

INTERNAL GEAR ELECTRICALLY HEATED ASPHALT PUMPS

AN ALTERNATIVE TO HEATING
WITH HOT OIL OR STEAM



PID closed loop controller
provides fast time-to-temperature,
easy setpoint adjustment.

Detailed info in Technical Service Manual 630.4



Capacity
to 685 GPM (155 M³/Hr)



Pressure
to 200 PSI (14 BAR)



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



Temperature
to +450°F (to +232°C)

VIKING PUMP

A Unit of IDEX Corporation

ELECTRICAL HEAT 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

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

Viking Temperature Control System

Viking's electrically heated pumps include the heat cartridges and a 1/2" 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.

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.

FEATURES AND BENEFITS

	VALUE OF BENEFITS	CUSTOMIZED SAVINGS	COMMENTS
Reduced 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 x 200 feet) + (40 hours or one 8-hour week to install 200 feet of pipe x 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 or steam system	\$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) x labor rate of \$100/hour)
Reduce Energy Costs			
Eliminates 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 x 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 x labor rate of \$100/hr) + \$ fine amount due to oil spill (if applicable)

*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.

ELECTRICAL HEAT SPECIFICATIONS

INTERNAL GEAR ELECTRICALLY HEATED PUMPS

How Does It Work?

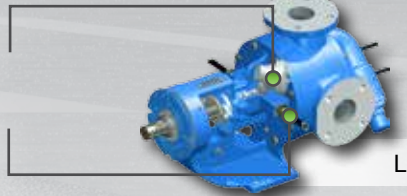
Pump is heated by Electric Heat Cartridges vs. Heating Jackets

- Heat cartridges located on the pump head, and casing/bracket on most sizes, provide sufficient heat to melt the asphalt with the pump and stuffing box
- The heat cartridges located on the pump head are a patented design to maximize heating within the pump

HEAD CARTRIDGES



THERMOCOUPLE



LS124E

BRACKET CARTRIDGES

THERMOCOUPLE



N324E

CASING CARTRIDGES

THERMOCOUPLE



N32E

CASING CARTRIDGES

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 can be found in the performance table. All heaters are 240 VAC, 1 Phase, 50/60 Hz.

Materials:

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

Agency Approvals:

- UL, CSA, VDE, CE

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.

Incoloy® is a registered trademark of Special Metals Corporation.

PERFORMANCE

Pump Type	Pump Size	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	M3/Hr	RPM					
Heavy Duty Pumps	H124E	1.5②	38	15	3.4	1750	1	75	2	100	275
	HL124E	1.5②	38	30/50*	6.8/11*	1750/2900*	1	75	2	100	275
	K124E	2②	50	75/90*	17/20*	780/950*	3	130	2	150	690
	KK124E	2②	50	100/120*	23/27*	780/950*	3	130	2	150	690
	L124E	2②	50	135/210*	30/48*	640/950*	2	350	2	250	1,200
	LQ124E	2.5③	65								
	LL124E	3③	75	140	32	520	2	375	2	250	1,250
	LS124E	3③	75	200/230*	45/52*	640/720*	2	375	2	250	1,250
	Q124E	4③	100	300	68	520	3	500	2	350	2,200
	QS124E	6③	150	500	114	520	3	500	2	350	2,200
General Purpose Pumps	N324E	6③	150	600/685*	136/155*	350/420*	2	900	2	350	2,500
	LQ32E	2.5③	65	90	20	420	2	350	2	250	1,200
	Q32E	3③	75	200	45	350	3	500	0	--	1,500
	M32E	4③	100	280	64	280	3	450	2	450	2,250
	N32E	5③	125	450	102	280	2	900	2	350	2,500

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 N324E, LQ32E, M32E and N32E cartridges located on the casing. Cartridges not required for the Q32E.

Note: Maximum temperature for standard pump 450°F / 232°C.

Higher temperatures can be handled, consult factory.

* Higher speed / capacity available on clean asphalt only.

ELECTRICAL HEAT SPECIFICATIONS CONTD.

INTERNAL GEAR
ELECTRICALLY HEATED PUMPS

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:

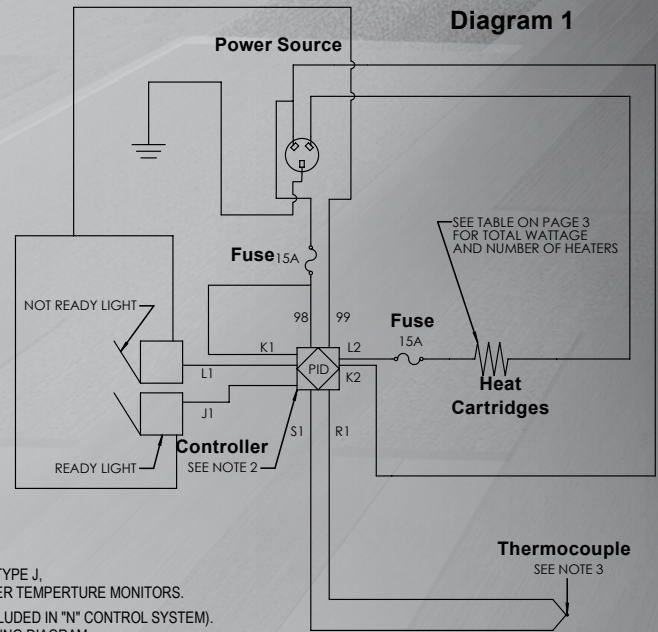
Mechanical relay, 5A, Form A

Agency Approvals:

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

NOTES:

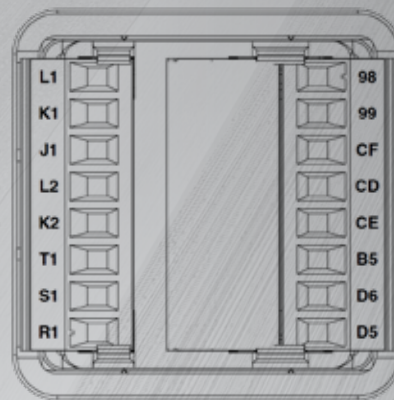
- 240V SINGLE PHASE AC, 50/60 HZ.
- SEE DIAGRAM 2 FOR TERMINAL DEFINITIONS; VALID ONLY FOR VIKING PUMP SUPPLIED CONTROLLERS.
- STANDARD THERMOCOUPLE TYPE J, CONSULT FACTORY FOR OTHER TEMPERATURE MONITORS.
- N-SIZE REQUIRES RELAY (INCLUDED IN "N" CONTROL SYSTEM). REFER TO TSM 630.4 FOR WIRING DIAGRAM.



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.

Normally Open (Ready Light)
Common (Ready Light)
Normally Closed (Optional)
Power Output; Fused (Relay)
Common (Relay)
Not Used
Negative Thermocouple Lead
Positive Thermocouple Lead



Power Input; AC; Fused (Controller)
Common (Controller)
Not Used
Not Used
Not Used
Not Used
Not Used
Not Used

Diagram 2

VIKING PUMP

Contact Your Distributor Today

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