SAFETY MEASURES

Electric apparatus designed for use in water. Serious injury can arise if instructions are not followed carefully. The pump is not for use by anyone under 16 years of age nor for anyone who has not read these instructions. In the event of malfunction it is important to identify and remedy the causes before switching the pump on again; use the trouble-shooting guide.

• This pump can only be used to pump clean water. It is forbidden to pump oils, explosive or flammable liquids or water with debris particles bigger than 2mm. • Danger of electric shock: Pump must be connected through an RCD protected mains electric socket to ensure electrical safety. Never install a damaged pump or one with frayed wires. Never use the power cable to support or move the pump; use the handle and the nylon cord. Disconnect the pump from the power supply before any work. When handling the pump, while it is connected to the power supply, avoid all contact with water. • Danger working over underground tanks: Take precautions to avoid falling into, or getting, stuck in, the opening to a tank. • Danger of water pressure: ensure your face or body is not in line with the pump output when turning the pump on.
TECHNICAL TERMS:

1. **Priming**: Pump must have water in it before first start. Remove the filler screw, pour water into the body of the pump until full (about 2 litres) and replace the screw.

2. **Dry run protection**: Pump will stop if no water pressure and is reset automatically (see specifications on back page). Also, as a failsafe, if the pump motor overheats the motor is turned off till it cools.

3. **Pressure-sensitive**: Pump runs when water is demanded and stops when taps or appliances are turned off.

4. **Reset**: In rare cases disconnect the mains electricity and reconnect after 15 seconds to make the pump run again.

5. **Hunting**: Pump turns on and off repeatedly due to a leak somewhere in the output piping. Check all connections for leaks and make sure they are tight.

Please check all components:

- **A** Filler Screw
- **B** Outlet Connector
- **C** Nylon Cord
- **D** Electric cable
- **E** Inlet Connector
Underwater Installation

1. Connect your input pipe and optional cartridge filter (neither supplied) to the pump inlet which has a 1" BSP male thread.

2. Connect output pipe into the outlet connector (B).

3. Lower pump into tank using the nylon cord (C), ensure pump is seated firmly on the floor of the tank.

Above Ground Installation

1. Connect your input pipe and optional cartridge filter (neither supplied) to the pump inlet which has a 1" BSP male thread.

2. Remove filler screw (A), fill with water (about 2 litres) and replace tightly.

3. Connect output pipe into the outlet connector (B).
If the pump is drawing water from a lower level, fit a non return valve (not supplied) on the inlet pipe at its lowest point. Prior to first pumping, fill the pipe with water. Use PTFE tape on all fixings. Max 3 metres.

Ensure the pipe connections are tight, otherwise pump will not pressurise.

*Turn pump on at the mains to ensure it runs when water is needed and turns off when all outlets are closed. The pump can be left plugged in all of the time.*

Ensure the pipe connections are tight.
## Trouble-shooting

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>PROBABLE CAUSE</th>
<th>SOLUTION</th>
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<tbody>
<tr>
<td>1. Reduced water flow.</td>
<td>i. Suction pipe, delivery pipe or inline optional cartridge filter obstructed.</td>
<td>Disconnect the pump from the power supply before any work. Remove obstructions, clean filter.</td>
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<tr>
<td>2. The pump motor does not run.</td>
<td>i. No electric power being delivered to the pump.</td>
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<td></td>
<td>ii. Pump was not primed i.e. filled with water before use.</td>
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<td>iii. Pump has detected a lack of water and has gone into dry run protection.</td>
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<td>iv. Pump has overheated (thermal switch has tripped).</td>
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<td>v. Pump repeatedly tripping RCD.</td>
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<td>vi. Non-return valve blocked.</td>
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<td>3. The motor runs but no water is supplied.</td>
<td>i. Air inside the pump or filter body.</td>
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<td></td>
<td>ii. No water in storage tank.</td>
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<td>4. The pump does not stop after tap or appliances turned off.</td>
<td>i. Water pressure not being held.</td>
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<td>5. The pump stops and starts intermittently.</td>
<td>i. Small leak in pipe.</td>
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### Background to the workings of “pressure-sensitive” pumps:

**Pump motor starts:** Pump switches on when i) a drop in pressure is detected by the pressure switch in the bottom of the pump, i.e. when tap or appliances are turned on and ii) the non-return valve shows no water flow. **Pump motor stops:** Pump switches off when no water flow is detected by the flow sensor in the non-return valve at the water inlet to the pump. This is the case when the tap or appliances are turned off and water flow stops. The pressure sensitive switch does not provide both the on and off functions. Both the non-return valve (with water flow detector) and the pressure-sensitive switch provide input to the logic of the printed circuit board (PCB). The thermal switch, which turns the pump off when temperatures in the motor stator is too high, is not connected to the PCB.
The HydroForce™ Series 3 is an electronically-controlled, pressure-sensitive, submersible, centrifugal roto-dynamic pump with no reciprocating parts.

Inlet port to the pump is 1” (25mm) male BSP.
Output port 1 inch (25mm) female BSP provided with push-fit connector for 1 inch (25mm) MDPE pipe (1 ¼ inch (32mm) connector option by special order).
Dimensions L 565 W 185 H 260 mm.
Weight 13.1 kgs.
Max head (nominal) 35 metres.
Pump pressure (nominal) at outlet 3.5 bar.
Max suction 3 metres.
Electrical use 220-240 Volts AC at 50Hz, 800 watts requiring 13 amp RCD-protected socket. Cable length 5 metres.
Pressure-sensitive (demand) pump which turns itself off until there is a demand for water.

Dry-run Protection: when no water is detected for 8 seconds, the pump is turned off by the printed circuit board (PCB) in order to protect the motor and pump from burning out.
Automatic reset after a period of 30 minutes. If water is still not detected, subsequent reset periods are 1.5 hours, 3 hours, 7 hours, 12 hours, 24 hours then back to the beginning of the cycle. Additionally, a thermal switch, not connected to the PCB, turns the pump off when motor overheats. It resets when cool which may take several hours.

Alloy bulkhead, pressure release gap and twin chamber design prevents ingress of water to motor, electrical components and to bearing oil.
Double bearing seal prevents egress of bearing oil.
Alloy bulkhead dissipates motor heat to water in the second chamber.
Logic processors in PCB prevent other pump anomalies and permit factory programming of reset timings.
Each pump is tested before leaving our factory and there may be marks on the connectors and residual water in the body. Pump serial numbers are on record for each individual pump and can be recalled in the event of warranty claim.
For ease of maintenance it is advised when installing in an underground tank, the pump is connected via an IP66 connection box in the turret of the tank. The connection box must be connected to the RCD via armoured cable run through underground ducting.

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WARRANTIES
The HydroForce™ pump is guaranteed for 2 years from date of purchase for manufacturing faults.
HydroForce™ Pumps Ltd certifies that the Series 3 pump with the model and serial number specified on the nameplate, are compliant with the safety requirements of the Machine Directive 89/392/EC and amendments, of the Low Voltage Directive 73/23/EC and in the Electromagnetic Compatibility Directive 89/336/EC and amendments. The materials and manufacturing of this product are guaranteed for 2 years from the date of purchase if the installation instructions are complied with, the pump has been used for its designed applications and it has not been dis-assembled. It is obligatory to prime the pump by removing the Filler screw and filling the body of the pump (approx. 2 litres of water) then replacing the Filler screw. In the event of an apparent fault, the retailer or installer should be contacted first. HydroForce™ Pumps Ltd declines responsibility for incidents or damage caused by negligence or by ignoring these instructions. Never use the power cable to support or move the pump; use the handle and the nylon cord.