

bioCycle

Tasmania

Operator's Manual



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Sales and Service: 24hours 7 days



Manion Plumbing
18 Invermay Road
Invermay 7250

Postal:
PO Box 4044
Invermay TAS 7248

Ph: 03 6334 0617
Fax: 03 6334 2593
Email: info@manionplumbing.com.au

**24 Hours Emergency Contact:
0400 340 030**

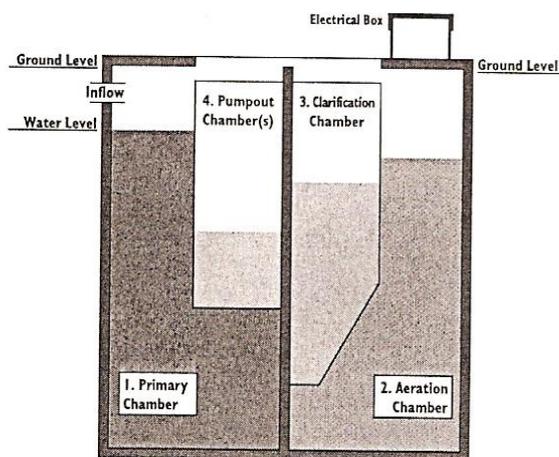
Introduction - What is a bioCycle

bioCycle is a four stage miniaturized waste water system in one tank. It accepts all the wastewater from your dwelling, processes the effluent to a high standard then automatically disposes of it into an ornamental garden. It is designed to cater for 6-8 people in permanent residence when using the system as per this manual.

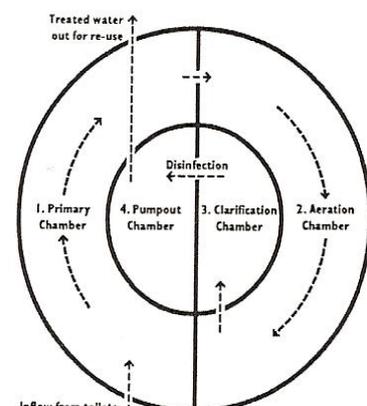
The reinforced concrete tank is divided into 2 large compartments and 2 small ones.

1. The first compartment is in effect the first chamber of a septic tank and uses anaerobic bacteria to break down the solids. The effluent enters the second chamber via a controlled flow device. This evens out the flow to some extent, e.g.: when a bath is discharged.
2. The second large compartment has air forced into the bottom of the tank by the blower. This operation converts the bacteria to aerobic. There is a quantity of 'media' installed for the bacteria to grow on. The aerobic bacteria chew up the remaining solids the septic bacteria can't remove. The effluent is discharged into the first small chamber (clarification chamber)
3. Before the now clean effluent enters the pump chamber, it passes around special chlorine tablets. (If the effluent is to be disposed of in ground then chlorine is not needed) The pump is operated via a float switch to pump the effluent through piping then out through sprays and drippers.

Note: 50m of irrigation line with sprays are supplied as standard equipment but we design sophisticated irrigation systems to suit your application. Alternatives are 'in ground' irrigation; above ground dripper lines or automatic line change either at each pump start or after about 4 minutes of pumping.



Cross Section of Typical System, showing Displacement Flow (Diagrammatic).



Top View of Typical System, showing Process Flow (Diagrammatic).

The Alarm Panel



The bioCycle alarm panel is normally located inside the house. If the system malfunctions, the alarm will sound and either the “Air” or “Water” light will illuminate.

If this occurs, consult the “Fault Finding” section on page 7 in this booklet.

The alarm plate appears much like a double light switch, it is ‘audio/visual’ and has 2 lights marked water and air and a ‘mute’ button. When the alarm sounds, take note of whether it is water or air then turn to mute until the problem has been attended to.

Note: The “MUTE” switch will stop the alarm sounding. Always remember to return the switch to “Normal” after the problem has been rectified.

*****Should the Alarm sound, please follow the instructions in “Fault Finding” on page 7 if these procedures are unsuccessful then please call our office on 6334 0617 for our serviceman to attend**

Responsibilities and Legal Requirements

Regulating bodies (State and Local Governments) impose certain requirements on owners of sewerage treatment systems. The following is a basic checklist as a guide only – please contact your local council for further information.

