Multi-Way Ball Valves

3 Series
Ball valve multi-port gauge valves 1,000 psi to 6,000 psi

3-Way SB Series
Multi-port panel mounting ball valves rated 1,000 psi to 3,000 psi

3-Way PSB Series
High pressure Multi-port panel mounting ball valves rated up to 6,000 psi

3-Way USB Series
High pressure Multi-port ball valves rated up to 10,000 psi

3-Way Rhino Valve
3-Way heavy duty ball valves 6,000 psi & 10,000 psi

3T Series
3-Way T ported ball valves 6,000 psi rated

X4 Series
4-Way ball valves 6,000 psi rated

X5 Series
5-Way - 1 x bottom inlet x 4 selectable outlets 6,000 psi & 10,000 psi rated

Specialised ball Valves & Manifolds
Various types shown

How to order the above
An explanation of the part numbering system
3 Series

Design Features

- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Anti-blowout internally loaded stem for safety.
- Positive 90° action.
- Replaceable seats and seals for extended life.
- Choice of inlet style i.e. male, female, compression end or standpipe connection.
- Available with vent and blanking plugs (if specified).

- Pressure / Temperature rating -20°C to 250°C temperature differs at 3,000 psi.
- Extended versions are made to allow for pipe lagging of 50mm or 100mm.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Part Numbers

<table>
<thead>
<tr>
<th>St/St Part No.</th>
<th>Connections</th>
<th>Size</th>
<th>A NPT</th>
<th>B (Bore)</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>Cv *</th>
<th>Kv *</th>
<th>Weight (kgs)</th>
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<td>3.6</td>
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<td>4.2</td>
<td>3.6</td>
<td>0.7</td>
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</tr>
</tbody>
</table>

* = Inline through bore connection.
For 3,000 psi add Prefix ‘H’ i.e. H34FNS
For 6,000 psi add Prefix ‘P’ i.e. P34FNS
For vent and blanking plugs add ‘VP’ - ‘BP’ i.e. 34MNS - ‘VP’ - ‘BP’
Seat materials: 1000 psi = PTFE - 2000 psi = RTFE - 3000 psi = Acetal - 6,000 psi = Peeko
Seal Materials: Body = PTFE - Stem = Peeko

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General Information

1,000 psi to 3,000 psi rated

The 3-way L-Port diverter valves are an economical and safe method of diverting high pressure lines, where several high 2-way valves may have been used. Ensuring an altogether safe, compact and easy to install solution to low and high pressure diversion. Available in bottom or side entry body formats. Materials of construction include 316 stainless steel, brass, carbon steel, monel, hastalloy, titanium, duplex and other exotic alloys. Many options apply including locating devices, actuator operation etc.

Design Features

- Rated 1,000 psi (SB) and 3,000 psi (HSB).
- Flexible 4 piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Suitable for panel mounting (with T bar) or actuation.
- Light, quick and positive 90° action side entry & 180° action on bottom entry version.
- Available in 316ss/Monel / Duplex / Hastalloy / Titanium / Carbon Steel
- Pressure / Temperature rating -50°C to 230°C
- Repair kits available should the valve require maintenance to prolong its service life.
- Low operating torque under pressure.
- Panel mounting facility as standard, ideal for actuation.
- Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Part Numbers

<table>
<thead>
<tr>
<th>St/St No.</th>
<th>Connections FxFxF</th>
<th>A BSPP</th>
<th>A NPT</th>
<th>B (Bore)</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H BSPP</th>
<th>H NPT</th>
<th>Cv</th>
<th>Kv</th>
<th>Weight (kgs)</th>
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<tbody>
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<td>61</td>
<td>68</td>
<td>10</td>
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<tr>
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<td>74</td>
<td>10</td>
<td>39</td>
<td>77</td>
<td>77</td>
<td>25</td>
<td>115</td>
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<td>61</td>
<td>1.5</td>
<td>1.3</td>
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<tr>
<td>SB4NS-3B</td>
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<td>93</td>
<td>10</td>
<td>39</td>
<td>77</td>
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<td>28</td>
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<td>70</td>
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<tr>
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<td>95</td>
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<td>68</td>
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<tr>
<td>SB8NS-3B</td>
<td>1&quot; NPT</td>
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<td>116</td>
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<td>48</td>
<td>100</td>
<td>41</td>
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<td>60</td>
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<td>89</td>
<td>11.3</td>
<td>9.8</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Note: 1" valves come with lever handle only

Note: Should side loading be required consult factory.

