

# INSTALLATION INSTRUCTIONS

## REPAIR SEAL KIT

### Survivor 35

#### PURPOSES OF THE KIT

Over time, the dynamic seals and O-rings in the PowerSurvivor-35 and Survivor-35 will wear. The Repair Seal Kit contains the major seals and O-rings that should be replaced to improve operating efficiency. It also contains new check valve poppets and springs, which should be replaced at the same time.

#### CONTENTS OF THE KIT

Refer to the illustrations on Pages 6-8, showing the parts included in the kit.

#### TOOLS REQUIRED

- Needle-nose pliers
- ¼-in. Allen wrench (Survivor-35 only)
- 5/32-in. Allen wrench
- ½-in. open-end wrench (PowerSurvivor-35 only)
- Standard-blade screwdriver)

#### DISASSEMBLY

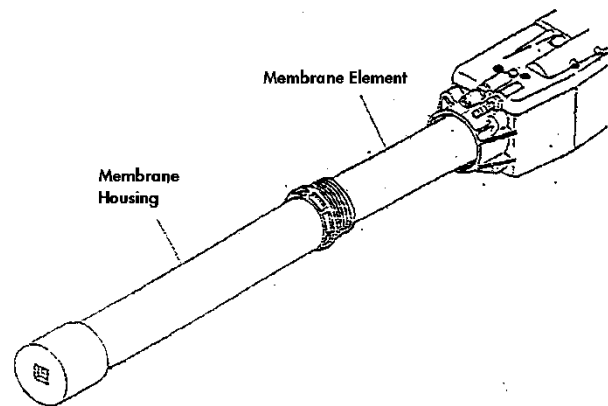
##### Remove Membrane Assembly from Pump

1. Grasp the membrane housing with both hands and turn counterclockwise until it can be removed.
2. Remove the membrane element with a pulling-and-twisting motion.

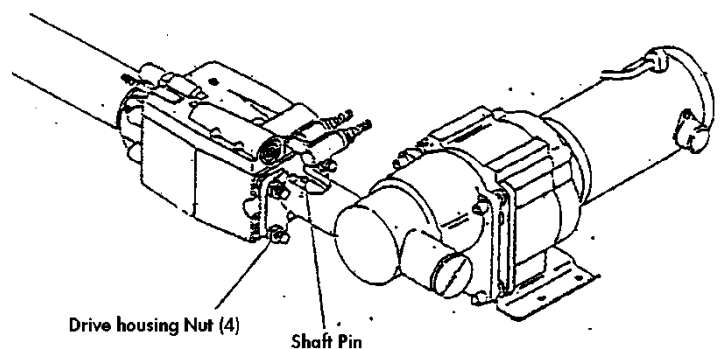
##### Remove Pump from Drive Housing (PowerSurvivor-35)

1. Pull the tubing off the two hose barbs on the drive end of the pump.
2. Slide back the rubber cap, and pull or tap out the pin which connects the pump shaft and motor drive shaft.
3. With a ½-in. wrench, remove the four drive housing nuts. Pull the pump from the drive housing. Remove the rubber cap from the piston shaft.

#### REMOVING MEMBRANE ASSEMBLY FROM PUMP



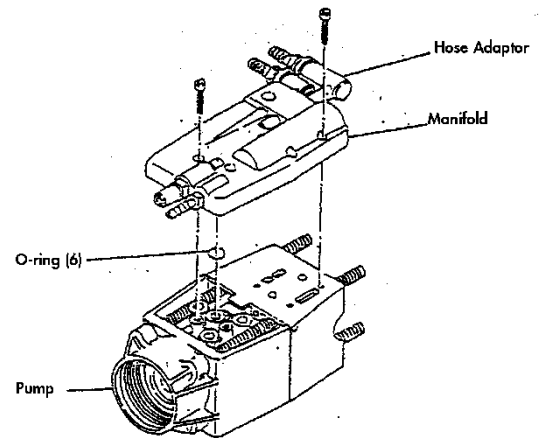
#### REMOVING PUMP FROM DRIVE HOUSING (PS-35)



