PLIDCO®

PLIDCO® SEALANT INJECTION IN DOUBLE SEAL GROOVES

LANGUAGES

ENGLISH

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SEALANT INJECTION IN DOUBLE SEAL GROOVES INSTALLATION INSTRUCTIONS

!! WARNING!!

IMPROPER SELECTION OR USE OF THIS PRODUCT CAN RESULT IN EXPLOSION, FIRE, DEATH, PERSONAL INJURY, PROPERTY DAMAGE AND/OR HARM TO THE ENVIRONMENT.

This procedure details the supplementary injecting of sealant between the seals of a PLIDCO Double Row Split+Sleeve. It is to be used in conjunction with IP-021, *plit+Sleeve Installation Instructions*. Do not inject sealant until all aspects of the application are thoroughly analyzed. Do not inject sealant until you read and understand these installation instructions. If you have any questions, or encounter any difficulties using this product, please contact PLIDCO.

READ CAREFULLY

The person in charge of the repair must be familiar with these instructions and communicate them to all personnel involved in the repair crew.

Safety Check List

Pipeline repairs can be made with the pipeline in operation or shutdown.

- ❑ Read and follow these instructions carefully. Follow your company's safety policy and applicable codes and standards.
- ❑ The instructions presented here are in addition to the PLIDCO Double Row Split+Sleeve Installation Instructions, and PLIDCO Double Row Hot Tapping+Saddle Installation Instructions provided separately. All instructions must be read and understood fully before proceeding.
- ❑ Whenever a PLIDCO product is modified in any form including adding a vent or changing seals by anyone other than the Engineering and Manufacturing Departments of The Pipe Line Development Company or a PLIDCO certified repacking company, the product warranty is voided. Products that are field modified do not have the benefit of material traceability, procedural documentation, quality inspection and experienced workmanship that are employed by The Pipe Line Development Company.
- ❑ Observe the Maximum Allowable Operating Pressure (MAOP) and temperature on the label of the PLIDCO fitting. Do not exceed the MAOP or temperature as indicated on the unit.
- ❑ Verify that the correct seal material has been selected for the intended use. Contact PLIDCO or an authorized PLIDCO distributor if there are any questions about the seal compatibility with the pipeline chemicals and temperatures.

- ❑ Verify that the sealant is compatible with the contents of the pipeline and temperature. Contact PLIDCO or an authorized PLIDCO distributor if there are any questions about the seal compatibility with the pipeline chemicals and temperatures.
- ❑ Verify the fitting is completely installed per the Fitting Installation Instructions prior to injecting sealant.
- ❑ When repairing an active leak, extreme care must be taken to guard personnel. Severe injury or death could result.
- ❑ During the ***Injection*** procedures, those injecting the sealant must wear, at minimum, Z87+ safety eyewear, compatible gloves, long sleeve shirt, pants, and steel toe safety footwear. Full face shields are strongly recommended.
- ❑ If the pipeline has been shut down, re-pressurizing should be done with extreme caution. Re-pressurizing should be accomplished slowly and steadily without surges that could vibrate the pipeline and fitting. Industry codes and standards are a good source of information on this subject. Personnel should not be allowed near the repair until the seal has been proven.

Double Row Seal Grooves

Most PLIDCO Split-Type fittings including: Split+Sleeves, Hot+Taps, and Clamp Sleeves can be ordered with a double row of seals. PLIDCO Split-Type fittings with a double row of seals are not considered redundant seals due to the orientation of the inner seal GirderRings. The double row of seals does provide several additional options including:

- Allow for pressure testing to ensure that a positive seal has been achieved.
- Allow for pressure monitoring during operation.
- Provide a redundant sealing mechanism via sealant injection that eliminates the risk of mainlining sealant into the process stream.

Figure 1 shows a cross-sectional view of the seals and groove arrangement. Sealant should only be injected into the ports that are within the sealant groove. Larger fittings may have more injection ports including ports around the circumferential grooves.

