



CENTRALBIDDING
FROM CENTRAL AUCTION HOUSE

**5000135674 ONE TIME PURCHASE OF SIX (6) PUMP PACKAGES MODEL
HAC348 FOR THE BAYOU SEGNETTE PUMP STATION.**
Jefferson Parish Government

Project documents obtained from www.CentralBidding.com
05-Oct-2021 10:51:03 AM



Bid Number 50-00135674

**ONE TIME PURCHASE OF SIX (6) 48" PUMP PACKAGES MODEL HAC348
FOR THE BAYOU SEGNETTE PUMP STATION.**

BID DUE: OCTOBER 7, 2021 AT 2:00 PM

ATTENTION VENDORS!!!

Please review all pages and respond accordingly, complying with all provisions in the technical specifications and Jefferson Parish Instructions for Bidders and General Terms and Conditions. All bids must be received on the Purchasing Department's eProcurement site, www.jeffparishbids.net, by the bid due date and time. Late bids will not be accepted.

**Jefferson Parish Purchasing Department
200 Derbigny Street
General Government Building, Suite 4400
Gretna, LA 70053
Donna Reamey
Email: Dreamey@jeffparish.net
Phone: 504-364-2684**

PURCHASE OF ALL STATIONARY EMERGENCY STANDBY FLOOD CONTROL PUMPING EQUIPMENT FOR THE BAYOU SEGNETTE PUMP STATION

Part 1- General

1.1 DESCRIPTION

This bid shall consist of providing all stationary emergency standby flood control pumping equipment including the hydraulic driven axial flow pumps, drive units and all piping appurtenances and mechanical system as specified herein.

Vendor shall furnish six (6) 48" axial flow packages. Preferred pump and skid package shall be model HAC348 by MWI Corporation, 33 NW Eller Street, Deerfield Beach, FL 33441 or approved equal and in accordance with this bid. Any substitution to the specification shall be submitted with the bid package outlined in section 2.2.

1.2 DELIVERY

Freight shall be included in base bid and shall be delivered to the Ames Pump station warehouse at 5100 Rochester Drive, Marrero, LA 70072. All deliveries shall be made during operating hours between 7:00 AM and 3:00 PM, Monday through Friday. Deliveries will not be accepted during Jefferson Parish holidays. Vendor shall notify Drainage Department two (2) weeks prior to delivery. Total delivery time starting from the date vendor receives the purchase shall not exceed two hundred ten (210) calendar days.

PART 2 – PUMP AND SKID PACKAGE

2.1. QUALITY ASSURANCE

- A. The pumping system equipment to be supplied in the section will be the product of one manufacturer regularly engaged in the production of diesel, fixed speed hydraulic systems and specialties. The manufacturer will be ISO 9001-2015 certified and be the owner of the facility where these units will be produced and must have a minimum of 5 similar installations which have been continuously operating for not less than 10 years. The test facility must be located inside the continental United States.

- B. The equipment furnished shall be fabricated, assembled, erected, tested, and delivered in full conformity with approved drawings, specifications, engineering data, and/or recommendations furnished by the equipment manufacturer. Pump construction shall conform to the minimum requirements of the applicable Hydraulic Institute standards.

2.2 **SUBMITTALS**

- A. Bidders shall submit the following submittals for the pump and skid package upon request of the Drainage Department. Bidders will have seventy-two hours after the time requested to submit all documents for approval.
- B. Shop Drawings (including main layout drawings, list of equipment specifications and or recommendations furnished by the equipment manufacturer)
- C. Pump "Bill of Materials" of the unit's construction, cutaway drawings and dimensions as offered to confirm compliance with the specifications.
- D. One hydraulic circuit schematic for the entire pumping system.
- E. As-Built Drawings of the pump and accessories as applicable.
- F. List of spare Parts and Special Tools if applicable.
- G. One certified copy of installation and operation manuals for permanent pump systems.
- H. Certified pump performance curve with points selected for all designs conditions as specified in section 2.5 A, Table 1.

2.3 **GENERAL PUMP PACKAGE DESIGN**

Each pump package shall have a diesel drive unit (specified herein). The controls for the diesel unit shall be arranged to start either automatically from an emergency high level ball float, a level sensing signal or selected to manually operate.

2.4 **SKID ASSEMBLY AND WIRING**

- A. Construction shall include a fabricated steel base with lifting eyes and assembly and shall support all components during shipping and serve as the installation mounting base. The dimensions of each base shall not exceed 78" wide by 185" long by 92" tall.
- B. The complete pump assembly and skid shall be coated inside and outside using standards SSPC-SP10, near white blasting cleaning, zinc primer, followed by an industrial strength epoxy primer with a polyurethane top coat.
- 1. Sherwin Williams Macropoxy 646 with an Acrlon 218 polyurethane as per manufacturer's recommendation or approve equal.

2.5 **DESIGN DATA**

A. The Pump design criteria is listed below in Table 1

HAC348	
ITEM	DESIGN CONDITION
Design Condition at Rated Speed	
Flow (GPM)	70,000
Bowl TDH*(Feet)	9
Pump Rated Speed (RPM)	310
Required Condition 2 at Rated Speed	
Flow (GPM)	60,000
Bowl TDH*(Feet)	14.2
Pump Rated Speed (RPM)	310
Required Condition 3 at Rated Speed	
Flow (GPM)	50,000
Bowl TDH*(Feet)	17.2
Pump Rated Speed (RPM)	310
Diesel Engine to be Supplied (HP)	550
Number of Pumps	6

B. Recommended minimum submergence level for pump starting measured from the surface of the intake bell inlet flange to water level datum shall not exceed 84"

2.6 **WATER PUMP HYDRAULIC DRIVE UNIT AND MATERIAL AND DESIGN**

The water pumps to be furnished under this specification shall be hydraulically driven axial flow propeller type completely submersible with propeller bowl assembly, hydraulic motor assembly, suction bell and discharge tube. The pump will be supported from a base plate and connect to a 45°, two miter elbow and then terminate with lugs for attachment to a dresser style coupling and existing discharge pipe.

1. **SUCTION BELL** - The suction bell assemblies shall be manufactured from 3/8" alloy steel conforming to ASTM A242 and shall have a maximum inlet diameter of 1.5 times the propeller diameter or be complaint with HI 1998. The inlet bell shall be constructed to minimize vortex formation by maintaining equal pressures and velocities across the entrance. Bars shall be placed across the bell mouth to prevent entrance of large sticks, logs or debris. Inlet bell face shall be parallel to the water surface regardless of the angle

of installation.

2. PUMP BOWL – The propeller bowl assembly section shall be a single stage, shop assembled unit consisting of a venturi, stainless steel liner, propeller shaft, bearing and stainless-steel propeller blades. The venturi shall be manufactured from ¾" thick steel, ASTM A242/A588, and shall be fitted with 3/16" thick removable liner manufactured from 300 series stainless steel.
3. PROPELLER and SHAFT – The pump propeller blades shall be manufactured using ASTM A304 stainless steel. The propeller shall be dynamically balanced and secured firmly to the tapered shaft with an alignment key and locknut. The propeller shaft will be machined from solid stainless steel bar stock and shall conform to ASME Code for transmission shafting to transmit full load torque and shall have additional safety factor for shock loads.
4. BEARINGS – The propeller shaft shall be supported and contained in place by three angular contact bearings. The shaft bearings shall be designed for an L10 life of 50,000 hours and lubricated by low pressure hydraulic oil, the propeller shaft and bearing assembly shall be contained in a machined bearing housing centrally supported by flow straightening vanes in the propeller bowl assembly and shall be protected against sand particle intrusion. The bearings shall be designed to accept thrust in either direction. A non-reverse rotation mechanism will be included.
5. HYDRAULIC MOTOR – The hydraulic motor assembly section shall consist of the hydraulic motor and inlet and outlet port pipe connections. The hydraulic motor shall be coupled to the water pump shaft with a spline connection. The hydraulic motor shall be sealed to permit totally submerged operation in any position. The hydraulic motor shall be provided with inlet and outlet pipes extending from the hydraulic motor through the pump housing and terminate with quick couplings connections. The hydraulic motor shall be mounted on the discharge side of the propeller to minimize NPSH requirements, avoid clogging of the intake and induce more efficient oil cooling. Suction side installations shall not be permitted.
6. FLANGES – All pump discharge flanges shall be ANSI B15.1, Class 125 pattern.
7. ADDITIONAL PIPING – All additional discharge piping furnished by vendor shall be 3/8" thickness and conform to ASTM code A139B.

2.7 DEISEL DRIVE UNIT REQUIREMENTS

- A. Diesel engines shall be Tier 3 John Deere or equal, 550 hp at 1800 rpm continuous duty rating. The units shall be fully equipped with radiator, 24 volt starting system, batteries and cable, safety shutdown switches (to include but not

limited to: low oil pressure, high temperature, low oil level, high amps, etc.) and exhaust system with residential type or sound attenuating system. All engines shall come with 24-volt starters.

- B. Power unit shall be factory assembled and skid mounted. Hydraulic equipment shall include but not limited to a 300 gallon hydraulic oil reservoir, full flow oil filter, adjustable pressure relief valves at each pump outlet, pressure and temperature gauges, quick disconnect couplings and safety shutdown controls for low oil pressure and high oil temperature. All systems shall be assembled, piped and tested prior to delivery to the site.
- C. A fuel storage day tank shall be 200 gallons mounted on the skid. The fuel tank shall be constructed per UL142 and labeled as such. The fuel tank shall have two spare (2") NPT threaded ports with caps in addition to all vents and UL required instrumentation.
- D. Control Continuous Level Transmitter (fuel tank): Shall have a total of two float switches and one continuous monitor level transmitter. The upper and lower switch floats will be independent high-level signals, while the middle continuous monitor float will transmit the control level. The 4-20- mA sensor operates on a loop power or a separate power supply of 10-30 VDC. The sensor will provide a linear output between 4-20mA across the measuring range. When the float is at the bottom of the measuring range (furthest away from the fitting) the signal output will be 4mA. As the float moves closer to the fitting, the mA signal will increase until it reaches the top of the measuring range, providing a 20-mA signal. The mA signal will change every $\frac{1}{4}$ " of float movement. The value of the mA change per $\frac{1}{4}$ " of float movement equals 4 divided by total measuring range in inches. Basis of Design is FPI Sensors International 4-20 mA continuous level transmitter.
- E. All required fittings, gauges and piping shall be supplied and installed as necessary to provide proper tie-in for the fuel supply and return lines.
- F. Engines shall have an electronic governor.
- G. Engine shall have a variable speed throttle control while set in auto.
- H. An instrument panel shall be provided in the enclosure and mounted on rubber isolators.
- I. A SENS NRG battery charger (C/N NRG22-10-RC) is to be provided and mounted on the skid next to the diesel engine batteries. Battery charger input is to be connected to fused terminal blocks (blown fuse indicating type) in the MEJB.

Battery charger output cables are to be provided for the connection to the battery bank. Battery charger shall include NEMA 3R housing with remote temperature comp sensors.

- J. Three (3) units shall have the hydraulic control panel and the engine controller mounted on the left side of the engine (facing the flywheel), while the remaining three (3) units shall have the hydraulic control panel and engine controller mounted on the right side of the engine (facing the flywheel).

2.8 **HYDRAULIC SYSTEM**

- A. The hydraulic pump shall be a fixed displacement hydraulic pump capable of continuous operation.
- B. A hydraulic system monitoring device to allow diagnosing hydraulic system behavior even while pump is still submerged shall also be included.
- C. The drive unit shall include a "clutch" system starting system which allows the prime mover to start under a no-load condition and gradually engage the load over a 3-5 second period. The "clutch" system shall be used to gradually disengage the load prior to shutoff of the prime mover.
- D. Sufficient hydraulic oil cooling capacity shall be provided to sustain direct sunlight radiation as well as ambient temperatures up to 122°F.
- E. Pumping units shall be open loop hydraulic system with a pilot operated relief valve to protect the system from over pressure.
- F. Each hydraulic system shall be fitted with a suction strainer and a return filter to insure a supply of clean oil.

2.9 **HYDRAULIC PANEL**

- A. All units shall have installed and ready for owner hookup a thermocouple and thermowell to monitor hydraulic oil temperature in addition to the annunciator and other items stated below on the panel.
- B. All units shall have installed and ready for owner hookup a pressure transmitters to monitor hydraulic system pressure in addition to the pressure switch.
- C. Operator Interface

In manual operation the operator's hydraulic panel shall include the

following:

1. System Failure Annunciate 1 – Low Hydraulic Oil Level
2. System Failure Annunciate 1 – High Hydraulic Vacuum
3. System Failure Annunciate 1 – High Hydraulic Oil temperature
4. Hydraulic System pressure Gauge
5. Hydraulic Vacuum Fixed Diesel Gauge
6. Hydraulic Oil Temperature Gauge
7. Hydraulic System Loading Solenoid Valve (failed closed-always pump if fail)

D. Alarms and shutdowns

The following alarms shall shut down the prime mover

1. Low oil level in hydraulic reservoir
2. High hydraulic system temperature
3. High hydraulic pump suction vacuum
4. Diesel engine high coolant temp
5. Diesel engine low oil shutdown

2.10 **DIESEL ENGINE PANEL**

- A. Basis of Design: Controls Inc C Series or approved equal. Each unit shall come equipped with these features:
1. Panel shall have a variable speed throttle control
 2. Engine shall have safety shutdown switches for low oil pressure and high-water temperature.
 3. An instrument panel shall be provided in the enclosure and mounted on rubber isolators
 4. Instrument panel shall contain the following instrumentation and controls: key switch, tachometer, hour meter, oil pressure gauge, water temperature gauge, charge indicator light

2.11 **SKID PACKAGE ACCESSORIES AND FUNCTIONS**

A. Lifting Lugs

Furnish major pump components with lifting lugs or eye bolts to facilitate handling. Design and arrange lugs or bolts to allow safe handling of pump components singly or collectively as required during shipping, installation and maintenance.

B. Nameplate

The pump shall be identified by means of a loose, separate nameplate. The plate shall bear the manufacturers name, model designation, weight of unit, serial number if applicable and any other pertinent information such as horsepower, speed, capacity, type, direction of rotation, etc. The plate shall be made from corrosion-resisting metal with raised or depressed lettering and contrasting background.

2.12 **SPARE PARTS**

- A. The vendor shall furnish and install all required lubrication oil and grease for the package unit upon delivery.
- B. The vendor shall furnish eight (6) spare 55-gallon drums of required hydraulic fluid for the package units.
- C. The vendor shall furnish one (1) 55-gallon drum of required lubrication oil for the diesel engines.
- D. The vendor shall furnish one (1) set of spare set of oil filter, fuel filters and air filters for each diesel engine.
- E. The vendor shall furnish one (1) spare hydraulic filter for each unit
- F. One Hydraulic motor
- G. One Hydraulic pump

2.13 **HYDRAULIC PIPING AND HOSE**

Hydraulic lines connecting the power unit to the pumping unit shall be a combination of black steel pipe and reinforced hose and shall be installed in accordance with the specifications. Supply pipe shall be ASTM A106, schedule 80 seamless black steel pipe and return lines shall be ASTM A106, schedule 40 black seamless steel pipe, all hydraulic pipe shall be pickled, oiled, and plugged. All reinforced supply hose shall be double wire braid reinforced and shall have a minimum safe working pressure of 4 times the working pressure or 3000psi, whichever is higher. All pipe fittings shall be socket weld type (with socket weld to threaded fittings at conversion point of pipe to reinforced hose). Quick connect couplings shall be provided at connection points of drive and water pump. Both supply and return piping shall be of adequate size to supply hydraulic fluid so that pump meets required flow. Hydraulic oil internal velocities shall not exceed 15 fps. Vendor shall furnish two (2) sets of hydraulic hoses per unit; one set to connect on the pump end to hard piping, and one set to connect to the skid end and hard piping. Hose lengths shall be determined with the drainage department before delivery and shall not exceed 10 feet in length per unit.

2.14 **FACTORY ASSEMBLY**

The pump along with controls shall be assembled at the manufacturer's plant to assure proper fitting and alignment of all parts. Tolerances shall not exceed those specified or shown on the vendors manufacturing drawings. Rotating elements shall be checked for binding. The suction bell, propeller housing, discharge column and additional piping shall be properly match marked and have centerlines clearly marked on the outside of all the flanges to facilitate erection and alignment in the field. The vendor shall notify the Owner sufficiently in advance to permit a representative of the owner to inspect and witness the pump assembly. All parts disassembled for shipment shall be match marked.

2.15 PUMP TESTING

Each pump and hydraulic power transmission system shall be factory tested to maximum design psi for a minimum of 10 minutes at design operating temperatures with every plumbing connection checked for leaks. In the event a leak is observed or detected, it shall be repaired, and the test will be repeated until all leaks are eliminated.

Pumps shall be full sized factory testing at the manufacturer's facility in an open sump in a vertical configuration with sufficient capacity for accurate pump testing. Certification by the Chief Engineer that manufacturer's pump testing meets all requirements of HI must be included in the test data submittal. Testing shall include but not be limited to design head vs. design capacity and mechanical integrity. All tests shall be in accordance with the Hydraulic Institute Standards 14.6 and certified by a Registered Professional Engineer employed full time by the manufacturer. The certified test may be witnessed by a Parish representative. Vendor will give two weeks' notice prior to conducting the test. Model tests are not acceptable.

All final assembly and parts shall be utilized for testing purposes. After Jefferson parish installs each pump according to the pump manufacturer's recommendations, an on-site test shall be conducted by a representative from the manufacturer and supply vendor to confirm proper installation.

2.16 WARRANTY

The entire pump system and controls shall be warranted for 2 years by the manufacturer against defects in materials and workmanship, under normal use and service from the date of shipment from the factory as described in the warranty certificate. Warranty work shall be on-site at vendor's expense.

2.17 OPERATION AND MAINTENANCE MANUAL/PUMP CURVES

All items shall be furnished at the time of pump delivery.

1. Three (3) sets of operating and maintenance manuals and startup procedures shall be provided to the owner as a hard copy and in PDF format on a CD. Vendor along with the pump manufacturer shall train and instruct owner's operator in all equipment.
2. Three (3) copies of certified pump performance curves of each unit will be furnished by the manufacturer. The curves shall be stamped as correct by a Registered Professional Engineer in the state in which the pumps are tested and manufactured. The curve shall show pump capacity, discharge head, speed and brake horsepower requirements.
3. Vendor shall supply a complete set of electrical diagrams and control panel schematics.

2.18 **PARTS AND SERVICE**

- A. Pump vendor shall be in a position to render prompt parts and service at competitive prices and in a timely manner.
- B. The pump vendor shall maintain and or have access to a parts inventory of sufficient size and variety to offer +95% parts availability within 48 hours from the time of order by the customer.

DATE: 9/22/2021
BID NO.: 50-00135674

INVITATION TO BID
THIS IS NOT AN ORDER

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JEFFERSON PARISH

PURCHASING DEPARTMENT
P.O. BOX 9
GRETNA, LA. 70054-0009
504-364-2678

BUYER: DREAMEY@jeffparish.net

BIDS WILL BE RECEIVED ONLINE VIA WWW.JEFFPARISHBIDS.NET UNTIL 2:00 PM, 10/07/2021 AND PUBLICLY OPENED THEREAFTER IN THE WEST BANK PURCHASING DEPT, SUITE 4400, JEFFERSON PARISH GENERAL GOVERNMENT BUILDING, 200 DERBIGNY STREET, GRETNA, LA 70053. At no charge, bidders are to submit via Jefferson Parish's electronic procurement page by visiting www.jeffparishbids.net to register for this free site. Additional instructions are included in the text box highlighting electronic procurement.

LATE BIDS WILL NOT BE ACCEPTED

NOTE: ONLY BIDS WRITTEN IN INK OR TYPEWRITTEN, AND PROPERLY SIGNED BY A MEMBER OF THE FIRM OR AUTHORIZED REPRESENTATIVE, WILL BE ACCEPTED. PENCIL AND/OR PHOTOSTATIC FIGURES OR SIGNATURES SHALL RESULT IN BID REJECTION. HOWEVER, ELECTRONIC SIGNATURES AS DEFINED IN LSA - R.S. 9:2620(8) ARE ACCEPTABLE. SIGNATURE MUST BE A SECURED DIGITAL SIGNATURE.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

THE FOLLOWING INSTRUCTIONS APPLY TO ALL BIDS

All bids submitted are subject to these instructions and general conditions and any special conditions and specifications contained herein, all of which are made part of this bid proposal reference. By submitting a bid, vendor agrees to comply with all provisions of Louisiana Law as well be in compliance with the Jefferson Parish Code of Ordinances, Louisiana Code of Ethics, applicable Jefferson Parish ethical standards and Jefferson Parish Resolution No. 113646 and/or Resolution No. 113647 as amended.

Jefferson Parish adheres to the Louisiana Code of Governmental Ethics, contained in Louisiana Revised Statutes Annotated, R.S. 42:1101, et seq. Vendor/Proposer by this submission, warrants that there are no "conflicts of interest" related to this procurement that would violate applicable Louisiana Law. Violation of the Louisiana Code of Governmental Ethics may result in rescission of contract, permit or licenses, and the imposition of fines and/or penalties, without contractual liability to the public in accordance with applicable law.

All vendors submitting bids should register as a Jefferson Parish vendor if not already yet registered. Registration forms may be downloaded from <http://purchasing.jeffparish.net> and by clicking on Vendor Information. Current W-9 forms with respective Tax Identification numbers and vendor applications may be submitted at any time; however, if your company is not registered and/or a current W-9 form is not on file, vendor registration is mandatory. Vendors may experience a delay in payment if your company is not a registered vendor with Jefferson Parish.

All quotations shall be based on F.O.B. Agency warehouse or job site, anywhere within the Parish as designated by the Purchasing Department. This provision does not apply to public works projects

JEFFERSON PARISH requires all products to be new (current) and all work must be performed according to standard practices for the project. Unless otherwise specified, no aftermarket parts will be accepted. Unless otherwise specified, all workmanship and materials must have at least one (1) year guaranty, in writing, from the date of delivery and/or acceptance of the project. Any deviations or alterations from the specifications must be indicated and/or supporting documentation supplied with bid submission.

Bidders should submit all questions in writing via email to the buyer's email address as indicated above, no later than Five (5) working days prior to the bid opening. Bid numbers should be mentioned in all requests. If submitting online, vendors may send questions via the E-Procurement site no later than Five (5) working days prior to the bid opening.

