

Ball Valves

3-Way Series

Pressures to 20,000 psi (1379 bar)

Autoclave Engineers high-pressure ball valves have been designed to provide superior quality for maximum performance within a variety of valve styles, sizes, and process connections. Some of the more unique design innovations include an integral one-piece trunnion mounted style ball and stem that eliminates the shear failure common in two piece designs, re-torqueable seat glands that result in longer seat life, and a low friction stem seal that reduces actuation torque and enhances cycle life.

These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators.

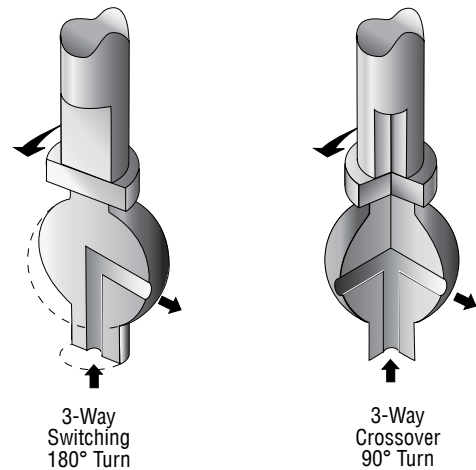
When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.

AE Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure found in two piece designs and reduces effects of side loading.
- Re-torqueable seat glands for longer seat life.
- Carbon filled PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel construction.
- Low friction pressure assisted graphite filled Teflon stem seal increases cycle life and reduces operating torque.
- Available in 90° turn diverter and 180° turn switching models.
- Viton o-rings for operation from 0°F (-17.8°C) to 400°F (204°C).
- Optional o-rings available for high-temperature applications.
- Optional wetted materials.
- Wide selection of tube and pipe end fittings available.
- Electric and pneumatic actuator options.



Flow Configuration



Applications:

- Laboratories
- Test Stands
- Control Panels
- Chemical Research
- Pilot Plants
- Water Blast Pumping Units
- High volume chemical injection skids.

Autoclave Engineers

Fluid Components
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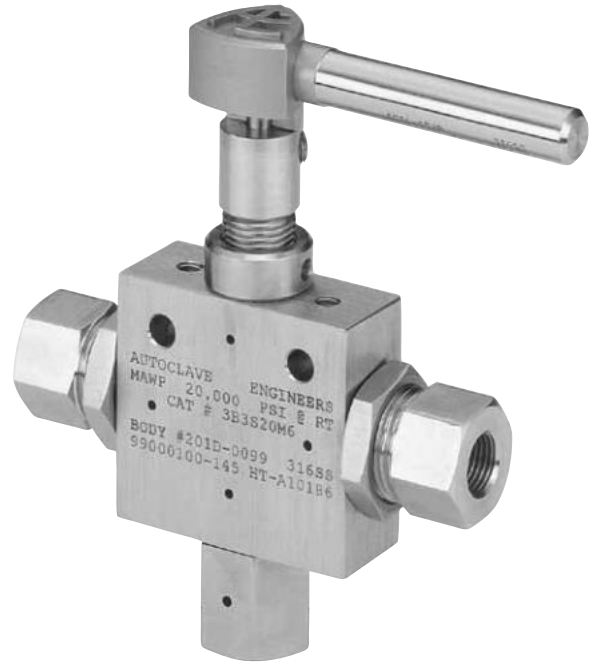
Ball Valves - 3-Way Series

Ball Valves - 3/16" 3-Way Series

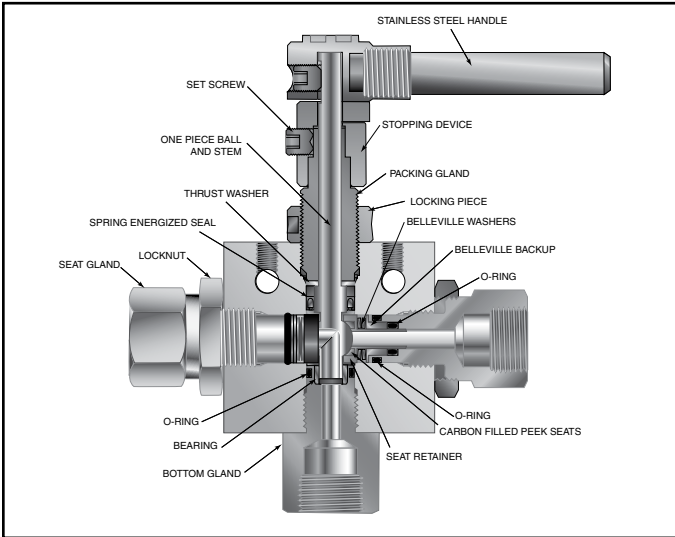
Pressures to 20,000 psi (1379 bar) .187" (4.77mm) Orifice

