

# Maxxum<sup>®</sup> Big-Flo<sup>®</sup> 6" Submersible Pump

## Installation, Operation, & Service

Red Jacket<sup>®</sup> Quick-Set<sup>®</sup> Submersible Pump



# Notice

---

Veeder-Root makes no warranty of any kind with regard to this publication, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Veeder-Root shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this publication.

Veeder-Root reserves the right to change system options or features, or the information contained in this publication.

This publication contains proprietary information which is protected by copyright. All rights reserved. No part of this publication may be photocopied, reproduced, or translated to another language without the prior written consent of Veeder-Root.

Contact Red Jacket Technical Support for additional troubleshooting information at 800-323-1799.

## **DAMAGE GOODS/LOST EQUIPMENT**

---

Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

VR must be notified of any damages and/or shortages within 30 days of receipt of the shipment, as stated in our Terms and Conditions.

## **VEEDER-ROOT'S PREFERRED CARRIER**

---

1. Fax Bill of Lading to V/R Customer Service at 800-234-5350.
2. Call V/R Customer Service at 800-873-3313 with the specific part numbers and quantities that were received damaged or lost.
3. VR will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

## **CUSTOMER'S PREFERRED CARRIER**

---

1. Customer files claim with carrier.
2. Customer may submit a replacement purchase order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.
3. If "lost" equipment is delivered at a later date and is not needed, VR will allow a Return to Stock without a restocking fee.
4. VR will NOT be responsible for any compensation when a customer chooses their own carrier.

## **RETURN SHIPPING**

---

For the parts return procedure, please follow the instructions in the "General Returned Goods Policy" pages of the "Policies and Literature" section of the Veeder-Root North American Red Jacket Mechanical Products Price Book. Veeder-Root will not accept any return product without a Return Goods Authorization (RGA) number clearly printed on the outside of the package.

## Introduction

Safety Precautions .....	1
Warnings and Instructions .....	3
Important Safety Information .....	3
Preliminary Precautions.....	3
Requirements For Use .....	4
Operating Precautions.....	4
Fuel Compatibilities .....	4

## Installation

Installation Safety Notices Attention Installer .....	5
Follow These Directions Carefully .....	6
Installing The Pumping Unit .....	6
Attaching the Expansion Relief Vent Line .....	7
Wiring the Conduit Box .....	8
Wiring Instructions- 208-230 Volt Single Phase Pumps .....	9
Wiring Instructions - 208-230, 380/415 or 575 Volt Three-Phase Pumps .....	9
Starting the System and Completing the Installation .....	16
Floating Suction Installation Information .....	19
Installing A Big Flo Diaphragm Valve .....	20
Attaching the Siphon & Vacuum Lines with Factory Installed Siphon Assemblies .....	22
Installing Two Pumps for Tandem Operation .....	23

## Testing the Installation

Testing the Piping .....	26
Testing the Tank .....	27
Purging the System .....	27
Adjusting the Pressurstat Line Relief Pressure .....	28

## Service and Repair

Removing the Extracta Assembly .....	29
Procedure for Removal of Plug-in Type Pump - Motor Assembly .....	30
Installing the Extracta Assembly (Ref. Figure 19) .....	31
Replacing the Check Valve Assembly .....	33
Repairing the Check Valve Lock-down Screw And Seals .....	34

## Parts

6" Maxxum Big Flo - Repair Parts Packer Manifold Assembly Parts - Side View .....	37
6" Maxxum Big Flo - Repair Parts Packer Manifold Assembly Parts - Top View .....	38
6" Maxxum Big Flo - Repair Parts Yoke Assembly .....	39
UL Listed Motor Control Box For 2HP Pumps Model P200H1-CB .....	40
Red Jacket Replacement Pump Motors .....	41
Magnetic Contactor For 2, 3, And 5 HP 3-Phase Pumps .....	41

## Appendix A: ATEX Safety Instructions

## Appendix B: Declaration of Conformity

## Appendix C: FDNY Certificate of Approval

## Appendix D: ANZe Conditions of Certification

## Figures

Figure 1.	Maxxum Packer-Manifold Assembly .....	7
Figure 2.	Conduit Box - Yoke Assembly .....	8
Figure 3.	Typical Mechanical Dispenser Representative Wiring Diagram, 1-Phase, Two-Wire Control .....	11
Figure 4.	Typical Mechanical Dispenser Motor Control Box, Wiring Diagram, 2HP .....	12
Figure 5.	Representative Wiring Diagram For Use With Switched “Hot” Feed 208-230 Vac, 2HP Single-Phase Control Box .....	13
Figure 6.	Representative Wiring Diagram, Three-Phase, Two-Wire Control .....	14
Figure 7.	Three-Wire, Three-Phase Motor Wiring Diagram .....	15
Figure 8.	.....	16
Figure 9.	.....	19
Figure 10.	.....	21
Figure 11.	.....	22
Figure 12.	.....	23
Figure 13.	Suggested Diagram For Wiring Dual Manifold System, Two-Wire Control, 208/230 Single Phase .....	24
Figure 14.	Suggested Diagram For Wiring Dual Manifold System, Three-Wire Control, 208/230 Single Phase .....	24
Figure 15.	Suggested Diagram For Wiring Dual Manifold System, Two-Wire Control, Three Phase .....	25
Figure 16.	Suggested Diagram For Wiring Dual Manifold System, Three-Wire Control, Three Phase .....	25
Figure 17.	Maxxum Packer-Manifold Assembly: Line And Tank Testing .....	26
Figure 18.	Pressurstat - Pressure Adjustment .....	27
Figure 19.	Maxxum - Extractable Section .....	29
Figure 20.	UMP - Discharge Head Assembly .....	32
Figure 21.	Maxxum Check Valve Assembly .....	33
Figure 22.	Pressurstat And Check Valve Lock-Down Screw Assembly .....	35
Figure 23.	Check Valve And Pressurstat Assembly .....	36
Figure 24.	Check Valve And Electrical Bushing Assembly .....	37
Figure 25.	Maxxum Packer-Manifold Assembly .....	38
Figure 26.	Maxxum Yoke and Contractors Box Assembly .....	39
Figure 27.	2HP, 1-Phase Control Box .....	40

## Tables














Table A.	.....	5
Table B.	.....	17
Table C.	.....	17
Table D.	.....	18
Table E.	.....	30
Table F.	.....	32
Table G.	.....	36
Table H.	.....	37
Table I.	.....	38
Table J.	.....	39
Table K.	.....	40
Table L.	.....	41
Table M.	.....	41

## Introduction

This manual provides step-by-step instructions for installing and wiring the Maxxum pump, tandem Maxxum pumps, pump testing procedures, and pump service and repair.

### Safety Precautions

The following safety symbols are used throughout this manual to alert you to important safety hazards and precautions.

 <p><b>EXPLOSIVE</b> Fuels and their vapors are extremely explosive if ignited.</p>	 <p><b>FLAMMABLE</b> Fuels and their vapors are extremely flammable.</p>
 <p><b>ELECTRICITY</b> High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p>	 <p><b>TURN POWER OFF</b> Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.</p>
 <p><b>WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.</b></p>	 <p><b>GLOVES</b> Wear gloves to protect hands from irritation or injury.</p>
 <p><b>NO SMOKING</b> Sparks and embers from burning cigarettes or pipes can ignite fuels and their vapors.</p>	 <p><b>NO OPEN FLAMES</b> Open flames from matches, lighters, welding torches, etc. can ignite fuels and their vapors.</p>
 <p><b>EYE PROTECTION</b> Wear eye protection when working with pressurized fuel lines or epoxy sealant to avoid possible eye injury.</p>	 <p><b>TURN OFF CELL PHONES/PAGERS</b> Sparks from electronic devices in the vicinity of gasoline storage tanks could cause an explosion or fire resulting in bodily injury or death.</p>
 <p><b>READ ALL RELATED MANUALS</b> Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.</p>	 <p><b>CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.</b></p>
 <p><b>NOTICE is used to address practices not related to physical injury..</b></p>	

**⚠ WARNING**

This product operates in the highly combustible atmosphere of a gasoline storage tank.

**FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.**

1. All installation work must comply with the latest issue of the National Electrical Code (NFPA 70), the Code for Motor Fuel Dispensing Facilities and Repair Garages (NFPA 30A), and any European, national, state, and local code requirements that apply.
2. Turn off, tag, and lockout power to the STP before connecting or servicing the STP.
3. Before installing pipe threads apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant.
4. When servicing unit, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.
5. To protect yourself and others from serious injury, death, or substantial property damage, carefully read and follow all warnings and instructions in this manual.

In addition to the specified torque values noted in this manual, when properly tightened, all flanged fittings should have metal-to-metal contact.

## Warnings and Instructions

---

### IMPORTANT SAFETY INFORMATION

**⚠ WARNING**

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause damage to property, environment, resulting in serious injury or death, if these safe service procedures are not followed.

### PRELIMINARY PRECAUTIONS

**⚠ WARNING**

You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.



#### Read the Manual

Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call 1-800-323-1799 to locate a qualified technician. It is imperative to your safety and the safety of others to understand the procedures before beginning work. **Make sure your employees and any service contractors read and follow the instructions.**

#### Follow the Regulations

Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code* (NEC), Occupational Safety and Hazard Association (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

#### Prevent Explosions and Fires

Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

#### Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/Tagout procedures. If you are not familiar with this requirement, refer to OSHA documentation.

#### Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down. Before you start work, know the location of the Emergency Power Cutoff Switch (the E-STOP). This switch cuts off power to all fueling equipment and submerged turbine pumps and is to be used in the event of an emergency. The buttons on the console at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you press a button on the console labeled EMERGENCY STOP, ALL STOP, PUMP STOP, or something similar, fuel may continue to flow uncontrolled.

## Hazardous Materials

Some materials may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.



**FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.**



**FIRE HAZARD!** Do **NOT** use **power tools** (Class I Division I and Class I Division II) during the installation or maintenance of equipment. Sparking could ignite fuel or vapors, resulting in fire.



**CHEMICAL EXPOSURE HAZARD!** Wear appropriate **safety equipment** during installation or maintenance of equipment. Avoid exposure to fuel and vapors. Prolonged exposure to fuel may cause severe skin irritations and possible burns.



## REQUIREMENTS FOR USE

- The Maxxum is designed for use only at facilities dispensing motor fuels.
- Application of the Maxxum must be consistent with NFPA Code 30A, OSHA regulations, and federal, state and local fire codes, and other applicable local regulations.
- The selection of any Veeder-Root product must be based upon physical specifications and limitations and the product's compatibility with the materials to be handled. Veeder-Root makes no warranty of fitness for a particular purpose.
- All Veeder-Root products should be used in accordance with applicable federal, state and local laws, ordinances and regulations.

## OPERATING PRECAUTIONS



**NO SMOKING.** Extinguish all open flames and pilot lights, such as on RV appliances.



**TURN OFF** cell phones and other electronic devices to avoid distractions while fueling.

## Fuel Compatibilities

Pumps are designed to operate in a Class 1, Group D atmosphere and in accordance with CENELEC standard and the European Directive 94/9/EC "Equipment for Potentially Explosive Atmosphere" (II2 G Ex IIA T4).

All Models of the Maxxum are UL Listed for the Following Fuel Compatibility						
Diesel	Gasoline	Gasoline and up to				
		15% Ethanol	15% Methanol	20% MTBE	20% ETBE	20% TAME

The Maxxum is designed to be compatible with 100 percent gasoline, or diesel and 80 percent gasoline with 20 percent methanol, ethanol, TAME, ETBE, or MTBE .



## Installation

This pumping system requires the following elements:

1. Discharge Manifold Assembly - Installed below grade (NEC/Class I, Group D, Division I area)
2. Motor-Pump Unit Assembly - Installed below grade (NEC/Class I, Group D, Division I area)
3. Control Box/Magnetic Starter

An “all inclusive” name plate will be found attached to the Extracta Head and can be inspected by removing the manhole cover directly over the pump.

An additional name plate will be found on the control box. It is important to give the model number and serial number of this pump when corresponding with the factory for any reason.

### INSTALLATION SAFETY NOTICES ATTENTION INSTALLER

Read This Important Safety Information Before Beginning Work.

1. Units should be installed with manholes, or with discharge manifold casting above grade, to allow for ease in servicing.

**⚠ WARNING** Red Jacket line leak detection systems do not function if the submersible pump runs continuously. Running a pump continuously will cause line leak detection systems to not function which results in a hazard that can cause damage to property, environment, resulting in serious injury or death.

2. Never wire a submersible pump to run continuously at less than minimum flow rate. The units are designed to operate continuously at or above minimum flow rate, or with an intermittent duty cycle, not to exceed 20 on/off cycles per hour. Should it be necessary to operate a unit continuously or when the demand is at a rate less than required per the information below, a bypass pipe should be installed in the piping to allow for continual product recirculation back into the storage tank. Regulation of the bypass flow back to the tank can be accomplished by correct sizing of the bypass line or use of a gate valve. The recommended minimum bypass per unit is shown in Table A.

Table A.

60 Hz, 208-240, 575 Volt Two Stage Units	50 Hz 380-415 Volt Three Stage Units
P200J1-2MB = 15 GPM	P300J17-3HB = 20GPM
P200J4-2MB = 15 GPM	P500J17-3K = 25 GPM
P300J4-2HB = 20 GPM	P300J16-3HB = 20GPM
P500J4-2K = 25 GPM	P500J16-3K = 25 GPM
P200J6-2K = 25 GPM	

3. Red Jacket submersibles are not designed to handle abrasives or foreign particles in the product being pumped.
4. Product temperature must never exceed 105°F (41°C) as the submersible motors are equipped with thermal overload protection. Product temperature higher than 105°F (41°C) may result in tripping of the thermal overload protector.

5. Pumping water will overload the motor and damage the motor bearings.
6. These units are designed for use in Class I, Group D atmospheres.
7. Install pumping system in accordance to applicable codes.

**⚠ WARNING** Proper motor protection must be used on three phase pump models, or motor warranty is void. To maintain warranty, the magnetic starters used must be supplied by Red Jacket, or have equivalent protection features defined as follows:

- 3-leg protection
  - Properly sized quick trip heaters, and
  - Ambient temperature compensated overloads.
8. The UMP (Unitized-Motor-Pump) contains no serviceable parts (other than the foot valve) and should not be modified or adjusted.

## Follow These Directions Carefully

---

Check these points before installing.

1. The power supply against the equipment voltage rating. For 3 phase units, request the power company identify and tag the service wires for L-1, L-2, L-3 phase sequence.
2. Be certain that the pump with the siphon valve is installed into the correct tank.
3. Check the equipment which was received against Table B and Figure 8 for the tank diameter and bury depth.

**⚠ WARNING** Before installing pipe threads apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant.

4. Apply thread sealant to the six-inch riser/flange male threads. Thread it into the tank port. Tighten the riser/flange until the joint is water tight.

## Installing The Pumping Unit

---

1. Apply a gasket compound to the bottom surface of the manifold and press the gasket onto the manifold's mating surface so the holes in the gasket and manifold align (reference Figure 1).
2. Coat the exposed surface of the gasket with gasket compound.

**⚠ WARNING** Confirm that the lifting eyebolts are properly torqued to 10 ft-lbs (13.6 N•m) with a minimum of 6 full threads installed. Occasionally, eyebolts are removed after pump installation and corrosion may occur in the threaded areas of the extractable and the eyebolt. If corrosion has occurred, the extractable and eyebolt should be replaced.

