



*Engineering the future of wastewater*

# Septic Treatment Systems

B33 / B52 / B90

**OWNER / OPERATOR MANUAL**



### **Important**

We recommend you keep this Manual with other important household manuals for future reference. If you have questions regarding the safety and operation of your Austin Bluewater Septic Treatment System contact your Local Authorised Service Technician.

- Do not attempt to service components of the system yourself, call your Accredited Service Technician.
- Only Authorised Service Personnel are to remove covers on the Treatment System.

Problems with treatment systems can be difficult to analyse.

Whenever your system is not functioning correctly, it is best to contact a trained professional, such as the manufacturer or trained technician to recommend the best procedure.



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# About Us

Austin Bluewater Environmental Concepts Ltd is a proven leader with over 30 years hands-on experience designing and manufacturing wastewater treatment systems, in New Zealand, for New Zealand.

Austin Bluewater Environmental Concepts is a leading manufacturer of specialised wastewater products including treatment systems, septic tanks, water storage tanks, pump stations, grease traps and oil & grit interceptors. Our company's founder and director Lew Austin, is the innovator of Aerobic Wastewater Treatment Systems in New Zealand and still plays an active role in the direction and supervision of the business.

As a business, we actively seek to develop, improve and refine all aspects of our products and our manufacturing processes. Our respect and care for the environment is our motivation to continue to develop and enhance the treatment of wastewater.

All of our products are designed, manufactured and assembled at our own manufacturing facility to ensure consistent quality and durability.



# The Treatment System

## The Nature of Household Sewage

Household sewage is a combination of wastewater from several sources including sinks, toilets, showers, washing machines and dishwashers. The largest source of household sewage may vary depending upon the number of residents and water-using appliances within the home. Organic matter comes mostly from toilets, while sinks, showers, and washing machines contribute large amounts of wastewater containing only small amounts of soap and dirt (including grease, detergents, lint and vegetable matter).

## The Septic System

Your septic system typically comprises a multi-chamber sewage treatment tank and a disposal system buried in the ground. The number of chambers will vary depending on the model and design criteria and it may have filters, pumps and other components depending on your location and system demands

## Treatment System Process

Regardless of the number of compartments or tanks in your system, the basic principle is the same. All wastewater from the home flows by gravity into the septic tank. Within the tank the following processes take place.

- The heavier, solid particles in the sewage settle to the bottom of the tank forming a layer of sludge. Lighter materials, including fat and grease, float to the surface, forming a scum layer.
- Anaerobic bacteria living in the septic tank break down some of the organic solids into liquid components, helping to reduce the build up of sludge in the tank.
- Sludge and scum are stored in the septic tank rather than being allowed to pass through where they would quickly create problems.
- The septic tank filter and/or baffles prevent scum and other floatable materials from flowing out to the wastewater dispersal system.

## Septic Tank Effluent Filters

Austin Bluewater Systems are fitted with Polylok Effluent Filters, recognised as the most efficient filters available. These have an automatic shut-off ball installed with every filter.

When the filter is removed for cleaning, the ball will float up and temporarily shut off the system so solids won't leave the chamber.

While effluent filters are partially self-cleaning, they must be cleaned as part of routine maintenance, your service agent will perform this task during scheduled servicing.

## Pumped Systems

Site conditions, engineers and local Councils will determine the type of pump to be installed.

Pumped systems also allow for even pressure dosing of dispersal fields resulting in a longer life to the field than under gravity conditions. Effluent levels in the pump chamber are controlled by internal switches that turn the pump on and off at preset levels, sending effluent to the disposal field.

## Gravity or Flout System

In some instances, or where an engineer has designed a gravity system, a flout effluent dosing system may be incorporated.



## Introducing Products To Your System

### Maintaining A Healthy Balance

The greatest cause of problems with your treatment system **are cleaning products and the washing machine.**

### Cleaning Products

Certain cleaning products may harm your treatment system by poisoning the natural bacteria that treat the wastewater. We recommend using environmentally friendly products.

