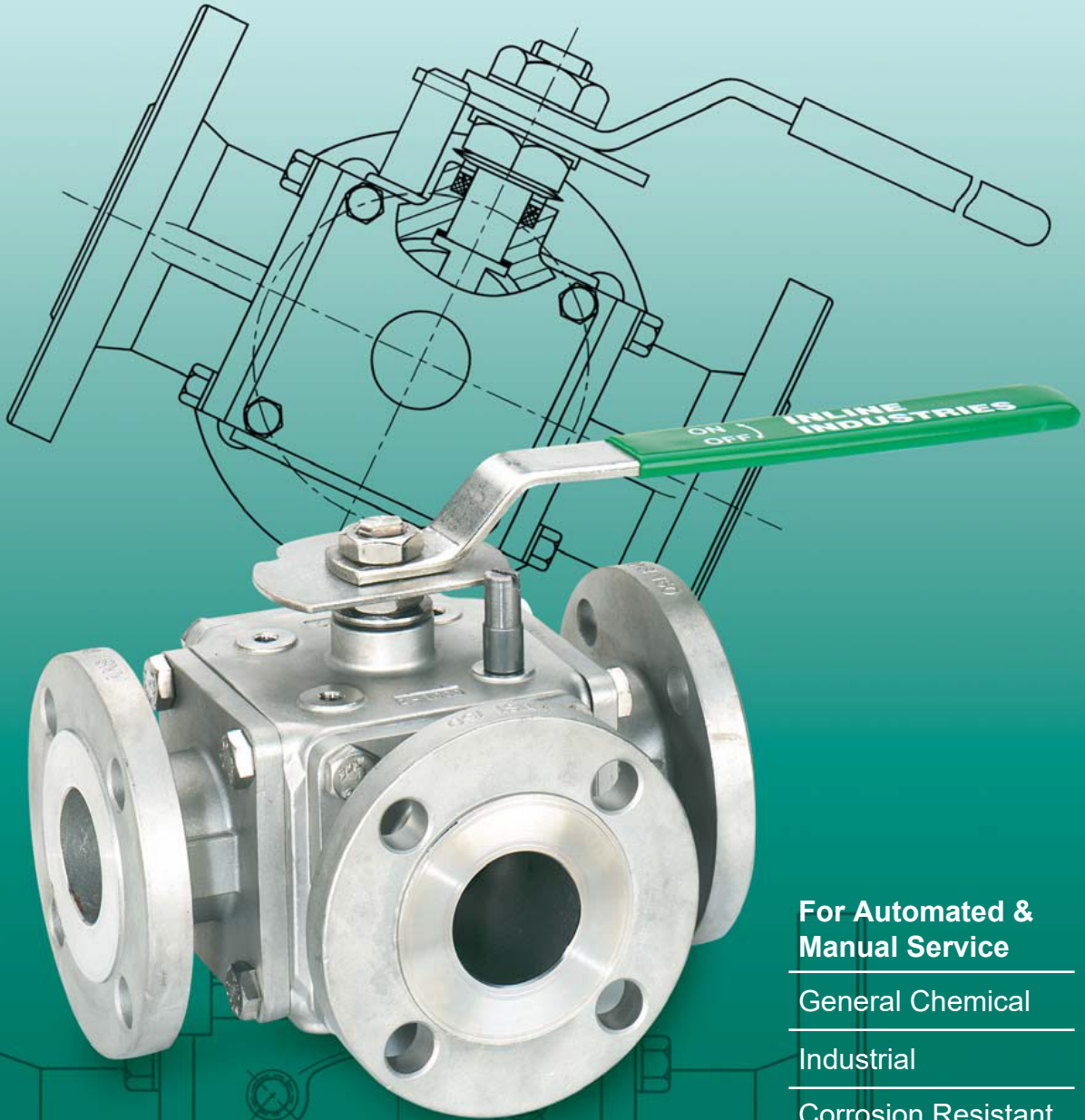


# 509F Multi-Port Flanged Ball Valve

Full Port  
ISO 5211 Mounting Pad



For Automated &  
Manual Service

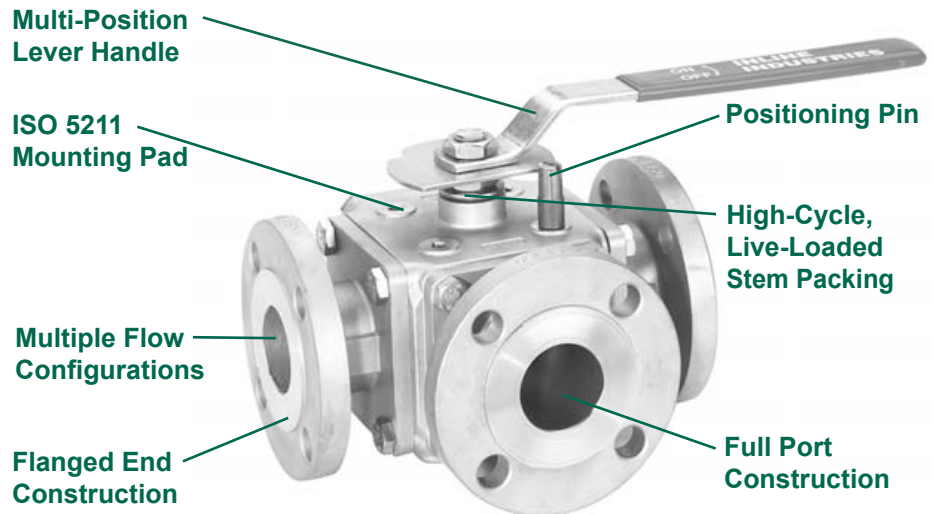
General Chemical

Industrial

Corrosion Resistant  
Applications

# The 509F Series Multi-Way Ball Valve

The 509F is a true multi-way stainless steel ball valve with balanced 4-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. The standard configuration has an ISO 5211 mount pad, which allows for easy assembly of most pneumatic and electric actuators.

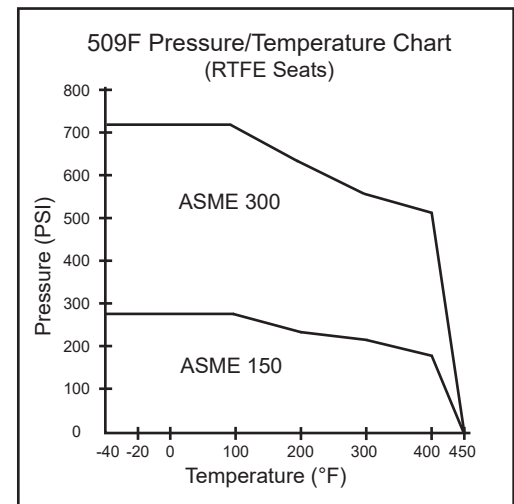


## Standard Features and Benefits

- **Balanced 4-Seat or 5-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")**  
Lateral forces in a 3-way valve can cause unwanted seat distortion. Stem/ball isolation prevents side-loading and wear of downstream seats, improving performance and service life
- **ISO 5211 Mounting Pad For Easy Actuation**  
Standard mounting pad dimensions facilitate easy assembling to 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 four different orientations for greater piping flexibility
- **90° or 180° Actuation**  
Stop plates are available for both 90° and 180° actuation

## Options

- **4-Way or 5-Way Construction With Multiple Flow Patterns**
- **Multiple End Connections Available**
- **Material Test Reports Available Upon Request**



