Viking® LVP Series Stainless Steel Vane Pumps

Vane Pumps for Corrosive, Thin Liquids at Higher Pressures

- Higher pressures than other stainless positive displacement pumps
- Low-wear, long-life vanes
- Superior suction lift and self-priming ability
- Metric or U.S. design standards

Sizes in Series: 6
Capacity to 36 M³/Hr (160 GPM)
Pressure to 14 Bar (200 PSI)
Viscosity 0.1 to 500 cSt (28 to 2,300 SSU)
Temperature -51°C to +260°C (-60°F to +500°F)
Viking® Reliability in a Stainless Steel Vane Pump

Vane pumps are used for liquid transfer applications ranging from chemicals to liquefied gases. Vanes extend from slots in the rotor, sweeping liquid through a cam-shaped cavity. The vanes provide high volumetric efficiency for lower total cost of ownership.

The Viking Advantages

Advanced Durability

Viking’s LVP series vane pump (patent applied for) sets the benchmark for durability with its standard, stainless steel casing surface-hardened to 62 Rockwell C maximizing casing and vane life. Its hard chrome oxide coated shaft turns in a hard silicon carbide sleeve bearing, providing industry leading pressure capabilities to 14 bar (200 PSI).

Ease of Installation

Pump installation has never been easier. The LVP series’ DIN or ANSI standard porting simplifies connection to local-standard systems. Top-mounted, adjustable pressure relief valves are standard. For local or remote monitoring systems, Viking’s LVP series provides standard gauge ports. A rotatable casing with motor mount option, on the two smallest models, permits vertical or horizontal porting. With motor speed operation up to 23 M³/Hr @ 50Hz (80GPM @ 60 Hz), Viking has eliminated a speed reducer and one shaft alignment, coupling and guard, reducing system costs.

Application Flexibility

Viking’s LVP series delivers broad chemical compatibility with high pressure capabilities [14 Bar (200 PSI)] on even the thinnest liquids. Its self-priming, short-term dry-run capability and bi-directional pumping design is ideal for loading/unloading, or line stripping operations. The LVP series delivers non-pulsing, low-shear flow with superior suction lift capability and volumetric efficiency.

Lower Cost of Ownership

The LVP series’ easy-to-pipe, straight-through porting design with raised-face IEC or NEMA flanges, elastomeric O-ring seals on the head, relief valve, and seal gland provide superior sealing reliability. The LVP series is also built with fewer parts, minimizing maintenance. Commonality of this series’ parts reduces overall parts inventory. In 20 minutes, a vane replacement service can be completed without removing the pump from its system, reducing life-cycle costs. The LVP series has tailored sealing solutions available for virtually every liquid and application to minimize leaks, for a lower total cost of ownership.

PEEK® is a registered trademark of Victrex LLC.
Viking's LVP pumps are designed for use with thin liquids that are compatible with stainless steel, but not cast iron. Chemical manufacturers and users that run many different liquids through their pumps, want the maximum practical corrosion protection, standard on the LVP series.

**Typical Applications:**
- Acids and Alkalis
- Alcohols and Solvents
- Aqueous Solutions

### Corrosive, Thin Liquids

The heavy-duty, one-piece, hardened stainless steel casing of the LVP pump series satisfies both the corrosion and thermal shock protection requirements for flammable liquids and liquefied gases in refineries or chemical manufacturing plants.

**Typical Applications:**
- Monomers
- Hexane, Pentane
- Refined Fuels

### Flammable Liquids

The LVP series develops up to 14 Bar (200 PSI) on thin, corrosive liquids, where gear pumps and other manufacturer's vane pumps are limited to 8.5 Bar (125 PSI) or less. The reduced slip characteristics of Viking’s LVP pumps provide enhanced self-priming and suction lift capabilities.

