



# Ball and Plug Valves

aerospace  
 climate control  
 electromechanical  
 filtration  
**fluid & gas handling**  
 hydraulics  
 pneumatics  
**process control**  
 sealing & shielding



ENGINEERING YOUR SUCCESS.

# Two-Way B Series Ball Valves

## 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. Monel® Alloy 400 and Hastelloy® C-276 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° 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) |
| Monel® Alloy 400    |                      |                     |
| B2 and B6:          | 3000 psig (207 bar)  | 1500 psig (103 bar) |
| B8:                 | 2000 psig (138 bar)  | 1500 psig (103 bar) |
| Hastelloy® C-276    |                      |                     |
| B2 and B6:          | 4000 psig (276 bar)  | 1500 psig (103 bar) |
| B8:                 | 3000 psig (207 bar)  | 1500 psig (103 bar) |

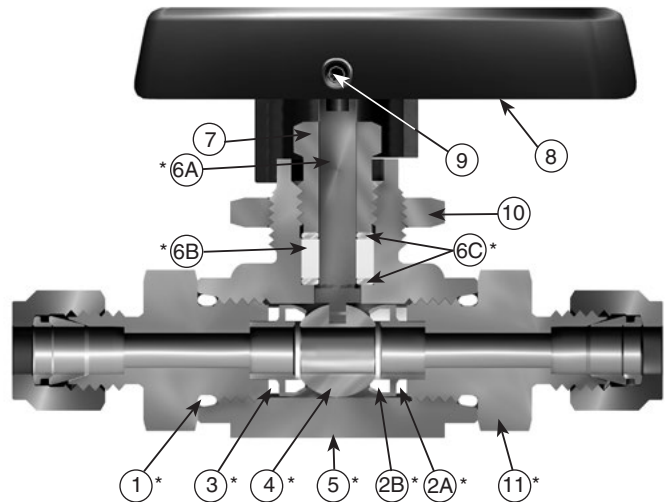
\* B6 Series: 6000 psig rating or 4400 psig (303 bar) CWP  
 B8 Series: 6000 psig rating or 4000 psig (276 bar) CWP

### 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



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.

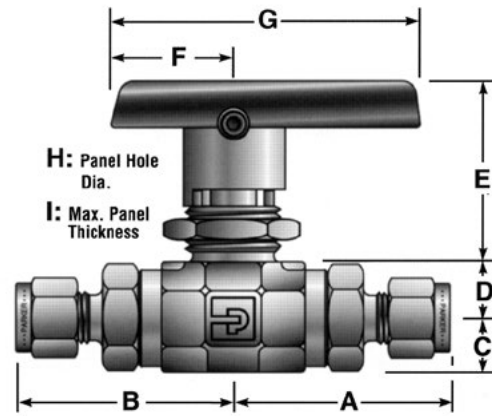
\*\* Optional stem seal and body seal materials are described in the How to Order section.

Lubrication: Perfluorinated Polyether.

Hastelloy® is a registered trademark of Haynes International.  
 Monel® Alloy 400 is a registered trademark of Special Metals Corporation.

