

Buffalopumps

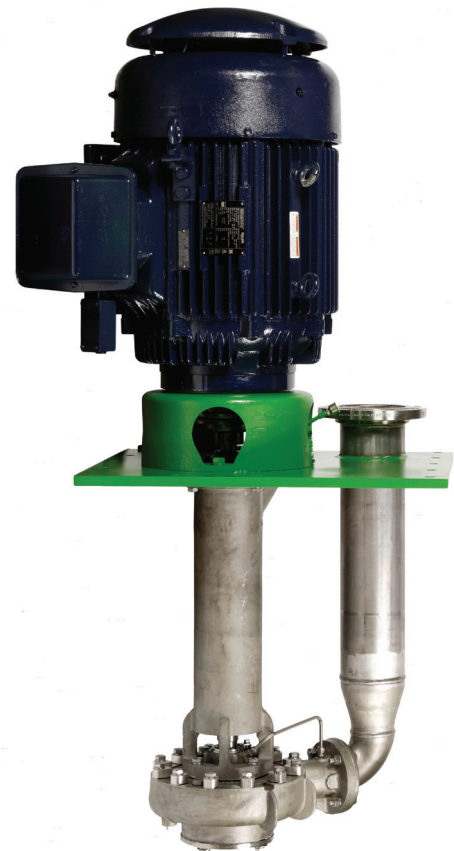
LUBE OIL PUMPS

VCRE Custom Design

Critical Lubrication
Service for:
Bearings
Seals
Gearboxes



on...
Gas & Steam Turbines
Compressors
Engines
Starting Packages



"LEADING SUPPLIER OF LUBE OIL PUMPS TO THE POWER GENERATION INDUSTRY FOR OVER 70 YEARS"

Lube oil pumping applications demand a pump that provides reliability and extended service life with a minimum of maintenance. The typical Lube Oil pump must also be capable of operation over a wide range of temperature and liquid viscosity conditions. The VCRE family of pumps is designed specifically with these requirements in mind.

The VCRE Lube Oil pump is a vertically submerged pump that utilizes an ANSI standard hydraulic construction, enclosed bearing housing, and welded piping construction which eliminates the inherent maintenance and leakage problems associated with other pumps. During operation, axial and radial thrust loads are controlled by Buffalo's exclusive modified casing volute and impeller design.

Buffalo Pumps is backed by over 70 years of field-proven experience in designing pumps to handle most any lube oil application. This experience also provides flexibility in assisting OEMs, contractors, and end-users in designing a sound installation that ensures maximum life.

DESIGN FEATURES

- Impellers for the VCRE are designed specifically to provide low axial thrust to provide long life bearings.
- Thrust bearing life is maximized through casing and impeller design to reduce radial and axial forces on the thrust bearing. Impeller position within the casing is maintained in a specific location.
- Bearings can be either grease or oil lubricated. Radial bearing life is maximized through our special casing design to reduce radial hydraulic thrust.
- Our shafts are designed such that the first critical speed is a minimum of 20% higher than the operating speed. This rigid shaft design provides worry-free operation.
- Close tolerance machined and rabbeted fits are utilized on all major components. This facilitates the ability to rebuild the original pump assembly in the field.
- Coverplates are a minimum of 7/8" thick to provide a rigid, flat, and leakproof connection to lube oil tanks. Coverplate dimensions can be customized to fit customer requirements.
- Motor stands are designed to allow most motors to be shipped mounted to the pump. All pump/motor assemblies are factory aligned to ensure field alignment.
- Hydraulic efficiency maximized through wide range of casing/impeller designs/sizes and specific speed on DC applications.
- High Pressure - Low-Flow designs available to match screw pump performance.

ENGINEERING ASSISTANCE

Buffalo Pumps' Sales Engineers have the training and practical field experience necessary for the correct selection and application of Lube Oil pumps. In addition, they have the full support of Buffalo Pumps' Research and Engineering personnel. This in-depth engineering service is invaluable in assuring proper pump application and installation.

AVAILABILITY

Buffalo Pumps is dedicated to providing first class service to customers from initial contact to the supply of spare parts after installation. Therefore, Buffalo Pumps maintains extensive stock for Lube Oil pumps and is committed to servicing the market's delivery demands. In addition, a complete Repair Parts Department stands ready to service your ordinary maintenance and emergency breakdown needs.

GENERAL SPECIFICATIONS

Capacity to 4500 GPM (1000 M3/HR)

Head to 250 PSI (17 Bar) (700 Feet)

- Submerged depth to 8 feet (longer available with intermediate bearings).
- Working pressures as standard to 235 psi and up to 400 psi for higher-pressure applications.
- Temperature range from -40°F to 225°F with standard product. Through the use of special materials of construction, the VCRE pump can be applied down to -65°F.
- Standard materials of construction include a ductile iron casing and a cast iron or bronze impeller. Carbon and stainless steel materials are also available.
- Standard construction to ANSI/Hydraulic Institute standards. API 610 features available as option.

