

Viking Mag Drive® Series 855

VIKING

Ideal for:

- **Hard-to-Seal Liquids**
- **24/7 Operations**
- **Hazardous and Toxic Liquids**



Capacity to 29.5 M³/Hr (130 GPM)

Pressure to 14 Bar (200 PSI)

Viscosity to 55,000 cSt (250,000 SSU)

Temperature -51°C to 260°C (-60°F to 500°F)

Series 855

IDEX
IDEX CORPORATION

Sealless, Reliable Gear Pumps

Viking's Mag Drive Series 855 pumps have no shaft seal.

The seal is a pump's weakest link, the part most likely to leak, generate pump maintenance costs and trigger unscheduled downtime.



Reduce Pump Maintenance Costs

- Seal inventory and repair labor
- Seal flush systems
- Leaked chemical cleanup



Reduce Unscheduled Downtime due to:

- Seal leakage or failure
- Seal flush system failure



Reduce Exposure Potential

- Less chance of environmental release

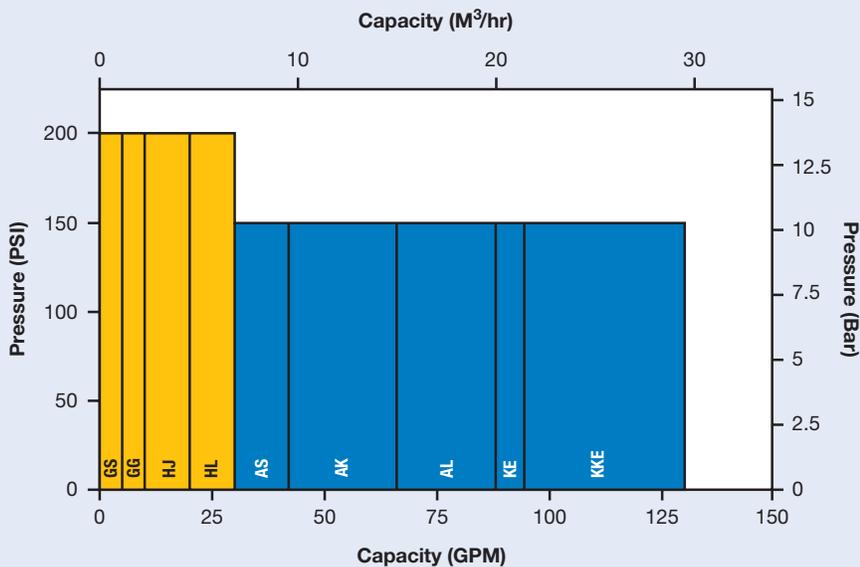


The 855 Series uses the Internal Gear pumping principle

The Internal Gear (or gear-within-a gear) pumping principle offers many advantages over both centrifugal pumps and other types of positive displacement pumps, including:

- High efficiency for low life-cycle cost
- 200 PSI capability
- Smooth, non-pulsating, low-shear flow
- Self priming capability
- Suction lift capability
- Capacity proportional to speed
- Excellent metering repeatability
- Able to handle thin or thick liquids
- Able to handle broad temperature range
- Reversible direction of flow
- Easy-to-pipe, straight-through porting
- 100 years of application experience.

Performance Envelope



Note: Capacities to 38 M³/hr (167 gpm) and/or pressures to 14 bar (200 psi) may be allowable with engineering review.

Mag Drive®

Applications

Hard-to-Seal Liquids



Eliminate seal troubles with liquids that crystallize or set up:

- Isocyanates
- Sodium Hydroxide
- Adhesives
- Epoxy Resins

Fact: Shaft seal leakage is the number one cause of pump downtime and maintenance.

Shaft seals wear faster when liquid, air and heat combine at the seal to cause chemical reactions, like:

- **Crystallization** (e.g. isocyanates, sugar). Abrasive crystals cause premature wear.
- **Sticking** (e.g. adhesives, epoxy resins, paints). Seal faces bond when pump stops, and fails at startup.
- **Varnishing** (e.g. petroleum products). Layer builds up on seal faces causing separation.

