

509F Multi-Port Flanged Ball Valve

Full Port
ISO 5211 Mounting Pad



For Automated &
Manual Service

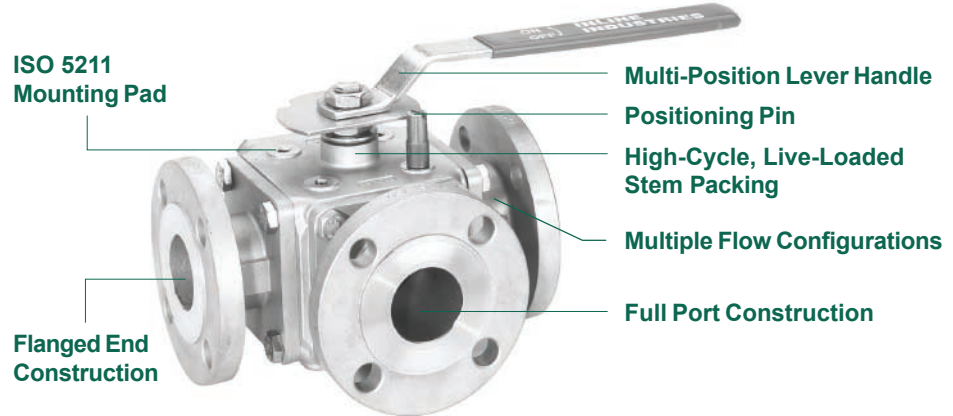
General Chemical

Industrial

and Other Corrosion
Resistant Applications

The 509F Series 3/4/5-Way Flanged Ball Valve

The 509F is a true multi-way ball valve with balanced four-seat construction. This full port valve is available in a variety of flow plans which can replace multiple two-way valves in a process system. A standard ISO 5211 pattern mounting pad allows for easy assembly of pneumatic and electric actuators.



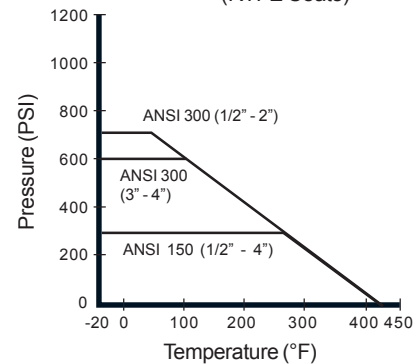
Standard Features and Benefits

- **Balanced 4-Seat Construction**
Unlike two seated diverter valves, the 509F series has four seats (five seats in bottom entry valves) for positive shut-off in the closed position. This true multiport function can reduce the number of valves required in a process system and gives engineers greater design flexibility
- **Trunnion Mounted Ball (1 1/2" - 4")**
Stem/ball isolation prevents side loading and wear of downstream seats, improving performance and service life
- **ISO 5211 Mounting Pad**
Standard mounting pad dimensions make it easy to assemble electric or pneumatic actuators
- **High-Cycle, Live-Loaded Stem Packing**
Dynamic loading on stem packing ensures a tight seal through varying pressure and temperature conditions, extending service life and reducing maintenance costs
- **Blow-Out-Proof Stem**
Stem is bottom loaded to prevent removal when valve is in service
- **Full Port Design**
Full port construction improves flow characteristics for greater process efficiencies
- **Multi-Position Lever Handle**
The lever handle can be positioned in two (1/2" - 2") or four (3" - 6") different orientations for greater piping flexibility
- **90° or 180° Actuation**
Stop plates are available for both 90° and 180° actuation

Options

- 4- or 5-way construction with multiple flow patterns
- Available in standard port construction for applications where flow rates are not critical and greater economy is desired

509F Pressure / Temperature Chart
(RTFE Seats)



