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Ball Valves (B Series)

Catalog 4121-B
January 2006

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Para Automação

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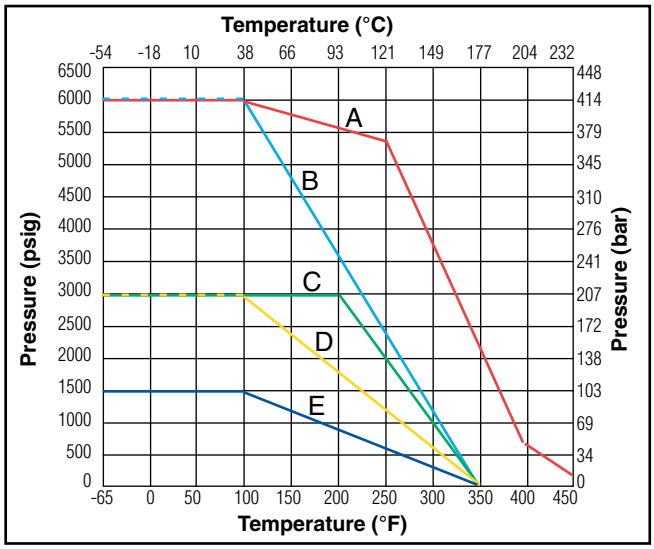
Pressure vs. Temperature



Legend: **A** – PEEK Seats; **B** – PCTFE Seats; **C** – Selector Valves; **D** – Brass Valves; **E** – PTFE Seats

Note: To determine MPa, multiply bar by 0.1

Note: This Pressure versus Temperature chart reflects the maximum temperature range of indicated materials.

When combining seat and seal materials, the most restrictive temperature rating of the seats or seals becomes the limiting factor on valve temperature range.

Elastomeric stem packing and seals are recommended if the application subjects the valve to thermal cycling.

Please see pages 2 and 4 for maximum pressure ratings.

Temperature Ratings:

PTFE:..... -65°F to 350°F (-54°C to 177°C)
PCTFE:..... -65°F to 350°F (-54°C to 177°C)
PEEK:..... -65°F to 450°F (-54°C to 232°C)
Nitrile Rubber:..... -40°F to 250°F (-40°C to 121°C)
Fluorocarbon Rubber:..... -15°F to 450°F (-26°C to 232°C)
Ethylene Propylene Rubber:... -65°F to 300°F (-54°C to 149°C)
Highly Fluoronated
Fluorocarbon Rubber ..... -15°F to 200°F (-26°C to 93°C)

Flow Calculations with 1000 psig (69 bar) Inlet Pressure

Two-Way

Valve Series	Max. C_v	Pressure Drop ΔP psig	Pressure Drop ΔP bar	Water @ 60°F (16°C) gpm	Water @ 60°F (16°C) m^3/hr	Air @ 60°F (16°C) scfm	Air @ 60°F (16°C) m^3r
B2L	0.93	10	0.7	2.9	0.7	92.4	156.2
		50	3.5	6.6	1.5	200.3	338.3
		100	6.9	9.3	2.1	272.0	458.9
B6L	2.34	10	0.7	7.4	1.7	231.7	391.5
		50	3.5	16.5	3.8	494.2	834.7
		100	6.9	23.4	5.3	657.0	1107.9
B8L	6.42	10	0.7	20.3	4.6	637.1	1076.8
		50	3.5	45.4	10.3	1373.6	2320.3
		100	6.9	64.2	14.6	1852.3	3124.8

Three-Way

Valve Series	Max. C_v	Pressure Drop ΔP psig	Pressure Drop ΔP bar	Water @ 60°F (16°C) gpm	Water @ 60°F (16°C) m^3/hr	Air @ 60°F (16°C) scfm	Air @ 60°F (16°C) m^3r
B2X	0.63	10	0.7	2.0	0.5	62.7	106.0
		50	3.5	4.5	1.0	137.1	231.7
		100	6.9	6.3	1.4	188.4	317.9
B6X	0.87	10	0.7	2.8	0.6	86.7	146.6
		50	3.5	6.2	1.4	190.5	321.8
		100	6.9	8.7	2.0	263.2	444.4
B8X	3.62	10	0.7	11.5	2.6	360.6	609.5
		50	3.5	25.6	5.9	789.7	1343.5
		100	6.9	36.2	8.2	1087.4	1836.6

⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

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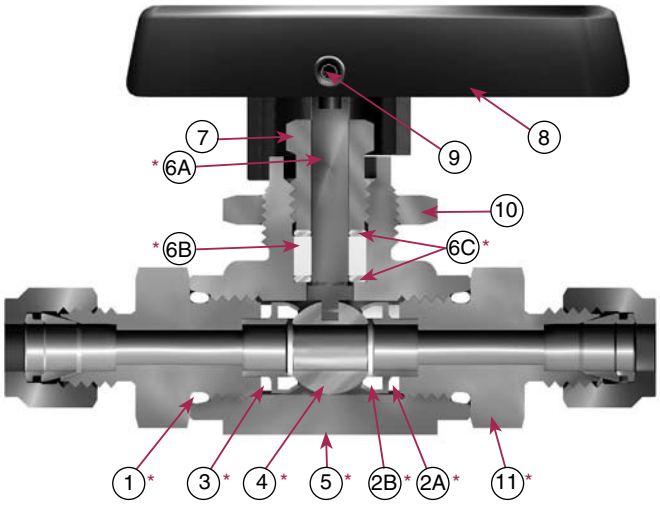
Introduction

Parker manually, pneumatically, and electrically actuated two-way B Series Ball Valves provide quick 1/4 turn on-off control of fluids utilized in process and instrumentation applications. A broad selection of valve body, seat, and seal materials provide a wide range of pressures and temperatures at which the valve may be used.

Features

- Free floating ball design provides seat wear compensation.
- Available in 316 stainless steel and brass construction. Alloy N24135 and Alloy N30002 construction available upon request.
- Micro-finished ball provides a positive seal.
- Straight through flow path for minimum pressure drop.
- Bi-directional flow.
- Wide variety of US Customary and SI ports.
- 90 degree actuation.
- Panel mountable.
- Adjustable PTFE stem seal can be maintained in-line.
- Handle indicates flow direction.
- Low operating torques.
- Positive handle stops.
- Color coded handles.
- Optional pneumatic and electric actuation.
- Optional live-loaded PTFE stem seals.
- Optional non-adjustable O-ring stem seals.
- Optional upstream and downstream drain models.
- Optional stainless steel and extended handles.



Model Shown: 6A-B6LJ-SSP

Specifications

Pressure Ratings:

Material	CWP	with PTFE Seats
316 Stainless Steel	6000 psig (414 bar)*	1500 psig (103 bar)
Brass	3000 psig (207 bar)	1500 psig (103 bar)
Alloy N24135 (400)		
B2 and B6:	3000 psig (207 bar)	1500 psig (103 bar)
B8:	2000 psig (138 bar)	1500 psig (103 bar)
Alloy N30002 (C-276)		
B2 and B6:	4000 psig (276 bar)	1500 psig (103 bar)
B8:	3000 psig (207 bar)	1500 psig (103 bar)

* B6 Series: 6000 psig rating or 4400 psig (303 bar) CWP
B8 Series: 6000 psig rating or 4000 psig (276 bar) CWP

Pressure Rating and Tubing Selection

For working pressures of A-LOK® and CPI™ tube connections, please see the Instrument Tubing Selection Guide (Bulletin 4200-TS), found in the Technical Section of the Parker Instrumentation Process Control Binder, or the Parker Instrument Fitting Installation Manual (Bulletin 4200-B4).

For working pressures of valves with external or internal pipe threads, please see Catalog 4260, Instrumentation Pipe Fittings.

Materials of Construction

Item #	Part Description	Stainless Steel	Brass
*1	Connector O-Ring	PTFE**	
*2A	Seat Retainer	ASTM A 276 Type 316	ASTM B 16 Alloy C36000
*2B	Seat	PTFE, PCTFE, PEEK	
*3	Retainer Seal	PTFE**	
*4	Ball	316 Stainless Steel	
*5	Body	ASTM A 351 Grade CF3M	ASTM B 283 Alloy C37700
*6A	Stem	ASTM A 276 Type 316	
*6B	Stem Seal	PTFE**	
*6C	Stem Washer	316 Stainless Steel	
7	Packing Nut	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
8	Handle	Nylon 6/6	
9	Handle Set Screw	Stainless Steel	
10	Panel Nut	316 Stainless Steel	
*11	End Connector	ASTM A 479 Type 316	ASTM B 16 Alloy C36000

* Wetted Parts.
** Optional stem seal and body seal materials are described in the How to Order section.
Lubrication: Perfluorinated Polyether.

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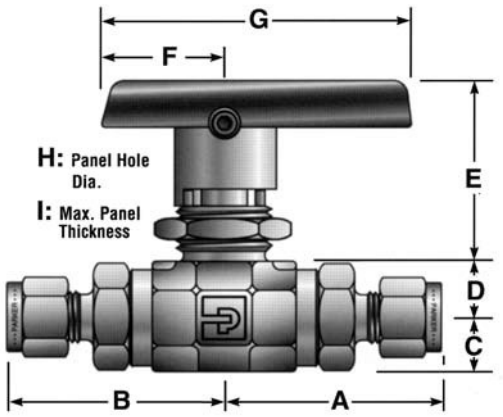
Dimensions & Flow Data



Model Shown: 4A-B6LJ-SSP

Port Size	Basic Part #	Flow Data: Orifice Inch	Orifice mm	C_v	X_T*	End Connections Port 1	Port 2	Dimensions Inches (mm) A†	B†	C	D	E	F	G	H	I
1A		0.052	1.3	0.06	0.45	1/16" A-LOK®		1.30 (33.0)	1.30 (33.0)							
1Z						1/16" CPI™										
2A		0.093	2.4	0.21	0.47	1/8" A-LOK®		1.36 (34.5)	1.36 (34.5)							
2Z						1/8" CPI™										
2F		0.165	4.2	0.93	0.43	1/8" Female NPT		1.07 (27.2)	1.07 (27.2)							
2M		0.165	4.2	0.93	0.43	1/8" Male NPT		1.18 (30.0)	1.18 (30.0)							
4A	B2L	0.165	4.2	0.93	0.43	1/4" A-LOK®		1.48 (37.6)	1.48 (37.6)	0.33 (8.4)	0.33 (8.4)	0.94 (23.9)	0.75 (19.1)	1.88 (47.8)	0.58 (14.7)	0.13 (3.3)
4Z						1/4" CPI™										
4M		0.165	4.2	0.93	0.43	1/4" Male NPT		1.35 (34.3)	1.35 (34.3)							
M3A		0.086	2.2	0.18	0.44	3mm A-LOK®		1.37 (34.8)	1.37 (34.8)							
M3Z						3mm CPI™										
4A		0.187	4.7	1.04	0.42	1/4" A-LOK®		1.74 (44.2)	1.74 (44.2)							
4Z						1/4" CPI™										
4F		0.250	6.4	2.34	0.29	1/4" Female NPT		1.51 (38.4)	1.51 (38.4)							
4M		0.250	6.4	2.34	0.29	1/4" Male NPT		1.62 (41.1)	1.62 (41.1)							
4Q		0.180	4.6	1.03	0.42	1/4" UltraSeal		1.51 (38.4)	1.51 (38.4)							
4V		0.188	4.8	1.04	0.42	1/4" VacuSeal		1.75 (44.5)	1.75 (44.5)							
6A	B6L	0.250	6.4	2.34	0.29	3/8" A-LOK®		1.80 (45.7)	1.80 (45.7)	0.42 (10.7)	0.47 (11.9)	1.53 (38.9)	1.00 (25.4)	2.50 (63.5)	0.77 (19.6)	0.25 (6.4)
6Z						3/8" CPI™										
6M		0.250	6.4	2.34	0.29	3/8" Male NPT		1.62 (41.1)	1.62 (41.1)							
6Q		0.250	6.4	2.34	0.29	3/8" UltraSeal		1.51 (38.4)	1.51 (38.4)							
M6A		0.187	4.7	1.04	0.42	6mm A-LOK®		1.75 (44.5)	1.75 (44.5)							
M6Z						6mm CPI™										
M8A		0.250	6.4	2.34	0.42	8mm A-LOK®		1.78 (45.2)	1.78 (45.2)							
M8Z						8mm CPI™										
M10A		0.250	6.4	2.34	0.42	10mm A-LOK®		1.81 (46.0)	1.81 (46.0)							
M10Z						10mm CPI™										
6F		0.406	10.3	6.42	0.37	3/8" Female NPT		1.95 (49.5)	1.95 (49.5)							
8F		0.406	10.3	6.42	0.37	1/2" Female NPT		2.15 (54.6)	2.15 (54.6)							
8A		0.406	10.3	6.42	0.37	1/2" A-LOK®		2.34 (59.4)	2.34 (59.4)							
8Z						1/2" CPI™										
8M		0.406	10.3	6.42	0.37	1/2" Male NPT		2.22 (56.4)	2.22 (56.4)							
8Q	B8L	0.375	9.5	5.57	0.37	1/2" UltraSeal		1.92 (48.8)	1.92 (48.8)	0.69 (17.5)	0.70 (17.8)	1.74 (44.2)	1.50 (38.1)	4.00 (101.6)	0.90 (22.9)	0.38 (9.7)
8V		0.406	10.3	6.42	0.37	1/2" VacuSeal		2.21 (56.1)	2.21 (56.1)							
12A		0.406	10.3	6.42	0.37	3/4" A-LOK®		2.33 (59.2)	2.33 (59.2)							
12Z						3/4" CPI™										
12F		0.406	10.3	6.42	0.37	3/4" Female NPT		2.25 (57.1)	2.25 (57.1)							
M12A		0.375	9.5	5.57	0.37	12mm A-LOK®		2.33 (59.2)	2.33 (59.2)							
M12Z		0.406	10.3	6.42	0.37	12mm CPI™		2.33 (59.2)	2.33 (59.2)							
M16A						16mm A-LOK®										
M16Z						16mm CPI™										

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position

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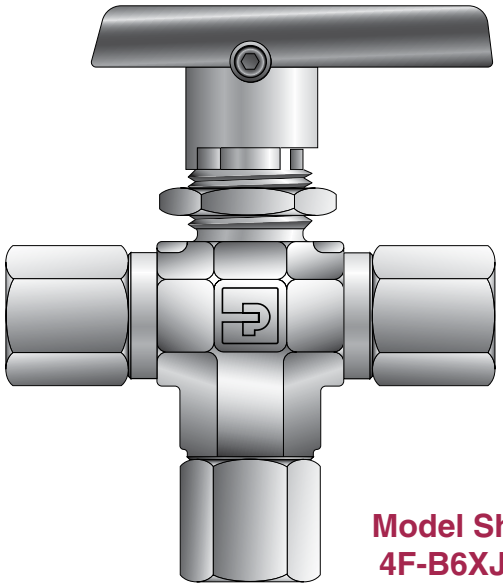
Introduction

Parker manually, pneumatically, and electrically actuated three-way B Series Ball Valves may be used as diverting or selecting valves for fluids utilized in process and instrumentation applications. The standard three-way diverter valve is designed to accept media through the bottom port and direct it out of two outlet ports. When equipped with spring-loaded seats, the three-way valve may be used as a selector valve, alternately accepting media from either of two inlet sources (side ports) and directing it through a single outlet (bottom port).

Features

- Available in 316 stainless steel and brass construction. Alloy N24135 and Alloy N30002 construction available for Diverter Valves upon request.
- Micro-finished ball provides a positive seal.
- Wide variety of US Customary and SI ports.
- 180 degree actuation.
- Panel mountable.
- Adjustable PTFE stem seal can be maintained in-line.
- Handle indicates flow direction.
- Low operating torques.
- Positive handle stops.
- Color coded handles.
- Optional pneumatic and electric actuation.
- Optional live-loaded PTFE stem seals.
- Optional non-adjustable O-ring stem seals.
- Optional stainless steel and extended handles.



Model Shown:
4F-B6XJ2-BP

Diverter Valve Specifications

Pressure Ratings with bottom port as inlet:

Material	CWP	with PTFE Seats
316 Stainless Steel	6000 psig (414 bar)*	1500 psig (103 bar)
Brass	3000 psig (207 bar)	1500 psig (103 bar)
Alloy N24135 (400)		
B2 and B6:	3000 psig (207 bar)	1500 psig (103 bar)
B8:	2000 psig (138 bar)	1500 psig (103 bar)
Alloy N30002 (C-276)		
B2 and B6:	4000 psig (276 bar)	1500 psig (103 bar)
B8:	3000 psig (207 bar)	1500 psig (103 bar)

* B6 Series: 6000 psig rating or 4400 psig (303 bar) CWP
B8 Series: 6000 psig rating or 4000 psig (276 bar) CWP

Pressure Rating with side ports as inlet:

150 psig (10 bar)

Selector Valve Specifications

(Spring Loaded – B6 and B8 models only)

Pressure Rating with bottom port as inlet:

316 Stainless Steel .....6000 psig (414 bar) CWP*
Brass .....3000 psig (207 bar) CWP

Pressure Rating with side ports as inlet:

316 Stainless Steel and Brass .....3000 psig (207 bar) CWP

Pressure Rating and Tubing Selection

For working pressures of A-LOK® and CPI™ tube connections, please see the Instrument Tubing Selection Guide (Bulletin 4200-TS), found in the Technical Section of the Parker Instrumentation Process Control Binder, or the Parker Instrument Fitting Installation Manual (Bulletin 4200-B4).

For working pressures of valves with external or internal pipe threads, please see Catalog 4260, Instrumentation Pipe Fittings.

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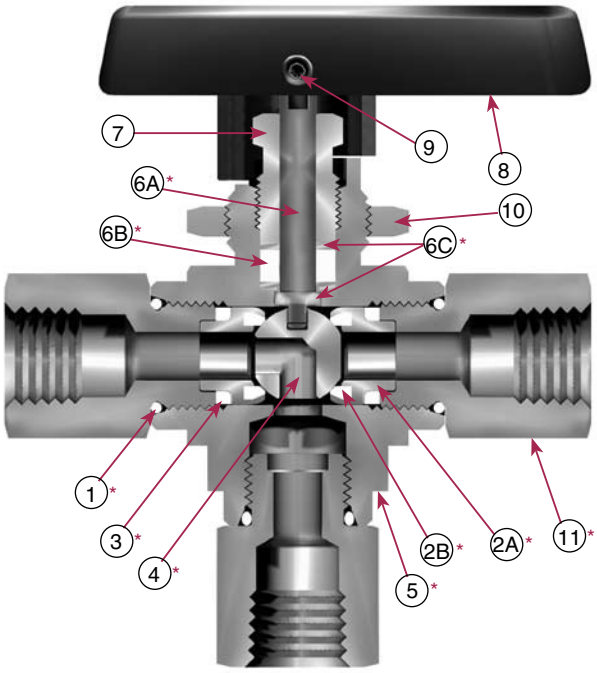
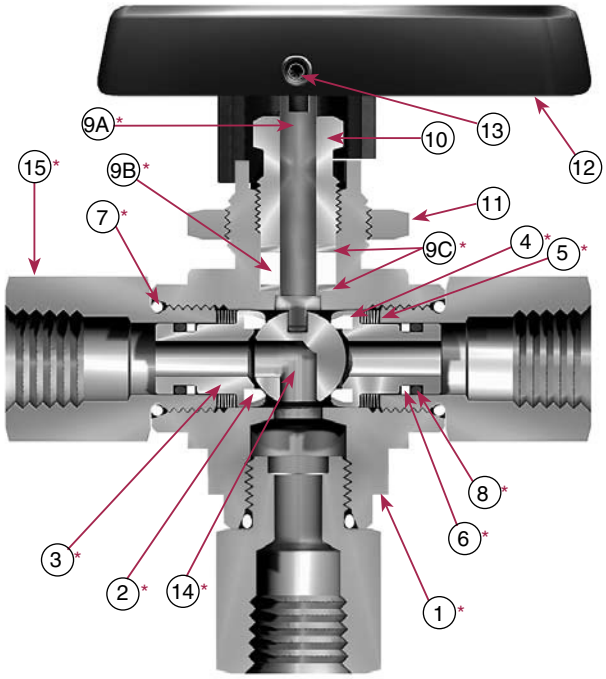
Diverter Valve



Model Shown: 4F-B6XJ-SSP

Selector Valve



Model Shown: 4F-B6XS2-SSP

Materials of Construction

Item #	Part Description	Stainless Steel	Brass
*1	Connector O-Ring	PTFE**	
*2A	Seat Retainer	ASTM A 276 Type 316	ASTM B 16 Alloy C36000
*2B	Seat	PTFE, PCTFE, PEEK	
*3	Retainer Seal	PTFE**	
*4	Ball	316 Stainless Steel	
*5	Body	ASTM A 351 Grade CF3M	ASTM B 283 Alloy C37700
*6A	Stem	ASTM A 276 Type 316	
*6B	Stem Seal	PTFE**	
*6C	Stem Washer	316 Stainless Steel	
7	Packing Nut	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
8	Handle	Nylon 6/6	
9	Handle Set Screw	Stainless Steel	
10	Panel Nut	316 Stainless Steel	
*11	End Connector	ASTM A 479 Type 316	ASTM B 16 Alloy C36000

* Wetted Parts.
** Optional stem seal and body seal materials are described in the How to Order section.
Lubrication: Perfluorinated polyether.

Materials of Construction

Item #	Part Description	Stainless Steel	Brass
*1	Body	ASTM A 351 Grade CF3M	ASTM B 283 Alloy C37700
*2	Seat	PTFE, PEEK	
*3	Seat Retainer	ASTM A 276 Type 316	
*4	Spring	Stainless Steel	
*5	Seat Retainer Washer	316 Stainless Steel	
*6	Back-up Ring	PTFE	
*7	Connector O-Ring	PTFE**	
*8	Seat Retainer O-Ring	Fluorocarbon Rubber**	
*9A	Stem	ASTM A 276 Type 316	
*9B	Stem Seal	PTFE*	
*9C	Stem Washer	316 Stainless Steel***	
10	Packing Nut	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
11	Panel Nut	316 Stainless Steel	
12	Handle	Nylon 6/6	
13	Handle Set Screw	Stainless Steel	
*14	Ball	316 Stainless Steel	
*15	End Connector	ASTM A 479 Type 316	ASTM B 16 Alloy C36000

* Wetted Parts.
** Optional stem seal and body seal materials are described in the How to Order section.
Lubrication: Perfluorinated polyether.
*** The lower stem washer material is PEEK for B8 Selector Valves.
Lubrication: Perfluorinated polyether.

