Manual No: **042-129-1** ● Revision: **J**

Quantum 4" Submersible Pump

Installation, Operation & Service

RED JACKET™

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

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3. VR will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

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3. If "lost" equipment is delivered at a later date and is not needed, VR will allow a Return to Stock without a restocking fee.
4. VR will NOT be responsible for any compensation when a customer chooses their own carrier.

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Figures

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Introduction

This manual contains installation, operation, and service information for the Red Jacket Quantum, 4-inch submersible pump.

Safety Precautions

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

	**EXPLOSIVE** Fuels and their vapors are extremely explosive if ignited.		**FLAMMABLE** Fuels and their vapors are extremely flammable.
	**ELECTRICITY** High voltage exists in, and is supplied to, the device. A potential shock hazard exists.		**TURN POWER OFF** Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.
⚠WARNING	**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.	⚠CAUTION	**CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	**READ ALL RELATED MANUALS** 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	*NOTICE*	**NOTICE** is used to address practices not related to physical injury.

⚠ WARNING

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

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

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

Fuel Compatibilities

Quantum pumps are designed to be compatible with 100 percent gasoline, or diesel and 80 percent gasoline with 20 percent methanol, ethanol, TAME, ETBE, or MTBE (see Table 1). All UMPs having the model numbers including the AG prefix are designed to be compatible with 100 percent gasoline, methanol, ethanol, or diesel and 80 percent gasoline with 20 percent TAME, ETBE, or MTBE. Single phase pumps are UL listed (Class I, Group D atmosphere).

Table 1.- Maximum Specific Gravity and Maximum Viscosity

UMP Model	Maximum Specific Gravity	Maximum Viscosity
AGUMP33R1, UMP33U1	.95	70SSU at 60°F (15°C)
AGUMP75S1, UMP75U1	.95	70SSU at 60°F (15°C)
AGUMP150S1, UMP150U1	.95	70SSU at 60°F (15°C)
AGUMP75S3-3, UMP75U3-3	.95	70SSU at 60°F (15°C)
AGUMP150S3-3, UMP150U3-3	.95	70SSU at 60°F (15°C)
X3AGUMP150S1, X3UMP150U1	.87	70SSU at 60°F (15°C)
X5AGUMP150S1, X5UMP150U1	.80	70SSU at 60°F (15°C)
AGUMP75S17-3, UMP75U17-3	.95	70SSU at 60°F (15°C)
AGUMP150S17-3, UMP150U17-3	.95	70SSU at 60°F (15°C)
X4AGUMP150S17, X4UMP150U17	.86	70SSU at 60°F (15°C)
X4GUMP150S3, X4UMP150U3	.86	70SSU at 60°F (15°C)
AGUMP200S1-3, UMP200U1-3	.87	70SSU at 60°F (15°C)

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

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

Leak Detector Installation and Manifold Dimensions

Figure 1 shows several manifold views of the Quantum pump.

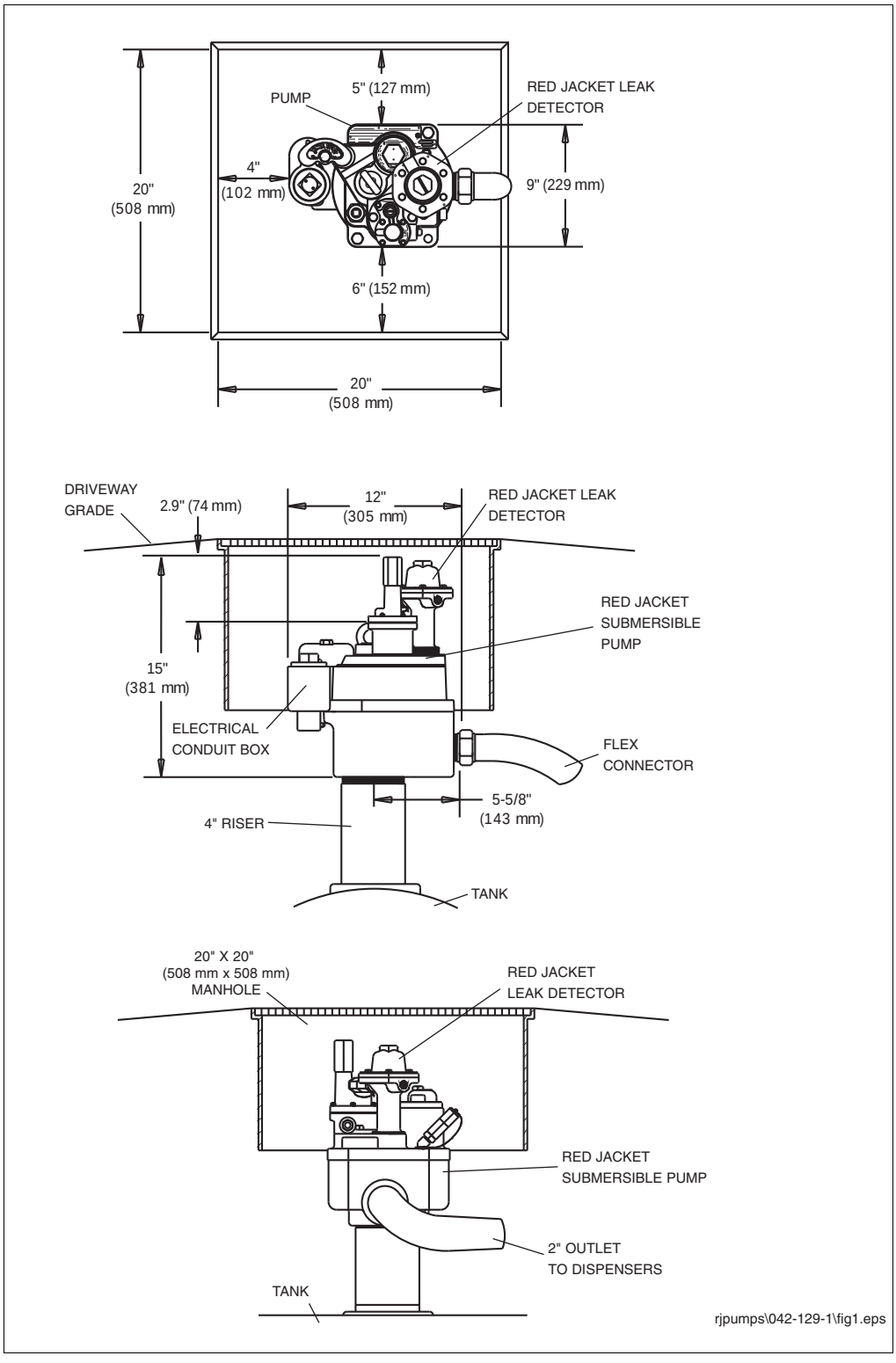


Figure 1. Leak detector and manifold dimensions

Recommended Floating Suction Installation

Figure 2 is an example of a floating suction installation. The floating suction arm can be mounted to pump previous to installing in tank.

NOTICE **We supply adapter only, not the apparatus. Floating suction adapter is not available for the X5 model pump.**

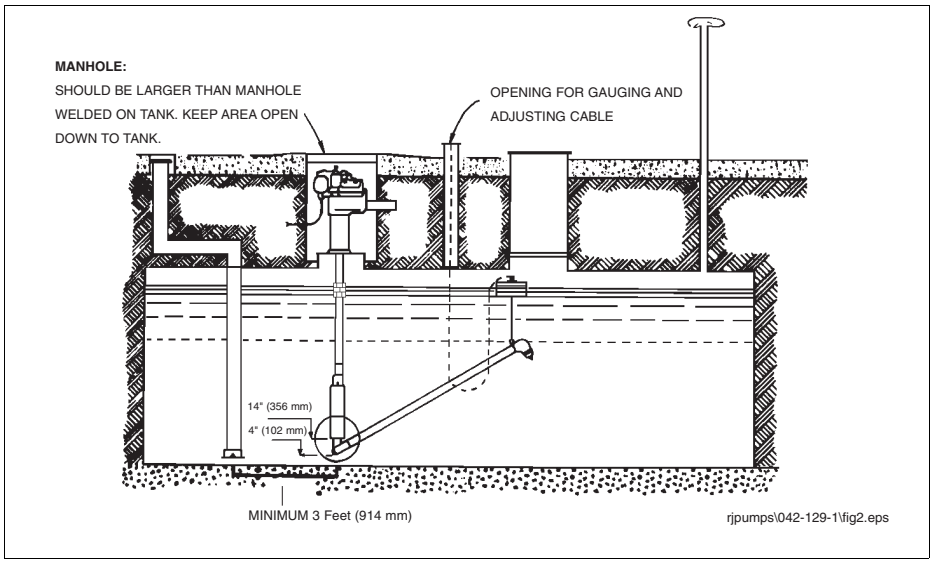


Figure 2. Floating suction installation

Figure 3 is an enlarged view within the circle in the above figure.

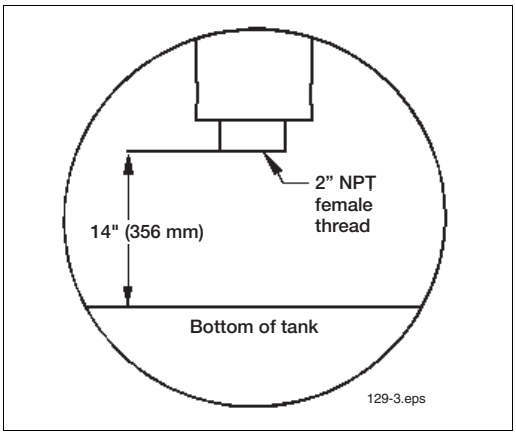


Figure 3. Floating suction adapter

Easy service access is provided by unbolting manhole lid through which pump is mounted and removing entire assembly. Use proper thread sealant and inset 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 are not designed to pump product when the level is below the bottom end of the UMP.**

Dimensions for Pump Selection

Figure 4 shows the dimensions needed to ensure a correctly sized pump.

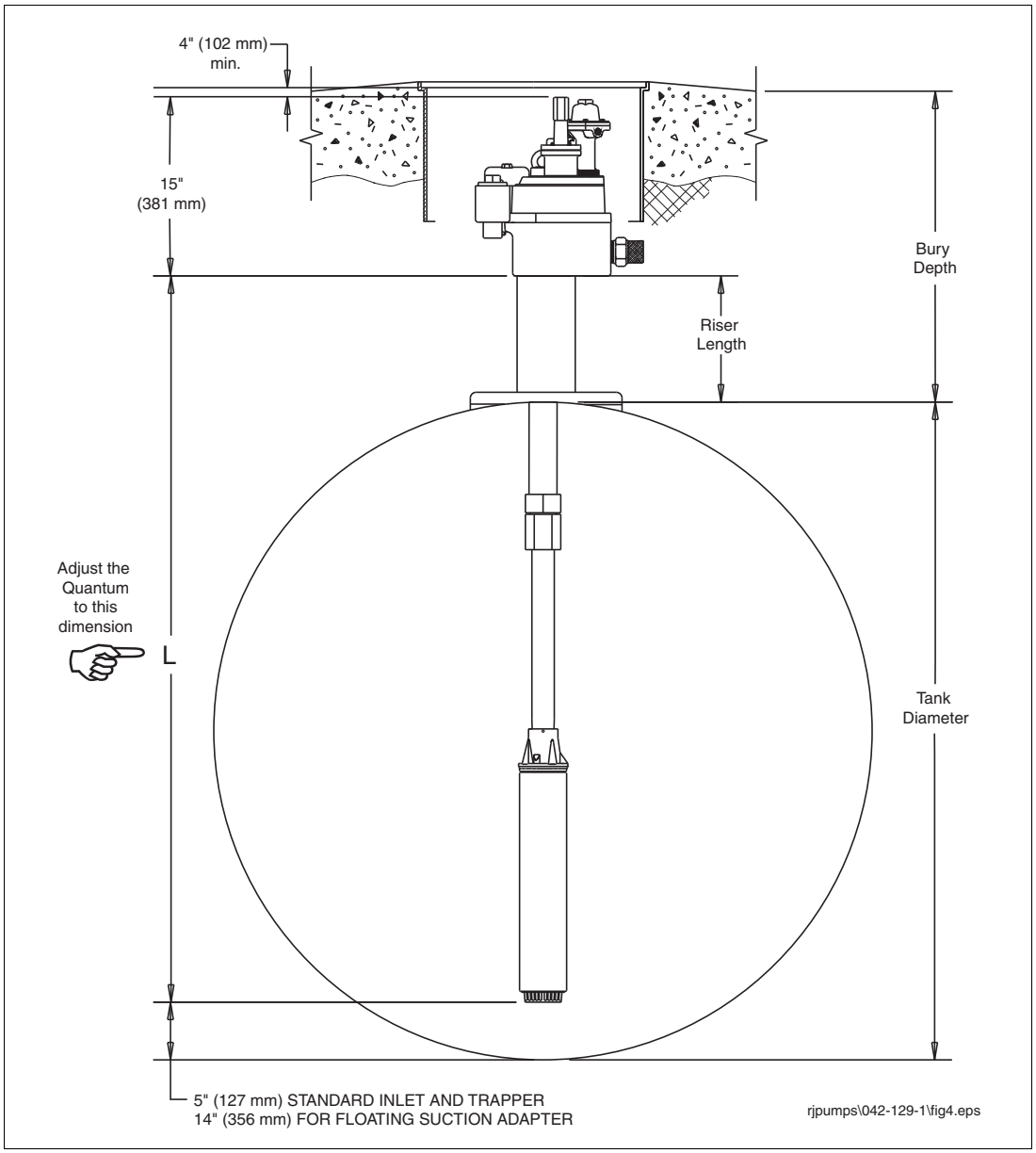


Figure 4. Measuring the tank (see Table 2 for adjustment ranges).

NOTICE **Distance between centerline of pump motor and centerline of bottom fill tube should be 3 feet (914 mm) minimum. Air locking of pump after product delivery may occur at distances less than this.**

Specifications

Table 2 shows the adjustable pump lengths by model.

