

# A useful guide to successful pump operation

We hope the tables below will prove helpful in resolving operational problems with pumps in the field.

Some other important points which have a bearing on safe pump operation are listed below:-

- (1) Never lift a submersible pump by its cable, always use a rope or chain attached to the handle.
- (2) Never use standard water pumps to handle oil, salt water, petrol, diesel fuel or organic solvents.
- (3) Never use standard pumps in hazardous areas, or in the presence of explosive or flammable materials.
- (4) Before starting an engine pump always check that there is oil in the sump, fuel in the tank and water in pump
- (5) Note that all electric pumps for site use should have minimum of 10m of HO7 rubber cable fitted.
- (6) Standard submersible pumps should not be used in water temperatures outside the range 0°-40°C.

## Trouble-shooting check list for engine-driven pumps

Symptom	Cause	Action	Checked
<b>Engine fails to start</b>	(1) insufficient or incorrect fuel	(1) re-fill or replace	<input type="checkbox"/>
	(2) fuel not reaching carburettor	(2) remove drain screw and check flow	<input type="checkbox"/>
	(3) fuel valve off	(3) switch on	<input type="checkbox"/>
	(4) engine switch off	(4) switch on	<input type="checkbox"/>
	(5) insufficient oil	(5) fill with oil to correct level	<input type="checkbox"/>
	(6) engine at an angle	(6) operate on level ground	<input type="checkbox"/>
	(7) no spark from spark plug	(7) remove plug and clean, check plug cap is fitted correctly	<input type="checkbox"/>
<b>Engine runs but pump will not pump</b>	(1) insufficient priming water	(1) fill pump chamber fully with water. do not run dry	<input type="checkbox"/>
	(2) operated without water	(2) check with operator and replace mechanical seal	<input type="checkbox"/>
	(3) sucking air	(3) check that washers in couplings are in place and that there are no cracks or holes in hose or in pump chamber. check that 'O' rings are in place on drain and filler plugs and that hose clips are secure.	<input type="checkbox"/>
	(4) suction head too high	(4) don't exceed recommended 6 metre vertical suction lift	<input type="checkbox"/>
	(5) pump still priming	(5) wait up to 5 minutes for water to be drawn through the pump	<input type="checkbox"/>
<b>Pump's head and output are low</b>	(1) strainer blocked or buried	(1) remove blockage or re-position suction strainer	<input type="checkbox"/>
	(2) kinked hose	(2) untwist or straighten hose and/or fit pipe elbows	<input type="checkbox"/>
	(3) too much hose	(3) reduce length of suction and delivery hose	<input type="checkbox"/>
	(4) impeller worn or clogged	(4) replace or clean	<input type="checkbox"/>
	(5) hose size too small	(5) fit specified size of hose or larger particularly important on suction side	<input type="checkbox"/>

## Trouble-shooting check list for submersible pumps

Symptom	Cause	Action	Checked
<b>Pump fails to start</b>			
From new:	(1) incorrect voltage	(1) check that voltage applied agrees with rating plate	<input type="checkbox"/>
	(2) damaged supply lead	(2) check full length for cuts or abrasions	<input type="checkbox"/>
	(3) locked impeller (LSC-4)	(3) check impeller and remove any rust between impeller blades and suction cover	<input type="checkbox"/>
After working properly:	(1) as above	(1) as above	<input type="checkbox"/>
	(2) as above	(2) as above	<input type="checkbox"/>
	(3) locked impeller	(3) check impeller and chamber for stones debris or rust between impeller blades and suction cover after period of use	<input type="checkbox"/>
<b>Motor runs but pump does not operate (LSC-4 only)</b>	(1) insufficient priming water	(1) LSC-4 requires minimum of 100mm (4") of water to self-prime, for lesser depths pump should be primed initially through outlet port	<input type="checkbox"/>
<b>Pump stops shortly after starting (motor protector actuates)</b>	(1) locked impeller	(1) check impeller and chamber for stones, debris or rust between impeller blades and suction cover	<input type="checkbox"/>
	(2) incorrect voltage	(2) check that voltage applied agrees with rating plate	<input type="checkbox"/>
	(3) low voltage at pump	(3) check actual supply voltage, check condition of supply from transformer or generator, check extension lead does not exceed 15 metres in length	<input type="checkbox"/>
<b>Pump's head and output are low</b>	(1) strainer blocked or buried	(1) remove blockage or re-position pump	<input type="checkbox"/>
	(2) kinked hose	(2) untwist or straighten hose and/or fit pipe elbows	<input type="checkbox"/>
	(3) too much hose	(3) reduce length of hose, install a larger pump	<input type="checkbox"/>
	(4) impeller worn or clogged	(4) replace or clean	<input type="checkbox"/>
	(5) hose size too small	(5) fit specified size of hose or larger	<input type="checkbox"/>
<b>Pump does not start or stop automatically (auto versions only)</b>	(1) float movement obstructed	(1) remove obstruction and ensure float can move freely throughout range	<input type="checkbox"/>
	(2) setting of cable length incorrect	(2) adjust length of float cable	<input type="checkbox"/>