

4" AG Pump Service Kit

Part No. 344-001-5

Installation Guide



Notice

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

DAMAGE GOODS/LOST EQUIPMENT

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

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

VEEDER-ROOT'S PREFERRED CARRIER

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

CUSTOMER'S PREFERRED CARRIER

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

RETURN SHIPPING

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

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Introduction






This manual contains installation, operation, and service information for the Red Jacket 4-inch Standard Submersible Petroleum and AG pump.

Safety Precautions

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

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>EXPLOSIVE Fuels and their vapors are extremely explosive if ignited.</p> |  <p>FLAMMABLE Fuels and their vapors are extremely flammable.</p> |
|  <p>ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p> |  <p>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.</p> |
|  <p>WARNING Heed the adjacent instructions to avoid equipment damage or personal injury.</p> |  <p>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.</p> |
|  <p>WEAR EYE PROTECTION Wear eye protection when working with pressurized fuel lines or epoxy sealant to avoid possible eye injury.</p> | |

⚠ WARNING

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | <p>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.</p> <ol style="list-style-type: none"> 1. All installation work must comply with the latest issue of the National Electrical Code (NFPA 70), Code for Motor Fuel Dispensing Facilities and Repair Garages (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 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. 5. When servicing unit use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Warnings and Instructions

IMPORTANT SAFETY INFORMATION

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

PRELIMINARY PRECAUTIONS

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

Read the Manual

Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call 1-800-323-1719 to locate a qualified technician. It is imperative to your safety and the safety of others to understand the procedures before beginning work. **Make sure your employees and any service contractors read and follow the instructions.**

Follow the Regulations

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

Prevent Explosions and Fires

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

Working Alone

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

Working With Electricity Safely

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

Hazardous Materials

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

WARNING! FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD RESULT IN PROPERTY DAMAGE, INJURY OR DEATH.

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

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

REQUIREMENTS FOR USE

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

OPERATING PRECAUTIONS

- **NO SMOKING.** Extinguish all open flames and pilot lights, such as on RV appliances.
- **TURN OFF** cell phones and other electronic devices to avoid distractions while fueling.
- **GASOLINE CAN BE HARMFUL OR FATAL IF SWALLOWED.** Long-term exposure may cause cancer. Keep eyes and skin away from liquid gasoline and gasoline vapors. Avoid prolonged breathing of gasoline vapors.

Replacing The Quad Seal

Removing the Pump



DANGER! Always disconnect, lock out, and tag the power before starting to service the pump.



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

1. If a ball valve is installed down line from the pump, close it.
2. If an electronic line leak detection transducer is installed, it must be removed from the leak detector port following instructions in the appropriate Line Leak installation manual (see Figure 1). A mechanical line leak detector does not need to be removed.