Table 2.- Distance From top of pressurstat to Inlet

MODEL#	COMPRESSED		EXTENDED	
	in.	mm	in.	mm
AGP33R1YQS1, AGP33R1YRQS1, P33U1YQS1, P33U1YRQS1	69.5	1765	100	2540
AGP33R1YQS2, AGP33R1YRQS2, P33U1YQS2, P33U1YRQS2	99.5	2527	160	4064
AGP33R1YQS3, AGP33R1YRQS3, P33U1YQS3, P33U1YRQS3	159.5	4051	220	5588
AGP75S1YQS1, AGP75S1YRQS1, P75U1YQS1, P75U1YRQS1	72	1828	102	2589
AGP75S1YQS2, AGP75S1YRQS2, P75U1YQS2, P75U1YRQS2	102	2590	162	4113
AGP75S1YQS3, AGP75S1YRQS3, P75U1YQS3, P75U1YRQS3	162	4115	222	5637
AGP150S1YQS1, AGP150S1YRQS1, P150U1YQS1, P150U1YRQS1	74.5	1891	105	2667
AGP150S1YQS2, AGP150S1YRQS2, P150U1YQS2, P150U1YRQS2	104.5	2653	165	4186
AGP150S1YQS3, AGP150S1YRQS3, P150U1YQS3, P150U1YRQS3	164.5	4177	225	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	2157	115.5	2928
X5AGP150S1YQS2, X5AGP150S1YRQS2, X5P150U1YQS2, X5P150U1YRQS2	115	2919	175.5	4452
X5AGP150S1YQS3, X5AGP150S1YRQS3, X5P150U1YQS3, X5P150U1YRQS3	175	4443	235.5	5976
AGP75S3-3YQS1, AGP75S3-3YRQS1, P75U3-3YQS1, P75U3-3YRQS1	74	1879	104.5	2649
AGP75S3-3YQS2, AGP75S3-3YRQS2, P75U3-3YQS2, P75U3-3YRQS2	104	2641	164.5	4173
AGP75S3-3YQS3, AGP75S3-3YRQS3, P75U3-3YQS3, P75U3-3YRQS3	164	4165	224.5	5697
AGP150S3-3YQS1, AGP150S3-3YRQS1, P150U3-3YQS1, P150U3-3YRQS1	76	1932	106.5	2703
AGP150S3-3YQS2, AGP150S3-3YRQS2, P150U3-3YQS2, P150U3-3YRQS2	106	2694	166.5	4227
AGP150S3-3YQS3, AGP150S3-3YRQS3, P150U3-3YQS3, P150U3-3YRQS3	166	4218	226.5	5751
X4AGP150S3YQS1, X4AGP150S3YRQS1, X4P150U3YQS1, X4P150US3YRQS1	76.5	1946	107	2717
X4AGP150S3YQS2, X4AGP150S3YRQS2, X4P150U3YQS2, X4P150US3YRQS2	106.5	2708	167	4241
X4AGP150S3YQS3, X4AGP150S3YRQS3, X4P150U3YQS3, X4P150US3YRQS3	166.5	4232	227	5765
AGP75S17-3YQS1, AGP75S17-3YRQS1, P75U17-3YQS1, P75U17-3YRQS1	73	1853	103.5	2624
AGP75S17-3YQS2, AGP75S17-3YRQS2, P75U17-3YQS2, P75U17-3YRQS2	103	2615	163.5	4148
AGP75S17-3YQS3, AGP75S17-3YRQS3, P75U17-3YQS3, P75U17-3YRQS3	163	4139	223.5	5672
AGP150S17-3YQS1, AGP150S17-3YRQS1, P150U17-3YQS1, P150U17-3YRQS1	75	1903	105.5	2674
AGP150S17-3YQS2, AGP150S17-3YRQS2, P150U17-3YQS2, P150U17-3YRQS2	105	2665	165.5	4198
AGP150S17-3YQS3, AGP150S17-3YRQS3, P150U17-3YQS3, P150U17-3YRQS3	165	4189	225.5	5722
X4AGP150S17YQS1, X4AGP150S17YRQS1, X4P150U17YQS1, X4P150U17YRQS1	75.5	1917	106	2688
X4AGP150S17YQS2, X4AGP150S17YRQS2, X4P150U17YQS2, X4P150U17YRQS2	105.5	2679	166	4212
X4AGP150S17YQS3, X4AGP150S17YRQS3, X4P150U17YQS3, X4P150U17YRQS3	165.5	4203	226	5736
AGP200S1-3YQS1, AGP200S1-3YRQS1, P200U1-3YQS1, P200U1-3YRQS1	78.5	1971	108.5	2756
AGP200S1-3YQS2, AGP200S1-3YRQS2, P200U1-3YQS2, P200U1-3YRQS2	108.5	2733	168.5	4280
AGP200S1-3YQS3, AGP200S1-3YRQS3, P200U1-3YQS3, P200U1-3YRQS3	168.5	4257	228.5	5804

Table 3 shows pump electrical service requirements.

Table 3.- Electrical Service Information

Required power supply rating for 60 Hz, 1 phase motors is 208 - 230 Vac. For 50 Hz, i phase motors, required rating is 220 - 240 Vac. 3 phase motors required rating is 380 - 415 Vac.

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	13	7.7 - 9.4	17.4 - 21.2	25 - 30.7	144-224-5 (17.5)
AGUMP75S1, UMP75U1	3/4	60	1	200	250	6.5	22	2.9 - 3.6	14.9 - 18.2	17.7 - 21.9	144-224-5 (17.5)
AGUMP150S1, UMP150U1	1-1/2	60	1	200	250	10.5	42	2 - 2.5	11.6 - 14.2	13.5 - 16.8	144-225-5 (25)
X3AGUMP150S1, X3UMP150U1	1/1/2	60	1	200	250	10.5	42	2 - 2.5	11.6 - 14.2	13.5 - 16.8	144-225-5 (25)
X5AGUMP150S1, X5UMP150U1	1-1/2	60	1	200	250	10.5	42	2 - 2.5	11.6 - 14.2	13.5 - 16.8	144-225-5 (25)
AGUMP200S1-3, UMP200U1-3	2	60	1	200	250	11.4	47	1.4 - 1.7	2.5 - 3.2	3.8 - 5	144-367-5 (50)
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	3.6 - 4.5	20.4 - 25	23.9 - 29.6	144-224-5 (17.5)
AGUMP150S3-3, UMP150U3-3	1-1/2	50	1	200	250	10	34.5	2.5 - 3.1	11.5 - 14	13.9 - 17.2	144-225-5 (25)
X4AGUMP150S3, X4UMP150U3	1-1/2	50	1	200	250	10	34.5	2.5 - 3.1	11.5 - 14	13.9 - 17.2	144-225-5 (25)
AGUMP75S17-3, UMP75U17-3	3/4	50	3	342	457	2.2	11	25.8 - 32.4	25.8 - 32.4	25.8 - 32.4	---
AGUMP150S17-3, UMP150U17-3	1-1/2	50	3	342	457	3.8	15.8	13.1 - 16.4	13.1 - 16.4	13.1 - 16.4	---
X4AGUMP150S17, X4UMP150U17	1-1/2	50	3	342	457	3.8	15.8	13.1 - 16.4	13.1 - 16.4	13.1 - 16.4	---

Table 4 lists pump weights and lengths.

NOTICE **The weights and lengths listed below are approximate values and will vary due to manufacturing tolerances.**

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 pounds (1.8 kg).

Table 4.- UMP Model Dimensions

		A (Use these lengths for UMPs with end view A shown in Figure 5)		B (Use these lengths for UMPs with end view B shown in Figure 5)		Weight	
UMP Model	**HP**	**in.**	**mm**	**in.**	**mm**	**lb.**	**kg**
UMP33U1, AGUMP33R1	1/3	15	380	15½	390	24	11
UMP75U1, AGUMP75S1	¾	17.6	447	17¾	447	28	12.7
UMP75U3-3, AGUMP75S3-3	¾	20	507	20	507	30.5	13.9
UMP75U17-3, AGUMP75U17-3	¾	19	482	19¼	489	28	12.7
UMP150U1, AGUMP150S1	1½	20.4	519	20½	519	34	15.5
X3P150U1, X3AGUMP150S1	1½	21.3	541	21¼	541	35	15.8
X5P150U1, X5AGUMP150S1	1½	30.9	785	31	785	38	17.2
UMP150U3-3, AGUMP150S3-3	1½	22.1	560	22¼	560	34	15.5
X4P150U3, X4GUMP150S3	1½	22.7	576	22¾	576	35	15.9
UMP150U17-3, AGUMP150S17-3	1½	20.9	532	21	532	31	14.1
X4P150U17, X4AGUMP150S17	1½	21.5	547	21½	547	32	14.5
UMP200U1-3, AGUMP200S1-3	2	23.5	600	24¼	618	36	16.3

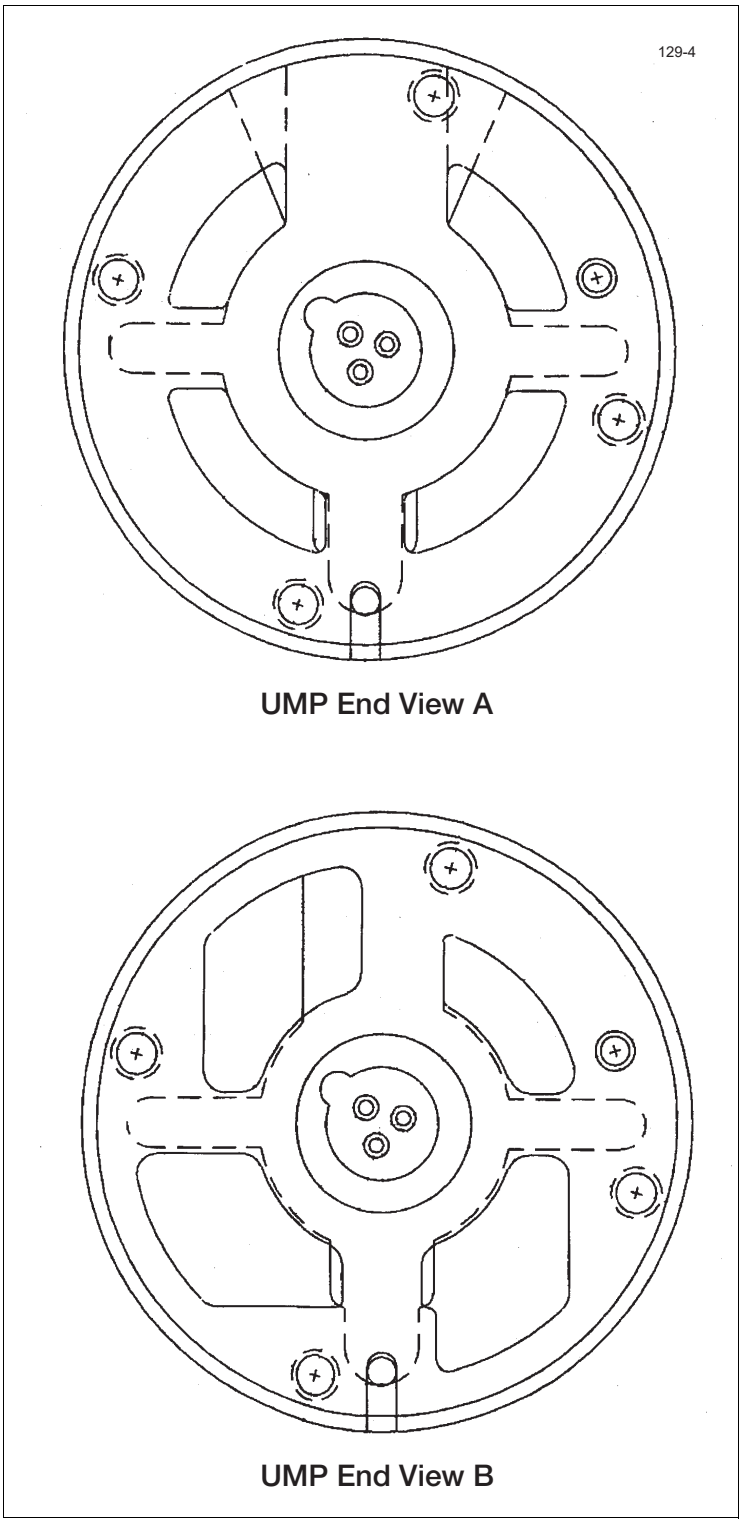
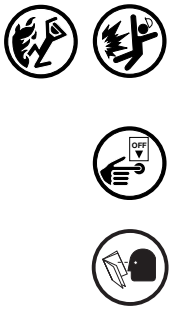


Figure 5. Identifying UMP models by their end view

Installation

⚠ WARNING



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1. **All installation work must comply with the latest issue of the National Electrical Code (NFPA 30A), and any national, state, and local code requirements that apply.**
2. **Turn off, tag, and lockout power to the STP before connecting or servicing wiring to the STP.**
3. **Before installing pipe threads apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant.**
4. **To protect yourself and others from serious injury, death, or substantial property damage, carefully read and follow all warnings and instructions in this manual.**

Attaching the UMP

When servicing unit, use non-sparking tools.

Table 5 lists the applicable UMPs for each packer/manifold.

Table 5.- Applicable UMPs for Packer/Manifolds

Packer/Manifold	UMP
AGP33R1YQS1, QS2, QS3 AGP33R1YRQS1, QS2, QS3	AGUMP33R1
P33U1YQS1, QS2, QS3 P33U1YRQS1, QS2, QS3	AUMP33R1
AGP75S1YQS1, QS2, QS3 AGP75S1YRQS1, QS2, QS3	AGUMP75S1
P75U1YQS1, QS2, QS3 P75U1YRQS1, QS2, QS3	UMP75U1
AGP150S1YQS1, QS2, QS3 AGP150S1YRQS1, QS2, QS3	AGUMP150S1
P150U1YQS1, QS2, QS3 P150U1YRQS1, QS2, QS3	UMP150U1
X3AGP150S1YQS1, QS2, QS3 X3AGP150S1YRQS1, QS2, QS3	X3AGUMP150S1
X3P150U1YQS1, QS2, QS3 X3P150U1YRQS1, QS2, QS3	X3UMP150U1
X5AGP150S1YQS1, QS2, QS3 X5AGP150S1YRQS1, QS2, QS3	X5AGUMP150S1
X5P150U1YQS1, QS2, QS3 X5P150U1YRQS1, QS2, QS3	X5UMP150U1
AGP75S3-3YQS1, QS2, QS3 AGP75S3-3YRQS1, QS2, QS3	AGUMP75S3-3

Packer/Manifold	UMP
P75U3-3YQS1, QS2, QS3 P75U3-3YRQS1, QS2, QS3	UMP75U3-3
AGP150S3-3YQS1, QS2, QS3 AGP150S3-3YRQS1, QS2, QS3	AGUMP150S3-3
P150U3-3YQS1, QS2, QS3 P150US-3YRQS1, QS2, QS3	UMP150U3-3
X4AGP150S3YQS1, QS2, QS3 X4AGP150S3YRQS1, QS2, QS3	X4AGUMP150S3
X4P150U3YQS1, QS2, QS3 X4P150U3YRQS1, QS2, QS3	X4UMP150U3
AGP75S17-3YQS1, QS2, QS3 AGP75S17-3YRQS1, QS2, QS3	AGUMP75S17-3
P75U17-3YQS1, QS2, QS3 P75U17-3YRQS1, QS2, QS3	UMP75U17-3
AGP150S17-3YQS1, QS2, QS3 AGP150S17-3YRQS1, QS2, QS3	AGUMP150S17-3
P150U17-3YQS1, QS2, QS3 P150U17-3YRQS1, QS2, QS3	UMP150U17-3
X4AGP150S17YQS1, QS2, QS3 X4AGP150S17YRQS1, QS2, QS3	X4AGUMP150S17
X4P150U17YQS1, QS2, QS3 X4P150U17YRQS1, QS2, QS3	X4UMP150U17

Table 5.- Applicable UMPs for Packer/Manifolds

Packer/Manifold	UMP
AGP200S1-3YQS1, QS2, QS3 AGP200S1-3YRQS1, QS2, QS3	AGUMP200S1-3

Packer/Manifold	UMP
P200U1-3YQS1, QS2, QS3 P200U1-3YRQS1, QS2, QS3	UMP200U1-3

The UMP is identified by the model number marked on the shell. The packer/manifold 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 identified by the kit number (144-327-4) marked on the bag (see Figure 6).

