

# Quantum 4" Submersible Pump

**Installation, Operation & Service Manual**

# **Red Jacket**



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# ABOUT THIS MANUAL

This preface describes the organization of this manual, explains symbols and typographical conventions used, and defines vital terminology. This manual is for personnel who install Red Jacket submersible pumps for petroleum. It contains the information required for working in the pit. It also contains a table of figures, a list of abbreviations, appendixes with the warranty and parts list, and an index.

## ORGANIZATION

*This manual is organized into four chapters:*

**Chapter 1:** Red Jacket Quantum Submersible Pump describes the basic components of the system.

**Chapter 2:** Installation provides safety notices and gives step-by-step instructions for installing and wiring the pump, tandem pumps and control boxes. It also describes how to adjust the Pressurstat.

**Chapter 3:** Testing the installation describes testing the various components of the system after it has been installed.

**Chapter 4:** Service and Repair describes how to remove a pump and replace the UMP, information on replacing the Pressurstat and capacitor, and replacement extractable pump installation instructions.

## TYPOGRAPHICAL CONVENTIONS

The various symbols and typographical conventions used in this manual are described here.



Indicates a **tip** or reminder.

## TERMINOLOGY

The following defined terms are used throughout this manual to bring attention to the presence of hazards of various risk levels, or to important information concerning use of the product.

### **DANGER**

Indicates the presence of a hazard that will cause severe personal injury, death, or substantial property damage if ignored.

### **WARNING**

Indicates the presence of a hazard that can cause severe personal injury, death, or substantial property damage if ignored.

### **CAUTION**

Indicates the presence of a hazard that will or can cause minor personal injury or property damage if ignored.

### **NOTICE**

Indicates special instructions on installation, operation, or maintenance that are important but not related to personal injury hazards.

## **ABBREVIATIONS AND SYMBOLS**

$\perp$	Chassis ground (see also GND)
$\text{⏏}$	Earth ground
$\Omega$	Ohm, resistance
$\mu\text{F}$	Microfarad ( $10^{-6}$ farad)
<b>AG</b>	Alcohol-gasoline blends
<b>C</b>	Centigrade
<b>DOM</b>	Domestic
<b>EPA</b>	Environmental Protection Agency
<b>F</b>	Fahrenheit
<b>ft-lb</b>	Foot-pound
<b>GND</b>	Ground
<b>gph; gpm</b>	Gallons per hour; Gallons per minute
<b>hp</b>	Horsepower
<b>Hz</b>	Hertz
<b>in-lb</b>	Inch-pound
<b>INTL</b>	International
<b>ISO</b>	International Organization for Standardization
<b>kg</b>	Kilogram
<b>kPa</b>	KiloPascals
<b>mm</b>	Millimeter
<b>N•m</b>	Newton-meter
<b>NEC</b>	National Electrical Code
<b>NFPA</b>	National Fire Protection Association
<b>NPT</b>	National Pipe Thread
<b>PH</b>	Phase
<b>psi; psig</b>	Pounds per square inch; Pounds per square inch gauge
<b>SG</b>	Specific Gravity
<b>SSU</b>	Saybolt Seconds Universal, a measure of viscosity
<b>UL</b>	Underwriters Laboratories Inc.
<b>UMP</b>	Unit motor pump; Pump-motor assembly
<b>VAC</b>	Voltage—alternating current
<b>V</b>	Volt
<b>VDC</b>	Voltage—direct current

# CHAPTER 1: RED JACKET 4" SUBMERSIBLE PUMP

## OVERVIEW

Quantum pumps are designed to be compatible with 100% gasoline, or diesel and 80% gasoline with 20% methanol, ethanol, TAME, ETBE or MTBE. All UMPs having the model numbers including the AG prefix are designed to be compatible with 100% gasoline, methanol, ethanol or diesel and 80% gasoline with 20% TAME, ETBE or MTBE. Single phase pumps are UL listed (Class I, Group D atmosphere).

TABLE A: MAXIMUM SPECIFIC GRAVITY AND MAXIMUM VISCOSITY

UMP Model	Maximum Specific Gravity	Maximum Viscosity
AGUMP33R1	.95	70SSU at 60°F (15°C)
UMP33U1		
AGUMP75S1	.95	70SSU at 60°F (15°C)
UMP75U1		
AGUMP150S1	.95	70SSU at 60°F (15°C)
UMP150U1		
AGUMP75S3-3	.95	70SSU at 60°F (15°C)
UMP75U3-3		
AGUMP150S3-3	.95	70SSU at 60°F (15°C)
UMP150U3-3		
X3AGUMP150S1	.87	70SSU at 60°F (15°C)
X3UMP150U1		
X5AGUMP150S1	.80	70SSU at 60°F (15°C)
X5UMP150U1		
AGUMP75S17-3	.95	70SSU at 60°F (15°C)
UMP75U17-3		
AGUMP150S17-3	.95	70SSU at 60°F (15°C)
UMP150U17-3		
X4AGUMP150S17	.86	70SSU at 60°F (15°C)
X4UMP150U17		
X4AGUMP150S3	.86	70SSU at 60°F (15°C)
X4UMP150U3		
AGUMP200S1-3	.87	70SSU at 60°F (15°C)
UMP200U1-3		

The Quantum features an adjustable column pipe and electrical conduit that allows the overall length to be adjusted to cover a wide range of overall pump lengths. By loosening a collet on the column pipe, the length of the pump may be varied by extending or compressing the column pipe.

Three sizes are available, QS1, QS2, and QS3 covering most pump length requirements.

## LEAK DETECTOR INSTALLATION AND MANIFOLD DIMENSIONS

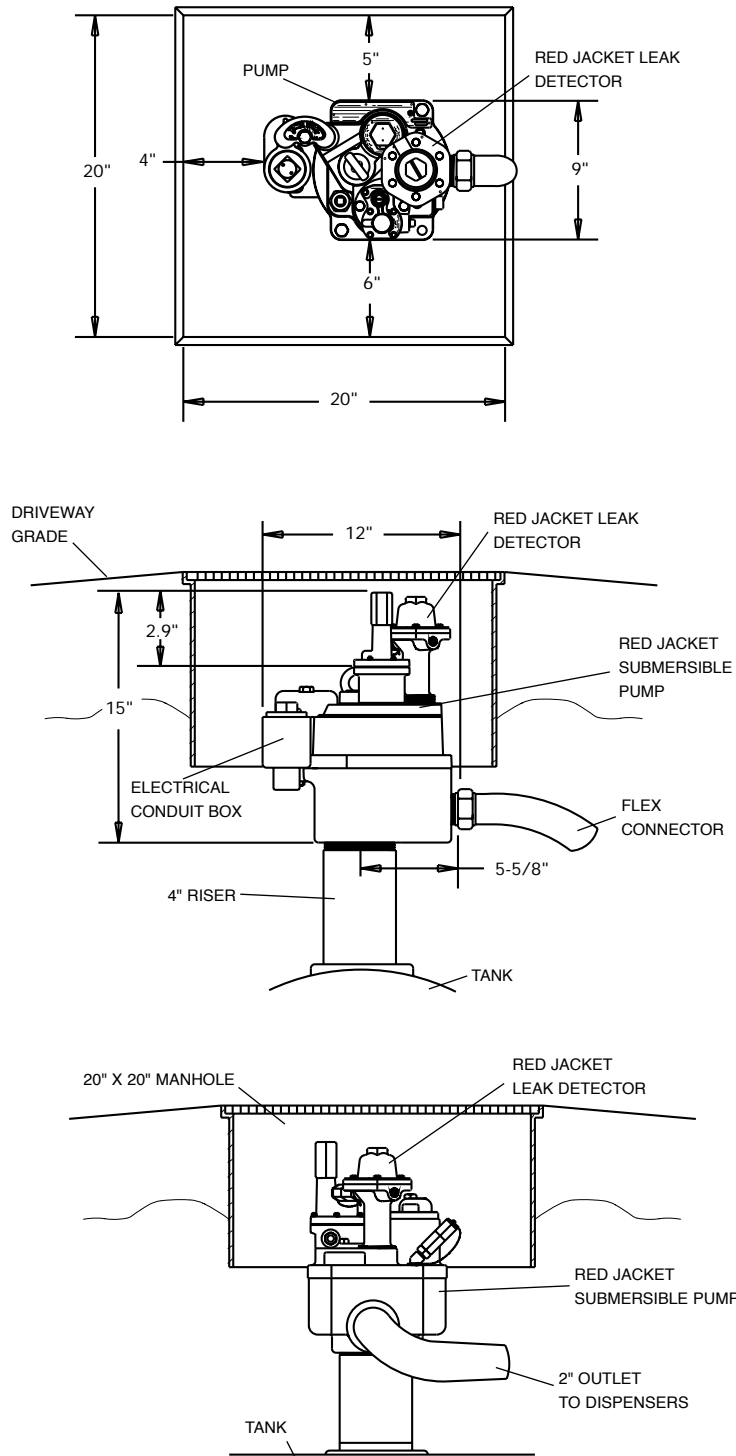
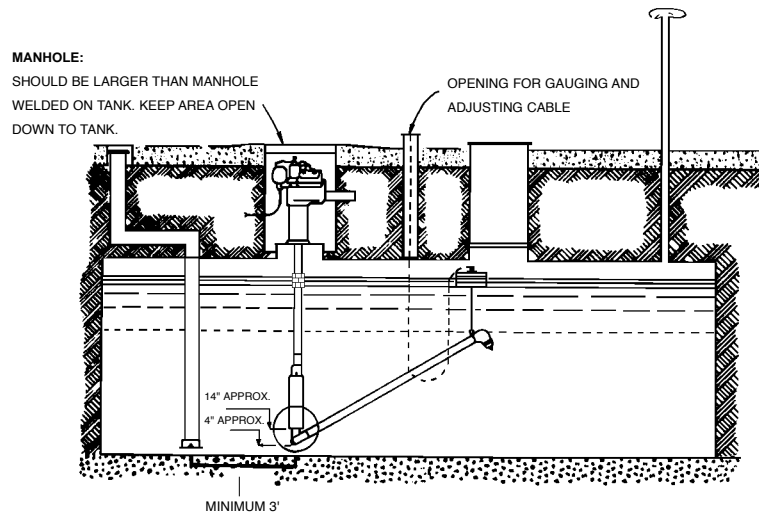


Figure 1.1 Leak detector and manifold Dimensions



## RECOMMENDED FLOATING SUCTION INSTALLATION



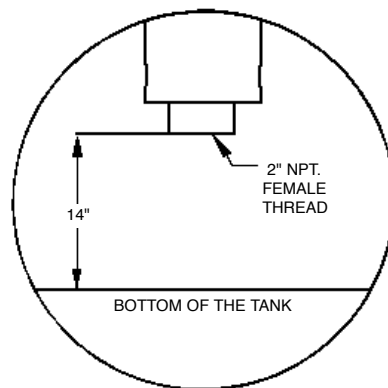
**Figure 1.2 Floating suction installation**

### NOTICE

We supply adapter only; not the apparatus. Floating suction adapter is not available for the X5 Model pump.

- The floating suction arm can be mounted to pump previous to installing in tank.

See example of adaptation to floating suction assembly below.



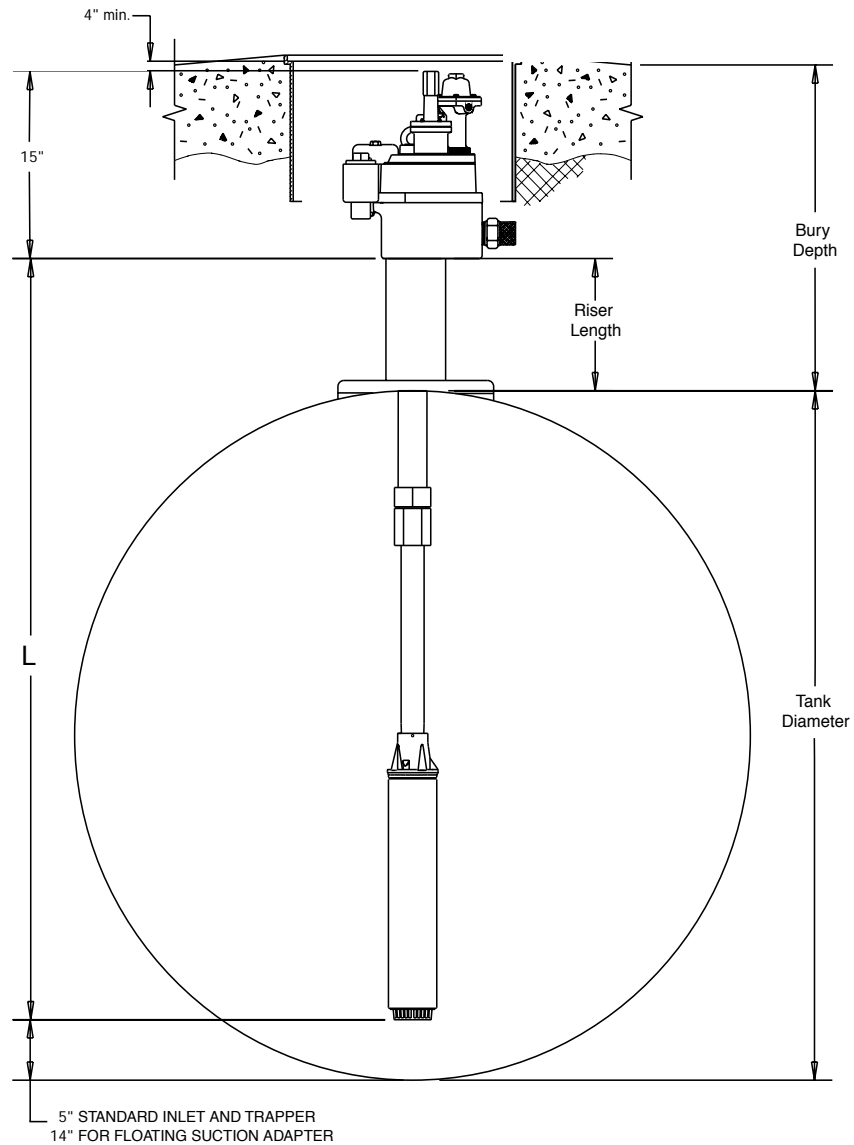
**Figure 1.3 Floating Suction Adapter**

- Easy service access is provided by unbolting manhole lid through which pump is mounted and removing entire assembly. Use proper thread sealant and insert gasket between flanges of floating suction and pump. This prevents hindrance to pump performance when product level is below this point.

### NOTICE

Red Jacket pumps are centrifugal type pumps and as such are not designed to pump product when the level is below the bottom end of the UMP.

