

# Bellows-Sealed Valve for Switching Service

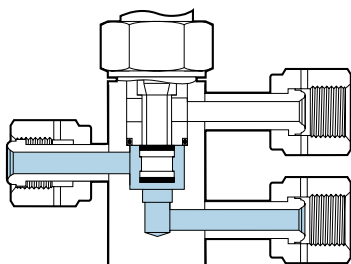
## BY Series

### Features

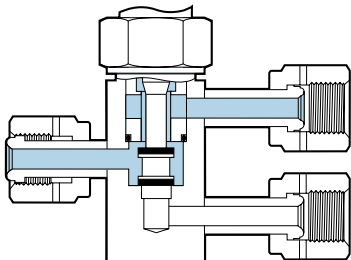
- Compact, packless valve switches flow from one line to another.
- Torlon® stem guide ensures proper alignment for consistent shutoff performance.
- Manual and spring-return and double-acting pneumatic actuators are available.
- End connections include 1/4 in. Swagelok® VCR® metal gasket face seal fittings and 1/4 in. Swagelok tube fittings. Other end connections are available; contact your authorized Swagelok sales and service representative for information.

### Operation

With pressure to the miniature spring-return pneumatic actuator, the stem tip seals the upper port, allowing flow through the lower port.



When there is no pressure to the actuator, the stem tip seals the lower port, allowing flow through the upper port.



### Pressure-Temperature Ratings

Valve Ratings		Actuator Ratings	
Pressure psig (bar)	Temperature °F (°C)	Pressure psig (bar)	Temperature °F (°C)
Vacuum to 150 (10.3)	0 to 200 (-18 to 93)	65 to 150 (4.5 to 10.3)	-10 to 300 (-23 to 148)



### Testing

Every BY series valve is factory vacuum tested with helium at room temperature for five seconds to a maximum leak rate of  $4 \times 10^{-9}$  std cm<sup>3</sup>/s at the seat, envelope, and all seals.

### Cleaning and Packaging

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

BY series switching valves with Swagelok tube fitting end connections are processed in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62.

### Oxygen Service Hazards

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

## Materials of Construction

### Valve

Component	Material Grade/ ASTM Specification
Bonnet nut, bonnet	316 SS/ A276 and A479
<i>Stem, weld ring, stem extension, spool, body</i>	<i>316 SS/ A276 and A479</i>
<i>Bellows</i>	<i>321 SS/A240</i>
<i>Gasket</i>	<i>PTFE-coated 316 SS/A240</i>
<i>Guide</i>	<i>Torlon</i>
<i>Stem tip</i>	<i>Fluorocarbon FKM- bonded<sup>①</sup> 316 SS/A276 and A479</i>
<i>O-rings</i>	<i>Fluorocarbon FKM</i>

Wetted components listed in *italics*.

① Material Safety Data Sheet for bonding agent available on request.

### Pneumatic Actuator

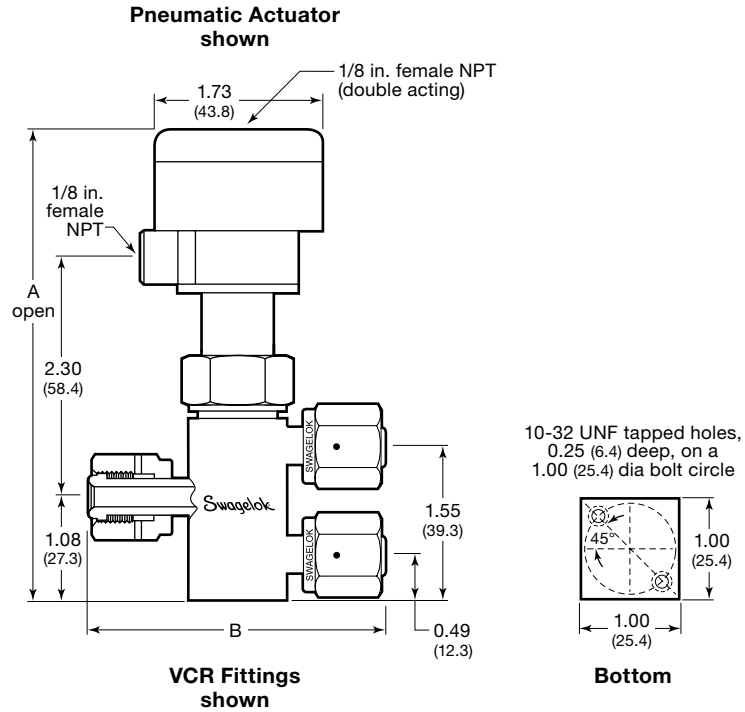
Component	Material
Housing	Aluminum
External hardware	Stainless steel
O-rings	Fluorocarbon FKM

**⚠ To increase service life, ensure proper valve performance, and prevent leakage, apply only as much torque as is required to achieve positive shutoff.**

## Ordering Information and Dimensions

Select an ordering number.

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



End Connections		Ordering Number	Dimensions, in. (mm)	
Type	Size		A	B
<b>Manual Actuator (Not Shown)</b>				
VCR fitting	1/4 in.	SS-4BY-V35	4.81 (122)	3.27 (83.1)
Swagelok tube fitting	1/4 in.	SS-4BY-W4		3.93 (99.8)
<b>Spring-Return Pneumatic Actuator</b>				
VCR fitting	1/4 in.	SS-4BY-V35-1C	4.75 (121)	3.27 (83.1)
Swagelok tube fitting	1/4 in.	SS-4BY-W4-1C		3.93 (99.8)
<b>Double-Acting Pneumatic Actuator</b>				
VCR fitting	1/4 in.	SS-4BY-V35-1D	4.75 (121)	3.27 (83.1)
Swagelok tube fitting	1/4 in.	SS-4BY-W4-1D		3.93 (99.8)

### 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](http://swagelok.com) or contact your authorized Swagelok representative.

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Torlon—TM Amoco Performance Products, Inc.  
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