*CAUTION*

*Prior to installing, the instructions provided herein should be completely reviewed and understood before operating or repairing this equipment. All CAUTION and WARNING notes must be strictly observed to prevent personal injury or equipment damage.*

**WARNING**

*Glycol Pumps and other devices should be installed and maintained in accordance with international codes and regulations, manufacturer's instructions, and proven best practices.*

## Description

Energy Exchange Circulating Pump for Glycol Dehydration and Gas Amine Desulfurizer Systems.

## Installation

Several considerations should be made when considering where to install a pump within a glycol dehydration system. It will require regular maintenance, and ultimately repair. Ease of access to the pump can reduce the time and effort required when working on the pump.

For maximum pump life a high-pressure filter should be installed in the "wet glycol" line, between the absorber (contact tower) and pump. A low-pressure filter (or strainer) is also recommended for the "dry glycol" suction line between the reboiler and the pump.

Adequate heat exchangers must be included within the dehydration system to keep the temperature of the glycol @ the pump below 200F.

Suction piping should be large enough to maintain a positive supply of glycol to the pump. Supply pressure must be more than 4 inches of Hg vacuum to prevent pump cavitation.

Bleed valves "A" and "B" are required to relieve pressure within the pump to allow for inspection and repair. Bleed valve "A" is also used for priming the pump, as described below. Plug valves and unions facilitate the isolation and/or removal of the pump and filters for inspection and repair.

The following filter and strainer sizes are recommended for corresponding pump sizes:

1720 PV . . . . . .1/2" NPT
4020 PV & 2020 SC. . . . . .1/2" NPT
9020 PV & 5020 SC. . . . . .3/4" NPT
21020 PV & 10020 SC. . . . . 1" NPT
45020 PV & 20020 SC. . . . . .11/2" NPT

## Start-up Procedure:

1. Close both speed control valves, bleed valves "A" & "B", and plug valve "C".
2. Open plug valves "D" & "E".
3. Pressurize absorber to about 300 psig.
4. Open bleed valve "A"; keep bleed valve "C" closed.
5. Slowly open both speed control valves until pump is running about 1/3 the rated max strokes per minute. Count one stroke for each DISCHARGE of PUMP. The pump is primed once "dry glycol" discharges from bleed valve "A" on each stroke. Close bleed valve "A" and now open bleed valve "C". Readjust the speed control valves to achieve 1/3 the rated max strokes per minute. Continue operating pump until "wet glycol" returns from the absorber to the pump. Evidence will be the pump attempting to meter liquid through the speed control valves instead of gas, at which point the pump will begin to slow down. Promptly close both speed control valves.
6. Bring absorber to full operating pressure.
7. Adjust speed control valves until the desired rate is achieved (see capacity chart).
8. Inspect and clean filters and strainers periodically.
9. For preventive maintenance, O-rings should be replaced annually. To determine how well the O-rings seal, close plug valve "C". The seals should be replaced if the pump continues to run.

***Cold Weather Start-up Procedure:**

The startup process can be difficult in very cold conditions due to the high viscosity of glycol at low temperatures. This problem can be eliminated by using a bypass (recirculating loop) from the "dry glycol" discharge port of the pump back to the reboiler.

****Two Or More Pumps In Parallel (Manifolded):**

The combined pump capacity must be considered in the design of the piping so that each pump in a manifold system receives an equivalent portion of "wet glycol" from the absorber. It isn't necessary for the proportion be exact.

## OPERATION:

The first step when commissioning a new pump or dehydrator is to begin the flow of glycol using only 300-400psig absorber pressure – the minimum needed to operate a PV pump. This should be done without gas flow through the absorber; enough gas will need to be supplied to the absorber to maintain the minimum pressure for glycol circulation. Once you have glycol return from the absorber, the pressure in the absorber should be increased gradually to the operating pressure.

NOTE: If the pump doesn't prime within a few strokes, bleed valve "A" should be opened to atmosphere until glycol discharges w/each stroke of the pump.

The maximum operating temperature of the pump is limited by the O-rings in the unit. A maximum of 200F is recommended. Operating at or near 150F will extend the life of the seals considerably.

ALWAYS stop the pump when the flow of gas is interrupted. A pump that continues to circulate glycol with no flow of gas will elevate the temperature of the entire system beyond normal operating limits.

