

# **Maxxum® Big-Flo® 6" Submersible Pump**

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**Installation, Operation and Service**  
**Red Jacket® Submersible Pump**

# Notice

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2. Call V/R Customer Service at 800-873-3313 with the specific part numbers and quantities that were received damaged or lost.
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## **RESPONSIBILITIES OF THE INSTALLER AND STATION OWNER**

This installation, operation and service instruction manual shall be left with the owner of the service station at which this equipment is installed. Retain these instructions for future use and provide them to persons servicing or removing this equipment.

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# 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</b> indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>	 <p><b>CAUTION</b> indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.</p>
 <p><b>GLOVES</b> Wear gloves to protect hands from irritation or injury.</p>	 <p><b>NOTICE</b> is used to address practices not related to physical injury.</p>
 <p><b>WEAR EYE PROTECTION</b> Wear eye protection when working with pressurized fuel lines or epoxy sealant to avoid possible eye injury.</p>	 <p><b>NO POWER TOOLS</b> Sparks from power tools (such as drills) can ignite fuels and their vapors.</p>
 <p><b>WEAR GLOVES</b> Wear gloves to protect hands from irritation or injury.</p>	 <p><b>NO OPEN FLAMES</b> Open flames from matches, lighters, welding torches, etc. can ignite fuels and their vapors.</p>
 <p><b>NO SMOKING</b> Sparks and embers from burning cigarettes or pipes can ignite fuels and their vapors.</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>	

## ⚠ 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.

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.

The Maxxum Submersible Turbine Pump's A-weighted emission sound pressure level at work stations (inside the sump pit on forecourt while refueling) does not exceed 70dB.

## Warnings and Instructions

### ⚠ 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 1-800-323-1719 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.

**⚠ WARNING** FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD RESULT IN PROPERTY DAMAGE, 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 at facilities dispensing motor fuels with a maximum working pressure not exceeding 50 psi (345 kPa).
- Application of the Maxxum must be consistent with NFPA Code 30A, OSHA regulations, and federal, state and local fire codes, and other applicable local and international 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 prevent sparks which could cause an explosion or fire.

## Operating Precautions For Safe Refueling

- Always turn off your engine before refueling.
- **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.
- Stay near your vehicle's fueling point when using a self-serve station.
- If you must re-enter your vehicle while refueling, discharge the static electricity by touching a metal part of the outside of your vehicle away from the filling point before touching the gas nozzle.
- **GASOLINE CAN BE HARMFUL OR FATAL IF SWALLOWED.** Long-term exposure may cause cancer. Keep eyes and skin away from liquid gasoline and gasoline vapors. Avoid prolonged breathing of gasoline vapors.

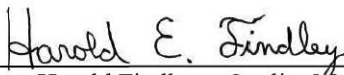
## Avoid Spills

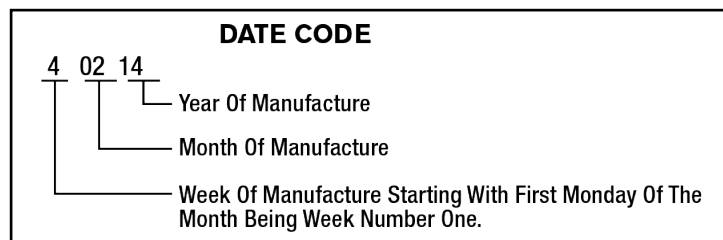
- To avoid spills, do not overfill or top off your gas tank.
- Let the fuel dispenser shut off automatically and leave the nozzle in the tank opening for six to eight seconds so the gasoline in the tank neck can settle down and any remaining gas in the nozzle can drip out of it into the tank.
- When filling a portable container always place it on the ground, and don't move away from it until its cap is back in place.

## European Declaration of Conformity of the Machinery

On behalf of The Veeder-Root Company (The Manufacturer), I declare that the equipment types listed on the declaration are designed, manufactured and tested in accordance with the provisions set forth in the Machinery Directive 2006/42/EC and subsequent amendments to the directive.

Please refer to included 577014-091 EC Declaration of Conformity of the Machinery for full text of declaration and specific equipment model types and serial numbers.

  
Harold Findley – Quality Manager  
Duncansville, PA USA / April 24, 2018  
Place / Date





## Fuel Compatibilities

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Pumps are designed to operate in a Class 1, Group D atmosphere.

All Models of the Maxxum are UL Listed for the Following Fuel Compatibility						
Diesel	Gasoline	Gasoline and up to				
		10% 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

- All submersible turbine pumps, manifolds and associated equipment shall be installed in accordance with the manufacturer's installation, operation and service manual supplied.
- All installations shall provide reliable electrical connection between the submersible turbine pumps, frame, piping, manifold or junction box and the tank structure for the electrical protection and equipotential bonding.
- Repairing and adjusting of the electric motor is not allowed. Only change it completely assembled with appropriate motor from the Manufacturer.
- Fasteners securing the discharge head shall be replaced only by identical fasteners.

### 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** 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 1.

**Table 1. Minimum Recommended Bypass Flow**

<b>60 Hz, 208-240, 575 Volt Two Stage Units</b>	<b>50 Hz 380-415 Volt Three Stage Units</b>
P300J4-2HB = 20 GPM	P300J17-3HB = 20GPM
P500J4-2K = 25 GPM	P500J17-3K = 25 GPM
P500J6-2K = 25 GPM	

3. Maxxum 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 an auxiliary thermal overload. Product temperature higher than 105°F (41°C) may result in tripping of the thermal overload under low flow rate conditions.
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 overload protection must be provided by an external control device. To maintain overload protection and 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

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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 2 and Figure 6 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

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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).

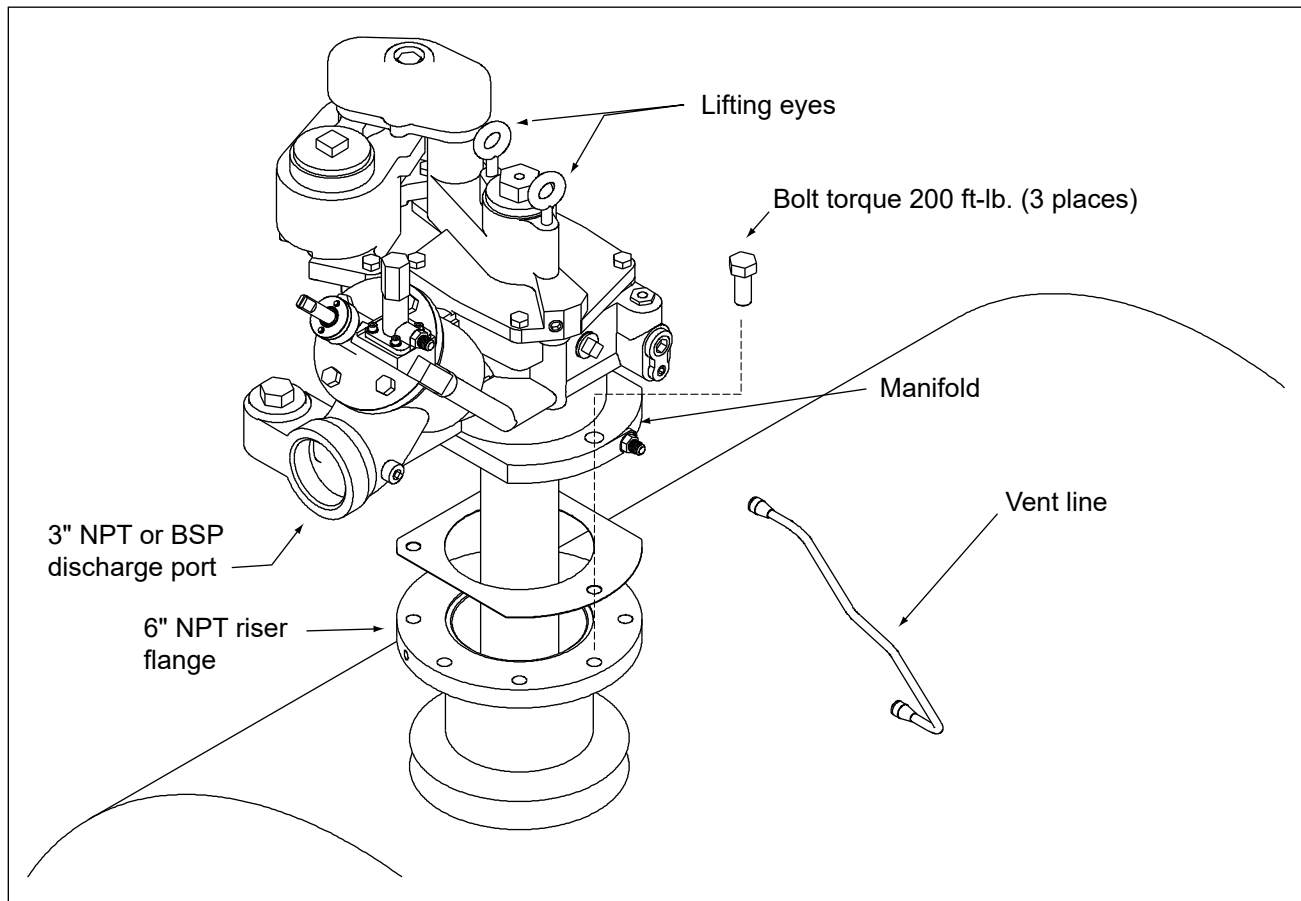


Figure 1. Maxxum Packer-Manifold Assembly

## 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, non-setting 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 10.

**NOTES:**

1. For AUS/NZ applications, use suitable AUS EX, ANZEx or IECEx certified cable gland or flameproof entry device to close the 1" NPT conduit connection where equipment is installed for connection of the external circuit conductors to the motor conductors.
2. For European installations, the End User must use an ATEX EX d IIA certified cable gland or stopping box.
3. For Brazilian installations, the End User must use cable-glands and entry devices certified under SBAC (INMETRO).
4. For Chinese installations, use suitable certified cable gland as entry device when equipment is installed in accordance with the requirement of GB3836.1-2010, GB3836.2-2010. The connector should be Ex d IIA, Ex d IIB/IIC grade with 1" NPT thread designed for minimum 5 threads.

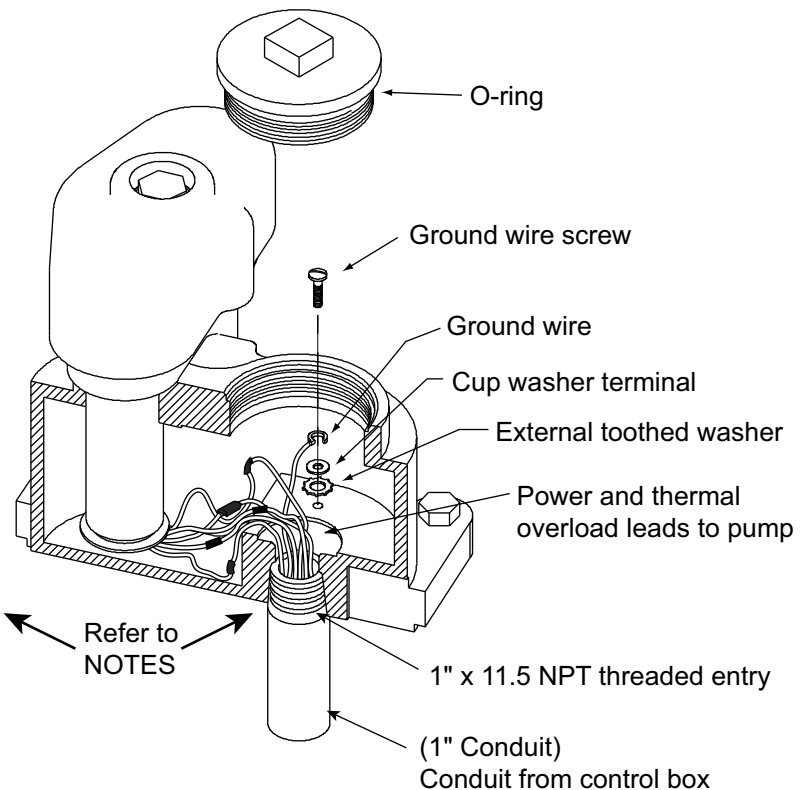


Figure 2. Conduit Box - Yoke Assembly

**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. Refer to NOTES in Figure 2.
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 threads. Torque to 35 ft-lb (50 N•m).

## 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 3)
  - 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 3 and Figure 4.)
  - 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 4), 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. 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.

