

HIGH PRESSURE EXTERNAL GEAR PUMPS: DUCTILE IRON CONSTRUCTION

GB-414 Series™

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SERIES DESCRIPTION

Viking's GB-414 Series™ positive displacement pumps build on and improve Viking's rich legacy of dependable solutions for demanding applications that require high pressure when handling thin liquids. Now with an even more robust construction, with the newly built-in repairable features, Viking's new GB Series of pipeline injection pumps provide an even more durable and repairable solution for your oil & gas processing, pipeline injection, and high-pressure transfer needs.

TYPICAL APPLICATIONS

This pump is designed to handle applications that are thin, clean, and lubricating liquids with high differential pressure requirements across multiple applications. Below is a subset of proven applications where these products have been applied in the field:

Pipelines, process, sumps, dehydration, booster, injection, and LACT Units, and many other liquids requiring high differential pressures supporting multiple application needs.



GB-41415



GB-41430



GB-41445

OPERATING RANGE

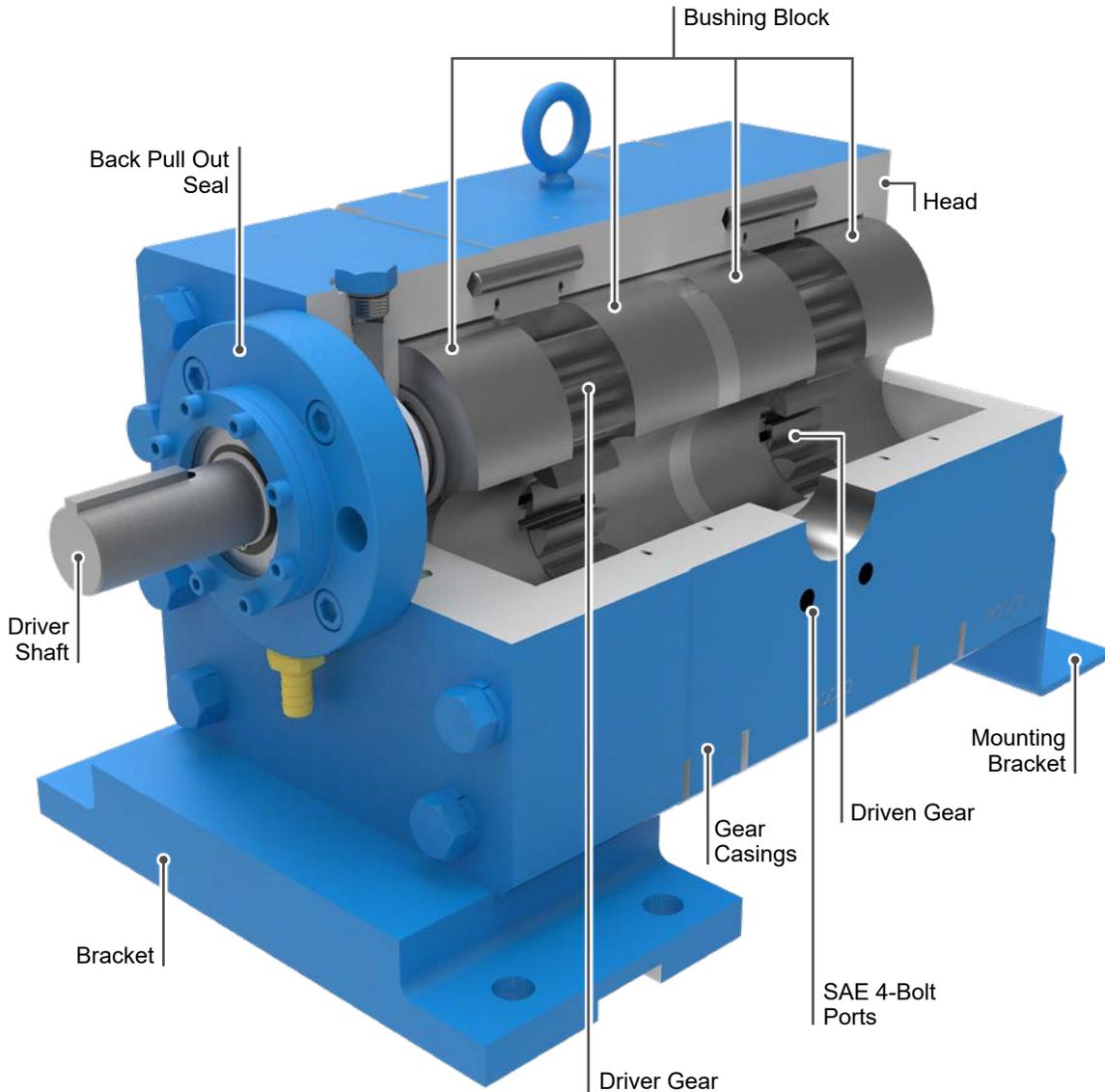
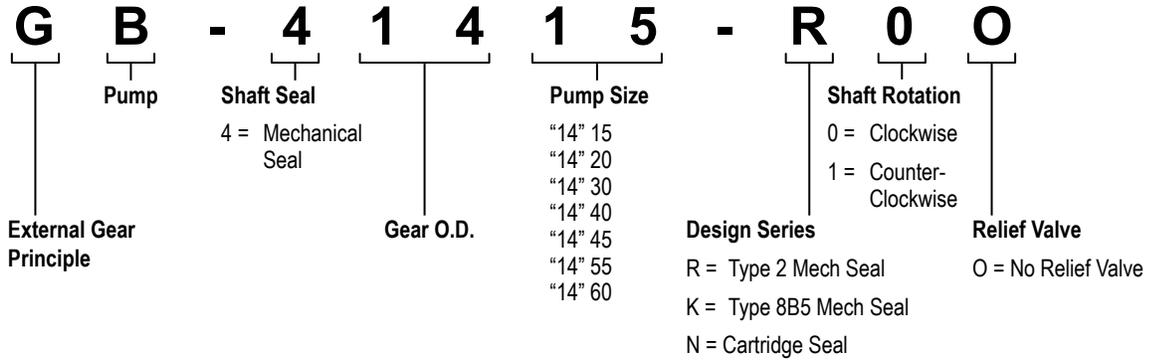
SERIES	NOMINAL FLOW		MAXIMUM PRESSURE	TEMPERATURE RANGE	VISCOSITY RANGE	
	GPM	BPD	PSI	°F	SSU	cP
GB-414	25 - 210	850 - 7,250	1,500	0 to +350	28 to 2,500	1 to 550

