



# Ultra Clear

WASTEWATER TREATMENT SYSTEMS

## Domestic Single Tank Systems

Model ST8  
Model ST10

## *Owner's Instruction Manual*

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## **Foreword**

The Ultra Clear single tank domestic aerated wastewater treatment systems, Models ST10 and ST8, have been designed to meet NSW Health Guidelines and Australian Standard AS1546.3:2017. The systems have been tested at the Jimboomba, QLD AWTS test site.

The Ultra Clear single tank systems have been designed by Darryl Rebbeck. The design allows ease of maintenance and servicing, allowing easy and full access to all chambers, to ensure the efficient functioning of your system.

This handbook will provide information on the function of your ULTRA CLEAR AWTS. Your authorised service technician will be able to help further if you have any queries.

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## **Description & Function**

### **Primary Treatment**

Sewage from the dwelling flows into the primary treatment tank. Wastewater and solids are treated through sedimentation and anaerobic digestion, with the lighter materials of oils and fats floating to the surface to form a crust. Anaerobic bacteria digest and reduce the organic load or Biochemical Oxygen Demand (BOD<sub>5</sub>).

### **Aerobic Treatment**

Settled wastewater from the primary chambers flows into the first aeration chamber overflowing into the second aeration chamber, with media pack fixed below water level. Oxygen is supplied to the liquid through four air diffusers and microbes attach to two media packs, producing an aerobic state which reduces the organic load and nitrifies ammonia.

### **Sludge Return**

The settling sludge in the sedimentation chamber is returned to the primary inlet of septic chamber.

### **Clarifier/Settling Chamber**

After aeration the wastewater overflows into the clarifier/settling chamber. Suspended solids are allowed to settle under quiescent conditions. Settled particles referred to as sludge, return automatically to primary chamber inlet by sludge return. This method aids with de-nitrification and provides a constant flow of food supply, which supports the treatment process during limited usage.

### **Disinfection**

Water flows through a regulated chlorination device to the disinfection chamber, removing final pathogens before flowing into the pump chamber. Chlorinated water flows into the disinfection chamber, providing a minimum of 300 litres contact time prior to pump cycle. Any remaining solids settle in base of settling chamber to be removed during regular maintenance by venturi device

### **Effluent Disposal**

Treated effluent is automatically pumped to disposal area using a minimum 10 metre head pump, with a pump out cycle of greater than 120 litres.

The maintenance of filters and irrigation sprinklers is the responsibility of the owner or tenant of property.

### **Air Supply**

Air is supplied to the aeration chamber by a Nitto LA80B or equivalent air blower. This produces a nominal 80 litres/minute air flow at 1320mm water depth, providing air to the manifold which is regulated using taps to the four air diffusers and venturi air lift devices.

## **Electrical Control Unit**

The system is fitted with an Electrical Control Unit incorporating an alarm panel for internal use in dwelling, e.g. laundry or strobe light for external use. A green light is constant on panel to indicate power to system. If a fault occurs with the system both audio and visual warnings indicate fault. The audio alarm will mute for 24 hours when pressed or swiped.

## **Operation**

All drainage and electrical supply to be connected to unit by licensed contractors. Landscaping must be completed by the owner to comply with local Council requirements. The system operates automatically. Any adjustments to system to be carried out by authorised technicians.

## **General**

Power consumption to run system is similar to an average household refrigerator.

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## **Intended Use**

The system is intended for the treatment of all domestic wastewater for up to 10 persons per household for Model ST10 and up to 8 persons per household for Model ST8. All household wastewater is recycled by treatment using anaerobic and aerobic bacteria, with a final disinfectant agent. Safe, clean, treated effluent is automatically irrigated onto lawns and gardens or pumped to subsurface disposal area, according to government regulations.

