

# ECO matic®

*Crystal Clear Water. Naturally.*

## **Installation and Operating Instructions**

**FOR MODELS:**

**ESC 6000**

**ESC 7000**

**ESC 8000**

**ESC 9000**



**Please pass these instructions on to the operator of this equipment.**

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## Packing List

Your ECO-matic product consists of the following components.

Please confirm that you have all components when attempting to install your ECO-matic.

- 1) 1 x Power Pack (Please confirm the Input Voltage is as ordered – 220-240V or 110V)
- 2) 1 x Cell (Including clear plastic Cell Housing)
- 3) 1 x Pack containing Mounting Screws, Wall Plugs and Spare Fuses



# IMPORTANT NOTICE

## FACTORS THAT WILL IMPROVE THE PERFORMANCE & LIFE OF YOUR SALT WATER CHLORINATOR PLEASE READ THIS BEFORE OPERATING YOUR CHLORINATOR

**POOL BUILDERS:** Please cover this information with your customer during the new pool “Hand over Session”

Salt Water Chlorinators are a valuable piece of pool sanitising equipment and must be cared for to get the best performance and life span from it.

There are **THREE** main factors that will damage your chlorinator and reduce the life of the product. Please monitor the following factors in accordance with your installation & operating instructions.

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### 1. MAINTAIN OPTIMUM SALT LEVELS:

#### SALT LEVELS: 4000-5000ppm

- Run chlorinator at the Salt Levels stated within this document and on the product to ensure optimum sanitizer output and cell life.
- Operating this device at low salt levels will damage the cell and reduce its life.
- The control panel displays red LED indicator warnings when the salt levels are low.
- If no action is taken to rectify the salt levels, damage to the cell may result which will not be covered under warranty.

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### 2. MONITOR & MAINTAIN YOUR CHLORINATOR CELL:

- To keep your salt water chlorinator in the best possible condition, regular monitoring of the electrolytic cell is recommended. The ‘Cell’ is the clear plastic housing containing the removable cell head.
- During the chlorination process a white powdery Calcium scale may naturally build up on the titanium plates in the cell. Monitor the cell to prevent excessive scale build up. Excessive scale build up will cause damage to your cell, and dramatically reduce its efficiency and lifespan.
- Reverse Polarity models are low maintenance models that minimise scale build up.
- The control panel displays red LED indicator warnings when the cell requires cleaning.
- If Calcium scale builds up please clean the cell, following the cleaning instructions provided on page 15.
- **NEVER:** Use concentrated acid to clean your cell.
- **NEVER:** Leave cell in cleaning solution for extended periods of time
- **NEVER:** Use metal implements, scourers or brushes to clean your cell

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### 3. BALANCED POOL WATER CHEMISTRY:

- Salt levels **MUST** be maintained at 4000-5000ppm for optimum performance and lifespan
- Calcium Hardness levels **MUST** be kept to ideal ranges of **200-275ppm** (for Concrete and Tiled Pools) and **0-225ppm** (for other surfaces) to prevent excessive scale build up and damage to equipment
- pH levels **MUST** be kept to ideal levels to prevent damage to equipment and pool surfaces and to obtain optimum sanitizer effectiveness (Refer to page 17).
- Total Alkalinity and Conditioner/Stabilizer levels must also be kept in an ideal range (Refer to page 17).

# Important Safety Instructions

**These instructions must be followed to eliminate the potential risk of fire, electric shock or injury to persons.**

## USA

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

1. READ AND FOLLOW ALL INSTRUCTIONS
2. 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) WARNING – 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 power supply; provide a properly located outlet.
7. This unit is to be installed in accordance with these Installation Instructions, the National Electrical Code and the requirements of the authority having jurisdiction, to reduce the potential risk of fire and electric shock.
8. The 'Cell' cord shall be located at least 5 feet from the inside walls of the pool/spa.
9. SAVE THESE INSTRUCTIONS

## Canada

### Instructions de Securite Importantes – Canada

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When installing and using this electrical equipment, basic safety precautions should always be followed, including the following: Durant l'installation et l'usage de cet equipement, les precautions de base d'usage doivent etre suivies, et mis en consideration:

1. READ AND FOLLOW ALL INSTRUCTIONS
1. LIRE ET SUIVRE TOUTES LES INSTRUCTIONS
2. A green colored terminal or a terminal marked G, GR, Ground, Grounding, or the international ground symbol is located inside the power control box ('Power Pack'). To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment.
2. Une borne electrique de couleur verte ou une borne marquee G, GR, prise de terre ou avec le symbole internationale de prise de terre se trouve a l'interieur de la boite de controle (source de courant). Pour reduire tout risque de choc electrique, cette borne doit etre connectee a la prise de terre qui se trouve dans le panneau electrique a cet effet, lequel est identifie par un fil de cuivre de la meme grosseur que le circuit conducteur qui alimente cet equipement.
3. At least two lugs marked 'Bonding Lugs' are provided on the external surface or on the inside of the power control box ('Power Pack'). To reduce the risk of electric shock, connect the local common bonding grid in the area of the hot tub or spa or pool to these terminals with an insulated or bare copper conductor not smaller than No. 6 AWG.
3. Au moins deux ecrous marques "Ecrous d'encrage" sont fournis sur la surface externe ou sur le cote de la boite de controle (source de courant). Pour reduire le risque de choc electrique, brancher la grille de jonction commune du bain tourbillon, spa ou piscine a ces terminaoux avec un fil isole ou un fil conducteur de cuivre d'un calibre de non moins qu'un No. 6 AWG.
4. SAVE THESE INSTRUCTIONS
4. GARDER CES INTRUCTIONS

# Welcome to the healthy luxury of a salt water swimming pool

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We at ECO-matic are dedicated to providing you with the most luxurious, healthy, 'natural' pool water you have ever experienced, as well as the most reliable product and the best after-sales service you could hope for.

Reading this Guide will help ensure that your ECO-matic system functions correctly and efficiently, help avoid the expense of unnecessary service calls and make you aware of certain maintenance procedures which, if left undone, may void warranties offered by the manufacturer. Please refer to the Trouble-Shooting section of this Guide if you are experiencing problems.

## Overview of the ECO-matic Salt Water Pool System

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When pool salt is dissolved in pool water and then subjected to simple electrolysis (by way of the in-line ECO-matic 'Cell'), the chloride portion of the salt (sodium chloride) is transformed into an effective sanitizer,\* which has the ability to oxidize (kill) bacteria, virus, algae and other such radicals which would otherwise flourish in the water. This process is reversible, so does not consume the salt, which is simply used over and over again.

Sized to suit your particular pool or spa, your ECO-matic system will provide all of the sanitizer necessary to maintain your pool/spa water in perfectly healthy condition, in an environmentally-perfect manner, by using and recycling a natural product – salt. Your ECO-matic will do exactly the same thing as 'pool chlorine' would do, but without the need to add (or swim in) potentially harmful, toxic man-made sanitizing chemicals.

\*(HOCl the same effective sanitizer as would result if 'pool chlorine' was added to the water – but without the potentially dangerous chlorine compounds and the obnoxious 'chemical' effects commonly associated with manual chlorination – and without the need to handle chemicals).

## The Components of an ECO-matic System

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### The 'Power Pack'

The 'Power Pack' contains the electrical components which transform the mains power supply to the low voltage DC current required to operate the ECO-matic 'Cell', as well as the other various operating and control functions of the ECO-matic system.

### The 'Cell'

The ECO-matic 'Cell' is the component which comes into contact with the pool/spa water and which, through a process of electrolysis, produces (from the 'natural' salt dissolved in the water) the sanitizer/oxidizer necessary to maintain the water in a healthy condition. The 'Cell' is comprised of sophisticated materials specifically designed and engineered for ECO-matic's intended purpose.

