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**LABEL – CONTROLLER/CELL**

ECO-matic COMM 2400  
Automatic

CHLORINE GENERATOR DEVICE

CONTROLS BACTERIA AND ALGAE  
In  
Swimming Pool (Spa) Waters  
COMMERCIAL

A maximum of 300,000 L of water can be treated with one ECO-matic COMM 1200 Automatic Chlorine Generator unit.

Maximum output of hypochlorous acid of 6 kg of free available chlorine per day in ideal conditions. However, an output of hypochlorous acid of 5.76 kg/day is more representative of typical conditions.

For swimming pools, a range of 1-3 ppm of free available chlorine must be maintained.  
For spas, a range of 3-5 ppm of free available chlorine must be maintained.

READ THE LABEL AND OPERATING MANUAL BEFORE USING  
KEEP UNIT OUT OF REACH OF CHILDREN  
PRODUCT REGISTRATION NO. 30297 *PEST CONTROL PRODUCTS ACT*

WARNING: operating the unit without water flow through the cell can cause a build up of flammable gases which can result in FIRE OR EXPLOSION.

Do not use this device with bromide products

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

Davey Water Products Pty. Ltd  
6 Lakeview Drive  
Scoresby, Victoria 3179  
Australia 61 397 309 232

IN CANADA, CONTACT:  
Alpine Spa Covers  
2103 – 43<sup>rd</sup> St  
Vernon, BC V1T 6K7  
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**LABEL – CONTROLLER/CELL**

**Replacement cell** for the chlorine generating device ECO-matic **COMM 1200** Automatic Chlorine Generator , ECO-matic **COMM 2400** Automatic Chlorine Generator , or ECO-matic **COMM 4000** Automatic Chlorine Generator

**Replacement cell** for the chlorine generating device ECO-matic **COMM 1200** Automatic Chlorine Generator REGISTRATION NUMBER 30296, ECO-matic **COMM 2400** Automatic Chlorine Generator REGISTRATION NUMBER 30297, or ECO-matic **COMM 4000** Automatic Chlorine Generator REGISTRATION NUMBER 30298, *PEST CONTROL PRODUCTS ACT*. This cell must only be used on this model of chlorine generating device.

Do not use this device with bromide products

Read the Label, the Installation Manual and Operation Manual of the chlorine generating device before using ECO-matic **COMM 1200** Automatic Chlorine Generator , ECO-matic **COMM 2400** Automatic Chlorine Generator , or ECO-matic **COMM 4000** Automatic Chlorine Generator

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# **INSTALLATION & OPERATION INSTRUCTIONS**

**For ECO-matic COMM 2400 Automatic  
Chlorine Generator unit.**

**For Davey Water Products Pty Ltd, Australia  
P/N 401767**

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## Important Safety Instructions

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1. "WARNING: To reduce the risk of injury, do not permit children to operate this device."
2. "WARNING: heavy pool (or spa) usage, and higher temperatures may require higher chlorine output to maintain proper free available chlorine residuals."
3. "If additional chlorine is required due to heavy bather loads, use Sodium Hypochlorite (Liquid Chlorine) to maintain an appropriate chlorine residual in the water."
4. "Maintaining high salt and chlorine levels above recommended range can contribute to corrosion of pool or spa equipment."
5. "DO NOT add pool or spa chemicals directly to the skimmer. This may damage the cell."
6. "Check the expiry date of the test kit as test results may be inaccurate if used after that date."
7. "The life expectancy of the electrolytic cell is 30,000 hours under normal use conditions."
8. "When replacing the cell, only use replacement cells having a label that clearly states that it is a replacement cell for the chlorine generating device ECO-matic COMM 2400 Automatic Chlorine Generator unit., REGISTRATION NUMBER 30297 *PEST CONTROL PRODUCTS ACT.*"
9. "Follow all aspects of the local and National Electrical Code(s) when installing the ECO-matic COMM 2400 Automatic Chlorine Generator unit."
10. "NOTE: For outdoor pools, chlorine residuals can be protected from destruction by sun light by addition of stabilizer (cyanuric acid)."
11. "For proper sanitation, spas must be completely drained periodically. The number of days between COMPLETE SPA DRAINAGE is equal to the volume of spa water in litres, divided by 10 times the maximum number of daily spa users. Refill spa with water and repeat DIRECTIONS FOR USE of the device."
12. Do not use this device with bromide products.

Health and Hyperthermia warnings for spas:

1. "People with a medical condition should consult a physician before entering pool or spa water."
2. "Maximum spa water usage temperature is 40°C. Bathing in spa water at 40°C should not exceed 15 minutes."

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

1. READ AND FOLLOW ALL 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 supply'). 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.
3. At least two lugs marked 'Bonding Lugs' are provided on the external surface or on the inside of the power control box ('power supply'). 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.

Field Code Changed

4. SAVE THESE INSTRUCTIONS

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

We are dedicated to providing you with the most luxurious pool water you have ever experienced, as well as the most reliable product and solid after-sales service you could hope for.

Reading this Guide will help ensure that your ECO-matic generator 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 before calling your dealer.

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

When salt 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, algae and other such organics which would otherwise flourish in the water. This process recycles, so it 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 the sanitizer necessary to maintain your pool/spa water by using and recycling a natural product – salt. Your ECO-matic will do exactly the same thing as 'pool chlorine' would do.

\*(HOCl the same effective sanitizer as would result if 'pool chlorine' was added to the water – but without the unpleasant aspects of chlorine compounds and without the need to handle them.)

## Your ECO-matic Equipment

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'), **turn it off immediately**, contact your ECO-matic Dealer or the person who installed your ECO-matic immediately and ensure that the fault is rectified.