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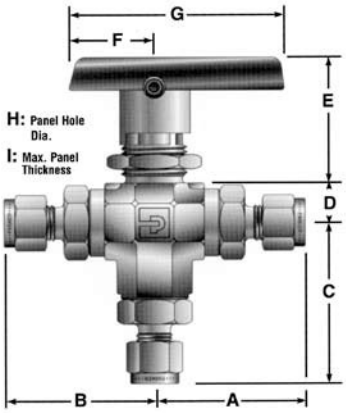
Dimensions & Flow Data



Model Shown:
4Z-B6XSPKR-V-SSP

Port Size	Basic Part #	Flow Data: Orifice Inch	Orifice mm	C_v	X_T*	End Connections: Port 1 Port 2 Port 3	Dimensions Inches (mm): A†	B†	C	D	E	F	G	H	I
1A	B2X	0.052	1.3	0.06	0.56	1/16" A-LOK®	1.30 (33.0)	1.30 (33.0)	1.39 (35.3)	0.33 (8.4)	0.94 (23.9)	0.75 (19.1)	1.88 (47.8)	0.58 (14.7)	0.13 (3.3)
1Z						1/16" CPI™									
2A		0.093	2.4	0.21	0.64	1/8" A-LOK®	1.36 (34.5)	1.36 (34.5)	1.45 (36.8)						
2Z						1/8" CPI™									
2F		0.165	4.2	0.63	0.59	1/8" Female NPT	1.07 (27.2)	1.07 (27.2)	1.15 (29.2)						
2M		0.165	4.2	0.63	0.59	1/8" Male NPT	1.18 (30.0)	1.18 (30.0)	1.26 (32.0)						
4A		0.165	4.2	0.63	0.59	1/4" A-LOK®	1.48 (37.6)	1.48 (37.6)	1.56 (39.6)						
4Z						1/4" CPI™									
4M		0.165	4.2	0.63	0.59	1/4" Male NPT	1.35 (34.3)	1.35 (34.3)	1.43 (36.3)						
M3A		0.086	2.2	0.18	0.63	3mm A-LOK®	1.37 (34.8)	1.37 (34.8)	1.45 (36.8)						
M3Z						3mm CPI™									
4A	B6X	0.187	4.7	0.70	0.69	1/4" A-LOK®	1.74 (44.2)	1.74 (44.2)	1.88 (47.8)	0.47 (11.9)	1.53 (38.9)	1.00 (25.4)	2.50 (63.5)	0.77 (19.6)	0.25 (6.4)
4Z						1/4" CPI™									
4F		0.196	5.0	0.87	0.74	1/4" Female NPT	1.51 (38.4)	1.51 (38.4)	1.65 (41.9)						
4M		0.196	5.0	0.87	0.74	1/4" Male NPT	1.62 (41.1)	1.62 (41.1)	1.76 (44.7)						
4Q		0.180	4.6	0.68	0.67	1/4" UltraSeal	1.51 (31.8)	1.51 (31.8)	1.65 (33.8)						
4V		0.188	4.8	0.70	0.69	1/4" VacuSeal	1.75 (35.1)	1.75 (35.1)	1.89 (37.1)						
6A		0.196	5.0	0.87	0.74	3/8" A-LOK®	1.80 (45.7)	1.80 (45.7)	1.94 (49.3)						
6Z						3/8" CPI™									
6M		0.196	5.0	0.87	0.74	3/8" Male NPT	1.62 (41.1)	1.62 (41.1)	1.76 (44.7)						
6Q		0.196	5.0	0.87	0.74	3/8" UltraSeal	1.52 (38.6)	1.52 (38.6)	1.65 (41.9)						
M6A		0.187	4.7	0.70	0.69	6mm A-LOK®	1.75 (44.5)	1.75 (44.5)	1.88 (47.8)						
M6Z						6mm CPI™									
M8A		0.196	5.0	0.87	0.74	8mm A-LOK®	1.78 (45.2)	1.78 (45.2)	1.91 (48.5)						
M8Z						8mm CPI™									
M10A		0.196	5.0	0.87	0.74	10mm A-LOK®	1.81 (46.0)	1.81 (46.0)	1.95 (49.5)						
M10Z						10mm CPI™									
6F	B8X	0.406	10.3	3.62	0.64	3/8" Female NPT	1.95 (49.5)	1.95 (49.5)	2.29 (58.2)	0.70 (17.8)	1.74 (44.2)	1.50 (38.1)	4.00 (101.6)	0.90 (22.9)	0.38 (9.7)
8A		0.406	10.3	3.62	0.64	1/2" A-LOK®	2.34 (59.4)	2.34 (59.4)	2.68 (68.1)						
8Z						1/2" CPI™									
8F		0.406	10.3	3.62	0.64	1/2" Female NPT	2.15 (54.6)	2.15 (54.6)	2.49 (63.2)						
8M		0.406	10.3	3.62	0.64	1/2" Male NPT	2.22 (56.4)	2.22 (56.4)	2.59 (65.8)						
8Q		0.375	9.5	3.46	0.62	1/2" UltraSeal	1.93 (49.5)	1.93 (49.5)	2.27 (57.7)						
8V		0.406	10.3	3.62	0.64	1/2" VacuSeal	2.21 (56.1)	2.21 (56.1)	2.55 (65.0)						
12A		0.406	10.3	3.62	0.64	3/4" A-LOK®	2.33 (59.2)	2.33 (59.2)	2.68 (68.1)						
12Z						3/4" CPI™									
12F		0.406	10.3	6.42	0.37	3/4" Female NPT	2.25 (57.1)	2.25 (57.1)	2.59 (65.8)						
M12A		0.375	9.5	3.46	0.62	12mm A-LOK®	2.33 (59.2)	2.33 (59.2)	2.67 (67.8)						
M12Z						12mm CPI™									
M16A		0.406	10.3	3.62	0.64	16mm A-LOK®	2.33 (56.9)	2.33 (56.9)	2.67 (65.5)						
M16Z						16mm CPI™									

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position

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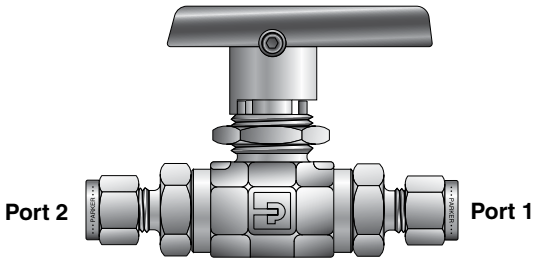
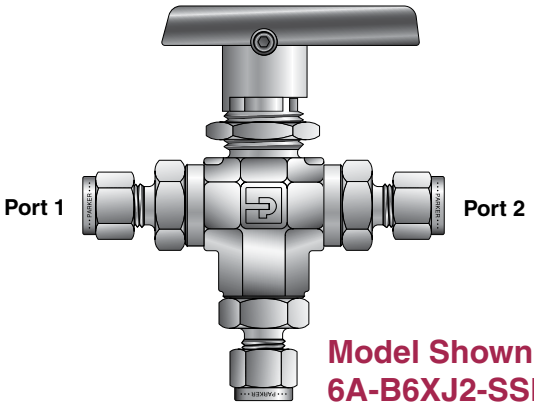
How to Order



Model Shown: 6A-B6LJ2-SSP



Model Shown: 6A-B6XJ2-SSP

Port 1	Port 2	Port 3	Valve Series	Seat Material	Seal Material	Body Material
1A	1/16" A-LOK®		B2L	J PTFE	(Blank) PTFE	SSP 316 Stainless Steel
1Z	1/16" CPI™		B2X	J2 PCTFE	V Fluorocarbon Rubber	BP Brass
2A	1/8" A-LOK®				EPR Ethylene Propylene Rubber	MP Alloy N24135
2Z	1/8" CPI™				BN Nitrile Rubber	HCP Alloy N30002
2F	1/8" Female NPT				KZ Highly Florinated Fluorocarbon Rubber	
2M	1/8" Male NPT				LT Live-Loaded PTFE Packing with PTFE Seals	
4A	1/4" A-LOK®				VLT Live-Loaded PTFE Packing with Fluorocarbon Rubber Seals	
4Z	1/4" CPI™				EPRLT Live-Loaded PTFE Packing with Ethylene Propylene Rubber Seals	
4M	1/4" Male NPT				BNLT Live-Loaded PTFE Packing with Nitrile Rubber Seals	
M3A	3mm A-LOK				KZLT Live-Loaded PTFE Packing with Highly Florinated Fluorocarbon Rubber Seals	
M3Z	3mm CPI™					
4A	1/4" A-LOK®		B6L	J PTFE		
4Z	1/4" CPI™		B6X	J2 PCTFE		
4F	1/4" Female NPT			S2 Spring-Loaded PCTFE		
4M	1/4" Male NPT			PKR PTFE Lubricated PEEK		
4Q	1/4" UltraSeal			SPKR Spring-Loaded PTFE Lubricated PEEK		
4V	1/4" VacuSeal					
6A	3/8" A-LOK®					
6Z	3/8" CPI™					
6M	3/8" Male NPT					
6Q	3/8" UltraSeal					
M6A	6mm A-LOK®					
M6Z	6mm CPI™					
M8A	8mm A-LOK®					
M8Z	8mm CPI™					
M10A	10mm A-LOK®					
M10Z	10mm CPI™					
6F	3/8" Female NPT		B8L	J PTFE		
8A	1/2" A-LOK®		B8X	J2 PCTFE		
8Z	1/2" CPI™			S2 Spring-Loaded PCTFE		
8F	1/2" Female NPT			PKR PTFE Lubricated PEEK		
8M	1/2" Male NPT			SPKR Spring-Loaded PTFE Lubricated PEEK		
8Q	1/2" UltraSeal					
8V	1/2" VacuSeal					
12A	3/4" A-LOK®					
12Z	3/4" CPI™					
12F	3/4" Female NPT					
M12A	12mm A-LOK®					
M12Z	12mm CPI™					
M16A	16mm A-LOK®					
M16Z	16mm CPI™					

Notes:
1. Panel Mounting Nut supplied with each valve. Various port combinations are available.
2. See How to Order.
3. VacuSeal and UltraSeal are not available in Brass.
4. 12F (3/4" Female NPT) not panel mountable.

See examples on page 9. See pages 10 and 11 for information about How to Order Options and Maintenance Kits.

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How to Order (Continued)

Examples: Two-Way Valves

4Z	4F	–	B6L	J	–	BP
Port 1	Port 2		Valve Series	Seat Material	Seal Material	Body Material

Describes a B6L ball valve with a 1/4" CPI™ end connection for port 1 and a 1/4" female NPT end connection for port 2, PTFE seats, PTFE stem and body seals, brass construction, with a panel mounting nut.

8A	*	–	B8L	J	–	BN	–	SSP
Port 1	Port 2		Valve Series	Seat Material		Seal Material		Body Material

Describes a B8L ball valve with a 1/2" A-LOK® end connections for ports 1 and 2, PTFE seats, Nitrile rubber stem and body seals, stainless steel construction, with a panel mounting nut.
***Note:** If ports 1 and 2 are the same, eliminate the port 2 designator.

M3A	*	–	B2L	J2	–	VLT	–	SSP
Port 1	Port 2		Valve Series	Seat Material		Seal Material		Body Material

Describes a B2L ball valve with 3mm A-LOK® end connections for ports 1 and 2, PCTFE seats, fluorocarbon rubber body seals, live-loaded PTFE packing, stainless steel construction, with a panel mounting nut. ***Note:** If ports 1 and 2 are the same, eliminate the port 2 designator.

Examples: Three-Way Diverter Valves

4Z	4Z	4F	–	B6X	J2	–	V	–	BP
Port 1	Port 2	Port 3		Valve Series	Seat Material		Seal Material		Body Material

Describes a B6X ball valve with 1/4" CPI™ end connections for side ports 1 and 2, 1/4" female NPT end connection for bottom port 3, PCTFE seats, fluorocarbon rubber stem and body seals, brass construction, and a panel mounting nut.

2Z	*	*	–	B2X	J	–	SSP
Port 1	Port 2	Port 3		Valve Series	Seat Material	Seal Material	Body Material

Describes a B2X ball valve with 1/8" CPI™ end connections for ports 1, 2, and 3, PTFE seats, PTFE stem and body seals, stainless steel construction, and a panel mounting nut.
***Note:** If ports 1, 2, and 3 are the same, eliminate the port 2 and port 3 designators.

Examples: Three-Way Selector Valves

4M	4M	4F	–	B6X	S2	–	EPR	–	SSP
Port 1	Port 2	Port 3		Valve Series	Seat Material		Seal Material		Body Material

Describes a B6X ball valve with 1/4" male NPT end connections for side ports 1 and 2, 1/4" female NPT end con-nection for bottom port 3, spring-loaded PCTFE seats, ethylene propylene rubber stem and body seals, stainless steel construction, and a panel mounting nut.

8A	*	*	–	B8X	S2	–	BNLT	–	SSP
Port 1	Port 2	Port 3		Valve Series	Seat Material		Seal Material		Body Material

Describes a B8X ball valve with 1/2" A-LOK® end connections for ports 1, 2, and 3, spring-loaded PCTFE seats, Nitrile rubber body seals, live loaded PTFE packing, stainless steel construction, and a panel mounting nut.
***Note:** If ports 1, 2, and 3 are the same, eliminate the port 2 and port 3 designators.

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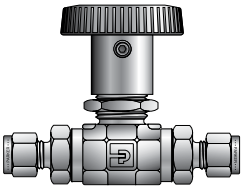
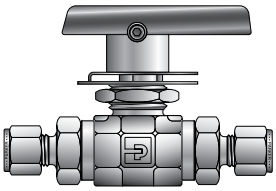
Options

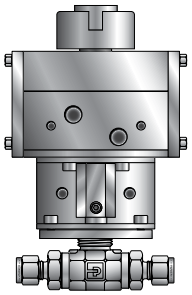


Round Handle



Lock-Out Handle

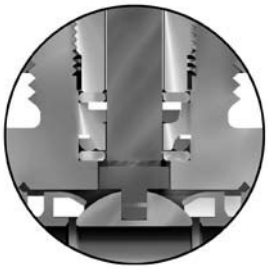
Actuator Options



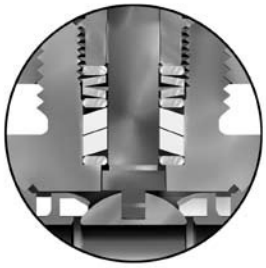
Double Acting (61AD) Pneumatic Actuator

Spring Returns (61AC & AO) Pneumatic Actuator

70 and 80 Series Electric Actuator



O-Ring Stem Seals



Live-Loaded Stem Seals

Two-Way Valve Upstream and Downstream Drain Options

For draining upstream or downstream media on two-way valves at pressures below 150 psig (10 bar), add the suffix **–VBU** (Vented Ball Upstream) or **–VBD** (Vented Ball Downstream). Example: 4Z-B6LJ-SSP-VBU. This option is also suitable to vent the ball cavity in vacuum applications. For pressures up to 3,000 psig (207 bar), select **S2** or **SPKR** spring-loaded seats and add the suffix **–VBU** (Vented Ball Upstream) or **–VBD** (Vented Ball Downstream). Example: 4Z-B6L**S2**-SSP-**VBU**

Note: VBD and VBU are ball cavity vents only.

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How to Order Options

	Examples
Lock-Out Devices: Add the suffix LD to the end of the part number to order directly on the valve. For field installation, simply substitute the correct valve series number after LD.	4F-B6LJ2-BN-SSP-**LD** **LD-B8L**
Colored Lever Handles: Add the designator corresponding to the correct handle as a suffix to the part number (black is standard). **W** = white, **B** = blue, **G** = green, **R** = red, **Y** = yellow.	M6A-B6XPKR-SSP-**G**
Colored Round Handles: Add the designator corresponding to the correct handle as a suffix to the part number. **S** = Black, **S-W** = white, **S-B** = blue, **S-G** = green, **S-R** = red, **S-Y** = yellow. **NOTE:** Round handles are not recommended for B8 valves with PEEK seats.	M6A-B6XPKR-SSP-**S-G**
Metal Oval Handles: Add the designator corresponding to the correct handle as a suffix to the valve part number. **OVSS** = stainless steel, **OVAL** = aluminum.	8F-B8LPKR-SSP-**OVSS**
Stainless Steel Handles: Add the suffix **-ST** to the end of the part number (B6 and B8 only).	4F-B6LJ-SSP-**ST**
Pneumatic Actuators: For detailed actuator information, refer to Catalog 4123-PA. For factory assembly, add the actuator part number as the suffix to the valve part number. For field installation, specify the actuator desired. The appropriate mounting hardware may be obtained by adding the valve series and actuator size to the prefix **MK-**.	2F-B2XJ2-V-SSP-**61ACX-2** **61ACX-2** **MK-B2X-61**
Electric Actuators: For detailed actuator information refer to Catalog 4123-EA. For factory assembly, add the actuator part number as the suffix to the valve part number. For field installation, specify the actuator desired. The appropriate mounting hardware may be obtained by adding the valve series and actuator series to the prefix MK-.	8A-B8LPKR-BN-SS-**71A** **71A** MK-**B8L-70**
Oxygen Cleaning: Add the suffix **-C3** to the end of the part number to receive valves cleaned and asembled for oxygen service in accordance with Parker Specification ES8003.	4A-B6LJ-EPR-SSP-**C3**
Electron Beam Welded End Connections: For tamper resistant valves, add the suffix **-EBW** to the end of the part number of stainless steel valves to have end connections electron beam welded.	M6A-B6LSPKR-V-SSP-**EBW**
Fillet Weld End Connections: For seal welded valves, add the suffix **-FW** to the end of the part number of the stainless steel valves to have the end connections seal welded to the body.	8Z-B8LJ2-SSP-**FW**
H2S Environment: To obtain valves suitable for H2S containing environments in accordance with NACE Standard MR0175/ISO 15156, add the suffix **-NC** to the end of the part number.	8F-B8LJ-BN-**SSP-NC**
Grounding Spring: To obtain B8 series valves with a grounding spring, add the suffix **-SPG** to the end of the part number.	8A-B8LJ2-SSP-**SPG**

How to Order Maintenance Kits

Colored Round Handle Kits: Series-Handle-Color. (Example consists of a green handle and handle screw.)	**B6-RD-HANDLE-GREEN**
Stainless Steel Handle Kits: Series-Handle-SS. (Example consists of a stainless steel handle and handle screw.)	**B8-HANDLE-SS**
Colored Lever Handle Kits: Series-Handle-Color. (Example consists of a red handle and handle screw.)	**B6-HANDLE-RED**

Two-way Valve Seal Kits:

PTFE Stem Seal Kits: Kit-Valve Series and Seat Material-Body Material. **KIT-B2LJ-SS**
(Consists of one PTFE stem seal, two stem seal washers, two encapsulated PTFE ball seats, two end connector PTFE seals, one assembly mandrel, maintenance instructions.)

Elastomeric Stem Seal Kits: Kit-Valve Series and Seat Material-Elastomer Material-Body Material. **KIT-B2LJ2-BN-SS**
(Consists of two stem seal Nitrile rubber O-rings, two PTFE back-up rings, two stem seal washers, two encapsulated PCTFE ball seats, two end connector Nitrile rubber O-ring seals, two seat retainer Nitrile rubber O-ring seals, stem glands and maintenance instructions.)

Diverter Valve Seal Kits:

PTFE Stem Seal Kits: Kit-Valve Series and Seat Material-Body Material. **KIT-B6XPKR-SS**
(Consists of one PTFE stem seal, two stem seal washers, two encapsulated PEEK ball seats, three end connector PTFE seals, one assembly mandrel, maintenance instructions.)

Elastomeric Stem Seal Kits: Kit-Valve Series and Seat Material-Elastomer-Body Material. **KIT-B6XJ-V-SS**
(Consists of two stem seal fluorocarbon rubber O-rings, two PTFE back-up rings, two stem seal washers, two encapsulated PTFE ball seats, three end connector fluorocarbon rubber O-ring seals, two seat retainer fluorocarbon rubber O-ring seals, stem glands and maintenance instructions.)

Selector Valve Seal Kits:

PTFE Stem Seal Kits: Kit-Valve Series and Seat Material. **KIT-B6XS2**
(Consists of one PTFE stem seal, two stem seal washers, two encapsulated spring-loaded PCTFE ball seats, two seat retainer fluorocarbon rubber O-rings, three end connector PTFE seals, one assembly mandrel, maintenance instructions.)

Elastomeric Stem Seal Kits: Kit-Valve Series and Seat Material-Elastomer. **KIT-B6XSPKR-V**
(Consists of two stem seal fluorocarbon rubber O-rings, two PTFE back-up rings, two stem seal washers, two encapsulated spring-loaded PEEK ball seat assemblies, three end connector fluorocarbon O-ring seals, two seat retainer fluorocarbon rubber O-rings, stem glands and maintenance instructions.)

Live-loaded Seal Kits:

Kit-Valve Series and Seat Material-Seal Material-Body Material. **KIT-B6LJ2-BNLT-SS**
(Consists of one live-loaded PTFE stem packing, two packing springs (B8 series valves have four springs), three packing washers, two PCTFE encapsulated ball seats, two Nitrile rubber end connector O-ring seals, two Nitrile rubber seat retainer O-ring seals, maintenance instructions.)

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Hi-Pro Ball Valve for High Performance Process Isolation

Catalog 4190-HBV
May 2005

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Product Description

These high performance two piece bi-directional Ball Valves offer the user full cold working pressure ratings up to 10,000 psi (689 bar), giving 100% bubble tight shut off and continuous repeatable performance. The Ball Valves are suitable for the most demanding applications in the oil, gas and process control industries.
By offering a true two piece design, body leakage paths are reduced to a minimum. With the added opportunity to select integral compression ends the user can eliminate the use of taper threads and thread sealant. This avoids system contamination, reduces leakage paths, installation costs, weight and space.

Specifications

- 316 Stainless steel construction.
- Maximum cold working pressure rating 6,000 psi (414 bar) with P.T.F.E. seats.*
- Temperature rating PTFE seats -54˚C to +204˚C (-65˚F to +400˚F).*
- Maximum cold working pressure rating 10,000 psi (689 bar) with PEEK seats.*
- Temperature rating PEEK seats -54˚C to +232˚C (-65˚F to +450˚F).*

*always refer to P/T graph

Features

- Two piece body design - minimal leakage paths.
- 4:1 Pressure boundary designed safety factor.
- Designed to comply with requirements of ANSI/ASME B16.34 where applicable.
- Bi-directional.
- PEEK and PTFE standard ball seat materials.
- PHflex seats available for 25mm bore.
- PTFE and Graphoil gland packings.
- Bubble tight shutoff.
- Floating ball principal with dynamic response seats featuring inherent self relief.
- Anti blowout stem.
- Integral compression ends available eliminating taper threads and thread sealants.
- Low torque operation.
- Quarter turn positive stop handle with ergonomically designed protective sleeve.
- Full hydrostatic and low pressure air tested.
- Connector thread environmentally sealed.
- Anti static.
- Firesafe designed to meet API 607, BS6755 Pt2 (optional).

⚠WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

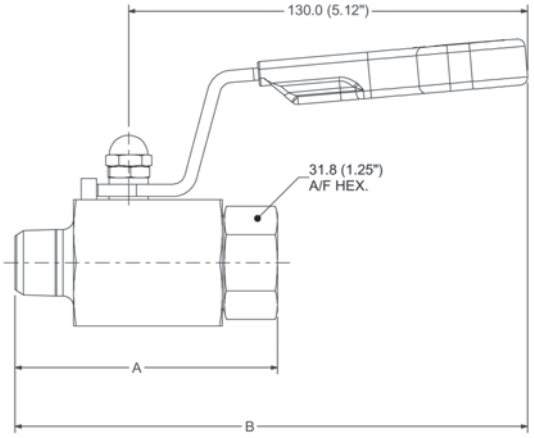
This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

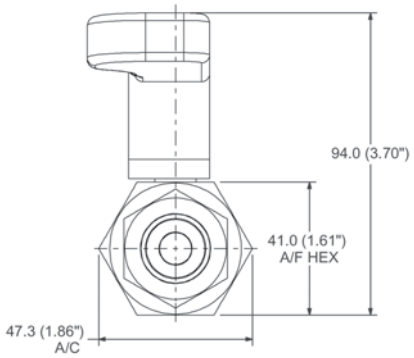
The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the “Offer of Sale” located in Catalog 4110-U Needle Valves (U Series).

Hi-Pro Ball Valve for up to Class 4500 (10,000 psi/689 bar) operations (10mm bore)





Standard range part numbers 10mm bore

Part number	Part number	Inlet	Outlet	Dimensions	
Class 2500	Class 4500	Female	Female	A mm (inch)	B mm (inch)
HPBY*4FF	HPBY*4FFHP	1/4" Female	1/4" Female	70.0 (2.76)	161.5 (6.36)
HPBY*6FF	HPBY*6FFHP	3/8" Female	3/8" Female	71.0 (2.80)	162.0 (6.38)
HPBY*8FF	HPBY*8FFHP	1/2" Female	1/2" Female	85.0 (3.35)	166.5 (6.56)
		Male	Female		
HPBY*4M4F	HPBY*4M4FHP	1/4" Male	1/4" Female	70.0 (2.76)	161.5 (6.36)
HPBY*8M8F	HPBY*8M8FHP	1/2" Male	1/2" Female	85.0 (3.35)	166.5 (6.56)
		A-LOK®	A-LOK®		
HPBY*4A	—	1/4" A-LOK®	1/4" A-LOK®	95.0 (3.74)	165.5 (6.52)
HPBY*6A	—	3/8" A-LOK®	3/8" A-LOK®	99.1 (3.90)	167.4 (6.59)
HPBY*8A	—	1/2" A-LOK®	1/2" A-LOK®	104.7 (4.12)	170.2 (6.70)
HPBY*M6A	—	6mm A-LOK®	6mm A-LOK®	95.0 (3.74)	165.5 (6.52)
HPBY*M8A	—	8mm A-LOK®	8mm A-LOK®	96.6 (3.80)	166.3 (6.55)
HPBY*M10A	—	10mm A-LOK®	10mm A-LOK®	99.5 (3.92)	167.6 (6.60)
HPBY*M12A	—	12mm A-LOK®	12mm A-LOK®	104.7 (4.12)	170.2 (6.70)

*Insert material code - select from material matrix (B = Standard 316 Stainless Steel). For CPI™ change A to Z.
"A" dimensions given for finger tight nuts. For compression ended valve pressure ratings consult tube ratings table.
Combination ends are available.

Standard product specification: PTFE packing with PTFE seats, 10mm bore ball 6,000 psi (414 bar).
Standard product specification: PTFE packing with PEEK seats, 10mm bore ball 10,000 psi (689 bar).

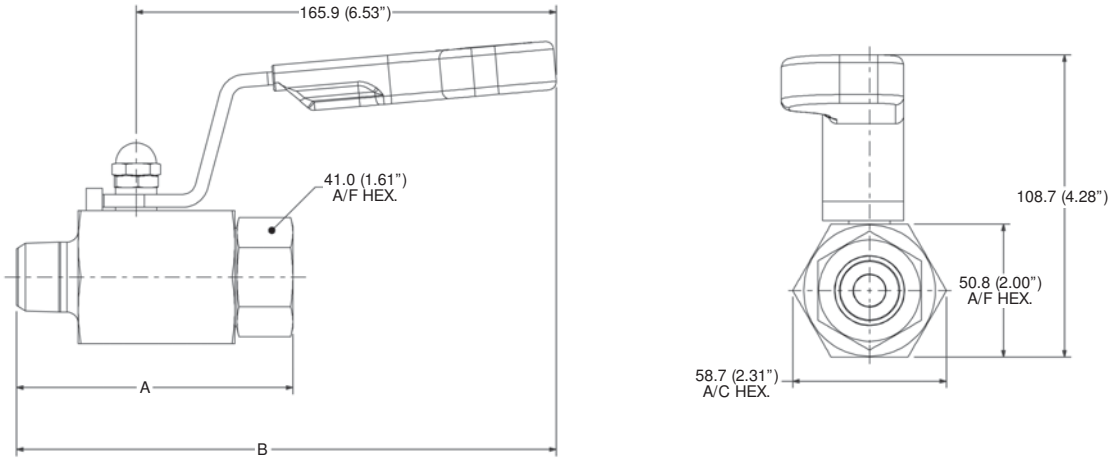
Cold working pressures (psi/bar) in accordance with ANSI/ASME B16.34

		Class Rating		
Material	*Insert	1500	2500	4500
316 Stainless steel std	B	3600/248	6000/414	10000/689
Alloy 400	D		5000/345	9000/620
Duplex	E	3600/248	6000/414	10000/689
Super Duplex	F		6000/414	10000/689
Hasteloy	G		6000/414	10000/689
6Mo	K		6000/414	10000/689
Alloy 625	M		6000/414	10000/689

Available options	Part number Suffix
Graphoil packing	3
PEEK seats	PK
Secured end connector	LC
Handle locking	HL
Spanner actuation	SA
Panel mounting	PM
Fire safe design - Graphoil packing (std)	FS
NACE compliant materials**	NC
Retro-fit handle locking kit (for site assembly)	HPHLKIT
PHlex seats	PH
Base mounting holes (consult Parker)	–

Note: Heat code Trace (HCT) material traceability certificates available on request
**Does not apply for A-lok/CPI ended valves in 316 stainless steel.