# Two-Way B Series Ball Valves

## Dimensions & Flow Data



Model Shown:  
4A-B6LJ-SSP

| Port Size | Basic Part # | Flow Data |      |      |                             | End Connections |        | Dimensions Inches (mm) |                |                |                |                |                |                |               |   |
|-----------|--------------|-----------|------|------|-----------------------------|-----------------|--------|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|---|
|           |              | Orifice   |      | Cv   | X <sub>T</sub> <sup>*</sup> | Port 1          | Port 2 | A†                     | B†             | C              | D              | E              | F              | G              | H             | I |
|           |              | Inch      | mm   |      |                             |                 |        |                        |                |                |                |                |                |                |               |   |
| 1A        | B2L          | 0.052     | 1.3  | 0.06 | 0.45                        | 1/16" A-LOK®    | 1.30   | 1.30                   | 0.33<br>(8.4)  | 0.33<br>(8.4)  | 0.94<br>(23.9) | 0.75<br>(19.1) | 1.88<br>(47.8) | 0.58<br>(14.7) | 0.13<br>(3.3) |   |
| 1Z        |              |           |      |      |                             | 1/16" CPI™      | (33.0) | (33.0)                 |                |                |                |                |                |                |               |   |
| 2A        |              | 0.093     | 2.4  | 0.21 | 0.47                        | 1/8" A-LOK®     | 1.36   | 1.36                   |                |                |                |                |                |                |               |   |
| 2Z        |              |           |      |      |                             | 1/8" CPI™       | (34.5) | (34.5)                 |                |                |                |                |                |                |               |   |
| 2F        |              | 0.165     | 4.2  | 0.93 | 0.43                        | 1/8" Female NPT | 1.07   | 1.07                   |                |                |                |                |                |                |               |   |
| 2M        |              | 0.165     | 4.2  | 0.93 | 0.43                        | 1/8" Male NPT   | 1.18   | 1.18                   |                |                |                |                |                |                |               |   |
| 4A        |              | 0.165     | 4.2  | 0.93 | 0.43                        | 1/4" A-LOK®     | 1.48   | 1.48                   |                |                |                |                |                |                |               |   |
| 4Z        |              |           |      |      |                             | 1/4" CPI™       | (37.6) | (37.6)                 |                |                |                |                |                |                |               |   |
| 4M        |              | 0.165     | 4.2  | 0.93 | 0.43                        | 1/4" Male NPT   | 1.35   | 1.35                   |                |                |                |                |                |                |               |   |
| M3A       |              | 0.086     | 2.2  | 0.18 | 0.44                        | 3mm A-LOK®      | 1.37   | 1.37                   |                |                |                |                |                |                |               |   |
| 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   |                        |                |                |                |                |                |                |               |   |
| 4M        | 0.250        | 6.4       | 2.34 | 0.29 | 1/4" Male NPT               | 1.62            | 1.62   |                        |                |                |                |                |                |                |               |   |
| 4Q        | 0.180        | 4.6       | 1.03 | 0.42 | 1/4" UltraSeal              | 1.51            | 1.51   |                        |                |                |                |                |                |                |               |   |
| 4V        | 0.188        | 4.8       | 1.04 | 0.42 | 1/4" VacuSeal               | 1.75            | 1.75   |                        |                |                |                |                |                |                |               |   |
| 6A        | B6L          | 0.250     | 6.4  | 2.34 | 0.29                        | 3/8" A-LOK®     | 1.80   | 1.80                   | 0.42<br>(10.7) | 0.47<br>(11.9) | 1.53<br>(38.9) | 1.00<br>(25.4) | 2.50<br>(63.5) | 0.77<br>(19.6) | 0.25<br>(6.4) |   |
| 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                   |                |                |                |                |                |                |               |   |
| 6Q        |              | 0.250     | 6.4  | 2.34 | 0.29                        | 3/8" UltraSeal  | 1.51   | 1.51                   |                |                |                |                |                |                |               |   |
| 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      |              | 0.250     | 6.4  | 2.34 | 0.42                        | 10mm A-LOK®     | 1.81   | 1.81                   |                |                |                |                |                |                |               |   |
| M10Z      |              |           |      |      |                             | 10mm CPI™       | (46.0) | (46.0)                 |                |                |                |                |                |                |               |   |
| 6F        |              | 0.406     | 10.3 | 6.42 | 0.37                        | 3/8" Female NPT | 1.95   | 1.95                   |                |                |                |                |                |                |               |   |
| 8F        |              | 0.406     | 10.3 | 6.42 | 0.37                        | 1/2" Female NPT | 2.15   | 2.15                   |                |                |                |                |                |                |               |   |
| 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   |                        |                |                |                |                |                |                |               |   |
| 8Q        | 0.375        | 9.5       | 5.57 | 0.37 | 1/2" UltraSeal              | 1.92            | 1.92   |                        |                |                |                |                |                |                |               |   |
| 8V        | 0.406        | 10.3      | 6.42 | 0.37 | 1/2" VacuSeal               | 2.21            | 2.21   |                        |                |                |                |                |                |                |               |   |
| 12A       | 0.406        | 10.3      | 6.42 | 0.37 | 3/4" A-LOK®                 | 2.33            | 2.33   |                        |                |                |                |                |                |                |               |   |
| 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   |                        |                |                |                |                |                |                |               |   |
| 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

Dimensions in inches/millimeters are for reference only, subject to change.

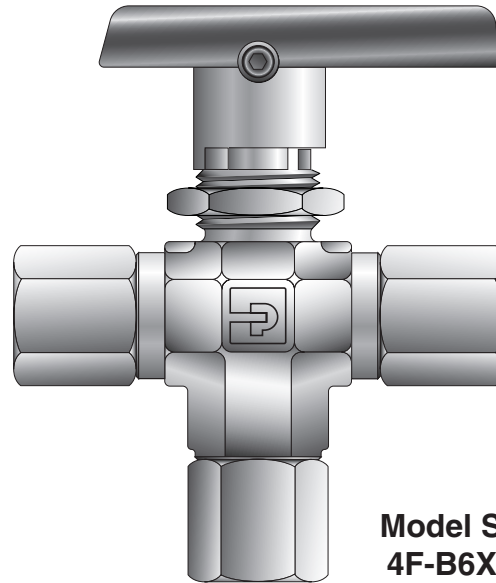
# Three-Way B Series Ball Valves

## 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. Monel® Alloy 400 and Hastelloy® C-276 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) |
| Monel® Alloy 400    |                      |                     |
| B2 and B6:          | 3000 psig (207 bar)  | 1500 psig (103 bar) |
| B8:                 | 2000 psig (138 bar)  | 1500 psig (103 bar) |
| Hastelloy® 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,

