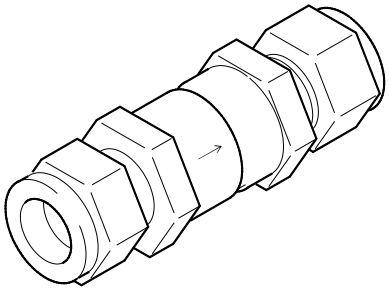
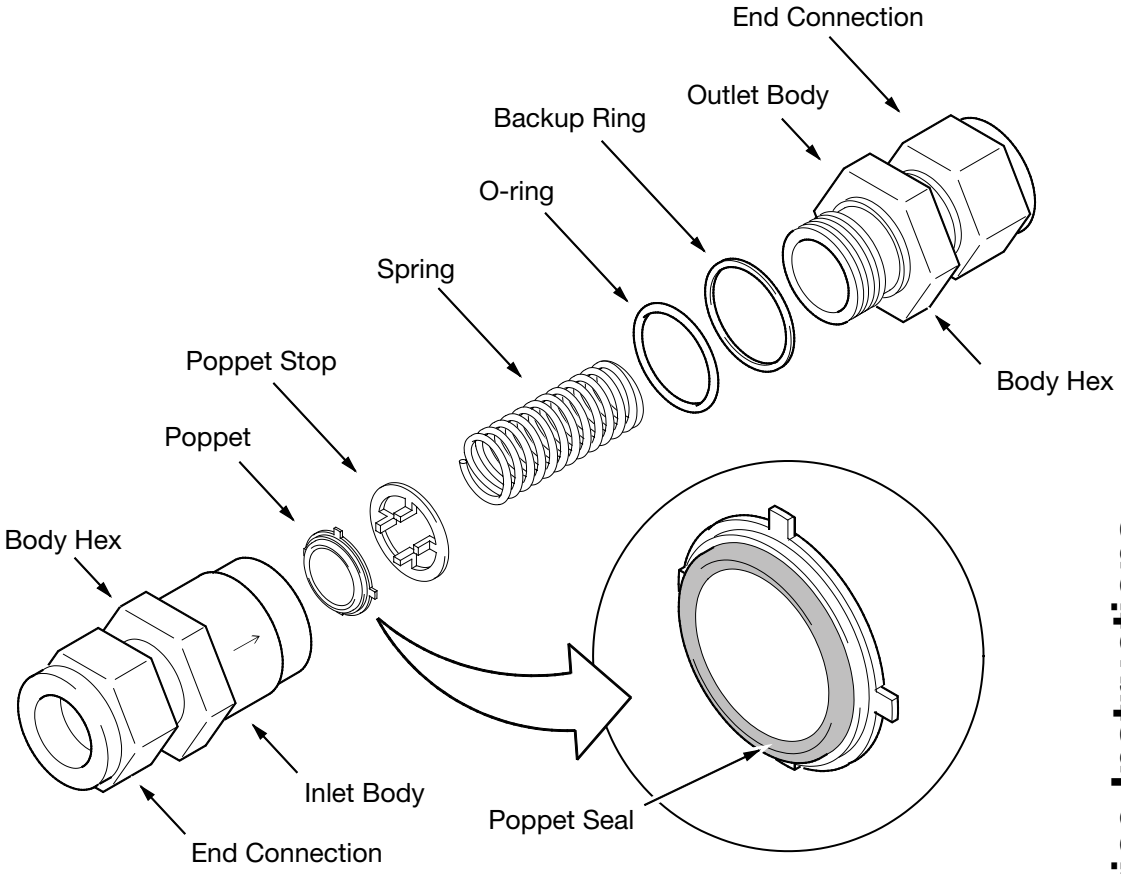
Service Instructions
CH Series Check Valve

Contents



The valve in this procedure is shown with Swagelok® Tube Fitting end connections. These instructions also apply to check valves with pipe ends and check valves with VCR® and VCO® ends.

Component Identification



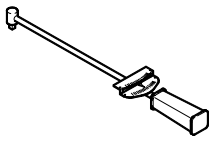
Service Instructions
CH Series Check Valve

Tool Requirements

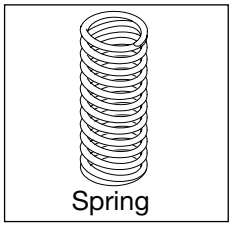
Tool size depends on the nominal end connection size and style. See the chart below.