- The system may not be used until the site has been inspected and the Council considers that effluent and sullage can be disposed of completely and without danger to health.
- Unless permitted by local authorities, irrigation water should not be used on food crops, vegetables etc.
- There shall be no irrigated water run-off from the allotment to the adjoining properties, public places or reserves.
- The owner shall enter into a service contract with the manufacturer, distributor or their agents considered to be competent by the relevant authority for servicing of the unit at quarterly intervals
- The service contractor shall make adjustments to each unit, its ventilation and irrigation system when directed to by the relevant authorities.
- The yard or garden areas must be turfed and/or

landscaped to the satisfaction of the relevant authorities before the system is used for irrigation purposes.

- The owner of the system is entirely responsible for its' operation and maintenance. The existence of a service contract does not transfer the responsibility to the supplier or its' agent.
- The homeowners and occupiers are legally responsible to keep their onsite system in good working order.

***** Irrigation Should Not Be Used On Vegetable Gardens**



Handy Hints

Do:

- Please read and understand this manual. The use is just a common sense approach.
- Use recommended biodegradable detergents and soaps. Some supermarkets sell detergents marked suitable for septic tanks but upon inspection, it will be noticed there are chemicals in the formula, which will inhibit your bacteria. Use low or nil phosphate detergents, low sodium detergents in dispersive soils.
- In the event of the alarm sounding, there are several actions to take before calling for service. (See instructions under Fault Finding)
- Spread your wash over several days, definitely no more than two (2) per day but preferably one (1). Avoid using both the dishwasher and clothes washer at the same time or in conjunction with showers or bath water release, the latter is very important.
- Scrape all dishes to remove fats and grease before washing.
- Keep all possible solids out of the system.
- Only wash when you have a full load whether it is clothes or dishes.

- Take showers instead of baths
- Space out water usage as much as possible
- Have your grease trap serviced regularly (if applicable)
- Keep the irrigation area as free as possible from weeds and high growth
- Keep any surface drains above the irrigation area operational
- Keep warning signs visible to persons accessing the area.

Do Not:

- Dispose of sanitary items, condoms, plastics and newspapers or use a garbage disposal unit at the sink.
- Use acids, strong alkaloids, caustics, bleaches, Napi San or any material or chemical that will inhibit the friendly bacteria in the system from working for you.

If the bacteria stop working to any degree, the system will start to smell but more importantly, the final effluent will not meet the stringent quality requirements set down by the Department of Health.

It is very important, excessive amounts of greases and oils are not flushed down the drain. These must be collected separately and otherwise disposed of.

- Exceed the maximum design load or subject the system to “shock loads” e.g.: doing several washes one after the other. It is advised to spread the washing over the week.
- Do not turn the power to the system off at any time. If you intend holidaying for longer than three (3) months then please contact us and we will ‘put the system to sleep’ until just before you return.
- If anyone is on antibiotics please contact us. The medication will inhibit the bacteria and extra material will need to be added to the system to overcome this problem.
- Do not allow children to play on the irrigation area, access should be restricted.

The owner has certain responsibilities in relation to the maintenance and everyday running of the bioCycle system, which are unable to be transferred to the service provider.

Please call our office if you have any queries or difficulties.

*** **Take Showers Instead of Baths Where Possible**



*** **Spread the Washing Over A Number Of Days**



Fault Finding

These may occur if the system is not maintained or used correctly. The signs are:

- Waste water ponding or area wet or soggy
- A smell of sewerage near the tank or the irrigation area
- Drains and toilets run slowly
- Grease trap full or blocked (Commercial Systems Only)

A Quick Guide

Many minor problems can be rectified by the owner taking simple corrective action.

The Alarm Sounds and the “AIR” Light Illuminates

- Remove the lid from the “box” on top of the tank
- Check if the blower inside this box is running, you will hear a slight hum
- Check if the overloads have “thrown”. To check this, push the small black pieces down (they barely move). This will re-set them.
- Check if the small clear plastic air tubes have parted, if so, gently insert one back into the other
- Check if the end of the plastic line has broken free of the electrical box, this will make the alarm sound.

- If the blower is not running and the lines etc are ok then call our office for assistance.
- Replace cover at all times

The Alarm Sounds and the “Water” Light Illuminates

- Check the overloads have not tripped as per the instructions for the blower.
- Check the filter on top of the tank is clean. If dirty, clean carefully with an old toothbrush. Very occasionally the float will stick and not allow the pump to start.
- Check for an irrigation valve which may have been turned off
- Check for a kinked line
- Check for blocked sprayers
- Carefully open the “test tap” near the filter, this will determine whether the pump is operating or not.
- Remove the manhole cover and check the height of the water in the central chamber holding the pump. The pump should be visible, if not, turn the power to the pump (inside the box) off for a few minutes. The pump has an inbuilt thermal overload but will not reset unless the power is turned off.

