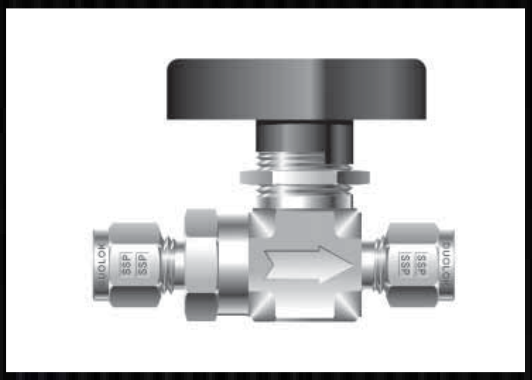
Contents

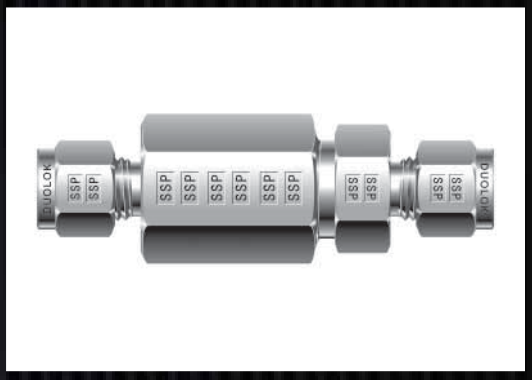
*** Each section may have a contents page for that specific section as this is a combined document.**

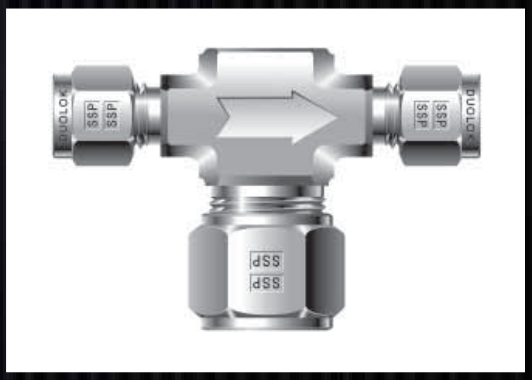
Flolok

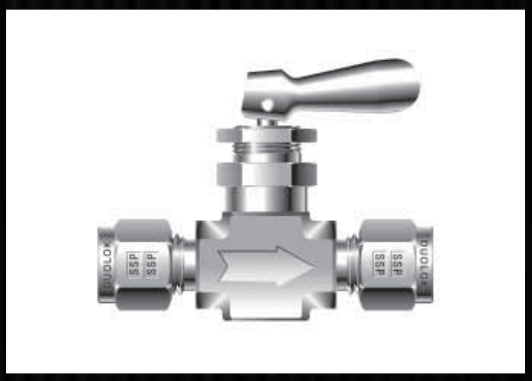
FloLok®
Valves



Made in USA







VALVES FOR INSTRUMENTATION & PROCESS SYSTEMS

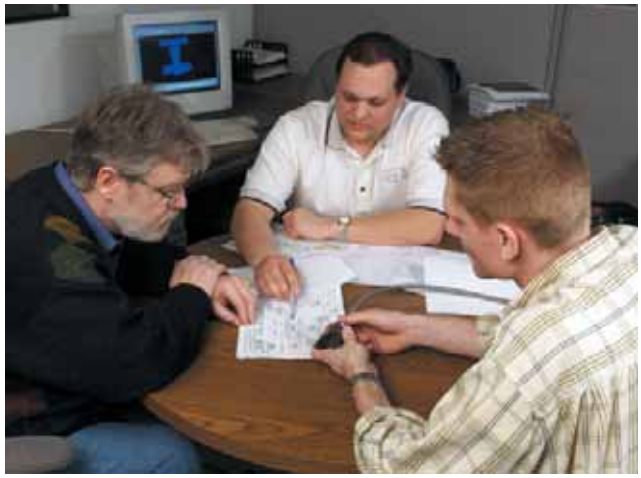
Table of Contents

SSP Fittings Corp. (SSP)

Since its inception in 1926, SSP has developed into an internationally recognized manufacturer of the highest quality machined products. This successful U.S. corporation's heritage of craftsmanship and business expertise provide the foundation for a valve division specializing in providing alternatives in quality instrumentation and process system valves...

FloLok®

From its origination in 1960, FloLok® Valves have been manufactured to meet the highest quality and performance standards associated with the instrumentation, control, and process industry marketplace. The FloLok® product line was initiated and expanded in response to expressed needs for solutions in unique flow control applications. Out of its original beginnings of specialization, standard product lines became available to serve a wide variety of applications and customers. The broad offering of operating pressure and temperature ranges, flow control options and end connections has made FloLok® the product of choice for many applications.

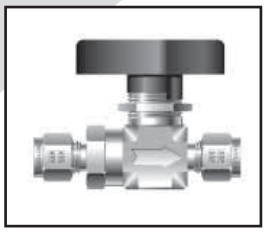


In 2001, the FloLok® product lines were acquired by SSP to supplement and complement SSP's historic product offering of quality tube, pipe, weld, hose and adapter fittings. SSP's world-renowned manufacturing, engineering, quality, sales and distribution now support valve product line expansion and provide the end-user with a single source for their instrumentation and process system valve and fitting needs.

FloLok® Valves

The FloLok Product Line

Ball Valves

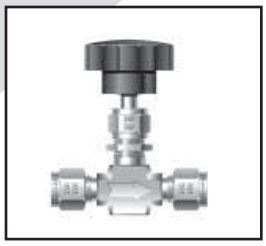


- Pressures to 5000 psig
- Temperatures to 350°F
- PTFE & Kel-F (PCTFE) Seats
- 316 Stainless Steel, Brass
- Two & Three Way
- **Standard Production Testing**: Every ball valve is assembled and tested @ 1000 psig (68.9 bar) with Nitrogen

Tee Filters

- Pressures to 5000 psig
- Temperatures to 450°F
- PTFE Gaskets
- 316 Stainless Steel, Brass
- Elements (Micron) 1, 2, 5, 10, 20, 40, 60, 100, 200, 400
- **Installation**: The best installation practice to help provent contaminants from entering the system during element change is to orient the filter with the cap downwards.

Needle, Metering & Lower Packing Valves

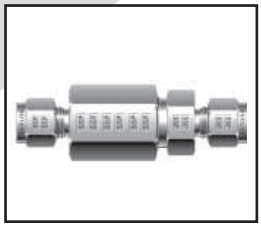


- Pressures to 6000 psig
- Temperatures to 450°F
- Metal-to-Metal & Soft Seat Stems
- 316 Stainless Steel, Brass
- Straight & Angle Patterns
- **Standard Production Testing:** Every needle, metering and lower packing valve is assembled and tested @ 1000 psig with Nitrogen.

Inline Filters

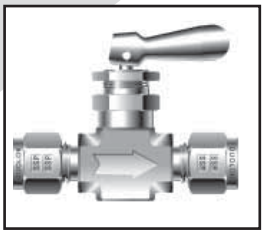
- Pressures to 3000 psig
- Temperatures to 900°F
- Replaceable Filter Elements
- 316 Stainless Steel, Brass
- Elements (Micron) 1, 2, 5, 10, 20, 40, 60, 100, 200

Check Valves



- Pressures to 6000 psig
- Temperatures to 350°F
- O-ring Seat Seal
- 316 Stainless Steel
- Cracking Pressures: 1/3, 1, 5, 10, 15, 25, 50 psig
- **Standard Production Testing:** Every check valve is tested for crack and reseal performance.

Toggle Valves



- Pressures to 200 psig
- Temperatures to 200°F
- PTFE Seats
- 316 Stainless Steel, Brass
- Straight & Angle Patterns
- **Standard Production Testing**: Every toggle valve is assembled and tested @ 200 psig with Nitrogen.

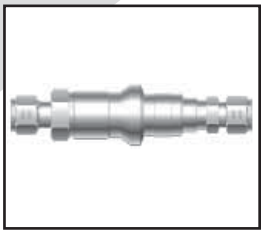
Plug Valves

- Pressures to 3000 psig
- Temperatures to 400°F
- Replaceable Plug
- 316 Stainless Steel, Brass
- One Piece Body Design
- **Standard Production Testing**: Every plug valve is assembled and tested @ 1000 psig (68.9 bar) with Nitrogen

Purge Valves

- Pressures to 4000 psig
- Temperatures to 600°F
- Quick Opening and Closing
- 316 Stainless Steel, Brass
- Low Operating Torque
- **Standard Production Testing**: Every purge valve is assembled and tested @ 1000 psig (68.9 bar) with Nitrogen

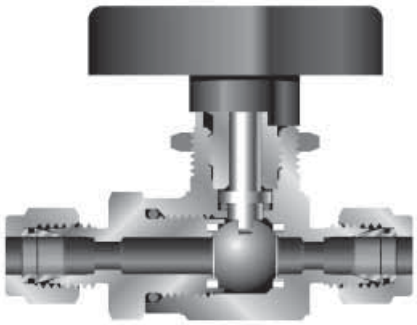
Quick Connects



- Pressures to 3000 psig
- DESO and SESO stem options
- Keyed Couplings Available
- 316 Stainless Steel, Brass
- Stem Caps & Body Plugs Available

Two-Way Ball Valves

FloLok® manually operated two-way ball valves provide quick ¼ turn directional flow control of fluids in instrumentation and process systems. Valve body, and Seat Material options provide a broad range of temperature and pressures at which the valve may be used.



Features

- Directional handle indicates flow direction
- Panel mountable
- 90 degree actuation
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Straight through flow path
- Micro finished ball provides positive seal
- Free floating ball design provides compensation for seat wear for repetitive sealing
- Blow-out proof ball & stem
- Available in 316 Stainless Steel and Brass

Ordering Information

To order, add the Material Designator and the desired Seat Material Designator as a suffix to the basic ordering number found in the table on page 13.

Part Number Configuration

Basic Ordering Number	—	Seat Material Designator *(optional)*	—	Material Designator *(optional)*

Material Designators

Brass – No suffix required

316 Stainless Steel – 316

Seat Material

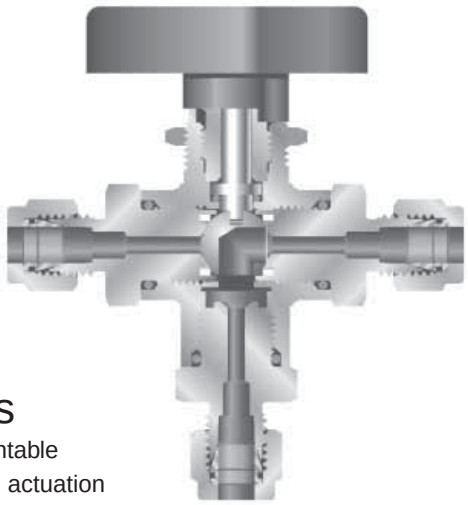
PTFE – No suffix required (standard Seat Material)

Kel-F (PCTFE) – K

	Specifications			
	Stainless Steel		Brass	
Temp Rating	PTFE Seats	-40°F to 350°F	PTFE Seats	-40°F to 350°F
	Kel-F Seats	-40°F to 350°F	Kel-F Seats	-40°F to 350°F
Pressure Rating @ 100°F	PTFE Seats 1500 psi		PTFE Seats 1500 psi	
	Kel-F Seats 5000 psi		Kel-F Seats 3000 psi	

Three-Way Ball Valves

FloLok® manually operated three-way ball valves accept media through the bottom port and allow selection of flow through a selected port. Valve body, and Seat Material options provide a broad range of temperatures and pressures at which the valve may be used.



Features

- Panel mountable
- 180 degree actuation
- Directional handle indicates flow direction
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Micro finished ball provides positive seal
- Free floating ball design provides compensation for seat wear for repetitive sealing
- Blow-out proof ball and stem

Ordering Information

To order, add the Material Designator and the desired Seat Material Designator as a suffix to the basic ordering number found in the table on page 15.

Part Number Configuration

Basic Ordering Number	—	Seat Material Designator *(optional)*	—	Material Designator *(optional)*

Material Designators

Brass – No suffix required

316 Stainless Steel – 316

Seat Material

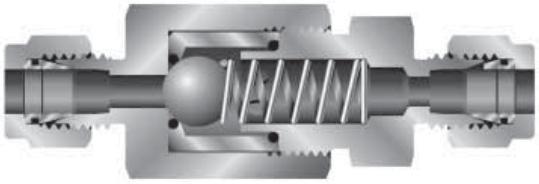
PTFE – No suffix required (standard Seat Material)

Kel-F (PCTFE) – K

	Specifications			
	Stainless Steel		Brass	
Temp Rating	PTFE Seats	-40°F to 350°F	PTFE Seats	-40°F to 350°F
	Kel-F Seats	-40°F to 350°F	Kel-F Seats	-40°F to 350°F
Pressure Rating @ 100°F	PTFE Seats 1500 psi		PTFE Seats 1500 psi	
	Kel-F Seats 5000 psi		Kel-F Seats 3000 psi	

Check Valves

FloLok® Check Valves are designed for uni-directional flow control of fluids in instrumentation and process systems.



Features

- O-ring seat for tight shut-off
- Minimum flow resistance
- Cracking pressures include: 1/3, 1, 5, 10, 15, 25, 50 psi
- Micro finished ball provides positive seal
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections

Ordering Information

To order, add the desired Nominal Spring Size Designator after the basic ordering number. The Nominal Spring Size as well as the basic ordering number, are found in the tables on page 17.

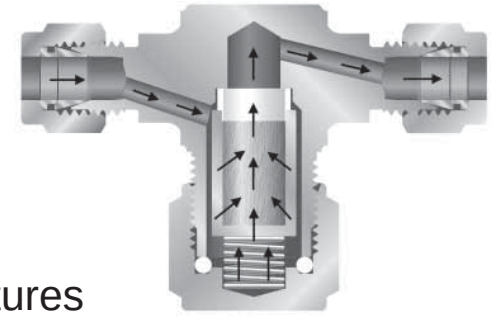
Part Number Configuration

Basic Ordering Number	—	Nominal Spring Size Designator

	Specifications
	Stainless Steel
Temp Rating	-15°F to 350°F
Pressure Rating @ 100°F	6000 psig

Tee Filters

FloLok® Tee Filters are designed to remove system contaminants and maintain fluid purity in instrumentation and process systems.



Features

- Replacement of filter element without removing filter body from system
- Available in 316 Stainless Steel and Brass
- Replaceable sintered or strainer elements are available in a choice of micron sizes
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections

Ordering Information

To order, add the Material Designator and the desired Filter Element Designator as a suffix to the basic ordering number found on page 19.

Part Number Configuration

Basic Ordering Number	—	Filter Element Designator	—	Material Designator *(optional)*

Material Designators

Brass – No suffix required

Stainless Steel – 316

Filter Element Designators

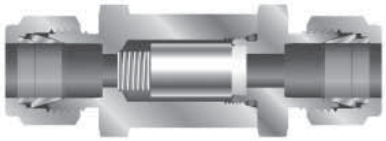
Sintered: 1, 2, 5, 10, 20, 40, 60, 100, 200

Strainer: 140, 400

	Specifications	
	Stainless Steel	Brass
Temp Rating	-20°F to 450°F	-20°F to 450°F
Pressure Rating @ 100°F	5000 psig	3000 psig

Inline Filters

FloLok® Inline Filters are designed to remove system contaminants and maintain fluid purity in instrumentation and process systems.



Features

- Replaceable Filter Elements
- Choice of Micron Sizes from 1 to 200
- Filters trap foreign particles to protect sensitive equipment
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Available in 316 Stainless Steel and Brass

Ordering Information

To order, add the Filter Element Designator and the Material Designatior as a suffix to the Basic ordering number found on page 20.

Part Number Configuration

Basic Ordering Number — **Filter Element Designator** — **Material Designator** *(optional)*

Filter Element Designators

Sintered: 1, 2, 5, 10, 20, 40, 60, 100, 200

Strainer: 140, 400

Material Designators

Brass – No suffix required

Stainless Steel – 316

	Specifications			
	Stainless Steel		Brass	
Inlet/Outlet Size	1/8" & 1/4"	3/8" & 1/2"	1/8" & 1/4"	3/8" & 1/2"
Temp. Rating	-20° to 900°F	-20° to 900°F	-20 to 300°F	-20° to 300°F
Pressure Rating @ 100°F	3,000 psig	2,500 psig	1,000 psig	1,000 psig

Metering Valves

FloLok® Metering Valves are designed for instrumentation, research and analytical applications where accurate control and flow rates are required.

Features

- Straight and Angle patterns available
- Panel mountable
- Orifice sizes from .047" to .250"
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Available in 316 Stainless Steel and Brass
- Optional color coded handles

Ordering Information

To order, add the Material Designator as a suffix and the Angle Pattern Designator as a prefix to the basic ordering number found in the tables on pages 22-23.

Part Number Configuration

Angle Pattern Designator *(optional)* — **Basic Ordering Number** — **Material Designator** *(optional)*

Material Designators

Brass - No suffix required

Stainless Steel – 316

Angle Pattern Designator

Straight Pattern – No prefix required
(Straight Pattern standard)

Angle Pattern – A (prefix to basic ordering number)

	Specifications	
	Stainless Steel	Brass
Temp Rating	-40°F to 450°F	-40°F to 450°F
Pressure Rating @ 100°F	6000 psig	3000 psig

Needle Valves

FloLok® Needle Valves are designed for positive shut-off and regulation control of media in instrumentation and process systems. A variety of end connections, temperature ranges, and pressures provide the user the utmost in control and flexibility.

Features

- Panel mountable
- Choice of two Stem Types:
  - All metal, blunt stem tip (Vee)
  - Kel-F stem tip (Soft seat)
- Straight and Angle patterns available
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Optional color coded handles
- Stainless Steel T-bar and knurled Stainless Steel handles available

Ordering Information

To order, add the Material Designator and desired Stem Type Designator as a suffix and Angle Pattern Designator as a prefix to the basic ordering number found in the table on page 25.

Part Number Configuration

Angle Pattern Designator *(optional)*	–	Basic Ordering Number	–	Stem Type Designator	–	Material Designator *(optional)*

Material Designators

Brass - No suffix required

Stainless Steel – 316

Stem Designator

Metal Stem Tip (Vee) – No suffix required (standard)

Kel-F (PCTFE) Stem Tip (Soft Seat) – K

Angle Pattern Designator

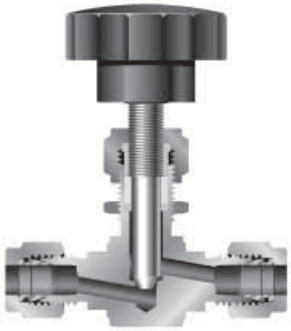
Straight Pattern – No prefix required

Angle Pattern – A (prefix to basic ordering number)

	Specifications			
	Stainless Steel		Brass	
Temp Rating	Metal Stem	-40°F to 450°F	Metal Stem	-40°F to 450°F
	Kel-F Stem Point	-40°F to 200°F	Kel-F Stem Point	-40°F to 200°F
Pressure Rating @ 100°F	6000 psig		3000 psig	

Lower Packing Valves

FloLok® Lower Packing Valves are designed with packing below the threads, isolating the threads and thread lubricant from the flow of media for thread protection, lubricant washout, contamination, and protection from potentially damaging media.



Features

- Panel mountable
- Straight and Angle patterns available
- Choice of two Stem Types:
  - All metal, blunt stem tip (Vee)
  - Kel-F stem tip (soft seat)
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Available in 316 Stainless Steel
- Optional color coded handles
- Optional Stainless Steel T-bar handles

Ordering Information

To order, add the Material Designator and the desired Stem Type Designator as a suffix and the Angle Pattern Designator as a prefix to the basic ordering number found on page 27.

Part Number Configuration

Angle Pattern Designator *(optional)*	–	Basic Ordering Number	–	Stem Type Designator *(optional)*

Stem Designator

Metal Stem Tip (Vee) – No suffix required (standard)

Kel-F (PCTFE) Stem Tip (Soft Seat) – K

Angle Pattern Designator

Straight Pattern – No prefix required (standard)

Angle Pattern – A (prefix to basic ordering number)

	Specifications	
	Stainless Steel	
Temp Rating	Metal Stem	-40°F to 450°F
	Kel-F Stem Point	-40°F to 200°F
Pressure Rating @ 100°F	5000 psig	

Toggle Valves

FloLok® Toggle Valves are designed for quick actuation and positive on-off control of media in low pressure and temperature applications encountered in instrumentation and process systems.

Features

- Quick opening and closing
- Straight and angle patterns available
- Panel mountable
- Rugged, compact design
- PTFE stem tip provides repetitive shut-off
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Available in 316 Stainless Steel and Brass

Ordering Information

To order, add the Material Designator as a suffix and the Angle Pattern Designator as a prefix to the basic ordering number found in the table on page 29.

Part Number Configuration

Angle Pattern Designator *(optional)*	—	Basic Ordering Number	—	Material Designator *(optional)*

Material Designators

Brass – No suffix required

Stainless Steel – 316

Angle Pattern Designators

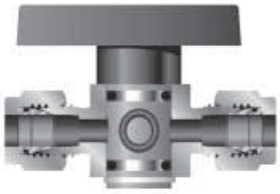
Straight Pattern – No prefix required
(Straight Pattern standard)

Angle Pattern – A (prefix to basic ordering number)

	Specifications	
	Stainless Steel	Brass
Temp Rating	- 20°F to 200°F	- 20°F to 200°F
Pressure Rating @ 100°F	200 psig	200 psig

Plug Valves

FloLok® manually operated Plug Valves are designed to provide positive shut-off to stop forward flow with up to 3000 psig in instrumentation and process systems.



Features

- Quick opening and closing
- Replaceable Pug
- 1/4 Turn Operation
- Low Operating Torque
- One Piece Body Design
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Available in 316 Stainless Steel and Brass

Ordering Information

To order, add the Material Designator as a suffix to the Basic ordering number found on page 31.

Part Number Configuration

Basic Ordering Number	—	Material Designator *(optional)*

Material Designators

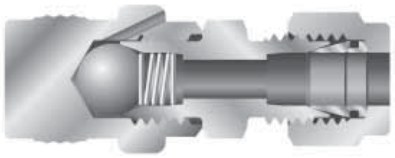
Brass – No suffix required

Stainless Steel – 316

	Specifications		
	Stainless Steel	Brass	
	PV4, PV6	PV4	PV6
Temp Rating	-10° to 400° F	-10° to 400° F	-10° to 400° F
Pressure Rating @ 100° F*	3000 psig	3000 psig	2000 psig

Purge Valves

FloLok® manually operated Purge Valves are designed to bleed, vent or drain system media or pressure and provide a leak tight seal up to 4000 psig.



Features

- Quick opening and closing
- Leak Tight Seal
- 1/4 Turn From Finger Tight
- Low Operating Torque
- Optional PTFE Ball
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Available in 316 Stainless Steel and Brass

Ordering Information

To order, add the Material Designator and the Ball Designator as a suffix to the basic ordering number found on page 33.

Part Number Configuration

Basic Ordering Number — **Material Designator** *(optional)* — **Ball Designator**

Material Designators

Brass – No suffix required

Stainless Steel – 316

Ball Designators

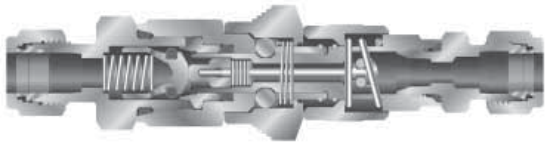
Stainless Ball – No suffix required

PTFE Ball – TFE

	Specifications	
	Stainless Steel	**Brass**
Temp Rating	-65° to 600° F	-65° to 400° F
Pressure Rating @ 100° F*	4000 psig	3000 psig

Quick Connects

FloLok® Quick Connects are designed to provide a convienient way to connect and disconnect fluid lines, creating a leak tight seal without the use of tools.



Features

- Viton® (Florocarbon FKM Rubber) O-Rings Provide Leak Tight Sealing
- Both DESO (Double End Shut Off) and SESO (Single End Shut Off) Stem Designs
- Push to Connect Design Means No Tools Required
- Keyed Couplings Available to Prevent Accidental Connection
- Choice of Duolok®, Unilok®, Griplok® tube fittings and TruFit® NPT pipe end connections
- Stem Plugs and Body Caps available to prevent contamination

Ordering Information

To order, add the Material Designator and the Key Color as a suffix to the basic ordering number found on pages 35-36.

Part Number Configuration

Basic Ordering Number — **Material Designator** *(optional)* — **Key Color** *(optional)*

Material Designators

Brass – No suffix required

Stainless Steel – 316

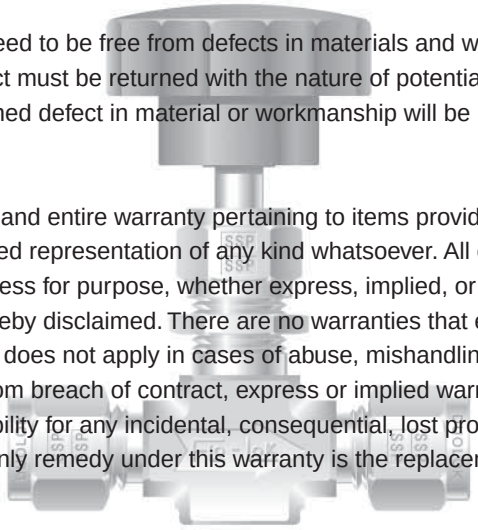
Key Color

Black – K1
Orange – K2
Green – K3
Yellow – K4
Blue – K5
White – K6
Purple – K7
Brown – K8

	Specifications					
	316 SS			Brass		
Series	**QC4**	**QC6**	**QC8**	**QC4**	**QC6**	**QC8**
Coupled	3000 psig	1500 psig	750 psig	2000 psig	1000 psig	500 psig
Uncoupled	3000 psig	1500 psig	750 psig	2000 psig	1000 psig	500 psig
Connect Under Pressure	250 psig	250 psig	250 psig	250 psig	250 psig	250 psig

FloLok® Valves

LIFETIME LIMITED WARRANTY



FloLok® valves are guaranteed to be free from defects in materials and workmanship. To initiate a warranty claim, suspected defective product must be returned with the nature of potential defect documented for factory evaluation. Any product with a determined defect in material or workmanship will be replaced with equivalent product at no charge.

This warranty comprises the sole and entire warranty pertaining to items provided hereunder. There is no other warranty, guarantee, express or implied representation of any kind whatsoever. All other warranties including, but not limited to, merchantability and fitness for purpose, whether express, implied, or arising by operation of law, course of dealing, or trade usage are hereby disclaimed. There are no warranties that extend beyond the description on the face hereof; and this warranty does not apply in cases of abuse, mishandling, or normal use depreciation. In no event, whether alleged to arise from breach of contract, express or implied warranty, by operation of law, negligence or otherwise, will there be any liability for any incidental, consequential, lost property, or other special damages of any kind whatsoever. The exclusive, only remedy under this warranty is the replacement of determined defective parts as set forth above.

Safety

To help ensure the safe and reliable performance of valve products, complete system design must be considered prior to the installation of the valves and end connections.

Determining the design compatibility of materials, media, flows, temperatures and pressures, as well as implementing proper installation, operation and maintenance of the system are the responsibilities of the systems' owners, designers and users.

FloLok Safety Reminders

All FloLok products are designed and manufactured with safety in mind. The following is a limited list of general safety tips as reminders of good safety practices:

- Do not install, tighten or loosen a valve or filter while the system is under pressure.
- Do not loosen a valve, filter, nut or end connection to relieve or bleed system pressure.
- Always use a back-up wrench to hold the valve or filter body steady when tightening or loosening end connections.
- There is no need to disassemble a new valve or filter prior to use.
- Use proper thread lubricants and sealants on tapered pipe threads.
- If Fractional Tube Fitting end connections are used with very soft pliable plastic tubing, a tube insert is required for proper installation.
- Valve Tube Fitting end connection and tubing material should be similar (stainless steel fittings on stainless steel tubing, brass fittings on copper tubing, etc.) with the tubing material being fully annealed.

Selection Guide

End Connections

FloLok valves are available with a choice of Duolok®, Unilok® and Griplok® fractional tube fittings and TruFit® pipe end connections.

Duolok®

Tube fitting end connections directly interchangeable/intermixable with Swagelok® tube fittings.

Griplok®

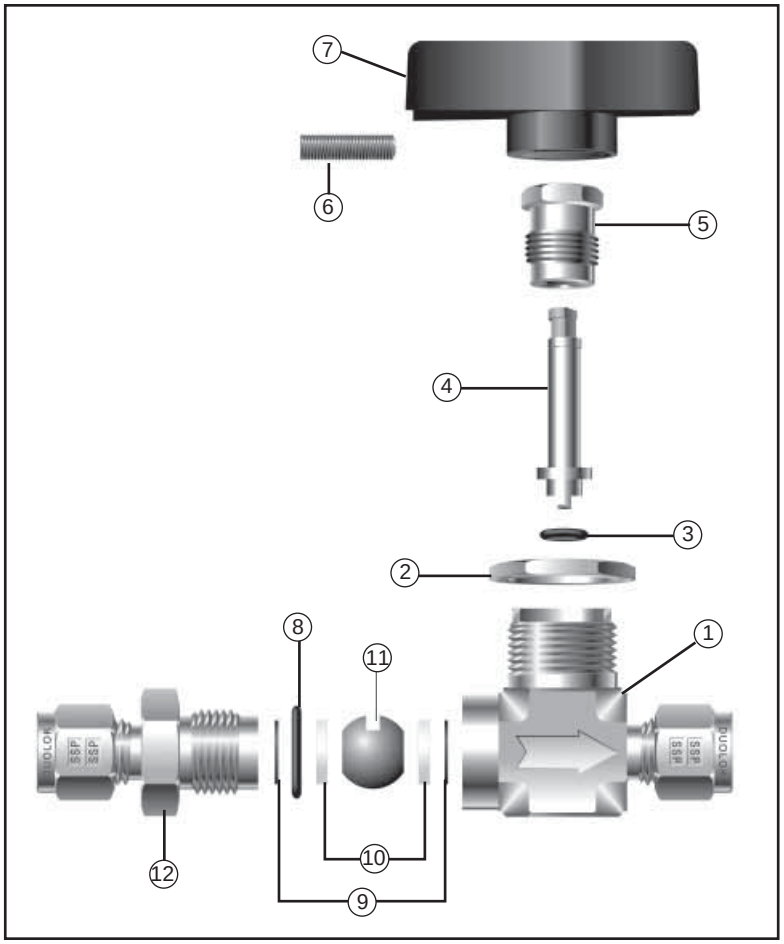
Tube fitting end connections directly interchangeable/intermixable with Hoke® Gyrolok® tube fittings.

Unilok®

Tube fitting end connections directly interchangeable/intermixable with Parker CPI® tube fittings.

TruFit®

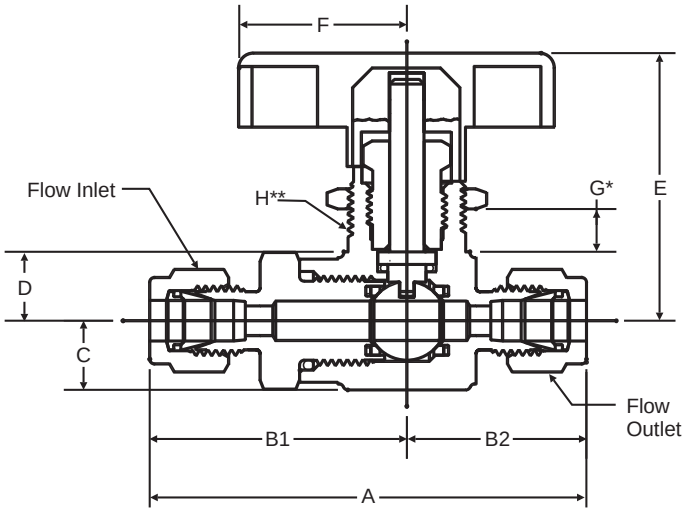
Pipe fitting end connections directly interchangeable with fittings provided by Swagelok®/Cajon®, Parker® and Hoke®.



*Wetted components.

Materials of Construction			
#	Component	Stainless Steel	Brass
1	Body*	316 Stainless Steel	Brass
2	Panel Nut	316 Stainless Steel	Brass
3	Stem O-ring*	Viton	Viton
4	Stem*	316 Stainless Steel	316 Stainless Steel
5	Bonnet	316 Stainless Steel	Brass
6	Handle Set Screw	Stainless Steel	Stainless Steel
7	Handle^	Nylon	Nylon
8	Connector O-ring*	Viton	Viton
9	Back-up Rings*	Viton	Viton
10	Seats*	PTFE / Kel-F	PTFE / Kel-F
11	Ball*	316 Stainless Steel	316 Stainless Steel
12	Connector*	316 Stainless Steel	Brass

*Wetted components.
^Handle contains brass insert for extra strength and wear resistance.



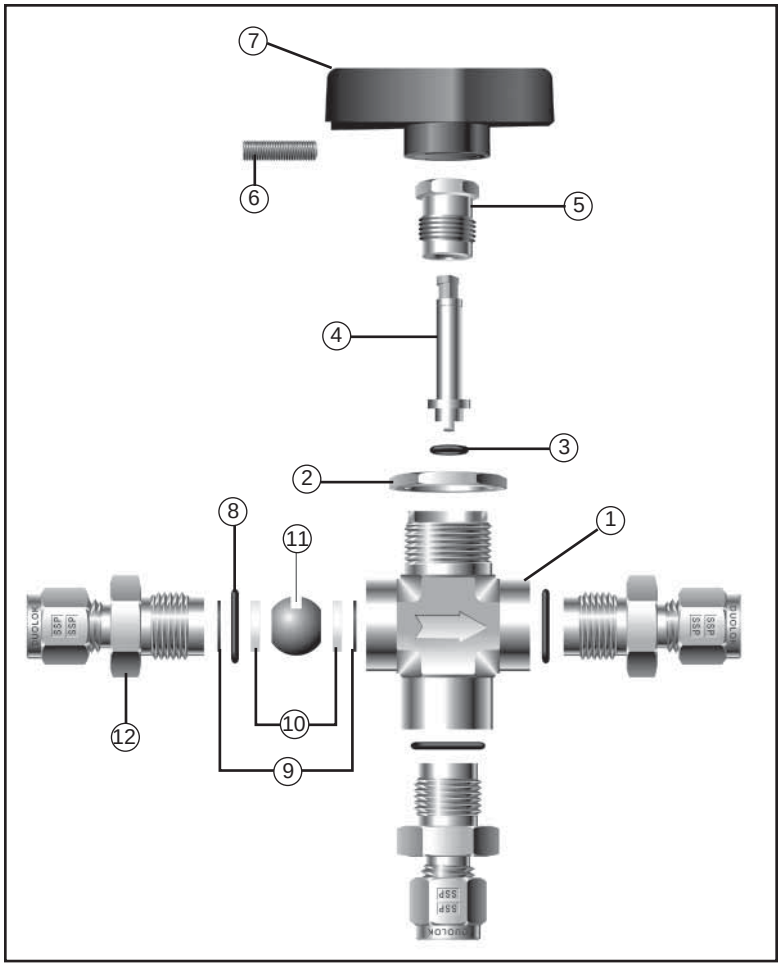
G* – Max. Panel Thickness
H** – Panel Hole Drill Size
Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions																	
						A		B1		B2		C		D		E		F		G		H	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**350**	0.093	2.36	2.22	56.49	1.24	31.60	0.98	24.89	0.40	10.16	0.38	9.53	1.27	32.26	0.94	23.93	0.25	6.35	19/32	15.08
	1/4	1/4	**352**	0.125	3.18	2.41	61.29	1.34	33.99	1.08	27.31	0.40	10.16	0.38	9.53	1.27	32.26	0.94	23.93	0.25	6.35	19/32	15.08
			312	0.187	4.75	2.77	70.28	1.63	41.40	1.14	28.88	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	3/8	3/8	**320**	0.250	6.35	2.88	73.23	1.69	42.88	1.20	30.35	0.44	11.13	0.44	11.10	1.69	42.93	1.06	27.00	0.25	6.35	25/32	19.84
	1/2+	1/2+	**322**	0.250	6.35	3.11	78.89	1.80	45.69	1.31	33.20	0.51	12.85	0.51	12.83	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
			358	0.437	11.10	3.77	95.81	2.15	54.58	1.62	41.22	0.75	19.05	0.75	19.05	2.21	56.01	1.51	38.25	0.25	6.35	1 1/32	26.19
	3/4	3/4	**359**	0.437	11.10	3.77	95.81	2.15	54.58	1.62	41.22	0.75	19.05	0.75	19.05	2.21	56.01	1.51	38.25	0.25	6.35	1 1/32	26.19
Fractional Tube Fitting to Female NPT	1/2+	1/2	**323**	0.437	11.10	3.56	90.35	2.15	54.58	1.41	35.76	0.75	19.05	0.75	19.05	2.21	56.01	1.51	38.25	0.25	6.35	1 1/32	26.19
Fractional Tube Fitting to Male NPT	1/2+	1/2	**362**	0.437	11.10	3.59	91.16	2.15	54.58	1.44	36.58	0.75	19.05	0.75	19.05	2.21	56.01	1.51	38.25	0.25	6.35	1 1/32	26.19
Female NPT	1/8	1/8	**351**	0.125	3.18	2.02	51.38	1.15	29.16	0.88	22.23	0.40	10.16	0.38	9.53	1.27	32.26	0.94	23.93	0.25	6.35	19/32	15.08
	1/4	1/4	**306**	0.250	6.35	2.64	67.08	1.58	40.13	1.06	26.92	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	3/8+	3/8+	**319**	0.437	11.10	3.26	82.90	2.01	51.05	1.25	31.75	0.75	19.05	0.75	19.05	2.21	56.13	1.51	38.35	0.25	6.35	1 1/32	26.19
	1/2	1/2	**357**	0.437	11.10	3.42	86.89	2.01	51.13	1.41	35.76	0.75	19.05	0.75	19.05	2.21	56.01	1.51	38.25	0.25	6.35	1 1/32	26.19
Female NPT to Fractional Tube Fitting	1/4	1/4	**310**	0.187	4.75	2.72	68.99	1.58	40.13	1.14	28.88	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	1/4	3/8	**315**	0.250	6.35	2.77	70.46	1.58	40.13	1.20	30.35	0.44	11.13	0.44	11.10	1.69	42.93	1.06	27.00	0.25	6.35	25/32	19.84
Female NPT to Male NPT	1/8	1/8	**355**	0.125	3.18	1.93	49.00	1.15	29.16	0.78	19.84	0.40	10.16	0.38	9.53	1.27	32.26	0.94	23.93	0.25	6.35	19/32	15.08
Male NPT	1/8	1/8	**353**	0.125	3.18	1.83	46.38	1.05	26.54	0.78	19.84	0.40	10.16	0.38	9.53	1.27	32.26	0.94	23.93	0.25	6.35	19/32	15.08
	1/4	1/4	**301**	0.250	6.35	2.64	67.08	1.58	40.13	1.06	26.92	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	3/8+	3/8+	**314**	0.250	6.35	2.71	68.73	1.58	40.13	1.13	28.58	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	1/2	1/2	**360**	0.437	11.10	3.45	87.71	2.01	51.13	1.44	36.58	0.75	19.05	0.75	19.05	2.21	56.01	1.51	38.25	0.25	6.35	1 1/32	26.19
Male NPT to Fractional Tube Fitting	1/8	1/4	**354**	0.125	3.18	2.12	53.85	1.05	26.54	1.08	27.31	0.40	10.16	0.38	9.53	1.27	32.26	0.94	23.93	0.25	6.35	19/32	15.08
	1/4	1/4	**304**	0.187	4.75	2.72	68.99	1.58	40.13	1.14	28.88	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	1/4	3/8	**307**	0.250	6.35	2.77	70.46	1.58	40.13	1.20	30.35	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	3/8+	3/8	**318**	0.250	6.35	2.78	70.51	1.58	40.13	1.20	30.35	0.44	11.13	0.44	11.10	1.69	42.93	1.06	27.00	0.25	6.35	25/32	19.84
Male NPT to Female NPT	1/4	1/4	**302**	0.250	6.35	2.64	67.08	1.58	40.13	1.06	26.92	0.44	11.13	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	1/2	1/2	**361**	0.437	11.10	3.42	86.89	2.01	51.13	1.41	35.76	0.75	19.05	0.75	19.05	2.21	56.01	1.51	38.25	0.25	6.35	1 1/32	26.19
	3/8+	3/8	**321**	0.437	11.10	3.06	77.72	1.81	45.97	1.25	31.75	0.75	19.05	0.75	19.05	2.21	56.13	1.51	38.35	0.25	6.35	1 1/32	26.19

+Spacer included for panel mounting.

Complete ordering information is provided on page 4.

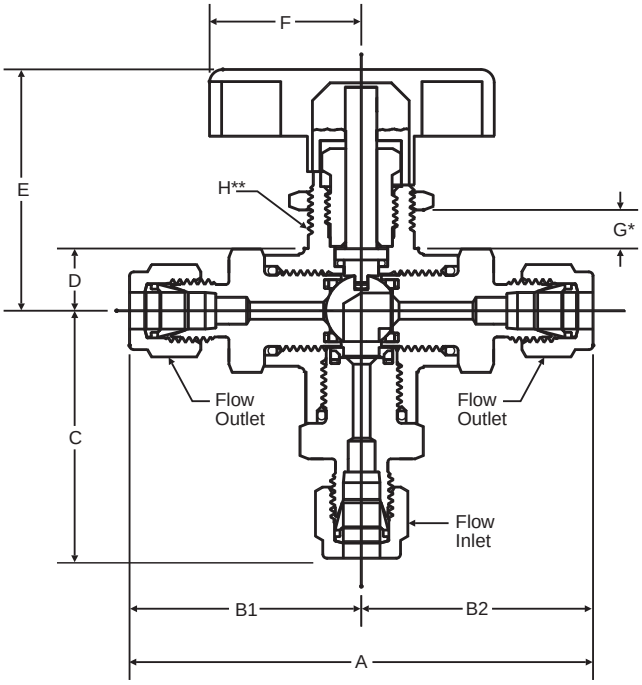
Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Material Designator and the desired Seat Material Designator as a suffix to the basic ordering number.



*Wetted components.

Materials of Construction			
#	Component	Stainless Steel	Brass
1	Body*	316 Stainless Steel	Brass
2	Panel Nut	316 Stainless Steel	Brass
3	Stem O-ring*	Viton	Viton
4	Stem*	316 Stainless Steel	316 Stainless Steel
5	Bonnet	316 Stainless Steel	Brass
6	Handle Set Screw	Stainless Steel	Stainless Steel
7	Handle^	Nylon	Nylon
8	Connector O-ring*	Viton	Viton
9	Back-up Rings*	Viton	Viton
10	Seats*	PTFE / Kel-F	PTFE / Kel-F
11	Ball*	316 Stainless Steel	316 Stainless Steel
12	Connector*	316 Stainless Steel	Brass

*Wetted components.
^Handle contains brass insert for extra strength and wear resistance.



