Block and Bleed Valves

MBB, MD, MB, MDB and VB3, VB4 Series
Features

- Maximum working pressure: 10000 psig (689 bar)
- Working temperature up to 850°F (454°C) with Graphite packing
- Colour coded valve function identification
- Every design is hydraulic pressure tested in accordance and API 598 with EN 12266-1. Every set is tested with nitrogen for leak-tight performance at 6000 psig
- Fire-tested design in accordance with API 607 and BS 6755 part 2
- Flanged connections comply with ANSI B16.5 RF and RTJ
- Pressure ratings in accordance with ANSI B16.34

Ball Valve Model

Features

- Maximum working pressure is 10000 psig (689 bar).
- Working temperature are as follows:
  - PTFE: -65°F to 400°F (-54°C to 204°C)
  - PEEK: -65°F to 450°F (-54°C to 232°C)
- Actuate at quarter-turn.
- Directional stem flats show open or closed position.
- Bottom-loaded stem prevents stem blowout and enhances system safety.
- High-strength stem bearing provides smooth actuation and eliminates galling between valve stem and body.
- It may be required to adjust the packing during the service life of the valve.
- FINELOK ball valves are designed to be operated in a fully open or fully closed position.

Needle Type Valve Model

Features

- Maximum working pressure is 10000 psig (689 bar).
- Working temperature are as follows:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - Graphite: -65°F to 850°F (-54°C to 454°C)
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem.
- Upper stem thread lubricant is isolated from system fluid.
- The nonrotating lower stem, linearly instead of helical movement, avoids galling damage to the seat and tip, as well as reduces the total friction area between the packing and the lower stem.
- Stem back seating seals in fully open position.
- Panel mounting is available as an option.
- Double lock pins enable steady and durable fastening of the handle.
- Handle with different colors are available.

OS&Y Needle Type Valve Model

Features

- Maximum working pressure is 10000 psig (689 bar).
- Working temperature are as follows:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - Graphite: -65°F to 850°F (-54°C to 454°C)
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem.
- Upper stem thread lubricant is isolated from system fluid.
- The nonrotating lower stem, linearly instead of helical movement, avoids galling damage to the seat and tip, as well as reduces the total friction area between the packing and the lower stem.
- Bolted bonnet enhance strength and reliability.
- Back seat design provides secondary stem sealing and prevents stem blowout.
- Adjustable gland flange allows easy access to the packing gland and packing adjustment for an effective stem seal.
- Investment case yoke is formed by precision casting which enhances strength and perfect stem alignment.
- Two handle pins make the handle fixed firmly and lastingly.

Handle colors indicate functions:

- Needle and OS&Y valves:
  - BLACK = Isolate/Block
  - RED = Vent/Bleed
- Ball valves:
  - YELLOW = Isolate/Block
  - RED = Vent/Bleed
Sour Gas Service/NACE Compliant

Process interface valves for sour gas service are available. Materials are selected in accordance with NACE MR0175/ISO 15156. Contact the authorized representative or FINELOK if any request.

### Standard Materials of Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Body Material</th>
<th>Carbon Steel</th>
<th>Duplex Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body/End connector</td>
<td>316 SS, 316L SS (A182)</td>
<td>316 SS, 316L SS (A182)</td>
<td>LF2/A350, F51/A182, S31803/A479</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ball Valve</th>
<th>Body Material</th>
<th>Carbon Steel</th>
<th>Duplex Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball</td>
<td>316 SS, 316L SS/A479</td>
<td>S31803/A479</td>
<td></td>
</tr>
<tr>
<td>Stem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reamer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socket</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Needle Type Globe Valve</th>
<th>Body Material</th>
<th>Carbon Steel</th>
<th>Duplex Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem</td>
<td>316 SS, 316L SS/A479</td>
<td>S31803/A479</td>
<td></td>
</tr>
<tr>
<td>Bonnet</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>OS&amp;Y Needle Type Globe Valve</th>
<th>Body Material</th>
<th>Carbon Steel</th>
<th>Duplex Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem</td>
<td>316 SS, 316L SS/A479</td>
<td>S31803/A479</td>
<td></td>
</tr>
<tr>
<td>Yoke</td>
<td>CF8M/A351 or 316 SS/A182</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Stainless steel is standard material; others are available upon request.

### Pressure vs. Temperature

#### Ball Valve module

![Pressure vs. Temperature Diagram](image)

#### Needle and OS&Y Needle Type Valve

![Pressure vs. Temperature Diagram](image)

### Sour Gas Service/NACE Compliant

Process interface valves for sour gas service are available. Materials are selected in accordance with NACE MR0175/ISO 15156. Contact the authorized representative or FINELOK if any request.