## DIMENSIONS FOR PUMP SELECTION



**Figure 1.4** Measuring the tank (See TABLE B for adjustment range.)

**NOTICE**

Distance between center line of pump motor and center line of bottom fill tube should be 3 feet minimum. Air locking of pump after product delivery may occur at distances less than this.



Adjust Quantum to "L".

## SPECIFICATIONS

**TABLE B: DISTANCE**

DISTANCE FROM TOP OF PRESSURESTAT TO INLET				
MODEL #	COMPRESSED		EXTENDED	
	in	mm	in	mm
AGP33R1YQS1, AGP33R1YRQS1, P33U1YQS1, P33U1YRQS1	69.0	1752	99.5	2523
AGP33R1YQS2, AGP33R1YRQS2, P33U1YQS2, P33U1YRQS2	99.0	2514	159.5	4047
AGP33R1YQS3, AGP33R1YRQS3, P33U1YQS3, P33U1YRQS3	159.0	4038	219.5	5571
AGP75S1YQS1, AGP75S1YRQS1, P75U1YQS1, P75U1YRQS1	71.5	1818	102.0	2589
AGP75S1YQS2, AGP75S1YRQS2, P75U1YQS2, P75U1YRQS2	101.5	2580	162.0	4113
AGP75S1YQS3, AGP75S1YRQS3, P75U1YQS3, P75U1YRQS3	161.5	4104	222.0	5637
AGP150S1YQS1, AGP150S1YRQS1, P150U1YQS1, P150U1YRQS1	74.5	1891	105.0	2667
AGP150S1YQS2, AGP150S1YRQS2, P150U1YQS2, P150U1YRQS2	104.5	2653	165.0	4186
AGP150S1YQS3, AGP150S1YRQS3, P150U1YQS3, P150U1YRQS3	164.5	4177	225.0	5710
X3AGP150S1YQS1, X3AGP150S1YRQS1, X3P150U1YQS1, X3P150U1YRQS1	75.5	1913	105.5	2684
X3AGP150S1YQS2, X3AGP150S1YRQS2, X3P150U1YQS2, X3P150U1YRQS2	105.5	2675	165.5	4208
X3AGP150S1YQS3, X3AGP150S1YRQS3, X3P150U1YQS3, X3P150U1YRQS3	165.5	4199	225.5	5732
X5AGP150S1YQS1, X5AGP150S1YRQS1, X5P150U1YQS1, X5P150U1YRQS1	85.0	2157	115.5	2928
X5AGP150S1YQS2, X5AGP150S1YRQS2, X5P150U1YQS2, X5P150U1YRQS2	115.0	2919	175.5	4452
X5AGP150S1YQS3, X5AGP150S1YRQS3, X5P150U1YQS3, X5P150U1YRQS3	175.0	4443	235.5	5976
AGP75S3-3YQS1, AGP75S3-3YRQS1, P75U3-3YQS1, P75U3-3YRQS1	74.0	1879	104.5	2649
AGP75S3-3YQS2, AGP75S3-3YRQS2, P75U3-3YQS2, P75U3-3YRQS2	104.0	2641	164.5	4173
AGP75S3-3YQS3, AGP75S3-3YRQS3, P75U3-3YQS3, P75U3-3YRQS3	164.0	4165	224.5	5697
AGP150S3-3YQS1, AGP150S3-3YRQS1, P150U3-3YQS1, P150U3-3YRQS1	76.0	1932	106.5	2703
AGP150S3-3YQS2, AGP150S3-3YRQS2, P150U3-3YQS2, P150U3-3YRQS2	106.0	2694	166.5	4227
AGP150S3-3YQS3, AGP150S3-3YRQS3, P150U3-3YQS3, P150U3-3YRQS3	166.0	4218	226.5	5751
X4AGP150S3YQS1, X4AGP150S3YRQS1, X4P150U3YQS1, X4P150U3YRQS1	76.5	1946	107.0	2717
X4AGP150S3YQS2, X4AGP150S3YRQS2, X4P150U3YQS2, X4P150U3YRQS2	106.5	2708	167.0	4241
X4AGP150S3YQS3, X4AGP150S3YRQS3, X4P150U3YQS3, X4P150U3YRQS3	166.5	4232	227.0	5765
AGP75S17-3YQS1, AGP75S17-3YRQS1, P75U17-3YQS1, P75U17-3YRQS1	73.0	1853	103.5	2624
AGP75S17-3YQS2, AGP75S17-3YRQS2, P75U17-3YQS2, P75U17-3YRQS2	103.0	2615	163.5	4148
AGP75S17-3YQS3, AGP75S17-3YRQS3, P75U17-3YQS3, P75U17-3YRQS3	163.0	4139	223.5	5672
AGP150S17-3YQS1, AGP150S17-3YRQS1, P150U17-3YQS1, P150U17-3YRQS1	75.0	1903	105.5	2674
AGP150S17-3YQS2, AGP150S17-3YRQS2, P150U17-3YQS2, P150U17-3YRQS2	105.0	2665	165.5	4198
AGP150S17-3YQS3, AGP150S17-3YRQS3, P150U17-3YQS3, P150U17-3YRQS3	165.0	4189	225.5	5722
X4AGP150S17YQS1, X4AGP150S17YRQS1, X4P150U17YQS1, X4P150U17YRQS1	75.5	1917	106.0	2688
X4AGP150S17YQS2, X4AGP150S17YRQS2, X4P150U17YQS2, X4P150U17YRQS2	105.5	2679	166.0	4212
X4AGP150S17YQS3, X4AGP150S17YRQS3, X4P150U17YQS3, X4P150U17YRQS3	165.5	4203	226.0	5736
AGP200S1-3YQS1, AGP200S1-3YRQS1, P200S1-3YQS1, P200S1-3YRQS1	77.5	1971	108.0	2741
AGP200S1-3YQS2, AGP200S1-3YRQS2, P200S1-3YQS2, P200S1-3YRQS2	107.5	2733	168.0	4265
AGP200S1-3YQS3, AGP200S1-3YRQS3, P200S1-3YQS3, P200S1-3YRQS3	167.0	4257	228.0	5789



**TABLE C: ELECTRICAL SERVICE INFORMATION**

Required power supply rating for 60Hz, 1 phase motors is 208-230VAC. For 50Hz 1 phase motors, required rating is 220-240 VAC.

ELECTRICAL SERVICE INFORMATION											
UMP Model No.	HP	HZ	PH	Voltage Fluctuation Range		Max. Load Amps	Locked Rotor Amps	Winding Resistance (Ohms)			Capacitor Kit (µF)
				Min.	Max.			Black-Orange	Red-Orange	Black-Red	
AGUMP33R1 UMP33U1	1/3	60	1	200	250	4.0	13.0	8.1-9.9	15.8-19.3	23.8-29.3	144-224-5 (17.5)
AGUMP75S1 UMP75U1	3/4	60	1	200	250	6.5	22.0	2.7-3.3	14.7-18.0	17.3-21.4	144-224-5 (17.5)
AGUMP150S1 UMP150U1	1-1/2	60	1	200	250	10.5	42.0	1.8-2.3	5.3-6.5	6.2-8.9	144-225-5 (25)
X3AGUMP150S1 X3UMP150U1	1-1/2	60	1	200	250	10.5	42.0	1.8-2.3	5.3-6.5	6.2-8.9	144-225-5 (25)
X5AGUMP150S1 X5UMP150U1	1-1/2	60	1	200	250	10.5	42.0	1.8-2.3	5.3-6.5	6.2-8.9	144-225-5 (25)
AGUMP200S1-3 UMP200U1-3	2	60	1	200	250	11.4	47.0	1.4-1.7	2.5-3.2	3.8-5.0	144-367-5 (50)
ELECTRICAL SERVICE INFORMATION											
UMP Model No.	HP	HZ	PH	Voltage Fluctuation Range		Max. Load Amps	Locked Rotor Amps	Winding Resistance (Ohms)			Capacitor Kit (µF)
				Min.	Max.			Black-Orange	Red-Orange	Black-Red	
AGUMP75S3-3 UMP75U3-3	3/4	50	1	200	250	5.8	18.6	3.5-4.3	23.1-28.3	26.5-32.7	144-224-5 (17.5)
AGUMP150S3-3 UMP150U3-3	1-1/2	50	1	200	250	10.0	34.5	2.7-3.4	12.4-15.2	15.0-18.7	144-225-5 (25)
X4AGUMP150S3 X4UMP150U3	1-1/2	50	1	200	250	10.0	34.5	2.7-3.4	12.4-15.2	15.0-18.7	144-225-5 (25)
AGUMP75S17-3 UMP75U17-3	3/4	50	3	342	457	2.2	11.0	26.1-31.9	26.1-31.9	26.1-31.9	--
AGUMP150S17-3 UMP150U17-3	1-1/2	50	3	342	457	3.8	15.8	12.1-14.8	12.1-14.8	12.1-14.8	--
X4AGUMP150S17 X4UMP150U17	1-1/2	50	3	342	457	3.8	15.8	12.1-14.8	12.1-14.8	12.1-14.8	--

**TABLE D: WEIGHTS AND LENGTHS**

UMP MODEL	HP	LENGTH		WEIGHT	
		in	mm	lb	kg
AGUMP33R1 UMP33U1	1/3	15	380	24	11.0
AGUMP75S1 UMP75U1	3/4	17 1/2	447	28	12.7
AGUMP150S1 UMP150U1	1 1/2	20 1/2	519	34	15.5
X3AGUMP150S1 X3UMP150U1	1 1/2	21 1/2	541	35	15.8
X5AGUMP150S1 X5UMP150U1	1 1/2	31	785	38	19.7
AGUMP75S3-3 UMP75U3-3	3/4	20	507	30.5	13.9
AGUMP150S3-3 UMP150U3-3	1 1/2	22 1/4	560	34	15.5
X4AGUMP150S3 X4UMP150U3	1 1/2	22 3/4	576	35	15.9
AGUMP75S17-3 UMP75U17-3	3/4	19	482	28	12.7
AGUMP150S17-3 UMP150U17-3	1 1/2	21	532	31	14.1
X4AGUMP150S17 X4UMP150U17	1 1/2	21 1/2	547	32	14.5
AGUMP200S1-3 UMP200U1-3	2	23 1/2	600	36	16.3

**NOTICE**

The weights and lengths listed above are approximate values and will vary due to manufacturing tolerances.

**NOTICE**

The optional Trapper intake screen is available as a field installed accessory. Trapper options will change the length of the UMP by 3 5/8 inches (92 mm). For installation instructions, see Red Jacket installation instructions #051-256-1.

For models with Floating Suction Adapter, add 2 3/8 inches (59 mm) and 4 lbs (1.8 Kg).

## CHAPTER 2: INSTALLATION

### INSTALLATION SAFETY NOTICES

**ATTENTION INSTALLER:** Read this important safety information before beginning work.

#### DANGER

This product operates in the highly combustible atmosphere of a gasoline storage tank. To protect yourself and others from serious injury, death, or substantial property damage, carefully read and follow all warnings and instructions in this manual.

#### WARNING

Failure to follow all instructions in proper order can cause personal injury or death. Read all instructions before beginning installation. All installation work must comply with the latest issue of the National Electrical Code (NFPA 70), the Automotive and Marine Service Code (NFPA 30A), and any national, state, and local code requirements that apply.

#### WARNING

Only trained and qualified personnel may install, program, and troubleshoot Red Jacket equipment. Hazards can cause severe personal injury, death, or substantial property damage if ignored.

#### WARNING

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

### ATTACHING THE UMP

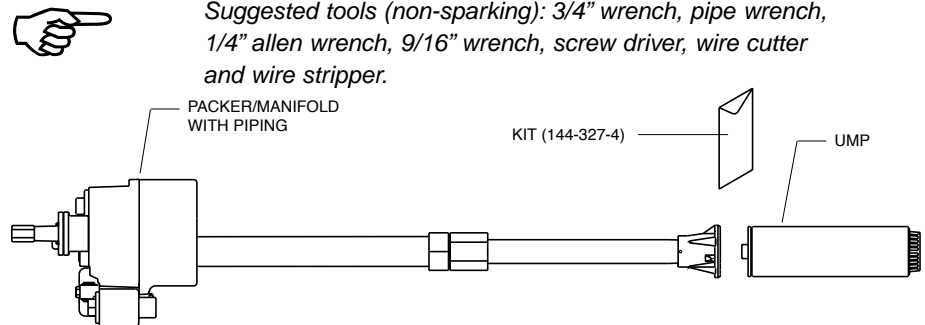
The UMP is identified by the model number marked on the shell. The packer/manifold

**TABLE E: ATTACHING THE UMP**

Packer/Manifold	UMP	Packer/Manifold	UMP
AGP33R1YQS1, QS2, QS3 AGP33R1YRQS1, QS2, QS3	AGUMP33R1	P75U3-3YQS1, QS2, QS3 P75U3-3YRQS1, QS2, QS3	UMP75U3-3
P33U1YQS1, QS2, QS3 P33U1YRQS1, QS2, QS3	UMP33U1	AGP150S3-3YQS1, QS2, QS3 AGP150S3-3YRQS1, QS2, QS3	AGUMP150S3-3
AGP75S1YQS1, QS2, QS3 AGP75S1YRQS1, QS2, QS3	AGUMP75S1	P150U3-3YQS1, QS2, QS3 P150U3-3YRQS1, QS2, QS3	UMP150U3-3
P75U1YQS1, QS2, QS3 P75U1YRQS1, QS2, QS3	UMP75U1	X4AGP150S3YQS1, QS2, QS3 X4AGP150S3YRQS1, QS2, QS3	X4AGUMP150S3
AGP150S1YQS1, QS2, QS3 AGP150S1YRQS1, QS2, QS3	AGUMP150S1	X4P150U3YQS1, QS2, QS3 X4P150U3YRQS1, QS2, QS3	X4UMP150U3
P150U1YQS1, QS2, QS3 P150U1YRQS1, QS2, QS3	UMP150U1	AGP75S17-3YQS1, QS2, QS3 AGP75S17-3YRQS1, QS2, QS3	AGUMP75S17-3
X3AGP150S1YQS1, QS2, QS3 X3AGP150S1YRQS1, QS2, QS3	X3AGUMP150S1	P75U17-3YQS1, QS2, QS3 P75U17-3YRQS1, QS2, QS3	UMP75U17-3
X3P150U1YQS1, QS2, QS3 X3P150U1YRQS1, QS2, QS3	X3UMP150U1	AGP150S17-3YQS1, QS2, QS3 AGP150S17-3YRQS1, QS2, QS3	AGUMP150S17-3
X5AGP150S1YQS1, QS2, QS3 X5AGP150S1YRQS1, QS2, QS3	X5AGUMP150S1	P150U17-3YQS1, QS2, QS3 P150U17-3YRQS1, QS2, QS3	UMP150U17-3
X5P150U1YQS1, QS2, QS3 X5P150U1YRQS1, QS2, QS3	X5UMP150U1	X4AGP150S17YQS1, QS2, QS3 X4AGP150S17YRQS1, QS2, QS3	X4AGUMP150S17
AGP75S3-3YQS1, QS2, QS3 AGP75S3-3YRQS1, QS2, QS3	AGUMP75S3-3	X4P150U17YQS1, QS2, QS3 X4P150U17YRQS1, QS2, QS3	X4UMP150U17
AGP200S1-3YQS1, QS2, QS3 AGP200S1-3YRQS1, QS2, QS3	AGUMP200S1-3	P200U1-3YQS1, QS2, QS3 P200U1-3YRQS1, QS2, QS3	UMP200U1-3

with piping is identified by the catalog number on the packer nameplate. The hardware kit consists of four 5/16-18 socket head cap screws, four 5/16 lock washers and one discharge head gasket. It is identified by the kit number 144-327-4 marked on the bag.

