FLUKE®
Calibration

700HPPK

High Pressure Pneumatic Pump

Service Information

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Introduction

The 700HPPK High Pressure Pneumatic Pump and Manifold Service Kits (the Kit) comes with the necessary items to service the 700HPPK High Pressure Pneumatic Test Pump (the Product). For Product usage, specifications, and basic maintenance information, see the *700HPPK Instruction Sheet*. This document applies to these Service Kits:

- Pump Quick Service, SK-700HPP-QS
- Pump Full Service, SK-700HPP-FS
- Manifold Service, SK-700HPM-FS

Regular lubrication (typically every 30-days) is the most important maintenance and ensures trouble-free operation, and delays having to do Quick-Service and/or Full-Service. See *Lubricate the Product*. If pump operation becomes more difficult or the pump shaft does not have a thin film of grease on it, this should be done. Remove the manifold from the pump before you begin any of these instructions.

Contact Fluke Calibration

To contact Fluke Calibration, call one of the following telephone numbers:

- Technical Support USA: 1-877-355-3225
- Calibration/Repair USA: 1-877-355-3225
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31-40-2675-200
- Japan: +81-3-6714-3114
- Singapore: +65-6799-5566
- China: +86-400-810-3435
- Brazil: +55-11-3759-7600
- Anywhere in the world: +1-425-446-6110

To see product information or download manuals and the latest manual supplements, visit Fluke Calibration's website at www.flukecal.com.

To register your product, visit http://flukecal.com/register-product.

Kit Contents

The three kits are described below:

The **SK-700HPM-FS** contains:

- Strainer Washer
- Filter retainer O-ring
- Plunger Seal

The **SK-700HPP-Quick-Service Kit** contains these items:

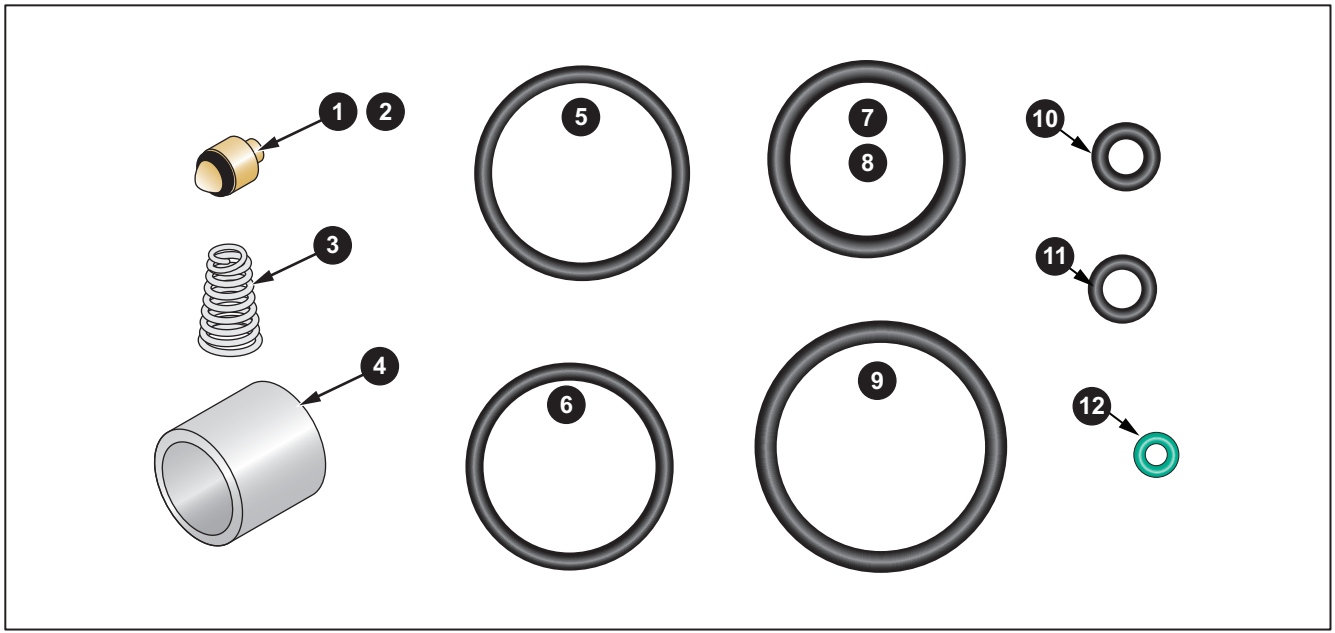
- Silicone grease, NLGI 2, 15 g tube
- Desiccant pack
- 700HPP Pump Quick-Service Seal Kit, see Figure 1.
    - Piston O-Ring (12 qty. 3)
    - Piston rod O-Ring (11 qty. 1)
    - Air exchange valve O-Ring (7 qty. 1)
    - Ball bearing, qty. 2 (not shown)

