

PURE MINERALS™

Advanced oxidiser and sanitiser for
mineral water pools.

MINERAL OXIDISER

Installation and Operation Manual for

PURE MINERALS™ MINERAL OXIDISER & SANITISER

MX15 | MX20 | MX25 | MX30 | MX35 | MX50

WARNING

This equipment must be installed and serviced by a qualified technician. Improper installation can create electrical hazards which could result in property damage, serious injury or death. Improper installation will void the warranty.

NOTICE TO INSTALLER

This manual contains important information about the installation, operation and safe use of this product. Once the product has been installed this manual must be given to the owner/operator of this equipment.

PURE MINERALS™

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1.0 FOREWORD

- 1.1 Congratulations on purchasing an Evolution Mineral Oxidiser & Sanitiser for your swimming pool. This system is designed for reliability and easy operation to provide many years of trouble-free service. Please read the instructions thoroughly before operating the unit. If you have any concerns or require further assistance, please do not hesitate to contact our friendly staff or any of our Evolution distributors.

2.0 POOL CHEMISTRY

- 2.1 It is important to note that the Mineral Oxidiser does not maintain the water chemistry of the swimming pool water; it simply sanitises the water from a mineral blend solution. To ensure that the water is chemically balanced within the guidelines listed below, the pool water should be tested regularly at a pool shop to maintain a sparkling and healthy pool.

pH	7.2 – 7.6
Total Alkalinity	90 – 150ppm
Cyanuric Acid	40 – 65ppm
Salinity	4,000ppm
Free Chlorine	1.5 – 3.0ppm

- 2.2 The Mineral Oxidiser is designed to operate on a salinity level of 4,000 parts per million (ppm). This is achieved with a blend of regular pool salt and Pure Minerals™ Magnesium Crystals or other mineral blend products. To correctly dose the pool water with Pure Minerals™ and salt, follow *Sections 6.0* and *7.0* of this manual.
- 2.3 **Note: Before adding minerals and salt to the swimming pool, please ensure the Mineral Oxidiser is switched off to avoid overload damage. FAILURE TO DO SO MAY VOID WARRANTY.**
- 2.4 Before initial startup, it is recommended to manually add chlorine to the swimming pool as the Mineral Oxidiser is designed to maintain oxidiser levels over time and not run for unnecessarily long hours to build an acceptable oxidiser level. The manual addition of chlorine may also be required for unforeseen situations where the swimming pool has a high sanitisation demand, for example, after a large bather load or heavy rain.

3.0 CELL INSTALLATION

- 3.1 The Mineral Oxidiser cell housing must be plumbed into the return line after the filter. Please refer to the installation diagram, *Fig.1*, below for the preferred method. The cell housing has allocations for either 50mm PVC pipe or 40mm PVC pipe using the supplied PVC reducing bushes.
- 3.2 If a heater is plumbed into the system, then the cell housing must be installed after the heater in the return line to protect the elements or heat exchanger. If a solar heating system is fitted, the cell housing should be installed after the return line comes back from the roof if it rejoins the main swimming pool return line.