| Connection | MAWP @ Room Temperature | Minimum Orifice inches(mm) |
|------------|-------------------------|----------------------------|
| W125 | 15,000 psi (1034 bar) | .094 (2.39) |
| SW250 | 15,000 psi (1034 bar) | .128 (3.25) |
| SW375 | 15,000 psi (1034 bar) | .188 (4.77) |
| SW500 | 10,000 psi (690 bar) | .188 (4.77) |
| SF250CX20 | 20,000 psi (1379 bar) | .109 (2.77) |
| SF375CX20 | 20,000 psi (1379 bar) | .188 (4.77) |
| SF562CX20 | 20,000 psi (1379 bar) | .188 (4.77) |
| F250C | 20,000 psi (1379 bar) | .094 (2.39) |
| F375C | 20,000 psi (1379 bar) | .125 (3.17) |
| F562C | 20,000 psi (1379 bar) | .188 (4.77) |
| 1/8" NPT | 15,000 psi (1034 bar) | .188 (4.77) |
| 1/4" NPT | 15,000 psi (1034 bar) | .188 (4.77) |
| 3/8" NPT | 15,000 psi (1034 bar) | .188 (4.77) |
| 1/2" NPT | 15,000 psi (1034 bar) | .188 (4.77) |

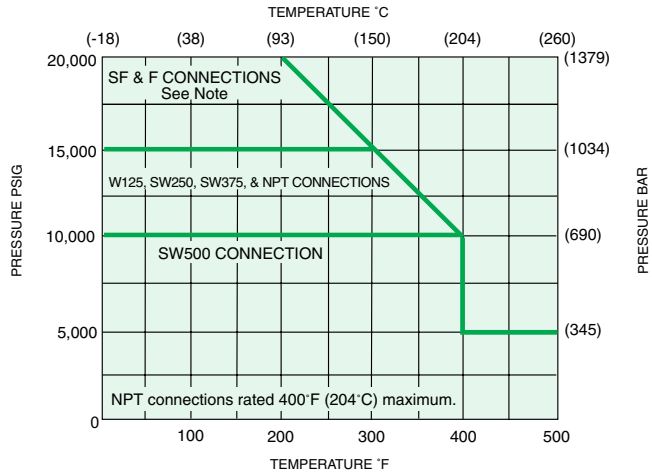
Valve C_v=.50



MAWP: Maximum Allowable Working Pressure
C_v listed is for maximum orifice size of .188 inches only.
Consult factory for C_v of valves with reduced orifice sizes.



PRESSURE TEMPERATURE RATINGS



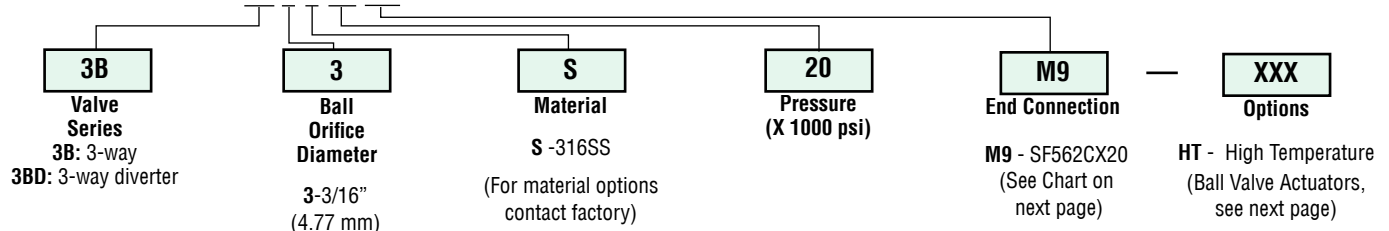
Pressure ratings are determined by the end connections chosen, see chart.
Note: Maximum side connection inlet pressure 15,000 psi (1034 bar)

