



Installation Instructions

Submersible Pump Series

Australian Owned & Operated
Since 1996

Orange Pumps Pty Ltd 25 Lionel Road, Mount Waverley VIC 3149, Australia

Hydraulic Site Installation

The submersible pump should be installed on a flat secure base in a vertical direction for best performance. If the surface is uneven the pump may have to be suspended from a rope.

The electrical motor is cooled by the flow of water around it. The pump should not be operated for more than half an hour without being submerged in water. The submergence of the pump should not exceed 5 metres.

The water inlet of the pump should be free from sand, grit and foreign matter to prevent clogging. Vortex and open impellers can handle a certain amount of foreign matter, see application table on page 4.

If there is excessive debris, leaves or foreign matter in the pumping solution a wire mesh screen with 5mm holes can be positioned around the pump inlet to prevent the pump from becoming blocked.

Air around the pump impeller can create an air lock preventing water from entering and the pump from performing. To avoid this air lock ensure there is at least 25mm of water above the discharge port. The pump may have to be slightly tilted when lowered to allow the air to escape.

The submersible pump requires a minimum pit or sump size. This is to ensure the float switch is not obstructed, the frequency of starts is reduced and the motor is properly cooled. Pits larger than the minimum size are better as they reduce turbulence created by incoming water and the probability of an air lock around the impeller. See minimum pit size table on page 4.

When lowering the submersible pump into position do not use the electrical lead to carry the weight of the pump. This could break the air tight seal made by the electrical gland and damage the internal wiring connections. Attach a rope or chain to lower the pump.

The temperature of fluid being pumped should not exceed 40°C for standard operation. The pump can operate up to 60°C for short periods of less than 10 minutes.

Plumbing

When fluid is being pumped long vertical distances install a check-valve at the discharge port. This will prevent fluid from flowing back into the pit once the pump has stopped. Without the check-valve, the pump could cycle on and off as the fluid in the pipes may be enough to activated the float switch.

When pumping fluid over long distances or large volumes it is better to use larger diameter pipes to reduce the pipe friction.

As a general rule the pipe size should not be smaller than the discharge port size.

A barrel union or hose clamp is recommended to connect the pipe to the pump. This will facilitate removal of pump during maintenance, repairs or replacement.

To reduce noise and misalignment problems, flexible plastic or rubber pipes can be used.

Ensure pipe fittings are properly sealed so that leaks do not occur.

Maintenance

A regular maintenance program can increase the working life of the submersible pump.

Seals

Seals are located in an oil chamber and are rated to 1,000 hours or 12 months of operation. The 1440 rpm models are rated at 2,000 hours of operation. After this time and depending upon the site factors the seals can fatigue which will allow water and oil to enter the motor causing damage to the windings. Replacement seals are available from Orange Pumps and should be installed by a qualified Orange service agent. When replacing the oil in the chamber use No 10 machine oil or equivalent. Except for the SP334 which should have food grade oil.

Electrical

The insulation of the motor should be checked to ensure the resistance to earth is at least 20M Ω .

Pump

Foreign matter around the pump suction screen and impeller should be removed to increase the life of the motor by reducing the load on the motor.

Electrical Site Installation

Electrical Power

The power supply should be installed by a qualified electrician in compliance with AS3000 (1991) standard.

Thermal overload protection on single phase models have been installed into the windings to protect against excess temperature and current. If the thermal overload is causing the pump to stop frequently the site conditions should be inspected.

Check for installation factors that might overload the motor such as low volts, fluctuating power supply, excess foreign matter around the impeller, an impeller that cannot rotate or low water in the pit.

Long electrical extension leads should not be used as they will decrease the volts and increase the current due to insufficient wire thickness. If extra length is required to connect the pump to the power source please see a qualified electrician who can install a suitable cable.

The voltage supplied for single phase pumps should be between 220–240 volts.

Before handling the pump please disconnect the power supply.

Surge protection

Pump rated at 750 watts or higher should be protected with a suitable circuit breaker and contactor. This will protect the motor from cycling on and off when the pump is jammed and the inbuilt motor thermal is activated. The circuit breaker and contactor should be 20% higher than the name plate current.