## INSTALLATION INSTRUCTIONS

### Packing List:

| PART                   | QTY | PART   | QTY |
|------------------------|-----|--|-----|
| POWER SUPPLY           | 1   | 'O'RINGS, 50mm or 80mm ADAPTOR                             | 1   |
| PRESSURE SWITCH        | 1   | EUROPEAN ADAPTORS OR                                       | 2   |
| CONTROL BOX            | 1   | 40/50mm (1.5" / 2") AUS ADAPTORS                           | 2   |
| GAS SENSOR             | 1   | GAS SENSOR T-PIECE 50mm (2")                               | 1   |
| MOUNTING BRACKETS      | 4   | KEY  | 1   |
| CELL CABLE (PAIR)      | 1   | TAP FOR PRESSURE SWITCH                                    | 1   |
| EXTERNAL CONTROL CABLE | 1   | INSTALLATION & OPERATION MANUAL                            | 1   |
| SALTPRO ANNODE         | 1   | FLOW METER<br>(Optional purchase but required for install) |     |

## General

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This system is **not intended** for outdoor installation. If a pump/filter room is not available, a shelter providing shade and weather protection will be necessary. Please note that the installation area should be well ventilated and free of substances that could cause corrosion. **Installation must be done in accordance with any local regulations AND MUST BE PERFORMED BY AN AUTHORIZED ECOMATIC DEALER.**

When deciding on the position of the unit, take care to allow for the cable lengths available. Approximate maximum placement distances are:

Power Supply to Control Box – 1.5m (approximately 5ft)  
Power Supply to Electrolytic Cell – 3m (approximately 10ft)  
Control Box to Gas Sensor (Cell) – 4m (approximately 13 ft)

Actual distances will depend on how the cables between units are run. Check prior to installation. **IMPORTANT: DO NOT PLACE ANY COMPONENT NEAR SOURCES OF HEAT OR CHEMICAL VAPORS** (e.g. ACID DRUMS). The Power Supply and Electrolytic Cell are very heavy, allow for this during installation. If any components are dropped, damage will occur.

## THE COMPONENTS OF YOUR ECOMATIC

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### Power Supply:

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Should be wall mounted using brackets provided. The brackets provide a gap between the back of the unit and the wall for air flow. The unit should be mounted at about head height. That is approximately 1.5 meters (approximately 5ft) above ground level. The brackets are designed for masonry bolts/wall plugs. The unit can be lifted on/off.

**Note: this unit is heavy. Please allow for this when installing.**

Instructions for mounting bracket use are provided in the package containing the brackets.

### Control Box

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Should be mounted at approximately the same height as the Power Supply to allow easy access and viewing. This unit has a “keyhole” mount at center/top/rear. Once the unit has been hung on this mount, two locating screws can be placed at the bottom corners of the unit. These are under the lower cover plate on the front of the unit.

### Electrolytic Cell Assembly

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Should be installed vertically on its legs and placed down stream from the filter. The cell is heavy and great care should be taken in fitting the legs. **If the cell is dropped the internal housing can be damaged.**

Select the approximate position for the cell and screw the legs to the protruding bolts on the lower flange; **space them equally around the flange circumference.**

The cell should be lifted and then maneuvered until it is vertical and resting its legs. At least 2 people will be required for this operation. Do not attempt to pivot the cell on the legs, as **they are not designed to carry a load in this way.**

The cell is now ready to be plumbed into the pool system.

### Back - up Sanitation

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In the event of a system failure or during periods of extreme bather loads and/or very hot weather, or due to local authority regulations, extra chlorine may be required to maintain sanitation levels in the pool. Use Sodium Hypochlorite (Liquid Chlorine) as an additional source of chlorine.

The extra chlorine can be provided by a Dual ORP Chemistry Controller, simple chlorine injection device such as a chlorine pump/feeder, or by simply keeping enough chemical chlorine on hand to manually cope with an emergency. The manufacturer does not recommend manually feeding chlorine.

Remember that the Electrolytic Cell will need to be replaced/ re-conditioned periodically and this may mean a small amount of down - time for the system.

## Minimum Flow Rates for Optimum Cell Efficiency

The following flow rate through the cell for the ECO-matic COMM 2400 Automatic Chlorine Generator are recommended for optimum efficiency:

| Model  | Required Flow Rates |                         |                    | Approx. Pressure Drop (Based on Mins) |     |
|--|---------------------|-------------------------|--------------------|---------------------------------------|-----|
|  | Liters per Minute   | m <sup>3</sup> per Hour | Gallons per Minute | KPa                                   | PSI |
| ECO-matic COMM 2400 Automatic Chlorine Generator | 400-530             | 24-32                   | 105-140            | 1.5                                   | 0.2 |

Note: While the flow rate stated is optimal, we understand that it is not feasible to achieve on a consistent basis. Please keep flow rate as close to the minimum as possible while not exceeding maximum flow stated in the table.

## Testing Cell Flow Rate

A flow meter must be installed into the cell line to verify correct flow.

A Rolachem flow meter 5-7.5cm (2" or 3") should be installed into the cell line – one flow meter per installed ECO-matic. Install the flow meter per manufacturer's instructions on the 5-7.5cm (2" or 3") by-pass line leading to the electrolytic cell.

## ELECTROLYTIC CELL PLUMBING

The Electrolytic Cell has been designed to operate in a bypass on the pool return line. Water flow through the cell must be in the flow range specified on page 4 and the water from the cell should be returned to the pool return line as quickly as possible.

A sample line should be installed after the cell to allow testing of water from the Cell.

A clear viewing area is also useful to allow a visual check of electrolysis (cloudy water). A number of possible installation methods follow:

## SALTPRO PLUMBING

An in-line zinc anode called SaltPro should be installed in-line and will serve as a sacrificial component. It is housed in a 7.62cm slip tee with clear PVC for visual inspection.

