

# Bellows-Sealed Valves

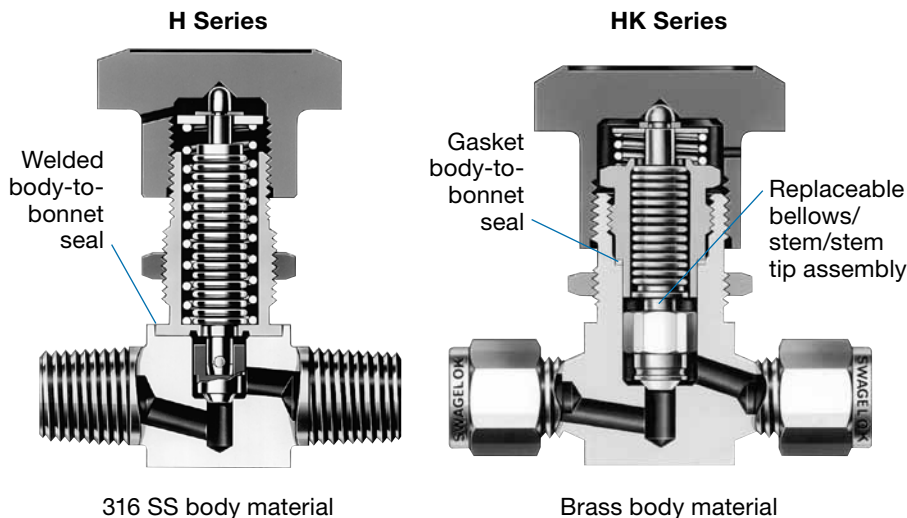


## H and HK Series

- Compact size
- Working pressures up to 1000 psig (68.9 bar)
- Temperatures up to 600°F (315°C)

## Features

- Flow coefficients ( $C_v$ ) from 0.11 to 0.28
- Precision-formed metal bellows and nonrotating stem tip for reliable, repetitive shutoff
- Variety of end connections—Swagelok® tube fittings, female and male NPT, integral male and welded female VCR® fittings, tube socket and tube butt weld ends, and tube extensions
- Panel and bottom mounting
- Pneumatic actuator for HK series available



## Technical Data

Body-to-Bellows Seal	Valve Body Material	Stem Tip	$C_v$	Internal Volume <sup>①</sup> in. <sup>3</sup> (cm <sup>3</sup> )	Series
Weld	316 SS	Stainless steel	0.11	0.08 (1.3)	2H
			0.20		2H2
			0.28		4H
Gasket	Brass	PCTFE	0.28	0.10 (1.6)	HK

① Determined using valves with Swagelok tube fitting end connections.

## Pressure-Temperature Ratings

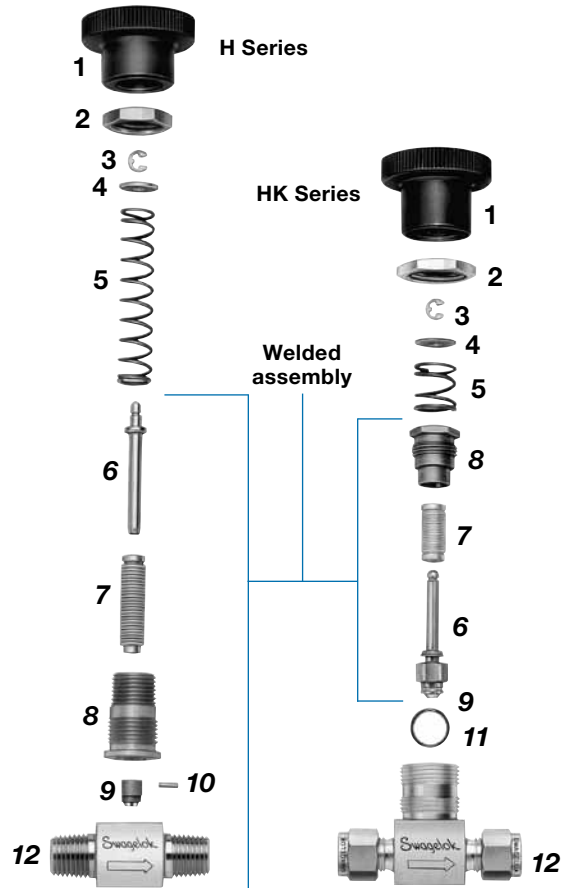
Material	316 SS	Brass
Series	H	HK
Temperature, °F (°C)	Working Pressure, psig (bar)	
-80 (-62) to -40 (-40)	1000 (68.9)	—
-20 (-28) to 100 (37)	1000 (68.9)	1000 (68.9)
200 (93)	1000 (68.9)	500 (34.4)
300 (148)	1000 (68.9)	—
400 (204)	1000 (68.9)	—
500 (260)	1000 (68.9)	—
600 (315)	1000 (68.9)	—

