



DAVEY

EcoMineral[®]

Therapeutic Mineral Water Sanitiser

Models: EMX2400 & EMX3600



Installation & Operating Instructions



WARNING: Failure to follow these instructions and comply with all applicable codes may cause serious bodily injury and/or property damage.

The installation of this product should be carried out by a person knowledgeable in swimming pool plumbing requirements following the installation instructions provided in this manual.

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

DAVEY EcoMineral®

Congratulations! You are now the proud owner of a new EcoMineral Water Sanitiser System. Please read all information in this manual carefully before installing or operating your EcoMineral Water Sanitiser System.

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Packing List

Included with your EcoMineral System are the following items, please check the contents of the box carefully prior to attempting to install the system:

- Power Supply
- In-Line Electrolytic Cell
- 2 x Barrel Unions
- 2 x Union Cell Adaptors
- Mounting Kit
- Flow Switch
- Installation & Operating Instructions
- Blanking Cap (plug, o-ring and lock ring)



Note: The Sanitiser is not intended for use by young children or infirm persons without supervision. Please ensure that young children are supervised to ensure that they do not play with the Sanitiser.



Power connections and wiring must be carried out by an authorised electrician.

IMPORTANT INFORMATION ABOUT YOUR SANITISER

FACTORS THAT WILL IMPROVE THE PERFORMANCE & LIFE OF YOUR ECOMINERAL WATER SANITISER

PLEASE READ THIS BEFORE OPERATING YOUR SANITISER

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

Sanitisers 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 Sanitiser and reduce the life of the product. Please monitor the following factors in accordance with your installation & operating instructions.

1. MAINTAIN RECOMMENDED TOTAL DISSOLVED SOLIDS (TDS) LEVELS

RECOMMENDED OPERATING RANGE: 4,000 - 6,000ppm

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

2. MONITOR & MAINTAIN YOUR SANITISER IN-LINE CELL

EcoMineral has a “Reverse Polarity” In-Line cell.

- To keep your EcoMineral Sanitiser in the best possible condition, regular monitoring of the electrolytic cell is recommended. The ‘Cell’ is the clear plastic housing containing the plates.
- During the sanitisation 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 have low maintenance cells that minimise scale build up.
- The control panel displays a red LED indicator warning when the cell requires cleaning.
- If Calcium scale builds up please clean the cell, following the cleaning instructions provided on page 14.
- **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

3. BALANCED POOL WATER CHEMISTRY

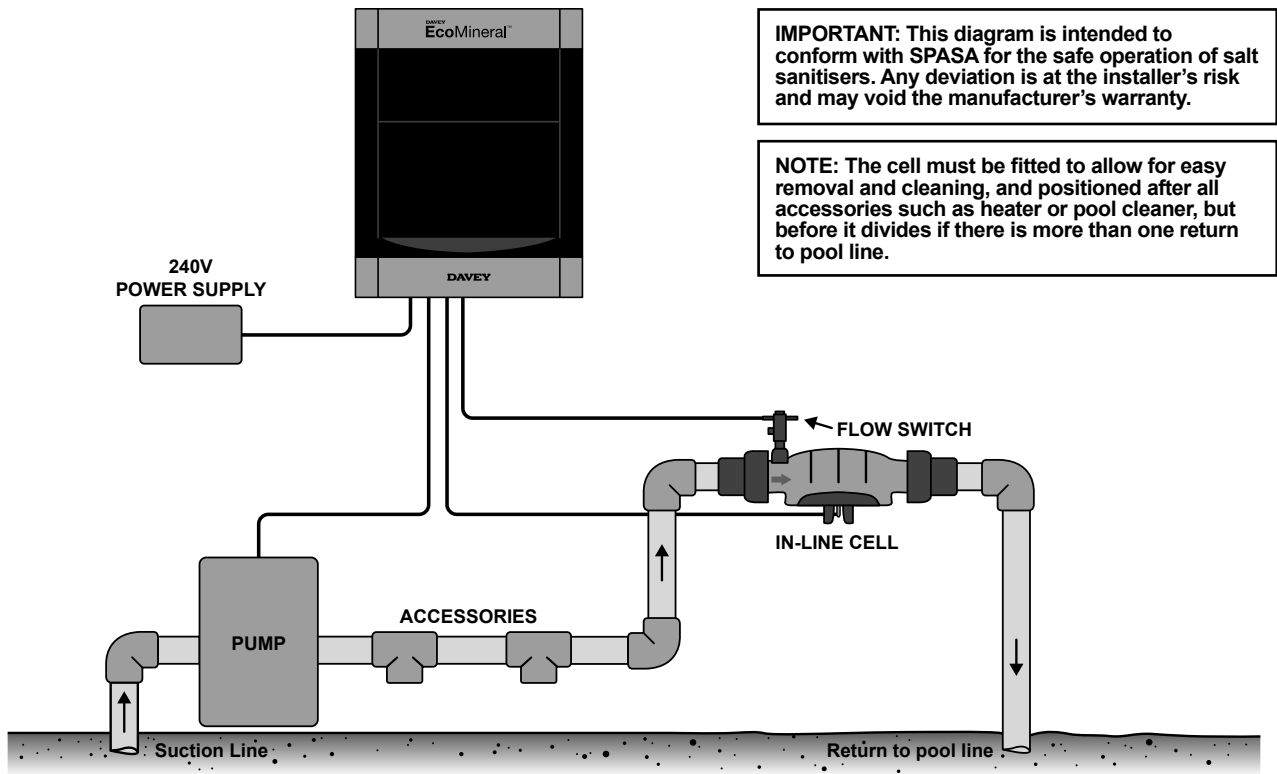
- EcoMineral Salt and Activator TDS levels **MUST** be maintained at **4,000 - 6,000ppm** for optimum performance and lifespan
- Calcium Hardness levels **MUST** be kept to ideal ranges of **200 - 275ppm** (for Concrete and Tiled Pools) and **100 - 225ppm** (for other surfaces) to prevent excessive scale 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 sanitiser effectiveness.
- Total Alkalinity and Stabiliser levels must also be kept in an ideal range.

