

# VIKING ABRASIVE LIQUID INTERNAL GEAR PUMPS

SERIES 4624B (Cast Iron - Replaces Series 4625 Models)

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## Series Description

The Abrasive Liquid Series heavy duty internal gear pumps utilize hard parts in key wear areas, combined with unique designs and operating practices to reduce abrasive wear for longest life. These pumps are ideally suited for liquids with concentrations of small but hard particles, such as paints, inks and pigments; filled polyols and resins; and waste oils.

## Improvements

The 4624B series pumps replaces the old style 4625 series, offering the advantage of a one-piece bearing housing for faster and easier end clearance adjustment, and adding the LS and QS sizes. The F & FH4624B pumps are identical to the old F & FH4625 pumps.

Jacketing is available by ordering a 4224B model with abrasive fitting (tungsten carbide idler pin and bushing, abrasive liquid seal with flush line).

All models are dimensionally interchangeable with the old 4625 series, except:

- The L, LQ & LL4624B sizes have a more robust 1.44" diameter shaft, while the old 4625 models used a 1.13" diameter shaft.
- The M4625 has been discontinued.
- The QS4624B provides equivalent performance, but is not dimensionally interchangeable.



K4624B

## Operating Range:

Nominal Flow	GPM	0.75 to 182
	m <sup>3</sup> /h	0.17 to 41
Pressure Range	PSI	150
	Bar	10
Temperature Range	°F	-40 to 300
	°C	-40 to 150
Viscosity Range	SSU	38 to 250,000
	cSt	3 to 55,000

## Nominal Flow Rates:

Pump Size	GPM	m <sup>3</sup> /h
F	0.75	0.17
FH	1.5	0.34
H	5	1.1
HL	10	2.2
K	25	5.6
KK	35	8
L / LQ	50	11
LL	65	15
LS	72	16
Q	110	25
QS	182	41

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## Major Design Features:

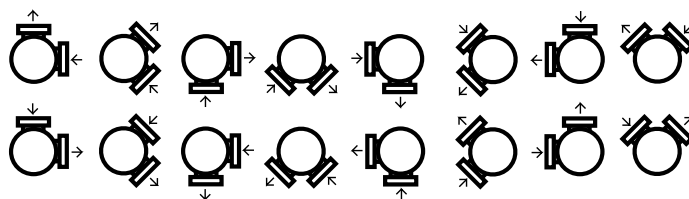
- Ultra-hard tungsten carbide idler pin and tungsten carbide idler bushing minimize wear in this key area, since a constant supply of abrasive material is flowing through the pumping elements.
- Behind-the-rotor pinned-seat mechanical seal with hard silicon carbide vs. silicon carbide seal faces, featuring external flush line from pump discharge to remove solids build-up, ensuring longest possible seal life (note: no flush line on F&FH sizes).
- The grease-lubricated bracket bushing is not contacted by the pumped liquid, for long life. The pump is re-greasable, with a lip seal at the stuffing box to retain grease and a relief fitting to prevent over-greasing.
- The grease-filled bracket helps to prevent air and moisture from reaching the seal faces, which helps limit crystallization of some air or water-reactive liquids.
- Limiting pressure ratings helps extend pump life on abrasives, by increasing film thickness between rotating parts and reduces the loads or forces within the pump.
- Limited speeds help ensure longest life by reducing fluid velocity, which reduces abrasion.
- All pumped liquid is contained in the casing area, which enables superior flushing to clean the casing.
- Positive Displacement Internal Gear pumping principle handles a broad range of viscosities with constant flow rate.
- Footed cast iron bracket provides rigid mounting to help maintain alignment, which extends seal and bearing life.
- Axial rotor thrust is controlled by double row ball or tapered roller bearings mounted in the rotatable bearing housing, which enables fast, easy end clearance adjustment.
- Can use direct drive, gear reducer or gearmotor drive, or belt-drive.
- Pressure relief valve is standard.

## Revolvable Pump Casings Standard

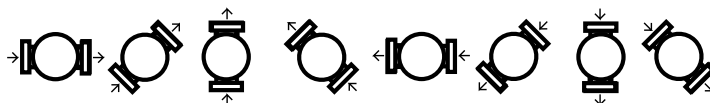
The Abrasive Liquid series pumps are equipped with casings that can be turned to eight positions (except the F & FH sizes, which cannot be rotated, and the LQ, LL & LS sizes, which cannot have any port in the 6 o'clock position). Direction of flow is reversible, so either port may be the suction or discharge. The relief valve must "point" towards the suction port in all cases. F & FH sizes have upright ports (both on top), H through Q sizes have 90° ports, and the QS size has 180° (opposite) ports standard.