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

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

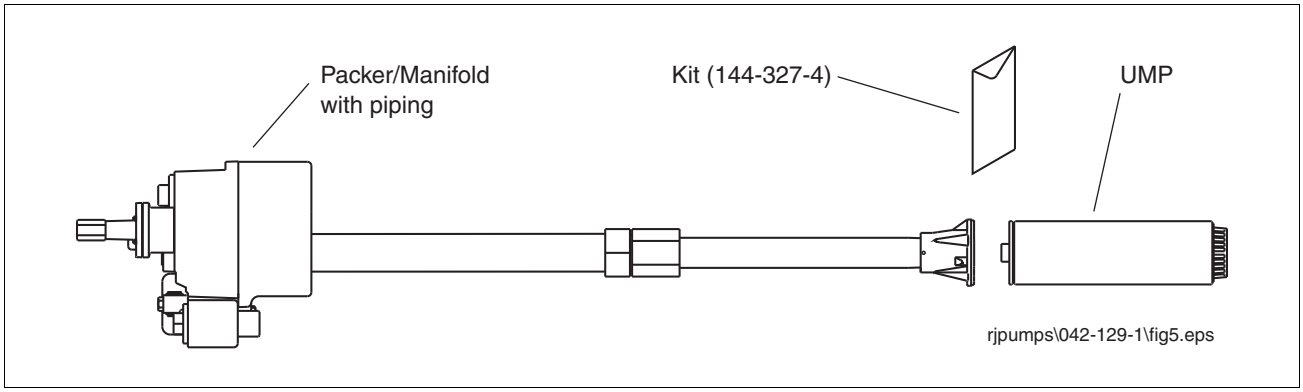


Figure 6. Packer/manifold with piping attaching to UMP

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

⚠CAUTION **Gaskets from competitive UMPs will not seal properly and performance will be reduced.**

2. 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.
3. Lubricate the o-ring and pigtail with petroleum based jelly.
4. 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.

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

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

⚠WARNING **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.**

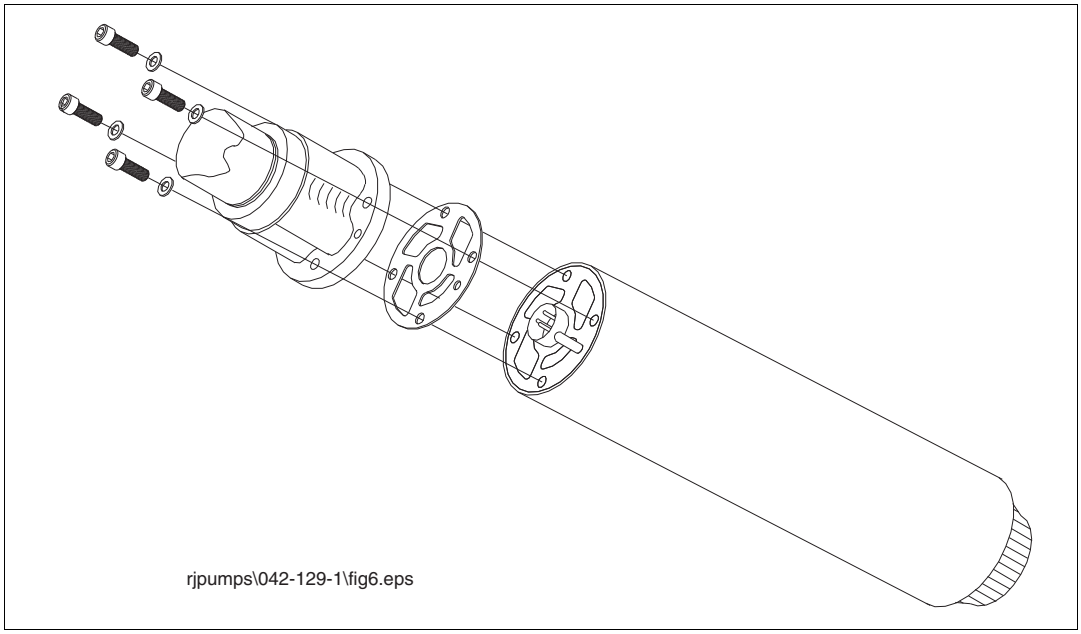


Figure 7. Aligning the UMP gasket

Installing the Pump

NOTES:

- Red Jacket petroleum pumps are designed to operate in a Class 1, Group D atmosphere.
- Specifications and installation instructions may change if the manufacturer recommends changes.
- The product temperature must not exceed 105°F (41°C) because the thermal overload protectors in the submersible motors may trip.

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 as shown in Figure 7.

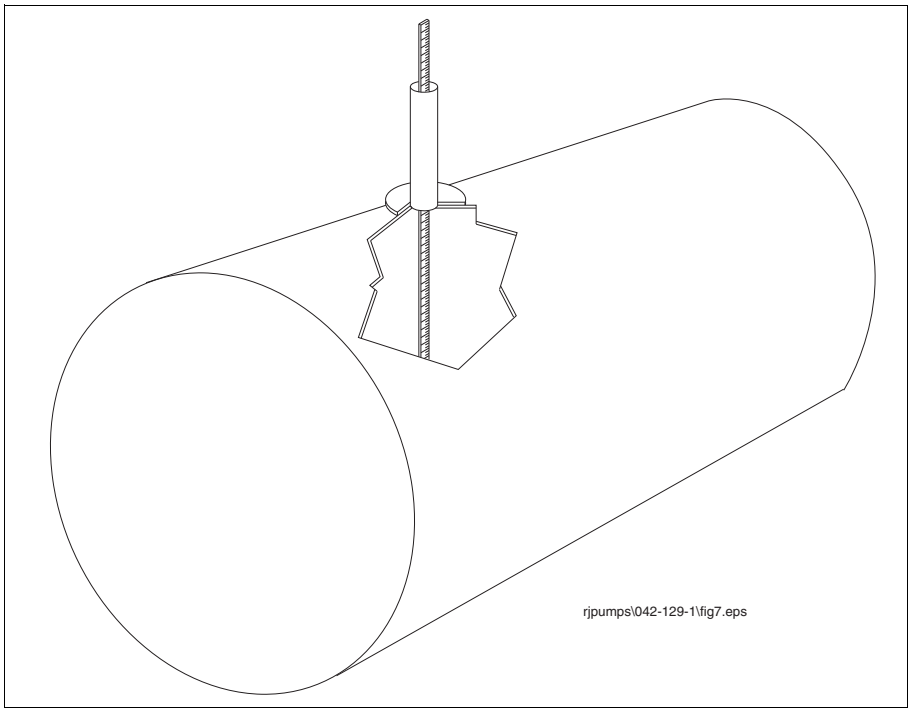


Figure 8. Measuring tank

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 unscrewing the set screw in the side of locking nut, then backing off the locking nut (see Figure 9).

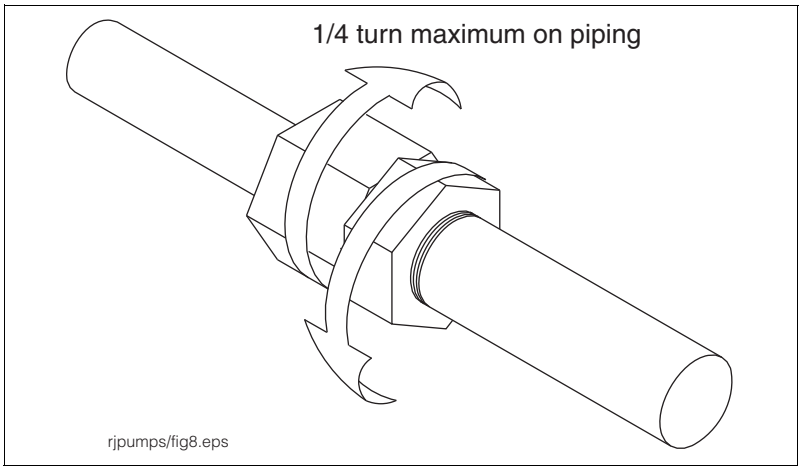


Figure 9. Loosening Locking Nut

5. Referencing Figure 10, 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.

NOTICE **If UMP is equipped with floating suction adapter, see section entitled "Recommended Floating Suction Installation" on page 4.**

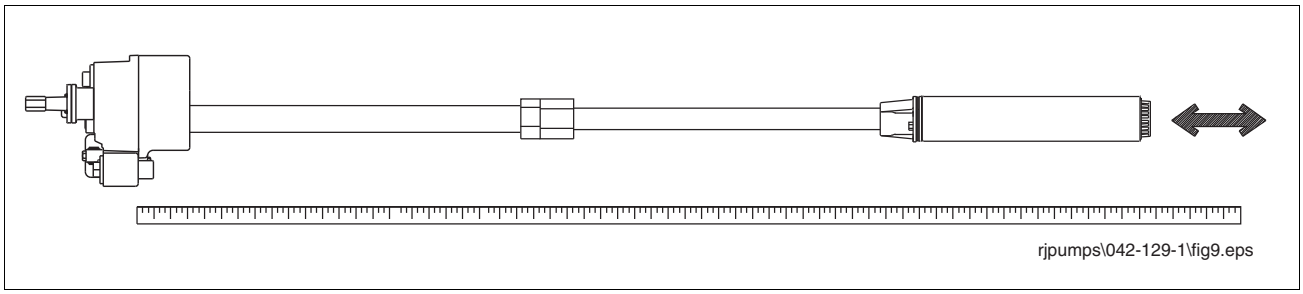


Figure 10. Adjusting pump length

⚠WARNING **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 setup screw in the locking nut 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 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 6 for proper kit).

Table 6.- Capacitor Kits

Horsepower	2	1/3, 3/4	1-1/2
Kit	144-367-5	144-224-5	144-225-5
Capacitor	50 µF	17.5 µF	25 µF
Black wire lead	2	2	2
Red wire lead	1	1	1
Wire nuts	5	5	5

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.
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 11 to verify connections. Proceed to Step 26.

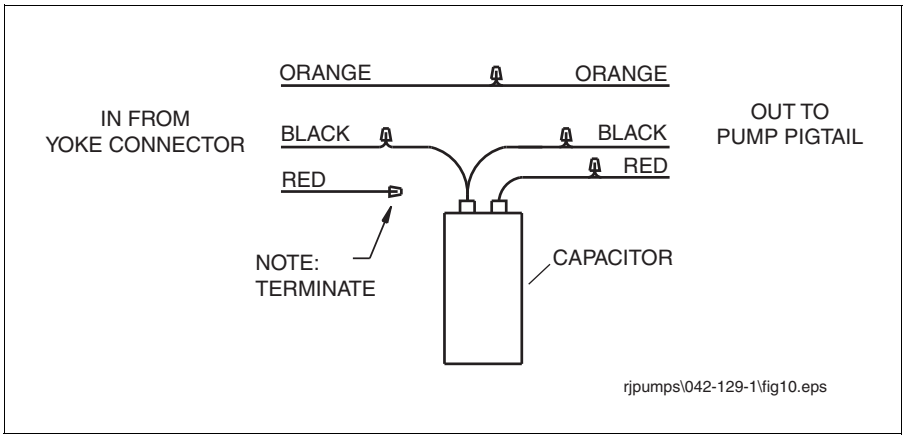


Figure 11. Capacitor wiring schematic

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

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

1. Connect electrical conduit 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.

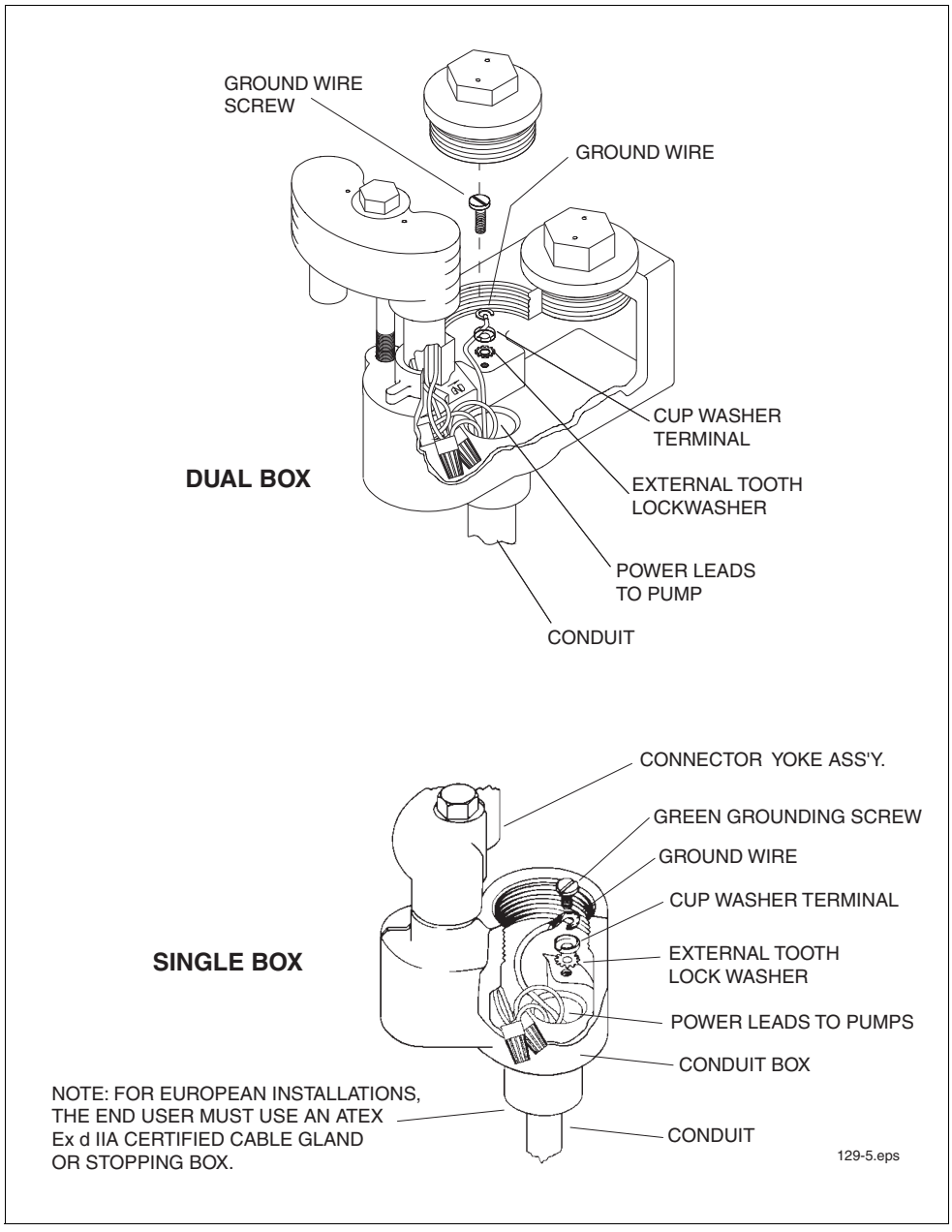


Figure 12. Conduit box wiring

Figure 13 through Figure 18 display various wiring diagrams.

