



CENTRALBIDDING
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**5000132814 - A ONE-TIME PURCHASE OF ALL STATIONARY
EMERGENCY STANDBY FLOOD CONTROL PUMPING EQUIPMENT FOR
THE LAFITTE AREA FOR THE JEFFERSON PARISH DEPARTMENT OF
DRAINAGE**

Jefferson Parish Government

Project documents obtained from www.CentralBidding.com

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Bid Number 50-00132814

**ONE-TIME PURCHASE OF ALL STATIONARY EMERGENCY STANDBY
FLOOD CONTROL PUMPING EQUIPMENT FOR THE LAFITTE AREA FOR
THE JEFFERSON PARISH DEPARTMENT OF DRAINAGE**

BID DUE: December 10, 2020 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 in the Purchasing
Department by the bid due date and time.**

**Jefferson Parish Purchasing Department
200 Derbigny Street
General Government Building, Suite 4400
Gretna, LA 70053
Buyer Name: Melissa Ovalle
Buyer Email: movalle@jeffparish.net
Buyer Phone: (504) 364-2687**



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
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LAFITTE PUMP BID PACKAGE

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 an axial flow propeller, drive unit, and controls. It shall include three (3) 16” packages and three (3) 24” packages. Preferred pump and skid package shall be electric-diesel drive unit Model Number 2000 and 2400 series with single stage water pump models HAC316 and HAC324 by MWI Corporation, 33 Northwest Eller Street, Deerfield Beach, FL, 33441, or **approved** equal and in accordance with this bid. Preferred instrumentation and controls shall be by Prime Controls LP, 110 Phlox Ave b, Metairie, LA 70001, or **approved** equal and in accordance with this bid. Any substitution to the specifications 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 the vendor receives the purchase order shall not exceed one hundred eighty (180) calendar days.

PART 2 – PUMP AND SKID PACKAGE

2.1 QUALITY ASSURANCE:

- A. The pumping equipment to be supplied in the section will be the product of one manufacturer regularly engaged in the production of electric/diesel, variable 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 installation which have been continuously operating for not less than 5 years. The test facility must be located inside the continental US.
- 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. Failure to submit with bid submission will result in bid being deemed non-responsive and rejected.**

Bidders shall submit with bid submission the following:

1. **Shop Drawings (including main layout drawings, list of equipment specifications, and recommendations furnished by the equipment manufacturer).**
2. **Pump "Bill of Materials" of the unit's construction, cutaway drawings, and dimensions as offered to confirm compliance with the specifications.**
3. **Control panel drawings.**
4. **One hydraulic circuit schematic for the entire pumping system.**
5. **As-Built Drawings of the pump and accessories (as is applicable).**
6. **List of Spare Parts and Special Tools (if applicable).**
7. **One certified copy of installation and operation manuals for permanent pump systems.**
8. **Certified pump curve with points selected for all design conditions in section 2.6.**

2.3 GENERAL PUMP PACKAGE DESIGN

- A. Each pump package shall have an electric-diesel drive unit (specified herein). The electric motor shall be the prime mover with the diesel engine as the backup. In the event of a power failure, the diesel engine will start automatically. When power resumes the diesel engine shall enter a shut-down routine and after the diesel engine stops, the electric motor will automatically start if the pump is being called for. In the event of electrical panel failure, 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.
- B. A variable displacement hydraulic piston pump shall be used to control the water pump speed. This configuration shall allow the prime mover (either the diesel engine or electric motor) to operate at a fixed optimum speed to utilize horsepower available. Hydraulic pump displacement (stroke) shall be controlled automatically (or manually through operator controls) based on the owners 4-20mA input signal from a level transducer.
- C. Utilizing variable displacement hydraulics on both the electric motor and diesel engine

configuration allows component crossover.

2.4 SKID ASSEMBLY AND WIRING

- A. Construction shall include a fabricated steel base with lifting eyes and skid assembly and shall support all components during shipping and also serve as the installation mounting base. The dimensions of each base for the 16" pumps shall not exceed 88" X 136", and 180" X 76" for the 24" pump skid package.
- B. The complete pump assembly and skid package shall be coated inside and outside using standards SSPC-SP10 / (Near-White Blast cleaning), a zinc coating primer, followed by an industrial strength epoxy primer with a polyurethane top coat.
 - 1. Sherwin Williams Macropoxy 646 with an Acrolon 218 polyurethane as per manufacturer's recommendation or approved equal.

2.5 DESIGN DATA

- A. The Pump design criteria is listed below in Table 1 and Table 2.

Table 1: HAC16 Pump Design Data

HAC16	
ITEM	DESIGN CONDITION
Design Condition at Rated Speed	
Flow (GPM)	4000
Bowl TDH* (Feet)	10
Pump Rated Speed (RPM)	700
Required Condition 2 at Rated Speed	
Flow (GPM)	8000
Bowl TDH* (Feet)	12.3
Pump Rated Speed (RPM)	1000
Required Condition 3 at Rated Speed	
Flow (GPM)	9500
Bowl TDH* (Feet)	9
Pump Rated Speed (RPM)	1100
Required Condition 4 at Rated Speed	
Flow (GPM)	8700
Bowl TDH* (Feet)	14
Pump Rated Speed (RPM)	1100
Diesel Engine to be Supplied (HP)	100
Motor to be Supplied (HP)	75
Number of Pumps	3
Maximum Rated Pump Speed (RPM)	1100
Minimum Rated Pump Speed (RPM)	700
Column and Discharge Size (Inches)	16"
Suction Bell Thickness	3/16"
Pump Bowl Thickness	3/8"
Hydraulic Motor housing thickness	3/16"

Table 2: HAC24 Pump Design Data

HAC24	
ITEM	DESIGN CONDITION
Design Condition at Rated Speed	
Flow (GPM)	8000
Bowl TDH* (Feet)	9.8
Pump Rated Speed (RPM)	450
Required Condition 2 at Rated Speed	
Flow (GPM)	18000
Bowl TDH* (Feet)	11
Pump Rated Speed (RPM)	650
Required Condition 3 at Rated Speed	
Flow (GPM)	20500
Bowl TDH* (Feet)	8
Pump Rated Speed (RPM)	700
Required Condition 4 at Rated Speed	
Flow (GPM)	18000
Bowl TDH* (Feet)	14
Pump Rated Speed (RPM)	700
Diesel Engine to be Supplied (HP)	150
Motor to be Supplied (HP)	150
Number of Pumps	2
Maximum Rated Pump Speed (RPM)	700
Minimum Rated Pump Speed (RPM)	450
Column and Discharge Size (Inches)	24"
Suction Bell Thickness	3/16"
Pump Bowl Thickness	1/2"
Hydraulic Motor housing thickness	1/4"

- 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 56" for models HAC324 or approved equal.

2.6 WATER PUMP HYDRAULIC DRIVE UNIT MATERIAL AND DESIGN

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

1. **SUCTION BELL** - The suction bell assemblies shall be manufactured from alloy steel} 3/16" and 1/4" (depending on the pump size) thick and conforming to ASTM A242} and shall have a maximum inlet diameter of 1.5 times the propeller diameter or compliant with Hydraulic Institute 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 assemblies 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 3/8" and 1/2" (depending on the pump size) 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.
3. **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.
4. **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 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 assembly housing, hydraulic motor, and propeller shaft coupling and inlet and outlet port pipe connections. The assembly housing shall be manufactured from 1/4" thick alloy steel conforming to ASTM A242. The housing assembly shall have the water pump shaft and hydraulic motor connected with a spline connection. 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.
6. **FLANGES** – All pump flanges shall be ANSI B15.1 Class 125 pattern.

2.7 ELECTRIC/DIESEL DRIVE UNIT REQUIREMENTS

- A. Diesel engines shall be Tier 3 John Deere or Deutz diesel engines unit or equal, of 100, and 150 HP at 1800 rpm continuous duty rating. The units shall be fully equipped with radiator (if required), 12 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 muffler 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 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 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 included as an integral part of the mounting skid. The tanks shall be 100 gallons for the 16" skid packages mounted vertical on top of the skid. The 24" skid packages tanks shall be 200 gallons mounted vertical on top of the skid. Fuel tanks shall be constructed per UL 142 and labeled as such. All tanks shall have two spare NPT ports with caps in addition to all vents and UL required instrumentation.
- D. Control Continuous Level Transmitter (Fuel Tanks): Shall have a total of two float switches and one continuous monitor level transmitter. The upper and lower switch floats will be independent high low 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 4 mA. As the float moves closer to the fitting, the mA output will increase until it reaches the top of the measuring range, providing a 20 mA signal. The mA signal will change every 1/4" of float movement. The mA value will change with every 1/4" of float movement. The value of mA change per 1/4" of float movement equals 4 divided by total measuring range 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 of fuel supply and return lines.
- F. Engines shall have electronic type governor for units 100HP and over, and mechanical type governor for smaller units.
- G. Engine shall have variable speed throttle control while set in auto.
- H. An instrument panel shall be provided in the enclosure and mounted on rubber isolators. See section 2.12.
- I. Electric motors shall be installed on the power unit and shall be the same BHP as the diesel listed above. The electric motors shall be a horizontal, foot-mounted, TEFC, 460 volt, 3-phase, 60 Hertz and shall be wound for reduced voltage starting and have a 1.15 SF. Each electric motor will come with a reduced voltage starter mounted on the skid.

- J. A SENS NRG battery charger (C/N NRG22-10-RCLS) 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 connection to the battery bank. Battery charger shall include NEMA 3R housing with remote temperature comp sensor. Panel shall provide designated IO in appendix 1 to the pump control panel listed in section 3 of this specifications.

2.8 HYDRRAULIC SYTEM

- A. The hydraulic pump shall be variable displacement hydraulic piston 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 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 option is included.
- D. Sufficient hydraulic oil cooling capacity shall be provided to sustain direct sunlight radiation as well as ambient temperatures up to 122°F (50°C).
- E. Pumping units shall be open loop hydraulic circuit with 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. Operator Interface

- 1. In manual operation the operator's hydraulic panel shall include the following:
- 2. System Failure Annunciator 1 - Low Hydraulic Oil Level
- 3. System Failure Annunciator 2 - High Hydraulic Vacuum Diesel
- 4. System Failure Annunciator 3 - High Hydraulic Vacuum Motor
- 5. System Failure Annunciator 4 - High Hydraulic Oil Temperature
- 6. Hydraulic System Pressure Gauge
- 7. Hydraulic Vacuum 1 Variable Diesel Gauge
- 8. Hydraulic Vacuum 2 Fixed Diesel Gauge
- 9. Hydraulic Vacuum 1 Variable Motor Gauge
- 10. Hydraulic Vacuum 2 Fixed Motor Gauge
- 11. Hydraulic Oil Temperature Gauge
- 12. Hydraulic System Loading Solenoid Valve (fail closed – always pump if fail)

B. Alarms and shutdowns

- 1. The following alarms shall shut down the prime mover.
- 2. Low oil level in hydraulic reservoir

3. High hydraulic system temperature
4. High hydraulic pump suction vacuum
5. Diesel engine high coolant temp
6. Diesel engine low oil shutdown

2.10 MOTOR STARTER PANEL

- A. Each unit shall come equipped with features
1. Solid State Reduced Voltage / Standard duty soft starter combination - Circuit Breaker Disconnect for Short Circuit Protection Starter Rated for 100 and 150 HP- 115% Continuous Rated, Calculated FLA 350% for 30 Seconds. MX2 Control Technology with Electronic OL, Metering & Motor Protection, and Modbus RTU Communications Rated for use in 40C Ambient. NEMA Type 3R Free Standard Enclosure.
 2. Control Power by Benshaw
 3. Phase Monitor Circuit with Time Delay on Power-Up I Return of Power
 4. Door Mounted MX2 Keypad Display (Keypad Start & Stop Disabled).
 5. Door Mounted H-0-A Switch.
 6. H = Start / Stop by local door mounted push buttons.
 7. 0 = Off, Starter will not run from local or remote control.
 8. A= Auto (Remote) Start from customer remote contact.
 9. Start Pushbutton.
 10. Stop Pushbutton.
 11. Pilot Light Green - Run Light.
 12. Pilot Light Red- Fault Light.
 13. Digital Input (120 V High) Programmed for low oil level shutdown contacts.
 14. Cable Entry I Exit - Top Entry I Bottom Exit.
 15. Panel shall provide designated IO in appendix 1 to the pump control panel listed in section 3 of this specifications.

2.11 DIESEL ENGINE PANEL

- A. Basis of Design: Controls Inc C Series Panels or approved equal. Each unit shall come equipped with features
1. Panel shall have 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 lamp.
 5. Panel shall provide designated IO in appendix 1 to the pump control panel listed in section 3 of this specifications.

2.12 SKID PACKAGE, ACCESSORIES, AND FUNCTIONS

- A. Lifting Lugs
 - 1. 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
 - 1. The pump shall be identified by means of a loose, separate name-plate. The plate shall bear the manufacturer's name, model designation, serial number if applicable, and other pertinent information such as horsepower, speed, capacity, type, direction of rotation, etc. The plate shall be made of corrosion-resisting metal with raised or depressed lettering and contrasting background.

2.13 SPARE PARTS

- A. The vendor shall furnish one spare hydraulic oil filter for each unit.
- B. The vendor shall furnish and install all required lubrication oil and grease for package unit field testing upon delivery.
- C. The vendor shall furnish one spare set of oil filters, fuel filters, and air filters for each unit.
- D. One 24" Hydraulic pump – Variable
- E. One 24" Stroke control proportional amplifier
- F. One 24" Hydraulic pump – Gear – Stroke Control
- G. One 16" Hydraulic pump – Variable
- H. One 16" Stroke control proportional amplifier
- I. One 16" Hydraulic pump – Gear – Stroke Control

2.14 HYDRAULIC PIPE AND HOSE

- A. 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 specifications. 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 four times the working pressure or 2500 psi, whichever is higher. 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 adequate size to supply hydraulic fluid so that pump meets required flow. Hydraulic oil internal velocities shall not exceed 15 fps. Hose lengths shall be determined with the drainage department and shall not exceed 50 feet in length before delivery.

PART 3 – INSTRUMENTATION AND CONTROLS

3.1 SUMMARY

- A. This Section includes control and monitoring equipment incorporated in a Station Control Panel which will interface with one electric/diesel drive skid to provide supervision of the drive system as well as other related station parameters. The vendor shall furnish, install, and place into service a Station Control Panel to perform the specified monitoring, communications, alarm, and control functions specified below. The Station Control Panel shall be pre-configured for local monitoring and automatic control of the pumps on the electric/diesel drive skid and remote monitoring and control through the OWNER's Supervisory Control and Data Acquisition (SCADA) System as described in the summary of work. All panels shall be mounted on the pump skid package and utilized during system testing at the manufactures facility.

B. General

The control system for the drainage station shall be comprised of multiple components, some providing control functions and others providing only supervision of non-essential parameters. Furnishing of the control system, at a minimum shall be by the pumping system manufacturer, as it a requirement of these documents for the pump driver skid local controls be furnished by the drainage pump manufacturer; however, it is permitted and expected for a local controls system Vendor to construct the actual Station Control Panel. The Station control panel shall primarily include automation low voltage power, automation/communication PLC/s, input/output modules, terminal strips, SCADA radio, and numerous exterior panel display and electronic or electromechanical input devices. The Control System shall also include various remote switches or measurement instruments, all of which shall be described in this Section.

It is the intent of these Specifications that the Vendor furnish and install a fully functioning Local Control System providing both local pump control and monitoring. The Station Control Panel shall include equipment required for local pump control and monitoring along with pre-configured communications equipment necessary to remotely monitor and control the pumps at the station through the Jefferson Parish VTSCADA System, all the while meeting the requirements of Jefferson Parish Drainage Operation Department of Jefferson Parish SCADA Division.

3.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

Without limiting the generality of other requirements of these Specifications, all items specified herein shall conform to or exceed the applicable requirements of the referenced documents to the extent that the requirements therein are not in conflict with the provisions of this section; provided, that where such documents have been adopted as a code or ordinance by the public agency having jurisdiction, such code or ordinance shall precedence

3.3 ACTION SUBMITTALS

Successful bidder shall submit the following after testing is completed at manufacturer's facility,

prior to delivery.

A. Shop Drawings: The Vendor shall submit to the Parish shop drawings of all equipment before fabrication. All drawings provided shall be produced using PC based drawing program compatible with Jefferson Parish computers. All shop drawings shall be checked by the vendor before submittal for review by the Parish. These drawings and data shall be submitted as a complete package at one time (except allowed early submittals on major equipment and long lead delivery items) and shall include:

- Complete systems diagrams.
- Drawings shall show definitive wiring interconnection diagrams. These diagrams shall show and identify each component of each system. These diagrams shall be prepared in accordance with ANSI/ISA S.5.4
- Data sheets shall be included for each component together with a technical product brochure or bulletin. These data shall show: The component name as used on project drawings and in these Specifications, manufacturer's model number or other identifying product designation, the project site to which it applies, input and output characteristics, functional and operational descriptions sufficient to show conformance to the specification requirements, requirements for electric power, specifications for ambient operating conditions, and details on materials of construction.
- Arrangement and construction drawings for the Station Control Panel shall show dimensions, identification of all components, preparation and finish data, nameplates, and the like.
- Any and all modifications made to existing measurement and control circuits, equipment, and wiring shall be shown on the SCADA site wiring diagrams.
- Complete and detailed bill of materials.

B. Technical Manuals: The Vendor shall furnish a complete set of manuals describing the operations and maintenance requirements of the complete PLC. The operations manuals shall describe each feature and function of the system in a step by step tutorial fashion. The maintenance manuals shall include complete system trouble-shooting guides and explain fully the use and application of diagnostic programs, as well as all relevant manufacturer's maintenance and calibration instruction sheets. All manuals written for this contract shall be produced using the word processing program furnished with the system software or Word Version 6. To allow for different levels of use and area of application, separate manuals shall be furnished as follows:

1. Maintenance Manual - Instrumentation: This manual shall provide complete information for the maintenance, repair, replacement, calibration, etc. for all of the instrumentation furnished under this contract. This shall include the final settings and calibration point

records developed during the checkout calibration of the system.

2. Maintenance Manual- PLCs/Interfaces: This manual shall provide complete information for the maintenance, repair, replacement, calibration etc. for all the PLCs and interfaces furnished under this contract. This shall include the final settings and calibration point records developed during the checkout complete instructions in the use of diagnostic programs for trouble shooting these units to the circuit card level, as well as instructions in loading application programs, system resets, initialization, etc.

3. Maintenance Manual- Radios: This manual shall provide complete information for the maintenance, repair, replacement, calibration, etc. for all of the radio equipment furnished under this contract. This shall include complete instructions in the use of testing and diagnostic programs for the radio system.

C. Quality Control Test Procedures and Forms: The Vendor shall submit a complete set of test procedures and forms that will be used in conjunction with the quality assurance program as specified herein.

3.4 QUALITY ASSURANCE

- A. Factory Tests: Prior to installation, the complete system, including peripherals and communication equipment of the PLCs, shall be assembled, connected, and all software loaded for a full functional test of the integrated system. Test procedures shall be developed by the system supplier to show that the integrated system hardware and software is fully operational. All system and pump tests shall be performed using the systems specified control panel. Temporary controls shall not be utilized when performing pump curves and tests.
- B. Installation Supervision: The system supplier shall furnish services and technical information as necessary to insure that the equipment furnished by supplier is installed in a proper and satisfactory manner. These services shall include, but not be limited to, providing the Parish with information and direction prior to commencement of the equipment, periodic inspection during the construction period, answering of all questions regarding the installation and hookup, a complete check of the completed installation and hookup, and a complete check of the completed installation to insure that it is in conformance with bid specifications.
- C. Calibration: The system supplier shall furnish the services of a trained technician to perform a complete system calibration. This shall provide that those components having adjustable features are set for the specific conditions and applications, and that the components and systems are within the specified limits of accuracy. Defective elements which cannot achieve proper calibration or accuracy, either individually or within the system or subsystem, shall be replaced. A complete record of the calibration checks and adjustments shall be made and delivered to the Parish upon completion of the system calibration.

3.5 PROGRAMMABLE LOGIC CONTROLLERS (PLC)

SCADAPack 357 Controllers shall be furnished and installed in the Station Control panel. Unit shall provide pump control decision processes and also collect and transfer data collected from the station instrumentation via data transfer to the Control Radio System. All required analog and digital input and output modules shall be designed for use with the SCADAPack controller. Station Control Panel DC power source shall be provided via the diesel engine battery bank.

PLC shall be able to communicate over a Modbus network. The ambient temperature shall be rated for 0° to 55° C (0 to 131 F). The PLC shall have enough I/O for the entire project with 20% spare I/O.

Communications shall be accomplished through one of the following options:

- Modbus RTU
- Modbus/TPC

3.6 RADIO SYSTEM

General: The radio shall be furnished/installed in the pump control panel and connected to the pump controller communications output port. The existing Jefferson Parish SCADA radio system operates on 4 adjacent 12.5 KHz channel splits in the 928-952 MHz band. The central station transceivers operate through antennas at the communications tower on Belle Terre Road in Marrero, Louisiana. The radios shall meet all of FCC part 94 out-of-band emission requirements and shall be capable of transmitting data at 9600 baud, operating half duplex. The radio shall also be capable of communicating with the Jefferson Parish VTSCADA system via a cellular connection.

Frequency Plan: Jefferson Parish has FCC licenses to operate four point-to-multipoint radio systems on 12.5 KHz channels in the Power Radio Service on the frequencies shown below:

Master Transmitter North	952.45625 MHz
Master Transmitter South	952.48125 MHz
Master Transmitter East	952.49375 MHz
Master Transmitter West	952.46875 MHz
Remote Transmitters North	928.45625 MHz
Remote Transmitters South	928.48125 MHz
Remote Transmitters East	928.48125 MHz
Remote Transmitters West	928.46875 MHz

The R.F. equipment furnished under these specifications shall meet or exceed all current FCC requirements for point-to-multipoint radio systems and shall also meet or exceed the following minimum specifications. The R.F. equipment shall be capable of operation on the above listed adjacent 12.5 KHz channels without degradation.

The R.F. transmitters shall be directly frequency modulated by a built-in digital modem from the digital data stream furnished by the Pump Controller. The R.F. receivers shall provide a digital data stream to the Pump Controller.

Power Output (at duplex output)+39.0

Dbm Frequency Stability	1.5 PPM
Modulation Deviation	+3.0 KHz
Duty Cycle	Continuous

Receivers:

Receiver Sensitivity (10 to -6 BERT)	-106
Dbm Frequency Stability	1.5 PPM
Modulation Acceptance	+3.0 KHz

The radio assembly for each site shall consist of a nonprotected transmitter, receiver, power supply and digital modem capable of operating in the 928 to 952 MHz band. Each assembly shall be capable of transmitting and receiving digital data at a rate of 9600 Baud over a 12.5 KHz FCC assigned channel. These units shall also meet the following requirements:

1. Each R.F. assembly shall be capable of operation at full performance specifications between -30 and +60 degrees centigrade with a relative humidity of 95% measured at +40 degrees centigrade.
2. Each R.F. assembly shall operate from a D.C. power system furnished and installed as a part of the overall installation. Battery tapping of 24 volt power systems to obtain 12 volts will not be permitted.
3. Each R.F. assembly shall be enclosed in a sturdy metal housing suitable for mounting on the back plate of the Pump Controller enclosure with stainless steel hardware in such a manner as to permit easy removal of the radio assembly for service and/or replacement.

Antenna systems shall be furnished and installed in accordance with the following specifications and as shown on the drawings. The antennas for all sites shall be heavy duty yagi type meeting the following minimum specifications:

Frequency Range	928 to 960 MHz
Forward Gain	10Dbd
Front-to-Back Ratio	20Db
VSWR	Vertical
Impedance	50 Ohms
Horizontal Beam width	60 Degrees (half power point)
Input Power	50 Watts
Wind Rating	150 MPH Survival (no ice)
Lighting Protection	Direct Ground
Input Connector	Type "N", Female

Mounting brackets shall be steel. All mounting hardware shall be stainless steel. Antennas at sites with wooden support poles shall be installed so that the 2" aluminum mast at the top of the pole extends over the top of the antenna by a minimum of 6". Note: Antenna mast and pole is not required to be furnished with the telemetry system.

Transmission lines shall be Andrew Corporation Heliac Type LDF4-50A 1/2" diameter foam dielectric coaxial cable or approved equal. The coaxial cable shall be encased in a black polyethylene outer jacket. Connection shall be Type "N" male. 100' of coaxial cable is required with each antenna furnished.

Cellular Connection: The radio system shall be capable of communicating with the Jefferson Parish VTSCADA system via a cellular connection.

Radio: Radio equipment shall be GE MDS Orbit LN series. The approved radio devices are listed below.

- MXNCL9CN4G5N1S2FASUNN Orbit MCR LN9 Licensed Narrowband+ 4G LTE US Verizon with GPS, 1 Ethernet 2 Serial

Cellular Antenna: Cellular antenna shall be PCTEL Ground Plane Independent, Low Profile Vertical LTE Antenna, Part Number BMLPVMBL TENG P-VP

Vendor shall coordinate the details of the radio system to be provided with Jefferson Parish prior to purchase.

Note: antenna, antenna mast, external antenna cable and connectors, and pole is not required to be furnished with the telemetry system.

3.7 INSTRUMENTATION

A. Digital Process Meter (Feet): Meter will be installed on Station Control Panel door and used in conjunction with the level transmitter to provide a digital readout to pump station personnel of the sump level reading at the station. Meter will be a digital process meter with the following features: accepts a 4-20 mA signal and displays this signal in engineering units on a digital display; NEMA 4X front panel; Digital process meter shall be Precision Digital Indicator, Model PD765-7R0-00.

3.8 STATION CONTROL PANEL

General: Panel system will incorporate a Station Control Panel with the capability to control the pumps on the electric/diesel drive skid, monitor the activities of the station, and transmit the activities of the station to the Jefferson Parish SCADA System over cellular and FCC licensed radio frequencies. The pumps shall be controlled by intake basin (sump) water level, using a radar level transmitter for the primary controls signal and floats for backup in the following manner:

Local automatic pump control: (All radar and floats shall be supplied by owner) Programmable Logic Controller (PLC) in the pump control panel shall automatically control the pumps based on intake level (sump) measurement utilizing a radar level transmitter measuring the intake water level (primary control) and float switches installed at predetermined elevations in the intake (backup control). Float switches are as follows:

FS1: Low Low Level Cut-Off Float: This float shall stop either pump under all conditions at an intake level just above the pump intake. This float shall backup the Low Level Stop Float.

FS2: Low Level Stop Float: This float shall stop either pump at an intake level just below the set point that the radar level transmitter would command the pump to stop.

FS3: High Level Float: This float shall start either pump at an intake level above the set point that the radar level transmitter would command the pump to stop.

Local manual pump control: Manual control of either the electric or diesel driven pump will be

accomplished from each respective electric and diesel pump control panel. Operators installed on the door of the Station Control Panel shall be utilized to manually control the speed of either pump once either pump has been started from the corresponding electric and diesel pump control panel.

Remote manual pump control: The Station Control Panel will be pre-configured for access to the Jefferson Parish SCADA System so that the SCADA System can be programmed to remotely monitor station activities and start and stop the pumps. SCADA System programming for remote manual pump control will be completed by the OWNER.

3.9 VARIABLE SPEED CONTROLLER

- Each drive unit shall be outfitted with “Electronic Proportional Displacement Control” which will use a 4-20mA signal to control the stroke of the hydraulic piston pump, in turn, controlling the drainage pump speed. The system shall allow the prime mover (either the electric motor or diesel engine) to operate at a fixed optimum speed to utilized horsepower available. The servo line maximum pressure and maximum stroke shall be factory set and may not be altered.
- The control shall be a 100% solid-state, plug-in module which is housed in the card housing previously specified. Each card shall receive a 2.5- 12.5 volt DC signal as supplied from the control system. The ramp controller shall provide adjustable gain, offset, minimum and maximum speed limit adjustments, differential set points and test points as described below.
- The control panel shall have a separate control panel battery back-up.
- Adjustable Gain - The controller shall allow the 4-20 mA signal output to be continuously positioned over the full output range. The low output limit shall be adjustable from 10% to 100% of the output range. The high output limit shall be adjustable from 100% down to 10% of the output range. The gain therefore is used to continuously adjust the slope of the output line based on the height of the suction pit.
- Offset - The control card shall have provision to allow adjustment of the 4-20 mA output over any portion of the input range.
- Minimum and Maximum Speed Limits - The control card shall have provisions to allow adjustment of the output signal so that a minimum and maximum speed can be selected and set by the Engineer. The minimum/maximum speed adjustments shall adjust the lowest and highest allowable current supplied by the 4-20 mA (max. range) output signal.
- Differential Set Points- Each ramp control shall be provided with a differential set point that senses the 2.5 - 12.5 volt D.C. input signal and provides an adjustable differential output. The differential control shall be used to tum the pump ON and OFF.
- Test points- Each control card shall be provided with edge mounted color coded test points that will allow the engineer to check the operation of the boards without removing the modules from the card housing.

3.10 PANEL CONSTRUCTION:

The control panel shall be housed in a NEMA 4X, 304 stainless steel enclosure and all mounting hardware shall be stainless steel. The enclosure shall have provisions for keyed lock/padlocking the door. The door shall contain the laminated electrical schematics. The control panel shall be UL

Type 4x. The design intention is for one PLC unit in the station control panel, along with the required input/output modules, control all of the pumps' start/stop signaling as well as collect and relay other drainage related data collected at the site. The panel shall include the following components:

SCADAPack PLC with required I/O and communications modules.

Communication equipment for data transmission to SCADA system over cellular and FCC licensed radio frequencies.

Power Supply (12 to 24 VDC)

Digital Display Proportional Valve Drivers

Circuit Protection

Control Relays

Operators and Indicators:

Green "AC Power On" pilot light

Manual-Auto selector switch (one for Electric, one for Diesel Pump)

Red "Pump Running" pilot light (one for Electric, one for Diesel Pump)

Potentiometer for Pump Speed Control (one for Electric, one for Diesel Pump)

Amber "Pump Failure" pilot light

White "Utility Power" available pilot light

Amber "Wet Well Low level cut-off" pilot light

Amber "Wet Well High Level alarm" pilot light

Intake (Sump) Level Digital Process Meter

Entries: All conduit/cable entries shall be rated NEMA Type 4x and shall be sealed.

Circuit Breakers: Circuit Breakers utilized shall be Schneider Electric Multi 9 Miniature Circuit Breakers, Part Number M9F42103.

Operators: Operators shall be 30mm, have modular construction and shall have enough luminance to be daylight visible. Contacts shall have compression type screw terminals.

Pilot Lights: Pilot Lights shall be Allen Bradley 800H Series.