Possible port configurations are illustrated at right.

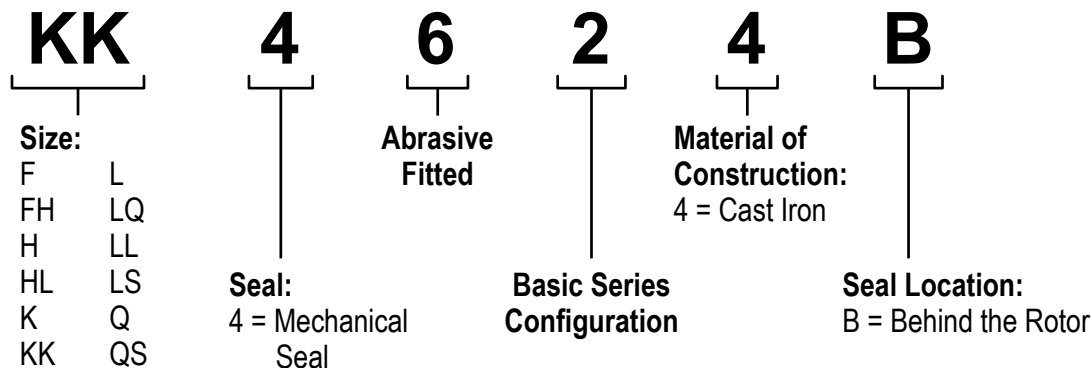
### 90° port options:



