

AQ | AQUA ADVANCED

WASTEWATER & IRRIGATION SYSTEM

SERVICE MANUAL

Aqua Advanced Wastewater & Irrigation System

Service manual





SERVICE PROCEDURES

Everhard Industries designs and manufactures sewage treatment plants (Aqua-Nova™ or AQ Advanced) for onsite operations. These systems must be serviced by appropriately qualified persons to ensure that they operate at optimal levels.

All systems must be serviced every three months by appropriately qualified persons.

When servicing the Aqua Advanced System it is important that people are not walking in the immediate environment. Never leave the sewage treatment plant unattended when lids are not in place and screwed down. We recommend using barriers to restrict access to the service area.

While the procedure shows a systematic approach to servicing, experienced service technicians may be able to perform several of these actions at once, however all actions listed must be performed as part of every servicing procedure.

SAFETY

When performing a service, persons must ensure that appropriate precautions are taken to ensure that the safety of any person on site is not compromised.

- / Always use water proof gloves. It is advisable to wear disposable waterproof coveralls if there is a risk of clothing becoming contaminated with sewage.
- / Avoid exposure of septic and chlorine fumes.
- / Wear recommended safety equipment when handling chemicals.
- / Thoroughly wash any clothing or equipment that may have come into contact with sewage prior to leaving the site, or bag coveralls and gloves for safe disposal..
- / Wash hands thoroughly using soap and water, after each service. Then use antibacterial hand cream to ensure that any possible remaining contamination is neutralised.

All persons involved in the servicing of an AQ Advanced System must have received appropriate vaccinations. Persons should consult with their local doctor to ensure that they have received these vaccinations and that they are current prior to servicing a system.

To begin the inspection of the system, look around the tank for signs of root ingress, bugs, vibration, noise and foreign objects. Remove any items causing an issue or rectify as part of the service.

FINAL WATER QUALITY

On entering a site the first job that a service technician should do is check the quality of the final effluent. If poor water quality is observed the technician should work their way back through the system to locate possible causes for this problem and fix the associated problem.

- / When laboratory samples are required, collect samples from the pump well using procedures stated by the local authority. Immediately place these samples in a chilled ice box or portable refrigerator and ensure that they arrive at the laboratory within 24-hours of the sampling event.

- / From the same location collect a 1-litre sample for onsite analysis. Samples should have the following quality.

Free Chlorine 0.5mg/L minimum

pH 6.0 – 8.0

Clarity greater than 40cm

DO Levels

Water temperature

- / Record the values on the site report.

PRIMARY (ANAEROBIC) CHAMBER

The Aqua Advanced System has one primary chamber, split into two halves.

- / Ask the homeowner to restrict flows into the system while servicing is being completed.
- / Remove the access lid of the tank. The first half of the primary chamber (the inlet side) should have a thick black crust on the surface.
- / Inspect for evidence of internal overflows, indicating inflows have been too great.
- / Drop in 'Sludge Judge' and record the depth of sludge at the bottom of this chamber (inlet side) and the thickness of the crust. There is a submerged obstruction to be careful of.
- / If the sludge and crust occupy more than 30% of the profile in a tank, the owner of the treatment plant must be immediately informed that the tank requires pumping out.
- / The second half of the primary chamber should be relatively scum free. There should be an obvious bubbling of the liquid, showing that the anaerobic filter below is sufficiently active.
- / The second half of the primary also houses the low level switch. Make sure that the low level switch is operating correctly, and that the skimmer blower activates when the switch is made.

SECONDARY (AEROBIC) CHAMBER

- / Air bubbles released from the two diffusers should be apparent at the surface at a relatively even rate. If the pattern is uneven you will need to adjust the air flow using the provided valves. When adjusting, open both valves fully, then throttle the strongest diffuser back to match the performance of the weakest one. This should give two even columns of diffused air bubbles.
- / In some instances sludge may have accumulated around the aerator arm and could completely block an air diffuser. In these cases shut the valves on the other arm diverting all air to the affected diffuser. Sludge will be purged away from the diffuser allowing it to operate effectively. If this operation is completed, repeat the balancing exercise above.
- / Visually check to see that there is no excessive build up of sludge on the media and physically remove if required.

