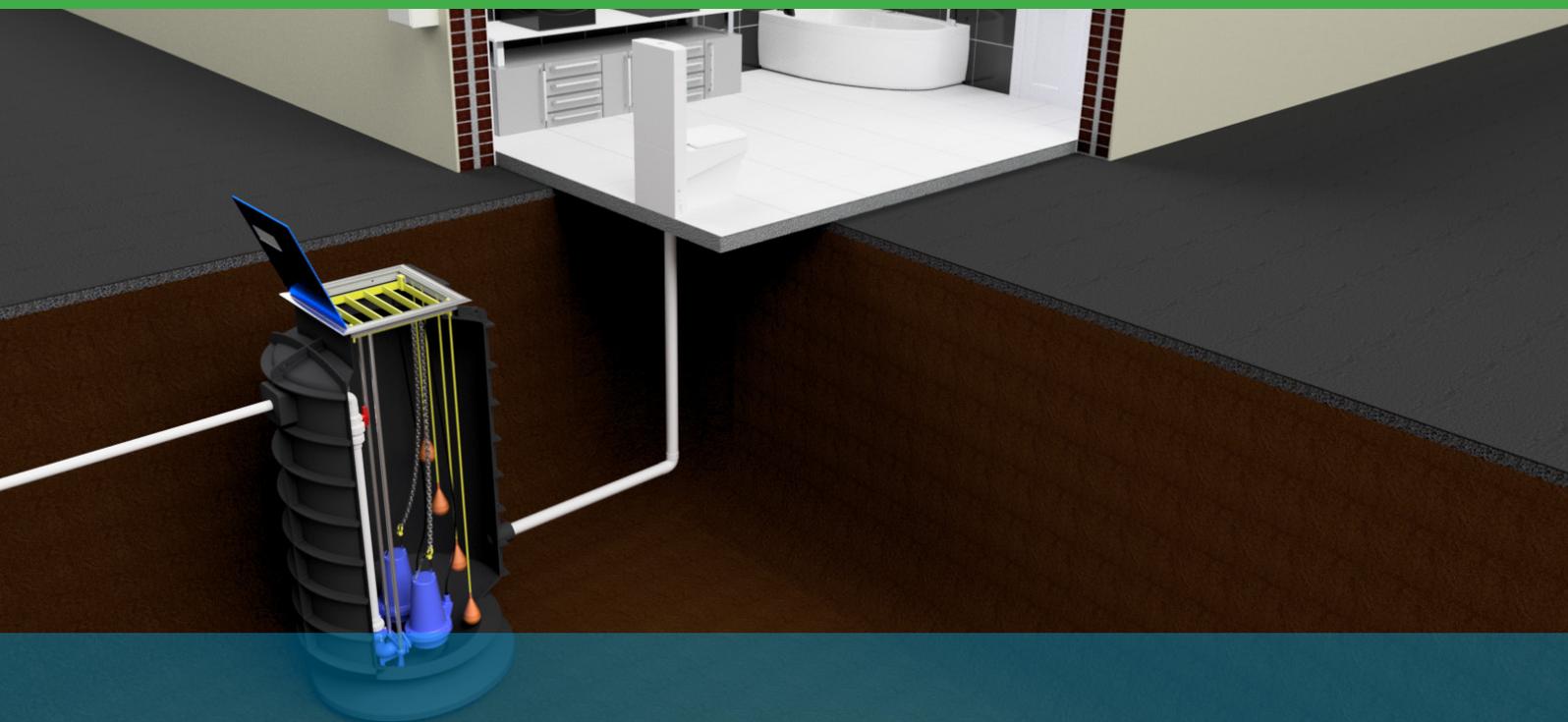




Installation, Operating & Maintenance Manual



NPE Series Polyethylene Packaged Pump Stations

Important Note: Please read this manual thoroughly prior to operation and keep handy for future reference.

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1.0 Introduction

Congratulations on your purchase of a Netco NPE Series Polyethylene Packaged Pumping Station. With proper 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 carry out repair works on your pump station. It is particularly important that any wiring is performed by a qualified electrician.

Prior to installation, local authorities must be consulted for all applicable codes and regulations.

2.0 Safety Precautions

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.

- Ensure the installer is aware of Confined Space guidelines. Only qualified personnel with current Confined Space certification should contemplate entering the pump chamber.
- 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 there is adequate 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 electrical 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 PPE such as hard hat, safety goggles, rubber gloves and protective footwear.
- All personnel who are to work with sewage pumping 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 the pump from the chamber, make sure that power is isolated to the pump and cannot be accidentally turned on. Clean unit thoroughly before beginning work.

