

MANUFACTURED BY PARKER - PGI DIVISION

# Installation, Operation & Maintenance Manual for Flo-Safe Nurse Tank Electronic Emergency Shut-off Valve Model FS125 & FS150

August 2013

Form FVC 087 - Rev 2

**IMPORTANT: KEEP THIS DOCUMENT WITH THE PRODUCT UNTIL IT REACHES THE END USER.**

The Flo-Safe Electronic Emergency Shut-off Valve is designed to provide the user the ability to stop the flow of NH<sub>3</sub> from a safe distance. The Flo-Safe can be safely shut-in with the use of the in-cab switch, along with the added feature of automatic shut-in caused by a separation of wire. Upon loss of power to the valve, a spring-loaded swing check in the body will snap closed to stop flow of product.

**WARNING! FAILURE TO READ AND UNDERSTAND THE INSTRUCTIONS CONTAINED IN THIS INSTALLATION, OPERATION AND MAINTENANCE MANUAL CAN LEAD TO PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH.**

If you have any questions about anything contained in this manual or desire additional copies, please call Squibb Taylor at 1-800-345-8105 and ask for customer service.

**WARNING! PROPER OPERATION OF THIS DEVICE AND YOUR SAFETY DEPENDS ON THE FOLLOWING:**

- 1. Valve must be secured, behind a mechanical secure point.** The valve must be installed in a location that provides protection against a break downstream of the itself. This must be done so the valve can safely stop the flow of product. Any break upstream of the valve will not be controlled by the Flo-Safe Valve.
- 2. Cable connections should be located near potential break-away points in the system. (i.e. Hitch Points)** Loss of power to the valve will automatically stop the flow of product. Having the cable connections near potential break-away points will ensure a loss of power to the unit in case of a mechanical equipment break-away.
- 3. As a minimum, both ends of the provided connector at the valve must be used at all times to ensure a disconnect in case of a pull-away, and prevent any possible damage to the valve.**
- 4. Cable connections must be secured to the hose or frame to ensure a disconnect in the case of a pull-away.** The cable must be securely attached to prevent any delay in the closure of the valve. Provided tie-wraps must be used to secure the cable about 6 inches away from each connector. The connection point should have enough slack to allow for swiveling and turning, but cable should be secured to ensure a disconnect in case of a pull-away.
- 5. A constant and fused 12VDC is necessary for proper operation of valve.** Flo-Safe Valve utilizes a electromagnet that requires a constant supply of 12VDC for proper operation. Any loss of 12VDC power to the valve will cause the unit to shut-in and stop the flow of product. An installed fuse in-line with the power supply (battery) will protect the supply from any excess draw of current.
- 6. To ensure long term safe operation,** the manufacturer recommends that under normal service conditions this product should be inspected at least once before every season. Verify closure and full movement of swing check and inspect for corrosion debris, binding or any other obstruction and replace as required.
- 7. WARNING!**
  - **Contact with NH<sub>3</sub> liquid or inhalation of NH<sub>3</sub> vapors can cause serious injury or death.**
  - **Protective clothing, goggles and gloves must be worn at all times.**
  - **Emergency water must be available to flood any NH<sub>3</sub> contact area on the body.**
  - **Observe all Local and National Codes According to Authority Having Jurisdiction.**