### Opposite port options:



## Model Number Key:

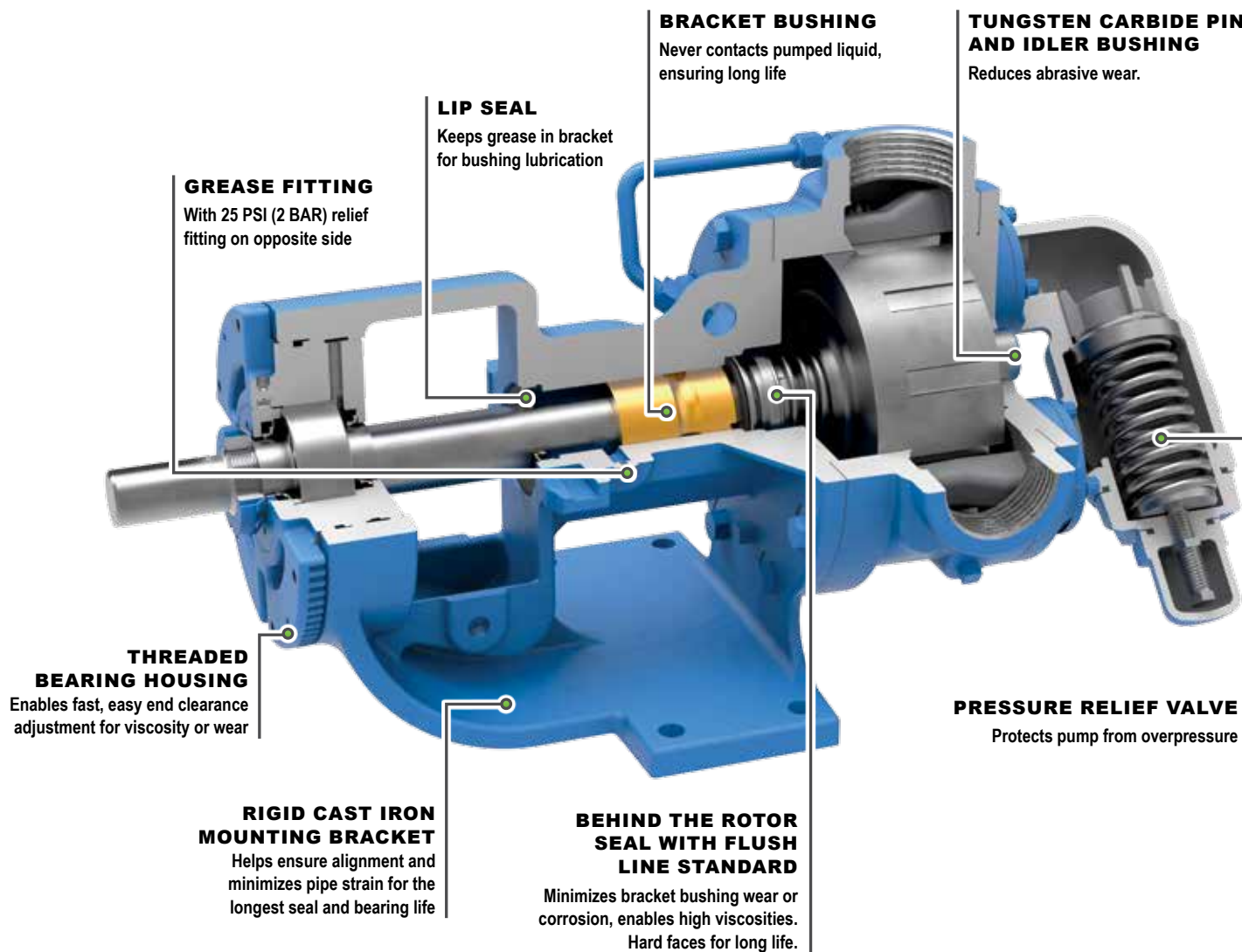


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## Features and Benefits:



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## VIKING ABRASIVE LIQUID INTERNAL GEAR PUMPS

SERIES 4624B (Cast Iron - Replaces Series 4625 Models)

### Specifications (U.S. Units)

Model Number	Port Size	① Port Type	Nominal Pump Rating (100 SSU & below)		Maximum Hydrostatic Pressure	② Maximum Discharge Pressure at Nominal Rated Speeds (PSIG)			③ Maximum Recommended Temperature for Standard Pump	Steel Fitted Recommended Above	Approximate Shipping Weight, 4624B w/valve
			GPM	RPM		PSIG	38-100 SSU	100-750 SSU			
Standard	Inches								°F	SSU	Pounds
F4624B	0.5	NPT	0.75	870	400	50	100	100	250	-	6
FH4624B	0.5	NPT	1.5	870	400	50	100	100	250	-	7
H4624B	1.5	NPT	5	640	400	50	100	150	300	25,000	38
HL4624B	1.5	NPT	10	640	400	50	100	150	300	7,500	40
K4624B	2	NPT	25	280	400	50	100	150	300	25,000	105
KK4624B	2	NPT	35	280	400	50	100	150	300	75,000	110
L4624B	2	NPT	50	230	400	50	100	150	300	25,000	155
LQ4624B	2.5	Flange	50	230	400	50	100	150	300	25,000	175
LL4624B	3	Flange	65	230	400	50	100	150	300	2,500	185
LS4624B	3	Flange	72	230	400	50	100	150	300	75,000	190
Q4624B	3	Flange	110	190	400	50	100	125	300	7,500	440
QS4624B	6	Flange	182	190	400	50	100	125	300	75,000	540

### Specifications (Metric Units)

Model Number	Port Size	① Port Type	Nominal Pump Rating (100 SSU & below)		Maximum Hydrostatic Pressure	② Maximum Discharge Pressure at Nominal Rated Speeds (PSIG)			③ Maximum Recommended Temperature for Standard Pump	Steel Fitted Recommended Above	Approximate Shipping Weight, 4624B w/valve
			m <sup>3</sup> /h	RPM		BAR	1-20 cSt	20-180 cSt			
Standard	Inches								°C	cSt	KG
F4624B	0.5	NPT	0.17	870	28	3.5	7	7	120	-	2.7
FH4624B	0.5	NPT	0.34	870	28	3.5	7	7	120	-	3.2
H4624B	1.5	NPT	1.1	640	28	3.5	7	10	150	5,500	17
HL4624B	1.5	NPT	2.2	640	28	3.5	7	10	150	1,650	18
K4624B	2	NPT	5.6	280	28	3.5	7	10	150	5,500	48
KK4624B	2	NPT	8	280	28	3.5	7	10	150	16,500	50
L4624B	2	NPT	11	230	28	3.5	7	10	150	5,500	70
LQ4624B	2.5	Flange	11	230	28	3.5	7	10	150	5,500	80
LL4624B	3	Flange	15	230	28	3.5	7	10	150	550	84
LS4624B	3	Flange	16	230	28	3.5	7	10	150	16,500	86
Q4624B	3	Flange	25	190	28	3.5	7	8.5	150	1,650	200
QS4624B	6	Flange	41	190	28	3.5	7	8.5	150	16,500	245