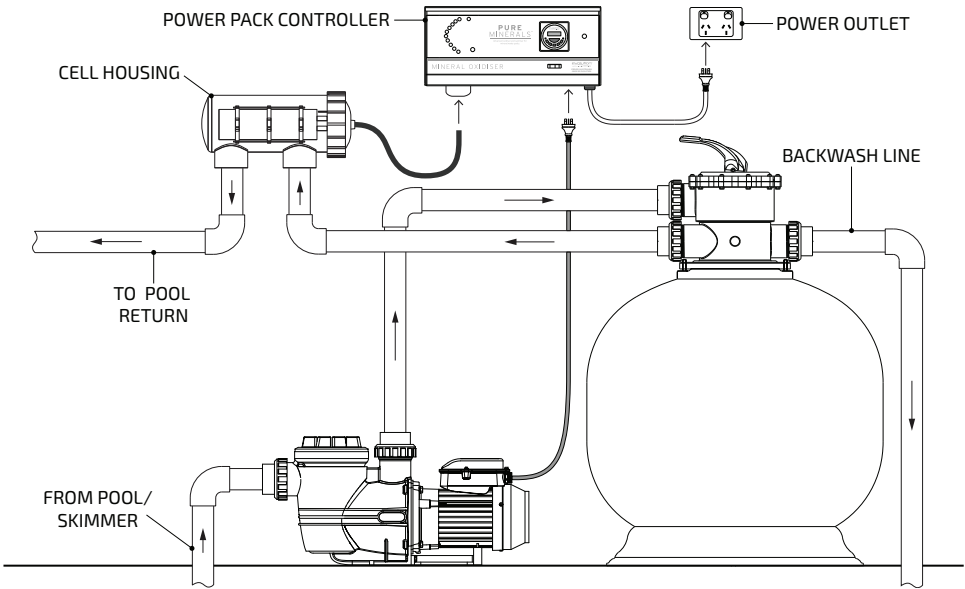
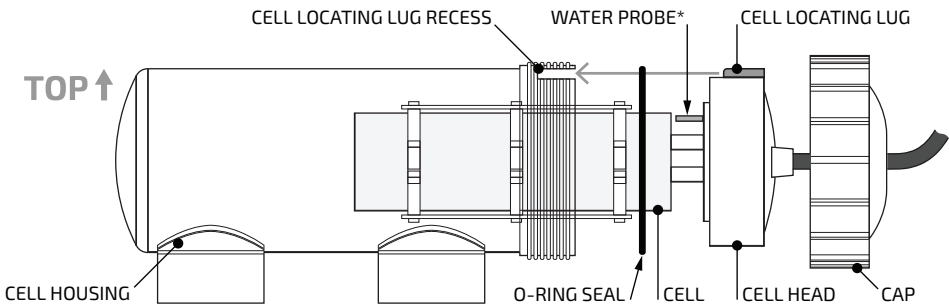


Fig. 1



*Please note the installation position of the electrolytic cell for water probe positioning. Water probe faces top.

Fig. 2

4.0 POWER PACK INSTALLATION

- 4.1 The Mineral Oxidiser power pack is wall mounted using the supplied mounting bracket or directly hanging on the wall with screws (300mm centres). The power pack must be mounted at least 1 metre above the ground and 3 metres or more from the pool edge.
- 4.2 It is strongly recommended that the power pack be installed where it is protected from the elements. Rain and sunlight will prematurely age the unit. It should also be mounted in a position where it is away from accidental water spray. The power pack should be installed so that adequate airflow can circulate freely around the unit to allow for sufficient ventilation.
- 4.3 The power pack comes with a standard 230V 10A power cable that is to be connected to mains power. Plug the power cable into a suitable weatherproof outlet.
- 4.4 The power pack is fitted with a 230V 10A power socket located on the right-hand underside of the power pack. The pool pump should be plugged into this socket so that the Mineral Oxidiser and pump activate together when the timer switches on at the allocated time settings. Failure to plug the pool pump into this socket could lead to the Mineral Oxidiser staying on with no water circulation. Without circulation, and in the event of a water probe failure, overheating and a possible gas build-up may occur. This build-up may damage the cell housing.
- 4.5 The Mineral Oxidiser cell cable is connected to the power pack at the junction box on the underside of the unit. With power off, remove the protective cover from the junction box and insert the cell cable wires to the terminals, with the thin wire connecting to the middle position. The screws must be firmly tightened so there is solid contact between the wires and the terminals. Replace the protective cover back over the junction box.

5.0 OPERATION

5.1 The control interface on the power pack consists of the following:



Fig. 3

1. Oxidiser Output LEDs

If the correct salinity level is maintained in the water, all ten lights will illuminate at full output (100%). Each light represents a 10% incremental output. If all lights are not illuminated, then a higher salinity level will be required. This is achieved by determining the current salinity level and adding Pure Minerals™ and pool salt according to the dosage tables in Section 7.0. Ensure all salt and mineral is dissolved correctly before further additions. The Oxidiser Output (2 in Fig. 3) will increase or decrease the output to suit the pool requirements. If all of the indicator lights flash, then there is a water flow fault.