Hazardous & Reactive Liquids



Where fluids should not leak out, and where air should not leak in:

- Volatile Organic Chemicals
- Hazardous Chemicals
- LPG and Ammonia
- Reactive Chemicals

Fact: Shaft seals can allow liquids and vapors out, causing hazardous exposure, and can allow air in, causing unwanted chemical reactions.

Environmental controls on traditional sealed pumps, including flushing, quenching and barrier fluids, are subject to the same failures as standard seals, plus failures of their associated equipment (pumps, piping, filters and heat exchangers). When the costs of environmental controls are considered, the Viking Mag Drive 855 Series is the most cost-effective alternative.

24/7 Operations



Where no downtime for seal maintenance is allowed:

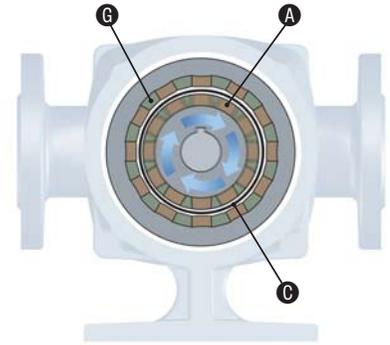
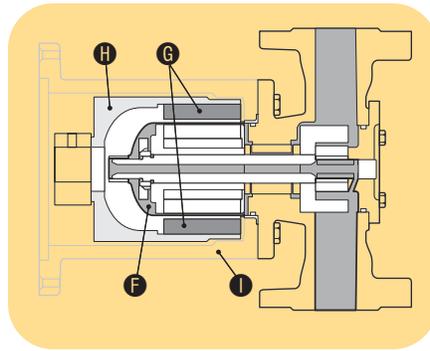
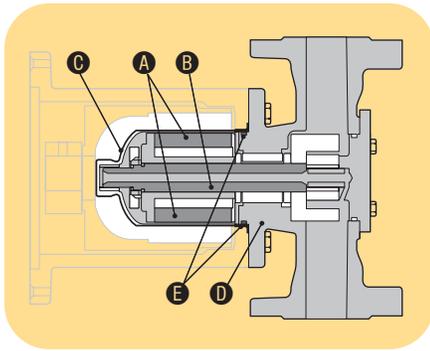
- Refineries
- Chemical and Polymer Plants
- Paper Mills
- Pipelines

Fact: Unplanned downtime to fix a leaky seal is unacceptable in facilities with continuous processes, like refineries, chemical plants and paper mills.

Even when pumping “safe” liquids, seals are subject to mechanical problems like loss of compression, misalignment of pump and driver, improper seal installation, shaft deflection causing off-center faces, suction lift (vacuum) causing face separation, and many others. If you can’t afford pump downtime, the Viking Mag Drive 855 Series offers exceptional up-time reliability through its robust, sealless design.

Series 855

Magnetic Drive



The Concept

The **driven magnets** (A) are connected to the **rotor shaft** (B), all housed inside the **containment canister** (C), which is sealed to the **pump casing** (D) by an **O-ring** (E).

The **canister's voids** (F) are filled with the liquid handled by the pump. The **drive magnets** (G) are mounted in a **housing** (H) outside of the canister, and this housing is connected to the motor or other driver. As the driver turns the **outer drive magnets** (G), magnetic forces pass through the **stationary**

canister (C) and rotate the **inner driven magnets** (A), turning the pump shaft and rotor. Liquid is contained in the O-ring sealed canister, fixed in place by the **bracket** (I), which close couples to the motor or a bearing carrier.