Hi-Pro Ball Valve for up to Class 4500 (10,000 psi/689 bar) operations (15mm bore)

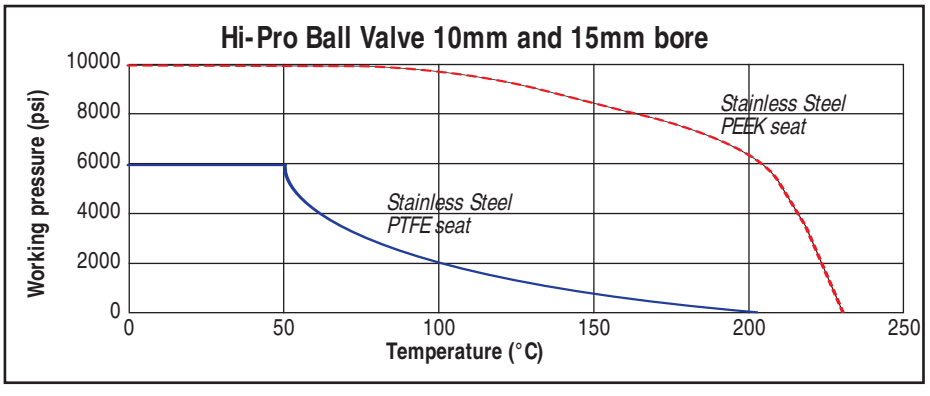


Standard range part numbers 15mm bore

Part number	Part number	Inlet	Outlet	Dimensions	
Class 2500	Class 4500	Female	Female	A mm (inch)	B mm (inch)
HPBX*8FF	HPBX*8FFHP	1/2" Female	1/2" Female	97.2 (3.83)	207.9 (8.18)
		Male	Female		
HPBX*8M8F	HPBX*8M8FHP	1/2" Male	1/2" Female	102.9 (4.05)	213.6 (8.41)
		A-LOK®	A-LOK®		
HPBX*10A	—	5/8" A-LOK®	5/8" A-LOK®	118.0 (4.65)	212.6 (8.37)
HPBX*12A	—	3/4" A-LOK®	3/4" A-LOK®	121.9 (4.80)	214.6 (8.45)
HPBX*M16A	—	16mm A-LOK®	16mm A-LOK®	120.0 (4.72)	214.2 (8.43)
HPBX*M18A	—	18mm A-LOK®	18mm A-LOK®	120.0 (4.72)	214.2 (8.43)
HPBX*M20A	—	20mm A-LOK®	20mm A-LOK®	120.0 (4.72)	214.2 (8.43)

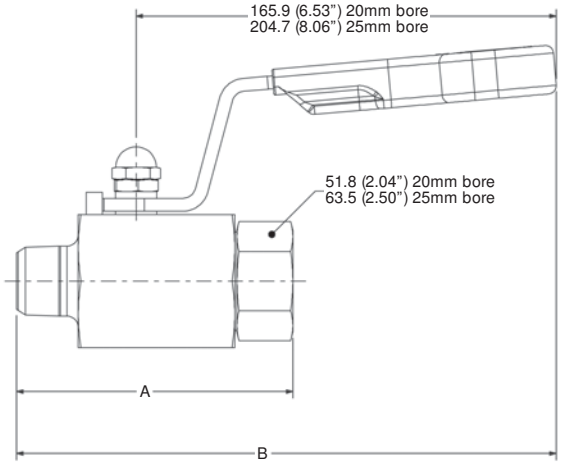
*Insert material code - select from material matrix (B = Standard 316 Stainless Steel). For CPI™ change A to Z.
"A" dimensions given for finger tight nuts. For compression ended valve pressure ratings consult tube ratings table.
Combination ends are available.

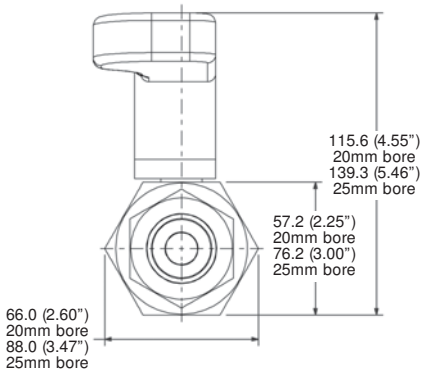
Standard product specification: PTFE packing with PTFE seats, 15mm bore ball 6,000 psi (414 bar).
Standard product specification: PTFE packing with PEEK seats, 15mm bore ball 10,000 psi (689 bar).



Materials and options as per page 3

Hi-Pro Ball Valve for up to Class 2500 (6,000 psi/414 bar) operations (20 & 25mm bore)





Standard range part numbers 20mm bore

Part number	Part number	Inlet	Outlet	Dimensions	
Class 1500	Class 2500	NPT	NPT	A mm (inch)	B mm (inch)
HPBW*12FFLP	HPBW*12FF	3/4" Female	3/4" Female	89.8 (3.54)	204.1 (8.03)
HPBW*12M12FLP	HPBW*12M12F	3/4" Male	3/4" Female	102.5 (4.04)	216.8 (8.53)
		A-LOK®	A-LOK®		
HPBW*14ALP	—	7/8" A-LOK®	7/8" A-LOK®	134.0 (5.28)	221.1 (8.71)
HPBW*16ALP	—	1" A-LOK®	1" A-LOK®	137.6 (5.42)	222.9 (8.77)
HPBW*M22ALP	—	22mm A-LOK®	22mm A-LOK®	133.3 (5.25)	220.8 (8.69)
HPBW*M25ALP	—	25mm A-LOK®	25mm A-LOK®	137.1 (5.40)	222.7 (8.77)

*Insert material code - select from material matrix (B = Standard 316 Stainless Steel). For CPI™ change A to Z.
"A" dimensions given for finger tight nuts. For compression ended valve pressure ratings consult tube ratings table.
Combination ends are available.

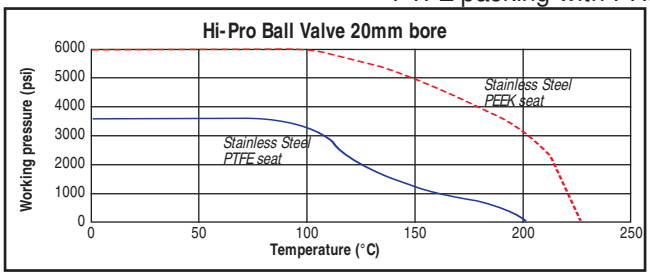
Standard product specification: PTFE packing with PTFE seats, 20mm bore ball 3,600 psi (247 bar).
Standard product specification: PTFE packing with PEEK seats, 20mm bore ball 6,000 psi (414 bar).

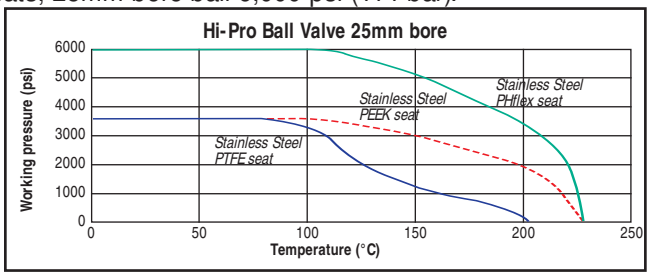
Standard range part numbers 25mm bore

Part number	Part number	Inlet	Outlet	Dimensions	
Class 1500	Class 2500	NPT	NPT	A mm (inch)	B mm (inch)
HPBV*16FFLP	HPBV*16FF	1" Female	1" Female	128.4 (5.05)	260.3 (10.23)
HPBV*16M16FLP	HPBV*16M16F	1" Male	1" Female	132.2 (5.20)	264.1 (10.40)
		A-LOK®	A-LOK®		
HPBV*16ALP	—	1" A-LOK®	1" A-LOK®	153.2 (6.03)	269.8 (10.62)
HPBV*M25ALP	—	25mm A-LOK®	25mm A-LOK®	153.2 (6.03)	269.8 (10.62)

*Insert material code - select from material matrix (B = Standard 316 Stainless Steel). For CPI™ change A to Z.
"A" dimensions given for finger tight nuts. For compression ended valve pressure ratings consult tube ratings table.
Combination ends are available.

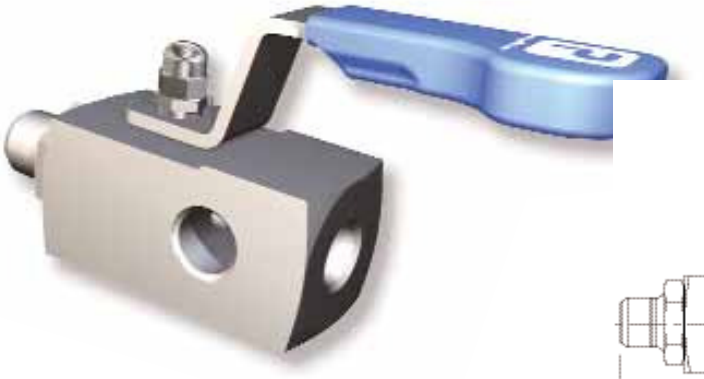
Standard product specification: PTFE packing with PTFE or PEEK seats, 25mm bore ball 3,600 psi (247 bar).
PTFE packing with PHflex seats, 25mm bore ball 6,000 psi (414 bar).

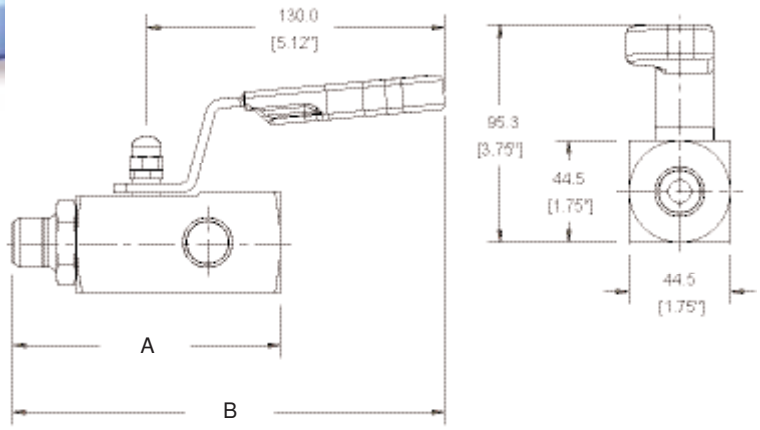




Materials and options as per page 3

Hi-Pro Multi Port Gauge Valve for up to Class 4500 (10,000 psi/689 bar) operations (10mm bore)





Standard Product Specifications

Part No. HPBYGVB8: 316 Stainless Steel construction, PTFE packing, PTFE seats, 10mm bore ball, 6,000 psi (414 bar), 1/2" NPT male inlet x 3 – 1/2" NPT female outlets.

Part No. HPBYGVB12: 316 Stainless Steel construction, PTFE packing, PTFE seats, 10mm bore ball, 6,000 psi (414 bar), 3/4" NPT male inlet x 3 – 1/2" NPT female outlets.

Part No. HPBYGVB8HP: 316 Stainless Steel construction, PTFE packing, PEEK seats, 10mm bore ball, 10,000 psi (689 bar), 1/2" NPT male inlet x 3 – 1/2" NPT female outlets.

Part No. HPBYGVB12HP: 316 Stainless Steel construction, PTFE packing, PEEK seats, 10mm bore ball, 10,000 psi (689 bar), 3/4" NPT male inlet x 3 – 1/2" NPT female outlets.

Note: To obtain optional bleed valve and/or blank plug with the gauge valve the above part number must be suffixed accordingly. If these parts are required they will be shipped loose in the box for customer assembly using their preferred thread sealant.

Part number	Part number	Inlet	Outlet	Dimensions	
6000 psi (414 bar)	10000 psi (689 bar)	Male	Female	A mm (inch)	B mm (inch)
HPBYGV*8	HPBYGV*8HP	1/2" NPT	3x1/2" NPT	116.5 (4.59)	188.1 (7.41)
HPBYGV*12	HPBYGV*12HP	3/4" NPT	3x1/2" NPT	119.5 (4.71)	191.1 (7.52)

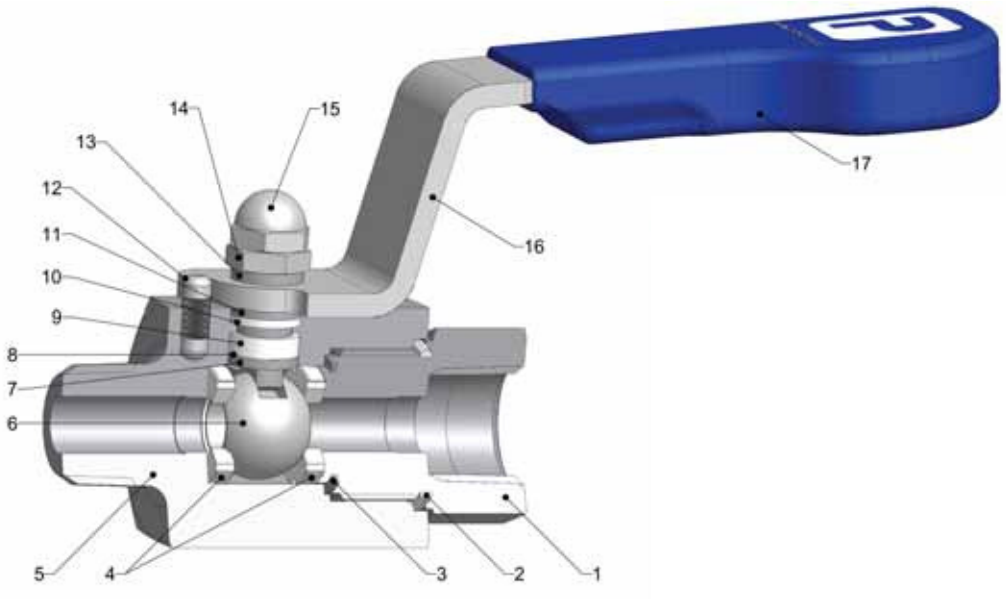
*Insert material code - select from material matrix (B = Standard 316 Stainless Steel).

Bleed valve

Plug

Materials and options as per page 3

Hi-Pro Ball Options for up to Class 4500 (10,000 psi/689 bar) operations

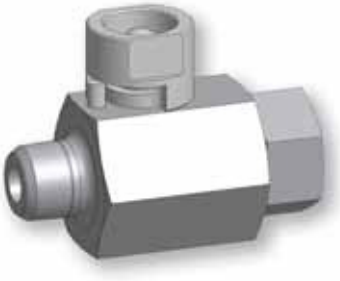


Part description

Item	Description
1	End Connector
2	E-seal™
3	Sealing washer
4	Seats
5	Body
6	Ball
7	Anti blowout stem
8	Thrust Seal
9	Gland packing
10	Upper gland packing
11	Thrust bush
12	Stop pin
13	Thrust bush
14	Lock nut
15	Locking dome nut
16	Handle
17	Handle grip

Handle locking (padlock not supplied)

Secured end connector (double pin)



Spanner actuation

Panel mounting (c/w nuts & bolts)

Parker Hannifin plc
Instrumentation Products Division
Riverside Road
Pottington Business Park
Barnstaple, Devon EX31 1NP
England
Phone: +44 (0) 1271 313131
Fax: +44 (0) 1271 373636
www.parker.com/ipd

Parker Instrumentation

TECNI-AR
Seu caminho
Para automação

Rotary Plug Valves (PR Series)

Catalog 4126-PR
Revised, July 2003

TECNI-AR
Seu Caminho
Para Automação

TECNI-AR Ltda
www.tecni-ar.com.br
Tel: (31)3362-2400

PR Series Rotary Plug Valves

Introduction

Parker PR Series Plug Valves provide positive leak tight shut-off, high flow capacity, and quick quarter-turn operation in a compact attractive package. The patented blow-out resistant seat design offers reliable sealing technology at all operating pressures. In addition to on-off actuation, the plug design allows forward flow throttling. A selection of valve seat and seal materials may be chosen for media compatibility and performance over a broad range of temperatures. The pressure balanced atmospheric seals are backed by PTFE rings to enhance their performance and increase cycle life.

Features

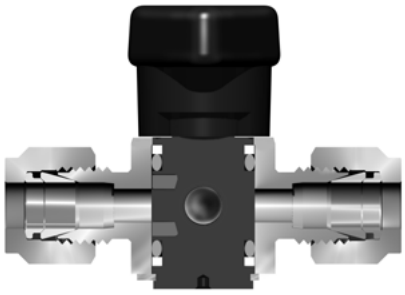
- Patented blow-out resistant seat design
- Pressures up to 3,000 psig (207 bar) CWP
- Quarter-turn operation
- Reliable simple design
- Straight-through flow
- Stainless steel and brass construction
- Nitrile, ethylene propylene, fluorocarbon, and highly fluorinated fluorocarbon rubber seats and seals
- PTFE back-up rings on atmospheric seals
- Low operating torque
- Minimum pressure drop
- Throttling capability
- Positive handle stops
- Color coded fracture resistant nylon handles with directional flow indication
- Easy to service
- 100% factory tested
- Options include lock-out devices, downstream venting, and both stainless steel and T-bar handles

Specifications

- Pressure Ratings:
  Normal Flow Direction: 3000 psig (207 bar) CWP
  Reverse Flow Direction: 150 psig (10 bar)
  Downstream Vent Option: 150 psig (10 bar)

Open

Closed

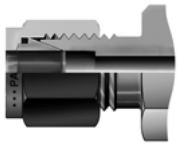


Model Shown: 4A-PR4-VT-SS

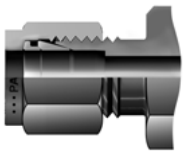
U.S. Patent 5,234,193

Available End Connections

Z-Single ferrule CPI™ compression port

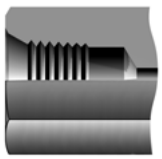


A-Two ferrule A-LOK® compression port



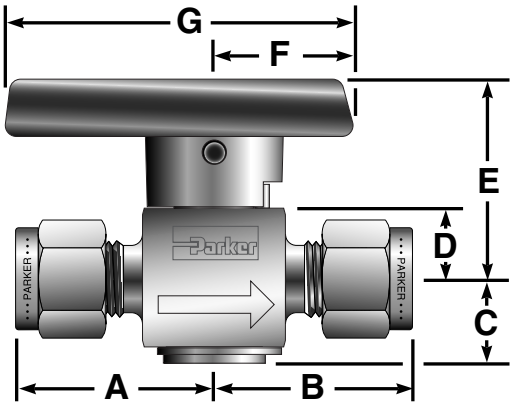
V-VacuSeal face seal port

F-ANSI/ASME B1.20.1 Internal pipe threads



M-ANSI/ASME B1.20.1 External pipe threads

Q-UltraSeal face seal port



Model Shown: 4A-PR4-VT-B

Flow Data / Dimensions

Port Size	Basic Part No.	Flow Data: Orifice Inch	Orifice mm	C_v	X_T‡	End Connections Port 1	Port 2	Dimensions Inches (mm): A†	B†	C	D	E	F	G
2F	PR4	0.193	4.9	1.24	0.39	1/8" Female NPT		0.89 (22.6)	0.89 (22.6)	0.46 (11.7)	0.38 (9.7)	1.07 (27.2)	0.75 (19.1)	1.88 (47.8)
2M		0.172	4.4	1.02	0.39	1/8" Male NPT		0.77 (19.6)	0.77 (19.6)					
2A		0.093	2.4	0.22	0.48	1/8" A-LOK®		1.00 (25.4)	1.00 (25.4)					
2Z						1/8" CPI™								
4F		0.193	4.9	1.24	0.39	1/4" Female NPT		1.05 (26.7)	1.05 (26.7)					
4M		0.193	4.9	1.24	0.39	1/4" Male NPT		0.96 (24.4)	0.96 (24.4)					
4A		0.187	4.7	1.18	0.41	1/4" A-LOK®		1.09 (27.7)	1.09 (27.7)					
4Z						1/4" CPI™								
4Q		0.187	4.7	1.18	0.41	1/4" UltraSeal		0.85 (21.7)	0.85 (21.7)					
4V		0.187	4.7	1.18	0.41	1/4" VacuSeal		1.02 (25.9)	1.02 (25.9)					
6M		0.193	4.9	1.24	0.39	3/8" Male NPT		0.94 (23.9)	0.94 (23.9)					
6A		0.193	4.9	1.24	0.39	3/8" A-LOK®		1.14 (29.0)	1.14 (29.0)					
6Z						3/8" CPI™								
M3A		0.086	2.2	0.15	0.48	3mm A-LOK®		0.98 (24.9)	0.98 (24.9)					
M3Z						3mm CPI™								
M6A		0.188	4.8	1.18	0.41	6mm A-LOK®		1.08 (27.4)	1.08 (27.4)					
M6Z						6mm CPI™								
M8A		0.193	4.9	1.24	0.48	8mm A-LOK®		1.11 (28.2)	1.11 (28.2)					
M8Z						8mm CPI™								
4F	PR6	0.281	7.1	3.19	0.28	1/4" Female NPT		1.19 (30.2)	1.19 (30.2)	0.67 (17.0)	0.56 (14.2)	1.49 (37.8)	0.99 (25.1)	2.40 (61.0)
6A		0.281	7.1	3.19	0.28	3/8" A-LOK®		1.33 (33.8)	1.33 (33.8)					
6Z						3/8" CPI™								
8F		0.281	7.1	3.19	0.28	1/2" Female NPT		1.44 (36.6)	1.44 (36.6)					
8M		0.281	7.1	3.19	0.28	1/2" Male NPT		1.32 (33.5)	1.32 (33.5)					
8A		0.281	7.1	3.19	0.28	1/2" A-LOK®		1.44 (36.6)	1.44 (36.6)					
8Z						1/2" CPI™								
M8A		0.250	6.4	2.84	0.29	8mm A-LOK®		1.30 (33.0)	1.30 (33.0)					
M8Z						8mm CPI™								
M10A		0.281	7.1	3.19	0.28	10mm A-LOK®		1.34 (34.0)	1.34 (34.0)					
M10Z						10mm CPI™								
M12A		0.281	7.1	3.19	0.28	12mm A-LOK®		1.47 (37.3)	1.47 (37.3)					
M12Z						12mm CPI™								

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.
‡ Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

How to Order

The correct part number is easily derived from the following number sequence. The six product characteristics required are coded as shown below. *Note: If the inlet and outlet ports are the same, eliminate the outlet port designator.

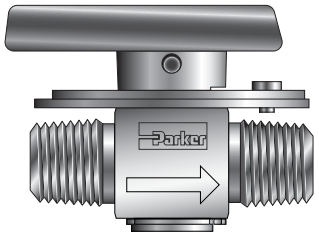
Example:	4Z	*	-	PR4	-	BN	T	-	SS
	①	②		③		④	⑤		⑥
	Inlet Port	Outlet Port		Valve Series		Seal Material	Back-Up Rings		Body Material

Describes a PR Series rotary plug valve equipped with 1/4" CPI™ compression inlet and outlet ports, Buna-N seals, PTFE back-up rings, and stainless steel construction.

① Inlet Port	② Outlet Port	③ Valve Series	④ Seal Material	⑤ Back-Up Rings	⑥ Body Material
2F, 2M, 2A, 2Z, 4F, 4M, **4A, 4Z, 4Q, 4V, 6M, 6A, 6Z, M3A, M3Z, M6A, M6Z, M8A, M8Z**		**PR4**	**V-** Fluorocarbon Rubber **KZ-** Highly Fluorinated Fluorocarbon Rubber **EPR-** Ethylene Propylene Rubber **BN-** Buna-N Rubber	**T-** PTFE	**SS-** Stainless Steel **B -** Brass
4F, 6A, 6Z, 8F, 8M, 8A, 8Z, M8A, M8Z, M10A, M10Z, M12A, M12Z		**PR6**			

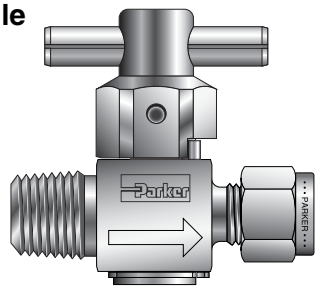
Options

Lock-Out Device



Used to lock the handle from accidental rotation in either the opened or closed position. To order the device with the valve, add the suffix –**LD** to the end of the part number. **Example and model shown**: 4M-PR4-VT-B-**LD.** To order the device separately, specify **LD-PR4** or **LD-PR6**.

T-Bar Handle



An all metal bar stock design for higher strength and durability. Consists of a stainless steel pin and aluminum adapter. To order, add the suffix –**T** to the end of the part number. **Example and model shown:** 4M4A-PR4-EPRT-SS-**T**.

Downstream Venting – As the valve is positioned from opened to closed, downstream pressure is released to atmosphere through a vent hole in the body and plug. The maximum recommended operating pressure for this option is 150 psig (10 bar). To order, insert **V** after PR in the model number. **Example:** 4A-PR**V**4-VT-B

Colored Handles – Black is the standard color. Add the designator corresponding to the correct handle color as a suffix to the part number: **W** – white, **B** – blue, **G** – green, **R** – red, **Y** – yellow. **Example:** M6A-PR4-BNT-SS-**G**

Stainless Steel Directional Handles – A stainless steel handle with the same design configuration as the standard nylon handle is available for the PR4 series. Add the designator –**ST** as a suffix to the part number. **Example:** 4Q-PR4-EPRT-SS-**ST**

⚠ WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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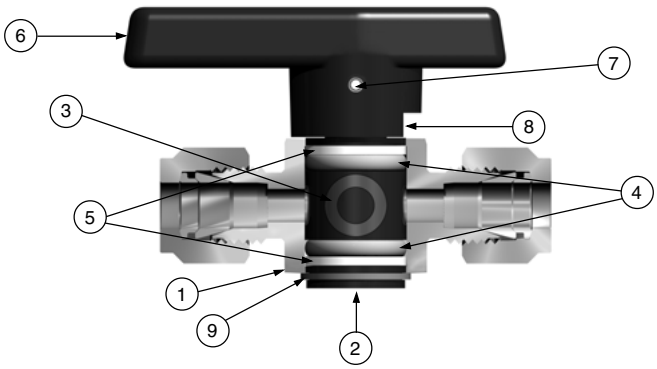


Model Shown: 4A-PR4-VT-SS

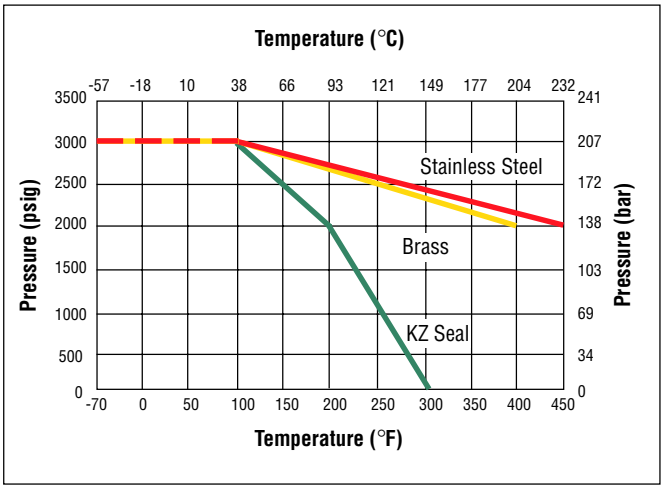
Materials of Construction

Item #	Part Description	Stainless Steel	Brass
1	Body	ASTM A 479 Type 316	ASTM B 16 Alloy C36000
2	Plug*	ASTM A 479 Type 316	ASTM B 16 Alloy C36000
3	Seat**	Fluorocarbon Rubber	
4	O-ring Seals**	Fluorocarbon Rubber	
5	Back-up Rings	PTFE	
6	Handle	Nylon 6/6	
7	Handle Pin	316 Stainless Steel	
8	Body Pin	316 Stainless Steel (Not shown)	
9	Retaining Ring	316 Stainless Steel	

* Plugs are PTFE color coated – Stainless steel plugs are black; Brass plugs are brown.

