

VIKING® JACKETED ASPHALT PUMPS

SERIES 34 AND 434

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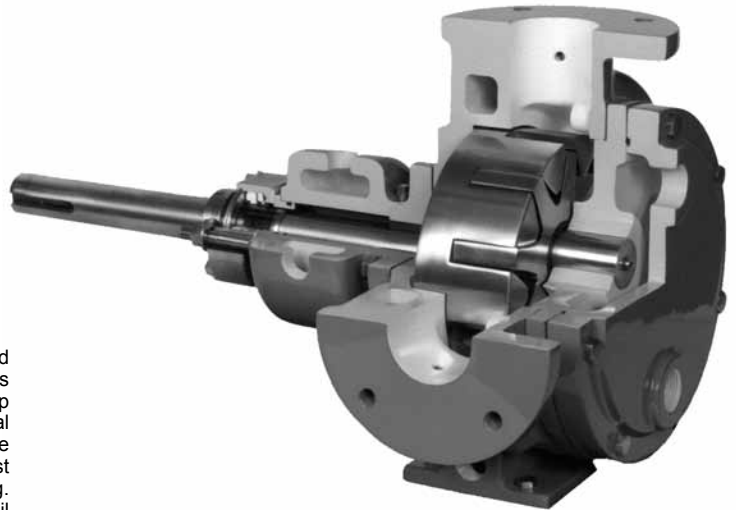
FEATURES

① Pressure Range	To 100 PSI (6.9 Bar)
① Temperature Range	-60°F. to +450°F. (-51°C. to +232°C.)
① Viscosity Range	31 SSU to 250,000 SSU (1 cP to 55,000 cPs.)
① Flow Range	20 to 450 GPM (4.5 to 102 m³/Hr)

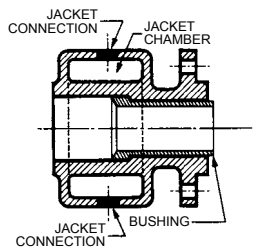


SHAFT SEAL OPTIONS

Series 34 pumps are furnished with packing. Series 434 pumps may be furnished with cartridge lip seal, single cartridge mechanical seal, or double cartridge mechanical seal. Seal type must be designated when ordering. Note that steam or heat transfer oil quench is recommended for Series 434 pumps.



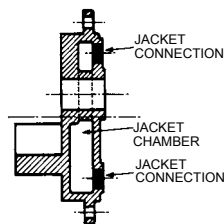
Series 434 Cutaway View



JACKETED ROTOR BEARING SLEEVE

(Standard Equipment)

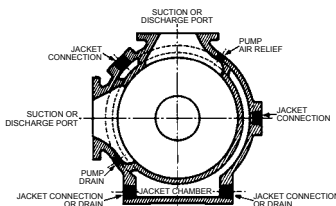
Jacket chamber indicated above accommodates the heating or cooling agent. All chambers are suitable for maximum steam pressures of 150 PSI or 365°F.



JACKETED HEAD

(Standard Equipment)

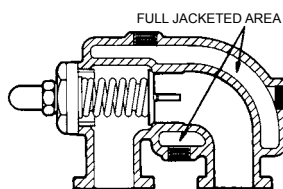
Series 34 and 434 pumps are equipped with this type of head as standard. Pumps with jacketed heads cannot be furnished with relief valve on head. The valve must be installed in line.



JACKETED CASING

(Standard Equipment)

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 Series 34 and 434 pumps.



JACKETED VALVE

(On Request)

Jacketed valve on unjacketed head can be furnished on "KK" through "N" pumps. 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# or 650°F.

Viking Jacketed Pumps are specifically designed for handling asphalt, heavy petroleum, coal tar, soap solutions, and other heavy, viscous liquids which present temperature control problems. To overcome these problems of maintaining a flowing state necessary for efficient handling of these liquids, the 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 congealing or hardening in the packing or mechanical seal box – affording effective shaft sealing and consequent leak-resistance.

Individual chambers surround the casing, head, and rotor bearing sleeve and each is provided with separate openings for connections with heating or cooling lines. See illustration at left showing location of chambers and connections. 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.

All pumps in this section come equipped with jacketing on casing, head, and rotor bearing sleeve (except HL model) 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.

① Values shown represent minimums or maximums. Some special construction or consideration may be required before a cataloged pump can be applied to an application involving maximum pressure or minimum or maximum temperature and/or viscosity.

Metric conversions are based on US measurements and rounded to the nearest whole number.

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VIKING® JACKETED ASPHALT PUMPS SERIES 34 AND 434

SPECIFICATIONS

This series of pumps is available either unmounted or as driven units. Material of construction is cast iron with packing or mechanical seals for versatile sealing on all models.

Dimensions for Unmounted Pumps — See Page 430.4.

CONSTRUCTION — SERIES 34 AND 434 (“HL” THROUGH “N” SIZES)

Pump Construction	Casing	Head	Rotor	Idler	Rotor Shaft	Idler Pin	Bushings	Shaft Seal		Jacketed Internal Relief Valve
								Packed	Cartridge Seal	
Standard Construction	Iron	Iron	Iron	⑤ Iron	Steel	Hardened Steel	Bronze	Standard	Lip Seal	Iron
Steel Fitted	Iron	Iron	Steel	① Iron	Steel	Hardened Steel	Bronze	Standard	Lip Seal	Iron

SPECIFICATIONS

TABLE 1 — UNMOUNTED PUMP

Model Number		Port Size	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)	
Packed	Seal	Inches	GPM	m³/hr	RPM	PSI	Bar	°F	°C	SSU	cPs	PSIG	Bar	LBs	KGs
HL34	HL434	1½	20	4.5	1200	100	6.9	450	232	7,500	1650	400	27.6	26	12
KK34	KK434	2	50	10	420	100	6.9	450	232	7,500	1650	400	27.6	70	32
LQ34	LQ434	② 2½	90	20	420	100	6.9	450	232	25,000	5495	400	27.6	180	82
Q34	Q434	② 3	200	45	350	75	5.2	450	232	7,500	1650	400	27.6	350	160
M34	M434	② 4	280	64	280	75	5.2	450	232	25,000	5495	400	27.6	530	240
N34	N434	② 5	450	102	280	75	5.2	450	232	2,500	550	400	27.6	750	340

TABLE 2 — PUMP JACKETING ④

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
HL34	HL434	365	185	150	10.4	650	343	150	10.4
KK34	KK434	365	185	150	10.4	650	343	150	10.4
LQ34	LQ434	365	185	150	10.4	650	343	150	10.4
Q34	Q434	365	185	150	10.4	650	343	150	10.4
M34	M434	365	185	150	10.4	650	343	150	10.4
N34	N434	365	185	150	10.4	650	343	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 iron or 150# ANSI steel or ductile iron companion flanged fittings. All other tapped for standard pipe (NPT).

