VIKING®

LVP

Vane Pumps for Corrosive, Thin Liquids at Higher Pressures

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)

Metric and Inch Design Standards

- **DIN Flanges, IEC B14 Motor Mount, Millimeter-Dimension Seals**
- **ANSI Flanges, NEMA C Motor Mount, Inch-Dimension Seals**

IDEX CORPORATION

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 very low slip and 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 hardened chrome oxide coated shaft turns in a hardened silicon carbide sleeve bearing, providing industry leading pressure capabilities to 14 bar (200 PSI). The LVP pump's self-adjusting, solid-PEEK® plastic vanes and push rods provide superior vacuum capabilities.

Ease of Installation

Pump installation has never been easier. The LVP series' DIN or ANSI standard porting simplifies connection to local-standard systems, and eliminates adapter leak points. To protect the pump from over-pressure, a top-mounted, adjustable pressure relief valve is standard. For those applications utilizing local or remote monitoring systems, Viking's LVP series provides standard gauge ports. A rotatable casing with motor mount option, on two smallest models, permits vertical or horizontal porting. With motor speed operation up to 18 M^3/Hr @ 50Hz (80GPM @ 60 Hz), Viking has eliminated a speed reducer and one shaft alignment, a coupling, and guard to simplify installation, reducing system costs.

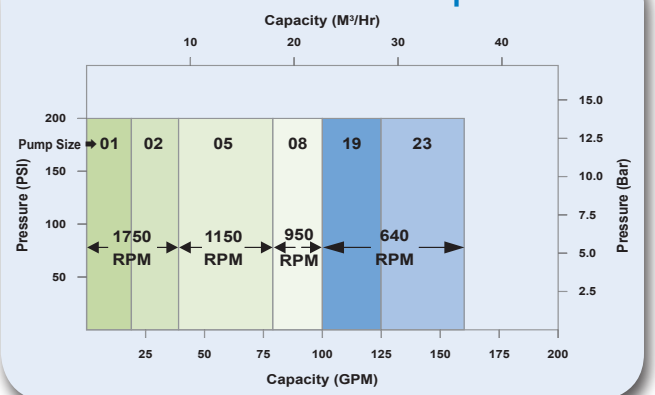
Application Flexibility

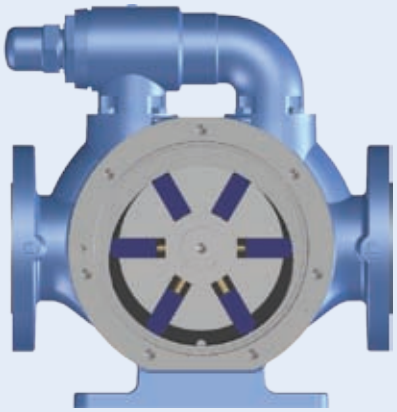
Viking's LVP series' delivers broad chemical compatibility with its advanced durability features and higher pressure capabilities [14 Bar (200 PSI)], on even the thinnest liquids, enables the pump to be an ideal fit for multiple liquids and applications. Its self-priming, short-term dry-run-capability 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 vacuum capability and volumetric efficiency to deliver the same capacity on thin liquids as a stainless steel gear or screw pump, using less energy.

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. For example, the interchangeable discs on the front and back side of the rotor can be switched and reversed for twice the life. In 20 minutes, a vane replacement service can be completed without removing the pump from its system, reducing maintenance time and life-cycle costs. Designed for use with more than 200 thin liquids, the LVP series has tailored sealing solutions available for virtually every liquid and application to minimize leaks, for a lower total cost of ownership.

Performance Envelope





LVP Series' Benefits Compared to Centrifugal Pumps:

- Higher efficiency at all points on the curve for low life-cycle cost
- Higher pressure: 14 Bar (200 PSI)
- Smoother, non-pulsating, low-shear flow
- Short-term dry-run-capability
- Better suction lift capability
- Capacity proportional to speed
- Reversible direction of flow
- Easier-to-pipe, straight-through porting

LVP Series' Benefits Compared to Other Vane Pumps:

- Higher pressure: 14 Bar (200 PSI)
- Harder casing: Hardened to 62 Rockwell C to extend pump life
- Harder bushings: Silicon Carbide sleeve bearings, standard
- Harder shaft: Chrome oxide shaft coatings, standard
- PEEK® vanes and push rods: Provides lower dynamic coefficient of friction
- Metric design standard: DIN raised-face flanges, IEC motor mount, millimeter-dimension seals
- Inch design standard: ANSI raised-face flanges, NEMA C motor mount, inch-dimension seals

PEEK® is a registered trademark of Victrex LLC.

