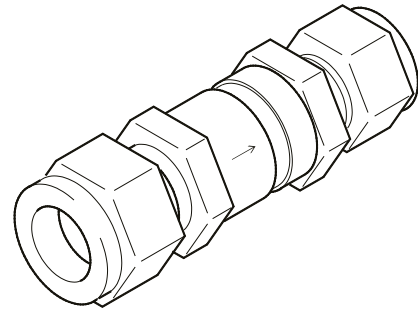


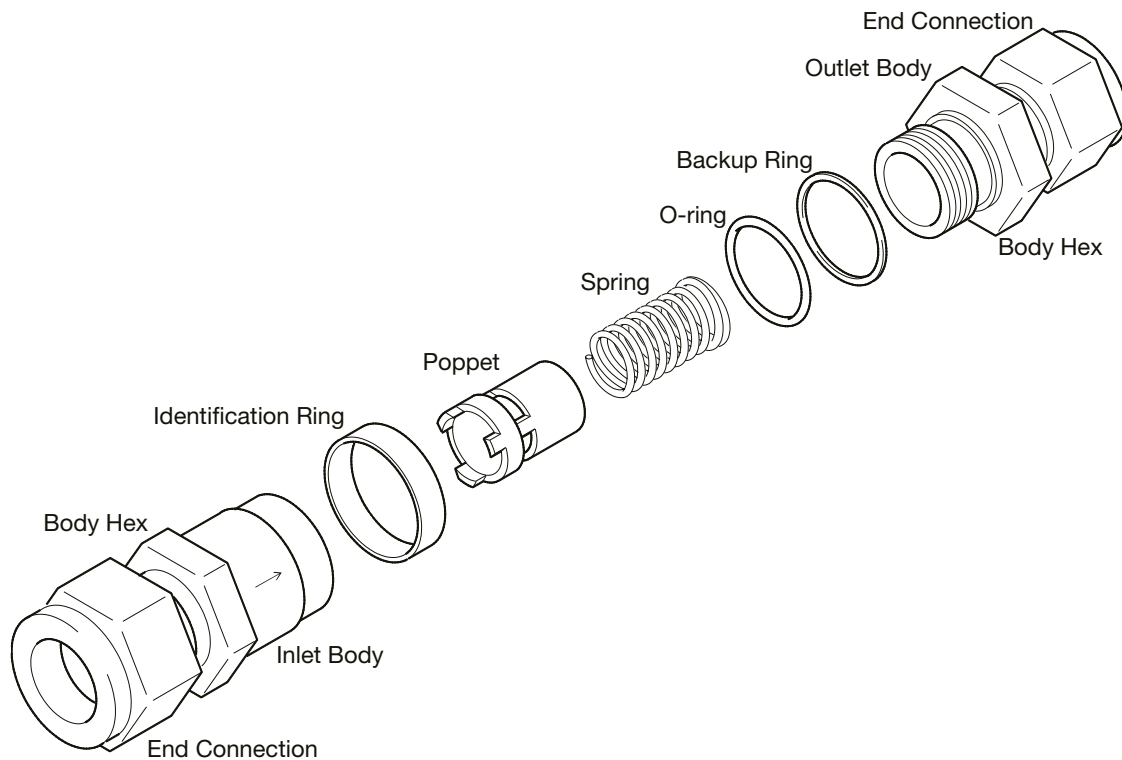
Contents

- Component Identification 1
- Tool Requirements..... 2
- Installation 2
- Testing 2
- Kit Contents..... 3
- Maintenance 3
- Troubleshooting..... 6



Valve is shown with Swagelok® tube fitting end connections. These instructions also apply to XS series valves with pipe ends and with VCR® and VCO® face-seal fitting end connections.

Component Identification



Definitions

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

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.

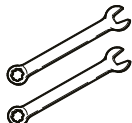



This symbol indicates cautionary information.



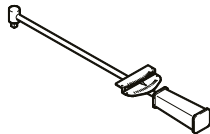
Tool Requirements

Tool size depends on the nominal end connection size and style. See the table below.

| Nominal End Connection Size | Tool Size and Quantity | | |
|-----------------------------|---|-----------------------------|---|
| | Wrenches | | Socket |
| | For Body Hex Qty. (2) | For End Connection Qty. (1) | For Body Hex Qty. (1) |
| 1/8 in. |  | 7/16 in. |  |
| 1/4 in. | | 9/16 in. | |
| 6 mm | | 14 mm | |
| 3/8 in. | 1 in. | 11/16 in. | 1 in. |
| 1/2 in. | | 7/8 in. | |
| 1/2 in. FNPT | 1 1/16 in. | 1 1/16 in. | 1 1/16 in. |
| 1/2 in. BSP / ISO | | 1 1/16 in. | |
| 8 mm | 1 in. | 16 mm | 1 in. |
| 12 mm | | 22 mm | |

Other Tools

Torque wrench rated to 200 in-lb (22.6 N·m).



