Submersible Pump

Installation and Operating Instructions

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

	CAUTION: This pump MUST be installed with a suitable residual current device (R.C.D.) with a rated residual operating current <30mA.

	These Instructions must be delivered with the pump to the operator.

	If applicable, the oil in the seal chamber should be periodically checked and replaced. This work should be done by a suitably qualified TREVOLI Service Dealer every 2,000hrs of operation or every 12 months, whichever occurs first.

Table 1: (A) Automatic float switch *Requires oil in the seal chamber to be checked

Model	Water Type	Max. Solid (mm)	Immersion Depth (m)	Warranty (years)
BAH-400A*	Drip Line Septic Field Pump	8	6	2
BAH-750A*	Drip Line Septic Field Pump	8	6	2
BAV-250A*	Dirty Water / Waste Water	25	8	2
BCV-400A*	Clean / Dirty Water / Waste Water / Salt	30	8	2
BCV-750A*	Clean / Dirty Water / Waste Water / Salt	30	8	2
BPS-100EA	Clean / Slightly Dirty Water	3	6	2
DO100A	Clean / Dirty Water / Waste Water / Salt	30	5	2
DO200A	Clean / Dirty Water / Waste Water / Salt	50	5	2
DR-20A	Clean / Dirty Water / Waste Water / Salt	20	5	2
DR-40A	Clean / Dirty Water / Waste Water / Salt	20	5	2
DS45A	Drainage / Rain water transfer / Clean & dirty water / Sea water	10	5	2
DS100A	Drainage / Rain water transfer / Clean & dirty water / Sea water	10	5	2
DS200A	Drainage / Rain water transfer / Clean & dirty water / Sea water	10	5	2
DSK-10A*	Cutter / Macerator Sewage Pump	15	8	2
EF15-25(A)	Drip Line Septic Field Pump	2	5	2
EF15-32(A)	Drip Line Septic Field Pump	2	5	2
EF30-30(A)	Drip Line Septic Field Pump	2	5	2
GC-07A*	Cutter / Macerator Sewage Pump	N/A	7	2
GC-10A*	Cutter / Macerator Sewage Pump	N/A	7	2
GDH-20A*	Cutter / Macerator Sewage Pump	N/A	8	2
GS-15 (A)*	Cutter / Macerator Sewage Pump	N/A	8	2
HOME 13A	Clean / Slightly Dirty Water	4	5	2
JH550B(A)	Clean / Slightly Dirty Water	35	7	1
JH40011(A)	Clean / Slightly Dirty Water	5	7	1
KA-2.4A*	Clean / Slightly Dirty Water	7	7	2
KA-2.75A*	Clean / Slightly Dirty Water	7	7	2
K75(A)	Dirty Water / Waste Water	10	5	2
M-100	Clean / Slightly Dirty Water	2	6	2
MD400*	Clean / Slightly Dirty Water	1	5	2
MD750A*	Clean / Slightly Dirty Water	7	6	2
MG1100A*	Cutter / Macerator Sewage Pump	15	8	2
MVH-10A*	Clean / Slightly Dirty Water	3	7	2
Q550B(A)	Dirty Water / Waste Water	35	7	1
Q1100B(A)	Dirty Water / Waste Water	35	7	1
SD-250A*	Drainage / Industrial	7	8	2
SD-400A*	Drainage / Industrial	7	8	2
SD-750A*	Drainage / Industrial	7	8	2
SS-750*	Clean / Dirty Water / Waste Water	7	8	2
SV-750A-3*	Clean / Dirty Water / Waste Water	37	8	2
SV-1500A*	Clean / Dirty Water / Waste Water	40	8	2
SV-1500A-3*	Clean / Dirty Water / Waste Water	40	8	2
TPV-200SA	Clean / Dirty Water / Waste Water / Salt	19	6	2

Section 1 Introduction

Thank you for purchasing this Trevoli unit. This instruction manual explains the product operation and provides important precautions regarding its safe use. In order to use the product to maximum benefit, be sure to read the instructions thoroughly and follow them carefully.

