MOTOR SPEED PRODUCT LINE:
CAST IRON PUMPS
32 Series™ & 432 Series™

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SERIES DESCRIPTION

Viking's Motor Speed Product Line internal gear pumps are extremely well suited for light, medium and intermittent service handling a variety of liquids. The smaller sizes C, F, FH are constructed for heavier duty service. Mechanical seal equipped pump models in sizes C, F, FH, G, H, HL are available with Underwriters label for handling fuel oil. Model numbers for these pumps must be designated by a suffix -X. UL listed models can be equipped with integral relief valve.

Viking's unique and unusually simple pump construction makes it adaptable to many diversified installations. The pumps possess excellent vacuum characteristics and will operate and prime at suction lifts up to 25 feet, depending upon the vaporization point of volatile liquids. Because of the cushioned action in providing a continuous and steady stream of liquid without splashing, pounding, foaming or churning, the Viking pump is adaptable to an unlimited number of industrial applications.

RELATED PRODUCTS

Steel Externals, 456 Series™: Catalog Section 1442

Steel Externals, 475 Series™: Catalog Section 1445

Cast Iron, 124C Series™: Catalog Section 2401

C32



G432



OPERATING RANGE

SERIES	NOMINAL FLOW		MAXIMUM PRESSURE		TEMPERATURE RANGE		VISCOSITY RANGE	
	GPM	m^3h	PSI	Bar	°F	°C	SSU	cSt
32 Series™	.5 - 450	.1 - 102	250	17	−60 to +450	−50 to +230	31 to 250,000	1 to 55,000
432 Series™	.5 - 20	.1 - 4.5	250	17	−60 to +450	−50 to +230	31 to 250,000	1 to 55,000

MOTOR SPEED PRODUCT LINE:
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32 Series™ & 432 Series™

FEATURES & BENEFITS

- **Relief Valve on Casing or Head:** The integral pressure relief valve on casing or head permits by-passing of liquid from discharge back to suction side of pump. Reverse valve when reversing pump rotation on large pumps. Small pumps with relief valve built with right hand suction as standard.
- **Steam Jacketed Head:** Jacketed head or plate permits temperature control of the liquid being pumped. Jacketed plate available on G through LL size pumps. Jacketed head available on Q through N sizes. Relief valve not available with jacketed head or plate. For complete jacketed pumps, refer to Catalog Section 1464.
- **Upright, Opposite & Right Angle Ports:** C, F and FH size pumps are furnished with upright port casings: G size pumps have opposite port casing and H, HL, K, KK, L, LQ, LL, Q, M, N size pumps have right angle port casings. Right hand port determined by location of side port when facing pump from shaft end.
- **Mechanical Seal:** All pumps are available with packed stuffing boxes. Mechanical seals are available on C, F, FH, G, H, HL size pumps as standard. The seal is a rotary type packaged unit that is simple and self-adjusting. It works WITH rather than *against* pressure.

MODEL NUMBER KEY

H L 4 3 2 D

Size:

C	HL	LL
F	K	Q
FH	KK	M
G	L	N
H	LQ	

Shaft Seal:
Blank = Packing
4 = Mechanical Seal

Basic Series Configuration

Drive Type
D = Direct Connected
B = Bracket Mounted
R = Reducer Unit
V = V-Belt Drive

STANDARD MATERIALS OF CONSTRUCTION

Component		Standard Material
Casing		Iron
Head		Iron
Rotor		Steel (C, F, FH) Iron (G, H, HL, K, KK, L, LQ, LL, Q, M) Ductile Iron (N)
Rotor Shaft		Steel
Idler		Powdered Metal (C, F, FH, G, H, HL) Iron (K, KK, L, LQ, LL, Q, M, N)
Idler Pin		Nitralloy (C, F, FH) Steel (G, H, HL, K, KK, L, LQ, LL, Q, M, N)
Bushings	32 Series™	Carbon Graphite (C, F, FH) Bronze (G, H, HL, K, KK, L, LQ, LL, Q, M, N)
	432 Series™	① Carbon Graphite
Internal Relief Valve		② Iron

Note: Buna N elastomer used in Mechanical Seal of 432 Series pumps.

① Mechanical seal seat has bronze bushing.

② Valve integral with pump casing. Right hand suction only.