2. Oxidiser Output

The Oxidiser Output dial determines the amount of oxidiser production. By simply turning the control clockwise, oxidiser output increases, and by turning the control anti-clockwise, oxidiser output decreases. Do not force the control past its stop, as this will damage the unit and void warranty.

3. High Salt Light

This light is a red warning indicator and will illuminate when the salinity level in the swimming pool is higher than 4500ppm. If this light is on, together with the ten output LEDs (1 in Fig. 3), decrease the output by turning the Oxidiser Output (2 in Fig. 3) anti-clockwise until the high salt (red light) goes off and all ten Oxidiser Output LEDs remain on. If the High Salt Light is the only one illuminated, the unit has gone into the over-temperature cutout and will reset once back to normal running temperature.

4. Polarity Light

The Polarity Light is the first indicator light, 10% in the Oxidiser Output array (1 in Fig. 3). This light will alternate between orange and green every reversing cycle (4-12 hours). The factory setting is a 12-hour cycle.

5. Digital Timer

The Digital Timer is a 24-hour, 7 day time switch for controlling the Oxidiser and associated circulation pump ON/OFF times.

Setting the Clock

Press and hold the **CLOCK** button. Press the **DAY** button until the correct day is displayed. Do the same with the **HOURL** and **MIN** buttons to set the clock.

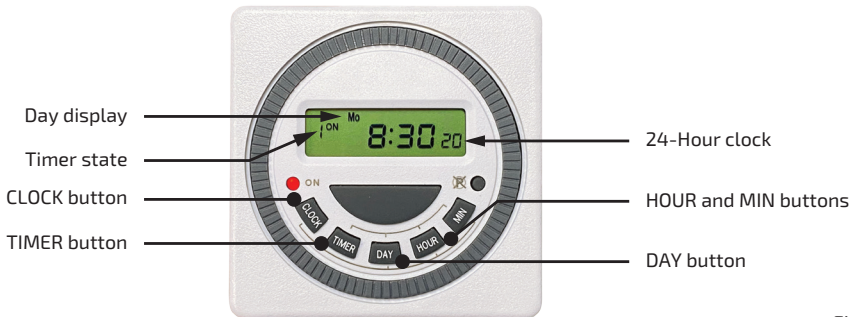


Fig. 4

Setting the Digital Timer

To set the chlorinator scheduled ON/OFF times, press the **TIMER** button. The first ON time (1^{ON}) will appear on the screen. The Digital Timer has 15 inbuilt daily program settings. Press the **DAY** button to scroll through these programs. Generally, the every-day program should be selected (Mo Tu We Th Fr Sa Su). This will enable the chlorinator scheduled ON/OFF times to activate every day.

Press the **HOUR** and **MIN** buttons to set the ON time. Press the **TIMER** button again, the first OFF time (1^{OFF}) will appear on the screen. Press the **HOUR** and **MIN** buttons to set the OFF time.

Pressing the **TIMER** button again will show the second ON time (2^{ON}). Repeat the programming procedure above to complete additional ON/OFF schedules if required. When finished programming the schedules, press the **CLOCK** button to return to the home screen. On this screen, the current timer state is shown.

To reset a timer schedule, go to the schedule by pressing the **TIMER** button as required, then press and hold the **TIMER** button again to reset.

6. Circuit Breaker

The circuit breaker mounted on the front right-hand side of the Mineral Oxidiser is designed to trip out in the event of a power surge or overload. When tripped, the yellow centre button will pop out, shutting down the unit. To reset, press the yellow centre button back in to resume normal function.

Note: Turn off the Mineral Oxidiser at the power point before attempting to reset the circuit breaker. Should the circuit breaker continue to trip, then a local Evolution distributor should be contacted.

