



# One-Piece Encapsulated Ball Valves



## EB Series

- ✓ Working Pressure: up to 3000 psig (206 bar)
- ✓ Temperature Range: -65 to 300°F (-53 to 148°C)
- ✓ Flow Coefficient: up to 12.0
- ✓ End Connections: 1/16 to 3/4 in. (3 to 12 mm)
- ✓ 2-way, Angle and 3-way valves
- ✓ Extremely Low Dead Space

[www.mySSP.com](http://www.mySSP.com)





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# EB Series One-Piece Encapsulated Ball Valves

SSP EB Series ball valves offer important improvements for the most popular valve design used in analytical instrumentation and other medium pressure applications. These include:

- The industry's first blowout proof stem standard design prevents accidental disassembly for improved safety
- Forged 316 stainless steel increases the structural integrity of the body
- One-piece packing encapsulates the trunnion-style ball eliminating dead space to maximize purgeability for clean and accurate samples. One-piece packing is standard on all EB Series valves.
- End-to-end dimensions match Swagelok® 40 Series valve dimensions

## General Specifications

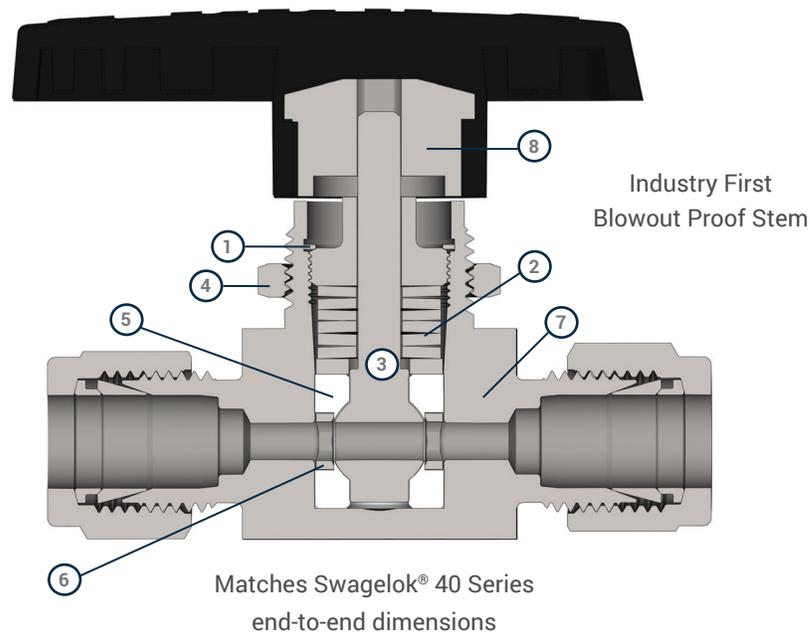
Feature	Specification
Body Materials	Forged 316 Stainless Steel, Alloy 400, Alloy C-276, and Brass
Packing Materials	Modified PTFE / D1710 or PFA / D3307
Working Pressure	Up to 3000 psig (206 bar)
Temperature Range	-65 to 300°F (-53 to 148°C)
Flow Coefficient	0.8 to 12.0
End Connection Sizes	1/16 to 3/4 in.
Flow Patterns	2-way and Angle Shutoff and 3-way Switching/Shut Off Valves. Special patterns for venting, purging, sampling and other functions are available.



## Applications

With an extended temperature range, low dead space, and the ability to seal at both high and low pressures, EB Series valves are suitable for a wide variety of instrumentation systems. They are widely used in the analytical instrumentation sampling and conditioning systems where clean and accurate sampling can have significant impact on product quality, process efficiency and productivity. In addition, EB Series ball valves can be used in process and equipment applications, such as painting, coating, filling and additive systems, where rapid and thorough cleaning and purging are required.

# Product Design



## 1 INDUSTRY FIRST BLOWOUT PROOF STEM

- Prevents accidental disassembly for improved safety and meets the most stringent safety standards including MSS SP-110

## 2 LIVE LOADED PACKING

- Reduces need for packing adjustments
- Packing is adjustable in-line. No special tools or adapters required
- Compensates for seat wear
- Improves performance in dynamic temperature applications

## 3 ONE-PIECE TRUNNION-STYLE BALL AND STEM

- Ensures alignment of ball in orifice
- Reduces seat wear
- Straight flow path allows cleaning and purging

## 4 PANEL MOUNTABLE

## 5 ENCAPSULATED ONE-PIECE PACKING IN ALL SIZES

- Eliminates dead space
- Reduces number of leak points
- Leak-tight from vacuum to maximum pressure

## 6 SUPPORT RINGS AND DISCS

- Protect packing
- Reduce packing extrusion

## 7 ONE-PIECE FORGED BODY WITH INTEGRAL END CONNECTIONS

- Matches Swagelok® 40 Series end-to-end dimensions
- Reduces the number of potential leak paths
- No end connections to loosen or O-rings to maintain
- Forged body improves grain structure

## 8 DURABLE DIRECTIONAL HANDLE

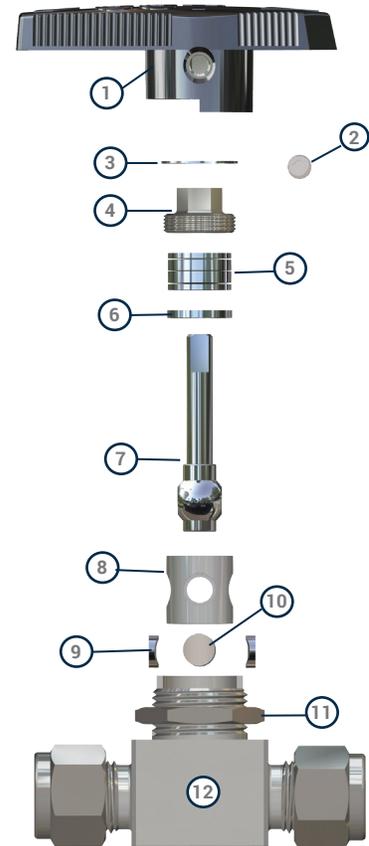
- Nylon handle with 316 stainless steel insert enhances strength and compatibility
- Handle and stem flats indicate flow direction
- Colored handles available