SPECIFICATIONS

Model Number	⑥ Port Size	Nominal Pump Rating			Motor HP Required at Rated Speed Pumping 100 SSU Liquid			Maximum Recommended Discharge Pressure PSIG			Maximum Recommended Temperature for Cataloged Pump				Steel Fitted Construction Recommended Above This Viscosity		Maximum Hydrostatic Pressure		Approx. Shipping Weight With Valve	
											Packed		Mech. Seal							
	Inches	GPM	m³/h	RPM	25 PSI (2 BAR)	50 PSI (3 BAR)	100 PSI (7 BAR)	Less Than 100 SSU	Fuel Oil Less Than 100 SSU	100 SSU and up	°F	°C	°F	°C	SSU	cSt	PSI	BAR	Lbs.	Kg.
C32 ①C432	¼	.5	.11	1800	¼	¼	¼	100	150	③ 250	300	150	④ 225	④ 105	—	—	750	50	5	2.3
F32 ①F432	½	1.5	.34	1800	¼	¼	¼	100	150	③ 250	300	150	④ 225	④ 105	—	—	750	50	6	2.7
FH32 ①FH432	½	3	.68	1800	¼	¼	⅓	100	150	③ 250	300	150	④ 225	④ 105	—	—	750	50	6	2.7
G32 ①G432	1	5	1.1	1200	⅓	½	¾	50	—	100	300	150	225	105	① 25,000	① 5,500	400	28	15	6.8
H32 ①H432	1	10	2.3	1200	½	¾	1½	50	—	100	300	150	225	105	① 25,000	① 5,500	400	28	20	9.1
HL32 ①HL432	1½	20	4.5	1200	¾	1½	2	50	—	100	300	150	225	105	① 7,500	① 1,650	400	28	26	11.8
K32	1½	35	8	420	1	2	5	50	—	100	300	150	—	—	25,000	5,500	400	28	65	29.5
KK32	2	50	11	420	1½	3	5	50	—	100	300	150	—	—	7,500	1,650	400	28	70	31.8
L32	2	90	20	420	3	5	10	50	—	100	300	150	—	—	25,000	5,500	400	28	120	54.5
LQ32	② 2½	90	20	420	3	5	10	50	—	100	300	150	—	—	25,000	5,500	400	28	125	56.8
LL32	② 3	140	32	520	5	7½	15	50	—	100	300	150	—	—	7,500	1,650	400	28	135	61.3
Q32	② 3	200	45	350	7½	10	—	50	—	75	300	150	—	—	7,500	1,650	400	28	335	152.1
M32	② 4	280	63	280	10	15	—	50	—	75	300	150	—	—	25,000	5,500	400	28	500	227
N32	② 5	450	102	280	15	25	—	50	—	75	300	150	—	—	2,500	550	400	28	670	304.2

① Mechanical Seal pumps not recommended on applications with viscosities above 15,000 SSU (3,300 cSt).

② Ports are suitable for use with 125# ANSI cast iron or 150# ANSI steel companion flanges or flanged fittings. All others tapped for standard pipe.

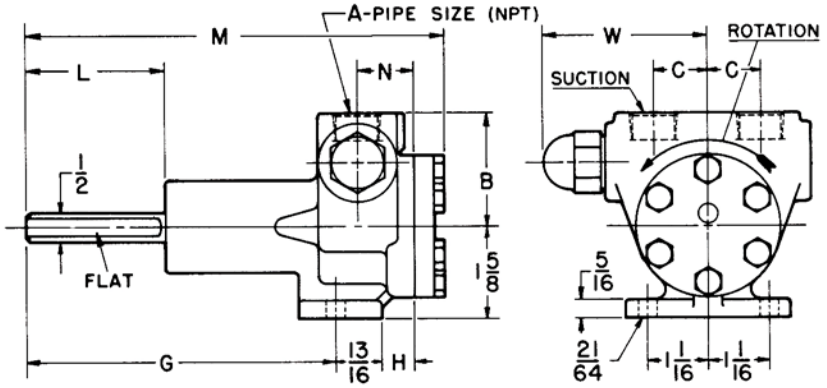
③ With extra clearance, pumps can be used to 500 PSI (34 BAR) on intermittent duty.

④ With special construction, temperature to 500°F can be handled with seal pumps. Consult factory.

⑤ Not available in steel fitted construction.