③ For use at higher temperatures, consult factory for recommended materials of construction.

④ “HL” Size does not have jacketed rotor bearing sleeve.

⑤ “HL” size has powdered metal idler.

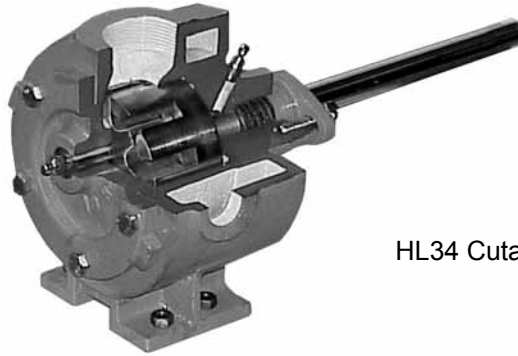
Metric conversions are based on US measurements and rounded to the nearest whole number.

VIKING® JACKETED ASPHALT PUMPS

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SPECIAL INFORMATION



HL34 Cutaway View

RETROFIT KITS

Retrofit kits are available that allow converting new KK, LQ, Q, M, and N packed pumps (series 34) to mechanically sealed pumps (series 434). Kit numbers are listed in the P430 price pages along with a list of parts that come in the kit. Packed pumps already in use can also be converted but a new rotor and shaft assembly will most likely be required (there will be wear on the shaft under the packing) and also new gaskets. Note that the kits do not include the mechanical seal.

GENERAL INSTALLATION NOTES

1. Vent air from stuffing box before start up. The seal may fail prematurely if this is not done.
2. Preheat seal prior to introducing hot product.
3. Use of low pressure (2 - 4 psi) continuous flow steam quench on the atmospheric side is recommended.
4. For double seals, pressurize seal chamber before startup.
5. Do not start pump until it is fully heated. Mechanical seal will fail almost instantly if hard product is in the seal chamber.
6. Do not use the PS II cartridge lip seal for filled asphalt or any product containing abrasives.
7. When converting an existing installation to a mechanical seal, special attention must be placed on the condition of the pump. All pumps should be inspected to make sure the rotor shaft is in good condition. Any wear due to packing will result in mechanical seal leakage. In general, the rotor and shaft assembly should be replaced. N size pumps can use the same rotor bearing sleeve assembly without modification. Outboard face of this assembly will need to be cleaned to make sure there is a good surface for the mechanical seal to seal against.
8. Most asphalt pumps are V-Belt driven. Packing is quite tolerant of any misalignment but mechanical seals are not. Make sure sheaves are aligned properly (see TSM 000) and that the rotor shaft is properly supported with a pillow block bearing. It is also important to make sure the mechanical seal is properly lined with the rotor shaft. This is done at the time of seal installation. Be sure to recheck alignment when the rotor shaft is inserted in the pillow block bearing.

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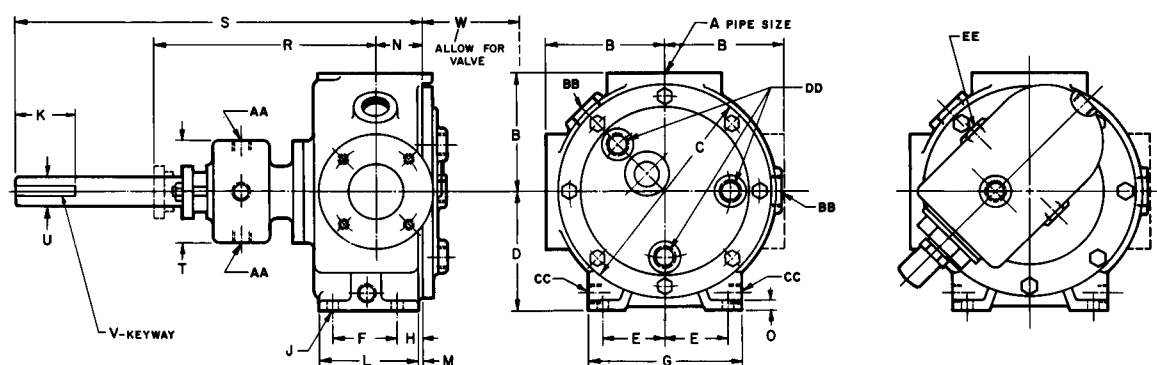
VIKING® JACKETED ASPHALT PUMPS SERIES 34 AND 434

DIMENSIONS

These dimensions are average and not for construction purposes. Certified prints on request.

For specifications, see page 430.2.

DIMENSIONS — 34 AND 434 SERIES UNMOUNTED PUMPS “HL” — “N” SIZE



MODEL NO.		A	B	C	D	E	F	G	H	J	K	L	M	N	O	② R	S	T	U	V	W	JACKET CONNECTIONS (N.P.T.)				
																						AA	BB	CC	DD	EE
HL34 HL434	in mm	1½	3.00 76	4.75 120	3.75 95	1.62 41	1.31 33	4.00 102	.88 22	.34 9	1.75 44	2.44 62	.25 6	1.38 35	N/A N/A	6.00 152	11.12 282	N/A N/A	.75 19	.19 x .09	N/A N/A	N/A N/A	¾	N/A	③ ½	N/A
KK34 KK434	in mm	2	4.88 124	8.00 203	6.00 152	2.88 73	3.00 76	7.00 178	1.00 25	.41 10	3.00 76	4.62 117	.25 6	1.75 44	N/A N/A	9.00 229	18.75 476	4.12 105	1.12 28	.25 x .12	7.12 181	½	1	N/A	½	1
LQ34 LQ434	in mm	① 2½	7.19 183	10.25 260	6.00 152	2.88 73	3.00 76	7.00 178	1.00 25	.47 12	3.00 76	4.62 117	.12 3	1.75 44	.62 16	11.62 295	21.25 540	5.50 140	1.44 37	.38 x .19	7.88 200	¾	1½	¾	③ 1	1
Q34 Q434	in mm	① 3	8.00 203	14.00 356	7.75 197	4.12 105	4.25 108	10.00 254	1.62 41	.75 19	5.00 127	6.50 165	.25 6	3.00 76	.62 16	13.88 353	33.50 851	6.75 171	1.94 49	.50 x .25	10.62 270	¾	1½	1	1¼	1
M34 M434	in mm	① 4	9.50 241	17.25 438	9.50 241	5.00 127	6.25 159	12.00 305	1.44 37	.75 19	5.00 127	8.69 221	.19 5	4.00 102	.75 19	13.38 340	34.00 864	6.75 171	1.94 49	.50 x .25	10.25 260	¾	1½	1	1½	1
N34 N434	in mm	① 5	9.50 241	17.25 438	9.50 241	5.00 127	6.25 159	12.00 305	1.62 41	.75 19	5.00 127	8.50 216	.19 5	4.50 114	.75 19	18.12 460	34.00 864	8.50 216	2.44 62	.62 x .31	10.25 260	¾	2	1½	1½	1

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 HL and LQ 34 and 434 heads have two jacket openings only, (near vertical centerline). “KK”, “Q”, “M”, and “N” head jacket opening per drawing.