Meets ASME B31.1 and B31.3 design pressure calculations

# Materials of Construction

ID	Component	Material			
		Stainless Steel	Brass	Alloy 400	Alloy C-276
		Material Grade / ASTM Specification			
1	Handle	Nylon with SS insert			
2	Set Screw	17-4 PH / 316 SS (44G Only)			
3	Retaining Clip	302 SS			
4	Packing Bolt	Powdered Metal 300 Series SS / B783	Alloy 400 / B164	Alloy C-276 / B574	
5	Springs	S17700 / A693			Alloy 718 / AMS 5596
6	Gland	316 SS / A479	Alloy 400 / B164	Alloy C-276 / B574	
7*	Ball Stem	316 SS / A479	Alloy 400 / B164	Alloy C-276 / B574	
8*	Packing	Modified PTFE / D1710 or PFA / D3307			
9*	Side Rings	Powdered Metal 300 Series SS / B783	Powdered Metal Alloy 400	Powdered Metal Alloy C-276	
10*	Side Discs	Powdered Metal 300 Series SS / B783	Powdered Metal Alloy 400	Powdered Metal Alloy C-276	
11	Panel Nut	Powdered Metal 300 Series SS / B783	360 Brass / B283	Powdered Metal 300 Series SS / B783	
12*	Body	316 SS / A182	377 Brass / B16	Alloy 400 / B564	Alloy C-276 / B564
	Wetted Lubricant	Silicone-Based			
	Non-Wetted Lubricant	Molybdenum Disulfide			

\* Wetted components

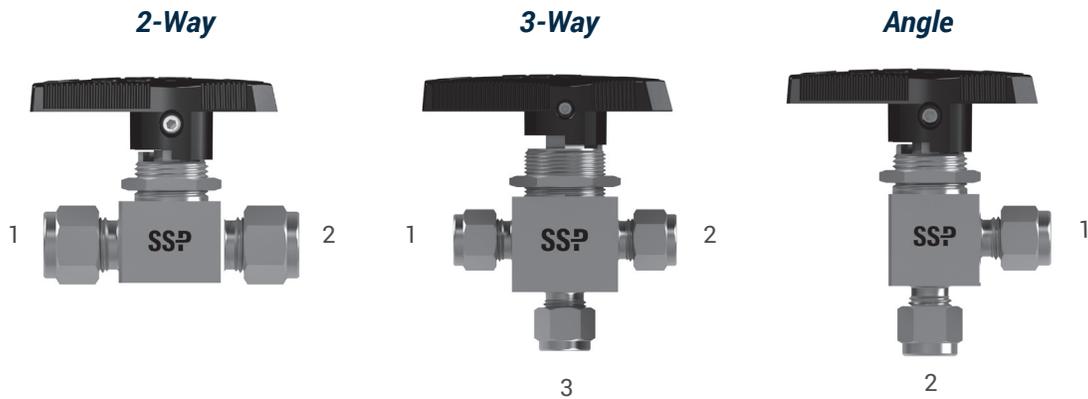


# Pressure-Temperature Tables

The table provides temperature ratings for both process and environmental temperatures.

Size	41		42		43		44/45	
Configuration	Straight/Angle/ 3-way	Straight/Angle/ 3-way	Straight	Angle/3-way	Straight	Angle/3-way	Straight	Angle/3-way
Temperature	Working Pressure - psig (bar)							
-65 to 150° F (-53 to 65° C)	2500 (172)	2500 (172)	3000 (206)	2500 (172)	2500 (172)	-	2500 (172)	1500 (103)
200°F (93°C)	2500 (172)	2500 (172)	2800 (193)	2500 (172)	-	-	-	-
250°F (121°C)	2500 (172)	2500 (172)	2650 (183)	2500 (172)	-	-	-	-
300°F (148°C)	2500 (172)	2500 (172)	2500 (172)	2500 (172)	-	-	-	-

# Ordering Information



## Ordering Instructions

**Ordering EB Series valves requires the following steps:**

- ① Locate the Basic Part Number & Dimensions table for the valve flow pattern.  
*Example: Angle Pattern Valves (see page 9).*
- ② Locate the Basic Ordering Number for the valve end connection type(s) and size(s) and the Cv.  
*Example: 43GAD4*

**Notes:**

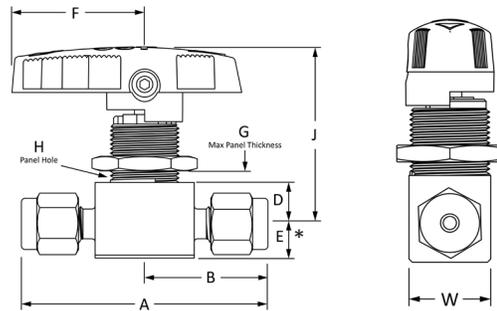
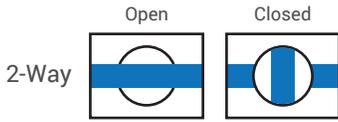
- a. End connections are designated in the part numbers according to the diagrams above.  
*Example: 43GXD4D44PM-316.* Connections 1 and 2 are ¼ in. Duolok tube ends. Connection 3 is a ¼ in. Male NPT pipe end.
- b. **Other Configurations:** The Basic Ordering Number tables contain only the most popular valve configurations. To configure valves with mixed end connection types and sizes, see the Special Orders Table – on page 14. *Example: 43GXD44PFD6*
- c. **Other Tube Fitting Designs:** The Basic Ordering Numbers for tube fitting end connections specify Duolok end connections. For Unilok and Griplok end connections, see the Tube Fitting End Connection options – on page 10. *Example: 43GAU4*
- ③ Locate and add the Body Material Designator to the part number – on page 10. *Example: 43GAD4-316*
- ④ Add designators for other options (pages 10-13) as shown in the instructions for each option.