Your treatment system relies on bacteria for your system to work effectively. Any product that kills bacteria is harmful to your system. If you wish to use some of the harsher cleaning products, it is suggested that you use a bucket and discard the contents in an alternative manner. This also applies to disinfectant, surface spays and wipes.

Most cleaning products should generally cause no issue when used as per the manufactures instructions and used in moderation. Always try to use the minimum amount of product required to perform the cleaning task.

Look for products labelled "safe for use in septic systems".

### Washing Machines

Try to evenly spread your washing over a period of a week. Avoid, where possible, washing everything in one day. It puts too much pressure on the system and your unit will struggle to cope. Liquid soaps breakdown easier than granulate styles do. Try not to be heavy handed with the amount of soaps you use.

When working properly, your treatment system will work efficiently with no odours or problems.

**It needs a happy balance.**



# How To Look After Your Septic Treatment System

## Acceptable Solutions

Substances that are considered to be typical domestic wastewater are human waste, bath and dish water and edible food waste.

The following substances may be used regularly without harming your Austin Bluewater Septic Treatment System:

- Laundry detergents without bleach
- Dishwashing detergents without bleach
- Toilet paper
- Household cleaners containing sodium bicarbonate, sodium carbonate and sodium borate.

## Caution Substances

Caution substances in large concentration will reduce or stop the treatment process.

These same substances in smaller concentrations can be safe to use in moderation without affecting the treatment process. You may use the following substances with your Austin Bluewater Septic Treatment System if you use the substance according to the manufacturer's directions, use the substances sparingly, and do not introduce concentrated doses to the system:

- Bio-degradable laundry powders
- Household cleaners containing sodium bactericides such as
  - Pine oil (disinfectant used in the general purpose liquid cleaners)
  - N-alkyl dichlorobenzyl ammonium chloride (disinfectant used in detergents and spray cleaners)
  - Sodium hydroxide (lye chemical used in drain openers and cleaners)
  - Sodium dichlor-s-triazinetriene (powdered bleach used in scouring powders and automatic dishwasher detergents)
  - Ortho-phenylphenol (bactericide used in tub and toilet bowl cleaners)

**We recommend to cease using the above substances if you experience issues with your treatment system, anything containing bleach should be used with caution.**

## Waste Food

Some food waste, whether or not it is run through a waste grinder will not be treated by the system, but will remain in solid form and fall to the bottom of the septic tank.

Therefore, you should not use a waste grinder system, or dispose of these food items through the Austin Bluewater Septic Treatment System:

- Animal bones
- Melon rinds
- Corn cobs
- Pips and seeds
- Eggshells
- Any other non-edible food waste

## Never Dispose Of Any Of The Following Items Into The System

- Automotive Oil or petroleum based products
- Bleaches, disinfectants, whiteners
- Nappy liners, wet wipes, condoms, sanitary napkins

Automotive oil is not treatable by the bacteria; the disinfectants will take away all the bacteria's oxygen; the sanitary items are impregnated with anti-bacterial matter, so they will never break down. The results will be – bacteria will die. The tank will almost certainly need to be pumped out to remove the gross pollutants and the tank refilled and re-started.

Whatever the product, always ensure that it is marked as Bio-degradable and Safe to Use in Septic/Onsite Systems.

If you experience issues with system performance that you think may be caused by a certain product, cease use or replace with a different product and see if the problem persists. Talk to your service agent if you have concerns about the health of your system.

**Please note:** Although often unavoidable, chemotherapy, radiation treatments and antibiotics can upset the system. Certain enzyme products on the market can help improve system performance. We recommend speaking to your service agent in this instance.

# Products For Septic Tank or AWTS System

## Suitable Products

Plant Based Cleaners are great as they are Phosphate, Chlorine and Ammonia free, here are some of the brands available in New Zealand.

