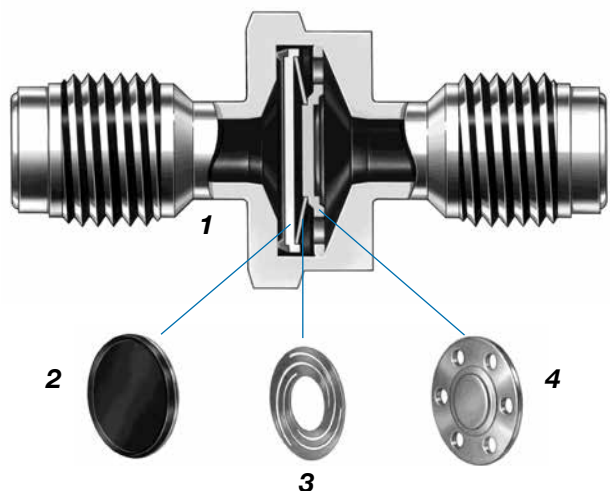


All-Welded Check Valves

CW Series

Features

- All-welded design provides reliable containment of system fluid.
- Forward flow starts at less than 2 psig (0.14 bar) pressure differential.
- Valve closes with less than 2 psig (0.14 bar) back pressure.
- 316L SS body offers enhanced material purity.
- Choice of standard or high-purity wetted surface finishes.
- Processing in accordance with Swagelok® *Ultrapure Process Specification (SC-01)* catalog, MS-06-61, is available.
- Tube butt weld, female VCR® fitting, integral male VCR fitting, rotatable male VCR fitting, and Swagelok tube fitting end connections are available.



Materials of Construction

Component	Material Grade/ASTM Specification
1 Body	316L SS/A479 ^①
2 Poppet	Fluorocarbon FKM [®] -bonded ^③ 316 SS/A479
3 Guidance wafer	Alloy X-750/B637
4 Poppet stop	316L SS/A240

All components are wetted.

- ① Bodies with tube butt weld ends are 316L VAR SS/SEMI F20 High-Purity, 20 % minimum elongation allowed.
- ② Aflas®, Buna N, ethylene propylene, and neoprene also available; see **Options**.
- ③ Material Safety Data Sheet for bonding agent available on request.

⚠ **Check valves are designed for directional flow control only. Swagelok check valves should never be used as code safety relief devices.**



Technical Data

Cracking Pressure psi (bar)	Maximum Back Pressure psig (bar)	Maximum Pressure Drop psi (bar)	Minimum Burst Pressure at 70°F (20°C) psig (bar)	Flow Coefficients (C _v)
Less than 2 (0.14)	Full pressure rating	145 (10.0)	12 000 (826)	0.55 (1/4 in., 6 mm Swagelok tube fitting and tube butt weld ends) 0.70 (1/4 and 1/2 in. VCR fittings, 3/8 and 1/2 in. tube butt weld ends)

⚠ For valves not actuated for a period of time, initial cracking pressure may be higher than the set cracking pressure.

Pressure-Temperature Ratings

Material Name	316L SS
Temperature °F (°C)	Working Pressure psig (bar)
-10 (-23) to 100 (37)	3000 (206)
200 (93)	2530 (174)
300 (148)	2270 (156)
400 (204)	2065 (142)

Flow Data at 70°F (20°C)

Pressure Drop psi (bar)	Air Flow std ft ³ /min (std L/min)	
	0.55 C _v	0.70 C _v
10 (0.68)	6.2 (170)	7.9 (220)
50 (3.4)	16 (450)	21 (590)
100 (6.8)	29 (820)	37 (1040)

Process Specifications

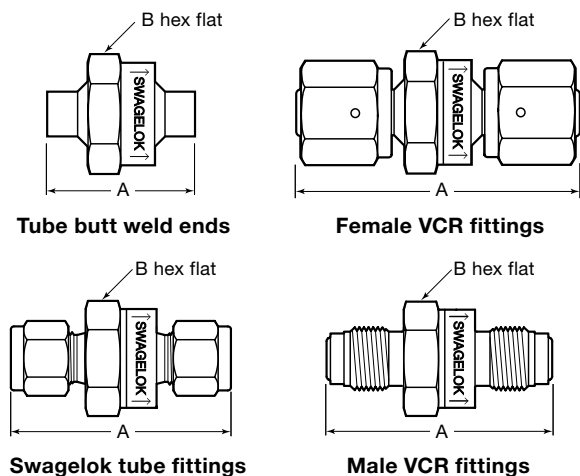
See Swagelok process specifications for details on processes, process controls, and process verification.

Cleaning	Assembly and Packaging	Process Designator	Process Specification	Wetted Surface Roughness (R_a)
Special cleaning with non-ozone-depleting chemicals	Performed in specially cleaned areas; valves are individually bagged	None	<i>Special Cleaning and Packaging (SC-11)</i>	20 $\mu\text{in.}$ (0.51 μm) average, machine finished
Ultrahigh-purity cleaning with a continuously monitored, deionized water, ultrasonic cleaning system	Performed in ISO Class 4 work areas; valves are double bagged and vacuum sealed in cleanroom bags	P	<i>Ultrahigh-Purity Process Specification (SC-01)</i>	8 $\mu\text{in.}$ (0.20 μm) average, machine finished and electropolished

Ordering Information and Dimensions

Select an ordering number.