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 3-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **3B 3 S 20 M9**

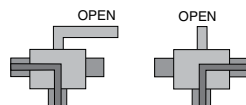


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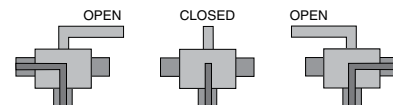
End Connection Options

| Catalog Number | End Connection Number | Connection | MAWP @ Room Temperature | Hex Inches(mm) |
|-----------------------|-----------------------|------------|-------------------------|----------------|
| 3B3S15L2 3BD3S15L2 | L2 | W125 | 15,000 psi (1034 bar) | 1 (25.40) |
| 3B3S15L4 3BD3S15L4 | L4 | SW250 | 15,000 psi (1034 bar) | 1 (25.40) |
| 3B3S15L6 3BD3S15L6 | L6 | SW375 | 15,000 psi (1034 bar) | 1 (25.40) |
| 3B3S10L8 3BD3S10L8 | L8 | SW500 | 10,000 psi (690 bar) | 1 (25.40) |
| 3B3S20M4 3BD3S20M4 | M4 | SF250CX20 | 20,000 psi (1379 bar) | 1 (25.40) |
| 3B3S20M6 3BD3S20M6 | M6 | SF375CX20 | 20,000 psi (1379 bar) | 1 (25.40) |
| 3B3S20M9 3BD3S20M9 | M9 | SF562CX20 | 20,000 psi (1379 bar) | 1 (25.40) |
| 3B3S20H4 3BD3S20H4 | H4 | F250C | 20,000 psi (1379 bar) | 1 (25.40) |
| 3B3S20H6 3BD3S20H6 | H6 | F375C | 20,000 psi (1379 bar) | 1 (25.40) |
| 3B3S20H9 3BD3S20H9 | H9 | F562C | 20,000 psi (1379 bar) | 1.38 (35.05) |
| 3B3S15P2 3BD3S15P2 | P2 | 1/8" NPT | 15,000 psi (1034 bar) | 1 (25.40) |
| 3B3S15P4 3BD3S15P4 | P4 | 1/4" NPT | 15,000 psi (1034 bar) | 1 (25.40) |
| 3B3S15P6 3BD3S15P6 | P6 | 3/8" NPT | 15,000 psi (1034 bar) | 1 (25.40) |
| 3B3S15P8 3BD3S15P8 | P8 | 1/2" NPT | 15,000 psi (1034 bar) | 1.38 (35.05) |

See ball valve option/detail section for end connection details, material, and high temperature options.



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

- AO - Air-to-open/Spring to close (diverter style only)
- AC - Air-to-close/Spring to open (diverter style only)
- AOC - Air-to-open-and-close (double action)

Electric Actuator:

- EO1 - 120 volt AC 50/60 Hz
- EO2 - 220 volt AC 50/60 Hz
- EO3 - 24 VDC

Actuator Operating Temperature:

- Pneumatic: 0°F to 175°F (-17°C to 79°C)
- Electric: 0°F to 160°F (-17°C to 71°C)

High Temperature Option:

- HT - for media temperature up to 500°F (260°C)

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog numbers for proper repair kit.
(Example: **R3B3S**)

Consult your Autoclave representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

See ball valve actuator section for full description, additional information, and options.

