

VIKING PUMP

A Unit of IDEX Corporation

NEW Viking® Electrically Heated Pumps

Electric heat, now available on Viking Universal Seal series cast iron pumps, can be used as an alternative to heating with hot oil or steam.

- **Lower installation costs**
in remote locations when steam or hot oil is not available or requires long piping runs.
- **Reduced environmental costs**
by eliminating hot oil leaks.
- **Reduced energy costs**
with heat source in pump vs. external heat tracing.
- **Simplified service**
by eliminating hot oil or steam pipe connections.
- **Improve safety**
by eliminating hot oil or steam leaks.



Capacity to 155 M³/Hr (685 GPM)

Pressure to 14 Bar (200 PSI)

Viscosity 0.1 to 440,000 cSt (28 to 2,000,000 SSU)

Temperature to +232°C (+450°F)

IDEX
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Viking® Advantages

Why Electric Heat?

To melt solid material in the pump prior to startup, Viking pumps are available with traditional jacketing to circulate steam or hot oil, or with built-in electric heat cartridges. Electric heat cartridges offer a number of advantages over steam, heat transfer oils or electric heat tracing, including:

- Precise temperature control to just above melting point, compared to steam or hot oil which use higher temperatures to compensate for heat loss through long piping runs.
- Allows specific temperatures for specific products – no need for separate heating systems.
- Minimizes energy use – heaters shut off when setpoint is reached, compared with steam or hot oil in constant circulation.
- Eliminates heat loss on long steam or hot oil piping runs to remote pumps.
- Eliminates possibility of heat transfer oil leakage.
- Eliminates possibility of cracked jackets due to steam condensate freezing.

Viking Temperature Control System

Viking's electrically heated pumps include the heat cartridges and a ½" NPT port for a temperature sensor. Temperature control can be accomplished using your plant-standard controllers, or using Viking's temperature control system. The Viking system includes a thermocouple and thermowell adapter, and a controller which powers all heat cartridges on one pump. Features include:

- Closed loop PID control to provide fast yet effective time to temperature with minimal overshoot.
- User-adjustable temperature setpoint, up to a preset maximum. The controller is ordered with preset maximum temperature of either 150°F, 250°F, 350°F or 450°F; or 65°C, 120°C, 175°C or 230°C, corresponding to the temperature-based rotor clearances on the pump.
- A relay output changes state when the setpoint is reached, to alert the operator, or to prevent a pump from being started until the asphalt is melted.

Note: The Viking temperature control system is designed only for asphaltic materials. For other materials, multiple controllers and thermocouples may be required for zone control within the pump. Consult factory.

Product features and examples of customer benefits:

By installing Viking's new electrically heated pump, you could lower your total cost of ownership by up to \$36,000*. If you are interested in learning more about how to achieve

this type of savings, we encourage you to find out more about how Viking's Electrically Heated pump could be applied in your facility.

	Value of Benefits	Customized Savings	Comments:
Reduce installation & maintenance expense			
Lower installation costs in remote locations when steam or hot oil is not available or requires long piping runs	\$26,000		One time savings - Cost of material and installation of insulated pipe/hangers. (\$110/ft for 1" insulated pipe and hangers * 200 feet) + (40 hours or one 8-hour week to install 200 feet of pipe * labor rate of \$100/hour) + cost of new hot oil system (if applicable)
Provides expansion flexibility	\$5,000		One time savings - Cost of new hot oil system or steam boiler
Eliminates the hot oil system or steam for this application	\$2,750		Yearly savings - Cost of new oil, dispose of used oil, time to change oil. (\$55/gallon for new heat transfer fluid x 50 gallons)
Simplified service due to the lack of hot oil or steam connections	\$200		Cost & time associated with isolating pump & disconnect steam/hot oil piping. (2 hours to isolate & disconnect piping (steam) * labor rate of \$100/hour)
Reduce energy costs			
Eliminate heat loss through piping	\$570		Yearly savings - Annual heat loss cost per foot of steam or hot oil pipe with 90% efficient insulation = \$2.85 per foot * 200 feet pipe
Reduces environmental costs by eliminating hot oil or steam piping	\$1,600		Savings per occurrence - (16 hours or two 8-hour days labor to clean up spill * labor rate of \$100/hr) + \$ fine amount due to oil spill (if applicable)