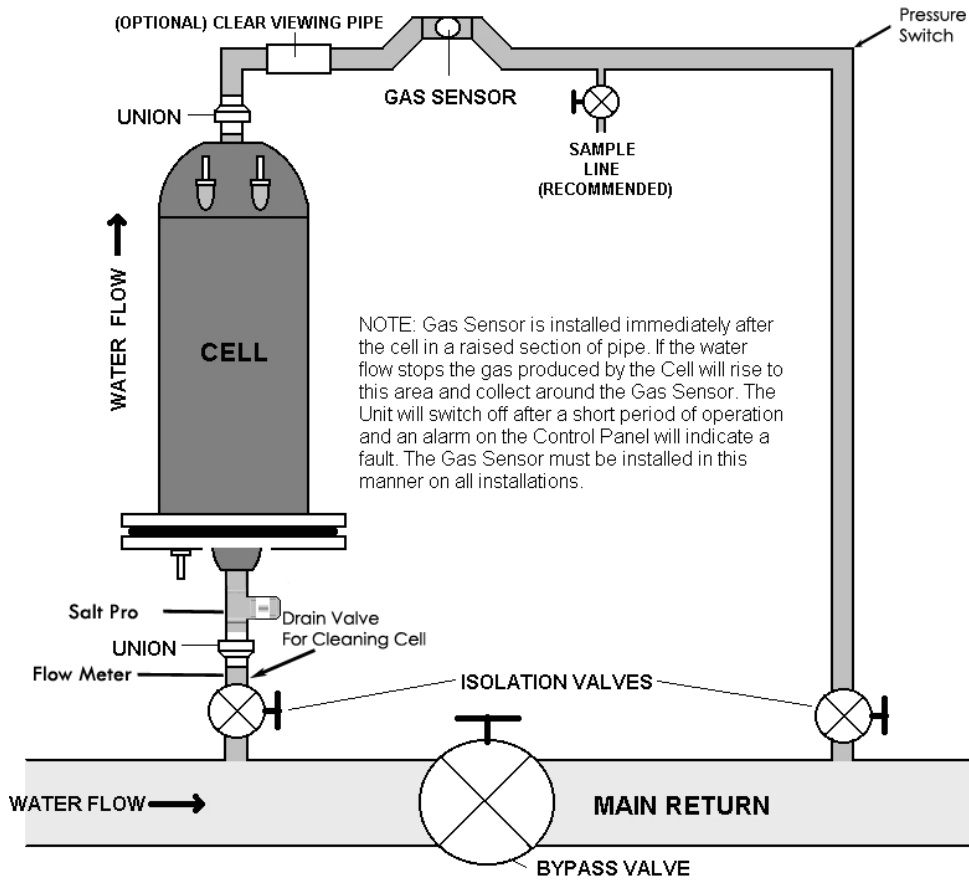
### Location:

The SaltPro should be glued in the bypass line prior to the electrolytic cell. Install one SaltPro per each body of water. The anode itself shall have a permanently attached bonding lug which shall be connected to the main bonding loop with a #8 bonding wire.

**The SaltPro is fitted with a manual bleeder valve for the installer to ensure, post installation that the air is removed from the tee and the zinc makes contact with the water flow**



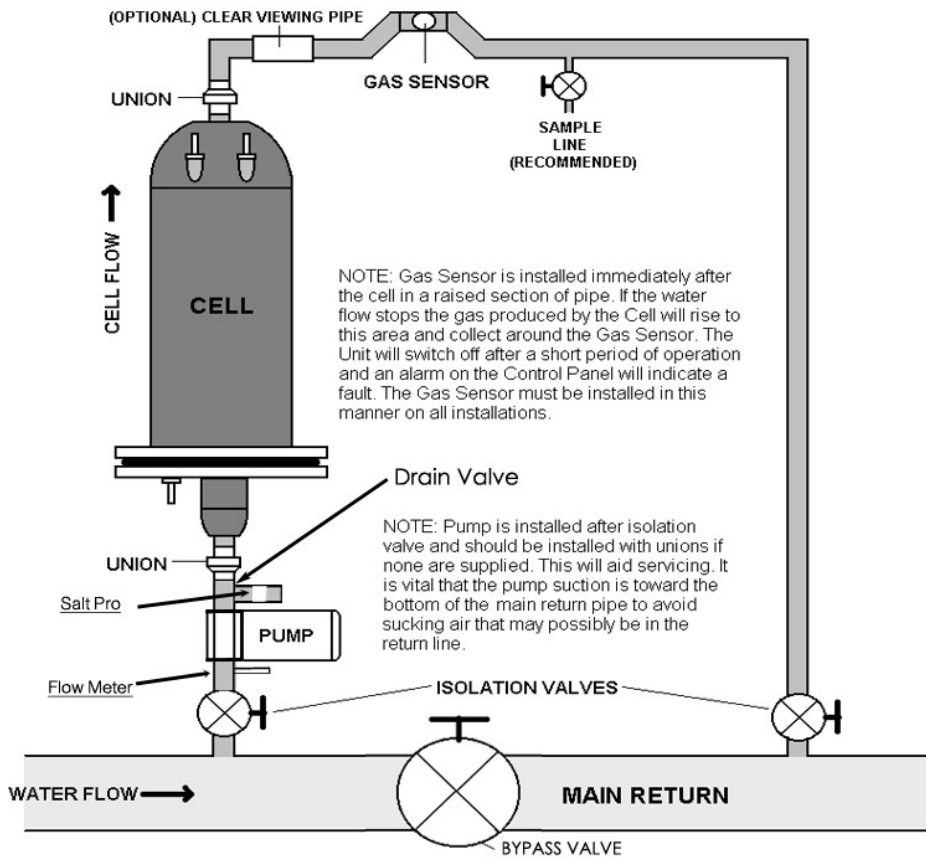
## Simple Bypass Installation



In this installation the bypass valve is partially closed to force water into the cell bypass and back to the pool return. This will increase the back pressure to the pool pump/filter but should not affect performance unless the pump/filter performance is already poor. Note the use of the Gas Sensor, isolation valves and sample line. The sample line is a simple tap used to collect a sample of cell effluent for chlorine residual testing.

The off-take should be after the cell, in the return line to avoid the possibility of air in the return line finding its way into the cell (see diagram page 7). The installation of a section of clear pipe before or after the Gas Sensor is beneficial in viewing water flow from the cell. This pipe must be suitable for chlorinated water.

