

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Pedestal Driven Centrifugal Pumps

Refer to Specifications Information and Replacement Parts Manual for Product Specific Information

Safety Guidelines

This manual contains information that is very important to know and understand. This information is provided for SAFETY and to PREVENT EQUIPMENT PROBLEMS. To help recognize this information, observe the following symbols:

⚠ DANGER *Danger indicates an imminent hazardous situation which, if not avoided, WILL result in death or serious injury.*

⚠ WARNING *Warning indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.*

⚠ CAUTION *Caution indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.*

NOTE: These symbols indicate important information that, if not followed, may cause damage to equipment.

Unpacking

When unpacking the unit, inspect carefully for any damage that may have occurred during transit. Check for loose, missing or damaged parts. (See pump exploded view and replacement parts list). **Do not attempt to assemble or operate pump if any parts are missing or damaged. Determine that all parts are properly installed.**

General Safety Information

1. Know the pump application, limitations and potential hazards.

⚠ WARNING *Pump should only be used with liquids compatible with pump component materials. Do not use to pump*

flammable or explosive fluids such as gasoline, fuel, oil, kerosene, etc. Do not use in flammable and/or explosive atmospheres.

When pumping hazardous or dangerous materials, use only in room or area designated for that purpose. For your protection, always wear proper clothing, eye protection, etc. in case of any malfunction. For proper handling techniques and cautions, contact your chemical supplier, insurance company and local agencies (fire dept., etc.). Failure to comply with this warning could result in personal injury and/or property damage.

2. Make certain that the power source conforms to the requirements of your equipment.
3. Provide adequate protection and guarding around moving parts.
4. Disconnect power before servicing. If the power disconnect is out-of-sight, lock in the open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electrical shock!
5. Release all pressure within the system before servicing any component.
6. Drain liquids from the system before servicing.
7. Secure the discharge line before starting the pump. An unsecured discharge line will whip, possibly causing personal injury and/or property damage.
8. Check hoses for weak or worn condition before each use. Make certain that all connections are secure.
9. Periodically inspect pump and system components. Perform routine maintenance as required (See Maintenance section).

10. Provide a means of pressure relief for pumps whose discharge line can be shut off or obstructed.

11. Personal Safety:

- a. Wear safety glasses at all times when working with pumps.
 - b. Wear a face shield and proper apparel when pumping hazardous chemicals.
 - c. Keep work area clean, uncluttered, and properly lighted; replace all unused tools and equipment.
 - d. Keep visitors at a safe distance from the work area.
 - e. Make workshop childproof - with padlocks, master switches, and by removing starter keys.
12. When wiring an electrically driven pump, follow all electrical and safety codes, as well as the most recent United States National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

⚠ WARNING *Risk of electric shock!*

13. To reduce the risk of electric shock, electric motor must be adequately grounded to a grounded metal raceway system, or by using a separate grounding wire connected to bare metal on the motor frame, or to the ground screw located inside motor terminal box, or by other suitable means. Refer to the most recent National Electrical Code (NEC) Article 250 (Grounding) for additional information. **ALL WIRING SHOULD BE DONE BY A QUALIFIED ELECTRICIAN.**
14. Do not operate a gasoline engine in an enclosed area. Be sure the area is well ventilated.

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General Safety Information (Continued)

▲WARNING Gasoline is a highly combustible fuel.

The improper use, handling, or storage of gasoline can be dangerous. Never fill or touch a hot engine.

Do not handle a pump or pump motor with wet hands or when standing on wet or damp surface, or in water as fatal electrical shock could occur. Disconnect main power before handling unit for any reason.

Installation

▲WARNING In order to safely use this product

familiarize yourself with this pump and also with the liquid (chemical, etc.) that is going to be pumped through the unit. This pump is not suitable for many liquids.

In any installations where property damage and/or personal injury might result from an inoperative or leaking pump due to power outages, discharge line blockage, or any other reason, a backup system(s) should be used.

1. Locate pump as close to the fluid source as possible making the suction line as short and direct as possible.

NOTE: The pump should be placed where motor is protected from the weather and extremes of heat, cold, and humidity.