Potentiometers: Potentiometers shall be Eaton-Cutler Hammer Part Number 10250T338.

Wiring: All wire sizes shall be taken from the latest edition of the National Electric Code. All wiring within the enclosure shall be neatly routed in wiring ducts. Each conductor shall be permanently marked and colored to match the electrical schematics. All wiring shall be minimum 600 VAC UL type MTW or AWM.

Labels: All major components and sub-assemblies shall be identified as to function with laminated, engraved nameplates.

Cooling: Vendor shall calculate and submit cabinet cooling load required to maintain cabinet interior within recommended operating temperatures of all housed equipment and provide a self-contained side mounted air conditioning unit if required. Exterior ventilation is not permitted.

Lightning/Surge Suppression: A Polyphaser "IS-B50LN-C2" lightning/surge suppressor shall be

included to protect the control equipment from lightning induced surges through the FCC licensed frequency antenna system cable that will be connected to communication components in the panel.

Digital Display Proportional Valve Driver: A Lynch Electronics "LE PS X" Digital Display Proportional Valve Driver shall be included for speed control of the Electric and Diesel Pumps. One valve driver shall be provided for each pump.

Power Supply: A Phoenix Contact 12VDC to 24VDC, 5 Amp, power supply shall be included to convert the 12VDC power source from the diesel engine battery bank to 24VDC for the Station Control Panel power required.

Dry Contact Discrete Inputs: All available existing and new telemetry contacts shall be connected to the PLC. Contacts shall be wired to terminal blocks in the Station Control Panel and from the terminal blocks to the PLC in the Station Control Panel. All wiring shall conform to section, "Electrical General Provisions."

Control Relays: Control Relays shall be 24VDC coil, 10 Amp contact capacity, blade terminal relays with indicator and diode. Relays shall be IDEC RH Series with Sockets.

I/O Relays: I/O Relays shall be 24VDC coil, 6 Amp contact capacity, plug-in miniature relays with indicator. Relays shall be Phoenix Contact Part Number 2966317.

3.11 PLC Controls Settings:

The PLC shall be configured to automatically start/stop the selected station pump (electric/diesel) to maintain intake (sump) level within configured set points.

The PLC shall have SCADA Communications capabilities for data logging to a central server. Logged data shall include:

- Pump start/stop times,
- Intake level trends,
- Any/all system alarms.

Communications shall be accomplished through one of the following options:

- Modbus RTU
- Modbus TCP

PLC requirements are listed above.

See Appendix 1 for Minimum Inputs and Outputs required in the Station Control Panel.

PART 4 – EXECUTION

4.1 FACTORY ASSEMBLY

The pump along with controls and enclosures 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, impeller housing, discharge column and additional piping shall be properly match marked and have their centerlines clearly marked on the outside of all 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.

4.2 PUMP TESTING

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.

Pumps shall be full size factory tested at the manufacturer's facility in an open sump in a vertical configuration 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 14.6 and performed by a Registered Professional Engineer. The certified field test may be witnessed by a Parish representative. Vendor shall give a two weeks' notice prior conducting certified test. Model test are not acceptable as the actual pumps are not utilized.

Authorized control panel representatives shall be present at pump manufacturer's facility to confirm proper installation and operation as designed during the testing of the first pump.

All final assembly and parts shall be utilized for testing purposes.

After Jefferson Parish installs each pump according to pump manufacturer's recommendation, an on-site test shall be conducted by vendor and witnessed by the Parish Drainage personnel to ensure installation, setup, and operations meet vendor's requirements. All plumbing fittings and hydraulic equipment shall be inspected again for leakage. Should leakage be detected or observed, repairs shall be made by Jefferson Parish as directed by vendor and tests performed again until all leaks or losses are detected and repaired.

Certification by Chief Engineer that manufacturer's pump testing facilities meet 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

4.3 Installation and Supervision

- A. Jefferson Parish will be installing the pumps.
- B. The vendor, control panel integrator, and parish shall be present for final inspection and testing of the system and shall make necessary adjustments to the control system prior to actual start up tests. Startup tests and demonstration shall be performed by the pump manufacturer's representative and the Parish representative.

4.4 WARRANTY

- A. The entire 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. The vendor shall have a certified shop which must maintain units of equal size and must be able to provide emergency units (within 3 hours from notification of pump failure) if any of the pump should fail during the warranty period and it is estimated down time for repairs is longer than 12 hours. This replacement loaner pump shall be provided at no cost to the Parish. This facility must have a supply of parts on the shelf, which include but not limited to: pump propeller, pump hydraulic motor, quick connection couplings, bearing, hydraulic hose and pipe, programmed controller/governor, and hydraulic pump for each size pump.
- B. Warranty work shall be on-site at vendor's expense.

4.5 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 start up procedures shall be provided to the owner as a hard copy and in pdf format on a CD. Vendor along with pump manufacturer shall train and instruct owner's operator on all equipment.
2. Three (3) copies of certified pump performance curves of each unit will be furnished by manufacturer. 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, NPSH, and Brake horsepower requirements.
3. Vendor shall supply a complete set of electrical diagrams, and control panel schematics.
4. Vendor shall provide one electronic copy of the electronic control module program for each unit.

4.6 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.

APPENDIX 1 - STATION CONTROL PANEL I/O LIST

DESCRIPTION	POINT TYPE	FROM	TO
LOSS OF UTILITY POWER	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
ELECTRIC PUMP IN AUTO	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
ELECTRIC SPEED CONTROL IN AUTO	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
ELECTRIC PUMP FAULT	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
ELECTRIC PUMP RUNNING	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
DIESEL PUMP IN AUTO	DI	DIESEL PUMP CONTROLLER (DRY CONTACT)	STATION CONTROL PANEL
DIESEL SPEED CONTROL IN AUTO	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
DIESEL PUMP RUNNING	DI	DIESEL PUMP CONTROLLER (DRY CONTACT)	STATION CONTROL PANEL
LOW LOW LEVEL	DI	FLOAT SWITCH	STATION CONTROL PANEL
LOW LEVEL (PUMP STOP FLOAT)	DI	FLOAT SWITCH	STATION CONTROL PANEL
HIGH LEVEL (PUMP START FLOAT)	DI	FLOAT SWITCH	STATION CONTROL PANEL
PUMP RUN FLOATS	DI	STATION CONTROL PANEL	STATION CONTROL PANEL
DIESEL PUMP FAULT	DI	DIESEL PUMP CONTROLLER (DRY CONTACT)	STATION CONTROL PANEL
BATTERY CHARGER FAULT	DI	BATTERY CHARGER	STATION CONTROL PANEL
HYDRAULIC OIL LOW LEVEL ALARM	DI	LEVEL SWITCH IN HYDRAULIC OIL TANK	STATION CONTROL PANEL
HYDRAULIC OIL LOW LEVEL SHUTDOWN	DI	LEVEL SWITCH IN HYDRAULIC OIL TANK	STATION CONTROL PANEL
ENGAGE HYDRAULIC PUMP	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
DISENGAGE HYDRAULIC PUMP	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
ELECTRIC PUMP RUN COMMAND	DO	STATION CONTROL PANEL	ELECTRIC PUMP PANEL
DIESEL PUMP RUN COMMAND	DO	STATION CONTROL PANEL	DIESEL PUMP CONTROLLER
PUMP COMMANDED PLC	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
ELECTRIC PUMP RUNNING	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
DIESEL PUMP RUNNING	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
PUMP CALL FLOATS	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT

AC POWER AVAILABLE	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
ENGAGE HYDRAULIC PUMP SOLENOID	DO	STATION CONTROL PANEL	HYDRAULIC PUMP SOLENOID
ELECTRIC RUN TIME	DO	STATION CONTROL PANEL	STATION CONTROL PANEL HOUR METER
DIESEL RUN TIME	DO	STATION CONTROL PANEL	STATION CONTROL PANEL HOUR METER
INTAKE (SUMP) LEVEL	AI	RADAR LEVEL TRANSMITTER	STATION CONTROL PANEL
FUEL LEVEL	AI	FUEL TANK CONTINUOUS LEVEL SWITCH	STATION CONTROL PANEL
ENGINE BATTERY VOLTAGE	AI	ENGINE BATTERY BANK	STATION CONTROL PANEL
ELECTRIC PUMP COMMANDED SPEED	AO	STATION CONTROL PANEL VALVE DRIVER	VARIABLE DISPLACEMENT HYDRAULIC PUMP
DIESEL PUMP COMMANDED SPEED	AO	STATION CONTROL PANEL VALVE DRIVER	VARIABLE DISPLACEMENT HYDRAULIC PUMP
INTAKE (SUMP) LEVEL LOCAL DISPLAY	AO	STATION CONTROL PANEL	STATION CONTROL PANEL DIGITAL PROCESS METER

DATE: 11/25/2020
BID NO.: 50-00132814

INVITATION TO BID
THIS IS NOT AN ORDER

Page: 1

JEFFERSON PARISH

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

BUYER: MOVALLE@jeffparish.net

BIDS WILL BE RECEIVED ONLINE VIA WWW.JEFFPARISHBIDS.NET UNTIL 2:00 PM, 12/10/2020 AND PUBLICLY OPENED THEREAFTER IN THE WEST BANK PURCHASING DEPT, SUITE 4400, JEFFERSON PARISH GENERAL GOVERNMENT BUILDING, 200 DERBIGNY STREET, GRETNA, LA 70053 AND VIA TELECONFERENCE (DIAL-IN AT (504) 323-1800, MEETING ID: 181357) 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)

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).

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

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.

10,13,15

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(l), 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 stated 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.

See Page 1 for Conflicts of Interest Statement

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 December 10, 2021 .

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 _____ 180 Calendar Days after Approved P.O.

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: N/A

NUMBER: N/A

NUMBER: N/A

NUMBER: N/A

TOTAL PRICE OF ALL BID ITEMS: \$ 1,462,098.00

AUTHORIZED SIGNATURE: Paul Klingman

Paul Klingman

Printed Name

TITLE: President

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.

INVITATION TO BID FROM JEFFERSON PARISH - continued

BID NO.: 50-00132814

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
1	3.00	EA	<p>ONE-TIME PURCHASE OF ALL STATIONARY EMERGENCY STANDBY FLOOD CONTROL PUMPING EQUIPMENT FOR THE LAFITTE AREA FOR THE JEFFERSON PARISH DEPARTMENT OF DRAINAGE</p> <p>0010 - 16" Pump Package One (1) time purchase as specified in attached specifications.</p>	\$218,403.00	\$655,209.00
2	3.00	EA	<p>0020 - 24" Pump Package One (1) time purchase as specified in attached specifications.</p>	\$268,963.00	\$806,889.00

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 December 9, 2020,
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

December 9, 2020

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 50-00132814, 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.

Paul Klingman
Signature of Affiant

PAUL Klingman.
Printed Name of Affiant

SWORN AND SUBSCRIBED TO BEFORE ME

ON THE 4th DAY OF December, 2020.

Christina P. Jones
Notary Public

Christina P Jones
Printed Name of Notary

131822
Notary/Bar Roll Number

My commission expires At Death.



STANDARD INSURANCE REQUIREMENTS FOR BIDDING PURPOSES

All required insurance under this bid shall conform to Jefferson Parish Resolution No. 113646 or No. 113647, as applicable. Contractors may not commence any work under any ensuing contract unless and until all required insurance and associated evidentiary requirements thereto have been met, along with any additional specifications contained in the **Invitation to Bid**. Except as where otherwise precluded by law, the Parish Attorney or his designee, with the concurrence of the Director of Risk Management or his designee, may agree on a case-by-case basis, to deviate from Jefferson Parish's standard insurance requirements, as provided in this Section. Vendors requesting deviation therefrom shall submit such requests in writing, along with compelling substantiation, to the Purchasing Department prior to the bid's due date. Any changes to the insurance requirements will be reflected in the bid specifications and addenda. Prior to contract execution and at all times thereafter during the term of such contract, contractors must provide and continuously maintain all coverages as required by the foregoing Resolutions, and the contract documents. Failure to do so shall be grounds for suspension, discontinuation or termination of the contract.

For bidding purposes, bidders must submit with bid submission a current (valid) insurance certificate evidencing the required coverages. Failure to comply will cause bid to be rejected. The current insurance certificate will be used for proof of insurance at time of evaluation. Thereafter, and prior to contract execution, the low bidder will be required to provide final insurance certificates to the Parish which shall name **the Jefferson Parish, its Districts Departments and Agencies under the direction of the Parish President and the Parish Council** as additional insureds regarding negligence by the contractor for the Commercial General Liability and the Comprehensive Automobile Liability policies. Additionally, said certificates should reflect the name of the Parish Department receiving goods and services and reference the respective Jefferson Parish bid number.

JEFFERSON PARISH REQUIRED STANDARD INSURANCE

WORKER'S COMPENSATION INSURANCE

As required by Louisiana State Statute, exception; Employer's Liability, Section B shall be \$1,000,000 per occurrence when Work is to be over water and involves maritime exposures to cover all employees not covered under the State Worker's Compensation Act, otherwise this limit shall be no less than \$500,000 per occurrence.

Note: If your company is not required by law to carry workmen's compensation insurance, i.e. not a Louisiana company, sole employee of the company, then bidders must request a workmen's compensation insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. A scanned copy 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.

COMMERCIAL GENERAL LIABILITY

Shall provide limits not less than the following: \$1,000,000.00 Combined Single Limit per Occurrence for bodily injury and property damage.

COMPREHENSIVE AUTOMOBILE LIABILITY

Bodily injury liability \$1,000,000.00 each person; \$1,000,000.00 each occurrence.
Property Damage Liability \$1,000,000.00 each occurrence.

Note: This category may be omitted if bidders do not/will not utilize company vehicles for the project or do not possess company vehicles. Bidder must request an automobile insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. 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.

DEDUCTIBLES - The Parish Attorney with concurrence of the Director of Risk Management have waived the deductible section of the Terms and Conditions for all Invitations to Bid, until further notice.

UMBRELLA LIABILITY COVERAGE

An umbrella policy or excess may be used to meet minimum requirements.

FOR CONSTRUCTION AND RENOVATION PROJECTS:

The following are required if selected below. Such insurance is due upon contract execution.

OWNER'S PROTECTIVE LIABILITY

To be for the same limits of liability for bodily injury and property damage liability established for commercial general liability.

BUILDER'S RISK INSURANCE

The contractor shall maintain Builder's Risk Insurance at his own expense to insure both the owner (Parish of Jefferson) and contractor as their interest may appear.

R. Kyle Ardoin
Secretary of State



LIMITED LIABILITY COMPANY

ANNUAL REPORT

For Period Ending

1/2/2021



34346784K



2021

Mailing Address Only (INDICATE CHANGES TO THIS ADDRESS IN THIS BOX)

34346784 K
ASSOCIATED PUMP & SUPPLY, LLC

9074 PARK AVENUE
HOUMA, LA 70363

1

(INDICATE CHANGES TO THIS ADDRESS IN THIS BOX)

Registered Office Address in Louisiana (Do not use P. O. Box)
9074 PARK AVENUE
HOUMA, LA 70363

Federal Tax ID Number

Our records indicate the following registered agents for the company. Indicate any changes or deletions below. All agents must have a Louisiana address. Do not use a P. O. Box. NEW REGISTERED AGENT REQUIRES A NOTARIZED SIGNATURE.

LOUIS KLINGMAN
201 GLENHILL DRIVE HOUMA, LA 70363

I hereby accept the appointment of registered agent(s).

Sworn to and subscribed before me on
NOTARY NAME MUST BE TYPED OR PRINTED WITH NOTARY #

New Registered Agent Signature

Notary Signature

Date

This report reflects a maximum of three members/managers for the company. Indicate any changes or deletions below. Include a listing of all names and addresses. Do not use a P. O. Box. If additional space is needed attach an addendum. Officer titles, such as president or secretary are not acceptable.

LOUIS KLINGMAN
201 GLENHILL DRIVE HOUMA, LA 70363
PAUL KLINGMAN
211 BELLINGRATH DRIVE HOUMA, LA 70360

Manager

Manager

The filing of a false public record, with the knowledge of its falsity, is a crime, subjecting the filer to the fine or imprisonment or both under R.S. 14:133.

SIGN →	To be signed by a manager, member, or agent Paul Klingman (SIGNED ELECTRONICALLY)	Title President	Phone	Date 12/09/2020
	Signee's address	Email Address ON FILE	(For Office Use Only)	
Enclose filing fee of \$30.00 Make remittance payable to Secretary of State Do Not Send Cash Do Not Staple web site: www.sos.louisiana.gov		Return by: 1/2/2021	To: Commercial Division P. O. Box 94125 Baton Rouge, LA 70804-9125 Phone (225) 925-4704	
DO NOT STAPLE				2

UNSIGNED REPORTS WILL BE RETURNED



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

December 10, 2020

Re: Bid # 50-00132814 -- Lafitte Area Pump Station

We are pleased to offer our MWI pump for the above referenced project. The following equipment is included in our quotation with no exceptions:

Item #1

- Three (3) MWI model HAC316 Hydraflo pumps each rated 20 CFS @ 12.59' TDH.
- Three (3) 2000ED drive units with 100 hp TEFC, electric motor, 100 hp diesel engine, 24 volt starting system, UL 100 gallon built in day tank, NEMA 12 starter panel, residential muffler, auto engine control, all skid mounted
- Variable speed control and hydraulics
- Station control panel SCADA ready from Prime Controls
- Quick disconnects for the hydraulic lines
- Stilling well with floats
- Hydraulic hoses to connect pump to drive unit.
- Painting per spec.

Price: \$655,209.00 (Plus Applicable Taxes)

Item #2

- Three (3) MWI model HAC324 Hydraflo pumps each rated 40 CFS @ 15.72' TDH.
- Three (3) 2400ED drive units with 150 hp TEFC, electric motor, 150 hp diesel engine, 24 volt starting system, UL 300 gallon day tank, NEMA 12 starter panel, residential muffler, auto engine control, all skid mounted.
- Variable speed control and hydraulics
- Station control panel SCADA ready from Prime Controls
- Quick disconnects for the hydraulic lines
- Stilling well with floats
- Hydraulic hoses to connect pump to drive unit.
- Painting per spec.

Price: \$806,889.00 (Plus Applicable Taxes)

Total Cost: \$1,462,098.00 (Plus Applicable Taxes)

Our price also includes:

1. All shop drawings and submittals.
2. 2-year warranty
3. Start-up services for five days not to exceed (8) hours per day
4. Full size factory testing on each pump and drive per HI 14.6



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

Specifically not included:

1. Installation of any type
2. Discharge pipe or elbows.
3. Hydraulic piping is not included but can be when lengths are determined at each site.
4. Exhaust piping. Only muffler and ss flex are included
5. Wiring to customer power source
6. Fuel or fuel lines to any external source
7. Expenses for engineers visit for testing

Quoted price is FOB to Ames Pump Station 5100 Rochester Drive Marrero, LA 70072 with contractor to unload. Delivery will be 180 Calendar Days after approved Purchase Order.

Once again, we appreciate the opportunity to quote you on the above equipment and we look forward to your favorable consideration. Please feel free to call, should you have any questions.

Sincerely,

Paul Klingman
President



MWI PUMP COMPANY
EQUIPMENT INFORMATION PROPOSAL

Project: Jefferson Parish - Lafitte Area Pump Stations
Bid No.: 00-132814

Hydraflo Models

- (3) MWI HAC324 – 2400ED – 150 HP Electric/Diesel Drive Units
- (3) MWI HAC316 – 1600ED – 100 HP Electric/Diesel Drive Units

10 December 2020

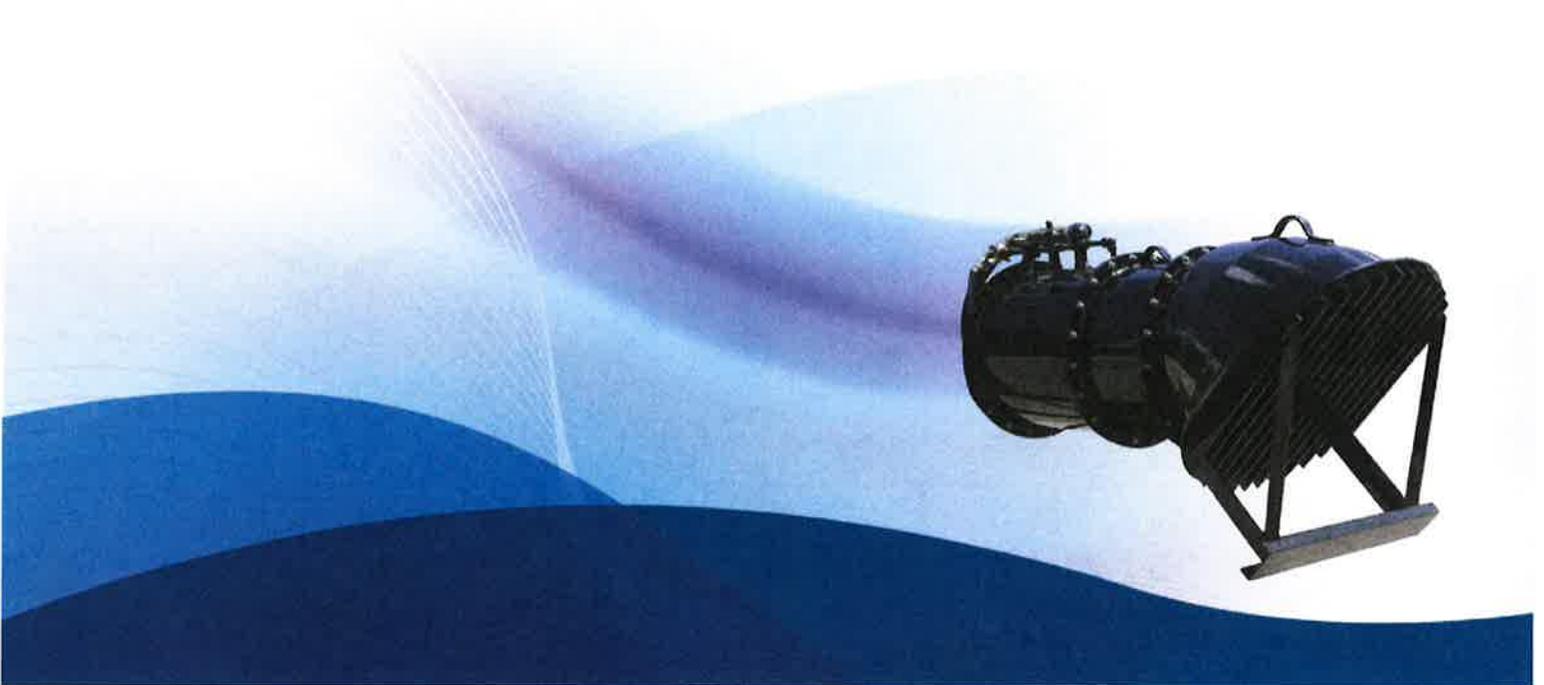


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About MWI



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, President

Perry Johnson Registrars, Inc. (PIR)
755 West Big Beaver Road, Suite 1340

Troy, Michigan 48084

(248) 358-3388



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

The validity of this certificate is dependent upon ongoing surveillance.

Effective

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.

Manufacturing Facilities



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



MANUFACTURER'S LIMITED WARRANTY

MWI Custom Engineered Products Warranty Policy for Jefferson Parish - Hydraulic Pumps

1. **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 24 months from the date of shipment from the factory. 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.

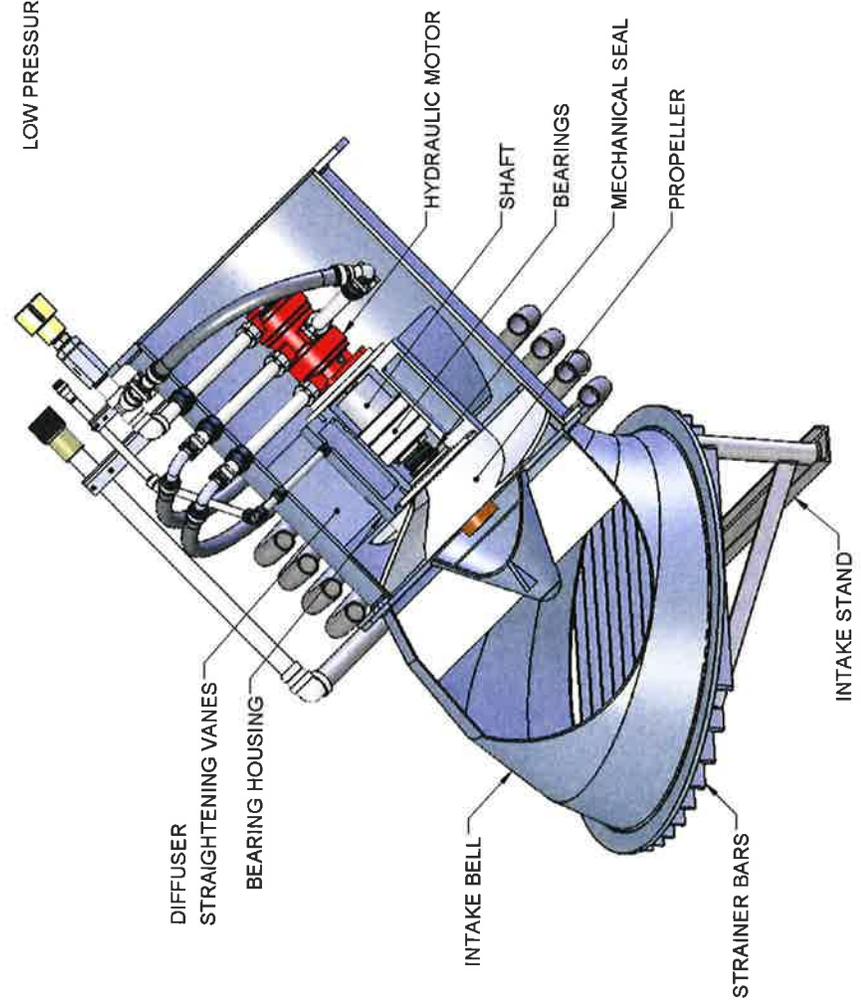
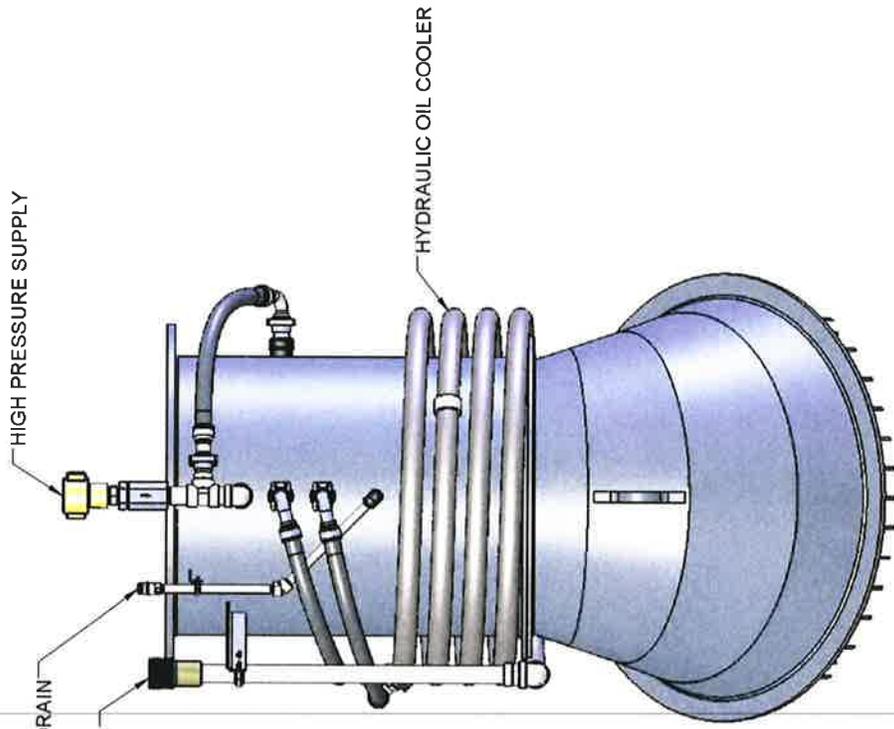
2. **PERFORMANCE GUARANTEES** are based on shop laboratory tests corrected for field performance in accordance with the engineering practices outlined in the Standards of the Hydraulic Institute. The performance guarantee is at the specified point of rating only, and will not cover performance under 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.

3. **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.

4. **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.

