

PFA Needle Valves

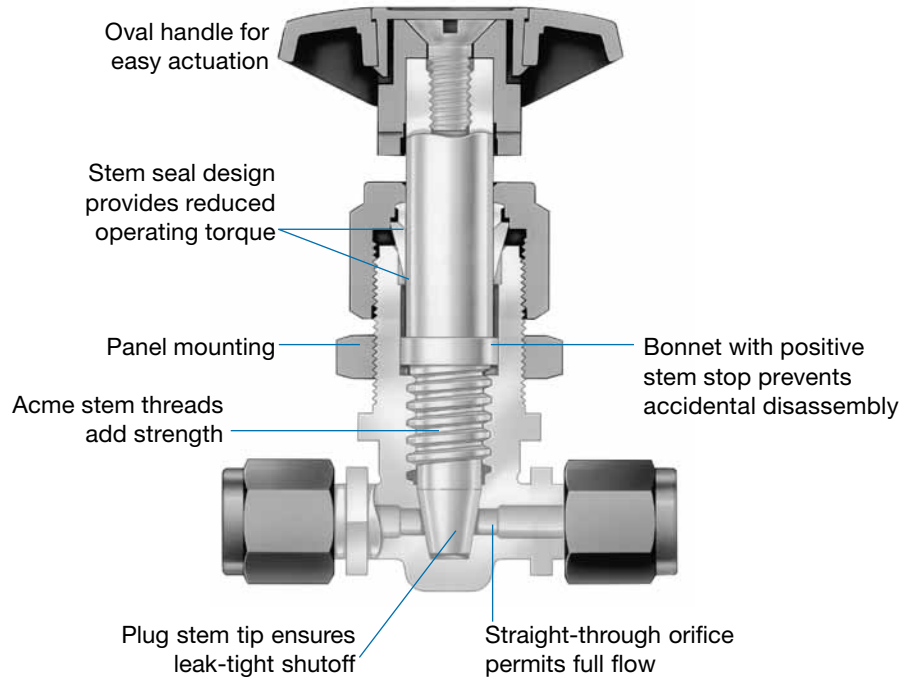


4RP Series

- 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) |

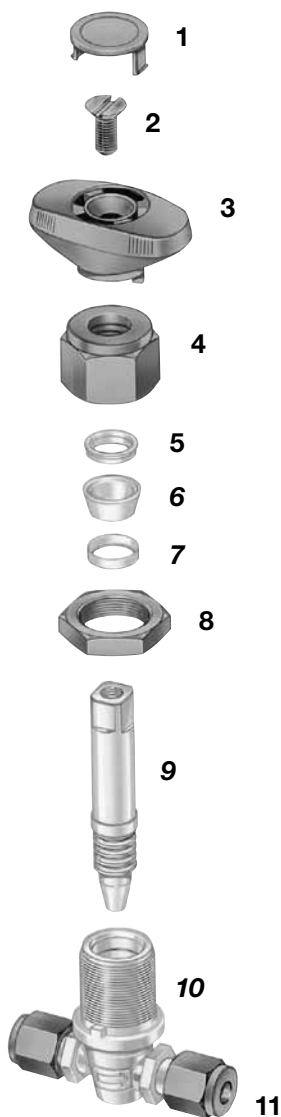
Testing

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.

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 | |

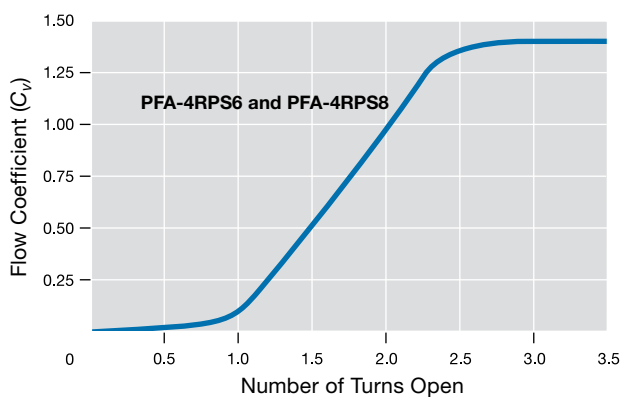
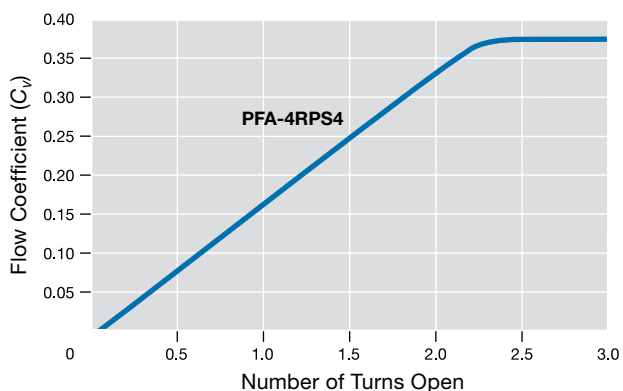
Wetted components listed in *italics*.

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) |

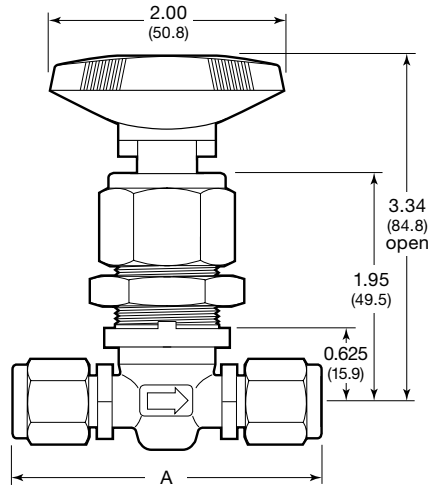
Flow Coefficient at Turns Open



Ordering Information and Dimensions

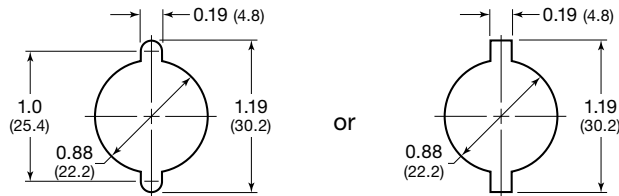
Select an ordering number.

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.



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.

Warranty Information

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