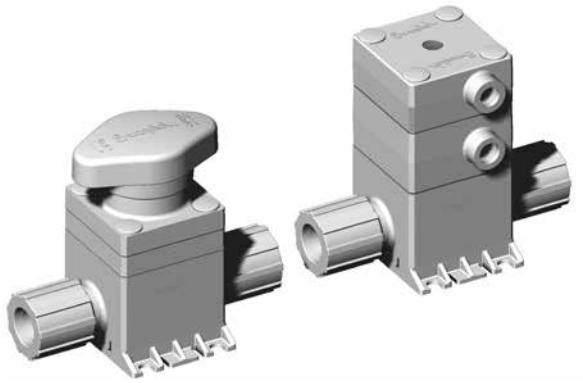
DRP™ Series Diaphragm Valve

Diaphragm Replacement Instructions

Contents



Valves are shown with fine thread flare fitting end connections.

Kit Contents

- Diaphragm (1)
- Hole plugs (4)
- PTFE–coated socket head cap screws (4)
- PTFE–coated washers (4)
- Instructions (1)

Definitions

Statements and symbols are used in this document to identify safety concerns.

⚠ **This symbol indicates cautionary information.**

⚠ **Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.**

Safe Product Use

Follow these instructions and refer to the product catalog for detailed product information. When using a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user. **Improper selection or misuse of the product may result in serious personal injury or property damage.**

Tool requirements

Torque Wrench(es)

Hex Wrench

See table for hex wrench size based on valve body size.

Valve Body Size	Hex Wrench Size in.
Small (DRP4)	3/32
Medium (DRP8)	5/32
Large (DRP16)	3/16

Operation

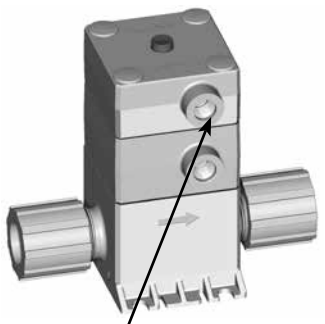
Manual Valve

Quarter-turn

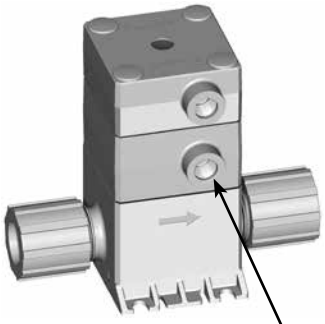
Turn handle clockwise one-quarter turn to open. Valve shown in open position.

Pneumatically Actuated Valves

Normally Open



Normally Closed



Apply 60 psig (4.1 bar, 0.41 MPa) clean, dry air to actuate.

Pneumatically Actuated Valve Disassembly

⚠ **Before servicing any installed valve, you must:**

- **depressurize the system**
- **purge the valve.**

⚠ **Do not disassemble the pneumatic actuator housing. The actuator housings are spring loaded and not intended for servicing in the field.**

1. For normally closed actuators, apply 60 psig (4.1 bar, 0.41 MPa) clean, dry air to actuate the valve.
2. Remove the four hole plugs to access socket head cap screws.
3. Loosen the socket head cap screws in a crisscross pattern using a hex wrench as shown in Fig. 1 and 2.

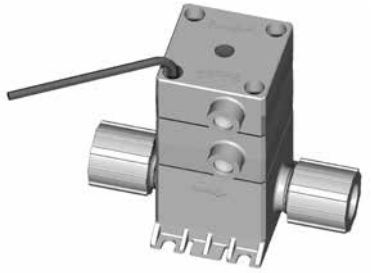


Fig. 1

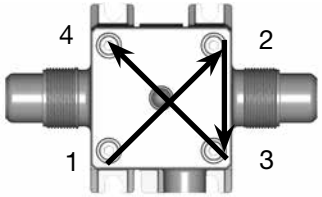


Fig. 2
Crisscross Pattern

4. Separate the actuator housing from the valve body as shown to expose the diaphragm.

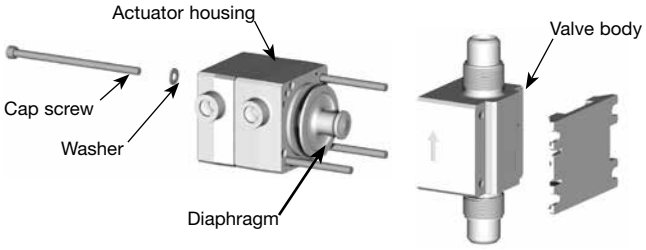


Fig. 3

5. Remove socket head cap screws and washers and discard.
6. Proceed to **Replacing the Diaphragm** section.

Manual Valve Disassembly

⚠ **Before servicing any installed valve, you must:**
- **depressurize the system**
- **purge the valve.**

1. Ensure that the valve is in the open position.
2. Remove the four hole plugs to access socket head cap screws.
3. Loosen the socket head cap screws in a crisscross pattern using a hex wrench as shown in Fig. 4 and 5.

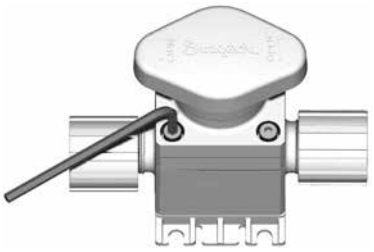


Fig. 4

4. Separate the actuator housing from the valve body as shown in Fig. 6 to expose the valve diaphragm.
5. Remove the socket head cap screws and washers and discard.

