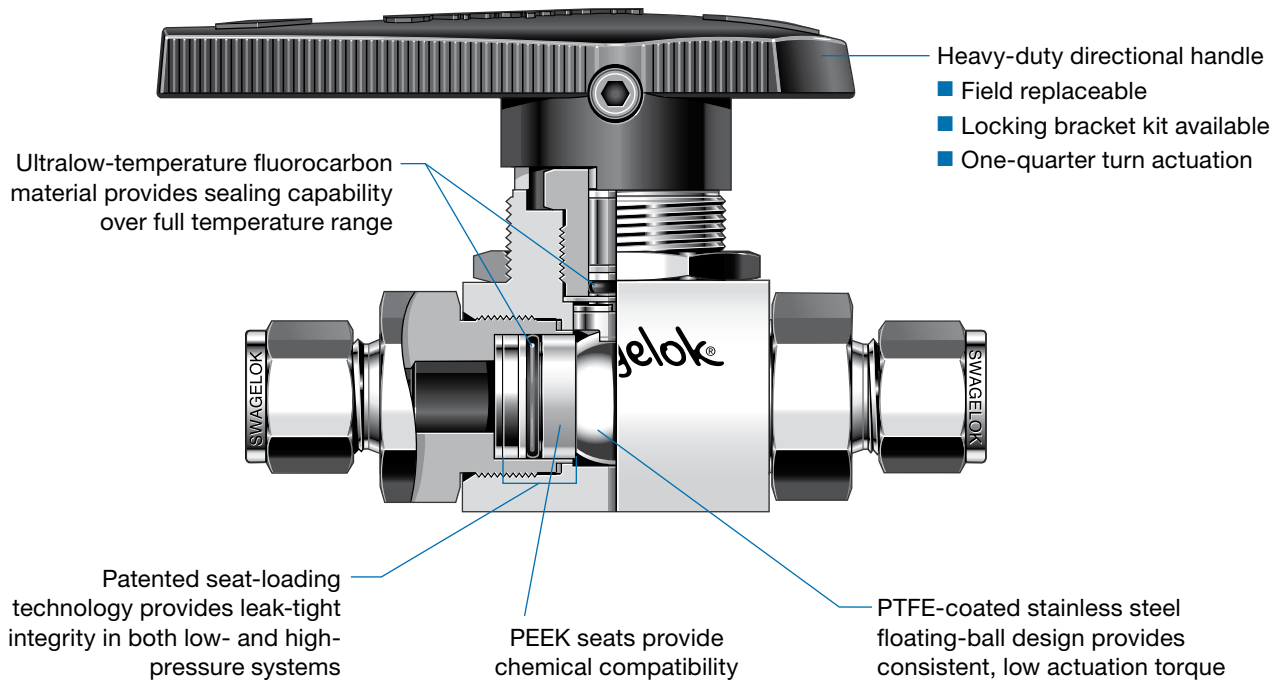


Swagelok Alternative Fuel Service (AFS) Ball Valves



Features

- High flow— C_v from 4.0 to 13.8
- All wetted components are compatible with hydrogen and compressed natural gas (CNG)
- Maximum pressure rating: 6000 psig (413 bar)
- Temperature rating: -40 to 250°F (-40 to 121°C)
- Low operating torque
- No packing adjustment required
- Field repairable with seal kit

Pressure-Temperature Ratings

End Connections	Swagelok Tube Fittings			Female Pipe	
	3/8, 1/2 in., 12 mm	3/4 in., 16 mm	1 in.	3/8, 1/2 in.	3/4 in.
Temperature, °F (°C)	Working Pressure, psig (bar)				
-40 (-40) to 200 (93)	6000 (413)	5800 (400)	4700 (323)	6000 (413)	5532 (381)
250 (121)	6000 (413)	5742 (395)	4653 (320)	6000 (413)	5532 (381)

Ratings are based on ASME Code for Pressure Piping B31.3, Process Piping. To determine working pressure ratings in accordance with ASME B31.1, Power Piping, for 316 stainless steel, multiply pressure by:

- 0.86 for temperatures from 100 to 200°F (37 to 93°C).
- 0.82 for temperatures up to 250°F (121°C).