**Utilize BOTH lifting eyebolts to suspend the pump vertically and lower the pumping unit into position. Do not allow the gasket to contact the riser flange until the bolt holes in the flange are aligned with those in the manifold and the discharge port is aimed in the desired direction.**

3. Insert three 3/4-inch bolts, provided, and torque them to 200 ft-lb (271 N•m).

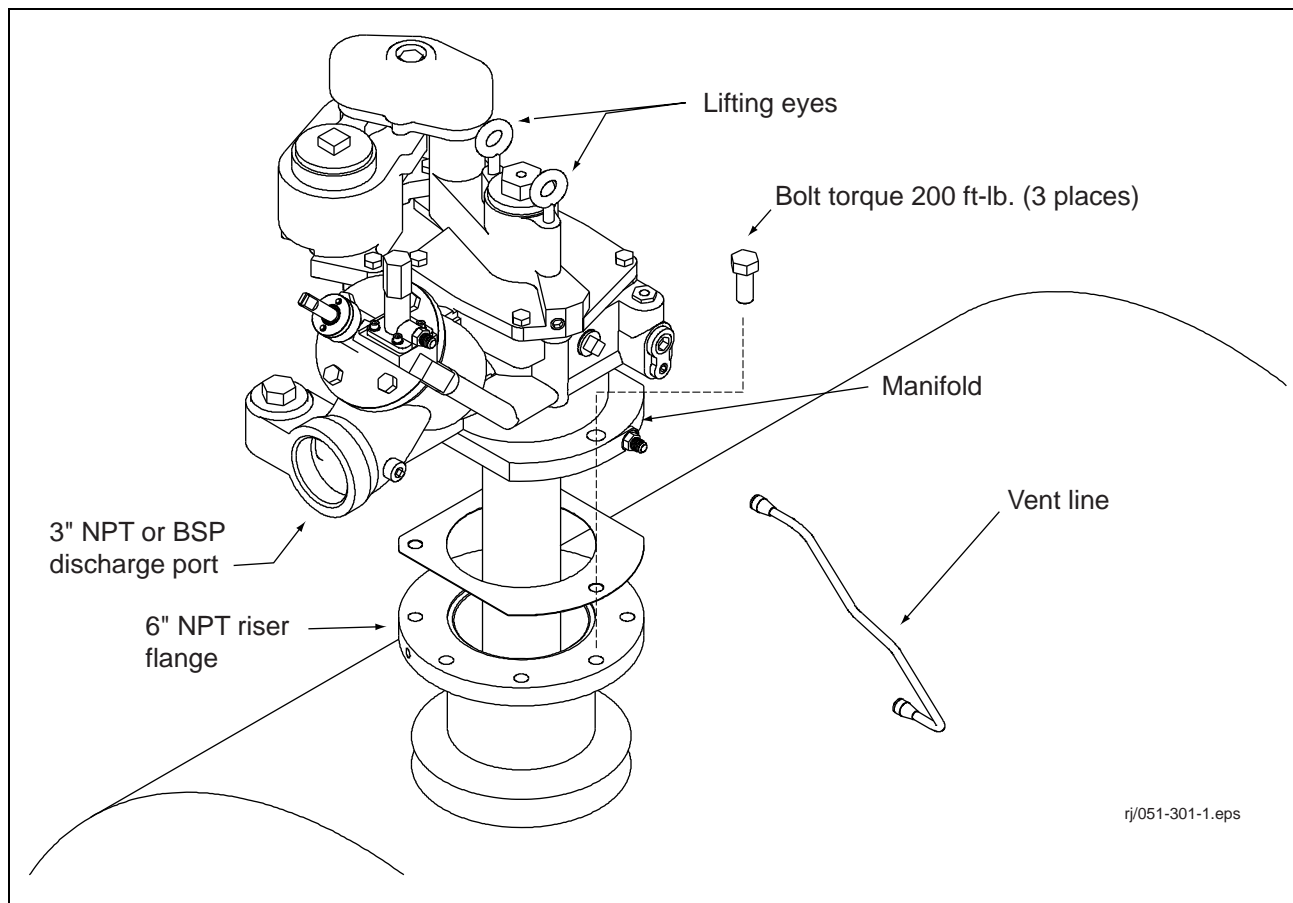


Figure 1. Maxxum Packer-Manifold Assembly

## Attaching the Expansion Relief Vent Line

1. Remove the metal protective shipping caps from the flare fittings (reference Figure 1).
2. Attach the vent line taking care not to cross thread the fittings.
3. Tighten the fittings 1/6 to 1/4 turn beyond hand tight.

**⚠ WARNING** Before installing pipe threads apply an adequate amount of fresh, UL classified for petroleum, nonsetting thread sealant.

4. Install the piping to the manifold discharge port. Pipe sealant should be used in this joint.

**NOTICE** Installation of a ball valve is recommended on the discharge side of the pump or discharge of the “Big Flo” leak detector housing if used. This will aid in troubleshooting and line testing.

Line check-valves are not required since the pump has a built in check-valve. However, whenever two pumps are manifolded together to the same discharge piping, check valves with expansion relief are required and should be installed in the discharge piping of each pump, as close to the pump manifold as possible.

See instructions “INSTALLING TWO PUMPS FOR TANDEM OPERATION” and Figure 12.

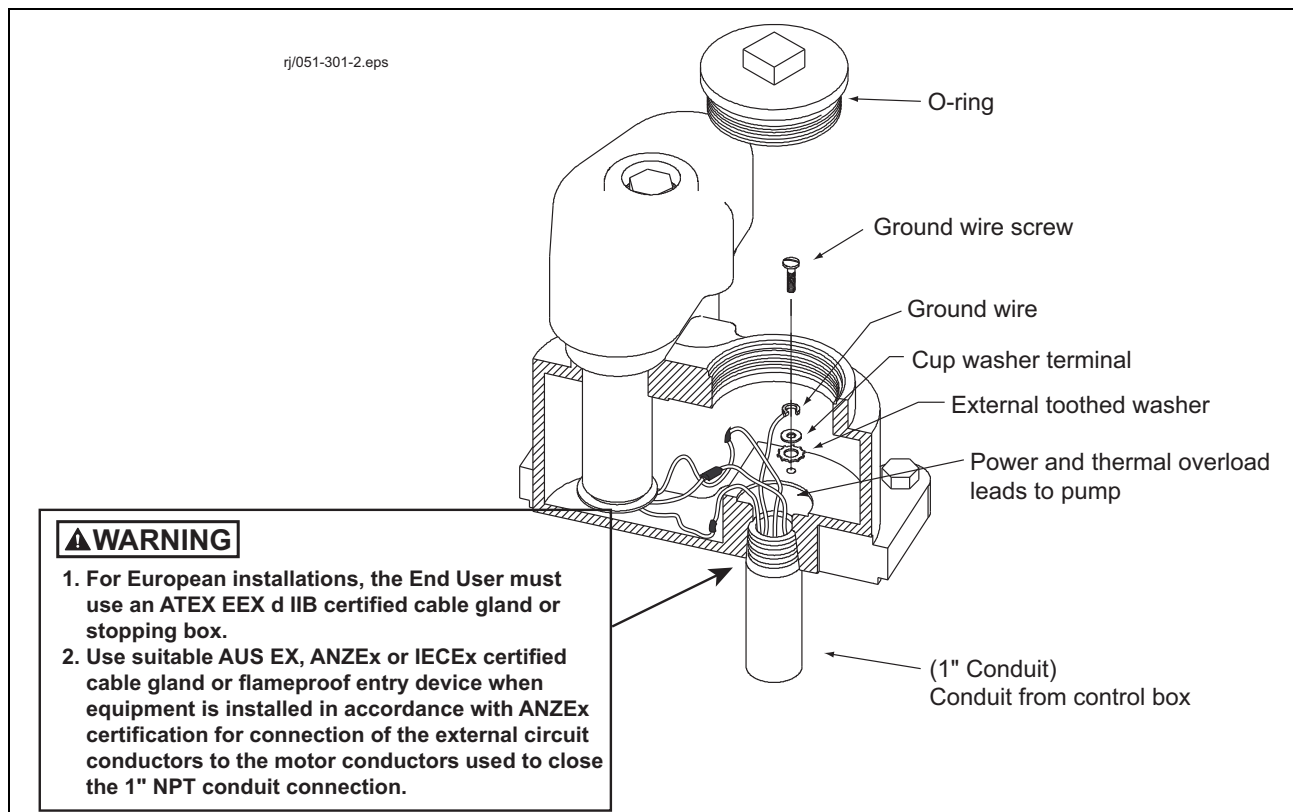


Figure 2. Conduit Box - Yoke Assembly

## Wiring the Conduit Box



**Disconnect, lock out, and tag power at the panel before servicing the pump.**



**When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.**

1. Connect the electrical conduit through the approved fittings to the conduit box.
2. Remove the conduit box cover.
3. Connect the wires from the power supply to the wires in the conduit box.
4. Install the ground wire from the power panel.
5. Sparingly lubricate the o-ring before screwing the cover into the manifold. Use light grease, oil, or petroleum jelly. Replace the conduit box cover. Do not use pipe sealant on the conduit box cover's threads. Torque to 35 ft-lb (50 N•m).

## Wiring Instructions- 208-230 Volt Single Phase Pumps

The motor control box must be located away from the fueling area in a non-hazardous location (see Figure 3).

1. Connect the single phase 208-230 V power supply from the distribution panel to terminals L1 and L2 in the motor control box. Each control box should be wired through a separate fused disconnect switch or circuit breaker (including neutral, when used), furnished by customer.
2. Using properly color coded wires, connect wires from the red, black, orange and two blue terminals on motor control box terminal strip to the corresponding color coded wires in the junction box of the proper submerged pump.

The “on-off” control station must be of explosion-proof construction. Where loading racks and dispensers are served by the same submerged pump, the 2-wire switches must be connected in parallel so the submerged pump can be controlled from any dispenser or any loading rack.

3. Connect wires from terminal Blue-1 and terminal 3 in motor control box to dispenser control switches (if dispensers are used) and “on-off” switch at loading rack as shown in Figure 3.
4. The pumps are equipped with a no-liquid, over-temperature switch in the motor and an overload switch in the motor control box which will cut out if the motor is overloaded. If the pump fails to operate, or stops, when there is sufficient product in the storage tank, check the manual overload reset switch in the control box cover. Wait 10 minutes for the overload protector to cool off and then press the reset button.

**⚠ CAUTION** If the reset button will not stay in position this indicates an overloaded motor, or a short to ground. This condition must be corrected. If the reset button stays in but the motor will not pump or continue to run, the tank is dry.

5. If an external pilot light is desired to indicate when the submerged pump is operating, wire as shown in Figure 3, Figure 4 or Figure 5. Should this light continue to burn when all switches at dispensers and loading racks are off, this indicates that one of the dispenser switches is out of adjustment. On installations with no external pilot light, the submerged pump should be checked to make sure it is not operating when all switches are turned off.
6. The magnetic contactor coil is shipped ready to accept 208-230 volts. No changes are required unless a 110-120 volt coil is desired.

## Wiring Instructions - 208-230, 380/415 or 575 Volt Three-Phase Pumps

**NOTICE** On some installations, “phase converters” are used to obtain a three-phase power supply from a single-phase power source. The use of phase converters may cause an imbalance between the three phases and cause damage to the motor. For this reason, these requirements must be followed in order to maintain warranty coverage.

- Static phase converters must not be used. Only rotary or electric phase converters are allowed.
- The horsepower rating of the phase converter must be equal to at least three times the horsepower rating of the pump(s).
- Current imbalance must not exceed 10% under varying flow conditions.
- Proper three-leg quick trip overloads must be used.

1. Installations where the magnetic starter is located away from the loading rack in a nonhazardous location. (See Figure 6)
  - a. Connect the three phase power supply from the master panel to terminals L1, L2 and L3 in the magnetic starter.
  - b. Using properly color coded wires, connect a black wire from terminal T1 in the magnetic starter to the black motor lead, in the junction box of the proper submerged pump. Connect an orange wire from starter terminal T2 to the orange motor lead and red wire from terminal T3 to the red motor lead. (See Figure 6 and Figure 7.)

- c. There are two remaining blue wires in the submerged pump junction box. Connect either blue wire to one side of the 'on-off' controls or switched 'hot' from the electronic dispenser or Isotrol (dispenser handle isolation). The 'on-off' controls must be of explosion-proof construction if located in a hazardous location. Connect the other blue wire to the appropriate terminal on the other side of the 'on-off' controls. See specific wiring diagrams provided with the magnetic starters matching pump voltage, coil voltage and type of pump control.
- d. Installations using loading racks only, may be connected for 2- or 3-wire control. For 3-wire control (Figure 7), connect a black wire from terminal 3 in the magnetic starter to the 'on-off' switch. Connect a red wire from terminal 2 in the magnetic starter to the 'on-off' switch. Connect either blue wire to the other side of the 'on-off' switch and connect the other blue wire to L1 of the magnetic starter.

**NOTICE** 3-wire control requires the use of an auxiliary contact in the magnetic starter. This auxiliary contact is standard equipment in the G.E. starters supplied by Red Jacket.

**⚠ WARNING** Installations with the magnetic starter in a hazardous location require explosion-proof magnetic starters. The wiring is the same as for general purpose enclosures. (Section 1).

- 2. Install proper overload heaters in magnetic starter matching starter manufacturer and amperage rating of the pump.

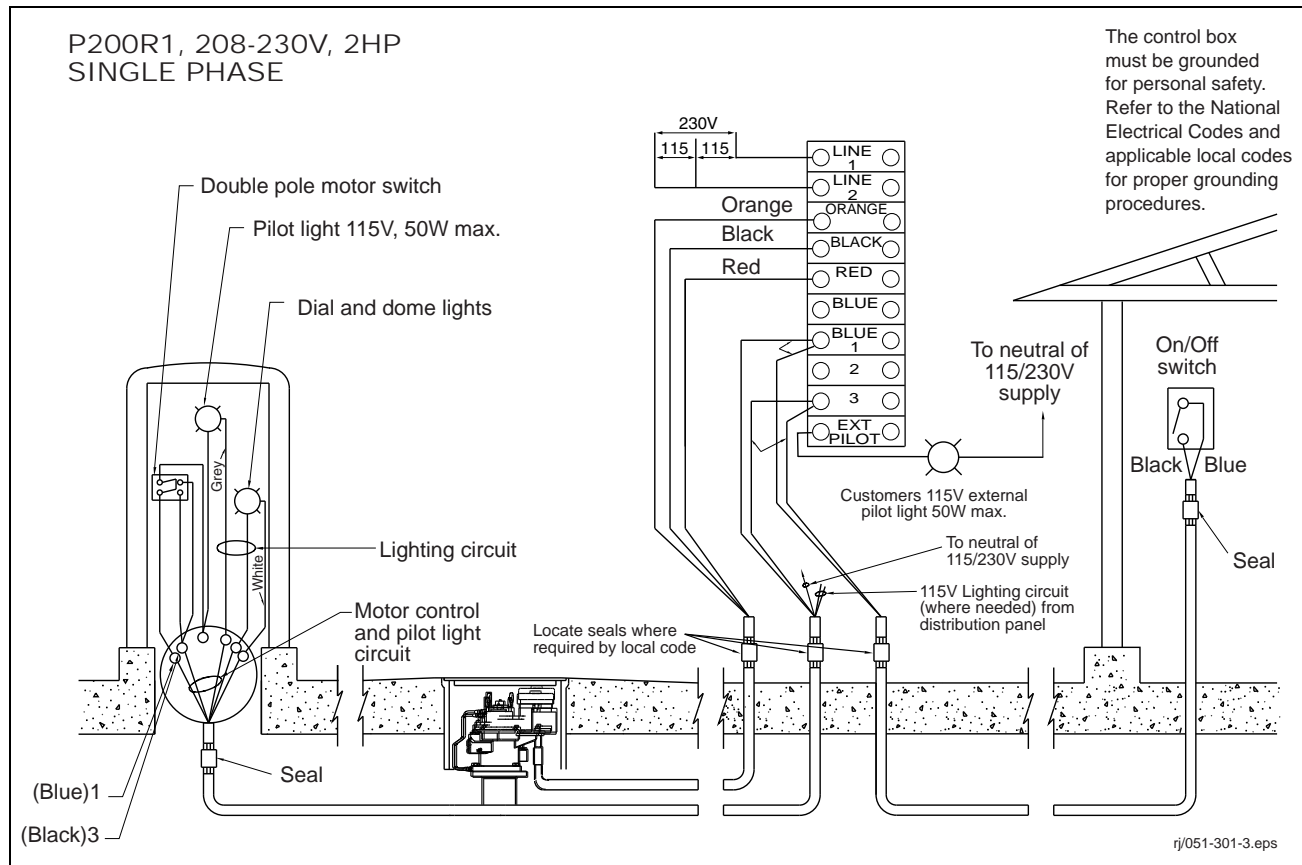
### 3. Motor Rotation

Where it is not convenient to predetermine the power supply phase rotation, proper rotation can be determined by pump performance. Pump head pressure and capacity will be considerably less than rated when rotating backwards.

Connect the pump motor leads to terminal T1, T2 and T3 of the magnetic starter observing color code shown in Figure 6 and Figure 7. With ample product in the tank and the system purged of air, start the motor and make a pressure gauge reading of the system pressure with the discharge valves closed; or, open one valve and calculate pumping rate.

Next, reverse power leads at L1 and L2. Repeat either pressure or capacity tests, as described above. If results are higher than the first test, the rotation of the second test is correct. If the second test gives lower performance than the first, reconnect the power leads to L1 and L2 (as under test 1) for correct rotation.

Where the power supply has been properly marked L1, L2 and L3 in accordance with accepted phase rotation standards, it is possible to predetermine the proper rotation of these units. The motor power leads are color coded black, orange and red, and if connected through the magnetic starter to L1, L2 and L3 respectively, the motor pump unit will rotate in the correct direction. It is recommended, however, that the performance tests always be made whether or not the power supply has been properly "phased out".



