

## Submersible Bore Hole Pumps Installation & Operating Instructions

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A submersible pump is a piece of precision equipment and correct installation is vital to guarantee maximum performance and efficiency.

Please check the following points to ensure correct pump operation.

1. Pump should not be installed in water over 40 degrees centigrade.
2. To obtain correct motor cooling pump should not be installed in a bore larger than 152 mm (6"). If the pump is being installed in a larger bore, dam or river a pump shroud should be used.
3. Motor has to be installed using lightening arrestors. Some motors have built-in lightening arrestors.
4. Direction of rotation of pump must be checked prior to installing in the bore.
5. Motor should be protected with the recommended contactor and thermal overloads. Correct cable size must be used. (check onga engineering sheet).
6. Do not use pump to pump sand or gravel. It is recommended to develop the bore using a temporary pump prior to permanent installation.
7. If the pump is being used as a pressure system use the recommended pressure tanks or larger and do not allow pump to short cycle.
8. Do not run pump dry.
9. Pump is not suitable for use in some types of corrosive water. (If unsure have water tested and seek advice from onga).
10. Pump should be installed using suitability safety cable.
11. Starting voltage at the pump and frequency must be correct.
12. Bore suitability check the following.
  - Water quality.
  - Is the bore straight.
  - Is the bore correctly cased.
  - Has the bore got a sand screen.
  - Does the bore have sufficient capacity to suit the pump.

### WATER SUPPLY

Since a submersible is a high capacity pump it follows that the bore in which it is installed should have sufficient capacity so that it will not be pumped dry. The bore should be screened, straight and of sufficient capacity. Before installation the bore should be pumped clean of sand or other foreign matter with a test pump. Where the water supply is a lake, stream or spring a pump shroud should be installed for pump protection and correct motor cooling.

### PUMP ASSEMBLY

The pump is supplied disassembled to prevent damage in transit. Assemble motor to pump being careful to align the electric motor lead with the slot in the pump suction. Nuts and star washers are supplied in the pump carton. After tightening the 4 nuts on motor studs fit the electric cable guard to the outside of the pump and secure at the top with 2 screws supplied in plastic bag. Position the plastic suction screen and secure with 2 screws supplied.

### PUMP MODEL & SERIAL NUMBER

Before pump is installed in the bore a record should be taken of model and serial numbers of both the pump and the motor. They should be kept with the proof of purchase as this will be required in the unlikely event of a warranty claim.

The motor serial number is stamped into the motor shell above the information label on the side of the motor. All other details such as motor size in Kw, amp draw, phase, & Hz, should also be recorded.

The pump model number is recorded on a label at the top of the pump outer shell.

### CABLE SPLICE

After first checking cable size for suitability proceed with the cable splice as instructed in the termination kit. This is a very important step and extreme care should be taken. On three phase pumps check for direction of rotation before installing pump in the bore. Pump should run anti-clockwise when looking down on pump. Should direction be wrong change any 2 leads at termination box.

### POWER SUPPLY

The power supply for a submersible pump should be a separate circuit independent of all other circuits. It should be equipped with a fuse and control box of ample capacity.

On rural installations it is advisable that the power supply be free of any buildings, preferably on a direct line from transformer so that in the event of fire the wires will not be burned and the water supply cut off. On three phase motors, a magnetic starter the reset type with quick trip thermals must be used.

A lightening arrestor is to be used.

All wiring should conform to national and local codes and be done by a competent electrician.

Check pump voltage and phase at the fuse box before connecting to pump. Also check voltage after pump is operating.

## INSTALLING PUMP IN BORE

Pumps installed down to 120 metres are commonly done so on 40 or 50 mm. Class 12 polythene pipe. Installations to 150 metres should use class 15 polythene up to 2.2 Kw motor size. For depths greater than 150 metres or motor sizes larger than 2.2 Kw use steel or galvanised pipe to install the pump. It is very important to check the pressure rating of the pipe and make sure it is compatible with the pump pressure.

The easiest method of installation is to connect the pump to the pipe and lay the pipe across the ground from the top of the bore. The electric cable should be taped to the pipe at 3 metre intervals to prevent snarling of cable.

A pump shroud should be used if the pump is to be installed below water inlet level. This protects the pump from damage from falling sand and ensures correct velocity of water over motor for cooling purposes. Shroud can be made from PVC pipe.

The pump and pipe can now be carefully lowered into the bore taking care not to cut or chafe the cable insulation on the bore casing. Never allow the pump weight to be supported by the electric cable alone. Stainless steel safety cable must always be installed to support the pump.

A wrench should never be applied to the pump shell or motor casing, but may be used on the top discharge port.

Lower the pump into the bore slowly without force to approximately 3 metres below maximum water draw down and if possible 3 metres from the bottom of the bore. DO NOT SET THE PUMP ON THE BOTTOM OF THE BORE.

## PUMP START UP

Partially throttle pump and run until the water is clear of sand or any impurities. Gradually open the throttle valve until the pressure gauge is at the required operating pressure. If the pressure gauge continues to drop once valve is set the water level is dropping in the bore. Close the valve further until a steady operating pressure is shown on the gauge.