Important Information About Swagelok AFS Ball Valves

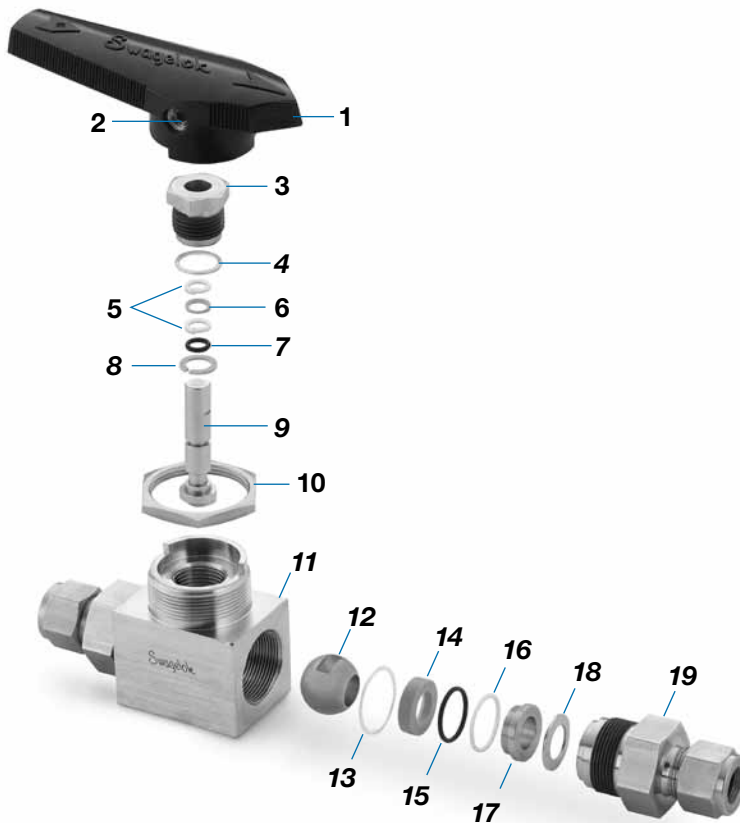
- ⚠ Swagelok AFS ball valves are designed to be used in the fully open or fully closed position.
- ⚠ Valves that have not been cycled for a period of time may have a higher initial actuation torque.

Certifications

- ANSI / AGA NGV 3.1 / CGA 12.3-M95,
Classification: Manual valve
Pressure: 4500 psig (310 bar)
Temperature: -40 to 250°F (-40 to 121°C)
- ANSI / IAS NGV 4.6 / CSA 12.56-M99,
Classification: Class A
Pressure: 4500 psig (310 bar)
Temperature: -40 to 185°F (-40 to 85°C)
- ECE R110 Manual Service Valve Type Approval
Classification: Class 0
Pressure: 3770 psig (260 bar)
Temperature: -40 to 248°F (-40 to 120°C)
- Certifications do not include attachments to the valve, such as actuators or a different handle mechanism.

