

# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

Section	230
Page	230.1
Issue	D

Heavy Duty, Hygienic Internal Gear Pumps for COP or CIP



Shown with Optional Wing Nuts on Head

## Operating Range:

Nominal Flow	(GPM)	1 to 275
	(M <sup>3</sup> /hr.)	0.2 to 62
Pressure Range	(PSI)	To 150
	(Bar)	To 10
Temp. Range	( ° F )	-5 to 225
	( ° C )	-20 to 107
Viscosity Range	(SSU)	28 to 100,000
	(cSt)	0.1 to to 21,500

## Nominal Flow Rates:

Pump Size	GPM	M <sup>3</sup> /Hr
H	6	1.5
HL	12	3
KS	30	7
K	40	10
KK	55	13
LQ	75	17
LL	100	22
LS	150	35
Q	185	42
QS	275	62

## Series Description

Viking's Hygienic Series positive displacement pumps are designed to conform to International standards for sanitary processing of foods, beverages, fine chemicals, pharmaceuticals and personal care products where the pump will be subject to frequent cleaning, using either Clean In Place (CIP) or Clean Out of Place (COP)/Strip Clean Methods.

These pumps are available with compliance to major hygienic standards including 3-A and EHEDG Type EL, Class 1. Wetted materials comply with FDA standards to limit leaching of substances.

Section	230
Page	230.2
Issue	D

# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

## Key Features and Benefits:

- Splined shaft with one front-removable rotor. Faster disassembly and reassembly vs. timed pumps with two rotors. *(Patent pending)*
- One shaft seal. Half the seal replacement cost of timed pumps with two shaft seals.
- Front-loading seals. Eliminates entrapment areas in the stuffing box common to other gear pumps, simplifies maintenance. *(Patent pending)*
- Mechanical seal with Carbon/Silicon Carbide faces standard. Provides greater seal life than Carbon/Ceramic or Carbon/SS faces standard on most pumps. Many seal options available.
- Sealed bearings with food-grade grease. No oil reservoir to enable water infiltration or condensation, no oil changes.
- Five minute end clearance adjustment by rotating the bearing housing, vs. 2-4 hours shimming on most lobe or CP pumps.
- FDA conforming wetted materials. Ensures product integrity.
- All internal angles machined to a minimum radius of 1/32 inch (0.08mm). Ensures cleanability.
- All internal wetted surfaces polished to minimum Ra of 32µin / 0.8µm. Ensures cleanability.
- Wetted part material traceability available. Ensures the ability to trace the part back to original batch.
- Reversible direction of flow. Enables stripping product from the line to minimize product loss and improve cleaning efficiency.
- Flow proportional to speed regardless of system pressure. Enables more accurate batching or metering than centrifugal pumps which are highly sensitive to system pressure.
- Locating pin on casing. Ensures pump head cannot be reassembled incorrectly.
- Removable idler pin allows replacement of pin only instead of head and pin assembly. *(Patent pending)*

## Standards and Options:

### Seals:

- Single mechanical seal standard.  
Options: double mechanical seal with flush/quench or single or double O-ring seal.

### Heating / Cooling:

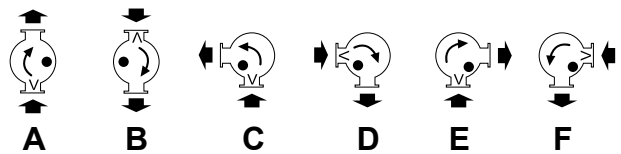
- Non-jacketed pump standard. Jacketing option for melting chocolate or other room-temperature solids prior to startup.

### Porting:

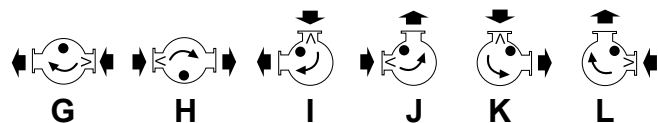
- Hygienic clamp ports conforming to ISO 2852 standard. Other hygienic ports and ANSI compatible flange ports optional.
- Standard and optional port sizes listed in specifications, page 6.
- Opposite ports standard, 90° ports optional.

The port with a casing groove (shown as V) needs to be used as the suction port for the pump's primary rotation which is clockwise from the shaft end in orientations A, B, D, E, G, H, I and L. The purpose of this suckback groove in the casing is to cause liquid to flow from the higher pressure discharge side behind the rotor to the lower pressure suction side to cool and lubricate the shaft seal, and ensure complete flushing during CIP. Due to the casing groove location, orientations C, F, J and K (counterclockwise rotation) will require a special casing.