If the capacity of the bore is unreliable a flow switch with timer or bore probes should be used to protect the pump. Check the onga submersible pump accessories for details.

## WATER PRESSURE SYSTEMS

Listed in our catalogue are water pressure kits to convert your pump to a water pressure system. See installation drawing for detail. When selecting pressure tanks check the pressure rating and ensure it matches pressure rating of pump.

## FREQUENCY OF STARTS

Install the correct size of pressure tank to ensure the correct cycling of pump and motor. The average number of starts per day over a period of years influences the life of control components such as starters, relays and capacitors. The pump and tank size and other controls should be selected to keep the starts per day as low as practical for maximum life. Excessive cycling accelerates motor bearing and spline wear, pump wear and control contact erosion.

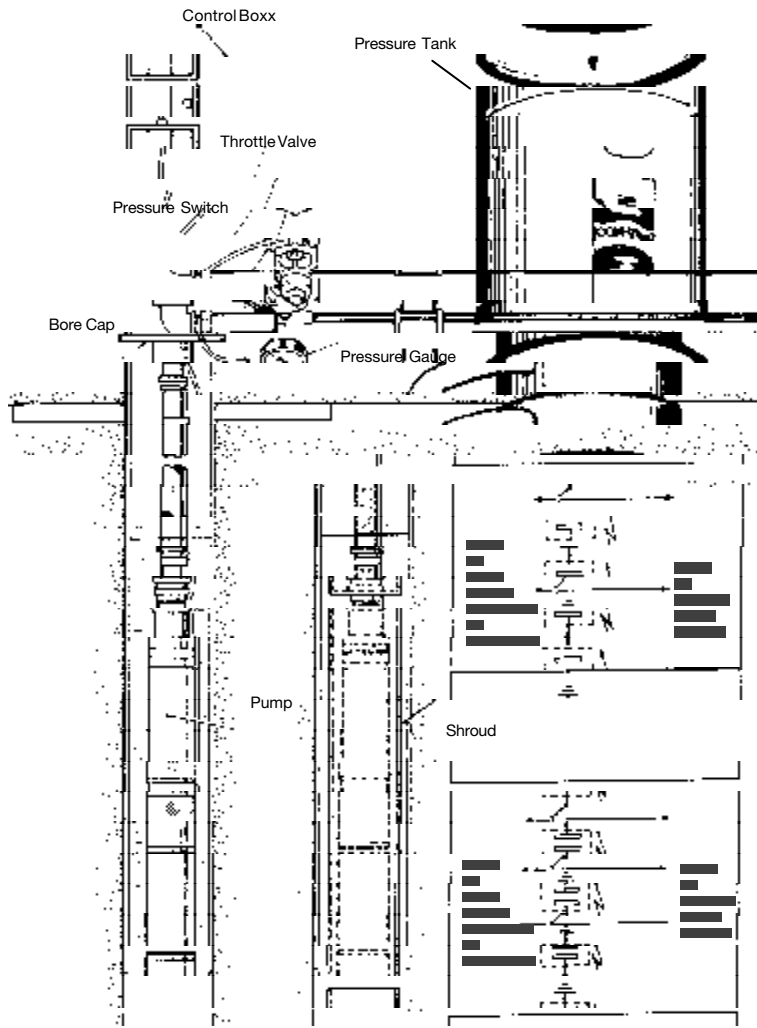
## TROUBLE SHOOTING GUIDE

### Electrical

1. Motor fails to start.
  - (a) Check fuses.
  - (b) Check for open or broken leads at terminals.
  - (c) Check to determine if power is being delivered to fuse box or service entry.
  - (d) Check control box - overload breaker may need resetting.
  - (e) Check pressure switch or bore level protection device.
2. Motor tries to start but blows fuses or trips overload.
  - (a) Fuses too small.
  - (b) Motor or cable grounded.
  - (c) Voltage too high or too low.
  - (d) Check control box or starter.
  - (e) Pump may be sand bound.

### HYDRAULIC

1. Pump does not deliver rated capacity.
  - (a) Water in bore not adequate-lower pump in bore, use throttle valve, use smaller pump. Lower water level control maybe needed.
  - (b) Horizontal check valve between pump and tank maybe stuck or installed backwards.
  - (c) Low voltage reducing R.P.M. of motor.
  - (d) Suction screen clogged.
  - (e) Impellers and diffusers worn due to abrasives.
  - (f) Incorrect rotation.
2. Pump starts to frequently.
  - (a) Waterlogged tank.
  - (b) Pressure switch may be out of adjustment.
3. Milky water or air from faucet.
  - (a) Gaseous bore.
4. Pump fails to shut off.
  - (a) Pressure switch fails to shut off.
  - (b) Bore pumped dry.
  - (c) Worn Pump.
  - (d) Pump setting too deep.



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## Onga Product Warranty

Onga warrants that, when this product is used for the purpose it was designed, is correctly housed and vented against weather, vermin, dust etc., that it will be free of material and manufacturing defects at the time of the original purchase. This warranty is limited to the cost of the product and does not cover third party costs including the costs of electricians, plumbers, etc. unless authorised by Onga pumps.

