

CleanFLOW™ TSB7F 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.

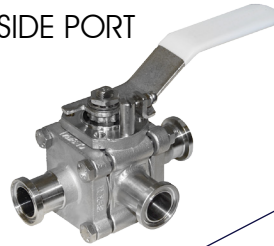
SERIES TSB7F DESIGN FEATURES

- ✓ ASME-BPE compliant
- ✓ Cavity filled TFM1600™ seat option available
- ✓ Drainable design with "Tube-ID" dimensions
- ✓ 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"

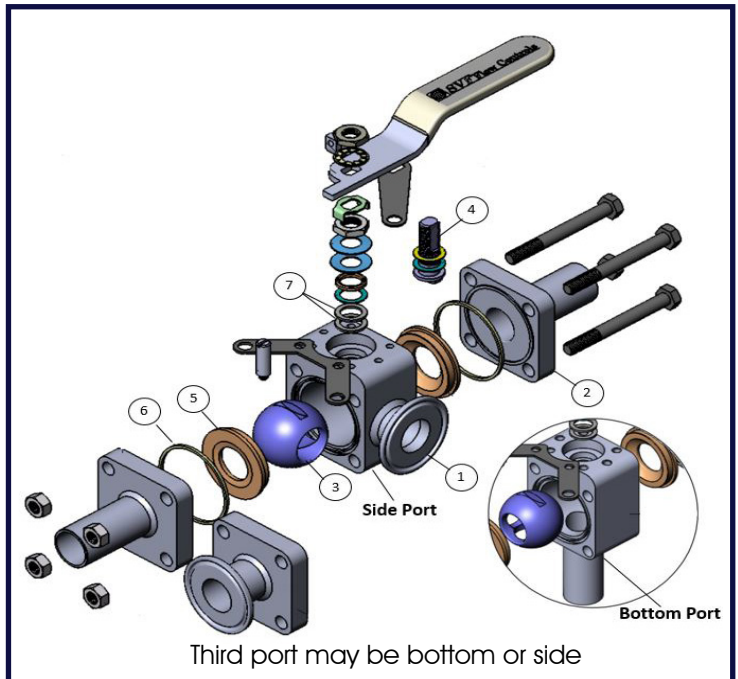
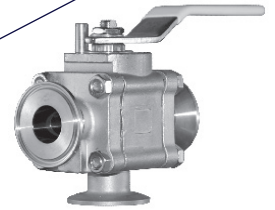
MATERIALS OF CONSTRUCTION

ITEM	DESCRIPTION	MATERIAL SPECIFICATIONS
1	Body	316L Stainless Steel (ASTM A182-F316L)
2	End Connector	316L Stainless Steel (ASTM A182-F316L)
3	Ball	316L Stainless Steel (ASTM A182-F316L)
4	Stem	316L Stainless Steel (ASTM A182-F316L)
5	Seat	TFM1600™
6	Body Seal	TFM1600™
7	Stem Seal	TFM1600™
8	Locking Device	(optional) 304 Stainless Steel

SIDE PORT



BOTTOM PORT



FAILURE POSITION FOR AUTOMATED VALVES

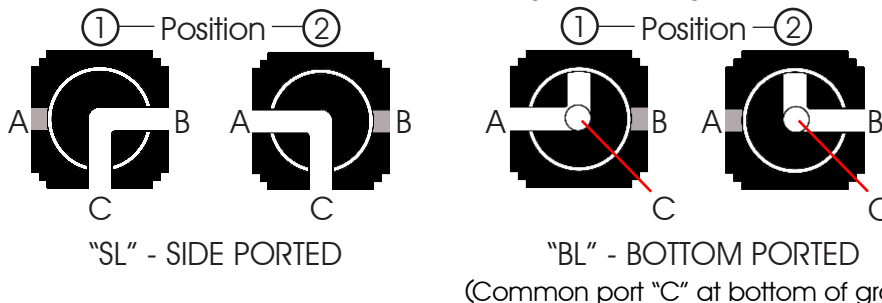
EXAMPLE:

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.