**Figure 3. Typical Mechanical Dispenser Representative Wiring Diagram, 1-Phase, Two-Wire Control**

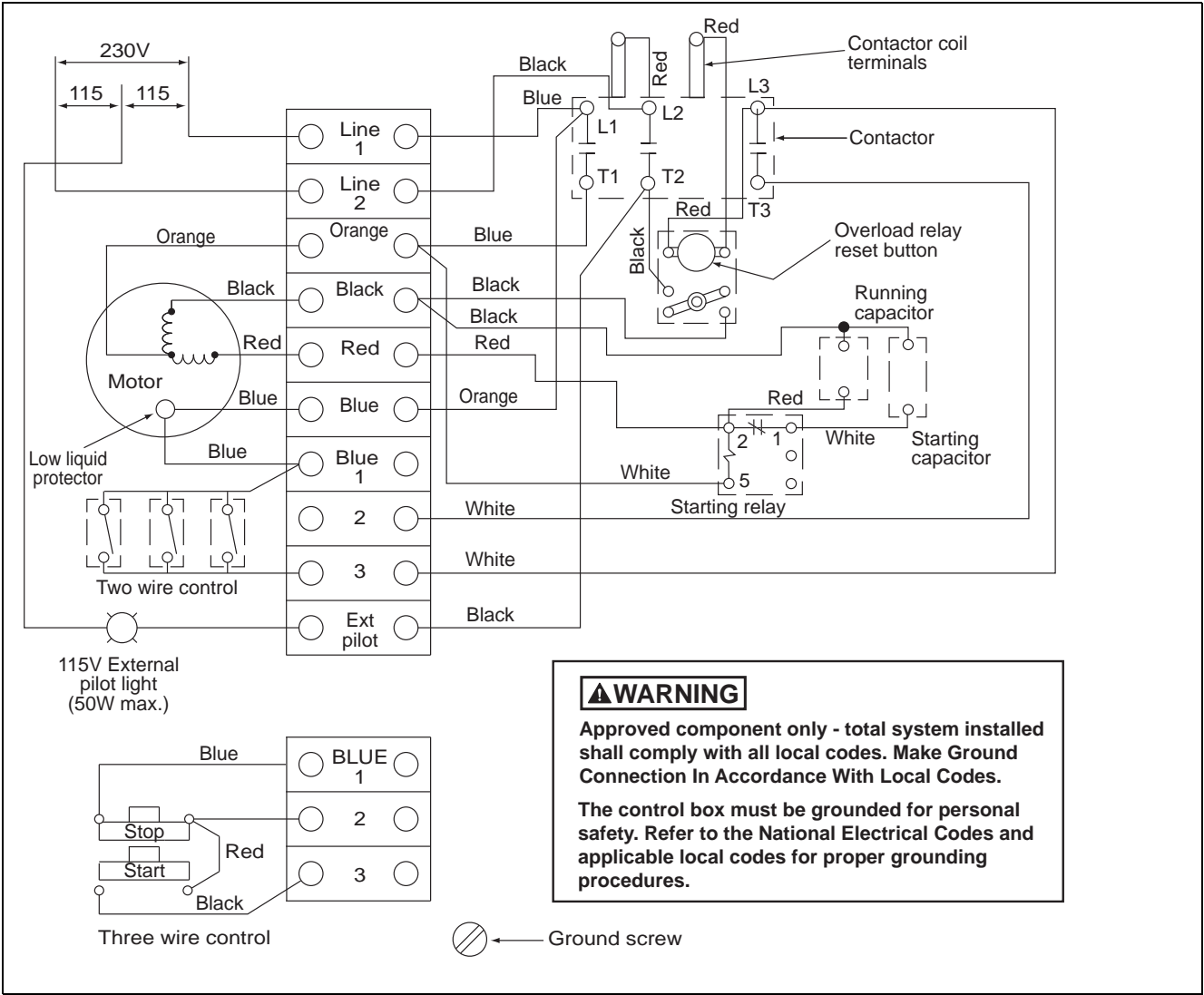
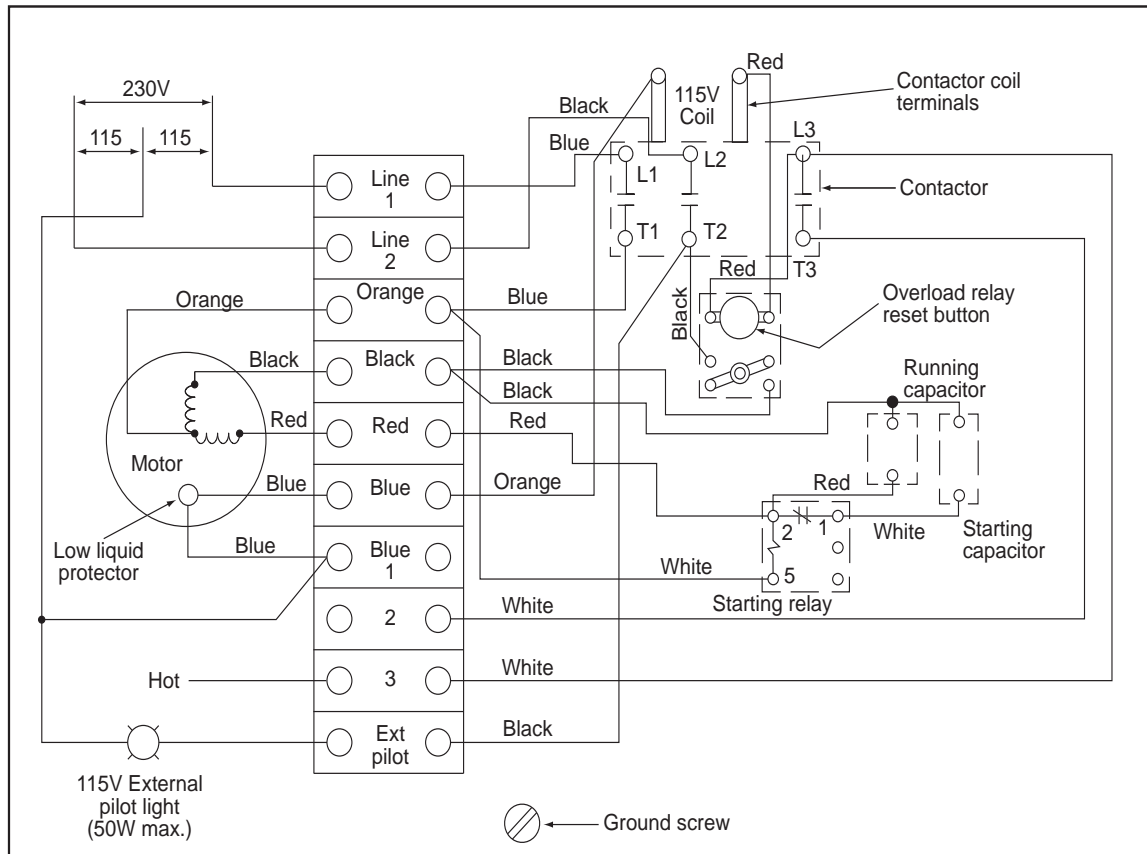


Figure 4. Typical Mechanical Dispenser Motor Control Box, Wiring Diagram, 2HP



## 208-230, 2HP 1Ø CONTROL BOX



1. Remove red wire (coil to L2).
2. Relocate orange wire at L1 to coil.
3. Change to 115V coil assembly.

**WARNING**

Approved component only - total system installed shall comply with all local codes. Make Ground Connection In Accordance With Local Codes.

The control box must be grounded for personal safety. Refer to the National Electrical Codes and applicable local codes for proper grounding procedures.

ri054-304-5.eps

Figure 5. Representative Wiring Diagram For Use With Switched "Hot" Feed 208-230 Vac, 2HP Single-Phase Control Box

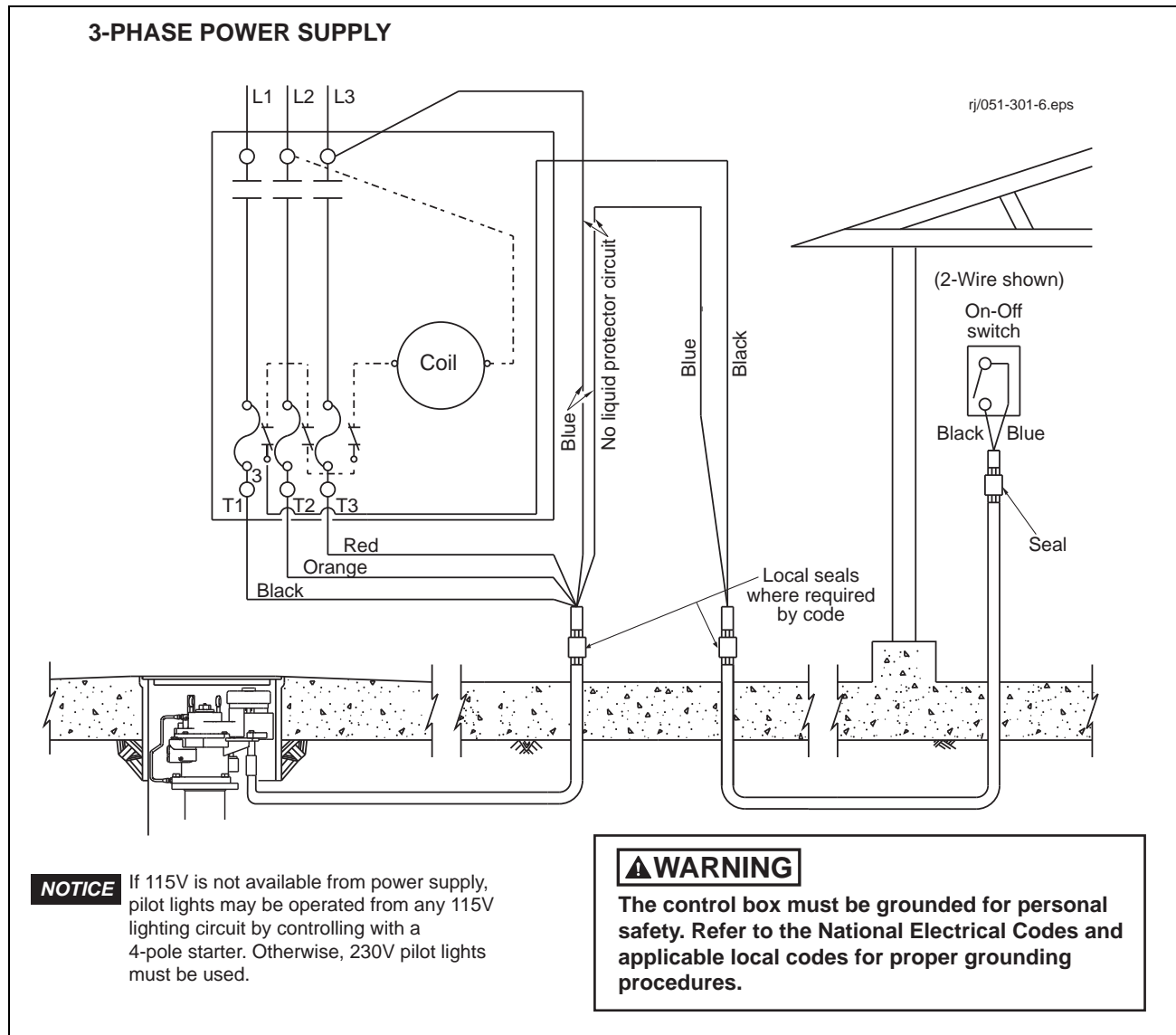
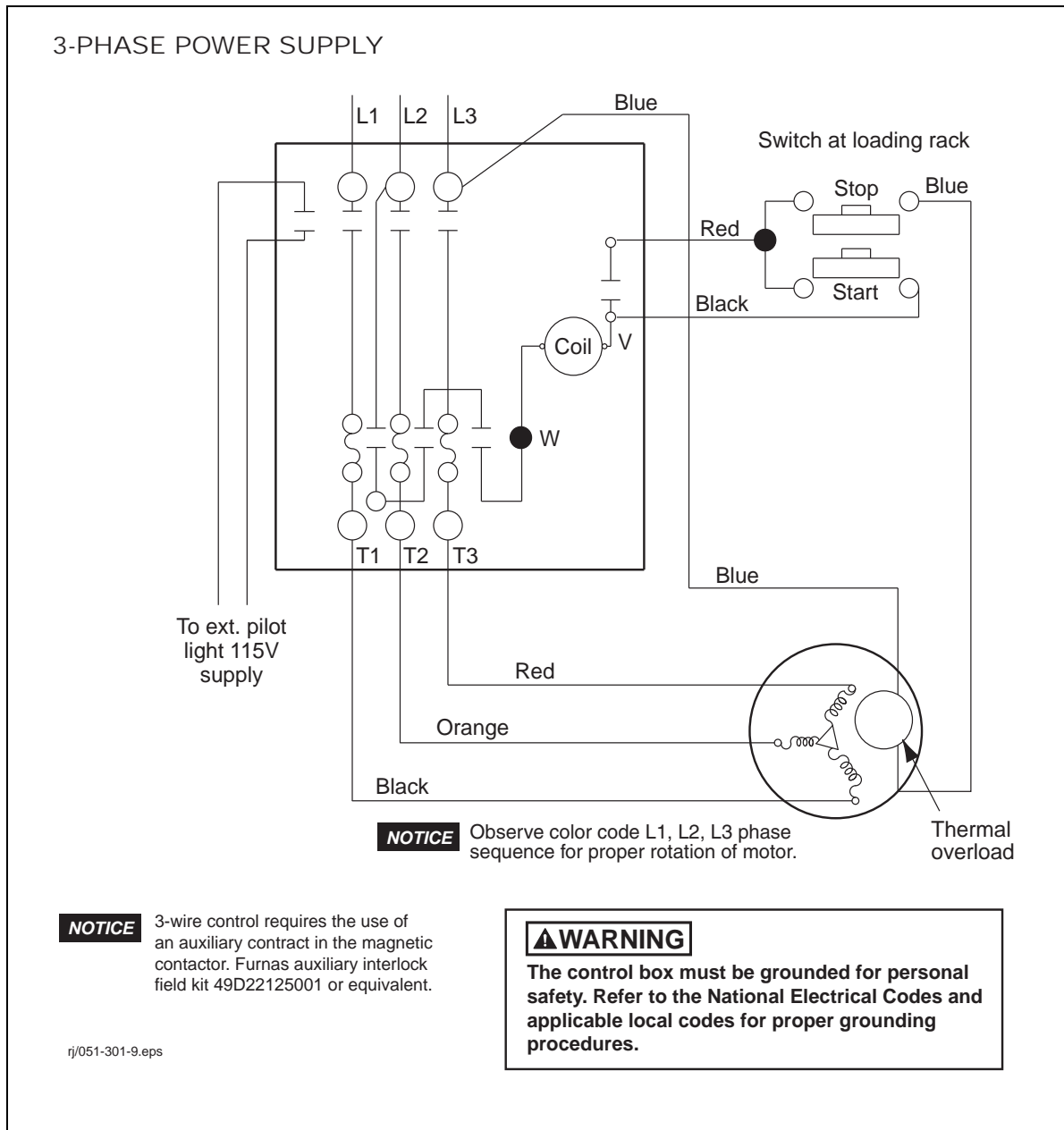


Figure 6. Representative Wiring Diagram, Three-Phase, Two-Wire Control



**Figure 7. Three-Wire, Three-Phase Motor Wiring Diagram**

## Starting the System and Completing the Installation

1. Do not start pumps unless ample product is in the storage tank.
2. Pump sufficient product through each dispenser to purge the entire system of air. If all air is not purged, the computers may "creep" slightly when the dispenser switch is turned on, but no product has been dispensed.
3. On pumps equipped with built-in siphon, it is necessary to run the submerged pump at least 10 to 20 minutes continuously to purge the air from the siphon manifold.
4. After the above checks have been made, the backfill can be completed and the manholes installed as shown in Figure 8.