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.	11/16 in.	7/16 in.	11/16 in.
1/4 in.	11/16 in.	9/16 in.	11/16 in.
6 mm	11/16 in.	14 mm	11/16 in.
3/8 in.	1 in.	11/16 in.	1 in.
1/2 in.	1 in.	7/8 in.	1 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	1 1/16 in	1 1/16 in
8 mm	1 in.	16 mm	1 in.
10 mm	1 in.	19 mm	1 in.
12 mm	1 in.	22 mm	1 in.
3/4 in.	1 5/8 in.	1 1/8 in.	1 5/8 in.
1 in.	1 5/8 in.	1 1/2 in.	1 5/8 in.
22 mm	1 5/8 in.	1 1/2 in.	1 5/8 in.
25 mm	1 5/8 in.	40 mm	1 5/8 in.

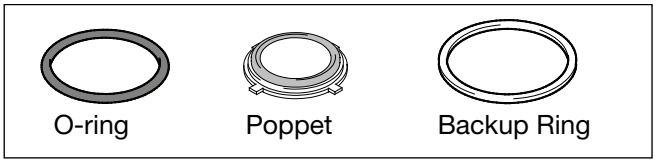
Torque wrench to read 200 in. · lb (22 N · m).



Spring Kit Contents

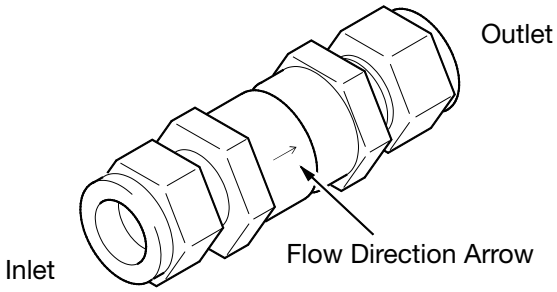


Seal Kit Contents



Installation

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



2. Follow the fitting assembly instructions for Swagelok, VCR, and VCO fittings.
3. When installing a valve with pipe fittings or straight thread fittings, follow standard industry practices.

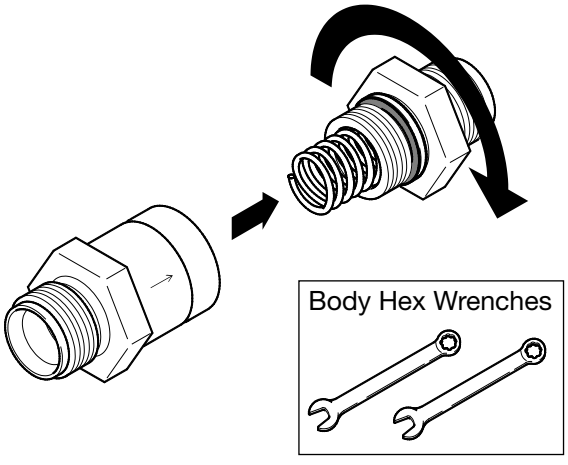
Testing

1. Test the valve to ensure there is no leakage to the atmosphere.
2. Check for correct cracking pressure.
3. Test the valve to ensure it stops reverse flow.

Maintenance

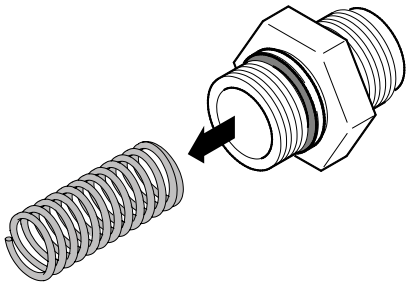
Disassembly

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

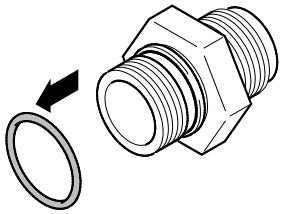


Outlet Body

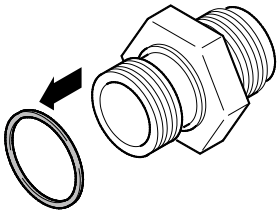
3. Remove the spring.