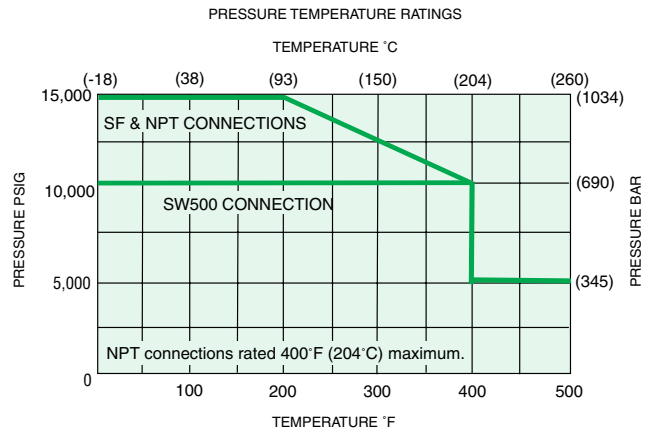
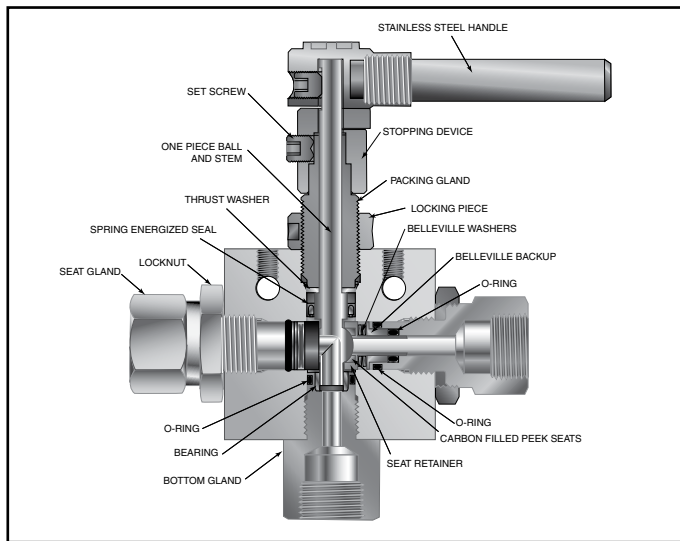
Ball Valves - 3/8" 3-Way Series

Pressures to 15,000 psi (1034 bar) .328" (8.33mm) Orifice

| Connection | MAWP @ Room Temperature | Minimum Orifice inches(mm) |
|------------|-------------------------|----------------------------|
| SW500 | 10,000 psi (690 bar) | .328 (8.33) |
| SF375CX20 | 15,000 psi (1034 bar) | .203 (5.16) |
| SF562CX20 | 15,000 psi (1034 bar) | .312 (7.92) |
| SF750CX20 | 15,000 psi (1034 bar) | .328 (8.33) |
| 1/4" NPT | 15,000 psi (1034 bar) | .328 (8.33) |
| 3/8" NPT | 15,000 psi (1034 bar) | .328 (8.33) |
| 1/2" NPT | 15,000 psi (1034 bar) | .328 (8.33) |

Valve C_v=2.1

MAWP: Maximum Allowable Working Pressure
C_v listed is for maximum orifice size of .328 inches only.
Consult factory for C_v of valves with reduced orifice sizes.



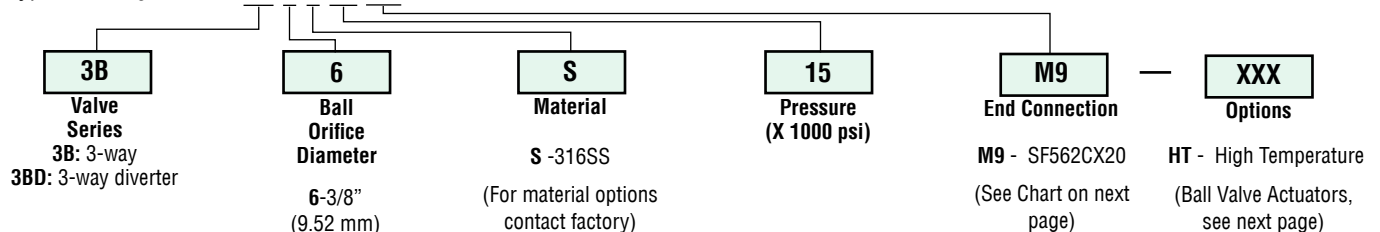
Pressure ratings are determined by the end connections chosen, see chart.
Side connection pressure not recommended.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 3-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **3B 6 S 15 M9**



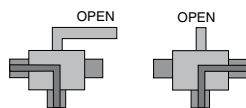
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End Connection Options

