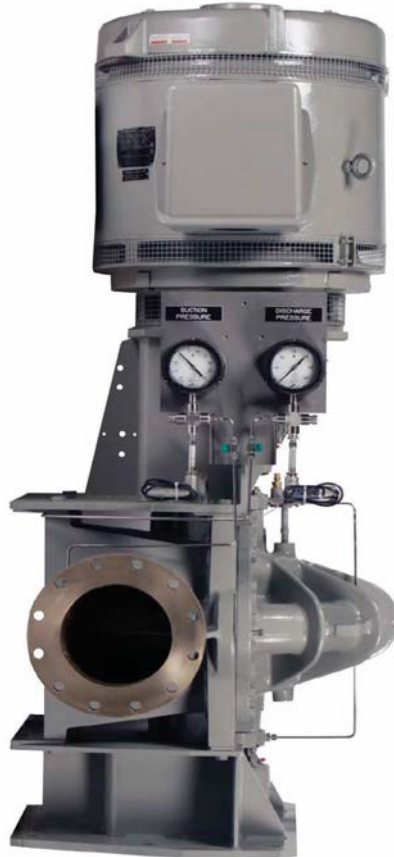




***Buffalopumps***

# CUSTOM ENGINEERED CENTRIFUGAL PUMPS



CRITICAL APPLICATIONS - QUALITY PERFORMANCE

Buffalo Pumps has been manufacturing quality custom-engineered centrifugal pumps since its founding in 1887. We specialize in critical applications for the power-generation, US Navy, commercial marine, oil & gas, chemical processing, and refrigeration industries. We partner with our customer's engineering teams to ensure our pumps meet the demanding specifications required for these critical services. All sales, design, manufacturing, and testing is completed in our plant in North Tonawanda, NY. Please contact one of our sales engineers for application assistance.

## Navy / Marine

### Performance Range / Capabilities:

Flow Rate to 7500 GPM (1700 m<sup>3</sup>/hr)

Heads to 700 Feet (213 m)

HP to 1000 HP (750 kW)

NPSHr to 1 foot (.3 m)

Available in all materials of construction including composite

Complete range of testing available including shock and type I vibration

Split case in vertical / horizontal

End suction in vertical / horizontal

Built to full Navy or commercial marine specifications

### Applications:

Fire Fighting

Air Conditioning / Chilled Water

Central Seawater

Bilge

Ballast

Fuel Oil

Potable Water

Chlorination

Demineralized Water

Fresh and Seawater Cooling

Condensate Drain

Hot Water Circulating

## Lube Oil

### Performance Range / Capabilities:

Flow Rate to 4500 GPM (1023 m<sup>3</sup>/hr)

Heads to 250 PSI (700 Feet) (213 m)

HP to 300 HP (224 kW)

Submerged depth to 8 Feet (2.5 m)

Working Pressure to 400 PSI (27 Bar)

Available in all materials of construction

API 610 features available as option

Performance Testing in oil as standard

Centrifugal or Screw available

### Applications:

Main AC Lube Oil

Pre / Post Lube Oil

Emergency DC

Seal Oil

Gear Box

Starting Packages

Electric Motor Drive

Turbines / Compressors / Engines

## Refrigeration

### Performance Range / Capabilities:

Flow Rates to 1000 GPM (227 m<sup>3</sup>/hr)

Heads to 320 Feet (100 m)

Power to 75 HP (50 kW)

Working Pressure to 580 PSI (40 Bar)

NPSHR to 3 Feet (1 m)