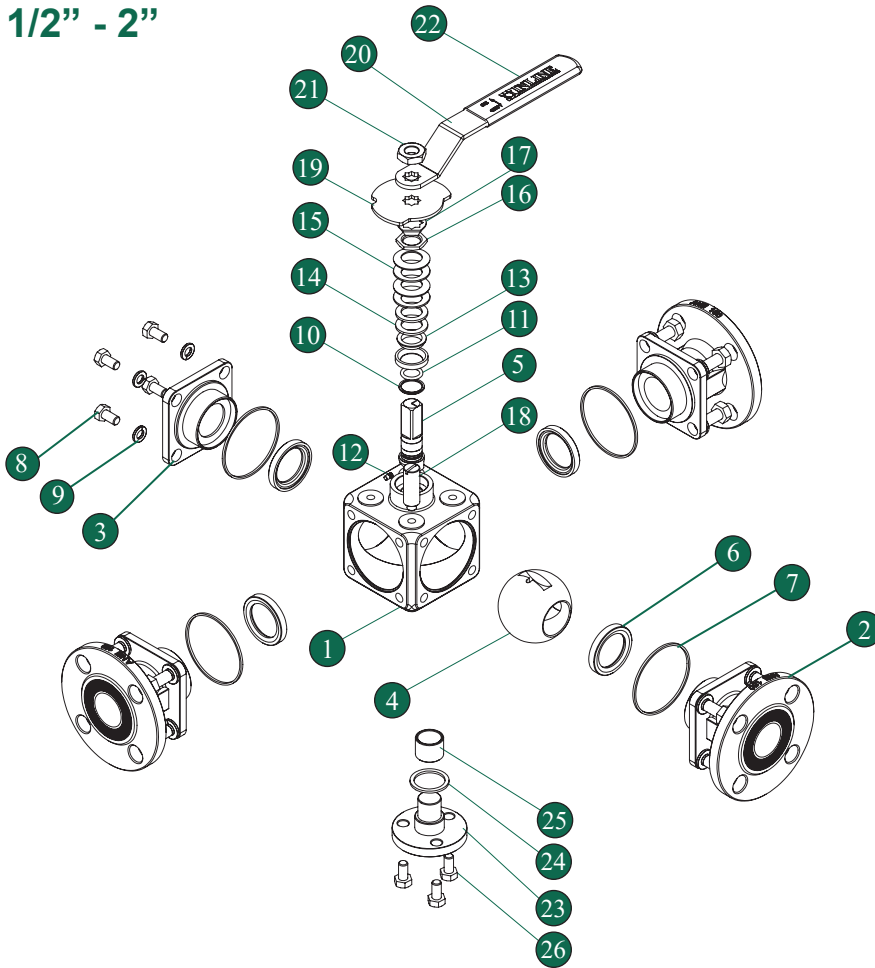
## Operating Conditions

- Temperature Range (RTFE): -40°F ~ 450°F
- Maximum Pressure (RTFE):  
ASME 150: 275 PSI CWP (CF8M)  
ASME 300: 720 PSI CWP (CF8M)

## Specifications

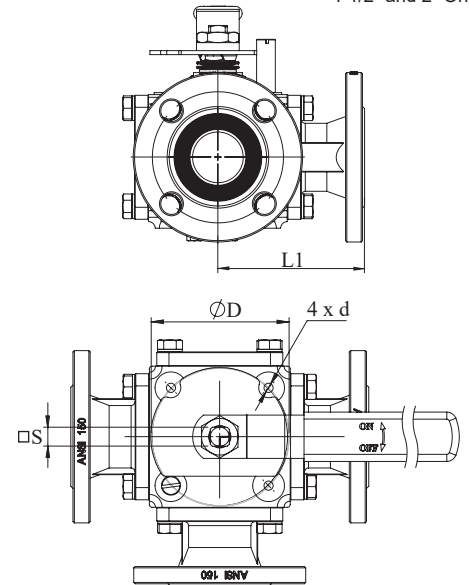
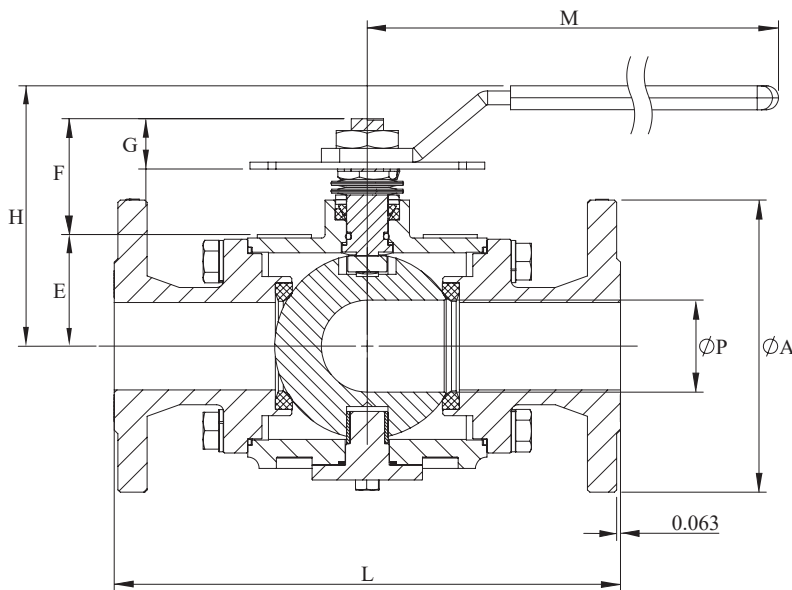
- All valves shell and seat tested to ANSI/ASME B16.34 and API 598
- All materials comply with applicable ASTM material specifications
- Length to ASME B16.10  
End connections to ASME B16.5

1/2" - 2"