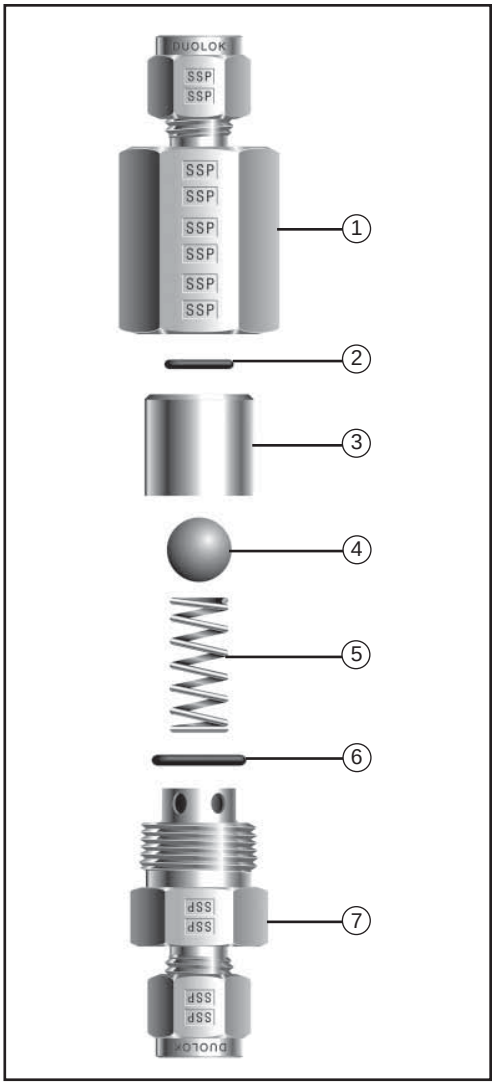
G* – Max. Panel Thickness
H** – Panel Hole Drill Size
Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions																	
						A		B1		B2		C		D		E		F		G		H	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**350-3**	0.093	2.36	2.49	63.20	1.24	31.60	1.24	31.60	1.42	36.14	0.38	9.53	1.27	32.23	0.94	23.88	0.25	6.35	19/32	15.08
	1/4	1/4	**352-3**	0.125	3.18	2.68	68.02	1.34	34.01	1.34	34.01	1.52	38.56	0.38	9.53	1.27	32.23	0.94	23.88	0.25	6.35	19/32	15.08
			312-3	0.187	4.75	3.26	82.70	1.63	41.35	1.63	41.35	1.82	46.18	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	3/8	3/8	**320-3**	0.250	6.35	3.38	85.75	1.69	42.88	1.69	42.88	1.88	47.70	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	1/2+	1/2+	**322-3**	0.250	6.35	3.60	91.39	1.80	45.69	1.80	45.69	1.99	50.52	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
			358-3	0.437	11.10	4.30	109.17	2.15	54.58	2.15	54.58	2.54	64.62	0.75	19.05	2.21	56.01	1.51	38.35	0.25	6.35	1 1/32	26.19
	3/4	3/4	**359-3**	0.437	11.10	4.30	109.17	2.15	54.58	2.15	54.58	2.54	64.62	0.75	19.05	2.21	56.01	1.51	38.35	0.25	6.35	1 1/32	26.19
Female NPT	1/8	1/8	**351-3**	0.125	3.18	2.30	58.32	1.15	29.16	1.15	29.16	1.33	33.71	0.38	9.53	1.27	32.23	0.94	23.88	0.25	6.35	19/32	15.08
	1/4	1/4	**306-3**	0.250	6.35	3.16	80.21	1.58	40.11	1.58	40.11	1.77	44.93	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	3/8+	3/8+	**319-3**	0.437	6.35	4.03	86.56	2.01	43.28	2.01	43.28	2.41	48.11	0.75	11.10	2.21	43.43	1.51	27.00	0.25	6.35	1 1/32	26.19
	1/2	1/2	**357-3**	0.437	11.10	4.03	102.26	2.01	51.13	2.01	51.13	2.41	61.16	0.75	19.05	2.21	56.01	1.51	38.35	0.25	6.35	1 1/32	26.19
Male NPT	1/8	1/8	**353-3**	0.125	3.18	2.09	53.09	1.05	26.54	1.05	26.54	1.22	31.09	0.38	9.53	1.27	32.23	0.94	23.88	0.25	6.35	19/32	15.08
	1/4	1/4	**301-3**	0.250	6.35	3.16	80.21	1.58	40.11	1.58	40.11	1.77	44.93	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84
	3/8+	3/8+	**314-3**	0.250	6.35	3.16	80.31	1.58	40.16	1.58	40.16	1.77	44.98	0.44	11.10	1.71	43.43	1.06	27.00	0.25	6.35	25/32	19.84

+Spacer included for panel mounting.

Complete ordering information is provided on page 4.

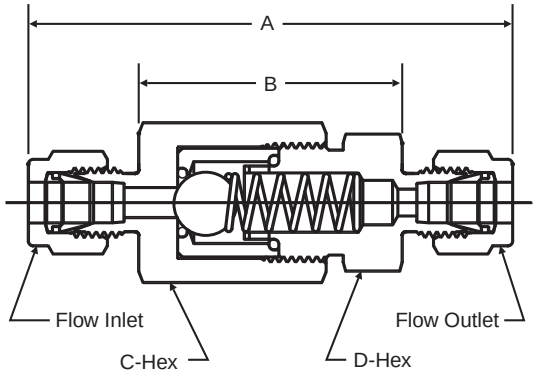
Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Material Designator and the Seat Material Designator as a suffix to the basic ordering number.



*All components are wetted.

Materials of Construction		
#	Component	Stainless Steel
1	Body*	316 Stainless Steel
2	O-ring*	Viton+
3	Ball Cage*	316 Stainless Steel
4	Ball*	316 Stainless Steel
5	Spring*	302 Stainless Steel
6	O-ring*	Viton+
7	Stem*	316 Stainless Steel

*All components are wetted.
+Viton standard; optional materials upon request.



Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions							
						A		B		C		D	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**4002-*-316**	0.09	2.36	2.60	66.14	1.39	35.41	0.75	19.05	0.63	15.88
	1/4	1/4	**4012-*-316**	0.19	4.78	2.67	67.79	1.27	32.33	0.75	19.05	0.63	15.88
	3/8	3/8	**4022-*-316**	0.28	7.16	3.06	77.80	1.55	39.32	0.88	22.23	0.75	19.05
	1/2	1/2	**4032-*-316**	0.28	7.16	3.29	83.44	1.13	28.60	0.88	22.35	0.75	19.05
Fractional Tube Fitting to Female NPT	1/4	1/8	**4013-*-316**	0.19	4.78	2.50	63.50	-	-	0.75	22.23	0.63	15.88
	1/2	1/2	**4042-*-316**	0.28	7.16	3.29	83.57	-	-	0.88	22.35	1.13	28.58
Fractional Tube Fitting to Male NPT	1/8	1/8	**4005-*-316**	0.09	2.36	2.44	61.98	1.44	36.58	0.75	19.05	0.63	15.88
	1/4	1/8	**4011-*-316**	0.19	4.78	2.50	63.50	1.41	35.81	0.75	19.05	0.63	15.88
		1/4	**4015-*-316**	0.19	4.78	2.50	63.50	1.23	31.24	0.75	19.05	0.63	15.88
	3/8	1/2	**4023-*-316**	0.28	7.16	3.05	77.47	1.55	39.37	0.88	22.23	0.88	22.23
	1/2	1/2	**4031-*-316**	0.28	7.16	3.17	80.52	1.55	39.37	0.88	22.23	0.88	22.23
Female NPT	1/8	1/8	**4010-*-316**	0.19	4.78	2.33	59.16	-	-	0.75	19.05	0.63	15.88
	1/4	1/4	**4020-*-316**	0.19	4.78	2.71	68.71	-	-	0.75	19.05	0.75	19.05
	3/8	3/8	**4030-*-316**	0.28	7.16	2.92	74.17	-	-	0.88	22.23	0.88	22.35
	1/2	1/2	**4040-*-316**	0.28	7.16	3.33	84.53	-	-	1.13	28.58	1.13	28.58
Male NPT to Female NPT	1/8	1/8	**4009-*-316**	0.19	4.78	2.33	59.18	-	-	0.75	19.05	0.63	15.88
	1/4	1/4	**4021-*-316**	0.19	4.78	2.58	65.53	-	-	0.75	19.05	0.63	15.88
	3/8	3/8	**4027-*-316**	0.28	7.16	2.92	74.17	-	-	0.88	22.23	0.88	22.23
	1/2	3/8	**4037-*-316**	0.28	7.16	2.92	74.17	-	-	0.88	22.23	0.88	22.23
		1/2	**4039-*-316**	0.28	7.16	3.05	77.47	-	-	0.88	22.23	0.88	22.23
Male NPT	1/8	1/8	**4006-*-316**	0.19	4.78	2.33	59.18	1.55	39.37	0.75	19.05	0.63	15.88
	1/4	1/4	**4016-*-316**	0.19	4.78	2.33	59.16	1.19	30.23	0.75	19.05	0.63	15.88
	3/8	3/8	**4026-*-316**	0.28	7.16	2.80	70.99	1.66	42.04	0.88	22.35	0.75	19.05
	1/2	1/2	**4036-*-316**	0.28	7.16	2.92	74.17	1.42	36.07	0.88	22.35	0.88	22.23
Male NPT to Fractional Tube Fitting	1/8	1/8	**4004-*-316**	0.09	2.36	2.50	63.50	1.50	38.10	0.75	19.05	0.63	15.88
		1/4	**4007-*-316**	0.19	4.78	2.50	63.50	1.41	35.81	0.75	19.05	0.63	15.88
	1/4	1/4	**4014-*-316**	0.19	4.78	2.50	63.45	1.23	31.24	0.75	19.05	0.63	15.88
	3/8	3/8	**4024-*-316**	0.28	7.16	2.93	74.40	1.60	40.67	0.88	22.23	0.75	19.05
		1/2	**4033-*-316**	0.28	7.16	3.04	77.22	1.60	40.64	0.88	22.23	0.88	22.23
	1/2	3/8	**4035-*-316**	0.28	7.16	2.92	74.17	1.42	36.07	0.88	22.23	0.88	22.23
		1/2	**4034-*-316**	0.28	7.16	3.04	77.22	1.42	36.07	0.88	22.23	0.88	22.23
Female NPT to Male NPT	1/8	1/8	**4008-*-316**	0.19	4.78	2.33	59.18	-	-	0.75	19.05	0.63	15.88
	1/4	1/8	**4017-*-316**	0.19	4.78	2.46	62.48	-	-	0.75	19.05	0.63	15.88
		1/4	**4018-*-316**	0.19	4.78	2.45	62.33	-	-	0.75	19.05	0.63	15.88
	3/8	3/8	**4028-*-316**	0.28	7.16	2.80	70.99	-	-	0.88	22.23	0.75	19.05
	1/2	1/2	**4038-*-316**	0.28	7.16	3.20	81.36	-	-	1.13	28.58	0.88	22.23
Female NPT to Fractional Tube Fitting	1/8	1/4	**4003-*-316**	0.19	4.78	2.50	63.50	-	-	0.75	19.05	0.63	15.88
	1/4	1/4	**4019-*-316**	0.19	4.78	2.62	66.55	-	-	0.75	19.05	0.63	15.88
	3/8	3/8	**4029-*-316**	0.28	7.16	2.93	74.42	-	-	0.88	22.35	0.75	19.05
	1/2	1/2	**4041-*-316**	0.28	7.16	3.32	84.33	-	-	1.13	28.58	0.75	19.05

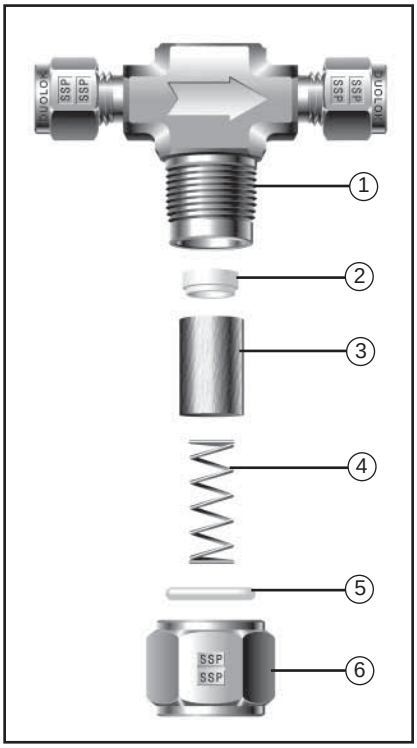
Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Nominal Spring Size Designator after the basic ordering number.

Designator	Cracking[1] and Reseal[2] Pressures @ 70°F	
Nominal Spring Size	Cracking Pressure Range	Reseal Pressure
1/3	0 - 1	6
1	0 - 3	6
5	3 - 8	2
10	7 - 15	3
15	10 - 20	15
25	20 - 30	17
50	40 - 60	45

Valves that are not actuated for a period of time may crack initially at pressures higher than the above cracking ranges.

[1] Cracking pressure – the upstream pressure at which the first indication of flow occurs.
[2] Reseal pressure – the upstream pressure at which there is no indication of flow.

*Insert Nominal Spring Size Designator as shown in the Cracking and Reseal Pressures table above. Complete ordering information is provided on page 5.



*All components are wetted.

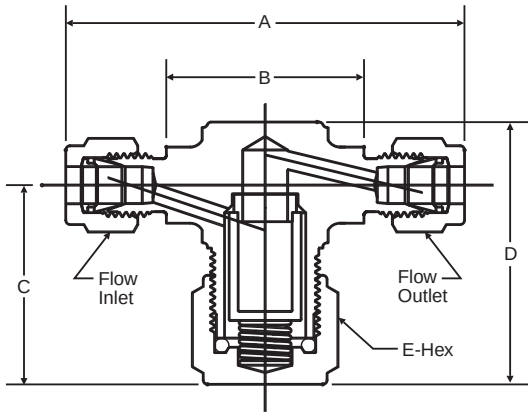
Materials of Construction			
#	Component	Stainless Steel	Brass
1	Body*	316 Stainless Steel	Brass
2	Filter Seal*	PTFE	PTFE
3	Filter Element*	316 Stainless Steel	316 Stainless Steel
4	Spring*	316 Stainless Steel	316 Stainless Steel
5	Body O-ring Seal*	PTFE	PTFE
6	Cap*	316 Stainless Steel	Brass

*All components are wetted.

Filter Kits

Replacement Element Kit Part Number	Micron Size	Description
5-3000-8805-K	1	Tee Filter 1 Micron Sintered Element Kit
5-3000-8806-K	2	Tee Filter 2 Micron Sintered Element Kit
5-3000-8807-K	5	Tee Filter 5 Micron Sintered Element Kit
5-3000-8808-K	10	Tee Filter 10 Micron Sintered Element Kit
5-3000-8809-K	20	Tee Filter 20 Micron Sintered Element Kit
5-3000-8810-K	40	Tee Filter 40 Micron Sinteredelement Kit
5-3000-8811-K	60	Tee Filter 60 Micron Sintered Element Kit
5-3000-8812-K	100	Tee Filter 100 Micron Sintered Element Kit
5-3000-8815-K	200	Tee Filter 200 Micron Brass Sintered Element Kit
5-3000-8816-K	400	Tee Filter 400 Micron Strainer Element Kit
5-3000-8817-K	140	Tee Filter 140 Micron Strainer Element Kit

Replacement Element Kit Part Number	Micron Size	Description
5-3100-8805-K	1	In-Line Filter 1 Micron Sintered Element Kit
5-3100-8806-K	2	In-Line Filter 2 Micron Sintered Element Kit
5-3100-8807-K	5	In-Line Filter 5 Micron Sintered Element Kit
5-3100-8808-K	10	In-Line Filter 10 Micron Sintered Element Kit
5-3100-8809-K	20	In-Line Filter 20 Micron Sintered Element Kit
5-3100-8810-K	40	In-Line Filter 40 Micron Sinteredelement Kit
5-3100-8811-K	60	In-Line Filter 60 Micron Sintered Element Kit
5-3100-8812-K	100	In-Line Filter 100 Micron Sintered Element Kit
5-3100-8815-K	200	In-Line Filter 200 Micron Brass Sintered Element Kit
5-3100-8816-K	400	In-Line Filter 400 Micron Strainer Element Kit
5-3100-8817-K	140	In-Line Filter 140 Micron Strainer Element Kit



Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions									
						A		B		C		D		E	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**3000**	0.078	1.98	2.71	68.86	1.50	38.15	1.38	35.13	1.82	46.25	7/8	22.23
	1/4	1/4	**3008**	0.156	3.96	2.91	73.89	1.51	38.43	1.38	35.13	1.82	46.25	7/8	22.23
	3/8	3/8	**3016**	0.172	4.37	2.77	70.26	1.25	31.78	1.38	35.13	1.82	46.25	7/8	22.23
	1/2	1/2	**3020**	0.172	4.37	2.99	75.97	1.25	31.80	1.38	35.13	1.82	46.25	7/8	22.23
Female NPT	1/4	1/4	**3014**	0.172	4.37	2.25	57.15	0.81	20.47	1.38	35.13	1.82	46.25	7/8	22.23
Male NPT	1/8	1/8	**3004**	0.156	3.96	2.19	55.55	1.41	35.74	1.38	35.13	1.82	46.25	7/8	22.23
	1/4	1/4	**3012**	0.140	3.56	2.19	55.55	1.05	26.59	1.38	35.13	1.82	46.25	7/8	22.23
	3/8	3/8	**3019**	0.172	4.37	2.25	57.15	1.11	28.19	1.38	35.13	1.82	46.25	7/8	22.23
Male NPT to Fractional Tube Fitting	1/4	1/4	**3010**	0.156	3.96	2.48	63.02	1.21	30.81	1.38	35.13	1.82	46.25	7/8	22.23
	3/8	3/8	**3018**	0.172	4.37	2.51	63.70	1.18	30.00	1.38	35.13	1.82	46.25	7/8	22.23

Filtration Definitions

- **Micron (mm)** – A unit of measure used to describe the mean particle diameter of media contamination or the mean pore diameter of the filter element.
  1 micron = 0.00004 in. • 1 micron = 0.001mm
- **Filter Element** – The component of a filter that captures the contaminants. Available as sintered element or strainer.

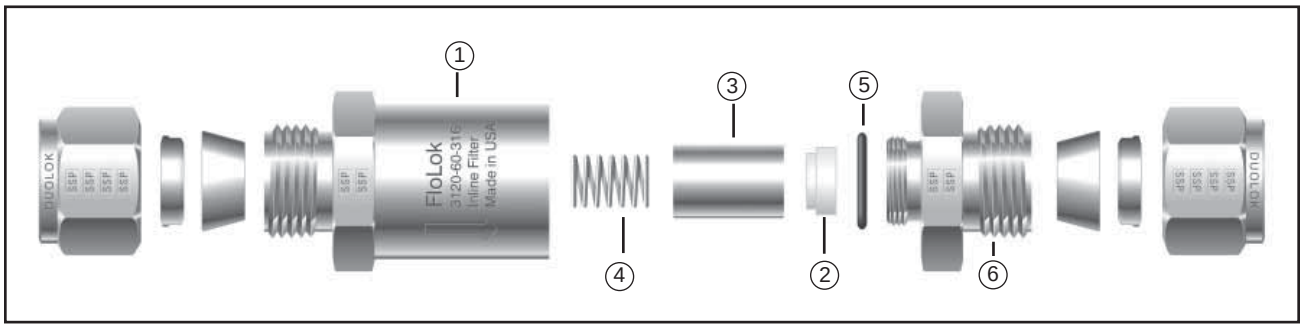
Sintered
- Traps fine contamination particles
- Choice of micron sizes (1 to 200*)
- 316 Stainless Steel

** size 200 micron in brass only*

Strainer
- Effectively removes large particles
- Choice of micron sizes (140 or 400)
- 316 Stainless Steel

Complete Ordering information can be found on page 5. Find Replacement Filter Kits on page 18.

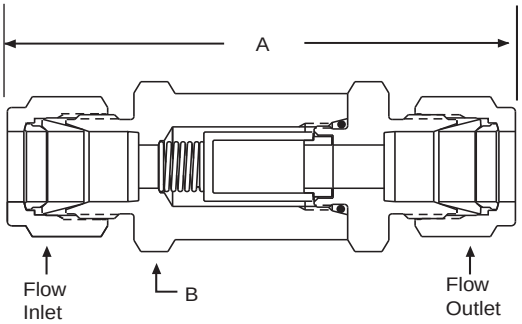
Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Material Designator and the Filter Element Designator to the basic ordering number.



*Wetted components.

Materials of Construction			
#	Component	Stainless Steel	Brass
1	Body*	316 Stainless Steel	Brass
2	Seal*	Viton	Viton
3	Filter Element*	316 Stainless Steel	316 Stainless Steel
4	Spring*	316 Stainless Steel	316 Stainless Steel
5	O-Ring*	PTFE	PTFE
6	Body Connector*	316 Stainless Steel	Brass

*Wetted components.

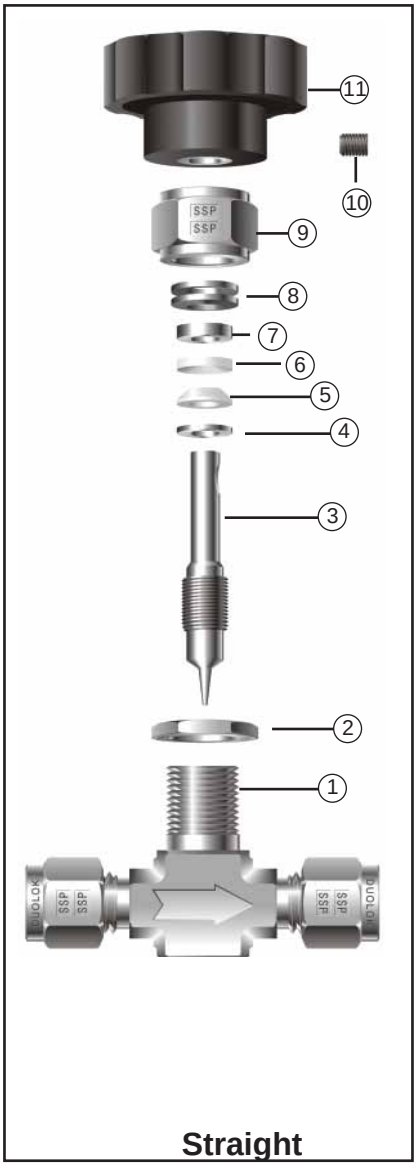


Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions			
Type	Inlet Size	Outlet Size				A		B (Hex)	
				In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**3100**	0.095	2.41	3.15	79.88	7/8	22.23
	1/4	1/4	**3108**	0.189	4.80	3.33	84.58	7/8	22.23
	3/8	3/8	**3116**	0.312	7.93	3.46	87.88	7/8	22.23
	1/2	1/2	**3120**	0.312	7.92	3.67	93.22	7/8	22.23
Female NPT	1/8	1/8	**3106**	0.312	7.92	2.57	65.28	7/8	22.23
	1/4	1/4	**3114**	0.312	7.92	2.88	73.15	7/8	22.23
	1/2	1/2	**3115**	0.312	7.92	3.46	87.88	1-1/16	26.98
Male NPT	1/8	1/8	**3104**	0.295	7.49	2.59	65.79	7/8	22.23
	1/4	1/4	**3112**	0.312	7.92	3.09	78.49	7/8	22.23
	3/8	3/8	**3119**	0.312	7.92	3.09	78.49	7/8	22.23
Male NPT to Fractional Tube Fitting	1/4	1/4	**3110**	0.189	4.80	3.26	82.80	7/8	22.23
	3/8	3/8	**3118**	0.312	7.92	3.32	84.33	7/8	22.23

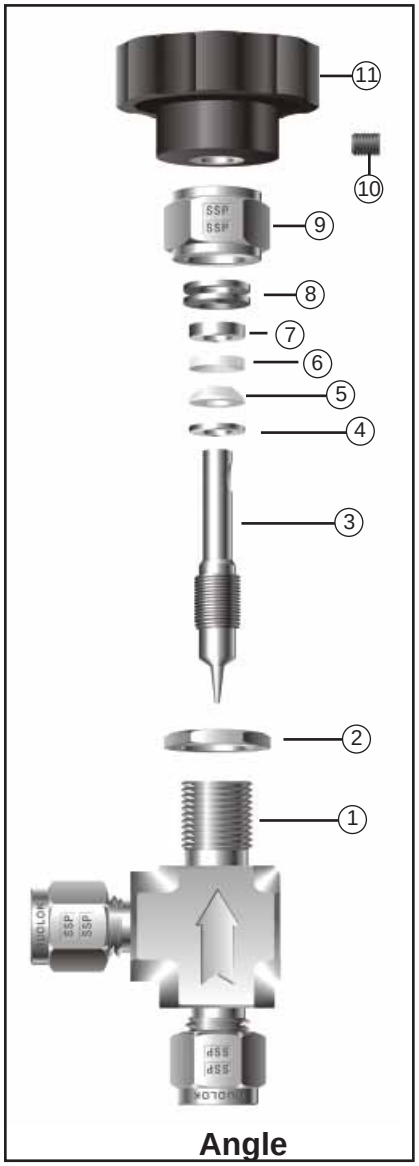
Complete Ordering information can be found on page 5.

Find Replacement Filter Kits on page 18.



Straight

*Wetted components.

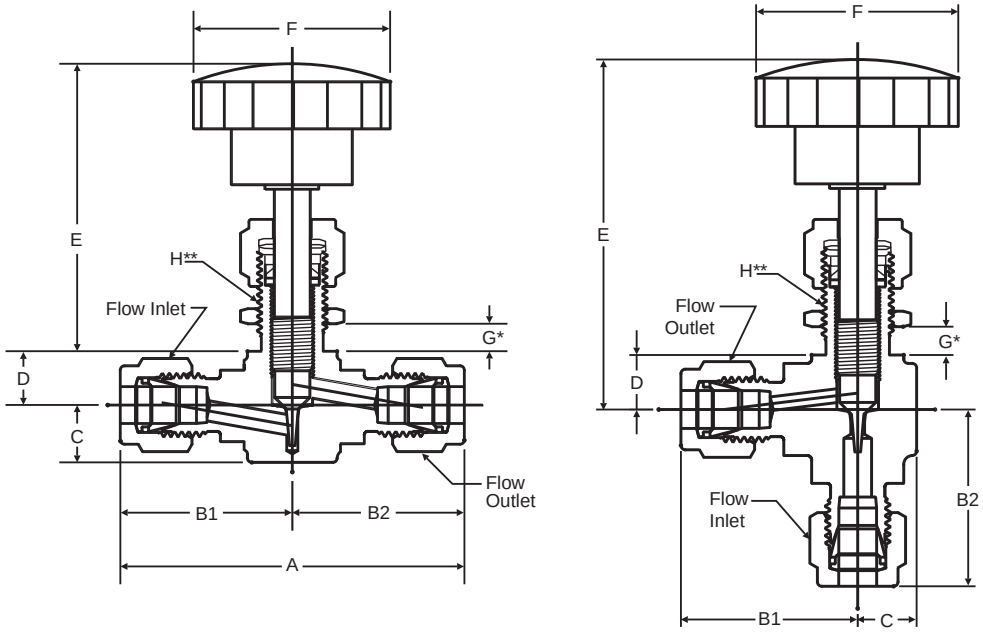


Angle

*Wetted components.

Materials of Construction			
#	**Component**	**Stainless Steel**	**Brass**
1	Body*	316 Stainless Steel	Brass
2	Panel Nut	316 Stainless Steel	Brass
3	Stem*	316 Stainless Steel	316 Stainless Steel
4	Packing Support*	316 Stainless Steel	316 Stainless Steel
5	Lower Packing*	PTFE	PTFE
6	Upper Packing*	PTFE	PTFE
7	Packing Pusher*	316 Stainless Steel	316 Stainless Steel
8	Packing Springs*	316 Stainless Steel	316 Stainless Steel
9	Packing Nut	316 Stainless Steel	Brass
10	Set Screw	Stainless Steel	Stainless Steel
11	Handle^	Nylon	Nylon

*Wetted components.
^Handle contains brass insert for extra strength and wear resistance.

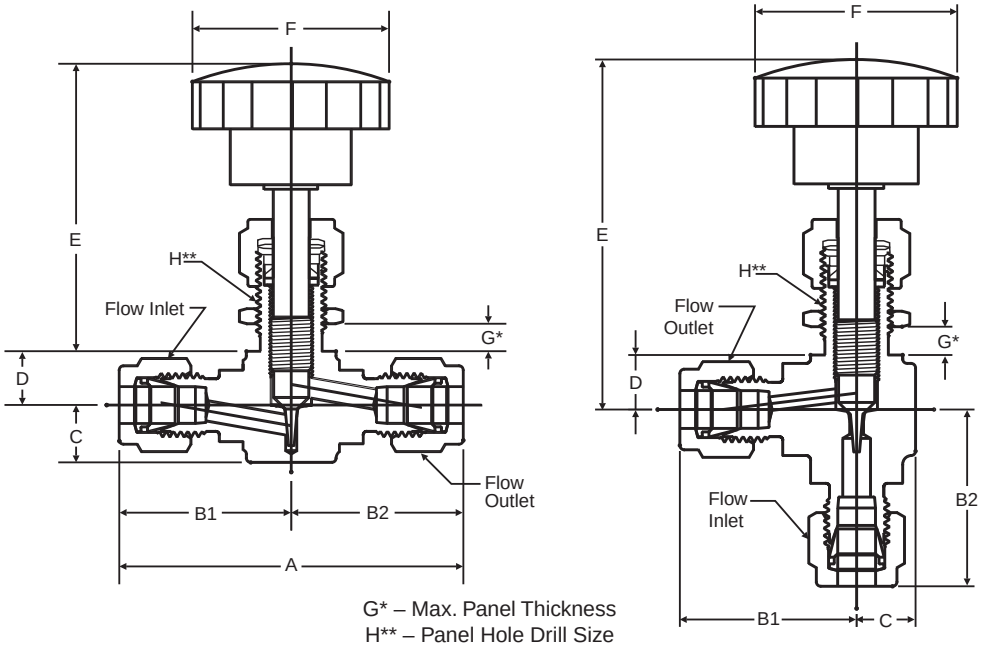


G* – Max. Panel Thickness
H** – Panel Hole Drill Size
Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions																	
						A		B1		B2		C		D		E		F		G		H	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**504**	0.047	1.19	2.34	59.33	1.17	29.67	1.17	29.67	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			504-1	0.062	1.57	2.34	59.33	1.17	29.67	1.17	29.67	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			504-3	0.078	1.98	2.34	59.33	1.17	29.67	1.17	29.67	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**506**	0.047	1.19	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.65	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			506-1	0.062	1.57	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.65	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			506-3	0.078	1.98	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.65	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			506-5	0.094	2.39	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.65	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			506-7	0.125	3.18	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.65	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			506-9	0.144	3.66	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.65	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			506-11	0.172	4.37	2.40	60.96	1.20	30.38	1.20	30.48	0.40	10.16	0.38	9.65	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
	3/8	3/8	**512**	0.047	1.19	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.65	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			512-1	0.062	1.57	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.65	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			512-3	0.078	1.98	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.65	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			512-5	0.094	2.39	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.65	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			512-7	0.125	3.18	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.65	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			512-9	0.144	3.66	2.40	60.96	1.20	30.48	1.20	30.38	0.40	10.16	0.38	9.65	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			512-11	0.172	4.37	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.65	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
	1/2	1/2	**520**	0.250	6.35	2.62	66.45	1.31	33.22	1.31	33.27	0.51	12.95	0.53	13.49	3.20	81.28	1.38	34.93	0.38	9.65	25/32	19.84
Female NPT	1/8	1/8	**510**	0.047	1.19	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			510-1	0.062	1.57	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			510-3	0.078	1.98	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			510-5	0.094	2.39	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			510-7	0.125	3.18	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			510-9	0.144	3.66	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			510-11	0.172	4.37	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**514**	0.047	1.19	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.53	2.81	71.37	1.38	34.93	0.38	9.65	17/32	13.49
			514-1	0.062	1.57	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			514-3	0.078	1.98	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			514-5	0.094	2.39	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			514-7	0.125	3.18	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.53	2.81	71.48	1.38	34.93	0.38	9.65	17/32	13.49
			514-9	0.144	3.66	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.53	2.81	71.48	1.38	34.93	0.38	9.65	17/32	13.49
			514-11	0.172	4.37	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.53	2.81	71.37	1.38	34.93	0.38	9.65	17/32	13.49
			514-13	0.250	6.35	2.30	58.42	1.15	29.21	1.15	29.21	0.40	10.16	0.38	9.53	3.22	81.69	1.38	34.93	0.38	9.65	25/32	19.84

Complete ordering information is provided on page 6.

Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Angle Pattern Designator as a prefix and the Material Designator as a suffix to the basic ordering number.

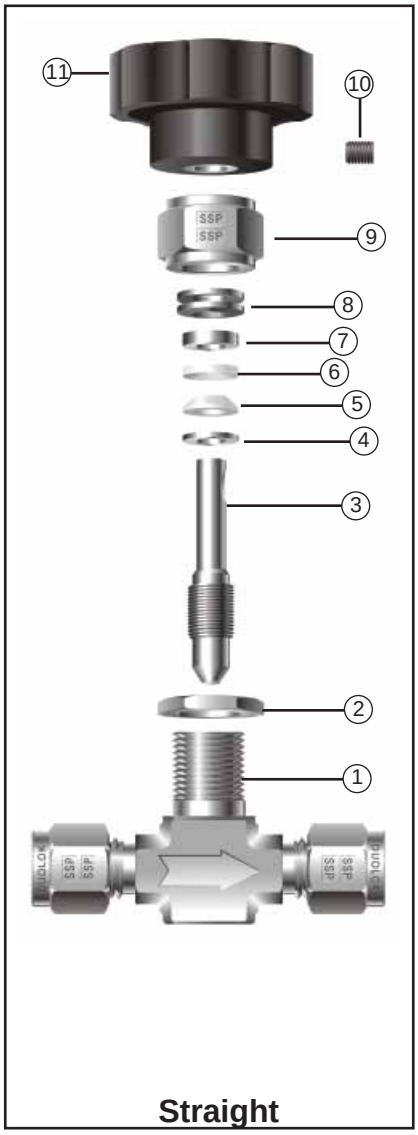


G* – Max. Panel Thickness
H** – Panel Hole Drill Size
Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions																	
						A		B1		B2		C		D		E		F		G		H	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Male NPT	1/8	1/8	**500**	0.047	1.19	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			500-1	0.062	1.57	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			500-3	0.078	1.98	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			500-5	0.094	2.39	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			500-7	0.125	3.18	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			500-9	0.144	3.66	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**502**	0.047	1.19	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			502-1	0.062	1.57	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			502-3	0.078	1.98	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			502-5	0.094	2.39	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			502-7	0.125	3.18	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			502-9	0.144	3.66	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			502-11	0.172	4.37	1.81	46.02	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
Male NPT to Fractional Tube Fitting	1/8	1/4	**508**	0.047	1.19	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			508-1	0.062	1.57	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			508-3	0.078	1.98	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			508-5	0.094	2.39	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			508-7	0.125	3.18	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			508-9	0.144	3.66	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**509**	0.047	1.19	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			509-1	0.062	1.57	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			509-3	0.078	1.98	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			509-5	0.094	2.39	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			509-7	0.125	3.18	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			509-9	0.144	3.66	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			509-11	0.172	4.37	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
		3/8	**503**	0.047	1.19	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49
			503-1	0.062	1.57	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			503-3	0.078	1.98	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			503-5	0.094	2.39	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.69	68.43	1.38	34.93	0.38	9.65	17/32	13.49
			503-7	0.125	3.18	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			503-9	0.144	3.66	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.90	1.38	34.93	0.38	9.65	17/32	13.49
			503-11	0.172	4.37	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.75	69.85	1.38	34.93	0.38	9.65	17/32	13.49

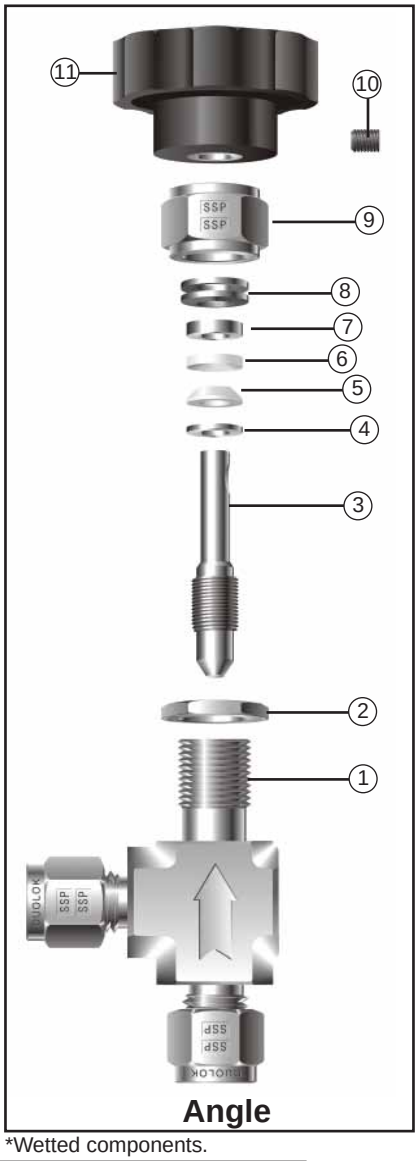
Complete ordering information is provided on page 6.

Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Angle Pattern Designator as a prefix and the Material Designator as a suffix to the basic ordering number.



Straight

*Wetted components.

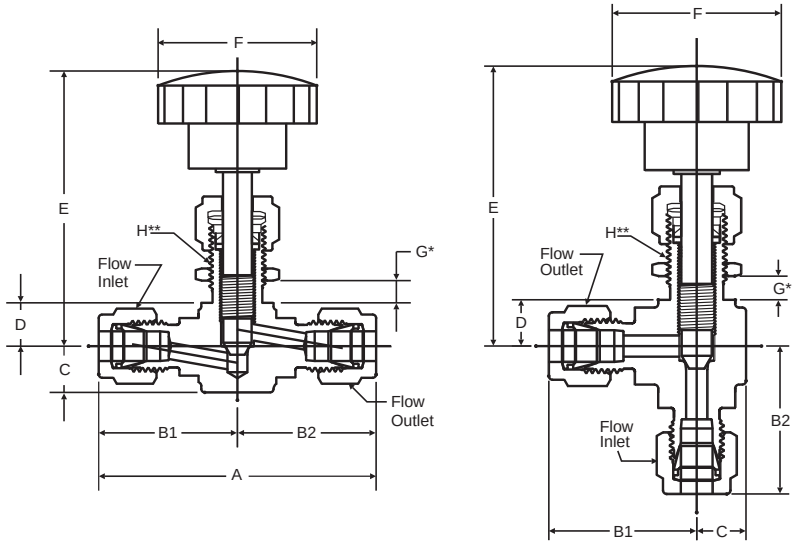


Angle

*Wetted components.

Materials of Construction			
#	**Component**	**Stainless Steel**	**Brass**
1	Body*	316 Stainless Steel	Brass
2	Panel Nut	Stainless Steel	Brass
3	Stem*	316 Stainless Steel	316 Stainless Steel
4	Packing Support*	316 Stainless Steel	316 Stainless Steel
5	Lower Packing*	PTFE	PTFE
6	Upper Packing*	PTFE	PTFE
7	Packing Pusher*	316 Stainless Steel	316 Stainless Steel
8	Packing Springs*	316 Stainless Steel	316 Stainless Steel
9	Packing Nut	316 Stainless Steel	Brass
10	Set Screw	Stainless Steel	Stainless Steel
11	Handle^	Nylon	Nylon

*Wetted components.
^Handle contains brass insert for extra strength and wear resistance.

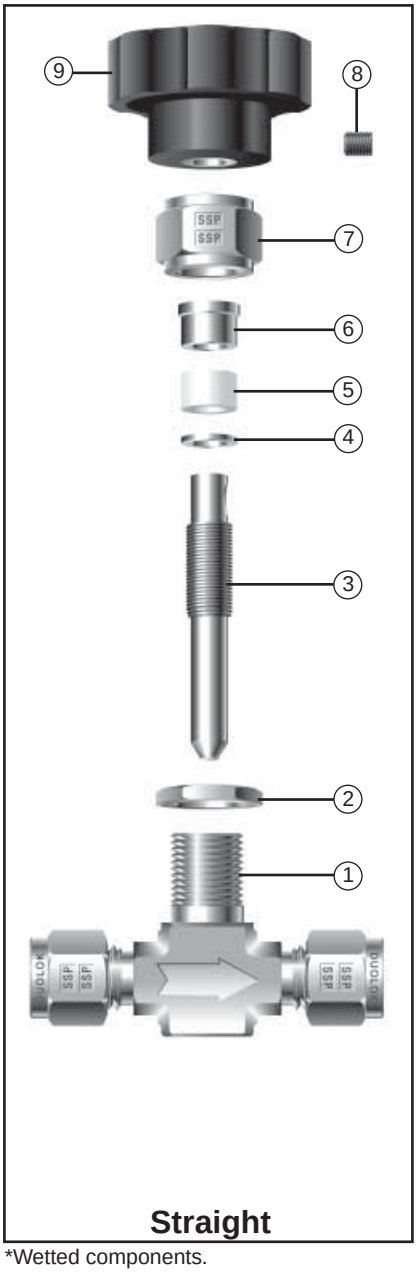


G* – Max. Panel Thickness
H** – Panel Hole Drill Size
Models Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions																	
						A		B1		B2		C		D		E		F		G		H	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**104**	0.063	1.60	2.34	59.33	1.17	29.72	1.17	29.67	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**106**	0.063	1.60	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
			118	0.172	4.37	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
	3/8	3/8	**124**	0.172	4.37	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
			626	0.250	6.35	2.58	65.53	1.29	32.77	1.29	32.77	0.44	11.13	0.44	11.13	3.15	80.01	1.75	44.32	0.38	9.65	25/32	19.84
	1/2	1/2	**651**	0.250	6.35	2.80	71.22	1.40	35.61	1.40	35.61	0.44	11.13	0.44	11.13	3.15	80.01	1.75	44.32	0.38	9.65	25/32	19.84
			654	0.312	7.92	2.80	71.22	1.40	35.61	1.40	35.61	0.44	11.13	0.44	11.13	3.15	80.01	1.75	44.32	0.38	9.65	25/32	19.84
			657	0.343	8.71	2.80	71.22	1.40	35.61	1.40	35.61	0.44	11.13	0.44	11.13	3.15	80.01	1.75	44.32	0.38	9.65	25/32	19.84
Female NPT	1/8	1/8	**110**	0.063	1.60	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
			114	0.172	4.37	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**600**	0.063	1.60	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.13	2.61	66.29	1.38	34.93	0.38	9.65	17/32	13.49
			600-2	0.172	4.37	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.13	2.61	66.29	1.38	34.93	0.38	9.65	17/32	13.49
			600-3	0.201	5.11	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.13	2.61	66.29	1.38	34.93	0.38	9.65	17/32	13.49
	3/8	3/8	**660**	0.250	6.35	2.50	63.50	1.25	31.75	1.25	31.75	0.75	19.00	0.69	17.42	3.36	85.34	1.75	44.32	0.38	9.65	25/32	19.84
			660-2	0.312	7.92	2.50	63.50	1.25	31.75	1.25	31.75	0.75	19.00	0.69	17.42	3.36	85.34	1.75	44.32	0.38	9.65	25/32	19.84
			660-3	0.343	8.71	2.50	63.50	1.25	31.75	1.25	31.75	0.75	19.00	0.69	17.42	3.36	85.34	1.75	44.32	0.38	9.65	25/32	19.84
	1/2	1/2	**664**	0.250	6.35	2.62	66.65	1.31	33.32	1.31	33.32	0.75	19.05	0.69	17.42	3.36	85.34	1.75	44.32	0.38	9.65	25/32	19.84
			664-2	0.312	7.92	2.62	66.65	1.31	33.32	1.31	33.32	0.75	19.05	0.69	17.42	3.36	85.34	1.75	44.32	0.38	9.65	25/32	19.84
			664-3	0.343	8.71	2.62	66.65	1.31	33.32	1.31	33.32	0.75	19.05	0.69	17.42	3.36	85.34	1.75	44.32	0.38	9.65	25/32	19.84
Male NPT	1/8	1/8	**100**	0.063	1.60	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
			112	0.172	4.37	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**102**	0.063	1.60	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
			116	0.172	4.37	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
	3/8	3/8	**636**	0.250	6.35	2.28	57.96	1.14	28.98	1.14	28.98	0.44	11.13	0.44	11.13	3.15	80.01	1.75	44.32	0.38	9.65	25/32	19.84
Male NPT to Fractional Tube Fitting	1/8	1/8	**105**	0.063	1.60	2.08	52.83	0.91	23.01	1.17	29.67	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
	1/4	1/4	**122**	0.172	4.37	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
		3/8	**123**	0.172	4.37	2.11	53.59	0.91	23.01	1.20	30.38	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49
Male NPT to Female NPT	1/4	1/4	**603**	0.063	1.60	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.13	2.61	66.29	1.38	34.93	0.38	9.65	17/32	13.49
			603-2	0.172	4.37	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.13	2.61	66.29	1.38	34.93	0.38	9.65	17/32	13.49
			603-3	0.201	5.11	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.13	2.61	66.29	1.38	34.93	0.38	9.65	17/32	13.49
Fractional Tube Fitting to Male NPT	3/8	1/4	**125**	0.172	4.37	2.11	53.59	1.20	30.38	0.91	23.01	0.40	10.16	0.38	9.53	2.55	64.77	1.38	34.93	0.38	9.65	17/32	13.49

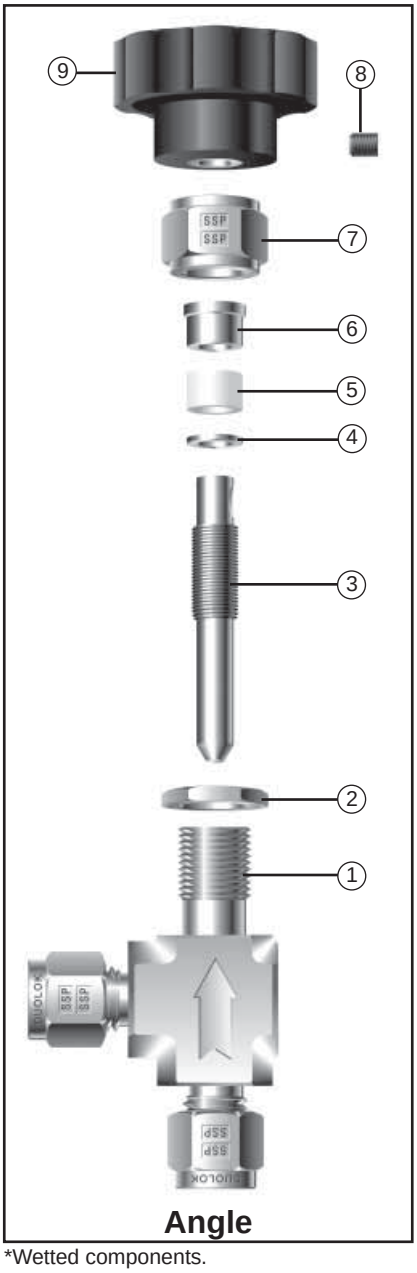
Complete ordering information is provided on page 7.

Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Material Designator and Stem Type Designator as a suffix and the Angle Pattern Designator as a prefix to the basic ordering number.



Straight

*Wetted components.

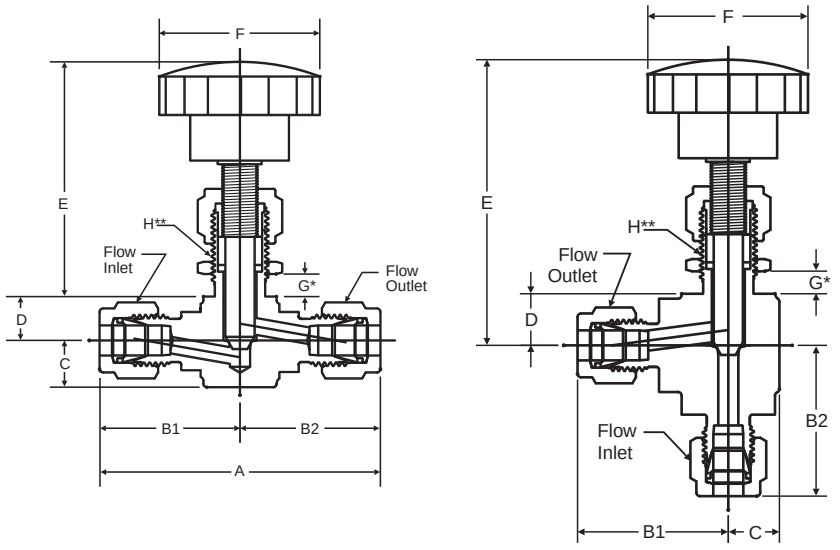


Angle

*Wetted components.

Materials of Construction		
#	**Component**	**Stainless Steel**
1	Body*	316 Stainless Steel
2	Panel Nut	316 Stainless Steel
3	Stem*	316 Stainless Steel
4	Packing Support*	316 Stainless Steel
5	Packing*	PTFE
6	Packing Pusher	316 Stainless Steel
7	Packing Nut	316 Stainless Steel
8	Set Screw	Stainless Steel
9	Handle^	Nylon

*Wetted components.
^Handle contains brass insert for extra strength and wear resistance.

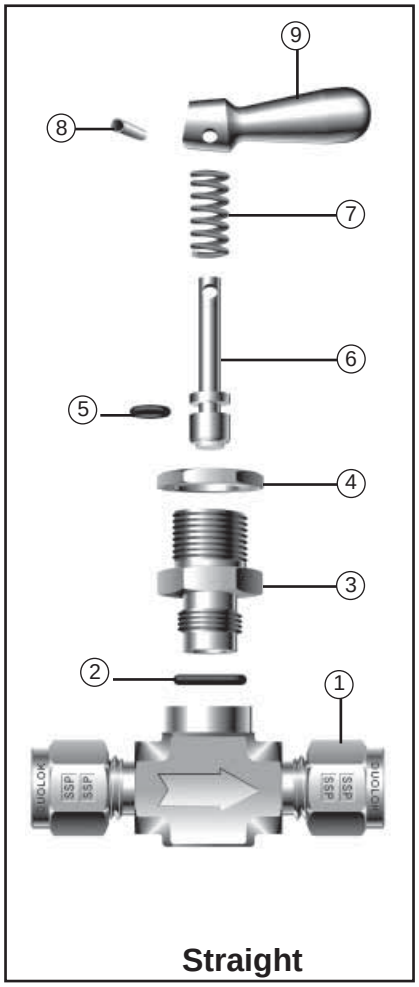


G* – Max. Panel Thickness
H** – Panel Hole Drill Size
Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions																	
						A		B1		B2		C		D		E		F		G		H	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**400-316**	0.172	4.37	2.34	59.33	1.17	29.67	1.17	29.67	0.40	10.16	0.38	9.53	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
	1/4	1/4	**422-316**	0.172	4.37	2.40	60.96	1.20	30.48	1.20	30.48	0.40	10.16	0.38	9.53	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
	3/8	3/8	**428-316**	0.172	4.37	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.40	10.08	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
	1/2	1/2	**436-316**	0.172	4.37	2.62	66.45	1.31	33.22	1.31	33.22	0.51	12.83	0.51	12.83	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
Female NPT	1/8	1/8	**408-316**	0.172	4.37	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
	1/4	1/4	**418-316**	0.172	4.37	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.23	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
	3/8	3/8	**438-316**	0.250	6.35	2.50	63.50	1.25	31.75	1.25	31.75	0.75	19.05	0.75	19.05	1.38	34.93	0.25	6.35	2.75	69.85	19/32	15.08
	1/2	1/2	**440-316**	0.312	7.92	2.62	66.65	1.31	33.32	1.31	33.32	0.75	19.05	0.75	19.05	3.00	76.20	0.25	6.35	2.86	72.64	25/32	19.84
	3/4	3/4	**442-316**	0.438	11.13	2.90	73.66	1.45	36.83	1.45	36.83	0.75	19.05	0.75	19.05	0.35	8.89	0.25	6.35	4.00	101.60	1 11/32	34.13
	1	1	**444-316**	0.562	14.27	3.62	91.95	1.81	45.97	1.81	45.97	1.02	25.91	0.90	22.86	0.35	8.89	0.25	6.35	4.00	101.60	1 11/32	34.13
Male NPT	1/8	1/8	**406-316**	0.172	4.37	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
	1/4	1/4	**410-316**	0.172	4.37	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.53	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
	3/8	3/8	**430-316**	0.172	4.37	2.26	57.40	1.13	28.58	1.13	28.58	0.44	11.13	0.44	11.23	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
Male NPT to Fractional Tube Fitting	1/4	1/4	**414-316**	0.172	4.37	2.11	53.59	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
		3/8	**416-316**	0.172	4.37	2.11	53.59	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.53	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08
Male NPT to Female NPT	1/4	1/4	**412-316**	0.172	4.37	2.00	50.80	1.00	25.40	1.00	25.40	0.44	11.13	0.44	11.23	2.50	63.50	1.38	34.93	0.25	6.35	19/32	15.08

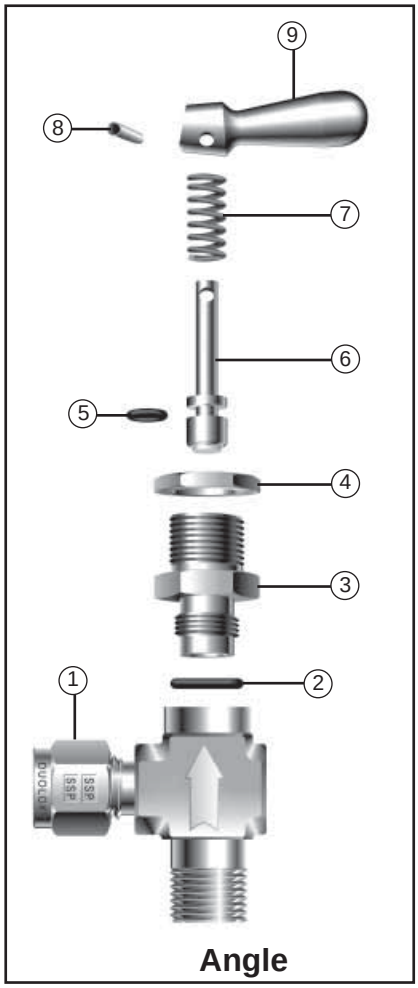
Complete ordering information is provided on page 7.

Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Material Designator and Stem Type Designator as a suffix and the Angle Pattern Designator as a prefix to the basic ordering number.



Straight

*Wetted components.

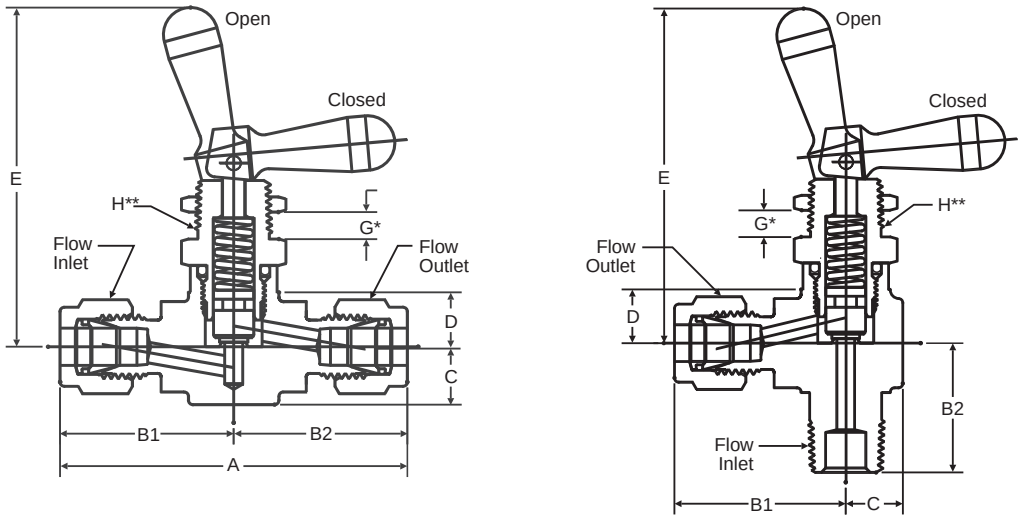


Angle

*Wetted components.

Materials of Construction			
#	Component	Stainless Steel	Brass
1	Body*	316 Stainless Steel	Brass
2	Bonnet O-ring Seal*	Viton	Viton
3	Bonnet*	316 Stainless Steel	Brass
4	Panel Nut	316 Stainless Steel	Brass
5	Stem O-ring Seal*	Viton	Viton
6	Stem*	316 Stainless Steel with PTFE tip	316 Stainless Steel with PTFE Tip
7	Spring	316 Stainless Steel	316 Stainless Steel
8	Handle Pin	Stainless Steel	Stainless Steel
9	Handle	Brass Chrome Plated	Brass

*Wetted components.

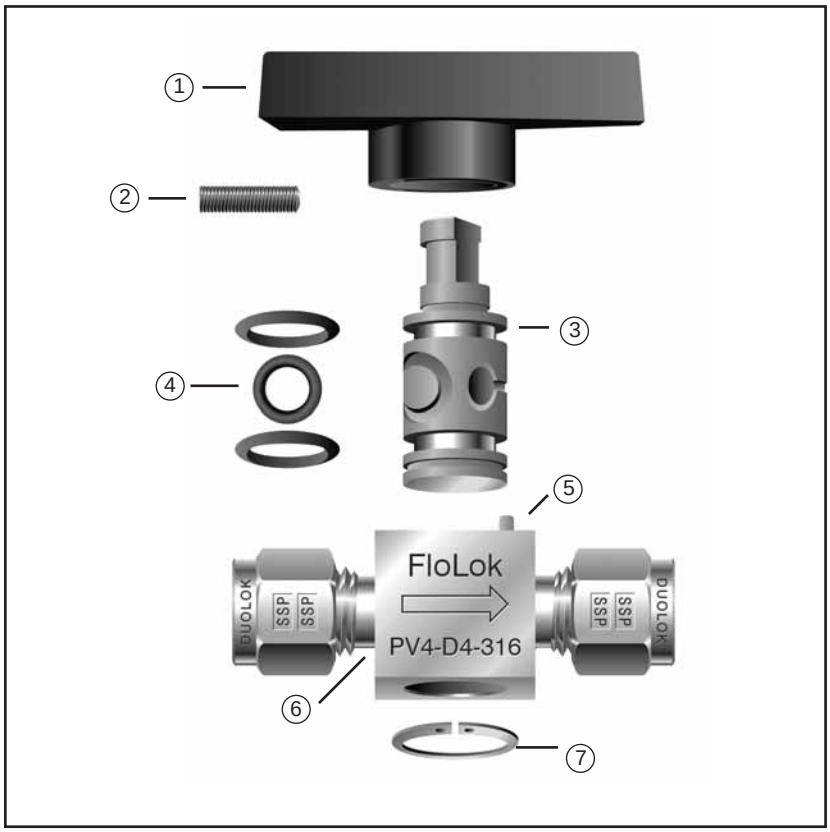


G* – Max. Panel Thickness
H** – Panel Hole Drill Size
Models Shown: End Connection Type Fractional Tube Fitting (Straight Pattern)
End Connection Type Male NPT to Fractional Tube Fitting (Angle Pattern)

End Connection			Basic Ordering Number	Orifice		Dimensions																	
						A		B1		B2		C		D		E		F		G		H	
Type	Inlet Size	Outlet Size		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	**206**	0.094	2.39	2.34	59.33	1.17	29.67	1.17	29.67	0.40	10.16	0.38	9.55	2.34	59.54	1.12	28.45	0.25	6.35	17/32	13.49
	1/4	1/4	**208**	0.125	3.18	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.55	2.34	59.44	1.12	28.45	0.25	6.35	17/32	13.49
	3/8	3/8	**212**	0.125	3.18	2.40	60.96	1.20	30.38	1.20	30.38	0.40	10.16	0.38	9.55	2.34	59.54	1.12	28.45	0.25	6.35	17/32	13.49
Female NPT	1/8	1/8	**202**	0.125	3.18	3.62	92.05	1.81	46.02	1.81	46.02	0.40	10.16	0.38	9.55	2.34	59.54	1.12	28.45	0.25	6.35	17/32	13.49
	1/4	1/4	**215**	0.125	3.18	2.00	50.80	1.00	25.40	1.00	25.40	0.40	10.16	0.38	9.65	2.40	60.96	1.12	28.45	0.25	6.35	17/32	13.49
Male NPT	1/8	1/8	**200**	0.125	3.18	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.55	2.34	59.54	1.12	28.45	0.25	6.35	17/32	13.49
	1/4	1/4	**204**	0.125	3.18	1.82	46.23	0.91	23.01	0.91	23.01	0.40	10.16	0.38	9.55	2.34	59.54	1.12	28.45	0.25	6.35	17/32	13.49
Male NPT to Fractional Tube Fitting	1/4	1/4	**209**	0.125	3.18	2.11	53.49	0.91	23.01	1.20	30.48	0.40	10.16	0.38	9.55	2.34	59.54	1.12	28.45	0.25	6.35	17/32	13.49

Complete ordering information is provided on page 8.

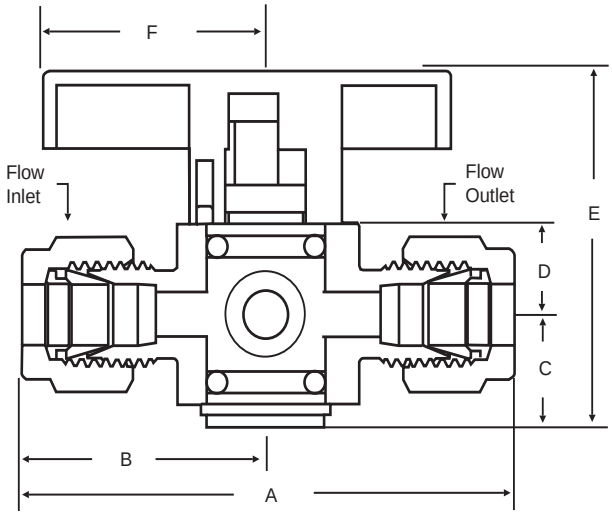
Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add Angle Pattern Designator as a prefix and Material Designator as a suffix to the basic ordering number.



*Wetted components.

Materials of Construction			
#	Component	Stainless Steel	Brass
1	Handle	Nylon	Nylon
2	Pin	316 Stainless Steel	316 Stainless Steel
3	Plug*	PTFE coated 316 Stainless Steel	PTFE coated Brass
4	O-rings*	PTFE coated fluorocarbon FKM	PTFE coated fluorocarbon FKM
5	Set Screw	316 Stainless Steel	316 Stainless Steel
6	Body*	316 Stainless Steel	Brass
7	Snap Ring	PH 15-7 Mo® SS	PH 15-7 Mo® SS

*Wetted components.

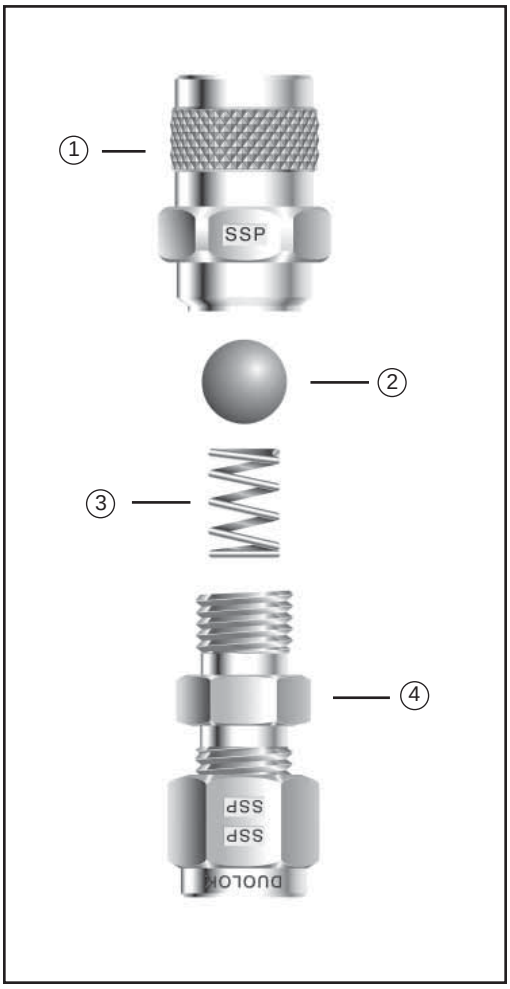


Model Shown: End Connection Type Fractional Tube Fitting

End Connection			Basic Ordering Number	Orifice		Dimensions											
Type	Inlet Size	Outlet Size				A		B		C		D		E		F	
				In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	1/8	1/8	PV4-D2	0.093	2.3	1.99	50.5	0.98	24.9	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
	1/4	1/4	PV4-D4	0.172	4.4	2.17	55.1	1.08	27.4	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
	3/8	3/8	PV4-D6	0.172	4.4	2.29	58.2	1.14	29.0	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
	3/8	3/8	PV6-D6	0.283	7.2	2.66	67.6	1.33	33.8	0.66	16.76	0.56	14.22	2.18	55.37	2.63	66.80
	1/2	1/2	PV6-D8	0.283	7.2	2.88	73.2	1.44	36.6	0.66	16.76	0.56	14.22	2.18	55.37	2.63	66.80
Female NPT	1/8	1/8	PV4-2PF	0.172	4.4	1.78	45.2	0.89	22.6	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
	1/4	1/4	PV4-4PF	0.172	4.4	2.09	53.1	1.05	26.7	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
	1/4	1/4	PV6-4PF	0.283	7.2	2.38	60.5	1.19	30.2	0.66	16.76	0.56	14.22	2.18	55.37	2.63	66.80
	1/2	1/2	PV6-8PF	0.283	7.2	2.88	73.2	1.44	36.6	0.66	16.76	0.56	14.22	2.18	55.37	2.63	66.80
Male NPT	1/8	1/8	PV4-2PM	0.172	4.4	1.53	38.9	0.76	19.3	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
	1/4	1/4	PV4-4PM	0.172	4.4	1.90	48.3	0.95	24.1	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
	1/2	1/2	PV6-8PM	0.283	7.2	2.64	67.1	1.32	33.5	0.66	16.76	0.56	14.22	2.18	55.37	2.63	66.80
Male NPT to Fractional Tube Fitting	1/4	1/4	PV4-4PM-D4	0.172	4.4	2.03	51.2	0.95	24.1	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80
Male NPT to Female NPT	1/4	1/4	PV4-4PM-4PF	0.172	4.4	2.00	50.8	0.95	24.1	0.46	11.68	0.37	9.40	1.64	41.66	2.00	50.80

Complete ordering information is provided on page 8.

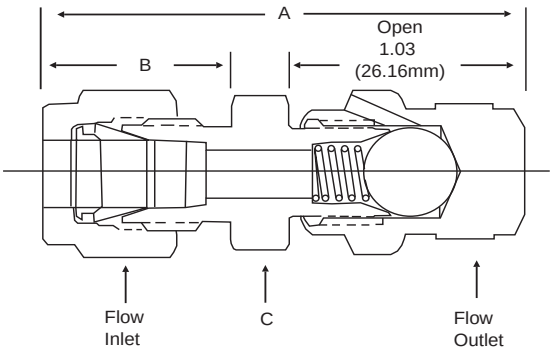
Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Material Designator as a suffix to the basic ordering number.



*All components wetted.

Materials of Construction			
#	Component	Stainless Steel	Brass
1	Cap*	316 Stainless Steel	Brass
2	Ball*	316 Stainless Steel	316 Stainless Steel
3	Spring*	316 Stainless Steel	316 Stainless Steel
4	Body*	316 Stainless Steel	Brass

*All components wetted.



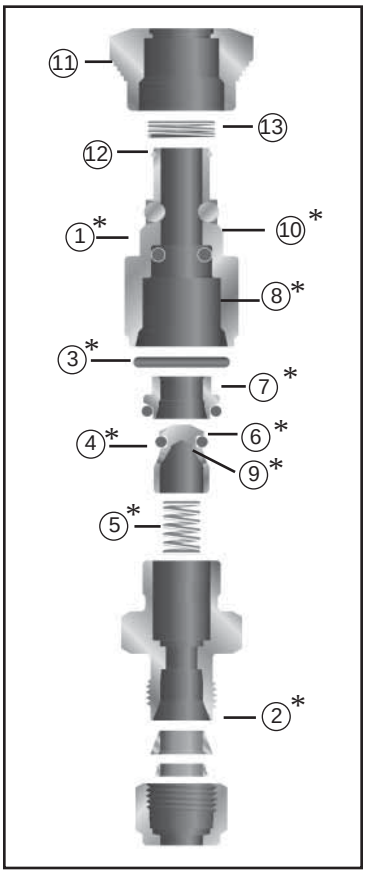
Model Shown: End Connection Type Fractional Tube Fitting

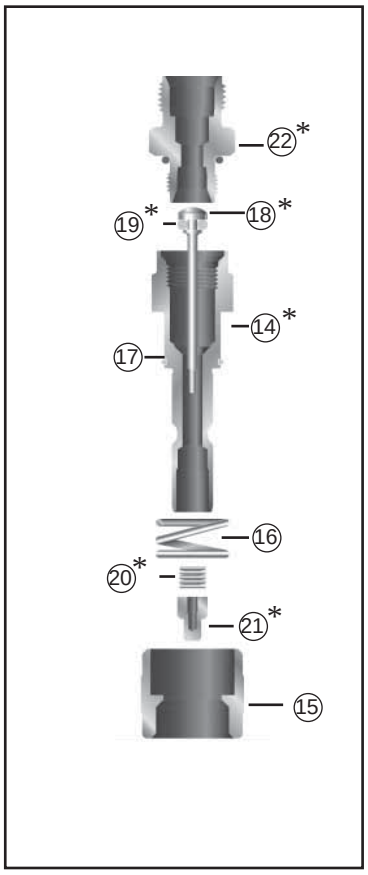
End Connection			Dimensions					
			A *		B		C	
Type	Inlet Size	Ordering Number	In.	mm	In.	mm	In.	mm
Fractional tube fitting	1/8	**4902**	1.84	46.74	0.59	14.99	1/2	12.70
	1/4	**4912**	1.94	49.28	0.69	17.53	1/2	12.70
	3/8	**4922**	2.03	51.56	0.75	19.05	5/8	15.88
	1/2	**4932**	2.19	55.63	0.88	22.35	13/16	20.64
Female NPT	1/8	**4910**	1.56	39.62	0.53	13.46	9/16	14.29
	1/4	**4920**	1.75	44.45	0.72	18.29	3/4	19.05
	3/8	**4930**	1.89	48.01	0.78	19.81	7/8	22.23
	1/2	**4940**	1.98	50.29	0.97	24.64	1-1/16	26.99
Male NPT	1/8	**4906**	1.62	41.15	0.38	9.65	1/2	12.70
	1/4	**4916**	1.81	45.97	0.56	14.22	9/16	14.29
	3/8	**4926**	1.84	46.74	0.56	14.22	11/16	17.47
	1/2	**4936**	2.09	53.09	0.75	19.05	7/8	22.23
Tube Adapter	1/8	**4952**	1.79	45.47	0.53	13.46	1/2	12.70
	1/4	**4954**	1.87	47.50	0.63	16.00	1/2	12.70
	3/8	**4956**	1.94	49.28	0.69	17.53	1/2	12.70
	1/2	**4958**	2.15	54.61	0.91	23.11	9/16	14.29

* A Dimension shown in open position.

Complete ordering information is provided on page 9.

Finger-tight assembly dimensions (shown in inches and millimeters) are for reference only and subject to change.
When ordering, add the Material Designator and the Ball designator as a suffix to the basic ordering number.



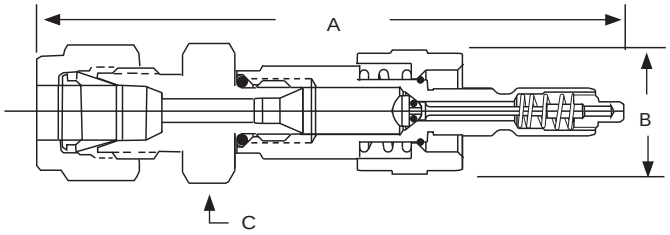


Materials of Construction			
#	Component	Stainless Steel	Brass
1	Body*	316 SS	Brass
2	Body Adapter*	316 SS	Brass
3	Body Adapter Seal*	Viton O-Ring	Buna N O-Ring
4	Body Valve*	316 SS	316 SS
5	Body Valve Spring*	316 SS	316 SS
6	Body Valve Seal*	Viton O-Ring	Buna N O-Ring
7	Insert*	316 SS	316 SS
8	Insert Seal*	Viton O-Ring	Buna N O-Ring
9	Poppet*	316 SS	316 SS
10	Locking Ball*	316 SS	316 SS
11	Body Sleeve	316 SS	Brass
12	Sleeve Snap Ring	316 SS	316 SS
13	Body Sleeve Springs	316 SS	316 SS
14	Stem Body*	316 SS	Brass
15	Stem Sleeve	316 SS	Brass
16	Sleeve Spring	316 SS	316 SS
17	Snap Ring	316 SS	316 SS
18	DESO Valve*^	316 SS	316 SS
19	DESO Valve O-Ring*^	Viton O-Ring	Buna N O-Ring
20	Valve Cap Spring*	316 SS	316 SS
21	Valve Cap*	316 SS	Brass
22	Stem Adapter*	316 SS	Brass

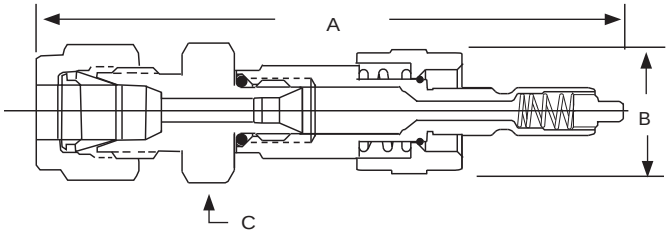
*Wetted components.
^ Not Assembled in SESO stem.

Temperature °F	316 SS			Brass		
	QC4	QC6	QC8	QC4	QC6	QC8
	Pressure Rating psig					
Coupled						
70	3000	1500	750	2000	1000	500
250	-	-	-	250	250	250
400	250	250	250	-	-	-
Uncoupled and Durring Coupling & Uncoupling						
70	250	250	250	250	250	250

Stems



DESO
Stem has valve, shuts off when uncoupled.



SESO
Stem has no valve, remains open when uncoupled.

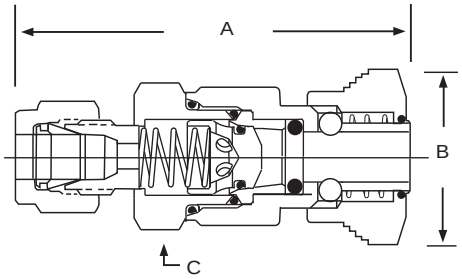
Models Shown: End Connection Type Fractional Tube Fitting

End Connection Type	SESO/ DESOStem Design	Basic Ordering Number	Connector Size	Dimensions					
				A		B*		C	
				In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	DESO	QC4-D-D2	1/8	2.82	71.63	0.62	15.75	7/16	11.11
		QC4-D-D4	1/4	2.94	74.68	0.62	15.75	1/2	12.70
		QC6-D-D6	3/8	3.05	77.47	0.74	18.80	5/8	15.88
		QC8-D-D8	1/2	3.27	83.06	0.87	22.10	13/16	20.64
Female NPT	DESO	QC4-D-2PF	1/8	2.55	64.77	0.62	15.75	9/16	14.29
		QC4-D-4PF	1/4	2.74	69.60	0.62	15.75	3/4	19.05
		QC6-D-4PF	1/4	2.76	70.10	0.74	18.80	3/4	19.05
		QC6-D-6PF	3/8	2.83	71.88	0.74	18.80	7/8	22.23
		QC8-D-8PF	1/2	3.37	85.60	0.87	22.10	1-1/16	26.99
Male NPT	DESO	QC4-D-2PM	1/8	2.61	66.29	0.62	15.75	7/16	11.11
		QC4-D-4PM	1/4	2.82	71.63	0.62	15.75	9/16	14.29
		QC6-D-4PM	1/4	2.84	72.14	0.74	18.80	9/16	14.29
		QC6-D-6PM	3/8	2.86	72.64	0.74	18.80	11/16	17.46
		QC8-D-8PM	1/2	3.46	87.88	0.87	22.10	7/8	22.23
Fractional Tube Fitting	SESO	QC4-S-D2	1/8	2.82	71.63	0.62	15.75	7/16	11.11
		QC4-S-D4	1/4	2.94	74.68	0.62	15.75	1/2	12.70
		QC6-S-D6	3/8	3.05	77.47	0.74	18.80	5/8	15.88
		QC8-S-D8	1/2	3.27	83.06	0.87	22.10	13/16	20.64
Female NPT	SESO	QC4-S-2PF	1/8	2.55	64.77	0.62	15.75	9/16	14.29
		QC4-S-4PF	1/4	2.74	69.60	0.62	15.75	3/4	19.05
		QC6-S-4PF	1/4	2.76	70.10	0.74	18.80	3/4	19.05
		QC6-S-6PF	3/8	2.83	71.88	0.74	18.80	7/8	22.23
		QC8-S-8PF	1/2	3.37	85.60	0.87	22.10	1-1/16	26.99
Male NPT	SESO	QC4-S-2PM	1/8	2.61	66.29	0.62	15.75	7/16	11.11
		QC4-S-4PM	1/4	2.82	71.63	0.62	15.75	9/16	14.29
		QC6-S-4PM	1/4	2.84	72.14	0.74	18.80	9/16	14.29
		QC6-S-6PM	3/8	2.86	72.64	0.74	18.80	11/16	17.46
		QC8-S-8PM	1/2	3.46	87.88	0.87	22.10	7/8	22.23

*For Outside diameter of keyed stems see page 37.

Complete ordering information is provided on page 9.

Bodies

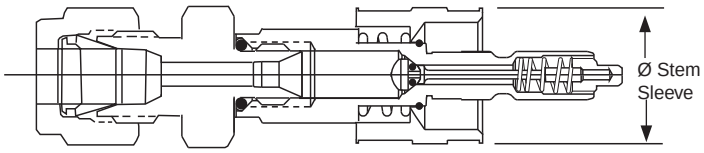


Model Shown: End Connection Type Fractional Tube Fitting

End Connection Type	Basic Ordering Number	Connector Size	Dimensions					
			A		B*		C	
			In.	mm	In.	mm	In.	mm
Fractional Tube Fitting	**QC4-B-D2**	1/8	2.02	51.31	0.86	21.84	5/8	15.88
	QC4-B-D4	1/4	2.11	53.59	0.86	21.84	5/8	15.88
	QC6-B-D6	3/8	2.38	60.45	0.98	24.89	3/4	19.05
	QC8-B-D8	1/2	3.30	83.82	1.21	30.73	15/16	23.81
Female NPT	**QC4-B-2PF**	1/8	1.94	49.28	0.86	21.84	5/8	15.88
	QC4-B-4PF	1/4	2.13	54.10	0.86	21.84	3/4	19.05
	QC6-B-4PF	1/4	2.34	59.44	0.98	24.89	3/4	19.05
	QC6-B-6PF	3/8	2.41	61.21	0.98	24.89	7/8	22.23
	QC8-B-8PF	1/2	2.96	75.18	1.21	30.73	1-1/16	26.99
Male NPT	**QC4-B-2PM**	1/8	1.80	45.72	0.86	21.84	5/8	15.88
	QC4-B-4PM	1/4	1.98	50.29	0.86	21.84	5/8	15.88
	QC6-B-4PM	1/4	2.20	55.88	0.98	24.89	3/4	19.05
	QC6-B-6PM	3/8	2.20	55.88	0.98	24.89	3/4	19.05
	QC8-B-8PM	1/2	2.56	65.02	1.21	30.73	15/16	23.81

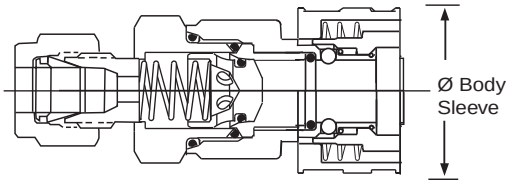
*For Outside diameter of keyed bodies see page 35.

Keys



Model Shown: End Connection Type Fractional Tube Fitting

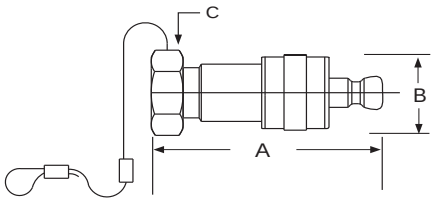
QUICK CONNECT KEY NUMBERS AND STEM SLEEVE OUTSIDE DIAMETERS						
Key Number and Color	QC4		QC6		QC8	
	Ø Stem Sleeve		Ø Stem Sleeve		Ø Stem Sleeve	
	In	mm	In.	mm	In.	mm
K1 black	0.82	20.83	0.99	25.15	1.11	28.19
K2 orange	0.85	21.59	1.02	25.91	1.14	28.96
K3 green	0.88	22.35	1.05	26.67	1.17	29.72
K4 yellow	0.91	23.11	1.08	27.43	1.20	30.48
K5 blue	0.94	23.88	1.11	28.19	1.23	31.24
K6 white	0.97	24.64	1.14	28.96	1.26	32.00
K7 purple	1.00	25.40	1.17	29.72	1.29	32.77
K8 brown	1.03	26.16	1.20	30.48	1.32	33.53



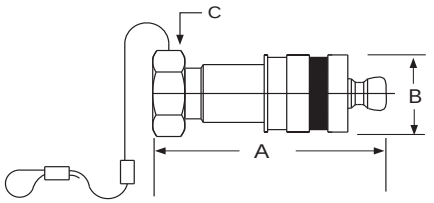
Model Shown: End Connection Type Fractional Tube Fitting

QUICK CONNECT KEY NUMBERS AND BODY SLEEVE OUTSIDE DIAMETERS						
Key Number and Color	QC4		QC6		QC8	
	Ø Body Sleeve		Ø Body Sleeve		Ø Body Sleeve	
	In.	mm	In.	mm	In.	mm
K1 black	0.96	24.38	1.13	28.70	1.26	32.00
K2 orange	0.99	25.15	1.16	29.46	1.29	32.77
K3 green	1.02	25.91	1.19	30.23	1.32	33.53
K4 yellow	1.05	26.67	1.22	30.99	1.35	34.29
K5 blue	1.08	27.43	1.25	31.75	1.38	35.05
K6 white	1.11	28.19	1.28	32.51	1.41	35.81
K7 purple	1.14	28.96	1.31	33.27	1.44	36.58
K8 brown	1.17	29.72	1.35	34.29	1.47	37.34

Plugs and Caps



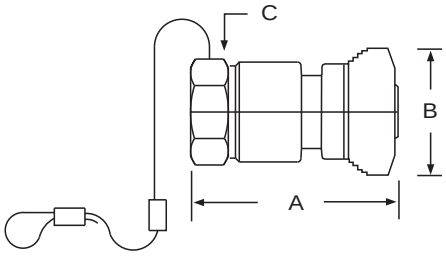
STEM PLUGS								
Series	Part Number	Body Size	A		B		C	
			In.	mm	In.	mm	In.	mm
QC4	QC4-SP-316	1/4	2.25	57.15	0.62	15.75	9/16	14.29
QC4	QC4-SP-B	1/4	2.25	57.15	0.62	15.75	9/16	14.29
QC6	QC6-SP-316	3/8	2.47	62.74	0.74	18.80	11/16	17.46
QC6	QC6-SP-B	3/8	2.47	62.74	0.74	18.80	11/16	17.46
QC8	QC8-SP-316	1/2	3.38	85.85	0.87	22.10	7/8	22.23
QC8	QC8-SP-B	1/2	3.38	85.85	0.87	22.10	7/8	22.23



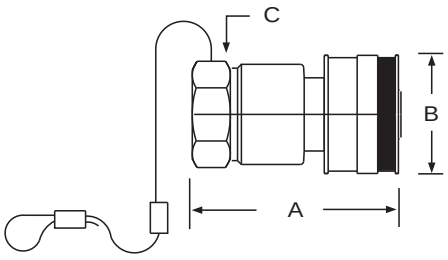
KEYED STEM PLUGS							
Series	Part Number	Body Size	A		B	C	
			In.	mm		In.	mm
QC4	QC4-SP-316	1/4	2.25	57.15	*	9/16	14.29
QC4	QC4-SP-B	1/4	2.25	57.15	*	9/16	14.29
QC6	QC6-SP-316	3/8	2.47	62.74	*	11/16	17.46
QC6	QC6-SP-B	3/8	2.47	62.74	*	11/16	17.46
QC8	QC8-SP-316	1/2	3.38	85.85	*	7/8	22.23
QC8	QC8-SP-B	1/2	3.38	85.85	*	7/8	22.23

When stem is uncoupled, the use of a stem plug is recommended to gaurd against damage and contaminants. Stem plugs are not pressure containing devices.

* For outside diameter of keyed stem plugs see page 37.



BODY CAPS								
Series	Part Number	Body Size	A		B		C	
			In.	mm	In.	mm	In.	mm
QC4	QC4-BC-316	1/4	1.42	36.07	0.86	21.84	9/16	14.29
QC4	QC4-BC-B	1/4	1.42	36.07	0.86	21.84	9/16	14.29
QC6	QC6-BC-316	3/8	1.63	41.40	0.98	24.89	11/16	17.46
QC6	QC6-BC-B	3/8	1.63	41.40	0.98	24.89	11/16	17.46
QC8	QC8-BC-316	1/2	2.01	51.05	1.21	30.73	7/8	22.23
QC8	QC8-BC-B	1/2	2.01	51.05	1.21	30.73	7/8	22.23



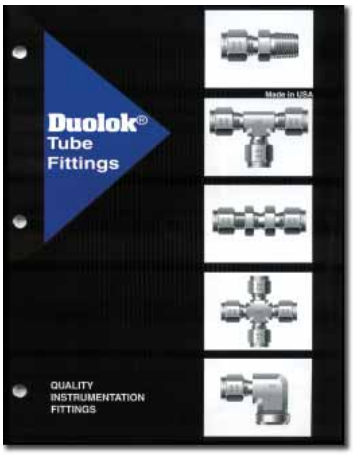
KEYED BODY CAPS							
Series	Part Number	Body Size	A		B	C	
			In.	mm		In.	mm
QC4	QC4-BC-316	1/4	1.42	36.07	*	9/16	14.29
QC4	QC4-BC-B	1/4	1.42	36.07	*	9/16	14.29
QC6	QC6-BC-316	3/8	1.63	41.40	*	11/16	17.46
QC6	QC6-BC-B	3/8	1.63	41.40	*	11/16	17.46
QC8	QC8-BC-316	1/2	2.01	51.05	*	7/8	22.23
QC8	QC8-BC-B	1/2	2.01	51.05	*	7/8	22.23

When body is uncoupled, the use of a body cap is recommended to gaurd against damage and contaminants. Body caps are not pressure containing devices.

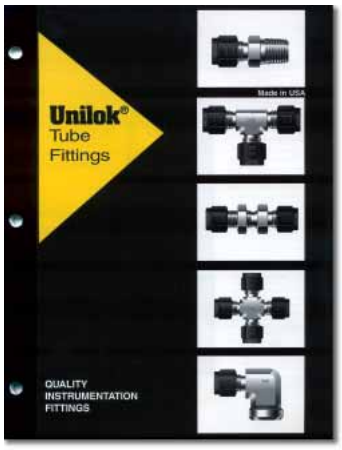
* For outside diameter of keyed body caps see page 37.

*To order Keyed Stem Plugs or Keyed Body Caps add the key color as a suffix to the basic ordering number.

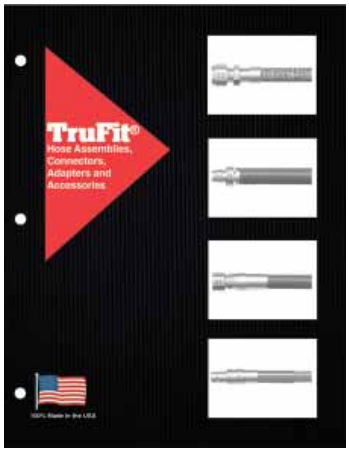
For more information on fittings for process and instrumentation systems manufactured by SSP, please request the catalogs pictured below.