**Typical Applications:**
- Reactor vessel ingredient metering
- Vacuum vessel service
- Suction lift applications
- Long suction or discharge line applications

### Higher Pressures

**Applications**

<table>
<thead>
<tr>
<th>Model Number Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>U</td>
</tr>
</tbody>
</table>

- **Shaft Sealing:**
  - 4 = Mechanical Seal
- **Mounting Arrangement:**
  - 0 = Motor Mount
  - (size 01 and 02 only)
  - 1 = Footed
- **Design Standard:**
  - M = Metric
  - U = Inch
- **Material of Construction:**
  - 7 = 316 Stainless Steel Casing, Head, Rotor, Shaft
- **Drive Configuration:**
  - M = Motor Mount
  - D = Direct Drive
  - R = Reducer Drive
  - P = Purchased Reducer
- **Pump Sizes and Nominal Capacities:**
  - 01 Displacement: 4 M³/Hr (20 GPM) @ 1750 RPM
  - 02 Displacement: 9 M³/Hr (40 GPM) @ 1750 RPM
  - 05 Displacement: 18 M³/Hr (80 GPM) @ 1150 RPM
  - 08 Displacement: 23 M³/Hr (100 GPM) @ 950 RPM
  - 19 Displacement: 29 M³/Hr (125 GPM) @ 520 RPM
  - 23 Displacement: 36 M³/Hr (160 GPM) @ 520 RPM
  - DIN 40 or 1.5” ANSI Flange
  - DIN 40 or 1.5” ANSI Flange
  - DIN 50 or 2.0” ANSI Flange
  - DIN 50 or 2.0” ANSI Flange
  - DIN 80 or 3.0” ANSI Flange
  - DIN 80 or 3.0” ANSI Flange
Viking® LVP Series Vane Pump Benefits

**Advanced Durability**

- **Hardened Casing**

- **Hard Sleeve Bearing**
  Hard silicon carbide sleeve bearing, standard. Extends pressure capability, minimizes wear, and lowers life-cycle costs.

- **Hard Shaft**
  Hard chrome oxide coated shaft. Contributes to industry leading pressure capabilities of 14 Bar (200 PSI), and extends pump life, lowering life-cycle costs.

- **Gauge Ports Standard**
  Gauge ports standard for easy application of gauges or transducers. Simplifies installation of local or remote monitoring systems.

- **Relief Valve, Standard**
  Top-mounted, adjustable pressure relief valve standard (optional cover plate shown). Eliminates cost of return-to-tank system. Protects pump from over-pressure from day one and beyond.

- **Rotatable Casing**
  Rotatable casing with motor mount option on two smallest models (to 9 M³/Hr (40 GPM)). Permits horizontal or vertical porting for easier installation.

- **Metric- or Inch-Standard Opposite Porting**
  DIN or ANSI standard, in-line porting, allows easy-to-pipe, simple connection to local-standard piping, eliminating adapter leak points. Reduces costs of installation and maintenance.

**Easy Installation**

- **All-PEEK® Non-Metallic Vanes and Push Rods**
  PEEK® plastic vanes and push rods. All non-metallic components minimize damage potential that is created by use of metal push rods and metal embedded plastic vanes. Extends pump life and lowers life-cycle cost.

- **Motor Speed Operation**
  Motor speed operation up to 23 M³/Hr @ 50Hz (80 GPM @ 60 Hz) eliminates speed reducer and one shaft alignment, coupling and guard. Reduces footprint, system cost, and allows quicker, easier installation.
■ Superior Suction Lift Capability and Volumetric Efficiency
Pump design provides superior suction lift capability and volumetric efficiency, using less energy. Provides application flexibility and reduces life-cycle costs.

■ Bi-directional Pump Design
Bi-directional pumping design eliminates cost of second pump, piping, and valving needed for loading/unloading or line stripping. Provides application flexibility and reduces system costs.

■ Broad Chemical Compatibility
Combination of Hardened 316 stainless steel casing, PEEK® vanes and push rods, and carbon construction provides broad chemical compatibility. Permits standardizing on single pump for multiple liquids and applications.

■ Short-term Dry-Run-Capable

■ Higher Pressure Capabilities
Pressure capabilities to 14 Bar (200 PSI), even on the thinnest liquids. Enhances application flexibility.

■ 20 Minute Maintenance
LVP series’ vane replacement is a 20 minute service item, and does not require rotor and shaft removal or detachment of pump from system. Reduces scheduled downtime, and lowers cost of ownership.

■ Parts Commonality
Better design with fewer parts reduces maintenance, and commonality of many parts between frame sizes reduces parts stocking needs. Provides better parts availability and lower cost of ownership.