Idler pin (shown as ●) and rotation shown is as viewed from shaft end of pump.



**CIP-able Port Options**  
one port oriented downwards for drainability



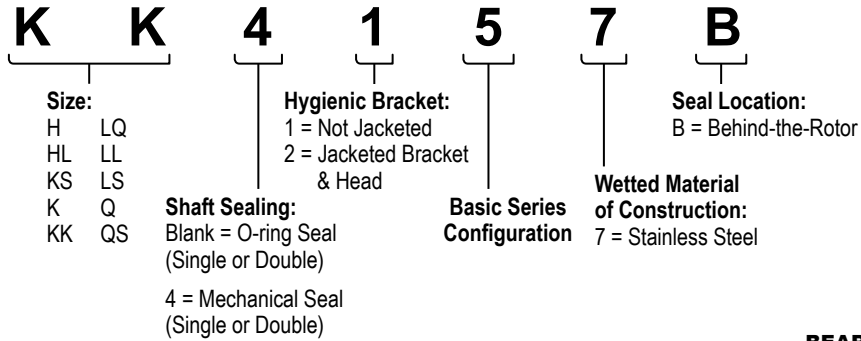
**Additional Options for COP**

# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

Section	230
Page	230.3
Issue	D

Model Number Key:



### ROTATABLE BEARING HOUSING

Five minute end clearance adjustment by rotating the bearing housing, vs. 2-4 hours shimming on most lobe or circumferential piston pumps.

### DOUBLE SEAL BARRIER/BUFFER FLUID PORTS STANDARD

Enables field change from single to double seals.

### INTERNAL ANGLES

Machined to a minimum radius of 1/32 in (0.08 mm). Ensures cleanability.

### INTERNAL WETTED SURFACES

Polished to a minimum Ra of 32µin (0.8µm). Ensures cleanability.

### SEALED BEARINGS WITH FOOD-GRADE GREASE

Means no oil reservoir, no oil changes.

### REMOVABLE IDLER PIN

Allows replacement of pin only instead of head and pin assembly to reduce maintenance costs. (Patent pending)

### JACKSCREW TAPS

For easy head removal.

### LOCATING PIN ON CASING

Ensures correct pump head reassembly.

### FRONT REMOVABLE ROTOR, SHAFT SEAL AND CASING

Enables fast disassembly and reassembly for cleaning or inspection without disturbing drive end.

### ACORN NUTS STANDARD

Wing nuts optional for COP.

### SEAL LEAK DETECTION GAPS

at 3, 6, 9 and 12 o'clock positions, provide visual cue of seal leakage and keeps liquid out of bearings.

### RIGID BRACKET

Ensures shaft alignment to maximize seal and bearing life.

### ONLY ONE SHAFT SEAL

Reduces chance of unplanned downtime due to seal leakage and reduces cost of seal replacement compared to most hygienic PD pumps which require two seals.

Section	230
Page	230.4
Issue	D

# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

## Materials of Construction

Standard Component	Product Contact?	Standard Construction	Options
Casing, Head and Rotor	Yes	316 SS	—
Rotor Retainer Screw	Yes	316 SS	—
Rotor Retainer Washer	Yes	17-4 PH SS	—
Idler	Yes	770 non-galling alloy	FDA PEEK (200°F/93°C Max Temp) FDA Metal Detectable Acetal (125°F/52°C Max Temp)
Idler Bushing	Yes	FDA Carbon Graphite	Silicon Carbide <sup>②</sup> , Hardened Iron <sup>①</sup>
Idler Pin	Yes	316 Stainless Steel, Colmonoy #6 Coated	—
Single Mechanical Seal Faces	Yes	Carbon vs. Silicon Carbide	SiC vs. SiC
Double Mechanical Seal Faces	Yes	Carbon (Stationary 1) vs. Silicon Carbide (Rotary) vs. Carbon (Stationary 2)	SiC (Stationary 1) vs. SiC (Rotary) vs. Carbon (Stationary 2)
O-rings and Mechanical Seal Elastomers	Yes	FDA Buna	FDA EPDM, FDA Viton®, Others Available
Seal Hardware, including O-Ring Seal Sleeve (for O-ring shaft seal option)	Yes	316 SS	—
Seal Springs	No	304 SS	—
Shaft	No	17-4 PH SS	—
Sealed Ball Bearing	No	Steel, Buna, H1 Food Grade Grease	—
Sealed Angular Contact Thrust Bearings	No	Steel, Buna, H1 Food Grade Grease	—
Bracket	No	Cast Iron, Powder-Coated	—
Bearing Housing	No	316 SS	—
Casing Studs	No	304 SS	—
Head Nuts	No	304 SS Head Acorn Nuts	304 SS Head Wing Nuts
Head Jacket (option)	No	316 SS	—
Bracket Jacket (option) <sup>③</sup>	No	316 SS Tubing	—
Head Jacket O-ring	No	Aflas®	—