** Optional Seat and O-ring seal materials are available. Lubrication: Perfluorinated polyether

Pressure vs. Temperature



Note: To determine MPa, multiply bar by 0.1

Note: This Pressure versus Temperature chart reflects the maximum temperature range of indicated body materials.

The temperature rating of the elastomer seals become the limiting factor on temperature range.

- Temperature Ratings:
  - Buna-N Rubber:
    -30 °F to 225 °F (-34 °C to 107 °C)
  - Fluorocarbon Rubber:
    -10 °F to 450 °F (-23 °C to 232 °C)
  - Highly Fluorinated Fluorocarbon Rubber:
    -10 °F to 300 °F (-23 °C to 149 °C)
  - Ethylene Propylene Rubber:
    -70 °F to 275 °F (-57 °C to 135 °C)

Flow Calculations with 1000 psig (69 bar) Inlet Pressure

Valve Series	Maximum Cv	Pressure Drop Δ P		Water @ 60 °F (16 °C)		Air @ 60 °F (16 °C)	
		psig	bar	gpm	m³/hr	scfm	m³/hr
PR4	1.24	10	0.7	3.9	0.9	123.1	209.6
		50	3.4	8.8	2.0	265.9	446.3
		100	6.9	12.4	2.8	359.6	607.0
PR6	3.19	10	0.7	10.1	2.3	315.7	533.5
		50	3.4	22.6	5.1	672.3	1128.2
		100	6.9	31.9	7.2	891.6	1504.1

Kits

Plug Kits – Specify the combination of valve series, seal material, plug material, and handle color (if applicable). **Example: KIT-PR4-VT-SS-Y**. This kit consists of a PR4 stainless steel plug with fluorocarbon rubber seat and seal elastomers, PTFE back-up rings, yellow handle, and handle pin.
Seal Kits – Specify the combination of valve series and seal material. **Example: KIT-PR4-BN**. This kit consists of a PR4 Buna-N rubber seat and seal elastomers and PTFE back-up rings.

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Swing-Out Ball Valves (SWB Series)

Catalog 4125-SWB
Revised, April 2004

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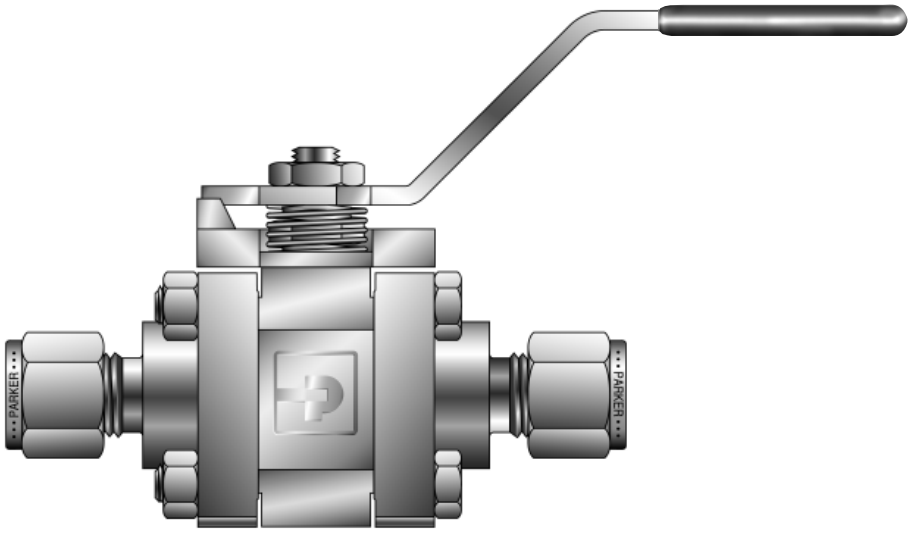
www.tecni-ar.com.br
Tel: (31)3362-2400

SWB Series Ball Valves

Introduction

Parker's three-piece SWB Series Ball Valves are durable valves that can handle the pressure and piping loads. The center section can swing out to quickly and easily replace seats, seals and the ball without major disruption to the piping system.



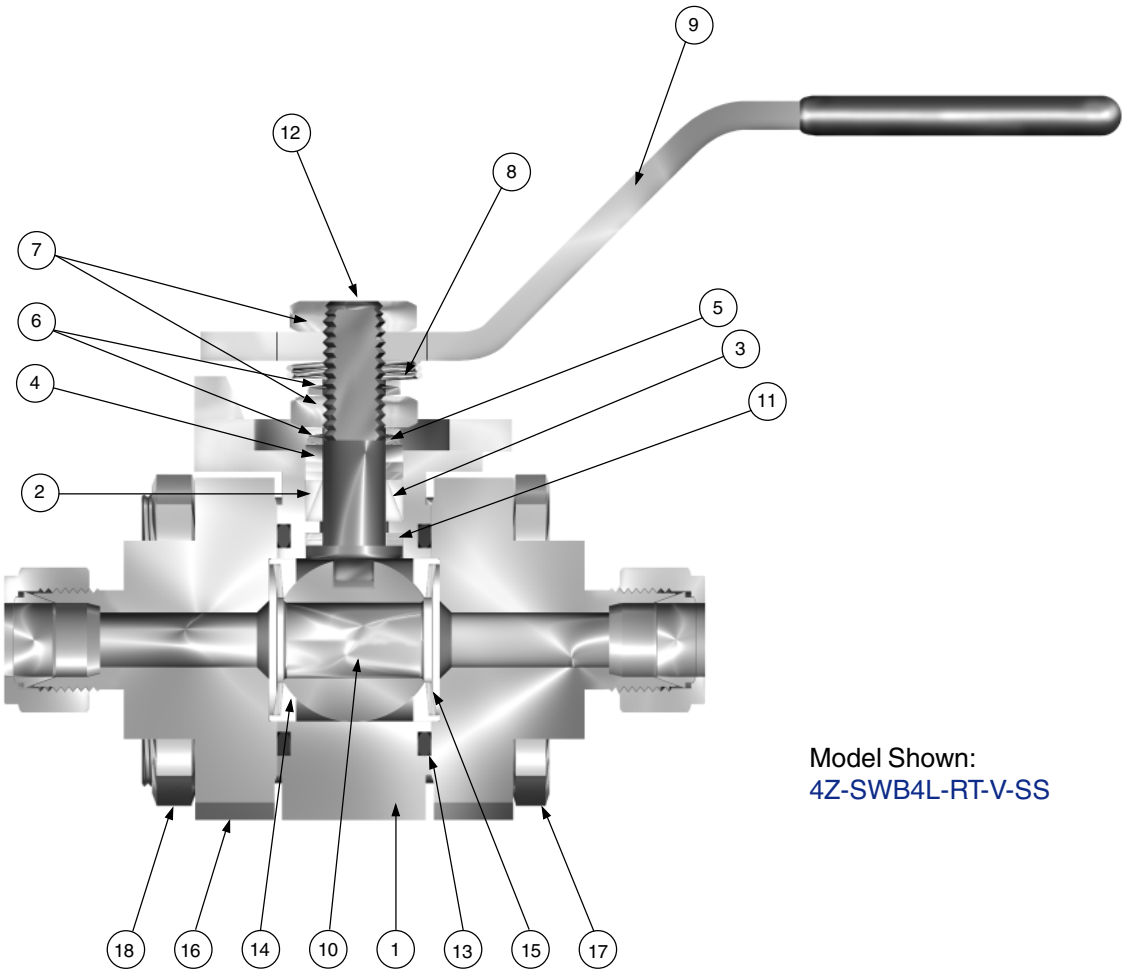
Model Shown: 8Z-SWB8L-RT-BN-SS

Features

- Free floating ball design allows for seat wear compensation
- Self-compensating stem seal
- Spring-loaded seats
- Blow out resistant stem
- Fully enclosed body bolting
- Four bolt construction
- ISO-type actuator mounting design
- Pneumatic and electric actuation options
- 100% factory tested

Specifications

- Body Materials:
  - Stainless Steel
- Seat Materials:
  - Reinforced PTFE
  - PEEK
- Seal Materials:
  - Buna-N Rubber
  - Ethylene Propylene Rubber
  - Fluorocarbon Rubber
  - PTFE
  - Grafoil®
- Flow Data:
  - C_v: 1.1 to 35.0
- Pressure Ratings:
  - 2500 psig (172 bar)
- Temperature Ratings:
  - Seats:
    - Reinforced PTFE Seats
      - -65 °F to 450 °F (-54 °C to 232 °C)
    - PEEK Seats:
      - -65 °F to 600 °F (-54 °C to 316 °C)
  - Seals:
    - Buna-N Rubber Seals:
      - -40 °F to 250 °F (-40 °C to 121 °C)
    - Ethylene Propylene Rubber Seals:
      - -65 °F to 300 °F (-54 °C to 149 °C)
    - Fluorocarbon Rubber Seals:
      - -15 °F to 400 °F (-26 °C to 204 °C)
    - PTFE Seals:
      - -65 °F to 350 °F (-54 °C to 177 °C)
    - Grafoil® Seals:
      - -65 °F to 600 °F (-54 °C to 316 °C)



Model Shown:
4Z-SWB4L-RT-V-SS

Materials of Construction

Item #	Part	Qty	Material
1	Body	1	ASTM A 351 Grade CF3M
2	Lower Packing	1	PTFE
3	Upper Packing	1	PTFE
4	Packing Support	2	PEEK
5	Packing Gland	1	ASTM A 276 Type 304
6	Stem Spring	4	ASTM A 176 Type 301
7	Stem Hex Nut	2	ASTM A 276 Type 304
8	Grounding Spring	1	ASTM A 276 Type 304
9	Handle Assembly	1	ASTM A 276 Type 304; Vinyl Covered
10	Ball	1	ASTM A 276 Type 316
11	Thrust Washer	2	PEEK
12	Stem	1	ASTM A 276 Type 316
13	Body Seal	2	Fluorocarbon Rubber*
14	Seat	2	Reinforced PTFE, PEEK
15	Seat Spring	2	ASTM A 176 Type 301
16	End Flanges	2	ASTM A 351 Grade CF3M
17	Body Bolts	4	ASTM A 193 Grade B8
18	Body Bolt Nuts	4	ASTM A 194 Grade 8

*Optional body seal materials are described in the How to Order section.

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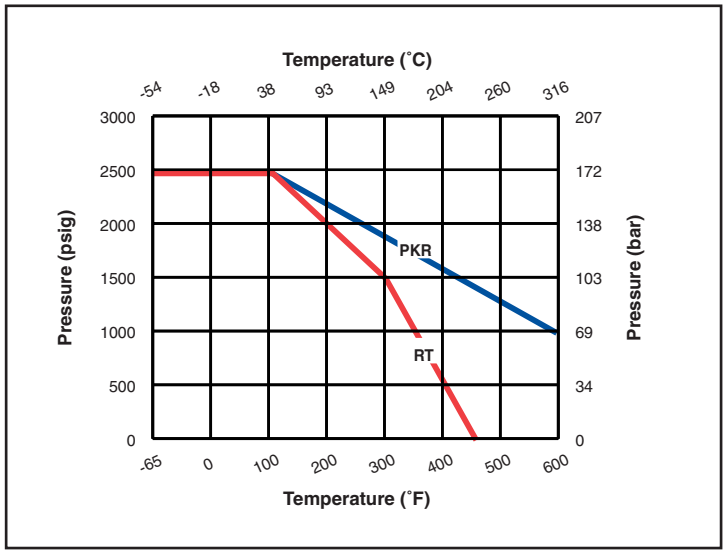
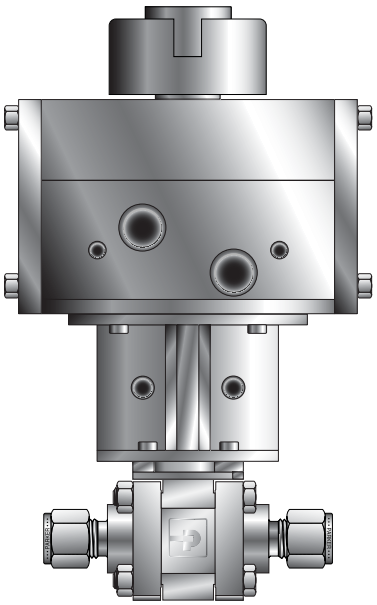
Pressure vs. Temperature

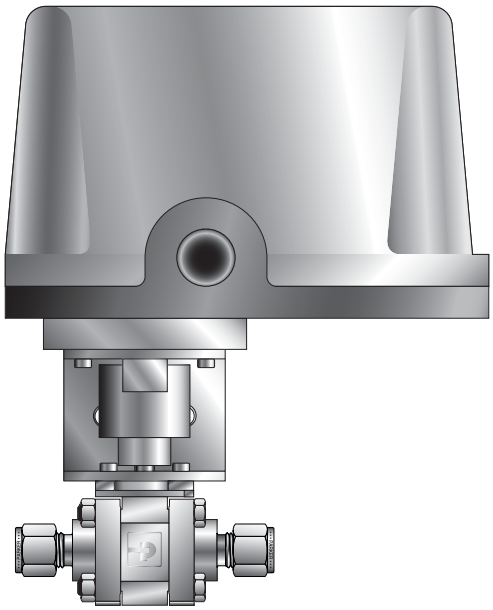


Notes:

- This Pressure versus Temperature chart reflects the use of indicated seat materials in Stainless Steel valves without consideration of seal materials. When combining seat and seal materials, the most restrictive temperature rating of the seats or seals becomes the limiting factor on temperature range. Please refer to Page 2 for seal temperature ranges.
- Elastomeric seals are recommended if the application subjects the valve to thermal cycling.



Pneumatic Actuated Model Shown:
8Z-SWB8L-RT-V-SS-62AD

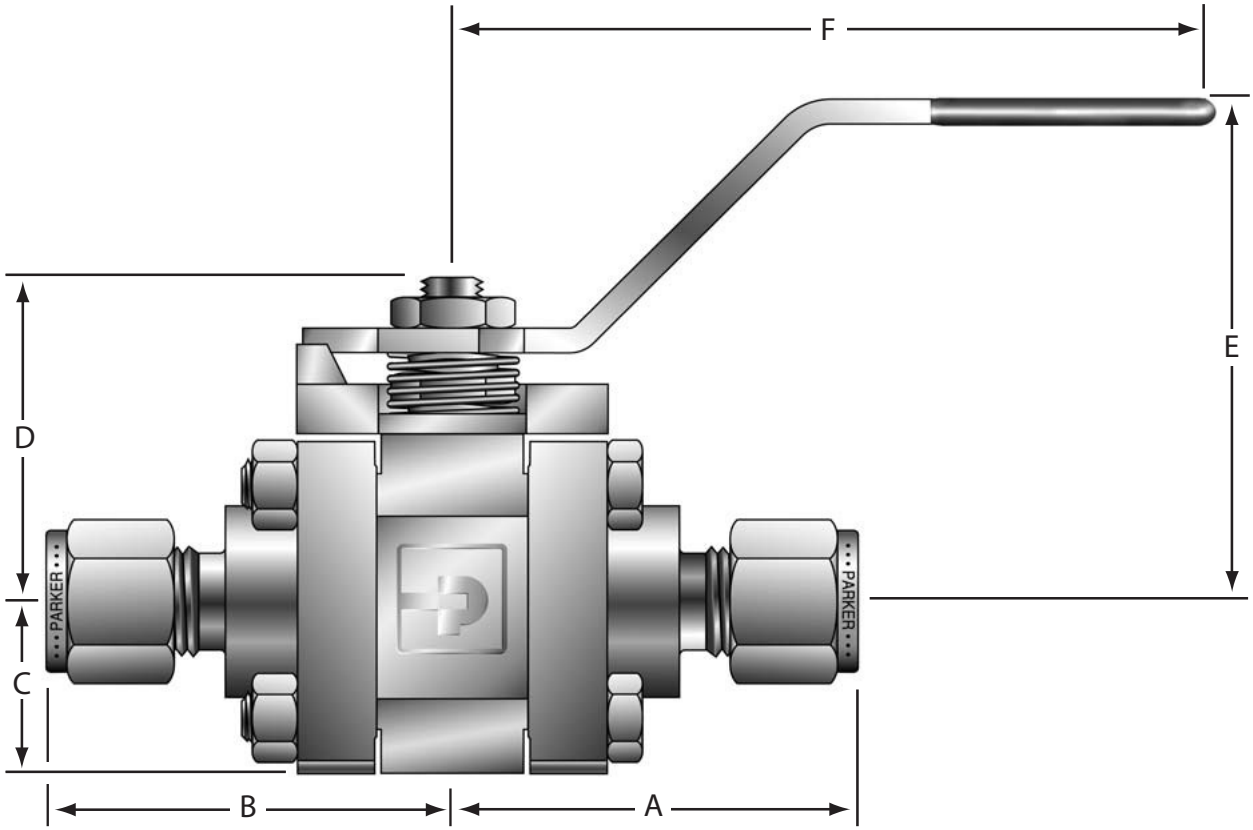


Electric Actuated Model Shown:
8A-SWB8L-PKR-G-SS-71

Dimensions / Flow Data

Basic Part Number	Flow Data				Dimensions											
	Orifice				A†		B†		C		D		E		F	
	Inch	mm	C_v	X_T*	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
4Z(A)-SWB4L	0.19	4.8	1.1	0.19	1.59	40.4	1.59	40.4								
4F-SWB4L	0.28	7.1	2.9	0.29	1.09	27.7	1.09	27.7	0.68	17.3	1.28	32.5	2.00	50.8	3.00	76.2
6Z(A)-SWB4L	0.28	7.1	4.5	0.19	1.59	40.4	1.59	40.4								
6F-SWB8L	0.44	11.2	8.2	0.35	1.29	32.8	1.29	32.8								
8Z(A)-SWB8L	0.41	10.4	6.4	0.35	2.03	51.6	2.03	51.6								
8F-SWB8L	0.44	11.2	8.2	0.26	1.29	32.8	1.29	32.8	0.89	22.6	1.54	39.1	2.36	59.9	3.94	100.1
8W-SWB8L	0.41	10.4	6.4	0.35	1.29	32.8	1.29	32.8								
8PBW1-SWB8L	0.44	11.2	8.2	0.26	1.35	34.3	1.35	34.3								
8PSW-SWB12L	0.52	13.2	13.5	0.34	1.35	34.3	1.35	34.3								
12Z(A)-SWB12L	0.56	14.2	14.7	0.28	2.03	51.6	2.03	51.6								
12F-SWB12L	0.56	14.2	14.7	0.28	1.39	35.3	1.39	35.3	1.06	26.9	1.81	46.0	2.59	65.8	3.94	100.1
12W-SWB12L	0.56	14.2	14.7	0.28	1.39	35.3	1.39	35.3								
12PBW1-SWB12L	0.56	14.2	14.7	0.28	1.37	34.8	1.37	34.8								
12PSW-SWB16L	0.88	22.4	35.0	0.29	1.95	49.5	1.95	49.5								
16Z(A)-SWB16L	0.88	22.4	35.0	0.29	2.68	68.1	2.68	68.1								
16F-SWB16L	0.88	22.4	35.0	0.29	1.79	45.5	1.79	45.5	1.25	31.8	2.30	58.4	3.00	76.2	5.71	145.0
16W-SWB16L	0.88	22.4	35.0	0.29	1.79	45.5	1.79	45.5								
16PBW1-SWB16L	0.88	22.4	35.0	0.29	1.81	46.0	1.81	46.0								

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.
† For CPI™and A-LOK®, dimensions are measured with nuts in the finger tight position.



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SWB Series Ball Valves

How to Order

The correct part number is easily derived from the following number sequence. The seven product characteristics required are coded as shown below.

Example: 8A (1) * (2) - SWB8L (4) - RT (5) - BN (6) - SS (7)

Describes a SWB8L Two-Way Ball Valve with 1/2" A-LOK® end connections for ports 1 and 2, reinforced PTFE seats, Buna-N rubber body seals, and stainless steel construction. ***Note**: If ports 1 and 2 are the same, eliminate the port 2 designator.

Port Size	① Port 1 ② Port 2	③ Valve Series	④ Valve Configuration	⑤ Seat Material	⑥ Seal Material	⑦ Body Material
4 6 8 12 16	**Z -** CPI™Tube **A -** A-LOK®Tube **F -** Female NPT **W -** Tube Socket Weld **PSW -** Pipe Socket Weld **PBW1 -** Pipe Buttweld (Schedule 10)	**SWB4** **SWB8** **SWB12** **SWB16**	**L -** 2 Way	**PKR -** PTFE Reinforced PEEK **RT -** Glass Reinforced PTFE	**T -** PTFE **BN -** Buna-N Rubber **EPR -** Ethylene Propylene Rubber **V -** Fluorocarbon Rubber **G -** Grafoil®Gasket	**SS -** Stainless Steel

Note: Upper and Lower PTFE packing is replaced with PEEK when valves are ordered with Grafoil®Seals.

How to Order Options

Lever Lock-Out Devices – Add the suffix -LD to the end of the part number to order directly on the valve. **Example:** 4F-SWB8L-RT-V-SS-LD. For field installation, substitute the correct valve series number after **LD**. **Example:** LD-SWB8L

Oval Handles – Add the suffix **-S** to the end of the part number. **Example:** 8A-SWB8L-RT-T-SS-**S**

Oval Handle Lock-Out Devices – Add the suffix -LD to the end of the part number to order directly on the valve. **Example:** 6F-SWB8L-PKR-V-SS-S-LD. For field installation, substitute the correct valve series number after LD. **Example:** S-LD-SWB8L

Handle Extensions – Add the suffix -EXT#, where # is the length in inches, to the end of the part number to order directly on the valve. **Example:** 6F-SWB8L-PKR-G-SS-EXT4.

Pneumatic Actuators – For detailed actuator information, refer to Catalog 4123-PA. For factory assembly, add the actuator part number as the suffix to the valve part number. **Example:** 8F-SWB8L-RT-BN-SS-61AC-2. For field installation, specify the the actuator desired. **Example:** 61AC-2. The appropriate mounting hardware may be obtained by adding the valve series and actuator size to the prefix MK-. **Example:** MK-SWB8L-61

Electric Actuators – For detailed actuator information, refer to Catalog 4123-EA. For factory assembly, add the actuator part number as the suffix to the valve part number. **Example:** 8A-SWB8L-PKR-EPR-SS-71A. For field installation, specify the actuator desired. **Example:** 71A. The appropriate mounting hardware may be obtained by adding the valve series and actuator series to the prefix MK-. **Example:** MK-SWB8L-70.

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3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

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7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and not withstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

11/98-P

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Pneumatic/Electric Actuators

Catalog 4123
August 2004

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Tel: (31)3362-2400

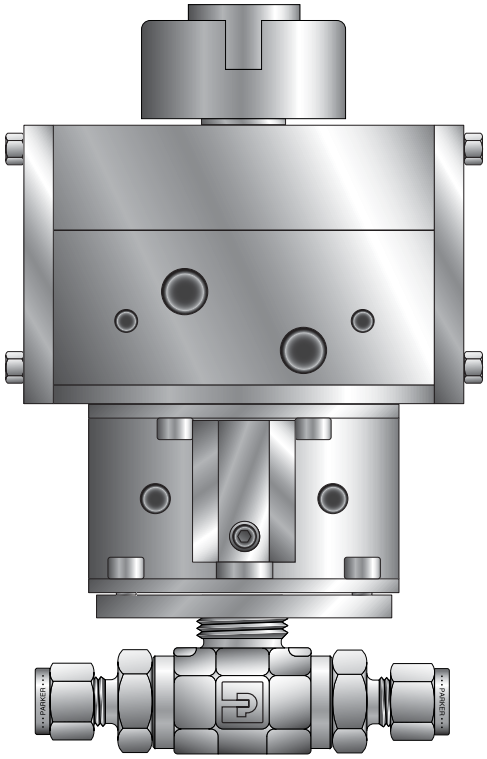
Introduction

Parker 60 Series spring return (AC/AO) or double acting (AD) rack and pinion actuators are compact, simply designed devices that are quality engineered to provide high torque outputs and a high cycle, trouble-free life.

A compact, dual opposed rack and pinion design and guide band suspension combine to produce a symmetrically balanced, center mount actuator. In addition, the actuator has a short powerful stroke, rapid response, and fully concentric operating load capability which ensures optimum performance.