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



What do you need today?™

HIGH PURITY VALVES
CleanFLOW™

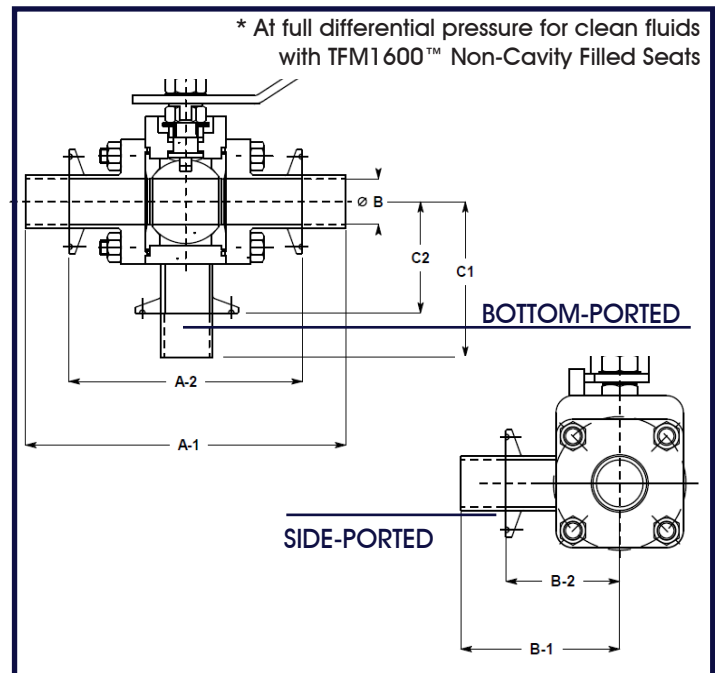
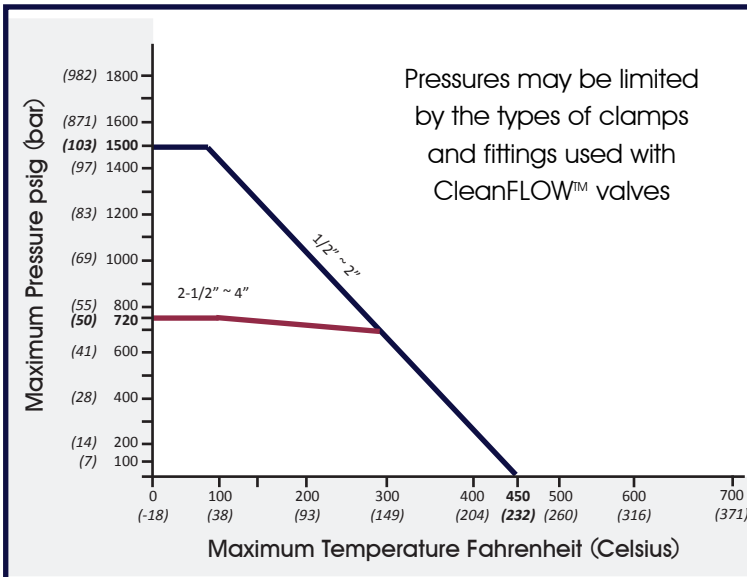
PRO-SPEC
PROCESS SPECIFIC

QUALITY FLOWS
THROUGH US

DIMENSIONS, WEIGHT, Cv, TORQUE

Size	A-1		A-2		B-1		B-2		C-1		C-2		ØB		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	20	9.2	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	37	16.8	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	53	24.5	2100	1400	158

