

VIKING® JACKETED ASPHALT PUMPS

SERIES 34 AND 434

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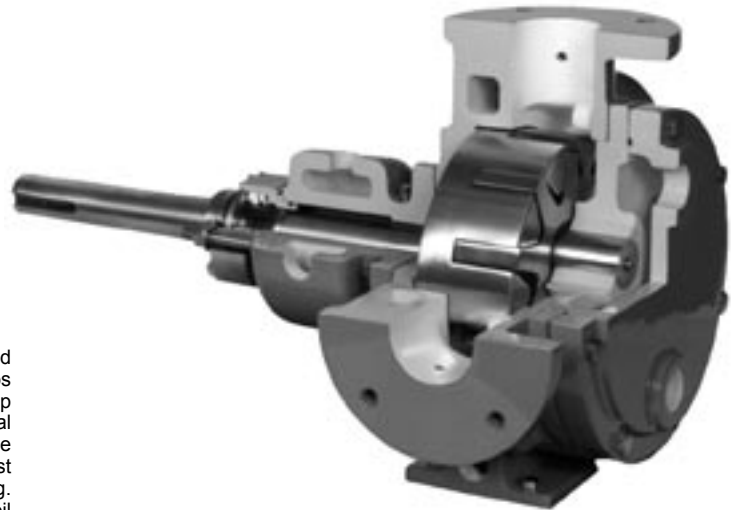
FEATURES

| | |
|---------------------|--|
| 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 m ³ /Hr) |

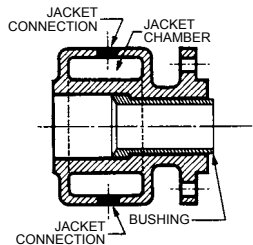


SHAFT SEAL OPTIONS

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.



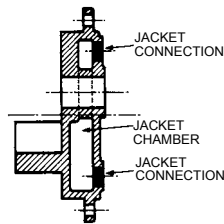
Series 434 Cutaway View



JACKETED ROTOR BEARING SLEEVE

(Standard Equipment)

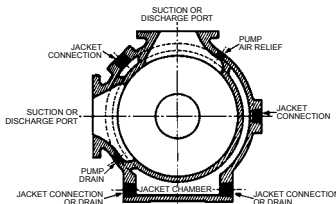
Jacket chamber indicated above accommodates the heating or cooling agent. All chambers are suitable for maximum steam pressures of 150 PSI or 365°F.



JACKETED HEAD

(Standard Equipment)

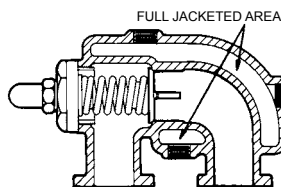
Series 34 and 434 pumps are equipped with this type of head as standard. Pumps with jacketed heads cannot be furnished with relief valve on head. The valve must be installed in line.



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.
Performance Data for Pumps — See Pages 430.7 through 430.18.*

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 | 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 | m ³ /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 | |
| Packed | Seal | °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.

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.

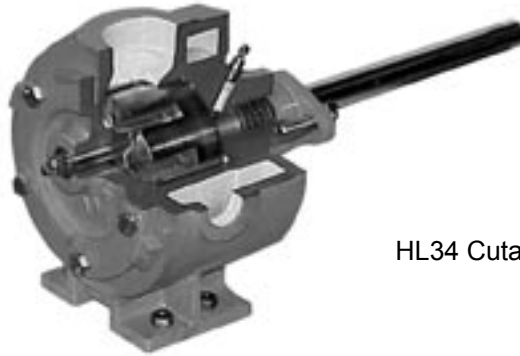
Metric conversions are based on US measurements and rounded to the nearest whole number.

VIKING® JACKETED ASPHALT PUMPS

SERIES 34 AND 434

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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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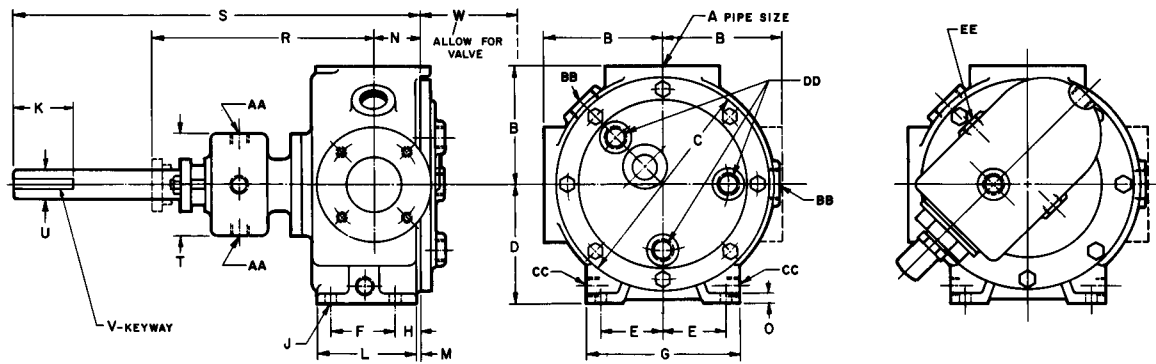
VIKING® JACKETED ASPHALT PUMPS SERIES 34 AND 434