### Remove Manifold from Pump

1. Pull the hoses off the hose barbs on the manifold.
2. With a 5/32-in. Allen wrench, remove the five machine screws (six screws on newer-model PowerSurvivor-35's) which secure the manifold to the pump. Lift off the manifold (the six O-rings seals between the manifold and pump will normally remain with the manifold).
3. Pull the hose adaptor straight out from the manifold. Remove the four old O-rings from the hose adaptor.  
**NOTE:** If the manifold assembly requires service other than replacement of the O-rings provided in this kit, either replace the complete assembly or return it to the factory for repair.

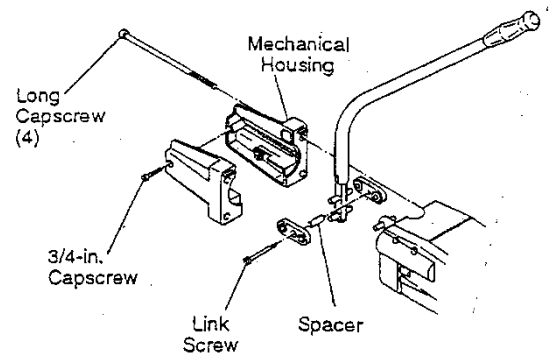
### REMOVING MANIFOLD FROM PUMP (PS-35 shown)



### Remove Handle from Pump (Survivor-35)

1. Using a 1/4-in. Allen wrench, remove the four long capscrews from the mechanical housing.
2. Using a 5/32-in. Allen wrench, remove the 3/4-in. capscrew which holds the two halves of the housing together. Pull off the two parts of the housing.
3. Remove the link screw (don't lose the spacer). Pull the links off the pivot fins of the piston shaft and handle.

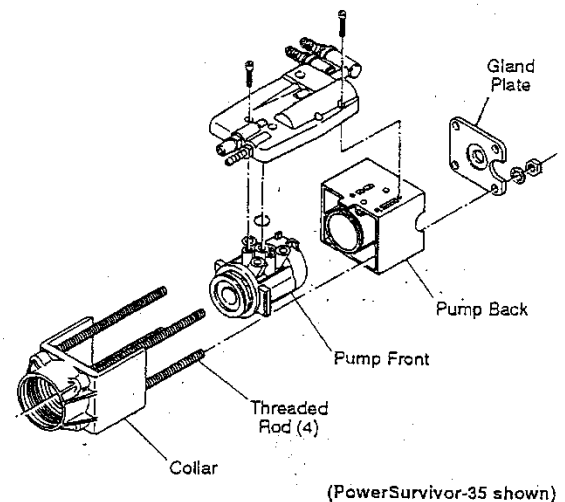
### REMOVING HANDLE FROM PUMP (Survivor-35)



### Separate Pump Back and Pump Front Assemblies

1. Remove the four nuts and washers from the drive end of the threaded rods which secure the pump halves together.
2. Separate the collar and threaded rods from the rest of the pump (the pump back and pump front will stay together).