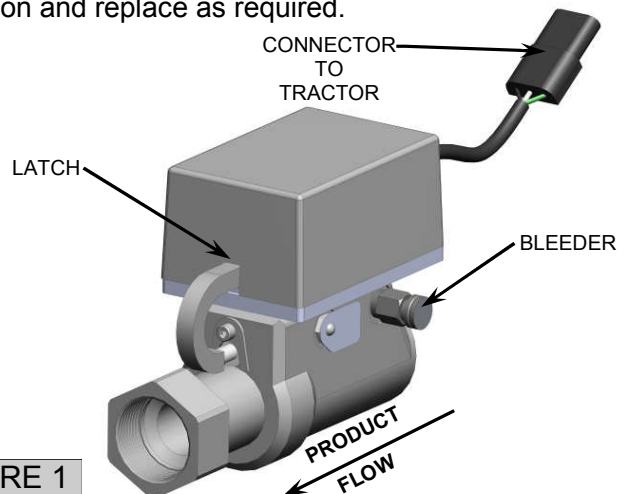


FIGURE 1

*While this information is presented in good faith and believed to be accurate, Individuals using this literature must exercise their independent judgment in evaluating product selection and determining product appropriateness for their particular purpose, system requirements and certifications. The manufacturer reserves the right to change product designs and specifications without notice.*

## OPENING FLO-SAFE INSTRUCTIONS

1. To energize the electromagnet inside the Flo-Safe valve, toggle the switch to the up position. After toggling, you should notice the LED to the left of the switch illuminate. An illuminated LED confirms there is 12V to the switch.
2. To engage or latch the Flo-Safe valve OPEN, **you must first confirm there is no product in the valve.** To do this, first ensure the tank valve or nearest valve upstream of the Flo-Safe is CLOSED.
3. Using the installed bleeder on the Flo-Safe valve, bleed out any product. CLOSE bleeder after all product has emptied the valve. You cannot open the Flo-Safe with product pressure inside the Flo-Safe.
4. Using your hand, push the plunger (u-shaped bar in front of the Flo-Safe valve) in until it latches with the electromagnet. If the bar does not latch with the electromagnet and maintains the flapper in the up position, check all cable connectors up to the cab to confirm good connections.
5. Once bar is securely latched, open all valves upstream of the Flo-Safe to begin feeding product through the valve. Steps 2-5 must be repeated after changing tank.
6. Double-check system for leaks.
7. Once back in the cab, ensure the 2nd LED (to the right of the switch) is illuminated. This LED is an indicator of an OPEN Flo-Safe Valve. (See picture below)

Left LED (Illuminated)  
indicates switch is in the ON  
position and there is 12VDC  
to the switch assembly.



Right LED (Illuminated)  
indicates the Flo-Safe  
Valve is OPEN

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## SHUTDOWN INSTRUCTIONS

1. If an uncontrolled leak arises downstream of the Flo-Safe valve, the flow of product can be stopped from within the cab by simply toggling the switch to the down position. Un-Illuminated LEDs on the switch box confirm there is not power to the electromagnet and the Flo-Safe valve is CLOSED.
2. If an accidental break-away occurs, the cable harness of the Flo-Safe system will pull apart at the nearest connection point and automatically CLOSE the valve.

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## RESTART INSTRUCTIONS (AFTER CABLE HARNESS DISCONNECT)

1. Check all cable connection points to ensure all connectors are securely plugged in to their mating connector.
2. Follow "Opening Flo-Safe Instructions" above.

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## OPERATION DESCRIPTION

1. When the Flo-Safe Valve is engaged and under pressure, the spring-biased Swing Check ① is held open by the Plunger ②. The Plunger ② is held in by the Electromagnet ③ on the top side of the assembly.