## Powered Bypass Installation: (If required to maintain flow through cell)

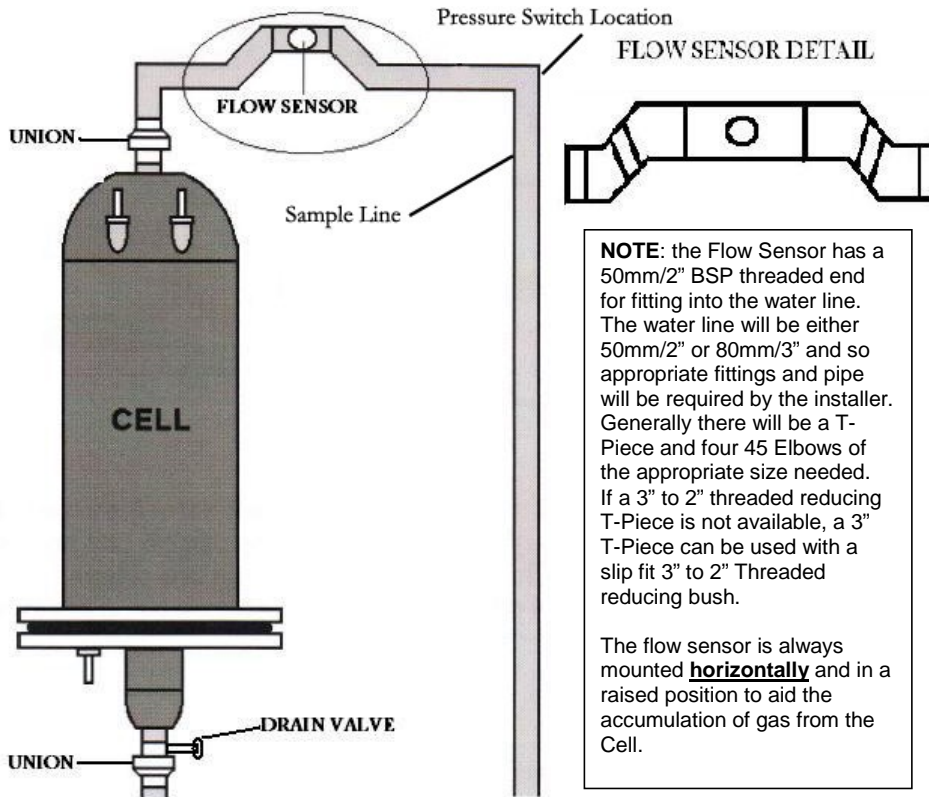


This installation uses a pump to create flow in the Cell bypass. Note the recommended sample line and optional clear viewing pipe. Please also note that care must be taken at the suction point to avoid air entering the bypass.

**IMPORTANT:** The Bypass Pump must be electrically interlocked to the main pool pump(s). Further to this, a Pressure Switch should be installed in the return line prior to the Cell Installation so that main pump(s) failure can be detected and Chlorinator production turned off. See "Gas Sensor and Pressure Switch Installation".

## Gas Sensor and Pressure Switch Installation

The Gas Sensor should be installed after the Cell in the following manner:



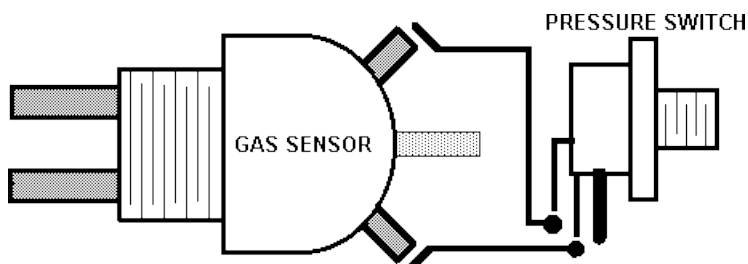
If the water flow ceases, the gas produced in the cell will collect at the highest point – the Gas Sensor – and when enough gas has been collected chlorine production will cease until flow is restored. It is recommended that 4 x 4 5° elbows be used for Gas Sensor Installation, with Gas Sensor mounted **horizontally**. Note that there are two pipe sizes available for use with the Cell – 50mm/2" and 80mm/3". Appropriate fittings and pipe will be required.

Note: A sample line after the Cell outlet is recommended to allow testing of the water leaving the Cell. A clear viewing pipe before or after the Gas Sensor can also be useful for a visual check of the electrolysis within the cell – the water will appear cloudy or effervescent when the cell is operating.

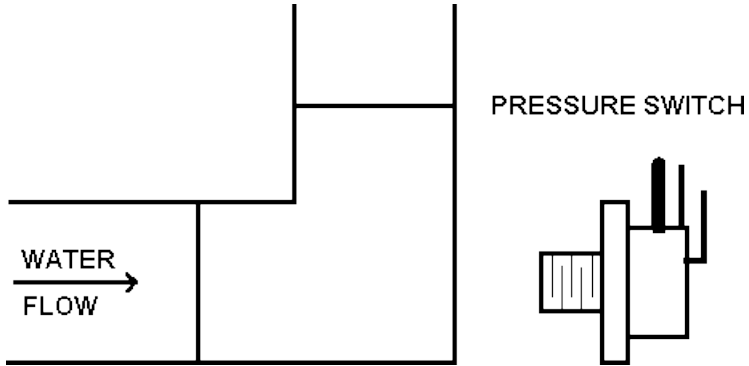
## Use of Pressure Switch

The Gas Sensor has 2 x 6.3mm or 1/4" spade terminals (male) on either side of its connecting lead. For manual operation these should be connected together with the short lead provided. The normally open terminals of the Pressure Switch must be connected to the Gas Sensor terminals:

## Pressure Switch Position



The Pressure Switch must activate when the main pump(s) are on and de-activate when they are off (i.e. no water flow). It should be placed after the electrolytic cell. Placing the Pressure Switch at a bend is best:



The thread fitting of the Pressure Switch is 3mm ( 1/8" ) NPT and the unit can be sealed with Teflon thread tape.

The switch should be placed so that water leaks do not interfere with the electrical switch; that is the switch should be mounted on the side or top of a pipe/fitting, not underneath.

Please note that the voltage at the Gas Sensor is isolated Extra Low Voltage and should not pose a shock hazard.

The Pressure Switch is adjustable for static pressure. There is a locking tab on its back – slide it up to allow the adjustment ring to be rotated. Rotation direction is embossed on the switch.