- EcoStore
- Earthwise
- Able
- Sigrids
- Greenerth
- Biozyme Cleaner

## Avoidable Products

Please avoid these products from being discharged into a septic system

- Ajax
- Antibiotics , Anti Depressants and Blood Pressure Medication being flushed.
- Alcohol
- Bubble Bath
- Coffee Grinds
- Dettol
- Domestos
- Diesel and Petrol
- Draino
- Dog and Cat Flea and Tick Wash
- Exit Mould
- Finish Dishwasher Powder or Tablets
- Excess Milk
- Paint Oil, Water and even Kids paint
- Handy Andy
- Harpic Toilet Cleaners
- Napisan
- Persil
- Kerosene
- Shower and Glass Cleaning products
- Campervan & Caravan Toilet Tablets
- Excessive Salt
- Left over Spa and Swimming Pool Tablets

***Most product's that have a poison helpline on the back of the product is a clear indication that they are not septic safe.***

Please note this list is not intended to promote or discredit any company or product, but to provide aid in keeping your septic tank or treatment plant alive and operating costs down.

Source: Water New Zealand

## Our Additional Recommendations

In addition, Austin Bluewater have performed some limited trials with customers and found the following **products less likely to cause problems** within the system.

Use products sparingly and as directed.

### **Dishwasher:**

- Active dishwashing powder (Do not use power balls or dishwashing tablets)
- Ecostore products
- Earthwise products

### **Washing Machine:**

- Cold Water Surf
- Cold Power
- Fab2
- Ecostore products
- Earthwise products

(Do not use any type of fabric softener as this can cause sludge buildup within the system)

### **Cleaning Products:**

- Spray and Wipe
- Ecostore products
- Earthwise products
- Biozyme products

### **Toilet:**

- Ecostore toilet cleaner - use sparingly

Again, this list is not intended to promote or discredit any company or product, but to provide aid in keeping your septic tank or treatment plant alive and operating costs down.

# High and Low Loadings

The treatment system is designed to handle a maximum daily flow as per the following:

- B33 – 900L per day
- B52 – 1,600L per day
- B90 – 2,200L per day

There may be times where the flows are higher or lower than 'average' use.

## Low or No Flows

During periods of low or no occupancy there will be less wastewater entering the tank, because of the simple nature of how a septic tank works this is unlikely to cause any detriment to the system. Periods of no flow can be beneficial to the land application system by giving it a chance to rest. The rest period in a free draining system will enable rejuvenation of the infiltrative surfaces by aerobic action and drying. On resumption of loading the system will then operate at higher infiltration rates than before resting. These infiltration rates will then progressively, but slowly, decrease over the next operational period as clogging slimes build up again on the infiltrative surfaces.

## High Flows

As with low flows, there may also be times where occupancy or water use is higher than average. It is important not to hydraulically overload the system as this can result in the contents becoming unsettled and cause premature filter blockages, it can also have a negative effect on effluent quality.

The system is capable of treating the volumes listed above however the size of the effluent field can be a limiting factor. Most designs account for the number of bedrooms and base the design off maximum occupancy, this makes the system suitable for when guests or additional occupants will be using it providing maximum treatment flows are not exceeded.





# System Maintenance, Monitoring and Servicing

It is the owners responsibility to:

- Monitor the alarm panel and contact the appropriate contractor in the event of a fault.
- Control the substances entering the system (remember anything that goes down the drain will end up in the system).
- Have the system pumped out as and when required (this is usually determined by the service provider).

To maintain the Limited Warranty your Austin Bluewater Septic Treatment System should be furnished with a 12 monthly service policy to ensure proper operation of the system.

### Settling Chambers

Periodically, waste will need to be removed from the settling chambers using normal pump-out procedures. These intervals will vary depending on usage and solids accumulation, your service person will advise when a pump out is required. As a guide, on average systems will require a pump out of the primary chambers every 2-3 years.

### Polylok Effluent Filter

The system is complete with a Polylok effluent filter which heavily reduces the amount of solids that reach the end of the system resulting in lower BOD (organic content) and suspended solids in the treated effluent. This filter requires cleaning as part of routine maintenance.