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

### 3. Motor Rotation

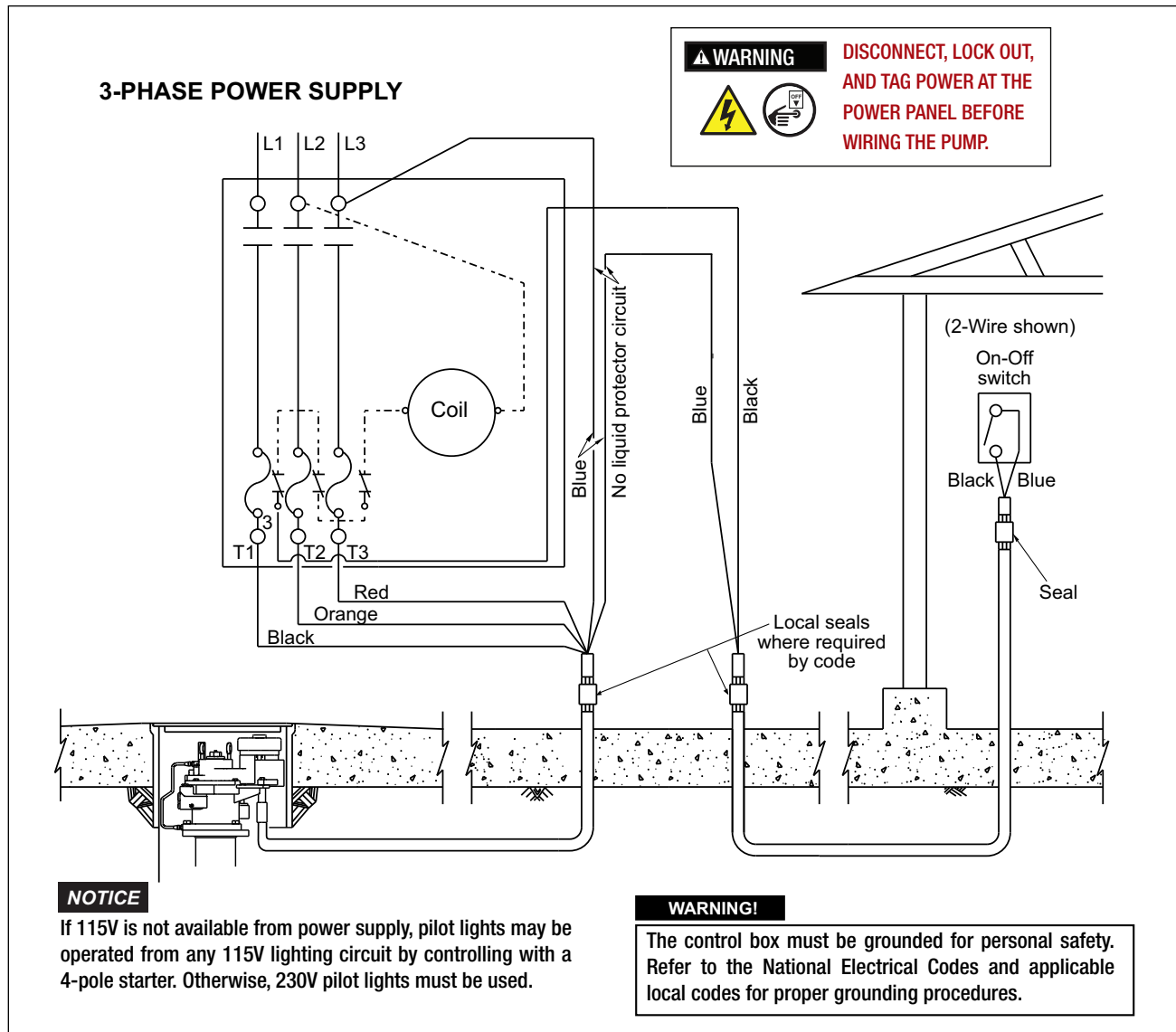
Where it is not convenient to predetermine the power supply phase rotation, proper rotation can be determined by pump performance. Pump head pressure and capacity will be considerably less than rated when rotating backwards.

Connect the pump motor leads to terminal T1, T2 and T3 of the magnetic starter observing color code shown in Figure 3 and Figure 4. 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.

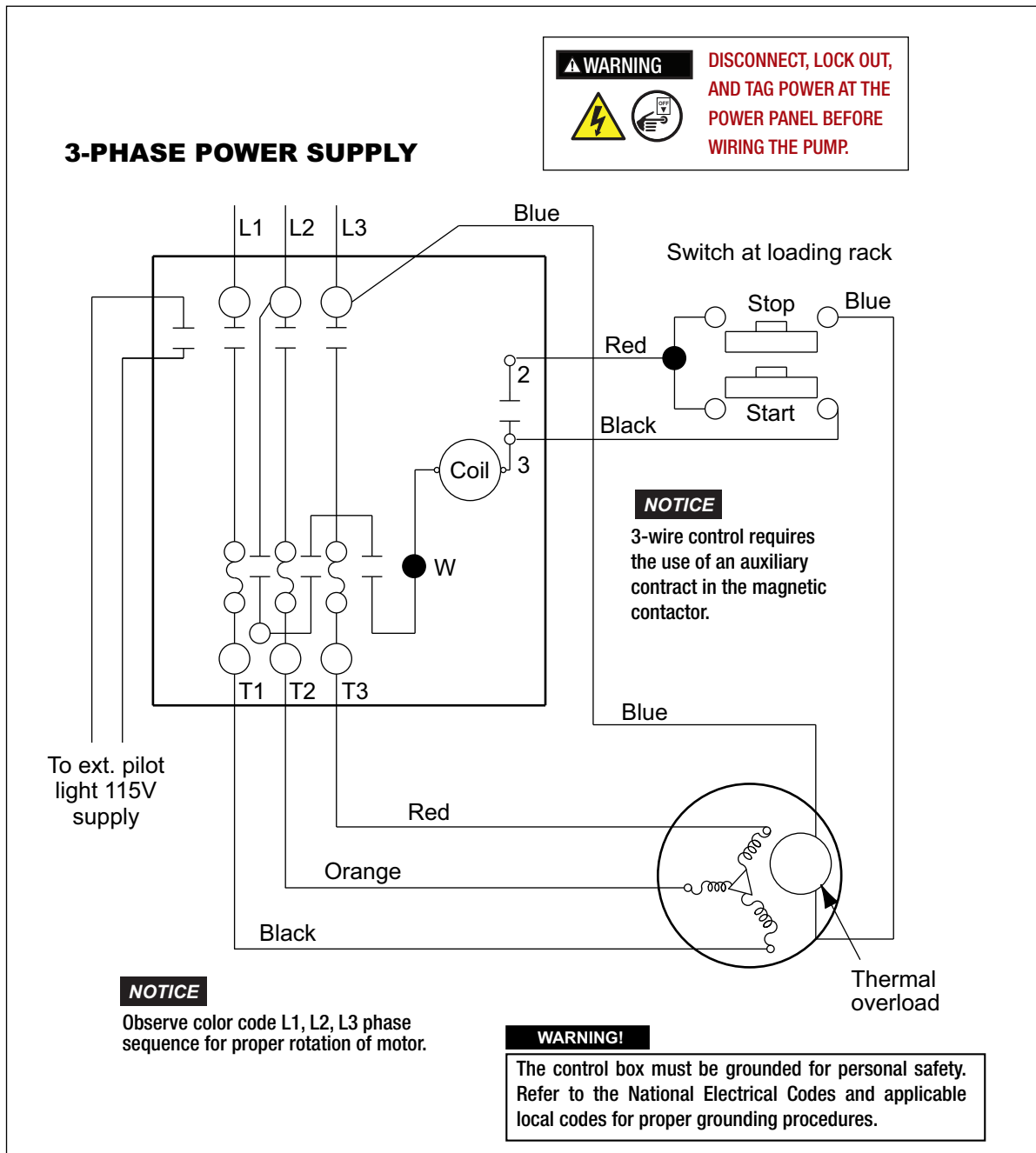
Next, reverse power leads at L1 and L2. Repeat either pressure or capacity tests, as described above. If results are higher than the first test, the rotation of the second test is correct. If the second test gives lower performance than the first, reconnect the power leads to L1 and L2 (as under test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

or 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. Representative Wiring Diagram, Three-Phase, Two-Wire Control**



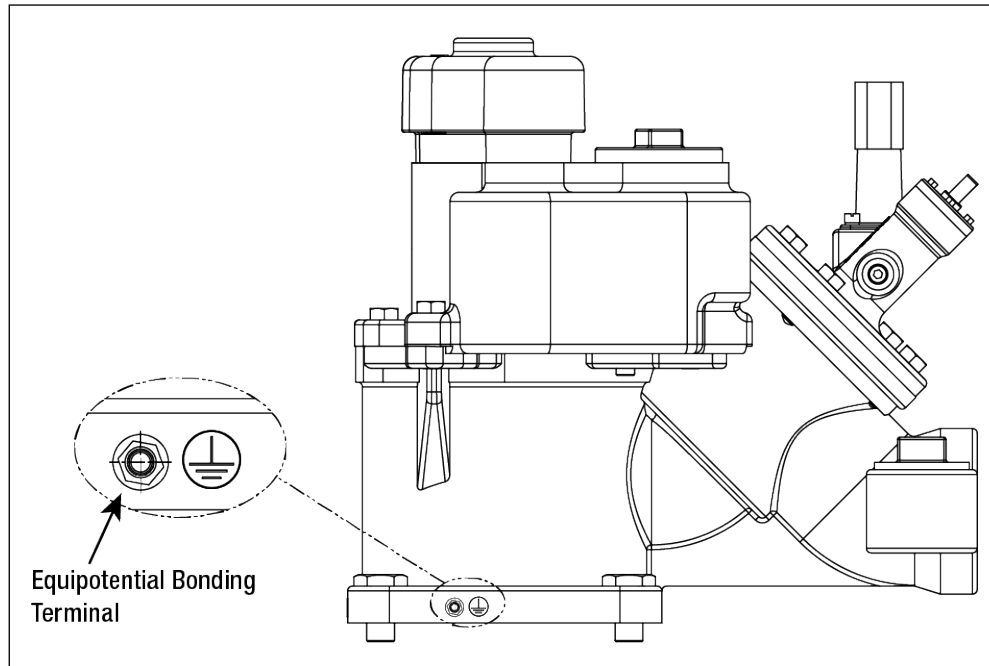
**Figure 4. Three-Wire, Three-Phase Motor Wiring Diagram**

## Connecting to the External Equipotential Bonding Terminal

A M6 threaded fastener set is provided on the side of the manifold identified by the symbol  for equipotential bonding. Refer to Figure 5 for the location underneath the conduit box assembly. If required by nationally



applicable installation regulations or by conditions per certificate (see Appendix A or Appendix B), connection to this terminal is to be made using a conductor having a cross-sectional area of at least 4mm<sup>2</sup> (10 AWG)



**Figure 5. Equipotential Bonding Terminal**

## **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 6 and Table 2.

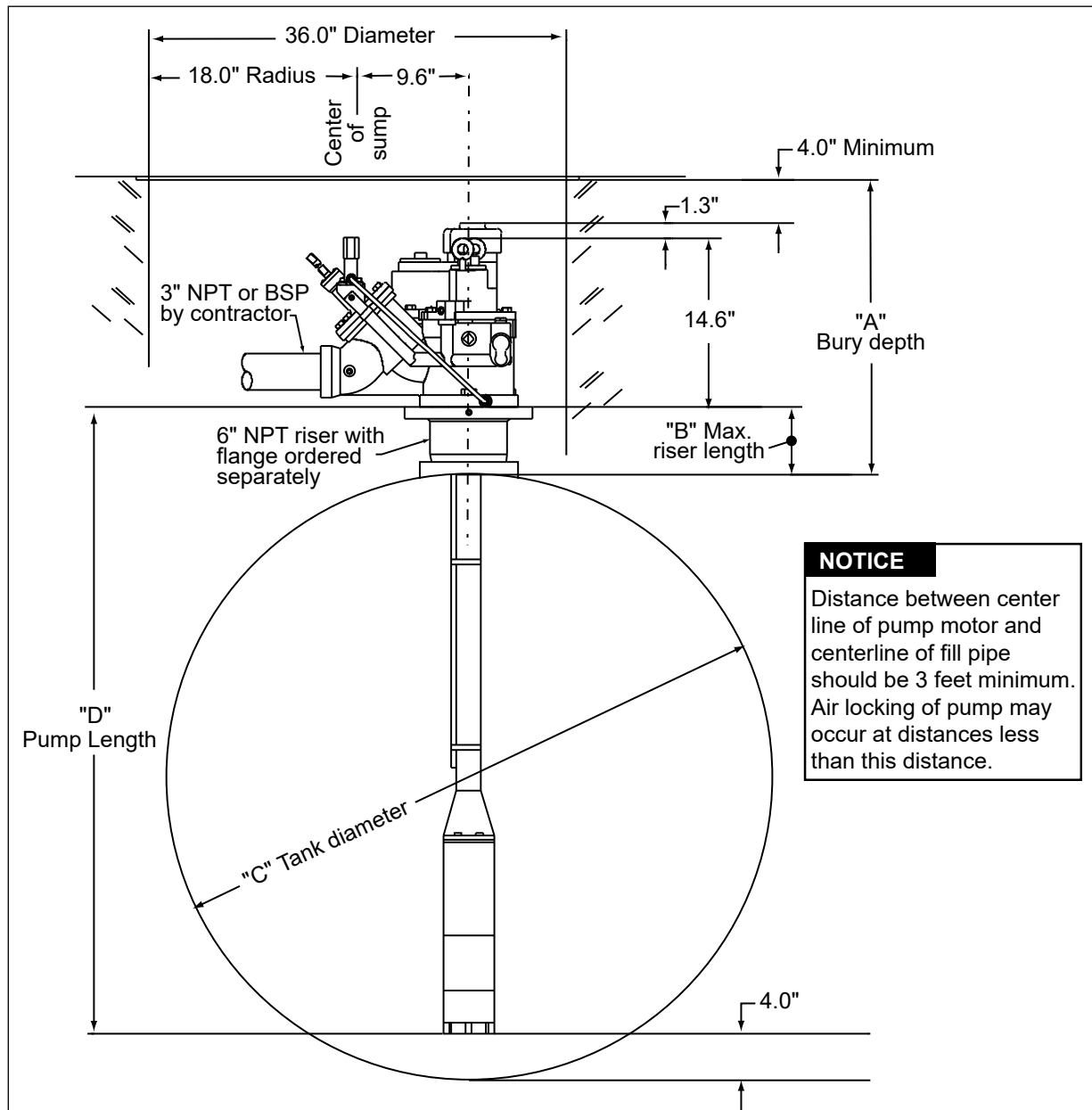


Figure 6. Installation Dimensions

Table 2. Pump Length Requirements

Bury Depth "A"	Riser Length "B"	Tank Diameters "C" / Pump Length Requirements "D"				
		C = 72"	C = 84"	C = 96"	C = 120"	C = 144"
30"	10" (883-442-1)	D = 78"	D = 90"	D = 102"	D = 126"	D = 150"
36"	16" (883-445-1)	D = 84"	D = 96"	D = 108"	D = 132"	D = 156"
42"	21" (883-449-1)	D = 89"	D = 101"	D = 113"	D = 137"	D = 161"