The UMP attaches to the packer/manifold with piping using hardware kit #144-327-4.



**Figure 2.1 Attaching the UMP**

- 1: Place the new gasket on the new UMP so that all the holes align.

**NOTICE**

Gaskets from competitive UMPS will not seal properly and performance will be reduced.

**CAUTION**

Visually inspect the pigtail connector in the discharge head. Replace if damaged. Be certain the indexing tab of the pigtail is seated in the notch of the discharge head.

- 2: Lubricate the o-ring and pigtail with petroleum based jelly.
- 3: Align the UMP positioning dowel and boss with the proper holes in the discharge head and push the UMP into position using hand force only. The UMP should be snug against the discharge head prior to installing the UMP retaining bolts.

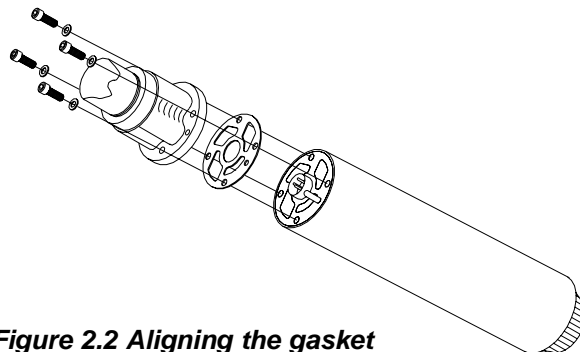
**NOTICE**

Use hand force to put the UMP onto the discharge head. If the UMP does not seat properly, snug against the discharge head, remove the UMP and correct the problem.

**NOTICE**

Do not use the bolts to pull the UMP into position. Use the cross pattern to snug and torque bolts. Do not over torque the bolts. Not following these instructions may cause parts to fail.

- 4: Install the UMP retaining bolts and lock washers. Snug and then torque the bolts using a cross pattern. Torque to 7 ft-lb. (11 N•m).



**Figure 2.2 Aligning the gasket**

## INSTALLING THE PUMP

**NOTICE**

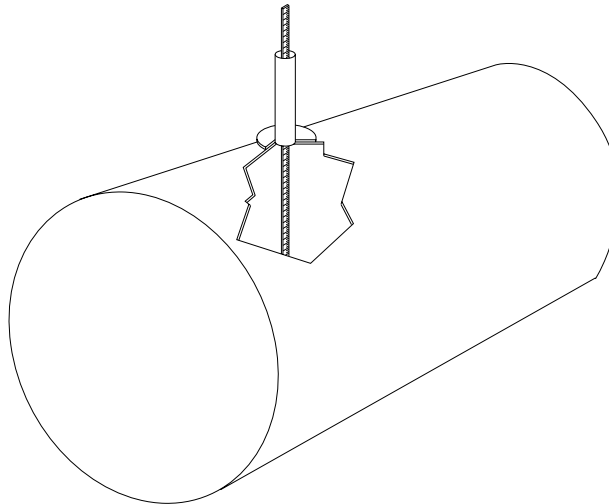
Red Jacket petroleum pumps are designed to operate in a Class 1, Group D atmosphere.

**NOTICE**

Specifications and installation instructions may change if the manufacturer recommends changes.

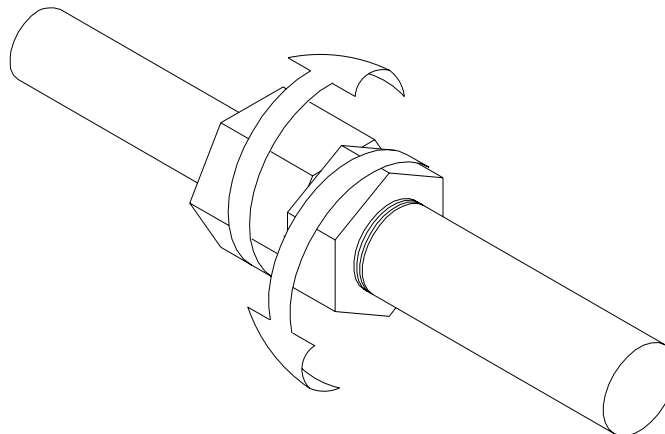
**NOTICE**

The product temperature must not exceed 105°F (41°C) because the thermal overload protectors in the submersible motors may trip.



**Figure 2.3 Measuring tank**

- 1: Install the riser pipe into the 4 inch tank opening. Use thread sealant. Tighten the riser pipe in the tank until watertight.
- 2: Measure the distance from the bottom of the tank to the top of the 4 inch riser pipe shown in figure 2.3.
- 3: Uncoil the pigtail and lay it flat so it will feed into the packer without knotting or kinking.
- 4: Loosen the clinch assembly starting by loosening the set screw in the side of locking nut, then loosen locking nut.



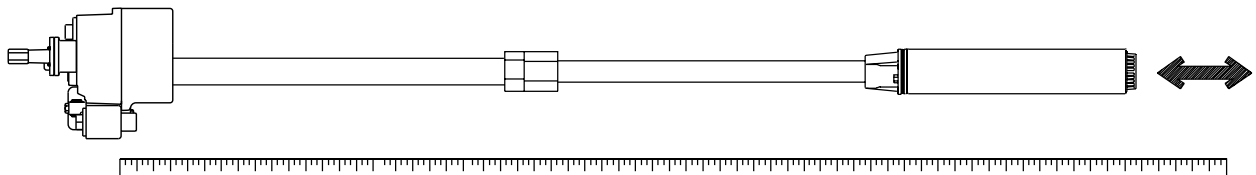
**Figure 2.4 Loosen fittings**



- 5: Pull the UMP end until the distance between the bottom of the manifold and the bottom of the UMP is 5 inches (125 mm) (15 inches (381 mm) for floating suction) shorter than the distance measured in step 2 (see figure 2.5)

**NOTICE**

**If UMP is equipped with floating suction adapter, see recommended floating suction installation in chapter 1.**



**Figure 2.5 Adjust pump length**

**NOTICE**

**Take care not to damage the pigtail. If pump is to be adjusted shorter, tension must be kept on pigtail to eliminate kinking.**

- 6: Tighten locking nut and torque to 150 ft lb (200 N•m) minimum, then torque the set screw to 30-35 in lb (3.5-4 N•m).

**NOTICE**

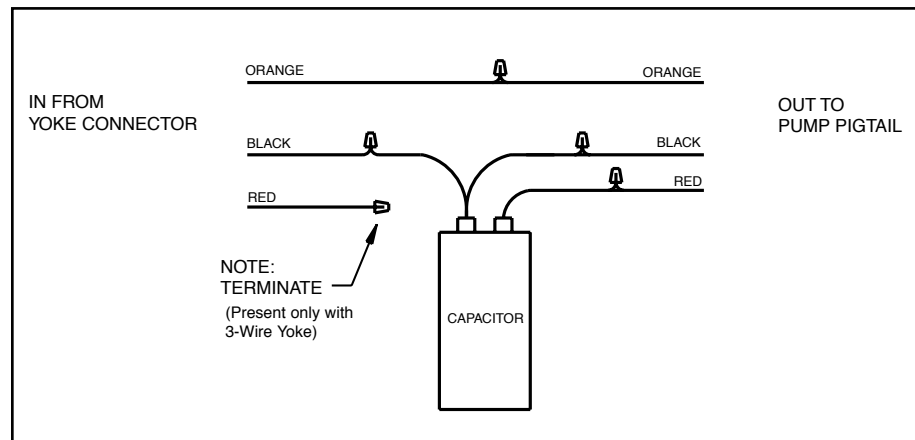
**Return Line should be installed on every application to insure against nuisance trips of electronic tank monitoring.**

- 7: Attach tubing to barbed fitting, secure with clamp.
- 8: Lay tubing beside column pipe. Cut off 1-3 inches (25-76 mm) above the discharge head.
- 9: Secure tube to column pipe with tie straps. Locate tie straps approximately 6 inches (152 mm) from packer, 6 inches (152 mm) from discharge head and middle of tubing.
- 10: Install the pump onto the riser pipe using thread sealant while making the proper alignment of the manifold and piping. Tighten the manifold until watertight.
- 11: Remove cover from wiring compartment.
- 12: To install capacitor in packer proceed with the following steps. For packers without capacitor, proceed to step 22.
- 13: Open capacitor kit 144-224-5, 144-225-5, or 144-367-5 (see Table F for proper kit).
- 14: Attach supplied black wires with flag terminal to one capacitor terminal and red wire lead with flag terminal to other capacitor terminal.
- 15: Place capacitor in wiring compartment.
- 16: Pull pigtail and yoke wires into wiring compartment.

**TABLE F: CAPACITOR KITS**

<b>Horsepower</b>	2	1/3,3/4	1-1/2
<b>Kit</b>	144-367-5	144-224-5	144-225-5
<b>Capacitor</b>	50 $\mu\text{F}$	17.5 $\mu\text{F}$	25 $\mu\text{F}$
<b>Black Wire Lead</b>	2	2	2
<b>Red Wire Lead</b>	1	1	1
<b>Wire Nuts</b>	5	5	5

- 17: Cut pigtail wires leaving approximately 8 inches (200 mm) hanging out of wiring compartment.
- 18: Strip back insulation of all wires 3/8 inch (10 mm).
- 19: Using supplied wire nuts attach one black wire from capacitor to black pump pigtail wire and other capacitor black wire to black yoke connector wire.
- 20: **For 3-Wire Yoke Only:** Place wire nut on red yoke connector wire to isolate it (it will not be used).
- 21: Attach orange pigtail wire to orange yoke connector wire using wire nut. See figure 2.6 to verify connections. Proceed to step 26.



**Figure 2.6 Wiring schematic**

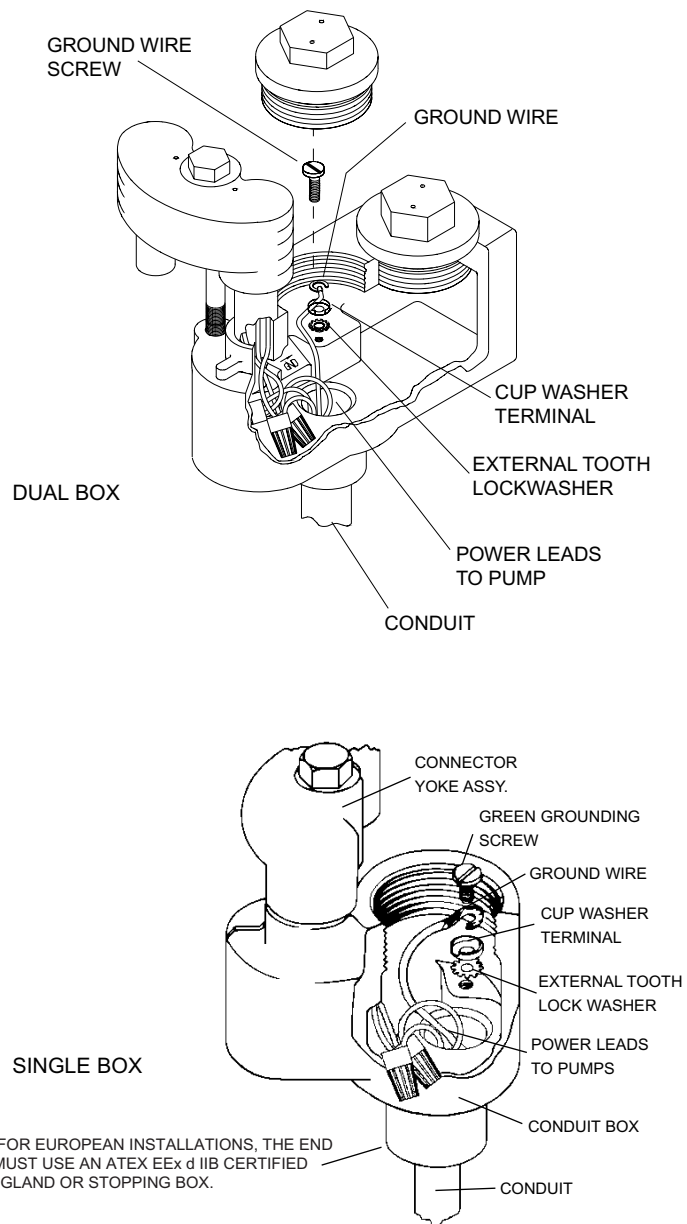
- 22: Pull pigtail and yoke wires into wiring compartment.
- 23: Cut pigtail wires leaving approximately 8 inches (200 mm) hanging out of wiring compartment.
- 24: Strip back insulation of all wires 3/8 inch (10 mm).
- 25: Connect like colored wires to like colored wires from yoke connector and from UMP.
- 26: Install excess wire into wiring compartment. Replace wiring compartment cover. Torque to 35 ft lb (50 N•m). Thread sealant should not be used.
- 27: Install eyebolt plug, use approved non-setting thread sealant and torque to 50 ft lb (70 N•m).