**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

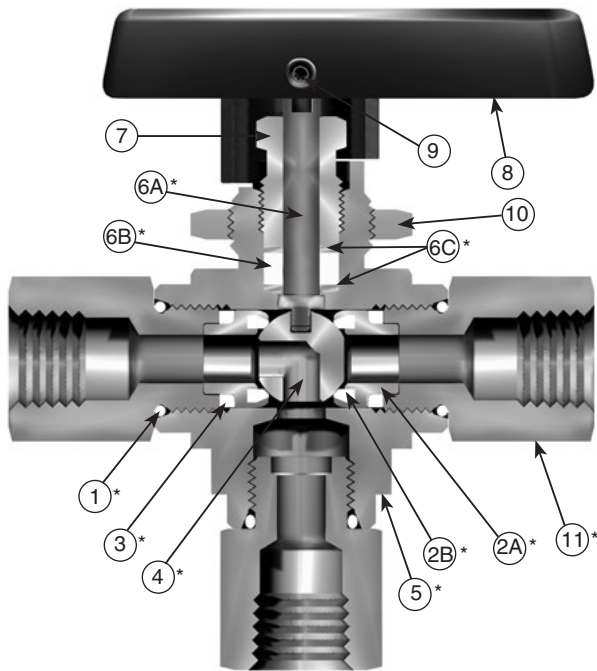
### Pressure Rating and Tubing Selection

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.

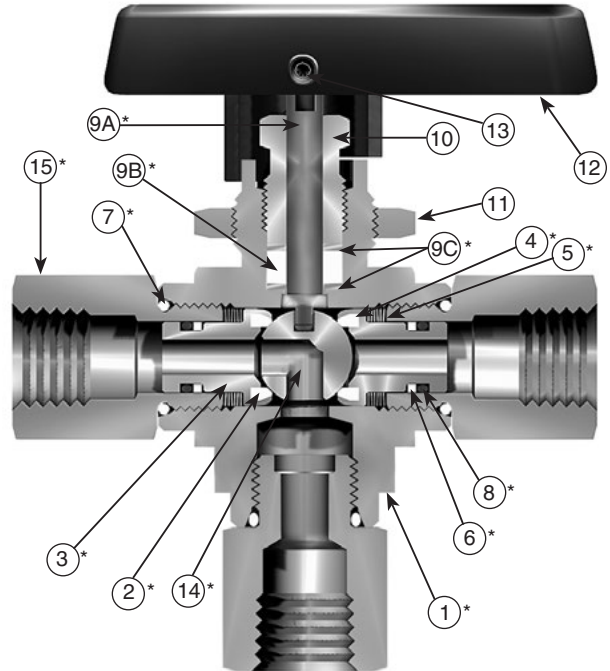
# Three-Way B Series Ball Valves

## 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.

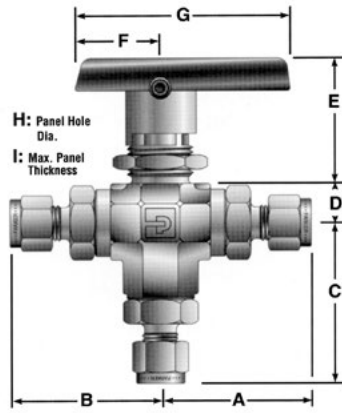
Lubrication: Perfluorinated Polyether.

\*\*\*The lower stem washer material is PEEK for B8 Selector Valves.

Lubrication: Perfluorinated polyether.