VIKING HEAVY DUTY ASPHALT PUMPS (Cast Iron)

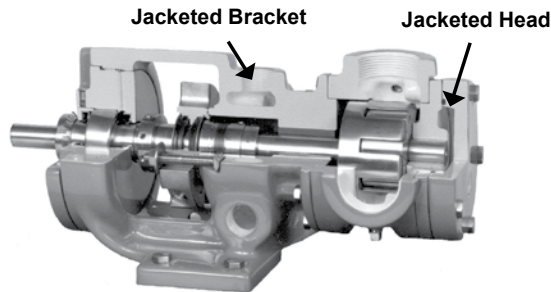
SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH,
324A, 324AH, 4324A, 4324AH
124E, 124EH, 324E, 324EH

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Heavy-Duty, Foot-Mounted Internal Gear Pumps

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.

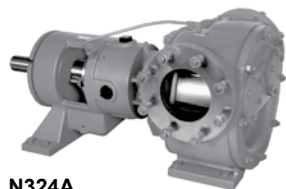
Jacketed Pumps



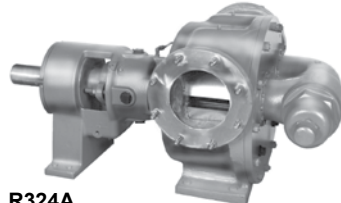
Standard-Jacketed Pump Cutaway – H4224A

Jacketing

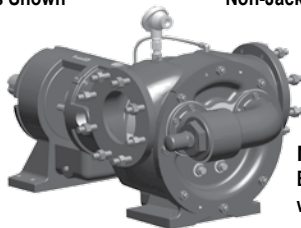
Jacketed pumps provide a cavity, or jacket, on the external wall of the pump through which steam or heat transfer liquid can be passed. The heat transfer medium flows in a closed loop back to the boiler or heater. Standard jacketed pumps include jacketing on the head and bracket, and are used for melting asphalt prior to startup. This series includes models 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH, 324A and 4324A.



N324A
Non-Jacketed Head with
Coverplates Shown



R324A
Jacketed Head with
Non-Jacketed Relief Valve Shown



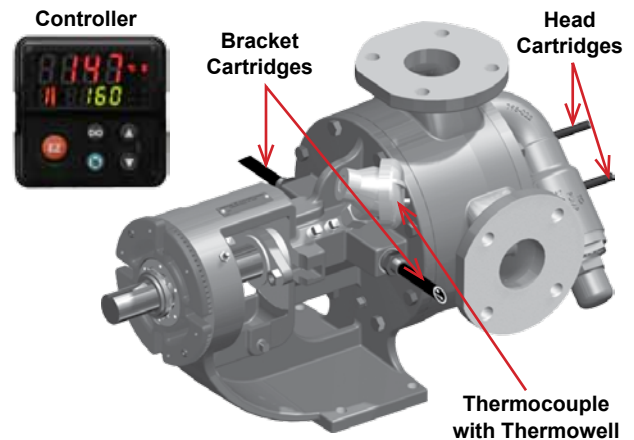
N324E
Electrically Heated Pump
with Relief Valve Shown

Electric Heating

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.

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.



Porting and 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.

Jacket port options for steam or heat transfer liquid include threaded, flanged and weld neck configurations. Viking will provide custom welded flange connections upon request.

The Universal Seal design allows the use of packing, component seals or cartridge seals. Seal plans, including API plan 53 and 54, are available.

Relief Valve Configurations

Jacketed pumps are provided with a jacketed head with no relief

valve as standard. Integral relief valves in jacketed and non-jacketed configurations are available on the "L" through "N" sizes, but require a non-jacketed valve-type head. Electrically heated pumps are provided with a non-jacketed relief valve as standard.

The "N" size pump is standard with a jacketed bracket and non-jacketed head and non-jacketed relief valve. A jacketed head, or a jacketed relief valve with a non-jacketed valve-type head, is available as an option.

The "R" size pump is standard with a jacketed bracket, a jacketed head and non-jacketed relief valve. For the "RS" size contact the factory for assistance with jacketing options.

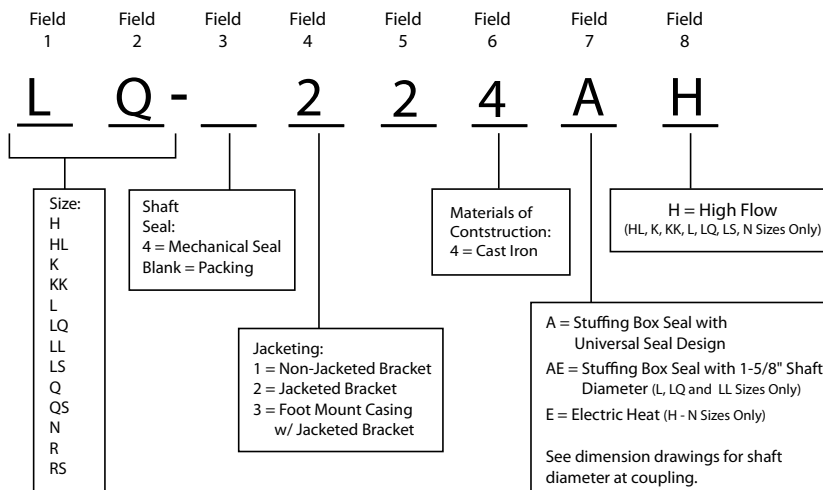
The "RS" size is not available with relief valve.

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VIKING HEAVY DUTY ASPHALT PUMPS (Cast Iron)

SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH, 324A, 324AH, 4324A, 4324AH 124E, 124EH, 324E, 324EH

Model Number Key



Note on Field 4 that only the N, R and RS sizes are the foot mount casing with jacketed bracket (3). All other sizes are available with a jacketed (2) bracket. The N size is standard with a jacketed bracket and non-jacketed head and non-jacketed relief valve, while the R size is standard with a jacketed bracket, a jacketed head, and a non-jacketed relief valve. There are relief valve options available on those pump models designed to accept a relief valve. Options include a jacketed relief valve for the N pump (only available with the non-jacketed head). A non-jacketed relief valve is available for the R pump.