We recommend a qualified electrician to supply and install the parts. This is particularly relevant for cutter and grinder models where the probability of jamming is high.

When used on a generator ensure adequate current, volts and correct frequency is supplied.

For three-phase models the impeller should rotate anti-clockwise from the non-drive end or when looking at the impeller. If it is rotating otherwise a qualified electrician should change the power connections.

Single phase models up to 1100 watts can be connected to a 10 amp power supply.

1500 watt models should be connected to a 15 amp power supply.

Application table

Model	Watts	Pit Size	Impeller	Discharge	Solids	Application
SF50	80	Small	Shrouded			C
SF100	400	Medium	Shrouded	40mm		C
SP100	180	Small	Vortex	32mm	18mm	A/B
SP140	450	Medium	Vortex	50mm	25mm	A/B
SP213 &M	400	Medium	Open	40mm	4mm	A/B/F
SP334 &M	750	Medium	Shrouded	25mm	3mm	A/G
SP500	750	Medium	Shrouded	50mm	25mm	A/B
SP600	1100	Medium	Open	50mm	25mm	A/B/F
SP617	1500	Large	Shrouded	40mm	25mm	A/B
SP700G	1100	Medium	Grinder	50mm	25mm	A/B/D/E/F
SPC700	1100	Medium	Cutter	50mm	25mm	A/B/D/E/F
SPG-750	750	Large	Grinder	50mm	30mm	A/B/D/E/F
SPG-1500	1500	Large	Grinder	50mm	30mm	A/B/D/E/F
SPG-2200	2500	Large	Grinder	50mm	30mm	A/B/D/E/F

Application Key

A Storm water draining, cellars, sumps, water features or rain harvesting

B Grey water, sullage, hair or silt in 90% water

C Water feature or treatment system

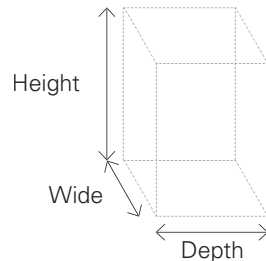
D Screened sewage with stringy solids

E Screened sewage with sanitary items

F Dairy, abattoirs, piggery pit, drainage in 90% water

G High pressure water transfer and irrigation.

Pit Size	Height	Wide	Depth
Small (S)	500mm	350mm	500mm
Medium (M)	800mm	400mm	500mm
Large (L)	900mm	450mm	600mm



Trouble Shooting

Fault	Possible Cause of Fault
Pump motor operates but does not pump water	<ul style="list-style-type: none">› Check water source is adequate.› Air-lock around impeller, tilt pump at a 45 degree angle to purge air.› Impeller or pipes could be blocked inspect and clean.› Vertical pumping height is higher than the top pressure of pump.
Pump motor does not operate	<ul style="list-style-type: none">› Internal Thermal activated due to excessive current and/or temperature caused by overloading of motor, check impeller is free to rotate.› Float switch could be obstructed.› Circuit breaker, safety switch or fuse has activated.› Electrical windings could be damaged.› Low voltage supply.› Pumping solution temperature is too high.
Pump will not stop	<ul style="list-style-type: none">› Float switch is obstructed in the on position.› Pumping solution flows back into pit, inspect check-valve.

Warnings

Electrical wiring must be performed by a qualified electrician and comply with electrical authorities and regulations.

This pump is not to be used for draining swimming pools or other environments where people might be in the same fluid medium.

In accordance with AS3350.2.41 we are obliged to inform you that this pump is not to be used by children or infirm persons and must not be used as a toy by children.

To avoid damage to the pump and any power leakage which could result in electric shocks, please ensure that the grounding has been properly installed and checked.

During maintenance or service work ensure the electrical power is switched off and the cord is unplugged as the unit could still be alive with electricity.

The submersible pumps are designed for water and some models for grey water and diluted sewage solution. Do not use for pumping oils, flammable solutions, chemicals or sea water.

Faulty electrical supply or incorrect voltage and frequency can damage the motor, resulting in power leakage or potentially a fire hazard.

