

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ASPHALT PUMPS

34 Series™

Section	1464
Page	1464.1
Issue	A

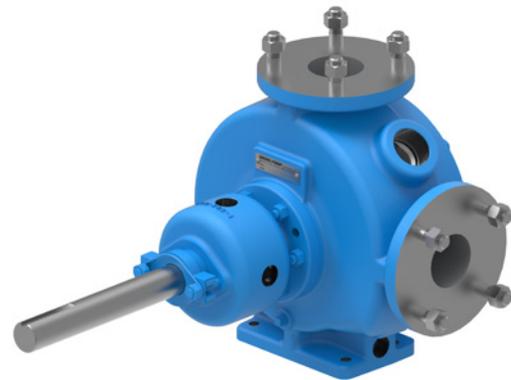
TABLE OF CONTENTS

Related Products	1
Operating Range.....	1
Series Description.....	1
Features & Benefits	2
Model Number Key	2
Jacketing	2
Pressure Relief Valves.....	2
Standard Materials of Construction	3
Specifications: Unmounted Pumps.....	3
Specifications: Pump Jacketing.....	3
Dimensions	4
NPSH Required	5

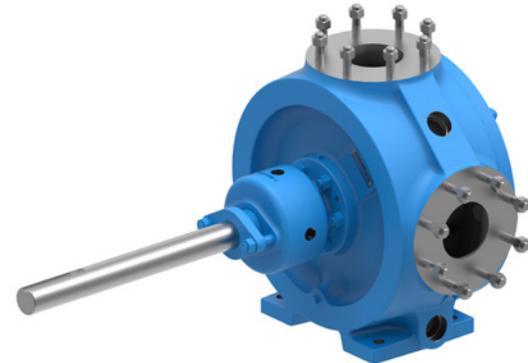
SERIES DESCRIPTION

Viking 34 Series™ Asphalt Pumps are designed to handle asphalts, bitumens, pitch, tar, bunker oils, residual oils and related materials that solidify at ambient temperatures. The 34 Series™ pumps are Viking's simplest asphalt pumps, with a hydraulically-balanced rotor that eliminates the need for thrust control, but also limits the pressures to 100 PSI and less.

These asphalt pumps melt ambient-temperature solids to a liquid state prior to pump startup using integral jacketing for steam or hot oil. The 34 Series™ are available as packed pumps only.



LQ34



M34

RELATED PRODUCTS

Cast Iron, 224A Series™: Catalog Section 1402

Cast Iron, 124E Series™ & 324E Series™:
Catalog Section 1465

Cast Iron, 32E Series™: Catalog Section 1466

OPERATING RANGE

SERIES	NOMINAL FLOW		MAXIMUM PRESSURE		TEMPERATURE RANGE		VISCOSITY RANGE	
	GPM	m³h	PSI	Bar	°F	°C	SSU	cSt
34 Series™	90 - 450	20 - 102	100	7	-60 to +450	-50 to +230	28 to 25,000	.1 to 5,500

Section	1464
Page	1464.2
Issue	A

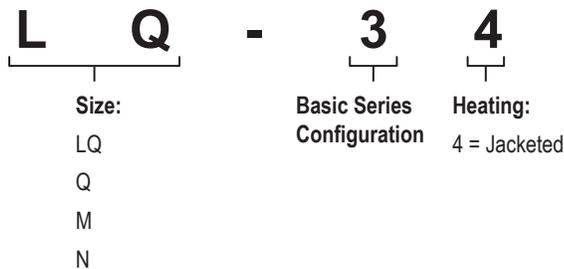
LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ASPHALT PUMPS

34 Series™

FEATURES & BENEFITS

- **Standard Jacketed Rotor Bearing Sleeve**
 - » Jacket chamber indicated above accommodates the heating or cooling agent. All chambers are suitable for maximum steam pressures of 150 PSI or 365°F.
- **Standard Jacketed Head***
 - » 34 Series™ pumps are equipped with this type of head as standard. Pumps with jacketed heads cannot be furnished with relief valve on head. Some form of pressure relief is recommended in the discharge line.
- **Standard Jacketed Casing**
 - » Complete jacketed casing section shown above. All pumps are available with right-hand ports as standard. Left-hand on special order only. All jacketed features are furnished as standard on 34 Series™ pumps.
- **Optional Jacketed Valve**
 - » Jacketed valve on non-jacketed head can be furnished on all pump sizes. Note the complete jacketing of the valve. Eliminates liquid solidifying in the valve. Maximum steam pressure 150# or 365°F. Maximum heat transfer oil pressure 150#, 450°F.

MODEL NUMBER KEY



JACKETING

Viking jacketed pumps feature complete jacketing of all external parts and extra clearances on all working parts. In addition, the rotor bearing sleeve jacket prevents these heavy viscous liquids from hardening in the seal box – affording effective shaft sealing.

Individual chambers surround the casing, head, and rotor bearing sleeve, and each is provided with separate openings for connections with heating lines. Casings are furnished in right hand port construction as standard (determined by location of side port when facing shaft end of pump). Left hand port construction on special order only.

34 Series™ pumps come equipped with jacketing on casing, head, and rotor bearing sleeve as standard. Pumps are available with any one, or any combination, of the three jackets, but must be so designated when ordering. A complete jacketed pump is recommended for most installations.

PRESSURE RELIEF VALVES

34 Series™ pumps feature a jacketed head without relief valve standard. A jacketed relief valve can be furnished on a non-jacketed head on all pump sizes.

All positive displacement pumps should have some form of pressure relief, whether in the pump or downstream of the pump, to prevent overpressure situations.