Features

- Three point suspension system uses carbon filled PTFE guide bands for piston alignment and rack support
- Dual opposed piston design uses air pressure on two pistons to deliver a balanced force to the pinion gear
- Patented balanced piston design results in even distribution of bearing loads and eliminates piston tilting
- Multiple spring concept permits actuator use at 40 to 120 psig (2.8 to 8.3 bar) air supply requirements
- Suitable for use with dry or lubricated air, non-corrosive gas, or light hydraulic oil
- Aluminum alloy body construction with two component polyurethane coating
- Manual override



Model Shown: 4Z-B6LJ-V-SS-61AD

Specifications

Operating Pressure

90˚ Models:
40 to 120 psig (2.8 to 8.3 bar) maximum
AC – Normally Closed Spring Return
AD – Double Acting
AO – Normally Open Spring Return
180˚ Models:
80 psig (5.5 bar) maximum
ACX – Spring Return
ADX – Double Acting

Temperature Range

-4 ˚F to 175 ˚F (-20 ˚C to 79 ˚C)
Optional high and low temperature ranges available

Options

- Solenoid valve
- Rotary limit switch with valve position indicator
- Breather block
- Dual mount actuator

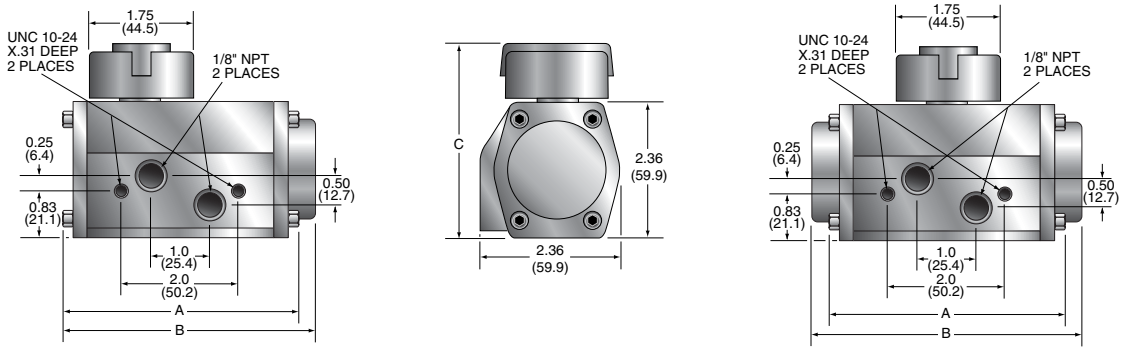
61S Option

- Compact single piston design
- Available for MB, HB, B2, and B6 Series Valves

Operation

Actuators are manufactured with an integral air manifold and internal porting. The air manifold is designed for direct mounting of solenoid valves. This eliminates the need for external tubing and simplifies installation. For applications not requiring a solenoid valve, the air manifold inlet ports are marked “A” and “B”. Air inlet port “A” will rotate the actuator counter-clockwise. Spring return actuators fail clockwise.

Dimensional Data for 61 and 61S Models



61S Actuator

61 Actuator

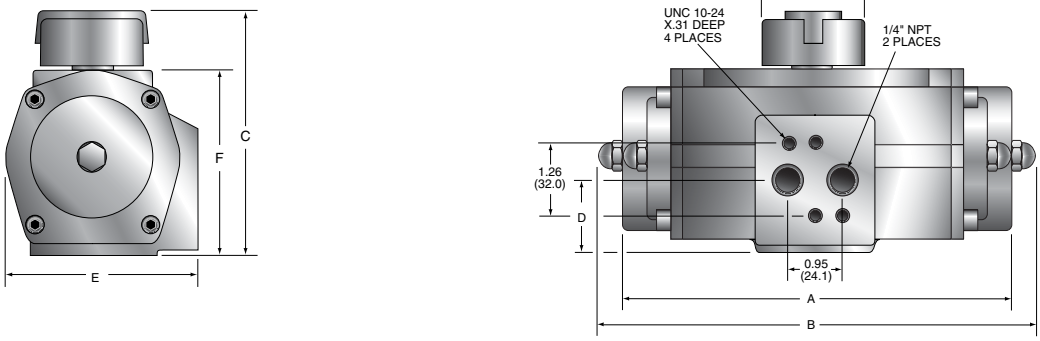
( ) Denotes dimensions in millimeters

Dim	61SAD		61SAC/O		61SADX		61SACX	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm
A	3.37	85.6	-	-	4.63	117.6	-	-
B	-	-	3.66	93.0	-	-	5.83	148.1
C	3.38	85.9	3.38	85.9	3.38	85.9	3.38	85.9

Dim	61AD		61AC/O		61ADX		61ACX	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm
A	4.06	103.1	-	-	6.10	154.9	-	-
B	-	-	4.65	118.1	-	-	8.50	215.9
C1	3.38	85.9	3.38	85.9	3.38	85.9	3.38	85.9
C2	2.36	59.9	2.36	59.9	2.36	59.9	2.36	59.9

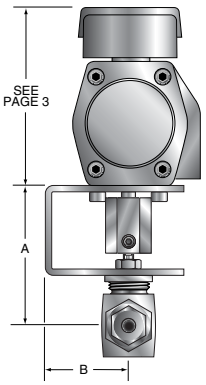
C1 – Single Mount C2 – Dual Mount

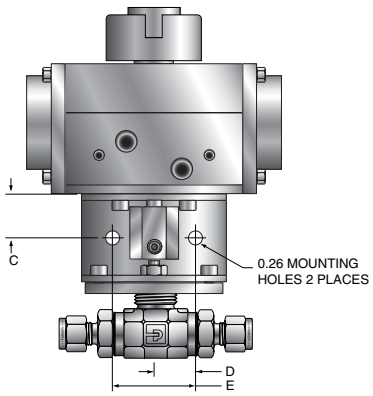
Dimensional Data for 62, 63, 64, 65, 66, 68 and 69 Models



Model	A		B		C				D		E		F	
					Single Mount		Dual Mount							
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
62AD	6.26	159.0	-	-	4.17	105.9	3.15	80.0	1.26	32.0	2.91	73.9	3.15	80.0
62AC/O	-	-	6.77	172.0	4.17	105.9	3.15	80.0	1.26	32.0	2.91	73.9	3.15	80.0
63AD	7.09	180.1	-	-	4.68	118.9	3.86	98.0	1.32	33.5	3.39	86.1	3.66	93.0
63AC/O	-	-	8.03	204.0	4.68	118.9	3.86	98.0	1.32	33.5	3.39	86.1	3.66	93.0
ADX64	6.34	161.0	-	-	5.00	127.0	3.98	101.1	1.69	42.9	4.27	108.5	3.98	101.1
ACX64	-	-	7.17	182.1	5.00	127.0	3.98	101.1	1.69	42.9	4.27	108.5	3.98	101.1
65AD	7.83	198.9	-	-	5.15	130.8	4.13	104.9	1.54	39.1	3.86	98.0	4.13	104.9
65AC/O	-	-	9.8	248.9	5.15	130.8	4.13	104.9	1.54	39.1	3.86	98.0	4.13	104.9
66AD	8.7	221.0	-	-	5.67	144.0	4.65	118.1	1.59	40.4	4.25	108.0	4.65	118.1
66AC/O	-	-	10.51	267.0	5.67	144.0	4.65	118.1	1.59	40.4	4.25	108.0	4.65	118.1
69AD	11.14	283.0	-	-	6.65	168.9	5.63	143.0	1.99	50.5	5.04	128.0	5.63	143.0
69AC/O	-	-	14.17	359.9	6.65	168.9	5.63	143.0	1.99	50.5	5.04	128.0	5.63	143.0

Pneumatic Actuators





Valve Dimensional Data

Model Shown: 4Z-B6LJ-V-SS-61AC-2

Valve Series	A		B		C		D		E	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
B2	2.23	56.6	1.61	40.9	0.80	20.3	0.75	19.1	1.50	38.1
B6	2.49	63.2								
B8	2.91	73.9								
MB2	2.33	59.2								
MB4	2.33	59.2								
MB6	2.48	63.0								
HB4	2.70	68.6								
SWB4	2.57	65.2	1.25	31.7	0.82	20.8				
SWB8	2.79	70.9								
SWB12	2.95	74.9								
SWB16	3.14	79.7								

Recommended Actuators for B, MB, and HB Series Ball Valves*

Valve Series	Double Acting AD	Spring Return AO	Spring Return AC
B2LJ	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B2LJ2	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or R 61SAC
B2XJ	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B2XJ2	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B6LJ	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B6LJ2	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B6LS2	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B6LPKR	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B6LSPKR	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
B6XJ	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B6XJ2	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B6XS2	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B6XPKR	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B6XSPKR	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
B8LJ	61AD	61AO-2	61AC-2
B8LJ2	61AD	62AO-3	62AC-3
B8LS2	61AD	62AO-3	62AC-3
B8LPKR	61AD	62AO-3	62AC-3
B8XJ	61ADX	61ACX-2	61ACX-2
B8XJ2	61ADX	ACX64-3	ACX64-3
B8XS2	61ADX	ACX64-3	ACX64-3
B8XPKR	61ADX	ACX64-3	ACX64-3
HB4LPKR	61AD	62AO-3	62AC-3
HB4LK	61AD	61AO-2	61AC-2
HB4XPKR	61ADX	ACX62-3	ACX62-3
HB4XK	61ADX	61ACX-2	61ACX-2
MB2A	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB2L	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB2X	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
MB4A	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB4L	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB4X	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
MB6A	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB6L	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB6X	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
SWB4	61AD	61AO-2	61AC-2
SWB8	61AD	62AO-3	62AC-3
SWB12	61AD	62AO-3	62AC-3
SWB16	62AD	63AO-3	63AC-3

*With 60 psig (4.1 bar) actuation pressure

90˚ Models (AC, AO, and AD)

Performance Characteristics

Series	Bore		Stroke		Weight				Operating Time	Air Consumption		Air Consumption	
					AD		AC/AO			in^3		cc	
	Inch	mm	Inch	mm	lb	kg	lb	kg	sec	Port "A"	Port "B"+	Port "A"	Port "B"+
61	1.8	45.7	0.5	12.7	1.3	0.6	1.5	0.7	0.4	3.1	3.7	50.8	60.7
61S	1.8	45.7	0.5	12.7	1.2	0.5	1.2	0.6	0.4	2.4	1.2	39.3	19.7
62	2.2	55.9	0.6	15.2	2.9	1.3	3.7	1.7	0.5	6.1	6.7	100.0	109.8
63	2.8	71.1	0.7	17.8	4.0	1.8	5.3	2.4	0.7	9.8	13.4	160.7	219.7
65	3.1	78.7	0.9	22.1	5.3	2.4	7.9	3.6	1.1	20.1	22.0	329.5	360.7
66	3.6	91.4	1.0	25.4	6.8	3.1	10.1	4.6	1.2	21.4	29.9	350.8	490.2

+Double acting only

AD Torques

Series	40 psig (2.8 bar)		60 psig (4.1 bar)		80 psig (5.5 bar)		100 psig (6.9 bar)	
	in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm
61	59	6.7	89	10.1	119	13.4	149	16.8
61S	-	-	45	5.1	59	6.7	75	8.5
62	109	12.3	165	18.6	220	24.9	276	31.2
63	205	23.2	309	34.9	413	46.7	518	58.5
65	312	35.2	471	53.2	630	71.2	789	89.1
66	461	52.1	696	78.6	930	105.1	1165	131.6

AC and AO Torques

Series	Spring Set	Air Torque								Spring Torque	
		40 psig (2.8 bar)		60 psig (4.1 bar)		80 psig (5.5 bar)		100 psig (6.9 bar)			
		in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm
61	2	-	-	23	2.6	55	6.2	87	9.8	41	4.6
61S	-	-	-	16	1.8	21	2.4	26	2.9	21	2.4
62	2	44	5.0	103	11.6	162	18.3	220	24.9	39	4.4
	3	8	0.9	66	7.5	126	14.2	185	20.9	58	6.6
	4	-	-	31	3.5	90	10.2	149	16.8	78	8.8
	5	-	-	-	-	54	6.1	113	12.8	98	11.1
	6	-	-	-	-	18	2.0	77	8.7	117	13.2
63	2	82	9.3	193	21.8	304	34.3	413	46.7	74	8.4
	3	15	1.7	126	14.2	236	26.7	346	39.1	110	12.4
	4	-	-	58	6.6	169	19.1	279	31.5	146	16.5
	5	-	-	-	-	101	11.4	212	24.0	183	20.7
	6	-	-	-	-	34	3.8	144	16.3	220	24.9
65	2	117	13.2	285	32.2	453	51.2	622	70.3	117	13.2
	3	10	1.1	178	20.1	347	39.2	515	58.2	175	19.8
	4	-	-	72	8.1	240	27.1	408	46.1	234	26.4
	5	-	-	-	-	133	15.0	301	34.0	292	33.0
	6	-	-	-	-	26	2.9	195	22.0	351	39.7
66	2	192	21.7	441	49.8	690	78.0	939	106.1	161	18.2
	3	43	4.9	293	33.1	542	61.2	790	89.3	242	27.3
	4	-	-	143	16.2	392	44.3	641	72.4	323	36.5
	5	-	-	-	-	244	27.6	492	55.6	403	45.5
	6	-	-	-	-	95	10.7	344	38.9	484	54.7

180˚ Models (ACX AND ADX)

Performance Characteristics

Series	Bore		Stroke		Weight AD		Weight AC		Operating Time	Air Consumption in³		Air Consumption cc	
	Inch	mm	Inch	mm	lb	kg	lb	kg	sec	Port "A"	Port "B"+	Port "A"	Port "B"+
61	1.8	45.7	1.0	25.4	1.9	0.9	2.4	1.1	0.8	4.5	5.7	73.8	93.4
61S	1.8	45.7	1.0	25.4	1.4	0.7	1.7	0.8	0.8	6.1	3.1	100.0	50.0

+Double acting only

ADX Torques

Series	40 psig (2.8 bar)		60 psig (4.1 bar)		80 psig (5.5 bar)	
	in-lb	Nm	in-lb	Nm	in-lb	Nm
61	59	6.7	89	10.1	119	13.4
61S	-	-	45	5.1	59	6.7

ACX Torques

Series	Spring Set	Air Torque 40 psig (2.8 bar)		Air Torque 60 psig (4.1 bar)		Air Torque 80 psig (5.5 bar)		Spring Torque	
		in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm
61	2	-	-	25	2.8	57	6.4	39	4.4
61S	-	-	-	16	1.8	21	2.4	21	2.4

How to Order Actuators

Factory Assembled

Add the actuator model designation as a suffix to the ball valve part number.
Example: **4Z-B6LJ2-SS-61AC-2.** Describes a B6 ball valve with a normally closed actuator.

For Field Assembly

Simply specify the actuator. Example: **65AC-3**. Mounting bracket kits are required when mounting actuators to valves.

With Mounting Brackets

Specify the ball valve series and seat material followed by the actuator. Examples: **B6LJ-61AO-2, MB6XPFA-61ACX, SWB12LRT-62AC-3-.**

Options

High Temperature Seals – Extends the high temperature from 175 ˚F (79 ˚C) to 250 ˚F (121 ˚C) and to 400 ˚F (204 ˚C) on special Series 62 and 63 90˚ models.
Low Temperature Seals – Extends the low temperature from –4 ˚F (-20 ˚C) to –40 ˚F (-40 ˚C).
Solenoid Valve (Single coil) – Mounts directly to the actuator inlet manifold. NEMA 4 or 7 housings with voltages of 24 VDC, 120 VAC, and 240 VAC. A manual override is standard.
Limit Switch – Rugged, fully enclosed unit contains two SPDT snap-acting switches operated by two independently adjustable cams on a rotating shaft coupled directly to the actuator auxiliary drive. Features a visual valve position indicator. Meets NEMA 4, 7, and 9 classifications for weather-resistant and hazardous locations.
Breather Block – A direct mount diverter module redirects instrument quality air to the spring chamber during the spring stroke (fail stroke) of AC and AO actuators. Ideal for corrosive, wet, or dusty environments. Also improves spring stroke speed and allows the solenoid valve to be mounted to it.
Dual Mount Actuator – Two valves may be actuated with a single actuator. Available with both valves open, both closed, or one open and one closed.

NOTE: Parker pneumatically actuated B Series Ball Valves should be ordered with elastometric stem packing and seals or the optional live-loaded PTFE packing. This reduces the need for any further packing adjustment after receipt from the factory.

How to Order Options

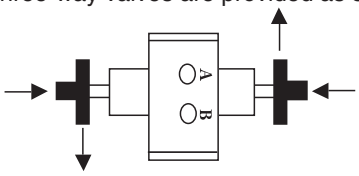
High Temperature Seals – Add the suffix **–HT** to the end of the part number for service up to 250 °F (121 °C). Add the suffix **–HT4** to the end of the part number for service up to 400 °F (204 °C). **NOTE:** The **–HT4** option is only available on series 62 and 63 90° models. Example: 2F-HB4LK-BN-SS-61AD-**HT.**

Low Temperature Seals – Add the suffix **–LT** to the end of the part number. Example: 4A-MB4LPFA-SS-61SAC-**LT.**

Accessories – Add one of the following suffixes to the end of the part number. Example: 16F-SWB16L-RT-T-SS-63AC-3-**2D.**

Suffix	Accessory
Single Option	
-1A	Breather Block
-1B	Solenoid Valve, (NEMA 4, 120 VAC)
-1C	Solenoid Valve, (NEMA 7, 120 VAC)
-1D	Solenoid Valve, (NEMA 4, 24 VDC)
-1E	Solenoid Valve, (NEMA 7, 24 VDC)
-1F	Solenoid Valve, (NEMA 4, 240 VAC)
-1G	Solenoid Valve, (NEMA 7, 240 VAC)
-1H	Limit Switch – Two SPDT switches with mounting kit
Double Option	
-2A	Breather Block, Solenoid Valve, (NEMA 4, 120 VAC)
-2B	Breather Block, Solenoid Valve, (NEMA 7, 120 VAC)
-2C	Breather Block, Solenoid Valve, (NEMA 4, 24 VDC)
-2D	Breather Block, Solenoid Valve, (NEMA 7, 24 VDC)
-2E	Breather Block, Solenoid Valve, (NEMA 4, 240 VAC)
-2F	Breather Block, Solenoid Valve, (NEMA 7, 240 VAC)
-2G	Limit Switch, Solenoid Valve, (NEMA 4, 120 VAC)
-2H	Limit Switch, Solenoid Valve, (NEMA 7, 120 VAC)
-2J	Limit Switch, Solenoid Valve, (NEMA 4, 24 VDC)
-2K	Limit Switch, Solenoid Valve, (NEMA 7, 24 VDC)
-2L	Limit Switch, Solenoid Valve, (NEMA 4, 240 VAC)
-2M	Limit Switch, Solenoid Valve, (NEMA 7, 240 VAC)
Triple Option	
-3A	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 120 VAC)
-3B	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 120 VAC)
-3C	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 24 VDC)
-3D	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 24 VDC)
-3E	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 240 VAC)
-3F	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 240 VAC)

Dual Mount Actuator – Add **–DVM** as a suffix to the end of the part number. Example: 6F-B6LPKC-SS-61AC-2-**DVM.** With **DVM** dual mount valve options, the following are standard arrangements: Two-way valves are provided in their failed position (in their closed position with AD actuators). Three-way valves are provided as shown below. Contact the factory for details on other available options.



How to Order Mounting Bracket Kits

Add the valve series and actuator model designation as a suffix to **MK-.** Example: MK-**MB4L-61S.** Describes a mounting kit for a MB Series ball valve with a 61S Series actuator.

Introduction

Parker 70 and 80 Series Electric Actuators are designed for electric actuation of Parker's B Series, MB Series, HB Series, and SWB Series Ball Valves. They provide reliable, cost effective, remote valve actuation. The simplicity of design provides accessible and easy wiring installation. The convenience and accuracy of advanced modular electronics gives the user the ability to wire in accessories without all the hard wiring hassles. The master PC ("mother") board accepts plug-in modular ("daughter") boards to allow for a variety of accessory functions. Other than connecting a power source, there is no internal wiring to tangle with, ever. With a variety of accessories as well as superior actuator design, Parker's Ball Valves with the 70 or 80 Series actuators are the obvious choice.

70 SERIES

Specifications

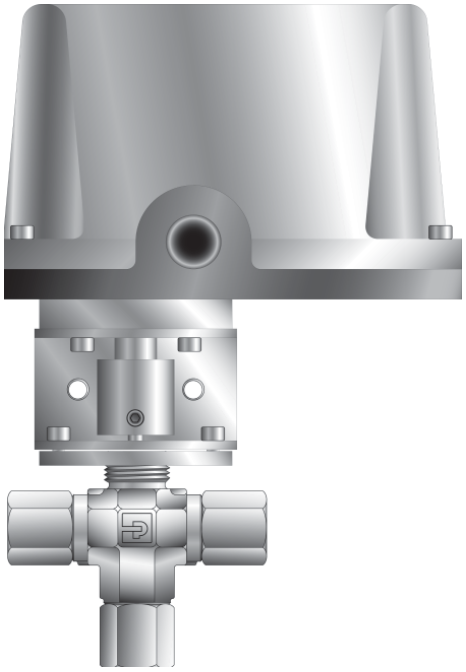
- Voltage: 24, 115 or 230 VAC (50/60 Hz); 12 or 24 VDC
- Torque: 150, 300, 600 in lb (17, 34, 68 N m)
- Enclosure: PVC composite
- Duty cycle: 25%; 100% (VDC models)
- Actuator bolt pattern: ISO standard (5211)
- Conduit connection: 1/2" NPT
- Output shaft: Male, zinc plated steel
- Temperature limits (all models): 32 °F to 150 °F (0 °C to 66 °C); (-40 °F [-40 °C] minimum with heater and thermostat)

Features

- Single direction actuation
- PVC cover resists damage/UV radiation
- NEMA 4 (weatherproof), 4X (weatherproof with corrosion resistance)
- Hardened steel spur gear drive train provides consistent, long life performance
- Permanently lubricated gear train and bearings
- Low profile design/direct drive male output permit limited space installation
- Available for the B Series, MB Series, HB Series and SWB Series ball valves
- Available for 2-way (90°) and 3-way (180°) configurations
- Approximate weight: 6 lb (2.7 kg)
- CSA certified (Standard)
- Two Limit Switches: Single pole, double throw, rated for 1/3 HP, 10 amps @ 125/230 VAC, CSA certified

Options

- Additional limit switches and cams (specify up to 2)
- Heater and thermostat (For operation to -40 °F [-40 °C])
- CE (European Conformity) marking available



Model Shown: 4F-B6XJ-SS-71XA

70R Series

Specifications

- Same as 70 series

Features

- Bi-directional (reversing) actuation
- Declutchable manual override (output shaft extends out of the cover)

Options

- Same as 70 Series

Additional Options

- Additional limit switches and cams (specify up to 2)
- Position indicator
- Valve position indication

Materials of Construction

Part	Material
Cover	Composite, PVC
Base	Diecast zinc alloy
Gear Train	Hardened steel
Output Shaft	Zinc plated steel
Finish	Powder coated epoxy

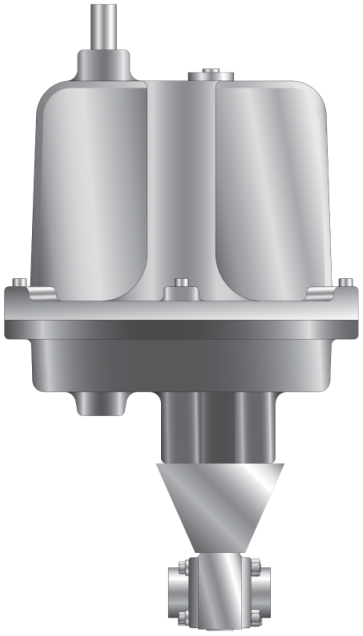
80 SERIES

Specifications

- Voltage: 24, 115 or 230 VAC (50/60 Hz); 12 or 24 VDC
- Torque: 150, 300, 600, 1000 in lb (17, 34, 68, 113 N m)
- Enclosure: Epoxy coated cast aluminum
- Duty cycle: 75%; 100% (VDC models)
- Actuator bolt pattern: ISO standard (5211)
- Conduit connection: 1/2" NPT (2 places)
- Output drive: ISO compatible female drive output
- Temperature limits (all models): 32 °F to 150 °F (0 °C to 66 °C); (-40 °F [-40 °C] minimum with heater and thermostat)

Features

- Bi-directional actuation
- Mother/daughter board, modular electronics technology
- Circuit board readily accepts plug-in connectors
- Variety of plug-in accessory boards are available
- Easy installation, no hard-wiring required
- NEMA 4 (weatherproof), 4X (weatherproof with corrosion resistance), NEMA 7 (explosion proof, gases) & 9 (explosion proof, dust) - Class I, Div. I, Group C&D; Class II, Div. I, Group E, F, and G; Class III
- Highly efficient spur gear power train
- Lubrication: Permanently lubricated gear train and bearings
- Manual override
- Visual position indicator
- Available for the B Series, MB Series, HB Series and SWB Series ball valves
- Available for 2-way (90°) and 3-way (180°) configurations
- Approximate weight: 17 lb (7.7 kg)
- CSA certified (Option)
- Two Limit Switches: Single pole, double throw, rated for 1/3 HP, 10 amps @ 125/230 VAC, CSA certified



Model Shown: 8W-SWB8L-RT-V-SS-81CS2

Standard Options

- Additional limit switches and cams (specify up to 2)
- Heater and thermostat (For operation to -40 °F [-40 °C])
- Modulating control package with position re-transmit (4-20mA, 0-10 VDC, includes potentiometer)
- CE (European Conformity) marking available
- CSA Certified

Additional 80 Series Options **(consult the factory)**

- Timer
- Cycle rate regulator (CRR)
- Center off
- Mechanical brake
- Potentiometer
- Relay board
- Dual relay board
- Declutchable handwheel
- Fail-safe Options: battery or capacitance type; without manual override

Part	Material
Cover	Diecast aluminum alloy
Base	Diecast aluminum alloy
Gear Train	Hardened steel
Output Shaft	N/A
Finish	Powder coated epoxy

TESTING

Actuator

All 70 and 80 Series Electric Actuators are factory tested for accurate cycle times and correct output signals at all applicable positions.

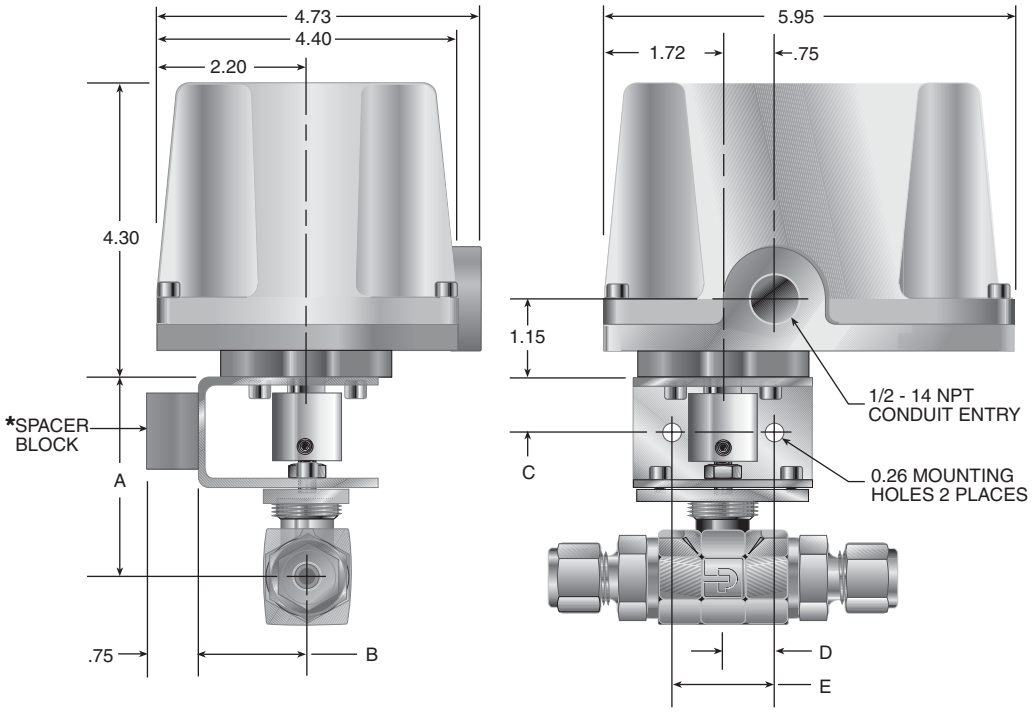
Valve

All valves are factory tested for internal and external leakage as described in their respective catalogs.

