

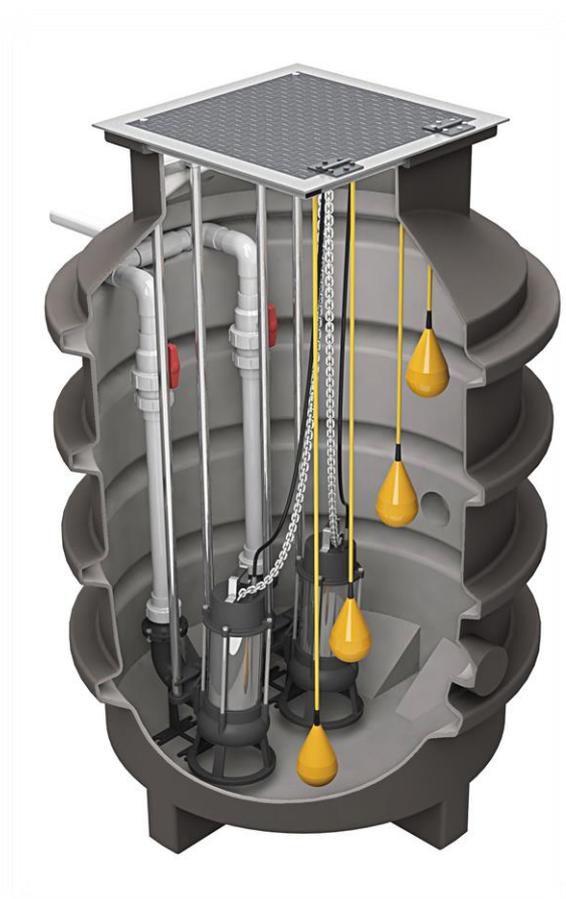
POLYETHYLENE PACKAGED PUMP STATIONS

INSTRUCTION MANUAL

**IMPORTANT NOTE: PLEASE READ THIS MANUAL THOROUGHLY PRIOR TO
OPERATION AND KEEP HANDY FOR FUTURE REFERENCE**

CONTENTS

1.0	Introduction	3
2.0	Safety Precautions	3
3.0	User Guide	6
4.0	Pre-installation Checklist	7
5.0	Installation Procedure	9
6.0	After Installation	11
7.0	Routine Maintenance	11
8.0	Troubleshooting	12
9.0	Breakdown – Safety when servicing	14
10.0	Warranty	15



1.0. INTRODUCTION

Congratulations on your purchase of a Netco Polyethylene Packaged Pump Station. Afforded the required care and preventative maintenance, 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 Netco Polyethylene Pump Station Package is approved by all relevant authorities; 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.
- Conduct a risk assessment before entering the chamber, and fill out the associated form. **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.
- Do not ignore the risk of infection. The highest possible standards of personal hygiene should be observed without compromise. Ensure a first aid kit is kept handy.
- 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 may start at any time.** In standard automatic mode, pumps may start automatically without any warning. Before any maintenance work is carried out, ensure full isolation of motor at the relevant controller.
- **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.
- **Confined Space.** Netco Packaged Pump Stations are designed purposely to facilitate pump removal and component servicing from the surface. 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.
- **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.

Netco is serious about your safety, so ensure that all safety instructions are thoroughly understood and correctly adhered to without compromise. Netco 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.

Remember, **there is no substitute for the exercising of common sense** when working on or near a pump system.

3.0. SAFETY PRECAUTIONS

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
- Strong chemicals
- Gasoline

Power Failure: Your wastewater pump is 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 advisable to minimize or prevent waste input to the system.

4.0. PRE-INSTALLATION CHECKLIST

It is critical that installation be carried out by experienced and qualified personnel. Before digging, local authorities must be contacted in order to determine location of any underground lines or cables.

The installation of the pump station requires the prior approval of local authorities. Questions relating to this should be directed to a responsible officer of the local council and/or relevant authority. Netco Pumps and Equipment regrets we are unable to provide this information.

The following information must be regarded as a guide only, and is to be read in conjunction with a printed detail sheet for the particular tank installation proposed.

- Determine the best location for your tank and control panel (if applicable).
- Correct appraisal of site conditions is essential prior to installation of tank. Installers must acknowledge that, when empty, these tanks will float on approximately 50mm of water. The upward thrust at the base of the tank fully immersed in water **could exceed 69,000 kPa**.