Caution:
Before servicing any installed valve, you must:

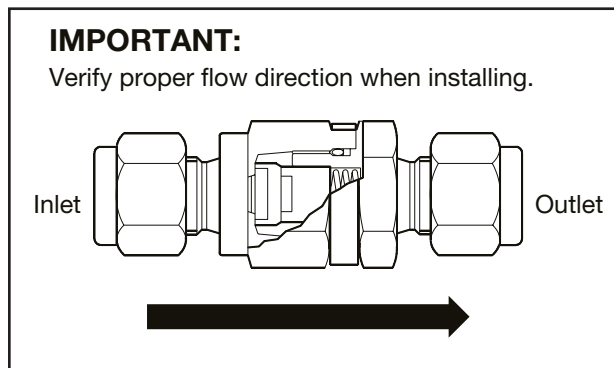
- depressurize the system
- purge the valve.

Installation

1. Refer to the flow direction arrow on the excess flow valve and install the valve in the correct orientation.



The flow direction verification card included with the valve shows the proper flow direction.

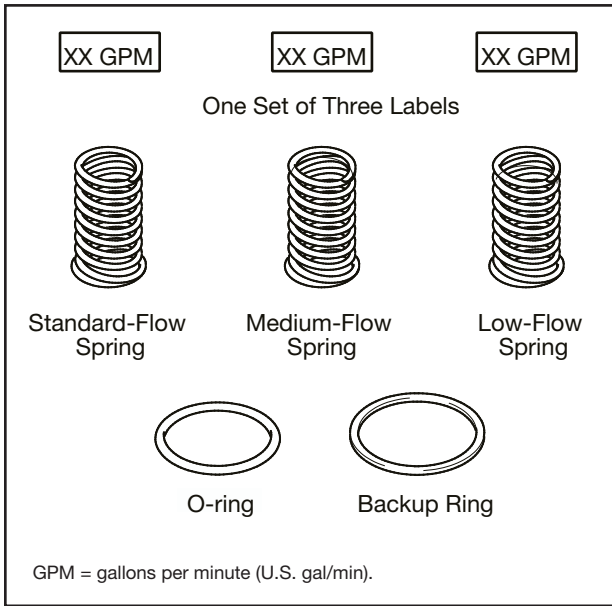


2. For valves with Swagelok tube fittings or VCO or VCR fittings, following the specific fitting assembly instructions.
3. For valves with pipe fittings or straight thread fittings, follow standard industry practices.

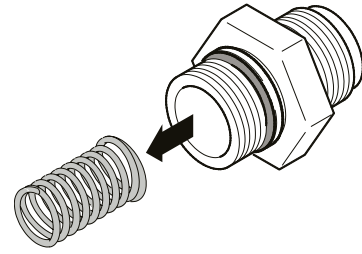
Testing

1. Operate at normal flow rate. Create maximum flow surges. Valve must remain open in both instances.
2. Vent system line to simulate a break. Valve must trip (close).
 - If valve trips closed, proceed to step 3.
 - If valve does not trip closed, replace the spring with one of the lower-flow springs. Repeat the Testing procedure.
3. Perform reset test by venting system to trip valve. Close upstream or downstream valve to allow the valve to reset. Valve must open and allow normal flow.
4. Test the valve to ensure there is no leakage to the atmosphere.

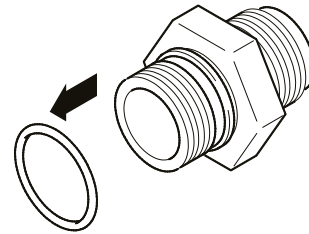
Spring Kit Contents



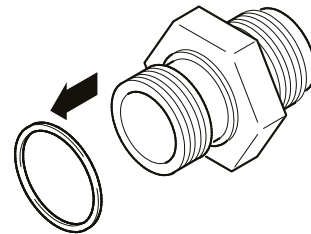
4. Remove the spring.



