



Premium Manufacturer of Sanitary Fittings, Valves, Pumps & More

# TOP-FLO® Series 77 Ball Valves



Stainless Steel Flow Control Equipment for the Food,  
Beverage, Dairy, Cosmetics, Pharmaceutical,  
Biotechnology, and Electronics Processing Industries

**STEEL & O'BRIEN IS AT YOUR SERVICE**

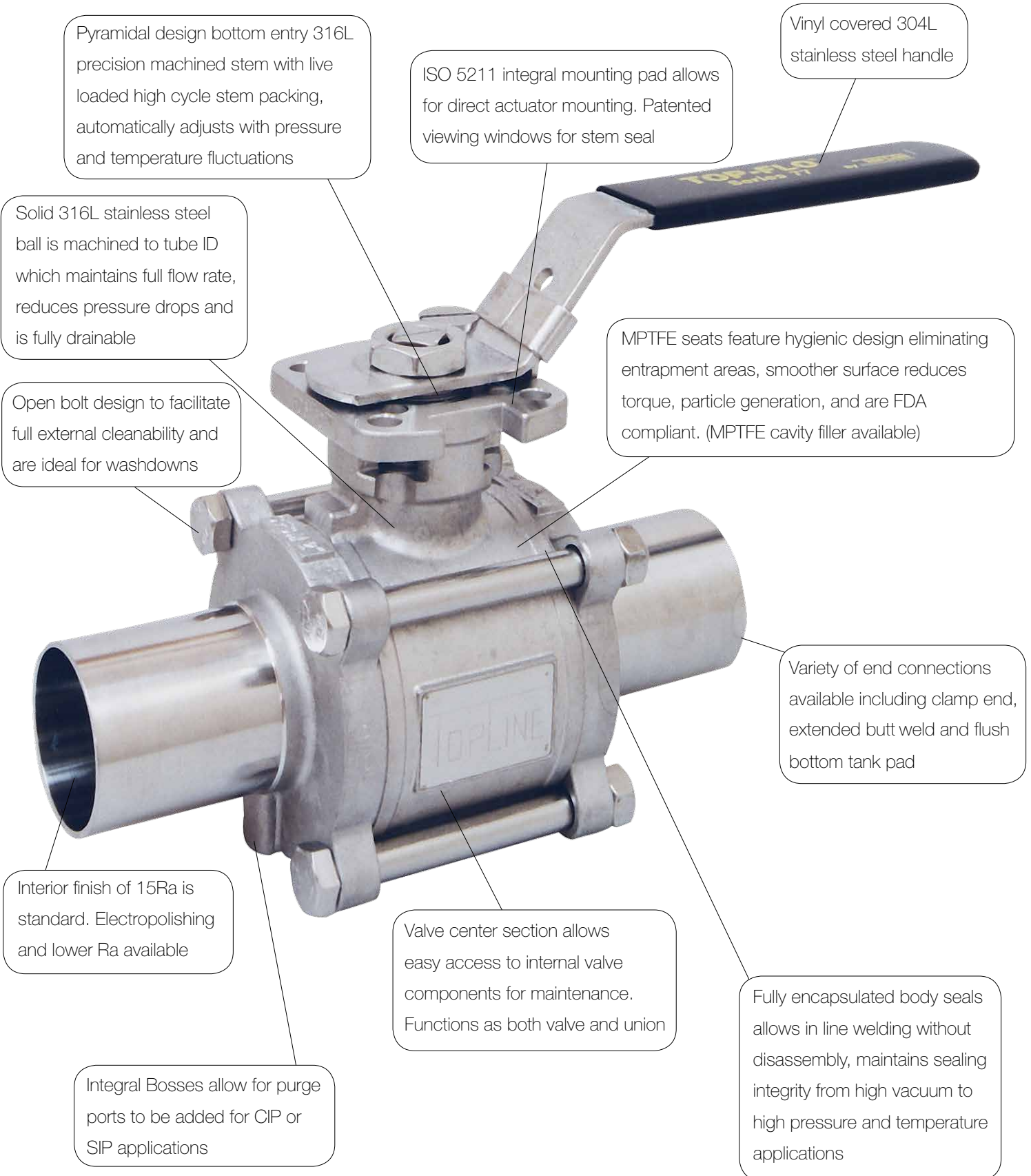
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SIMPLIFYING SANITARY THROUGH SUPERIOR SERVICE.™