**Note: For configurations that are not in the catalog see the Special Order Instructions available on page 14.**

**Note:** The Part Number and Dimensions tables contain the most common valve configurations. Use the Special Order table on page 14 to specify the end connection type and size combinations and options to meet the requirements of your applications. Dimensions are subject to change.

# Part Numbers and Dimensions

## Two-Way Ball Valves

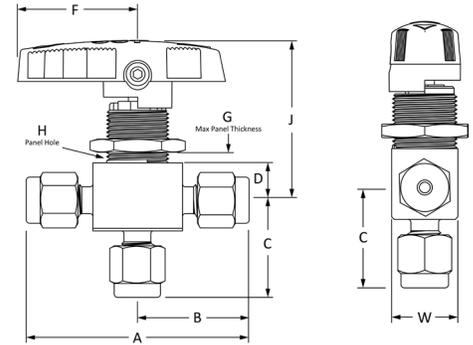
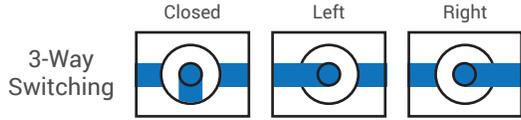


\* E dimension 0.75in. (19.1mm) for 45 Brass and Alloy 400 only

End Connection			Basic Part Number	Orifice in. (mm)	CV	Dimensions, in. (mm)								
Type	Inlet Size	Outlet Size				A	B	D	E	F	G	H	J	W
Fractional Tube Fitting	1/16	1/16	41GD1	0.052 (1.32)	0.10	1.68 (42.7)	0.84 (21.3)	0.34 (8.6)	0.28 (7.1)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/8	1/8	41GD2	0.093 (2.36)	0.20	2.01 (51.1)	1.01 (25.7)	0.34 (8.6)	0.28 (7.1)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/4	1/4	42GD4	0.125 (3.18)	0.60	2.21 (56.1)	1.10 (27.9)	0.34 (8.6)	0.28 (7.1)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/4	1/4	43GD4	0.187 (4.75)	1.4	2.39 (60.7)	1.20 (30.5)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	3/8	3/8	43GD6	0.187 (4.75)	1.5	2.58 (65.5)	1.29 (32.8)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	3/8	3/8	44GD6	0.281 (7.14)	6.0	3.05 (77.5)	1.52 (38.6)	0.56 (14.2)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45GD8	0.406 (10.3)	12.0	3.92 (99.6)	1.96 (49.8)	0.69 (17.5)	0.69 * (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
	3/4	3/4	45GD12	0.406 (10.3)	6.4	3.92 (99.6)	1.96 (49.8)	0.69 (17.5)	0.69 * (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Metric Tube Fitting	3 mm	3 mm	41GDM3	0.093 (2.36)	0.20	2.01 (51.1)	1.01 (25.7)	0.34 (8.6)	0.28 (7.1)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	6 mm	6 mm	42GDM6	0.125 (3.18)	0.60	2.21 (56.1)	1.10 (27.9)	0.34 (8.6)	0.28 (7.1)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	6 mm	6 mm	43GDM6	0.187 (4.75)	1.4	2.39 (60.7)	1.20 (30.5)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	8 mm	8 mm	43GDM8	0.187 (4.75)	1.5	2.46 (62.5)	1.23 (31.2)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	10 mm	10 mm	44GDM10	0.281 (7.14)	6.0	3.07 (78)	1.53 (38.9)	0.56 (14.2)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	12 mm	12 mm	45GDM12	0.406 (10.3)	12.0	3.92 (99.6)	1.96 (49.8)	0.69 (17.5)	0.69 * (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Female NPT	1/8	1/8	42G2PF	0.125 (3.18)	0.50	1.63 (41.4)	0.81 (20.6)	0.34 (8.6)	0.28 (7.1)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/8	1/8	43G2PF	0.187 (4.75)	1.2	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	1/4	1/4	43G4PF	0.187 (4.75)	0.90	2.06 (52.3)	1.03 (26.2)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	1/4	1/4	44G4PF	0.281 (7.14)	3.0	2.50 (63.5)	1.25 (31.8)	0.56 (14.2)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	3/8	3/8	44G6PF	0.281 (7.14)	2.6	2.50 (63.5)	1.25 (31.8)	0.56 (14.2)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45G8PF	0.406 (10.3)	6.3	3.12 (79.2)	1.56 (39.6)	0.69 (17.5)	0.69 * (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Male NPT	1/4	1/4	43G4PM	0.187 (4.75)	1.2	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
Male NPT to Fractional Tube Fitting	1/4	1/4	43G4PMD4	0.187 (4.75)	0.75	2.20 (55.9)	1.20 (30.5)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
Female ISO Tapered	1/4	1/4	43G4FRT	0.187 (4.75)	0.90	2.06 (52.3)	1.03 (26.2)	0.44 (11.2)	0.38 (9.7)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	3/8	3/8	44G6FRT	0.281 (7.14)	2.6	2.50 (63.5)	1.25 (31.8)	0.56 (14.2)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45G8FRT	0.406 (10.3)	6.3	3.12 (79.2)	1.56 (39.6)	0.69 (17.5)	0.69 * (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)

