Industries

Installation and Maintenance Manual for the Ri-Treat EP33 Secondary Treatment System

South Australia's leading manufacturer of pre-cast concrete products including Ri-Treat, trade waste arrestors, septic tanks and rainwater tanks

www.ri-industries.com.au

Contents

Industries

Leaders in pre-cast concrete products that enhance the environment

Ri-Industries was established 1947. We are totally committed to achieving excellence in all that we do, which is why South Australian residents and businesses repeatedly buy our products and regularly recommend us.

www.ri-industries.com.au
618 South Rd, Angle Park, SA 5010
P (08) 8444 8100

Warranty

The warranty will be void based on failing to install and maintain/operate unit as per the manufacturer's requirements. For example:

- Tank is not installed in strict accordance with the Ri-Industries Installation and Maintenance Manual for the Ri-Treat EP33
- Structural modifications in any form
- Aerobic unit is not serviced in accordance with SA Health guidelines for owner/operating an onsite wastewater system and in accordance with manufacturers' specified requirements
- Failure to undertake servicing and repairs by an approved SA Health servicing contractor and failure to maintain records for all services and repairs
- Owner/operator overloads the system by failing to meet all guidelines as specified in the General Information section of the Ri-Industries Householders Operational Manual for the Ri-Treat EP33
- Owner/operators use of unsuitable cleaning products as specified in the Ri-Industries Householders Operational Manual
- Damage caused to the unit from external forces such as but not limited to mother nature storm/fire/flood or planting proximity to tank
- Failure to ensure full details are passed over at the transfer of ownership and/or development of land.

Copies of the Householders Operational Manual and the Installation & Maintenance Manual can be found online at **www.ri-industries.com.au**

Preparation

Preparation for the delivery and installation of a Ri-Treat EP33

- The Ri-Industries' crane truck requires full and clear access onto the site and around the excavation.
- Site conditions should be dry and stable underfoot, and a level set-up area prepared for the truck.
- The crane truck will reverse up to the excavation, lift and slew the tanks into position over the rear axle.

Note: *Under no circumstances will tanks be lifted over houses, sheds or other property of value, nor will they be lifted under low power lines. Unloading on awkward and dangerous sites will be at the driver's discretion.*

Preparation of excavation

- The width of the excavation is to be a minimum of 3.5 metres x 10.5 metres.
- The base of the excavation is to be a 100mm layer of levelled 10mm gravel.
- **DO NOT** place unit on a rocky or uneven base.

Delivery

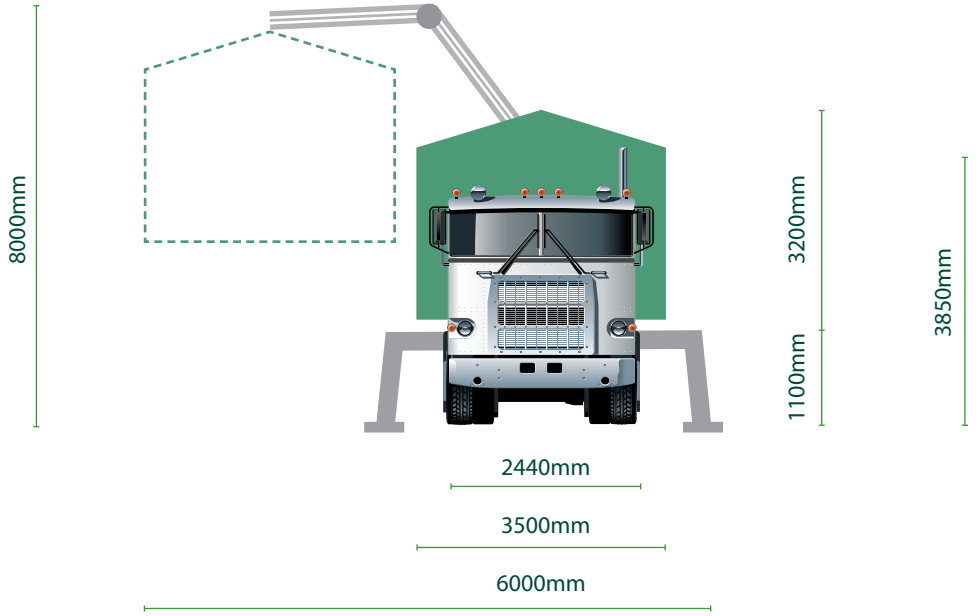
- A clear level site is required to unload the tanks into your prepared excavation.

