

## Spikecheck for Standard Pump

### Installation Instructions



# Notice

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

## **DAMAGE GOODS/LOST EQUIPMENT**

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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**

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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**

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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**

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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

Spikecheck for Standard Pump:

- P/N 410557-001 – Integrated Pressure Relief Version
- P/N 410557-002 – Non-Pressure Relief Version

## Overview

This manual addresses the conversion of the stock Standard Packer/Manifold to a version which is compatible with PLLD when using the Spikecheck Valve Assembly.

The Check Valve and integrated Relief Valve assembly is factory set for 19-25 PSI and is not adjustable.

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

The PLLD must be used in conjunction with the TLS monitoring system to provide leak detection for the piping system (see PLLD Site Prep & Installation Guide 576013-902).

The Spikecheck Valve for the Standard pump replaces the SwiftCheck valve and modified functional element and was designed to operate with 3/4 hp and 1-1/2 hp Red Jacket Standard Submersible Pumps.

The Spikecheck valve allows the pump head (Packer) to be tested during a PLLD (Pressurized Line Leak Detection) line test and is not designed to work with WPLLD (Wireless Pressurized Line Leak Detection).





The Spikecheck was developed to address a customer's specific need for their inventory of the Standard version of the RJ STP, and was not developed to be comprehensive for all pump variations.

The Spikecheck product does not provide siphon functionality.

## Safety Precautions

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

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

 <b>EXPLOSIVE</b> Fuels and their vapors are extremely explosive if ignited.	 <b>FLAMMABLE</b> Fuels and their vapors are extremely flammable.
 <b>ELECTRICITY</b> High voltage exists in, and is supplied to, the device. A potential shock hazard exists.	 <b>TURN POWER OFF</b> Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.



**WARNING**

Heed the adjacent instructions to avoid equipment damage or personal 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.

**⚠ 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.

## Contractor Certification Requirements

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Veeder-Root requires the following minimum training certifications for contractors who will install and setup the equipment discussed in this manual:

**Level 1** Contractors holding valid Level 1 Certification are approved to perform wiring and conduit routing, equipment mounting, probe and sensor installation, tank and line preparation, and line leak detector installation.

**Level 2/3** Contractors holding valid Level 2 or 3 Certifications are approved to perform installation checkout, startup, programming and operations training, troubleshooting and servicing for all Veeder-Root Tank Monitoring Systems, including Line Leak Detection and associated accessories.

**Warranty Registrations** may only be submitted by selected Distributors.

## Warnings and Instructions

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

#### Prevent Explosions and Fires

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

#### Working Alone

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

#### Working With Electricity Safely

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

#### Hazardous Materials

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

**WARNING! FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD RESULT IN PROPERTY DAMAGES TO THE ENVIRONMENT, 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.

### REQUIREMENTS FOR USE

- The Spikecheck Valve is designed for use only at facilities dispensing motor fuels.
- Application of the Spikecheck Valve 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.



## Installation

### Option 1 - Converting a Standard Packer/Manifold Containing a Functional Element

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**Note:** Lubricate all o-rings with petroleum jelly prior to installation.



**WARNING!** Always disconnect, lock out, and tag the power at the panel before starting to service the pump.

1. Close the ball valve at the end of the STP (if installed).
2. Depressurize the packer by removing the protective cap on the functional element and rotate the hex screw counterclockwise to relieve pressure back to the fuel storage tank (See Figure 1).
3. If a non-adjustable functional element is installed, relieve pump pressure by removing the 2 – 1/2" fasteners on the packer and rock the pump to allow excess pressure to flow into the tank. Re-torque fasteners to 50 ft-lbs.
4. Monitor pressure to confirm that all pressure has been removed from the packer.
5. Remove the 2" NPT pipe plug from the MLD port on the packer.
6. Remove the 2-3/8" hex fasteners which retain the functional element and discard the functional element, check valve, spring and all related seals. (If a siphon system is connected to the functional element, this system must be removed and properly disabled since the Spikecheck Valve Assembly does not allow for provision of a siphon system.)
7. Install the PLLD transducer per the PLLD Site Prep & Installation Guide 576013-902.
8. Install the Spikecheck Check Valve/Relief Valve assembly onto the seat in the packer.
9. Install the spring over the Check Valve/Relief Valve stem.
10. Install the 072-533-1 O-Ring onto the Spikecheck housing.
11. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
12. Install the Spikecheck housing.
13. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
14. Remove the protective cap on the Spikecheck housing.
15. Confirm that the lock down screw is fully counterclockwise.
16. Reinstall the protective cap on the Spikecheck housing and torque until plug bottoms out on flange.
17. Remove the 2" NPT pipe plug from the MLD port on the packer.
18. Inspect and confirm that all joints do not leak fuel, when the system is pressurized.
19. Veeder-Root recommends that you induce a 3 GPH leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the Spikecheck Valve and confirmation of leak detection.
20. Remove the 3 GPH leak and confirm operation of the Spikecheck Valve.

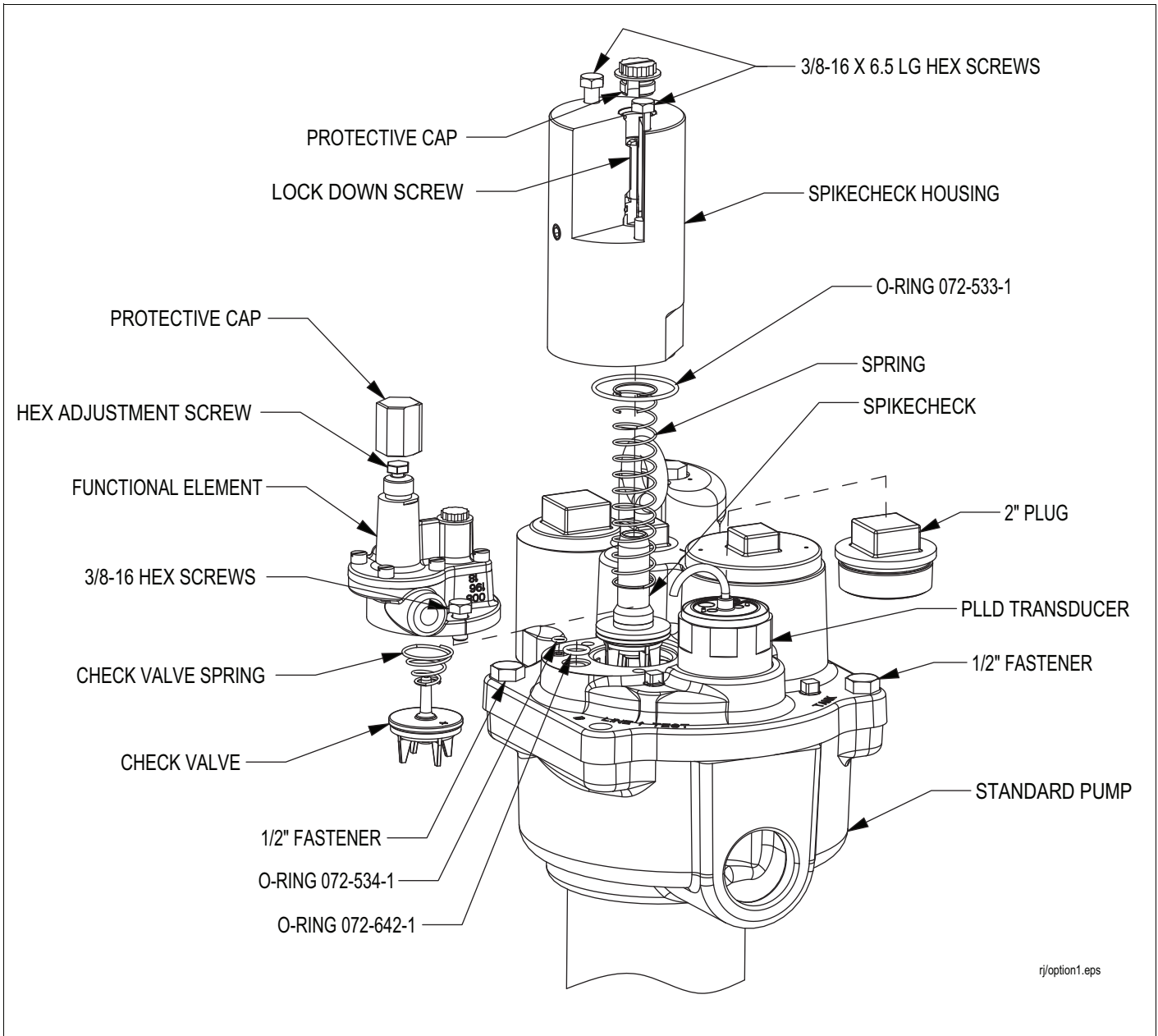


Figure 1. Option 1 - Converting a Standard Packer/Manifold Containing a Functional Element

## Option 2 – Converting a Standard Packer/Manifold Containing a Functional Element and Mechanical Leak Detector

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**Note:** Lubricate all o-rings with petroleum jelly prior to installation.



