OPERATION AND
SERVICE GUIDE
O-2515A
MAY 2000

PULSATION DAMPENERS

Refer to Bulletin A-114.

⚠ SAFETY PRECAUTIONS BEFORE STARTING PUMP

1. Read operating instructions and instructions supplied with chemicals to be used.
2. Refer to a chemical resistance data chart for compatibility of material in dampener with solution to be used.
3. Note temperature and pressure limitations.
4. Personnel operating dampener should always wear suitable protective clothing: face mask or goggles, apron and gloves.
5. All piping must be supported and aligned independently of the dampener.
6. Always close valves slowly to avoid hydraulic shock.
7. Ensure that all fittings and connections are properly tightened.

⚠ BEFORE CHANGING APPLICATION OR PERFORMING MAINTENANCE:

1. Wear protective clothing as described in Item 4 above.
2. Flush dampener thoroughly with a neutralizing solution to prevent possible harm to personnel.
3. Verify compatibility of materials as stated in Item 2 of Safety Precautions above.

APPLICATION INFORMATION

Air-operated double-diaphragm pumps, like other reciprocating types of pumps, move liquids by trapping a given quantity of material in a chamber and then pushing this material out the pump's discharge in pulses rather than a continuous flow such as with centrifugal pumps. This pulsating flow creates pressure drops and uneven flow. The Pulsation Dampener reduces the pressure fluctuations and evens or smooths the flow of material through the discharge. Depending upon pump size and speed, 90-97% of the inherent pulsation should be removed.

The Pulsation Dampener can also be used in front of the pump's inlet to reduce water hammer shock to the pump and extend pump diaphragm life. When the pump's inlet check balls close, the flow of fluid to the pump is stopped and a water hammer effect is created.

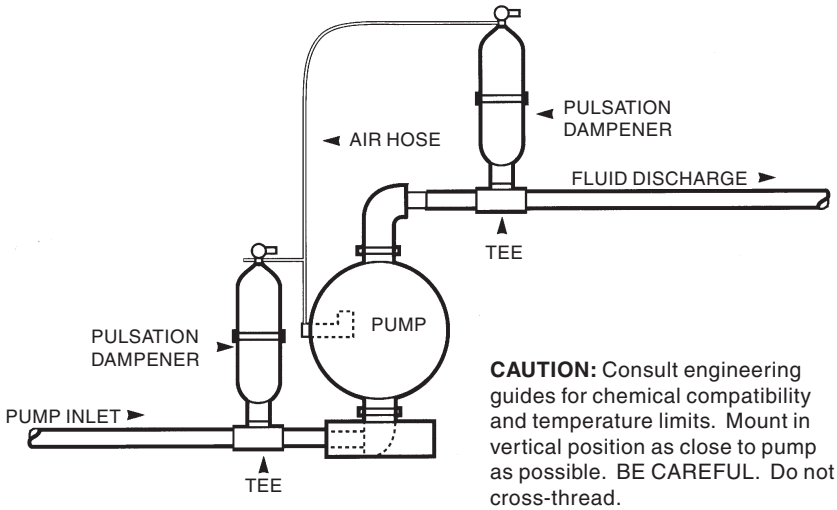
If the inlet pressure is higher than about 15 psi or higher than the discharge pressure, the pump's inlet check balls will not close properly, pump efficiency will go down and diaphragm life can be reduced. The Pulsation Dampener placed in front of the pump's inlet will dampen the water hammer effect and reduce the tendency to force the inlet check balls open at the wrong time. Diaphragm life will also be extended when the unit is placed at the pump inlet. It should be pressurized to approximately one-half the positive inlet pressure of the pump.

A Pulsation Dampener on the inlet and discharge will smooth the flow of fluid through the piping system, reduce pipe vibration, pump shake, damage to gauges and regulators, and extend component life.

TYPICAL INSTALLATION

SUCTION SIDE
Acts as an accumulator on the suction side to provide a close source of product when pump inlet check balls are opened. Helps prevent cavitation. Acts as a dampener when high inlet pressures are generated as pump's inlet check valves are closed. Minimizes stress and shock on pipes, fittings, manifolds and extends diaphragm life.

DISCHARGE SIDE
Acts as a shock absorber to minimize pulsations and water hammer. Should be mounted as close to pump discharge as possible to absorb shock at its source. Will prevent leaking joints and fittings due to pulsation. Allows meters to be used without damage and extends the life and reliability of pump components.



CAUTION: Consult engineering guides for chemical compatibility and temperature limits. Mount in vertical position as close to pump as possible. BE CAREFUL. Do not cross-thread.

