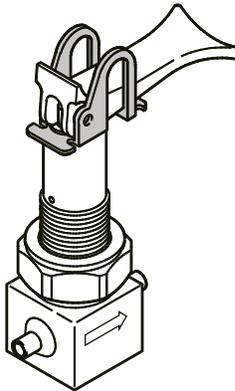
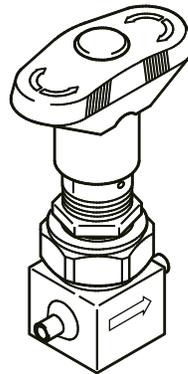


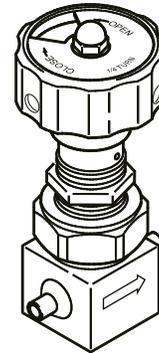
Pneumatically Actuated Valve



Toggle Handle Valve



Directional Handle Valve



Round Handle Valve

Valves are shown with tube butt weld ends. These instructions also apply to DA series valves with any other end connection.

## Contents

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## Definitions

Statements and symbols are used in this document to identify safety concerns. Read the definitions below before performing the service instructions.

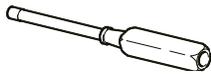
 This symbol indicates cautionary information.

**Caution:** Indicates a potentially hazardous situation. It may also be used to alert against unsafe practices.

**Notice:** Indicates a statement of company policy directly or indirectly related to the safety of personnel or protection of property.

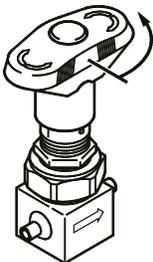


## Tool Requirements

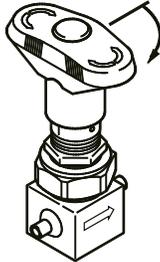
Part	Tool	Size	Quantity
Bonnet nut	Open-end extension 	1 1/8 in.	1
	Torque wrench 	0 to 600 in.·lb (0 to 68 N·m, 691 cm·kg)	1
VCR® fittings	Open-end wrench 	3/4 in.	2
S Type VCR fittings		5/8 in.	2
Panel nut		7/8 in.	1
Jam nut		7/16 in.	1
Insert	Screwdriver 	1/8 in. blade	1
Barrel		1/4 in. blade	
Nut/lock washer	Nut driver 	11/32 in.	1
Cap nut		5/16 in.	
Set screw	Hex wrench 	1/16 in.	1
Actuator cap	Spanner wrench 	Order Swagelok part number S-BN4-S60	1

## Operation

### Directional Handle Valve

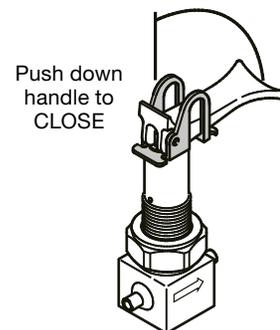
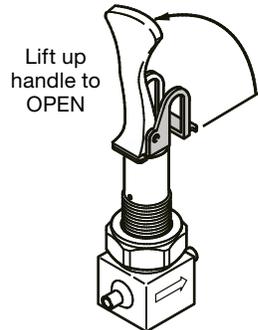


Turn counterclockwise one quarter turn to OPEN

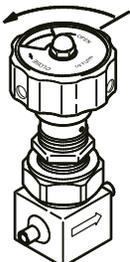


Turn clockwise one quarter turn to CLOSE

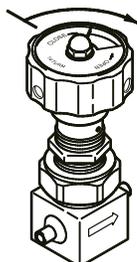
### Toggle Handle Valve



### Round Handle Valve

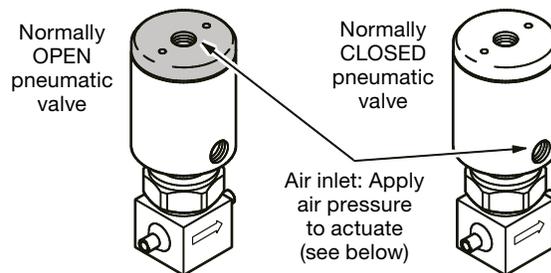


Turn counterclockwise one quarter turn to OPEN



Turn clockwise one quarter turn to CLOSE

### Pneumatically Actuated Valve



#### Actuation Pressure<sup>①</sup>

Normally closed valve: 60 psig (4.1 bar, 0.41 MPa)

Normally open valve: 60 to 90 psig (4.1 to 6.2 bar, 0.41 to 0.62 MPa)

<sup>①</sup> Actuation pressure depends on system pressure. See DA series catalog, MS-02-65, for details.