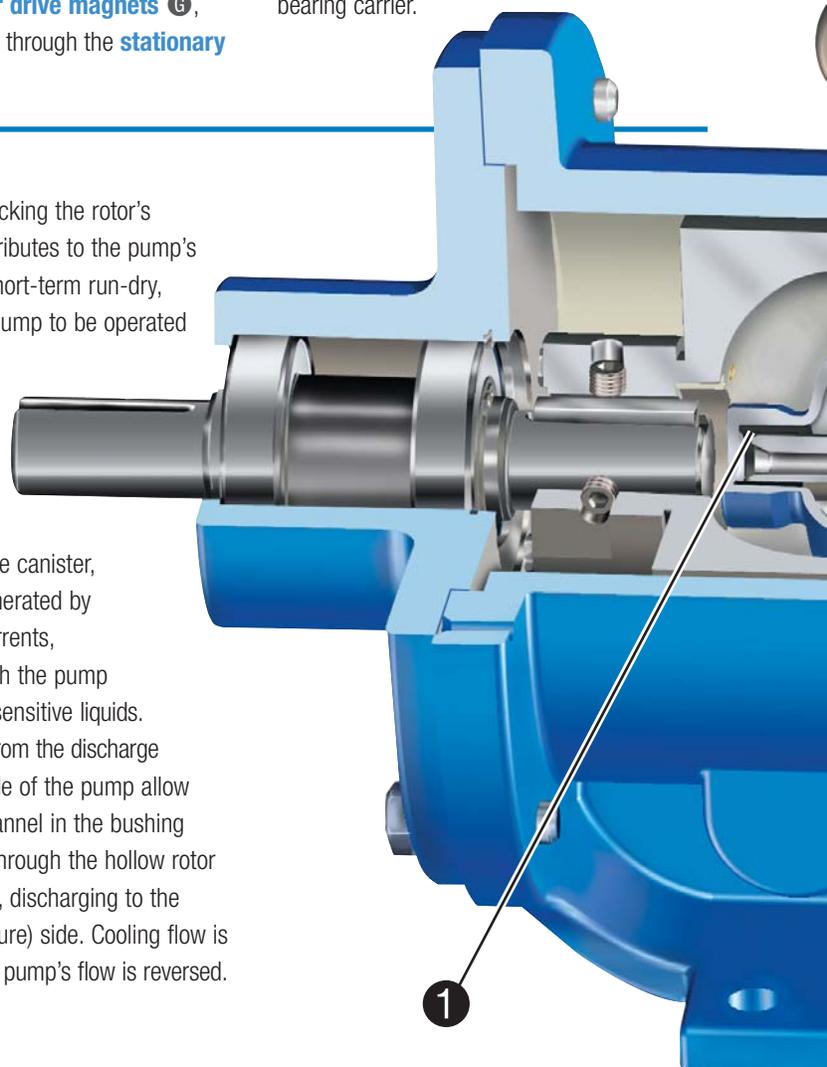
The Engineering

The 855 Series uses advanced engineering concepts not found in previous Viking mag drives or in any other magnetically driven gear pump.

- Exceptional rotor shaft support is provided by a long spread between the **rear bushing** (1), and the **front bushing** (2). This design contributes to the 200 psi pressure capability and extends rotor and bushing life by providing better alignment.
- Unique rotor positioning system uses **thrust washers** (3) on both sides of the front bushing. They fix the rotor in position regardless of pressure variations or upset conditions on the suction or

discharge side. Locking the rotor's axial position contributes to the pump's ability to handle short-term run-dry, and it allows the pump to be operated in either direction.

- Simple, effective **cooling system** (4) ensures continuous fluid flow throughout the canister, removing heat generated by magnetic eddy currents, and protecting both the pump and temperature-sensitive liquids. Internal channels from the discharge (high pressure) side of the pump allow flow through a channel in the bushing into the canister, through the hollow rotor shaft and idler pin, discharging to the suction (low pressure) side. Cooling flow is reversed when the pump's flow is reversed.



Features & Benefits

No other mag-drive gear pump offers all these benefits:

Short-term run dry is possible due to its rotor thrust control and long bearing spread. Protects pump during priming and accidental empty-tank situations. (Consult factory for details.)

Flanged Ports

Flanges are standard, offering better sealing reliability than threaded ports. In-line ports are easy to pipe, and can be rotated 90° to vertical or horizontal positions.

Reversible Flow

Dual-direction thrust control and cooling enable the pump flow to be reversed, by reversing the direction of rotation.

