



## PUMPING ASPHALT

- Pumps designed specifically for asphalt applications
- Variety of problem-solving sealing options
- Quick time to temperature
- Variety of jacketing or electric heat options

Experience Shows • Innovation Flows

**VIKING PUMP**

A UNIT OF IDEX CORPORATION



## OUR EXPERIENCE SHOWS IN...

### Service to the Asphalt Industry

Viking Pump has supplied pumps to handle asphalt since 1915. As the industry has evolved, so have our products.

Working with asphalt professionals worldwide, Viking Pump has handled straight-runs, cutbacks, emulsions, blown, filled, and polymer-modified, as well as related products like pitch, tar, and heavy oils. By responding with new designs, sizes, materials, and options, we've worked to satisfy each unique application.

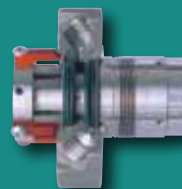
Viking's commitment to customer needs is reflected in our international network of knowledgeable stocking distributors. They provide expertise in selection, installation, start up, operation and service. And they're backed by the extensive technical expertise of Viking's field sales team and Customer Support Centers.

The traditional braided packing seal used in most asphalt pumps allows leaks to keep moving parts lubricated. Customers interested in reducing the costs of lost product, downtime and disposal, as well as fugitive emissions, helped Viking develop retrofittable, cartridge-style lip and mechanical seals.



**Lip Seal**

*Low cost seal for all clean asphalts, requires steam or hot oil quench.*



**Single Mechanical Seal**

*With hard faces for clean and filled asphalts, requires steam quench.*



**Double Mechanical Seal**

*With hard faces for clean and filled asphalts, requires pressurized barrier fluid.*



## Problem-Solving Innovation

Electrically heated pumps can be used as an alternative to jacketed pumps that require liquid or steam for heating. Electric heat cartridges on the bracket and head ensure the asphalt is in a liquid state prior to startup.

Electric heating can be a cost effective solution when a steam or heat transfer liquid source is not available, or if the pump is in a remote location which makes long heat pipe runs impractical. It can also help reduce environmental costs associated with the clean-up of hot oil leaks.



Viking's temperature control system uses a thermocouple to monitor the pump temperature and send a signal back to a controller with adjustable set

point. When the pump reaches temperature, the asphalt is liquid and the controller stops heating. Relays can be used to alert the operator or allow the motor to safely begin operation.



## Mechanical Seals Pay Off in New Mexico

Mechanical seals have performed well for over a decade at a New Mexico bulk asphalt storage facility. They have paid for themselves over and over, according to Mitch Taylor of T.P. Pump, the Viking distributor who installed the heavy-duty pumps at the plant.

"This customer was concerned about cleanliness and waste. They did not want any material loss," he explained.

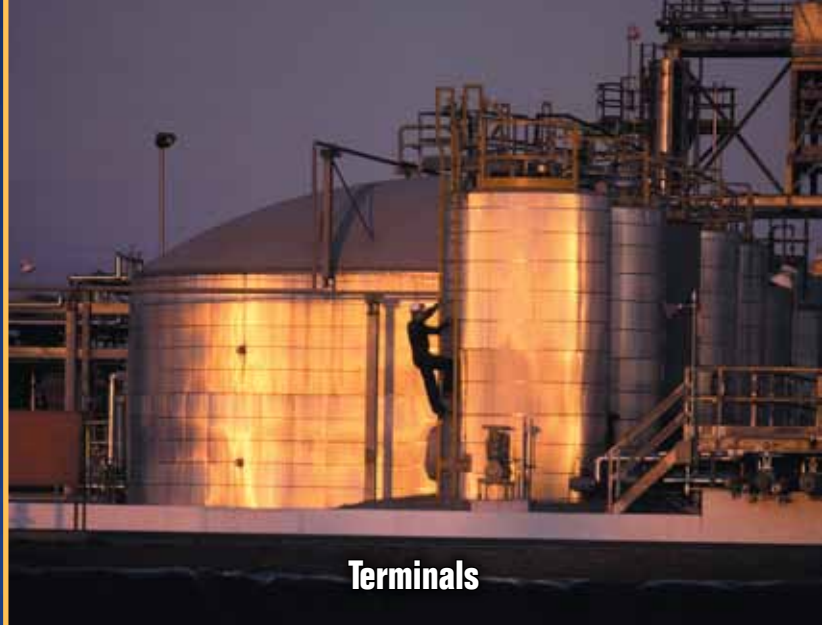
To meet the challenge, Viking developed a system for directing low pressure steam to the seals. By flushing out residue asphalt there, the mechanical seals don't crack or break.

