

PFA Needle Valves

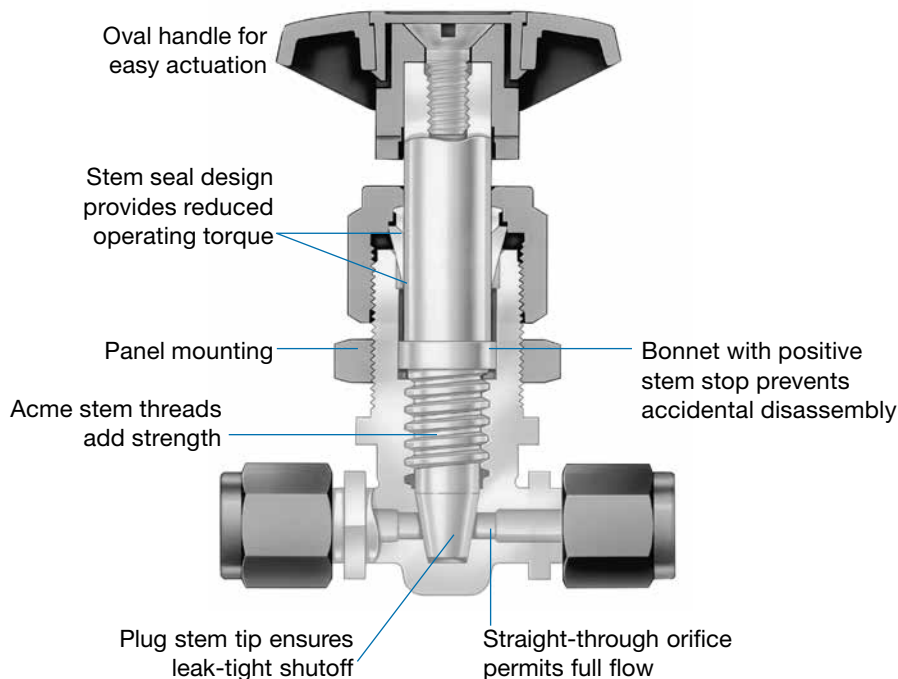


4RP Series

- High-purity PFA material
- Working pressures up to 180 psig (12.4 bar)
- Temperatures up to 300°F (148°C)
- 1/4, 3/8, and 1/2 in. Swagelok® PFA tube fitting end connections

Features

- Straight-through orifice for full flow
- Plug stem tip for flow regulation
- Low-torque, leak-resistant stem seal
- High-purity PFA material with low extractables for chemical resistance
- Swagelok PFA tube fitting end connections for consistent performance



Technical Data

Swagelok Tube Fitting End Connection	Ordering Number	Orifice in. (mm)	C _v
1/4 in.	PFA-4RPS4	0.156 (4.0)	0.38
3/8 in.	PFA-4RPS6	0.250 (6.4)	1.39
1/2 in.	PFA-4RPS8		

Pressure-Temperature Ratings

End Connection	1/4 in., 3/8 in.	1/2 in.
Temperature, °F (°C)	Working Pressure, psig (bar)	
0 (-17) to 70 (21)	180 (12.4)	125 (8.6)
100 (37)	160 (11.0)	110 (7.5)
150 (65)	125 (8.6)	87 (5.9)
200 (93)	95 (6.5)	66 (4.5)
250 (121)	69 (4.7)	49 (3.3)
300 (148)	50 (3.4)	33 (2.2)

Testing

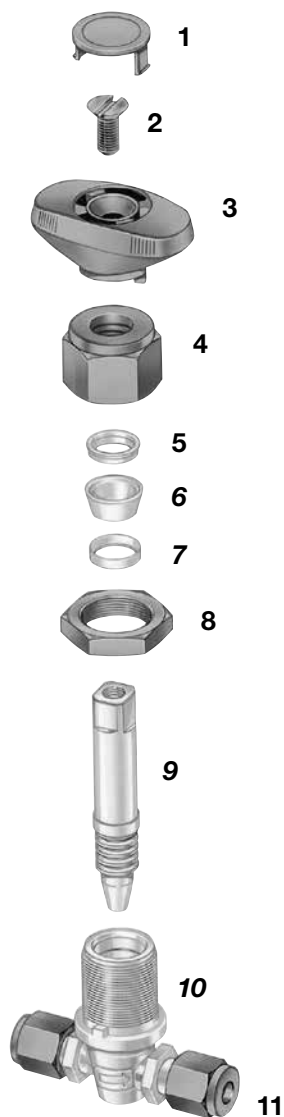
Every 4RP series PFA needle valve is factory tested with nitrogen at its rated pressure for leakage at the seat to a maximum allowable leak rate of 0.1 std cm³/min. The stem seal is tested with helium at rated pressure to a maximum leak rate of 1 × 10⁻³ std cm³/s.

Cleaning and Packaging

Every 4RP series PFA needle valve is cleaned and packaged in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)* (MS-06-62).

- ⚠ A packing adjustment may be required periodically to increase service life and to prevent leakage.
- ⚠ Valves that have not been cycled for a period of time may have a higher initial actuation torque.
- ⚠ To increase service life, ensure proper valve performance, and prevent leakage, apply only as much torque as is required to achieve positive shutoff.