Note: Some fittings may have vents on the annulus of the fitting. Those ports are not intended to be used for sealant injection.

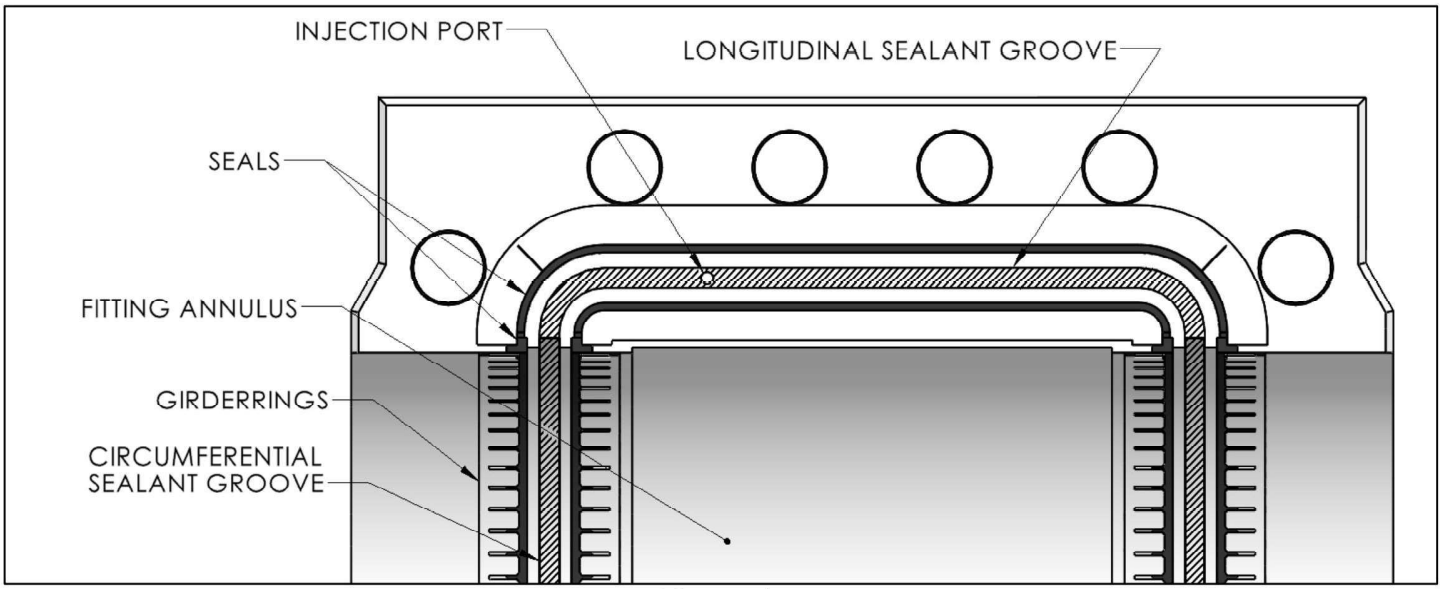

Figure 1

Injection Procedure

1. Select the proper type of sealant for your application.
2. Assemble the sleeve following the PLIDCO Split+Sleeve Installation Instructions or the PLIDCO Hot Tapping+Saddle Installation Instructions.
3. During installation of the PLIDCO fitting, make sure to have one sealant injection port as close to the top as possible. This will ensure the annulus of the PLIDCO fitting is completely filled with sealant and all the air or liquid is pushed out of the top of PLIDCO fitting. (See Figure 3 and 4)
4. Close all vent ports and remove all the pipe plugs from vents and sealant injection ports. Figure 2 shows the correct orientation for closed and open sealant injection ports if provided by PLIDCO with the fitting.
5. Open all the sealant injection ports slightly. Leave the bottom sealant injection port that is being used first in the closed position.
6. Connect a sealant barrel loaded with sealant to the closed sealant injection port on the bottom of the PLIDCO fitting. If clearances are an issue, use the 90-degree hose adapter. Start to inject sealant into the closed sealant injection port. Once pressure starts to build on the pump, open the sealant injection port to allow sealant to flow into the fitting.
7. Continue injecting sealant until the barrel is empty or the PLIDCO fitting is full. Close the sealant injection port. Release any hydraulic pressure on the sealant pump. Disconnect the sealant barrel from the sealant injection port.
8. If the barrel is empty, follow the procedures in the PLIDCO Hydraulic Sealant Pump for reloading sealant. For any other sealant injection pumps, follow their manufacturer's loading procedure.
9. Continue to inject sealant through the bottom sealant injection port by repeating steps 5 thru 7. When there are multiple sealant injection ports on a PLIDCO fitting, close or plug the port/vent when sealant starts to come out.