## CONDUIT BOX WIRING

### **DANGER**

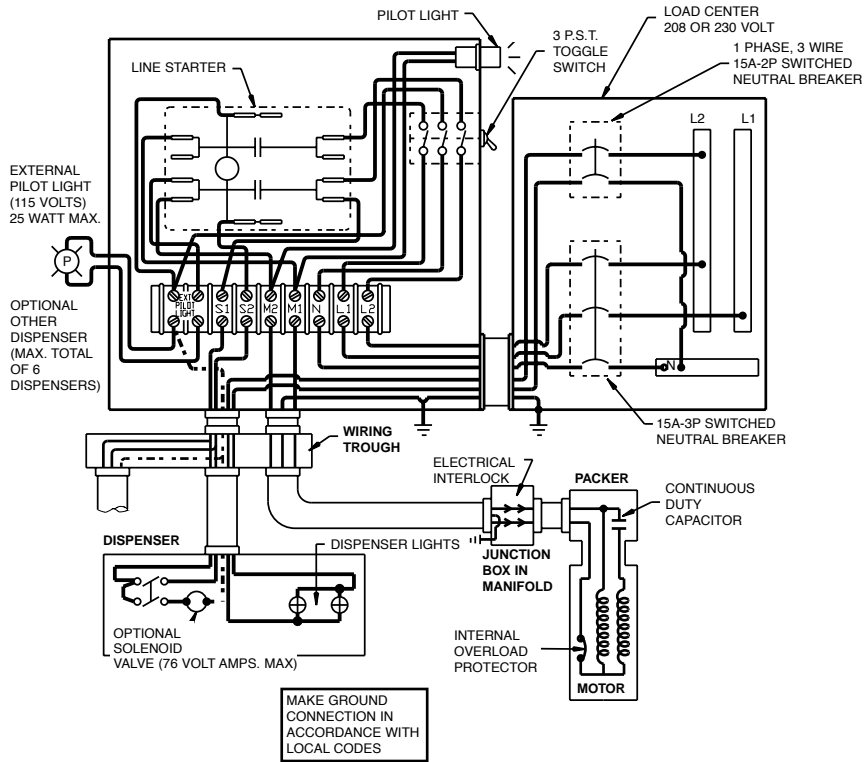
**ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service the pump.**

- 1: Connect electrical conduit through approved fittings to conduit box.
- 2: Remove cover from conduit box.
- 3: Connect wires from power supply to wire in the conduit box. Install ground wire as shown if applicable. Replace cover, do not use thread sealant on dual box. Thread sealant required on single box.



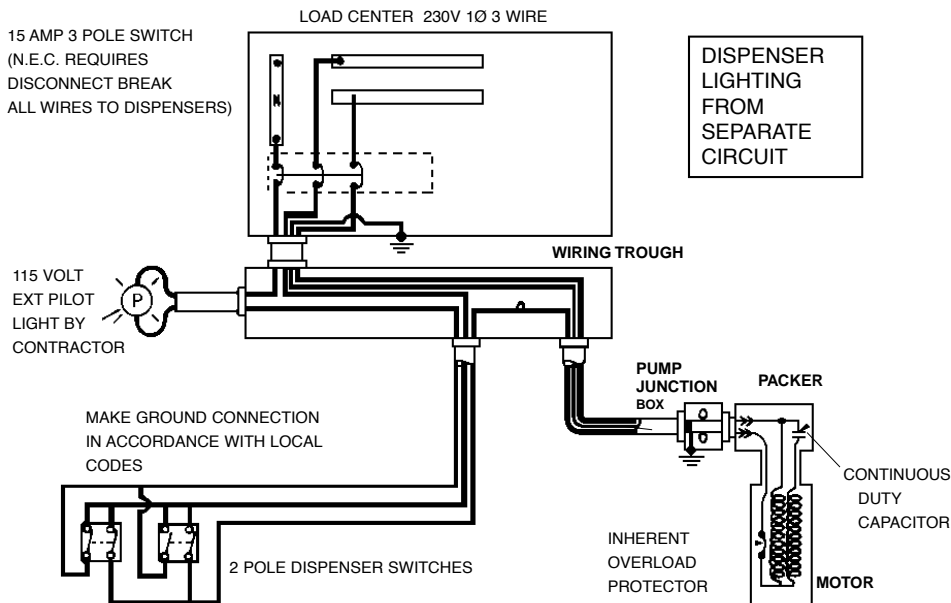
**Figure 2.7 Conduit box wiring**

**230 VAC REMOTE CONTROL BOX WITH 110 VAC COIL  
UL LISTED, RED JACKET MODEL 880-041-5**



**Figure 2.8**

**SUGGESTED WIRING DIAGRAM WITHOUT OPTIONAL CONTROL BOX**

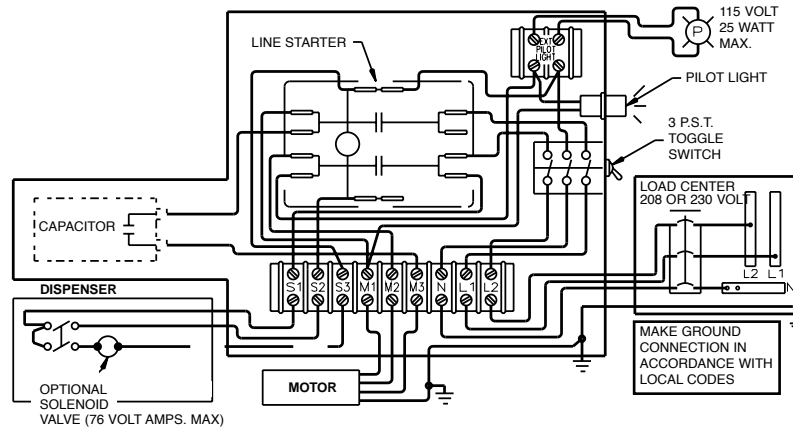


COMBINATION OF 2 POLE DISPENSER SWITCHES OR EXTERNAL PILOT LIGHT.

- RATED FOR TWICE THE FULL LOAD CURRENT OF THE MOTOR:  
1/3 HP-8 AMPS, 3/4 HP-13 AMPS, 1-1/2 HP-21 AMPS, 2 HP-22.8 AMPS
- RATED FOR HANDLING LOCKED ROTOR CURRENT OF THE MOTOR:  
1/3 HP-13 AMPS, 3/4 HP-22 AMPS, 1-1/2 HP-42 AMPS, 2 HP-47 AMPS

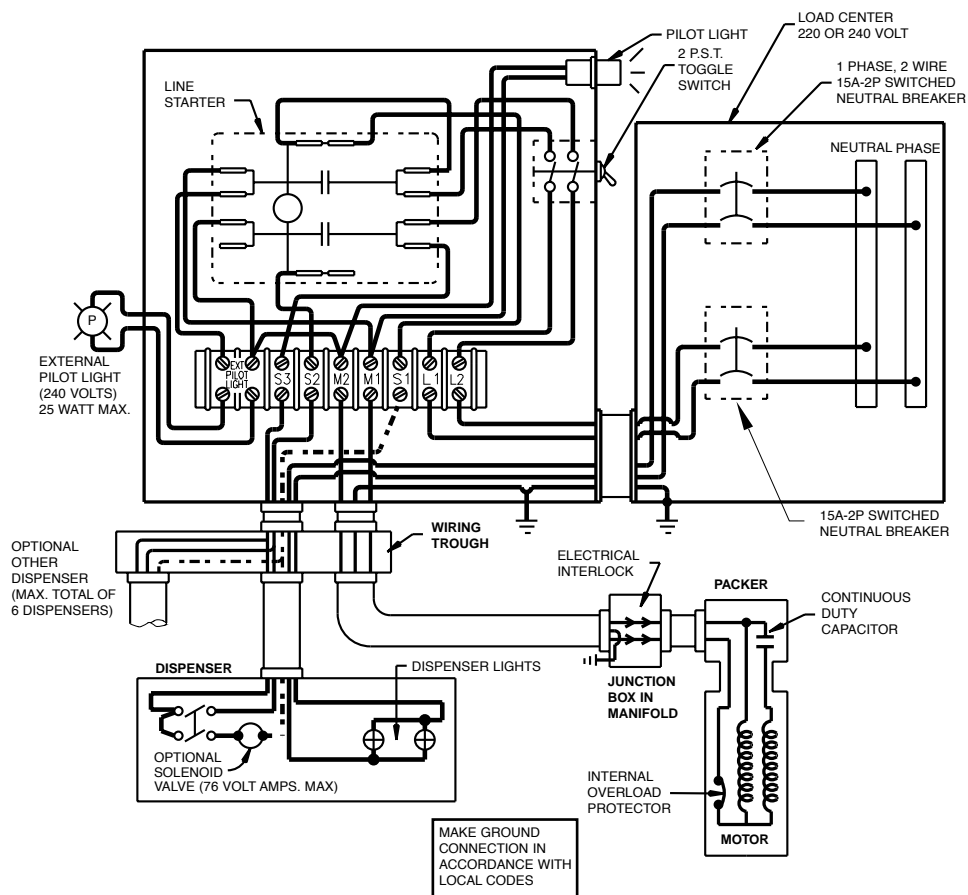
**Figure 2.9**

**230 VAC REMOTE CONTROL BOX WITH 110 VAC COIL AND CAPACITOR  
UL LISTED, RED JACKET MODEL 880-045-5 (1/3 & 3/4 HP) & 880-046-5 (1-1/2 HP)**



**Figure 2.10**

**230 VAC REMOTE CONTROL BOX WITH 230 VAC COIL  
UL LISTED, RED JACKET MODEL 880-042-5**



**Figure 2.11**

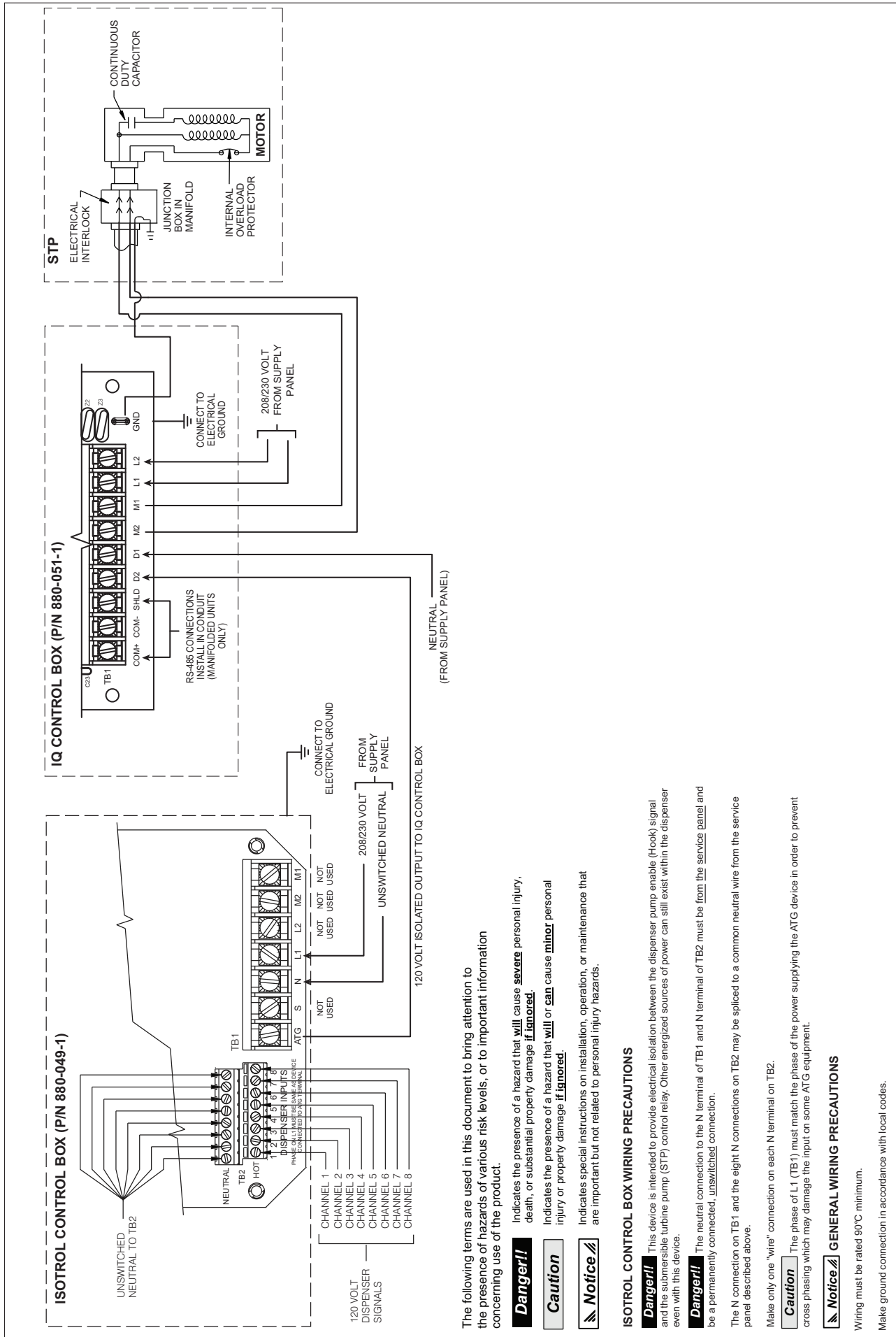
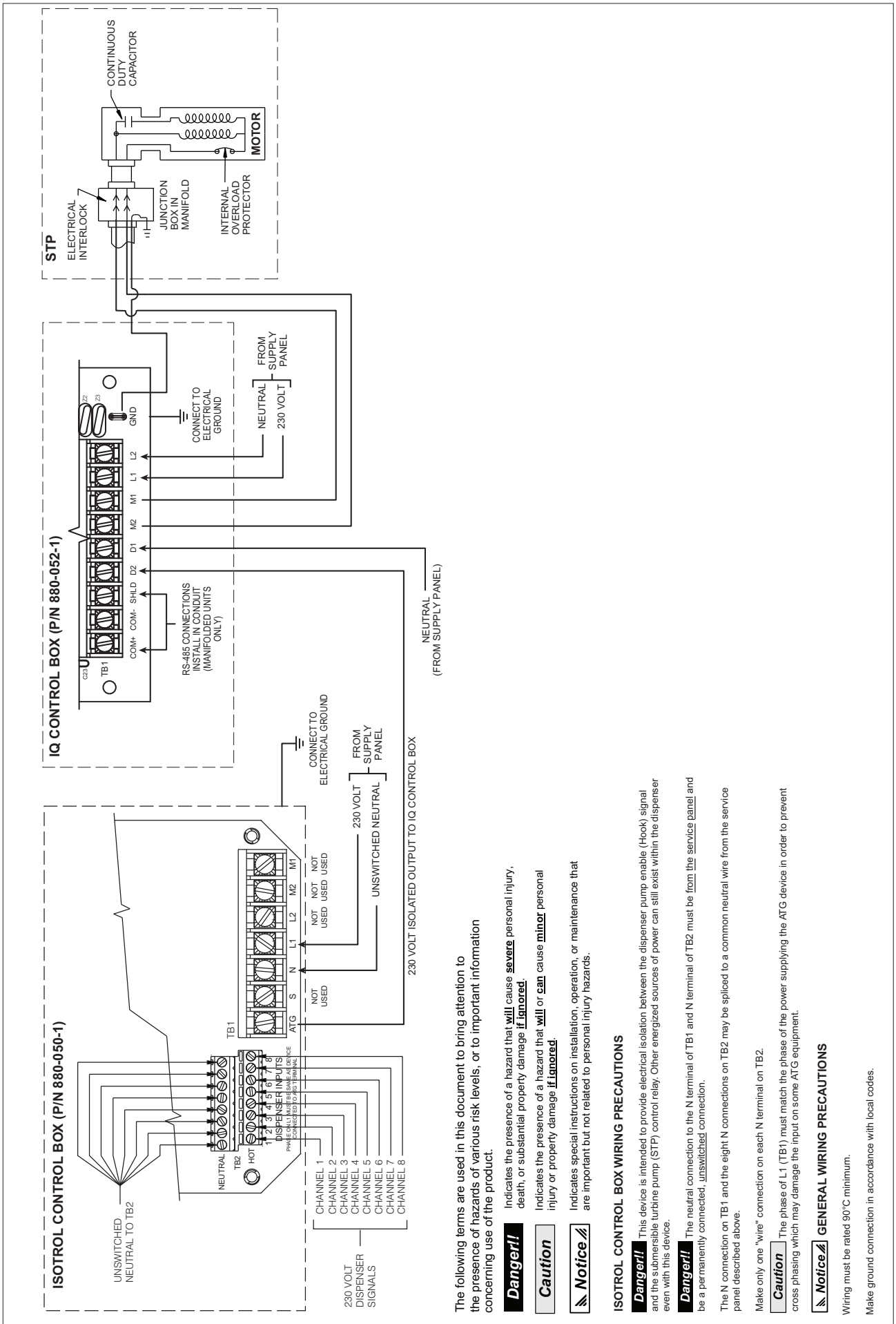


FIGURE 2.11a: ISOTROL TO IQ SYSTEM WIRING - 120 VOLT DISPENSER SIGNALS



The following terms are used in this document to bring attention to the presence of hazards of various risk levels, or to important information concerning use of the product.