## Installation

### Panel Mounting

#### Round Handle Valve

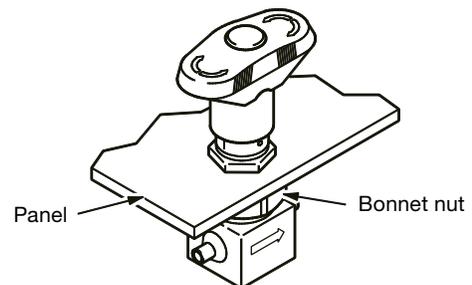
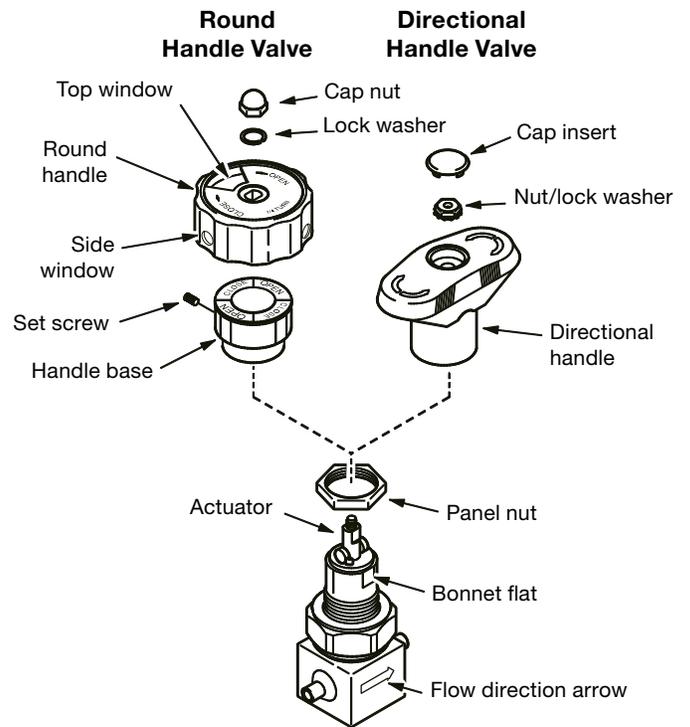
1. Actuate the valve to the OPEN position.
2. Remove the cap nut and lock washer.
3. Lift upward on the round handle and remove it.
4. Loosen the set screw in the handle base.
5. Lift upward on the handle base and remove it.
6. Remove the panel nut.
7. Insert the valve through the panel. Hold the valve in the panel.
8. Refer to the flow direction arrow on the valve. Orient the valve in the proper flow direction.
9. Install and tighten the panel nut.
10. Install the handle base over the actuator so the set screw is 180° opposite the bonnet flat. Tighten the set screw.
11. Install the round handle over the handle base. Orient the handle so the OPEN marking is visible through the top window and the letter O is visible in the side windows.
12. Install the lock washer and cap nut. Tighten the nut to 25 in.-lb (2.8 N·m, 29 cm·kg) of torque.
13. Test the valve for proper operation.

#### Directional Handle Valve

1. Actuate the valve to the OPEN position.
2. Remove the cap insert from the directional handle.
3. Remove the nut/lock washer.
4. Lift upward on the directional handle and remove it.
5. Remove the panel nut.
6. Insert the valve through the panel. Hold the valve in the panel.
7. Refer to the flow direction arrow on the valve. Orient the valve in the proper flow direction.
8. Install and tighten the panel nut.
9. Install the directional handle.
10. Install and tighten the nut/lock washer to 25 in.-lb (2.8 N·m, 29 cm·kg) of torque.
11. Install the cap insert.
12. Test the valve for proper operation.

