Trouble-Shooting Your Pumping System

A handy guide to help determine pump system problems.

Problems	Possible Causes	Solutions
Low pressure.	1. Belt slipping. 2. Improperly sized nozzle. 3. Worn nozzle. 4. Regulator or unloader is improperly adjusted. 5. Inlet filter screen is clogged, 6. Worn seals. 7. Discharge or inlet hose is not properly sized. 8. Pitted valves.	1. Tighten or replace belt. 2. Change to correct nozzle. 3. Replace nozzle. 4. Adjust regulator or unloader to correct pressure. 5. Clean filter or replace. 6. Replace seals. 7. Replace plumbing with a size matched to pump flow rate. 8. Replace valves.
Erratic pressure; pump runs rough; louder than normal.	1. Worn pulsation dampener. 2. Foreign particles caught in inlet/discharge valves. 3. Worn valve or valve seat. 4. High inlet water temperature. 5. Worn seal. 6. Wrong size motor pulley.	1. Recharge or replace accumulator. 2. Clean valves. 3. Replace valve or valve seat. 4. Decrease water temperature. 5. Replace seal. 6. Replace with correct-sized motor pulley.
Water in crankcase.	1. Worn low pressure seals. 2. If water condition is milky, but the oil level does not rise in crankcase, this is a sign of condensation only.	1. Replace seals. 2. Change oil more frequently.
Short seal life.	1. Damaged plunger sleeve. 2. Worn connecting rod. 3. Excess pressure, beyond the pump's maximum rating. 4. High water temperature.	1. Replace plunger sleeve. 2. Replace connecting rod. 3. Lower pressure to recommended rating. 4. Lower water temperature.
Loud knocking in pump.	1. Loose connecting rod bolts. 2. Damaged crankshaft. 3. Worn bearings. 4. Loose plunger sleeve bolt.	1. Tighten bolts to recommended torque specifications. 2. Replace crankshaft. 3. Replace bearings. 4. Tighten plunger sleeve bolt to correct torque specifications.
Short bearing life.	1. Excessive belt tension. 2. Misalignment between pump and motor. 3. Oil has not been changed on a regular basis.	1. Ease belt tension. 2. Realign pump and motor. 3. Change oil and follow Operating Manual on recommended oil changes.
Oil leaking from crankcase.	1. Worn or cracked oil sight glass or gasket. 2. Loose rear cover screws. 3. Worn rear cover gasket. 4. Worn crankshaft seal. 5. Excessive belt tension. 6. Pump overfilled with oil, displaced through crankcase breather hole in oil cap.	1. Replace sight glass or gasket. 2. Tighten screws. 3. Replace gasket. 4. Replace seal. 5. Ease tension on belt. 6. Drain oil; refill to recommended oil level as stated in Operating Manual.

Trouble-Shooting Your Pumping System

This guide deals specifically with mechanically driven diaphragm pumps.

A guide to high-pressure piston and plunger pumps can be found on page 98.

Problems	Possible Causes	Solutions
Pump runs but produces no flow.	Pump is not primed.	Flood suction then restart pump.
Pump fails to prime.	Air is trapped inside pump.	Disconnect discharge hose from pump. Flood suction hose, restart pump, and run pump until all air has been evacuated.
Pump loses prime. Chattering noise, pressure fluctuates.	Air leak in suction hose or inlet fittings.	Remove suction hose and test for leaks by pressurizing hose with water. Make sure thread sealant has been used on all fittings.
	Suction line is blocked, collapsed or too small.	Remove suction line and inspect it for a loose liner or debris lodged in hose. Avoid all unnecessary bends. Do not kink hose.
	Clogged suction strainer.	Clean strainer.
The pump does not draw water.	One or more valves are seating improperly	Remove valve and check for debris. Remove any debris found examine the valve seatings and clean them
	Suction line is plugged or collapsed. Clogged strainer.	Examine and clean the suction line. Clean the strainer.
Low pressure at nozzle.	Incorrect or worn nozzle.	Make sure nozzle is matched to the flow and pressure of the pump. If the nozzle is worn, replace.
	Restricted intake.	Refer to above priming information.
Pressure loss in general.	Screen clogged.	Check the screen for debris and clean or replace.
	Inlet size too small.	Make sure it is big enough.
	Worn or clogged valves are stuck.	Inspect valves, wear pitting and debris and replace if necessary.
	System leaks.	Check for leaks.
The liquid flow is irregular.	One or more valves are seating improperly.	Remove valve and check for debris. remove any debris found. examine the valve seatings and clean them.

Trouble-Shooting Your Air Driven Pump

Product discharged from air exhaust

- Check for diaphragm rupture.
- Check tightness of diaphragm nut.

Air Bubbles In Product Discharge

- Check connections of suction plumbing.
- Check band clamps on intake manifold.
- Check O-rings between intake manifold and fluid caps.
- Check tightness of diaphragm nut.

Pump blows air out main exhaust when stalled on either stroke

- Check "U" cups on spool in major valve.
- Check valve plate and insert for wear.
- Check sleeve and O-ring on diaphragm connecting rod.
- Check O-rings on piston for wear.

Low output volume

- Check air supply.
- Check for plugged outlet hose.
- Check for pump cavitation - suction pipe should be ½ min. or larger if high viscosity fluids are being pumped. Suction hose must be non-collapsible type, capable of pulling a high vacuum.
- Check all joints on intake manifolds and suction connections. These must be airtight.
- Check for sticking or improperly seating check valves.
- If pump cycles at a high rate or runs erratically check piston O-rings for wear.