4. Remove the O-ring.

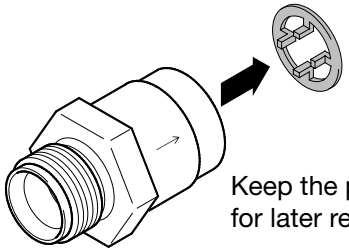


5. Remove the backup ring.

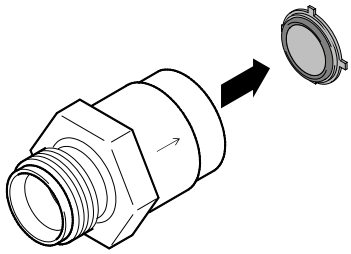


Inlet Body

6. Remove the poppet stop.



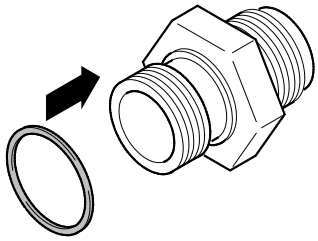
7. Remove the poppet.



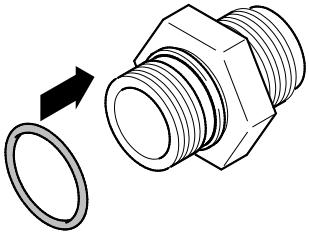
Reassembly

Outlet Body

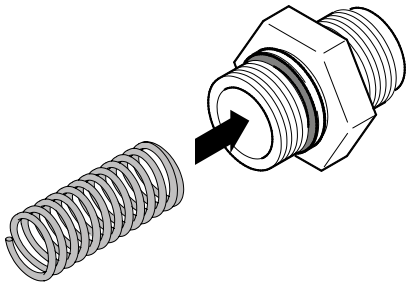
1. Place the backup ring on the outlet body.



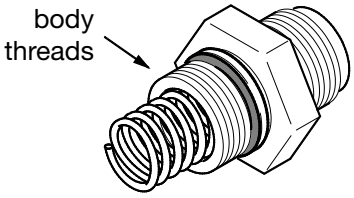
2. Lubricate the O-ring with a compatible lubricant.
3. Slide the O-ring over the threads against the backup ring.



4. Insert the spring into the body.

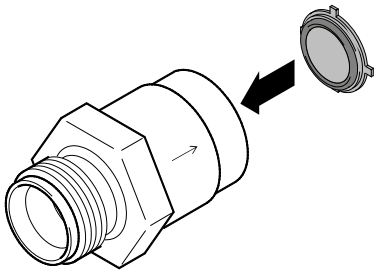


5. Lubricate the body threads with a system-compatible lubricant.

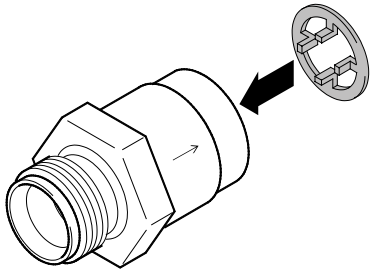


Inlet Body

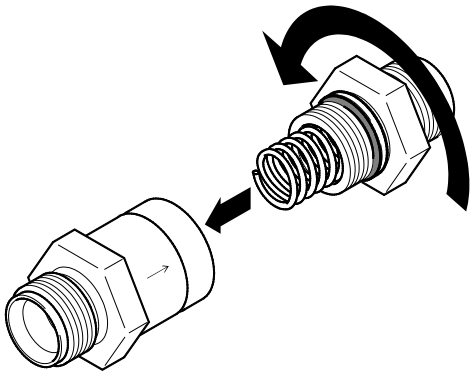
6. Insert the poppet, bonded side first, into the body.