# Three-Way B Series Ball Valves

## Dimensions & Flow Data



**Model Shown:  
4Z-B6XSPKR-V-SSP**

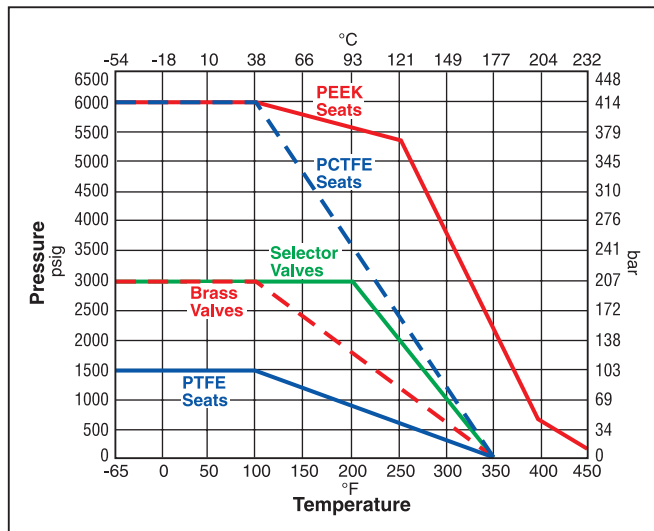
| Port Size | Basic Part # | Flow Data |      |      |                  | End Connections |                |                | Dimensions Inches (mm) |               |                |                |                |                |               |   |   |
|-----------|--------------|-----------|------|------|------------------|-----------------|----------------|----------------|------------------------|---------------|----------------|----------------|----------------|----------------|---------------|---|---|
|           |              | Orifice   |      | Cv   | X <sub>T</sub> * | Port 1          | Port 2         | Port 3         | A†                     | B†            | C              | D              | E              | F              | G             | H | I |
|           |              | Inch      | mm   |      |                  |                 |                |                |                        |               |                |                |                |                |               |   |   |
| 1A        | B2X          | 0.052     | 1.3  | 0.06 | 0.56             | 1/16" A-LOK®    | 1.30           | 1.30           | 1.39                   | 0.33<br>(8.4) | 0.94<br>(23.9) | 0.75<br>(19.1) | 1.88<br>(47.8) | 0.58<br>(14.7) | 0.13<br>(3.3) |   |   |
| 1Z        |              |           |      |      |                  | 1/16" CPI™      | (33.0)         | (33.0)         | (35.3)                 |               |                |                |                |                |               |   |   |
| 2A        |              | 0.093     | 2.4  | 0.21 | 0.64             | 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  | 0.63 | 0.59             | 1/8" Female NPT | 1.07<br>(27.2) | 1.07<br>(27.2) | 1.15<br>(29.2)         |               |                |                |                |                |               |   |   |
| 2M        |              | 0.165     | 4.2  | 0.63 | 0.59             | 1/8" Male NPT   | 1.18<br>(30.0) | 1.18<br>(30.0) | 1.26<br>(32.0)         |               |                |                |                |                |               |   |   |
| 4A        |              | 0.165     | 4.2  | 0.63 | 0.59             | 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  | 0.63 | 0.59             | 1/4" Male NPT   | 1.35<br>(34.3) | 1.35<br>(34.3) | 1.43<br>(36.3)         |               |                |                |                |                |               |   |   |
| M3A       |              | 0.086     | 2.2  | 0.18 | 0.63             | 3mm A-LOK®      | 1.37           | 1.37           | 1.45                   |               |                |                |                |                |               |   |   |
| 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<br>(38.4)  | 1.51<br>(38.4) | 1.65<br>(41.9) |                        |               |                |                |                |                |               |   |   |
| 4M        | 0.196        | 5.0       | 0.87 | 0.74 | 1/4" Male NPT    | 1.62<br>(41.1)  | 1.62<br>(41.1) | 1.76<br>(44.7) |                        |               |                |                |                |                |               |   |   |
| 4Q        | 0.180        | 4.6       | 0.68 | 0.67 | 1/4" UltraSeal   | 1.51<br>(31.8)  | 1.51<br>(31.8) | 1.65<br>(33.8) |                        |               |                |                |                |                |               |   |   |
| 4V        | 0.188        | 4.8       | 0.70 | 0.69 | 1/4" VacuSeal    | 1.75<br>(35.1)  | 1.75<br>(35.1) | 1.89<br>(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<br>(41.1)  | 1.62<br>(41.1) | 1.76<br>(44.7) |                        |               |                |                |                |                |               |   |   |
| 6Q        | 0.196        | 5.0       | 0.87 | 0.74 | 3/8" UltraSeal   | 1.52<br>(38.6)  | 1.52<br>(38.6) | 1.65<br>(41.9) |                        |               |                |                |                |                |               |   |   |
| M6A       | 0.187        | 4.7       | 0.70 | 0.69 | 6mm A-LOK®       | 1.75            | 1.75           | 1.88           |                        |               |                |                |                |                |               |   |   |
| 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<br>(49.5)  | 1.95<br>(49.5) | 2.29<br>(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<br>(54.6)  | 2.15<br>(54.6) | 2.49<br>(63.2) |                        |               |                |                |                |                |               |   |   |
| 8M        | 0.406        | 10.3      | 3.62 | 0.64 | 1/2" Male NPT    | 2.22<br>(56.4)  | 2.22<br>(56.4) | 2.59<br>(65.8) |                        |               |                |                |                |                |               |   |   |
| 8Q        | 0.375        | 9.5       | 3.46 | 0.62 | 1/2" UltraSeal   | 1.93<br>(49.5)  | 1.93<br>(49.5) | 2.27<br>(57.7) |                        |               |                |                |                |                |               |   |   |
| 8V        | 0.406        | 10.3      | 3.62 | 0.64 | 1/2" VacuSeal    | 2.21<br>(56.1)  | 2.21<br>(56.1) | 2.55<br>(65.0) |                        |               |                |                |                |                |               |   |   |
| 12A       | 0.406        | 10.3      | 3.62 | 0.64 | 3/4" A-LOK®      | 2.33            | 2.33           | 2.68           |                        |               |                |                |                |                |               |   |   |
| 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<br>(57.1)  | 2.25<br>(57.1) | 2.59<br>(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

Dimensions in inches/millimeters are for reference only, subject to change.