The **SK-700HPP-FS** contains:

- Silicone grease, NLGI 2, 15 g tube
- Desiccant pack

See Figure 1 for these items.

- Non-return valve with O-ring (1 and 2, qty. 1 each)
- Spring (3, qty. 1)
- Micron filter (4, qty. 1)
- Brass end cap lower O-ring (5, qty.1)
- Handle connector upper O-ring (6, qty.1)
- Air-exchange valve O-ring (7, qty. 1)
- Handle connector lower O-ring (8, qty.1)
- Non-return valve housing O-ring (9, qty.1)
- Retainer nut O-ring (10, qty.1)
- Piston rod O-ring, (11, qty. 1)
- Piston O-ring (12, qty. 1)



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Figure 1. Full-Service Seal Kit Contents

Safety Information

A **Warning** identifies conditions and procedures that are dangerous to the user. A **Caution** identifies conditions and procedures that can cause damage to the Product or the equipment under test.

⚠WARNING

To prevent personal injury:

- **Read all safety information before you use the Product.**
- **Use the Product only as specified, or the protection supplied by the Product can be compromised.**
- **Carefully read all instructions.**
- **Do not use the Product if it operates incorrectly.**
- **Do not use the Product if it is altered or damaged.**
- **Disable the Product if it is damaged.**
- **Do not attempt to operate the Product above its rated pressure.**
- **Avoid tipping the Product so that it will fall over.**
- **Use care when working with this Product. Do not drop the Product or strike it with sharp objects.**
- **Carefully follow the cleaning and decontamination instructions in the manual. Do not use unapproved solvents or cleaners on the product.**
- **To prevent eye damage or personal injury, use approved eye protection.**

⚠ Caution

To prevent damage to the 700HPP not covered by the warranty, use only parts and silicone grease specified in the *Kit Contents* section. Do not use petroleum, oil, aerosol-based lubricants, or other parts for these procedures.

Tools Required

Tools required for the procedures in this document are: (All tools are metric, equivalent SAE shown where possible.)

- 2.5 mm hex wrench
- 4 mm hex wrench
- 17 mm wrench
- 20 mm (13/16 in) slim jaw wrench
- 24 mm (15/16 in) wrench
- 25 mm (1 in) slim jaw wrench
- 30 mm (1-3/16 in) wrench

Or use an adjustable wrench and adjustable wrench (slim jaw)

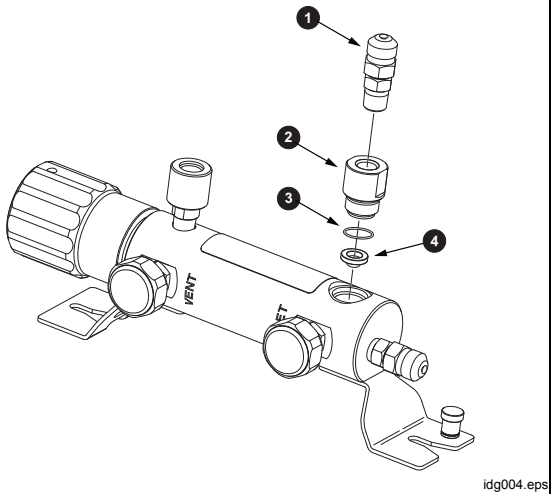
Manifold Service (SK-700HPM-FS) Instructions

Strainer Washer Replacement/Service

To avoid build-up of particulate contamination from units under test, regularly inspect the strainer washer. See Table 1.

1. Disconnect the test hose (❶) by unscrewing it from the coupling fitted to the filter retainer.
2. Unscrew the filter retainer (❷) and remove the strainer washer (❹).
3. Clean or replace the strainer washer.
4. Inspect the O-ring (❸) on the filter retainer. Replace if necessary.
5. Lubricate O-ring with small amount of grease.
6. Refit the strainer washer to the main body.
7. Refit the filter retainer and tighten just beyond hand tight with a wrench.
8. Reconnect the test hose.