## ELECTRICAL CONNECTIONS

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### Mains Power

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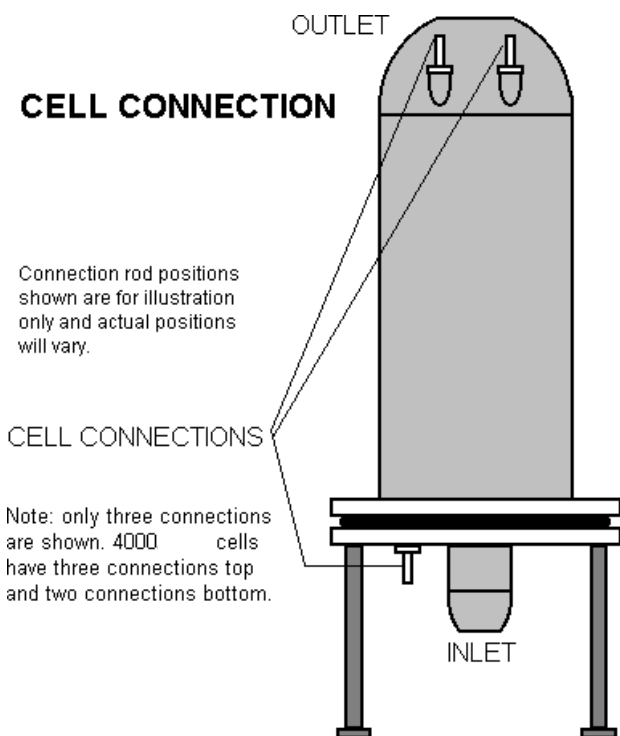
The Power Supply has a power cord attached to the left-hand side of its bottom panel. The Earth must be connected. The General Purpose Outlet to which the unit is connected must be protected by a GFCI (see local electrical regulations). **If the supply cord is damaged it must be replaced by a similar cord according to local electrical regulations.**

**The electrical supply to the unit must be interlocked to the main pump(s).** That is, if the main pump(s) are turned off, so is power to the unit. This can be very important when the Powered Bypass Installation is used. The bypass pump should also be interlocked to the main pump(s) supply.

A clean (insulated) ground must be provided to the Power Supply.

### Cell Power

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The cell has connections both top and bottom. These protrude through the cell housing. You will find that the black and white cell cables are terminated in male plugs and brass blocks resembling terminal block mechanisms. Simply fit the brass blocks to the cell connections. Ensure that the connections are connected tightly.

The male plugs should be inserted into their sockets on the right hand side of the bottom panel of the Power Supply. To insert, simply push them in slowly until a click is heard, then gently try to pull them out. If they are locked in place the connection is correct.

If it is necessary to disconnect the cable, push the connector in further until a click is heard and then remove the connector. This should only be done when power to the cell is off as arcing can result. Arcing will damage the connector. The connector should be kept clean to ensure long life.

## Control Box

There are three connectors under the Control Panel (when it is mounted). From left to right, the first is for power and other signals to and from the Power Supply. This connector should be inserted and locked in place first. Do not attempt to connect the units with the power on - damage may result. The connectors are keyed and cannot be inserted the wrong way. **DO NOT FORCE THE CONNECTORS AS DAMAGE WILL RESULT** – the pins and socket contacts can be forced out of their positions if force is used to insert the connectors.

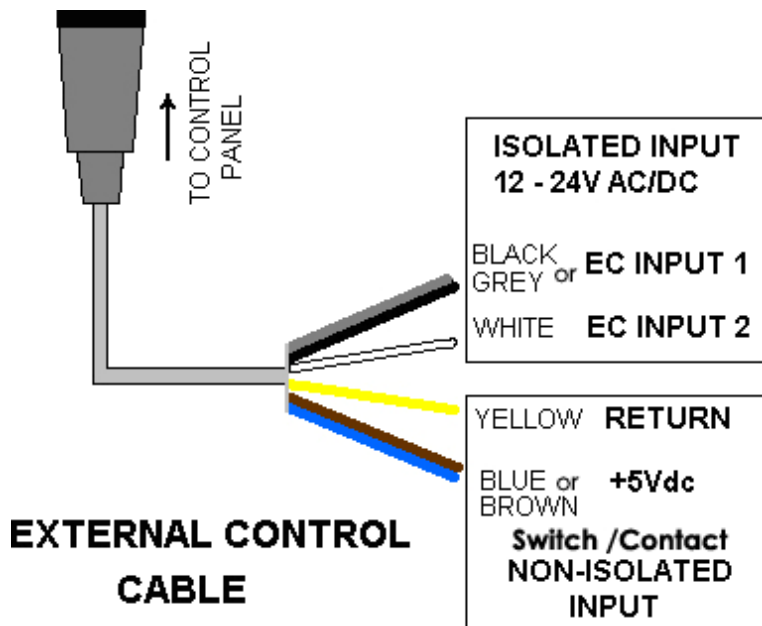
The second connector is for the Gas Sensor and should be connected only after the Gas Sensor has been installed. If the Gas Sensor must be removed it should be disconnected first.

The third connector is for EXTERNAL CONTROL and is normally left capped. A connector is supplied (with a length of lead) for interconnection to another controller, such as a timer or Chlorine Controller. Please note that the external controller must output 12 to 24V A.C./D.C. or have an isolated relay output (closed) to turn the Chlorinator on. Voltages in excess of those detailed will damage the unit. To use the EXTERNAL CONTROL simply connect the correct wires to your controller output. See EXTERNAL CONTROL detailed information further on in this manual.

## Connecting the Chemistry Controller - External Control

EXTERNAL CONTROL is a means of controlling the unit's operation from an external Chemistry Controller. The External Control LED will be Red to show that the external controller has the Cell Power turned Off. Green shows the Cell Power is turned On and that the external controller has energized the unit.

An EXTERNAL CONTROL Cable is supplied with the unit. The cable can be connected in a number of ways and extreme care must be exercised when it is connected into any external control device. The EXTERNAL CONTROL will respond to any input signal of 12V to 24V AC or DC (1 Watt maximum) – this input is electrically isolated from the unit – or a dry contact or switch. The configuration for each connection type is shown below.



## OPERATION OF THE ECOMATIC COMMERCIAL SYSTEM

The ECO-matic System passes an electrical current through an electrolytic cell filled with a flowing mild salt solution. The electrolysis that takes place causes the production of chlorine.

Your ECO-matic System is made up of three main components:

1. Power Supply
2. Control Box (includes Gas Sensor)
3. Electrolytic Cell

We have outlined the operation of the Electrolytic Cell, the Power Supply and Control Box is detailed below:

### Power Supply

This component houses all the high power, heat generating elements of the ECO-matic System. This enclosure should remain closed at all times as mains voltages are present at some points - mostly on the left hand side of the enclosure. Safety isolation and AC to DC current rectification takes place inside this unit. There are two heat sinks on either side of the enclosure which will become hot to the touch when operating. The inside of the enclosure is fan-cooled to help dissipate heat generated by the transformer and other components.

