



## PUMP STATIONS

### INSTRUCTION MANUAL

**MODEL:** QubeX 250 Series | 700 Series | 1200 Series  
1600 Series | 2000 Series | 3000 Series | 5000 Series

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## 1.0. INTRODUCTION

Congratulations on your purchase of a REEFE® Polyethylene Packaged Pump Station. Providing the necessary care and preventative maintenance is followed, and through adherence to a few simple guidelines, your packaged pumping system will give many years of reliable service. However, it is essential to acknowledge that only fully qualified personnel should install, operate and repair your pump station system. In addition, a qualified electrician must perform any wiring. The REEFE® Polyethylene Pump Station Package is constructed considering all government requirements; however, you must consult local authorities before installation for all applicable codes and regulations.

## 2.0. SAFETY PRECAUTIONS

In addition to any specific safety awareness highlighted in this manual, all persons involved in both installation and maintenance of the pump station must be 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. If entry to the station is unavoidable, the correct safety procedures should be carried out in complete accordance with OH&S requirements. Personnel entering must have full confined space entry certification, have completed a risk assessment, evacuated the chamber of dangerous gases, wear 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 necessary.
- Use a gas meter to guarantee sufficient oxygen and ensure there are zero poisonous gases in the 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 an approved type and is in good working order.
- Do not ignore the risk of electric shock. Use equipment protected by an RCD and ensure power is isolated at the control panel before entering the 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 helmets, 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 the pump from the chamber, ensure that power is isolated to the pump and cannot be accidentally turned on. Clean the 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 total isolation of electrical POWER to the motor, preferably by turning off and locking 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.
- **The system is pressurized.** Under normal operating conditions, the pipes, pumps and components are pressurized. Before unbolting or dismantling any pipework or equipment, ensure the water supply to the maintenance areas is isolated and the water pressure is relieved.
- **Exposed moving parts.** Keep clear of all moving parts on pumps, motors and couplings and keep the area around the pump system clear at all times.
- **Noxious and dangerous gases.** The system may emit dangerous gases, particularly in sewage pump station conditions. Ensure the area is well ventilated prior to removing the 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. The 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 that 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 claim no responsibility for injury, illness or equipment damage, either in whole or part, resulting directly from the failure to adhere to safety recommendations and instructions.
- Nothing in these instructions overrides the exercise of 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 can accept and pump 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 or grease
- Gasoline
- Strong Acids or Alkalines (other than normal household cleaning fluids)
- Any other chemical substance.

Power Failure: REEFE® wastewater pumps are wholly reliant upon electrical power to dispose of wastewater and provide an alarm signal. If the electrical power service is disrupted, action must be taken immediately to minimise or prevent waste input to the system. We require all systems to include a high-level alarm with battery backup to ensure an alert is made if the power fails. The system installation location should be designed and constructed so 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. In high water table conditions, external ballast will be required to resist groundwater's upward buoyancy forces. Installers must recognise that these tanks, when empty, will float on approximately 50mm of water. The upward thrust at the tank's base fully immersed in water could exceed 69000KPa. The most convenient ballast is site-poured concrete. This document does not cover the calculation of the required concrete ballast volume. 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 tank's base to remove groundwater.

#### **SURFACE LOADS**

Light-duty polyethylene access covers are rated for 150kg loading and unsuitable for vehicular traffic. A certified cast iron cover must be used if a tank is to be located in an area subject to vehicular traffic. The polyethylene pump station walls have been tested to withstand a wheel loading of 510kg per the

Australian standard. However, suppose heavier wheel loadings are to be encountered. In that case, special design consideration must be given to the surface slab, providing full reinforced bridge support to transmit slab loads to the virgin ground. In this case, the services of a qualified civil engineer should be engaged to provide adequate slab design. Loads more significant than 510kg must not be transmitted to the polyethylene pump station walls.

### **TEMPERATURE**

Above 50°C, the characteristics of polyethylene begin to change. Therefore, 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°C by filling it with water and allowing it to cool for 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. Experienced and qualified tradespersons should carry out the installation. Before digging, call any relevant authorities to locate underground services. Installing a tank for sewage or water storage may require approval from local authorities. Contact your local council or relevant authority to ensure you meet all approval requirements. Ensure 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 tank base, fit reinforcing bar, so it penetrates the concrete slurry to stop the tank base from moving. Additional concrete may be required to lock reinforcing bars firmly into place. Level and adjust tank to suit installation conditions. Secure with stabilising bars or timbers to hold in place. Fill the tank with water to the level of required concrete ballast according to engineer recommendations.