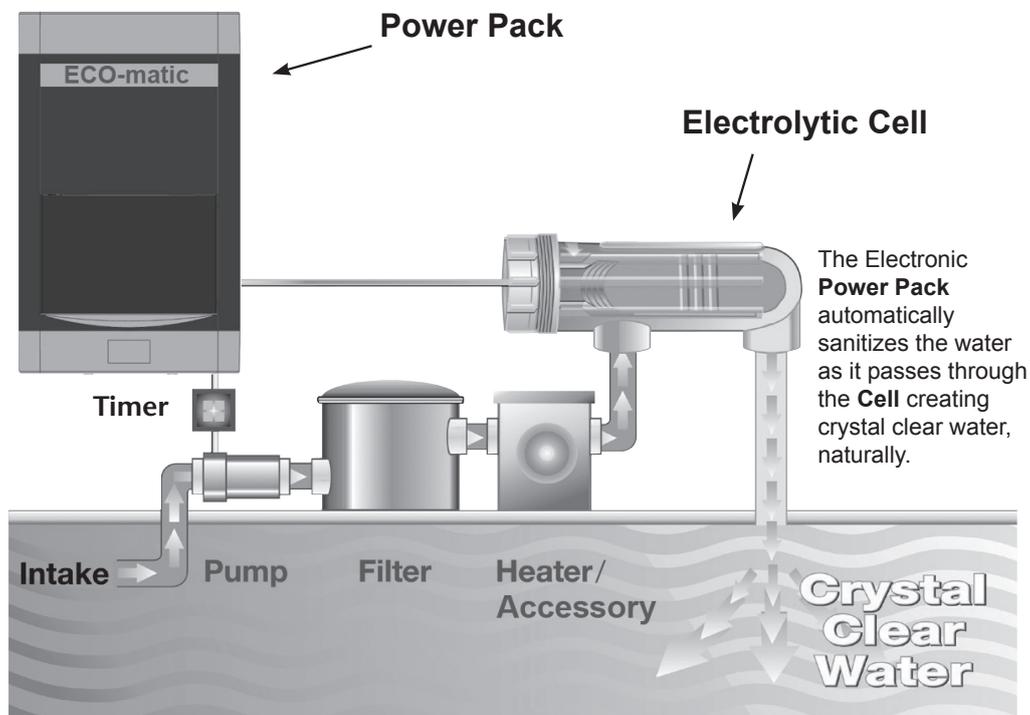
### The Salt

A basic ingredient of the ECO-matic process is Pool Salt. The salt is added directly into the pool or spa water to produce the water salinity required to enable your ECO-matic to function properly. Pool Salt is available in bags of various sizes from your local pool professional.

## Your ECO-matic Equipment

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When correctly installed, your ECO-matic will operate ONLY WHEN THE FILTER PUMP IS OPERATING and water is flowing through the 'Cell'. Your ECO-matic must not be able to operate while the filter pump is OFF. If your ECO-matic continues to operate after the filter pump is switched OFF (as indicated by bubbling and cloudiness at the 'Cell'), contact your ECO-matic dealer or the person who installed your ECO-matic immediately and ensure that the fault is rectified.



Note: Never install a filter after the electrolytic cell in the order of operation.

## Understanding the ECO-matic System

Your ECO-matic uses the dissolved salt in the water to produce the sanitizer necessary to maintain your pool/spa water in a safe and healthy condition.

The amount of sanitizer produced by the ECO-matic and the quantity of salt (the salinity) in the water are related, but must be maintained and controlled as two separate factors:

### Sanitizer:

The amount of sanitizer required for your pool varies from time to time and depends upon a number of variables, including the number of swimmers in the pool, water temperature, etc.

To determine whether your ECO-matic is producing sufficient sanitizer for YOUR pool/spa, the sanitizer level in the pool/spa must be measured using a normal 'chlorine' Test Kit. The sanitizer level in the water can then be adjusted up or down as required, by adjusting the quantity of sanitizer being produced by the ECO-matic (refer to Production Control on page 12).

Low sanitizer levels should not be confused with a low salt level, and adding more salt will not necessarily increase the sanitizer level. The salt level should be controlled and maintained separately – see below.

### Salt Level (Salinity):

Your ECO-matic Control Panel will indicate whether the salt level in the water has fallen below the desired minimum operating level. The system will continue to produce sanitizer in low salt conditions (but at a decreased rate, and only until the automatic Cut-Out applies) but low salt conditions cause **increased wear on the 'Cell' and will shorten the life of the 'Cell'**. When your ECO-matic indicates a Low Salt condition, add salt to the water to correct the situation. Measure and control sanitizer levels separately, as described above.

*Note: Never add salt in order to increase sanitizer level. Only add salt, as necessary, to maintain the recommended salt level.*

### The Amount of Sanitizer Produced by ECO-matic Depends Upon:

- The daily operating time of the equipment (pump/filter and ECO-matic). Suggested operating times vary depending on weather conditions, pool usage, etc (as little as 4 hrs in winter, to 8-12 hrs in summer or more in certain adverse conditions).
- The production control setting (high or low)
- The condition of the ECO-matic 'Cell' (clean or dirty) The rate of sanitizer production will decrease as the 'Cell' accumulates scale (calcium, etc), or if the salt level in the water decreases and, in time, as the 'Cell' nears the end of its life.

*Note: Your Test Kit is your ONLY INDICATOR of whether your ECO-matic is producing sufficient, too little, or too much sanitizer for your pool.*

If your ECO-matic is producing TOO MUCH SANITIZER, turn the production control DOWN, or reduce the daily operating time (being sure to maintain at least the minimum recommended daily filtering time).

If your ECO-matic is producing TOO LITTLE SANITIZER, turn the production control UP, or increase the daily operating time of the equipment (and refer to trouble-shooting, including stabilizer/conditioner level).

# Installation Summary

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This is a quick guide as to how the ECO-matic should be installed. Refer to the following pages for detailed instructions and helpful hints.

1. Install the ECO-matic 'Cell' into the return line, downstream from all other equipment. The 'Cell' must be horizontal. The water flow direction through the cell housing should be 'flowing away from the Cell Head'. Inlet and outlet piping to be a minimum of 6" in length (to provide for easy Cell Housing replacement if this becomes necessary in the future). Refer to following pages for details.
2. Mount the 'Power Pack' onto a wall, fence or post, etc., within reach of the 'Cell' cord. Connect to power so that 'Power Pack' receives power only when the filter pump is operating (both components should switch on and off at the same times). Refer to following pages for important wiring instructions.
3. Connect 'Cell' to 'Power Pack'. Refer to following pages for connection details.
4. Add salt to the pool water.

## Before Installing Your ECO-matic...

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### How good is the water in your pool/spa?

In most instances, pools can be simply converted to the ECO-matic system without the need to change the pool water.

However, if the water is 'old' (older than say 3 years), or if the water has been subjected to high degrees of chemical dosing, or has been kept in generally poor condition, you may want to consider dumping that water and refilling the pool.

Pool water has a tendency to become 'harder' over time. Evaporation leaves the 'hardness' in the water and when top-up water is added to the pool, additional hardness is added. This additional hardness, together with residuals from previous chemical treatments etc can make the pool generally more difficult to maintain (regardless of the purification method being used).

A simple water hardness test (Total Hardness, not just calcium hardness) can determine whether it is preferable to dump the water and refill. Although water hardness varies from one area to another, the following general rule can be used as a guide:

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If the pool water Total Hardness exceeds 500 ppm (parts per million) AND is more than 300 ppm above that of the fill water (tap water), it is recommended that you drain and refill the pool.

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The same general rule applies to spas, however the smaller volume of water and relative ease of changing the water in a spa, suggests that it is generally the advisable thing to do.

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**WARNING:** Before emptying your pool or spa, consult your pool builder, Pool Service or local Pool Shop and determine whether it is safe to do so. Emptying a pool in certain ground-water conditions can cause serious structural damage to the pool.

*Note: Pools that have been sanitized with non-chlorine systems (bi-guinia or copper saged) should be drained and refilled before converting to salt sanitation.*

## Choosing the 'CELL' Location

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The location in which the 'Cell' is to be installed is important. The 'Cell' must be located as follows:

- \* In the return-to-pool line (the pipe carrying filtered water back to the pool)
- \* AFTER (down-stream from) all other equipment (filter, heater etc). Contact your ECO-matic Dealer for instructions if the 'Cell' cannot be located AFTER all other equipment.
- \* Locate the 'Cell' so that its power supply cord (attached to 'Power Pack') can reach the 'Cell' from the 'Power Pack' location.
- \* The 'Cell' cord must be at least 5 feet distance from the inside walls of the pool/spa (at least 5 feet from the nearest water in the pool/spa).