10. Continue to inject until sealant comes out of the top sealant injection port. After sealant comes out of the top injection port, close the sealant injection port.
11. Slowly and cautiously inject more sealant until the sealant pressure is slightly higher than the Maximum Allowable Operating Pressure (MAOP) of the pipeline. Wait a couple minutes for sealant pressure to stabilize and hold without any pressure drop. If sealant is injected at a pressure lower than MAOP and pipeline is subsequently pressurized above sealant injection pressure, a leak may occur.
12. Repeat step 8 on all sealant injection ports.
13. Remove sealant pump and install pipe plugs into the ends of the sealant injection ports.
14. The main annulus of the sleeve may be pressure tested at this time.
15. If leakage occurs, additional sealant should be pumped into the sealant port nearest the leak until a seal is achieved. Note: Slow and careful pumping is required to prevent displacing the gaskets. Do not pump in more sealant than required to achieve a seal.

NOTE 1: Hydraulic pressure is not the same as sealant pressure. For thicker sealants, higher pump pressure is required to overcome fluid viscosity and frictional losses through various orifices and openings. Sealant pressure will be less than the hydraulic injection pressure monitored at the sealant injection gun. Sealants are compressible materials. Pressure drops drastically as the distance from the point of injection increases.

NOTE 2: For active leaks it is not recommended to inject directly into the vents. This is due to internal pressure that builds up when the sealant barrel is connected. Extreme harm could come to the operator when disconnecting the sealant barrel under pressure.

NOTE 3: On PLIDCO fittings that have more vents than sealant injection ports, the sealant injection ports may be moved to another vent that allows better access for sealant injection. The unused vents can be plugged with pipe plugs as required per the injection procedure above.