Valve Components			
No.	Part Name	Material	Qty
1	Body	CF8M	1
2	End Cap	CF8M	3
3	End Cap (Blind)	CF8M	1
4	Ball	316 SS	1
5	Stem	316 SS	1
6	Seat	RTFE (15% C.F.)	4
7	Body Seal	PTFE	4
8	Body Bolt	304 SS	16
9	Body Bolt Washer	304 SS	16
10	Thrust Washer	PEEK	1
11	Stem O-Ring	VITON 75	1
12	Stem Set Pin	316 SS	1
13	Stem Packing Set	PTFE	1
14	Packing Gland	304 SS	2
15	Belleville Washer	301 SS	4
16	Gland Nut	304SS	1
17	Gland Nut Lock Washer	304SS	1
18	Stop Pin	304SS	1
19	Stop Plate	304SS	1
20	Handle	304SS	1
21	Handle Nut	304SS	1
22	Handle Cover	Vinyl	1
23	Trunnion*	316 SS	1
24	Trunnion Bearing*	PEEK	1
25	Trunnion Gasket*	PTFE	1
26	Trunnion Bolt*	304 SS	3

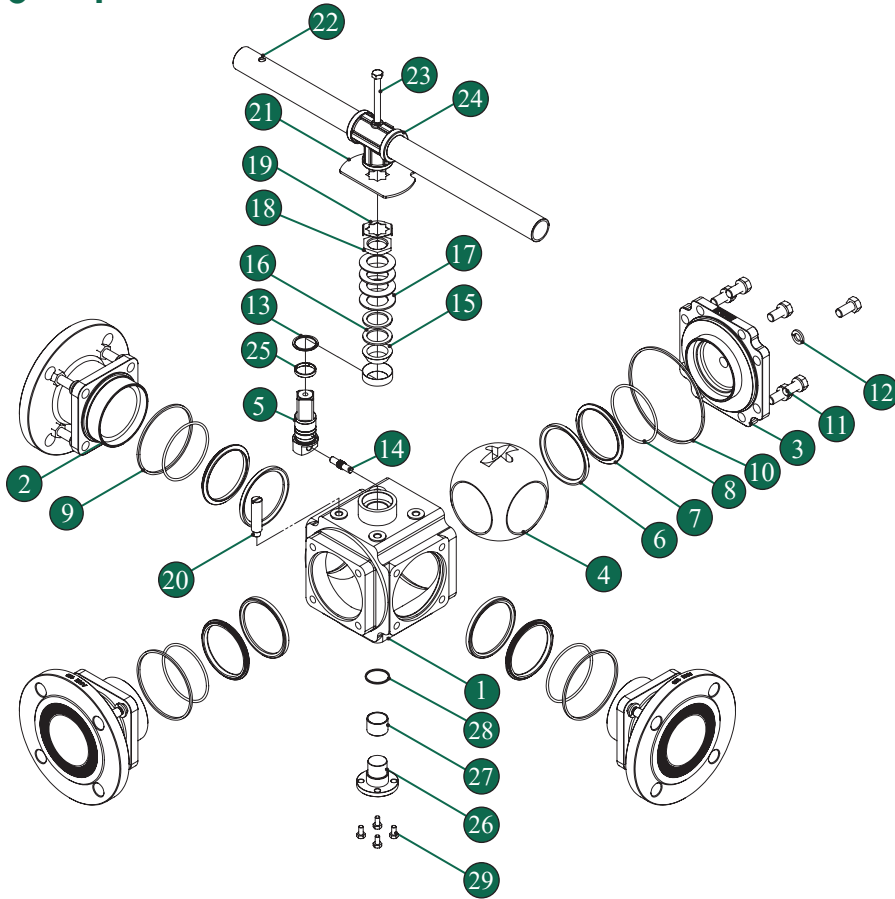
\*1 1/2" and 2" Only



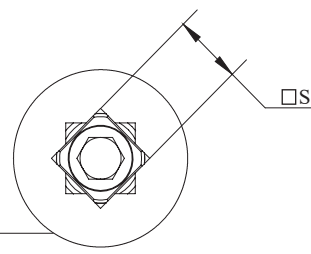
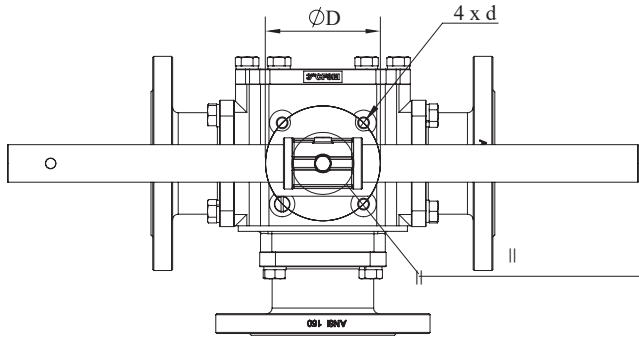
Dimensions (Inches)																				
Size	L		L1		P	M	H	E	F	G	D	d	S	ISO 5211 Pattern	A		Cv	Weight (lbs)		
	ANSI 150#	ANSI 300#	ANSI 150#	ANSI 300#											ANSI 150#	ANSI 300#		ANSI 150#	ANSI 300#	ANSI 150#
1/2"	5.98	6.37	2.99	3.19	0.59	5.8	2.6	1.12	0.93	0.50	1.97	M6x1.00 $\nabla$ 6	0.35	F05	3.50	3.74	8.4	8.2	9.7	
3/4"	6.57	7.05	3.29	3.52	0.79	6.6	3.0	1.22	1.17	0.55	1.97	M6x1.00 $\nabla$ 6	0.43	F05	3.86	4.61	14.9	10.7	14.0	
1"	7.28	7.72	3.64	3.86	0.98	7.7	3.6	1.42	1.46	0.64	2.76	M8x1.25 $\nabla$ 7	0.43	F07	4.25	4.88	25.8	15.3	18.7	