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MODEL NUMBER KEY



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MATERIALS OF CONSTRUCTION

Component	Standard Offering	Options
Bracket	Ductile Iron (ASTM A536)	----
Casing	Ductile Iron (ASTM A536)	----
Head / Separation Plate	Ductile Iron (ASTM A536)	----
Bushing Block	Gray Iron (ASTM A823) with DLC Surface Hardening	----
Gears	Heat Treated Steel (ASTM A322) with DLC Surface Hardening	----
Shaft	Heat Treated Steel (ASTM A322)	----
Bushings	DU (PTFE-Impregnated Bronze w/ Steel Reinforcement)	----
O-Rings	FKM	----
Mechanical Seal	Carbon / Silicon Carbide ①	Carbon / Silicon Carbide Balanced ②③

- ① Standard Mechanical Seal - Single Component Elastomer Bellows Seal (**Note:** Max inlet pressure is 200 PSI)
 ② Balanced Mechanical Seal - John Crane Type 8B5 Balanced Seal (**Note:** Max inlet pressure is 500 PSI)
 ③ Cartridge Mechanical Seal - John Crane 5611Q (Tungsten Carbide / Silicon Carbide) (**Note:** Max inlet pressure is 100 PSI)

PERFORMANCE

Pump Model	① Ports	Nominal Flow @ 750PSI (1,775 rpm) on 4 cP			Nominal Flow @ 1,500PSI (1,775 rpm) on 4 cP			Maximum Continuous Pressure	Maximum Recommended Temperature	Approximate Shipping Weight (Pump Only)
		GPM	BPH	BPD	GPM	BPH	BPD			
Ductile Iron	Inch							PSI	°F	Lb.
GB-41415	2" SAE	46	66	1,587	40	57	1,366	1500	350	225
GB-41420	2" SAE	60	85	2,045	-	-	-	750	350	233
GB-41430	2" SAE	94	134	3,208	81	116	2,779	1500	350	322
GB-41440	3" SAE	120	172	4,138	-	-	-	750	350	334
GB-41445	3" SAE	141	201	4,833	122	175	4,202	1500	350	437
GB-41455	3" SAE	168	240	5,760	-	-	-	750	350	453
GB-41460	4"	182	260	6,230	-	-	-	750	350	500

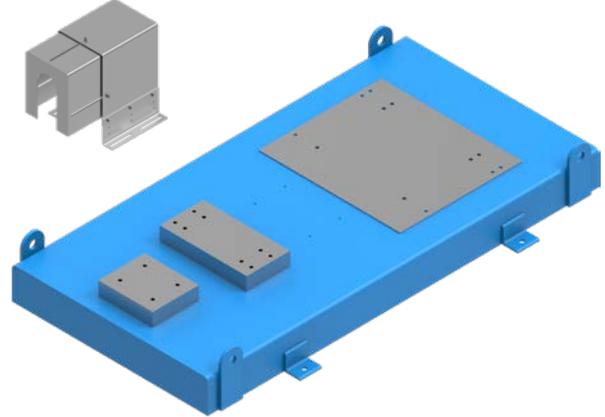
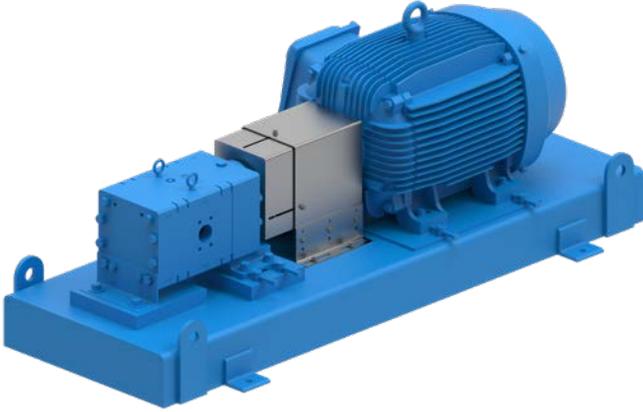
- ① 2" and 3" SAE Ports use J518 Code 61 SAE Flange Ports. 4" port uses 3000 Series Square Flange.

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DRIVE OPTIONS



Base Mounted Units (“D” Drive)

GB-414 Series™ external gear pumps are available mounted to a Viking formed steel base providing solid mounting for the pump, motor, and coupling guard. Available as complete unit with spec motor, spacer-coupling, coupling guards, and alignment jacking bolts.

NOTE: This mounting arrangement requires on-site coupling alignment.

Dimensions for Base Mounted Pumps (“D” Drive) — See Pages 1655.7 - 1655.9.