Section 2 Installation & Operating Instructions

The TREVOLI range of Submersible Sump Pumps are suitable for small to medium dewatering (or recirculating) applications. Vortex models are suitable for pumping small soft solids in fluid suspension. The multi-impeller MVH model is designed for clean water only. The JH40011, JH550B, Q550B and Q1100B are NOT to be installed permanently. Cutter / macerator / grinder pumps are designed to grind domestic sewage. Please refer to Table 1 for details.

They are extremely quiet in operation which makes them ideal for applications within residential areas for sullage pits, waterfalls and general drainage.

Other Ideal Applications are: Lift Wells, Car Park Sumps, Basements, Cable Pits, etc.

This Submersible pump has been factory checked prior to delivery; however, please check for any damage during transport. After Sales Service is available from TREVOLI authorised Service Dealers.

	**Do not:** Run the pump dry Attempt electrical repairs, unless suitably qualified Run the pump for long periods with the motor fully exposed Install the pump on soft or loose ground Operate the pump if the inlet is submersed by sand or debris Lift or carry the pump by the power cable or float switch Exceed the maximum operating immersion depth

	Not intended to be used for swimming pools. Note that these pumps may be used for the repair or maintenance of swimming pools, but never with people present in the water.

Suitable Fluids

This pump is designed to pump waste water, clean water and water containing mild pollutants at ambient temperatures. It is not suitable for pumping flammable or corrosive fluids, nor fluids at elevated temperatures. If you are unsure as to

the suitability of the fluids, contact your TREVOLI dealer for advice. The multi-impeller MVH models are designed for clean water only.

CAUTION: Please refer to Table 1 for details. Please note these pumps are not designed to pump hard solids (e.g., stones) nor fluids containing excessive amounts of abrasive materials.

These pumps are **not suitable** for pumping liquids that:

- have a temperature exceeding 40 degrees Celsius, or
    - A density greater than 1000kg/m3, and
    - kinematic viscosity greater than 1mm2/s (1cSt);
- a pH lower than 5 or greater than 8;
- are chemically and/or mechanically aggressive for the materials of the pump;
- have flammable and/or explosive properties;
- have features other than those specified for each type or model of pump.

Not all pumps can be installed in pits, tanks or other areas containing gas or other explosion hazards.

CAUTION	WARNING
• Essentially the pumps are for use in water. Except for a pump specifically intended for use in liquids other than water, do not use in oil, salt water, organic solvents or other special liquids.	• Do not use in the vicinity of explosive or flammable materials. • Use only in fully assembled state. *Note*: ***Consult with your local dealer before using with any special liquids.***
• Do not use in water temperatures outside the range of 0-40℃, which can lead to failure, electrical leakage or shock.	
• Use independent sockets above 15A.	
• Use with a power supply voltage within ±5% of the rated voltage.	

Prior to Operation

- Product Inspection:
    - Inspect the product for damage during shipment, and make sure all bolts and nuts are tightened properly.
- Specification Check:
    - Check the nameplate of the unit to verify that it is the product that you have ordered. Pay particular attention to its voltage and frequency specifications.

- ***Note**: If you discover any damage or discrepancy in the product, please contact the dealer where this equipment was purchased.*

- Product Specifications:
  - ⚠ ***CAUTION: Do not operate this product under any conditions other than those that have been specified.***

Important Information for grinder / cutter / macerator pumps:

- The automatic thermal overload protection shuts the motor off when it overheats because of low voltage, trash in the pump or other problems. Normally, motor cools in 10 minutes and restarts automatically.
- Failure to clear any blockage may result in damage to the motor.
- The grinder / cutter / macerator pumps contain metal parts that rotate at high speeds. Be careful around the pump base while power is connected. Make sure that the pump is either in the tank or clear from people and wires when in operation. The grinder pump is designed for continuous underwater operation. The induction motor is insulated against heat and moisture in accordance with Class B 265F (130C) regulations.
- The impeller and volute are designed for efficient flow characteristics and clog-free operation. The hardened cutters grind solids and fibrous matter into small particles that can be safely pumped through small diameter piping.
- Grinder installations should be checked yearly for debris and/or build up which may interfere with the "ON" or "OFF" positions of variable level float control switches. Repair and service, other than cutter assembly maintenance, should be performed by experienced authorized service agents only, so **Do Not** attempt to turn the inlet cutter located at the bottom of the unit with fingers. Use a wrench when checking or removing cutter, and always unplug the power when working with the pump.

