SVF Flow Controls

Series TSB7 Ball Valve

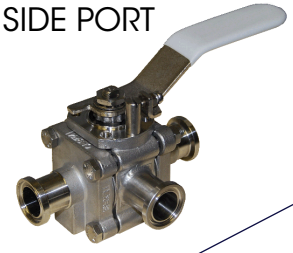
CleanFLOW ™ Multi-Ported, High Purity Ball Valve - Sizes 1/2" ~ 4"

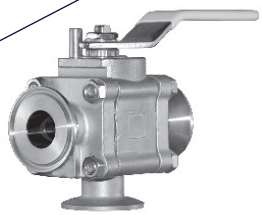
CleanFLOW™ TSB7 Ball Valves are engineered to be a true process piping component to specifically meet the demanding processes found in the pharmaceutical and food & beverage industries. The "Tube-ID" port opening is dimensionally identical to the adjacent tubing to comply with ASME-BPE guidelines. The standard TFM1600™ seat material complies with 21CFR 177.1550.

SERIES TSB7 DESIGN FEATURES

- ✓ ASME-BPE compliant
- ✓ Cavity filled TFM1600™ seat option available
- ✓ Complete 316L Stainless Steel cast construction
- ✓ Drainable design with "Tube-ID" dimensions
- ✓ Weld bosses for easy purge porting on ends
- ✓ ISO 5211 mounting pad for easy actuation
- ✓ Encapsulated body seals to facilitate welding without disassembly
- ✓ End connections include Tri-Clamp and Extended Tube O.D.
- ✓ Controlled delta ferrite chemistry
- ✓ Standard interior finish is 20Ra or better
- ✓ ETO ends are designed for Orbital Welding
- ✓ Exclusive "Fine Adjust" handle for precise positioning on sizes 1/2" ~ 2"

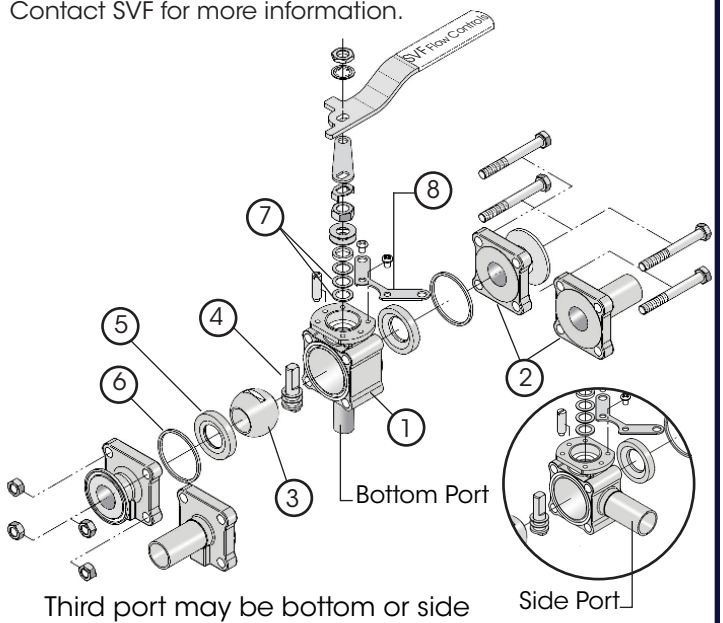
SIDE PORT





BOTTOM PORT

The Series TSB7 Ball Valve is available with additional options. Contact SVF for more information.

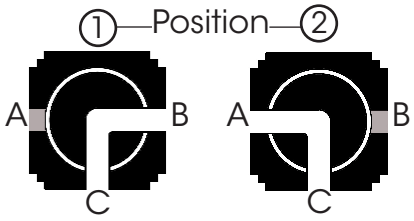


Third port may be bottom or side

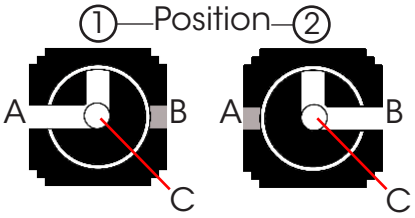
MATERIALS OF CONSTRUCTION

ITEM #	DESCRIPTION	MATERIALS SPECIFICATIONS (Additional options available)
1	Body	316L Stainless Steel (ASTM A351 CF3MN)
2	End Connector	316L Stainless Steel (ASTM A351 CF3MN)
3	Ball	316L Stainless Steel (ASTM A351 CF3MN)
4	Stem	316L Stainless Steel (ASTM A351 CF3MN)
5	Seat	TFM1600™
6	Body Seal	PTFE
7	Stem Seal	TFM1600™
8	Locking Device	(Optional) 304 Stainless Steel