### Other considerations regarding 'Cell' location:

When correctly installed, the 'Cell' will produce sanitizer only when water is flowing through it – and, obviously, the sanitizer is carried in the water, to wherever the water is being directed, so ... If there is a spa attached to the pool, be sure to locate the 'Cell' in the line carrying water to the pool/spa, preferably before (upstream from) the valve which directs water flow to either the pool or spa – and not after (downstream from) the valve in the line to the 'spa only' (in which case no sanitizer would be sent to the pool during normal filtering periods).

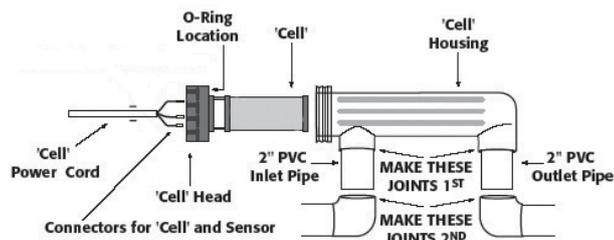
If there is a solar heater attached to the pool, locate the 'Cell' so that it has water flowing through it whenever the filter pump is operating regardless of whether water is flowing through the solar heater panels.

## Installing the 'CELL HOUSING'

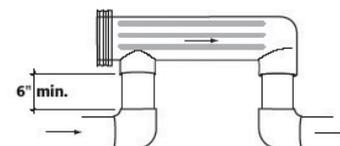
Once the correct location for the 'Cell' has been established, the 'Cell Housing' must be installed into the plumbing at that selected location. The clear plastic 'Cell Housing' is PVC compatible, so use ordinary PVC solvent (glue) to attach the 'Cell Housing' to the pipework. Remove the 'Cell' from the 'Cell Housing' before attempting to install the 'Cell Housing'.

### IMPORTANT The 'Cell Housing' must be installed as follows:

- \* 'Cell Housing' must be installed in a HORIZONTAL position.
- \* Water flow should be in the direction indicated by the ARROW on the clear plastic 'Cell Housing' (in the direction flowing away from the 'Cell' head).
- \* The Inlet and outlet pipes must be pointing vertically DOWN, to form an inverted 'U' configuration with the 'Cell Housing'.
- \* The vertical inlet and outlet PVC piping must be a minimum of 6" in length (refer Sketches 3a, 3b)
- \* The 'Cell Housing' shall be free standing and not secured to any rigid backing surface (such as a wall).
- \* Installation should allow easy removal of the cell from the housing.

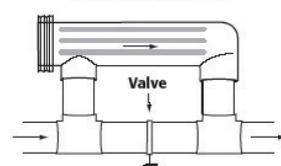


SKETCH 2



SKETCH 3a

Total flow through 'Cell'



SKETCH 3b

'Cell' on a by-pass  
(partial flow through 'Cell')

**Water Flow:** In most cases (for 1.5" and 2" PVC) the total water flow can be directed through the 'Cell Housing' (as shown in Sketch 3a) without significantly effecting the flow rate and/or backpressure on the filter etc. However, if flow rate is a concern (high horse-power pump, large diameter piping etc), the 'Cell' can be installed on a by-pass (as shown in Sketch 3b). Note the need for a valve to ensure a good flow of water through the by-pass.

**Helpful HINT:** When attaching the 'Cell Housing' into the pipework, attach the inlet and outlet pipes to the 'Cell Housing' FIRST – and then connect that assembly to the rest of the pipework (Refer Sketch #2). The inlet and outlet pipes should be pushed in, twisted, and held firmly in place until the PVC solvent holds. **Note:** While making these joints, hold the 'Cell Housing' horizontally, with the inlet and outlet pointing down, so that the liquid PVC solvent does not run into the 'Cell Housing' where it will look unsightly through the clear plastic.

**Helpful HINT:** Copper Pipes? Use PVC 'Flow-Lock' fittings (compression fittings) for easy connection of PVC to copper pipes.

## Installing the 'POWER PACK'

**Location of the 'Power Pack':** Select a location to mount the 'Power Pack' onto a wall or fence etc, as follows:

- \* The 'Cell' location should already have been selected (see above). The 'Cell' power cord must reach the 'Cell' (with sufficient slack to allow removal of the 'Cell' from the 'Cell Housing'). Note: The 'Cell' cord can be extended if absolutely necessary, but you must first contact your ECO-matic Dealer for important instructions.
- \* For cord-connected units, locate the 'Power Pack' so its cord is within reach of the point where it is to be connected to mains power (eg: pool Timer).
- \* The 'Power Pack' is weather-proof so can be located outdoors.
- \* It is important to ensure that 'Power Pack' be located in a well ventilated area – and that air can circulate between the back of the 'Power Pack' and the surface onto which it is mounted (stand-offs on back of 'Power Pack' provide ventilation for wall-mounted units).

Once a suitable location for the 'Power Pack' has been selected, use 2 - #8 screws to attach 'Power Pack' to a wall, fence or post etc (using wall plugs if necessary).

**See actual size template on back page for mounting screw position.**

# Connecting the 'POWER PACK' to Power Supply

**IMPORTANT:** It is essential that your ECO-matic gets power **ONLY WHEN THE FILTER PUMP IS 'ON'** and water is flowing through the 'Cell'. The power supply to the ECO-matic 'Power Pack' must therefore be controlled by the same switch or timing device which controls power to the filter pump.

## Voltage

Your ECO-matic 'Power Pack' has been designed to operate on either 110V or 220/240V AC. It cannot be switched from one voltage to the other, so must be ordered in the same voltage as the power to your filter pump. Note: Units for larger pools are available **ONLY** in 220/240V.

## Cord Connected 'Power Packs'

UL and C-UL Listed 'Power Packs' will not be fitted with a power cord. Refer to Permanently Connected 'Power Packs', below.

## 'Power Packs' with cords should be connected as follows:

Cord wires will generally be BLACK, WHITE and GREEN, or BROWN, BLUE and GREEN.

**For 220/240v units, connect Black and White to load, Green to Ground. For 110V units, connect Black/Brown to load, White/Blue to neutral, Green to Ground.**

Simply put, the power supply cord wires should be connected to the same Timer terminals as the filter pump – to insure that the 'Power Pack' receives the same voltage as the filter pump, and is switched ON and OFF coincidentally with the filter pump.

## Fitting an existing power supply cord to the ECO-matic 'Power Pack'.

Refer to IMPORTANT SAFETY INSTRUCTIONS on page 4. Always de-energize the power supply before opening the 'Power Pack'.

Lay the unit on its back. To open the 'Power Pack', remove the 4 screws in the base of the unit and pull down base section. Slide down the front facia and clear it from the top section, then open up the 'Power Pack' for access to the terminal block.

When open, support the front panel facia so as not to place strain on the internal wiring.

Remove the attached power cord from the unit's terminal block, and connect the replacement power supply wires into the terminal block and the GROUND terminal (marked with standard GROUND symbol).

Replace the front facia and base section, making sure that the 4 screws are replaced and securely fastened.

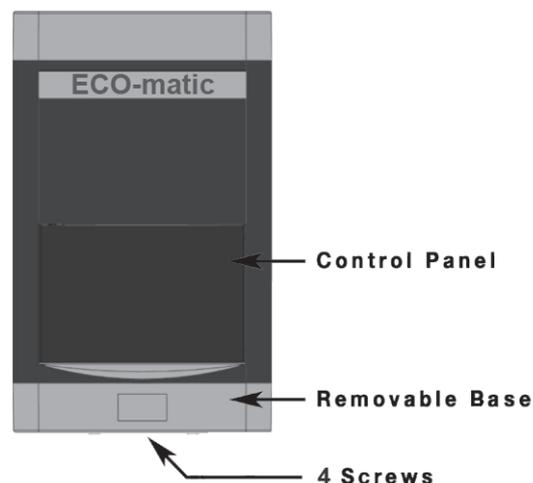
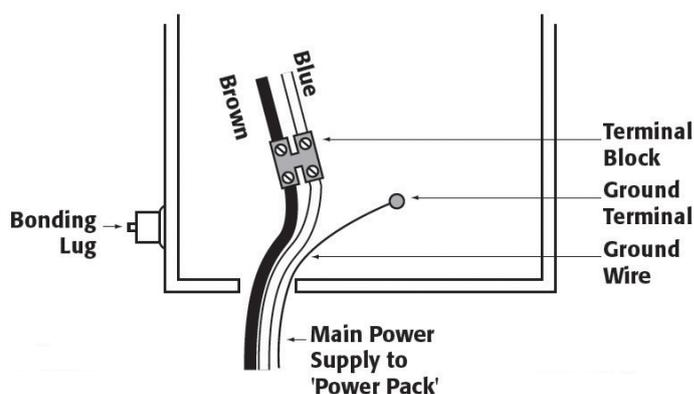
## Bonding Lug Connection (if applicable)

The 'Power Pack' comes with Bonding Lugs located externally on the side of the 'Power Pack'. They must be connected to the local common bonding grid (which includes all metal parts of the swimming pool structure and to all electrical equipment, metal conduit and metal piping) in the area of the equipment, using either insulated or bare copper conductor not smaller than No. 6 AWG.

