



Ball Valves (HB Series)

Catalog 4121-HB
Revised, April 2004



HB Series Ball Valves

Introduction

Parker High Pressure HB4 Series Ball Valves, featuring Supracase® ball and trunnions, provide reliable shut-off or switching functions. The Supracase® trunnion style ball enhances the resistance of the trunnions against seizure and the resistance of the spherical ball to particle abrasion. 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

- Supracase® ball/trunnion 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

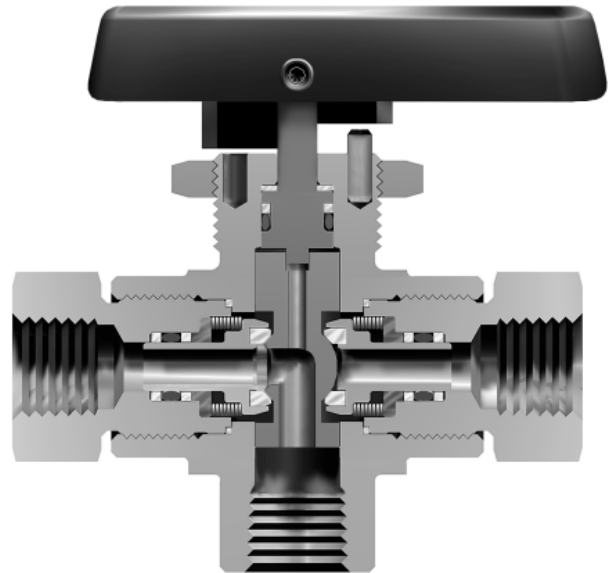
- Pressure rating: 10,000 psig (689 bar) CWP
with PEEK (PKR) Seats;
6,000 psig (414 bar) CWP
with PCTFE (K) Seats
- Temperature rating: -65 ½F to 400 ½F (-54 ½C to 204 ½C)
- Body material: Stainless Steel
- Body configurations: Two-way and Three-way
- Port connections: Tube compression (CPI™ / A-LOK®);
Short and Long Female NPT
- Port size: 1/8" - 1/2" (6mm to 12mm)

Flow Data

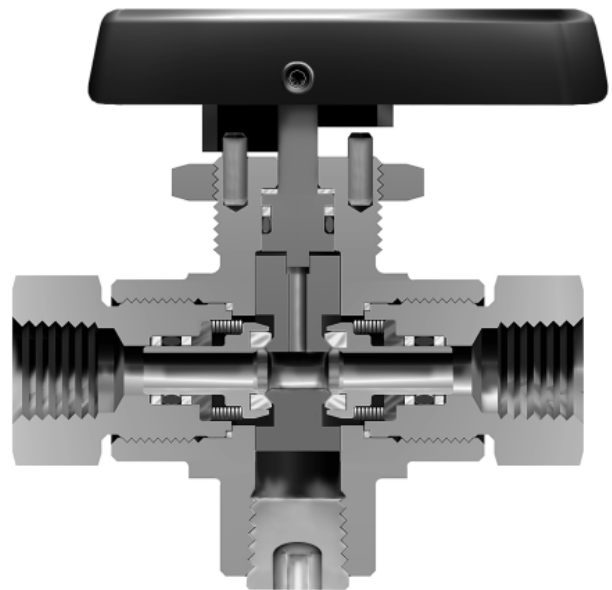
Two-way HB4L: $C_v = 1.02$; $x_T = 0.42$; Orifice = 0.188" (4.8 mm)
Three-way HB4X: $C_v = 0.62$; $x_T = 0.71$; Orifice = 0.188" (4.8 mm)
Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

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.

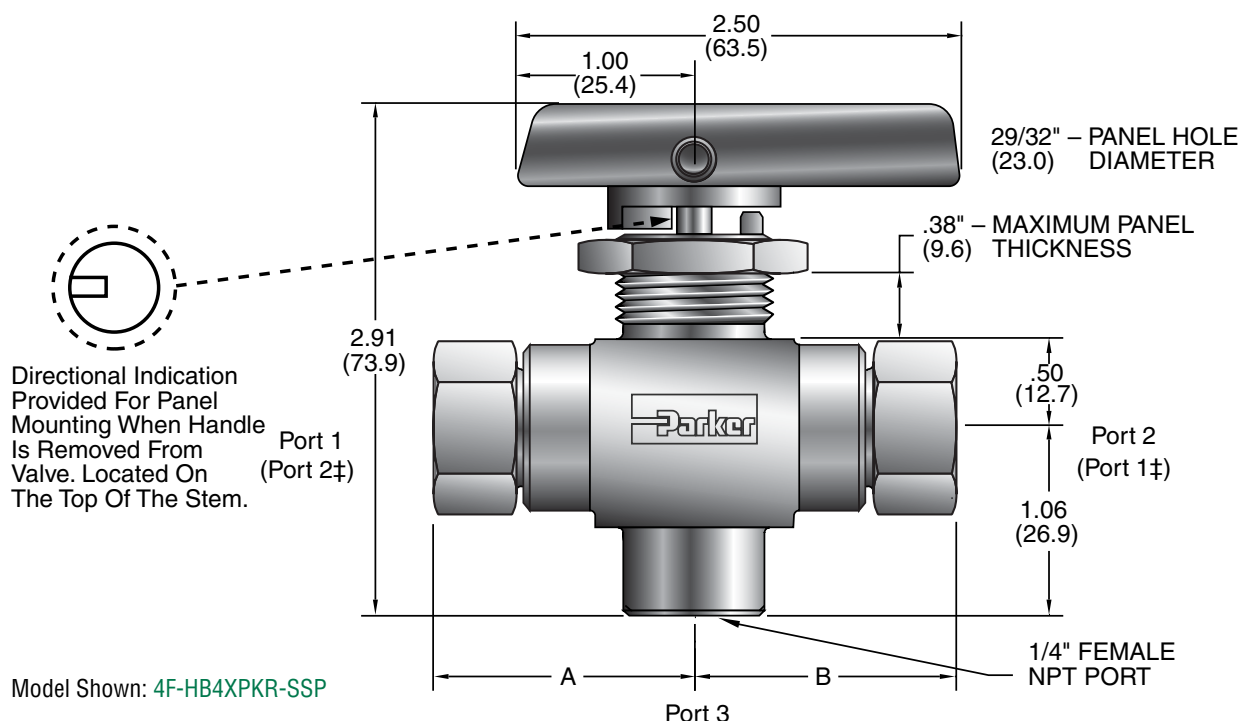


Three-way HB4X design



Two-way HB4L design

HB Series Ball Valves



Dimensions / Pressure Data

() Denotes dimensions in millimeters
 † For two-way valves, Port 1 is the inlet port and Port 2 is the outlet port.

Basic Part Number*	Pressure Rating† @ 100 ½F (38 ½C)		End Connections		Dimensions			
			Port 1	Port 2	A††		B††	
	psig	bar			inch	mm	inch	mm
2F-HB4	10,000	689	1/8" Female NPT		1.47	37.3	1.47	37.3
4F-HB4**			1/4" Female NPT		1.47	37.3	1.47	37.3
4FL-HB4			1/4" Female NPT		1.97	50.0	1.97	50.0
4A-HB4			1/4" A-LOK® Compression		2.07	52.6	2.07	52.6
4Z-HB4			1/4" CPI™ Compression		2.07	52.6	2.07	52.6
M6A-HB4			6mm A-LOK® Compression		2.07	52.6	2.07	52.6
M6Z-HB4			6mm 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	8mm A-LOK® Compression		2.07	52.6	2.07	52.6
M8Z-HB4	7,975	550	8mm CPI™ Compression		2.07	52.6	2.07	52.6
M10A-HB4	6,525	450	10mm A-LOK® Compression		2.20	55.9	2.20	55.9
M10Z-HB4	6,525	450	10mm CPI™ Compression		2.20	55.9	2.20	55.9
M12A-HB4	6,162	425	12mm A-LOK® Compression		2.30	58.4	2.30	58.4
M12Z-HB4	6,162	425	12mm CPI™ Compression		2.30	58.4	2.30	58.4

