



“MP-2”
Manual/Remote Reset Relay
Model 15A1
Operation Manual
OMP # 15A1 12/00

I. PRINCIPLE OF OPERATION

The Ruelco “MP-2” Model 15A1 relay is a pilot operated manual relay and an automatic reset relay combined into one. The automatic reset feature is enabled by applying pressure to the override port. The Model 15A1 can be used for both hydraulic and pneumatic applications. It is a three-way, normally closed valve with a palm knob for relay position indication and manual operation. In the closed position, pneumatic or hydraulic pressure coming into the “Inlet” port, is blocked from the “Outlet” port by the upper shaft o-ring. The spring keeps the spool in the down or closed position. The valve is opened by manually pulling the palm knob outward, thus moving the shaft assembly upward. The detent pin is then pushed “In” to lock the relay open until pneumatic signal is applied to the pilot cap of the relay. This pneumatic pressure acting on the piston causes the detent pin to drop “Out” of the locked position. When the relay is in the open position, it causes the middle o-ring to engage the body seal bore and the upper o-ring to disengage from the body seal bore respectively. Supply pressure at the “Inlet” port may then flow through the body to the “Outlet” port.

When the pneumatic signal is removed from the pilot cap, the spring moves the shaft assembly downward. This causes the upper o-ring to engage the body seal bore and the middle o-ring to disengage the body seal bore respectively. With the supply pressure blocked, pressure will flow from the “Outlet”

port and exit through the “Vent” port. The relay may also be closed manually by pushing the palm knob inward.

Alternatively, the valve could be automatically opened by supplying pressure to the override port. When the relay is in the open position, it causes the middle o-ring to engage the body seal bore and the upper o-ring to disengage from the body seal bore respectively. Supply pressure at the “Inlet” port may then flow through the body to the “Outlet” port. When the pneumatic signal is removed from the override port, the spring moves the shaft assembly downward. This causes the upper o-ring to engage the body seal bore and the middle o-ring to disengage the body seal bore respectively. With the supply pressure blocked, pressure will blow from the “Outlet” port and exit through the “Vent” port.

II. INSTALLATION

The “MP-2” Model 15A1 can be mounted either vertically, horizontally, panel mounted (with optional panel mount nut), 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 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.

If the relay is going to be installed in a location where the stem will be exposed to excessive paint, sand, drilling fluids, etc., the use of the optional stem protector is recommended. The stem protector does not affect the operation of the relay and will prevent the relay from jamming should the exposed portion of the shaft accumulate excessive trash or debris.

III. **DISASSEMBLY (REFER TO SPEC SHEET 10A1)**

Tools required are as follows:

- 7/16" open end wrench or suitable adjustable wrench
- 1" open end wrench or suitable adjustable wrench
- 7/8" open end wrench or suitable adjustable wrench and flat blade screw driver (for removal of optional stem protector)
- 1/8" Allen wrench (for complete disassembly)
- Channel lock
- Pliers

A. **PARTIAL DISASSEMBLY**

1. To replace the three (3) shaft o-rings (Item 9) and the piston seal (Item 13), the relay does not have to be completely disassembled. The upper seal (Item 8) may not have to be replaced as often as other moving seals.

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 subassembly (Item 10). If the optional stem protector is installed, pull the relay knob outward until the flat on the seal washer (Item 17) is visible. Use the 7/8" wrench to rotate the seal washer clockwise until the knob is loose. Remove the knob and seal washer simultaneously (rotate counterclockwise).

3. Remove any piping connections from the override body (Item 19) that would prevent it from being removed from the body (Item 11). Use the channel lock and loosen the slip ring (Item 18) and remove it from the body (Item 11). This enables the override body (Item 19) to come off the relay body (Item 11).

4. Push the shaft subassembly (Item 10) through the valve body and slide the spring (Item 12) off the relay shaft.

5. The seals on the shaft may now be replaced as per instructions given in the repair section of this manual.

6. Screw the end cap (Item 22) off the override body (Item 19).

B. **FULL DISASSEMBLY**

1. Follow the procedures stated under partial disassembly. If the relay is panel mounted, it is not necessary to remove

the relay from the panel, but it is recommended so adequate inspection and cleaning of all parts may be performed.

2. Using the 1/8" Allen wrench, rotate the three (3) set screws (Item 6) counterclockwise approximately four (4) turns. They do not have to be completely removed.
3. Pull the head (Item 7) outward from the body. If the relay is panel mounted, pull the body from the head. If the head does not completely out, it may be necessary to loosen the set screws more.
4. To remove the stem protector housing (Item 28) if installed, use the flat blade screw driver and rotate the screws (Item 4) counterclockwise).
5. Unscrew the flange ring (Item 15) from the override body (item 19).
6. Remove the locknut (Item 27) from the piston/stem assembly (Item 20) in the override body.
7. The relay is now ready to be cleaned and repaired.

IV. REPAIR AND ASSEMBLY

1. Remove the piston and shaft seals from the shaft and the upper seal from the body.
2. Using an appropriate safety solvent, clean all parts.
3. Inspect the shaft assembly for any major damage such as burrs, nicks,

etc. on the upper part where the upper seal (Item 8) makes contact. 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. Install the upper seal into the valve body. NOTE: This is a cup type seal. The inside of the cup should be facing down and toward the valve body as shown.
7. Install the head into the upper part of the body. The panel mount threads should almost touch the body. If not, remove the head and verify that the set screws or any debris is not obstructing the correct installation.
8. Using the Allen wrench, rotate the three (3) set screws clockwise until lightly tightened. Tighten all three (3) firmly afterwards.
9. Install the piston seal (Item 24) onto the shaft subassembly (Item 10). NOTE: This is a cup type seal. The inside of the cup should be facing toward the bottom of the shaft subassembly as shown. Be sure that the inside lip of the seal is completely into the piston groove.
10. Lubricate the shaft o-rings (Item 9) and install on the shaft subassembly (Item 10).
11. Lightly lubricate the large bore in the relay body.

12. Slide the spring over the shaft subassembly and slide the shaft into the relay body.
13. Lubricate the base o-ring (Item 16) and install into the valve body.
14. Install the stem seal (Item 23). Push the override stem (Item 20) through the piston (Item 25). Screw on the locknut (Item 27) and tighten.
15. Install the piston seal (Item 24) on to the stem subassembly (Item 20). NOTE: This is a cup type seal. The inside of the cup should be facing toward the bottom of the shaft subassembly as shown. Be sure that the inside lip of the seal is completely pushed into the piston groove.
16. Install the flange seal (Item 17). Fit the slip ring (Item 18) onto the override body (Item 19), then screw the flange ring (item 15) onto the override body.
17. Install the end cap seal (Item 21) and screw on the end cap Item 22) onto the override body (item 19).
18. Screw the slip ring onto the relay body and tighten using a channel lock.
19. If a stem protector is to be used, locate the holes in the protector body over the threaded holes in the head. Insert the two (2) screws and rotate them clockwise to tighten.
20. 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.
21. To install the stem protector washer and the knob, thread the washer as far down onto the shaft as possible. Screw the knob onto the exposed threads above the washer, but do not tighten. Pull the relay shaft fully outward and thread the protector washer until it stops. NOTE: The protector seal should be completely inside the protector housing. Release the relay knob and allow the shaft subassembly to retract. Rotate the knob clockwise until it stops. Pull the knob outward again and use the 7/8" wrench to turn the protector washer counterclockwise until tight.

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.