If this bid requires a pre-bid conference (see Additional Requirements section), bidders are advised that such conference will be held to allow bidders the opportunity to identify any discrepancies in the bid specifications and seek further clarification regarding instructions. The Purchasing Department will issue a written response to bidders' questions in the form of an Addendum. Please note that all official communication will be expressed in the form of an addendum.

Visit our website at [HTTP://PURCHASING.JEFFPARISH.NET](http://PURCHASING.JEFFPARISH.NET)

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All formal Addenda require written acknowledgement on the bid form by the bidder. Failure to acknowledge an Addendum on the bid form shall cause the bid to be rejected. JEFFERSON PARISH reserves the right to award bid to next lowest responsive and responsible bidder in this event.

JEFFERSON PARISH will accept one price for each item unless otherwise indicated. Two or more prices for one item will result in bid rejection. Bidders are required to complete, sign and return the bid form and/or complete and return the associated line item pricing forms as indicated. Vendors must not alter the bid forms. Doing so will cause the bid to be rejected.

A corporate resolution or written evidence of the individual signing the bid having such authority must be submitted with the bid. Failure to comply will cause bid to be rejected. For corporate entities, such written evidence may be a printout of the Louisiana Secretary of State's website listing the signatory as an officer. Such printout shall be included with the bid submission. Bids submitted by Owners or Sole Proprietorships must include certification that he or she owns the entity for which the bid is signed. This documentation must be submitted with the bid. Failure to do so will result in bid rejection.

NOTE: A sample corporate resolution can be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document. A sample certification of sole proprietorship can also be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

A. AWARD OF CONTRACT: JEFFERSON PARISH reserves the right to award contracts or place orders on a lump sum or individual item basis, or such combination, as shall in its judgment be in the best interest of JEFFERSON PARISH. Every contract or order shall be awarded to the LOWEST RESPONSIVE and RESPONSIBLE BIDDER, taking into consideration the CONFORMITY WITH THE SPECIFICATIONS and the DELIVERY AND/OR COMPLETION DATE. SPLIT AWARDS MADE TO SEVERAL VENDORS WILL ONLY BE GRANTED TO THOSE DEEMED RESPONSIVE AND RESPONSIBLE.

All bid prices shall remain valid for 45 days. Jefferson Parish and the lowest responsive and responsible bidder(s) by mutual written consent may mutually agree to extend the deadline for award by one (1) or more extensions of thirty (30) calendar days.

PROTESTS: Only those vendors that submit bids in response to this solicitation may protest any element of the procurement, in writing to the Director of the Purchasing Department. Written protest must be received within 48 hours of the release of the bid tabulation by the Purchasing Department. After consultation, the Parish Attorney's Office will then respond to protests in writing. (For more information, please see Chapter 2, Article VII, Division 2, Sec. 2-914.1 of the Jefferson Parish Code of Ordinances.)

PREFERENCE: Unless federal funding is directly spent by Jefferson Parish for this purchase, preference is hereby given to materials, supplies, and provisions produced, manufactured or grown in Louisiana, quality being equal to articles offered by competitors outside the state. "LSA - R.S. 38:2251-2261"

B. USE OF BRAND NAMES AND STOCK NUMBERS: Where brand names and stock numbers are specified, it is for the purpose of establishing certain minimum standards of quality. Bids may be submitted for products of equal quality, provided brand names and stock numbers are specified. Complete product data may be required prior to award.

C. CANCELLATION OF CONTRACT: JEFFERSON PARISH reserves the right to cancel all or any part if not shipped promptly. No charges will be allowed for parking or cartage unless specified in quotation. The order must not be filled at a higher price than quoted. JEFFERSON PARISH reserves the right to cancel any contract at anytime and for any reason by issuing a THIRTY (30) day written notice to the contractor.

For good cause and as consideration for executing a contract with Jefferson Parish, vendor conveys, sells, assigns and transfers to Jefferson Parish or its assigns all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of Louisiana, relating to the particular good or services purchased or acquired by Jefferson Parish.

D. PRICES: Jefferson Parish is exempt from paying sales tax under LSA-R.S. 47:301 (8)(c). All prices for purchases by Jefferson Parish of supplies and materials shall be quoted in the unit of measure specified and unless otherwise specified, shall be exclusive of state and local taxes. The price quoted for work shall be stated in figures. In the event there is a difference in unit prices and totals, the unit price shall prevail.

Quantities listed are for bidding purposes only. Actual requirements may be more or less than quantities listed.

Bidders are not to exclude from participation in, deny the benefits of, or subject to discrimination under any program or activity, any person in the United States on the grounds of race, color, national origin, or sex; nor discriminate on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973, or on the basis of religion, except that any exemption from such prohibition against discrimination on the basis of religion as provided in the Civil Rights Act of 1964, or Title VI and VII of the Act of April 11, 1968, shall also apply. This assurance includes compliance with the administrative requirements of the Revenue Sharing final handicapped discrimination provisions contained in Section 51.55 (c), (d), (e), and (k)(5) of the Regulations. New construction or renovation projects must comply with Section 504 of the 1973 Rehabilitation Act, as amended, in accordance with the American National Standard Institute's specifications (ANSI A17.1-1961).

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INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

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Jefferson Parish and its partners as the recipients of federal funds are fully committed to awarding a contract(s) to firm(s) that will provide high quality services and that are dedicated to diversity and to containing costs. Thus, Jefferson Parish strongly encourages the involvement of minority and/or woman-owned business enterprises (DBE's, including MBE's, WBE's and SBE's) to stimulate participation in procurement and assistance programs.

The purpose and intention of this invitation to bid is to afford all suppliers an equal opportunity to bid on all construction, maintenance, repair, operating supplies and/or equipment listed in this bid proposal. JEFFERSON PARISH WILL ACCEPT ONE BID ONLY FROM EACH VENDOR. Items bid must meet specifications.

Advertised bids will be tabulated and a copy of the tabulation will be forwarded to each responding bidder.

IN ACCORDANCE WITH STATE REGULATIONS JEFFERSON PARISH OFFERS ELECTRONIC PROCUREMENT TO ALL VENDORS

This electronic procurement system allows vendors the convenience of reviewing and submitting bids online.

This is a secure site and authorized personnel have limited read access only. Bidders are to submit electronically using this free service; while the website accepts various file types, one single PDF file containing all appropriate and required bid documents is preferred. Bidders submitting uploaded images of bid responses are solely responsible for clarity. If uploaded images/documents are not legible, then bidder's submission will be rejected. Please note all requirements contained in this bid package for electronic bid submission.

Please visit our E-Procurement Page at www.jeffparishbids.net to register and view Jefferson Parish solicitations. For more information, please visit the Purchasing Department page at <http://purchasing.jeffparish.net>.

The general specifications for construction projects and the purchase of materials, services and/or supplies are those adopted by the JEFFERSON PARISH Council by Resolution No. 113646 or 113647 as amended. The general conditions adopted by this resolution shall be considered as much a part of this document as if they were written wholly herein. A copy may be obtained from the Office of the Parish Clerk, Suite 6700, Jefferson Parish General Government Building, 200 Derbigny Street, Gretna, LA 70053. You may also obtain a copy by visiting the Purchasing Department webpage at <http://purchasing.jeffparish.net> and clicking on Online Forms.

ADDITIONAL REQUIREMENTS FOR THIS BID

PLEASE MATCH THE NUMBERS PRINTED IN THIS BOX WITH THE CORRESPONDING INSTRUCTIONS BELOW.

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1. All bidders must attend the MANDATORY pre-bid conference and will be required to sign in and out as evidence of attendance. In accordance with LSA R.S. 38:2212(I), all prospective bidders shall be present at the beginning of the MANDATORY pre-bid conference and shall remain in attendance for the duration of the conference. Any prospective bidder who fails to attend the conference or remain for the duration shall be prohibited from submitting a bid for the project.
2. Attendance to this pre-bid conference is optional. However, failure to attend the pre-bid conference shall not relieve the bidder of responsibility for information discussed at the conference. Furthermore, failure to attend the pre-bid conference and inspection does not relieve the successful bidder from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the specification with no additional cost to the owner.
3. Contractor must hold current applicable JEFFERSON PARISH licenses with the Department of Inspection and Code Enforcement. Contractor shall obtain any and all permits required by the JEFFERSON PARISH Department of Inspection and Code Enforcement. The contractor shall be responsible for the payment of these permits. All permits must be obtained prior to the start of the project. Contractor must also hold any and all applicable Federal and State licenses. Contractor shall be responsible for the payment of these permits and shall obtain them prior to the start of the project.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

4. A LA State Contractor's License will be required in accordance with LSA R.S. 37-2150 et. seq. and such license number will be shown on the outside of the bid electronic envelope. Failure to comply will cause the bid to be rejected. When submitting the bid electronically, the license number must be entered in the appropriate field in the electronic procurement system. Failure to comply will cause the bid to be rejected.
5. It is the bidder's responsibility to visit the job site and evaluate the job before submitting a bid.
6. Job site must be clean and free of all litter and debris daily and upon completion of the contract. Passageways must be kept clean and free of material, equipment, and debris at all times. Flammable material must be removed from the job site daily because storage will not be permitted on the premises. Precaution must be exercised at all times to safeguard the welfare of JEFFERSON PARISH and the general public.
7. **PUBLIC WORKS BIDS:** All awards for public works in excess of \$5,000.00 will be reduced to a formal contract which shall be recorded at the contractor's expense with the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. A price list of recordation costs may be obtained from the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. All awards in excess of \$25,000.00 will require both a performance and a payment bond. Unless otherwise stated in the bid specifications, the performance bond requirements shall be 100% of the contract price. Unless otherwise state in the bid specifications, the payment bond requirements shall be 100% of the contract price. Both bonds shall be supplied at the signing of the contract.
8. **NON-PUBLIC WORKS BIDS:** A performance bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The performance bond shall be supplied at the signing of the contract.
9. **NON-PUBLIC WORKS BIDS:** A payment bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The payment bond shall be supplied at the signing of the contract.
10. All bidders must comply with the requirements stated in the attached "Standard Insurance Requirements" sheet attached to this bid solicitation. Failure to comply with this instruction will result in bid rejection.
11. A bid bond will be required with bid submission in the amount of 5% of the total bid, unless otherwise stated in the bid specifications. All sureties must be in original format (no copies) When submitting a bid online, vendors must submit an electronic bid bond through the respective online clearinghouse bond management system(s) as indicated in the electronic bid solicitation on Central Auction House. No scanned paper copies of any bid bond will be accepted as part of the electronic bid submission.
12. This is a requirements contract to be provided on an as needed basis. JEFFERSON PARISH makes no representations on warranties with regard to minimum guaranteed quantities unless otherwise stated in the bid specifications.
13. Freight charges should be included in total cost when quoting. If not quoted FOB DELIVERED, freight must be quoted as a separate item. Bid may be rejected if not quoted FOB DELIVERED or if freight charges are not indicated on bid form.
14. **PUBLIC WORKS BIDS - Completed, Signed and Properly Notarized Affidavits Required;** This applies to all solicitations for construction, alteration or demolition of public buildings or projects, in conformity with the provisions contained in LSA-RS 38:2212.9, LSA-RS 38:2212.10, LSA-RS 38:2224, and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Conviction Affidavit, Non-Collusion Affidavit, Campaign Contribution Affidavit, Debt Disclosures Affidavit and E-Verify Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

15. NON PUBLIC WORK BIDS - Completed, Signed and Properly Notarized Affidavits Required in conformity with the provisions contained in LSA – RS 38:2224 and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Collusion Affidavit, Debt Disclosures Affidavit and Campaign Contribution Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled NON PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

16. The ensuing contract for this bid solicitation may be eligible for FEMA reimbursement and/or Federal funding/reimbursement. As such, the referenced appendix will be applicable accordingly and shall be considered a part of the bid documents. All applicable certifications must be duly completed, signed and submitted with bid submission. Failure to submit applicable certifications with bid submission will result in bid rejection.

17. For this project, the Contractor shall not pay any state or local sales or use taxes on materials and equipment which are affixed and made part of the immovable property of the project or which is permanently incorporated in the project (hereinafter referred to as "applicable materials and equipment."). All purchases of applicable materials or equipment shall be made by the contractor on behalf of and as the agent of Jefferson Parish (Owner), a political subdivision of the State of Louisiana. No state and local sales and use taxes are owed on applicable materials and equipment under the provisions of Act 1029 of the 1991 Regular Session - Louisiana Revised Statute 47:301(8)(c). Owner will furnish to contractor a certificate form which certifies that Owner is not required to pay such state or local sales and use taxes, and contractor shall furnish a copy of such certificate to all vendors or suppliers of the applicable materials and equipment, and report to Owner the amount of taxes not incurred.

It shall be the duty of every parish officer, employee, department, agency, special district, board, and commission: and the duty of every contractor, subcontractor, and licensee of the parish, and the duty of every applicant for certification of eligibility for a parish contract or program, to cooperate with the Inspector General in any investigation, audit, inspection, performance review, or hearing pursuant to JPCO 2-155.10(19). By signing this document, every corporation, partnership, or person contracting with PARISH, whether by cooperative endeavor, intergovernmental agreement, bid, proposal, application or solicitation for a parish contract, and every application for certification of eligibility for a parish contract or program, attests that it understands and will abide by all provisions of JPCO 2-155.10.

DATE: 9/22/2021

Page: 6

BID NO.: 50-00135674

BID FORM
Non Public Works

All Public Work Projects are required to use the Louisiana Uniform Public Work Bid Form

All prices must be held firm unless an escalation provision is requested in this bid. Jefferson Parish will allow one escalation during the term of the contract, which may not exceed the U.S. Bureau of Labor Statistics National Index for all Urban Consumers, unadjusted 12 month figure. The most recently published figure issued at the time an adjustment is requested will be used. A request must be made in writing by the vendor, and the escalation will only be applied to purchases made after the request is made.

Are you requesting an escalation provision?

YES _____ NO X

MAXIMUM ESCALATION PERCENTAGE REQUESTED N/A %

INITIAL BID PRICES WILL REMAIN FIRM THROUGH THE DATE OF October 7, 2022

For the purposes of comparison of bids when an escalation provision is requested, Jefferson Parish will apply the maximum escalation percentage quoted by the bidder to the period to which it is applied in the bid. The initial price and the escalation will be used to calculate the total bid price. It will be assumed, for comparison of prices only, that an equal amount of material or labor is purchased each month throughout the entire contract.

DELIVERY: FOB JEFFERSON PARISH

INDICATE DELIVERY DATE ON EQUIPMENT AND SUPPLIES

330 Days

LOUISIANA CONTRACTOR'S LICENSE NO.: (if applicable)

N/A

THIS SECTION MUST BE COMPLETED BY BIDDER:

FIRM NAME: Associated Pump & Supply LLC

ADDRESS: 9074 Park Avenue

CITY, STATE: Houma, LA ZIP: 70363

TELEPHONE: (985)851-7077 FAX: (985)876-9854

EMAIL ADDRESS: office@associatedpump.com

In the event that addenda are issued with this bid, bidders MUST acknowledge all addenda on the bid form. Bidder must acknowledge receipt of an addendum on the bid form by placing the addendum number as indicated. Failure to acknowledge any addendum on the bid form will result in bid rejection.

Acknowledge Receipt of Addenda: NUMBER: 1

NUMBER: _____

NUMBER: _____

NUMBER: _____

TOTAL PRICE OF ALL BID ITEMS: \$ 2,925,750.00

AUTHORIZED SIGNATURE: Paul Klingman

Paul Klingman

TITLE: President

Printed Name

SIGNING INDICATES YOU HAVE READ AND COMPLY WITH THE INSTRUCTIONS AND CONDITIONS.

NOTE: All bids should be returned with the BID NUMBER and BID OPENING DATE indicated on the outside of the envelope submitted to the Purchasing Department.

DATE: 9/22/2021

INVITATION TO BID FROM JEFFERSON PARISH - continued

Page 7

BID NO.: 50-00135674

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
1	6.00	EA	<p>ONE TIME PURCHASE OF SIX (6) 48" PUMP PACKAGES MODEL HAC348 FOR THE BAYOU SEGNETTE PUMP STATION.</p> <p>0010 48" PUMP PACKAGE *PURCHASE OF ALL STATIONARY EMERGENCY STANDBY FLOOD CONTROL PUMPING EQUIPMENT FOR THE BAYOU SEGNETTE PUMP STATION</p> <p>DELIVER TO: AMES PUMP STATION 5100 ROCHESTER DR MARRERO, LA 70072</p> <p>*SPECS ATTACHED</p>	\$487,625.00	\$2,925,750.00

CORPORATE RESOLUTION

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF
Associated Pump & Supply LLC
INCORPORATED.

AT THE MEETING OF DIRECTORS OF Associated Pump & Supply LLC
INCORPORATED, DULY NOTICED AND HELD ON October 4, 2021,
A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT
WAS:

RESOLVED THAT Paul Klingman, BE AND IS HEREBY
APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-
FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON
BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS
AND TRANSACTIONS WITH THE PARISH OF JEFFERSON OR ANY OF ITS AGENCIES,
DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT LIMITED TO, THE
EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS, BONDS, SURETIES,
CONTRACTS AND ACTS AND TO RECEIVE ALL PURCHASE ORDERS AND NOTICES
ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID OR CONTRACT, THIS
CORPORATION HEREBY RATIFYING, APPROVING, CONFIRMING, AND ACCEPTING
EACH AND EVERY SUCH ACT PERFORMED BY SAID AGENT AND ATTORNEY-IN-
FACT.

I HEREBY CERTIFY THE FOREGOING TO BE
A TRUE AND CORRECT COPY OF AN
EXCERPT OF THE MINUTES OF THE ABOVE
DATED MEETING OF THE BOARD OF
DIRECTORS OF SAID CORPORATION, AND
THE SAME HAS NOT BEEN REVOKED OR
RESCINDED.



SECRETARY-TREASURER

October 4, 2021

DATE

Non-Public Works Bid Affidavit Instructions

- Affidavit is supplied as a courtesy to Affiants, but it is the responsibility of the affiant to insure the affidavit they submit to Jefferson Parish complies, in both form and content, with federal, state and parish laws.
- Affidavit must be signed by an authorized representative of the entity or the affidavit will not be accepted.
- Affidavit must be notarized or the affidavit will not be accepted.
- Notary must sign name, print name, and include bar/notary number, or the affidavit will not be accepted.
- Affiant **MUST** select either A or B when required or the affidavit will not be accepted.
- Affiants who select choice A must include an attachment or the affidavit will not be accepted.
- If both choice A and B are selected, the affidavit will not be accepted.
- Affidavit marked N/A will not be accepted.
- It is the responsibility of the Affiant to submit a new affidavit if any additional campaign contributions are made after the affidavit is executed but prior to the time the council acts on the matter.

Instruction sheet may be omitted when submitting the affidavit

Non-Public Works Bid

AFFIDAVIT

STATE OF Louisiana

PARISH/COUNTY OF Terrebonne

BEFORE ME, the undersigned authority, personally came and appeared: Paul
Klingman, (Affiant) who after being by me duly sworn, deposed and said that
he/she is the fully authorized President of Associated Pump & Supply LLC (Entity),
the party who submitted a bid in response to Bid Number 50-00135674, to the Parish of
Jefferson.

Affiant further said:

Campaign Contribution Disclosures

**(Choose A or B, if option A is indicated please include the required
attachment):**

Choice A Attached hereto is a list of all campaign contributions, including
the date and amount of each contribution, made to current or
former elected officials of the Parish of Jefferson by Entity,
Affiant, and/or officers, directors and owners, including
employees, owning 25% or more of the Entity during the two-year
period immediately preceding the date of this affidavit or the
current term of the elected official, whichever is greater. Further,
Entity, Affiant, and/or Entity Owners have not made any
contributions to or in support of current or former members of the
Jefferson Parish Council or the Jefferson Parish President through
or in the name of another person or legal entity, either directly or
indirectly.

Choice B X there are **NO** campaign contributions made which would require
disclosure under Choice A of this section.

Debt Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

Choice A Attached hereto is a list of all debts owed by the affiant to any elected or appointed official of the Parish of Jefferson, and any and all debts owed by any elected or appointed official of the Parish to the Affiant.

Choice B X There are **NO** debts which would require disclosure under Choice A of this section.

Affiant further said:

That Affiant has employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course of their duties for Affiant; and

[The remainder of this page is intentionally left blank.]

That no part of the contract price received by Affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for Affiant.



Signature of Affiant

Paul Klingman

Printed Name of Affiant

SWORN AND SUBSCRIBED TO BEFORE ME

ON THE 6th DAY OF October 2021



Notary Public

Thelma G Babin #9128

Printed Name of Notary

#9128

Notary/Bar Roll Number

My commission expires Lifetime!



JEFFERSON PARISH

DEPARTMENT OF PURCHASING

CYNTHIA LEE SHENG
PARISH PRESIDENT

RENNY SIMNO
DIRECTOR

September 2020

Changes to Jefferson Parish Bidding Information

The Jefferson Parish Purchasing Department would like to make vendors aware of the following changes:

Total Bid Price Must Include the Cost of Naming Jefferson Parish as Additional Insured:

Bidder acknowledges that Bidder recovered the cost of any required insurance in the contract price as required by La.R.S. 9:2780.1 and that Bidder recovered any such cost for the purposes of insuring an obligation to indemnify Jefferson Parish, defend Jefferson Parish, or hold Jefferson Parish harmless and that Bidder's indemnity liability is limited to the amount of the proceeds that are payable under the insurance policy or policies that Bidder has obtained.

Electronic Procurement: Beginning November 1, 2020, Jefferson Parish will no longer accept manual bid submissions; and will only accept bid submissions electronically via our e-Procurement system, Central Bidding. Central Bidding can be accessed by visiting either www.centralbidding.com or www.jeffparishbids.net. All bidders will be required to register with Central Bidding. Jefferson Parish vendors are able to register for free by accessing the following link:
<https://www.centrauctionhouse.com/registration.php>.

Probable Construction Cost: Per Jefferson Parish Administrative Policy, the probable construction cost is not revealed in the Jefferson Parish Bidding Documents. Jefferson Parish Administrative Policy has changed and a range of the probable construction cost will be stated in the Jefferson Parish bidding document, entitled Important Notice to All Bidders – Bid Requirements. Per Louisiana Public Bid Law, the probable construction cost will be read at the bid opening.

Insurance Requirement: All bidders must provide proof of valid insurance in the required amounts as stated in the Standard Insurance Requirements for bidding purposes. Failure to provide the proof of valid insurance in all of the required coverage amounts will result in bid rejection.

