Buffalopumps

LUBE OIL PUMPS

Model VCRE Vertical Design

Gas & Steam Turbines
Compressors
Engines
Starting Packages

"LEADING SUPPLIER OF LUBE OIL PUMPS TO THE POWER GENERATION INDUSTRY FOR OVER 50 YEARS"

ISO 9001 Certified

Bulletin 986

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 50 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 were designed specifically to provide low axial thrust to provide long life bearings.
- Thrust bearing life is maximized through casing, impeller, and impeller balance chamber design to reduce axial forces on the 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.

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

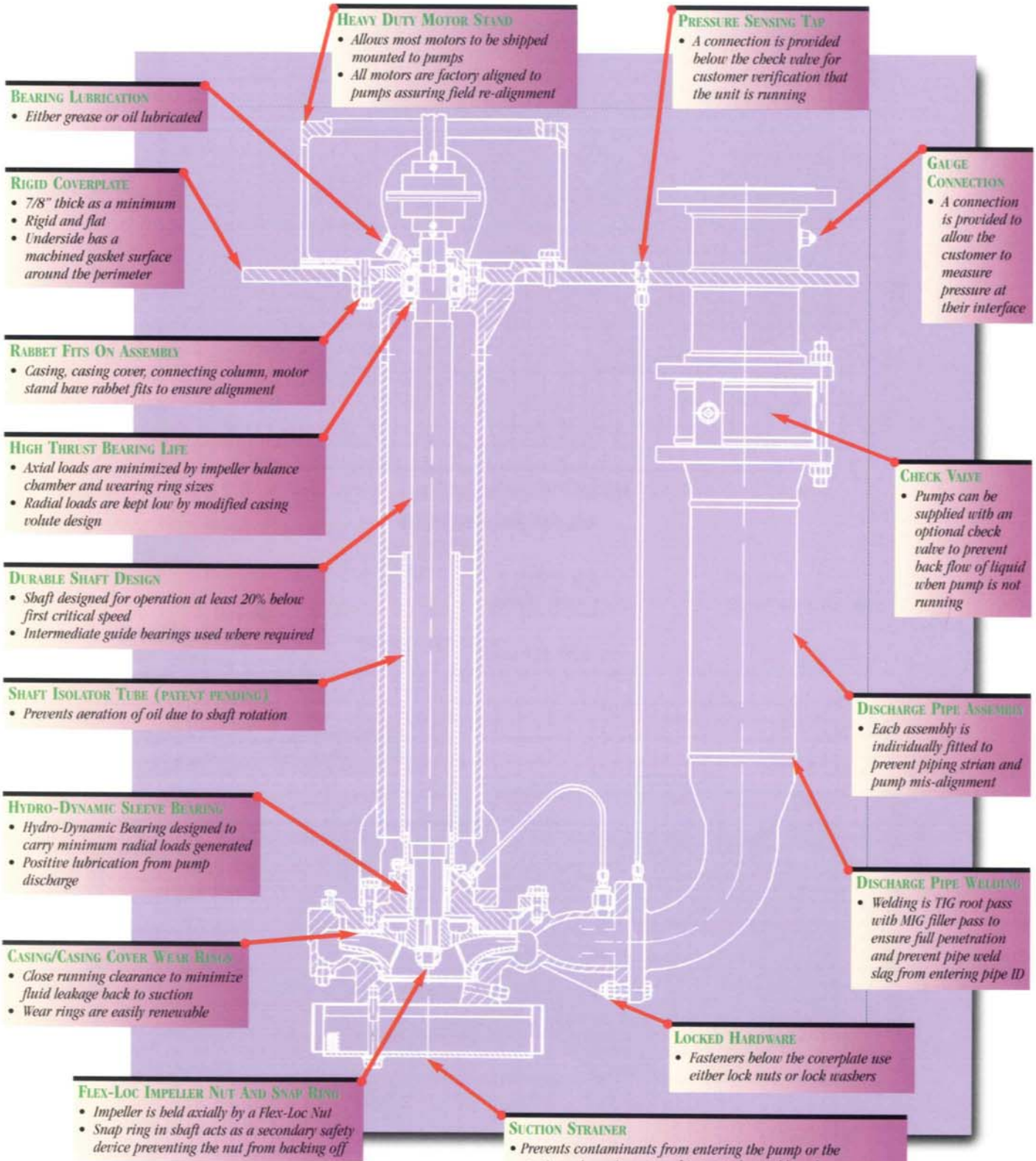
Buffalo Pumps is dedicated to providing first class service to customers from initial contact to the supply of spare parts after installation. Therefore, Buffalo Pumps maintains extensive stock for Lube Oil pumps and is committed to servicing the market delivery demands. In addition, a complete Repair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

General Specifications

Capacity . . . . . .to 4500 GPM
Head . . . . . .to 700 Feet
RPM . . . . . .1450, 1750, 2900 & 3500

- Working pressures as standard to 235 psi and up to 400 psi for higher-pressure applications.
- Temperature range from -40°F to 200°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 alloy steel materials are also available.