Base Package Standard Features

GB-414 Series™ Base Packages are available from Viking as a turn key pump and motor package to allow maximum flexibility for future pump needs (CPL), ease of alignment with jacking bolts and milled mounting pads, and integrated lifting lugs for proper rigging and unit mobility. The Viking base package also includes a standard adjustable aluminum coupling guard covering our 5” / 8” spacer coupling for easy seal access.*

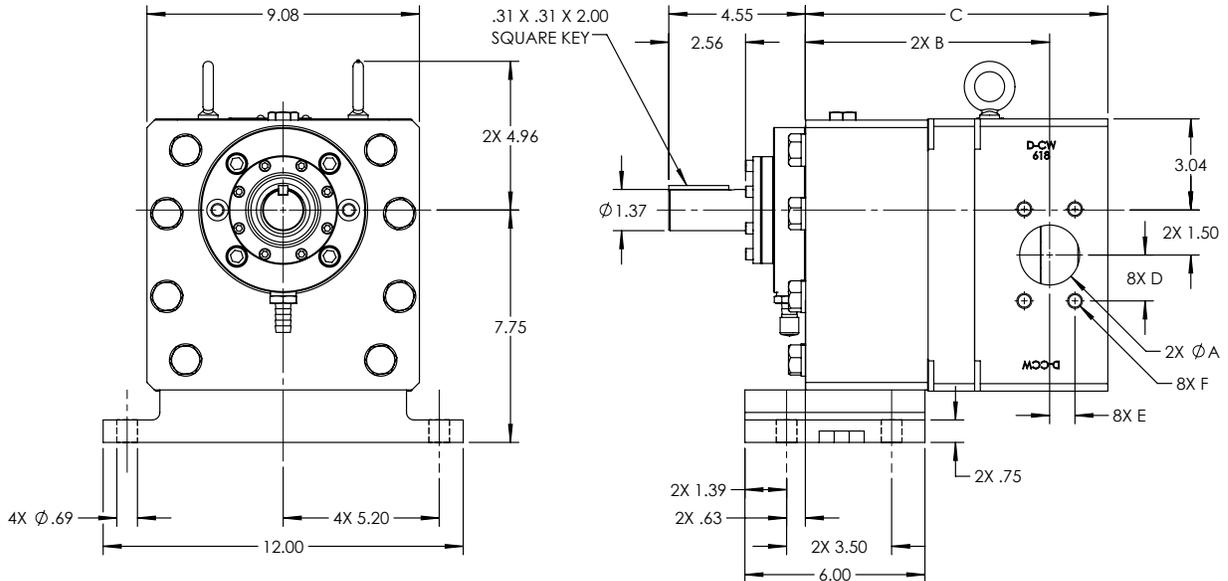
*8” spacer coupling standard on motor frames 445T and larger

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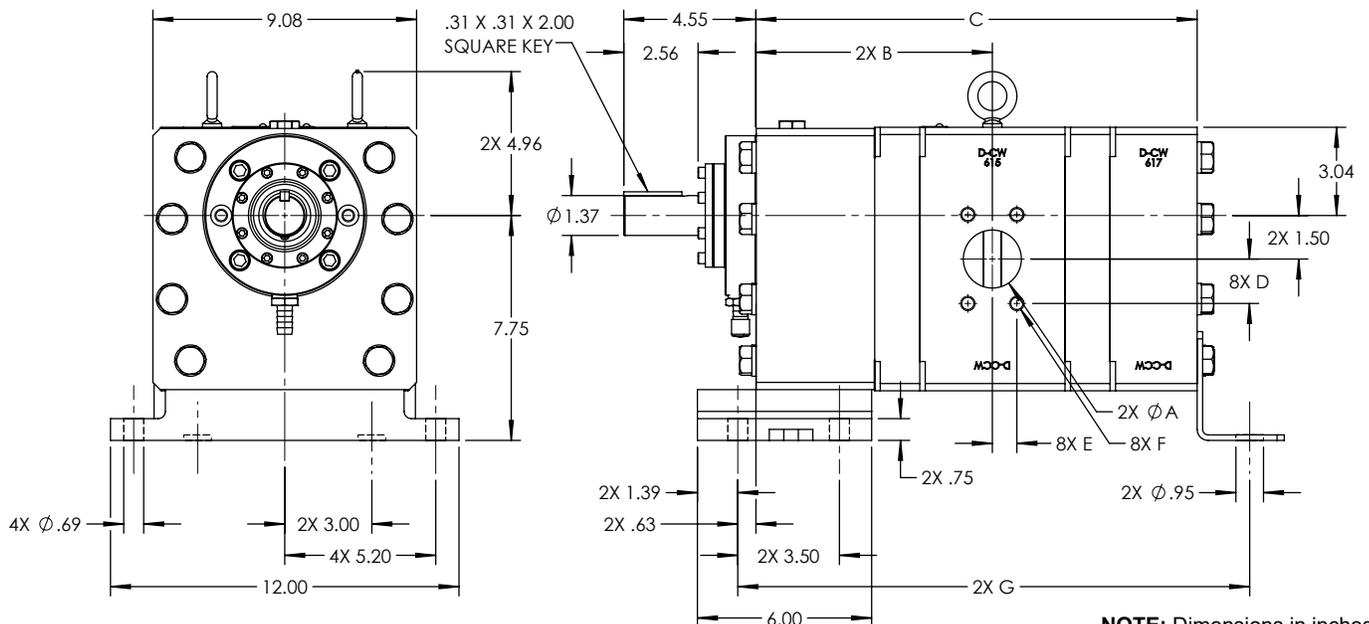
DIMENSIONS – GB-41415, GB-41420 (BARE SHAFT PUMP)