VERTICAL LUBE OIL PUMP

MODEL VCRE

HEAVY DUTY MOTOR STAND

- Allows most motors to be shipped mounted to pumps
- All motors are factory aligned to pumps assuring field re-alignment

BEARING LUBRICATION

- Either grease or oil lubricated

PRESSURE SENSING TAP

- A connection is provided below the check valve for customer verification that the unit is running

RIGID COVERPLATE

- 7/8" thick as a minimum
- Rigid and flat
- Underside has a machined gasket surface around the perimeter

GAUGE CONNECTION

- A connection is provided to allow the customer to measure pressure at their interface

RABBET FITS ON ASSEMBLY

- Casing, casing cover, connecting column, motor stand have rabbet fits to ensure alignment

HIGH THRUST BEARING LIFE

- Axial loads are minimized by impeller balance chamber and wearing ring sizes
- Radial loads are kept low by modified casing volute design

DURABLE SHAFT DESIGN

- Shaft designed for operation at least 20% below first critical speed
- Intermediate guide bearings used where required

CHECK VALVE

- Pumps can be supplied with an optional check valve to prevent back flow of liquid when pump is not running

SHAFT ISOLATOR TUBE (PATENTED)

- Prevents aeration of oil due to shaft rotation

DISCHARGE PIPE ASSEMBLY

- Each assembly is individually fitted to prevent piping strain and pump mis-alignment

HYDRO-DYNAMIC SLEEVE BEARING

- Hydro-Dynamic Bearing designed to carry maximum radial loads generated
- Positive lubrication from pump discharge

DISCHARGE PIPE WELDING

- Welding is TIG root pass with MIG filler pass to ensure full penetration and prevent pipe weld slag from entering pipe ID

CASING / CASING COVER WEAR RINGS

- Close-running clearance to minimize fluid leakage back to suction
- Wear rings are easily renewable

LOCKED HARDWARE

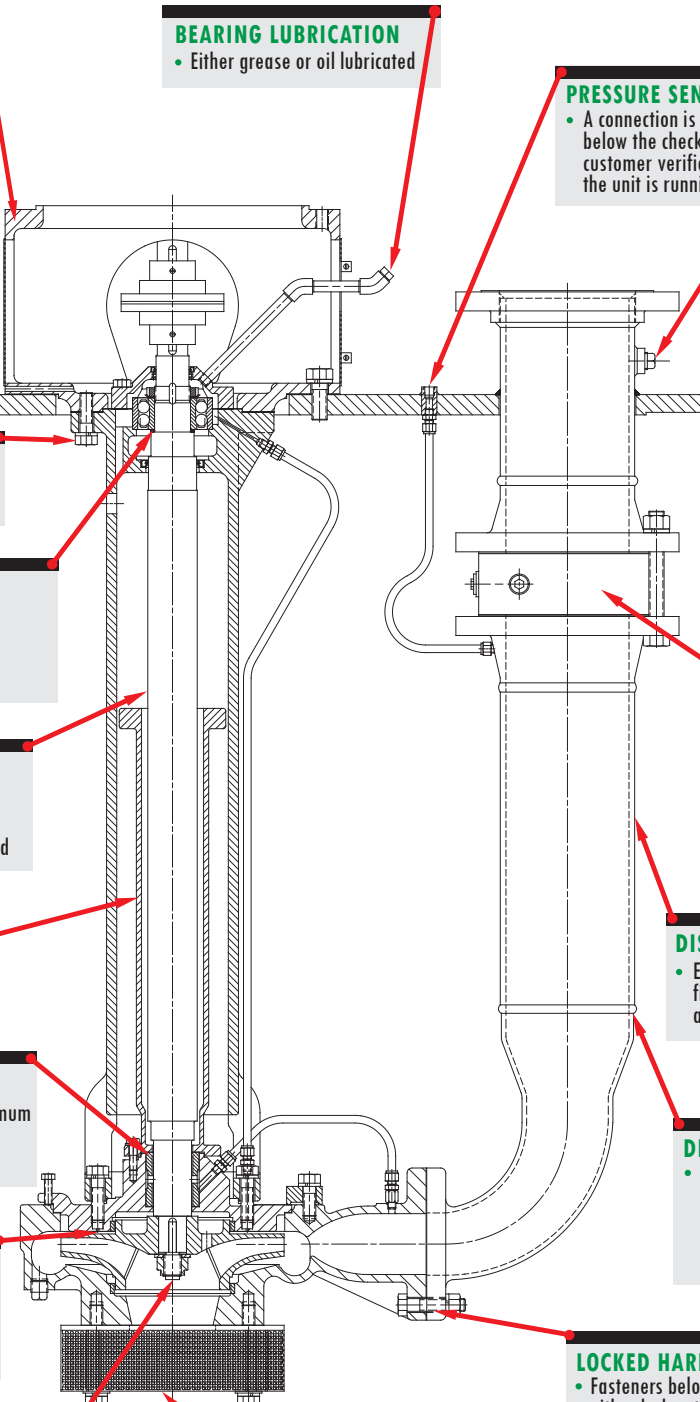
- Fasteners below the coverplate use either lock nuts or lock washers