5. **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: _____
Job No.: _____
Model No.: _____
Serial No.: _____
Authorized By: **SAMPLE**



IN-PROCESS SHEET
 THIRD ANGLE PROJECTION
 WEIGHT

STANDARD
 UNLESS OTHERWISE SPECIFIED
 TOLERANCES ARE AS FOLLOWS
 METRIC
 X ± 0.06 mm
 XX ± 0.010
 XXX ± 0.015
 FRACTIONAL SURFACE
 MACHINED SURFACE
 FINISH
 1 EQUAL SPACING
 2 EQUAL SPACING
 3 EQUAL SPACING
 4 MARK PART NO. AT LOCATION SHOWN
 5 MAY VARY

TITLE HYDRAFLO CROSS SECTION
 JOB NO N/A
 APPROVED BY
 DRAWN BY MAR 12/12/2018
 DRAWING NO HAC-TYPICAL
 SHEET 1 OF 1
 REV 12/12/2018

NOT TO SCALE
 THIS DRAWING IS THE PROPERTY OF
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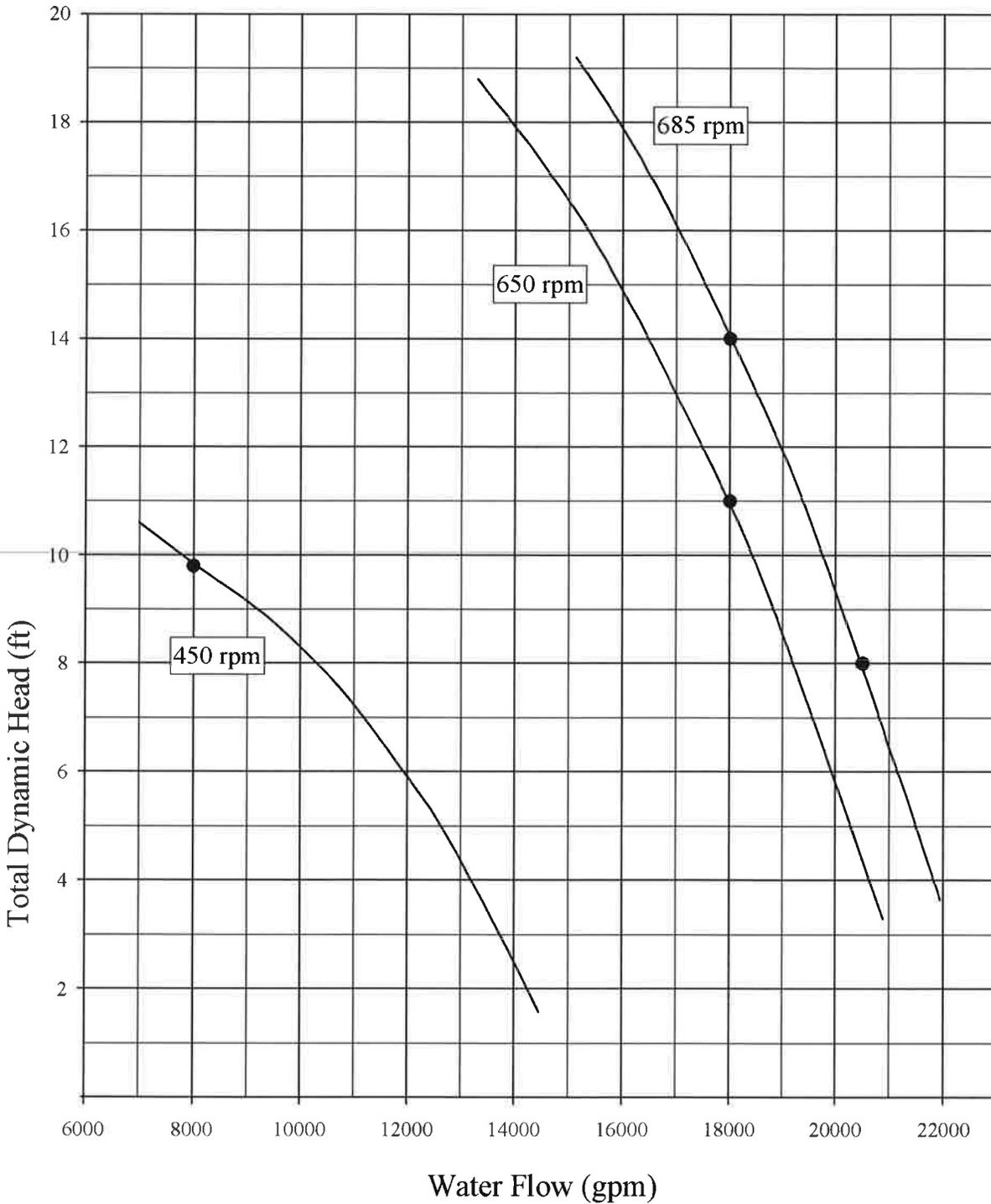
Hydraflo™

Water Pump Bill of Material

WATER PUMP – OVERVIEW

The water pump(s) to be furnished shall be hydraulically driven, axial flow propeller, completely submersible with propeller bowl assembly, hydraulic motor assembly, and suction bell assembly. Reference to enclosed general arrangement drawing(s).

Intake Bell Housing & Blades	A242
Pump Bowl (Diffuser Housing) & Blades	A242
Wear Ring (Liner)	304 Stainless Steel
Impeller Blades	304 Stainless Steel
Impeller Hub	Steel
Shaft	304 Stainless Steel
Hydraulic Motor	Vane – Fixed Displacement
Water Pump Assembly Fasteners	Steel (Bolts / Flat & Lock Washers / Nuts)
Bearings	[3] Angular Contact
O-Rings	Buna-N
Mechanical Seal Faces	Silicon Carbide
Flanges	A36 Carbon Steel
Flange Gaskets	Neoprene
Hydraulic Fittings & Crimped Hose Ends	Steel
Coating	International Intergard 345; 8.0 mil DFT (black).

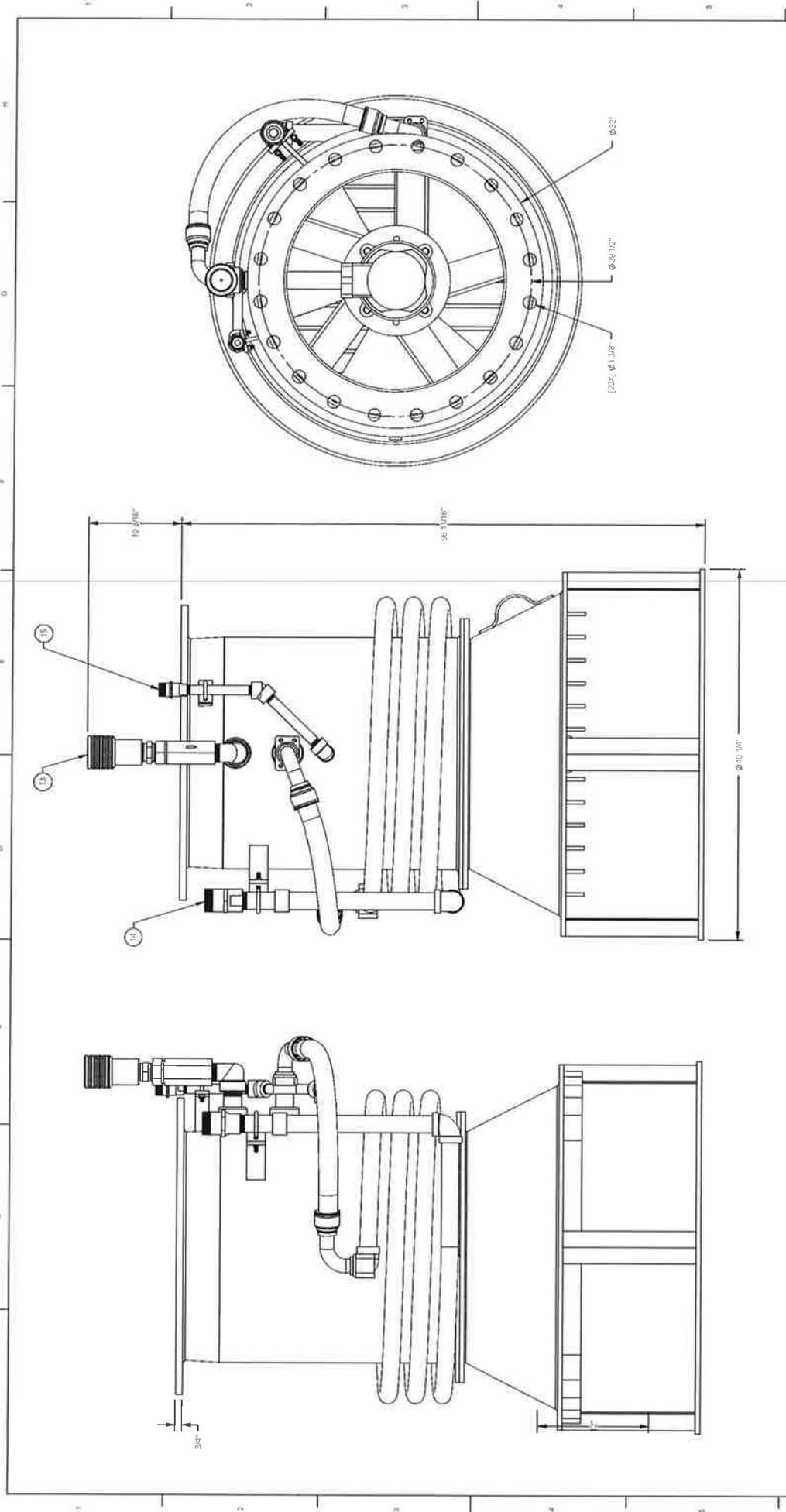


PUMP BOWL PERFORMANCE CURVE	
Project: Lafitte HAC324	
TYPE: AXIAL FLOW	PROPELLER DIA: 24"
MODEL NO: HAC324	PUMP SPEED: As noted
INTAKE DIA: 36"	DISCHARGE DIA: 24"
Electric motor: 150 Hp, 1800 rpm	
SINGLE STAGE PERFORMANCE	
FOR TWO STAGES MULTIPLY HEAD AND HORSEPOWER BY 2.0 AND EFFICIENCY BY 1.0	
PERFORMANCE 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.	

IT IS HEREBY CERTIFIED THAT THIS CURVE REPRESENTS THE TRUE PERFORMANCE CHARACTERISTICS OF THE MWI PUMP MODEL SHOWN AND WAS OBTAINED BY SCALE MODEL TEST AND CALCULATIONS IN ACORDANCE WITH STANDARDS OF THE HYDRAULIC INSTITUTE.

MWI CORPORATION
CERTIFIED BY

Sam Ell 6-1-20
PE58019
MWI CORPORATION
Deerfield Beach, Florida



INSPECTIONS IN-PROCESS SHEET 	PROJECT JEFFERSON PARISH UNLESS OTHERWISE SPECIFIED TO EXCEED AS SHOWN	TITLE HAC324 GENERAL ARRANGEMENT
	WEIGHT 1500 LB	JOB NO STANDARD
NOTES: 1. NOTES 2, 3, INSPECTIONS AND TOLERANCES ARE APPLICABLE ONLY TO PRODUCTION 2. BREAK TOE WITH ALL SHARP EDGES AND 3. REMOVE ALL BURRS/SHARP EDGES AROUND 4. DRILL HOLE AND JAWED HOLE 5. HOLE PART NO. AT LOCATION SHOWN	FINISH X 0.06 IN XX 0.010 XXX FRACTIONAL MACHINED SURFACE FINISH 125 V EQUAL SPACING UNLESS OTHERWISE SPECIFIED 0.02 MAX ALL HOLES	DATE 5/26/2020
REVISIONS 1. 1.5 mm 2. 0.25 3. 0.025 MACHINED SURFACE FINISH 32 V EQUAL SPACING UNLESS OTHERWISE SPECIFIED 0.02 MAX ALL HOLES	REV 1 OF 2	SHEET 5/26/2020

MWJ
 MANUFACTURING WORKS
 JEFFERSON PARISH, LA
 (504) 833-1111

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DATE
 5/26/2020

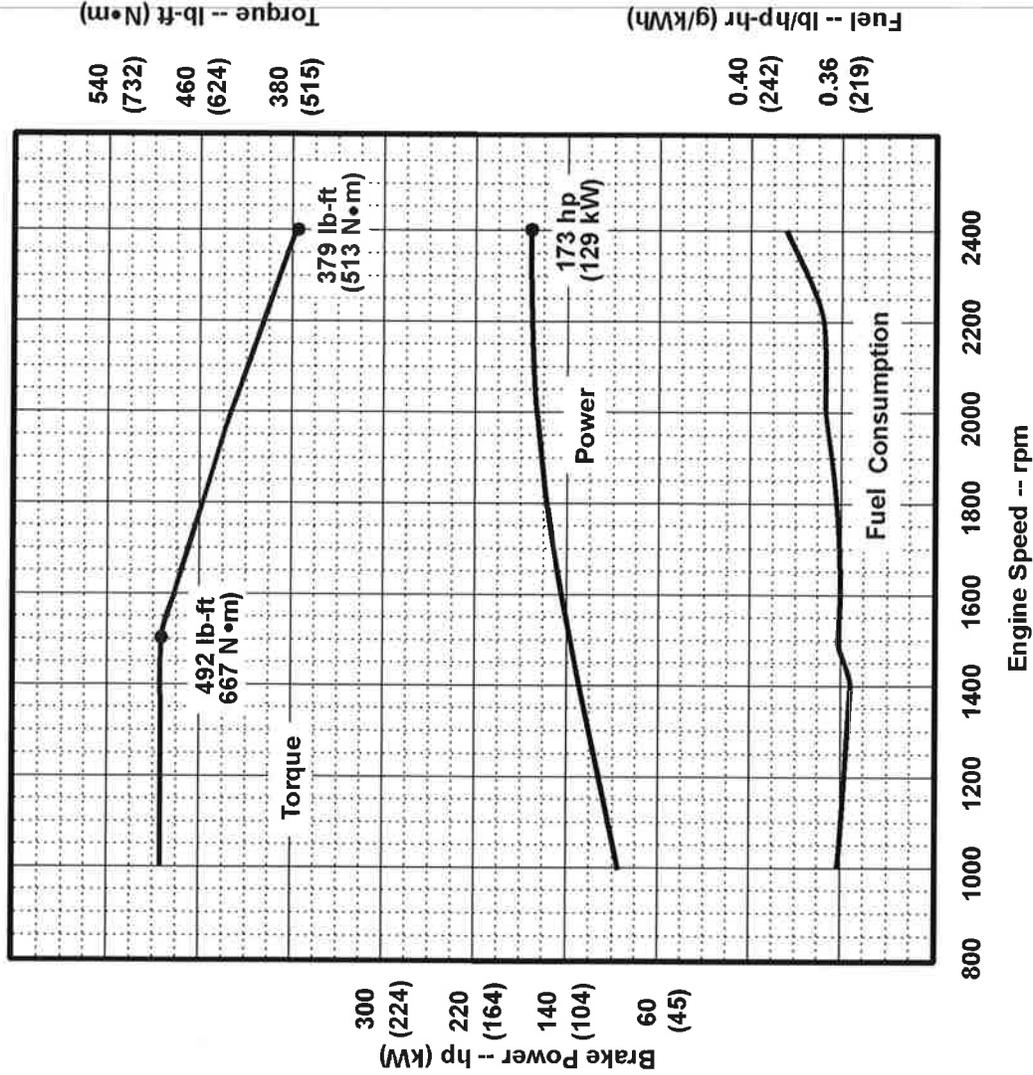


JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: Gross Power
 Application: Industrial - Heavy Duty
 Power Bulge - 0%
 Torque Rise - 30%

PowerTech E™ 6.8 L Engine
 Model: **6068HF285**
JD Electronic Control
 173 hp @ 2400 rpm
 129 kW @ 2400 rpm
 [See Option Code Table]



STANDARD CONDITIONS
 Air Intake Restriction 12 in. H₂O (3 kPa)
 Exhaust Back Pressure 30 in. H₂O (7.5 kPa)
 Gross power guaranteed within + or - 5% at SAE J1995 and ISO 3046 conditions:
 77 °F (25 °C) air inlet temperature
 29.31 in. Hg (99 kPa) barometer
 104 °F (40 °C) fuel inlet temperature
 0.853 fuel specific gravity @ 60 °F (15.5 °C)
 Conversion factors:
 Power: kW = hp x 0.746
 Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
 Torque: N·m = lb-ft x 1.356
 All values are from currently available data and are subject to change without notice.

Notes:

Tier-3 Emission Certifications: Certified by:

Brian L. Carlson
 2 FEB 07

CARB; EPA; EU
 Ref: Engine Emission Label

* Revised Data
 Curve: 6068HF285173_2400_0_30 Sheet 1 of 2
 February 2007

Engine Installation Criteria

General Data

Model	6068HF285
Number of Cylinders	6
Bore and Stroke--in. (mm)	4.19 (106) x 5.00 (127)
Displacement--in. ³ (L)	415 (6.8)
Compression Ratio	19.0 : 1
Valves per Cylinder--Intake/Exhaust	1 / 1
Firing Order	1-5-3-6-2-4
Combustion System	Unit Injection
Engine Type	In-line, 4-Cycle
Aspiration	Turbocharged
Charge Air Cooling System	Air-to-Air
Engine Crankcase Vent System	Open

Physical Data

Length--in. (mm)	44.2 (1123)
Width--in. (mm)	25.9 (657)
Height--in. (mm)	40.8 (1036)
Weight, dry--lb (kg)	1340 (608)
(Includes flywheel housing, flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block(X-axis)--in. (mm)	14.5 (369)
Right of Crankshaft (Y-axis)--in. (mm)	0.12 (3)
Above Crankshaft (Z-axis)--in. (mm)	6.1 (154)
Maximum Allowable Static Bending Moment at Rear Face of Flywhl Hsg w/ 5-G Load--lb-ft (N*m)	600 (814)
Thrust Bearing Load Limit--lb (N)	Forward Rearward
Intermittent	899 (4000) 450 (2000)
Continuous	495 (2200) 225 (1000)
Max. Front of Crank. Torsional Vibration--DDA	0.25
Max. Continuous Damper Temp--°F (°C)	180 (82)

Electrical System

Min. Battery Capacity (CCA)--amp	800	570
Max. Allow. Starting Circuit Resist.--Ohm	0.0012	0.002
Starter Rolling Current		
At 32 °F (0 °C)--amp	920	600
At -22 °F (-30 °C)--amp	1300	700
Min. Voltage at ECU during Cranking--volts	6	10
Maximum ECU Temperature--°F (°C)	221 (105)	
Maximum Harness Temperature--°F (°C)	248 (120)	

Air System

Maximum Allowable Temp Rise--Ambient Air to Engine Inlet--°F (°C)	15 (8)
Maximum Air Intake Restriction:	
Dirty Air Cleaner--in. H ₂ O (kPa)	25 (6.25)
Clean Air Cleaner--in. H ₂ O (kPa)	15 (3.75)
Engine Air Flow--ft ³ /min (m ³ /min)	484 (13.7)
Air Cleaner Efficiency--%	99.9

Charge Air Cooling System

Air/Air Exchgr., Heat Rej.--Btu/min(kW)	1497 (26)
Compressor Discharge Temp.(Rated) @ 77 °F (25°C) Ambient Air--°F (°C)	315 (157)
Max. Pressure Drop, thru CAC--in.H ₂ O (kPa)	52 (13)
Intake Manifold Pressure--psi (kPa)	20 (137)
CAC Out. Temp @ 77°F (25°C) Amb.--°F (°C)	
Max.	140 (60)
Min.	118 (48)
CAC Out. Temp @ any Ambient--°F (°C)	
Max.	190 (88)

Cooling System

Engine Heat Rejection--BTU/min (kW)	4303 (76)
Coolant Flow--gal/min (L/min)	55 (207)
Thermostat Start to Open--°F (°C)	180 (82)
Thermostat Fully Open--°F (°C)	203 (95)
Engine Coolant Capacity--qt (L)	13 (11.9)
Minimum Pressure Cap--psi (kPa)	14.5 (100)
Maximum Top Tank Temp--°F (°C)	230 (110)
Minimum Coolant Fill Rate--gal/min (L/min)	3 (11)
Minimum Air-to-Boil Temperature--°F (°C)	117 (47)
Minimum Pump Inlet Pressure--psi (kPa)	4.4 (30)
Max. Radiator System Restriction--in. H ₂ O (kPa)	80 (20)

Exhaust System

Exhaust Flow--ft ³ /min (m ³ /min)	1111 (31)
Exhaust Temperature--°F (°C)	831 (444)
Maximum Exhaust Restriction--in. H ₂ O (kPa)	30 (7.5)
Max. Bend. Moment on Turbo Out.--lb-ft (N*m)	5.2 (7)
Max. Shear on Turbo Outlet--lb (kg)	24 (11)

Fuel System

ECU Description	L16 Controller
Fuel Injection Pump	Denso HP3
Governor Type	Electronic
Total Fuel Flow--lb/hr (kg/hr)	159 (72.0)
Fuel Consumption--lb/hr (kg/hr)	67 (30)
Max. Fuel Inlet Temperature--°F (°C)	176 (80)
Fuel Temp. Rise, Inlet to Return--°F (°C)	78 (44)
Max. Fuel Inlet Restriction--in. H ₂ O (kPa)	80 (20)
Max. Fuel Inlet Pressure--in. H ₂ O (kPa)	NA (NA)
Max. Fuel Return Pressure--in. H ₂ O (kPa)	80 (20)

Lubrication System

Oil Pressure at Rated Speed--psi (kPa)	54 (375)
Oil Pressure at Low Idle--psi (kPa)	15 (105)
Max. Oil Carryover in Blow-by--lb/hr (g/hr)	0.002 (1.0)
Max. Airflow in Blow-by--gal/min (l/min)	26 (100)
Max. Crankcase Pressure--in. H ₂ O (kPa)	2 (0.5)

Performance Data

Rated Power--hp (kW)	173 (129)
Rated Speed--rpm	2400
Breakaway Speed--rpm	2470
Fast Idle Speed--rpm	2600
Peak Torque--lb-ft (N*m)	492 (667)
Peak Torque Speed--rpm	1500
Low Idle Speed--rpm	800
BMEP--psi (kPa)	138 (948)
Friction Power @ Rated Speed--hp (kW)	42 (31)
Altitude Capability--ft (m)	10,000 (3048)
Ratio--Air : Fuel	30 : 1
Smoke @ Rated Speed--Bosch No.	<1
Noise--dB(A) @ 1 m	91.7
Power Bulge--%	0
Power Bulge Speed--rpm	NA
Torque Rise--%	30

Engine

Speed rpm	Power hp (kW)	Torque lb-ft (N*m)	BSFC lb/hp-hr (g/kWh)
2400	173 (129)	379 (513)	0.384 (234)
2200	173 (129)	413 (560)	0.368 (224)
2000	166 (124)	435 (590)	0.366 (223)
1800	157 (117)	458 (621)	0.361 (220)
1600	146 (109)	481 (652)	0.360 (220)
1500	141 (105)	492 (667)	0.361 (220)
1400	131 (98)	491 (666)	0.357 (218)
1200	112 (84)	491 (666)	0.359 (219)
1000	94 (70)	491 (666)	0.361 (220)

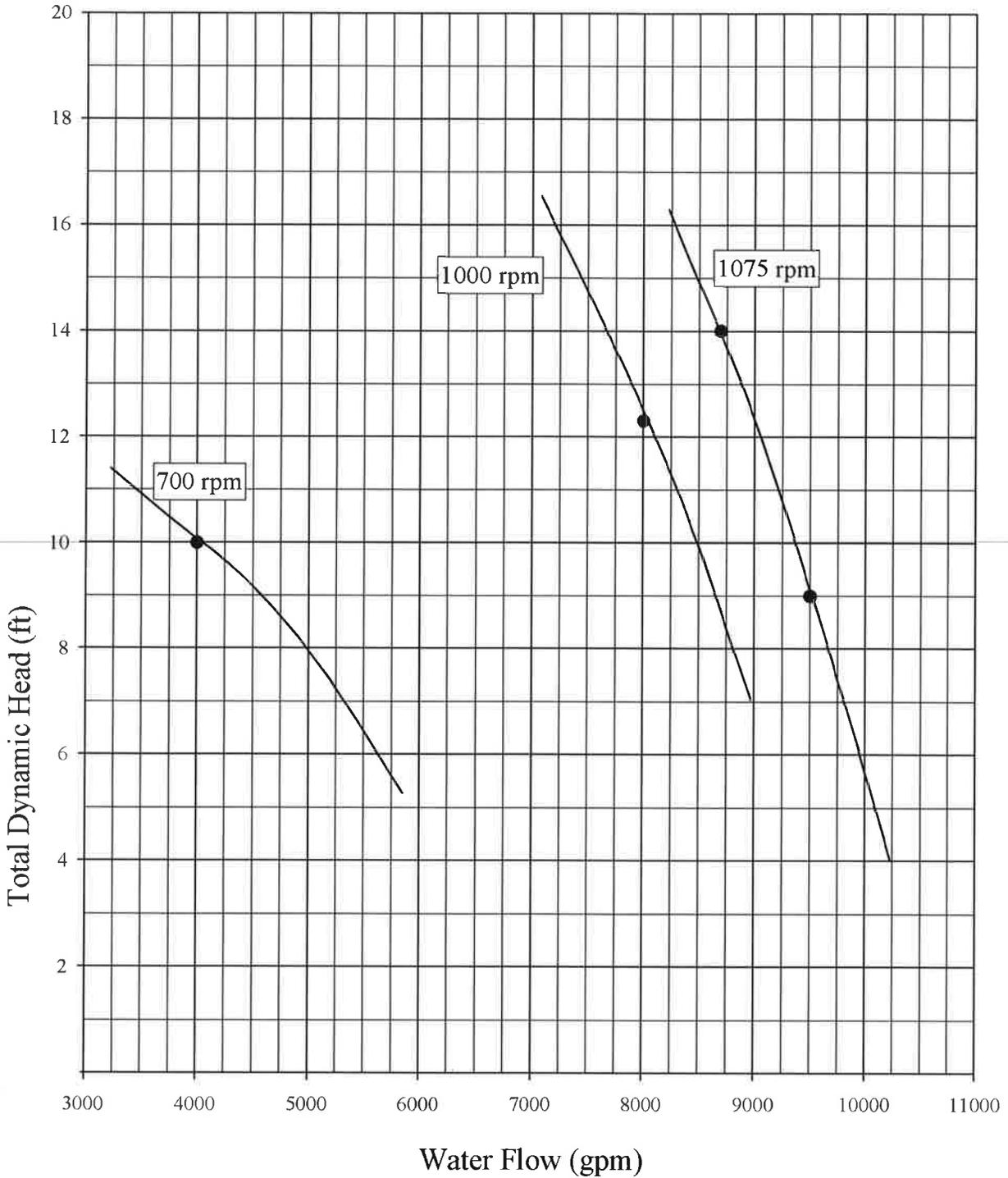
All values at rated speed and power with standard options unless otherwise noted.

* Revised Data

Curve: 6068HF285173_2400_0_30

Sheet 2 of 2

February 2007



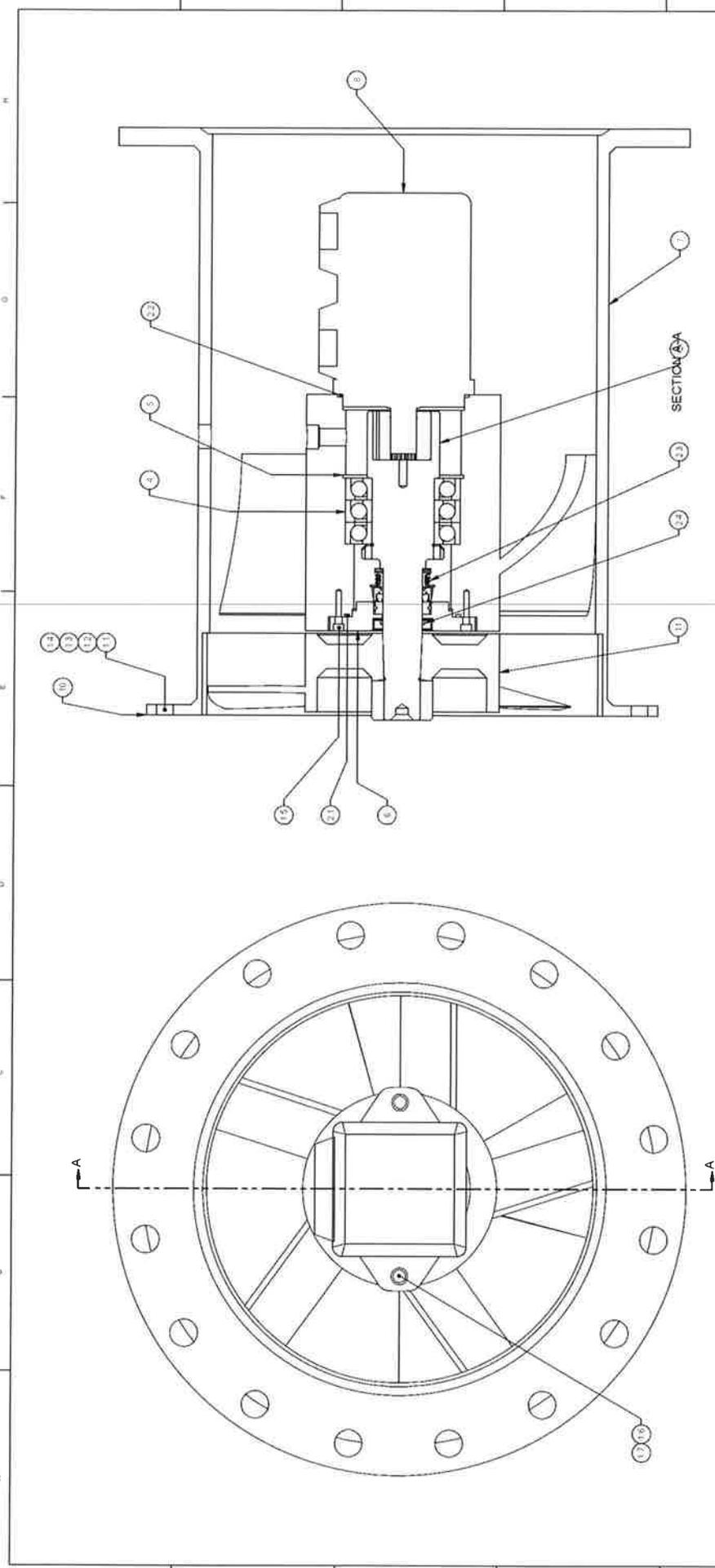
PUMP BOWL PERFORMANCE CURVE	
Project: Lafitte HAC316	
TYPE: AXIAL FLOW	PROPELLER DIA: 16"
MODEL NO: HAC316	PUMP SPEED: As noted
INTAKE DIA: 24"	DISCHARGE DIA: 16"
Electric motor: 75 Hp, 1800 rpm	
SINGLE STAGE PERFORMANCE FOR TWO STAGES MULTIPLY HEAD AND HORSEPOWER BY 2.0 AND EFFICIENCY BY 1.0 PERFORMANCE 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.	

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MWI CORPORATION
CERTIFIED BY

Sam Edh 6-1-20

PE58019
MWI CORPORATION
Deerfield Beach, Florida



HAC316 GENERAL ARRANGEMENT

APPROVED BY: **STANDARD**

DESIGNED BY: **TAK** 5/26/2020

DATE: 5/26/2020

PROJECT: **HAC316-JP01**

SHEET: **2 OF 2**

PROJECT: JEFFERSON PARISH

UNLESS OTHERWISE SPECIFIED:

700 LB

1. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO CENTER UNLESS NOTED OTHERWISE.