# Part Numbers and Dimensions

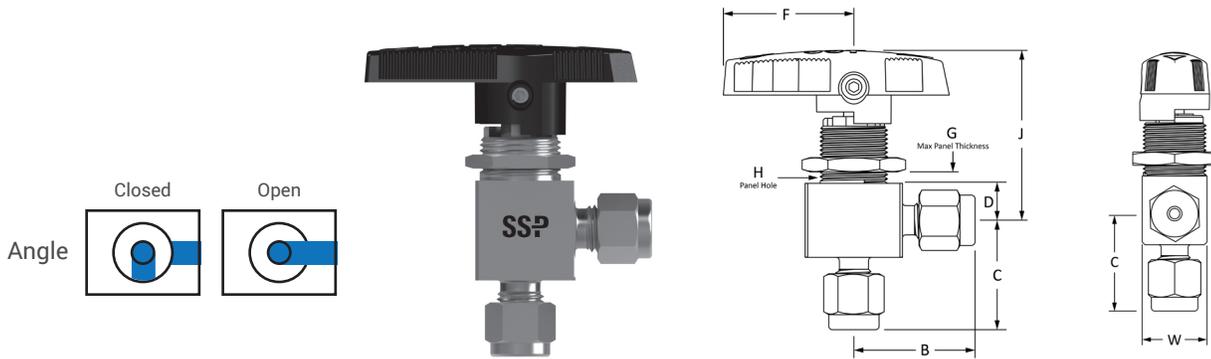
## Three-Way Ball Valves



End Connection			Basic Part Number	Orifice in. (mm)	CV	Dimensions, in. (mm)								
Type (Sides/Bottom)	Bottom	Sides				A	B	C	D	F	G	H	J	W
Fractional Tube Fitting	1/16	1/16	41GXD1	0.052 (1.32)	0.08	1.68 (42.7)	0.84 (21.3)	0.81 (20.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/8	1/8	41GXD2	0.093 (2.36)	0.15	2.01 (51.1)	1.01 (25.7)	0.97 (24.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/4	1/4	42GXD4	0.125 (3.18)	0.35	2.21 (56.1)	1.10 (27.9)	1.07 (27.2)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/4	1/4	43GXD4	0.187 (4.75)	0.90	2.39 (60.7)	1.20 (20.6)	1.17 (29.7)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	3/8	3/8	44GXD6	0.281 (7.14)	2.0	2.89 (73.4)	1.45 (36.8)	1.43 (36.3)	0.56 (14.2)	1.86 (47.2)	3/8 (9.7)	1 1/8 (28.7)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45GXD8	0.406 (10.3)	4.6	3.48 (88.4)	1.74 (44.2)	1.74 (44.2)	0.69 (17.5)	3.02 (76.7)	3/8 (9.7)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
	3/4	3/4	45GXD12	0.406 (10.3)	3.8	3.48 (88.4)	1.74 (44.2)	1.74 (44.2)	0.69 (17.5)	3.02 (76.7)	3/8 (9.7)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Metric Tube Fitting	3 mm	3 mm	41GXDM3	0.093 (2.36)	0.15	2.01 (51.1)	1.01 (25.7)	0.97 (24.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	6 mm	6 mm	42GXDM6	0.125 (3.18)	0.35	2.21 (56.1)	1.10 (27.9)	1.07 (27.2)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	6 mm	6 mm	43GXDM6	0.187 (4.75)	0.90	2.39 (60.7)	1.20 (20.6)	1.17 (29.7)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	8 mm	8 mm	43GXDM8	0.187 (4.75)	0.80	2.46 (62.5)	1.23 (31.2)	1.20 (30.5)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	10 mm	10 mm	44GXDM10	0.281 (7.14)	2.0	2.89 (73.4)	1.45 (36.8)	1.43 (36.3)	0.56 (14.2)	1.86 (47.2)	3/8 (9.7)	1 1/8 (28.7)	2.10 (53.3)	1.12 (28.4)
	12 mm	12 mm	45GXDM12	0.406 (10.3)	4.6	3.48 (88.4)	1.74 (44.2)	1.74 (44.2)	0.69 (17.5)	3.02 (76.7)	3/8 (9.7)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Female NPT	1/8	1/8	42GX2PF	0.125 (3.18)	0.30	1.63 (41.4)	0.81 (20.6)	0.81 (20.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/4	1/4	43GX4PF	0.187 (4.75)	0.75	2.06 (52.3)	1.03 (26.2)	1.03 (26.2)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	1/4	1/4	44GX4PF	0.281 (7.14)	1.7	2.50 (63.5)	1.25 (31.8)	1.25 (31.8)	0.56 (14.2)	1.86 (47.2)	3/8 (9.7)	28.7 (73.3)	2.10 (53.3)	1.12 (28.4)
	3/8	3/8	44GX6PF	0.281 (7.14)	1.5	2.50 (63.5)	1.25 (31.8)	1.25 (31.8)	0.56 (14.2)	1.86 (47.2)	3/8 (9.7)	28.7 (73.3)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45GX8PF	0.406 (10.3)	3.5	3.13 (79.5)	1.56 (39.6)	1.56 (39.6)	0.69 (17.5)	3.02 (76.7)	3/8 (9.7)	38.1 (97.8)	2.57 (65.3)	1.50 (38.1)
Male NPT to Fractional Tube Fitting	1/4	1/4	43GXD4D44PM	0.187 (4.75)	0.80	2.39 (60.7)	1.20 (30.5)	1.03 (26.2)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
Female ISO Tapered	1/4	1/4	43GX4FRT	0.187 (4.75)	0.75	2.06 (52.3)	1.03 (26.2)	1.03 (26.2)	0.44 (11.2)	1.53 (38.9)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	3/8	3/8	44GX6FRT	0.281 (7.14)	1.5	2.50 (63.5)	1.25 (31.8)	1.25 (31.8)	0.56 (14.2)	2.00 (50.8)	3/8 (9.7)	28.7 (73.3)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45GX8FRT	0.406 (10.3)	3.5	3.1 (79.5)	1.56 (39.6)	1.56 (39.6)	0.69 (17.5)	3.00 (76.2)	3/8 (9.7)	38.1 (97.8)	2.57 (65.3)	1.50 (38.1)