GENERAL GOVERNMENT BLDG. – 200 DERBIGNY ST., SUITE 4400, GRETNA, LA 70053
OFFICE 504.364.2678

JOSEPH S. YENNI BLDG. – 1221 ELMWOOD PARK BLVD., SUITE 404, JEFFERSON, LA 70123
OFFICE 504.364.2678
EMAIL: PURCHASING@JEFFPARISH.NET WEBSITE: WWW.JEFFPARISH.NET



JEFFERSON PARISH

DEPARTMENT OF PURCHASING

CYNTHIA LEE SHENG
PARISH PRESIDENT

RENNY SIMNO
DIRECTOR

October 1, 2021

ADDENDUM # 1

Bid Number: 50-00135674

Bid Opening Date: October 7, 2021

Description of Bid: One time purchase of six (6) 48" pump packages model HAC348 for the Bayou Segnette Pump Station.

CLARRIFICATIONS:

QUESTION: My Lead Time on the diesel engines is 300 – 330 Day Delivery. On specifications you all are asking for 210 Day Delivery. Will You all be ok with the 300 – 330 Day Delivery on diesel engines?

Answer: See changes to specifications below.

QUESTION: On Spare Parts you ask for the following "C. The vendor shall furnish eight (6) 55-gallon drum of required hydraulic fluid for the package units" what amount is it 6 or 8?

Answer: See changes to specifications below.

CHANGES TO CONTRACT SPECIFICATIONS:

DELETE last sentence in section 1.2 in its entirety and REPLACE with the following:

Total delivery time starting from the date vendor receives the purchase shall not exceed 330 calendar days.

DELETE section A in 2.7 in its entirety and REPLACE with the following:

Diesel engines shall be Caterpillar C18 or equal, 575 hp at 1800 rpm continuous duty rating. The units shall be fully equipped with radiator, 24 volt starting system, batteries and cable, engine safety shutdown switches (to include but not limited to: low oil pressure, high temperature, low oil level, high amps, etc.) and exhaust system with residential type or sound attenuating system. All engines shall come with 24-volt starters and block heaters.

DELETE section B in 2.12 in its entirety and REPLACE with the following:

The vendor shall furnish six (6) spare 55-gallon drums of required hydraulic fluid for the package units.

ADD the following to section 2.12 Spare Parts

H. The Vendor shall furnish two spare sets of radiator fan belts for all units.

I. The Vendor shall furnish one spare engine controller

GENERAL GOVERNMENT BLDG. – 200 DERBIGNY ST., SUITE 4400, GRETNA, LA 70053
OFFICE 504.364.2678

JOSEPH S. YENNI BLDG. – 1221 ELMWOOD PARK BLVD., SUITE 404, JEFFERSON, LA 70123
OFFICE 504.364.2678
EMAIL: PURCHASING@JEFFPARISH.NET WEBSITE: WWW.JEFFPARISH.NET

Sincerely,

Donna Reamey

Donna Reamey
Buyer II

Bidders must acknowledge all addenda on the bid form. Bidder acknowledges receipt of this addendum on the bid form by indicating the addendum number listed above. Failure to list each addenda number on the bid form will result in bid rejection.

This addendum is a part of the contract documents and modifies the original bidding documents and specifications. The contents of this addendum shall be included in the contract documents. Changes made by this addendum shall take precedence over the documents of earlier date.

GENERAL GOVERNMENT BLDG. — 200 DERBIGNY ST., SUITE 4400, GRETN, LA 70053
OFFICE 504.364.2678

JOSEPH S. YENNI BLDG. — 1221 ELMWOOD PARK BLVD., SUITE 404, JEFFERSON, LA 70123
OFFICE 504.364.2678
EMAIL: PURCHASING@JEFFPARISH.NET WEBSITE: WWW.JEFFPARISH.NET

State of
Louisiana
Secretary of
State



COMMERCIAL DIVISION
225.925.4704

Fax Numbers
225.932.5317 (Admin. Services)
225.932.5314 (Corporations)
225.932.5318 (UCC)

Name	Type	City	Status
ASSOCIATED PUMP & SUPPLY, LLC	Limited Liability Company	HOUMA	Active

Previous Names

ASSOCIATED PUMP & SUPPLY, INC. (Changed: 12/15/2011)

Business: ASSOCIATED PUMP & SUPPLY, LLC

Charter Number: 34346784K

Registration Date: 1/2/1990

Domicile Address

9074 PARK AVENUE

HOUMA, LA 70363

Mailing Address

9074 PARK AVENUE

HOUMA, LA 70363

Status

Status: Active

Annual Report Status: In Good Standing

File Date: 1/2/1990

Last Report Filed: 12/9/2020

Type: Limited Liability Company

Registered Agent(s)

Agent: LOUIS KLINGMAN
Address 1: 201 GLENHILL DRIVE
City, State, Zip: HOUMA, LA 70363
Appointment Date: 1/2/1990

Officer(s)

Additional Officers: No

Officer: LOUIS KLINGMAN
Title: Manager
Address 1: 201 GLENHILL DRIVE
City, State, Zip: HOUMA, LA 70363

Officer: PAUL KLINGMAN
Title: Manager
Address 1: 211 BELLINGRATH DRIVE
City, State, Zip: HOUMA, LA 70360

Amendments on File (3)

Description	Date
Conversion	12/15/2011
Name Change	12/15/2011
Appointing, Change, or Resign of Officer	12/9/2020

Print

Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

► Go to www.irs.gov/FormW9 for instructions and the latest information.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

Associated Pump & Supply LLC

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☒ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► **S**

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ►

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

9074 Park Ave

6 City, state, and ZIP code

Houma, LA 70363

7 List account number(s) here (optional)

Requester's name and address (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			-			-				
--	--	--	---	--	--	---	--	--	--	--

or

Employer identification number

7	2	-	1	1	6	1	3	4	8
---	---	---	---	---	---	---	---	---	---

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign
Here

Signature of
U.S. person ►

Paul Wingman

Date ►

10-6-2021

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.



9074 Park Avenue - Houma, LA 70363
P: 985-851-7077
F: 985-876-9854
office@associatedpump.com

**Terrebonne Parish / Similar Installations
Valhi Pump Station Diesel & Electric Driven
February 2019**

**Terrebonne Parish Consolidated Government (Forced Drainage)
Attn: David Rome – Public Works
206 Government Street
Gray, LA 70659
PH: 985-873-6735**

1. **MWI Model # HAC330**
Pump S/N: 14172 / Drive Unit S/N: 14173
2. **MWI Model # HAC312**
Pump S/N: 12258 / Drive Unit S/N: 14176
3. **MWI Model # HAC312**
Pump S/N: 12259 / Drive Unit: 14177
4. **MWI Model # HAC330**
Pump S/N: 14178 / Drive Unit: 14179



ASSOCIATED
PUMP & SUPPLY LLC
SALES - RENTAL - 24 HOUR SERVICE

9074 Park Avenue · Houma, LA 70363
P: 985-851-7077
F: 985-876-9854
office@associatedpump.com

Terrebonne Parish / Similar Installations
Valhi Pump Station Diesel & Electric Driven

February 2019

1. **MWI Model # HAC330**
Pump S/N: 14172 / Drive Unit S/N: 14173
2. **MWI Model # HAC312**
Pump S/N: 12258 / Drive Unit S/N: 14176
3. **MWI Model # HAC312**
Pump S/N: 12259 / Drive Unit: 14177
4. **MWI Model # HAC330**
Pump S/N: 14178 / Drive Unit: 14179

MWI CORPORATION
ESTABLISHED 1926

**INSTALLATION, OPERATION,
AND MAINTENANCE MANUAL**



PROJECT:
MANSON DITCH DRAINAGE PUMP STATION
HAC330 / SKID DRIVE UNIT

DATE: JULY 2021

[Signature]
7-12-21

SECTION 1 – INTRODUCTION

1.1 Introduction

The purpose of this manual is to describe the installation, operation, and maintenance of MWI Hydraflo equipment. These instructions should be read and understood before proceeding with any of the procedures outlined.

If you require additional information or are in need of assistance please contact MWI.

MWI has experienced factory trained personnel who are available to offer prompt and efficient equipment service for a reasonable charge if requested. You may call, email, write, or fax us via contact information below.

MWI Corporation
33 N.W. 2nd Street
Deerfield Beach, Florida 33441

Phone (954) 426-1505
Fax (954) 426-1582

www.mwicorp.com

MWI pumps and/or drive units can be identified by Serial Number and Model. This information is located on the equipment nameplate; refer to section 1.6 for the equipment nameplate information.

The equipment history is maintained under the unit serial number; therefore, it is critical to provide the equipment serial number with all correspondence.

1.2 Hydraflo System – Open Loop

Refer to enclosed hydraulic circuit schematic along with the following explanation on the principles of operation. The prime mover drives an open loop hydraulic circuit to operate the water pump. Hydraulic oil exits the reservoir bottom through the suction strainer to the hydraulic pump inlet. The hydraulic pump supplies the oil to the hydraulic motor, which is directly coupled to the propeller shaft, therefore driving the water pump. The system is protected from over pressure with a pilot operated relief valve. The relief valve maximum pressure level is preset at the factory to safeguard the accessories and components of the hydraulic circuit. Only factory personnel or the product representative should make adjustments to the valve maximum pressure setting.

In the event that the water pump impeller is stalled (ex. jammed with debris), the hydraulic system pressure will quickly increase until the preset maximum of the relief valve is reached. At this point the relief valve will open and divert all the oil flow through the by-pass system back to the tank. This "by-pass" flow can be verified by viewing through the bypass flow sight indicator. The system will remain at maximum pressure. As oil flow is relieved at maximum pressure the oil temperature will rise to the maximum temperature and the temperature gauge will then shut down the prime mover. The hydraulic system is fitted with a suction strainer and a return filter to insure a supply of clean oil.

This application utilizes an electric motor as the prime mover with a diesel engine back-up; in the event of a power failure during operation the diesel engine will start automatically. When power is restored the diesel engine will enter a shut-down routine (electronic engines only); after the diesel stops the electric motor will automatically restart. The pump control panel will be powered by battery back-up.

Variable Displacement Control

This application uses a variable displacement hydraulic pump. Variable hydraulic oil flow rate from the hydraulic pump to the hydraulic motor results in water speed changes. A fixed displacement pump is directly coupled to the rear of the variable displacement pump which provides servo pressure to command the variable displacement pump to adjust stroke. The variable displacement hydraulic pump is outfitted with "Electronic Proportional Displacement Control"; an electrical signal controls the amount of stroke. For this application the electrical signal is generated by a 4-20mA signal from the level transducer. **Servo line maximum pressure and maximum stroke have been factory set and may not be altered.**

1.3 Safety Precautions

Tools and related machinery used for installing, removing, and maintaining Hydraflo pump equipment can cause personal injury; especially if they are carelessly handled. Extreme caution should be taken when operating or servicing this equipment.

SAFETY IS EVERYBODY'S BUSINESS MAKE IT YOURS

1. Read all safety messages in this manual and observe all warning decals on equipment; replace missing or damaged safety decals.
2. Learn how to safely operate equipment; do not let anyone operate equipment without proper instruction.
3. Be aware of your environment; observe all appropriate safety precautions when working around fall hazards, water, or hot surfaces.
4. Be prepared for emergencies; keep first aid kit and fire extinguisher in close proximity. Post emergency contact numbers.
5. Observe all appropriate safety precautions when working with lifting devices. Never work below suspended loads. Use equipment appropriate for the load being lifted.
6. Handle fluids, lubricants, chemicals, and greases properly; store flammable fluids away from fire hazards. Refer to Material Safety Data Sheets (MSDS) to assess risks, safety procedures, and emergency response techniques.
7. Stay clear of rotating equipment; repair or replace damaged or missing protective guards.
8. Wear close fitting clothing and safety equipment appropriate for the task; including safety glasses, protective foot wear, hearing protection, harnesses, etc.
9. Work in ventilated areas.
10. Avoid high pressure fluids; relieve pressure before removing hydraulic lines and fittings. Escaping fluid under pressure can penetrate the skin causing serious injury.
11. Hazardous energy must be controlled in accordance with government and/or municipal regulatory guidance for your geographical area as well as the use of personal protective equipment.
12. Follow lock-out / tag-out procedures to avoid accidents.
13. Dispose of hazardous materials and waste properly; inquire with local environmental or recycling center for proper disposal methods.

1.5 Warranty

Refer to enclosed warranty certificate. MWI Corporation will assume no responsibility and will take no action to repair or replace any part or reimburse for any part:

1. When hydraulic oil of a type and/or viscosity are different than recommended by MWI is used in the hydraulic drive unit.
2. When physical damage is found to be the source of the problem.
3. When reasonable periodic maintenance is not performed (filters).
4. When the relief valve setting has been adjusted by non-authorized personnel.
5. When the incorrect return filter element(s) and/or suction strainer are used.
6. When hydraulic system failure shutdowns are bypassed or the switch gauge settings have been adjusted by non-authorized personnel.
7. When the hydraulic hose assemblies between the water pump and drive unit are improperly connected, pinched, or the quick disconnects are not fully seated.
8. When any mechanical linkages or moving parts are restricted, purposely jammed, rigged, etc.
9. When a corrosive material/liquid has been pumped.

SECTION 2 – STORAGE

2.1 Storage of Equipment

Equipment Stored Less Than One Month

Normally there is no need to do anything if the equipment will be stored less than one month. If the equipment will be subject to high humidity or airborne gases that may be corrosive then consult your lubrication specialist to determine the proper preservatives to apply.

Equipment Stored More Than One Month

Equipment stored for a period greater than one month must be stored properly to preserve and protect all exposed components. The following general procedures should be followed when storing the equipment. Additional procedures for properly storing the electric motors and/or diesel engines should be obtained from the respective manufacturer's manuals.

1. The storage area must be level and not subject to flooding.
2. All unpainted surfaces should be coated with a rust preventative.
3. Inspect equipment periodically to determine if additional rust preventive is required.

NOTE: Stainless steel components do not require painting or rust preventatives.

Extended Storage

Please contact MWI Corporation for storage recommendations if the equipment will be stored for more than six months.

SECTION 3 - INSTALLATION

3.1 Standard Installation

Generally the water pump is shipped without discharge accessories or hydraulic oil hoses attached. This operation must be performed at installation.

Attach required discharge hose/pipe to water pump; flange connections should have a gasket or alternate sealant between the faces to minimize leakage.

Unroll the hydraulic oil hoses; there should be no kinks in the hose. To connect the hydraulic oil lines to the pump and drive unit, follow these steps.

- Step 1. Wipe hose connections with lint-free cloth before connecting the quick disconnects, verify there is no debris on either of the quick disconnect faces or threads.
- Step 2. Connect return (low-pressure) hose to the matching fitting on the water pump.
- Step 3. Connect return (low-pressure) hose to the matching fitting on the drive unit.
- Step 4. Connect supply (high-pressure) hose to the matching fitting on the water pump.
- Step 5. Connect supply (high-pressure) hose to the matching fitting on the drive unit.
- Step 6. Connect case drain (low pressure) hose to the matching fitting on the water pump.
- Step 7. Connect case drain (low pressure) hose to the matching fitting on the drive unit.

On units with the same size hose, fittings are reversed or ends are color-coded for correct orientation. Tighten by hand until fittings seat. Additional force may be required to seat the connection; an adjustable wrench applied to the ear of the fitting will give the additional force needed.

Lift water pump into sump.

CAUTION:

- Do not lift the water pump by the hydraulic plumbing rigid pipe and/or hydraulic hose and do not lift by the oil cooler if present.
- Verify there is an adequate foundation for the water pump; if the water pump is not supported or if the foundation is inadequate the water pump may settle in silt during operation.

Set the drive unit as close as possible to the pump but far enough away from embankments to cave-in. The drive unit foundation should be level and readily accessible to a fuel or service support vehicle.

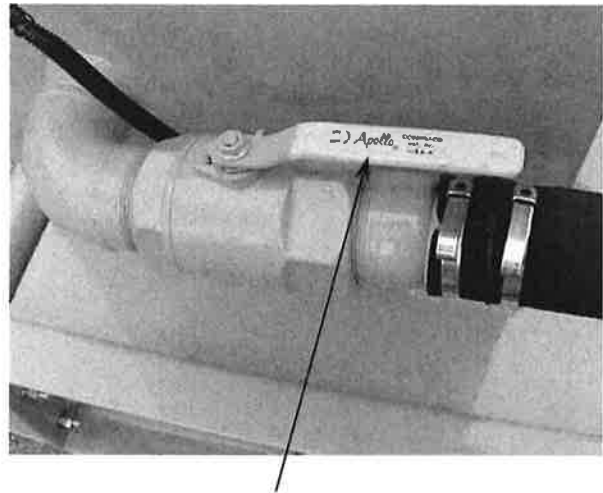
SECTION 4 – OPERATION

4.1 Prestart Check List

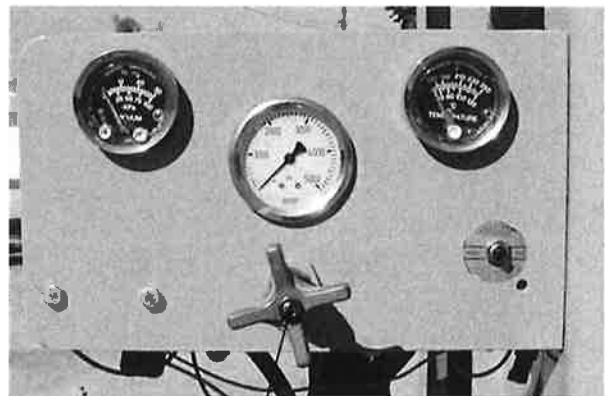
1. Perform visual check of all equipment for obvious signs of damage, loose equipment, leaks, and repair as required.
2. Verify that all rotating element protective guards are securely installed and do not make physical contact with each other.
3. Verify that the suction line ball valve is open.
4. Verify that the hydraulic system loading valve is open.
5. Verify that all hydraulic quick disconnects are fully seated.
6. Check the diesel engine oil and coolant fluid levels (if applicable).
7. On electric powered units verify rotation.
8. Verify proper oil level in the hydraulic oil reservoir.
9. Verify sufficient water levels in the sump and sump is free of debris.
10. Most applications require filling the hydraulic lines between the water pump and drive unit on **INITIAL START-UP ONLY**. Filling the lines will result in the hydraulic oil level in the reservoir dropping which may cause an automatic shutdown. If this occurs fill the reservoir within 4" of the top of the reservoir and restart the prime mover. Repeat until the hydraulic oil level in the reservoir stabilizes. Once the level stabilizes fill the reservoir within 4" of the top of the reservoir. Refer to hydraulic oil specification included with this manual.

!! IMPORTANT NOTE !!

Verify Ball Valve In Hydraulic Pump
Suction Line Is OPEN



Valve Shown In OPEN Position
Handle Parallel To Flow Direction

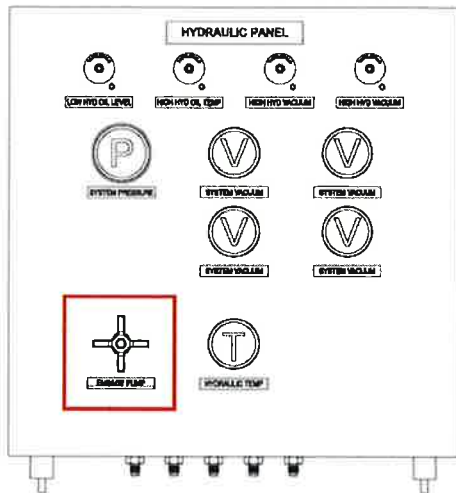


Hydraulic System Loading Valve

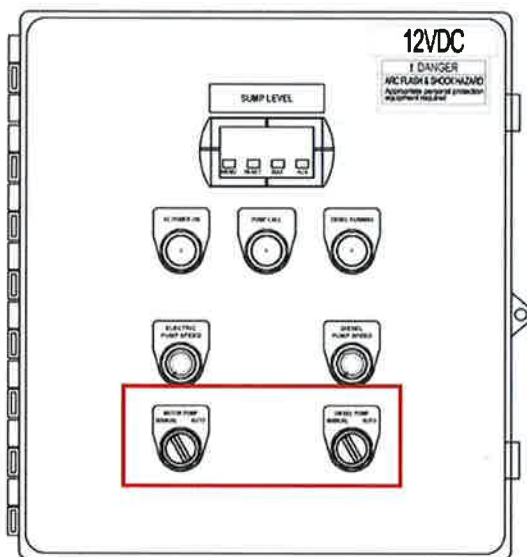
4.2.1 Manual Operation

MANUAL START:

Step 1. Open loading valve by turning counterclockwise one-half turn.



Step 2. Switch "MOTOR PUMP" and "DIESEL PUMP" to "MANUAL".

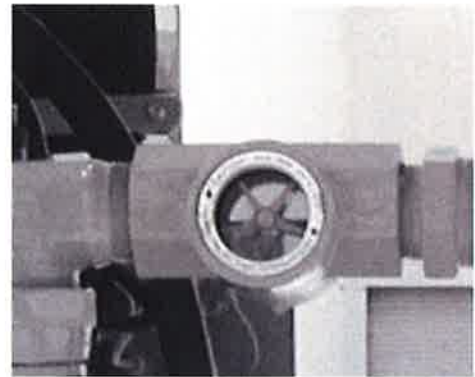


Step 3. Energize the electric motor or start the diesel engine. Allow engine to warm-up at idle speed before increasing engine speed to 1800rpm.

Step 4. Slowly close loading valve to engage hydraulic oil flow to the water pump, water pump will begin to pump water and hydraulic system pressure will increase.

NOTE: there is an accumulator located in the hydraulic control panel to dampen hydraulic system engagement; it may take up to 2 minutes for the hydraulic system to fully engage.

Step 5. Observe sight glass to verify system not bypassing.

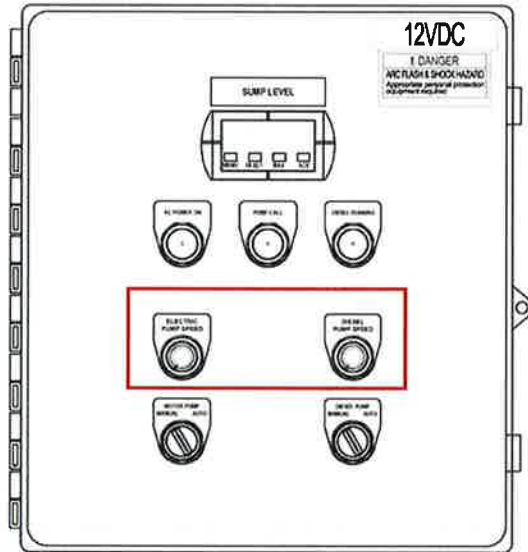


Relief Bypass Indicator

Possible root causes for hydraulic pressure exceeding relief valve bypass setting:

- Impeller jammed with debris preventing rotation
- Excessive water pump load (flow / head)
- Hydraulic line pinched or obstructed
- Hydraulic quick disconnect not fully seated

- Step 6. Adjust water pump speed by adjusting variable displacement hydraulic pump stroke via the “ELECTRIC PUMP SPEED” or “DIESEL PUMP SPEED” knobs. Rotate knob **CCW** to reduce stroke/speed and rotate knob **CW** to increase stroke/speed.