- ① Flange ports are suitable for use with Class 125 ANSI cast iron companion flanges or flanged fittings. F & FH ports are upright (both on top), G through Q ports are at 90°, QS ports are at 180° (opposite).
- ② If suction pressure exceeds 50 PSIG, consult factory. Higher pressures possible with factory approval based on application details.
- ③ Extra clearances are required above 225°F / 107°C. Higher temperatures can be handled with special construction. Consult factory.

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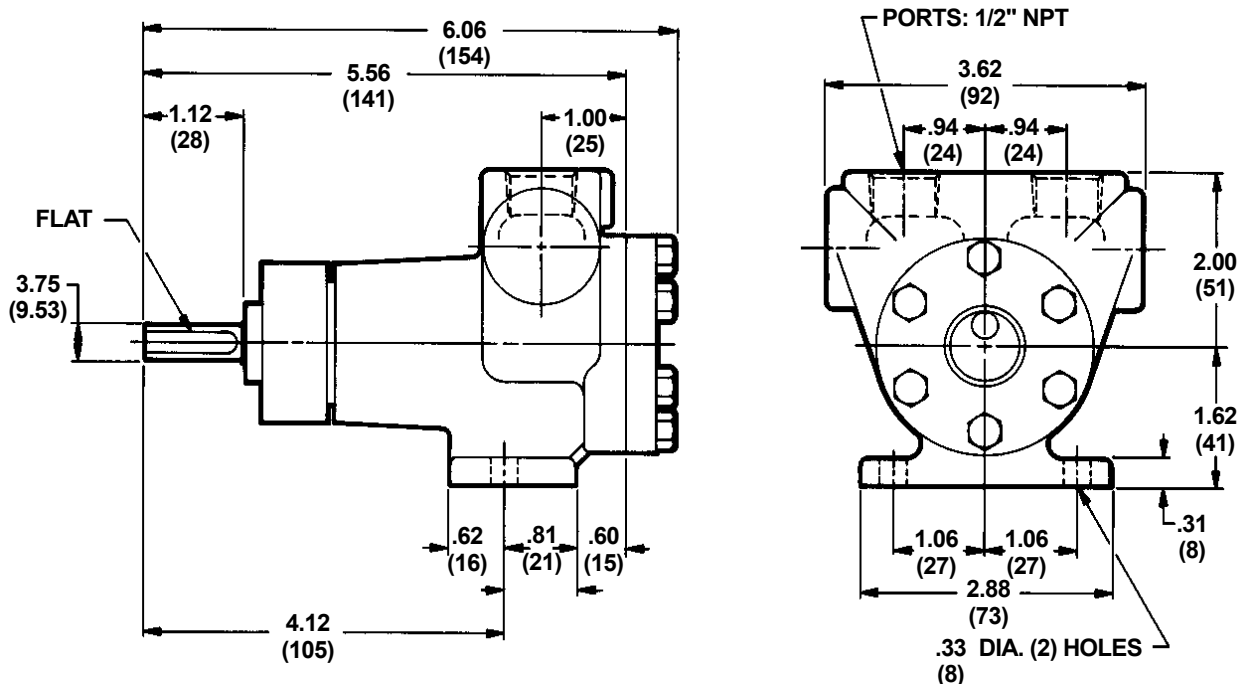
## Materials of Construction

Component	Standard Material	
Casing	Cast Iron, ASTM A48, Class 35B	
Head	Cast Iron, ASTM A48, Class 35B	
Bracket	Cast Iron, ASTM A48, Class 35B	
Pressure Relief Valve	Cast Iron, ASTM A48, Class 35B	
Idler	<b>Standard</b>	<b>Steel Fitted</b>
	① Cast Iron, ASTM A48, Class 35B	② Cast Iron, ASTM A48, Class 35B
Rotor	<b>Standard</b>	<b>Steel Fitted</b>
	③ Cast Iron, ASTM A48, Class 35B	Steel, ASTM A216, Grade WCB
Rotor Shaft	Steel, ASTM A108, Grade 1045	
Idler Pin	④ Tungsten Carbide	
Idler Bushing	④ Tungsten Carbide	
Bracket Bushing (no product contact)	Bronze, ASTM B584 (B505), Alloy C93700	
Standard Mechanical Seal	Silicon Carbide vs. Silicon Carbide Faces	