### Dosed Pumping System

A dosed pumping system is used to give a proportioned controlled flow to the engineer designed disposal field, to allow for even distribution over the entire field. Submersible effluent pumps operate in harsh acidic conditions and should be checked on a 12 monthly basis for satisfactory operation.

### System Capacity

The system is rated for a maximum of:

- 4 – 5 persons or 900L/day continuous flow – B33
- 8 – 10 persons or 1,600L/day continuous flow – B52
- 11 – 13 persons or 2,200L/day continuous flow – B90

As with any system it is important the system is not hydraulically overloaded as this will interfere with the treatment process. Continuous use above site specific design may also result in flooding of the disposal area.

### Visual

Wastewater backup is characterised by wastewater flowing back into the house or slow movement of the wastewater in the drains. This may indicate a problem with your wastewater treatment system. Identify where the backup is occurring within your home's plumbing system. If no material is blocking the drain, contact your Service Technician or local supplier. Check for an alarm at the controller, if alarming refer to Section Five.

Within the greater Canterbury area, Austin Bluewater Environmental Concepts offer a 12 monthly service and maintenance contract to ensure your system functions correctly. This also forms part of our two year Limited Warranty Validation.

### Service procedure includes the following:

1. Visual inspection of system to ensure correct biological function of system.
2. Septic and secondary chamber checked and biological breakdown of sewage analysed for correct operation of system. Client notified of correct timing for septic pump-out.
3. Polylok bacteriological filter cleaned and repositioned.
4. If pump fitted, unit removed, impeller checked and unit fully cleaned of debris/build-up.
5. Flushing of irrigation field
6. Field Service Report presented to owner and Council verifying work carried out.

# Troubleshooting, Faults & Alarms

In the event of a fault, an audible alarm will sound and an alarm strobe light will flash on the system controller. The alarm can be muted by pressing the mute button, the strobe will continue to flash. The mute function will reset after 24 hours.

The following information will assist with establishing the fault, please contact Austin Bluewater or your local service agent for help or further advice in the event of a fault.

The tables below refer to the possible alarms shown on the main controller at the wastewater tank. The tables are broken down to show the respective alarms, their likely cause and their likely solution.

ALARM: FAULT	
The pump has failed or is blocked	Remove pump from system and determine if inlet is blocked or complete pump failure has occurred
The float is caught in the high level position	Check float position and move to stop it being caught

PROBLEM: WASTEWATER IS BACKING UP INTO THE HOME SEWER PIPING	
There is an obstruction in the home sewer piping	Check the pipes leading to the system visually or with drain cleaning equipment for an obstruction and correct
There is an obstruction in the discharge line from the system	Check the effluent piping and lateral field piping visually or with drain cleaning equipment for an obstruction and correct
The lateral field pump has failed	Check the operation of the lateral field pump per the manufacturer's specifications
The flow rate to the system is too high	Check the maximum flow rate to the system to see that it is within normal limits
The tank requires cleaning and/or a pump out is required	Check the sludge depth in both chambers of the tank to see if it is below required levels
Polylok filter is blocked	Remove Polylok filter from system and clean as necessary
There is a blockage at the inlet of the system	Remove 100mm PVC cap to inspect inlet. Remove or clear blockage if required

See more information under 'Equipment or Power Failure' – Page 17

# Equipment or Power Failure

In the event of equipment or power failure please follow these guidelines.

## Power Failure or Outage

The system needs power to pump the wastewater to the irrigation field. In the event of a power failure or outage minimise water usage as much as possible. There is enough emergency storage in the tank for about a days worth of flow. The system should restart when the power has resumed, a high level alarm may be experienced at this stage if water has continued to flow into the system during the outage. Let the system pump down, this will be automatic. The alarm can be silenced by pressing the mute button on the controller. The alarm should clear within a couple of hours when the internal levels have returned to normal.

If an alarm persists contact your local service agent.