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 | ¾ | N/A | ⊙ 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 | ⊙ 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 | ⊙ 1 | 1 |
| Q34 Q434 | in mm | ⊙ 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 | ⊙ 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 | ⊙ 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 JACKETED ASPHALT PUMPS (Cast Iron)

SERIES 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH, 4224B, 324A, 324AH, 4324A, and 4324AH

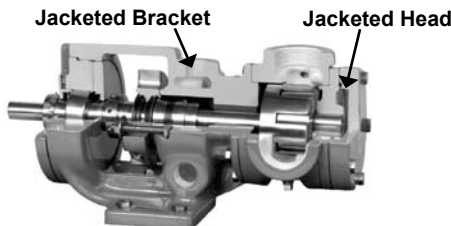
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Heavy-Duty, Foot-Mounted Internal Gear Pumps With Multiple Seal Options

The jacketed cast iron Universal Seal pump is commonly used for asphalt applications. Now the details regarding these jacketed pumps have been added to this section for convenience.



Jacketed Pump (shown: KK4224A with optional flanged port)



Standard-Jacketed Pump Cutaway – H4224A

Operating Range:

| Cast Iron Series, 224A, 224AE, 224AH, 324A, 4224A, 4224B, 4224AE, 4224AH & 4324A | | |
|--|-----------------------|--|
| Nominal Flow | (GPM) | 15 - 1600 |
| | (M ³ /hr.) | 3.4 - 364 |
| Pressure Range | (PSI) | 200 PSI: 100 SSU and above 100 PSI: Below 100 SSU |
| | (Bar) | 14 Bar: 20 cSt and above 7 Bar: below 20 cSt |
| Temp. Range | (°F) | -60°F to +650°F (N&R -60°F to +450°F) |
| | (°C) | -51°C to +343°C (N&R -51°C to +232°C) |
| Viscosity Range | (SSU) | 28 SSU to 2,000,000 SSU |
| | (cSt) | 0.1 cSt to 440,000 cSt |



ATEX Certification available.

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 to control the temperature of the fluid in the pump. The heat transfer medium flows in a closed loop back to the boiler or heater. Applications include “melting” ambient temperature solids like asphalt which solidify in the pump when it cools, and maintaining precise temperature control in processes like manufacturing polymers and epoxy resins.

Standard-Jacketed Pumps

Standard-Jacketed pumps include series 224A, 224AE, 224AH, 4224A, 4224AE, 4224AH and 4224B. They feature jacketing on the head and bracket only, and are typically used for melting ambient temperature solids.

Relief Valve Configurations

Jacketed pumps are provided with a jacketed head with no relief valve as standard. Integral pressure relief valves in jacketed and non-jacketed configurations are available on “L” through “N” sizes, but require a non-jacketed valve-type head.

The “N” 324A, and 4324A, pumps are standard with a jacketed bracket and non-jacketed head and non-jacketed relief valve. A jacketed head, or a jacketed relief valve with non-jacketed valve-type head, is available as an option.

The “R” 324A, and 4324A, pumps are standard with a jacketed bracket, a jacketed head and a non-jacketed relief valve. For “RS” models contact the factory for assistance with jacketing options.



N4324A
Non-Jacketed Head with
Coverplates Shown



R4323A
Jacketed Head with
Non-Jacketed Relief Valve
Shown

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.

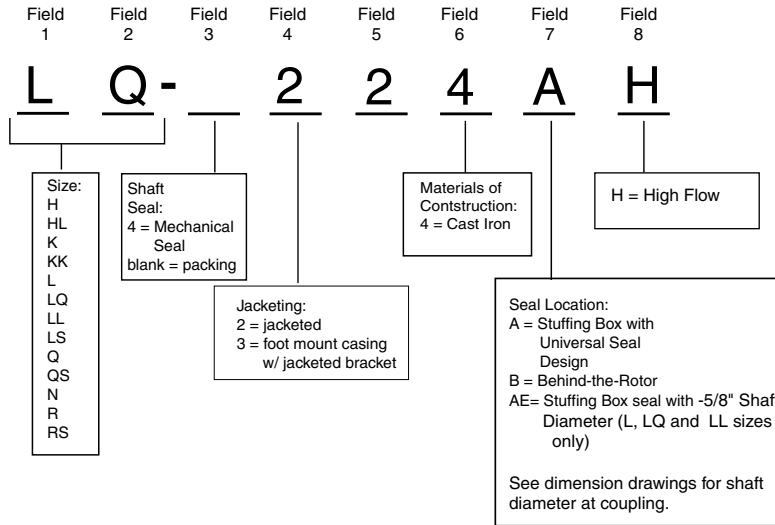
Jacketed port options for steam or heat transfer liquid include threaded, flanged and weld neck configurations. Viking will provide custom welded steam or hot oil flange connections upon request.

