

# Toggle Valves



## OG, 1G, and 92 Series

- Manual and pneumatically actuated models
- Straight, angle, and cross body patterns
- 316 SS and brass body materials

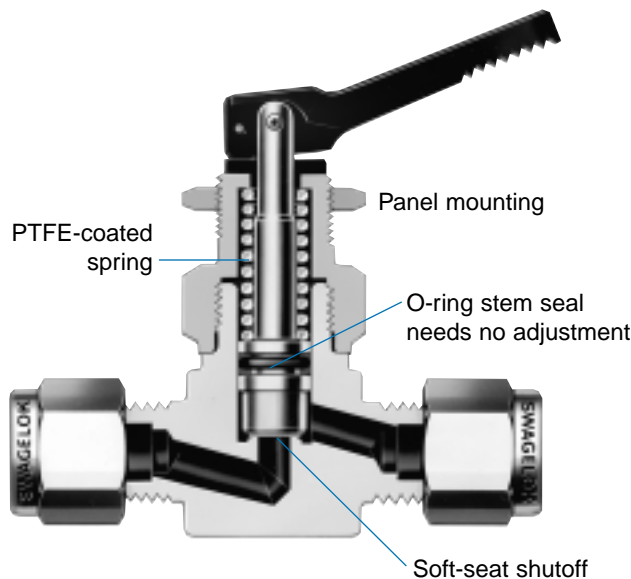
## Features

- Compact, rugged design
- Opens and closes quickly
- Orifice sizes from 0.080 to 0.250 in. (2.0 to 6.4 mm)
- Flow coefficients ( $C_v$ ) from 0.11 to 0.70
- Straight, angle, and cross flow patterns
- Pneumatic actuation
- Swagelok tube fitting, female NPT, male NPT, and mixed end connections.

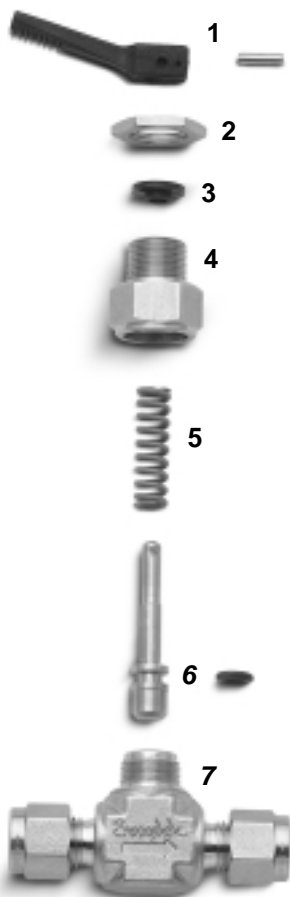
## Technical Data

Series	Orifice in. (mm)	Pressure-Temperature Ratings	
		Temperature °F (°C)	Working Pressure psig (bar)
OG	0.080 (2.0)	-20 to 200 (-28 to 93)	300 (20.6)
1G	0.125 (3.2)		200 (13.7)
	0.250 (6.4)		

Ratings based on manual valve. See **Pneumatic Actuators**, page 4, for ratings of valves with pneumatic actuators.



## Materials of Construction



Component	Valve Body Materials	
	316 SS	Brass
	Material Grade/ASTM Specification	
1 Handle	Nylon	
Roll pin	302 SS	
2 Panel nut	Stainless steel	Brass 360/B16
3 Washer	Nylon	
4 Packing nut	316 SS/A276	Brass 360 <sup>①</sup> /B16
5 Spring	PTFE-coated S17700/A313	
6 Stem	316 SS/A276	
O-ring	Fluorocarbon FKM	
Stem tip	PTFE/D1710	
7 Body	316 SS/A182	Brass 377/B283
Lubricant	Silicone based; nickel antiseize in hydrocarbon carrier	

Wetted components listed in *italics*.

① Contains a clear nylon thrust washer (not shown) between the packing nut and the spring.