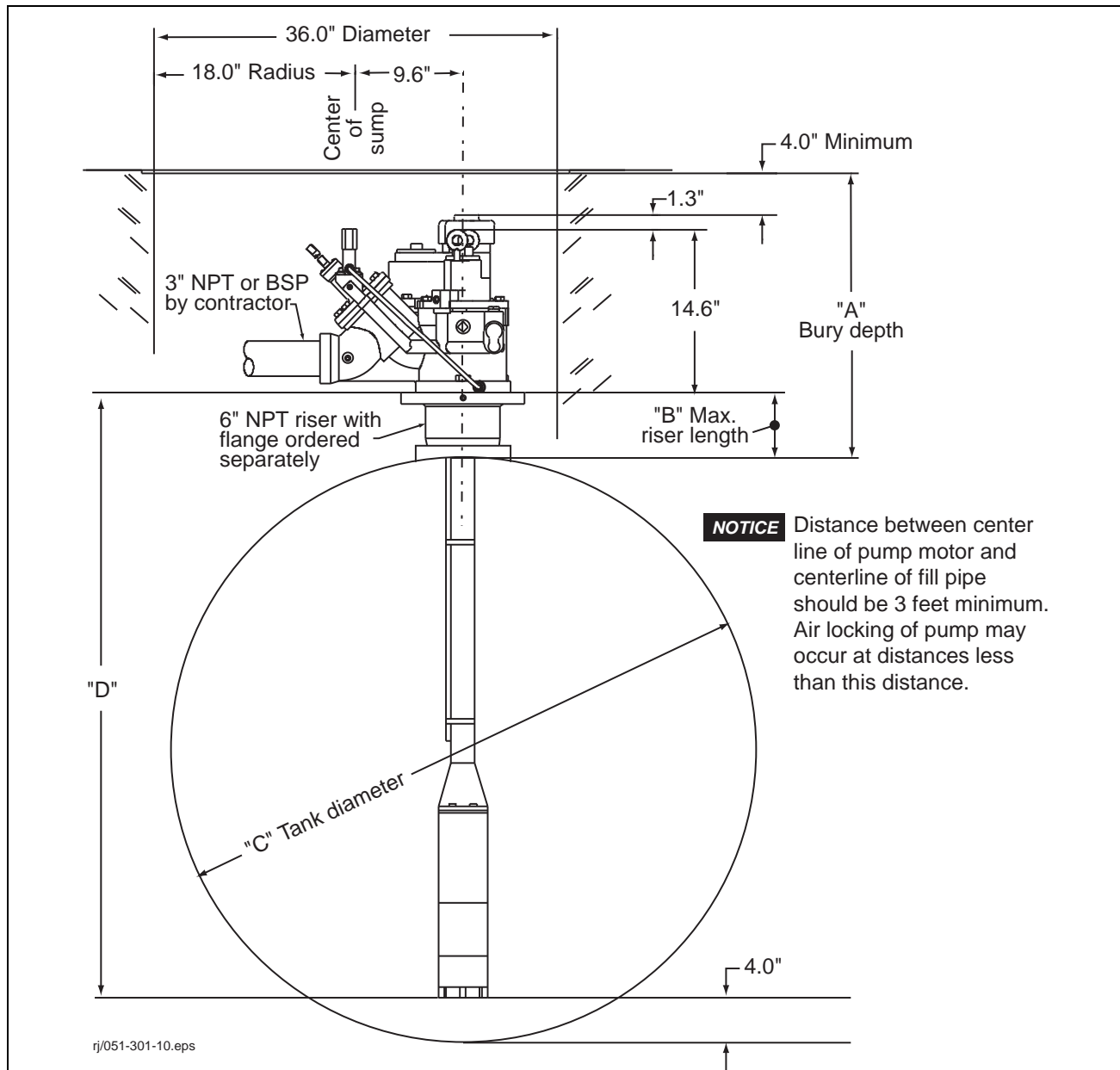


Figure 8.

Table B.

Bury Depth "A"	Riser Length "B"	Tank Diameters "C" / Pump Length Requirements "D"				
		C = 72" / D = 78"	C = 84" / D = 90"	C = 96" / D = 102"	C = 120" / D = 126"	C = 144" / D = 150"
30"	10" (883-442-1)	C = 72" / D = 78"	C = 84" / D = 90"	C = 96" / D = 102"	C = 120" / D = 126"	C = 144" / D = 150"
36"	16" (883-445-1)	C = 72" / D = 84"	C = 84" / D = 96"	C = 96" / D = 108"	C = 120" / D = 132"	C = 144" / D = 156"
42"	21" (883-449-1)	C = 72" / D = 89"	C = 84" / D = 101"	C = 96" / D = 113"	C = 120" / D = 137"	C = 144" / D = 161"
48"	27" (883-449-1)	C = 72" / D = 95"	C = 84" / D = 107"	C = 96" / D = 119"	C = 120" / D = 143"	C = 144" / D = 167"
60"	36" (883-451-1)	C = 72" / D = 104"	C = 84" / D = 116"	C = 96" / D = 128"	C = 120" / D = 152"	C = 144" / D = 176"
72"	51" (883-454-1)	C = 72" / D = 119"	C = 84" / D = 131"	C = 96" / D = 143"	C = 120" / D = 167"	C = 144" / D = 191"

Table C.

Model Number Pump Motor Assembly	HP	Volt	Phase	Winding Resistances (Ohms)			
				Orange to Red	Orange to Black	Red to Black	Blue to Blue
UMP200J1-2MB	2	208-230	1	5.4 - 6.6	1.6 - 2.0	7.0 - 8.6	0.0 - 1.0
UMP200J4-2MB	2	208-230	3	2.6 - 3.3	2.6 - 3.3	2.6 - 3.3	0.0 - 1.0
UMP300J4-2HB	3	208-230	3	1.9 - 2.3	1.9 - 2.3	1.9 - 2.3	0.0 - 1.0
UMP300J17-3HB	3	380-415	3	7.6 - 9.3	7.6 - 9.3	7.6 - 9.3	0.0 - 1.0
UMP500J4-2K	5	208-230	3	1.0 - 1.3	1.0 - 1.3	1.0 - 1.3	0.0 - 1.0
UMP500J17-3K	5	380-415	3	4.0 - 4.9	4.0 - 4.9	4.0 - 4.9	0.0 - 1.0
UMP500J6-2K	5	575	3	6.3 - 7.6	6.3 - 7.6	6.3 - 7.6	0.0 - 1.0

NOTE: The above readings do not include the added resistance of the power supply wires to the submersible pump. Therefore, for the readings to fall within the above limits, the resistance should be checked at the submersible pump junction box. If the resistance readings are taken at the control box or magnetic starter, they will be slightly higher.

**⚠ WARNING** Disconnect, lock out, and tag power at the panel before servicing the pump and taking these resistance readings.

**NOTICE** When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.

Table D.

HP	Volts	Phase	Service Factor Cur.  (Amps)	Locked Rotor Cur.  (Amps)	Branch Ckt. Protection		Wire Size for Max. Length of Run Shown (From Service Entrance to Pump in Feet)					Nema Codes
					Fusetron (Amps)	Ckt. Brkr. (Amps)	No. 14	No. 12	No. 10	No. 8	No. 6	
2	208-230*	1	12.0	61.0	20	20	172	274	929	673	1048	H
2	208-230*	3	7.2	45.0	15	15	361	574	899	1410	2197	K
3	208-230*	3	10.5	62.0	15	20	255	406	635	997	1552	K
3	380-415	3	5.4	29.0	15	15	787	1250	1956	3070	---	K
5	208-230*	3	17.2	92.0	25	30	---	240	376	590	920	J
5	380-415	3	8.8	49.0	15	15	472	750	1173	1841	2867	G
5	575	3	7.0	37.0	15	15	929	1477	2311	3627	---	K

\*Figures represent maximum length in feet for 220 or 230 volt system. Use 75% of length for 208 volt system.

## Floating Suction Installation Information

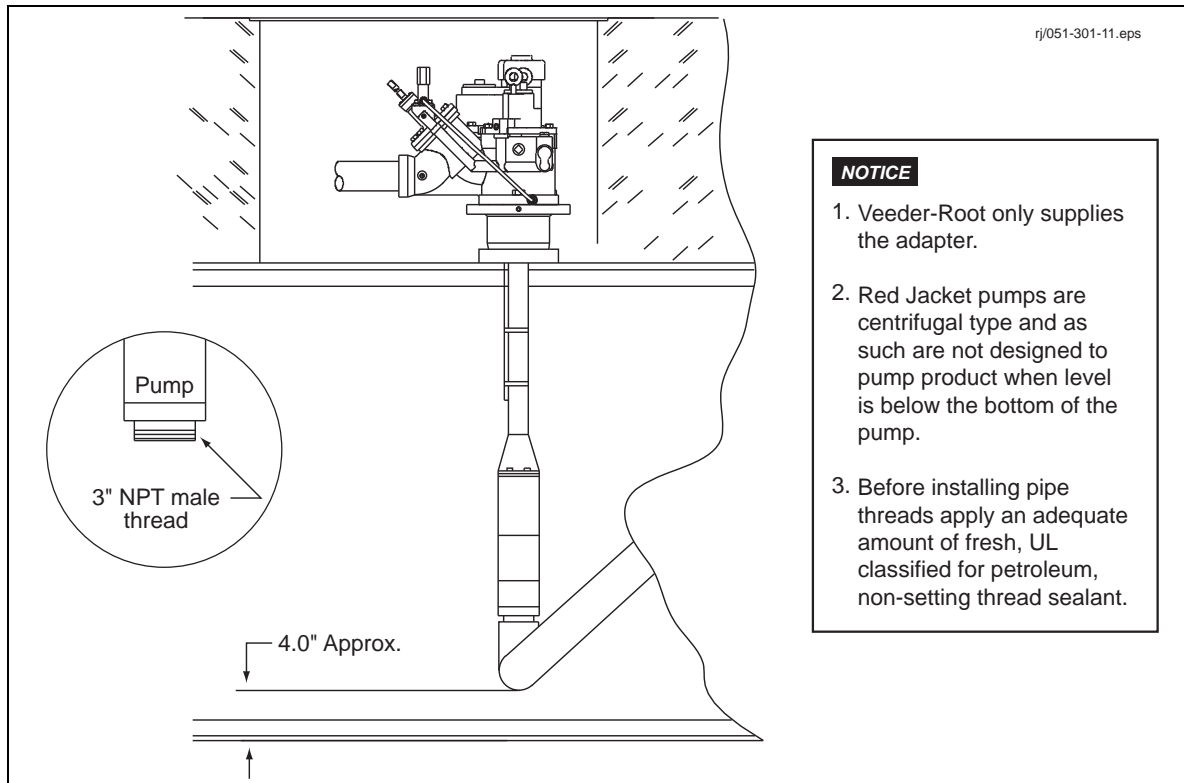


Figure 9.

## Installing A Big Flo Diaphragm Valve



**Disconnect, lock out, and tag power at the panel before servicing the pump.**



**When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.**

**NOTICE**

**The installation described herein is for a single pump system (reference Figure 10). If two pumps are to be installed in tandem, contact your service representative for instructions for your specific system.**

1. Since the leak detector only checks for leaks down stream from itself it should be installed as close to the pump as possible while still maintaining clearance for the removal of the pump check valve housing.
2. Install the “Big-Flo” diaphragm valve per the instructions included with the “Big-Flo” Diaphragm Valve.
3. Install the vent line from the FXV to the 1/4 NPT port in the six inch flange using tubing and fittings supplied with the leak detector.
4. Test the installation per the instructions included with the “Big-Flo” diaphragm valve.



**⚠ WARNING**

If Big Flo valve is installed in separate sump, a passage way must be run between the two sumps. The FX vent line can be easily routed back to the tank through this passage way.

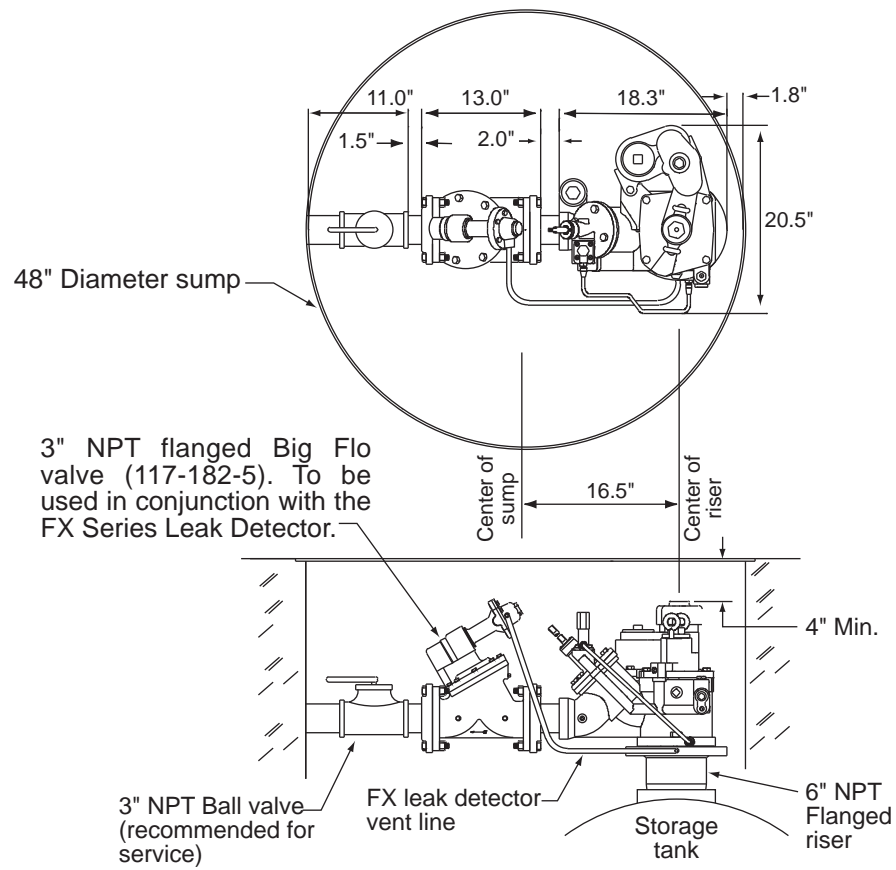


Figure 10.

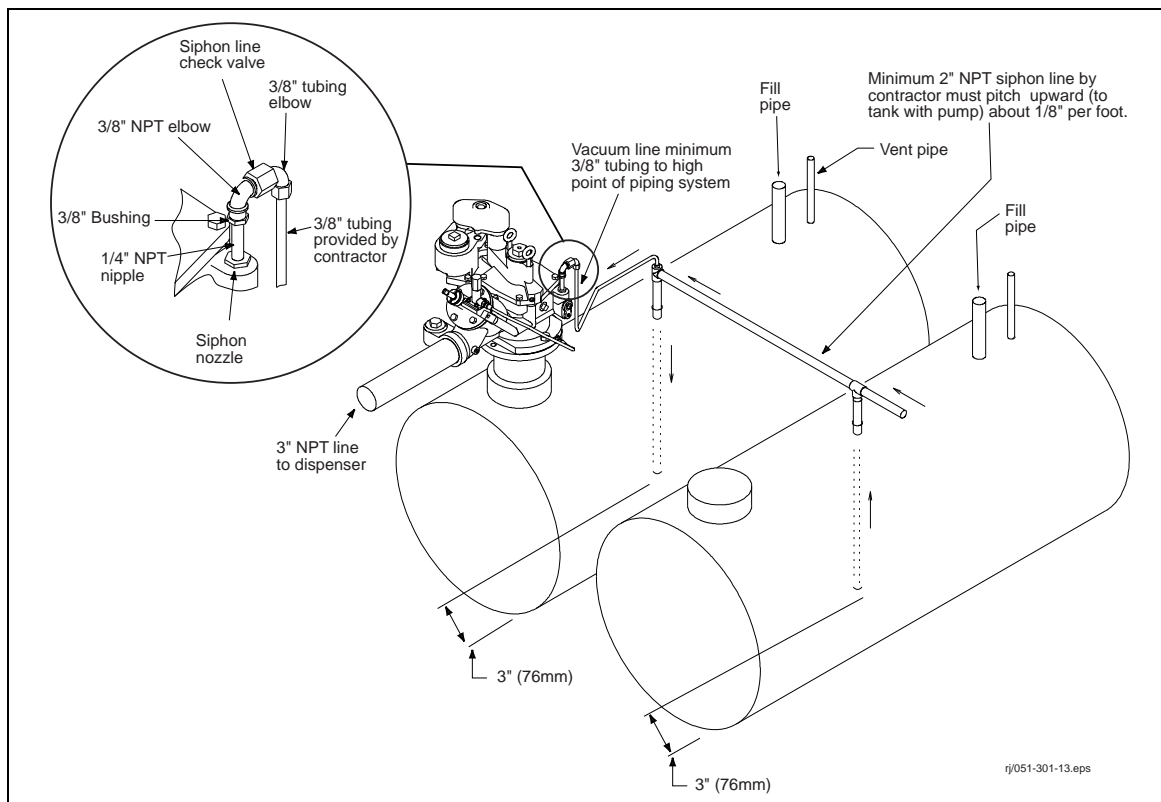


Figure 11.

## Attaching the Siphon & Vacuum Lines with Factory Installed Siphon Assemblies

### ⚠ WARNING



Disconnect, lock out, and tag power at the panel before servicing the pump.



When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.

1. Remove the 1/4 inch pipe plug from the siphon nozzle.

### NOTICE

Care should be taken to insure that the internal portions of the siphon nozzle and parts included in the siphon kit are clean and free of debris or contamination during assembly.

### ⚠ WARNING

Before installing pipe threads apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant.

2. Coat both of the male threads of the 1/4 X 2 inch long nipple with pipe sealant. Thread one end of the nipple into the siphon nozzle and the other end into the 1/4 x 3/8 inch reduction bushing.
3. Apply pipe sealant to the male threads of the reduction bushing and thread it into the 3/8 inch female elbow.
4. Apply pipe sealant to the male threads of the siphon check valve and thread it into the 3/8 inch female elbow.
5. Apply pipe sealant to the male pipe threads of the compression fitting elbow and thread it into the 1/4 inch hole in the siphon check valve.