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ITEM #	DESCRIPTION	MATERIAL / MODEL	QTY
1	INTAKE STAND	STEEL	1
2	COIL WINDING KIT	STEEL	1
3	PLUMBING KIT	STEEL	1
4	INTAKE	STEEL	1
5	ROLLER	STEEL	1
6	ROLLER	STEEL	1
7	ROLLER	STEEL	1
8	ROLLER	STEEL	1
9	ROLLER	STEEL	1
10	ROLLER	STEEL	1
11	ROLLER	STEEL	1
12	ROLLER	STEEL	1
13	ROLLER	STEEL	1
14	ROLLER	STEEL	1

ITEM #	DESCRIPTION	MATERIAL / MODEL	QTY
1	INTAKE STAND	STEEL	1
2	COIL WINDING KIT	STEEL	1
3	PLUMBING KIT	STEEL	1
4	INTAKE	STEEL	1
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6	ROLLER	STEEL	1
7	ROLLER	STEEL	1
8	ROLLER	STEEL	1
9	ROLLER	STEEL	1
10	ROLLER	STEEL	1
11	ROLLER	STEEL	1
12	ROLLER	STEEL	1
13	ROLLER	STEEL	1
14	ROLLER	STEEL	1

IN-PROCESS SHEET

700 LB

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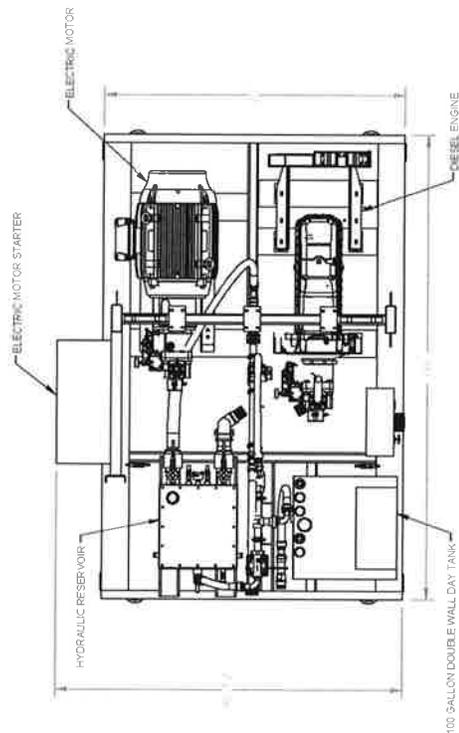
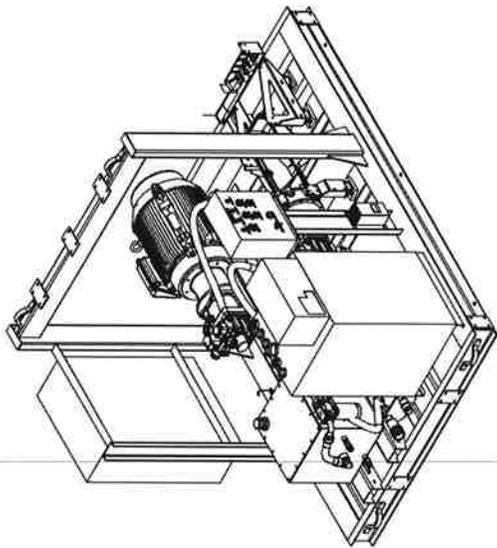
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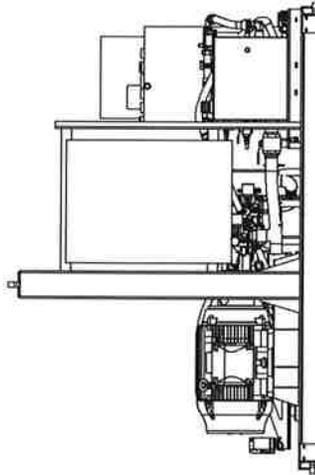
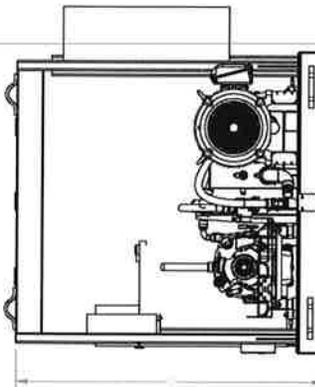
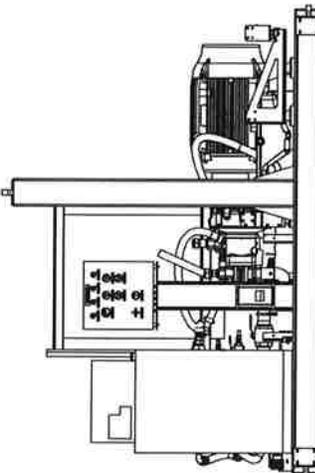
12. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO CENTER UNLESS NOTED OTHERWISE.

13. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO CENTER UNLESS NOTED OTHERWISE.

14. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO CENTER UNLESS NOTED OTHERWISE.



100 GALLON DOUBLE WALL DAY TANK



INSPECTIONS

THIRD ANGLE PROJECTION WEIGHT

- 1. WEIGHTS & DIMENSIONS AND TOLERANCES ARE APPLICABLE ONLY TO PRODUCTION
- 2. BREAK FILE SHOW ALL SHARP EDGES AND CORNERS
- 3. DIMENSIONS ALL DIMENSIONS SHALL BE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED
- 4. DRILLED HOLES AND TAPPED HOLES SHALL BE TO THE DIMENSIONS SPECIFIED IN THE DRAWING
- 5. MARK PART NO. AT LOCATION SHOWN

PROJECT LAFITTE PUMP STATION

TITLE 16SDE DIESEL/ELECTRIC SKID GENERAL ARRANGEMENT

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE AS FOLLOWS

IMPERIAL	± 0.06 in	± 1.5 mm
FRACTIONAL	± 0.010	± 0.25
DECIMAL	± 0.010	± 0.25
FINISH	125	32
MACHINED SURFACE	125	32
OTHER SURFACES	125	32

APPROVED BY: [Signature]

DRAWN BY: MAR 4/28/20

DRAWING NO: [Blank]

4/28/2020

1 OF 1

SHEET

THIS DRAWING IS THE PROPERTY OF THE COMPANY AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF THE COMPANY. THE COMPANY ASSUMES NO LIABILITY FOR ANY DAMAGE OR LOSS OF PROFITS, BUSINESS, OR REPUTATION, OR FOR ANY SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT, OR OTHERWISE, ARISING OUT OF OR FROM THE USE OF THIS DRAWING, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.



JOHN DEERE

PowerTech™ E

4045H Diesel Engine

Specifications



4045HF Engine shown

General Data

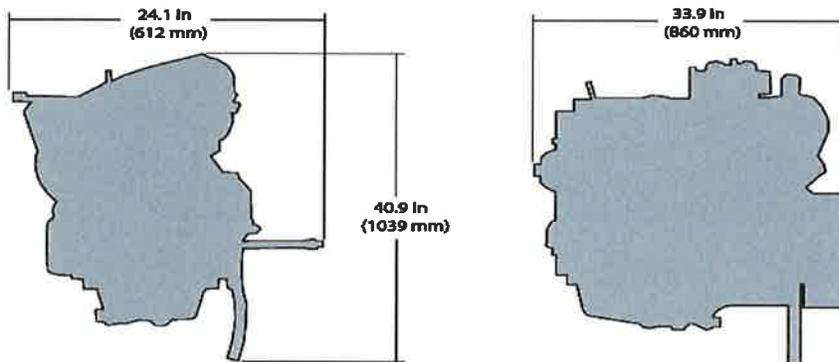
Model	4045HF285	Aspiration	Air-to-Air
Number of cylinders	4	Length-- mm (in)	860 (33.9)
Displacement-- L (cu in)	4.5 (275)	Width-- mm (in)	612 (24.1)
Bore and Stroke-- mm (in)	106 x 127 (4.17 x 5.00)	Height-- mm (in)	1039 (40.9)
Compression Ratio	19.0:1	Weight, dry-- kg (lb)	491 (1082)
Engine Type	In-line, 4-cycle		

Rated BHP is the power rating for variable speed and load applications where full power is required intermittently.
 Continuous BHP is the power rating for applications operating under a constant load and speed for long periods of time.
 Heavy duty - see application ratings/definitions, engine performance curves. Power output is within + or - 5% at standard SAE J 1995 and ISO 3046.

Certifications

- CARB
- EPA Tier 3
- EU Stage III A

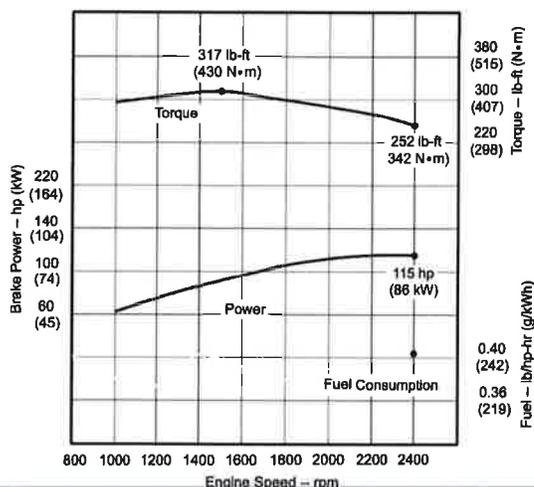
Dimensions



Performance data

Rated Speed	
Intermittent	86 kW (115 hp) @ 2400 rpm
Peak power	
Power bulge %	86 kW (115 hp) @ 2400 rpm 0% @ NA rpm
Peak torque	
Torque Rise %	430 N·m (317 ft-lb) @ 1500 rpm 26% @ 1500 rpm

Performance curve



Features and Benefits

2-Valve Cylinder Head

- Cross flow head design that provides excellent breathing from a lower cost two-valve cylinder head

High-Pressure Common-Rail (HPCR) and Engine Control Unit (ECU)

- The HPCR fuel system provides variable common-rail pressure, multiple injections, and higher injection pressures, up to 1600 bar (23,000 psi). It also controls fuel injection timing and provides precise control for the start, duration, and end of the injection

Fixed Geometry Turbocharger

- Fixed geometry turbochargers are precisely matched to the power level and application

Air-to-Air Aftercooled

- This is the most efficient method of cooling intake air to help reduce engine emissions while maintaining low-speed torque, transient response time, and peak torque. It enables an engine to meet emissions regulations with better fuel economy and the lowest installed costs

Compact Size

- Mounting points for Tier 3/ Stage III A engines are the same as Tier 2/Stage II engines

Mounting points are the same as Tier 2/Stage II engine models

- The new high-pressure common rail (HPCR) fuel system and engine control unit (ECU) allow for multiple fuel injections. The number of fuel injections, based on speed and load, help contribute to lower combustion temperatures, which reduce the formation of NOx and particulates. The multiple injection strategy also provides an added benefit of noise reduction.

Engine Performance

- New power bulge feature
- Increased low speed torque
- New higher-peak torque speed
- Faster torque rise
- Lower-rated speeds available for reduced noise and improved fuel economy

John Deere Electronic Engine Controls

- Electronic engine controls monitor critical engine functions, providing warning and/or shutdown to prevent costly engine repairs and eliminate the need for add-on governing components all lowering total installed costs. Snapshot diagnostic data that can be retrieved using commonly available diagnostic service tools
- Controls utilize new common wiring interface connector for vehicles or available OEM instrumentation packages; new solid conduit and "T" connectors to reduce wiring stress and provide greater durability and improved appearance
- Factory-installed, engine mounted ECU or remote-mounted ECU comes with wiring harness and associated components. Industry-standard SAE J1939 interface communicates with other vehicle systems, eliminating redundant sensors and reducing vehicle installed cost

Additional Features

- Self-adjusting poly-vee fan drive
- Forged-steel connecting rods
- Replaceable wet-type cylinder liners
- Either-side service
- 500-hour oil change
- Gear-driven auxiliary drive


JOHN DEERE

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PowerTech™ E

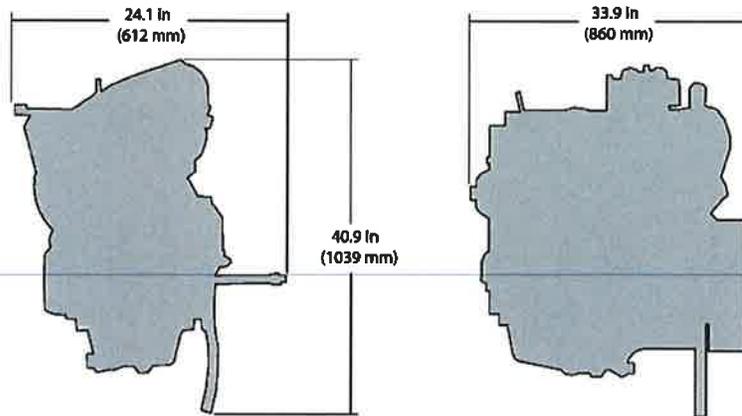
4045HF285 Diesel Engine

Industrial Engine Specifications



4045HF285 shown

Engine dimensions



Dimensions may vary according to options selected. Call your distributor for more information.

Emissions

CARB
EPA Tier 3
EU Stage III A

General data

Model	4045HF285	Length - mm (in)	860 (33.9)
Number of cylinders	4	Width - mm (in)	612 (24.1)
Displacement - L (cu in)	4.5 (275)	Height - mm (in)	1039 (40.9)
Bore and Stroke - mm (in)	106 x 127 (4.17 x 5.00)	Weight, dry - kg (lb)	491 (1082)
Compression Ratio	19.0:1		
Engine Type	In-line, 4-cycle		
Aspiration	Turbocharged and air-to-air aftercooled		

Performance data range

Application ratings	Intermittent	Heavy Duty	Continuous
Rated power/Rated speed	93-104 kW (125-139 hp) @2200-2400rpm	86-93 kW (115-125 hp) @2200-2400rpm	86 kW (115 hp) @2400rpm
Peak power	100-104 kW (134-139 hp) @2000-2400rpm	90-93 kW (121-125 hp) @2000-2400rpm	86 kW (115 hp) @2400rpm
Power bulge	NA @2000rpm	5% @ 2000rpm	0% @ NA rpm
Peak torque	525 N.m (387ft-lb) @1500rpm	480-481 N.m (354-355ft-lb) @1500rpm	430 N.m (317ft-lb) @1500rpm
Torque rise	27-30%	29-30%	26%

The Industrial Intermittent engine power rating is for applications that operate at varying loads and speeds, and do not fit the Industrial Heavy-Duty rating information.

Some applications require Industrial Heavy-Duty engine power ratings. Please contact your John Deere Power Systems engine distributor for more information.

The Industrial Continuous engine power rating is for applications that operate with constant load and speed, except for short periods during startup or shutdown.

Power output is within + or - 5% at standard SAE J 1995 and ISO 3046.

Features and Benefits

2-Valve Cylinder Head

- Cross flow head design that provides excellent breathing from a lower cost two-valve cylinder head

High-Pressure Common-Rail (HPCR) and Engine Control Unit (ECU)

- The HPCR fuel system provides variable common-rail pressure, multiple injections, and higher injection pressures, up to 1600 bar (23,000 psi). It also controls fuel injection timing and provides precise control for the start, duration, and end of the injection

Fixed Geometry Turbocharger

- Fixed geometry turbochargers are sized for a specific power range and optimized to provide excellent performance across the entire torque curve. They are also designed to maximize fuel economy between the engine's rated speed and peak torque.

Air-to-Air Aftercooled

- This is the most efficient method of cooling intake air to help reduce engine emissions while maintaining low-speed torque, transient response time, and peak torque. It enables an engine to meet emissions regulations with better fuel economy and the lowest installed costs

Multiple Injection Strategy

- The new HPCR fuel system and engine control unit (ECU) allow for multiple fuel injections. The number of fuel injections, based on speed and load, help contribute to lower combustion temperatures, which reduce the formation of NOx and particulates. The multiple injection strategy also provides an added benefit of noise reduction

Compact Size

- Mounting points are the same as Tier 2/Stage II engine models

John Deere Electronic Engine Controls

- PowerTech E engines offer electronically controlled fuel systems with improved cold-start performance, precise engine speed control, torque curve shaping and more. Because these systems have less need for redundant sensors, add-on electronic governors, and shutdown devices - they result in a lower total installed cost.

Additional Features

- Self-adjusting poly-vee fan drive
- Forged-steel connecting rods
- Replaceable wet-type cylinder liners
- Either-side service
- 500-hour oil change
- Standard gear auxiliary drive

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All values at rated speed and power with standard options unless otherwise noted. Specifications and design subject to change without notice.

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LAFITTE PUMP BID PACKAGE

PART 1 – GENERAL

1.1 DESCRIPTION:

SCOPE OF WORK

The work under 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 an axial flow propeller, drive unit, and controls. It shall include three (3) 16” packages and three (3) 24” packages. Preferred pump and skid package shall be electric-diesel drive unit Model Number 2000 and 2400 series with single stage water pump models HAC316 and HAC324 by MWI Corporation, 33 Northwest Eller Street, Deerfield Beach, FL, 33441, or *approved* equal and in accordance with this bid. Preferred instrumentation and controls shall be by Prime Controls LP, 110 Phlox Ave b, Metairie, LA 70001, or *approved* equal and in accordance with this bid. Any substitution to the specifications 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 the vendor receives the purchase order shall not exceed one hundred eighty (180) calendar days.

PART 2 – PUMP AND SKID PACKAGE

2.1 QUALITY ASSURANCE:

- A. The pumping equipment to be supplied in the section will be the product of one manufacturer regularly engaged in the production of electric/diesel, variable 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 installation which have been continuously operating for not less than 5 years. The test facility must be located inside the continental US.
- 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. For approval the vendor shall submit in one package for the pump and skid package the following items:
 - 1. Shop Drawings (including main layout drawings, list of equipment specifications, and recommendations furnished by the equipment manufacturer).
 - 2. Pump "Bill of Materials" of the unit's construction, cutaway drawings, and dimensions as offered to confirm compliance with the specifications.
 - 3. Control panel drawings.
 - 4. One hydraulic circuit schematic for the entire pumping system.
 - 5. As-Built Drawings of the pump and accessories (as is applicable).
 - 6. List of Spare Parts and Special Tools (if applicable).
 - 7. One certified copy of installation and operation manuals for permanent pump systems.
 - 8. Certified pump curve with points selected for all design conditions in section 2.6 along with calculations used to derive these points.
 - 9. A reference list with projects of like size pumps. The list shall include owners name, phone number and email address with contact person.

2.3 GENERAL PUMP PACKAGE DESIGN

- A. Each pump package shall have an electric-diesel drive unit (specified herein). The electric motor shall be the prime mover with the diesel engine as the backup. In the event of a power failure, the diesel engine will start automatically. When power resumes the diesel engine shall enter a shut-down routine and after the diesel engine stops, the electric motor will automatically start if the pump is being called for. In the event of electrical panel failure, 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.
- B. A variable displacement hydraulic piston pump shall be used to control the water pump speed. This configuration shall allow the prime mover (either the diesel engine or electric motor) to operate at a fixed optimum speed to utilize horsepower available. Hydraulic pump displacement (stroke) shall be controlled automatically (or manually through operator controls) based on the owners 4-20mA input signal from a level transducer.
- C. Utilizing variable displacement hydraulics on both the electric motor and diesel engine configuration allows component crossover.

2.4 SKID ASSEMBLY AND WIRING

- A. Construction shall include a fabricated steel base with lifting eyes and skid assembly and shall support all components during shipping and also serve as the installation mounting base. The dimensions of each base for the 16" pumps shall not exceed 88" X 136" and 180" X 76" for the 24" pump skid package.
- B. The complete pump assembly and skid package shall be prepared inside and outside using standards SSPC-SP10 / (Near-White Blast cleaning) and painted with industrial strength epoxy primer with polyurethane top coat.

2.5 DESIGN DATA

- A. The Pump design criteria is listed below in Table 1 and Table 2.

Table 1: HAC16 Pump Design Data

HAC16	
ITEM	DESIGN CONDITION
Design Condition at Rated Speed	
Flow (GPM)	4000
Bowl TDH* (Feet)	10
Pump Rated Speed (RPM)	700
Required Condition 2 at Rated Speed	
Flow (GPM)	8000
Bowl TDH* (Feet)	12.3
Pump Rated Speed (RPM)	1000
Required Condition 3 at Rated Speed	
Flow (GPM)	9500
Bowl TDH* (Feet)	9
Pump Rated Speed (RPM)	1100
Required Condition 4 at Rated Speed	
Flow (GPM)	8700
Bowl TDH* (Feet)	14
Pump Rated Speed (RPM)	1100
Diesel Engine to be Supplied (HP)	100
Motor to be Supplied (HP)	100
Number of Pumps	3
Maximum Rated Pump Speed (RPM)	1100
Minimum Rated Pump Speed (RPM)	700
Column and Discharge Size (Inches)	16"
Suction Bell Thickness	3/16"
Pump Bowl Thickness	3/8"
Hydraulic Motor housing thickness	3/16"

Table 2: HAC24 Pump Design Data

HAC24	
ITEM	DESIGN CONDITION
Design Condition at Rated Speed	
Flow (GPM)	8000
Bowl TDH* (Feet)	9.8
Pump Rated Speed (RPM)	450
Required Condition 2 at Rated Speed	
Flow (GPM)	18000
Bowl TDH* (Feet)	11
Pump Rated Speed (RPM)	650
Required Condition 3 at Rated Speed	
Flow (GPM)	20500
Bowl TDH* (Feet)	8
Pump Rated Speed (RPM)	700
Required Condition 4 at Rated Speed	
Flow (GPM)	18000
Bowl TDH* (Feet)	14
Pump Rated Speed (RPM)	700
Diesel Engine to be Supplied (HP)	150
Motor to be Supplied (HP)	150
Number of Pumps	2
Maximum Rated Pump Speed (RPM)	700
Minimum Rated Pump Speed (RPM)	450
Column and Discharge Size (Inches)	24"
Suction Bell Thickness	3/16"
Pump Bowl Thickness	1/2"
Hydraulic Motor housing thickness	1/4"

- 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 56" for models HAC324 or approved equal.

2.6 WATER PUMP HYDRAULIC DRIVE UNIT MATERIAL AND DESIGN

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

1. **SUCTION BELL** - The suction bell assemblies shall be manufactured from alloy steel} 3/16" and 1/4" (depending on the pump size) thick and conforming to ASTM A242} and shall have a maximum inlet diameter of 1.5 times the propeller diameter or compliant with Hydraulic Institute 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 assemblies 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 3/8" and 1/2" (depending on the pump size) 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.
3. **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.
4. **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 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 assembly housing, hydraulic motor, and propeller shaft coupling and inlet and outlet port pipe connections. The assembly housing shall be manufactured from 1/4" thick alloy steel conforming to ASTM A242. The housing assembly shall have the water pump shaft and hydraulic motor connected with a spline connection. 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.
6. **FLANGES** – All pump flanges shall be ANSI B15.1 Class 125 pattern.

2.7 ELECTRIC/DIESEL DRIVE UNIT REQUIREMENTS

- A. Diesel engines shall be Tier 3 John Deere or Deutz diesel engines unit or equal, 100 HP and

150 HP at 1800 rpm continuous duty rating. The units shall be fully equipped with radiator (if required), 12 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 muffler 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 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 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 included as an integral part of the mounting skid. The tanks shall be 100 gallons for the 16" skid packages mounted vertical on top of the skid. The tanks shall be 200 gallons for the 24" skid packages mounted vertical on top of the skid. Fuel tanks shall be constructed per UL 142 and labeled as such. All tanks shall have two spare NPT ports with caps in addition to all vents and UL required instrumentation.
- D. Control Continuous Level Transmitter (Fuel Tanks): Shall have a total of two float switches and one continuous monitor level transmitter. The upper and lower switch floats will be independent high low 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 4 mA. As the float moves closer to the fitting, the mA output will increase until it reaches the top of the measuring range, providing a 20 mA signal. The mA signal will change every 1/4" of float movement. The mA value will change with every 1/4" of float movement. The value of mA change per 1/4" of float movement equals 4 divided by total measuring range 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 of fuel supply and return lines.
- F. Engine shall have electronic type governor for units 100HP and over, and mechanical type governor for smaller units.
- G. Engine shall have variable speed throttle control while set in auto.
- H. An instrument panel shall be provided in the enclosure and mounted on rubber isolators. See section 2.12.
- I. Electric motors shall be installed on the power unit and shall be the same BHP as the diesel listed above. The electric motors shall be a horizontal, foot-mounted, TEFC, 460 volt, 3-phase, 60 Hertz and shall be wound for reduced voltage starting and have a 1.15 SF. Each electric motor will come with a reduced voltage starter mounted on the skid.
- J. A SENS NRG battery charger (C/N NRG22-10-RCLS) 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 connection to the battery bank. Battery charger shall include NEMA 3R housing with remote temperature comp sensor. Panel shall provide designated IO in appendix 1 to the pump control panel listed in section 3 of this specifications.

2.8 HYDRRAULIC SYTEM

- A. The hydraulic pump shall be variable displacement hydraulic piston 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 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 option is included.
- D. Sufficient hydraulic oil cooling capacity shall be provided to sustain direct sunlight radiation as well as ambient temperatures up to 122°F (50°C).
- E. Pumping units shall be open loop hydraulic circuit with 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. Operator Interface

- 1. In manual operation the operator's hydraulic panel shall include the following:
 - 2. System Failure Annunciator 1 - Low Hydraulic Oil Level
 - 3. System Failure Annunciator 2 - High Hydraulic Vacuum Diesel
 - 4. System Failure Annunciator 3 - High Hydraulic Vacuum Motor
 - 5. System Failure Annunciator 4 - High Hydraulic Oil Temperature
 - 6. Hydraulic System Pressure Gauge
 - 7. Hydraulic Vacuum 1 Variable Diesel Gauge
 - 8. Hydraulic Vacuum 2 Fixed Diesel Gauge
 - 9. Hydraulic Vacuum 1 Variable Motor Gauge
 - 10. Hydraulic Vacuum 2 Fixed Motor Gauge
 - 11. Hydraulic Oil Temperature Gauge
 - 12. Hydraulic System Loading Solenoid Valve (fail closed – always pump if fail)

B. Alarms and shutdowns

- 1. The following alarms shall shut down the prime mover.
 - 2. Low oil level in hydraulic reservoir
 - 3. High hydraulic system temperature
 - 4. High hydraulic pump suction vacuum
 - 5. Diesel engine high coolant temp
 - 6. Diesel engine low oil shutdown

2.10 MOTOR STARTER PANEL

- A. Each unit shall come equipped with features
 - 1. Solid State Reduced Voltage / Standard duty soft starter combination - Circuit Breaker Disconnect for Short Circuit Protection Starter Rated for 100 HP and 150 HP- 115% Continuous Rated, Calculated FLA 350% for 30 Seconds. MX2 Control Technology

with Electronic OL, Metering & Motor Protection, and Modbus RTU Communications Rated for use in 40C Ambient. NEMA Type 3R Free Standard Enclosure.

2. Control Power by Benshaw
3. Phase Monitor Circuit with Time Delay on Power-Up I Return of Power
4. Door Mounted MX2 Keypad Display (Keypad Start & Stop Disabled).
5. Door Mounted H-0-A Switch.
6. H = Start / Stop by local door mounted push buttons.
7. 0 = Off, Starter will not run from local or remote control.
8. A= Auto (Remote) Start from customer remote contact.
9. Start Pushbutton.
10. Stop Pushbutton.
11. Pilot Light Green - Run Light.
12. Pilot Light Red- Fault Light.
13. Digital Input (120 V High) Programmed for low oil level shutdown contacts.
14. Cable Entry I Exit - Top Entry I Bottom Exit.
15. Panel shall provide designated IO in appendix 1 to the pump control panel listed in section 3 of this specifications.

2.11 DIESEL ENGINE PANEL

A. ~~Basis of Design: Controls Inc C Series Panels or approved equal.~~ Each unit shall come equipped with features

1. Panel shall have 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 lamp.
5. Panel shall provide designated IO in appendix 1 to the pump control panel listed in section 3 of this specifications.

2.12 SKID PACKAGE, ACCESSORIES, AND FUNCTIONS

A. Lifting Lugs

1. 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

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

2.13 SPARE PARTS

- A. The vendor shall furnish one spare hydraulic oil filter for each unit.
- B. The vendor shall furnish and install all required lubrication oil and grease for package unit field testing upon delivery.
- C. The vendor shall furnish one spare set of oil filters, fuel filters, and air filters.

2.14 HYDRAULIC PIPE AND HOSE

- A. 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 specifications. 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 four times the working pressure or 2500 psi, whichever is higher. 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 adequate size to supply hydraulic fluid so that pump meets required flow. Hydraulic oil internal velocities shall not exceed 15 fps. Hose lengths shall be determined with the drainage department and shall not exceed 50 feet in length before delivery.

PART 3 – INSTRUMENTATION AND CONTROLS

3.1 SUMMARY

- A. This Section includes control and monitoring equipment incorporated in a Station Control Panel which will interface with one electric/diesel drive skid to provide supervision of the drive system as well as other related station parameters. The vendor shall furnish, install, and place into service a Station Control Panel to perform the specified monitoring, communications, alarm, and control functions specified below. The Station Control Panel shall be pre-configured for local monitoring and automatic control of the pumps on the electric/diesel drive skid and remote monitoring and control through the OWNER's Supervisory Control and Data Acquisition (SCADA) System as described in the summary of work. All panels shall be mounted on the pump skid package and utilized during system testing at the manufactures facility.

- B. General

The control system for the drainage station shall be comprised of multiple components, some providing control functions and others providing only supervision of non-essential parameters. Furnishing of the control system, at a minimum shall be by the pumping system manufacturer, as it a requirement of these documents for the pump driver skid local controls be furnished by the drainage pump manufacturer; however, it is permitted and expected for a local controls system Vendor to construct the actual Station Control Panel. The Station control panel shall primarily include automation low voltage power, automation/communication PLC/s, input/output modules, terminal strips, SCADA radio, and numerous exterior panel display and electronic or electromechanical input devices. The Control System shall also include various remote switches or measurement instruments, all of which shall be described in this Section.

It is the intent of these Specifications that the Vendor furnish and install a fully functioning Local Control System providing both local pump control and monitoring. The Station Control Panel shall include equipment required for local pump control and monitoring along with pre-configured communications equipment necessary to remotely monitor and control the pumps at the station through the Jefferson Parish VTSCADA System, all the while meeting the requirements of Jefferson Parish Drainage Operation Department of Jefferson Parish SCADA Division.

3.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

Without limiting the generality of other requirements of these Specifications, all work specified herein shall conform to or exceed the applicable requirements of the referenced documents to the extent that the requirements therein are not in conflict with the provisions of this section; provided, that where such documents have been adopted as a code or ordinance by the public agency having jurisdiction, such code or ordinance shall precedence

3.3 ACTION SUBMITTALS

B. Shop Drawings: The Vendor shall submit to the Parish shop drawings of all equipment before fabrication. All drawings provided shall be produced using PC based drawing program compatible with Jefferson Parish computers. All shop drawings shall be checked by the vendor before submittal for review by the Parish. These drawings and data shall be submitted as a complete package at one time (except allowed early submittals on major equipment and long lead delivery items) and shall include:

- Complete systems diagrams.
- Drawings shall show definitive wiring interconnection diagrams. These diagrams shall show and identify each component of each system. These diagrams shall be prepared in accordance with ANSI/ISA S.5.4
- Data sheets shall be included for each component together with a technical product brochure or bulletin. These data shall show: The component name as used on project drawings and in these Specifications, manufacturer's model number or other identifying product designation, the project site to which it applies, input and output characteristics, functional and operational descriptions sufficient to show conformance to the specification requirements, requirements for electric power, specifications for ambient operating conditions, and details on materials of construction.
- Arrangement and construction drawings for the Station Control Panel shall show dimensions, identification of all components, preparation and finish data, nameplates, and the like.
- Any and all modifications made to existing measurement and control circuits, equipment, and wiring shall be shown on the SCADA site wiring diagrams.
- Complete and detailed bill of materials.

