

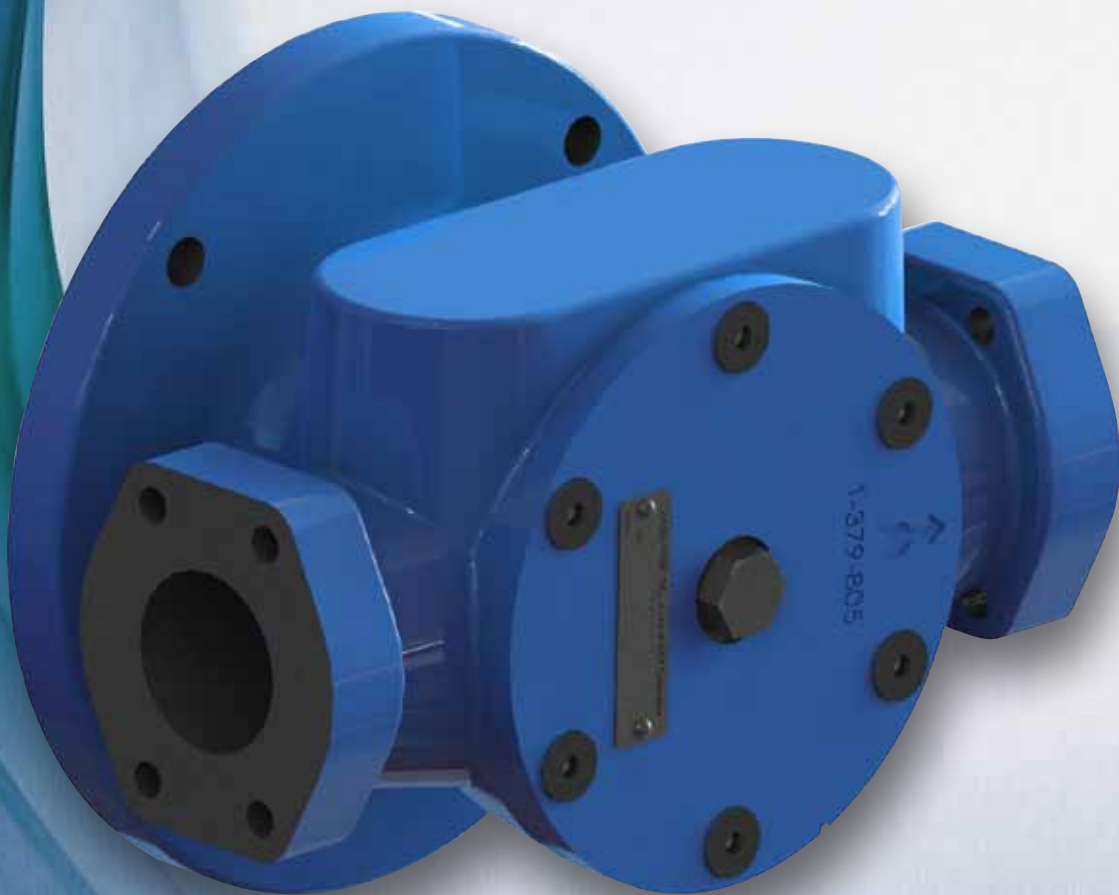
VIKING PUMP

A Unit of IDEX Corporation

NEW Viking® Mechanical Lubrication Pump

High speed, heavy-duty lubrication pumps built for dependability in the most extreme wind turbine gearbox applications.

- **Lower life cycle costs** minimize investment
- **Proven durable design** to optimize performance
- **Maximum reliability** in any climate conditions
- **Custom design** to adapt to multiple gearbox designs



Viking® Advantages

Why Viking?

Viking Pump has been a pump industry leader and innovator since its founding in 1911. We continue to build upon our growing experience delivering innovative new pumping solutions, including custom designs, to thousands of customers who use Viking pumps in some of the world's toughest applications.

Viking Advantage

- Full range of product solutions for the most difficult applications
- Strong knowledge of industrial applications
- Vertically integrated manufacturing
- Global sales, engineering and manufacturing footprint
- 100+ years of fluid handling experience
- 10+ years of wind turbine lubrication experience

Viking Pump's new line of wind turbine lubrication pumps provides solutions for the most difficult gearbox lubrication needs.

