

PUMP TROUBLES AND THEIR CURES

LOSS OF DELIVERY

Probable causes :

1. A closed valve in the pipe line.
2. Cavitation and vapor binding may be caused by circulation of liquid through the relief valve. This might happen if the separate bypass valve is too small, or if the piping to the valve is too small. It can also be caused by the pump overheating from too much internal bypassing.
3. Lack of a vapor return will cause high discharge pressure and a vacuum in the supply tank and resulting recirculation. If a vapor line is being used, it should be at least 1-1/2 " (38mm) preferably 2 " (51 mm) in diameter. Where such a line is not permitted, vapor space filling (spray) valves should be used to keep pressure down to a reasonable level. Capacity with- out a vapor return line will be less than when one is Used.
4. Reversed pump rotation. Check the rotation of the pump with the arrow on the casing.
5. Restriction may be caused by too long of a suction line. Locate the pump as close to the supply as possible. It is easier for a pump to push liquid through a discharge pipe than pull it through a suction pipe because of the tendency Of CO₂ to vaporize when the pressure drops.
6. Excessively worn vanes, discs, and rotor ends will increase pump slippage. One or more vanes installed backward may reduce capacity.

LEAKAGE

Mechanical seals can be damaged and will begin leaking from using the wrong grease, greasing with a high pressure gun, dirt or abrasive particles entering between the seal faces, or cut or otherwise damaged O-rings. Leakage will appear at the tell-tale holes under the bearing housing on the pump head. If leakage occurs, the entire mechanical seal assembly should be replaced. After rebuilding a pump, if leakage appears from between the pump casing and the head, remove the head and inspect the head O-ring for cuts or nicks. Damaged O-rings should be replaced immediately.

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EXCESSIVE WEAR OR DAMAGED PARTS

Excessive wear and damaged pump parts are most often the re-sult of the following:

Excessive vane wear is usually caused by:

- a. Running dry
- b. Overspeeding
- c. Dirt "abrasives" in the line

Push rod penetration is usually caused by:

- a. Overspeeding
- b. Cavitation

c. Worn vane slots

Worn or scored discs and rotor ends are usually caused by ini-proper replacement of the bearing locknuts. Unless the locknuts are drawn up evenly as previously instructed in "Assembly," end-play will permit rotor and disc contact.

NOISE AND VIBRATION

The most frequent cause of noise and vibration is recirculation of the liquid through the pump relief valve. This is caused by either a malfunction of the separate bypass, or too high a bypass setting.

Excessive cavitation is another cause of noise and vibration. Cavi-tation is created by a restricted intake, a dirty strainer, or too long or too short an intake pipe.

Other possible causes of noise and vibration include: one or more vanes installed backwards, liner installed backwards, universal joints out of phase.



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