"After more than a decade, we've had to replace just two of the ten mechanical seals originally installed," said Taylor.





**Refineries**



**Terminals**

## OUR EXPERIENCE SHOWS IN...

### Refineries

Viking Pump delivers on the challenges facing today's refiners.

Our cast steel API asphalt pumps withstand extreme temperature changes without damage. Able to manage viscosities from 28 to 2,000,000 SSU, a heavy-duty Viking® pump can handle asphalt or any other hydrocarbon, providing year-round versatility for seasonal asphalt producers.

With flow capabilities up to 365 M<sup>3</sup>/Hr (1,600 GPM), Viking pumps swiftly move asphalt through processing operations to storage to transport. Along the way, our pumps handle long pipeline head losses, thanks to discharge head capabilities up to 14 BAR (200 PSI) for gear pumps or 28 BAR (400 PSI) for lobe pumps.

### Terminals

Speed is critical in terminal operations. Therefore, loading, unloading, and blending equipment all need to function quickly and reliably.

Bi-directional pumps are one way Viking has helped streamline terminal flows. Instead of requiring two sets of pumps, drives and piping, a single pump can change direction to load or unload with equal efficiency. We also speed up asphalt transfer with a powerful suction lift that allows pumps to draw down rapidly from the top ports of barges, railcars or tankers during unloading, cutting investment expense and energy use.

For blending, multiple components can be easily metered into a custom spec mix of any size, eliminating batch storage.

### Viking: The Pump of Choice

*Viking's are the preferred pumps in other asphalt applications as well, including:*

- **Distributor trucks** for spray injection to fill and coat roadbed aggregate.
- **Pipe lining** where liquid asphalt is used to line sewer pipe in-plant and in-place.
- **Tar kettles** or portable heat-and-spray units, for on-site roofing build-up, foundation-sealing and crack-filling.
- **Asphaltic insulation** in automotive and appliance manufacturing lines for sound deadening.
- **Aluminum refining** for pumping pitch used in anode-production.





**Hot Mix Plants**



**Roofing**

Photo courtesy of Reichel & Drews Inc.

## Hot Mix Plants

For many hot mix manufacturers, the paving season is short. When demand is high, they need to operate 24/7. Downtime must be kept to a minimum.

What hot mixers need is simple, dependable pump operation, even after sitting dormant all winter. Our internal gear design uses just two moving parts for reliable operation and easy maintenance.

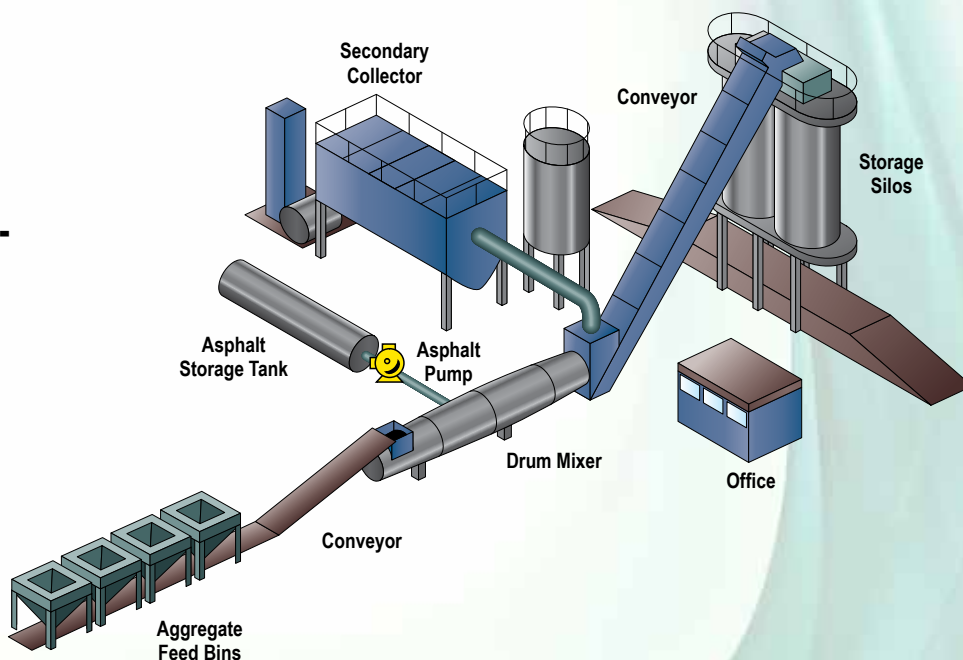
And when the paving season is on, hot mixers can rely upon Viking's vast stocking distributor network to provide fast and knowledgeable service — whether it's repairs, replacement parts or complete pumps.