## Connecting 'Cell' to 'Power Pack'

The 'Cell' connecting lead is factory-attached to the 'Power Pack', with connectors at the end of the lead for attachment to 'Cell' head.

Fit the BLACK connectors to either titanium rod. The BLUE Flow Sensor should be pushed onto the threaded shaft of the small bolt.

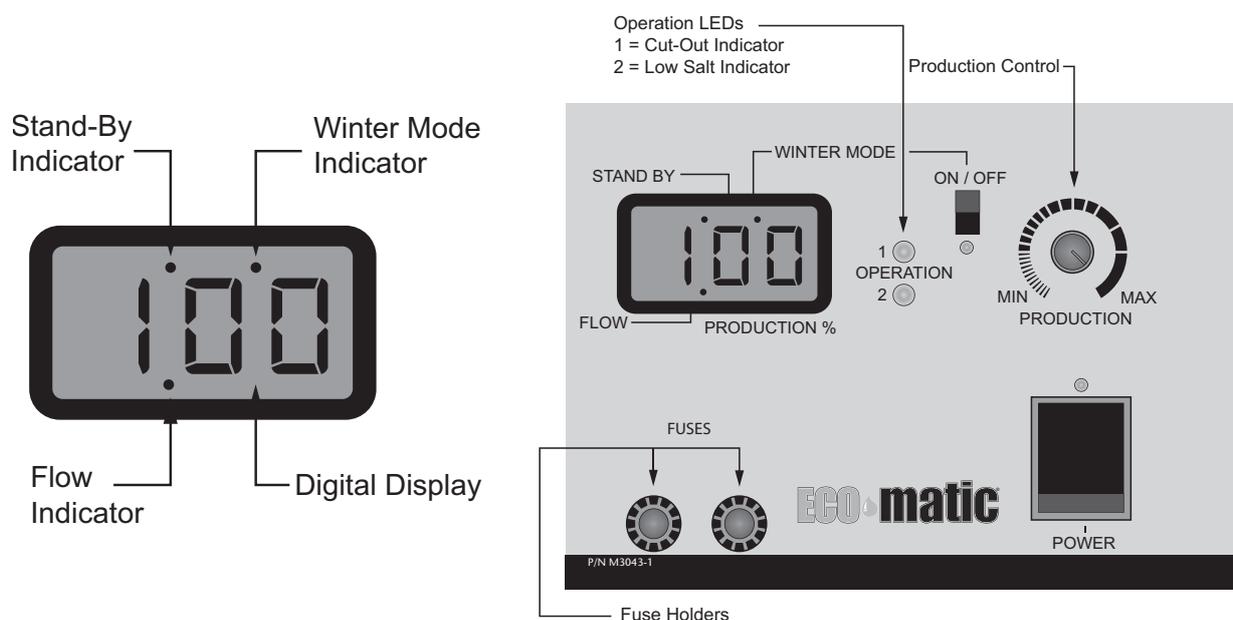


## Installation Check List

Your ECO-matic installation is complete when the following have been completed:

- Cell Housing installed into plumbing.
- Cell Housing is be mounted horizontally.
- Cell Housing should be located downstream from filter, heater and all other accessories, and before any spa valve.
- Water flow direction should be away from the head of the Cell. Check markings on Cell Housing.
- Cell properly fitted/sealed in Cell Housing.
- Power Pack mounted in place.
- Power Pack connected to main power (be sure your 220/240V or 110V ECO-matic is connected to correct voltage).
- Confirm that your ECO-matic Power Pack switches ON and OFF in time with the filter pump.
- Power Pack connected to Cell (including the Gas-Sensor connection).
- Sufficient salt dissolved into pool water.

## Controls and Display Panel



The rate at which your ECO-matic produces sanitizer for your pool varies (see below) and is indicated on the DIGITAL DISPLAY (Eg: 100 or in winter mode 85).

There are two lights on the Control Panel – LED 1 and LED 2 – which will indicate whether the system is working as intended or whether there may be faulty or damaging operating conditions (such as low salt levels). If these warnings are ignored, the Unit will either **Cut-Out** OR otherwise, continued operation will result in damage to the 'Cell'.

## 'Power Pack' Start Up

1. Turn the POWER ON (first time only). Power setting "1". Switch filter pump ON. ECO-matic power switch can then be left ON and filter power control will also control the ECO-matic.
2. The unit will enter a START-UP PHASE (which will repeat itself at the start of each filtration period). The STANDBY light will be ON, but there will be no 'Cell' output (sanitizer production).
3. After the Start-Up delay, the DISPLAY should indicate around 100 (unless set in the Winter Mode). With the correct amount of salt added and dissolved, both LED 1 and LED 2 will be GREEN. If LED 2 is RED, there is insufficient salt in the pool.

## Digital Display

The **DIGITAL DISPLAY** indicates how the ECO-matic is performing, compared to its maximum design output. 100(%) is the standard display. Normal Winter Mode reading is 85. If below 100 (or 85 if in winter mode).

# System Start-Up Procedure

NOTE: The ON/OFF switch on the front control panel of your ECO-matic can be left in the ON position (other than at times when you want the ECO-matic to be OFF while the filter pump is operating). The Timing device or switch which turns your filter pump ON and OFF will also switch the ECO-matic ON and OFF (providing the electrical connection to the 'Power Pack' has been done correctly).

## What To Do - Day 1

Once your ECO-matic is operational, adjust the sanitizer Production Control to suit the existing 'chlorine' reading in the pool water. If the existing 'chlorine' reading is low or zero, adjust the Production Control to maximum and run the system until the desired sanitizer level is measured in the pool. If the existing 'chlorine' reading is high, the Production Control can be set low (or the ECO-matic can be left OFF until the chlorine level drops)

Operate the filter at least 12 hours (preferably all day)

## What To Do - Day 2

Check the sanitizer level in the pool water (refer to Owner's Guide). Adjust the Production Control and/or filter operating time accordingly (refer Owner's Guide).

It is best to check the sanitizer level at approx the same time of day (mornings are best) so you get a true indication of whether the ECO-matic is producing sufficient, too much or too little sanitizer each day.

## Ongoing Adjustment Of The ECO-matic

Repeat the above (testing sanitizer level daily) until you get a consistent sanitizer reading each day. The Output Control (and/ or daily filtering time) will then only need to be altered according to fluctuations in pool use, seasonal changes in the weather and pool water temperature. Your pool 'Test Kit' is your ONLY INDICATOR as to whether the Output Control or daily ECO-matic operating time needs to be altered.

**NOTE: The SALT LEVEL and SANITIZER LEVEL are not the same thing and should both be maintained as per your ECO-matic Owner's Guide.**

## Indicators – What They Mean

Output readings on the DIGITAL DISPLAY can fall due to any (or combination of) the following: cooler water temperatures, warming of power pack (in heated equipment rooms for example), lower than normal power voltage, low salt levels, scaling occurring on 'Cell'.

Provided LED 1 and LED 2 are both GREEN ( and the 'Cell' is not scaling excessively), your ECO-matic is performing (producing) satisfactorily.