AERATOR PUMPS

- / Remove the lid of the control box, on top of the tank.
- / Remove lids of aerator units.
- / Clean out any debris that may have accumulated.
- / Aerators should be relatively quiet and warm to touch. If aerators appear to be noisy they typically require servicing. All aerators must be serviced every 12 months (see below).
- / Check that the alarms are operational by turning off each air pump and fix if not operational.
- / Turn off aerators. Check air filters and replace when necessary. The accumulation of excessive amounts of grease on the filter indicates that 'sewer gases' are entering the box from the aeration tank and can result in the premature failure of the aerators. Reseal the hole between the aerator box and the tank if required.
- / Secure the aerators and replace the lid.

SERVICING AERATORS

All systems are provided with Blowers for maintaining good aerobic conditions. These aerators must be serviced every 12 months by a trained technician.

To ensure that aerators are serviced in a safe and proficient manner, this must only be performed by appropriately trained personnel.

CLARIFIER

The water at the top of the clarifier should clear. There is a skimming system installed that keeps the surface clear of unwanted material, which activates when the system is at low level. If the clarification chamber has a scum layer then the performance of the skimming system should be checked.

- / Ask the homeowner to restrict flow into the system so that it can be pumped down to its minimum level.
- / Brush down the sides of the clarifier removing any adhering solids.
- / When the system reaches the minimum level, the skimmer will activate and skim off any solids that may have accumulated on the surface of the clarifier and transfer them to the primary chamber. The skimmer should run for a few minutes and stop. The air valve for the skimmer should be set to its half way point, or approximately 45 degrees.
- / Check the alarm by raising the overflow float alarm.

PERFORMING DESLUDGING OF THE SYSTEM

- / Turn off air flow to the air lifter and diffusers by using the appropriate valves.
- / Operate the sludge return by opening the ball valve to around 45 degrees of rotation.
- / Allow the sludge return to operate for around one minutes until the water entering the primary inlet is nearly clear. If the ball valve is opened too far the excess air flow will reduce pump efficiency and the pump out time duration will be extended.
- / While operating the sludge return, open one diffuser valve to 100% for one minute
- / Close the diffuser valve and open the other diffuser valve to 100% for one minute, while still conducting sludge return
- / Now open both diffuser valves to 100%
- / If the returned water is running fairly clear, close the sludge return valve fully and continue. If the returned water is still running dark, repeat the above process again once more.
- / Reset the air lifter valve to the required setting (typically around 45 to 50 max)
- / Balance the aeration of the diffusers by reducing air supply to the most lively diffuser, until both diffusers are giving an even amount of aeration
- / **Note:** only one diffuser supply should be throttled, the other should be wide open.
- / **Note:** it may be necessary to complete this process more than once.

IRRIGATION CHAMBER

The water in this tank should be clear.

- / Replenish chlorine tablets in the static chlorinator and record the number of tablets used.
- / Check the operation of the pump by lifting the pump float.
- / Replace the lids and secure with screws when all servicing activities are complete.
- / Advise the homeowner that they no longer need to restrict flows into the system.

IRRIGATION AREA

Inspect the irrigation area to ensure that no water is ponding which would indicate one or more of the following:

- / Poor irrigation distribution.
- / Excess water being used,
- / Undersizing of irrigation area

This should be performed in conjunction with checking the pump operation to verify that the system is not leaking.

CONTACT DETAILS FOR AFTER SALES SERVICE & WARRANTY

Make a note in the space provided of your local authorised service agent for your system. For all service callouts, use your local Service provider.

For all service calls, contact your service agent:

Agent:

Address:

Telephone:

Fax:

System Type: Aqua Advanced Polymer / Aqua Advanced Concrete

You will need to quote your contract number:

The EVERHARD WARRANTY starts from the Commissioning date: / /

For all Warranty Claims, contact your Service Agent first to arrange for a claim to be processed.