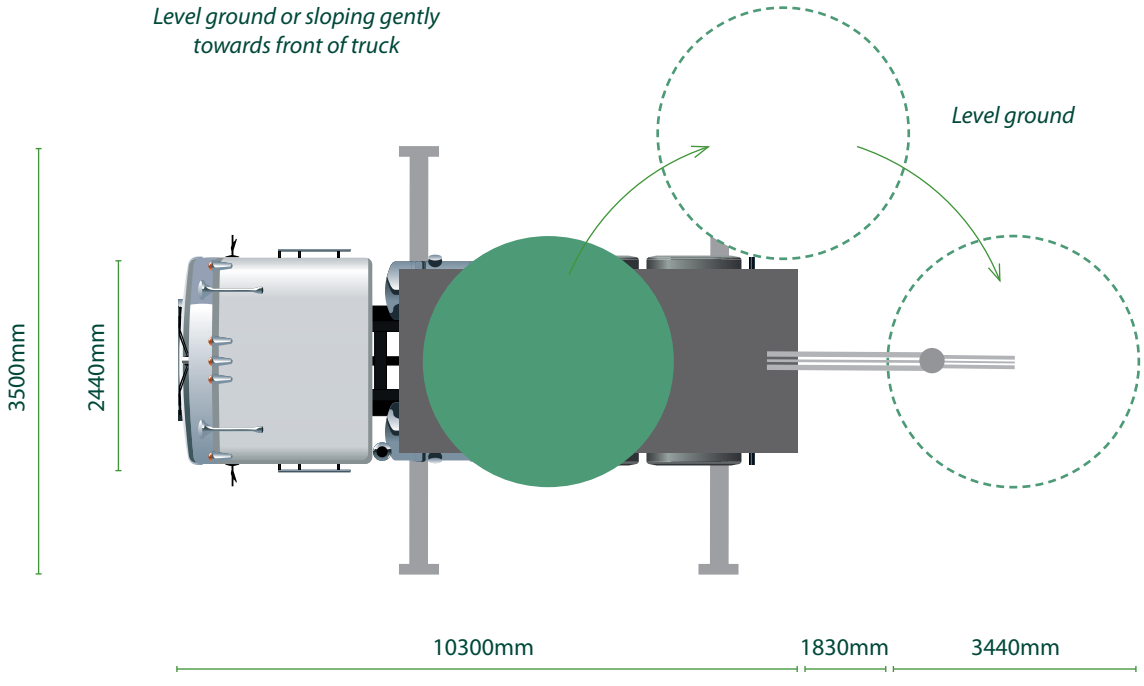
Delivery

We offer a FREE on-site visit to advise on location and delivery assessment.

Delivery instructions

The truck will need to reverse up to the hole. A clear, level site is required to unload the tanks into your prepared excavation. Easy access is very important, ie. NO overhead trees, wires, etc. NO benching out of the hole.