## Irrigation Pump Failure

This will often be indicated by a high level alarm, if a pump failure is diagnosed limit water usage as much as possible. A replacement pump should be installed as soon as possible. There is emergency storage in the system and this should be enough to cover minimal water usage before the pump is replaced. Avoid using washing machines, dishwashers, showers etc. during this time.

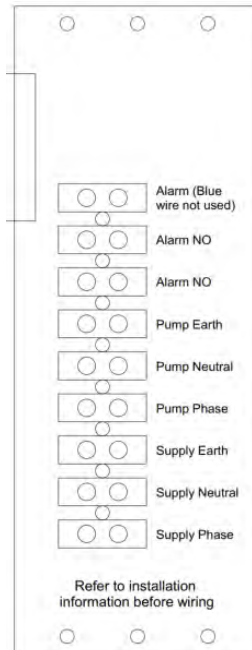


# Ezi Control Panel Wiring & Installation Info

Refer to attached wiring and circuit diagram when installing the controller. All electrical work must be carried out as per NZS 3000:2007 and NZECP2:1993. The controller is to be earthed at the distribution board and the supply to the controller should be protected by its own dedicated 16Amp MCB or as required.

This controller is rated to 10A at 230V and has been designed for the B52 pumps only.

1. Remove the cover from the controller.
2. Refer to wiring diagram to side. Wire the supply Earth, Neutral and Phase to the bottom 3 terminals.
3. Wire the pump's phase, neutral and earth terminals to the next 3 terminals.
4. Wire the high level alarm float to the terminals labelled Alarm NO . The float is to be wired Normally Open (NO). The blue wire is not used and can be wired to the Alarm (Blue wire not used) terminal. The level float is low voltage (<24VDC).
5. NOTE: The ON/OFF switch is to turn power on and off to the pump and printed circuit board only.
6. Once installed be sure to seal the conduit gland to stop condensation forming within the controller.
7. Once installed commission by:
  - Power controller Green Power LED light should illuminate on front.
  - Test pump by lifting the float attached to the pump.
  - Test high level alarm by lifting high level alarm float. The red Fault LED should illuminate, buzzer sound and alarm light flash.
  - Press the mute button and the buzzer shall stop.



## Mute Options

There are three different mute options; Continuous, Chirp and Auto. The different mute options are changed by moving the dipswitch on the PCB as highlighted below.

### Continuous



The buzzer will sound continuously until the mute button is pushed. It will stay muted until the next alarm state occurs.

### Chirp



The buzzer will sound continuously until the mute button is pushed. Once the mute button is pushed, the buzzer will sound for 1 second every 10 minutes until the fault is cleared.

### Auto



The buzzer will sound continuously for 30 minutes or until the mute button is pushed



## Alarm LED

### If Dip Switch 3 is Off



When an Alarm is active the alarm LED will flash.

### If Dip Switch 3 is On



When an Alarm is active the Alarm LED will light continuously.

## Alarm Input

### If Dip Switch 4 is Off

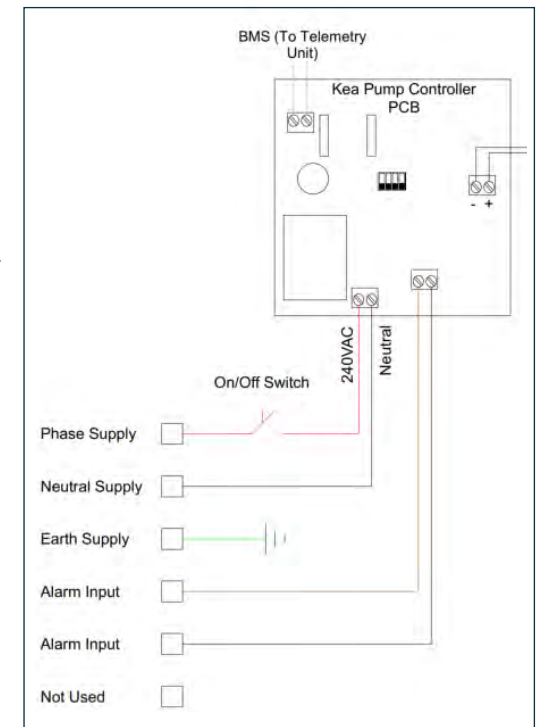


A closed circuit across the alarm input will cause the alarm to activate

### If Dip Switch 4 is On



An Open circuit across the alarm input will cause the alarm to activate.



