Valves are shown with tube butt weld ends. These instructions also apply to DL or DS series valves with any end connection.

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**Definitions**

⚠️ **CAUTION**
Statements that identify conditions or practices that could result in damage to the equipment or other property.

⚠️ **WARNING**
Statements that identify conditions or practices that could result in personal injury or loss of life.
**Tool Requirements**

<table>
<thead>
<tr>
<th>Part</th>
<th>Tool</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonnet nut</td>
<td>Crow's foot</td>
<td>1 1/8 in.</td>
</tr>
<tr>
<td></td>
<td>Torque wrench</td>
<td>0 to 600 in.-lb (0 to 67 N·m)</td>
</tr>
<tr>
<td>Bonnet nut</td>
<td>Open-end wrench</td>
<td>1 1/8 in.</td>
</tr>
<tr>
<td>VCR fittings</td>
<td></td>
<td>3/4 in.</td>
</tr>
<tr>
<td>Panel nut</td>
<td></td>
<td>7/8 in.</td>
</tr>
<tr>
<td>Cap insert</td>
<td>Screwdriver</td>
<td>1/8 in. blade</td>
</tr>
<tr>
<td>Lock nut</td>
<td>Nut driver</td>
<td>11/32 in.</td>
</tr>
<tr>
<td>Set screw</td>
<td>Hex wrench</td>
<td>1/16 in.</td>
</tr>
</tbody>
</table>

**Operation**

**DL Series (Lever Handle) Valve**

- Turn counterclockwise one quarter turn to **OPEN**
- Turn clockwise one quarter turn to **CLOSE**

**DS Series (Round Handle) Valve**

- Turn counterclockwise one and one half turns to **OPEN**
- Turn clockwise one and one half turns to **CLOSE**
Installation
Panel Mounting

DL Series (Lever Handle) Valve
1. Actuate the valve to the OPEN position.
2. Remove the cap insert from the lever handle.
3. Remove the nut/lock washer.
4. Remove the lever handle, indicator ring, and the panel nut.
5. Insert the valve through the panel.
6. Orient the valve in the proper flow direction.
7. Install and tighten the panel nut.
8. Install the indicator ring by aligning the tab on the ring with the slot in the bonnet.
9. Invert the lever handle onto the actuator to prevent the handle stop from engaging. Turn the handle clockwise until it stops to close the valve.
10. Invert the handle right side up onto the actuator with the arrow pointing near the letter D of the CLOSED marking.
11. Install the nut/lock washer and tighten to 20 in.-lb (2.3 N·m) of torque.
12. Install the cap insert.

DS Series (Round Handle) Valve
1. Actuate the valve to the OPEN position.
2. Loosen the two set screws in the round handle.
3. Remove the round handle and panel nut.
4. Insert the valve through the panel.
5. Orient the valve in the proper flow direction.
6. Install and tighten the panel nut.
7. Install the round handle and tighten the set screws.
8. See Testing.

NOTE: Remove outer bag prior to entering cleanroom. Remove inner bag in cleanroom.
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

Seal Kit
- Diaphragms
- Gasket

Diaphragm Only Kit
- Diaphragms

Gasket Kit
- Gasket

Stem Replacement Kit
- Stem
- Spring
- Guide ring

Upper Assembly Kits
- DS Series Round Handle
- DL Series Lever Handle
- Upper assembly
- Button
- Diaphragms (3)
- Gasket
- Stem
- Spring
- Guide ring
Replacing Diaphragms, Gasket, Stem, Spring, Body, or Upper Assembly
(All Valve Types)

⚠️ WARNING
Before servicing any installed valve, you must:
• depressurize the system
• cycle the valve
• purge the valve.

Disassembly
1. If possible, remove the valve from the system.
2. Actuate the valve to the OPEN position.
3. Keeping body stationary, loosen the bonnet nut and remove the upper assembly.
4. Remove the button, diaphragms, and gasket.
5. Turn the body upside down and remove the stem, spring, and guide ring.

⚠️ CAUTION
The seal surfaces on the body, stem, and diaphragms must be clean before reassembly. Particles can damage the seat and seal surfaces.

Reassembly
1. Insert the guide ring, spring, and stem into the body in the order shown.

NOTE: If the valve is disassembled, a new gasket must be installed, and it is recommended new diaphragms be installed.

CAUTION
Before servicing any installed valve, you must:
• depressurize the system
• cycle the valve
• purge the valve.
3. Center the three new diaphragms on top of the stem.
   Note: The diaphragms are identical and can be stacked in any order.

4. Place the button in the cavity of the upper assembly with the round side of the button facing out.

   ![Diaphragms](image1)
   ![Button](image2)

   **CAUTION**
   Use of a PTFE, Polyimide, or PCTFE stem in a valve body previously fitted with a cobalt-based alloy stem can cause seat leakage.

   NOTE: The upper assembly must be in the OPEN position.

5. Place the upper assembly on the body. On DL series (lever handle) assemblies only, with the handle in the fully counterclockwise position, align the handle arrow with the outlet port on the body.

   ![Handle arrow](image3)
   ![Outlet port](image4)

6. Hold the upper assembly firmly against the body, and thread the bonnet nut onto the body finger-tight.

7. Keeping the body stationary, torque the bonnet nut to 500 in.-lb (56.5 N·m).

**DL series (lever handle) assemblies only (see figure on page 3):**

8. Remove the cap insert from the lever handle.

9. Remove the nut/lock washer.

10. Lift upward on the lever handle and remove it.

11. Invert the lever handle onto the actuator to prevent the handle stop from engaging. Turn the handle clockwise until it stops to close the valve.

12. Invert the handle right side up onto the actuator with the arrow pointing near the letter D of the CLOSED marking.

13. Install the nut/lock washer and tighten to 20 in.-lb (2.3 N·m) of torque.


15. Turn handle clockwise until the valve is CLOSED to check for proper handle orientation.

16. If repositioning is required, turn the handle to the OPEN position and loosen bonnet nut. Reposition the upper assembly following steps 5, 6, and 7.

**All valves:**

17. See Testing.

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**Safe Product Selection**

When selecting 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.

**Caution: Do not mix or interchange parts with those of other manufacturers**

Translations available on [www.swagelok.com](http://www.swagelok.com).

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