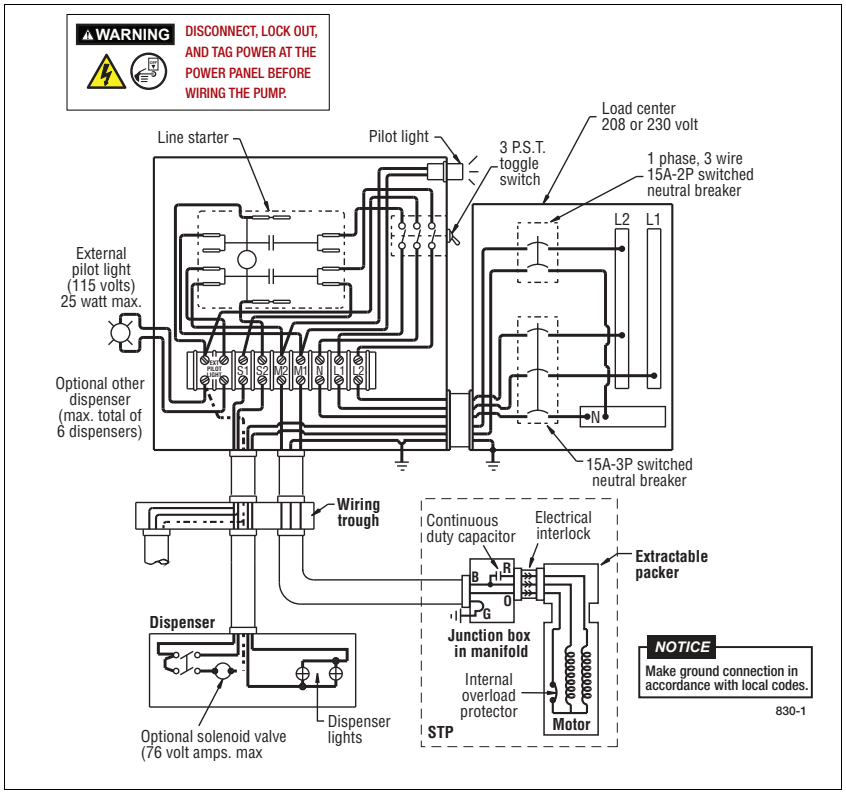


Figure 13. 230 Vac Remote Control Box with 110 Vac coil - Model 880-041-5

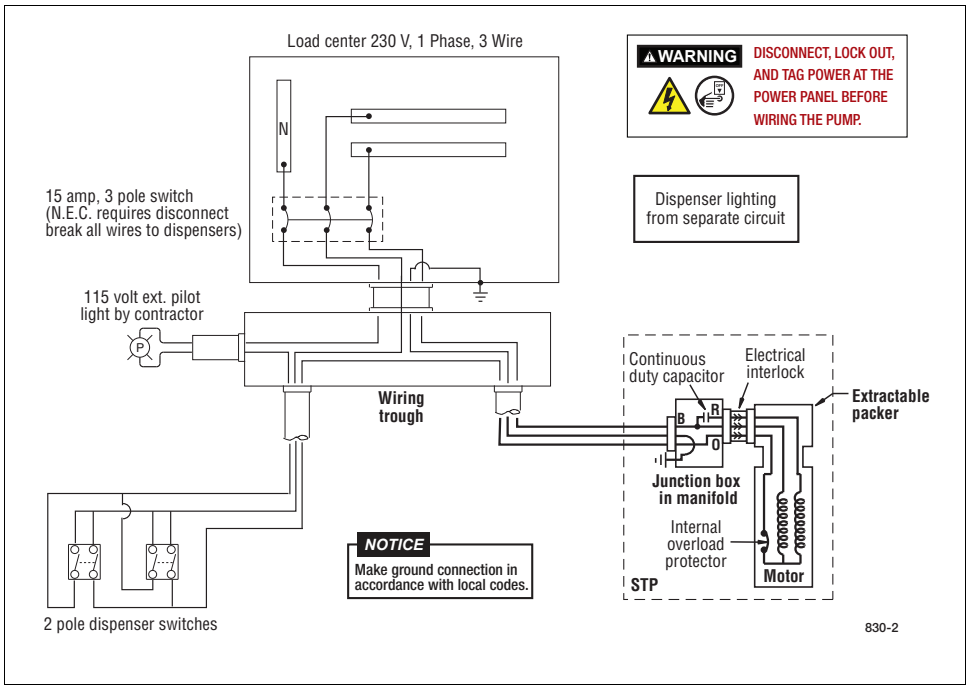


Figure 14. Suggested Wiring Diagram without Optional Control Box

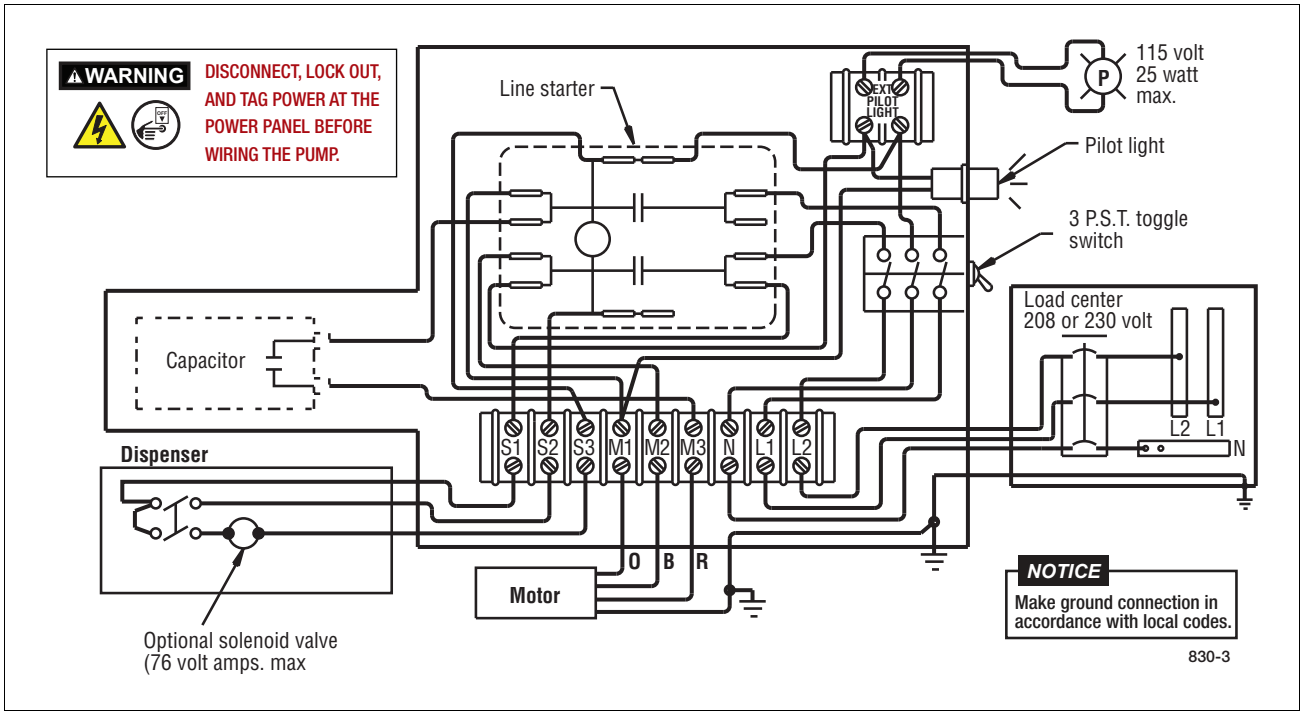


Figure 15. 230 Vac Remote Control Box with 110 Vac Coil & Cap - Model 880-045/880-046-5

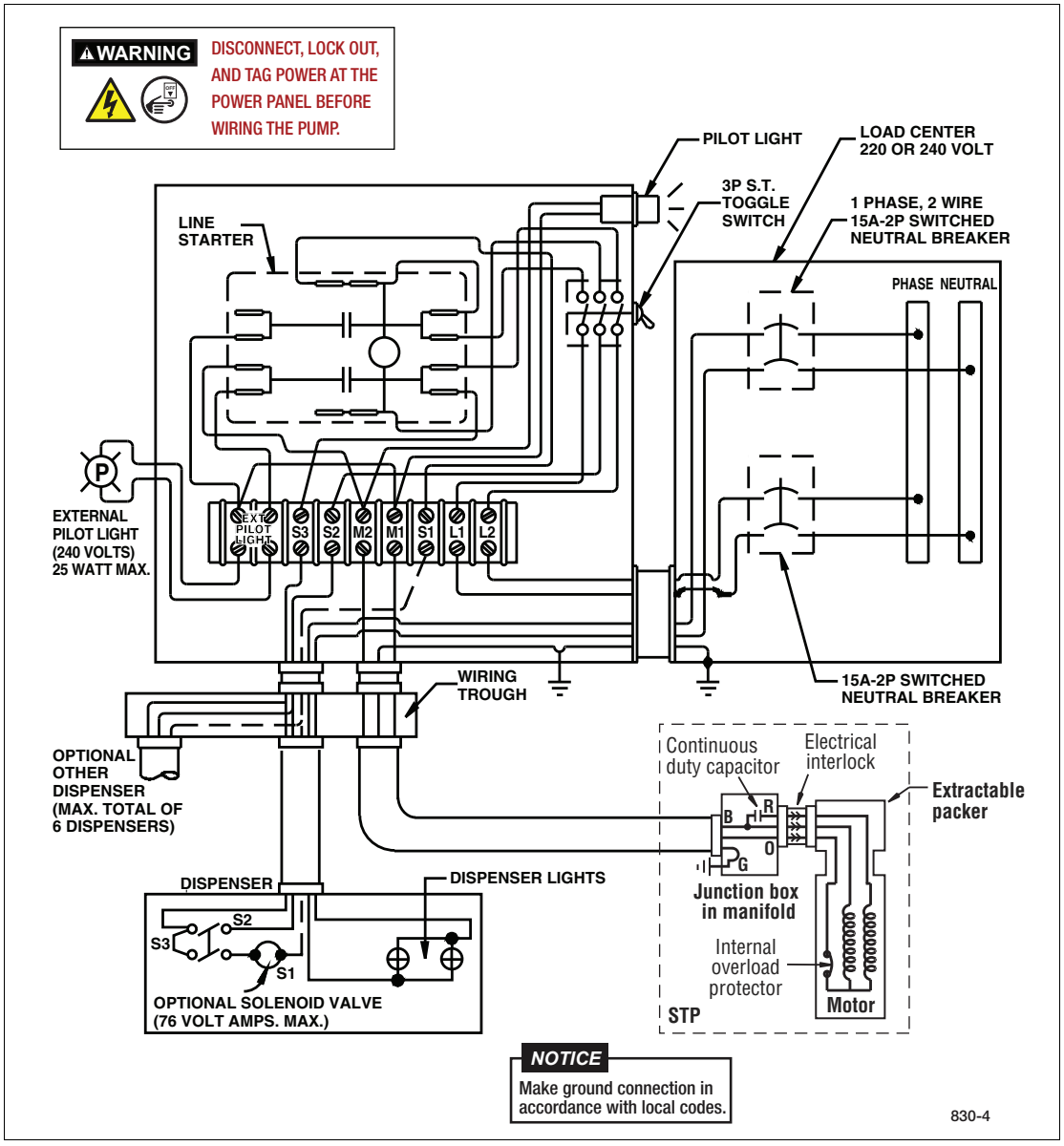
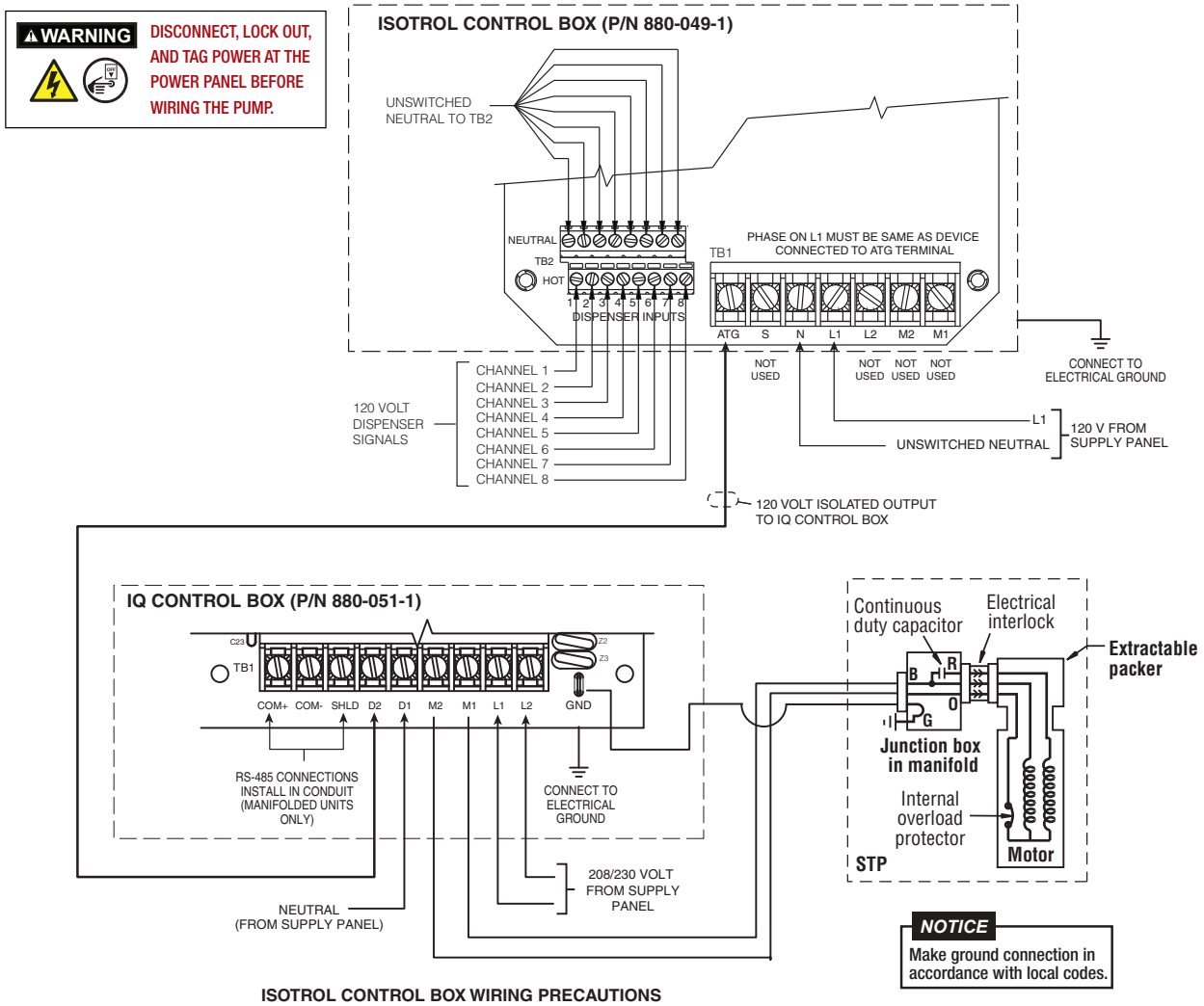