Installation:

Essentially the pumps are designed for use in water. Except for a pump specifically intended for use in liquids other than water, do not use in oil, salt water, organic solvents or other special liquids.

The internal diameter of the pipes depends on their length and the flow they need to deliver. To prevent possible obstructions and blockages, the speed of the liquid in the delivery pipe must be greater than 0.8 to 1.0 m/s; in the presence of sand or suspended particles, the speed must be at least 1.6 m/s in horizontal pipes and 2.5 m/s in vertical pipes: in any case speed must not exceed 3.5 to 4 m/s.

The delivery pipe should *never* have a diameter smaller than the diameter of the outlet of the pump.

To avoid sedimentation, it is best to limit to a minimum the vertical sections of the delivery pipe and install the horizontal sections slightly sloping in the direction of the flow. This TREVOLI pump is completely submersible as per "Immersion Depth" in Table 1, and should be placed on a solid flat surface (if not available, sit the pump on timber or house bricks) in the vertical position. The pump should always be installed so that it will be clear of settled silt or debris. It is recommended to fit the biggest diameter outlet hose possible, to obtain the best flow from the pump.

To remove or lift the pump from deep wells or pits, connect a rope to the handle during installation. **(Fig.1)**

Automatic controlled pump units have float switches factory set to provide the correct high (ON) and low (OFF) liquid levels.

Automatic versions should be placed in a sump which has adequate dimensions so as not to restrict the movement of the float switch.

⚠ **WARNING**: When installing the pump, pay close attention to its center of gravity and weight. If it is not lowered into place correctly, it may fall and be damaged or cause injury

⚠ **CAUTION**: When the pump is installed at a work site, make sure the hose is connected in such a way as to ensure proper drainage. Otherwise, water may leak out and cause damage to surrounding walls or flooring, or to equipment.

Fixed Installation: (Fig.2)

Fit a check valve on the delivery pipe, preferably in horizontal sections that are easy to access. To be able to remove the pump without draining the system, place a lock gate and a nozzle downstream of the valve, thus allowing for maintenance and cleaning of the valve. In order not to amplify the vibrations typical of any rotating machine, it would be best to have the resting base on the pump fixed firmly to the bottom of the tank; also provide for anchoring devices and supports for the delivery pipe. If the pump needs to operate in sandy or muddy conditions, it should be placed on a stable base and, in any case, kept a certain distance from the bottom.

Portable Installation: (Fig.3)

Always fix a rope or a safety chain made with non-perishable material to the eyebolt or the pump's handle. If using a delivery pipe made with plastic, or in general with flexible materials, always use a safety rope to raise, lower, move and anchor the pump. Never use the electric cord and/or float to support the pump. Always remember to secure the safety rope used to lower the pump at the top, on the edge of the pit or the trap door. Secure the electric power cord to the safety rope or to the delivery pipe with the designated straps: if the delivery pipe is a flexible tube, ensure that you do not restrict the flow when the pipe expands due to expansion of the pipe under load - leave the cable loosened to avoid tension. It is always preferable, even for portable installations, that during operation the pump is not suspended but is resting on a solid base.

⚠ Place the pump on concrete or other level surface, in a location not subject to air suction or turbulence.
⚠ Locate the pump and its float switches away from the tank inlet, or use baffle plates, to protect against air swirls and turbulence.
⚠ Arrange pipes so as to prevent air locks from forming along the pipe.
⚠ Do not run the pump cable along the same route as float (electrode) cable or other sensor cabling. Use a separate conduit for running electrical wiring.
⚠ If the pump is operated while the cable or chain is drooping, these may become caught in the impeller, causing the cable to be cut or the chain to break, damaging the impeller or causing seepage in the pump, which can result in electrical leakage or shock.
⚠ When operating under automatic control, sewage backing up in the pipe may trigger the level control and cause frequent on/off operation, which can damage the pump.
⚠ If the pump is used in a deep tank, or in case of long vertical lifting or lateral pulling, install a check valve.