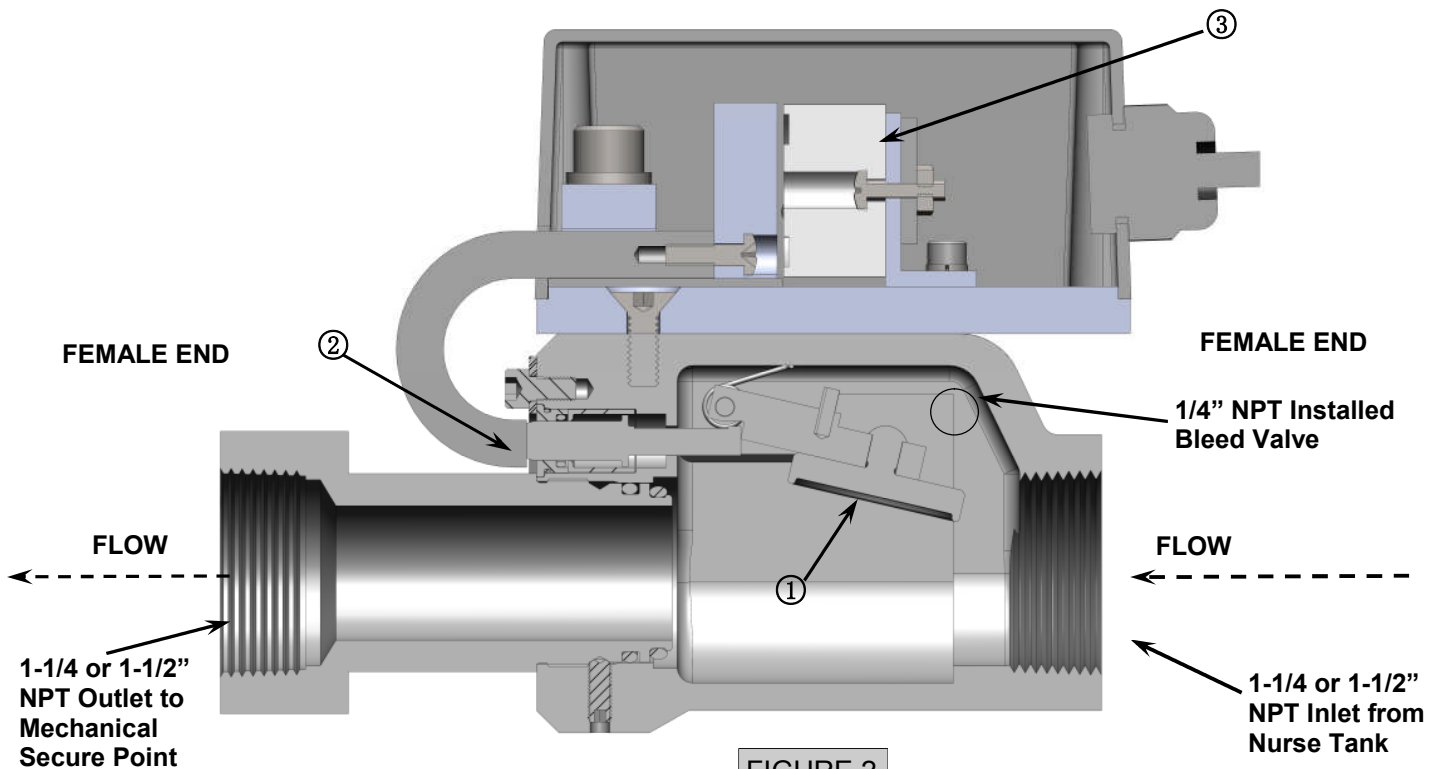


FIGURE 2

2. When there is a loss of power to the Electromagnet ③, the spring-biased Swing Check ① will swing downward and seal to prevent additional NH<sub>3</sub> release to the atmosphere, as shown in Figure 3.