7. Insert the poppet stop, prongs first, into the body.



8. Thread the outlet and inlet bodies together.

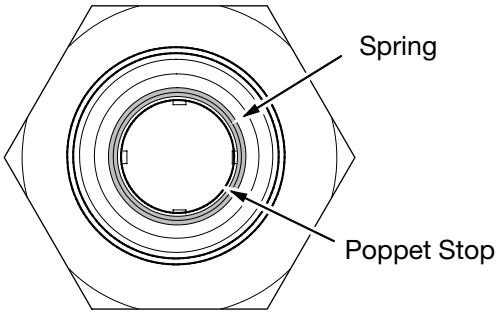


⚠ Note:

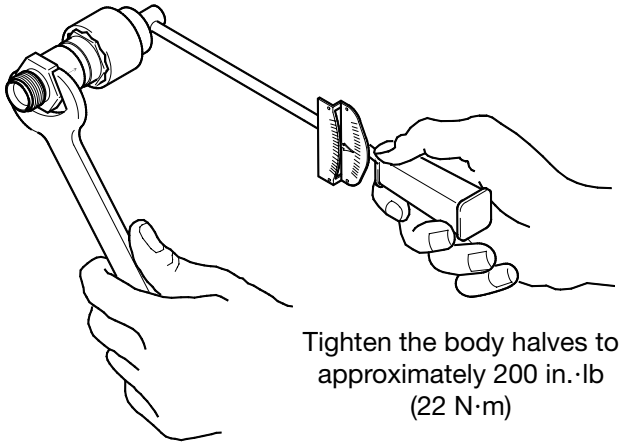
Do not pinch the O-ring and backup ring between the outlet and inlet bodies during assembly

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

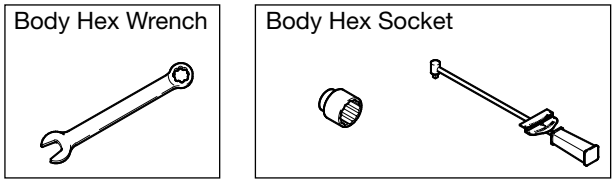
9. Look into the valve outlet port to verify that the spring is aligned in the center of the poppet stop.



10. Tighten the valve bodies.



Tighten the body halves to approximately 200 in.·lb (22 N·m)

