

MP8000-6001 Seal Kit for MP8000 Series Actuators

Contents of Kit

- One seal, 5/8 in. Inside Diameter (I.D.) x 7/8 in. Outside Diameter (O.D.) x 1/8 in.
- One plastic sleeve, 41/64 in. I.D.

Tools Required

- MP8000-6012 Diaphragm and Seal Repair Tool Kit:
 - Strap wrench (polyester strap and strap handle)
 - Stem wrench
 - 7/16 in. hex tool
- Retaining ring pliers
- 7/16 in., 10 mm, and 13 mm sockets
- 3/8 in. ratchet wrench with a 3 in. extension
- 3/8 in. open-end wrench
- 7/32 in. Allen wrench
- 200 lb-in torque wrench with socket to fit a 7/16 in. hex
- 3/16 in. open-end wrench for anti-rotation pin on MP82 and MP83 actuators
- 1/4 in. open-end wrench for anti-rotation pin on MP84, MP85, MP86 and MP87 actuators
- 7/16 in. open-end wrench for 1/4 in. jam nut on MP82 and MP83 actuators
- 9/16 in. open-end wrench for the 3/8 in. jam nuts on MP82 and MP83 actuators
- 5/8 in. open-end wrench for the stem bolt and 3/8 in. jam nuts on MP84, MP85, MP86, and MP87 actuators

Seal Repair Procedure for MP82 and MP84 Spring-Return-Up Actuators

Refer to Figure 1 and proceed as follows:

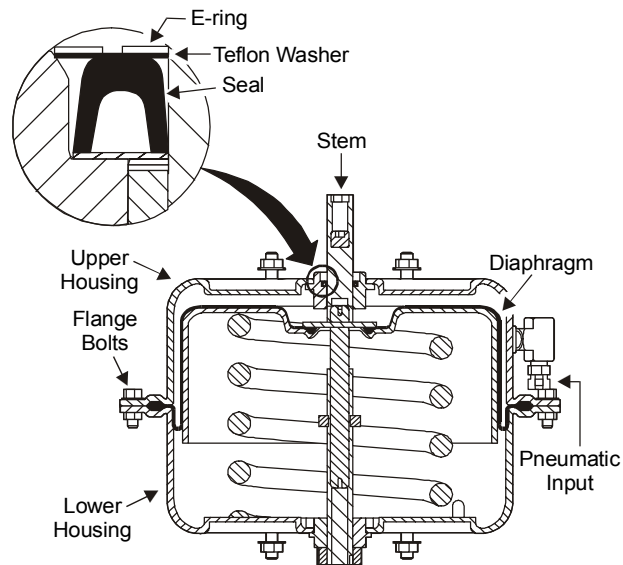


Figure 1: MP84 Actuator

1. Remove air pressure input to the actuator.
- Note: If the optional stem cover is present, remove it.
2. Remove the E-ring with the retaining ring pliers and set aside.
 3. Apply 15 psig (103 kPa) slowly to the actuator input. The actuator will stroke, which will loosen the seal and Teflon® washer.
 4. Remove the air pressure from the actuator.
 5. Remove the Teflon washer and seal, and retain the washer. (There is a second stainless washer below the seal that should remain on the stem.)

IMPORTANT: Be careful not to score the stem or leakage may result.

6. Place the plastic sleeve over the stem, and slide the new seal over the sleeve (both supplied in the kit).

Note: Make sure the groove side of the seal is facing the actuator.

7. Hold the seal on the stem, while pulling the plastic sleeve off the stem, so the seal remains on the stem.

IMPORTANT: Be careful not to damage the seal on the flats located on the upper part of the stem.

8. Install the Teflon washer on the stem.

9. Place the plastic sleeve over the stem, and push down firmly to seat the washer and the seal.

10. Install the E-ring, using the retaining ring pliers.

Note: If the E-ring cannot be installed, the seal is not completely seated. Repeat Step 9.

11. Apply 15 psig (103 kPa) to stroke the actuator and to ensure the air seal is properly installed.

12. If the actuator does not stroke correctly, repeat Steps 2 through 4 and 9 through 11.

13. If the actuator has the optional stem cover, install it now.

Seal Repair Procedure for MP86 and MP87 Spring-Return-Up Actuators

Two MP8000-6001 Seal Kits are required for the MP86 and MP87 actuators. Refer to Figure 2 and proceed as follows:

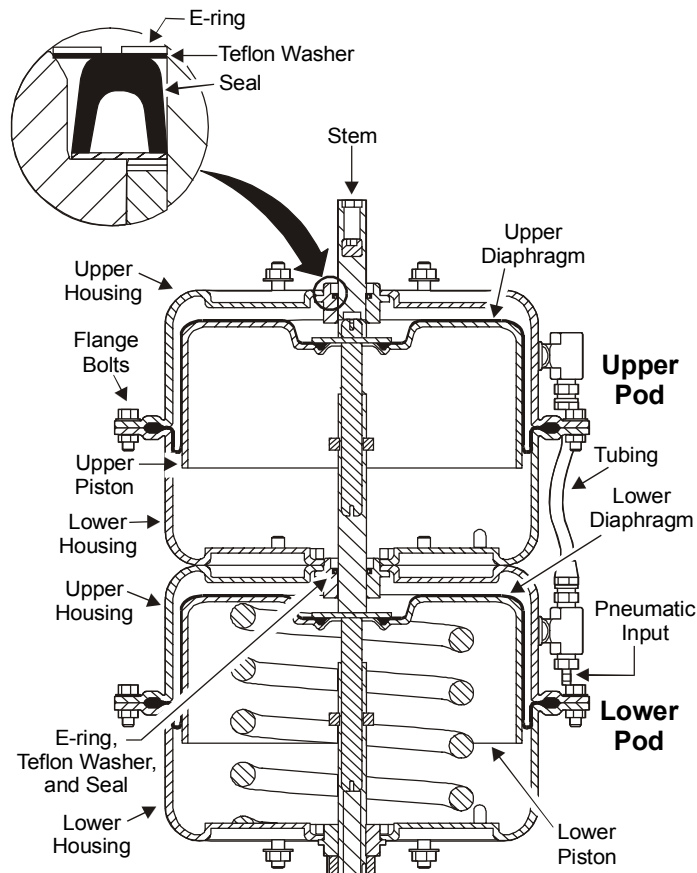


Figure 2: MP86 Actuator

1. Remove the air pressure input to the actuator.
- Note: If the optional stem cover is present, remove it.
2. Unscrew the flare nut from the copper tubing that connects the two pods.
 3. Remove the eight flange bolts from the upper housing of the upper pod using a 7/16 in. socket and 3/8 in. ratchet and 3/8 in. open-end wrenches.
 4. Lift off the upper housing. (This will also disconnect the copper tubing from the upper pod.)

5. Insert the 7/16 in. hex tool in the top of the stem. Use the 7/16 in. open-end wrench to remove the stem assembly (includes the piston, diaphragm, and stem).
6. Remove the E-ring of the lower pod with the retaining ring pliers and retain.
7. Block the open end of the tubing (end disconnected from the upper pod) to temporarily seal it.
8. Apply 15 psig (103 kPa) pressure slowly to the lower pod. The actuator will stroke, which will loosen the seal and Teflon washer.
9. Remove the air pressure from the lower pod.
10. Remove the Teflon washer and seal, and retain the washer. (There is a second stainless steel washer below the seal that should remain on the stem.)

IMPORTANT: Be careful not to score the stem or leakage may result.

11. Place the plastic sleeve over the stem, and slide the new seal over the sleeve (both supplied in the kit).

Note: Make sure the groove side of the seal is facing the actuator.

12. Hold the seal on the stem, while pulling the plastic sleeve off the stem, so the seal remains on the stem.

IMPORTANT: Be careful not to damage the seal on the flats located on the upper part of the stem.

13. Install the Teflon washer on the stem.
14. Place the plastic sleeve over the stem, and push down firmly to seat the washer and seal.
15. Install the E-ring, using the retaining ring pliers.

Note: If the E-ring cannot be installed, the seal is not completely seated. Repeat Step 14.

16. Block the open end of the copper tubing.
17. Apply 15 psig (103 kPa) to stroke the actuator and to ensure the air seal is properly installed.
18. If the actuator does not stroke correctly, repeat Steps 6 through 9 and 14 through 17.
19. Reinstall the stem assembly, using the 7/16 in. hex tool and the 7/16 in. open-end wrench. Tighten between 21 and 26 lb-in (2 and 3 N·m), using the torque wrench.
20. Install the upper housing, using the eight bolts, nuts, and lock washers. Make sure to line up the notch in the flange for the air pressure connection.
21. Tighten the nuts between 120 and 150 lb-in (13 and 17 N·m) in a cross pattern, using the torque wrench.

22. Reconnect the copper tubing to the upper housing of the upper pod.
23. Remove the E-ring from the upper housing with the retaining ring pliers and retain.
24. Apply 15 psig (103 kPa) slowly to the actuator input. The actuator will stroke, which will loosen the seal and Teflon washer.
25. Remove the air pressure from the actuator.
26. Remove the Teflon washer and seal, and retain the washer. (The second stainless steel washer below the seal should remain on the stem.)

IMPORTANT: Be careful not to score the stem or leakage may result.

27. Place the plastic sleeve over the stem, and slide the new seal over the sleeve (both supplied in the kit).

Note: Make sure the groove side of the seal is facing the actuator.

28. Hold the seal on the stem, while pulling the plastic sleeve off the stem, so the seal remains on the stem.

IMPORTANT: Be careful not to damage the seal on the flats located on the upper part of the stem.