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

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

Model Number Key



Note on Field 4 that only the N, R and RS sizes are the foot mount 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.

The Universal Seal series comes in several different versions depending on the type and location of the sealing device. The L, LQ and LL size also offer two shaft diameter options. The model numbering scheme is illustrated in the table below, with the cast iron, jacketed series pumps.

| Model Number Scheme | | | |
|---------------------|---------------------|------------------------|-----------------------|
| Packed | Stuffing Box Seal | ①Rated for Higher Flow | Behind-the-Rotor Seal |
| H224A | H4224A | NA | H4224B |
| HL224A | HL4224A | HL224AH HL4224AH | HL4224B |
| K224A | K4224A | K224AH K4224AH | K4224B |
| KK224A | KK4224A | KK224AH KK4224AH | KK4224B |
| L224A L224AE | L4224 A L4224AE | L224AH L4224AH | L4224B |
| LQ224A LQ224AE | LQ4224A LQ4224AE | LQ224AH LQ4224AH | LQ4224B |
| LL224A LL224AE | LL4224A LL4224AE | NA | LL4224B |
| LS224A | LS4224A | LS224AH LS4224AH | NA |
| Q224A | Q4224A | NA | NA |
| QS224A | QS4224A | NA | NA |
| N324A | N4324A | N324AH N4324AH | NA |
| R324A RS324A | R4324A RS4324A | NA | NA |

Note that on L, LQ and LL pumps with the "AE" or "B" 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" will have a 1 7/16" shaft standard as illustrated in the chart below. The "B" designation i.e. L4224B or KK4224B, are replacements for similar size 4225 models (see dimensional drawings for shaft coupling sizes). The "AE" designation, i.e., LQ224AE is dimensionally interchangeable with a LQ224A or LQ225 except that the "AE" model has a 1-5/8" shaft at the drive end versus 1-7/16" 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)..

| Model Sizes L, LQ, LL | Shaft Seal Dimension | "U" Dimension |
|------------------------------|-------------------------|------------------|
| 224A, 4224A 224AH, 4224AH | 1-7/16" | 1-1/8" |
| 224AE, 4224AE 4224B | 1-5/8" | 1-7/16" |

① These models have been performance tested and rated for higher flow service specifically for asphalt applications. Performance curves can be electronically generated with the Viking Pump Selector Program. For authorized distributors, this program is available at www.idexconnect.com (Security passwords are required) and is found listed under the "Products" tab