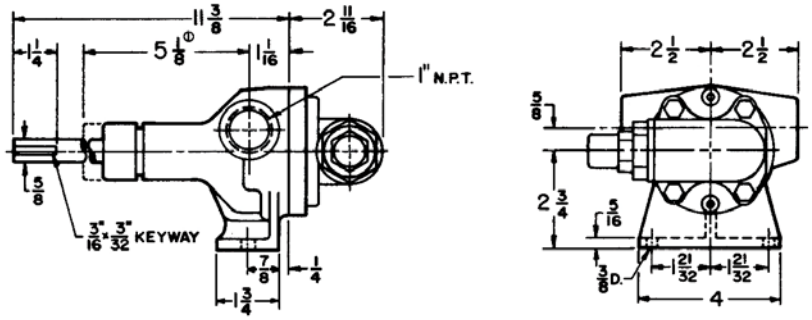
⑥ Right hand port only.

DIMENSIONS – C, F, FH SIZES



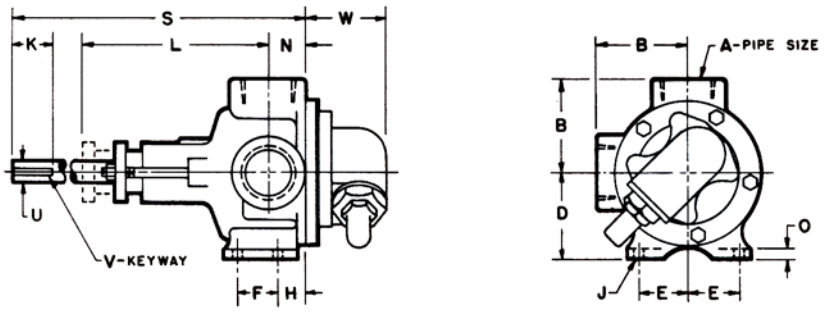
MODEL NO.		A	B	C	G	H	L	M	N	W
PACKED	SEAL									
C32	C432	¼	1 11/16	¾	4 25/32	17/32	2¼	6 11/16	⅞	2 9/16
F32	F432	½	2	15/16	5	19/32	2	7	1	2⅞
FH32	FH432	½	2	15/16	5⅜	19/32	2⅜	7⅜	1	2⅞

DIMENSIONS – G SIZE



① Minimum dimension for repacking. Assembled dimension on seal pumps 3 1/16".

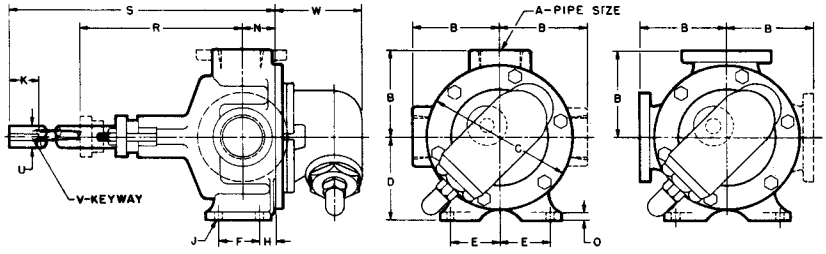
DIMENSIONS – H, HL SIZES



MODEL NO.		A		B	D	E	F	H	J	K	① L	N	O	S	U	V	W
PACKED	SEAL																
H32	H432	1	in	2.88	2.75	1.63	1.31	0.88	0.34	1.75	5.75	0.88	0.31	11.38	0.75	.19 x .09	2.88
			mm	73.2	69.9	41.4	33.3	22.4	8.6	44.5	146.1	22.4	7.9	289.1	19.1	4.8 x 2.3	73.2
HL32	HL432	1½	in	3.00	2.75	1.63	1.31	0.88	0.34	1.75	6.00	1.19	0.31	11.38	0.75	.19 x .09	2.88
			mm	76.2	69.9	41.4	33.3	22.4	8.6	44.5	152.4	30.2	7.9	289.1	19.1	4.8 x 2.3	73.2

① Minimum dimension for repacking. Assembled dimension on seal pumps: 3⅞" for Model H432, 4½ for Model HL432.