1 1/4"	7.91	8.15	3.96	4.07	1.26	7.7	4.0	1.57	1.96	0.86	2.76	M8x1.25 $\nabla$ 8	0.55	F07	4.61	5.28	40.1	20.4	25.2	
1 1/2"	8.66	8.82	4.33	4.41	1.57	9.9	4.5	1.91	1.98	0.86	4.02	M10x1.50 $\nabla$ 9	0.55	F10	5.00	6.14	57.1	31.4	39.8	
2"	9.96	10.20	4.98	5.10	1.97	12.3	5.3	2.34	2.14	0.84	4.02	M10x1.50 $\nabla$ 9	0.67	F10	5.98	6.50	105.0	50.5	54.4	

\*Cv value represents flow data to ISA 75.01.01 - 2007 based on 509F with L-Port Flow Configuration

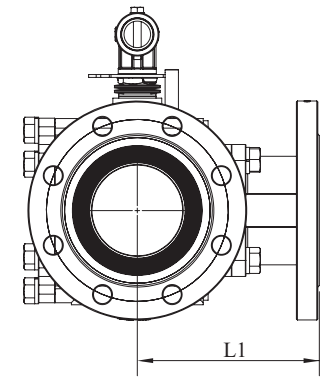
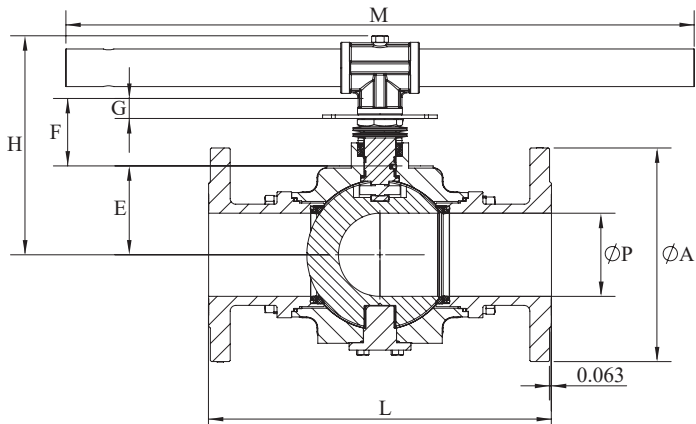
3" - 4"



Valve Components			
No.	Part Name	Material	Qty
1	Body	CF8M	1
2	End Cap	CF8M	3
3	End Cap (Blind)	CF8M	1
4	Ball	316 SS	1
5	Stem	316 SS	1
6	Seat	RTFE (15% C.F.)	4
7	Seat Housing	316 SS	4
8	Seat Housing O-Ring	VITON	4
9	Body Seal	PTFE	3
10	Body Seal (Large)	PTFE	1
11	Body Bolt	304 SS	20
12	Body Bolt Washer	304 SS	20
13	Thrust Washer	PEEK	1
14	Stem Set Pin	316 SS	1
15	Stem Packing Set	PTFE	1
16	Packing Gland	304 SS	2
17	Belleville Washer	301 SS	4
18	Gland Nut	304 SS	1
19	Gland Nut Lock Washer	304 SS	1
20	Stop Pin	304 SS	1
21	Stop Plate	304 SS	1
22	Pipe Handle	304 SS	1
23	Handle Bolt	304 SS	1
24	Handle Drive Coupling	304 SS	1
25	Stem Bearing	PEEK	2
26	Trunnion	316 SS	1
27	Trunnion Bearing	PEEK	1
28	Trunnion Gasket	PTFE	1
29	Trunnion Bolt	304 SS	4