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

Materials of Construction - All Series

Specifications

| Packed | 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 | |
|-----------|------------------------------------|-----------------------------|---------|-----|--|--------------------|------|-------------------------------------|-----|-------------------------------------|-----|--|-------------------------|-----|-----|--------------------------------------|--------|---|-----|
| | Stuffing Box Mechanical Seal | Behind the Rotor Seal | | | | | | | | | | ⑥ | | ⑦ | | | | | |
| | | | In. | mm | GPM | m ³ /hr | RPM | PSIG | BAR | PSIG | BAR | Packed | ⑥ Mechanical Seal | SSU | cSt | lbs. | kG | | |
| | °F | °C | °F | °C | | | | | | | | | | | | | | | |
| H224A | H4224A | H4224B | ②1.5 | 38 | 15 | 3.4 | 1750 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 42 | 19 |
| HL224A | HL4224A | HL4224B | ②1.5 | 38 | 30 | 6.8 | 1750 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 7,500 | 1,650 | 45 | 21 |
| HL224AH | HL4224AH | NA | ②1.5 | 38 | 50 | 11 | 2900 | 400 | 28 | 125 | 9 | 450 | 232 | 450 | 232 | 7,500 | 1,650 | 45 | 21 |
| K224A | K4224A | K4224B | ②2 | 50 | 75 | 17 | 780 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 120 | 55 |
| K224AH | K4224AH | NA | ②2 | 50 | 90 | 20 | 950 | 400 | 28 | 125 | 9 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 120 | 55 |
| KK224A | KK4224A | KK4224B | ②2 | 50 | 100 | 23 | 780 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 125 | 57 |
| KK224AH | KK4224AH | NA | ②2 | 50 | 120 | 27 | 950 | 400 | 28 | 125 | 9 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 125 | 57 |
| L224A/AE | L4224A/AE | L4224B | ②2 | 50 | 135 | 30 | 640 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 175 | 80 |
| L224AH | L4224AH | NA | ②2 | 50 | 210 | 48 | 950 | 400 | 28 | 125 | 9 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 175 | 80 |
| LQ224A/AE | LQ4224A/AE | LQ4224B | ③2.5 | 65 | 135 | 30 | 640 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 190 | 87 |
| LQ224AH | LQ4224AH | NA | ③2.5 | 65 | 210 | 48 | 950 | 400 | 28 | 125 | 9 | 450 | 232 | 450 | 232 | 25,000 | 5,500 | 190 | 87 |
| LL224A/AE | LL4224A/AE | LL4224B | ③3 | 75 | 140 | 32 | 520 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 2,500 | 550 | 200 | 91 |
| LS224A | LS4224A | NA | ③3 | 75 | 200 | 45 | 640 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 75,000 | 16,500 | 210 | 96 |
| LS224AH | LS4224AH | NA | ③3 | 75 | 230 | 52 | 720 | 400 | 28 | 125 | 9 | 450 | 232 | 450 | 232 | 75,000 | 16,500 | 210 | 96 |
| Q224A | Q4224A | NA | ③4 | 100 | 300 | 68 | 520 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 7,500 | 1,650 | 580 | 265 |
| QS224A | QS4224A | NA | ③6 | 150 | 500 | 114 | 520 | 400 | 28 | 200 | 14 | 450 | 232 | 450 | 232 | 75,000 | 16,500 | 580 | 265 |
| N324A | N4324A | NA | ③6 | 136 | 600 | 136 | 350 | 400 | 28 | 200 | 14 | 450 | 232 | 300 | 132 | 75,000 | 16,500 | 810 | 376 |
| N324AH | N4324AH | NA | ③6 | 136 | 685 | 155 | 420 | 400 | 28 | 125 | 9 | 450 | 232 | 300 | 132 | 75,000 | 16,500 | 810 | 376 |
| R324A | R4234A | NA | ③8 | 200 | 1100 | 250 | 280 | 400 | 28 | 200 | 14 | 450 | 232 | 300 | 132 | 25,000 | 5,500 | 1435 | 650 |
| RS324A | RS4324A | NA | ③10 | 254 | 1600 | 364 | 280 | 400 | 28 | 125 | 9 | 450 | 232 | 300 | 132 | 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. If suction pressure exceeds 50 PSIG, consult factory.
- ⑤ Higher temperatures can be handled with special construction, consult factory.
- ⑥ Temperature based on PTFE seal as standard. Lower temperature limits may be required when using other seal elastomers.

CONSTRUCTION — SERIES 224A, 224AH, 4224A, 4224AH, 224AE, 4224AE, 4224B, 324A, AND 4324A (ALL SIZES)

| Pump Construction | Casing | Head and Jacketed Head Plate | Bracket | Rotor | Pressure Relief Valve | Idler | Rotor Shaft | Idler Pin | Shaft Sealing | |
|-----------------------|-------------------------------|-------------------------------|-------------------------------|---------------------------------|-------------------------------|--------------------------------|-----------------------------|---------------------------------------|---------------|------------|
| | | | | | | | | | 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 | PTFE Seal |
| Steel Fitted | | | | ⑤ Steel ASTM A108, Grade 1045 | | ② Iron | | | Standard | PTFE Seal |

| Pump Construction | Bushings | | | |
|-----------------------|---------------------------------------|---------------------------------------|-----------------|-------------------|
| | Packed | | Mechanical Seal | |
| | Idler | Bracket | Idler | Bracket |
| Standard Construction | Bronze ASTM B584 (B505), Alloy C93700 | Bronze ASTM B584 (B505), Alloy C93700 | Carbon Graphite | ④ Carbon Graphite |
| Steel Fitted | | | | ④ Carbon Graphite |