Indicator	Display	LED 1	LED 2	What's Happening
STAND-BY ON	Blank	Green	Green	<ol style="list-style-type: none"> <li>Unit is in start-up mode.</li> <li>'Cell' is in OFF cycle during normal operation. (refer <b>Production Control</b>)</li> <li><b>Production Control</b> set at MIN.</li> </ol>
FLOW ON	Blank	Green	Green	<ol style="list-style-type: none"> <li>Insufficient flow through 'Cell' (gas or air at STAND-BY ON 'Cell', check pump/pipes for damage, leaks).</li> <li>Gas Sensor lead not connected to 'Cell'.</li> <li>System is wired incorrectly.</li> </ol>
	100	Green	Green	System operating normally.
	100	Green	Red	<ol style="list-style-type: none"> <li>'Cell' is dirty, scale build-up. Clean 'Cell'.</li> <li>Water temperature cold. Switch to <b>Winter Mode</b>.</li> <li>Salt Level below minimum. Add salt. Prompt action recommended to avoid cut-out.</li> <li>'Cell' failing. Test and/or replace 'Cell'.</li> </ol>
	Varying	Red	Red	Unit preparing to <b>Cut-Out</b> . (see <b>Low Salinity Indicator</b> and <b>Cut-Out</b> ) <ol style="list-style-type: none"> <li>'Cell' is dirty, scale build-up. Clean 'Cell'.</li> <li>Water temperature cold. Switch to <b>Winter Mode</b>.</li> <li>Salt Level below minimum. Add salt.</li> <li>'Cell' failing. Test and/or replace 'Cell'.</li> </ol>
STAND-BY ON	Blank	Red	Red	System Protection activated. Unit has <b>Cut-Out</b> . Follow above procedures
WINTER MODE ON	85	Green	Green	System operating normally - in <b>Winter Mode</b> . Only operate in <b>Winter Mode</b> if water is very cold. Red LED(s): Scaled 'Cell' or Low Salt Level.

# Operation of the ECO-matic

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The ESC Models have the following features:

- a) **Polarity Indicator:** The + or - symbol appears before the **Digital Output Display**, to indicate the polarity in which the system is operating (i.e. positive or negative direction of 'Cell' current). The symbol will alternate according to pre-set factory settings and does not effect the normal operation of the unit.
- b) **Production Control:** When the Production Control is being adjusted, the ESC units will indicate (flashing) the percentage of time that the 'Cell' will operate during the filtration cycle (for a few seconds, then display reverts to 'Cell' Output display).
- c) **'Cell' Cleaning:** The ESC units use a patented Electronic Auto-Cleaning system for the 'Cell'. 'Cells' may eventually scale in extreme hard water conditions and will require manual cleaning if this occurs.
- d) The second **Low Salinity** warning phase (Red + Red LED's) is very short. Therefore on first warning phase (Red + Green LED's) prompt action is recommended to avoid **Cut-out**.

## Stand-by Indicator

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The **Stand-By** indicator will be ON when the Unit is preparing to produce sanitizer. This will be either during the system's initial **Start-Up** or when the 'Cell' is in an OFF cycle during the filtration cycle (refer Production Control). Stand-By indicator can also be ON after System Protection Cut-Out has activated. (ie: when unit has shut down).

## Flow Indicator

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If there is a problem with water flow or gas is detected in the 'Cell Housing' the **Flow** indicator will be ON. When this occurs the pump or pipes should be inspected for damage and the **Gas Sensor** on the 'Cell' checked for correct connection (and scale build-up on bolt head of Gas Sensor).

## Production Control (Sanitizer Output Control)

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The **Production Control** allows you to control the amount of sanitizer to be produced during any filtration cycle (filter operating time).

The setting on the **Production Control** determines the amount of time for which the ECO-matic will operate during the filtration cycle. The **Production Control** dial is graduated approximately as follows: 0% (MIN), 20%, 40%, 60%, 80%, (MAX) 100%.

The **Production Control** will not vary the rate at which the 'Cell' will produce sanitizer (as indicated on the DISPLAY), just the 'time' for which the ECO-matic will produce sanitizer. For example:

Daily Filter Operating Time	System Control Setting	Hours of Sanitizer Production
8 hours	60%	4.8 hours (60% of 8 hours)
12 hours	20%	2.4 hours (20% of 12 hours)
8 hours	100%	8 hours (100% of 8 hours)
6 hours	50%	(halfway) 3 hours (50% of 6 hours)

When the **Production Control** is set to MIN, the 'Cell' will be OFF for the duration of the filtration cycle.

When the **Production Control** is set to MAX, the 'Cell' will be ON for the full duration of the filtration cycle.

The **Production Control** is graduated in steps of 20% from MIN (OFF) to MAX (ON).

*Note: If the ECO-matic is controlled by ORP chemical automation, turn the control knob to MAX.*

During any filtration cycle, when the **Production Control** is set between MIN and MAX, the 'Cell' will be turned ON and OFF a number of times each hour. Using the previous example (of 60%), the 'Cell' will operate for about 36 minutes each hour. This 36 minute operating time will be made up of a number of smaller operating periods. As an example, the 'Cell' may turn ON 12 times (for a period of 3 minutes each time) to make up the 36 minutes. This enables the electronic circuitry to re-adjust to any changes in the pool water condition. For example, dilution from winter rains, the addition of salt, etc.

If the 'Cell' is OFF and you wish to check its operation, simply turn the **Production Control** to MAX and the 'Cell' will turn ON. Once checked, adjust the **Production Control** back to the desired position and after a few minutes the 'Cell' will turn OFF again. To turn the 'Cell' OFF, simply turn the **System Control** to MIN. This will be convenient when backwashing filter.

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## Low Salinity Indicator and Cut-Out

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Your ECO-matic is fitted with a number of protective features including the **Low Salinity Indicator** and a **Cut-Out** feature.

As the salt level in the pool decreases, the wear on the 'Cell' increases. Although salt is not consumed in the ECO-matic process, it is lost through splashing, back-washing and on bathers as they leave the pool. The salt level is also reduced by rain, which causes dilution. Salt is not lost to evaporation. As the salt level in the pool falls toward the minimum, **LED 2** will turn RED. At this point the salt level should be increased by adding approximately 50 lbs of salt per 5000 gallons of water. If no action is taken and the salt level continues to fall, the **Low Salinity Cut-Out** will activate and **LED 1** will also turn RED. It is advisable to satisfy yourself that the salt level is in fact low, prior to adding salt, as LEDs 1 and 2 can activate for reasons other than 'low salt'. Salt Tests Strips can be used to confirm the salt level in the water. If you have no means of measuring salt level, add the suggested amount of salt and dissolve it by vacuuming or sweeping onto floor drain. If the LED indicators do not change, the salt level in the water **MUST** be measured prior to adding additional salt (take a sample to your local ECO-matic Dealer for testing). This will prevent adding too much salt when 'low salt' may not be the problem.

When the Cut-Out feature activates, the ECO-matic will no longer produce sanitizer, but will switch itself ON a number of times each hour and assess whether the problem(s) (low salt for example) have been corrected. If the problem still exists, the unit will switch OFF once again.

Other factors which can activate the **Cut-Out** feature:

1. **Heavy Rain** - can cause very dilute pool water to pass over the 'Cell' due to surface skimming. The Unit will turn back ON after the rain has been mixed into the water unless the salt level has been reduced by dilution/overflow.
2. **Scaled 'Cell'** - a scaled 'Cell' will not draw as much electrical current as a clean 'Cell' when first started. This will cause the **Cut-Out** to operate. This is very beneficial as a scaled 'Cell' can cause an overload if it is operated for a few hours. Heavy scale build-up also increases the wear on the 'Cell'.
3. **Cold Water** - cold pool water reduces the ability of a 'Cell' to carry electrical current. (Refer **Winter Mode** below).
4. **Failing 'Cell'** - as 'Cell' ages there will come a time when the electrical current draw will drop. This can be compensated for with the addition of extra salt. A 'Cell' is considered failed when it draws less than 80% of maximum current. To keep a failed 'Cell' in operation, **Winter Mode** can be used along with extra salt. There will come a time when the 'Cell' will not respond to either extra salt or **Winter Mode**. It will then need to be replaced.

## Winter Mode

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When the 'Cell' draws electrical current from the Power Supply, the amount of current drawn is dependent upon a number of factors. Two of these factors are **Salinity** and **Water Temperature**.