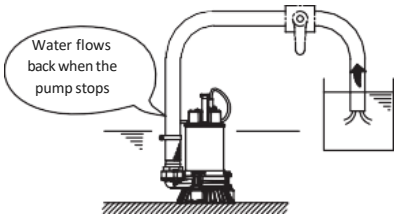
Using a hose for piping:

Attach the hose to the hose coupling as far as it will go, then fasten it securely with the hose band.

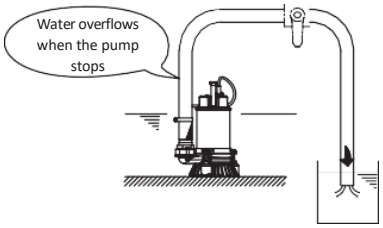
Install the pump in a location with sufficient water level, where water collects readily.

Make sure the hose has no sharp bends, as this can severely limit the flow of water. In particular, sharp bends near the base may cause air pockets to form, resulting in idle operation. Lessen the degree of bending while continuing to operate the pump. The tip of the hose (discharge end) should be located higher than the water surface.

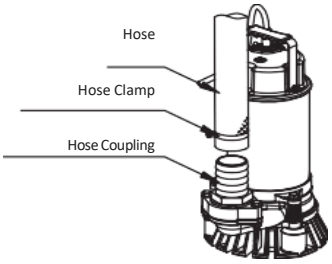
Note: The tip of the hose (discharge end should be located higher than the water surface. If the end of the hose is submerged, due to the syphon effect, water may flow back to the pump when the pump is stopped; and if the hose end is lower than the water surface, water may overflow when the pump is turned off.)



Install switch valve to prevent counterflow



Install switch valve to prevent overflow



⚠ **CAUTION**: Avoid dry operation, which will not only lower performance but can cause the pump to malfunction, leading to electrical shock.
⚠ Install the pump in a location with a sufficient water level, where water collects readily.
⚠ **CAUTION**: Using a pump with an insufficient head or operating with a clogged strainer can cause excessive vibration and noise, which may result in damage to the pump, leading to electrical shock.
⚠ Run the piping as straight as possible, and avoid having the piping load applied directly to the pump.
⚠ The piping should be able to withstand the recoil when the pump is started up.

Motor Cooling

All models rely upon water flow around the motor shell for correct motor cooling. SD and SS models have a double case which forces water around the motor. These models are therefore suitable to operate partially submerged.

All models other than the double case models are suitable for partially submerged operation only for short periods of up to 10 minutes. For continuous operation, the motor must remain fully immersed in the liquid to ensure adequate cooling. Continuous use implies that a float switch is activating the pump and that the pump will cycle automatically as the depth varies. It **does not mean** that the motor runs continuously unless specifically designed for this purpose, e.g., pond recirculation pumps. Where the pump (other than double case models) is required to operate for longer than 10 minutes partially submerged, or where water flow over the motor may not be assured, it is advisable to direct a low flow (2-3lpm) cooling jet of water over the motor shell (e.g., when installed in large tanks or ponds).

Section 3 Power Connection

	Note: The single phase 1.5HP model can only be connected to a supply with a system impedance of no more than 0.207 ohm. If necessary, please consult your supply authority for system impedance information. The single phase 2HP model can only be connected to a supply with a system impedance of no more than 0.150 ohm. If necessary, please consult your supply authority for system impedance information. Disconnection incorporated in the fixed wiring should be in accordance with AS/NZS 3000

A power connection point should be provided by a qualified electrician, in compliance with the requirements of AS 3000 (1991). Single phase models are rated for 220/250 Volts, 50Hz operation, and may be connected to a standard 10-amp power outlet. 1500-Watt models need to be connected to 15-amp power outlet.

Always ensure that plugs and ends of power cables are kept clear of water at all times, and are protected from possible infiltration of water or moisture.