If none of these actions starts the pump, call our office for assistance.

- Remember to thoroughly wash your hands
- Turn the alarm back to normal as soon as light goes off.

Note: If the pump re-starts after all these actions, it will take a little while for the water to lower to the point where the alarm will cease to sound.

We are here to help at all times so if you have any concerns, please call us.

Resetting the Circuit Breaker

The electrical circuitry in your bioCycle allows for some variations in power supply, but problems can still occur. Blackouts, supply fluctuations, power surges or voltage drops – all more common in rural areas – may trip the circuit breaker, shutting down the system and triggering the alarm.

If the overload circuit breaker in your switchboard has tripped to the “Off” (down) position, this does not necessarily indicate a fault with the system – it is the electrical system working to protect the equipment within the system.

If, after a power cut or voltage fluctuation, the system alarm does not clear itself within 30 minutes, it may be necessary for you to reset the tripped circuit breaker.

To do this, open your switchboard and look for the circuit marked

“Aerobic” (or whatever your electrician has named it). There will be two circuit breakers. If one of them is in the down position, it is off. To reset, lift the circuit breaker toggle to the up position.

Upon doing this, the blower should immediately re-start and the system should function normally. The alarm may take 30 minutes to clear. Don’t forget to reset the alarm to NORMAL.

If the circuit breaker will not stay up contact our office. You may need an electrician.

Irrigation Does Not Work

Possible causes:

- 1) Tripping of a circuit breaker/Power failure.
- 2) Blocked irrigation filter
- 3) Blockage in the irrigation line
- 4) Kink in the irrigation line
- 5) Pump Failure

Action:

Check as per previous page

Unblock filter

Flush out irrigation line

Unkink line – if necessary cut out damaged section and rejoin

If all above have been checked but irrigation still does not function, a service call is necessary

Excessive Foaming

Possible Causes:

- 1) Too much detergent being used in laundry
- 2) Too many washes

Action:

Use recommended quantities of detergents

Adjust loads – only do one or two washes per day

Persistent Odours

Possible Causes:

- 1) The first tank in the system has not matured yet
- 2) Too much water is being discharged through your household fittings at one time.
- 3) Excessive chemicals and/or disinfectants are being used in your residence

Action:

Contact our office for advice

Modify your water use patterns to avoid heavy loads on the system – e.g. avoid using the bath and washing machine at the same time

Please avoid and the system will recover.

- 4) E-duct vent or S-bends are not suitable constructed
- 4) Exposed areas in tanks, seal degradation
- 5) The system is required to do more than it is designed for
- 7) The venting system on the house is too low and/or is over a window

Refer to your plumber or contact our office for advice

Apply a light mix of sand/cement of similar mix

Refrain from overloading

Extend the vent pipe higher

Medo LA 80 Blower



Easy Pump 750



Quarterly Maintenance

Council bylaws dictate that we must service the system every 3 months. The need for mandatory servicing is to ensure the system does not create a health hazard for you and your family.

Servicing Entails:

- Replenishing the chlorine tablets
- Checking the whole system for faults and rectifying where necessary
- Checking the irrigation
- Desludging the inner chamber back to the primary when necessary.
- Leaving a written report with the client and sending a copy to the relevant council.

The charge for the quarterly service is usually added to your rates but in some areas we bill directly.

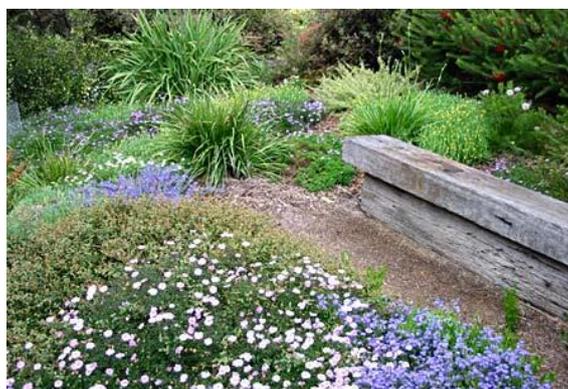
The primary (septic) chamber will require pumping out when the sludge reaches a certain depth or the top sludge becomes too thick. Usually we arrange this operation and pass the cost on to the client. If the system is used as per this manual, the client can reasonably expect the periods between pump outs to be from 9-12 years. If guidelines are not followed this can result in the tank requiring pump outs in as little as 9 months.

Our serviceman will advise you if a pump out is necessary.