## Testing

Every Swagelok toggle valve is factory tested with nitrogen at 200 psig (13.7 bar) at the seat and seal. There is a requirement of no detectable leakage with a liquid leak detector.

## Cleaning and Packaging

Every Swagelok toggle valve is cleaned and packaged in accordance with Swagelok Specification SC-10.

## Ordering Information and Dimensions

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

### Stainless Steel Valves

Select an ordering number.

### Brass Valves

Replace **SS** with **B**.

Example: **B-OGS2**

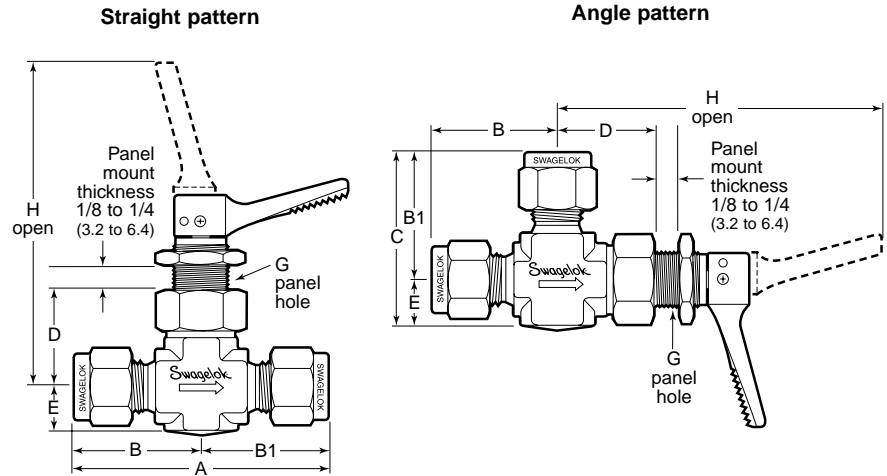
### Angle-Pattern Valves

Add **-A** to the ordering number.

Example: **SS-OGS2-A**

### Cross-Pattern Valves

Certain toggle valves are available with cross-pattern bodies, which provide continuous flow between side ports and on-off flow through the bottom port. Contact your independent Swagelok sales and service representative for more information.