### SEPARATING PUMP BACK AND PUMP FRONT

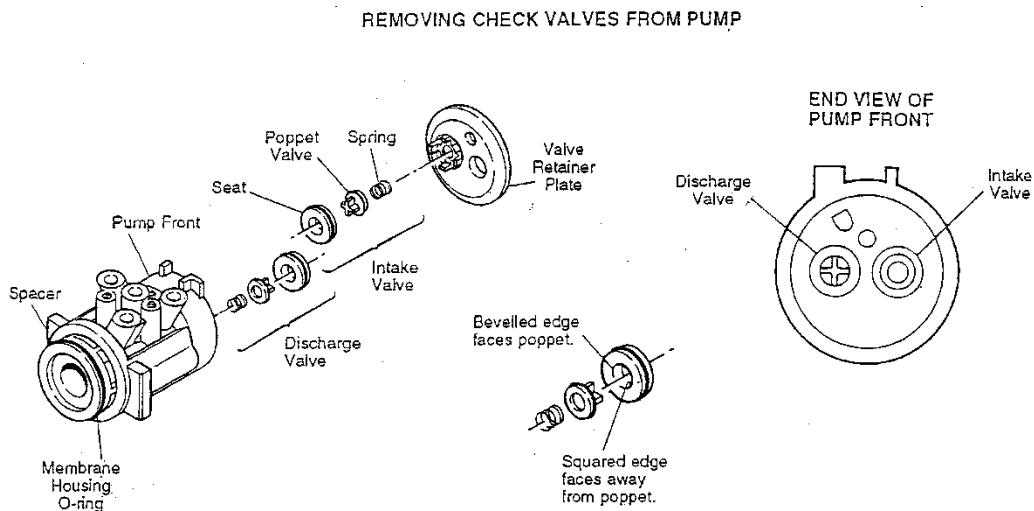


### Pull off the gland plate from the drive end of the pump.

1. With a flat-bladed screwdriver, carefully pry apart the pump back and pump front. The valve retainer plate may fall out of the pump front.

### Remove Check Valve from Pump

1. Set the pump upright. The end which attaches to the membrane assembly should be at the bottom.
2. With a needle-nose pliers, remove the valve retainer plate from the pump front (if it hasn't already fallen out).

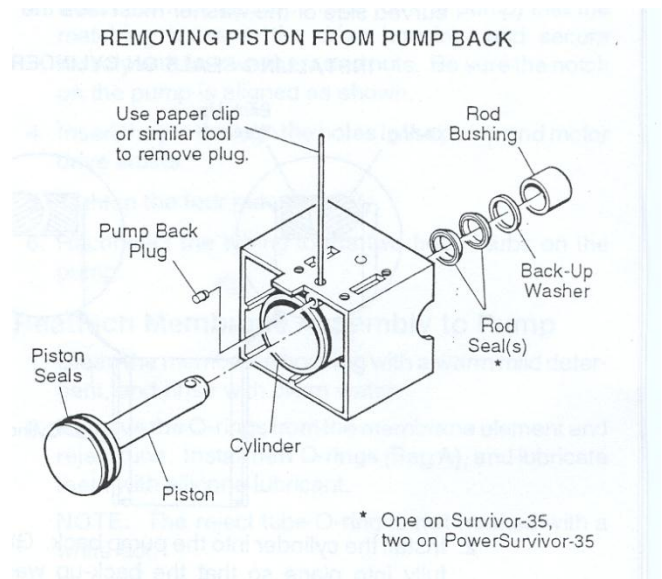


3. With the same pliers, pull the intake and discharge poppet valves. The seat for the discharge poppet valve will come out with the poppet; the seat for the intake poppet valve will remain in the pump front.
4. The intake seat doesn't have to be removed unless it is damaged. To remove, pull it out using a small hook or the head of a nail. Discard the two poppets (with O-rings) and springs.
5. Remove the membrane housing O-rings for the other end of the pump front.

### Remove Piston and Cylinder from Pump Back (PowerSurvivor-35)

**NOTE:** Because the Survivor-35 generally is used for lower-volume water production, its cylinder seals are unlikely to need replacement. However, if for some reason those seals are damaged, follow the same procedure as below. To remove the pin from the piston rod, place the piston in a vise with one end of the pin covered by the socket from a socket wrench (be careful not to damage the pin when pressing it out of the hole in the piston rod).

