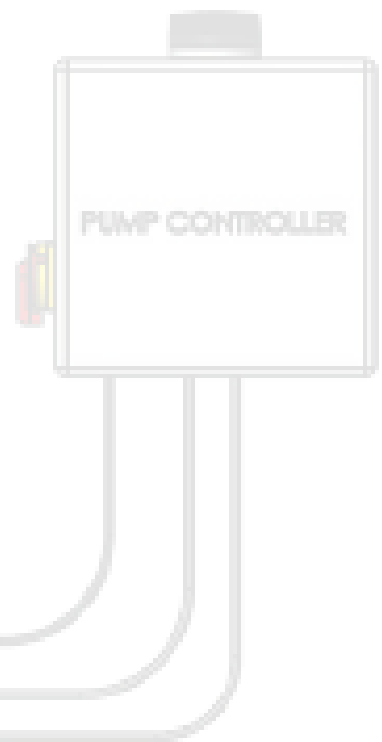


# **REEFE**

# **Pump Station**

## **Operation and Installation Manual**



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## 1.0. INTRODUCTION

Congratulations on your purchase of a REEFE® Polyethylene Packaged Pump Station. Providing the required care and preventative maintenance is followed, and through adherence to a few simple guidelines, your packaged pumping system will provide many years of reliable service. It is important to acknowledge that only fully qualified personnel should install, operate and repair your pump station system. It is particularly important that any wiring should be performed by a qualified electrician.

The REEFE® Polyethylene Pump Station Package is constructed in consideration of all government requirements; however, it is essential that local authorities be consulted prior to installation for all applicable codes and regulations.

## 2.0. SAFETY PRECAUTIONS

In addition to any specific safety awareness highlighted in this manual, it is critical that all persons involved in both installation and maintenance of the pump station are made aware of the dangers associated with entry to the pump chamber and take the necessary safety precautions. The following checklist, although not comprehensive, must be followed.

- Only qualified personnel with current Confined Space Certification should contemplate entering the pump chamber, and then only if a second qualified person equipped with required safety equipment is supervising. In the event of entry to the station being unavoidable, the correct safety procedures should be carried out in complete accordance to OH&S requirements. Personnel entering must have full confined space entry certification, have completed a risk assessment, evacuated the chamber of dangerous gases, be wearing appropriate breathing apparatus and have a certified safety lifting harness attached to an approved lifting system.
- Conduct a risk assessment before entering the chamber. Do not enter a pump station unless absolutely necessary.
- Use a gas meter to guarantee sufficient oxygen and to make sure there is zero existence of poisonous gases in working atmosphere, thus eliminating the risk of suffocation and explosions. Ensure adequate forced ventilation.
- Never work alone. Use a lifting harness, safety line and respirator. Ensure that lifting equipment is of approved type and is in good working order.

- Do not ignore the risk of electric shock. Use equipment protected by an RCD and ensure that power is isolated at control panel before entering chamber.
- Place a suitable barrier around the work zone that complies with local rules for safety at work.
- Make sure there is a clear path of retreat from the point of installation.
- Use all necessary personal safety equipment such as helmet, safety goggles, rubber gloves and protective footwear.
- All personnel who are to work with sewage systems should be fully vaccinated against diseases that can occur.
- When removing pump from chamber, make sure that power is isolated to the pump and cannot be accidentally turned on. Clean unit thoroughly before beginning work.

The following warning list refers to safety precautions related to system operation. Remember that all maintenance of pump systems must be carried out by authorized, qualified personnel only.

- **Pump/s may start at any time.** ensure full isolation of electrical POWER to the motor, preferably by turning off, and locking out, the main switch in the circuit board. Use correct warning signs and lockout processes to avoid persons reactivating the power while work is being performed.
- **System is pressurized.** Under normal operating conditions, the pipes, pumps and components are pressurized. Before unbolting or dismantling any pipework or equipment, ensure water supply to the areas of maintenance is isolated and water pressure relieved.
- **Exposed moving parts.** Keep clear of all moving parts on pumps, motors and couplings and keep area around pump system clear at all times.
- **Noxious and dangerous gases.** The system, particularly in sewage pump station conditions, may emit dangerous gases. Ensure area is well ventilated prior to removing pit cover.