End Connections		C <sub>v</sub>	Orifice in. (mm)	Ordering Number	Dimensions, in. (mm)							
Inlet/Outlet	Size				A	B	B1	C	D	E	G	H
Fractional Swagelok tube fittings	1/8 in.	0.11	0.080 (2.0)	SS-OGS2	1.96 (49.8)	0.98 (24.9)	1.29 (32.8)	0.92 (23.4)	0.31 (7.9)	0.53 (13.5)	2.87 (72.9)	
	1/4 in.	0.20	0.125 (3.2)	SS-1GS4	2.26 (57.4)	1.13 (28.7)	1.50 (38.1)	0.86 (21.8)	0.38 (9.5)		2.81 (71.4)	
	3/8 in.	0.70	0.250 (6.4)	SS-1GS6	2.58 (65.5)	1.29 (32.8)	1.79 (45.5)	1.06 (26.9)	0.50 (12.7)	0.66 (16.8)	3.56 (90.4)	
	1/2 in.	0.70	0.250 (6.4)	SS-1GS8	2.80 (71.1)	1.40 (35.6)	1.90 (48.3)					
Metric Swagelok tube fittings	3 mm	0.11	0.080 (2.0)	SS-OGS3MM	1.96 (49.8)	0.98 (24.9)	1.29 (32.8)	0.92 (23.4)	0.31 (7.9)	0.53 (13.5)	2.87 (72.9)	
	6 mm	0.20	0.125 (3.2)	SS-1GS6MM	2.26 (57.4)	1.13 (28.7)	1.50 (38.1)	0.86 (21.8)	0.38 (9.5)		2.81 (71.4)	
	8 mm	0.20	0.125 (3.2)	SS-1GS8MM	2.22 (56.4)	1.11 (28.2)	1.48 (37.6)	1.06 (26.9)	0.50 (12.7)	0.66 (16.8)	3.56 (90.4)	
	10 mm	0.70	0.250 (6.4)	SS-1GS10MM	2.72 (69.1)	1.36 (34.5)	1.86 (47.2)					
	12 mm	0.70	0.250 (6.4)	SS-1GS12MM	2.92 (74.2)	1.46 (37.1)	1.96 (49.8)					
Female NPT	1/8 in.	0.20	0.125 (3.2)	SS-1GF2	1.63 (41.4)	0.81 (20.6)	1.19 (30.2)	0.86 (21.8)	0.38 (9.5)	0.53 (13.5)	2.81 (71.4)	
	1/4 in.	0.70	0.250 (6.4)	SS-1GF4	2.12 (53.8)	1.06 (26.9)	1.56 (39.6)	1.06 (26.9)	0.50 (12.7)	0.66 (16.8)	3.56 (90.4)	
Male NPT	1/8 in.	0.11	0.080 (2.0)	SS-OGM2	1.50 (38.1)	0.75 (19.0)	1.06 (27.0)	0.92 (23.4)	0.31 (7.9)	0.53 (13.5)	2.87 (72.9)	
	1/8 in.	0.20	0.125 (3.2)	SS-1GM2	1.72 (43.7)	0.86 (21.8)	1.23 (31.2)	0.86 (21.8)	0.38 (9.5)		2.81 (71.4)	
	1/4 in.	0.20	0.125 (3.2)	SS-1GM4	1.96 (49.8)	0.98 (24.9)	1.36 (34.5)			1.62 (41.1)		1.06 (26.9)
	3/8 in.	0.70	0.250 (6.4)	SS-1GM6	2.25 (57.2)	1.12 (28.4)	1.62 (41.1)					
Male NPT/ Swagelok tube fitting	1/8 in.	0.11	0.080 (2.0)	SS-OGM2-S2	1.73 (43.9)	0.75 (19.0)	0.98 (24.9)	1.29 (32.8)	0.92 (23.4)	0.31 (7.9)	0.53 (13.5)	2.87 (72.9)
	1/4 in.	0.20	0.125 (3.2)	SS-1GM4-S4	2.11 (53.6)	0.98 (24.9)	1.13 (28.7)	1.50 (38.1)	0.86 (21.8)	0.38 (9.5)		2.81 (71.4)
Male/female NPT	1/8 in.	0.20	0.125 (3.2)	SS-1GM2-F2	1.63 (41.4)	0.81 (20.6)	1.19 (30.2)	0.86 (21.8)	0.38 (9.5)		2.81 (71.4)	

Dimensions shown with Swagelok nuts finger-tight.

## Pneumatic Actuators

### Features

- Valve and actuator are fully assembled and factory tested.
- Positive stem retraction prevents sticking.
- O-ring stem seal requires no packing adjustment.
- Rotatable actuator port allows easy installation.

### Actuation Modes

- Normally closed—air opens, spring closes.
- Normally open—air closes, spring opens.
- Double acting—air opens and closes.
- High-pressure normally closed—air opens, spring closes.

### Actuator Types

- Standard—valve contains fluorocarbon FKM O-ring, PTFE stem tip, and silicone-based lubricant.
- Low temperature—valve contains Buna C O-ring, PTFE stem tip, and lithium-thickened, silicone-based lubricant.
- High temperature—valve contains fluorocarbon FKM O-ring, PEEK stem tip, PEEK washer, and PTFE-based lubricant.
- Nonfluorocarbon—valve contains ethylene propylene O-ring, PEEK stem tip, and silicone-based lubricant.