29. Install the Teflon washer on the stem.
 30. Place the plastic sleeve over the stem, and push down firmly to seat the washer and the seal.
 31. Install the E-ring, using the retaining ring pliers.
- Note: If the E-ring cannot be installed, the seal is not completely seated. Repeat Step 30.
32. Apply 15 psig (103 kPa) to stroke the actuator and to ensure the air seal is properly installed.
 33. If the actuator does not stroke correctly, repeat Steps 23 through 25 and 30 through 32.
 34. If the actuator has the optional stem cover, install it now.

Seal Repair Procedure for MP83, MP85, and MP87 Spring-Return-Down Actuators

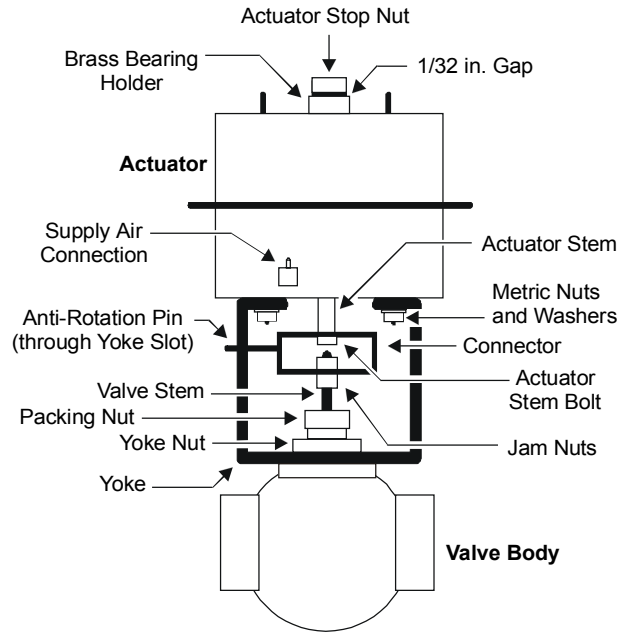


Figure 3: Components of a Spring-Return-Down Actuator

Before the seals can be replaced, the actuator will have to be removed from the valve. Proceed as follows:

1. Remove the stem cover (if present) and the anti-rotation pin using a 3/16 or 1/4 in. open-end wrench.
2. Loosen the yoke nut and the lower jam nut.
3. Remove the upper jam nut from the stem.
4. Apply air pressure to the actuator, and stroke the valve approximately 1/8 in.
5. Loosen the actuator stem bolt.

IMPORTANT:	Use the stem wrench to hold the stem in place while loosening the stem bolt. Rotation of the stem could cause the diaphragm to wrinkle, affecting the actuator's performance.
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Note: The stem wrench fits on the actuator stem just above the connector where the stem has two flat sides.

6. Remove the air pressure, and make sure the valve stem is fully down.
7. Remove the four metric nuts holding the actuator to the yoke. (Use the 10 mm socket for the MP83 and the 13 mm socket for the MP85 and MP87.)

8. Remove the actuator stem bolt and the connector from the actuator stem, and remove the actuator from the yoke.

To install the seal repair kit on a MP83 or MP85 actuator, proceed to the *Seal Repair Procedure for MP82 and MP84 Spring-Return-Up Actuators* section. For an MP87 actuator, proceed to the *Seal Repair Procedure for MP86 and MP87 Spring-Return-Up Actuators* section.

After completing the previous procedures, remount the actuator on the valve as follows:

1. Make sure the lower jam nut is still on the valve.
2. Attach the connector to the actuator stem using the actuator stem bolt and lock washer, and hand tighten.

Note: Orient the connector so that the anti-rotation pin holes on the connector are closest to the valve body.

3. Locate the four threaded studs on the bottom of the actuator housing adjacent to the actuator stem, and install the yoke on the threaded studs.
4. Secure the actuator to the yoke with the four metric nuts and washers so the valve stem engages the connector, and tighten the nuts securely.
5. Position the valve stem to fully close the valve.
6. Align the connector with the yoke slot, and insert the anti-rotation pin.
7. Tighten the anti-rotation pin securely with a 1/4 or 3/16 in. open-end wrench.
8. Tighten the actuator stem bolt between 95 and 105 lb·in (11 and 12 N·m).

IMPORTANT: Use the stem wrench to hold the stem in place while tightening the stem bolt. Rotation of the stem could cause the diaphragm to wrinkle and affect the actuator's performance.
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9. Thread the lower jam nut against the connector, and tighten until there is a 1/32 in. gap between the actuator stop nut and the brass bearing holder at the top of the actuator. (See Figure 3.)

Note: This ensures the valve stem is in the full down position.

10. Thread the upper jam nut against the connector and tighten.
11. Tighten the yoke nut.
12. Apply up to 20 psig (138 kPa) air supply to the actuator to make sure the unit is operating properly.
13. Remove the air pressure.
14. If the actuator has the optional stem cover, install the cover now.