



SERVICE BULLETIN

Title: 23XL Slide Valve Operation
and Troubleshooting
Models Affected: ALL 23XL

Number: C9719
Date: 6/14/97
Supersedes: New

PURPOSE:

To provide the field with information on the operation and trouble shooting of the slide valve.

File: Compressor-Motor-Driver-Gears

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PRINCIPLE:

Gas forces resulting from the discharge to suction pressure differential tend to push the load valve toward the fully loaded position (see Figure 1 on hard copy).

To Unload the compressor, the unload solenoid is energized and load solenoid deenergized, supplying high pressure oil to the left (inboard) side of the unload piston. The oil delta pressure across the unload piston overcomes the gas delta pressure across the load valve, and drives the slide valve assy in the unload direction (to right).

To Load the compressor, the load solenoid is energized and unload solenoid deenergized, equalizing the pressures across the unload piston. The Discharge pressure at the right side of the load valve moves the slide valve assy to the load position.

To Hold, the load and unload solenoids are deenergized (valve closed). Discharge pressure wants to move the slide valve assy to the loaded position, but oil trapped on the left side (inboard) of the unload piston will hold the slide valve assy at its current position. This only is true if suction and discharge pressures remain constant.

At shutdown the spring force returns the slide valve assy slowly to fully unloaded position. The load and unload solenoids when deenergized are normally closed.

TROUBLESHOOTING:

1. Slide Valve will not unload. Symptoms are: compressor slowly loads up, controls below the setpoint and hunts.
 - a. Unload solenoid valve will not open — faulty valve, no power.
 - b. Damaged or worn guide seal.
 - c. Damaged o-ring between slide casing plug and slide housing.
 - d. Loose locknut, unload piston end.
 - e. Loose debris trapped under the load solenoid valve.
2. Slide Valve will not load. Symptoms are: compressor loads up part way, hunts at full load.
 - a. Load solenoid will not open — faulty valve or no power.
 - b. Damaged or worn seal ring. Scored capacity slide rod.
 - c. Debris trapped under the unload solenoid valve.
3. Slide Valve continuously loads up. Symptoms are: Chiller trips on overload shortly after start-up, constantly recycles and a loud bang can be heard shortly after start up and shutdown.
 - a. One of the locknuts backed off completely.

REPAIR HINTS:

1. To remove debris trapped under the solenoid valves: Start the compressor and manually energize both solenoid valves simultaneously. Apply control power (24 V) directly to both solenoid coils.
2. If the seal ring is found worn, inspect the slide rod and polish it to 22 micro-inches (.55 micro-meter) using a very fine emery cloth and replace seal ring.
Note: When installing the shaft through the seal ring the load valve must be removed. Insert the seal ring on the load valve end of the shaft with inner spring facing away from piston end.
3. With slide valve casing removed from compressor, remove the end cover and block the load valve from moving. Apply oil pressure to left side of the unload piston and visually observe leaks.
4. As instructed in bulletin C9602A do not reinstall the shaft to load valve o-ring or the shaft to unload piston o-ring that was installed in compressors built prior to 1996.

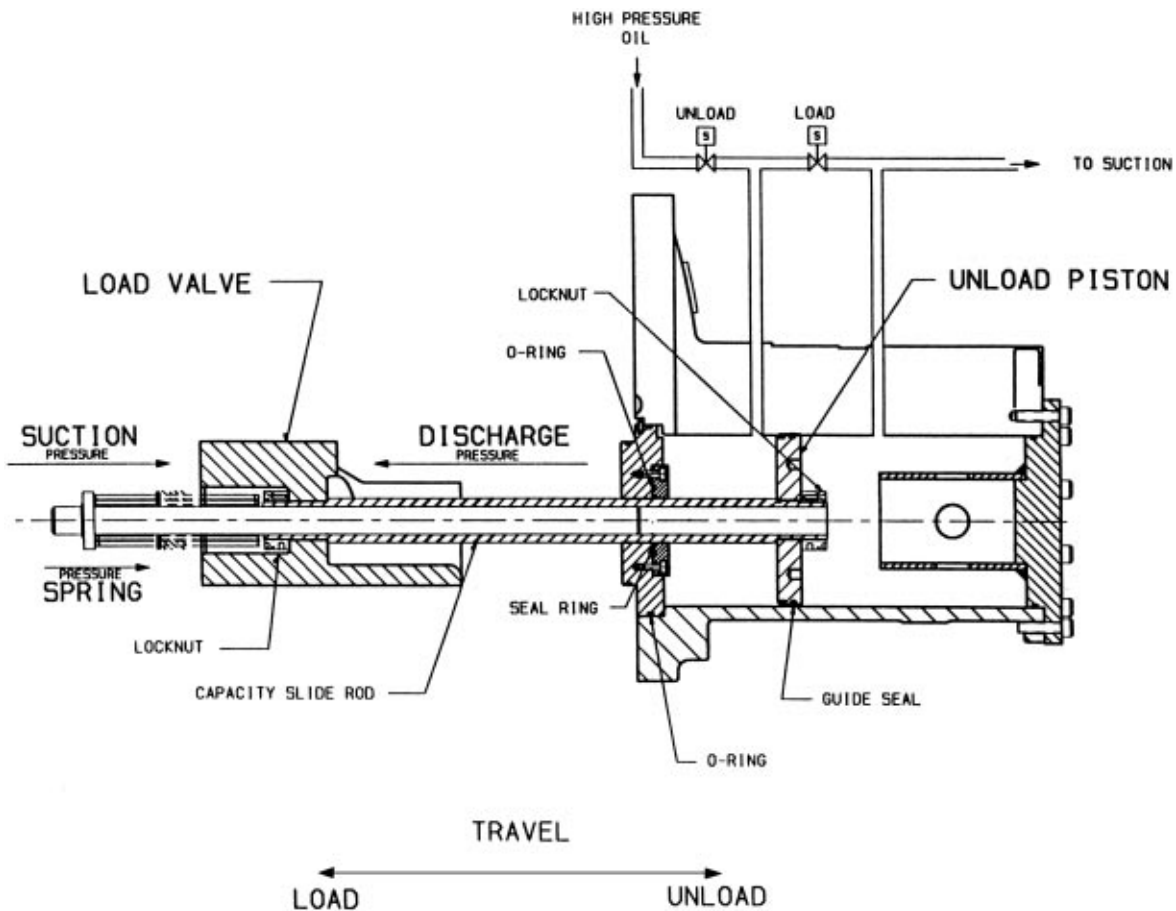


Figure 1