Add 'H' for 3,000 psi version i.e. HSB4NS-3B
Change 'B' to 'L' for side entry version i.e. SB3NS-3L
Change 'N' to 'P' for BSPP threads i.e. SB4PS-3L
Change 'N' to 'T' for BSPT threads i.e. SB4TS-3L
Seat materials: 1,000 psi = PTFE - 2,000 psi = RTFE - 3,000 psi = Acetal
Seal Materials: Body = PTFE - Stem = RTFE

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See technical section for important additional valve data.
3-Way PSB Series

General Information

6,000 psi rated

The 3-way L-Port diverter valves are an economical and safe method of diverting high pressure lines, saving the use of several high pressure 2-way valves. Ensuring an altogether safe, compact and easy to install solution to high pressure diversion. Available in bottom or side entry body formats. Materials of construction include 316 stainless steel, monel, hastalloy, titanium, duplex and other exotic alloys.

Design Features

- Low operating torque under pressure.
- Flexible 4 piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Can be supplied suitable for actuation if specified.
- Light, quick and positive 90° action side entry & 180° action on bottom entry version.
- Repair kits available should the valve require maintenance to prolong its service life.
- Pressure / Temperature rating -20°C to 250°C
- Choices of ‘T’ bar or lever handle, connection sizes and material of construction.
- Panel mounting facility as standard (4 off M4 x 10mm).
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Part Numbers

<table>
<thead>
<tr>
<th>St/St Part No.</th>
<th>Connections FxFxF side entry</th>
<th>A BSPP</th>
<th>A NPT</th>
<th>B (Bore)</th>
<th>C NPT</th>
<th>D BSPP</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>CV</th>
<th>KV</th>
<th>Weight (Kgs)</th>
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<td>6</td>
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<td>115</td>
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<td>1.3</td>
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<tr>
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<td>74</td>
<td>6</td>
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<td>32</td>
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<td>1.3</td>
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<tr>
<td>PSB4NS-3L</td>
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<td>93</td>
<td>6</td>
<td>58</td>
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<td>42</td>
<td>1.5</td>
<td>1.3</td>
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<td>95</td>
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Change ‘3L’ to ‘3B’ for bottom entry version i.e. PSB4NS-3B
Change ‘N’ to ‘P’ for BSPP threads i.e. PSB4PS-3L
Change ‘N’ to ‘T’ for BSPT threads i.e. PSB4TS-3L

Seat materials: 6,000 psi = PEEK Seal Materials: Body = PTFE Stem = PEEK

See technical section for important additional valve data.
3-Way USB Series

General Information

10,000 psi rated

The 10,000 psi 3-way L-Port Diverting ball valve range are bottom entry with 180° & 90° action. The USB offers low torque smooth positive action with floating seat design. 4-piece flexibility, with the added advantage of single nut panel mounting facility. Dynamic seats and Trunnion Mounted Ball design, a compact way to divert high pressure lines safely. Materials of construction include 316 stainless steel, monel, hastalloy, titanium, duplex and other exotic alloys. Many other standard options apply including lever handle, locking devices, actuators etc.

Design Features

- Rated up to 10,000 psi.
- Flexible 4 piece design.
- 180° operation as standard (90° operation version can be supplied).
- Anti blow out stem for safety.
- Dynamic Seats and Trunnion Mounted Ball.
- Light, quick and positive 180° action.
- Single nut type Panel mounting facility for easy panel installation or actuation.
- Pressure / Temperature rating -20°C to 250°C.
- Available in 316ss/Monel/Duplex.
- Repair Kits available to prolong valve life.
- Fitted with compact "T" bar handle as standard.
- A choice of handle, connection sizes and material of construction.
- 100% Hydrostatic testing & Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Part Numbers

<table>
<thead>
<tr>
<th>St/St Part No.</th>
<th>Connections</th>
<th>A BSPP</th>
<th>A NPT</th>
<th>B (Bore)</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I BSPP</th>
<th>I NPT</th>
<th>J Clearance</th>
<th>CV</th>
<th>KV</th>
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<td>74</td>
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<td>28</td>
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<td>1.3</td>
<td>0.9</td>
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</table>

Note: this valve is for bottom entry use only

dims are in mm (Appx)

See technical section for important additional valve data.