TSB7F - PRESSURE/TEMPERATURE CHART



HOW TO ORDER SERIES TSB7F BALL VALVES

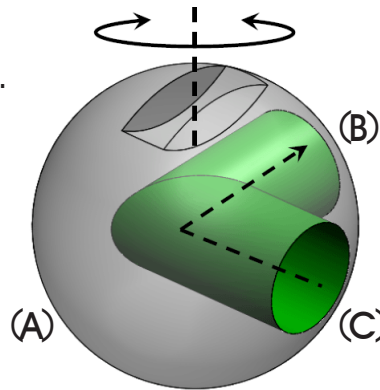
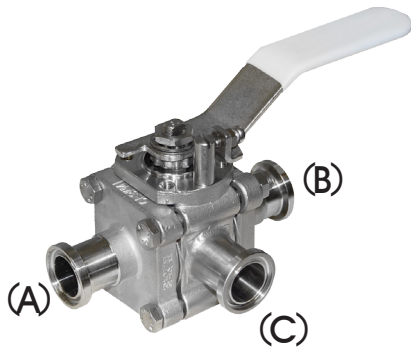
Please refer to the last page for our comprehensive How to Order Guide for Series TSB7F Ball Valves.

TSB7F COMMON FLOW PATHS

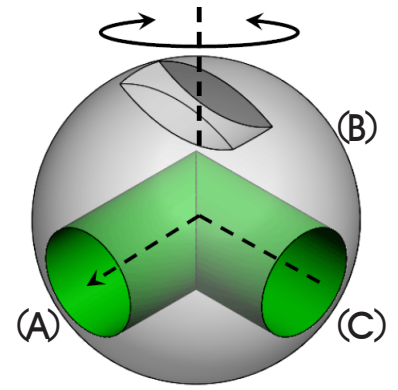
At the heart of the TSB7F design is the use of a common port that facilitates directional flow requirements and drainability in the optimal position. The common port "C" may be located at the bottom or the side of the valve. The two most common flow paths are the Side Ported (SL) and the Bottom Ported (BL)*.

SL (L-HORIZONTAL) - SIDE PORTED

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



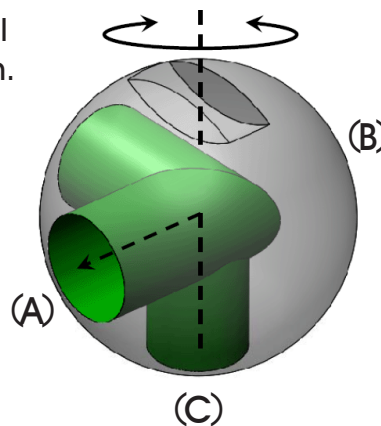
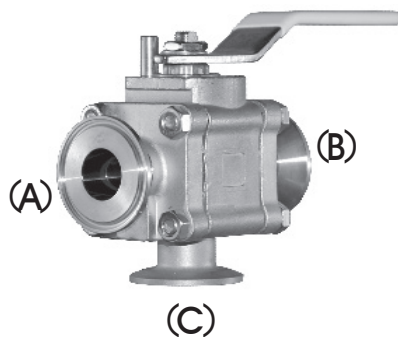
Position (1)
Flow (C to B)



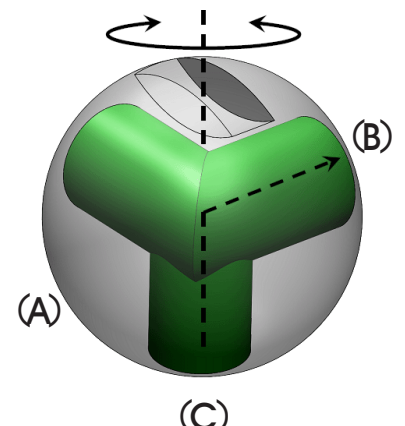
Position (2)
Flow (C to A)

BL (LL) - BOTTOM PORTED

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



Position (1)
Flow (C to A)