NOTE: 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

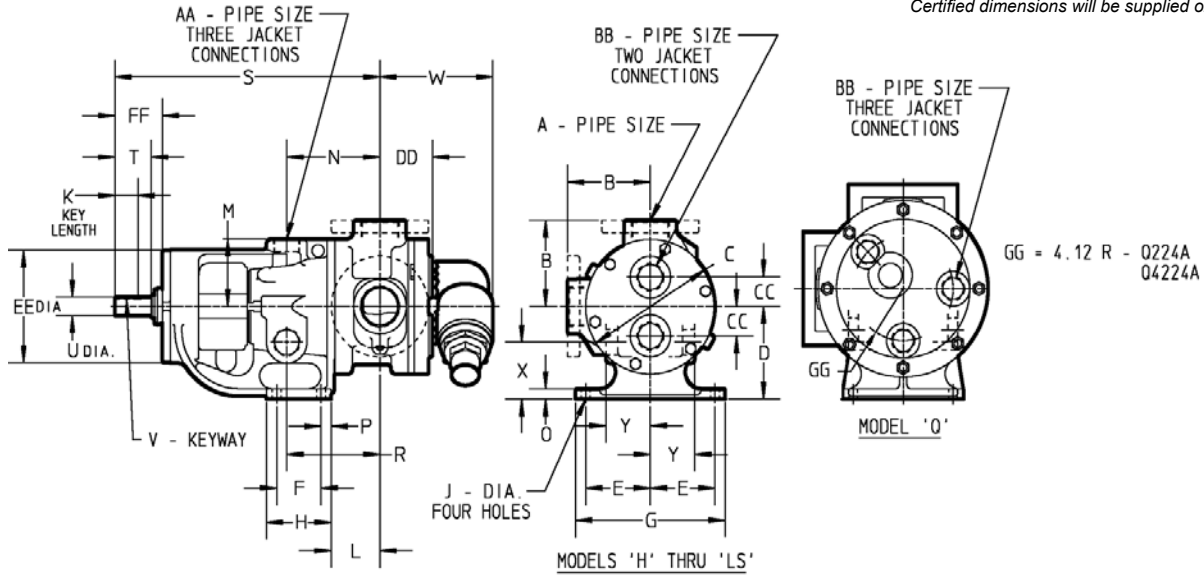
- ① KK, LS, QS, N and RS sizes have ductile iron rotor, ASTM A536 Grade 60-40-18.
- ② Steel fitted Q and QS sizes have steel idler.
- ③ H and HL sizes have powdered metal idler, MPIF Std 35 FC-0208-50.
- ④ H-LL 4224B (Behind-the-Rotor) pumps have bronze bracket bushing with Buna N seal, carbon graphite for Viton® or PTFE seals.
- ⑤ 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,
4224B, 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 |
|--------------------------------------|--|-----------------------|--------|----|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|------|
| Packed | Stuffing Box Seal | Behind the Rotor Seal | | | | | | | | | | | | | | | |
| H224A HL224A HL224AH | H4224A HL4224A HL4224AH | H4224B HL4224B | 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 | K4224B KK4224B | 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 | L4224B | 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 | LQ4224B | 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 | LL4224B | ③3 | 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 | NA | ③3 | 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 | NA | ④4 | 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 |

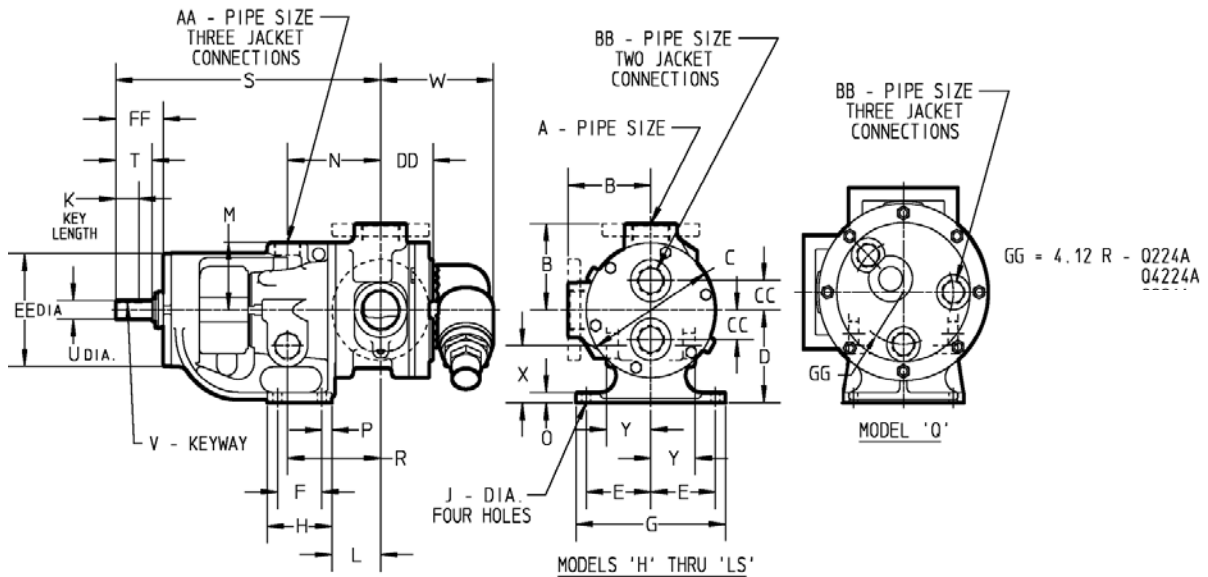
① Port(s) tapped for standard (NPT) pipe.

