

INSTRUCTION BOOK

Bioniser™

Eco-Friendly, Salt-Free.
Pool Management System



Read before you call us for advice

APVMA Product No: 60564 ; Label Approval No: 60564/01/0106

BIO-EFFECTIVE IONIC POOL AND SPA PURIFIER

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PLEASE TAKE THE TIME TO READ THESE INSTRUCTIONS CAREFULLY AND NOTE HOW THEY APPLY TO YOUR PARTICULAR POOL AND EQUIPMENT.

An all natural pool that requires minimal maintenance and expense is a real joy. Before start up correctly **balance and maintain the pool water** and you will be rewarded by having a toxic free, eco pool that will not cause corrosion (as salt does) or threaten your health in any way. Feel free to water your garden or lawn with any backwash water.

Take note of the few “don'ts” and you will have a seamless start up and thereafter you will be amazed at your pool water quality and clarity.

Bioniser Pty Ltd is committed to creating a more healthy environment... the Bioniser Pool System is only part of our ongoing journey in this direction.

We have now introduced three other products to advance ourselves along the path back to a toxic free world. They are Bioniser Eco-Oxidizer, Bioniser pH Control (auto) and “TheCirculator”. A pool with all three of these systems plus the Bioniser will never require a toxic chemical to be placed in the water... ever! In fact the most difficult part of the process of pool maintenance will then be to add some soda bicarb. to the water and clear the leaves from the skimmer every several weeks. It just does not get any easier than that... not with swimming pools anyway.

You can start with a Bioniser and a couple of “Circulators” on your pool and a short while later when you are delighted and confident with the Bioniser technology you can add the Eco-Oxidizer unit and/or the pH Boss unit to augment the Bioniser. You will then have the ‘ultimate’ Eco Pool Care System operating your pool - zero toxicity and/or salt, zero corrosion, tiny running costs, low maintenance etc.

We know ionisation technology and we know pools and, we know more than most do about water and just how special a substance it really is. Water is in fact vital to all life on earth... water and oxygen are essential substances... as are beneficial minerals.

Bioniser Pty Ltd has harnessed the three of these technologies to protect and maintain your pool water in the most powerful natural way known on Earth. The Eco-Pool Partners.

Nothing is more powerful than Nature.

Witness a Volcano blowing its top, a Force 5 hurricane or a devastating Tsunami...Bioniser has united the most essential elements in Nature to ensure that you swim safely and hassle free.

Now for the first time pools are able to stay healthy and clear without any toxic substances polluting your swimming environment or your lifestyle. You are removed from all but the most simple tasks required for pool care.

If you use a pool care service you can halve the time they visit... they are now almost redundant. Let them visit once a month and sweep the pool, check the skimmer and add some acid to the pH reservoir and you do no pool care whatsoever.

This is the Bioniser “Ultimate Solution” to Pool Care... and your commitment to help us all return to a toxic free Planet for your children to enjoy.

BIONISER POOL MANAGEMENT SYSTEM

Dear Bioniser Owner,

Congratulations and thank you for choosing the Bioniser Pool Management System.

By purchasing this product you have taken a major step towards helping the environment, as well as the health of your family.

Superior Pool System

We believe we have developed one of the most superior pool and spa management systems on the market today.

The Bioniser pool ioniser manages your pool superbly while you spend your valuable time relaxing in your environmentally sensible and healthy pool.

No more dry skin and hair. No more red eyes. No more corrosive salt. Now you and your family will be swimming in pure sanitised mineral water that needs only small amounts of Oxidizer to remain crystal clear and healthy.

The important point is that with Bioniser **this occurs without an overload of hazardous, costly chemicals or corrosive salt!**

Olympic Swimmers Use Ionisation

Currently the most common way of sanitising your pool is by using environmentally degrading and costly pool chemicals. This also applies to controlling algae in your pool.

Yet, ionisation is a well tried and long time proven natural alternative to chemical-based pool treatments. Ionisation is endorsed & embraced by the

World Health Organization (WHO) & the US EPA -Environmental Protection Authority.

Ionisers are now extremely popular in the leading pool market in the world, the United States. In fact, the USA Olympic Swimming Team trains in an ionised pool.

Ionisation does not ever exacerbate asthma or eczema as high levels of chlorine are shown to do. Many USA Public Pools have chosen ionization as their primary form of sanitation and pool control and the public who use these pools have overwhelmingly endorsed this choice.

Our Bioniser is used on many Eco-Award swimming pools, learn to swim pools, health resort pools and public pools in over 18 countries

NASA Developed Ionisers

Ionisers have been used for sanitising water for many years now and were refined by NASA in the 1960's for its space program.

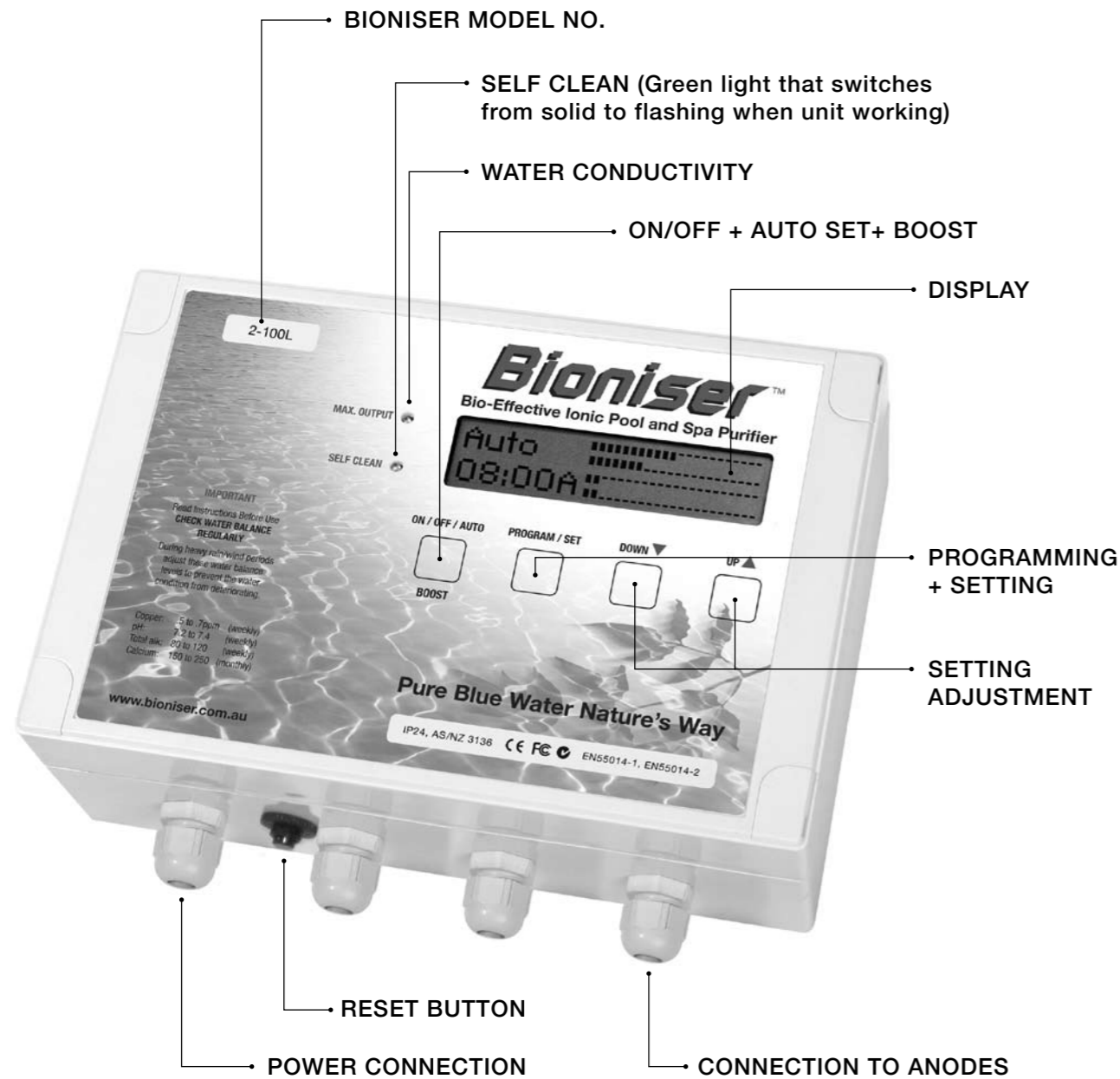
The main function of ionisers is to control the growth of micro-organisms in bodies of water.