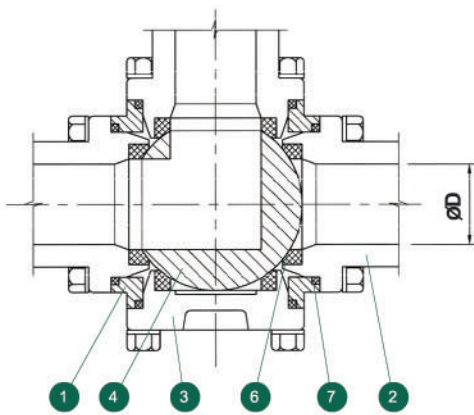
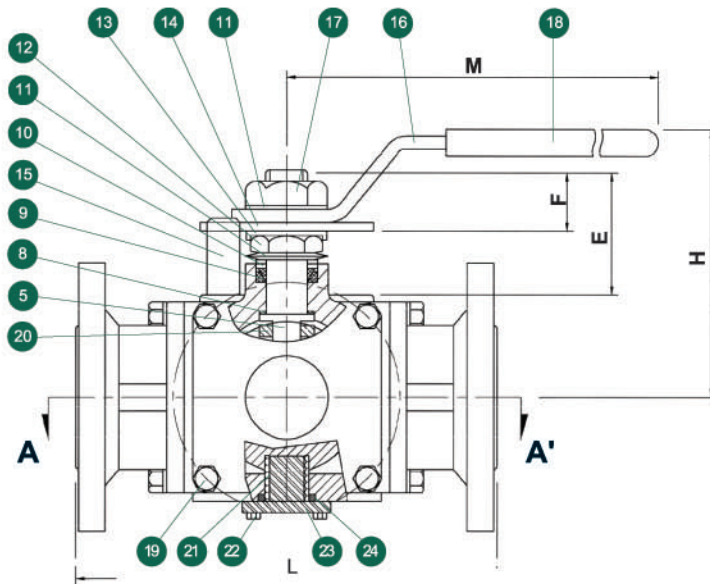
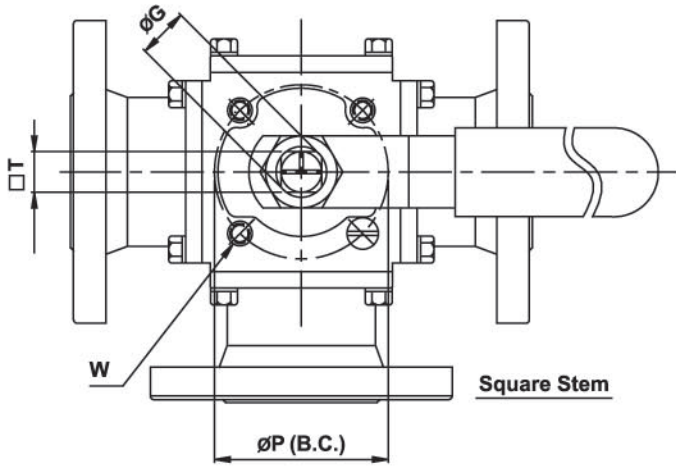
Operating Conditions

- Temperature range (CF Seats):
-20°F ~ 420°F
- Maximum pressure:
ANSI 150: 275 PSI WOG (1/2" - 4")
ANSI 300: 720 PSI WOG (1/2" - 2")
600 PSI WOG (3" - 4")

Specifications

- All valves shell and seat tested to ANSI/ASME B16.34 and API 598
- All materials comply with applicable ASTM material specifications
- End connections: Flanged ends to ANSI B16.5

1/2" ~ 2"



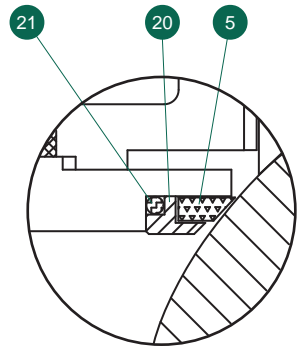
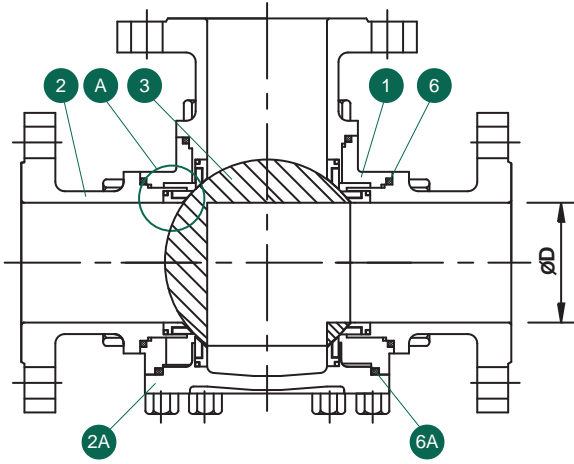
A - A' View, "L" Port Flow

Valve Components			
#	Part Name	Material	Qty.
1	Body	A351 Gr. CF8M	1
2	Flange End Cap	A351 Gr. CF8M	3
3	Blind End Cap	A351 Gr. CF8M	1
4	Ball	316SS	1
5	Stem	316SS	1
6	Seat	RTFE (15% C.F.)	4
7	Body Seal	PTFE	4
8	Thrust Washer	PEEK	1
9	Stem Packing Set	PTFE	1
10	Packing Gland	304SS	1
11	Belleville Washer	301SS	2
12	Gland Nut	304SS	1
13	Gland Nut Lock Washer	304SS	1
14	Stop Plate	304SS	1
15	Positioning Pin	304SS	1
16	Handle	304SS	1
17	Handle Nut	304SS	1
18	Handle Cover	Vinyl	1
19	Body Bolt	304SS	16
20*	Stem Set Pin	316SS	1
21*	Trunnion Bearing	PTFE	1
22*	Trunnion Bolt	304SS	4
23*	Trunnion	316SS	1
24*	Trunnion Seal	PTFE	1