## 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 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 Fluorinated Fluorocarbon Rubber ..... -15°F to 200°F (-26°C to 93°C)

## Flow Calculations with 1000 psig (69 bar) Inlet Pressure

### Two-Way

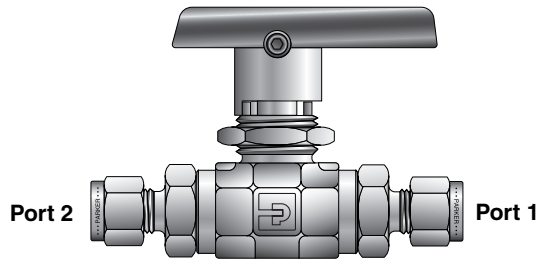
| Valve Series | Max. Cv | Pressure Drop ΔP |     | Water @ 60°F (16°C) |                    | Air @ 60°F (16°C) |                    |
|--------------|---------|------------------|-----|---------------------|--------------------|-------------------|--------------------|
|              |         | psig             | bar | gpm                 | m <sup>3</sup> /hr | scfm              | m <sup>3</sup> /hr |
| 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

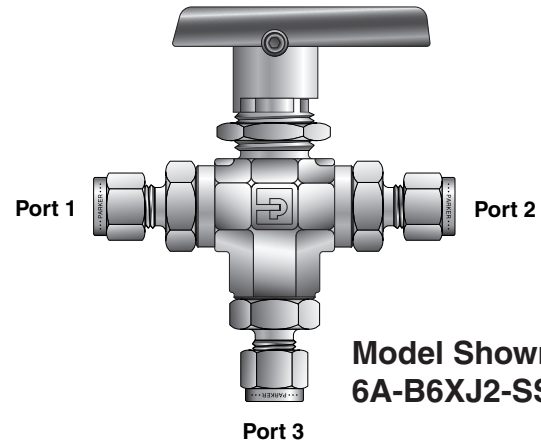
| Valve Series | Max. Cv | Pressure Drop ΔP |     | Water @ 60°F (16°C) |                    | Air @ 60°F (16°C) |                    |
|--------------|---------|------------------|-----|---------------------|--------------------|-------------------|--------------------|
|              |         | psig             | bar | gpm                 | m <sup>3</sup> /hr | scfm              | m <sup>3</sup> /hr |
| 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             |