They are in widespread use in water towers for air conditioning systems where they efficiently control Legionella bacteria that cause the deadly Legionnaires' disease, whilst reducing the chemicals that promote structural decay.

In Australia the APVMA, the government authority in regards to pool & spa chemicals (APVMA - The Australian Pesticides & Veterinary Medicines Authority) requires that a registered sanitiser be used with this product when the pool is used for bathing. Bioniser uses only official APVMA Authorised Anodes.

The Bioniser Eco-Oxidizer creates Hydrogen Peroxide (a registered Sanitiser) electrochemically and infuses it into your pool water when the pump/filter is running. If using a Bioniser and Eco-Oxidizer we advise that the pump is running when bathing.

Happy Swimming!



IMPORTANT SAFETY INSTRUCTIONS

It is important to follow basic safety precautions when installing and using this electrical equipment, including the following:

1. **Ensure you read and follow all instructions.**
2. **WARNING** – Do not allow children to use this product unless they are closely supervised at all times. This is to prevent accidental injury.
3. Keep cord visible and do not bury it. Also position the cord so that it does not get damaged by lawn mowers, hedge trimmers and other equipment.
4. **WARNING** – To prevent electrical shock, replace damaged cord immediately.
5. Save these instructions.

CAUTION:

Your warranty could become invalid should you fail to observe the following:

1. The Bioniser must be installed and operated as specified.
2. Do not open plastic enclosure with mains power connected.
3. Turn off the power to the Bioniser before detaching the anode connectors.
4. The life of the unit will be extended (as with most other pool equipment) if it is placed indoors or in an enclosed structure. This is recommended as sunlight can damage the Liquid Crystal Display on the face of the control unit.
5. Never plug more than one pump at a time into the 3-pin socket in the base of the control unit.
6. Disconnect pump from mains power (or control unit) before inspecting or working on the pump.

SETTING UP YOUR POOL

READ THE DO'S AND DON'TS AND TAKE THE TIME TO SET UP CORRECTLY

STEP 1 – PREPARE YOUR POOL

For existing pools:

If unsure about your pool water quality

we recommend that the pool should be super-chlorinated and the walls and floor brushed. (See **Super-Chlorination** on page 23).

Test your pool water for pH, Total Alkalinity, Calcium Hardness, Phosphates and balance the pool to the following levels: pH – 7.2 – 7.5, Total Alkalinity – 80 - 120, Calcium Hardness – 200 - 250 and Phosphates – less than 500 ppb.

For new pools:

Test your pool water for pH, Total Alkalinity, Calcium Hardness and Phosphates and balance the pool to the following levels: pH – 7.2 – 7.5, Total Alkalinity – 80 - 120, Calcium Hardness – 200 - 250 and Phosphates – less than 500 ppb.

If you have a cement, pebblecrete, marblesheen or quartzon type surface on your pool, place a sock on your skimmer box basket whilst the pool surface is ‘curing’ and clean it every few days. Do not run an automatic pool cleaner for several weeks after first filling your pool as fine particles are released from the pool surface for two to three weeks whilst the new surfaces are ‘curing’. If these particles manage to get into your filter they have the potential to ‘trap’ the copper ions in your filter which will then be difficult to remove and may necessitate the requirement to change the sand/medium or cartridge in your filter.

STEP 2 – BIONISER INSTALLATION

IONISER INSTALLATION

1. Installing your Bioniser Ioniser takes less than 30 minutes.

NOTE: Turn off all valves prior to fitting the T-piece (avoid leaks) and turn them on again before ionising / filtering the pool.

2. Alternatively engage a plumber or a handyman to do the job.
3. If installing it yourself you will need:
 - PVC pressure glue and primer
 - A fine tooth saw.
4. **The Bioniser must be fitted on the pipe that sends water back to the pool after it has been filtered.**

5. If a **salt chlorinator** is currently fitted between the filter and the pool turn off the chlorinator. Remove the old cells or the electrode chamber.

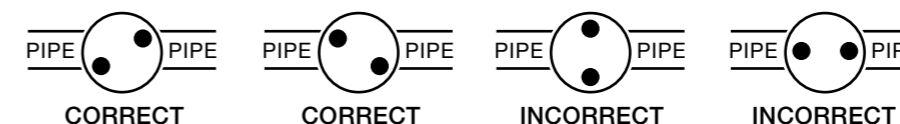
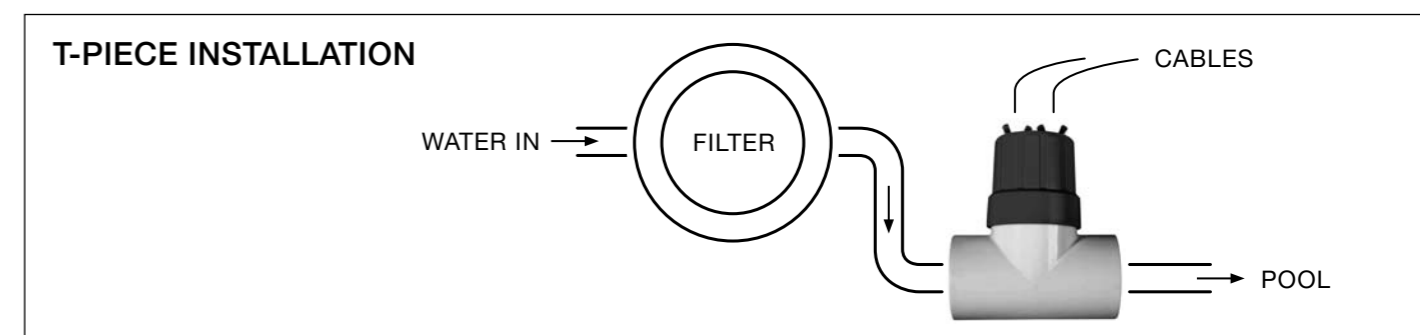
T-PIECE INSTALLATION

1. Cut out a 7cm section of pipe sufficient to fit the “T” piece that holds the anodes.
2. **NOTE:** The section that is cut out of the pipe should be about 60mm shorter than the “T” piece).
3. If the T-Piece diameter is larger than the pipe then use the 50mm - 40mm reducing bushes provided by gluing them in place in the T-Piece before fitting. Make sure they are pushed all the way into the T-piece

when glueing them in to avoid leaks. The pipe should now fit snug into the T- piece.