FLEX-LOC IMPELLER NUT AND SNAP RING

- Impeller is held axially by a Flex-Loc Nut
- Snap ring in shaft acts as a secondary safety device preventing the nut from backing off

SUCTION STRAINER

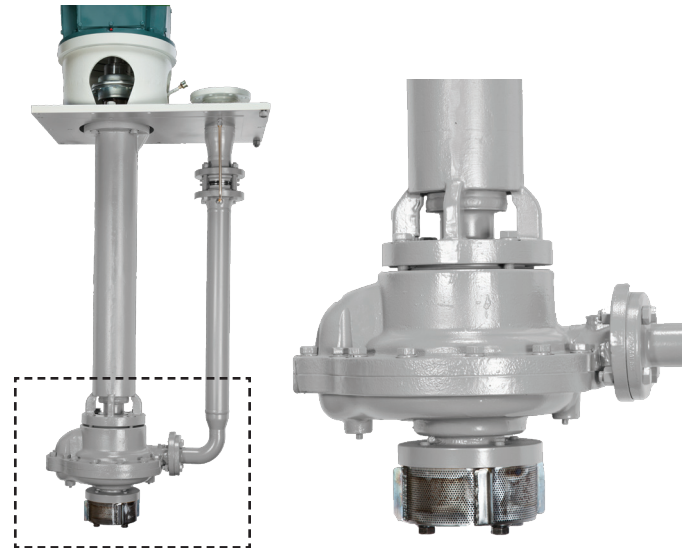
- Prevents contaminants from entering the pump or the customer's equipment and is properly sized based on pump capacity



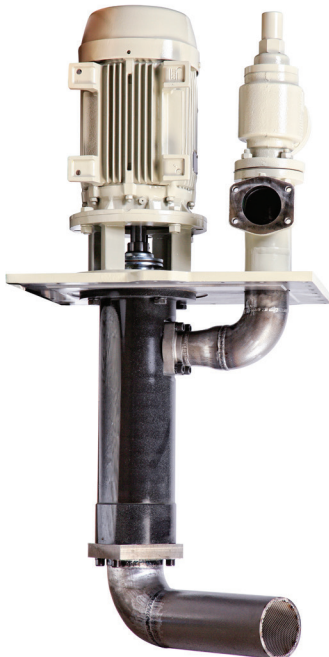
VCRE Custom Design



**Main / Auxiliary / Emergency Lube Oil Pump
for bearing or seal service**



**Two Stage design is ideally suited for seal oil
service or any application where low flow-rate,
high pressure, and high efficiency are required**



**Positive displacement pump option with
extended suction pipe for reservoir list**

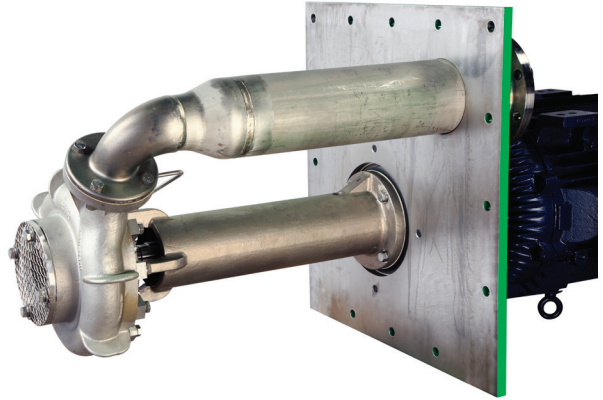


**Piggy-back arrangement saves tank
space by coupling DC motor with dual-
shaft AC motor**

VCRE Custom Design



Return bend arrangement for when piping runs below tank plate level



Other materials of construction available - 316 stainless steel shown



Dual-discharge design is capable of supplying two separate performance ratings with one pump saving cost and tank space



Custom lengths and protective coatings available to meet demanding OEM specifications

LUBE OIL PUMP APPLICATION DATA WORKSHEET

Visit our website at www.buffalopumps.com
to submit this data for Buffalo Pumps selection and quotation

Project Reference: _____

Service: Main AC LO pump _____
Emergency DC LO pump _____
AC Seal Oil pump _____
DC Seal Oil pump _____
Other _____