Views are shown with valve stem coming up from page (Plan View)



"SL" - SIDE PORTED



"BL" - BOTTOM PORTED
(Common port "C" at bottom of graphic)

FAILURE POSITION FOR AUTOMATED VALVES

EXAMPLE:
A Side Ported "SL" valve in Position 2, with a spring return actuator:

The valve fail position would have a flow path between ports A - C, and port B would be closed.

See page 3 for 3D graphical details.

What do you need today?™

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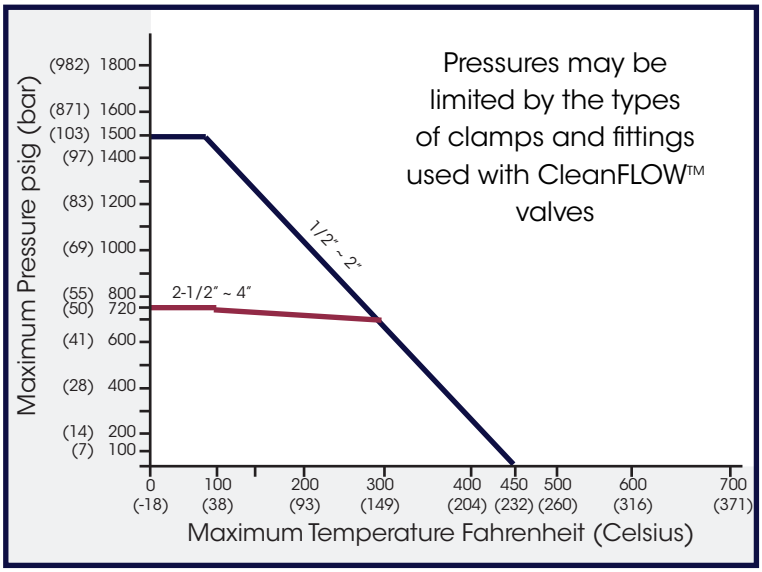
DIMENSIONS, WEIGHT, Cv, TORQUE

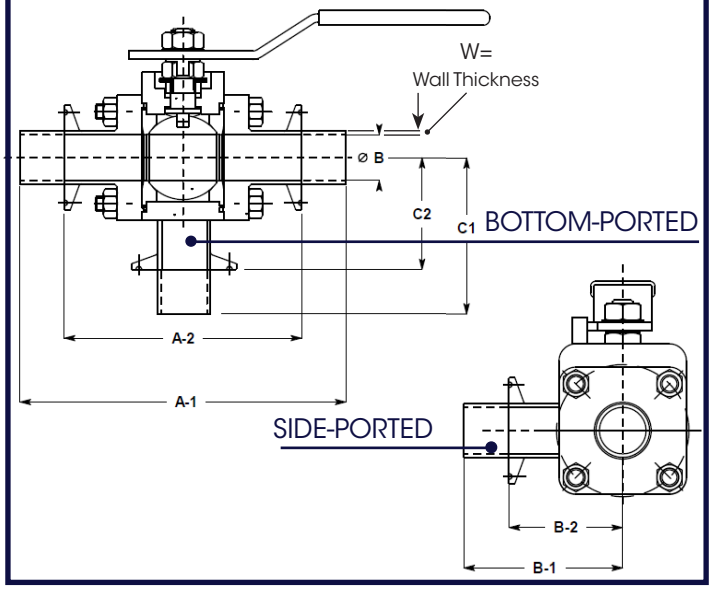
Size	A-1		A-2		B-1		B-2		C-1		C-2		∅ B		W		Weight		Cv	Torque*	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs	kg		in-lbf	Nm
1/2"	5.50	140	3.50	89	2.96	75	1.67	42	2.96	75	1.67	42	0.37	9	0.065	1.7	2	0.9	8	60	7
3/4"	6.00	152	4.00	102	3.05	77	1.76	45	3.05	77	1.76	45	0.62	16	0.065	1.7	2	0.9	29	60	7
1"	6.50	165	4.50	114	3.23	82	1.95	50	3.23	82	1.95	50	0.87	22	0.065	1.7	4	1.8	66	100	11
1-1/2"	7.50	191	5.50	140	3.58	91	2.30	58	3.58	91	2.30	58	1.37	35	0.065	1.7	8	3.6	192	200	23
2"	8.00	203	6.25	159	3.74	95	2.46	62	3.74	95	2.46	62	1.87	47	0.065	1.7	13	5.9	434	250	28
2-1/2"	9.50	241	6.75	171	4.50	114	3.20	81	4.50	114	3.20	81	2.37	60	0.065	1.7	23	10.4	723	450	51
3"	10.50	267	7.00	178	5.80	147	4.00	102	5.80	147	4.00	102	2.87	73	0.065	1.7	31	14.1	1124	1300	147
4"	12.50	318	8.50	216	7.00	178	5.00	127	7.00	178	5.00	127	3.83	97	0.083	2.1	46	20.9	2100	1400	158