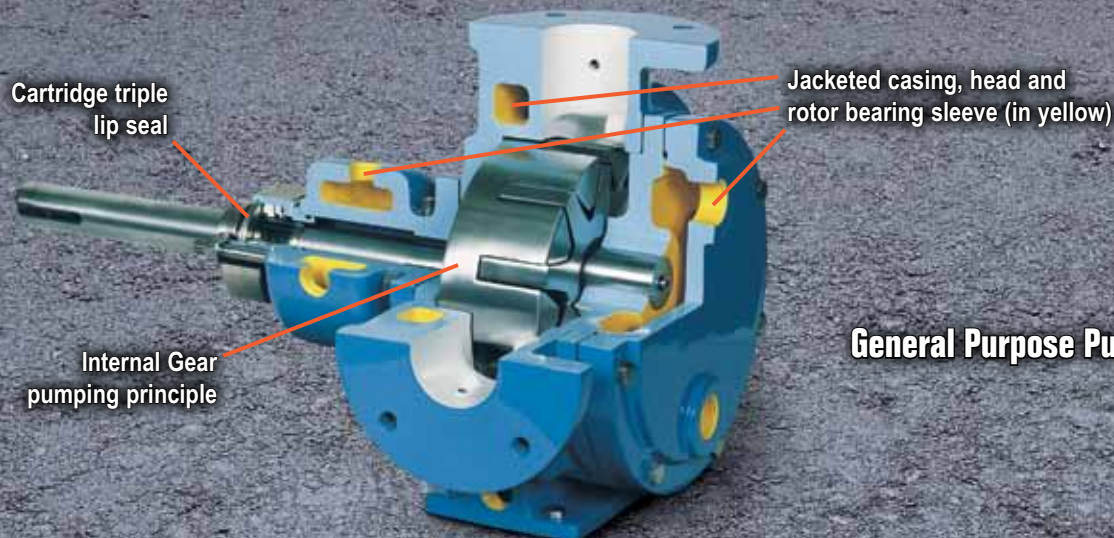
## Roofing Plants

Asphalt used for roofing products is another breed. With crushed limestone and other abrasive agents, filled asphalt takes on the texture of liquid sandpaper. That's why hardened, heavy-duty Viking pumps are such a sound investment. Specially designed for roofing applications, they feature tungsten carbide parts in key areas and a variety of sealing options. With pumps designed to last, Viking can help cut life-cycle costs dramatically.

Asphalt fumes can be unpleasant for indoor plant workers as well. With the option of single or double mechanical seals, Viking can virtually eliminate fugitive emissions from asphalt pumps.

### Hot Mix Asphalt - Typical Layout Process Map





**General Purpose Pump**

## OUR EXPERIENCE SHOWS IN...

### Pump Engineering

As a leading manufacturer of internal gear, external gear and rotary lobe pumps, Viking® knows positive displacement pumps. And we know asphalt.

That adds up to engineered solutions that make sense in the field.

The internal gear pumping principle that Viking developed nearly a century ago is still the preferred technology for asphalt today. A simple, two-moving-part design ensures reliable operation. Features and benefits include:

- Bi-directional flow allows a single pump to load and unload.
- A single stuffing box and shaft seal to hold down maintenance costs.
- Excellent suction lift for top-of-tank and barge unloading.
- Minimal shearing on shear-sensitive emulsions and rubberized asphalts.

### Solutions Tailored To Your Needs

For each unique type of asphalt, Viking has a unique pumping solution. Viking's knowledge base provides field-tested operating speeds, clearances, materials and options that ensure your success.

### General Purpose Asphalt Pumps



For low pressure transfer of clean blended or cutback asphalts, Viking offers jacketed General Purpose asphalt pumps. The "floating" rotor on these pumps is a simple, economical design.