Note that on L, LQ and LL pumps with the "AE" designation at the end of the model number will have 1 5/8" shaft as standard, the L, LQ and LL pumps ending in "A" or "E" will have a 1 7/16" shaft standard. The "AE" designation, i.e., LQ224AE is dimensionally interchangeable with a LQ224A or LQ225 except that the "AE" model has a 1-7/16" shaft at the drive end versus 1-1/8" for the other models. The "AE" version is recommended in severe-duty applications or those where stress corrosion may be encountered. (Dimensional drawings are located on pages 22 and 23).

Electric Heat Specifications

Heat cartridges (pre-installed on pump)

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

Pump Size		Head Cartridges	Watts/Cartridge (Head)	Bracket/Casing Cartridges	Watts/Cartridge (bracket/casing)	Total Watts
H124E	---	1	75	2	100	275
HL124E	HL124EH	1	75	2	100	275
K124E	K124EH	3	130	2	150	690
KK124E	KK124EH	3	130	2	150	690
L124E	L124EH	2	350	2	250	1200
LQ124E	LQ124EH	2	350	2	250	1200
LL124E	---	2	375	2	250	1250
LS124E	LS124EH	2	375	2	250	1250
Q124E	---	3	500	2	350	2200
QS124E	---	3	500	2	350	2200
N324E	N324EH	2	900	2 ①	350	2500

① Heat cartridges are located in the casing.

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

Control System (accessory not included with pump)

Thermocouple

Type J thermocouple with thermowell in weather-resistant housing with 1/2" 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.

VIKING HEAVY DUTY ASPHALT PUMPS (Cast Iron)

SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH, 324A, 324AH, 4324A, 4324AH, 124E, 124EH, 324E, 324EH

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Materials of Construction - All Series

Specifications

Model			① Ports		Nominal Pump Rating (750 SSU and below)			Maximum Hydrostatic Pressure		④ Maximum Discharge Pressure		⑤⑥ Maximum Recommended Temperature for Standard Pump				Steel Fitted Recommended Above		Approximate Shipping Weight with Valve	
Jacketed Pumps		Electric Heat																	
Packed	Stuffing Box Mechanical. Seal	Packed	In.	mm	GPM	m³/hr	RPM	PSIG	BAR	PSIG	BAR	Packed		Mechanical Seal		SSU	cSt	lbs.	kG
												°F	°C	°F	°C				
H224A	H4224A	H124E	②1.5	38	15	3.4	1750	400	28	200	14	450	232	Consult Factory		25,000	5,500	42	19
HL224A	HL4224A	HL124E	②1.5	38	30	6.8	1750	400	28	200	14	450	232			7,500	1,650	45	21
HL224AH	HL4224AH	HL124EH	②1.5	38	50	11	2900	400	28	125	9	450	232			7,500	1,650	45	21
K224A	K4224A	K124E	②2	50	75	17	780	400	28	200	14	450	232			25,000	5,500	110	50
K224AH	K4224AH	K124EH	②2	50	90	20	950	400	28	125	9	450	232			25,000	5,500	110	50
KK224A	KK4224A	KK124E	②2	50	100	23	780	400	28	200	14	450	232			25,000	5,500	115	52
KK224AH	KK4224AH	KK124EH	②2	50	120	27	950	400	28	125	9	450	232			25,000	5,500	115	52
L224A/AE	L4224A/AE	L124E	②2	50	135	30	640	400	28	200	14	450	232			25,000	5,500	165	75
L224AH	L4224AH	L124EH	②2	50	210	48	950	400	28	125	9	450	232			25,000	5,500	165	75
LQ224A/AE	LQ4224A/AE	LQ124E	③2.5	65	135	30	640	400	28	200	14	450	232			25,000	5,500	185	84
LQ224AH	LQ4224AH	LQ124EH	③2.5	65	210	48	950	400	28	125	9	450	232			25,000	5,500	185	84
LL224A/AE	LL4224A/AE	LL124E	③3	75	140	32	520	400	28	200	14	450	232			2,500	550	195	88
LS224A	LS4224A	LS124E	③3	75	200	45	640	400	28	200	14	450	232			75,000	16,500	200	91
LS224AH	LS4224AH	LS124EH	③3	75	230	52	720	400	28	125	9	450	232			75,000	16,500	200	91
Q224A	Q4224A	Q124E	③4	100	300	68	520	400	28	200	14	450	232			7,500	1,650	455	206
QS224A	QS4224A	QS124E	③6	150	500	114	520	400	28	200	14	450	232			75,000	16,500	555	252
N324A	N4324A	N324E	③6	150	600	136	350	400	28	200	14	450	232			75,000	16,500	810	376
N324AH	N4324AH	N324EH	③6	150	685	155	420	400	28	125	9	450	232			75,000	16,500	810	376
R324A	R4324A	---	③8	200	1100	250	280	400	28	200	14	450	232			25,000	5,500	1435	650
RS324A	RS4324A	---	③10	254	1600	364	280	400	28	125	9	450	232			25,000	5,500	1580	718

- 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 Selector Program, 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 Consult factory for maximum temperatures for mechanical seals.

Construction —

Series 224A, 224AH, 4224A, 4224AH, 224AE, 4224AE, 124E, 124EH, 324A, 4324A, 324E & 324EH (all sizes)

Pump Construction	Casing	Head & Jacketed Head Plate	Bracket	Rotor	Pressure Relief Valve	Idler	Rotor Shaft	Idler Pin	Shaft Sealing		Bushings
									Packed	Mech. Seal	
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	Cast Iron ASTM A48, Class 35B	③ Cast Iron ASTM A48 Class 35B	Steel ASTM A108, Grade 1045	Hardened Steel ASTM A108, Grade 10L45	Standard	Consult Factory	Bronze ASTM B584 (B505), Alloy C93700
Steel Fitted				④ Steel ASTM A108, Grade 1045		② Iron			Standard		

NOTE: Jacketed pump sizes H through M, relief valve cannot be used on pump with jacketed head plate or jacketed head. The N size is standard with a jacketed bracket and non-jacketed head and non-jacketed relief valve. The R is standard with a jacketed bracket, jacketed head, and non-jacketed relief valve. RS size relief valve not available. Contact factory for jacketing options.