Metric or U.S. Design

DIN 2501 or ANSI B16.5 compatible flanges, IEC-B5 or NEMA-C compatible motor flanges, and metric or U.S.-dimensioned bearing carrier shafts ensure compatibility with local standards worldwide.

Adjustable End Clearance

Head shims allow adjustment of end clearance to maximize efficiency on low or high viscosity fluids, and to compensate for wear over time.

Motor Speed Operation

Optimized flow geometry allows operation at motor speeds on many liquids to eliminate a speed reducer and minimize the unit footprint.

Close-Coupled or Long-Coupled Design

Close-couples to motors up to 15 kW (20 HP) to simplify mounting and eliminate a shaft coupling, guard and shaft alignment. An optional bearing carrier (shown here) allows coupling to a speed reducer, gear motor, or standard motor where needed.

Pressure Relief Standard

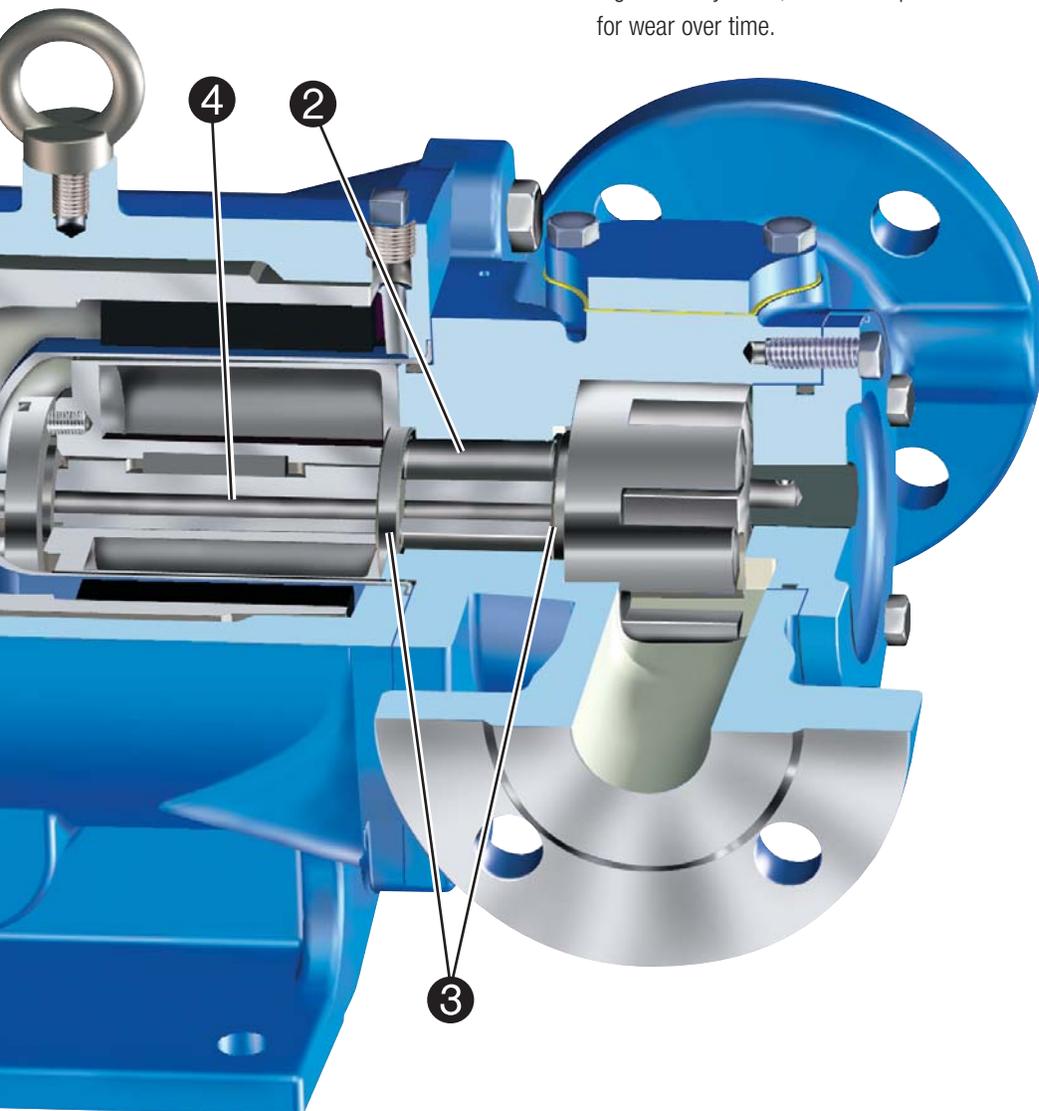
An integral pressure relief valve (not shown) is standard equipment.