Table 1. Manifold Service

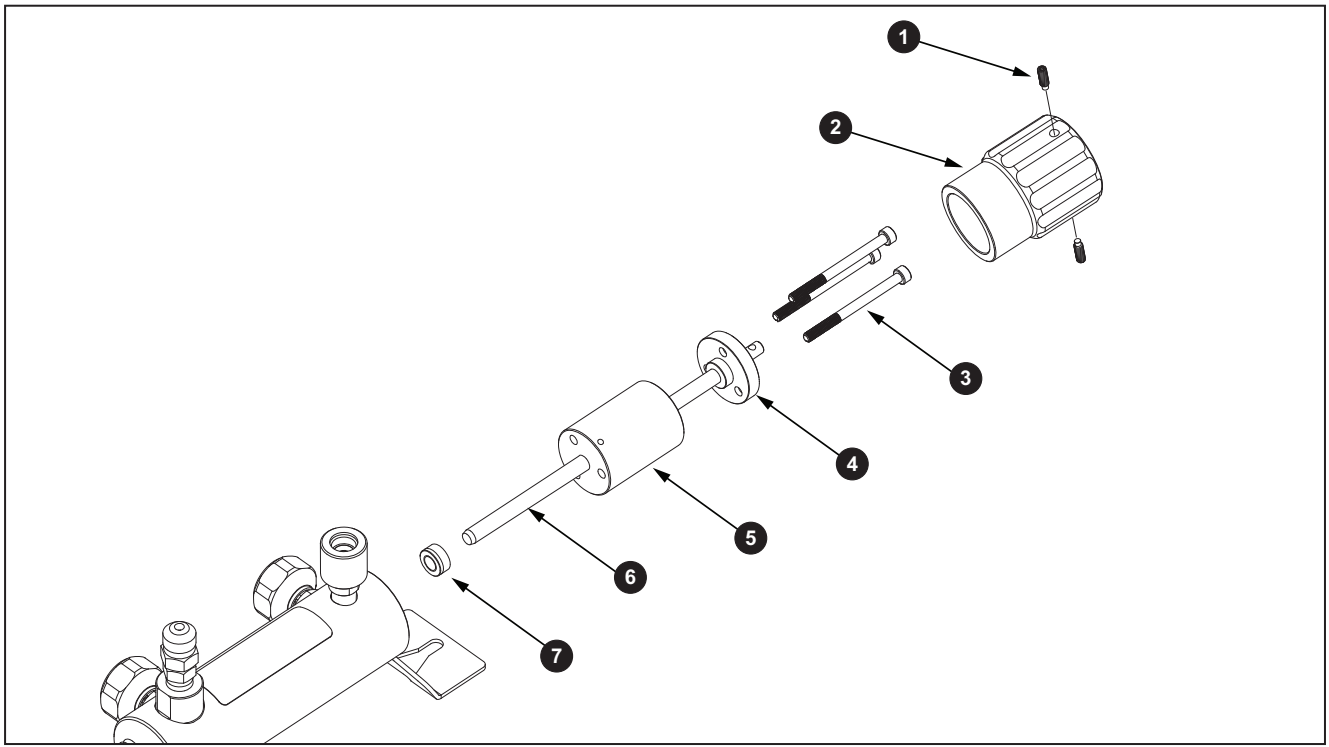


Number	Description
❶	Test hose connection
❷	Filter retainer
❸	Filter retainer O-ring (PN 4809741)
❹	Strainer washer (PN 4809533)

Plunger Seal Replacement

To remove the plunger seal, see Figure 2:

1. Remove the set screws (❶) from the knob (❷).
2. Slide the knob from the plunger assembly.
3. Remove the cap screws (❸).
4. Withdraw the plunger (❻), plunger nut (❹), and bonnet (❺) as an assembly from the main body.
5. If the plunger seal (❼) remains on the plunger, slide it off.
6. If the plunger seal is in the main body, carefully insert the end of the plunger into the seal, approximately 4.5 mm (3/16 in) and gently tilt to pull seal out.