### Monoflange Single Block and Bleed Valves

**MBB Series Features**

- Piping and instrument valves in one body
- Weight, space and cost saving over traditional designs
- Blowout-proof valve stems and needles
- Complete traceability of materials
- 1/4 female NPT standard vent with plug
- 1/2 female NPT standard outlet with plug

**Block: OS&Y  Bleed: needle (ON)**

![Block and Bleed Valves Diagram](image)

**Features**

- Blow: OS&Y
- Bleed: needle (ON)

**Vent**

- 1/4 female NPT standard vent with plug

**Outlet**

- 1/2 female NPT standard outlet with plug

**Dimensions are for reference only and are subject to change.**

### Standard Materials of Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Material Grade/Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Material</td>
<td>S31803/A479</td>
</tr>
<tr>
<td>Stem</td>
<td>S31803/A479</td>
</tr>
<tr>
<td>Bonnet</td>
<td>S31803/A479</td>
</tr>
<tr>
<td>Yoke</td>
<td>CF8M/A351 or 316 SS/A182</td>
</tr>
</tbody>
</table>

Stainless steel is standard material; others are available upon request.
**Monoflange Double Block Valves**

**MD Series**

**Features**
- Piping and instrument valves in one body
- Weight, space and cost saving over traditional designs
- Blowout-proof valve stems and needles
- Complete traceability of materials
- 1/2 female NPT standard outlet with plug

**Outlet**

**Process**

<table>
<thead>
<tr>
<th>Flange Size</th>
<th>Bore Size</th>
<th>ANSI Class</th>
<th>L (in. (mm))</th>
<th>L' (in. (mm))</th>
<th>φ A (in. (mm))</th>
<th>φ B (in. (mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 (DN15)</td>
<td>3/4 (DN20)</td>
<td>1 (DN25)</td>
<td>11/2 (DN40)</td>
<td>2 (DN50)</td>
<td>0.157 (4)</td>
<td>0.157 (4)</td>
</tr>
<tr>
<td>150</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>300</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>600</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>900/1500</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>2500</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
</tbody>
</table>

Dimensions are for reference only and are subject to change.

**Monoflange Single Block Valve**

**MB Series**

**Features**
- Piping and instrument valves in one body
- Weight, space and cost saving over traditional designs
- Blowout-proof valve stems and needles
- Complete traceability of materials
- 1/2 female NPT standard outlet with plug

**Outlet**

**Process**

<table>
<thead>
<tr>
<th>Flange Size</th>
<th>Bore Size</th>
<th>ANSI Class</th>
<th>L (in. (mm))</th>
<th>L' (in. (mm))</th>
<th>φ A (in. (mm))</th>
<th>φ B (in. (mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 (DN15)</td>
<td>3/4 (DN20)</td>
<td>1 (DN25)</td>
<td>11/2 (DN40)</td>
<td>2 (DN50)</td>
<td>0.157 (4)</td>
<td>0.157 (4)</td>
</tr>
<tr>
<td>150</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>300</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>600</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>900/1500</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
<tr>
<td>2500</td>
<td>2.03 (51.6)</td>
<td>2.03 (51.6)</td>
<td>2.38 (60.5)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
<td>3.10 (78.9)</td>
</tr>
</tbody>
</table>

Dimensions are for reference only and are subject to change.
### Monoflange Double Block & Bleed Valves

#### MDB Series

**Features**
- Piping and instrument valves in one body
- Weight, space and cost saving over traditional designs
- Blowout-proof valve stems and needles
- Complete traceability of materials
- 1/4 female NPT standard vent with plug
- 1/2 female NPT standard outlet with plug

Primary: OS&Y  Secondary: needle  Bleed: needle (ONN)

#### VB3 Series:

**Features**
- One piece forged body, minimize potential leak point
- Piping and instrument valves in one design
- Weight, space and cost saving over traditional designs
- Blowout-proof valve stems and needles
- Complete traceability of materials

Primary: ball  Secondary: needle  Bleed: needle (BBN)