7. Switch

This switch allows you to choose the timer operation mode for the Mineral Oxidiser and pool pump. The *Timer* selection to the left enables the Mineral Oxidiser and pool pump to turn on and off at the designated timer settings. The *Manual* selection to the right allows the Mineral Oxidiser and pump to work continuously until the switch setting is physically changed. The *Off* position in the middle will turn power off to the Mineral Oxidiser and circulation pump.

6.0 DOSAGE

- 6.1 The Mineral Oxidiser is designed to work with all mineral blend products to sanitise your pool effectively, but works best as a complete system with high-quality Pure Minerals™ Magnesium Crystals. Using Pure Minerals™ in conjunction with pool salt will produce a magnesium-rich and precisely sanitised pool with minimal maintenance. You will need to follow the given dosage guidelines for properly activating and maintaining your blended pool salinity levels. These tables are designed to help you integrate or maintain Pure Minerals™ and pool salt at the right ratios with a target salinity of 4,000ppm.
- 6.2 If your pool water is not yet conditioned with Pure Minerals™ follow 7.3 Table 1: *Pure Minerals™ Start-Up and Activate Dosage*.
- 6.3 If your pool water has already been enhanced with Pure Minerals™ follow 7.4 Table 2: *Pure Minerals™ Maintenance Dosage*.
- 6.4 To begin using Pure Minerals™ and your Mineral Oxidiser, you will need to know the pool water salinity level. A pool care professional can perform this test for you. Once the salinity level is known, add the appropriate Pure Minerals™ amount by following the dosage tables.
- 6.5 Your Mineral Oxidiser is designed to operate with a primary salinity of 4,000ppm.
- 6.6 **Note: Before adding minerals and salt to the swimming pool, please ensure the Mineral Oxidiser is switched off to avoid overload damage. FAILURE TO DO SO MAY VOID WARRANTY.**

7.0 ADDING PURE MINERALS™

- 7.1
1. Ensure pool water is correctly balanced before adding Pure Minerals™. Free chlorine level must be between 1.5 and 3.0ppm, pH level must be between 7.2 and 7.6.
 2. Add the recommended amount of Pure Minerals™ into the shallow end of the pool and allow to dissolve (sweep in with a broom if required).
 3. Run the filter pump for 8 hours (with Mineral Oxidiser turned off) to allow for complete dilution.
 4. You may swim in the pool at any time during this process.
- 7.2 **Note: As magnesium dissolves into the water, the water may sometimes take on a green tinge. This is a natural effect of the magnesium, and the water colour will return to normal after 48-72 hours.**

7.3 Table 1: Pure Minerals™ Start-Up and Activate Dosage

Current Salinity (ppm)	Add (kg)	10,000L	20,000L	30,000L	40,000L	50,000L
0	Pure Minerals	16	32	48	64	80
	Pool Salt	32	64	96	128	160
500	Pure Minerals	16	32	48	64	80
	Pool Salt	27	54	81	108	135
1,000	Pure Minerals	16	32	48	64	80
	Pool Salt	22	44	66	88	110
1,500	Pure Minerals	16	32	48	64	80
	Pool Salt	17	34	51	68	85
2,000	Pure Minerals	16	32	48	64	80
	Pool Salt	12	24	36	48	60
2,500	Pure Minerals	16	32	48	64	80
	Pool Salt	7	14	21	28	35
3,000	Pure Minerals	16	32	48	64	80
	Pool Salt	2	4	6	8	10
3,500	Pure Minerals	10	20	30	40	50
	Pool Salt	0	0	0	0	0
4,000	Pure Minerals	0	0	0	0	0
	Pool Salt	0	0	0	0	0

Current Salinity (ppm)	Add (kg)	60,000L	70,000L	80,000L	90,000L	100,000L
0	Pure Minerals	96	112	128	144	160
	Pool Salt	192	224	256	288	320
500	Pure Minerals	96	112	128	144	160
	Pool Salt	162	189	216	243	270
1,000	Pure Minerals	96	112	128	144	160
	Pool Salt	132	154	176	198	220
1,500	Pure Minerals	96	112	128	144	160
	Pool Salt	102	119	136	153	170
2,000	Pure Minerals	96	112	128	144	160
	Pool Salt	72	84	96	108	120
2,500	Pure Minerals	96	112	128	144	160
	Pool Salt	42	49	56	63	70
3,000	Pure Minerals	96	112	128	144	160
	Pool Salt	12	14	16	18	20
3,500	Pure Minerals	60	70	80	90	100
	Pool Salt	0	0	0	0	0
4,000	Pure Minerals	0	0	0	0	0
	Pool Salt	0	0	0	0	0