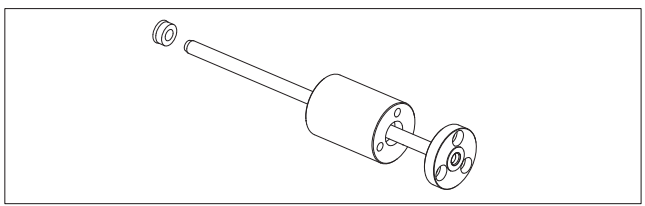


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Figure 2. Plunger Seal Replacement

Replacement

Carefully inspect the plunger seal for damage to its outer edges on the open face of both the inner and the outer diameters. Any damage to these surfaces results in a leak when reassembled. See Figure 3.



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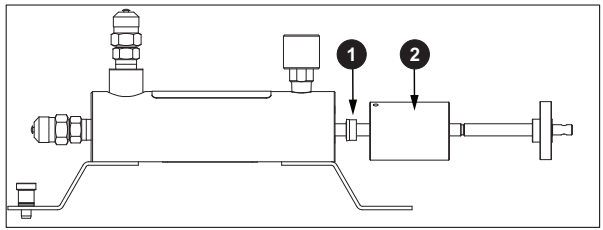
Figure 3. Plunger and Plunger Seal

1. Carefully put the plunger into the back, flat-side of the plunger seal, and then gently slide them together.

   Note

   The plunger seal has an embedded O-ring that must face towards the main body to make the seal when assembled.

2. See Figure 4. Carefully insert the plunger assembly into the main body so that the bonnet (❷) is evenly supporting the plunger seal (❶), and the seal is aligned with the tapered hole in the body.



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Figure 4. Plunger and Main Body

3. Use the bonnet to gently push the seal into the body.
4. Ensure there is grease on the plunger threads, apply if necessary.
5. Use a 4 mm hex wrench to secure the plunger assembly with the cap screws and tighten to 5.5 N·m (50 lbf·in).
6. Refit the knob, and use a 2.5 mm hex wrench to secure it with the set screws to 1 N·m (10 lbf·in).

Pump Quick Service

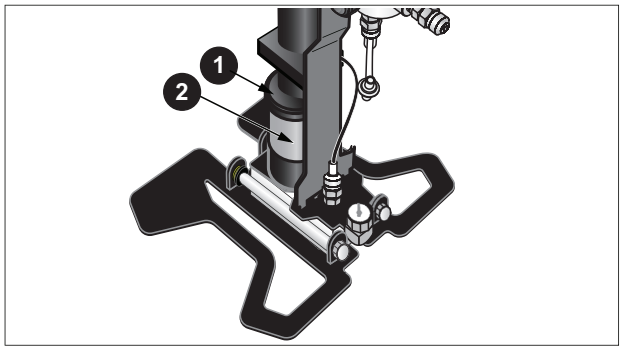
For quick service of the Product, do steps 1 through 5 from *Lubricate the Product*.

Pump Quick Service (SK-700HPP-QS) Instructions

To replace the desiccant, see Figure 5:

1. Unscrew and open the black lid (❶) of the clear desiccant tube (❷) at the base of the pump.
2. Remove the old desiccant material from the tube.
3. Tear open one of the provided desiccant packs and pour the desiccant material into the clear desiccant tube.
4. Screw the lid back on.

Repeat this process every 3 to 4 months or as necessary to keep moisture out of the desiccant.



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Figure 5. Desiccant Access

Lubricate the Product

Note

For this section, it is not necessary to replace the desiccant first.

To lubricate the Product:

1. Pull up the handle of the pump approximately 15 cm (6 in).
2. Hold the exposed metal body of the pump with one hand and unscrew the handle to remove the handle from the unit. The bolt comes off with the handle as one piece.

Note

A 20 mm wrench may be necessary to hold the handle connector/pump body in place when the pump handle is rotated counterclockwise.

3. By hand, unscrew the hose fitting at the bottom of the pump to remove the hose.
4. By hand, unscrew the large plastic nut located at the top of the pump.

Note

To make step 5 easier, remove the outer body round end cap by unscrewing it by hand (under the top manifold bracket). The manifold mounting bracket can then be removed, which gives more access to the desiccant assembly.

5. By hand, unscrew the outer body/desiccant tube assembly from the pump base. The entire assembly should come off of the pump base.
6. Set the assembly aside. The metal pump body is now exposed.