5. Remove the O-ring.

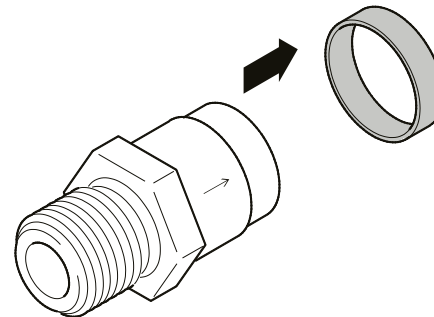


6. Remove the backup ring.



Inlet Body

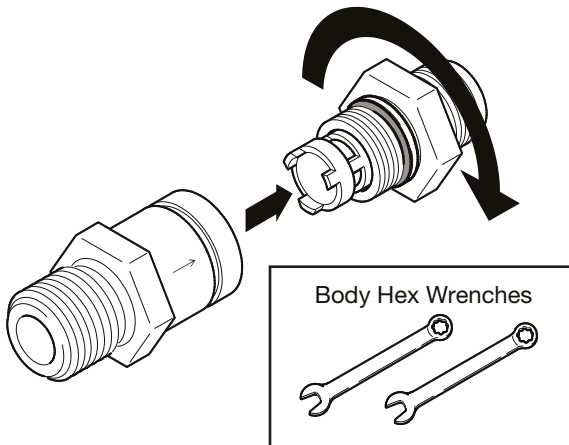
7. Remove the identification ring.



Maintenance

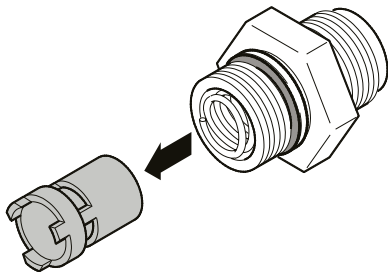
Disassembly

1. Remove the excess flow valve from the system.
2. Separate the inlet body from the outlet body.



Outlet Body

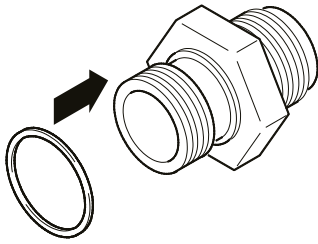
3. Remove the poppet.



Reassembly

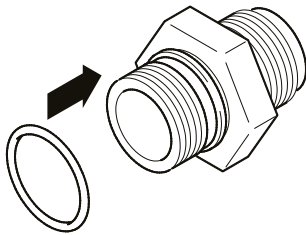
Outlet Body

1. Place the backup ring on the outlet body.



2. Lubricate the O-ring with a compatible lubricant.

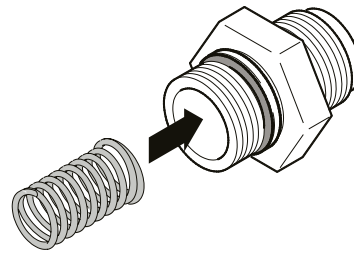
3. Slide the O-ring over the threads against the backup ring.



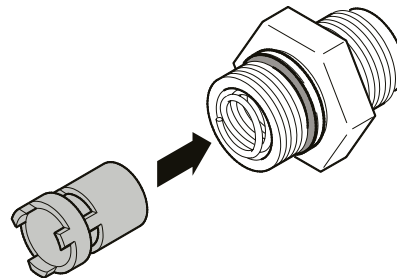
4. Select the preferred replacement spring from the table below.

| Nominal End Connection Size | Spring | | |
|-----------------------------|------------------------------------|-------------|----------|
| | Nominal Flow, U.S. gal/min (L/min) | | |
| | Standard Flow | Medium Flow | Low Flow |
| 1/8 in. | XS4 | XS4-3 | XS4-1 |
| 1/4 in. | 5 (18.9) | 3 (11.3) | 1 (3.7) |
| 6 mm | | | |
| 3/8 in. | XS6 | XS8-6 | XS8-3 |
| 8 mm | 9 (34.0) | 6 (22.7) | 3 (11.3) |
| 1/2 in. | XS8 | XS8-6 | XS8-3 |
| 12 mm | 13 (44.2) | 6 (22.7) | 3 (11.3) |

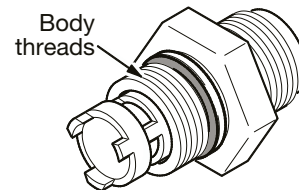
5. Insert the spring, large end first, into the body.