**Table 2. Pump Length Requirements**

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 3. Winding Resistances**

Model Number Pump Motor Assembly	HP	Volt	Phase	Winding Resistances (Ohms)			
				Orange to Red	Orange to Black	Red to Black	Blue to Blue
UMP300J4-2HB	3	208-230	3	1.8 - 2.2	1.8 - 2.2	1.8 - 2.2	0.0 - 1.0
UMP300J17-3HB	3	380-415	3	7.1 - 8.7	7.1 - 8.7	7.1 - 8.7	0.0 - 1.0
UMP500J4-2K	5	208-230	3	1.2 - 1.5	1.2 - 1.5	1.2 - 1.5	0.0 - 1.0
UMP500J17-3K	5	380-415	3	4.5 - 5.5	4.5 - 5.5	4.5 - 5.5	0.0 - 1.0
UMP500J6-2K	5	575	3	6.6 - 8.2	6.6 - 8.2	6.6 - 8.2	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.



**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.**

Table 4. Electrical Service Information

HP	Volts	Phase	Service Factor Current (Amps)	Locked Rotor Current (Amps)	Branch Circuit Protection		Wire Size for Max. Length of Run Shown (From Service Entrance to Pump in Feet)					NEMA Codes
					Fusetron (Amps)	Circuit. Breaker (Amps)	No. 14	No. 12	No. 10	No. 8	No. 6	
3	208-230*	3	11.0	56.0	15	20	255	406	635	997	1552	J
3	380-415	3	5.4	25.0	15	15	787	1250	1956	3070	---	G
5	208-230*	3	17.1	85.0	25	30	---	240	376	590	920	H
5	380-415	3	8.8	38.0	15	15	472	750	1173	1841	2867	F
5	575	3	7.0	36.0	15	15	929	1477	2311	3627	---	J

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

## Floating Suction Installation Information

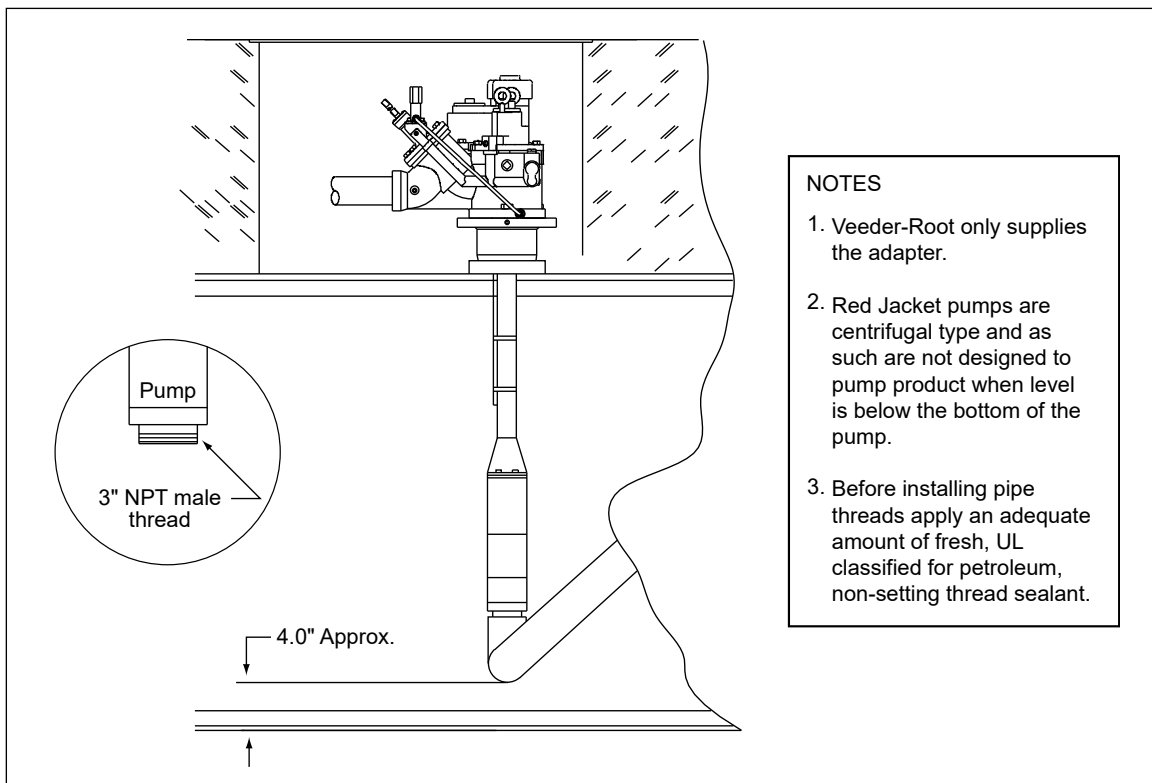


Figure 7. Floating Suction Installation

## 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 8). 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.

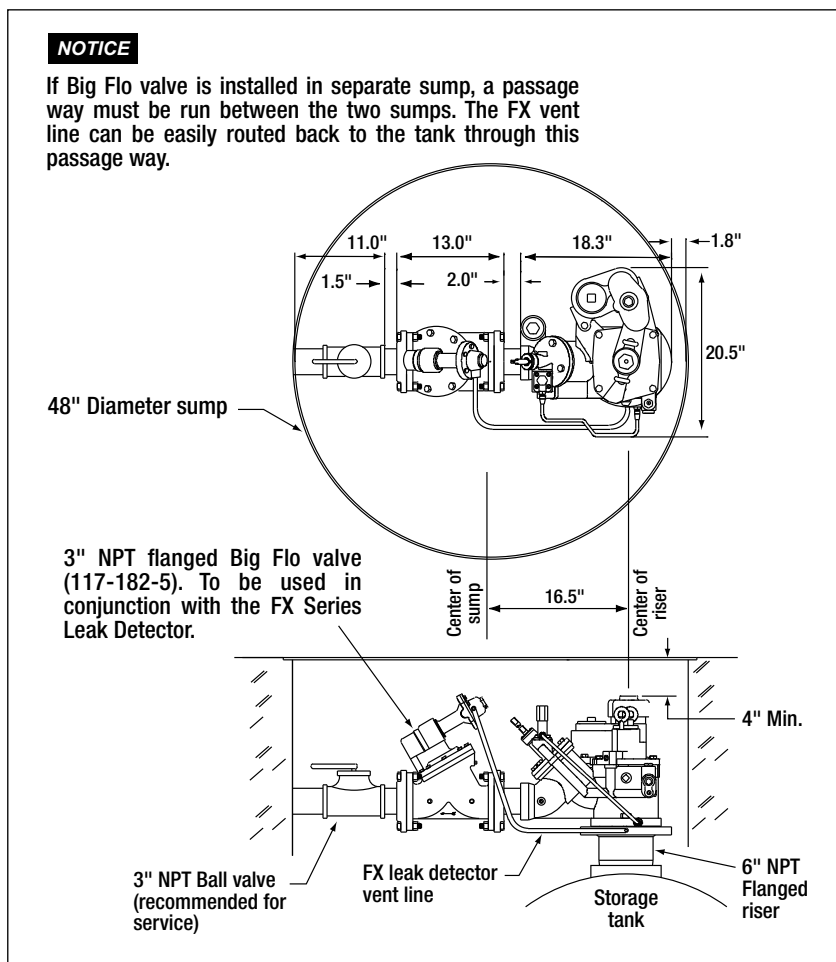


Figure 8. Installing A Big Flo Diaphragm Valve

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



**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.

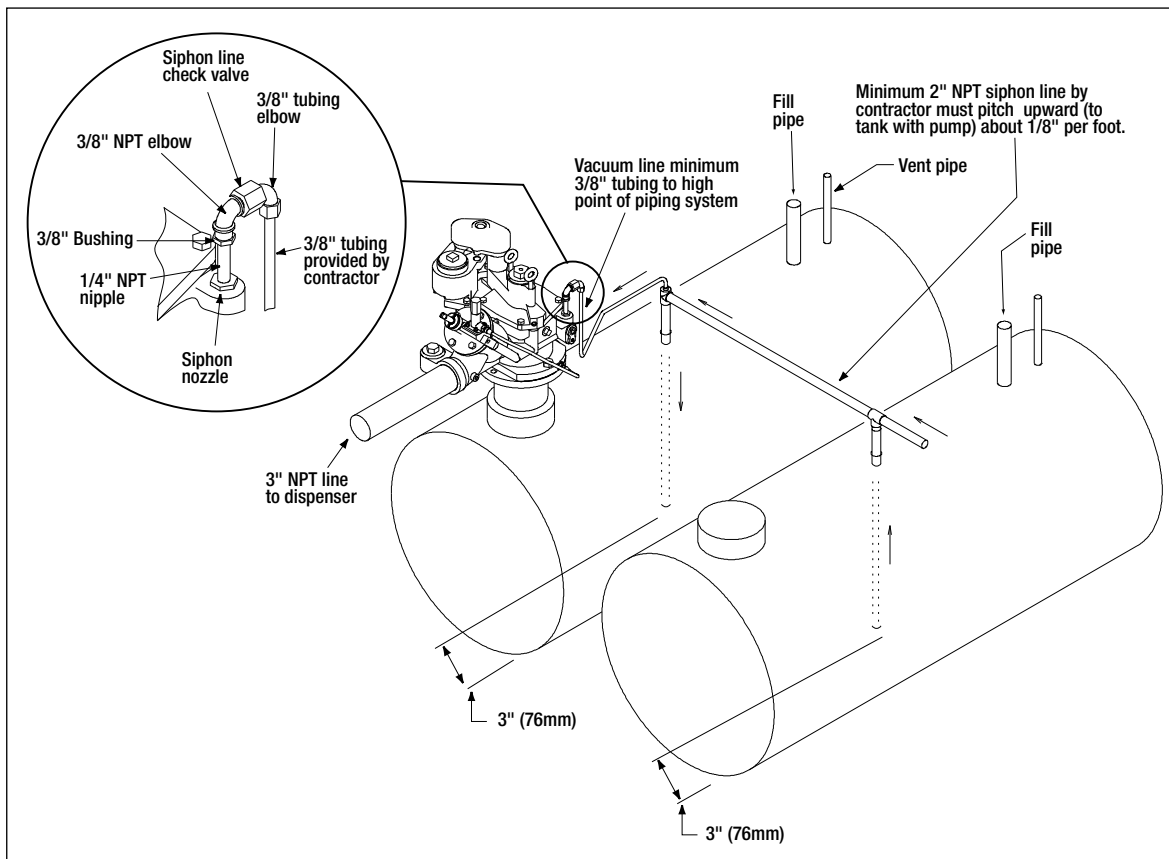
### NOTICE

**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.**



**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.



**Figure 9. Installing A Siphon And Vacuum Lines**

## 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.

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 9).

**⚠ WARNING** Adjust the Pressurstat (see “Adjusting the Pressurstat Line Relief Pressure” on page 24) 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.

