



This document contains service instructions for all LD16 series valves.

### Contents

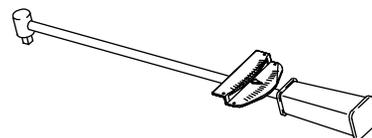
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### Tool Requirements

- 1/8 in. hex wrench
- 9/16 in. open-end wrench
- 3/4 in. open-end wrench
- 3/4 in. crowfoot wrench
- 2 in. open-end wrench
- 2 in. hex socket

#### Torque wrench

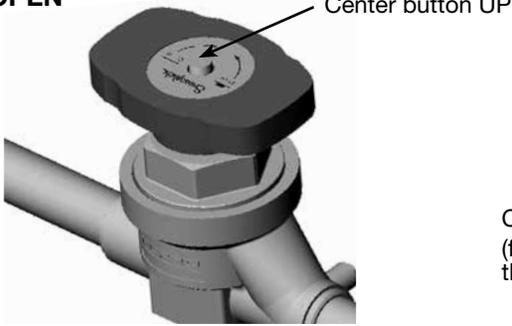
Capable of applying up to 1500 in. · lb (169.5 N · m)  
(1728 cm · kg) of torque



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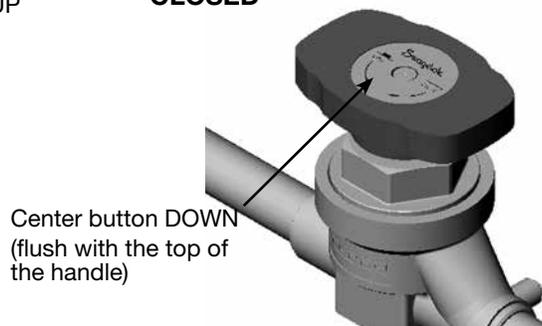
## Operation

**OPEN**



To open the valve, turn the handle *counterclockwise* two and one half turns.

**CLOSED**



To close the valve, turn the handle *clockwise* two and one half turns.

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## Installation – Welding

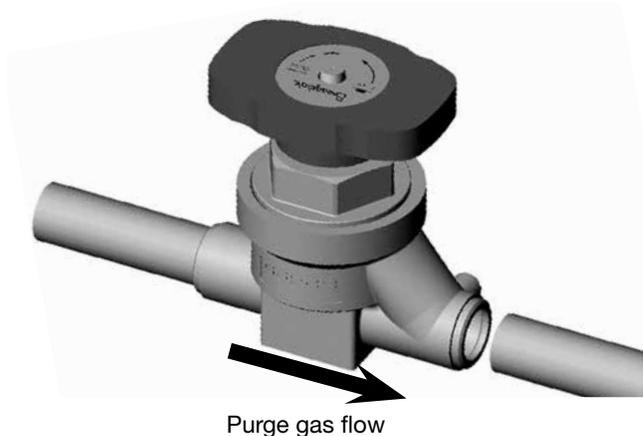
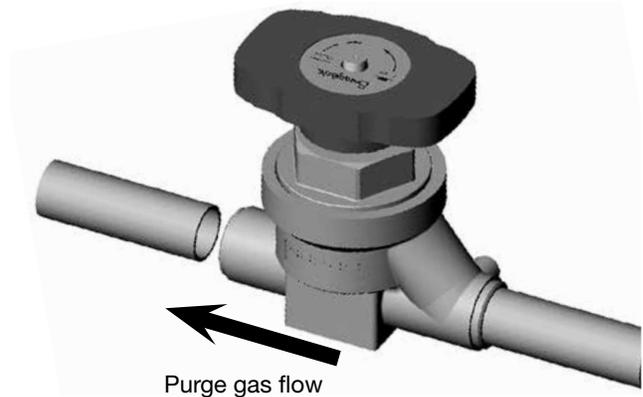
**⚠ Notice: All welding should be done by qualified personnel.**

**⚠ Notice: Disassembly of valve is not required for in-line welding if the steps listed below are followed. If valve disassembly is necessary, cover sealing surfaces to protect them from nicks and weld spatter.**

1. If not using the Swagelok Welding System, use a heat sink to prevent excessive heating of internal components.
2. Actuate the valve to the OPEN position.
3. Connect purge gas so that flow exits out of the valve port being welded to keep the internal components cool.