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*

PRESSURE SENSING TAP
- *A connection is provided below the check valve for customer verification that the unit is running*

BEARING LUBRICATION
- *Either grease or oil lubricated*

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

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

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*

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

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

SHAFT ISOLATOR TUBE (PATENT PENDING)
- *Prevents aeration of oil due to shaft rotation*

DISCHARGE PIPE ASSEMBLY
- *Each assembly is individually fitted to prevent piping strian and pump mis-alignment*

HYDRO-DYNAMIC SLEEVE BEARING
- *Hydro-Dynamic Bearing designed to carry minimum 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*

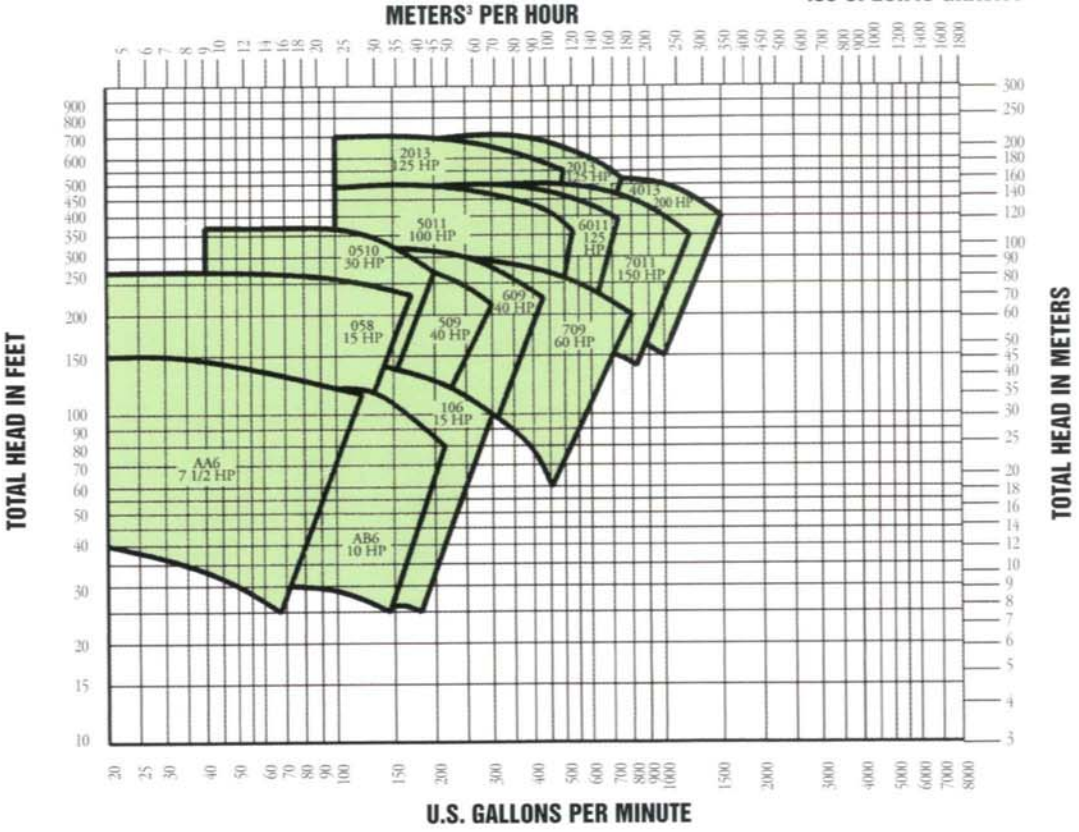
SUCTION STRAINER
- *Prevents contaminants from entering the pump or the customer's equipment and is properly sized based on pump*

PERFORMANCE DATA:

60 CYCLE
3500 RPM

150 SSU
.88 SPECIFIC GRAVITY

METERS³ PER HOUR



TOTAL HEAD IN FEET

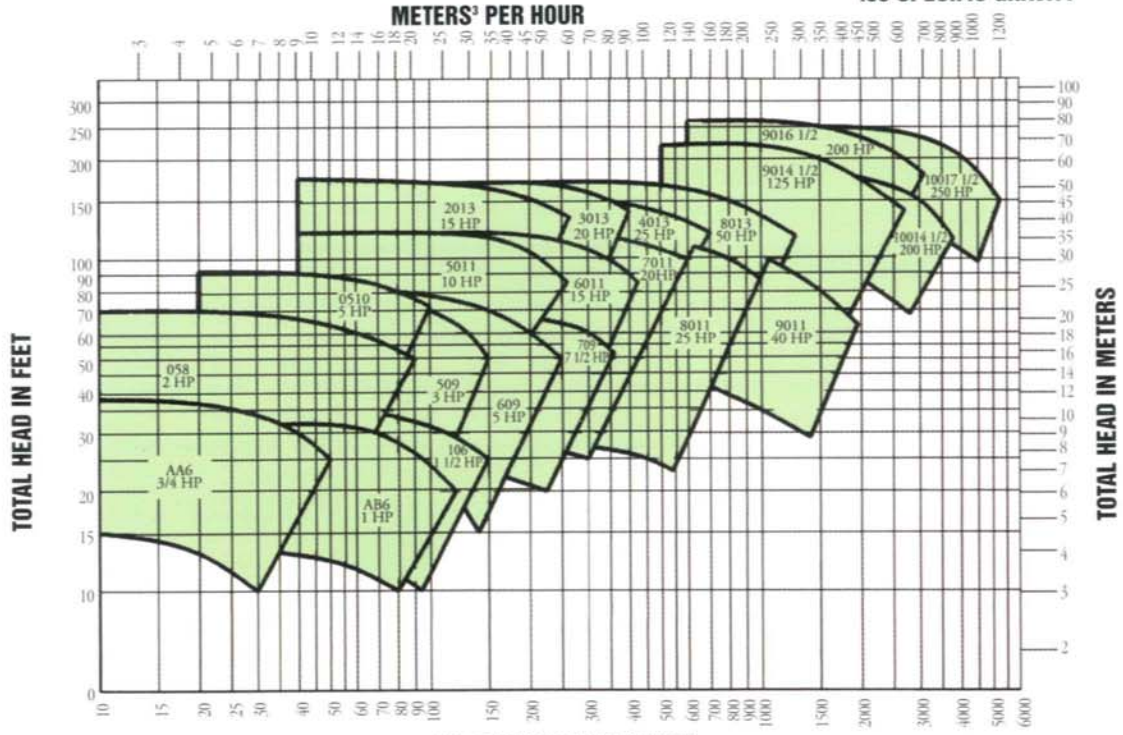
TOTAL HEAD IN METERS

U.S. GALLONS PER MINUTE

60 CYCLE
1750 RPM

150 SSU
.88 SPECIFIC GRAVITY

METERS³ PER HOUR



TOTAL HEAD IN FEET

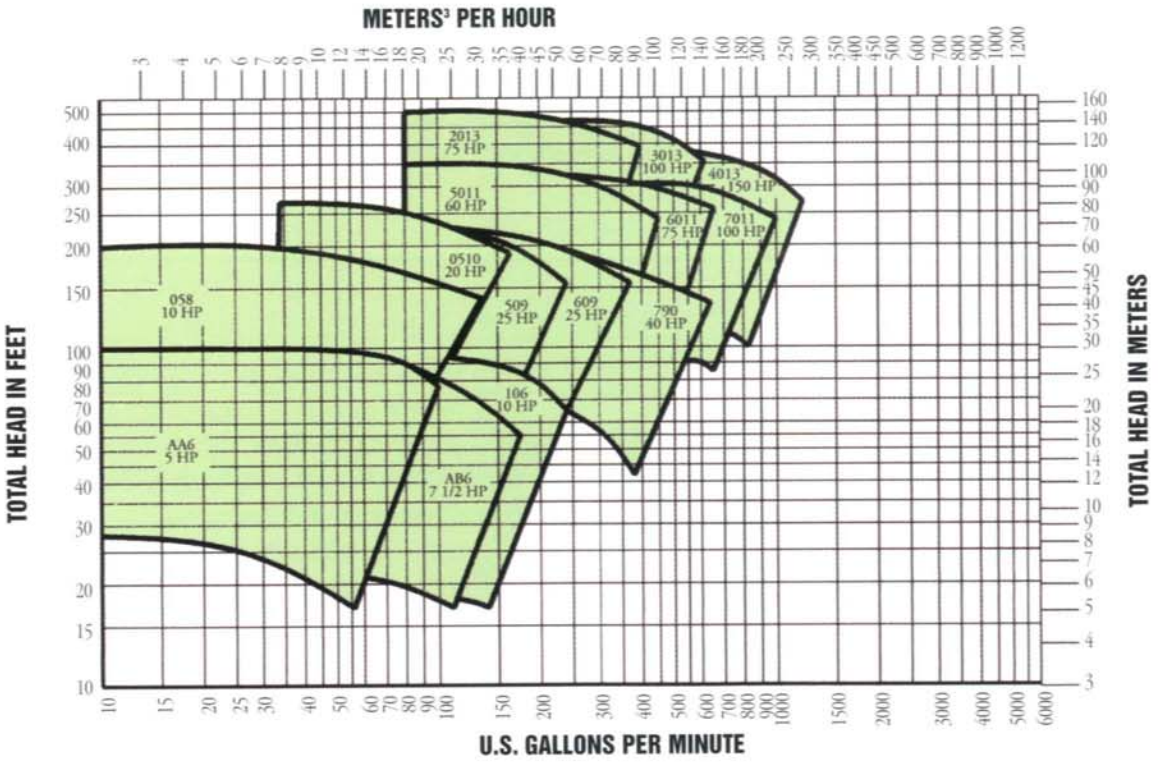
TOTAL HEAD IN METERS

U.S. GALLONS PER MINUTE

Performance Data:

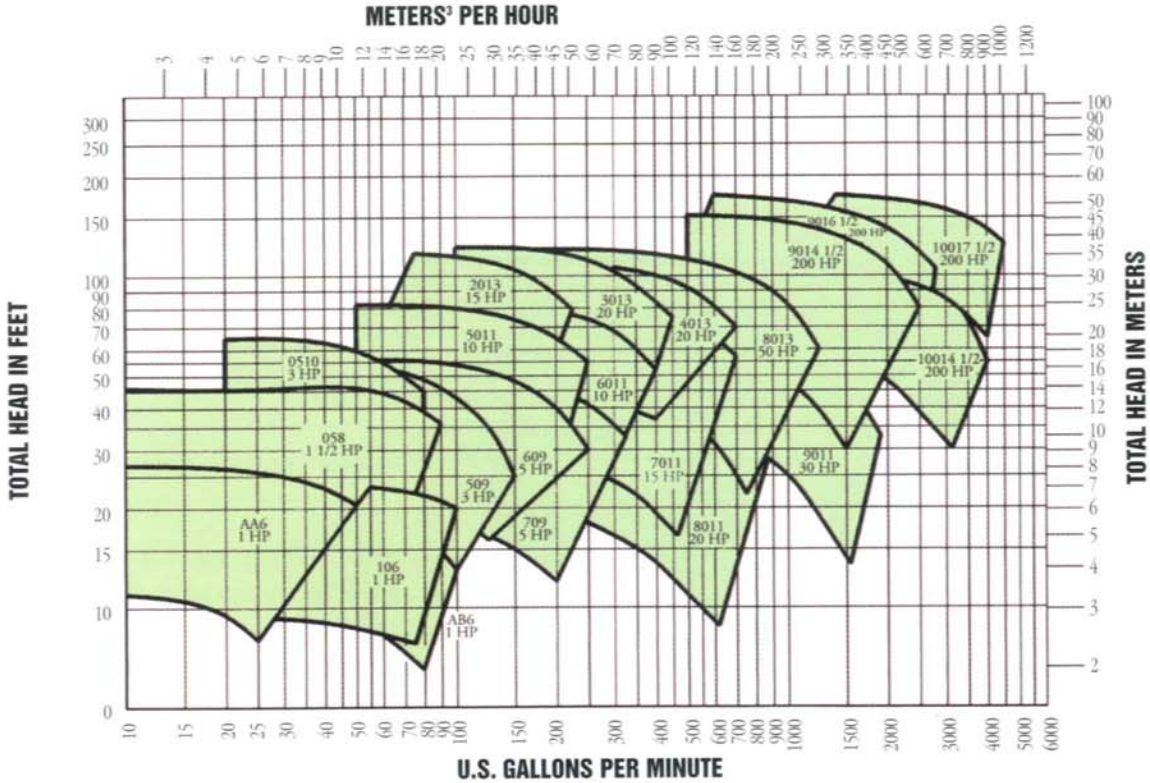
50 CYCLE
2900 RPM

150 SSU
.88 SPECIFIC GRAVITY



50 CYCLE
1450 RPM

150 SSU
.88 SPECIFIC GRAVITY



LUBE OIL PUMP
APPLICATION DATA WORKSHEET

Visit our Internet 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 _____

Additional specifications attached: yes ___
no ___

Flow required:
_____ US GPM
_____ cubic meters / hour

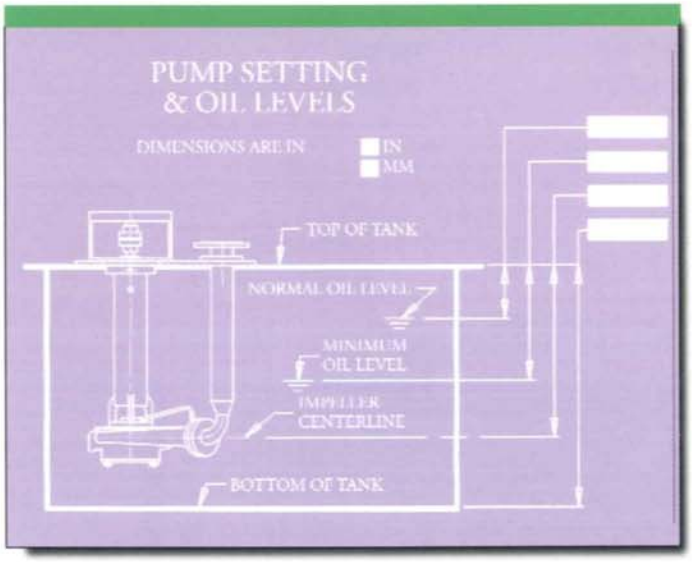
Lube Oil: ISO Grade _____
normal operating temperature _____ F/C
minimum operating temperature _____ F/C
maximum operating temperature _____ F/C

Pressure required:
_____ psig
_____ feet
_____ meters
_____ bar

Pump performance test required:
_____ at 150 SSU oil viscosity
_____ at _____ SSU oil viscosity

Design point conditions to be measured at:
_____ impeller centerline
_____ discharge flange above cover

Tank opening: _____ x_____
_____ diameter
_____ recommended by Buffalo Pumps



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

Materials of Construction:
Buffalo Pumps Standard _____
or
Impeller _____
Casing _____
Shaft _____
Discharge pipe _____

Motor requirements: specification attached _____
design point BHP to be _____ % below nameplate HP / KW
motor to be sized _____ ssu cold oil temperature
_____ ssu normal oil temperature

other _____