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, 2224AE and 2224B pumps is 1.44" (36.6mm).

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

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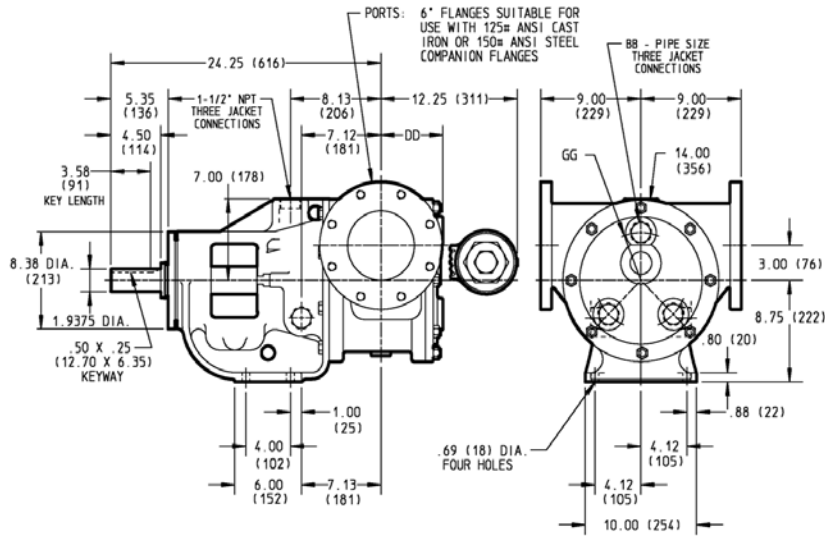
| Model Number | | | P | R | S | ⑥ T | ⑦ U | ⑧ V | W | X | Y | ⑨ AA | ⑩ BB | CC | DD | EE | FF | |
|--------------|-------------------|-----------------------|----|------|-------|-------|-------|-------|-------------|-------|-------|-------|------|------|------|-------|-------|-------|
| Packed | Stuffing Box Seal | Behind the Rotor Seal | | | | | | | | | | | | | | | | |
| H224A | H4224A | H4224B | 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 | HL4224B | 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 |
| K224A | K4224A | K4224B | 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 |
| KK224A | KK4224A | KK4224B | 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 |
| L224A/AH | L4224A/AH | L4224B | 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 | LQ4224B | 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 | LQ4224A | | 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 | LL4224B | 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 | LL4224A | | 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 | NA | 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 | NA | 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 |

⑥ 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.
 ⑦ "T" dimension shown for Cast Iron sizes L, LQ and LL is for "A" models. Dimension for L, LQ and LL size 224AE, 4224AE and 4224B pumps is 2.35" (59.7 mm).
 ⑧ "U" dimension shown for Cast Iron sizes L, LQ and LL is for "A" models. "U" dimension for L, LQ and LL size 224AE, 4224AE and 4224B pumps is 1.44" (36.6 mm).
 ⑨ "V" dimension shown for Cast Iron sizes L, LQ and LL is for "A" models. "V" dimension for L, LQ and LL size 224AE, 4224AE and 4224B pumps is 0.38 X 0.19" (9.65 X 4.83 mm).
 ⑩ "BB" Dimension for Q223A and Q227A is 1"(25.4 mm).