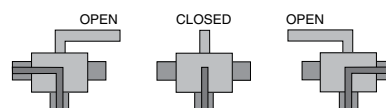
| Catalog Number | End Connection Number | Connection | MAWP @ Room Temperature | Hex Inches(mm) |
|-------------------------|-----------------------|------------|-------------------------|----------------|
| 3B6S10L8 3BD6S10L8 | L8 | SW500 | 10,000 psi (690 bar) | 1.38 (35.05) |
| 3B6S15M6 3BD6S15M6 | M6 | SF375CX20 | 15,000 psi (1034 bar) | 1.38 (35.05) |
| 3B6S15M9 3BD6S15M9 | M9 | SF562CX20 | 15,000 psi (1034 bar) | 1.38 (35.05) |
| 3B6S15M12 3BD6S15M12 | M12 | SF750CX20 | 15,000 psi (1034 bar) | 1.38 (35.05) |
| 3B6S15P4 3BD6S15P4 | P4 | 1/4" NPT | 15,000 psi (1034 bar) | 1.38 (35.05) |
| 3B6S15P6 3BD6S15P6 | P6 | 3/8" NPT | 15,000 psi (1034 bar) | 1.38 (35.05) |
| 3B6S15P8 3BD6S15P8 | P8 | 1/2" NPT | 15,000 psi (1034 bar) | 1.38 (35.05) |

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

- AO - Air-to-open/Spring to close (diverter style only)
- AC - Air-to-close/Spring to open (diverter style only)
- AOC - Air-to-open-and-close (double action)

Electric Actuator:

- E01 - 120 volt AC 50/60 Hz
- E02 - 220 volt AC 50/60 Hz
- E03 - 24 VDC

Actuator Operating Temperature:

- Pneumatic: 0°F to 175°F (-17°C to 79°C)
- Electric: 0°F to 160°F (-17°C to 71°C)

High Temperature Option:

- HT - for media temperature up to 500°F (260°C)

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog numbers for proper repair kit.

(Example: **R3B6S**)

Consult your Autoclave representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

See ball valve actuator section for full description, additional information, and options.

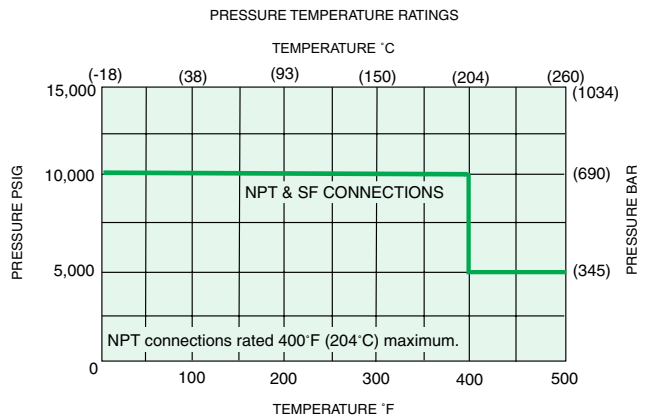
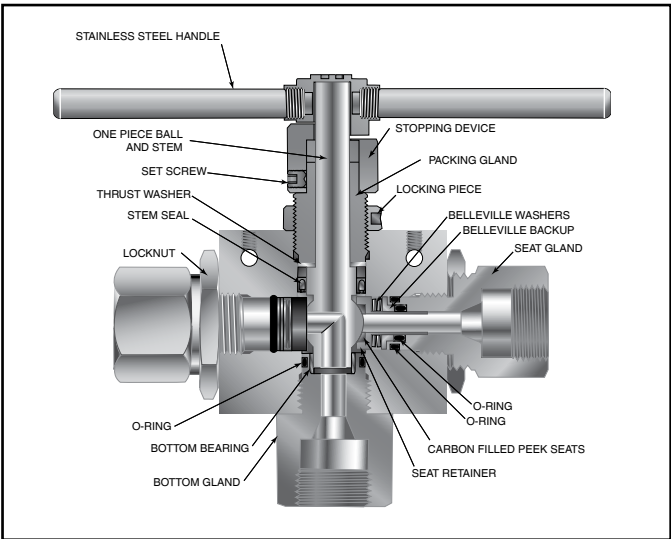
Ball Valves - 1/2" 3-Way Series