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ASPHALT PUMPS

34 Series™

Section	1464
Page	1464.3
Issue	A

STANDARD MATERIALS OF CONSTRUCTION

Pump Construction	Casing	Head	Rotor	Idler	Rotor Shaft	Idler Pin	Bushings	Shaft Seal	Internal Relief Valve (optional)
								Packed	
Standard Construction	Iron	Iron	Iron	Iron	Steel	Hardened Steel	Bronze	Standard	Iron
Steel Fitted	Iron	Iron	Steel	① Iron	Steel	Hardened Steel	Bronze	Standard	Iron

SPECIFICATIONS: UNMOUNTED PUMPS

Model Number	Port Size Inches	Nominal Pump Rating			Maximum Recommended Discharge Pressure for 100 SSU and Above		③ Maximum Recommended Temperature for Cataloged Pump		Steel Fitted Construction Recommended Above This Viscosity		Maximum Hydrostatic Pressure		Approximate Shipping Weight (Pump Only)	
		GPM	m³/h	RPM	PSI	Bar	°F	°C	SSU	cPs	PSIG	Bar	Lbs.	Kg.
④ LQ34	② 2½	90	20	420	100	6.9	450	232	25,000	5500	400	27.6	180	82
Q34	② 3	200	45	350	75	5.2	450	232	7,500	1650	400	27.6	350	160
M34	② 4	280	64	280	75	5.2	450	232	25,000	5500	400	27.6	530	240
N34	② 5	450	102	280	75	5.2	450	232	2,500	550	400	27.6	750	340

SPECIFICATIONS: PUMP JACKETING

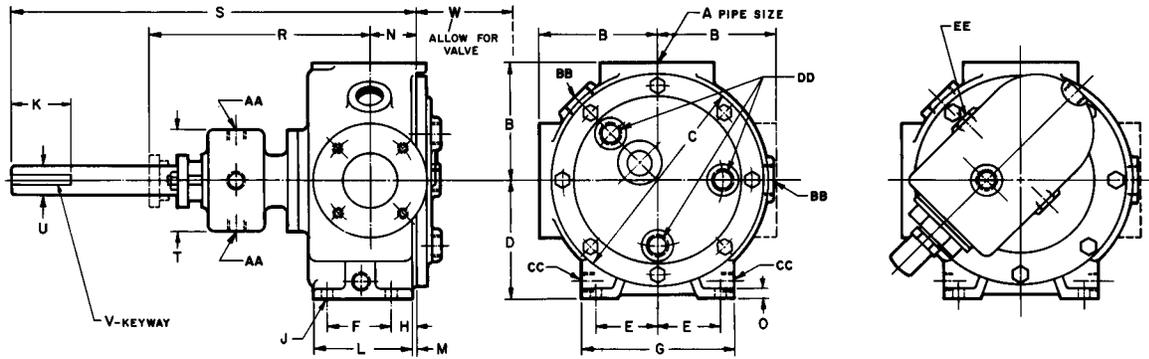
Model Number	Maximum Temperature/Pressure Of Fluid in Jackets							
	Steam (Saturated)				Heat Transfer Oil			
	Temperature		Pressure		Temperature		Pressure	
	°F	°C	PSIG	Bar	°F	°C	PSIG	Bar
④ LQ34	365	185	150	10.4	450	232	150	10.4
Q34	365	185	150	10.4	450	232	150	10.4
M34	365	185	150	10.4	450	232	150	10.4
N34	365	185	150	10.4	450	232	150	10.4

- ① Q Size has steel idler when steel fitted construction is required.
- ② Ports are suitable for use with 125# ANSI cast or ductile iron or 150# ANSI steel companion flanged fittings. All other tapped for standard pipe (NPT).
- ③ For use at higher temperatures, consult factory for recommended materials of construction.
- ④ LQ size has two-piece jacketed head construction

Section	1464
Page	1464.4
Issue	A

**LIQUID-SPECIFIC PRODUCT LINE:
CAST IRON ASPHALT PUMPS**
34 Series™

DIMENSIONS



Jacketed Head Standard

Optional Jacketed Relief Valve Shown

Model Number	A (inch)		B	C	D	E	F	G	H	J	K	L	M
LQ34	① 2½	in	7.19	10.25	6.00	2.88	3.00	7.00	1.00	.47	3.00	4.62	.12
		mm	183	260	152	73	76	178	25	12	76	117	3
Q34	① 3	in	8.00	14.00	7.75	4.12	4.25	10.00	1.62	.75	5.00	6.50	.25
		mm	203	356	197	105	108	254	41	19	127	165	6
M34	① 4	in	9.50	17.25	9.50	5.00	6.25	12.00	1.44	.75	5.00	8.69	.19
		mm	241	438	241	127	159	305	37	19	127	221	5
N34	① 5	in	9.50	17.25	9.50	5.00	6.25	12.00	1.62	.75	5.00	8.50	.19
		mm	241	438	241	127	159	305	41	19	127	216	5

Model Number		N	O	② R	S	T	U	V	W	JACKET CONNECTIONS (N.P.T.)				
										AA	BB	CC	DD	EE
LQ34	in	1.75	.62	11.62	21.25	5.50	1.44	.38 x .19	7.88	¾	1½	¾	③ 1	1
	mm	44	16	295	540	140	37		200					
Q34	in	3.00	.62	13.88	33.50	6.75	1.94	.50 x .25	10.62	¾	1½	1	1¼	1
	mm	76	16	353	851	171	49		270					
M34	in	4.00	.75	13.38	34.00	6.75	1.94	.50 x .25	10.25	¾	1½	1	1½	1
	mm	102	19	340	864	171	49		260					
N34	in	4.50	.75	18.12	34.00	8.50	2.44	.62 x .31	10.25	¾	2	1½	1½	1
	mm	114	19	460	864	216	62		260					

① Ports are suitable for use with 125# ANSI cast iron flanges or 150# steel or ductile iron companion flanges or flanged fittings. All others are tapped for standard pipe (NPT).

② Minimum dimension for repacking.

③ LQ 34 heads have two jacket openings only (near vertical centerline). Q, M, and N head jacket opening per drawing.

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ASPHALT PUMPS

34 Series™

Section	1464
Page	1464.5
Issue	A

NPSH REQUIRED

Printed performance curves are not available.

Performance curves can be electronically generated with the Viking Pump Curve Generator on vikingpump.com.

NPSH_R data is not available on the curve generator.

NPSH (Net Positive Suction Head): The NPSH_R (Net Positive Suction Head Required by the pump) is given in the table below and applies for viscosities through 750 SSU. NPSH_A (Net Positive Suction Head – Available in the system) must be greater than the NPSH_R. For a complete explanation of NPSH, see Application Data Sheet AD-19.

FOR VISCOSITIES UP TO 750 SSU – See NPSH_R table below.

NPSH_R for high viscosities can be estimated using the following method:

1. Calculate line loss for a 1 foot long pipe of a diameter matching the pump inlet port size. Use your flow rate and max viscosity.
2. Convert this value into Feet of Liquid (S.G. 1.0)
3. Add this value to the NPSH_R value in the chart below.