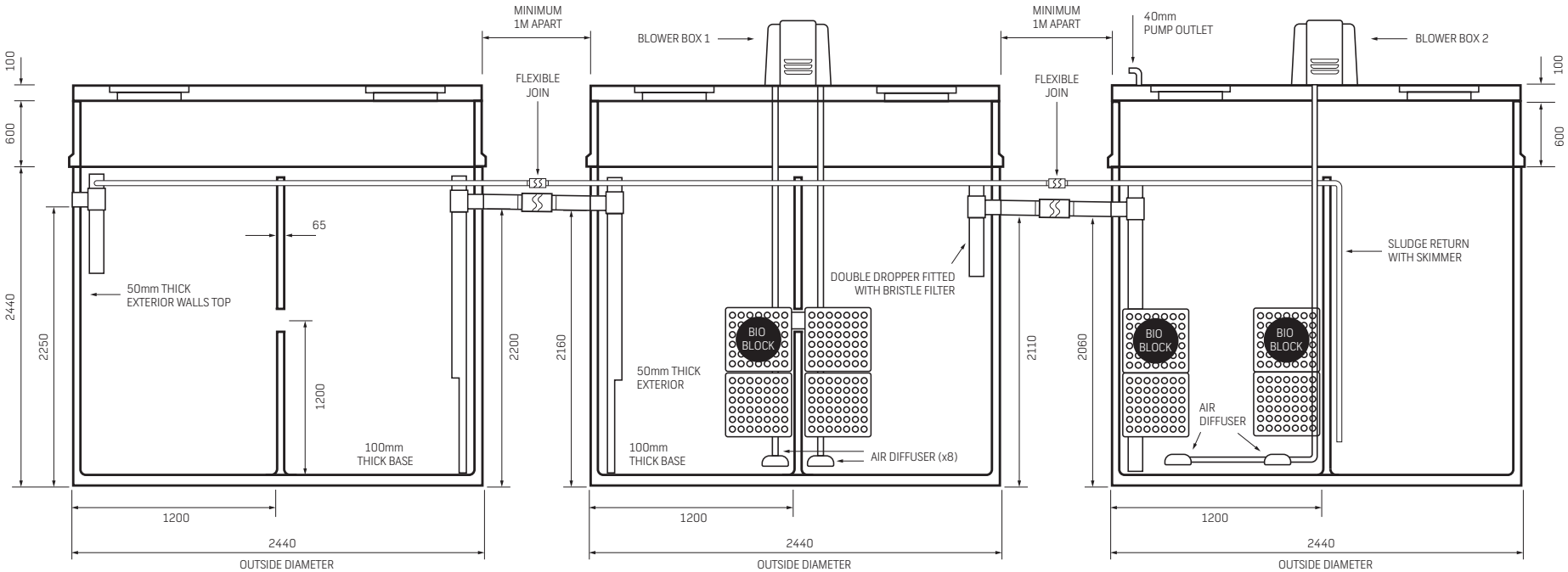


Installation

Installation of a Ri-Treat EP33

- The Ri-Treat EP33 must be installed by a licensed plumbing contractor.
- The tanks must be level when installed.
- Care must be taken to ensure that excavated material does not fall onto the lid of the tanks, as material may fall into the tanks, clogging the diffusers and irrigation pump.
- The inlet connection is a standard 100mm sewer pipe. The connections between the tanks are 100mm and 40mm. We recommend joining the tanks with a flexible joiner (joiner not supplied).
- The electrical connections are 240 volt for pumps and 12 volt for the alarm panel.
- Backfill around the tanks with gravel or excavated material / good soil. Complete the backfilling with approved granular material such as sand compacted in 150mm layers to a 90% maximum dry density in accordance with AS 3798. Backfilling should be raised evenly around the tanks with a maximum backfill height differential of 400mm at any time. The lids of the three tanks must sit above ground level at the seal. **Rock must not be used as backfill**.
- Tanks to be completely filled with clean water to the operating level.
- **If the tanks are not filled with water they could hydraulically lift out of the ground in wet conditions**.
- **Please refer to the warranty details**.

Installation technical specifications



PRIMARY TANK 1

SECONDARY TANK 1

SECONDARY TANK 2

Electrical

All electrical connections must be carried out by tradespersons who are experienced and licensed for such work.

Within the premise's switchboard, we recommend the use of an independent and dedicated circuit of 16 Amp (minimum) being serviced with its own ELCB (residual current device) to supply power to your Ri-Treat EP33.

This alarm system consists of three units:

1. **Auxiliary control box** (*situated on secondary tank 1*)
   The auxiliary control box on secondary tank 1 has a double GPO for the two Mac 100 air blowers and cables connecting the auxiliary panel to the main alarm panel for the alarm system and power. It contains the 7.2ah SLA battery for alarm operation during power outages.

2. **Main control box** (*situated on secondary tank 2*)
   The main control box contains the PLC (Programmable Logic Controller), sensor interfaces and the alarm cancel button. It also has a double GPO (double powerpoint) for the two Mac 100 air blowers. It contains a "dial home" device which will send an SMS to up to 10 configurable mobile phone numbers with a configurable alarm message and location information in the event of an alarm. These 10 numbers can also cancel the alarm remotely via SMS to the site.

3. **Audible/visual alarm** (*mounted outdoor near the unit*)
   The audible/visual alarm contains an illuminating LED and sonalert sounder to sound an alert if the system has a fault.

Secondary tank 2

Within the plastic blower box, fix the weatherproof double GPO (supplied mounted to a stainless bracket) to the concrete lid with the dyna bolts supplied. Run an independent power cable from the main switchboard at the building to this weatherproof GPO (cable not supplied). This GPO will feed power to the submersible pump and alarm system.

The main control box with stainless bracket should be mounted to the concrete lid with the dyna bolts supplied. The double GPO mounted to the control box is the power supply for the two Mac 100 air blowers. On the side of this control box are two air switches - connect the two 6mm air tubes to these air switches.