DIMENSIONS – K, KK, L, LQ SIZES (32 SERIES™)



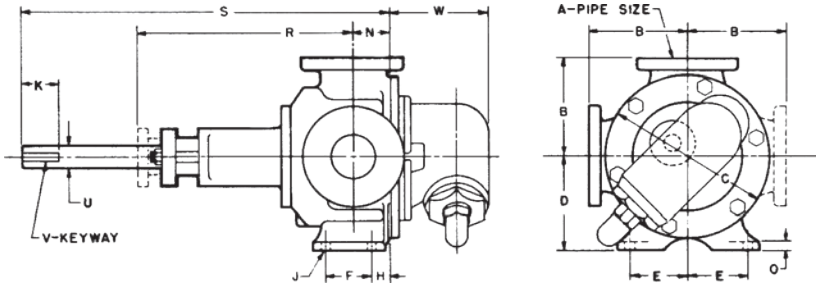
MODEL NO.	A	B	C	D	E	F	H	J	K	N	O	② R	S	U	V	W
K32	1½	4⅞	8	4⅝	2⅞	2¼	⅞	13/32	3	1¾	7/16	7⅛	18¼	1⅛	¼ x ⅛	5⅛
KK32	2	4⅞	8	4⅝	2⅞	2¼	⅞	13/32	3	1¾	7/16	7⅝	18¾	1⅛	¼ x ⅛	5⅛
L32	2	6½	10¼	6	2⅞	3	1	15/32	3	1¾	½	9⅛	21¼	1 1/16	⅜ x 3/16	5⅜
LQ32	①2½	7 3/16	10¼	6	2⅞	3	1	15/32	3	1¾	½	9⅞	21¼	1 1/16	⅜ x 3/16	5⅜

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

② Minimum dimension for repacking.

MOTOR SPEED PRODUCT LINE:
CAST IRON PUMPS
32 Series™ & 432 Series™

DIMENSIONS – LL, Q, M, N SIZES (32 SERIES™)

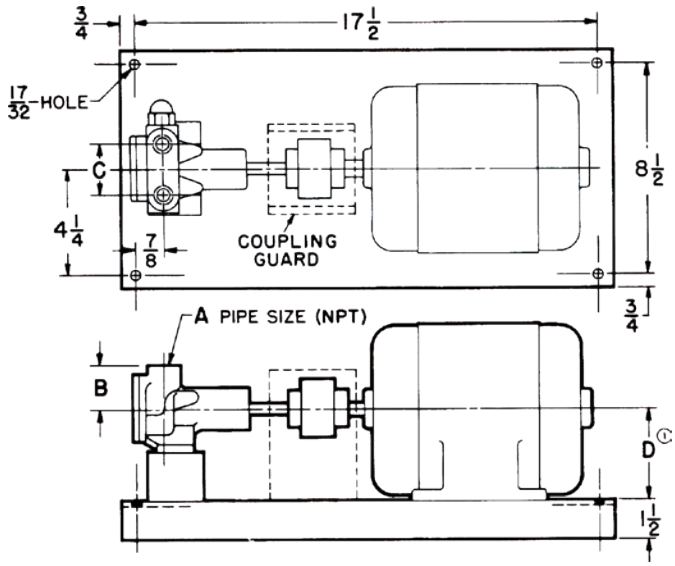


MODEL NO.	① A	B	C	D	E	F	H	J	K	N	O	② R	S	U	V	W
LL32	3	7 3/16	10 1/4	6	2 7/8	3	1 1/2	15/32	3	2 1/4	1/2	12 1/8	21 3/4	1 7/16	3/8 x 3/16	5 3/8
Q32	3	7 3/4	14	7 3/4	4 1/8	4 1/4	1 5/8	11/16	5	3	5/8	13 7/8	33 1/2	1 15/16	1/2 x 1/4	8 3/16
M32	4	9 1/2	17 1/4	9 1/2	5	6 1/4	1 7/16	11/16	5	4	3/4	13 3/8	34	1 15/16	1/2 x 1/4	8 1/2
N32	5	9 1/2	17 1/4	9 1/2	5	6 1/4	1 5/8	11/16	5	4 1/2	1	20 7/8	34	2 7/16	5/8 x 5/16	8 1/2

① Ports are suitable for use with 125# ANSI cast iron or 150# ANSI steel companion flanges or flanged fittings.

② Minimum dimension for repacking.