Viton® is a registered trademark of DuPont Performance Elastomers, L.L.C.

Aflas® is a registered trademark of the Asahi Glass Co., Ltd.

① Material option not compatible with cleaning solutions, disqualifies pump from 3A and EHEDG certifications.

② Drilled idler not possible.

③ Bracket jacket disqualifies pump from 3A certification.

# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

Section	230
Page	230.5
Issue	D

## Specifications (U.S. Units)

Model Number		① Standard Port Size	Optional Port Sizes Available	Max. Nominal Flow Rate & Speed with Mechanical Seals (100 SSU)		Max. Nominal Flow Rate & Speed with O-Ring Seals (100 SSU)		Max. Differential Pressure	Max. Hydrostatic Pressure	② Max. Recommended Temp for Std. Pump	Approx. Shipping Weight
③ Mech Seal	④ O-ring Seal	Inches	Inches	GPM	RPM	GPM	RPM	PSIG	PSIG	°F	lbs
H4157B	H157B	1	—	6	1150	3	500	150	400	225	40
HL4157B	HL157B	1-1/2	—	12	1150	6	500	150	400	225	42
KS4157B	KS157B	1-1/2	2	30	520	24	400	150	400	225	123
K4157B	K157B	2	2-1/2	40	520	30	400	150	400	225	125
KK4157B	KK157B	2	2-1/2, 3	55	520	40	400	150	400	225	130
LQ4157B	LQ157B	2-1/2	3	75	420	50	320	150	400	225	233
LL4157B	LL157B	3	—	100	420	70	320	150	400	225	240
LS4157B	LS157B	3	4	150	520	85	320	125	400	225	255
Q4157B	Q157B	4	6	185	350	N/A	N/A	125	400	225	615
QS4157B	QS157B	6 ⑤	—	275	350	N/A	N/A	125	400	225	677

## Specifications (S.I. Units)

Model Number		① Standard Port Size	Optional Port Sizes Available	Max. Nominal Flow Rate & Speed with Mechanical Seals (100 SSU)		Max. Nominal Flow Rate & Speed with O-Ring Seals (100 SSU)		Max. Differential Pressure	Max. Hydrostatic Pressure	② Max. Recommended Temp for Std. Pump	Approx. Shipping Weight
③ Mech Seal	④ O-ring Seal	Inches	Inches	M <sup>3</sup> /Hr	RPM	M <sup>3</sup> /Hr	RPM	BarG	BarG	°C	kg
H4157B	H157B	1	—	1.5	1150	0.6	500	10	28	107	18
HL4157B	HL157B	1-1/2	—	3	1150	1.5	500	10	28	107	19
KS4157B	KS157B	1-1/2	2	7	520	5	400	10	28	107	56
K4157B	K157B	2	2-1/2	10	520	7	400	10	28	107	57
KK4157B	KK157B	2	2-1/2, 3	13	520	10	400	10	28	107	59
LQ4157B	LQ157B	2-1/2	3	17	420	12	320	10	28	107	106
LL4157B	LL157B	3	—	22	420	16	320	10	28	107	109
LS4157B	LS157B	3	4	35	520	20	320	8.5	28	107	116
Q4157B	Q157B	4	6	42	350	N/A	N/A	8.5	28	107	279
QS4157B	QS157B	6 ⑤	—	62	350	N/A	N/A	8.5	28	107	307

① Standard ports are ISO 2852 sanitary clamp. Port options include most other hygienic port types and ANSI-compatible Class 150 flanges.

② Extra clearances are required above 225°F (107°C). Higher temperatures can be handled with special construction, consult factory.

③ Mechanical seal viscosity range: Carbon/SiC 1 to 5,000 cSt (28 to 1,000,000 SSU); SiC/SiC 1 to 150,000 cSt.

