INSTALLING THE PLUMBING

When you finish mounting your pump on a motor, you must install the plumbing for the pump. Follow these steps after you have mounted your pump.

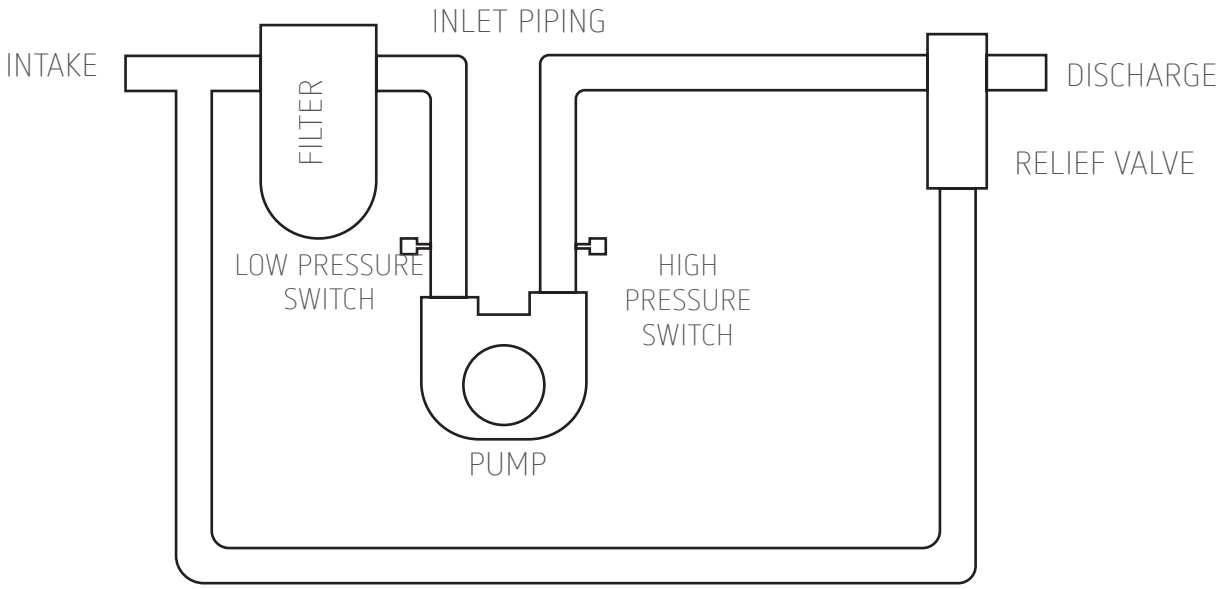
1. **Install the inlet and outlet fittings**
    - Support the pump by using a backup wrench on the square port bosses. Do not put any strain on the V-band clamp.
    - Use brass fittings or plastic fittings on a brass pump. Use stainless steel or plastic fittings on a stainless steel pump. Using dissimilar metals can cause corrosion, which may get into the pump and cause damage.
    - Use Teflon thread tape to install the fittings. Do not let any thread tape get into the pump and do not over-tighten the fittings
2. **Check the inlet line**
    - Make sure the inlet line is big enough to allow adequate flow to the inlet port of the pump (3/8 inch internal diameter for series 1, 2, and 3; 1/2 inch internal diameter for series 4 and 5; 1 inch internal diameter for the series 6; all elevated temperature applications above 150 degrees Fahrenheit must have oversized inlet piping).
    - Make sure the inlet line is clean and properly flushed out. Protect the pump with a 100 mesh or liner strainer or filter.
3. **Connect the inlet line to the fitting on the pump**
4. **Connect the outlet line to the fitting on the pump**

PIPING LAYOUT

NOTICE Your pump can be ruined or its service life shortened it if does not meet these operating conditions at all times:

- Pumps must have a fluid supply to the pump inlet greater than the pump's flow rating
- Fluid must be compatible with the pump materials
- Fluid must not contain any particles
- Pump must not operate above its rated discharge pressure
- Fluid flow should not stop suddenly while the pump is running
- Operating pressure should be 50 PSI below PROCON's relief valve setting
- Applications with operating temperatures above 150 degrees Fahrenheit require oversized inlet piping
- If using compressed air to purge the pump of fluid, install a coalescing filter in the air system to prevent contaminated air from entering the pump

We suggest that you use the precautionary measures and piping layout that follow. This layout promotes a long, trouble-free life for your pumps.



Filter

If particles may contaminate the fluid, use a particulate filter that is capable of filtering particles larger than 125 microns. If the particles are abrasive, use a filter that is capable of removing virtually all of the particles.

Make sure there is at least six inches of piping between the pump inlet and any "T-fitting," elbow, or system component to minimize turbulence. The piping should be made from a material that does not corrode or shed particles. A flexible hose of plastic, copper, or stainless steel are good choices, among others. Be sure no joint compound or tape falls into the inlet of the pump.

Low pressure switch

If the pump may possibly experience insufficient fluid supply, install a pressure or suction switch to prevent cavitation. This switch should be mounted or ported close to the pump inlet. Series 1, 2, 3, 4, and 5 pumps may operate with as much as six feet of suction lift, with the exception of the 330 GPH models, which require a minimum of 20 PSI inlet pressure. Series 6 pumps must have positive inlet pressure.

If the inlet pressure falls too low while the pump is operating, the switch will shot the pump motor off. By shutting the motor off, this switch helps protect the pump from cavitation due to an insufficient fluid supply or a plugged filter.

High pressure switch

If it is possible that the pump in your system may experience too much discharge back pressure, install a pressure switch set to 250 PSI.

Mount or port this pressure switch close to the pump outlet. If the outlet pressure rises too high while the pump is operating, the switch will shut the pup motor off. By shutting the motor off, this switch will help protect the pump from over-pressurization.

Inlet piping

The inlet piping should have a minimum interior diameter of
1/8 inch for Micro Vane & Gear Pump
3/8 inch for Series 1, 2, and 3 Rotary Vane & Mag Drive pumps
1/2 inch for Series 4 and 5 Rotary Vane & Mag Drive pumps
1 inch for Series 6 Rotary Vane & Mag Drive pumps
As shown, the by-pass flow is directed to the inlet feed line. However, if your system is operating from a feed reservoir, we recommend by-passing any flow of the relief valve directly back into the reservoir, rather than back into the inlet feed line. If the inlet feed line is used, introduce the by-pass flow at least twelve inches upstream of the pump inlet port.

Discharge

If it is possible that the pump in your system may experience a sudden blockage of the discharge, then a customer supplied external relief valve should be installed on the discharge line and set to a maximum of 250 PSI.

At a setting of 250 PSI or less, the relief valve should prevent sudden over-pressurization. If the discharge becomes blocked, the relief valve will bypass the fluid from the discharge line back to the reservoir or inlet line. Piping length should be long enough to allow heat dissipation and prevent the pump from overheating.

SOLENOID VALVES

If you use solenoid valves in conjunction with PROCON pumps, take the following precautions to prevent serious over/under pressurization.

If you can incorporate a time delay into the control circuit to turn off the pump motor and allow it to stop prior to the closing of the solenoid valve, then you can put the solenoid valve on either the inlet or the discharge of the pump. Also, the time delay should allow time for the solenoid valve to fully open prior to starting the motor.

If a time delay is not possible, locate the solenoid valve on the discharge side of the pump downstream of the relief valve.

NOTES