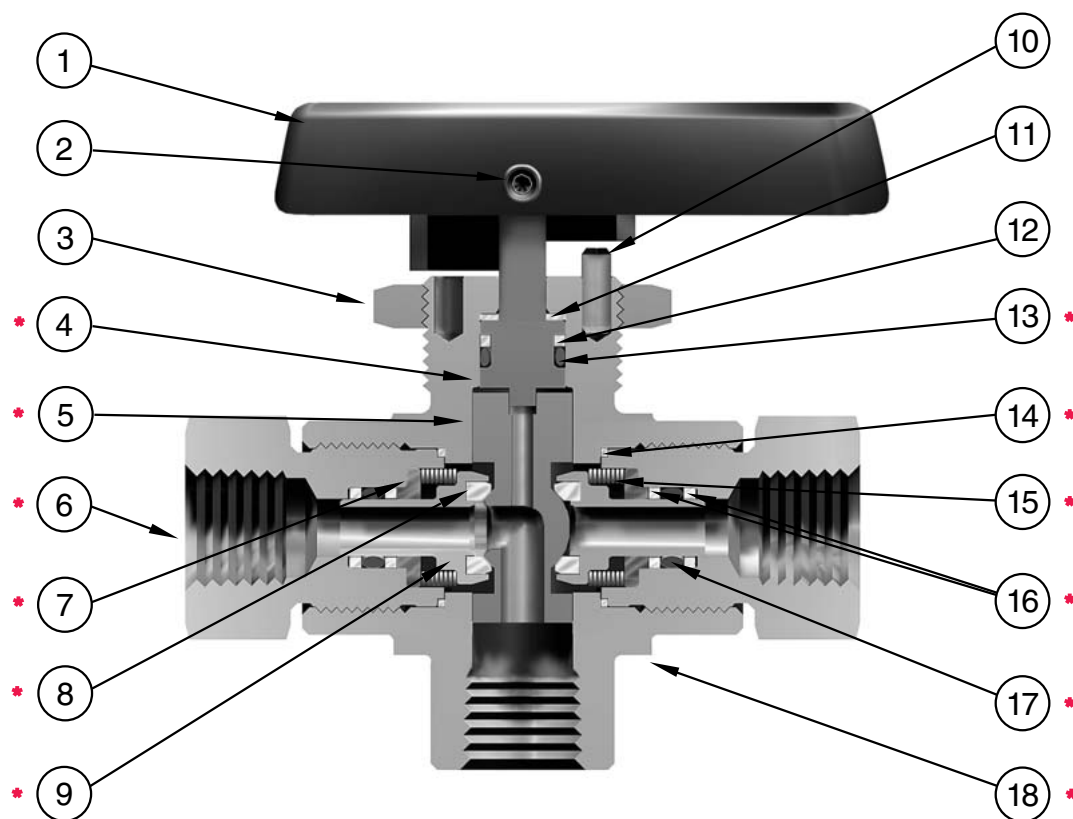
* Flow configurations are two-way (HB4L) and three-way (HB4X); Seat materials are PEEK (Polyetheretherketone) and PCTFE (Polychlorotrifluoroethylene).

** 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.

HB Series Ball Valves



Materials of Construction

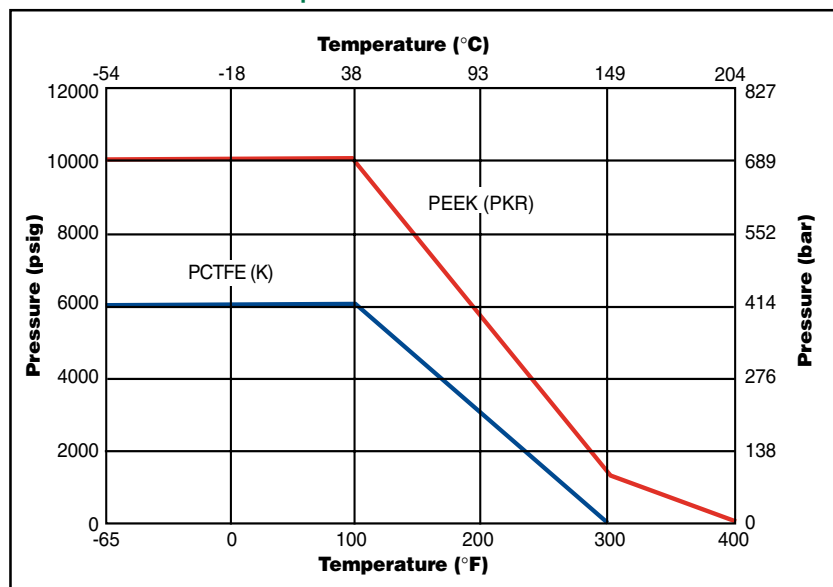
No.	Part Description	6,000 psi (414 bar)	10,000 psi (689 bar)
1	Handle/Insert	Nylon 6/6/316 SS	
2	Handle Screw	Stainless Steel	
3	Panel Nut	316 Stainless Steel	
*4	Stem	ASTM A 479 Type 316	
*5	Ball	ASTM A 479 Type 316	
*6	Port End Connector	ASTM A 479 Type 316	
*7	Spring Washer	ASTM A 479 Type 316	
*8	Seat	PCTFE	PEEK
*9	Seat Retainer	ASTM A 276 Type 316	
10	Handle Stop Pins	302 Stainless Steel	
11	Stem Washer	PEEK	
12	Stem O-ring Back-up	PTFE	
*13	Stem O-ring	Fluorocarbon Rubber**	
*14	Connector End Seal	PEEK	
*15	Spring	ASTM A 313 Type 631	
*16	Seat Retainer O-ring Back-up	PTFE	
*17	Seat Retainer O-ring	Fluorocarbon Rubber**	
*18	Valve Body	ASTM A 276 Type 316	
*19	Pipe Plug (Not shown/HB4L only)	316 Stainless Steel	

* 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 ½°F to 250 ½°F (-40 ½°C to 121 ½°C)

Ethylene Propylene Rubber:

-65 ½°F to 300 ½°F (-54 ½°C to 149 ½°C)

Fluorocarbon Rubber:

-15 ½°F to 400 ½°F (-26 ½°C to 204 ½°C)

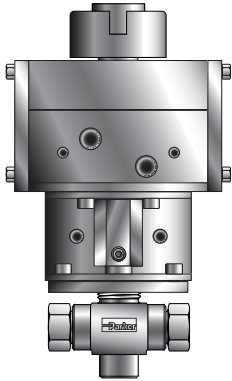
Flow Calculations (Two-way HB4L)

Inlet Pressure		Pressure Drop ΔP		Water @ 60 ½°F (16 ½°C)		Air @ 60 ½°F (16 ½°C)	
psig	bar	psig	bar	gpm	m³/hr	scfm	m³/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

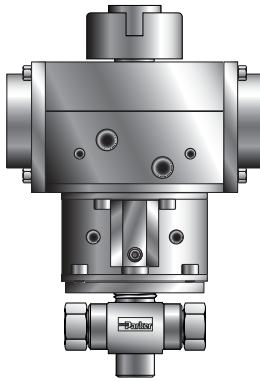
Flow Calculations (Three-way HB4X)

Inlet Pressure		Pressure Drop ΔP		Water @ 60 ½°F (16 ½°C)		Air @ 60 ½°F (16 ½°C)	
psig	bar	psig	bar	gpm	m³/hr	scfm	m³/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

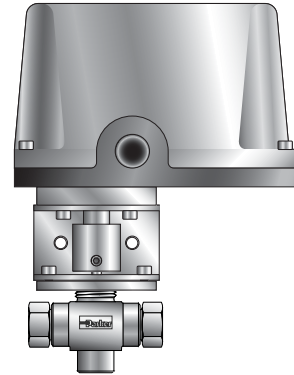
Actuator Options



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 ball, springs, stem washers and stem seal, back-up ring, end connector seals, 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 ball, springs, stem washers and stem seal, back-up ring, end connector seals, 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.

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).



Catalog 4121-HB, 10M, 04/04

Parker Hannifin Corporation
Instrumentation Products Division
2651 Alabama Highway 21 North
Jacksonville, AL 36265-9681
USA
Phone: (256) 435-2130
Fax: (256) 435-7718
www.parker.com/ipdus

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
Email: ipd@parker.com
www.parker.com/ipd



Ball Valves (MB Series)

*Catalog 4121-MB
Revised, January 2005*



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.