Secondary tank 1

Within this blower box, fix the auxiliary control box with the stainless bracket to the concrete lid with the dyna bolts supplied.

The double GPO mounted to the control box is the power supply for the two Mac 100 air blowers. On the side of this control box are two air switches - connect the two 6mm air tubes to these air switches.

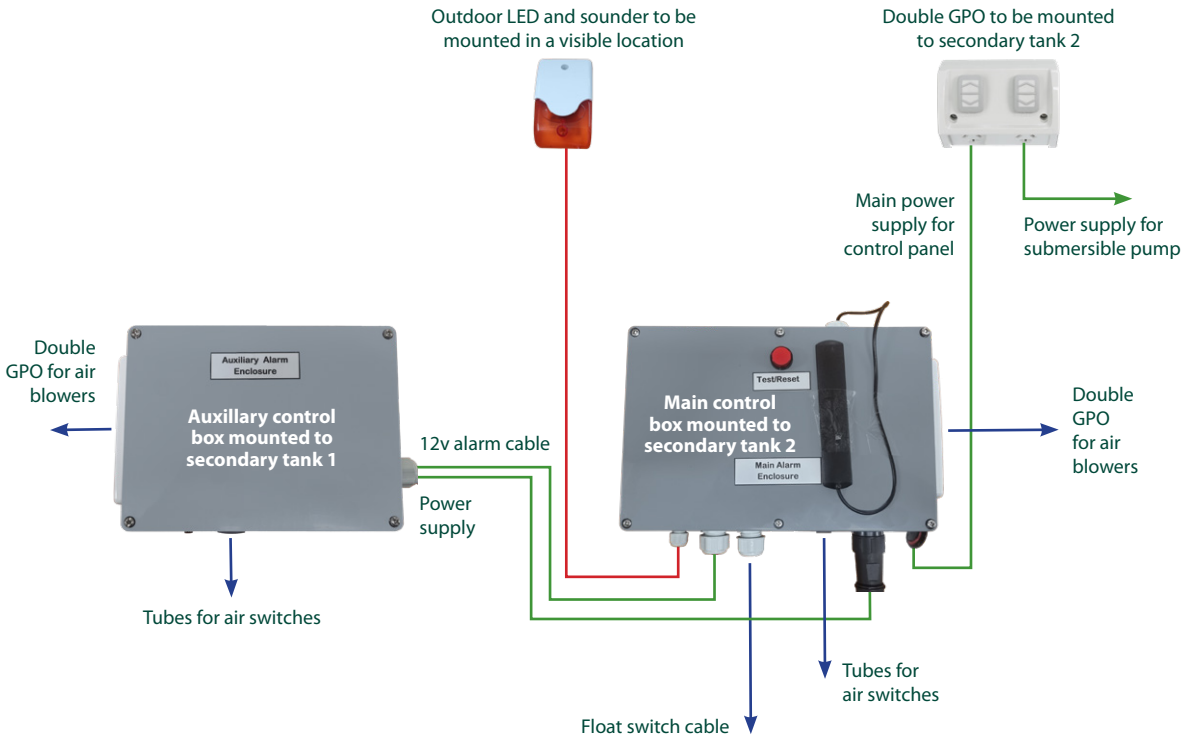
There is a 6m orange cable supplied with male and female 3-pin RS connectors. Run this between the two tanks in a conduit (conduit not supplied). The plugs then connect between the main alarm panel and auxiliary alarm panel. This cable runs power between the two panels.

Use the supplied gel-filled crimp connectors to extend the alarm wires from the main control box on secondary tank 2 to secondary tank 1. We recommend this should run in a separate conduit to the orange power cable.