■ Interchangeable Discs
Interchangeable discs may be reversed instead of replaced when worn. Doubles useful life of parts, for reduced life-cycle cost.

■ Tailored Sealing Solutions
Tailored sealing solutions are available for virtually every liquid and application, beyond the standard hard silicon carbide mechanical seal. Prevents leaks and minimizes seal maintenance for a better bottom line.

■ Superior Sealing Reliability
Raised-face flange ports, one-piece casing and bracket, and elastomeric O-ring seals on head, relief valve, and seal gland provides improved sealing reliability. Reduces downtime and cleanup, minimizes chemical exposure.
### Materials of Construction & Specifications

#### LVP Series Vane Pump Construction

<table>
<thead>
<tr>
<th>Construction</th>
<th>Casing</th>
<th>Head, Bracket, Relief Valve and Foot</th>
<th>Rotor, Shaft Assembly</th>
<th>Vanes</th>
<th>Pushrods</th>
<th>Discs</th>
<th>Bracket Bushing, Head Bushing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>62 Rockwell C Hardened 316 Stainless Steel (ASTMA 743, Grade CF8M)</td>
<td>316 Stainless Steel (ASTMA 743, Grade CF8M)</td>
<td>316 Stainless Steel (ASTMA 276)</td>
<td>Carbon-Reinforced PEEK®</td>
<td>PEEK®</td>
<td>Carbon Graphite</td>
<td>Silicon Carbide</td>
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<tr>
<td>Optional</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Carbon Graphite</td>
<td>Torlon®</td>
<td>High Temp Carbon Graphite</td>
<td>Carbon Graphite</td>
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#### LVP Series Vane Pump (cont'd.)

<table>
<thead>
<tr>
<th>Construction</th>
<th>Shaft Coating (Bushing Area)</th>
<th>Mechanical Seal</th>
<th>Seal Type - U (Inch-Standard) Models</th>
<th>Seal Type - M (Metric-Standard) Models</th>
<th>O-Rings</th>
<th>Motor Mount (Size 001 &amp; 002 only)</th>
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<tbody>
<tr>
<td>Standard</td>
<td>Chrome Oxide</td>
<td>Viton®, Carbon / SiC</td>
<td>Flowserv Component Type 52</td>
<td>Crane Component Type 2100</td>
<td>Viton®</td>
<td>&quot;M&quot; Models: Steel &quot;U&quot; Models: Cast Iron, ASTM A48, Class 35B</td>
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<tr>
<td>Optional</td>
<td>N/A</td>
<td>EPR, Kalrez®, PTFE</td>
<td>Crane Component Types 8-1 and 9, Flowserv Cartridge Types ISC1PX and ISC2PP, Garlock Triple Lip Type PS-II</td>
<td>Crane Component Types 58U and 59U, Crane Cartridge Types 5610 and 5620</td>
<td>EPR, PTFE, Kalrez®</td>
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#### LVP Series Vane Pump Specifications

<table>
<thead>
<tr>
<th>Pump Model</th>
<th>DIN Flange mm</th>
<th>ANSI Flange in.</th>
<th>① Port Size</th>
<th>22 cSt (100 SSU) Performance</th>
<th>② Maximum Differential Pressure</th>
<th>Maximum Hydrostatic Pressure</th>
<th>③ Maximum Recommended Temperature</th>
<th>Approximate Shipping Weight</th>
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<td>1.5</td>
<td>4</td>
<td>1450</td>
<td>20</td>
<td>1750</td>
<td>14</td>
<td>200</td>
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<tr>
<td>LVP40027/LVP41027</td>
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<td>1.5</td>
<td>9</td>
<td>1450</td>
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<td>1750</td>
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<td>2.0</td>
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<td>950</td>
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<td>1150</td>
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<td>200</td>
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<td>520</td>
<td>160</td>
<td>520</td>
<td>14</td>
<td>200</td>
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</table>

[Viscosity Range: 0.1 to 500 cSt (28 to 2,300 SSU)]

① See performance curves for maximum pressures at rated speeds.

② Carbon graphite bushings reduce pressure ratings to 8.5 Bar (125 PSI).