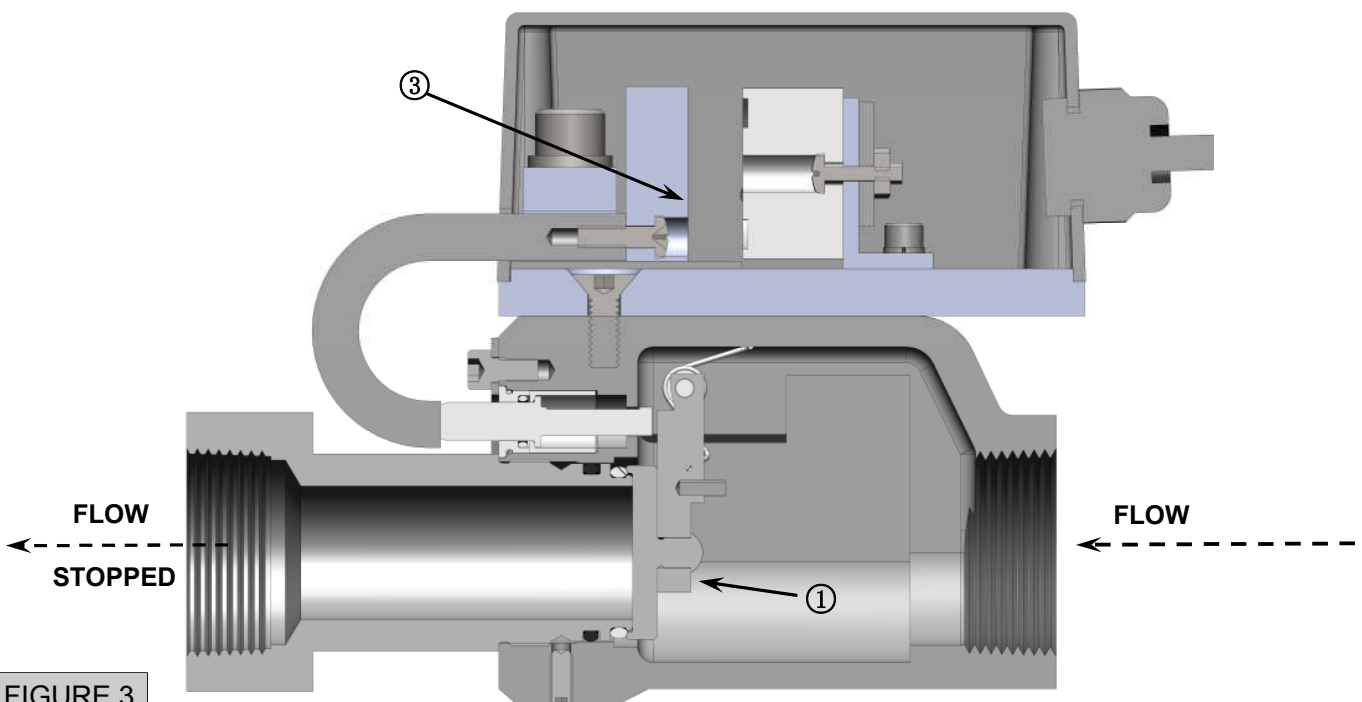
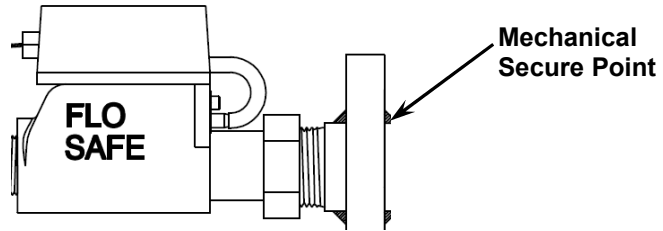


FIGURE 3

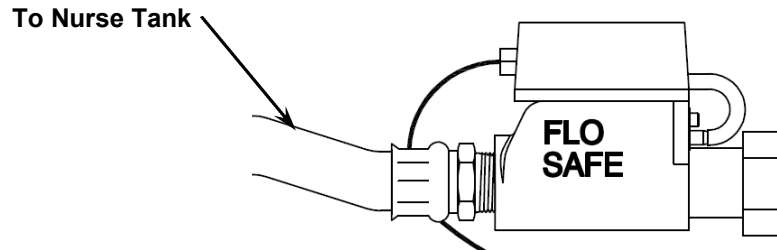
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## Flo-Safe Valve Installation Instructions

1. Attach the Flo-Safe Valve, between tank and Mechanical Secure Point.  
Always place the wrench on the hex flats of the NPT piece when connecting or disconnecting the valve.



2. Attach the nurse tank hose to the Flo-Safe Valve.  
Always place the wrench on the body portion of the valve when connecting or disconnecting a hose.