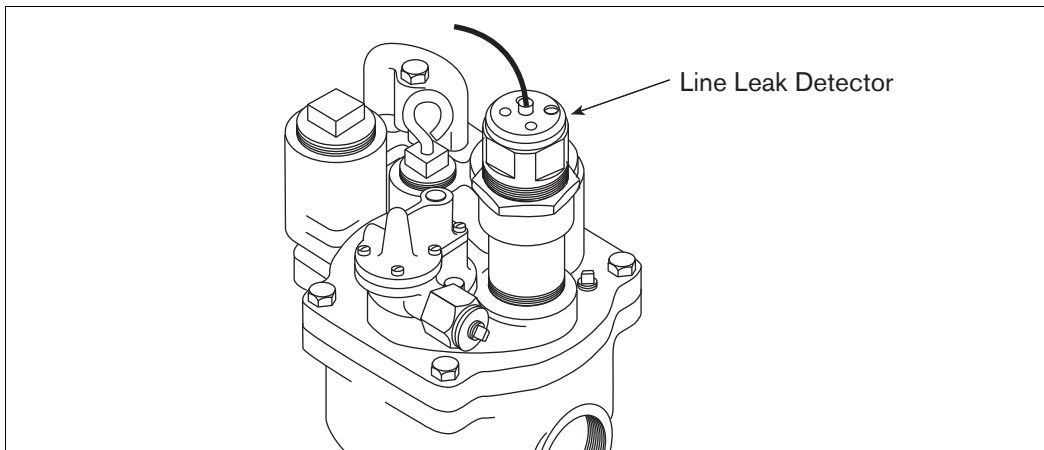


Figure 1. Electronic Line Leak Detector

3. Back out the electrical yoke disconnect bolt (see Figure 2).

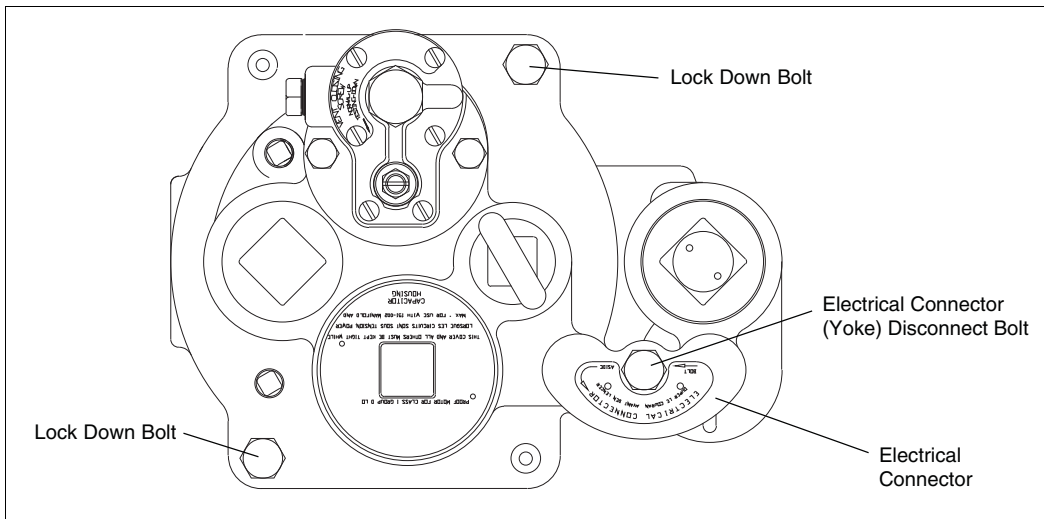


Figure 2. Packer

4. Swing the electrical connector aside.
5. If a siphon system is in place, disconnect the siphon tubing. If ball valves are installed, close them.
6. Remove the two lock-down bolts. To relieve pressure, rock the pump to allow excess pressure to flow into the tank or back out pressure adjustment screw (see Figure 6).

**WARNING!**

Confirm that the packer wiring compartment cover/plug (with lifting eye bolt) is properly torqued at 50 ft-lbs (70 N•m). Confirm that the lifting eye bolt is properly torqued to 10 ft-lbs (13.6 N•m) with a minimum of 6 full threads installed. Occasionally, eye bolts are removed after pump installation and corrosion may occur in the threaded areas of the wiring compartment cover/plug and the eye bolt. If corrosion has occurred, the cover/plug and eye bolt should be replaced.

Utilize the lifting eye bolt to lift out the extractable unit and place it on a clean surface. Removal of the extractable section of the pump must be conducted with caution. Make certain that the extractable portion remains centered within the riser pipe and that no portion of the extractable binds during the removal process. If binding occurs during removal, stop and determine the cause of the binding and correct the situation before proceeding with removal.

7. Lift out the extractable unit.

CAUTION! DO NOT damage the surface above the manifold's discharge port. The quad seal below the packer's leak detector port seals on this surface.

8. Once the pump is lifted off of the manifold, remove the old quad seal from the base of the packer (under the line leak port (see Figure 3).
9. Clean the seating surface and the sealing surface of the quad seal.
10. Lubricate the quad seal with petroleum jelly and install it into the base of the packer's line leak port. The seal's retaining lip fits over the outward angled edge of the port as shown in Figure 4.