Materials of Construction

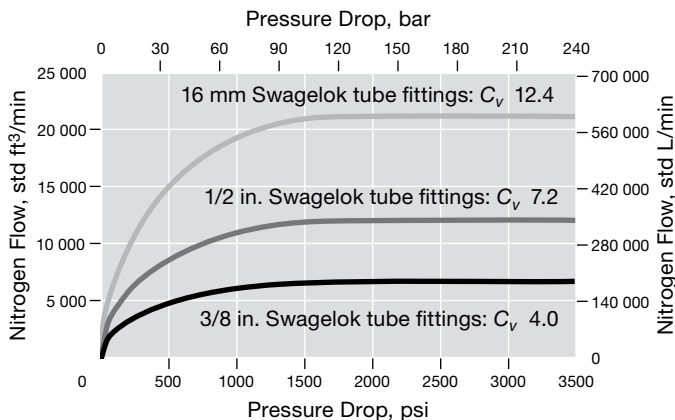
Component	Material Grade/ ASTM Specification
1 Handle	Nylon with brass insert
2 Set screw	S17400 SS
3 Packing bolt	316 SS / A479
4 Packing bolt gasket	Silver-plated 316 SS / A240
5 Guide ring (2)	PTFE / D1710
6 Stem backup ring	PEEK
7 Stem O-ring	Ultralow-temperature fluorocarbon / D2000
8 Thrust washer	PEEK
9 Stem	316 SS / A276
10 Panel nut	316 SS / B783
11 Body	316 SS / A479
12 Ball	PTFE-coated 316 SS / A276
13 End screw gasket (2)	Silver-plated 316 SS / A240
14 Seat (2)	PEEK
15 Seat O-ring (2)	Ultralow-temperature fluorocarbon / D2000
16 Seat backup ring (2)	PTFE / D1710
17 Seat gland (2)	316 SS / A479
18 Seat spring (2)	316 SS / A240 or A666
19 End screw (2)	316 SS / A479
Lubricant	PTFE-based



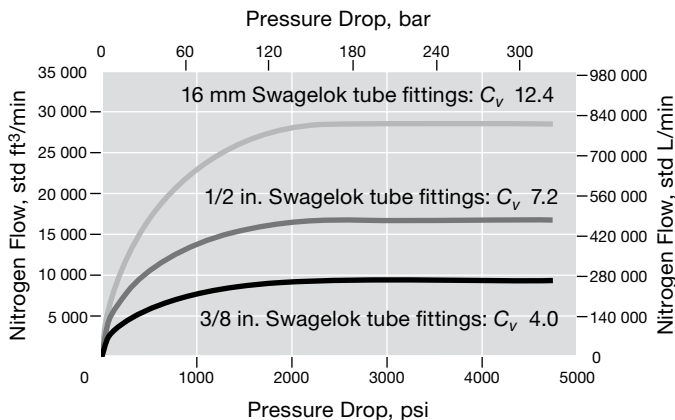
Wetted components listed in *italics*.

Flow Data at 70°F (20°C)

Inlet Pressure 3600 psig (248 bar)



Inlet Pressure 5000 psig (344 bar)



Testing

Every Swagelok AFS ball valve is factory tested in both directions with nitrogen at 1000 psig (69 bar). Seats have a maximum allowable leak rate of 0.1 std cm³/min. Shell testing is performed to a requirement of no detectable leakage with a liquid leak detector.

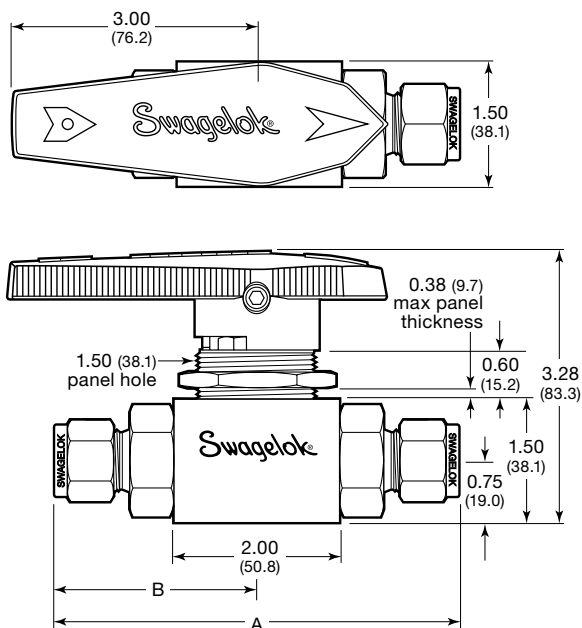
Cleaning and Packaging

All Swagelok AFS ball valves are cleaned and packaged in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62.