Note: Please refer to the **POOL WATER CHEMISTRY** chart on page 17 for more information.

INSTALLATION INSTRUCTIONS FOR ECOMINERAL

INSTALLING THE POWER SUPPLY

Select a convenient well-ventilated location within one metre of filter equipment and mount the Power Supply vertically onto a post or wall 1.5 metres above ground level. Australian Standards requires that the Power Supply shall not be located within 3 meters of the pool water. Plug Power supply into a suitable weatherproof outlet and plug pump into the power outlet of the Power Supply Unit. The Unit must be kept away from acid and other chemical storage areas. Acid and chemical vapours will corrode the electronics inside the Unit. It must also be kept away from heat sources. Good ventilation is necessary for correct operation.



Two self-tapping screws and wall plugs have been provided for fast and simple installation. Simply use the Template on page 19 for location of drill entry points.

Use a 6mm masonry drill bit when fitting Power Supply to a brick or concrete wall. When mounting to a post drill pilot holes and fit screws provided. Once screws are in position simply hang Sanitiser via bracket on back of Unit.

CONNECTING THE IN-LINE ELECTROLYTIC CELL TO THE POWER SUPPLY

The EcoMineral System uses a reverse polarity In-Line Electrolytic Cell for low maintenance operation. The EcoMineral Power Supply is fitted with a flexible lead terminated with push on brass connectors for the EMX2400 model and push on brass connectors with a securing nut for the EMX3600 model.

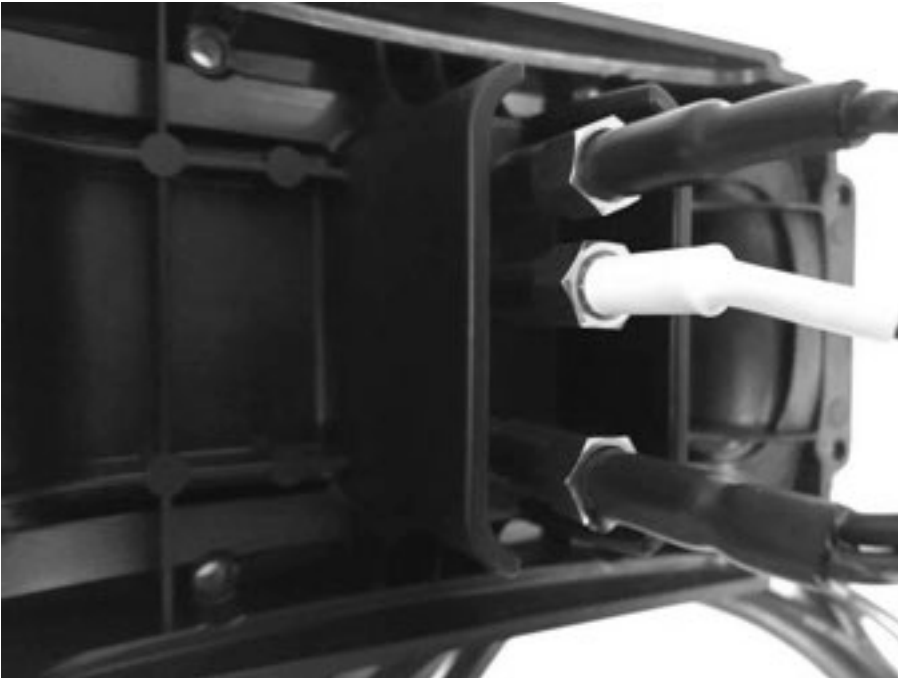
These must be correctly fitted to the connections on the Cell. Fit black connectors to the outer titanium rods. Fit the white connector to the middle titanium rod as per illustration below.

EMX2400



Tighten the “push on cell connectors” on the EMX2400 by using a pair of pliers, once applied.

EMX3600



Tighten the nuts with a suitable spanner to secure the cell connectors to the titanium rods, on the EMX3600 once applied. Hold the back of the cell leads when tightening.

NOTE: The EcoMineral Cell is supplied with a paddle type flow switch, which is to be installed on the Cell as shown in the diagram on page 4.



IMPORTANT: The flow switch must be mounted with the highlighted arrow on top of the switch pointing in the direction of flow.

CONNECTING THE IN-LINE ELECTROLYTIC CELL FLOW SWITCH TO THE POWER SUPPLY

Use the black & red terminals at base of the unit to connect the two wires from the Flow Switch to the Power Supply (See below):

Place the Flow Switch wires into the terminal holes at right angles, and tighten the terminals.



CONNECTING THE FILTER CIRCULATION PUMP TO THE POWER SUPPLY

Insert the 3 pin male plug into the 3 pin female socket located at the bottom of the Power Supply. See following diagram.



NOTE: Filter Circulation Pump current draw should not exceed 8 Amps.

Socket for
Pool Pump



Do not use a double adaptor to connect more than one pump – it can cause overload to the system and could void your warranty.