- ⚠ Incorrect wiring can lead to electrical leakage, electrical shock, or fire.
- ⚠ Always make sure the pump is equipped with the specified RCD overload protectors and fuses or breakers, so as to prevent electrical shock from an electrical leak or pump malfunction.
- ⚠ If two or more pumps are installed, each must be equipped with its own circuit breaker and surge protector. Operate well within the capacity of the power supply and wiring.
- ⚠ Do not share the socket or leakage protector with other equipment, or it may cause electrical leakage, shock or fire.
- ⚠ Ensure the pump is properly grounded.
- ⚠ Reference insulation resistance: 20MΩ or greater. Note: This is the value when the pump is new or has been repaired.
- ⚠ Before connecting leads to the terminal, make certain the power supply is turned off (circuit breaker, etc.) to avoid electrical shock, shorting, or unexpected starting of the pump, leading to injury.
- ⚠ Do not use the pump if the cable is worn or damaged, or is not plugged into the outlet securely, which can result in electrical shock, shorting, or fire.
- ⚠ **CAUTION**: Be sure to use a dedicated power supply with a ground leakage circuit breaker.

Single-phase

All single-phase models have automatic reset thermal overload protection built in, i.e., should an overload on the motor cause a thermal open circuit, and switch the motor off, it will automatically reset and switch the motor on when the motor has cooled down sufficiently, usually within a few minutes.

	**Note**: If the cord is damaged, the appliance should be repaired by a qualified TREVOLI Service Centre. The supply cord must only be replaced by a suitably qualified person with a genuine TREVOLI replacement supply cord.

Three-phase

Three phase models are rated for 380/440 Volts, 50 Hz operation. All three phase models must be wired by an authorised electrician.

	**NOTE:** 1. Long extension leads should be avoided as they often have insufficient current carrying capacity to run electric motors, hence they can cause substantial voltage drop and operating problems. 2. Minimum voltage at the electric motor must not fall below 216 Volts for single phase, otherwise motor damage may result which is not claimable under guarantee. 3. If the electrical fittings in your country make it necessary to remove the plug (where fitted) from the lead fitted to the motor, care should be taken to ensure that the earth conductor green/yellow in the lead is properly connected to a good earth. This work should be undertaken by a suitably qualified person. 4. Expansion and contraction inside the motor due to heating and cooling is vented via the lead. The lead end must never be sealed off, but must always be open to the atmosphere.
	**Note:** If fitting an extension lead, a QUALIFIED ELECTRICIAN should be consulted to ensure correct rating is provided. Extension leads are not allowed for permanent installations.

Section 4 Operation

Before starting

Make sure once again that the product is of the correct voltage and frequency rating.

⚠ **CAUTION**: Using the product at other than rated voltage and frequency will not only lower its performance, but damage the product.

Note: Confirm the rated voltage and frequency on the model nameplate. Confirm the wiring, supply voltage, circuit breaker capacity, and motor insulation resistance.

Never operate the pump while it is suspended in the air. The recoil may result in injury or other major accidents. Never start the pump when people are standing next to it. An electrical leak can result in electrical shock. Run the pump for a short time (1-2 seconds) to check the direction of rotation. The rotation is correct if the pump recoil direction is counter-clockwise.

⚠ **CAUTION**: Always perform the rotation check in air, not while the pump is submerged. Running the pump in reverse direction while submersed may damage the pump, resulting in electrical leakage or electrical shock. The setting on the circuit breaker or other overload protector should be made in accordance with the rated current of the pump.

Start up

Before installing the pump, make sure that the machine is not connected to the mains supply and that the motor turns freely. To check this, ensure that the impeller is rotating freely by accessing, where possible, through the suction inlet. Do not operate the pump in dry conditions.

The float switch is connected directly to the motor and ensures that it starts and stops as required. If necessary, adjust the cable length of the float, making sure that an excessive length does not cause the pump motor to overheat or run in dry conditions. Make sure that the float switch can move freely, providing for pits of adequate size. The size of the pit must always be considered also in relation to the amount of incoming water and the capacity of the pump, in order not to subject the electric motor to an excessive number of starts.

CAUTION: If large quantities of soil are sucked up, damage resulting from friction in the pump can lead to electrical leakage and shock.