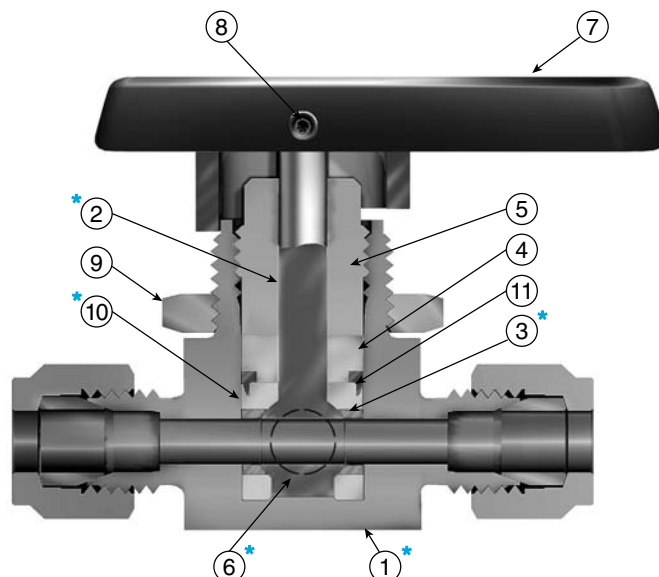
Features

- 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

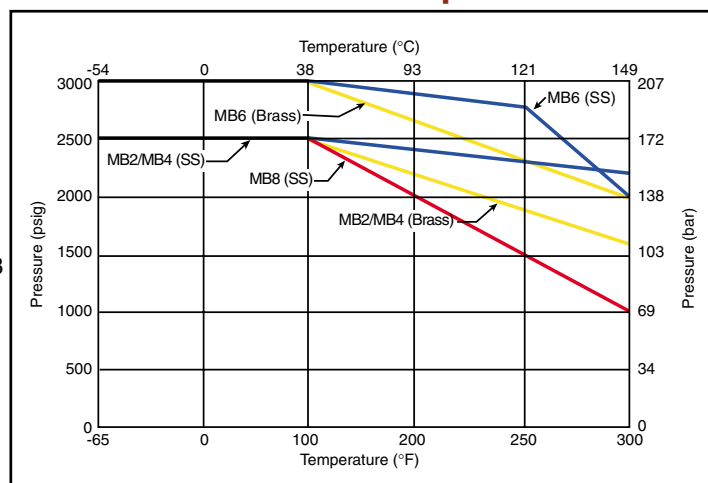
Specifications

- 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

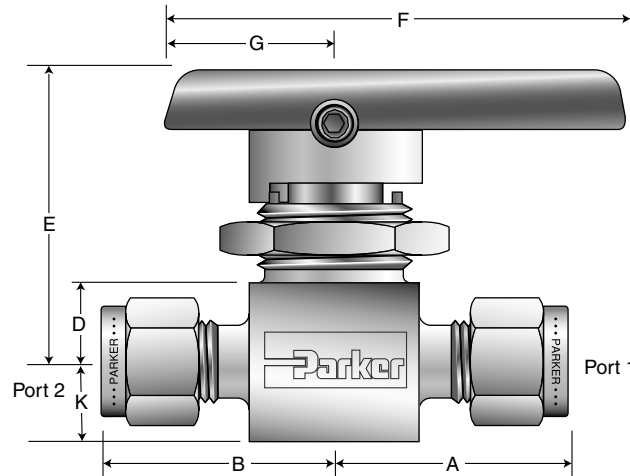
Item #	Part Description	Stainless Steel Valve	Brass Valve
*1	Body	ASTM A 276 TYPE 316	ASTM B 16 Alloy C36000
*2	Stem	ASTM A 276 TYPE 316	
*3	Hollow Insert	316 Stainless Steel	
4	Packing Washer	ASTM B 16 Alloy C36000	
5	Packing Nut	ASTM A 479 Type 316	ASTM B 16 Alloy C36000
*6	Solid Insert	316 Stainless 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

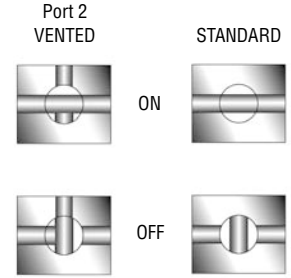
MB Series Ball Valves

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

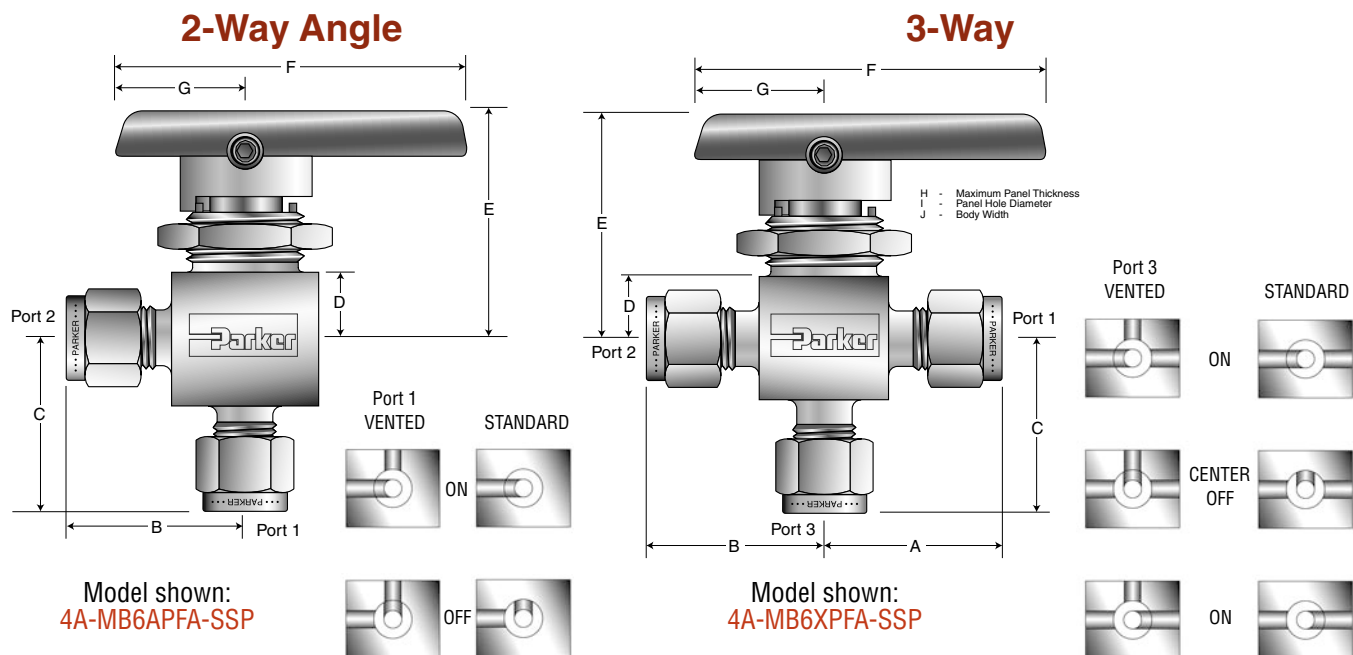
2-Way In-Line Dimensions, Flow Data

Port Size	Basic Part #	Flow Data				End Connections		Dimensions inches (mm)									
		Orifice		C_v	x_T †	Port 1	Port 2	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	0.84								
1A						1/16" A-LOK®		(21.3)	(21.3)								
2Z		0.093	2.4	0.20	0.42	1/8" CPI™		1.00	1.00								
2A						1/8" A-LOK®		(25.4)	(25.4)								
M3Z		0.086	2.2	0.17	0.43	3mm CPI™		1.00	1.00								
M3A						3mm A-LOK®		(25.4)	(25.4)								
2F	MB4L					1/8" Female NPT		0.81	0.81								
4Z						1/4" CPI™		1.12	1.12								
4A		0.125	3.2	0.44	0.34	1/4" A-LOK®		(28.5)	(28.5)								
M6Z						6mm CPI™		1.12	1.12								
M6A						6mm A-LOK®		(28.5)	(28.5)								
2Z	MB6L	0.093	2.4	0.18	0.55	1/8" CPI™		1.09	1.09								
2A						1/8" A-LOK®		(27.7)	(27.7)								
2F						1/8" Female NPT		1.00	1.00								
4M						1/4" Male NPT		1.00	1.00								
4Z						1/4" CPI™		1.19	1.19								
4A						1/4" A-LOK®		(30.2)	(30.2)								
4F						1/4" Female NPT		1.03	1.03								
4M4Z		0.187	4.7	1.02	0.53	1/4" Male NPT	1/4" CPI™	1.00	1.19								
4M4A						1/4" Male NPT	1/4" A-LOK®	(25.4)	(30.2)								
4V						1/4" VacuSeal		1.03	1.03								
6Z						3/8" CPI™		1.31	1.31								
6A						3/8" A-LOK®		(33.3)	(33.3)								
M6Z						6mm CPI™		1.19	1.19								
M6A						6mm A-LOK®		(30.2)	(30.2)								
M8Z						8mm CPI™		1.22	1.22								
M8A						8mm A-LOK®		(31.0)	(31.0)								
8A	MB8L	0.406	10.3	10.7	0.16	1/2" A-LOK®		1.94	1.94								
8Z						1/2" A-CPI™		(49.3)	(49.3)								
8F		0.406	10.3	6.1	0.20	1/2" FNPT		1.56	1.56								
12A		0.406	10.3	6.4	0.19	3/4" A-LOK®		1.94	1.94								
12Z						3/4" CPI™		(49.3)	(49.3)								
M12A		0.375	9.5	10.7	0.16	12mm A-LOK®		1.96	1.96								
M12Z						12mm CPI™		(49.8)	(49.8)								
								0.69	0.69	2.39	4.50	1.50	0.38	1.50	1.50	0.69	

† 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 $P_1 - P_2 / P_1 = x_T$.