2.0 Safety Precautions cont.

The following warning list refers to safety precautions related to pump 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 and without any warning. Before any maintenance work is carried out, ensure full isolation of the pump at the relevant power source.
- **System is Pressurized.** Under normal operating conditions, the pipework, pumps and components are pressurized. Ensure that water pressure is relieved before unbolting or dismantling any pipework or equipment.
- **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, particularly in sewage pump station conditions, may emit dangerous gases. Ensure area is well ventilated prior to removing pit cover.
- **High Voltage.** Pump station control panels contain high voltage live wiring and terminals. Entry to control panels is strictly not permitted except by a qualified electrician. The control panel should be fully isolated before entry.
- **Confined Space.** Netco Packaged Pumping Stations are purpose-designed to facilitate pump removal and component servicing from the surface. If entry to the pump station is unavoidable, only qualified personnel with current confined space certification should enter the pump chamber.
- **Deep Pit.** Removal of pump station access cover or incorrect fitting of access cover may cause injury. Never leave an open pump station unattended. Adequate barricading and warning are imperative to prevent accidental falling. Ensure access cover is correctly reinstalled and sealed after removal.
- **Corrosive Liquids.** The pump station may contain corrosive liquids or gases that may cause injury or equipment damage. Avoid all contact with skin and thoroughly wash and treat any contaminated equipment.
- **Biological Risk.** The pump station may contain bacteria, infectious diseases and other associated harmful substances. At all times, exercise extreme care when working near or on the pump station. 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 please 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 station.

3.0 Pre-Installation Checklist

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

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 (available on request).

- Determine the best location for your pump station, and control panel (if applicable).
- Confirm the depth of your inlet pipe as this will determine the pump station depth in the ground.
- Correct appraisal of site conditions is essential prior to installation of the pump station. 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.

Hence, it is 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 pump stations are installed under adverse site conditions, utmost care is required to prevent any chance of the pump station being forced out of the ground by the upward pressure of water. This can occur if the base of the chamber 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.

Check for any damage to your pump station. 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 mains power will be supplied from and confirm it can handle the rated electrical load for your pump station.

3.0 Pre-Installation Checklist cont.

- Where applicable, mount the control panel in accordance with local electrical codes and where the alarm strobe 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 the pump station access cover, as chamber riser sections are not recommended. Also, access covers must not be buried at any time.

4.0 Installation Procedure

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

- Pump station construction is roto-moulded medium-density polyethylene manufactured in accordance with strict quality control procedures.
- The excavation for the pump station should be no greater than 250mm to 300mm oversize to the tank diameter, giving due regard to the amount of backfill to be used under and around the tank.
- **FOR MODELS NPE-800, NPE-1200 & NPE-1600.** Fill the base of the excavation with a 100mm thick concrete slab or 100mm bed of compacted FCR or 7mm clean gravel. If the water table is above the bottom of the tank, contact the site engineer to determine whether any concrete ballast is required.
FOR ALL OTHER MODELS. Fill the base of the excavation with a minimum 100mm thick concrete slab. If the water table is above the bottom of the tank, contact the site engineer to determine required quantity of concrete ballast.
- It is suggested the base of the excavation be drained until backfill is complete, especially in water-charged ground.
- Level and adjust tank to suit installation conditions.
- Fill tank with water to at least 300mm-400mm depth.
- Secure tank with stabilizing bars or timber to hold in place before backfilling.
- If pumps are not already installed, install pumps in the station and connect unions (where fitted) before installing discharge pipework to ensure connections are both free and level.
- Check local council or other relevant authority's requirements concerning levels. Ensure the relevant inspector's approval is obtained before commencing backfilling.

4.0 Installation Procedure cont.

- **FOR MODELS NPE-800, NPE-1200 & NPE-1600.** Confirm with the site engineer regarding the type and quantity of backfill. As a minimum, the excavation should be backfilled with compacted FCR, 7mm clean gravel or cement-stabilised sand.

FOR ALL OTHER MODELS. Slide reinforcing bars into the base of the pump station (if applicable). Pour concrete around reinforcing bars and up the side of the pump station over the first supporting rib. For the remaining backfill, contact the site engineer regarding the type and quantity required. As a minimum, the excavation should be backfilled with compacted FCR, 7mm clean gravel or cement-stabilised sand.