It is hence important to pay close attention to site conditions. The installer should consider:

- **Drainage**, particularly at the tank base.
- The **rise in water** due to:
 - (i) tidal conditions;
 - (ii) saturation of the ground during heavy rain, and;
 - (iii) likelihood of flooding or run-off water from any source.
- The **quality of available backfill**.

Where tanks are installed under adverse site conditions, utmost care is required to prevent any chance of the tank being forced out of the ground by the upward pressure of water. This can occur if the base of the tank is not properly drained.

For installations where the water table is above the bottom of the tank, it is essential that tanks be bedded on a cement slurry (see installation procedure), as this will prevent the base of the tank buckling.

Ensure that damage to tanks is checked. During transport and handling over rough ground, be careful to avoid "bruising." Contact with sharp stones, or dropping of the tank may result in "plastic fractures" which must be repaired prior to installation to avoid leakage.

Other important points to consider include:

- Minimise the use of elbows on the inlet line. If required, use only 45° elbows.
- Plan your installation location carefully to ensure that the inlet pipe stays within the allowable inlet height.
- Determine where the incoming power will be supplied from and if it can handle the rated load for your pump station.
- Where applicable, mount the control panel in accordance with electrical codes and where the alarm light is clearly visible.
- Determine the length of electrical cable required as all joints in cables must be made by approved submersible splice. Only extend cables with cable of equal or greater submersion rating and current carrying capacity.
- Finish ground level in relation to tank lid, as tank lid risers are not normally recommended. Also, lids must not be buried at any time.

5.0. INSTALLATION PROCEDURE

Below is a step by step procedure that should be fully observed and followed when installing a Netco Polyethylene Pump Station.

1. Tank construction is 8mm polyethylene manufactured in accordance with strict quality control procedures.
2. The hole for the tank should be no greater than 250mm to 300mm oversize to tank diameter, giving due regard to the amount of concrete or backfill to be used under and around the tank.
3. It is suggested the base of the tank be drained, especially in water-charged ground, before, during and until concrete encasement has set, to hold the tank securely in the ground.
4. Compact a 100mm bed of sand to a finished depth 100mm deeper than tank. Pour **min. 100mm of 20mpa concrete into bottom of hole**. Bed tank in fresh concrete, ensuring no rocks or sharp objects fall into hole, as damage to the tank wall and base could occur. Pour concrete around sides to a depth of approx. 250mm. If the water table is above the bottom of the tank, contact the site engineer to determine the extent of the ballast required.
5. Where 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.
6. Level and adjust tank to suit installation conditions.
7. Fill tank with water up to the first rib, or to a minimum of 300mm-400mm depth.
8. Secure tank with stabilizing bars or timber to hold in place before encasing with concrete.
9. Put pumps into tank and connect unions (where fitted) before installing discharge line to ensure connections are both free and level.
10. The tanks are provided with a collar approximately 300mm from the base. The purpose of this collar is to create a bond between the tanks and the backfill material to withstand the upward forces when the tanks are empty.

11. Check local council or other relevant authority's requirements concerning levels. Ensure the relevant inspector's approval is obtained before commencing backfilling.
12. Whilst site conditions will determine the amount of concrete encasement, engineer's instructions should be referred concerning each individual site.
13. Backfill material must not exceed 100mm to underside of lid when fitted with "gatic" type concrete fill-in lid.
14. When backfilling use sand or soil only. At all times be careful that rocky or sharp objects are not used. Avoid use of heavy soils that do not consolidate.
15. Inlet pipes must be vented and fitted with a "T" junction and dropper pipe on the inside of tank.
16. All pipe connections to tanks must be flanged and sealed to stop the ingress of dirt, water etc. Minimum inlet height from base of tank to the underside of pipe would be 600mm.
17. All electrical connections and conduits must be carried out by a licensed electrician. Cables should be sealed with silicon on inside of conduit to prevent gases venting into pump controller.
18. Before connecting power supply, check all connections and relays for any loose connections that may have occurred during transportation. When commissioning, set pump overloads to pump nameplate amperage.
19. High level alarm float should be set 100mm above pump start switch.
20. **IMPORTANT:** On three-phase units, directional rotation must be physically sight-checked by lifting pump before operation.
21. It is **HIGHLY RECOMMENDED** that a concrete slab be formed around the pump station cover. Besides creating a tidy surface footprint, this will help fully seal the unit and prevent any potential ground water ingress to the station.