MB Series Ball Valves



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

Port Size	Basic Part #	Flow Data				End Connections			Dimensions inches (mm)									
		Orifice		C _v	x _r ±				Port 1	Port 2	Port 3*	A†	B†	C†	D	E	F	G
		inch	mm															
1Z	MB2A MB2X	0.052	1.3	0.02	0.58	1/16" CPI™			0.84	0.84	0.81	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®			(21.3)	(21.3)	(20.6)							
2Z		0.093	2.4	0.18	0.48	1/8" CPI™			1.00	1.00	0.97							
2A						1/8" A-LOK®			(25.4)	(25.4)	(24.6)							
M3Z		0.086	2.2	0.15	0.47	3mm CPI™			1.00	1.00	0.97							
M3A						3mm A-LOK®			(25.4)	(25.4)	(24.6)							
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	1.12	1.12							
4A						1/4" A-LOK®			(28.4)	(28.4)	(28.4)							
M6Z						6mm CPI™			1.12	1.12	1.12							
M6A						6mm A-LOK®			(28.4)	(28.4)	(28.4)							
4Z	MB6A MB6X	0.187	4.7	0.70	0.58	1/4" CPI™			1.19	1.19	1.15	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®			(30.2)	(30.2)	(29.2)							
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	1.19	1.03							
4A4A4M						1/4" A-LOK®	1/4" A-LOK®	1/4" Male NPT	(30.2)	(30.2)	(26.2)							
6Z						3/8" CPI™			1.31	1.31	1.23							
6A						3/8" A-LOK®			(33.3)	(33.3)	(31.2)							
M6Z						6mm CPI™			1.19	1.19	1.15							
M6A						6mm A-LOK®			(30.2)	(30.2)	(29.2)							
M8Z						8mm CPI™			1.22	1.22	1.18							
M8A						8mm A-LOK®			(31.0)	(31.0)	(30.0)							
8A	MB8A MB8X	0.406	10.3	5.4	0.36	1/2" A-LOK®			1.75	1.75	1.75	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™			(44.5)	(44.5)	(44.5)							
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						3/4" A-LOK®			1.75	1.75	1.75							
12Z		0.406	10.3	4.9	0.39	3/4" CPI™			(44.5)	(44.5)	(44.5)							
M12A						12mm A-LOK®			1.75	1.75	1.75							
M12Z		0.375	9.5	5.6	0.37	12mm CPI™			(44.5)	(44.5)	(44.5)							

* 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

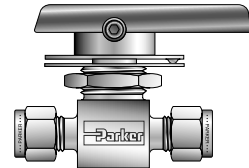
1
2
3
4
5
6

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.

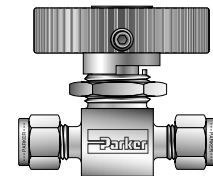
① Port 1	② Port 2	③ Port 3	④ Valve Series	⑤ Seat Material	⑥ Body Material
1Z - 1/16" CPI™			MB2L MB2A MB2X	PFA - Perfluoroalkoxy	SSP - Stainless Steel (Stainless Steel with BP - Brass (Brass with Panel Nut) (Only Available in MB 2,4,6)
1A - 1/16" A-LOK®					
2Z - 1/8" CPI™					
2A - 1/8" A-LOK®					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

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

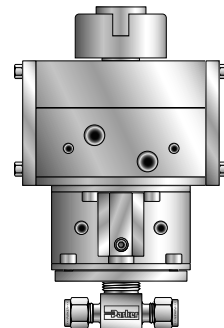
Lock-Out Device Option



Oval Handle Option



Pneumatic Actuator Option



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-MBV2XPFA-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

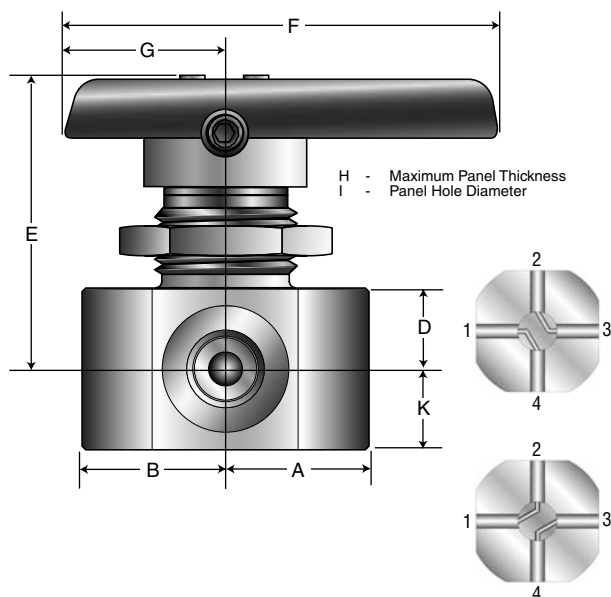
Special Cleaning – All face seal ended valves are cleaned in accordance with Parker Specification ES8001. This is an available option for all valves by adding the suffix **-C1** to the end of the part number. **Example:** 4V-MB4XPFA-SSP-C1

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

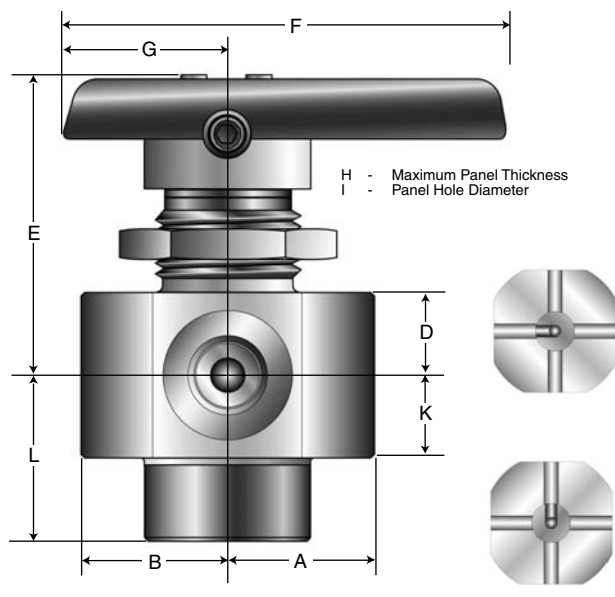
Electric Actuators – For detailed actuator information, refer to Catalog 4123. For factory assembly, add the actuator part number as the suffix to the valve part number. **Example:** M6A-MB6XPFA-SSP-71C. For field installation, specify the actuator desired. **Example:** 71C. The appropriate mounting 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				End Connections		Dimensions inches (mm)									
		Orifice		C_v	x_T^*	Port 1	Port 2	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	0.97	0.44	1.57	2.37	0.88	0.25	0.77	0.44	
2Z7						1/8" Female CPI™		(24.6)	(24.6)								
2F						1/8" Female NPT		(19.8)	(19.8)								
2A7	MB6X5	0.063	1.6	0.17	0.16	1/8" Inverted A-LOK®		0.97	0.97	0.44	1.57	2.37	0.88	0.25	0.77	0.44	0.97
2Z7						1/8" Inverted CPI™		(24.6)	(24.6)								(24.6)
2F						1/8" Female NPT		(19.8)	(19.8)								(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	②	③	④
End Connection	Valve Series	Seat Material	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)

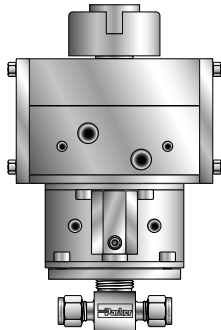
How to Order Options

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



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

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)

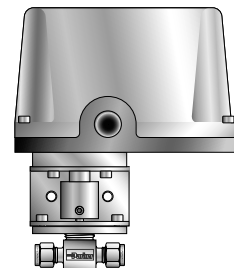
Electric Actuators Factory Assembled

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

Example: 4Z-MB6XPFA-SS - 81 X A -

1
2
3
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.



Parker Hannifin Corporation
Instrumentation Products Division
2651 Alabama Highway 21 North
Jacksonville, AL 36265-9681
USA
Phone: (256) 435-2130
Fax: (256) 435-7718
www.parker.com/ipdus

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
Email: ipd@parker.com
www.parker.com/ipd

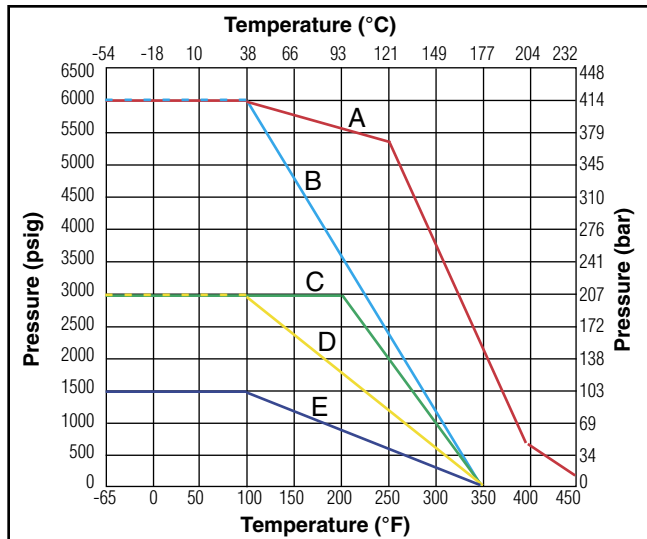


Ball Valves (B Series)

*Catalog 4121-B
January 2006*



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 3 and 5 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 Fluorinated 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		Water @ 60°F (16°C)		Air @ 60°F (16°C)	
		psig	bar	gpm	m ³ /hr	scfm	m ³ r
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		Water @ 60°F (16°C)		Air @ 60°F (16°C)	
		psig	bar	gpm	m ³ /hr	scfm	m ³ r
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.