2. Mount the pump on a solid foundation. On fixed installations, install both a union and a gate valve (not furnished) on the discharge side of the pump for service convenience.

NOTE: Do not use a globe or other restricting type of valve at the discharge, as this would seriously restrict the capacity of the pump.

▲WARNING Support pump and piping when

assembling and when installed. Failure to do so may cause piping to break, pump to fail, motor bearing failures, etc. All of which can result in property damage and/or personal injury.

3. Attach suction piping to the suction inlet and discharge pipe to the discharge outlet. Avoid using loops or sections of pipe or fittings which might permit air to become trapped.

IMPORTANT: If plastic or fabric hose is used for the suction piping, it should be of a reinforced type so as not to collapse under suction. The discharge piping should be at least the same size as the discharge connection. Suction piping should be the same size as the discharge piping or one size larger.

DRIVES

1. Direct Coupling Drives: Never use a rigid coupling between the pump and the motor. Some degree of flexibility must be allowed at the coupling to avoid excessive side loading of the motor and pump bearings. Any flexible coupling rated for the horsepower load and speed is satisfactory. Pump and motor must be in alignment. Misalignment will cause unnecessary loads on the pump and motor bearings.

NOTE: Unit is not recommended for direct drive by an engine (gas or gasoline). If engine drive is desired a V-Belt arrangement is recommended, to reduce torque pulsations on pump.

2. Pulley Drive:(Refer to Pedestal Pump Performance Chart, found in the Product Specific OIPM accompanying this manual). A single 1/2" (A or 4L section) V-belt and single groove pulleys are satisfactory for drive sizes and speeds up to 3450 RPM, 1 HP. For higher HP loads, doubled groove pulleys are recommended.

Matched V-Belts and double groove pulleys are satisfactory for drive sizes and speeds up to 7½ HP, 3600 RPM. When replacing belts for double groove pulleys, replace both belts with a matched pair, even if only 1 belt breaks or shows wear.

3. ROTATION: Check motor rotation before coupling to pump to be certain it is the same as arrow on bearing housing. Looking at pump from shaft end this rotation is clockwise.
4. When using a self-priming pump, a foot valve may be used on the suction line (for drive speeds below 3450 RPM) to assist in faster priming and is recommended for suction lifts over 10 feet or when long suction runs are involved.
5. A suitable suction strainer should be attached to the suction line so that large pieces of foreign material are not drawn into the pump.
6. Install any auxiliary components (e.g. pressure switch, timer, etc.).

Operation

SELF-PRIMING PUMPS

It is necessary to prime the pump before initial start up. Prime the pump by filling the casing with liquid through the top fill plug, the discharge port, or by installing a pipe tee at the discharge of the pump. (When installing a tee, use the horizontal leg of the tee as the pump discharge and place a pipe plug in the vertical leg). This procedure will help facilitate priming later.

NON-PRIMING PUMPS

1. The casing and suction piping must be filled with liquid before the unit can begin pumping.

In order to completely fill casing with liquid, entrapped air in casing must be vented. This is accomplished by momentarily loosening or removing the top drain plug located on the casing.

▲CAUTION Do not run pump dry as permanent damage to the mechanical seal will result.

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Operation (Continued)

2. Activate the unit.

IMPORTANT: Power should be applied momentarily to the pump at first and the direction of rotation checked.

When viewing the rear of the motor (opposite the pump end), the motor shaft should be rotating clockwise.

NOTE: Never shut off discharge or restrict suction flow while the pump is operating. It may take up to 5 minutes for pump to prime if long horizontal/vertical lines are used. If pump has not picked-up prime in 2 minutes, re-prime piping and casing after letting unit cool down for 5 minutes. Re-check all suction connections making sure pipe compound has sealed all connections. Initial priming may take 2 to 3 tries to prime pump successfully.

CAUTION *The proper impeller (motor) rotation is CCW facing the front of the pump. Wrong rotation will give low performance, low head and could damage unit and/or personnel.*

Maintenance

WARNING *Make certain that the unit is disconnected from the power source before attempting to service or remove any components!*

NOTE: Always flush pump thoroughly after use or if unit is not going to be used for any prolonged length of time to prevent crystallization and/or damage to seal and pump.