4. The T-Piece should be installed in an upright (horizontal) position to allow easy T-Piece and cap replacement and proper water flow past the anodes. Do not install the T-Piece in a vertical position unless there is absolutely no other way to fit it. Never fit the T-Piece vertically immediately after a fitting that contains salt chlorinator cells as these slow the water flow and thereby reduce the production of ions. Leave at least 200mm space between the trailing end of the T-Piece to the next bend in the pipe.

5. Make sure that the two anodes are at a 45 degree angle (approx) to the water flow and **are not** either directly in line, or directly across the flow within the pipe that the T-Piece is attached to. This allows maximum ionisation to take place and protects both anodes from uneven wear while at the same time prolonging the life of the two anodes. **The self cleaning indicator light on the “Ionise” function of the control box will alternate between slow and fast flashing every few minutes when the Bioniser is actually ionising.** (This indicates that the anode self-cleaning action is taking place)



CONTROL BOX INSTALLATION

1. Choose a position that will allow you to see the LCD (Display) easily. Fix the control box in position using screws at each corner of the box.
2. Make sure (if possible) that the unit is undercover and that the LCD (Display) is not in direct sunlight as it is not covered by warranty if it is damaged by sunlight.
3. Once fixed in position attach the connecting wires to the anode connectors and tighten

the wing nuts onto each connector. It does not matter which connector goes on which anode.

4. Then plug the pump power cable into the socket at the base of the control box and also plug the power cable for the Bioniser unit into a power source.
5. **NOTE:** Make sure that the control unit is positioned near enough to a power outlet and to the T-piece to allow the power connecting and anodes cables to reach the socket and anode cap.

Your Bioniser is now ready for programming.

STEP 3 – WATER PREPARATION & TESTING

Very Important Point:

Test your pool water.

Balance and adjust to levels below.

pH: 7.2 – 7.5

Calcium Hardness: 200 – 250

Total Alkalinity: 80 - 120

Phosphates: < 500 ppb

Stabiliser: < 30 ppm.

Phosphates

Phosphates are algae food and are introduced into the pool water by bathers, plants and animals. If the phosphate levels get above 500 ppb then they assist algae to form when it gets introduced to the water during rainy and/or windy periods, especially if the pH is too high. Algae thrive on high pH and high phosphate levels.

Check your phosphates every month. If your phosphate reading is around 500 ppb or higher, treat the pool with Phosphate Remover according to the directions on the label. This small task will save you from algae attack – prevention not cure is the intelligent course of action.

Bioniser supplies calcium and phosphate test kits for your convenience.

In areas that do not have testing facilities for Phosphates treat the pool for phosphates anyway just to make sure that they are not present in the pool water. This may save you an algae attack as we have already pointed out phosphates are “algae food” and greatly enhance the chance of an algal attack if they are present in high levels... especially if pH is getting high and rain is about. Use any phosphate remover for swimming pools to directions on the label...phosphate remover is sometimes called “starver”. It is advised in these areas to treat for phosphates every month or so to make sure that any algae spores that find their way into your pool have nothing to feed on. eg.

one drop of rainwater may contain as much as 30,000 algae spore.

Calcium Hardness

If your Calcium Hardness is too low the water will, over time, absorb calcium from pool surfaces and pool equipment. This can cause the pebbles in a pebblecrete pool to fall off and etching to appear on the walls and floor of quartzon type and concrete pools. It can also cause damage to other pool equipment and be a cause of cloudy water if levels are low. You use Calcium Chloride to raise the Calcium Hardness of the water.

START-UP ION USE

1. Use the start-up ions provided at the outset **if you have a zeolite filter medium**. This will speed the start up process by saturating the filter thereby enabling the ions to pass straight through the filter and into the pool without having to saturate the filter medium first.
 - **There is no need to use the start up ions if the pool has a cartridge or sand filter.**
2. When using the start up ions add one level dessertspoon of ions to each 20,000 liters of poolwater into the skimmer box with the filter running.
 - Wait 10 minutes and then test the pool water for ions with the copper test kit. If the copper level is 0.5ppm or more then continue with the start up procedure. If the copper level is below 0.3 add more start up ions until the copper level reaches 0.5 or over.
3. Once the copper readings are correct proceed with the start up procedure but do not use the “boost” function in the step 5 - ionising schedule section.

START UP PROCEDURE

1. **The start-up period** will be from 1 to 2 days depending on pool size. The Bioniser ioniser can make a domestic pool immune to algae in as little as 12 hours (without start up ions added). Do not use an automatic pool cleaner, Kreepy Krawly, Barracuda etc, or run a waterfall during the start up period. These devices slow the water flow thereby increasing the amount of time it takes to ionise the pool.
2. **The Copper (Cu) Ion Test Kit** supplied with the Bioniser indicates whether or not the pool has sufficient ions in it (see **Ion Testing**).

At 0.4ppm Cu your pool is guarded against contaminants, however we recommend keeping the copper ion level in swimming season at between 0.5 and 0.7ppm. with the pH at 7.2 – 7.5. This should ensure that algae cannot thrive.

3. It is not recommended to use your pool/spa unless the ion level has reached 0.4 ppm on your **Copper Ion Test**.
4. **If no ions are detected** in the pool water after several days of operation it may indicate that the water conductivity is low. Check if the unit was set correctly. Add 5 -10 kg of pool salt to the water if it is a newly filled pool to increase conductivity.
5. Alternatively add 1 level dessertspoon of “**start up ions**” for every 20,000 liters of poolwater. Always add start up ions into the pool’s skimmer box with the filter running or pour them into the balance tank. Once the start-up ions have been added operate the unit as for normal operation. (See step 4)

6. **When adding acid to the pool** first mix it into a 10 litre bucket of water and spread around the pool. **The fitting of a ‘pH Boss’ Auto pH controller will eliminate this process.**

7. **Test pH before testing for copper.** If the pH is too high bring it down to the required level (7.2 – 7.5) before testing for copper or you may get an inaccurate copper reading. It is very important to maintain these levels of pH. **Copper is somewhat less effective at pH levels above 7.5 just as chlorine is less effective at pH levels above 7.5.**

- The neutral range of pH varies according to the water temperature. At 25°C the pH neutral in fresh water is 7.0 and at 30°C the pH neutral is 6.8. **Keep your pH lower during the warmer months for maximum control over algae.**

8. If a copper-based algaecide has been used, the pool water will probably show an ion reading when testing with the copper test kit. This will also be the case if “**start up ions**” have been used. If the copper readings are detected prior to start up, proceed as outlined under the “Ion Testing” section.