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 4230/4233 CPI™/A-Lok® Tube Fittings.

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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.

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)

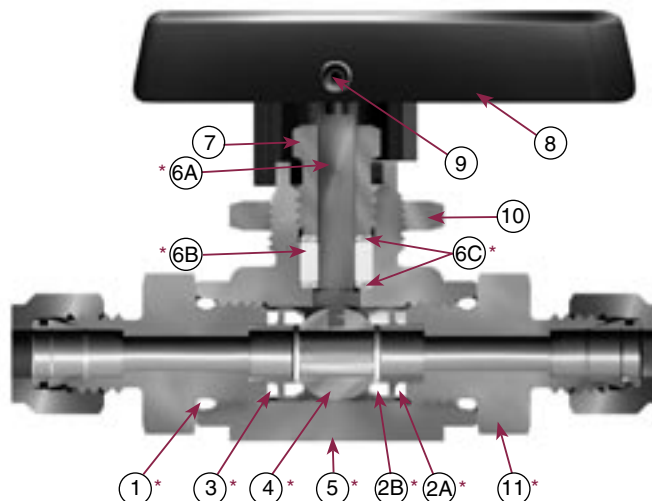
* B6 Series: 6000 psig rating or 4400 psig (303 bar) CWP

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](#).



Model Shown: 6A-B6LJ-SSP

Materials of Construction

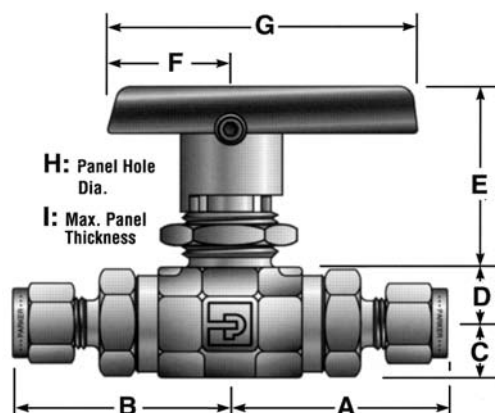
Item #	Part Description	Stainless Steel	Brass
*1	Connector O-Ring	PTFE**	
*2A	Seat Retainer	ASTM A 276 Type 316	ASTM B 16 Alloy C36000
*2B	Seat	PTFE, PCTFE, PEEK	
*3	Retainer Seal	PTFE**	
*4	Ball	316 Stainless Steel	
*5	Body	ASTM A 351 Grade CF3M	ASTM B 283 Alloy C37700
*6A	Stem	ASTM A 276 Type 316	
*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.

Dimensions & Flow Data



**Model Shown:
4A-B6LJ-SSP**

Port Size	Basic Part #	Flow Data				End Connections		Dimensions Inches (mm)								
		Orifice		C_v	X_T^*	Port 1	Port 2	A†	B†	C	D	E	F	G	H	I
1A	B2L	0.052	1.3			1/16" A-LOK®		1.30	1.30	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)
1Z						1/16" CPI™		(33.0)	(33.0)							
2A		0.093	2.4			1/8" A-LOK®		1.36	1.36							
2Z						1/8" CPI™		(34.5)	(34.5)							
2F		0.165	4.2			1/8" Female NPT		1.07	1.07							
								(27.2)	(27.2)							
2M		0.165	4.2			1/8" Male NPT		1.18	1.18							
								(30.0)	(30.0)							
4A		0.165	4.2			1/4" A-LOK®		1.48	1.48							
4Z						1/4" CPI™		(37.6)	(37.6)							
4M		0.165	4.2			1/4" Male NPT		1.35	1.35							
								(34.3)	(34.3)							
M3A	B6L	0.086	2.2	0.18	0.44	3mm A-LOK®		1.37	1.37	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)
M3Z						3mm CPI™		(34.8)	(34.8)							
4A		0.187	4.7	1.04	0.42	1/4" A-LOK®		1.74	1.74							
4Z						1/4" CPI™		(44.2)	(44.2)							
4F		0.250	6.4	2.34	0.29	1/4" Female NPT		1.51	1.51							
								(38.4)	(38.4)							
4M		0.250	6.4	2.34	0.29	1/4" Male NPT		1.62	1.62							
								(41.1)	(41.1)							
4Q		0.180	4.6	1.03	0.42	1/4" UltraSeal		1.51	1.51							
								(38.4)	(38.4)							
4V		0.188	4.8	1.04	0.42	1/4" VacuSeal		1.75	1.75							
								(44.5)	(44.5)							
6A	B8L	0.250	6.4	2.34	0.29	3/8" A-LOK®		1.80	1.80	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)
6Z						3/8" CPI™		(45.7)	(45.7)							
6M		0.250	6.4	2.34	0.29	3/8" Male NPT		1.62	1.62							
								(41.1)	(41.1)							
6Q		0.250	6.4	2.34	0.29	3/8" UltraSeal		1.51	1.51							
								(38.4)	(38.4)							
M6A		0.187	4.7	1.04	0.42	6mm A-LOK®		1.75	1.75							
M6Z						6mm CPI™		(44.5)	(44.5)							
M8A		0.250	6.4	2.34	0.42	8mm A-LOK®		1.78	1.78							
M8Z						8mm CPI™		(45.2)	(45.2)							
M10A	B8L	0.250	6.4	2.34	0.42	10mm A-LOK®		1.81	1.81	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)
M10Z						10mm CPI™		(46.0)	(46.0)							
6F		0.406	10.3	6.42	0.37	3/8" Female NPT		1.95	1.95							
								(49.5)	(49.5)							
8F		0.406	10.3	6.42	0.37	1/2" Female NPT		2.15	2.15							
								(54.6)	(54.6)							
8A		0.406	10.3	6.42	0.37	1/2" A-LOK®		2.34	2.34							
8Z						1/2" CPI™		(59.4)	(59.4)							
8M		0.406	10.3	6.42	0.37	1/2" Male NPT		2.22	2.22							
								(56.4)	(56.4)							
8Q		0.375	9.5	5.57	0.37	1/2" UltraSeal		1.92	1.92							
								(48.8)	(48.8)							
8V		0.406	10.3	6.42	0.37	1/2" VacuSeal		2.21	2.21							
								(56.1)	(56.1)							
12A	B8L	0.406	10.3	6.42	0.37	3/4" A-LOK®		2.33	2.33	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)
12Z						3/4" CPI™		(59.2)	(59.2)							
12F		0.406	10.3	6.42	0.37	3/4" Female NPT		2.25	2.25							
								(57.1)	(57.1)							
M12A		0.375	9.5	5.57	0.37	12mm A-LOK®		2.33	2.33							
M12Z						12mm CPI™		(59.2)	(59.2)							
M16A		0.406	10.3	6.42	0.37	16mm A-LOK®		2.33	2.33							
M16Z						16mm CPI™		(59.2)	(59.2)							

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

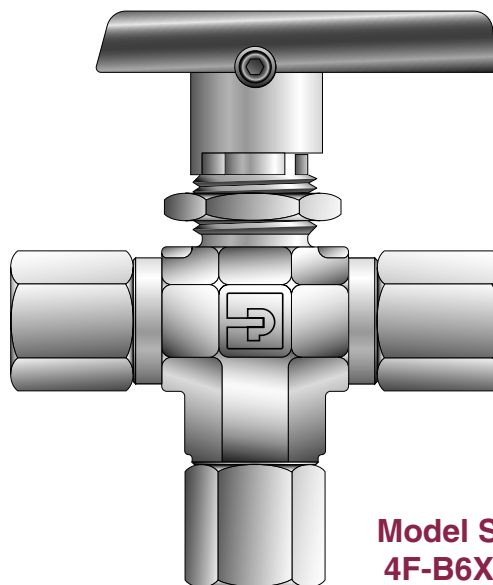
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position

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:

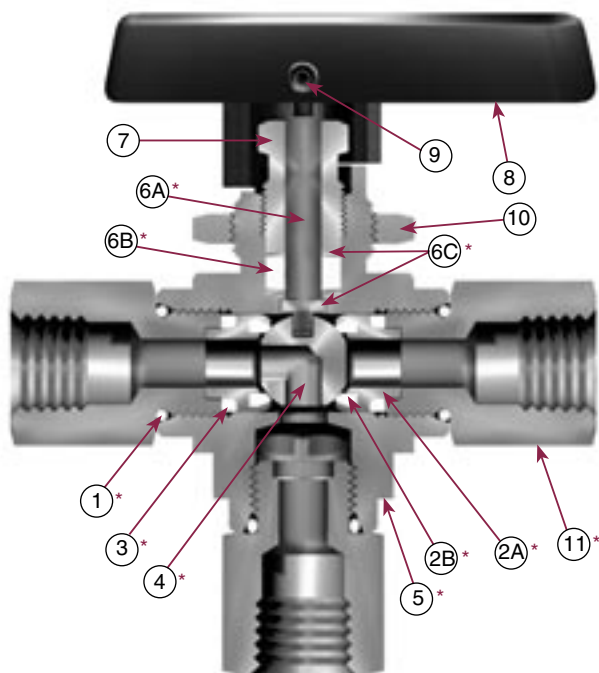
316 Stainless Steel and Brass 3000 psig (207 bar) CWP

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).