Use the pump in the upright position. If there is a danger that the pump will become submerged in mud, mount it on a base or take other measures to prevent this.

Section 5 Fault Checks

A: Pump will not start:

1. **Manual Type**
   - Check to ensure power is available and the outlet is switched ON
   - Check for a blown fuse or tripped circuit breaker (replace/reset or call an electrician)
   - If an extension lead is fitted, check the connection
   - Impeller jammed - **disconnect from the power supply**, and ensure the impeller is free to rotate.
   - Thermal cut-out switch has not reset (wait 5 minutes).
   - If the pump does not start from new then the seal has possibly stuck due to the length of time it has been standing since it was manufactured. In this case, disconnect from the power supply, remove the bottom strainer and turn the impeller nut clockwise, this will release the initial friction on the seal, and, once the power is connected, will allow the pump to work.
2. **Auto Type (with float switch)**
   - Check all in (1) above
   - Float switch jammed against the sump side wall
   - Insufficient liquid to place the float switch in the ON position, i.e., higher than the horizontal.

B: Pump runs, but does not pump water or pumps insufficient water:

- Insufficient liquid in sump causing air to be to sucked in
- Strainer, impeller, and/or discharge pipework blocked or damaged
- Impeller incorrect diameter, damaged or worn out
- Air lock or leak in discharge pipework. Ensure the pump is filled with water
- Excessive back pressure or lift.
- Discharge head too high
- Motor speed too low

C: Pump will not stop:

(1) **Manual Type**
- Must be switched off at the power supply.

(2) **Auto Type (with float switch)**
- Float switch is prevented from moving to the fully down position
- Float switch may be faulty.

D: Pump runs for short periods only (the overload protection has tripped):

- Some foreign body is clogging the impeller
- The liquid temperature is too high
- Pump operating in a non-submerged position or with no water movement around the motor
- Electrical fault.
- Specific gravity or viscosity of liquid too high
- Speed too high
- Head lower than rating, pumping too much liquid
- Defective bearings or impellor

E: Pump is noisy:

- Defective bearings
- No axial clearance between impeller and volute
- No diametral clearance between radial cutter and cutter ring—it must double check the gap

Do not run the pump dry as this will damage the seal and reduce the life of the pump.

Where hair, lint or other string-like material may be in the water, the pump should be regularly checked. It might become necessary sometimes to clean the suction strainer, impeller, and/or discharge pipework.

With simple cleaning and regular examination, this pump should give reliable service.

TROUBLE	COMMON CASUSE
A. Pump will not start or run.	Blown panel or circuit breaker fuse, low voltage, thermal overload open, defective capacitor circuit, cutter or impeller clogged, float switch held down or defective, incorrect wiring in control panel, water in cap assembly.
B. Pump will not shut off.	Air lock, debris under float assembly, defective switch, in coming sewage exceeds capacity of pump.
C. Pump operates but delivers little or no water.	Intake clogged with grease or sludge, pump air locked (clear vent hole), low or incorrect voltage, clogged discharge line, operating near shut-off head.
D. Pump starts and stops too often.	Check valve stuck open or defective. Sump pit too small to handle incoming sewage. Level control out of adjustment. Thermal overload tripping.
E. Motor overheats and trips on overload.	Incorrect voltage, impeller or cutter blocked, negative head (discharge lower than intake of pump).Defective “off” float. Pump runs continuously at low water level. Low oil level in motor shell.
F. Large red flashing light comes on at control box.	High water in pit. Check pump for clogging, or overload trip. On single phase pumps, check the start capacitor in the control panel. See “A” or “C” items above.
G. Grease and solids accumulate in pit around pump.	Break up solids and run pump with water running into the pit. Allow level to lower to the pump intake. Continue until solids are cleared from the pit. Do not drain kitchen grease down the sink.

Section 6 Maintenance

Only applicable to units with an oil-filled mechanical seal chamber – see Table 1.