9. **If intending to swim prior to ionising your pool ensure adequate levels of chlorine are present in the pool water.**

STEP 4 – PROGRAMMING YOUR BIONISER

1. POWER ON

- Plug in to power source, make sure that the connectors on the cable are attached to the anodes correctly and plug the pump into the Bioniser control box – Turn power on.
- Press the “ON” button once. The pump may start depending on original settings / time of day. If you do not want the pump on while you set the program simply do not connect the pump plug to the control box until you have completed setting the program.
- You will see this message appear on the LCD on the Bioniser control box:

Manual: Priming
12:00

- Once it is actually running ionising, the top line shows the output of the unit, and the bottom line denotes the amount of ionising done that day in 10% increments of the total ionising time that is programmed

2. PRIMING

- After priming message disappears 10/20 secs, press program/set button once.
- You will see this display:

Manual
50%

3. OUTPUT LEVELS

- The output percentage is shown on the screen
- Use the ^ V buttons to change this output.
- After selecting the desired output level press the program/set button once and you will see this display:

Manual
Ionise for 4:00

4. SETTING THE TIMER

- Use the ^ V buttons to choose how long you wish to run the Bioniser each day (to ionise your pool).

- After choosing the length of the ionising time press the program/set button again and you will see this display:

Manual
Set hour 18:35

- Use the ^ V buttons to set the time of day – this is the time clock of the Bioniser and will keep real time.

(NB: Please note any power supply interruption of more than 50 hours or so may require you to reprogram the Bioniser. It is a good idea to check the unit is operating properly after any power cuts.) If the program has been lost then repeat the programming procedure.

- After setting the time clock press the Program/Set button again.
- **Press** the Program/Set button again and you will see this display

Manual
On A 8:00>16:00

- Use the ^ V buttons to adjust the start and stop times for the filter pump.

NB: These are the real time settings and if you want your filter/pump to run for more than one individual session per day then the Bioniser has provision for up to 4 individual sessions per day.

5. PROGRAMS A, B, C & D

- If you want one continuous filtering session per day then set 'A' to suit (say 08.00 – 16.00) then simply set B, C & D to zeros on both sides. Or, the same time for both start and finish on either sides and these sessions will be ignored.

- See example for ignored 'C' cycle:

Manual
Off C 20:00*20:00

- If you want two to four separate filtering periods in one day then repeat the above for pump cycle B, C and/or D.

- If you want the pump/filter to operate for 24 hours continuously (every day), leave the unit set on 'Manual'. The ionising function will operate for the amount of hours set for each day and the ionising will begin at the start time set for 'pump A'

6. AUTOMATIC OPERATION

- To switch the Bioniser to automatic operation press and hold the On/Off/Auto button for 3 seconds – you will then see this display:

Auto
08:00A

- The A B C D will appear according to the time of day.
- If unit is in manual mode, then simply press On/Off/Auto to switch the output on and off manually. To change to Auto mode, press and hold the On/Off/Auto and release when 'Auto' shows on the screen. The screen now looks like this when operating on Auto mode in a pump cycle. The time is on the left; A/B/C/D pump zones are shown next, then the indication of how far through the the day's ionising time the system has gone, in 10% increments is shown.

7. 'BOOST' OR SUPER-IONISE FUNCTION

- Use this function when ionising your pool for the first time. The pool should be ionised within that 24 hour period... see program Bioniser video on the Bioniser website.
- Use this in periods of rainy, windy weather if the pool water is under environmental stress.
- To run the Boost function, hold the On/Off/Auto switch for 10 seconds. The system now shows 'Boost' and ionising output status on the top line, and the bottom line shows how far through the total 24 hrs boost time the system has progressed in 10% steps.

BOOST
12:00

- It will show "priming" at first and then show only "boost" – "priming" will disappear.
- This function will over-ride your normal pre-set Bioniser program and will operate the pump and ioniser (at normal ionise output) for a continuous 24 hour period. After this your normal program of filtering and ionising will be reinstated.
- There is no need to reprogram the Bioniser. It will revert to the normal operating program that was being used before the Boost function was activated.

8. COMPATIBLE WITH SOLAR AND CBUS TYPE SYSTEMS

- A new EXTERNAL mode has been added. This allows the Bioniser to be operated from an external timer instead of its inbuilt pump timer. This is useful for systems such as CBUS or Solar powered systems. The pool pump can still be connected to the Bioniser, since power will be provided to that whenever the unit is powered on.
- To enter EXTERNAL mode, press and hold On/Off/Auto until 'external' appears on the screen then release. The screen looks like this when operating on EXTERNAL mode. As before, the bottom line shows how far through the day's ionising hours the unit has gone, in 10% steps.

EXTERN
12:00

- NOTE: Although the unit does not operate according to the pump cycles, the daily ionising still starts as the beginning of the Pump A cycle. Set Pump A on 0800 - 0800 and ignore the times shown for Pump B,C and D. These have no function when unit is set on 'external' mode. This makes the system workable regardless of how many times during the day the external timer switches the unit on and off, and also allows for the external timer running 24 hours a day
- After Ionising cycle (not Filtering cycle) has finished each day the following screens show Manual, Auto and External mode, after the ionising time has finished for the day, but the pump output is still running:

MANUAL: PUMP ONLY
12:00

AUTO: PUMP ONLY
12:00

EXTERN: PUMP ONLY
12:00

STEP 5 – IONISING SCHEDULE

BIONISER SETTINGS GUIDE - 40K LITRE POOL 50% 2 HOURS / 70K LITRE POOL 60% 2.5 HOURS

RECOMMENDED ION LEVELS

- To initially bring the pool up to the recommended ion level (if no start up ions have been used) the filter/pump timer will have to be set for constant running with the ionising current output set at the 60% to 80% level. The best way to do this is to program your Bioniser to what will be approximately your normal operating settings.
- If start up ions have been used (zeolite filter medium) then do not use “boost” function to assist in start up.

THEN DO AS FOLLOWS:

- Set the current output at about 70% of its capacity, set the unit to “auto” and then activate the boost function. This will operate the unit for 24 hours at the increased level and then revert to the normal cycle that you have set.
- Remember to make sure that the current level is set to a lower setting after the pool is ionised to the correct levels of copper. See ‘Guide to Settings’. Follow the given procedure to ascertain the settings required for the normal operation of your pool.

MAXIMUM LEVELS

- To find the maximum current level for your pool operate the filter with the unit switched on and increase the current until the red (maximum output) light switches on. It does not damage the unit if this level is exceeded. If the red light does not come on at all it indicates that the water in the pool is quite conductive.
- In pools with high conductivity, eg. a salt water pool, the light may not come on. In these cases just set the current output to between 50% and 80% of capacity.

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OPTIMUM LEVELS

- When the red light comes on, reduce the current until the light goes out. This is the “sweet spot” and you will then be operating the unit at the optimum start up level for your pool.

LOW LEVELS

- If the red light comes on at a very low level (below 3) then adding 5-10 kg of pool salt will increase the water conductivity and allow a higher level of current control and therefore more ion production. (This small amount of salt is not apparent in the pool)
- Adding this small amount of salt may be necessary when ion readings are initially low due to zeolite filter medium “taking up” the ions to saturation point.

NORMAL LEVELS

- The filter and the ionising unit will have to be run continually and the pool tested daily until the ion level reaches between 0.5 and 0.7ppm. This could take from 1 to 2 days, depending on the size of the pool.
- When the pool has the required amount of ions (0.5 - 0.7ppm), set the bioniser unit’s timer to a daily ionising schedule (suggest 2 to 3 hours per day with the current output at 40% for a 50.000 litre pool). See ‘Guide to Settings’.
- Test the pool weekly (vary the place in your pool that you take the water sample from) and adjust the output and/or ionising time period up or down so as to maintain a constant ion level (0.5 – 0.7ppm.) in the pool.
- You will soon achieve the correct ionise setting that will maintain the ion levels in your pool without any further adjustment.
- In times of heavy rain/wind/bather use simply use the boost (super ionise) function to compensate for the increased environmental stress that the water is experiencing. The ions in the water will be replenished.

