RESPONSIBLE

PUMP OWNERSHIP

Centrifugal pumps are simple to maintain, efficient, reliable, and meet the needs of most system requirements. Centrifugal pumps are designed to pump liquids, not gases. *Any centrifugal pump (even a self-priming pump) will not start pumping unless the wet end is full of a constant supply of liquid.* Place the pump as close as possible to a reliable and properly sized water source.

PUMP CARE

Pump seals must be kept lubricated and cooled. A constant supply of water/liquid will provide lubrication and cooling to the pump seals. Centrifugal pumps should never be operated without a continual water supply source. Failure of the pump seal is due to overheating as a result of friction. This failure can happen in less than a minute of operation without a proper water supply to the pump. The damage of such a run-dry situation can easily be discovered by examining the seals. The damage will be a warranty-void situation.

Pump priming is done as follows:

1. First, make sure the intake pipe and wet end/impeller are open and filled with a consistent supply of water.
2. With the outtake/delivery valve closed/partially closed (dependent on system design/pump model).
3. Start (plug in) the pump.
4. The rotating impeller will send water into the outtake/delivery pipe.
5. Immediately open the outtake/delivery valve.

Common tasks/items to implement, check, and maintain:

- Always provide adequate access around the pump for ventilation and pump service/maintenance.
- Before placing the pump into operation, check for air leaks in the piping and make sure all valves to/from the pump are operational.
- Confirm the intake pipe and wet end/impeller are full of a consistent supply of water.
- Properly prime the pump.
- Eliminate plumbing angles close to the intake of the pump to reduce cavitation and/or resonance (vibration noise) coming from the pump.

Common tasks/items to implement, check, and maintain:

- Locate the pump as close to the water source as possible. It is best to have your main (longest) run of pipe on the discharge side of the pump. A centrifugal pump is designed to push water, not pull it. If your installation requires a modest pulling of water, we recommend using a swing check valve and priming pot (Dolphin EZ basket) to be attached to the pump intake - Consult a professional engineer. Do NOT use foot or spring check valves as they reduce the water available to the pump. They clog easily and are difficult to service.
- When installing the pump, utilize the correct size piping (use the same size or larger than the inlet to the pump). The piping length to the pump should be a straight length of pipe with an equivalent length of at least five to ten times the pump inlet size (e.g. 1.5" would need at least 7.5 inches of 1.5" or larger diameter straight pipe leading to the inlet of the pump).
- Utilizing the anti-vibration pad that comes with your pump will also reduce unwanted noise vibrating from the surface your pump is placed.
- Shut-off valves are recommended on both the intake and discharge sides to aid in the ease of removing the pump from the system for maintenance and repair.
- Attach the pump unions to the pump first to ensure proper union alignment and seal. Do NOT use Teflon/plumber tape on the pump union threads.
- Avoid freeze damage. Freeze damage is a problem that can happen anywhere the temperature drops below freezing for an hour or more. The water in the priming chamber of the pump will solidify if the ambient temperature drops below freezing for a sufficient time period. When water freezes it expands and the casing will crack. The casing will require replacement at a cost not covered by warranty. To avoid this, unplug the pump and drain the wet end or simply supply a heat source when the ambient temperature is predicted to be below freezing.
- Routinely check if any foot valve or check valve is leaking.
- Routinely check for proper seals on all joints and unions.
- Routinely check for proper water and power supply.
- Routinely check impeller is freely spinning and remove any obstructions.
- Routinely check the pump seal for any signs of leaks.
- Routinely clean and inspect the wet end of the pump for debris, and obstructions and to inspect that no defects, gouges, or pits are present in the top surface of the impeller and the volutes are clean. An informative video on pump wet end cleaning can be found here: Working on a Dolphin Diamond Amp Master Pump - YouTube = https://youtu.be/xNu3iiaynKU?feature=shared
- After maintenance make sure all parts are replaced in the correct position.

TROUBLESHOOTING

ALWAYS UNPLUG THE UNIT BEFORE EVALUATING

Centrifugal pumps must have a “flooded inlet” when liquid pumping starts. Never plug in or operate a pump without a constant supply of liquid in the wet end of the pump – this will immediately damage the seals and impair motor function. Re-prime after any power loss or electrical event.

The pump will not prime:

- Air leaks in the suction line, which prevents the creation of low pressure.
- Debris in the impeller, which blocks the flow of water.
- The pump is air-bound, which means air is trapped in the pump casing.
- Plugged recirculation port, which reduces the water circulation.
- Lift too high for pump speed or impeller diameter, which exceeds the pump's performance curve.
- Warped or misaligned basket lids, unions, O-ring(s), and/or plumbing allowing air to enter the system.

If NO water is being pumped:
The pump is not delivering water consistently – or at all. This can occur even if the pump has been operating normally, and both the discharge and suction valves are open and functional. There are several potential causes for a stoppage in liquid delivery.

- The pump is not primed - Confirm the intake pipe and wet end/impeller are full of a consistent supply of water. Pumps are thirsty. Re-prime your pump.
- There's an obstruction in the suction line - inspect the line and remove any obstruction.
- The impeller is clogged - inspect the impeller and remove the obstruction.
- The foot valve or suction pipe has inadequate submergence: check the suction source for vortexing and correct submergence.
- The intake pipe lift is too high: review and revise the suction level until corrected.