6.0. AFTER 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.

Alternatively, a specifically constructed lid able to withstand the required traffic can be supplied. It is preferable for this to be specified prior to installation.

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; use a vacuum truck.
- Routine maintenance and servicing are essential to maintain the plant in a serviceable condition. Each time the pump station is visited, readings of the hours run, voltage and current should be taken and recorded on the System Fault and Maintenance Record log. Abnormalities in these readings 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, pump routine maintenance work, level system service, etc.

- 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 operation and environmental conditions with a comparison of previous inspections, the frequency of inspections can be altered to maintain satisfactory operation of the plant to suit established operation routines. The checks and inspections carried out during the running-in period will often establish the frequency of future inspections.

8.0. 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.

PROBLEM	WHAT TO CHECK	ACTION
Pumps (s) will not start	<p>Check if visual/audible alarm on control panel is activated.</p> <p>Check for voltage at panel "Power On" light should be aglow.</p> <p>Fuses are blown or circuit breakers are tripped</p> <p>Checked if pump can be started manually</p>	<p>If not report to electrician</p> <p>Have licensed personnel to replace fuses to reset breakdown.</p> <p>Report findings to service department.</p>
Pump(s) starts but then cuts out immediately	<p>Check that overload is on the correct amperage setting.</p> <p>Have electrician check the voltage on all three phases.</p> <p>Check that check valves are closing properly, otherwise backflow will cause tank to fill again.</p> <p>Level floats are set to close together, or, turbulence in water is causing floats to go up and down.</p>	<p>Adjust overload</p> <p>Replace if faulty</p> <p>Reset level floats to eliminate turbulence</p>
Pump(s) runs but does not deliver water	<p>Gate valve is closed</p> <p>Check if valve is blocked</p> <p>Inlet of pumps is blocked</p>	<p>Open gate valve</p> <p>Unblock valve</p> <p>Contact servicemen</p>
Pump (s) runs but delivers too little water	<p>Pump inlets are particularly blocked.</p> <p>Excessive wear on impeller and/or wear plate.</p>	<p>Contact servicemen</p> <p>Contact servicemen</p>

9.0. BREAKDOWN – SAFETY WHEN SERVICING

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

The following list, while not comprehensive, 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.

10.0. WARRANTY

Warranty is limited to replacement or repair, at Manufacturer's discretion, of any parts or equipment without removal and reinstallation cost for a period of twelve months from date of invoice, provided such part of equipment that is deemed by the respective manufacturer to be faulty. Any work done on site to inspect or remedy faults that are subsequently not accepted as being under warranty by the manufacturer, or are caused by misuse, fair wear or operating procedures, will be charged at parts and labour and travelling time rates applicable at the time.

- If buyer requires our services in respect of site inspection or service outside of what is covered by Manufacturers' warranties, then Buyer should enter into a separate agreement with **NETCO PUMPS** in respect to the same. In the event of no such separate agreement, all operation, calibrating, cleaning and maintenance of plant is the responsibility of the buyer.
- **NETCO PUMPS** have not acted as a consultant nor charged design fees on this project, and are in no way responsible for, nor guarantee any particular level or performance of the treatment plant supplied or effluent quality unless such guarantee is specially given in writing.
- Under no circumstances is **NETCO PUMPS** liable for any direct or consequential loss or damage to persons or properties of any nature due to any cause whatsoever.
- Application of warranties is conditional on **NETCO PUMPS** having received in cash the total contact price. Furthermore, **NETCO PUMPS** reserves the right to withdraw any code compliance, Australian Standard compliance or selection compliance, should the contract not be paid in full.
- Warranty does not cover travel and accommodation costs for non-capital city installations.

This warranty gives you specific legal rights. Nothing in this warranty limits or restricts, or is intended to derogate from, any right or remedy which the purchaser or end user of the product may have pursuant to Australian state and/or Australian federal consumer protection legislation, New Zealand Sale of Goods Act, Consumer Guarantees Act, Fair Trading Act or any other relevant and applicable legislation or authority and where necessary shall be so read and construed.