Figure 16. 230 Vac Remote Control Box with 230 Vac Coil - Model 880-042-5



ISOTROL CONTROL BOX WIRING PRECAUTIONS

WARNING

The Isotrol Control Box 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.** 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.

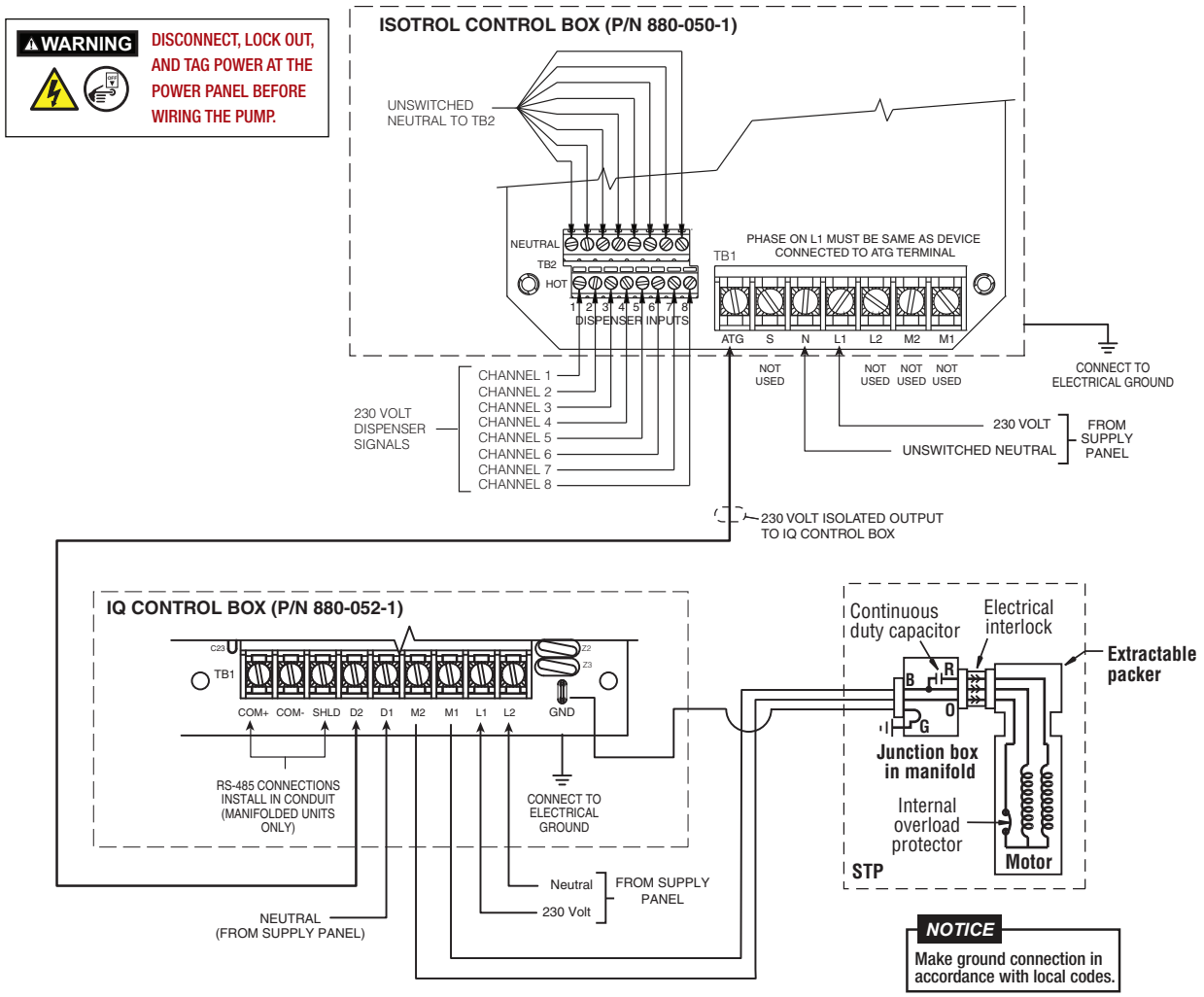
The phase of L1 (TB1) must match the phase of the power supplying the ATG device to prevent cross phasing which may damage the input on some ATG equipment.

GENERAL WIRING PRECAUTIONS

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

830-5

Figure 17. Isotrol to IQ System Wiring - 120 Volt Dispenser Signals



ISOTROL CONTROL BOX WIRING PRECAUTIONS

WARNING

The Isotrol Control Box 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.** 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.

The phase of L1 (TB1) must match the phase of the power supplying the ATG device to prevent cross phasing which may damage the input on some ATG equipment.

GENERAL WIRING PRECAUTIONS

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

830-6

Figure 18. 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 Figure 19, tandem systems offer backup support so operations can continue if one pump stops working.

Alternatively, Veeder-Root's Red Jacket IQ™ Control Unit can be connected to additional control boxes to allow up to four pumps per tank with demand-based sequencing.

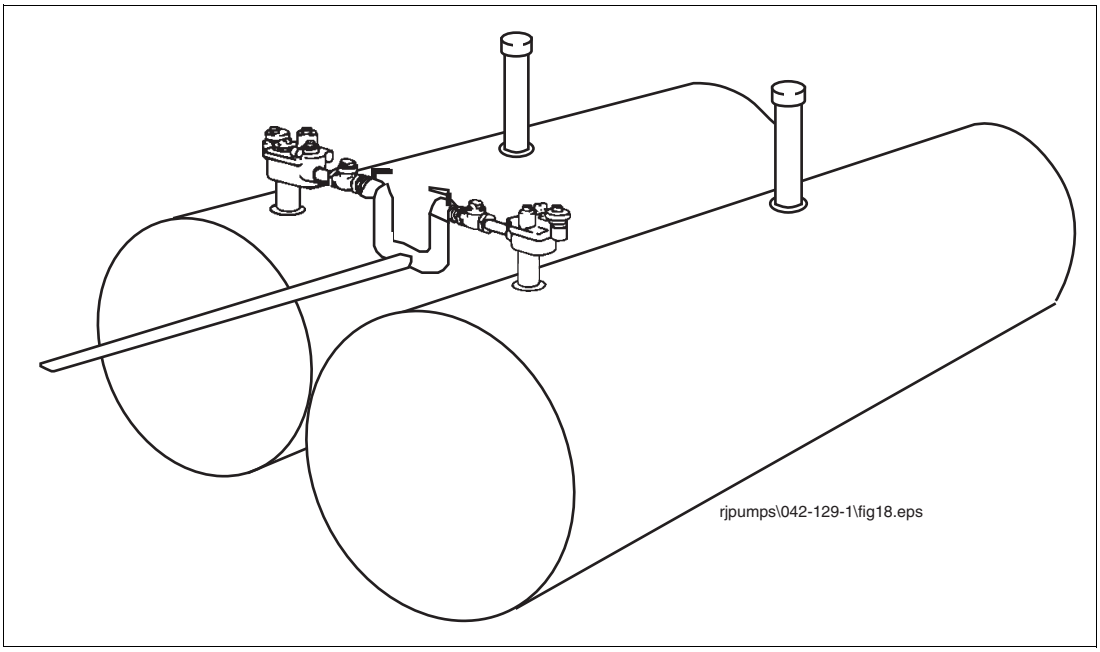


Figure 19. Tandem pumps

⚠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.**

NOTICE **Ball valves should be installed at the pump end of the discharge line for ease of maintenance and troubleshooting (see Figure 19).**

NOTICE **The in-line check valves and 115 Vac relay are not available from Veeder-Root and should be purchased locally.**

Wiring Single-Phase Tandem Pumps

Figure 20 shows the wiring allowing both STPs 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.

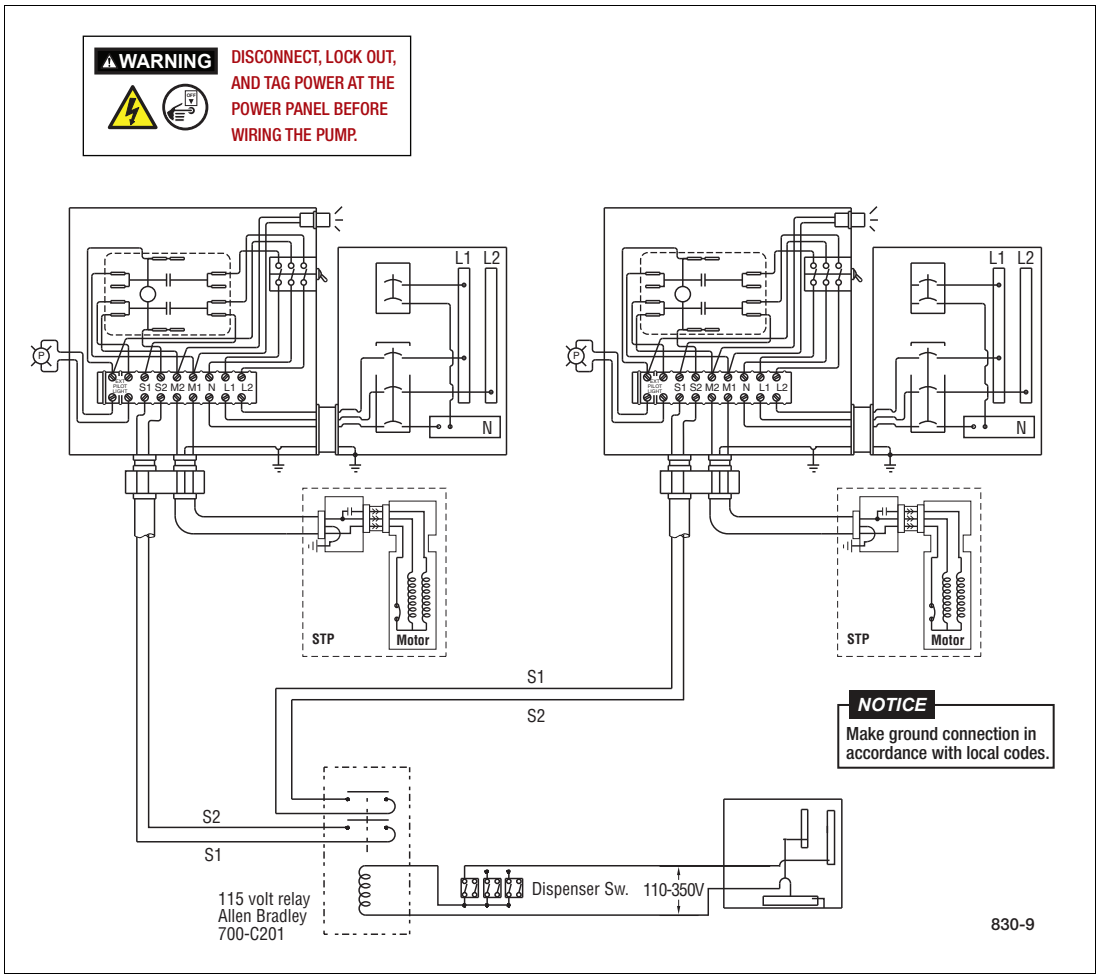


Figure 20. Suggested Wiring for Tandem Pumps

Adjusting the Pressurstat

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

The Pressurstat contained in this package is an adjustable model. All Pressurstats are factory set at relief pressures of 23 -28 psi (160 - 195 kPa) but can be adjusted to a maximum of 40 - 45 psi (276 - 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 (see Figure 21).
2. Turn down the adjustment screw (see Figure 21). Tightening the screw clockwise will increase the pressure. When the adjusting screw is fully down, the relief pressure is approximately 40 - 45 psi (276 - 310 kPa). Fully up will result in relief pressures between 0 - 3 psi (0 - 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:

   a. 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.

   b. 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 the adjusted relief pressure.