**WARNING!**

Proper replacement of the quad seal is critical for maintenance of product line pressure. An improper seal will allow the release of product inside the unit and back into the tank.

11. Lubricate the 7" packer o-ring with petroleum jelly and install it in the groove in the packer (see Figure 3).

**WARNING! For fixed length pumps:**

If removed, install eye bolt plug, using an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant and torque to 50 ft-lbs (70 N•m). Confirm that the lifting eye bolt is properly torqued to 10 ft-lbs (13.6 N•m) with a minimum of 6 full threads installed. Occasionally, eye bolts are removed after pump installation and corrosion may occur in the threaded areas of the wiring compartment cover (eye bolt plug) and the eye bolt. If corrosion has occurred, the cover and eye bolt should be replaced.

Utilize the lifting eye bolt to suspend the pump vertically and then install the pump into the manifold.

NOTE: Before replacing the extractable, make sure that the surfaces of the packer o-ring and the quad seal are clean.

12. Install the pump into the manifold.
13. Align the positioning dowels of the manifold with the holes in the packer.
14. Push the packer as far as possible against the manifold.
15. Insert the lock-down bolts and torque to 45 – 55 ft-lb (61 – 75 N•m).
16. Loosen the bolts that hold the conduit box to the manifold. Do not remove.

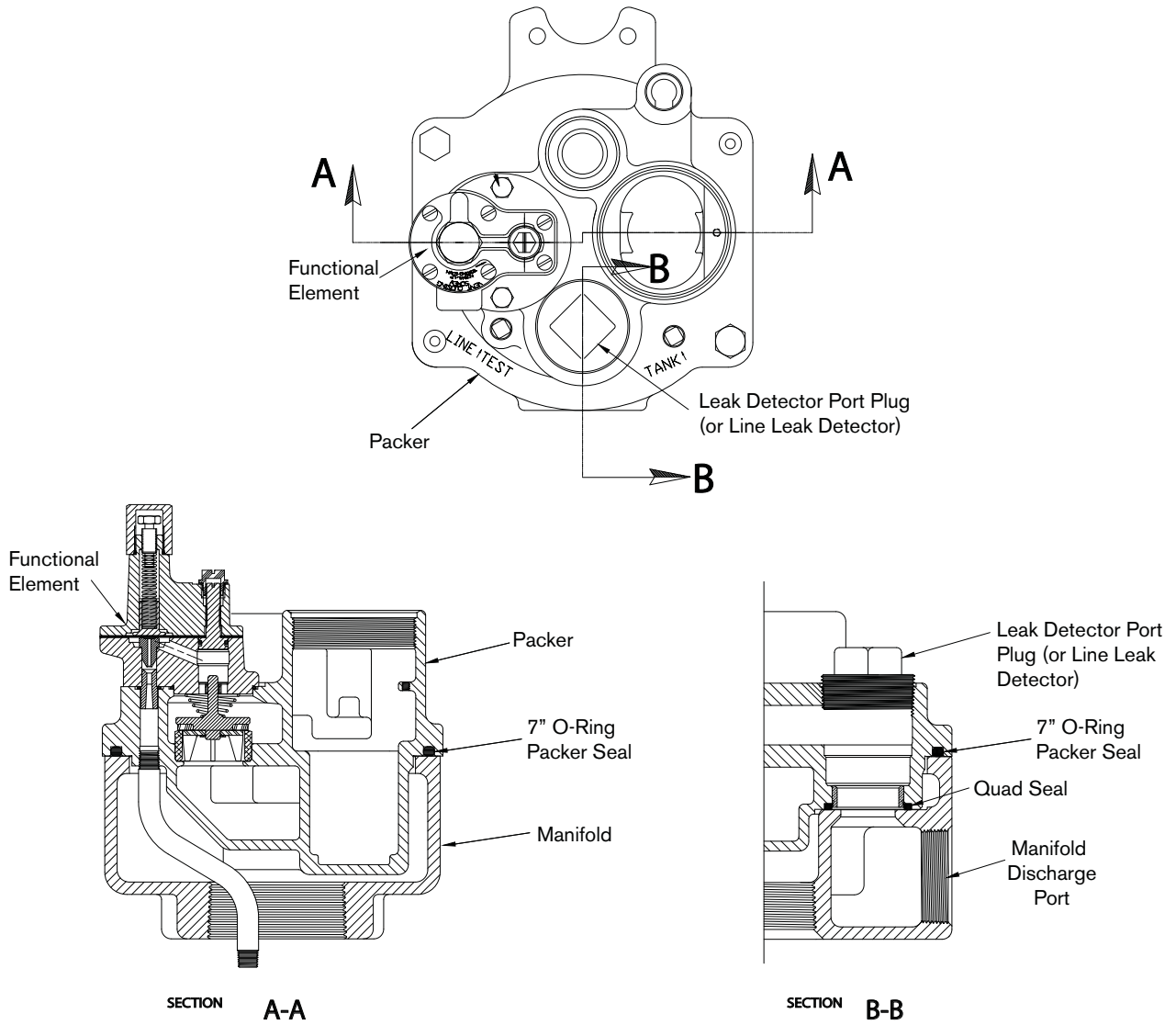


Figure 3. Locating 7" Packer O-Ring And Quad Seal

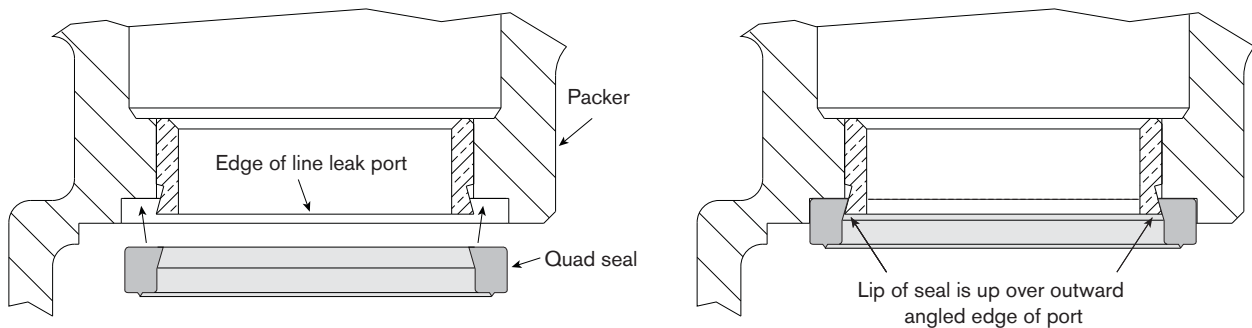


Figure 4. Installing New Quad Seal

17. Swing the electrical connector into position.
18. Torque the electrical connector bolt to 25 – 50 ft-lb (34 – 68 N•m).
19. Torque the conduit box bolts to 30 – 45 ft-lb (40 – 61 N•m).

NOTE: 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.

20. If applicable, open ball valve down line from the pump.
21. 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.

Replacing the Functional Element



DANGER! Always disconnect, lock out, and tag the power before starting to service the pump.



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

1. If a ball valve is installed down line from the pump, close it.
2. To relieve pressure, back out the pressure adjustment screw (see Figure 6) and confirm pressure relief has occurred.
3. Disconnect the siphon tubing (if siphon is installed).
4. Remove the two 3/8-inch bolts (see Figure 5).