ROUTINE

1. Pump should be drained if subjected to freezing temperatures. A drain plug is provided on the pump casing.

2. Clean the suction line strainer at regular intervals.
3. Properly selected and installed electric motors are capable of operating for years with minimal maintenance. Periodically clean dirt accumulations from open-type motors, especially in and around vent openings, preferably by vacuuming (avoids imbedding dirt in windings).
4. Periodically check to see if electrical connections are tight.
5. Pump should be checked daily, weekly, monthly, etc. for proper operation. If anything has changed since unit was new, unit should be removed and repaired or replaced. Only qualified electricians or service personnel should attempt to repair this unit. Improper repair and/or assembly can cause an electrical shock hazard.

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Troubleshooting Chart (Continued)

Symptom	Possible Causes	Corrective Action
Little or no discharge and unit will not prime	1. Casing not filled with water	1. Fill pump casing. Using a foot-valve will extend pump life and facilitate immediate priming
	2. Total head too high	2. Shorten suction lift and/or discharge head
	3. Suction head exceeds that for which pump is designed	3. Lower suction head, install foot-valve and prime
	4. Impeller partially or completely plugged	4. Disassemble pump and clean out impeller
	5. Rotation incorrect	5. Correct. (See Installation Instructions for proper rotation)
	6. Hole or air leak in suction line	6. Repair or replace suction line
	7. Foot-valve too small	7. Match foot-valve to piping or install one size larger foot-valve
	8. Impeller damaged	8. Disassemble pump and replace impeller
	9. Foot-valve or suction line not submerged deep enough in water, pulling air	9. Submerge lower in water
	10. Insufficient inlet pressure or suction head	10. Increase inlet pressure by adding more water to tank or increasing back pressure by turning gate-valve on discharge line to partially closed position
	11. Suction piping too small	11. Increase pipe size to pump inlet size or larger
	12. Casing gasket leaking	12. Replace
	13. Suction or discharge line valves closed	13. Open
	14. Speed too low	14. Check and correct alignment, belt slippage and possibly incorrect pulley sizes
	15. Wear plate worn	15. Replace
Loss of suction after satisfactory operation	1. Air leak in suction line	1. Repair or replace suction line
	2. When unit was last turned off, water syphoned out of pump casing	2. Refill (reprime) pump casing before restarting
	3. Suction head exceeds that for which pump is designed	3. Lower suction head, install foot-valve and prime
	4. Insufficient inlet pressure or suction head	4. Increase inlet pressure by adding more water to tank or increasing back pressure by turning gate valve on discharge line to partially closed position
	5. Clogged foot-valve, strainer, or pump	5. Unclog, clean or replace as necessary
Pump overloads driver	1. Total head lower than pump rating. Unit delivering too much water	1. Increase back pressure on pump by turning gate valve on discharge line to partially closed position that will not overload motor
	2. Specific gravity and viscosity of liquid being pumped different than the pump rating	2. Increase HP if needed and/or use different pump for application. Consult factory
	3. Speed too high	3. Check and correct alignment, and change pulley sizes to lower pump speed
Pump vibrates and/or makes excessive noise	1. Pump and motor misaligned	1. Realign
	2. Mounting plate or foundation not rigid enough	2. Reinforce
	3. Foreign material in pump causing unbalance	3. Disassemble pump and remove
	4. Impeller bent	4. Replace impeller
	5. Cavitation present	5. Check suction line for proper size and check valve in suction line if completely open, remove any sharp bends before pump and shorten suction line
	6. Worn bearings	6. Replace
Pump runs but no fluid	1. Faulty suction piping (air leak)	1. Replace
	2. Pump located too far from fluid source	2. Relocate
	3. Gate valve closed	3. Open
	4. Clogged strainer	4. Clean or replace
	5. Fouled foot valve	5. Clean or replace
	6. Discharge height too great	6. Lower the height
Pump leaks at shaft	Worn mechanical seal	Replace