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### General Information

**3 way heavy duty ball valves**

6,000 psi & 10,000 psi

The Rhino valve is aptly named due to its strong and rugged construction and high design specification. The Rhino is a true “heavy duty small bore” multi-purpose ball valve that will withstand arduous services and unkind operator treatment. The Rhino can deliver a greater field life than other valves presently available in the market place. Because of this the Rhino would suit any application where it may experience shock loading, impacts, thermal changes in excess of normal application parameters. Or any application where extra confidence is required to be sure failure is minimised. The Rhino is available in sizes 1/4” to 1” with threaded, socket weld or twin ferrule compression ends. Available in side or bottom entry 3-way (L-ported) versions.

### Design Features
- Oversize handle, stem and ball for extra strength.
- *Rated up to 6,000 psi - to ASME B16.34 or 10,000 psi working pressure version.
- Soft primary seating, with metal secondary seating.
- Available in 316ss / Monel / Duplex / Hastelloy.
- Panel mounting & stainless steel lever handle as standard.
- Internally loaded anti-blow out stem for safety.
- Low operating torque under pressure.
- Flexible design with strong and compact body.
- Light, quick and positive 90° action (180° action on bottom entry version).
- *Pressure / Temperature rating -20°C to 250°C or higher temperature option (+HT) see graph.
- A choice of “T” bar or lever style handles, connection sizes and material of construction.
- Full material traceability for all major components.
- 100% Hydrostatic and gas testing.
- Can be side loaded without the disadvantages of being a trunnion ball (small bore size).
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

### Part Numbers

<table>
<thead>
<tr>
<th>St/St Part No.</th>
<th>Connections Size</th>
<th>A (NPT)</th>
<th>B (Bore)</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>Cv</th>
<th>Kv</th>
<th>Weight (Kgs)</th>
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<td>1.3</td>
<td>0.60</td>
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<td>10</td>
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<td>77</td>
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Note: BSPP & BSPT dims are equal to NPT dims - Change '3L' to '3B' for bottom entry version i.e. RV4NS-3B
Change 'N' to 'P' for BSPP threads i.e. RV4PS-3L - Change 'N' to 'T' for BSPT threads i.e. RV4TS-3L

Seat options, PTFE, Peek®, Graphoil (high temperature)  Seal materials: body = PTFE - Stem = Peek® - HT = graphoil

See technical section for important additional valve data.

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3T Series

Design Features

- High pressure up to 6,000 psi.
- "T" ported ball design for various high pressure flow diversions or isolation orientation.
- Low operating torque under pressure.
- Flexible five piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Light, quick and positive 90° action side entry.
- 3 handle orientations for two flow formats.
- Soft seat for first time bubble tight diversion or isolation.
- Available in sizes from 1/4" to 1" thread connections.

General Information

3-Way T Ported Ball
6,000 psi rated

The Alco 3T series "T" ported high pressure diverting ball valve range offers a compact and safe way to divert, control, vent, or sample high pressure liquid or gas mediums. Manufactured from high integrity bar-stock material the "3T" is suitable for use in hostile environments. Available in threaded sizes from 1/4" to 1". The "3T" is available in several flow configurations (shown below) offering more flexibility and usefulness to any system design. Various handle orientations can be specified at the time of the order, otherwise 3T1 (configuration 1) is supplied as standard. Lever handle, locking device and actuators can be fitted as options.

Part Numbers

<table>
<thead>
<tr>
<th>St / St Part No.</th>
<th>Flow Configuration Part No.</th>
<th>Connections F x F x F side entry</th>
<th>A</th>
<th>B (Bore)</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>CV</th>
<th>KV</th>
<th>Weight (Kgs)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3T1 3T2 3T3</td>
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<td>3T1 3T2 3T3</td>
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<td>6.5</td>
<td>48</td>
<td>77</td>
<td>40</td>
<td>1.0</td>
<td>0.86</td>
<td>0.8</td>
</tr>
<tr>
<td>SB6NS-</td>
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<td>55</td>
<td>100</td>
<td>51</td>
<td>1.8</td>
<td>1.55</td>
<td>1.7</td>
</tr>
</tbody>
</table>