# B Series Ball Valves

## 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                  |
|--------------------------|-----------------|--|--------------|--|--|--------------------------------|
| <b>1A</b>                | 1/16" A-LOK®    |  | <b>B2L</b>   | <b>J</b> PTFE                                  | (Blank) PTFE   | <b>SSP</b> 316 Stainless Steel |
| <b>1Z</b>                | 1/16" CPI™      |  | <b>B2X</b>   | <b>J2</b> PCTFE                                | <b>V</b> Fluorocarbon Rubber   | <b>BP</b> Brass                |
| <b>2A</b>                | 1/8" A-LOK®     |  |              |  | <b>EPR</b> Ethylene Propylene Rubber   | <b>MP</b> Monel® Alloy 400     |
| <b>2Z</b>                | 1/8" CPI™       |  |              |  | <b>BN</b> Nitrile Rubber   | <b>HCP</b> Hastelloy® C-276    |
| <b>2F</b>                | 1/8" Female NPT |  |              |  | <b>KZ</b> Highly Fluorinated Fluorocarbon Rubber                                       |                                |
| <b>2M</b>                | 1/8" Male NPT   |  |              |  | <b>LT</b> Live-Loaded PTFE Packing with PTFE Seals                                     |                                |
| <b>4A</b>                | 1/4" A-LOK®     |  |              |  | <b>VLT</b> Live-Loaded PTFE Packing with Fluorocarbon Rubber Seals                     |                                |
| <b>4Z</b>                | 1/4" CPI™       |  |              |  | <b>EPRLT</b> Live-Loaded PTFE Packing with Ethylene Propylene Rubber Seals             |                                |
| <b>4M</b>                | 1/4" Male NPT   |  |              |  | <b>BNLT</b> Live-Loaded PTFE Packing with Nitrile Rubber Seals                         |                                |
| <b>M3A</b>               | 3mm A-LOK       |  |              |  | <b>KZLT</b> Live-Loaded PTFE Packing with Highly Fluorinated Fluorocarbon Rubber Seals |                                |
| <b>M3Z</b>               | 3mm CPI™        |  |              |  |  |                                |
| <b>4A</b>                | 1/4" A-LOK®     |  | <b>B6L</b>   | <b>J</b> PTFE                                  |  |                                |
| <b>4Z</b>                | 1/4" CPI™       |  | <b>B6X</b>   | <b>J2</b> PCTFE                                |  |                                |
| <b>4F</b>                | 1/4" Female NPT |  |              | <b>S2</b> Spring-Loaded PCTFE                  |  |                                |
| <b>4M</b>                | 1/4" Male NPT   |  |              | <b>PKR</b> PTFE Lubricated PEEK                |  |                                |
| <b>4Q</b>                | 1/4" UltraSeal  |  |              | <b>SPKR</b> Spring-Loaded PTFE Lubricated PEEK |  |                                |
| <b>4V</b>                | 1/4" VacuSeal   |  |              |  |  |                                |
| <b>6A</b>                | 3/8" A-LOK®     |  |              |  |  |                                |
| <b>6Z</b>                | 3/8" CPI™       |  |              |  |  |                                |
| <b>6M</b>                | 3/8" Male NPT   |  |              |  |  |                                |
| <b>6Q</b>                | 3/8" UltraSeal  |  |              |  |  |                                |
| <b>M6A</b>               | 6mm A-LOK®      |  |              |  |  |                                |
| <b>M6Z</b>               | 6mm CPI™        |  |              |  |  |                                |
| <b>M8A</b>               | 8mm A-LOK®      |  |              |  |  |                                |
| <b>M8Z</b>               | 8mm CPI™        |  |              |  |  |                                |
| <b>M10A</b>              | 10mm A-LOK®     |  |              |  |  |                                |
| <b>M10Z</b>              | 10mm CPI™       |  |              |  |  |                                |
| <b>6F</b>                | 3/8" Female NPT |  | <b>B8L</b>   | <b>J</b> PTFE                                  |  |                                |
| <b>8A</b>                | 1/2" A-LOK®     |  | <b>B8X</b>   | <b>J2</b> PCTFE                                |  |                                |
| <b>8Z</b>                | 1/2" CPI™       |  |              | <b>S2</b> Spring-Loaded PCTFE                  |  |                                |
| <b>8F</b>                | 1/2" Female NPT |  |              | <b>PKR</b> PTFE Lubricated PEEK                |  |                                |
| <b>8M</b>                | 1/2" Male NPT   |  |              | <b>SPKR</b> Spring-Loaded PTFE Lubricated PEEK |  |                                |
| <b>8Q</b>                | 1/2" UltraSeal  |  |              |  |  |                                |
| <b>8V</b>                | 1/2" VacuSeal   |  |              |  |  |                                |
| <b>12Z</b>               | 3/4" CPI™       |  |              |  |  |                                |
| <b>12F</b>               | 3/4" Female NPT |  |              |  |  |                                |
| <b>M12A</b>              | 12mm A-LOK®     |  |              |  |  |                                |
| <b>M12Z</b>              | 12mm CPI™       |  |              |  |  |                                |
| <b>M16A</b>              | 16mm A-LOK®     |  |              |  |  |                                |
| <b>M16Z</b>              | 16mm CPI™       |  |              |  |  |                                |

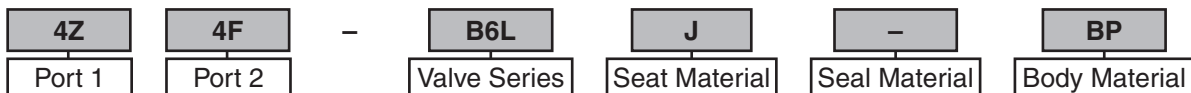
**Notes:**  
 1. Panel Mounting Nut supplied with each valve. Various port combinations are available.  
 2. See How to order.  
 3. VacuSeal and UltraSeal are not available in Brass.  
 4. 12F (3/4" Female NPT) not panel mountable.

See examples on [page 9](#). See [pages 10 and 11](#) for information about How to Order Options and Maintenance Kits.



## How to Order (Continued)

### Examples: Two-Way Valves

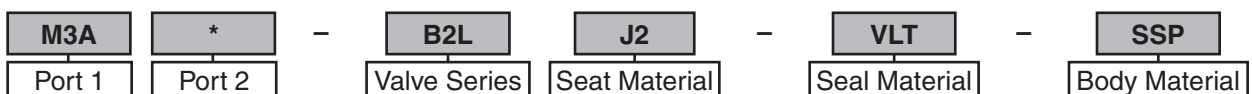


Describes a B6L ball valve with a 1/4" CPI™ end connection for port 1 and a 1/4" female NPT end connection for port 2, PTFE seats, PTFE stem and body seals, brass construction, with a panel mounting nut.



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.

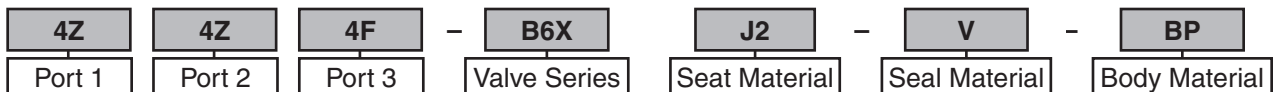
\* **Note:** If ports 1 and 2 are the same, eliminate the port 2 designator.