7.4 Table 2: Pure Minerals™ Maintenance Dosage

Current Salinity (ppm)	Add (kg)	10,000L	20,000L	30,000L	40,000L	50,000L
2,000	Pure Minerals	8	16	24	32	40
	Pool Salt	16	32	48	64	80
2,500	Pure Minerals	6	12	18	24	30
	Pool Salt	12	24	36	48	60
3,000	Pure Minerals	4	8	12	16	20
	Pool Salt	8	16	24	32	40
3,500	Pure Minerals	2	4	6	8	10
	Pool Salt	4	8	12	16	20
4,000	Pure Minerals	0	0	0	0	0
	Pool Salt	0	0	0	0	0

Current Salinity (ppm)	Add (kg)	60,000L	70,000L	80,000L	90,000L	100,000L
2,000	Pure Minerals	48	56	64	72	80
	Pool Salt	96	112	128	144	160
2,500	Pure Minerals	36	42	48	54	60
	Pool Salt	72	84	96	108	120
3,000	Pure Minerals	24	28	32	36	40
	Pool Salt	48	56	64	72	80
3,500	Pure Minerals	12	14	16	18	20
	Pool Salt	24	28	32	36	40
4,000	Pure Minerals	0	0	0	0	0
	Pool Salt	0	0	0	0	0

8.0 MAINTENANCE

- 8.1 It is recommended that a pool water sample is taken to a pool shop and tested once per month for analysis. Please refer to *Section 2.0, 6.0 and 7.0* for additional information.
- 8.2 The Mineral Oxidiser cell operates most efficiently when it is clean. As a natural result of the electrolytic process, calcium is attracted to the titanium plates in the cell. The self-cleaning feature helps to inhibit such build-up and scaling. However, the attraction of calcium and other minerals is inevitable, and eventually, it must be removed by manual cleaning.
- 8.3 The transparent housing of the cell allows easy visual inspections, and with correct water chemistry, the cell will only need cleaning approximately every 3-6 months. In regions with hard water (high calcium levels), more frequent cleaning may be required.
- 8.4 To clean the cell follow these instructions:
1. Turn off power to the Mineral Oxidiser and pump.
 2. Remove the cell from the cell housing by loosening the cell collar and pulling the cell out of the housing. If required, disconnect the cell cable wires at the junction box underneath the power pack (these must be reconnected firmly and tightly).
 3. With the cell removed, use a high-pressure hose nozzle to spray off as much loose scale as possible. Do not use any sharp or metallic objects to remove scale, as this will damage the cell.
 4. If further cleaning is required, the cell needs to be cleaned in a mixture of 1 part Hydrochloric Acid to 10 parts water. Mix the acid solution in a bucket or tube that will fit the cell.
 5. **⚠️WARNING:** Chemical Hazard - When mixing acid with water, always add the acid to the water, never add water to the acid. When using the acid, ensure to use rubber gloves and appropriate eye protection and follow safety directions on the Hydrochloric Acid label.
 6. Place the cell into the cleaning solution submerging the plates and ensuring that the cell head (Section 3.0 Fig. 2) does not contact the acid solution. Once the cell is clean, remove it from the cleaning solution and rinse. Replace the cell into the housing in the reverse manner to the steps above.
- 8.5 Only qualified electrical technicians should service the power pack. For the nearest Evolution recommended service technician, please contact Evolution Water & Lighting Solutions on 07 5565 0000 or email us at service@evolutionwls.com.au.