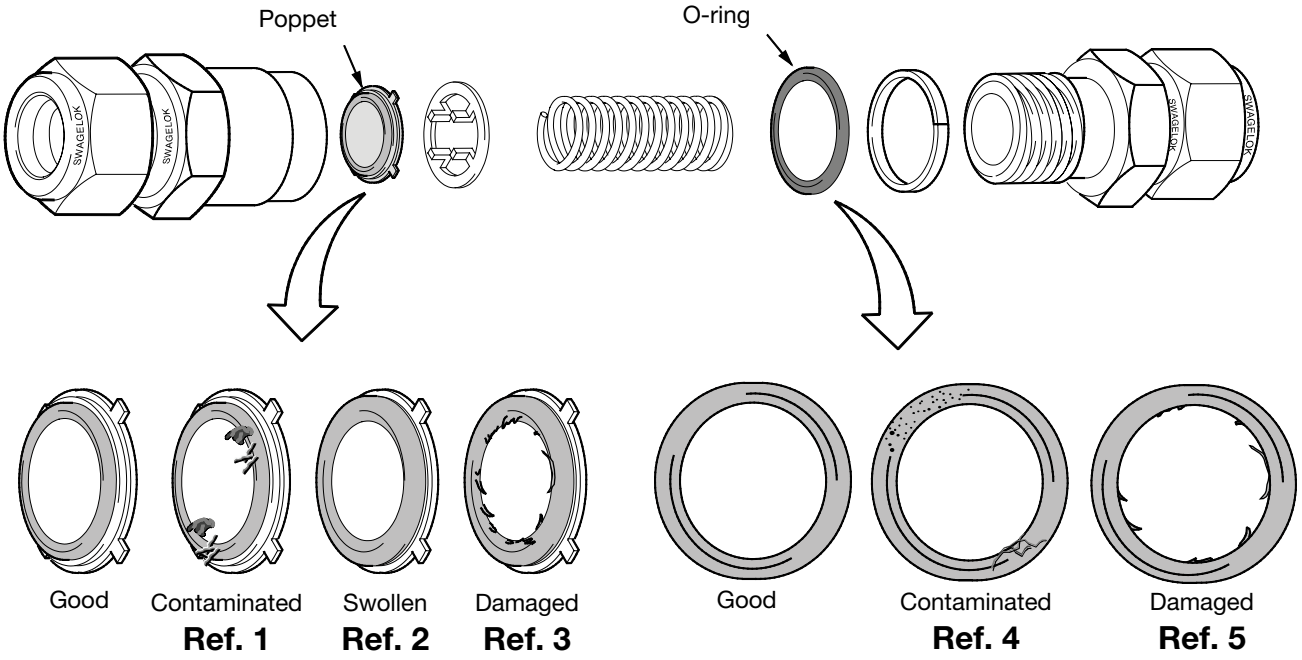


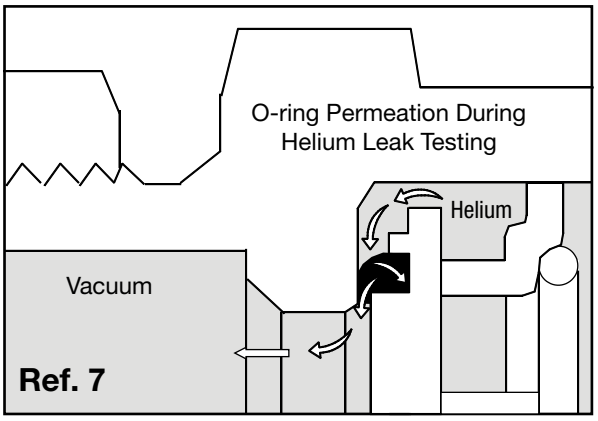
11. Refer to the Installation and Testing sections.

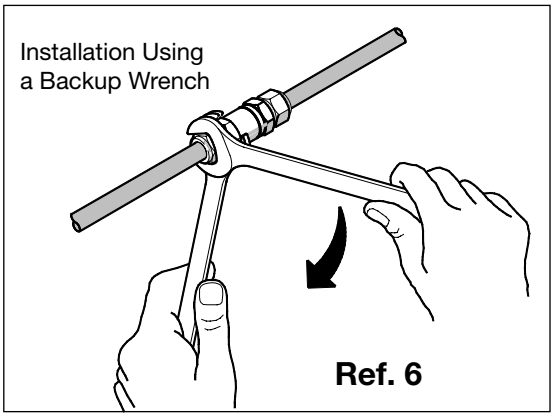
Troubleshooting

Symptom	Possible Causes	Reference to Pg 6	Corrective Action
Seal leakage	Poppet elastomer was chemically attacked	2	Replace poppet with a material that is compatible with the system fluid.
	Poppet elastomer was damaged	3	Replace poppet.
	Poppet contamination	1	Clean poppet and valve inside surfaces.
	Fluid deposits buildup on seat		Consider using two check valves in series.
	Upstream pressure is greater than the cracking pressure (when valve is not expected to be open)		Consider using a spring with a higher cracking pressure.
	Age or wear		Service during preventive maintenance. Clean and replace internal components as needed.
Reverse flow	Downstream pressure is less than the reseal pressure - when back pressure is required for sealing (lower cracking pressure springs) - and upstream pressure has dropped to 0.		Consider using a spring with a higher cracking pressure.
	Spring not centered on the poppet stop		Install spring per service instructions.
Leakage to the atmosphere	Incorrect reassembly of valve		Reassemble valve according to service instructions.
	Incorrect installation of valve	6	Use a backup wrench.
	End connection leakage		Inspet end connection for damage, replace if damaged.
			Reinstall the fitting to the valve end connection.
	Contamination on body O-ring	4	Clean O-ring and reassemble valve per service instructions.
	Damaged O-ring	5	Replace O-ring. Reassemble valve according to service instructions.
Helium leak test leakage	Check valve not compatible with helium leak test specifications	7	Consider using a positive shutoff valve.
Valve chatter or noise at operating pressures close to the cracking pressure	Cracking pressure of spring is too high.		Consider using a spring with a lower cracking pressure.
	Valve size exceeds system requirements		Consider using a smaller valve. Consider adding a flow restriction downstream of the valve.
Valve chatter or noise at high flow rates	Poppet and spring unstable in the flow stream		Consider using a spring with a higher or lower cracking pressure. Consider using a larger or smaller valve.
Fluid mixing	Check valve used to separate incompatible fluids		Consider using an appropriate positive shutoff valve. Check valves cannot isolate incompatible fluids.

If the symptom persists, contact your independent Swagelok representative for assistance.







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.