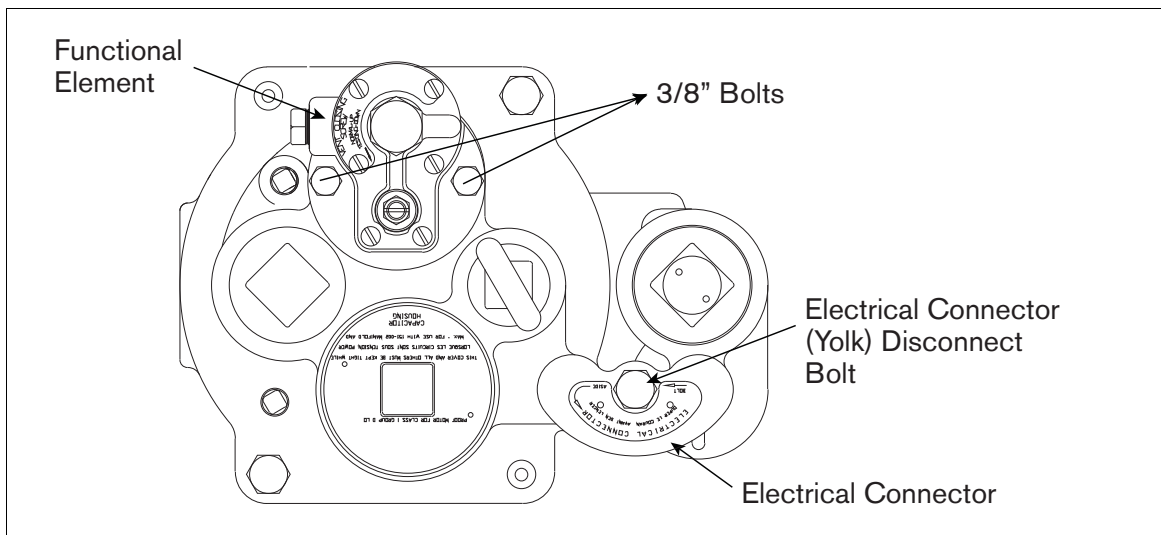


Figure 5. Functional Element

5. Carefully lift the functional element and remove it from the packer. The old check valve and spring will be resting inside the packer.

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

6. Be certain all mating surfaces are clean. Install the new functional element o-rings after lubricating them with petroleum jelly. Carefully set the new functional element in place, then replace the two 3/8-inch bolts and torque to 20 – 35 ft-lb (27 – 50 N•m).
7. Check the seating pressure of the adjustable functional element for proper setting.
8. If applicable, open ball valve down line from the pump.

Adjusting the Functional Element



DANGER! Always disconnect, lock out, and tag the power before starting to service the pump.

The functional element contained in this package is an adjustable model. All new functional elements are factory set at relief pressures of 11.5 – 16 psi (79 – 93 kPa) but can be adjusted to a maximum of approximately 30 psi (207 kPa) by turning down the pressure adjustment screw.

This adjustment feature allows the use of the Red Jacket Standard pump with electronic line leak detection systems that require higher relief pressures and enhances performance of electronic line leak detection systems where field conditions have necessitated minor adjustments to the relief pressure.

To Adjust the Relief Pressure

1. Remove the cap (see Figure 6).
2. Turn down the pressure adjustment screw (see Figure 6). Tightening the screw clockwise will increase the pressure. When the adjustment screw is fully down, the relief pressure is approximately 30 psi (207 kPa). Fully up will result in relief pressures between 0 – 3 psi (0 – 20 kPa).
3. Lubricate the cap's o-ring with petroleum jelly and replace cap by turning it until it contacts the functional element body. 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.