To change flow configuration to configuration 2 change 1 to 2 i.e. SB4NS-3T2
Change 'N' to 'P' for BSPP thread i.e. SB4PS-3T2

Seat materials: 1,000 psi = PTFE  Seal Materials: Body = PTFE - Stem = Peek®

See technical section for important additional valve data.
**X4 Series**

### Design Features
- Rated 6,000 psi.
- Low operating torque under pressure.
- Flexible 4 piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Suitable for actuation.
- Light, quick and positive 90° action side entry & 180° action on bottom entry version.
- Panel mounting facility as standard.
- Pressure / Temperature rating -50°C to 260°C
- Repair kits available should the valve require maintenance to prolong its service life.
- Choices of ‘T’ bar or lever handle, connection sizes and material of construction.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

### Part Numbers

<table>
<thead>
<tr>
<th>St / St Part No.</th>
<th>Flow Configuration Part No.</th>
<th>Connections (Female x Female x Female)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>CV</th>
<th>KV</th>
<th>Weight (Kgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB2NS- X4S</td>
<td>X4T X4DL</td>
<td>1/4&quot; NPT</td>
<td>78</td>
<td>6</td>
<td>48</td>
<td>77</td>
<td>78</td>
<td>1.0</td>
<td>0.86</td>
<td>1.1</td>
</tr>
<tr>
<td>SB3NS- X4S</td>
<td>X4T X4DL</td>
<td>3/8&quot; NPT</td>
<td>78</td>
<td>6</td>
<td>48</td>
<td>77</td>
<td>78</td>
<td>1.0</td>
<td>0.86</td>
<td>1.1</td>
</tr>
<tr>
<td>SB4NS- X4S</td>
<td>X4T X4DL</td>
<td>1/2&quot; NPT</td>
<td>97</td>
<td>6</td>
<td>48</td>
<td>80</td>
<td>100</td>
<td>1.0</td>
<td>0.86</td>
<td>1.1</td>
</tr>
<tr>
<td>SB6NS- X4S</td>
<td>X4T X4DL</td>
<td>3/4&quot; NPT</td>
<td>120</td>
<td>10</td>
<td>55</td>
<td>100</td>
<td>130</td>
<td>1.5</td>
<td>1.3</td>
<td>1.5</td>
</tr>
<tr>
<td>SB8NS- X4S</td>
<td>X4T X4DL</td>
<td>1&quot; NPT</td>
<td>130</td>
<td>10</td>
<td>55</td>
<td>100</td>
<td>130</td>
<td>1.5</td>
<td>1.3</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Double 'L' ported version change -X4S to -X4DL i.e. SB4NS-X4DL
Change 'N' to 'P' for BSPP threads i.e. SB4PS-X4
Seat materials: 6,000 psi = PTFE Seal Materials: Body = PTFE - Stem = PEEK

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**General Information**

**6,000 psi rated**

The 4-way multi diverter valves are an economical and safe method of diverting high pressure lines, this replaces several high pressure 2-way valves. Ideal for sampling or vent / dumping applications. Ensuring an altogether safe, compact and easy to install solution to high pressure diversion, using the inlet pressure to actuate the floating ball ensuring a tight seal on the seat. Available in bottom or side entry body formats. Materials of construction include 316 stainless steel, brass, carbon steel, monel, hastalloy, titanium, duplex and other exotic alloys.

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**Alco Valves**

Industrial Valve Manufacturers

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### X5 Series

**General Information**

1 x bottom inlet x 4 selectable outlets

6,000 & 10,000 psi rated

The compact “X5” series eliminates the use of several 2 or 3 way ball valves and complicated fitting combinations. Rated up to 10,000 psi this versatile valve is a real time and space saver. One common inlet, and four outlets. The X5 is especially suited for panel work as it comes complete with 2 x M5 panel mounting holes or a panel mount nut. Pressure ranges from vacuum to 10,000 psi. The compact design offers a multitude of end connections and options. The “X5” Series is manufactured in all stainless steel marine specification fitted with a stainless steel flow indicating arrow style handle as standard.

### Design Features

- Compact 4 way design (with optional added vent facility).
- Trunion mounted.
- Rated upto 10,000 psi.
- Bi-directional floating seat design to ensure leak-proof shut-off on pressure or vacuum.
- Light, quick and positive action.
- Low operating torque under pressure.
- Strong, compact body construction.
- Anti blow out stem for safety.
- Suitable for actuation.