PUMP SIZE	PUMP SPEED [RPM]														
	100	125	155	190	230	280	350	420	520	640	780	950	1150	1450	1750
LQ	1.7	1.8	2.0	2.2	2.5	3.0	3.8	5.0	7.3	10.8	—	—	—	—	—
Q	1.9	2.1	2.3	2.7	3.3	4.2	6.1	8.4	12.7	—	—	—	—	—	—
M	2.1	2.3	2.8	3.4	4.3	6.0	9.0	12.7	—	—	—	—	—	—	—
N	2.1	2.5	3.5	4.5	6.3	9.5	15.0	—	—	—	—	—	—	—	—

Note: NPSH_R – FEET OF LIQUID (Specific Gravity 1.0), Viscosities up to 750 SSU

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

Section	1465
Page	1465.1
Issue	A

TABLE OF CONTENTS

Operating Range.....	1
Series Description.....	1
Related Products	1
Features & Benefits	2
Model Number Key	2
Standard Materials of Construction	2
Relief Valve Configurations.....	2
Porting & Sealing	2
Electric Heat Specifications	3
Controlling Electrically Heated Pumps	3
Control System.....	3
Specifications	4
Dimensions – H, HL, K, KK, L, LQ, LL, LS & Q Sizes.....	5
Dimensions – QS Size.....	6
Dimensions – N Size.....	6
Dimensions – H, HL, K, KK, L, LQ, LL, LS, Q, QS Sizes.....	7
Stuffing Box Seal Chamber Dimensions	8
NPSH Required	9

SERIES DESCRIPTION

The electrically heated pump is specifically designed to heat the asphalt within the pump, prior to start-up. Heat cartridges located on the bracket or casing heat the area behind the rotor and stuffing box. The design also uses heat cartridges installed in the head to quickly melt asphalt throughout the casing.

RELATED PRODUCTS

Cast Iron, 32E Series™: Catalog Section 1466

Cast Iron, 34 Series™: Catalog Section 1464

Cast Iron, 224A Series™: Catalog Section 1402



H124E



LS124E

OPERATING RANGE

SERIES	NOMINAL FLOW		MAXIMUM PRESSURE		TEMPERATURE RANGE		VISCOSITY RANGE	
	GPM	m ³ h	PSI	Bar	°F	°C	SSU	cSt
124E Series™	15 - 500	3.4 - 114	200	14	-60 to +450	-50 to +230	28 to 2,000,000	.1 to 440,000
324E Series™	600 - 685	136 - 155	200	17	-60 to +450	-50 to +230	28 to 2,000,000	.1 to 440,000

Section	1465
Page	1465.2
Issue	A

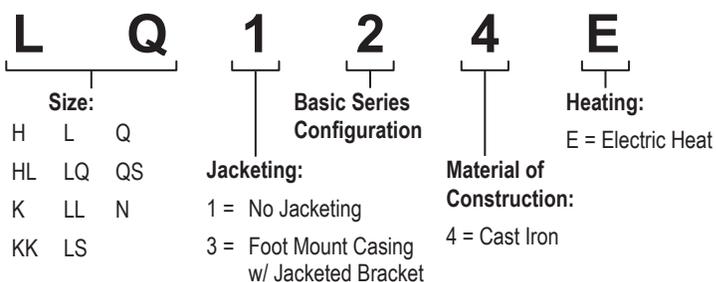
LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

FEATURES & BENEFITS

- Reduced installation & maintenance expense
 - » Lower installation costs in remote locations when steam or hot oil is not available or requires long piping runs
 - » Provides expansion flexibility
 - » Eliminates the hot oil or steam system
 - » Simplified service due to the lack of hot oil or steam connections
- Reduce energy costs
 - » Eliminates heat loss through piping
 - » Reduces environmental costs by eliminating hot oil or steam piping

MODEL NUMBER KEY



STANDARD MATERIALS OF CONSTRUCTION

Pump Construction	Casing	Head	Bracket	Rotor	Idler	Rotor Shaft	Idler Pin	Packing	Idler Bushing	Bracket Bushing	Pressure Relief Valve
Standard Construction	Cast Iron ASTM A48, Class 35B	Cast Iron ASTM A48, Class 35B	Cast Iron ASTM A48, Class 35B	① Cast Iron ASTM A48, Class 35B	③ Cast Iron ASTM A48 Class 35B	⑤ Steel ASTM A108, Grade 1045	Hardened Steel ASTM A108, Grade 10L45	Standard	Bronze ASTM B584 (B505), Alloy C93700	Bronze ASTM B584 (B505), Alloy C93700	Cast Iron ASTM A48, Class 35B
Steel Fitted				④ Steel ASTM A108, Grade 1045	② Iron						

① KK, LS, QS sizes have ductile iron rotor, ASTM A536 Grade 60-40-18.

② Steel fitted Q and QS sizes have steel idler.

③ H and HL sizes have powdered metal idler, MPIF Std 35 FC-0208-50.

④ Material specification for HL steel rotor is AISI 8620, LS steel rotor is ASTM A148 80-50.

⑤ K, KK, L, LQ, LL and LS sizes are high strength steel ASTM A434 Type 4140 Grade BC or equivalent.

RELIEF VALVE CONFIGURATIONS

Electrically heated pumps are provided with a non-jacketed relief valve as standard.

The "N" size pump is standard with a jacketed bracket, non-jacketed head and non-jacketed relief valve.

PORTING & SEALING

A variety of opposite and 90° port configurations are available, including top suction with bottom or side discharge designs typically mounted at the bottom of a tank or reactor.

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

Section	1465
Page	1465.3
Issue	A

ELECTRIC HEAT SPECIFICATIONS

Heat cartridges (pre-installed on pump)

All heaters are 240 VAC, 1 phase, 50/60 Hz

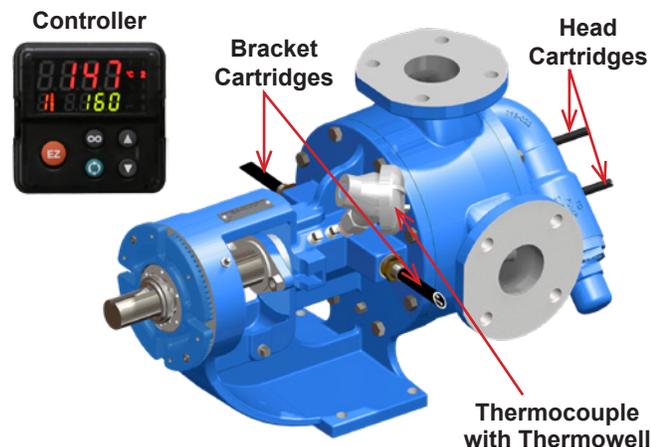
Materials: Incoloy® outer sheath, PFA moisture seal, Brass NPT fitting

Leads: Two fiberglass-insulated leads, rated to 840°F/450°C in flexible stainless steel conduit for abrasion resistance. The two leads extend 12" past end of stainless steel conduit. Normal practice is to wire all cartridges to local junction box at pump, with one cable to controller.