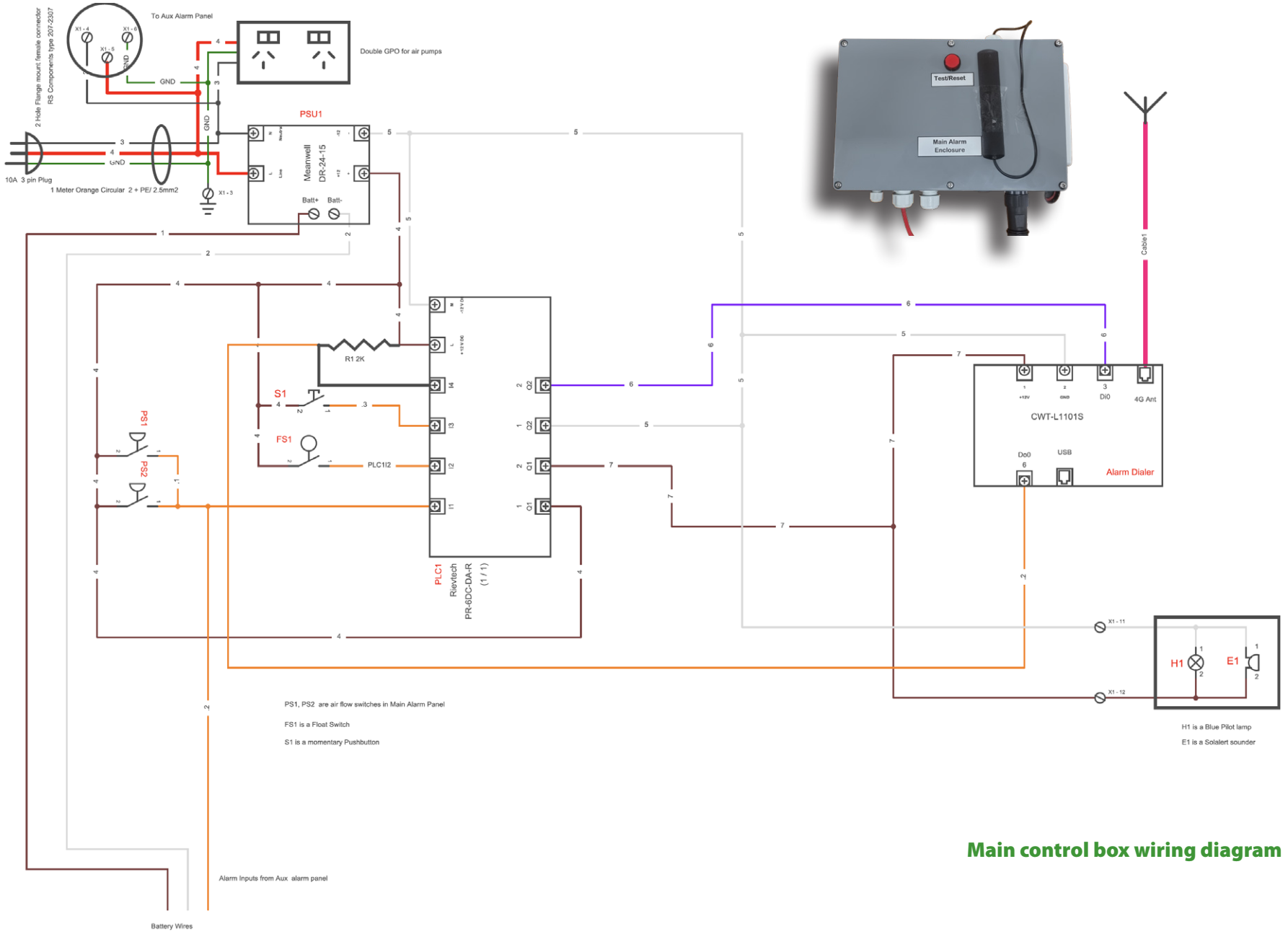
The alarm panel is an indoor/outdoor alarm panel and can be mounted on a wall outside or near the tank. The cable for this is not supplied.

Use two gel-filled crimp connectors to connect the audible-visual alarm panel to the main control box on secondary tank 2.