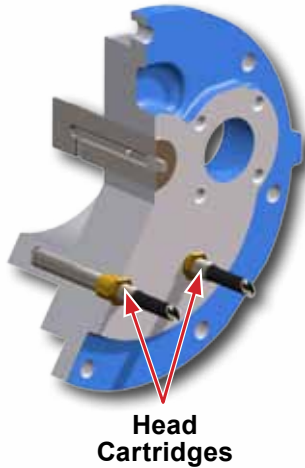
* DISCLAIMER:

The intent of this document is to compare the value of the product or service alternatives based on customer inputs such as the customer's prioritized needs, product or service conditions, and other factors. The analysis uses various assumptions and estimates, some of which may be subjective or inaccurate,

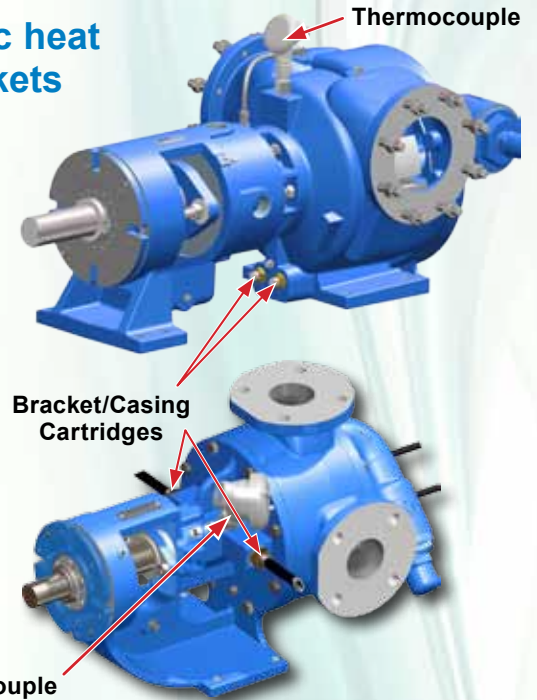
and may not take into account all relevant factors. Accordingly, there are no warranties, guarantees or assurances that the results shown can or will be achieved, and actual results may be significantly different from the results shown.

How Does it Work?

Pump is heated by electric heat cartridges vs. heating jackets



- Patented design uses heat cartridges installed in the head to quickly melt asphalt throughout the casing.
- Heat cartridges located on bracket or casing heat area behind the rotor, to ensure sufficient heating in the shaft bushing and stuffing box.



Performance

Pump Size	Port Size ①	Port Size ①		Nominal Rating		Head Cartridges	Watts / Cartridge (Head)	Bracket / Casing Cartridges ④	Watts / Cartridge (Bracket or Casing) ④	Total Watts
		In.	mm	GPM	M ³ /Hr					
H124E	---	1.5 ②	38	15	3.4	1	75	2	100	275
HL124E	HL124EH	1.5 ②	38	50	11	1	75	2	100	275
K124E	K124EH	2 ②	50	90	20	3	130	2	150	690
KK124E	KK124EH	2 ②	50	120	27	3	130	2	150	690
L124E	L124EH	2 ②	50	210	48	2	350	2	250	1,200
LQ124E	LQ124EH	2.5 ③	65	210	48	2	350	2	250	1,200
LL124E	---	3 ③	75	140	32	2	375	2	250	1,250
LS124E	LS124EH	3 ③	75	230	52	2	375	2	250	1,250
Q124E	---	4 ③	100	300	68	3	500	2	350	2,200
QS124E	---	6 ③	150	500	114	3	500	2	350	2,200
N324E	N324EH	6 ③	136	685	155	2	900	2	350	2,500

Note: Maximum temperature for standard pump 450°F / 232°C. Higher temperatures can be handled, consult factory.

① Port sizes are inch standard, not metric design or size. Consult factory for other port sizes.

② Ports are tapped for standard (NPT) pipe.

③ Ports are suitable for use with Class 125 ANSI cast iron flanges or flange fittings.