**WARNING!** Always disconnect, lock out, and tag the power at the panel before starting to service the pump.

1. Close the ball valve at the end of the STP (if installed).
2. Depressurize the packer by removing the protective cap on the functional element and rotate the hex screw counterclockwise to relieve pressure back to the fuel storage tank (See Figure 2).
3. If a non-adjustable functional element is installed, relieve pump pressure by removing the 2 – 1/2" fasteners on the packer and rock the pump to allow excess pressure to flow into the tank. Re-torque fasteners to 50 ft-lbs.
4. Monitor pressure to confirm that all pressure has been removed from the packer.
5. Remove the mechanical leak detector and all related components.
6. Remove the vent tube and related fittings and apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant to the threads of a 1/4" NPT pipe plug and seal the tank port.
7. Install the PLLD transducer per the PLLD Site Prep & Installation Guide 576013-902.
8. Remove the 2-3/8" hex fasteners which retain the functional element and discard the functional element, check valve, spring and all related seals. (If a siphon system is connected to the functional element, this system must be removed and properly disabled since the Spikecheck Valve Assembly does not allow for provision of a siphon system.)
9. Install the Spikecheck Check Valve/Relief Valve assembly onto the seat in the packer.
10. Install the spring over the Check Valve/Relief Valve stem.
11. Install the 072-533-1 O-Ring onto the Spikecheck housing.
12. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
13. Install the Spikecheck housing.
14. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
15. Remove the protective cap on the Spikecheck housing.
16. Confirm that the lock down screw is fully counterclockwise.
17. Reinstall the protective cap on the Spikecheck housing and torque until plug bottoms out on flange.
18. Inspect and confirm that all joints do not leak fuel, when the system is pressurized.
19. Veeder-Root recommends that you induce a 3 GPH leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the Spikecheck Valve and confirmation of leak detection.
20. Remove the 3 GPH leak and confirm operation of the Spikecheck Valve.

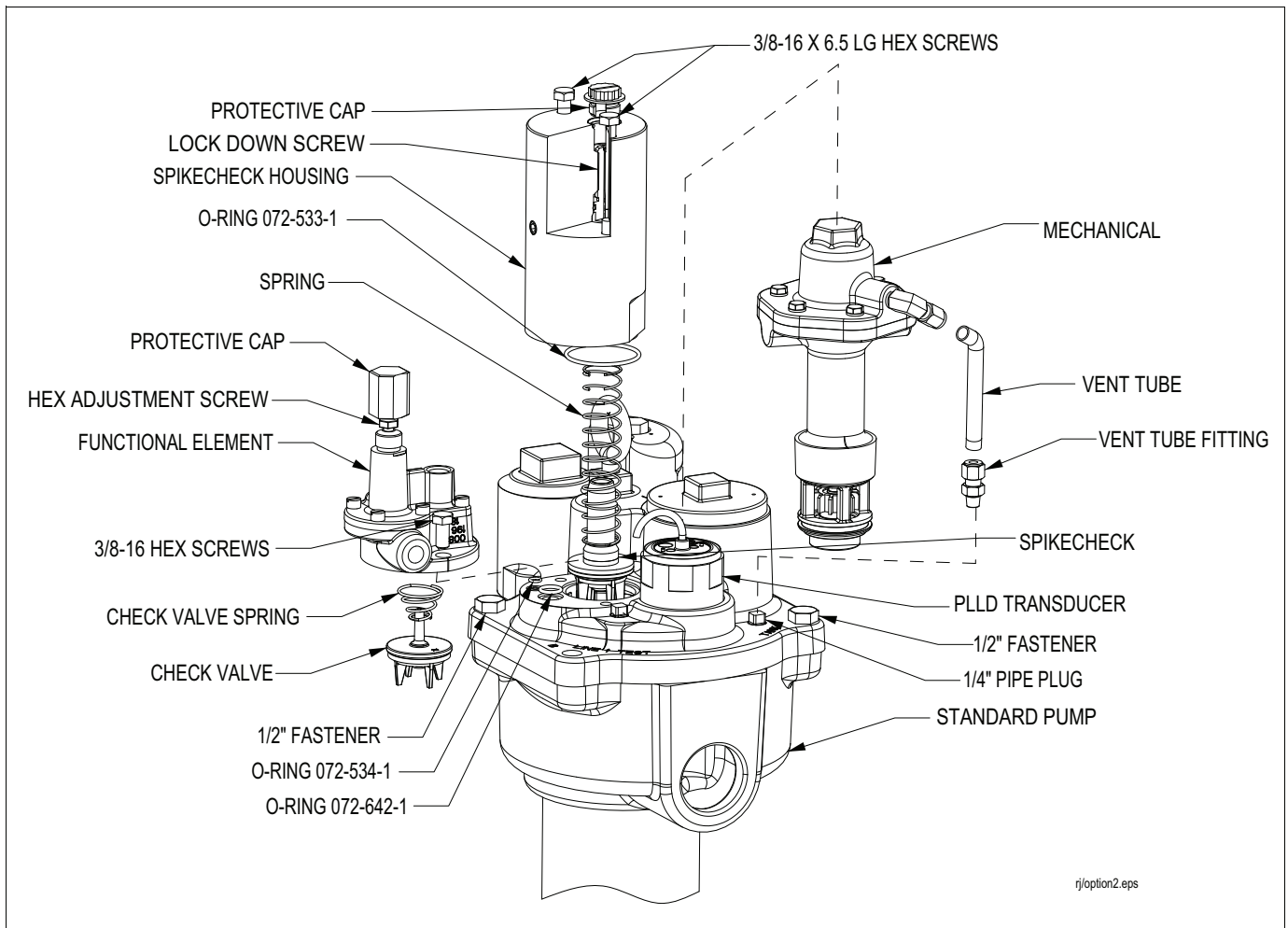


Figure 2. Option 2 – Converting a Standard Packer/Manifold Containing a Functional Element and Mechanical Leak Detector

### Option 3 – Converting a Standard Packer/Manifold Containing a SwiftCheck Valve and PLLD

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**Note:** Lubricate all o-rings with petroleum jelly prior to installation.



**WARNING!** Always disconnect, lock out, and tag the power at the panel before starting to service the pump.

Induce a 3 gph leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the SwiftCheck valve and confirmation of leak detection prior to converting to the Spikecheck.

1. Close the ball valve at the end of the STP (if installed).
2. Depressurize the packer by removing the protective cap on the functional element and rotate the hex screw counterclockwise to relieve pressure back to the fuel storage tank (See Figure 3).
3. If a non-adjustable functional element is installed, relieve pump pressure by removing the 2 – 1/2" fasteners on the packer and rock the pump to allow excess pressure to flow into the tank. Re-torque fasteners to 50 ft-lbs.
4. Monitor pressure to confirm that all pressure has been removed from the packer.
5. Remove the PLLD transducer and SwiftCheck Valve.



**WARNING!** Residual fuel may be present between the PLLD transducer and the SwiftCheck valve. Use proper procedures to avoid spills.