## Installing Two Pumps for Tandem Operation

When greater flow rates are needed, two pumps may be required in the same piping system by means of a manifold. If they are installed according to the illustration, a tandem system offers backup support so operations can continue if one pump stops working. Install the pump as outlined above with the following additions.

1. If a siphon system is required, each pump must have 3/8 inch siphon vacuum line attached to the same location on the siphon line (reference Figure 11).

**⚠ WARNING** Adjust the Pressurstat (see “Adjusting the Pressurstat Line Relief Pressure” on page 28) on both packers to maximum relief pressure by rotating fully clockwise. If maximum pump pressures are NOT a minimum of 5 psi below the Pressurstat relief setting then proper check valves with pressure relief are required to be installed in the discharge line of each pump to prevent product from being pumped through the pressure relief system of the adjacent pump when it is not operating. Readjust the Pressurstat to the desired pressure relief value for proper operation of the siphon system.

**NOTICE** Installation of a ball valve is recommended on the discharge side of the pressure relief check valve. This will aid in troubleshooting and line testing.

Figure 12 illustrates the requirement for in-line, pressure relief type check valves. It is not a recommended guide for installation of piping downstream of the check valves.

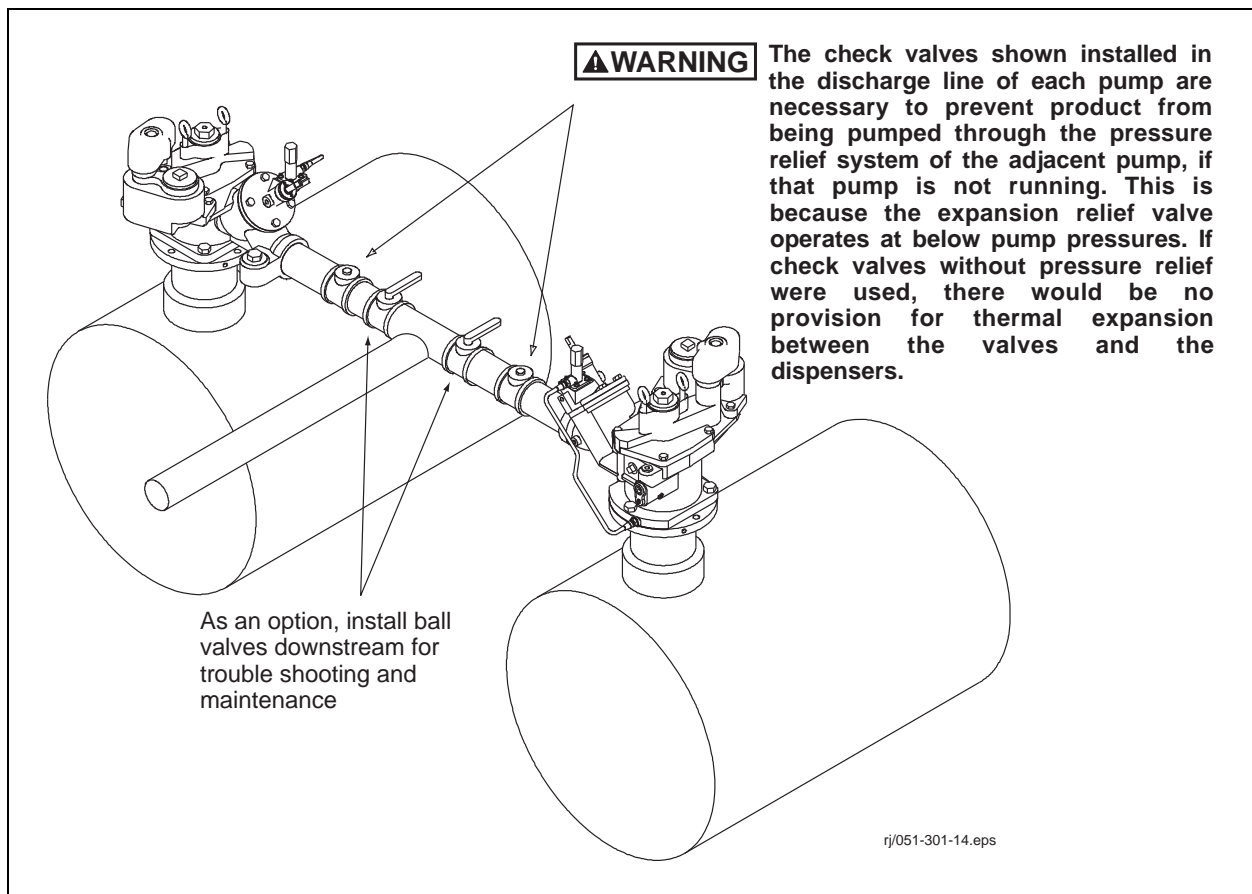


Figure 12.

It is preferable that the wiring allow both submersibles to operate simultaneously with any combination of dispensers turned on. To operate individually, the appropriate disconnect switch must be turned off manually. (See Figure 13 through Figure 16 for suggested wiring diagrams.)

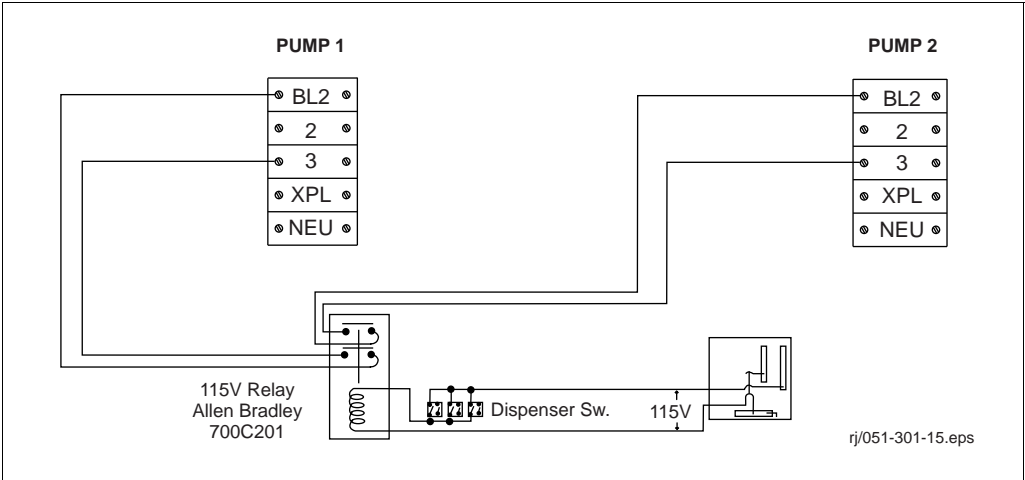


Figure 13. Suggested Diagram For Wiring Dual Manifold System, Two-Wire Control, 208/230 Single Phase

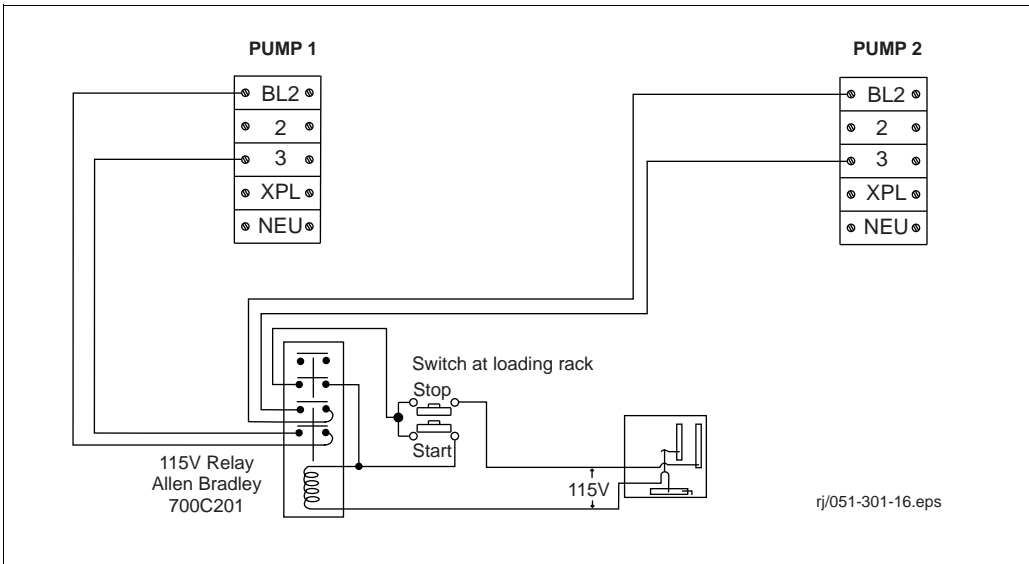


Figure 14. Suggested Diagram For Wiring Dual Manifold System, Three-Wire Control, 208/230 Single Phase

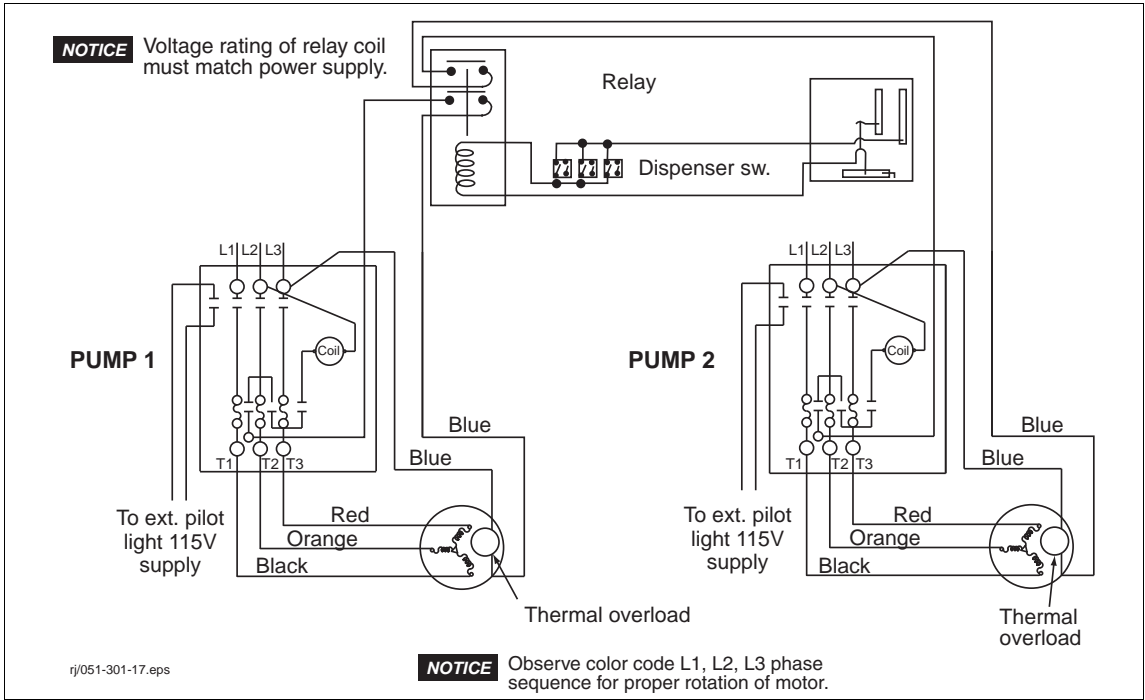


Figure 15. Suggested Diagram For Wiring Dual Manifold System, Two-Wire Control, Three Phase

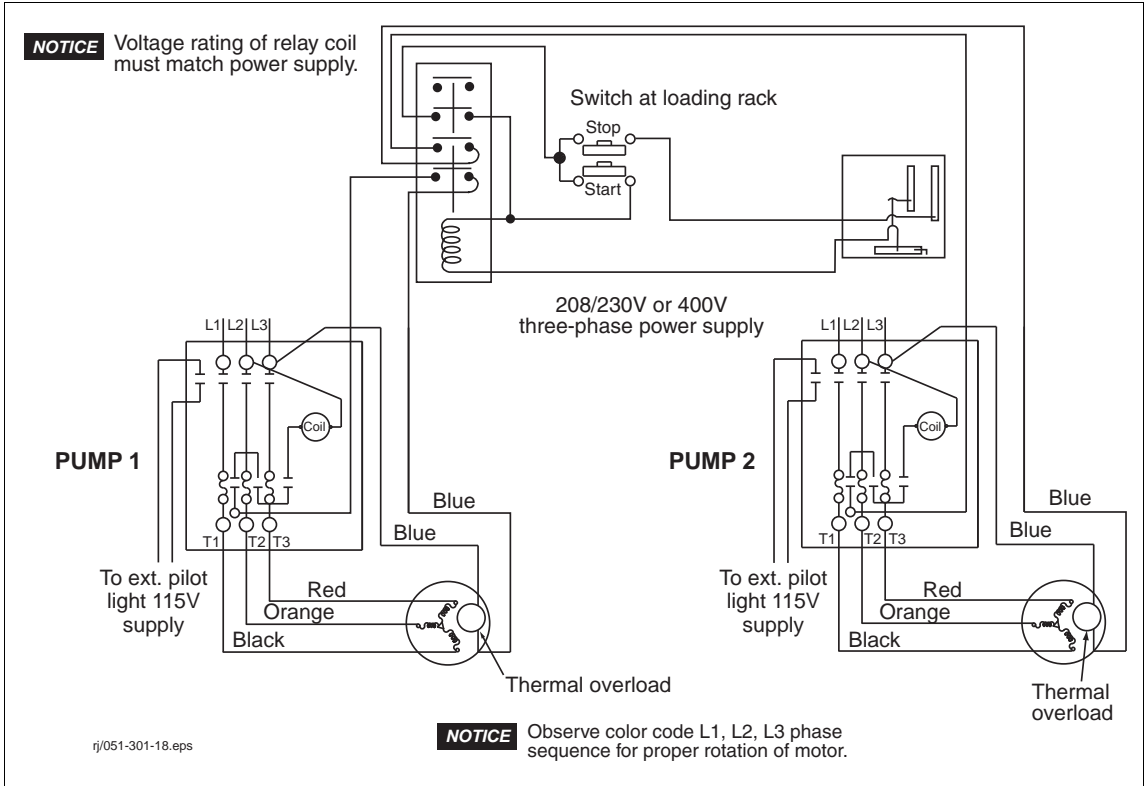


Figure 16. Suggested Diagram For Wiring Dual Manifold System, Three-Wire Control, Three Phase

## Testing the Installation

### Testing the Piping

**⚠ WARNING**



**Disconnect, lock out, and tag power at the panel before servicing the pump.**



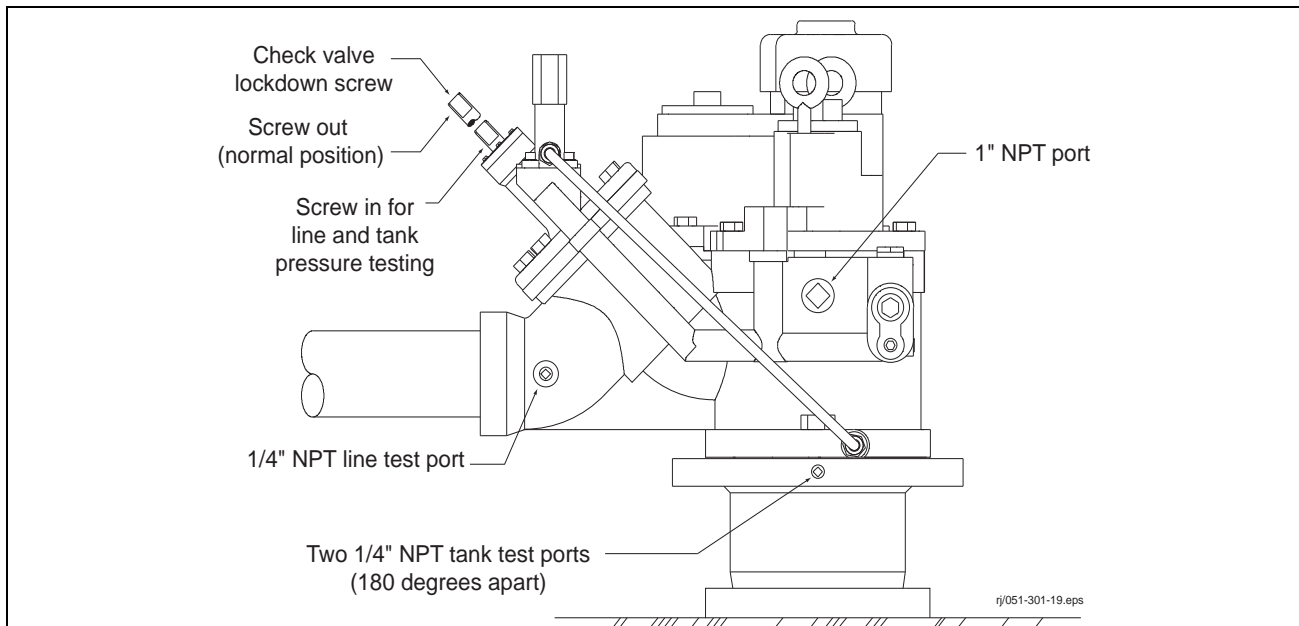
**When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.**

1. Block the lines at each dispenser. (Trip the dispenser shear valve.)
2. Lock down the pump check valve by turning the check valve lock down screw clockwise as far as it will turn (see Figure 17).
3. Remove the 1/4" NPT line test port plug and apply the line test pressure at the line test port (50 psi (345 kPa) maximum).