The **Low Salinity Indicator** and/or **Cut-Out** on your ECO-matic are designed to operate at swimming season water temperatures. When the pool begins to cool in the off season the temperature drop causes the 'Cell' to behave differently – it will draw less electrical current. This can cause the **Low Salinity Indicator** and/or **Cut-Out** to assume that the salinity has fallen even if the salinity has remained relatively constant.

When the temperature of the pool water drops (typically when it is too cold to swim), the **Winter Mode** Switch should be placed in the ON position. The **Winter Mode** Indicator will then be ON.

**Winter Mode** setting has two effects:

1. It alters the setting of the **Low Salinity Indicator** and/or **Cut-Out**.
2. It reduces the Cell Output by approximately 15%.

The Unit will now respond to a cold pool environment. **Winter Mode** should not be used in the swimming season as it reduces the **Cell Output**, leading to less sanitizer, and it alters the setting of the **Low Salinity Indicator** and/or **Cut-Out**, which could lead to premature 'Cell' failure.

## Gas Sensor

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The smaller of the three leads which connect to the 'Cell' head is the Gas Sensor. Whenever the head of the Gas Sensor bolt loses contact with the water (due to gas or air pocket in 'Cell', or scale build-up on sensor bolt head), your ECO-matic will **Cut-Out**.

## Day to Day Operation

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Your ECO-matic must operate daily in order to produce sufficient sanitizer for your pool. In average summer weather conditions, with average family use of a pool, the daily operating time should be as recommended by your filter manufacturer or pool maintenance person - in average summer climates usually 6 - 8 hours per day, but in hot climates and if pool is heavily used as much as 12 or 14 (or more) hours per day. Your TEST KIT is the **ONLY** means of determining whether your ECO-matic is producing sufficient sanitizer for your pool.

It is suggested that the daily operating time be broken down into 2 sessions – one in the early morning and one in the late afternoon, early evening. This will optimize the effectiveness of the sanitizer which the ECO-matic produces.

Always operate the pool filter and ECO-matic while the pool is being used.

## Shocking the Pool

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Periodically, especially in very hot climates and if the pool is heavily used, it may be necessary to boost the amount of sanitizer in the pool in order to maintain absolute sanitation of the water. This can be achieved simply by operating the ECO-matic for an extended period (say 24 hours) with the System Control set at MAXIMUM.

## Maintenance of Your ECO-matic

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### The 'Power Pack'

The POWER PACK should require very little (if any) maintenance. However, damage to certain components may result from improper maintenance of the 'Cell' (see below). Always ensure that the POWER PACK is located in a well ventilated area free of corrosive fumes from any acid or chemical containers in the vicinity.

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**Important Note:** *The two most important maintenance requirements for your ECO-matic are:*

- 1. Cleaning the 'Cell' and*
  - 2. Maintaining sufficient salt level in the pool.*
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### The 'Cell'

Maintenance of the 'Cell' is quite simple, but very important. ECO-matic 'Cells' are comprised of expensive materials and even with proper care and maintenance the delicate coating on the 'Cell' anode will eventually wear away and the 'Cell' will 'die' and will no longer be able to produce sufficient sanitizer for the pool. Proper care (and cleaning) will ensure the maximum life for the 'Cell'. Operating your 'Cell' on lower-than-recommended salt levels will shorten 'Cell' life and void 'Cell' warranties.

### Cell Life

The life expectancy of ECO-matic 'Cells' may vary considerably from one installation to the next, due to variations in daily operating time, water quality and composition, system and 'Cell' maintenance.

The ESC7000, 8000 and 9000 models use the same size 'Cell'. However, due to the increased 'Cell' output of the ESC9000, its 'Cell' will have a shorter life than that of the ESC7000.

**Please ensure that when it is time to replace your 'Cell', you use only ECO-matic replacement 'Cells. The use of imitations (or copies) of the ECO-matic 'Cell' may harm the internal components of your ECO-matic Power Pack and may void warranties.**

# Maintenance of Your ECO-matic (Continued)

## Cleaning The 'Cell'

Mineral salts, calcium, etc. (scale) will accumulate onto the 'Cell' and may effect the efficiency of the 'Cell' in its production of sanitizer. If allowed to build up unchecked, this scale can damage the 'Cell'. It is therefore essential that the 'Cell' be cleaned whenever necessary, as indicated by visual inspection, a drop in Output and/or RED LED(s).

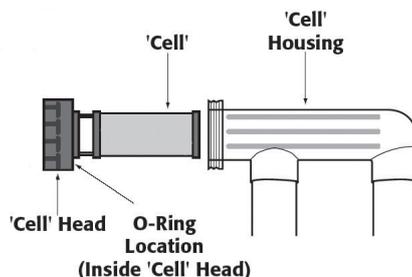
The rate at which the scale accumulates on the 'Cell' varies from pool to pool and is influenced mostly by the Total Hardness, Total Alkalinity and the ratio of these two important components of water balance. Rapid scaling on the 'Cell' indicates the need to adjust either the Total Hardness and/or the Total Alkalinity of the pool water (refer to Maintenance of the Water).

## Removing The 'Cell' For Cleaning

The 'Cell' leads connect to the 'Cell' Head with push-in bayonet type connectors.

Simply twist and pull each connector to disconnect. The Gas Sensor lead is a push-on connection – simply pull to disconnect. Do not attempt to remove by pulling on the wires. Be sure to color-match the connectors when reconnecting.

The 'Cell' can be removed by unscrewing the head cover in the direction of the 'open' arrow.



## How To Clean The 'Cell'

- Turn OFF filter pump before attempting to remove the 'Cell'.
- Remove the 'Cell' from the 'Cell Housing'. Turn in direction of 'OPEN' arrow on 'Cell' Housing).
- Immerse the 'Cell' into the weak acid solution (see below) for as short a time as necessary for the scale to be dissolved off the 'Cell'
- If necessary, remove the 'Cell' from the weak acid solution, brush with a soft brush (never use a metal brush) to help remove stubborn scale, then re-immerses into the weak acid solution. Repeat until 'Cell' is completely clean of scale.
- Remember to also clean scale off head of **Gas Sensor** bolt (on inside of 'Cell' head).
- Rinse the acid solution off the 'Cell' using fresh water, or **immediately** replace the 'Cell' into the 'Cell Housing' and start the filter (so the pool water rinses the 'Cell').

**NEVER** tap or knock the 'Cell' against hard objects to help remove scale. 'Cell' will break.

**NEVER** use concentrated acid to clean your cell.

**NEVER** leave 'Cell' in cleaning solution for extended periods of time.

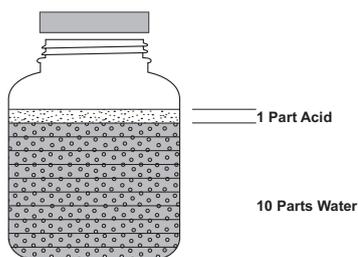
**NEVER** use metal implements, scourers or brushes to clean your cell

When re-inserting the 'Cell' into the 'Cell Housing', ensure that the O-ring is in place (seated in the groove in the 'Cell' Head). If it is difficult to have the O-ring stay in its groove, apply lube gel to O-ring, then re-fit into groove. Do not over-tighten the 'Cell' (hand tight is OK).

## Weak Acid Solution

Add 10 parts water to the 'Cell' cleaning container, then add 1 part acid (pool acid, muriatic acid) to the water, to a total depth which allows all of the 'Cell' mesh to be immersed.

**Warning: NEVER add water-to-acid. ALWAYS add acid-to-water**



The weak acid solution can be stored in a safe place (where children cannot access it) and re-used several times before becoming ineffective (saves having to make the solution each time). Avoid getting the acid solution on skin or in your eyes. If you accidentally do so, wash off immediately with fresh water (or use the pool/spa water).

Please do not hesitate to contact your ECO-matic Dealer for any assistance regarding 'Cell' cleaning.

## Maintenance of Your ECO-matic (Continued)

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### Maintaining The Salt Level

The salt levels for best chlorinator efficiency is 4000-5000ppm. Always monitor and maintain the recommended salt level for your ECO-matic model.

Operating your ECO-matic at lower than recommended salinity level will shorten the life of your 'Cell' and will void warranties on the 'Cell'. An excess of salt (up to 6000 ppm) is acceptable and will not harm the ECO-matic.