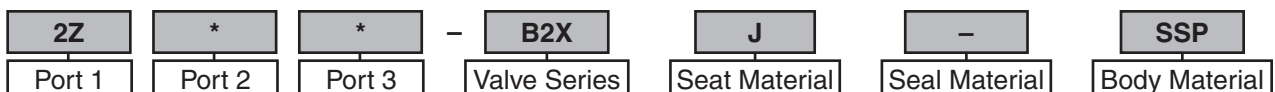
Describes a B2L ball valve with 3mm A-LOK® end connections for ports 1 and 2, PCTFE seats, fluorocarbon rubber body seals, PCTFE packing, stainless steel construction, with a panel mounting nut.

\* **Note:** If ports 1 and 2 are the same, eliminate the port 2 designator.

### Examples: Three-Way Diverter Valves



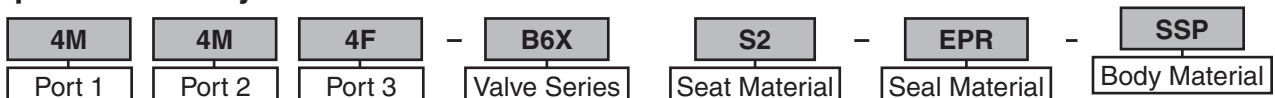
Describes a B6X ball valve with 1/4" CPI™ end connections for side ports 1 and 2, 1/4" female NPT end connection for bottom port 3, PCTFE seats, fluorocarbon rubber stem and body seals, brass construction, and a panel mounting nut.



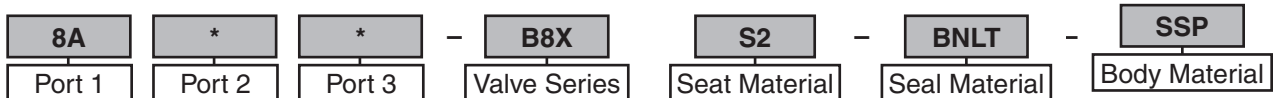
Describes a B2X ball valve with 1/8" CPI™ end connections for ports 1, 2, and 3, PTFE seats, PTFE stem and body seals, stainless steel construction, and a panel mounting nut.

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

### Examples: Three-Way Selector Valves



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.



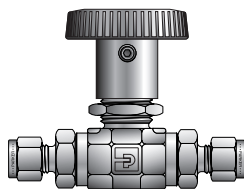
Describes a B8X ball valve with 1/2" A-LOK® end connections for ports 1, 2, and 3, spring-loaded PCTFE seats, Nitrile rubber body seals, live loaded PTFE packing, stainless steel construction, and a panel mounting nut.

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

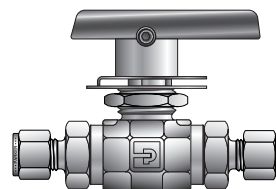
# B Series Ball Valves

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## Options

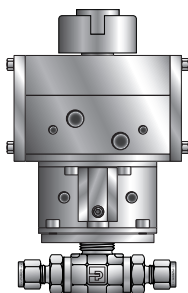


Round Handle



Lock-Out Handle

## Actuator Options



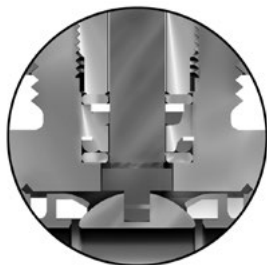
Double Acting (61AD)  
Pneumatic Actuator



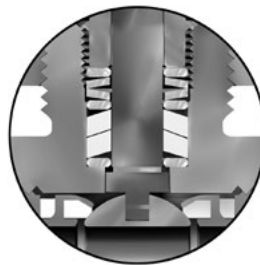
Spring Returns (61AC & AO)  
Pneumatic Actuator