## FLO-SAFE WIRE HARNESS INSTALLATION INSTRUCTIONS

1. The Flo-Safe Valve requires a constant 12VDC source to remain engaged, and allow product to flow. The 12VDC source could be the tractor battery or a source from within the cab. (These instructions will assume a connection to the battery.) A fuse in-line with this connection is required to protect against excess current draw. If connecting directly to the battery, ensure a fuse is installed. Flo-Safe wire harness provides a fuse pre-wired for your convenience.
2. Securely connect the wire with the Fuse Holder to the positive terminal of the battery and the Black wire to the negative terminal of the battery.
3. Connect the Switch cable to the 4-pin connector on the battery cable and feed the switch into the cab. The switch box can be securely attached with the provided Velcro or screwed down using the mounting tabs on the box.
4. Connect one of the provided 15ft. cables into the 3-pin connector of the battery cable and begin guiding the other end towards the toolbar. The cable can be secured to the tractor or other cables using the provided plastic tie wraps. It is recommended that the end of the cable line up with the hitch of the tractor to decrease the time to disconnect and increase break-away protection.
5. Connect the 25ft cable to the 3-pin connector at the Tractor-Toolbar hitch-point. The cable on each side of the connector must be secured at least 6 inches away from the connectors to ensure that the connectors can be pulled apart in case of a pull-away. **NOTE: Leave enough slack on the cable at the hitch-point to allow for turning and to prevent unwanted disconnects.**
6. Begin guiding the other end of the cable towards the nurse tank. Again, the cable can be secured to the toolbar or other cables using the provided plastic tie wraps. It is recommended that the end of the cable line up with the hitch of the toolbar to decrease the time to disconnect and increase break-away protection. If a longer length of cable is needed, additional 15ft and 25ft extensions are available through your local distributor.
7. Connect the second 15ft cable into the 3-pin connector at the Toolbar-Nurse Tank hitch-point. The cable on each side of the connector must be secured at least 6 inches away from the connectors to ensure that the connectors can be pulled apart in case of a pull-away. **NOTE: Leave enough slack on the cable at the hitch-point to allow for turning and to prevent unwanted disconnects.**
8. Begin guiding the other end of the cable towards the Flo-Safe Valve, wrapping the cable around the hose. Again, the cable can be secured to the nurse tank using the provided plastic tie wraps. Connect the 3 Pin connector to the matching connector on the Flo-Safe Valve.
9. See Figure 4 on next page for Typical Installation.