For three phase models the rated power is 415 volts, 50 hertz supply. These motors must be connected by a qualified electrician who can also supply a suitable contactor and overload protection.

Earth leakage protection should be installed by a qualified electrician on both single phase and three phase models and be suitable for the motor.

Warranty Statement

1. This is an express warranty provided by Orange Pumps Pty Ltd ACN 18 009 789 155 (**Company**) of 25 Lionel Road, Mount Waverley Victoria, Australia 3149, phone: +61(3) 9426 3400 and email: enquiries@orangepumps.com The benefits that you receive under this warranty are in addition to other rights and remedies that you have under law in relation to the Orange Pump product (**Product**) supplied to you. Specifically, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
2. The Company warrants, in accordance with and subject to the provisions of this warranty, that the Product will be free from defects in material and workmanship for a period of 12 months or 1,000 hours operation (which ever occurs first) (or other period specified in writing in any extended warranty product offered by the Company), from the date of purchase of new Products to the original purchaser at retail level, when used in the original installation.
3. The warranty is void if the Product is:
 - (1) not installed, housed and operated in accordance with the instructions supplied with the Product;
 - (2) used for a purpose other than for which it was designed;
 - (3) used for unreasonable periods, or under unreasonable conditions, or for periods or in conditions not intended by the Company;
 - (4) operated on voltages or frequencies other than indicated on the rating plate;
 - (5) modified or adjusted without the Company's prior written consent;
 - (6) serviced, modified or adjusted by a person not trained in the servicing, modification or adjustment of the Product;
 - (7) repaired using non-genuine spare parts or components (being parts or components not originally manufactured or imported into Australia by the Company);
 - (8) misused; not serviced at least annually, or as otherwise reasonably required for the proper operation of the Product (taking into account its workload and surroundings); subject to abuse; or not installed in accordance with any guidance or instructions issued by the Company;
 - (9) run in a dry condition, operated at high temperatures or outside its technical specifications.
- 3.2. This warranty does not cover loss or damage resulting from, or issues arising as a result of:
 - (1) the installation of the Product (i.e. the warranty applies to defects in workmanship in the Product only);
 - (2) fair wear and tear;
 - (3) electrical mains power supply issues; storms (including dust, thunder and power); flood; or infestation by insects or vermin;
 - (4) exposure to corrosive conditions;
 - (5) abrasion or corrosion resulting from the fluid pumped by the Product;
 - (6) accident or negligence (other than that of the Company);
 - (7) an incorrectly set voltage regulator; or
 - (8) any other force majeure.
4. In order to make a claim under this warranty, you must take the Product together with proof of purchase, model and serial number, to the place of purchase or your local Orange Pumps authorised dealer. A list of authorised dealers can be found at www.orangepumps.com.au You must also provide your name, address and phone number.
5. In respect of all valid warranty claims, the Company will repair the breakdown or failure, and replace any defective part, free of charge. However, you are responsible for all costs associated with making a claim, including costs associated with the transportation of the Product to and from your local dealer and to and from the Company, and de-installation and reinstallation. If the Company, in its absolute discretion, agrees to inspect a Product that is subject to a warranty claim by you onsite (or authorises one of its dealers to do so), you will be required to pay a labour and assessment charge of at least \$50/hour (including travel time) if the Company determines that the issue is not covered by this warranty.
6. Other than expressly set out in this warranty, and the warranties that are set out in the Australian Consumer Law (schedule 2 of the *Competition and Consumer Act 2010* (Cth) (and any other law), the Company:
 - (1) excludes all other warranties, guarantees and remedied with regard to the Products (including implied warranties and guarantees);
 - (2) has no liability (including liability in negligence and for consequential loss or damage) to you or any other person for any loss or damage (consequential or otherwise) however suffered or incurred: in relation to the Product; or caused by or resulting directly or indirectly from the Product or from any failure, breakdown, defect or deficiency of any nature in the Product; and
 - (3) is not liable to make any payment in connection with this warranty that exceeds the total price paid by you for the relevant Product.