# TOP-FLO<sup>®</sup> High Purity Ball Valves



# 3-Piece Design

Series 77 3-pc ball valves feature a high quality CF3M investment casting of center body and end caps with 316L ball and stem and are excellent choice for use in clean steam systems. Valve end connections are hygienic clamp or extended butt weld type for orbital welding. Standard seals are non-cavity filled modified PTFE (MPTFE) that are FDA conforming and USP Class VI certified. Internal surface finishes available are BPE codes SF1, SF4, and SF5. All stainless valve components are fully traceable with MTR's for center body, end caps, ball, and stem. Available in sizes 1/2" - 4" - all valves feature direct mount ISO5211 mounting pad for easy automation and stem extension installation.

## Options

- Flush bottom tank pad, TI-Line, QI-Line, others available upon request.
- Improved I.D. polish to 10Ra and electropolishing available
- Cavity filled seats in MPTFE
- Non-cavity filled seats available in MPTFE, 50/50 SS/TFE, PEEK
- Pneumatic or electric actuation available
- Westlock & Stonel products

Value Size	Value Cv
1/2	10
3/4	30
1	65
1-1/2	200
2	410
2-1/2	600
3	1050
4	1900

## Direct Mount! • Easy to Automate!

See automated data sheets for pre-sized assemblies



Electric

- Sizes 1/2" - 4"
- Cavity filled and non-cavity filled
- ISO 5211 mounting pad
- 800/1000 PSI
- 316L body ball and stem full port
- Sanitary clamp ends or extended tube OD ends