- **High Voltage.** Control boxes contain high voltage live wiring and terminals. Entry of control boxes is strictly not permitted except by authorized service personnel. Controller should be fully isolated before entry.
- **Deep pit.** Removal of pit access cover or incorrect fitting of cover may cause injury. Never leave an open pit unattended. Adequate barricading and warning are imperative to prevent accidental falling. Ensure pit cover is correctly reinstalled and sealed after removal. Removal of pit covers must only be performed by authorized personnel.
- **Corrosive Liquids.** The system may contain corrosive liquids or gases that may cause injury or equipment damage. Avoid all contact with skin and thoroughly wash and treat any equipment the contacts liquid.
- **Biological Risk.** The system may contain bacteria, infectious diseases and other associated harmful substances. At all times, exercise extreme care when working near or on the system. Avoid direct contact with components that have been in contact with waste liquids or gases.
- **Reporting.** Finally, ensure that all faults are reported to the maintenance manager.

REEFE® is serious about your safety, so ensure that all safety instructions are thoroughly understood and correctly adhered to without compromise. We claims no responsibility for injury, illness or equipment damage, either in whole or in part, resulting directly from failure to adhere to safety recommendations and/or instructions.

Nothing in these instructions overrides the exercise of your good judgement, if there is a better, safer way to conduct a task, that way should be followed.

### 3.0. SAFE USE OF THE PUMP STATION

While your pump station is designed to handle domestic sewage, and is capable of accepting and pumping a wide range of materials, regulatory agencies advise that the following items should never be introduced into any sewer either directly or through a kitchen waste disposal.

- Glass
- Metal
- Nappies
- Socks, rags or cloth
- Plastic objects (e.g. toys, utensils)
- Sanitary napkins, tampons or any similar such products
- Sand, rocks, stones and other associated debris

Further to this, these items must NEVER be introduced into any sewer:

- Explosives
- Flammable material
- Lubricating oil and/or grease
- Gasoline
- Strong Acids or Alkalines (other than normal household cleaning fluids)
- Any other chemical substance of any type.

Power Failure: REEFE® wastewater pumps are wholly reliant upon electrical power both to dispose of wastewater and to provide an alarm signal. If the electrical power service is disrupted, it is absolutely critical that action is immediately taken to minimise or preferably prevent waste input to the system.

All systems we require that they include a high level alarm, with battery backup, to ensure an alert is made if the power has failed. The system installation location should be designed and constructed in such a manner that if it does overflow, it does NOT cause harm or damage. We are not responsible or liable for costs involved due to overflow, for any reason whatsoever. It is the responsibility of the engineer or designer or installer to ensure that damage cannot be caused in a situation of overflow.

## 4.0. Installation Instructions

### ANTI BUOYANCY BALLAST

REEFE Underground tanks have been tested to resist the effects of underground pressure to full depth as per the Australian Standard, however the correct backfill instructions must be followed (see below).

In conditions of high water table, external ballast will be required to resist the upward buoyancy forces that groundwater exhibits. Installers must recognise that these tanks when empty will float on approximately 50mm of water. The upward thrust at the base of the tank fully immersed in water could exceed 69000KPa. The most convenient ballast is site poured concrete. The calculation of the volume of concrete ballast required is not covered in this document. These instructions suggest a minimum ballast requirement. A certified civil engineer should be engaged to carry out this calculation. Drainage should also be considered at the base of the tank to remove any groundwater.

### SURFACE LOADS

Light duty polyethylene access covers are rated for 150kg loading and are not suitable for vehicular traffic. If a tank is to be located in an area subject to vehicular traffic a certified cast iron cover must be used. The polyethylene pump station walls have been tested to withstand a wheel loading of 510kg as per the Australian standard. If heavier wheel loadings are to be encountered special design consideration must be given to the surface slab, which must provide a full reinforced bridge support to transmit slab loads to virgin ground. In this case, the services of a qualified civil engineer should be engaged to provide adequate slab design. Loads greater than 510kg must not be transmitted to the polyethylene pump station walls.

### TEMPERATURE

Above 50 degrees Celsius the characteristics of polyethylene begin to change. Extreme care must be exercised when installing tanks in hotter weather. After installation into the excavated hole, the tank must be stabilised to around 25 degrees C by filling with water and allowing to cool for a period of 24 hours before backfilling operations begin. Failure to do so could cause the tank walls to deform as backfill is allowed to rest against the polyethylene when it is too hot.