④ O-ring seal viscosity range: 1 to 1,000,000 cSt.

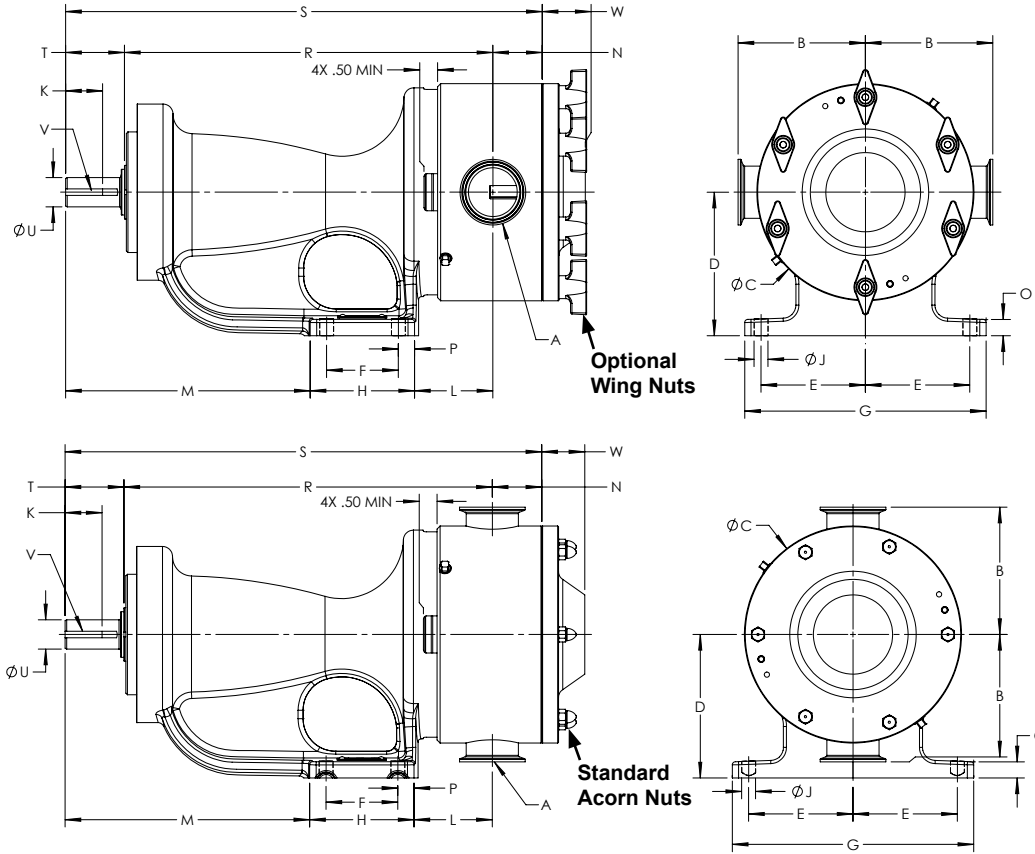
⑤ QS size pumps not available with clamp ports. ANSI-compatible flange ports only. 3A and EHEDG certifications not available on this size due to the ports.