Agency Approvals: UL, CSA, VDE, CE

Pump Model	Head Cartridges	Watts/Cartridge (Head)	Bracket/Casing Cartridges	Watts/Cartridge (bracket/casing)	Total Watts
H124E	1	75	2	100	275
HL124E	1	75	2	100	275
K124E	3	130	2	150	690
KK124E	3	130	2	150	690
L124E	2	350	2	250	1200
LQ124E	2	350	2	250	1200
LL124E	2	375	2	250	1250
LS124E	2	375	2	250	1250
Q124E	3	500	2	350	2200
QS124E	3	500	2	350	2200
N324E	2	900	2 ①	350	2500

① Heat cartridges are located in the casing.



CONTROLLING ELECTRICALLY HEATED PUMPS

Viking Pump offers a controller for its electrically heated pumps. It is a closed loop PID control providing fast, yet effective time to temperature with minimal overshoot to prevent overheating. The control system includes a thermocouple and thermowell adapter for mounting, and a controller which powers all the heat cartridges on one pump (N-size requires a 40-amp relay). The controller has a user-adjustable temperature set point, up to a preset maximum. When the set point is reached, a relay can be wired to alert the operator, or prevent a pump from being started until the asphalt is melted. It can be ordered with present maximum temperature of either 150°F, 250°F, 350°F or 450°F; or 65°C, 120°C, 175°C or 230°C. See specifications on page 2 for number of cartridge heaters and wattages by pump size.

CONTROL SYSTEM

(accessory not included with pump)

Thermocouple

Type J thermocouple with thermowell in weather-resistant housing with ½" MNPT fitting to mount in pump.

Controller

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

Mains power: 240 VAC, 1 phase

Heater Output: 15A NO-ARC, Form A

Control Algorithm: PID, with pre-set bandwidths

Set point Achieved Relay Output: Mechanical relay, 5A, Form A

Agency Approvals: UL, CSA, CE, RoHS, W.E.E.E., FM
N-size pump requires a separate 40-amp relay.

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 the equipment and property, and/or injury or loss of life.

Section	1465
Page	1465.4
Issue	A

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

SPECIFICATIONS

Note: Sizes HL, K, KK, L/LQ, LS & N show two different max speed and pressure options. Use higher speed on clean asphalt only.

Model	① Ports	Nominal Pump Rating (750 SSU and below)			Maximum Hydrostatic Pressure		④ Maximum Discharge Pressure		⑤ Maximum Recommended Temperature for Standard Pump		Steel Fitted Recommended Above		Approximate Shipping Weight with Valve	
	In.	GPM	m³/hr	RPM	PSIG	BAR	PSIG	BAR	°F	°C	SSU	cSt	lbs.	kG
H124E⑥	②1.5	15	3.4	1750	300	21	200	14	450	232	25,000	5,500	42	19
HL124E⑥	②1.5	30	6.8	1750	300	21	200	14	450	232	7,500	1,650	45	21
	②1.5	50	11	2900	300	21	125	9	450	232	7,500	1,650	45	21
K124E	②2	75	17	780	300	21	200	14	450	232	25,000	5,500	110	50
	②2	90	20	950	300	21	125	9	450	232	25,000	5,500	110	50
KK124E	②2	100	23	780	300	21	200	14	450	232	25,000	5,500	115	52
	②2	120	27	950	300	21	125	9	450	232	25,000	5,500	115	52
L124E	②2	135	30	640	300	21	200	14	450	232	25,000	5,500	165	75
	②2	210	48	950	300	21	125	9	450	232	25,000	5,500	165	75
LQ124E	③2.5	135	30	640	300	21	200	14	450	232	25,000	5,500	185	84
	③2.5	210	48	950	300	21	125	9	450	232	25,000	5,500	185	84
LL124E	③3	140	32	520	300	21	200	14	450	232	2,500	550	195	88
LS124E	③3	200	45	640	300	21	200	14	450	232	75,000	16,500	200	91
	③3	230	52	720	300	21	125	9	450	232	75,000	16,500	200	91
Q124E	③4	300	68	520	250	17	200	14	450	232	7,500	1,650	455	206
QS124E	③6	500	114	520	250	17	200	14	450	232	75,000	16,500	555	252
N324E	③6	600	136	350	250	17	200	14	450	232	75,000	16,500	810	376
	③6	685	155	420	250	17	125	9	450	232	75,000	16,500	810	376

① Port sizes are inch standard, not metric design or size. See p. 630.16 for other port size options.

② Ports are tapped for standard (NPT) pipe.

③ Ports are suitable for use with 125# ANSI cast iron flanges or flanged fittings.

④ For maximum recommended discharge pressures when handling other viscosities and/or other speeds, see performance curves, which can be electronically generated with the Viking Pump Curve Selector, located on www.vikingpump.com. If suction pressure exceeds 50 PSIG, consult factory.

⑤ Higher temperatures can be handled with special construction, consult factory.

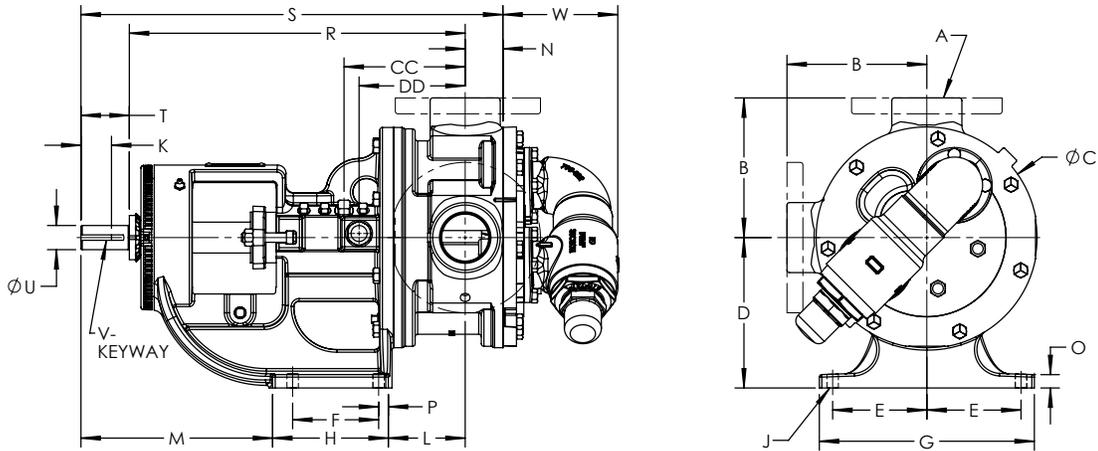
⑥ H and HL sizes available with tapped ports only due to interference between the bracket heat cartridge and flange.