**⚠ WARNING**

**Excessive pressure (above normal test pressure of 50-55 psi (345-380 kPa) may damage the pump check valve seat and other system components.**

4. After the completion of the test, release the pressure by:
  - a. Turning the check valve lock down screw counter clockwise as far as it will go.
  - b. Remove the protective cover from the Pressurstat (see Figure 18) and turn the Pressurstat adjustment screw counter clockwise until the screw protrudes 3/4", this will relieve the line pressure to "0" psi.  
Apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant on the 1/4" NPT line test port plug and replace it. Torque the plug to 14 - 24 ft-lbs (19.4 - 29 N•m).  
Adjust desired relief pressure per instructions on page 28 and replace the protective cover.
5. If applicable, unblock lines at each dispenser.



**Figure 17. Maxxum Packer-Manifold Assembly: Line And Tank Testing**

## Testing the Tank



**Disconnect, lock out, and tag power at the panel before servicing the pump.**



**When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.**

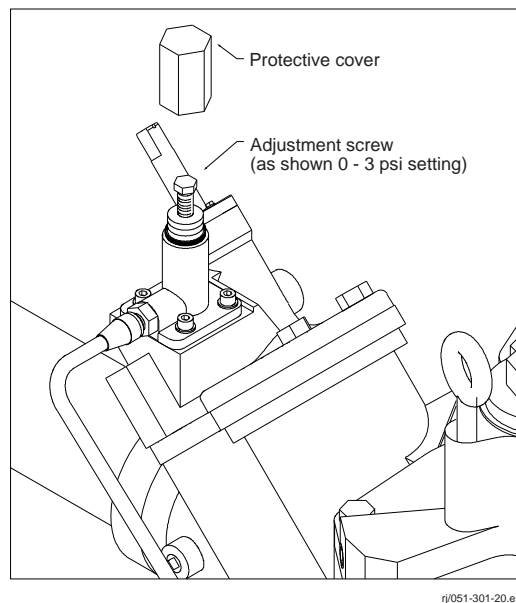
1. Lock down the pump check valve by turning the check valve lock down screw clockwise as far as it will turn (see Figure 17).
2. Remove the Tank Test Plug from the riser flange.
3. Apply tank test pressure at the tank test port.
4. After the completion of the test, release the pressure by:
  - a. Turning the check valve lock down screw counter clockwise as far as it will go.
  - b. Remove the protective cover from the Pressurstat (see Figure 18) and turn the Pressurstat adjustment screw counter clockwise until the screw protrudes 3/4", this will relieve the line pressure to "0" psi.

Apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant on the 1/4" NPT line test port plug and replace it. Torque the plug to 14 - 24 ft-lbs (19.4 - 29 N•m).

Adjust desired relief pressure per instructions on page 28 and replace the protective cover.

## Purging the System

1. Pump a minimum of fifteen gallons (57 liters) of product through each dispenser.
2. Start with the dispenser furthest from the pump and work toward the pump.



**Figure 18. Pressurstat - Pressure Adjustment**

## Adjusting the Pressurstat Line Relief Pressure

---

**NOTICE** Pressurstat line relief pressure is the line pressure after the pump stops.

1. All pumps are factory set to a line relief pressure of 23-28 psi (160-195 kPa).
2. Remove the protective cover (see Figure 18).
3. Adjust the relief pressure to the desired level. Turning the adjusting screw clockwise will increase the line relief pressure. With the adjusting screw fully down the line relief pressure should be from 40 to 45 psi. With the adjusting screw all the way up the pressure should be from 0 to 3 psi.
4. The line relief pressure can be verified in three locations:
  - a. The pressure can be observed from the control unit of the electronic line leak detector.
  - b. The pressure can be observed by attaching a gauge to the impact valve.
  - c. The pressure can be observed by attaching a gauge to the line test port.
5. After setting the desired line relief pressure replace the protective cap. **DO NOT USE PIPE SEALANT.** Lubricate the o-ring with petroleum jelly. Tighten to just snug after the protective cover has fully bottomed out.



## Service and Repair

### Removing the Extracta Assembly

**⚠ WARNING**



Disconnect, lock out, and tag power at the panel before servicing the pump.



When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.

1. If a ball valve is installed down line from the pump, close it.
2. Unscrew the 5/8-inch bolt and pull the yoke up and rotate it 90° counterclockwise (see Figure 19).
3. Remove the protective cover from the Pressurstat. Rotate the adjustment screw counterclockwise to relieve pressure in the packer/manifold assembly.
4. Unscrew and remove the four 1/2-inch Extracta retaining bolts.

**⚠ WARNING**

Confirm that the lifting eyebolts are properly torqued to 10 ft-lbs (13.6 N•m) with a minimum of 6 full threads installed. Occasionally, eyebolts are removed after pump installation and corrosion may occur in the threaded areas of the extractable and the eyebolt. If corrosion has occurred, the extractable and eyebolt should be replaced.

Utilize BOTH lifting eyebolts to suspend the pump vertically. A vertical lift will ensure that the o-ring in the manifold will not be damaged. Remove the pumping unit and place it on a clean surface.

Removal of the extractable section of the pump must be conducted with caution. Make certain that the extractable section remains centered within the riser pipe and that no portion of the extractable binds during the removal process. If binding occurs during removal, stop and determine the cause of the binding and correct the situation before proceeding with removal.

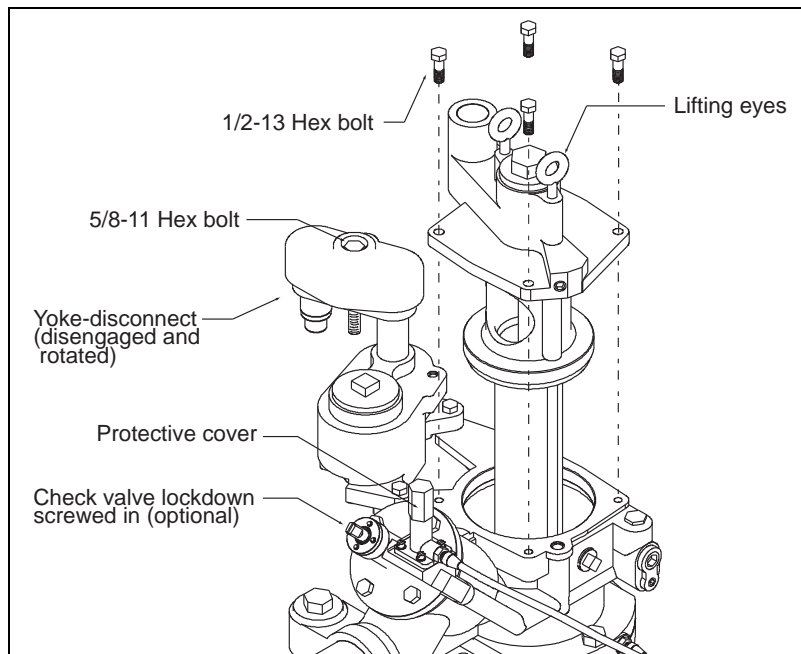


Figure 19. Maxxum - Extractable Section

## Procedure for Removal of Plug-in Type Pump - Motor Assembly

**NOTICE** Not all installed pump/motor units will have a locknut securing the pump shell. Steps 3A and 11 can be skipped if no locknut is present.

**The UMP (Unitized-Motor-Pump) contains no serviceable parts (other than the foot valve) and should not be modified or adjusted.**

1. Place pump in a horizontal position on a clean surface.
2. Block up under the 3-inch column pipe so that the pump/motor assembly is about 2 inches above supporting surface.
- 3A. If a locknut is present; loosen setscrew in locknut. Unscrew the locknut from the discharge head. Slide the adapter tube up to expose the four hex head machine bolts.
- 3B. Loosen and remove the four hex head machine bolts on the top of the pumping unit just above the shell and around the motor.
4. Do not let the pump roll. Using your hands, (do not use a wrench) hold pump at the extreme bottom end and use a slight up and down motion to pull the pump from the casting attached to the 3-inch pipe.

**⚠ WARNING** Up and down motion to remove the pump unit should not be greater than 1/4 inch. Motion greater than 1/4 inch could damage a positioning dowel pin in the top of the motor.

5. If the motor leads tend to stay plugged into the motor, finish removing the motor until the leads can be pulled out of the top of the motor by hand (this is a "plug in" type connection). Verify the number of wires. If there are only three wires, the pigtail and conduit seal must be replaced with the proper 5-wire version.
6. Pull the pigtail connector in the discharge head out far enough to see the o-ring in the sidewall of its socket. Remove the connector's o-ring from the connector's socket and discard it. Get a 1.234" ID x 0.139" (-218 P/ N 072-712-1) wide o-ring and lubricate it with petroleum jelly. Slide the new o-ring over the pigtail connector and push it in the groove in the wall of the connector's socket. Lubricate the pigtail connector body with petroleum jelly and push it back into its socket, making sure the index tab is in the socket's notch.

Table E.

HP	Pigtail	Buna Seal	Seal & Pigtail Kit
3	213-065-4	110-038-4	213-065-5
5	213-069-4	110-038-4	213-069-5

**⚠ WARNING** Installed pump/motor units with 3-wire pigtails must be upgraded to the proper 5-wire pigtail and conduit seal assemblies.

7. Remove the block from the top of the new pump/motor.
8. Look at bottom of the discharge head casting which remains screwed to the 3-inch pipe. Note the position of the one hex head bolt. Place the four machine bolts through the four bolt holes.

**NOTICE** One hole (180 degrees away from the hex head) remains open, this is the locating pin hole.

9. Find the locating pin on top of the motor. This pin must go into the remaining open hole referred to in notice following Step 8.
10. Place the new pump/motor assembly in position by starting the locating pin into the hole referred to above. Gently push the motor into place until the shell starts to pass over the large "O"ring. Position the four machine bolts into the bolt holes and start threads. Draw all bolts down evenly until all are snug. After all bolts are snug, torque bolts to 24-34 ft-lbs (32-46 N•m).

**⚠ WARNING** Draw all bolts down evenly until all are snug. This will help avoid damaging the connector and dowel pin.

11. If a locknut is present; slide the adapter tube down over the discharge head so that it sets against the shell. Thread the locknut onto the discharge head and tighten until the adapter tube is firmly held in place against the pump shell. Torque the locknut to 55-75 ft-lbs (75-102 N•m). Torque the setscrew in the locknut to 25-50 in-lbs (2.8-5.6 N•m).

## Installing the Extracta Assembly (Ref. Figure 19)

**⚠ WARNING**



**Disconnect, lock out, and tag power at the panel before servicing the pump.**



**When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.**

1. Replace the lower o-ring (see Figure 24, Item #4) in the manifold and the one in the lower face of the Extracta head (see Figure 24, Item #3).
2. Sparingly lubricate the lower o-ring located in the inside the manifold and the o-ring in the lower face of the Extracta head. Use light grease, oil, or petroleum jelly.

**⚠ WARNING**

**Confirm that the lifting eyebolts are properly torqued to 10 ft-lbs (13.6 N•m) with a minimum of 6 full threads installed. Occasionally, eyebolts are removed after pump installation and corrosion may occur in the threaded areas of the extractable and the eyebolt. If corrosion has occurred, the extractable and eyebolt should be replaced.**

**Utilize BOTH lifting eyebolts to suspend the pump vertically. Lower the Extracta into position through the manifold assembly. Care should be taken to keep the unit as near to vertical as possible to avoid damaging the o-rings. Start the four 1/2 inch Extracta retaining bolts. DO NOT TIGHTEN THEM AT THIS TIME.**

3. Rotate the yoke-disconnect into position so that the brass boss aligns with the disconnect port in the packer assembly.
4. Tighten the 5/8 inch bolt to fully engage the yoke.
5. Torque the four 1/2 inch Extracta retaining bolts to 50 ft lbs.(68 N•m).
6. Torque the 5/8 inch bolt to 50 ft lbs.(68 N•m).
7. Rotate the adjustment screw on the Pressurstat to reset line relief pressure.
8. Lubricate the o-ring on the Pressurstat with petroleum jelly and install the protective cover by rotating it until it contacts the Pressurstat body. Hand tightening is sufficient, as the o-ring completes the seal.
9. Visually inspect the pumping unit for leaks while the pump is running. This is to ensure that no seals or sealing surfaces were damaged during removal or installation of the Extracta assembly.

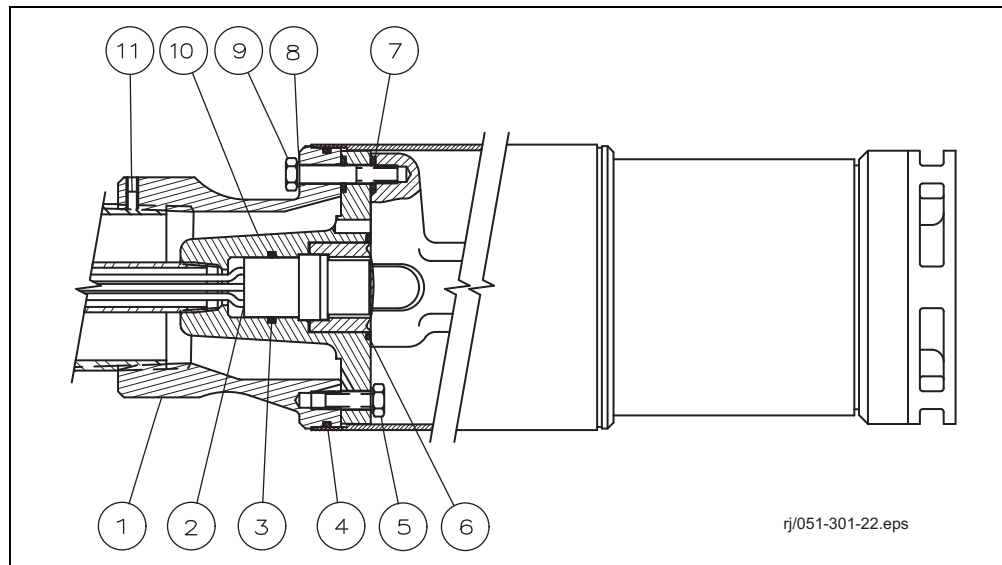


Figure 20. UMP - Discharge Head Assembly

Table F.

Item	Part No.	Description	Number Required		
			2 HP	3 HP	5 HP
1	036-043-3	Head - Motor Discharge	1	1	1
2	213-065-5	Pigtail & Conduit Seal - 2, 3, HP	1	1	--
2	213-069-5	Pigtail & Conduit Seal - 5 HP	--	--	1
3	072-712-1	Pigtail O-ring	1	1	1
4	072-714-1	Motor Shell O-ring	1	1	1
5	026-179-1	Bolt - 3/8-16 x 1 Hex	1	1	1
6	072-309-1	Receptacle Housing O-ring	1	1	1
7	031-328-1	Gasket Bolt	8	8	8
8	026-110-1	Lockwasher 3/8" Spring	4	4	4
9	579025-004	Bolt - 3/8-16 x 2-3/16 Hex-Gr. 5	4	4	4
10	038-241-1	Housing Pigtail	1	1	1
11	026-448-1	Set Screw Fastener - 1/4"	2	2	2
NS	001-157-3	Floating Suction Adaptor - HB	--	1	--
NS	001-026-3	Floating Suction Adaptor - K	--	--	1
NS	001-158-3	Floating Suction Adaptor - MB	1	--	--

Only the parts listed above are available for repairs of the lower end of the pump. If any other parts need replacing, order Red Jacket pump-motor assemblies. See page 33 for ordering numbers.

## Replacing the Check Valve Assembly

**⚠ WARNING**



Disconnect, lock out, and tag power at the panel before servicing the pump.



When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.

**⚠ WARNING**

Close the ball valve in the discharge line if it has been installed.

Care should be taken to ensure that the internal portions of the vent line and check valve assembly are clean and free of debris or contamination during servicing.

1. Relieve system pressure by removing the protective cover and then backing out the pressure adjustment screw (see Figure 21).
2. Disassembly
  - a. Loosen or disconnect the lower vent line fitting.
  - b. Disconnect the upper vent line fitting.
  - c. Remove the four 1/2 inch hex bolts.
  - d. Pull the check valve housing assembly straight out of the manifold.