### TERMS AND CONDITIONS APPLICABLE IN AUSTRALIA AND NEW ZEALAND

#### 1) YOU SHOULD CAREFULLY READ THE INSTRUCTIONS SUPPLIED PRIOR TO USING THIS ONGA PRODUCT.

This product is to be installed and operated in accordance with the instructions provided. This warranty will not apply if it is used in a manner otherwise than in accordance with the instructions.

#### What the warranty covers:

Onga warrants its products to be free of defects in material and workmanship during the warranty period. If a product proves to be defective in material or workmanship during the warranty period, then Onga will, at its sole option **repair or replace the product with a like product. Replacement product or parts may include re-manufactured or refurbished parts or components.**

(International: Should any parts fail as a result of such defects within the specified period, the part will be replaced free of charge. This does not include travel charges, removal and reinstallation charges.)

#### How long the warranty is effective: (International 12 months)

- 1) This Onga product is warranted for (specified period) for all parts from the date of the first consumer purchase.
- 2) Where this Onga product is sold for commercial application as defined in the relevant Trade Practices and Consumer Protection legislation the warranty shall be for a period of three months from the date of purchase by the end user.
- 3) Ancillary equipment including but not limited to plastics and metal fittings, electrical controls (including touch pads), bladders, pressure switches, filter cartridges, pressure gauges, etc. shall be warranted for a period of twelve months only in relation to consumer applications and three months in relation to commercial applications.

#### Who the warranty protects:

This warranty is valid only for the consumer purchaser.

#### What the warranty does not cover:

- 1) Damage, deterioration or malfunction resulting from:
  - a) accident, misuse, negligence, fire, water, lightning, or other acts of nature, unauthorised product modification or failure to follow instructions supplied with the product;
  - b) repair or attempted repair by anyone not authorised by Onga;
  - c) any damage to the product due to shipment;
  - d) removal or installation of the product;
  - e) causes external to the product such as electric power fluctuations or failure;
  - f) use of supplies or parts not meeting Onga specifications;
  - g) normal wear and tear;
  - h) water ingress or exposure to abnormal corrosive conditions or run in dry conditions;
  - i) any other cause which does not relate to a product defect.
- 2) Damage caused to the product as a consequence of use of another manufacturer's product used in conjunction with Onga and affiliate companies.
- 3) This warranty does not cover such products as combustion engines, mechanical seals or other component parts of units not manufactured by Onga, but where possible Onga will make available to purchaser the benefit of any warranty of that manufacturer.
- 4) This guarantee does not cover underwater light bulbs, underwater lights will only be warranted if wiring is to approved standards, and an approved transformer incorporating thermistors has been used, running the light not submerged in water will void warranty.
- 5) Hydrostatic relief valve supplied separately or incorporated in products are sold with the express understanding that such products offer limited hydrostatic relief and no offer is made or implied as to the suitability of such products for a specific application as their condition at the time of sale are unknown and beyond Onga's control. It is the responsibility of the installer to ensure that the performance of the valve meets the required application.
- 6) Swimming pools or spa equipment will not be warranted where the Langelier saturation index PH" range is outside 7.2 to 7.6 and they have not been regularly treated with chlorine or bromine based sanitising systems, or other recognised sanitising systems.

#### Spare Parts:

Spare parts are usually stocked for a reasonable period of time following last production.

Onga does not warrant that spare parts will be made available for the whole of the reasonable period and reserves its right to cease supplying spare parts or providing facilities for repair of spare parts in circumstances which are beyond its control including the requirement to remove spare parts from sale as a consequence of changes in the law or otherwise as it deems fit.

**How to get service: In Australia please contact 1800 664 266 In New Zealand please contact 0800 664 269**

**Claims under this warranty must give evidence of date of purchase, model and serial number of the product and the claimants name, address and telephone number.**

- 1) To obtain warranted service, you will be required to provide to either Onga state office or recommended service agent:-
  - a) the product;
  - b) confirmation in writing specifying the nature of your claim;
  - c) proof providing date of original purchase;
  - d) full contact details including name and address;
  - e) the serial number of the product if any.
- 2) Any travel and removal-reinstalling charges for products repaired by Onga infield will be at the owners own expense.
- 3) Warranty service work will be denied or suspended, on equipment not readily accessible to service personnel, that is products that are behind barriers, tiled or bricked in, installed in roofs or second storey external walls including inaccessible power points.
- 4) Any service of any product which is found to be faulty due to abuse, misuse or improper installation will be charged to the owner at the service agents current servicing hourly rate.

#### Limitation of implied warranties:

**THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED HEREIN INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

#### Exclusion of damages:

**ONGA'S LIABILITY IS LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT. ONGA SHALL NOT BE LIABLE FOR:**

- 1) DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE OF BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
- 2) ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE.
- 3) ANY CLAIM AGAINST THE CUSTOMER BY ANY OTHER PARTY.

#### Effective law:

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Nothing in this warranty limits or restricts, or is intended to derogate from, any right or remedy which the purchaser or ultimate 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 New Zealand legislation or authority and where necessary shall so be read and construed.