6. Remove the 2-3/8" hex fasteners which retain the functional element and discard the functional element, check valve, spring and all related seals. (If a siphon system is connected to the functional element, this system must be removed and properly disabled since the Spikecheck Valve Assembly does not allow for provision of a siphon system.)
7. Install the PLLD transducer per the PLLD Site Prep & Installation Guide 576013-902.
8. Install the Spikecheck Check Valve/Relief Valve assembly onto the seat in the packer.
9. Install the spring over the Check Valve/Relief Valve stem.
10. Install the 072-533-1 O-Ring onto the Spikecheck housing.
11. Install the 072-642-1 and 072-534-1 O-Rings onto the packer
12. Install the Spikecheck housing.
13. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
14. Remove the protective cap on the Spikecheck housing.
15. Confirm that the lock down screw is fully counterclockwise.
16. Reinstall the protective cap on the Spikecheck housing and torque until plug bottoms out on flange.
17. Inspect and confirm that all joints do not leak fuel, when the system is pressurized.
18. Veeder-Root recommends that you induce a 3 GPH leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the Spikecheck Valve and confirmation of leak detection.
19. Remove the 3 GPH leak and confirm operation of the Spikecheck Valve.

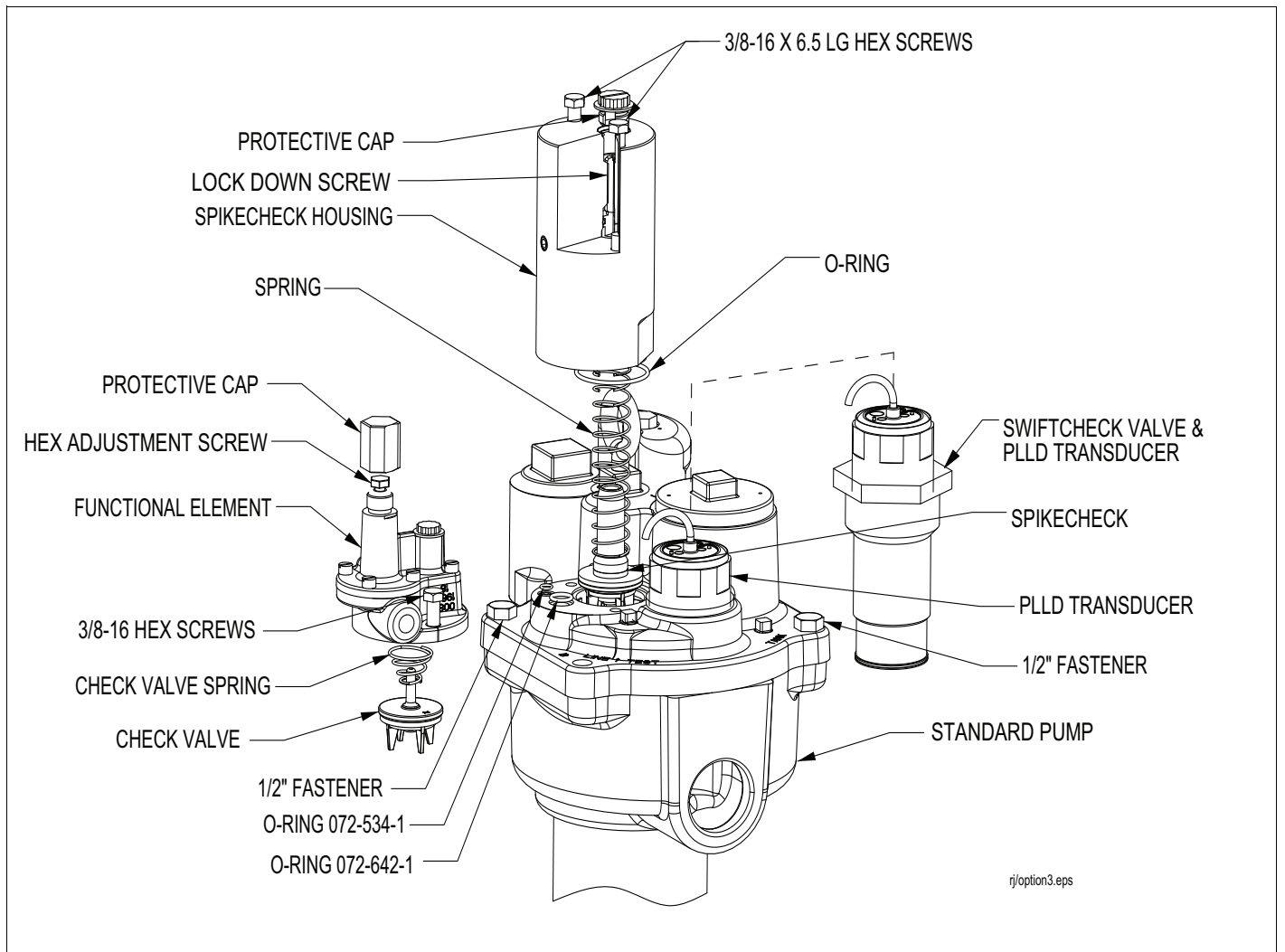


Figure 3. Option 3 – Converting a Standard Packer/Manifold Containing a SwiftCheck Valve and PLLD

## Option 4 – Manifolded Systems – Converting a Standard Packer/Manifold Containing an Adjustable Functional Element

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**Note:** Lubricate all o-rings with petroleum jelly prior to installation.



**WARNING!** Always disconnect, lock out, and tag the power at the panel before starting to service the pump.

1. Close the ball valve(s) at the end of the STP(s) (if installed).
2. Depressurize the packer by removing the protective cap on the functional element and rotate the hex screw counterclockwise to relieve pressure back to the fuel storage tank (See Figure 4).
3. If a non-adjustable functional element is installed, relieve pump pressure by removing the 2 – 1/2" fasteners on the packer and rock the pump to allow excess pressure to flow into the tank. Re-torque fasteners to 50 ft-lbs.
4. Monitor pressure to confirm that all pressure has been removed from the packer.
5. Remove the 2" NPT pipe plug from the MLD port in the **master** packer.
6. Remove the 2-3/8" hex fasteners which retain the functional element and discard the functional element, check valve, spring and all related seals on both **master** and **slave** units. (If a siphon system is connected to the functional element, this system must be removed and properly disabled since the Spikecheck Valve Assembly does not allow for provision of a siphon system.)
7. Install the PLLD transducer into the **master** unit per per the PLLD Site Prep & Installation Guide 576013-902.
8. On the **master** unit, install a pressure relieving Spikecheck Check Valve/Relief Valve assembly 410555-001 (included in the 410557-001 kit) onto the seat in the packer.
9. Install the spring over the Check Valve/Relief Valve stem.
10. Install the 072-533-1 O-Ring onto the Spikecheck housing.
11. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
12. Install the Spikecheck housing.
13. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
14. Remove the protective cap on the Spikecheck housing.
15. Confirm that the lock down screw is fully counterclockwise.
16. Reinstall the protective cap on the Spikecheck housing and torque until plug bottoms out on flange.
17. Obtain a 2" NPT pipe plug and apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant to the threads and install into the MLD port on the packer of the **slave** unit, if not already installed.
18. On the **slave** unit, install a non-pressure relieving Spikecheck Check Valve assembly 410556-001 (included in the 410557-002 kit) onto the seat in the packer.
19. Install the spring over the Check Valve stem.
20. Install the 072-533-1 O-Ring onto the Spikecheck housing.
21. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
22. Install the Spikecheck housing (non pressure relief version).
23. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.

24. Remove the protective cap on the Spikecheck housing (non pressure relief version).
25. Confirm that the lock down screw is fully counterclockwise.
26. Reinstall the protective cap on the Spikecheck housing (non pressure relief version) and torque until plug bottoms out on flange.
27. Inspect and confirm that all joints do not leak fuel, when the system is pressurized.
28. Veeder-Root recommends that you induce a 3 GPH leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the Spikecheck Valve and confirmation of leak detection.
29. Remove the 3 GPH leak and confirm operation of the Spikecheck Valve.