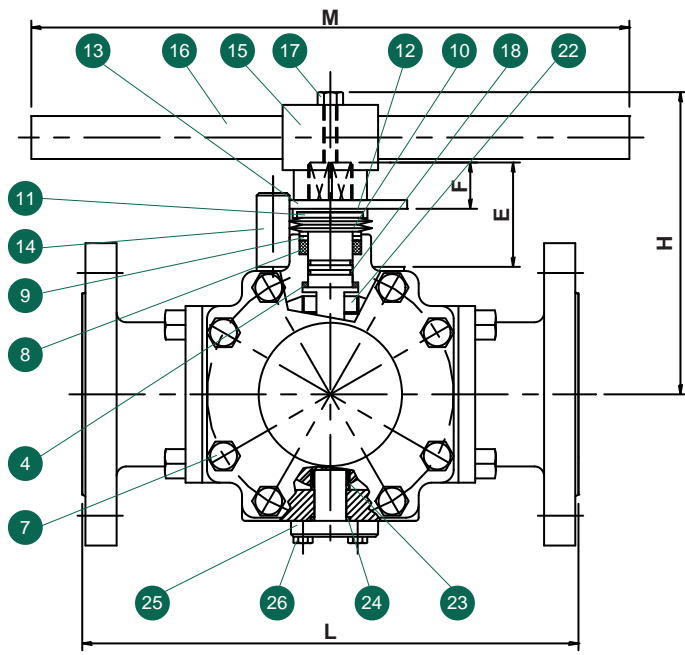
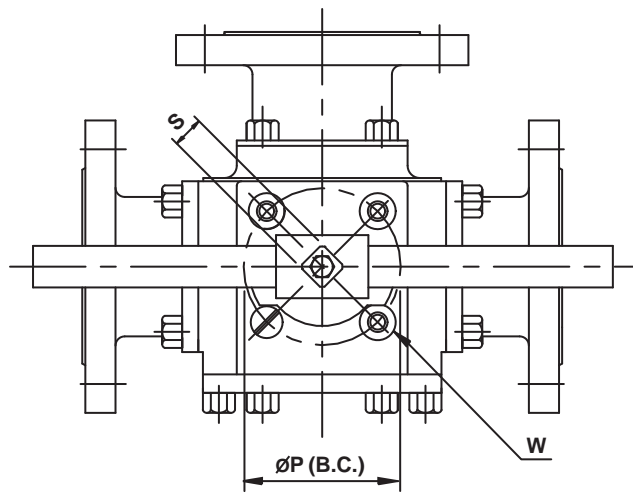
*Part numbers 20 to 24 are for 1 1/2" - 2" only

Dimensions (Inches)														
Size	D	L		M	H	G	T	E	F	P	W	ISO 5211 Pattern	Weight (lbs)	
		ANSI150	ANSI300										ANSI150	ANSI300
1/2	0.59	5.98	6.38	5.71	3.07	0.47	0.35	0.71	0.44	1.97	M6	F05	8.0	10.0
3/4	0.79	6.58	7.05	6.50	3.60	0.55	0.43	1.06	0.52	1.97	M6	F05	10.0	14.0
1	0.99	7.28	7.72	7.68	4.20	0.55	0.43	1.40	0.60	2.76	M8	F07	15.0	19.0
1 1/4	1.25	7.91	8.15	9.84	4.90	0.55	0.55	1.78	0.73	2.76	M8	F07	19.0	23.0
1 1/2	1.50	8.66	8.82	9.84	5.20	0.55	0.55	1.79	0.73	4.02	M10	F10	29.0	35.0
2	2.00	9.96	10.20	12.20	6.02	0.87	0.67	2.10	0.85	4.02	M10	F10	50.0	58.0

3" ~ 4"