1. Pull the piston from the pump back.
2. Push the rod seals, back-up washer, and rod bushing from the pump back. This can be done by using a blunt rod to push on the seal



from the inside (the cylinder side). **Because this may damage the seals, do it only if the seals are to be replaced.**

3. Remove the piston seals from the piston.
4. Grasp the outside of the cylinder and pull it out of the pump back (if tight, rock it from side to side while pulling). You may need to use a large channel-lock pliers for additional leverage.
5. Remove the O-ring and back-up washer from each end of the cylinder.
6. Using a small-diameter screwdriver, or a paper clip or similar wire, push through the side hole in the pump body back to remove the plug as shown in the illustration.

### REASSEMBLY

**NOTE:** For the following reassembly steps, refer to the appropriate illustration next to the disassembly procedure, and to page 9.

**IMPORTANT:** Clean all components before reassembly.

**IMPORTANT:** Lubricate all O-rings and seals with silicone lubricant when the components are reassembled. **Do not use** any petroleum-based grease or oil (including petroleum jelly) as they will degrade the membrane.

### Reinstall Piston and Cylinder in Pump Back (PowerSurvivor-35)

1. Install a new O-ring and back-up washer on each end of the cylinder, as shown in the illustration. The curved side of the washer must face the O-ring.

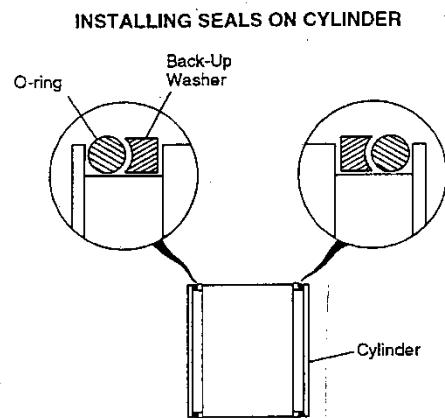
### INSTALLING SEALS ON CYLINDER

Install the cylinder into the pump back. Guide it carefully into place so that the back-up washers don't "roll".

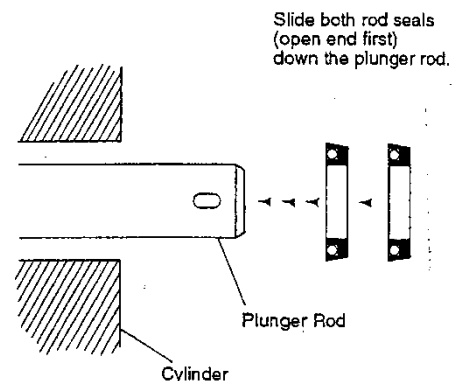
- Install the two new piston seals on the head of the piston, with their smooth surfaces back-to-back.
- Install the piston assembly into the pump body back. Then slide the rod seals (open end first, as shown on the next illustration) down the plunger rod and into the pump body back. Be careful that you don't invert the rod seals while installing (guide them into place with your fingers).
- Slide the back-up washer and then the rod bushing down the plunger rod. Press the rod bushing all the way into the pump back so that it is flush with the opening.

**NOTE:** On a Survivor-35, reinstall the pin into the hole in the piston rod.

Push the pump back plug into the hole where the old one was removed.



### INSTALLING SEALS ON PLUNGER ROD



## Reinstall Check Valves

1. Install the new membrane housing O-ring (Bag A) on the pump front, and lubricate it with silicon lubricant.
2. Install the new check valve components (Bag C) into the pump front, in the order shown. Lubricate the O-rings with silicone lubricant before assembly.
3. Insert the spring into its recess in the valve retainer plate, then reinstall the plate over the check valves in the pump front. Maneuver the retainer plate until it sits squarely (not tilted).