NOTE: Dimensions in inches

Model No.	A	B	C	D	E	F	Approximate Shipping Weight in Pounds
GB-41415	2.00	8.14	10.08	1.53	.84	1/2-13 UNC-2B	225
GB-41420	2.00	8.59	10.53	1.53	.84	1/2-13 UNC-2B	233

DIMENSIONS – GB-41430, GB-41440 (BARE SHAFT PUMP)



NOTE: Dimensions in inches

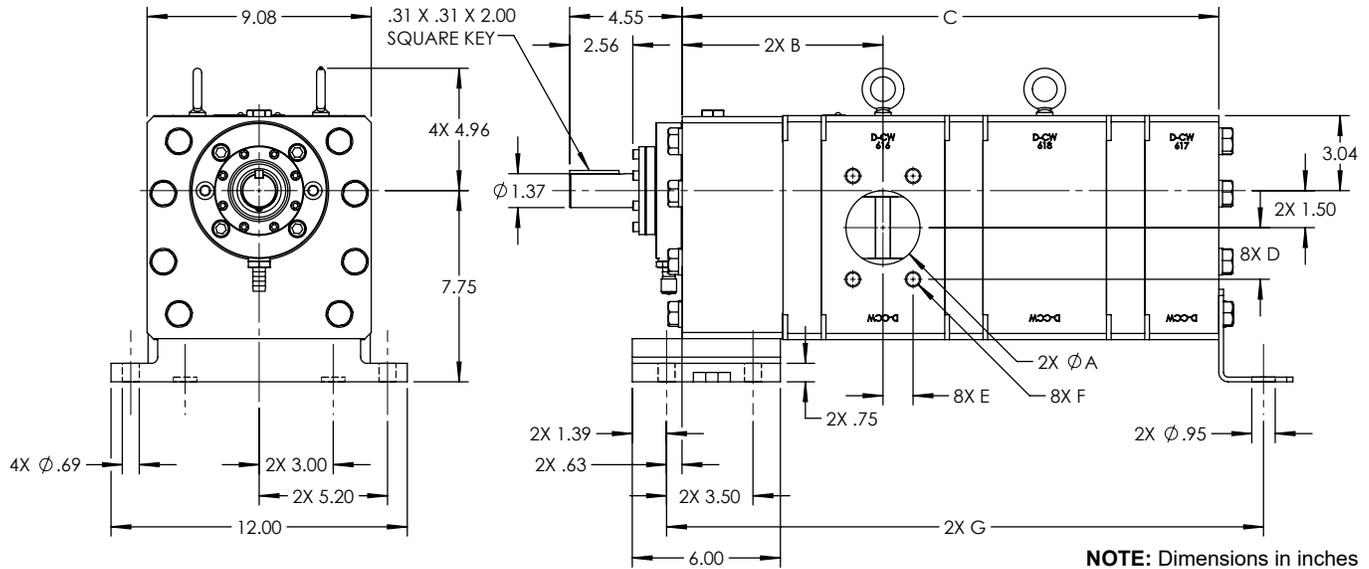
Model No.	A	B	C	D	E	F	G	Approximate Shipping Weight in Pounds
GB-41430	2.00	8.14	15.19	1.53	.84	1/2-13 UNC-2B	17.62	322
GB-41440	3.00	8.59	16.09	2.09	1.22	5/8-11 UNC-2B	18.53	334