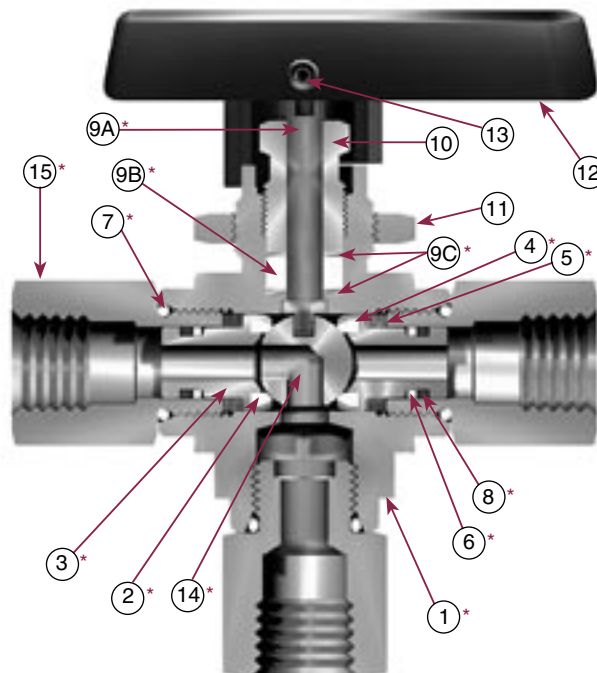
For working pressures of valves with external or internal pipe threads, please see [Catalog 4260, Instrumentation Pipe Fittings](#).

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

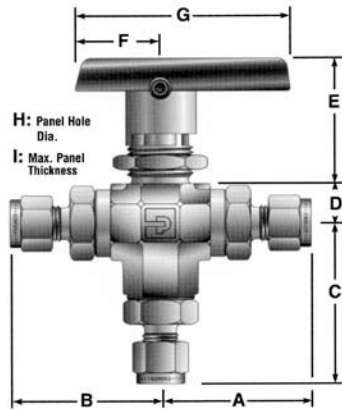
* Wetted Parts.

** 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.

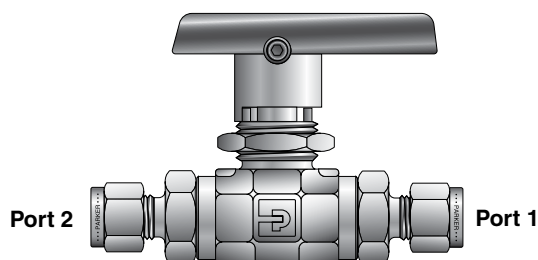
Dimensions & Flow Data**Model Shown:
4Z-B6XSPKR-V-SSP**

Port Size	Basic Part #	Flow Data				End Connections			Dimensions Inches (mm)								
		Orifice		C_v	X_T^*	Port 1	Port 2	Port 3	A†	B†	C	D	E	F	G	H	I
1A	B2X	0.052	1.3			1/16" A-LOK®			1.30	1.30	1.39	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™			(33.0)	(33.0)	(35.3)						
2A		0.093	2.4			1/8" A-LOK®			1.36	1.36	1.45						
2Z						1/8" CPI™			(34.5)	(34.5)	(36.8)						
2F		0.165	4.2			1/8" Female NPT			1.07	1.07	1.15						
									(27.2)	(27.2)	(29.2)						
2M		0.165	4.2			1/8" Male NPT			1.18	1.18	1.26						
									(30.0)	(30.0)	(32.0)						
4A		0.165	4.2			1/4" A-LOK®			1.48	1.48	1.56						
4Z						1/4" CPI™			(37.6)	(37.6)	(39.6)						
4M		0.165	4.2			1/4" Male NPT			1.35	1.35	1.43						
									(34.3)	(34.3)	(36.3)						
M3A	B6X	0.086	2.2	0.18	0.63	3mm A-LOK®			1.37	1.37	1.45	0.47 (11.9)	1.53 (38.9)	1.00 (25.4)	2.50 (63.5)	0.77 (19.6)	0.25 (6.4)
M3Z						3mm CPI™			(34.8)	(34.8)	(36.8)						
4A		0.187	4.7	0.70	0.69	1/4" A-LOK®			1.74	1.74	1.88						
4Z						1/4" CPI™			(44.2)	(44.2)	(47.8)						
4F		0.196	5.0	0.87	0.74	1/4" Female NPT			1.51	1.51	1.65						
									(38.4)	(38.4)	(41.9)						
4M		0.196	5.0	0.87	0.74	1/4" Male NPT			1.62	1.62	1.76						
									(41.1)	(41.1)	(44.7)						
4Q		0.180	4.6	0.68	0.67	1/4" UltraSeal			1.51	1.51	1.65						
									(31.8)	(31.8)	(33.8)						
4V		0.188	4.8	0.70	0.69	1/4" VacuSeal			1.75	1.75	1.89						
									(35.1)	(35.1)	(37.1)						
6A		0.196	5.0	0.87	0.74	3/8" A-LOK®			1.80	1.80	1.94						
6Z						3/8" CPI™			(45.7)	(45.7)	(49.3)						
6M		0.196	5.0	0.87	0.74	3/8" Male NPT			1.62	1.62	1.76						
									(41.1)	(41.1)	(44.7)						
6Q		0.196	5.0	0.87	0.74	3/8" UltraSeal			1.52	1.52	1.65						
									(38.6)	(38.6)	(41.9)						
M6A	B8X	0.187	4.7	0.70	0.69	6mm A-LOK®			1.75	1.75	1.88	0.70 (17.8)	1.74 (44.2)	1.50 (38.1)	4.00 (101.6)	0.90 (22.9)	0.38 (9.7)
M6Z						6mm CPI™			(44.5)	(44.5)	(47.8)						
M8A		0.196	5.0	0.87	0.74	8mm A-LOK®			1.78	1.78	1.91						
M8Z						8mm CPI™			(45.2)	(45.2)	(48.5)						
M10A		0.196	5.0	0.87	0.74	10mm A-LOK®			1.81	1.81	1.95						
M10Z						10mm CPI™			(46.0)	(46.0)	(49.5)						
6F		0.406	10.3	3.62	0.64	3/8" Female NPT			1.95	1.95	2.29						
									(49.5)	(49.5)	(58.2)						
8A		0.406	10.3	3.62	0.64	1/2" A-LOK®			2.34	2.34	2.68						
8Z						1/2" CPI™			(59.4)	(59.4)	(68.1)						
8F		0.406	10.3	3.62	0.64	1/2" Female NPT			2.15	2.15	2.49						
									(54.6)	(54.6)	(63.2)						
8M		0.406	10.3	3.62	0.64	1/2" Male NPT			2.22	2.22	2.59						
									(56.4)	(56.4)	(65.8)						
8Q		0.375	9.5	3.46	0.62	1/2" UltraSeal			1.93	1.93	2.27						
									(49.5)	(49.5)	(57.7)						
8V		0.406	10.3	3.62	0.64	1/2" VacuSeal			2.21	2.21	2.55						
									(56.1)	(56.1)	(65.0)						
12A	B12X	0.406	10.3	3.62	0.64	3/4" A-LOK®			2.33	2.33	2.68	0.70 (17.8)	1.74 (44.2)	1.50 (38.1)	4.00 (101.6)	0.90 (22.9)	0.38 (9.7)
12Z						3/4" CPI™			(59.2)	(59.2)	(68.1)						
12F		0.406	10.3	6.42	0.37	3/4" Female NPT			2.25	2.25	2.59						
									(57.1)	(57.1)	(65.8)						
M12A		0.375	9.5	3.46	0.62	12mm A-LOK®			2.33	2.33	2.67						
M12Z						12mm CPI™			(59.2)	(59.2)	(67.8)						
M16A		0.406	10.3	3.62	0.64	16mm A-LOK®			2.33	2.33	2.67						
M16Z						16mm CPI™			(56.9)	(56.9)	(65.5)						

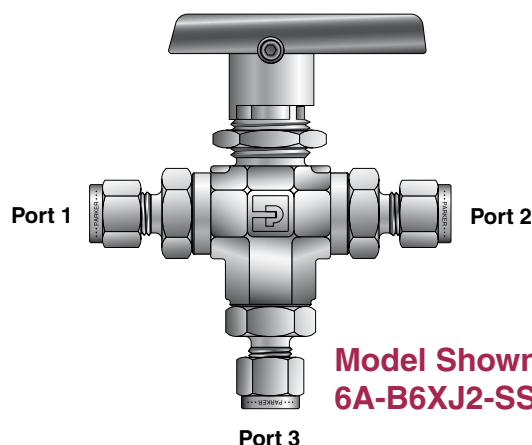
* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$

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

How to Order



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

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.