Key Features

- Simple internal gear design with only three moving parts ensures reliability and minimizes potential downtime
- Pump is directly mounted to the gearbox and driven by wind power with a gear connected to the drive shaft. No electricity or motor is required.
- Reversing head feature allows pump to flow in one direction, regardless of shaft rotation. This prevents backflushing contaminants from the oil filter into the gearbox, even when wind shifts and the turbine reverses direction.
- Sealless design eliminates the primary cause of pump downtime - shaft seals. Minimal slip is allowed back to the gearbox, providing positive bearing and drive gear lubrication.
- Robust roller bearing design allows product dependability for the life of the gearbox
- Proven design handles pressures to >35 BAR (500 PSI)
- Drop-in replacement with porting flexibility is adaptable to various gearbox designs
- Built to operate in extreme temps (-20°C to 80°C)
- Delivers high pressures on thin liquids

Product features and examples of customer benefits:

By installing a Viking Wind Power Lubrication pump, you can lower your total cost of ownership by up to \$15,000*.

	Total Savings	Customized Savings	Comments:
Reduce set-up			
Integrated reversing head design simplifies the lubrication system and reduces the need for extra piping and components.	\$4,500		One time savings - Saves 40% off the total cost of the system
Adaptable design saves cost of system adjustments and adaptors	\$3,200		One time savings - Saves 25% off the total cost of the system
Reduce operating cost			
Bearing vs. bushing design enhances reliability	\$1,225		Yearly Savings - Cost of maintenance * loss of electricity*2 days downtime + cost of replacement pump)
Suction lift better in extreme temperatures	\$2,645		Yearly Savings - better flow
Design enhancement			
Competitor pump design is more complicated and has 4 check valves where Viking has one.	\$1,650		Yearly Savings - 25% greater chance of product failure, 5% probability of failure per year (cost of downtime, maintenance and loss of revenue from electricity generation)
Compact platform size fits into most gearbox openings	\$2,265		One time savings

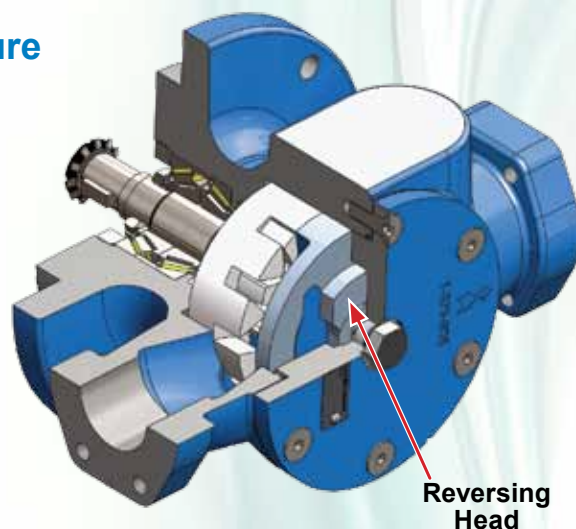
* DISCLAIMER:

Warning: The intent of this document is to compare the value of the product or service alternatives based on customer inputs such as the customer's prioritized needs, product or service conditions, and other factors. The analysis uses various assumptions and estimates, some of which may be subjective or

inaccurate, and may not take into account all relevant factors. Accordingly, there are no warranties, guarantees or assurances that the results shown can or will be achieved, and actual results may be significantly different from the results shown.

How Does it Work? Reversing Head Feature

Pump uses a spring loaded reversing head that provides constant direction of flow regardless of shaft rotation. Using friction between rotating elements, the head will rotate with the shaft until hitting a stop which will resume fluid flow.