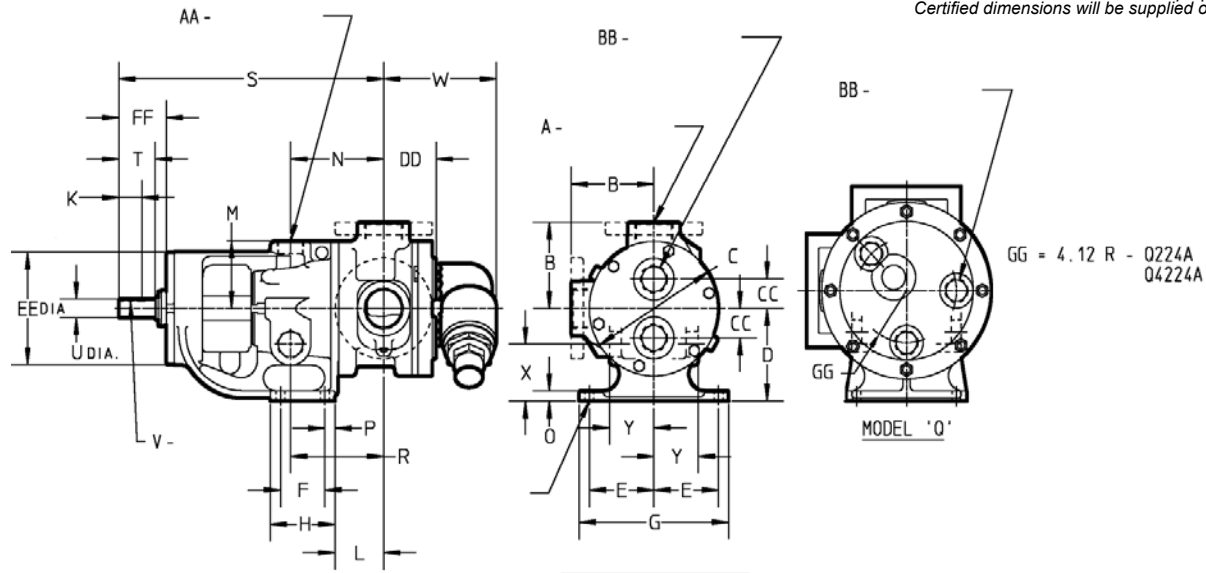
- ① KK, LS, QS, N and RS sizes have ductile iron rotor, ASTM A536 Grade 60-40-18.
 ② Steel fitted Q and QS sizes have steel idler.
 ③ H and HL sizes have powdered metal idler, MPIF Std 35 FC-0208-50.
 ④ Material specification for HL steel rotor is AISI 8620, LS steel rotor is ASTM A148 80-50.

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VIKING HEAVY DUTY JACKETED ASPHALT PUMPS (Cast Iron)
SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH,
324A, 324AH, 4324A, and 4324AH

Dimensions - H through Q Sizes – Cast Iron Construction – Jacketed Pumps

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



NOTE: Dimensions "R" through "FF" on next page

Model Number		A (in)		B	C	D	E	F	G	H	J	③ K	L	M	N	O
Jacketed Pumps																
Packed	Stuffing Box Seal															
H224A HL224A HL224AH	H4224A HL4224A HL4224AH	①1.5	in	3.00	4.75	3.50	2.75	2.25	6.75	3.50	0.47	0.99	3.38	2.38	4.00	0.56
			mm	76.2	120.6	88.9	69.8	57.1	171.4	88.9	11.9	25.1	85.8	60.5	101.6	14.2
K224A K224AH KK224A KK224AH	K4224A K4224AH KK4224A KK4224AH	①2	in	5.12	8.00	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	4.00	5.75	0.62
			mm	130.0	203.2	139.7	101.6	69.8	234.9	101.6	13.5	36.1	76.2	101.6	146.0	15.7
L224A L224AH L224AE	L4224A L4224AH L4224AE	①2	in	6.50	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2	3.38	5.12	6.56	0.62
			mm	165.1	260.3	177.8	111.3	101.6	254	136.7	13.5	50.8	85.9	130.0	166.6	15.7
LQ224A LQ224AH LQ224AE	LQ4224A LQ4224AH LQ4224AE	②2.5	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2	3.38	5.12	6.56	0.62
			mm	182.6	260.3	177.8	111.3	101.6	254	136.7	13.5	50.8	85.9	130.0	166.6	15.7
LL224A LL224AE	LL4224A LL4224AE	②3	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2	3.38	5.12	6.56	0.62
			mm	182.6	260.3	177.8	111.3	101.6	254	136.7	13.5	50.8	85.9	130.0	166.6	15.7
LS224A LS224AH	LS4224A LS224AH	②3	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.55	4.75	5.12	7.40	0.62
			mm	182.6	260.3	177.8	111.3	101.6	254	136.7	13.5	64.8	120.6	130.0	188.0	15.7
Q224A	Q4224A	②4	in	8.25	14.00	8.75	4.12	4.00	10.00	6.00	0.69	3.58	6.62	7.00	7.62	0.75
			mm	209.5	355.6	222.2	104.6	101.6	254	152.4	17.5	90.9	168.1	177.8	193.5	19.0

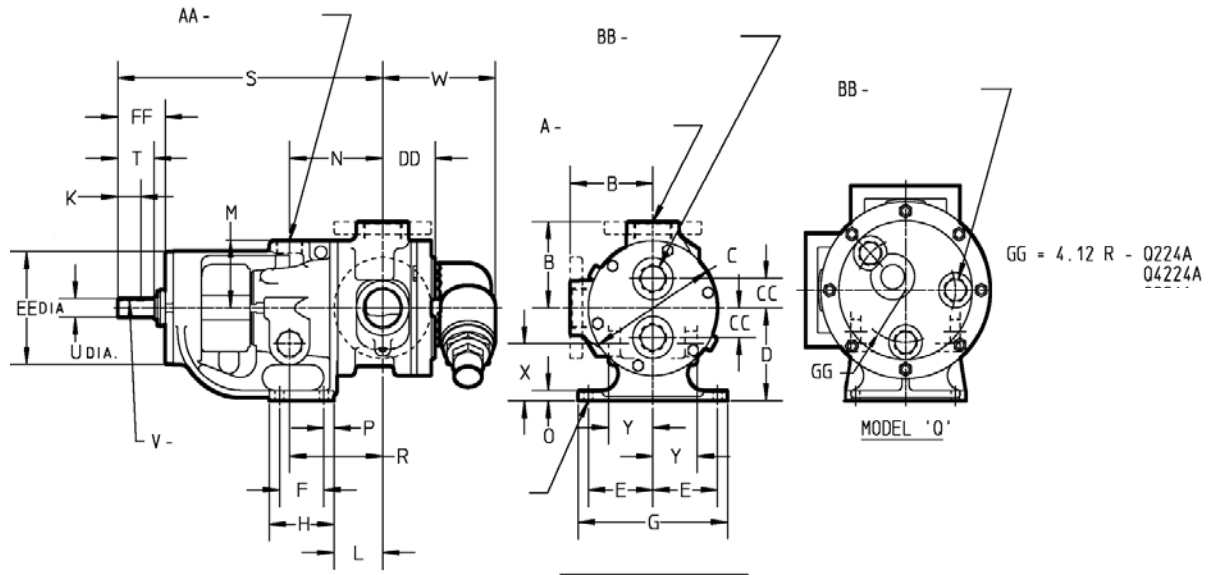
① Port(s) tapped for standard (NPT) pipe.