#### ⚠ Notice:

To maintain original cleanliness, all DA series valves are packaged in double bags. Remove outer bag prior to entering cleanroom. Remove inner bag in cleanroom.



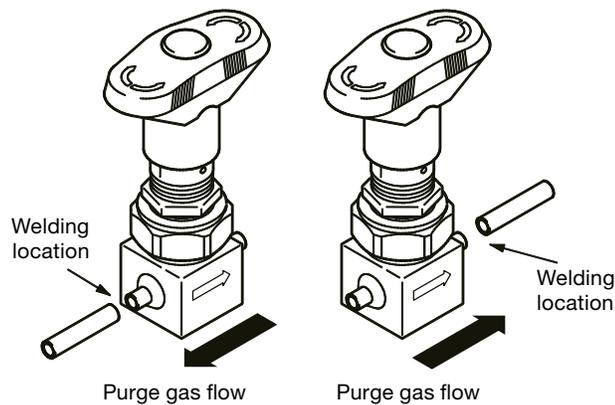
## Welding (All Valve Types)

### ⚠ Notice:

All welding should be done by qualified personnel as outlined in Section IX of the ASME Boiler and Pressure Vessel Code.

### ⚠ 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 to exit out of the valve port being welded to keep the gasket, diaphragms, button, guide ring, and stem 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, purge the valve and system of contamination.
6. Test the valve for leaktight integrity. 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, verify that no flow passes through the valve.
3. Leak test the diaphragm seal.
4. Leak test the seat seal.

## Kit Contents

### Diaphragm Kit



Diaphragms

### Body Kit

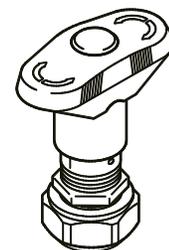


Body and Seat Assembly

### Upper Assembly Kits



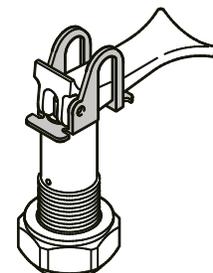
Pneumatically Actuated Assembly



Directional Handle Assembly



Round Handle Assembly



Toggle Handle Assembly

### ⚠ Caution:

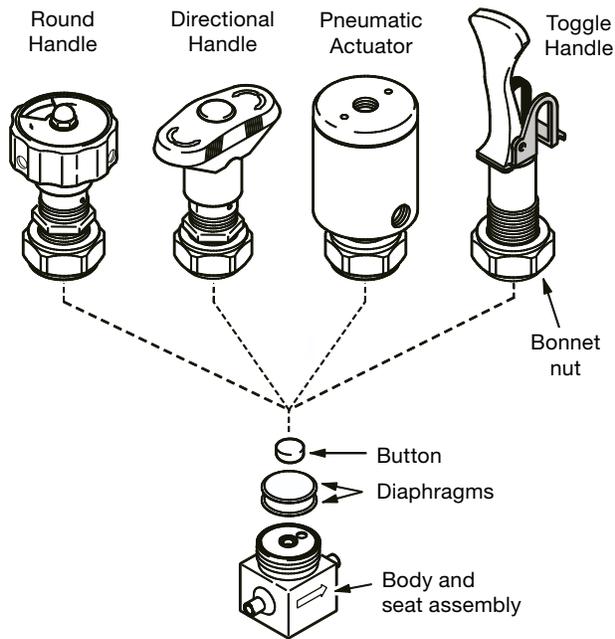
Before servicing any installed valve you must:

- depressurize the system
- purge the valve.

## Maintenance

Maintenance of the DA series valve may include replacing the diaphragms, the body and seat assembly, or the upper assembly. After maintenance, the assembled valve must be tested, then installed in the system.

## Replacing Diaphragms, Upper Assembly, or Body and Seat Assembly (All Valve Types)



### ⚠ Notice:

If the valve is disassembled, new diaphragms must be installed.