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

Dimensions - QS Size – Jacketed Series 224A and 4224A

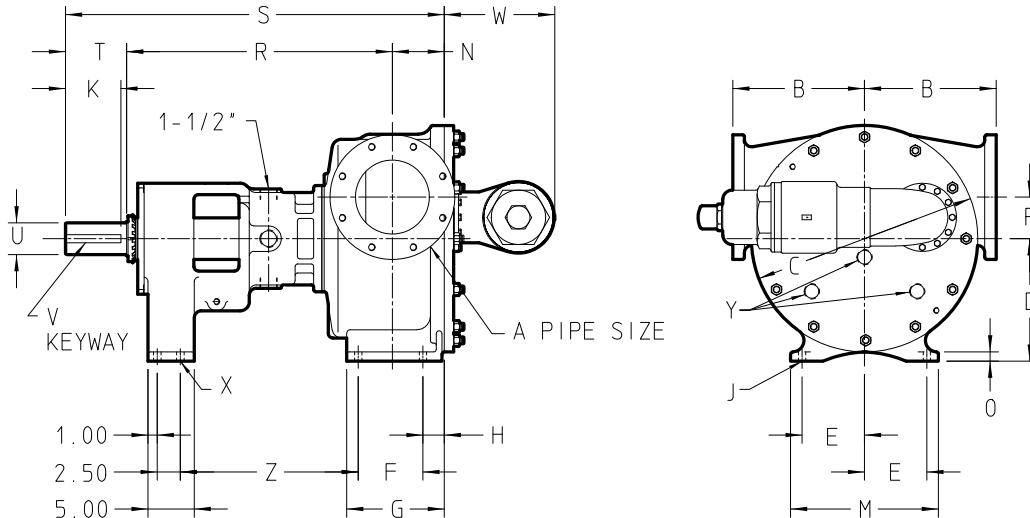


Dimensions given are for guidance only and should not be used for installation purposes. Certified dimensions will be supplied on request.

| Other Dimensions | |
|------------------|---------------|
| BB* | 1.25 (31.75) |
| DD | 5.57 (141.48) |
| GG | 4.12 (105) |

* 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.

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



| Model Number | | A (in) | B | C | D | E | F | G | H | J | K | M | N | O | P | R | S | T | U | V | W | X | Y | Z | |
|--------------|---------|--------|----|-------|--------|-------|-------|-------|--------|--------|-------|-------|--------|--------|-------|-------|--------|---------|-------|------|--------------|-------|-------|------|-------|
| N324A | N4324A | ② | in | 9.75 | 17.25 | 9.50 | 5.00 | 6.25 | 8.69 | 1.62 | 0.69 | 4.50 | 12.00 | 4.50 | 1.00 | 3.00 | 26.00 | 36.50 | 6.00 | 2.44 | .62x.31 | 8.63 | 0.69 | n.a. | 18.94 |
| | | 6 | mm | 24.6 | 438.1 | 241.3 | 127.0 | 158.7 | 220.7 | 41.1 | 17.5 | 114.3 | 304.8 | 114.3 | 25.4 | 76.2 | 660.4 | 927.1 | 152.4 | 62.0 | 15.74 x7.87 | 219.2 | 17.5 | n.a. | 481.0 |
| R324A | R4324A | ② | in | 14.25 | 24.50 | 13.25 | 6.75 | 7.00 | 10.56 | 2.31 | 0.78 | 6.00 | 16.00 | 5.62 | 1.00 | 4.50 | 28.75 | 41.00 | 6.62 | 3.44 | .88x.44 | 12.00 | 0.69 | 1.25 | 19.25 |
| | | 8 | mm | 361.9 | 622.3 | 336.5 | 171.4 | 177.8 | 268.2 | 58.7 | 19.8 | 152.4 | 406.4 | 142.7 | 25.4 | 114.3 | 730.2 | 1041 | 168.1 | 87.4 | 22.35 x11.18 | 304.8 | 17.5 | 31.7 | 488.9 |
| RS324A | RS4324A | ② | in | 14.25 | 24.5 | 13.25 | 6.75 | 7.00 | 13.12 | 4.81 | 0.88 | 6.00 | 16.46 | 8.12 | 1.30 | 4.50 | 28.55 | 43.49 | 6.62 | 3.44 | .88x.44 | 12.00 | 0.88 | 1.25 | 19.25 |
| | | 10 | mm | 361.9 | 622.30 | 336.5 | 171.4 | 177.8 | 333.24 | 122.17 | 22.35 | 152.4 | 418.08 | 206.24 | 33.02 | 114.3 | 725.17 | 1104.64 | 168.1 | 87.4 | 22.35 x11.18 | 304.8 | 22.35 | 31.7 | 488.9 |

NOTE: The N size is standard with a jacketed bracket and non-jacketed head and non-jacketed relief valve. The R size is standard with a jacketed bracket, a jacketed head, and a non-jacketed relief valve. RS contact factory for jacketing options.

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

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

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Optional Casings - Standard-Jacketed* Pumps