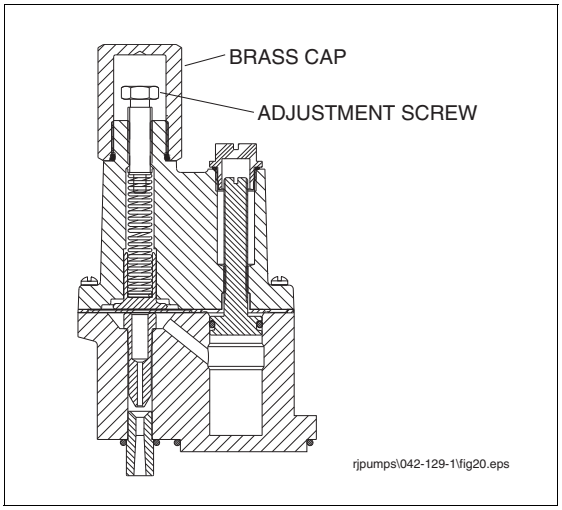


Figure 21. Pressurstat cap and adjustment screw

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 Figure 22).**

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 more than the pressure at which the Pressurstat relief pressure is set.

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).

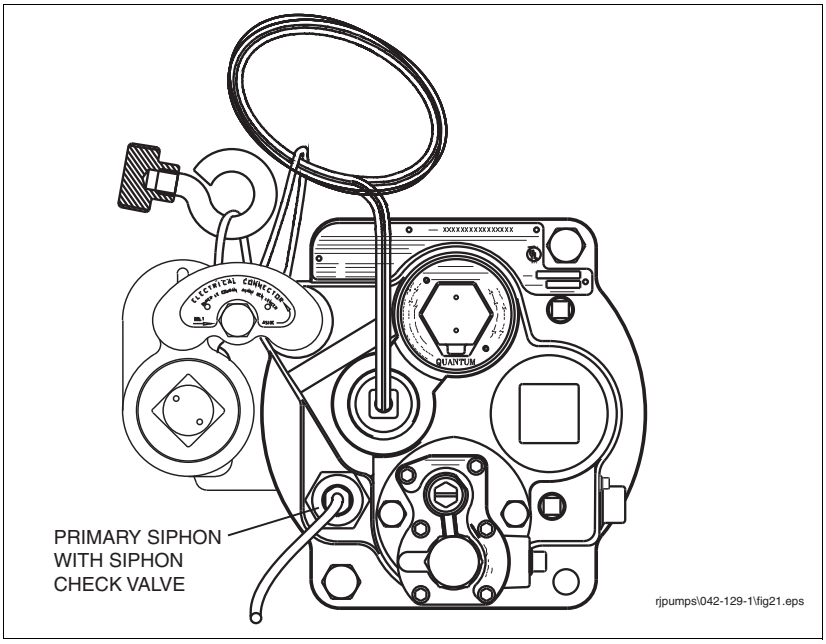


Figure 22. Primary siphon

Table 7.- Approximate Pressures at shut-off

Pump	Approximate Shut Off Pressure
AGUMP33R1, UMP33U1	25 psi (172 kPa) .74 SG@ 60°F (15°C
AGUMP75S1, UMP75U1	28 psi (193 kPa) .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, X4UMP150U17-3	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 (297 kPa) .74 SG @ 60°F (15°C)

Testing The Installation

⚠WARNING **Disconnect, lock out, and tag power at the panel before servicing the 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 clockwise as far down as possible (see Figure 23).

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

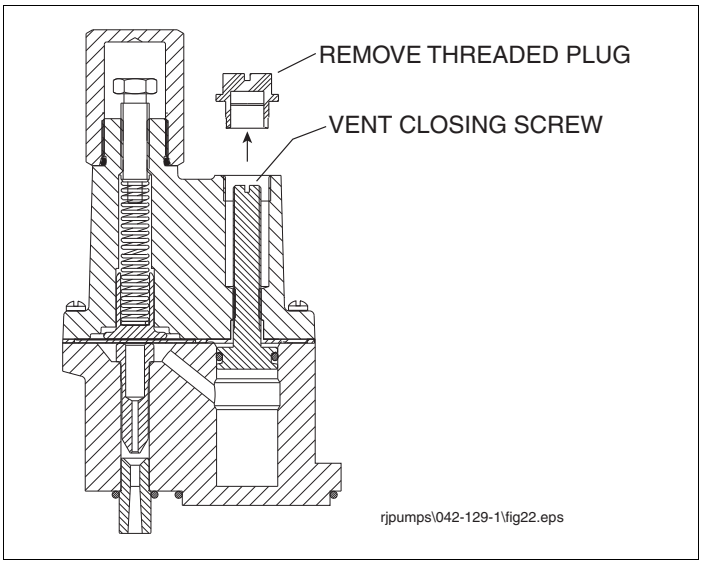


Figure 23. Closing the check valve

3. Apply line test pressure at line test port (50 psi [345 kPa] maximum) - see Figure 24.

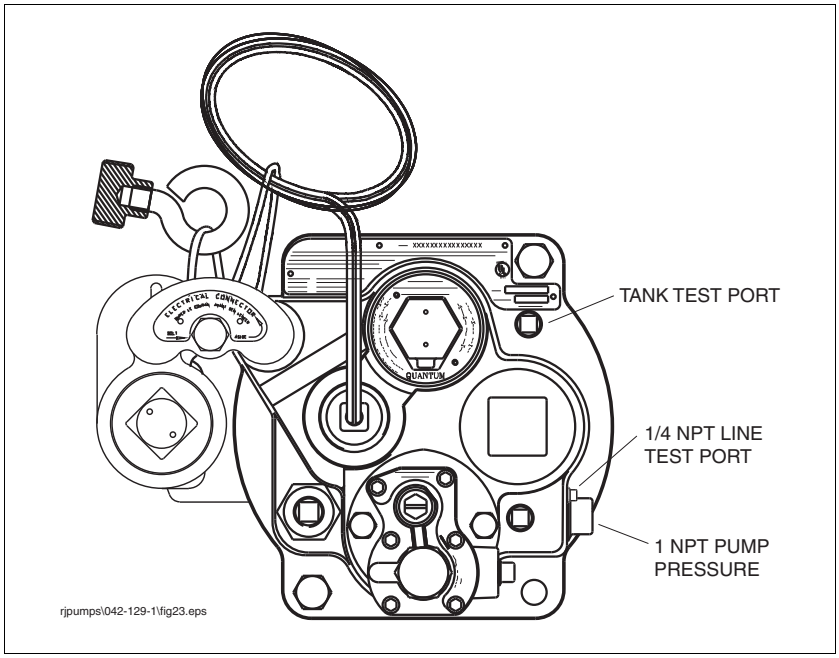


Figure 24. Line test port

To Test Tank

1. Close pump check valve by turning the vent closing screw (see Figure 23) as far down as possible. Apply tank test pressure at tank test port.
2. After completion of line and/or tank tests, release pressure by turning the vent closing screw counterclockwise 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 the pump and work toward the pump.

Removing the Pump

⚠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. Back out the electrical yoke disconnect bolt (see Figure 25).

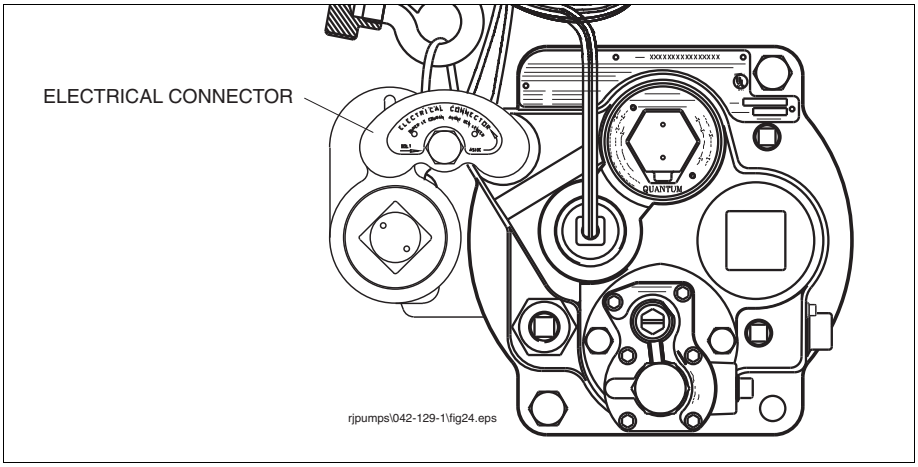


Figure 25. Packer

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, lubricate with petroleum jelly.**

Replacing the UMP

⚠WARNING **Disconnect, lock out, and tag power at the panel before servicing 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 26.

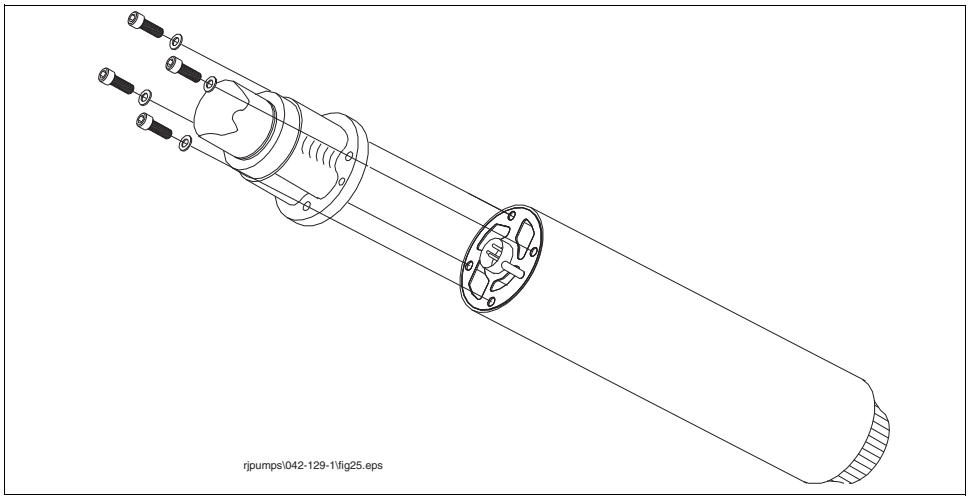


Figure 26. Removing the UMP

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 (see Figure 27).

⚠WARNING **Gaskets from competitive UMPs will not seal properly and performance will be reduced.**

5. 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.

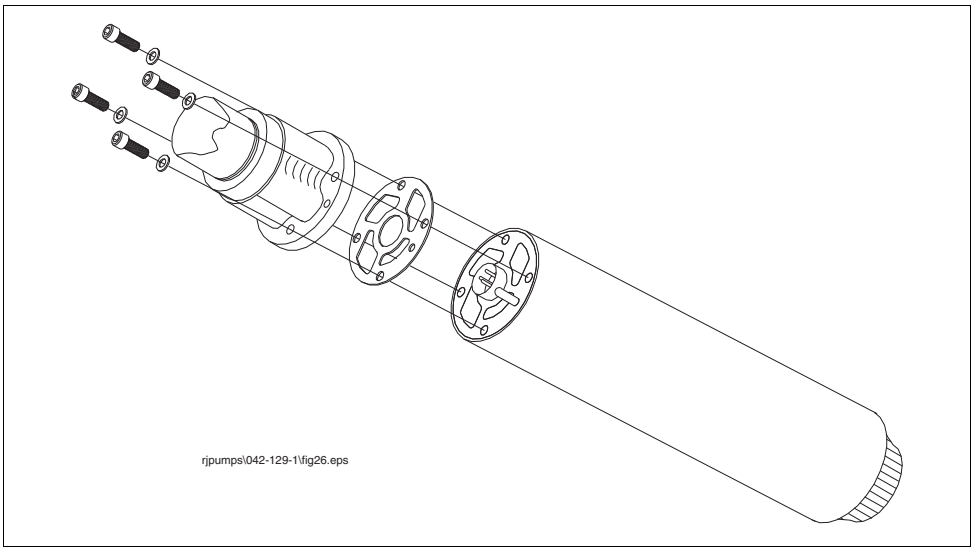


Figure 27. Replacing the gasket

6. Lubricate o-ring and pigtail with petroleum jelly.
7. 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.

⚠WARNING **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.**

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

⚠WARNING **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.**

9. Replace the packer o-ring and the discharge o-ring seals.
10. Reinstall the extractable portion into the tank using the steps previously described under “Installing the Pump” on page 12.

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

11. Refer to section entitled “Testing The Installation” on page 26.

Replacing the Pressurstat

⚠WARNING  **Disconnect, lock out, and tag power at the panel before servicing the pump, then bleed off any residual pressure from the system.**

Disable the Pump

1. Back out the electrical yoke disconnect bolt (see Figure 28).

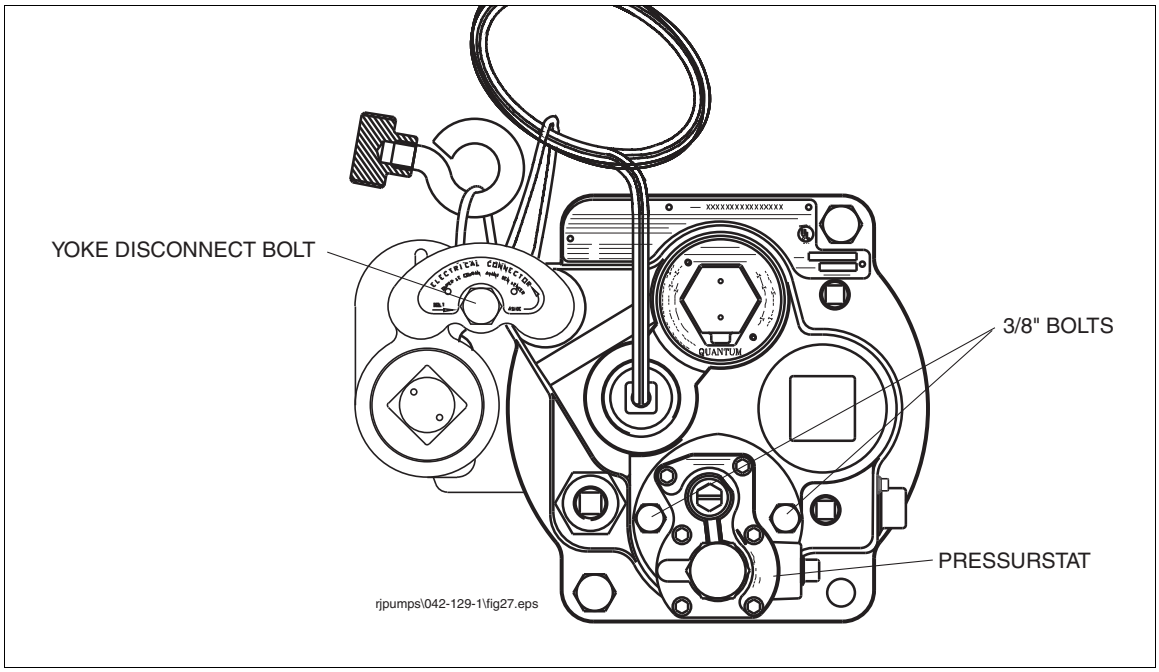


Figure 28. Packer with Pressurstat

2. Swing the electrical connector aside.
3. To relieve the pressure, back out Pressurstat screw (see Figure 23 on page 26).