Duolok® Tube Fittings

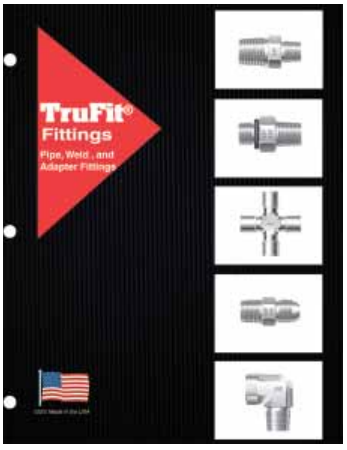


Unilok® Tube Fittings



TruFit® Fabricated Hose

Griplok® Tube Fittings



TruFit® Pipe, Weld and Adapter Fittings

SSP Instrumentation

FloLok®

AUTHORIZED DISTRIBUTOR

FloLok®
8250 Boyle Parkway
Twinsburg, OH 44087-2200
Phone: 1-330-963-0600
FAX: 1-330-425-8116
www.flolok.com

Made in the USA

CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001:2000 ANAB ACCREDITED DNV

ILFPCA/050-08A

SSP

Proportional Relief Valves

FloLok®

R Series

- ☑ Liquid or Gas Service
- ☑ Set Pressures: 10 to 6000 psig (0.7 to 413 bar)
- ☑ Variety of Seal Materials
- ☑ Variety of End Connections
- ☑ 1/4 and 1/2 in. (6, 8 and 12 mm)

www.mySSP.com

MADE IN USA

At SSP, we are proud to be an American manufacturing success story.

100% of our products are made in America. All of our manufacturing is performed in our 165,000 sq. ft. facility located near Cleveland, Ohio. Our facility is the largest vertically integrated, single-site operation in the industry. In addition to manufacturing and assembly, we have closed die forging, tool & die design, product engineering and testing operations under the same roof with customer service and management.

Made in America is good business. Not only do we make everything in America, we use American suppliers too. Buying American allows us to have better quality control and a more reliable supply chain. We can work more closely within our walls and with our suppliers to improve quality, reduce costs, and shorten lead times, which means faster service and better products for you.

Support where it counts. SSP products and services are supported by more than 4000 people and 350 distributor locations around the globe. For a distributor near you, contact SSP Customer Service or visit www.mySSP.com/distributors.

Industry Standard Products Made Better

TABLE of CONTENTS

R Series
Proportional Relief Valves

R Series proportional relief valves are designed to protect pressure sensitive equipment by diverting flow in order to relieve pressure upstream of pressure sensitive equipment such as analyzers and flow meters. They open when the upstream pressure exceeds the closing force exerted by the spring, permitting flow through the valve. Flow through the valve increases and decreases proportionately in response to changes in upstream pressure. Proportional relief valves reseal at a pressure lower than the cracking pressure.

Specifications

High-Pressure Valves

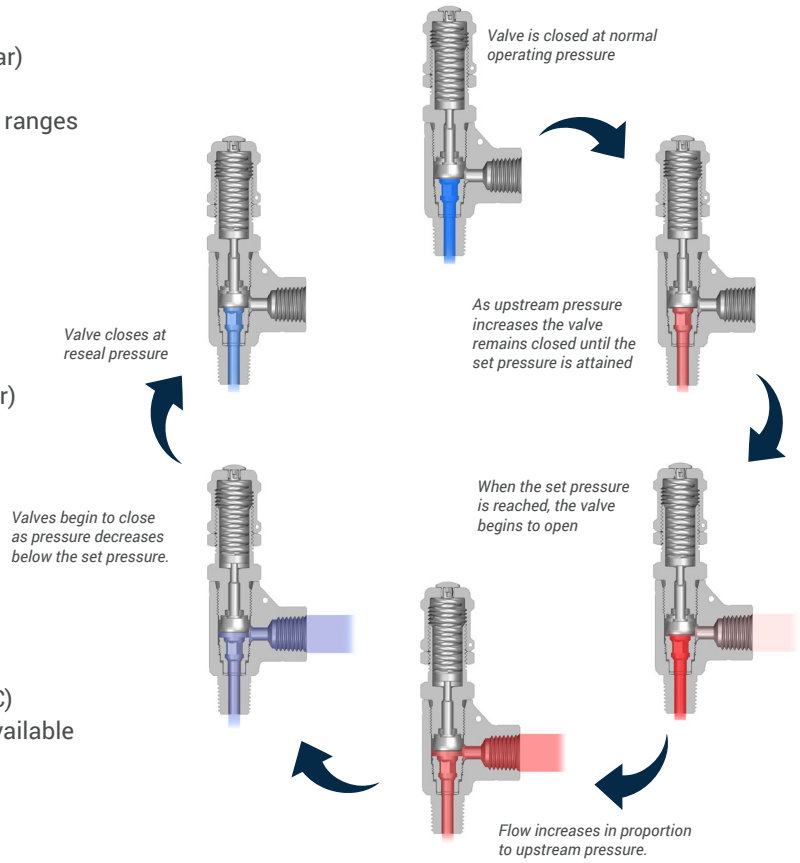
- Maximum Working Pressure: 6000 psig (413 bar)
- Set Pressure: 50 to 6000 psig (3.4 to 413 bar)
- Multiple springs for a selection of set pressure ranges improve accuracy and reduce hysteresis
- End Connections:
  - RH3: 1/4 in., 6 mm and 8 mm tube ends
    1/4 in. NPT and BSPT pipe ends
  - RH4: 1/2 in. and 12 mm tube ends
    1/2 in. NPT pipe ends

Low-Pressure Valves

- Maximum Working Pressure: 300 psig (20.6 bar)
- Set Pressures 10 to 225 psig (0.7 to 15.5 bar)
- One spring for the full set pressure range
- End Connections:
  - RL3: 1/4 in., 6 mm and 8 mm tube ends
    1/4 in. NPT and BSPT pipe ends
  - RL4: 1/2 in. and 12 mm tube ends
    1/2 in. NPT pipe ends

General Specifications

- Temperature Range: -40 to 300°F (-40 to 148°C)
- Valves preset to a specified set pressure are available
- Wide range of O-ring and seat materials
- Choice of Duolok, Griplok and Unilok tube end connections
- 316 SS valve bodies



Applications

R Series valves are used in gas or liquid systems in upstream and downstream oil & gas, chemical, pharmaceutical and laboratory applications. They are often used downstream from pumps and regulators to ensure protection from pressure spikes due to failures upstream of the valve or blockages downstream of the valve. Other applications include test labs, steam cleaning and sterilization systems, heating lines, dispensing and filling systems.

Product Design

1. ***CAP***
   Allows easy external set pressure adjustment.

2. ***SPRING***
   Adjusts to provide set pressure. Springs are color coded to indicate the set pressure range.

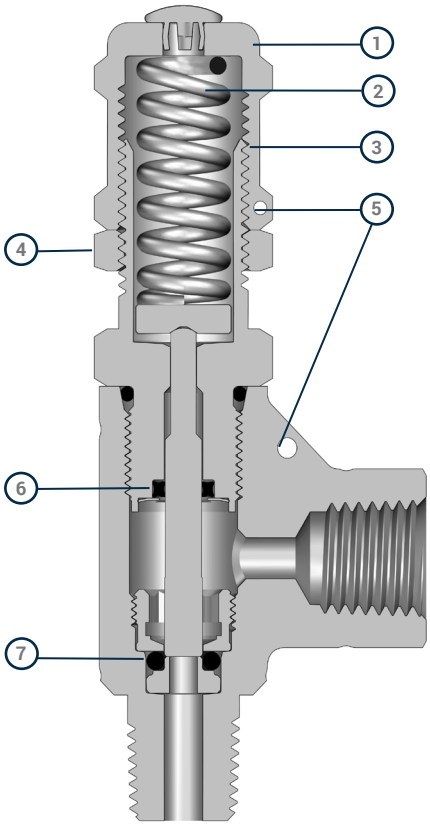
3. ***LABEL***
   Identifies spring set pressure range. Label colors are matched with the spring colors.

4. ***LOCKNUT***
   Maintains cap position to lock in the pressure setting.

5. ***LOCK WIRE CAPABILITY***
   Secures cap to maintain set pressure.

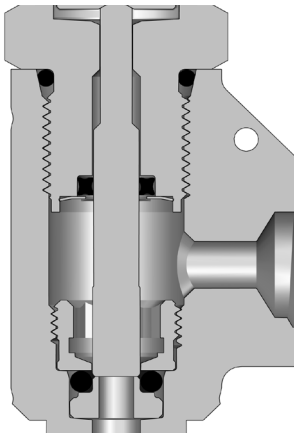
6. ***STEM SEAL***
   Quad seal reduces friction for greater accuracy.

7. ***O-RING***
   Fully supported O-ring provides durable elastomer seal for positive shutoff. See below for other designs.

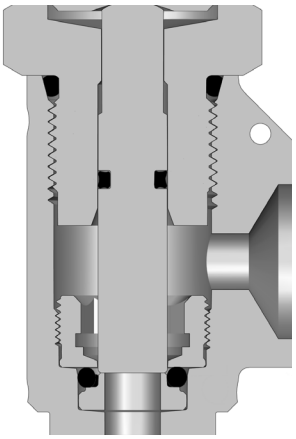


RH Series

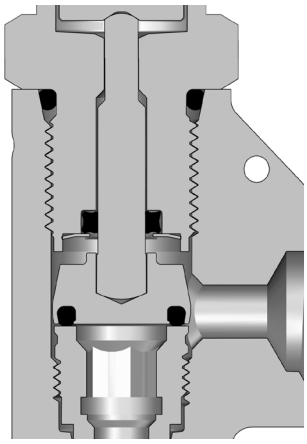
Meets ASME B31.3 design pressure calculations



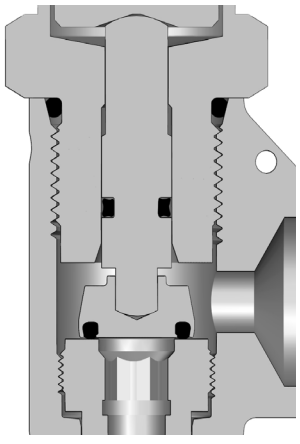
RH3



RH4



RL3



RL4

Series

Technical Information

General Specification

Series	RH3	RH4	RL3 / RL4
	psig, (bar)		
Max. Working Pressure	6000 (413)[1]	6000 (413)	300 (20.6)
Max. Outlet Pressure[2]	1500 (103)	2500 (172)	225 (15.5)
Set Pressure Range	50 to 6000 (3.4 to 413)	50 to 1500 (3.4 to 103)	10 to 225 (0.7 to 15.5)

[1] Up to 8000 psig (551 bar) during relief RH3 only
[2] Outlet pressure not to exceed inlet pressure

Pressure - Temperature

Seal Materials	RH Series			RL Series	
	Temperature Range °F (°C)	RH3	RH4	Temperature Range °F (°C)	RL3 & RL4
		Max Set Pressure, psig (bar)			Max Set Pressure, psig (bar)
Fluorocarbon FKM	25 to 300 (-4 to 148)	6000 (413)	1500 (103)	10 to 275 (-12 to 135)	225 (15.3)
Nitrile	0 to 250 (-17 to 121)	6000 (413)	1500 (103)	-10 to 250 (-23 to 121)	
Ethylene Propylene	30 to 250 (-1 to 121)	6000 (413)	1500 (103)	-40 to 250 (-40 to 121)	
Perfluoroelastomer FFKM	30 (-1)	2500 (172)	1500 (103)	30 to 200 (-1 to 93)	225 (15.3)
	40 (4)	6000 (413)			
	70 (21)	6000 (413)			
	150 (65)	3000 (207)			
	200 (93)	1500 (103)			

Set Pressure Repeatability

The table below estimates the repeatability of set pressure, the pressure at which flow begins, after initial actuation of the valve.

Temperature	Set Pressure Repeatability
60 to 80°F (15 to 26°C)	The greater of ± 3.0 psig (0.20 bar) or 5%
< 60°F (15°C)	The greater of ± 6.0 psig (0.40 bar) or 20%
>80°F (26°C)	

Note: Valves that have not been actuated for a period of time may have higher initial cracking pressures.

Resealing Pressure

The resealing pressure is the upstream pressure at which the valve closes and flow stops. It is always lower than set pressure. Every R series proportional relief valve is tested for set and resealing performance. The chart below provides parameters for resealing values within specific pressure ranges.

Series	Test Set Pressure psig (bar)	Minimum Resealing Pressure % of Set Pressure
RH3, RH4	100 to 200 (6.8 to 13.7)	50
	850 to 1000 (58.5 to 68.9)	85
RL3, RL4	10 to 20 (0.7 to 1.3)	50
	175 to 225 (12.0 to 15.5)	90

Back Pressure

(RL Series Valves only)

System back pressure increases the set pressure of the RL Series valves. To compensate when setting the valve, subtract 80% of the back pressure from the desired set pressure.

Example

- Desired set pressure: 200 psig.
- System back pressure: 60 psig.
- *Set pressure: 200 - (60 x 0.80) = 152 psig*

Note: Valves are set at atmospheric outlet pressure.

Cleaning and Packaging

R Series relief valves are cleaned and packaged according to SSP Standard Cleaning and Packaging Processes. Cleaning in accordance with ASTM G93 Level C, *Cleaning Methods and Cleanliness Levels for Material and Equipment Used in Oxygen-Enriched Environments is also available.*

Technical Information

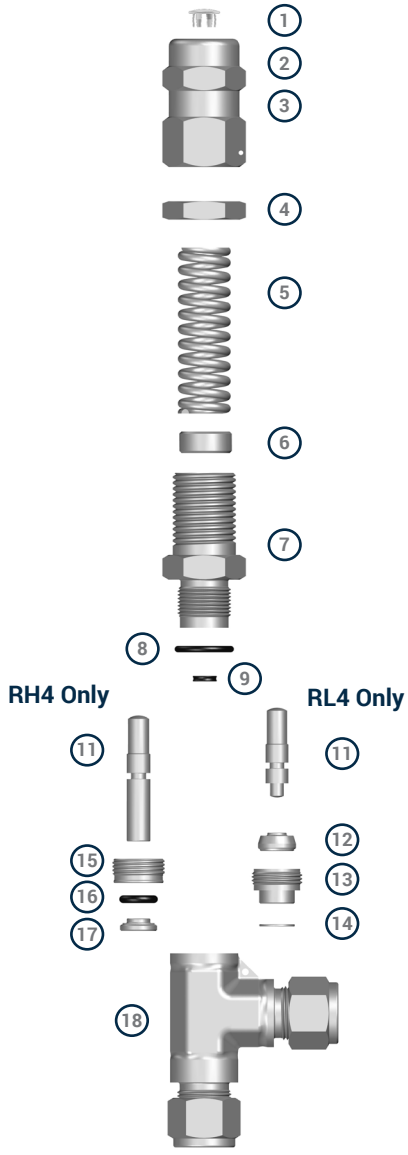
Materials of Construction

ID	Component	Body Material
		316 SS
1	Plug	Nickel-Plated Steel
2	Cap	316 SS / A479
3	Label	Polyester
4	Lock Nut	316 SS / A479
5	Spring	S17700 / AMS 5678
6	Spring Support	316 SS / A479
7*	Bonnet	316 SS / A479
8*	O-ring	Fluorocarbon FKM
9*	Quad Seal	Low-Friction Coated Fluorocarbon FKM
10*	Retainer	316 SS / A666
11*	Stem	316 SS / A276
12*	Sealing Disc	Fluorocarbon FKM and 316 SS / A479
13*	Seat	316 SS / A479
14*	Gasket	PTFE-Coated 316 SS / A479
15*	Seat Retainer	316 SS / A479
16*	O-ring	Fluorocarbon FKM
17*	Insert	316 SS / A479
18*	Body	316 SS / A182
Lubricant		Molybdenum Disulfide-Based Dry Film and PTFE-Based

*Wetted Components

RH3 and RL3

RH4 and RL4



⚠ Selection and Application

It is the system designer's responsibility to determine the requirements for their application and whether R Series relief valves conform to the codes.

In some systems, relief valves are required to meet specific safety codes which require valves to open completely at a set pressure. R series proportional relief valves open gradually as the pressure increases. Therefore they cannot be certified to ASME, PED, or any other codes for safety relief valves.

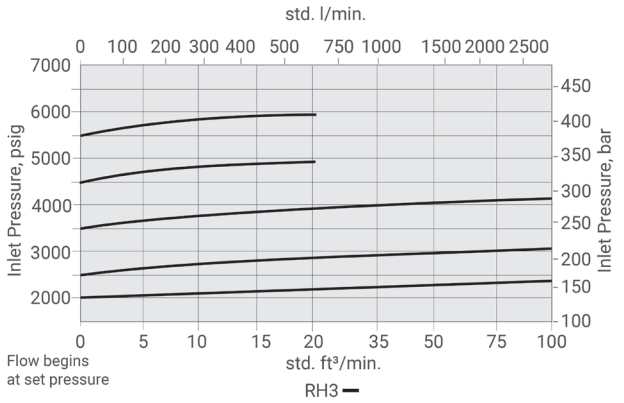
SSP proportional relief valves should never be used as ASME Boiler and Pressure Vessel Code safety relief devices or as "Safety Accessories" defined in the Pressure Equipment Directive 97/23/EC.

Flow Data

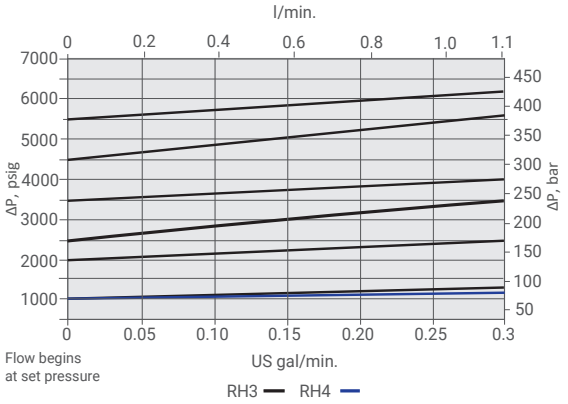
(70°F/20°C)

RH3 & RH4 Series

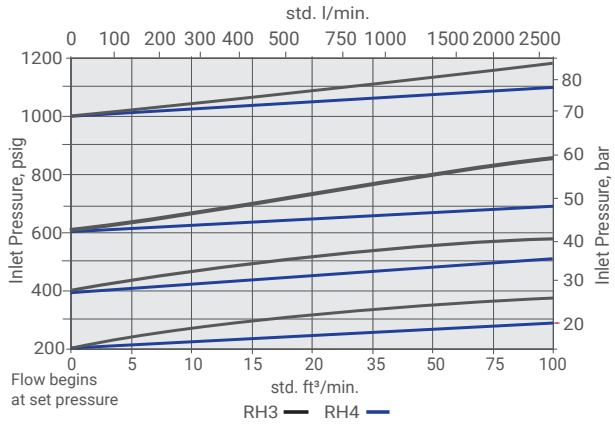
Air Flow



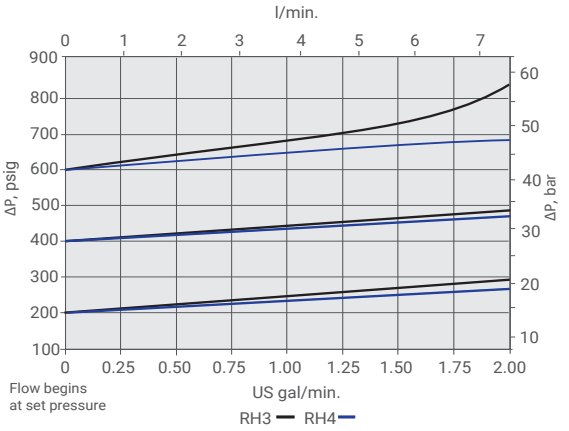
Water Flow



Air Flow

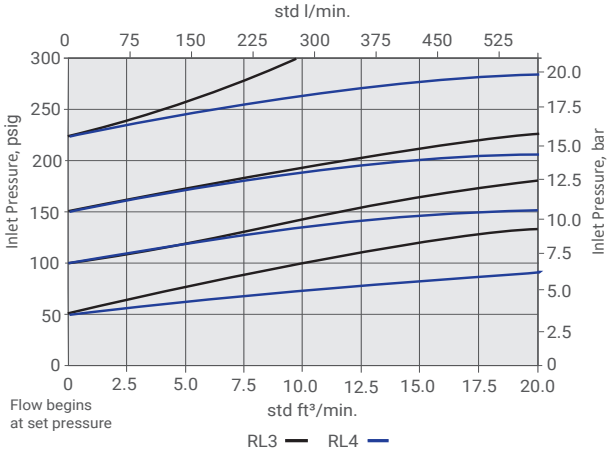


Water Flow

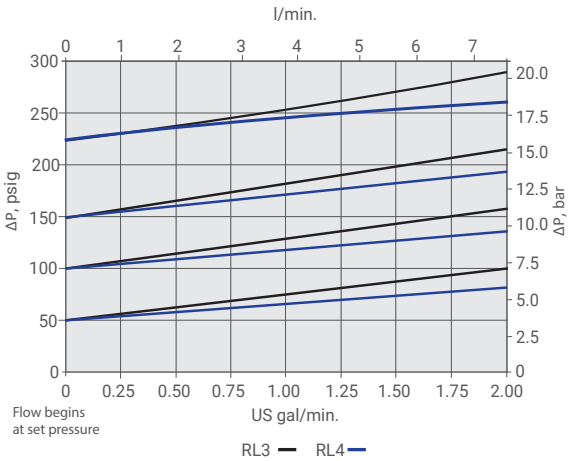


RL3 & RL4 Series

Air Flow



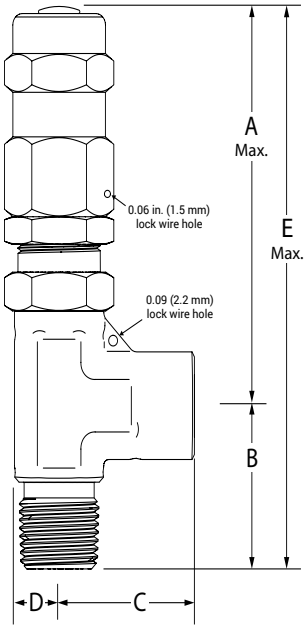
Water Flow



Ordering Information

To order, locate the Basic Part Number for the valve for your application from the tables below, then add the required options and accessories from pages 9.

Basic Part Numbers and Dimensions

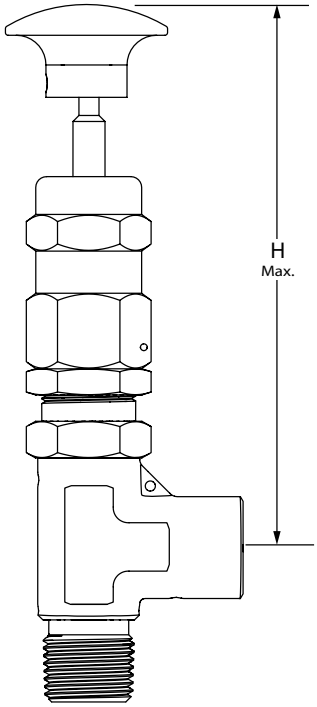


RH3 and RH4 Series High Pressure Valves

Note: RH Series valves are shipped standard without springs. To order spring kits, valves with springs installed, or factory set valves, see the instructions on page 9.

Inlet/Outlet		Basic Part Number	Dimensions, in. (mm)[1]					
Type(s)	Size		A	B	C	D	E	H
Orifice 0.14 (3.6 mm), Set Pressures from 50 to 6000 psig (3.4 to 413 bar)								
Fractional Tube Fitting[2]	1/4 in.	RH3D4	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.41 (10.4)	4.14 (105)	4.09 (104)
Metric Tube Fitting[2]	6 mm	RH3DM6	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.41 (10.4)	4.14 (105)	4.09 (104)
	8 mm	RH3DM8	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.41 (10.4)	4.14 (105)	4.09 (104)
Male NPT to Tube[2]	1/4 in.	RH34PMD4	2.70 (68.6)	1.19 (30.2)	1.60 (40.6)	0.41 (10.4)	3.89 (98.8)	4.09 (104)
Male NPT to Female NPT	1/4 in.	RH34PM4PF	2.70 (68.6)	1.19 (30.2)	1.17 (29.7)	0.41 (10.4)	3.89 (98.8)	4.09 (104)
Male BSPT to Female BSPT	1/4 in.	RH34MRT4FRT	2.70 (68.6)	1.19 (30.2)	1.17 (29.7)	0.41 (10.4)	3.89 (98.8)	4.09 (104)
Orifice 0.25 (6.4 mm), Set Pressures from 50 to1500 psig (3.4 to 103 bar)								
Fractional Tube Fitting[2]	1/2 in.	RH4D8	4.09 (104)	1.83 (46.5)	1.83 (46.5)	0.47 (11.9)	5.92 (150)	5.37 (136)
Metric Tube Fitting[2]	12 mm	RH4DM12	4.09 (104)	1.83 (46.5)	1.83 (46.5)	0.47 (11.9)	5.92 (150)	5.37 (136)
Male NPT to Tube Fitting[2]	1/2 in.	RH48PMD8	4.09 (104)	1.43 (36.3)	1.83 (46.5)	0.47 (11.9)	5.52 (140)	5.37 (136)
Male NPT to Female NPT	1/2 in.	RH48PM8PF	4.09 (104)	1.43 (36.3)	1.43 (36.3)	0.47 (11.9)	5.52 (140)	5.37 (136)

[1]Dimension are for reference only and subject to change.
[2]Basic part numbers specify Duolok two-ferrule tube ends. For Unilok single-ferrule or Griplok dual ferrule, see page 9.



RL3 and RL4 Series Low Pressure Valves

Note: RL Series valves are shipped standard with springs installed in the valve.

Inlet /Outlet		Basic Part Number	Dimensions, in. (mm)[1]					
Type(s)	Size		A	B	C	D	E	H
Orifice 0.19 (4.8 mm), Set Pressures from 10 to 225 psig (0.7 to 15.5 bar)								
Fractional Tube Fitting[2]	1/4 in.	RL3D4	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.41 (10.4)	4.14 (105)	4.09 (104)
Metric Tube Fitting[2]	6 mm	RL3DM6	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.41 (10.4)	4.14 (105)	4.09 (104)
	8 mm	RL3DM8	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.41 (10.4)	4.14 (105)	4.09 (104)
Male NPT to Tube Fitting[2]	1/4 in.	RL34PMD4	2.70 (68.6)	1.19 (30.2)	1.60 (40.6)	0.41 (10.4)	4.14 (105)	4.09 (104)
Male NPT to Female NPT	1/4 in.	RL34PM4PF	2.70 (68.6)	1.19 (30.2)	1.17 (29.7)	0.41 (10.4)	3.89 (98.8)	4.09 (104)
Male BSPT to Female BSPT	1/4 in.	RL34MRT4FRT	2.70 (68.6)	1.19 (30.2)	1.17 (29.7)	0.41 (10.4)	3.89 (98.8)	4.09 (104)
Orifice 0.25 (6.4 mm), Set Pressures from 10 to 225 psig (0.7 to 15.5 bar)								
Fractional Tube Fitting[2]	1/2 in.	RL4D8	4.09 (104)	1.83 (46.5)	1.83 (46.5)	0.47 (11.9)	5.92 (150)	5.37 (136)
Metric Tube Fitting[2]	12 mm	RL4DM12	4.09 (104)	1.83 (46.5)	1.83 (46.5)	0.47 (11.9)	5.92 (150)	5.37 (136)
Male NPT to Tube Fitting[2]	1/2 in.	RL48PMD8	4.09 (104)	1.43 (36.3)	1.83 (46.5)	0.47 (11.9)	5.52 (140)	5.37 (136)
Male NPT to Female NPT	1/2 in.	RL48PM8PF	4.09 (104)	1.43 (36.3)	1.43 (36.3)	0.47 (11.9)	5.52 (140)	5.37 (136)

[1]Dimension are for reference only and subject to change.
[2]Base part numbers specify Duolok two-ferrule tube ends. For Unilok single-ferrule or Griplok dual ferrule, see page 9.

Options & Accessories

Spring Options

RL Series valves are shipped with springs installed.

RH Series valves are shipped standard without springs. To order RH Series valves with factory installed springs locate the required pressure range from the table below then insert the spring designator into the part number.
*Example: RH3D4-316-**C***

Set Pressure Range psig (bar)	Spring Designator	Spring Color
RH3		
50 to 350 (3.4 to 24.1)	-A	Blue
350 to 750 (24.1 to 51.7)	-B	Yellow
750 to 1500 (51.7 to 103)	-C	Purple
1500 to 2250 (103 to 155)	-D	Orange
2250 to 3000 (155 to 206)	-E	Brown
3000 to 4000 (206 to 275)	-F	White
4000 to 5000 (275 to 344)	-G	Red
5000 to 6000 (344 to 413)	-H	Green
RH4		
50 to 350 (3.4 to 24.1)	-A	Blue
350 to 750 (24.1 to 51.7)	-B	Yellow
750 to 1500 (51.7 to 103)	-C	Purple
RL3 / RL4		
10 to 225 (0.7 to 15.5)	Blank	N/A

Spring Kits

Spring kits include the spring, spring support, label, 302 SS lock-wire with seal, and installation instructions.

To order spring kits, use the series and size followed by "-SK-177." For RH Series valves add the spring designator from the Spring Options table above.
Examples: **RH4-SK-177-C**
RL4-SK-177

Manual Override Handles

A manual override handle allows operators to open the valve without changing the set pressure. To order relief valves with manual override handles, add -MO to the part number. *Example: RH4D4-316-**MO***
Manual override handles can only be used with:

- RH3 series—A, B, and C springs only
- RH4 series—A spring only
- RL3 and RL4 series—standard spring

Manual Override Handle Kits

Use the kit part number from the table below to order manual override kits for your valve series. Each kit contains an aluminum handle, 316 SS pull rod and instructions.

Series	Maximum Height (Closed Position)	Kit Part#
RH3, RL3	5.16 in. (131 mm)	R3-MOK
RH4, RL4	6.78 in. (172 mm)	R4-MOK

Handle diameter is 1.50 in. (38.1 mm).

Factory Set Valves

R Series valves are available preset to a specified set pressure. Valves are set, tested, locked, and tagged with the set pressure. Certificates of testing are included. Allowable factory set pressure range is ± 5% from requested set pressure. To order preset RH Series valves, add the spring designator and the desired set pressure to the part number. For RL Series valves include the set pressure only.
*Example RH4D8-316-**C850** or RH4D8-316-**C59BAR***
*RL3D4-316-**100** or RL4D8-316-**7BAR***

Tube Fitting End Connections

SSP offers three tube fitting designs. Duolok two-ferrule tube fittings are standard. To specify a different design, select the designator from the table below, then substitute it for the "D" in the part number. Example: RL3**U4**-316

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

Seal Materials

The standard seal material for R Series valves is Fluorocarbon FKM. To order non-standard seals, add the designator to the part number. *Example: RH3D4-316-**BN***

Seal Material	Designator	
	Valve	Seal Kit
Fluorocarbon FKM	Blank	-V
Nitrile Rubber	-BN	
Ethylene Propylene	-EP	
Perfluoroelastomer FFKM	-FFKM	

Seal Replacement Kits

To order a replacement seal kit, add a seal material designator from the seal material table into the seal kit basic ordering number from the table below.
*Example: **RL3-RK-316-V***

RH3	RH4	RL3	RL4
Basic Part Number			
RH3-RK-316	RH4-RK-316	RL3-RK-316	RL4-RK-316
Kit Contents			
O-rings (2) Quad-Seal Retainer Instructions	O-rings (2) Quad-Seal Instructions	O-ring Quad-Seal Retainer Sealing Disc Instructions	O-ring Quad-Seal Sealing Disc Instructions

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, add -XP98 to the part number. *Example: RH3D4-316-**XP98***

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

Special Orders

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

Series/Size	Inlet	Outlet	Body Material	Options
A	B	C	D	E
RH3	4PM	4PF	-316	-C825-EP-MO

A SERIES / SIZE

RL3	*0.19 Orifice*
RL4	*0.25 Orifice*
RH3	*0.14 Orifice*
RH4	*0.25 Orifice*

D BODY MATERIAL

-316	*316 SS*

B + C INLET[1] + OUTLET[1]

Type:		Fractional Sizes:		Metric Sizes:	
D	*Duolok® Tube Fitting*	*4*	*1/4 in.*	*M6*	*6 mm*
U	*Unilok® Tube Fitting*	*8*	*1/2 in.*	*M8*	*8 mm*
G	*Griplok® Tube Fitting*			*M12*	*12 mm*
PF	*Female NPT*				
PM	*Male NPT*				
FRT	*Female BSPT*				
MRT	*Male BSPT*				

E OPTIONS[2]

SPRINGS

Designator	Set Pressure Range
RL3 & RL4 Series	psig (bar)
Blank	10 to 225 (0.7 to 15.5)
RH3 Series	psig (bar)
Blank	No Spring
-A	50 to 350 (3.4 to 24.1)
-B	350 to 750 (24.1 to 51.7)
-C	750 to 1500 (51.7 to 103)
-D	1500 to 2250 (103 to 155)
-E	2250 to 3000 (155 to 206)
-F	3000 to 4000 (206 to 275)
-G	4000 to 5000 (275 to 344)
-H	5000 to 6000 (344 to 413)
RH4 Series	psig (bar)
Blank	No Spring
-A	50 to 350 (3.4 to 24.1)
-B	350 to 750 (24.1 to 51.7)
-C	750 to 1500 (51.7 to 103)

FACTORY SET PRESSURE

Add the actual set pressure desired.
See page 9 for more information.

SEAL MATERIALS

Blank	Fluorocarbon FKM
-BN	Nitrile
-EP	Ethylene Propylene
-FFKM	Perfluoroelastomer FFKM

OTHER OPTIONS

-XP98	Special Cleaning per ASTM G93, Level C and CGA G-4.1
-MO	Manual override handle. See notes on page 9 for limitations.

*[1] Tube fitting end connection part numbers are formatted Type followed by Size. Example: **D4***
*Pipe ends are formatted Size followed by Type. Example: **4PF***
*If both ends are the same, use only one end connection designator. Example: RL3**D4**-316*

[2] Add options designators to the end of the Basic Part Number in alphabetical order.

SSP Limited Lifetime Warranty

SSP valves are backed by the SSP Limited Lifetime Warranty. This warranty is available from your local distributor or at www.mySSP.com.

⚠ 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.

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when intermixed with Swagelok®, Hoke Gyrolok® and Parker CPI™ fittings.

Valves

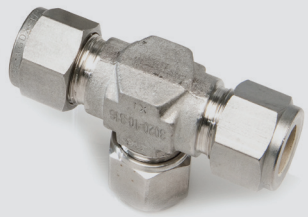
The FloLok valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility applications.

Pipe Fittings

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



Filters

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

Hose

TruFit PTFE-lined and flexible metal core hose assemblies are used in a variety of instrumentation, utility, biopharm and other applications.

Tools & Accessories

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

Quick Connects

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

Founded 1926

Privately owned, third generation business

Modern single-site vertically integrated manufacturing facility

DFARS-compliant raw material

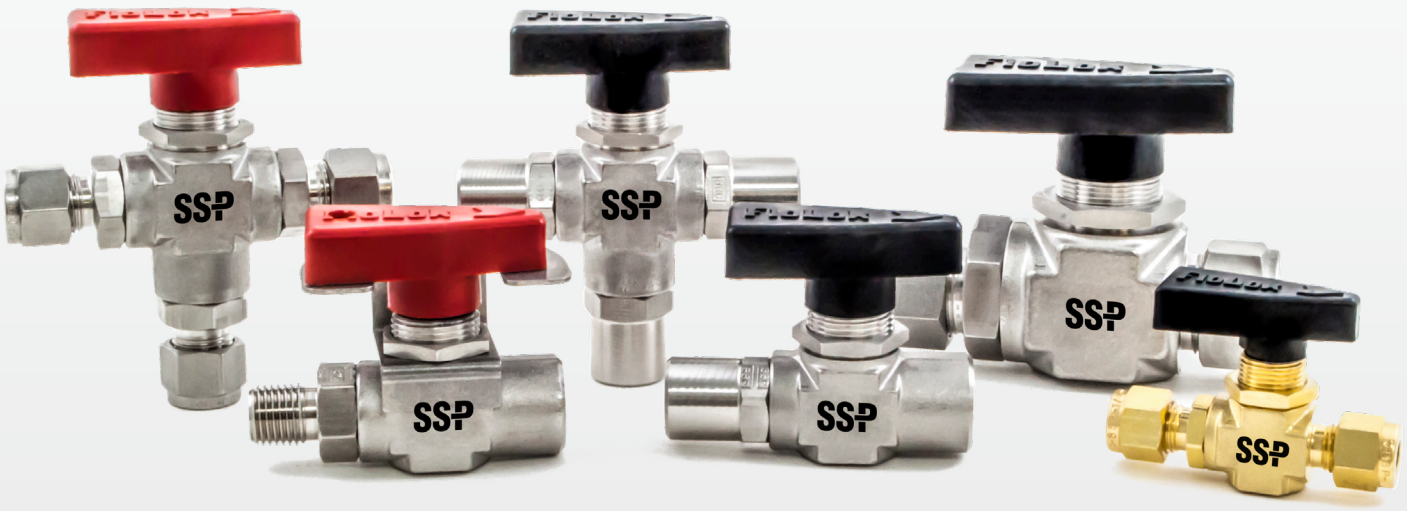
ISO 9001 quality management system

Limited Lifetime Warranty

8250 Boyle Parkway • Twinsburg, OH 44087

330-425-4250 • www.mySSP.com

General Utility Ball Valves



300 Series

- ☑ Working Pressure: up to 5000 psig (344 bar)
- ☑ End Connections: 1/8 to 3/4 in. (3 to 18 mm)
- ☑ Temperature Range: -40 to 350°F (-40 to 176°C)
- ☑ 2-way and 3-way valves

www.mySSP.com

MADE IN USA

At SSP, we are proud to be an American manufacturing success story.

100% of our products are made in America. All of our manufacturing is performed in our 165,000 sq. ft. facility located near Cleveland, Ohio. Our facility is the largest vertically integrated, single-site operation in the industry. In addition to manufacturing and assembly, we have closed die forging, tool & die design, product engineering and testing operations under the same roof with customer service and management.

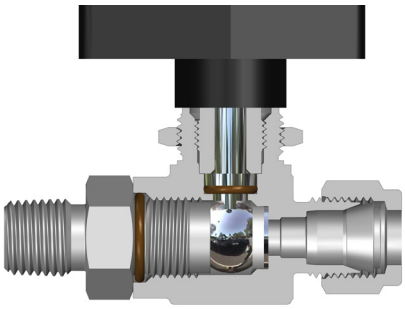
Made in America is good business. Not only do we make everything in America, we use American suppliers too. Buying American allows us to have better quality control and a more reliable supply chain. We can work more closely within our walls and with our suppliers to improve quality, reduce costs, and shorten lead times, which means faster service and better products for you.

SSP Industry Standard Products.
Made Better.

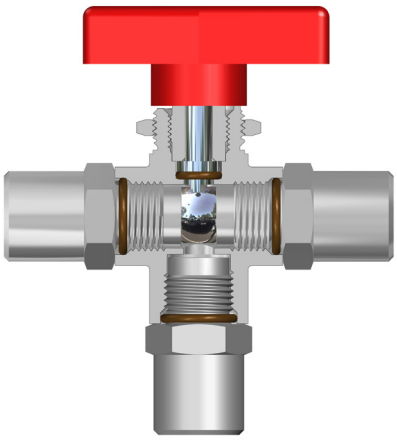
TABLE of CONTENTS

300 Series General Utility Ball Valves

300 Series ball valves are designed for general utility, control, and small process applications up to 5000 psig (344 bar) and temperatures from -40 to 350°F (-40 to 176°C).



Two-way shut off valves and three-way diverting valves are available with 316 stainless steel or brass bodies. Valves are available in three sizes with 0.125, 0.250 and 0.438 in. orifices and standard end connections from 1/8 to 3/4 in. The end screw design allows them to be configured with mixed end connection types and sizes. The standard offering includes PTFE or PCTFE seats and FKM or nitrile O-rings.

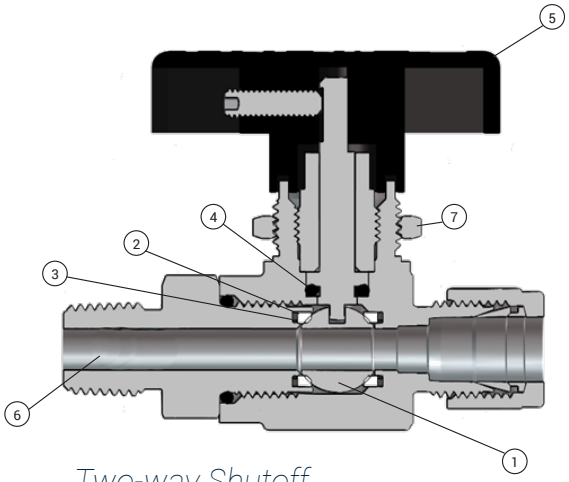


The floating ball design allows upstream pressure to create a leak-tight seal on the downstream seat. O-ring stem seals eliminate the need for packing adjustments and reduce torque. 300 Series valves are offered in a wide range of end connection types and sizes and with a variety of seat and o-ring material combinations.

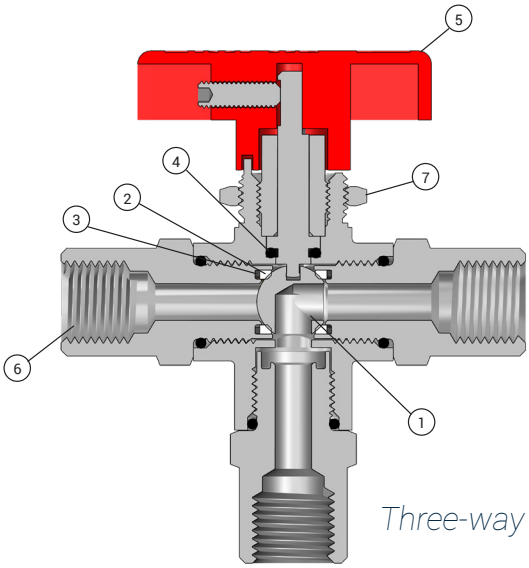
Applications

SSP 300 Series ball valves are used in a wide range of process and utility applications including compressed gas, water and lube systems.

Product Design



Two-way Shutoff



Three-way Diverting

1 ***MICRO FINISHED. FREE FLOATING BALL***

- Seals with flow from either direction
- Upstream pressure assists with downstream seal
- Compensates for seat wear
- Low operating torque

2 ***SEATS***

- Tight bi-directional seal
- PTFE / PCTFE / PEEK

3 ***BACKUP RING***

- Supports and seals the valve seat

4 ***O-RING PACKING***

- Does not require packing adjustment
- Low operating torque
- Wide range of o-ring materials for temperature and chemical compatibility

5 ***DIRECTIONAL HANDLE***

6 ***END SCREW DESIGN***

- Allows a wide variety of mixed size and type end connection combinations
- Easy Maintenance

7 ***PANEL MOUNTING***

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

TESTING

All 300 Series valves are factory tested with Nitrogen to 1000 psig (69 bar) at 70°F (20°C).