Valve / Actuator Assemblies

All valve/actuator assemblies are factory tested for proper valve actuation.

70 SERIES



Dimensional Data

Valve Type	A		B		C		D		E	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
B2	2.23	56.6	1.61	40.9	0.80	20.3	0.75	19.1	1.50	38.1
B6	2.49	63.2								
B8	2.91	73.9								
MB2	2.33	59.2								
MB4	2.33	59.2								
MB6	2.48	63.0								
HB4	2.70	68.6								
SWB4	2.57	64.3	1.25	31.7	.82	20.8				
SWB8	2.79	70.9								
SWB12	2.95	74.9								
SWB16	3.14	79.8								

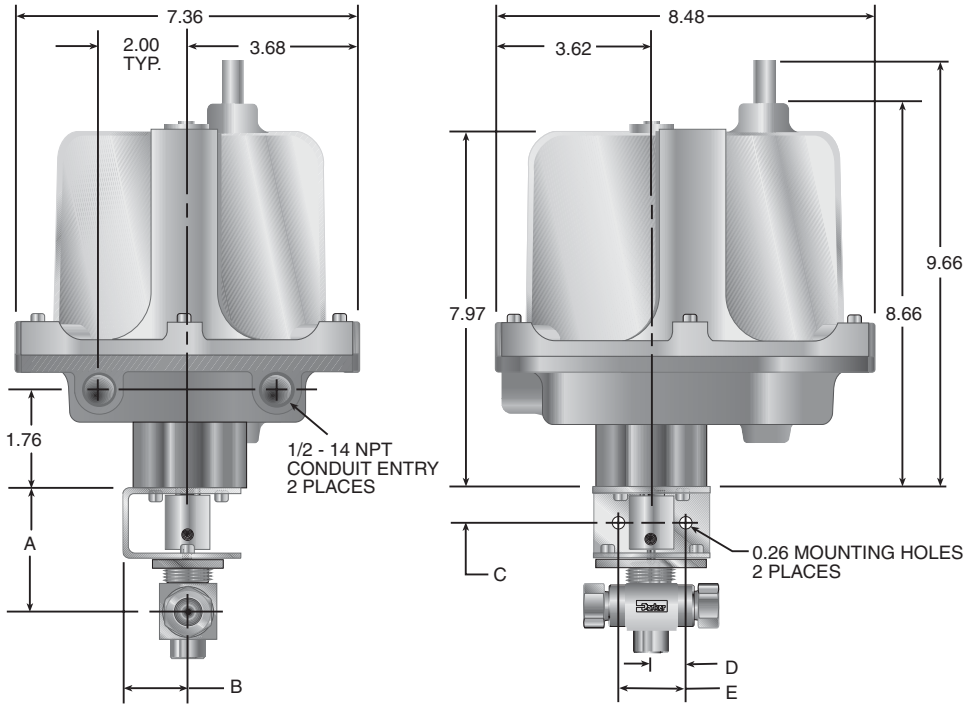
*Spacer block ordered separately, see page 12

Actuator Model	Breakaway Torque in lb (N m)	Voltage	Duty Cycle	Cycle Time (sec)	Amps at stall (Nominal)			Approx. Weight lb (kg)
					24 VAC	115 VAC	230 VAC	
71	150 (17.0)	24 VAC, 115 VAC or 230 VAC	25%	5	5.2	1.3	0.7	6 (2.7)
72	300 (34.0)			9	7.2	1.8	0.9	
73	600 (67.8)			16	7.2	1.3	0.7	

Actuator Model	Breakaway Torque in lb (N m)	Voltage	Duty Cycle	Cycle Time (sec)		Amps at Running Torque (Nominal)		Approx. Weight lb (kg)
				12 VDC	24 VDC	12 VDC	24 VDC	
72	300 (34.0)	24 VDC	100%	**	9	**	0.5	6 (2.7)
73	600 (67.8)	12 VDC or 24 VDC		16	16	1.3	0.5	

NOTE: Cycle times reflect 90° rotation. For 180° rotation, double the cycle time.
**12 VDC not available with this model.

80 SERIES



Dimensional Data

Valve Type	A		B		C		D		E	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
B2	2.23	56.6	1.61	40.9	0.80	20.3	0.75	19.1	1.50	38.1
B6	2.49	63.2								
B8	2.91	73.9								
MB2	2.33	59.2								
MB4	2.33	59.2								
MB6	2.48	63.0								
HB4	2.70	68.6								
SWB4	2.57	64.3	1.25	31.7	0.82	20.8				
SWB8	2.79	70.9								
SWB12	2.95	74.9								
SWB16	3.14	79.8								

Actuator Model	Breakaway Torque in lb (N m)	AC				DC			
		Cycle Time (sec)	Voltage	Duty Cycle	Amp** Draw (@115 VAC)	Cycle Time (sec)	Voltage	Duty Cycle	Amp** Draw (@12 VDC)
81	150 (17.0)	10	115	75%	0.3	5	12 VDC or 24 VDC†	100%	1.1
82	300 (34.0)	15	230		0.3	10			1.1
83	600 (67.8)	30	OR		0.3	15			1.1
84‡	1000 (113.0)	25‡	24 VAC		0.5	15‡			2.6

NOTE: Cycle times reflect 90° rotation. For 180° rotation, double the cycle time.
**Amps rated at full running torque. Amp draws shown are for 115 VAC and 12VDC only. For other voltages, consult the factory.
†24 VDC cycle time and amp draw are half of 12 VDC.
‡Large 80 Series enclosure must be ordered (consult factory).

Duty Cycle: The percentage of time an electric actuator may operate in relation to the time it must rest. It equals “on time” divided by total elapsed time, multiplied by 100. For example, an actuator with a duty cycle of 25% and a cycle time of five seconds must rest for 15 seconds before operating again.

Actuator Selection Tables

Valve Series	Flow Pattern	Seat Material	Suggested Actuator					
			70 Series					80 Series
			115 VAC	230 VAC	24 VAC	12 VDC	24 VDC	All Voltages
B Series	2-Way	All	71	71	71	73	72	81
B Series	3-Way	All	71X	71X	71X	73X	72X	81X
MB Series	2-Way	All	71	71	71	73	72	81
MB Series	3-Way	All	71X	71X	71X	73X	72X	81X
HB Series	2-Way	All	71	71	71	73	72	81
HB Series	3-Way	All	71X	71X	71X	73X	72X	81X
SWB4	2-Way	All	71	71	71	73	72	81
SWB8	2-Way	RT	71	71	71	73	72	81
SWB12	2-Way	RT	71	71	71	73	72	81
SWB16	2-Way	RT	71	71	71	73	72	81

How To Order Mounting Bracket Kits

Valve Series	Mounting Bracket Kit Part Numbers	
	70 Series	80 Series
B2L B2X	**MK-B2L-70** **MK-B2X-70**	**MK-B2L-80** **MK-B2X-80**
B6L B6X	**MK-B6L-70** **MK-B6X-70**	**MK-B6L-80** **MK-B6X-80**
B8L B8X	**MK-B8L-70** **MK-B8X-70**	**MK-B8L-80** **MK-B8X-80**
MB2L MB2A MB2X	**MK-MB4L-70** **MK-MB4L-70** **MK-MB4X-70**	**MK-MB4L-80** **MK-MB4L-80** **MK-MB4X-80**
MB4L MB4A MB4X	**MK-MB4L-70** **MK-MB4L-70** **MK-MB4X-70**	**MK-MB4L-80** **MK-MB4L-80** **MK-MB4X-80**
MB6L MB6A MB6X	**MK-MB6L-70** **MK-MB6L-70** **MK-MB6X-70**	**MK-MB6L-80** **MK-MB6L-80** **MK-MB6X-80**
HB4L HB4X	**MK-HB4-70** **MK-HB4-70**	**MK-HB4-80** **MK-HB4-80**
SWB4L	**MK-SWB4-70**	**MK-SWB4-80**
SWB8L	**MK-SWB8-70**	**MK-SWB8-80**
SWB12L	**MK-SWB12-70**	**MK-SWB12-80**
SWB16L	**MK-SWB16-70**	**MK-SWB16-80**

NOTE: Mounting bracket kits include one mounting bracket, one nut plate, one coupling, six socket head cap screws, and two set screws.

If the bracket spacer block is required, order separately using the following nomenclature: **SPACER-ACT-.75**

How To Order Actuators With Mounting Brackets: Specify the ball valve series and seat material followed by the actuator. Example: B6LJ-71C, MB6XPFA-71RX, SWB12LRT-73CS1.

NOTE: For the SWB Series, actuators can be down sized to fit the application. The actuator selection tables utilize valve combinations at full operating pressures.

How To Order Kits For Field Assembly

Kit Description	70 Series Part Number	80 Series Part Number
Limit Switch (Two-Way Valve)	KIT-LSW-70-2WAY	KIT-LSW-80-2WAY
Limit Switch (Three-Way Valve)	KIT-LSW-70-3WAY	KIT-LSW-80-3WAY
Heater & Thermostat (115 VAC)*	KIT-HTR-70-115AC	KIT-HTR-80-115AC
Heater & Thermostat (230 VAC)*	KIT-HTR-70-230AC	KIT-HTR-80-230AC
Heater & Thermostat (24 VAC)*	KIT-HTR-70-24AC	KIT-HTR-80-24AC
Positioner (4-20mA, 115 VAC)	Not Available	KIT-POSITIONER-420-115AC
Positioner (0-10 VDC, 115 VAC)	Not Available	KIT-POSITIONER-010-115AC

*Heater and thermostat for DC voltages are factory installed only.

How to Order:
Electric Actuators for Field Assembly

The correct part number is easily derived by following the circled number sequence.

Example: 71 (1) _ (2) __ (3) - T (4)

Describes a Model 71, 2-Way electric actuator unit with a NEMA 4 and 4X rating, a 115 VAC motor with optional heater and thermostat.

① Actuator Model	② Flow Pattern	③ Voltage	④ Options
71 72 73 71R 72R 73R 81 82 83 84	Blank - 2-Way X - 3-Way	Blank - 115 VAC A - 230 VAC B - 24 VAC C - 12 VDC D - 24 VDC	T - Heater and Thermostat S# - Additional Limit Switch; # = number of limit switches required C - Modulating Control Package with position re-transmit (4-20mA, 0-10 VDC includes potentiometer)‡ F - Position Indicator (70R Series only) CE - European Conformity Marking *CSA - Canadian Standard

NOTE: Mounting bracket kits are required when ordering actuators for field assembly.
*CSA - Standard on 70 Series (optional on 80 Series)

Electric Actuators Factory Assembled

The correct part number is easily derived by following the circled number sequence.

Example: 4Z-MB6XPFA-SS (1) - 81 (2) X (3) A (4) - ___ (5)

Describes a Model 81, 3-Way electric actuator unit with a NEMA 4, 4X, 7 and 9 rating, a 230 VAC motor and no options, mounted on a MB Series ball valve.

① Valve Part Number	② Actuator Model	③ Flow Pattern	④ Voltage	⑤ Options
See the "How to Order" section in the applicable catalog for the desired valve series	71 72 81 73 82 71R 83 72R 84 73R	Blank - 2-Way X - 3-Way	Blank - 115 VAC A - 230 VAC B - 24 VAC C - 12 VDC D - 24 VDC	T - Heater and Thermostat S# - Additional Limit Switch; # = number of limit switches required C - Modulating Control Package with position re-transmit (4-20mA, 0-10 VDC includes potentiometer)‡ F - Position Indicator (70R Series only) CE - European Conformity Marking

NOTE: Parker electrically actuated, B Series Ball Valves should be ordered with elastometric stem packing and seals or the optional live-loaded PTFE packing. This reduces the need for any further packing adjustment after receipt from the factory.

‡For 80 Series electric actuators only.

⚠WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

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The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale" located in Catalog 4110-U Needle Valves (U Series).

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Ball Valves (MB Series)

Catalog 4121-MB
Revised, January 2005

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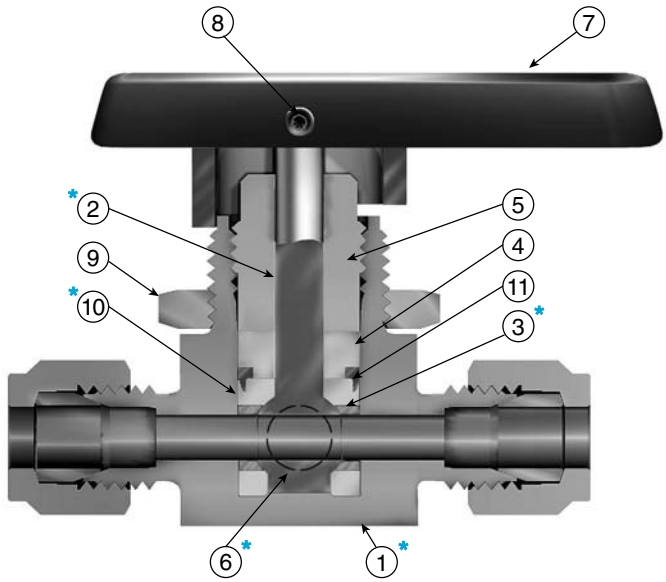
MB Series Ball Valves

Introduction

Parker MB Series Ball Valves, with their rugged compact design, offer positive shut off or directional control of fluids in process, power and instrumentation applications. The unique one piece seat/packing design insures excellent sealing characteristics while accommodating a superior temperature range and cycle life.

These valves are available in 2-way and 3-way configurations, brass and stainless steel construction, with a wide variety of port connections. Also, all ports are suitable as inlets to full operating pressure of the valve.



Features

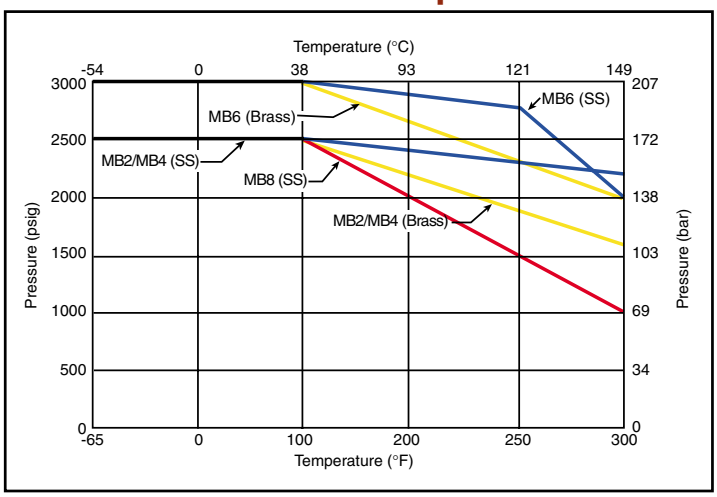
- One piece seat/packing design
- Broad temperature range
- Coated metal inserts
- One piece stem/ball
- Wide variety of US Customary and SI ports
- Panel mountable to 1/4" thickness
- Bi-directional flow
- Handle indicates direction of flow
- Full operating pressure at any port
- Positive handle stops
- Color coded handles
- 100% factory tested
- Vent option
- Manual, electric or pneumatic actuation
- Leak-tight center-off position on 3-way valves

Specifications

- Pressure rating: 3000 psig* (207 bar) CWP - MB6
  2500 psig* (172 bar) CWP - MB2/MB4/MB8
- Temperature rating: -65 °F to 300 °F (-54 °C to 149 °C)
- Orifice: .052" to .406" (1.3 mm to 10.3 mm)
- C_v: .05 to 6.96
- Body materials: Stainless Steel and Brass
- Body configurations: 2-way (in-line and angle)
  3-way, 4-way and 5-way
- Port connections: Tube compression (CPI™ / A-LOK®)
  NPT (Male / Female)
  BSP, VacuSeal and UltraSeal
- Port size: 1/16" to 3/4" and 3mm to 12mm
- Seat/Packing: PFA-Perfluoroalkoxy

* Preset from factory to 1000 psig (69 bar) bubble tight service. Packing nut must be tightened to achieve higher pressures. Packing in vented MB Series Ball Valves is factory adjusted for the maximum valve pressure rating of 500 psig (34 bar).

Pressure vs. Temperature



NOTE: To determine MPa, multiply bar by 0.1

Materials of Construction

Item #	Part Description	Stainless Steel Valve	Brass Valve
*1	Body	ASTM A 276 TYPE 316	ASTM B 16 Alloy C36000
*2	Stem	ASTM A 276 TYPE 316	
*3	Hollow Insert	316 Stainless Steel	
4	Packing Washer	ASTM B 16 Alloy C36000	
5	Packing Nut	ASTM A 479 Type 316	ASTM B 16 Alloy C36000
*6	Solid Insert	316 Stainless Steel	
7	Handle	Nylon 6/6	
8	Set Screw	Stainless Steel	
9	Panel Nut	316 Stainless Steel**	
*10	Seat/Packing	Perfluoroalkoxy (PFA)	
11	Packing Ring	ASTM A 479 Type 316	

* Wetted Parts ** Nickel Plated Brass for MB8
Lubrication: Perfluorinated polyether

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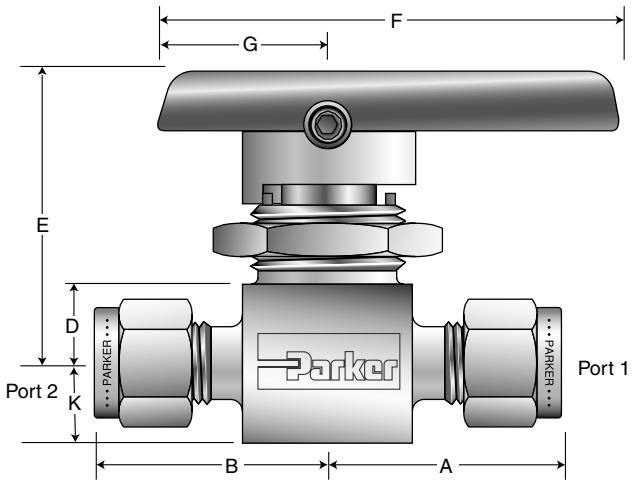
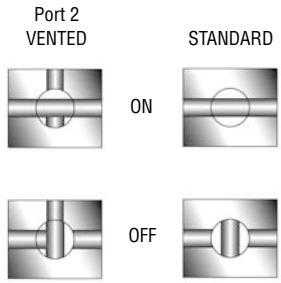
Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, Alabama

2-Way In-Line

Vented - In off position the downstream port vents to atmosphere through a hole in the side of the body.



H - Maximum Panel Thickness
I - Panel Hole Diameter
J - Body Width



Model shown: 4A-MB6LPFA-SSP

2-Way In-Line Dimensions, Flow Data

Port Size	Basic Part #	Flow Data: Orifice inch	Orifice mm	C_v	x_T‡	End Connections: Port 1	Port 2	Dimensions inches (mm): A†	B†	D	E	F	G	H	I	J	K
1Z	MB2L	0.052	1.3	0.03	0.46	1/16" CPI™		0.84 (21.3)	0.84 (21.3)	0.34 (8.6)	1.31 (33.3)	1.88 (47.8)	0.75 (19.1)	0.25 (6.4)	0.58 (14.7)	0.58 (14.7)	0.28 (7.1)
1A						1/16" A-LOK®											
2Z		0.093	2.4	0.20	0.42	1/8" CPI™		1.00 (25.4)	1.00 (25.4)								
2A						1/8" A-LOK®											
M3Z		0.086	2.2	0.17	0.43	3mm CPI™		1.00 (25.4)	1.00 (25.4)								
M3A						3mm A-LOK®											
2F	MB4L	0.125	3.2	0.44	0.34	1/8" Female NPT		0.81 (20.6)	0.81 (20.6)	0.34 (8.6)	1.31 (33.3)	1.88 (47.8)	0.75 (19.1)	0.25 (6.4)	0.58 (14.7)	0.58 (14.7)	0.28 (7.1)
4Z						1/4" CPI™		1.12 (28.5)	1.12 (28.5)								
4A						1/4" A-LOK®											
M6Z						6mm CPI™		1.12 (28.5)	1.12 (28.5)								
M6A						6mm A-LOK®											
2Z	MB6L	0.093	2.4	0.18	0.55	1/8" CPI™		1.09 (27.7)	1.09 (27.7)	0.44 (11.2)	1.56 (39.6)	2.37 (60.2)	0.88 (22.4)	0.25 (6.4)	0.77 (19.6)	0.80 (20.3)	0.38 (9.7)
2A						1/8" A-LOK®											
2F		0.187	4.7	1.02	0.53	1/8" Female NPT		1.00 (25.4)	1.00 (25.4)								
4M						1/4" Male NPT		1.00 (25.4)	1.00 (25.4)								
4Z						1/4" CPI™		1.19 (30.2)	1.19 (30.2)								
4A						1/4" A-LOK®											
4F						1/4" Female NPT		1.03 (26.2)	1.03 (26.2)								
4M4Z						1/4" Male NPT	1/4" CPI™	1.00 (25.4)	1.19 (30.2)								
4M4A						1/4" Male NPT	1/4" A-LOK®										
4V						1/4" VacuSeal		1.03 (26.2)	1.03 (26.2)								
6Z						3/8" CPI™		1.31 (33.3)	1.31 (33.3)								
6A						3/8" A-LOK®											
M6Z						6mm CPI™		1.19 (30.2)	1.19 (30.2)								
M6A						6mm A-LOK®											
M8Z						8mm CPI™		1.22 (31.0)	1.22 (31.0)								
M8A						8mm A-LOK®											
8A	MB8L	0.406	10.3	10.7	0.16	1/2" A-LOK®		1.94 (49.3)	1.94 (49.3)	0.69 (17.5)	2.39 (60.7)	4.50 (114.3)	1.50 (38.1)	0.38 (9.7)	1.50 (38.1)	1.50 (38.1)	0.69 (17.5)
8Z						1/2" A-CPI™											
8F		0.406	10.3	6.1	0.20	1/2" FNPT		1.56 (39.6)	1.56 (39.6)								
12A		0.406	10.3	6.4	0.19	3/4" A-LOK®		1.94 (49.3)	1.94 (49.3)								
12Z						3/4" CPI™											
M12A		0.375	9.5	10.7	0.16	12mm A-LOK®		1.96 (49.8)	1.96 (49.8)								
M12Z						12mm CPI™											

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.
‡ Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

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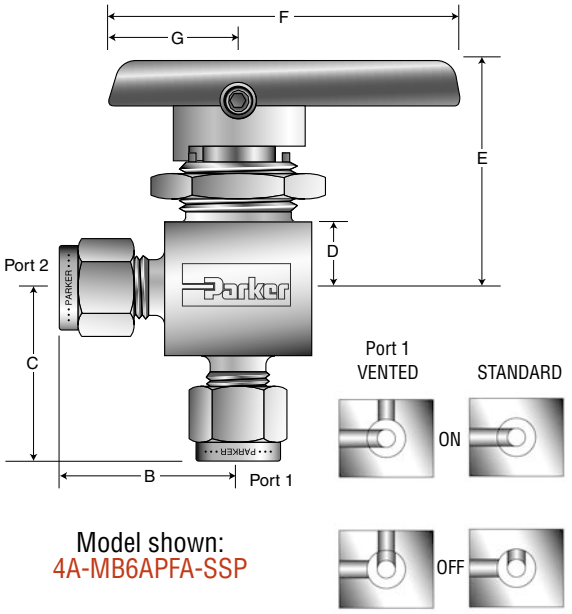
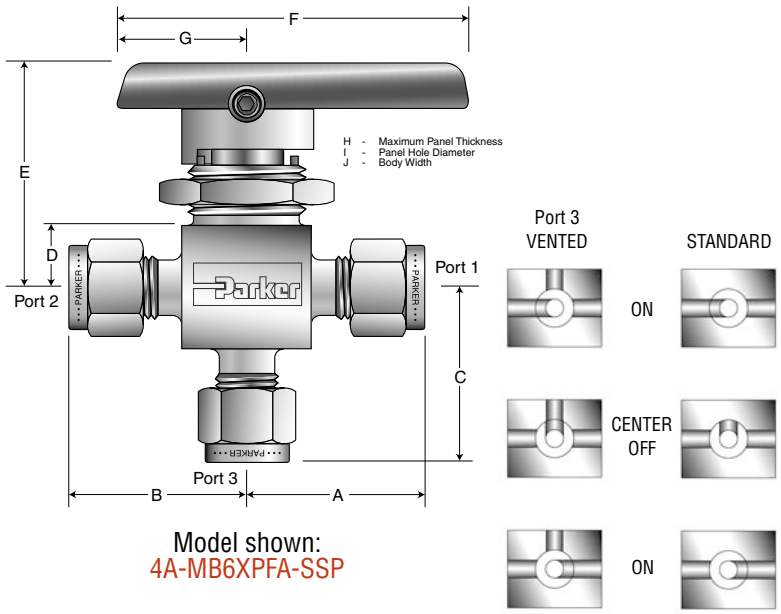
MB Series Ball Valves

2-Way Angle



Model shown:
4A-MB6APFA-SSP

3-Way



Model shown:
4A-MB6XPFA-SSP

2-Way Angle and 3-Way Dimensions, Flow Data

Port Size	Basic Part #	Flow Data: Orifice inch	Flow Data: Orifice mm	C_v	x_T‡	End Connections: Port 1	Port 2	Port 3*	Dimensions inches (mm): A†	B†	C†	D	E	F	G	H	I	J
1Z	MB2A MB2X	0.052	1.3	0.02	0.58	1/16" CPI™			0.84 (21.3)	0.84 (21.3)	0.81 (20.6)	0.34 (8.6)	1.31 (33.3)	1.88 (47.8)	0.75 (19.1)	0.25 (6.4)	0.58 (14.7)	0.58 (14.7)
1A						1/16" A-LOK®												
2Z		0.093	2.4	0.18	0.48	1/8" CPI™			1.00 (25.4)	1.00 (25.4)	0.97 (24.6)							
2A						1/8" A-LOK®												
M3Z		0.086	2.2	0.15	0.47	3mm CPI™			1.00 (25.4)	1.00 (25.4)	0.97 (24.6)							
M3A						3mm A-LOK®												
2F	MB4A MB4X	0.125	3.2	0.34	0.45	1/8" Female NPT			0.81 (20.6)	0.81 (20.6)	0.81 (20.6)	0.34	1.31	1.88	0.75	0.25	0.58	0.58
4Z						1/4" CPI™			1.12 (28.4)	1.12 (28.4)	1.12 (28.4)							
4A						1/4" A-LOK®												
M6Z						6mm CPI™			1.12 (28.4)	1.12 (28.4)	1.12 (28.4)							
M6A						6mm A-LOK®												
4Z	MB6A MB6X	0.187	4.7	0.70	0.58	1/4" CPI™			1.19 (30.2)	1.19 (30.2)	1.15 (29.2)	0.44 (11.2)	1.56 (39.6)	2.37 (60.2)	0.88 (22.4)	0.25 (6.4)	0.77 (19.6)	0.80 (20.3)
4A						1/4" A-LOK®												
4F						1/4" Female NPT			1.03 (26.2)	1.03 (26.2)	1.03 (26.2)							
4V						1/4" VacuSeal			1.03 (26.2)	1.03 (26.2)	1.03 (26.2)							
4Z4Z4M						1/4" CPI™	1/4" CPI™	1/4" Male NPT	1.19 (30.2)	1.19 (30.2)	1.03 (26.2)							
4A4A4M						1/4" A-LOK®	1/4" A-LOK®	1/4" Male NPT										
6Z						3/8" CPI™			1.31 (33.3)	1.31 (33.3)	1.23 (31.2)							
6A						3/8" A-LOK®												
M6Z						6mm CPI™			1.19 (30.2)	1.19 (30.2)	1.15 (29.2)							
M6A						6mm A-LOK®												
M8Z						8mm CPI™			1.22 (31.0)	1.22 (31.0)	1.18 (30.0)							
M8A						8mm A-LOK®												
8A	MB8A MB8X	0.406	10.3	5.4	0.36	1/2" A-LOK®			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	0.69 (17.5)	2.39 (60.7)	4.50 (114.3)	1.50 (38.1)	0.38 (9.7)	1.50 (38.1)	1.50 (38.1)
8Z						1/2" A-CPI™												
8F		0.406	10.3	5.0	0.33	1/2 " FNPT			1.56 (39.6)	1.56 (39.6)	1.56 (39.6)							
12A		0.406	10.3	4.9	0.39	3/4" A-LOK®			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)							
12Z						3/4" CPI™												
M12A		0.375	9.5	5.6	0.37	12mm A-LOK®			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)							
M12Z						12mm CPI™												

* Not applicable for the 2-Way Angle pattern.
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.
‡ Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

How to Order 2-Way In-Line, 2-Way Angle and 3-Way Patterns

The correct part number is easily derived by following the circled number sequence.