## PRE-INSTALLATION CHECKS

After unloading inspect the tank for any damage during transportation and lifting. Should any surface damage be evident, this must be reported to us before proceeding further with the installation.

Installation should be carried out by experienced and qualified tradespersons. Before digging, call any relevant authorities to locate underground services.

The installation of a tank for sewage or water storage may require prior approval of local authorities. Contact your local council or relevant authority to ensure you meet all approval requirements.

Make sure you have all the necessary equipment and supplies to complete the installation. Finish ground level in relation to tank lid, as tank risers are not generally recommended.

## INSTALLATION

The hole for the tank should be no greater than 250mm to 300mm oversize to tank diameter, with due regard to the amount of concrete or backfill to be used under and around the tank.

It is suggested that the base of the excavation be drained, especially in water charged ground, before, during and until concrete encasement has set, to hold the tank securely in the ground.

Lay a minimum of 100mm of 20mpa concrete in the bottom of the hole, complete with two layers of M81 reinforcing mesh.

Lower the tank into the hole while the concrete is still a slurry. Ensure no rocks or sharp objects fall into the hole as damage to the tank could occur.

Where cored locking holes are provided in the base of the tank, fit reo bar so it penetrates the concrete slurry to stop the tank base moving. Additional concrete may be required to lock reo bars firmly into place.

Level and adjust tank to suit installation conditions. Secure with stabilising bars or timbers to hold in place.



Fill tank with water to level of required concrete ballast according to engineer recommendations. If ambient temperature is high, the tank should be left in place (filled with water) for 24 hours before backfilling operations commence. Allow concrete to set before proceeding further.

Encase tank with concrete to meet requirement above and to at least halfway between first and second rib. Ensure tank remains full of water.

Connect pipes with minimum earth cover as per Australian Standard. (inlet 300mm and outlet 220mm)

Blue metal gravel backfill material should be placed around the outside of remaining wall to ensure uniform wall loading. Uneven backfill must not be used. The backfill must be even and porous, to allow free draining of water away from tank wall. If free draining of groundwater is unlikely, then concrete should be poured up the full height of the tank wall.

Back fill material must not exceed 100mm from underside of lid when fitted with cast iron lids.

If a surface concrete slab is required at ground level it should now be poured to cover the neck of the tank and access cover should be fitted.

**Lids must not be buried at any time.**

The water used to stabilise the tank during back filling may now be pumped out.

## 5.0. AFTER INSTALLATION

Specifically constructed lids able to withstand the required traffic can be supplied. It is preferable for this to be specified prior to installation.

It is particularly important that the pump station is protected from accidental contact by motor vehicles, construction equipment, and, in a farm scenario, contact from farm machinery and/or livestock. Where there is danger of stock being able to walk on the lid, the tank must be fenced to prevent livestock injury risk, or the tank lid being holed.

## 6.0. TROUBLESHOOTING

The table on the following page is a guide to diagnose and rectify the most common problems that may arise. This guide should only be used by qualified maintenance personnel. As with any troubleshooting procedure, start with the simplest solution first: always make the above ground checks before pulling the pump from the pit.

Before embarking on any trouble shooting action ensure you read all the warnings in the beginning of this manual.

Model	Operation	Volts
Pump/s will not run	<ul style="list-style-type: none"> <li>- Check if visual/audible alarm on control panel is activated.</li> <li>- Check for voltage at panel "Power On" light should be aglow.</li> <li>- Ensure circuit breakers are not tripped</li> <li>- Check if pump can be started manually .</li> </ul>	<p>If not, report to electrician.</p> <p>If so, report to electrician.</p> <p>Report to service department.</p>
Pump/s start but then cut out immediately	<ul style="list-style-type: none"> <li>-Check that overload is on the correct amperage setting.</li> <li>- Have electrician check the voltage on all three phases.</li> <li>- Check that check valves are closing properly, otherwise backflow will cause tank to fill again.</li> <li>- Level floats are set too close together, or, turbulence in water is causing floats to go up and down.</li> </ul>	<p>Adjust Overload</p> <p>Replace if faulty.</p> <p>Remove any blockages, if issue persists, replace valve.</p> <p>Reset float levels.</p>
Pump/s run but do not deliver water	<ul style="list-style-type: none"> <li>- Gate valve is closed</li> <li>- Check valve is blocked</li> <li>- Inlet of pumps is blocked</li> </ul>	<p>Open gate valve</p> <p>Unblock check valve</p> <p>Contact servicemen</p>
Pump/s run but deliver too little water	<ul style="list-style-type: none"> <li>- Pump inlets are partially blocked.</li> <li>- Excessive wear on impeller and/or wear plate.</li> </ul>	<p>Contact servicemen</p> <p>Contact servicemen</p>