Inside the lower portion of the Power Supply is a plastic enclosure with a clear cover. Inside the enclosure is the Power Supply Control PCBA. It has a number of switches and displays that represent the operation of the Power Supply. The operation of these Power Supply sub-systems will be described. **It should be noted that the switches should be in certain positions for normal operation and that any deviation from their normal positions during normal operation may damage the unit. Read the following sections carefully and check switch positions before normal operation commences.**

(For more information on internal power supply information request document called "Large COMM Power Supply Control Overview".)

## Control Box

This enclosure determines the operation of the ECO-matic Commercial System. The enclosure is protected to IP68 to stop the penetration of dust and/or corrosive/moist atmospheres. The transparent door should be closed at all times other than when using the control panel.



The Control Box has a number of features:

### Cell Production & Polarity Indicator

Shows the magnitude and polarity of the electrical current applied to the cell. The Cell Production is shown as a percentage of maximum system output. It will read around 100 unless the unit is in Winter Mode, where it can read down to 65. If the Cell Power is off, it will be blank. Polarity is shown as "+" (positive, forward) or "-" (negative, reverse)

## Temperature Indicator

Displays the temperature of the water passing the Cell (in degrees Celsius). This temperature is monitored and used by the Control Box to adjust the unit's operation (see Winter Mode and High and Low Temperature Shutdown). The temperature sensor is integrated into the Gas Sensor fitting.

### Operation Switches - Control the Cell Power

- OFF** - Cell Power is not applied  
**RESET** - resets all alarms and places unit into STANDBY mode.  
Cell Power cannot be applied for approximately 2 minutes.  
**ON** - allows Cell Power to be applied from 10% to 100% (all the time), or from the EXTERNAL CONTROL input (see below).

The System Output Control operates by a form of Pulse Width Modulation. This form of control works by switching the Cell current on and off over a period of time with the result that the system output is averaged. For example if the control is set at 50(%) the unit will operate at its normal output for only half the time that the unit is on with the averaged output being 50%.

## Winter Mode Switch

When Winter Mode is selected the unit will adjust its output to suit the water temperature of the pool. The amount of current that the Cell can draw is determined by the water conductivity, which in turn is influenced by salinity and water temperature. As the water temperature falls, so does its conductivity. If there was no modification of the unit's operation this reduction in conductivity would result in the eventual shutdown of the unit via the Low Conductivity Shutdown. With Winter Mode selected the output of the unit will reduce with temperature. The reduction with temperature will approximately follow the table:

| TEMPERATURE |        | % OUTPUT |
|-------------|--------|----------|
| > 72°F      | > 22°C | 100      |
| < 70°F      | < 21°C | 85       |
| < 64°F      | < 18°C | 75       |
| < 59°F      | < 15°C | 70       |
| < 54°F      | < 12°C | 65       |

When Winter Mode is in operation < 21C (70 °F) approx, the display LED will be Blue. See also High and Low Temperature Shutdown.

## Stand By

Red shows that the unit is waiting to produce chlorine; this occurs at polarity reversal, RESET and power - up of the unit. The STANDBY delay is approximately 2 minutes. After the delay the LED will be Green indicating readiness to produce chlorine.

## Cell Power LED

Red shows that the cell is not powered, Green shows that the cell is on. If the output is set at less than 100 the Cell will turn on and off automatically. This is how the output is reduced.

## FLOW/GAS LED

Red shows a problem with either water flow and/or a gas build up at the Gas Sensor. **Green shows normal operation.** When **Red**, the **Cell Power will be turned off until the problem is rectified.**

## Low Conductivity Display & Shutdown

This display consists of two LEDs, one to display LOW CONDUCTIVITY and the other to display the LOW CONDUCTIVITY SHUTDOWN. The first LED will show Red when the conductivity falls below a certain point. If the conductivity continues to fall the second LED will go Red and this will cut power to the Cell until the problem has been rectified. The LEDs will be Green for normal operation. In cases



where the water temperature is dropping the unit should be operated in Winter Mode as low temperatures can cause these alarms to operate. For more information read "Water Conductivity".

## **Low Temperature Shutdown**

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Will be Blue if the water temperature falls below 10 - 12°C (50 - 54°F). Cell Power is turned off to protect the cell. At these temperatures people will not swim and algae cannot reproduce. The filter can be run to keep the pool clean. When the temperature rises again the Unit will turn back on automatically.

## **High Temperature Shutdown LED**

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Will be Red if the cell water temperature rises to approximately 45°C (113°F)  
This is a safety feature included as the Cell can heat water. In the unlikely event of the failure of the pressure switch in a Powered Bypass Installation, the water would heat up and could possibly boil if given enough time. When the cell water temperature exceeds approximately 45°C (113°F), Cell Power is turned off.

***Please note that if the Cell Power has been turned off by any of the fault conditions, an automated check procedure takes place approximately every 2 hours to see if the fault conditions have been rectified. The use of RESET will also re-start the system to see if the fault condition still exists.***

## **WATER CONDUCTIVITY**

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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, backwashing and on bathers as they leave the pool. The salt level is also reduced in an outdoor pool by rain, which causes dilution. Salt is not lost to evaporation. As the salt level in the pool falls toward the minimum, the LOW CONDUCTIVITY LED will turn Red. At this point the salt level should be tested and increased to 4,000ppm minimum. (Note Maximum Salt level should be 5000ppm).

The addition of salt should not affect the ECO-matic as it is protected against overloads. If no action is taken and the salt level continues to fall, the LOW CONDUCTIVITY SHUTDOWN will also turn Red and turn off Cell Power.

**The unit will not produce sanitizer in this state.** It will turn ON approximately every 2 hours to check if salt has been added. If salt has not been added the Cell will turn OFF again:

There are other factors that can cause the Unit to shutdown.

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.
2. **Cold Water** - cold pool water reduces the ability of a Cell to carry electrical current. (Refer to **Winter Mode**). More salt can be added if desired.
3. **Failing Cell** - as the 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.

Please note that the **Low Conductivity** and **Low Conductivity Shutdown** are not like T.D.S. meters, which are temperature compensated Scientific Instruments. Their accuracy will be within 500ppm salinity and they are water temperature dependent, just as the Cell is.

## WINTER MODE

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 CONDUCTIVITY and LOW CONDUCTIVITY SHUTDOWN 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 CONDUCTIVITY and LOW CONDUCTIVITY SHUTDOWN to assume that the salinity has fallen even if the salinity has remained relatively constant.