Dimensions are for reference only and are subject to change.



End Connections		Ordering Number	Dimensions, in. (mm)	
Inlet/Outlet	Size		A	B
Tube butt welds	1/4 in.	6LV-CW4BW4	1.24 (31.5)	7/8
	3/8 in.	6LV-CW4BW6		
	1/2 in.	6LV-CW4BW8		
	6 mm	6LV-CW4BW6M		
Female VCR fittings	1/4 in.	6L-CW4FR4	2.43 (61.7)	7/8
	1/2 in.	6L-CW4FR8		
Integral male VCR fittings	1/4 in.	6L-CW4VR4	1.80 (45.7)	1
	1/2 in.	6L-CW4VR8	2.06 (52.3)	
Female/integral male VCR fitting	1/4 in.	6L-CW4FR4-VR4 ^①	2.12 (53.8)	7/8
Rotatable male VCR fittings	1/4 in.	6L-CW4MR4	2.87 (72.9)	
Swagelok tube fittings	1/4 in.	6L-CW4S4	1.96 (49.8)	
	6 mm	6L-CW4S6M		

Dimensions shown with Swagelok tube fitting nuts finger-tight.

① To order the female/integral male VCR fitting in accordance with Swagelok *Ultrahigh-Purity Process Specification (SC-01)* catalog, (MS-06-61), use the following ordering number.
Example: 6L-CW4FR4VR4-P

⚠ 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.

Testing

Swagelok CW series valves are factory tested with nitrogen. Seats have a maximum allowable leak rate of 0.9 std cm³/min nitrogen within 10 seconds.

Options

Seal Materials

Fluorocarbon FKM is standard. For an optional seal material, add a designator to the valve ordering number.

Seal Material	Designator
Aflas	-AF
Buna N	-BU
Ethylene propylene	-EP
Neoprene	-NE

Example: 6LV-CW4BW4-AF

Ultrahigh-Purity Process Specification (SC-01)

Swagelok CW series valves are processed in accordance with Swagelok *Special Cleaning and Packaging (SC-11)* catalog, MS-06-63, to ensure compliance with product cleanliness requirements stated in ASTM G93 Level C.

To order optional cleaning and packaging in accordance with Swagelok *Ultrahigh-Purity Process Specification (SC-01)* catalog, MS-06-61, for valves with VCR or tube butt weld end connections, add -P to the valve ordering number.

Example: 6LV-CW4BW4-P

Oxygen Service Hazards

For more information about hazards and risks of oxygen-enriched systems, refer to *Oxygen System Safety* technical report, MS-06-13.

Introduction

Since 1947, Swagelok has designed, developed, and manufactured high-quality, general-purpose and specialty fluid system products to meet the evolving needs of global industries. Our focus is on understanding our customers' needs, finding timely solutions, and adding value with our products and services.

We are pleased to provide this global edition of the book-bound *Swagelok Product Catalog*, which compiles more than 100 separate product catalogs, technical bulletins, and reference documents into one convenient, easy-to-use volume. Each product catalog is up to date at the time of printing, with its revision number shown on the last page of the individual catalog. Subsequent revisions will supersede the printed version and will be posted on the Swagelok website and in the Swagelok electronic Desktop Technical Reference (eDTR) tool.

For more information, visit your Swagelok website or contact your authorized Swagelok sales and service representative.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.

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.

Not all trademarks listed below apply to this catalog.
Swagelok, Ferrule-Pak, Goop, Hinging-Collecting, IGC, Kenmac, Micro-Fit, Nupro, Snoop, Sno-Trik, SWAK, VCO, VCR, Ultra-Torr, Whitey—TM Swagelok Company
15-7 PH—TM AK Steel Corp.
AccuTrak, Beacon, Westlock—TM Tyco International Services
Aflas—TM Asahi Glass Co., Ltd.
ASCO, El-O-Matic—TM Emerson
AutoCAD—TM Autodesk, Inc.
CSA—TM Canadian Standards Association
Crastin, DuPont, Kalrez, Krytox, Teflon, Viton—TM E.I. duPont Nemours and Company
DeviceNet—TM ODVA
Dyneon, Elgiloy, TFM—TM Dyneon
Elgiloy—TM Elgiloy Specialty Metals
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Grafoil—TM GrafTech International Holdings, Inc.
Honeywell, MICRO SWITCH—TM Honeywell
MAC—TM MAC Valves
Microsoft, Windows—TM Microsoft Corp.
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PH 15-7 Mo, 17-7 PH—TM AK Steel Corp
picofast—Hans Turck KG
Pillar—TM Nippon Pillar Packing Company, Ltd.
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