\*For any other issues, please contact us.

## 7.0. ROUTINE MAINTENANCE

When a pump station is initially commissioned it should be visited daily for the first week to check that all the systems are working correctly. Particular care should be taken with a new installation that foreign matter such as concrete, silt, gravel, timber or tools do not foul the pump. The following checklist should be followed.

- The wet well should be hosed down and pumped to its minimum level each day to check for such foreign matter. All such material should be removed. Do not use the pump to remove silt or gravel as abrasives will ruin tolerances (i.e Impeller, Volute etc.); use a vacuum truck.
- Routine maintenance and servicing are essential to maintain the plant in a serviceable condition. Abnormalities are often the first sign that maintenance is required on the pump unit.
- The station should be visited on a monthly basis to check the pumps operation, record the above data and hose off any build-up of fats or foreign material in the wet well.
- Station should be serviced by a proficient technician on at least a 6 monthly basis. This will need to be more frequent for high maintenance stations. Checks and tests include the full assessment of pump condition, internal component condition, system performance and routine pump maintenance as per pumps instruction manual.

The main factors in determining if a major overhaul is required would be if a reduction on the pump output is observed, or a significant increase in power.

- A high degree of cleanliness of the equipment and surrounding area should be maintained as this will assist in the detection of minor defects, which, if no action was taken, could lead to more serious problems.
- The main factors in determining if a major overhaul is required is a falling off in the pump discharge pressure to an unsatisfactory level or a significant increase in power consumption or pump running time.
- Depending on the conditions and environment that the pump station must work in, more frequent inspections to the system may be required. This can often be determined by the initial checks following the installation of the system.

## 8.0. BREAKDOWN – SAFETY WHEN SERVICING

\*Refer: 2.0 SAFETY PRECAUTIONS also.

When servicing your REEFE® Pump Station, ensure you always consider the health and safety of yourself and others first and foremost.

The following list is a basic guideline to safety practices that should be followed when servicing.

- Be aware of “Confined Space” guidelines.
- To reduce the risk of electrical shock, always isolate the pump from the power source before handling. Lock out power and tag.
- Do not wear loose clothing that may become entangled in the impeller or other moving parts.
- Keep clear of suction and discharge openings. DO NOT insert fingers in pump whilst power is connected.
- Always wear appropriate safety gear such as safety glasses when working on the pump or piping.
- Cable should be protected at all times to avoid punctures, cuts, bruises and abrasions. INSPECT FREQUENTLY.
- NEVER handle connected power cords with wet hands.
- To reduce the risk of electrical shock, all wiring and junction connections should be made in accordance with local codes and regulations.