**NOTICE** Figure 10 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.

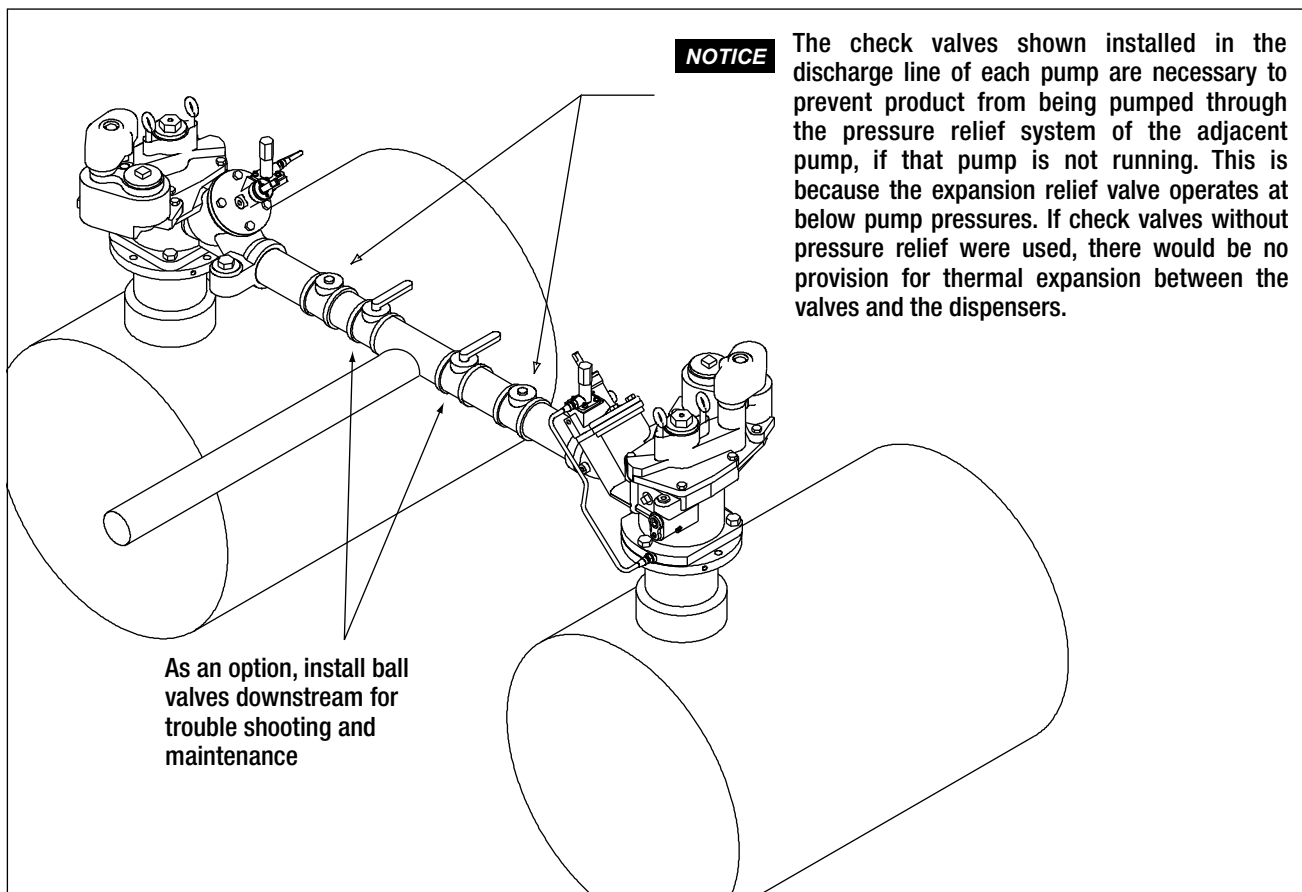
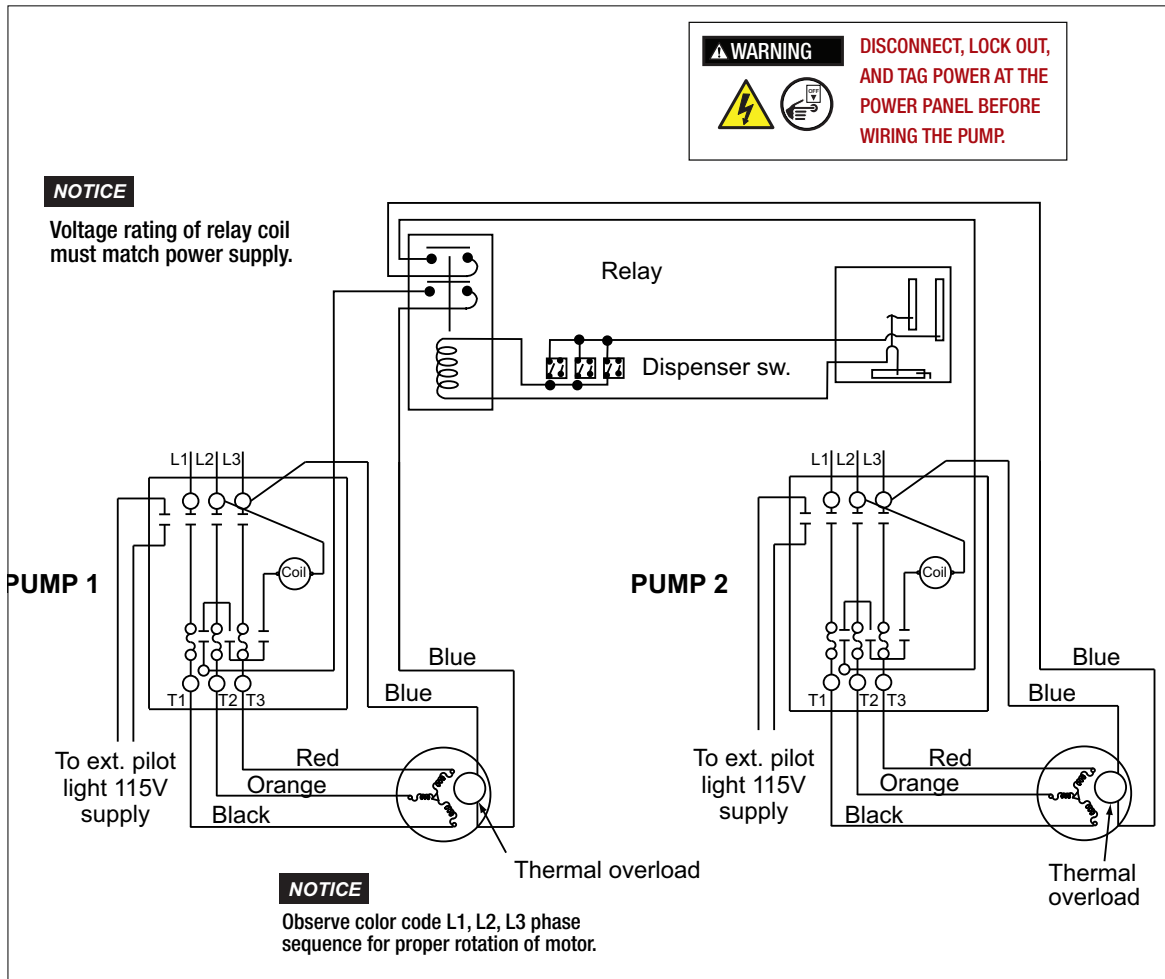


Figure 10. Tandem Pumps

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 11 and Figure 12 for suggested wiring diagrams.)



**Figure 11. Suggested Diagram for Wiring Dual Manifold System, Two-Wire Control, Three Phase**



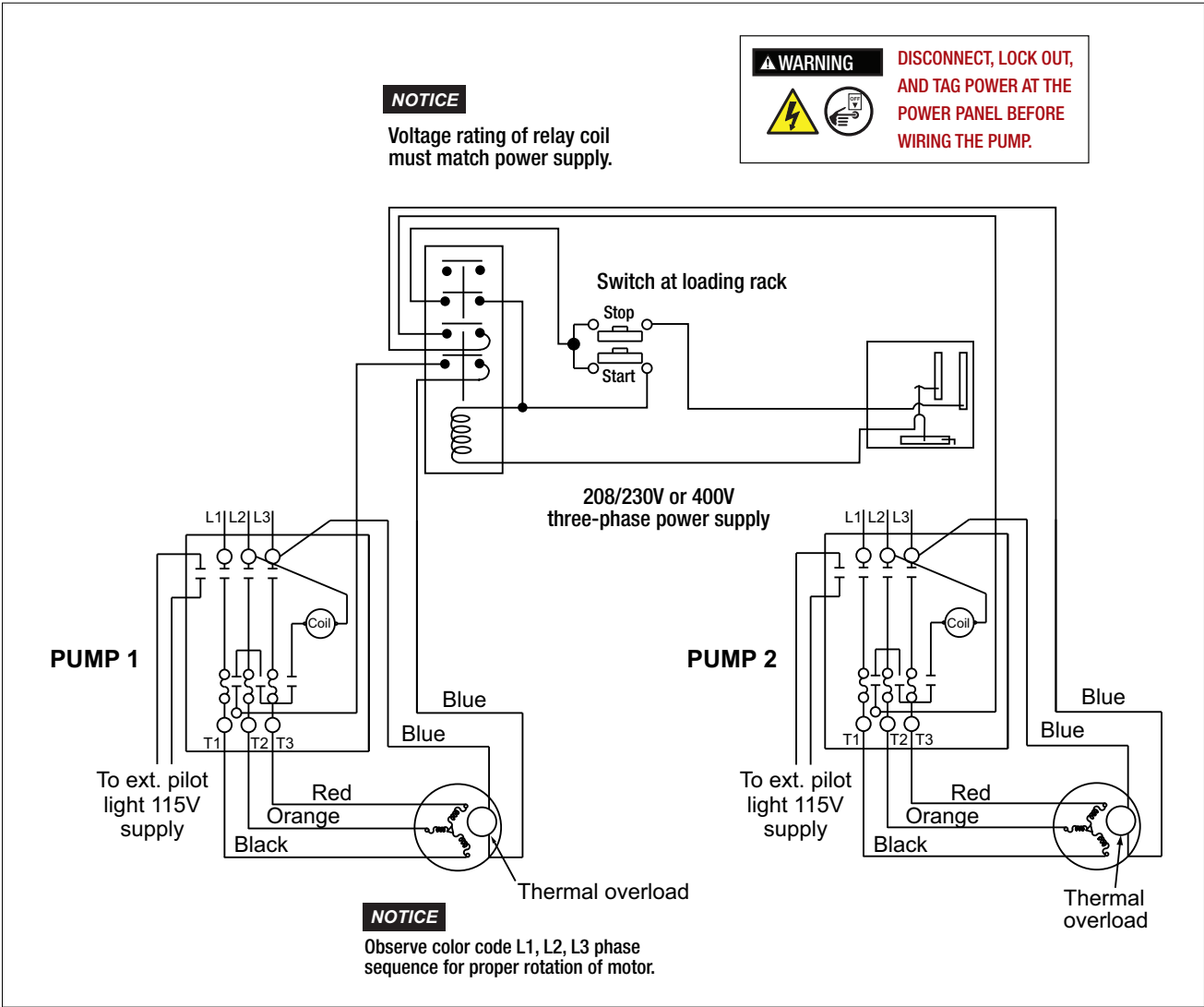


Figure 12. Suggested Diagram for Wiring Dual Manifold System, Three-Wire Control, Three Phase

## 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 13).
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

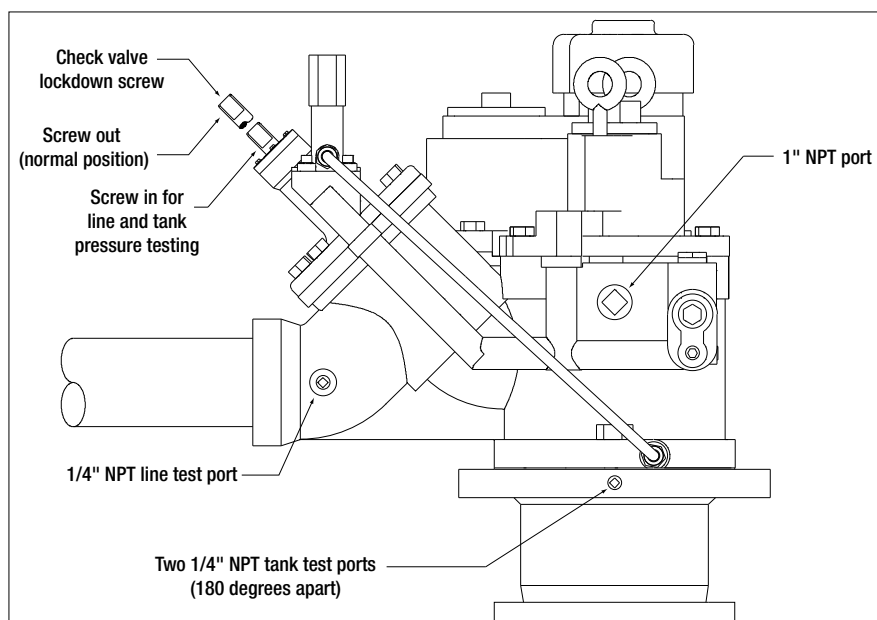
**Excessive pressure (above normal test pressure of 50-55 psi (345-380 kPa) may damage the pump check valve seat and other system components.**

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 14) 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 24 and replace the protective cover.