Normally closed, high-pressure normally closed, and double acting

Normally open

### Materials of Construction

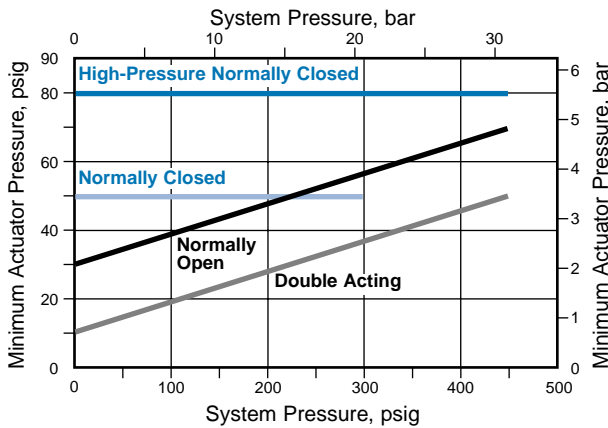
Component	Material
Housing	Anodized aluminum
Spring	UNS 17700
External hardware	18-8 SS
O-ring	Fluorocarbon FKM

See page 2 for other materials of construction.

### Technical Data

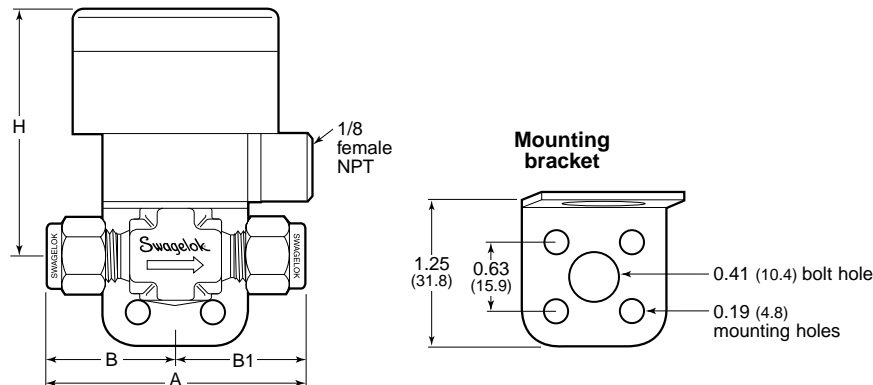
Actuator Type	Temperature Rating °F (°C)	Valve Working Pressure, psig (bar)		Actuator Pressure Rating psig (bar)
		Normally Open, Double Acting, High-Pressure Normally Closed	Normally Closed	
Standard	-20 to 200 (-28 to 93)	450 (31.0)	300 (20.6)	150 (10.3)
Low temperature	-65 to 200 (-53 to 93)			
High temperature	-20 to 400 (-28 to 204)			
Nonfluorocarbon	-20 to 250 (-28 to 121)			

### Pneumatic Actuator Performance



## Ordering Information and Dimensions

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



End Connections		C <sub>v</sub>	Orifice in. (mm)	Ordering Number	Dimensions, in. (mm)			
Inlet/Outlet	Size				A	B	B1	H
Fractional Swagelok tube fittings	1/8 in.	0.11	0.080 (2.0)	SS-92S2	1.96 (49.8)	0.98 (24.9)		2.21 (56.1)
	1/4 in.	0.20	0.125 (3.2)	SS-92S4	2.26 (57.4)	1.13 (28.7)		2.15 (54.6)
Metric Swagelok tube fittings	6 mm	0.20	0.125 (3.2)	SS-92S6MM	2.26 (57.4)	1.13 (28.7)		
	8 mm	0.20	0.125 (3.2)	SS-92S8MM	2.22 (56.4)	1.11 (28.2)		
Female NPT	1/8 in.	0.20	0.125 (3.2)	SS-92F2	1.63 (41.4)	0.81 (20.6)		
Male NPT	1/8 in.	0.11	0.080 (2.0)	SS-92M2	1.50 (38.1)	0.75 (19.0)		2.21 (56.1)
	1/4 in.	0.20	0.125 (3.2)	SS-92M4	1.96 (49.8)	0.98 (24.9)		2.15 (54.6)
Male NPT/ Swagelok tube fitting	1/8 in.	0.11	0.080 (2.0)	SS-92M2-S2	1.73 (43.9)	0.75 (19.0)	0.98 (24.9)	2.21 (56.1)
	1/4 in.	0.20	0.125 (3.2)	SS-92M4-S4	2.11 (53.6)	0.98 (24.9)	1.13 (28.7)	2.15 (54.6)

Dimensions shown with Swagelok nuts finger-tight.