PRE-START UP PROCEDURE

Before operating your EcoMineral Pool Sanitiser System please ensure the following quantity of EcoMineral Salt (P/N: EMSALT-15) and EcoMineral Activator (P/N: EMACT-15) has been added to your pool.

CONVERTING EXISTING SALT POOLS

Pool Size (Litres)	Davey Therapeutic EcoMineral Salt (15kg bags)
5,000 to 10,000	1 Bag = 15kg
10,001 to 20,000	2 Bags = 30kg
20,001 to 30,000	3 Bags = 45kg
30,001 to 40,000	4 Bags = 60kg
40,001 to 50,000	5 Bags = 75kg
50,001 to 60,000	6 Bags = 90kg
60,001 to 70,000	7 Bags = 105kg
70,001 to 80,000	8 Bags = 120kg
80,001 to 90,000	9 Bags = 135kg
90,001 to 100,000	10 Bags = 150kg
100,001 to 110,000	11 Bags = 165kg
110,001 to 120,000	12 Bags = 180kg
120,001 to 130,000	13 Bags = 195kg
130,001 to 140,000	14 Bags = 210kg
140,001 to 150,000	15 Bags = 225kg

NEW MINERAL SALT POOLS

Pool Size (Litres)	Davey Therapeutic EcoMineral Salt (15kg bags)	Davey EcoMineral Activator (15kg bags)
5,000 to 10,000	1 Bag = 15kg	2 Bags = 30kg
10,001 to 20,000	2 Bags = 30kg	5 Bags = 75kg
20,001 to 30,000	3 Bags = 45kg	7 Bags = 105kg
30,001 to 40,000	4 Bags = 60kg	9 Bags = 135kg
40,001 to 50,000	5 Bags = 75kg	12 Bags = 180kg
50,001 to 60,000	6 Bags = 90kg	14 Bags = 210kg
60,001 to 70,000	7 Bags = 105kg	16 Bags = 240kg
70,001 to 80,000	8 Bags = 120kg	19 Bags = 285kg
80,001 to 90,000	9 Bags = 135kg	21 Bags = 315kg
90,001 to 100,000	10 Bags = 150kg	23 Bags = 345kg
100,001 to 110,000	11 Bags = 165kg	26 Bags = 390kg
110,001 to 120,000	12 Bags = 180kg	28 Bags = 420kg
120,001 to 130,000	13 Bags = 195kg	30 Bags = 450kg
130,001 to 140,000	14 Bags = 210kg	33 Bags = 495kg
140,001 to 150,000	15 Bags = 225kg	35 Bags = 525kg

1. Continue to operate your filter pump for a period of 24 hours following the addition of Davey EcoMineral Salt to ensure proper blending has occurred.
2. Davey EcoMineral Salt can be used with all Davey Salt Water Chlorinators with recommended TDS levels of between 4,000 and 6,000ppm.
3. When replacing normal pool salt with Davey EcoMineral Salt, ensure that TDS levels do not exceed 6,000ppm after its addition to the pool.
4. Ensure pH levels are between 7.4 & 7.6 after the addition.
1. With the filter pump running, pour the contents of Davey EcoMineral Salt and Davey EcoMineral Activator into the pool evenly around the edge.
2. Continue to operate the filter pump for a period of 24 hours following the addition to ensure proper blending has occurred.
3. It is recommended that TDS levels be maintained between 4,000 and 6,000ppm.
4. When using the Davey EcoMineral Salt and Davey EcoMineral Activator, ensure that TDS levels do not exceed 6,000ppm after its addition to the pool.
5. Ensure pH levels are between 7.4 & 7.6 after the addition.

Note: When the need arises to top up your pool with Davey EcoMineral Salt or Davey EcoMineral Activator, due to dilution through rainfall or backwashing. Davey recommends you use equal quantities of EcoMineral Salt to Activator (ratio 1:1) and that you maintain your TDS level between 4,000 and 6,000ppm. This will ensure your mineral pool water stays soft, silky and crystal clear.