# Part Numbers and Dimensions

## Angle Pattern Ball Valves



End Connection			Basic Ordering Number	Orifice in. (mm)	CV	Dimensions, in. (mm)							
Type	Inlet Size	Outlet Size				B	C	D	F	G	H	J	W
Fractional Tube Fitting	1/8	1/8	41GAD2	0.093 (2.36)	0.15	1.01 (25.7)	0.97 (24.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/4	1/4	42GAD4	0.125 (3.18)	0.35	1.10 (27.9)	1.07 (27.2)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/4	1/4	43GAD4	0.187 (3.18)	0.90	1.20 (30.5)	1.17 (29.7)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	3/8	3/8	43GAD6	0.187 (3.18)	0.90	1.29 (32.8)	1.29 (32.8)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	3/8	3/8	44GAD6	0.281 (7.14)	2.0	1.52 (38.6)	1.43 (36.3)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45GAD8	0.406 (10.3)	4.6	1.96 (49.8)	1.74 (44.2)	0.69 (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
	3/4	3/4	45GAD12	0.406 (10.3)	3.8	1.96 (49.8)	1.74 (44.2)	0.69 (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Metric Tube Fitting	3 mm	3 mm	41GADM3	0.093 (2.36)	0.15	1.01 (25.7)	0.97 (24.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	6 mm	6 mm	42GADM6	1.25 (3.18)	0.35	1.10 (27.9)	1.07 (27.2)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	6 mm	6 mm	43GADM6	0.187 (4.75)	0.90	1.20 (30.5)	1.17 (29.7)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	8 mm	8 mm	43GADM8	0.187 (4.75)	0.90	1.23 (31.2)	1.20 (30.5)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	10 mm	10 mm	44GADM10	0.281 (7.14)	2.00	1.53 (38.9)	1.43 (36.3)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	12 mm	12 mm	45GADM12	0.406 (10.3)	4.6	1.96 (49.8)	1.74 (44.2)	0.69 (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Female NPT	1/8	1/8	42GA2PF	0.125 (3.18)	0.30	0.81 (20.6)	0.81 (20.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/8	1/8	43GA2PF	0.125 (3.18)	0.70	1.00 (25.4)	1.00 (25.4)	0.44 (8.6)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	1/4	1/4	43GA4PF	0.187 (4.75)	0.75	1.03 (26.2)	1.03 (26.2)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
	1/4	1/4	44GA4PF	0.281 (7.14)	1.7	1.25 (31.8)	1.25 (31.8)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	3/8	3/8	44GA6PF	0.281 (7.14)	1.5	1.25 (31.8)	1.25 (31.8)	0.56 (14.2)	1.86 (47.2)	3/8 (9.5)	1 1/8 (28.6)	2.10 (53.3)	1.12 (28.4)
	1/2	1/2	45GA8PF	0.406 (10.3)	3.5	1.56 (39.6)	1.56 (39.6)	0.69 (17.5)	3.02 (76.7)	3/8 (9.5)	1 1/2 (38.1)	2.57 (65.3)	1.50 (38.1)
Male NPT	1/4	1/4	43GA4PM	0.187 (4.75)	0.75	1.00 (25.4)	1.03 (28.2)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)
Male NPT to Fractional Tube Fitting	1/4	1/4	43GA4PMD4	0.187 (4.75)	0.75	1.2 (30.5)	1.03 (26.2)	0.44 (11.2)	1.43 (36.3)	3/16 (4.8)	25/32 (19.8)	1.53 (38.9)	0.78 (19.8)

# Options & Accessories

## Tube Fitting End Connections

SSP can provide three tube fitting designs for all SSP valves. Use the designators below to indicate the required design. For more information about SSP tube ends see our other tube fitting catalogs.

*Example: 43GU4-316 for Unilok tube fitting end connections.*

Design	Description	Designator
Duolok	2-Ferrule	D
Unilok	1-Ferrule	U
Griplok	2-Ferrule	G

## Vented Valves

### 2-WAY VALVES

The downstream port vents to atmosphere through a vent hole in the side of the valve body when the valve is closed.

### ANGLE PATTERN AND 3-WAY VALVES

The bottom port vents to atmosphere through a vent hole in the side of the valve body when the valve is closed.

### VENTED VALVE PRESSURE RATING

The pressure rating for vented valves is 500 psig (34.4 bar).

### ORDERING VENTED VALVES

To order vented valves, add V after the flow pattern designator. *Example: 42GXVD4-316*

*Important:* To prevent cross-vent flow, order a vented valve with a smaller vent orifice by adding the designator from the table below to the part number.

*Example: 42GXVD4-316-040*

Valve Size	Orifice, in. (mm)	Designator
41, 42	0.040 (1.02)	-040
43, 44, 45	0.049 (1.24)	-049
45	0.093 (2.36)	-093

## Special Flow Paths

EB Series ball valves are available with special flow paths to accommodate sampling, draining, purging, tee flow and other applications. See pages 12-13 for special flow path options.

