Richter Lined Standard
ASME and ISO Ball Valves

Lining virgin PFA
One-piece ball/stem design, \( \text{Al}_2\text{O}_3 \) ball option
Maintenance-free stem seal
Low torque, high flow rate
Lined Standard ASME/ANSI and ISO/DIN Ball Valves

Fields of application
The design of the ball valves series BVA and BVI is based on more than 30 years of application experience with lined ball valves. They provide an excellent ratio of economic and operational performance in a wide variety of process applications.

The Richter ball valves BVA and BVI are designed
• as shut-off and automated valves for corrosive and hazardous media,
• where stainless steel, special metals, PVDF etc. are not sufficiently corrosion-resistant,
• as alternative to valves made of exotic special metals and
• serve as reliable alternative to lined plug valves due to higher flow rates, much lower torques and minimum maintenance.

Product features
• PFA-lined one-piece ball/stem unit, optional Al2O3 ceramic ball
• Full ports of BVA sizes 1", 1.5" and 2" to ASME/ANSI as well as BVI DN 25 through DN 150 to ISO result in high flow rates, minimum pressure losses and a more efficient piping system.
• BVA sizes 3", 4" and 6" to ASME/ANSI with reduced port feature a compact design with smaller valve body envelope and lowest possible torque for economic actuation.
• Locking devices
• Gear operators on request

Type code manual actuation remote actuation
• ASME/ANSI ball valve BVA/… BVAP/…
• ISO/DIN ball valve BVI/… BVIP/…
• Lining PFA fluoroplastic …/F

Efficient alternative to plug valves
• Plug valves provide some 2/3 of full port ball valve flow only, whereas full port ball valves allow for downsizing of pipeline system by at least 1 size. Reduced port ball valves provide flows equal to plug valves.
• Plug valves require 100-350 % more torque, therefore in most cases larger actuator needed.
• The plug is seated in the body lining instead of seat rings. Wear and tear requires body or complete valve (“throw away valve”) to be exchanged. No ceramic option.
• Plug valves have conventional packing-type stem sealing, not self-adjusting, not maintenance-free.
• Cavity volume underneath plug
• Plug core usually made of ductile iron unlike ball valves with SS ball core

Reliable body and seat sealing
1. 3 mm (1/8") thick virgin PFA body lining
   • High permeation resistance
   • Vacuum-proof anchored
   • Translucent, optimum quality assurance
2. Pressure-bearing body made of ductile cast iron EN-JS 1049 (0.7043)/ASTM A395, absorbs system and pipe forces.
3. Permanent body flange sealing
   • Effective even under the most frequent thermal cycle conditions
   • Sealing zone (3a) with full lining thickness
   • Labyrinth-like sealing (3b) maximizes surface pressure.
   • Body pieces position themselves properly by means of the cup and cone shapes (3c) of each piece. Metal centering (3d) withstands lateral and angular pipe forces.
   • Almost metal-to-metal flange contact (3e) in the circumference area controls the effects of temperature variations.
4. One-piece ball/stem design
   • Stainless steel core
   • Eliminates individual plastic lined mating parts for higher pressure/temperature ratings and optimises operational safety.
   • Al2O3 (99.7 %) ceramic ball option
5. Energised PTFE seat rings provide a permanent spring load onto the ball and ensure of gas-tight sealing.
6. Time-tested maintenance-free stem seal
   • Outstanding long-life seal performance
   • Gas-tight to EN 12266, leakage rate A
   • Spring gland follower ensures of tightness even with changing conditions.
   • Visual inspection of sealing load
   • Manually adjustable from outside
7. Universal ISO 5211 mounting dimensions
8. External corrosion protection
Innovative cone shape stem seal design

The PTFE packing insert translates a low axial thrust into a higher radial sealing force by means of the law of cone. The packing gland is designed with a diameter as small as possible. The result: outstanding stem seal performance under the most challenging conditions, permanent preload controlled manual adjustability at any time.

An added benefit is the ability to monitor the live loaded condition of the stem seal simply by inspecting the “gap” between the packing followers, thus lending this design to the user’s preventive maintenance program.

Stem seal design

Pressure/temperature range

Flow rates

Operating torques PFA-lined ball/stem unit

Operating torques Al₂O₃ ceramic ball

Flow rates

Torques measured with water 20 °C (68 °F). Depending on the medium, e.g. gases or viscous resp. crystallizing liquids, the torques could increase.
Dimensions and weights BVA (ASME/ANSI):
face to face ASME/ANSI B16.10 short, flanges ASME (ANSI) B16.5 Cl. 150 ****

<table>
<thead>
<tr>
<th>BVA DN</th>
<th>ØPort</th>
<th>L</th>
<th>HL</th>
<th>H</th>
<th>D</th>
<th>k</th>
<th>nxd</th>
<th>1</th>
<th>H1</th>
<th>H5</th>
<th>H2</th>
<th>approx.</th>
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</thead>
<tbody>
<tr>
<td>25 1”</td>
<td>24.5</td>
<td>0.964</td>
<td>167</td>
<td>6.5</td>
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<td>5.12</td>
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<tr>
<td>40 11/2”</td>
<td>38</td>
<td>1.496</td>
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<td>260</td>
<td>10.24</td>
<td>155</td>
<td>6.1</td>
<td>130</td>
<td>5.12</td>
<td>94.5</td>
<td>3.70</td>
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<tr>
<td>50 2”</td>
<td>47.5</td>
<td>1.87</td>
<td>230</td>
<td>9.05</td>
<td>280</td>
<td>10.24</td>
<td>155</td>
<td>6.1</td>
<td>152.5</td>
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<td>10.24</td>
<td>155</td>
<td>6.1</td>
<td>190.5</td>
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<td>152.5</td>
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<tr>
<td>100 4”</td>
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<td>12.2</td>
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<td>9.0</td>
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<tr>
<td>150 6”</td>
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<td>3.78</td>
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<td>11.0</td>
<td>241.5</td>
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</tbody>
</table>

** manually operated, PFA lined ball/stem unit
*** on request drilled to ASME (ANSI) B16.5, JIS 10K
**** on request drilled to JIS 10K, ISO 7005-2

** BVI size 150 mm (6”): with Δp > approx. 2 bar (29 psi) a worm gear is recommended instead of hand lever. Details on request.

Components and materials

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Main body</td>
<td>Ductile iron ASTM A395/EN-JS1049; PFA lined</td>
</tr>
<tr>
<td>102</td>
<td>Body end piece</td>
<td>Ductile iron ASTM A395/EN-JS1049; PFA lined</td>
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<tr>
<td>200</td>
<td>Ball</td>
<td>Al2O3</td>
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<tr>
<td>201</td>
<td>Ball/stem unit</td>
<td>Stainless steel, PFA lined</td>
</tr>
<tr>
<td>202</td>
<td>Stem</td>
<td>Stainless steel, PFA lined</td>
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<tr>
<td>203</td>
<td>Lever</td>
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<tr>
<td>401</td>
<td>Seat rings</td>
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<td>Thrust ring</td>
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<tr>
<td>422</td>
<td>Base ring</td>
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<tr>
<td>423</td>
<td>Packing insert</td>
<td>PTFE</td>
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<tr>
<td>502</td>
<td>Spring gland follower</td>
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<tr>
<td>503</td>
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<tr>
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<td>Bracket</td>
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<tr>
<td>557</td>
<td>Grounding spring washer</td>
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<td>Actuator</td>
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<tr>
<td>w/o No.</td>
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<td>Stainless steel</td>
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* Modified PTFE seat rings supplied with Al2O3 ceramic ball