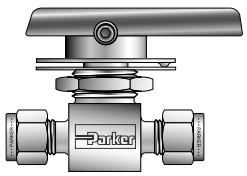
Example: **2Z** * - **MB2LPFA** - **SSP**

(1)(2)(3) (4) (5) (6)

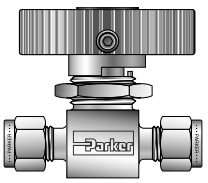
Describes a MB Series, 2-way, in-line pattern ball valve with 1/8" CPI™ compression end connections for ports 1 and 2 Inline Body Styler, PFA seat and packing, stainless steel body construction, and a panel mounting nut.

(1) (2) (3) Port 1 Port 2 Port 3	(4) Valve Series	(5) Seat Material	(6) Body Material
1Z - 1/16" CPI™			
1A - 1/16" A-LOK®			
2Z - 1/8" CPI™	**MB2L**		
2A - 1/8" A-LOK®	**MB2A**		
M3Z - 3mm CPI™	**MB2X**		
M3A - 3mm A-LOK®			
2F - 1/8" Female NPT			
4Z - 1/4" CPI™			
4A - 1/4" A-LOK®	**MB4L**	**PFA** - Perfluoroalkoxy	**SSP** - Stainless Steel (Stainless Steel with **BP** - Brass (Brass with Panel Nut) (Only Available in MB 2,4,6)
M6Z - 6mm CPI™	**MB4A**		
M6A - 6mm A-LOK®	**MB4X**		
2Z - 1/8" CPI™			
2A - 1/8" A-LOK®			
2F - 1/8" Female NPT			
4Z - 1/4" CPI™			
4A - 1/4" A-LOK®	**MB6L**		
4F - 1/4" Female NPT	**MB6A**		
4M - 1/4" Male NPT	**MB6X**		
4V - 1/4" VacuSeal			
6Z - 3/8" CPI™			
6A - 3/8" A-LOK®			
M6Z - 6mm CPI™			
M6A - 6mm A-LOK®			
M8Z - 8mm CPI™			
M8A - 8mm A-LOK®			
8Z - 1/2 " CPI™	**MB8A**		
8A - 1/2" A-LOK®	**MB8L**		
8F- 1/2" Female NPT	**MB8X**		
12Z - 3/4" CPI™			
12A - 3/4" A-LOK®			
M12Z - 12mm CPI™			
M12A - 12mm A-LOK®			

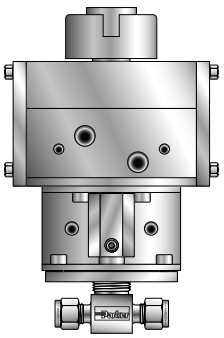
Lock-Out Device Option



Oval Handle Option



Pneumatic Actuator Option



* Valves with identical port connections for port 1 and port 2 require only one designator.

How to Order Options (2-way, Angle, and 3-way)

Lock-Out Devices – Add the suffix **-LD** to the end of the part number to order directly on the valve. **Example**: 2F-MB4LPFA-SSP**-LD**. For field installation, simply substitute the correct valve series number in the following nomenclature: **LD-**valve series. **Example**: **LD-**MB6L

Colored Handles – Add the designator corresponding to the correct handle as a suffix to the part number: **W** - white, **B** - blue, **G** - green, **R** - red, **Y** - yellow. **Example**: 4Z-MB6LPFA-SSP**-G**

Stainless Steel Handles – Add the suffix **-ST** to the part number. **Example**: 4F-MB6LPFA-SSP**-ST**

Oval Handles – Add the suffix **-S** to the part number. **Example**: 6Z-MB6APFA-SSP**-S**. If requesting a colored oval handle, add the suffix **-S**-color designator. **Example**: 6Z-MB6APFA-SSP**-S-W (* MB6 ONLY)**

Vented Valves – Add the designator **V** after the **MB** in the part number for the vent option.
Example: 2Z-MB**V**2XPFA-SSP.

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. **Example**: 4A-MB4LPFA-SSP**-C3**

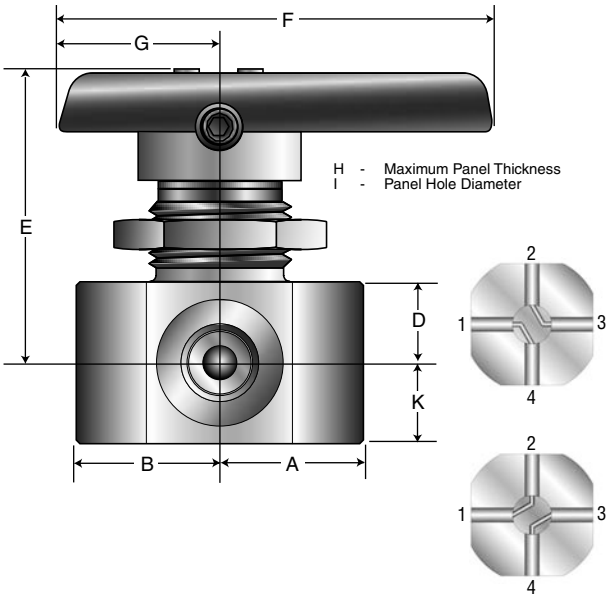
Special Cleaning – All face seal ended valves are cleaned in accordance with Parker Specification ES8001. This is an available option for all valves by adding the suffix **-C1** to the end of the part number. **Example**: 4V-MB4XPFA-SSP**-C1**

Pneumatic Actuators – For detailed actuator information, refer to Catalog 4123. For factory assembly, add the actuator part number as the suffix to the valve part number. **Example**: 4A-MB4LPFA-SSP**-61AC-2**. For field installation, specify the actuator desired. **Example**: **61AC-2**. The appropriate mounting hardware may be obtained by adding the valve series and actuator size to the prefix **MK-**. **Example**: **MK-**MB4L-61

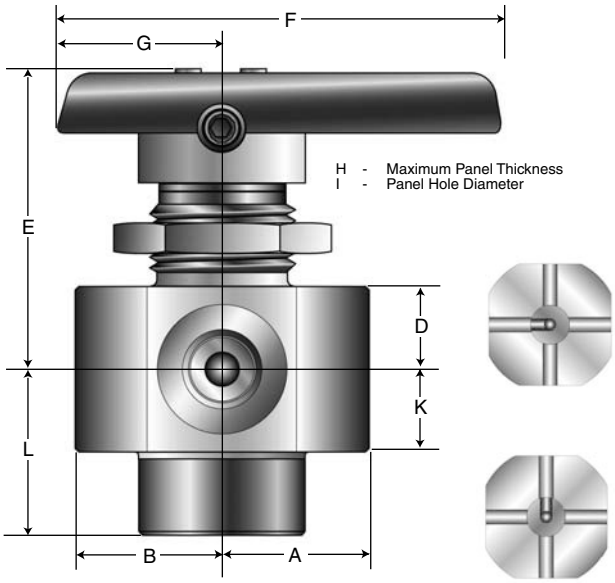
Electric Actuators – For detailed actuator information, refer to Catalog 4123. For factory assembly, add the actuator part number as the suffix to the valve part number. **Example**: M6A-MB6XPFA-SSP**-71C**. For field installation, specify the actuator desired. **Example**: **71C**. The appropriate mounting hardware may be obtained by adding the valve series and actuator series to the prefix **MK-**. **Example**: **MK-**MB6X-70

MB Series Ball Valves

4-Way



5-Way



Dimensions

Port Size	Basic Part #	Flow Data: Orifice inch	Flow Data: Orifice mm	C_v	x_T*	End Connections: Port 1	End Connections: Port 2	Dimensions inches (mm): A	B	D	E	F	G	H	I	K	L
2A7	MB6X4	0.063	1.6	0.17	0.16	1/8" Female A-LOK®		0.97 (24.6)	0.97 (24.6)	0.44 (11.2)	1.57 (39.9)	2.37 (60.2)	0.88 (22.4)	0.25 (6.4)	0.77 (19.6)	0.44 (11.2)	
2Z7						1/8" Female CPI™											
2F						1/8" Female NPT		0.78 (19.8)	0.78 (19.8)								
2A7	MB6X5	0.063	1.6	0.17	0.16	1/8" Inverted A-LOK®		0.97 (24.6)	0.97 (24.6)	0.44 (11.2)	1.57 (39.9)	2.37 (60.2)	0.88 (22.4)	0.25 (6.4)	0.77 (19.6)	0.44 (11.2)	0.97 (24.6)
2Z7						1/8" Inverted CPI™											
2F						1/8" Female NPT		0.78 (19.8)	0.78 (19.8)								0.88 (22.4)

How to Order

The correct part number is easily derived by following the circled number sequence.

Example: **2Z7** - **MB6X4PFA** - **SSP**

① ② ③ ④

This example describes a MB-Series 4-way pattern ball valve with 1/8" female CPI™ compression end connections for all ports, PFA seat and packing, stainless steel body construction, and a panel mounting nut.

① End Connection	② Valve Series	③ Seat Material	④ Body Material
2F - 1/8" Female NPT **2Z7** - 1/8" CPI™ **2A7** - 1/8" A-LOK®	**MB6X4** **MB6X5**	**PFA** - Perfluoroalkoxy	**SSP** - Stainless Steel (Stainless Steel with Stainless Steel Panel Nut)

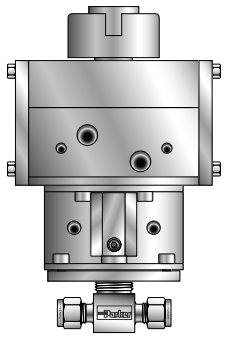
How to Order Options

Colored Handles – Add the designator corresponding to the correct handle as a suffix to the part number: **W** - white, **B** - blue, **G** - green, **R** - red, **Y** - yellow. **Example**: 2F-MB6X4PFA-SSP-**R**

Stainless Steel Handles – Add the suffix **-ST** to the part number. **Example**: 2A7-MB6XPFA-SSP-**ST**

Recommended Pneumatic Actuators

Valve Series	Double Acting AD	Spring Return AO	Spring Return AC
MB2A,MB2L, MB4A, MB4L, MB6A, MB6L, MB6X4	61AD or 61SAD	61AO-2 or 61SAO	61AC-2 or 61SAC
MB8L	62AD	63AO-3	63AC-3
MB2X, MB4X, MB6X	61ADX or 61SADX	61ACX-2 or 61SACX	61ACX-2 or 61SACX
MB8X	ADX62	ACX64-3	ACX64-3



Suffix	Accessory
Single Option	
-1A	Breather Block
-1B	Solenoid Valve, (NEMA 4, 120 VAC)
-1C	Solenoid Valve, (NEMA 7, 120 VAC)
-1D	Solenoid Valve, (NEMA 4, 24 VDC)
-1E	Solenoid Valve, (NEMA 7, 24 VDC)
-1F	Solenoid Valve, (NEMA 4, 240 VAC)
-1G	Solenoid Valve, (NEMA 7, 240 VAC)
-1H	Limit Switch – Two SPDT switches with mounting kit
Double Option	
-2A	Breather Block, Solenoid Valve, (NEMA 4, 120 VAC)
-2B	Breather Block, Solenoid Valve, (NEMA 7, 120 VAC)
-2C	Breather Block, Solenoid Valve, (NEMA 4, 24 VDC)
-2D	Breather Block, Solenoid Valve, (NEMA 7, 24 VDC)
-2E	Breather Block, Solenoid Valve, (NEMA 4, 240 VAC)
-2F	Breather Block, Solenoid Valve, (NEMA 7, 240 VAC)
-2G	Limit Switch, Solenoid Valve, (NEMA 4, 120 VAC)
-2H	Limit Switch, Solenoid Valve, (NEMA 7, 120 VAC)
-2J	Limit Switch, Solenoid Valve, (NEMA 4, 24 VDC)
-2K	Limit Switch, Solenoid Valve, (NEMA 7, 24 VDC)
-2L	Limit Switch, Solenoid Valve, (NEMA 4, 240 VAC)
-2M	Limit Switch, Solenoid Valve, (NEMA 7, 240 VAC)
Triple Option	
-3A	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 120 VAC)
-3B	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 120 VAC)
-3C	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 24 VDC)
-3D	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 24 VDC)
-3E	Breather Block, Limit Switch, Solenoid Valve, (NEMA 4, 240 VAC)
-3F	Breather Block, Limit Switch, Solenoid Valve, (NEMA 7, 240 VAC)

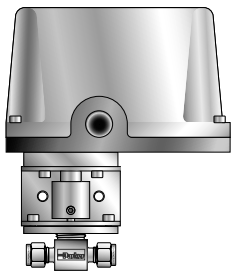
How to Order Actuators

Factory Assembled
Valve Part Number — Actuator — Options
4Z-MB6LPFA-SS - 61AD - 1B

For Field Assembly (Without Brackets)
Actuator Number
61AD

For Field Assembly (Including Bracket & Coupling)
Valve Series & Seat Material - Actuator
MB6LPFA - 61AD

For more details see Catalog 4123



Electric Actuators Factory Assembled

The correct part number is easily derived by following the circled number sequence.

Example: 4Z-MB6XPFA-SS (1) - 81 (2) X (3) A (4) - ___ (5)

Describes a Model 81, 3-Way electric actuator unit with a NEMA 4, 4X, 7 and 9 rating, a 230 VAC motor and no options, mounted on a MB Series ball valve.

(1) Valve Part Number	(2) Actuator Model	(3) Flow Pattern	(4) Voltage	(5) Options
See the "How to Order" section in the applicable catalog for the desired valve series	71 72 81 73 82 71R 83 72R 84 73R	Blank - 2-Way X - 3-Way	Blank - 115 VAC A - 230 VAC B - 24 VAC C - 12 VDC D - 24 VDC	T - Heater and Thermostat S# - Additional Limit Switch; # = number of limit switches required C - Modulating Control Package with position re-transmit (4-20mA, 0-10 VDC includes potentiometer)‡ F - Position Indicator (70R Series only) CE - European Conformity Marking

‡For 80 Series electric actuators only.

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Ball Valves (MB8 Series)

Bulletin 4121-MB8
October 2002

Introduction

Parker MB8 Ball Valves, with their rugged compact design, offer positive shut off or directional control of fluids in process, power and instrumentation applications. The unique one piece seat/packing design insures excellent sealing characteristics while accommodating a superior temperature range and cycle life.

Features

- One piece seat/packing design
- Broad temperature range
- One piece stem/ball
- Bi-directional flow
- Positive handle stops
- Panel mountable
- U.S. Patent No. 5,730,420
- 100% factory tested

Specifications

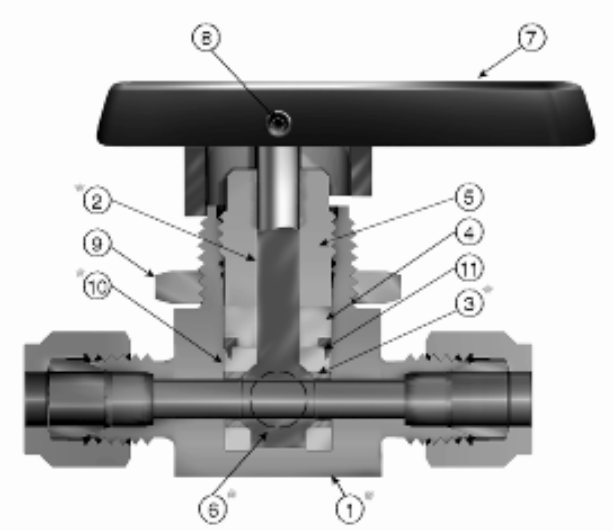
- Pressure Rating: 2500 psig* (172 bar) CWP
- Temperature Rating: -65 °F to 300 °F (-54 °C to 149 °C)
- Body Configuration: Two-way inline and Three-way
- Body Material: Stainless steel
- Port Connections: FNPT, CPI™, and A-LOK®

* Preset from factory to 1000 psig (69 bar) bubble tight service. Packing nut must be tightened to achieve higher pressures.

Materials of Construction

Item #	Part Description	Material
* 1	Body	ASTM A 276 Type 316
* 2	Stem	ASTM A 276 Type 316
* 3	Hollow Insert	316 Stainless Steel
4	Packing Washer	ASTM B-16 Alloy C36000
5	Packing Nut	ASTM A 479 Type 316
* 6	Solid Insert	316 Stainless Steel
7	Handle	Nylon 6/6
8	Set Screw	Stainless Steel
9	Panel Nut	Brass (Nickel Plated)
* 10	Seat/Packing	Perfluoroalkoxy (PFA)
11	Packing Ring	ASTM A 479 Type 316

* Wetted Parts
Lubrication: Perfluorinated Polyether



Parker Instrumentation

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TECNI-AR Ltda
www.tecni-ar.com.br
Tel: (31)3362-2400

Parker Hannifin Corporation
Instrumentation Valve Division
Jacksonville, Alabama

Dimensions
MB8L

Port Size	Basic Part #	Flow Data: Orifice inch	Orifice mm	Cv*	x_T	End Connections: Port 1	Port 2	Dimensions inches (mm): A**	B	C	D	E	F	G	H	I	J	K
8A	MB8L	0.406	10.3	10.7	0.16	1/2" A-LOK®		1.94 (49.3)	1.94 (49.3)	N/A	0.69 (17.5)	2.39 (60.7)	4.50 (114.3)	1.50 (38.1)	0.38 (9.7)	1.50 (38.1)	1.50 (38.1)	0.69 (17.5)
8Z						1/2" CPI™												
8F		0.406	10.3	6.1	0.20	1/2" FNPT		1.56 (39.6)	1.56 (39.6)									
12A		0.406	10.3	6.4	0.19	3/4" A-LOK®		1.94 (49.3)	1.94 (49.3)									
12Z						3/4" CPI™												
M12A		0.375	9.5	10.7	0.16	12mm A-LOK®		1.96 (49.8)	1.96 (49.8)									
M12Z						12mm CPI™												

MB8X

Port Size	Basic Part #	Flow Data: Orifice inch	Orifice mm	C_v*	x_T	End Connections: Port 1	Port 2	Port 3	Dimensions inches (mm): A**	B	C	D	E	F	G	H	I	J	K
8A	MB8X	0.406	10.3	5.4	0.36	1/2" A-LOK®			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	0.69 (17.5)	2.39 (60.7)	4.50 (114.3)	1.50 (38.1)	0.38 (9.7)	1.50 (38.1)	1.50 (38.1)	N/A
8Z						1/2" CPI™													
8F		0.406	10.3	5.0	0.33	1/2" FNPT			1.56 (39.6)	1.56 (39.6)	1.56 (39.6)								
12A		0.406	10.3	4.9	0.39	3/4" A-LOK®			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)								
12Z						3/4" CPI™													
M12A		0.375	9.5	5.6	0.37	12mm A-LOK®			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)								
M12Z						12mm CPI™													

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.
** For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

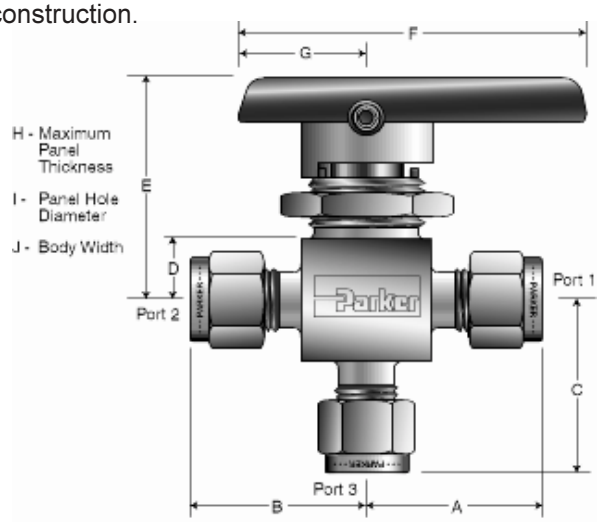
How to Order

The correct part number is easily derived by following the circled number sequence.

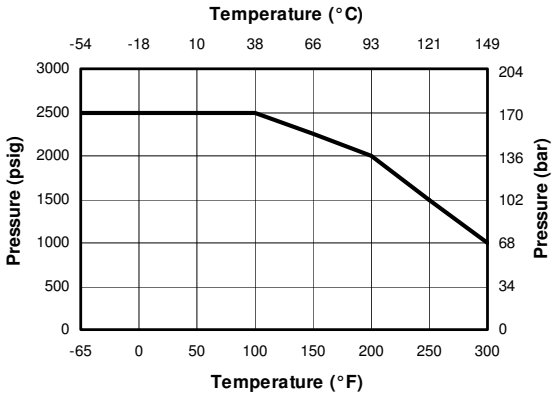
Example: **8Z - MB8L PFA - SSP**

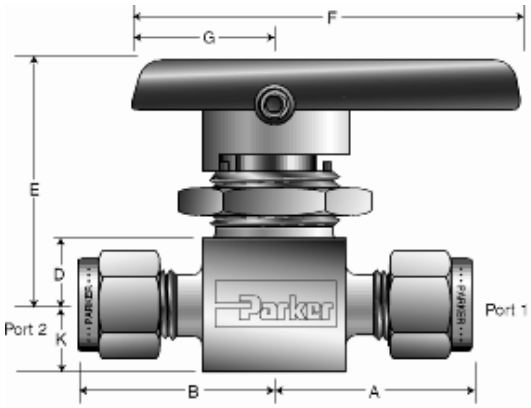
① ② ③ ④

Describes a MB8 Two-way inline pattern ball valve, with 1/2" CPI™ compression end connections for ports 1 and 2, PFA seat and packing, and stainless steel body construction.



Pressure vs. Temperature





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Ball Valves (HB Series)

Catalog 4121-HB
Revised, April 2005

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Introduction

Parker High Pressure HB4 Series Ball Valves provide reliable shut-off or switching functions. The upper and lower trunnion bearings enhance the resistance of the trunnions against seizure, and increase the valve life in extreme applications. The compact and rugged design employs spring-loaded seats for high cycle life and low operating torques at pressures up to 10,000 psig (689 bar).

Features

- PEEK trunnion bearings for longer cycle life
- Two-way and three-way designs
- Compact FNPT version for tight work areas
- Blow-out resistant two-piece ball/stem
- Full operating pressure at any port
- Low operating torque
- Manual, electric or pneumatic actuation
- Panel mountable to 3/8″ (9.6 mm) thickness
- No packing to adjust
- Color coded fracture resistant handles
- Handle indicates direction of flow
- Positive handle stops
- Wide variety of US customary and SI ports
- Top of stem marked to indicate flow direction
- 100% factory tested
- Compact package
- Heat code traceability

Specifications

- **Pressure rating:** 10,000 psig (689 bar) CWP with PEEK (PKR) Seats; 6,000 psig (414 bar) CWP with PCTFE (K) Seats
- **Temperature rating:** -65˚F to 400˚F (-54˚C to 204˚C)
- **Body material:** Stainless steel
- **Body configurations:** Two-way and three-way
- **Port connections:** Tube compression (CPI™ / A-LOK®); short and long female NPT
- **Port size:** 1/8″ – 1/2″ (6 mm to 12 mm)

Flow Data

- Two-way HB4L: C_v = 1.02; x_T = 0.42; orifice = 0.188″ (4.8 mm)
- Three-way HB4X: C_v = 0.62; x_T = 0.71; orifice = 0.188″ (4.8 mm)

Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

Testing

Standard production testing – valves are 100% factory tested with nitrogen at 1,000 psig (69 bar) for leakage at the seats and body seals. Both areas are required to have less than 0.1 SCCM leakage. Optional testing is available upon request. Consult your authorized Parker Instrumentation Distributor or the factory for further information.