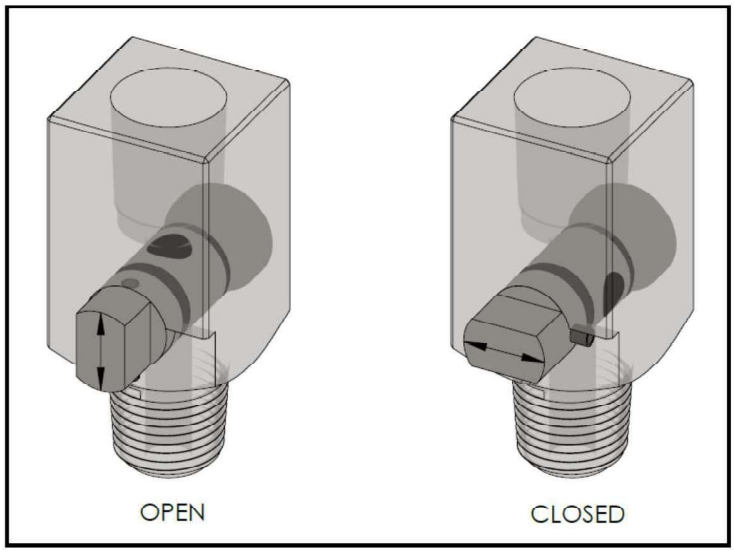

Figure 2

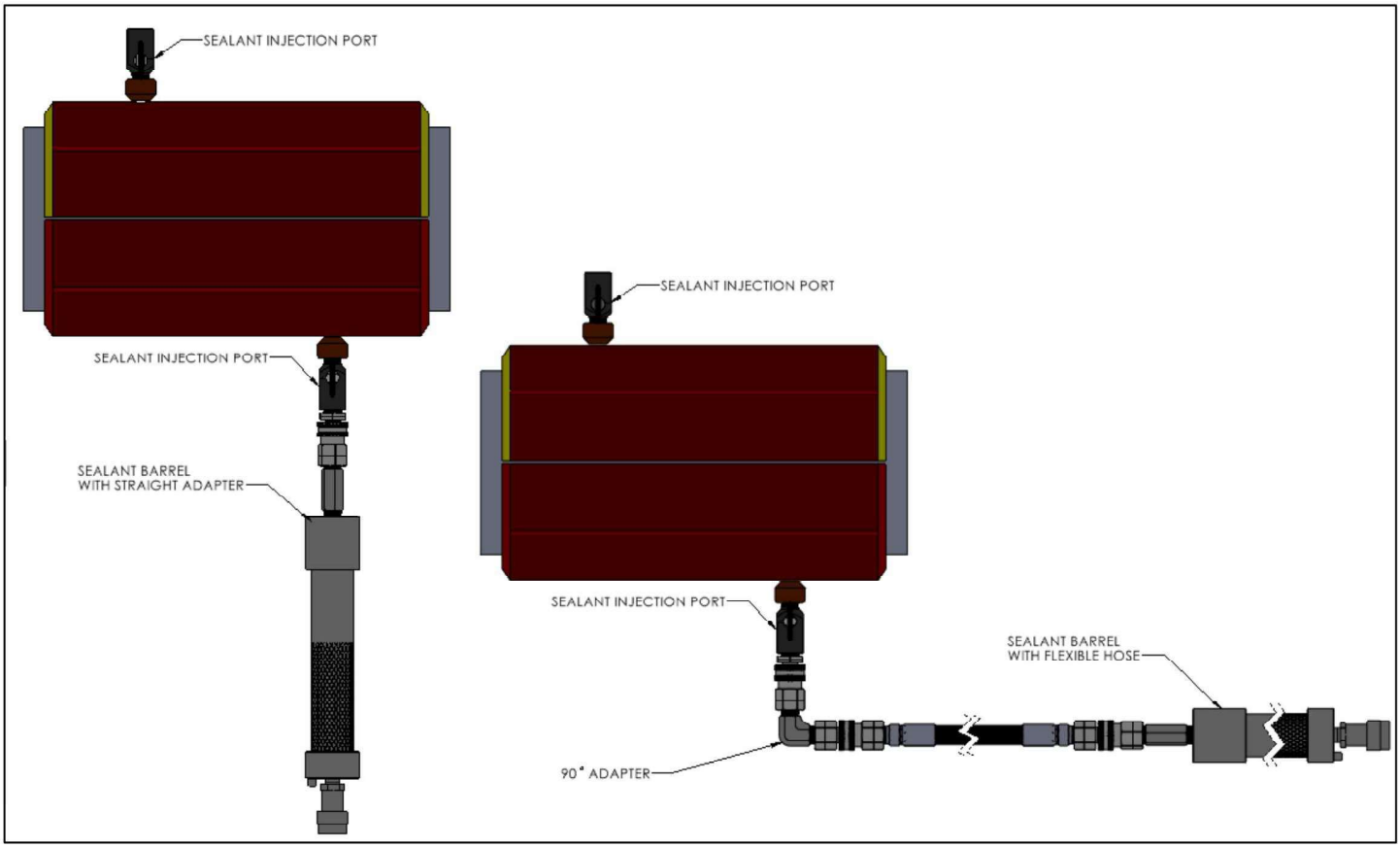

Figure 3

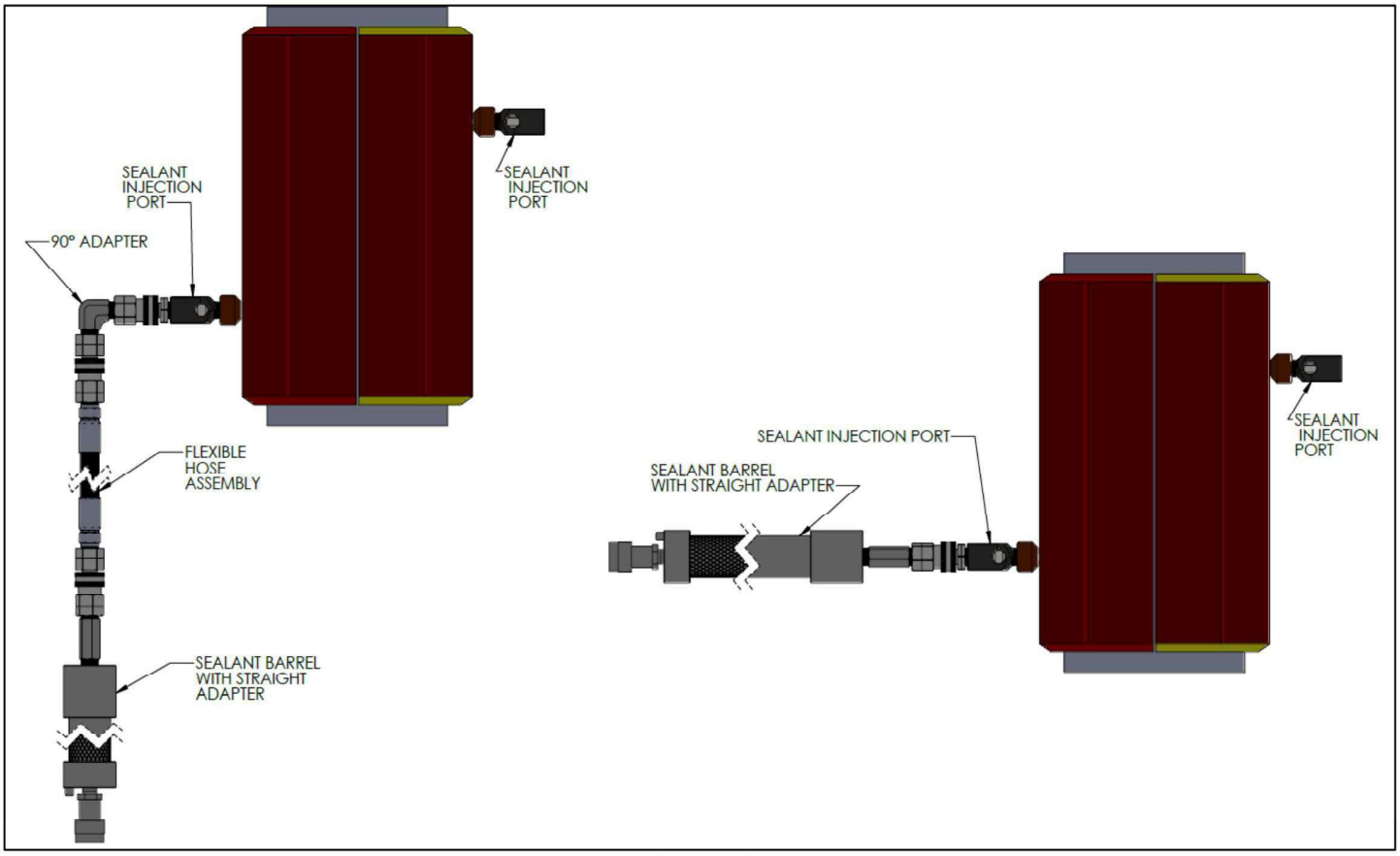

Figure 4

PLIDCO Hydraulic Sealant Pump

PLIDCO offers standard and long barrel hydraulic sealant pumps. There are three different pump variations you could choose from: Hand pump, foot pump, and air pump. They all utilize standard hydraulic fittings and are interchangeable between units. Figure 5 shows the different variations on the pumps. All units come in a Pelican® case for storage between uses.

