PIPE CONNECTIONS AND SIZING

Before installation, remove all protective inserts on the pump suction and discharge. Piping connected to the system must be installed without imposing any strain on the system components. Improperly installed piping can result in misalignment, general operating problems, excessive vibration and pump failure. Pipe materials may vary but pipe with smooth interior walls is preferable to pipe with rough interior walls.

Inlet Piping

Inlet piping should be at least the size of the pump inlet. Install the system as close as possible to the process to minimize losses due to the length of the suction line. If the system has to be installed further away from the process, be sure that the inlet piping is oversized accordingly to minimize the overall line-pressure drop.

Undersized piping, long pipe runs, and 90-degree elbows create significant pressure drops. The shortest possible inlet piping is preferred. If the use of 90-degree elbows is required, it is preferable to use long radius elbows instead.

Excessive pressure drop creates an artificial demand. As the system pressure drop increases, there is a need for higher vacuum at the vacuum system to compensate for the loss. To attain the desired vacuum, more volumetric capacity is needed. In severe cases, additional capacity may need to be added to the system to account for the greater volume of air.

Pump systems operating in parallel on a common manifold must each have a manual or automatic shutoff valve and a suitable check valve installed in the suction line close to the pump-suction flange. This allows each individual system to be isolated when it is not in operation. The line size of the manifold should be equal to the sum of the individual system pipe areas. Make sure the shutoff valves and check valves match the size of the inlet piping.

If the inlet gas contains dust or foreign particles, a suitable inlet filter should be installed at the inlet port. For more information, consult your local distributor or the factory.

If the possibility exists that the pump inlet can become closed during operation, it will be essential to install some type of vacuum relief valve so air can enter the pump inlet to prevent hydraulic knock / cavitation which can damage the pump.

Discharge Piping

Discharge piping should be at least the size of the separator discharge. Do not discharge the exhaust gases from the pump system into the area where the system is installed. Vapors pulled over from the process could be hazardous. Install a drip leg with a tee on the discharge line to prevent condensable liquids from draining back into the separator reservoir. Be sure to leave access into the separator lid to allow the separator element to be changed. See the discharge piping diagram below.

For pump systems operating in parallel on a common discharge, install a suitable check valve close to the separator discharge flange of each unit. Discharge check valves should be a low differential pressure type with positive shutoff. When discharging more than one pump in a common discharge, the line size of the manifold should be equal to the sum of the individual system pipe areas. For more information, contact your local distributor or the factory.
(continued from page 1)

DISCHARGE PIPING DIAGRAMS

- Check valve
- Shut-off valve