Where the system is the older type with a fiberglass division, special precautions must be adhered to, failing which extensive damage will be done. Usually we supervise the

pump out and fill with water. If we don't supervise then we take no responsibility for any damage, which may eventuate.

bioCycle Tasmania does not take any responsibility for any system which has been serviced, adjusted in any way, pumped out or in any way interfered with unless by an approved service provider.



Final Effluent Quality

A properly maintained system discharges effluent (water), of a very high standard, often exceeding the minimum standard set by the Department of Health.

The minimum standards are:

- BOD₅ (Biological Oxygen Demand over 5 days); less than 20ppm (parts per million)
- NFR (non filterable residue), less than 30ppm;
- Ecoli, less than 10 per 100ml
- 'Free Chlorine' count of not less than 0.5 ppm

If, at any stage, the system is not achieving these results we must advise you of the problem and ask your help to overcome it. At all times the system **MUST** conform.

The Chlorinator

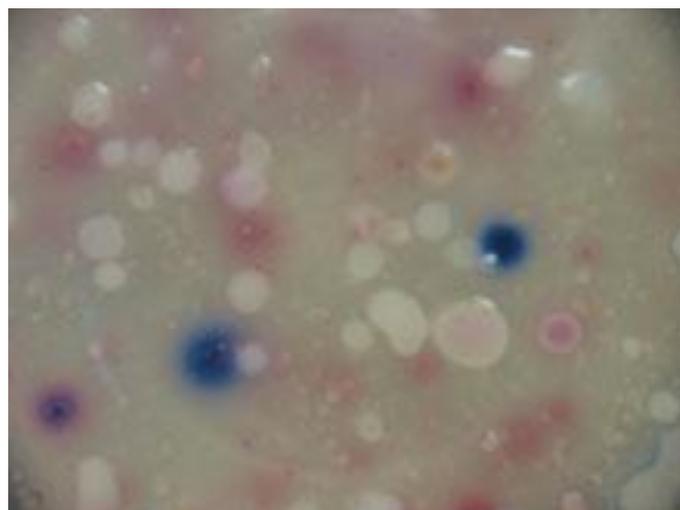
Is a specially designed plastic unit fitted between the clarification and the pump chambers. 200gm Trichlor chlorine tablets are inserted into this in such a manner; all effluent must pass around the tablets before entering the pump chamber. They kill all bacteria down to less than 10/100ml provided the front part of the system is functioning, as it should.

If 'in ground' irrigation is utilized, then no chlorine is used.

Water Test:

Blue Colonies – E Coli

Pink Colonies – General Coliforms



Detergents and Cleaning Products

Many popular detergents and cleaners can upset the delicate biological balance, which is essential for your bioCycle system's efficient operation. They can damage the bacteria processed within the system, resulting in odours and other potential problems.

As a toilet and surface cleaner, hot water has been proven to be the most effective as a disinfectant. Where possible this should be utilized in preference to ANY chemicals.

Among the products which we **DO** recommend using in the bioCycle system are:

Washing Powders, Liquids & Detergent:

Softly, Cold Power, Bio Soak, Blue Gum, Rinso, Embassy, Hurricane, Surf, Woolmix, Omo, Fab, Castle, Launda, Scotts Fabric conditioner, Purlite, Tri Nature, Care Liquid, Top Wash, More, Fluffy, Add Soft, Amway SA8 Liquid, Citrus Resources, Love & Care, Sunlight, Parry's.

Washing Up Detergents:

Kit, Green Apple, Dishdrops, Bushlands, Top Wash, Dominant, Adds, Sunlight, Palmolive, Trix

Dishwasher:

Castle, Morning Fresh

Shampoo & Conditioner

Most Brands (Avoid anti-bacterial brands)

Toilet Soap, Moisturisers:

Most Brands

Toilet Tissue:

Most Brands



Among the products which we **DO NOT** recommend using in the bioCycle system are:

- **Anti-Bacterial Solutions**
Milton tablets, Napisan, Nursil, Milton-Nursery Land, Nappy Plus, Pine-O-Clean, Nappy Soft, Nappy Fresh, Toilet Duck
- **Bleaches**
Domestos, Lemon Budget, White King, Grade, Marvolinn Bleach, Zixo Premium, Lemon Bleach
- **Toilet Cleaners**
Harpic, Ajax, Blue Loo, Aussa

Please remember that your bioCycle operates on biological digestion. Do not allow products to be introduced into (or processed by) your bioCycle, which will harm the condition of the animated bacteria in your bioCycle.