**WARNING! Failure to install a non-pressure relieving Check Valve/Relief Valve assembly may result in transfer of fuel from the master tank into the slave tank. Operation of the slave pump/tank will allow product to flow into the master tank and overfilling can occur.**

**WARNING! A non-pressure relieving check valve must ALWAYS be used in conjunction with a pressure relieving check valve to insure that the piping system is protected from potential over-pressurization.**

**WARNING! Additional check valves must not be placed in the pipeline or protection from over-pressurization may be negated.**



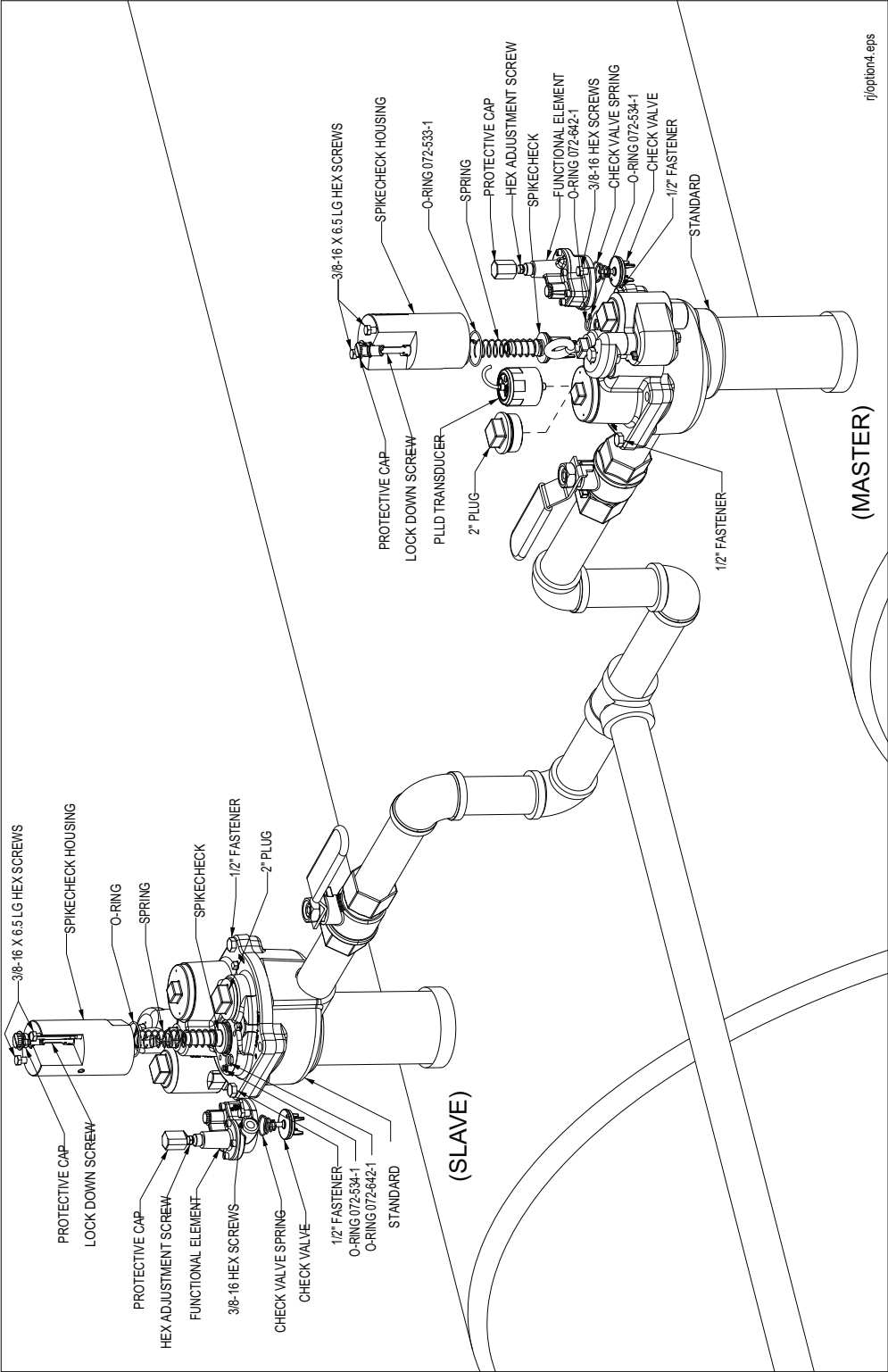


Figure 4. Option 4 – Manifolded Systems – Converting a Standard Packer/Manifold Containing an Adjustable Functional Element

## Option 5 – Manifolded System - Converting a Standard Packer/Manifold Containing an Adjustable Functional Element and Mechanical Leak Detector

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**Note:** Lubricate all o-rings with petroleum jelly prior to installation.



**WARNING!** Always disconnect, lock out, and tag the power at the panel before starting to service the pump.

1. Close the ball valve at the end of the STP (if installed).
2. Depressurize the packer by removing the protective cap on the functional element and rotate the hex screw counterclockwise to relieve pressure back to the fuel storage tank.
3. If a non-adjustable functional element is installed, relieve pump pressure by removing the 2 – 1/2" fasteners on the packer and rock the pump to allow excess pressure to flow into the tank. Re-torque fasteners to 50 ft-lbs.
4. Monitor pressure to confirm that all pressure has been removed from the packer.
5. Remove the mechanical leak detector(s) from the **master** and **slave** packers (if applicable).
6. Remove the vent tube and apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant to the threads of a 1/4" NPT pipe plug and seal the tank port.
7. Remove the 2-3/8" hex fasteners which retain the functional element and discard the functional element, check valve, spring and all related seals on both the **master** and **slave** units. (If a siphon system is connected to the functional element, this system must be removed and properly disabled since the Spikecheck Valve Assembly does not allow for provision of a siphon system.)
8. Install the PLLD transducer into the **master** unit per the PLLD Site Prep & Installation Guide 576013-902.
9. Obtain a 2" NPT pipe plug and apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant to the threads and install into the MLD port on the packer of the **slave** unit.
10. On the **master** unit, install a pressure relieving Spikecheck Check Valve/Relief Valve assembly 410555-001 (included in the 410557-001 kit) onto the seat in the packer.
11. Install the spring over the Check Valve/Relief Valve stem.
12. Install the 072-533-1 O-Ring onto the Spikecheck housing.
13. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
14. Install the Spikecheck housing.
15. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
16. Remove the protective cap on the Spikecheck housing.
17. Confirm that the lock down screw is fully counterclockwise.
18. Reinstall the protective cap on the Spikecheck housing and torque until plug bottoms out on flange.
19. On the **slave** unit, install a non-pressure relieving Spikecheck Check Valve assembly 410556-001 (included in the 410557-002 kit) onto the seat in the packer.
20. Install the spring over the Check Valve stem.
21. Install the 072-533-1 O-Ring onto the Spikecheck housing.
22. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
23. Install the Spikecheck housing (non pressure relief version).

24. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
25. Remove the protective cap on the Spikecheck housing (non pressure relief version).
26. Confirm that the lock down screw is fully counterclockwise.
27. Reinstall the protective cap on the Spikecheck housing (non pressure relief version) and torque until plug bottoms out on flange.
28. Inspect and confirm that all joints do not leak fuel, when the system is pressurized.
29. Veeder-Root recommends that you induce a 3 GPH leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the Spikecheck Valve and confirmation of leak detection.
30. Remove the 3 GPH leak and confirm operation of the Spikecheck Valve.