"A" Detail



Valve Components			
#	Part Name	Material	Qty.
1	Body	A351 Gr. CF8M	1
2	Flange End Cap (Small)	A351 Gr. CF8M	3
2A	Blind End Cap (Large)	A351 Gr. CF8M	1
3	Ball	316SS	1
4	Stem	316SS	1
5	Seat	RTFE (15% C.F.)	4
6	Body Seal (Small)	PTFE	3
6A	Body Seal (Large)	PTFE	1
7	Thrust Washer	PEEK	1
8	Stem Packing Set	PTFE	1
9	Packing Gland	304SS	1
10	Belleville Washer	301SS	4
11	Gland Nut	304SS	1
12	Gland Nut Lock Washer	304SS	1
13	Stop Plate	304SS	1
14	Positioning Pin	304SS	1
15	Handle Drive Coupling	304SS	1
16	Pipe Handle	304SS	1
17	Handle Bolt	304SS	1
18	Stem Bearing	PEEK - Carbon Filled	2
19	Body Bolt	304SS	20
20	Seat Retainer	316SS	4
21	Seat Retainer O-Ring	Viton 90	4
22	Stem Set Pin	316SS	1
23	Trunnion Bearing	PTFE	1
24	Trunnion Seal	PTFE	1
25	Trunnion	316SS	1
26	Trunnion Bolt	304SS	4

Dimensions (Inches)													
Size	L		M	H	D	S	E	F	P	W	ISO 5211 Pattern	Weight (lbs)	
	ANSI150	ANSI300										ANSI150	ANSI300
3	12.00	12.50	22.00	7.50	2.91	0.87	2.41	1.07	4.02	M10	F10	72.0	86.0
4	15.00	15.75	32.00	8.10	3.78	0.87	2.41	1.09	4.02	M10	F10	124.0	153.0

6" CAD drawing available upon request or at www.ballvalve.com

Flow Pattern Options

3 Way - Side Entry, T-Port (5T)			3 Way - Side Entry, L-Port (5L)					
No.	Turn	Positions	Diagram		No.	Turn	Positions	Diagram
01	90°	A & B			01	90°	A & B	
02	90°	B & C						
03	90°	C & D						
04	90°	D & A						
12	180°	A & B & C						
23	180°	B & C & D						
34	180°	C & D & A						
41	180°	D & A & B						
00	360°	All						

3 Way - Bottom Entry, 180° L-Port (3A)			3 Way - Bottom Entry, 90° Angle Port (4A)					
No.	Turn	Positions	Diagram		No.	Turn	Positions	Diagram
01	90°	A & B			01	90°	A & B	
02	90°	B & C						
12	180°	A & B & C						

4 Way - Bottom Entry, L-Port (6A)			4 Way - Side Entry, Double L-Port (7D)					
No.	Turn	Positions	Diagram		No.	Turn	Positions	Diagram
01	90°	A & B			01	90°	A & B	
02	90°	B & C						
12	180°	A & B & C						
00	360°	All						

4 Way - Bottom Entry, Double L-Port (6Y)			5 Way - Bottom Entry, Angle Port (8A)					
No.	Turn	Positions	Diagram		No.	Turn	Positions	Diagram
01	90°	A & B			01	90°	A & B	
					00	360°	All	

3 Way - Bottom Entry, 180° T-Port (3B)			3 Way - Bottom Entry, 180° Double L-Port (3Y)					
No.	Turn	Positions	Diagram		No.	Turn	Positions	Diagram
01	90°	A & B			01	90°	A & B	
					00	360°	All	



Direct Mount Products



Automation Systems

509F Ordering Information

Example: 2" Multi-Port Ball Valve with ISO 5211 Pattern Mounting Pad, Lever Handle and Positioning Pin, Full Port, 316SS Body and Trim, RTFE (15% C.F.) Seats, PTFE Seals, ANSI 150# Flanged End Connections, 3-Way Side Entry, L-Port, Flow Pattern 01*

Valve Series	Valve Size	Body Material	End Material	Ball Material	Stem Material	Seat	Seal	End Connect.	Port Config.	Ball Config.	Flow Pattern*
509F	5	6	6	6	6	C	T	AA	5	L	01
Full Port	1/2" 3/4" 1" 1 1/4" 1 1/2" 2" 3" 4" 6"	A351 Gr. CF8M (316)	A351 Gr. CF8M (316)	A351 Gr. CF8M (316)	A351 Gr. CF8M (316)	C - RTFE (15% C.F.) R - RTFE (15% G.F.) T - PTFE M - TFM	T - PTFE M - TFM	A - ANSI 150# Flanged B - ANSI 300# Flanged	3 - 3 Way 180° Bottom Entry 4 - 3 Way 90° Bottom Entry 5 - 3 Way Side Entry 6 - 4 Way Bottom Entry 7 - 4 Way Side Entry 8 - 5 Way Bottom Entry	A - Bottom Entry L - Port Y - Bottom Entry Double L - Side Entry L - Port D - Side Entry Double L - Port T - Side Entry T - Port B - Bottom Entry T - Port	99 - Adjust in Field 00 01 02 03 04 12 23 34 41

† Not available in 4-way Double L-port
 †† Available in 3-way L-port only

* See Flow Pattern Options.
 Due to continuous product development, information may change without notice.



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