- ① H and HL sizes have a powdered metal idler, MPIF 35, FC-0208-45.
- ② Q and QS sizes have a steel idler when steel rotor is used.
- ③ KK, LS and QS sizes have ductile iron rotor.
- ④ Tungsten carbide idler pins for all sizes except Q and QS, which have a tungsten carbide sleeve over a steel pin.

## Dimensions F and FH 4624B Unmounted Pumps

NOTE: Dimensions shown in inches, with millimeter equivalent shown in parentheses.



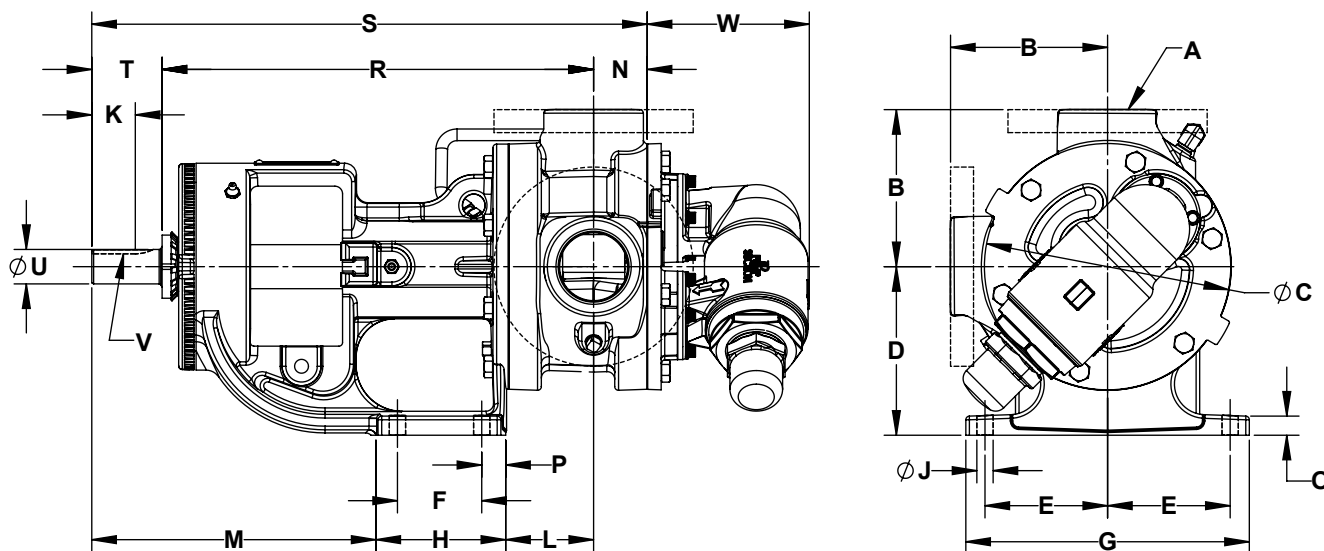
These dimensions are average and not for construction purposes. Certified prints on request.

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# VIKING ABRASIVE LIQUID INTERNAL GEAR PUMPS

SERIES 4624B (Cast Iron - Replaces Series 4625 Models)

## Dimensions H through Q 4624B



## U.S. Units

Model Number	A (in)	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U	V	W
H4624B HL4624B	① 1.5	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	0.19 x 0.09	2.85
K4624B KK4624B	① 2	5.12	8.00	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	9.38	1.75	0.62	0.62	14.12	18.12	2.25	1.12	0.25 x 0.12	5.25
L4624B	① 2	6.50	10.25	7.00	4.38	4.00	10.00	5.38	0.53	1.42	3.38	9.12	1.75	0.62	0.62	15.62	19.62	2.35	1.44	0.38 x 0.19	5.43
LQ4624B	② 2.5	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	1.42	3.38	9.12	1.75	0.62	0.62	15.62	19.62	2.35	1.44	0.38 x 0.19	5.43
LL4624B	② 3	7.19	10.25	7.00	4.38	4.00	10.00	5.38	0.53	1.42	3.38	9.12	2.25	0.62	0.62	15.62	20.12	2.35	1.44	0.38 x 0.19	5.43
LS4624B	② 3	7.19	10.74	7.00	4.38	4.00	10.00	5.73	0.53	2.55	4.59	8.91	2.44	0.62	0.79	15.75	21.69	3.50	1.44	0.38 x 0.19	5.26
Q4624B	② 3	8.25	14.06	8.75	4.12	4.00	10.00	6.28	0.69	3.58	6.53	10.94	3.00	0.80	1.11	19.25	26.75	3.58	1.94	0.50 x 0.25	8.25