**WARNING! Failure to install a non-pressure relieving Check Valve/Relief Valve assembly may result in transfer of fuel from the master tank into the slave tank. Operation of the slave pump/tank will allow product to flow into the master tank and overfilling can occur.**

**WARNING! A non-pressure relieving check valve must ALWAYS be used in conjunction with a pressure relieving check valve to insure that the piping system is protected from potential over-pressurization.**

**WARNING! Additional check valves must not be placed in the pipeline or protection from over-pressurization may be negated.**

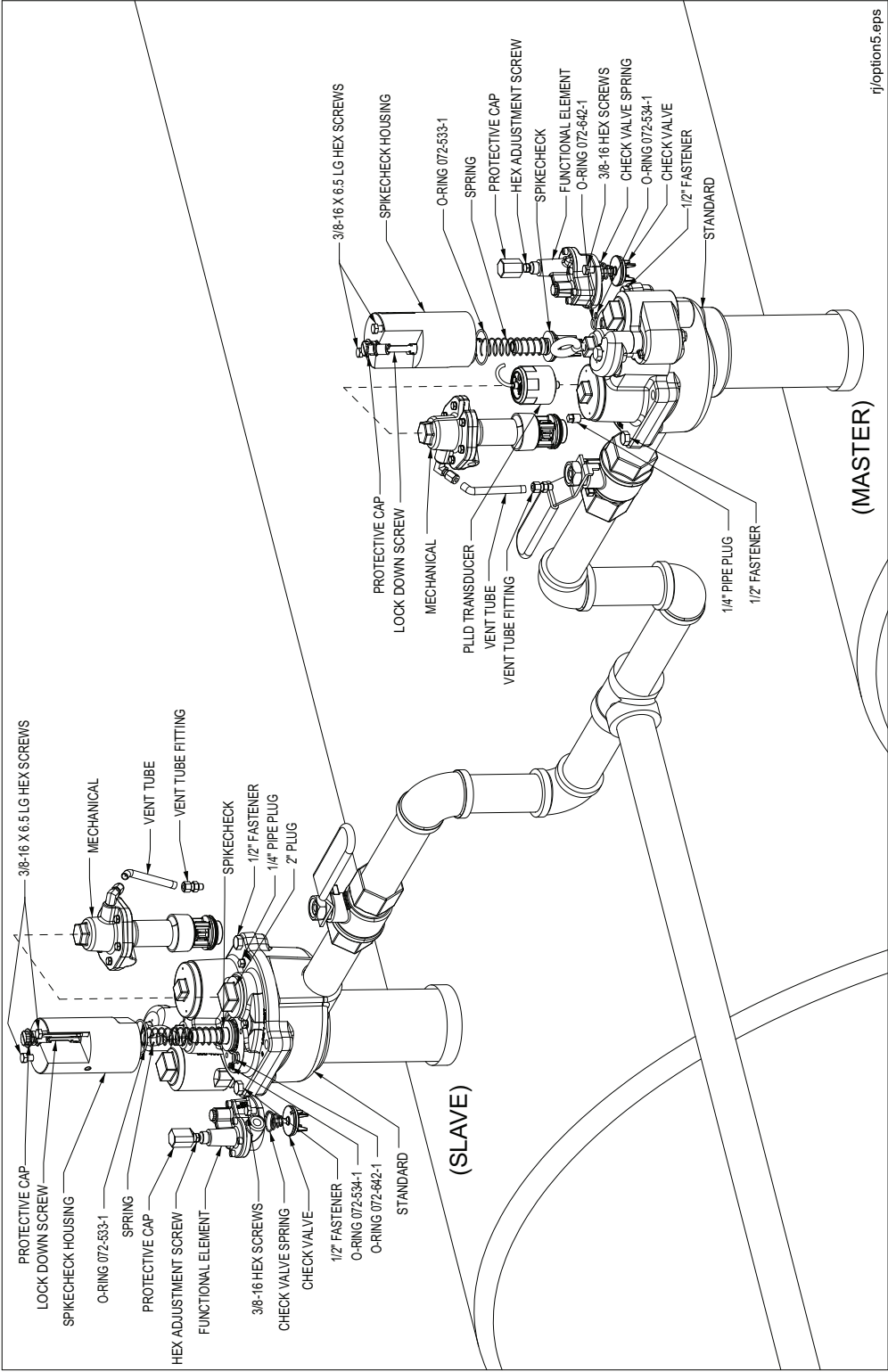


Figure 5. Option 5 – Manifolded System - Converting a Standard Packer/Manifold Containing an Adjustable Functional Element and Mechanical Leak Detector

## Option 6 - Manifolder System – Converting a Standard Packer/Manifold Containing a SwiftCheck Valve and PLLD

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**Note:** Lubricate all o-rings with petroleum jelly prior to installation.



**WARNING!** Always disconnect, lock out, and tag the power at the panel before starting to service the pump.

Induce a 3 gph leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the SwiftCheck valve and confirmation of leak detection prior to converting to the Spikecheck.

1. Close the ball valve at the end of the STP (if installed).
2. Depressurize the packer by removing the protective cap on the functional element and rotate the hex screw counterclockwise to relieve pressure back to the fuel storage tank.
3. If a non-adjustable functional element is installed, relieve pump pressure by removing the 2 – 1/2" fasteners on the packer and rock the pump to allow excess pressure to flow into the tank. Re-torque fasteners to 50 ft-lbs.
4. Monitor pressure to confirm that all pressure has been removed from the packer.
5. Remove the PLLD transducer and SwiftCheck Valve from the **master** unit.



**WARNING! Residual fuel may be present between the PLLD transducer and the SwiftCheck valve. Use proper procedures to avoid spills.**

6. Remove the non-vented SwiftCheck valve from the **slave** unit.
7. Remove the 2-3/8" hex fasteners which retain the functional element and discard the functional element, check valve and all related seals on both **master** and **slave** units. (If a siphon system is connected to the functional element, this system must be removed and properly disabled since the Spikecheck Valve Assembly does not allow for provision of a siphon system.)
8. Install the PLLD transducer into the **master** unit per the PLLD Site Prep & Installation Guide 576013-902.
9. Obtain a 2" NPT pipe plug and apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant to the threads and install into the MLD port on the packer of the **slave** unit.
10. On the **master** unit, install a pressure relieving Spikecheck Check Valve/Relief Valve assembly 410555-001 (included in the 410557-001 kit) onto the seat in the packer.
11. Install the spring over the Check Valve/Relief Valve stem.
12. Install the 072-533-1 O-Ring onto the Spikecheck housing.
13. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
14. Install the Spikecheck housing.
15. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
16. Remove the protective cap on the Spikecheck housing.
17. Confirm that the lock down screw is fully counterclockwise.
18. Reinstall the protective cap on the Spikecheck housing and torque until plug bottoms out on flange.
19. On the **slave** unit, install a non-pressure relieving Spikecheck Check Valve assembly 410556-001 (included in the 410557-002 kit) onto the seat in the packer.
20. Install the spring over the Check Valve stem.

21. Install the 072-533-1 O-Ring onto the Spikecheck housing.
22. Install the 072-642-1 and 072-534-1 O-Rings onto the packer.
23. Install the Spikecheck housing (non pressure relief version).
24. Install the 2-3/8" hex fasteners and torque to 20-35 ft-lbs.
25. Remove the protective cap on the Spikecheck housing (non pressure relief version).
26. Confirm that the lock down screw is fully counterclockwise.
27. Reinstall the protective cap on the Spikecheck housing (non pressure relief version) and torque until plug bottoms out on flange.
28. Inspect and confirm that all joints do not leak fuel, when the system is pressurized.
29. Veeder-Root recommends that you induce a 3 GPH leak into the piping system and then conduct PLLD line testing via the TLS to confirm operation of the Spikecheck Valve and confirmation of leak detection.
30. Remove the 3 GPH leak and confirm operation of the Spikecheck Valve.