- Pressure / Temperature rating -20°C to 250°C
- Repair kits available should the valve require maintenance to prolong its service life.
- Choices of flow indicating arrow (standard) or stainless steel lever handle.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

### Part Numbers

<table>
<thead>
<tr>
<th>St/St Part No.</th>
<th>Flow Configuration Part No.</th>
<th>Connections Size</th>
<th>A B C</th>
<th>Connections Size</th>
<th>A NPT</th>
<th>B (Bore)</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>CV</th>
<th>KV</th>
<th>Weight (kgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB2NS-</td>
<td>X5A X5B X5C</td>
<td>1/4&quot; NPT</td>
<td>64 5</td>
<td>90</td>
<td>110 1</td>
<td>0.86</td>
<td>1.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB3NS</td>
<td>X5A X5B X5C</td>
<td>3/8&quot; NPT</td>
<td>86  5</td>
<td>101</td>
<td>110 1</td>
<td>0.86</td>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB4NS</td>
<td>X5A X5B X5C</td>
<td>1/2&quot; NPT</td>
<td>108 5</td>
<td>112</td>
<td>48</td>
<td>110 1</td>
<td>0.86</td>
<td>1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Can be supplied with twin ferrule compression connections. Change “N” for “K” i.e. SB4KS-X5A

6,000 psi as standard add “U” for 10,000 psi version i.e. USB2NS-X5A

Optional bleed valve / vent facility (-V) i.e. SB4NS-X5A-V

Optional screw in vent valve (-V V) i.e SB4NS X5A-V V

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

See technical section for important additional valve data.
Specialised Ball Valves & Manifolds

2 valve manifolds for gauge / instrument applications

Double block & bleed valve manifolds, various formats see our DBB catalogue.

3 valve manifolds

Isolation and venting valve manifold construction offers 360° rotation of a gauge without the use of a swivel gauge adapter, orifice weld style

5 ball valve construction manifolds, remote or direct mounting style, rodable, viscous services, soft seat, high pressure.

The high cycle Alco Centurion™ ball valve, made to last. Using low emission packings Suitable for actuator use.
How to order Multi-Way Valves

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is:-

1/2" NPT female x female x female 316ss ‘SB’ series 3-way “L” ported bottom entry ball valve, Monel® ball & stem, fitted with compact “T” bar handle rated 414 BAR (6,000 psi).

The part number shown below is made up using the following system:-

<table>
<thead>
<tr>
<th>Bore type</th>
<th>Rated pressure</th>
<th>Valve series</th>
<th>Valve size</th>
<th>End connections</th>
<th>Material of construction/body parts</th>
<th>Trim material (Ball and stem)</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>SB</td>
<td>4</td>
<td>N</td>
<td>S</td>
<td>-</td>
<td>U</td>
<td></td>
</tr>
</tbody>
</table>

Blank = Std Bore
F = Full bore

No letter = standard pressure
R = 2,000 psi 138 Bar
H = 3,000 psi 207 Bar
P = 6,000 psi 414 Bar
U = 10,000 psi 690 Bar

3 = Series Multiport
SB = Square Body (Panel mounting)

2 = 1/4”
3 = 3/8”
4 = 1/2”
6 = 3/4”
8 = 1”

B = Brass
C = C/Steel
D = Ali-Bronze
H = Hastalloy C
I = Incoloy 625
M = Monel 400
N = Cupro-Nickel
S = 316 St. St.
U = Duplex
T = Titanium

-U = Duplex
-5 = Monel 400
-6 = Incoloy
-7 = Ali-bronze
-8 = Hastalloy
-9 = Cupro nickle
-S3 = 316ss

-1M = One end male
-2M = Double male ends
-3B = 3 way bottom entry
-3L = 3 way side entry
-X5 = 5-way valve
-X4 = 4-way valve
-CAV = Cavity filled seats
-DAG = Actuated, double acting
-DG = Degreased and cleaned
-S = Spanner flat handle
-TACK = Tack welded end connectors
-TAG = Identification Tagging
-DMH = Dead mans handle
-X = Down stream exhaust to atmosphere trim
-CAVX = Cavity to down stream exhaust trim
-EL = Electric actuator
-SRG = Actuated, spring return

Socket weld & butt weld end connectors may be extended for thermal protection of the valve internals

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.