## 9.0. WARRANTY

1. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. If you are a consumer as defined by the Australian Consumer Law, you are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you (the purchaser) do not fall within the meaning of 'consumer' in the Australian Consumer Law the provisions of the Australian Consumer Law will not apply to you. The following conditions form part of the instructions and do not over-ride your statutory rights.
2. This warranty covers failure due to manufacturing defects for PUMP STATIONS purchased and used in mainland Australia for a period of 12 months from the date of installation. The PUMP STATION is hereinafter referred to as "equipment" or "product" or "goods" or other generic terms to describe the PUMP STATION and items supplied by us, as part of the system. We shall repair or replace faulty goods when we ascertain that the fault is due to manufacturing defects, within the period of time as advised by us for any particular item (12 months if not specified by us otherwise). If you require a refund, you must return the item to the original place of purchase. We have not acted as a consultant nor charged design fees for the design or specifying of this equipment, and are in no way responsible for, nor guarantee any particular level or performance of the equipment supplied, unless such guarantee is given in writing by us, and personally signed by the General Manager or Managing Director. Application of warranties is also conditional on us having received payment for the total price as quoted, within the agreed payment terms.
3. Faults or losses or failure caused due to: Accidents, misuse, lack of maintenance, not following these instructions, damage caused by lightning strike/flooding/other natural disasters/power surges/power brownouts/or operating the equipment on incorrect power supply - are not covered by warranty.
4. Where fitted: The complete Impeller set (including shaft), Pre-filter Sponge, Seals and O-rings are all wearing items and therefore are not covered for "normal wear and tear". They are covered by this warranty if they are faulty due to a manufacturing defect.
5. Warranty will be void if any tampering or removal of identification labels or electrical cables has occurred, or any non-genuine parts have been fitted, or repairs have been carried out by unqualified persons. No warranty applies for goods sold or used for HIRE or RENT or LEASE. No warranty applies, and no liability is accepted, if the equipment is used in circumstances that we define as: HAZARDOUS SITUATIONS, A MINE SITE, A REMOTE AREA, AN INDUSTRIAL APPLICATION, or any other UNSUITABLE APPLICATION, all of these circumstances are defined by us at our sole discretion.
6. The Warranty excludes accidental or deliberate breakages, normal wear and tear, fading or breakdown due to the effect of exposure to sunlight or chemicals or any other external factor that may affect the life of the product.

7. This product is guaranteed as fit for the purpose of pumping CLEAN WATER, STORM WATER, GREY WATER and EFFLUENT in normal domestic household use, and for NO OTHER USE. This equipment is not for Potable Water, it has not been tested for Potable Water. Performance data quoted is generally from test data and is approximate and does not take into account factors in the installation such as loss of pressure and flow due to pipework & pipe-fittings & valves. It is the purchaser's responsibility to ensure that the product is fit for their purpose and of sufficient size & performance for their application.
8. IMPORTANT: No electrical equipment last forever. Therefore ALL installations of electrical equipment must be constructed to allow for easy removal for servicing, or replacement, warranty replacement or upgrading. Warranty replacement does not include costs of removal and re-installation as we have no control over the method of installation.
9. Before installing or servicing ALWAYS disconnect from the power supply, and ensure it cannot be accidentally turned back on.
10. This equipment is not to be used for critical applications. For critical applications where equipment failure could cause serious consequences, you MUST have a backup system, this is a condition of this warranty.
11. This equipment must be installed in accordance with these instructions, and the a detailed record must be made, including photographic evidence of the various steps of installation must be kept for future reference if ever required. The equipment MUST NOT be installed in any manner that if it were to leak, or fail to work, that it would cause damage or loss to property or persons. It MUST be installed in a well-ventilated and drained area. All warranty is void if this condition is not heeded and no liability can be accepted in the case of damage or loss caused by failing to comply with this condition.
12. The electrical equipment must be correctly earthed and connected to a circuit with an integral RCD (safety switch) in the circuit breaker, in accordance with the Electrical Regulations or Standards that are applicable.
13. In the case of a fault, refer to the Trouble Shooting Guide first. If these steps do not rectify the problem, you may return the faulty appliance to the original place of purchase with proof of purchase for replacement or refund. Alternatively you can mail us at PO BOX 650 MORNINGSIDE QLD 4170 or send an email at [csv@ascento.com.au](mailto:csv@ascento.com.au) with a photo of the faulty item, copy of your purchase receipt, a copy of the installation record and the installation photos, a description of the problem, and your name and address and phone number - we will review your request and send you a replacement directly if we accept your warranty claim. Or call us on 1800 807 604 with the above information; however we will always require a copy of your purchase receipt and a copy of the installation record and the installation photos. Do not send the product to us unless we ask you to do so.
14. Equipment used in SUITABLE commercial or industrial applications are covered by replacement warranty only, when proved to have a manufacturing defect that has caused the equipment to fail. No warranty applies when used in unsuitable applications, which shall be defined by us, at our sole discretion.
15. If an exact replacement is not available, the closest equivalent product will be supplied at our discretion.
16. This warranty does not exclude any non-excludable rights according to Australian Law. However any condition that is made void by Australian Law does not void the remaining conditions, which shall stand unaltered.

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