④ N-size, cartridges located on the casing.

Specifications

Heat Cartridges (included with pump)

Multiple heat cartridges per pump, with different cartridge lengths, diameters and watt ratings, depending on pump size. Total watts per pump in the performance table. All heaters are 240 VAC, 1 Phase, 50/60 Hz.

Materials:

Incoloy® outer sheath, PFA moisture seal, Brass NPT fitting

Leads:

Two - fiberglass-insulated leads rated to 842°F / 450°C for temperature resistance (H-QS sizes, 36" lead length) (N size, 72" lead length) in flexible stainless steel hose for abrasion resistance. Two leads extend 12" past end of SS hose. Normal practice is to wire all cartridges to local junction box at pump, with one cable to controller.

Agency Approvals:

UL, CSA, VDE, CE

Incoloy® is a registered trademark of Special Metals Corporation.

Thermocouple (included with control system)

Type J thermocouple with thermowell in weather-resistant housing with 1/2" MNPT fitting to mount in pump.

Controller (included with control system)

Enclosure:

1/16 DIN, NEMA 4X / IP66 for panel mount

Mains power:

240 VAC, 1 phase, 50/60 Hz

Heater Output:

15A NO-ARC, Form A

Control Algorithm:

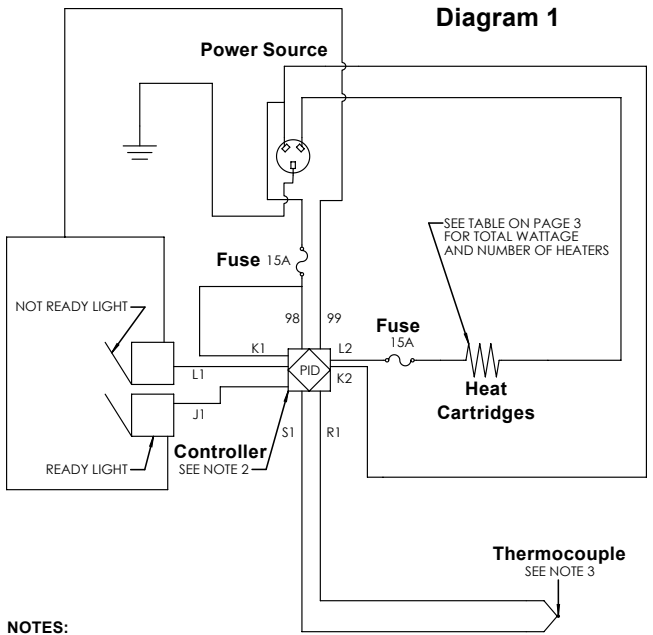
PID with preset bandwidths

"Setpoint Achieved" Relay Output:

Mechanical relay, 5A, Form A

Agency Approvals:

UL, CSA, CE, RoHS, W.E.E.E., FM



NOTES:

1. 240V SINGLE PHASE AC, 50/60 HZ.
2. SEE DIAGRAM 2 FOR TERMINAL DEFINITIONS; VALID ONLY FOR VIKING PUMP SUPPLIED CONTROLLERS.
3. STANDARD THERMOCOUPLE TYPE J, CONSULT FACTORY FOR OTHER TEMPERATURE MONITORS.
4. N-SIZE REQUIRES RELAY (INCLUDED IN "N" CONTROL SYSTEM). REFER TO TSM 630.4 FOR WIRING DIAGRAM.

Warning!

Use National Electric Code (NEC) or other country-specific standard wiring and safety practices when wiring and connecting this controller to a power source and to electrical sensors, heaters or peripheral devices. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

L1	Normally Open (Ready Light)	98	Power Input; AC; Fused (Controller)
K1	Common (Ready Light)	99	Common (Controller)
J1	Normally Closed (Optional)	CF	Not Used
L2	Power Output; Fused (Relay)	CD	Not Used
K2	Common (Relay)	CE	Not Used
T1	Not Used	B5	Not Used
S1	Negative Thermocouple Lead	D6	Not Used
R1	Positive Thermocouple Lead	D5	Not Used

Diagram 2

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



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