**⚠ Notice: Use a high-purity purge gas to maintain cleanliness and reduce welding discoloration.**

4. Perform the welding procedure.
5. With the valve in the OPEN position, continue to purge the valve and system of contamination.
6. Test the valve for leaktight integrity. See **Testing** section.



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## Testing

1. With the valve in the OPEN position, verify that flow passes through the valve.
2. With the valve in the CLOSED position, verify that *no* flow passes through the valve.
3. Leak test the diaphragm seal.
4. Leak test the seat seal.

## Kit Contents

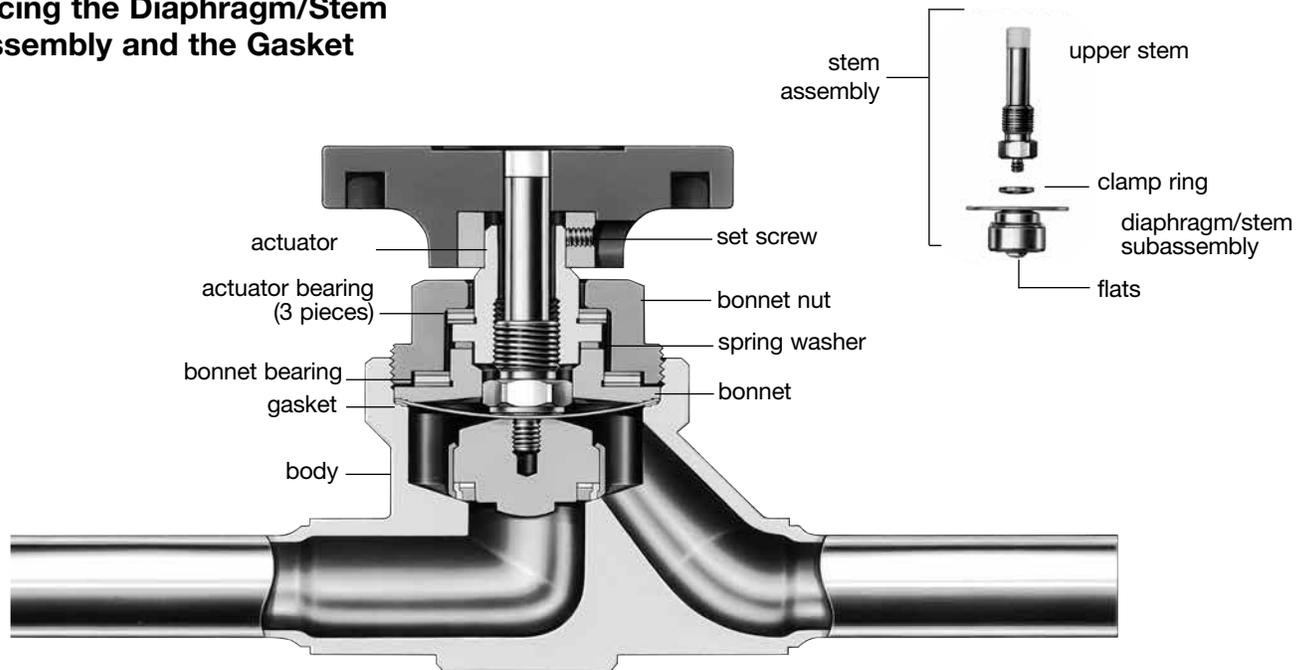
### Diaphragm/Stem Subassembly Kit

- Diaphragm/stem subassembly
- Gasket
- Instructions

### Gasket Kit

- Gasket
- Instructions

## Replacing the Diaphragm/Stem Subassembly and the Gasket



### Warning

- Before servicing any installed valve, you must
- depressurize system
  - cycle the valve
  - purge the valve