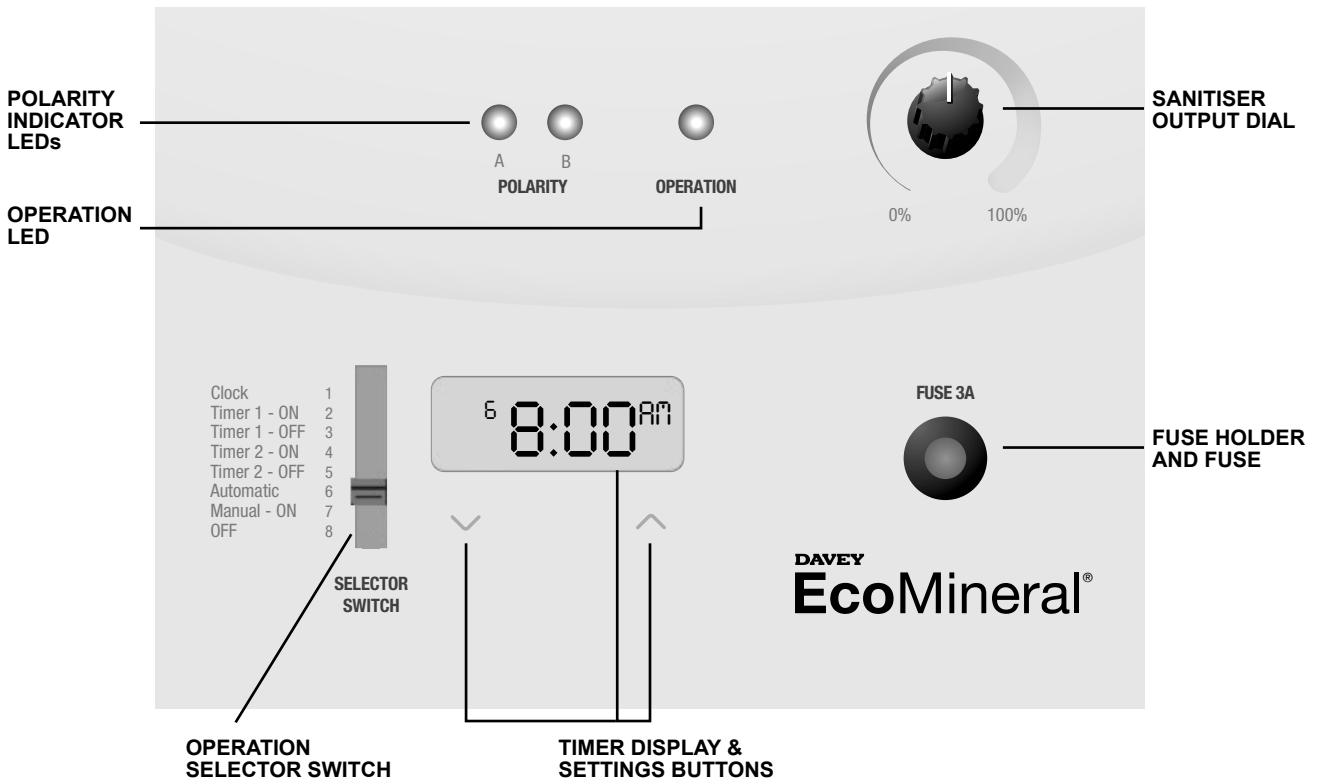
STORAGE AND SAFETY

1. Store in a dry, covered place away from direct sunlight for longer bag life
 2. Always use the entire bag content of EcoMineral Salt, once opened. Do not keep open bags of EcoMineral Salt as it is sensitive to moisture in the air.
 3. Care should be taken to avoid contact with eyes and inhaling salt dust. Wearing eye protection and a dust mask is good practice.
 4. If eyes become affected, flush with clean tap water.
 5. If skin becomes irritated, immediately wash contaminated skin with plenty of water and then wash with soap and water.
- **CHLORINE** - For a new pool installation that has not been chlorinated, add sufficient Chlorine (liquid or granular) to achieve a reading of 3 ppm (with a suitable test kit), or run the Sanitiser system continuously for at least 24 hours or until a reading of 3 ppm is reached.
 - **STABILISER** - It is essential that pool stabiliser be added and maintained at the rate of 30 - 50 ppm at all times. Do not exceed 100 ppm. **(FOR OUTDOOR POOLS ONLY)**
 - (Refer Day to Day Operation page 15 for further information).

OPERATION OF YOUR ECOMINERAL SYSTEM

Cell Output is expressed as a percentage. Set the system control to the percentage output required and the unit will automatically adjust the cell output to the set level. The Unit is fitted with an electronic control and warning system. This regulates the output of the Unit to the preset maximum and changes cell polarity as indicated by POLARITY LEDs A&B. These LEDs will alternate over a number of hours or days depending on how the unit is set to operate. The warning system consists of one **Operation LED** which will glow Green to indicate normal operation or RED to indicate possible faults with the Unit or damaging operating conditions.

CONTROL PANEL LAYOUT



Once the TDS level in the pool is correct the unit may be switched on.

Note: Once the unit starts there is a short time delay until the cell operates to ensure the filtration system is primed with water.

At this point the Operation LED should be Green; if red refer below. Note: Polarity LED may be either A or B whichever is on or brightest.

The RED Operation LED will indicate a number of different possible problem situations:

Possible Problem	Action
TDS Level Below Minimum	Add equal quantities of EcoMineral Salt and Activator
Cell is Calcified	Clean Cell
Water temperature very cold	Add equal quantities of EcoMineral Salt and Activator to compensate for cold water
There is a problem with water flow	Check pump / pipes for blockage or damage. Check that flow switch is connected properly

ECOMINERAL SPECIAL FEATURES

SYSTEM CONTROL (SANITISER OUTPUT DIAL)

The System Control varies the amount of time the Cell operates during the filtration cycle.

The System Control will not vary the electrical current supplied to the Cell.

As an example, if one filtration cycle is set at 5 hours, and the System Control is set to 80%, then the total amount of time the Cell will operate during the 5-hour cycle will be 4 hours. If the System Control is set to 60%, the Cell will operate for 3 hours total over the 5-hour filtration cycle. At 100% the Cell will be ON for the entire 5 hour cycle.

When the System Control is set to 0, the Cell will be OFF for the duration of the filtration cycle. When the System Control is set to 100%, the Cell will be ON for the duration of the filtration cycle. To turn the Cell OFF, simply turn the System Control to 0.

NOTE: It is recommended to turn the sanitiser output dial to “0” when backwashing.

POLARITY INDICATORS A & B

These LEDs are used to check that the Cell current polarity is reversing. Whichever is on (or brightest) indicates the polarity of operation. The Cell will operate in one polarity for a number of hours so any change in these LEDs will happen slowly and depend on how the unit is operated.