Applications

Corrosive, Thin Liquids

Viking's LVP pumps are designed for use with more than 200 thin liquids that are compatible with stainless steel, but cause unacceptable corrosion on 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 Alkalies**
- **Alcohols and Solvents**
- **Aqueous Solutions**

Flammable 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**

Higher Pressures

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 also contribute to superior vacuum power for 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**

Serial Number Key

L V P 4 1 2 3 7 U R

Series

Shaft Sealing:
4 = Mechanical Seal

Mounting Arrangement:
0 = Motor Mount
(size 01 and 02 only)
1 = Footed

Material of Construction:
7 = 316 Stainless Steel Casing, Head, Rotor, Shaft

Design Standard:
M = Metric
U = Inch

Drive Configuration:
M = Motor Mount
D = Direct Drive
R = Reducer Drive
P = Purchased Reducer

Pump Sizes (US gallons/100 revolutions) and Nominal Capacities:

01	Displacement:	4 M³/Hr (20 GPM) @ 1750 RPM	DIN 40 or 1.5" ANSI Flange
02	Displacement:	9 M³/Hr (40 GPM) @ 1750 RPM	DIN 40 or 1.5" ANSI Flange
05	Displacement:	18 M³/Hr (80 GPM) @ 1150 RPM	DIN 50 or 2.0" ANSI Flange
08	Displacement:	23 M³/Hr (100 GPM) @ 950 RPM	DIN 50 or 2.0" ANSI Flange
19	Displacement:	29 M³/Hr (125 GPM) @ 520 RPM	DIN 80 or 3.0" ANSI Flange
23	Displacement:	36 M³/Hr (160 GPM) @ 520 RPM	DIN 80 or 3.0" ANSI Flange