## **Servicing Requirements**

The system must be serviced every 3 months as required by Health Department and local Councils. The owner is required to ensure maintenance with an authorised service agent to retain full warranty benefits. If system is in an enclosure, a working gateway must be provided. Ensure all manholes on tank and electrical box are clear of foreign objects. **Strictly no bark chips or aggregate on tank.**

At each service, the technician will take water samples, sludge readings, make adjustments where required, replenish chlorine, and report to governing bodies.

## **Basic Operating Instructions**

1. Ensure system is serviced every 3 months by approved service technician.
  2. Use correct products as per manual.
  3. Respond to alarms as indicated in manual.
  4. Do not disconnect power supply to system.
  5. The alarm plate has a green POWER light to show there is power and the system is working normally.
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## **Trouble Shooting**

### **• No POWER LIGHT**

- If green POWER light is not lit, and there is no general power failure to the home, contact your service technician.

### **• Low Air Alarm** red AIR led will flash and audible alarm sound

- Press alarm mute button, the alarm will reset and sound again in 24 hours.
- Contact your authorised service technician.
- The air blower is not operating. Repairs may need to be carried out, e.g. chamber block kit, piston or blower replacement

### **• High Water Alarm** red WATER led will flash and audible alarm sound

- Press alarm mute button, the alarm will reset and sound again in 24 hours.
- Especially after mowing or work being carried out in the yard, make the following checks.
- Ensure irrigation taps are turned on.
- If filter is installed, ensure it is clean. Turn off pump at control box by disconnecting irrigation pump plug, to avoid being sprayed with water. Remember to turn pump on when filter is cleaned.
- Check sprinkler outlets for any blockages.
- Check irrigation line for kinks.
- If irrigation line, etc. are OK, phone your authorised service technician.
- High water alarm can indicate pump failure, technician to repair or replace.

## **Bad Odours from System**

- Wrong products being used, or system overload with overuse.
- Check products used. Especially avoid any disinfectants, bleaches or antiseptics and overuse of laundry powders and fabric softeners.
- Ensure washing loads are spread over the day.

## **Bad Odours from Sprinklers**

- The air blower may not be working to its full capacity, causing low aeration.
- Contact your authorised service technician.

## **Blocked Drainage Lines**

- Blocked drainage lines from house to the system are plumbing problems.
- Check drainage line at inspection opening to clear.
- Contact your local plumber or drainer if necessary.

## **Electrical**

- After power black outs or electrical storms it is advisable to check meter box to ensure all circuit breakers are on.
  - All electrical wiring from system to meter box and to alarm panel is the responsibility of the electrician, and is not covered by our warranty.
  - There is a 15 amp fast blow fuse to protect the pumps. Should the fuse holder amp be lit, the fuse is open circuit. A spare fuse is supplied under the controller enclosure cover, together with photos of correctly terminated cabling to the control unit and alarm plate
  - The alarm panel has three leds. Under normal operating conditions, the green power led will light. High water alarm will activate the red water led and the audible alarm will sound to attract attention. If air blower fails the red air led will be activated and the audible alarm will sound to attract attention.
  - Silence alarm by pressing or swiping the MUTE button on the alarm panel.
  - If problem is not rectified within 24 hours, the led will be activated again with the audible alarm. Silence alarm by pressing or swiping the MUTE button.
  - Contact your authorised service technician if any alarms occur.
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## **Landscaping**

Ensure drainage is away from system at all times. Do not make gardens that create a pooling effect around tanks. Warranty does not cover storm water damage.

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## **Desludging Requirements**

Service technicians check sludge accumulation levels at each service. You will be advised on your service form when a full desludge of primary chamber is required. Sludge build up depends upon the number of persons in the household and upon product usage. Time varies between 3 to 8 years. The owner is responsible for the full pump out cost, to be carried out by an approved contractor.

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## **Safety Information**

To ensure no damage to system and safety of occupants, lids and manhole covers should not be removed other than by authorised service technicians. The electrical wiring must be carried out by licensed electricians. Installation of system to be carried out by licensed plumbers. For safety of service technicians, avoid trees or shrubs larger than two metres in close proximity to tanks. In accordance with government requirements, avoid contact with effluent.