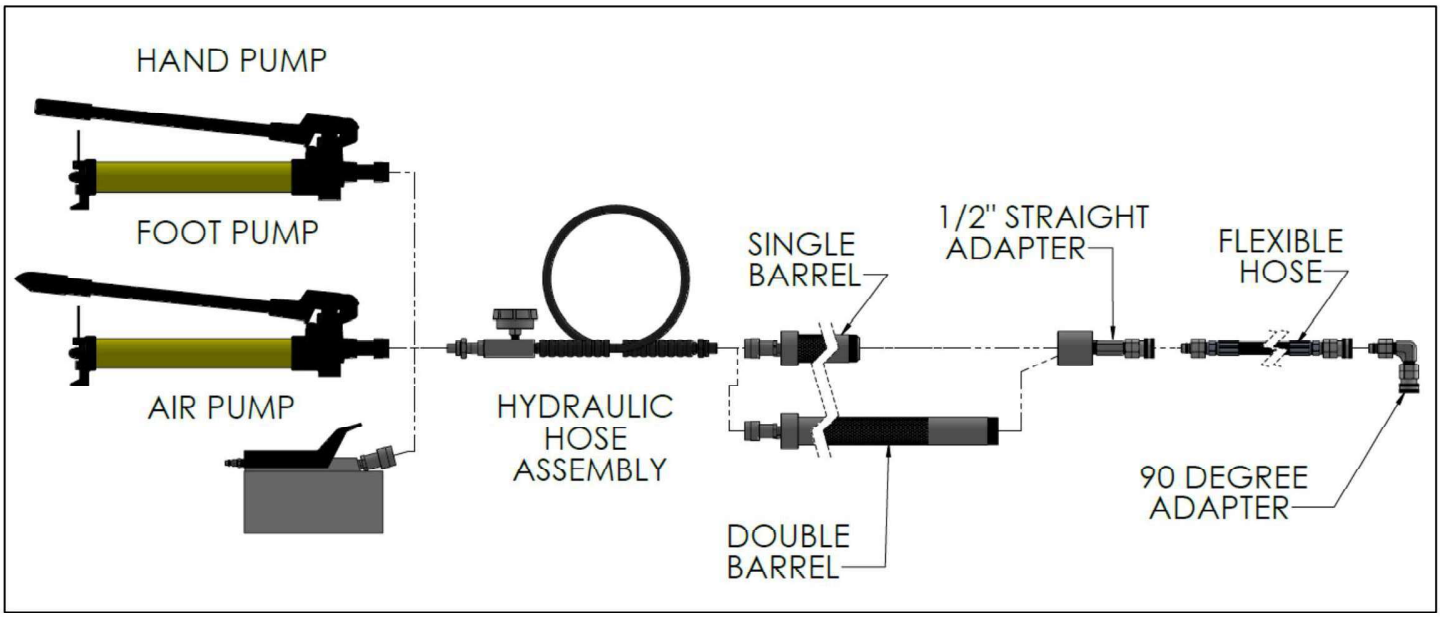

Figure 5

Assembly

1.) Figure 4 above shows how to assemble the units after removing them from the case.
2.) To insert sealant into a sealant barrel, make sure the piston is at the bottom of the barrel. Figure 5 shows how to push the piston into the barrel. The connected hydraulic pump needs to be in the release position to allow oil to flow back into the pump. The piston is a very tight fit. A hammer may be needed to drive the piston back. If the supplied piston plunger is lost, a piece of pipe or handle of a hammer may be used to drive the piston back.