9.0 TROUBLESHOOTING

Fault/Problem	Possible Cause	Remedy
NO FLOW All oxidiser output LEDs flashing	Pump turned off.	Ensure the pump is on.
	Closed valve.	Open valve.
	Air in the system.	Check all o-rings and grease.
	Dirty filter.	Clean or backwash filter.
	Low water level.	Fill up the pool.
	Calcium build-up on water probe sensor.	Clean probe in a mild hydrochloric acid solution as per <i>Page 9</i> .
HIGH SALT Red LED illuminated	Salinity level too high, above 4,500ppm.	Turn oxidiser output anti-clockwise to reduce salinity level.
NO LIGHTS	Circuit breaker tripped.	Reset circuit breaker. If it trips again immediately call a technician.
	Mains power failure.	Check switches and switchboard circuit breaker.
LOW / NO OXIDISER PRODUCTION	Oxidiser output too low.	Increase oxidiser production, turn oxidiser output clockwise.
	Salinity level too low.	Increase salinity to 4,000ppm and check stabiliser (Cyanuric) levels.
	pH too high.	Adjust pH between 7.2 – 7.6
	Timer period too short.	Increase running time.
	High phosphate levels.	Treat pool water with phosphate remover.
	Cell connections not secure.	Check connections at junction box under the unit.
ABNORMAL CALCIUM BUILD-UP ON CELL	Calcium level in pool water is extremely high or unbalanced water chemistry.	Have water tested and balanced as per Langlier Saturation Index. Clean cell with mild HCl solution.
TIMER TIMES OUT OF SYNC	Timer is not set correctly.	Check setting procedure as per <i>Page 5</i> .
	Mineral Oxidiser installed on off-peak tariff.	Adjust timer accordingly.
	Timer / Off / Manual switch not selected correctly.	Make sure switch is selected correctly, see <i>Page 5</i> .
OVER TEMPERATURE Red LED illuminated only (no other lights)	Salinity level too high, above 4,500ppm.	Turn oxidiser output anti-clockwise to reduce salinity level.
	Unit is installed in an area where the ambient temperature is extremely high.	Supply adequate cooling. Install outside of the extreme temperature area.

10.0 WARRANTY

- 10.1 Evolution Mineral Oxidisers are covered by a 3-year full warranty from the date of purchase. The power pack and electrolytic cell are covered against defects in materials and assembly from the date of purchase in a domestic application. All electrical or mechanical failure due to faulty components will be repaired or replaced at no cost to the owner, including labour. Warranty will not be covered without proof of purchase, so keep the original purchase invoice in a safe place.
- 10.2 In field labour is limited to the Gold Coast city metropolitan area. Outside of these areas the complete unit should be returned to Evolution Water & Lighting Solutions or one of our warranty agents. Freight charges may apply and are entirely at the discretion of Evolution Water & Lighting Solutions. Please contact us in regards to an authorised warranty agent in your area.
- 10.3 The warranty will be void due to unfavourable environments and operating conditions beyond the control of the manufacturer. These include but are not limited to: incorrect power supply (must be 230V, 50Hz), the Mineral Oxidiser connected to an ancillary device such as a Variable Frequency Drive, wear and tear, water and insect damage, extreme ambient temperatures or any other adverse situation that affects the unit. All warranties only apply if the equipment is installed and operated in complete compliance with the Installation and Operation Manual.
- 10.4 Evolution Mineral Oxidisers and Mineral Oxidiser cells installed in a commercial situation are covered by a 1-year warranty. Commercial situations include motels/hotels, health spas, apartment/townhouse complexes and any location with an unusually high bather load or abnormal conditions.
- 10.5 Evolution Water & Lighting Solutions will not accept liability for any consequential loss or damage of any kind.

For all warranty enquiries, please do not hesitate to call 07 5565 0000 or email service@evolutionwls.com.au

IMPORTANT

Please attach sales invoice/receipt here as a proof of purchase should warranty service be required. Please keep warranty form and retain for records.

Purchased from:
Purchase date:
Serial No:
Model No:

[illegible]



Evolution Water and Lighting Solutions
1/33 Hinkler Drive, Highland Park QLD 4211, Australia +61 7 5565 0000

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