If the ambient temperature is high, the tank should be left in place (filled with water) for 24 hours before backfilling operations commence. Then, allow the concrete to set before proceeding further. Encase the tank with concrete to meet the requirement above and at least halfway between the first and second rib. Ensure the tank remains full of water. Connect pipes with minimum earth cover as per Australian Standards. (inlet 300mm and outlet 220mm). All pipe connections to tanks must be flanged and sealed to stop the ingress of dirt, water etc. The minimum inlet height from the tank's base to the underside of the pipe would be 600mm. the remaining wall to ensure uniform wall loading. Uneven backfill must not be used. The backfill must be even and porous to allow open water to drain away from the tank wall. If free draining of groundwater is unlikely, then concrete should be poured up the full height of the tank wall. Backfill material must not exceed 100mm from the underside of the 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 an access cover should be fitted.

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

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

### **5.0. AFTER INSTALLATION**

Specifically, constructed lids able to withstand the required traffic can be supplied. These requirements should be specified prior to installation. The pump station must be protected from accidental contact by motor vehicles, construction equipment, and, in a farm scenario, contact from farm machinery and livestock. Where there is the 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 diagnosing and rectifying the most common problems. This guide should only be used by qualified maintenance personnel. As with any troubleshooting procedure, start with the simplest solution: always make the above-ground checks before pulling the pump from the pit. Before embarking on any troubleshooting action, ensure you read all the warnings at the beginning of this manual.

Problem	Check	Action
Pump/s will not start	Check power supply is active. The “Power On” light should be aglow for pump stations with a control panel.	Turn the power supply on at PowerPoint. If a further electrical investigation is required, contact a licensed electrician.
	Fuses are blown, or the circuit breaker has tripped.	Have a licenced electrician replace the fuses or reset the circuit breaker. If the circuit breaker trips repeatedly, contact a pump technician.
	Check if the visual/audible high-level level alarm is activated.	Contact pump technician.
Pump/s start but then cut out immediately	Check that overload is set to the correct amperage setting.	Adjust overload.
	Ensure that check valves are closing properly. Otherwise, backflow will cause the tank to fill again.	Remove blockage from check valve or replace if faulty.
	Level floats are set too close together, or turbulence in the water causes floats to go up and down.	Reset float levels to eliminate turbulence.
Pump/s run but does not deliver water	Shutoff Valve is closed.	Open Shutoff Valve.
	Check if the non-return valve is blocked.	Unblock the non-return valve.
	Pump inlet is blocked.	Contact pump technician.
Pump/s run but deliver too little water	Pump is partially blocked.	Contact pump technician.
	Excessive wear on impeller and/or wear plate.	Contact pump technician.

**\*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 daily level 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 every month to check the pump's operation, record the above data and hose off any build-up of fats or foreign material in the wet well.
- A proficient technician should service the station at least every six months. This will need to be more frequent for high-maintenance stations. Checks and tests include the complete assessment of pump condition, internal component condition, system performance and routine pump maintenance as per the instruction manual.
- 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 severe problems.
- The main factors determining if a significant overhaul is required are 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 in which the pump station must work, more frequent systems inspections may be required. The initial checks can often determine this following the system's installation.

## **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 for 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 the pump whilst the 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 per local codes and regulations.

## **9.0. WARRANTY**

1. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. Suppose you are a consumer as defined by Australian Consumer Law. In that case, you are entitled to a replacement or refund for a major failure and 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 override your statutory rights.
2. This warranty covers failure due to manufacturing defects for PUMP STATIONS purchased and used in mainland Australia for 12 months from the installation date. 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 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 a 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 strikes/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". However, 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, any non-genuine parts have been fitted, or unqualified persons have repaired the product. No warranty applies for goods sold or used for HIRE, RENT, or LEASE. In addition, 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 exposure to sunlight or chemicals or any other external factor that may affect the product's life.
7. This product is guaranteed as fit to pump CLEAN WATER, STORM WATER, GREY WATER and EFFLUENT in everyday domestic household use and for NO OTHER USE. This equipment is not for Potable Water, and it has not been tested for Potable Water. Performance data quoted is generally from test data and is approximate and does not consider 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 electrical equipment installations must be constructed to allow for easy removal for servicing, replacement, warranty replacement or upgrading. Warranty replacement does not include removal and re-installation costs, as we have no control over the installation method.
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 warranty condition.
11. This equipment must be installed following these instructions, and 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 leaks or fails to work, it will 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 for 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, per the applicable Electrical Regulations or Standards.
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, a 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 if we accept your warranty claim. Alternatively, call us on 1800 807 604 with the above information; however, we will always require a copy of your purchase receipt and the installation record and photos. Please do not send the product to us unless we ask you to do so.
14. Equipment used in SUITABLE commercial or industrial applications is covered by a 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 we shall define at our sole discretion.
15. If an exact replacement is unavailable, the closest equivalent product will be supplied at our discretion.
16. According to Australian Law, this warranty does not exclude any non-excludable rights. However, any condition made void by Australian Law does not void the remaining conditions, which shall stand unaltered.