Pressures to 10,000 psi (690 bar) .500" (12.7mm) Orifice

| Connection | MAWP @ Room Temperature | Minimum Orifice inches(mm) |
|------------|-------------------------|----------------------------|
| SF750CX20 | 10,000 psi (690 bar) | .500 (12.70) |
| SF1000CX20 | 10,000 psi (690 bar) | .500 (12.70) |
| 3/4" NPT | 10,000 psi (690 bar) | .500 (12.70) |
| 1" NPT | 10,000 psi (690 bar) | .500 (12.70) |

Valve C_v=4.4

MAWP: Maximum Allowable Working Pressure



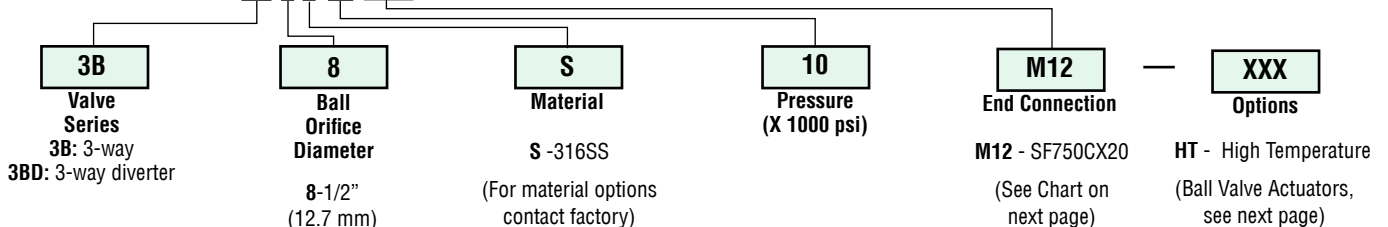
Pressure ratings are determined by the end connections chosen, see chart.
Note: Maximum side connection inlet pressure 10,000 psi (690 bar)

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 3-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **3B 8 S 10 M12**



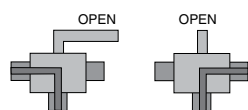
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End Connection Options

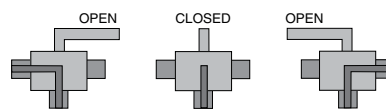
| Catalog Number | End Connection Number | Connection | MAWP @ Room Temperature | Hex Inches(mm) |
|-------------------------|-----------------------|------------|-------------------------|----------------|
| 3B8S10M12 3BD8S10M12 | M12 | SF750CX20 | 10,000 psi (690 bar) | 1.75 (44.5) |
| 3B8S10M16 3BD8S10M16 | M16 | SF1000CX20 | 10,000 psi (690 bar) | 1.75 (44.5) |
| 3B8S10P12 3BD8S10P12 | P12 | 3/4" NPT | 10,000 psi (690 bar) | 1.75 (44.5) |
| 3B8S10P16 3BD8S10P16 | P16 | 1" NPT | 10,000 psi (690 bar) | 1.75 (44.5) |

MAWP: Maximum Allowable Working Pressure

See ball valve options for end connection details, material, and high temperature options.



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

- AO - Air-to-open/Spring to close (diverter style only)
- AC - Air-to-open/Spring to close (diverter style only)
- AOC - Air-to-open-and-close (double action)

Electric Actuator:

- E01 - 120 volt AC 50/60 Hz
- E02 - 220 volt AC 50/60 Hz
- E03 - 24 VDC

Actuator Operating Temperature:

- Pneumatic: 0°F to 175°F (-17°C to 79°C)
- Electric: 0°F to 160°F (-17°C to 71°C)

High Temperature Option:

- HT - for media temperature up to 500°F (260°C)