### Disassembly

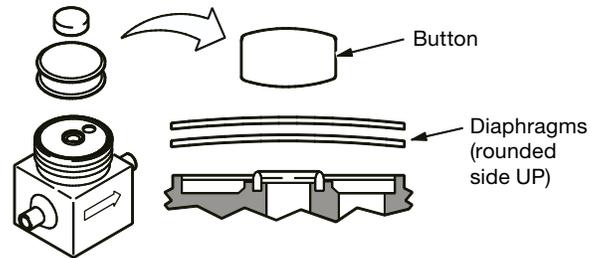
1. If possible, remove the valve from the system.
2. Actuate the valve to the OPEN position. For normally closed valves, use 60 psig (4.1 bar, 0.41 MPa) minimum pressure to actuate the valve.
3. Loosen the bonnet nut. Use a backup wrench or vise to keep the body stationary.
4. Remove the upper assembly, button, and two diaphragms.

### ⚠ Notice:

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

### Reassembly

1. Place the two new diaphragms on the body with the rounded side of the diaphragms facing UP.
2. Center the button on the diaphragms.

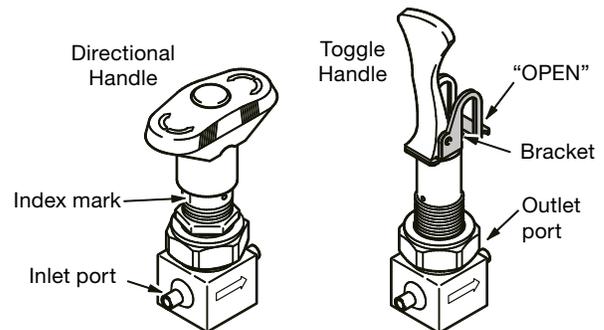


### ⚠ Notice:

The upper assembly must be in the OPEN position.

3. Place the upper assembly on the body.

- **Round and directional handle assemblies:** Align the index mark on the bonnet with the inlet port on the body.
- **Toggle handle assemblies:** Align OPEN marking on the bracket over the outlet port on the body.
- **Pneumatically actuated assemblies:** No specific alignment is required.



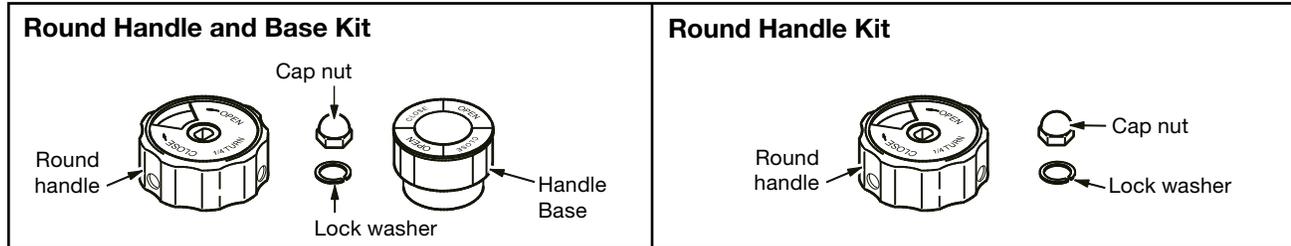
4. Hold the upper assembly firmly against the body.
5. Thread the bonnet nut onto the body hand tight.
6. Tighten the bonnet nut to 600 in.·lb (68 N·m, 691 cm·kg) of torque. Use a backup wrench or vise to keep the body stationary.
7. Test the assembled valve and then reinstall it into the system. See **Testing** section.

## Handle Style and Color Conversions

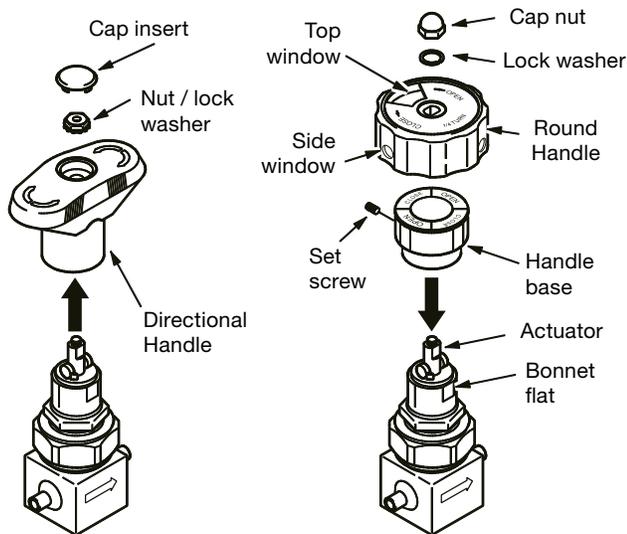
These conversion kits are available for DA series valves:

- Round Handle and Base Kit
- Round Handle Kit

### Kit Contents



### Directional to Round Handle Conversion



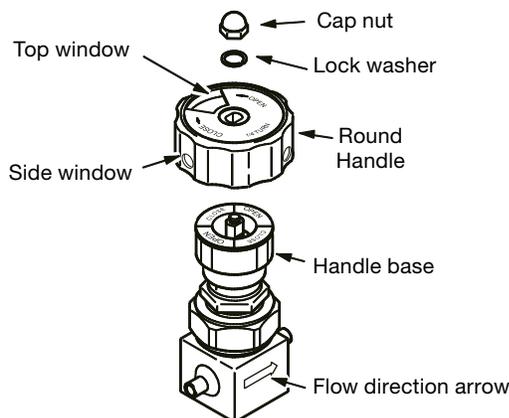
#### Disassembly

1. Actuate the valve to the OPEN position.
2. Remove the cap insert from the directional handle.
3. Remove the nut/lock washer.
4. Remove the directional handle.

#### Reassembly

1. Install the handle base over the actuator so the set screw is 180° opposite the bonnet flat. Tighten the set screw.
2. Install the round handle over the handle base. Orient the handle so the OPEN marking is visible through the top window and the letter O is visible in the side windows (three places).
3. Install the lock washer and cap nut. Tighten the nut to 25 in.·lb (2.8 N·m, 29 cm·kg) of torque.

### Round Handle Color Conversion



#### Disassembly

1. Actuate the valve to the OPEN position.
2. Remove the cap nut and lock washer.
3. Remove the round handle.

#### Reassembly

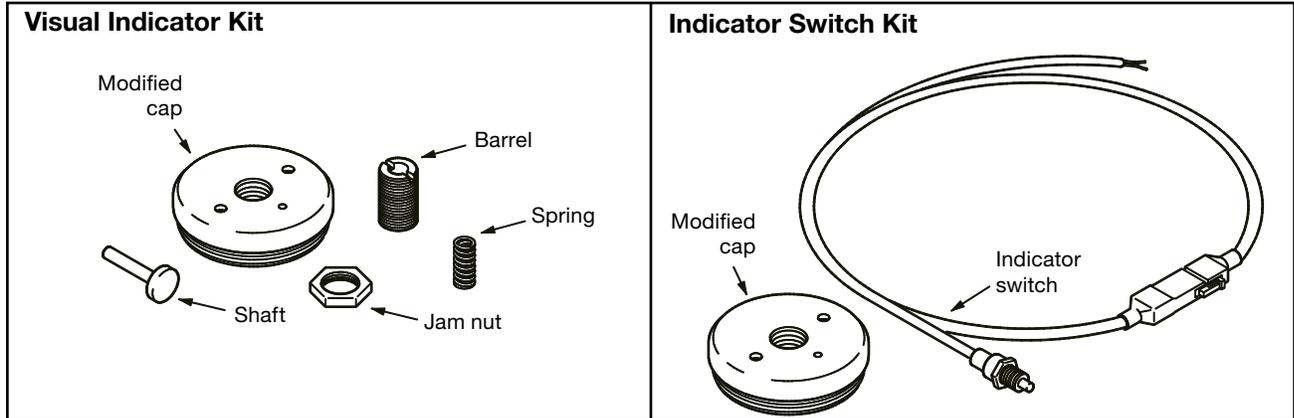
1. Install the new round handle over the handle base. Orient the handle so the OPEN marking is visible through the top window and the letter O is visible in the side windows (three places).
2. Install the lock washer and cap nut. Tighten the nut to 25 in.·lb (2.8 N·m, 29 cm·kg) of torque.