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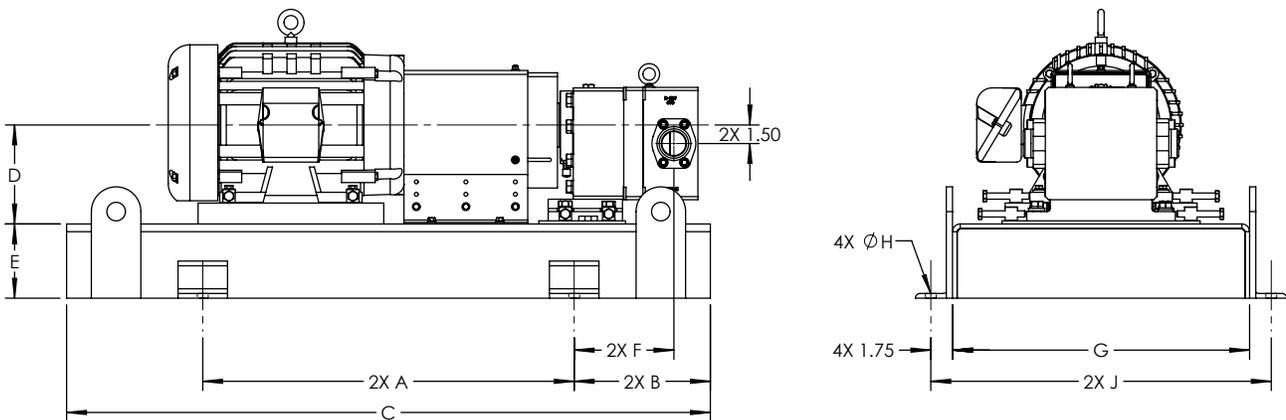
GB-414 Series™

DIMENSIONS – GB-41445, GB-41455, GB-41460 (BARE SHAFT PUMP)



Model No.	A	B	C	D	E	F	G	Approximate Shipping Weight in Pounds
GB-41445	3.00	8.14	21.74	2.09	1.22	5/8-11 UNC-2B	24.18	437
GB-41455	3.00	8.59	22.64	2.09	1.22	5/8-11 UNC-2B	25.08	453
GB-41460	4.00	9.84	25.59	2.50	2.50	1-8 UNC-2B	28.03	500

DIMENSIONS – GB-41415, GB-41420 (PUMP & MOTOR)