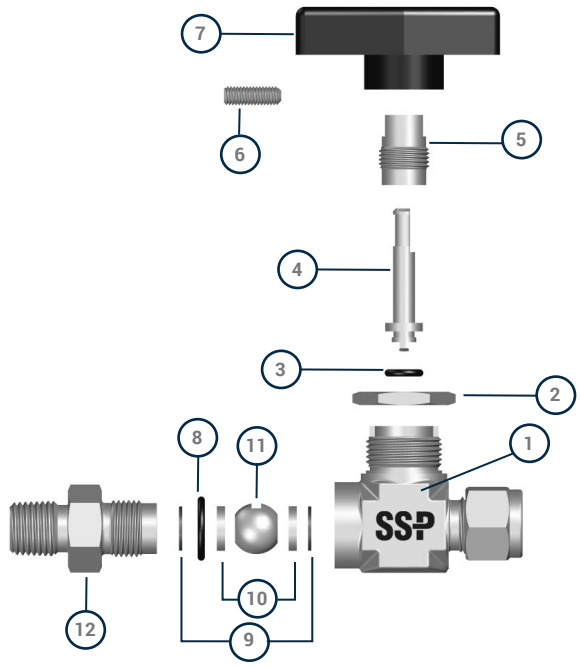
WARRANTY

FloLok valves are backed by the SSP Lifetime Limited Warranty. This warranty is available from your local distributor or at www.mySSP.com.

Materials of Construction

ID	Component	316 SS	Brass
1	Body*	316 Stainless Steel	Brass
2	Panel Nut	316 Stainless Steel	Brass
3	Stem O-ring*	FKM	FKM
4	Stem*	316 Stainless Steel	316 Stainless Steel
5	Bonnet	316 Stainless Steel	Brass
6	Handle Set Screw	Stainless Steel	Stainless Steel
7	Handle	Nylon	Nylon
8	Connector O-ring*	FKM	FKM
9	Backup Rings*	FKM	FKM
10	Seats*	PTFE / PCTFE / PEEK	PTFE / PCTFE / PEEK
11	Ball*	316 Stainless Steel	316 Stainless Steel
12	Connector*	316 Stainless Steel	Brass

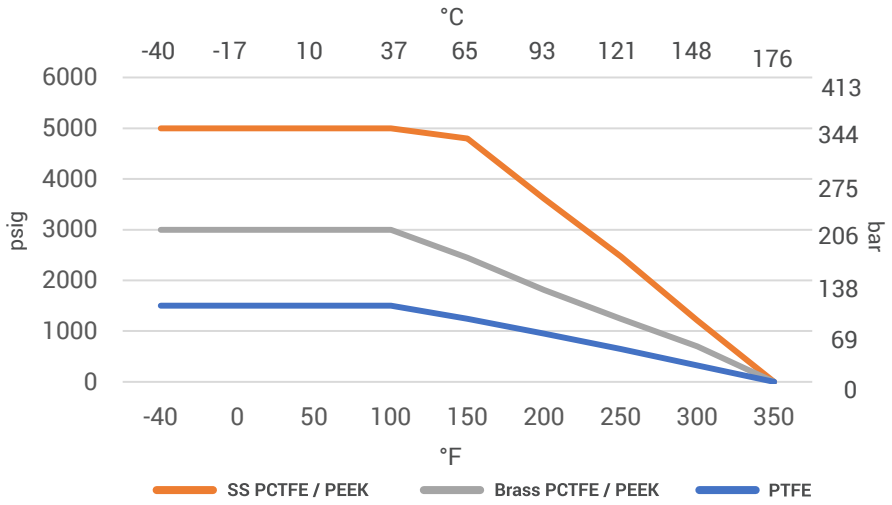
** Wetted components*



Temperature - Pressure

The chart provides ratings for process temperatures.

Maximum work pressures
- PCTFE / PEEK: 5000 psig (344 bar)
- PTFE: 1500 psig (103 bar)



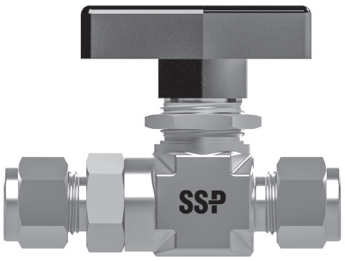
Ordering Information

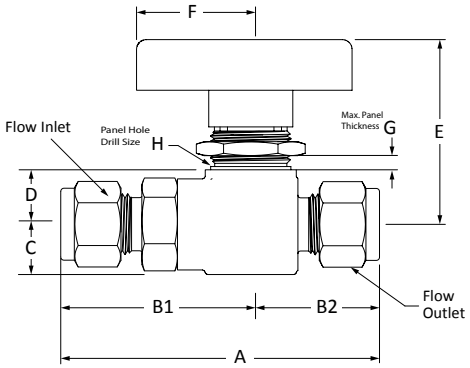
Ordering Instructions

1. Locate the Basic Part Number for the valve end connection type(s) and size(s). (See pages 6-8). *Example:* ***306.***
2. PTFE seats are standard. For PCTFE seats add -K to the part number. For PEEK seats add -P to the part number. *Example: 306-**K**.*
3. Add the Body Material Designator to the part number. Add -316 for 316 stainless steel. Add -B for Brass. *Example: 306-K-**316.***
4. Add designators for other options in alphabetical order (page 9). *Example 306-K-316-**LOH-BN.***

Note: The Basic Ordering Numbers and Dimensions tables contain only the most popular valve configurations; more are available. If the required valve configuration is not in the Basic Part Numbers and Dimensions tables, contact your local Authorized SSP Instrumentation Distributor or Contact SSP Customer Service - customer.service@mySSP.com.

Two-Way Ball Valves





Part Numbers and Dimensions

End Connection			Basic Ordering Number	Orifice in. (mm)	Dimensions in. (mm) [2]								
Type	Inlet Size	Outlet Size			A	B1	B2	C	D	E	F	G	H
Fractional Tube Fitting	1/8	1/8	350	0.093 (2.36)	2.21 (56.1)	1.24 (31.4)	0.97 (24.6)	0.40 (10.1)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.19 (4.8)	25/32 (19.8)
	1/4	1/4	352	0.125 (3.18)	2.41 (61.2)	1.34 (34.0)	1.07 (27.1)	0.40 (10.1)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.19 (4.8)	25/32 (19.8)
	1/4	1/4	312	0.187 (4.75)	2.76 (70.1)	1.62 (41.1)	1.14 (28.9)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	3/8	3/8	320	0.250 (6.35)	2.88 (73.1)	1.69 (42.9)	1.19 (30.2)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.08 (4.8)	25/32 (19.8)
	1/2[1]	1/2[1]	322	0.250 (6.35)	3.10 (78.7)	1.80 (45.7)	1.30 (33.0)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	1/2	1/2	358	0.437 (11.10)	3.76 (95.5)	2.14 (54.3)	1.62 (41.1)	0.75 (19.1)	0.75 (19.1)	2.20 (55.8)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.1)
	3/4	3/4	359	0.437 (11.10)	3.76 (95.5)	2.14 (54.3)	1.62 (41.1)	0.75 (19.1)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.1)
Metric Tube Fitting	6	6	341	0.187 (4.75)	2.79 (70.9)	1.64 (41.7)	1.15 (29.2)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	8	8	342	0.250 (6.35)	2.83 (71.8)	1.66 (42.1)	1.17 (29.7)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	10	10	343	0.250 (6.35)	2.91 (73.9)	1.70 (43.1)	1.21 (30.7)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	12	12	344	0.250 (6.35)	3.11 (28.5)	1.80 (45.7)	1.31 (28.7)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	16	16	369	0.437 (11.10)	3.76 (95.5)	2.14 (54.4)	1.31 (28.7)	0.75 (19.1)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
	18	18	367	0.437 (11.10)	2.14 (54.4)	2.14 (54.4)	1.62 (41.1)	0.75 (19.1)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)

[1]Spacer included for panel mounting.
[2]Dimensions subject to change.

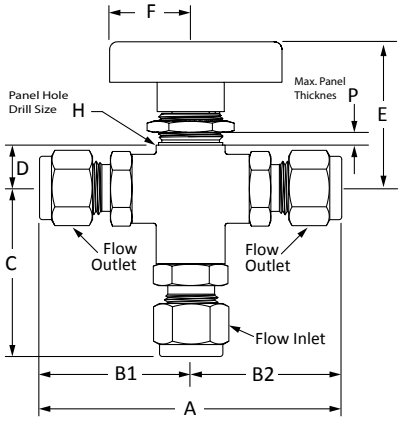
Two-Way Ball Valves

Part Numbers and Dimensions (cont.)

End Connection			Basic Ordering Number	Orifice in. (mm)	Dimensions in. (mm) [2]								
Type	Inlet Size	Outlet Size			A	B1	B2	C	D	E	F	G	H
Fractional Tube Fitting to Female NPT	3/8	1/4	316	0.250 (6.35)	2.75 (69.8)	1.69 (42.9)	1.06 (26.9)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	1/2[1]	1/2[1]	323	0.437 (11.10)	3.56 (90.3)	2.15 (54.58)	1.41 (35.76)	0.75 (19.1)	0.75 (19.1)	2.21 (56.0)	1.51 (38.3)	0.14 (6.4)	1 1/32 (26.2)
Fractional Tube Fitting to Male NPT	1/4	1/4	303	0.250 (6.35)	2.68 (68)	1.62 (41.1)	1.06 (26.9)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	3/8	3/8	308	0.250 (6.35)	2.75 (68.9)	1.62 (41.1)	1.13 (28.7)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	1/2	1/2	362	0.437 (11.10)	3.58 (90.9)	2.14 (54.3)	1.44 (36.5)	0.75 (19.1)	0.75 (19.1)	2.21 (56.0)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
Female NPT	1/8	1/8	351	0.125 (3.18)	2.03 (51.5)	1.15 (29.2)	0.88 (22.3)	0.40 (10.1)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.19 (4.8)	19/32 (15.1)
	1/4	1/4	306	0.250 (6.35)	2.64 (67.0)	1.58 (40.1)	1.06 (26.9)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	3/8	3/8	319	0.437 (11.10)	3.26 (82.8)	2.01 (51.0)	1.25 (31.7)	0.75 (19.1)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
	1/2	1/2	357	0.437 (11.10)	3.42 (86.8)	2.01 (51.0)	1.41 (35.8)	0.75 (19.1)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
Female NPT to Fractional Tube Fitting	1/4	1/4	310	0.187 (4.75)	2.71 (68.8)	1.58 (40.1)	1.13 (28.7)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.25 (6.4)	25/32 (19.8)
	1/4	3/8	315	0.250 (6.35)	2.78 (70.6)	1.58 (40.1)	1.20 (30.4)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.25 (6.4)	25/32 (19.8)
Female NPT to Male NPT	1/8	1/8	355	0.125 (3.18)	1.93 (49.0)	1.15 (29.2)	0.78 (19.8)	0.40 (10.1)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.25 (6.4)	19/32 (15.1)
Male NPT	1/8	1/8	353	0.125 (3.18)	1.83 (46.4)	1.05 (26.6)	0.78 (19.8)	0.40 (10.1)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.25 (6.4)	19/32 (15.1)
	1/4	1/4	301	0.250 (6.35)	2.64 (67.0)	1.58 (40.1)	1.06 (26.9)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.25 (6.4)	25/32 (19.8)
	3/8	3/8	314	0.250 (6.35)	2.71 (68.8)	1.58 (40.1)	1.13 (28.7)	0.47 (11.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.25 (6.4)	25/32 (19.8)
	1/2	1/2	360	0.437 (11.1)	3.45 (87.6)	2.01 (51.1)	1.44 (36.5)	0.75 (19.1)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
Male NPT to Fractional Tube Fitting	1/8	1/4	354	0.125 (3.18)	2.12 (53.9)	1.05 (26.5)	1.08 (27.3)	0.40 (10.2)	0.38 (9.7)	1.27 (32.3)	0.94 (23.9)	0.25 (6.4)	19/32 (15.1)
	1/4	1/4	304	0.187 (4.75)	2.72 (69.0)	1.58 (40.1)	1.14 (28.9)	0.44 (11.1)	0.44 (11.1)	1.71 (43.4)	1.06 (27.0)	0.25 (6.4)	25/32 (19.8)
	3/8	3/8	318	0.250 (6.35)	2.78 (70.5)	1.58 (40.1)	1.20 (30.4)	0.44 (11.1)	0.44 (11.1)	1.71 (43.4)	1.06 (27.0)	0.25 (6.4)	25/32 (19.8)
Male NPT to Female NPT	1/4	1/4	302	0.250 (6.35)	2.64 (67.1)	1.58 (40.1)	1.06 (26.9)	0.44 (11.1)	0.44 (11.1)	1.71 (43.4)	1.06 (27.0)	0.25 (6.4)	25/32 (19.8)
	3/8	3/8	321	0.437 (11.1)	3.06 (77.7)	1.81 (46.0)	1.25 (31.8)	0.75 (19.1)	0.75 (19.1)	2.21 (56.1)	1.51 (38.4)	0.25 (6.4)	1 1/32 (26.2)
	1/2	1/2	361	0.437 (11.1)	3.42 (86.9)	2.01 (51.1)	1.41 (35.8)	0.75 (19.1)	0.75 (19.1)	2.21 (56.0)	1.51 (38.4)	0.25 (6.4)	1 1/32 (26.2)

[1]Spacer included for panel mounting.
[2]Dimensions subject to change.

Three-Way Ball Valves



Part Numbers and Dimensions

End Connection			Basic Ordering Number	Orifice in. (mm)	Dimensions in. (mm)[2]								
Type	Inlet Size	Outlet Size			A	B1	B2	C	D	E	F	G	H
Fractional Tube Fitting	1/8	1/8	350-3	0.093 (2.36)	2.48 (62.9)	1.24 (31.4)	1.24 (31.4)	1.42 (36.0)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.19 (4.8)	19/32 (15.1)
	1/4	1/4	352-3	0.125 (3.18)	2.68 (68.0)	1.34 (34.0)	1.34 (34.0)	1.52 (38.6)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.19 (4.8)	19/32 (15.1)
	1/4	1/4	312-3	0.187 (4.75)	3.24 (82.2)	1.62 (41.1)	1.62 (41.1)	1.81 (45.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	3/8	3/8	320-3	0.250 (6.35)	3.38 (85.8)	1.69 (42.9)	1.69 (42.9)	1.88 (47.7)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	1/2[1]	1/2[1]	322-3	0.250 (6.35)	3.60 (91.4)	1.80 (45.7)	1.80 (45.7)	1.99 (50.5)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8
	1/2	1/2	358-3	0.437 (11.10)	4.28 (108.7)	2.14 (54.3)	2.14 (54.3)	2.53 (64.2)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
	3/4	3/4	359-3	0.437 (11.10)	4.28 (108.7)	2.14 (54.3)	2.14 (54.3)	2.54 (64.5)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
Metric Tube Fitting	6	6	341-3	0.187 (4.75)	2.28 (57.9)	1.64 (41.7)	1.64 (41.7)	1.83 (46.5)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.84)
	8	8	342-3	0.250 (6.35)	3.34 (84.8)	1.67 (42.4)	1.67 (42.4)	1.86 (47.2)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.84)
	10	10	343-3	0.250 (6.35)	2.28 (57.9)	1.70 (43.2)	1.70 (43.2)	1.89 (48.0)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.84)
	12	12	344-3	0.250 (6.35)	3.60 (91.4)	1.80 (45.7)	1.80 (45.7)	1.99 (50.5)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.84)
	16	16	369-3	0.437 (11.10)	4.28 (108.7)	2.14 (53.3)	2.14 (53.3)	2.54 (64.0)	0.75 (19.1)	2.21 (56.1)	1.51 (38.25)	0.25 (6.4)	1 1/32 (26.19)
	18	18	367-3	0.437 (11.10)	4.28 (108.7)	2.14 (53.3)	2.14 (53.3)	2.54 (64.0)	0.75 (19.15)	2.21 (56.1)	1.51 (38.25)	0.25 (6.4)	1 1/32 (26.19)
Female NPT	1/4	1/4	306-3	0.250 (6.35)	3.16 (80.2)	1.58 (40.1)	1.58 (40.1)	1.77 (44.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	3/8	3/8	319-3	0.437 (11.1)	4.02 (102.1)	2.01 (51.1)	2.01 (51.1)	2.41 (61.2)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.4)	1 1/32 (26.2)
	1/2	1/2	357-3	0.437 (11.10)	4.02 (102.1)	2.01 (51)	2.01 (51)	2.41 (61.2)	0.75 (19.1)	2.21 (56.1)	1.51 (38.3)	0.25 (6.3)	1 1/32 (26.2)
Male NPT	1/8	1/8	353-3	0.125 (3.18)	2.10 (53.3)	1.05 (26.6)	1.05 (26.6)	1.23 (31.2)	0.38 (9.7)	1.33 (33.7)	0.94 (23.8)	0.19 (4.8)	19/32 (15.1)
	1/4	1/4	301-3	0.250 (6.35)	3.16 (80.2)	1.58 (40.1)	1.58 (40.1)	1.77 (44.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)
	3/8	3/8	314-3	0.250 (6.35)	3.16 (80.2)	1.58 (40.1)	1.58 (40.1)	1.77 (44.9)	0.51 (12.9)	1.71 (43.4)	1.06 (26.9)	0.19 (4.8)	25/32 (19.8)

[1]Spacer included for panel mounting.
[2]Dimensions subject to change.

Options & Accessories

Seat Material

To specify seat material add the designator from the table below to the part number. Note: Valves with PTFE seats are supplied with black handles. Valves with PCTFE seat are supplied with red handles. To specific different colored handles see the Handle Options section.
*Example: 312-3-**K***

Material	Designator
PTFE	Blank
PCTFE	-K
PEEK	-P

Body Material

Select the valve body material then add the designator to the basic part number.
*Example: 306-K-**316***

Material	Designator
316 Stainless Steel	-316
Brass	-B

Tube Fitting End Connections[1]

Duolok 2-ferrule tube ends are standard for 300 Series valves. To specify Unilok single ferrule or Griplok dual ferrule tube ends, add the designator from the table below to the part number.
*Example: 312-3-K-316-**U** for Unilok tube end connections.*

Design	Designator
Duolok	Blank
Unilok	-U
Griplok	-G

O-ring Material[1]

O-ring materials are specified by adding the material designator from the table below after the body material designator. *Example: 312-K-316-**BN***

Material	Designator
FKM	Blank
Nitrile	-BN

Mixed End Connections

300 Series valves are available with mixed end connection sizes and types. Contact SSP Customer Service for price and availability.
Example: 1/4 in. Duolok x 3/8 in. female NPT

Handle Options[1]

Black nylon handles are standard for valves with PTFE seats. Red handles are standard for valves with PCTFE seats. To specify non-standard handle colors, add the designator from the table below to the part number after the body material designator.
*Example: 312-K-316-**BL***

Handle Color	Designator
Black	-BK
Red	-RD
Green	-GR
Blue	-BL
Stainless Steel Bar	-SSBH
No Handle	-NH

Locking Devices[1]

Factory installed locking handle hardware can be specified for any 300 Series valve by adding -LOH to the part number. *Example: 312-K-316-**LOH**.*

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

Valve Size	Kit Part #
350, 351, 352, 353	350-LOHK
301, 302, 304, 306, 307, 310, 312, 314, 318, 320, 322	300-LOHK
315, 319, 323, 358, 357, 359, 360, 361, 362	370-LOHK

Special Cleaning[1]

To specify special cleaning, add the designator from the table below to the part number.
*Example: 312-K-316-**XP98***

Description	Designator
ASTM G93. Level C and CGA G-4.1	-XP98

[1]Options are added in alphabetical order after the body material designator. *Example: 312-3-K-316-**BL-LOH-U-XP98***

Options & Accessories

Maintenance Kits

Maintenance kits include: Seats, backup rings, stem O-ring and connector O-ring. To order, select the kit for the valve size, then add the seat material and O-ring seal material designators.

Example: ***300-RK-T-V***

Valve Size	Kit Part #		Material Designator	
	2-way	3-way	Seat	O-ring
350, 351, 352, 353	350-RK	350-3-RK	-T PTFE -K PCTFE -P PEEK	-V FKM -BN NBR
301, 302, 304, 306, 307, 310, 312, 314, 318, 320, 322	300-RK	300-3-RK		
315, 319, 323, 358, 357, 359, 360, 361, 362	370-RK	370-3-RK		

Replacement Handles

To order replacement handles, locate the kit part number for the valves size, then add the color designator from the Handle Options table.

Example: ***350-7K-BK***

Valve Size	Kit Part #
350, 351, 352, 353	350-7K
301, 302, 304, 306, 307, 310, 312, 314, 318, 320, 322	300-7K
315, 319, 323, 358, 357, 359, 360, 361, 362	370-7K

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.

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

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

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when intermixed with Swagelok®, Hoke Gyrolok® and Parker CPI™ fittings.

Valves

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

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility 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.

Quick Connects

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

MADE IN USA

Founded 1926
Privately owned. third generation business
Modern single-site vertically integrated manufacturing facility
DFARS-compliant raw material
ISO 9001 quality management system
ISO 17025 testing laboratory
Lifetime Limited Warranty

8250 Boyle Parkway • Twinsburg. OH 44087
330-425-4250 • www.mySSP.com

SSP

Trunnion Ball Valves

FloLok®

TB Series

- ☑ Working Pressure: up to 10,000 psig (689 bar)
- ☑ Temperature Range: -40 to 450°F (-40 to 232°C)
- ☑ Flow Coefficient: up to 1.6
- ☑ End Connections: 1/8 to 3/4 in. (6 to 12 mm)
- ☑ 2-way and 3-way valves
- ☑ Wide variety of end connection types and sizes

www.mySSP.com

MADE IN USA

At SSP, we are proud to be an American manufacturing success story.

100% of our products are made in America. All of our manufacturing is performed in our 165,000 sq. ft. facility located near Cleveland, Ohio. Our facility is the largest vertically integrated, single-site operation in the industry. In addition to manufacturing and assembly, we have closed die forging, tool & die design, product engineering and testing operations under the same roof with customer service and management.

Made in America is good business. Not only do we make everything in America, we use American suppliers too. Buying American allows us to have better quality control and a more reliable supply chain. We can work more closely within our walls and with our suppliers to improve quality, reduce costs, and shorten lead times, which means faster service and better products for you.

Support where it counts. SSP products and services are supported by more than 4000 people and 350 distributor locations around the globe. For a distributor near you, contact SSP Customer Service or visit www.mySSP.com/distributors.

SSP *Industry Standard Products Made Better*

TABLE of CONTENTS

TB Series Trunnion Ball Valves

The TB Series trunnion ball valve family provides positive shut-off and directional flow control for systems with working pressures up to 10,000 psig (689 bar) and temperatures from -40 to 450°F (-40 to 232°C).

Common features for all TB Series valves include:

- Trunnion ball design which stabilizes the ball to ensure consistent alignment of the ball with the seats and promotes lower actuation torque especially at high differential pressures.
- Spring-loaded seats provide a leak-tight seal independent of system pressure. Valves seal well at both high and low pressures.
- Springs compensate for seat wear.
- Seat carrier fully supports the seat to prevent extrusion of the seat material at higher pressures and temperatures.
- Bottom-loaded, blowout-proof ball and stem for safety, reliability and easy maintenance.

TB Series Ball Valves

TB Series valves are used in systems with working pressures up to 6,000 psig (413 bar) and temperatures from 0 to 450°F (-17 to 232°C).

HTB Series Ball Valves for High-Pressure Service

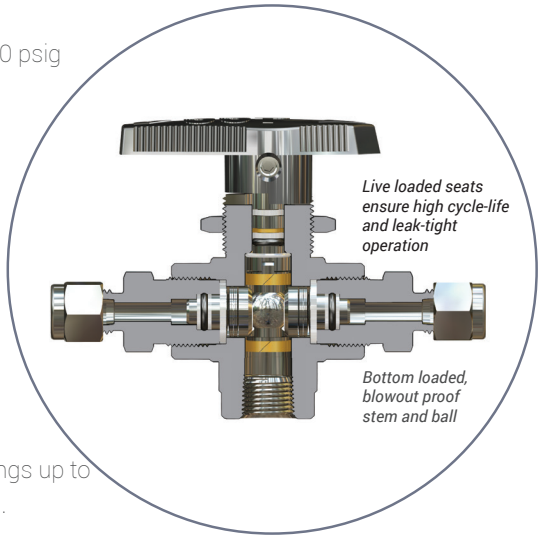
HTB Series valves are used in systems with working pressures up to 10,000 psig (689 bar) and temperatures from 0 to 450°F (-17 to 232°C).

LTB Series Ball Valves for Low-Temperature Service

LTB Series low-temperature ball valves can be used in systems from -40 to 200°F (-40 to 93° C) and pressures up to 6000 psig (413 bar).

LHTB Series for High-Pressure, Low Temperature Service

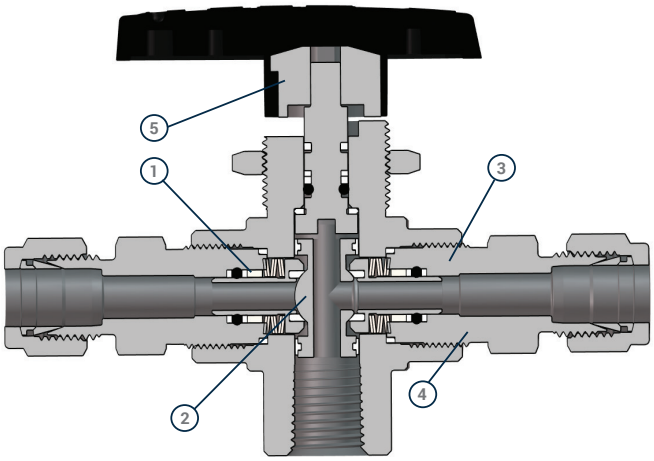
LHTB Series valves are designed for applications requiring pressure ratings up to 10,000 psig (689 bar) and temperatures from -40 to 200°F (-40 to 93° C).



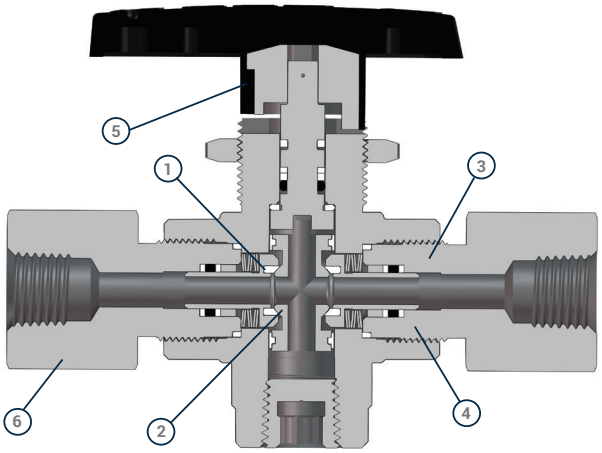
Applications

TB Series ball valves are suitable for a wide variety of control and instrumentation applications. The trunnion ball and spring loaded seats enable them to perform in systems having dynamic pressure, flow and temperature requirements. TB Series valves are used in high-cycle low-temperature applications such as CNG fueling, and as isolation and switching valves in valve control panels and test stands. Their compact size makes them a good choice for panels and other applications where space is limited. End screw construction allows a wide variety of end connection size and type combinations.

Product Design



[TB/LTB Series]
[3-WAY]



[HTB/HLTB Series]
[2-WAY]

1 ***SPRING-LOADED SEATS AND CARRIERS***

- Leak-tight seal in high and low pressure applications
- Compensate for seat wear
- Fully supported seats for higher cycle-life

2 ***BOTTOM-LOADED TRUNNION BALL***

- Blowout-proof ball and stem for safety and reliability
- Ensures proper alignment of the ball with the seat
- Lower actuation torque at high differential pressures
- Easy maintenance

3 ***END SCREW CONSTRUCTION***

- Wide variety of end connection types and size combinations

4 ***THREE TUBE FITTING DESIGNS***

- Double and single ferrule designs
- Interchangeable with Swagelok®, Hoke Gyrolok® and Parker CPI™ tube fittings

5 ***DURABLE DIRECTIONAL HANDLE***

- Nylon handle with 316 stainless steel insert enhances strength and compatibility
- Handle and stem flats indicate orifice position

6 ***10,000 PSIG END CONNECTIONS AVAILABLE***

- NPT
- Tube Fitting

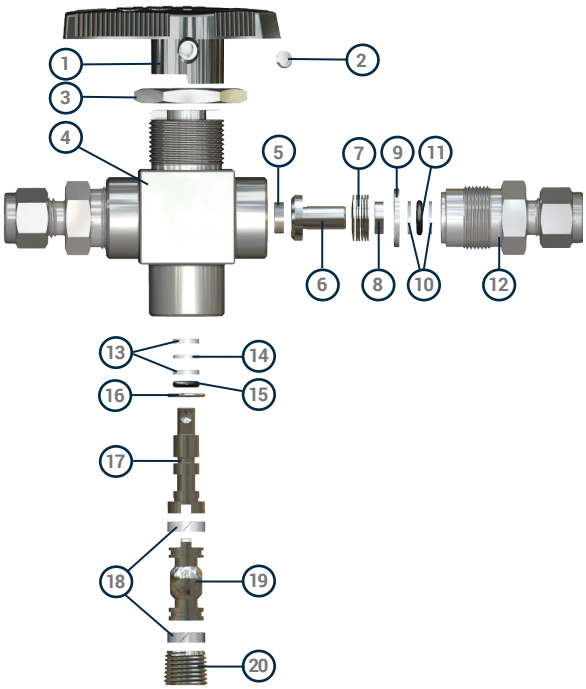
Series Comparison

Series	TB	HTB	LTB	LHTB
Maximum Working Pressure				
316 SS	6000 (413 bar)	10,000 (689 bar)	6000 (413 bar)	10,000 (689 bar)
Alloy 400	5000 (344 bar)	-	5000 (344 bar)	-
Temperature Range	0 to 450°F (-17 to 232°C)	0 to 450°F (-17 to 232°C)	-40 to 200°F (-40 to 93°C)	-40 to 200°F (-40 to 93°C)
Maximum Cv				
Two-way	1.0 to 1.6*	1.0 to 1.6*	1.0 to 1.6*	1.0 to 1.6*
Three-way	0.75	0.75	0.75	0.75
Flow Patterns	2-way, 3-way	2-way, 3-way	2-way, 3-way	2-way, 3-way
Seat Material	PCTFE, PEEK	PEEK	PCTFE, PEEK	PEEK
O-rings	FKM	FKM	Low-Temp. Nitrile	Low-Temp. Nitrile
End Connection Types	Tube Fittings, NPT, BSP, SAE, ORFS	Tube fittings, FNPT	Tube Fittings, NPT, BSP, SAE, ORFS	Tube fittings, FNPT
Tube Fittings Sizes	1/4 to 1/2 in. (6 to 12 mm)	1/4 to 1/2 in. (6 to 12 mm)	1/4 to 1/2 in. (6 to 12 mm)	1/4 to 1/2 in. (6 to 12 mm)
Pipe Sizes	1/8, 1/4 and 1/2 in.	1/8 and 1/4 in.	1/8, 1/4 and 1/2 in.	1/8 and 1/4 in.
O-ring Face Seal (ORFS)	1/4 and 3/8	-	1/4 and 3/8	-
SAE Straight Thread	#4 to #8	-	#4 to #8	-

**Depending on end connection size and type.*

Materials of Construction

ID	Component	Material[3]	Specification
1	Handle	Nylon with SS insert	-
2	Set Screw	Stainless Steel	A276
3	Panel Nut	316 SS	A276
4*	Body	316 SS / Alloy 400[2]	A182 (TB), A479 (HTB)/B164
5*	Seat	PCTFE/PEEK	-
6*	Seat Carrier	316 SS / Alloy 400[2]	A276/B164
7*	Seat Springs	Alloy X-750	AMS 5542
8*	Carrier Gland	316 SS / Alloy 400[2]	A276/B164
9*	End Screw Seal	PCTFE (TB), PEEK (HTB)	D1710
10*	Carrier Back-Up Ring	Reinforced PTFE	-
11*	Seat Carrier O-Ring	FKM / Low-Temp Nitrile	-
12*	End Screw	316 SS / Alloy 400[2]	A479/B164
13	Stem Secondary Back-Up Ring	PTFE	D1710
14	Stem Back-Up Ring	PEEK	-
15*	Stem O-Ring	FKM / Low-Temp Nitrile	-
16	Stem Bearing	PEEK	-
17*	Stem	316 SS / Alloy 400[2]	A276/B164
18*	Trunnion Bearing	PEEK	-
19*	Ball	316 SS / Alloy 400[2]	A276/B164
20[1]*	1/4" Countersunk Pipe Plug	316 SS / Alloy 400[2]	A276/B164
	Wetted Lubricant	PTFE-Based	-
	Nonwetted Lubricant	Molybdenum disulfide	-



[1] Two-way valves only. [2] Alloy 400 is available in TB Series valves only.
*[3] Standard Materials. See page 8 for other materials. * Wetted components*

Temperature Pressure Tables

TB Series

Material	316 SS		Alloy 400	
Seat Material	PCTFE	PEEK	PCTFE	PEEK
Temperature °F (°C)	Working Pressure, psig (bar)			
0 to 100 (-17 to 37)	6000 (413)	6000 (413)	5000 (344)	5000 (344)
150 (65)	3000 (206)	5800 (399)	3000 (206)	4690 (323)
200 (93)	2000 (137)	5000 (344)	2000 (137)	4390 (302)
250 (121)	1000 (68)	4100 (282)	1000 (68)	4100 (282)
300 (148)	-	3200 (220)	-	3200 (220)
350 (176)	-	2300 (158)	-	2300 (158)
400 (204)	-	1400 (96)	-	1400 (96)
450 (232)	-	500 (34)	-	500 (34)

HTB Series

Material	316 SS					
End Connections	2PF, 4PF, D4, DM6	DM10	D6	DM8	D8	DM12
Temperature °F (°C)	Working Pressure, psig (bar)					
0 to 100 (-17 to 37)	10,000 (689)	8400 (579)	6550 (451)	7500 (517)	6700 (461)	6600 (455)
150 (65)	7500 (517)	7500 (517)	6550 (451)	7500 (517)	6700 (461)	6600 (455)
200 (93)	5000 (344)	5000 (344)	5000 (344)	5000 (344)	5000 (344)	5000 (344)
250 (121)	4100 (282)	4100 (282)	4100 (282)	4100 (282)	4100 (282)	4100 (282)
300 (148)	3200 (220)	3200 (220)	3200 (220)	3200 (220)	3200 (220)	3200 (220)
350 (176)	2300 (158)	2300 (158)	2300 (158)	2300 (158)	2300 (158)	2300 (158)
400 (204)	1400 (96)	1400 (96)	1400 (96)	1400 (96)	1400 (96)	1400 (96)
450 (232)	500 (34)	500 (34)	500 (34)	500 (34)	500 (34)	500 (34)

LTB Series

Material	316 SS		Alloy 400	
Seat Material	PCTFE	PEEK	PCTFE	PEEK
Temperature °F (°C)	Working Pressure, psig (bar)			
–40 to 100 (-40 to 37)	6000 (413)	6000 (413)	5000 (344)	5000 (344)
150 (65)	3000 (206)	5800 (399)	3000 (206)	4690 (323)
200 (93)	2000 (137)	5000 (344)	2000 (137)	4390 (302)

LHTB Series

Material	316 SS					
End Connections	2PF, 4PF, D4, DM6	DM10	D6	DM8	D8	DM12
Temperature °F (°C)	Working Pressure, psig (bar)					
–40 to 100 (-40 to 37)	10,000 (689)	8400 (578)	6550 (451)	7500 (516)	6700 (461)	6600 (454)
150 (65)	7500 (516)	7500 (516)	6550 (451)	7500 (516)	6700 (461)	6600 (454)
200 (93)	5000 (344)	5000 (344)	5000 (344)	5000 (344)	5000 (344)	5000 (344)

Ordering Instructions

Ordering TB Series valves requires the following steps:

1. In the Basic Part Number and Dimensions tables, select the Basic Part Number for the required valve series, flow pattern and end connections. *Examples:* ***83XKD4*** *or* ***H83P4PF***
   Note: For tube fitting end connections the Basic Part Number designates the Duolok two-ferrule design. To specify other tube fitting designs, see the tube fitting end connections table on page 8. Mixed end connection types and sizes are available. For configurations that are not in the catalog, see the Special Order Instructions on page 10.
2. To specify low-temperature valves add "L" in front of the basic part number. *Examples:* ***L83KD4*** *or* ***LH83P4PF***
3. PCTFE seats are standard for TB and LTB series ball valves. To specify PEEK seats replace the "K" in the basic part number with "P". *Example: 83X****P****D4 Note: HTB and LHTB series valves are only available with PEEK seats.*
4. Add the Body Material Designator to the part number. Use -316 for 316 Stainless Steel or -M for Alloy 400. *Example: 83XKD4-****316***
   Note: HTB and LHTB series valves are only available in 316 SS.
5. FKM O-rings are standard on TB and HTB series valves. To select other materials, please select the designator from the O-ring Material table on page 8, then add it after the body material indicator. *Example: 83XKD4-316-****FFKM***
   Note: LTB and LHTB series valves are only offered with low-temperature Nitrile O-rings.
6. Add designators for other options in alphabetical order (see page 10). *Example: 83XKD4--316-****FFKM-LD-RD***

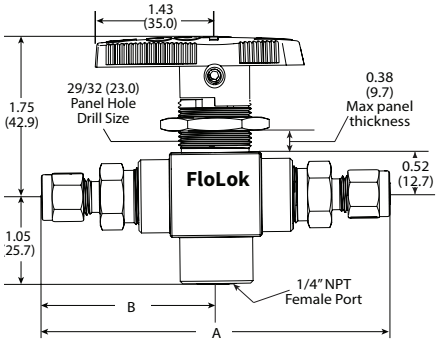
Ordering Information

Note: *The Part Numbers and Dimensions tables contain the most common valve configurations. Use the Special Order table on page 10 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

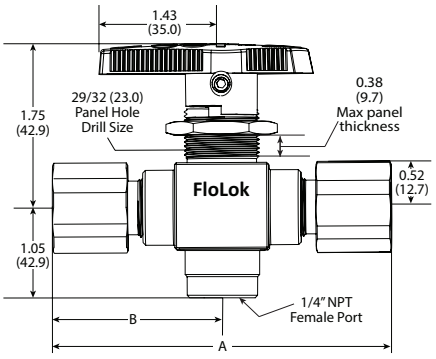
Two-Way							
End Connection		Basic Part Number		Cv	Orifice in. (mm)	Dimensions in. (mm)	
Type[1]	Suze	TB / LTB	HTB / LHTB			A	B
Female NPT	1/8	83K2PF	H83P2PF	1.2	0.187 (4.8)	2.94 (74.7)	1.47 (37.3)
	1/4	83K4PF	-	1.0			
		-	H83P4PF			3.93 (99.8)	1.97 (50.0)
	3/8	83K6PF	-	1.4		3.72 (94.5)	1.86 (47.2)
	1/2[2]	83K8PF	-	1.2		4.25 (108.0)	2.13 (54.1)
Fractional Tube Fitting	1/4	83KD4	H83PD4	1.6		4.14 (105.0)	2.07 (52.6)
	3/8	83KD6	H83PD6	1.4		4.39 (111.5)	2.19 (55.6)
	1/2[2]	83KD8	H83PD8	1.0		4.60 (117.0)	2.30 (58.4)
Metric Tube Fitting	6	83KDM6	H83PDM6	1.6		4.15 (105.0)	2.07 (52.6)
	8	83KDM8	H83PDM8	1.5		4.15 (105.0)	2.07 (52.6)
	10	83KDM10	H83PDM10	1.3		4.41 (111.5)	2.20 (55.9)
	12[2]	83KDM12	H83PDM12	1.0		4.60 (117.0)	2.30 (58.4)

TB Series



Three-Way							
Type[1]	Size	TBX / LTBX	HTBX / LHTBX	Cv	Orifice in. (mm)	A	B
Female NPT	1/8	83XK2PF	H83XP2PF	0.75	0.187 (4.8)	2.94 (74.7)	1.47 (37.3)
	1/4	83XK4PF	-				
		-	H83XP4PF			3.93 (99.8)	1.97 (50.0)
	3/8	83XK6PF	-			3.72 (94.5)	1.86 (47.2)
	1/2	83XK8PF	-			4.25 (108.0)	2.13 (54.1)
Fractional Tube Fitting	1/4	83XKD4	H83XPD4			4.14 (105.0)	2.07 (62.6)
	3/8	83XKD6	H83XPD6			4.39 (111.5)	2.19 55.6)
	1/2[2]	83XKD8	H83XPD8			4.60 (117.0)	2.30 (58.4)
Metric Tube Fitting	6	83XKDM6	H83XPDM6			4.15 (105.0)	2.07 (52.6)
	8	83XKDM8	H83XPDM8			4.15 (105.0)	2.07 (52.6)
	10	83XKDM10	H83XPDM10			4.41 (112.0)	2.20 (55.9)
	12[2]	83XKDM12	H83XPDM12			4.60 (117.0)	2.30 (58.4)

HTB Series



[1]End Connections Options

- Male and female SAE and BSP straight thread fittings, O-ring face seal (ORFS) are available on request. To order, see the special order table on page 10. Duolok 2-ferrule tube ends are standard.
- For Unilok single-ferrule and Griplok dual-ferrule ends, see the options on page 8.
- 1/4 in. female NPT bottom ports are standard on all 3-way valves. Optional #6 Female SAE straight thread bottom ports are available on TB Series only. To order the optional bottom ports, see the special ordering table on page 10. Note: The maximum pressure for this port is 4000 psig.

[2] *Not recommended for panel mounting.*

Options & Accessories

Tube Fitting End Connections

SSP provides three tube fitting designs for all TB series valves. Use the designators below to indicate the required design. For more information about SSP tube fitting end connections see our tube fitting catalogs.
*Example: 83P**U**4-316 for Unilok tube fitting end connections.*

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

Seat Material

TB and LTB Series valves include a standard PCTFE seat material. To order valves with PEEK seat material, replace the **K** in the basic part number with a material designator **P**. *Example: 83**P**D6 Note: HTB and LHTB Series valves are only available with PEEK seats.*

Material	Designator
PCTFE (Standard)	K
PEEK	P

Body Material

Select the valve body material required and add the designator to the valve basic part number. *Example: 83XKD6-**316** Note: LTB and LHTB series valves are only available with 316 stainless steel.*

Material	Designator
316 Stainless Steel	-316
Alloy 400	-M

O-Ring Material

Standard O-ring materials for each series are listed in the Series Comparison table on page 5. To specify a non-standard O-ring material add the material designator from the table below to the part number.
*Example: 83XKD4-316-**FFKM**.*
***Note:** LTB and LHTB series valves are available with low-temperature nitrile O-rings only.*

Material	Designator
Nitrile	-BN
Perfluoroelastomer FFKM (Generic)	-FFKM
Perfluoroelastomer FFKM (Kalrez®)	-KZ

Handle Colors

Stainless steel reinforced black nylon handles are standard on TB series valves. To select a different color handle, add the designator from the table below.
*Example: 83PD4-316-**RD***

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

Replacement Handles

Replacement handles are shipped with the stainless steel insert and set screw installed. To order replacement handles substitute the color designator from the Handle Colors table in the replacement handle part number - NY-7K-83-XX. *Note: the designator for black replacement handles is -BK.*
*Examples: NY-7K-83-**BK** for black handles.*
*NY-7K-83-**RD** for red handles.*

Locking Devices

To specify factory-installed locking devices add -LD to the part number. *Example: 83PD4-316-**LD***

Use part number 83-LDK-316 to order locking device kits for field installation.

Special Cleaning

TB Series 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, add -XP98 to the part number. *Example: 83PD4-316-**XP98***

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

Rebuild Kits

Valve rebuild kits contain seats, seat carriers, seat springs, carrier gland, carrier backup rings, carrier O-rings, end screw seals, stem bearing, stem secondary back up rings, stem O-ring, trunnion ball, trunnion bearing, lube, MSDS and instructions. Select the rebuild kit part number from the table below that matches the valve size and seat designator in the part number on your valve then add the valve material designator.