## Metric Units

Model Number	A (in)	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U	V	W
H4624B HL4624B	① 1.5	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
K4624B KK4624B	① 2	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	133.3
L4624B	① 2	165.1	260.3	177.8	111.3	101.6	254.0	136.7	13.5	36.1	85.9	231.6	44.4	15.7	15.7	396.7	498.3	59.7	36.6	9.65 x 4.83	137.9
LQ4624B	② 2.5	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	36.1	85.9	231.6	44.4	15.7	15.7	396.7	498.3	59.7	36.6	9.65 x 4.83	137.9
LL4624B	② 3	182.6	260.3	177.8	111.3	101.6	254.0	136.7	13.5	36.1	85.9	231.6	57.1	15.7	15.7	396.7	511.0	59.7	36.6	9.65 x 4.83	137.9
LS4624B	② 3	182.6	272.8	177.8	111.3	101.6	254.0	136.7	13.5	64.8	116.6	226.3	62.0	15.7	20.1	400.0	550.9	88.9	36.6	9.65 x 4.83	133.6
Q4624B	② 3	209.5	357.1	222.2	104.6	101.6	254.0	159.5	17.5	90.9	165.9	277.9	76.2	20.3	28.2	488.9	679.4	90.9	49.3	12.70 x 6.35	209.5

① Ports are tapped for standard (NPT) pipe.

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

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

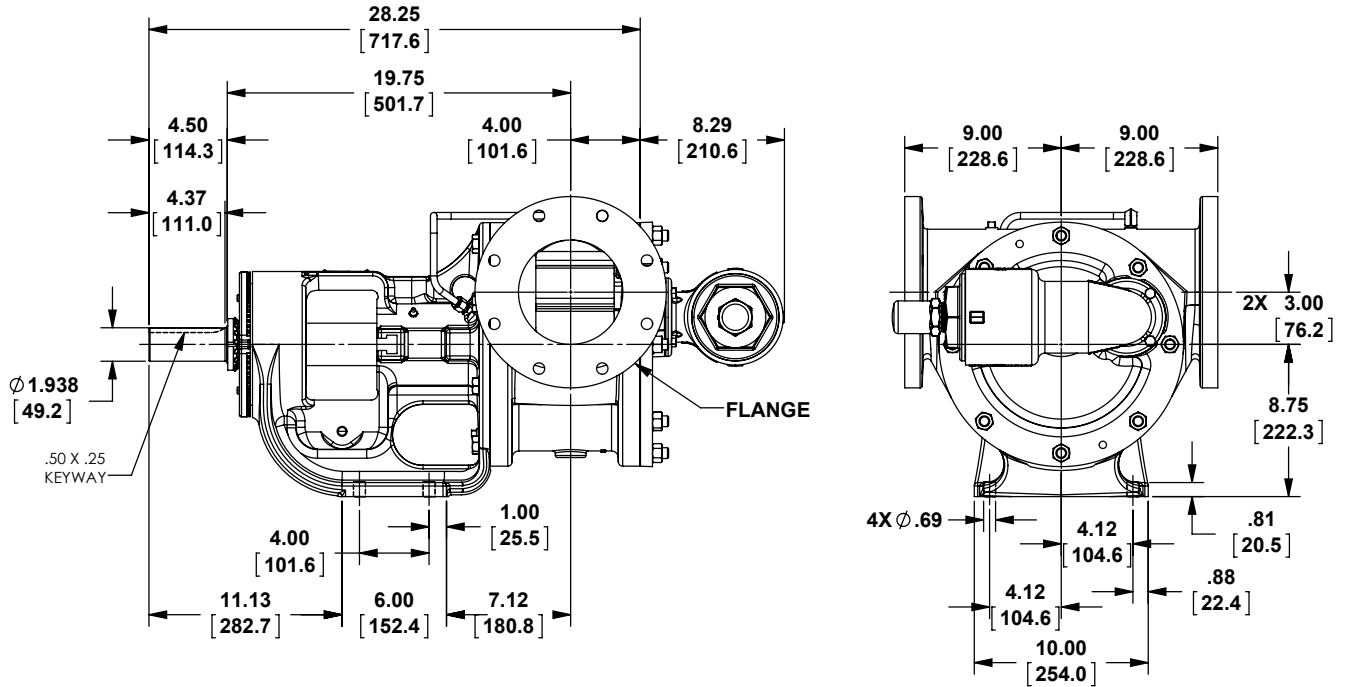
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## Dimensions QS 4624B