## Body Material

Select the valve body material required then add the designator to the valve basic part number.

*Example: 43GAD4-316*

Material	Designator
316 Stainless Steel	-316
Alloy 400	-M
Alloy C-276	-HC
Brass	-B

## Handle Options

Stainless steel reinforced black nylon handles are standard on EB Series ball valves. To select other handle options, add the designator from the table below to the basic part number.

*Example: 43GAD4-316-RD*

Handle Color	Designator
Black	None
Green	-GR
Red	-RD
Blue	-BL
Yellow	-YW
Orange	-OG
No Handle	-NH

## Locking Devices

SSP offers standard locking devices for all EB Series valve sizes and compact locking devices for 41, 42 and 43 size 2-way valves. For factory installed standard locking devices, add -LD. For compact locking devices add -LD2. *Example: 44GD6-316-LD*

Locking handle kits for field installation can be ordered using the part numbers in the table below.



Compact



Standard

Valve Size	Part Number	
	Compact	Standard
41, 42	42-LD2K-316	42-LDK-316
43	43-LD2K-316	43-LDK-316
44	N/A	44-LDK-316
45	N/A	45-LDK-316

# Actuator Brackets & Couplings

Actuator brackets and couplings are available for ISO 5211 compliant actuators. Actuator kits contain the actuator bracket, coupling and cap screws required to install the actuator bracket and connect to the actuator.

Valve Size	ISO 5211 Flange Size	Coupling Type	Cap Screw Type	Bracket Kit Part Number
41/42	F03	9 mm ISO	Metric	41-MB-F03-9ISO-M
			Fractional	41-MB-F03-9ISO-F
		9 mm DIN	Metric	41-MB-F03-9DIN-M
			Fractional	41-MB-F03-9DIN-F
	F04	9 mm ISO	Metric	41-MB-F04-9ISO-M
			Fractional	41-MB-F04-9ISO-F
		9 mm DIN	Metric	41-MB-F04-9DIN-M
			Fractional	41-MB-F04-9DIN-F
		11 mm ISO	Metric	41-MB-F04-11ISO-M
			Fractional	41-MB-F04-11ISO-F
		11 mm DIN	Metric	41-MB-F04-11DIN-M
			Fractional	41-MB-F04-11DIN-F
43	F03	9 mm ISO	Metric	43-MB-F03-9ISO-M
			Fractional	43-MB-F03-9ISO-F
		9 mm DIN	Metric	43-MB-F03-9DIN-M
			Fractional	43-MB-F03-9DIN-F
	F04	9 mm ISO	Metric	43-MB-F04-9ISO-M
			Fractional	43-MB-F04-9ISO-F
		9 mm DIN	Metric	43-MB-F04-9DIN-M
			Fractional	43-MB-F04-9DIN-F
		11 mm ISO	Metric	43-MB-F04-11ISO-M
			Fractional	43-MB-F04-11ISO-F
		11 mm DIN	Metric	43-MB-F04-11DIN-M
			Fractional	43-MB-F04-11DIN-F
	F05	11 mm ISO	Metric	43-MB-F05-11ISO-M
			Fractional	43-MB-F05-11ISO-F
		11 mm DIN	Metric	43-MB-F05-11DIN-M
			Fractional	43-MB-F05-11DIN-F
		14 mm ISO	Metric	43-MB-F05-14ISO-M
			Fractional	43-MB-F05-14ISO-F
		14 mm DIN	Metric	43-MB-F05-14DIN-M
			Fractional	43-MB-F05-14DIN-F

Valve Size	ISO 5211 Flange Size	Coupling Type	Cap Screw Type	Bracket Kit Part Number	
44	F03	9 mm ISO	Metric	44-MB-F03-9ISO-M	
			Fractional	44-MB-F03-9ISO-F	
		9 mm DIN	Metric	44-MB-F03-9DIN-M	
			Fractional	44-MB-F03-9DIN-F	
	F04	11 mm ISO	Metric	44-MB-F04-11ISO-M	
			Fractional	44-MB-F04-11ISO-F	
		11 mm DIN	Metric	44-MB-F04-11DIN-M	
			Fractional	44-MB-F04-11DIN-F	
	F05	11 mm ISO	Metric	44-MB-F05-11ISO-M	
			Fractional	44-MB-F05-11ISO-F	
		11 mm DIN	Metric	44-MB-F05-11DIN-M	
			Fractional	44-MB-F05-11DIN-F	
14 mm ISO		Metric	44-MB-F05-14ISO-M		
		Fractional	44-MB-F05-14ISO-F		
14 mm DIN		Metric	44-MB-F05-14DIN-M		
		Fractional	44-MB-F05-14DIN-F		
45	F05	11 mm ISO	Metric	45-MB-F05-11ISO-M	
			Fractional	45-MB-F05-11ISO-F	
		11 mm DIN	Metric	45-MB-F05-11DIN-M	
			Fractional	45-MB-F05-11DIN-F	
		14 mm ISO	Metric	45-MB-F05-14ISO-M	
			Fractional	45-MB-F05-14ISO-F	
		14 mm DIN	Metric	45-MB-F05-14DIN-M	
			Fractional	45-MB-F05-14DIN-F	
		F07	17 mm ISO	Metric	45-MB-F07-17ISO-M
				Fractional	45-MB-F07-17ISO-F
			17 mm DIN	Metric	45-MB-F07-17DIN-M
				Fractional	45-MB-F07-17DIN-F

## Actuation Torque

Use the table below to select the correct actuator for the valve and application. Listed is minimum required actuator torque at maximum system pressure. Valves with packings adjusted for less than maximum system pressure will require less torque.