Two-way HB4L design

Three-way HB4X design

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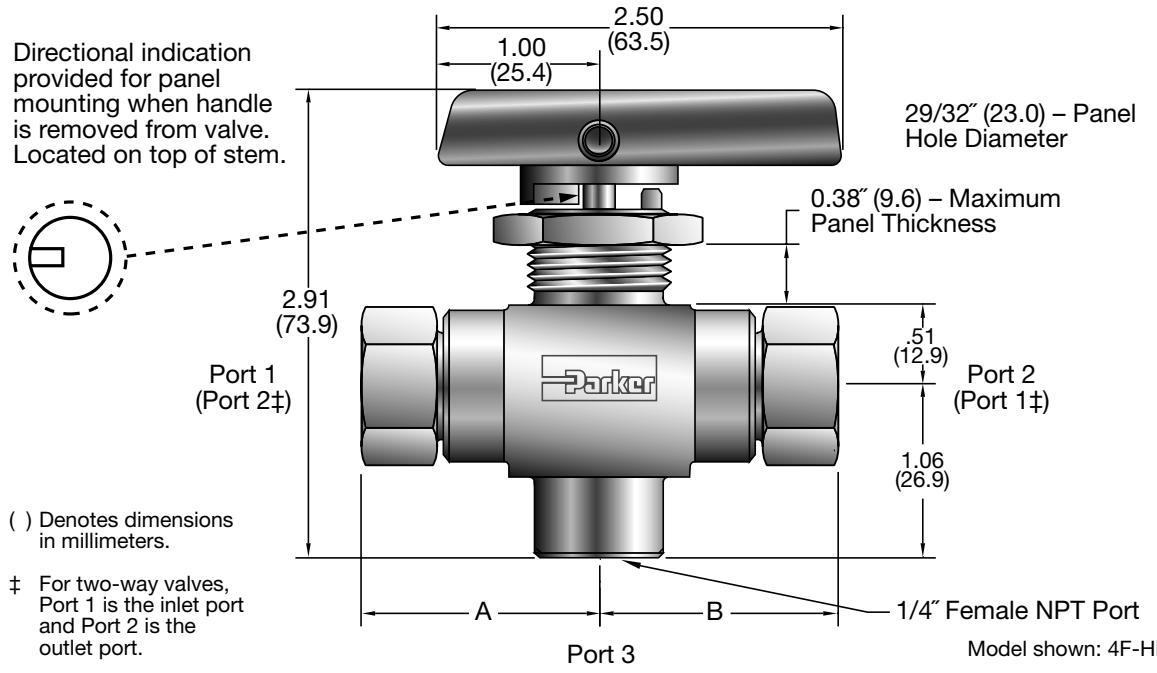
Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, Alabama



Dimensions / Pressure Data

Basic Part Number*	Pressure Rating @100°F (38°C) psig	bar	End Connection Port 1 / Port 2	Dimensions A†† inch	mm	B†† inch	mm
2F-HB4	10,000	689	1/8″ Female NPT	1.47	37.3	1.47	37.3
4F-HB4**	10,000	689	1/4″ Female NPT	1.47	37.3	1.47	37.3
4FL-HB4	10,000	689	1/4″ Female NPT	1.97	50.0	1.97	50.0
4A-HB4	10,000	689	1/4″ A-LOK® Compression	2.07	52.6	2.07	52.6
4Z-HB4	10,000	689	1/4″ CPI™ Compression	2.07	52.6	2.07	52.6
M6A-HB4	10,000	689	6 mm A-LOK® Compression	2.07	52.6	2.07	52.6
M6Z-HB4	10,000	689	6 mm CPI™ Compression	2.07	52.6	2.07	52.6
6A-HB4	6,600†	455	3/8″ A-LOK® Compression	2.19	55.6	2.19	55.6
6Z-HB4	6,600†	455	3/8″ CPI™ Compression	2.19	55.6	2.19	55.6
8A-HB4	6,300†	434	1/2″ A-LOK® Compression	2.30	58.4	2.30	58.4
8Z-HB4	6,300†	434	1/2″ CPI™ Compression	2.30	58.4	2.30	58.4
M8A-HB4	7,975†	550	8 mm A-LOK® Compression	2.07	52.6	2.07	52.6
M8Z-HB4	7,975†	550	8 mm CPI™ Compression	2.07	52.6	2.07	52.6
M10A-HB4	6,525†	450	10 mm A-LOK® Compression	2.19	55.6	2.19	55.6
M10Z-HB4	6,525†	450	10 mm CPI™ Compression	2.19	55.6	2.19	55.6
M12A-HB4	6,162†	425	12 mm A-LOK® Compression	2.30	58.4	2.30	58.4
M12Z-HB4	6,162†	425	12 mm CPI™ Compression	2.30	58.4	2.30	58.4

* Flow configurations are two-way (HB4L) and three-way (HB4X); Seat materials are PEEK (Polyetheretherketone) and PCTFE (Polychlorotrifluoroethylene).

** Designed with shorter end-to-end dimensions than the 4FL model to save space.

† Reduced pressure rating is determined by the maximum rated pressure of the tubing as stated in the Parker Instrument Tubing Selection Guide Bulletin 4200-TS. The working pressure ratings are limited by the seat material (PCTFE – 6,000 psig (414 bar) maximum and PEEK – 10,000 psig (689 bar) maximum) and the temperature of the application.

†† For CPI™ and A-LOK® , dimensions are measured with nuts in the finger tight position.

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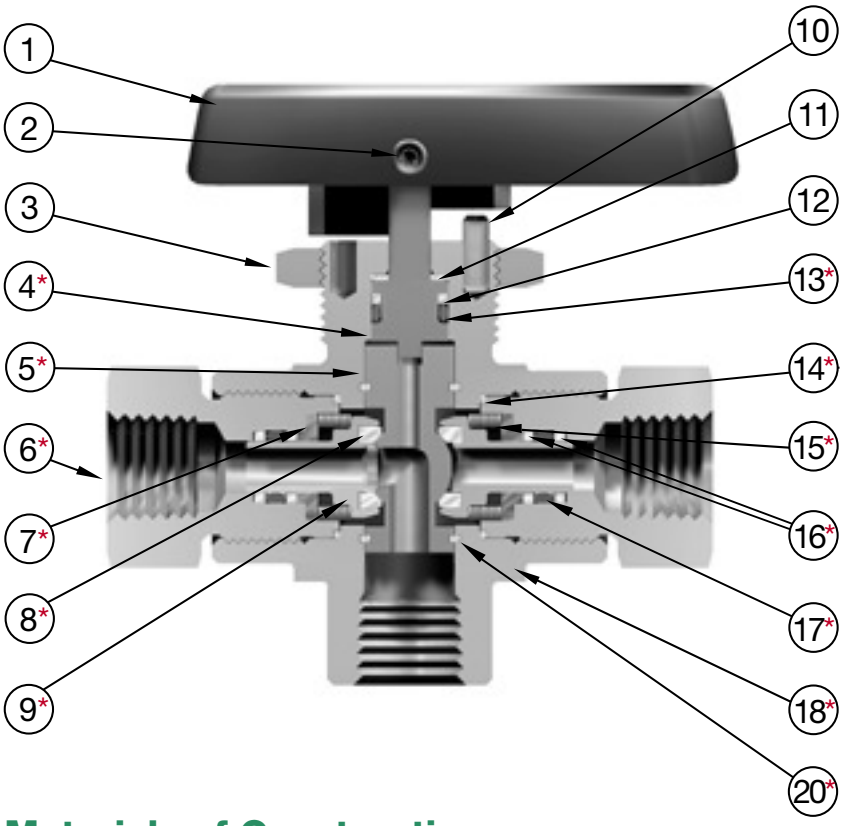


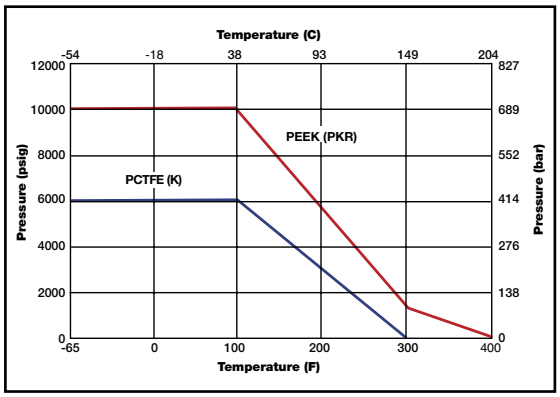
Materials of Construction

No.	Part Description	6,000 psi (414 bar)	10,000 psi (689 bar)
1	Handle/insert	Nylon 6/6/316 SS	Nylon 6/6/316 SS
2	Handle screw	Stainless steel	Stainless steel
3	Panel nut	316 Stainless steel	316 Stainless steel
4*	Stem	ASTM A 479 Type 316	ASTM A 479 Type 316
5*	Ball trunnion	ASTM A 479 Type 316	ASTM A 479 Type 316
6*	Port end connector	ASTM A 479 Type 316	ASTM A 479 Type 316
7*	Spring washer	ASTM A 479 Type 316	ASTM A 479 Type 316
8*	Seat	PCTFE	PEEK
9*	Seat retainer	ASTM A 276 Type 316	ASTM A 276 Type 316
10	Handle stop pins	302 Stainless steel	302 Stainless steel
11	Stem washer	PEEK	PEEK
12	Stem o-ring back-up	PTFE	PTFE
13*	Stem o-ring	Fluorocarbon rubber**	Fluorocarbon rubber**
14*	Connector end seal	PEEK	PEEK
15*	Spring	ASTM A 313 Type 631	ASTM A 313 Type 631
16*	Seat retainer o-ring back-up	PTFE	PTFE
17*	Seat retainer o-ring	Fluorocarbon rubber**	Fluorocarbon rubber**
18*	Valve body	ASTM A 276 Type 316	ASTM A 276 Type 316
19*	Pipe plug **(Not shown/HB4L only)**	316 Stainless steel	316 Stainless steel
20*	Trunnion bearing	PEEK	PEEK

* Wetted parts
** Optional elastomer seals available

Lubrication: Perfluorinated polyether

Pressure vs. Temperature



Note: To determine MPa, multiply bar by 0.1

This pressure versus temperature chart reflects the maximum temperature range of indicated materials.

When combining seat and seal materials, the most restrictive temperature rating of the seats or seals becomes the limiting factor on valve temperature range.

Temperature Ratings:

Buna-N (Nitrile) Rubber: -40˚F to 250˚F (-40˚C to 121˚C)
Ethylene Propylene Rubber: -65˚F to 300˚F (-54˚C to 149˚C)
Fluorocarbon Rubber: -15˚F to 400˚F (-26˚C to 204˚C)

Flow Calculations (Two-way HB4L)

Inlet Pressure		Pressure Drop P		Water @ 60°F (16°C)		Air @ 60°F (16°C)	
psig	bar	psig	bar	gpm	m^3/hr	scfm	m^3/hr
100	7	1	0.1	1.0	0.2	10.8	17.4
		10	0.7	3.2	0.7	32.0	50.7
		50	3.5	7.2	1.6	50.5	76.0
1000	69	10	0.7	3.2	0.7	101.3	171.3
		100	6.9	10.2	2.3	297.7	502.3
		500	34.5	22.8	5.2	446.7	749.6
3000	207	100	6.9	10.2	2.3	542.0	919.9
		1000	69.0	32.3	7.3	1297.0	2198.9
		1500	103.4	39.5	9.0	1327.2	2248.8
6000	414	1000	69.0	32.3	7.3	2158.5	3662.7
		2000	137.9	45.6	10.4	2188.5	4388.6
		3000	206.8	55.9	12.7	2647.9	4486.8
10000	689	1000	69.0	32.3	7.3	2954.3	5020.2
		2000	137.9	45.6	10.4	3818.4	6487.0
		3000	206.8	55.9	12.7	4236.2	7194.9

Flow Calculations (Three-way HB4X)

Inlet Pressure		Pressure Drop P		Water @ 60°F (16°C)		Air @ 60°F (16°C)	
psig	bar	psig	bar	gpm	m^3/hr	scfm	m^3/hr
100	7	1	0.1	0.6	0.1	6.6	10.6
		10	0.7	2.0	0.4	20.0	31.9
		50	3.5	4.4	1.0	37.1	57.4
1000	69	10	0.7	2.0	0.4	61.8	104.4
		100	6.9	6.2	1.4	187.2	316.1
		500	34.5	13.9	3.1	337.4	567.7
3000	207	100	6.9	6.2	1.4	333.1	565.4
		1000	69.0	19.6	4.5	903.4	1532.8
		1500	103.4	24.0	5.5	1004.4	1703.2
6000	414	1000	69.0	19.6	4.5	1393.5	2365.2
		2000	137.9	27.7	6.3	1803.8	3060.4
		3000	206.8	34.0	7.7	2004.9	3399.8
10000	689	1000	69.0	19.6	4.5	1858.9	3159.0
		2000	137.9	27.7	6.3	2499.6	4247.2
		3000	206.8	34.0	7.7	2903.0	4932.1

How to Order

The correct part number is easily derived by following the circled number sequence. The six product characteristics required are coded as shown. *Note: If ports 1 and 2 are the same, eliminate the port 2 designator.

4Z – * – HB4XPKR – – SSP

① Port 1 ② Port 2 ③ Valve Series ④ Seat Material ⑤ Seal Material ⑥ Body Material

Describes a HB4X, three-way ball valve with 1/4″ CPI™ compression end connections for ports 1 and 2, PEEK seats and fluorocarbon rubber seals, stainless steel body construction, and a panel mounting nut. Port 3 is always a 1/4″ FNPT port.

4F – 4A – HB4LK – EPR – SSP

① Port 1 ② Port 2 ③ Valve Series ④ Seat Material ⑤ Seal Material ⑥ Body Material

Describes a HB4L, two-way ball valve with a 1/4″ female NPT port 1 and a 1/4″ A-LOK® compression port 2, PCTFE seats and ethylene propylene rubber seals, stainless steel body construction, and a panel mounting nut.
Note: Port 3 will always have a 1/4″ MNPT plug when ordering a HB4L Series two-way ball valve.

① Port 1	② Port 2	③ Valve Series	④ Seat Material	⑤ Seal Material	⑥ Body Material
2F 1/8″ Female NPT	**2F** 1/8″ Female NPT				
4F 1/4″ Female NPT	**4F** 1/4″ Female NPT				
4FL 1/4″ Female NPT (Long)	**4FL** 1/4″ Female NPT (Long)			**Blank-** (Fluorocarbon Rubber)	
4A 1/4″ A-LOK® Compression	**4A** 1/4″ A-LOK® Compression				
4Z 1/4″ CPI™ Compression	**4Z** 1/4″ CPI™ Compression		**PKR** (PEEK–Polyetherether-ketone)		
6A 3/8″ A-LOK® Compression	**6A** 3/8″ A-LOK® Compression				
6Z 3/8″ CPI™ Compression	**6Z** 3/8″ CPI™ Compression	**HB4L** (2-way)			
8A 1/2″ A-LOK® Compression	**8A** 1/2″ A-LOK® Compression			**BN** (Buna-N Rubber)	**SSP** (Stainless Steel with Panel Nut)
8Z 1/2″ CPI™ Compression	**8Z** 1/2″ CPI™ Compression				
M6A 6 mm A-LOK® Compression	**M6A** 6 mm A-LOK® Compression				
M6Z 6 mm CPI™ Compression	**M6Z** 6 mm CPI™ Compression				
M8A 8 mm A-LOK® Compression	**M8A** 8 mm A-LOK® Compression		**K-** (PCTFE, Poly-chlorotrifluoro-ethylene)		
M8Z 8 mm CPI™ Compression	**M8Z** 8 mm CPI™ Compression	**HB4X** (3-way)		**EPR** (Ethylene Propylene Rubber)	
M10A 10 mm A-LOK® Compression	**M10A** 10 mm A-LOK® Compression				
M10Z 10 mm CPI™ Compression	**M10Z** 10 mm CPI™ Compression				
M12A 12 mm A-LOK® Compression	**M12A** 12 mm A-LOK® Compression				
M12Z 12 mm CPI™ Compression	**M12Z** 12 mm CPI™ Compression				

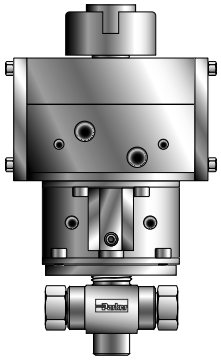
Available End Connections

Z – One ferrule CPI™ compression port

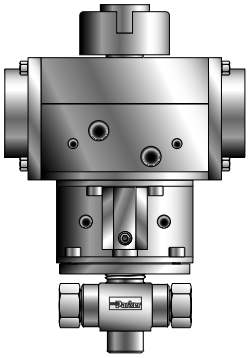
A – Two ferrule A-LOK® compression port

F – ANSI/ASME B1.20.1 internal pipe threads

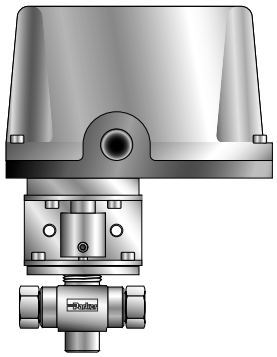
Actuator Options



Double Acting (61AD) Pneumatic Actuator



Spring Return (61AC & AO) Pneumatic Actuator



70 and 80 Series Electric Actuator

How to Order Options

Lock-Out Devices – Add the suffix **-LD** to the end of the part number to order directly on the valve.
(Example: 2F-HB4LPKR-BN-SSP-**LD**).
For field installation, simply substitute the correct valve series number after LD. (Example: **LD**-HB4L).

Colored Handles – Add the designator corresponding to the correct handle as a suffix to the part number:

W - white
B - blue
G - green
R - red
Y - yellow

(Example: M6A-HB4XPKR-SSP-**G**).

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. (Example: 4A-HB4LPKR-EPR-SSP-**C3**).

Pneumatic Actuators – For detailed actuator information, refer to Catalog 4123-PA. For factory assembly, add the actuator part number as the suffix to the valve part number. (Example: 4FL-HB4XK-SSP-**61ACX-2**).
For field installation, specify the actuator desired (Example: 61ACX-2). The appropriate mounting hardware may be obtained by adding the valve series and actuator size to the prefix **MK-.**
(Example: **MK-**HB4X-61).

Electric Actuators – For detailed actuator information, refer to Catalog 4123-EA. For factory assembly, add the actuator part number as the suffix to the valve part number (Example: 6A-HB4XPKR-SSP-**71XA**).
For field installation, specify the actuator desired (Example: 71XA). The appropriate mounting hardware may be obtained by adding the valve series and actuator series to the prefix **MK-** (Example: **MK-**HB4X-70).

How to Order Maintenance Kits

Handle Kits: HB4-Handle-Color (Example: HB4-HANDLE-RED). Consists of a red handle and handle screw.

Two-way Seal Kits: KIT-HB4LPKR or KIT-HB4LK – Consists of a two-way trunnion, springs, stem washers, stem seal, back-up ring, end connector seals, seat springs, seat retainer seals, seat retainer back-up rings, and seat assemblies.

Three-way Seal Kits: KIT-HB4XPKR or KIT-HB4XK – Consists of a three-way trunnion, springs, stem washers and stem seal, back-up ring, end connector seals, seat springs, seat retainer seals, seat retainer back-up rings, and seat assemblies.

⚠ WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale" located in Catalog 4110-U Needle Valves (U Series).

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Parker Hannifin Corporation
Instrumentation Products Division
Jacksonville, Alabama

Ball Valves (B12 Series)

Bulletin 4121-B12
May 2002

Introduction

Parker manually and pneumatically actuated two-way B12 Series Ball Valves provides quick 1/4 turn on-off control of fluids used in process and instrumentation applications.

Features

- Blow-out resistant stem
- Spring-loaded ball seats
- Bi-directional flow
- Stainless steel construction
- Micro-finished ball provides positive seal
- Handle indicates flow direction
- Color coded handles
- Low operating torques
- Optional pneumatic actuation
- 100% factory tested

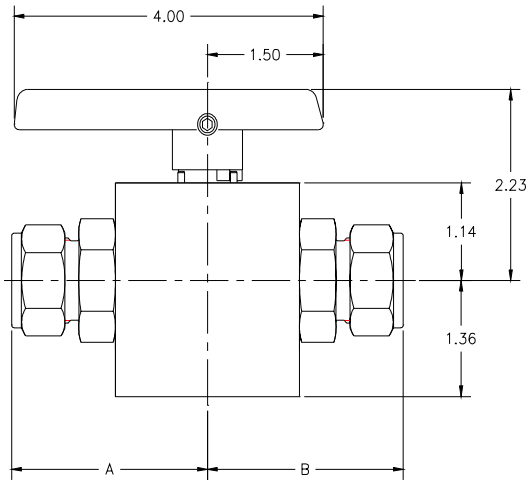
Specifications

- Pressure Rating: 4000 psig (276 bar) CWP
- Temperature Rating: -65 °F to 350 °F (-54 °C to 177 °C)
- Orifice: 0.50” (12.7mm)
- Flow Data: C_V = 9.09; x_T = 0.32

Dimensions

Port Size	Basic Part No.	End Connections		Dimensions Inches (mm)	
		Port 1	Port 2	A	B
12A	B12L	3/4" A-LOK®		2.53 (64.3)	2.53 (64.3)
12Z		3/4" CPI™			
12F		3/4" Female NPT		2.47 (62.7)	2.47 (62.7)
16A		1" A-LOK®		2.90 (73.7)	2.90 (73.7)
16Z		1" CPI™			
16F		1" Female NPT		2.69 (68.3)	2.69 (68.3)

For CPI™ and A-LOK®, dimensions A and B are measured with nuts in the finger tight position



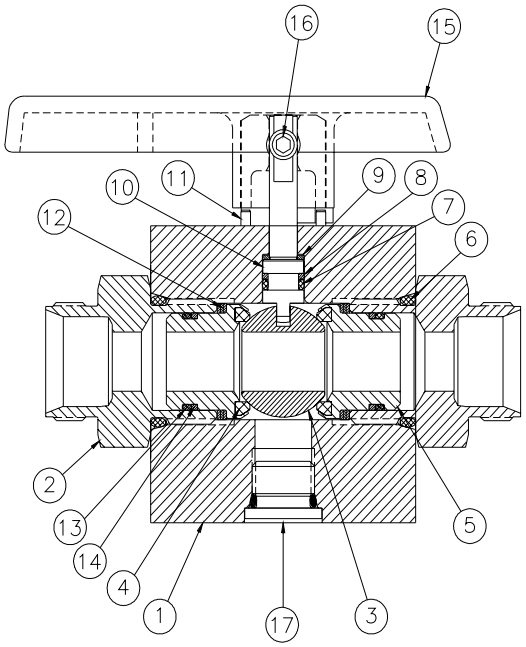
Parker Instrumentation

Parker Hannifin Corporation
Instrumentation Valve Division
Jacksonville, Alabama

Materials of Construction

Item #	Part Description	Material
1	Body	ASTM A 479 Type 316
2	End Connector	ASTM A 479 Type 316
3	Ball	ASTM A 276 Type 316
4	Seat	PCTFE
5	Seat Retainer	ASTM A 276 Type 316
6	Connector O-Ring	Optional Elastomers
7	Stem O-Ring	Optional Elastomers
8	Back-up Ring (Stem)	PTFE
9	Stem Washer	PEEK
10	Stem	ASTM A 276 Type 316
11	Handle Pin	ASTM A 479 Type 316
12	Seat Spring	ASTM A 313 Type 631
13	Seat Retainer O-Ring	Optional Elastomers
14	Back-up Ring (Seat Retainer)	PTFE
15	Handle	Nylon 6/6
16	Handle Set Screw	316 Stainless Steel
17	Plug	316 Stainless Steel

Lubrication: Perfluorinated Polyether



How to Order

The correct part number is easily derived by following the circled number sequence.

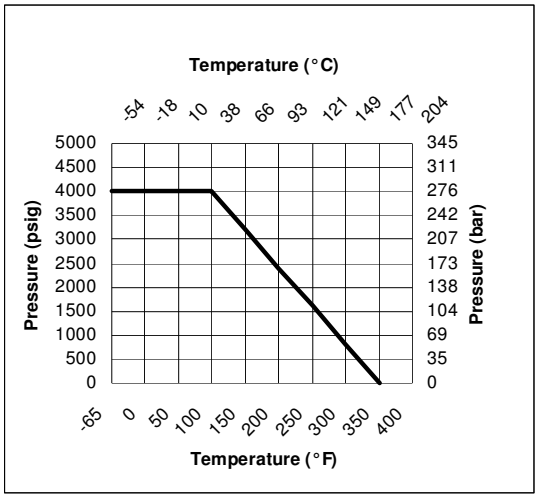
Example: **12Z - B12LS2 - V - SS**

① ② * ③ ④ ⑤ ⑥

Describes a B12 Series, 2-way, in-line pattern ball valve with 3/4" CPI™ compression end connections for ports 1 and 2, spring loaded PCTFE seats, fluorocarbon rubber seals, and stainless steel body construction.

* Valves with identical port connections for port 1 and 2 require only one designator.

Pressure vs. Temperature



1 Port 1	2 Port 2	3 Valve Series	4 Seat Material	5 Seal Material	6 Body Material
12F - 3/4" FNPT		**B12L**	**S2** - Spring Loaded PCTFE	**BN** - Buna-N Rubber	**SS** - Stainless Steel
12A - 3/4" A-LOK®				**V** - Fluorocarbon Rubber	
12Z - 3/4" CPI™					
16F- 1" FNPT				**EPR** - Ethylene Propylene Rubber	
16A - 1" A-LOK®					
16Z - 1" CPI™					

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