Product Specifications

Performance

Pump Size	Port Size (SAE J518 Code 61)	Nominal Displacement at 330 cSt (1500 SSU)		Maximum Pressure		Maximum Hydrostatic Pressure		Maximum Recommended Temperature		Approximate Shipping Weight	
	Inches	Gal / Rev	mL / Rev	BAR	PSI	BAR	PSI	°C	°F	Kg	Lb
HJ095C	1.5	0.012	45	16	232	400	28	107	225	14	32
HL095C	1.5	0.017	63	16	232	400	28	107	225	14	32
A095C	2	0.021	80	16	232	400	28	107	225	30	67
AS095C	2.5	0.030	112	16	232	400	28	107	225	31	68
AK095C	3	0.040	150	16	232	400	28	107	225	32	69

Construction

Model	Casing	Head	Rotor	Idler	Rotor Shaft	Idler Bushing
HJ095C HL095C	Iron	Iron	Ductile Iron	Iron	Steel	Carbon Graphite
A095C AS095C AK095C	Iron	Ductile Iron	Ductile Iron	Ductile Iron	Steel	Carbon Graphite

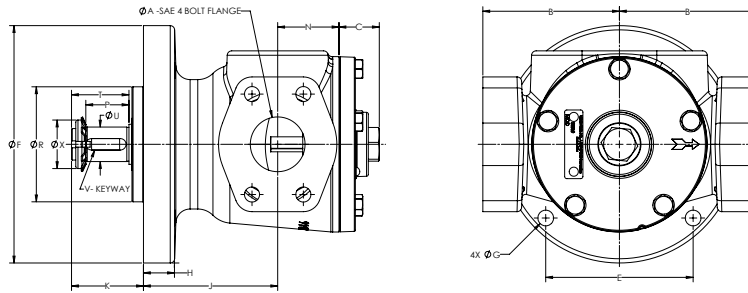
Adaptability

This series is designed to be adapted to a wide variety of gearboxes. Examples of adaptations include:

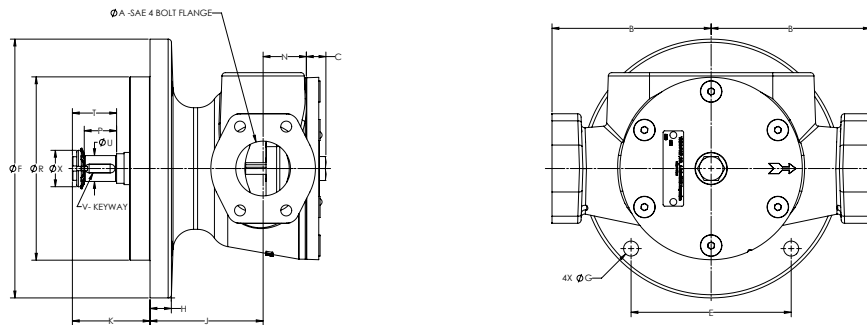
- Shaft length
- Mounting flange dimensions
- Port types
- Integral pressure relief valve

See reverse for standard configuration, other designs available

Dimensions



MODEL	A		B	C	E	F	G	H	J	K	N	P	R	T	U	V	X
HJ095C	1.5 in	in	3.74	1.10	4.04	6.50	0.43	0.85	3.68	1.97	1.68	1.18	3.15	1.57	0.94	.32 x .28	1.34
		mm	95.0	28.0	102.5	165.1	11.0	21.7	93.4	50.0	42.6	30.0	80.0	39.9	24.0	8 x 7	34.0
HL095C	1.5 in	in	3.74	1.10	4.04	6.50	0.43	0.85	3.68	1.97	2.07	1.18	3.15	1.57	0.94	.32 x .28	1.34
		mm	95.0	28.0	102.5	165.1	11.0	21.7	93.4	50.0	52.6	30.0	80.0	39.9	24.0	8 x 7	34.0



MODEL	A		B	C	E	F	G	H	J	K	N	P	R	T	U	V	X
A095C	2 in	in	11.62	0.71	5.85	9.45	0.55	0.78	4.13	2.83	1.58	1.18	6.69	1.61	0.94	.32 x .28	1.34
		mm	295.1	18.1	148.5	240.0	14.0	19.9	104.9	72.0	40.1	30.0	170.0	41.0	24.0	8 x 7	0.3
AS095C	2.5 in	in	11.62	0.71	5.85	9.45	0.55	0.78	4.13	2.83	---	1.18	6.69	1.61	0.94	.32 x .28	1.34
		mm	295.1	18.1	148.5	240.0	14.0	19.9	104.9	72.0	---	30.0	170.0	41.0	24.0	8 x 7	34.0

For more information, contact your local Authorized Viking Pump Distributor or contact Viking at:

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