MANUAL STOP:

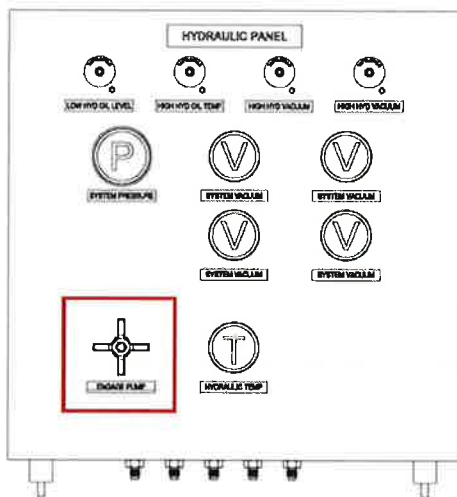
- Step 1. Decrease water pump speed by rotating “ELECTRIC PUMP SPEED” or “DIESEL PUMP SPEED” knob fully **CCW**.
- Step 2. Open loading valve one-half turn.
- Step 3. If the diesel is in operation decrease engine speed to idle. Allow the engine to idle and cool-down for a minimum of 5 minutes.
- Step 4. De-energize the electric motor or stop the diesel engine.

4.2.3 Automatic Operation Supplement

AUTOMATIC OPERATION:

This application allows the water pumps and drive units to start automatically. A 4-20mA input signal allows the units to start, stop, and adjust water pump speed based on water levels programmed into the PD6000 pump control panel. Observe the following for proper automatic operation:

- Hydraulic system loading valve must be CLOSED 100%.

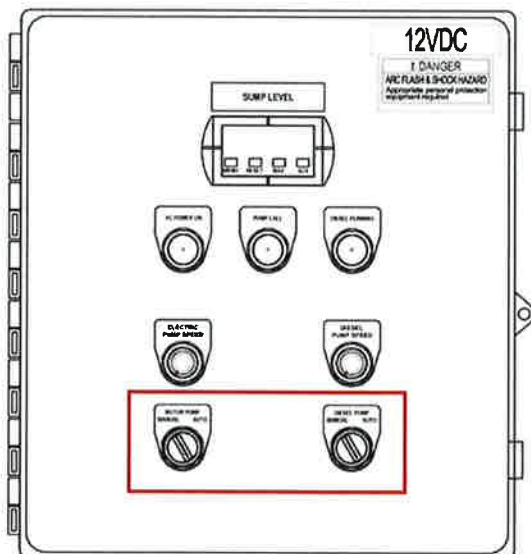


- When the switches are set to "AUTO" the speed/stroke control knob(s) have no function.

When water levels reach the programmed start elevation the electric motor will start automatically. Hydraulic pump stroke will be controlled automatically based on the 4-20mA input signal.

If a power failure occurs the diesel engine will start automatically, when power is restored the diesel engine will stop automatically and the electric motor will re-start automatically.

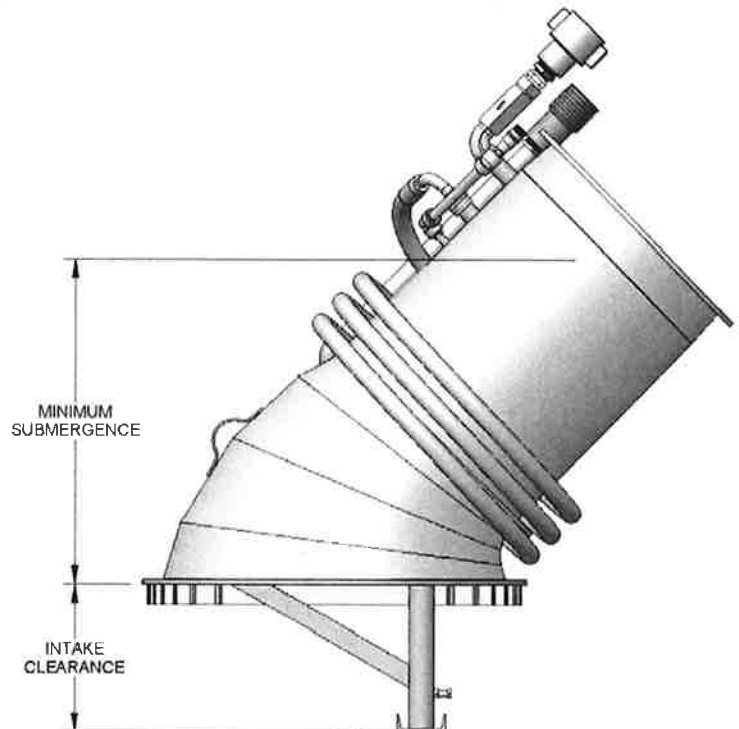
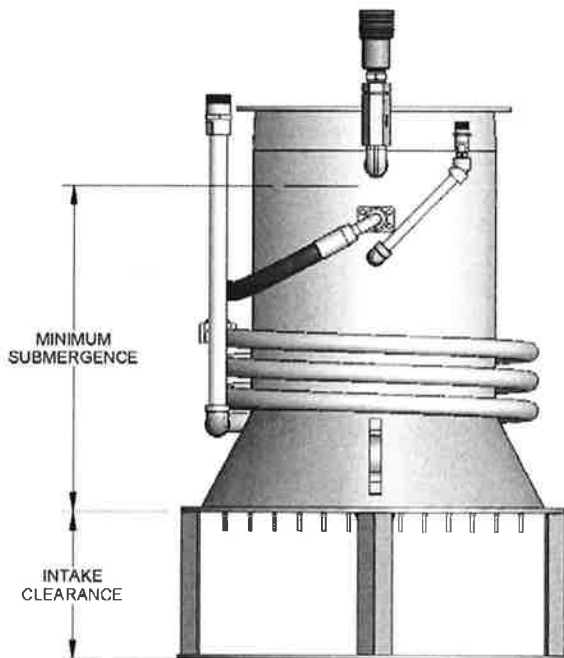
- Switch "MOTOR PUMP" and "DIESEL PUMP" to "AUTO"



4.3 Unit Operation With Water Levels Below Minimum Submergence

Minimum submergence for is measured from the surface of the intake bell inlet flange to water level datum; refer to section 1.6 for minimum submergence for this application. The water level may be dropped below the recommended minimum submergence at the discretion of the operator; the water level may be reduced as low as the intake bell inlet flange for intermittent periods. The operator should take site conditions into account and make adjustments based upon water pump and drive unit performance observation. Ultimately the choice of to how low of a water level to pump to and at what speed is up to the discretion of the operator with the understanding that:

- When the submergence is reduced undesirable phenomena may develop depending on the amount that the water level is brought below the design value; these may include vortexing, gulping air, loss of efficiency, cavitation, running hot, vibration, and surging.
- Continuous operation under these adverse conditions may void the warranty.
- Adverse effects can be reduced by reducing the pump speed.
- As long as these items are not violent and/or don't occur for excessive periods of time by operating such conditions then effects on the pump(s) may be minimized.
- If water level is below the suction bell inlet flange then suction will attempt to break and some surging will occur as water just past the pump will backflow and then be "repumped"; if the unit is shut down at this time then restarting will not be possible until the water level rises.



SECTION 5 – MAINTENANCE

5.1 Water Pump Inspection – AXIAL FLOW

The schedule for pump maintenance shall depend upon the operating conditions, which can vary widely. These recommendations for a schedule of preventive maintenance apply in general for all water pumps. Regular inspections should be made on all mechanical equipment, it is suggested that a record be kept of periodic inspections and maintenance on each water pump. This recognition of proper maintenance procedures is the best insurance against costly break down and down time.

By making regular, thorough inspections and performing the appropriate repair or maintenance required, the original design flow conditions of the pump can be maintained. If a factory authorized facility carries out maintenance service, re-certification of the pump's operating characteristics can be provided - consult factory for details.

The major inspection of the pump shall be carried out at the factory or by a factory authorized to do so. It is suggested that each pump is inspected after accumulating **3000** operating hours, or when the pump exhibits characteristics different from the established norm. This may include, but no limited to, excessive vibration, noise, or reduced water flow rate.

If the pump inspection reveals wear or damage, it is suggested that the other pumps be subjected to the same inspection and be repaired accordingly.

Major inspection will require dismantling of the pump; several options are available to the customer to carry out this inspection. The pump may be returned to the factory for this service, or the owner may choose to perform this task himself.

This inspection should include, at minimum, the following:

1. Visually inspect all hydraulic hoses and rigid plumbing for cuts, abrasions, cracks, or swelling. Replace defective items with a reputable hydraulic hose manufacturer having an equivalent pressure rating.
2. Check each component of the pump assembly for corrosion, deposits, scaling, or damage to the protective coating. All deposits or scaling should be removed and the damaged coating should be repaired before reassembling the pump.
3. Unbolt the intake bell from the propeller bowl assembly (lower venturi) and visually inspect the propeller. Measure the clearance between the propeller and the wear liner and compare measurement to maximum design clearance values in table below. Areas of excessive wear or material erosion on the propeller blades and /or the wear ring indicates that the component will need to be repaired or replaced as required.

Impeller Diameter [Nominal]	Maximum Design Tip Clearance
12" / 305mm	.038" / 0.97mm
16" / 406mm	.050" / 1.27mm
18" / 457mm	.056" / 1.42mm
20" / 508mm	.063" / 1.60mm
24" / 610mm	.075" / 1.91mm
30" / 762mm	.094" / 2.39mm
36" / 914mm	.113" / 2.87mm
42" / 1067mm	.131" / 3.33mm
48" / 1219mm	.150" / 3.81mm
54" / 1372mm	.169" / 4.29mm
60" / 1524mm	.188" / 4.78mm

5.2 Mechanical Seal Inspection / Replacement

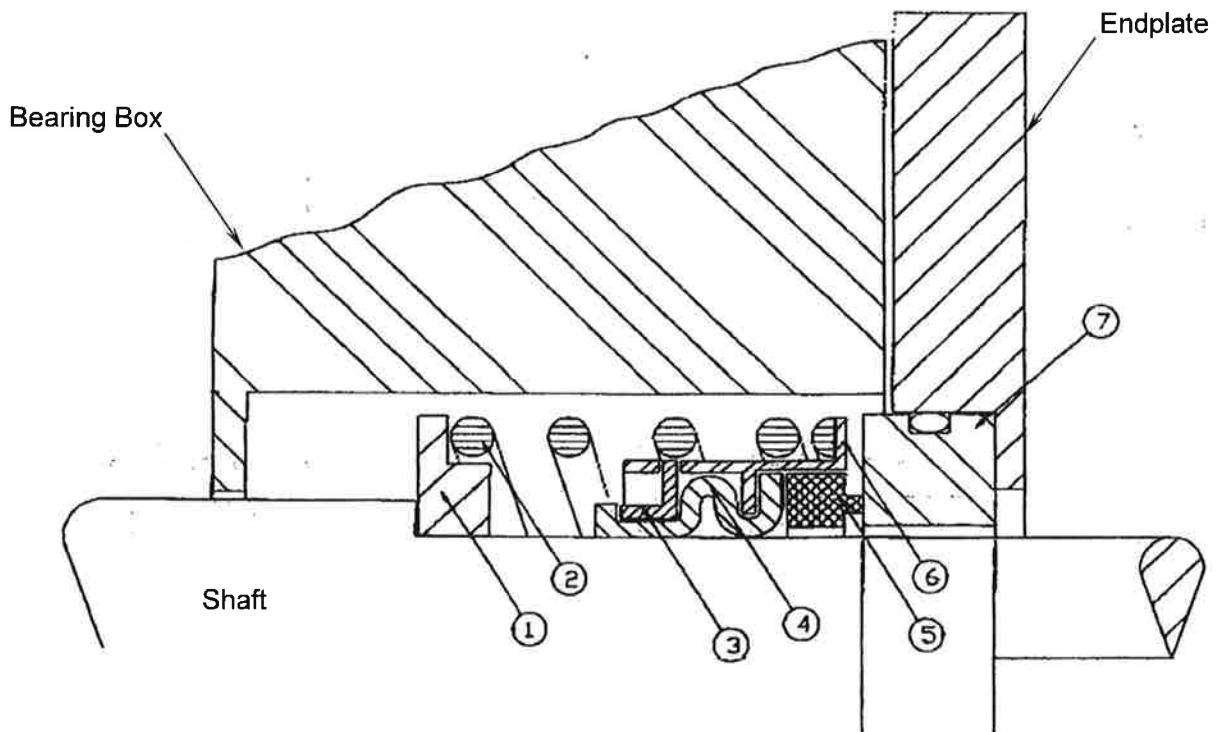
Loosen the propeller nut but do not remove; there are tapped holes in the propeller hub face to anchor a prop-puller or insert jack bolts. The propeller has a taper fit on the shaft; do not remove the propeller nut completely from the shaft until the propeller becomes unseated from the shaft.

Remove the socket head cap screws fastening end plate to the bearing box; the mechanical seal spring will create force to separate the endplate and bearing box sealing faces. The mechanical seal stationary seat is located in the bearing side of the endplate and a sacrificial lip seal is located in the propeller side of the endplate. MWI recommends replacing the lip seal and the o-ring sealing the endplate and bearing box faces during each mechanical seal inspection.

Remove the rotating mechanical seal head assembly from the pump shaft, take precautions not to scratch the shaft. Remove the mechanical seal stationary seat and sacrificial lip seal from the endplate. Carefully inspect the mechanical seal sealing faces for scratches or cracks and inspect all elastomers for cuts. Note how the mechanical seal assembly is configured, the replacement seal must be configured in an identical manner.

Mechanical Seal Component Identification:

1. Spring Holder
2. Spring
3. Drive Band
4. Bellows
5. Rotating Face
6. Retainer
7. Stationary Face



Execute the following checks prior to mechanical seal installation:

1. The shaft has been cleaned and inspected for nicks, burrs, sharp edges, or scratches which may tear the mechanical seal bellows or affect bellows seal performance.
2. The stationary face counterbore in the endplate is free of debris, sharp edges, or scratches that will prevent the stationary face from seating squarely, damage the radial sealing o-ring, or affect o-ring seal performance.
3. The mating faces between the endplate and bearing box is free from debris
4. Remove protective packaging from all components and inspect components for damage.
5. Vendor supplied lubricant is available.

Stationary Face Installation

Apply vendor supply lubricant sparingly to the radial o-ring and the endplate counterbore. Press stationary face firmly into endplate counterbore observing the following:

1. Verify radial o-ring is not pinched or is dislodged from the groove
2. The seal face may not be flush with the counterbore when it is fully seated
3. Clean the stationary seal face with a clean lint free cloth.

Rotating Face Installation

Apply vendor supply lubricant to the shaft and the portion of the bellows that is in contact with the shaft. Slide the rotating face assembly onto the shaft; apply firm, steady pressure to the tail end of the bellows to slide the assembly along the shaft until the spring holder makes contact with the existing bearing retainer ring in the shaft. Do not press directly on the seal face and do not compress the spring. Clean the seal face with a clean lint free cloth.

Final Assembly

Reinstall the endplate with stationary face installed observing the following:

1. Apply grease sparingly to secure the endplate to bearing box o-ring, do not use silicone; if silicone makes contact with the seal faces there is a high risk of seal failure and catastrophic damage to the faces.
2. Install the endplate square; the seal spring will compress as the endplate is installed and will cause resistance.
3. Install replacement sacrificial lip seal in endplate.

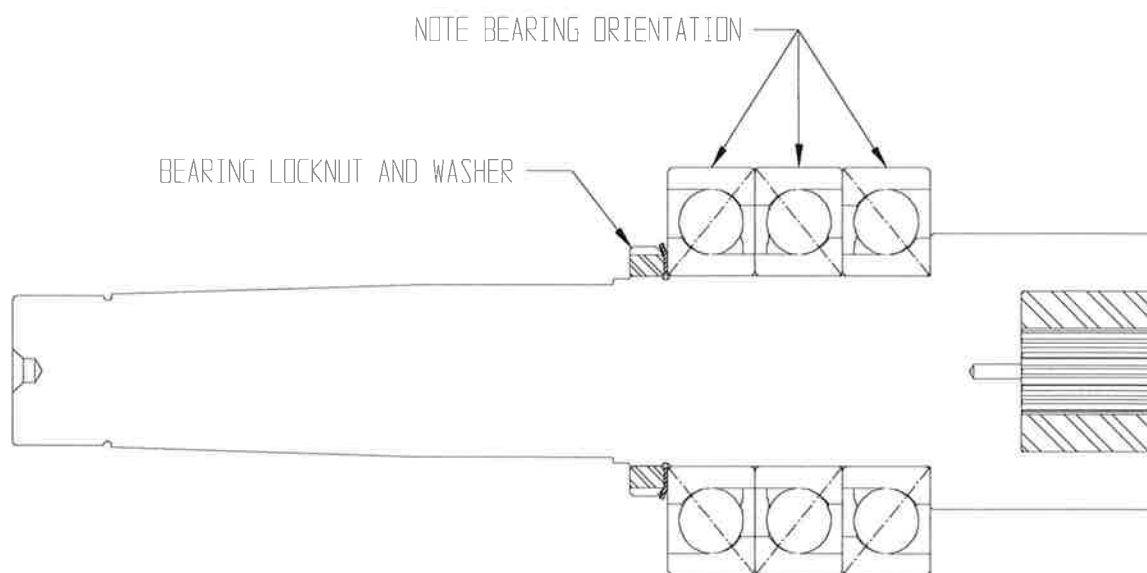
5.3 Bearing Inspection / Replacement

Remove the propeller and mechanical seal as outlined in sections 5.1 and 5.2 respectively. Separate the water pump from the discharge pipe. The following procedure outlines shaft removal:

1. Remove the 4-bolt flanges and related hydraulic plumbing at the hydraulic motor ports.
2. Remove the fasteners securing the hydraulic motor to the bearing box.
3. Remove the internal retaining ring securing the bearings in the bearing box.
4. Press out the bearing/shaft assembly towards the discharge side. Inspect the bearings for wear or damage. A worn or damaged bearing should be replaced and the cause determined. If bearing removal becomes necessary due to malfunction, the old bearings are to be discarded and replaced with new bearings of equivalent design and load ratings.
5. Remove the bearing lock-nut and washer. The inner race of the bearing is press-fit on the shaft; therefore, to remove the bearing, the inner race must be uniformly heated causing it to expand and then tapped or pressed off with the appropriate equipment.
6. Cleanliness and careful handling are extremely important when mounting ball bearings. Prior to mounting, all related parts should be cleaned and all burrs removed. The mounting should be accomplished in a dust free environment to avoid contamination. Bearing mounting is exactly the reverse of removal. Extreme care should be exercised while mounting the bearing on the shaft to ensure that neither the shaft nor the bearings will suffer any damage.
7. Heating the bearing inner race and dropping the bearing onto the shaft is the preferred method of installation.

Caution - Do not overheat

To achieve correct performance, the bearings must be mounted as illustrated below.



8. Install the bearing lock washer and bearing lock nut; tighten the nut until the bearing outer races are firmly locked together.
9. Water pump assembly is the reverse of disassembly. MWI recommends replacing all sealing o-rings before reassembly. Note that the outer race of the bearings are light interference fit into the bearing housing and should never be excessively forced/pressed when installing the bearing/shaft assembly; contact MWI if difficulties occur during shaft installation. Reference enclosed torque specifications for the fasteners and 4-bolt flange fasteners when reassembling the water pump.

5.4 Filtration

Hydraulic system contamination accounts for the largest portion of repair cost and equipment downtime. The oil in the hydraulic system must be kept clean. Keeping the oil clean does not require much effort on the part of the operator or maintenance personnel. There are several steps you can take to maintain a clean hydraulic system.

- Make personnel in charge of your new hydraulic drive unit aware of the importance of a clean hydraulic system.
- Use oil recommended by the factory and purchased from a reputable dealer.
- Check filters regularly and replace when needed. Keep a record of filter changes.
- Use a clean lint free cloth to wipe away dirt from hydraulic hose quick disconnects.
- Any equipment used to make the transfer of oil from a barrel to reservoir, such as transfer pumps, fill cans, funnels, etc., should be scrupulously cleaned.
- Whenever possible, filter new oil as it is added to the reservoir.
- **A separate section of this is dedicated to filtration and contamination control fundamentals; please review this section of the manual.**

Return Line Filter

The return filter element must be changed periodically. The return filter has a dirt alarm indicator/gauge. When the gauge is in the RED the element is dirty and should be changed. **Note: Observe element dirt indicator levels when the hydraulic oil is at operating temperature; if the oil is below the operating temperature it is more viscous which results in increased pressure drop through the filter assembly and may provide false indication that the element is dirty.**



Do **NOT** operate the system without a filter element; the filter protects the hydraulic system from normal wear contaminants created within the system. The filter element cannot be cleaned and reused.

Suction Line Strainer

Remove and clean the strainer after every 1000 hours of operation. Access the suction strainer by removing the lid on the reservoir. Remove the suction strainer by turning counterclockwise to remove from nipple.

To protect the hydraulic pump, a vacuum switch has been installed in the suction line. This switch will shut down the prime mover when indicating 5 inches of Mercury (Hg) at the gauge on the panel. If the prime mover shuts down due to high suction vacuum, determine the cause of the restriction. This failure may be the result of a clogged suction strainer or a closed ball valve (if applicable). The operator must first clean the strainer or open the ball valve (if applicable) and then reset the system at the control panel before restarting the prime mover. **Do NOT override or adjust this shutdown function; excessive vacuum may result in catastrophic damage to the hydraulic pump.**

Typical dirt level alarm indicators

5.5 Hydraulic Oil

Refer to enclosed hydraulic oil data sheet and MSDS for MWI specified hydraulic oil for this equipment.

Add hydraulic oil to the system through the hydraulic reservoir filler cap; do not fill by removing the lid. Fill the reservoir to within 3 inches of the top. Remember to transfer hydraulic oil with clean containers; dirt, water, and all other liquids are contaminants to the hydraulic system.