Options include:

- Packed, lip seal or mechanical seals.
- Cast iron construction.
- Steel fitted for high viscosities.

Model No. (Cast Iron)		Specifications				
Packed	Mech. Seal	Capacity		Pressure		Ports
		GPM	M <sup>3</sup> /Hr	PSI	BAR	In.
HL34	HL434	20	4.5	100	7	1.5
KK34	KK434	50	10	100	7	2
LQ34	LQ434	90	20	100	7	2.5
Q34	Q434	200	45	75	5	3
M34	M434	280	64	75	5	4
N34	N434	450	102	75	5	5

Threaded thrust bearing housing fixes rotor clearance, allows adjustment

Back pull-out seal design

Jacketed head and bracket (in yellow)

## Heavy Duty Pump

Cartridge single mechanical seal

Universal Seal design permits switching from packing to component seals or cartridge seals in field

## Heavy Duty Asphalt Pumps



For emulsions, filled asphalts, high pressure and refinery applications, the cast iron Universal Seal pump is commonly used for asphalt applications. It can be heated by utilizing jacketing for steam/hot oil or built-in electric heat cartridges. It also features a thrust bearing that fixes the rotor position in the casing, so users can set precise clearances and compensate for wear over time. These durable pumps also include:

- Universal Seal pumps with three year warranty
- Offers the ability to change from packing to cartridge seals in the field
- Hardened parts options available to extend pump life

Model No. (Cast Iron)			Specifications					
Packed, Jacketed	Packed, Electric Heat	Mech. Seal, Jacketed	Capacity		Pressure		Ports	
			GPM	M <sup>3</sup> /Hr	PSI	BAR	In.	
H224A	H124E	H4224A	15	3.4	200	14	1.5	
HL224A	HL124E	HL4224A	30	6.8	200	14	1.5	
HL224AH*	HL124EH*	HL4224AH*	50	11	125	9	1.5	
K224A	K124E	K4224A	75	17	200	14	2	
K224AH*	K124EH*	K4224AH*	90	20	125	9	2	
KK224A	KK124E	KK4224A	100	23	200	14	2	
KK224AH*	KK124EH*	KK4224AH*	120	27	125	9	2	
L224A	L124E	L4224A	135	30	200	14	2	
L224AH*	L124EH*	L4224AH*	210	48	125	9	2	
LQ224A	LQ124E	LQ4224A	135	30	200	14	2.5	
LQ224AH*	LQ124EH*	LQ4224AH*	210	48	125	9	2.5	
LL224A	LL124E	LL4224A	140	32	200	14	3	
LS224A	LS124E	LS4224A	200	45	200	14	3	
LS224AH*	LS124EH*	LS4224AH*	230	52	125	9	3	
Q224A	Q124E	Q4224A	300	68	200	14	4	
QS224A	QS124E	QS4224A	500	114	200	14	6	
M225	N/A	M4225	420	95	200	14	4	
N324A	N124E	N4324A	600	136	200	14	6	
N324AH*	N124EH*	N4324AH*	685	155	125	9	6	
R324A	R124E	R4324A	1100	250	200	14	8	
RS324A	RS124E	RS4124A	1600	364	125	9	10	

\* AH / EH designation is for high flow pump.

## Service and Retrofits

Want to upgrade your existing pumps?  
Consider:

- Hardened parts (bushings, pins) to eliminate excessive wear.
- Temperature monitoring using thermowell on bracket.
- Mechanical seals to replace packing.

For information, contact your local authorized Viking Pump Distributor.

## 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 thousands of customers who use Viking® pumps in some of the world's toughest applications.

## Broad Performance Range

### Capacity:

0.5 to 360 M<sup>3</sup>/Hr (0.1 to 1,600 GPM)

### Pressure:

0 to 172 Bar (0 to 2,500 PSI)

### Temperature:

-84°C to 370°C (-120°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.

## 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 a pump's life significantly, while reducing maintenance and unplanned downtime, enabling 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. They are backed by Viking Application Engineers and Viking Region Managers strategically located around the world.

## Quality Manufacturing

Viking uses ISO9001-2008, Six-Sigma, and Lean/Kaizen in its worldwide manufacturing and assembly processes to remove waste, reduce development costs, and deliver superior products. 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 designs or pump designs derived from one of our 40,000 active configurations. Whether you are an end-user or an OEM, Viking can provide custom designed pumping solutions to meet your specific needs.



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

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