# Installation Information

## Site Requirements

- The tank(s) should be installed clear of any buildings so as not to affect any structure and with regard for section boundaries relating to local regulations and bylaws.
- The location of the treatment system is subject to approval by local councils/ authorities.
- The tank(s) should be sited so that access can be gained for desludging purposes.
- The tank(s) should be installed on a suitable foundation in stable soils.
- The tank(s) should be installed in a location and manner that diverts surface water away from the system.
- Installation should account for cases of high ground water or flood prone areas.
- The sanitary drainage system should comply with the New Zealand Building Code. All drainage levels should be considered to ensure that there are appropriate gradients leading into the system.
- A 16 amp circuit is required at the tank.

## Installation Instructions

- The system components are to be installed in accordance with the approved design plans and taking into account required setback distances and consented land application system envelope areas.
- The system comes complete with an alarm panel mounted on the top. Consideration should be given to placement so any alarm will be seen and can be dealt with in a timely manner. Remote alarm panels are available for installations where the on tank alarm panel is in a hidden location. These are purchased and installed separately.
- As standard, Austin Bluewater septic systems are non-trafficable and should be located away from trafficked areas or protected by fencing, bollards or barriers etc. Recommended maximum loose soil cover depth is 400mm for standard lid thickness.
- Any excavation must comply with all relevant legal acts, codes and standards including Department of Labour approved code of practice for safety.
- Following excavation dimensions of hole to suit both tank and soil types, cover the base of the hole with 100mm of 5-7 drainage gravel ensuring the base is finished perfectly level. DO NOT leave exposed rocks as these may damage the tank and void the warranty. DO NOT use sand.

- Tank Weight - including 80 mm lid = 3.6T-B33 / 5.7T-B52 & 8.2T-B90. Lifting - 4 x 2.5T eye anchors. When handling, an equalising beam must be used to ensure equal loading to all lifting anchors.
- Backfill excavation with soil/sand maximum particle size of 50mm DO NOT use rocks. Compact in layers of 300mm max.
- The lid(s) should be a minimum of 200mm above finished ground level to prevent stormwater ingress.
- To prevent flotation, fill the tank to at least 70% of capacity. Austin Bluewater will not take responsibility for floating tanks.
- For ground level installations, the ground must be able to support the tank and water contents. Generally the foundation must have a safe bearing capacity of 100kPa typical for normal house foundations. Tanks must be placed on a bed of compacted sand or 5-7 drainage gravel 150mm thick. This base must extend an additional 1.0 metre further than the tank base all round. We recommend that the site is excavated a minimum of 150mm below existing ground level.
- Ensure the drain field is not in trafficked areas and do not allow stock to graze on this area.
- Pump and discharge pipe work to be fitted on site – ensure mack union is accessible for pump removal.
- B52 & B33 are supplied with concrete lift out lids as standard. These can be extended with Ø400mm farm tuff as required.
- Only authorised personnel should access tank internals.
- All electrical connections to the system must comply with current codes and operate correctly.
- The controller is powered via a 230V power supply. This power supply should be protected by a 16A MCB or as deemed necessary from the electrician. The controller is rated to 10A at 230V.

## Commissioning and Startup Procedure

To ensure correct operation, the following checks should be made after installation is complete.

- Ensure discharge pump operation float is clear of walls and any obstructions
- Lift alarm float and check for both audible and strobe alarm at controller
- Check correct seating of effluent filter
- Check field flush points for flow (requires full irrigation chamber)



## Limited Warranty

Please refer to our website for warranty terms and conditions.



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