- Danger!** Indicates the presence of a hazard that **will** cause **severe** personal injury, death, or substantial property damage **if ignored**.
- Caution** Indicates the presence of a hazard that **will** or **can** cause **minor** personal injury or property damage **if ignored**.
- Notice** Indicates special instructions on installation, operation, or maintenance that are important but not related to personal injury hazards.

**ISOTROL CONTROL BOX WIRING PRECAUTIONS**

- Danger!** This device is intended to provide electrical isolation between the dispenser pump enable (Hook) signal and the submersible turbine pump (STP) control relay. Other energized sources of power can still exist within the dispenser even with this device.
- Danger!** The neutral connection to the N terminal of TB1 and N terminal of TB2 must be from the service panel and be a permanently connected, unswitched connection.
- The N connection on TB1 and the eight N connections on TB2 may be spliced to a common neutral wire from the service panel described above.
- Make only one "wire" connection on each N terminal on TB2.
- Caution** The phase of L1 (TB1) must match the phase of the power supplying the ATG device in order to prevent cross phasing which may damage the input on some ATG equipment.

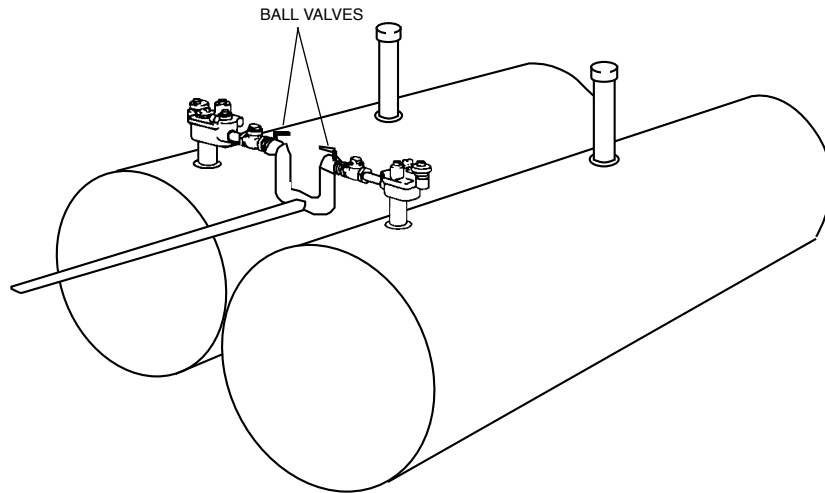
**GENERAL WIRING PRECAUTIONS**

- Notice** Wiring must be rated 90°C minimum.
- Make ground connection in accordance with local codes.

**FIGURE 2.11b: ISOTROL TO IQ SYSTEM WIRING - 230 VOLT DISPENSER SIGNALS**

## INSTALLING TWO PUMPS FOR TANDEM OPERATION

When greater flow rates are needed, two pumps may be installed in the same piping system by means of a manifold. If installed according to the illustration below (figure 2.12), tandem systems offer backup support so operations can continue if one pump stops working.



**Figure 2.12 Tandem pumps**

### WARNING

Adjust the Pressurstat on both packers to maximum relief pressure by rotating fully clockwise. If maximum pump pressures are NOT a minimum of 5 psi (34 kPa) 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.



*The in line check valves and 115 VAC relay are not available from Red Jacket and should be purchased locally. See figure 2.13.*

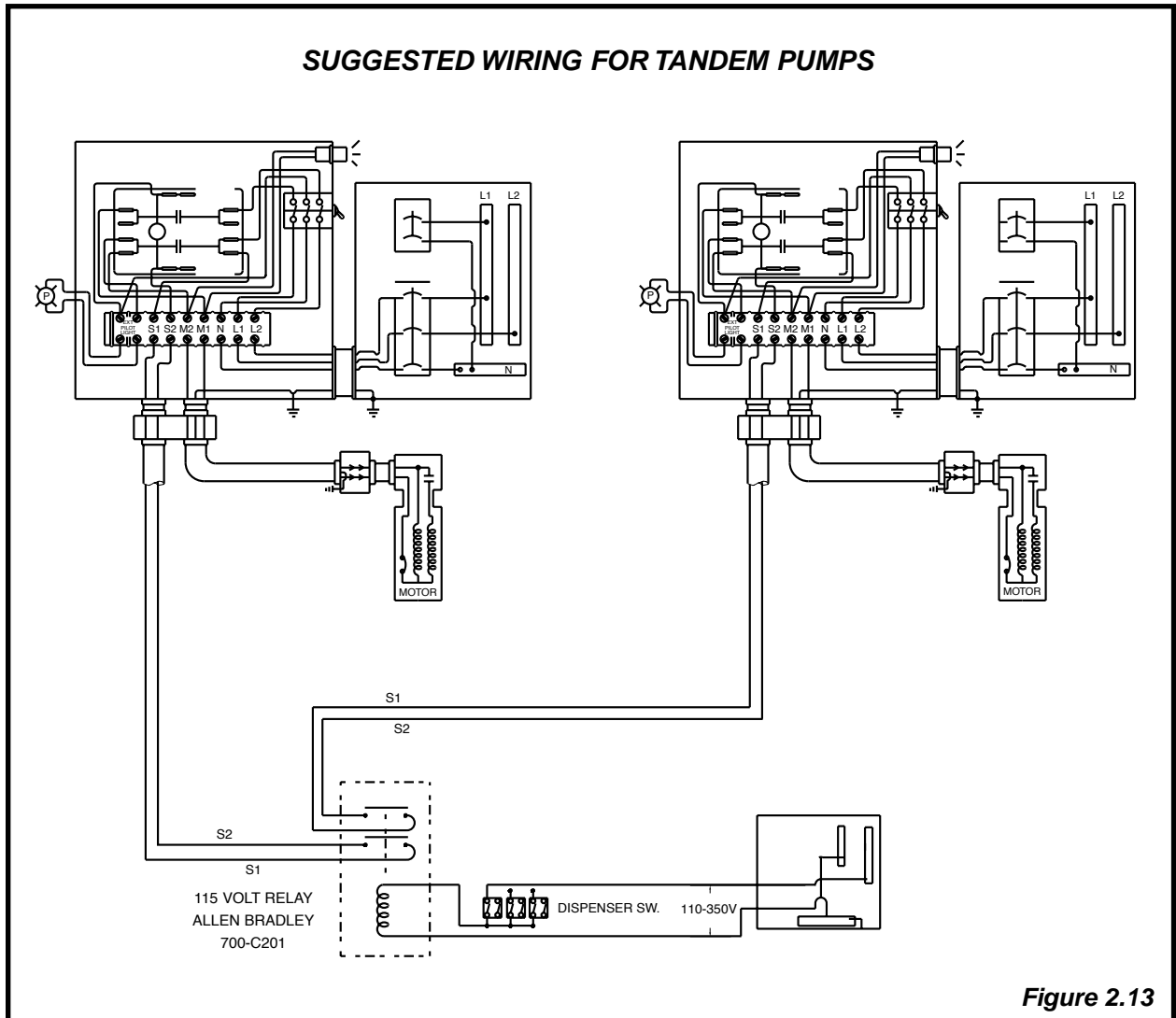


*Ball valves should be installed at the pump end of the discharge line for ease of maintenance and troubleshooting. See figure 2.12.*

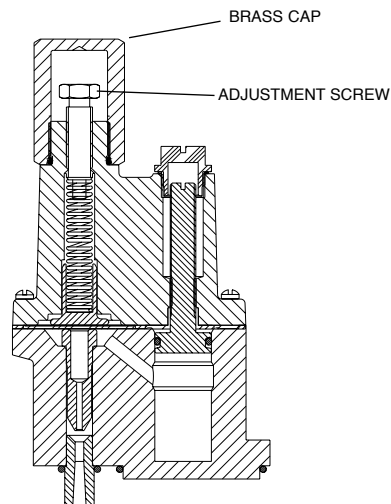


### Single Phase

This diagram (Fig 2.13) shows the wiring allowing both submersibles to operate simultaneously with any combination of dispensers turned on. To operate individually, the appropriate toggle switch, located externally on the side of the control box can be turned off manually.



## ADJUSTING THE PRESSURSTAT



**Figure 2.14 Pressurstat cap and adjustment screw**

### **DANGER**

**ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service the pump.**

The Pressurstat contained in this package is an adjustable model. All Pressurstats are factory set at relief pressures of 23 psi (160 kPa) to 28 psi (195 kPa) but can be adjusted to a maximum of 40 psi (276 kPa) to 45 psi (310 kPa) by turning down the adjustment screw.

This adjustment feature allows the use of the Red Jacket pump with electronic line leak detection systems that require higher relief pressures.

- 1: Remove the brass cap (Fig. 2.14).
- 2: Turn down the adjustment screw (Fig. 2.14). Tightening the screw clockwise will increase the pressure. When the adjusting screw is fully down, the relief pressure is approximately 40 psi (276 kPa) to 45 psi (310 kPa). Fully up will result in relief pressures between 0 psi (0 kPa) and 3 psi (20 kPa).
- 3: Replace brass cap by turning it until it bottoms out. Hand tightening is sufficient as the o-ring completes the seal.

There are two methods to verify the relief pressure setting:

- The pressure reading can be taken from the control unit of an electronic line leak detection system if one is in operation. Observe the pressure that occurs after the pump turns off — this is the adjusted relief pressure.
- Pressure may be observed using a gauge attached at the impact valve or the line test port at the pump. Observe the pressure that occurs after the pump turns off — this is the adjusted relief pressure.

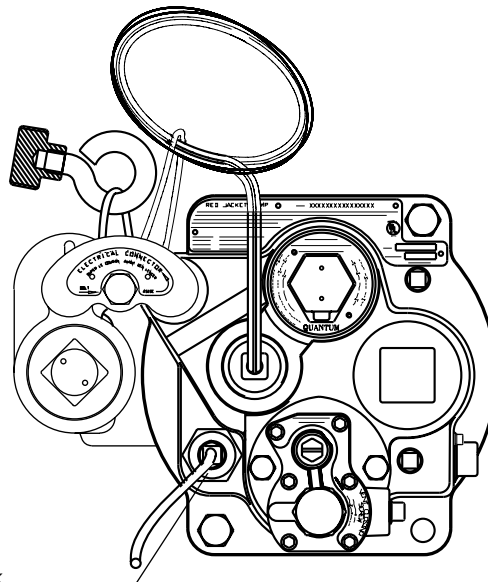
**NOTICE**

The primary siphon system for the Quantum is the brass fixture located beside the Pressurstat. The 3/8" NPT plug in the fixture should be removed and siphon check valve with siphon line attached to the fixture in that port. See Fig. 2.15

**NOTICE**

It is strongly recommended that the primary siphon be used. If this recommendation is ignored and siphon lines are attached to the Pressurstat, the 5 psi (34 kPa) rule comes into effect. The pump must be able to create 5 psi (34 kPa) more than what the Pressurstat relief pressure is set at.

For example: if a relief pressure of 25 psi (170 kPa) is desired, the pump in use must be capable of producing 30 psi (210 kPa) minimum.



PRIMARY SIPHON WITH SIPHON CHECK VALVE

**Figure 2.15 Primary Siphon**

**TABLE G:**

RED JACKET PUMP – APPROXIMATE PRESSURE AT SHUT-OFF	
AGUMP33R1, UMP33U1	25 psi (172 kPa) .74 SG @ 60° F (15° C)
AGUMP75S1, UMP75U1	28 psi (193kPa) .74 SG @ 60° F (15° C)
AGUMP150S1, UMP150U1	30 psi (207 kPa) .74 SG @ 60° F (15° C)
X3AGUMP150S1, X3UMP150U1	43 psi (297 kPa) .74 SG @ 60° F (15° C)
X5AGUMP150S1, X5UMP150U1	46 psi (317 kPa) .74 SG @ 60° F (15° C)
AGUMP75S3-3, UMP75U3-3	30 psi (207 kPa) .74 SG @ 60° F (15° C)
AGUMP75S17-3, UMP75U17-3	29 psi (200 kPa) .74 SG @ 60° F (15° C)
AGUMP150S3-3, UMP150U3-3	32 psi (220 kPa) .74 SG @ 60° F (15° C)
AGUMP150S17-3, UMP150U17-3	32 psi (220 kPa) .74 SG @ 60° F (15° C)
X4AGUMP150S3, X4UMP150U3	40 psi (275 kPa) .74 SG @ 60° F (15° C)
X4AGUMP150S17, X4UMP150U17	39 psi (267 kPa) .74 SG @ 60° F (15° C)
AGUMP200S1-3, UMP200U1-3	43 psi (297kPa) .74 SG @ 60°F (15°C)

## CHAPTER 3: TESTING THE INSTALLATION

### NOTICE

ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service pump.