Viking® LVP Series Vane Pump Benefits

ADVANCED DURABILITY

EASY INSTALLATION

■ Hardened Casing

62 Rockwell C surfaced-hardened stainless steel casing. **Extends casing and vane life, lowering life-cycle costs.**

■ Hardened Sleeve Bearing

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

■ Hardened Shaft

Hardened 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

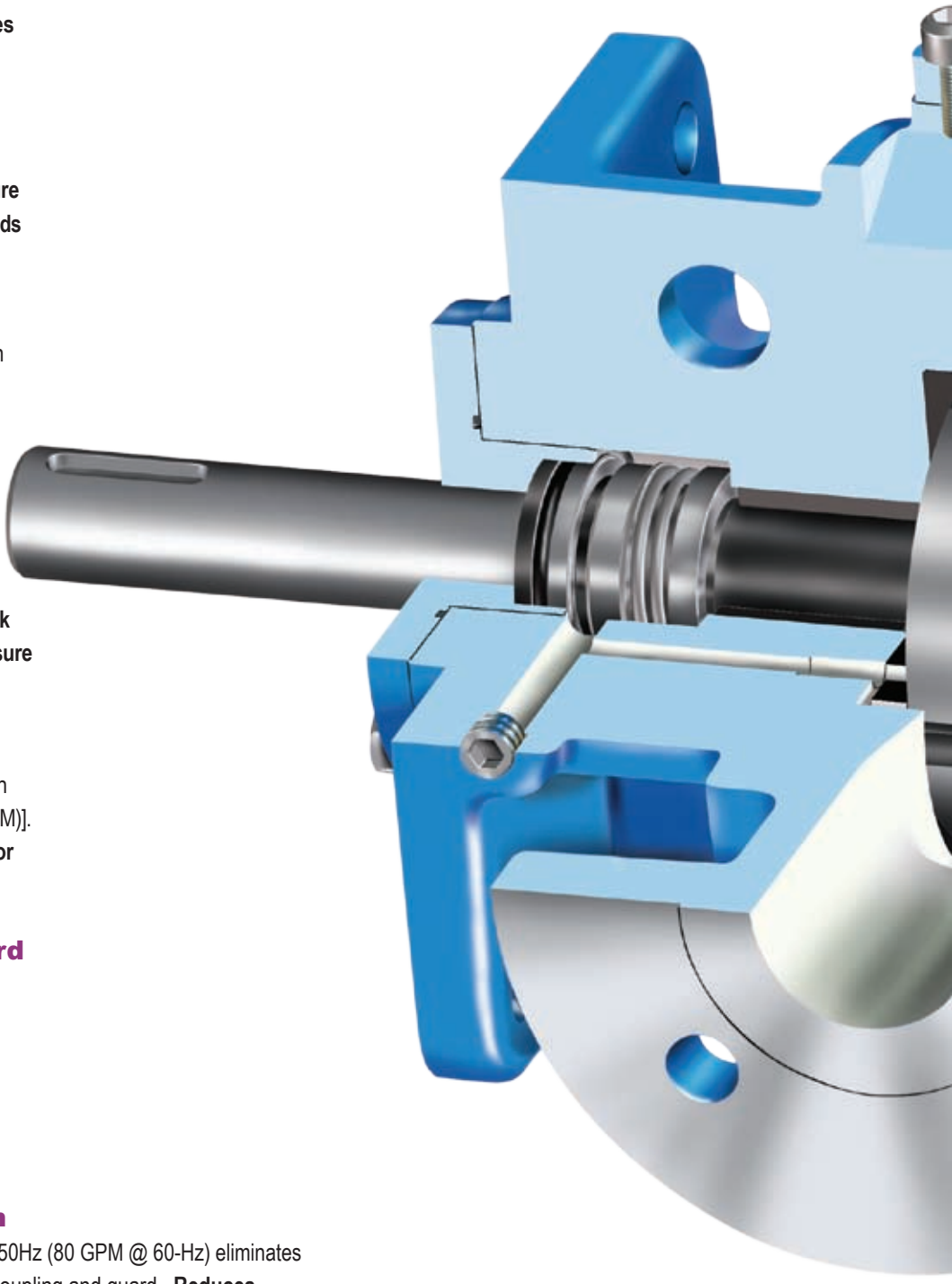
DIN or ANSI standard, opposite porting, allows easy-to-pipe, simple connection to local-standard piping, eliminating adapter leak points. **Reduces costs of installation and maintenance.**

■ Motor Speed Operation

Motor speed operation up to 18 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.**