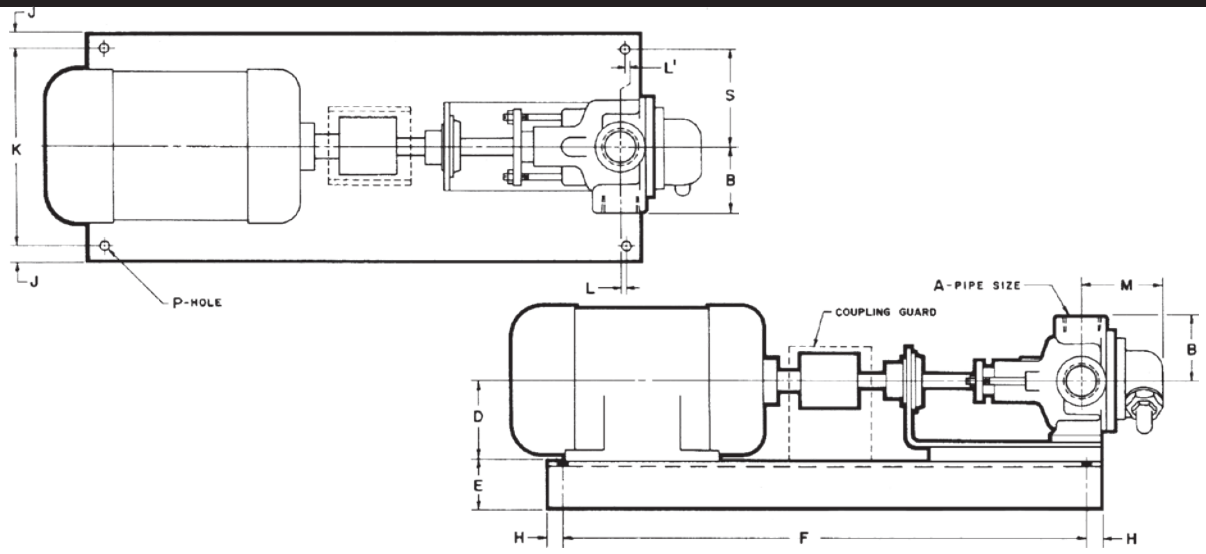
DIMENSIONS – C, F, FH SIZES – D DRIVE



MODEL NO.		A	B	C	Approximate Shipping Weight With Valve (Less Power)	
PACKED	SEAL				Pounds	KG
C32D	C432D	1/4	1 11/16	1 1/2	26	11.8
F32D	F432D	1/2	2	1 7/8	27	12.3
FH32D	FH432D	1/2	2	1 7/8	29	13.2

① Centerheight is 3” with 48 frame motor. Centerheight is 3 1/2” with 56 frame motor.

DIMENSIONS – G, H, HL SIZES – D DRIVE



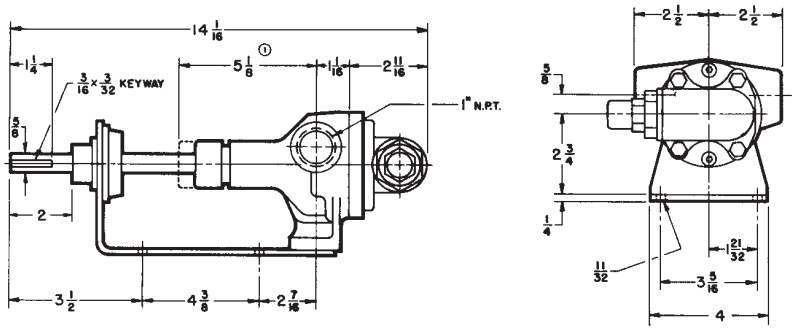
MODEL NO.		A	B	D	E	F	H	J	K	L	L_1	M	P	S	Approximate Shipping Weight With Valve (Less Power)	
PACKED	SEAL														Pounds	KG
①G32D	①G432D	1	2½	②3½	1½	20½	¾	¾	8½		5/32	3¾	½	4¼	45	20.4
H32D	H432D	1	2⅞	②3½	1½	20½	¾	¾	8½		⅛	3¾	½	4¼	70	31.8
HL32D	HL432D	1½	3	②3½	1½	20½	¾	¾	8½	3/16		4 1/16	½	4¼	75	34.1
①G32D	①G432D	1	2½	③4½	2 15/16	25	1	1½	9	1		3¾	9/16	4½	45	20.4
H32D	H432D	1	2⅞	③4½	2 15/16	25	1	1½	9	1 1/16		3¾	9/16	4½	70	31.8
HL32D	HL432D	1	3	③4½	2 15/16	25	1	1½	9	1⅜		4 1/16	9/16	4½	75	34.1

① All G size pumps are equipped with opposite ports with openings ⅝" above shaft center line. See drawing page 310.9.

② For motor frames 56, 143T and 145T.