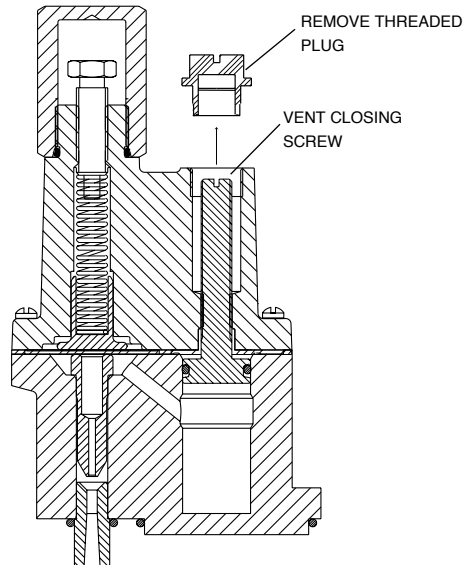
### To TEST PIPING

- 1: Block lines at each dispenser. (Trip dispenser shear valve.) Remove line test plug for this test.
- 2: Close pump check valve by turning the vent closing screw as far down as possible. (See Fig 3.1)

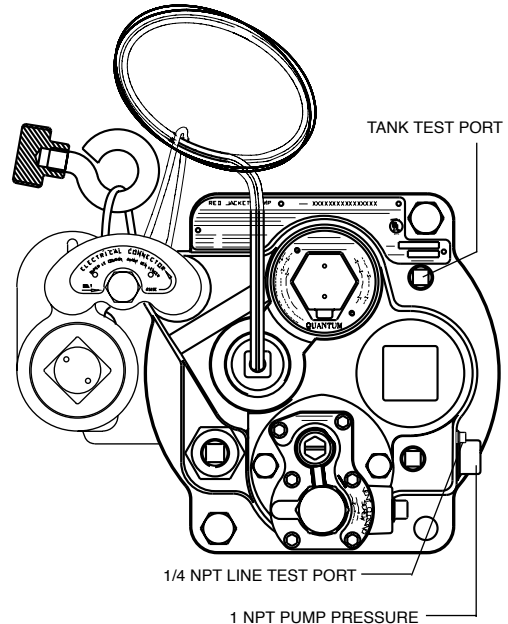
### CAUTION

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

- 3: Apply line test pressure at line test port. (50 psi (345 kPa) maximum). (See Fig 3.2)



**Figure 3.1 Closing the check valve**



**Figure 3.2 Line test port**

### To TEST TANK

- 1: Close pump check valve by turning the vent closing screw as far down as possible. Apply tank test pressure at tank test port. (See fig. 3.2)
- 2: After completion of line and/or tank tests, release pressure by turning the vent closing screw as far up as possible.
- 3: After the installation is completed and tests have been made, purge system of air by pumping at least 15 gallons (57 liters) through each dispenser. Begin with the dispenser furthest from pump and work toward the pump.

## CHAPTER 4: SERVICE AND REPAIR

### TECHNICAL SUPPORT

*For technical assistance 24 hours a day, call*

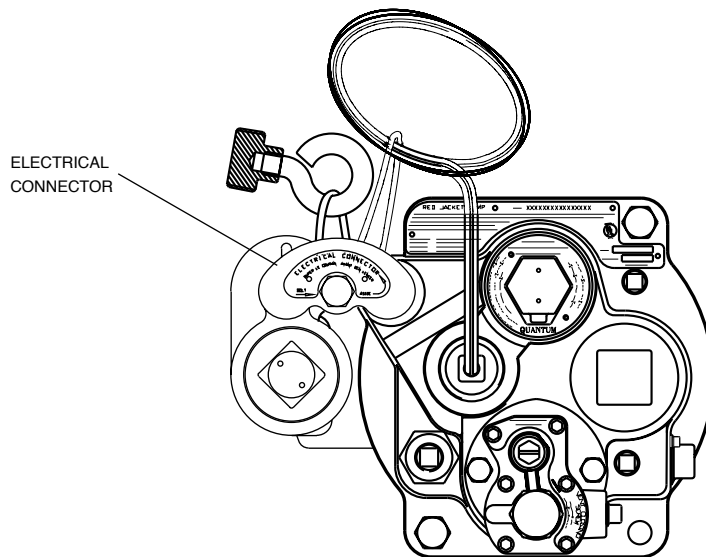
**1-800-777-2480.**

Please have your Red Jacket Technical Support ID number when calling.

See the Parts List in Appendix A.

See Limited Warranty on back cover.

### REMOVING THE PUMP



**Figure 4.1 Packer**

#### **DANGER**

**ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service the pump.**

- 1: Back out the electrical yoke disconnect bolt. (See fig. 4.1)
- 2: Swing the electrical connector aside.

- 3: If a siphon system is in place, disconnect the siphon tubing. If ball valves are installed, close them.
- 4: Remove the two lock-down bolts. To relieve pressure, rock the pump to allow excess pressure to flow into the tank or back out Pressurstat screw.
- 5: Lift out the extractable unit.

**CAUTION**

**DO NOT damage the surface above the discharge port. The o-ring below the leak detector port seals on this surface.**

**NOTICE**

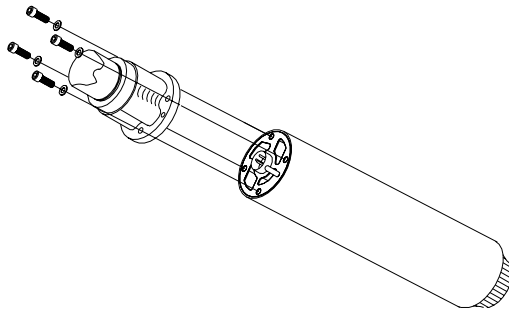
**Before replacing the extractable portion, make sure that the packer o-ring and discharge o-ring seal surfaces are clean. New o-rings should be installed.**

## REPLACING THE UMP

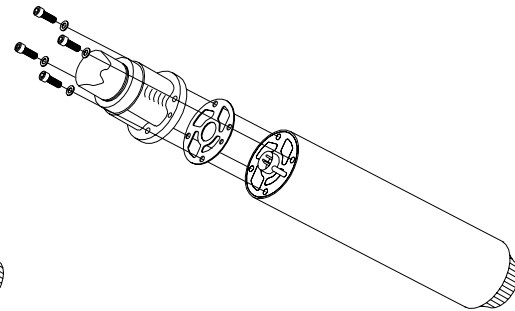
**DANGER**

**ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service the pump.**

- 1: Remove the extractable portion of the old pump from the tank as described in removing the pump.
- 2: Remove the old UMP by removing the four bolts holding the discharge head as shown in figure 4.2.
- 3: Rock the unit while pulling away from the discharge head until it is free.
- 4: Replace the old gasket with a new one provided. Place the new gasket on the new UMP so that all the holes align.



**Figure 4.2 Removing the UMP**



**Figure 4.3 Replacing the gasket**

**NOTICE**

**Gaskets from competitive UMPS will not seal properly and performance will be reduced.**

**CAUTION**

**Visually inspect the pigtail connector in the discharge head. Replace if damaged. Be certain the indexing tab of the pigtail is seated in the notch of the discharge head.**

- 5: Lubricate o-ring and pigtail with petroleum based jelly.
- 6: Align the UMP positioning dowel and boss with the proper holes in the discharge head and push the UMP into position using hand force only. The UMP should be snug against the discharge head prior to installing the UMP retaining bolts.

**NOTICE**

Use hand force to put the UMP onto the discharge head. If the UMP does not seat properly, snug against the discharge head, remove the UMP and correct the problem.

**NOTICE**

Do not use the bolts to pull the UMP into position. Use the cross pattern to snug and torque bolts. Do not over torque the bolts. Not following these instructions may cause parts to fail.

- 7: Install the UMP retaining bolts and lock washers. Snug and then torque the bolts using a cross pattern. Torque to 7 ft-lb. (11 N·m).
- 8: Replace the packer o-ring and the discharge o-ring seals.
- 9: Reinstall the extractable portion into the tank, using the steps previously described under Installing the Pump in chapter 2.

**NOTICE**

Before replacing the extractable, make sure that the surfaces of the packer o-ring and the discharge o-ring seals are clean.

- 10: Refer to Chapter 3 to test system.

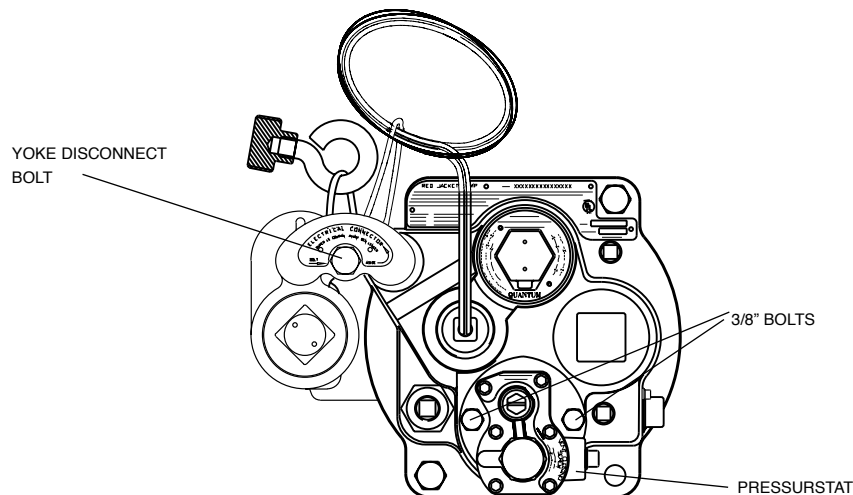
## REPLACING THE PRESSURSTAT

**DANGER**

ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service the pump. Then bleed off any residual pressure from the system.

### Disable the Pump

- 1: Back out the electrical yoke disconnect bolt. (See fig. 4.4)
- 2: Swing the electrical connector aside.



**Figure 4.4 Packer with Pressurstat**

- 3: To relieve the pressure, back out Pressurstat screw.

### Replace the Pressurstat

- 1: Remove the siphon (if siphon is installed in the Pressurstat's port).
- 2: Remove the two 3/8 in. bolts.
- 3: Carefully lift the Pressurstat and remove it from the packer. The old check valve and spring will be resting on top of the check valve seat.

**NOTICE**

The check valve and spring should be replaced if they are damaged or worn.

- 4: Carefully set the new Pressurstat and its three new o-rings into place; then, replace the two 3/8 in. bolts.
- 5: Check the seating pressure of the adjustable Pressurstat for proper setting.

## REPLACING THE CAPACITOR IN PACKER

**DANGER**

Serious injury or death can result from using a generic-type capacitor. Generic-type capacitors do not contain internal bleed resistors.

**DANGER**

ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service the pump.

**NOTICE**

Capacitor is 440V, 17.5  $\mu$ F continuous duty with internal bleed resistor for 1/3 & 3/4 HP models. Capacitor is 440V, 25  $\mu$ F continuous duty with internal bleed resistor for 1-1/2 HP models. Capacitor is 440V, 50  $\mu$ F continuous duty with internal bleed register for 2 HP models.

- 1: Remove wiring compartment cover.
- 2: Disconnect wire nuts.
- 3: Stuff yoke and pump wires back toward yoke.
- 4: Pull out capacitor.
- 5: Open capacitor kit.
- 6: Attach black wires with flag terminal to one capacitor terminal and red wire lead with flag terminal to other capacitor terminal.
- 7: Place capacitor in wiring compartment.
- 8: Reinstall wiring compartment cover. Do not use thread sealant. Torque to 50 ft lb (70 N•m).

## INSTALLING A REPLACEMENT EXTRACTABLE PUMP

- 1: Remove existing Red Jacket pump. (See "Removing the Pump" in Chapter 4).



Hardware/Seal Kit 144-209-4 (AG) or 144-329-4 (20%) consists of:  
1 each – Packer O-ring (8-inch OD) and Pac/Man Seal (2-inch OD)  
2 each – 1/2 - 13 x 1 1/4 lockdown Bolts and 3/8 - 16 x 1 1/4 Bolts.

**DANGER**

ALWAYS DISCONNECT and LOCK or TAG OUT the power before starting to service the pump.

- 2: Remove the cover of the existing conduit box.
- 3: Pull wires out of conduit box.
- 4: Remove wire nuts and disconnect wires.
- 5: Remove the two bolts that hold the conduit box to the manifold.



- 6: Disconnect conduit from conduit box. Discard old conduit box.
- 7: Uncrate new Quantum Replacement Pump and Yoke/Conduit Box Kit.
- 8: Attach new conduit box to existing manifold using 3/8 - 16 x 1 1/4 inch bolts from Hardware/Seal Kit 144-209-4 (AG) or 144-329-4 (20%). Reattach box to conduit. Complete installation through step 38 before tightening.

**NOTICE**

**Confirm length of pump prior to installation.**

**CAUTION**

**Do not damage the surface above the discharge port. The o-ring below the leak detector port seals on this surface.**

- 9: Attach the UMP (see attaching the UMP in Chapter 2)
- 10: Measure the distance from the bottom of the tank to the sealing surface of the manifold.
- 11: Uncoil pigtail and lay flat so it will feed into the packer without knotting or kinking.
- 12: Loosen the clinch fittings, starting with the joint closest to the discharge head.
- 13: Pull the UMP end until the distance between the packer o-ring seal and the bottom of the ump is 4 inches (102 mm) (14 inches (356 mm) for floating suction) shorter than the distance measured in step 3.

**NOTICE**

**If UMP is equipped with floating suction adapter, see recommended floating suction installation in Chapter 1.**

**NOTICE**

**Take care not to damage the pigtail. If pump is to be adjusted shorter, tension must be kept on the pigtail to eliminate kinking.**

- 14: Tighten locking nut and torque to 150 ft lb (200 N·m) minimum, then torque the set screw to 30-35 in lb (3.5 - 4 N·m).

**NOTICE**

**Return Line should be installed on every application to insure against nuisance trips of electronic tank monitoring.**

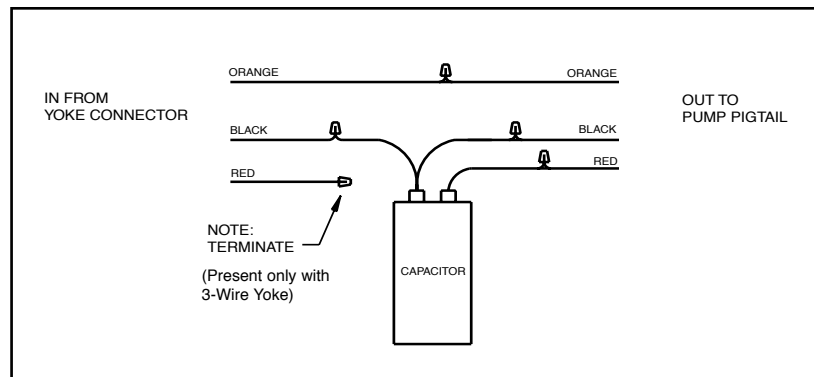
- 15: Attach tubing to barbed fitting, secure with clamp.
- 16: Lay tubing beside column pipe. Cut off 1-3 inches (25-76 mm) above the discharge head.
- 17: Secure tube to column pipe with tie straps. Locate tie straps approximately 6 inches (152 mm) from packer, 6 inches (152 mm) from discharge head and middle of tubing.
- 18: Remove cover from wiring compartment.
- 19: To install capacitor in packer proceed with the following steps. For packers without a capacitor, proceed to step 29.
- 20: Open capacitor kit 144-224-5 or 144-225-5 (see pg. 4 Electrical Service info for proper kit).
- 21: Attach supplied black harness wires with flag terminal to one capacitor terminal and red wire lead with flag terminal to other capacitor terminal.