## Reattach Pump Back and Pump Front Assemblies

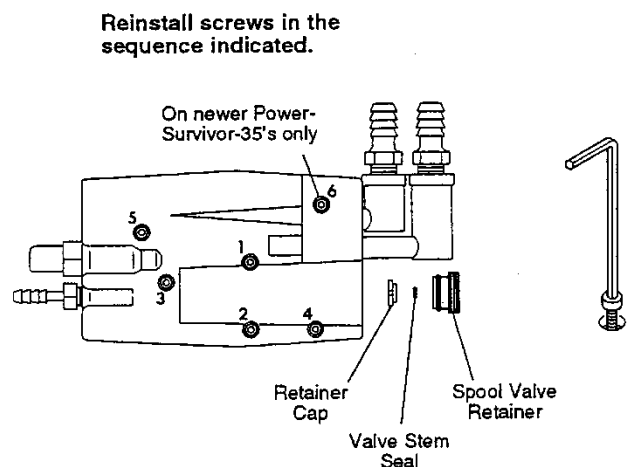
1. Set the pump front upright. The end that attaches to the membrane housing should be at the bottom.
2. Hold the pump back over the pump front, align the tabs on the two, and press the piston cylinder into the opening over the valve retainer plate. Push in until the two components fully mesh.
3. If the spacer has fallen off the pump front, reinstall it.
4. Push the collar and threaded rods onto the pump assembly. The collar and pump don't have to be completely flush when assembled.
5. **PowerSurvivor-35 only.** Reinstall the gland plate on the end of the pump back. The outside of the plate is flat; the inside has a recess which matches the shoulder on the pump back.

## Reattach Handle to Pump (Survivor-35)

1. Install the two links onto the pivot pins of the piston shaft and handle. The flanges on the bushings should be on the **inside** of the links; the center hole in the links must be closer to the piston shaft pivot pin than it is to the handle pivot pin.
2. Hold the spacer between the links, and install the link screw.
3. Install the two halves of the mechanical housing, using the 3/4-in. capscrew.
4. Align the mechanical housing with the pump back, and reinstall the four long capscrew. Alternately tighten them to 40 in.-lbs.

## Reattach Manifold to Pump

1. Unscrew and remove the spool valve retainer, by inserting a needle-nose pliers into the retainer slots and turning.
2. Pull the retainer cap off of the retainer with the pliers. Remove the stem seal from inside the retainer.
3. Install the new valve stem seal, lubricate it with silicone grease, and reassemble.
4. Install the new O-rings onto the hose adapter, and push it into the manifold."
5. **If leakage is evident**, remove the large and small rubber plugs from the back of the manifold. Remove the O-rings from the plugs, and replace them with new O-rings (Bag A). Reinstall the plugs.



**NOTE:** We do not recommend replacing the plugs **unless** leakage is evident. Be careful not to damage the manifold when prying out the plugs.

6. Position the six new O-rings (Bag A) carefully into the openings on the back of the manifold, and lubricate them with silicone lubricant.

**NOTE:** The manifold O-rings are marked with a white dot to distinguish them from the similar O-ring on the reject tube.

7. Position the manifold over the pump assembly, being careful not to disturb the O-rings.

**IMPORTANT:** For the following step, tighten the screws in the order shown in the illustration. Overtightening can easily strip the threads in the plastic manifold: first snug to about 5 in.-lbs (lightly fingertighten with an Allen wrench inserted as shown below); then repeat in the same sequence to about 15 in.-lbs (1/8 to 1/4 turn additional).

8. Secure with the five manifold screws (six on newer model PowerSurvivor-35's).
9. Reattach the hoses.

#### **Reattach Pump to Drive Housing (PowerSurvivor-35)**

1. Align the pin holes in the pump shaft and motor drive shaft.
2. Slip the rubber cap onto the pump shaft.
3. Insert the four threaded rods (on the pump) into the matching holes in the drive housing, and secure loosely with four washers and nuts. Be sure the notch on the pump is aligned as shown.
4. Insert the pin through the holes in the pump and motor drive shafts.
5. Tighten the four nuts securely.
6. Reconnect the tubing to the two hose barbs on the pump.

#### **Reattach Membrane Assembly to Pump**

1. Clean the membrane housing with a warm mild detergent, and rinse with clean water.
2. Remove the O-rings from the membrane element and reject tube. Install new O-rings (Bag A), and lubricate them with silicone lubricant.