5. If applicable, unblock lines at each dispenser.



**Figure 13. Maxxum Packer-Manifold Assembly: Line and Tank Testing**

## Testing the Tank

**⚠ 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.**

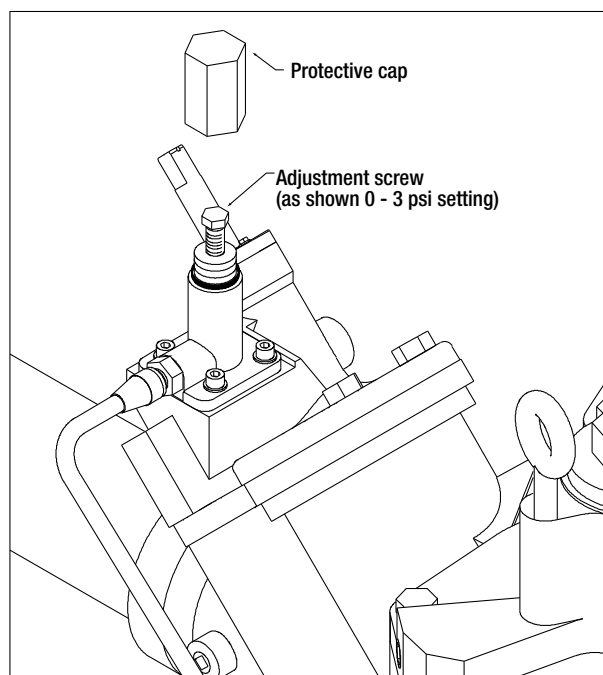
1. Lock down the pump check valve by turning the check valve lock down screw clockwise as far as it will turn (see Figure 13).
2. Remove the Tank Test Plug from the riser flange.
3. Apply tank test pressure at the tank test port.
4. After the completion of the test, release the pressure by:
  - a. Turning the check valve lock down screw counter clockwise as far as it will go.
  - b. Remove the protective cover from the Pressurstat (see Figure 14) 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 24 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 14. 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 20-25 psi (138-172 kPa).
2. Remove the protective cover (see Figure 14).
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 approximately 40 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.

**▲WARNING**

The Discharge Head attached to the Extracta Assembly has a mechanical interlocking dowel mating with the Red Jacket manufactured Submersible Pump Motor Assembly. Competitive units are no longer compatible with the Maxxum Extracta Assembly.

Only Pump Motor Assemblies listed in Table 11 are compatible with the Maxxum Pump. These are marked with an “FM” on the nameplate (Figure 15).

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 15).
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.

5. 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.

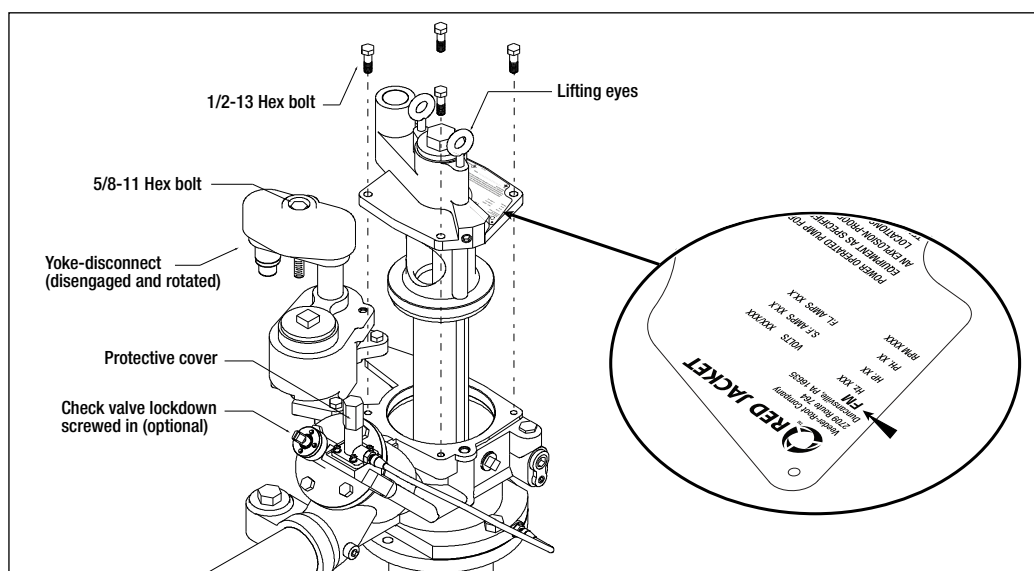


Figure 15. Maxxum - Extractable Section Showing 'FM' On Nameplate

## 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. Step 3A 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.

**NOTICE** 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.

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

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.
7. Remove the block from the top of the new pump-motor assembly.
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 and mechanical interlocking dowel pin. 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. The mechanical interlocking dowel pin will engage into a recessed cavity in the motor first. 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).

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

**⚠ 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.**

3. 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.**
4. Rotate the yoke-disconnect into position so that the brass boss aligns with the disconnect port in the packer assembly.
5. Tighten the 5/8 inch bolt to fully engage the yoke.
6. Torque the four 1/2 inch Extracta retaining bolts to 50 ft lbs.(68 N•m).
7. Torque the 5/8 inch bolt to 50 ft lbs.(68 N•m).
8. Rotate the adjustment screw on the Pressurstat to reset line relief pressure.
9. 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.
10. 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.

## Pigtail Assembly Replacement

**⚠ WARNING**

**Disconnect, lock out, and tag power at the panel before starting to service the pump.**



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

**⚠ WARNING**

**The Discharge Head attached to the Extracta Assembly has a mechanical interlocking dowel mating with the Red Jacket manufactured Submersible Pump Motor Assembly. Competitive units are no longer compatible with the Maxxum Extracta Assembly.**

**NOTICE**

**Versions of the externally threaded discharge head with AN-21 locking ring (circa 1997-1998) are not replaceable.**

1. Remove Extracta assembly following procedure listed in "Removing The Extracta Assembly" on page 25.
2. Remove UMP following procedure listed in "Procedure for Removal of Plug-in Type Pump - Motor Assembly" on page 26.

3. Remove Extracta Head cap (see Figure 16) to access the pigtail wiring compartment.

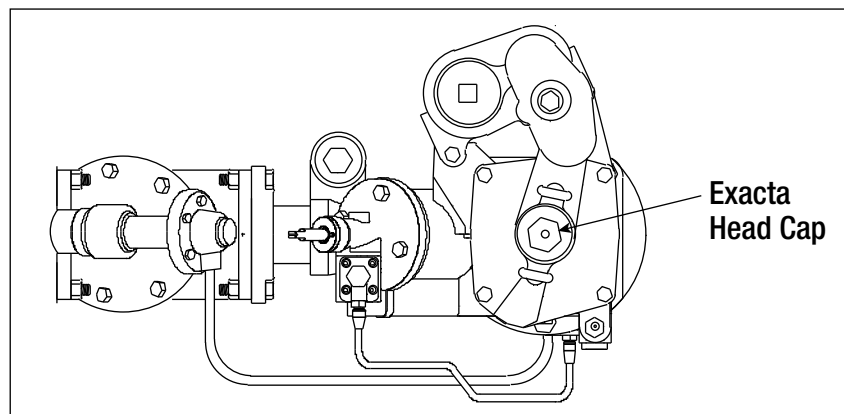


Figure 16. Extracta Head Cap

4. Disconnect pigtail wiring (see Figure 17).

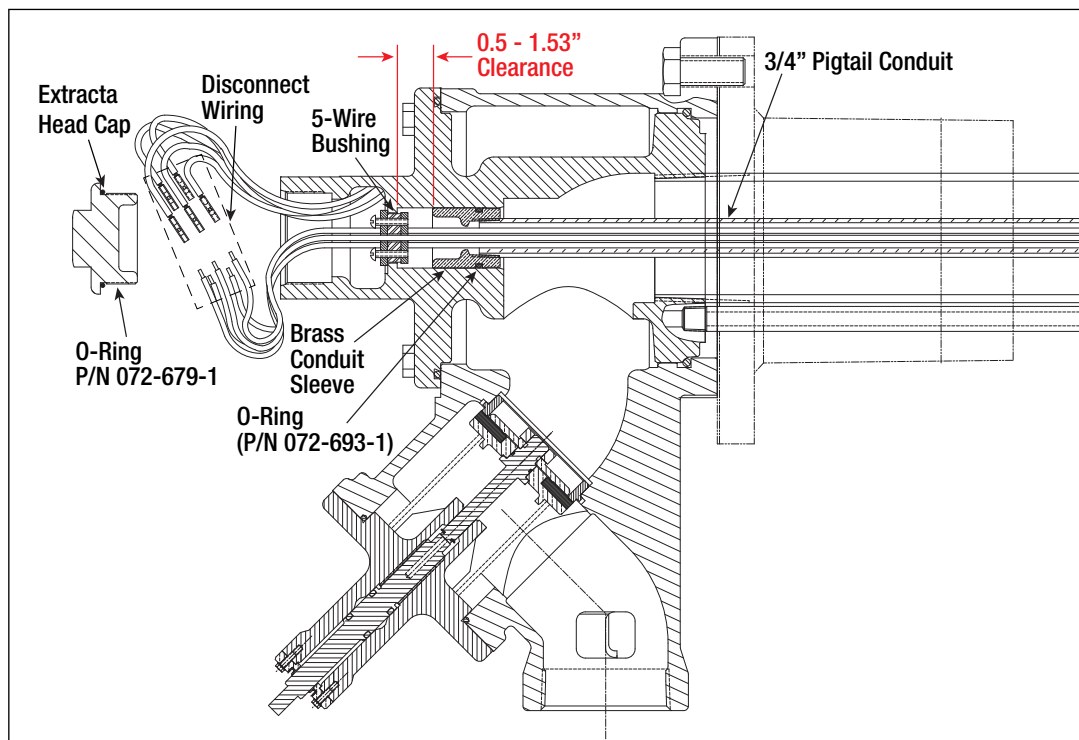
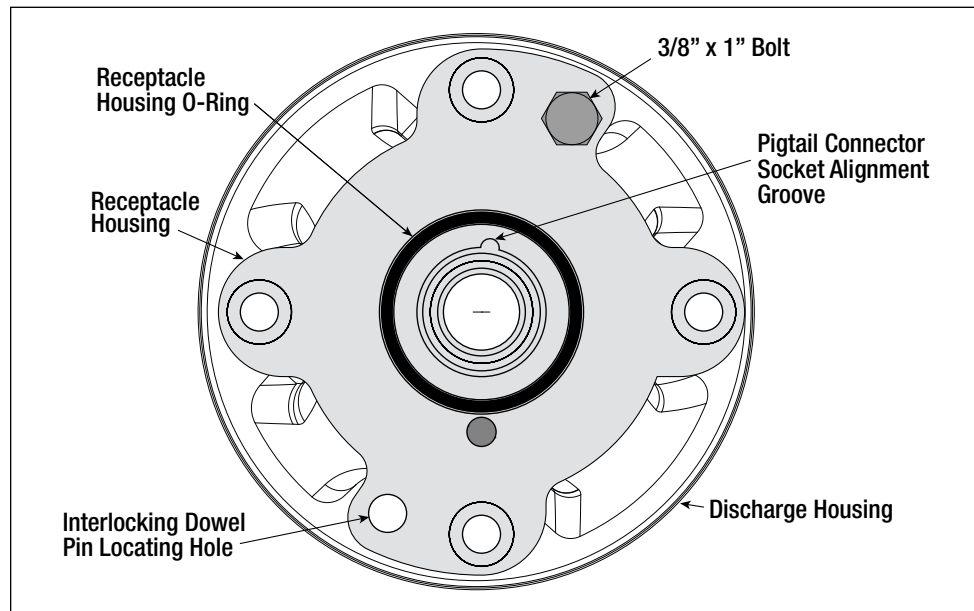


Figure 17. Extracta Head Components

5. Loosen the two screws in the 5-wire bushing seal so the wires can be pulled down through it. Discard the old bushing.
6. At the Receptacle Housing, pull out the pigtail connector/wiring and discard (see Figure 18).
7. Remove the o-ring from the sidewall of the pigtail connector socket in the Receptacle Housing and discard (see Figure 20). Install a new pigtail connector o-ring (P/N 072-712-1) into the groove in the side wall of the pigtail connector socket and lubricate with petroleum jelly.
8. Tape the ends of the pigtail wires ends together and push them through the pigtail connector socket in the Receptacle Housing until the pigtail connector is seated in the socket.



**NOTICE** Be careful to align the ridge along the outside of the pigtail connector with the groove in the receptacle housing as you push the connector into the housing (see Figure 18).



**Figure 18. Pigtail Connector Socket Alignment Groove**

9. Remove and discard the Receptacle Housing o-ring. Install the new Receptacle Housing o-ring (P/N 072-309-1) and lubricate it with petroleum jelly.
10. Remove and discard the motor shell o-ring (see Figure 20). Replace with new o-ring (P/N 072-714-1) and lubricate it with petroleum jelly.
11. Look at the bottom of the Receptacle Housing and note the 3/8" hex head bolt (Figure 18) and the mechanical interlocking dowel pin locating hole, 180 degrees opposite.
12. Orient the pump/motor assembly in position by starting the locating pin into the locating pin hole in the receptacle housing referred to above. The mechanical interlocking dowel pin will engage into a recessed cavity in the motor first. Gently push the motor into place until the shell starts to pass over the motor shell o-ring (see Figure 20). Position the four machine bolts into the bolt holes and start the 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).