Oil Inspection and Changing Procedures

Inspecting Oil

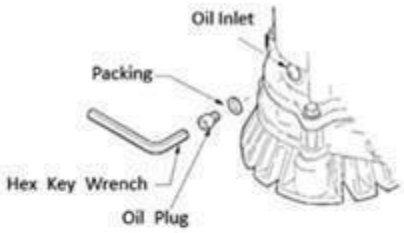
Remove the oil plug and take out a small amount of oil. The oil can be extracted easily by tilting the pump so that the oil filler plug faces downward. If the oil appears milky or intermixed with water, a likely cause is a defective shaft sealing device (i.e. mechanical seal), which requires that the pump be disassembled and repaired.

Changing Oil

Remove the oil plug and drain the oil completely. Pour a specified volume of oil into the oil filler inlet.

Note :

The drained oil must be disposed of properly to prevent it from being released into the sewer or rivers. The packing or the O-ring for the oil plug must be replaced with a new part at each oil inspection and change.



Specified Oil: No.32 Mechanical Oil

Unit :ml

Pump Model	Specified Volume
KA-2.4(A)	160
KA-2.75(A)	160

Replacement Parts

The table lists the parts that need to be replaced periodically. Replace these using the recommended frequency as a guideline

Part	Replacement condition
Mechanical Seal	When oil in oil compartment becomes milky.
Lubricant; No.32 Mechanical Oil	Every 12 months or after 2.000 hours of use, whichever comes first.
Packing, O-Ring	Each time pump is disassembled or inspected
V-Ring	When ring is worn and each time pump is disassembled or inspected
Shaft sleeve	When it becomes worn

WARRANTY TERMS & CONDITIONS

(Subject to the provisions of the Consumers Guarantee Act)

Vortex Distributors Ltd warrants that the TREVOLI Pumps that we distribute are free from defects in workmanship and materials for a period as detailed in Table 1 from the date of purchase. Subject to the conditions of the warranty, Vortex Distributors Ltd will repair any defective products that are installed/used in New Zealand free of charge at the premises of Vortex Distributors Ltd, or our authorised service agents throughout New Zealand.

1) This warranty excludes transportation costs to and from Vortex Distributors Ltd or its appointed service agents.

2) The warranty does not cover normal wear and tear, replacement of product consumables (mechanical seals, bearing, and capacitors) and excludes defects due to non-compliance with installation instructions, neglect or misuse, inadequate protection against freezing, low voltage or use or operation for purposes other than those for which they were designed. Failure to carry out maintenance, using corrosive or abrasive water of other liquids, voltage spikes (including lightning), or having unauthorised persons attempting repairs will render the warranty null and void. For further information regarding the suitability of your intended application please contact us.

3) The warranty only applies to the original owner, purchaser, or end user, and is subject to the Consumers Guarantee Act.

4) Our warranty commences from the date of purchase of the above-mentioned pumps. Proof of purchase is required before consideration under warranty is given.

Record your date of purchase in the space below and retain this copy for records.

Date of Purchase:

Model Purchased:

Invoice #:

Vortex Distributors

2D Rothwell Avenue, Rosedale,
Auckland 0632

Ph: 0800 102 335

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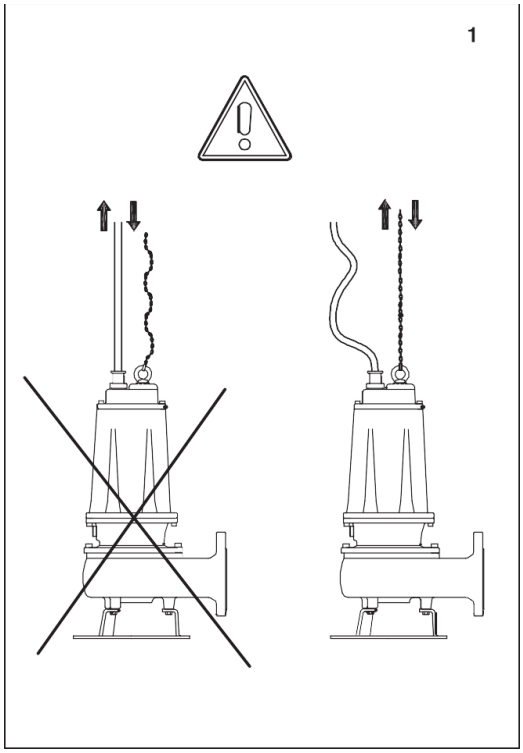