**NOTE:** The reject tube O-ring is **not** marked with a white dot.

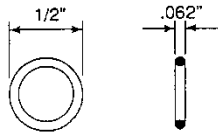
3. Insert the element into the pump front, then push the reject tube assembly all the way into the element.
4. Slide the housing over the element. Screw it all the way into the pump collar by hand, but don't overtighten.
5. Be sure there is not a gap between the pump collar and the thread stop on the membrane housing.

# CONTENTS OF 8013053 REPAIR SEAL KIT

## Bag A

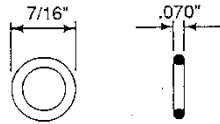
2

8013006  
Qty: 2



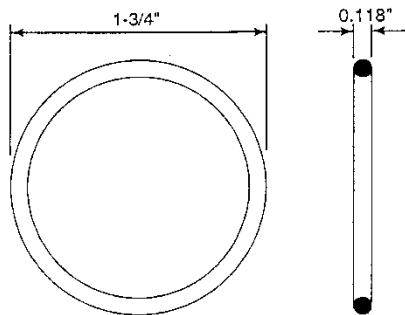
3

8013008  
Qty: 1



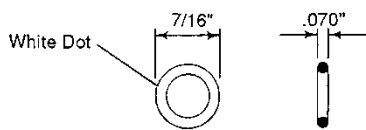
21

8012947  
Qty: 1



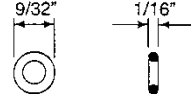
32

8013042  
Qty: 6



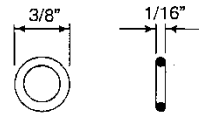
33

8013123  
Qty: 1



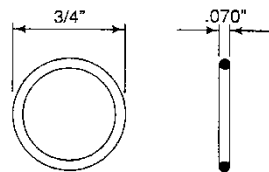
34

8013012  
Qty: 1



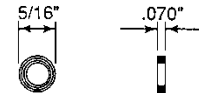
44

8013004  
Qty: 2



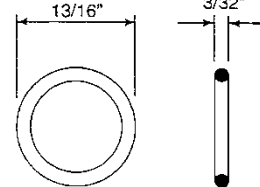
45

8013014  
Qty: 1



50

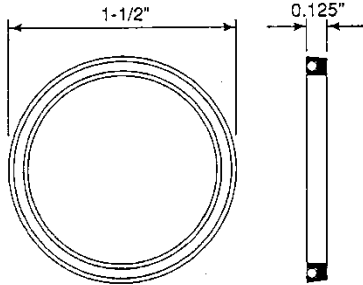
8013016  
Qty: 1



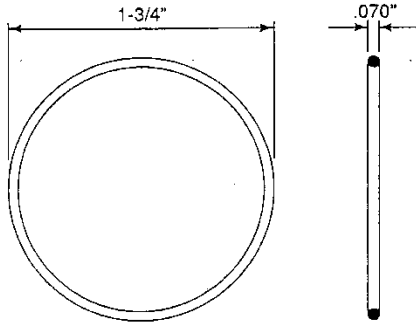
NOTE:  
Some dimensions are approximate.