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

13. Remove the lower o-ring in the packer manifold (see Figure 25, Item #4) and replace it with a new one (P/N 072-696-1). Remove the o-ring in the flange face of the Extracta head (see Figure 24, Item #3) and replace it with a new one (P/N 072-695-1). Sparingly lubricate the lower o-ring located in the inside the manifold and the o-ring in the 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.

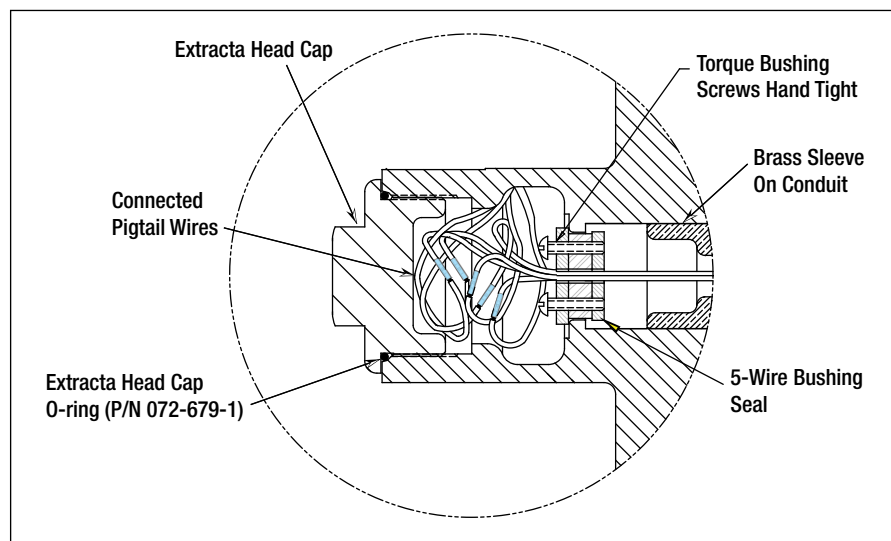
**⚠ WARNING** Utilize BOTH lifting eyebolts to suspend the pump vertically. Lower the Extracta into position through the manifold assembly. Care should be taken to keep the unit as near

**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.**

14. Rotate the yoke-disconnect into position so that the brass boss aligns with the disconnect port in the packer assembly.
15. Tighten the 5/8-inch bolt to fully engage the yoke.
16. Torque the four, 1/2-inch Extracta retaining bolts to 50 ft lbs.(68 N•m).
17. Torque the 5/8 inch bolt to 50 ft lbs.(68 N•m).
18. To prepare for the o-ring sealing test, get an Extracta head test cap (P/N 410950-001) with o-ring (P/N 072-679-1).
19. Lubricate the Extracta head test cap o-ring with petroleum jelly and install the cap in the Extracta wiring compartment and torque to 25-50 ft-lbs (34-68 N•m).
20. Connect an air pressure source to the Extracta head test cap and Inject 50-60 psi (345-413 kPa) of air into the electrical compartments and passages. For proper sealing, the pressure must remain constant for a minimum of 1 (one) minute.
21. After the test passes, remove and discard the Extracta head test cap.

**NOTICE** If test does not pass investigate leak location and correct.

22. Get the new 5-wire bushing seal from the kit. Remove tape from the pigtail wires in the Extracta Head compartment and feed wires through the 5-wire bushing. Put the 14 AWG blue wires in the two smaller holes of the bushing and the three 10 AWG colored wires in the larger holes of the bushing. Install the bushing into the base of the Extract Head wiring compartment as shown in Figure 17 and tighten the two bushing screws hand tight to secure it in place.
23. Cut the pigtail wires to leave approximately 115mm (4.528") hanging out of the wiring compartment.
24. Strip back insulation of the 5 wires 7 mm (0.275").
25. Crimp #14 butt splices onto the 2 (two) blue pigtail wires and #10 butt splices onto the remaining 3 wires.
26. Connect blue wires together, then connect the remaining like-colored wires together.
27. Coil the connected pigtail wires into the Extracta Head compartment.
28. Replace the o-ring in the Extracta Head cap you set aside earlier with a new o-ring (P/N 072-679) and lubricate it with petroleum jelly. Install the Extracta Head cap in the Extracta wiring compartment (see Figure 19) and torque to 25-50 ft-lbs (34-68 N•m).



**Figure 19. Extracta Head Components**

## Discharge Head & Receptacle Housing Replacement

### ⚠ WARNING



Disconnect, lock out, and tag power at the panel before starting to service the pump.



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

### ⚠ WARNING

The Discharge Head attached to the Extracta Assembly has a mechanical interlocking dowel mating with the Red Jacket manufactured Submersible Pump Motor Assembly. Competitive units are no longer compatible with the Maxxum Extracta Assembly.

### NOTICE

Versions of the externally threaded discharge head with AN-21 locking ring (circa 1997-1998) are not replaceable.

1. Remove Extracta assembly following procedure listed in "Removing The Extracta Assembly" on page 25.
2. Remove UMP following procedure listed in "Procedure for Removal of Plug-in Type Pump - Motor Assembly" on page 26.
3. Remove and set aside the Extracta head cap (see Figure 16).
4. Disconnect the wiring (see Figure 17).
5. Loosen the 2 screws in the conduit 5-wire bushing seal so the wires can be pulled down through it. Remove the busing seal and set aside.
6. At the Receptacle Housing, pull out the pigtail connector/wiring and set it aside (see Figure 20).
7. Remove the 3/8-16 x 1" bolt (see Figure 20) that secures the Receptacle Housing to the Discharge Head and pull the Receptacle Housing/conduit from the 3" pipe. Be careful not to damage the brass conduit sleeve at the Extracta end of the conduit as you remove this assembly. Set this assembly aside.

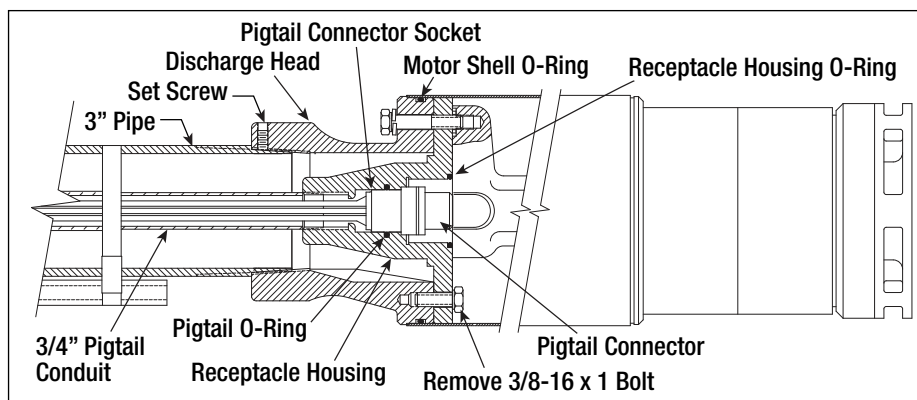


Figure 20. Discharge Head Components

8. Clamp the 3" pipe into a vise.
9. Loosen the Discharge Head set screw (see Figure 20) and unscrew the Discharge Head from the 3" pipe.
10. Clean the NPT threads of the 3" pipe.
11. Add Loctite and thread sealant per the Notice below and install the new Discharge Head from the kit onto the 3" column pipe.

### NOTICE

All threaded pipe joints on the 3" column pipe must engage 5 full threads minimum. Loctite 7090 primer must be applied to both the male and female 3" NPT threads followed by the Loctite PST 567. A generous bead of the Loctite PST 567 sealant should be spread on 100% of the thread circumference of the male pipe threads and the sealant must completely fill the

**valley of the pipe threads. Torque joints promptly after application, as the sealant will begin to cure as soon as the mating parts are threaded together.**

12. Tighten the new Discharge Head per the Notice below.

**NOTICE** Torque the Discharge Head 1-1/2 to 2-1/2 turns past hand tight (368 ft-lbs. [~500 N•m]).

13. Tighten the set screw in the Discharge Head to 31-35 in-lb [3.5-4 N•m].
14. If necessary to replace the Receptacle Housing, follow Steps 15 to 17, otherwise skip to Step 18 below.
15. Clamp the conduit near the Receptacle Housing into a vise and remove the Receptacle Housing.
16. Clean the NPT threads of both the 3/4" conduit and the new Receptacle Housing from the kit.
17. Add Loctite and thread sealant per the Notice below and install the new Receptacle Housing onto the 3/4" conduit.

**NOTICE** Loctite 7090 primer must be applied to both the male and female 3/4" NPT threads followed by the Loctite PST 567. A generous bead of the Loctite PST 567 sealant should be spread on 100% of the thread circumference of the male pipe threads and the sealant must completely fill the valley of the pipe threads. Torque joints promptly after application, as the sealant will begin to cure as soon as the mating parts are threaded together (torque to 45-65 ft-lbs. [61-88 N•m]).

18. Install a new o-ring (P/N 072-693-1) from the kit onto the brass conduit sleeve (see Figure 17) and lubricate with petroleum jelly.
19. Insert the Receptacle Housing/conduit subassembly into the 3" pipe.
20. Verify the Receptacle Housing is fully seated against the Discharge Head and replace the 3/8-16 x 1" bolt and tighten to 15-20 ft-lbs (20-27 N•m).

**NOTICE** Check location of brass conduit sleeve. Top of sleeve should be 0.50 - 1.53" (13 - 38 mm) below shoulder in Extracta head (see Figure 17).

21. Install the pigtail connector o-ring into the groove in the side wall of the pigtail connector socket (see Figure 20) and lubricate with petroleum jelly.
22. Tape the ends of the pigtail wires ends together and push them through the pigtail connector socket in the Receptacle Housing until the pigtail connector is seated in the socket.

**NOTICE** Be careful to align the ridge along the outside of the pigtail connector with the groove in the pigtail socket as you push the connector into it (see Figure 18).

23. Coil the unconnected pigtail wires in the Extracta head compartment until completing the Discharge Head/conduit seal test below.
24. Install the Receptacle Housing o-ring from the kit (item 9, Figure 27) onto the receptacle housing and lubricate with petroleum jelly.
25. Remove and discard the motor shell o-ring (see Figure 20). Replace with new o-ring from the kit (item 11, Figure 27) and lubricate with petroleum jelly.
26. Look at the bottom of the Receptacle Housing and note the 3/8" hex head bolt and the mechanical interlocking dowel pin locating hole, 180 degrees opposite. (see Figure 18).
27. Orient the pump/motor assembly in position by starting the locating pin into the locating pin hole in the Receptacle Housing referred to above. The mechanical interlocking dowel pin will engage into a recessed cavity in the motor first. Gently push the motor into place until the shell starts to pass over the motor shell o-ring (see Figure 20). Position the four machine bolts into the bolt holes and start the 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).

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

28. Replace the lower o-ring (see Figure 24, Item #4) in the packer manifold and the one in the lower face of the Extracta head (see Figure 24, Item #3).
29. 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.**

30. Rotate the yoke-disconnect into position so that the brass boss aligns with the disconnect port in the packer assembly.
31. Tighten the 5/8-inch bolt to fully engage the yoke.
32. Torque the four, 1/2-inch Extracta retaining bolts to 50 ft lbs.(68 N•m).
33. Torque the 5/8 inch bolt to 50 ft lbs.(68 N•m).
34. To prepare for the o-ring sealing test, get the Extracta head test cap (P/N 410950-001) with o-ring (P/N 072-679-1) from the kit.
35. Lubricate the Extracta Head test cap o-ring with petroleum jelly and install the cap in the Extracta wiring compartment and torque to 25-50 ft-lbs (34-68 N•m).
36. Connect an air pressure source to the Extracta head test cap and Inject 50-60 psi (345-413 kPa) of air into the electrical compartments and passages. For proper sealing, the pressure must remain constant for a minimum of 1 (one) minute.
37. After the test passes, remove and discard Extracta head test cap.

**NOTICE If test does not pass investigate leak location and correct.**

38. Get the 5-wire bushing seal you set aside earlier. Remove the tape from the pigtail wires in the Extracta Head compartment and feed wires through the 5-wire bushing. Put the 14 AWG blue wires in the two smaller holes of the bushing and the three 10 AWG colored wires in the larger holes of the bushing. Install the bushing into the base of the Extract Head wiring compartment as shown in Figure 17 and tighten the two bushing screws hand tight to secure it in place.
39. Cut the pigtail wires to leave approximately 115mm (4.528") hanging out of the wiring compartment.
40. Strip back insulation of the 5 wires 7 mm (0.275").
41. Crimp #14 butt splices onto the 2 (two) blue pigtail wires and #10 butt splices onto the remaining 3 wires.
42. Connect blue wires together, then connect the remaining like-colored wires together.
43. Coil the connected pigtail wires into the Extracta Head compartment.
44. Replace the o-ring in the Extracta Head cap you set aside earlier with a new o-ring (P/N 072-679) and lubricate it with petroleum jelly. Install the Extracta Head cap in the Extracta wiring compartment (see Figure 19) and torque to 25-50 ft-lbs (34-68 N•m).