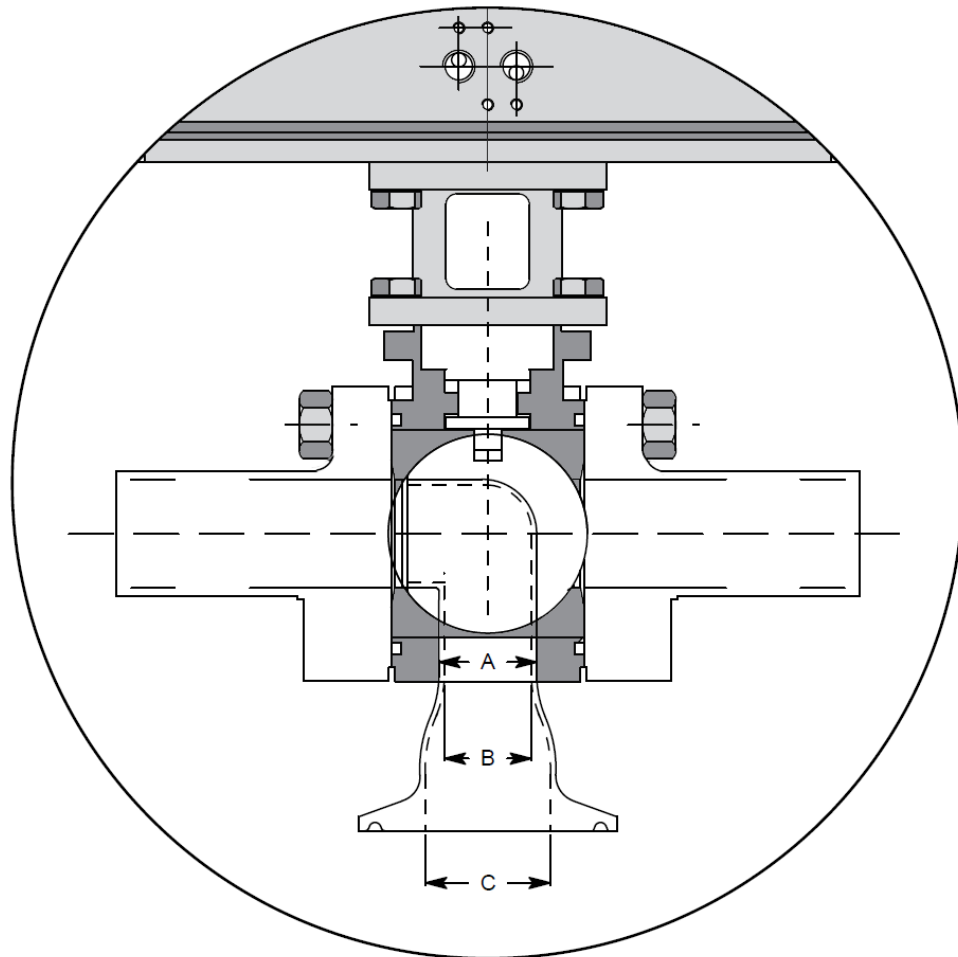
Position (2)
Flow (C to B)

*Other flow paths are available.

THIRD PORT DIMENSIONS - SIZES 3" & 4"

TSB7F 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" TSB7F		4" TSB7F	
	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

Ordering Code Sequence (Columns 1 thru 11)

1	2	3	4	5	6
SERIES	BODY	ENDS	BALL	STEM	SEAT MATERIAL
TSB7F =	6 = 316L Stainless Steel ASTM A182-F316L	6 = 316L Stainless Steel ASTM A182-F316L	6 = 316L Stainless Steel ASTM A182-F316L	6 = 316L Stainless Steel ASTM A276-316L	A = TFM1600™ Q = TFM1600™ Cavity Filled

7	8	9	10	11
BODY SEAL	END CONNECTIONS	VALVE SIZE	OPTIONS*	SPECIAL SERVICES*
A = TFM1600™	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) 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 AA = Electropolished & 15Ra ID Finish AB = Electropolished & 10Ra ID Finish AD = Oxygen Cleaned & Electropolished JA = Electropolished, Oxygen Cleaned & 15Ra ID Finish JB = Electropolished, Oxygen Cleaned & 10Ra ID Finish

Order Example: (TSB7F6666AATR0010BL00) The Part Number will contain 21 digits.

Ordering Code Sequence >>

Sample Part Number >>

1	2	3	4	5	6	7	8	9	10	11
TSB7F	6	6	6	6	A	A	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.