Technical Documentation
XOMOX® XLD Fully Lined Butterfly Valve
The XOMOX® lined butterfly valve is available in DIN under the term XLD12 as wafer version and XLD22 as lug version. The ASME types are termed XLD11 as wafer version and XLD21 as lug version, and in JIS as XLD13 wafer version and XLD23 lug version.

For XOMOX® Lined Butterfly Valves bi-directional flow is possible at max. operating pressure. Since the valve port corresponds to the piping diameter, a high flow capacity is guaranteed.

The seamless one piece molded liner together with the underlying elastic O-ring provides trouble- and maintenance-free operation. It covers the lower shaft completely and renders an additional sealing to atmosphere unnecessarily.

The liner extends up the shaft to above the secondary seal. This sealing prevents leakage to atmosphere. The body seal ring is designed to provide a 360° sealing for in-line shutoff and at the upper and lower shaft to act as primary seal to atmosphere.

A further special feature is the one-piece disc consisting of a metallic core (disc/shaft) with a homogeneous non-porous plastic coating standing up to the secondary external seals.

All these features combine to make the XOMOX® lined butterfly valve the solution for tight shutoff and corrosion resistance and represent an advance on all previously available products of this type.

Each valve is 100% spark tested with 20000 volts in accordance with API 598 specification to ensure the absence of pin holes and defects.

### Key Benefits

- Superior In-Line Sealing– Viton ring activated PFA liner is more flexible than larger sintered PTFE liners which allows for improved inline sealing, protecting equipment from internal corrosion related to media leakage.

- Longer Valve Life– PFA lasts 20% longer than PTFE due to abrasion resistance helps to improve life of inline seal.

- PFA lining more robust in thermal cycles and high temperature applications (>180°C) than PTFE lining allowing the PFA lined disk to last longer keeping the chemical plant operating longer.

### Scope of Supply

**Materials**

- **Body:** Ductile iron EN-JS1049/ASTM A395
- **Body liner:** PFA
- **Disc:** 2”-12”: Ductile iron EN-JS1049 / ASTM A395 PFA lined & SS PFA lined, 14”-24”: Fabricated Disc (A516 Gr. 70+ 1.4462/ F51/F60 SS Duplex Stem) PFA lined
- **Face to face** acc. to EN 558, basic column 20/ API 609 (except for 14”)

**Operation**

DN 50 / NPS 2 up to DN 150 / NPS 6 latching lever from DN 200 / NPS 8 with worm gear, pneumatic and electric actuators on request.

**Tightness**

The actual leakage rate to atmospheric pressure is less than 110-6 mbar . l/s of helium gas. Requirements according to TA-Luft specification will be accomplished.

**Paint**

Standard paint: Epoxy - primer and coating based on AY-PUR (Acryle-Polyuretane) Orange RAL 2009, FV7133 prevent external corrosion
Design Features

Type test approval VdTÜV-M229 for plants subject to inspection:

<table>
<thead>
<tr>
<th>Rule</th>
<th>Dampfkv</th>
<th>DruckbehV</th>
<th>Gas HL-V0</th>
<th>Vbf</th>
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<td>TRD</td>
<td>TRB/TRR</td>
<td>TRGL/DVGW</td>
<td>TrbF</td>
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Options:
- Chlorine application
- Oxygen application
- Disc in stainless steel or Titanium (without lining)
- O-ring Silicon
- Safety manual adjustable packing
- PFA antistatic lining
- PTFE Liner / PTFE lined disc from DN350 size onwards
- Other painting on request

XLD Pressure/Temperature Rating

All XLD in Vacuum Condition

Note: Max. differential operating pressure limited to maximum of 10bar for all sizes.