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	–	VL	–	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

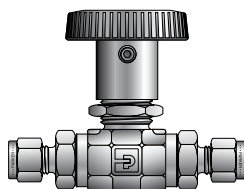
Describes a B6X ball valve with 1/4" male NPT end connections for side ports 1 and 2, 1/4" female NPT end connection for bottom port 3, spring-loaded PCTFE seats, ethylene propylene rubber stem and body seals, stainless steel construction, and a panel mounting nut.

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

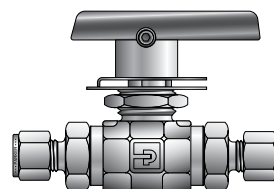
Describes a B8X ball valve with 1/2" A-LOK® end connections for ports 1, 2, and 3, spring-loaded PCTFE seats, Nitrile rubber body seals, live loaded PTFE packing, stainless steel construction, and a panel mounting nut.

***Note:** If ports 1, 2, and 3 are the same, eliminate the port 2 and port 3 designators.

Options

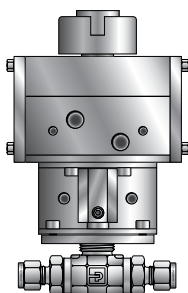


Round Handle



Lock-Out Handle

Actuator Options



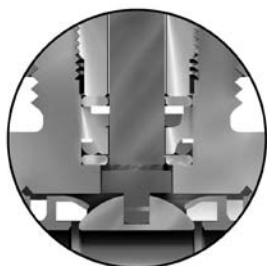
**Double Acting (61AD)
Pneumatic Actuator**



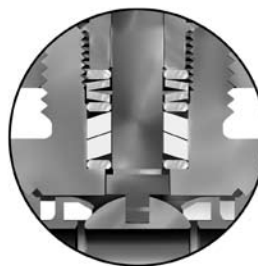
**Spring Returns (61AC & AO)
Pneumatic Actuator**



**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-B6LS2-SSP-VBU

Note: VBD and VBU are ball cavity vents only.

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 assembled 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. (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.)	KIT-B2LJ-SS
Elastomeric Stem Seal Kits: Kit-Valve Series and Seat Material-Elastomer Material-Body Material. (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.)	KIT-B2LJ2-BN-SS

Diverter Valve Seal Kits:

PTFE Stem Seal Kits: Kit-Valve Series and Seat Material-Body Material. (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.)	KIT-B6XPKR-SS
Elastomeric Stem Seal Kits: Kit-Valve Series and Seat Material-Elastomer-Body Material. (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.)	KIT-B6XJ-V-SS

Selector Valve Seal Kits:

PTFE Stem Seal Kits: Kit-Valve Series and Seat Material. (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.)	KIT-B6XS2
Elastomeric Stem Seal Kits: Kit-Valve Series and Seat Material-Elastomer. (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.)	KIT-B6XSPKR-V

Live-loaded Seal Kits:

Kit-Valve Series and Seat Material-Seal Material-Body Material. (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.)	KIT-B6LJ2-BNLT-SS
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Parker Hannifin Corporation

Instrumentation Products Division
2651 Alabama Highway 21 North
Jacksonville, AL 36265-9681
USA

Phone: (256) 435-2130

Fax: (256) 435-7718

www.parker.com/ipdus

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

Email: ipd@parker.com

www.parker.com/ipd



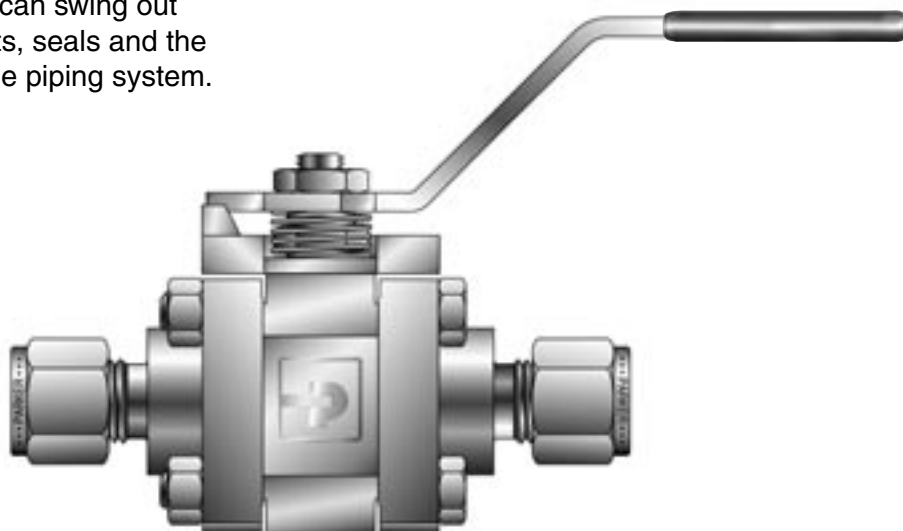
Swing-Out Ball Valves (SWB Series)

*Catalog 4125-SWB
July 2005*



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.



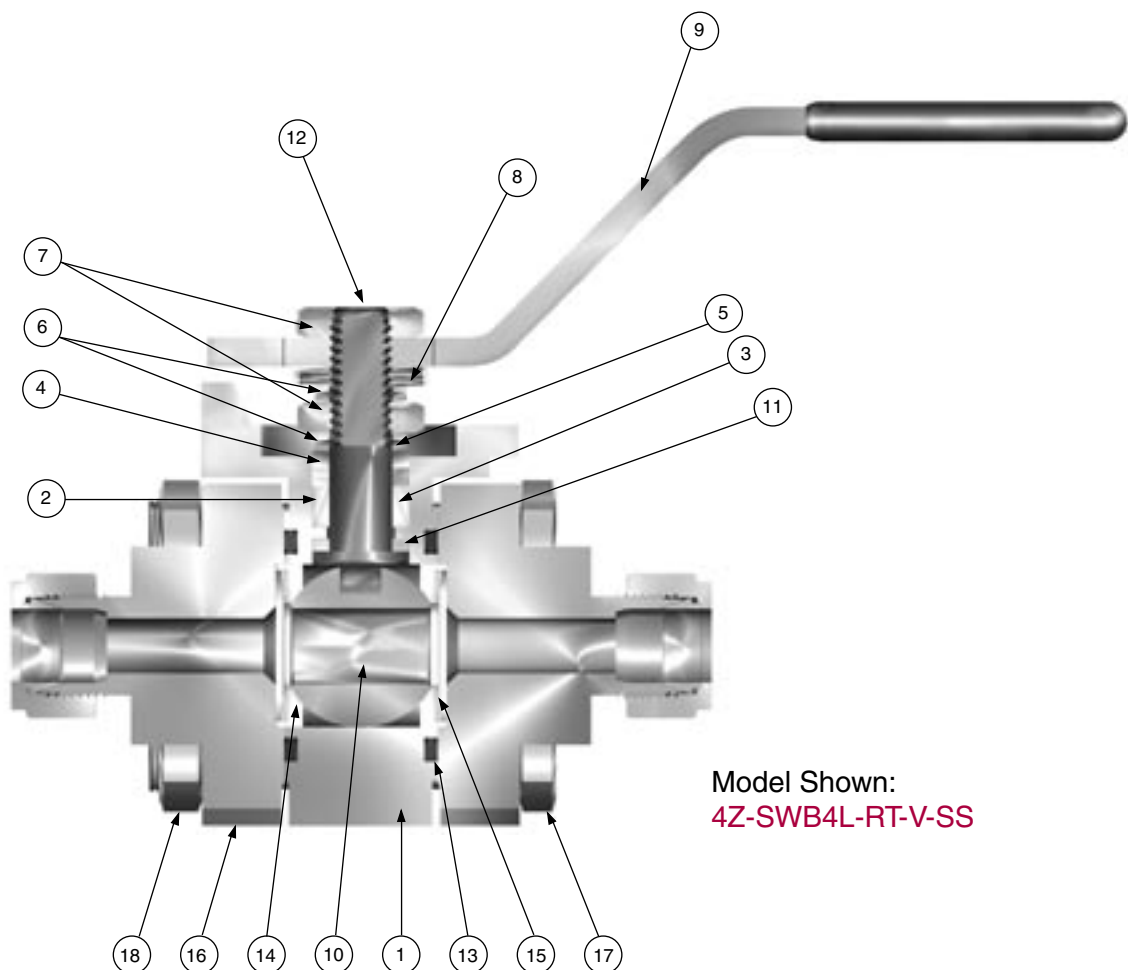
Model Shown: 8Z-SWB8L-RT-BN-SS

Features

- ▶ Ultra low internal volume
- ▶ 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)
Temperature Ratings — 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)