Replace the Pressurstat

1. Remove the siphon (if siphon is installed in the Pressurstat's port).
2. Remove the two 3/8 inch 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.

⚠CAUTION **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 inch bolts.
5. Check the seating pressure of the adjustable Pressurstat for proper setting.

Replacing the Capacitor in Packer

Disconnect, lock out, and tag power at the panel before servicing the pump.Then bleed off any residual pressure from the system.

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

Capacitor is 440V, 17.5 µF continuous duty with internal bleed resistor for 1/3 and 3/4 HP models. Capacitor is 440V, 25 µF continuous duty with internal bleed resistor for 1-1/2 HP models. Capacitor is 440V, 50 µF 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

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

1. Remove existing Red Jacket pump - see “Removing the Pump” on page 28.
2. Open Hardware /Seal kit 144-209-4 (AG) or 144-329-4 (20%) which consists of: 1 each - packer o-ring (8” [203 mm] OD) & Pac/Man seal (2” [51 mm] OD); 2 each - 1/2-13 x 1/1/4 lockdown bolts and 3/8-16 x 1-1/4 bolts.
3. Remove the cover of the existing conduit box.
4. Pull wires out of conduit box.
5. Remove wire nuts and disconnect wires.
6. Remove the two bolts that hold the conduit box to the manifold.
7. Disconnect conduit from conduit box. Discard old conduit box.
8. Uncrate new Quantum Replacement Pump and Yoke/Conduit Box kit.
9. Attach new conduit box to existing manifold using 3/8-16 x 1-1/4 inch bolts from Hardware Seal kit. 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.**

10. Attach the UMP (see "Attaching the UMP" on page 10.
11. Measure the distance from the bottom of the tank to the sealing surface on the manifold.
12. Uncoil pigtail and lay flat so it will feed into the packer without knotting or kinking.
13. Loosen the clinch fittings, starting with the joint closest to the discharge head.
14. 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 11.

NOTICE **If UMP is equipped with floating suction adapter, see "Recommended Floating Suction Installation" on page 4.**

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.**

15. Tighten locking nut and torque to 150 ft-lb (200 N•m).

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

16. Attach tubing to barbed fitting, secure with clamp.
17. Lay tubing beside column pipe. Cut off 1 - 3 inches (25 - 76 mm) above the discharge head.
18. Secure tube to column pipe with tie straps. Locate tie straps approximately 6 inches (152 mm) from packer, 6 inches from discharge head, and middle of tubing.
19. Remove cover from wiring compartment.
20. To install capacitor in packer proceed with the following steps. For packers without a capacitor, proceed to Step 30.
21. Open capacitor kit 144-224-5 or 144-225-5 as required - see Table 6 on page 14 for proper kit.
22. Attach supplied black harness wires with flag terminal to one capacitor terminal and red wire lead with flag terminal to other capacitor terminal.
23. Place capacitor in wiring compartment.
24. Pull pigtail and yoke wires into wiring compartment.
25. Cut pigtail wires leaving approximately 8 inches (200 mm) hanging out of wiring compartment.
26. Strip back insulation of all wires 3/8 inch (10 mm).
27. 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.
28. **For 3-Wire Yoke Only:** Place wire nut on red yoke connector wire to isolate it (it will not be used).
29. Attach orange pump pigtail wire to orange yoke connector wire using wire nut. See Figure 29 to verify connections. Proceed to Step 33.

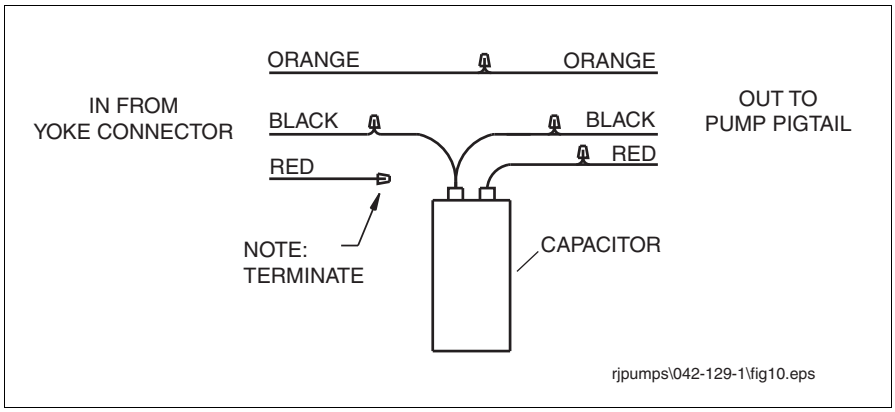


Figure 29. Wiring schematic

30. Pull pigtail and yoke wires into wiring compartment.

31. Cut pigtail wires leaving approximately 8 inches (200 mm) hanging out of wiring compartment.

32. Strip back insulation of all wires 3/8 inch (10 mm).

33. Connect like colored wires from UMP to like colored wires from yoke connector.

34. Install excess wire into wiring compartment. Replace wiring compartment cover. Torque to 35 ft-lb (50 N•m). Thread sealant should not be used.

35. Install eyebolt plug, use approved non-setting thread sealant and torque to 50 ft-lb (70 N•m).

36. Remove packer o-ring and Pac/Man seal from Hardware Seal kit 144-209-4 (AG) or 144-329-4 (20%) as required. Make sure o-ring and seal surfaces are clean and install on packer.

37. Loosen the bolt that holds the conduit box to the manifold. Do not remove.

38. Swing the electrical yoke into position.

39. Torque the electrical yoke bolt to 25 - 50 ft-lb (34 - 68 N•m).

40. Torque the conduit box bolts to 30 - 45ft-lb (40 - 61 N•m).

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

Parts Lists

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 parts.

Yoke Assembly and Conduit Box Parts

Table 8.- Yoke Assembly and Conduit Box Parts List

Item (ref. Figure 30)	Part No.	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

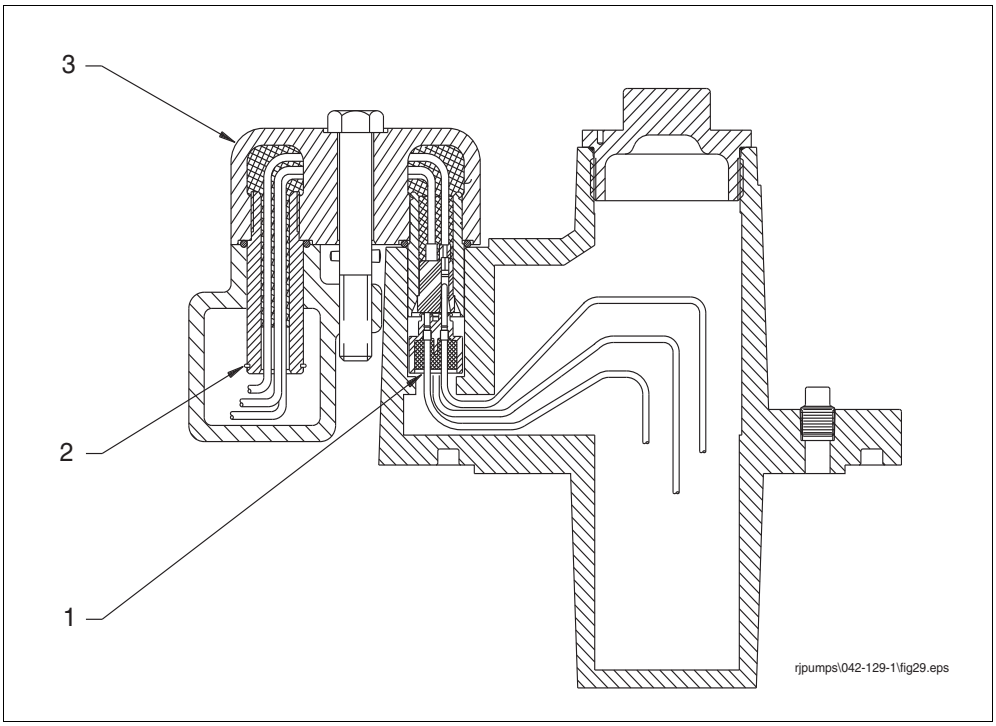


Figure 30. Yoke assembly and conduit box part identification

Packer-Manifold Assembly Parts

Table 9.- Packer-Manifold Assembly Parts List - Part 1

Item (ref. Figure 31)	Part No.	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	288-053-1	Siphon Check Valve	1
7	027-086-3	Plug - Pipe 2" NPT (Single Box Only)	1
7	067-281-5	Plug - Ass'y. 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

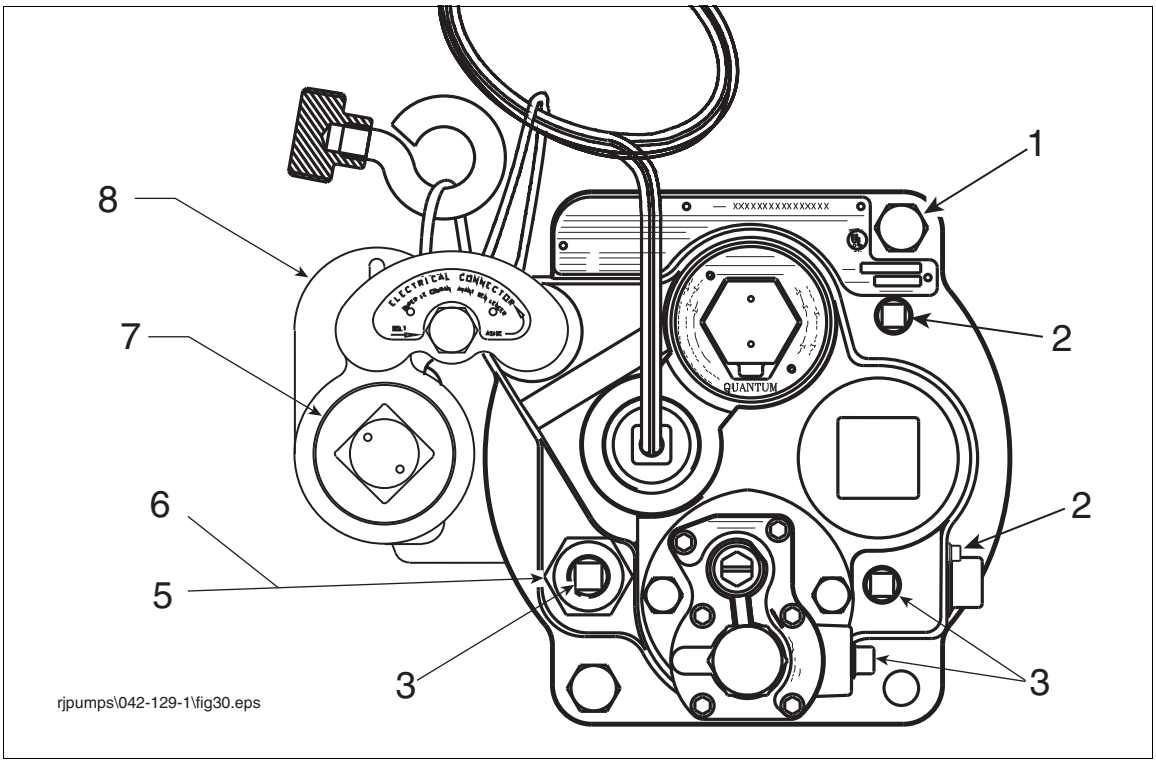


Figure 31. Packer-Manifold Assembly - Part 1 Part Identification

Table 10.- Packer-Manifold Assembly Parts List - Part 2

Item (ref. Figure 32)	Part No.	Description	Qty.
9	067-283-5	Plug - Ass'y. Wiring Compartment	1
10	072-656-1	O-Ring FKM (-928)	1
11	144-224-5	Kit - Capacitor 17.5 µF	1
11	144-225-5	Kit - Capacitor 25 µF	1
11	144-367-5	Kit - Capacitor 50 µF	1
12	072-542-1	O-Ring FKM (-443)	1
13	144-223-5	Kit - Check Valve & Spring	1
14	344-004-5	Kit - Pressurstat (Adj.)	1

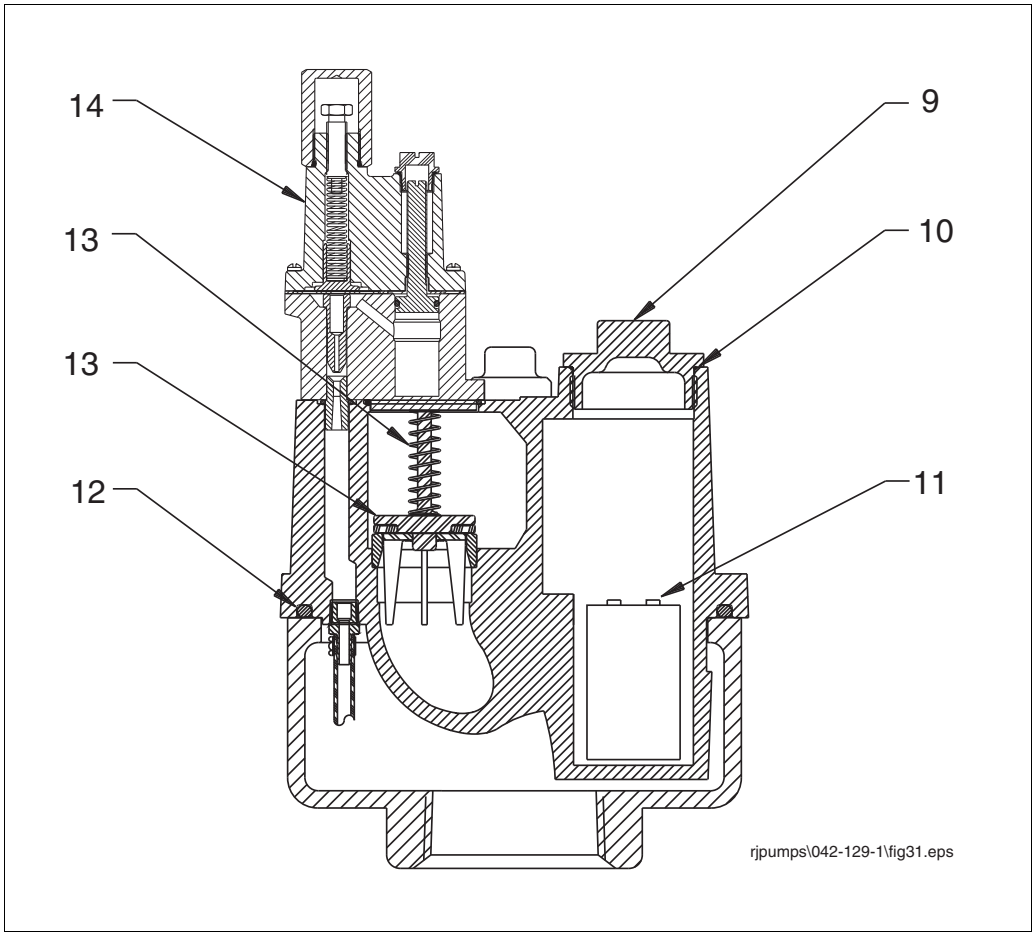


Figure 32. Packer-Manifold Assembly Part 2 Part Identification

Pump Parts

Table 11 lists the domestic pump parts list and Table 8 lists the international pump parts list.