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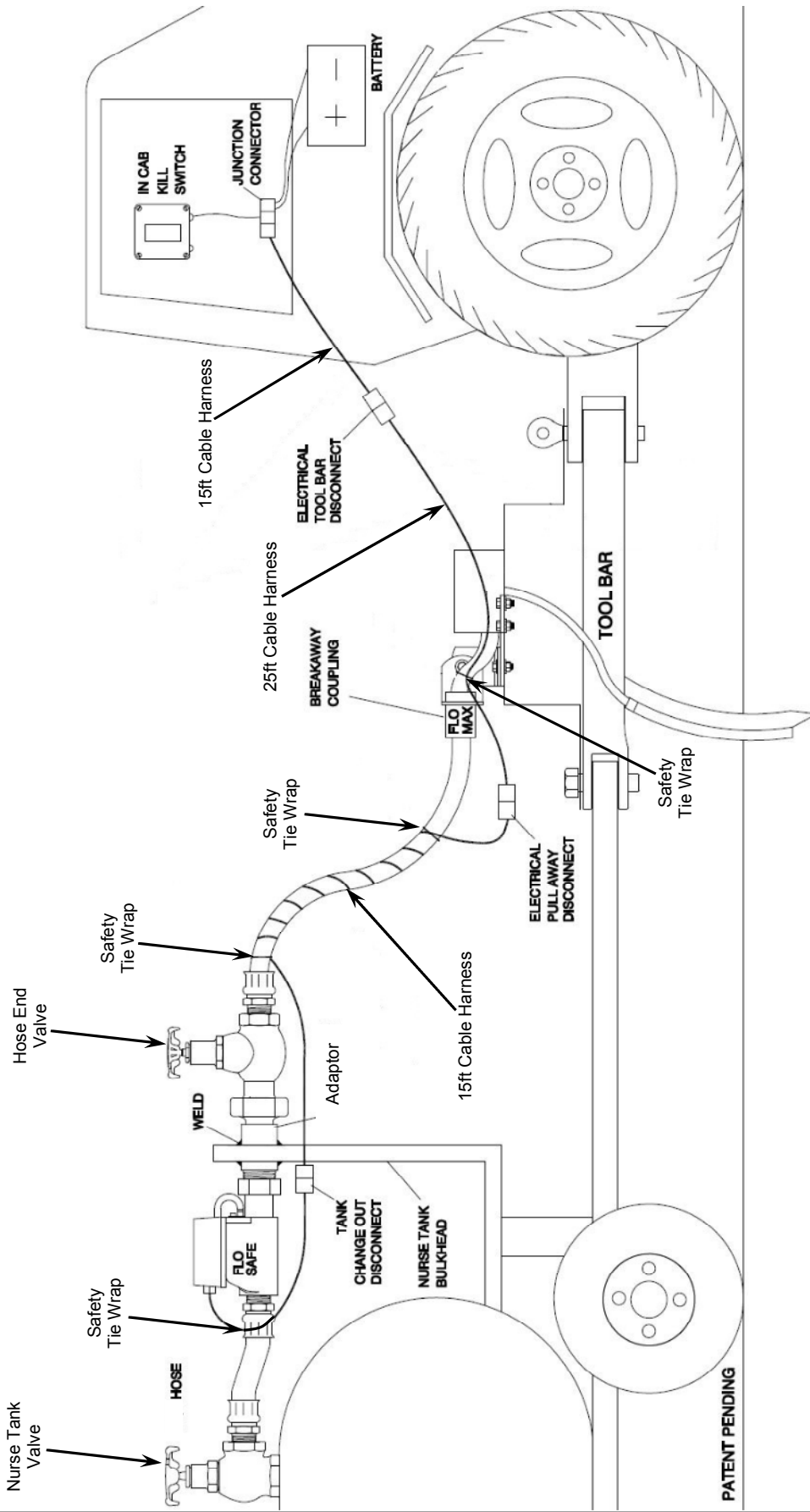


FIGURE 4

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## ALTERNATIVE WIRING METHOD

In some cases, the complete Flo-Safe Wire Harness can not be utilized, for these cases, a 12 inch pigtail is provided at the valve connection to allow for user termination. Please refer to the Wire Color Code table below:

<u>Wire Color</u>	<u>Description</u>
White	+ 12VDC
Black	Ground
Green	+12VDC Signal to Switch LED ( <i>Optional</i> )

### WARNING!

1. As a minimum, the provided connector at the valve must be used at all times to ensure a disconnect in case of a pull-away.
2. Cable connector must be secured to the hose or frame to ensure a disconnect in the case of a pull-away. The cable must be securely attached to prevent any delay in the closure of the valve. Provided tie-wrap must be used to secure the cable about 6 inches away from the connector.

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## TROUBLESHOOTING

### ISSUE:

Flo-Safe valve does not latch OPEN

### POSSIBLE RESOLUTIONS:

1. Ensure switch is toggled in the UP position and the left LED is ON.
2. Check all cable connection points to ensure that all connectors are mated properly.
3. Disconnect Flo-Safe valve connector from extension at nurse tank hitch point. Check under Flo-Safe enclosure to ensure there are no obstructions between u-shaped bar part and electromagnet. Remove enclosure by first removing the four Philips Head screws from underside of box. Unscrew cable strain relief fitting to allow cable to move and remove box from mounting plate. Remove any obstruction and clean if necessary. Reattach the enclosure using the screws and tighten the strain relief fitting.

### ISSUE:

LED will not turn on after switch is toggled ON

### POSSIBLE RESOLUTIONS:

1. Check wire connections to battery to ensure 12VDC are being fed to switch assembly.
2. Check fuse on positive wire and replace if necessary.