LOW SALINITY INDICATION

Your EcoMineral is fitted with a number of protective systems including the operation LED whose primary function includes Low Salinity Indicator. As the TDS level in the pool decreases, the wear on the Cell increases. Although EcoMineral Salt and Activator is not consumed in the sanitisation process, it is lost through splashing, backwashing and on bathers as they leave the pool. The TDS level is also reduced by rain, which causes dilution

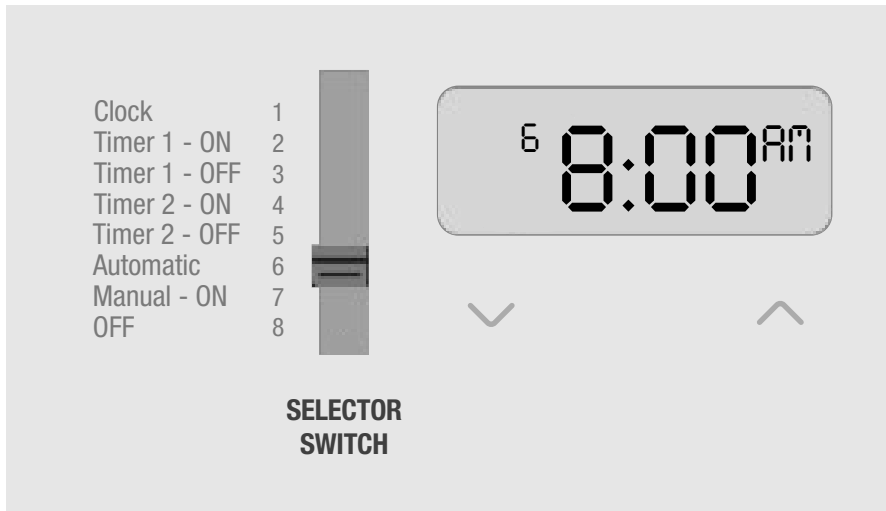
As the TDS level in the pool falls toward the minimum TDS, the Operation LED will turn RED. At this point the TDS level should be increased by adding the required amount of EcoMineral Salt and Activator as instructed by your pool water tester or pool shop. The addition of EcoMineral Salt and Activator should not affect the EcoMineral Water Sanitiser as it is protected against overloads. If no action is taken and the TDS level continues to fall damage to the system may result.

There are other factors that can cause the Unit not to work correctly:

- 1. Heavy Rain** – can cause very diluted pool water to pass over the Cell due to surface skimming.
- 2. Scaled Cell** – a scaled Cell will not draw as much electrical current as a clean Cell when first started.
- 3. Cold Water** – cold pool water reduces the ability of a Cell to carry electrical current.
- 4. 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 EcoMineral Salt and Activator. A Cell is considered failed when it draws less than 80 % of maximum current. Please note that the Low Salinity Indicator is not like TDS meters, which are temperature compensated Scientific Instruments. The accuracy will be within 500ppm and they are water temperature dependent, just as the Cell is.

AUTOMATIC TIME CLOCK OPERATION

TIMER SETTING AND FUNCTIONS



NOTE: When you first turn on the power to the Sanitiser, it will take approximately 1min for the LCD to appear on the screen.

Function Description	Selector Switch Position	Functions and Instructions
Set Clock	1	<p>SET THE CURRENT TIME ON THE DIGITAL CLOCK</p> <p>Select the Set Clock position on the selector switch to enable the time of day to be input. A number '1' will appear at the left of the screen.</p> <p>(a) The display will flash on and off as long as the selector switch remains at this position. Use the up and down buttons to reach the desired times. Hold the buttons down for fast increments.</p>
Set Timer 1 - ON	2	<p>SET THE START TIME FOR THE FIRST RUN TIME SEQUENCE</p> <p>Select the Set Timer 1-ON position on the selector switch. A number '2' will appear at the left of the screen.</p> <p>This time factory pre-set to 6am. Proceed as per (a) in the 'Set Clock' instruction to change time.</p> <p>To disable this timer, move up or down to 11:59PM. Press the UP button one more time to turn OFF. NOTE: This step will also disable the time for 'Set Timer 1 - OFF'.</p>
Set Timer 1 - OFF	3	<p>SET THE COMPLETION TIME OF THE FIRST RUN TIME SEQUENCE</p> <p>Select the Set Timer 1- OFF position on the selector switch. A number '3' will appear on the left of the screen.</p> <p>This time is factory pre-set to 8am. Proceed as per (a) in the 'Set Clock' instruction to change time.</p>

Function Description	Selector Switch Position	Functions and Instructions
Set Timer 2 - ON	4	<p>SET THE COMPLETION TIME OF THE SECOND RUN TIME SEQUENCE</p> <p>Select the Set Timer 2- ON position on the selector switch. A number '4' will appear on the left of the screen.</p> <p>This time is factory pre-set to 5pm. Proceed as per (a) in the 'Set Clock' instruction to change time.</p> <p>To disable this timer, move up or down to 11:59PM. Press the UP button one more time to turn OFF. NOTE: This step will also disable the time for 'Set Timer 2 - OFF'.</p>
Set Timer 2 - OFF	5	<p>SET THE COMPLETION TIME OF THE SECOND RUN TIME SEQUENCE</p> <p>Select the Set Timer 2- OFF position on the selector switch. A number '5' will appear on the left of the screen.</p> <p>This time is factory pre-set to 11pm. Proceed as per (a) in the 'Set Clock' instruction to change time.</p>
Automatic ON	6	<p>FILTRATION SYSTEM SWITCHES ON AND OFF AUTOMATICALLY ACCORDING TO YOUR SET TIMES</p> <p>Select the Automatic ON position on the selector switch. A number '6' will appear on the left of the screen.</p>
Manual ON	7	<p>OVER-RIDES THE AUTOMATIC TIME CLOCK SETTINGS & SWITCHES FILTRATION SYSTEM ON</p> <p>Select the Manual ON position on the selector switch. A number '7' will appear on the left of the screen.</p> <p>NOTE: Sanitisation will be constant until turned OFF or back to Automatic ON. Over sanitisation may occur if left for long durations</p>
OFF	8	<p>OVER-RIDES THE AUTOMATIC TIME CLOCK SETTINGS & SWITCHES FILTRATION SYSTEM OFF</p> <p>Select the OFF position on the Selector switch. A number '8' will appear on the left of the screen.</p> <p>NOTE: Filtration & sanitisation will cease. Not recommended for long durations.</p>



IMPORTANT. Certain local electrical regulations state "If the supply cord is damaged, it must be replaced by a special cord available from the manufacturer or its service agent".