When the temperature of the pool water drops, the **Winter Mode** Switch should be placed in AUTO position (it can be left here all the time if desired).

This has two effects:

1. It alters the setting of the LOW CONDUCTIVITY and LOW CONDUCTIVITY SHUTDOWN Systems.
2. It reduces the **Cell Output** as the water temperature falls.

The Unit will now respond better to a cold pool environment.

The approximate temperature and Cell outputs are:

| TEMPERATURE |        | % OUTPUT |
|-------------|--------|----------|
| > 72°F      | > 22°C | 100      |
| < 70°F      | < 21°C | 85       |
| < 64°F      | < 18°C | 75       |
| < 59°F      | < 15°C | 70       |
| < 54°F      | < 12°C | 65       |

## CHEMISTRY FOR ECOMATIC COMMERCIAL

### Salt

At startup of the Chlorinator System there must be at least 4,000ppm of salt (sodium chloride) in the pool water. The salt level should not exceed 5,000ppm. This is simple to achieve if the following steps are taken:

- (i) Know, with reasonable accuracy, the pool volume.
- (ii) Measure the pool water TDS (Total Dissolved Solids or Conductivity) prior to adding salt.  
Note: the Conductivity Meter should be calibrated for sodium chloride. NOTE: Do not use Rock Salt or salt which contains YPS or Iodine. Salt should be Fine or Medium Grade Solar Salt at 99.4% PURE NaCl
- (iii) Calculate the required start - up salt dose and add it to the pool. Adding 10 kg of salt per 10,000 litres will raise the salt concentration by 1,000 ppm (e.g. In a pool with no salt, a 100,000 litre pool will need 450 kg of salt to reach 4,500 ppm).
  - If the pool is already operating as a salt pool, simply add enough salt to bring the level to 4,500.

- Note: Fill water can have existing salt level. Test with Conductivity Meter

- (iv) Backwash the filters and add the salt by dumping it along the deep end of the pool. DO NOT load all the salt into one area, as it will take longer to dissolve. During the time the salt is dissolving, do not backwash the filters. Heavier salted water will tend to flow into the deep end of the pool and could be backwashed out via the bottom drains. Brush salt to ensure mixing.

If the TDS (Conductivity) is higher than expected then the pool volume may have been over estimated. This is not a cause for concern as more salt is far better than not enough! It is possible to lower the salt concentration by partially draining the pool and refilling with fresh water. (Unless the salt level is above 7,000ppm - contact the factory). It is possible to lower the salt concentration by partially draining the pool and refilling with fresh water.

**Salt is effectively not consumed by the ECO-matic process - the salt is recycled.**

**Note: Always use an approved Digital Conductivity Meter to measure salt content.**

**IMPORTANT NOTE: Newly plastered pools should run on traditional chlorine to “cure” the plaster for at least 2 to 4 weeks before adding the salt. Consult with the Pool Company for exact timing to ensure you do not void your warranty. Be sure to check local authority regulations for checking calcium buildup in the cell.**

## Pool Stabilizer (Cyanuric acid / Cyanurates)

(For Outdoor Pools Only- where allowed by local authority regulations)

- (i) Measure the stabilizer level using an appropriate test kit. It should be between 15 and 25ppm.
- (ii) If the pool has never had stabilizer added, then approx. 25ppm of stabilizer should be added. Follow the directions for adding it or load it directly into the pool pump inlets.

**IMPORTANT: Stabilizer is very slow to dissolve and if it is loaded into the pump inlets it can sit in the filters for a number of days. If the filters are backwashed it will be lost. Monitor the stabilizer prior to back washing.**

- (iii) If there is some stabilizer present, but it is below 25ppm, add enough to make up the 25ppm.

**IMPORTANT: stabilizer is for use in outdoor pools only. It is used to reduce the loss of chlorine due to the effect of sunlight. It should not be used in indoor pools as it may adversely affect pool chlorine demand.**

## Other Chemical Levels

The other chemical levels to be aware of are pH, Total Alkalinity and Calcium Hardness.

The manufacturer highly recommends that you test and balance your water to L.S. I. (Langlier Saturation Index) daily.

Simply follow basic pool guidelines, bearing in mind the following:

|                         | Swimming pool | Spa           |
|-------------------------|---------------|---------------|
| Free available chlorine | 1.0 - 3.0 ppm | 3.0 - 5.0 ppm |
| pH                      | 7.2 - 7.8     | 7.2 - 7.8     |
| Total alkalinity        | 100 - 120 ppm | 100 - 120 ppm |
| Calcium hardness        | 200 - 300 ppm | 150 - 200 ppm |
| salt                    | 4000 ppm      | 4000 ppm      |

- (i) Very high Calcium Hardness with Magnesium present in the water may present a problem to the Self-Cleaning properties of the system and therefore require additional cell inspections and cleanings.
- (ii) Phosphates: should be less than (<) 200 ppb (Parts per billion)

Phosphates are food for algae and will increase chlorine consumption thus shortening cell life if present in water. Remove phosphates with Saltline approved Phosphate Remover.

## Possible Chemistry Problems

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- (i) The use of sulphate containing chemicals may promote the production of oxygen compounds at the cell, which can lead to slightly lower chlorine production, and the production of chemicals which can adversely affect ORP probes. Chemicals to avoid
  - Sulphuric acid and Sulphate flocking compoundsNote: the use of potassium monopersulphate is acceptable.
- (ii) The use of quaternary ammonium compounds (Quats) as an algaecide can promote turbidity (cloudiness). This is caused by the very high chlorine levels in the cell reacting with the Quats compound. A common Quats compound is benzalkonium chloride (also known as alkyldimethylbenzylammonium chloride or ABDAC).
- (iii) The use of Citric Acid as a "black spot remover" will cause the chlorine residual reading in the pool to fall to zero for an extended period of time.
- (iv) Hydrogen peroxide, peroxygen chemicals and peroxide in general do not interfere with the ECO-matic System but can seriously affect the ORP probes (redox probes) on chlorine/redox/ORP controllers.

## MAINTENANCE

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### DAILY

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1. Ensure all indicator lights are Green in Control Box
2. Ensure fan is running in Power Supply.
3. Ensure all cords attached
4. Ensure water is balanced to L.S.I.
5. Ensure that chlorine levels are between 1-3 ppm of free available chlorine for swimming pools and 2-5 ppm of free available chlorine for spas.