### Applications:

Ammonia

CO<sub>2</sub>

HFC and HCFC Refrigerants

LiBr / Water in Absorption Service

Superheated Water

Transformer Oil Cooling

# NAVY / MARINE



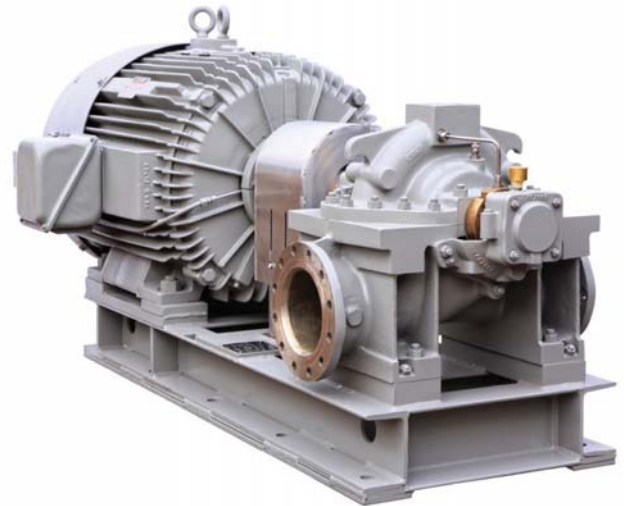
Navy Titanium Fire Pump built to NAVSEA drawing for emergency fire fighting service and in various configurations and orientations



Vertical axial-split case pump built to ASTM F998 for commercial marine duty



Navy standard end suction pumps built to MIL-P-17639 in a complete size range from 1C to 17C for a wide variety of services



Horizontal split-case pump built to MIL-P-17639 on JP-5 service



Special-purpose system pumps with ANSI or Navy standard pump ends with gauges for local monitoring

# LUBE OIL



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



Custom lengths and protective coatings available to meet demanding OEM specifications



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



Other materials of construction available - 316 stainless steel shown



Positive displacement pump option with extended suction pipe for reservoir list

# REFRIGERATION



COM Canned motor pumps in service on Ammonia recirculation package



COM pump for service under vacuum on absorption chiller application



COM Pump designed for transformer oil cooling service



Oil-Filled stator design for high temperature service



High Pressure design (580 PSI) for CO2 Cascade system



Unique absorption double-end pump for solution and solution spray service

# OEM Aftermarket Support / Repair Parts



Unique conical bearing / journal geometry and carbon graphite composition provides for extended bearing life for our canned pumps



Replacement Navy pumps ends tested to duplicate original performance of existing installations



Replacement parts available in Buffalo Pumps' patented composite material or original metal construction for seawater service



Pre-assembled oil-lubricated bearing conversion kits available for our lube oil pumps reduce maintenance and extend bearing life



Rotating assemblies available for Navy and marine duty pumps



OEM rings, sleeves, seals, and impellers available to match original performance

# ADVANCED TESTING CAPABILITY

**All performance testing is done in accordance with Hydraulic Institute Standards and applicable MIL specifications.**

- 1000 HP capability (AC)
- 100 HP capability (DC)
- Flow rates to 10,000 GPM / Heads to 700 feet
- Operation on inverter to test performance at different operating speeds
- Navy Pump Testing in Freshwater Seawater
- Structureborne and airborne noise testing
- Bearing stabilization
- Reverse rotation
- Full NPSHR and suction lift testing available
- Shock Qualification and Type I Vibration available off-site
- Durability Testing
- Acceleration time testing
- Endurance / life cycle testing under varying conditions
- Lube Oil pump testing to simulate varying oil levels and tank bottom
- Lube Oil Pump Testing in lube oil at varying viscosities (70 SSU to 400 SSU)
- Measurement of vibration / noise levels with dynamic signal analysis equipment
- Pressure boundary parts hydro-pressure testing to 750 psi. Leak testing with mass spectrometer to 6 mm Hg(a) and visco probe test to  $1 \times 10^{-6}$  cc/sec



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**Hydraulic**  
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MANAGEMENT SYSTEMS  
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**ABS**  
FOUNDED 1862