Section	230
Page	230.6
Issue	D

# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

## Dimensions H Through Q 157B / 4157B



Model No.		A	B	B	C	D	E	F	G	H	J	K	L <sup>②</sup>	M	N	O	P	R	S	T	U <sup>②</sup>	V	W	
Mech. Seal	O-Ring Seal	(in) ①	(clamp) ③	(flange)																				
H4157B	H157B	1	in	3.51	4.00	4.88	3.50	2.75	2.25	6.75	3.50	0.47	0.99	3.38	5.18	0.79	0.56	0.65	10.45	12.85	1.60	0.75	.19 x .09	1.56
			mm	88.9	101.6	124.0	88.9	57.2	57.2	171.5	88.9	11.9	25.1	85.7	131.8	20.1	14.2	15.7	265.2	326.4	41.1	19.1	4.83 x 2.29	39.6
HL4157B	HL157B	1.5	in	3.38	4.00	4.88	3.50	2.75	2.25	6.75	3.50	0.47	0.99	3.38	5.18	1.41	0.56	0.65	10.45	13.47	1.60	0.75	.19 x .09	1.56
			mm	85.9	101.6	124.0	88.9	57.2	57.2	171.5	88.9	11.9	25.1	85.7	131.8	35.8	14.2	15.7	265.2	342.1	41.1	19.1	4.83 x 2.29	39.6
KS4157B	KS157B	1.5	in	4.88	5.50	8.32	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	9.37	1.15	0.62	0.62	14.24	17.52	2.13	1.12	0.25x0.12	1.65
			mm	124.0	139.7	211.3	139.7	101.6	69.9	235.0	101.6	13.5	36.1	76.2	238.3	29.2	14.2	15.7	362.0	445.0	54.1	28.4	6.35x3.05	41.9
K4157B	K157B	2	in	4.88	5.25	8.32	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	9.37	1.40	0.62	0.62	14.24	17.77	2.13	1.12	0.25x0.12	1.65
			mm	124.0	133.4	211.3	139.7	101.6	69.9	235.0	101.6	13.5	36.1	76.2	238.3	35.6	14.2	15.7	362.0	451.4	54.1	28.4	6.35x3.05	41.9
KK4157B	KK157B	2	in	4.88	5.25	8.32	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	9.37	1.90	0.62	0.62	14.24	18.27	2.13	1.12	0.25x0.12	1.65
			mm	124.0	133.4	211.3	139.7	101.6	69.9	235.0	101.6	13.5	36.1	76.2	238.3	48.3	14.2	15.7	362.0	464.1	54.1	28.4	6.35x3.05	41.9
LQ4157B	LQ157B	2.5	in	6.32	7.19	10.88	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	20.13	2.25	1.12	0.25x0.12	2.57
			mm	160.5	182.6	276.4	177.8	111.3	101.6	254.0	136.7	13.5	36.1	85.9	231.6	57.2	15.7	15.7	400.1	511.0	54.1	28.4	6.35x3.05	65.3
LL4157B	LL157B	3	in	6.07	7.19	10.88	7.00	4.38	4.00	10.00	5.38	0.53	1.42	3.38	9.12	2.75	0.62	0.62	15.62	20.63	2.25	1.12	0.25x0.12	2.57
			mm	154.2	182.6	276.4	177.8	111.3	101.6	254.0	136.7	13.5	36.1	85.9	231.6	69.9	15.7	15.7	400.1	523.7	54.1	28.4	6.35x3.05	65.3
LS4157B	LS157B	3	in	6.07	7.19	10.88	7.00	4.38	4.00	10.00	5.38	0.53	2.55	4.75	9.11	2.41	0.62	0.63	15.73	21.64	3.50	1.44	0.38x0.19	2.57
			mm	154.2	182.6	276.4	177.8	111.3	101.6	254.0	136.7	13.5	64.8	120.7	231.6	61.2	15.7	15.7	403.9	550.2	88.9	36.6	9.65x4.83	65.3
Q4157B	Q157B	4	<b>Q DIMENSIONS COMING SOON</b>																					

① Standard ports are sanitary clamp. Sanitary clamp port dimension is O.D. of pipe, not O.D. of ferrule, which is about 1/2" greater diameter. Optional flange ports suitable for use with Class 150 steel or stainless steel companion flanges or flanged fittings.

② "U" dimension on L, LL & LS equivalent to Viking Universal Seal 127A series of same size, not 127AE or B, which have 1.44" (36.6mm) diameter.

③ Clamp ports to ISO 2852 standard. Requires EHEDG - approved gaskets for EHEDG certification.

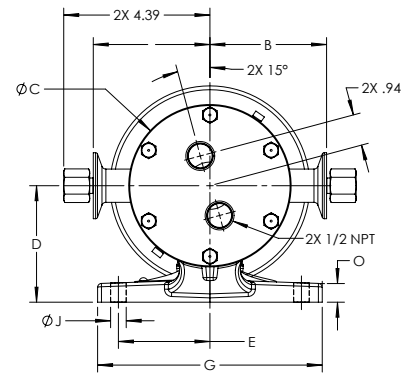
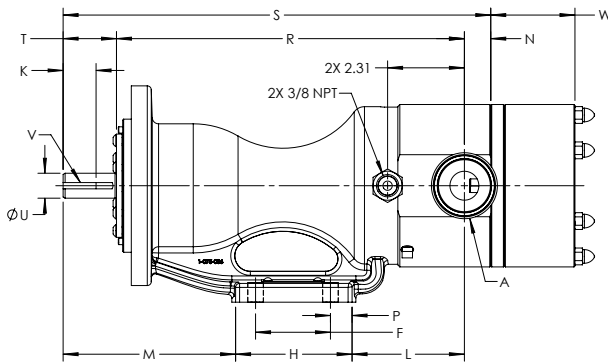
# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