Size/Sat	83K	83P/H83P	L83K	L83P/LH83P
2-way				
Kit Part Number	83K-RK	83P-RK	L83K-RK	L83P-RK
Seat Material	PCTFE	PEEK	PCTFE	PEEK
O-ring Material	FKM	FKM	Low-Temp Nitrile	Low-Temp Nitrile
3-way				
Part Number	83XK-RK	83XP-RK	L83XK-RK	L83XP-RK
Seat Material	PCTFE	PEEK	PCTFE	PEEK
O-ring Material	FKM	FKM	Low-Temp Nitrile	Low-Temp Nitrile

*Example: Valve Part Number **83XK**D4-316 requires the 83XK-RK kit. For valves with special O-rings add the O-ring designator to the kit part number.*
*Example: 83XK-RK-**KZ***

Actuated Ball Valve Assemblies

TB Series valves are available with a wide range of actuators, solenoids, and 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.

Actuator Brackets & Couplings

Actuator brackets and couplings are available for ISO 5211 complaint actuators. Actuator kits contain the actuator bracket, coupling and fasteners.

⚠ *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.*

Valve Size	ISO 5211 Flange Size	Coupling Size	Cap Screw Size	Part Number
83	F03	9 mm ISO	Metric	83-MB-F03-9ISO-M
			Fractional	83-MB-F03-9ISO-F
		9 mm DIN	Metric	83-MB-F03-9DIN-M
			Fractional	83-MB-F03-9DIN-F
	F04	9 mm ISO	Metric	83-MB-F04-9ISO-M
			Fractional	83-MB-F04-9ISO-F
		9 mm DIN	Metric	83-MB-F04-9DIN-M
			Fractional	83-MB-F04-9DIN-F
		11 mm ISO	Metric	83-MB-F04-11ISO-M
			Fractional	83-MB-F04-11ISO-F
		11 mm DIN	Metric	83-MB-F04-11DIN-M
			Fractional	83-MB-F04-11DIN-F
	F05	11 mm ISO	Metric	83-MB-F05-11ISO-M
			Fractional	83-MB-F05-11ISO-F
		11 mm DIN	Metric	83-MB-F05-11DIN-M
			Fractional	83-MB-F05-11DIN-F
		14 mm ISO	Metric	83-MB-F05-14ISO-M
			Fractional	83-MB-F05-14ISO-F
		14 mm DIN	Metric	83-MB-F05-14DIN-M
			Fractional	83-MB-F05-14DIN-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.

	System Pressure psig (bar)									
	0		1500 (103)		3000 (206)		6000 (413)		10000 (689)	
	Base Torque, in.-lb (N·m)									
Valve Series	Start	End	Start	End	Start	End	Start	End	Start	End
TB 2-way	15 (1.7)	15 (1.7)	15 (1.7)	15 (1.7)	17 (2.0)	17 (2.0)	20 (2.3)	20 (2.3)	-	-
TBX 3-way	25 (2.9)	15 (1.7)	25 (2.9)	15 (1.7)	27 (3.1)	17 (2.0)	30 (3.4)	20 (2.3)	-	-
ALL HTB	25 (2.9)	15 (1.7)	25 (2.9	15 (1.7)	27 (3.1)	17 (2.0)	30 (3.4)	20 (2.3)	35 (4.0)	20 (2.3)

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.

A	B	C	D	E	F	G
H83	X	P	D6	6PF	-316	-BN -GR -XP98

A VALVE DESIGN

83	*Standard*
H83	*High-Pressure*
L83	*Low-Temperature*
LH83	*Low-Temperature, High-Pressure*

B BODY TYPE

(Blank)	*2-Way*
X	*3-Way*

C SEAT MATERIAL[4]

P	*PEEK*
K	*PCTFE*

G OPTIONS[1]

HANDLES

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

SPECIAL CLEANING

-XP98	*Oxygen compatible lubricant, per ASTM G93, Level C and CGA G-4.1*

O-RINGS[3]

(Blank)	*Fluorocarbon FKM*
-BN	*Buna-N Nitrile*
-FFKM	*Perfluoroeslatomer FFKM (Generic)*
-KZ	*Kalrez®*

OTHER OPTIONS

-LD	*Locking Hardware*
--6FP	*#6 SAE Female Bottom Port*

D E INLET TYPE[2] + OUTLET TYPE[2]

D	*Duolok® Tube Fitting*
U	*Unilok® Tube Fitting*
G	*Griplok® Tube Fitting*
PF	*Female NPT*
PM	*Male NPT*
MRT	*Male ISO Tapered*
FRT	*Female ISO Tapered*
MST	*Male SAE Straight*
FST	*Female SAE Straight*
S	*Male O-ring Face Seal (SAE J1453)*
SS	*Female O-ring Face Seal (SAE J1453)*

Fractional Sizes:	
1	*1/16 in.*
2	*1/8 in.*
4	*1/4 in.*
6	*3/8 in.*
8	*1/2 in.*
12	*3/4 in.*

Metric Sizes:	
M6	*6 mm*
M8	*8 mm*
M10	*10 mm*
M12	*12 mm*

F BODY MATERIAL

-316	*316 Stainless Steel*
-M	*Alloy 400*

[1] *Add options designators to the end of the Base Part Number in alphabetical order.*
[2] *Tube end and O-ring face seal connection part numbers are formatted "Type" followed by "Size." Example: D6 or SS6. Pipe end connections are formatted "Size" followed by "Type." Example: 6PF*
[3] *Low temperature Nitrile O-rings are standard on LTB and LHTB series valves.*
[4] *HTB and LHTB series valves are only available with PEEK seats.*

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.

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

Testing

All TB Series valves are factory tested with Nitrogen to 1000 psig (68 bar) at 70°F (21°C).

Warranty

FloLok valves are backed by the SSP Limited Life Time Warranty. This warranty is available from your local distributor or at www.mySSP.com.

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when intermixed with Swagelok®, Hoke Gyrolok® and Parker CPI™ fittings.

Valves

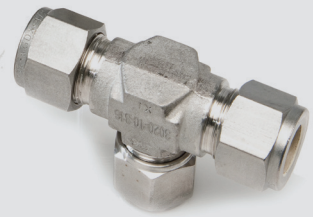
The FloLok valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility applications.

Pipe Fittings

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



Filters

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

Hose

TruFit PTFE-lined and flexible metal core hose assemblies are used in a variety of instrumentation, utility, biopharm and other applications.

Tools & Accessories

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

Quick Connects

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

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

MADE IN USA

8250 Boyle Parkway • Twinsburg, OH 44087

330-425-4250 • www.mySSP.com

SSP

A Series Pneumatic Actuators

- ☑ ISO 5211 Compliant
- ☑ 90° and 180° Actuators
- ☑ Standard and Custom Assemblies
- ☑ Solenoids , limit switches, position sensors and other accessories

www.mySSP.com

MADE IN USA

At SSP, we are proud to be an American manufacturing success story.

100% of our products are made in America. All of our manufacturing and assembly is performed in our 165,000 sq. ft. facility located near Cleveland, Ohio. Our facility is the largest vertically integrated, single-site operation in the industry. In addition to manufacturing and assembly, we have closed die forging, tool & die design, product engineering and testing operations under the same roof with customer service and management.

Made in America is good business. Not only do we make everything in America, we take extraordinary measures to use American suppliers whenever possible. Buying American allows us to have better quality control and a more reliable supply chain. We can work more closely within our walls and with our suppliers to improve quality, reduce costs, and shorten lead times, which means faster service and better products for you.

Table of Contents

Actuated Ball Valve Assemblies

SSP will provide assembled automated valve packages for SSP EB, FB and TB series ball valves. Actuators are available in 90° and 180° double acting, spring to open, spring to close and spring to center actions with a wide variety of solenoids, limits switches, position sensors and other accessories to meet your applications' requirements. Packages are engineered from components selected specifically for each valve. SSP can also provide packages with customer-specified actuators, solenoids, limit switches and other components.

Why Choose SSP Automated Valve Assemblies

SSP provides actuated ball valve assemblies for SSP EB, TB and FB Series ball valves. SSP assemblies are:

- Fast - SSP has many of the most commonly used components ready for assembly and shipment.
- Single source - SSP stands behind the entire assembly including the valve, hardware, and accessories.
- Reliable - Whether your assembly is built with standard or custom components, all automation components and accessories are selected to maximize the performance of the valve. All assemblies are factory tested to ensure that they function as expected.
- Flexible - SSP can locate components to meet the unique needs of your application or provide automated valves assembled with customer specified actuators and accessories.

Product Features

SSP offers a variety of options for automated valve assemblies. SSP can help you specify options that will enable your actuated assembly to meet the performance requirements of your application. Features include:

- Compact Size
- 90° and 180° dual acting and spring return actuation including a variety of 3-way flow path options
- Single and dual mounted valve assemblies
- Variety of anodized and corrosion proof coated aluminum and stainless steel housings
- High temperature and low temperature actuated assemblies available
- Wide range of solenoids, limit switches, brackets and other accessories
- Custom assemblies available
- Lifetime Limited Warranty

Actuator Technical Information

Component	Specifications			
	Standard	High Temperature	Low Temperature	Super-Low Temperature
	Material			
Housing	Anodized Aluminum			
Pinion	Nickel Plated Carbon Steel			
Endcaps & Piston	Epoxy Coated Die Cast Aluminum			
Fasteners	304 Stainless Steel			
Spring Cartridges	Epoxy Coated Steel w/ Technopolymer Cartridge			
Skates & Wear Bearings	Technopolymer			
O-rings	**NBR** (-4 TO 176°F)	**FKM** (-10 to 300°F/ 350°F cyclic)	**NBR** (-40 to 212°F) **VMQ** (-49 to 300°F/ 350°F cyclic)	**FVMQ** (-67 to 300°F/ 350°F cyclic)
ISO 5211 Mounting Bracket & Coupling	316 Stainless Steel			
Operating Pressure	60 to 120 PSIG			
Max Pressure Rating	150 PSIG			
Valve Mounting	ISO 5211			
Accessory Mounting	NAMUR VDI/VDE 3845			

Actuator Technical Information

Weight & Air Consumption

Actuator Model	Double Acting		Spring Return	
	Weight (lbs)	Air Consumption (cu-in)	Weight (lbs)	Air Consumption (cu-in)
AM10	1.06	4.03	N/A	N/A
AM15	2.00	13.50	2.18	8.00
AM20	2.76	15.26	3.00	6.10
AM25	3.52	25.60	3.94	11.20
AM35	5.17	44.40	6.00	18.10

Ordering Information

Below are ordering instructions for the SSP valve automation program. SSP has access to many suppliers of actuators and valve automation accessories. If you require specific actuators and accessories for your valve automation packages please contact your authorized SSP instrumentation distributor or SSP Customer Service at CustomerService@mySSP.com.

Port Numbering

Ordering instructions throughout this catalog will refer to the port numbers in this illustration.

Ordering Instructions

1. Select the valve ordering number from the valve catalog. *Example:* ***43GD4-316***
2. Locate the Actuator Selection Table for the valve series you wish to actuate (see pages 6 - 9) and select the actuator based on the valve size, and actuation mode. Add the designator to the valve part number *Example: 43GD4-316-**AM15NO2** (see page 6 under 43 spring return, normally open actuators).*
3. Add any options to the actuator designator (see page 10). *Example: 43GD4-316-AM15NO2**HT** for high temperature actuators.*
4. If required, select a solenoid type from the Solenoid Selection Table on page 11, then add the designator to the part number.
   *Example: 43GD4-316-AM15NO2HT**S6** for a 24 V (dc) intrinsically safe solenoid.*
5. If required, select a limit switch from Ordering Information on page 12, then add the designator to the part number. *Example: 43GD4-316-AM15NO2HTS6**L2B** for* NEMA 4 limit switch.

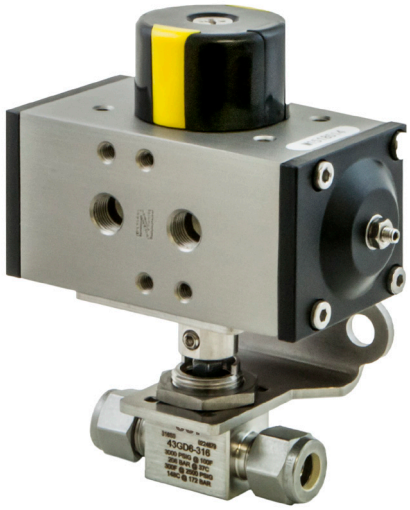
Actuated Ball Valve Assemblies

EB Series Encapsulated Ball Valves

EB Series ball valves are designed for use in analytical instrumentation and other medium pressure applications up to 3000 psig (206 bar).
Features include:

- One-piece packing encapsulates the trunnion-style ball eliminating dead space to maximize purgeability for clean and accurate samples.
- Blowout proof stem for safety.

For more information, see the EB Series Encapsulated Ball Valves Catalog.



Actuator Selection Table

From the table below, locate the Actuator Designator for the valve size and operation required.

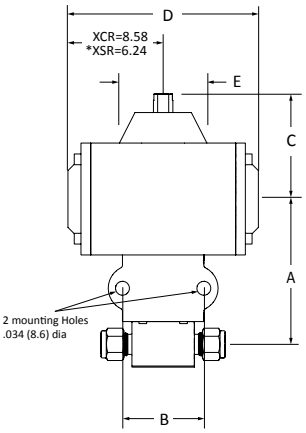
Valve Size	Actuator Designator[1]			Actuator Part Number			Mounting Bracket Kit Part Number	
	Spring Return		Double Acting					
	Normally Closed	Normally Open		Normally Closed	Normally Open	Double Acting	Spring Return	Double Acting
Two-Way Valves								
41, 42	-AM15NC2	-AM15NO2	-AM10DA	AM15NC2	AM15NO2	AM10DA	41-MB-F04-11ISO-F	41-MB-F03-9ISO-F
43	-AM15NC2	-AM15NO2	-AM10DA	AM15NC2	AM15NO2	AM10DA	43-MB-F04-11ISO-F	43-MB-F03-9ISO-F
44	-AM20NC3	-AM20NO3	-AM15DA	AM20NC3	AM20NO3	AM15DA	44-MB-F05-11ISO-F	44-MB-F04-11ISO-F
45	-AM25NC3	-AM25NO3	-AM20DA	AM25NC3	AM25NO3	AM20DA	45-MB-F05-14ISO-F	45-MB-F05-11ISO-F
3-Way 90° Actuation								
	Spring Return Port 1 NC	Spring Return Port 2 NC	Double Acting	Spring Return Port 1 NC	Spring Return Port 2 NC	Double Acting	Spring Return	Double Acting
41XQS 42XQS	-AM15SR12	-AM15SR22	-AM10DA	AM15SR12-XQS	AM15SR22-XQS	AM10DA-XQS	41-MB-F04-11ISO-F	41-MB-F03-9ISO-F
43XQS	-AM15SR12	-AM15SR22	-AM10DA	AM15SR12-XQS	AM15SR22-XQS	AM10DA-XQS	43-MB-F04-11ISO-F	43-MB-F03-9ISO-F
44XQS	-AM20SR13	-AM20SR23	-AM15DA	AM20SR13-XQS	AM20SR23-XQS	AM15DA-XQS	44-MB-F05-11ISO-F	44-MB-F04-11ISO-F
45XQS	-AM25SR13	-AM25SR23	-AM20DA	AM25SR13-XQS	AM25SR23-XQS	AM20DA-XQS	45-MB-F05-14ISO-F	45-MB-F05-11ISO-F

3-Way 180° Actuation									
	Spring Return Port 1 NC	Spring Return Port 2 NC	Spring Return to Center	Double Acting	Spring Return Port 1 NC	Spring Return Port 2 NC	Spring Return to Center	Double Acting	Mounting Bracket Kit Part Number
41X/42X	-AM25XSR1	-AM25XSR2	-AM25XCR	-AM25XDA	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA	41-MB-F05-14ISO-F
43X	-AM25XSR1	-AM25XSR2	-AM25XCR	-AM25XDA	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA	43-MB-F05-14ISO-F
44X	-AM25XSR1	-AM25XSR2	-AM25XCR	-AM25XDA	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA	44-MB-F05-14ISO-F
45X	-AM25XSR1	-AM25XSR2	-AM25XCR	-AM25XDA	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA	45-MB-F05-14ISO-F

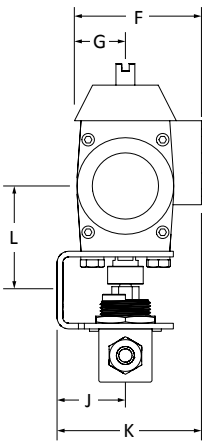
[1]Actuators are selected based on a minimum supply pressure of 60 psig (4.13 bar).

Actuated Ball Valve Assembly Dimensions

Valve Size	Actuator Model	Dimensions in. (mm)									
		A	B	C	D	E	F	G	J	K	L
Two-Way Valves											
41/42	AM10DA	2.59 (65.8)	2.00 (50.8)	1.87 (47.5)	3.94 (100.1)	1.56 (39.6)	2.00 (50.8)	0.90 (22.9)	1.44 (36.6)	2.54 (64.5)	1.57 (39.9)
	AM15 (NC/NO)	3.07 (78)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.05 (52.1)
43	AM10DA	2.65 (67.3)	2.00 (50.8)	1.87 (47.5)	3.94 (100.1)	1.56 (39.6)	2.00 (50.8)	0.90 (22.9)	1.44 (36.6)	2.54 (64.5)	1.55 (39.4)
	AM15 (NC/NO)	3.13 (79.5)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.03 (51.6)
44	AM15DA	3.57 (90.7)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.19 (55.6)
	AM20 (NC/NO)	3.51 (89.2)	2.00 (50.8)	2.54 (64.5)	6.30 (160)	2.15 (54.6)	2.76 (70.1)	1.14 (29)	1.44 (36.6)	3.06 (77.7)	2.13 (54.1)
45	AM20DA	3.64 (92.5)	2.19 (55.6)	2.54 (64.5)	6.30 (160)	2.15 (54.6)	2.76 (70.1)	1.14 (29)	1.72 (43.7)	3.34 (84.8)	2.23 (56.6)
	AM25 (NC/NO)	4.27 (108.5)	2.19 (55.6)	2.64 (67.1)	6.52 (165.6)	2.15 (54.6)	3.19 (81.0)	1.31 (33.3)	1.72 (43.7)	3.60 (91.4)	2.66 (67.6)
Three-Way XQS Valves 90° Actuation											
41XQS 42XQS	AM10DA	2.59 (65.8)	2.00 (50.8)	1.87 (47.5)	3.94 (100.1)	1.56 (39.6)	2.00 (50.8)	0.90 (22.9)	1.44 (36.6)	2.54 (64.5)	1.57 (39.9)
	AM15 (NC/NO)	3.07 (78)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.05 (52.1)
43XQS	AM10DA	2.65 (67.3)	2.00 (50.8)	1.87 (47.5)	3.94 (100.1)	1.56 (39.6)	2.00 (50.8)	0.90 (22.9)	1.44 (36.6)	2.54 (64.5)	1.55 (39.4)
	AM15 (NC/NO)	3.13 (79.5)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.03 (51.6)
44XQS	AM15DA	3.57 (90.7)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.19 (55.6)
	AM20 (NC/NO)	3.51 (89.2)	2.00 (50.8)	2.54 (64.5)	6.30 (160)	2.15 (54.6)	2.76 (70.1)	1.14 (29)	1.44 (36.6)	3.06 (77.7)	2.13 (54.1)
45XQS	AM20DA	3.64 (92.5)	2.19 (55.6)	2.54 (64.5)	6.30 (160)	2.15 (54.6)	2.76 (70.1)	1.14 (29)	1.72 (43.7)	3.34 (84.8)	2.23 (56.6)
	AM25 (NC/NO)	4.27 (108.5)	2.19 (55.6)	2.64 (67.1)	6.52 (165.6)	2.15 (54.6)	3.19 (81)	1.31 (33.3)	1.72 (43.7)	3.6 (91.4)	2.66 (67.6)
Three-Way Valves 180° Actuation											
41X/42X	AM25XDA	3.67 (93.2)	2.00 (50.8)	2.82 (71.6)	9.21 (233.9)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.65 (67.3)
	AM25XCR	3.67 (93.2)	2.00 (50.8)	2.82 (71.6)	13.19 (335)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.65 (67.3)
	AM25XSR	3.67 (93.2)	2.00 (50.8)	2.82 (71.6)	10.85 (275.6)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.65 (67.3)
43X	AM25XDA	3.73 (94.7)	2.00 (50.8)	2.82 (71.6)	9.21 (233.9)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.63 (66.8)
	AM25XCR	3.73 (94.7)	2.00 (50.8)	2.82 (71.6)	13.19 (335)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.63 (66.8)
	AM25XSR	3.73 (94.7)	2.00 (50.8)	2.82 (71.6)	10.85 (275.6)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.63 (66.8)
44X	AM25XDA	4.17 (105.9)	2.00 (50.8)	2.82 (71.6)	9.21 (233.9)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.79 (70.9)
	AM25XCR	4.17 (105.9)	2.00 (50.8)	2.82 (71.6)	13.19 (335)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.79 (70.9)
	AM25XSR	4.17 (105.9)	2.00 (50.8)	2.82 (71.6)	10.85 (275.6)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.79 (70.9)
45X	AM25XDA	4.50 (114.3)	2.19 (55.6)	2.82 (71.6)	9.21 (233.9)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.72 (43.7)	3.71 (94.2)	2.89 (73.4)
	AM25XCR	4.50 (114.3)	2.19 (55.6)	2.82 (71.6)	13.19 (335)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.72 (43.7)	3.71 (94.2)	2.89 (73.4)
	AM25XSR	4.50 (114.3)	2.19 (55.6)	2.82 (71.6)	10.85 (275.6)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.72 (43.7)	3.71 (94.2)	2.89 (73.4)



*Three-Way 180° Actuators Only



TB Series Trunnion Ball Valves

TB Series trunnion ball valves provide positive shut-off and directional flow control for systems with working pressures up to 10,000 psig and temperatures from -40 to 450°F (-40 to 232°C). Features include:

- Trunnions stabilize the ball for a tight seal at high and low pressures.
- Spring-loaded seat carriers independently apply pressure to the seats to provide leak-tight shut off at high and low pressures and compensate for seat wear.
- Bottom-loaded, blowout proof stem for safety and reliability.

For more information, see the TB Series Trunnion Ball Valves catalog.

Actuator Selection Table

From the table below, locate the Actuator Designator for the valve size and operation required.

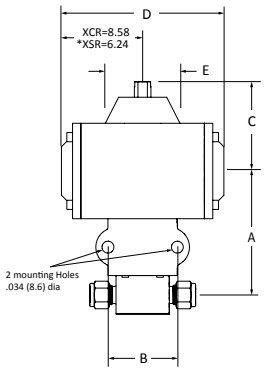
Valve Size	Actuator Designator[1]			Actuator Part Number			Mounting Bracket Kit Part Number	
	Spring Return		Double Acting					
	Normally Closed	Normally Open		Normally Closed	Normally Open	Double Acting	Spring Return	Double Acting
Two-Way Valves								
83/H83	-AM15NC2	-AM15NO2	-AM10DA	AM15NC2	AM15NO2	AM10DA	83-MB-F04-11ISO-F	83-MB-F03-9ISO-F
L83	-AM20NC3	-AM20NO3	-AM10DA	AM20NC3	AM20NO3	AM10DA	83-MB-F05-11ISO-F	83-MB-F03-9ISO-F
LH83	-AM20NC3	-AM20NO3	-AM15DA	AM20NC3	AM20NO3	AM15DA	83-MB-F05-11ISO-F	83-MB-F04-11ISO-F

Three-Way Valves									
Valve Size	Actuator Designator[1]				Actuator Part Number				Mounting Bracket Kit Part Number
	Spring Return Port 1 NC	Spring Return Port 2 NC	Spring Return to Center	Double Acting	Spring Return Port 1 NC	Spring Return Port 2 NC	Spring Return to Center	Double Acting	
83X/L83X	-AM25XSR1	-AM25XSR2	-AM25XCR	-AM25XDA	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA	83-MB-F05-14ISO-F
H83X/LH83X	-AM25XSR1	-AM25XSR2	-AM25XCR	-AM25XDA	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA	83-MB-F05-14ISO-F

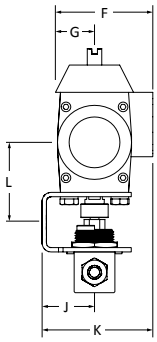
[1]Actuators are selected based on a minimum supply pressure of 60 psig (4.13 bar).

Actuated Ball Valve Assembly Dimensions

Valve Size	Actuator Model	Dimensions in. (mm)									
		A	B	C	D	E	F	G	J	K	L
Two-Way Valves											
83/H83	AM10DA	2.97 (75.4)	2.00 (50.8)	1.87 (47.5)	3.94 (100.1)	1.56 (39.6)	2.00 (50.8)	0.90 (22.9)	1.44 (36.6)	2.54 (64.5)	1.67 (42.4)
	AM15 (NC/NO)	3.46 (87.9)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.16 (54.9)
L83	AM10DA	2.97 (75.4)	2.00 (50.8)	1.87 (47.5)	3.94 (100.1)	1.56 (39.6)	2.00 (50.8)	0.90 (22.9)	1.44 (36.6)	2.54 (64.5)	1.67 (42.4)
	AM20 (NC/NO)	3.40 (86.4)	2.00 (50.8)	2.54 (64.5)	6.30 (160)	2.15 (54.6)	2.76 (70.1)	1.14 (29)	1.44 (36.6)	3.06 (77.7)	2.10 (53.3)
LH83	AM15DA	3.46 (87.9)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.16 (54.9)
	AM20 (NC/NO)	3.40 (86.4)	2.00 (50.8)	2.54 (64.5)	6.30 (160)	2.15 (54.6)	2.76 (70.1)	1.14 (29)	1.44 (36.6)	3.06 (77.7)	2.10 (53.3)
Three-Way Valves 180° Actuation											
83X/H83X L83X/LH83X	AM25XDA	4.06 (103.1)	2.00 (50.8)	2.82 (71.6)	9.21 (233.9)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.76 (70.1)
	AM25XCR	4.06 (103.1)	2.00 (50.8)	2.82 (71.6)	13.19 (335)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.76 (70.1)
	AM25XSR	4.06 (103.1)	2.00 (50.8)	2.82 (71.6)	10.85 (275.6)	2.15 (54.6)	3.35 (85.1)	1.37 (34.8)	1.44 (36.6)	3.43 (87.1)	2.76 (70.1)



*Three-Way 180° Actuators Only



FB Series Multipurpose Ball Valves

FB Series valves are multipurpose ball valves designed for demanding applications having high-cycle, dynamic pressures up to 6000 psig (413 bar), extended temperature ranges from -40 to 400° F (-40 to 206° C), flow coefficients up to 13.8 and end connections up to 1 in.

The live-loaded floating ball design:

- Allows the valve to seal independent of upstream pressure.
- Compensates for seat wear.
- Reduces actuation torque.

The end-screw design enables system designers to configure valves with a wide range of end connection types and sizes.

For more information, see the FB Series Ball Valves catalog.

Actuator Selection Table

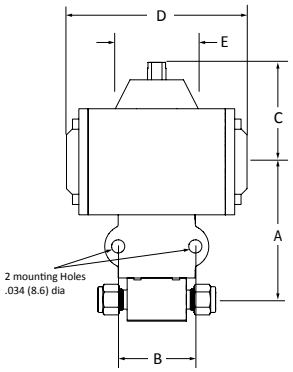
From the table below, locate the Actuator Designator for the valve size and operation required.

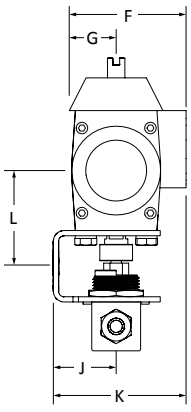
Valve Size	Actuator Designator[1]			Actuator Part Number			Mounting Bracket Kit Part Number	
	Spring Return		Double Acting	Spring Return		Double Acting		
	Normally Closed	Normally Open		Normally Closed	Normally Open		Spring Return	Double Acting
Two-Way Valves								
36/L36	-AM15NC2	-AM15NO2	-AM10DA	AM15NC2	AM15NO2	AM10DA	36-MB-F04-11ISO-F	36-MB-F03-9ISO-F
38	-AM25NC3	-AM25NO3	-AM15DA	AM25NC3	AM25NO3	AM15DA	38-MB-F05-14ISO-F	38-MB-F04-11ISO-F
L38	-AM35NC3	-AM35NO3	-AM25DA	AM35NC3	AM35NO3	AM25DA	38-MB-F05-17ISO-F	38-MB-F05-14ISO-F

[1]Actuators are selected based on a minimum supply pressure of 60 psig (4.13 bar).

Actuated Ball Valve Assembly Dimensions

Valve Size	Actuator Model	Dimensions in. (mm)									
		A	B	C	D	E	F	G	J	K	L
Two-Way Valves											
36/L36	AM10DA	2.64 (67.1)	2.00 (50.8)	1.87 (47.5)	3.94 (100.1)	1.56 (39.6)	2.00 (50.8)	0.90 (22.9)	1.44 (36.6)	2.54 (64.5)	1.55 (39.4)
36/L36	AM15 (NC/NO)	3.13 (79.5)	2.00 (50.8)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.44 (36.6)	3.04 (77.2)	2.03 (51.6)
38	AM15DA	3.96 (100.6)	2.19 (55.6)	2.58 (65.5)	4.68 (118.9)	2.15 (54.6)	2.62 (66.5)	1.02 (25.9)	1.72 (43.7)	3.32 (84.3)	2.29 (58.2)
38	AM25 (NC/NO)	4.33 (110)	2.19 (55.6)	2.64 (67.1)	6.52 (165.6)	2.15 (54.6)	3.19 (81)	1.31 (33.3)	1.72 (43.7)	3.60 (91.4)	2.66 (67.6)
L38	AM25DA	4.33 (110)	2.19 (55.6)	2.64 (67.1)	6.52 (165.6)	2.15 (54.6)	3.19 (81)	1.31 (33.3)	1.72 (43.7)	3.60 (91.4)	2.66 (67.6)
L38	AM35 (NC/NO)	4.52 (114.8)	2.19 (55.6)	3.13 (79.5)	6.96 (176.8)	2.15 (54.6)	3.70 (94)	1.59 (40.4)	1.72 (43.7)	3.82 (97)	2.85 (72.4)





Actuator Options and Accessories

Temperature

To order actuators for other temperature ranges, add the designator from the table below to the part number.
*Example: L36PD4-AM15NC2**LT***

Option	Temperature Range	Designator
Standard	-4 to 176°F (-20 to 80°C)	Blank
High-Temperature	-10 to 300°F / 350°F Cyclic (-23 to 148° C / 176°C Cyclic)	HT
Low-Temperature Slicone	-49 to 300°F / 350°F Cyclic (-45 to 148°C/ 176°C Cyclic)	LT
Low-Temperature NBR	-40 to 212°F (-40 to 100°C)	LTB
Super-Low Temperature	-67 to 300°F / 350°C Cyclic -55 to 148°C / 176°C Cyclic	SLT

Corrosion-Resistant Housing

The standard housing material is anodized aluminum. A range of corrosion resistant coated and stainless steel housings and end caps are available. Contact you local authorized SSP distributor or SSP Customer Service for more information.

Dual Mounted Assemblies

Dual mounted assemblies, which place two valves on one actuator are available on

- EB Series sizes 42 and 43
- FB Series size 36
- All TB Series valves

Contact your authorized SSP distributor or SSP Customer Service for more information.

Position Sensor

To order a position sensor in your assembly, add the designator from the table below to the part number.
*Example: 43GD4-316-AM15NO2S1**P1***

Type	Designator
Pepperl & Fuchs NBN3-F25-E9-V1	P1
Pepperl & Fuchs NCN3-F25-N4-V1	P2

Fusible Plugs

Fusible plugs provide a means of emergency venting which depends only on temperature. Plugs are designed to melt and blow out at a predetermined temperature, venting both the supply air and actuator pressure to atmosphere, causing the valve to cycle to a failsafe position. To specify fusible plugs for your assembly, add the designator from the table below to your part number. *Example: L36PD4-AM15NC2**F1***

Designator	Mark	Color Code	Melt Point	
			°F	°C
F1	158°F	Black	158	70
F2	184°F	White	183	84
F3	203°F	Orange	203	95
F4	255°F	Green	253	123
F5	281°F	Red	284	140

Vent Protector (Mud Dauber) Fittings

Vent protector fittings for exhaust or unused actuator and solenoid ports can be ordered separately. *Part Number: **ISST4MD***

Mounting Brackets

ISO 5211 mounting brackets and couplings are specified in the actuator selection tables for each valve series. The standard offering is based on ISO style couplings with fractional mounting hardware. DIN style couplings with metric mounting hardware are available.

Customer-Specified Assemblies

SSP can provide actuated ball valve assemblies using customer-specified components. Customers can provide components for assembly, or SSP can source the required components from a wide range of manufacturers.

Solenoids

SSP offers solenoid valves with NAMUR style mounting for use in either double acting or spring return actuators. They are available in single coil, dual coil, or 3-position configurations. Solenoid valves are available in compliance with intrinsically safe and explosion proof environments. Low voltage solenoids and other options are available.

Specifications

Feature	Standard
Direct Mount Standard	NAMUR
Body	Powder Epoxy Coated Aluminum
Spool	Anodized Aluminum
Spring	Stainless Steel
Seals	NBR
Coil Class	Class F Standard Duty
Wiring Connections	1/2 in. NPT or 1/4 in. Cable Gland
Operation	3-way or 4-way air piloted
Ambient Temp. Range	-4 to 158° F
Enclosure Rating	IP65
Voltage	120 and 220V AC, 24 VDC, 12VDC/24 VAC and 230 VAC/125 VDC
Manual Override	Lockable
Pressure Rating	0 to 120 psig
Flow Coefficient	1.1
Certifications[1]	CSA/UL, ATEX

[1]Certifications vary by solenoid.

Features

- Standard CSA/UL Certified
- Configuration
  - Standard Duty
  - Intrinsically Safe
  - Explosion Proof
- Single, dual, or 3 position
- Can be used with lubricated or non-lubricated air
- Standard lockable manual override button
- Water and dust proof - IP65

Options

- Intrinsically safe and explosion proof
- High temp. FKM seals
- IP67 watertight kit
- Stainless steel body
- Lighted and molded DIN connectors
- Class H coils
- 3-way and 4-way adapter plates
- Dual coil and 3 position
- Low voltage options

Ordering Information

To order solenoids locate the designator for the required voltage and duty in the table below, then add it to the part number.
*Example: 43GD4-316-AM15NO2HT**S6***

Solenoid Kits. Left-pilot solenoid kits are standard. For right-pilot solenoid kits add R, for dual coil add D after the Kit Part Number. *Example:* ***SVK-S1R***

Designator	Voltage/Duty	Kit Part Number
S1	120 V (ac) / NEMA 4, 4X	SVK-S1
S2	24 V (dc) / NEMA 4, 4X	SVK-S2
S3	220 V (ac) / NEMA 4, 4X	SVK-S3
S4	12 V (dc) / NEMA 4, 4X	SVK-S4
S5	120 V (ac) / NEMA 7, 9	SVK-S5
S6	24 V (dc) / Intrinsically Safe	SVK-S6

Double-Acting Actuator

Add the designator below before the solenoid designator. *Example:* ***C****S2*

Type (2-way / 3-way 90° & 180°)	Designator
Energize to Open / Open Port 1	C
Energize to Close / Close Port 1	O
Dual Coil	D

Other Options

Add the designator below after the solenoid designator in alphabetical order. *Example: S6****A***

Type	Designator
ATEX Certification	A
High Temperature (250°F/300°F cyclic)	HT
Stainless Steel Body	S

Limit Switches

SSP offers limit switches for applications requiring that the position/status of the actuator be monitored from a remote location. SSP offers NEMA 4 Type 1, 2, 3, 4, 4X, general purpose watertight and NEC Class 1 (NEMA 7), Division1, Groups C and D, and NEC Class II (NEMA 9), Division 1, Groups E, F, G watertight and explosion proof switches.

Features

- Compact Design
- Quick Set Cams
- Easy wiring - PCB Terminal, 10 pt.
- High visibility open/close beacon
- NAMUR mounting bracket
- Captive cover bolts

Options

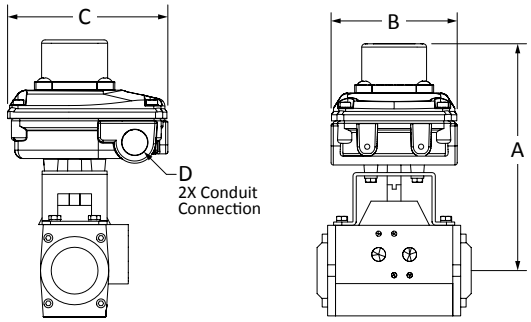
- Mechanical, Inductive Proximity and Magnetic Switches
  - IFM, Honeywell, Omron and Pepperl & Fuchs
- NEMA 4, 4X, 7, 9
- Variety of mounting brackets
- Stainless steel housing and brackets
- Lighted and molded DIN connectors
- Dual coil 7-8-7-9 and 7-8-9-10 circuit boards
- 3-way T-port and L-Port Beacon options

Specifications

Specification	Standard
Cable Entry	1/2 NPT (2)
Temperature	-4 to 176° F (-20 to 80° C) (Standard Contacts)
Terminal Strip	10 pt. single coil solenoid (7-8-7-8) 10 pt. dual coil solenoid (7-8-7-9) (Optional)
Weights	Aluminum: 1.62 lbs (0.74 kg) Stainless Steel: 3.94 lbs (1.79 kg) (Optional)
Seals	NBR
Shaft	304 SS
Cams	ABS

Dimensions

Limit Switch Model	Actuator Model							
	AM10	AM15	AM20	AM25	AM35	All Models		
	A	A	A	A	A	B	C	D
L1B	6.00 (151.6)	6.89 (175.0)	6.87 (174.5)	6.97 (177.0)	7.44 (189.0)	3.83 (97.3)	4.78 (121.4)	1/2 NPT
L2B	6.48 (164.6)	7.42 (188.5)	7.41 (188.2)	7.50 (190.5)	7.97 202.4	5.71 (145.0)	5.71 (145.0)	1/2 NPT



Materials of Construction

Component	Standard
Enclosure	Epoxy Coated Die Cast Aluminum
Bracket	300 Series SS
Indicator	Polycarbonate
Fastener	316 SS
Seals	NBR
Shaft	304 SS
Cams	ABS

Ordering Information

To order limit switches for your assembly, add the designator from the table below to the part number.
*Example: 43GD4-316-AM15NO2HTS6**L2B.***

Designator	Type	Description
NEMA 4, 4X		
L1B	Mechanical	Omron SS-5 or SSG, SPDT, 5A 250V
L1AB*	Mechanical	Omron SS-01, SPDT, 0.1A 125VAC 30VDC, Gold Plated Contacts
L2B*	Magnetic	Magnetic Reed Hamlin (Low Power, 5W Max)
L3B*	Inductive	IFM IS5001 DC 3 Wire PNP Switch (10-36V, NO)
NEMA 4, 4X, 7, 9		
L4B	Mechanical	Omron D3V11 or Cherry D44 (250VAC/DC, 11A MAX, 50/60 HZ)
L4AB*	Mechanical	Honeywell V7, 250VAC/DC, 0.1A MAX, 50/60 HZ Gold Plated Contacts
L5B*	Magnetic	Magnetic Reed Hamlin (Low Power, 5W Max)
L6B*	Inductive	IFM IS5001 DC 3 Wire PNP Switch (10-36V, NO)

*Intrinsically Safe

Limit Switch Options

Add the designator below to the limit switch designator.
S Stainless steel enclosure
D Dual Coil 7-8-7-9 circuit board

Valve Flow Pattern	Kit Ordering Numbers	
	AM10	AM15 to AM35
Two-Way 90°	LSK-*-AM10	LSK-*
Three-Way 180°	LSK-*X-AM10	LSK-*X
Three-Way 90°	LSK-*XQS-AM10	LSK-*XQS

*Limit switch designator from chart above.
Example: LSK-**L1AB**XQS-AM10

Actuators

SSP will sell actuators for field installation on SSP valves. To order actuators for SSP ball valves find the part number for the valve series/size and actuator from the Actuator Part Number tables below. Example: **AM25NC3** for a 38 Series, two-way normally closed actuator.

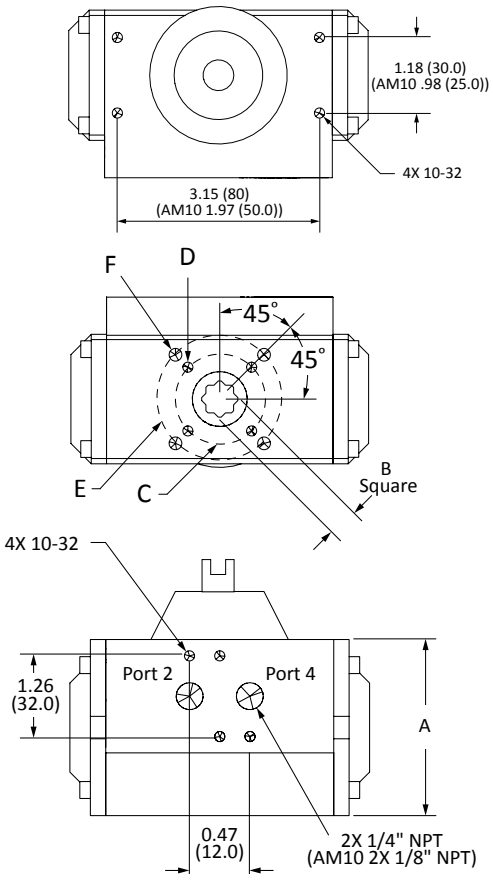
Actuator Part Numbers

Valve Series/ Size	Actuator Part Number		
	Normally Closed	Normally Open	Double Acting
Two-Way Valves			
41, 42	AM15NC2	AM15NO2	AM10DA
43	AM15NC2	AM15NO2	AM10DA
44	AM20NC3	AM20NO3	AM15DA
45	AM25NC3	AM25NO3	AM20DA
36/L36	AM15NC2	AM15NO2	AM10DA
38	AM25NC3	AM25NO3	AM15DA
L38	AM35NC3	AM35NO3	AM25DA
83/H83	AM15NC2	AM15NO2	AM10DA
L83	AM20NC3	AM20NO3	AM10DA
LH83	AM20NC3	AM20NO3	AM15DA
3-Way 90° Actuation			
	Spring Return Port 1 NC	Spring Return Port 2 NC	Double Acting
41XQS 42XQS	AM15SR12-XQS	AM15SR22-XQS	AM10DA-XQS
43XQS	AM15SR12-QXS	AM15SR22-XQS	AM10DA-XQS
44XQS	AM20SR13-XQS	AM20SR23-XQS	AM15DA-XQS
45XQS	AM25SR13-XQS	AM25SR23-XQS	AM20DA-XQS

Valve Series/ Size	Actuator Part Number			
	Spring Return			
3-Way 180° Actuation				
	Spring Return Port 1 NC	Spring Return Port 2 NC	Spring Return to Center	Double Acting
41/42	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA
43	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA
44	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA
45	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA
83/L83	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA
H83/LH83	AM25XSR1	AM25XSR2	AM25XCR	AM25XDA

Actuator Dimensions

Actuator Model	ISO Flange Size	Dimensions in. (mm)					
		A	B	C	D	E	F
AM10	F03	1.78 (45.2)	0.35 (9)	1.42 (36.1)	10-32	-	-
AM15	F04	2.80 (57.9)	0.43 (11)	1.65 (41.9)	10-32	-	-
AM20	F03/F05	2.68 (68.1)	0.43 (11)	1.42 (36.1)	10-32	1.97 (50)	1/4-20
AM25	F05/F07	3.19 (81.0)	0.55 (14)	1.97 (50)	1/4-20	2.76 (70.1)	5/16-18
AM35	F05/F07	3.86 (98.0)	0.67 (17)	1.97 (50)	1/4-20	2.76 (70.1)	5/16-18



Special Orders

The Basic Part Numbers and Dimensions Tables contain only the most popular valve configurations; many other configurations are available. Use the chart below to build part numbers for quotation purposes.