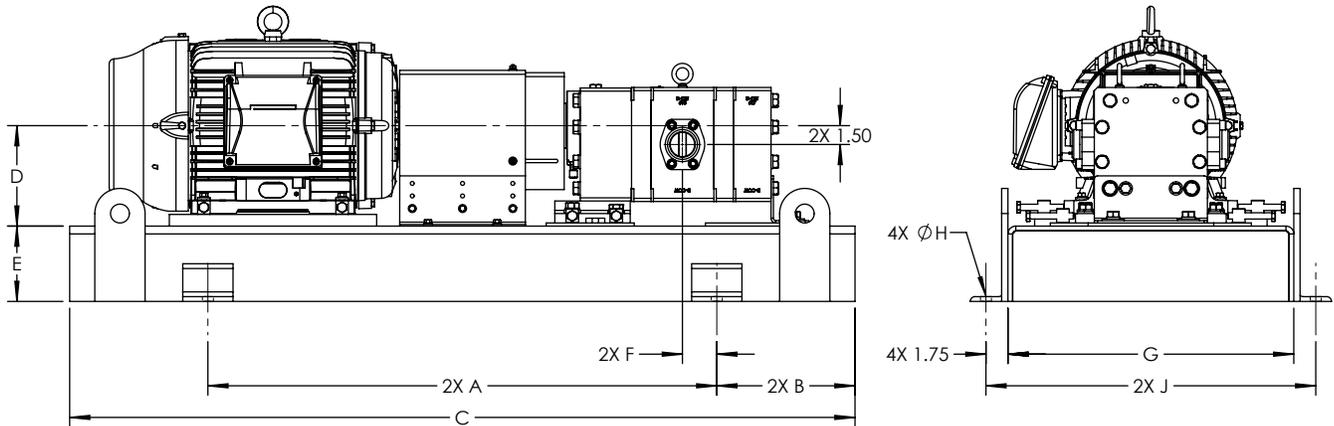
Motor Frame Size	Pump Model No.	A	B	C	D	E	F	G	H	J	Approx. Shipping Weight (Pump, Drive & Motor) In Pounds
182T-184T	GB-41415 GB-41420	19.75	11.00	41.75	8.00	4.00	8.06	18.75	.88	22.25	530
213T-215T											620
254T-256T		30.00		52.00	6.00	8.50	24.00	27.50		840	
284T-286T										1,010	
324T-326T		8.25		1,085							

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DIMENSIONS – GB-41430, GB-41440 (PUMP & MOTOR)



NOTE: Dimensions in inches

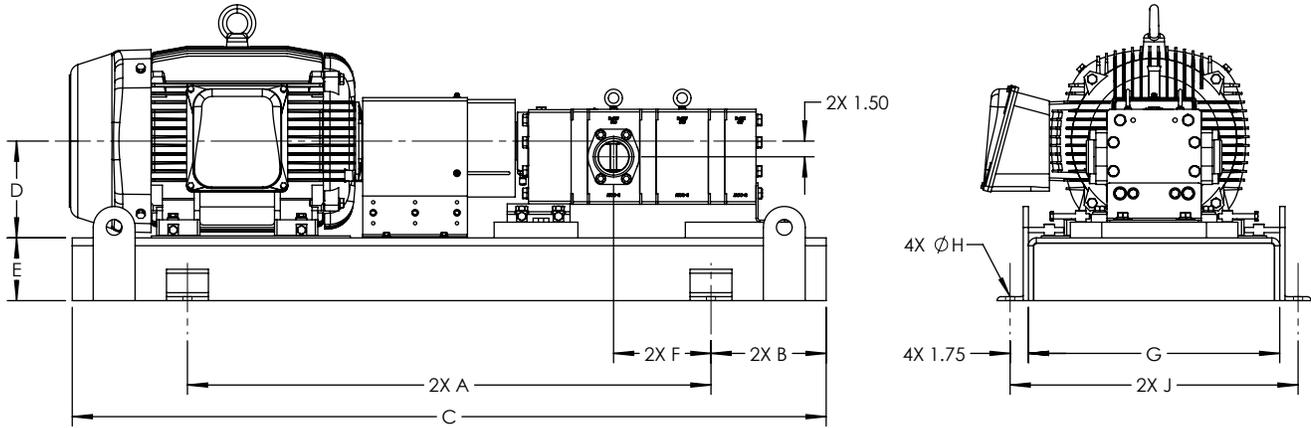
Motor Frame Size	Pump Model No.	A	B	C	D	E	F	G	H	J	Approx. Shipping Weight (Pump, Drive & Motor) In Pounds
213T-215T	GB-41430	30.00	11.00	52.00	8.00	6.00	2.73	24.00	0.88	27.50	815
254T-256T	GB-41430 GB-41440	40.50	11.00	62.50	8.00	6.00	2.73 2.29	22.75	0.88	26.25	970 980
284T-286T	GB-41430 GB-41440	40.50	11.00	62.50	8.00	6.00	2.73 2.29	22.75	0.88	26.25	1,135 1,140
324T-326T	GB-41430 GB-41440	40.50	11.00	62.50	8.25	6.00	2.73 2.29	22.75	0.88	26.25	1,215 1,230
364T-365T	GB-41430 GB-41440	50.00 43.00	11.00	72.00 65.00	9.25	6.00	2.73 1.49	24.00	0.88	27.50	1,800 1,775
404T-405T	GB-41430	40.00	16.00	72.00	10.25	6.00	2.23	36.00	0.88	39.50	2,225