## Materials of Construction

Component	H Series	HK Series
	Material Grade/ASTM Specification	
1 Handle	Green-anodized aluminum/B211	
2 Panel mount nut	316 SS/A479	Brass 360/B16
3 Retaining ring	S15700	Beryllium copper
4 Washer	316 SS/A240	Phosphor bronze C51000/B103
5 Spring	S17700/AMS 5678	
6 Stem	316 SS/A479	Phosphor bronze C51000/B139
7 Bellows	321 SS/A269	Phosphor bronze C51900
8 Bonnet adapter	316 SS/A479	Phosphor bronze C51000/B139
9 Stem tip	S17400/A564	PCTFE 6060/D1430
10 Stem pin	420 SS	—
11 Gasket	—	PTFE-coated copper 110/B152
12 Body	316 SS/A479	Brass CDA 356 or 360/B16
Nonwetted lubricant	Molybdenum disulfide-based paste	
Wetted lubricant	—	Fluorinated-based

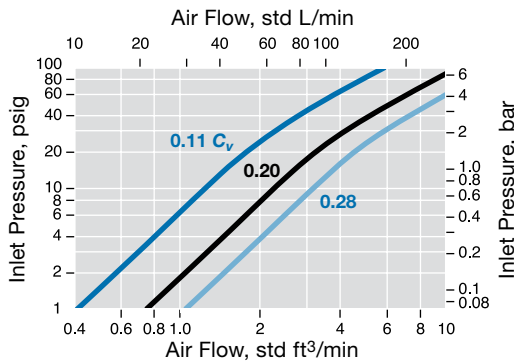
Wetted components listed in *italics*.

- ⚠ **To increase service life, ensure proper valve performance, and prevent leakage, apply only as much torque as is required to achieve positive shutoff.**
- Lubricate threads on bonnet and handle periodically for increased valve life.**

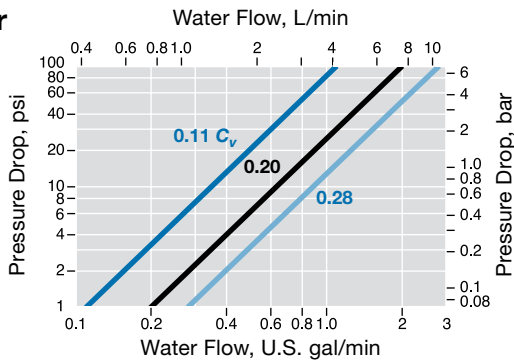


## Flow Data at 70°F (20°C)

### Air



### Water



## Testing

Every H and HK series valve is helium leak tested to a maximum leak rate of  $4 \times 10^{-9}$  std cm³/s at the seat, envelope, and all seals.

## Cleaning and Packaging

Swagelok H series 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.

Swagelok H series valves with other end connections are processed in accordance with Swagelok *Standard Cleaning and Packaging* (SC-10), MS-06-62; special cleaning and packaging are available as an option.

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

## Oxygen Service Hazards

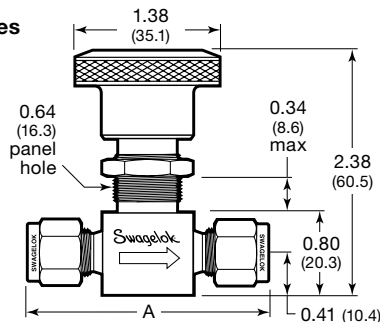
For more information about hazards and risks of oxygen-enriched systems, see the Swagelok *Oxygen System Safety* technical report, MS-06-13.

## Ordering Information and Dimensions

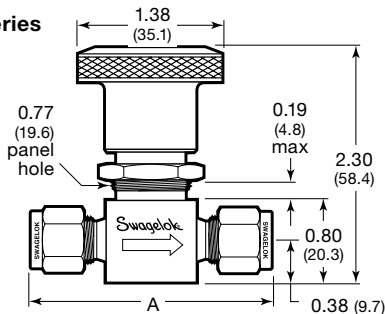
Select an ordering number.