ION TESTING

The mineral anodes are made of a unique alloy of copper and silver, predominantly copper.

- **The ion test kit** detects the presence of copper ions, thereby determining if the water has an adequate level of protective minerals. It is an accurate test when used correctly.
- The reagents should be replenished every time you change anodes or when they have run out.

TESTING SCHEDULE

- Test copper and pH at least **once every week** to ensure your pool has an adequate level of ions and the pH is correct.
- The anode mineral composition is homogenous. As a result silver ions are created at the same time as the copper ions. If the copper ion level is adequate then so is the silver ion level.

COPPER ION TEST KIT

Testing for ions with the Bioniser Copper Ion Test Kit is different from testing for pH or Total Alkalinity which require looking through the side of the test tube.

- To use the copper ion test look down through the top of the tube with the cap off.
- The colour comparison chart is on the top of the plastic bottle that contains the Copper Ion test kit.
- Go off the shading to judge copper level as computer colours rarely match our test hues.

1. Read instructions on the test kit.

- When taking a reading place the tube on the white part of the colour chart in the centre of the various comparison colours. (Cu ion levels). Leave the tube for a minute or two to arrive at the true reading.
- When the water sample is taken and the reagents added correctly remove the cap from the test tube and look down through the tube to obtain a comparative colour reading.

2. Test the water from different positions around the pool with the filter running. You should be getting the same reading each time.

3. The target reading is 0.5ppm to 0.7ppm. When 0.4ppm is reached the pool is adequately ionised for swimming.

- Reaching 0.5ppm or less should only take 1 day of continuous ionisation in a 50,000-litre pool.

4. If the ion reading climbs to 0.7ppm or thereabouts, turn down the ioniser current output or ionising time period.

- Test ion levels weekly. By doing this you will know the average ion loss from the pool (see step 3).

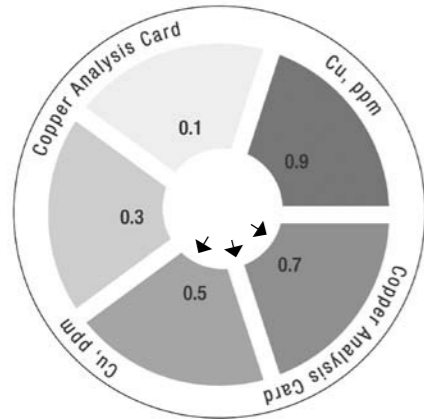
5. If the ion level drops to less than 0.5ppm increase the unit’s ionise time or current output enough to restore the pool to the 0.5ppm to 0.7ppm range.

- In a short time you will ascertain how long and at what level to run the ionising function each day so as to keep the pool at the correct levels of copper.

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BASIC POOL ROUTINE

6. **Keep ion levels between 0.5ppm and 0.7ppm.**
7. **Always adjust the pH to the correct level before testing for copper ions** as the test may be inaccurate if the pH is too high.



Why Test for Copper Ions?

- **The purpose of copper ion testing is to establish how long to run the ioniser each time the filter is operating so as to maintain a steady ion level of 0.5ppm - 0.7ppm.**

The unit should only need to operate for around 2 - 3 hours per day at setting about 50% of the current output. This is to maintain the required ion level in a 50,000 litre pool. Each pool is different so adjust until you have the settings required for your pool.

- Copper and silver ions are not affected by hotter water and have a high residual and therefore remain active for days and weeks even if the ionising unit is switched off.

However if the spa has not been used for some time care should be taken to check the levels of copper ions and Oxidizer in the water before using the spa.

SPAS

As spas have much less water volume than pools the required times and levels for each are less than for pools.

- The average time to ionise a 1500 litre spa for instance may be as little as 30 minutes at 60% of current output levels.

The same balancing rules for pools are used and small amounts of Oxidizer or sanitiser should be added.

If the water is being retained for several weeks or months in the spa then adequate levels of ions and Oxidizer should be maintained in the spa to control any nasties.

1. It is important to spend a few minutes a week to monitor the water balance and to learn the trends of the pool.
2. After a couple of weeks a clear pattern will be identified as to how many hours and at what current control levels the ioniser should function.
3. **Do not arbitrarily alter the pH,** or add algaecide, or try to change perfectly clear water. Give the pool water time to stabilise and remember simplicity is the key.
4. **Always keep the pH, Phosphates, Total Alkalinity, Calcium hardness and Copper ion levels at the correct levels.**
5. **Brush the pool or operate your auto pool cleaner once a week** and your pool water will settle down into a healthy sparkling body of water.

2 TESTS EACH WEEK

Test every week (adjust if required):

1. **pH 7.2 - 7.5**
3. **Copper .5 - .7**

Correct phosphates levels are as important as correct pH levels and are easily controlled by using a "phosphate remover". When levels of phosphates are above 1 in the pool water there is a risk of algae as phosphates are food for algae.

3 TESTS EACH MONTH

(If weather/conditions are very wet/windy then do these 3 tests weekly)

1. **Total Alkalinity 80 - 120**
2. **Phosphates (Algae Food) < 500 ppb**
3. **Calcium Hardness 150 - 250**

Follow these rules and check your Bioniser regularly to ensure it is operating correctly and the anodes are not worn. Do these simple steps and we promise your pool will be the source of joy it was meant to be.

Using a Bioniser to manage and control your pool or spa rewards you with sparkling and healthy water which is a pleasure to swim or spa in.

ANODE REPLACEMENT

The copper/silver mineral anodes are “sacrificial” and designed to slowly disintegrate, contributing mineral ions to the pool water.

- **After an average of 18 – 30 months,** (depending on respective conditions and pool size), the anodes will wear away and require replacing.

REPLACEMENT INDICATOR

- This will be apparent when the ion readings start to drop for no apparent reason. The red light on the control box (Maximum Output) will light up and the message “Check Anodes” will appear on the display screen .
- When this happens it is indicating that the anodes are wearing down.

NOTE: When the anodes are worn it will not damage the Bioniser. This is also true if the pump fails or there is no water passing the anodes when the Bioniser is operating – no damage to the unit or pool equipment will result and there will be no risk of fire or explosion as can occur with many salt chlorinator electrodes if they are left running.

ADJUSTING IONISATION WHEN ANODES WORN

1. If they are becoming worn reduce the current output until the red light goes out.
2. Increase the length of ionising time that the unit operates to compensate.

EXAMINING THE ANODES

NOTE: At this time it is important to check the anodes.