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

Section	1465
Page	1465.5
Issue	A

DIMENSIONS – H, HL, K, KK, L, LQ, LL, LS & Q SIZES



Model Number	A (in)		B	C	D	E	F	G	H	J	K	L
H124E	①	in	3.00	4.75	3.50	2.75	2.25	6.75	3.50	0.47	0.99	3.38
HL124E	1.5	mm	76.2	120.6	88.9	69.8	57.1	171.4	88.9	11.9	25.1	85.8
K124E	①	in	5.12	8.00	5.50	4.00	2.75	9.25	4.0	0.53	1.42	3.00
KK124E	2	mm	130.0	203.2	139.7	101.6	69.8	234.9	101.6	13.5	36.1	76.2
L124E	①	in	6.50	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.00	3.38
	2	mm	165.1	260.3	177.8	111.3	101.6	254.0	136.7	13.5	50.8	85.9
LQ124E	②	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.00	3.38
	2.5	mm	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	50.8	85.9
LL124E	②	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.00	3.38
	3	mm	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	50.8	85.9
LS124E	②	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.55	4.75
	3	mm	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	64.8	120.6
Q124E	②	in	8.25	14.00	8.75	4.12	4.00	10.00	6.00	0.69	3.58	6.62
	4	mm	209.5	355.6	222.2	104.6	101.6	254.0	152.4	17.5	90.9	168.1

Model Number		M	N	O	P	R	S	T	U	V	W	③ CC	④ DD
H124E	in	5.19	1.19	0.56	0.62	10.44	13.25	1.62	0.75	.19 x .09	2.85	2.84	2.40
HL124E	mm	131.8	30.2	14.2	15.7	265.2	336.5	41.1	19.0	4.83 x 2.29	72.4	72.14	60.96
K124E	in	9.38	1.75	0.62	0.62	14.12	18.12	2.25	1.12	.25 x .12	6.38	4.88	4.14
KK124E	mm	238.3	44.4	15.7	15.7	358.6	460.2	57.1	28.4	6.35 x 3.05	162.0	123.95	105.16
L124E	in	9.12	1.75	0.62	0.62	15.62	19.62	2.25	1.12	.25 x .12	5.43	5.62	4.92
	mm	231.6	44.4	15.7	15.7	396.7	498.3	57.1	28.7	6.35 x 3.05	137.9	142.75	124.97
LQ124E	in	9.12	1.75	0.62	0.62	15.62	19.62	2.25	1.12	.25 x .12	5.43	5.62	4.92
	mm	231.6	44.4	15.7	15.7	396.7	498.3	57.1	28.7	6.35 x 3.05	137.9	142.75	124.97
LL124E	in	9.12	2.25	0.62	0.62	15.62	20.12	2.25	1.12	.25 x .12	5.43	5.62	4.92
	mm	231.6	57.1	15.7	15.7	396.7	511.0	57.1	28.7	6.35 x 3.05	137.9	142.75	124.97
LS124E	in	9.12	2.44	0.62	0.62	15.75	21.69	3.50	1.44	.38 x .19	5.43	6.25	6.09
	mm	231.6	62.0	15.7	15.7	400.0	550.9	88.9	36.6	9.65 x 4.83	137.9	158.75	154.7
Q124E	in	11.12	3.00	0.75	1.00	19.25	26.75	4.50	1.94	.50 x .25	8.25	7.33	5.83
	mm	282.4	76.2	19.0	25.4	488.9	679.4	114.3	49.3	12.7 x 6.35	209.5	186.18	148.08

① Ports are tapped for standard (NPT) pipe. Other thread standards available.

③ Port centerline to thermocouple port

② Ports are suitable for use with Class 125 ANSI cast iron companion flanges.

④ Port centerline to bracket heat cartridge.

See drawing on Page 1465.7 for cartridge heater and thermocouple port location.

Dimensions given are for guidance only and should not be used for installation purposes. Certified dimensions will be supplied on request.