---

<table>
<thead>
<tr>
<th>Flange Size</th>
<th>Bore Size (in. (mm))</th>
<th>ANSI Class</th>
<th>L (in. (mm))</th>
<th>L' (in. (mm))</th>
<th>ΦA (in. (mm))</th>
<th>ΦB (in. (mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 (DN15)</td>
<td>150</td>
<td>300</td>
<td>600</td>
<td>900/1500</td>
<td>2500</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>2.03 (51.4)</td>
<td>2.03 (51.4)</td>
<td>5.50 (88.9)</td>
<td>2.38 (60.5)</td>
<td>2.37 (60.2)</td>
<td>2.62 (66.5)</td>
</tr>
<tr>
<td>3/4 (DN20)</td>
<td>150</td>
<td>300</td>
<td>600</td>
<td>900/1500</td>
<td>2500</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>2.03 (51.4)</td>
<td>2.03 (51.4)</td>
<td>4.62 (117.3)</td>
<td>3.25 (82.4)</td>
<td>3.25 (82.4)</td>
<td>3.50 (84.9)</td>
</tr>
<tr>
<td>1 (DN25)</td>
<td>150</td>
<td>300</td>
<td>600</td>
<td>900/1500</td>
<td>2500</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>2.03 (51.4)</td>
<td>2.03 (51.4)</td>
<td>4.25 (108.0)</td>
<td>2.12 (53.5)</td>
<td>2.12 (53.5)</td>
<td>2.50 (63.5)</td>
</tr>
<tr>
<td>11/2 (DN40)</td>
<td>150</td>
<td>300</td>
<td>600</td>
<td>900/1500</td>
<td>2500</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>2.03 (51.4)</td>
<td>2.03 (51.4)</td>
<td>5.00 (127.0)</td>
<td>3.98 (100.6)</td>
<td>3.98 (100.6)</td>
<td>4.25 (108.0)</td>
</tr>
<tr>
<td>2 (DN50)</td>
<td>150</td>
<td>300</td>
<td>600</td>
<td>900/1500</td>
<td>2500</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>2.03 (51.4)</td>
<td>2.03 (51.4)</td>
<td>6.25 (158.8)</td>
<td>4.25 (108.0)</td>
<td>4.25 (108.0)</td>
<td>4.75 (120.7)</td>
</tr>
</tbody>
</table>

---

**Flange Double Block and Bleed Valves**

**Features**
- Piping and instrument valves in one design
- Weight, space and cost saving over traditional designs
- Blowout-proof valve stems and needles
- Complete traceability of materials

Primary: ball  Secondary: needle  Bleed: needle (BBN)
Large-bore Bolted Double Block and Bleed Valves

VB4 Series

Features
- Complementing the existing one-piece range, flange to flange bolted construction DBB valves available in sizes from 1/2 to 2.
- Designed according to ASME SI B16.34
- Weight, space and cost saving over traditional designs.
- Complete traceability of materials

Full-bore Series

Reduced-bore Series

Dimensions

<table>
<thead>
<tr>
<th>Flange Size</th>
<th>Bore Size in. (mm)</th>
<th>ANSI Class</th>
<th>L in. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (DN25)</td>
<td>1</td>
<td>150</td>
<td>10.7 (272)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300</td>
<td>11.0 (279)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600</td>
<td>11.5 (290)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>900/1500</td>
<td>14.3 (364)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2500</td>
<td>14.8 (377)</td>
</tr>
<tr>
<td>11/2 (DN 40)</td>
<td>11/2 (28.1)</td>
<td>150</td>
<td>14.2 (362)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300</td>
<td>14.4 (367)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600</td>
<td>15.1 (384)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>900/1500</td>
<td>15.8 (392)</td>
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<td></td>
<td>2500</td>
<td>16.2 (413)</td>
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<td>2 (DN 50)</td>
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<td>150</td>
<td>15.4 (390)</td>
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<td></td>
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<td>300</td>
<td>15.7 (394)</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>900/1500</td>
<td>18.9 (481)</td>
</tr>
</tbody>
</table>

Dimensions are for reference only and are subject to change.

Injection Double Block & Bleed Valves

Function - injection
Injection of chemicals and other media into the process stream can be accomplished with this design. A check valve is installed to prevent process fluid from reaching the inlet injection position. There is a 0.125” (3 mm) hole in the injection nozzle orifice. The length of the injection nozzle orifice can be manufactured to meet customer requirements and needs to be specified. The injection orifice can also be rotated. Injection valves can be provided in most of the styles and options offered for the DBB ranges.

Injection Quill
The injection quill length (L) is manufactured to meet customer requirements.

Integral Check Valve
This poppet type spring return valve has a FKM soft seal (standard).

Sampling Double Block & Bleed Valves

Function - sampling
This design is developed to remove a sample directly from process stream at full system pressure. The customised sampling probe extends from the pipe flange connection for correct sample removal. Sampling valves can be provided without a probe and valves can be provided in most of the styles and options offered for the DBB ranges.

Sampling Probe
The sampling probe length (L) is manufactured to meet customer requirements.
11 Block and Bleed Valves

Ordering Information

1. Options of ball valve bore:
   - 3/8" (9.5 mm) bore (all process connection sizes); select size DN25, DN40 or DN50.
   - 1/2" (14 mm) bore (1, 1 1/2, or 2 process connections; select size DN25, DN40 or DN50).
   - 3/4" (20 mm) bore (1 1/2 or 2 process connections; select size DN40 or DN50).