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DIMENSIONS – GB-41445, GB-41455, GB-41460 (PUMP & MOTOR)



NOTE: Dimensions in inches

Motor Frame Size	Pump Model No.	A	B	C	D	E	F	G	H	J	Approx. Shipping Weight (Pump, Drive & Motor) In Pounds
284T-286T	GB-41455	50.00	11.00	72.00	8.00	6.00	9.74	24.00	0.88	27.50	1,435
	10.53						1,510				
324T-326T	GB-41445	50.00	11.00	72.00	8.25	6.00	9.30	24.00	0.88	27.50	1,485
	9.74						1,505				
	10.53						1,575				
364T-365T	GB-41445	50.00	11.00	72.00	9.25	6.00	9.30	24.00	0.88	27.50	1,930
	9.74						1,950				
	10.53						2,020				
404T-405T	GB-41445	52.00	16.00	84.00	10.25	6.00	4.30	36.00	0.88	39.50	1,930
	4.74						2,460				
	4.74						2,535				
444T-445T	GB-41445	64.00	16.00	96.00	11.37	6.00	2.59	36.00	0.88	39.50	3,205

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PERFORMANCE CURVES

Contact Viking Pump for performance curves for specific application conditions.

NPSH (NET POSITIVE SUCTION HEAD)

The NPSH_R (Net Positive Suction Head Required by the pump) is given in the table below and applies to viscosities through 750 SSU. NPSH_A (Net Positive Suction Head Available in the system) must be greater than NPSH_R.

For a complete explanation of NPSH, see Viking Application Data Sheet, AD-19.

GB Series
Net Positive Suction Head Required (NPSHR) ①
Feet of Liquid (S.G. 1.0)
Viscosities - 38 SSU to 750 SSU

Pump Size	Pump Speed (RPM)					
	640	780	950	1150	1450	1750
GB-41415	6.9	7.3	8.0	9.2	11.3	14.2
GB-41420	6.9	7.4	8.2	9.4	11.8	15
GB-41430	7.0	7.6	8.5	9.9	12.7	16.6
GB-41440	7.0	7.8	8.8	10.4	13.7	18.2
GB-41445	7.1	7.8	9.0	10.7	14.2	19.0
GB-41455	7.2	8.0	9.3	11.2	15.3	20.9
GB-41460	7.2	8.1	9.4	11.4	15.7	21.6

1 meter = 3.28 feet

1 foot = 0.305 m

① - At pump suction port

For Viscosities Above 750 SSU (NPSH_R Data Not Available):

The performance curves are based on 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, when measured at the pump suction port. Vacuum above 20 In.-Hg. should be avoided. (Refer to "Engineering Data" Catalog Section 1510 for information helpful in determining suction line size.)

Mechanical Efficiency:

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

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

CPL (COMMON PORT LOCATION) OPTION

Viking's Common Port Location (CPL) base units allow for ease of downsizing pumps once wells come off of IP (Initial Production). This feature is special order (on some models), and allows customers to drop in smaller flow rated pumps into the exact base and drive as the original with no / minimal piping changes required. Contact Viking Pump for more information on this drive package option.

GB-41415:



GB-41430:



GB-41445:



* Nominal Flow