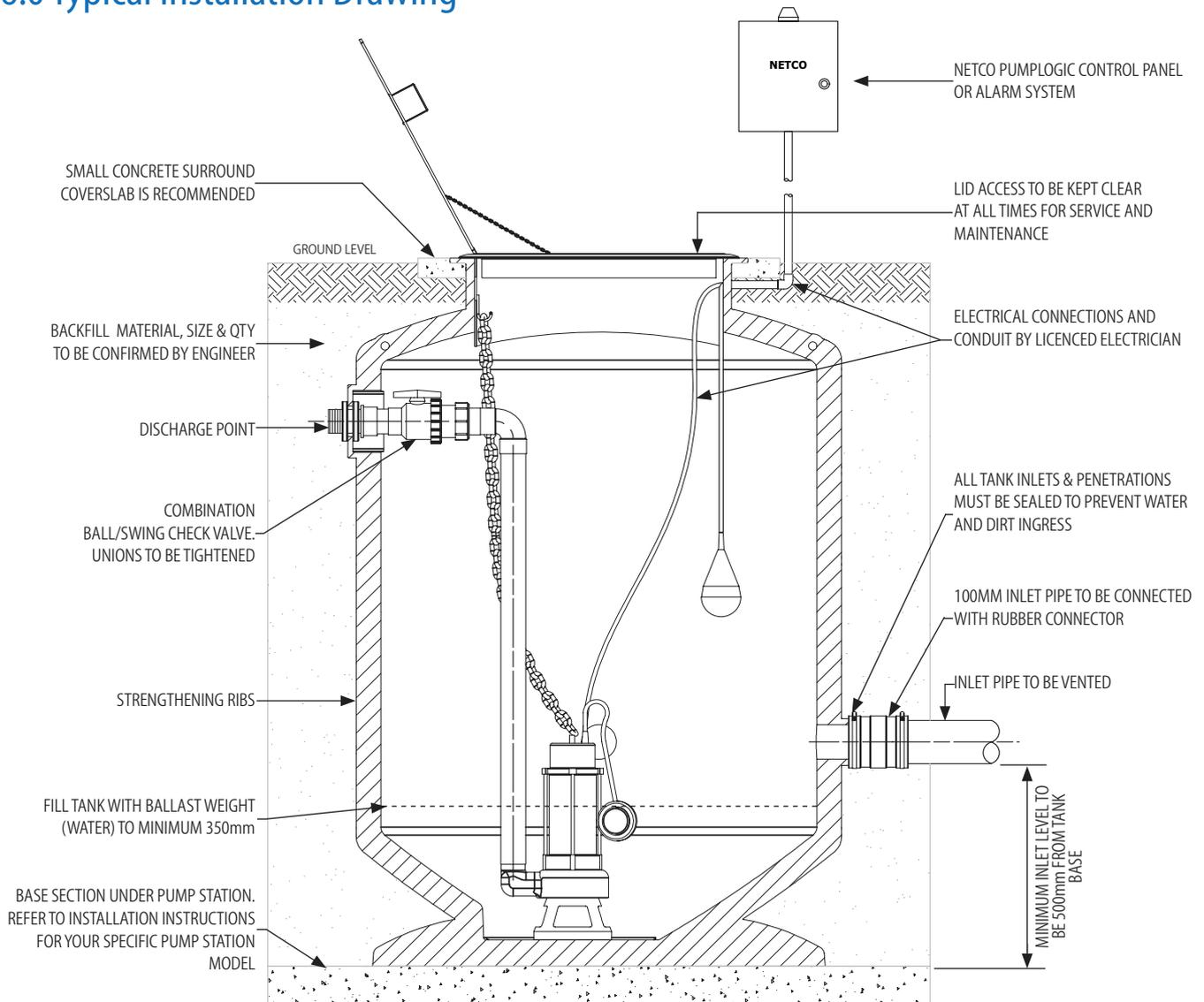
- Ensure the access cover supplied meets the traffic requirement for the pump station supplied.
- Where a GATIC, concrete infill, grated or other trafficable-style access cover is utilised, backfill material must not exceed 100mm to the underside of the cover. Trafficable covers should be keyed into a concrete surround coverslab. Ensure that the coverslab is supported off the backfill material, not supported off the tank. Supporting a coverslab off the tank may cause the tank to be crushed.
- The pump station must be vented. Vent and inlet pipework penetrations must be sealed and in accordance with local plumbing authority regulations. The vent should be as close as possible to the top of the pump station. All penetrations should be perpendicular to the chamber wall.
- Electrical conduits are required for all cabling from the pump station, and all conduit installation and electrical connections must be carried out by a licensed electrician. Cables should be sealed on the inside of conduit to prevent gas egress from the pump station.
- Before connecting power supply, check all connections and relays for any loose connections that may have occurred during transportation. When commissioning, check pump amp draw on the identification plate and set overloads accordingly.
- High level alarm float should be set minimum 100mm above pump start switch.
- **IMPORTANT:** On three-phase units, directional rotation must be physically sight-checked by lifting pump before operation.