Electrical Layout to be installed by a qualified electrician

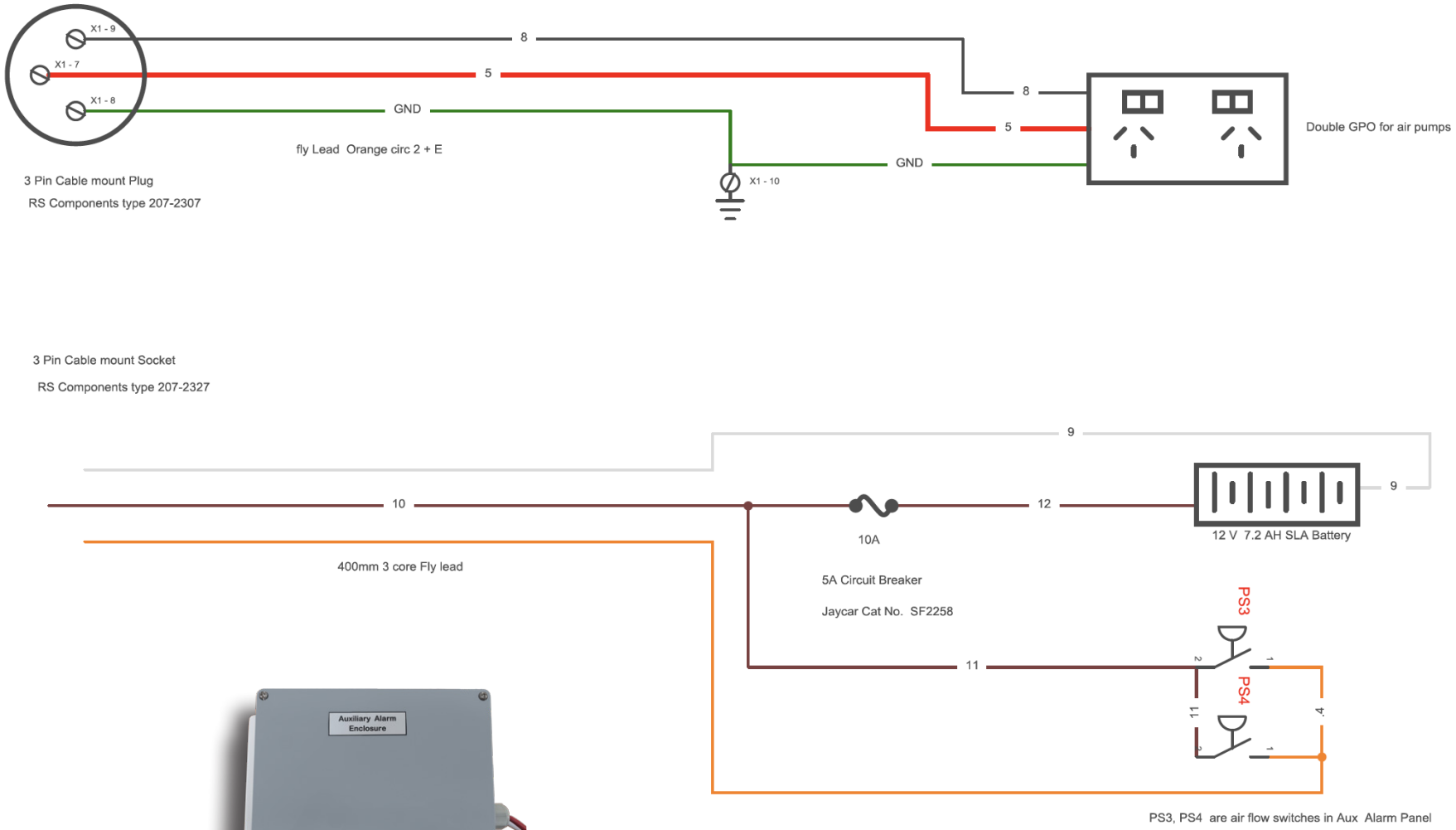


Electrical technical specifications



Main control box wiring diagram

Electrical technical specifications



Auxillary alarm panel

Setting up the auto dialer

The Ri Industries auto dialer is located in the main control box and has been designed for the Ri Treat EP33. It uses the 3G/4G cellular network to alert owners and maintenance personnel to a current alarm.

The alarm system also has a local lamp and a loud sounder to alert people in the vicinity to the presence of an alarm.

The alarm is generated by a number of failures:

- Failure of any of the installed air blowers
- High float alarm when fitted
- Power fail.

The auto dialer has a backup battery which will power the alarm system for approximately 30 hours. The battery is charged by an onboard charger.

Up to 10 mobile phone numbers can be programmed to receive an SMS if an alarm occurs and these same phone numbers can remotely silence the local lamp and sounder by sending an SMS command to the auto dialer.

The unit will only send SMS alarms between the hours of 6am and 8pm. Alarms occurring outside these hours will be remembered and sent at the next opportunity. If an alarm occurs inside these hours, an SMS will be sent and the local lamp/sounder will be activated. This will sound for 1 hour and silenced for 3 hours on a repeating cycle during the hours of 6am to 8pm until it is turned off by a remote SMS command. Sending the word "Stop" (capital S - no quotes) via SMS to the system phone number will stop the alarm/sounder for 24 hours. This prevents undue disruption to neighbours during an alarm condition.

