

I. PRINCIPLE OF OPERATION

The Ruelco Sand Probe Relay Model 1S03 is an instrument supply relay which uses a thin wall probe installed directly into a flowline to indicate that excessive erosion and/or corrosion has occurred. It utilizes a reliable 3-way, normally open valve that will bleed off an instrumentation signal and provide visual indication that the probe has lost pressure integrity. This alerts field personnel that inspection of the flowline and possible repair may be required. In the open position, pneumatic pressure coming into the "Inlet" port flows through the body to the "Outlet" port. The valve can be manually tested by pulling the knob outward, thus moving the shaft assembly upward, and closing the valve. When the relay is in the closed position, the middle o-ring blocks the pressure at the "Inlet" port from flowing through, and the "Outlet" can now be vented causing the system to pressure down.

In the event of the thin-walled probe breaking due to excessive wear, the flowline pressure will push the shaft assembly upward. This will cause the relay to vent the "Outlet" pressure while blocking the "Inlet" pressure. At the same time a red indication band will become visible on the shaft to show loss of pressure integrity.

II. INSTALLATION

The Model 1S03 Sand Probe Relay can be mounted either vertically or horizontally. If it is supported with

pipng, care should be taken that the strength of the pipe fittings used is adequate to prevent the fitting from breaking off in the relay body should the relay be inadvertently struck.

Proper pipe thread sealant should be used on any pipe fittings threaded into the relay ports. If stainless steel fittings are used, a sealant that will prevent galling is required. Supply gas or hydraulic fluid flowing through the relay should be free of large dirt particles. If compressed air is used, it does not have to be lubricated. If natural gas is used, it should contain as little condensate as possible. This will extend the life of the seals.

III. DISASSEMBLY (REFER TO SPEC SHEET 1S04)

Tools required are as follows:

- 7/16" open end wrench or suitable adjustable wrench
- 9/16" open end wrench or suitable adjustable wrench
- Pliers
- Small sharp pick

A. DISASSEMBLY

1. This procedure will replace the two (2) shaft o-rings (Item 5) and the piston seals (Item 8).
2. Place the 7/16" wrench on the lock nut and rotate it clockwise while holding the knob (Item 1) until the knob is loose. Rotate the knob counterclockwise and

remove it from the shaft (Item 6). Pull the snap ring off of the shaft using pliers.

3. Remove any piping connections from the body (Item 7) that would prevent it from being removed. The body should now be able to unscrew from process connection or piping.
4. Push the shaft (Item 6) through the valve body.
5. The seals on the shaft may now be replaced.

IV. REPAIR AND ASSEMBLY

1. Remove the piston seal and shaft seals.
2. Using an appropriate safety solvent, clean all parts.
3. Inspect the shaft for any major damage such as burrs, nicks, etc. Also, inspect for straightness. Replace the shaft assembly if damaged.
4. Examine the relay body and head bores for any damage such as burrs, nicks, etc. Replace any damaged pieces.
5. Replacement seals from a Ruelco product repair kit are required for proper relay performance. It is recommended that all seals be lubricated before and after installation with a high quality silicone base grease.

6. Lubricate the shaft o-rings (Item 5) and install on the shaft (Item 6).
7. Place the shaft into the relay body.
8. Now, replace the snap ring (Item 3).
9. Thread the lock nut over the shaft subassembly until it reaches the last thread. Do not tighten. Rotate the knob over the shaft thread until it touches the lock nut. Hold the knob and turn the lock nut counterclockwise with the 7/16" wrench until firmly tightened.

V. RECOMMENDED MAINTENANCE

PROCEDURE and INTERVAL

Operate Manually - Every 30 days

Disassemble, inspect and lubricate – Yearly or as required.

Replace all seals – Every two (2) years or as required.