③ For motor frames 182, 182T, 184 and 184T. Frame 48 (3" center line), smaller base required. Frame 213 on up, larger base required.

DIMENSIONS – G SIZE – B DRIVE

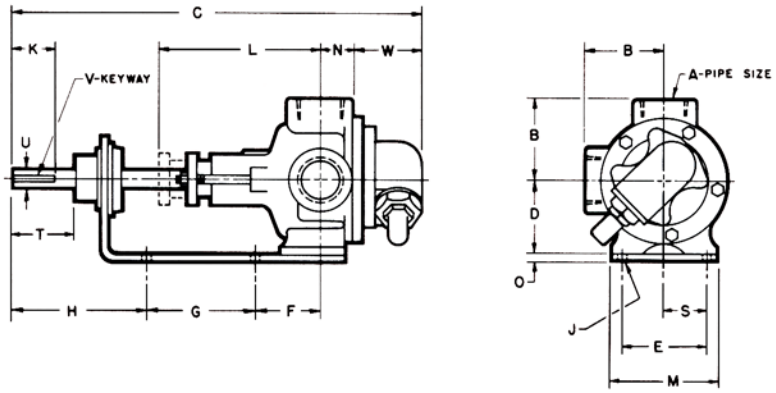


MODEL NO.		Approximate Shipping Weight With Valve (Less Power)	
PACKED	SEAL	Pounds	KG
G32B	G432B	18	8.2

① Minimum dimension for repacking. Assembled dimension for seal pump 3 1/16.

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32 Series™ & 432 Series™

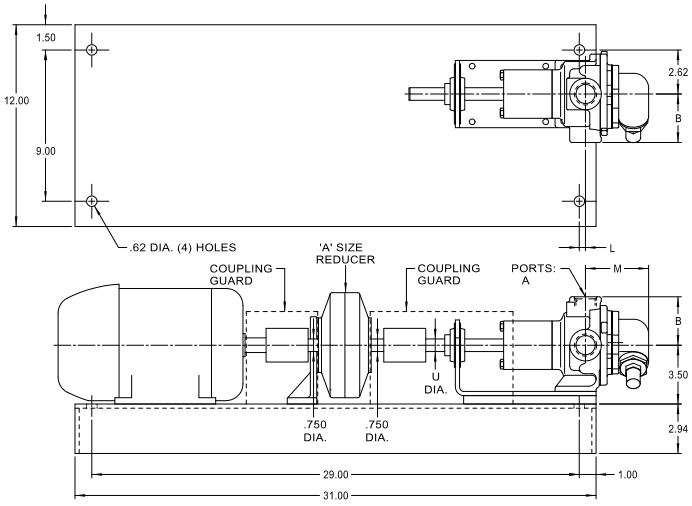
DIMENSIONS – H, HL SIZES – B DRIVE



MODEL NO.												①								Approximate Shipping Weight With Valve (Less Power)	
PACKED	SEAL	A	B	C	D	E	F	G	H	J	K	L	M	N	O	S	T	U	V	W	Pounds	KG
H32B	H432B	1	2⅞	14¼	2¾	3 15/16	2¾	4⅜	3¾	1 1/32	1¼	5¾	4	⅞	¼	1 21/32	2 3/16	¾	3/16 x 3/32	2⅞	23	10.4
HL32B	HL432B	1½	3	14	2¾	3 15/16	2¾	4⅜	3½	1 1/32	1¼	6	4	1 3/16	¼	1 21/32	2	¾	3/16 x 3/32	2⅞	28	12.7

① Minimum dimension for repacking. Assembled dimension on seal pumps: 3⅞" – for Model H432B, 4½" – for Model HL432B.

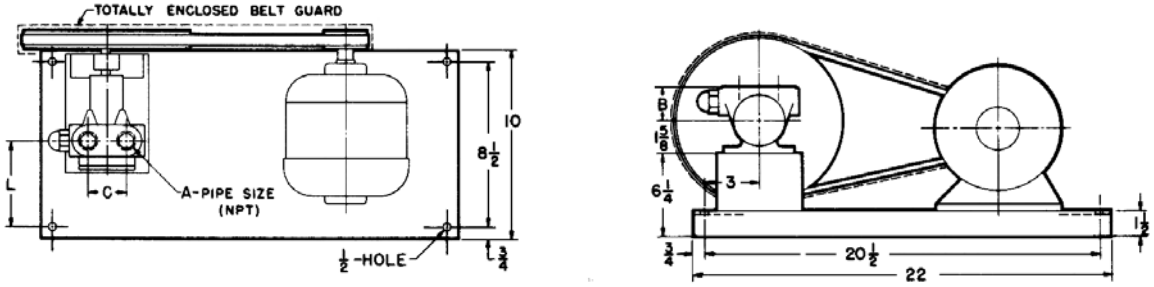
DIMENSIONS – G, H, HL SIZES – R DRIVE, A REDUCER