Note

If the black pump outer body unscrews from the clear desiccant tube, the desiccant will spill into the pump. A strap wrench might be required at the bottom of the desiccant tube to remove the entire assembly.

7. Pull up and fully extend the metal pump body.
8. Apply a thin coating of the provided silicone grease to the exposed pump shaft below the top metal pump body.
9. To reassemble the pump, reverse these steps.

Follow the *Safe Operation* procedure to ensure that the pump is in good condition.

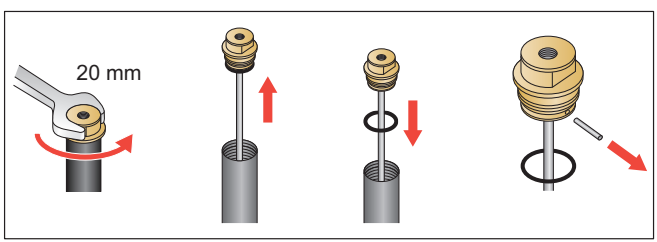
Piston O-Ring Replacement

To replace the piston O-ring, do steps 1 through 6 from *Lubricate the Product*. See Figure 6:

1. Use a 20 mm wrench to unscrew the handle connector from the pump body.
2. Lift the handle connector to expose the O-ring.
3. Remove the O-ring to expose the pin on the bottom of the handle connector.
4. Push the pin from one side and then pull the pin out of the handle connector.

Note

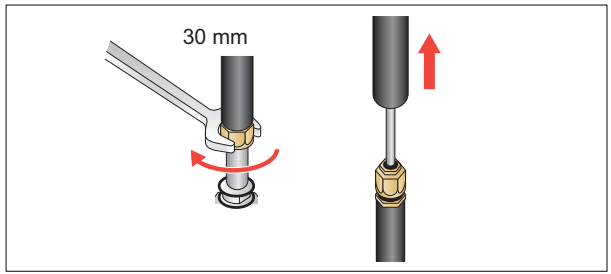
When you reassemble the pump, make sure that this O-ring is secured in its groove.



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Figure 6. Piston O-Ring Replacement (A)

5. Use a 30 mm wrench to unscrew the pump body end cap and slide off the metal pump body. See Figure 7.



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Figure 7. Piston O-Ring Replacement (B)

Hold the lower nut (air exchange valve) with a 24 mm wrench and then with a 17 mm wrench, unscrew the exposed ball/O-ring retainer nut. See Figure 8.

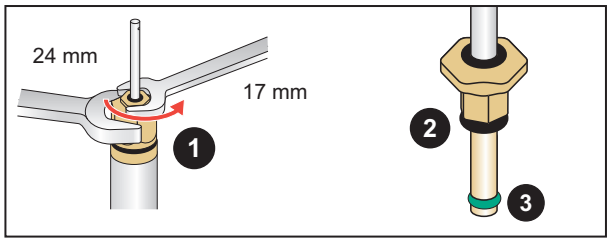


Figure 8. Piston O-Ring Replacement (C)

6. Pull the piston up and out of the pump. Note that the piston is held in place by the O-ring. Do not lose the two balls located in the top of the pump.
7. On the air exchange valve, there is a large black O-ring (❶). If the O-ring is worn, replace the O-ring. When you reassemble the pump, add a small amount of silicone grease to this O-ring.
8. The piston shaft O-ring (❷) is on the bottom of the ball/O-ring retainer nut. If the O-ring is worn, replace the O-ring.
9. On the bottom of the piston, there is a small green O-ring (❸). Carefully remove this O-ring and apply a small amount of silicone grease to the replacement when you reassemble the pump.
10. Reassemble the pump in the reverse order.

Pump Full Service (SK-700HPP-FS) Instructions

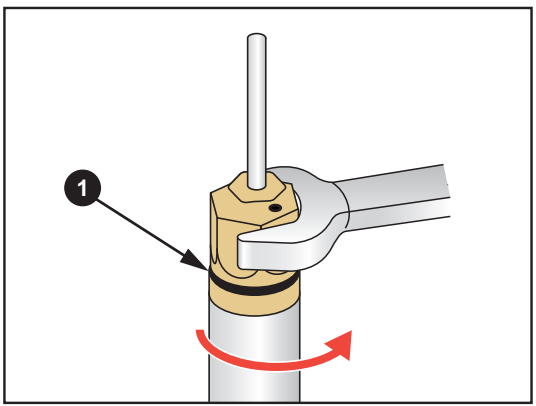
Follow the directions for the desiccant replacement and lubrication from the pump quick service instructions above.