## Standard Features

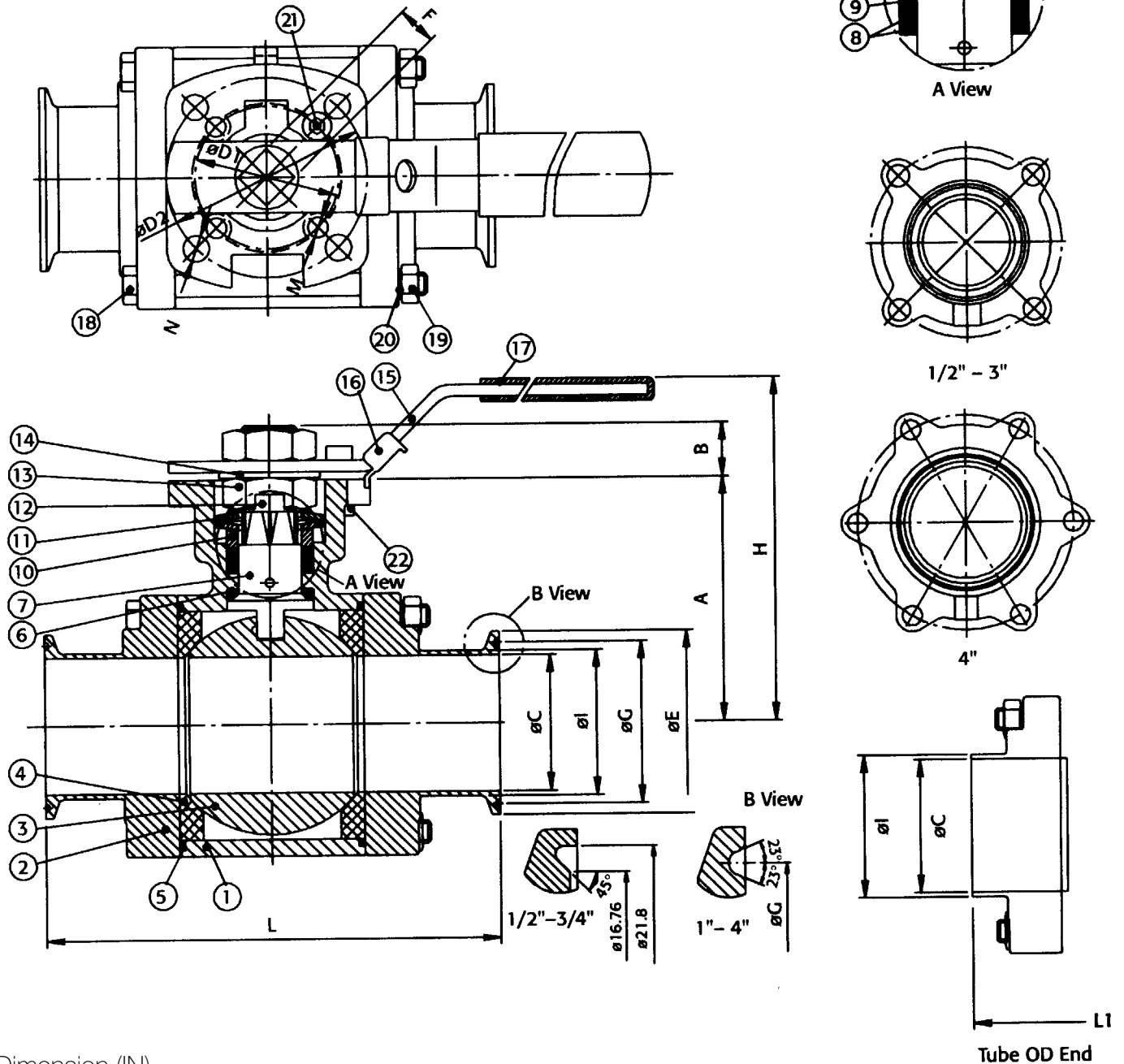
- Main valve components are made from 316L stainless steel
  - Body and ends are 316L CF3M ASTM A351 investment cast stainless steel
  - Ball is machined from 316L CF3M ASTM A351 cast stainless steel
  - Stem is machined from ASTM A493 316L bar stock
- Full traceability on all wetted parts (MTR's)
- Standard internal polish is 15Ra and is polished to meet BPE specifications of part SF and tables SF-2.2-1, SF-2.2-2 and SF-2.4-1.
- Standard seats MPTFE (FDA, USP Class VI)
- Stem packing MPTFE
- Full port to I.D. of tubing for reduced pressured drop
- Bottom entry 316L pyramidal live loaded blow out proof high cycle stem adjusts to temperature and pressure fluctuation
- Locked stem nut to prevent loosening after continuous valve actuation
- Dual anti-static devices on stem (contact between stem and ball, and stem and valve body)
- ISO 5211 direct mounting pad
- Direct mount actuation 1/2" - 4"
- Handle locking device when manually actuated
- 3-piece body construction for ease of repair
- Open bolt design to facilitate full external cleanability
- Ends - clamp, extended butt weld, or clamp by extended
  - Clamp end requirements per BPE 2012 table DT-7-1
  - Extended butt-weld ends, 316L CF3M ASTM A351 controlled sulfur only per BPE 2012 part MM section 5.1.1 and tables DT-3.1, DT-3.2, DT-4.1, and DT-4.1.1.

## Excellent for:

- Pharmaceutical
- Food and Beverage

# TOP-FLO<sup>®</sup> Series 77

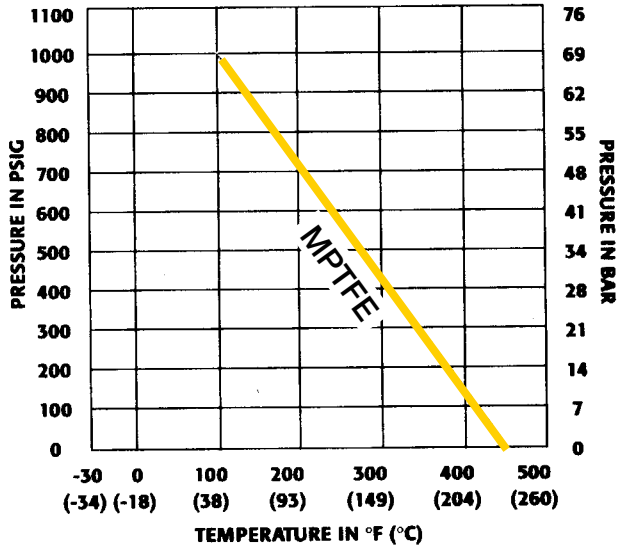
- With or without cavity filler
- Internal Polish
- Standard 15Ra