A float switch in the hydraulic reservoir protects the system and environment when a change in the nominal hydraulic oil volume is detected. **do not override or tamper with this shutdown function.** The operator can visibly check the float switch to see if there is sufficient oil in the reservoir. If a failure occurs causing the prime mover to shutdown due to low oil level, identify the failure, repair the deficiency, refill the reservoir, and then reset the hydraulic panel shutdown before restarting the prime mover.

MWI offers hydraulic oil analysis to monitor and evaluate hydraulic oil contaminants; please contact MWI for additional information.

5.6 Hydraulic System Adjustments

The relief valve, temperature switch, and vacuum switch are adjustable; however, these components are factory set at MWI; any alterations or adjustments without MWI's consent could damage the system and will void the warranty.

- The relief valve protects hydraulic system components from excessive pressures.
- The temperature switch prevents the hydraulic oil from exceeding a factory temperature threshold.
- The vacuum switch limits the minimum inlet pressure to the hydraulic pump preventing cavitation and hydraulic pump damage.

If the operator has any inquiries regarding the devices listed above, please contact MWI or a MWI representative.

Normal prime mover vibrations require periodic inspection and possible tightening of threaded connections, flanges, etc. may be required.

5.8 Pump Maintenance Record

Date	Hours Of Operation	Service Performed	By

6.1 Troubleshooting

Symptom	Possible Cause	Action
Noise coming from hydraulic pump on drive unit.	1) Suction ball valve is closed.	1) Open valve.
	2) Hydraulic vacuum in excess of 5 in/hg.	2) Clean suction strainer in hydraulic tank.
	3) Air leaking into suction inlet of hydraulic pump.	3a) Check pipe joints and hose connections for leaks. 3b) Small brass swivel fittings on vacuum hose are cracked. Replace if necessary.
Vortex in Sump	1) Sump restriction.	1) Clear sump of all restrictions.
	2) Pump not properly located / oriented in sump.	2) Consult engineer.
Hydraulic oil moving through Bypass Sight Glass during water pumping.	1) Static lift is too high.	1) Measure static lift. Check against pump specification.
	2) Relief valve is not properly set.	2) Consult MMI Service Department.
Hydraflo will not pump water when pump Loading Valve is closed. <u>No hydraulic pressure.</u>	1) Relief valve not properly set / setting has been changed.	1) Consult MMI Service Department.
	2) O-ring in Pump Loading Valve is damaged.	2) Replace O-ring, or replace the Loading Valve.
	3) Water pump propeller is buried in the mud causing it to starve for water.	3) Clear the sump of excess mud and silt.
Hydraflo will not pump water when pump Loading Valve is closed. <u>Hydraulic pressure is present.</u>	1) Water pump propeller is not turning.	1a) Check intake bell / propeller for debris.
		1b) Thrust bearings in water pump are damaged. Repair pump head.
		1c) Hydraulic motor in water pump is damaged. Repair or replace hydraulic motor.
	2) Hydraulic drive hoses not connected properly.	2a) Make sure drive hose quick couplers are fully seated.
		2b) Make sure drive hoses are routed properly.
		2c) Make sure drive hoses are not kinked.

Hydraflo
Installation, Operation, and Maintenance

Hydraulic filter reads "dirty" after new element is installed.	1) Hydraulic oil too cold.	1) Allow the unit to run and come up to optimal operating temperature. Recheck filter indicator.
	2) Hydraulic oil is contaminated.	2) Have the oil tested.
Engine bogs down or stalls when pump Loading Valve is closed.	1) Propeller is not turning freely.	1) Check propeller for debris.
	2) Too much TDH.	2) Check discharge pipe arrangement, discharge valving, and static lift. Check against pump specification.
Water delivery from Hydraflo pump is too low.	1) Debris in sump.	1) Clear sump.
	2) Relief valve is improperly set.	2) Consult MWI Service Department.
	3) Hydraulic motor in water pump is damaged.	3) Repair or replace motor.
	4) Propeller blades worn down.	4) Reblade the propeller.
Hydraulic pressure gauge needle bounces around / is erratic when pumping water.	1) Water pump is starving for water.	1) Check pump submergence.
Hydraflo pump suddenly stops pumping water. <u>Engine shuts off.</u>	1) Hydraulic shutdown has been tripped.	1a) Check hydraulic oil level.
		1b) Check hydraulic vacuum (must be done with the engine running)
		1c) Check hydraulic temperature.
	2) Engine or electric motor shutdown has been tripped.	2a) High Temperature.
		2b) Engine overspeed.
		2c) Low oil pressure.
		2d) Motor overload.
		2e) Motor over temperature.
Hydraflo pump suddenly stops pumping water. <u>Engine stays running.</u>	1) Water no longer reaching the propeller.	1) Check propeller / sump for debris.
	2) Hydraulic pump on drive unit has failed.	2) Repair / replace hydraulic pump.
	3) Hydraulic motor in water pump has failed.	3) Repair / replace motor.



MWI PUMP COMPANY
EQUIPMENT INFORMATION PROPOSAL

Project: Jefferson Parish – Bayou Segnette Pump Station

MWI Hydraflo Models:

(6) MWI HAC348 – 4200D – 575 HP Diesel Drive Units

September 28, 2021



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About MWI



Moving Water Industries (MWI) Corporation traces its roots back to 1926, when Hoyt Eller started a business in Deerfield Beach, Florida. The company grew over the years due to its reputation for customer service, quality and innovative designs. David Eller P.E., the current CEO/President, has over 20 US patents for his innovations in pump design. He is joined by his two sons, Dana and Daren and daughter Danielle, all graduate engineers.

MWI's international headquarters and extensive manufacturing capabilities are located in Deerfield Beach, Florida, very close to the original business. The manufacturing facilities are spread over 4 city blocks and total nearly 300,000 ft², to include a 10,000 ft² test lab. The company has a facility in Egypt and representatives throughout the United States, Latin America, Middle East, Africa and Asia.



MWI's pump product line includes: lineshaft, submersible electric, hydraulically driven, centrifugal, self priming, trash, rotary lobe and solar powered borehole pumps.

Today, MWI is focused on:

- Axial and mixed flow pumps for drainage, irrigation, flood control and emergency pumping.
- Pumps for rental companies and contractors for construction dewatering, sewage bypass and industrial applications.
- Renting pumps directly in Central and South Florida and nationwide when very large pumps are required.
- Solar powered pumps with water treatment capabilities for the developing world.



Our philosophy is simple: provide innovative, high-quality pumps at competitive prices and take care of each customer. Let us help you solve your water moving problems with our extensive engineering staff, years of experience and great products.





PERRY JOHNSON REGISTRARS, INC.

Certificate of Registration

Perry Johnson Registrars, Inc., has audited the Quality Management System of:

MWI Corporation

33 Northwest Eller Street, Deerfield Beach, FL 33441 United States

*(Hereinafter called the Organization) and hereby declares that
Organization is in conformance with:*

ISO 9001:2015

This Registration is in respect to the following scope:

**Design, Manufacture and Servicing of Axial, Mixed Flow,
Centrifugal and Mobile Pumps, and Village Water Supply Units**

*This Registration is granted subject to the system rules governing the Registration referred to above, and the
Organization hereby covenants with the Assessment Body duty to observe and comply with the said rules.*



Terry Boboige

Terry Boboige, President

Perry Johnson Registrars, Inc. (PJR)
755 West Big Beaver Road, Suite 1340
Troy, Michigan 48064
(248) 358-3388

The use of the UKAS accreditation symbol is in respect to the activities covered by the Accreditation Certificate Number 0105

This validity of this certificate is dependent upon ongoing surveillance.

Effective Date

November 16, 2019

Expiration Date

November 15, 2022

C2019-02646

Company Owned Manufacturing Facilities

The primary manufacturing facility for Moving Water Industries (MWI) consists of a 1:2 story building of non-combustible construction that encloses 62,345 ft² and the building is protected by a wet pipe sprinkler system. The facility is supported by four nearby warehouses (47,336 ft² cumulative) and a Unit Assembly / Industrial Coatings / R&D facility that encloses 32,176 ft² all of which are located in buildings of non-combustible, masonry non-combustible and fire resistive construction. All of these, Company owned buildings, are located on adjacent lots to one another, the Company also owns two additional adjacent vacant lots for storage, and one of these lots is enclosed by fencing. In addition the Company owns six facilities throughout the state of Florida that vary in size but have sufficient storage yard capacity.

Our entire manufacturing operations are ISO 9001:2008 certified. MWI is proud to be a member of several professional organizations including The National Association of Manufacturers (NAM), The Hydraulic Institute (HI), The Association of Equipment Manufacturers (AEM), The Society for Protective Coatings (SSPC) and a founding member of the Corporate Council for Africa.

Housed within the main plant are all support function offices including engineering, materials, safety, quality and manufacturing management. Our engineering team utilizes AutoCad, Solidworks, Cosmos and CFD Design software. Our business information system is Macola. We have redundant network servers with our Corporate offices located approximately ½ mile away. MWI has an extensive library of industrial standards including ANSI, NEMA, IEEE, ASTM, and a variety of Mil specs and other specifications which are utilized in confirming compliance with standards requirements for a variety of large scale projects.

Located within in the main plant is our test facility that includes two electrical generators (Cummins 625 kva & 1200 kva) and two test tanks (140,000 gal & 50,000 gal) and a 6,000 gallon NPSH test tank. A back up test facility is owned by MWI located 90 miles north in Vero Beach Florida and has redundant testing capabilities that match the main plant test capabilities. In addition MWI owns a fleet of some 60 to 70 service vehicles including flat bed, stake body and tractor trailer trucks w/ trailers and a 30 ton crane. The 9 qualified crane operators are all trained by National Crane Services a division of NISI Inc to US Department of Energy Crane and Rigging Standards Committee USDL/OSHA 29 CFR Part 1919 requirements. All MWI buildings have ample electrical power service, compressed air and clean water for manufacturing processing. All electrical services panels in all buildings are Thermographically Infrared (IR) scanned on an annual basis and deficiencies are corrected immediately. We also have capability of Vibratory Stress relief of metal components of any size required by this project.



MWI's blast and industrial coatings applications booths are located in our Unit Assembly building and conform to The Society for Protective Coatings (SSPC) Requirements. (Again a similar paint facility is owned by the Company at its Vero Beach location.) Also housed in this building (as of November 2009) is our 120 inch Betts VTL. The remainder (and majority) of the building is open bay assembly area.

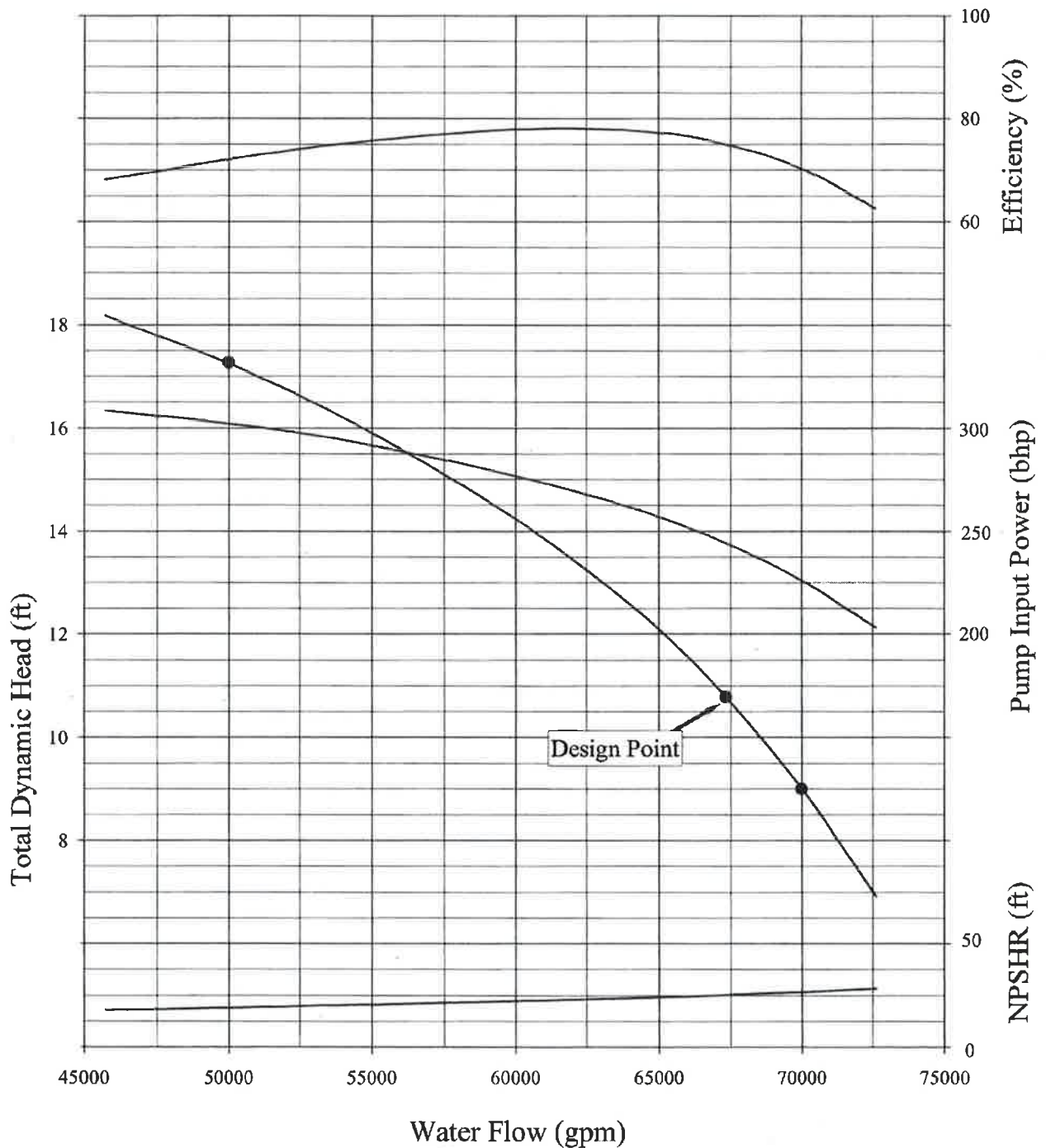
All welders are trained in accordance to ASME Boiler & Pressure Vessel Code and AWS standards and tested in accordance with AWS D1.1.



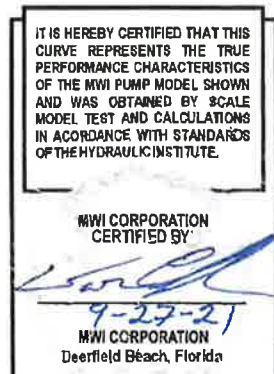
Deerfield Beach, Florida



Vero Beach, Florida



PUMP BOWL PERFORMANCE CURVE	
Project: Bayou Segnette PS	
TYPE: AXIAL FLOW	PROPELLER DIA: 48"
MODEL NO: HAC348	SPEED: 310 RPM
INTAKE DIA: 72"	DISCHARGE DIA: 48"
SINGLE STAGE PERFORMANCE FOR TWO STAGES MULTIPLY HEAD AND HORSEPOWER BY 2.0 AND EFFICIENCY BY 1.0 PERFORMANCE IS BASED ON PUMPING CLEAR, NON-AERATED WATER, WITH A SPECIFIC GRAVITY OF 1.0, TEMPERATURE 85 DEG F OR LESS AND AT SEA LEVEL. PUMP PERFORMANCE MAY BE AFFECTED BY HIGHER TEMPERATURES, SPECIFIC GRAVITY, ALTITUDES AND SUMP CONDITIONS.	



HAC348 System Priming Power at Specified TDH Calculations

Pump Model: HAC348

Date: 09-23-2021

System Calculations based on water flow and related total head at the water pump

Design water flow	= 50000 gpm
Design total dynamic head	= 17.2 ft
Water pump efficiency at design head / flow	= 72.0%
Water pump propeller speed	= 310 rpm

Water horsepower = WHP = $\text{TDH} * \text{Flow} / 3960 = 17.2 * 50000 / 3960 = 217.2 \text{ hp}$

Water pump shaft input power = BHP = $\text{WHP} / \text{pump eff} = 217.2 / 0.72 = 301.6 \text{ hp}$

Hyd Motor output torque = $\text{Bhp} * 63027 / \text{speed} = 301.6 * 63027 / 310 = 61319 \text{ in-lbs}$

Approximate motor displacement required at assumed 2500psi:

$$\text{Disp} = 2 * \pi * T / P = 2 * \pi * 61319 / 2500 = 154.08 \text{ in.}^3$$

Select Rineer 125A/98/82 rated continuous 77652 lbf-in @ 3000 psi and 300 rpm

Given displacement is 180 in³/rev, oil flow required:

$$Q = \text{spd} * \text{disp} / 231 / \text{vol eff} = 310 * 180 / 231 / 0.88 = 274.5 \text{ gpm}$$

Given displacement is 180 in³/rev and torque is 61319 in-lbs find pressure required:

$$\text{Pressure across motor} = 2 * \pi * T / (\text{disp} * \text{mech eff}) = 2 * \pi * 61319 / (180 * 0.89) = 2406 \text{ psi}$$

Pressure losses in transmission between hydraulic pump and hydraulic motor for 274.5 gpm:

$$\text{Total line pressure loss} = 2405 * 0.05 = 121 \text{ psi}$$

$$\text{Total pressure delivered by hyd pump} = \text{pressure across motor} + \text{line loss} = 2405 + 120 = 2526 \text{ psi}$$

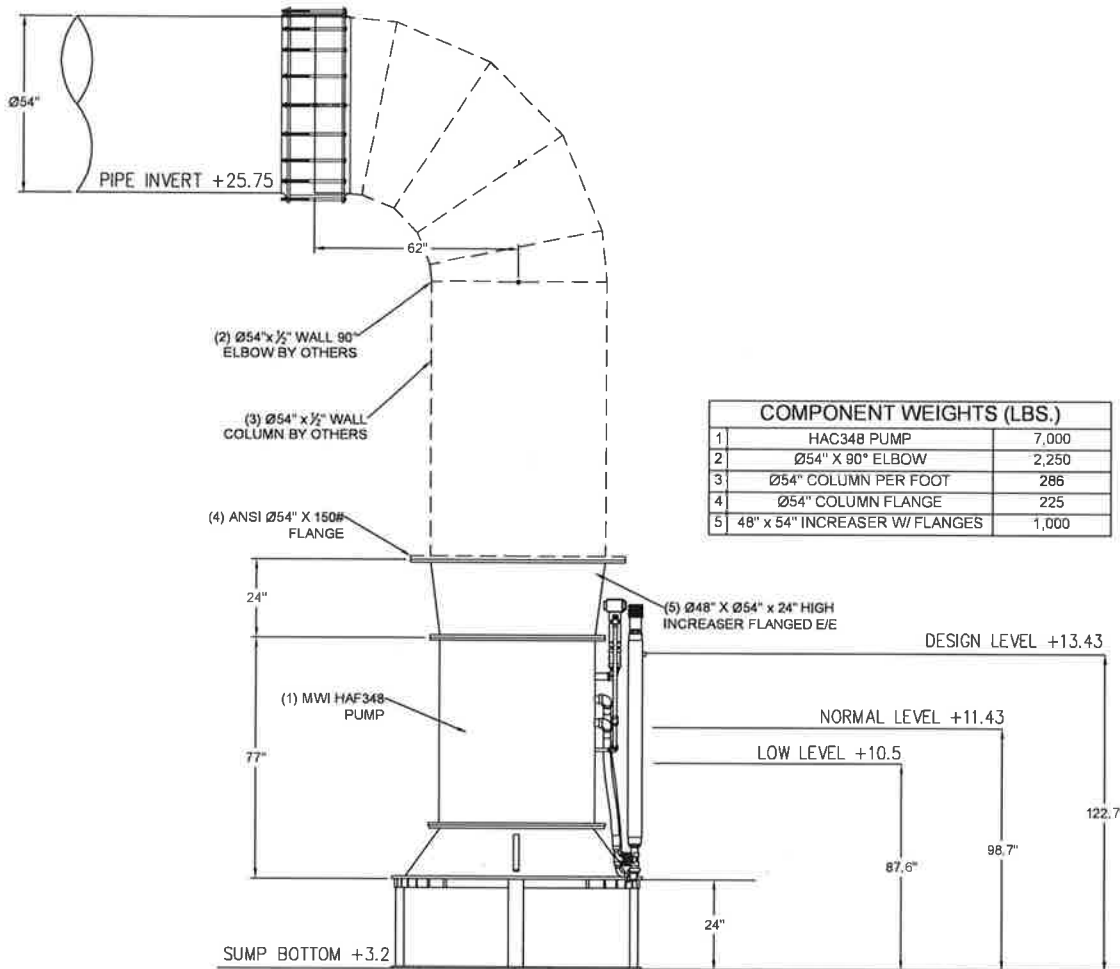
$$\begin{aligned} \text{Horsepower required by hydraulic pump Denison T-series (hp}_{\text{pump}}) &= \text{gpm} * \text{press} / (1714 * \text{mech eff}) \\ &= 274.5 * 2526 / (1714 * 0.94) = 430 \text{ hp into the hydraulic pumps} \end{aligned}$$

$$\text{Safety Factor} = \text{hp}_{\text{engine}} / \text{hp}_{\text{pump}} \Rightarrow 430 * 1.1 = 473 \text{ hp of engine}$$



NOTE: Mechanical efficiency (mech eff) and Volumetric efficiency (vol eff) are estimated worse case used for design purposes. Actual efficiency values are expected to be higher.