MODEL NO.		A	B	L	M	U	Approximate Shipping Weight With Valve (Less Power)	
PACKED	SEAL						Pounds	KG
① G32R	① G432R	1	2½	5/8	3¾	5/8	65	30
H32R	H432R	1	2⅞	9/16	3¾	¾	70	32
HL32R	HL432R	1½	3	¼	4 1/16	¾	75	34

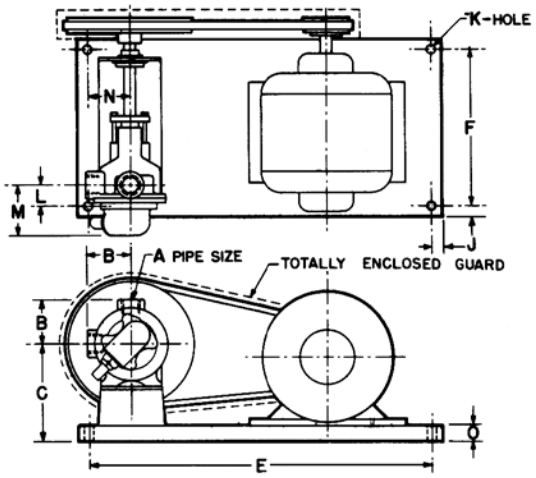
① All G size pumps are equipped with opposite ports with openings ⅝" above shaft center line.

DIMENSIONS – C, F, FH SIZES – V DRIVE



MODEL NO.		A	B	C	L	Approximate Shipping Weight With Valve (Less Power)	
PACKED	SEAL					Pounds	KG
C32V	C432V	¼	1 1/16	1	4⅞	35	16
F32V	F432V	½	2	1⅞	4 15/16	40	18
FH32V	FH432V	½	2	1⅞	4 15/16	45	20

DIMENSIONS – G, H, HL SIZES – V DRIVE



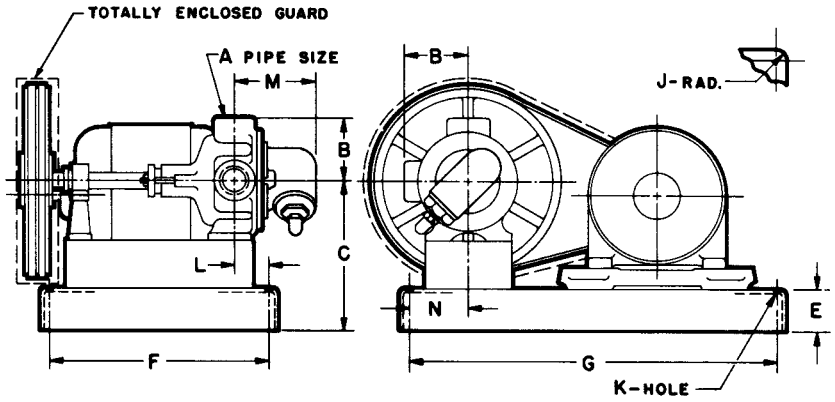
MODEL NO.		A	B	C	E	F	J	K	L	M	N	O	Approximate Shipping Weight With Valve (Less Power)	
PACKED	SEAL												Pounds	KG
① G32V	① G432V	1	① 2½	8⅜	18¾	10¼	¾	½	1 13/16	3¾	2¾	1¼	65	30
H32V	H432V	1	2⅞	8⅜	18¾	10¼	¾	½	1⅞	3¾	2¾	1¼	70	32
HL32V	HL432V	1½	3	8⅜	18¾	10¼	¾	½	2 3/16	4 1/16	2¾	1¼	75	34

① All G size pumps are equipped with opposite ports with openings ⅝" above shaft center line. See drawing page 310.9.

Base shown for motor frame 56 and smaller.

Larger Base always required with motor frames 143T, 145T, 182, 182T, 184, 184T.