② Port(s) suitable for use with 125# ANSI cast iron companion flanges or flanged fittings.

③ "K" dimension for Cast Iron L, LQ and LL sizes is for "A" models. "K" dimension for L, LQ and LL size 224AE and 4224AE pumps is 1.44" (36.6mm).

VIKING HEAVY DUTY JACKETED ASPHALT PUMPS (Cast Iron)
SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH,
324A, 324AH, 4324A, and 4324AH

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Model Number			P	R	S	⑥ T	⑦ U	⑧ V	W	X	Y	⑤ AA	⑤ BB	CC	DD	EE	FF
Packed	Stuffing Box Seal																
H224A	H4224A	in	0.62	4.00	12.06	1.62	0.75	.19 X .09	4.04	1.80	1.83	0.75	0.50	0.94	2.41	5.75	2.30
HL224A	HL4224A	mm	15.7	101.6	306.3	41.1	19.0	4.83 X 2.29	102.6	45.7	46.5	19.0	12.7	23.9	61.2	146.0	58.4
HL224AH	HL4224AH																
K224A	K4224A	in	0.62	5.75	16.38	2.25	1.12	.25 X .12	7.00	3.38	2.75	1.25	1.25	1.75	3.25	6.75	2.92
K224AH	K4224AH	mm	15.7	146.0	416.0	57.1	28.4	6.35 X .05	177.8	85.9	69.8	31.7	31.7	44.4	82.5	171.4	74.2
KK224A	KK4224A																
KK224AH	KK4224AH																
L224A/AH	L4224A/AH	in	0.62	6.56	17.88	2.25	1.12	.38 X .19	7.18	4.62	3.25	1.25	1	3.00	3.81	6.75	2.93
L224AE	L4224AE	mm	15.7	166.6	454.2	57.1	28.4	9.65 X .83	182.4	117.3	82.5	31.7	25.4	76.2	96.8	171.4	74.4
LQ224A/AH	LQ4224A/AH	in	0.62	6.56	17.88	2.25	1.12	.38 X .19	7.18	4.62	3.25	1.25	1	3.00	3.81	6.75	2.93
LQ224AE	LQ4224AE	mm	15.7	166.6	454.2	57.1	28.4	9.65 X .83	182.4	117.3	82.5	31.7	25.4	76.2	96.8	171.4	74.4
LL224A/AH	LL4224A/AH	in	0.62	6.56	17.88	2.25	1.12	.38 X .19	7.18	4.62	3.25	1.25	1	3.00	4.31	6.75	2.93
LL224AE	LL4224AE	mm	15.7	166.6	454.2	57.1	28.4	9.65 X .83	182.4	117.3	82.5	31.7	25.4	76.2	109.5	171.4	74.4
LS224A/AH	LS4224A/AH	in	0.62	7.00	19.25	3.50	1.44	.38 X .19	7.72	4.40	3.30	1.25	1	3.00	4.50	7.00	4.03
		mm	15.7	177.8	488.9	88.9	36.58	9.65 X .83	196.1	111.8	83.8	31.7	25.4	76.2	114.3	177.8	102.4
Q224A	Q4224A	in.	1.00	6.62	23.75	4.50	1.94	.50 X .25	11.25	5.50	4.50	1.5	1.25	---	4.57	8.38	5.35
		mm	25.4	168.1	603.2	114.3	49.3	12.70 X .35	285.7	139.7	114.3	38.1	31.7	---	116.1	212.8	135.9

⑤ Ports for steam or hot oil jacketing are inch standard NPT threads. Metric (mm) equivalents are for information only, and do not indicate a metric thread size.

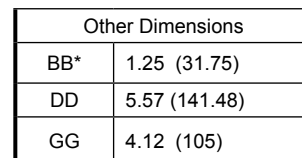
⑥ "T" dimension shown for Cast Iron sizes L, LQ and LL is for "A" models. Dimension for L, LQ and LL size 224AE and 4224AE pumps is 2.35" (59.7 mm).

⑦ "U" dimension shown for Cast Iron sizes L, LQ and LL is for "A" models. "U" dimension for L, LQ and LL size 224AE and 4224AE pumps is 1.44" (36.6 mm).

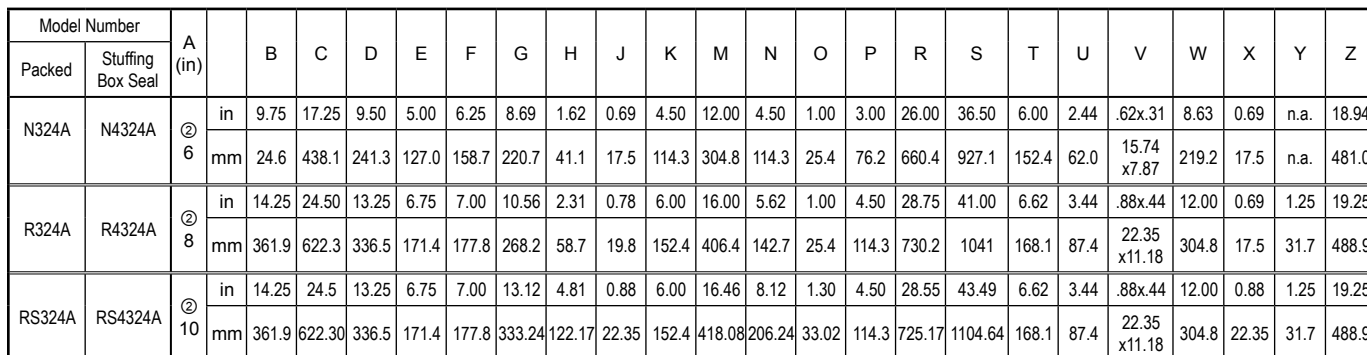
⑧ "V" dimension shown for Cast Iron sizes L, LQ and LL is for "A" models. "V" dimension for L, LQ and LL size 224AE and 4224AE pumps is 0.38 X 0.19" (9.65 X 4.83 mm).