Stem View



Note: Number of flange bolt holes may vary by size and pressure rating

Dimensions (Inches)																			
Size	L		L1		P	M	H	E	F	G	D	d	S	ISO 5211 Pattern	A		Cv	Weight (lbs)	
	ANSI 150#	ANSI 300#	ANSI 150#	ANSI 300#											ANSI 150#	ANSI 300#		ANSI 150#	ANSI 300#
3"	12.00	12.50	6.00	6.25	2.91	22.0	7.7	3.11	2.36	0.70	4.02	M10x1.5 $\nabla$ 10	0.87	F10	7.48	8.27	231	75.8	93.2
4"	15.00	15.75	7.50	7.88	3.78	32.0	8.4	3.88	2.30	0.70	4.02	M10x1.5 $\nabla$ 10	0.87	F10	9.02	10.00	385	135.9	165.8

\*Cv value represents flow data to ISA 75.01.01 - 2007 based on 509F with L-Port Flow Configuration

# Flow Pattern Options

### 3 Way - Side Entry T-Port (5T)

No.	Turn	Positions
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 - Side Entry L-Port (5L)

No.	Turn	Positions
01	90°	A & B

### 3 Way - Bottom Entry 180° L-Port (3A)

No.	Turn	Positions
01	90°	A & B
02	90°	B & C
12	180°	A & B & C

### 3 Way - Bottom Entry 90° Angle Port (4A)

No.	Turn	Positions
01	90°	A & B

### 4 Way - Bottom Entry L-Port (6A)

No.	Turn	Positions
01	90°	A & B
02	90°	B & C
12	180°	A & B & C
00	360°	All

### 4 Way - Side Entry Double L-Port (7D)

No.	Turn	Positions
01	90°	A & B
00	360°	All

### 4 Way - Bottom Entry Double L-Port (6Y)

No.	Turn	Positions
01	90°	A & B

### 5 Way - Bottom Entry Angle Port (8A)

No.	Turn	Positions
01	90°	A & B
00	360°	All

### 3 Way - Bottom Entry 180° T-Port (3B)

No.	Turn	Positions
01	90°	A & B

### 3 Way - Bottom Entry 180° Double L-Port (3Y)

No.	Turn	Positions
01	90°	A & B



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, 316 SS Body and Trim, RTFE (15% C.F.) Seats, PTFE Seals, ASME 150# Flanged End Connections, 3-Way Side, Entry L-Port, Flow Pattern 01\*

509F	D	6	6	6	6	C	T	AA	5	L	01	
Valve Series	Valve Size	Body Material	End Material	Ball Material	Stem Material	Seat	Seal	End Connection	Port Configuration	Ball Configuration	Flow** Pattern	
509F - Full Port	5 7 A C D E F G <sup>1</sup> I <sup>*</sup>	1/2" 3/4" 1" 1 1/2" 2" 2 1/2" 3" 4" 6"	6 - A351 Gr. CF8M (316)	6 - A351 Gr. CF8M (316)	6 - 316 SS	6 - 316 SS	C - RTFE (15% C.F.) R - RTFE (15% G.F.) M - TFM T - PTFE	T - PTFE M - TFM	A - ASME 150# Flanged B - ASME 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 B - Bottom Entry T-Port D - Side Entry Double L-Port L - Side Entry L-Port T - Side Entry T-Port Y - Bottom Entry Double L-Port	01 - A & B (Standard) 00 - All 02 - B & C 03 - C & D 04 - D & A 12 - A & B & C 23 - B & C & D 34 - C & D & A 41 - D & A & B

<sup>1</sup>Not available in 4-way Side-Entry Double L-Port (7D)

<sup>\*</sup>6" available in 3-way Side Entry L or T-Port 150# Flanged Ends Only

\*\*See Flow Pattern Options

Due to continuous product development, information may change without notice



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