Alternative Cleaners:

Bathroom:

Fixtures: A moist cloth with some bi-carb can be used to wipe over bathroom fixtures

Shower Curtains: Soak shower curtains in white (or cider) vinegar, scrub if necessary and sun dry.

Shower Screens: Fixed shower screens with mildew can be treated with the following mixture with very good results: Mix equal parts of pure soap, starch, salt and lemon juice. Rub the paste on the mildew area, allow to dry then scrub off.

Tiles: Tiles can be cleaned with plain household vinegar to remove mildew.

Grout Cleaner: Try a little toothpaste on an old toothbrush, and brush onto discoloured white grout area.

Bathtub/Hand Basin: Rub the bathtub and hand basin with a cloth moistened with vinegar to remove grime.

Hair Spray: Hair spray buildup can be removed from walls and mirrors with methylated spirits, then wiped clean.

Laundry:

Pre-Wash: Bi-Carb soda can be used as a pre-soaker, for soiled nappies, removing mould or just stubborn stains. Dissolve 45g of bi-carb soda in warm water, let soak, wash in hot soapy water then dry in sun.

Whitener: Mix 2 teaspoons of bi-carb into half bucket cold water and soak for 30minutes. Wash normally.

Final Rinse: Add half a cup of bi-carb soda to clothes in the final rinse cycle for clean and fresh smelling clothes.

Grass Stains: Soak article in diluted eucalyptus oil for at least one hour before washing. DO NOT empty the container of used eucalyptus oil down the drain into your bioCycle.

Perspiration Stains: Place two tablespoons of bi-carb soda in half a bucket cold water and soak for at least one hour before washing. Bi-Carb soda will not harm your bioCycle unit.

Blood Stains: Soak in a bucket with a few drops of cloudy ammonia in a litre of cold water. Allow soaking prior to washing. DO NOT let the container of used cloudy ammonia drain into your bioCycle unit. Dispose of separately.

Heavy Dirt and Grime: Wash with usual washing powder (warm water), but add a cup of kerosene to the wash as well. Lightly starching the clothes helps to prevent them absorbing too much dirt and grime next time round.

Kitchen:

Oven Cleaner: Mix one cup of warm water and half a cup of cloudy ammonia in an ovenproof dish. Heat your oven to moderate heat then place the mixture in the pre-heated oven for 15 minutes, turn oven off but while still hot, sprinkle the surface with bi-carb soda, allow the bi-carb to absorb the grease and grime. Simply wipe off when cool. Or apply a paste of bi-carb and water to a warm oven and leave overnight for a dirty oven, or apply paste to a cold oven then warm for 30 minutes and wipe off for regular cleaning.

Stubborn Saucepans: For dirty saucepans that don't respond to steel wool, add cold water and one to two tablespoons of bi-carb to the pot and bring to the boil. When cool, clean off with steel wool.

Drain Cleaner:

Dissolve two heaped desert spoons of bi-carb soda in one litre of boiling water, tip down the blocked sink, hand basin or tub and allow to standing overnight.

***** Bi-Carb Soda and Water are Excellent Alternative Cleaning Products**



***** Vinegar is good for cleaning in the bathroom**



Recommended Plants For Use With An AWTS

Ground Cover

Ferns
 Preitia Pedunculata
 Mosses
 Scaecola Albida
 Isoltoma Axillaris
 Hibbertia Procumbens
 Lobelia Alata
 Scleran Thus Biflorus
 Viola Hederacea
 Mazus Pumilo

Plants to 1m

Boronia Muelleri
 Prostanthers Cuneata
 Brachyacome Muitifida
 Westringia Senifolia
 Restio Astralis
 Bavera Rubioides



Plants to 2m

Baeckea Linifolia
 Bavera Sessili Flora
 Banksia Ericfolia
 Grevillea Australis
 Banksia Robur
 Grevillea Victoriae
 Correa Aemula
 Hakea Salicifolia
 Prostanthera Linearis
 Hakea Seriosa
 Leptosperum Flavescens
 Leptosperum Scoparium



Plants to 2m Plus

Nothofagus Cunninghamii
 Eucalyptus Globulus
 Acacia Fioibunda
 Eucalyptus Dulchella
 Acacia Elongata
 Eucalyptus Botryoides



Plants to 2m Plus Continued

Casuarina Cunninghamiana
 Eucalyptus Ovata
 Callistemor Citrinus
 Telepea Truneata
 Callistemor Pallidus
 Tristania Conferta
 Callistemor Siegeri
 Melaleuca Thymifolia
 Melaleuca Armillaris
 Melaleuca Styphelioides
 Melaleuca Laterita