**Bag B**

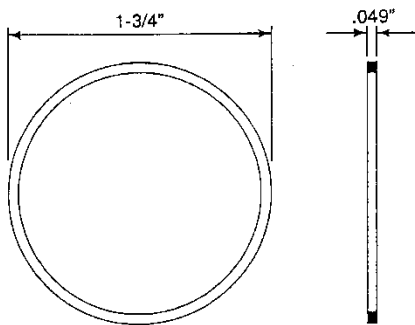
⑨  
8013003  
Qty: 2



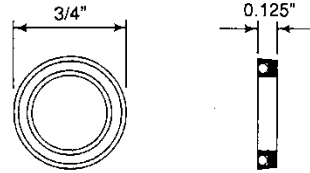
⑩  
8013007  
Qty: 2



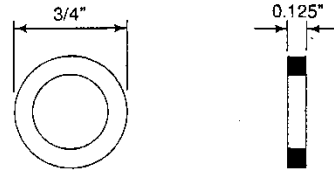
⑪  
8013040  
Qty: 2



⑬  
8013013  
Qty: 2



⑭  
8012967  
(white nylon)  
Qty: 1



⑮ ⑯  
8012948 Pump Body Plug  
with 8013064 O-ring installed

Qty: 1



8012966 Plunger Rod Bushing

Qty: 1

without drawing

*Bag B also contains a packet of Silicone Lubricant.*



# Bag C

②⑤ ⑥⑨  
8012977 Valve Seat  
with 8013005 O-ring installed  
Qty: 2



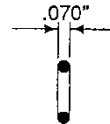
①⑥ ①⑦  
8012978 Check Valve Poppet  
with 8013009 O-ring installed  
Qty: 2



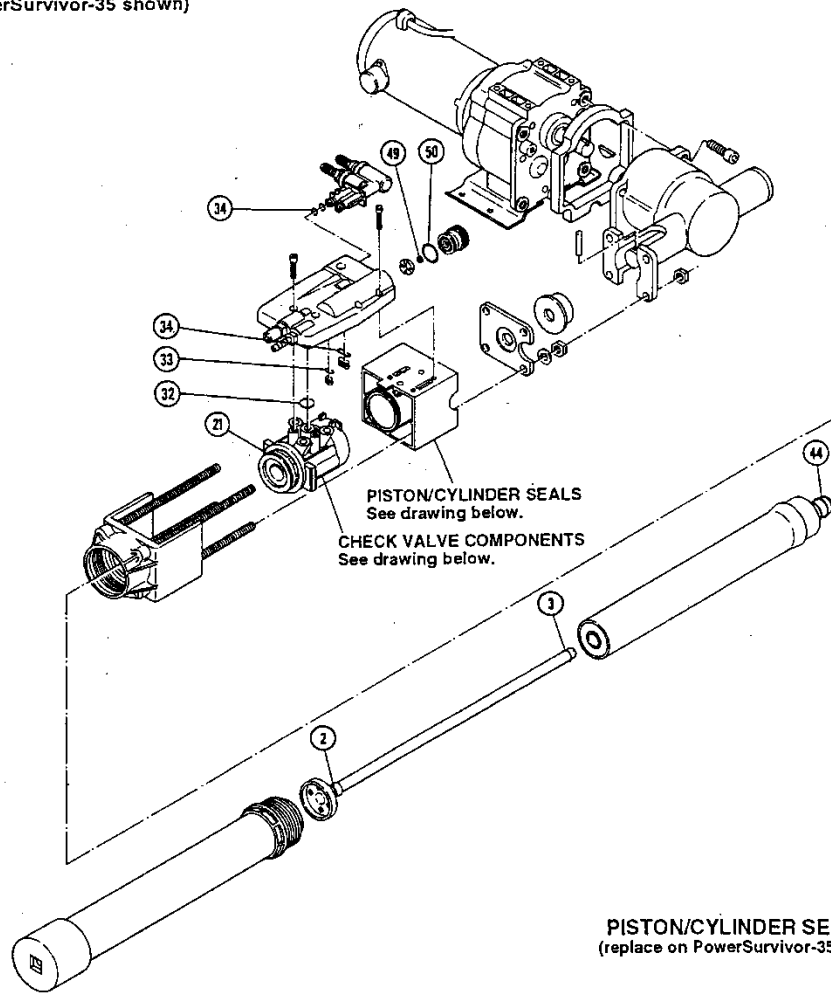
①⑧  
8013120 Check Valve Spring  
Qty: 2



③④  
8013012 Hose Adapter O-ring  
(for PowerSurvivor-35 Ser. No. S3500-0864 & above)  
Qty: 4



(PowerSurvivor-35 shown)



CHECK VALVE COMPONENTS