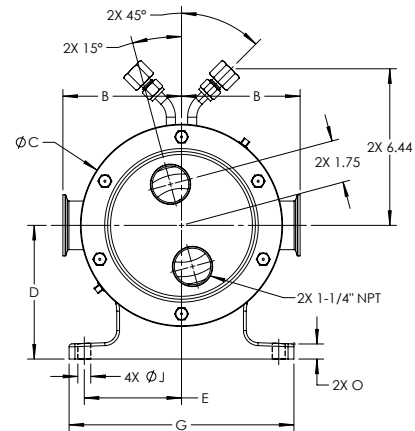
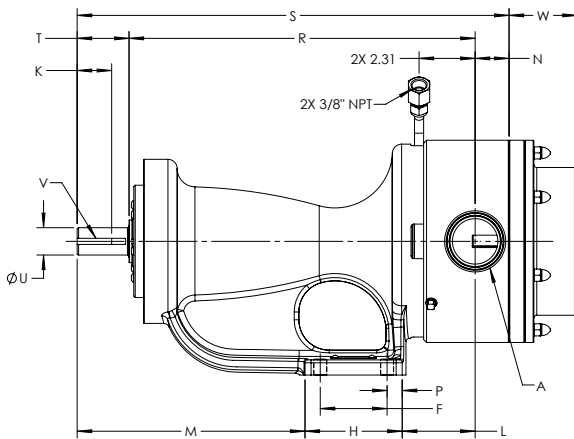
Section	230
Page	230.7
Issue	D

## Dimensions H Through Q 257B / 4257B

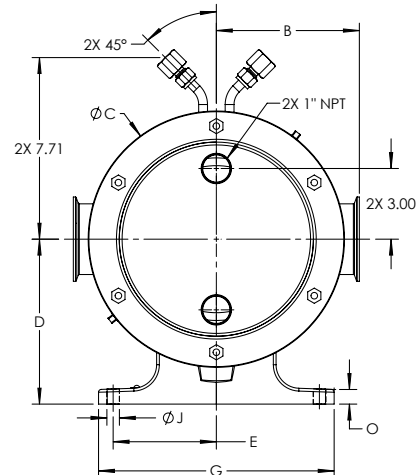
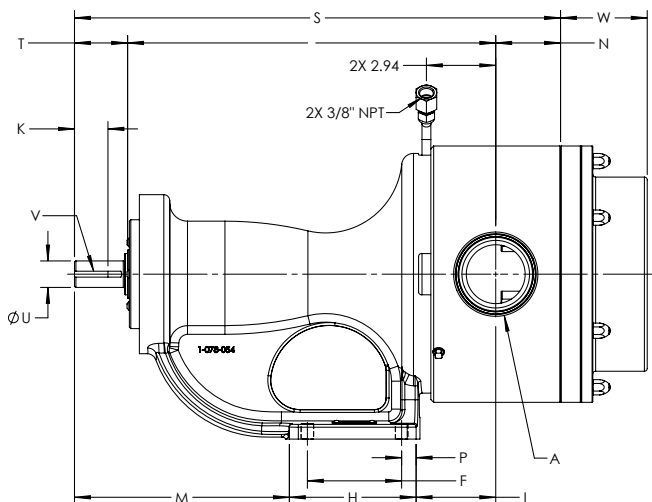
### H / HL



### KS / K / KK



### LQ / LL / LS



Consult factory for Q & QS sizes.