Valve Size	Actuation Torque, 2-way/3-way in.-lbs.
41	20
42	20
43	40
44	80
45	150



Actuated assemblies must be properly aligned and supported. Improper alignment or inadequate support of the actuated assembly may result in leakage or premature valve failure.

# Options & Accessories

## Actuated Ball Valve Assemblies

EB Series valves are available with a wide range actuators, solenoids, limit switches selected specifically for each valve's requirements.

For more information, see the SSP Actuated Ball Valve Assemblies catalog, contact SSP Customer Service or visit [www.mySSP.com](http://www.mySSP.com).



## Special Cleaning

Valves are available cleaned in compliance with ASTM G93 Level C and CGA G-4.1, *Cleaning Methods and Cleanliness Levels for Material and Equipment Used in Oxygen-Enriched Environments*. To specify special cleaning, add -XP98 to the part number. *Example: 43GAD4-316-RD-XP98*

For more information about other types of special cleaning, please contact your local SSP distributor or SSP Customer Service.

Description	Designator
Oxygen compatible lubricant <sup>1</sup>	-XP98
No Lube	-XP97

<sup>1</sup>Valves with no lubricant have a pressure rating of 500 psig (34.4 bar). Valves with oxygen compatible lubricant are rated to -30°F.

## Replacement Handles

Replacement handles can be ordered by using the replacement part number table below. Replacement handles are shipped with set screw installed. *Note: For Black replacement handles use a -BK designator. Designators for other colors are listed in the handle options on page 10. Example: NY-7K-44-BK*

HANDLE COLOR	BASE PART NUMBER
41, 42	NY-7K-42-XX
43	NY-7K-43-XX
44	NY-7K-44-XX
45	NY-7K-45-XX

## High Performance Coatings

SSP offers high performance coatings that enhance stainless steel and other materials by providing high levels of corrosion resistance, chemical inertness, hydrophobicity and wear resistance. For more information about the coatings for your applications, contact SSP Customer service or visit [www.mySSP.com](http://www.mySSP.com).

## Special Flow Path

### Ordering Information

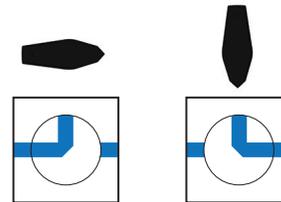
Below are EB Series ball valve special flow path options for 2-way and 3-way ball valves. To order special flow paths, select the flow path designator from the tables below, then place the designator after the G in the basic ordering number.

*Note: See the important Cross-Port Flow Warning on the bottom of page 13 for information about ordering special flow paths. Add the port sizes to the part number if required.*

Examples: 2-way Valve: 43GLD4-316  
3-way Valve: 43GXTFD4-316

## 2-Way Sampling Transfer

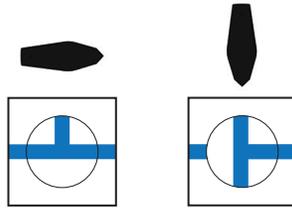
The valve isolates then transfers a small sample as the valve rotates 90° to transfer the sample to the opposite port. **Designator: L**



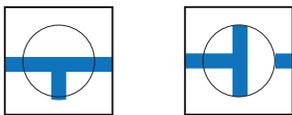
Size	Orifice in./mm	Flow Path Volume in. <sup>3</sup> /cm <sup>3</sup>	Working Pressure psig/bar	Designator
41	0.040 1.02	0.0004 0.007	2500 172	L
42	0.047 1.19	0.0005 0.008		
43	0.062 1.57	0.0013 0.021		
44	0.125 3.18	0.0073 0.120	1500 103	
45	0.281 7.14	0.0473 0.775		

## 2-Way Valve Drain/Purge

The valve may drain through either the upstream or downstream ports when the valve is in the off position. Designate DP for downstream or UP for upstream draining, *Example: 43GUPD6-316*



Downstream



Upstream

Size	Orifice in./mm	Working Pressure psig/bar	Designator
41	0.093 2.36	2500 172	DP - Downstream UP - Upstream
42	0.125 3.18		
43	0.187 4.75		
44	0.281 7.14	1500 103	
45	0.406 10.3		

### IMPORTANT: CROSS-PORT FLOW WARNING

Cross-port flow may occur in two- and three-port valves with L, DP, XQS, XTF, and XTS flow paths and orifices larger than 0.049 in. (1.24 mm).

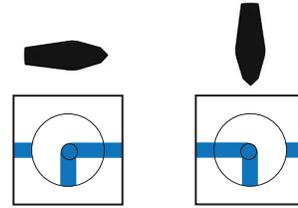
To prevent cross-port flow, select the designator for the vent orifice size, then add it to the part number.

*Example: 45GXTFD4-316-093*

Valve Size	Orifice, in. (mm)	Designator
41, 42	0.040 (1.02)	-040
43, 44, 45	0.049 (1.24)	-049
45	0.093 (2.36)	-093

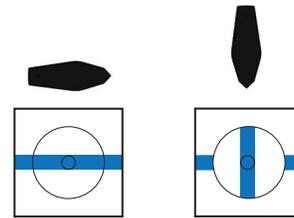
## 3-Way Quarter Turn Switching

Switching can be achieved in a quarter turn. Flow cannot be shut off in this configuration. **Designator: XQS**