### Checking The Salt Level

Your ECO-matic has a **Low Salt Indicator (LED 2)**. When the level of salt in the water falls below the minimum level, **LED 2** will turn RED. The Unit will continue to produce sanitizer, but the situation should be corrected quickly. Otherwise the **Low Salinity Cut-Out** will shut down the ECO-matic.

The **Low Salt Indicator (LSI)** has been factory calibrated (plus or minus) to a salt level 3000 ppm so could therefore activate at slightly higher salinity than the designed minimum salinity. If the LSI activates when you think there is sufficient salt in the water, a physical test kit measurement of the salinity is necessary.

### Salt Test Kits

Various 'salt' test kits are available, and less expensive salt test strips can be purchased from your local pool professional. Some pool shops will test your salt levels.

### How Salt Is Lost From Your Pool

The ECO-matic process does not consume the salt – it merely re-uses it over and over. No salt is lost through evaporation. However, salt is lost from the pool when water is lost – back-flushing filter, splash-out, overflow in rainy periods, leaks in the pool.

### Adding Salt To The Water

Pool salt (sodium chloride) is available in bags of various sizes from your local pool professional. Call your ECO-matic Dealer if you need assistance in locating a source of salt.

Add the salt by tipping it directly into the pool. Dissolve by sweeping the salt to the deep-end floor drain and/or by vacuuming the pool. The heavier-than-water saline 'syrup' will remain on the floor of the pool if not mixed properly.

*Note: Some ECO-matic owners find it convenient to add 5 - 10 lbs of salt after each back-flushing of the filter.*

### How Much Top-up Salt To Add

When topping-up the salt level, we suggest adding salt at the rate of approx 100 lb per 10,000 gallons of water.

Remember: A slight excess of salt is not a problem, but too little salt causes damage to the 'Cell'. When the added salt is dissolved, check that **LED 2** remains GREEN. Measure the salinity if in doubt. DO NOT continue to add salt if LED 1 and/or LED 2 remain RED. Measure salinity before adding more salt to prevent over-salting the pool.

# Balancing the Pool Water

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You should always be sure that your pool water is 'in balance'. The person who maintains the pool should already be checking and adjusting the water for the following. If you need verification of any of the following, take a water sample to your local ECO-matic Dealer for testing.

## Adding 'chemicals' To Your Pool

Your ECO-matic will eliminate the need for you to add 'pool chlorine', algaecides and 'shock' chemicals to the water. Many pool owners and pool service people are in the habit of 'shocking' their pool water periodically, but this is no longer necessary with ECO-matic and we advise against adding such chemicals (including copper-based algaecides, non-chlorine shock, etc). If the need to add 'pool chlorine' should ever arise, you can do so without risk of harming your ECO-matic equipment.

In the event that your sanitizer level has fallen too low, or that you feel a need to 'shock' the pool, simply let your ECO-matic operate at **MAX** output for an extended time (say for 24 hours).

## Conditioner/Stabilizer

It is important to maintain 50 - 80 ppm of conditioner (cyanuric acid) in the pool water, in order to prevent sunlight from destroying the sanitizer (especially important in hot, sunny areas). If the conditioner level is too low you will find it difficult to maintain a good residual of sanitizer in the water – and your ECO-matic will need to work twice as hard as it would if the conditioner level was correct.

## pH Level

Pool water pH should be maintained in the range 7.2 - 7.8. At higher pH levels, the sanitizer loses its effectiveness, allowing algae growth etc even though your Test Kit may indicate sufficient sanitizer in the water. If you have difficulty maintaining the pH in the correct range, this is an indication that the Total Alkalinity (TA) is not at the correct level. It is always necessary to bring the TA within the correct range before pH can be properly maintained.

## Total Alkalinity (TA)

(TA) determines the speed and ease of pH change. TA can also greatly effect the frequency of having to clean the ECO-matic 'Cell'. The ideal range for TA is generally 80 - 120 ppm, but really depends upon the Total Hardness (TH) of the water and should be set at the level which suits the TH of your pool. The harder the water in a pool, the lower the TA should be. Your TA is correct when the pH becomes stable and easy to maintain.

<b>If the TA is TOO LOW</b>	<b>If the TA is TOO HIGH</b>
<ul style="list-style-type: none"><li>• pH 'bounce'</li><li>• Stains on plaster walls</li><li>• Etching of plaster walls</li><li>• Corrosion of metal parts</li></ul>	<ul style="list-style-type: none"><li>• Almost constant acid demand</li><li>• Promotes 'Cell' scaling</li></ul>

## Total Hardness (TH)

The Total Hardness (not just calcium hardness) if too high, can promote rapid scaling of the ECO-matic 'Cell'. TH also determines the desired level of TA.

General Rule: If the pool water total hardness levels are over 275 ppm you must regularly monitor your cell for scale build up and clean if necessary.

**Warning: Be aware that pools in high water-table areas should not be emptied without first consulting your pool builder or pool service.**

*Note: All water balance parameters (Hardness, conditioner/stabilizer, pH, TA) should be maintained within the normal recommended ranges.*

# Water Testing • What to Test For • Recommended Levels

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## Sanitizer (or 'chlorine')

Recommended Level	1.0 - 3.0 ppm
How to Test	Normal 'chlorine' Test Kit (free-chlorine test)
Frequency of Testing	Test and adjust daily, initially, until you achieve consistent readings. Then test at least weekly, or whenever pool conditions or usage changes.
How to Adjust	Use the ECO-matic <b>Production Control</b> (and/or vary filter operating time, being sure to run filter at least the recommended daily hours).
Why Sanitizer?	Micro organisms, germs, algae want to grow in your pool water. Correct sanitizer levels (in combination with other various levels) prevent the growth of such radicals and will maintain your pool water in a healthy and safe condition.
Sanitizer Demand	The amount of sanitizer required for your pool varies from time to time, depending upon such factors as: the number of swimmers, water temperature, pool environment, hours of sunlight.

## Total Alkalinity (TA)

Recommended Range	80 - 120 ppm. Note: Or follow the advice of our pool maintenance person and/or the contractor who plastered your pool.
Correct level	Depends upon the Total Hardness of the water. The harder the water, the lower the TA should be kept. Check with your local pool service or pool supply store.
How to Test	Normal 4-in-1 pool Test Kit. If your Test Kit does not have a TA Test, have your water tested by your local pool store.
Frequency of Testing	After initial adjustment, check every couple of weeks.
How to Adjust	There are various methods of adjusting TA. Check with your local pool service or pool supply store. Lowering TA is achieved by addition of 'acid'. TA can be raised by adding sodium bicarbonate (baking soda).
Why TA is Important	TA determines the speed and ease of pH change (if you get the TA correct, pH control will become very simple). TA level effects the frequency of 'Cell' scaling.
High TA	Makes pH maintenance difficult. Increases potential for scale to form on 'Cell', on pool walls, etc.
Low TA	Causes etching, staining of plaster pool walls, corrodes metals, makes pH control very difficult.

## pH Level

Recommended	Range 7.2 - 7.8
How to Test	Normal pool Test Kit
Frequency of Testing	If the Total Alkalinity (TA) is within the correct range for your pool, the pH will become more stable - reducing the need to test frequently. Test at least weekly. If pH always needs adjusting, check and adjust TA.
How to Adjust	Lower pH by adding 'pool acid' (muriatic acid). Disperse acid by pouring into water around perimeter of pool. Raise pH using baking soda.
Why pH is Important	Properly maintained pH means much fewer pool problems. High pH reduces sanitizer efficiency (makes it more difficult for the sanitizer to do its job) and increases scaling (on 'Cell' and on pool walls etc). Low pH will cause etching of plaster pool walls, corrodes metal components, stains pool walls, eye irritation, destruction of Alkalinity.

## Conditioner, Stabilizer (Cyanuric acid)

Recommended Range	50 - 80 ppm (may vary in some areas)
How to Test	Some pool Test Kits include this Test. You can also purchase a Cyanuric Acid Test Kit, or have your pool service test for you, or take a water sample to your local pool supply store.
Frequency of Testing	Once or twice per year is normal. More frequently if water is lost from pool by way of leaks, splash-outs, etc.