VIKING HEAVY DUTY JACKETED ASPHALT PUMPS (Cast Iron)
SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH,
324A, 324AH, 4324A, and 4324AH

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



Dimensions - N, R & RS Sizes – Jacketed Series 324A and 4324A



② Ports are suitable for use with 125# ANSI cast iron (324A/4324A)

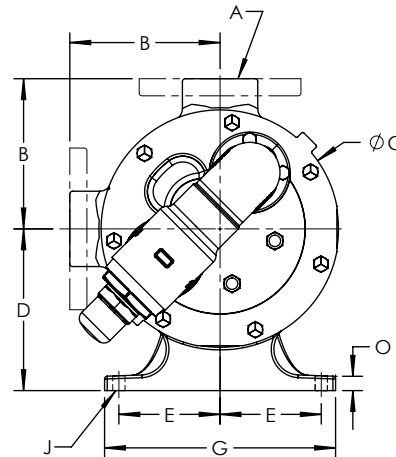
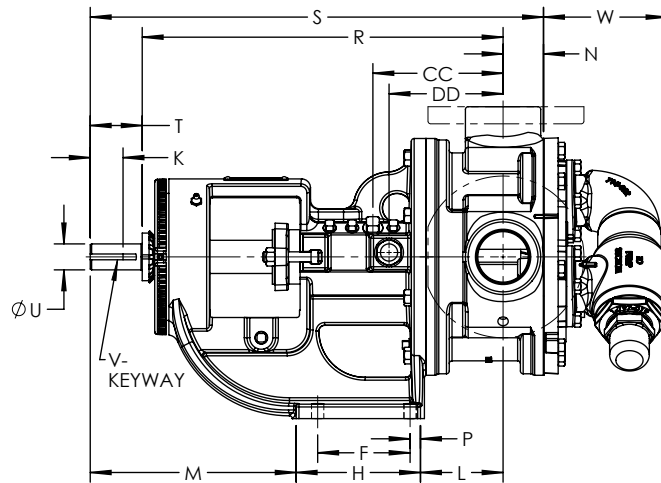
VIKING HEAVY DUTY ELECTRICALLY HEATED ASPHALT PUMPS
(Cast Iron)
SERIES 124E and 124EH

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Dimensions - H through Q Sizes – Electrically Heated – Non Jacketed

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

See drawing on Page 13 for cartridge heater and thermocouple port location.



Model Number	A (in)		B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U	V	W	CC	DD
Packed																								
H124E	① 2	in	3.00	4.75	3.50	2.75	2.25	6.75	3.50	0.47	0.99	3.38	5.19	1.19	0.56	0.62	10.44	13.25	1.62	0.75	.19 x .09	2.85	5.62	4.92
HL124E HL124EH		mm	76.2	120.6	88.9	69.8	57.1	171.4	88.9	11.9	25.1	85.8	131.8	30.2	14.2	15.7	265.2	336.5	41.1	19.0	4.83 x 2.29	72.4	142.75	124.97
K124E	① 2	in	5.12	8.00	5.50	4.00	2.75	9.25	4.0	0.53	1.42	3.00	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 K124EH KK124EH		mm	130.0	203.2	139.7	101.6	69.8	234.9	101.6	13.5	36.1	76.2	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	① 2	in	6.50	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.00	3.38	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
L124EH		mm	165.1	260.3	177.8	111.3	101.6	254.0	136.7	13.5	50.8	85.9	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	② 2.5	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.00	3.38	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
LQ124EH		mm	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	50.8	85.9	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	② 3	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.00	3.38	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	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	50.8	85.9	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	② 3	in	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	2.55	4.75	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
LS124EH		mm	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	64.8	120.6	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	② 4	in	8.25	14.00	8.75	4.12	4.00	10.00	6.00	0.69	3.58	6.62	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	209.5	355.6	222.2	104.6	101.6	254.0	152.4	17.5	90.9	168.1	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.

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

VIKING HEAVY DUTY ELECTRICALLY HEATED ASPHALT PUMPS (Cast Iron) SERIES 124E, 324E and 324EH

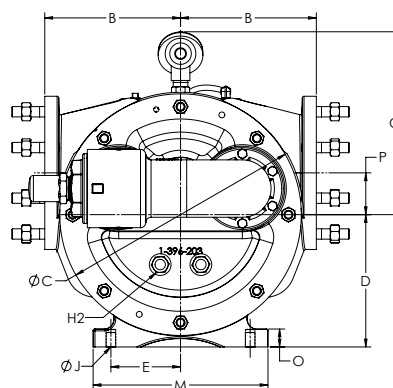
Dimensions given are for guidance only and should not be used for installation purposes. Certified dimensions will be supplied on request.

[illegible]

Technical drawing of a 100mm diameter ball valve. The drawing shows a front view of the valve body with a central ball and handle assembly. Dimensions are provided in millimeters:

- Top horizontal dimension: 2×9.00
- Left vertical dimension: 2×3.00
- Left vertical dimension (total): 8.75
- Bottom horizontal dimension (total): 10.00
- Bottom horizontal dimension (left): 4×4.12
- Bottom horizontal dimension (right): $2 \times .88$
- Bottom right vertical dimension: $2 \times .80$

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

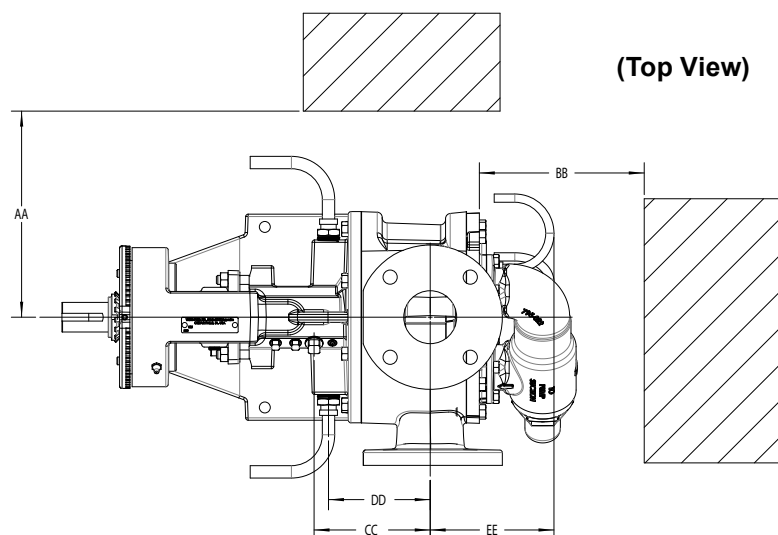


① Ports are suitable for use with 125# ANSI cast iron.