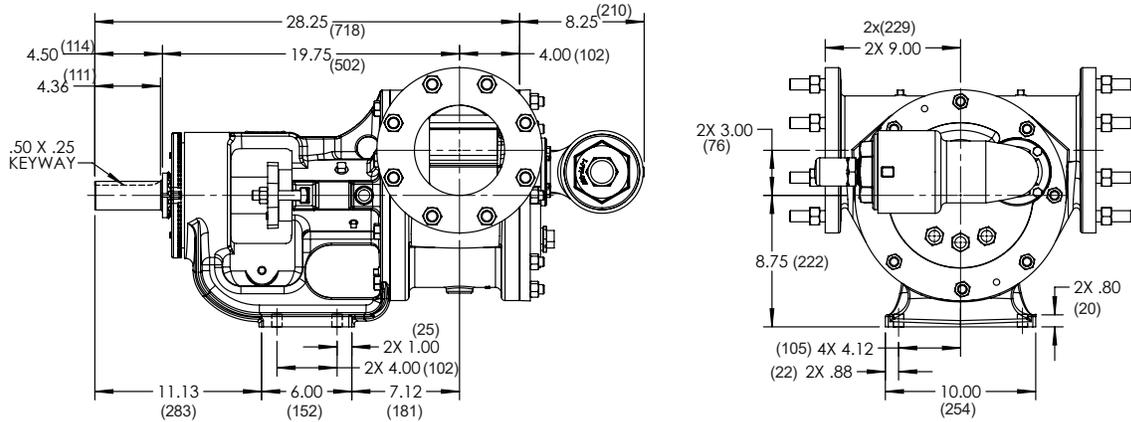
Section	1465
Page	1465.6
Issue	A

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

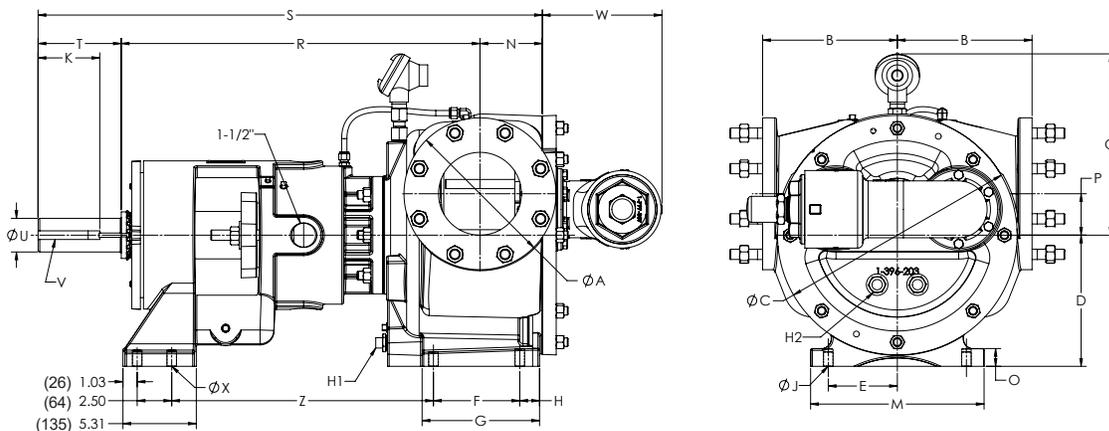
DIMENSIONS – QS SIZE

Dimensions shown in inches with millimeter equivalent shown in parentheses



DIMENSIONS – N SIZE

Dimensions shown in inches with millimeter equivalent shown in parentheses



Model Number	A (in)	B	C	D	E	F	G	H	H1	H2	J	K	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
N324E	①	in	9.75	17.25	9.50	5.00	6.25	8.69	1.62	0.75	0.69	4.50	12.00	4.50	1.00	3.00	13.11	26.00	36.50	6.00	2.44	.62 x.31	8.63	0.69	N/A	18.94
	6	mm	247.7	438.1	241.3	127.0	158.7	220.7	41.1	19	19	17.5	114.3	304.8	114.3	25.4	76.2	333	660.4	927.1	152.4	62.0	15.74 x7.87	219.2	17.5	N/A

① Ports are suitable for use with 125# ANSI cast iron.

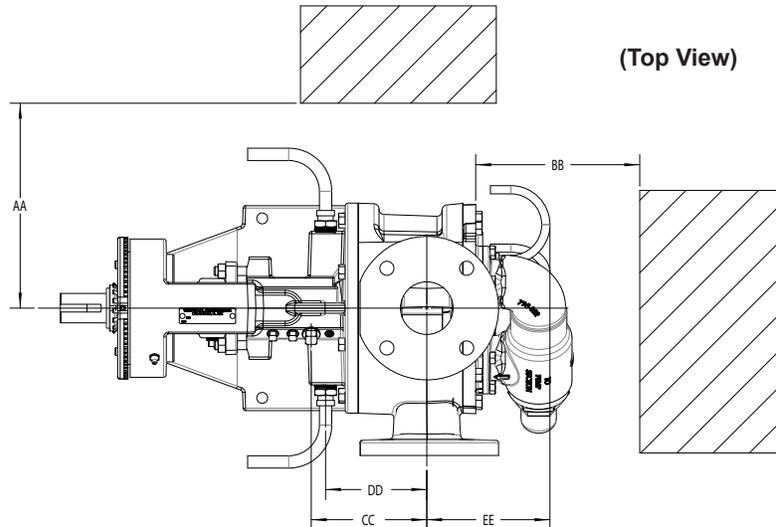
Dimensions given are for guidance only and should not be used for installation purposes. Certified dimensions will be supplied on request.

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

Section	1465
Page	1465.7
Issue	A

DIMENSIONS – H, HL, K, KK, L, LQ, LL, LS, Q, QS SIZES

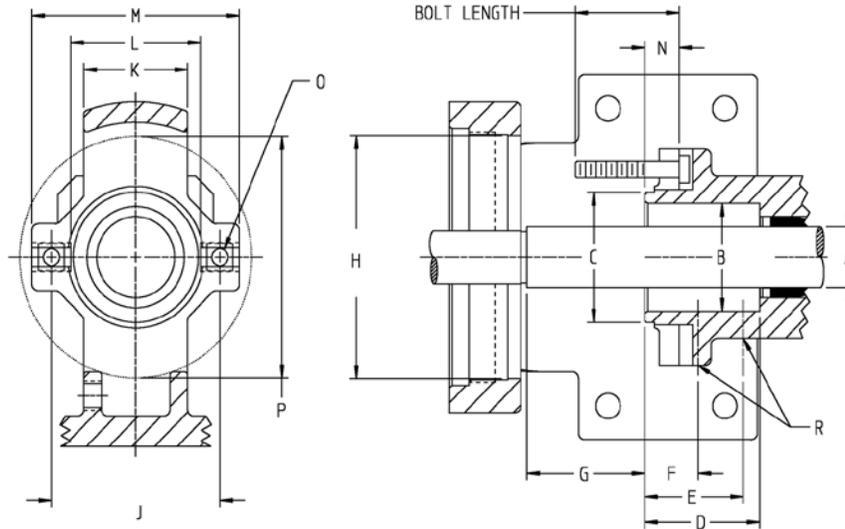


Model	Bracket Heater to Port Center Line (DD)		Temp Probe to Port Center Line (CC)		Head Heater to Port Center Line (EE)		Required to Remove Heater			
	Inch	mm	Inch	mm	Inch	mm	(AA)		(BB)	
							Inch	mm	Inch	mm
H124E HL124E	2.40	60.96	2.84	72.14	5.66	143.76	8.13	206.50	7.75	196.85
K124E KK124E	4.14	105.16	4.88	123.95	5.66	143.76	8.13	206.50	7.75	196.85
L124E	4.92	124.97	5.62	142.75	5.71	145.03	7.00	177.80	6.25	158.75
LQ124E					5.75	146.05			6.75	171.45
LL124E					6.25	158.75			6.50	165.10
LS124E	6.09	154.69	6.25	158.75	6.44	163.58	9.25	234.95	7.75	196.85
Q124E	5.83	148.08	7.33	186.18	8.25	209.55				
QS124E	6.33	160.78	7.83	198.88	9.25	234.95				