5.0 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.

6.0 Typical Installation Drawing



INSTALLATION NOTES

1. Excavate the installation site to a depth 100mm greater than the overall pump chamber height.
2. Fill the base section under the pump station. Refer to installation instructions for your specific pump station model.
3. Place the pump chamber and fill with 300mm - 400mm water.
4. Confirm with site engineer regarding backfill requirements.
5. Electrician to install conduit(s) for the pump(s) through wall using plain to screwed adaptors. Seal cables on inside of conduits. Ensure adequate power supply.
6. Set high level alarm float switch 100mm above pump start float switch.
7. Vent penetrations and inlet penetrations to be made on site and sealed through inlet stub or via rubber connection through the chamber wall using a multi-seal or similar. Vent to be as close as possible to the top of the chamber. All penetrations to be perpendicular to the chamber wall.
8. When commissioning, set overloads to amperage shown on pump nameplate.
9. Pump chamber is to be regularly cleaned with a handheld hose, and pump and alarm operation checked. In sewage or high grease applications, the chamber should be degreased on a regular basis by waste removal contractor. Pump(s) should be removed for service on a 12 monthly cycle (approximately).
10. **IMPORTANT NOTE:** This is a typical representation only and may not accurately reflect the pump station you have purchased. Installation procedures may vary from site to site. Please read installation instructions carefully.

7.0 User Guide

Please note that 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, wet wipes, tampons or any similar 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

Electrical

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. To reduce the risk of electrical shock, the pumps and control panels must be properly earthed in accordance with AS3000 wiring rules and all applicable state or local council ordinances. Keep control panel (if installed) locked or confined to prevent unauthorised access

Access Cover

Do not leave pump cover off the pump station except when servicing, to prevent the entrance of foreign materials such as rocks, metal, soil, animals or humans.

Infiltration

Prevent infiltration of rain or run-off water into the pump station to minimise pump cycling.

Gate Valve

Always keep the gate valve completely open when the system is in operation (unless advised otherwise by the proper authorities).

Pump is Idle

If the pump is idle for long periods of time, it is advisable to start the pump occasionally by adding water to the pump station.

8.0 Routine Maintenance

When a pump station is initially commissioned it should be checked daily for the first week to ensure 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 a 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.
- The pump station should be serviced by a proficient technician on at least a 6 monthly basis. This will need to be more frequent for higher usage pump stations. Checks and tests include the full assessment of pump condition, internal component condition, electrical condition, pump routine maintenance work, level system service, etc. **Netco has a dedicated preventative maintenance team and would love the opportunity to assist. Please phone us for more details on 1300 301 664.**
- 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 two main factors in determining if a major system 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.

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 PPE such as safety glasses and gloves when working on the pump or pipework.
- 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 Troubleshooting

The table on the following page is a guide to diagnose and rectify the most common problems that may arise with a pump station. 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 beginning any troubleshooting actions please ensure you read all the warnings in the beginning of this manual.

PROBLEM	WHAT TO CHECK	ACTION
Pump (s) will not start	<p>Check power supply is active. For pump stations with a control panel the "Power On" light should be aglow.</p> <p>Fuses are blown or circuit breaker has tripped.</p> <p>Check if visual/audible high level alarm is activated.</p>	<p>Turn power supply on at PowerPoint. If further electrical investigation is required contact a licensed electrician.</p> <p>Have a licenced electrician replace fuses or re-set circuit breaker. If circuit breaker trips repeatedly, contact pump technician.</p> <p>Contact pump technician</p>
Pump (s) starts but then cuts out immediately	<p>Check that overload is set to the correct amperage setting.</p> <p>Ensure that check valves are closing properly, otherwise backflow will cause tank to fill again.</p> <p>Level floats are set too close together, or turbulence in the water is causing floats to go up and down</p>	<p>Adjust overload</p> <p>Remove blockage from check valve or replace if faulty.</p> <p>Reset float levels to eliminate turbulence</p>
Pump (s) runs but does not deliver water	<p>Gate Valve is closed</p> <p>Check if non-return valve is blocked</p> <p>Pump inlet is blocked</p>	<p>Open Gate Valve</p> <p>Unblock non-return valve</p> <p>Contact pump technician</p>
Pump (s) runs but delivers too little water	<p>Pump inlet is partially blocked</p> <p>Excessive wear on impeller and/or wear plate.</p>	<p>Contact pump technician</p> <p>Contact pump technician</p>

11.0 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 (12) months from date of invoice, provided such part of equipment 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 pump station 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.



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