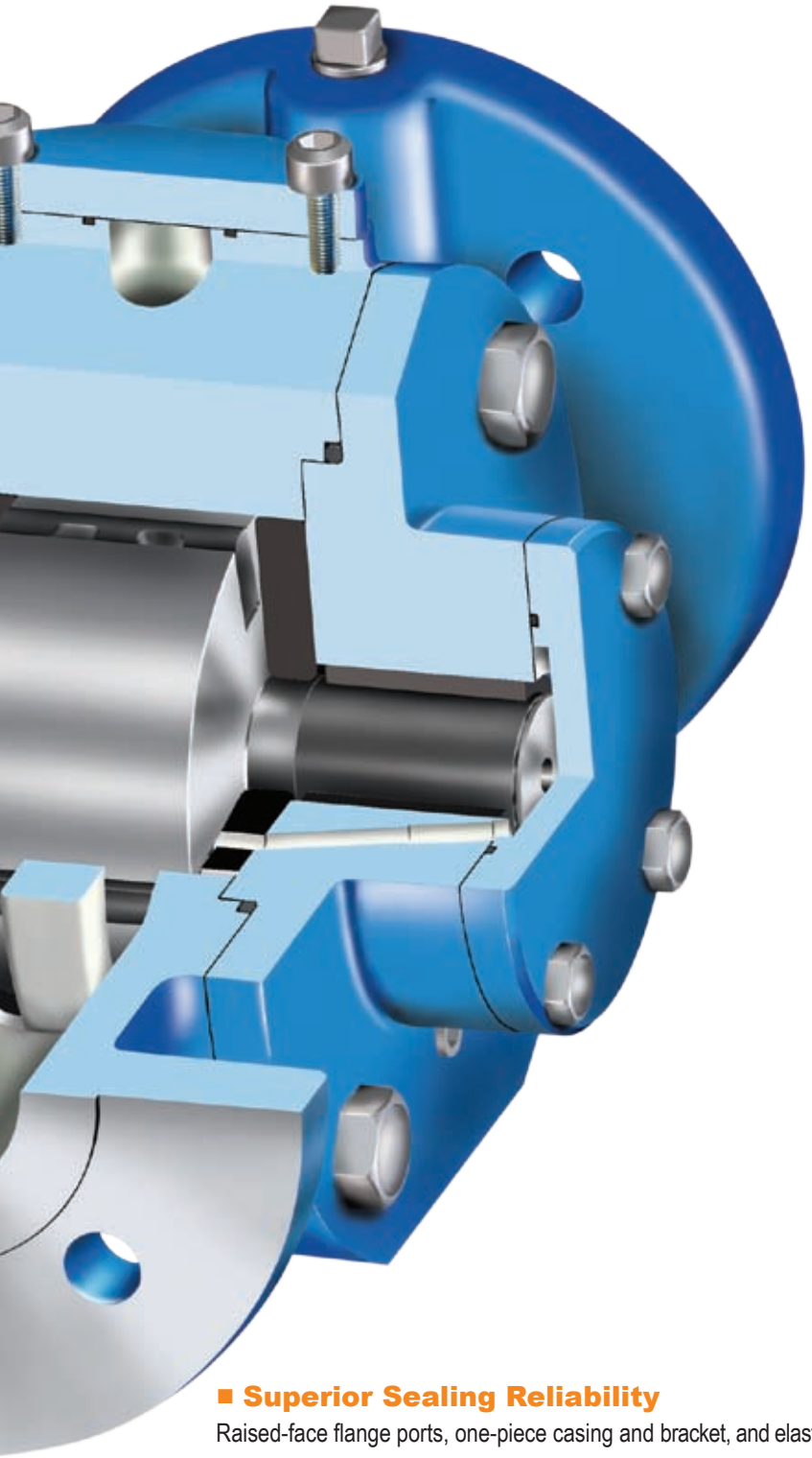
■ All-PEEK® Non-Metallic Vanes and Push Rods

Solid-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.**



■ Superior Vacuum Capability and Volumetric Efficiency

Pump design provides superior vacuum capability and volumetric efficiency to deliver the same capacity on thin liquids as a stainless steel gear or screw pump, using less energy. **Provides application flexibility and reduces life-cycle costs.**



■ 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.**

■ 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. **Enhances application flexibility.**

■ Short-term Dry-Run-Capable

High efficiency pump with self-priming, short-term dry-run-capabilities that handles entrained gases. **Provides non-pulsing, low-shear flow.**

■ Higher Pressure Capabilities

Pressure capabilities to 14 Bar (200 PSI), even on the thinnest liquids. **Permits standardizing on single pump for multiple liquids and applications.**

■ 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 switched and 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.**

APPLICATION FLEXIBILITY

LOWER COST OF OWNERSHIP

Materials of Construction & Specifications

LVP Series Vane Pump Construction

Construction	Casing	Head, Bracket, Relief Valve and Foot	Rotor, Shaft Assembly	Vanes	Pushrods	Discs	Bracket Bushing, Head Bushing
Standard	62 Rockwell C Hardened 316 Stainless Steel (ASTM A 743, Grade CF8M)	316 Stainless Steel (ASTM A 743, Grade CF8M)	316 Stainless Steel (ASTM A 276)	Carbon-Reinforced PEEK®	PEEK®	Carbon Graphite	Silicon Carbide
Optional	N/A	N/A	N/A	Carbon Graphite	N/A	N/A	Carbon Graphite