**WARNING! Failure to install a non-pressure relieving Check Valve/Relief Valve assembly may result in transfer of fuel from the master tank into the slave tank. Operation of the slave pump/tank will allow product to flow into the master tank and overfilling can occur.**

**WARNING! A non-pressure relieving check valve must ALWAYS be used in conjunction with a pressure relieving check valve to insure that the piping system is protected from potential over-pressurization.**

**WARNING! Additional check valves must not be placed in the pipeline or protection from over-pressurization may be negated.**

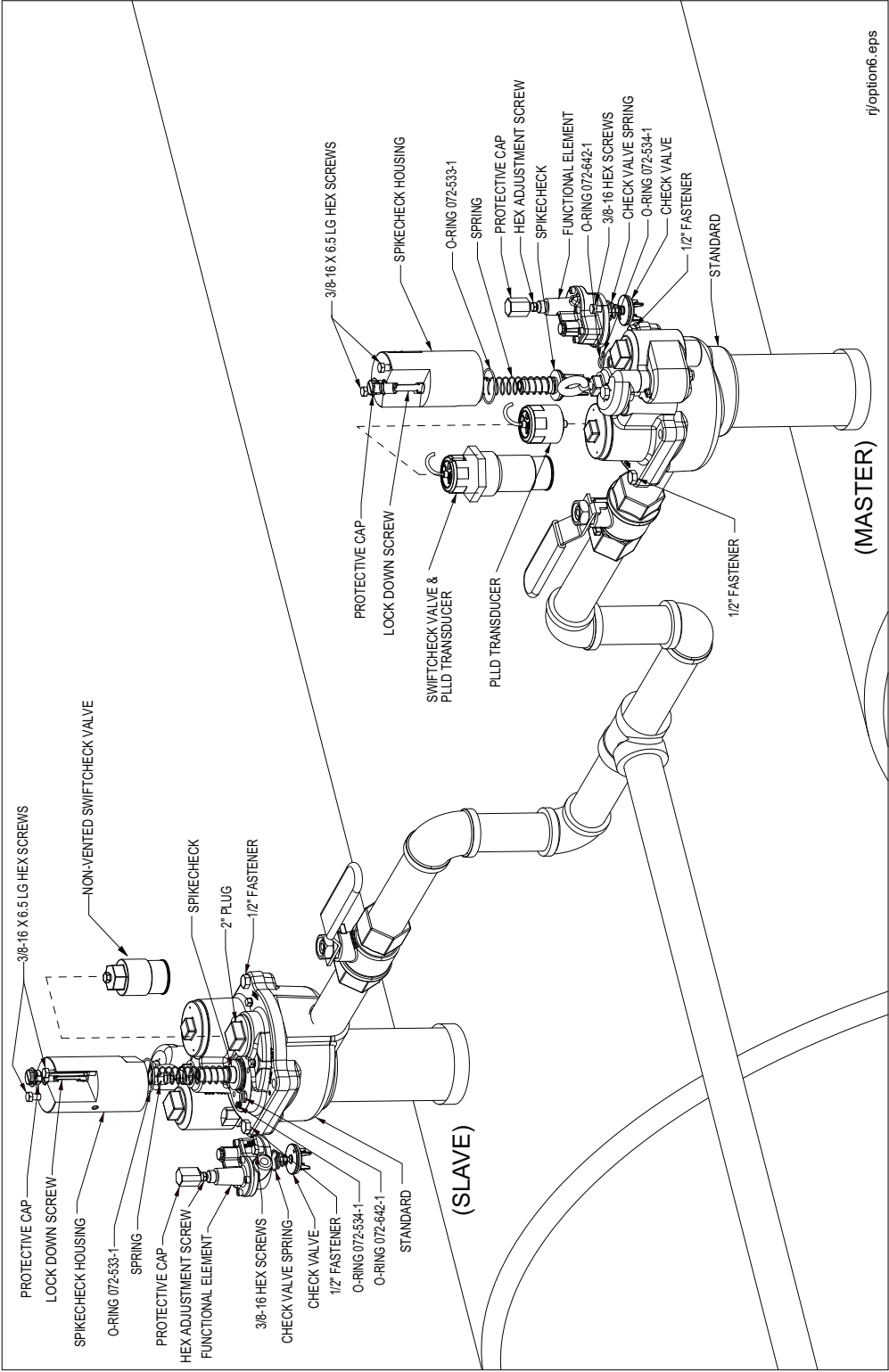


Figure 6. Option 6 - Manifolded System – Converting a Standard Packer/Manifold Containing a SwiftCheck Valve and PLLD

## Line Testing

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**WARNING! Always disconnect, lock out, and tag the power at the panel before starting to service the pump.**

1. Close the ball valve at the end of the STP (if installed)
2. Depressurize the packer by removing the protective cap on the Spikecheck housing and rotating the lock down screw clockwise (line pressure will be relieved back to the tank during this process).
3. Continue to rotate the lock down screw clockwise until it contacts the top of the Spikecheck Check/Relief Valve assembly and forms a seal on the check valve stem.
4. Apply line test pressure (50 PSI [345 kPa] maximum) at the Line Test Port on the packer and open the ball valve and test the product pipeline.
5. Upon completion of the line testing, close the ball valve and then depressurize the packer by fully rotating the lock down screw on the Spikecheck housing counterclockwise to relieve the pressure.
6. To reseal the Line Test Port, apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant to the threads on a 1/4" NPT pipe plug and seal the port.
7. Open the ball valve (residual line pressure may be relieved through the relief valve assembly to a level of 19-25 PSI)
8. Reinstall the protective cap on the Spikecheck Housing and torque until plug bottoms out on the flange.

**CAUTION: Excessive pressure (above normal test pressure of 50 PSI [345 kPa]) may damage check valve seat and other system components.**



## Parts Lists

### Customer Service Number

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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.

### Spikecheck Assembly

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- 410557-001 Spikecheck Check/Relief Valve (Pressure Relief Version), Housing, Spring, Fasteners, Seals (See Figure 7).
- 410557-002 Spikecheck Check Valve (Non-Pressure Relief Version), Housing, Spring, Fasteners, Seals (See Figure 8).

### Replacement Kits for the Spikecheck assembly

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- Service Kit 410568-001 Check/Relief Valve (Pressure Relief Version), Spring, Fasteners, Seals (See Figure 9).
- Service Kit 410569-001 Check Valve (Non-Pressure Relief Version), Spring, Fasteners, Seals (See Figure 10).
- Service Kit 410567-001 Fasteners, Seals (See Figure 11).