Section	1465
Page	1465.8
Issue	A

**LIQUID-SPECIFIC PRODUCT LINE:
CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS**
124E Series™, 324E Series™

STUFFING BOX SEAL CHAMBER DIMENSIONS



Pump Size		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R
H & HL	In	1.12	2.00	2.41	2.22	1.90	1.03	2.27	4.50	3.00 to 3.50	2.00	2.50	4.00	0.66	5/16	4.47	1/8
	mm	28.6	50.8	61.2	56.4	48.3	26.2	57.7	114.3	76.2 to 88.9	50.8	63.5	101.6	16.8	7.9	113.5	3.2
K & KK	In	1.44	2.31①	3.00	3.13	2.25	1.25	3.00	5.25	3.50 to 4.50	2.50	3.00	5.00	0.38	7/16	5.25	1/4
	mm	36.5	58.7①	76.2	79.5	57.1	31.7	76.2	133.3	88.9 to 114.3	63.5	76.2	127.0	9.7	11.1	133.3	6.3
L, LQ, & LL (A)	In	1.44	2.31①	3.00	3.13	2.25	1.25	4.00	5.25	3.50 to 4.50	2.50	3.00	5.00	0.44	7/16	5.25	1/4
	mm	36.5	58.7①	76.2	79.5	57.1	31.7	101.6	133.3	88.9 to 114.3	63.5	76.2	127.0	11.2	11.1	133.3	6.3
LS	In	1.62	2.375	2.80	2.70	2.25	1.16	3.52	5.25	3.25 to 4.50	3.00	2.80	5.00	0.46	7/16	5.25	1/4
	mm	41.3	60.3	71.1	68.6	57.1	29.5	89.4	133.3	82.5 to 114.3	76.2	71.1	127.0	11.7	11.1	133.3	6.3
Q & QS	In	2.44	3.42	4.50	4.00	2.50	1.53	4.10	6.75	5.50 to 6.25	3.20	4.50	7.20	0.56	5/8	6.75	1/4
	mm	61.9	87.0	114.3	101.6	63.5	38.9	104.1	171.4	139.7 to 158.7	81.3	114.3	182.9	14.2	15.9	171.4	6.3
N	In	3.44	4.69	-	5.56	1.65	-	4.91	8.81	6.75	-	-	-	-	3/4②	9.00	1/4
	mm	87.3	119.3	-	141.2	41.9	-	124.7	223.8	171.4	-	-	-	-	19.0②	228.6	6.3

① Bracket is counter bored to a diameter of 2.687 inches (68.25 mm), 0.12 inches (3.05 mm) deep from stuffing box face.

② Studs are used in place of cap screws.

LIQUID-SPECIFIC PRODUCT LINE: CAST IRON ELECTRICALLY HEATED ASPHALT PUMPS

124E Series™, 324E Series™

Section	1465
Page	1465.9
Issue	A

NPSH REQUIRED

Printed performance curves are not available.

Performance curves can be electronically generated with the Viking Pump Curve Generator on vikingpump.com.

NPSH_R data is not available on the curve generator.

NPSH (Net Positive Suction Head): The NPSH_R (Net Positive Suction Head Required by the pump) is given in the table below and applies for viscosities through 750 SSU. NPSH_A (Net Positive Suction Head – Available in the system) must be greater than the NPSH_R. For a complete explanation of NPSH, see Application Data Sheet AD-19.

FOR VISCOSITIES UP TO 750 SSU – See NPSH_R table below.

NPSH_R for high viscosities can be estimated using the following method:

1. Calculate line loss for a 1 foot long pipe of a diameter matching the pump inlet port size. Use your flow rate and max viscosity.
2. Convert this value into Feet of Liquid (S.G. 1.0)
3. Add this value to the NPSH_R value in the chart below.

PUMP SIZE	PUMP SPEED [RPM]														
	100	125	155	190	230	280	350	420	520	640	780	950	1150	1450	1750
H, HL					1.7	1.8	1.9	2.1	2.4	2.8	3.4	4.5	6.2	9.5	13.5
K, KK		1.7	1.8	1.9	2.1	2.3	2.8	3.3	4.4	6.3	9.1	—	—	—	—
L, LQ, LL, LS	1.7	1.8	2.0	2.2	2.5	3.0	3.8	5.0	7.3	10.8	—	—	—	—	—
Q, QS	1.9	2.1	2.3	2.7	3.3	4.2	6.1	8.4	12.7	—	—	—	—	—	—
N	2.1	2.5	3.5	4.5	6.3	9.5	15.0	—	—	—	—	—	—	—	—

Note: NPSH_R – FEET OF LIQUID (Specific Gravity 1.0), Viscosities up to 750 SSU



1224A-ASP SERIES™, 1324A-ASP SERIES™

CAST IRON CONSTRUCTION | ASPHALT PUMP

LEAK PREVENTION WITH O-PRO® CARTRIDGE SEAL

Asphalt has traditionally been sealed with packing, which must continuously leak to stay lubricated. The ASP asphalt series pumps come standard with Viking's O-Pro® Cartridge seal, which uses O-rings in combination with a lubricating grease to provide a robust seal that keeps process fluid from leaking out of the pump. The O-Pro® cartridge seal improves operational efficiency by not requiring periodic repacking or re-tensioning of the seal gland, and the leak prevention avoids loss of product and clean up costs.



FEATURES & BENEFITS

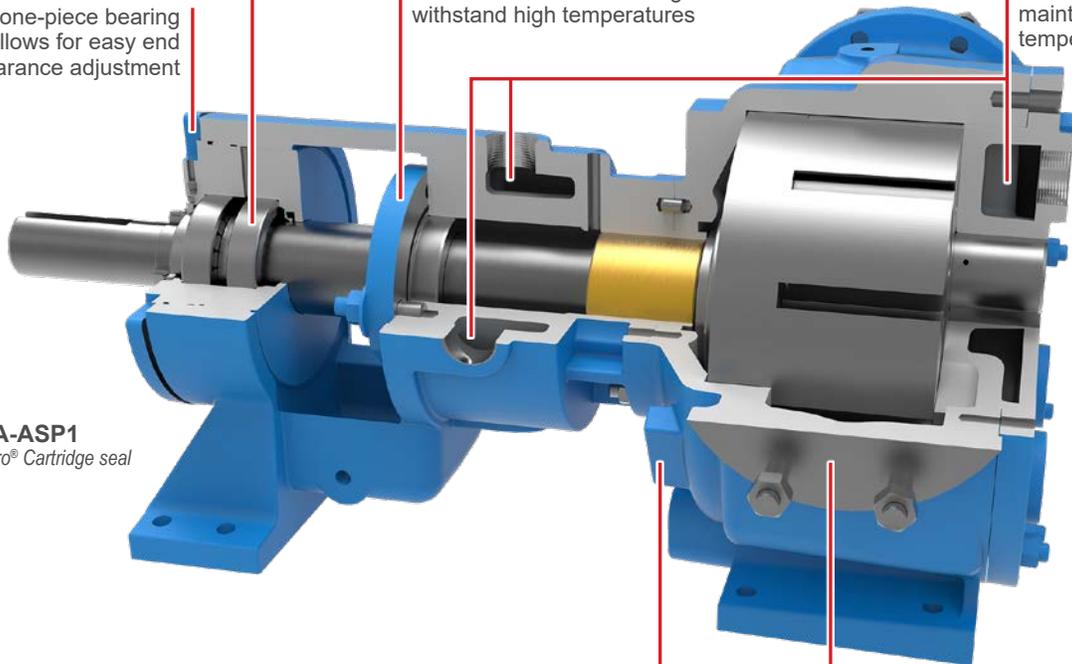
- Rugged design provides superior performance in asphalt applications
- Tight clearances offer high efficiency and excellent priming capabilities
- O-Pro® Cartridge seal combines reliable sealing with easy maintenance
- Hardened bushings, shaft, rotor, and idler used in ASP2 model to resist wear in abrasive applications