Piston O-Ring Replacement

To replace the piston O-ring, do steps 1 through 10 from *Piston O-Ring Replacement* and then insert the piston back in the pump and screw the ball/O-ring retainer nut back on and move on to the next procedure.

Inner Pump Shaft O-Ring Replacement

1. Unscrew the air exchange (Figure 9, ❶) valve with a 24 mm wrench (without unscrewing the ball/O-ring retainer nut) while ensuring the ball bearings do not fall off from their pockets.

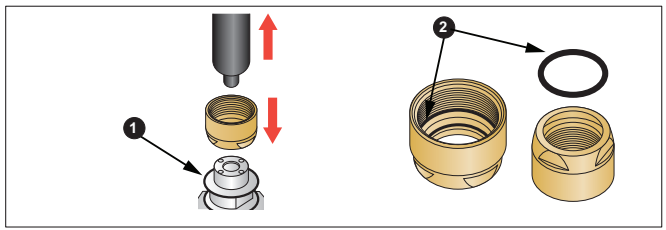


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Figure 9. Air Exchange Valve

2. Once completely unscrewed, remove the pump shaft assembly and the brass end cap from the bottom of the pump to expose the non-return valve at the base (Figure 10, ❶).

3. Remove the brass end cap from the pump shaft.



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Figure 10. Pump Shaft O-ring Replacement

4. There are two O-rings in the brass end cap, see Figure 10:

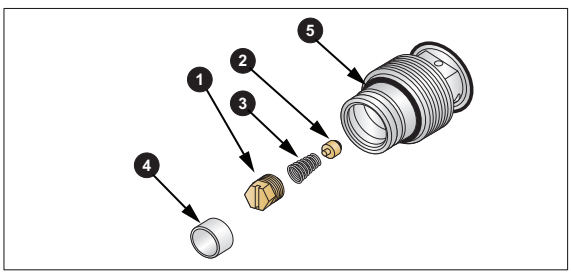
   - An upper thin O-ring which seals against the bottom of the pump body (no need to replace).
   - A thicker O-ring (❷) which sits inside a machined slot at the bottom of the end cap and seals against the pump shaft.

   Carefully remove the thicker O-ring.

5. Apply silicone grease before installing the new O-ring.

Micron Filter and Non-return Valve Replacement (for SK-700HPP-FS only)

1. Unscrew and completely remove the non-return valve housing at the base on the pump using a 25 mm wrench, see Figure 10.
2. See Figure 11. Use long-nose pliers to pull out the micron filter (❹) from the bottom of the housing.



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Figure 11. Micron Filter and Non-return Valve Replacement

3. Use a flat-head screwdriver to unscrew the brass screw (❶) and pull out the spring (❸) and the non-return valve with O-ring (❷).
4. Replace the spring and the non-return valve (with O-ring) with new ones provided in the Kit.
5. Remove and replace the O-ring (❺) on the outside of the non-return valve housing.

Note

Do not apply grease to any of these items during or after replacement. These items must be completely dry.

6. If necessary, clean the base of the manifold.
7. Reassemble the pump in the reverse order; replace the O-ring on the top of the ball/O-ring retainer nut (Figure 8), the O-ring on the handle connector that covers the retention pin (O-ring in Figure 6), and the O-ring at the top of the handle connector (Figure 6, O-ring not shown).

Safe Operation

To verify safe operation of the Product after maintenance or repair:

⚠ WARNING

To prevent eye damage or personal injury, use approved eye protection.

1. Attach a pressure gauge to the hose or the accessory fitting on the calibration manifold (700HPPK only). Use any approved (properly-rated) adapter as required.
2. Close the upper vent valve (700HPPK) and slowly pressurize the pump/gauge system to 21 MPa (3000 psi, 210 bar).
3. Maintain pressure for 60 seconds, and check for excessive leaks.
4. Use the upper vent valve on the calibration manifold (700HPPK only) to slowly release the pressure. Pressure can also be vented using the vent valve at the base of the pump.

If the Product fails this verification, contact Fluke Calibration for service information. See *Contact Fluke Calibration*.

See the *700HPPK Instruction Sheet* at www.Flukecal.com for full specifications and usage instructions.