A B C D

REVISIONS	
REV.	ECR NO.
-	-



COMPONENT WEIGHTS (LBS.)		
1	HAC348 PUMP	7,000
2	Ø54" X 90° ELBOW	2,250
3	Ø54" COLUMN PER FOOT	286
4	Ø54" COLUMN FLANGE	225
5	48" x 54" INCREASER W/ FLANGES	1,000

INSPECTIONS:		PROJECT:		TITLE:		<div><p>13 NORTHWEST FILLER STREET OCEANVIEW BEACH, FL 33860 WWW.MWD-CORP.COM</p></div> <div>THIS PROPRIETARY DRAWING IS THE INTELLECTUAL PROPERTY OF MWD CORPORATION, A FLORIDA CORPORATION, AND IT IS LOANED WITH THE EXPRESS UNDERSTANDING THAT ALL RECIPIENTS SHALL NOT DISCLOSE CONFIDENTIAL INFORMATION CONTAINED WITHIN OR CREATE COPIES OF ANY KIND FOR THIRD PARTIES WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF MWD. ADDITIONALLY THIS DRAWING SHALL BE IMMEDIATELY RETURNED AT THE REQUEST</div>
NONE		BAYOU SEGNETTE PS JEFFERON PARISH, LA		HAC348 HYDRAFLO VERTICAL GENERAL ARRANGMENT		
THIRD-ANGLE PROJECTION	WEIGHT:	UNLESS OTHERWISE SPECIFIED TOLERANCES ARE AS FOLLOWS:		JOB NO.:	APPROVED BY:	
	N/A	<div>IMPERIAL: X ± 0.06 in. XX ± 0.03 XXX ± 0.010 XXXX ± 0.001 FRACTIONAL ± 1/16 MACHINED SURFACE FINISH: 125 ✓</div> <div>METRIC: X ± 1.5 mm .X ± 0.8 .XX ± 0.25 .XXX ± 0.025 MACHINED SURFACE FINISH: 32 ✓</div> <div>BOLT PATTERN TOLERANCE: EQUAL SPACING VARIATION 0.03 MAX ALL HOLES.</div> <div>BOLT PATTERN TOLERANCE: EQUAL SPACING VARIATION 0.8 MAX ALL HOLES.</div>		N/A		
NOTES: 1. NOTES 2, 3, INSPECTIONS AND TOLERANCES ARE APPLICABLE ONLY TO PRODUCTION DRAWINGS. 2. BREAK / DE-BURR ALL SHARP EDGES AND CORNERS. 3. REMOVE ALL BURRS/RAISED EDGES AROUND DRILLED HOLES AND TAPPED HOLES. 4. MARK PART NO. AT LOCATION SHOWN				DRAWN BY: - 9/23/2021		
				DRAWING NO.:	-	
				REV:	SHEET: - 1 OF 1 -	

A B C D 7





HYDRAFLO™ PUMP SPECIFICATIONS

I. GENERAL

The work under this section shall consist of providing all pumping equipment including the hydraulically driven axial flow pumps, drive units, and all piping, appurtenances and mechanical system as shown on the drawings and as specified herein. The manufacturer shall be ISO9001-2015 certified. Pumps shall be manufactured by MWI Corporation, 33 NW 2nd St, Deerfield Beach, FL 33441-3624 or engineer prior approved equal. The manufacturer must have a certified maintenance facility located less than 50 miles from the Parish.

The substitution form enclosed must be returned two (2) weeks prior to bid opening for consideration of approval.

II. DESIGN DATA

The Contractor shall furnish with the bid, guaranteed pump performance curves based on shop tests of pumps in accordance with procedures as specified by Standards of Hydraulic Institute. Curves shall be certified by a professional engineer, registered in the state where the tests are conducted and employed full time by the pump manufacturer. Any bid not including such curves shall be considered non-responsive and shall not be accepted.

1.	Quantity of Pumps	6
2.	Design Capacity Ea.	50,000 gpm
3.	Operation Head: Design TDH	9'
4.	Minimum propeller size	48"
5.	Maximum pump rpm	350 rpm

The pump and drive equipment to be furnished under this contract shall be made by a manufacturer regularly engaged in such work, and who has furnished like equipment and specialties for at least five (5) similar installations which have been continuously operating successfully for not less than five (5) years.

Evidence of this experience and data on the equipment and its operation in those installations shall be made available to the ENGINEER at their request to determine whether the equipment and specialties offered meet the requirements of these specifications.

Pump bowls, propellers and hydraulic power units shall be the product of a single manufacturer.

III. PUMP MATERIAL AND DESIGN

The pumps to be furnished under this specification shall be hydraulically driven, axial flow propeller, completely submersible with propeller bowl assembly, hydraulic motor assembly, suction bell assembly and discharge tube.

- A. SUCTION BELL - The suction bell assembly shall be manufactured from alloy steel, 1/4" thick and conforming to ASTM A242, and shall have an inlet diameter of 1.5 times the propeller diameter. The inlet

bell shall be constructed to minimize vortex formation by maintaining equal pressures and velocities across the entrance. Bars shall be placed across the bell mouth to prevent entrance of large sticks, logs or debris. Inlet bell face shall be parallel to the water surface regardless of the angle of installation. The intake must be able to be removed without disconnecting the hydraulic lines.

- B. PUMP BOWL - The propeller bowl assembly section shall be a single stage, shop assembled unit consisting of a venturi housing, stainless steel liner, propeller shaft, bearings and stainless steel propeller blades. The venturi housing shall be manufactured from 1/2" thick alloy steel conforming to ASTM A242 and shall be fitted with a machined, removable housing liner of 300 series stainless steel of not less than 3/16" thickness and a liner length of not less than the pitch length of the propeller.
- C. PROPELLER and SHAFT - The pump propeller blades shall be manufactured using ASTM A304 stainless steel. The propeller shall be balanced and secured firmly to the taper shaft with alignment key and locknut. The propeller shaft shall be machined from solid stainless steel bar stock and shall conform to ASME Code for transmission shafting to transmit full load torque and shall have additional safety factor for shock loads.
- D. BEARINGS - The propeller shaft shall be supported and contained in place by three multiple angular contact bearings. The shaft bearings shall be designed for an L_{10} life of 50,000 hours and lubricated by low pressure hydraulic oil. The propeller shaft and bearing assembly shall be contained in a machined bearing housing centrally supported by flow straightening vanes in the propeller bowl assembly and sealed using a silicon carbide mechanical seal. A lip seal shall be utilized to protect against sand particle intrusion. The bearings shall be designed to accept thrust in either direction. A non-reverse rotation mechanism will be included (except in two way pumping applications).
- E. DISCHARGE TUBE - The discharge tube and head assembly shall be manufactured as shown on the drawings and the material shall be abrasive resistance steel conforming to ASTM A242 with a minimum wall thickness of 1/4". The complete pump assembly shall be painted inside and outside with Mo-tar 47.
- F. HYDRAULIC MOTOR - The hydraulic motor assembly section shall consist of the assembly housing, hydraulic motor, propeller shaft coupling and inlet and outlet port pipe connections. The assembly housing shall be manufactured from 3/8" thick alloy steel conforming to ASTM A242. The housing assembly shall contain a hydraulic motor coupled to the propeller shaft. The hydraulic motor, bearings, shaft and coupling shall be enclosed and sealed to permit totally submerged operation in any position. The hydraulic motor shall be provided with inlet and outlet pipes extending from hydraulic motor through the assembly housing and terminate with quick coupling connections. The hydraulic motor shall be mounted on the discharge side of the propeller as to minimize NPSH requirements, avoid clogging of the intake and induce more efficient oil cooling. Suction side installations shall not be permitted.

IV. DIESEL DRIVE UNIT

Pumps will be supplied with a diesel power unit. The drive units shall be manufactured and tested at the same factory as the pumping unit to provide a single source of responsibility and for the proper coordination of all components of the system. The unit shall consist of an oil reservoir, fixed displacement hydraulic pump, diesel engine and interconnecting piping, valves, and accessories, mounted on a fabricated steel base with lifting eyes.

- A. The hydraulic pump shall be fixed displacement hydraulic pump capable of continuous operation.
- B. The diesel power sources shall be a Catapillar C-18 diesel engines unit rated 575 BHP at 1,800 rpm having a continuous duty rating. The unit shall be fully equipped with radiator, batteries and cable, safety shutdown switches and exhaust system with residential-type muffler or sound attenuating system.
- C. Power units shall be factory assembled and skid-mounted. Hydraulic equipment shall include but not be limited to: a full flow oil filter, adjustable pressure relief valves at each pump outlet, pressure and temperature gauges, quick connect couplings and safety shut down controls for low oil pressure and high oil temperature. All systems shall be assembled, piped and tested prior to delivery to the site.
- D. A hydraulic system monitoring device to allow diagnosing hydraulic system behavior even while pump is still submerged shall also be included.

- E. The drive system shall include a "clutch" starting system which allows the prime mover to start under a no-load condition and gradually engage the load over a 3 to 5 second time period. The "clutch" system shall be used to gradually disengage the load prior to shut-off of the prime mover. An automatic system is included.
- F. Sufficient hydraulic oil cooling capacity shall be provided to sustain direct sunlight radiation as well as ambient temperatures up to 122°F (50°C).

V. HYDRAULIC PIPE AND HOSE

Hydraulic lines connecting the power unit to the pumping unit shall be a combination of black steel pipe and reinforced hose and shall be installed in accordance with the drawings and as specified herein. Supply pipe shall be ASTM-A106, Schedule 80 seamless black steel pipe, and return pipes shall be ASTM-A106, Schedule 40 seamless black steel pipe. All hydraulic pipe shall be pickled, oiled and plugged (P.O.P.). All reinforced supply hose shall be double wire braid reinforcement and shall have minimum safe working pressure of 3000 psi. All pipe fittings shall be socket weld type (with socket weld to thread fittings at conversion point of pipe to reinforced hose). Quick connect couplings shall be provided at connection points of drive unit and water pump. Both supply and return piping shall be of the size indicated on the drawings and internal velocities shall not exceed 15 fps. Hose lengths shall be determined in the field after erection of pumps.

VI. PUMP TESTING

- A. Each pump and hydraulic power transmission system shall be factory pressure tested to maximum design psi for a minimum of 10 minutes at design operating temperatures with every plumbing connection checked for possible leaks. In the event a leak is observed or detected, it shall be repaired and the test be repeated until all leaks are eliminated.
- B. One Pump shall be full size factory tested, per HI 14.6, at the manufacturer's facility in an open sump with sufficient capacity for accurate pump testing. Testing shall include but not be limited to design head vs. design capacity and mechanical integrity. All tests shall be in accordance with the Hydraulic Institute Standards and performed by a Professional Engineer employed full time by the manufacturer. Model test are not acceptable as the actual pumps are not utilized.
- C. A field test shall be witnessed by the ENGINEER. All plumbing fittings and hydraulic equipment shall be inspected again for leakage. Should leakage be detected or observed, repairs shall be made and tests performed again until all leaks or losses are detected and repaired.

VII. INSTALLATION AND SUPERVISION

- A. The contractor shall coordinate construction of station and installation of the pumps with the pump manufacturer. All construction and installation shall be in conformance with the drawings and specifications and the pump manufacturer's recommendations. The manufacturer will include 10 days of start-up services and onsite training for the customer.
- B. The contractor and pump manufacturer shall provide for final inspection and testing of the system and shall make necessary adjustments to the control system prior to actual start-up tests. Start-up tests and demonstration shall be performed by the pump manufacturer's representative and the contractor, and witnessed by the engineer. Three (3) sets of operating and maintenance manuals and start-up procedures shall be provided to the engineer. Contractor shall have pump manufacturer train and instruct owner's operator on all equipment.

VIII. WARRANTY

The hydraulic propeller pump system and controls shall be warranted for 2 years by the manufacturer against defects in material and workmanship, under normal use and service from the date of shipment from the factory as described in the warranty certificate.

IX. SUBSTITUTION OF MATERIALS OR EQUIPMENT

The procedure for review by ENGINEER will be as set forth in following paragraphs:

Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. The application will state whether or not acceptance of the substitute for use in the Work will require a change in the Drawings or Specifications to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered or installed without ENGINEER'S prior written acceptance. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute.

ENGINEER will record time requirements by ENGINEER and ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Drawings or Specifications occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER'S consultants for evaluating any proposed substitute.

X. MANUFACTURER'S QUALIFICATION

Qualification information required for evaluation

Not later than _____, 19____ (two weeks prior to bid date) all bidders must submit for evaluation purposes by certified mail the following data: (NOTE: If this information is not received, the bidder's proposal will not be acceptable and will be considered non-responsive.)

Name, address, phone number of pump manufacturer: _____

Number of years in business: _____

Length of time manufacturing permanently installed pumps of this type:

Reference list of units of this type manufactured including owners name, phone number, size and type of unit and year installed

Directly employed key personnel, experience and qualifications:

A. Chief Engineer (Name, Address, Professional Registration Number):

Length of Time Employed: _____

Academic Qualifications: _____

B. Other professional personnel employed (Name, Address, Title):

Name and registration number of responsible testing engineer who will perform factory certified witness testing of the pumping system: _____

Certification by Chief Engineer that manufacturer's pump testing facilities meets all requirements of the Hydraulic Institute Standards.

Specific acknowledgment that all testing shall be conducted in accordance with procedures described in the "Hydraulic Institute Standards" USA

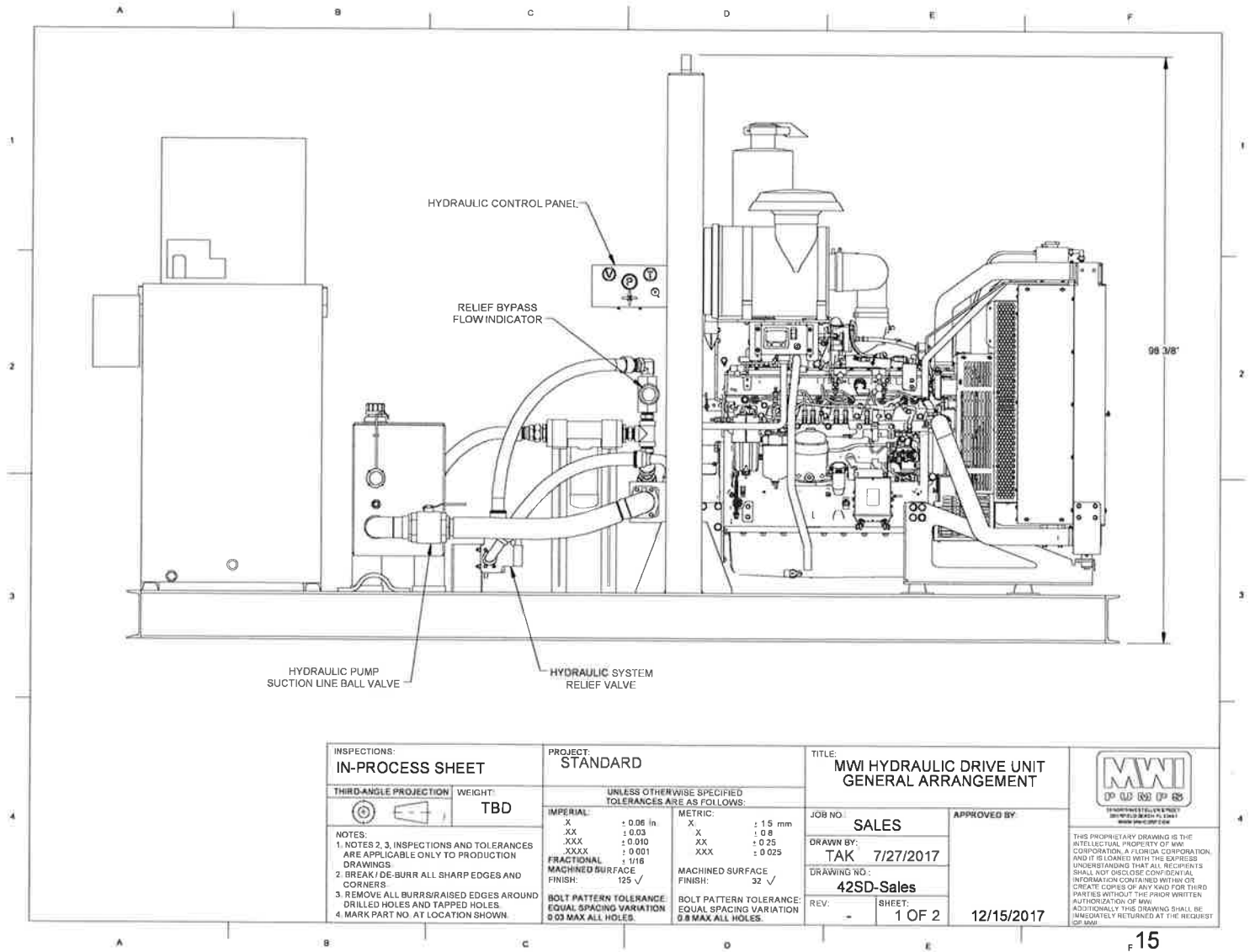
A representative list of manufacturer's experience in the furnishing of hydraulically driven axial flow pumps of similar sizes or larger to those specified for this project, permanently installed and presently operating shall be furnished and include the names, addresses and telephone numbers of the consulting engineers, owners and operators of the system. The dates of installations shall also be included.

Three (3) copies of certified pump performance curves of the unit will be furnished. The curve shall be stamped as certified (correct) by a Registered Professional Engineer in the state in which the pumps are tested and manufactured.

The curve shall show the pump capacity, discharge head, speed, and horsepower requirements.

Prospective bidders shall also submit for evaluation:

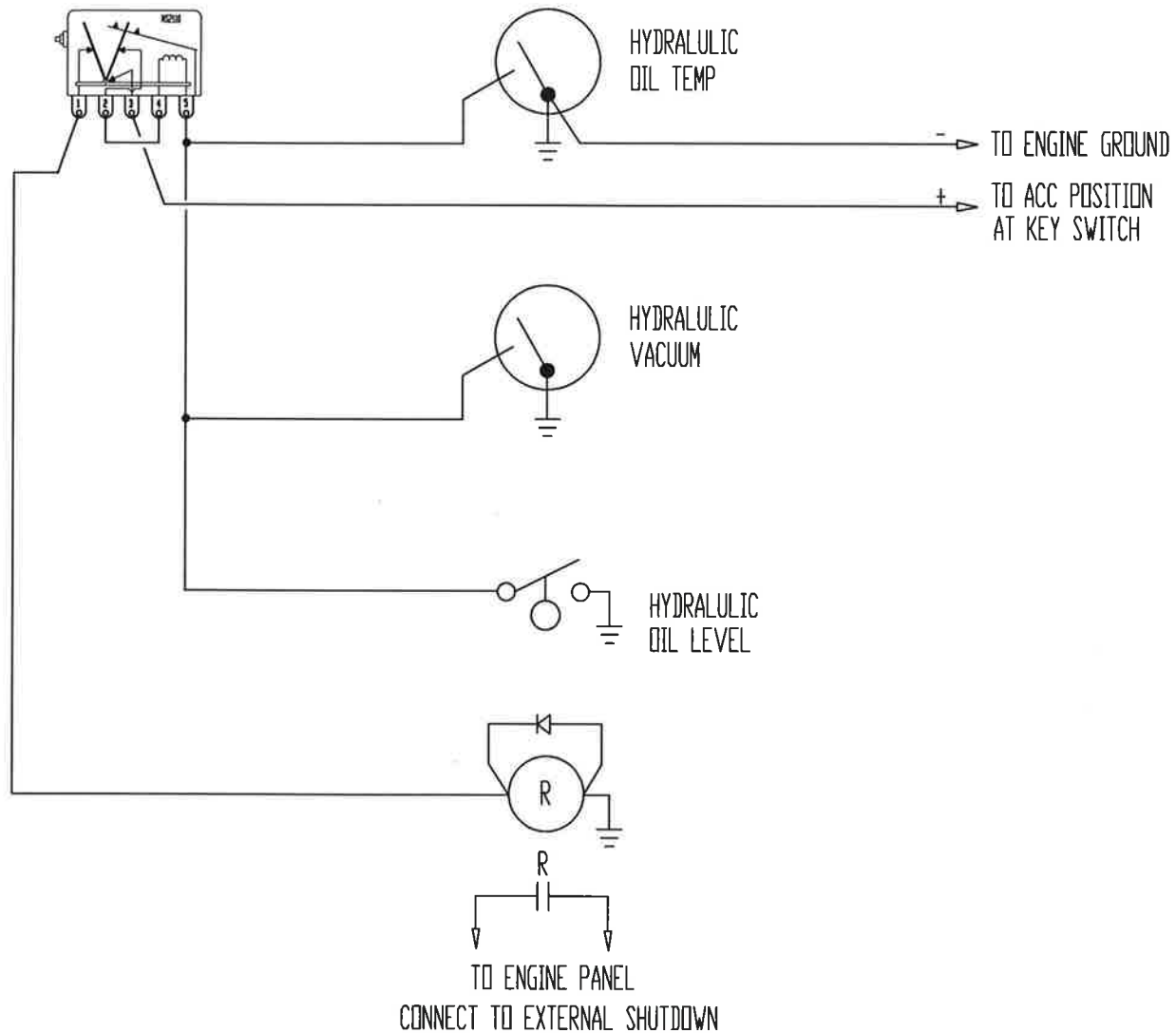
- Three original copies of manufacturer's complete engineering catalogues for pumps.
- Three certified copies of installation and operation manuals for permanent pump systems.
- Three descriptive brochures showing photographs and/or describing the pump unit.
- Three copies of all pump "Bill of Materials" of the unit's construction, cut-a-way drawings, and dimensions as offered to confirm compliance with the specifications.



16



FORWARD REVISIONS TO ENGINEERING			
REV	DESCRIPTION	DATE	APP'D



SCHEMATIC

THIS DRAWING IS THE PROPERTY OF MWI CORPORATION, 201 NFD HWY, DEERFIELD BEACH, FL, 33441 AND IS LOANED WITH THE EXPRESS UNDERSTANDING THAT IT IS SUBJECT TO RETURN ON DEMAND.

THE ENGINEERING KNOW-HOW AND DESIGN INFORMATION HEREON ARE INCLUDED IN THE PRICE OF OUR PROPOSAL AND MAY NOT BE REVEALED, USED OR TRANSMITTED TO OTHERS EXCEPT IN ACCORD WITH CONTRACT OR WRITTEN PERMISSION OF MWI CORPORATION.

©1998 MWI CORPORATION

APPROVALS	DATE
DESIGNED BY EJS	24 JUL 12
DRAWN BY EJS	24 JUL 12
CHECKED BY	
JOB NUMBER 12086	

CUSTOMER	PROJECT
MWI STANDARD	THAILAND DWR

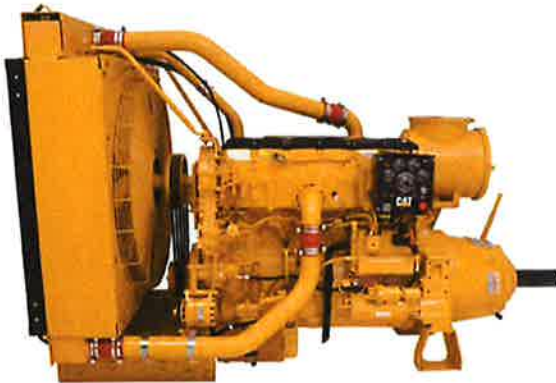
TITLE	DWG No.	SHEET
HYDRAULIC PANEL WIRING DIAGRAM	E12086-ELECT	1

MOVING
WATER
INDUSTRIES

201 NORTH FEDERAL HWY
DEERFIELD BEACH, FL
33441

www.mwincorp.com





The Cat® C18 Industrial Power Unit is offered in ratings ranging from 429-470 kW (575-630 bhp) @ 1800-2100 rpm. These ratings meet China Stage II, U.S. EPA Tier 3 equivalent and EU Stage IIIA equivalent or Non-certified emission standards. Conveniently pre-configured for a wide range of applications, the Cat® Industrial Power Unit is a complete power package containing a radiator, flywheel, alternator and alternator wiring completely pre-assembled for fast, straightforward installation in a number of OEM, customer and packager applications. These fuel efficient units are ready made for irrigation, industrial, mining and other pump applications.