- 22: Place capacitor in wiring compartment.
- 23: Pull pigtail and yoke wires into wiring compartment.
- 24: Cut pigtail wires leaving approximately 8 inches (200 mm) hanging out of wiring compartment.
- 25: Strip back insulation of all wires 3/8 inch (10 mm).

**TABLE H: CAPACITOR KITS**

Horsepower	2	1/3,3/4	1-1/2
Kits	144-367-5	144-224-5	144-225-5
Capacitor	50 $\mu$ F	17.5 $\mu$ F	25 $\mu$ F
Black Wire Lead	2	2	2
Red Wire Lead	1	1	1
Wire Nuts	5	5	5

- 26: Using supplied wire nuts attach one black wire from capacitor to black pump pigtail wire and other capacitor black wire to black yoke connector wire.
- 27: **For 3-Wire Yoke Only:** Place wire nut on red yoke connector wire to isolate it (it will not be used).
- 28: Attach orange pump pigtail wire to orange yoke connector wire using wire nut. See figure 4.5 to verify connections. Proceed to step 32.
- 29: Pull pigtail and yoke wires into wiring compartment.
- 30: Cut pigtail wires leaving approximately 8 inches (200 mm) hanging out of wiring compartment.



**Figure 4.5 Wiring Schematic**

- 31: Strip back insulation of all wires 3/8 inch (10 mm).
- 32: Connect like colored wires from UMP to like colored wires from yoke connector.
- 33: Install excess wire into wiring compartment. Replace wiring compartment cover. Torque to 35 ft lb (50 N·m). Thread sealant should not be used.
- 34: Install eyebolt plug, use approved non-setting thread sealant and torque to 50 ft lb (70 N·m).

- 35: Remove Packer O-ring and Pac/Man Seal from Hardware/Seal Kit 144-209-4 (AG) or 144-329-4 (20%). Make sure O-ring and seal surfaces are clean and install on packer.
- 36: Loosen the bolt that holds the conduit box to the manifold. Do not remove.
- 37: Swing the electrical yoke into position.
- 38: Torque the electrical yoke bolt to 25-50 ft lb (34-68 N•m).
- 39: Torque the conduit box bolts to 30-45 ft lb (40-61 N•m).



*Suggested tools (non-sparking): 3/4" wrench, pipe wrench, 1/4" allen wrench, 9/16" wrench, screw driver, wire cutter and wire stripper.*



## ***PARTS LIST***

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### ***CUSTOMER SERVICE NUMBER***

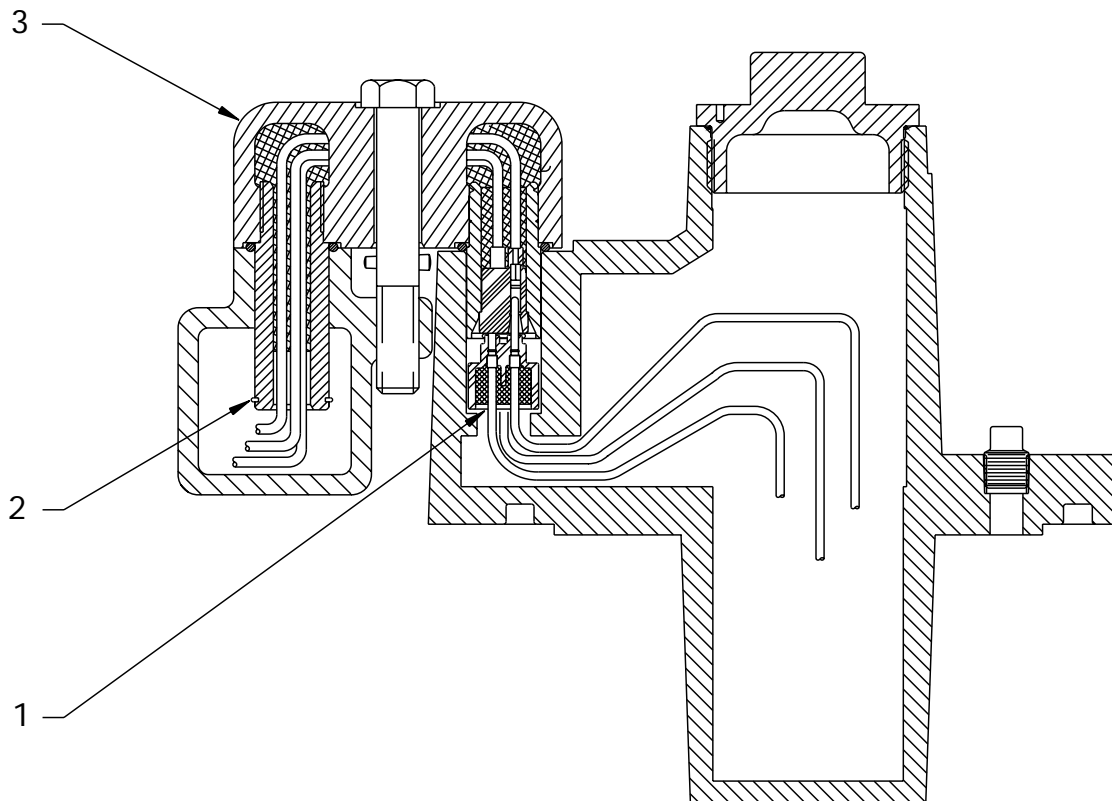
After unpacking the equipment, please inspect the parts. Make sure all accessories are included and that no damage occurred during shipping. Report any damage to the shipper immediately and inform a customer service representative at **1-800-873-3313** of any ***equipment damage*** or ***missing equipment***.

The following pages list the parts for the Pressurstat, final, Quick-Set feature, Yoke Assembly, Packer-Manifold, pump and Control Box.

A dash in a table cell indicates the item is not required for that type of pump.

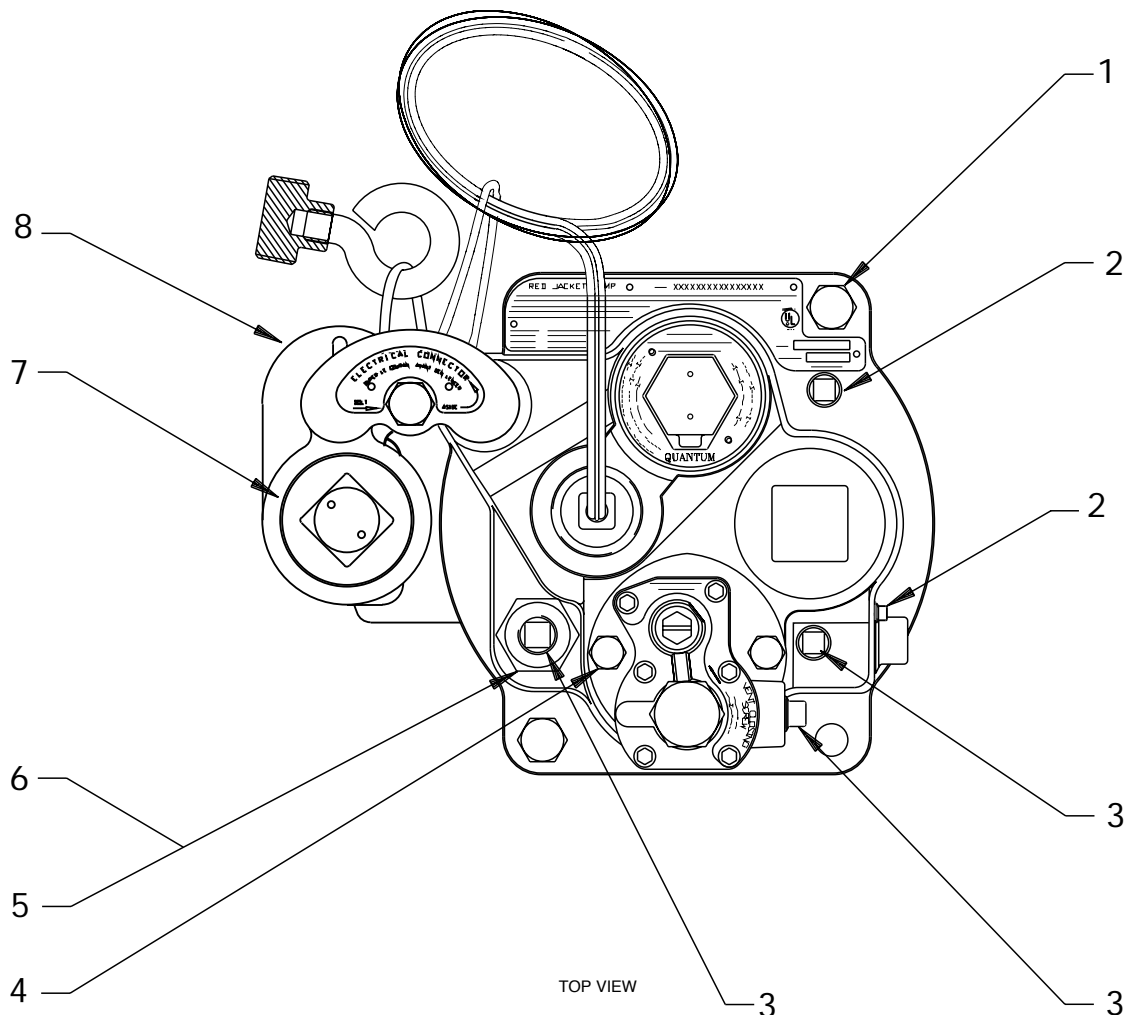
## YOKE ASSEMBLY AND CONDUIT BOX PARTS

ITEM	PART #	DESCRIPTION	QTY
1	113-105-5	CONNECTOR — MALE (2-WIRE)	1
1	113-555-5	CONNECTOR — MALE (3-WIRE)	1
2	072-492-1	RING — SNAP	1
3	313-037-5	CONNECTOR — REPAIR (2-WIRE)	1
3	313-038-5	CONNECTOR — REPAIR (3-WIRE)	1



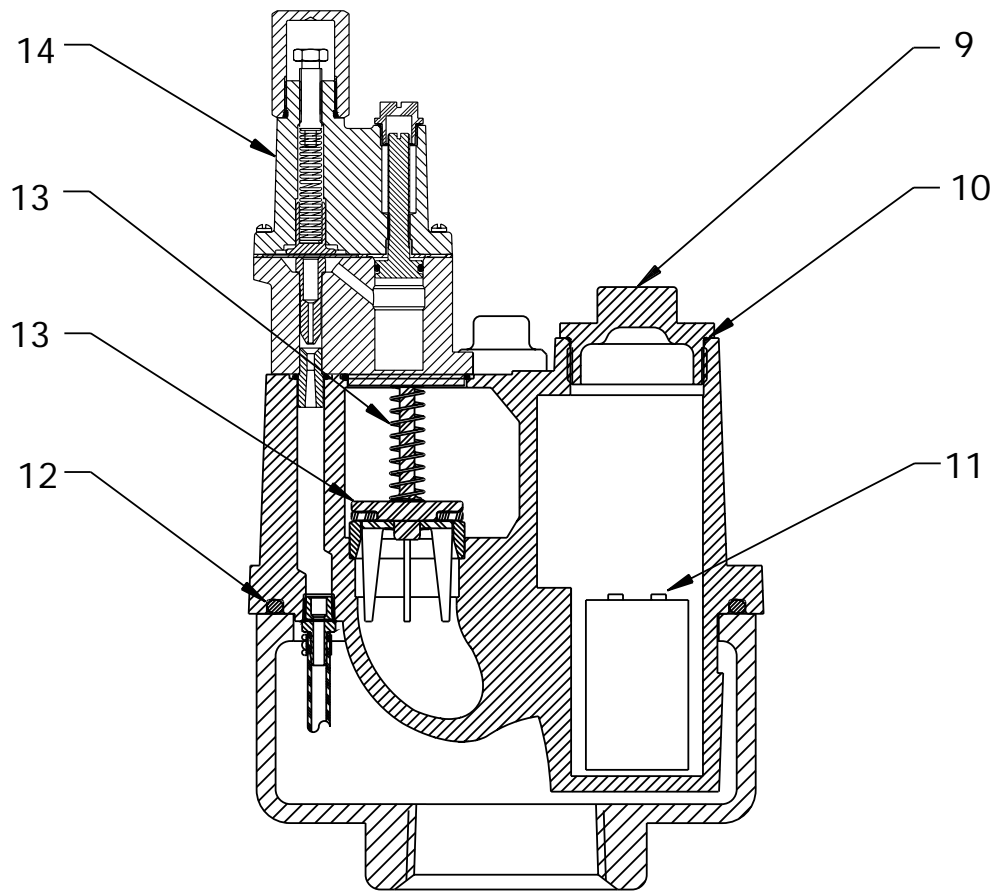
## PACKER-MANIFOLD ASSEMBLY PARTS — PART 1

ITEM	PART #	DESCRIPTION	QTY
1	026-205-1	SCREW - 1/2 13 x 1 1/4 UNC	2
2	027-031-1	PLUG - PIPE 1/4" NPT	2
3	027-084-1	PLUG - PIPE 3/8" NPT	3
4	026-176-1	SCREW - 3/8-16 X 3/4 UNC	2
5	144-230-5	KIT - SIPHON NOZZLE	1
6	288-053-5	SIPHON CHECK VALVE	1
7	027-086-3	PLUG - PIPE 2" NPT (SINGLE BOX ONLY)	1
7	067-281-5	PLUG - ASSY CONDUIT BOX (DUAL BOX OPTION NOT SHOWN)	2
8	144-368-5	KIT - 3 WIRE YOKE & SINGLE CONDUIT BOX	1
8	144-229-5	KIT - 2 WIRE YOKE & DUAL CONDUIT BOX (NOT SHOWN)	1
8	144-226-5	KIT - 3 WIRE YOKE & DUAL CONDUIT BOX (NOT SHOWN)	1



