

## **Reservoir Oil Maintenance**

Anytime maintenance is performed on the mechanical seal, the reservoir should be disassembled, inspected and cleaned, and repaired if necessary. New reservoir o-rings should always be installed when the reservoir is torn down.

### **(A) Disassembly**

For disassembly, it is convenient to clamp the pumpage end cylinder head in a vise. Using a 9/16 inch wrench, remove any two diagonally opposite bolts securing the reservoir heads to the cylinder. Very carefully remove the remaining two bolts; the spring exerts a great deal of force, so it may be helpful to have an assistant holding the top reservoir head down while the last two bolts are removed. Alternately, the cylinder heads can be clamped in place with a large C-clamp and all the bolts removed at once. The clamp can then be loosened. Once the reservoir is apart all o-rings should be removed and discarded.

Using a suitable solvent, clean all the reservoir parts, particularly the o-ring grooves. Inspect the cylinder for pits, scratches or corrosion. If there is minor damage, a cylinder hone can be used to recondition the cylinder. If there are deep pits or scratches, the cylinder should be replaced.

When replacing the o-rings, use only those supplied in the Cornell factory kit (BME178A-A00); the elastomers used in these o-rings were carefully selected for service in ammonia, halocarbons and refrigeration oils. Other elastomers may not be compatible with these environments.

### **(B) Assembly**

When reassembling the reservoir, it is helpful to use STP or similar “tacky,” heavy consistency lubricant to hold the cylinder head o-rings into their grooves. This will prevent them from falling out during assembly. The cylinder wall should be well lubricated with refrigeration machinery oil prior to installing the piston.

As with disassembly, hold the pumpage end cylinder head in a vise and install the cylinder head o-ring. Set the cylinder on the head, and place the spring inside with the small end pointing up. After installing the piston o-ring in its groove, set the piston on the spring with the spring end over the raised pilot on the back of the piston. Slide the oil end cylinder head over the piston indicator rod and down against the piston face. Do not try to push the piston into the cylinder and then position the cylinder head. Instead, push the cylinder head against the piston and then down against the cylinder; the piston will be less likely to cock and bind.

While holding the cylinder down, have someone start two diagonally opposite bolts, and tighten them finger tight so that the cylinder head is held against the cylinder loosely. Install the remaining two bolts, and tighten all bolts in an alternating pattern.

Once the assembly is complete, push the indicator rod in, to ensure the piston moves freely. This will require considerable force, so it will be necessary to push with a block of wood against the end of the rod.

### **(C) Final Reassembly of Seal Reservoir**

Reconnect the oil supply and return lines between the backplate, seal gland and the reservoir face. Check all fittings for tightness. Reconnect the oil pressurization line, and recharge the seal oil reservoir.

In accordance with the practices outlined in this paper, a video illustrating proper maintenance procedures can be acquired from Cornell Pump Company at (503) 653-0330.

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