A	B	C	D
43GD6-316	-AM15NC2HT	S2HT	L1B

A VALVE PART

(From Valve Catalog)

B ACTUATOR

Select SSP actuator part number from tables on pages 6-9 then add the options designators to the part number.

TEMPERATURE

Blank	*Standard*
HT	*High Temp.*
LT	*Low Temp. Silicone*
LTB	*Low Temp. Buna*
SLT	*Super-Low Temp.*

MOUNTING

Blank	*One Valve*
DM	*Dual Mount (2 valves)*

Available on EB Series sizes 42 and 43 FB Series 36 and all TB Series valves. Contact SSP Customer Service for actuator sizing.

C SOLENOID

Select the Solenoid type and add any option designators to the part number.

DOUBLE ACTING OPTIONS

Note: Only required for double acting assemblies

C	*Energize to Open / Open Port 1*
O	*Energize to Close / Close Port 1*
D	*Dual Coil*

SOLENOID TYPE

S1	*120 V (ac) / NEMA 4, 4X*
S2	*24 V (dc) / NEMA 4, 4X*
S3	*220 V (ac) / NEMA 4, 4X*
S4	*12 V (dc) / NEMA 4, 4X*
S5	*120 V (ac) / NEMA 7, 9*
S6	*24 V (dc) / Intrinsically Safe*

OPTIONS

A	ATEX Certification
HT	High-Temperature*
SS	Stainless Steel Body

**Available for S1-S3 Only*

D *LIMIT SWITCH / POSITION SENSOR / FUSIBLE PLUGS*

Choose either a limit switch or position indicator, then add the designator to the actuator part number. Add limit switch option designators to the limIt switch part number.

LIMIT SWITCHES

	NEMA 4, 4X
L1B	Omron SS-5 or SSG, SPDT, 5A 250V
L1AB*	Omron SS-01, SPDT, 0.1A 125VAC 30VDC, Gold Plated Contacts
L2B*	Magnetic Reed Hamlin (Low Power, 5W Max)
L3B*	IFM IS5001 DC 3 Wire PNP Switch (10-36V, NO)
	NEMA 4, 4X, 7 9
L4B	Omron D3V11 or Cherry D44 (250VAC/DC, 11A MAX, 50/60 HZ)
L4AB*	Honeywell V7 (250VAC/DC, 0.1A MAX, 50/60 HZ), Gold Plated Contacts
L5B*	Magnetic Reed Hamlin (Low Power, 5W Max)
L6B*	IFM IS5001 DC 3 Wire PNP Switch (10-36V, NO)

*Intrinsically Safe

LIMIT SWITCH OPTIONS

S	Stainless steel enclosure
D	Dual Coil 7-8-7-9 circuit board

POSITION SENSOR

P1	NBN3-F25-E9-V1
P2	NCN3-F25-N4-V1

FUSIBLE PLUGS

MELT POINT °F (°C)

F1	158 (70)
F2	183 (84)
F3	203 (95)
F4	253 (123)
F5	284 (140)

Testing

All actuated assemblies are tested for proper function. All valves are factory tested with Nitrogen to 1000 psig (69 bar) at 70°F (20°C).

Warranty

SSP valves are backed by the SSP Lifetime Limited Warranty. This warranty is available from your local distributor or at www.mySSP.com.

⚠ 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.

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when intermixed with Swagelok®, Hoke Gyrolok® and Parker CPI™ fittings.

Valves

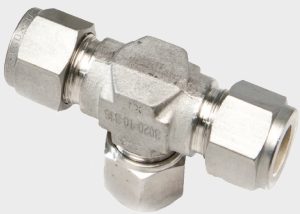
The SSP valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility 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.

Hose

TruFit PTFE-lined and flexible metal core hose assemblies are used in a variety of instrumentation, utility, biopharm and other applications.

Tools & Accessories

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

Quick Connects

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

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

8250 Boyle Parkway • Twinsburg, OH 44087

330-425-4250 • www.mySSP.com

SSP

One-Piece Encapsulated Ball Valves

FloLok®

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

MADE IN USA

At SSP, we are proud to be an American manufacturing success story.

100% of our products are made in America. All of our manufacturing is performed in our 165,000 sq. ft. facility located near Cleveland, Ohio. Our facility is the largest vertically integrated, single-site operation in the industry. In addition to manufacturing and assembly, we have closed die forging, tool & die design, product engineering and testing operations under the same roof with customer service and management.

Made in America is good business. Not only do we make everything in America, we use American suppliers too. Buying American allows us to have better quality control and a more reliable supply chain. We can work more closely within our walls and with our suppliers to improve quality, reduce costs, and shorten lead times, which means faster service and better products for you.

Support where it counts. SSP products and services are supported by more than 4000 people and 350 distributor locations around the globe. For a distributor near you, contact SSP Customer Service or visit www.mySSP.com/distributors.

SSP *Industry Standard Products Made Better*

TABLE of CONTENTS

EB Series One-Piece Encapsulated Ball Valves

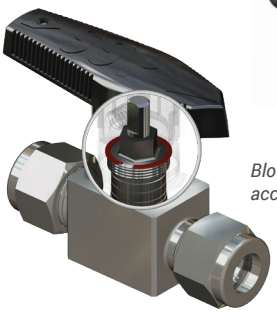
FloLok® EB Series ball valves offer important improvements for the most popular valve design used in analytical instrumentation and other medium pressure applications. These include:

- 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
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.

Encapsulating PTFE packing eliminates dead space to improve sample quality

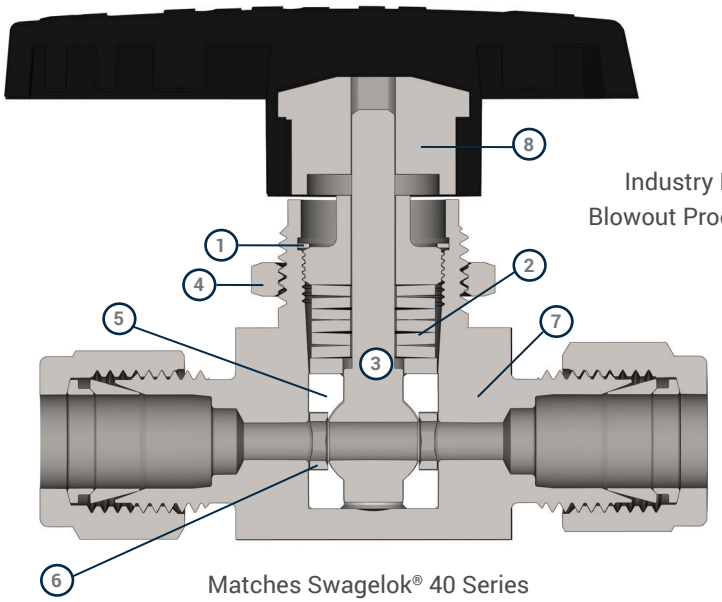


Blowout retainer clip prevents accidental disassembly

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



Industry First
Blowout Proof Stem

Matches Swagelok® 40 Series
end-to-end dimensions

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

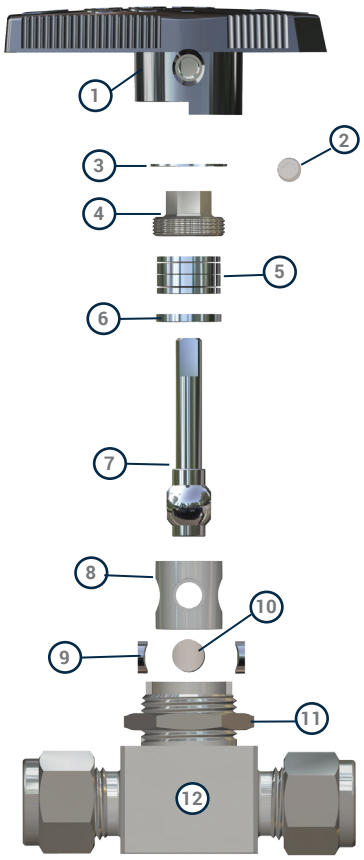
8 ***DURABLE DIRECTIONAL HANDLE***
- Nylon handle with 316 stainless steel insert enhances strength and compatibility
- Handle and stem flats indicate flow direction
- Colored handles available

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			
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*



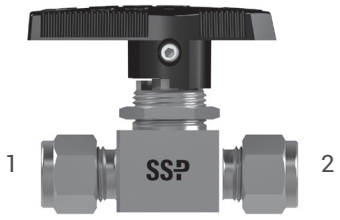
Pressure-Temperature Tables

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

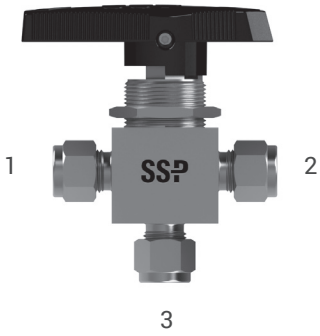
Size	41	42	43		44/45	
Configuration	Straight/Angle/ 3-way	Straight/Angle/ 3-way	Straight	Angle/3-way	Straight	Angle/3-way
Temperature	Working Pressure - psig (bar)					
-65 to 150° F (-53 to 65° C)	2500 (172)	2500 (172)	3000 (206)	2500 (172)	2500 (172)	1500 (103)
200°F (93°C)	2500 (172)	2500 (172)	2800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

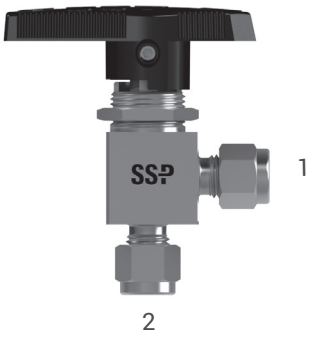
2-Way



3-Way



Angle



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: 43GX****D4D44PM****-316.* Connections 1 are 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***

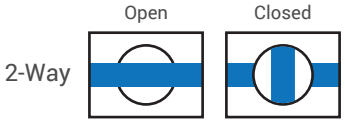
   c. **Other Tube Fitting Designs:** The Basic Ordering Numbers for tube fitting end connections specify Duolok end connections. For Unilok and Griplok end connections, see the Tube Fitting End Connection options — on page 10. *Example: 43GA****U4***
3. Locate and add the Body Material Designator to the 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.

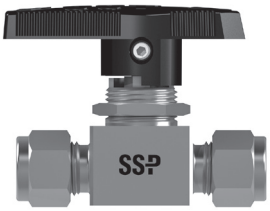
   Note: For configurations that are not in the catalog see the Special Order Instructions available on page 14.

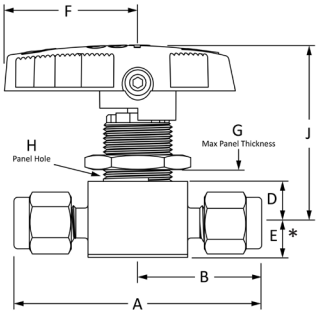
Note: *The Part Number and Dimensions tables contain the most common valve configurations. Use the Special Order table on page 14 to specify the end connection type and size combinations and options to meet the requirements of your applications. Dimensions are subject to change.*

Part Numbers and Dimensions

Two-Way Ball Valves





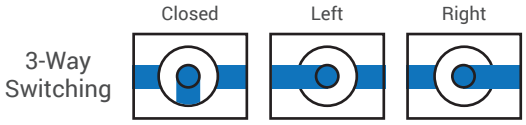


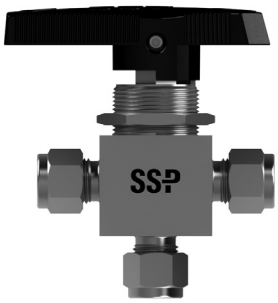
* E dimension 0.75in. (19.1mm) for 45 Brass and Alloy 400 only

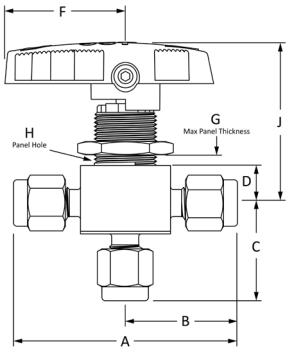
End Connection			Basic Part Number	Orifice in. (mm)	CV	Dimensions, in. (mm)								
Type	Inlet Size	Outlet Size				A	B	D	E	F	G	H	J	W
Fractional Tube Fitting	1/16	1/16	41GD1	0.052 (1.32)	0.10	1.68 (42.7)	0.84 (21.3)	0.34 (8.6)	0.28 (7.1)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	1/8	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 (42.7)	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)

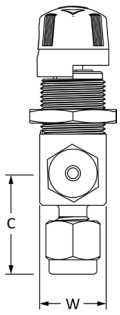
Part Numbers and Dimensions

Three-Way Ball Valves





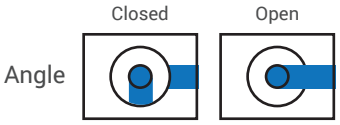


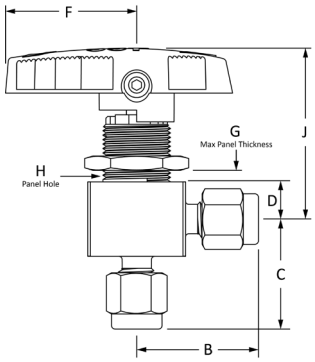


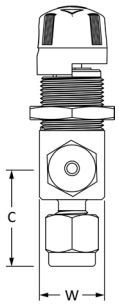
End Connection			Basic Part Number	Orifice in. (mm)	CV	Dimensions, in. (mm)								
Type (Sides/ Bottom)	Bottom	Sides				A	B	C	D	F	G	H	J	W
Fractional Tube Fitting	1/16	1/16	41GXD1	0.052 (1.32)	0.08	1.68 (42.7)	0.84 (21.3)	0.81 (20.6)	0.34 (8.6)	1.09 (27.7)	1/4 (6.4)	19/32 (15.1)	1.45 (36.8)	0.58 (14.7)
	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)	1 1/8 (28.7)	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)	1 1/8 (28.7)	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)	1 1/2 (38.1)	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 42.7	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	1 1/8 28.7	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 44.2	0.69 17.5	3.00 76.2	3/8 9.7	1 1/2 38.1	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)	.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 Fittng	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 FloLok valves. Use the designators below to indicate the required design. For more information about SSP tube ends see our other tube fitting catalogs.

*Example: 43G**U**4-316 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: 42GX**V**D4-316*

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.

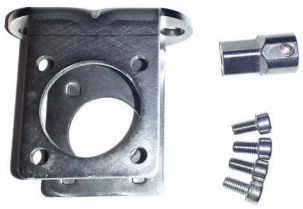
Valve Size	ISO 5211 Flange Size	Coupling Type	Cap Screw Type	Bracket Kit Part Number
41/42	F03	9 mm ISO	Metric	41-MB-F03-9ISO-M
			Fractional	41-MB-F03-9ISO-F
		9 mm DIN	Metric	41-MB-F03-9DIN-M
			Fractional	41-MB-F03-9DIN-F
	F04	9 mm ISO	Metric	41-MB-F04-9ISO-M
			Fractional	41-MB-F04-9ISO-F
		9 mm 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
		17 mm ISO	Metric	45-MB-F05-17ISO-M
			Fractional	45-MB-F05-17ISO-F
		17 mm DIN	Metric	45-MB-F05-17DIN-M
			Fractional	45-MB-F05-17DIN-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

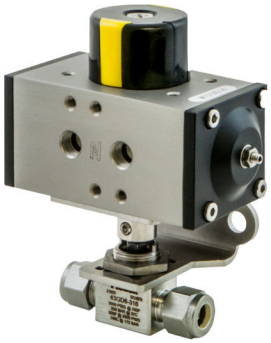


⚠ *Actuated assemblies must be properly aligned and supported. Improper alignment or inadequate support of the actuated assembly may result in leakage or premature valve failure.*

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.

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[1]	-XP98
No Lube	-XP97

[1]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, hydrophobility and wear resistance. For more information about the coatings for your applications, contact SSP Customer service or visit www.mySSP.com.

Special Flow Path Ordering Information

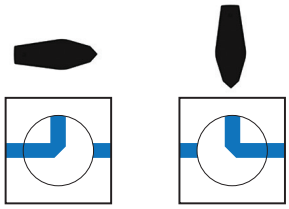
Below are EB Series ball valve special flow path options for 2-way and 3-way ball valves. To order special flow paths, select the flow path designator from the tables below, then place the designator after the G in the basic ordering number.

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: 43G**L**D4-316*
*3-way Valve: 43G**XTF**D4-316*

2-Way Sampling Transfer

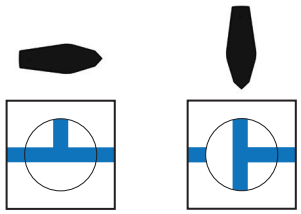
The valve isolates then transfers a small sample as the valve rotates 90° to transfer the sample to the opposite port. **Designator**: **L**



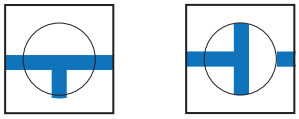
Size	Orifice in./mm	Flow Path Volume in.³/cm³	Working Presure psig/bar	Designator
41	0.040 1.02	0.0004 0.007	2500 172	L
42	0.047 1.19	0.0005 0.008		
43	0.062 1.57	0.0013 0.021		
44	0.125 3.18	0.0073 0.120	1500 103	
45	0.281 7.14	0.0473 0.775		

2-Way Valve Drain/Purge

The valve may drain through either the upstream of downstream ports when the valve is in the off position. Designate DP for downstream or UP for upstream draining, *Example: 43G**UP**D6-316*



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).

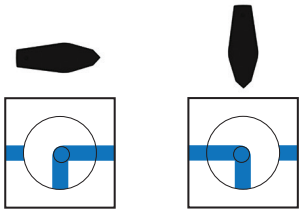
To prevent cross-port flow, select the designator for the vent orfice size, then add it to the part number.

*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

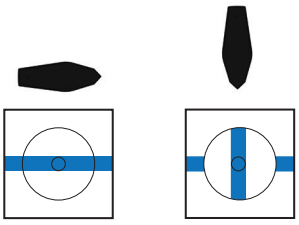
3-Way Quarter Turn Switching

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



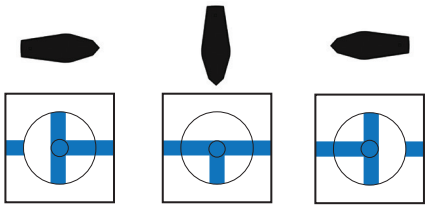
3-Way Tee Flow On/Off

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.

A	B	C	D	E	F	G	H
43	G	X	V	D4	4PM	-316	-GR
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	*PTFE*

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.

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*

E + F Inlet[2] + Outlet Type and Size[2]

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

H Options[1]

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.

[1] Add options designators to the end of the Base Part Number in alphabetical order.
[2] 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.*

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

FloLok valves are backed by the SSP Limited Life Time Warranty. This warranty is available from your local distributor or at www.mySSP.com.

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when intermixed with Swagelok®, Hoke Gyrolok® and Parker CPI™ fittings.

Valves

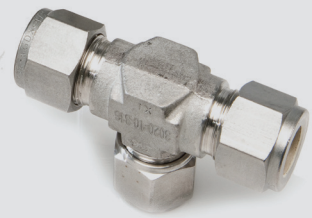
The FloLok valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility applications.

Pipe Fittings

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



Filters

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

Hose

TruFit PTFE-lined and flexible metal core hose assemblies are used in a variety of instrumentation, utility, biopharm and other applications.

Tools & Accessories

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

Quick Connects

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

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
100% American Made
Instrument Valve s Fittings

8250 Boyle Parkway • Twinsburg, OH 44087
330-425-4250 • www.mySSP.com

EBPC-20B

Multipurpose Ball Valves

FB Series

Live Loaded Seats
- Leak-tight seal in high and low system pressures
- Compensate for seat wear

Floating Ball
- Upstream pressure assists sealing against the downstream seat

Robust Body and Stem Seals
- Leak tight envelope
- No need for packing adjustment

Three-Piece Design
- Wide variety of end connections
- Easier maintenance

www.mySSP.com

MADE IN USA

At SSP we are proud to be an **American success story** and each day our products are specified and used across America and the rest of the world.

100% of our products are made in the USA and are manufactured in our 165,000 sq. ft. facility based near Cleveland, Ohio. Throughout our manufacturing we use the latest technology and quality control procedures.

Our facility is the largest single-site operation in the entire industry and includes tool and die design, production, custom closed-die forging, machining, finishing operations, assembly and rigorous product testing.

We also carefully select each of our supply chain partners, many of whom are local using the latest in Kaizen and Six Sigma methodology.

TABLE of CONTENTS

FB Series Multipurpose Ball Valves

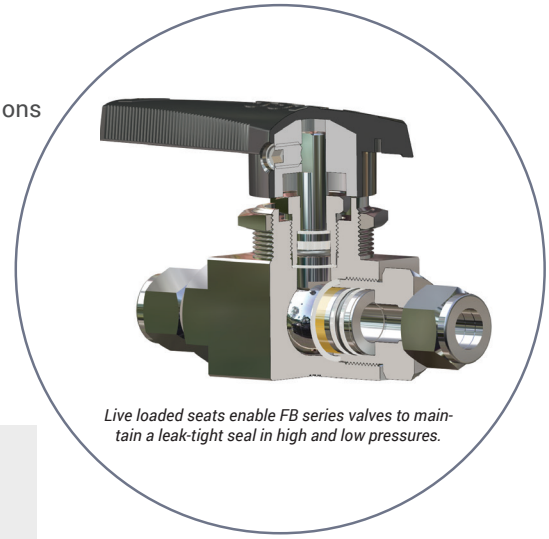
FB Series ball valves use a unique combination of features to provide leak-tight performance at high and low pressures and temperatures, high cycle-life, low maintenance, lower actuating torque, and design flexibility.

Features include:

- Pressure range: up to 6000 PSIG (413 bar)
- Temperature range: -15 to 400°F (-26 to 204°C)
- Flow: Cv up to 13.8
- Live-loaded seats
- Robust body and stem seals
- Wide variety of end connection size and type combinations
- Choice of Duolok, Griplok and Unilok tube fitting end connections

LFB Series Low-Temperature Ball Valves

LFB low-temperature ball valves are designed with materials selected for applications requiring temperature ratings from -40 to 200°F (-40 to 93°C).

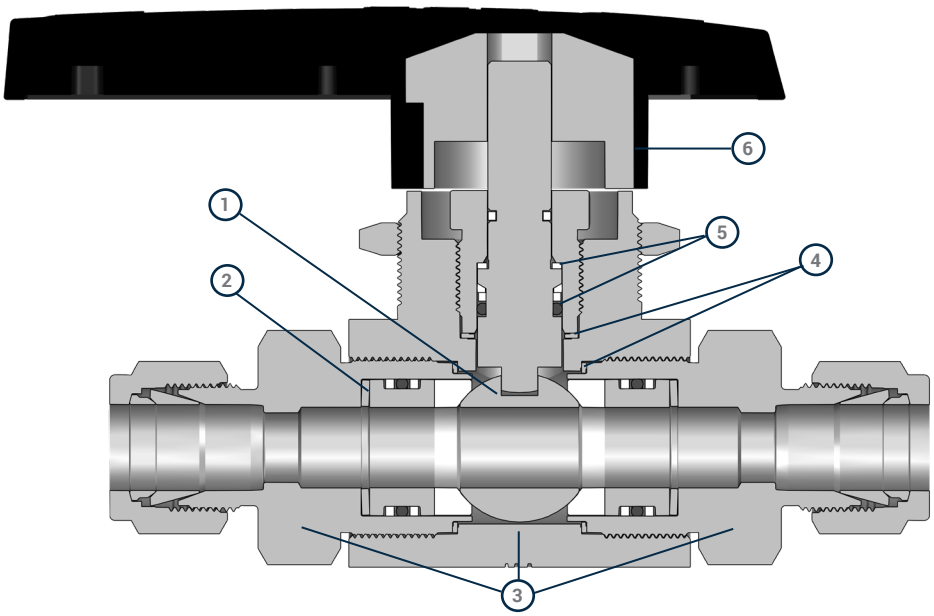


Live loaded seats enable FB series valves to maintain a leak-tight seal in high and low pressures.

Applications

FB Series ball valves are very versatile. They can be used in both high and low pressure instrumentation systems, process lines, utility systems, and other applications. Designed for higher pressures than many floating ball valves, they can be used in applications such as high-pressure CNG filling station supply lines, equipment and in instrumentation and control systems. Unlike many floating ball designs, FB Series valves are also suitable for low and dynamic pressure conditions. In addition, end-screw construction allows users to specify a wide variety of end connection size and type combinations.

Product Design



Drop in replacement size for Swagelok® AFS and SK Series Valves.
Meets ASME B31.3 design pressure calculations.

1 ***FLOATING BALL DESIGN***
- Upstream pressure assists sealing against the downstream seat

2 ***LIVE-LOADED SEATS***
- Improves sealing in high, low and dynamic pressure and flow conditions
- Fully supported seats improve cycle-life

3 ***THREE-PIECE DESIGN***
- Wide variety of end connection type and size combinations
- Three tube fitting designs
- Easier maintenance

4 ***ROBUST BODY SEALS***
- Leak-tight envelope

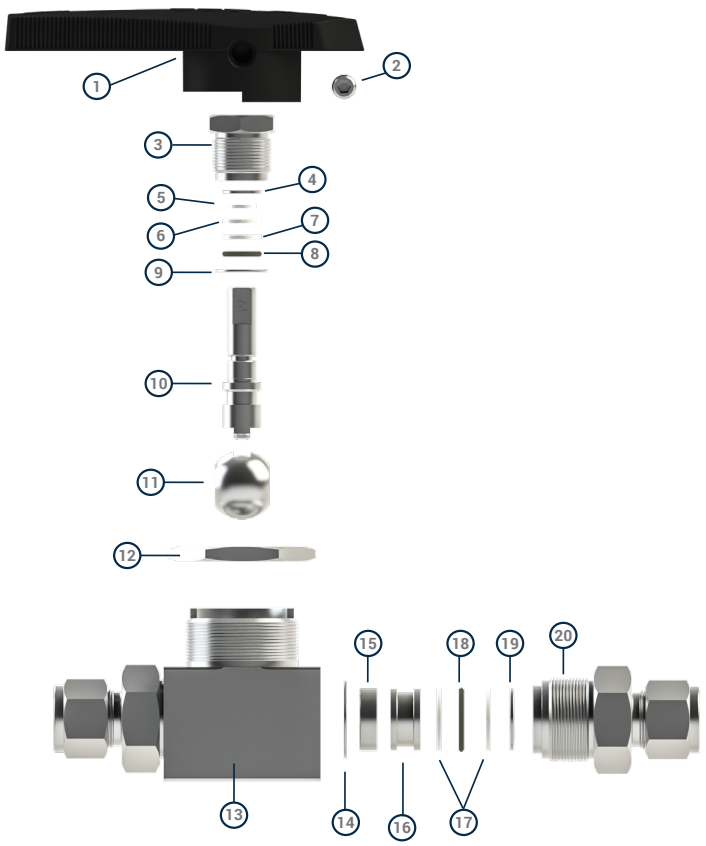
5 ***STEM BEARING AND O-RING STEM SEAL***
- Leak-tight seal
- Lower actuation torque
- No need for packing adjustments

6 ***DURABLE DIRECTIONAL HANDLE***
- Stainless steel reinforced nylon handle for durability
- Indicates flow direction
- Large ergonomic handle for easier actuation

Temperature Pressure Tables

Seat Material	PTFE	PEEK					
End Connections	All	D4 to D8 DM6 to DM12	D12 DM16	D16	4PF to 12PF 4FRT & 8FRT	4PM to 8PM	S6 & S8 SS6 & SS8
Temperature, F(C)	Working Pressure, psig (bar)						
FB Series							
-15 (-26) to 100 (37)	1500 (103)	6000 (413)	5800 (400)	5500 (379)	6000 (413)	6000 (413)	6000 (413)
150 (65)	1250 (86.1)						
200 (93)	1000 (68.9)						
250 (121)	600 (41.3)						
300 (148)	300 (20.6)	3000 (206)	3000 (206)	3000 (206)	3000 (206)	3000 (206)	3000 (206)
350 (176)	100 (6.89)	2000 (138)	2000 (138)	2000 (138)	2000 (138)	2000 (138)	2000 (138)
400 (204)	-	1000 (68.9)	1000 (68.9)	1000 (68.9)	1000 (68.9)	1000 (68.9)	1000 (68.9)
LFB Series							
-40 (-40) to 100 (37)	1500 (103)	6000 (413)	5800 (400)	5500 (379)	6000 (413)	6000 (413)	6000 (413)
150 (65)	1250 (86.1)						
200 (93)	1000 (68.9)						

Materials of Construction

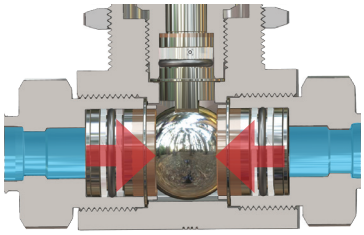


ID	Component	Material / Specification
1	Handle	Nylon with SS Insert
2	Handle Set Screw	17-4PH
3*	Packing Bolt	316 SS/A479
4	Stem Bearing	PEEK
5	Stem Guide Ring	PTFE / D1710
6	Chamfered Back-up Ring	PEEK
7	Stem Back-up Ring	PTFE / D1710
8*	Stem O-ring	Fluorocarbon FKM (FB) Low-Temp Nitrile (LFB)
9*	Packing Bolt Gasket	Silver-Plated 316 SS/A240
10*	Stem	316 SS/A276
11*	Ball	316 SS/A276
12	Panel Nut	Powder Metal 316 SS/B783
13*	Body	316 SS/A182
14*	End Screw Gasket	Silver-Plated 316 SS/A240
15*	Seat	PEEK or PTFE /D1710
16*	Seat Gland	316 SS/A479
17*	Seat Back-up Rings	PTFE / D1710
18*	Seat O-ring	Fluorocarbon FKM (FB) Low-Temp Nitrile (LFB)
19*	Seat Spring	316 SS/A240 OR A666
20*	End Screw	316 SS/A479
	Lubricant	PTFE-Based

**Wetted components*

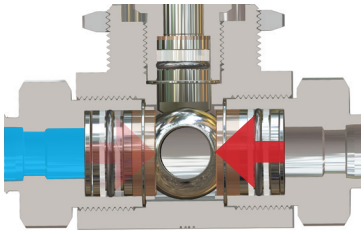
How it works

The images below explain how live-loaded seats work to keep a leak-tight seal in high and low pressures, reduce actuation torque and improve cycle life.



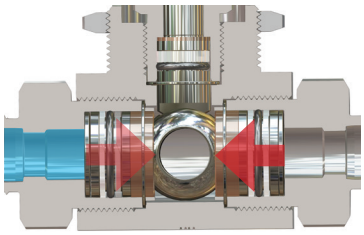
Open

When the valve is open fluid flows through the valve (blue). Force from the springs (red arrows) apply pressure evenly to the seat gland, seat and ball.



Closed - High Pressure

When the ball is closed under high pressure, the force of the upstream pressure forces the ball against the downstream seat to form a tight seal. Resistance from the downstream spring cushions the force of the ball against the seat to protect the seat and makes the valve easier to actuate.



Closed - Low Pressure

Under low pressure, there is much less upstream pressure on the ball and downstream seat. Without the mechanical force exerted by the seats and springs, the ball could disengage from the downstream seat.

Ordering Instructions

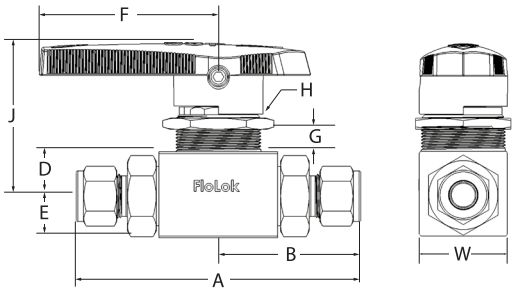
Ordering FB Series valves requires the following steps:

1. Locate the basic part number with the required orifice size and end connection type and size. *Example:* ***38PD8-316*** Note: Duolok Tube Fitting end connections are standard. Unilok, and Griplok tube fitting end connections are also available. To order, please see Tube Fitting End Connections on page 8.

2. Add designators for other options. (See pages 8-9) *Example: 38PD8-316-**RD-XP98***

NOTE: The Part Number and Dimensions Tables contain the most popular part numbers. Valves can be configured with different end connection types and sizes. Please use the special order table on page 10 to construct a part number for quote. *Example: 38PD86PF-316-**RD-XP98***

Ordering Information



Part Numbers and Dimensions

Connection		Part Number	Orifice	Cv	Dimensions, in. (mm)								
Type(s)	Size				A	B	D	E	F	G	H	J	W
Fractional Tube Fitting	1/4 in.	36PD4-316	0.188	1.3	3.60 (91.4)	1.80 (45.7)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	3/8 in.	36PD6-316	0.250	2.5	3.73 (91.5)	1.86 (47.2)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	1/2 in.	38PD8-316	0.406	7.2	4.80 (122)	2.40 (61.0)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
	3/4 in.	38PD12-316	0.472	7.1	4.80 (122)	2.40 (61.0)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
	1 in.	38PD16-316[1]	0.472	6.5	5.10 (130)	2.55 (64.8)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
Metric Tube Fitting	6 mm	36PDM6-316	0.188	1.3	3.60 (91.4)	1.80 (45.7)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	8 mm	36PDM8-316	0.250	2.5	3.68 (93.5)	1.84 (46.7)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	10 mm	36PDM10-316	0.250	2.5	3.75 (95.3)	1.88 (47.8)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	12 mm	38PDM12-316	0.375	5.2	4.80 (122)	2.40 (61.0)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
	16 mm	38PDM16-316	0.472	12.4	4.80 (122)	2.40 (61.0)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
Female NPT	1/4 in.	36P4PF-316	0.250	2.5	2.91 (73.9)	1.46 (37.1)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	3/8 in.	38P6PF-316	0.472	11.0	4.00 (102)	2.00 (50.8)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
	1/2 in.	38P8PF-316	0.472	13.8	4.00 (102)	2.00 (50.8)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
	3/4 in.	38P12PF-316[1]	0.472	7.8	4.12 (105)	2.06 (52.3)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
Male NPT	1/4 in.	36P4PM-316	0.250	2.5	3.23 (82.0)	1.62 (41.0)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	3/8 in.	38P6PM-316	0.375	5.2	4.22 (107)	2.11 (58.6)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
	1/2 in.	38P8PM-316	0.472	13.8	4.59 (117)	2.29 (58.3)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
Female ISO	1/4 in.	36P4FRT-316	0.250	2.5	2.91 (73.9)	1.46 (37.1)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	1/2 in.	38P8FRT-316	0.472	13.8	4.00 (102)	2.00 (50.8)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
Male ORFS	3/8 in.	36PS6-316[1]	0.250	2.5	3.10 (78.8)	1.55 (39.4)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	1/2 in.	38PS8-316	0.378	5.2	4.06 (103)	2.03 (51.6)	0.75 (19.1)	0.70 (17.8)	3.02 (81.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)
Female ORFS	3/8 in.	36PSS6-316[1]	0.250	2.5	3.73 (94.7)	1.87 (47.4)	0.44 (10.8)	0.44 (10.8)	1.43 (36.3)	3/16	25/32	1.53 (38.9)	1.00 (25.4)
	1/2 in.	38PSS8-316	0.358	4.8	4.83 (123)	2.41 (61.3)	0.75 (19.1)	0.70 (17.8)	1.43 (36.3)	3/8	1 1/2	2.59 (65.8)	1.50 (36.8)

[1]*Not recommended for panel mounting.*

Options & Accessories

Tube Fitting End Connections

SSP offers three tube fitting designs. Duolok two-ferrule tube fittings are standard. To select a different design, select the designator from the table below, then substitute it for the "D" in the part number. *Example: 38P**U**8-316 for Unilok tube fitting end connections.* For more information about SSP tube fittings see our tube fitting catalogs or go to www.mySSP.com

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

Handle Options

Stainless steel reinforced black nylon handles are standard on FB Series ball valves. To select a different handle, add the designator from the table below to the basic part number. *Example: 38PD8-316-**GR***

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

Replacement Handles

Replacement handles are shipped with the set screw installed. To order replacement handles, select the base part number from table below, then add the color designator from the Handle Options table to the end of the part number. For black replacement handles use a -BK color designator. *Example: NY-7K-38-**OG***

Valve Series	Part Number
36 / L36	NY-7K-36-XX
38 / L38	NY-7K-38-XX

Seat Material

FB Series valves listed in the dimensions table, include a standard PEEK seat material. To order valves with PTFE seat material, replace the P in the basic part number with material designator T. Example: *36**T**D4-316*

Seat Material	Designator
PEEK	P
PTFE	T

Locking Devices

Factory installed locking handle hardware can be added to any size valve by adding -LD to the part number. *Example: 38PD8-316-**LD**.* Locking handle kits for field installation can be ordered using the part numbers in the table below.

Valve Series	Part Pumber
36 / L36	36-LDK-316
38 / L38	38-LDK-316

Rebuild Kits

Rebuild kits can be ordered using a part number from the table below.

SEAT KITS: Seat rebuild kits contain seats, seat backup rings, seat o-rings, seat springs, end screw gaskets, lube, SDS and instructions.

STEM AND SEAT KITS: Stem and Seat rebuild kits contain stem o-ring, stem back-up ring, stem chamfered back-up ring, stem bearing, packing bolt gasket, seats, seat backup rings, seat o-rings, seat springs, end screw gaskets, lube, SDS and instructions.

Series	Seat Kits		Stem & Seat Kits	
	PEEK Seat	PTFE Seat	PEEK Seat	Seat
36	36P-RK1	36T-RK1	36P-RK2	36T-RK2
L36	L36P-RK1	L36T-RK1	L36P-RK2	L36T-RK2
38	38P-RK1	38T-RK1	38P-RK2	38T-RK2
L38	L38P-RK1	L38T-RK1	L38P-RK2	L38T-RK2

Special Cleaning

FB Series 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: 38PD8-316-**XP98***

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

ECE R110-Type Approval

LFB Series valves are available with ECE R110-type approval. Valves with this approval have low-temp Nitrile stem and seat O-rings and PEEK seats.

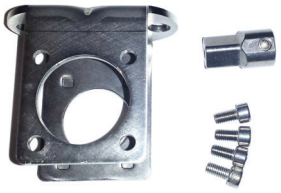
- ECE R110 Manual Service Valve Type Approval
  Classification: Class 6
  Pressure: 3988 psig (275 bar)
  Temperature: -40 to185˚F (-40 to 85˚C)

To order, add **-R110** to the valve ordering number.

Example: L36PD4-316**-R110**

Actuator Brackets & Couplings

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



Valve Series	ISO 5211 Flange Size	Coupling Size	Fastener Type	Part Number
36 / L36	F04	11 mm ISO	Metric	36-MB-F04-11ISO-M
			Fractional	36-MB-F04-11ISO-F
		11 mm DIN	Metric	36-MB-F04-11DIN-M
			Fractional	36-MB-F04-11DIN-F
	F05	11 mm ISO	Metric	36-MB-F05-11ISO-M
			Fractional	36-MB-F05-11ISO-F
		11 mm DIN	Metric	36-MB-F05-11DIN-M
			Fractional	36-MB-F05-11DIN-F
		14 mm ISO	Metric	36-MB-F05-14ISO-M
			Fractional	36-MB-F05-14ISO-F
		14 mm DIN	Metric	36-MB-F05-14DIN-M
			Fractional	36-MB-F05-14DIN-F
38 / L38	F05	11 mm ISO	Metric	38-MB-F05-11ISO-M
			Fractional	38-MB-F05-11ISO-F
		11 mm DIN	Metric	38-MB-F05-11DIN-M
			Fractional	38-MB-F05-11DIN-F
		14 mm ISO	Metric	38-MB-F05-14ISO-M
			Fractional	38-MB-F05-14ISO-F
		14 mm DIN	Metric	38-MB-F05-14DIN-M
			Fractional	38-MB-F05-14DIN-F
		17 mm ISO	Metric	38-MB-F05-17ISO-M
			Fractional	38-MB-F05-17ISO-F
		17 mm DIN	Metric	38-MB-F05-17DIN-M
			Fractional	38-MB-F05-17DIN-F
	F07	17 mm ISO	Metric	38-MB-F07-17ISO-M
			Fractional	38-MB-F07-17ISO-F
		17 mm DIN	Metric	38-MB-F07-17DIN-M
			Fractional	38-MB-F07-17DIN-F

Actuation Torque

Use the table below to select the correct actuator for the valve and application. The values listed are minimum required actuator torque at maximum system pressure for each valve.

Valve Series							
36		L36		38		L38	
in-lb (N-m)							
Start	End	Start	End	Start	End	Start	End
30 (3.4)	6 (0.7)	51 (5.8)	19 (2.1)	96 (10.8)	23 (2.6)	176 (19.9)	53 (6.0)

Actuated Ball Valve Assemblies

FB Series valves are available with a wide range of actuators, solenoids, and 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.

Sour Gas Service

Selecting valves for sour gas applications requires the consideration of several factors including the temperature, pH, partial pressure of H_2S, and whether the application is above or below ground. SSP offers configurations to meet the requirements in ANSI/NACE MR0175/ISO 15156-3 and NACE MR0103/ISO 17945. To order valves for sour gas applications, add the designator below to the part number.
*Example: 38PD8-316-**SG1***

Designator	Wetted Part[1]	Non-Wetted	Body	O-ring
SG1	Annealed 316 SS except body[2]	316 SS	316 SS	EP
SG2	Annealed 316 SS	316 SS	316 SS	EP
SG3	Alloy 400/UNS S20910	316 SS	Alloy 400	FFKM

[1]Springs or other components may require other materials for functionality.
[2]Compression fittings and valve bodies with compression fitting ports are exempt from lower hardness requirements per ANSI/NACE MR0175/ISO 15156 and NACE MR0103/ISO 17945.

Special Orders

The Basic Ordering Numbers and Dimensions tables (page 7) 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.

(basic ordering number) (options)

A	B	C	D	E
38P	D8	6PF	-316	-GR -LD -SG1

A TEMPERATURE

Blank	Standard (FB)
L	Low-Temperature (LFB)

B VALVE SIZE/SEAT MATERIAL

36P	0.250 Ball Orifice - PEEK Seats
36T	0.250 Ball Orifice - PTFE Seats
38P	0.472 Ball Orifice - PEEK Seats
38T	0.472 Ball Orifice - PTFE Seats

C INLET TYPE[2] + OUTLET TYPE[2]

D	Duolok® Tube Fitting
U	Unilok® Tube Fitting
G	Griplok® Tube Fitting
DM	Duolok® Metric
PF	Female NPT
PM	Male NPT
FRT	Female ISO Tapered
S	Male ORFS
SS	Female ORFS

Fractional Sizes:	
4	1/4 in.
6	3/8 in.
8	1/2 in.
12	3/4 in.
16	1 in.

Metric Sizes:	
M6	6 mm
M8	8 mm
M10	10 mm
M12	12 mm
M16	16 mm

D BODY MATERIAL

-316	316 SS

Additional Valve Materials

Alloy 400/405 and Alloy C-276 materials are available for FB series valves. Contact SSP for more information

E OPTIONS[1]

HANDLES

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

SPECIAL CLEANING

-XP98	Per ASTM G93 Level C and CGA G-4.1

OTHER OPTIONS

-LD	Locking Hardware
-SG*	Sour Gas *See Sour Gas Options on page 8.
-R110	ECE R110 Approved valve (L36P/L38P series only)

[1] *Add options designators to the end of the Base Part Number in alphabetical order.*
[2] *Tube end connection part numbers are formatted "Type" followed by "Size." Example: D6.*
Pipe end connections are formatted "Size" followed by "Type." Example: 6PF
*If both ends of the valve are the same, then only designate the end connection one time. Example 38P**D8**-316. If they are different, use both designators together. Example: 38P**D88PF**-316.*

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.