Construction (cont'd.)	Shaft Coating (Bushing Area)	Mechanical Seal	Seal Type - U (Inch-Standard) Models	Seal Type - M (Metric-Standard) Models	O-Rings	Motor Mount (Size 001 & 002 only)
Standard	Chrome Oxide	Viton®, Carbon / SiC	Flowserve Component Type 52	Crane Component Type 2100	Viton®	**"M" Models:** Steel **"U" Models:** Cast Iron, ASTM A48, Class 35B
Optional	N/A	EPR, Kalrez®, PTFE	Crane Component Types 8-1 and 9, Flowserve Cartridge Types ISC1PX and ISC2PP, Garlock Triple Lip Type PS-II	Crane Component Types 58U and 59U, Crane Cartridge Types 5610 and 5620	EPR, PTFE, Kalrez®	N/A

LVP Series Vane Pump Specifications

Pump Model	② Port Size		22 cSt (100 SSU) Performance				① Maximum Differential Pressure		Maximum Hydrostatic Pressure		③ Maximum Recommended Temperature		Approximate Shipping Weight	
	DIN Flange mm	ANSI Flange in.	Nominal Capacity at 50 Hz Motor Speed		Nominal Capacity at Max. Rated Speed									
			M^3/Hr.	RPM	GPM	RPM	BAR	PSI	BAR	PSI	Deg. C	Deg. F	kg.	lb.
LVP40017 LVP41017	40	1.5	4	1450	20	1750	14	200	21	300	135	275	36	80
LVP40027 LVP41027	40	1.5	9	1450	40	1750	14	200	21	300	135	275	36	80
LVP41057	50	2.0	18	950	80	1150	14	200	21	300	135	275	64	140
LVP41087	50	2.0	23	950	100	950	14	200	21	300	135	275	68	150
LVP41197	80	3.0	29	520	125	640	14	200	21	300	135	275	98	215
LVP41237	80	3.0	36	520	160	640	14	200	21	300	135	275	98	215

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

① See performance curves for maximum pressures at rated speeds. Carbon graphite bushings reduce pressure ratings to 8.5 Bar (125 PSI).

② Opposite ports suitable for 150# ANSI steel or stainless steel companion flanges or flanged fittings standard, DIN-compatible flanges optional.

③ Higher temperatures can be handled with special construction. Consult factory.

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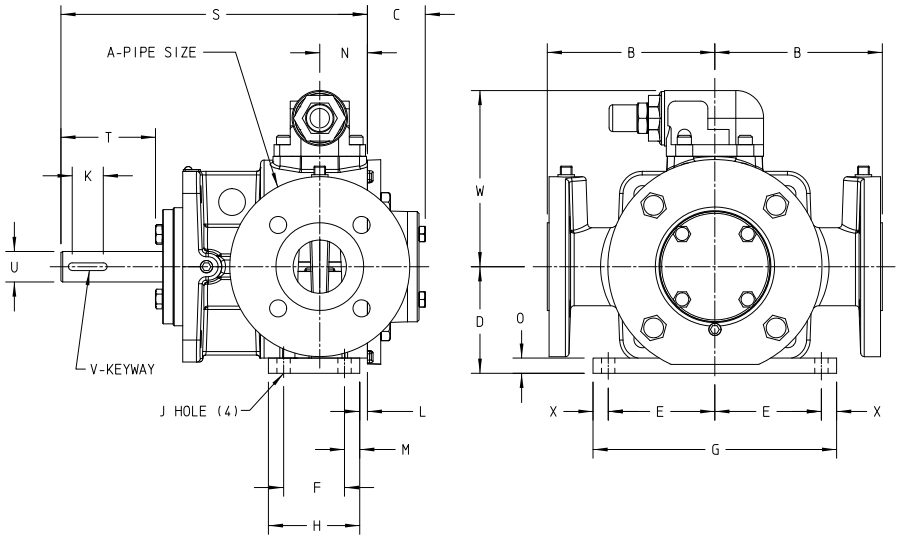
Teflon® is a registered trademark of the DuPont Company.
Viton® is a registered trademark of DuPont Performance Elastomers.
Viking® is a registered trademark of IDEX Corporation.