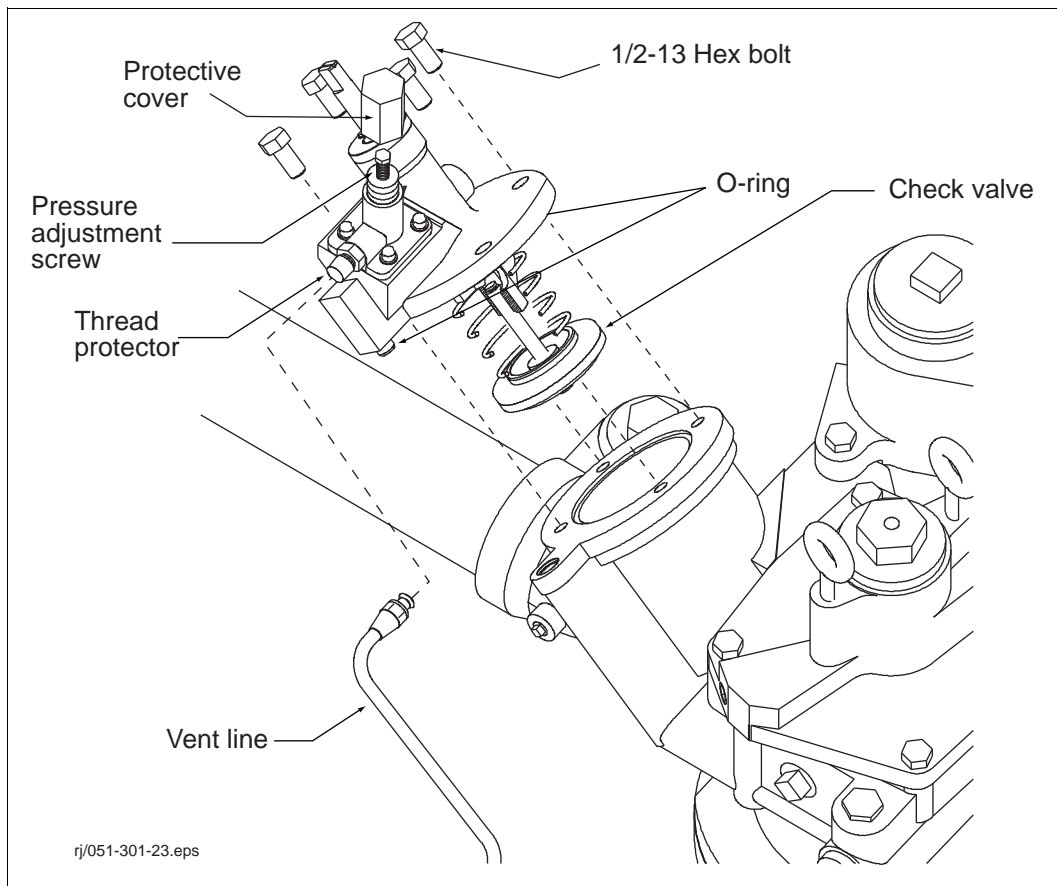


Figure 21. Maxxum Check Valve Assembly

3. Assembly
  - a. Be certain the two o-rings on the sealing face of the check valve housing are in place.
  - b. Lower the check valve assembly back down into the manifold taking care not to damage the rubber seal on the check valve assembly.
  - c. Install the four 1/2 inch bolts. Torque these bolts to 50 ft-lbs (68 N•m).
  - d. Remove and discard the thread protector.
  - e. Re-attach the upper vent fitting then tighten both the upper and lower fittings 1/6 to 1/4 turn beyond hand tight.
4. Readjust the pressure adjustment screw to the desired pressure setting.
5. Replace the protective cover.
6. If applicable, open ball valve down line from the pump.

## Repairing the Check Valve Lock-down Screw And Seals



**Disconnect, lock out, and tag power at the panel before servicing the pump.**



**When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.**



**Care should be taken to ensure that the internal portions of the check valve housing are clean and free of debris or contamination during servicing.**

1. Close the ball valve in the discharge line if it has been installed.
2. Lock down screw removal (see Figure 22).
  - a. Remove the four wiper housing retaining screws.
  - b. Lift off the wiper housing from the lock-down screw.
  - c. Remove the wiper from the wiper housing. Avoid damaging the bores in the housing.
  - d. Unscrew the lock-down screw and remove it from the check valve housing.
3. Lock-down screw re-installation.
  - a. Replace the two o-rings on the lock-down screw. These o-rings should be installed from the non-threaded end of the lock-down screw so as to avoid nicking or damaging the o-rings.
  - b. Sparingly lubricate the two o-rings before screwing the lock-down screw into the check valve housing. Use light grease, oil, or petroleum jelly.
  - c. Using a flat piece of metal at least 1/2 inch larger than the OD of the wiper, carefully drive the new wiper into the wiper housing, orienting the wiper as shown in Figure 22.
  - d. Sparingly lubricate the wiper ID lip before sliding it over the lock-down screw onto the check valve housing. Use light grease, oil, or petroleum jelly.
  - e. Re-install the four #6 wiper housing retaining screws and torque to 20 in-lb (2.23 N•m).
4. If applicable, open the ball valve in the discharge line if it has been installed.

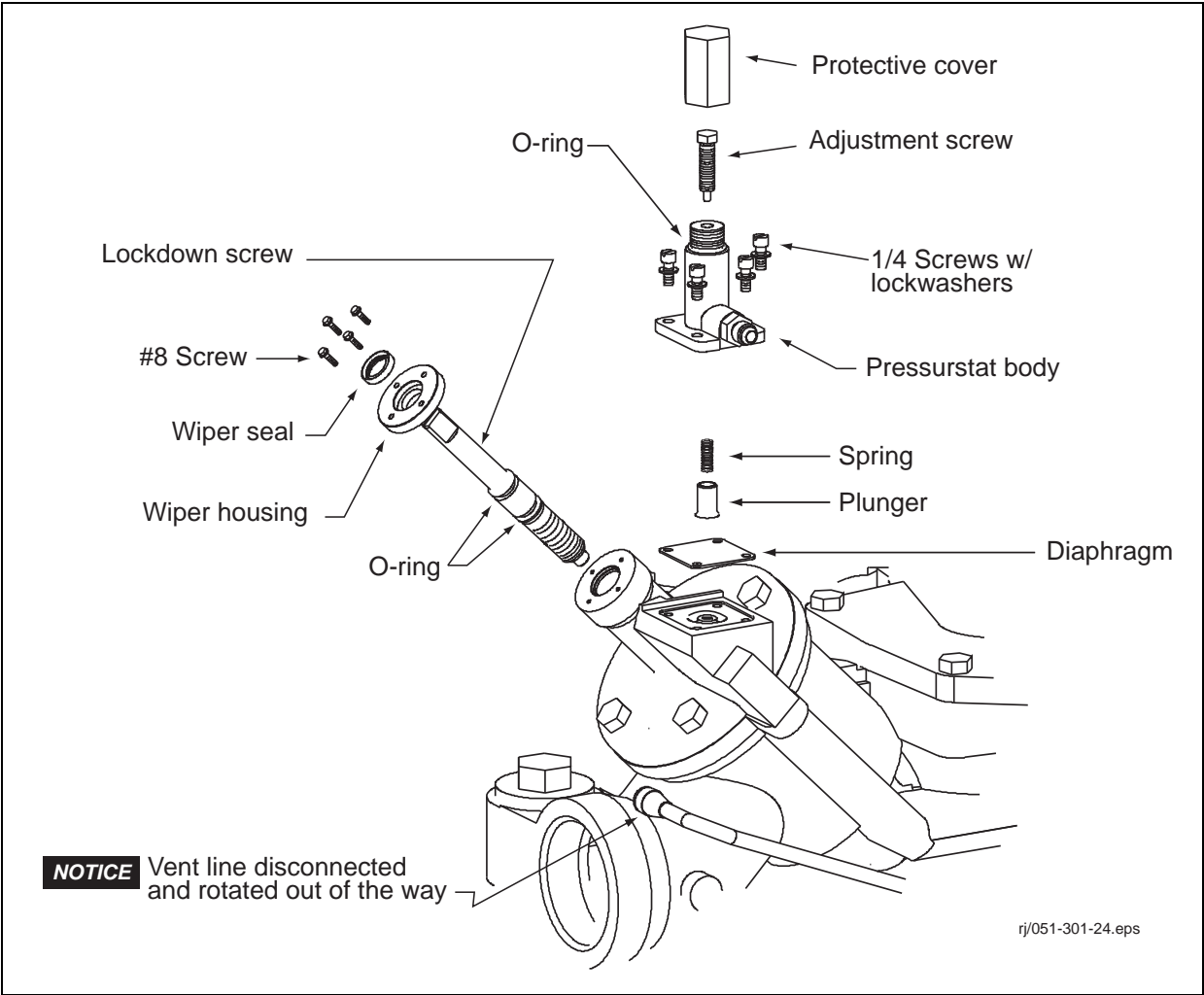


Figure 22. Pressurstat And Check Valve Lock-Down Screw Assembly

## Parts

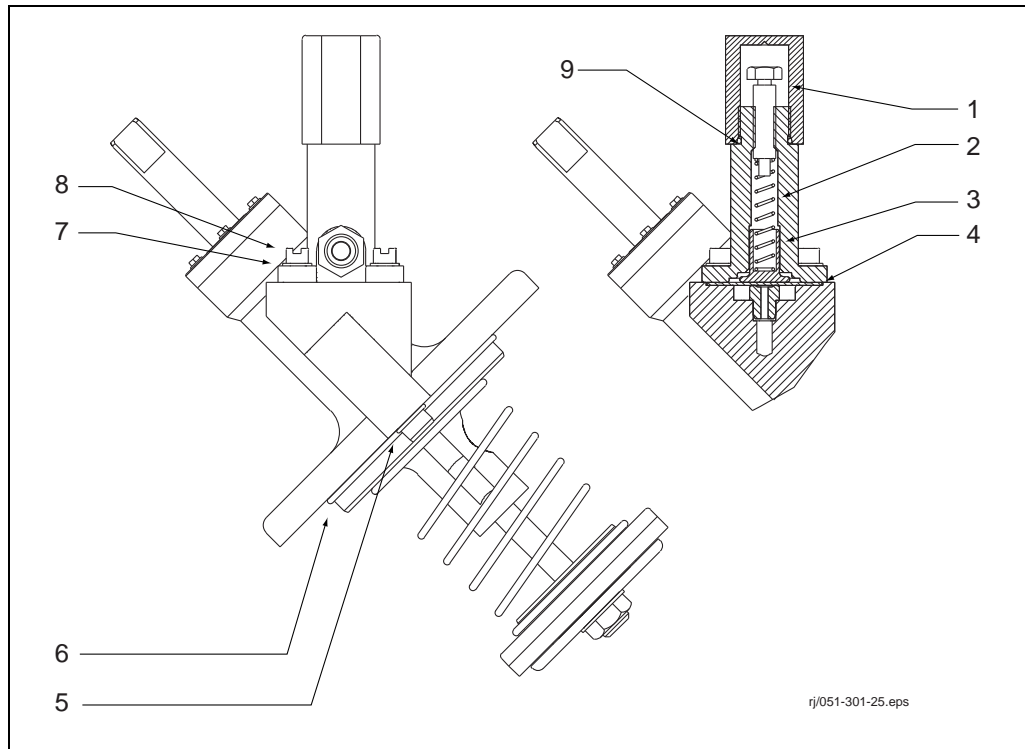


Figure 23. Check Valve And Pressurstat Assembly

Table G.

Item	Part No.	Description	Qty.
1	076-447-1	Screw - Adjustment	1
2	080-944-1	Spring - Expansion Relief	1
3	067-278-1	Plunger	1
4	017-573-1	Diaphragm - Expansion Relief	1
5	072-642-1	O-Ring (-112)	1
6	072-699-1	O-Ring (-240)	1
7	026-752-1	Lockwasher	4
8	026-748-1	Screw - Hex Socket	4
9	072-684-1	O-Ring (-910)	1



6" Maxxum Big Flo - Repair Parts Packer Manifold Assembly Parts - Side View

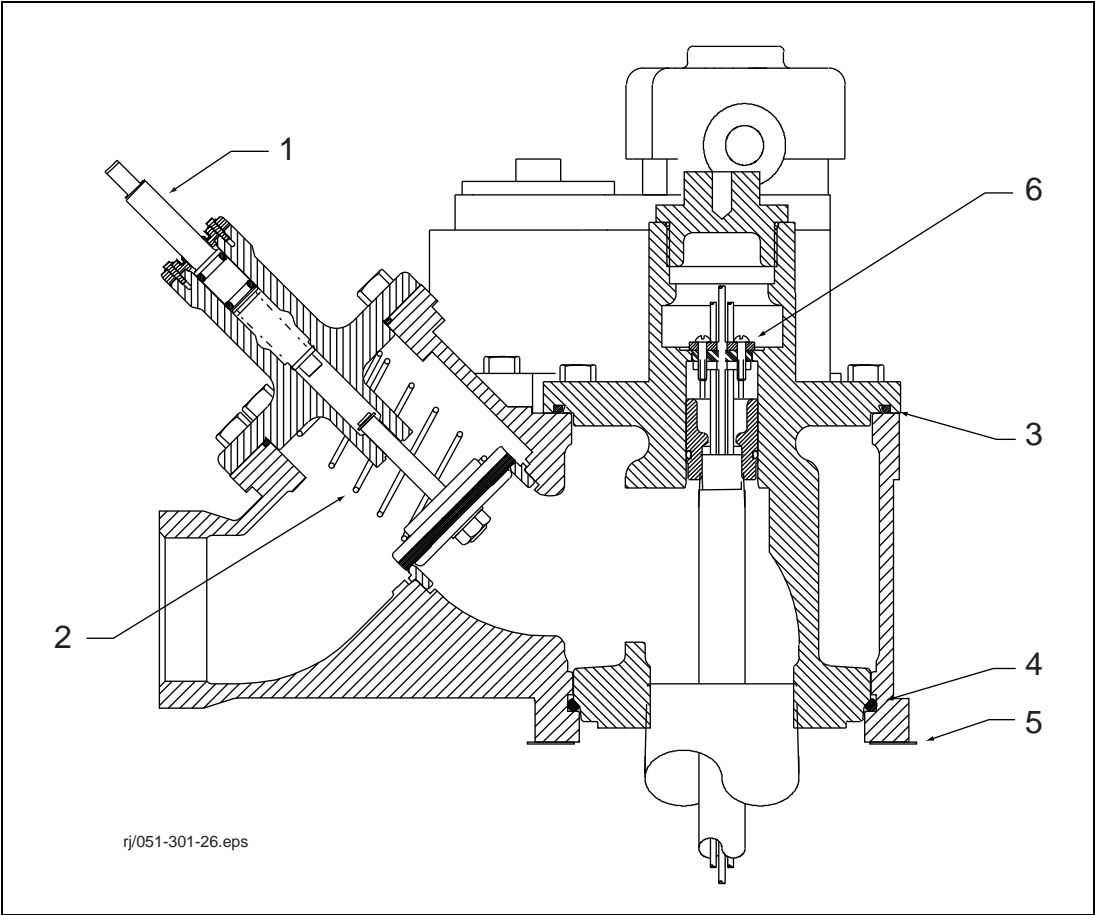


Figure 24. Check Valve And Electrical Bushing Assembly

Table H.

Item	Part No.	Description	Qty.
1	144-320-5	Kit - Lock Down Screw	1
2	144-317-5	Kit - Check Valve	1
3	072-695-1	O-Ring (-366)	1
4	072-696-1	O-Ring (-439)	1
5	031-334-1	Gasket Flange	1
6	144-321-5	Kit - 5 Wire Bushing	1

## 6" Maxxum Big Flo - Repair Parts Packer Manifold Assembly Parts - Top View

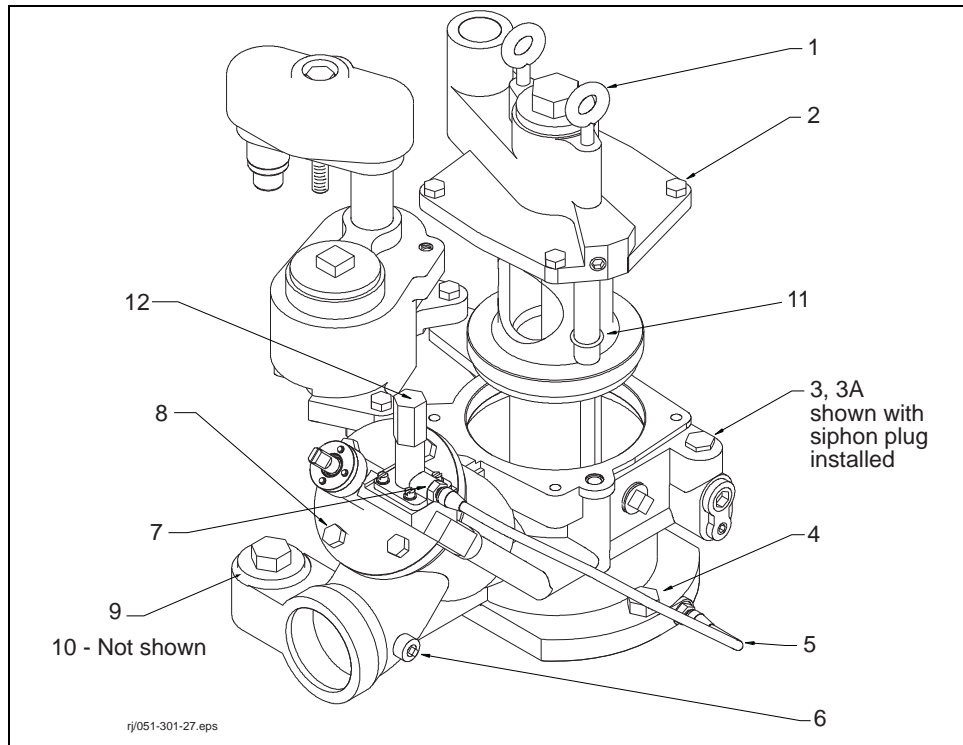


Figure 25. Maxxum Packer-Manifold Assembly

Table I.