Alternatively, you can contact us:

by phone on 131 926

by email at info@everhard.com.au

online via our Contact Form at everhard.com.au

MAINTENANCE SERVICE CONTRACTS

The service contract is an agreement between the homeowner and the installer or organised company. All states require that the System is serviced every three months. Failure to have the system serviced and maintained may void all warranties.

For most states and councils, new installations must be sold with a service contract. This automatically comes into effect on commissioning your System. The initial service contract may include:

- / The initial commissioning and services at three-month intervals, at which time samples of the treated effluent are tested for clarity, and the presence of chlorine
- / The purging of settled solids from the Treatment Tank Sediment Chamber into the Primary Tank, the replenishment of the chlorine sticks when required, testing and inspection of the electrical / control system, the aerator and irrigation feed pumps
- / Issuing reports of the work done, and any test results, are supplied to the owner. Copies will be forwarded to the local authority as required.

Local authorities may also require samples of treated effluent to be tested at any time at the Owner's expense. These tests are not included in the regular service contract Service calls, which are the result of household practices generally sitting outside of the Service Agreement.

IMPORTANT SERVICING INFORMATION

For the purposes of regular servicing, AQ Advanced Systems will be installed so that the access and inspection covers are exposed. The polymer tank's sloping top cover may be lightly covered over with mulch or bark, however, access and inspection covers and the control box must always be freely accessible and never buried.

SERVICE SCHEDULE

The AQ Advanced System HSTP will be serviced every third calendar month over the contracted period for a total of four services. As part of servicing the following duties will be performed:

1. Perform onsite testing of treated effluent quality, limited to Free Residual Chlorine, pH, Clarity, D.O. and Temperature
2. Replace air filters
3. Evaluate Aerator and Pump Operation
4. Test Aerator Pressure Switch and High Level Float Switch
5. Purge aeration lines and operate sludge return
6. Perform Sludge Monitoring on Primary Tank, Clarifier and Pump Well
7. Clean / Purge Clarifier and Pump Well
8. Check irrigation lines and irrigation sprinklers (where possible)
9. Replace or top up disinfection agent (when necessary)
10. Clean irrigation disc filters and backwash granular media filters (when necessary)
11. Issue service reports to the owner and local authority as required by law

SYSTEM DESIGN SPECIFICATIONS

The Aqua Advanced Wastewater & Irrigation System is designed to conform with the following specifications:

SPECIFICATION	DETAILS OF CONFORMANCE
Legislative Requirements	Certified to conform with the requirements of AS 1546.3:2017 and any amendments – Onsite Domestic Wastewater Treatment Units Part 3: Secondary Treatment Systems
Power Consumption	1.22 kWh per 1000 litres processed
System Performance	Complies with the requirements for Advanced Secondary Treatment
Hydraulic Loading	System is rated for 0 to 1,200 L/day Equivalent to 8 Persons consuming up to 150 litres per day.
Organic Loading (average)	Suspended Solids and BOD5 - 70 g per person per day
Organic Loading (range)	Suspended Solids and BOD5 - 150 mg/L to 750 mg/L per day
Nitrogen Load (average)	15g per person (100 mg/L)
Phosphorous Load (average)	2.5 g per person (17mg/L)
Filter Media	Type 1: Polymer Bio Mesh Type 2: Polymer tube segments Type 3: Polymer Bio Balls
System Capacity	8EP, or a household of 8 persons
pH of Influent	pH 6 to pH 10
Wastewater Temperature	The system operates at air temperatures between -2 and 45 degrees C. Wastewater between 13.1 and 28.3 degrees C
Disinfection Equipment	Chlorine Tablet dispenser, min 30 minute contact time @ max flow
Typical Sludge Pump Out Interval	Two Person Household: 13.2 years Four Person Household: 6.6 years Six Person Household: 4.4 years Eight Person Household: 3.3 years
Emergency Storage Capacity	Minimum 1,086 Litres

All AQ Systems must be installed according to AS/NZS 3500.1 and AS/NZS 3500.2 (or any standards that may supersede them).

MANUFACTURER'S DETAILS

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