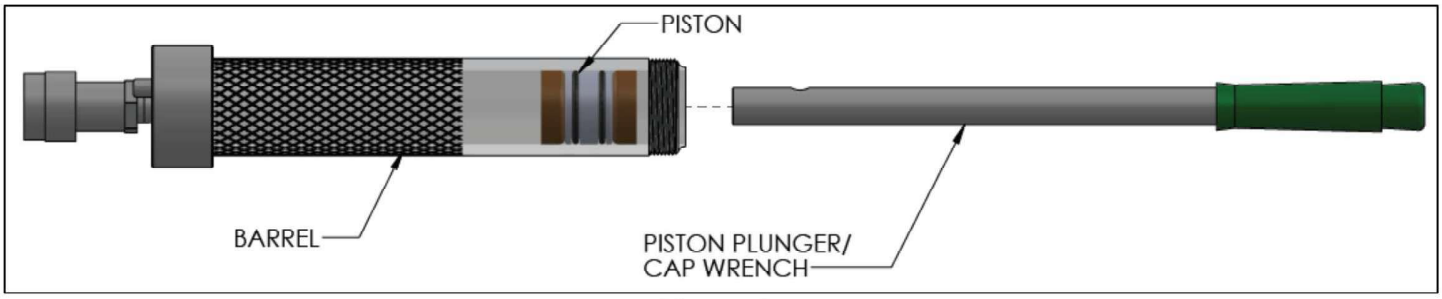

Figure 6

3.) Once the piston has been pushed to the bottom of the barrel insert the selected sealant. Screw on the 1/2" straight nipple cap, or the 90-degree adapter. Proceed to injecting sealant. When the barrel is empty repeat step 2 and 3 to load more sealant. See Figure 7.

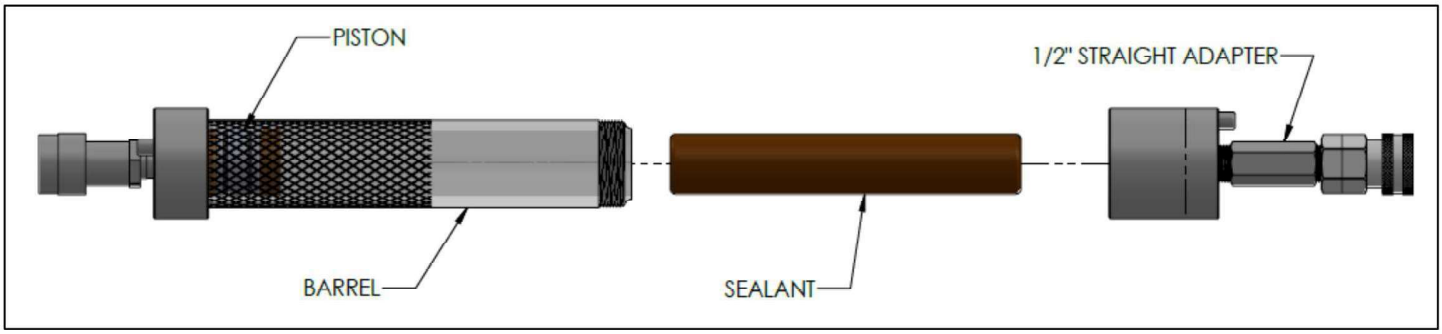

Figure 7

4.) Once the injection of sealant is complete. Clean out the barrel and cap. All units can be completely disassembled if necessary. Use a solvent compatible with the sealant used. Once the sealant has been cleaned out of the barrel and cap place them back into the storage case. The Buna O-ring in the cap can be removed for cleaning. If the O-ring has been damaged contact PLIDCO for a replacement.

Note: Replacement parts can be ordered through PLIDCO.