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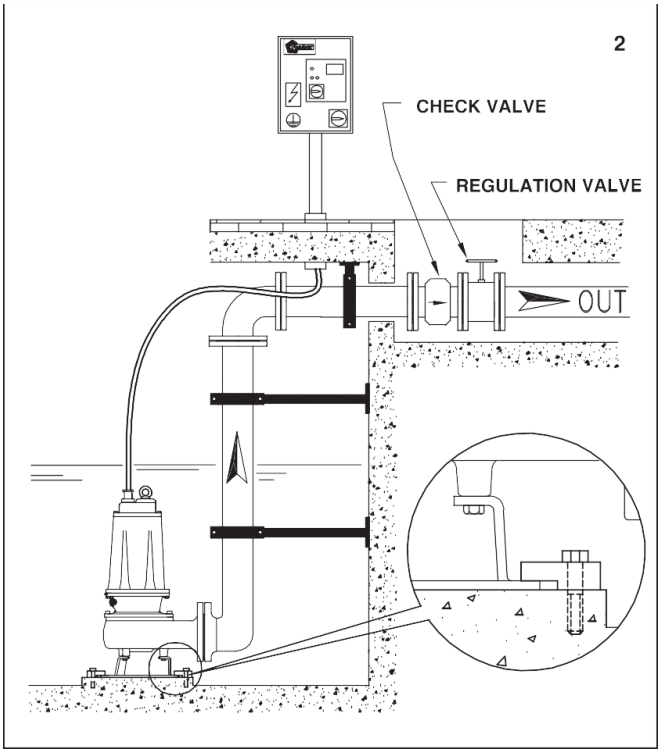

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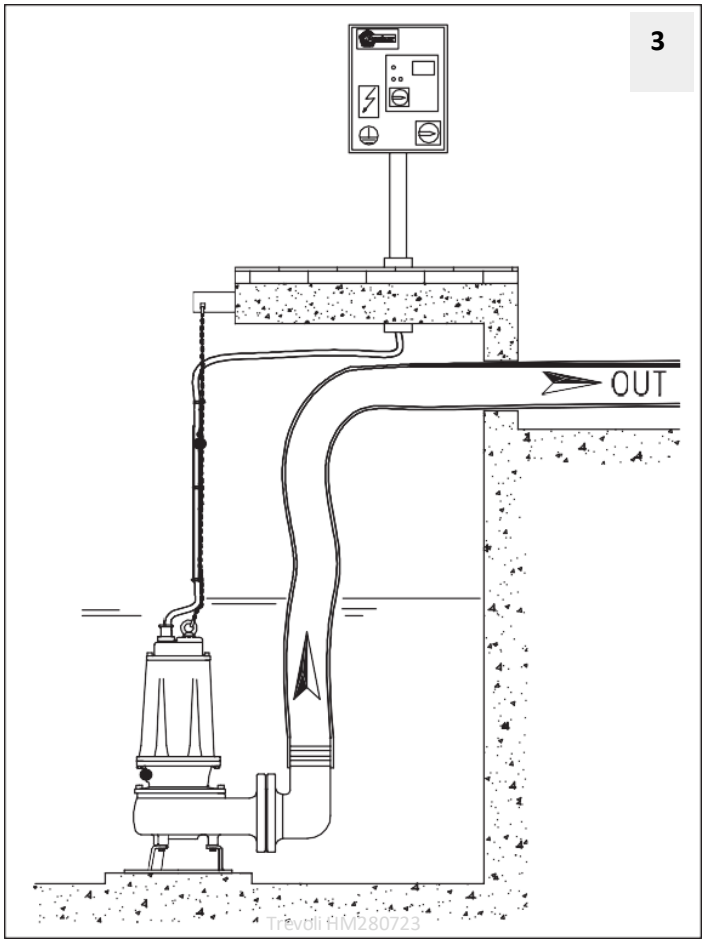

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