### Standard Actuators with Stainless Steel Valves

Add an actuation mode designator to the ordering number.

Actuation Mode	Designator
Normally closed	-C
High-pressure normally closed	-HPC
Normally open	-O
Double acting	-D

Example: SS-92S2-C

### Other Actuator Types

For a low-temperature, high-temperature, or nonfluorocarbon actuator, add an actuator designator to the ordering number.

Actuator Type	Designator
Low temperature	-LT
High temperature	-HT
Nonfluorocarbon	-NF

Example: SS-92S2-C-LT

### Actuators with Brass Valves

Replace **SS** with **B**.

Example: **B**-92S2-C

### Actuators with Angle-Pattern Valves

Insert **-A** into the ordering number.

Example: SS-92S2-A-C

### Valves Without Mounting Brackets

Standard actuator assembly includes a mounting bracket.

**Removal of the mounting bracket shortens actuator stroke and prevents valve actuation. If the mounting bracket is not used, a spacer washer is required.**

To order, add **-W** to the ordering number.

Example: SS-92S2-C-W

## Options and Accessories

### Optional O-ring Materials

Fluorocarbon FKM O-rings are standard. For other O-ring materials, add a designator to the valve ordering number.

O-ring Material	Designator
Buna C	-BC
Buna N	-B
Ethylene propylene	-E
Kalrez®	-KZ
Silicone	-SI

Examples: SS-OGS2-**BC**  
SS-92S2-C-**BC**

In pneumatically actuated valves, only the stem tip O-ring is changed to the optional material.

### O-ring Kits

O-ring kits contain fluorocarbon FKM O-ring, lubricant, and instructions. Select a kit ordering number.

Valve Series	Orifice in. (mm)	O-ring Kit Ordering Number
OG	0.080 (2.0)	VA70-9K-008
1G	0.125 (3.2)	
	0.250 (6.4)	VA70-9K-011

### Low-Temperature Service

Manual valves with Buna C O-rings, aluminum handles, and lithium-thickened, silicone-based lubricant are available for low-temperature service from -65 to 200°F (-53 to 93°C).

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

Example: SS-OGS2-**LT**

### Handles

Black nylon handles are standard. For other handles, add a designator to the valve ordering number.

Example: SS-OGS2-**BL**

### Handle Kits

Handle kits contain black nylon handle, roll pin, and instructions. For nylon handles of other colors, replace **-BK** with a nylon handle color designator.

Example: NY-5K-14G-**BL**

For other handle materials, replace **NY** with **A** for anodized black aluminum or **SS** for stainless steel.

Example: **A**-5K-14G-**BK**

Handle	Designator
Blue nylon	-BL
Green nylon	-GR
Orange nylon	-OG
Red nylon	-RD
Yellow nylon	-YW
Black anodized aluminum	-BKB
316 SS	-SH

Valve Series	Orifice in. (mm)	Handle Kit Ordering Number
OG	0.080 (2.0)	NY-5K-14G- <b>BK</b>
1G	0.125 (3.2)	
	0.250 (6.4)	NY-5K-16G- <b>BK</b>

### Handle Positioner

The handle positioner enables setting a valve handle in a desired position and prevents it from rotating—for example, in panel mounting applications where all handles must point in the same direction. It cannot be used with a spring-return pin.

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

Example: SS-OGS2-**TGP**



### Handle Positioner Kits

Kits include handle positioner, panel nut, and instructions. Select a handle positioner kit ordering number.

Valve Series	Orifice in. (mm)	Positioner Kit Ordering Numbers	
		316 SS Valves	Brass Valves
OG	0.080 (2.0)	SS-5K-14G	B-5K-14G
1G	0.125 (3.2)		
	0.250 (6.4)	SS-5K-16G	B-5K-16G

### Spring-Return Pin

The spring-return pin stops the valve from being left in the open position. It cannot be used with the handle positioner.

To order, add **-SPR** as a suffix to the valve ordering number.

Example: SS-OGS2-**SPR**

#### 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.**