70, 80 & 90 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   |
|--|--|
| <b>Lock-Out Devices:</b> Add the suffix LD to the end of the part number to order directly on the valve.<br>For field installation, simply substitute the correct valve series number after LD.  | 4F-B6LJ2-BN-SSP-LD<br><b>LD-B8L</b>                                  |
| <b>Colored Lever Handles:</b> Add the designator corresponding to the correct handle as a suffix to the part number (black is standard). <b>W</b> = white, <b>B</b> = blue, <b>G</b> = green, <b>R</b> = red, <b>Y</b> = yellow.   | M6A-B6XPKR-SSP- <b>G</b>   |
| <b>Colored Round Handles:</b> Add the designator corresponding to the correct handle as a suffix to the part number.<br><b>S</b> = Black, <b>S-W</b> = white, <b>S-B</b> = blue, <b>S-G</b> = green, <b>S-R</b> = red, <b>S-Y</b> = yellow.<br><b>NOTE:</b> Round handles are not recommended for B8 valves with PEEK seats.   | M6A-B6XPKR-SSP- <b>S-G</b>   |
| <b>Metal Oval Handles:</b> Add the designator corresponding to the correct handle as a suffix to the valve part number.<br><b>OVSS</b> = stainless steel, <b>SA</b> = oval aluminum.<br><b>NOTE:</b> Not available in size 2.  | 8F-B8LPKR-SSP- <b>OVSS</b>   |
| <b>Stainless Steel Handles:</b> Add the suffix <b>-ST</b> to the end of the part number (B6 and B8 only).  | 4F-B6LJ-SSP- <b>ST</b>   |
| <b>Pneumatic Actuators:</b> For detailed actuator information, refer to the <a href="#">Pneumatic Actuators section</a> of this catalog.<br>For factory assembly, add the actuator part number as the suffix to the valve part number.<br>For field installation, specify the actuator desired.<br>The appropriate mounting hardware may be obtained by adding the valve series and actuator size to the prefix <b>MK-</b> . | 2F-B2XJ2-V-SSP- <b>61ACX-2</b><br><b>61ACX-2</b><br><b>MK-B2X-61</b> |
| <b>Electric Actuators:</b> For detailed actuator information refer to the <a href="#">Electric Actuators section</a> of this catalog.<br>For factory assembly, add the actuator part number as the suffix to the valve part number.<br>For field installation, specify the actuator desired.<br>The appropriate mounting hardware may be obtained by adding the valve series and actuator series to the prefix <b>MK-</b> .  | 8A-B8LPKR-BN-SS- <b>71A</b><br><b>71A</b><br><b>MK-B8L-70</b>        |
| <b>Oxygen Cleaning:</b> Add the suffix <b>-C3</b> 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- <b>C3</b>   |
| <b>Electron Beam Welded End Connections:</b> For tamper resistant valves, add the suffix <b>-EBW</b> to the end of the part number of stainless steel valves to have end connections electron beam welded.   | M6A-B6LSPKR-V-SSP- <b>EBW</b>  |
| <b>Fillet Weld End Connections:</b> For seal welded valves, add the suffix <b>-FW</b> 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- <b>FW</b>  |
| <b>Grounding Spring:</b> To obtain B6 and B8 series valves with a grounding spring, add the suffix <b>-SPG</b> to the end of the part number.  | 8A-B8LJ2-SSP- <b>SPG</b>   |

## How to Order Maintenance Kits

|   |                           |
|---|---------------------------|
| <b>Colored Round Handle Kits:</b> Series-Handle-Color. (Example consists of a green handle and handle screw.)<br><b>NOTE:</b> Stainless Steel kits not available in size 2.   | <b>B6-RD-HANDLE-GREEN</b> |
| <b>Stainless Steel Handle Kits:</b> Series-Handle-SS. (Example consists of a stainless steel handle and handle screw.)  | <b>B8-HANDLE-SS</b>       |
| <b>Colored Lever Handle Kits:</b> Series-Handle-Color. (Example consists of a red handle and handle screw.)   | <b>B6-HANDLE-RED</b>      |
| <b>Two-way Valve Seal Kits:</b>   |                           |
| <b>PTFE Stem Seal Kits:</b> Kit-Valve Series and Seat Material-Body Material.<br>(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.)   | <b>KIT-B2LJ-SS</b>        |
| <b>Elastomeric Stem Seal Kits:</b> Kit-Valve Series and Seat Material-Elastomer Material-Body Material.<br>(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.)        | <b>KIT-B2LJ2-BN-SS</b>    |
| <b>Diverter Valve Seal Kits:</b>  |                           |
| <b>PTFE Stem Seal Kits:</b> Kit-Valve Series and Seat Material-Body Material.<br>(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.)   | <b>KIT-B6XPKR-SS</b>      |
| <b>Elastomeric Stem Seal Kits:</b> Kit-Valve Series and Seat Material-Elastomer-Body Material.<br>(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.) | <b>KIT-B6XJ-V-SS</b>      |
| <b>Selector Valve Seal Kits:</b>  |                           |
| <b>PTFE Stem Seal Kits:</b> Kit-Valve Series and Seat Material.<br>(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.)   | <b>KIT-B6XS2</b>          |
| <b>Elastomeric Stem Seal Kits:</b> Kit-Valve Series and Seat Material-Elastomer.<br>(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.)   | <b>KIT-B6XSPKR-V</b>      |
| <b>Live-loaded Seal Kits:</b>   |                           |
| Kit-Valve Series and Seat Material-Seal Material-Body Material.<br>(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.)                                 | <b>KIT-B6LJ2-BNLT-SS</b>  |