Valve Maintenance

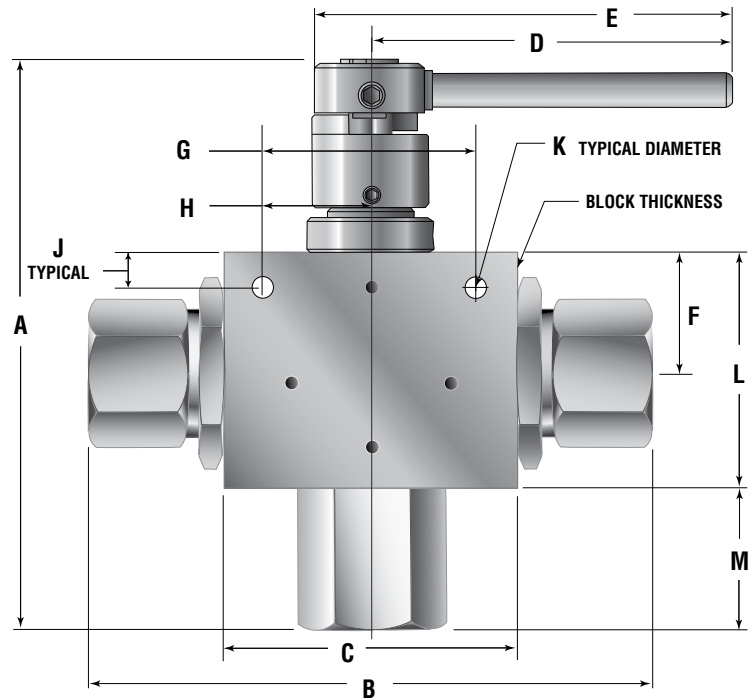
Repair Kits: add "R" to the front of valve catalog numbers for proper repair kit.
(Example: **R3B8S**)

Consult your Autoclave representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

See ball valve actuator section for full description, additional information, and options.

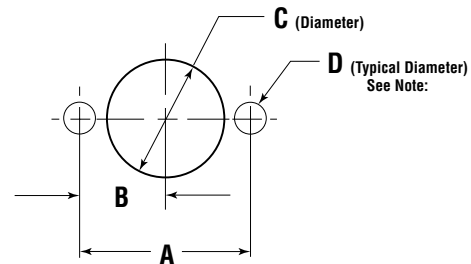
Ball Valve Dimensions - inches (mm)

| | VALVE MODELS | | |
|------------------------|------------------|------------------|-------------------|
| | 3B3S/3BD3S | 3B6S/3BD6S | 3B8S/3BD8S |
| A | 5.64 (143.35) | 6.55 (166.37) | 7.83 (198.79) |
| B | 4.72 (119.94) | 5.74 (145.79) | 7.77 (197.36) |
| C | 2.50 (63.50) | 3.00 (76.20) | 4.13 (104.78) |
| D | 3.37 (85.55) | 4.99 (126.82) | 5.12 (130.04) |
| E | 3.90 (99.02) | 5.52 (140.32) | 10.25 (260.35) |
| F | 1.13 (28.58) | 1.38 (34.93) | 1.66 (42.16) |
| G | 1.50 (38.10) | 2.00 (50.80) | 3.00 (76.20) |
| H | 0.75 (19.05) | 1.00 (25.40) | 1.50 (38.10) |
| J | 0.43 (10.92) | 0.41 (10.31) | 0.50 (12.70) |
| K | 0.28 (7.11) | 0.28 (7.11) | 0.28 (7.11) |
| L | 2.25 (57.15) | 2.88 (73.03) | 3.34 (84.94) |
| M | 0.97 (24.64) | 1.19 (30.22) | 1.70 (43.18) |
| Block Thickness | 1.00 (25.40) | 1.38 (34.92) | 1.75 (44.45) |



Ball Valve Panel Mounting Dimensions - inches (mm)

| | VALVE MODELS | | |
|----------|------------------|------------------|------------------|
| | 3B3S/3BD3S | 3B6S/3BD6S | 3B8S/3BD8S |
| A | 1.500 (38.10) | 2.000 (50.80) | 3.000 (76.20) |
| B | 0.750 (19.05) | 1.000 (25.40) | 1.500 (38.10) |
| C | 1.06 (26.92) | 1.50 (38.10) | 1.88 (47.63) |
| D | 0.28 (7.11) | 0.28 (7.11) | 0.28 (7.11) |



All dimensions are for reference only and are subject to change without notice.
Note: Body mounting 1/4" - 20 thread

! WARNING !

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