## Check Valve Assembly Replacement

**WARNING**

Disconnect, lock out, and tag power at the panel before starting to service the pump.



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

**NOTICE**

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

Care should be taken to insure 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.

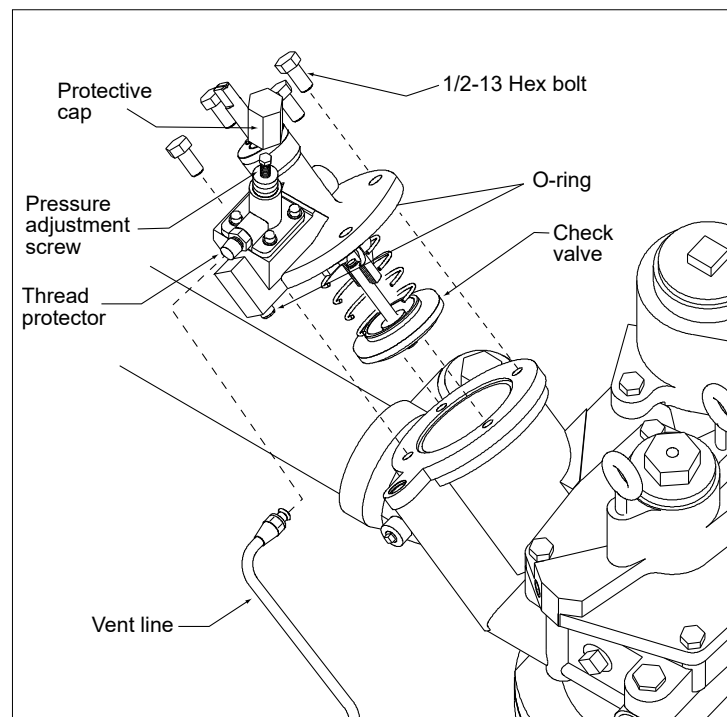


Figure 21. Maxxum Check Valve Assembly

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 cap.
  6. If applicable, open ball valve down line from the pump.

