



**“RB-1”
AUTOMATIC RELAY
MODEL 16A1
OPERATION MANUAL
MANUAL # OMP-16A1-05/98
(SEE SPEC SHEET 16A1)**

I. PRINCIPLE OF OPERATION

The Ruelco ‘**RB-1**’ is a pilot operated automatic relay. It is a three (3) way, normally closed or normally open valve. In the closed position, pneumatic pressure coming into the normally closed port is blocked from the outport by the second shaft O-ring from the top. The spring keeps the spool in the down or closed position. The valve is opened by pressure applied to the pilot port. When the relay is in the open position, it causes the second O-ring from the bottom to engage the body seal bore and the second O-ring from the top to disengage from the body seal bore respectively. Supply pressure at the normally closed port may then flow through the body to the outport.

When the pneumatic signal is removed from the pilot cap, the spring moves the shaft assembly downward. This causes the second O-ring from the top to engage the body seal bore and the second O-ring from the bottom to disengage the body seal bore respectively. With the supply pressure blocked, pressure will flow from the “OUTLET” port and exit through the normally open port.

The operation of the “RB-1” as a normally open valve is reversed with the pneumatic pressure coming into the normally open port. With no pressure at the pilot port, the pneumatic pressure coming into the normally open port, flows through the body to the outport

but is blocked from the normally closed port by the second O-ring from the top. The valve is closed by pressure applied to the pilot port. This causes the second O-ring from the bottom to engage the body seal bore and the second O-ring from the top to disengage from the body seal bore respectively. With the supply pressure blocked, pressure will flow from the outport and exit through the normally closed port.

II. INSTALLATION

The ‘**RB-1**’ can be mounted either vertically, horizontally, mounted on the inside of the panel (with optional mounting bracket), or supported by piping from any of its ports. If it is supported by 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. Supply gas flowing through the relay body 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.



**“RB-1”
AUTOMATIC RELAY
MODEL 16A1
OPERATION MANUAL
MANUAL # OMP-16A1-05/98
(SEE SPEC SHEET 16A1)**

III. DISASSEMBLY (REFER TO SPEC. SHEET 16A1)

Tools required are as follows:

- 3/16” allen wrench.
- Suitable adjustable wrench for unthreading the base.

A. DISASSEMBLY

- 1) To replace the four (4) shaft O-rings (Item 8) and the piston seal (Item 2), remove any piping connections from the base (Item 1) that would prevent it from being removed from the body and unthread the base from the relay body.
- 2) Unscrew the two screws (Item 9) and remove the end plate (Item 10).
- 3) Push the shaft sub-assembly through the valve body and slide the spring (Item 5) off of the relay shaft.
- 4) The seals on the shaft may now be replaced as per instructions given in the repair section of this manual.
- 7) Install the piston seal (Item 2) onto the shaft sub-assembly. NOTE: This is a cup type seal. The inside of the cup should be facing toward the bottom of the shaft sub-assembly as shown. Be sure that the inside lip of

IV. REPAIR AND ASSEMBLY

- 1) Remove the piston and shaft seals from the shaft and the upper seal from the body.
- 2) Remove the base O-ring (Item 4) from the body (Item 6).
- 3) Using an appropriate safety solvent, clean all parts.
- 4) Inspect the shaft assembly for any major damage such as burrs and nicks. Also inspect it for straightness. Replace the shaft assembly if damaged.
- 5) Examine the relay body for any damage such as burrs, nicks, etc. Replace if damaged.
- 6) 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 silicon base grease.

the seal is completely pushed into the piston groove.
- 8) Lubricate the shaft O-rings (Item 8) and install on the shaft sub-assembly.



**“RB-1”
AUTOMATIC RELAY
MODEL 16A1
OPERATION MANUAL
MANUAL # OMP-16A1-05/98
(SEE SPEC SHEET 16A1)**

- 9) Lightly lubricate the large and small bores in the relay body (Item 6).
- 10) Slide the spring (Item 5) over the shaft sub-assembly and slide the shaft into the relay body.
- 11) Lubricate the base O-ring (Item 4) and install into the valve body.
- 12) Rotate the base clockwise onto the body and use an appropriate wrench to tighten.
- 13) Install the end plate (Item 10) on the body and tighten the two screws (Item 9) using an allen wrench.

V. RECOMMENDED MAINTENANCE

PROCEDURE

Operate Manually.
Disassemble, inspect and lubricate.
Replace all seals.

INTERVAL

Every 30 days.
Yearly or as required.
Every two (2) years or as required.