Spikecheck Assembly - Pressure Relief Version

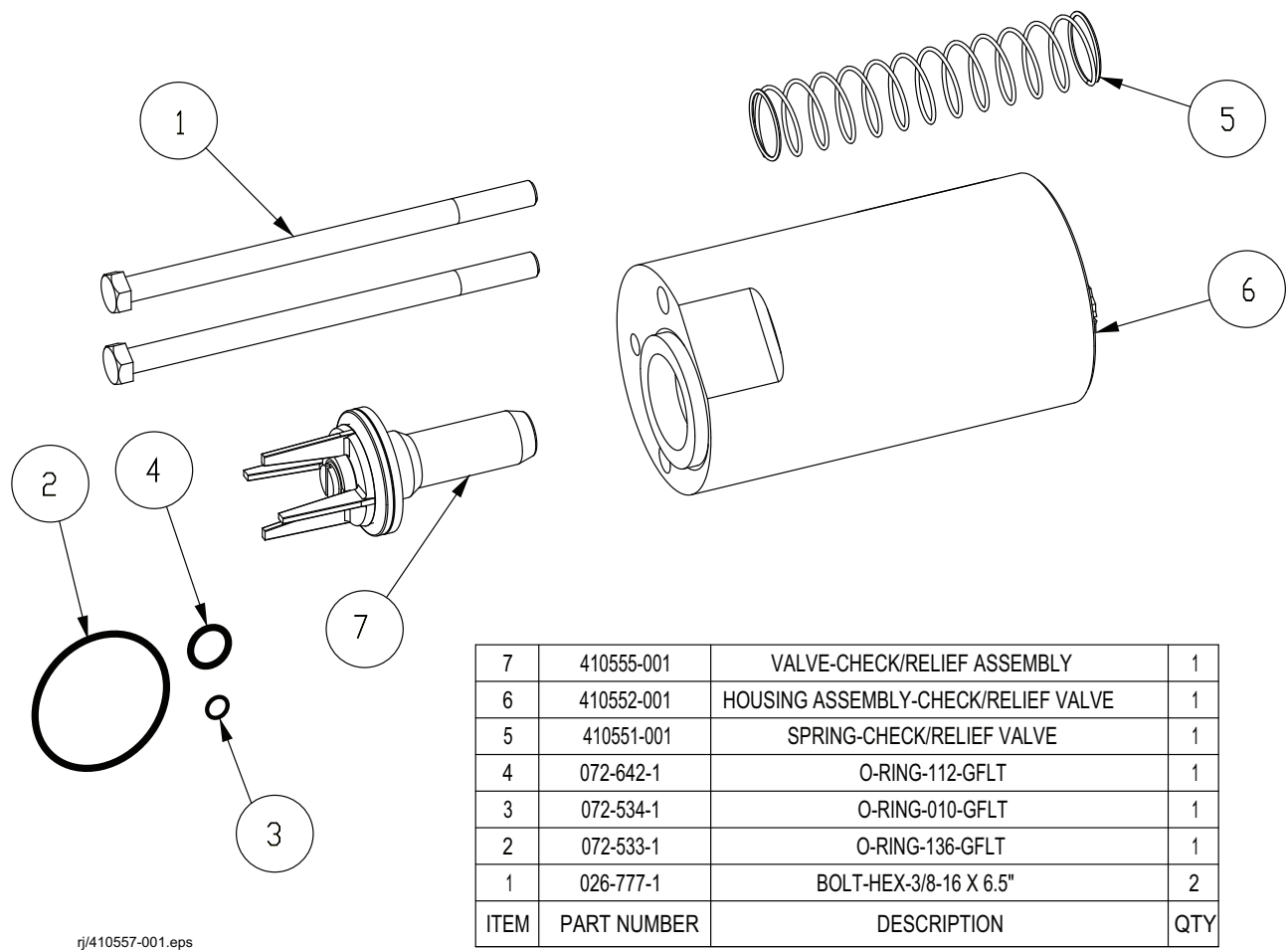


Figure 7. 410557-001 Spikecheck Check/Relief Valve (Pressure Relief Version), Housing, Spring, Fasteners, Seals

Spikecheck Assembly - Non Pressure Relief Version

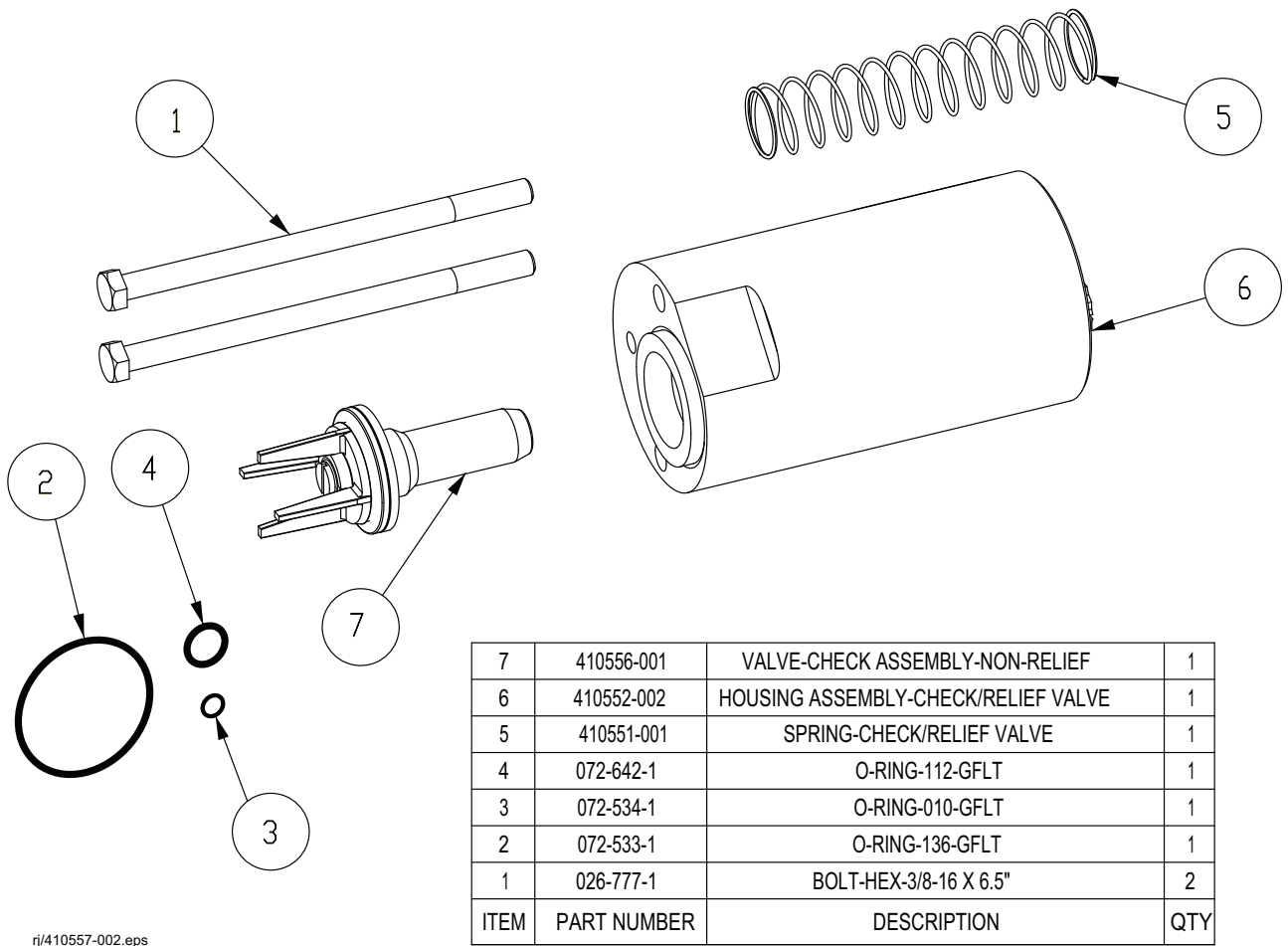


Figure 8. 410557-002 Spikecheck Check Valve (Non-Pressure Relief Version), Housing, Spring, Fasteners, Seals