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

Testing

All FB Series valves are factory tested with Nitrogen to 1000 psig (69 bar) at 70°F (20°C).

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.

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when intermixed with Swagelok®, Hoke Gyrolok® and Parker CPI™ fittings.

Valves

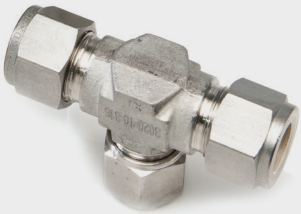
The SSP valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility 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.

Hose

TruFit PTFE-lined and flexible metal core hose assemblies are used in a variety of instrumentation, utility, biopharm and other applications.

Tools & Accessories

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

Quick Connects

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

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

8250 Boyle Parkway • Twinsburg, OH 44087

330-425-4250 • www.mySSP.com

SSP

Lift Check Valves

FloLok®

LC Series

- ☑ Working Pressures up to 6000 psig (413 bar)
- ☑ Temperature Range from -100 to 900°F (-73 to 482°C)
- ☑ Flow Coefficients up to 1.10
- ☑ Wide variety of end connection types and sizes
- ☑ End connection sizes from 1/8 to 3/4 in. (6 to 12 mm)

www.mySSP.com

MADE IN USA

At SSP, we are proud to be an American manufacturing success story.

100% of our products are made in America. All of our manufacturing is performed in our 165,000 sq. ft. facility located near Cleveland, Ohio. Our facility is the largest vertically integrated, single-site operation in the industry. In addition to manufacturing and assembly, we have closed die forging, tool & die design, product engineering and testing operations under the same roof with customer service and management.

Made in America is good business. Not only do we make everything in America, we use American suppliers too. Buying American allows us to have better quality control and a more reliable supply chain. We can work more closely within our walls and with our suppliers to improve quality, reduce costs, and shorten lead times, which means faster service and better products for you.

SSP Industry Standard Products.
Made Better.

TABLE of CONTENTS

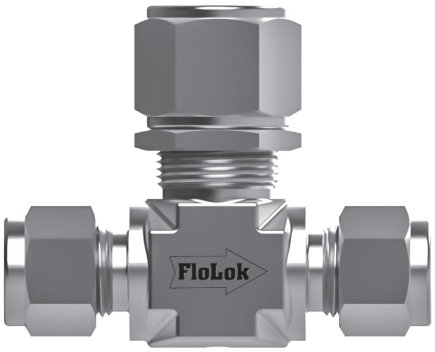
LC Series Lift Check Valves

LC Series lift check valve's all-metal design is suitable for extreme temperatures found in power, oil & gas, chemical, petrochemical, pulp & paper, and laboratory applications. LC Series valves use gravity and back pressure to prevent reverse flow to less than 0.1% of forward flow. Applications include:

- Grab samples
- Industrial engines
- Separators
- Nozzles
- Emissions analyzers

Temperature-Pressure

MATERIAL	316 SS
TEMPERATURE °F (°C)	PRESSURE PSIG (BAR)
-100 to 100 (-73 TO 37)	6000 (413)
200 (93)	5160 (355)
250 (121)	4910 (338)
300 (148)	4660 (321)
350 (176)	4470 (308)
400 (204)	4280 (295)
450 (232)	4130 (284)
500 (260)	3980 (274)
550 (287)	3870 (266)
600 (315)	3760 (259)
650 (343)	3700 (255)
700 (371)	3600 (248)
750 (398)	3520 (242)
800 (426)	3460 (238)
850 (454)	3380 (233)
900 (482)	3280 (226)



Important Installation Note

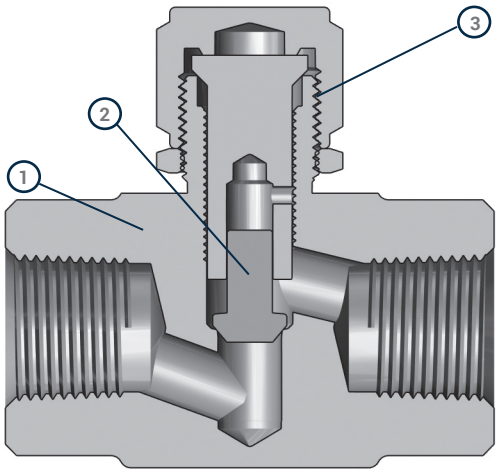
The operation of LC Series lift check valves is assisted by gravity. Valves must be mounted horizontally with the bonnet on top.

Product Design

1 ***All Stainless Steel Construction***
- Metal to metal seal
- No O-rings or springs
- Forged body
- Temperatures up to 900°F (482°C)

2 ***Simple Poppet Design***
- Forward flow opens the valve
- Reverse flow/gravity closes the valve
- Reverse flow coefficient is less than 0.1% of forward flow coefficient

3 ***Compact Design***
- Suitable for tight spaces
- One piece body - fewer potential leak points

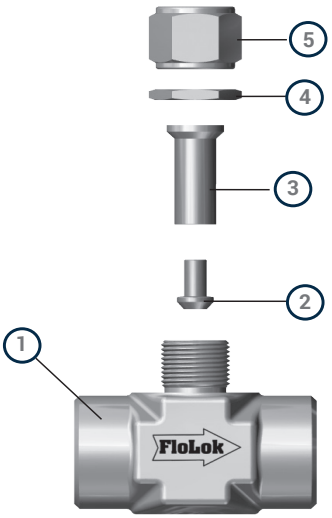


Meets ASME B31.1 and B31.3 design pressure calculations

Materials of Construction

ID	COMPONENT	MATERIAL/SPECIFICATION
1	*Body	316 SS/A182
2	*Poppet	17-4 PH/A564
3	*Bonnet	316 SS/A276
4	Lock Nut	316 SS/A276
5	Bonnet Nut	316 SS/A276

**Wetted components*



Ordering Information

To order LC Series valves, follow the steps below.

1 Locate the basic ordering number that corresponds to the inlet and outlet sizes and types and the Cv required for your application. *Example* ***LC6-D6***

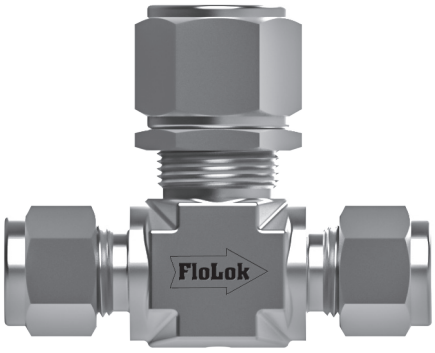
Note: SSP offers three tube fitting designs. Duolok 2-ferrule tube ends are standard. To specify Unilok single-ferrule end connections or Griplok dual-ferrule end connections see page 6.

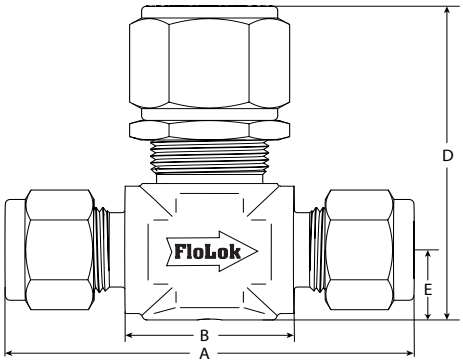
2 Add "-316" for 316 Stainless Steel. Other material are available on request.
Example LC6-D6-**316**

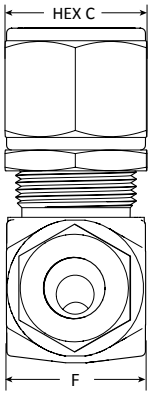
3 Select options from the options on page 6. Add them in alphabetical order after the body material designator.
*Example: LC6-D6-316-**XP98***

Note: To order product configurations that are not shown in the table use the special order chart on page 6.

Part Numbers and Dimensions







END CONNECTION			BASIC PART NUMBER	VALVE SIZE	CV	ORIFICE IN. (MM)	DIMENSIONS					
TYPE	INLET SIZE	OUTLET SIZE					A	B	C	D	E	F
Fractional Tube Fitting	1/4 in.	1/4 in.	LC4-D4	LC4	0.34	0.172 (4.36)	2.40 (60.9)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
	3/8 in.	3/8 in.	LC4-D6	LC4	0.34	0.172 (4.36)	2.40 (60.9)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
	3/8 in.	3/8 in.	LC6-D6	LC6	0.73	0.250 (6.35)	2.58 (65.5)	1.12 (28.4)	0.875 (22.2)	2.1 (53.3)	0.44 (11.1)	0.87 (22.1)
	1/2 in.	1/2 in.	LC6-D8	LC6	0.73	0.250 (6.35)	2.80 (71.1)	1.12 (28.4)	0.875 (22.2)	2.1 (53.3)	0.44 (11.1)	0.87 (22.1)
	1/2 in.	1/2 in.	LC8-D8	LC8	1.10	0.343 (8.71)	2.80 (71.1)	1.12 (28.4)	0.875 (22.2)	2.5 (63.5)	0.44 (11.1)	1.49 (37.8)
	3/4 in.	3/4 in.	LC8-D12	LC8	1.10	0.343 (8.71)	3.43 (87.1)	1.69 (42.9)	0.875 (22.2)	2.5 (63.5)	0.75 (19.0)	1.49 (37.8)
Metric Tube Fitting	6 mm	6 mm	LC4-DM6	LC4	0.34	0.172 (4.36)	2.40 (60.9)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
Female NPT	1/8 in.	1/8 in.	LC4-2PF	LC4	0.34	0.172 (4.36)	1.82 (46.2)	-	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
	1/4 in.	1/4 in.	LC4-4PF	LC4	0.34	0.172 (4.36)	2.0 (50.8)	-	0.625 (15.8)	1.7 (43.1)	0.40 (10.1)	0.68 (17.2)
	1/4 in.	1/4 in.	LC6-4PF	LC6	0.73	0.250 (6.35)	2.30 (58.4)	-	0.875 (22.2)	2.1 (53.3)	0.44 (11.1)	0.87 (22.1)
	3/8 in.	3/8 in.	LC6-6PF	LC6	0.73	0.250 (6.35)	2.50 (63.5)	-	0.875 (22.2)	2.1 (53.3)	0.75 (19.0)	0.87 (22.1)
	3/8 in.	3/8 in.	LC8-6PF	LC8	1.10	0.343 (8.71)	2.50 (63.5)	-	0.875 (22.2)	2.5 (63.5)	0.75 (19.0)	1.49 (37.8)
	1/2 in.	1/2 in.	LC6-8PF	LC6	0.73	0.250 (6.35)	2.50 (63.5)	-	0.875 (22.2)	2.5 (63.5)	0.75 (19.0)	1.49 (37.8)
	1/2 in.	1/2 in.	LC8-8PF	LC8	1.10	0.343 (8.40)	2.50 (63.5)	-	0.875 (22.2)	2.5 (63.5)	0.75 (19.0)	1.49 (37.8)
MNPT	1/8 in.	1/8 in.	LC4-2PM	LC4	0.32	0.172 (4.36)	1.82 (46.2)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
	1/4 in.	1/4 in.	LC4-4PM	LC4	0.34	0.172 (4.36)	1.82 (46.2)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
	3/8 in.	3/8 in.	LC6-6PM	LC6	0.73	0.250 (6.35)	1.82 (46.2)	1.12 (28.4)	0.875 (22.2)	2.1 (53.3)	0.44 (11.1)	0.87 (22.1)
Male to Female NPT	1/4 in.	1/4 in.	LC4-4PM-4PF	LC4	0.34	0.172 (4.36)	2.00 (50.4)	-	0.625 (15.8)	1.7 (43.1)	0.44 (11.1)	0.68 (17.2)
Male NPT to Tube	1/4 in.	1/4 in.	LC4-4PM-D4	LC4	0.34	0.172 (4.36)	2.11 (53.5)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
	1/4 in.	3/8 in.	LC4-4PM-D6	LC4	0.34	0.172 (4.36)	2.11 (53.5)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
Tube to Male NPT	3/8 in.	1/4 in.	LC4-D6-4PM	LC4	0.34	0.172 (4.36)	2.11 (53.5)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)
Tube Socket Weld	1/4 in.	1/4 in.	LC4-4SW	LC4	0.34	0.172 (4.36)	2.40 (60.9)	1.03 (26.1)	0.625 (15.8)	1.6 (40.6)	0.40 (10.1)	0.68 (17.2)

Options & Accessories

Tube Fitting End Connections

SSP offers three tube fitting designs. Duolok two-ferrule tube fittings are standard. To select a different design, select the designator from the table below, then substitute it for the "D" in the part number.
*Example LC6-**U**6-316*

DESIGN	DESCRIPTION	DESIGNATOR
Duolok	2-Ferrule	D
Unilok	1-Ferrule	U
Griplok	2-Ferrule	G

Body Material

316 stainless steel is standard for LC Series valves. To specify other body materials, select the designator from the table below the add to the part number after the end connections. Example: LC6-D6-B

MATERIAL	DESIGNATOR
316 SS	-316
Brass	-B
Alloy 400	-M

Special Cleaning

LC Series valves are available with ASTM G93 Level C and CGA G-4.1 compliant cleaning. To specify special cleaning, add -XP98 to the part number.
*Example: LC6-6PF-316-**XP98***

Sour Gas Service

LC Series check valves constructed with materials selected in accordance with NACE MR01-75/ ISO 15156 are available for sour gas service. To order, add -SG to the part number. *Example: LC6-6PF-316-**SG***

Specifications

- *Body, Bonnet Nut and Panel Nut: 316 SS*
- *Poppet and Bonnet Material: Alloy 400/R405*
- *Pressure Rating: 6000 psig (413 bar)*
- *Temperature Rating: -65 to 500°F (-53 to 260°C)*

Testing

All LC Series lift check valves are tested for proper operation.

Special Orders

Basic Part Number — Options

A	B	C[3]	D	E
LC4	-4PM	-D6	-316	-SG

The Part Numbers and Dimensions table (page 5) contains only the most popular valve configurations; many more are available. If the required valve is not in the Part Numbers and Dimensions table, uses the chart below to build part numbers for quotation purposes.

A SERIES / SIZE

LC4	*0.172 Orifice.*
LC6	*0.250 Orifice*
LC8	*0.343 Orifice*

D BODY MATERIAL

-316	*316 SS*
-M	*Alloy 400*
-B	*Brass*

B + C INLET TYPE[2] + OUTLET TYPE[2]

D	*Duolok® Tube Fitting*
U	*Unilok® Tube Fitting*
G	*Griplok® Tube Fitting*
PF	*Female NPT*
PM	*Male NPT*
SW	*Tube Socket Weld*

Fractional Sizes:		*Metric Sizes:*	
2	*1/8 in.*	*M6*	*6 mm*
4	*1/4 in.*	*M8*	*8 mm*
6	*3/8 in.*	*M10*	*10 mm*
8	*1/2 in.*	*M12*	*12 mm*
12	*3/4 in.*		

E OPTIONS[1]

SPECIAL CLEANING

-XP98	*Oxygen compatible lubricant, per ASTM G93, Level C and CGA G-4.1*

SOUR GAS

-SG	*ISO 15156 (NACE MR01-75)*

[1] Add options designators to the end of the Base Part Number in alphabetical order.
[2] Tube fitting end connection part numbers are formatted Type followed by Size. Example: D6
Pipe ends are formatted Size followed by Type. Example: 6PF
*[3] If both ends are the same, use only one end connection designator. Example: LC6-**D6**-316 for 3/8 in. Duolok end connections.*
*If the end connections are different types or sizes, the inlet and outlet designators are separated by a dash. Example LC6-**6PF-4PM**-316*

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.

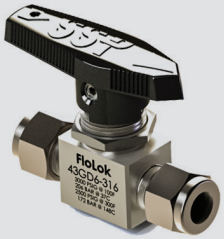
Product Selection

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.

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when inter-mixed with Swagelok®, Hoke Gyrolok® and Parker A-LOK™ and CPI™ tube fittings.



Valves

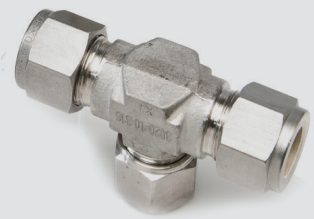
The SSP valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility 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.

Hose

TruFit PTFE-lined and flexible metal core hose assemblies are used in a variety of instrumentation, utility, biopharm and other applications.

Tools & Accessories

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

Quick Connects

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

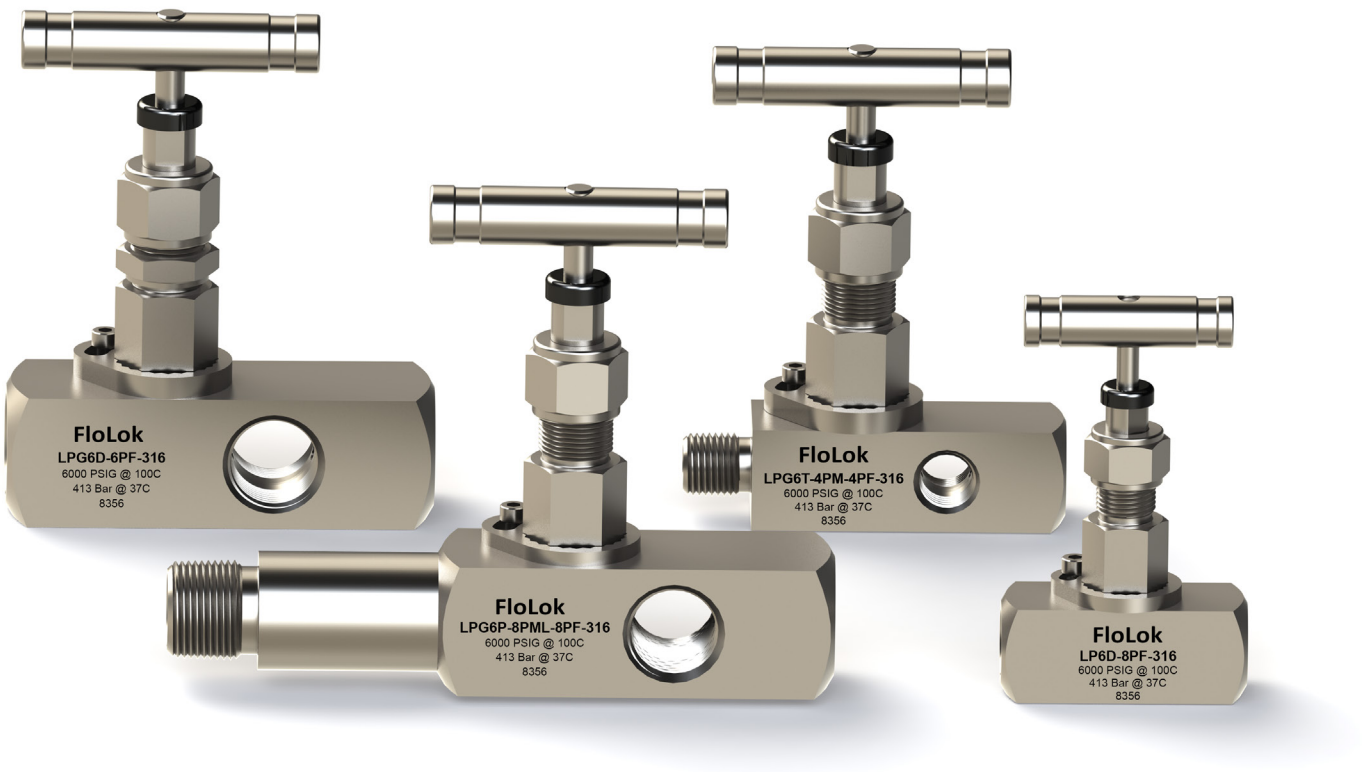
SSP

Founded 1926 • Privately owned, third generation family business • Modern manufacturing facility – 165,000 square feet • Captive closed die forging operation • Integrated tool & die production Nearly 200 machining centers • ISO 17025 testing laboratory • Automated warehouse retrieval system ISO 9001 quality management system • DFARS-compliant raw material • EN 10204 3.1 certification • Limited Lifetime Warranty • ASME B31.3 design • Canadian Registration • Third Party Approvals from CSA, TüV, DNV, and ABS

8250 Boyle Parkway • Twinsburg, OH 44087
330-425-4250 • www.mySSP.com

SSP

Rising Plug and Gauge Valves



FloLok®

LP Series

- ☑ Pressure: Up to 6000 psig (413 bar)
- ☑ Temperature: -65 to 600° F (-53 to 315° C)
- ☑ Locked bonnet eliminates accidental disassembly of the bonnet
- ☑ Live-loaded packing reduces the need for packing adjustments

www.mySSP.com

MADE IN USA

At SSP we are proud to be an American success story and each day our products are specified and used across America and the rest of the world.

100% of our products are made in the USA and are manufactured in our 165,000 sq. ft. facility based near Cleveland, Ohio. Throughout our manufacturing we use the latest technology and quality control procedures.

Our facility is the largest single-site operation in the entire industry and includes tool and die design, production, custom closed-die forging, machining, finishing operations, assembly and rigorous product testing.

We also carefully select each of our supply chain partners, many of whom are local using the latest in Kaizen and Six Sigma methodology.

TABLE of CONTENTS

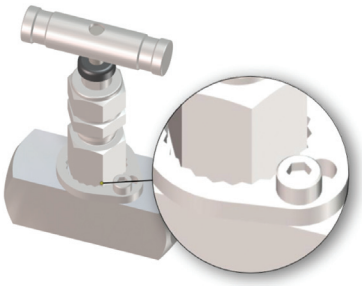
LP Series Rising Plug and Gauge Valves

Better Rising Plug and Gauge Valves

LP Series rising plug and gauge valves use a unique combination of features that can reduce maintenance time and cost, improve safety and increase the reliability of instruments in your systems.

Locked Bonnet Design for Greater Safety

The LP Series valve takes the best aspects of union bonnet and screwed bonnet designs to provide safer and more reliable service. LP Series' bonnets incorporate the stem, packing nut, packing bolt and packing into a single assembly. The bonnet is screwed into the valve body, then locked in place with a lock ring. This design prevents accidental disassembly from over-rotating the handle past fully open or from loosening due to vibration. The back seating plug allows inline packing adjustments to be made more safely.



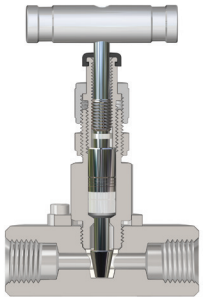
LP Series Locked Bonnet Design

Live loaded Chevron Packing for Greater Reliability

The tighter your system, the better your data. LP Series valves are designed with live loaded packing that provides a dynamic leak-tight stem seal, which compensates for changes in pressure, temperature and packing wear.

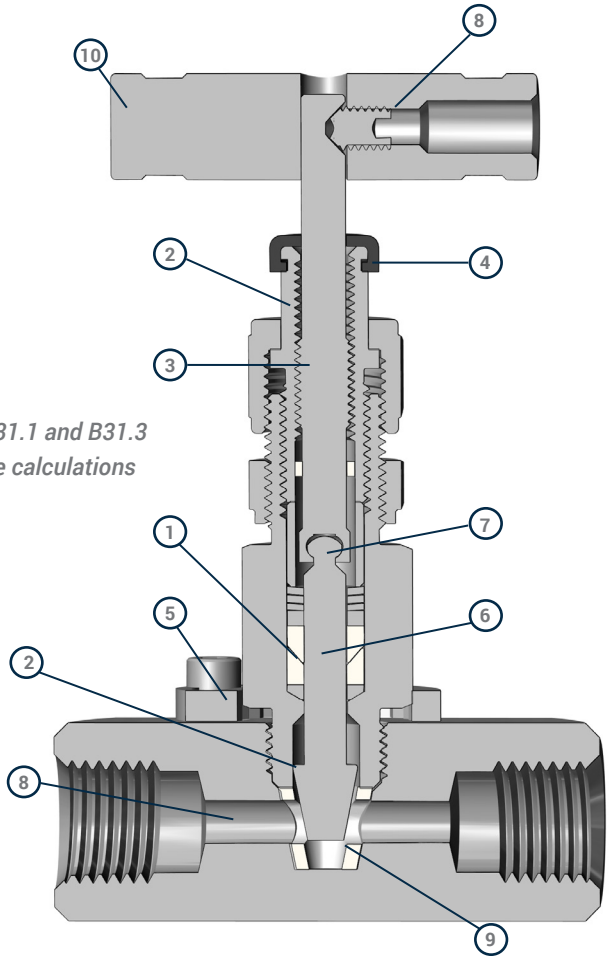
Severe Service Construction

LP Series rising plug and gauge valves are built for demanding conditions. In addition to the bonnet construction, LP Series valves feature a non-rotating lower stem that prevents seat damage and reduces wear to the seat and packing caused by rotational damage. The threaded upper stem and stem pivot are located above the packing to prevent system media from attacking the threads or from washing away thread lubricants. A dust cap prevents dust and other environmental elements from contaminating the threads.



Product Design

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



1 *LIVE LOADED CHEVRON PACKING*

- Reduces need for packing adjustments
- Compensates for wear
- Compensates for pressure and temperature changes
- Packing support prevents extrusion of the packing
- Easy actuation with positive shutoff
- Stem will not back out in high-vibration applications

2 *BACK SEATING STEM ALLOWS FOR INLINE PACKING ADUSTMENT*

- Isolates the packing when the valve is in the fully open position
- Makes packing adjustment safer

3 *HARDENED NON-WETTED STEM THREADS*

- Hardened 17-4 PH stainless steel
- High cycle life
- Retains lubricants for easy operation and longer cycle life

4 *DUST CAP*

- Prevents contamination of the stem threads from the environment

5 *BONNET LOCK PLATE*

- Locks bonnet in place to prevent accidental disassembly

6 *NON-ROTATING LOWER STEM*

- Prevents damage to the seat and stem tip caused by rotational damage, for repetitive leak-tight sealing even in severe environments
- Reduces packing maintenance because the stem does not rotate within the packing
- Chrome-plated, strain-hardened 316 SS

7 *NON-WETTED STEM PIVOT INTERLOCK*

- Prevents system media from infiltrating and seizing up the stem joint

8 *STRAIGHT FLOW PATH*

- High Flow
- Roddable

9 *REPLACEABLE SEAT*

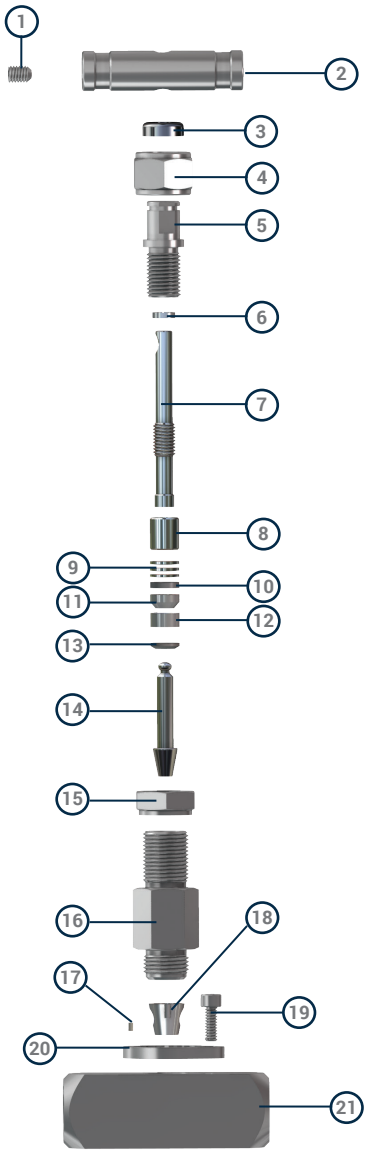
- Three material choices (Acetal/PFA/PEEK)

10 *DURABLE STAINLESS STEEL HANDLE*

Materials of Construction

ID	COMPONENT	MATERIAL	SPECIFICATION
1	Handle Screw	316 SS	A276
2	T-Bar Handle	303	A582
3	Dust Cap	NBR	D2000
4	Packing Nut	316 SS	A276
5	Packing Bolt	316 SS	A276
6	Stem Guide	PEEK	
7	Upper Stem	17-4PH	A564
8	Packing Spacer	316 SS	A276
9	Packing Springs	301	A666
10	Packing Washer	316 SS	A276
11*	Upper Packing	PTFE / PEEK	D1710
12*	Lower Packing	PTFE / PEEK	D1710
13*	Packing Support	316 SS	A176
14*	Lower Stem	316 SS / Alloy 405	A276
15	Panel Nut (Optional)	316 SS	A176
16*	Bonnet	316 SS / Alloy 400	A479
17*	Seat Pin	316 SS	A276
18*	Seat	Acetal / PFA / PEEK	
19	Set Screw	316 SS	A276
20	Bonnet Lock	316 SS	A276
21*	Body	316 SS / Alloy 400	A479
	Thread Lubricant	Christo-Lube MCG 130	
	Packing Lubricant	Christo-Lube MCG 111	

**Wetted components*



Temperature Pressure Tables

SERIES	SS 316			ALLOY 400		
Seat Material	Acetal	PEEK	PFA	Acetal	PEEK	PFA
Temperature	Working Pressure - psig (bar)					
-65 to 100°F (-53 to 37°C)	6000 (413)	6000 (413)	750 (51.6)	5000 (344)	5000 (344)	750 (51.6)
200°F (93°C)	2650 (182)	3000 (206)	625 (43.0)	2650 (182)	3000 (206)	625 (43.0)
250°F (121°C)	1000 (68.9)	1600 (110)	450 (31.0)	1000 (68.9)	1600 (110)	450 (31.0)
300°F (148°C)	-	1300 (89.5)	300 (20.6)	-	1300 (89.5)	300 (20.6)
350°F (176°C)	-	1200 (82.6)	200 (13.7)	-	1200 (82.6)	200 (13.7)
400°F (204°C)	-	1000 (68.9)	100 (6.8)	-	1000 (68.9)	100 (6.8)
500°F (260°C)	-	600 (41.3)	-	-	600 (41.3)	-
600°F (315°C)	-	200 (13.7)	-	-	-	-

Ordering Information

Ordering LP Series valves requires the following steps:

1. *Locate the part number with the required body size, orifice size, and end connection type(s) and size(s). (see pages 07-08)*

   Example: ***LP6-4PF*** *Rising Plug Valve*

   Example: ***LPG6-4PF*** *Gauge Valve*

2. *Add the required Seat Material Designator (see page 09). Example LP6****D****-4PF*

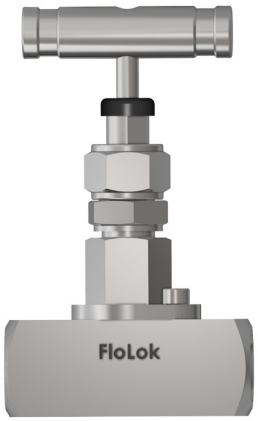
3. *Add the Body Material Designator (see page 09). Example: LP6D-4PF****-316***

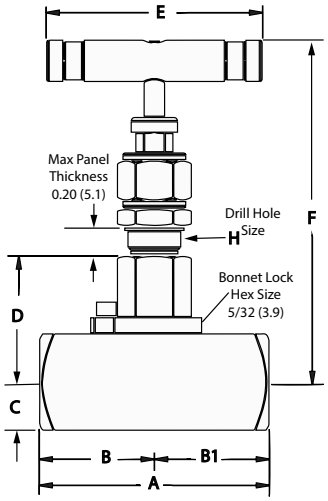
4. *Add designators for Options (see page 09).*

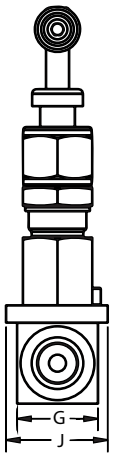
NOTE: For configurations that are not in the catalog, see the Special Order instructions on page 10.

Basic Part Numbers and Dimensions

Rising Plug Valves





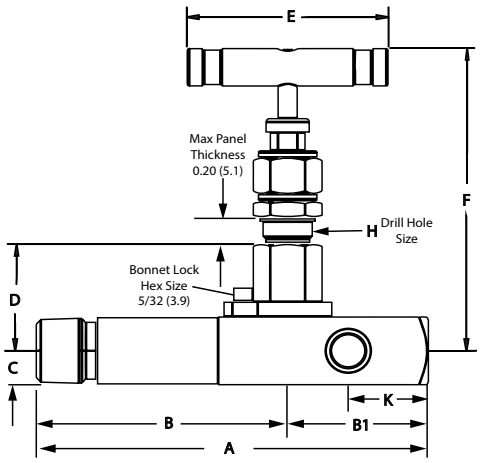


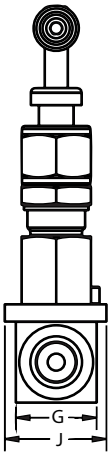
End Connection			Basic Part Number	Orifice in. (mm)	CV	DIMENSIONS in. (mm)									
Type	Inlet Size	Outlet Size				A	B	B1	C	D	E	F	G	H	J
Female NPT	1/4	1/4	LP6-4PF	0.187 (3.96)	0.85	2.24 (56.9)	1.12 (28.5)	1.12 (28.5)	0.44 (11.2)	1.35 (34.3)	2.50 (63.5)	3.85 (97.8)	0.88 (22.2)	11/16 or 23/32	1.10 (27.9)[1]
	1/2	1/2	LP6-8PF	0.250 (6.35)	1.65	2.66 (67.6)	1.33 (33.8)	1.33 (33.8)	0.56 (14.2)	1.46 (37.1)	2.50 (63.5)	3.95 (100.3)	1.13 (28.6)	11/16 or 23/32	1.10 (27.9)
Male to Female NPT	1/4	1/4	LP6-4PM-4PF	0.187 (3.96)	0.85	2.9 (73.7)	1.78 (45.2)	1.12 (28.5)	0.44 (11.2)	1.35 (34.3)	2.50 (63.5)	3.85 (97.8)	0.88 (22.2)	11/16 or 23/32	1.10 (27.9)[1]
	1/2	1/4	LP6-8PM-4PF	0.187 (3.96)	0.85	3.07 (76.5)	1.50 (38.1)	1.51 (38.4)	0.44 (11.2)	1.35 (34.3)	2.50 (63.5)	3.85 (97.8)	0.88 (22.2)	11/16 or 23/32	1.10 (27.9)[1]
	1/2	1/2	LP6-8PM-8PF	0.250 (6.35)	1.65	3.48 (88.6)	2.15 (54.6)	1.33 (33.8)	0.56 (14.2)	1.46 (37.1)	2.50 (63.5)	3.95 (100.3)	1.13 (28.6)	11/16 or 23/32	1.10 (27.9)
	3/4	1/2	LP6-12PM-8PF	0.250 (6.35)	1.65	3.50 (88.9)	1.75 (44.5)	1.75 (44.5)	0.56 (14.2)	1.46 (37.1)	2.50 (63.5)	3.95 (100.3)	1.13 (28.6)	11/16 or 23/32	1.10 (27.9)

[1] *Bonnet lock ring is wider than the body*

Basic Part Numbers and Dimensions

Rising Plug Gauge Valves





End Connection			Gauge Port Sizes[2]	Basic Part Number	Orifice in. (mm)	CV	Dimensions in. (mm)[4]										
Type[5]	Inlet Size	Outlet Size					A[3]	B[3]	B1	C	D	E	F	G	H	J	K
Female NPT	1/4	1/4	1/4	LPG6-4PF	0.187 (3.96)	0.85	2.87 (72.9)	1.12 (28.5)	1.75 (44.5)	0.44 (11.2)	1.35 (34.3)	2.50 (63.5)	3.85 (97.8)	0.88 (22.2)	11/16 or 23/32	1.10 (27.9)[1]	1.00 (25.4)
	1/2	1/2	1/2	LPG6-8PF	0.250 (6.35)	1.65	3.58 (90.9)	1.48 (37.6)	2.10 (51.1)	0.63 (16.8)	1.46 (37.1)	2.50 (63.5)	3.95 (100.3)	1.25 (31.8)	11/16 or 23/32	1.10 (27.9)	1.20 (30.5)
	1/2	1/2	1/4	LPG6-8PF-8PF-4PF	0.250 (6.35)	1.65	3.58 (90.9)	1.48 (37.6)	2.10 (51.1)	0.56 (14.2)	1.46 (37.1)	2.50 (63.5)	3.95 (100.3)	1.13 (28.6)	11/16 or 23/32	1.10 (27.9)	1.20 (30.5)
Male to Female NPT	1/2	1/4	1/4	LPG6-8PM-4PF	0.187 (3.96)	0.85	3.50 (88.9)	1.75 (44.4)	1.75 (44.5)	0.44 (11.2)	1.35 (34.3)	2.50 (63.5)	3.85 (97.8)	0.88 (22.2)	11/16 or 23/32	1.10 (27.9)[1]	1.00 (25.4)
	1/2	1/2	1/2	LPG6-8PM-8PF	0.250 (6.35)	1.65	4.41 (112.0)	2.16 (54.9)	2.25 (57.2)	0.63 (16.8)	1.46 (37.1)	2.50 (63.5)	3.95 (100.3)	1.25 (31.8)	11/16 or 23/32	1.10 (27.9)	1.20 (30.5)

[1] *Bonnet lock ring is wider than the body*
[2] *To order other gauge port sizes, see instructions on page 10*
[3]LNG Series gauge valves with male NPT and pipe socket weld end connections are available with 2, 4 and 6 inch lagging for use with insulated pipe. To order extended inlets, see the instructions on page xxx. To calculate the dimensions of a valve with lagging, add the extension length to the A and and B dimensions in the chart above.
[4]Valve dimensions are subject to change.
[5]Other end connection types are available. Please see the Special Orders guide on page xxx.

Options & Accessories

Lagging (Extended Inlet)

To specify lagging, or and extended inlet find the required extension length in the table below, then insert the designator after the inlet type in the part number. *Example: LNG8V-8PM**L4**-8PF-316*

Designator	Add to A & B dimensions in. (mm)
L	2.26 (57.4)
L4	4 (101.6)
L6	6 (152.4)

Seat Material

Select the seat material designator from the table below then insert it into the basic part number following the series designator.

*Examples: LP6**D**-8PF-316 - Acetal Seat*
*LP6**P**-8PF-316 - PEEK Seat*

STEM TYPE	DESIGNATOR
Acetal	D
PFA	T
PEEK	P

Body Material

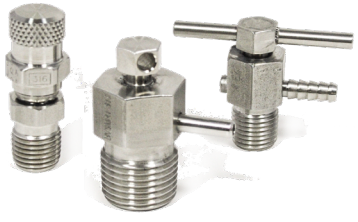
Select the valve body material required and add the designator to the valve basic part number after the end connection designators.

*Example: LP6-8PF-**M***

MATERIAL	DESIGNATOR
316 Stainless Steel	-316
Alloy 400	-M

Bleed & Purge Valves

SSP offers bleed and purge valves for installation in LP Series Gauge Valves. For more information, go to www.mySSP.com or contact your authorized SSP distributor.



Rebuild Kits

Seat and bonnet rebuild kits are available. Bonnet kits are preassembled and ready to install in the valve body. Seat kits include the seat and seat pin used to align and secure the seat in the valve body. To order rebuild kits, contact your authorized SSP distributor or SSP Customer Service.

Replacement Handles and Dust Caps

To order replacement handles and dust caps, use the part number from the table below.

VALVE SERIES	T-BAR	DUST CAP
LP6	L6-7A-303	L6-3C-NBR

Sour Gas Service

LP Series rising plug valves constructed with materials selected in accordance with NACE MR0175/ ISO 15156 are available for sour gas service.

To order add -SG to the part number.
*Example: LP6D-4PF-4PM-316-**SG***

Panel Mounting

To order panel nuts to mount LP Series valves on bulkheads, panels and cabinets use part number L6-6A-316.

Special Cleaning

LP Series valves are available with ASTM G93 Level C and CGA G-4.1 compliant cleaning. To specify special cleaning, add -XP98 to the part number.
*Example: LP6D-8PF-316-**XP98***

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

Special Orders

The Basic Part Numbers and Dimensions tables (pages 7 and 8) contain only the most popular valve configurations; many more are available. If the required valve configuration is not in the Basic Part Numbers and Dimensions tables, use the chart below to build part numbers for quotation purposes.

(basic part number) (options)

A	B	C	D	E	F
LP6	D	-8PM	-8PF	-4PF	-316	-SG

A SERIES / SIZE

LP6	*Rising Plug*
LPG6	*Gauge*

B SEAT MATERIAL

D	*Acetal*
T	*PFA*
P	*PEEK*

C + D INLET[2] + OUTLET[2] / PORT[3] SIZE- TYPES

**PF*	*Female NPT*
**PML*	*Male NPT Extended Inlet*
**PM*	*Male NPT*
**SW*	*Tube Socket Weld*
**PSW*	*Pipe Socket Weld*

** To designate a connection size and type, replace the "*" with the fractional size designator. Example: **4**PML*

Fractional Sizes:	
2	*1/8 in.*
4	*1/4 in.*
6	*3/8 in.*
8	*1/2 in.*
12	*3/4 in.*
16	*1 in.*

E BODY MATERIAL

-316	*316 Stainless Steel*
-M	*Alloy 400*

F OPTIONS[1]

SOUR GAS

-SG	*NACE MR01-75 / ISO 15156*

SPECIAL CLEANING

-XP98	*Oxygen compatible lubricant, per ASTM G93, Level C and CGA G-4.1*

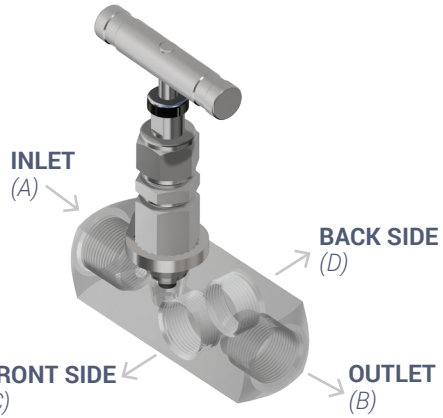
[1] Add options designators to the end of the Base Part Number in alphabetical order.

*[2] If both ends match, use only one end connection designator. Example: LP6D-**8PF**-316*
*If the ends do not match, designate the inlet then the outlet. Example: LP6D-**8PM-8PF**-316*

*[3] Gauge ports are 1/4 or 1/2 in. female NPT only. If the gauge port size matches the outlet size, no designator is necessary. To order gauge port sizes that do not match the outlet size add the designator according to the table diagram below. Example: LP6D-8PM-8PF-**4PF**-4PF-316 for 1/2 in. female NPT outlet with 1/4 in. female NPT gauge ports.*

Bleed & Purge Valves

Bleed and Purge Valves may be ordered and installed at the factory. To find out more, please contact your distributor or visit www.mySSP.com



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.

Packing must be adjusted 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 LP Series valves are factory tested with Nitrogen to 1000 psig (69 bar) at 70°F (20°C). ***Note: Packing adjustments may be required for applications with higher pressures and/ or higher or lower process or environmental temperatures.***

Warranty

FloLok valves are backed by the SSP Limited Lifetime Limited Warranty. This warranty is available from your local distributor or at www.mySSP.com.

More SSP Products

Tube Fittings

Duolok and Griplok two-ferrule and Unilok® single ferrule tube fittings provide leak-tight installation even when intermixed with Swagelok®, Hoke Gyrolok® and Parker CPI™ fittings.

Valves

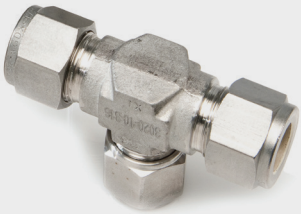
The FloLok valve offering includes ball, check, metering, needle, toggle, plug, bleed, and purge valves for pressures up to 10,000 psig.

Tubing

SSP offers straight and coiled seamless 316 stainless steel instrumentation tubing for instrumentation, process and utility applications.

Pipe Fittings

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



Filters

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

Hose

TruFit PTFE-lined and flexible metal core hose assemblies are used in a variety of instrumentation, utility, biopharm and other applications.

Tools & Accessories

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

Quick Connects

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

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

8250 Boyle Parkway • Twinsburg, OH 44087

330-425-4250 • www.mySSP.com