TSB7 - PRESSURE/TEMPERATURE CHART



Pressures may be limited by the types of clamps and fittings used with CleanFLOW™ valves

* At full differential pressure for clean fluids with TFM1600™ Non-Cavity Filled Seats



HOW TO ORDER SERIES TSB7 BALL VALVES

Please refer to the last page for our comprehensive How to Order Guide for Series TSB7 Ball Valves.

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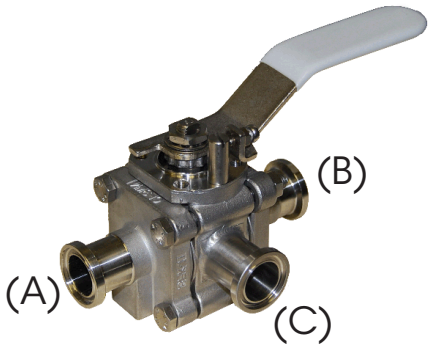
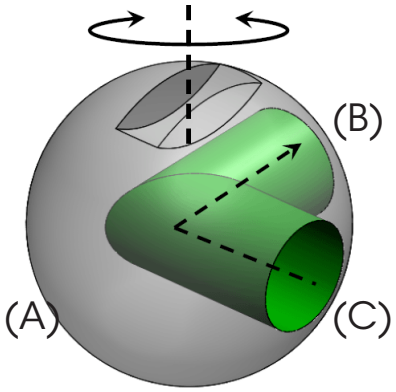
TSB7 COMMON FLOW PATHS

At the heart of the TSB7 design is the use of a common port that facilitates directional flow requirements and drainability in the optimal position.
The common port "C" may be located at the bottom or the side of the valve.
The two most common flow paths are the Side Ported (SL) and the Bottom Ported (BL)*.

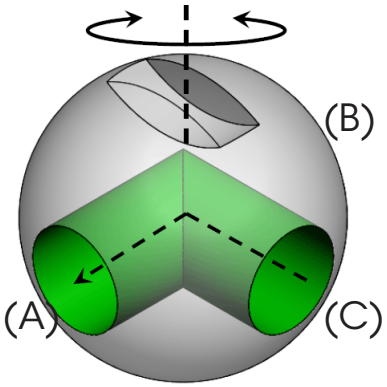
SL (L-HORIZONTAL) - SIDE PORTED

This position utilizes an "L-Port" ball and requires quarter-turn operation.