MAINTENANCE OF POWER SUPPLY

Little or no maintenance is normally required with the exception of replacing blown Fuses. These Fuses can be sourced from your local EcoMineral Dealer. However it is essential that the wall or post to which the Unit is installed be sprayed (not the Unit itself) periodically with a good surface type insect repellent, since penetration by insects may cause damage, which is not covered by your warranty.

Note: The back of the Unit has been designed as a heat sink. It is normal for this area to become very hot.

MAINTENANCE OF THE IN-LINE ELECTROLYTIC CELL

The In-Line Cell is composed of precious materials, and although proper maintenance can prolong its life to the maximum, eventually the process of electrolysis will wear away its delicate coating, at which time it gradually ceases to produce chlorine.

Mineral salts and calcium (scale) are deposited on the plates as electrolysis takes place. This build up will interfere with the flow of electrical current in the Cell and thus lowers sanitiser production. It is essential to inspect the Cell regularly and clean when necessary. The rate at which deposits will form on the plate differs with each pool and can be influenced by the following:

- Calcium hardness of the water
- Water temperature
- pH level
- Water which has been chlorinated with calcium hypochlorite for an extended period
- Calcium in the plaster surfaces of a concrete pool

Because these conditions vary so much, check the Cell at least weekly to begin with to see when either scale or a blue/green soapy substance appears on the plates. You will then be able to determine the cleaning cycle necessary for your pool (more frequent cleaning may be required in summer). The intervals between cleaning could get longer to the point where cleaning is only necessary a couple of times each year. One exception is the use of bore water or ground water, in which case cleaning may always need to be as frequent as once a week.



NOTE: In areas with hard water, reverse polarity systems may require occasional manual cleaning.

The life of the EcoMineral Electrolytic Cells vary substantially from one installation to another due to variations in operating time, water quality and composition, system and Cell maintenance.

Please ensure that when Cell replacement is necessary you use the correct genuine EcoMineral Replacement Cell to match your system. The correct EcoMineral Replacement Cells to use are shown in the table below:

Model	Replacement Cell Code
EMX2400	EMILC2400
EMX3600	EMILC3600

ALWAYS INSIST ON GENUINE DAVEY REPLACEMENT PARTS.

If it is necessary to replace the In-Line Electrolytic Cell, beware of “look-a-likes”. Only the Genuine EcoMineral Cell is designed and warranted to operate with the EcoMineral Power Supply.

SERIOUS DAMAGE MAY RESULT TO THE ELECTRONICS INSIDE THE UNIT IF COPY CELLS ARE USED AND MAY VOID WARRANTY.

TO CLEAN THE ECOMINERAL IN-LINE CELL

Ensure that the Power Supply is turned off – failure to do so may result in the pool pump turning on while the Cell is not in place. Disconnect the cell lead and flow switch from the Cell and remove the Cell from the pool return line by undoing the unions, taking care not to lose the o-rings.

Method

1. Assemble a blanking cap from the supplied plug, o-ring and lock ring.



2. Install the blanking cap onto the end of the Cell opposite the flow switch port.



3. Secure the Cell in a vertical position with the blanking cap at the bottom, to catch any spills the Cell should be placed in an acid proof container.
4. Add 50mL of HYDROCHLORIC ACID to 500mL of WATER in a suitable sized container, carefully pour the solution into the open end of the Cell.
5. Alternatively step 4 can be carried out using an approved commercial cell cleaning solution.
6. As the scale is being dissolved from the plates the solution will foam, when this foaming action has stopped the Cell is clean and the solution can be returned to the container for future use or discarded appropriately. **NOTE: do not leave the acid solution in the Cell for more than ½ hour.**
7. Rinse the Cell out with clean tap water by filling and draining a couple of times, check that all the scale deposits have been removed, repeat the cleaning process if necessary.
8. Return the Cell to its position in the pipe work and re-connect the cell lead and flow switch.



NOTE: Always add acid to water, never add water to acid. Always wear eye protection and rubber gloves. Always clean the Cell in a well-ventilated area.

SAFETY DEVICE

Hydrogen Gas is a by-product of the chlorine producing process. A Flow Switch has been supplied with the unit, which will stop sanitisation if low or no flow is detected.

EcoMineral units are also fitted with a Thermal Cut-Out to prevent overheating. If the temperature rise is too high, power is automatically disconnected. The Unit will resume operation when it cools down.

DAY TO DAY OPERATION

Four Prime rules must be observed if your unit is to give the best possible service:

1. STABILISER

The importance of pool stabiliser cannot be over – emphasised. It is essential in helping retain chlorine in your pool. Chlorine is rapidly dissipated by sunlight and the use of stabiliser will reduce this dissipation substantially. Without stabiliser, it may be necessary to run the Unit for up to three times as long!