Easy Drain and Flush

For batch operations or prior to maintenance, a pump chamber drain and a canister drain allow removal of liquid and facilitates flushing.

Designed for Ease of Maintenance

Should the pump ever require maintenance, it was designed for easy draining, disassembly, repair and reassembly, with a minimal number of parts, and no special tools.



Specifications & Materials of Construction

Performance Specifications

Series Operating Range	GS-HL Sizes		AS-KKE Sizes*	
	Metric Units	US Units	Metric Units	US Units
Maximum Differential Pressure	14 BAR	200 PSI	10 BAR	150 PSI
Maximum Hydrostatic Pressure	27 BAR	400 PSI	20 BAR	300 PSI
Minimum Viscosity	1 cSt	28 SSU	1 cSt	28 SSU
Maximum Viscosity	55,000 cSt	250,000 SSU	5,500 cSt	25,000 SSU
Minimum Temperature	-51° C	-60° F	-51° C	-60° F
Maximum Temperature (standard Neodymium Iron Boron Magnets)	107° C	225° F	107° C	225° F
Maximum Temperature (optional Samarium Cobalt Magnets)	260° C	500° F	260° C	500° F

* Pressures to 14 Bar (200 PSI) and viscosities to 55,000 cSt (250,000 SSU) may be allowable with engineering review.

Pump Specifications

Model	Nominal Capacity		Max. Speed RPM	Ports		Magnetic Coupling Options		
	M3/hr	GPM		"M" mm	"U" Inch			
GS855	1.1	5	1750	25 ^①	1 ^②	MD2A		
GG855	2.2	10	1750	25 ^①	1 ^②	MD2A		
HJ855	4.5	20	1750	40 ^③	1.5 ^③	MD2A	MD2B	
HL855	6.8	30	1750	40 ^③	1.5 ^③	MD2A	MD2B	
AS855**	9.5	42	1450	65 ^③	3 ^③		MD2B	MD2C
AK855**	15.0	66	1450	65 ^③	3 ^③		MD2B	MD2C
AL855**	20.0	88	1450	65 ^③	3 ^③		MD2B	MD2C
KE855***	21.3	94	1150	80 ^③	3 ^③			MD2C
KKE855***	29.5	130	1150	80 ^③	3 ^③			MD2C

① = Metric design standard, with DIN 2501 PN 16/25/40 Raised-Face Flanges

② = Metric design standard, with DIN 2501 PN 25/40 Raised-Face Flanges

③ = US design standard, with ANSI B16.5 125# Class Flat-Faced Flanges

** Speeds up to 1750 RPM and corresponding capacities may be allowable with engineering review.

*** Speeds up to 1450 RPM and corresponding capacities may be allowable with engineering review.

Magnetic Coupling Specifications****

Magnetic Coupling Size	Torque Rating Options Ft-Lbs	Close-Coupled to Motor		Long-Coupled Bearing Carrier
		IEC B-5 Flange	NEMA-C Flange	
MD2A	4, 9	80/90, 100/112	56C, 143/145TC, 182/184TC	Metric or US Shaft
MD2B	14, 32, 50	100/112, 132	182/184TC, 213/215TC, 254/256TC	Metric or US Shaft
MD2C	40, 90, 135, 180	132, 160, 180	213/215TC, 254/256TC, 284/286TC	Metric or US Shaft