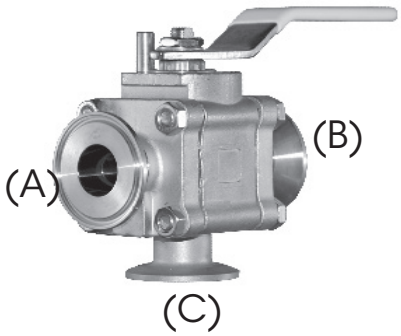
Position (1)
Flow (C to B)

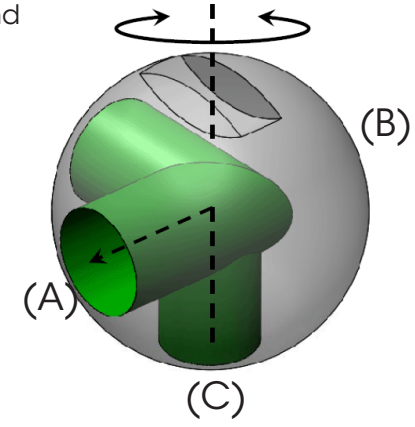


Position (2)
Flow (C to A)

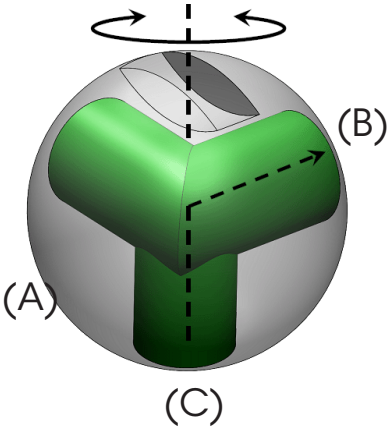
BL (LL) - BOTTOM PORTED

This position utilizes an "LL-Port" ball and requires quarter-turn operation.





Position (1)
Flow (C to A)



Position (2)
Flow (C to B)

*Other flow paths are available.

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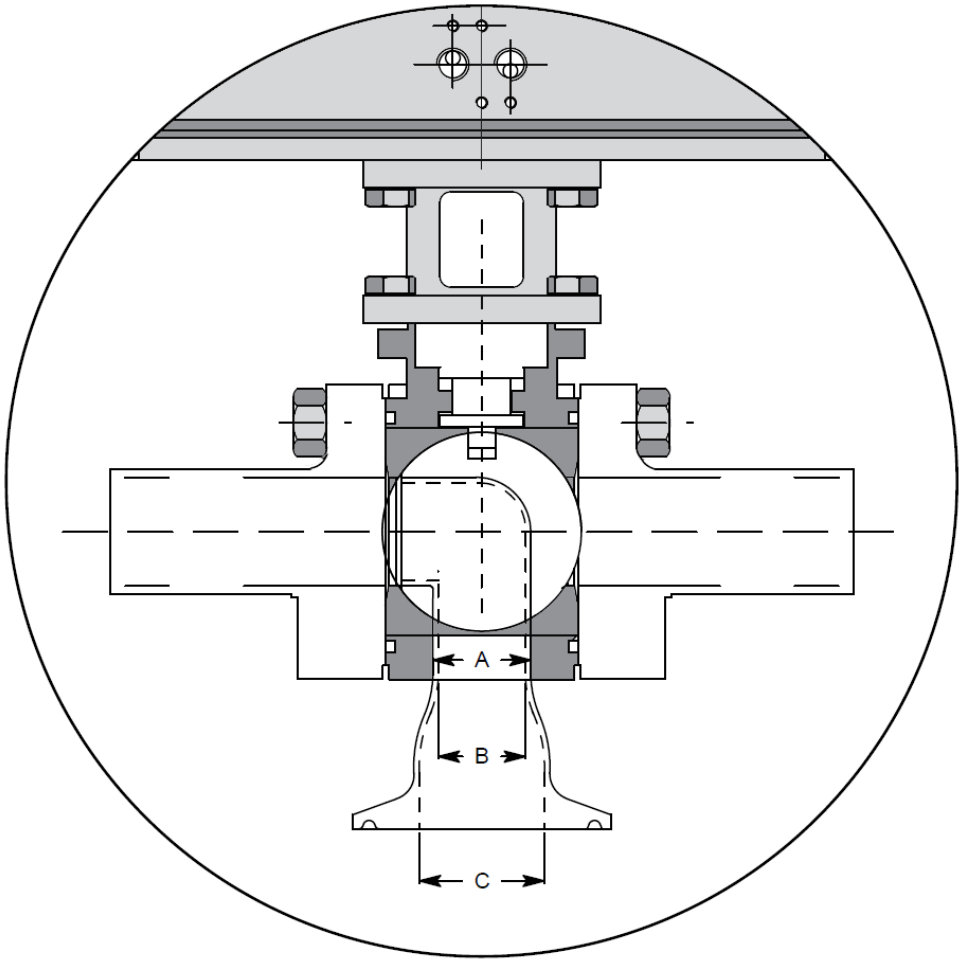
THIRD PORT DIMENSIONS - SIZES 3" & 4"

TSB7 valves, in line sizes 3" and 4", require that the third port be slightly reduced at the valve body due to the lack of material (body width) at the point of weld.