⚠ **CAUTION:** DO NOT EXCEED 125 PSIG AIR PRESSURE, AND/OR 175°F WITH POLYPROPYLENE AND NYLON, 225°F WITH PVDF.

START-UP

1. If the dampener is to be used on the discharge of the pump, mount the unit as close to the pump discharge as possible and before any downstream instrumentation.

If the dampener is to be used on the suction side of the pump, the unit should be installed prior to any instrumentation leading to the pump but as close to the pump as possible.

2. Using 1/4" flexible hose, run an air line to the top of the dampener.

MANUAL MODEL - If the dampener is being used in conjunction with pneumatically operated equipment, a tee can be used to run an air line to the dampener from the existing equipment supply line (see Figure #1). The tee should be placed in line after any in-line instrumentation, such as a filter, regulator or lubricator.

AUTOMATIC MODEL - An automatic model requires that the air supply line be separate from the existing equipment's supply line. No regulator is required if maximum line pressure is 120 psi or less.

3. Prior to starting the equipment, charge the dampener with full air line pressure, to a maximum of 125 psi. Do not start the equipment until the dampener is fully charged with air or bladder rupture may occur.

MANUAL MODEL - Start the equipment to generate working pressure. As working pressure is achieved, gradually decrease air supply pressure to the dampener by adjusting the regulator on top of the dampener until pulsation/vibration are minimized. Generally, pulsation is most effectively minimized when pressure at the dampener is 4 to 6 psi below pump discharge pressure. Allow the system to respond to change in dampener pressure; this may take one or two minutes.

AUTOMATIC MODEL - Start the equipment to generate working pressure. Air supply to the dampener must be greater than pump discharge pressure at all times or bladder rupture will occur. As working pressure is achieved, the pressure on the air side of the dampener automatically increases. As pump discharge pressure drops, the dampener automatically compensates. Generally, pulsation is most effectively minimized when pressure at the dampener is 10 to 12 psi above discharge pressure. Allow the system to respond to change in discharge pressure; this may take one or two minutes.

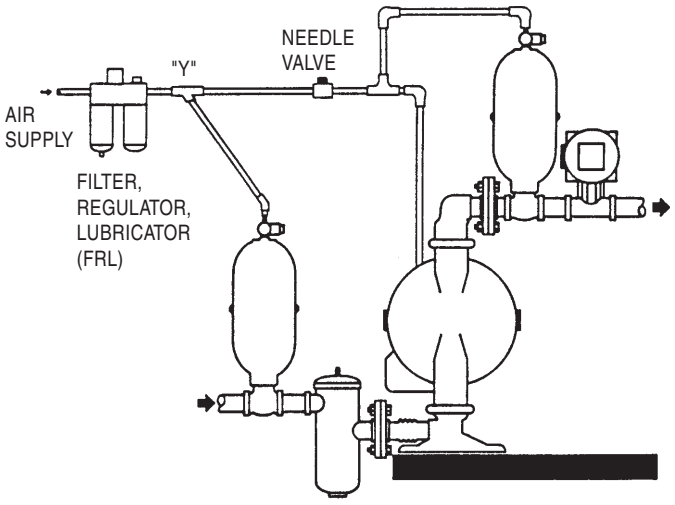


FIGURE 1

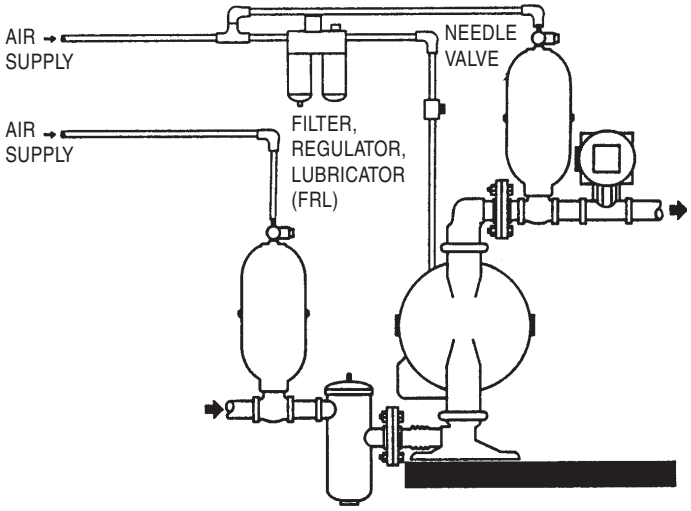


FIGURE 2

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