- C. **Technical Manuals:** The Vendor shall furnish a complete set of manuals describing the operations and maintenance requirements of the complete PLC. The operations manuals shall describe each feature and function of the system in a step by step tutorial fashion. The maintenance manuals shall include complete system troubleshooting guides and explain fully the use and application of diagnostic programs, as well as all relevant manufacturer's maintenance and calibration instruction sheets. All manuals written for this contract shall be produced using the word processing program furnished with the system software or Word Version 6. To allow for different levels of use and area of application, separate manuals shall be furnished as follows:
1. **Maintenance Manual - Instrumentation:** This manual shall provide complete information for the maintenance, repair, replacement, calibration, etc. for all of the instrumentation furnished under this contract. This shall include the final settings and calibration point records developed during the checkout calibration of the system.
 2. **Maintenance Manual- PLCs/Interfaces:** This manual shall provide complete information for the maintenance, repair, replacement, calibration etc. for all the PLCs and interfaces furnished under this contract. This shall include the final settings and calibration point records developed during the checkout complete instructions in the use of diagnostic programs for trouble shooting these units to the circuit card level, as well as instructions in loading application programs, system resets, initialization, etc.
 3. **Maintenance Manual- Radios:** This manual shall provide complete information for the maintenance, repair, replacement, calibration, etc. for all of the radio equipment furnished under this contract. This shall include complete instructions in the use of testing and diagnostic programs for the radio system.
- D. **Quality Control Test Procedures and Forms:** The Vendor shall submit a complete set of test procedures and forms that will be used in conjunction with the quality assurance program as specified herein.

3.4 QUALITY ASSURANCE

- A. **Factory Tests:** Prior to installation, the complete system, including peripherals and communication equipment of the PLCs, shall be assembled, connected, and all software loaded for a full functional test of the integrated system. Test procedures shall be developed by the system supplier to show that the integrated system hardware and software is fully operational. All system and pump tests shall be performed using the systems specified control panel. Temporary controls shall not be utilized when performing pump curves and tests.
- B. **Installation Supervision:** The system supplier shall furnish services and technical information as necessary to insure that the equipment furnished by supplier is installed in a proper and satisfactory manner. These services shall include, but not be limited to, providing the Parish with information and direction prior to commencement of the equipment, periodic inspection during the construction period, answering of all questions regarding the installation and hookup, a complete check of the completed installation and hookup, and a complete check of the completed installation to insure that it is in conformance with bid specifications.

- C. Calibration: The system supplier shall furnish the services of a trained technician to perform a complete system calibration. This shall provide that those components having adjustable features are set for the specific conditions and applications, and that the components and systems are within the specified limits of accuracy. Defective elements which cannot achieve proper calibration or accuracy, either individually or within the system or subsystem, shall be replaced. A complete record of the calibration checks and adjustments shall be made and delivered to the Parish upon completion of the system calibration.

3.5 PROGRAMMABLE LOGIC CONTROLLERS (PLC)

SCADAPack 357 Controllers shall be furnished and installed in the Station Control panel. Unit shall provide pump control decision processes and also collect and transfer data collected from the station instrumentation via data transfer to the Control Radio System. All required analog and digital input and output modules shall be designed for use with the SCADAPack controller. Station Control Panel DC power source shall be provided via the diesel engine battery bank.

PLC shall be able to communicate over a Modbus network. The ambient temperature shall be rated for 0° to 55° C (0 to 131 F). The PLC shall have enough I/O for the entire project with 20% spare I/O.

Communications shall be accomplished through one of the following options:

- Modbus RTU
- Modbus/TPC

3.6 RADIO SYSTEM

General: The radio shall be furnished/installed in the pump control panel and connected to the pump controller communications output port. The existing Jefferson Parish SCADA radio system operates on 4 adjacent 12.5 KHz channel splits in the 928-952 MHz band. The central station transceivers operate through antennas at the communications tower on Belle Terre Road in Marrero, Louisiana. The radios shall meet all of FCC part 94 out-of-band emission requirements and shall be capable of transmitting data at 9600 baud, operating half duplex. The radio shall also be capable of communicating with the Jefferson Parish VTSCADA system via a cellular connection.

Frequency Plan: Jefferson Parish has FCC licenses to operate four point-to-multipoint radio systems on 12.5 KHz channels in the Power Radio Service on the frequencies shown below:

Master Transmitter North	952.45625 MHz
Master Transmitter South	952.48125 MHz
Master Transmitter East	952.49375 MHz
Master Transmitter West	952.46875 MHz
Remote Transmitters North	928.45625 MHz
Remote Transmitters South	928.48125 MHz
Remote Transmitters East	928.48125 MHz
Remote Transmitters West	928.46875 MHz

The R.F. equipment furnished under these specifications shall meet or exceed all current FCC

requirements for point-to-multipoint radio systems and shall also meet or exceed the following minimum specifications. The R.F. equipment shall be capable of operation on the above listed adjacent 12.5 KHz channels without degradation.

The R.F. transmitters shall be directly frequency modulated by a built-in digital modem from the digital data stream furnished by the Pump Controller. The R.F. receivers shall provide a digital data stream to the Pump Controller.

Power Output (at duplex output)	+39.0
Dbm Frequency Stability	1.5 PPM
Modulation Deviation	+3.0 KHz
Duty Cycle	Continuous

Receivers:

Receiver Sensitivity (10 to -6 BERT)	-106
Dbm Frequency Stability	1.5 PPM
Modulation Acceptance	+3.0 KHz

The radio assembly for each site shall consist of a nonprotected transmitter, receiver, power supply and digital modem capable of operating in the 928 to 952 MHz band. Each assembly shall be capable of transmitting and receiving digital data at a rate of 9600 Baud over a 12.5 KHz FCC assigned channel. These units shall also meet the following requirements:

1. Each R.F. assembly shall be capable of operation at full performance specifications between -30 and +60 degrees centigrade with a relative humidity of 95% measured at +40 degrees centigrade.
2. Each R.F. assembly shall operate from a D.C. power system furnished and installed as a part of the overall installation. Battery tapping of 24 volt power systems to obtain 12 volts will not be permitted.
3. Each R.F. assembly shall be enclosed in a sturdy metal housing suitable for mounting on the back plate of the Pump Controller enclosure with stainless steel hardware in such a manner as to permit easy removal of the radio assembly for service and/or replacement.

Antenna systems shall be furnished and installed in accordance with the following specifications and as shown on the drawings. The antennas for all sites shall be heavy duty yagi type meeting the following minimum specifications:

Frequency Range	928 to 960 MHz
Forward Gain	10Dbd
Front-to-Back Ratio	20Db
VSWR	Vertical
Impedance	50 Ohms
Horizontal Beam width	60 Degrees (half power point)
Input Power	50 Watts
Wind Rating	150 MPH Survival (no ice)
Lighting Protection	Direct Ground
Input Connector	Type "N", Female

Mounting brackets shall be steel. All mounting hardware shall be stainless steel. Antennas at sites with wooden support poles shall be installed so that the 2" aluminum mast at the top of the pole extends over the top of the antenna by a minimum of 6". Note: Antenna mast and pole is not required to be furnished with the telemetry system.

Transmission lines shall be Andrew Corporation Heliac Type LDF4-50A 1/2" diameter foam dielectric coaxial cable or approved equal. The coaxial cable shall be encased in a black polyethylene outer jacket. Connection shall be Type "N" male. 100' of coaxial cable is required with each antenna furnished.

Cellular Connection: The radio system shall be capable of communicating with the Jefferson Parish VTSCADA system via a cellular connection.

Radio: Radio equipment shall be GE MDS Orbit LN series. The approved radio devices are listed below.

- MXNCL9CN4G5N1S2FASUNN Orbit MCR LN9 Licensed Narrowband+ 4G LTE US Verizon with GPS, 1 Ethernet 2 Serial

Cellular Antenna: Cellular antenna shall be PCTEL Ground Plane Independent, Low Profile Vertical LTE Antenna, Part Number BMLPVMBLTENGP-VP

Vendor shall coordinate the details of the radio system to be provided with Jefferson Parish prior to purchase.

Note: antenna, antenna mast, external antenna cable and connectors, and pole is not required to be furnished with the telemetry system.

3.7 INSTRUMENTATION

- A. Digital Process Meter (Feet): Meter will be installed on Station Control Panel door and used in conjunction with the level transmitter to provide a digital readout to pump station personnel of the sump level reading at the station. Meter will be a digital process meter with the following features: accepts a 4-20 mA signal and displays this signal in engineering units on a digital display; NEMA 4X front panel; Digital process meter shall be Precision Digital Indicator, Model PD765-7R0-00.

3.8 STATION CONTROL PANEL

General: Panel system will incorporate a Station Control Panel with the capability to control the pumps on the electric/diesel drive skid, monitor the activities of the station, and transmit the activities of the station to the Jefferson Parish SCADA System over cellular and FCC licensed radio frequencies. The pumps shall be controlled by intake basin (sump) water level, using a radar level transmitter for the primary controls signal and floats for backup in the following manner:

Local automatic pump control: (All radar and floats shall be supplied by owner)
Programmable Logic Controller (PLC) in the pump control panel shall automatically control the pumps based on intake level (sump) measurement utilizing a radar level transmitter measuring the intake water level (primary control) and float switches installed at predetermined elevations in the intake (backup control). Float switches are as follows:

FS1: Low Low Level Cut-Off Float: This float shall stop either pump under all conditions at an intake level just above the pump intake. This float shall backup the Low Level Stop Float.
FS2: Low Level Stop Float: This float shall stop either pump at an intake level just below the set point that the radar level transmitter would command the pump to stop.

FS3: High Level Float: This float shall start either pump at an intake level above the set point that the radar level transmitter would command the pump to stop.

Local manual pump control: Manual control of either the electric or diesel driven pump will be accomplished from each respective electric and diesel pump control panel. Operators installed on the door of the Station Control Panel shall be utilized to manually control the speed of either pump once either pump has been started from the corresponding electric and diesel pump control panel.

Remote manual pump control: The Station Control Panel will be pre-configured for access to the Jefferson Parish SCADA System so that the SCADA System can be programmed to remotely monitor station activities and start and stop the pumps. SCADA System programming for remote manual pump control will be completed by the OWNER.

3.9 VARIABLE SPEED CONTROLLER

- Each drive unit shall be outfitted with “Electronic Proportional Displacement Control” which will use a 4-20mA signal to control the stroke of the hydraulic piston pump, in turn, controlling the drainage pump speed. The system shall allow the prime mover (either the electric motor or diesel engine) to operate at a fixed optimum speed to utilized horsepower available. The servo line maximum pressure and maximum stroke shall be factory set and may not be altered.
- The control shall be a 100% solid-state, plug-in module which is housed in the card housing previously specified. Each card shall receive a 2.5- 12.5 volt DC signal as supplied from the control system. The ramp controller shall provide adjustable gain, offset, minimum and maximum speed limit adjustments, differential set points and test points as described below.
- The control panel shall have a separate control panel battery back-up.
- Adjustable Gain - The controller shall allow the 4-20 mA signal output to be continuously positioned over the full output range. The low output limit shall be adjustable from 10% to 100% of the output range. The high output limit shall be adjustable from 100% down to 10% of the output range. The gain therefore is used to continuously adjust the slope of the output line based on the height of the suction pit.
- Offset - The control card shall have provision to allow adjustment of the 4-20 mA output over any portion of the input range.
- Minimum and Maximum Speed Limits - The control card shall have provisions to allow adjustment of the output signal so that a minimum and maximum speed can be selected and set by the Engineer. The minimum/maximum speed adjustments shall adjust the lowest and highest allowable current supplied by the 4-20 mA (max. range) output signal.
- Differential Set Points- Each ramp control shall be provided with a differential set point that senses the 2.5 - 12.5 volt D.C. input signal and provides an adjustable differential output. The differential control shall be used to tum the pump ON and OFF.
- Test points- Each control card shall be provided with edge mounted color coded test points that will allow the engineer to check the operation of the boards without removing the modules from the card housing.

3.10 PANEL CONSTRUCTION:

The control panel shall be housed in a NEMA 4X, 304 stainless steel enclosure and all mounting hardware shall be stainless steel. The enclosure shall have provisions for keyed

lock/padlocking the door. The door shall contain the laminated electrical schematics. The control panel shall be UL Type 4x. The design intention is for one PLC unit in the station control panel, along with the required input/output modules, control all of the pumps' start/stop signaling as well as collect and relay other drainage related data collected at the site. The panel shall include the following components:

- SCADAPack PLC with required I/O and communications modules.
- Communication equipment for data transmission to SCADA system over cellular and FCC licensed radio frequencies.
- Power Supply (12 to 24 VDC)
- Digital Display Proportional Valve Drivers
- Circuit Protection
- Control Relays
- Operators and Indicators:
 - Green "AC Power On" pilot light
 - Manual-Auto selector switch (one for Electric, one for Diesel Pump)
 - Red "Pump Running" pilot light (one for Electric, one for Diesel Pump)
 - Potentiometer for Pump Speed Control (one for Electric, one for Diesel Pump)
 - Amber "Pump Failure" pilot light
 - White "Utility Power" available pilot light
 - Amber "Wet Well Low Low level cut-off" pilot light
 - Amber "Wet Well High Level alarm" pilot light
- Intake (Sump) Level Digital Process Meter

Entries: All conduit/cable entries shall be rated NEMA Type 4x and shall be sealed.

Circuit Breakers: Circuit Breakers utilized shall be Schneider Electric Multi 9 Miniature Circuit Breakers, Part Number M9F42103.

Operators: Operators shall be 30mm, have modular construction and shall have enough luminance to be daylight visible. Contacts shall have compression type screw terminals.

Pilot Lights: Pilot Lights shall be Allen Bradley 800H Series.

Potentiometers: Potentiometers shall be Eaton-Cutler Hammer Part Number 10250T338.

Wiring: All wire sizes shall be taken from the latest edition of the National Electric Code. All wiring within the enclosure shall be neatly routed in wiring ducts. Each conductor shall be permanently marked and colored to match the electrical schematics. All wiring shall be minimum 600 VAC UL type MTW or AWM.

Labels: All major components and sub-assemblies shall be identified as to function with laminated, engraved nameplates.

Cooling: Vendor shall calculate and submit cabinet cooling load required to maintain cabinet interior within recommended operating temperatures of all housed equipment and provide a self-contained side mounted air conditioning unit if required. Exterior ventilation is not permitted.

Lightning/Surge Suppression: A Polyphaser "IS-B50LN-C2" lightning/surge suppressor shall

be included to protect the control equipment from lightning induced surges through the FCC licensed frequency antenna system cable that will be connected to communication components in the panel.

Digital Display Proportional Valve Driver: A Lynch Electronics "LE PS X" Digital Display Proportional Valve Driver shall be included for speed control of the Electric and Diesel Pumps. One valve driver shall be provided for each pump.

Power Supply: A Phoenix Contact 12VDC to 24VDC, 5 Amp, power supply shall be included to convert the 12VDC power source from the diesel engine battery bank to 24VDC for the Station Control Panel power required.

Dry Contact Discrete Inputs: All available existing and new telemetry contacts shall be connected to the PLC. Contacts shall be wired to terminal blocks in the Station Control Panel and from the terminal blocks to the PLC in the Station Control Panel. All wiring shall conform to section, "Electrical General Provisions."

Control Relays: Control Relays shall be 24VDC coil, 10 Amp contact capacity, blade terminal relays with indicator and diode. Relays shall be IDEC RH Series with Sockets.

I/O Relays: I/O Relays shall be 24VDC coil, 6 Amp contact capacity, plug-in miniature relays with indicator. Relays shall be Phoenix Contact Part Number 2966317.

3.11 PLC Controls Settings:

The PLC shall be configured to automatically start/stop the selected station pump (electric/diesel) to maintain intake (sump) level within configured set points.

The PLC shall have SCADA Communications capabilities for data logging to a central server. Logged data shall include:

Pump start/stop times,
Intake level trends,
Any/all system alarms.

Communications shall be accomplished through one of the following options:

Modbus RTU
Modbus TCP

PLC requirements are listed above.

See Appendix 1 for Minimum Inputs and Outputs required in the Station Control Panel.

PART 4 – EXECUTION

4.1 FACTORY ASSEMBLY

The pump along with controls and enclosures 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, impeller housing, discharge column and additional piping shall be properly match marked and have their centerlines clearly marked on the outside of all 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.

4.2 PUMP TESTING

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.

Pumps shall be full size factory tested at the manufacturer's facility in an open sump in a vertical configuration 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 14.6 and performed by a Registered Professional Engineer. The certified field test may be witnessed by a Parish representative. Vendor shall give a two weeks' notice prior conducting certified test. Model test are not acceptable as the actual pumps are not utilized.

Authorized control panel representatives shall be present at pump manufacturer's facility to confirm proper installation and operation as designed during the testing of the first pump.

All final assembly and parts shall be utilized for testing purposes.

After Jefferson Parish installs each pump according to pump manufacturer's recommendation, an on-site test shall be conducted by vendor and witnessed by the Parish Drainage personnel to ensure installation, setup, and operations meet vendor's requirements. All plumbing fittings and hydraulic equipment shall be inspected again for leakage. Should leakage be detected or observed, repairs shall be made by Jefferson Parish as directed by vendor and tests performed again until all leaks or losses are detected and repaired.

Certification by Chief Engineer that manufacturer's pump testing facilities meet 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

4.3 Installation and Supervision

- A. Jefferson Parish will be installing the pumps.
- B. The vendor, control panel integrator, and parish shall be present for final inspection and testing of the system and shall make necessary adjustments to the control system prior to actual start up tests. Startup tests and demonstration shall be performed by the pump manufacturer's representative and the Parish representative.

4.4 WARRANTY

- A. The entire 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. The vendor shall have a certified shop which must maintain units of equal size and must be able to provide emergency units (within 3 hours from notification of pump failure) if any of the pump should fail during the warranty period and it is estimated down time for repairs is longer than 12 hours. This replacement loaner pump shall be provided at no cost to the Parish. This facility must have a supply of parts on the shelf, which include but not limited to: pump propeller, pump hydraulic motor, quick connection couplings, bearing, hydraulic hose and pipe, programmed controller/governor, and hydraulic pump for each size pump.
- B. Warranty work shall be on-site at vendor's expense.

4.5 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 start up procedures shall be provided to the owner as a hard copy and in pdf format on a CD. Vendor along with pump manufacturer shall train and instruct owner's operator on all equipment.
- 2. Three (3) copies of certified pump performance curves of each unit will be furnished by manufacturer. 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, NPSH, and Brake horsepower requirements.
- 3. Vendor shall supply a complete set of electrical diagrams, and control panel schematics.
- 4. Vendor shall provide one electronic copy of the electronic control module program for each unit.

4.6 PARTS AND SERVICE

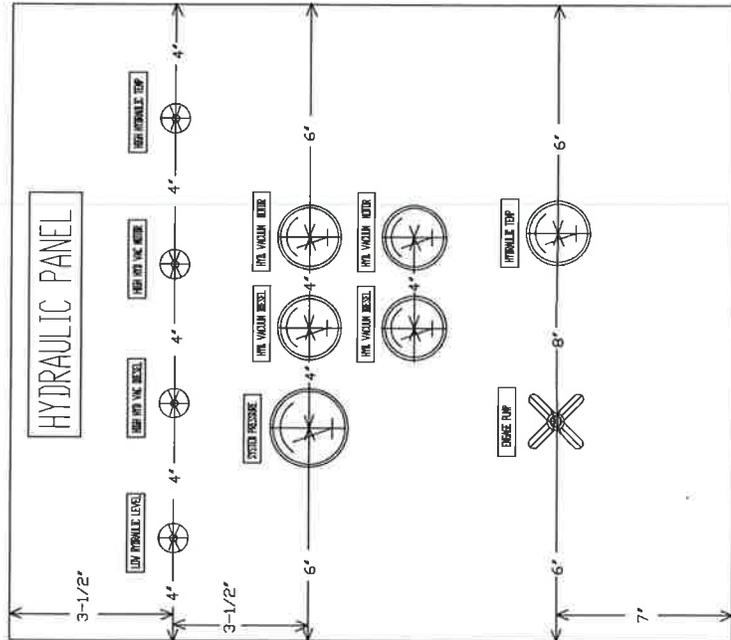
- A. Pump vendor shall be in a position to render prompt parts and service at competitive prices and in a timely manner.
- B. The pump vendor shall maintain and/or have access to a parts inventory of sufficient size and variety to offer 95% parts availability within 48 hours from the time of order by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

APPENDIX I - STATION CONTROL PANEL I/O LIST

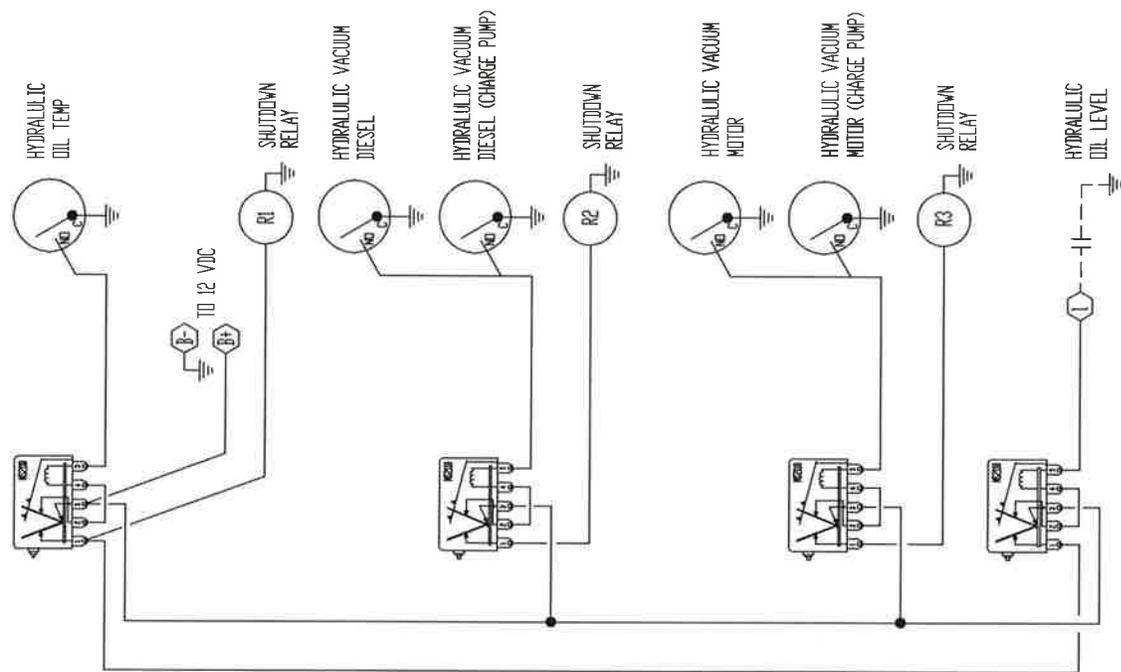
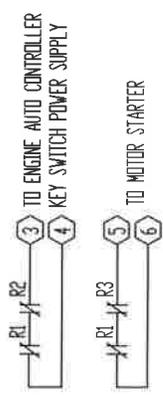
DESCRIPTION	POINT TYPE	FROM	TO
LOSS OF UTILITY POWER	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
ELECTRIC PUMP IN AUTO	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
ELECTRIC SPEED CONTROL IN AUTO	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
ELECTRIC PUMP FAULT	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
ELECTRIC PUMP RUNNING	DI	ELECTRIC PUMP PANEL (DRY CONTACT)	STATION CONTROL PANEL
DIESEL PUMP IN AUTO	DI	DIESEL PUMP CONTROLLER (DRY CONTACT)	STATION CONTROL PANEL
DIESEL SPEED CONTROL IN AUTO	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
DIESEL PUMP RUNNING	DI	DIESEL PUMP CONTROLLER (DRY CONTACT)	STATION CONTROL PANEL
LOW LOW LEVEL	DI	FLOAT SWITCH	STATION CONTROL PANEL
LOW LEVEL (PUMP STOP FLOAT)	DI	FLOAT SWITCH	STATION CONTROL PANEL
HIGH LEVEL (PUMP START FLOAT)	DI	FLOAT SWITCH	STATION CONTROL PANEL
PUMP RUN FLOATS	DI	STATION CONTROL PANEL	STATION CONTROL PANEL
DIESEL PUMP FAULT	DI	DIESEL PUMP CONTROLLER (DRY CONTACT)	STATION CONTROL PANEL
BATTERY CHARGER FAULT	DI	BATTERY CHARGER	STATION CONTROL PANEL
HYDRAULIC OIL LOW LEVEL ALARM	DI	LEVEL SWITCH IN HYDRAULIC OIL TANK	STATION CONTROL PANEL
HYDRAULIC OIL LOW LEVEL SHUTDOWN	DI	LEVEL SWITCH IN HYDRAULIC OIL TANK	STATION CONTROL PANEL
ENGAGE HYDRAULIC PUMP	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
DISENGAGE HYDRAULIC PUMP	DI	STATION CONTROL PANEL SELECTOR SWITCH	STATION CONTROL PANEL
ELECTRIC PUMP RUN COMMAND	DO	STATION CONTROL PANEL	ELECTRIC PUMP PANEL
DIESEL PUMP RUN COMMAND	DO	STATION CONTROL PANEL	DIESEL PUMP CONTROLLER
PUMP COMMANDED PLC	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
ELECTRIC PUMP RUNNING	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
DIESEL PUMP RUNNING	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
PUMP CALL FLOATS	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
AC POWER AVAILABLE	DO	STATION CONTROL PANEL	STATION CONTROL PANEL PILOT LIGHT
ENGAGE HYDRAULIC PUMP	DO	STATION CONTROL PANEL	HYDRAULIC PUMP SOLENOID

SOLENOID					
ELECTRIC RUN TIME	DO		STATION CONTROL PANEL		STATION CONTROL PANEL HOUR METER
DIESEL RUN TIME	DO		STATION CONTROL PANEL		STATION CONTROL PANEL HOUR METER
INTAKE (SUMP) LEVEL	AI		RADAR LEVEL TRANSMITTER		STATION CONTROL PANEL
FUEL LEVEL	AI		FUEL TANK CONTINUOUS LEVEL SWITCH		STATION CONTROL PANEL
ENGINE BATTERY VOLTAGE	AI		ENGINE BATTERY BANK		STATION CONTROL PANEL
ELECTRIC PUMP COMMANDED SPEED	AO		STATION CONTROL PANEL VALVE DRIVER		VARIABLE DISPLACEMENT HYDRAULIC PUMP
DIESEL PUMP COMMANDED SPEED	AO		STATION CONTROL PANEL VALVE DRIVER		VARIABLE DISPLACEMENT HYDRAULIC PUMP
INTAKE (SUMP) LEVEL LOCAL DISPLAY	AO		STATION CONTROL PANEL		STATION CONTROL PANEL DIGITAL PROCESS METER

REV	FORWARD REVISIONS TO ENGINEERING	DATE	APP'D
	DESCRIPTION		



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	48075	RELAY 4VDC
2	1	60039	INDUCTION MOTOR 1/2HP 115V 1725RPM
3	1	60040	INDUCTION MOTOR 1/2HP 115V 1725RPM
4	1	60041	INDUCTION MOTOR 1/2HP 115V 1725RPM
5	1	60042	INDUCTION MOTOR 1/2HP 115V 1725RPM
6	1	60043	INDUCTION MOTOR 1/2HP 115V 1725RPM
7	1	60044	INDUCTION MOTOR 1/2HP 115V 1725RPM
8	1	60045	INDUCTION MOTOR 1/2HP 115V 1725RPM
9	1	60046	INDUCTION MOTOR 1/2HP 115V 1725RPM
10	1	60047	INDUCTION MOTOR 1/2HP 115V 1725RPM
11	1	60048	INDUCTION MOTOR 1/2HP 115V 1725RPM
12	1	60049	INDUCTION MOTOR 1/2HP 115V 1725RPM
13	1	60050	INDUCTION MOTOR 1/2HP 115V 1725RPM
14	1	60051	INDUCTION MOTOR 1/2HP 115V 1725RPM
15	1	60052	INDUCTION MOTOR 1/2HP 115V 1725RPM
16	1	60053	INDUCTION MOTOR 1/2HP 115V 1725RPM
17	1	60054	INDUCTION MOTOR 1/2HP 115V 1725RPM
18	1	60055	INDUCTION MOTOR 1/2HP 115V 1725RPM
19	1	60056	INDUCTION MOTOR 1/2HP 115V 1725RPM
20	1	60057	INDUCTION MOTOR 1/2HP 115V 1725RPM
21	1	60058	INDUCTION MOTOR 1/2HP 115V 1725RPM
22	1	60059	INDUCTION MOTOR 1/2HP 115V 1725RPM
23	1	60060	INDUCTION MOTOR 1/2HP 115V 1725RPM
24	1	60061	INDUCTION MOTOR 1/2HP 115V 1725RPM
25	1	60062	INDUCTION MOTOR 1/2HP 115V 1725RPM
26	1	60063	INDUCTION MOTOR 1/2HP 115V 1725RPM
27	1	60064	INDUCTION MOTOR 1/2HP 115V 1725RPM
28	1	60065	INDUCTION MOTOR 1/2HP 115V 1725RPM
29	1	60066	INDUCTION MOTOR 1/2HP 115V 1725RPM
30	1	60067	INDUCTION MOTOR 1/2HP 115V 1725RPM
31	1	60068	INDUCTION MOTOR 1/2HP 115V 1725RPM
32	1	60069	INDUCTION MOTOR 1/2HP 115V 1725RPM
33	1	60070	INDUCTION MOTOR 1/2HP 115V 1725RPM
34	1	60071	INDUCTION MOTOR 1/2HP 115V 1725RPM
35	1	60072	INDUCTION MOTOR 1/2HP 115V 1725RPM
36	1	60073	INDUCTION MOTOR 1/2HP 115V 1725RPM
37	1	60074	INDUCTION MOTOR 1/2HP 115V 1725RPM
38	1	60075	INDUCTION MOTOR 1/2HP 115V 1725RPM
39	1	60076	INDUCTION MOTOR 1/2HP 115V 1725RPM
40	1	60077	INDUCTION MOTOR 1/2HP 115V 1725RPM
41	1	60078	INDUCTION MOTOR 1/2HP 115V 1725RPM
42	1	60079	INDUCTION MOTOR 1/2HP 115V 1725RPM
43	1	60080	INDUCTION MOTOR 1/2HP 115V 1725RPM
44	1	60081	INDUCTION MOTOR 1/2HP 115V 1725RPM
45	1	60082	INDUCTION MOTOR 1/2HP 115V 1725RPM
46	1	60083	INDUCTION MOTOR 1/2HP 115V 1725RPM
47	1	60084	INDUCTION MOTOR 1/2HP 115V 1725RPM
48	1	60085	INDUCTION MOTOR 1/2HP 115V 1725RPM
49	1	60086	INDUCTION MOTOR 1/2HP 115V 1725RPM
50	1	60087	INDUCTION MOTOR 1/2HP 115V 1725RPM



MOVING WATER INDUSTRIES
 200 NORTH FEDERAL HWY
 DEERFIELD BEACH, FL 33441
 www.mwi.com

CORPORATION
 ESTABLISHED 1958

TITLE	HYDRAULIC PANEL
DRAWN BY	EJS
DATE	10/3/16
CUSTOMER	
PROJECT	DIESEL - ELECTRIC PUMP DRIVE UNIT
DWG No.	19034E-1

THE ENGINEER OR ARCHITECT SHALL BE RESPONSIBLE FOR THE PROPER USE OF THIS DRAWING. THE USER SHALL BE RESPONSIBLE FOR THE PROPER USE OF THIS DRAWING. THE USER SHALL BE RESPONSIBLE FOR THE PROPER USE OF THIS DRAWING. THE USER SHALL BE RESPONSIBLE FOR THE PROPER USE OF THIS DRAWING.