The dimensions for the reduction are shown in the table below.



	3" TSB7		4" TSB7	
	in.	mm	in.	mm
A = O.D. DIMENSION	2.50	64	3.00	76
B = I.D. DIMENSION	2.37	61	2.87	73
C = TRI-CLAMP FERRULE I.D.	2.87	73	3.83	97

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Ordering Code Sequence (Columns 1 thru 11)

1	2	3	4	5	6
SERIES	BODY	ENDS	BALL	STEM	SEAT MATERIAL
TSB7 = Series TSB7	6 = 316L Stainless Steel ASTM A351 CF3MN	6 = 316L Stainless Steel ASTM A351 CF3MN	6 = 316L Stainless Steel ASTM A351 CF3M	6 = 316L Stainless Steel ASTM A351 CF3M	A = TFM1600™ Q = TFM1600™ Cavity Filled

7	8	9	10	11
BODY SEAL	END CONNECTIONS	VALVE SIZE	OPTIONS*	SPECIAL SERVICES*
T = PTFE	TR0 = Tri-Clamp Ends ETO = Extended Tube-OD Ends NAA = ETO (Port A) x ETO (Port B) x TR0 (Port C) NAB = ETO (Port A) x TR0 (Port B) x ETO (Port C) NAC = ETO (Port A) x TR0 (Port B) x TR0 (Port C) NAD = TR0 (Port A) x TR0 (Port B) x ETO (Port C) NAE = TR0 (Port A) x ETO (Port B) x TR0 (Port C) NAF = TR0 (Port A) x ETO (Port B) x ETO (Port C)	005 = 1/2" 007 = 3/4" 010 = 1" 015 = 1-1/2" 020 = 2" 025 = 2-1/2" 030 = 3" 040 = 4"	00 = None BL = BL3 Ball, 90° Turn (Bottom Port) SL = SL1 Ball, 90° Turn (Side Port) B2 = BL2 Ball, 180° Turn (Bottom Port) OH = Oval Handle LK = Locking Device SX = ISO Cast Stem Extension AD = Anti-Static Device SC = Secondary Containment A8 = BL3 Ball & Locking Device BA = BL3 Ball & ISO Cast Stem Extension BD = SL1 Ball & Locking Device BF = SL1 Ball & ISO Cast Stem Extension KF = BL3 Ball, Locking Device & ISO Cast Stem Extension KK = BL3 Ball, Anti-Static Device & ISO Cast Stem Extension KM = SL1 Ball, Locking Device & ISO Cast Stem Extension KP = SL1 Ball, Anti-Static Device & ISO Cast Stem Extension	00 = None XC = Oxygen Cleaned EP = Electropolished SA = 15Ra ID Finish SB = 10Ra ID Finish SC = 5Ra ID Finish AA = Electropolished & 15Ra ID Finish AB = Electropolished & 10Ra ID Finish AC = Electropolished & 5Ra ID Finish AD = Oxygen Cleaned & Electropolished JA = Electropolished, Oxygen Cleaned & 15Ra ID Finish JB = Electropolished, Oxygen Cleaned & 10Ra ID Finish

Order Example: (TSB76666ATTR0010BL00) The Part Number will contain 20 digits.

Ordering Code Sequence >>	1	2	3	4	5	6	7	8	9	10	11
Sample Part Number >>	TSB7	6	6	6	6	A	T	TR0	010	BL	00
	Valve Series	Body Material	End Material	Ball	Stem	Seat Material	Seal Material	End Connections	Valve Size	Options*	Special Services*

* Not all Options or Special Services available on all ball valves. Consult SVF for additional information.

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