VIKING HEAVY DUTY ELECTRICALLY HEATED ASPHALT PUMPS
(Cast Iron)
SERIES 124E and 124EH

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Dimensions - K through QS Sizes – Electrically Heated – Non Jacketed



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)	
H124E HL124E HL124EH	4.92	124.97	5.62	142.75	5.66	143.76	8.13	206.50	7.75	196.85
K124E K124EH KK124E KK124EH	4.14	105.16	4.88	123.95	5.66	143.76	8.13	206.50	7.75	196.85
L124E L124EH	4.92	124.97	5.62	142.75	5.71	145.03	7.00	177.80	6.25	158.75
LQ124E LQ124EH					5.75	146.05			6.75	171.45
LL124E					6.25	158.75			6.50	165.10
LS124E LS124EH	6.09	154.69	6.25	158.75	6.44	163.58				
Q124E	5.83	148.08	7.33	186.18	8.25	209.55	9.25	234.95	7.75	196.85
QS124E	6.33	160.78	7.83	198.88	9.25	234.95				

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VIKING HEAVY DUTY JACKETED ASPHALT PUMPS (Cast Iron)
SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH,
324A, 324AH, 4324A, and 4324AH

Optional Casings - Standard-Jacketed* Pumps

Model Number		Standard Jacketed Pumps' Standard Ports ¹	Standard Jacketed Pumps Optional Ports
Packed	Stuffing Box Seal		
H224A	H4224A	1.5" ①	1.5" ② Ⓜ, 2" ② Ⓜ
HL224A	HL4224A		
HL224AH	HL4224AH		
K224A	K4224A	2" ①	2" ② Ⓜ, 2.5" ② Ⓜ Ⓜ, 3" ② Ⓜ, 4" ② Ⓜ
K224AH	K4224AH		
KK224A	KK4224A	2" ①	2" ② Ⓜ, 2.5" ② Ⓜ, 3" ② Ⓜ, 4" ② Ⓜ
KK224AH	KK4224AH		
L224A/AE	L4224A/AE	2" ①	-----
L224AH	L4224AH		
LQ224A/AE	LQ4224A/AE	2.5" ②	3" ② Ⓜ, 4" ② Ⓜ, 6" ② Ⓜ
LQ224AH	LQ4224AH		
LL224A/AE	LL4224A/AE	3" ②	4" ② Ⓜ, 5" ② Ⓜ
LS224A	LS4224A	3" ②	4" ② Ⓜ
LS224AH	LS4224AH		
Q224A	Q4224A	4" ②	3" ② Ⓜ, 5" ② Ⓜ, 6" ② Ⓜ
QS224A	QS4224A	6" ② Ⓜ	6" ② Ⓜ
N324A	N4324A	6" ② Ⓜ	5" ② Ⓜ
N324A	N4324A	6" ② Ⓜ	5" ② Ⓜ
R324A	R4324A	8" ② Ⓜ	6" ② Ⓜ
RS324A	RS4324A	10" ② Ⓜ	

① Port(s) tapped for standard (NPT) pipe.

② Port(s) suitable for use with 125# ANSI cast iron companion flanges or flanged fittings.

Ⓜ Non-Rotatable Ports at 90 degree angle, contact factory for available orientation (right hand or left hand).

Ⓜ Opposite Ports

Ⓜ 90° port arrangement for Right Hand inlet (viewed from shaft end).

Contact factory for flange details (e.g. Flat face or raised face flanges).

* Standard-Jacketed pumps have a jacketed bracket and head, but the casing is not jacketed. They have the series designations 224A/4224A & AE, and 224AH/4224AH. Also the N324A, and N4324A, are standard with a jacketed bracket and non-jacketed head and relief valve, while the R324A, and R4324A, are standard with a jacketed bracket and jacketed head and non-jacketed relief valve. For the RS324A and RS4324A, contact the factory for jacketing options.

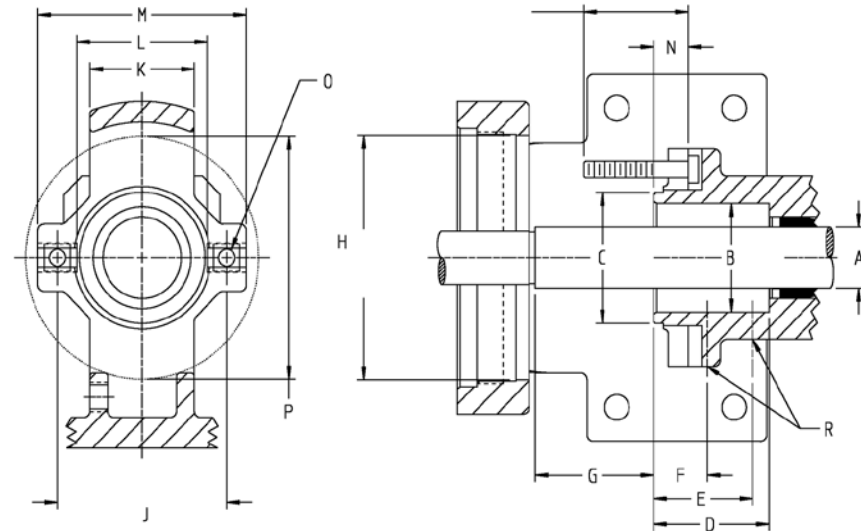
Additional jacketed casings, including fully-jacketed casing, available in steel.

See Universal Seal Catalog Section 630.

VIKING HEAVY DUTY JACKETED ASPHALT PUMPS (Cast Iron)
SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH,
324A, 324AH, 4324A, and 4324AH

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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
L, LQ, & LL (AE)	In	1.62	2.375	3.00	3.13	2.25	1.16	3.52	5.25	3.50 to 4.50	3.00	3.00	5.00	0.46	7/16	5.25	1/4
	mm	41.3	60.3	76.2	79.5	57.1	29.5	89.4	133.3	88.9 to 114.3	76.2	76.2	127.0	11.7	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
R	In	4.50	5.75	-	5.56	1.53	-	4.79	9.81	7.75	-	-	-	-	3/4②	9.81	1/4
	mm	114.3	146.1	-	141.2	38.9	-	121.7	249.2	196.8	-	-	-	-	19.0②	249.2	6.3
RS	In	4.50	5.75	-	5.56	1.53	-	4.79	9.81	7.75	-	-	-	-	3/4②	9.81	1/4
	mm	114.3	146.1	-	141.2	38.9	-	121.7	249.2	196.8	-	-	-	-	19.0②	249.2	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.

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VIKING HEAVY DUTY ASPHALT PUMPS (Cast Iron)
SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH,
324A, 324AH, 4324A, 4324AH
124E, 124EH, 324E, 324EH

Performance Curve Notes

Printed performance curves are not available.

Performance curves can be electronically generated with the Viking Pump Selector Program. This program is located at www.vikingpump.com/pumpselector.

NPSH_R - Feet of Liquid S.G. 1.0

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								
R, RS	2.7	3.2	4.2	5.8	8.2	11.9									

1. NPSH_A (Net Positive Suction Head *Available*) must be greater than the NPSH_R (Net Positive Suction Head *Required*) given in the above table.
2. VISCOSITY - Above chart applies to viscosities up thru 750 SSU. Consult factory or Viking representative for viscosities above 750 SSU.
3. For liquids other than water, divide by specific gravity.