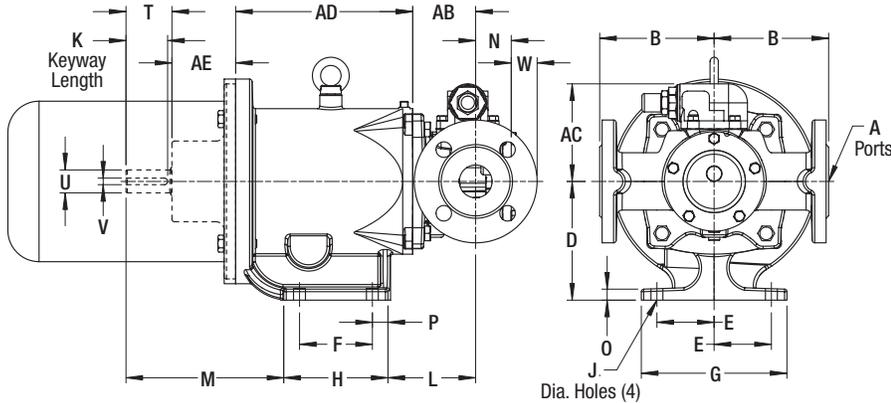
**** Selecting a magnetic coupling requires information from the specific pump curve to determine the horsepower and coupling torque requirement, adjusted for operating temperature. Contact your local Viking Pump distributor for pump selection assistance.

Materials of Construction

Component	Standard Construction	Options
Casing, Head, Magnetic Coupling Bracket	Cast Iron	
Shaft	Steel	Hardened Steel
Canister	316 Stainless Steel	
Head Shims	316 Stainless Steel	
Idler	Iron	PPS (composite)
Rotor (GS, GG)	Cast Iron	Steel
Rotor (HJ, HL, AS, AK, AL, KE, KKE)	Ductile Iron	
O-Rings	Buna-N	Viton®, Teflon® Encapsulated
Bushings	Carbon Graphite	Hardened Cast Iron
Thrust Washers	Hardened Cast Iron	
Magnets (outer magnets nickel plated, inner magnets sealed in stainless steel canister)	Neodymium Iron Boron	Samarium Cobalt

Viton® is a registered trademark of DuPont Dow elastomers. Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

Dimensions



Dimensions for “M” models (Metric-standard pumps). Dimensions in mm.

Coupling	Pump Model	A	B	L	N	W	AB	AC
A	GS 855 M	25 ¹	102	95	49.0	8.3	65	119
A	GG 855 M	25 ¹	102	95	49.0	8.3	65	119
A or B	HJ 855 M	40 ¹	140	107	43.0	32.0	77	119
A or B	HL 855 M	40 ¹	140	107	43.0	32.0	77	119
B	AS 855 M	65 ²	150	119	67.3	28.0	92	206
B	AK 855 M	65 ²	150	119	67.3	28.0	92	206
B	AL 855 M	65 ²	150	119	67.3	28.0	92	206
C	AS 855 M	65 ²	150	138	67.3	28.0	111	206
C	AK 855 M	65 ²	150	138	67.3	28.0	111	206
C	AL 855 M	65 ²	150	138	67.3	28.0	111	206
C	KE 855 M	80 ²	170	143	64.0	35.6	114.3	223
C	KKE 855 M	80 ²	170	143	64.0	35.6	114.3	223

- 1 DIN 2501-Compatible PN 16/25/40 Raised Face Flanges
- 2 DIN 2501-Compatible PN 25/40 Raised Face Flanges
- 3 Bearing Carrier (shown in dashed line) or IEC B-5 Flange Motor Mount