1725 LAKEPOINT DR.
LEWISVILLE, TX 75067
1-855-592-SCADA
WWW.PRIME-CONTROLS.COM

PANEL INFORMATION
 S/N: 0065-0252-CP1 PROJECT NO: 155072
 MFG DATE: XXXXX/XXXX ENCLOSURE TYPE: TYPE 1X

INCOMING SOURCES OF POWER

SOURCE 1	SOURCE 2
DISCONNECT: CB1	DISCONNECT: NA
MAXIMUM VOLTAGE: 24VDC	MAXIMUM VOLTAGE:
PHASE: 1	PHASE:
FREQUENCY: 60 HZ	FREQUENCY:
TOTAL FLA: 15A	TOTAL FLA:
SCCR:	SCCR:



1725 LAKEPOINT DR.
LEWISVILLE, TX 75067
WWW.PRIME-CONTROLS.COM

PANEL INFORMATION
 ENCLOSURE OPENINGS MUST BE FILLED BY EQUIPMENT MARKED WITH THE SAME TYPE RATING AS THE ENCLOSURE.

FIELD TERMINATION
 ALL FIELD WIRE UNLESS OTHERWISE NOTED SHALL BE A/N, 18 AWG COPPER CONDUCTOR Braid Shielded Cable. ALL FIBER OPTIC WIRE SHALL BE 18 AWG SHIELDED CABLE.

FUSE INFORMATION
 CAUTION: TO REDUCE THE RISK OF FIRE, REPLACE WITH FUSES WITH SAME TYPE AND RATING. ALL FUSES ARE BUSSMANN TYPE _____ GMA _____ RATED AT 125VAC UNLESS OTHERWISE NOTED. SEE DRAWING SET FOR EXACT PLACEMENT OF FUSES.

TORQUE RATINGS

CIRCUIT BREAKER	7 INxLB
UTA	7 INxLB
UTS & UT10	15 INxLB
UT35	32 INxLB
FIELD W/0 BASES	5 INxLB

0065-0252-CP1

PRELIMINARY

JEFFERSON PARISH DRAINAGE DEPARTMENT
LAFITTE PUMP STATIONS

STATION CONTROL PANEL
 LABEL SCHEDULE

DATE: 11/15/18
 DRAWN BY: []
 CHECKED BY: []
 APPROVED BY: []

PROJECT NO: 155072
 SHEET NO: 1-1481

PRIME CONTROLS
 1725 LAKEPOINT DRIVE
 LEWISVILLE, TX 75067
 (972) 221-1485

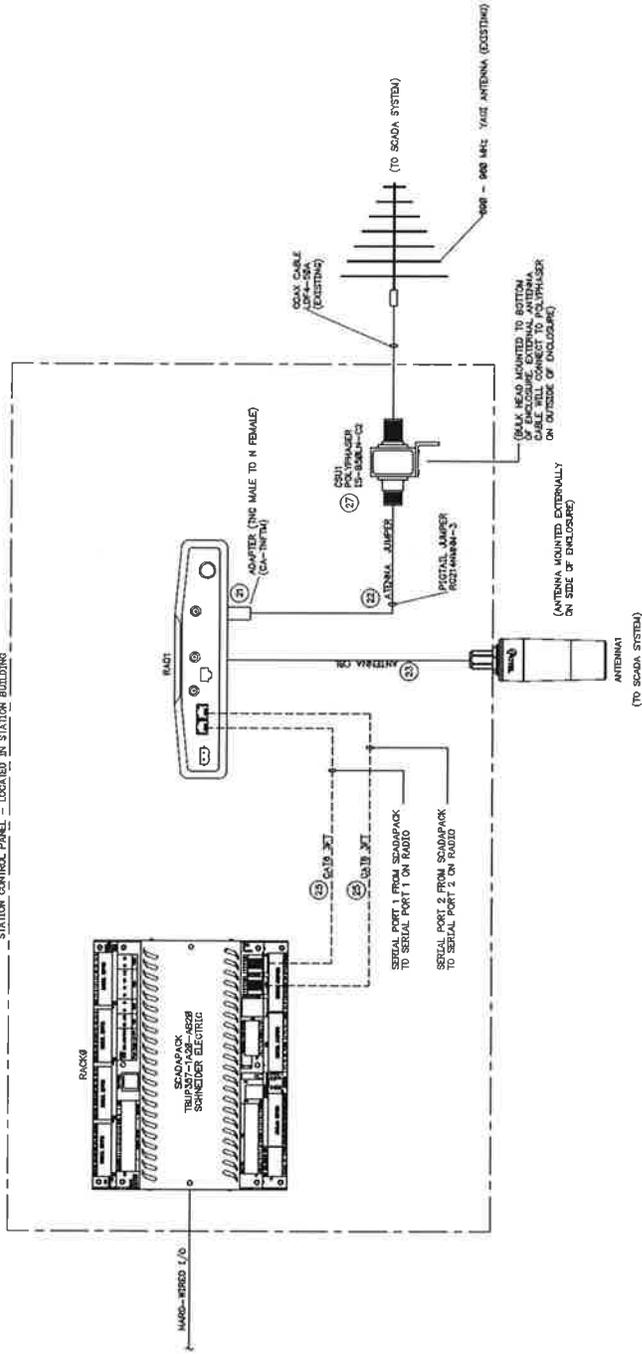
REV. DATE DESCRIPTION

REV	DATE	DESCRIPTION
A	06/20/18	DESIGN

CON. SIZE: []
 CON. TYPE: []
 CON. WIRE: []
 CON. WIRE: []

NOTICE: THIS DOCUMENT IS THE PROPERTY OF PRIME CONTROLS AND MAY NOT BE REPRODUCED, COPIED OR DUPLICATED WHOLLY OR PARTLY WITHOUT PRIOR WRITTEN CONSENT OF PRIME CONTROLS.

STATION CONTROL PANEL - LOCATED IN STATION BUILDING



CABLE LEGEND

-----	ETHERNET
-----	FIBER OPTIC
-----	MISC COMM. CABLE

NOTES

REFERENCE DRAWINGS

REVISIONS

REV. NO. DESCRIPTION

DATE DESIGN

BY

DATE APPROVAL

NO. OF SHEETS

PRIME COMMUNICATIONS
1725 LAKEPOINTE DRIVE
LEWISVILLE, TX 75057
(972) 221-4650

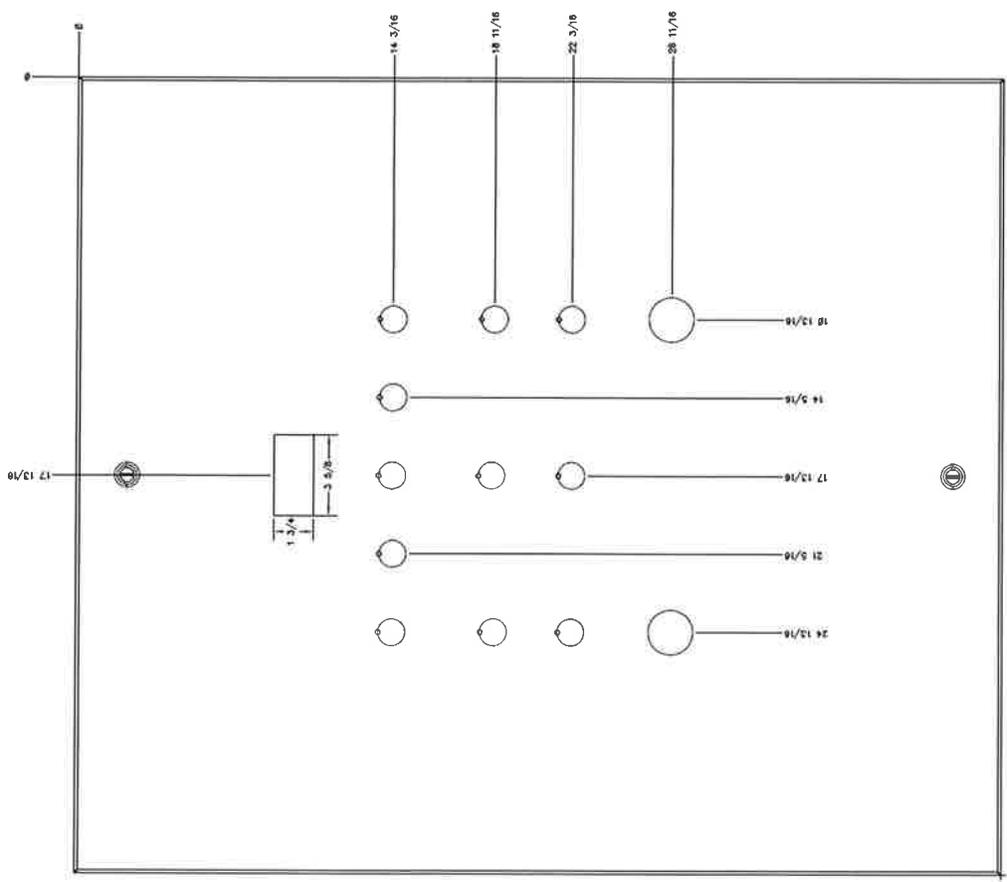
PROJECT NO. 8055-8828-CF1-2801

STATION CONTROL PANEL
LAFITTE PUMP STATIONS
COMMUNICATIONS DIAGRAM

JEFFERSON PARISH DRAINAGE DEPARTMENT

PRELIMINARY

NOTICE: THIS DOCUMENT IS THE PROPERTY OF PRIME COMMUNICATIONS AND MAY NOT BE REPRODUCED, COPIED OR DISCLOSED WITHOUT THE WRITTEN CONSENT OF THE OWNER.



PRELIMINARY

JEFFERSON PARISH DRAINAGE DEPARTMENT
LAFITTE PUMP STATIONS
 STATION CONTROL PANEL
 OUTPUT DETAILS

SCALE: 1/8" = 1'-0"
 SHEET NO. 8865-8828-C1-3883

PRIME CONTROLS
 1725 LAKEHURST DRIVE
 LEWISVILLE, TX 75067
 (972) 221-4668

TX
 P-0897

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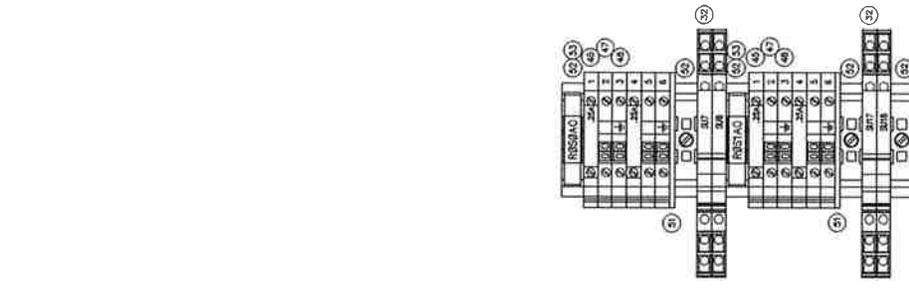
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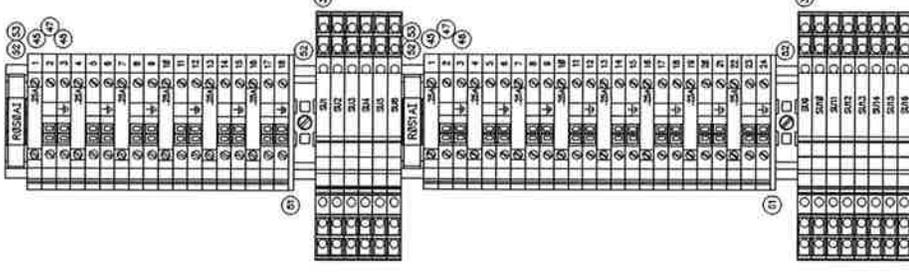
REV	DATE	DESCRIPTION

NOTES



DC DIST
TS1-4

CONTROL
TS3-3



DIGITAL INPUTS
TS: 195A00/0, 195A001

DIGITAL OUTPUTS
TS: 195A00



ANALOG INPUTS
TS: 195A0-RES1A

ANALOG OUTPUTS
TS: 195A0-RES1A

NOTES

REFERENCE DRAWINGS

REVISIONS

DWG NO.

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REV. DATE

BY / IN / FOR

DATE

DESCRIPTION

CHK. DATE

DRWN. DATE

APP. NO.

REV. NO.

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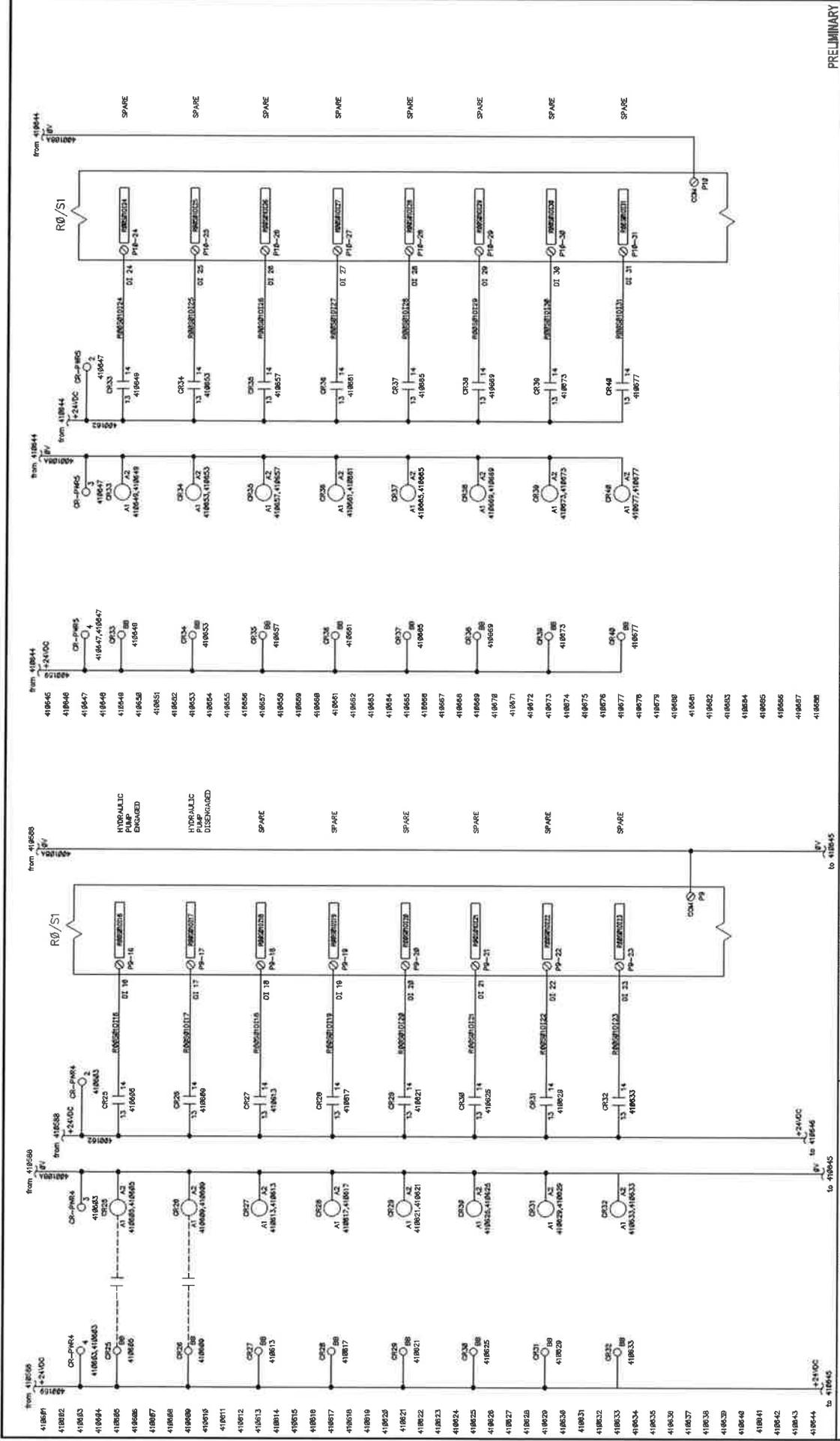
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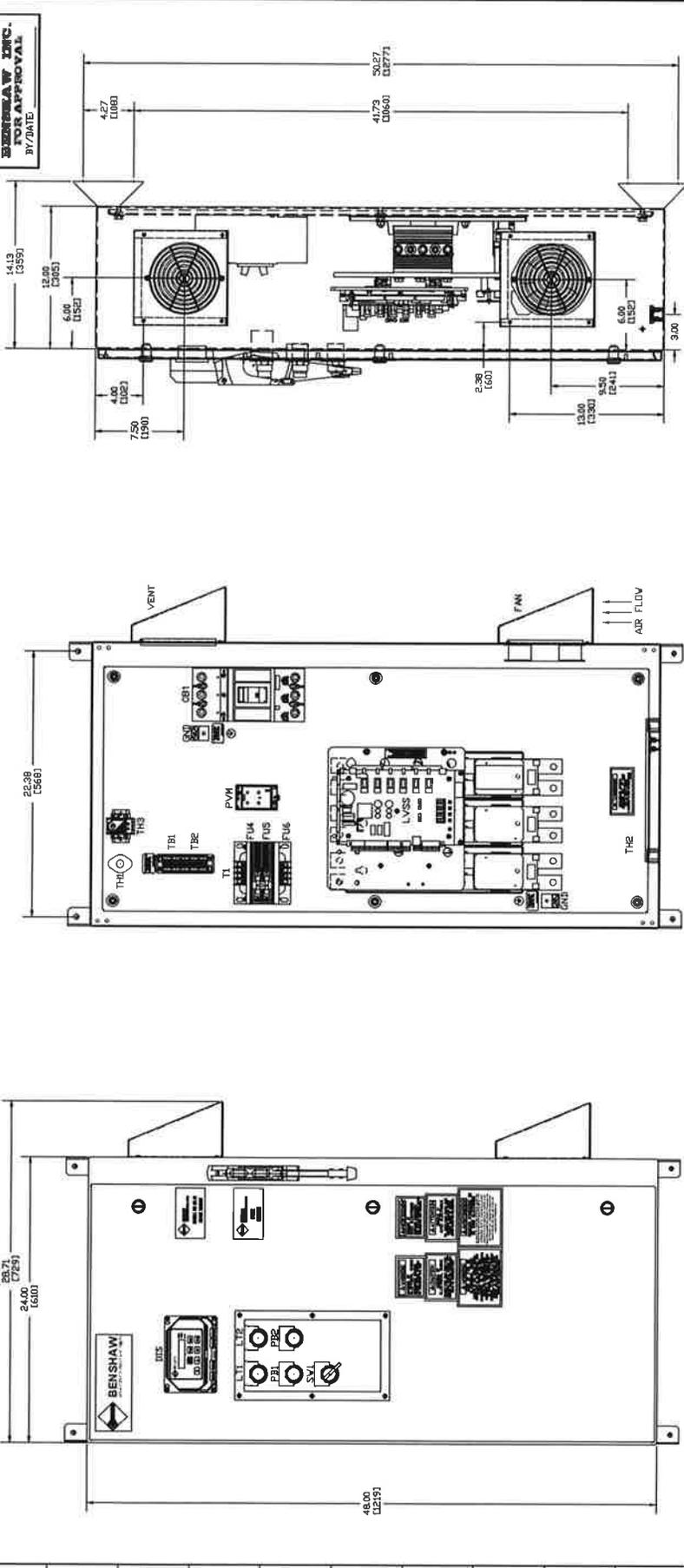
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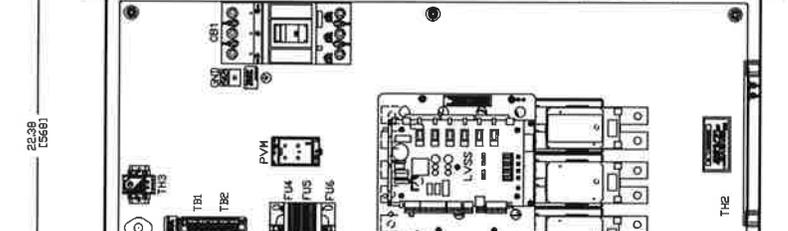
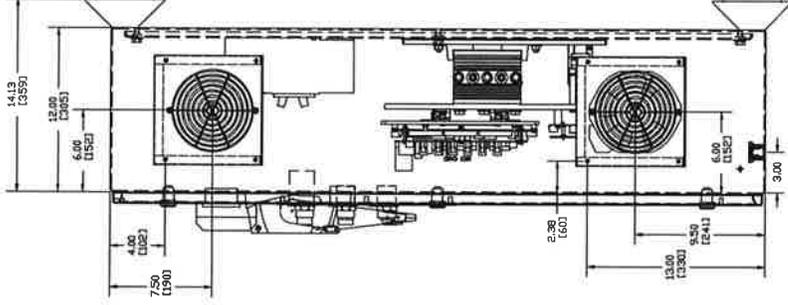
NOTES		REFERENCE DRAWINGS		REVISIONS		PRIME CONTROLS	
1	to 41864			1	2025/03/03		PRIME CONTROLS 1725 LAKEWANTE DRIVE LENOIRVILLE, TX 75847 (972) 221-4650
2	to 41864			2			
3	to 41864			3			STATION CONTROL PANEL DIGITAL INPUT MODULE WIRING DIAGRAM
4	to 41864			4			
5	to 41864			5			SHEET NO. 3 DATE: 08/25/2025 DRAWN BY: JMM CHECKED BY: JMM PROJECT NO. 8855-8828-C01-1118

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

00-270002-36AS-EDRS08P001S12RE



BENSHAW INC.
DATE APPROVAL
BY/DATE



BENSHAW

ENCLOSURE LAYOUT
100% ADV. CLASS. TO
STANDARD PER
PER SPEC-200042-00

SCALE: 1:4

SHEET 1 OF 4

REVISIONS

DATE

BY

APP'D

REV

LEGEND:

- CB1 MAIN CIRCUIT BREAKER
- CB2 GROUND FES STACK
- CT1-3 CONTROL CT'S
- CT1-3 CUSTOMER TERMINAL BLOCKS
- T1-T6 STOP TERMINAL BLOCKS
- THB THERMOSTAT
- FAN FAN
- THB FAN THERMOSTAT
- PTM-5 PRIMARY POWER TRANSFORMER
- FLU-5 SECONDARY FUSE (T)
- PV4 PHASE VOLT MONITOR
- LVSS LOW VOLTAGE SENSITIVE SWITCH
- LTD RUN PILOT LIGHT (RED)
- LTR RUN PILOT LIGHT (GREEN)
- PBU FAULT PUSH-BUTTON
- SVL START/STOP/RESET SWITCH
- SVL HAND-OFF-AUTO SELECTOR SWITCH
- VENT ENCLOSURE VENT
- FAN ENCLOSURE FAN

NOTES:

- MINIMUM WIRE BENDING SPACE SHALL BE 7.00" FROM TOP OF CIRCUIT BREAKER POWER CONNECTION TO TOP OF ENCLOSURE.
- ENSURE THAT ALL RIBBON CABLES ARE ROUTED AWAY FROM POWER CONDUCTORS.
- MINIMUM WIRE BENDING SPACE SHALL BE 7.00" FROM BOTTOM OF POWERSTACK POWER CONNECTION TO BOTTOM OF ENCLOSURE.
- ENCLOSURE LAYOUT IS DESIGNED FOR CABLE ENTRY/EXIT TO BE TOP/BOTTOM

FRONT VIEW

BOTTOM VIEW

SIDE VIEW

00-270002-03AS-EDRESS08F0010812R21

REVISION BY DATE FOR APPROVAL

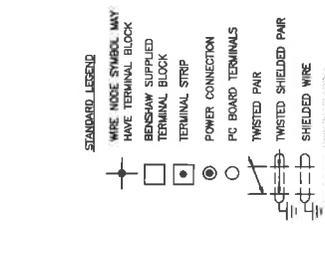
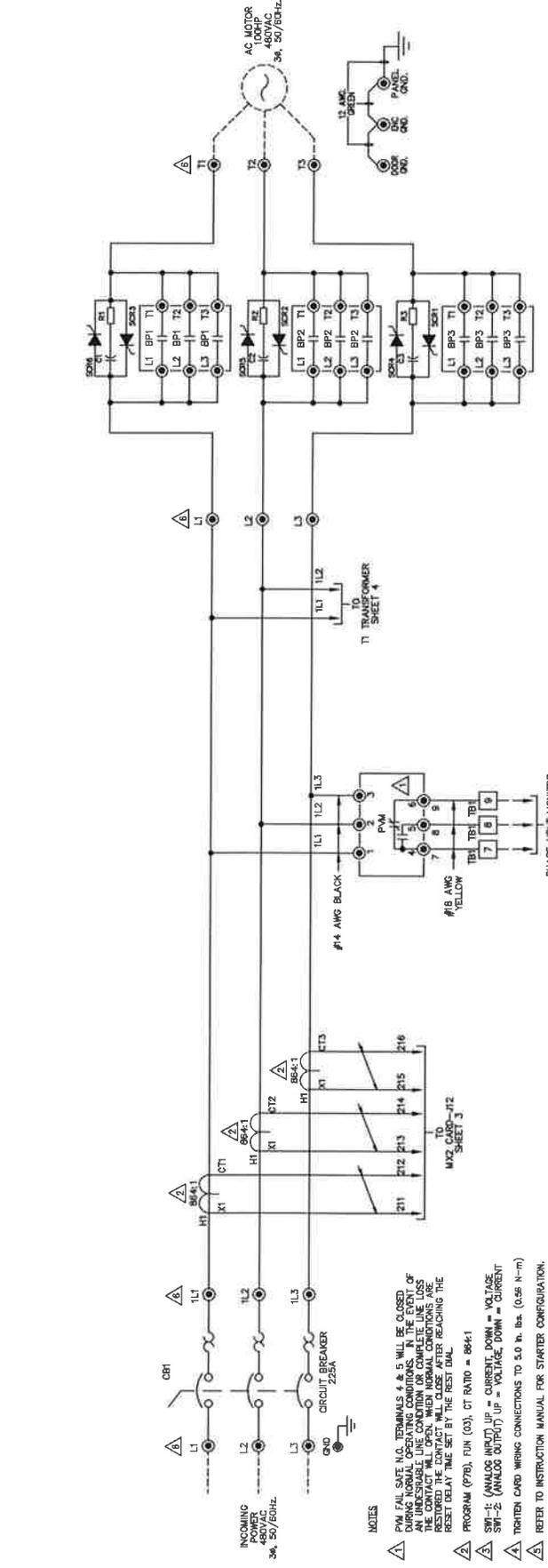


CHART 1

TIGHTENING TORQUE SPECIFICATIONS FOR SOCKET HEAD SCREWS ACROSS FLATS (INCHES)	TORQUE POINTS-INCHES
1/4	200
5/16	275
3/8	375
1/2	500

- STANDARD LEGEND
- WIRE NODE SYMBOL MAY HAVE TERMINAL BLOCK
 - BENSHAW SUPPLIED TERMINAL BLOCK
 - TERMINAL STRIP
 - POWER CONNECTION
 - PC BOARD TERMINALS
 - TWISTED PAIR
 - TWISTED SHIELDED PAIR
 - SHIELDED WIRE
 - FIELD WIRING

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY. DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY. DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY.