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## SERVICE KITS

If O-rings become worn or damaged, Service Kits are available through your local distributor.

**1-1/4" Valve Service Kit Number FS125-0022 (See FIGURE 5 for item numbers.)**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	P5-067-R2	O-RING N674-70
2	1	P5-287-R0	O-RING N674-70

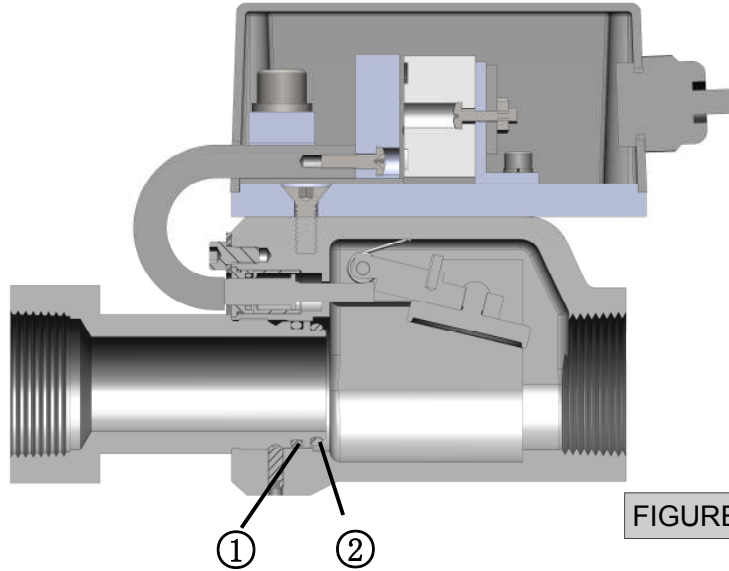


FIGURE 5

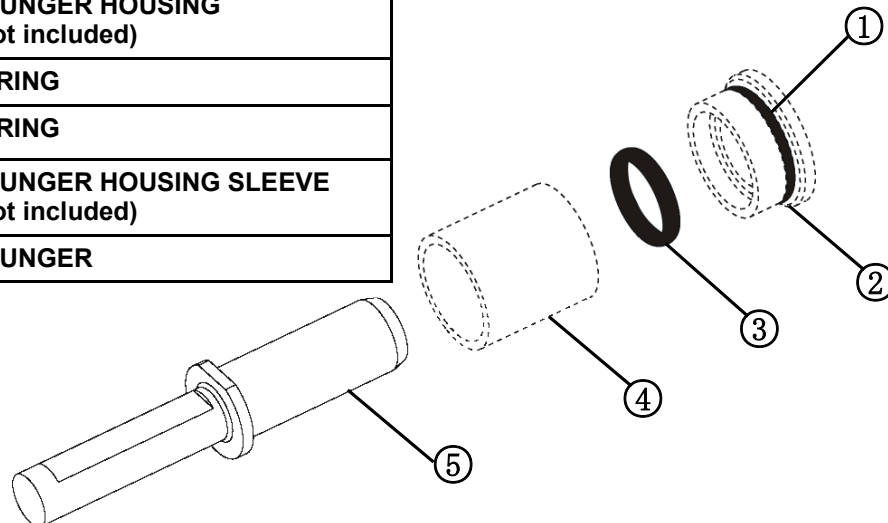
**1-1/2" Valve Service Kit Number FS150-0022 (See FIGURE 5 for item numbers.)**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	P5-169-R0	O-RING N674-70
2	1	P5-197-R0	O-RING N674-70

If the Plunger or Plunger O-Rings become damaged, a Service Kit is available through your local distributor.

**Service Kit Number FM125-0023 (See FIGURE 8 for item numbers.)**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	FM125-5013	PLUNGER HOUSING (not included)
2	1	P5-133-R0	O-RING
3	1	P5-015-R4	O-RING
4	1	FM125-5014	PLUNGER HOUSING SLEEVE (not included)
5	1	FM125-5009	PLUNGER



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