

Pump Losing Pressure?

In a positive displacement pump, flow is directly related to RPM and pressure by the restriction of the flow in the discharge line.

Pump Inlet

The inlet conditions are often one of the first places to investigate when a system loses pressure. Many things can cause cavitation or starvation and result in a gradual loss or fluctuation of system pressure. It is recommended that precautions be taken at the pump inlet to minimize problems. All liquids should be filtered before entering the pump to minimize wear to the pump packings (seals) and valves. A flow control valve should be installed in the tank to maintain adequate liquid levels to avoid starving the pump. A temperature control valve should be installed to maintain liquid temperature within the pump limits. Overheating will quickly deteriorate both packing (seals) and valve assemblies and reduce pressure. Problems in other inlet accessories can also contribute to the system losing pressure. Clogged filters are a prime target. These should be inspected and cleaned regularly. All fittings and hoses should be inspected periodically for air leaks as this will also contribute to a loss in pressure.

Pump Drive

Changes in RPM, the drive, may contribute to a loss in system pressure. A proper and secure drive for the pump is a significant factor in maintaining a consistent flow and the resulting pressure. When initially setting up the system, carefully calculate the HP required from the flow and pressure and efficiency of the pump. Replace belts on a regular schedule to maintain maximum HP. Worn or slipping belts, the wrong pulley sizes for the pump and/or motor and an undersized drive RPM can alter the desired pump output and directly affect the pressure.

At The Pump

Changes within the pump can also affect pressure. Good pump maintenance is an essential element in maintaining consistent flow and system pressure. Regular servicing of the packings (seals) and valves will assure good sealing and seating surfaces within the pump and optimum performance. Pump maintenance established specifically for each system as liquid, temperature, operating cycles, and system accessories all affect the wear on a system. With a pressure gauge at the pump, it is easy to see when the pressure drops or fluctuates. This is the time to do the maintenance. Do not wait until the pump leaks or stops running completely.

Discharge Line

This is a primary place to investigate when you begin to lose pressure. Most often, worn nozzles are at the source of pressure loss and too often adjustments are made in the regulating and relief valves to compensate for nozzle wear. This can put unnecessary stress on the pump. Always replace nozzles as a first step to correct pressure loss. If the nozzle does not restore the pressure to the original setting, then proceed to the other inlet, pump or discharge conditions. Pressure regulators or unloaders can also be the cause of pressure loss. Internal seats, pistons and O-rings can wear and reduce the ability of the

device to hold set pressure. Worn check valves can cause a device to cycle and give erratic pressure readings. It is important to inspect these devices at the same time pump maintenance is done. It is important to establish a complete maintenance routine for your entire system that includes the pump, filters, hoses, connections, valves, and nozzles. Regular maintenance is far less expensive and time consuming than major overhauls or replacements. Good maintenance of your system will assure consistent flow and consistent pressure.

Low Pressure Problem? Plunger Pump Diagnosis & Maintenance

Probable Cause	Solution
Worn nozzle	Replace nozzle
Belt slippage	Tighten or replace: use correct belt
Air leak in inlet plumbing	Use PTFE liquid or tape
Pressure gauge inoperative or not registering accurately	Check pressure with new gauge and replace as needed
Relief valve stuck partially plugged or improperly adjusted	Clean & reset relief valve to system pressure & correct by-pass. Check supply tank for contamination
Worn seat or valves	Clean or replace with valve kit
Inlet suction strainer clogged or improperly sized	Use adequate size for inlet pump connection & liquid being pumped. Clean frequently
Worn seals. Abrasives in pumped liquid, severe cavitation: inadequate water supply, stressful inlet conditions	Install & maintain proper filter, check line size & flow available to pump
Fouled or dirty inlet or discharge valves	Clean inlet & discharge valve assemblies
Worn inlet or discharge valves	Replace with valve kit
Leaky discharge hose	Replace hose, check connections