1. To inspect the anodes the cap may be unscrewed from the T-Piece. To do this detach the connecting wires and unscrew the cap.
2. Don't forget to have the filter turned off and the stop cocks/valves closed to prevent water from spurting out when you remove the cap from the T-piece.
3. Take care not to lose the O-Ring seal inside the cap as this prevents the water leaking when the cap is screwed onto the T-Piece.
4. **If the copper anodes are thinner than 10mm or less in any place they will probably require replacing.**

REPLACING ANODES

1. Ensure the O-Ring is in place inside the cap and screw on the cap taking care not to cross-thread it.
2. Try to end up with the two anodes obliquely across the flow pipe. Do not over-tighten. This should happen naturally without having to over-tighten the cap.
3. Replace the wires onto the connectors to the anodes, re-set the stop cocks and valves to allow water flow through the T-piece and the Bioniser is ready to use again.
4. Turn the pool pump on briefly to check for leaks. **On very rare occasions the anodes may have loosened inside the cap and they may leak slightly at the top.** Simply unscrew the cap, tighten the leaking anode (do not over-tighten) and replace the cap.
5. If the cap itself is leaking around the base unscrew it and check that you have not cross threaded it and or the O-Ring seal is correctly in place.
6. If this seal has shifted rub a small amount of Silicone Lubricant onto it, put it back in the cap and screw the cap back onto the T-piece.

HOW OFTEN SHOULD I CHECK?

We recommend checking your anodes for wear every six (6) months.

It is always a good idea to have a spare set of anodes on hand.

TO ORDER ANODES:

For replacement anodes call or email your local distributor or check the Bioniser website for details to order over the internet.

**www.bioniser.com.au
www.bioniser.com**

DO'S AND DON'T'S

Remember:

(DO NOT LET YOUR POOL MAN/SHOP OVERRULE THESE INSTRUCTIONS)

1. **Don't allow direct sunlight to shine onto the display screen. The LCD as it is called is not covered by our warranty if left out in sunlight. Remember it is very easy for us to ascertain if the LCD has been sun damaged if false claims are made.**
2. **Don't leave any old sand whatsoever in the filter** when replacing the old sand/medium in your filter. Make sure the filter is clean before adding the new sand.
3. **Don't operate an auto pool cleaner** (Kreepy Krawly/Barracuda etc) while initially ionising the pool as these will inhibit the water flow and therefore slow down the time it takes to achieve the correct level.
4. **Don't operate any waterfalls/features** while initially ionising the pool as these features may also inhibit the water flow.
5. **Don't add any chemicals** (despite what your pool man tells you) other than some liquid chlorine when required. Obviously acid and calcium for water balancing may be used. **(See water balance) Never use calcium hypo-chlorite.**
6. **Don't add any buffer or sodabarbonate** for the first week prior to or after first ionising your pool as radically altering the total alkalinity of the water is unnecessary with a Bioniser system. The T/A can drift lower and needs no adjusting until the levels reach 60. Incrementally adjust the T/A if necessary to between 80 – 120. The water with

Bioniser will not become corrosive at lower T/A levels. Lower T/A can help to maintain a low pH level.
7. **Don't use any flocculants (pool water polish/clarifiers)** that remove minerals from water as they will inhibit Bioniser operation. If at any time a flocculant is required to remove dust etc from your pool then we recommend a product called "**Bioguard Polysheen Plus**" as it is compatible with Bioniser. Specify a flocculant that does not remove metals from the water. Focus and Lo-Chlor Products have suitable flocculants.
8. **Don't backwash the filter too frequently** unless clearing trapped residue after shocking the pool. One backwash session every 3-4 weeks is ample (give a quick rinse after each backwash). Over-doing backwashing the filter causes "tunnelling" in the sand reducing the filter's effectiveness and reducing filter medium.
9. **Never open the control box. Unplug it before removing it from its usual position.**
10. **If ever another algaecide is used in the pool make sure it is a copper based product.**
11. **Do check the pH and Copper levels** at least once per week. Check pH every 2 or 3 days if it rises rapidly or until it becomes trained to stay low.
The Bioniser pH Boss will eliminate pH problems and irksome testing. See www.phboss.com.
12. **Do increase the bioniser current control (increase ion production)** to compensate for times of heavy rain and bather load that may deplete the ion level and put the pool at risk of algal attack. The Boost function is there for this purpose also.
13. **Do try to keep the pH between 7.2 and 7.5** as copper is less effective against algae when not within this neutral range.
14. **Do try to keep the calcium hardness level around 200 at all times unless you have a fibreglass pool so 150+ is adequate.**
15. **Don't take advice from anyone who is not experienced with ionisers.** This type of expert opinion is often prejudiced by the criteria surrounding costly pool chemicals. Additionally, recommendations more often than not reflect the criteria followed with chemical based pools and are not applicable to ionised water. Be guided by these instructions at all times.
16. **Don't add any clarifiers, flocculants or metal removers** that contain ALUM as they will eliminate the beneficial mineral ions generated by the Bioniser.
17. "Shocking" the pool after initial start-up should only be required if the pH and copper levels in the pool have been let lapse and created an algal attack.
Use of a 'pH Boss' will eliminate any algae attack that would be caused by your pools pH being too high.
 - This can occur during times of extreme heat and/or rain. In this instance a one-off heavy dose of liquid chlorine to dissolve the coating is the cheapest and easiest solution. This heavy concentration of chlorine will dissipate in a day or two leaving the pool ready to swim in once again. **(Refer super chlorination section)** The Boost function will often be sufficient to correct this condition.

OPERATIONAL CHECK

It is highly unlikely that your Bioniser will not generate ions. Should there be any doubt the following quick check will confirm if the unit is working or not.

1. Put 10cm of pool water in a plastic container or bucket.
2. Remove the cap from the T- Piece and place the anodes into the water in the bucket. Do not immerse past the tops of the anodes.
3. Turn on the Bioniser and ionise the water for several minutes.
4. Note the **self clean** light glowing and the **screen display**. This demonstrates that the unit is working.

5. After several minutes in ionise mode use the **copper test kit** to check the water in the bucket. It should show copper ions are now present in the water.
6. If there are no ions present in the water see point 4 the **troubleshooting** guide before calling your Bioniser distributor/supplier.
7. If you have been adhering to the **simple pool regimen** that we suggest then any problems are rare and also easily rectified.

You may also contact your distributor via the Bioniser website or email facility.

www.bioniser.com.au

TIPS FOR TROUBLE-FREE SWIMMING

1. **Do not use undissolved and/or granulated chlorine or chlorine tablets in an ionised pool. It may have the effect of forming a crust effect on the surface of the anodes and reducing the anodes life and reducing ion output.**

2. **When replacing the mineral anodes,** ensure that they are free of water. Ensure also that the O-Ring is in place inside the cap before screwing it onto the T-piece.

3. **Keep test kits in a cool place** (not the Fridge) in hot weather/hot climates. Store out of direct sunlight.

4. **The use of a pool cover is recommended** as it saves time and effort in keeping debris out of the pool whilst the pool is not being used. It can save 30,000 litres or more of water loss (evaporation) per year on the average size pool.

Note: www.discountpoolcovers.com.au for great quality and prices on pool blankets and rollers.

5. **Take a few minutes each week to thoroughly brush the walls, steps and floor** of the pool and clean the skimmer box and remove leaves and debris from the pool. This small chore will repay you repeatedly by ensuring a sparkling clean swimming environment at all times.

6. **At certain seasonal times of the year (spring/summer) the pool may tinge green or develop green residue** on the bottom. This can be mistaken for algae but is often **pollen**. The easy test is: if it is slimy it is likely to be algae.