## Water Testing • What to Test For • Recommended Levels (Continued)

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Why Conditioner?	Low levels of conditioner causes loss of sanitizer, especially in sunny locations. Low conditioner levels mean your ECO-matic will have to work harder (produce more sanitizer) in order to achieve and maintain correct sanitizer levels. Indoor pools need very low or no conditioner, stabilizer, or cyanuric acid (some states have prohibited it's use on indoor pools), check with your local health department or pool supply store.
How to Adjust	Add cyanuric acid to the water. Get instructions as to how to add conditioner from your pool service or local pool supply store. Give 48 hours to dissolve, don't backflush filter too soon. Alternative is to dissolve into warm water and pour into pool. Another idea – get your pool service to do it.

### Total Hardness (TH)

Ideal Range	Concrete and Tiled Pools: 200-275ppm. Other surfaces: 0-225ppm
How to Test	Some pool Test Kits include this Test. You can purchase Total Hardness Test Kits.
Frequency of Testing	The water used to fill your pool has its own TH, depending upon its source. Over time, the TH of the pool water will increase as the Hardness is left in the pool when water evaporates. Fill water adds more Hardness. Test at least once or twice per year.
When to adjust TH	If the TH of the pool water is greater than 500 ppm, and is 300 ppm above the TH of the fill water, it is recommended that you dump the water and re-fill the pool.
How to Adjust TH	Replacing the water is the only way to reduce the TH of the pool water. Be sure to consult your pool builder or pool service before emptying your pool. Serious structural damage can result if pools are emptied in certain ground conditions and ground water levels.
Calcium Hardness	Always maintain calcium hardness within the range suggested by your pool builder or pool service.

### Phosphates

Phosphates in swimming pool water can reduce the level and effectiveness of sanitizer in pools, causing the ECO-matic to work harder than necessary; any amount (over 50 ppb) of phosphate should be removed by using a phosphate-removing chemical available at your local pool shop. We recommend having your pool water tested for phosphates annually to insure good performance and long cell life.

## Trouble Shooting

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### ECO-matic Not Working

1. No power getting to 'Power Pack' (Main power OFF).
2. ECO-matic switched OFF.
3. **Production Control** set to MIN.
4. Blown fuse(s).
5. **Gas Sensor** Lead not connected securely. Scale build-up on **Gas Sensor** bolt head.
6. ECO-matic has **Cut-out** – insufficient Salt in the water, or 'Cell' needs cleaning, or water temperature cold.
7. 'Cell' needs replacing.

### Rapid Salt Loss

1. Check for leaks in pool. Turn off any automatic fill device, check for water loss.
2. Heavy rain can dilute salt level.

### ECO-matic starts up with 2 red LEDS and varying display

1. Incorrect voltage to 'Power Pack'. Check voltage.
2. Unit preparing to cut-out. Check salt level.

### ECO-matic Producing, But Sanitizer Level Low

1. 'Cell' dirty.
2. **Production Control** set too low.
3. Insufficient operating time.
4. Low Salt level.
5. Conditioner level too low.
6. Pump filter needs cleaning/emptying.
7. Poor flow rate may be creating air pocket in 'Cell'.
8. Check for nitrates and phosphates.
9. Winter Mode on during swimming season.

### ECO-matic Scaling Too Frequently

1. Total Alkalinity (and pH) too high.
2. Total Hardness too high.

### Water Leaking At 'Cell' Head

1. Loose O-ring or O-ring out of its groove.

## Adding Salt to Your Pool

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Your ECO-matic requires an optimum water salinity of 4000-5000ppm. An excess of salt is OK (maximum 6000 ppm), but TOO LITTLE SALT WILL CAUSE DAMAGE TO, AND SHORTEN THE LIFE OF YOUR 'CELL' – and void warranties on the 'Cell'.

Only Pool Salt should be used in your pool.

### How Much Salt To Add

Calculate the volume of water in your pool - or call your ECO-matic Dealer with the dimensions of the pool (length, width, average depth etc) for assistance. Multiply the water volume (in gallons) by 0.0460 for ESC models, to get the required amount of salt to be added (in lbs). Round off salt weight to nearest multiple of salt bag weight (eg: 15,000 gallon pool x 0.0460 = 690.5 lbs of salt. Use 14 - 50 lb bags of salt = 700 lbs, or 17 - 40 lb bags of salt = 680 lbs).

**NOTE: for In-ground spas - check with your ECO-matic Dealer for correct salinity level.**

If you under-estimate the amount of salt required, your ECO-matic will indicate 'Low Salt'. Simply add more salt (first being sure that original salt is properly dissolved) until the ECO-matic indicates sufficient salt – Refer to your ECO-matic Owner's Guide.

### Adding and Dissolving The Salt

Tip the salt directly from each bag into the pool water.

Sweep the salt around the floor to help dissolve.

A short while after the salt has been added it will no longer be visible, however, the heavier-than-water syrup which forms initially will sit on the floor at the deep end until properly mixed throughout the pool. Dissolve by directing filter suction to the floor drain in the pool (if your pool has one) or by vacuuming the pool.

## ECO-matic – Pool Size Estimates

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Model	Suitable for Pools up to:*
ESC6000	15,000 Gallons
ESC7000	25,000 Gallons
ESC8000	40,000 Gallons
ESC9000	48,000 Gallons

\*Pool sizing estimates are based on an 8 hour filtration cycle. Pools in hot climates may require a larger unit (hot climate = average temperature during pool season 86°F or above). Consult your dealer/builder/contractor for more information.

## Warranty Information:

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### **(This warranty is applicable to the USA and Canada only)**

The ECO-matic® & EcoSalt® product is warranted that if any component, other than fuses, proves to be defective within a period of 36 months from the date of purchase, that the defect will be repaired or the product will be replaced free of charge.

To find an authorized ECO-matic® warranty station near you, call ECO-matic Customer Service at (877) 885-0585 or go to [www.ecomaticusa.com](http://www.ecomaticusa.com)

During the Warranty period any defective product shall be repaired or replaced by an authorized warranty station or returned by the customer to its place of purchase, accompanied by proof of date of purchase. Product will either be repaired or replaced and returned freight prepaid.

There is no responsibility other than the repair or replacement of defective product and this Warranty specifically excludes product failure due to accidental damage, abuse, misuse, negligence, damage due to non-compliance with Installation or Operating Instructions or unauthorized alterations or modifications to the product. No responsibility or liability accepted for any extended warranties or variations to this warranty offered by re-sellers.

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#### **ECO-matic Manufactured by:**

##### **Davey Water Products Pty Ltd**

Member of the GUD Group  
ABN 18 066 327 517

##### **Head Office and Manufacturing**

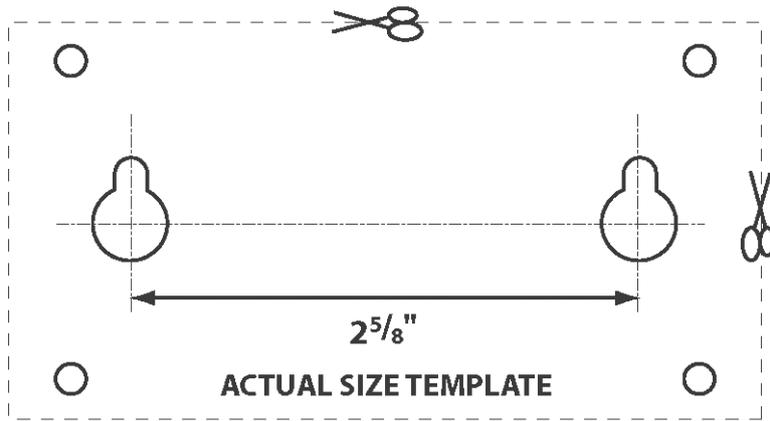
6 Lakeview Drive,  
Scoresby, Australia 3179

Help to find a Dealer: [www.ecomaticusa.com](http://www.ecomaticusa.com) Parts or Service: Phone 877-885-0585

#### **Your local ECO-matic Dealer:**







**SCREW POSITION TEMPLATE**

Use this template for mounting 'POWER PACK'  
See page 18 for details.

**ECO**  **matic**<sup>®</sup>  
*Crystal Clear Water. Naturally.*