_____

_____ HP / KW
_____ voltage
_____ class
_____ rise
_____ C ambient
_____ CE marked

_____ rpm
_____ enclosure
_____ insulation
_____ service factor
_____ extra severe duty
_____ volt space heater

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 250 HP capability to simulate voltage and frequency ranges utilized world wide
- DC lube oil pumps – to 40 HP/125V and 75 HP/240V; in-rush current regulation and acceleration time monitoring
- Testing at design operating viscosity conditions of 80 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, 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

- Main and Auxiliary AC Lube Oil Pumps for Normal Operating Bearing Operation
- Emergency DC Lube Oil Pumps for Emergency Bearing Lubrication During AC Power Interruptions
- Seal Oil Pumps with AC/DC Motors for Operation During Normal and Emergency Situations

3500 rpm:	14 sizes to 200 hp (149 kw) 1500 gpm (341 m^3/hr) 700 feet (213 m) tdh
1750 rpm:	21 sizes to 250 hp (186.5 kw) 4500 gpm (1023 m^3/hr) 260 feet (79 m) tdh
2900 rpm:	14 sizes to 150 hp (112 kw) 1200 gpm (273 m^3/hr) 490 feet (149 m) tdh
1450 rpm:	21 sizes to 200 hp (149 kw) 4000 gpm (909 m^3/hr) 175 feet (53 m) tdh

Buffalopumps

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Hydraulic Institute

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION

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