### Disassembly

1. Turn the **handle** *counterclockwise* until the valve is fully OPEN. Then turn the **handle** *clockwise* 1/8 of a turn.
2. Loosen the **handle set screw**.
3. Remove the **handle**.
4. Unscrew and remove the **bonnet nut**.
5. Remove the **actuator bearing**.
6. Unscrew and remove the **left-hand threaded actuator**.
7. Remove the **spring washer** and **stem assembly** including the **bonnet** and **bonnet bearing**.
8. Unscrew the **upper stem** and **clamp ring** from the subassembly.
9. Discard the **diaphragm/stem subassembly**.
10. Remove and discard the **gasket**.

### Reassembly

1. Clean the **body surfaces** where the gasket will sit.
2. Place a **new gasket** into the body.
3. Place the **clamp ring**, curved side DOWN, on top of the **new diaphragm/stem subassembly**. Center the **clamp ring** over the diaphragm/stem subassembly.
4. Thread the **upper stem** through the clamp ring and into the diaphragm/stem subassembly. Align the **locating diameter** on **upper stem** with the **inside diameter** of the **clamp ring**.
5. Tighten the **upper stem** to 35 in. · lb (4 N · m) (40 cm · kg).
6. Place the **bonnet** and **bonnet bearing** over the **upper stem**, aligning the **hex flats**.
7. Place the **stem assembly** into the body.
8. Place the **spring washer** on top of the bonnet.
9. Apply a **molybdenum disulfide-based lubricant** to the **internal threads** of the actuator.
10. Thread the **left-hand threaded actuator** onto the upper stem until it slightly compresses the spring washer.
11. Place the **actuator bearing** onto the shoulder of the actuator.

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12. Thread the **bonnet nut** into the body and tighten to 1500 in. · lb (169.5 N · m) (1728 cm · kg).
  13. Place the **handle** on the actuator, aligning the flats on both parts.
  14. Rotate the **handle** to the CLOSED position. (Handle button should be *flush* with the top of the handle.)
  15. Tighten the **handle set screw**.
  16. Test the **valve** for proper operation. See **Testing** section, page 2.

## Replacing the Gasket

Refer to the cutaway illustration on page 3.

### Disassembly

1. Turn the **handle** *counterclockwise* until the valve is fully OPEN. Then turn the **handle** *clockwise* 1/8 of a turn.
2. Loosen the **handle set screw**.
3. Remove the **handle**.
4. Unscrew and remove the **bonnet nut**.
5. Remove the **actuator bearing**.
6. Unscrew and remove the **left-hand threaded actuator**.
7. Remove the **spring washer** and the **stem assembly**, including the **bonnet** and the **bonnet bearing**.
8. Remove and discard the **gasket**.

### Reassembly

1. Clean the **body surfaces** where the gasket will sit.
2. Place a *new* **gasket** into the body.
3. Place the **stem assembly** into the body.
4. Place the **spring washer** on top of the bonnet.
5. Apply a **molybdenum disulfide-based lubricant** to the **internal threads** of the actuator.
6. Thread the **left-hand threaded actuator** onto the upper stem until it slightly compresses the spring washer.
7. Place the **actuator bearing** onto the shoulder of the actuator.
8. Thread the **bonnet nut** into the body and tighten to 1500 in. · lb (169.5 N · m) (1728 cm · kg).
9. Place the **handle** on the actuator aligning the flats on both parts.
10. Rotate the **handle** to the CLOSED position. (Handle button should be *flush* with the top of the handle.)
11. Tighten the **handle set screw**.
12. Test the **valve** for proper operation. See **Testing** section, page 2.

#### **WARNING**

**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.**