## PACKER-MANIFOLD ASSEMBLY PARTS — PART 2

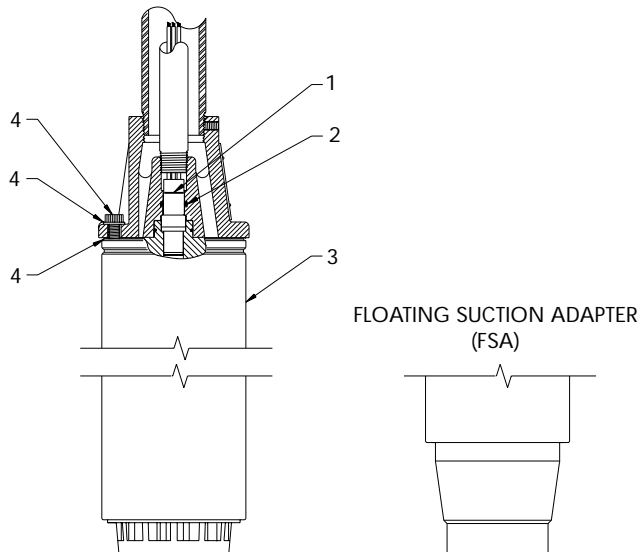
ITEM	PART #	DESCRIPTION	QTY
9	067-283-5	PLUG — ASSY WIRING COMPARTMENT	1
10	072-656-1	O-RING GFLT (-928)	1
11	144-224-5	KIT — CAPACITOR 17.5 $\mu$ F	1
11	144-225-5	KIT — CAPACITOR 25 $\mu$ F	1
11	144-367-5	KIT — CAPACITOR 50 $\mu$ F	1
12	072-542-1	O-RING — VITON (-443)	1
13	144-223-5	KIT — CHECK VALVE & SPRING	1
14	344-004-5	KIT — PRESSURSTAT (ADJ.)	1



SIDE VIEW

## PUMP PARTS

ITEM	PART #	DESCRIPTION	DOM
1	144-091-5	KIT — PIGTAIL	1
2	072-528-1	O-RING GFLT (-113)	1
3	852-083-5	AGUMP33R1	1
3	852-198-5	UMP33U1	1
3	852-084-5	AGUMP75S1	1
3	852-199-5	UMP75U1	1
3	852-085-5	AGUMP150S1	1
3	852-200-5	UMP150U1	1
3	852-134-5	AGUMP33R1 W/FSA	1
3	852-135-5	AGUMP75S1 W/FSA	1
3	852-136-5	AGUMP150S1 W/FSA	1
3	852-128-5	X3AGUMP150S1	1
3	852-202-5	X3UMP150U1	1
3	852-132-5	X3AGUMP150S1 W/FSA	1
3	852-203-5	X3UMP150U1 W/FSA	1
3	852-124-5	X5AGUMP150S1	1
3	852-208-5	X5UMP150U1	1
3	852-221-5	UMP200U1-3	1
3	852-222-5	AGUMP200S1-3	1
3	852-223-5	UMP200U1-3 W/FSA	1
3	852-224-5	AGUMP200S1-3 W/ FSA	1
4	144-327-4	KIT — FLEX SYPHON/UMP (INCLUDES GASKET, LOCKWASHERS AND BOLTS)	1
--	144-194-5	TRAPPER — RETROFIT (NOT SHOWN)	1

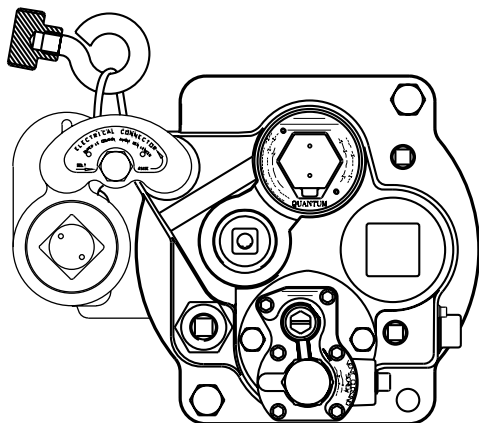




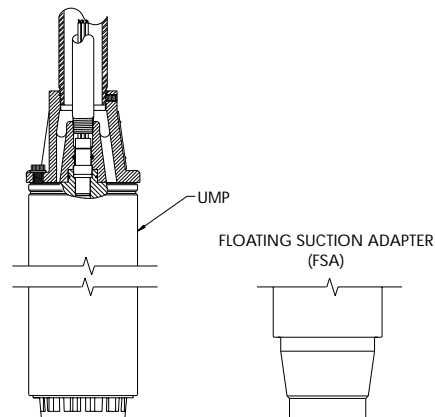
# PUMP PARTS

The parts listed below are for the international market therefore, U.L. listing does not apply as Country specific international code agencies serve as the approval authority where required.

ITEM	PART #	DESCRIPTION	INTL
1	144-091-5	KIT — PIGTAIL	1
2	072-528-1	O-RING	1
3	852-204-5	UMP75U3-3	1
3	852-206-5	UMP75U3-3 W/FSA	1
3	852-207-5	UMP150U3-3 W/FSA	1
3	852-205-5	UMP150U3-3	1
3	852-107-5	AGUMP75S3-3	1
3	852-111-5	AGUMP75S3-3 W/FSA	1
3	852-108-5	AGUMP150S3-3	1
3	852-112-5	AGUMP150S3-3 W/FSA	1
3	852-192-5	UMP75U3-3 W/2" DISCHARGE HEAD	1
3	852-193-5	UMP150U3-3 W/2" DISCHARGE HEAD	1
3	852-194-5	X4UMP150U3 W/2" DISCHARGE HEAD	1
3	852-195-5	UMP75U17-3 W/2" DISCHARGE HEAD	1
3	852-196-5	UMP150U17-3 W/2" DISCHARGE HEAD	1
3	852-197-5	X4UMP150U17 W/2" DISCHARGE HEAD	1
	364-101-5	PACKER/MANIFOLD ASSEMBLY	1
	176-082-5	SEAL — CONDUIT ADAPTER ASSEMBLY	1
4	144-327-5	KIT — FLEX SYPHON/UMP (INCLUDES GASKET, LOCKWASHERS AND BOLTS)	1
N.S.	144-194-5	TRAPPER — RETROFIT (NOT SHOWN)	1



PACKER/MANIFOLD ASSEMBLY



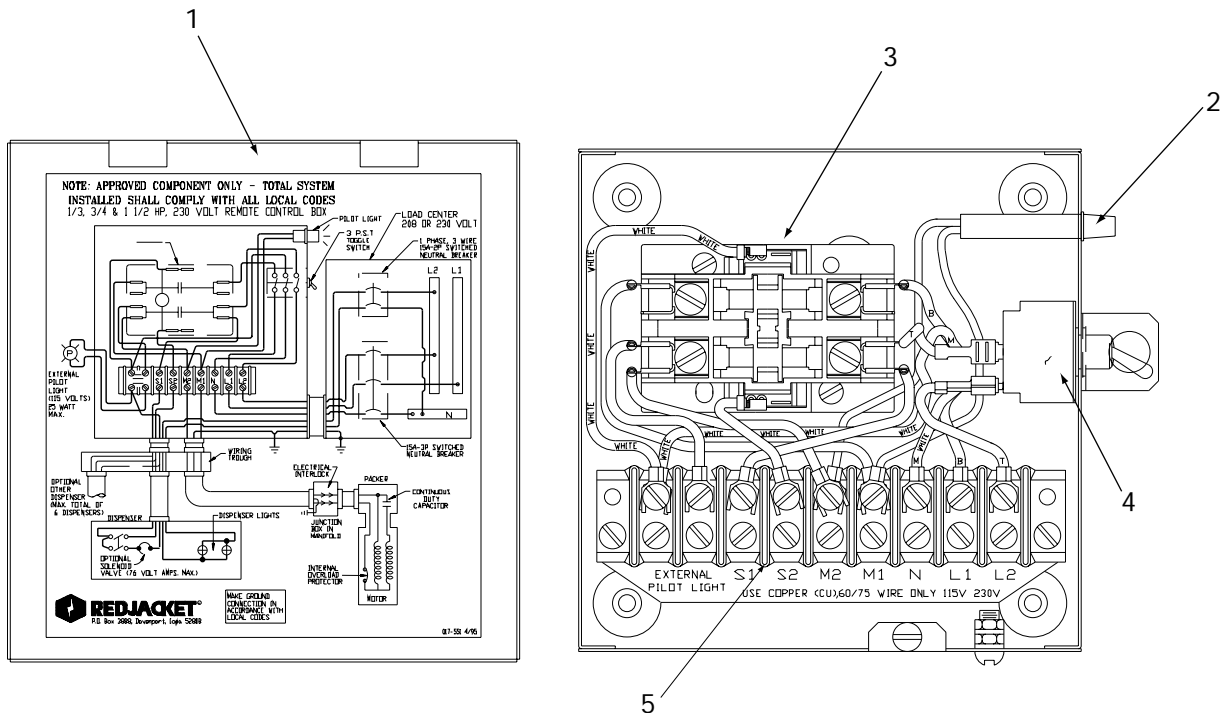
## CONTROL BOXES — PART 1

### 880-041-5 CONTROL BOX W/115V COIL (60 HZ)

ITEM	PART #	DESCRIPTION	QTY
1	108-572-4	CONTROL BOX	1
2	147-006-1	PILOT LIGHT ASSY	1
3	014-723-1	LINE CONTRACTOR RELAY	1
4	080-858-1	TOGGLE SWITCH	1
5	008-202-1	TERMINAL BLOCK	1

### 880-042-5 CONTROL BOX W/230V COIL (50/60 HZ)

ITEM	PART #	DESCRIPTION	QTY
1	108-572-4	CONTROL BOX	1
2	147-006-1	PILOT LIGHT ASSY	1
3	014-720-1	LINE CONTRACTOR RELAY	1
4	080-062-1	TOGGLE SWITCH	1
5	008-202-1	TERMINAL BLOCK	1



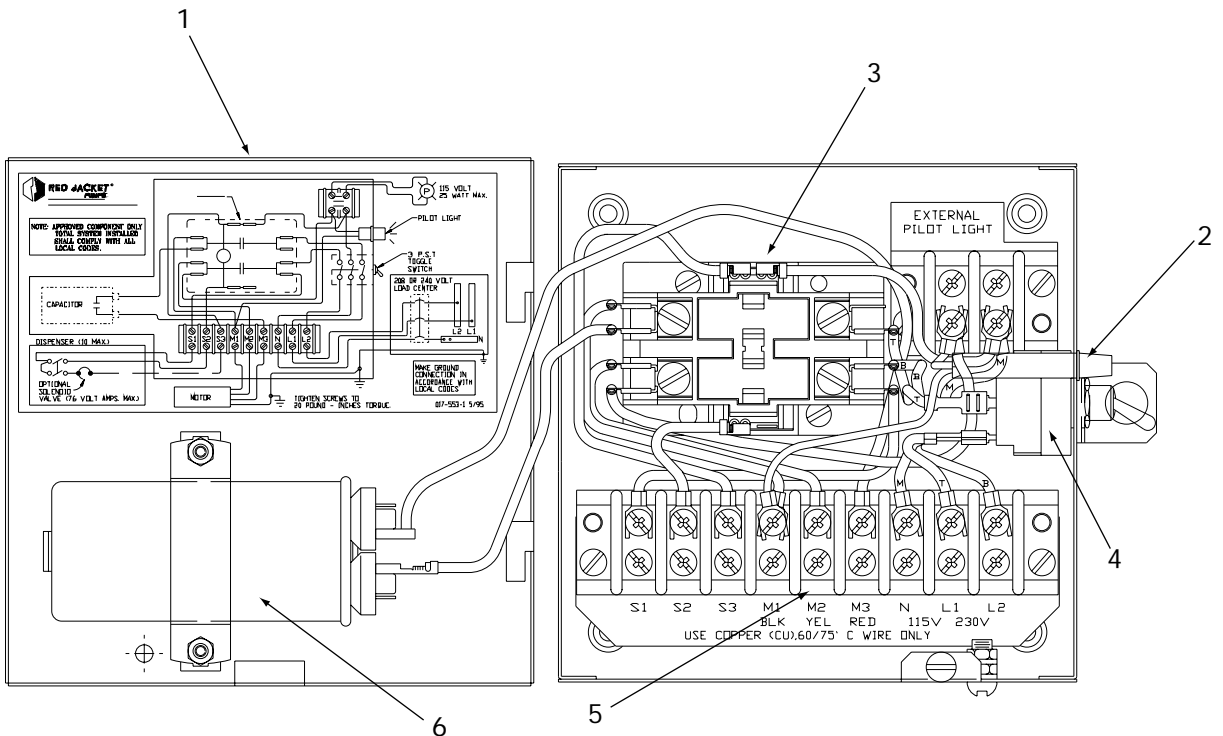
## CONTROL BOXES — PART 2

### 880-045-5 1/3 & 3/4 HP CONTROL BOX W/CAPACITOR (115V COIL)

ITEM	PART #	DESCRIPTION	QTY
1	123-141-1	CONTROL BOX	1
2	147-006-1	PILOT LIGHT ASSY	1
3	014-723-1	LINE CONTRACTOR RELAY	1
4	080-858-1	TOGGLE SWITCH	1
5	008-202-1	TERMINAL BLOCK	1
6	111-092-5	CAPACITOR	1

### 880-046-5 ALL 1-1/2 HP CONTROL BOX W/CAPACITOR (115V COIL)

ITEM	PART #	DESCRIPTION	QTY
1	123-141-1	CONTROL BOX	1
2	147-006-1	PILOT LIGHT ASSY	1
3	014-723-1	LINE CONTRACTOR RELAY	1
4	080-858-1	TOGGLE SWITCH	1
5	008-202-1	TERMINAL BLOCK	1
6	111-661-5	CAPACITOR	1



## Appendix A: Quantum Red Jacket STP Safety Instructions

1. ATEX Directive 94/9/EC approved Red Jacket Submersible Turbine Pump (STP) marked with the following information defining its limits for safe use.
  - Location Classification:  
CE 0539 Ex II2G  
EEx ds IIA T3
  - Special Conditions for Safe Use:  
“The pump motor must not be allowed to run dry. This assembly must be used with appropriately certified equipment that ensures that the motor either remains fully submersed or that there is a continuous presence of fluid inside the pump motor.”
  - Certification Number:  
DEMKO 03 ATEX 0237289X
2. For European installations, electrical conduit must be connected through an ATEX EEx d IIB certified cable gland or stopping box.
3. Initial start-up of this pump requires that the pump motor be fully submersed in fuel.
4. The Red Jacket Quantum Submersible Turbine Pump requires no periodic maintenance or calibration.



# Red Jacket

By  **VEEDER-ROOT**

125 Powder Forest Drive • Simsbury, CT 06070  
Tel: (860) 651-2700 • Fax: (860) 651-2719