③ Opposite ports suitable for 150# ANSI steel or stainless steel companion flanges or flanged fittings standard, DIN-compatible flanges optional.

④ Temperatures to 500°F (260°C) can be handled with special construction. Consult factory.

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# Dimensions

## Dimensions For LVP Footed Pump Only - Sizes 01, 02

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
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<td>203</td>
<td>76</td>
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<td>1.00</td>
<td>.25 X .12</td>
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</table>

* T dimension when using a cartridge seal.

Ports for "M" model pumps are DIN 2501- compatible PN 16/25/40 raised face flanges.

Ports for "U" model pumps are ANSI B 16.5 compatible 150# class raised face flanges.

## Dimensions for LVP Pump Only - Sizes 05, 08, 19 and 23

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
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<th>S</th>
<th>T</th>
<th>U</th>
<th>V</th>
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<td>86</td>
<td>133</td>
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<td>81</td>
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<td>13</td>
<td>39</td>
<td>2</td>
<td>17</td>
<td>56</td>
<td>16</td>
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<td>91 / *52</td>
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<td>108</td>
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<td>77</td>
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<td>426</td>
<td>129</td>
<td>/90</td>
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<td>10.0 X 4.0</td>
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<td>/3.56</td>
<td>1.50</td>
<td>.38 X .19</td>
<td>9.28</td>
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</table>

* T dimension when using a cartridge seal

Ports for "M" model pumps are DIN 2501- compatible PN 16/25/40 raised face flanges.

Ports for "U" model pumps are ANSI B 16.5 compatible 150# class raised face flanges.
Innovation and Experience

Viking Pump has been a pump industry leader and innovator since its founding in 1911. We continue to build on our ever-growing experience delivering innovative new pumping solutions, including custom designs, to many thousands of customers who use millions of Viking® pumps in some of the world’s toughest applications.

Material Options Matched to Application

Viking’s dedicated iron and alloys foundries provide pump construction materials from cast iron to Alloy C. Application-specific materials of construction extend pump life significantly, while reducing maintenance and unplanned downtime, which enables increased production and a better bottom line.

Liquid Integrity Protection

Viking has developed multiple positive displacement pump principles to protect shear-sensitive liquids, and low-shear options to prevent damage to fibers, polymers, and solids. Full-jacketing options provide precise temperature control throughout the pump. The Viking Mag Drive® and other seal options prevent fluid contact with air, assuring liquid integrity.

Local Applications and Engineering Support

Over 245 Authorized Viking Pump Distributors in 68 countries provide local application support and service, backed by Viking Application Engineers and Viking Region Managers strategically located around the world.

Quality Manufacturing

Viking uses ISO9001-2000, Six-Sigma, and Lean/Kaizen in its worldwide manufacturing and assembly processes to remove waste, reduce development costs, and deliver superior products on schedule. Dedicated Viking foundries and manufacturing facilities utilize state-of-the-art CNC equipment to assure unmatched quality is built into every pump.

Custom Designed Solutions

Viking has provided custom designed pumps to end-users and OEMs since its first pump in 1911, when Viking invented the gear-within-a-gear pumping principle to remove water from a rock quarry. Today, enabled by Viking’s engineering staff, extensive applications experience, and in-house foundries, more than 20% of Viking’s sales are new Viking designs, or pumps designs derived from more than 1,000 Viking catalog pumps with more than 40,000 active configurations. So, whether you are an end-user or an OEM, Viking can provide custom designed pumping solutions to meet your specific needs.

Broad Performance Range

Capacity: 0.5 to 360 M³/Hr (0.1 to 1,600 GPM)
Pressure: 0 to 172 Bar (0 to 2,500 PSI)
Temperature: -40°C to 370°C (-40°F to 700°F)
Viscosity: 0.5 to 1,000,000 cSt (28 to 4,500,000 SSU)

Ultimate in Sealing Solutions

Viking’s offering of packing, component mechanical seals, cartridge seals, and sealless Mag Drive technology provides the best choices for sealing flexibility needed to provide your application a customized sealing solution every time - saving you money, time, and unplanned downtime.

For more information, contact your local authorized Viking Pump Distributor or contact Viking at:

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