Coupling	Drive ³	D	E	F	G	H	J	K	M	O	P	T	U	V	AD	AE
A	Bearing Carrier	130	69.9	88.9	178	145	14.5	46	141	13.5	19	56.0	28	8	182	77.7
	80/90	130	69.9	88.9	178	145	14.5	-	-	13.5	19	-	-	-	182	-
	100/112	130	69.9	88.9	178	145	14.5	-	-	13.5	19	-	-	-	182	-
B	Bearing Carrier	145	69.9	88.9	178	127.5	14.5	46	191	13.5	19	56.0	28	8	216	77.7
	100/112	145	69.9	88.9	178	127.5	14.5	-	-	13.5	19	-	-	-	216	-
	132	170	69.9	108	178	146.3	14.5	-	-	13.5	19	-	-	-	236	-
C	Bearing Carrier	170	95	146	254	216.6	24.0	63	283	19.3	35.6	103.4	48	14	284	139.7
	132	170	95	146	254	216.6	24	-	-	19.3	35.6	-	-	-	284	-
	160/180	203	120	165	305	235	24	-	-	19.3	35	-	-	-	314	-

Dimensions for “U” models (U.S.-standard pumps). Dimensions in inches.

Coupling	Pump Model	A ⁴	B	L	N	W	AB	AC
A	GS 855 U	1	4	3.74	1.94	0.32	2.56	4.68
	GG 855 U	1	4	3.74	1.94	0.32	2.56	4.68
A or B	HJ 855 U	1.5	5.5	4.21	1.69	1.26	3.03	4.68
A or B	HL 855 U	1.5	5.5	4.21	1.69	1.26	3.03	4.68
B	AS 855 U	3	5.91	4.69	2.65	1.10	3.62	8.12
B	AK 855 U	3	5.91	4.69	2.65	1.10	3.62	8.12
B	AL 855 U	3	5.91	4.69	2.65	1.10	3.62	8.12
C	AS 855 U	3	5.91	5.44	2.65	1.10	4.37	8.12
C	AK 855 U	3	5.91	5.44	2.65	1.10	4.37	8.12
C	AL 855 U	3	5.91	5.44	2.65	1.10	4.37	8.12
C	KE 855 U	3	6.69	5.57	2.53	1.40	4.50	8.79
C	KKE 855 U	3	6.69	5.57	2.53	1.40	4.50	8.79

- 4 ANSI 616.5-Compatible 125# Class Flat Face Flanges
- 5 Bearing Carrier (shown in dashed line) or NEMA-C Flange Motor Mount
- 6 Requires a minimum of 0.31" pad under pump bracket to provide clearance for motor.

Coupling	Drive ⁵	D	E	F	G	H	J	K	M	O	P	T	U	V	AD	AE
A	Bearing Carrier	4.50	2.75	4.00	7.00	5.71	0.56	1.88	5.00	0.53	0.76	2.06	0.875	0.19	7.34	2.50
	56C, 145TC	4.50	2.75	4.00	7.00	5.71	0.56	-	-	0.53	0.76	-	-	-	7.34	-
	182/184TC	5.12	2.75	4.25	7.00	6.12	0.56	-	-	0.53	0.76	-	-	-	7.60	-
B	Bearing Carrier	5.50	2.75	4.88	7.00	6.41	0.56	2.12	7.60	0.53	0.78	2.72	1.125	0.25	9.30	2.87
	182/184TC	5.50	2.75	4.25	7.00	5.78	0.56	-	-	0.53	0.78	-	-	-	8.92	-
	213/215TC	5.50	2.75	4.88	7.00	6.41	0.56	-	-	0.53	0.78	-	-	-	9.30	-
	254/256TC	6.50	2.75	5.50	7.00	7.03	0.56	-	-	0.53	0.78	-	-	-	9.92	-
C	Bearing Carrier	6.69	3.75	5.75	10.00	8.53	0.945	2.50	11.14	0.76	1.40	4.07	1.875	0.50	11.20	5.50
	213 thru 256 TC	6.69	3.75	5.75	10.00	8.53	0.945	-	-	0.76	1.40	-	-	-	11.95	-
	284/286TC	6.69 ⁶	3.75	5.75	10.00	8.53	0.945	-	-	0.76	1.40	-	-	-	12.49	-

**Viking Pump,
worldwide producers
of internal gear,
external gear, and lobe
pump products.**

VIKING PUMP

An ISO-9001 and
14001 System-Certified Company

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