REVISIONS

SCALE: 1:1

BENSHAW

POWER SCHEMATIC FOR MOTOR CONTROL SYSTEM STANDARD FAULT NEMA 3R PER SPEC-200042-00

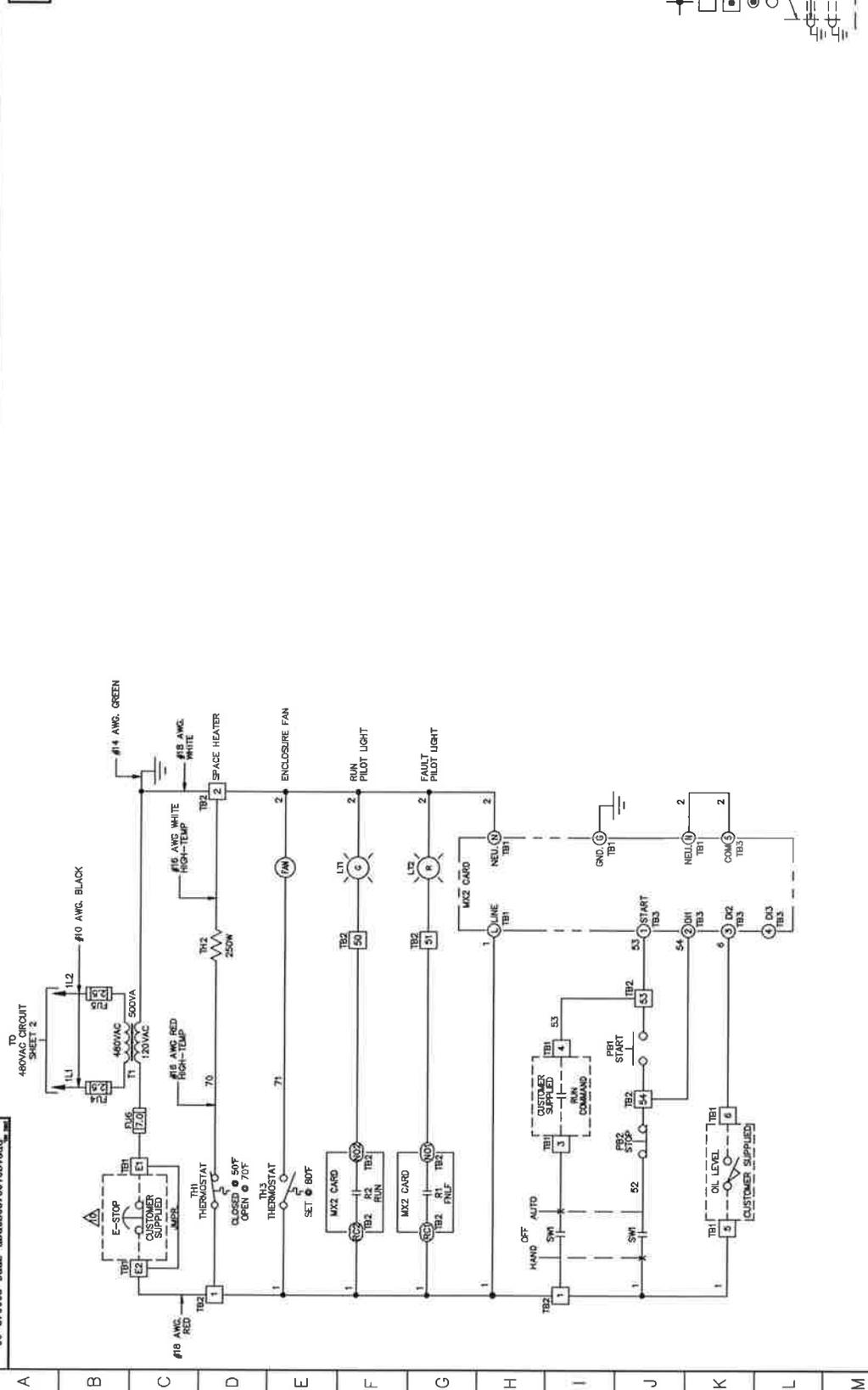
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SCALE: 1:1

SHEET 2 OF 4

- NOTES
- △ P14 FAIL SAFE N.O. TERMINALS 4 & 5 WILL BE CLOSED DURING NORMAL OPERATING CONDITIONS. IN THE EVENT OF A SHORT CIRCUIT, THE CONTACTS WILL OPEN. WHEN NORMAL CONDITIONS ARE RESTORED, THE CONTACT WILL CLOSE AFTER REACHING THE RESET DELAY TIME SET BY THE RESET DIAL.
 - △ PROGRAM (P7B), FWH (03), CT RATIO = 864:1
 - △ SWP-1 (ANALOG INPUT) UP = CURRENT, DOWN = VOLTAGE
 - △ SWP-2 (ANALOG OUTPUT) UP = VOLTAGE, DOWN = CURRENT
 - △ TIGHTEN CARD WIRING CONNECTIONS TO 3.0 lb. lbs. (0.59 N-m)
 - △ REFER TO INSTRUCTION MANUAL FOR STARTER CONFIGURATION.
 - △ TIGHTEN POWER LUG FIELD WIRING CONNECTIONS TO CHART 1. STARTER POWER WIRING IS SUPPLIED ON LINE SIDE OF STARTER.
 - △ FOR CLASS 20 UNITS, UNITS WITH THE LETTER H AFTER THE VOLTAGE IN THE PART NUMBER, REPROGRAM P5 (SET 03, PFM 15) MOTOR OVERLOAD CLASS RUNNING TO "20".
 - △ REPROGRAM P49 D02 AS "TH" FAULT HIGH.
 - △ REPROGRAM P52 R1 AS "FLUP" FAULT NON FAIL SAFE.
 - △ REPROGRAM P52 R2 AS "TH" RUNNING.
 - △ THE DOOR MOUNTED KEYPAD START/STOP FUNCTIONS ARE TO BE DISABLED. LOCAL & REMOTE START/STOP FUNCTIONS AND P5 (LOCAL & REMOTE START/STOP) SET POINTS ARE TO BE SET TO "0" (TERMINAL), THEN REPROGRAM THE INDICATED PARAMETERS AS FOLLOWS: PARAMETER P65 (KEYPAD STOP DISABLE) - SET TO "Disabled" (DISABLED)
 - △ REMOVE JUMPER WHEN E-STOP IS INSTALLED.

BENSHAW INC.
 SHEET NO. 72A
 BY/DATE: _____



STANDARD LEGEND

- WIRE NODE SYMBOL MAY HAVE TERMINAL BLOCK
- BENSHAW SUPPLIED TERMINAL BLOCK
- TERMINAL STRIP
- POWER CONNECTION
- PC BOARD TERMINALS
- TWISTED PAIR
- SHIELDED PAIR
- SHIELDED WIRE
- FIELD WIRING

REV	DATE	BY	CHKD	DESCRIPTION
1				CONTROL SCHEMATIC FOR MOTOR SYSTEM
2				STANDARD FAULT - NEMA 3R
3				PER SPEC-200042-00
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SCALE: 1:1

SHEET 4 OF 4

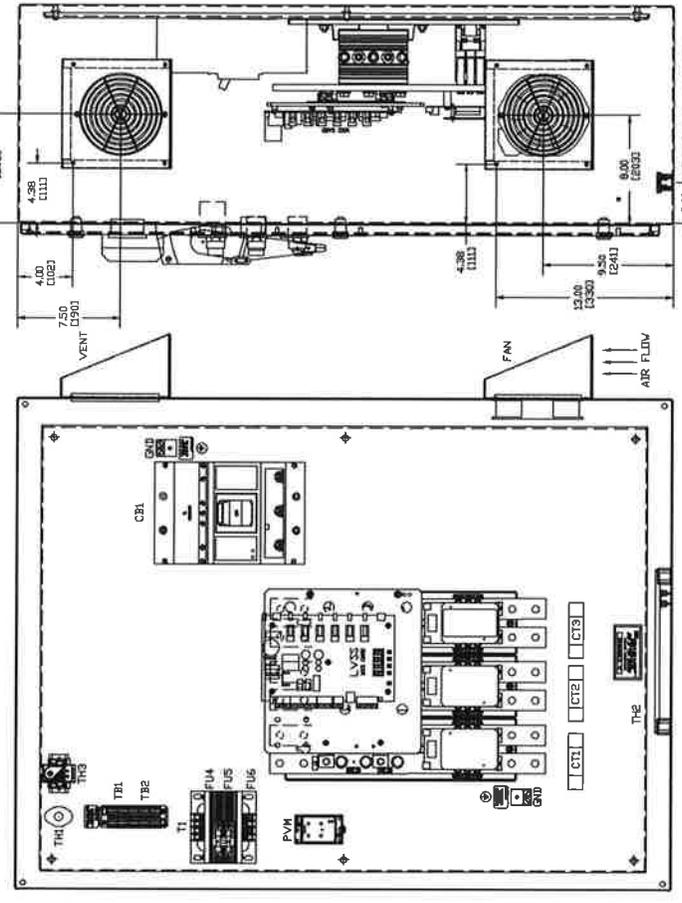
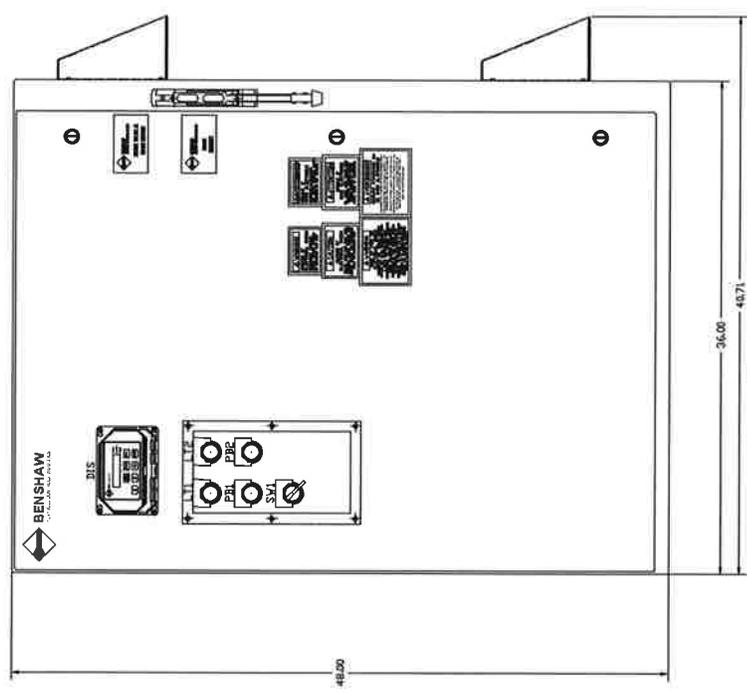
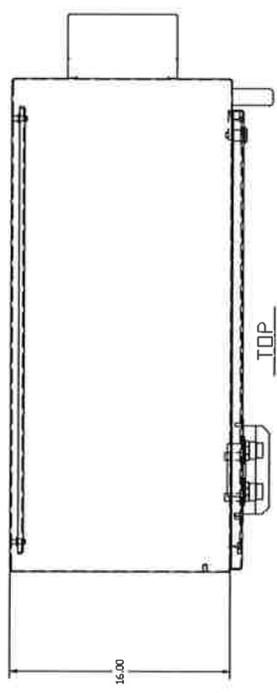
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00-270002-3245-EXPRESSPOST081208

BENSHAW INC.
FOR APPROVAL
BY/DATE

- LEGEND**
- CBU MAIN CIRCUIT BREAKER
 - GN0 GROUND
 - LVSS LVSS
 - TB1 CUSTOMER TERMINAL BLOCKS
 - TB2 SHEP TERMINAL BLOCKS
 - TH0 HEATER THERMOSTAT
 - TH1 FAN THERMOSTAT
 - TH2 FAN THERMOSTAT
 - TU CONTROL POWER TRANSFORMER
 - FU4-5 PRIMARY FUSES (T)
 - FU6 SECONDARY FUSES
 - PVN PHASE VOLT MONITOR
 - DIS NKS2 DISPLAY/KEYPAD
 - LT0 RAN FLIGHT LIGHT GREEN
 - LT1 RAN FLIGHT LIGHT RED
 - PB0 START PUSH-BUTTON
 - PB1 START PUSH-BUTTON
 - SV0 HAND-OPERATED SELECTOR SWITCH
 - SV1 HAND-OPERATED SELECTOR SWITCH
 - FAN ENCLOSURE FAN

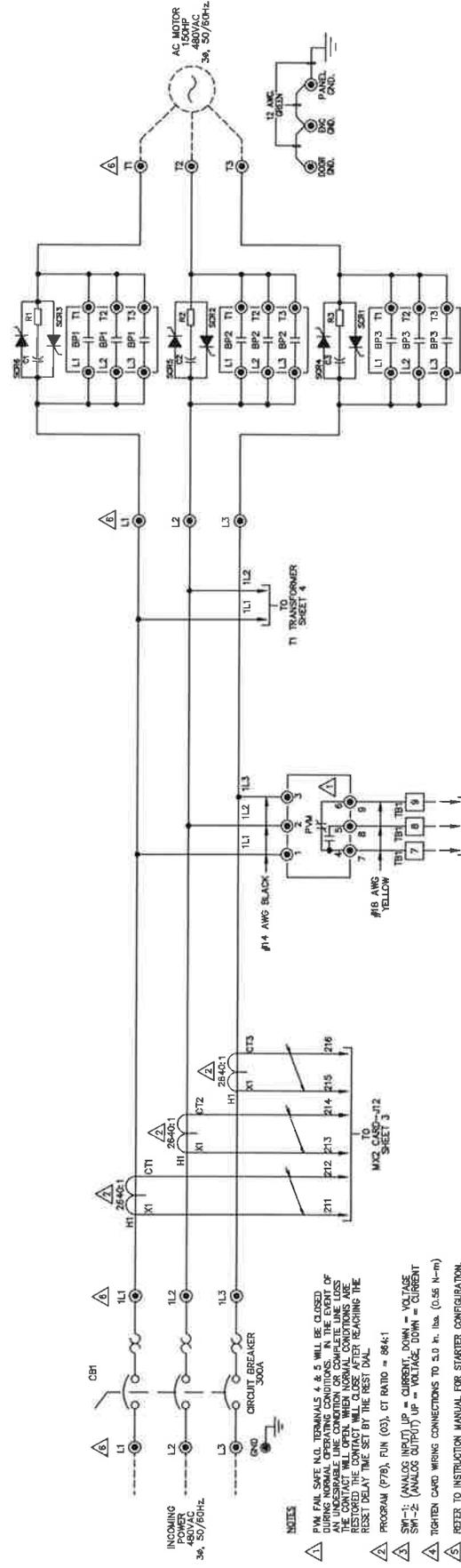
- NOTES:**
- △ MINIMUM VISE BENDING SPACE SHALL BE 100" FROM TOP OF CIRCUIT BREAKER POWER CONNECTION TO TOP OF ENCLOSURE.
 - △ ENSURE THAT ALL HIDDEN CABLES ARE ROUTED AWAY FROM POWER CONDUCTORS.
 - △ MINIMUM VISE BENDING SPACE SHALL BE 100" FROM BOTTOM OF POWERSTACK POWER CONNECTION TO BOTTOM OF ENCLOSURE.
 - △ ENCLOSURE LAYOUT IS DESIGNED FOR CABLE ENTRY/EXIT TO BE TOP/BOTTOM.



<p>BENSHAW</p> <p>ENCLOSURE LAYOUT STANDARD FAULT NEMA 3R PER SPEC-200042-00</p>		<p>SCALE: 1:4</p> <p>SHEET 1 OF 4</p>
<p>UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DIMENSIONS ARE TO CENTER UNLESS NOTED OTHERWISE TOLERANCES ARE AS SHOWN ANGLES ARE 90° UNLESS NOTED OTHERWISE</p>		<p>REVISIONS</p>
<p>THIRD ANGLE PROJECTION</p> <p>DO NOT SCALE DIM</p>		<p>REV. NO. 1</p>

BENSHAW INC.
FOR APPROVAL
BY/DATE:

00-370002-33AS-EDHSS98905105128R

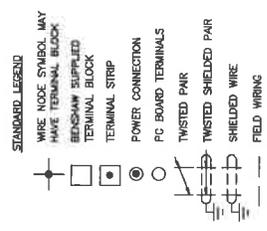


NOTES

- △ P14 FAIL SAFE NO. TERMINALS 4, 5 & 6 WILL BE CLOSED DURING NORMAL OPERATING CONDITIONS. IN THE EVENT OF AN UNDERVOLTAGE LINE CONDITION OR COMPLETE LINE LOSS, THE CONTACTS WILL CLOSE AFTER REACHING THE RESET DELAY TIME SET BY THE REST DAL.
- △ PROGRAM (P78), FUM (03), CT RATIO = 864:1
- △ SW-1 (ANALOG INPUT) UP = CURRENT, DOWN = VOLTAGE
- △ SW-2 (ANALOG OUTPUT) UP = VOLTAGE, DOWN = CURRENT
- △ TIGHTEN CARD WIRING CONNECTIONS TO 3.0 h. Ina (0.56 N-m)
- △ REFER TO INSTRUCTION MANUAL FOR STARTER CONFIGURATION.
- △ TIGHTEN POWER LUG FIELD WIRING CONNECTIONS TO CHART 1. SPECIFICATIONS, IF BREAKER IS SUPPLIED ON LINE SIDE OF STACK USE TORQUE VALUES ON BREAKER.
- △ FOR CLASS 20 UNITS, UNITS WITH THE LETTER H AFTER THE VOLTAGE, THE BREAKER IS SUPPLIED ON THE LINE SIDE OF THE CLASS 20 UNITS.
- △ REPROGRAM P40 P42 AS "TH" FAULT HIGH
- △ REPROGRAM P42 P43 AS "TH" FAULT NON FAL SAFE
- △ THE DOOR MOUNTED KEYPAD START/STOP FUNCTIONS ARE TO BE DISABLED. TO ACCOMPLISH THIS FUNCTION, VERIFY THAT PARAMETERS P4 AND P5 (LOCAL & REMOTE SOURCES) ARE SET TO "TF" (TERMINAL), THEN RECONFIGURE PARAMETER P45 (KEYPAD STOP DISABLE) - SET TO "Disable" (DISABLED)
- △ REMOVE JUMPER WHEN E-STOP IS INSTALLED.

CHART 1
TIGHTENING TORQUE SPECIFICATIONS FOR SOCKET HEAD SCREWS ACROSS FLATS (INCHES)

SOCKET SIZE (INCHES)	TORQUE (POUNDS-INCHES)
1/4	200
5/16	275
3/8	375
1/2	500



BENSHAW

POWER SCHEMATIC
1000 REV. CLASS 19
STANDARD MOUNT
PER. SPEC-200042-30

SCALE: 1:1

SHEET 2 OF 4

Manual Double Wall Day Tank - PY50MDW thru PY150MDW

TANK DIMENSION REFERENCE CHART (SHOWN IN INCHES)

TANK RATED CAPACITY	A - HEIGHT (TANK)	D - DEPTH (OVERALL)	E - MTG HOLES (CTR-TO-CTR)	F - DEPTH (INNER TANK)	U/L VENT NPT SIZE (See Note)
50 GAL.	35.00	24.00	22.50	18.00	2.00
60 GAL.	43.00	24.00	22.50	18.00	3.00
75 GAL.	48.00	24.00	22.50	18.00	3.00
100 GAL.	48.00	30.00	28.50	24.00	3.00
150 GAL.	48.00	42.00	40.50	36.00	3.00

* Depth dimension - Front-to-Back

NOTE - Both Day Tank & Double Wall Secondary Containment Area are vented

NOTE - BOTH THE TANK AND THE DOUBLE WALL SECONDARY CONTAINMENT AREA ARE VENTED

REF #	DESCRIPTION OF STANDARD EQUIPMENT
1	CONTROL PANEL
2	6-1/2" X 6-1/2" INSPECTION PLATE
3	6" X 6" MOTOR MOUNTING PLATE
4	1-1/2" NPT - FUEL LEVEL GAUGE
5	FUEL INLET/OUTLET TO/FROM TANK W/DROP TUBES
6	2" x 1" NPT - ENGINE FUEL SUPPLY W/DROP TUBE
7	2" x 1" NPT - ENGINE FUEL RETURN W/DROP TUBE
8	2" NPT - TANK VENT TO ATMOSPHERE
9	1" NPT - DROP TUBES for ENGINE SUPPLY & RETURN
10	1" NPT - OVERFLOW TO MAIN STORAGE TANK
11	1/2" NPT - TANK DRAIN W/DROP TUBE (PLUGGED)
12	2" NPT - EXTRA CONNECTION
13	2" NPT - MANUAL FILL W/DROP TUBE
20	2" NPT - VENT TO ATMOSPHERE for DOUBLE WALL SECONDARY CONTAINMENT AREA
21	1-1/4" NPT - INSPECTION PORT for DOUBLE WALL SECONDARY CONTAINMENT AREA
22	3/8" NPT - Drain for DOUBLE WALL SECONDARY CONTAINMENT AREA
23	1/2" NPT - For OPTIONAL LEAK DETECTOR (NOT SUPPLIED) for DOUBLE WALL SECONDARY CONTAINMENT AREA

ADDITIONAL EQUIPMENT IF TANK IS UNLISTED
40 NPT CONNECTION FOR U/L EMERGENCY RELIEF VENT (See Above Chart For Size)
41 NPT CONNECTION FOR U/L EMERGENCY RELIEF VENT for DOUBLE WALL SECONDARY CONTAINMENT AREA

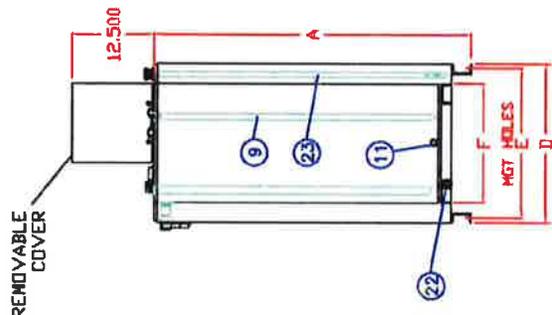
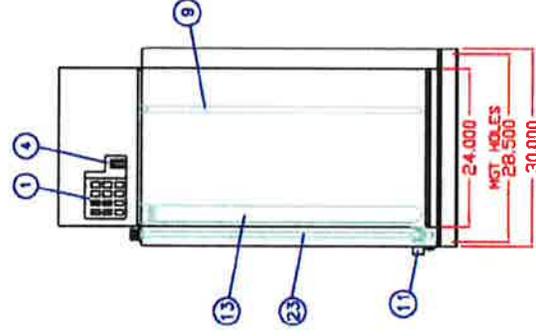
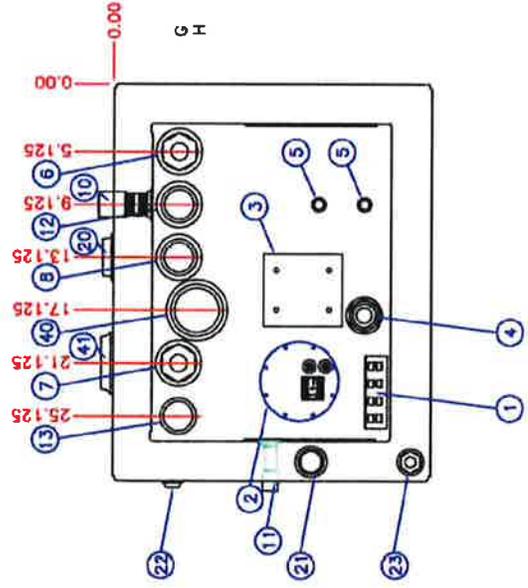
CONSTRUCTION NOTES
 1 - TANK TOP BOTTOM & SHELL - 12 GAUGE STEEL
 2 - DIMENSIONS SUBJECT TO CHANGE WITHOUT NOTICE

MANUAL DOUBLE WALL DAY TANK
 PY50MDW - PY150MDW
 PY50MDLW - PY150MDLW (U/L Listed Version)

PRYCO, INC.
 MECHANICSBURG, ILLINOIS

DRAWN BY: RES | DATE: 03/01/2008
 CHECKED BY: JWW | REV: 03/01/2008
 SHEET NO: 1 of 1 | DWG #: MAN_DW_B

PLAN VIEW (SCALE: 2X)



Manual Double Wall Day Tank - PY200MDW thru PY1000MDW

TANK DIMENSION REFERENCE CHART (SHOWN IN INCHES)

TANK RATED CAPACITY	B - WIDTH (OVER ALL)	C - WIDTH (CTR-TO-CTR)	D - DEPTH (OVER ALL)	E - DEPTH (CTR-TO-CTR)	F - DEPTH (ACTUAL TANK)	U/L VENT NPT SIZE
200 GAL	30.00	27.00	60.00	57.00	54.00	4.00
275 GAL	33.00	30.00	72.00	69.00	66.00	4.00
300 GAL	34.00	31.00	72.00	69.00	66.00	4.00
400 GAL	40.00	37.00	78.00	75.00	72.00	4.00
500 GAL	48.00	45.00	86.00	83.00	80.00	4.00
600 GAL	54.00	51.00	92.00	89.00	86.00	4.00
800 GAL	62.00	59.00	99.00	96.00	93.00	6.00
1,000 GAL	64.00	61.00	102.00	99.00	96.00	6.00

* Depth dimension - Front-to-Back
NOTE - Both Tank & Double Wall Secondary Containment Area are vented.

DESCRIPTION OF STANDARD EQUIPMENT

- 1 CONTROL PANEL
- 2 6-1/2" X 6-1/2" INSPECTION PLATE
- 3 6" x 6" MOTOR MOUNTING PLATE
- 4 1-1/2" NPT - FUEL LEVEL GAUGE
- 5 FUEL INLET/OUTLET TO/FROM TANK W/DROP TUBES
- 6 2" x 1" NPT - ENGINE FUEL SUPPLY W/DROP TUBE
- 7 2" x 1" NPT - ENGINE FUEL RETURN W/DROP TUBE
- 8 2" NPT - TANK VENT TO ATMOSPHERE
- 9 1" NPT - DROP TUBES for ENGINE SUPPLY & RETURN
- 10 1" NPT - OVERFLOW TO MAIN STORAGE TANK
- 11 1" NPT - TANK DRAIN W/DROP TUBE (PLUGGED)
- 12 2" NPT - EXTRA CONNECTION
- 13 2" NPT - MANUAL FILL W/DROP TUBE
- 20 2" NPT - VENT TO ATMOSPHERE for DOUBLE WALL SECONDARY CONTAINMENT AREA
- 21 1-1/4" NPT - INSPECTION PORT for DOUBLE WALL SECONDARY CONTAINMENT AREA
- 22 1" NPT - Drain for DOUBLE WALL SECONDARY CONTAINMENT AREA
- 23 1/2" NPT - For OPTIONAL LEAK DETECTOR (NOT SUPPLIED) for DOUBLE WALL SECONDARY CONTAINMENT AREA

ADDITIONAL EQUIPMENT (TANKS U/L LISTED)
40 NPT CONNECTION FOR U/L EMERGENCY RELIEF VENT (See Above Chart For Size)
41 NPT CONNECTION FOR U/L EMERGENCY RELIEF VENT for DOUBLE WALL SECONDARY CONTAINMENT AREA

CONSTRUCTION NOTES

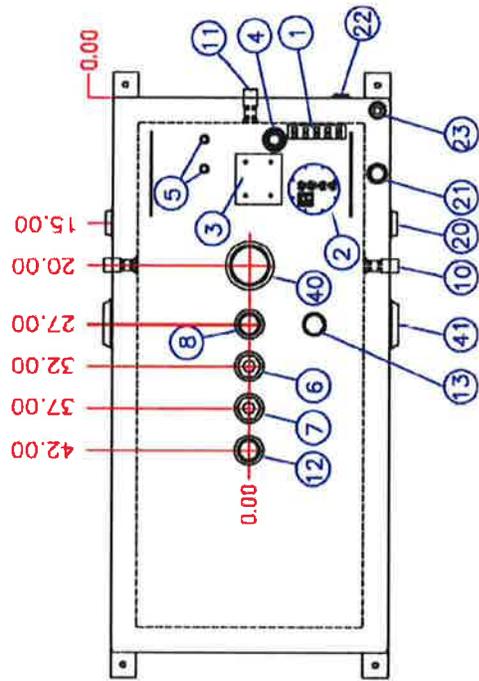
- 1 - TANK TOP, BOTTOM, & SHELL - 12 GAUGE STEEL
- 2 - DIMENSIONS SUBJECT TO CHANGE WITHOUT NOTICE

MANUAL DOUBLE WALL DAY TANK
PY200MDW - PY1000MDW
PY200MULDW - PY1000MULDW (U/L Listed Version)

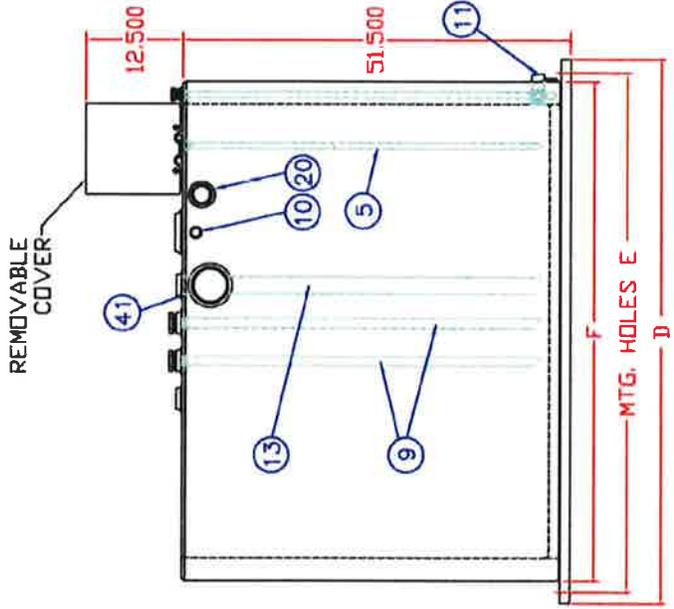
PRYCO, INC.
MECHANICSBURG, ILLINOIS

DRAWN BY: RES | DATE: 03/01/2008
CHECKED BY: DAW | REV: 03/01/2008
SHEET NO. 1 of 1 | DWG #: MAN_DW_C

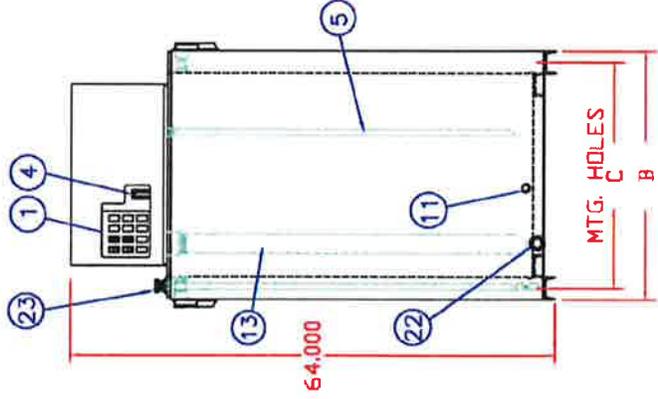
PLAN VIEW



REMOVABLE COVER



LEFT SIDE VIEW



FRONT VIEW



Hydraflo™

Spare Parts

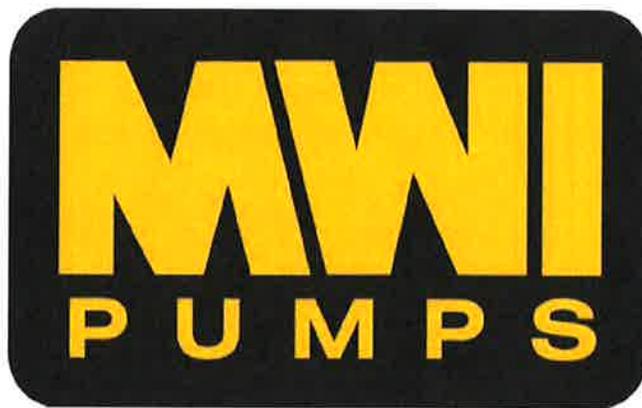
SPARE PARTS

MWI shall provide the following spare parts:

- [1] set of filters for each drive unit consisting of:
 - Suction strainer
 - Return filter element(s)
- [1] set of diesel engine filters consisting of:
 - Oil filter
 - Fuel filter(s)
 - Air filter

MWI CORPORATION
ESTABLISHED 1926

**INSTALLATION, OPERATION,
AND MAINTENANCE MANUAL**



PROJECT:
LAFITTE/LOWER LAFITTE/BARATARIA AREAS
JEFFERSON PARISH

Sam Elh

6-1-2020

PE58019

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 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.

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

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

www.mwicorp.com

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.

