

I. PRINCIPLE OF OPERATION

The Ruelco Electric Sand Probe Relay Model 1SE3 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 snap acting electric switch and provides 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 operating position, the electric switch is not contacted and the probe is detecting. The valve can be manually tested by pulling the knob outward, thus moving the shaft assembly upward, and operating the electric switch.

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 trip the electric switch. At the same time a red indication band will become visible on the shaft to show loss of pressure integrity.

II. INSTALLATION

The Model 1SE3 Electric Sand Probe Relay can be mounted either vertically or horizontally. If it is supported with piping, 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.

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 shaft o-ring (Item 4) and the piston seals (Item 7).
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 5). Pull the snap ring off of the shaft using pliers.
3. Remove any piping connections from the body (Item 6) 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 5) 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 4) and install on the shaft (Item 5).
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

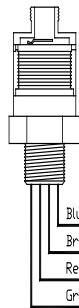
PROCEDURE and INTERVAL

Operate Manually - Every 30 days

Disassemble, inspect and lubricate – Yearly or as required.

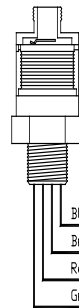
Replace all seals – Every two (2) years or as required.

SPDT



LOW PRESSURE OPERATION

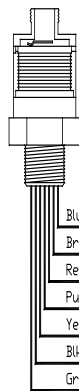
- Blue N.O. CONTACT OPENS ON FALLING PRESSURE
- Brown C. COMMON CONTACT
- Red N.C. CONTACT CLOSSES ON FALLING PRESSURE
- Grn. GND. SWITCH GROUND



HIGH PRESSURE OPERATION

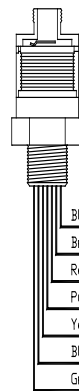
- Blue N.O. CONTACT CLOSSES ON RISING PRESSURE
- Brown C. COMMON CONTACT
- Red N.C. CONTACT OPENS ON RISING PRESSURE
- Grn. GND. SWITCH GROUND

DPDT



LOW PRESSURE OPERATION

- Blue N.O.1 CONTACT OPENS ON FALLING PRESSURE
- Brown C.1 COMMON CONTACT
- Red N.C.1 CONTACT CLOSSES ON FALLING PRESSURE
- Pur. N.O.2 CONTACT 2 OPENS ON FALLING PRESSURE
- Yel. C.2 COMMON 2 CONTACT
- Blk. N.C.2 CONTACT 2 CLOSSES ON FALLING PRESSURE
- Grn. GND. SWITCH GROUND



HIGH PRESSURE OPERATION

- Blue N.O.1 CONTACT CLOSSES ON RISING PRESSURE
- Brown C.1 COMMON CONTACT
- Red N.C.1 CONTACT OPENS ON RISING PRESSURE
- Pur. N.O.2 CONTACT 2 CLOSSES ON RISING PRESSURE
- Yel. C.2 COMMON 2 CONTACT
- Blk. N.C.2 CONTACT 2 OPENS ON RISING PRESSURE
- Grn. GND. SWITCH GROUND

- COM 1 - BROWN
- COM 2 - YELLOW
- N.O. 1 - BLUE
- N.C. 1 - RED
- N.O. 2 - PURPLE
- N.C. 2 - BLACK
- GND. - GREEN