6. Insert the poppet over the spring.

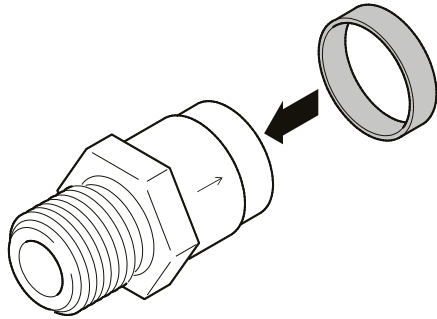


7. Lubricate the body threads with a system-compatible lubricant

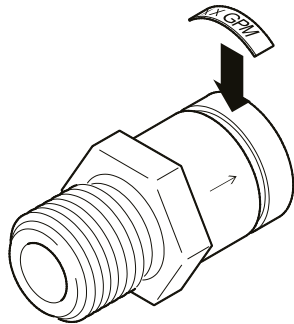


Inlet Body

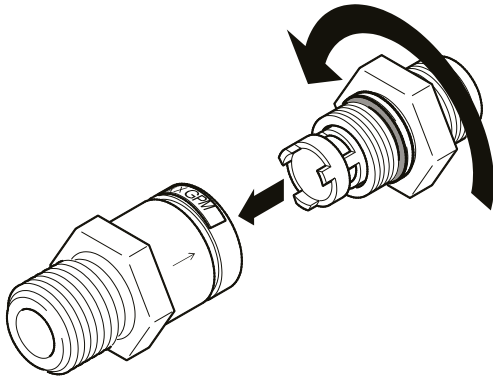
8. Place the identification ring on the body.



9. Select the trip point label that matches the replacement spring. Place the label on the identification ring.



10. Thread the outlet and inlet bodies together.

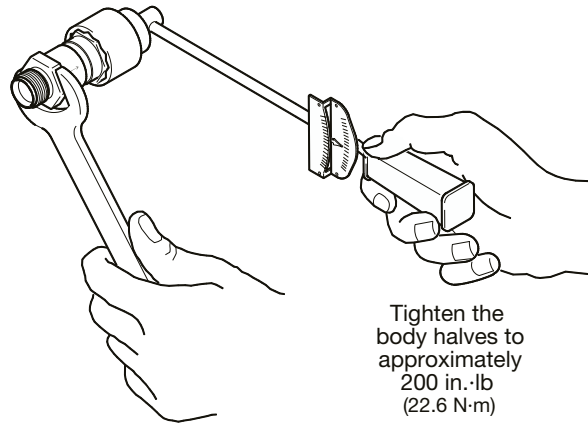


Notice:

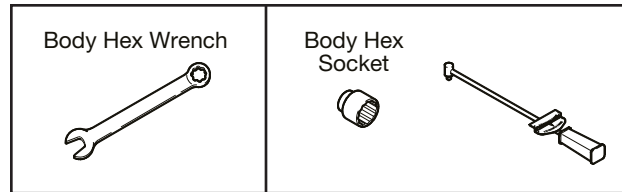
Do not pinch the O-ring and backup ring between the outlet and the inlet bodies during assembly.

The O-ring must fit tightly into the inlet body.

11. Tighten the valve bodies.

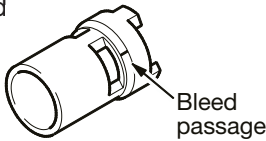


Tighten the body halves to approximately 200 in.-lb (22.6 N·m)



12. See **Installation** and **Testing** sections.

Troubleshooting

| Symptom | Possible Causes | Corrective Action |
|--|--|---|
| Valve trips during normal operation | Flow surges higher than expected. | Evaluate a smaller valve. Evaluate a lower trip range spring option. |
| Valve trips at normal flow after being in service for some time. | Poppet openings are plugged. | Clean or replace poppet. Flush or blow down regularly. Clean on a regular preventive maintenance schedule. |
| Valve does not trip at high flow | Valve is too large. | Evaluate a smaller valve. Evaluate a lower trip range spring option. |
| | Low system pressure. | System pressure must be greater than trip pressure. Evaluate a lower trip range spring option. |
| | Poppet is stuck. | The parts are contaminated. Clean the parts thoroughly. Replace the damaged parts. Service regularly. The parts are corroded. Replace corroded parts. Select a compatible material. |
| Valve does not reset itself | Bleed passage on poppet is plugged  | The parts are contaminated. Clean the parts thoroughly. Replace the damaged parts. Service regularly. The parts are corroded. Replace corroded parts. Select a compatible material. |

Safe Product Selection

When selecting products, 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.

Translations available at www.swagelok.com

VCR, VCO, Swagelok—TM Swagelok Co.
© 2000-2021 Swagelok Company

MS-CRD-0064, RevC, November 2021 CP