Specifications

Power Rating		
Maximum Power	470 kW	630 HP
Rated Speed	1800-2100	
Minimum Power	429 kW	575 HP

Emission Standards	
Emissions	China Stage II, U.S. EPA Tier 3 Equivalent, EU Stage IIIA Equivalent or Non-Certified

General		
Engine Configuration	Inline 6, 4-Stroke-Cycle Diesel	
Bore	145 mm	5.7 in
Stroke	183 mm	7.2 in
Displacement	18.1 l	1104.5 in ³
Compression Ratio	16.3:1	
Aspiration	Turbocharged Aftercooled (TA)	
Rotation from Flywheel End	Counterclockwise	
Aftertreatment	-	

Power Unit Dimensions		
Length	1388 mm	54.6 in
Width	921 mm	36.3 in
Height	1243 mm	48.9 in
Weight	2197 kg	4844 lb

Benefits and Features

Reliable, Quiet and Durable Power

World-class manufacturing capability and processes coupled with proven core engine designs assure reliability, quiet operation, and many hours of productive life.

Broad Application Range

Industry leading range of factory configurable ratings and options for agricultural, material handling, construction, mining, aircraft ground support, and other industrial applications.

Package Size

Exceptional power density enables standardization across numerous applications. Multiple installation options minimize total package size. Ideal for equipment with narrow engine compartments.

World-class Product Support Offered Through Global Cat Dealer Network

- Scheduled maintenance, including SOSSM sample
- Customer Support Agreements (CSA)
- Caterpillar Extended Service Coverage (ESC)
- Superior dealer service network
- Extended dealer service network through the Cat Industrial Service Distributor (ISD) program

Standard Equipment

Air Inlet System

- Turbocharged Aftercooled (429-470 bkW, 575-630 bhp)
- Twin Turbocharged Aftercooled (522-597 bkW, 700-800 bhp)
- Air-to-Air Aftercooled

Charging System

- Charging alternator 24 volt, 50 amp

Control System

- Electronic governing, PTO speed control
- Programmable ratings
- Automatic altitude compensation
- Power compensation for fuel temperature
- Programmable low and high idle and total engine limit
- Electronic diagnostics and fault logging
- Engine monitoring system SAE J1939 broadcast and control
- ADEM™ A4 Electronic Control Unit (ECU)

Cooling System

- Thermostats and housing, vertical outlet
- Jacket water pump, centrifugal
- Water pump, inlet

Exhaust System

- Exhaust manifold, dry
- Optional exhaust outlet

Flywheels and Flywheel Housing

- SAE No. 1 flywheel housing

Fuel System

- MEUI injection
- Fuel filter, secondary (2 micron)
- ACERT™ Technology
- Fuel transfer pump
- Fuel priming pump

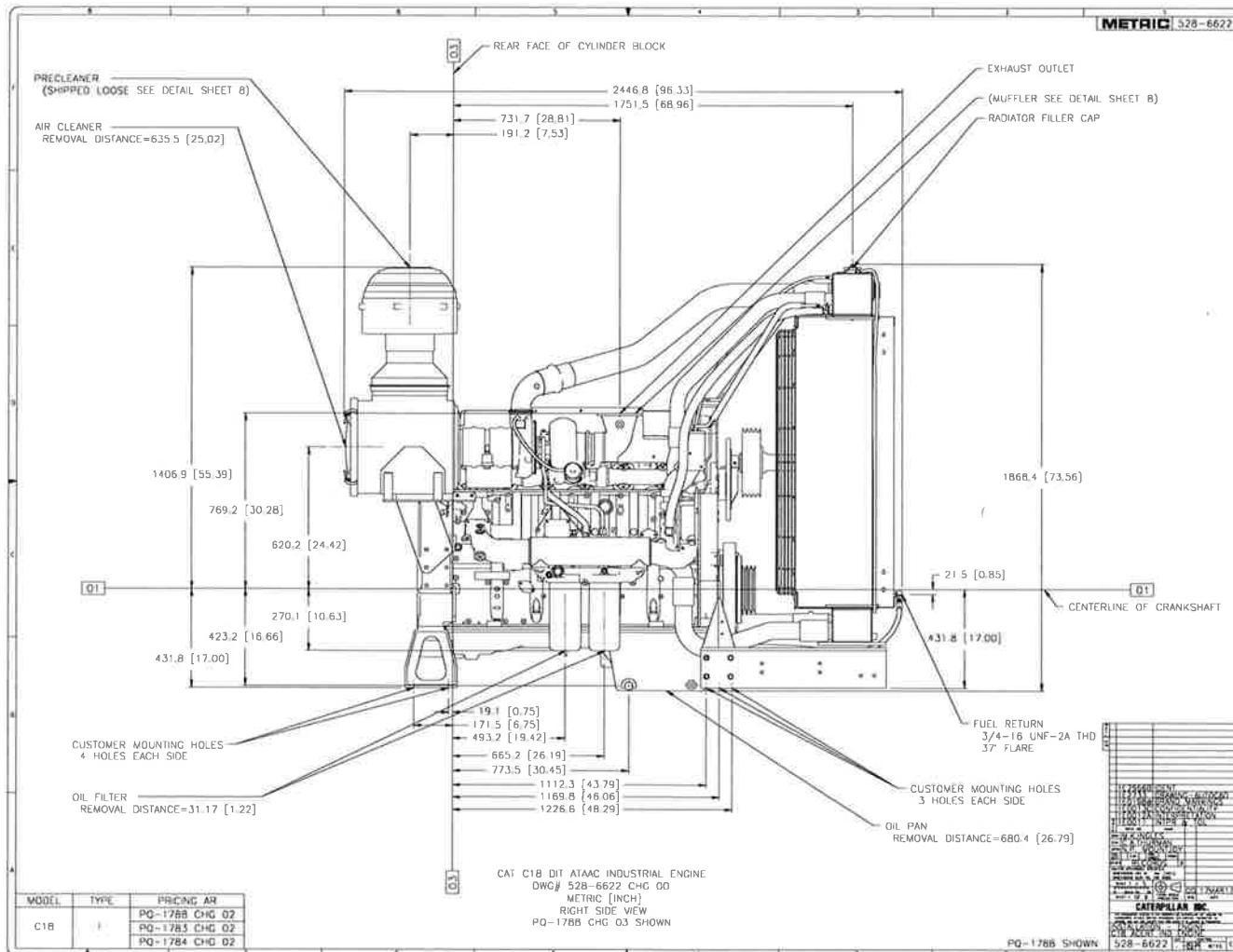
Lube System

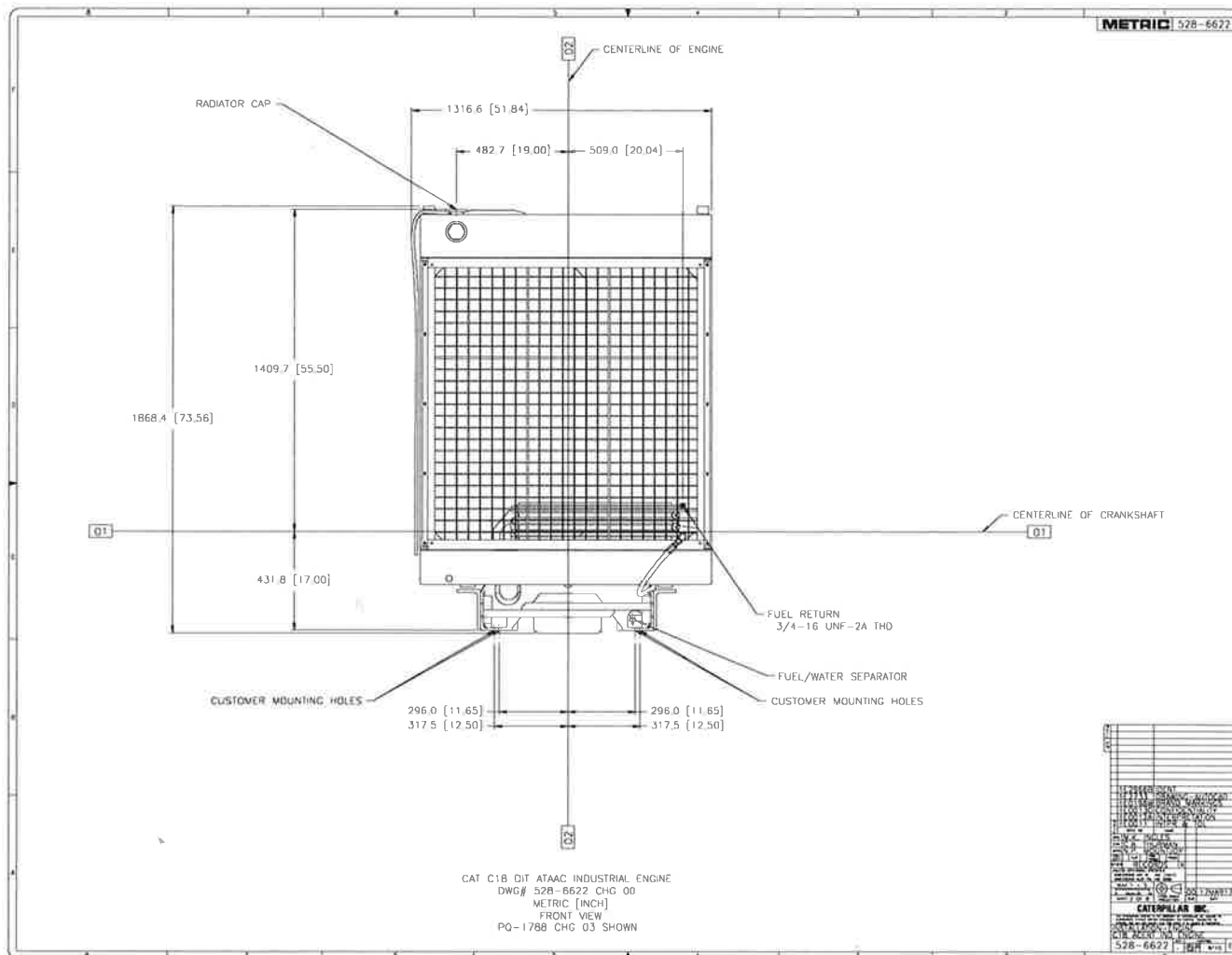
- Crankcase breather
- Oil cooler
- Oil filler
- Lube oil filter
- Front sump oil pan
- Oil dipstick
- Gear driven oil pump

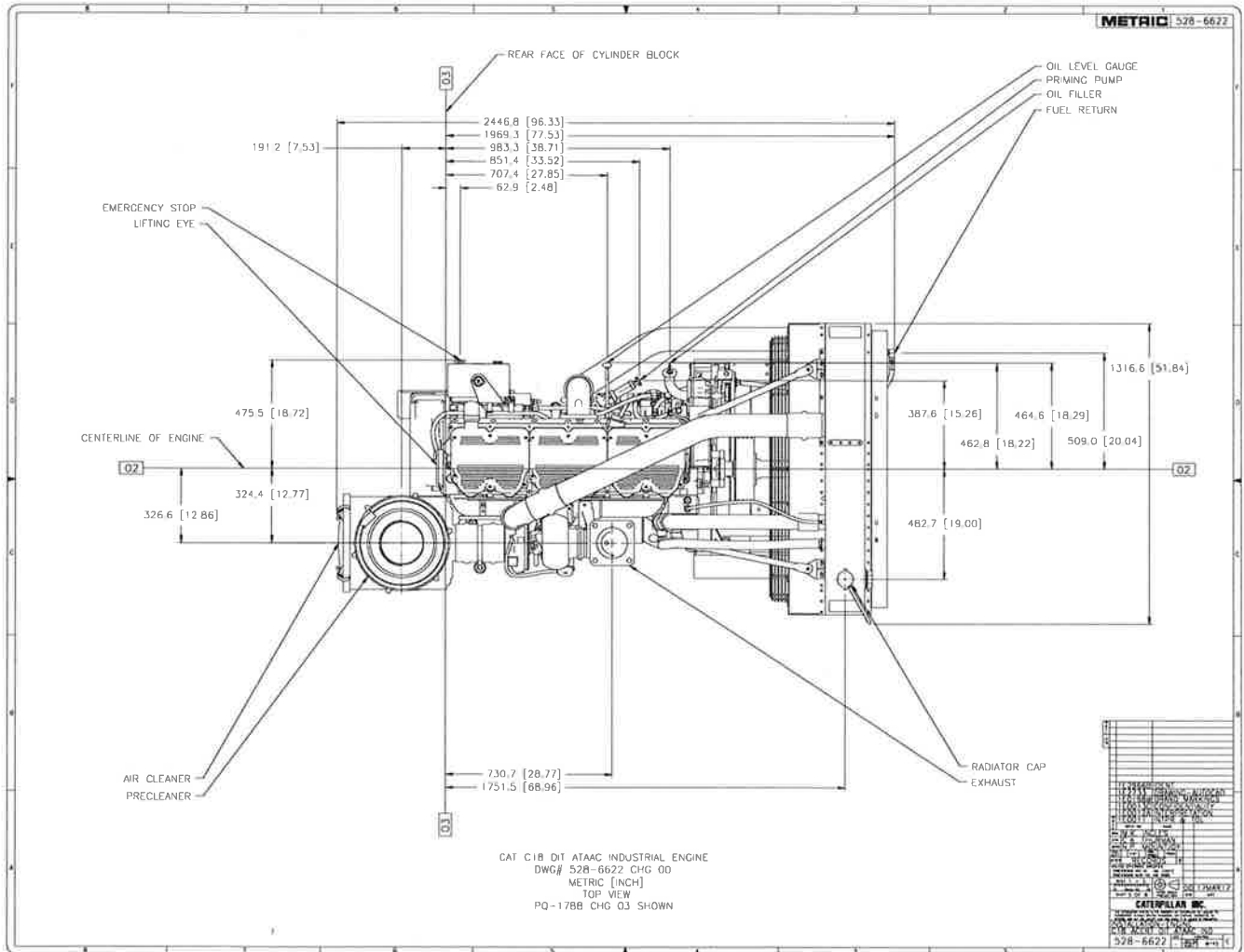
General

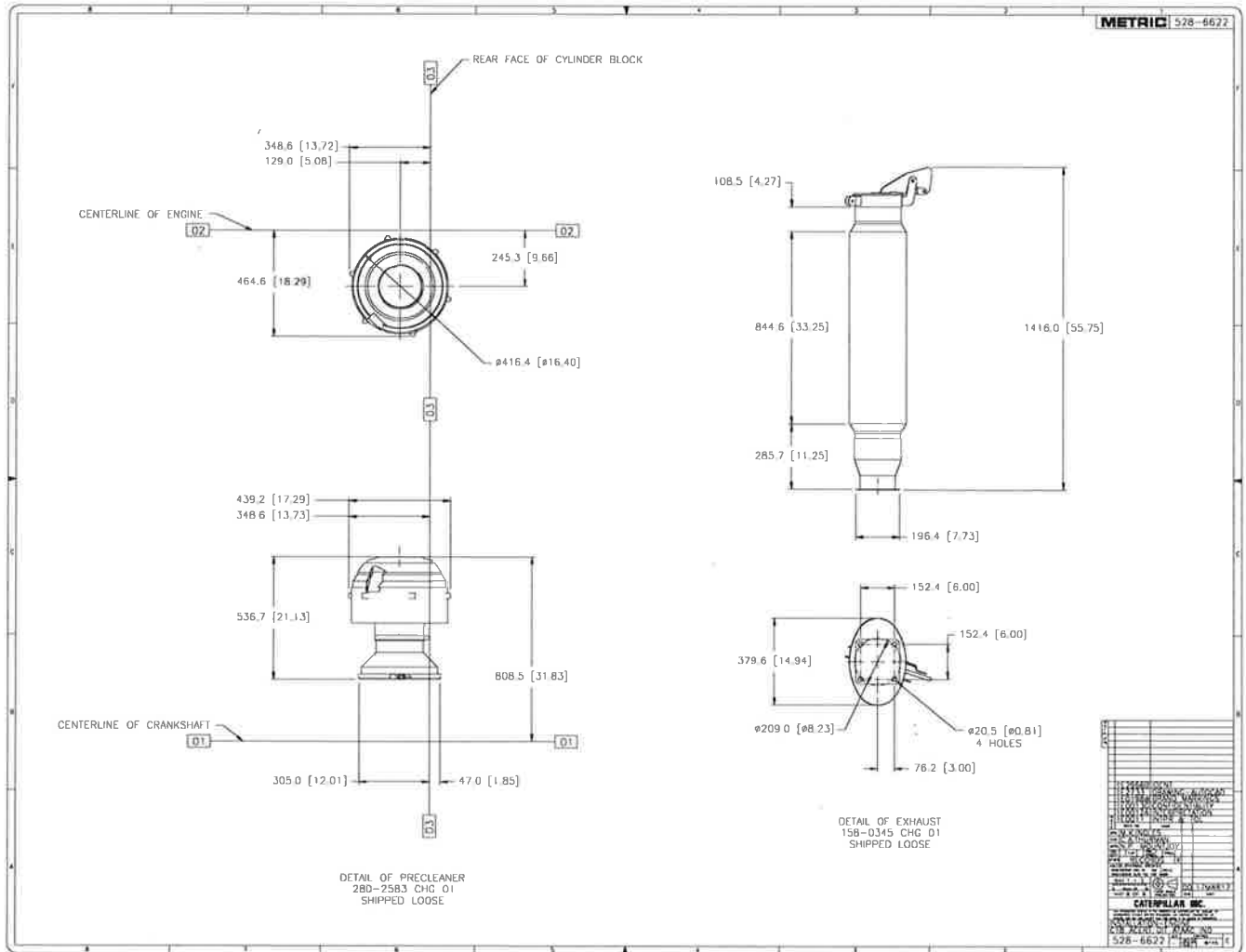
- Vibration damper
- Lifting eyes
- Cold start capability to -20° C (-4° F)
- Paint: Caterpillar yellow, with optional colors available at request

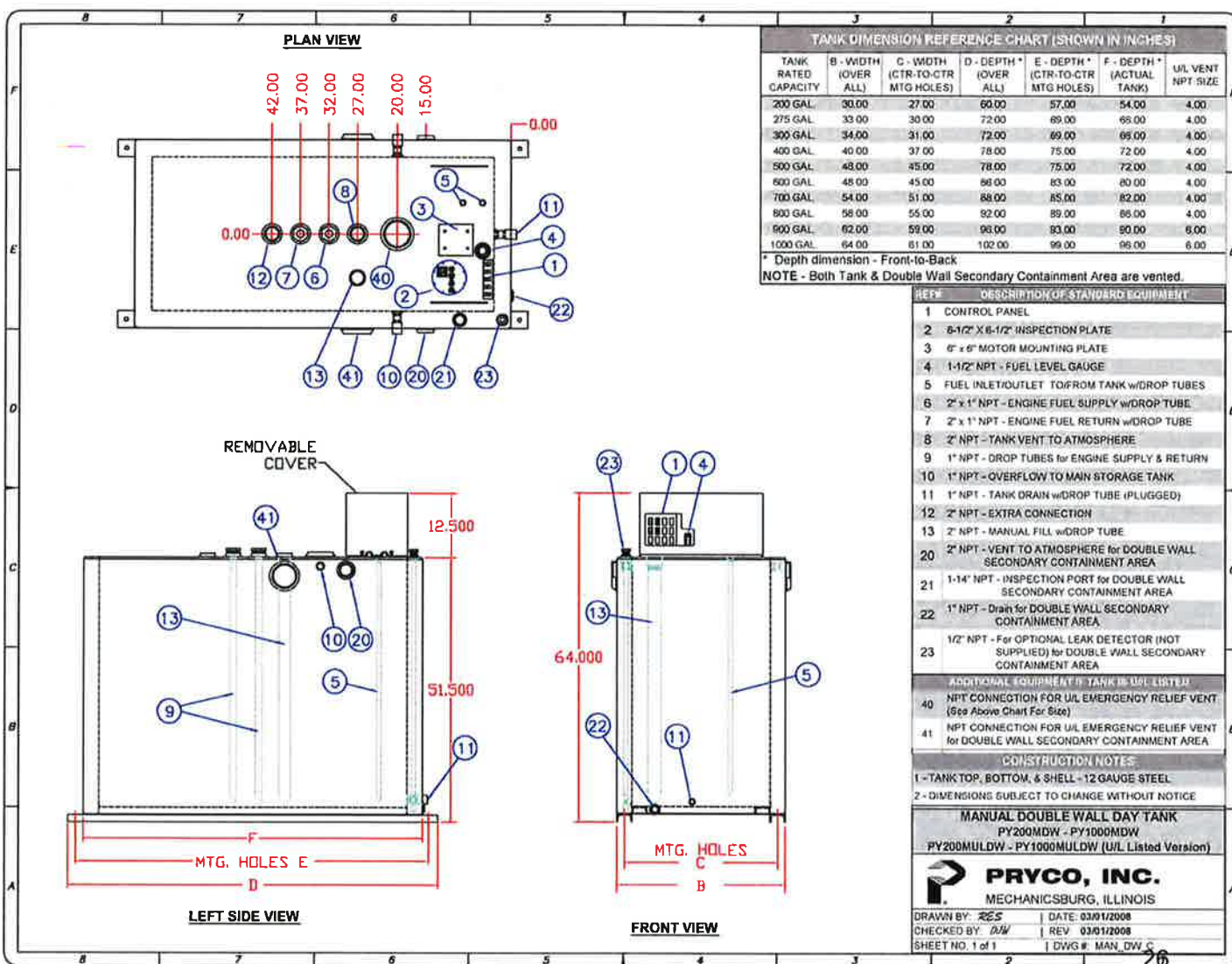
The International System of Units (SI) is used in this publication. CAT, CATERPILLAR, their respective logos, ADEM, EUI, S-O-S, "Caterpillar Yellow" and the "Power Edge" trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.