### WEEKLY

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1. Ensure Flow Rate to cell is to spec
2. Inspect SaltPro to see if it is being attacked (look for signs for erosion)

### MONTHLY

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1. Ensure all connections (especially DC Cords) are snug
2. Inspect cell for build-up between blades and clean **only if necessary**

### SEMI ANNUALLY

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1. Turn off Power Supply
2. Tighten all internal connections
3. Ensure all wire looms are in good order



1. Turn off Power to unit and isolate & drain by-pass line
2. Drain water from cell with drain valve
3. Remove union at top of cell and inspect cell using flashlight
4. If build up is present, **(do not use pressure wash)**. Mix a solution consisting of 20% Muriatic Acid and water. Muriatic acid is corrosive. Please follow safety instructions and wear protective clothing. NEVER add water-to-acid. ALWAYS add acid-to-water. With lower drain valve closed, add this solution to top of cell and wait 15 to 20 mins before draining. **Note, allowing cell to sit in this solution for longer than 15 – 20 mins may damage the cell and/or reduce cell life.**
5. Drain and dispose of the liquid in an environmental manner

## TROUBLE SHOOTING

Little or no maintenance should be required for your ECO-matic Commercial System. Its operation should be checked at least daily or whenever the operator is in the pump house or near the unit. **Of particular importance is the small fan under the Power Supply.** If it is found in a failed state the unit should be tuned off until it is replaced. Problem checklist:

### **1. Power to Power Supply, but Control Box does not operate.**

- Check all leads from the Power Supply to the Control Panel.
- Open the Power Supply and inspect the displays in the plastic enclosure in the lower portion of the Power Supply. They should be lit. If the Control Panel is not operating (is not lit) contact your factory/ECO-matic distributor.
- If the LEDs are not lit, check the Power Supply fuse/breaker in the bottom of the unit. If blown, replace it and re-connect power. If the fuse blows immediately, contact your factory/ECO-matic distributor.

### **2. System will not produce chlorine (keeps shutting down).**

- Check cell connections and with unit powered off, ensure that all Power Supply connections are tight
- Check Control Panel to see which of the systems is causing the shutdown. If it is temperature related, check the pool temperature. If it is conductivity related, check the pool salt level. Remember it can be a combination of both temperature and salinity that can cause the **Low Conductivity Shutdown**.

### **3. Unit keeps shutting down when all chemical levels and temperatures are correct.**

- Cell may have failed or is badly connected. The cell has a limited life span of approximately 30,000 hours. This is dependent on many factors such as salinity, other minerals in the water and water temperature.

When the cell has failed contact your ECO-matic dealer or distributor. The cell will require replacement with either a new or reconditioned cell. Please note that it is the internal section of the cell that will be replaced, not the external housing.

### **4. Power Supply and Control Box Faults.**

- Should there be a problem with these components please contact your ECO-matic dealer or distributor.

**PLEASE NOTE:** Always ensure that your ECO-matic System is repaired only by an **authorized** ECO-matic Dealer and that only genuine ECO-matic parts are used.

## TECHNICAL INFORMATION

| DIMENSIONS AND WEIGHT: | Width<br>mm/ins. | Height<br>mm/ins | Depth<br>mm/ins | Approx.<br>Weight kg/lbs |
|------------------------|------------------|------------------|-----------------|--------------------------|
|------------------------|------------------|------------------|-----------------|--------------------------|

|   |             |           |           |           |
|---|-------------|-----------|-----------|-----------|
| Assembled:  |             |           |           |           |
| <b>Control Box</b>                                    | 240 / 9.4   | 260 / 10  | 115 / 4.5 | 1 / 2.2   |
| Power Supply 2400                                     | 460 / 17.9  | 500 / 9.5 | 210 / 8.1 | 32 / 70.4 |
| Electrolytic Cell with Legs 2400*                     | 600 / 23.4  | 1400 / 54 | 600 / 23  | 109 / 240 |
| <b>Leg Height</b>                                     |             |           | 550 / 21  |           |
| <b>Packed on skid for shipping:</b>                   |             |           |           |           |
| ECO-matic COMM 2400 Automatic Chlorine Generator unit | 1200 / 46.8 | 700 / 27  | 1000 / 39 | 142 / 312 |
|   |             |           |           |           |
|   |             |           |           |           |

**NOTE:** Cells are cylindrical in shape; Width/depth of cell shown above is diameter of cell at widest point.

|  |  |             |  |  |
|--|--|-------------|--|--|
| <b>Power Consumption</b>                       |  | <b>2400</b> |  |  |
| Power Consumption Kilowatts approx.            |  | 1.20        |  |  |
| Output 100% equivalent Chlorine grams per hour |  | 240         |  |  |
| Input Current Amps                             |  | 5.0         |  |  |

All systems require 220-240 volt single phase 50 or 60 cycle power supply.

**Flow Rates for Optimum Cell Efficiency:**

See page 6

## WARRANTY DETAILS

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ECO-matic COMM 2400 Automatic Chlorine Generator unit

### **1<sup>st</sup> Year Full Warranty**

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The manufacturer warrants to the original purchaser of the ECO-matic COMM 2400 Automatic Chlorine Generator unit that if any component, other than fuses and the Electrolytic Cell, proves to be defective within a period of 12 months from the date of purchase, that the defect will be repaired or the product replaced free of charge. Warranty does not include **on-site** labour or shipping. Product must be installed by an authorized Dealer in order for the warranty to be valid.

### **2<sup>nd</sup> year – Conditional Warranty**

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The manufacturer warrants to the original purchaser of the ECO-matic COMM 2400 Automatic Chlorine Generator unit that if any component, other than fuses and the Electrolytic Cell, proves to be defective within month 13 through 24 from the date of purchase, **and the ECO-matic is connected to an approved Chemistry Controller**, that the defect will be repaired or the product replaced free of charge excluding labour & shipping. Product must be installed by an authorized Dealer in order for the warranty to be valid.

During the Warranty Period, any defective product shall be returned to the distributor by the customer, accompanied by proof of date of purchase. No product shall be returned before calling for an RMA # to attach to return. The manufacturer will, at its option, either replace or repair the defective product and return it. Customer pays for all shipping. The manufacturer accepts 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/Maintenance instructions or unauthorized alterations or modifications to the product.

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