* XLD 13/23 10K UPTO DN500
* XLD 12/22 PN10 & 13/22 10K UP TO DN500*
* XLD 11/21 UP TO 24"

Options:
- Chlorine application
- Oxygen application
- Disc in stainless steel or Titanium (without lining)
- O-ring Silicon
- Safety manual adjustable packing
- PFA antistatic lining
- PTFE Liner / PTFE lined disc from DN350 size onwards
- Other painting on request
<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
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<th>Material</th>
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<td>304 SS</td>
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<tr>
<td>3</td>
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<td>1.4408 / 1.4541 / 304 SS / 1.4571</td>
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<td>6</td>
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<td>FKM</td>
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<td>2</td>
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<tr>
<td>8</td>
<td>1</td>
<td>Body Top half</td>
<td>EN-JS1049/ASTM A395 PFA liner</td>
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<tr>
<td>9</td>
<td>1</td>
<td>Body Bottom half</td>
<td>EN-JS1049/ASTM A395 PFA liner</td>
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<td>10</td>
<td>2</td>
<td>Body Seal Ring</td>
<td>FKM</td>
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<td>11</td>
<td>1</td>
<td>Liner</td>
<td>PFA</td>
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<tr>
<td>12</td>
<td>1</td>
<td>Disc</td>
<td>DN 50-300: EN-JS1049/ASTM A395 or SS PFA lined</td>
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<td>DN 350-600: Welded Disc (A516 Gr. 70+ 1.4462/ASTM A395 PFA lined</td>
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<td>2</td>
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<td>A4-70 (108/109, 808/809), A194 2H (008/009)</td>
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<td>1</td>
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<td>15</td>
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**DN 50/2” – 300/12”**

**DN 350/14” – 600/24”**
Sealing Principles

1. In-line seal – valve in closed position

2. In-line seal – valve in opening position

3. Secondary shaft seal

DN 50/2” – 300/12”

DN 350/14” – 600/24”
## Flow Characteristics

### Kv values in m³/h, Cv=1,156 Kv

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<th>DN / NPS</th>
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<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
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<td>0.62</td>
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<td>12</td>
<td>30</td>
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<td>212</td>
<td>228</td>
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<td>595</td>
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<td>640</td>
<td>910</td>
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DN65 NPS 2½ on request

### Valve coefficients for process control: DN 50 – 200 / NPS 2 – 8

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<thead>
<tr>
<th>Angel of Aperture</th>
<th>9°</th>
<th>18°</th>
<th>27°</th>
<th>36°</th>
<th>45°</th>
<th>54°</th>
<th>63°</th>
<th>72°</th>
<th>81°</th>
<th>90°</th>
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<tbody>
<tr>
<td>Angle of Aperture %</td>
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<td>0.20</td>
<td>0.30</td>
<td>0.40</td>
<td>0.50</td>
<td>0.60</td>
<td>0.70</td>
<td>0.80</td>
<td>0.90</td>
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<tr>
<td>Recovery factor FL</td>
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<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
<td>0.81</td>
<td>0.73</td>
<td>0.67</td>
<td>0.61</td>
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<tr>
<td>Factor F₁²</td>
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<td>0.72</td>
<td>0.72</td>
<td>0.72</td>
<td>0.66</td>
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<td>0.45</td>
<td>0.37</td>
<td>0.35</td>
<td>0.30</td>
</tr>
<tr>
<td>Valve characteristic zₐ</td>
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<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.43</td>
<td>0.37</td>
<td>0.33</td>
<td>0.28</td>
<td>0.27</td>
<td>0.24</td>
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<tr>
<td>Pressure differential ratio KT</td>
<td>0.61</td>
<td>0.61</td>
<td>0.61</td>
<td>0.61</td>
<td>0.55</td>
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<td>0.31</td>
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<td>Valve style modifier F₂</td>
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<td>0.52</td>
<td>0.58</td>
<td>0.64</td>
<td>0.70</td>
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### Valve coefficients for process control: DN 250 – 600, NPS 10 – 24

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<th>45°</th>
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<th>72°</th>
<th>81°</th>
<th>90°</th>
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<tr>
<td>Valve characteristic zₐ</td>
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<td>0.44</td>
<td>0.44</td>
<td>0.44</td>
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<td>0.56</td>
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<td>0.08</td>
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## In-Line Mounting Dimensions

