

Hydrogen FK Check Valve



Designed for use in hydrogen refueling station applications, this check valve delivers unidirectional flow and highly reliable shut-off of small-molecule gases. When the differential drops below the cracking pressure, the check valve prevents reverse flow.

Note: Not for use as a relief valve.

Features

- Maximum allowable working pressure to 1050 bar (15 229 psig)
- Passed third-party hydrogen testing per ISO-19880-3
- High flow coefficient: up to 4.5 C_v
- Temperature range: -40° to 85°C (-40° to 185°F)
- Body material construction: 316 SS > 12% Ni
- Available with 1/4, 3/8, 1/2, 9/16, 3/4 in. Swagelok® FK series medium-pressure tube fitting end connection
- All-metal body seal for leak-tight integrity
- Patented seat design and spring isolated from flow path to minimize damage and increase service life
- Fixed cracking pressure: < 2 bar (29 psig)

Temperature		Elevated Temperature Factors ¹	
°F	°C	Heavy-Wall Annealed 316 SS Tubing	Cold-Drawn 1/8 Hard 316 SS Tubing
185	85	1.0	1.0

¹ Elevated temperature factor = suggested allowable working pressure at elevated temperature/suggested allowable working pressure at room temperature.





Installation

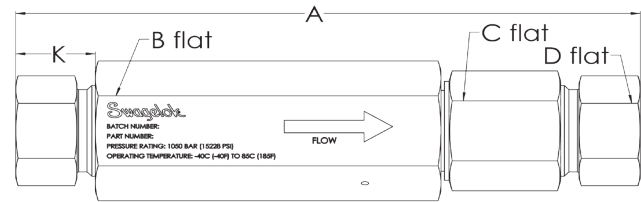
Orientate as required using the flow-direction arrow on the valve body.

Cleaning

Swagelok Standard Cleaning and Packaging, SC-10, MS-06-62

Materials of Construction

Component	Material/ASTM Specification
Body	316 SS/A276 or A479
Poppet	316 SS/A276 or A479
O-Ring	FKM Material
Spring	316 SS/A313
Belleville	316 SS/A182
Spring Guide	316 SS/A276 or A479
Bushing	Aluminum Bronze - UNS C6300
Gasket	Silver Plated - 316 SS/A240 or A480
Wetted Lubricant	Fluorinated - PTFE-based



Soft-Seal Poppet Check Valve and Dimensions

	End Connection ¹	Ordering Number	Cv	Dimensions, mm (in.)				
				A	B	C	D	K
CVT6	4FK	SS-CVT6FK4-H2	0.30	103.4mm (4.07")	25.4mm (1.0")	19.10mm (1.50")	14.3mm (0.56")	12.1mm (1.02")
	6FK	SS-CVT6FK6-H2	0.95	117.7mm (4.63")	25.4mm (1.0")	19.10mm (1.50")	17.5mm (0.69")	15.6mm (0.61")
CVT9	8FK	SS-CVT9FK8-H2	2.0	147.4mm (5.80")	38.10mm (1.5")	31.75mm (1.25")	22.23mm (0.88")	17.7mm (0.70")
	9FK	SS-CVT9FK9-H2	2.1	157.7mm (6.21")	38.10mm (1.5")	31.75mm (1.25")	27.0mm (1.06")	18.8mm (0.74")
CVT12	12FK	SS-CVT12FK12-H2	4.5	203.6mm (8.01")	44.45mm (1.75")	38.10mm (1.50")	34.9mm (1.38")	26.0mm (1.02")

¹ Non-wetted molybdenum disulfide-based lubricant

Cone and thread tubing can be used with the FK connection in these sizes without the need for an adapter

Production Testing

- Fixed cracking pressure: < 2 bar (29 psig)
- Body seal: 1.25 × pressure rating (< 10 cm³/hr., H₂ equivalent)
- Seat seal: 1 × pressure rating (< 10 cm³/hr., H₂ equivalent)

Performance Testing

- Passed third-party hydrogen testing per ISO-19880-3
 - 10 cm³/hr H₂ equivalent shell leak tightness
 - 102 000 cycles, full pressure drop with H₂ @ 1050 bar (15 229 psig)
- Proof pressure test (liquid) 1.5 × pressure rating, Hydrostatic strength test: 4 × pressure rating

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.

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

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