The unit will generate an alarm that has been continuously present for more than 3 hours and will monitor the status of the alarm every hour to prevent the generation of multiple SMS messages on 'fleeting' alarms such as short power breaks.

There is also a manual reset button located on the front of the main control box. Pressing this button once will silence the local alarm lamp/sounder for a period of 24 hours, as will the SMS Stop command from one of the pre-programmed mobile phone numbers.

Pressing this button for 10 seconds continuously will generate a test SMS to the pre-programmed numbers and the light will illuminate for 10 seconds indicating that an attempt to send an SMS has been made.

Commissioning

The Ri-Treat EP33 is supplied with all components to commission the unit once the electrical power is provided to the system and the unit is filled to the correct levels with clean water.

THE SYSTEM CANNOT BE COMMISSIONED UNLESS POWER IS AVAILABLE AT THE UNIT.

The following steps must be completed prior to commissioning:

Installer's responsibility

- The Ri-Treat EP33 tanks must be completely filled with clean water to the operating level.
- Inlet drain connected, along with joining the tanks together.
- Outlet pump is installed and connected to the irrigation/dispersal field.
- Irrigation placement of sprinklers and drippers.
- Electrical power is connected.

Owner's responsibility

- Make contact with an accredited service agent to arrange the ongoing servicing of the unit. If you are unsure who the service agent is, please contact your local council. Alternatively, contact Ri-Industries on (08) 8444 8100.

Servicing the Ri-Treat EP33

Servicing of the Ri-Treat EP33 should only be carried out by an SA Health Accredited Service Agent. Please contact your local council or Ri-Industries to find a service agent in your area.

Please refer to the warranty details.

Instructions

Primary Tank 1

This tank is an anerobic tank, therefore there is minimal servicing required for this tank.

To start, remove the two concrete manhole covers with 2 x 1.3T swift lift clutches.

You will need to check the sludge levels either side of the baffle and check that the inlet and sludge return are clear along with the outlet to Secondary Tank 1.

Take notice of the 'crust' thickness in the primary septic chamber. This is an indicator of how the system is running, or if it may have become overloaded.

The crust within a septic system gradually develops over time. The natural bacteria break the crust down over time. However, if the system is overloaded this function may be slowed or stopped. Excessive crust may have to be removed (by a vacuum tanker).

The natural bacteria can be affected by:

- Excessive amounts of water
- Excessive biological load
- The use of antibacterial substances
- The use of antibiotics by a number of people at the same time
- The use of chemicals, petrochemicals or excess cooking oils or fats

The system is designed to cope with the occasional, short term overload. Due to the recirculation circuit within the system, it is able to recover from most minor overloads during periods of lower loads.

Secondary Tank 1

Remove the plastic cover over the air pumps and electrical control box. Look for any chafed electrical cables which may cause problems. Remove the air filter cover from the air blowers. Clean or replace the air filters as required and check the intake to the air blowers are clear. Check that the joining tubes are not too rigid or damaged. If necessary, replace them. Sweep out any foreign matter from under the plastic cover.

Using 2 x 1.3T swift lift clutches, lift the manholes out and check that the air flow from the blowers through the diffusers is consistent in both chambers. Check diffusers for wear and replace if necessary.

Remove the two bristle filters and clean or replace if necessary. Once cleaned, place back into filter holders in the tank.

Check sludge levels either side of the baffle.

Secondary Tank 2

Remove the plastic cover over the air pump and electrical control box. Look for any chafed electrical cables which may cause problems. Remove the air filter cover from the air blowers. Clean or replace the air filters as required and check the intake to the air blowers are clear. Check that the joining tubes are not too rigid or damaged. If necessary, replace them. Sweep out any foreign matter from under the plastic cover.

Remove all access cover using 1.3T swift lift clutch and inspect the air flow from the diffusers in the aeration chamber. The cubes of bio-medium can also build up with bio-mass. If excessive, this is best dislodged using a pressure garden hose to wash the bio-mass off the blocks. This releases bio-mass from the blocks, which will need to be transferred back to the primary chamber, either by vacuum or by the internal sludge return. The risk is that too much may block the septic return and cause flooding within the system.

The 'sludge-return' (at the outlet to the aeration chamber) should be checked to ensure that it is not blocked, as this can cause flooding. It is easily cleared with a pressure garden hose to flow through the inlet pipe and the bio-medium within the unit. Within this sep-return there is a sludge return, which will return any trapped scum back to the inlet of Primary Tank 1. This is controlled with an air tap (located within the tank) whilst servicing. This tap should be opened fully for several minutes, which clears the chamber. It should then be returned to a position where air is allowed to very slowly bubble through. This flow can be checked by looking at the water return flow at the inlet of Primary Tank 1.