Pump starts and stops:
If your pump starts but then the flow stops – investigate immediately.

- The pump is improperly primed - sometimes, an incomplete priming (or no priming at all) can cause the pump to start and stop. Re-prime the pump thoroughly to resolve this issue.
- There's air in the suction line - an accumulation of air bubbles in the suction line can cause the pump to drop out of prime. Review the intake piping and revise as needed to eliminate any air pockets that may be present. Too many angled fittings on the intake line can cause this to happen. Cavitation is a large cause of damage to any pump and is caused by excessive vapor. Review the intake system design and correct the problem related to the presence of any air bubbles.

The pump does not produce proper rated flow or head:
The flow rate or head in the system is below the performance rating. Here are some possible causes and solutions:

- There's a possible air leak through the gasket(s) - replace the gasket and tighten all connections properly. Gaskets can be located on the wet end faceplate, drain plug, and unions.
- The impeller is partially clogged and is usually accompanied by a vibration or rattling noise. Inspect the impeller for debris and remove the obstruction(s).
- There's an inadequate water source - review the intake design to make sure specs are met and revise if needed.
- If the impeller is worn or damaged: inspect the impeller's performance and replace it as needed.
- There's an air leak in the suction line - escaping air can also cause intermittent pump runs. Check the gaskets and seals on the pump and replace them if needed.

MOTOR TROUBLESHOOTING

ALWAYS UNPLUG THE UNIT BEFORE EVALUATING

The pump motors have Automatic Thermal Overload Protection. The motor will automatically shut off before the motor generates enough heat to damage itself. Once a normal heat level is reached, the motor may restart without damage.

Common things to check and maintain:

- Check for stable and proper electrical connections. Check for damaged cords and loose connections. Check for undersized wiring. Place unit out of service if any of the above is found and/or there is damage to the cord.
- Frozen/jammed impeller - Check that the motor shaft rotates easily by using a screwdriver to turn at the screw start of the shaft (dependent on the pump model - located under the white motor plug or by unscrewing the black backend of the motor). If it does not rotate, check that the impeller is not impaired by debris. If the shaft still fails to turn check the seals for loss of friction.
- Check that the impeller and/or float ring (models 7200, 12500, 14500) is not cracked or broken. If the impeller is good, your problem may be bad motor bearings.

Motor hums, but not much else:

- Make sure the impeller is moving freely without debris.
- Make sure the seal has not adhered together from heat caused by a run-dry.
- Check for a damaged/dented capacitor and broken connections. Power surges and overheating can damage a capacitor. If the capacitor is good and your shaft is rotating freely by hand then you most likely have a burned-out motor coil/winding which requires replacement of the motor.

The motor gets hot and shuts down:

Generally due to low voltage or being overloaded.

- Check that the motor is wired correctly. If the motor is configured for 230V and has 115V coming in, it will shut down.
- Check for correct-sized wiring to the pump. Example: For a hook-up to the circuit box of under 50', pumps of up to 2HP wired for 230V need No. 14 size wire, for pumps wired for 115V, the wire size must be No. 14 for 1/2 and 3/4 HP; No 12 for 1 HP; and No. 10 for 1 1/2 and 2 HP. Make sure to check your specific system needs and these figures with your professional contractor/electrical engineer.
- Check that the motor is not overloaded.
- Does the pump's wet end have the correct impeller and diffuser for the model motor was it replaced in the correct position? Is the impeller and/or the float ring worn?

Motor Amps are increasing:

Excessive amp draw can be a sign of several electrical or mechanical issues. Here are some possible causes and solutions:

- Water flow restriction (check all intake pipes for leaks and that the priming/straining basket is clear/clean and being maintained properly.)
- Impeller rubbing against the pump housing (check if the impeller is spinning freely and no noise is coming from the wet end)
- Debris caught against the impeller (make sure you are doing wet-end maintenance at least every 6 months)
- Verify the fluid properties. If the density or viscosity is higher than expected, the power draw will increase.

If you cannot find a problem with the pump, it might be the power supply, a voltage imbalance, or other complication(s). You will want to have an experienced contractor/electrician properly evaluate the supply and system.

- Too long or too thin of gauge extension cord can create low voltage/high amperage levels which can damage the electric motor and degrade pump performance.
- Most motor trouble is the result of too small a gauge or too long of an extension cord. We DO NOT recommend the use of an extension cord.
- Recommended plugging directly into a GFCI.
- Clean the ventilation and outside parts of the motor. Grit or other foreign material may cause electrical motor defect(s).

DIRECTIONS FOR WARRANTY USE:

- REQUEST A REPAIR/REPLACEMENT FORM via email: info@dolphinpumps.com
- Ship the pump and form to 2279 Industrial Park Dr., Cairo, GA 39828
- Provide a copy of the original receipt, warranty, and/or proof of purchase.
- Dolphin will contact you when your pump has been received, and evaluated to advise of details.
- The pump will ship back via UPS Ground service (US mailing addresses only).

For additional information please visit the following page on our website:

https://dolphinpumps.com/information