7. **Using chlorine to try and kill “algae” (really pollen) will only bleach the pollen so it disappears.** It is likely to reappear in your pool days later. If you once more mistake this for algae and continue the chlorine cycle until the pollen season is finished you will suffer the effects of too much chlorine and your pool will be out of control.

8. **To rectify this problem use a flocculant** that does not remove minerals or metals from the water – e.g. **“Bioguard Poly-sheen Plus on ‘Focus’ Liquid Flocc”** is recommended. This process may have to be repeated several times if the pollen is still in the environment and there are trees and shrubs surrounding your pool.

9. **We strongly recommend the use of an automatic pool cleaner** once a week or so in the pool. This will save a lot of time and effort and also keep the pool clean and free of any algae causing contaminants.

10. Do not operate the auto pool cleaner or any water features during the ionising/start-up phase as they slow the water flow considerably. The pools that operate best always have very good water circulation so limit the auto pool cleaning times if possible.

11. **We recommend using “Glass” Filter Medium in your filter.** This medium is superior to other mediums such as river sand or zeolite in our opinion. River sand is not a quality medium and is not recommended. Make sure all old sand/medium is removed completely before replacing it with the new medium in an existing filter. This is important!

12. **If you have a heated pool** (this especially applies to indoor pools) that uses a pool blanket when the pool is not in use it is recommended that you maintain a residual Oxidizer level (hydrogen peroxide/chlorine) at minimum .5ppm in the water. This is to prevent any harmless environmental bacteria from hiding beneath the pool blanket thus causing a “smelly sock” type of odour. **We recommend the Bioniser Eco-Oxidizer to take care of this.**

TIPS FOR KEEPING YOUR POOL CRYSTAL CLEAR

WATER STRESS – PREVENTION BETTER THAN CURE

As algae can diminish the copper levels in water it is important to use the Boost function of the Bioniser to compensate for periods of heavy rain, wind and/or abnormal pool load (i.e. lots of bodies in the pool all day).

These conditions rapidly increase the amount of algae spores that would normally find their way into your pool. By doing this before or soon after the rain/wind/extra load is experienced you are prepared for any increased loading on your pool.

This action will exponentially reduce the chance of an algal attack stemming from these conditions.

DON'T NEGLECT YOUR FILTER.

The filter's primary responsibility is to remove fine suspended debris from the water. **If it is not maintained properly, cloudy water will be a constant problem.**

- Sand filters should have their media/sand replaced every two or three years. (Use Glass Filter medium for swimming pool sand filters).
- **When replacing the medium in the filter make sure that all of the old medium is completely removed from the filter. Up ending the filter and hosing out is one way to ensure this. This is important! Take care not to damage any laterals or seals inside the filter if changing filter medium.**

- **We don't recommend D.E. filters** as the medium can double the number of anodes required for efficient operation.
- For Cartridge Filters clean cartridges regularly and inspect for holes or wear. Regardless of the filter type, damaged or missing gaskets or any incorrectly fitted parts can be responsible for cloudy water. **Many water quality complaints are finally traced to the pool's filter.**

REMEMBER WATER BALANCE.

Proper water balance is necessary for water health, clarity and also water hue. **Maintain the pool water as outlined in the Start-Up section.**

We recommend the addition of a 'pH Boss' to your pool. PH problems and troublesome testing now disappear.

SKIM THE SURFACE.

Use a surface skimmer net to collect all floating debris. A leaf net works best for this particular task. This task can be greatly minimised with a properly functioning pool filtration system with adequate flow and a properly functioning skimmer weir. This inexpensive device increases the velocity of the surface water into the skimmer; thereby ensuring its ability to remove surface material from the pool, keeping it crystal clear. It acts as a one-way street allowing debris in but not out. This device is often underestimated. Installing one greatly reduces the amount of time required to clean the pool properly and keep it clean.

SUPER-CHLORINATION

To super-chlorinate your pool apply two (2) litres of liquid chlorine to every 10,000 litres of pool water. Thoroughly brush the walls and floor of the pool and run the filter for at least 24 hours. It is also advised to treat the pool water for phosphates at the same time.

1. Backwash several times during and after this period.

2. Turn off the filter for at least six hours (or overnight) to let any residue settle to the pool floor and then vacuum any residue to waste before resuming normal filter cycle. This will ensure that all algae are removed from the pool.

3. Check that the pool water is balanced as shown in the Start-up section.

4. Commence normal pool operation again.

CIRCULATION

Proper circulation of the pool water is vital to the health of the swimming pool water and to the prevention of algae. Long periods of time between filtering can give algae time to protect itself with a wax coating thus resisting the copper and infesting the pool.

We strongly recommend filtering to a minimum amount per day to keep the water in a healthy condition. It is not about 'filtration'. It is about 'circulation'. A Bionised pool can be circulated/filtered to bare minimum time periods. Let your eyesight be the guide to whether the pool water is clean and healthy.

We also strongly recommend the use of "the circulator". This great addition to your pool will save you many hours of filtering time, a good deal of money, wear and tear and tons of CO² emissions. No pool should be without them and they fit 90% of all pools. An 8 hours per day filtering cycle will reduced by around 3 hours per day with the circulators fitted to your pool.

Visit www.thecirculator.net.au for information and purchase.

BIONISER TROUBLESHOOTING

1. **If the pool water becomes cloudy** – Add a sufficient amount of Oxidizer to the pool according to instructions. If the water fails to restore its sparkle by the next day read on.

- **N.B. Cloudy water is generally an indication that the water is out of balance.** High pH, high total alkalinity and/or deficient calcium hardness levels can produce conditions that cause cloudy water.
- Test pH, total alkalinity, and calcium hardness and adjust to the recommended levels. A filter in need of backwashing/cleaning and/or other filter faults can also cause cloudy water.
- If the water remains cloudy after these checks then use a compatible flocculant such as Bioguard polysheen plus as the cloudiness will be dust particles or the like that are not removed by an Oxidizer.

2. **No apparent copper** in pool after test with Bioniser Copper test kit:
See “Operational Check” section!

Please do this before calling your distributor as this information will enable them to quickly rectify any malfunction.

3. **If there is no ion reading** in the water check that an **incorrect flocculant** has not been used.

Also check that there is not high amounts (**>80ppm cyanuric acid**) in the water.

If there is either or both of these problems then only by diluting the pool water (by up to 50%) will the ioniser become operational.

If you are running a new pool with a cement/quartzon type finish then it may be that the surface has released small particles/dust (especially if you are brushing the pool quite frequently) and these have been caught in the filter and are causing the ions to be trapped. In this case after pouring the acid into the skimmer box attach a “sock” to the basket in the skimmer box. Filter the pool normally for several weeks and clean and replace the “sock” regularly during this time. This should remove most of the particles from the filter and the ions should then be released into the pool. The “socks” are inexpensive and are readily available at your nearest pool shop.

4. **Do a bucket test (see page 20 Operational Check) If there is a positive ion reading** in the bucket, then **backwash the filter** for 15 seconds or so and then stop.

Then backwash the filter again for a second or two and capture a small amount of the backwash water. The sight glass on or near the filter is ideal for water sample collection.

Test some of this water with the Bioniser test kit using the small vial provided.