Double row ball or tapered roller bearings for axial thrust control

Threaded one-piece bearing housing allows for easy end clearance adjustment

O-Pro® Cartridge seal comes standard with FFKM O-rings to withstand high temperatures

Jacketing for steam or hot oil circulation to maintain a constant temperature



N1324A-ASP1
Shown with O-Pro® Cartridge seal

One-piece cast bracket with seal between bearings provides rigid foundation to maximize seal and bearing life

Port sizes, types, and ratings vary by pump size; see table on back



CAPACITY
to 1,500 GPM
(340 m³/h)



PRESSURE
to 200 PSI
(14 BAR)



VISCOSITY
100 to 2,000,000 SSU
(20 to 440,000 cSt)



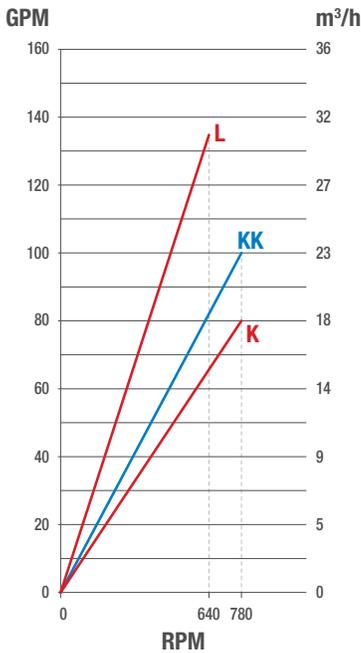
TEMPERATURE
0°F to +450°F
(-15°C to +230°C)

PERFORMANCE

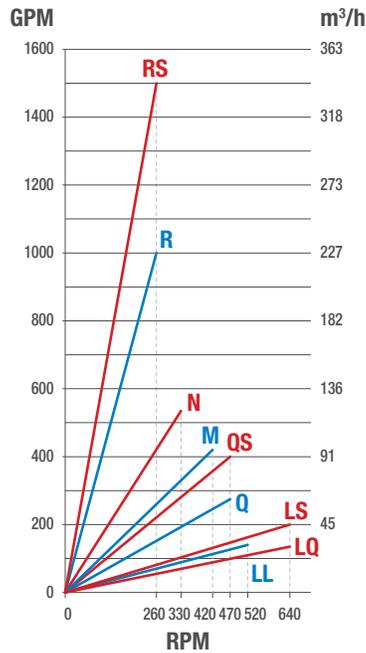
MODELS	SPECIFICATIONS								
	Jacketed	ASP1: Clean Asphalt			ASP2: Filled Asphalt			Standard Ports	
O-Pro® Cartridge Seal	Max Speed, RPM	GPM	m³/h	Max Speed, RPM	GPM	m³/h	Size, Inches	Type	Orientation
K1224A-ASP	780	80	18	280	25	6	2	NPT	Right Angle
KK1224A-ASP	780	100	23	280	35	8	2	NPT	Right Angle
L1224A-ASP	640	135	31	230	50	11	2	NPT	Right Angle
LQ1224A-ASP	640	135	31	230	50	11	2 ½	Flange	Right Angle
LL1224A-ASP	520	140	32	230	65	15	3	Flange	Right Angle
LS1224A-ASP	640	200	45	230	72	16	3	Flange	Right Angle
Q1224A-ASP	470	275	62	190	110	25	4	Flange	Right Angle
QS1224A-ASP	470	400	91	190	180	41	6	Flange	Opposite
M1224A-ASP	420	420	95	155	155	35	4	Flange	Right Angle
N1324A-ASP	330	550	125	130	210	48	6	Flange	Opposite
R1324A-ASP	260	1,000	227	100	350	80	8	Flange	Opposite
RS1324A-ASP	260	1,500	340	—	—	—	10	Flange	Opposite

CURVES

NPT PORTS



FLANGE PORTS



NOTE: Maximum speed shown for ASP1 model pumps. For ASP2 models, refer to maximum speeds listed under the performance specifications section.

MODELS FOR SPECIFIC APPLICATIONS

ASP1 MODELS FOR CLEAN, NON-ABRASIVE LIQUIDS

ASP1 models improve upon Viking's robust design that has been used for decades of successful asphalt transfer by adding shaft seal leak prevention through use of Viking's O-Pro® Cartridge seal.

ASP2 MODELS FOR ABRASIVE, FILLED ASPHALTS

ASP2 models utilize hard parts in key wear areas to reduce abrasive wear to extend pump life. The ASP2 pumps offer shaft seal leak prevention with Viking's O-Pro® Cartridge seal.

PORTING

- Right Angle (90°) (Rotatable Casing), K-Q & M
- Opposite (180°), QS, N-RS
- NPT, K-L
- Flanged (ANSI), LQ-RS

SEALING

- O-Pro® Cartridge Seal

MOUNTING

- Foot Mount

TYPICAL APPLICATIONS

- Filled Asphalt
- Polymer Modified Asphalts (PMA)
- Cutback Asphalt
- Flux
- Blown Asphalt
- Asphalt Emulsion
- Pitch
- Tar

Note: O-Pro® Cartridge Seal is patented.



VIKING PUMP, INC.
 A Unit of IDEX Corporation
 406 State Street
 Cedar Falls, Iowa 50613 U.S.A.
vikingpump.com

CONTACT YOUR STOCKING DISTRIBUTOR TODAY