MANUFACTURER'S LIMITED WARRANTY

MWI Custom Engineered Products Warranty Policy
Lineshaft, SFA, Hydroflo, & Solar Pedaflo Pumps

- WARRANTY** - MWI manufactured pumps are guaranteed by Moving Water Industries, hereinafter called the Company, so far as the same are of its own manufacture, against defects in material and workmanship, under normal use and service for a period of 27 months from the date of shipment from the factory, or 3000 hours running time, or 24 months from the completion of "start up" whichever comes first. The Company's obligation is limited to furnishing without charge, excluding freight charges, parts to replace any similar parts of its own manufacture which are proved to be defective within the time limits or operational terms above, provided the purchaser has given the Company immediate written notice upon discovery of such defect.
The Company assumes no liability for damages or delays caused by defective materials and no allowance will be made for local repair bills or expenses without the prior written approval or authority of the Company.
The Company will guarantee accessory equipment or components supplied but not manufactured by the Company to the same extent that the guarantee is made by the manufacturer or supplier of such equipment. Immediate written notice of defects is required.
The warranty provided by the Company for its own manufactured equipment or for accessory equipment or components manufactured by others is contingent upon the equipment being properly shipped, stored, installed and operated in accordance with the design and instructions provided.
- PERFORMANCE GUARANTEES** are based on shop laboratory tests corrected for field performance in accordance with the engineering practices outlined in the Standards of the Hydraulic Institute. The performance guarantee is at the specified point of rating only, and will not cover performance under conditions varying therefrom. The Company is not responsible for any special indirect or consequential damages in case of failure to meet the conditions of any warranty, or for any damages arising from the use of its products.
- ACCEPTANCE TESTS**, if required, shall be conducted in accordance with and subject to the limitations set forth in the Standards of the Hydraulic Institute. The expense of any such test shall be borne by the purchaser. Due to the inaccuracies of field-testing, the results of any such tests conducted by or for the purchaser shall be interpreted as being only indicative of the actual field performance of the pump. No equipment shall be furnished on the basis of acceptance by results of field tests. If the purchaser, after such a test, questions the performance of the pump, he may at his option request tests to establish the performance. Such tests will be conducted in accordance with paragraph 2 and subject to the limitations of paragraphs 2, 3, and 4. If the tests conducted in this manner establish the performance as being within the guarantee, then all expenses involved shall be borne by the purchaser.
- ALL WARRANTIES** or guarantees are void if (a) pump is handling liquids other than clear, fresh, non-aerated water at a temperature not exceeding 85 degrees F., or liquids other than as specified by the primary design and purchase order; (b) pump has been handling sand or other abrasive material and if inspection indicates wear or erosion from such use; (c) operating speed is other than that of design condition; (d) installation of the pump is made in such a manner as to create shaft misalignment; (e) the Total Dynamic Head is exceeded or minimum submergence (low water level) is less than as specified by the primary design and purchase order; (f) lubrication and service maintenance instructions are not followed; or (g) damage to any component including the pump in a diesel, direct-drive lineshaft pumping system is caused by torsional vibration, unless the Company provided the entire system; (h) damage due to foreign objects; (i) damage due to cavitation.
- The Company is not responsible for hydraulic disturbances, including, but not limited to, vortices and cavitation which are generated from sump designs. The Company neither designs sumps nor provides consulting services to others on proposed sump designs. Consequently, the Company accepts no responsibility whatsoever for sump design, repair or modification of a sump, or any reduction in performance due to sump design.**

Ship Date: _____ Authorized By: _____

Job No.: _____

Model No.: _____

Serial No.: _____

Reviewed By: SOM

Released By: DM

Rev. No.: 003

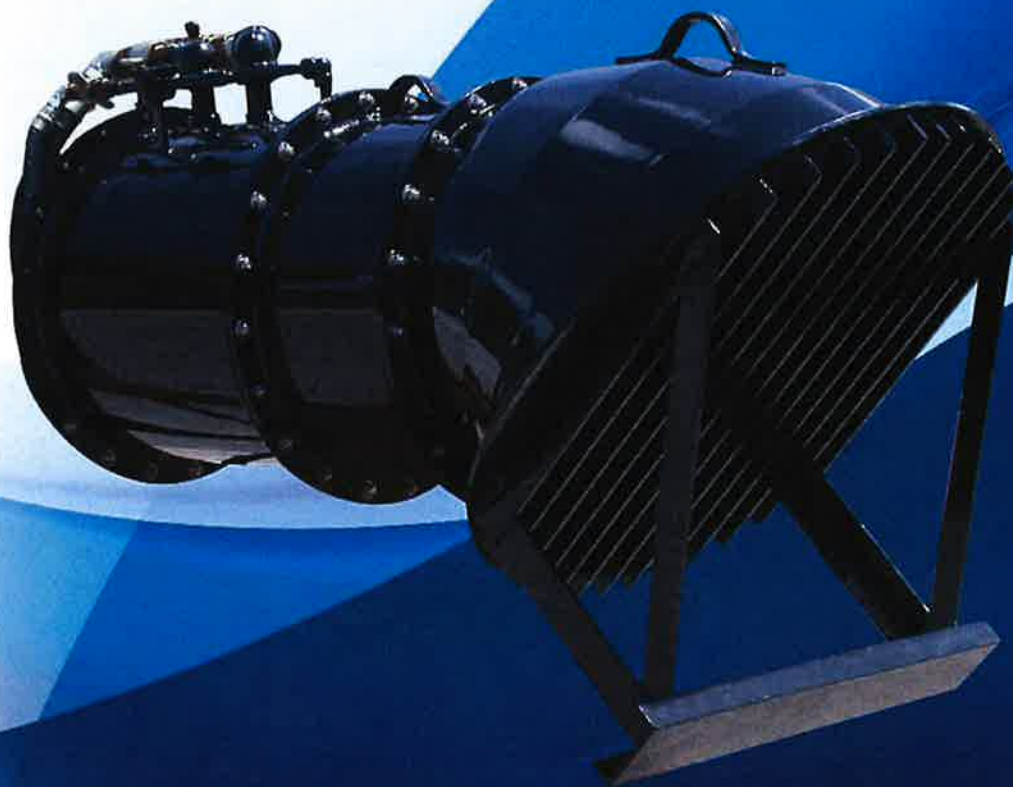
Rev. Date: 02/10/09

Doc. No.: QF 7.2-10



Hydraulically Driven Pumps

Hydraflo™



...
Moving Water Worldwide - Reliably and Efficiently



Hydraflo Pumps from MWI

The Hydraflo is a patented, submersible pump that uses the power of hydraulics to drive the impeller via flexible hoses. This replaces a fixed motor, a long, rigid shaft and the supporting structure common to most pumps that can move very large quantities of water. The unique design allows the pump to be set up in hours - not months - usually eliminates most of the civil works necessary for installation - saving a lot of money and time, allows the pump to be portable and provides variable speed control.

Advantages

Versatility

Hydraflo pumps can be installed at any angle - vertical, horizontal or any angle in between, by simply changing the intake bell.

Fast Installation

Hydraflo pumps can be installed within a fraction of the time of conventional lineshaft pumps. A typical installation can be done in house, because they do not require any critical alignment or the extensive civil works required by other high capacity pumps.

Designed for Longer Life

Hydraflos are designed for a very long life. All components are picked for ruggedness and durability. Many Hydraflos over 25 years old are still in daily use.

Less Submergence Required

Because the standard design of MWI Hydraflo pumps have large intake passages and low speeds, they can be installed and operated continuously at minimal submergence.

Requires Less Maintenance and Costs Less to Operate

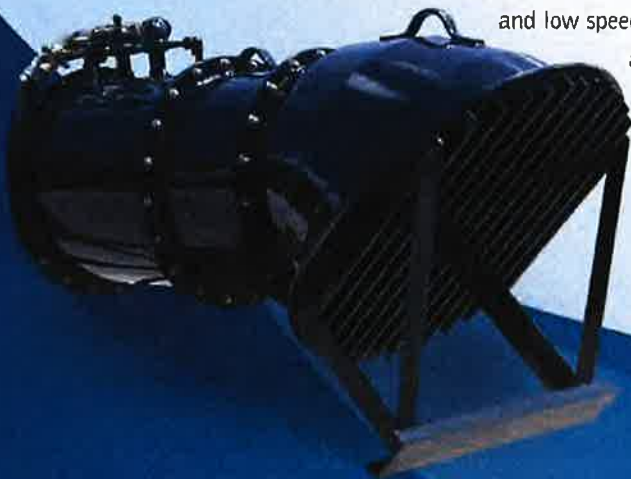
The Hydraflo is a simple, straightforward design that requires very little maintenance. When used in portable mode, pumps more water for less money and has a smaller footprint than the many centrifugal pumps that would be required to take its place. Hydraflo pumps are designed to run dry without damage to their components.

Variable Speed Pumping

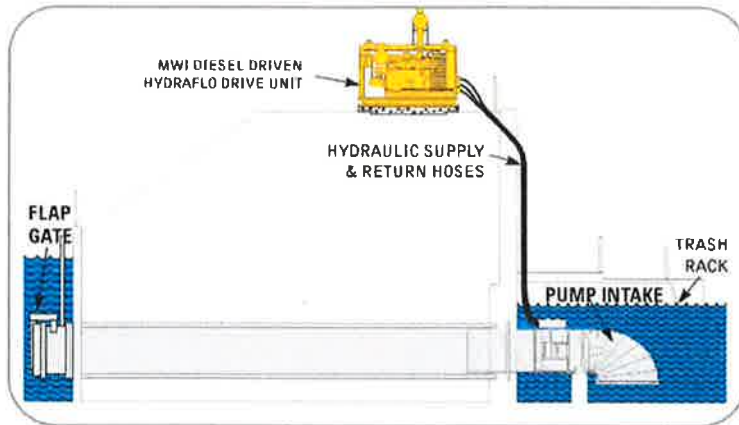
Pump speed can be varied manually by regulating engine speed. An automatic variable speed option is also available.

Environmentally Friendly

We offer several hydraulic fluid options which are readily biodegradable and meet the EPA toxicity limits. Hydraflo hydraulic tanks are small and have an engine shut down switch activated by small amounts of fluid loss.

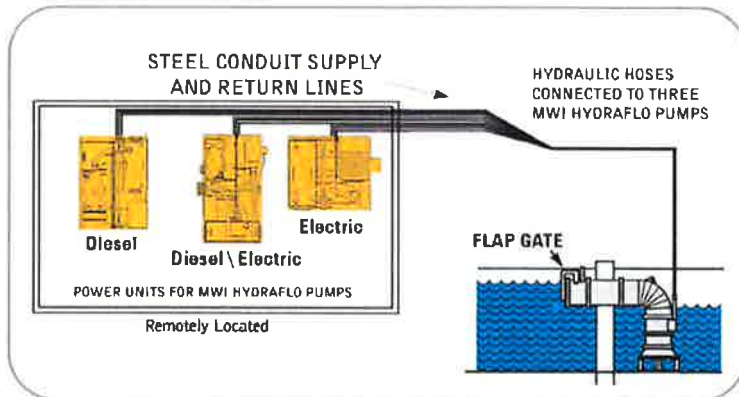


Installations ***



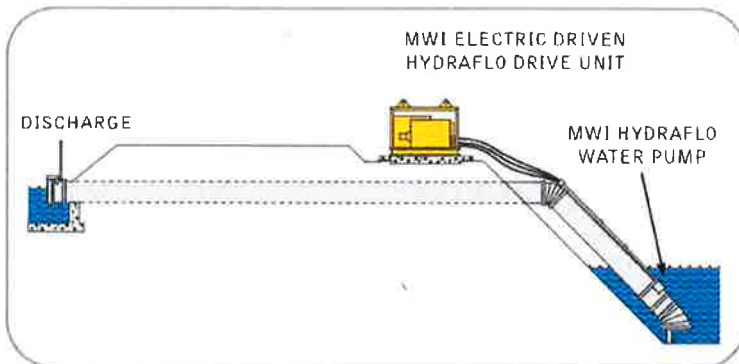
HORIZONTAL INSTALLATION

- Low profile
- Retro-fit existing pipe



VERTICAL INSTALLATION

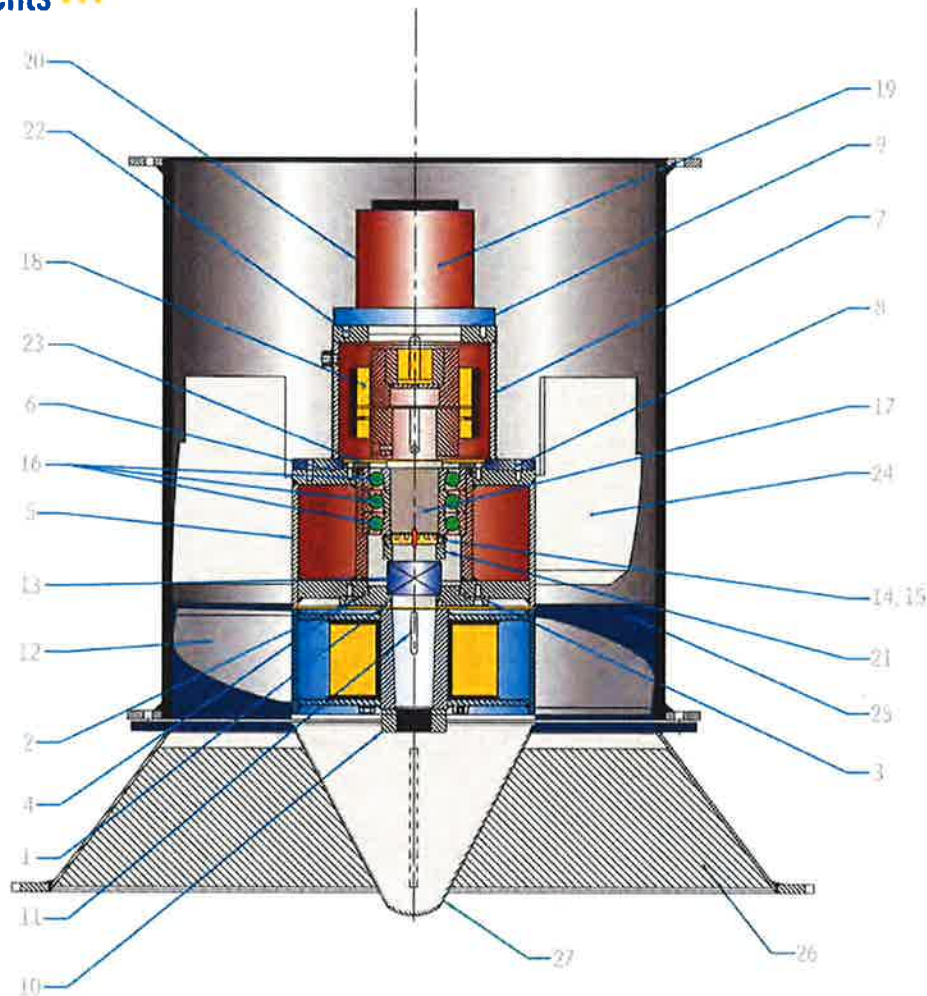
- Dual power for emergencies
- Remote drive unit



ANGLED INSTALLATION

- Low civil works
- Installable at any angle

Internal Components ***



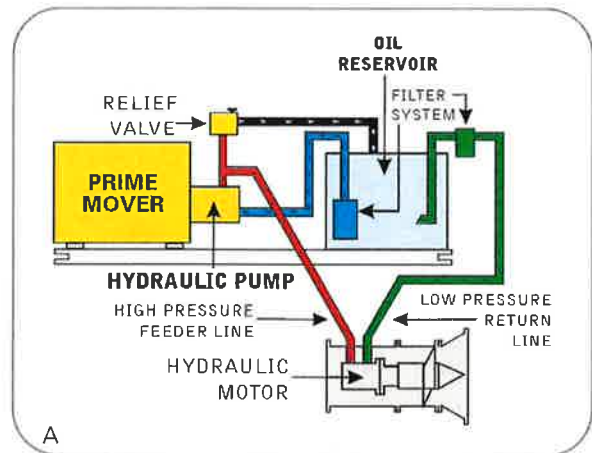
- | | |
|--|---|
| 1 Lip Seal (Synthetic Rubber & Stainless Steel Garter Spring) | 16 Bearings |
| 2 Bolts:Fasten End PI-Bearing Box(Grade 5) | 17 Hydraflo Shaft (304 Stainless Steel) |
| 3 End Plate (ASTM A588, Corten Steel) | 18 Shaft Coupling Assembly (Steel) |
| 4 O-Ring: End Plate / Bearing Box | 19 Hydraulic Motor (Steel Casting) |
| 5 Bearing Box (ASTM A588, Corten Steel) | 20 Mounting Flanges/ Adapters |
| 6 O-Ring: Bearing Box / Motor Mount | 21 Bronze Spacer (Bronze 660) |
| 7 Motor Mount (ASTM A242 Corten Steel) | 22 Bolts -Hydraulic Motor To Mount (Grade 5) |
| 8 Bolts:Motor Mount-Bear'g Box (Grade 5) | 23 Bearing Retainer (ASTM A242, Corten Steel) |
| 9 O-Ring: Motor Mount / Hydraulic Motor | 24 Distributor Blades (ASTM A242, Corten Steel) |
| 10 Propeller Nut (AISI 1026 Steel) | 25 Wear Ring/Liner (304 Stainless Steel) |
| 11 Propeller Key (AISI 1018 Steel) | 26 Guide Blades |
| 12 Propeller(S/ S Blades,A588 Corten Steel) | 27 Guide Hub |
| 13 Mechanical Seal Assembly (Ceramic & Stainless Steel Spring) | |
| 14 Bearing Lock-Nut (ANSI C1015 Steel) | |
| 15 Bearing Lock-Washer (ANSI C1015 Steel) | |

Due to our continual improvement of our products, we reserve the right to change designs and specifications.

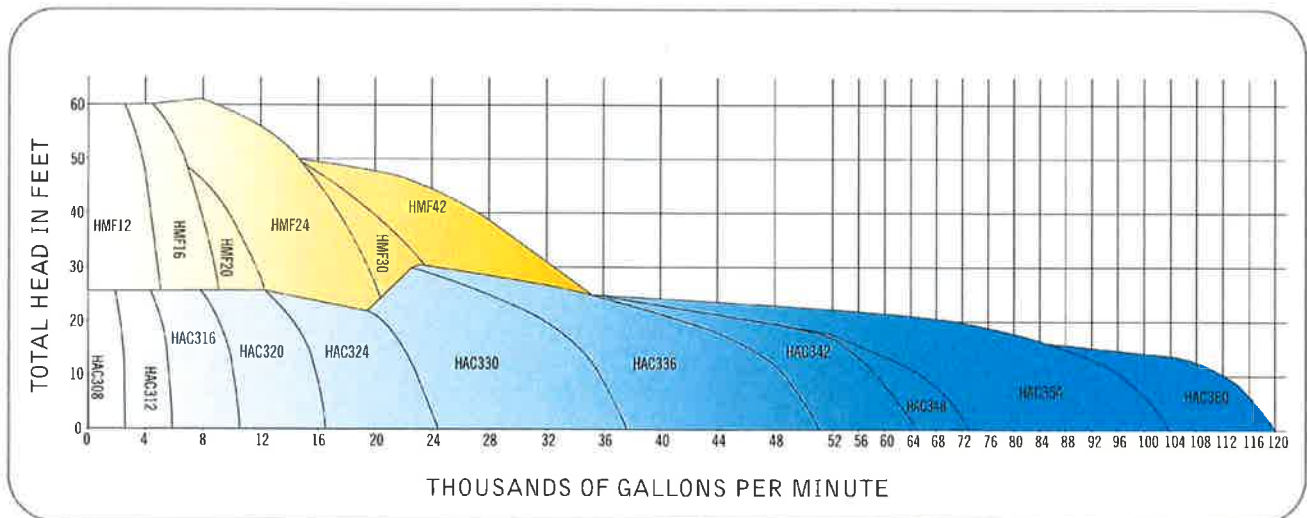
Method of Operation

Schematic A shows how the hydraulic system works. Note that the prime mover can be a diesel engine, electric motor or a combination of both. It drives a hydraulic pump which in turn supplies oil to the hydraulic motor in the water pump. This spins the hydraulic motor which is directly connected to the propeller. The hydraulic oil is then returned to the oil reservoir through the return filter. Then, the hydraulic oil returns through a strainer and back to the hydraulic pump, completing the circuit.

A relief valve from the high pressure side to the oil reservoir, serves to by-pass the power transmission fluid and divert flow in the event that an object gets lodged in the propeller. This is a very important safety feature available only with Hydraflo systems which protects all components from shock loads. Where variable flows are needed (such as in sewage effluent or "piped in" stormwater pumping), the propeller speeds can be infinitely adjusted automatically through the hydraulic power transmission system to match up with any combination of water flows and head conditions.



Performance curves for each bowl size are available upon request.





MWI's international headquarters and extensive manufacturing capabilities are located in Deerfield Beach, Florida, very close to the original business. The manufacturing facilities are spread over 4 city blocks and total nearly 300,000 ft², to include a 10,000 ft² test lab. The company has a facility in Egypt and representatives throughout the United States, Latin America, Middle East, Africa and Asia.

The Hydraflo™ is protected by one or more of the following patents and patents pending:

US Patents: #4,138,202, #6,447,260, #6,520,750, #4,188,788, #6,113,356, #4,350,476, #4,138,202, #3,907,463, #4,070,135, #4,797,067, #3,270,677



Moving Water Worldwide - Reliably and Efficiently

MOVING WATER INDUSTRIES
INTERNATIONAL HEADQUARTERS

201 N. Federal Highway Deerfield Beach, Florida 33441 USA
Phone: (954) 426-1500 Fax: (954) 426-1582 E-mail: info@mwicorp.com www.mwicorp.com

Spare parts list for HAC348 AND Caterpillar C-18 diesel engine

1. Set of hydraulic oil filters for each MWI drive unit
2. One hydraulic motor for the HAC348 pump head
3. One hydraulic pump for the MWI drive unit
4. Six (6) 55-gallon drums of hydraulic oil
5. Set of oil filters for each Caterpillar engine
6. Two sets of belts for the Cat engine
7. One spare engine controller
8. One water pump for the Cat engine
9. One 55-gallon drum of oil for the Cat engine