Remove the bristle filter from the filter housing in the settlement chamber and hose down the filter, making a note if the filter is blocked. Replace the filter annually or as required.

From the settlement chamber, the liquid flows into the pump out chamber. Here it passes through the chlorine canister and is stored, ready for automatic irrigation. With the cover off this chamber, check the liquid level, the pump and alarm cables, and the clarity of the liquid. Usually you will be able to see into the liquid several hundred millimetres in depth. This is only a guide to quality. Top up chlorine canisters with approved tablets to required amount.

Tests to be performed as part of a regular service

1. Take a sample of liquid from either the pump-out chamber or settlement chamber. The amount of liquid should be enough to fill a turbidity tube, or large beaker. Perform a pH test and residual chlorine test, using the appropriate swimming pool test kits.

2. Using a turbidity tube, view the liquid at varying depths to find the corresponding numbers for the clarity of liquid. Calculate the probable B.O.D.S. from the clarity.

3. Using the thermometer, check the temperature of the primary and aeration chambers (if the temperature is high, the absorption of oxygen is greatly reduced, causing poor quality of waste water).

4. Using a dissolved oxygen meter, check the increase of oxygen from the primary to aeration chambers. If there is a low reading in both chambers, look for causes.

5. pH tests give an indication of the system being unstable. A pH neutral reading is ideal. Levels that are too acidic or too alkaline will make the system not function properly and produce offensive odours.

On start-up of systems there may be slight odours. If you wish, adding a small amount of "dynamic lifter" soaked in water to the inlet of the system may help to kick start the system. If the system becomes too acidic, you may add a little dehydrated lime to reduce the pH. If the system becomes too alkaline, it is possible to add a little hydrochloric acid – but be careful when doing this.

The system operates naturally and usually with very little addition of chemicals, etc.

- Top up the chlorine. *Please note: use stabilised chlorine tablets only (tri-chloro-iso-cyanuric acid).*
- Replace all covers.
- Replace the plastic blower box cover.
- Check the land application area (irrigation area) is working correctly and the pump is discharging correctly.
- Check the "re-claimed warning" signs are positioned, mounted and visible.
- Wash hands thoroughly with either antiseptic or disinfectant hand cleaner.

Complete a service report stating the test results, any defects found and general condition of the system. Leave a copy of the report on site with the owner or authorised land agent, create a second copy to be sent to Council, and a third copy to be retained by the service agent.

Should you have any problems or queries in relation to the system, please feel free to contact Ri-Industries.

Recommended maintenance tools

1. 2 x swift lift 1.3T lifting clasp and cast-iron lifter to remove the access covers
2. Cordless drill or screwdriver with Phillips head adaptor to remove the screws on the plastic blower box and PVC trap screws
3. Medium sized flat head screwdriver
4. Broom
5. Wet and dry vacuum
6. Rubber gloves

Recommended instruments

1. Turbidity tube
2. Swimming pool pH test kit
3. Swimming pool chlorine test kit
4. Floating thermometer
5. Dissolved oxygen meter
6. Sludge judge

Ri-Treat and Ri-Scape bristle filter

The Ri bristle filter is fitted as a standard item in our secondary treatment systems and can be incorporated with our septic tanks and holding tanks for better quality effluent.

We recommend cleaning the filter quarterly, with replacement annually or as required.

Poor maintenance or factors such as garbage disposals and excessive laundry may result in more frequent inspections/servicing or replacement of the filter.

Features

- Keeps out hair, lint, tissue, seeds and other items that can clog pumps and soakage trenches.
- Provides excellent filtration.
- Offers over 300 cubic inches of open area to reduce clogging.
- Flexible filters can be used in hard-to-reach Tees or baffles, etc.
- Made from twin 2.5mm galvanised wire with black UV-stable polypropylene bristles for superior filtration of your septic tank.

Installation and removal

To install
Push the Ri bristle filter into the top of the PVC tee inside the tank until the 90-degree wire handle touches the top of the tee. The filter is now 'installed', as shown in the picture.

To remove for cleaning or replacement
Remove the filter by pulling up on the filter handle. We recommend hosing down the filter over the inlet chamber. If replacing, put the used filter in a plastic bag for proper disposal.

Notes

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