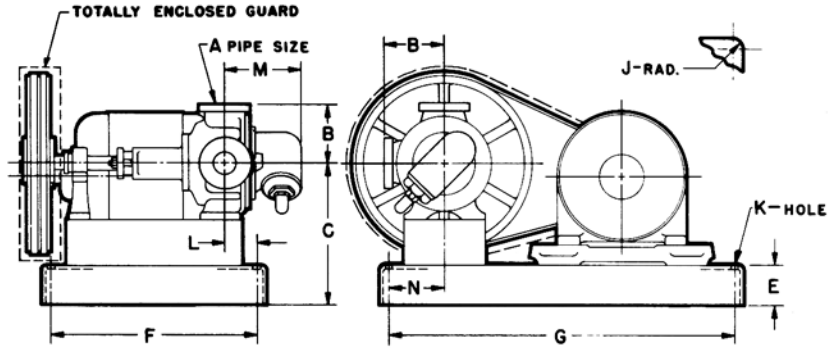
DIMENSIONS – K, KK, L, LQ SIZES – V DRIVE (32 SERIES™)



MODEL NO.	A	B	C	E	F	G	J	K	L	M	N	Approximate Shipping Weight With Valve (Less Power) Pounds	KG
K32V	1½	4⅞	13 9/16	3¼	17	28¾	1	½	2 11/16	6⅞	4 9/16	210	95
KK32V	2	4⅞	13 9/16	3¼	17	28¾	1	½	2 11/16	6⅞	4 9/16	215	98
L32V	2	6½	15½	3½	18½	31	1	⅝	1⅞	7⅛	6½	280	127
LQ32V	① 2½	7 3/16	15½	3½	18½	31	1	⅝	1⅞	7⅛	6½	290	132

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

DIMENSIONS – LL, Q, M, N – V DRIVE (32 SERIES™)



MODEL NO.	① A	B	C	E	F	G	J	K	L	M	N	Approximate Shipping Weight With Valve (Less Power) Pounds	KG
LL 32V	3	7 3/16	15½	3½	18½	31	1	⅝	1⅞	7⅝	6½	315	143
Q32V	3	7¾	② 13¾	6	27	49	1½	13/16	2⅛	11 3/16	8½	750	341
M32V	4	9½	③ 15½	6	27	49	1½	13/16	3 1/16	12½	8½	1100	500
N32V	5	9½	20½	6	27	49	1½	13/16	3 9/16	13	9½	1300	590

① Ports are suitable for use with 125# ANSI cast iron or 150# ANSI steel companion flanges or flanged fittings.

② Dimension “C” (13¾) shown is for 19” or 25” O.D. sheave (lesser reductions). Dimension “C” is 20¼” when 33.5” O.D. sheave is used (maximum reduction).

③ Dimension “C” (15½) shown is for 19” or 25” O.D. sheave (lesser reductions). Dimension “C” is 22” when 33.5” O.D. sheave is used (maximum reduction)

NPSH REQUIRED

Printed performance curves are not available.

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

$NPSH_R$ data is not available on the curve generator.

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

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

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

1. Calculate line loss for a 1 foot long pipe of a diameter matching the pump inlet port size. Use your flow rate and max viscosity.

2. Convert this value into Feet of Liquid (S.G. 1.0)

3. Add this value to the $NPSH_R$ value in the chart below.

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

	PUMPS SPEED, RPM														
PUMP SIZE	100	125	155	190	230	280	350	420	520	640	780	950	1150	1450	1750
C	-	-	-	-	-	-	-	-	-	-	-	1.7	1.9	2.2	2.4
F, FH	-	-	-	-	-	-	-	-	-	1.8	1.9	2.1	2.3	2.8	3.4
G	-	-	-	-	-	-	-	1.8	2.0	2.2	2.6	3.1	3.9	5.6	7.6
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	24.4	-	-	-
L, LQ, LL	1.7	1.8	2.0	2.2	2.5	3.0	3.8	5.0	7.3	10.8	17.7	32.0	-	-	-
Q	1.9	2.1	2.3	2.7	3.3	4.2	6.1	8.4	12.7	-	-	-	-	-	-
M	2.1	2.3	2.8	3.4	4.3	6.0	9.0	12.7	-	-	-	-	-	-	-
N	2.1	2.5	3.5	4.5	6.3	9.5	15.0	29.5	-	-	-	-	-	-	-

Catalog Speed Rating*

*Limit for most models.
Some models exceed this limit.
See Viking Pump catalog for details.