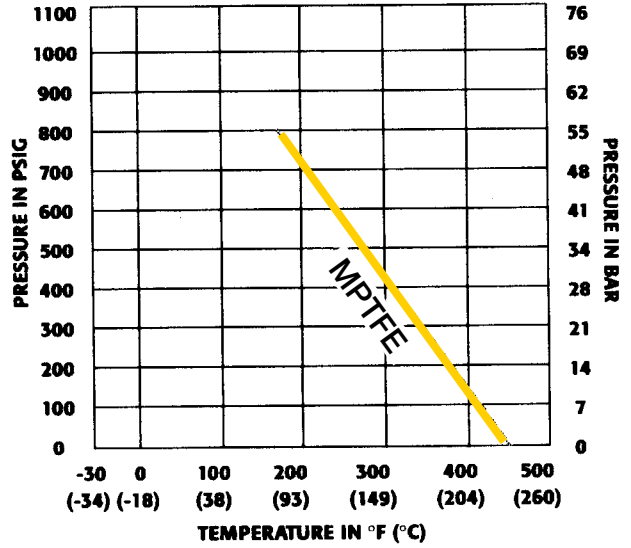
Dimension (IN)

Size	A	B	C dia	D1 dia	D2 dia	E dia	F	G dia.	I dia.	H	L	L1	M	N	ISO 5211
1/2	1.66	0.34	0.37	1.42	1.65	0.99	0.35	N/A	0.50	3.03	3.51	5.50	0.24	0.28	F03/F04/F05
3/4	1.89	0.33	0.62	1.42	1.65	0.99	0.35	N/A	0.75	3.27	4.00	5.75	0.24	0.28	F03/F04/F05
1	2.23	0.45	0.87	1.64	1.97	1.98	0.43	1.71	1.00	3.74	4.51	6.25	0.24	0.28	F04/F05
1-1/2	3.05	0.55	1.37	1.97	2.76	1.99	0.55	1.71	1.50	5.00	5.52	7.50	0.28	0.35	F05/F07
2	3.35	0.55	1.87	1.97	2.76	2.52	0.55	2.20	2.00	5.28	6.26	8.50	0.28	0.35	F05/F07
2-1/2	4.28	0.66	2.37	2.76	4.02	3.05	0.67	2.78	2.50	6.54	6.85	9.75	0.39	0.47	F07/F10
3	4.63	0.70	2.87	2.76	4.02	3.58	0.67	3.28	3.00	6.93	7.61	10.50	0.39	0.47	F07/F10
4	5.22	0.66	3.83	2.76	4.02	4.68	0.748	4.34	4.00	7.48	8.90	12.50	0.39	0.47	F07/F10

Pressure vs. Temperature Chart  
for valve 1/2" - 2"



Pressure vs. Temperature Chart  
for valve 2-1/2" - 4"



NOTE: Use of sanitary clamp ends will affect pressure ratings.

NOTE: PTFE Seats. Consult factory when using other seat material.

Valve Operating Torques		
	Non-Cavity Filled	Cavity Filled
1/2	80	95
3/4	89	100
1	127	160
1-1/2	210	410
2	354	490
2-1/2	580	1010
3	755	1075
4	1317	1400

No.	Part Name	Qty.	Material	No.	Part Name	Qty.	Material
1	Body	1	CF3M	12	Stop Washer	1	SS304
2	End Cap	2	CF3M	13	Stem Nut	2	SS304
3	Ball	1	SS316L	14	Stem Washer	1	SS304
4	Seat	2	MPTFE	15	Handle	1	SS304
5	Joint Gasket	2	MPTFE	16	Locking Device	1	SS304
6	Stem Seal	1	MPTFE	17	Handle Sleeve	1	Vinyl
7	Stem	1	SS316L	18	Bolt	#	SS304
8	Gland Packing	*	MPTFE	19	Bolt Nut	§	SS304
9	Gland Packing	1	‡	20	Bolt Washer	§	SS304
10	Gland Bush	1	SS304	21	Stop Pin	1	SS304
11	Belleville Washer	2	SS301	22	Pin Nut	1	SS304

\* For 1/2" - 2" - 2 pcs.; For 2-1/2" - 4" - 3 pcs.