Stabiliser should be added at the rate of 500 grams for every 10,000 litres of water. Stabiliser should be maintained at a level of 30 – 50 ppm. Before adding more stabiliser, have your pool water analysed at your pool shop to ensure that you do not add too much. **(FOR OUTDOOR POOLS ONLY, INDOOR DO NOT REQUIRE STABILISER)**

2. pH AND TOTAL ALKALINITY

A correct pH level must be maintained to prevent problems such as black spot, staining, cloudy water, etc. An incorrect pH level can damage the pool. Correct pH levels are as follows; Fibreglass – 7.2 to 7.4 Concrete & tiled – 7.4 to 7.6 If you allow the pH level to rise to 8.0 or above, the chlorine required could be as much as three times the normal amount.

Total Alkalinity should not be confused with pH, although the two are closely related. Total Alkalinity determines the speed and ease of pH change. The ideal range is 80 – 150 ppm, or refer to your pool professional.

You should use a test kit which includes a test for Total Alkalinity. Low Total Alkalinity can cause unstable pH levels – i.e. An inability to keep the pH constant may cause staining, etching and corrosion of metals. High Total Alkalinity will cause constantly high pH levels.

3. TDS LEVELS



WARNING: Some people recommend that you put salt directly in the skimmer box. This is a very poor practice as it allows very high concentrations of salt to be passed through your filtration and other pool equipment.

EcoMineral Salt and Activator are the essential elements by which your Unit operates. Insufficient EcoMineral Salt and Activator will damage your Cell.

RECOMMENDED TDS LEVEL RANGE: 4,000 - 6,000ppm



WARNING: Do not add Hydrogen Peroxide to pool water or through swimming pool hydraulic or sanitiser system. Use of Hydrogen Peroxide will void warranty on Davey products.

EcoMineral Salt and Activator is NOT used up in the sanitisation process or by evaporation. It is only lost through backwashing, splash-out, overflow or by leakage from the pool or plumbing. Heavy rain can dilute the TDS levels in your pool; therefore TDS levels should be checked during these events.

Low TDS levels will destroy the coating on the Anode plates and will void all Warranty.

The EcoMineral has a built in warning indicator to minimise damage resulting from insufficient TDS levels, however, the ultimate responsibility is on the owner to ensure adequate TDS levels are maintained all year round.

4. RUNNING TIMES

These instructions cover EcoMineral for residential use only.

If you run your Sanitiser for 24 hours a day, or for long periods, the Cell life will be greatly reduced. It is important that the correct model EcoMineral has been installed on your pool. Many models are available from Davey to cope with small courtyard pools up to commercial applications. (Consult your local EcoMineral Dealer for more information).

Note: The EcoMineral guarantee does not apply to commercial or semi-commercial installations, i.e. where the system runs more than an average of 8 hours per day over the year. Guarantee on commercial and semi-commercial installations is 12 months only on both power supply and cells.

CHLORINE PRODUCTION

The EcoMineral must be run daily to generate sufficient chlorine to sanitise the pool. During Summer this is approximately eight hours per day, preferably in two periods - between 6.00 and 8.00am and between 5.00 and 11.00pm. Night time is preferable because chlorine dissipates rapidly in direct sunlight. If these running times are observed, and the Cell is functioning correctly, your pool will have sufficient chlorine when tested in the morning.

If the level is too low either longer running times are required or the Sanitiser Output Control needs to be adjusted to maximum. Harsh local conditions such as traffic pollution or wind borne dust require different running times, in which case, seek advice from your pool shop. During winter approximately 4 to 6 hours a day should provide enough chlorine. Without sufficient filtration/sanitisation, your pool will never function correctly. **ALWAYS RUN THE FILTER WHEN SWIMMING IN THE POOL.** In extremely hot weather or during periods of heavy bathing loads, the running time may need to be extended to 10 – 14 hours per day.

In some cases you may find your chlorine level to be too high. To determine if this is the case, run your filter/ Sanitiser for the suggested times/chlorine production level and test your pool water on the morning after operation. If your chlorine test shows a high level of chlorine, either the running times can be reduced slightly, or the Sanitiser Output Control can be turned anti-clockwise. Test your chlorine level again the following morning at around the same time. If your chlorine level is still high, repeat the above process until the correct level is attained.

“SHOCK” TREATMENT

Periodically, especially during extremely hot conditions, it may be necessary to boost the amount of chlorine in your pool in order to maintain absolute sanitation of the water. This can be achieved by adding either liquid or granulated chlorine. If granulated chlorine is added, the Cell must be checked regularly, since the additives from this product will clog the electrodes. Alternatively, extend the running time of your EcoMineral.

CHLORINE TYPES AND COMPARISONS / MAX POOL SIZE

Many Sanitiser manufacturers calibrate their units to compare with 65% granulated chlorine, making it necessary to adjust their readings to a lower level in order to determine true chlorine production. Below is a comparison table of the available types of chlorine used to sanitise pools.

EcoMineral Model	Production Maximum (g/hr 100%)	Production (g/hr 65% equivalent)	Chlorine produced over 8 hours (grams 100%)	Maximum Pool Size (Litres)		
				Cool Climates <25°C	Temperate Climates 25°C to 30°C	Hot & Tropical Climates >30°C
EMX2400	14	22	112	70,000	43,000	30,000
EMX3600	26	40	208	130,000	81,000	57,000



NOTE: The appropriate Sanitiser size for your pool is dependent on the local climate and the bather load of the pool. Please note that Sanitiser cell life can be increased with shorter running times during winter and lower output settings. Davey recommends that a Sanitiser is run for between 6 - 8 hours a day during summer, and 4 hours during winter.