Ordering Information and Dimensions

Select an ordering number.

Dimensions, in inches (millimeters), are for reference only and are subject to change.



End Connections ^①		Ordering Number	C _v	Orifice in. (mm)	Dimensions in. (mm)	
Type	Size				A	B
Fractional Swagelok tube fitting	3/8 in.	SS-AFSS6	4.0	0.281 (7.1)	4.57 (116)	2.29 (58.2)
	1/2 in.	SS-AFSS8	7.2	0.406 (10.3)	4.80 (122)	2.40 (61.0)
	3/4 in.	SS-AFSS12	7.1	0.472 (12.0)	4.80 (122)	2.40 (61.0)
	1 in.	SS-AFSS16 ^②	6.5	0.472 (12.0)	5.10 (130)	2.55 (64.8)
Metric Swagelok tube fitting	12 mm	SS-AFSS12MM	5.2	0.406 (10.3)	4.80 (122)	2.20 (55.9)
	16 mm	SS-AFSS16MM	12.4	0.472 (12.0)	4.80 (122)	2.40 (61.0)
Female NPT	3/8 in.	SS-AFSF6	11.0	0.472 (12.0)	4.00 (102)	2.00 (50.8)
	1/2 in.	SS-AFSF8	13.8		4.00 (102)	2.00 (50.8)
	3/4 in.	SS-AFSF12 ^②	7.8	4.12 (105)	2.06 (52.3)	
Female ISO tapered ^③	1/2 in.	SS-AFSF8RT	13.8	0.472 (12.0)	4.00 (102)	2.00 (50.8)

Dimensions shown with Swagelok tube fitting nuts finger-tight.

① Valves can be ordered with two different end connections. Contact your authorized Swagelok sales and service representative.

② Not available with AGA, IAS, and ECE R110 certifications; not recommended for panel mounting; not available with pneumatic actuator.

③ Thread type ISO/BSP (tapered), based on DIN 3852, Swagelok RT fittings. See specifications ISO 7/1, BS EN ISO 10226-1, and JIS B0203.

Options and Accessories

Handle Options

Black nylon directional handles are standard.

- To order a directional handle of another color, add a handle color designator to the valve ordering number.

Handle Color	Designator
Blue	-BL
Green	-GR
Orange	-OG
Red	-RD
Yellow	-YW

Example: SS-AFSS6-RD

- To order a nylon oval handle, add **-K** to the valve ordering number.



Example: SS-AFSS6-K

- To order a black aluminum directional handle, add **-AHD** to the valve ordering number.

Example: SS-AFSS6-AHD

Handle Kits

The replacement handle kit includes a handle with set screw and instructions.

- Black nylon directional handle kit ordering number: **NY-5K-AFS-BK**

To order a nylon directional handle kit in a color other than black, replace **-BK** in the kit ordering number with a handle color designator.

Example: NY-5K-AFS-RD

- Nylon oval handle kit ordering number: **NY-5K-AFSK-BK**
- Black aluminum directional handle kit ordering number: **A-5K-AFS-BK**

Stem Seal Material Option

Ultralow-temperature fluorocarbon FKM is standard. Ultralow-temperature nitrile (Buna C) is available as an option to enhance valve cycle life. Valves with ultralow-temperature nitrile have a temperature rating of -40 to 200°F (-40 to 93°C) and are not certified to AGA, IAS, or ECE R110.

To order, add **-BCS** to the valve ordering number.

Example: SS-AFSS6-BCS

Locking Brackets



- Designed to lock valve in the open and closed position
- Accommodates shackle diameters up to 0.344 in. (8.7 mm)
- To order the locking bracket factory-assembled on a valve, add **-LH** to the valve ordering number.

Example: SS-AFSS6-LH

To order the locking bracket for field assembly, use kit ordering number: **SS-51K-AFS-LH**