System Shutdown:

1. Close plug valve "D" Allow pump to stop running
2. Close plug valve "C" and "E"
3. Vent pressure from bleed valve "A" and "B"

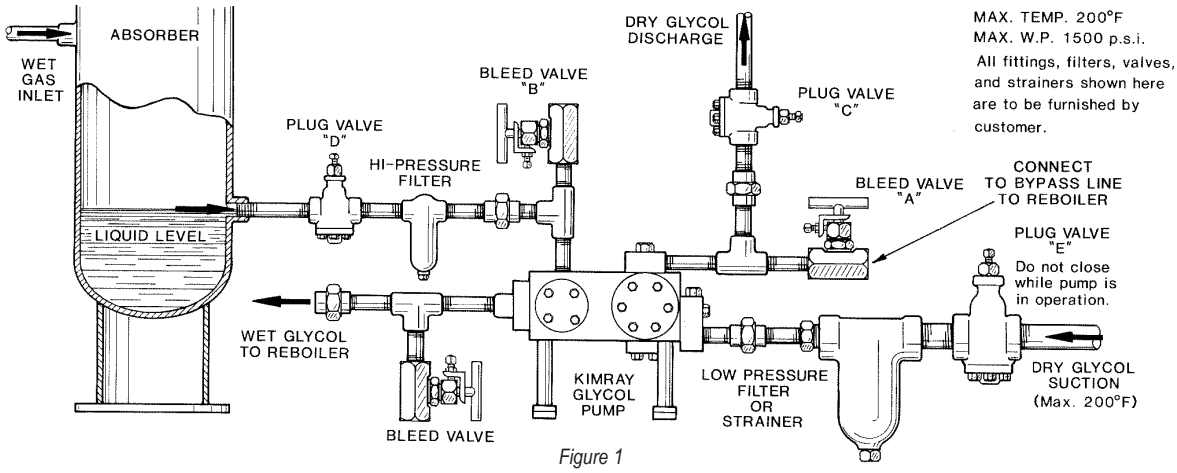


*Figure 1*

All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.
‡ Configuration of the Glycol Pump is a trademark of Kimray, Inc.

**Maintenance**

Assuming the pump has been operating in a clean system, it is recommended that the O-rings be replaced annually. Typically the pump will continue operating normally, except for the following scenarios: an internal part is bent, worn, or broken; a foreign object has fouled the pump; or the system has lost too much glycol.

A pump that has operated for any length of time without glycol should be inspected thoroughly before returning it to normal service. Pay close attention to the condition of the O-rings, as well as the cylinders and piston rods, as they may need to be replaced.

If a pump has been deactivated for an extended period, the check valves should be removed and inspected before attempting to operate the pump. The pump startup procedure will be like that of a new pump.

Only use genuine Kimray replacement parts.

Repair kits and detailed repair instructions are available for each valve.

Visit www.kimray.com or contact your Kimray authorized distributor for additional product information and / or literature.

| Troubleshooting | |
|---|---|
| **Problem** | **Possible Cause(s)** |
| The pump will not operate. | One or more of the flow lines to the pump are completely blocked or the system pressure is too low for standard PV pumps. Use “SC” pumps below 300 psig. |
| The pump will start and run until the glycol returns from the absorber. The pump then stops or slows considerably and will not run at its rated speed. | The wet glycol discharge line to the reboiler is restricted. A pressure gauge installed on the line will show the restriction immediately. |
| The pump operates until the system temperature is normal then the pump speeds up and cavitates. | The suction line is too small and increase in the temperature and pumping rate cavitates the pump. |
| The pump lopes or pumps on one side only. | A leaky check valve, a foreign object lodged under a check valve or a leaky piston seal. |
| Pump stops and leaks excessive gas from wet glycol discharge. | Look for metal chips or shavings under the pump D-slides. |
| Erratic pump speed. Pump changes speed every few minutes. | "Traps" in the wet glycol power piping send alternate slugs of glycol and gas to the pump. |
| Broken Pilot Piston. | Return line from absorber may be restricted. |

**WARNING**

Before beginning installation:
• Read and follow instructions.
• Make sure the valve cannot operate during installation.

Do not exceed the maximum supply pressure specified on the pump name-plate.

Never tighten any fitting or the main connections to the valve while there is pressure on the line.

**WARNING**

Before any service, be certain that the valve is fully isolated and that all pressure upstream and downstream has been relieved. Use bypass valves or fully shut off the process.

Be sure that any operating or instrument gas lines have been disconnected.

Never stand directly in front of or over a valve when the system is pressurized. The valve could suddenly open, blowing debris into the person’s face and eyes.

**WARNING**

A leaking valve is an indication that service is required. Failure to take valve out of service immediately may cause a hazardous condition.

**NOTE**

If conditions indicate the possibility of backward flow you may wish to install check valves.
Never assume that a check valve is fully blocking the downstream line.

For questions or comments, contact your local Kimray authorized distributor, or visit www.kimray.com.

Kimray Inc.
52 NW 42nd Street
Oklahoma City, OK 73118

Customer Service: 405.525.6601 | service@kimray.com

Product Support: 405.525.4264 | ProductSupport@Kimray.com