Additional Specifications Attached: yes _____
no _____

Flow Required: _____ US GPM
_____ cubic meters / hour

Lube Oil: ISO Grade _____
normal operating temperature _____ F/C
minimum operating temperature _____ F/C
maximum operating temperature _____ F/C

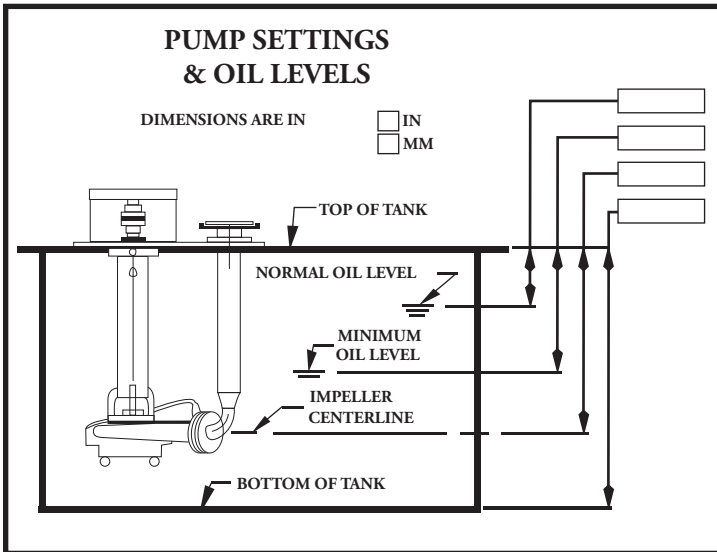
Pressure Required: _____ psig
_____ feet
_____ meters
_____ bar

Tank Opening: _____ X _____
_____ diameter
_____ recommended by Buffalo Pumps

Design point conditions to be measured at:

_____ impeller centerline
_____ discharge flange above cover

Discharge Pipe: _____ none required
_____ terminated above cover
_____ inch 150 lb ANSI flange
_____ inch 300 lb ANSI flange
_____ mm PN10 DIN 2501 flange
_____ mm PN16 DIN 2501 flange
_____ 90 degree elbow
_____ straight up from cover
_____ install check valve



Materials of Construction:

Buffalo Pumps Standard Cast Iron / Ductile Iron / Steel
or

Impeller _____
Casing _____
Shaft _____
Discharge Pipe _____
Other _____

Motor Requirements: specification attached _____

_____ HP / KW _____ rpm
_____ voltage _____ enclosure
_____ frequency _____ insulation class
_____ hazardous area _____ service factor
_____ ambient _____ IEC / NEMA
_____ CE marked _____ space heater voltage
_____ other

Additional Requirements:

UNIQUE TESTING CAPABILITY — ON SITE LUBE OIL TESTING FACILITY

All performance testing is done with a volume of 6000 U.S. gallons of ISO VG 46 oil as the test liquid.

- AC lube oil pumps — to 400 HP capability to simulate voltage and frequency ranges utilized worldwide
- DC lube oil pumps — to 50 HP/125V and 100 HP/240V; in-rush current regulation and acceleration time monitoring
- Testing at design operating viscosity conditions of 70 SSU to 400 SSU utilizing liquid temperature controls
- Testing at actual installation oil levels for high, normal, low, and emergency level conditions
- Can simulate the relationship of the pump suction to tank bottom and sides as exists in the actual installation
- All testing is performed in accordance with Hydraulic Institute Standards, section 14.6, with capabilities to test to American Petroleum Institute, British Standard 5316, and ISO requirements
- Full range or point of rating hydraulic performance testing available
- Measurement of vibration levels with dynamic signal analysis equipment
- Measurement of acoustic characteristics with dynamic signal analysis equipment
- Measurement of bearing operating temperatures during break in hours of operation
- Analysis of air entrapment, priming time, and all other hydraulic characteristics
- Endurance / life cycle testing under varying conditions
- Capable of varying speed of both AC & DC pumps



PERFORMANCE RANGE

3500 RPM: 300 hp (224 kw)
2500 gpm (567 m³/hr)
250 psi (700 feet) (213 m) tdh

2900 RPM: 300 hp (224 kw)
2500 gpm (567 m³/hr)
180 psi (490 feet) (149 m) tdh

1750 RPM: 250 hp (186.5 kw)
4500 gpm (1023 m³/hr)
95 psi (260 feet) (79 m) tdh

1450 RPM: 200 hp (149 kw)
4000 gpm (909 m³/hr)
64 psi (175 feet) (53 m) tdh

Positive Displacement Option: 150 hp (111kw)
700 gpm (160 m³/hr)
232 psi (638 feet) (195 m) tdh



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