# For 1/2" to 3" - 4 pcs.; For 4" - 6 pcs.

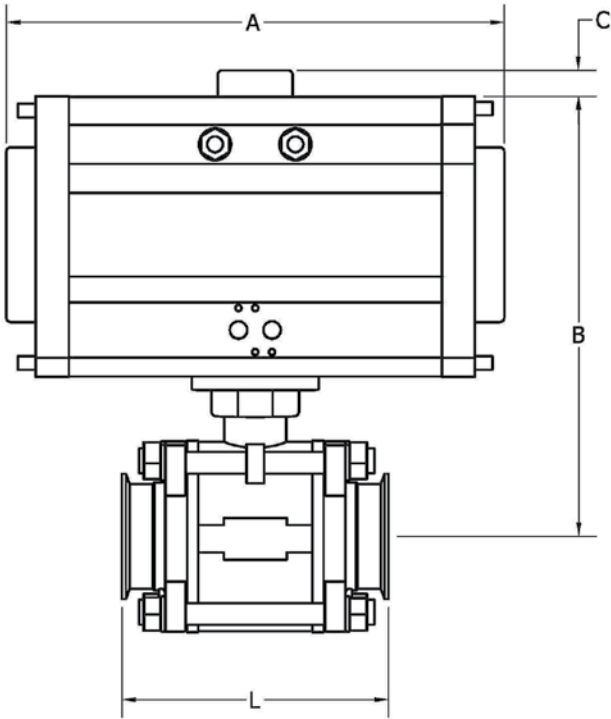
§ For 1-1/2" - 2" - 4 pcs.; For 2-1/2" - 4" - 12 pcs.

‡ 25% glass fiber filled and PTFE

1/2" - 2" single ended external thread

2-1/2" - 4" double extended external thread

# Double Acting or Spring Return Pneumatic Automated Ball Valve Package



Non-Cavity Filled

Valve Size	A	B	C	L		
				C X C	BW X BW	C X BW
1/2	5.59	5.12	20mm	3.51	5.50	4.51
3/4	5.59	5.35	20mm	4.00	5.75	4.88
1	6.62	6.19	20mm	4.51	6.25	5.38
1 -1/2	8.74	7.66	20mm	5.52	7.50	6.51
2	8.74	7.96	20mm	6.26	8.50	7.38
2 -1/2	12.20	10.62	20mm	6.85	9.75	8.30
3	12.20	10.97	20mm	7.61	10.50	9.06
4	14.57	12.31	20mm	8.90	12.50	10.70

Cavity Filled

Valve Size	A	B	C	L		
				C X C	BW X BW	C X BW
1/2	5.59	5.12	20mm	3.51	5.50	4.51
3/4	5.59	5.35	20mm	4.00	5.75	4.88
1	6.62	6.19	20mm	4.51	6.25	5.38
1 -1/2	8.74	7.66	20mm	5.52	7.50	6.51
2	12.20	9.69	20mm	6.26	8.50	7.38
2 -1/2	12.20	10.62	20mm	6.85	9.75	8.30
3	14.57	11.72	20mm	7.61	10.50	9.06
4	19.57	13.13	30mm	8.90	12.50	10.70

## Other Available Options

- Electric actuators
- Solenoid valves
- Switch packs
- Mechanical
- Proximity
- AS-I
- Positioners (4-20 ma or 3-15 psi)
- Westlock & Stonel products
- Stem extensions
- "V" port control ball
- Alternate seat materials available upon request
- Stainless actuators
- Steam ports
- CIP ports