If the ion reading is high then the filter sand/medium is trapping ions. Backwash the filter and put about 500 ml of Hydrochloric Acid into the skimmer box with the filter running. Wait for 15 minutes and test the copper in the pool again. If the copper reading is still very low then change the sand to Glass Medium for pool filters.

FURTHER TROUBLESHOOTING:

5. **There is no need to adjust the total alkalinity (T/A)** unless it drops below 50 - 60. If raising the T/A try to keep it in between 80 – 120. The water may tinge clear green if the T/A gets too low for any period of time. The ioniser will not cause any corrosion if the T/A is low (under 60). The levels of water balance that we prescribe fall into the area that is neither corrosive nor scale forming.

CHEMICALS

WARNING...Chemicals usually used for swimming pool maintenance require care in handling. Bioniser has the benefit of allowing the normal levels of chemicals used for algae and bacteria control to be substantially reduced whilst delivering spa and pool water in a sparkling healthy condition.

Treat and choose the chemicals for your spa and pool wisely.

- **For instance the harshness and health risks of Chlorine and Stabiliser (Cyanuric acid) can be largely negated by the use of Hydrogen Peroxide or the Bioniser ‘Eco-Oxidizer’ instead.**

PROBLEM:

Clear water but no/low copper reading.

SOLUTION:

1. Check Anodes for wear.
2. Increase ionising time or current output.
3. Check that the Bioniser is switched on.
4. Check that the Bioniser program is still set.
5. Check pH and Total Alkalinity levels.
6. Check that the pump is working.

PROBLEM:

The Bioniser unit is not working no display.

SOLUTION:

1. Check there is power to the unit.
2. Check the reset button on the bottom of your control unit.
3. Check the 4 amp fuse inside the unit.

6. **Do not use flocculants that remove metals from the water. Do not add soda bi-carb (buffer) in the week before and after start-up unless the T/A is low. (Below 50) Only raise the T/A to sit within 80 – 120. Any higher level may excessively bicarbonate the water.**

PROBLEM:

Green clear water but no algae

SOLUTION:

Test T/Alkalinity - green clear water can be an indication that T/A is too low - adjust the T/A back to the 80 - 120 level and the water will return to normal in a day or so.

PROBLEM:

My Copper Reading is low / zero

SOLUTION:

1. Check to see that you have not used a flocculent that removes metals from the water. If you have empty half the water from the pool/spa and refill - adjust the bioniser to start-up levels and reionise the pool water to normal ion levels. Once normal levels are achieved return bioniser to normal operating mode.
2. Check your T-Piece position is not too close to any 90° bends in the pipe ahead.

PROBLEM:

My red light is Flashing. The red light flashes when water conductivity is low or anodes are worn from use. Conductivity can be low due to a) recent rains or b) pool water level being topped up.

To check conductivity adjust “Output %” setting down slowly. If red light goes out before zero output is reached conductivity of the water is low.

SOLUTION:

If anodes worn from use, replace anodes. If low water conductivity add a bag of pool salt to pool water and brush until dissolved.

REPLACING the FUSE (a very rare thing):

1. Disconnect power from the unit by switching off the power at the source and removing the plug.
2. Remove the screw covers at each corner of the control unit and undo the screw in each corner.
3. Carefully lift off the top cover from the unit and sit to one side to allow access to the circuit board in the base of the control unit.
4. See location of the 4 amp fuse in the photo below.
5. Carefully remove the fuse taking care not to damage any components in the unit or on the circuit boards.
6. Check the fuse and replace if blown. The fuse will only blow if too much current is applied to the control unit and it is a protection device that prevents damage to the rest of the electronic circuitry and components.
7. If the fuse is not blown then carefully replace it. Re-fit the lid of the control unit, tighten the screws and replace the screw covers in each corner.
8. Reconnect the unit to the power source and switch on.
9. If the Bioniser still does not show a display or will not operate then remove the unit (after disconnecting the power and pulling out the plug as well as

disconnecting the power cord attached to the unit from the pump) and send it to your supplier.

10. Pack the control unit carefully with protective material and mark FRAGILE before sending to your supplier. Please include the product warranty form or proof and date of purchase with the Bioniser unit being returned.

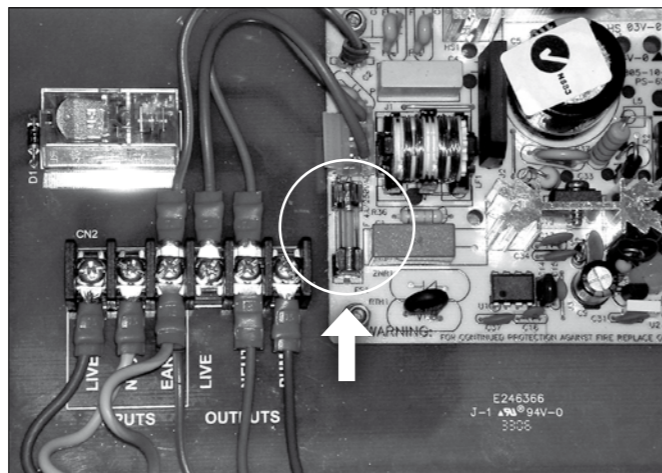
These fuses are a long life component and will only blow when a current is applied to the circuit that exceeds tolerance levels.

In all probability fuse replacement will never happen to your Bioniser.

The fuses are not covered by the warranty unless a fault with manufacturing, assembly or componentry is the cause of the destruction of the fuse.

For the ultimate in pH control see our "pH Boss" on www.phboss.com and you will never test your pH again... it will be all done for you... automatically.

The fuse type is: 4 amp/250V Fast Blow, MT05 Style



THE 2 THINGS ONCE A WEEK RULE

There will be no need to ever consult these pages on trouble shooting if the **2/3 Things Rules** (once a week) and three tests every month are adhered to.

Five minutes per week and you will have a trouble free pool. Really unless your Bioniser Control Unit develops a fault then your pool will stay pristine week in month out. In the unlikely event there is a problem then this trouble shooting guide will have you back on track in no time.

Apply the 2/3 Things Rule and enjoy your pool everyday – forever and a day!

NOTE: If your pool pH increases by a large amount each week (7.2 - 7.8 or more) then just add some extra acid into the pool mid-week and this will keep the pH down. Then you may test and adjust on the weekend.

2 TESTS EACH WEEK

Test every week (adjust if required):

1. pH 7.2 - 7.5
2. Copper .5 - .7

Correct phosphate levels are as important as correct pH levels and are easily controlled by using a "phosphate remover". When levels of phosphates are above 500ppb in the pool water there is a risk of algae as phosphates are food for algae.

ONLY 3 TESTS EVERY MONTH

(If weather/conditions are very wet/windy then do these 3 tests weekly)

1. Total Alkalinity 80 - 120
2. Phosphates (Algae Food) < 500 ppb
3. Calcium Hardness 150 - 250

Follow these rules and check your Bioniser regularly to ensure it is operating correctly and the anodes are not worn. Do these simple steps and we promise your pool will be the source of joy it was meant to be.

Using a Bioniser to manage and control your pool or spa rewards you with sparkling and healthy water which is a pleasure to swim or spa in.

BioniserTM

Non-toxic Bio-Effective
Swimming pool and Spa Control

SAVE THE ENVIRONMENT
SAVE TIME & MONEY
SAVE YOUR LONG-TERM HEALTH

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INSTRUCTION BOOK