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

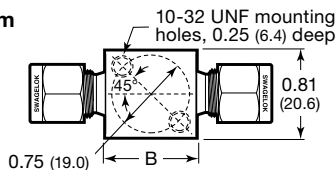
### H Series



### HK Series



### Bottom



End Connections		C <sub>v</sub>	Ordering Number	Series	Dimensions, in. (mm)			
					Orifice		A	B
					Body	Port		
Type	Size							
H series								
Swagelok tube fitting	1/8 in.	0.11	SS-2H	2H	0.148 (3.8)	0.082 (2.1)	2.09 (53.1)	0.88 (22.3)
	1/4 in.	0.28	SS-4H	4H		0.156 (4.0)	2.27 (57.7)	
	6 mm	0.28	SS-6H-MM	4H			1.94 (49.3)	1.04 (26.4)
Female NPT	1/4 in.	0.28	SS-4H4	4H		0.125 (3.2)	1.57 (39.9)	0.81 (20.6)
Male NPT	1/8 in.	0.20	SS-2H2	2H2		0.156 (4.0)	1.94 (49.3)	0.82 (20.8)
	1/4 in.	0.28	SS-4H2	4H			2.12 (53.8)	0.88 (22.3)
Integral male VCR fitting	1/4 in.	0.28	SS-4H-VCR	4H			3.68 (93.5)	0.82 (20.8)
Socket welded female VCR fitting	1/4 in.	0.28	SS-4H-V13	4H			2.57 (65.3)	
Butt welded female VCR fitting	1/4 in.	0.28	SS-4H-V51	4H			1.50 (38.1)	
Tube socket and tube butt weld	1/4 and 3/8 in.	0.28	SS-4H-TW	4H			7.06 (179)	
Tube extension, 3 in. (76.3 mm) long	1/4 × 0.049 in.	0.28	SS-4H-TH3	4H			7.47 (190)	
	3/8 × 0.065 in.	0.28	SS-4H-TN3	4H				
HK series								
Swagelok tube fitting	1/4 in.	0.28	B-4HK	HK	0.168 (4.3)	0.156 (4.0)	2.26 (57.4)	0.87 (22.1)
	6 mm	0.28	B-6HK-MM	HK			1.94 (49.3)	0.82 (20.8)
Female NPT	1/4 in.	0.28	B-4HK4	HK				
Male NPT	1/4 in.	0.28	B-4HK2	HK				

Dimensions shown with Swagelok tube fitting nuts finger-tight.

## Options and Accessories

### H Series

#### Cobalt-Based Alloy Stem Tip



- For severe service applications
- Spherical stem tip is welded to stem
- Fluorinated-based lubricant is applied to stem tip

To order, add **S** to the valve ordering number. Example: SS-2HS

### HK Series

#### Copper Stem Tip

- For temperatures up to 400°F (204°C) at 150 psig (10.3 bar)

- Includes copper gasket for body-to-bonnet seal

To order, replace **K** in the valve ordering number with **G**.

Example: B-4HG2



#### Special Cleaning and Packaging (SC-11)

Swagelok H series 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.

To order special cleaning and packaging for H series valves with other end connections, add **-SC11** to the valve ordering number.

Example: SS-2H-**SC11**

#### Special Alloy Material

HK series valves are available in alloy 400 body material for system compatibility. Contact your authorized Swagelok sales and service representative.

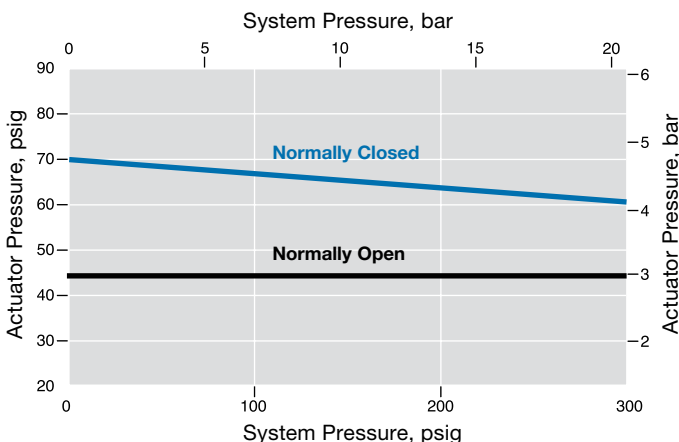
### Pneumatic Actuators

#### Features

- Two modes of operation: normally closed and normally open
- Low actuation pressure
- Available factory-assembled or as a kit for field assembly

#### Pneumatic Actuator Performance

Use the minimum air pressure required for a given system to reduce air consumption and increase valve life. Increase air pressure to speed up response time.



#### Technical Data

Pressure Rating psig (bar)	Temperature Rating °F (°C)	Air Displacement in. <sup>3</sup> (cm <sup>3</sup> )
45 to 150 (3.1 to 10.3)	-10 to 300 (-23 to 148)	0.068 (1.11)

#### Materials of Construction

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

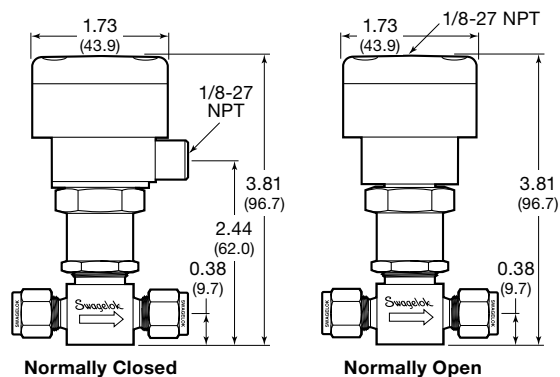
#### Ordering Information and Dimensions

Add an actuator designator to an HK series valve ordering number.

Example: B-4HK-**10**

To order a pneumatic actuator kit, use ordering number **MS-HK-1C** for the normally closed model or **MS-HK-10** for the normally open model.

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



#### 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.