Section	230
Page	230.8
Issue	D

# VIKING HYGIENIC SERIES INTERNAL GEAR PUMPS

SERIES 157B / 4157B / 257B / 4257B

## Dimensions H Through Q 257B / 4257B

Model No.		A (in) ①	B (clamp) ③	B (flange)	C	D	E	F	G	H	J	K	L <sup>②</sup>	M	N	O	P	R	S	T	U ②	V	W	
Mech. Seal	O-Ring Seal																							
H4157B	H157B	1	in	3.51	4.00	4.88	3.50	2.75	2.25	6.75	3.50	0.47	0.99	3.38	5.18	0.79	0.56	0.65	10.45	12.85	1.60	0.75	.19 x .09	2.53
			mm	88.9	101.6	124.0	88.9	57.2	57.2	171.5	88.9	11.9	25.1	85.7	131.8	20.1	14.2	15.7	265.2	326.4	41.1	19.1	4.83 x 2.29	39.6
HL4157B	HL157B	1.5	in	3.38	4.00	4.88	3.50	2.75	2.25	6.75	3.50	0.47	0.99	3.38	5.18	1.41	0.56	0.65	10.45	13.47	1.60	0.75	.19 x .09	2.53
			mm	85.9	101.6	124.0	88.9	57.2	57.2	171.5	88.9	11.9	25.1	85.7	131.8	35.8	14.2	15.7	265.2	342.1	41.1	19.1	4.83 x 2.29	39.6
KS4157B	KS157B	1.5	in	4.88	5.50	8.32	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	9.37	1.15	0.62	0.62	14.24	17.52	2.13	1.12	0.25x0.12	2.81
			mm	124.0	139.7	211.3	139.7	101.6	69.9	235.0	101.6	13.5	36.1	76.2	238.3	29.2	14.2	15.7	362.0	445.0	54.1	28.4	6.35x3.05	41.9
K4157B	K157B	2	in	4.88	5.25	8.32	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	9.37	1.40	0.62	0.62	14.24	17.77	2.13	1.12	0.25x0.12	2.81
			mm	124.0	133.4	211.3	139.7	101.6	69.9	235.0	101.6	13.5	36.1	76.2	238.3	35.6	14.2	15.7	362.0	451.4	54.1	28.4	6.35x3.05	41.9
KK4157B	KK157B	2	in	4.88	5.25	8.32	5.50	4.00	2.75	9.25	4.00	0.53	1.42	3.00	9.37	1.90	0.62	0.62	14.24	18.27	2.13	1.12	0.25x0.12	2.81
			mm	124.0	133.4	211.3	139.7	101.6	69.9	235.0	101.6	13.5	36.1	76.2	238.3	48.3	14.2	15.7	362.0	464.1	54.1	28.4	6.35x3.05	41.9
LQ4157B	LQ157B	2.5	in	6.32	7.19	10.88	7.00	4.38	4.00	10.00	5.38	0.53	1.42	3.38	9.12	2.25	0.62	0.62	15.75	20.12	2.13	1.12	0.25x0.12	3.68
			mm	160.5	182.6	276.4	177.8	111.3	101.6	254.0	136.7	13.5	36.1	85.9	231.6	57.2	15.7	15.7	400.1	511.0	54.1	28.4	6.35x3.05	65.3
LL4157B	LL157B	3	in	6.07	7.19	10.88	7.00	4.38	4.00	10.00	5.38	0.53	1.42	3.38	9.12	2.75	0.62	0.62	15.75	20.62	2.13	1.12	0.25x0.12	3.68
			mm	154.2	182.6	276.4	177.8	111.3	101.6	254.0	136.7	13.5	36.1	85.9	231.6	69.9	15.7	15.7	400.1	523.7	54.1	28.4	6.35x3.05	65.3
LS4157B	LS157B	3	in	6.07	7.19	10.88	7.00	4.38	4.00	10.00	5.38	0.53	2.55	4.75	9.13	2.41	0.62	0.63	15.90	21.66	3.50	1.44	0.38x0.19	3.68
			mm	154.2	182.6	276.4	177.8	111.3	101.6	254.0	136.7	13.5	64.8	120.7	231.6	61.2	15.7	15.7	403.9	550.2	88.9	36.6	9.65x4.83	65.3
Q4157B	Q157B	4	in	<b>Q DIMENSIONS COMING SOON</b>																				
			mm	<b>Q DIMENSIONS COMING SOON</b>																				

① Standard ports are sanitary clamp. Sanitary clamp port dimension is O.D. of pipe, not O.D. of ferrule, which is about 1/2" greater diameter. Optional flange ports suitable for use with Class 150 steel or stainless steel companion flanges or flanged fittings.

② "U" dimension on L, LL & LS equivalent to Viking Universal Seal 127A series of same size, not 127AE or B, which have 1.44" (36.6mm) diameter.

③ Clamp ports to ISO 2852 standard. Requires EHEDG - approved gaskets for EHEDG certification.



**VIKING**  
**HYGIENIC SERIES INTERNAL GEAR PUMPS**

SERIES 157B / 4157B / 257B / 4257B

Section	230
Page	230.9
Issue	D

---

**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.

NPSH<sub>R</sub> tables for the Hygienic Series can be found in TR-126.