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## **Spreading of Hydraulic Loads**

Avoid use of bath, washing machine and dishwasher at the same time. Spread washing loads during the week where possible.

## **Recommended Product Usage for Ultra Clear AWTS**

### **Washing Powders & Liquids**

Avoid powders with added bleaches and whiteners. The bleach is harmful to the system. No laundry powders or liquids with added softeners. Use recommended dosage or less, too much may cause odour.

### **Fabric Softeners**

Better not used. Coats bacteria and prevents effective treatment of waste water.

### **Products Not to Be Used**

Antibacterial solutions, bleaches, toilet cleansers, products with ammonia.

Aerated systems, like all sewage treatment/disposal systems, are biological, so that if a product kills bacteria in the house, it will kill the bacteria that carry out the sewage treatment.

### **Recommended Products**

We recommend the use of products that are environmentally friendly and safe for use in septic tanks.

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## **Responsibility**

1. The owner is required to enter into a maintenance agreement with an authorised service provider.
  2. The owner of the system is responsible for the operation and maintenance of the system, by following owner's manual instructions, to provide the best effluent possible, in accordance with NSW Health Department guidelines.
  3. Top of tank to be kept clear of all materials.
  4. Keep gardens, shrubs, etc clear of tank lid.
  5. Ensure safe and clear access for service technician to tank.
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## **Irrigation/Disposal Area**

Irrigation supplied by Ultra Clear is intended as a starter pack only, and is not covered by warranty. It is the owner's responsibility to install irrigation as required by Council and to maintain irrigation.

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## **NSW Health and Local Government Requirements**

1. Follow your local Council requirements.
2. System to be installed in accordance to plans submitted to Council.
3. System is not to be operated until approved by local council, including landscaping requirements.
4. Disposal of irrigated effluent is to remain on your property, with no run off to adjoining properties, drains, gutters, etc., in compliance with government regulations.
5. No fruit or vegetables to be irrigated with the effluent.
6. A continuous maintenance agreement must be held.

# Ultra Clear Wastewater Treatment Systems

Model ST10  
Model ST8

## WARRANTY

### CONCRETE TANKS

- warranty commencing on installation date

**15 YEARS**

### ALL MECHANICAL AND ELECTRICAL PARTS, INTERNAL PARTITIONS

Including air blower, irrigation pump, control box, alarm panel, internal partitions and internal pipework

- warranty commencing on installation date
- 1st year includes parts and labour
- 2nd year includes **PARTS ONLY**

**2 YEARS**

***NOTE: This warranty is subject to a continuous service agreement being held with Ultra Clear Wastewater Treatment Systems or authorised agents, to ensure proper maintenance of the system. Also subject to installation in accordance with our Plumber's & Electrical Installation Manuals.***

## STATEMENT OF SERVICE LIFE

All fittings, fasteners and components of the Ultra Clear AWTS other than pumps and motors and electrical are of non-corroding material and designed to function reliably with a MINIMUM SERVICE LIFE OF 15 YEARS.

All mechanical and electrical parts have a MINIMUM SERVICE LIFE OF 5 YEARS.

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**MAINTENANCE RECORD**

	<i>Phone</i>	<i>Details</i>
<b>Service Technician</b>		
<b>Plumber</b>		
<b>Electrician</b>		
	<i>Date</i>	<i>Details</i>
Installation		
<i>Year 1</i>		
Maintenance payment		
Service One		
Service Two		
Service Three		
Service Four		
<i>Year 2</i>		
Maintenance payment		
Service One		
Service Two		
Service Three		
Service Four		
Repairs		
<i>Year 3</i>		
Maintenance payment		
Service One		
Service Two		
Service Three		
Repairs		
<i>Year 4</i>		
Maintenance payment		
Service One		
Service Two		
Service Three		
Service Four		
Repairs/Desludge		
<i>Year 5</i>		
Maintenance payment		
Service One		
Service Two		
Service Three		
Service Four		
Repairs/Desludge		
Notes		