# TOP-FLO® Series 77 BioPharm 2-Way Sanitary Ball Valve

END CONNECTORS		VALVE TYPE		MATERIAL		SIZE		VALVE SERIES		SEAT MATERIAL & TYPE		OPERATOR TYPE		ID SURFACE FINISH	
38	CLAMP X CLAMP	4	2-WAY	3	CF3M/316L	05	1/2	77	VALVE SERIES	PTFE	NON-CAVITY FILLED MPTFE	-	MANUAL LEVER HANDLE	-	15RA
3C	CLAMP X EXT. BW					07	3/4			SSFE	NON-CAVITY FILLED 50/50 SS-316L	SR	SR80 PSI ACTUATOR	-3EP	15RA W/EP (SF4)
40	EXT. BW X EXT. BW					10	1					DA	DA80 PSI ACTUATOR		
						15	1-1/2					SR1	SR60 PSI ACTUATOR		
						20	2					DA1	DA60 PSI ACTUATOR		
						25	2-1/2					E1	115VAC - 1PH, NEMA4,4X		
						30	3					2	24VDC, NEMA 4, 4X		
						40	4					*	CUSTOMER SPECIFIED		
						60*	6								

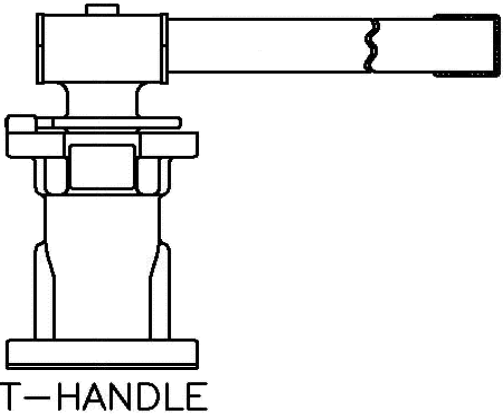
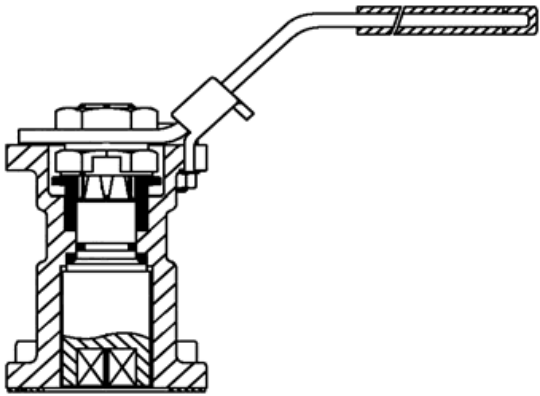
PART NUMBER EXAMPLE:  
**3C431577PTFEDA-3EP**  
 TOP-FLO® 1 1/2" SERIES 77 BIOPHARM  
 3-PC BALL VALVE, CLAMP X EXT. BW ENDS,  
 FDA/USP TFM1600 SEATS & SEALS, 15R<sub>s</sub>  
 EP ID (SF4), CF3M/316L CONSTRUCTION,  
 DIRECT MOUNT TA SERIES DOUBLE  
 ACTING ACTUATOR SIZED FOR 80 PSIG,  
 VISUAL POSITION INDICATOR

\* FOR 6" VALVE - SEE TF4 SERIES BROCHURE

## Direct Mount TSM Stem Extensions

STEM EXTENSION PART #	CORRESPONDING VALVE SIZE	HANDLE TYPE
88TSM1	1/2	LEVER
88TSM1	3/4	LEVER
88TSM3	1	LEVER
88TSM4	1-1/2	LEVER
88TSM4	2	LEVER
D9TSM3	1-1/2	T-TYPE PIPE
D9TSM3	3	T-TYPE PIPE
D9TSM4	4	T-TYPE PIPE

TSM extensions are ordered as a separate component  
 Please specify quantity required and corresponding valve size  
 when ordering.  
 Direct mount TSM extensions are constructed of 316SS material  
 And have integral iso 5211 mounting pad for easy adaptation  
 For both manual handle or actuator requirements.



Alternate end connections upon request - consult factory for options