Check/Relief Valve - Pressure Relief Version

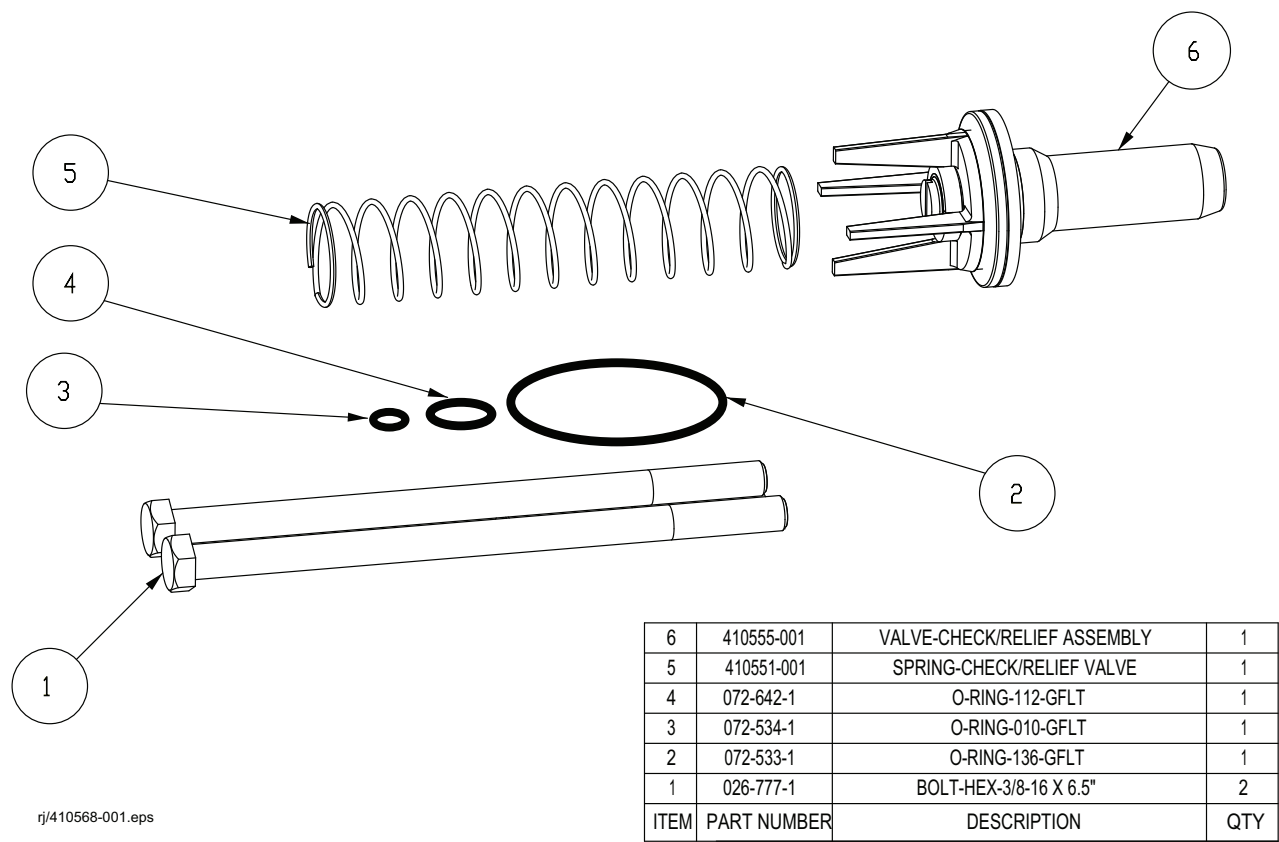


Figure 9. Service Kit 410568-001 Check/Relief Valve (Pressure Relief Version), Spring, Fasteners, Seals

Check/Relief Valve - Non Pressure Relief Version

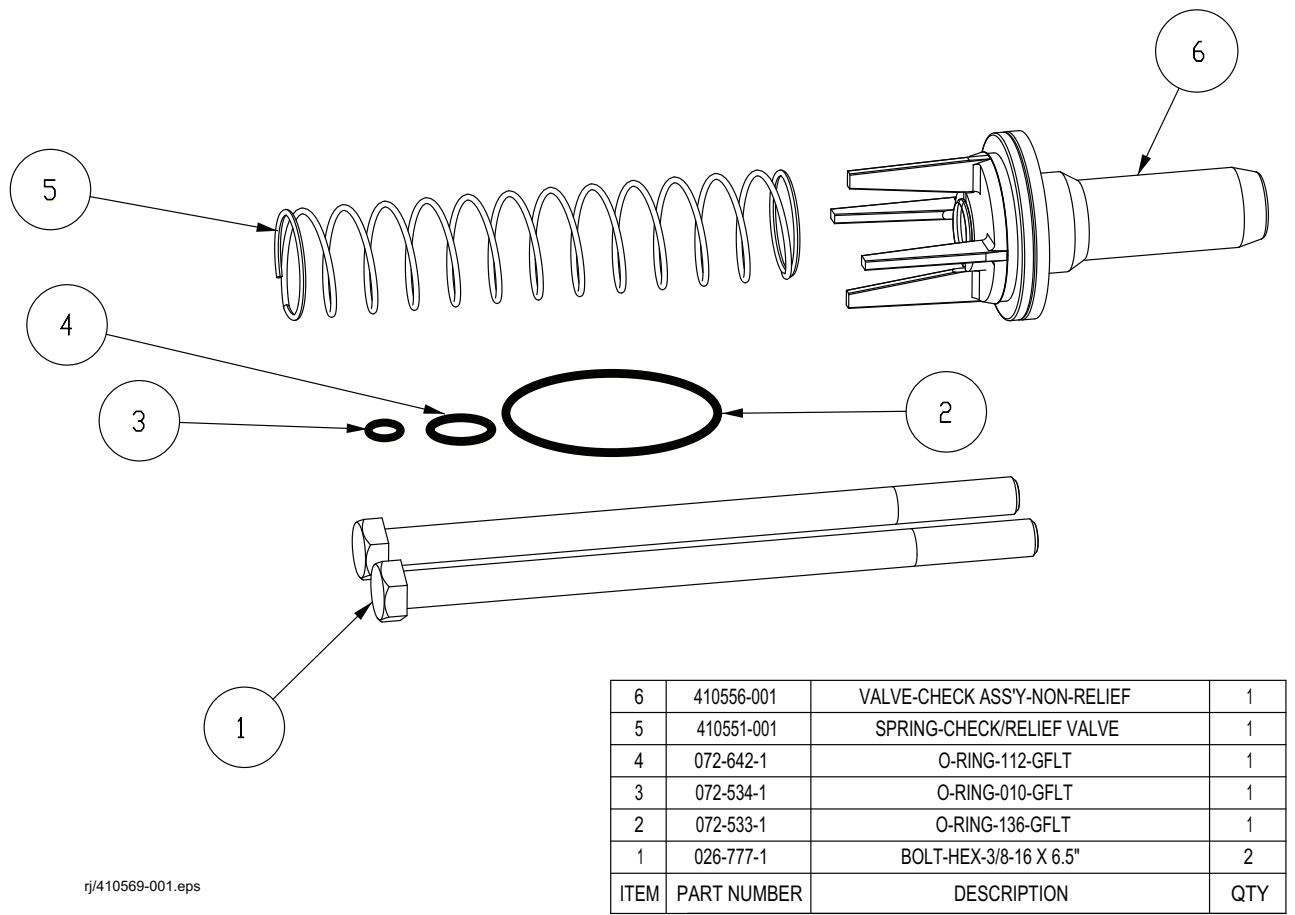


Figure 10. Service Kit 410569-001 Check Valve (Non-Pressure Relief Version), Spring, Fasteners, Seals

Fastner / O-Ring Kit

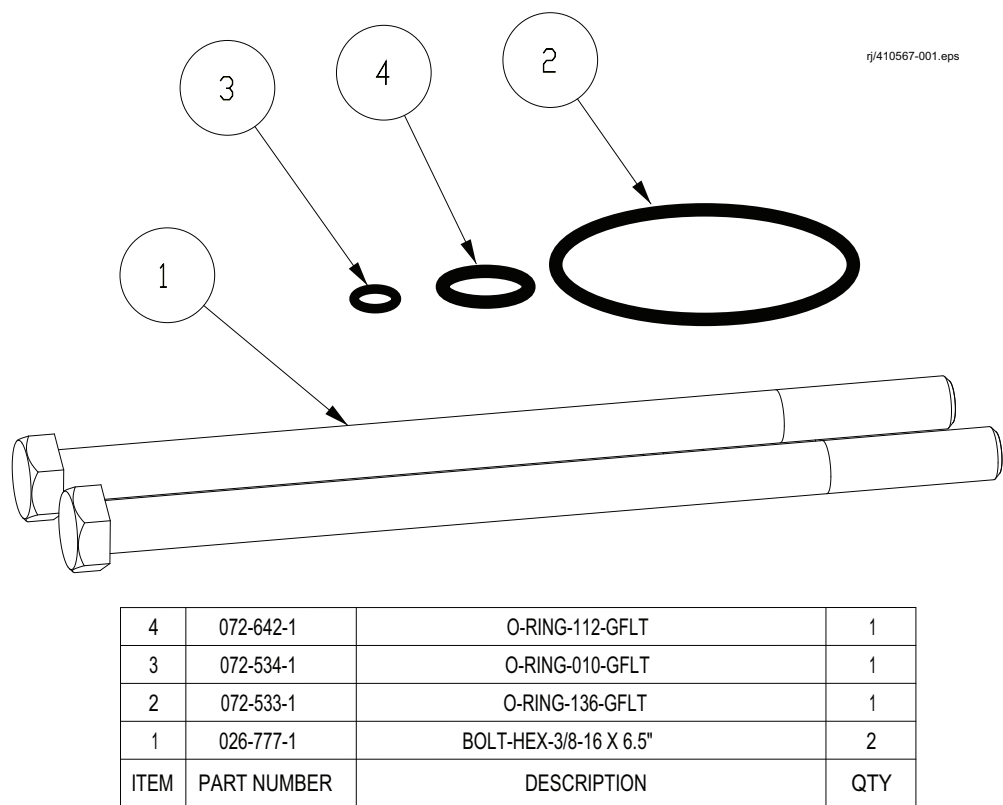


Figure 11. Service Kit 410567-001 Fasteners, Seals