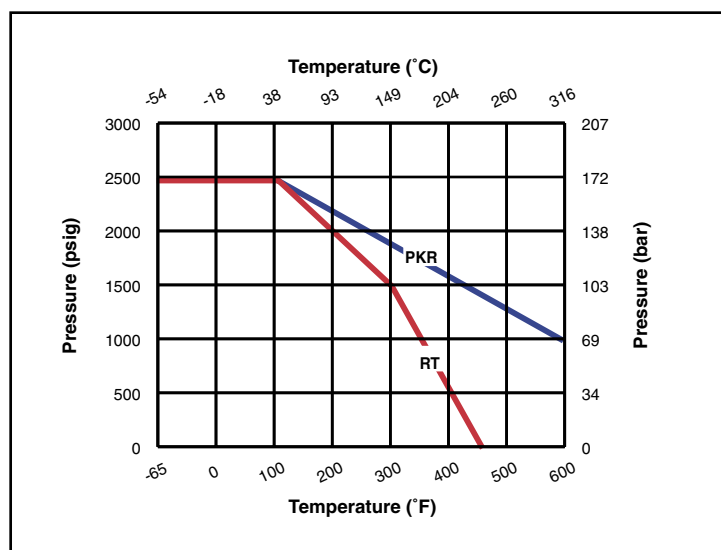
Model Shown:
4Z-SWB4L-RT-V-SS

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 666 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 666 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

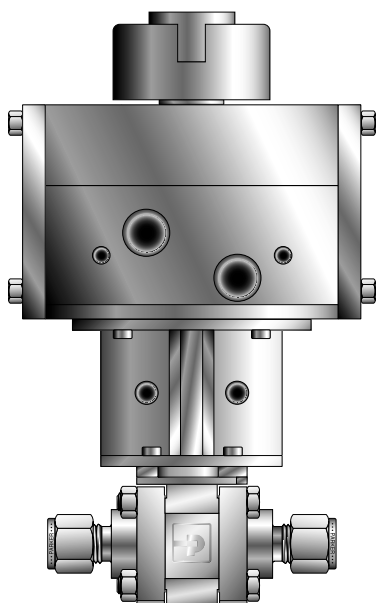
*Optional body seal materials are described in the [How to Order](#) section.

Pressure vs. Temperature

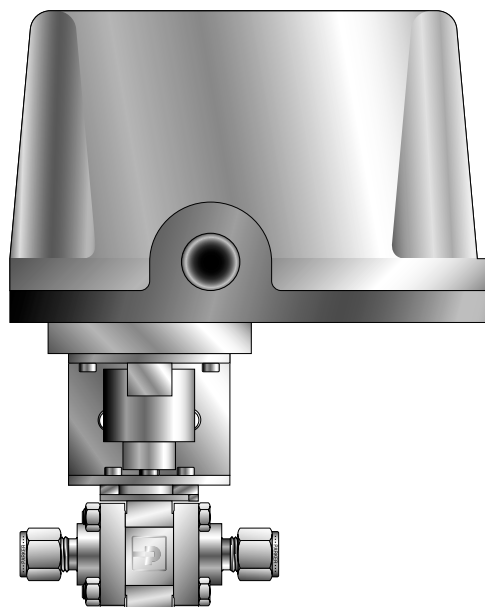


Notes:

- 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



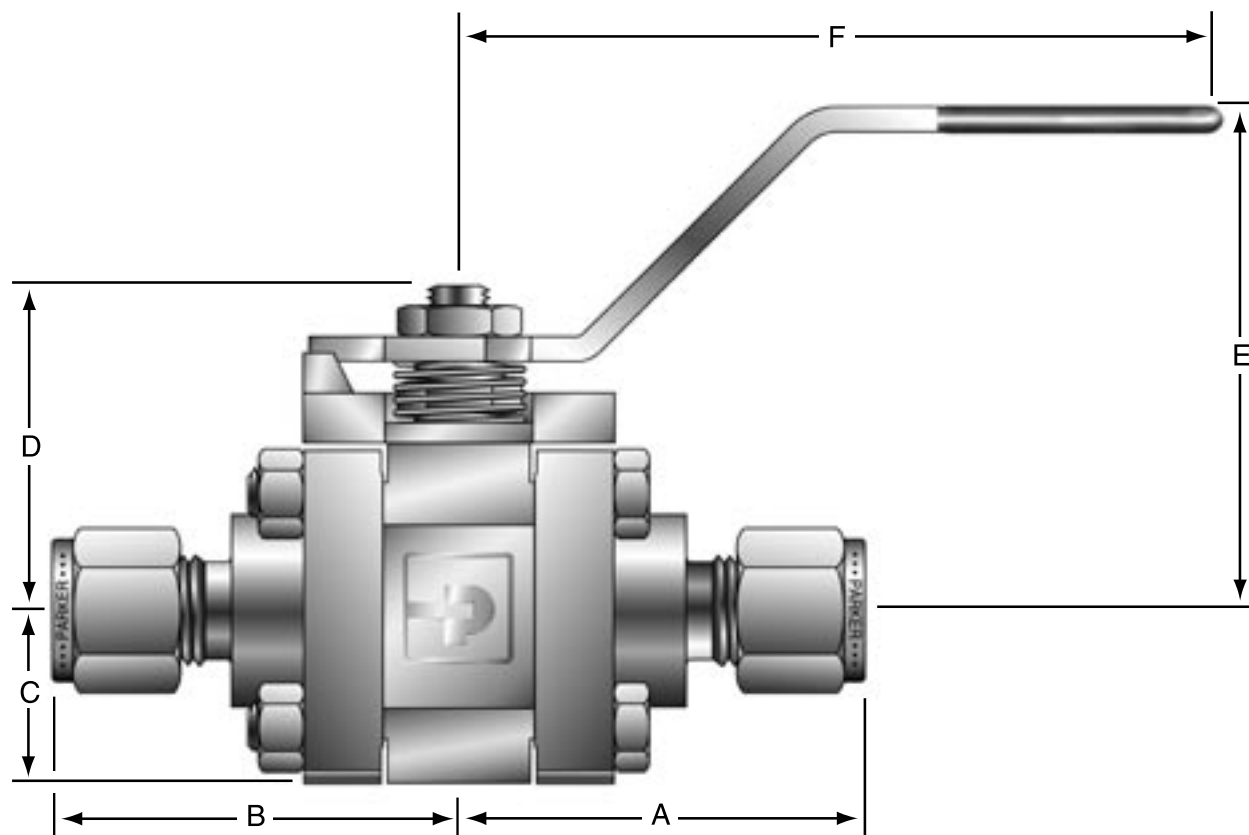
Electric Actuated Model Shown:
8A-SWB8L-PKR-G-SS-71

Dimensions / Flow Data

Basic Part Number	Flow Data				Dimensions											
	Orifice		C_v	X_T^*	A†		B†		C		D		E		F	
	Inch	mm			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.



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 * - SWB8L - RT - BN - SS** 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.

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

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

How to Order Options

Examples

Lever Lock-Out Devices –

Add the suffix -LD to the end of the part number to order directly on the valve.
For field installation, order part number as shown in the example.

4F-SWB8L-RT-V-SS-LD
SWB8L-HANDLE-LOCKING

Oval Handles – Add the suffix -S to the end of the part number.

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.
For field installation, order part number as shown in the example.

6F-SWB8L-PKR-V-SS-S-LD
SWB8L-OVAL-LOCKING- HANDLE

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.

6F-SWB8L-PKR-G-SS-EXT4

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.
For field installation, specify the the actuator desired.
The appropriate mounting hardware may be obtained by adding the valve series and actuator size to the prefix MK-.

8F-SWB8L-RT-BN-SS-61AC-2
61AC-2
MK-SWB8L-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.
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-SWB8L-PKR-EPR-SS-71A
71A
MK-SWB8L-70.

Grafoil® is a registered trademark of UCAR Carbon Technology Corporation

WARNING

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2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

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.

4. Warranty: Seller warrants that items sold hereunder shall be free from defects in material or workmanship. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.**

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5. Limitation Of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

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



Parker Hannifin Corporation

Instrumentation Products Division
2651 Alabama Highway 21 North
Jacksonville, AL 36265-9681
USA

Phone: (256) 435-2130

Fax: (256) 435-7718

www.parker.com/ipdus

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

Email: ipd@parker.com

www.parker.com/ipd