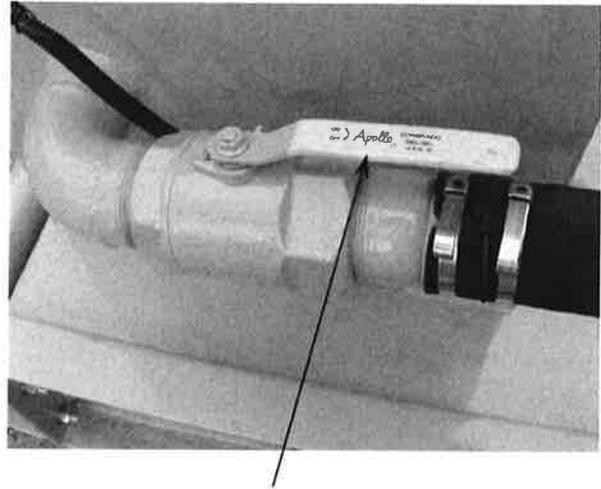
SECTION 4 – OPERATION

4.1 Prestart Check List

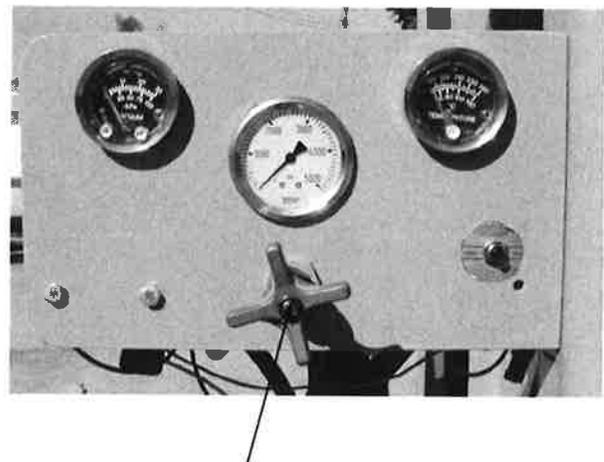
1. Perform visual check of all equipment for obvious signs of damage, loose equipment, leaks, and repair as required.
2. Verify that all rotating element protective guards are securely installed and do not make physical contact with each other.
3. Verify that the suction line ball valve is open.
4. Verify 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

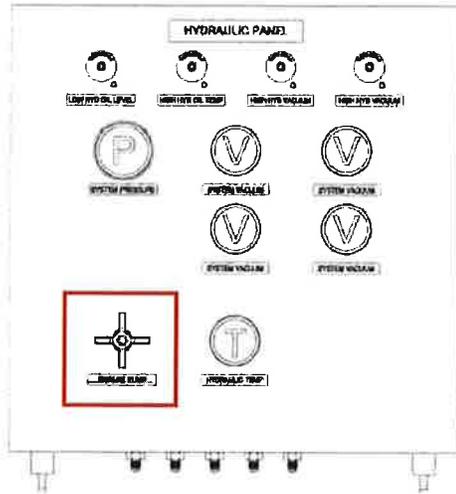


Hydraulic System Loading Valve

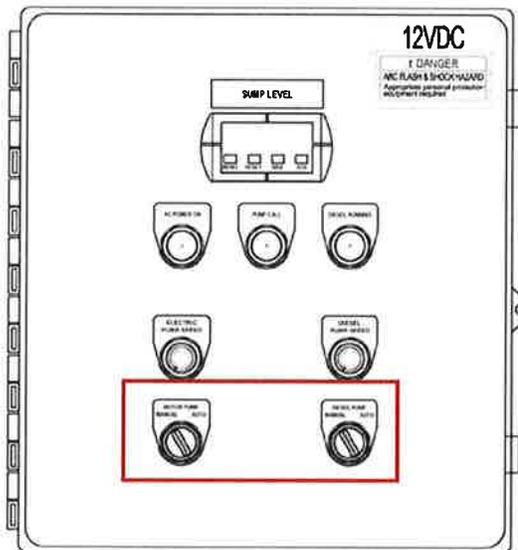
4.2.1 Manual Operation

MANUAL START:

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



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

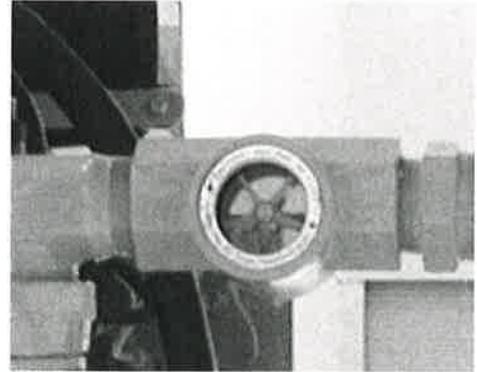


Step 3. Energize the electric motor or start the diesel engine. Allow engine to warm-up at idle speed before increasing engine speed to 1800rpm.

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.

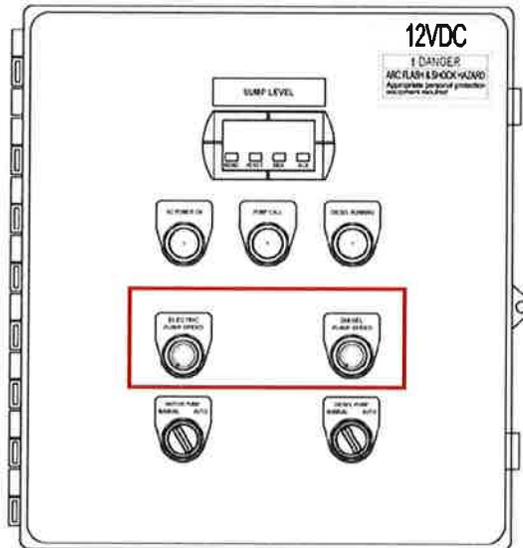


Relief Bypass Indicator

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:

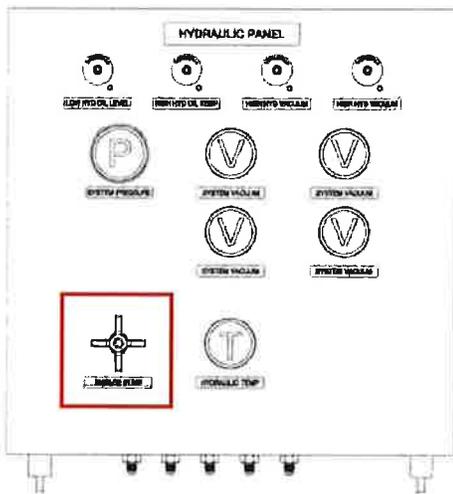
- Step 1. Decrease water pump speed by rotating “ELECTRIC PUMP SPEED” or “DIESEL PUMP SPEED” knob fully **CCW**.
- Step 2. Open loading valve one-half turn.
- Step 3. If the diesel is in operation decrease engine speed to idle. Allow the engine to idle and cool-down for a minimum of 5 minutes.
- Step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

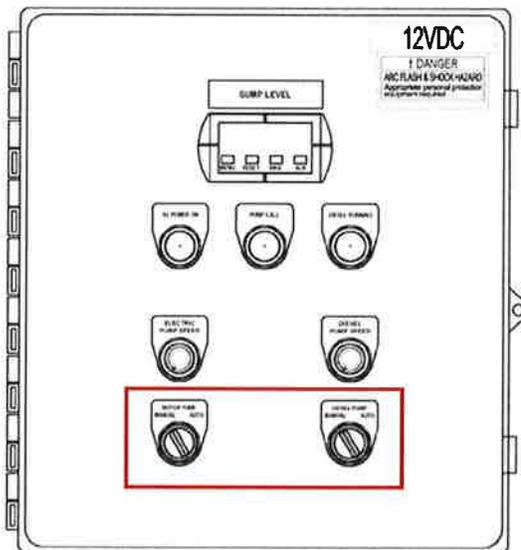


- When the switches are set to "AUTO" the speed/stroke control knob(s) have no function.

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"

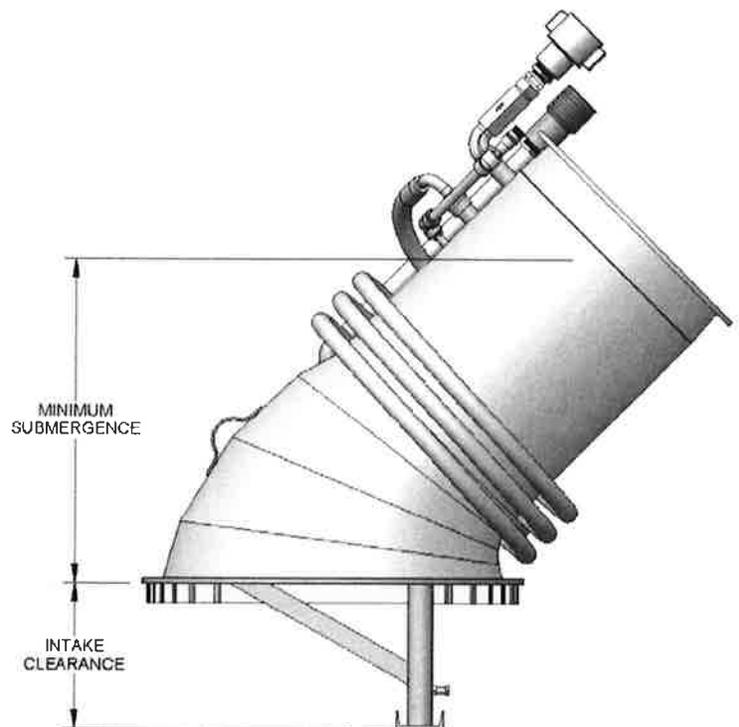
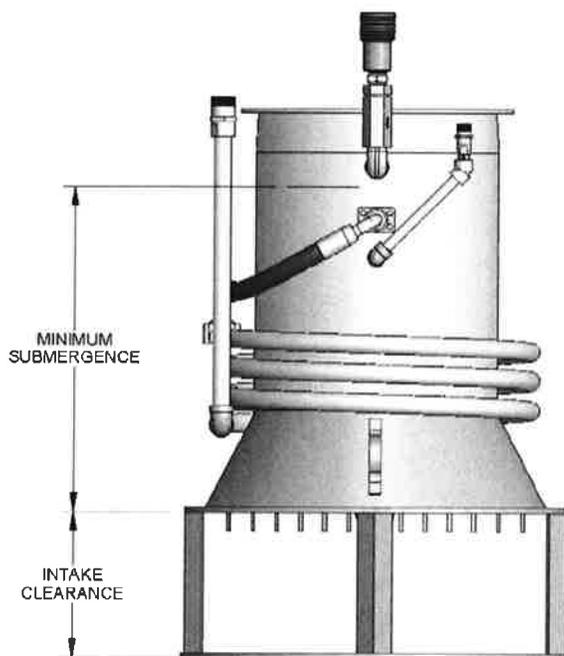


4.3 Unit Operation With Water Levels Below Minimum Submergence

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

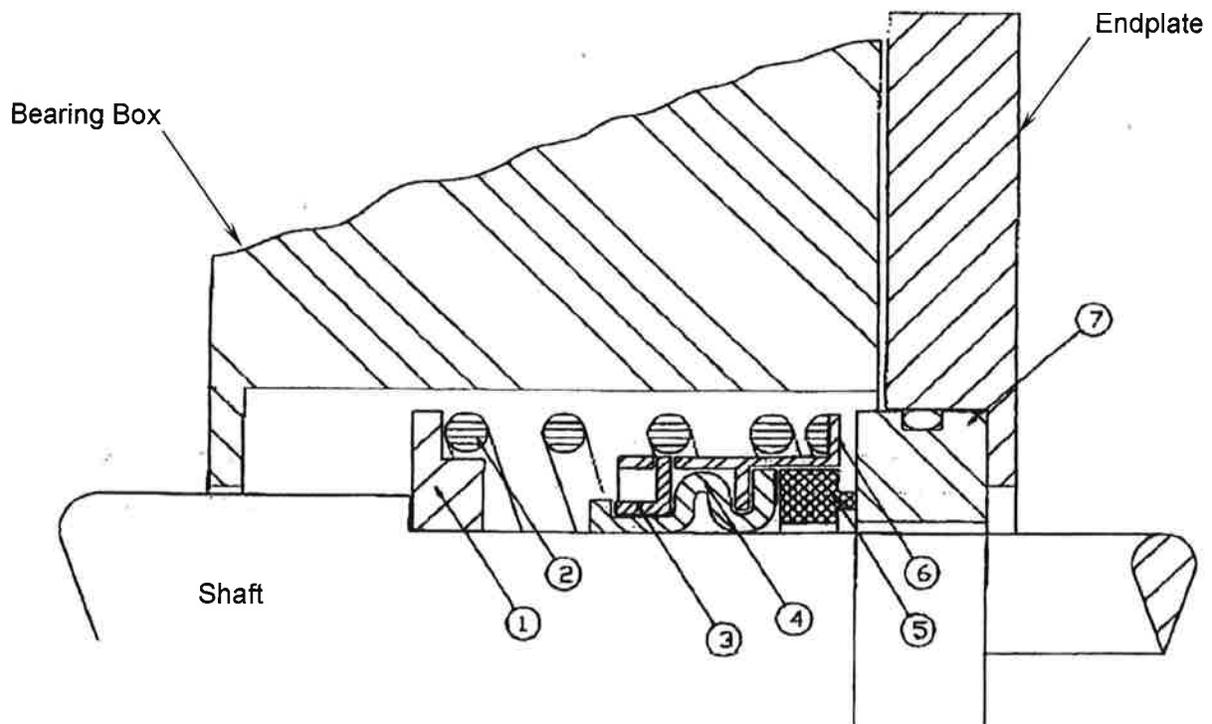
Loosen the propeller nut but do not remove; there are tapped holes in the propeller hub face to anchor a prop-puller or insert jack bolts. The propeller has a taper fit on the shaft; do not remove the propeller nut completely from the shaft until the propeller becomes unseated from the shaft.

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.

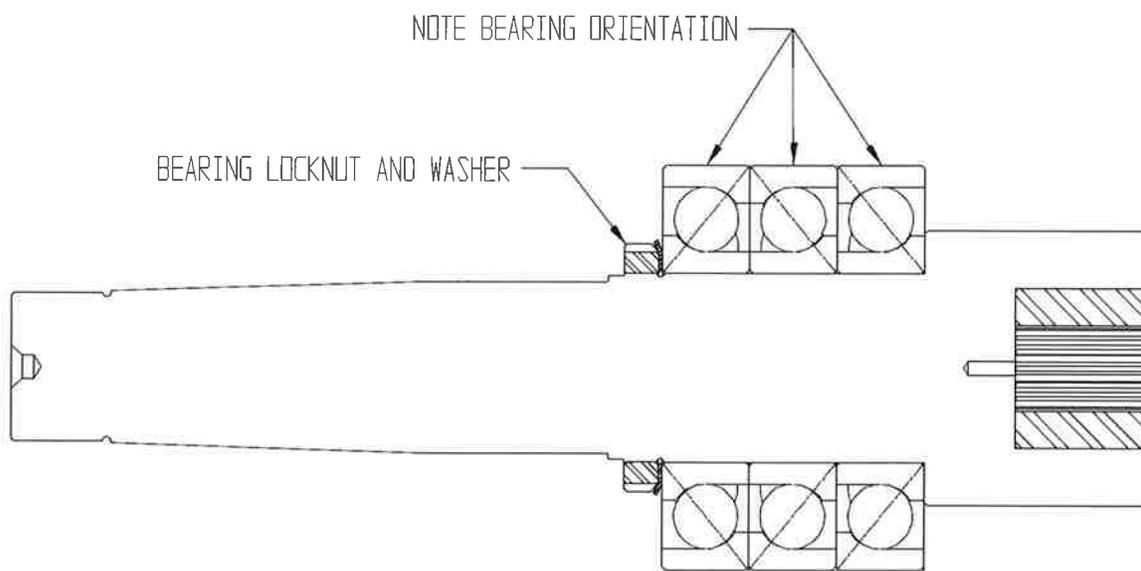
5.3 Bearing Inspection / Replacement

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.

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 / orientated 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.

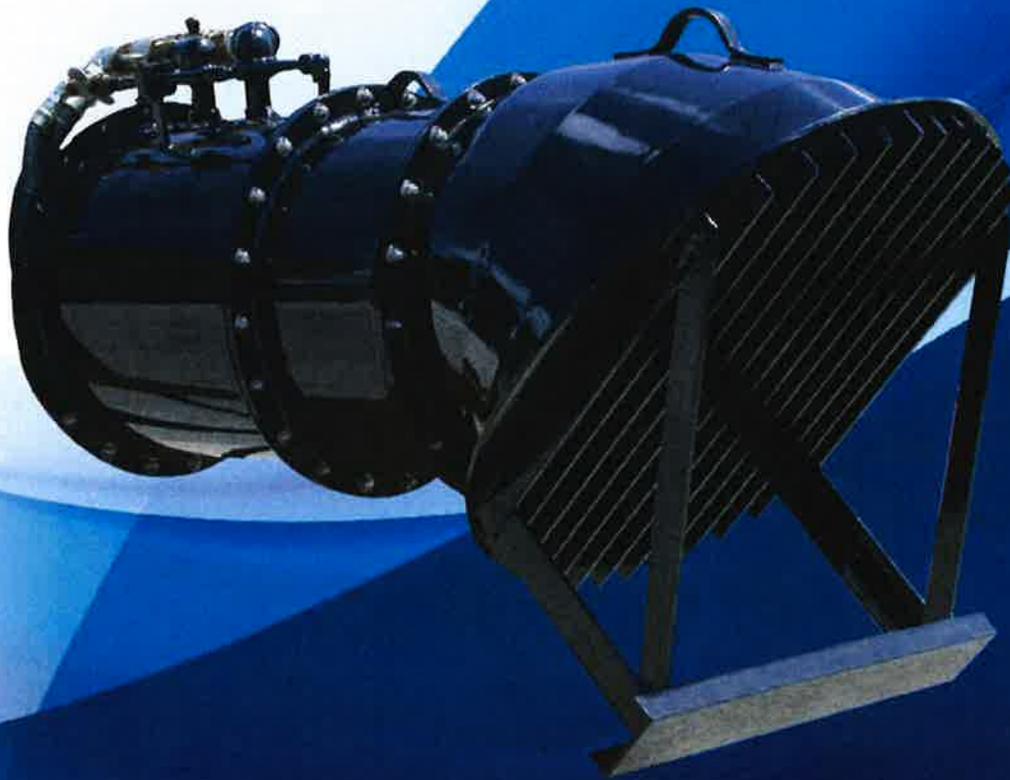
Hydraflo
Installation, Operation, and Maintenance

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



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

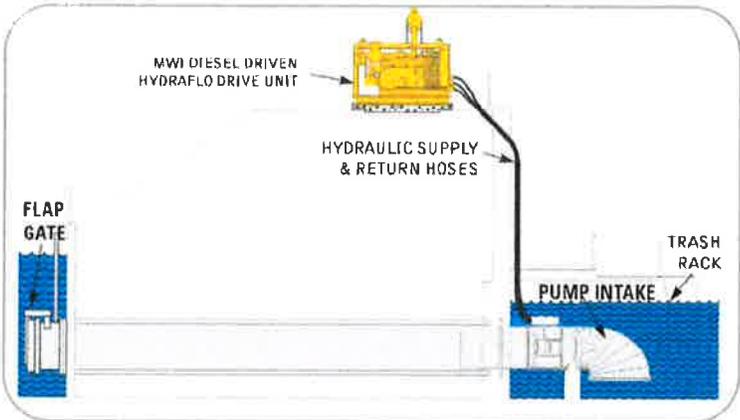
Pump speed can be varied manually by regulating engine speed. An automatic variable speed option is also available.

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.

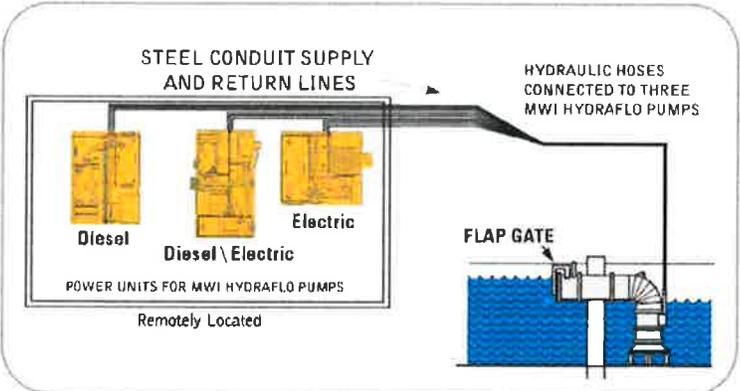


Installations ...



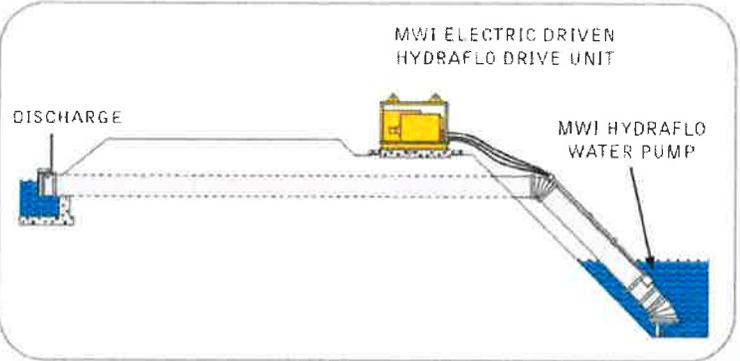
HORIZONTAL INSTALLATION

- Low profile
- Retro-fit existing pipe



VERTICAL INSTALLATION

- Dual power for emergencies
- Remote drive unit

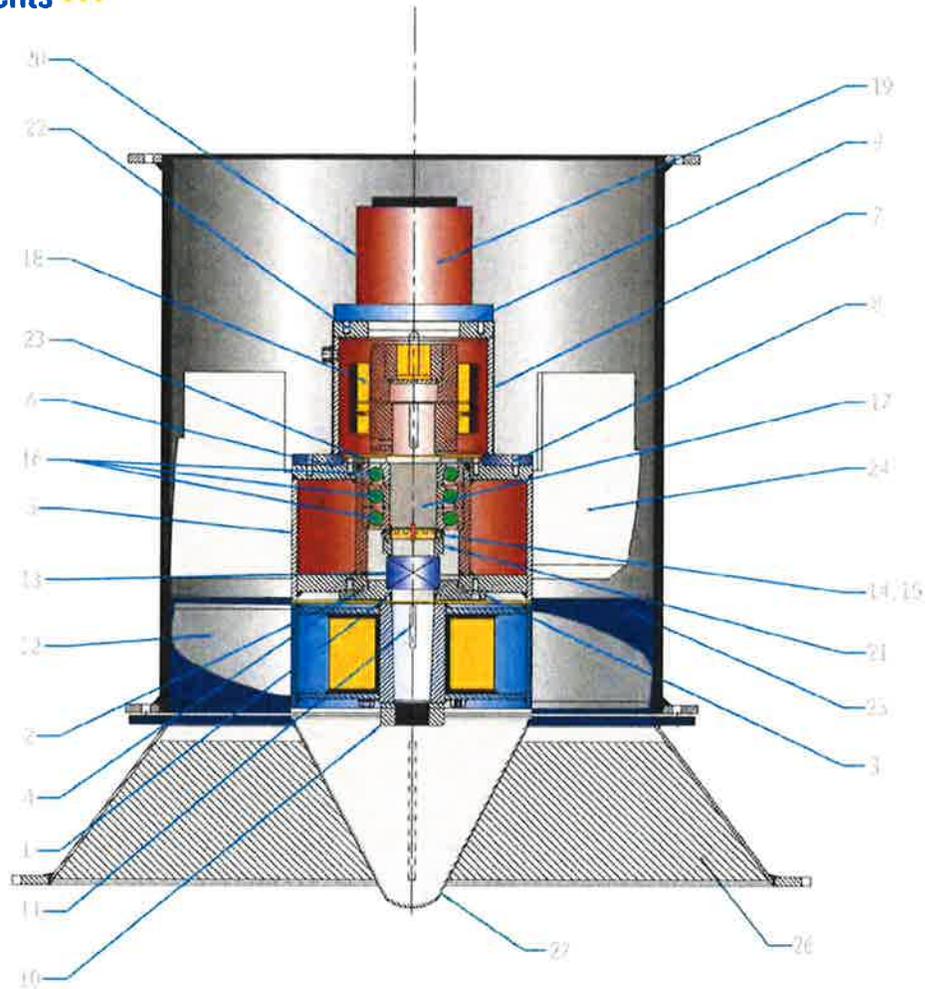


ANGLED INSTALLATION

- Low civil works
- Installable at any angle



Internal Components ***



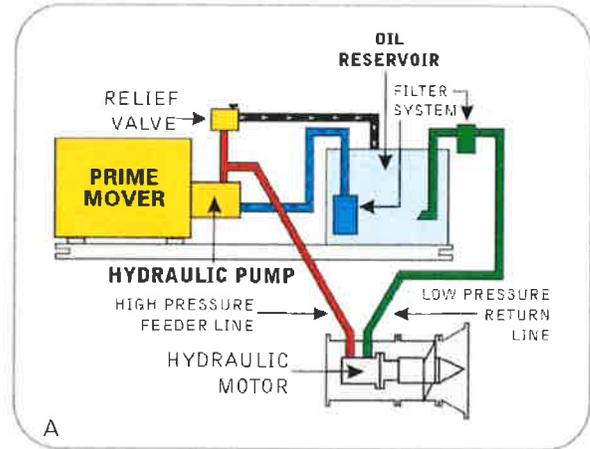
- | | |
|--|---|
| 1 Lip Seal (Synthetic Rubber & Stainless Steel Garter Spring) | 16 Bearings |
| 2 Bolts:Fasten End PI-Bearing Box(Grade 5) | 17 Hydraflo Shaft (304 Stainless Steel) |
| 3 End Plate (ASTM A588, Corten Steel) | 18 Shaft Coupling Assembly (Steel) |
| 4 O-Ring: End Plate / Bearing Box | 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.

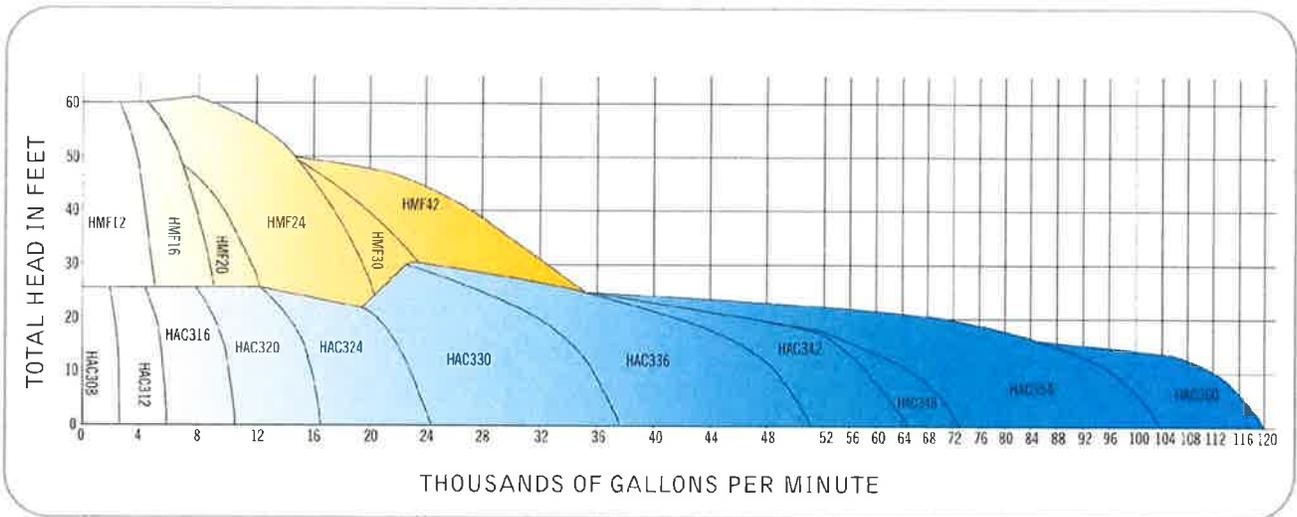
Method of Operation ...

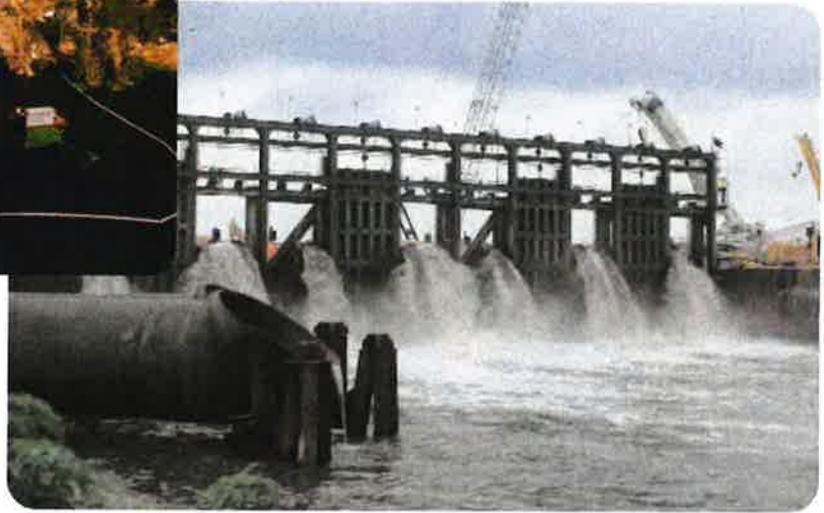
Schematic A shows how the hydraulic system works. Note that the prime mover can be a diesel engine, electric motor or a combination of both. It drives a hydraulic pump which in turn supplies oil to the hydraulic motor in the water pump. This spins the hydraulic motor which is directly connected to the 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 Hydriflo 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
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P: 985-851-7077
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Jefferson Parish / Similar Installations Pontiff Playground Diesel & Electric Driven

1. **Gilmore Pump Station** – Model # HAC324
Pump S/N: 13177 / Drive Unit S/N: 13540
2. **Magnolia # 3 Pump Station** – Model # HAC324
Pump S/N: 13180 / Drive Unit S/N: 13543
3. **Magnolia # 7 Pump Station** -- Model # HAC324
Pump S/N: 13181 / Drive Unit S/N: 13544
4. **North East # 4 Pump Station** – Model # HAC320
Pump S/N: 13537 / Drive Unit S/N: 13547
5. **North Line # 3 Pump Station** – Model # HAC320
Pump S/N: 13538 / Drive Unit S/N: 13548
6. **Nassau # 6 Pump Station** – Model # HAC320
Pump S/N: 13539 / Drive Unit S/N: 13549
7. **South West # 1 Pump Station** – Model # HAC320
Pump S/N: 13536 / Drive Unit S/N: 13546
8. **Earhart # 8 Pump Station** – Model # HAC324
Pump S/N: 13535 / Drive Unit S/N: 13545
9. **North West # 2 Pump Station** – Model # HAC324
Pump S/N: 13179 / Drive Unit S/N: 13542
10. **North West # 13 Pump Station** – Model # HAC324
Pump S/N: 13178 / Drive Unit S/N: 13541
11. **Falcon # 15 Pump Station** – Model # HAC324
Pump S/N: N/A / Drive Unit S/N: N/A



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F: 985-876-9854
office@associatedpump.com

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

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