Dimensions

Dimensions For LVP Footed Pump Only - Sizes 01, 02

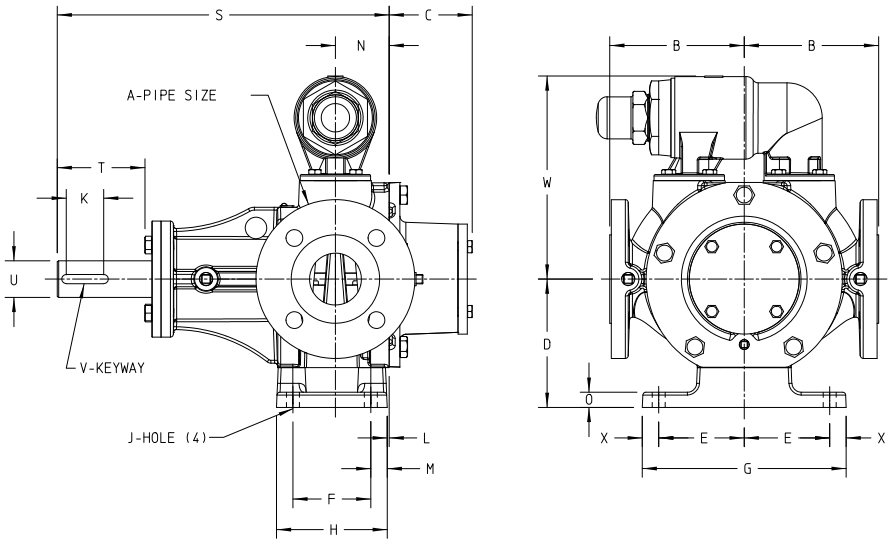


For motor mount dimensions, contact factory. Available motor mount brackets include:
IEC - B14, 90, 100, 112, 132
NEMA - 56C, 143/145TC, 182/184TC

Model		A	B	C	D	E	F	G	H	J	K	L	M	N	O	S	T	U	V	W	X
LVP41017	"M" mm	40	140	48	89	89	51	203	76	11	26	6	13	40	13	256	79 / *41	25.00	8.0 X 3.5	147	13
LVP41027	"U" in.	1.50	5.50	1.90	3.50	3.50	2.00	8.00	3.00	0.44	1.02	0.25	0.50	1.56	0.50	10.06	3.11 / *1.63	1.00	.25 X .12	5.79	0.50

* 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



Model		A	B	C	D	E	F	G	H	J	K	L	M	N	O	S	T	U	V	W	X
LVP41057	"M" mm	50	140	86	133	89	81	212	115	13	39	2	17	56	16	345	91 / *52	38	10.0 X 4.0	211	17
LVP41087	"U" in.	2.0	5.50	3.4	5.25	3.50	3.19	8.34	4.53	0.53	1.53	0.08	0.67	2.20	0.62	13.58	3.59 / *2.06	1.5	.38 X .19	8.31	0.67
LVP41197	"M" mm	80	184	86	155	108	108	247	139	13	77	12	15	77	16	426	129 / *90	38	10.0 X 4.0	236	15
LVP41237	"U" in.	3.0	7.25	3.4	6.10	4.25	4.24	9.72	5.46	0.53	3.03	0.46	0.61	3.04	0.62	16.76	5.09 / *3.56	1.5	.38 X .19	9.28	0.61

* 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.

VIKING PUMP
A Unit of IDEX Corporation

Worldwide Leader Since 1911 for Positive Displacement Pumping Solutions for Industrial, OEM, and Sanitary Applications.

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.

Broad Performance Range

Capacity:
0.5 to 345 M³/Hr (0.1 to 1500 GPM)
Pressure:
0 to 172 Bar (0 to 2500 PSI)
Temperature:
-40°C to 370°C (-40°F to 700°F)
Viscosity:
0.5 to 440,000 cSt (28 to 2,000,000 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.

Material Options Matched to Application

Viking's dedicated iron and alloys foundries provide pump construction materials from cast iron to Hastelloy®. 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, ISO14001, 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. Viking products also meet the applicable standards or certification requirements for ATEX, CE, DIN, EHEDG, BSP, JIS, ANSI, UL, 3-A and others.

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 1000 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.

IDEX CORPORATION

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

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