## Check Valve Lock-down Screw & Seals Repair



**Disconnect, lock out, and tag power at the panel before starting to service the pump.**

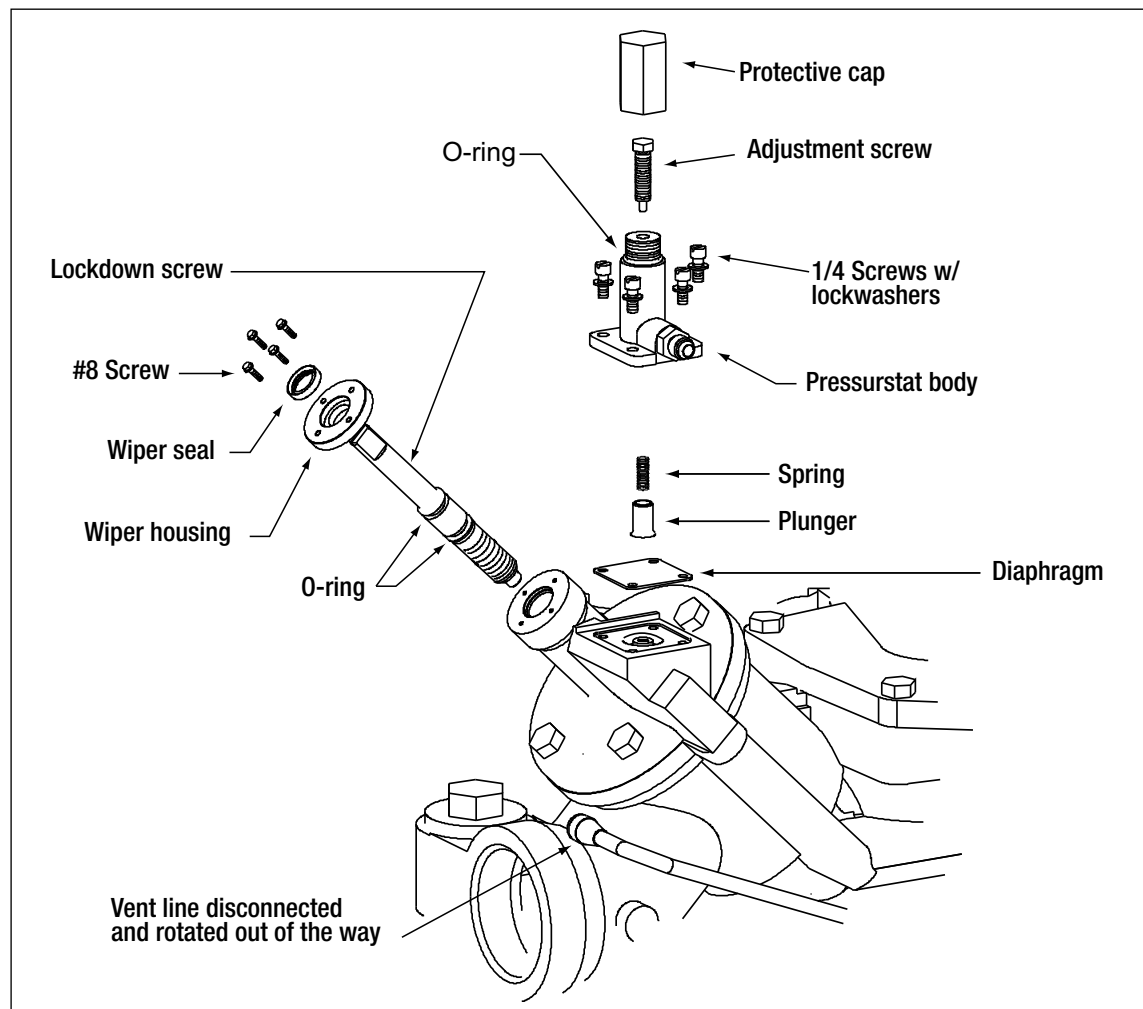


**When servicing equipment, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.**

### NOTICE

**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

### Check Valve and Pressurstat Assembly Parts

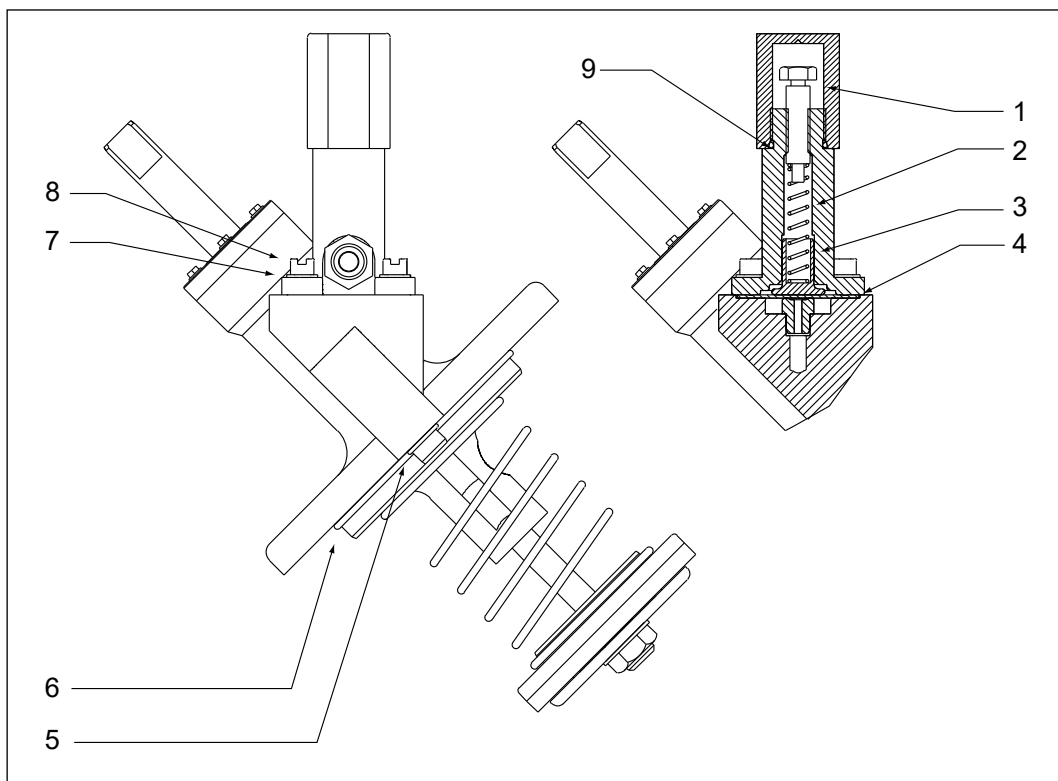


Figure 23. Check Valve and Pressurstat Assembly

Table 5. Check Valve and Pressurstat Assembly Repair Parts

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

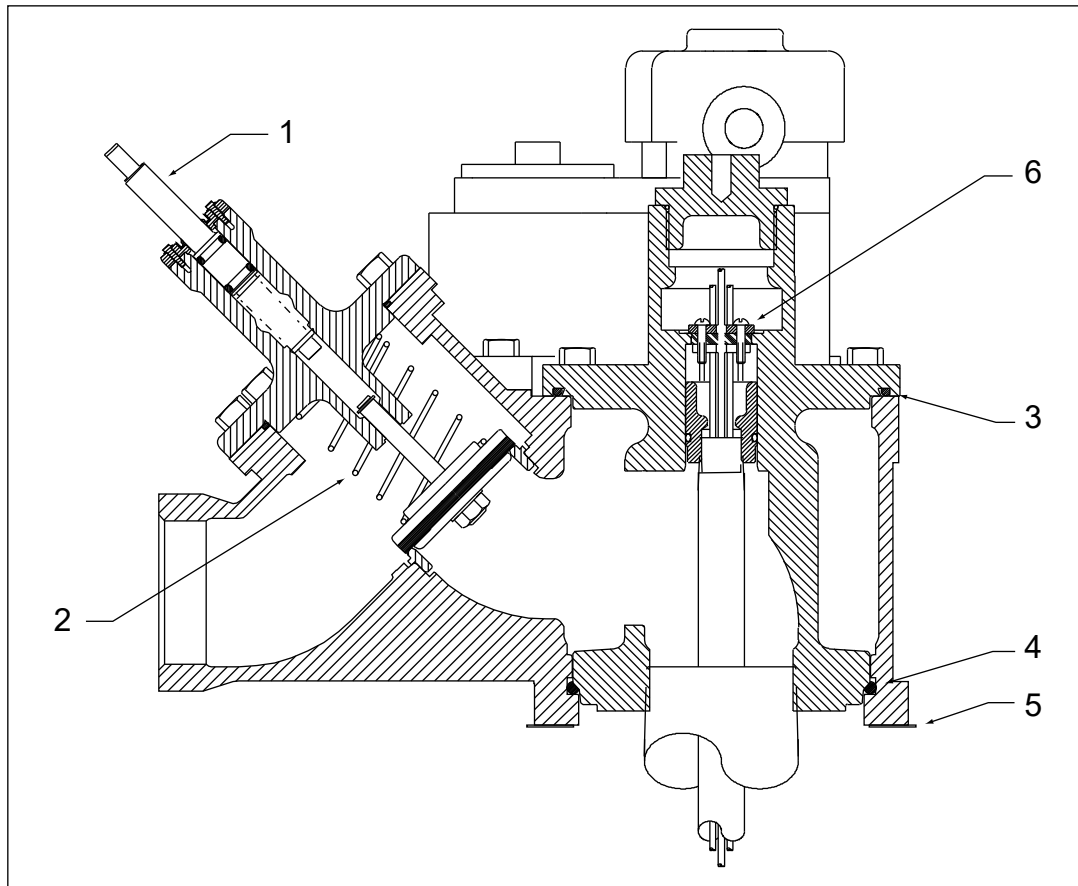


Figure 24. Check Valve and Electrical Bushing Assembly

Table 6. Check Valve/Electrical Bushing Assembly Repair Parts

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

## Packer Manifold Assembly Repair Parts - Top View

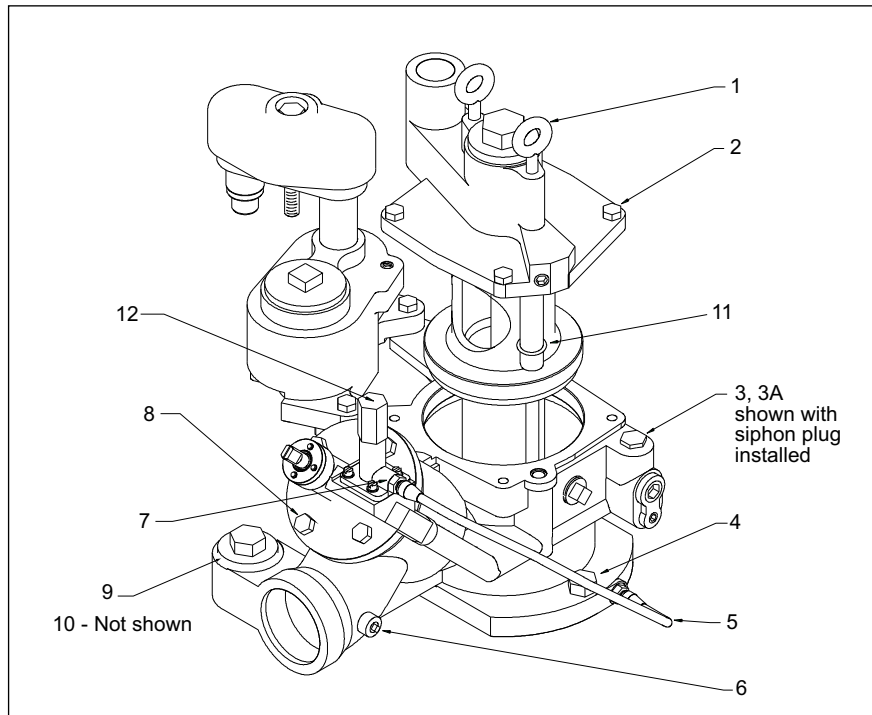


Figure 25. Maxxum Packer-Manifold Assembly

Table 7. Packer-Manifold Repair Parts

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

## Yoke Assembly Repair Parts

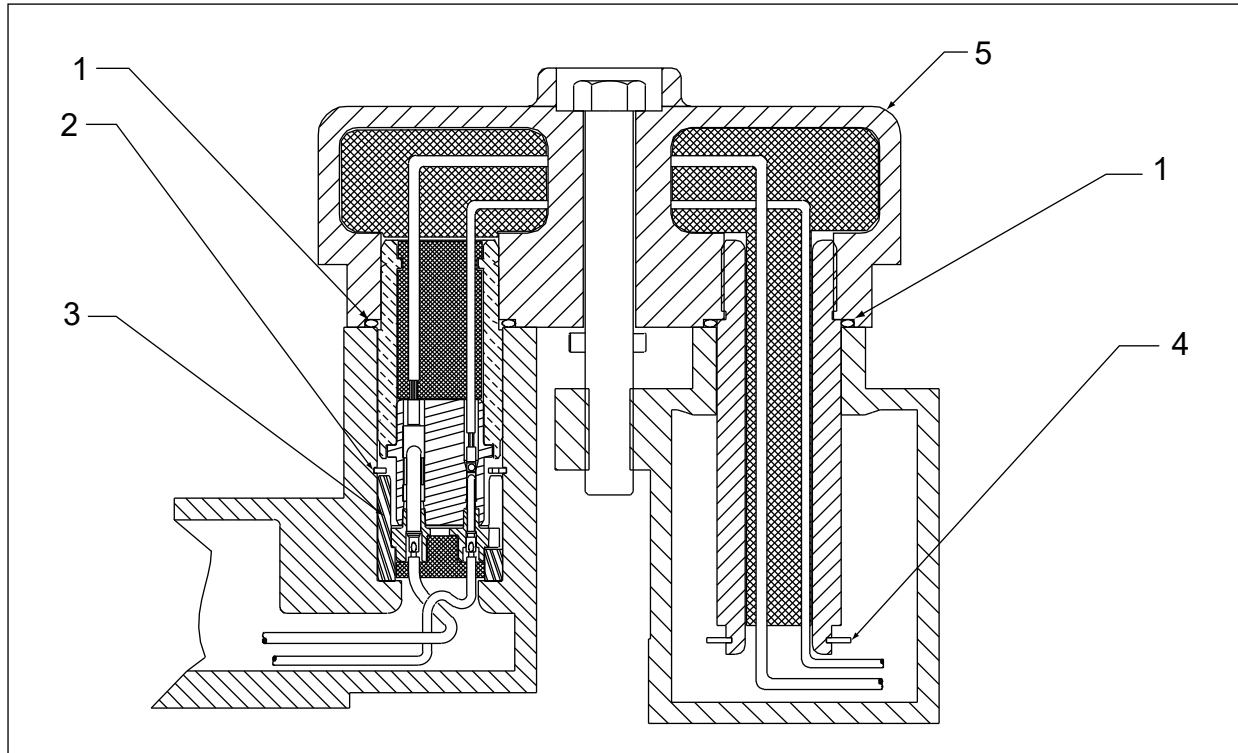
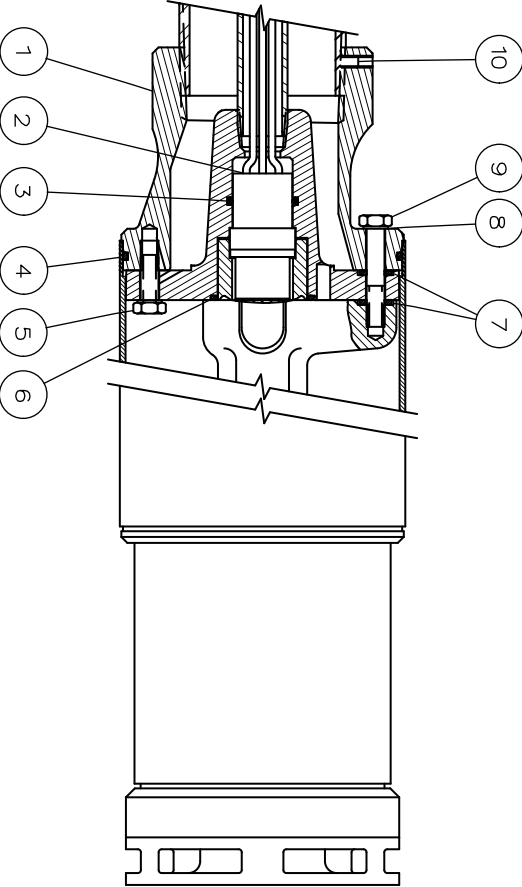


Figure 26. Maxxum Yoke and Contractors Box Assembly

Table 8. Yoke Assembly Repair Parts

Item	Part No.	Description	Qty.
1	072-700-1	O-Ring (-223)	2
2	072-689-1	Internal Retaining Ring	1
3	144-319-5	Kit - 5 Wire Connector Assembly	1
4	072-697-1	External Retaining Ring	1
5	110-064-5	Conduit Box Assembly - 5 Wire	1

## Discharge Head Assembly Repair Kits

Discharge Head Assembly Repair Parts	Item	P/N	Description	Qty.
 <p><b>Figure 27. Discharge Head Assembly</b></p>	3	026-110-1	Washer, lock - 3/8 - Stainless	4
	4	026-179-1	Screw Hex 3/8 - 16 x 1" Lg, Zinc	1
	5	026-448-1	Screw - Set - 1/4-20 x 3/8 Lg	2
	6	031-328-1	Gasket - Bolt 0.625 OD x 0.094 Thick	8
	7	036-043-3	Discharge Head - Mach.	1
	9	072-309-1	O-Ring - 225 V75	1
	10	072-712-1	O-Ring - Viton - 218	1
	11	072-714-1	O-Ring - Viton - 255	1
	13	410645-002	Pigtail Connector Assy - 20 Ft	1
	14	410766-001	Receptacle Housing W/Pin Hole - Mach.	1
	NS	072-679-1	O-Ring - Viton - 932, Extracta Head Cap (Figure 17)	1
	NS	072-693-1	O-Ring - Viton 220 (Item 7, Figure 23)	1
	NS	072-695-1	O-Ring - Viton 366 (Item 3, Figure 23)	1
	NS	072-696-1	O-Ring - Viton 439 (Item 4, Figure 23)	1
	17	576025-004	Screw - Hex - 3/8 - 16 x 2-3/16 Lg Blk - Zinc (3 Stage)	1
		026-184-1	Screw - Hex - 3/8 - 16 x 2-1/4 Lg - Zinc (2 Stage)	1

**Table 9. Discharge Head Assembly Repair Kits**

Part No.	Description	Qty.
410943-001	Kit - Discharge Head - Maxxum, 2 Stage - Models UMP300J4-2HB, UMP500J4-2K & UMP500J6-2K	1
410943-002	Kit - Discharge Head - Maxxum, 3 Stage - Models UMP300J17-3HB & UMP500J17-3K	1
144-336-5	Kit - Floating Suction Adapter	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 Parts section for ordering numbers.

Pigtail Connector Kit

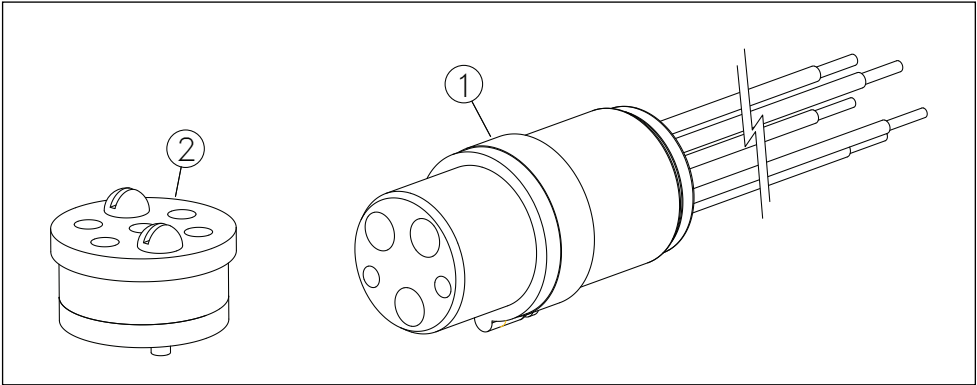


Figure 28. Pigtail Connector Kit

Table 10. Pigtail Connector Kit

Item	Part No.	Description	Qty.
1	410645-002	Pigtail Connector Assy - 20 ft	1
2	110-038-4	Seal - Conduit Assy	1

## Red Jacket Replacement Pump Motors

**Table 11. Replacement Pump Motors**

Ordering Number	Model Number	HP	Length in. (mm)	Weight lbs. (kg)	Volts	Phase
<b>UMP</b>						
410718-001	UMP-P300J4-2HB	3	34.3 (871)	116 (53)	208-230	3
410718-003	UMP-P500J4-2K	5	42.5 (1080)	154 (70)	208-230	3
410718-002	UMP-P300J17-3HB	3	37.4 (950)	137 (62)	380-415	3
410718-005	UMP-P500J17-3K	5	47.0 (1200)	194 (88)	380-415	3
410718-004	UMP-P500J6-2K	5	41.1 (1050)	154 (70)	575	3
<b>UMP WITH DISCHARGE HEAD</b>						
410719-001	UMP-P300J17-3HB W/DH	3	40.1 (1020)	158 (72)	380-415	3
410719-002	UMP-P500J17-3K W/DH	5	49.7 (1270)	215 (98)	380-415	3

## Magnetic Starter For 3 & 5 HP 3-Phase Pumps



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

**Table 12. Magnetic Starter Information**

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

## **Appendix A: ANZEx Conditions of Certification**

### **ANZEx CONDITIONS OF CERTIFICATION:**

#### **ANZEx 04.3005X**

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.



## Appendix B: CNEEx/IECEX Conditions of Certification

The Maxxum® Submersible Turbine Pump Assemblies have China certification under CCC Certificate Number 2021312302000036 and shall be marked with the following information:

**Manufacturer:**

**Veeder-Root Company  
2709 Route 764  
Duncansville, PA 16635 U.S.A.**

**Marking:**

**Type Series  
Serial Number  
Year of Construction**



**IECEX 20.0129X  
Ex db IIA T4 Gb**

**CNEEx 20.1534X  
Ex d IIA T4 Gb  
Ex b c d IIA T4 Gb**

### Instructions

1. All submerged turbine pumps, manifolds and associated equipment shall be installed in accordance with the manufacturer's installation, operation and service manuals supplied.
2. All submerged turbine pumps can only be mounted and used in the vertical, upright position.
3. All installations shall provide reliable electrical connection between the pump/motor, frame, pipe, manifold or junction box and the tank structure for the electrical protection and equipotential bonding.
4. Use suitable certified cable gland as entry device when equipment is installed in accordance with the requirement of GB3836.1-2010, GB3836.2-2010, and the connector should be Ex d IIA, Ex d IIB/IIC grade with 1" NPT thread, designed for minimum 5 threads.
5. The ambient temperature range is -20° to 40°C.
6. Dry operation is forbidden, the minimum fuel level shall be set at least 30 mm above the highest product intake level at the bottom of the pump motor.
7. The installation, operation and maintenance should be in accordance with the manual, GB3836.15-2000 Electrical Apparatus for Explosive Gas Atmospheres - Part 15: Electrical Installation in hazardous areas (other than mines), GB3836.13-2013 Electrical Apparatus for Explosive Gas Atmospheres - Part 13: Equipment repair, overhaul and reclamation.
8. Fasteners securing the discharge head are non-metric. They shall be replaced only by part numbers 579025-004 for the discharge head and 026-750-1 for the extracta head.
9. The flameproof dimensions are detailed in certification drawing number 410795-001 and shall not be repaired.
10. Compliance with the International Electrotechnical Commission IECEx has been assured by compliance with IEC 60079-0 Ed. 7.0 and IEC 60079-1 Ed. 7.0.



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[veeder.com](http://veeder.com)