⚠ **Do not disassemble the manual actuator housing. These actuator housings are spring loaded and not intended for servicing in the field.**

6. Proceed to **Replacing the Diaphragm** section.

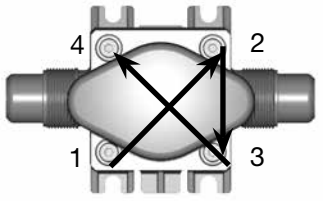


Fig. 5 Crisscross Pattern

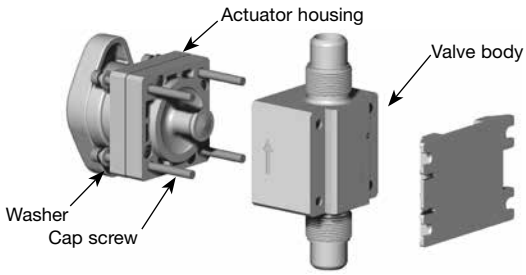


Fig. 6

Replacing the Diaphragm

1. Follow the steps in the Pneumatically Actuated or Manual Valve Disassembly sections.
2. Before removing the diaphragm, actuate the normally open pneumatic or manual assembly to a position that extends the actuator shaft as shown in Fig. 7 and 8. (Normally closed actuators are already extended.)
   - For normally open actuators, apply 60 psig (4.1 bar, 0.41 MPa) air pressure to extend the shaft.
   - For quarter-turn manual actuators, rotate the handle to the closed position to extend the shaft.

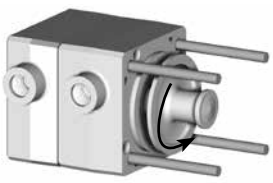


Fig. 7

Fig. 8

3. With the diaphragm facing you, hold the outer edge of the diaphragm and rotate by hand counterclockwise to remove it from the actuator housing.
4. To install a new diaphragm, carefully align the diaphragm with the actuator housing to avoid cross-threading (Fig. 9). Thread the diaphragm into the actuator housing by holding it on the outer edge and rotating it clockwise until the backside is flush with the actuator shaft (finger-tight). Do not over tighten.

Fig. 9

Pneumatic and Manual Valve Reassembly

1. Before installing the diaphragm and actuator housing into the valve cavity, actuate the pneumatic or manual assembly to a position that retracts the actuator shaft.
   - For normally closed actuators, apply 60 psig (4.1 bar, 0.41 MPa) air pressure to retract the shaft.
   - For normally open actuators, relieve the air pressure to retract the shaft.
   - For quarter-turn manual actuators, rotate the handle to the open position to retract the shaft.
2. Place the valve body on the mounting plate, aligning the notch on the bottom of the valve body with the positioning post on the mounting plate (Fig. 10).
3. Place the actuator housing onto the valve body, seating the diaphragm in the body opening (Fig. 10).

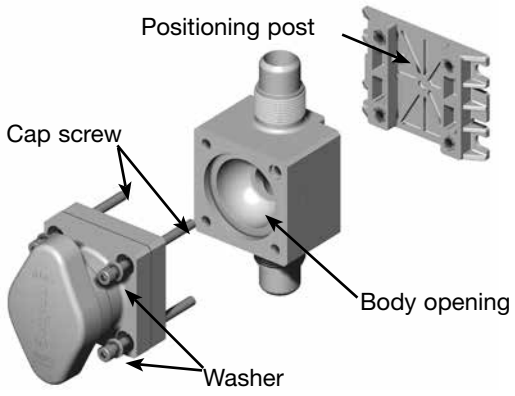


Fig. 10

4. Place a washer on each socket head cap screw, insert the four socket head cap screws into their respective mounting holes of the actuator, and thread them into the valve body and mounting plate until finger tight.
5. Tighten the socket head cap screws in a crisscross pattern using a hex wrench, as shown in Fig. 11, until actuator assembly is flush with the valve body.

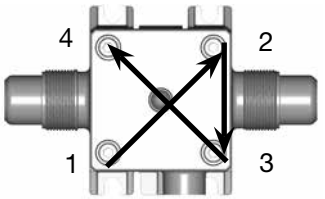


Fig. 11

6. Tighten the socket head cap screws with a torque wrench in a series of three passes using the torque values listed in the chart. Use the crisscross-tightening pattern shown in Fig. 2 and 5 for each pass.

Valve Size	Torque, in·lb (N·m, cm·kg)		
	First Pass	Second Pass	Third Pass
Small (DRP4)	1 (0.11, 1.2)	3 (0.33, 3.6)	6 (0.66, 7.2)
Medium (DRP8)	5 (0.55, 6)	10 (1.1, 12)	25 (2.8, 30)
Large (DRP16)	10 (1.1, 12)	20 (2.2, 24)	45 (4.9, 54)

Note: Do not exceed the third pass torque value .

7. Re-install hole plugs.
8. Test the valve for proper operation before installing it into the system. See **Testing** section.

Testing

1. With the valve in the OPEN position, verify that flow passes through the valve.
2. With the valve in the CLOSED position, pressurize the valve to 50 psig (3.4 bar) and test for leakage at the seat and diaphragm seal with Snoop® liquid leak detector.