Item	Part No.	Description	Qty.
1	036-470-1	Handle - Lifting	2
2	026-750-1	Bolt - Hex 1/2-13 x 1-1/2	6
3	144-307-5	Kit - Siphon Components	1
3a	066-163-3	Plug - Siphon Plug	1
4	026-759-1	Bolt - Hex 3/4-10 x 1-3/4	3
5	086-010-1	Line - Steel Vent	1
6	027-240-1	Plug - Square 1/4 NPT	1
7	027-276-1	Fitting - Tube	2
8	026-757-1	Bolt - Hex 1/2-13 x 1	4
9	067-265-1	Plug - 2" NPT With O-Ring	1
10	072-686-1	O-Ring (-228)	1
11	072-642-1	O-Ring (-112)	1
12	144-322-5	Kit-Expansion Relief	1

## 6" Maxxum Big Flo - Repair Parts Yoke Assembly

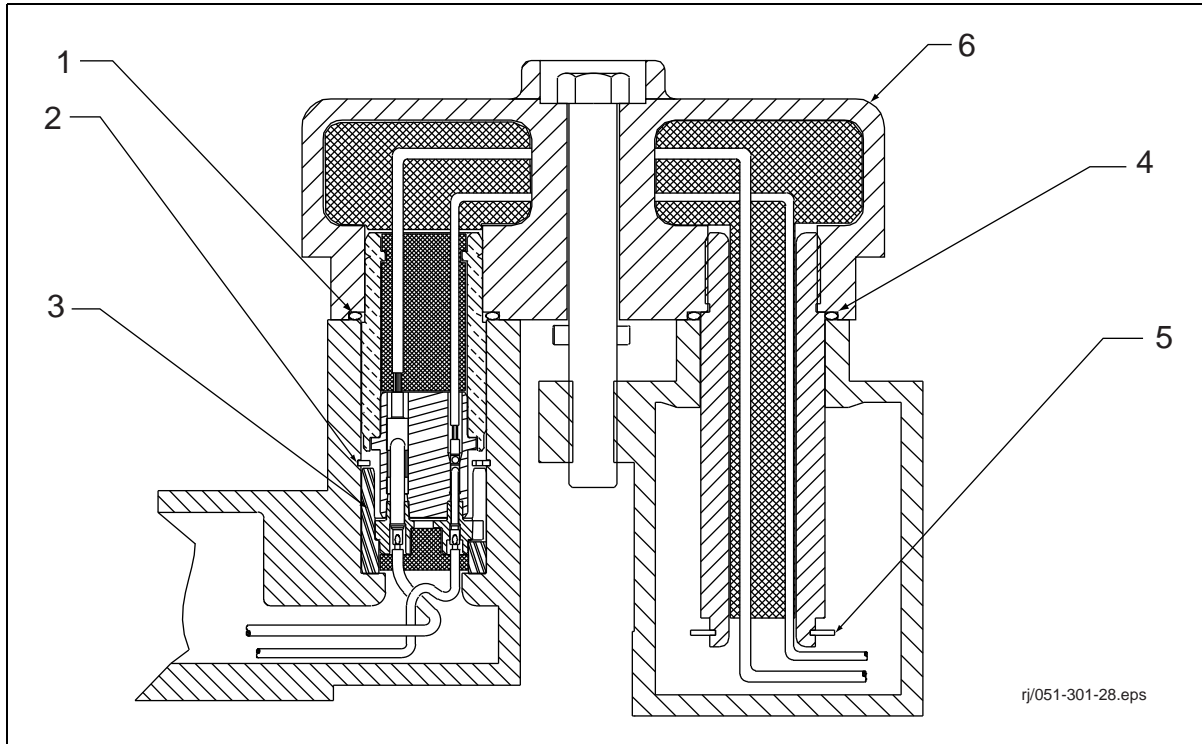


Figure 26. Maxxum Yoke and Contractors Box Assembly

Table J.

Item	Part No.	Description	Qty.
1	072-700-1	O-Ring (-223)	1
2	072-689-1	Internal Retaining Ring	1
3	114-319-5	Kit - 5 Wire Connector Assembly	1
4	072-710-1	O-Ring (-130)	1
5	072-697-1	External Retaining Ring	1
6	110-064-5	Conduit Box Assembly - 5 Wire	1

## UL Listed Motor Control Box For 2HP Pumps Model P200H1-CB

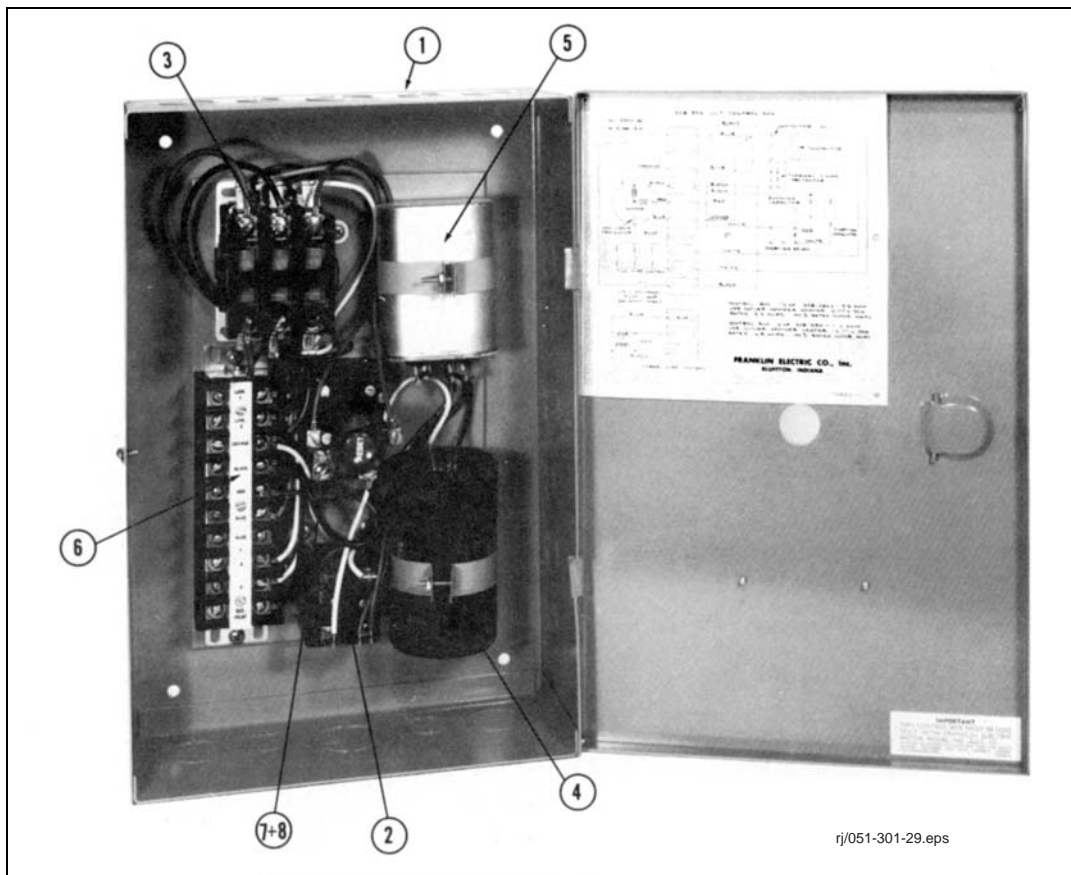


Figure 27. 2HP, 1-Phase Control Box

Table K.

Item	Part No.	Description	Qty.
1	108-403-1	P200H1-CB Complete General Purpose Motor Control Box (4" D x 10.125" W x 15.125" L)	1
2	071-047-1	Starting Relay (3ARR3-J3V2)	1
3	071-061-1	Line Contactor Relay	1
4	011-085-1	Starting Capacitor (200MFD-250 Volt)	1
5	012-253-1	Running Capacitor (15MFD-370 Volt)	1
6	008-180-1	Terminal Block	1
7	071-062-1	Overload Protector (Cutler Hammer 10-2149)	1
8	023-009-1	Overload Protector Heater Element (Cutler Hammer 10177H-33A) (P200H1-CB)	1

## Red Jacket Replacement Pump Motors

Table L.

Ordering Number	Model Number	HP	Length in. (mm)	Weight lbs. (kg)	Volts	Phase
<b>UMP</b>						
882-839-5	UMP-P200J1-2MB	2	32.1 (815)	116 (53)	208-230	1
882-840-5	UMP-P200J4-2MB	2	29.6 (752)	116 (53)	208-230	3
882-842-5	UMP-P300J4-2HB	3	34.3 (871)	120 (54)	208-230	3
882-211-5	UMP-P500J4-2K	5	42.5 (1080)	162 (74)	208-230	3
883-434-5	UMP-P300J17-3HB	3	37.4 (950)	125 (57)	380-415	3
886-511-5	UMP-P500J17-3K	5	47.0 (1200)	167 (76)	380-415	3
883-226-5	UMP-P500J6-2K	5	41.1 (1050)	162 (74)	575	3
<b>UMP WITH DISCHARGE HEAD</b>						
883-460-5	UMP-P300J17-3HB W/DH	3	40.1 (1020)		380-415	3
886-454-5	UMP-P500J17-3K W/DH	5	49.7 (1270)		380-415	3

## Magnetic Contactor For 2, 3, And 5 HP 3-Phase Pumps

**⚠ WARNING** Three phase pump/motor units must have proper overload and quick trip heaters installed in the control box. Heaters must match starter manufacturer.

Table M.

			<b>SIEMENS (FURNAS)</b>		<b>GENERAL ELECTRIC</b>	
HP	Voltage	Hz	Heaters (3 Req'd.)	Control Box (Coil V)	Heaters (3 Req'd.)	Control Box (Coil V)
2	208-230	60	036-072-1	279-231-5 (230V)	410649-004	410648-001 (120V) 410648-002 (240V) 410648-003 (575V)
3	208-230	60	036-076-1		410649-006	
5	208-230	60	036-080-1		410649-008	
5	575	60	036-100-1	279-230-5 (575V)	410649-009	
3	380-415	50	036-070-1	279-231-5 (230V)	410649-005	
5	380-415	50	036-074-1	279-231-5 (230V)	410649-007	

## **Appendix A: 6” Maxxum STP ATEX Safety Instructions** **For European Installations**

1. ATEX Directive 94/9/EC approved 6” Maxxum Submersible Turbine Pumps (STP) marked with the following information defining its limits for safe use.

- Location Classification:  
Duncansville, PA U.S.A.  
CE 1180 Ex II2G  
Ex ds IIA T4
- Certification Number: LCIE 05 ATEX 6120 X

2. Special Conditions for Safe Use:

- All submerged turbine pumps, manifolds and associated equipment shall be installed in accordance with the manufacturer’s Installation, Operation and Service Manuals supplied.
- All installations shall provide reliable electrical connection between the pump/motor, frame, pipe, manifold or junction box and the tank structure for both electrical protection and equipotential bonding.
- The minimum fuel level shall be set 30mm above the highest product intake level at the bottom of the pump motor.
- Where terminal boxes are used for termination of the cables from the motor and the supply source, they shall be ATEX certified for use in gas group IIA and category 2.
- Where a differential pressure switch or transducer is installed, each must be capable of ensuring that the nominated temperature classification is not exceeded.
- Fasteners are non metric. They shall be replaced only with identical fasteners.



Veeder-Root Company  
2709 Route 764  
Duncansville, PA 16835  
USA  
Phone: 814.695.4476  
Fax: 814.695.7605

## *EC Declaration of Conformity*

We, The Veeder-Root Company (The Manufacturer) of 2709 Route 764, Duncansville, PA 16835, U.S.A. declare that the equipment listed on this declaration are designed, manufactured and tested in accordance with the provisions set forth in the ATEX Directive 94/9/EC and subsequent normative documents as authorized by LCIE, France.

**Provisions of the ATEX Directive Fulfilled by the Equipment:** Ex d s IIA T4

**EC Type Certificate Number:**  
05ATEX6120X

**Notified Body for EC-Type Examination:**  
LCIE (ID 0081)  
33 Avenue DuGeneral Leclerc  
Fontenay-aux-Roses  
92262 France

**Notified Body for Production:**  
Baseefa (ID 1180)  
Rockhead Business Park  
Staden Lane  
Buxton, Derbyshire, UK

**Product:**  
6" Maxxum Submersible Gasoline Pumps

**Equipment Type / Models Covered:**  
Models MXP300J17-3HB, MXP500J17-3K

**Applied Standards for Certification:**  
EN 60079-0:2006 – Explosive atmospheres - Part 0: Equipment - General requirements  
EN 60079-1:2004 – Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures 'd'

**Current Harmonized Standards:**  
EN 60079-0:2009 – Explosive atmospheres - Part 0: Equipment - General requirements  
EN 60079-1:2007 – Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures 'd'

The Veeder Root Company also declares to have compared the technical requirements of the harmonized standards against the applied standards and have determined that there are no significant changes that affect product safety.

*Harold E Findley*

Harold Findley – Quality Manager

*Altoona, PA*

*2/15/2012*

Place / Date

# **The City of New York Fire Department Conditions of Approval**

## **Certificate of Approval #4970**

1. Motor wiring shall be in accordance with the New York City Electrical code for hazardous locations.
2. The installation and use of pumps shall comply with applicable New York City Code, rules and regulations including 3RCNY § 21-20 and/or 3RCNY § 21-21. Manufacturer's and Underwriters Laboratories Inc.'s safety requirements and limitations shall be complied with.

**Note:** To obtain a copy of the New York City Administrative Fire Code you may contact Citybooks Store at 212-669-8246. For a copy of the Fire Department Rules of the City of New York please contact Command Information Services, Legal Publishing Division at 518-436-8647.

3. Pumps shall be Underwriters Laboratories Inc. listed and pump manufacturer shall retain follow up service requirements of Underwriters Laboratories Inc.
4. Equipment shall have secured and shall maintain all required approvals and shall meet all applicable Federal and State requirements. The use of this product shall be limited to the indicated intent and has not been acceptable for other uses or applications.
5. Certificate of Approval number shall be plainly and permanently stamped or otherwise fixed upon each pump by the manufacturer. **NOTE:** Product must already be identified with Certificate of Approval number before it arrives at New York City job site.
6. The Certificate of Approval is issued upon condition that the material or equipment's technology does not violate any patent, trade name, trade secret or other intellectual right.
7. The Fire Department Certificate of Approval does not constitute an endorsement or recommendation of your product by the Fire Department, but is a certification that your product, as represented, meets the standards as of the date of issuance.
8. The Fire Department reserves the right to withdraw this approval at any time in the event there is a reasonable doubt that the product does not operate or perform as required by code, the conditions of this resolution or as represented in your application.
9. The Fire Department's conditions of approval shall be enumerated in the installation manuals and brochures that will be provided to New York City buyers, users and installers.
10. As the manufacturer of this equipment/material, you should be aware that any end user who fails to comply with the condition as outlined in the approval will be subject to enforcement action which may include fines and imprisonment.



## **ANZEx CONDITIONS OF CERTIFICATION:**

1. It is a condition of manufacture that each motor be subjected to the routine high voltage test of clause 6.2 of AS2380.1.
2. It is a condition of safe use that all submerged turbine pumps, manifolds and associated equipment be installed in accordance with the manufacturer's Installation, Operation and Service Manuals supplied
3. It is a condition of safe use that all installations must provide reliable electrical connection between the pump motor, frame, pipe, manifold or junction box and the tank structure for both electrical protection and equipotential bonding.
4. It is a condition of safe use that, where terminal boxes are used for termination of the cables from the motor and the supply source, they shall be Australian certified for use in Gas Group IIA and Zone I hazardous areas.
5. It is a condition of safe use that where a differential pressure switch or transducer is installed, each must be capable of ensuring that the nominated temperature classification is not exceeded.