Materials of Construction



Component	Material Grade/ ASTM Specification
1 Handle insert ^①	PFA 440-HP/ D3307
2 Screw ^①	
3 Handle ^①	
4 Packing nut ^①	
5 Upper packing	
6 Lower packing	
7 Stem stop	
8 Panel nut ^①	
9 Stem	
10 Body, ferrules	
11 Nut ^①	PTFE based
Lubricant	

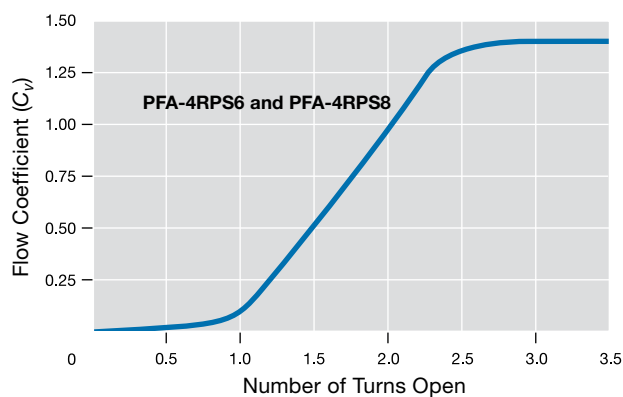
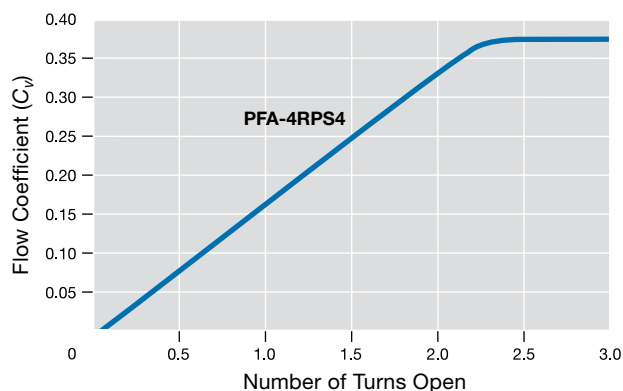
Wetted components listed in *italics*.

① Blue dyed.

Flow Data at 70°F (20°C)

Ordering Number	Pressure Drop to Atmosphere (Δp) psi (bar)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)
PFA-4RPS4	10 (0.68)	4.3 (120)	1.2 (4.5)
	75 (5.1)	15 (420)	3.3 (12)
	180 (12.4)	34 (960)	5.1 (19)
PFA-4RPS6	10 (0.68)	15 (420)	4.4 (16)
	75 (5.1)	57 (1600)	12 (45)
	180 (12.4)	120 (3300)	18 (68)
PFA-4RPS8	10 (0.68)	15 (420)	4.4 (16)
	75 (5.1)	57 (1600)	12 (45)
	125 (8.6)	90 (2500)	15 (56)

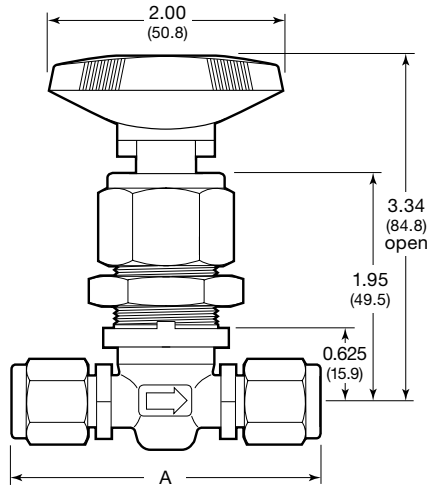
Flow Coefficient at Turns Open



Ordering Information and Dimensions

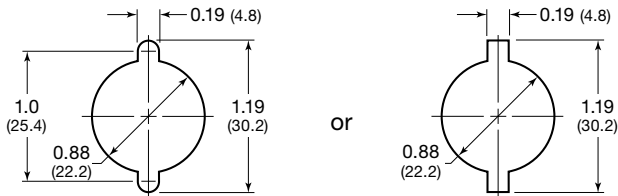
Select an ordering number.

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



Panel Hole Drill Dimensions

Maximum panel thickness is 0.25 in. (6.4 mm).



Ordering Number	A in. (mm)	Weight lb (kg)
PFA-4RPS4	2.50 (63.5)	0.20 (0.09)
PFA-4RPS6	2.66 (67.6)	0.23 (0.10)
PFA-4RPS8	3.14 (79.8)	0.27 (0.12)

Dimensions shown with Swagelok nuts positioned prior to swaging.

Other Swagelok PFA Products

For more information about Swagelok PFA tubing and tools, see the Swagelok *Hose and Flexible Tubing* catalog (MS-01-180).

For more information about Swagelok PFA tube fittings, see the Swagelok *PFA Tube Fittings* catalog (MS-01-05).

For more information about Swagelok PFA plug valves, see the Swagelok *PFA Plug Valves* catalog (MS-01-56).



Installation

⚠ PFA tubing MUST be grooved for use with PFA tube fittings. Use the Swagelok groove cutter tool.

1. Insert grooved PFA tubing into the Swagelok PFA tube fitting until a clicking sound is heard.



2. While holding fitting body steady, tighten the blue nut until there is no gap between the nut and body hexes.



3. Continue tightening until the nut and body hexes are aligned.



Caution: Do not mix or interchange parts with those of other manufacturers.

About this document

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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.

Warranty Information

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

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