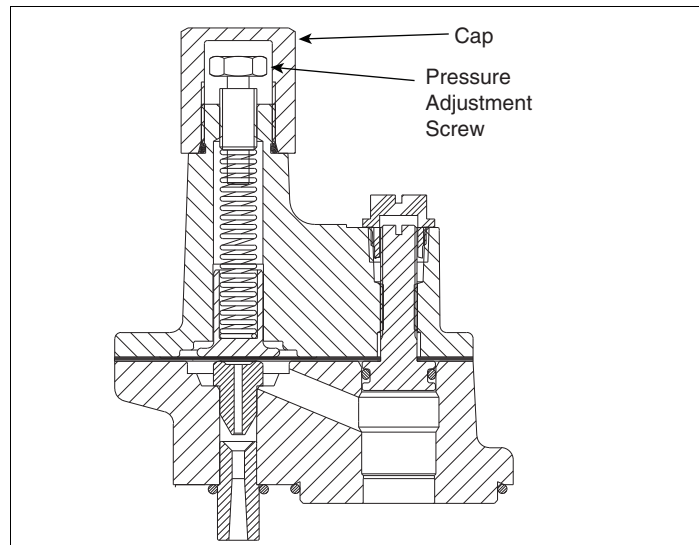


Figure 6. Functional Element Cap And Pressure Adjustment Screw



WARNING!

When the adjustable functional element is installed, the pump/motor unit must operate at a minimum of 5 psi (34 kPa) greater than the relief (seating) pressure at which the functional element has been set. An improper pressure setting may cause mechanical damage and will void the warranty.

NOTICE: If a siphon system is being utilized, it is especially important to follow the 5 psi (34 kPa) rule, that is the pump must create 5 psi more pressure than the relief pressure setting. 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).

Table 1.- Approximate Pressures At Shut-Off

| Pump | Approximate Shut Off Pressure |
|----------------------------|---------------------------------------|
| AGUMP33R1, UMP33R1 | 25 psi (172 kPa) .74 SG @ 60°F (15°C) |
| AGUMP75S1, UMP75S1 | 28 psi (193 kPa) .74 SG @ 60°F (15°C) |
| AGUMP150S1, UMP150S1 | 30 psi (207 kPa) .74 SG @ 60°F (15°C) |
| X3AGUMP150S1, X3UMP150S1 | 43 psi (297 kPa) .74 SG @ 60°F (15°C) |
| AGUMP75S3-3, UMP75S3-3 | 30 psi (207 kPa) .74 SG @ 60°F (15°C) |
| AGUMP150S3-3, UMP150S3-3 | 32 psi (220 kPa) .74 SG @ 60°F (15°C) |
| X4AGUMP150S3, X4UMP150S3 | 40 psi (275 kPa) .74 SG @ 60°F (15°C) |
| AGUMP75S17-3, UMP75S17-3 | 29 psi (200 kPa) .74 SG @ 60°F (15°C) |
| AGUMP150S17-3, UMP150S17-3 | 32 psi (220 kPa) .74 SG @ 60°F (15°C) |
| X4AGUMP150S17, X4UMP150S17 | 39 psi (267 kPa) .74 SG @ 60°F (15°C) |

4. Turn on the pump and purge the 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.
5. Pump start up is now complete.

Functional Element Parts List

Table 2.- Adjustable Precision Functional Element AG (P/N 323-002-5)

| Item | Part Number | Description |
|------|-------------|--------------------------|
| 1 | 108-574-4 | Base Casting |
| 2 | 017-526-1 | Diaphragm |
| 3 | 066-883-1 | Poppet |
| 4 | 072-641-1 | O-Ring 41/64 x 5/64 |
| 5 | 076-421-3 | Adjustment Screw |
| 6 | 012-956-3 | Cap |
| 7 | 080-767-1 | Spring |
| 8 | 066-620-1 | Plug |
| 9 | 060-332-1 | Seal |
| 10 | 012-965-3 | Top Casting |
| 11 | 076-145-3 | Relief Screw |
| 12 | 072-526-1 | O-ring 9/16 x 3/4 x 3/32 |
| 13 | 072-533-1 | O-ring 2 x 2-3/16 x 3/32 |
| 14 | 072-535-1 | O-ring 7/16 x 5/8 x 3/32 |
| 15 | 026-155-1 | Screw |
| 16 | 066-826-1 | Nameplate (not shown) |