**RU**

**SRI**  
Quality System Registrar

# APPLICATION DATA WORKSHEET

## Navy / Marine

Ship / Project Reference: \_\_\_\_\_

Flow Required: \_\_\_\_\_ US GPM  
\_\_\_\_\_ cubic meters / hour

Head / Pressure Required: \_\_\_\_\_ psig  
\_\_\_\_\_ feet

### Applicable Pump Specification

\_\_\_\_\_ MIL-P-17639  
\_\_\_\_\_ F998 w/Supplemental  
\_\_\_\_\_ Other

Materials of Construction: (if not covered in MIL specifications)

\_\_\_\_\_  
\_\_\_\_\_

Service: \_\_\_\_\_

Liquid / Temperature: seawater \_\_\_\_\_ F/C  
fresh water \_\_\_\_\_ F/C  
other \_\_\_\_\_

### Testing Required:

\_\_\_\_\_ Full Range Performance  
\_\_\_\_\_ Shock Qualification  
\_\_\_\_\_ Vibration  
\_\_\_\_\_ Structureborne / Airborne Noise

Motor Requirements: (if not covered in MIL specifications)

\_\_\_\_\_  
\_\_\_\_\_

## Lube Oil

Project Reference: \_\_\_\_\_

Additional specifications attached: yes \_\_\_\_\_  
no \_\_\_\_\_

Flow required: \_\_\_\_\_ US GPM  
\_\_\_\_\_ cubic meters / hour

Pressure Required: \_\_\_\_\_ psig/m/bar

Motor Requirements: \_\_\_\_\_

Paints / Coatings: \_\_\_\_\_

### Materials of Construction:

Buffalo Pumps Standard \_\_\_\_\_ or  
Other \_\_\_\_\_

Compliance / Certification / Language: \_\_\_\_\_

Service: Main AC LO pump \_\_\_\_\_  
Emergency DC LO pump \_\_\_\_\_  
AC Seal Oil pump \_\_\_\_\_  
DC Seal Oil pump \_\_\_\_\_

Lube Oil: ISO Grade \_\_\_\_\_  
Normal operating temperature \_\_\_\_\_ F/C  
Minimum operating temperature \_\_\_\_\_ F/C  
Maximum operating temperature \_\_\_\_\_ F/C

### Pump performance test required:

Buffalo Pumps Standard \_\_\_\_\_ or  
Other \_\_\_\_\_

Tank opening: \_\_\_\_\_ X \_\_\_\_\_  
\_\_\_\_\_ diameter

Discharge pipe detail: \_\_\_\_\_

## Refrigeration

Project Reference: \_\_\_\_\_

Flow Required: \_\_\_\_\_ US GPM  
\_\_\_\_\_ cubic meters / hour

Pressure Required: \_\_\_\_\_ feet \_\_\_\_\_ meters \_\_\_\_\_ psig \_\_\_\_\_ bar

Pressure Rating: psi \_\_\_\_\_ bar \_\_\_\_\_

### Materials of Construction:

Buffalo Pumps Standard Cast Iron / Ductile Iron / Steel or  
Impeller \_\_\_\_\_

Casing \_\_\_\_\_

Motor wetted components \_\_\_\_\_

Service: Recirculator \_\_\_\_\_  
Transfer \_\_\_\_\_  
Absorption \_\_\_\_\_  
Cooling \_\_\_\_\_  
Transformer cooling oil \_\_\_\_\_  
Other \_\_\_\_\_

Liquid: Ammonia \_\_\_\_\_ LiBr \_\_\_\_\_  
CO2 \_\_\_\_\_ Water \_\_\_\_\_  
R-22 \_\_\_\_\_ Superheated water \_\_\_\_\_  
R-123 \_\_\_\_\_ Other \_\_\_\_\_

normal operating temp. \_\_\_\_\_ F/C minimum operating temp. \_\_\_\_\_ F/C  
maximum operating temp. \_\_\_\_\_ F/C

Motor Requirements: specification attached \_\_\_\_\_  
\_\_\_\_\_ HP / KW \_\_\_\_\_ rpm \_\_\_\_\_ frequency  
\_\_\_\_\_ hazardous area \_\_\_\_\_ other