### Valve coefficients for process control: DN 50 – 600 / NPS 2 – 24

<table>
<thead>
<tr>
<th>DN</th>
<th>NPS</th>
<th>In-line mounting dimensions</th>
<th>Free space sectional area at 90° in cm²</th>
<th>ξ₁</th>
<th>Break-away torque in Nm</th>
<th>Maximal Allowable torque on stem in Nm</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dimension L in mm</td>
<td>Chord Ø mm</td>
<td></td>
<td>*₁</td>
<td>*₂</td>
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<td>50</td>
<td>2</td>
<td>8</td>
<td>29</td>
<td>10.6</td>
<td>3.2</td>
<td>35</td>
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<tr>
<td>80</td>
<td>3</td>
<td>16</td>
<td>62</td>
<td>24.7</td>
<td>2.4</td>
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<td>100</td>
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<td>125</td>
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<td>37</td>
<td>114</td>
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*¹ Coefficient of resistance, acc. to theoretical pipe diameter (DN) and Kva (opening angle 90°)
*² Identical torque at opening and closing, running torque = 40% of break away torque
*³ Max. Permissible torque with Material EN-JS1049 up to DN300 & with 1.4462 SS from DN 350 onwards
Dimensions with Bare Shaft **DN 50-300, 2" - 12"**

Dimensions (mm) and Weight (kg)

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<th>DN NPS</th>
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<th>65</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>150</th>
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<tbody>
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<td>A</td>
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<td>56</td>
<td>56</td>
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# Flange Bolt Dimensions

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## Drilling JIS 10 K 10 (mm)

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## Drilling ANSI Pressure Class 150 (in)

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F: Hole Circle
G: Number of Holes/Threads
H: Diameter of Hole/Thread Dimension
Dimensions with Latching Lever

Lever design:
- **Lever**: ENJS 1049 (GGG 40.3); zinc - phosphate coated
- **Notch plate**: 1.4571
- **Screws**: A4 - 70
- **Nuts**: A4

### Dimensions (mm) and Weight (kg)

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Gear design:
- Standard: Alu-Gear (aluminium-molded, chromed) Screws: A4-70;
- Wheel: EN 10025 (1.0038), powder coated

Dimensions (mm) and Weight (kg)

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*DN65 NPS21/2 on request*

These dimensions refer to standard pneumatic actuators with 4 bar pressure. Please be aware that these data can therefore only be used for general actuator sizing purposes within piping systems. Actuator sizing above DN 300 on request.
XLD valves offer economical solutions for the vast majority of chemical applications while maintaining the highest possible degree of performance in terms of in-line leakage and fugitive emissions.

**XLD valves are commonly used within the following industries:**

- Chlor-Alkali
- Industrial Inorganic Chemicals
- Metal and Mining
- Nitrogen and Phosphatic Fertilizers
- Petroleum Refining
- Pharmaceutical

**Within these industries, XLD valves have superior performance in the following applications:**

- Chlorine
- Benzene
- Bromine
- Sulfuric Acid
- Nitric Acid
- Hydrochloric Acid
- Phosphoric Acid
- Sea Water

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### CRANE ChemPharma & Energy, XOMOX® XLD Lined Butterfly Valve - Performance Chart

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>On / Off</th>
<th>Throttling</th>
<th>Diversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDIA TYPES</td>
<td>Clean Liquids &amp; Gases</td>
<td>Dirty Liquids &amp; Gases</td>
<td>Corrosive Liquids &amp; Gases</td>
</tr>
<tr>
<td></td>
<td>Visous Liquids</td>
<td>Scaling Liquids &amp; Slurries</td>
<td>Abrasive Slurries</td>
</tr>
<tr>
<td></td>
<td>Dry Materials</td>
<td>Vacuum Service</td>
<td>High Flow Capacity</td>
</tr>
<tr>
<td></td>
<td>Fugitive Emissions Control</td>
<td>Reduced Maintenance</td>
<td>Extended Service Life</td>
</tr>
<tr>
<td>APPLICATION REQUIREMENTS</td>
<td>Sizes 2”-24” DN50-DN600</td>
<td>Pressure Ratings Class 150 / PN 10 PN 20</td>
<td>High Temperature (ASME/EN) 200°C / 392°F</td>
</tr>
<tr>
<td></td>
<td>Low Temperature (ASME) -20°C / -4°F</td>
<td>Key Benefit Safety / Economy</td>
<td></td>
</tr>
</tbody>
</table>

Superior Performance

Limited Application

Not Applicable

Source: CRANE Engineering

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Visit our website, www.cranecpe.com, to view these and other lined products, applications, brochures, certification, documents and more.