GENERAL INFORMATION

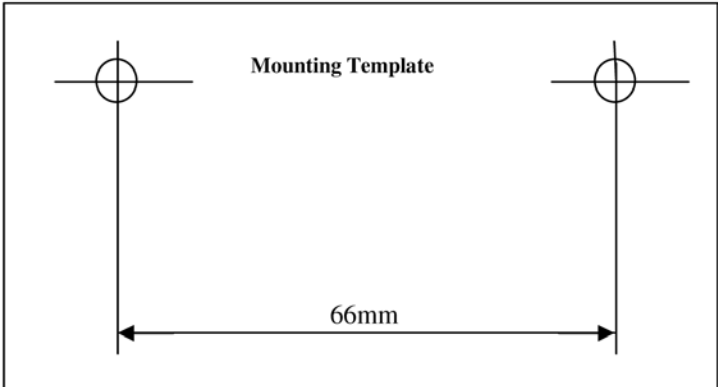
POOL WATER CHEMISTRY INSTRUCTIONS

POOL WATER BALANCE	Free Chlorine (ppm)	pH	Total Alkalinity TA (ppm)	Calcium Hardness (ppm)	Stabiliser - Cyanuric Acid (ppm)	Recommended TDS Levels (ppm)
Ideal Reading/ Range	1.5 - 3	Concrete & Tiled Pools 7.4-7.6 Other Surfaces 7.2-7.4	80 - 150	Concrete & Tiled Pools 200-275 Other Surfaces 100-225	30 - 50	4,000 - 6,000
To Increase	Increase output of Sanitiser. Add chlorine. Increase filtration time.	Add Soda Ash (Sodium Carbonate)	Add Buffer (Sodium Bicarbonate)	Add Calcium Chloride	Add Cyanuric Acid	Add equal quantities of EcoMineral Salt and Activator (1:1)
To Decrease	Decrease output of Sanitiser. Decrease filtration time.	Add Hydrochloric Acid	Add Hydrochloric Acid or Dry Acid	Partially Drain & Refill Pool with lower hardness water to Dilute	Partially Drain & Refill Pool to Dilute	Partially Drain & Refill Pool to Dilute
Frequency of Testing	Weekly	Weekly	Weekly	Weekly	Regularly	Regularly

COMMON TERMS

Algae	Microscopic forms of plant life which enter the pool by rain, wind and dust. There are numerous varieties – some are free floating whilst others grow on walls and in cracks and come in different colours. Some are more resistant to chemical treatment than others.
Bacteria	The germs that contaminate your pool. Introduced by swimmers, dust, rain storms and other elements.
Balanced Water	The correct ratio of mineral content and pH level that prevents pool water from being corrosive or scale forming.
Chloramines	Compounds formed when chlorine combines with nitrogen from urine, perspiration, etc. Chloramines cause eye and skin irritation, as well as unpleasant odours.
Chlorine Demand	The chlorine required to destroy germs, algae and other contaminants in the pool.
Chlorine Residual	The amount of chlorine remaining after chlorine demand has been satisfied. This is the reading obtained with your test kit.
Cyanuric Acid	Also known as stabiliser or conditioner. It reduces dissipation of chlorine by direct sunlight.
Liquid Acid	Chemical used to reduce the pH and total alkalinity in the pool water, and for cleaning Sanitiser Cell.
ppm	An abbreviation for Parts Per Million the accepted measurement of chemical concentration in swimming pool water. 1 ppm- 1 mg/L.

MOUNTING TEMPLATE



Davey Repair or Replacement Guarantee

In the unlikely event in Australia or New Zealand that this Davey product develops any malfunction within warranty periods beginning from the date of original purchase due to faulty materials or manufacture, Davey will at our option repair or replace it for you free of charge, subject to the conditions below.

Davey Guarantee Period

Power Supply – Two (2) Years Electrolytic In-Line Cell – Three (3) Years

Should you experience any difficulties with your Davey product, we suggest in the first instance that you contact the Davey Dealer from which you purchased the Davey product. Alternatively you can phone our Customer Service line on 1300 367 866 in Australia, or 0800 654 333 in New Zealand, or send a written letter to Davey at the address listed below. On receipt of your claim, Davey will seek to resolve your difficulties or, if the product is faulty or defective, advise you on how to have your Davey product repaired, obtain a replacement or a refund.

Your Davey Guarantee naturally does not cover normal wear or tear, replacement of product consumables (i.e. seals, bearings or capacitors), loss or damage resulting from misuse or negligent handling, improper use for which the product was not designed or advertised, failure to properly follow the provided installation and operating instructions, failure to carry out maintenance, corrosive or abrasive water or other liquid, lightning or high voltage spikes or unauthorized persons attempting repairs. Where applicable, your Davey product must only be connected to the voltage shown on the nameplate.

Your Davey Guarantee does not cover freight or any other costs incurred in making a claim. Please retain your receipt as proof of purchase; you MUST provide evidence of the date of original purchase when claiming under the Davey Guarantee.

Davey shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from Davey products. This limitation does not apply to any liability of Davey for failure to comply with a consumer guarantee applicable to your Davey product under the Australian or New Zealand legislation and does not affect any rights or remedies that may be available to you under the Australian or New Zealand Consumer Legislation.

In Australia, you are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Should your Davey product require repair or service after the guarantee period; contact your nearest Davey Dealer or phone the Davey Support Centre on the number listed below.

For a complete list of Davey Dealers visit our website (davey.com.au) or call:



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* Installation and operating instructions are included with the product when purchased new. They may also be found on our website.