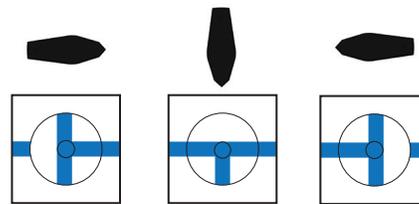
## 3-Way Tee Flow On/Off

Tee flow can be switched on and off in a quarter turn. **Designator: XTF**



## 3-Way Tee Flow Switching

The valve can be switched from tee flow to individual ports in one quarter turn from full flow. This configuration cannot be shut off. **Designator: XTS**



Size	Orifice in./mm	Working Pressure psig/bar	Designator
41	0.093 2.36	2500 172	XQS - Quarter-Turn Switching XTF - 3-way Tee Flow XTS - 3-way Tee Flow Switching
42	0.125 3.18		
43	0.187 4.75		
44	0.281 7.14	1500 103	
45	0.406 10.3		

# Special Orders

The Basic Ordering Numbers and Dimensions tables (pages 7-9) contain only the most popular valve configurations; many more are available. If the required valve configuration is not in the Basic Ordering Numbers and Dimensions tables, use the chart below to build part numbers for quotation purposes.

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
<b>43</b>	<b>G</b>	<b>X</b>	<b>V</b>	<b>D4</b>	<b>4PM</b>	<b>-316</b>	<b>-GR</b>
Valve Series/Size	Packing Material	Flow Path	Venting	Inlet/Outlet	Body Material	Options	

## A Body/Orifice Size

41	0.093, 0.053* in.
42	0.125 in.
43	0.187 in.
44	0.281 in.
45	0.406 in.

## B Packing

G Modified PTFE or PFA

## C Body/Flow Path

Blank	2 way
L	2-way Sample Transfer
DP	2-way Downstream Drain/Purge
UP	2-way Upstream Drain/Purge
A	Angle
X	3-way
XQS	Quarter Turn Switching
XTF	3-way Tee Flow
XTS	3-way Tee Flow Switching
See instructions on Page 12.	

## E + F Inlet<sup>2</sup> + Outlet Type and Size<sup>2</sup>

		Fractional Sizes:	Metric Sizes:
D	Duolok® Tube Fitting	1	M6 6 mm
U	Unilok® Tube Fitting	1 1/16 in.	M6 6 mm
G	Griplok® Tube Fitting	2 1/8 in.	M8 8 mm
PF	Female NPT	4 1/4 in.	M10 10 mm
PM	Male NPT	6 3/8 in.	M12 12 mm
MRT	Male ISO Tapered	8 1/2 in.	
FRT	Female ISO Tapered	12 3/4 in.	

## D Vented Valves

V Atmosphere  
See Vent Size options below

## G Body Material

-316	316 Stainless Steel
-M	Alloy 400
-HC	Alloy C-276
-B	Brass

## H Options<sup>1</sup>

### HANDLES

(Blank)	Black
-GR	Green
-RD	Red
-BL	Blue
-YW	Yellow
-OG	Orange
-NH	No Handle

### Locking Devices

-LD	Standard
-LD2	Compact

### Special Cleaning

-XP97	No Lube
-XP98	Oxygen compatible lubricant, per ASTM G93, Level C and CGA G-4.1

### Vent Size

-040	0.040
-049	0.049
-093	0.093

Blank Standard Size  
Note: For vented valves indicate V in the base part number. See D.  
See instruction for selecting vent sizes on Page 10.

## Important Information

IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE PERSONAL INJURY AND PROPERTY DAMAGE. It is the sole responsibility of the system designers and users to properly select and use products for their specific applications. This document has been provided to users with technical expertise as a reference for further investigation to determine specific product needs relative to their design requirements.

EB series ball valves should only be used in the full on or full off position. Throttling may damage the valve.

Packing adjustments are required for applications with working pressure higher than 1000 psig (69 bar) or if the valves have been exposed to high or low temperatures prior to installation. Instructions for packing adjustments are included with each valve.

Valves that have not been actuated for extended periods of time may require greater actuation torque.

## Testing

All EB series valves are factory tested with Nitrogen to 1000 psig (69 bar) at 70°F (20°C).  
Note: Packing adjustments are required for applications with higher pressures and in applications with higher or lower process or environmental temperature.

## Warranty

SSP valves are backed by the SSP Limited Life Time Warranty. This warranty is available from your local distributor or at [www.mySSP.com](http://www.mySSP.com).

<sup>1</sup> Add options designators to the end of the Base Part Number in alphabetical order.  
<sup>2</sup> Tube end connection part numbers are formatted "Type" followed by "Size." Example: D6.  
Pipe end connections are formatted "Size" followed by "Type." Example: 6PF  
\*1/16 tube fitting end connections reduce the opening to 0.053 in.

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Swagelok® is a registered trademark of Swagelok Company

# More SSP Products



## Tube Fittings

*Duolok® and Griplok® (two-ferrule) and Unilok® (single-ferrule) tube fittings ensure leak-tight installation when intermixed with Swagelok®, Hoke® Gyrolok®, and Parker® CPI™ fittings, provided they are used in accordance with SSP Fittings' published installation and service recommendations.*



## Valves

*The SSP valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.*



## Quick Connects

*SSP offers single-end shutoff, double-end shutoff, and full-flow quick connects for instrumentation and process applications.*



## Pipe Fittings

*TruFit and TruFit 10K pipe fittings are available in a wide range of weld, threaded and flared connections.*



## Filters

*SSP in-line and tee-type filters trap particles to clean sample fluids and protect sensitive process and analytical instrumentation components and equipment.*



## Tools & Accessories

*SSP TurnPro professional hand tools, power tools and installation training make quality tube system installation faster and easier.*



# SSP

Founded 1926

Privately owned, third generation business

Modern single-site vertically integrated manufacturing facility

DFARS-compliant raw material

ISO 9001 quality management system

Limited Lifetime Warranty



*The Only  
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