## Accessories for Pneumatic Valves

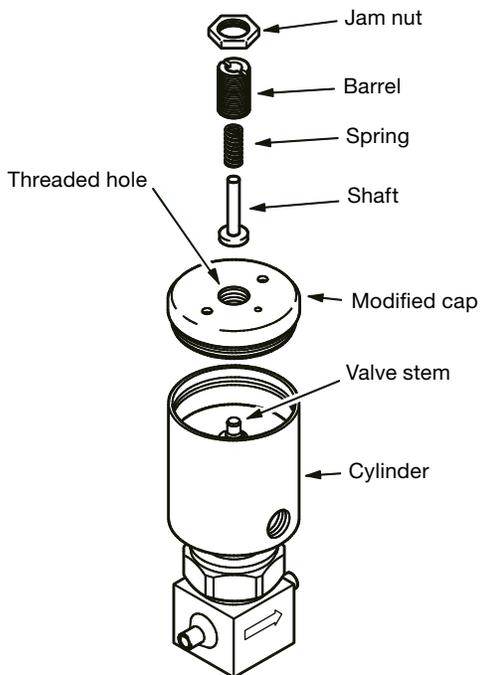
These accessories are available for normally CLOSED DA series pneumatically actuated valves:

- Visual Indicator Kit
- Indicator Switch Kit

### Kit Contents



### Visual Indicator Installation



### Disassembly

1. Relieve system pressure in valve and actuator.
2. Remove the cap with the spanner wrench.

### Reassembly

1. Thread the modified cap onto the cylinder and tighten with the spanner wrench to 20 in.·lb (2.3 N·m, 23 cm·kg) of torque.
2. Insert the shaft, large end first, into the threaded hole of the cap until the shaft rests on top of the valve stem.
3. Place the spring over the shaft; slide the spring down to the bottom of the shaft.
4. Place the barrel over the shaft with the screwdriver slot facing UP.
5. Thread the barrel into the cap until the top of the barrel is flush with the top of the shaft.
6. Thread the jam nut onto the barrel and tighten against the modified cap.
7. Test the valve and visual indicator for proper operation. Actuate the valve OPEN and verify that the red button of the visual indicator is UP.
8. Install the valve into the system.

## Indicator Switch Installation

### ⚠ Notice:

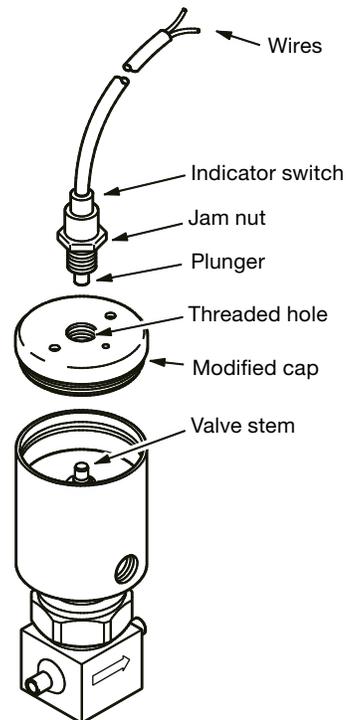
Valve must be in the **OPEN** position when installing the switch.

### Disassembly

1. Relieve the system pressure in the valve and actuator.
2. Remove the cap with the spanner wrench.

### Reassembly

1. Thread the modified cap onto the cylinder and tighten with the spanner wrench to 20 in.·lb (2.3 N·m, 23 cm·kg) of torque.
2. Thread the indicator switch into the threaded hole of the cap until the switch plunger rests on top of the valve stem.
3. Connect the indicator switch wires to a continuity tester.
4. Thread the indicator switch into the cap until the continuity tester indicates that the indicator switch is actuated. Continue to thread the indicator switch into the cap another one quarter of a turn.
5. Thread the jam nut against the cap and tighten. Disconnect the wires from the continuity tester.
6. Test the valve and indicator switch for proper operation. Actuate the valve OPEN and CLOSED to verify that the indicator switch operates properly.
7. Install the valve into the system and connect the indicator switch wires to the appropriate electrical device.



### 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.

### ⚠ 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.

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