NOTE: Dimensions shown in inches, with millimeter equivalent shown in parentheses.



Ports are 6", suitable for use with Class 125 cast iron companion flanges or flange fittings.

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## VIKING ABRASIVE LIQUID INTERNAL GEAR PUMPS

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### Performance Curve Notes

Printed performance curves are not available.

Performance curves can be electronically generated with the Viking Pump Selector Program. This program can be located on [www.vikingpump.com](http://www.vikingpump.com).

NPSH<sub>R</sub> data is not available on the pump selector.

**INLET CONDITIONS:** The performance curves show "Based on 10 (or 15) In.-Hg.," which is the standard test condition. This is not the maximum vacuum capability of the pump.

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

**FOR VISCOSITIES UP TO 750 SSU** – See NPSH<sub>R</sub> table below.

**FOR VISCOSITIES GREATER THAN 750 SSU (NPSH<sub>R</sub> data not available):** The performance curves are based on 10 or 15 In.-Hg. While vacuums up to 20 In.-Hg. will not generally result in any loss of capacity, it is recommended that the suction line size and possibly the pump port size be increased to hold the expected vacuum to 15 In.-Hg. or less. Vacuum above 20 In.-Hg. should be avoided. Refer to General Catalog, Engineering Section 510 for information on determining line size.

**THIN LIQUIDS:** Pump capacity when handling 28 SSU liquids (solvents, etc.) is shown on the 38 SSU performance curve found in the pump selector program on [www.vikingpump.com](http://www.vikingpump.com) as a broken line. Pressure shown on broken line is the maximum recommended for 28 SSU liquids. It is shown as a reference for flushing cycles only; pumps should not be used for continuous duty with solvents. Horsepower required for 28 SSU is the same as 38 SSU at any given pressure.

**MECHANICAL EFFICIENCY:** The Mechanical Efficiency (expressed in percent) can be calculated using the following formula:

$$\text{Mechanical Efficiency} = \frac{(\text{Differential Pressure, PSI}) (\text{Capacity, GPM}) (100)}{(\text{Horsepower, BHP}) (1715)}$$

### NPSH<sub>R</sub> – FEET OF LIQUID (Specific Gravity 1.0), Viscosities up to 750 SSU

#### Cast Iron Series 4624B

PUMP SIZE	PUMPS SPEED, RPM											
	84	100	125	155	190	230	280	420	520	640	780	870
F, FH	-	-	1.0	-	-	-	1.3	1.6	1.7	1.8	1.9	2.0
H, HL	-	-	1.3	-	-	-	1.8	2.1	2.4	2.8	-	-
K, KK	1.5	1.6	1.7	1.8	1.9	2.1	2.3	-	-	-	-	-
L, LQ, LL, LS	1.6	1.7	1.8	2.0	2.2	2.5	-	-	-	-	-	-
Q, QS	1.7	1.9	2.1	2.3	2.7	-	-	-	-	-	-	-

**METRIC CONVERSION:** The following table has been compiled for conversion to metric values.

VACUUM		PRESSURE		CAPACITY	
In.-Hg (inches of mercury)	KPa* (Kilopascals)	PSI (lb./in <sup>2</sup> )	kPa* (Kilopascals)	GPM (US gal/minute)	LPM (Liter/Minute)
1	3.4	1	6.9	1	3.8
5	17	25	172	0.26	1
10	34	50	345	-	-
15	51	100	690	-	-
20	68	150	1034	-	-
25	85	200	1379	-	-
-	-	250	1724	-	-

\* 100 kPa = 1 bar