| Model Number | | | Standard Jacketed Pumps' Standard Ports [†] | Standard Jacketed Pumps Optional Ports |
|--------------|-------------------|-----------------------|--|--|
| Packed | Stuffing Box Seal | Behind the Rotor Seal | | |
| H224A | H4224A | H4224B | 1.5" ① | 1.5" ②Ⓡ, 2" ②Ⓡ |
| HL224A | HL4224A | HL4224B | | |
| HL224AH | HL4224AH | n.a. | | |
| K224A | K4224A | K4224B | 2" ① | 2" ②Ⓡ, 2.5" ②Ⓢ, 3" ②Ⓡ, 4" ②Ⓡ |
| K224AH | K4224AH | n.a. | | |
| KK224A | KK4224A | KK4224B | 2" ① | 2" ②Ⓡ, 2.5" ②Ⓡ, 3" ②Ⓡ, 4" ②Ⓡ |
| KK224AH | KK4224AH | n.a. | | |
| L224A/AE | L4224A/AE | L4224B | 2" ① | ----- |
| L224AH | L4224AH | n.a. | | |
| LQ224A/AE | LQ4224A/AE | LQ4224B | 2.5" ② | 3" ②Ⓡ, 4" ②Ⓡ, 6" ②Ⓡ |
| LQ224AH | LQ4224AH | n.a. | | |
| LL224A/AE | LL4224A/AE | LL4224B | 3" ② | 4" ②Ⓡ, 5" ②Ⓡ |
| LS224A | LS4224A | n.a. | 3" ② | 4" ②Ⓡ |
| LS224AH | LS4224AH | n.a. | | |
| Q224A | Q4224A | n.a. | 4" ② | 3" ②Ⓡ, 5" ②Ⓡ, 6" ②Ⓡ |
| QS224A | QS4224A | n.a. | 6" ②Ⓢ | 6" ②Ⓢ |
| N324A | N4324A | n.a. | 6" ②Ⓢ | 5" ②Ⓢ |
| N324A | N4324A | n.a. | 6" ②Ⓢ | 5" ②Ⓢ |
| R324A | R4324A | n.a. | 8" ②Ⓢ | 6" ②Ⓢ |
| RS324A | RS4324A | n.a. | 10" ②Ⓢ | |

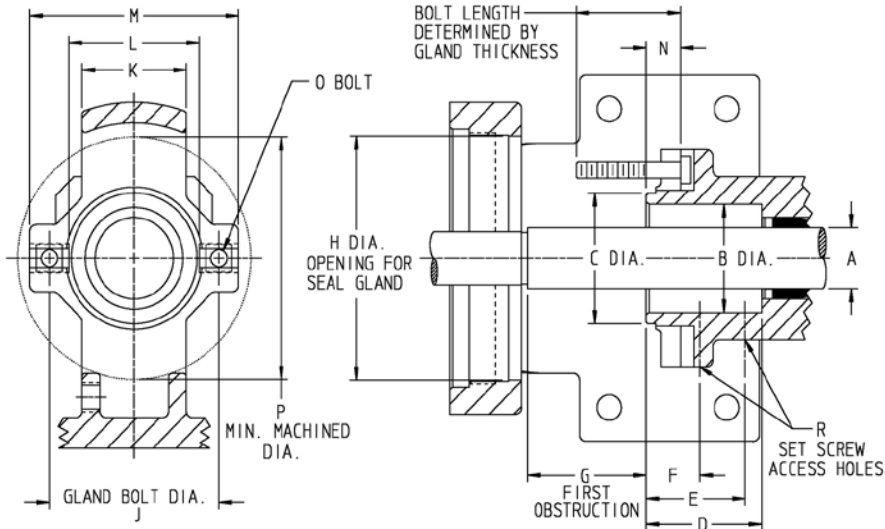
- ① Port(s) tapped for standard (NPT) pipe.
- ② Port(s) suitable for use with 125# ANSI cast iron companion flanges or flanged fittings.
- ③ Port(s) suitable for 150# ANSI steel or stainless steel companion flanges or flanged fittings.
- ④ Port(s) suitable for 300# ANSI steel or stainless steel companion 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, 224B/4224B 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. The RS324A and RS4324A contact the factory for jacketing options.

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

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 | 2.31 ^① | 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 | 58.7 ^① | 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 | 2.31 ^① | 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 | 58.7 ^① | 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 | - | - | - | - | 3/4 ^② | 9.00 | 1/4 |
| | mm | 87.3 | 119.3 | - | 141.2 | 41.9 | - | 124.7 | 223.8 | 171.4 | - | - | - | - | 19.0 ^② | 228.6 | 6.3 |
| R | In | 4.50 | 5.75 | - | 5.56 | 1.53 | - | 4.79 | 9.81 | 7.75 | - | - | - | - | 3/4 ^② | 9.81 | 1/4 |
| | mm | 114.3 | 146.1 | - | 141.2 | 38.9 | - | 121.7 | 249.2 | 196.8 | - | - | - | - | 19.0 ^② | 249.2 | 6.3 |
| RS | In | 4.50 | 5.75 | - | 5.56 | 1.53 | - | 4.79 | 9.81 | 7.75 | - | - | - | - | 3/4 ^② | 9.81 | 1/4 |
| | mm | 114.3 | 146.1 | - | 141.2 | 38.9 | - | 121.7 | 249.2 | 196.8 | - | - | - | - | 19.0 ^② | 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.