Table 11.- Domestic Pump Parts List

Item (ref. Figure 33)	Part No.	Description	DOM
1	144-091-5	Kit - Pigtail	1
2	072-528-1	O-Ring FKM (-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
3	852-025-5	UMP75U1 W/FSA	1
3	852-042-5	UMP150U1 W/FSA	1
3	852-024-5	UMP33U1 W/FSA	1

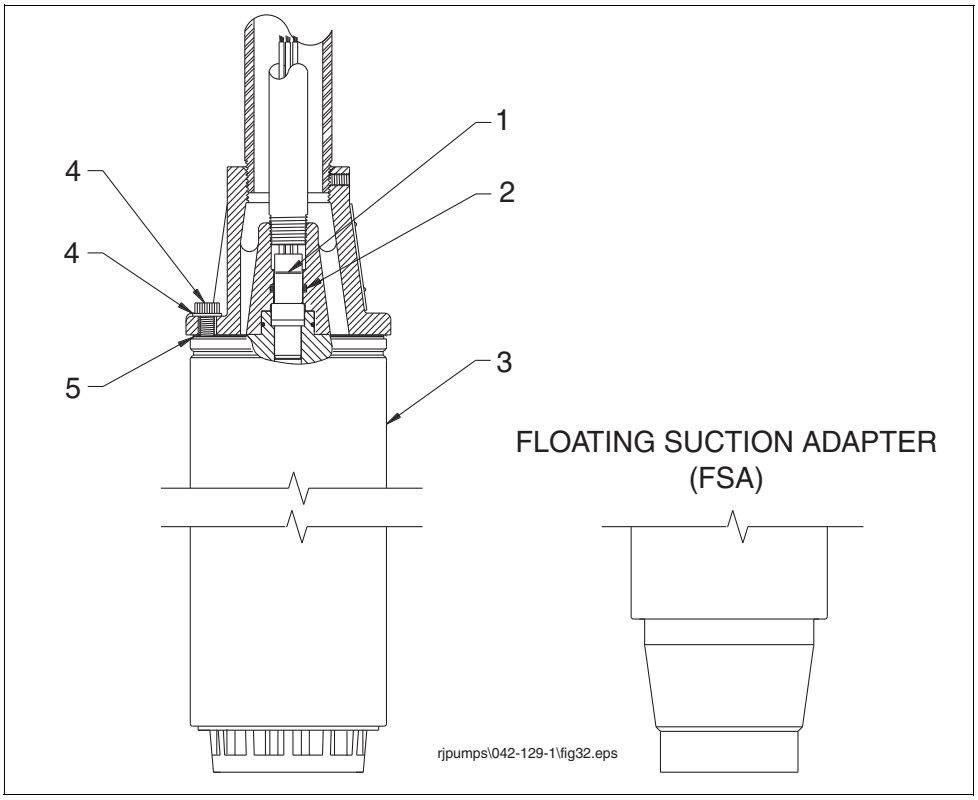


Figure 33. Pump parts

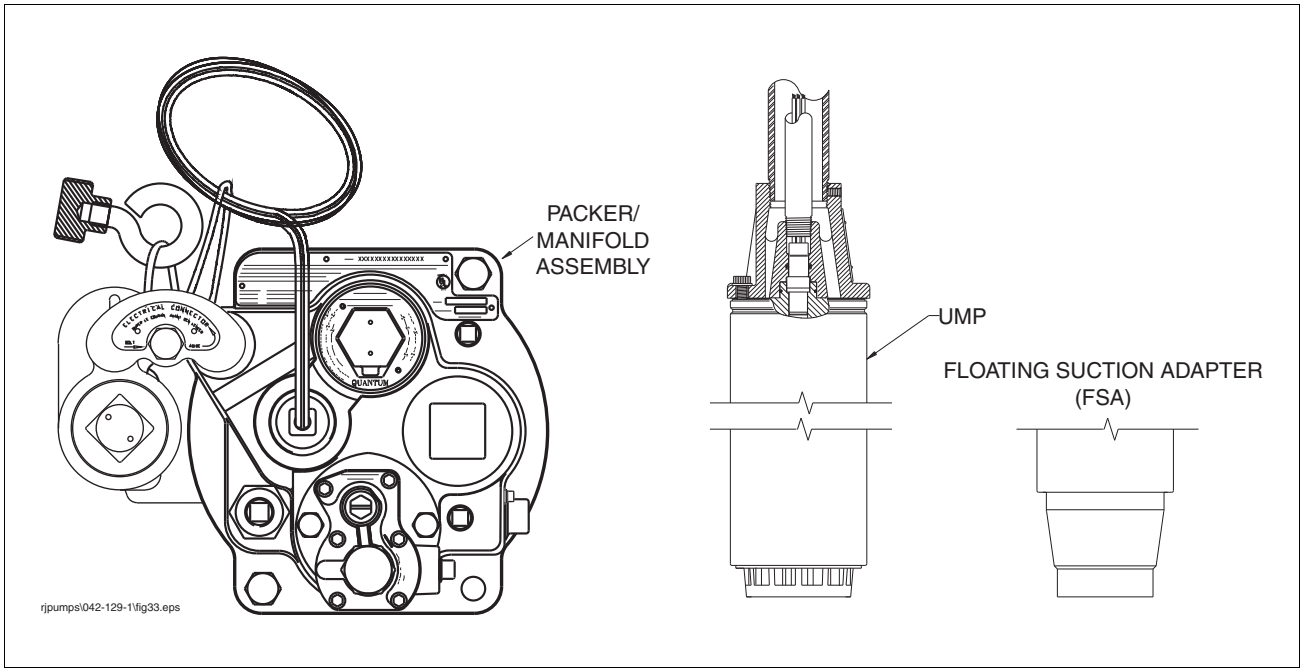


Figure 34. Packer/Manifold Ass'y., UMP, and Floating Suction Adapter

Table 12.- International Pump Parts List

Item (ref. Figure 33)	Part No.	Description	INTL
1	144-091-5	Kit - Pigtail	1
2	072-528-1	O-Ring	1
3	852-204-5	UMP75U3-3	1
3	852-205-5	UMP150U3-3	1
3	852-206-5	UMP75U3-3 W/FSA	1
3	852-207-5	UMP150U3-3 W/FSA	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
3	852-058-5	UMP75U17-3	1
3	852-059-5	UMP150U17-3	1
3	852-145-5	AGUMP75S17-3	1
3	852-146-5	AGUMP150S17-3	1
3	852-147-5	AGUMP75S17-3 W/FSA	1
3	852-148-5	AGUMP150S17-3 W/FSA	1
3	852-153-5	X4UMP150U3	1
3	852-154-5	X4UMP150U3 W/FSA	1
3	852-155-5	X4UMP150U17	1
3	852-156-5	X4UMP150U17 W/FSA	1
3	852-215-5	X4AGUMP150S3	1
3	852-216-5	X4AGUMP150S3 W/FSA	1
3	852-217-5	X4AGUMP150S17	1
3	852-218-5	X4AGUMP150S17 W/FSA	1
3	852-219-5	UMP75U17-3 W/FSA	1
3	852-220-5	UMP150U17-3 W/FSA	1

Table 12.- International Pump Parts List

Item (ref. Figure 33)	Part No.	Description	INTL
	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
	144-194-5	Trapper - Retrofit (not shown)	1

Control Boxes

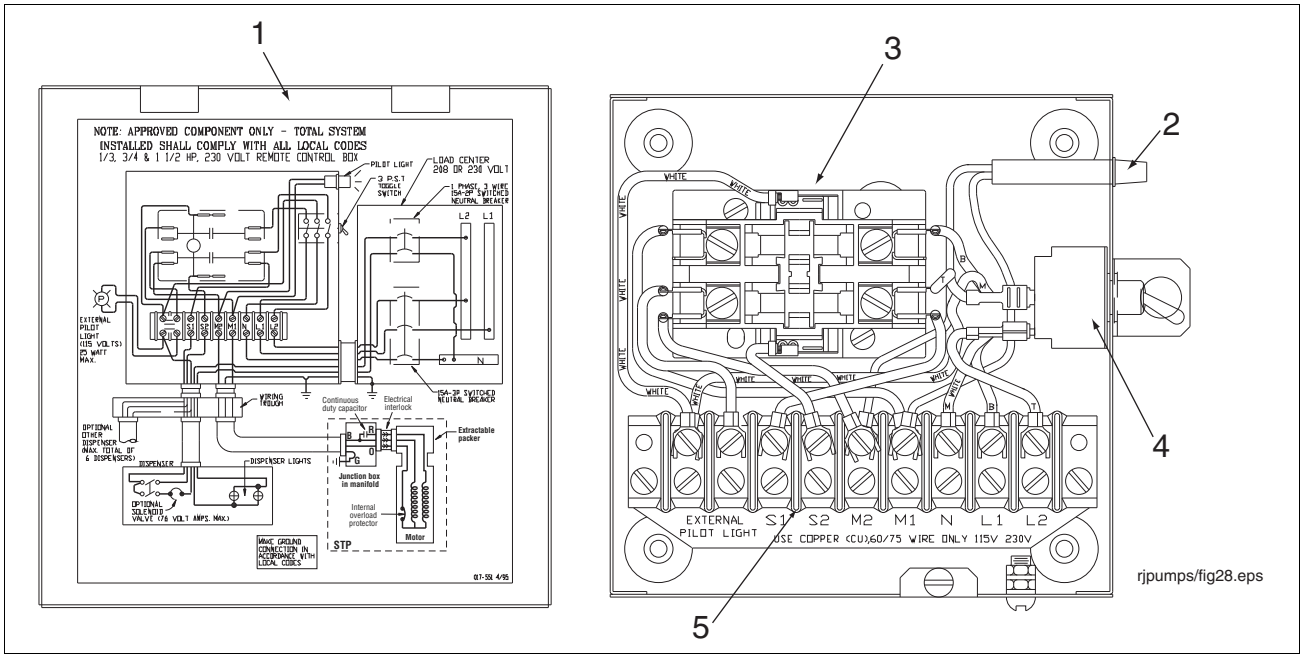


Figure 35. 880-041-5/880-042-5 control box

Table 13.- 880-041-5 Control Box w/115V Coil (60 Hz)

Item (Ref. Figure 35)	Part No.	Description	Qty.
1	108-572-4	Control box	1
2	147-006-1	Pilot light ass'y	1
3	014-723-1	Line contractor relay	1
4	080-858-1	Toggle switch	1
5	008-202-1	Terminal block	1

Table 14.- 880-042-5 Control Box w/230V Coil (50/60 Hz)

Item (Ref. Figure 35)	Part No.	Description	Qty.
1	108-572-4	Control box	1
2	147-006-1	Pilot light ass'y	1
3	014-720-1	Line contractor relay	1
4	080-858-1	Toggle switch	1
5	008-202-1	Terminal block	1

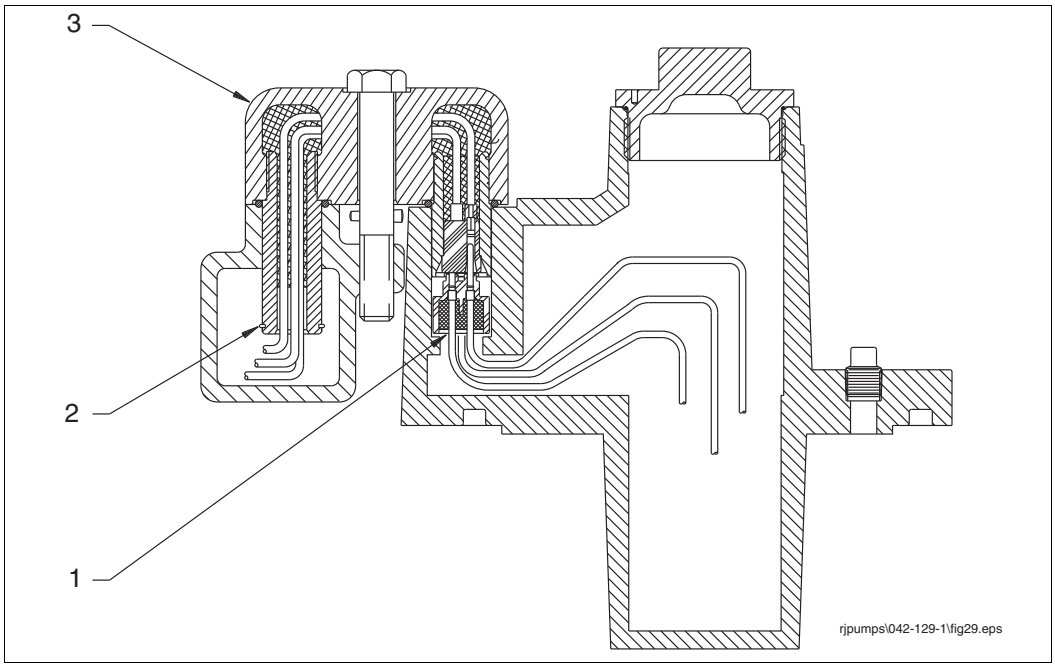


Figure 36. 880-045-5/880-046-5 control box

Table 15.- 880-045-5 1/3 & 3/4 HP Control Box w/Cap (115V Coil)

Item (Ref. Figure 36)	Part No.	Description	Qty.
1	123-141-1	Control box	1
2	147-006-1	Pilot light ass'y	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

Table 16.- 880-046-5 All 1-1/2 HP Control Box w/Cap (115V Coil)

Item (Ref. Figure 36)	Part No.	Description	Qty.
1	123-141-1	Control box	1
2	147-006-1	Pilot light ass'y	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

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