


GREEN HYDRAULICS
SNAP-RING REPHASING CYLINDER SEAL REPAIR INSTRUCTIONS

1. The cylinder should be disassembled in a clean environment to prevent dirt or other contamination from entering the interior of the cylinder. Clean any accumulated dirt or debris from the port openings and rod guide area. Remove the port plugs and drain any oil from the cylinder. Do not reinstall the port plugs at this time. No special tools are required for disassembly, but snap ring pliers would ease removal of the snap ring that retains the rod guide. Items that should be at hand are a vise, flat punch, hammer, rubber hammer, clean oil, clean paper towels or shop towels and a wrench for removal of the piston nut. A piston ring compressor would be useful but is not necessary for resizing the teflon piston seal.
2. Secure the cylinder in a vise at approximately the mid-point of the cylinder wall. Do not tighten the vise excessively or the cylinder wall may be distorted.
3. If the cylinder has a retaining plate on the front of the rod guide, remove the capscrews and dismount the retaining plate. If the cylinder has a snap ring on the front of the guide, remove it from its groove. Remove the snap ring from the groove in the cylinder wall.
4. Pull the rod vigorously outward and allow the piston to bump the rod guide. If there is high resistance to piston movement in the area of the vise jaws, the vise is probably too tight. The momentum of the rod should be sufficient to pull the rod guide and piston from the cylinder barrel. Be careful to not mar the chromed surface of the rod. Note: The piston seal and the rod guide static seal will likely be cut by the edge of the snap ring groove on removal from the barrel. This is normal and cannot be avoided on disassembly.
5. Secure the rod so that the piston nut can be removed. Be careful to not mar the chromed surface of the rod. The rod cannot be repaired if it is dented or scratched. If securing the rod in a vise, use clean cardboard to pad the vise jaws. Remove the piston nut, piston, spacer tube (if any) and rod guide.
6. Note the position and orientation of the seals on the piston and rod guide before replacing them. Be careful to not scratch the seal grooves when removing the old seals. The seals can be removed with a sharp tool like an awl by carefully pushing the point partially into the seal and prying the seal from the groove. Hard seals can be removed by carefully cutting the seal apart with a utility knife or an x-acto knife.
7. Inspect the seal grooves and clean away any contamination. Apply a light coating of clean oil to the new seals and into the seal grooves to ease installation and prevent scuffing of the sealing surfaces.

8. Special care must be taken when installing the new teflon piston seal. Teflon seals are not as pliable or elastic as rubber or urethane seals. Teflon seals should not be stretched excessively or the cross section may neck down or break. Heating the teflon ring to about 120° F will improve the pliability. Install the rubber expander into the seal groove first. The expander acts as a spring to push the teflon seal outward against the wall. One

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method of installing the teflon seal into the groove is to carefully work about half of the seal into the groove, much like installing a tire on a rim. Loop a shoe string or flat nylon tie inside the portion of the piston seal that is outside the groove. Use the string or tie to lift and guide the seal into the balance of the groove. When the seal is properly aligned with the groove, the string can be pulled free.

9. Once the teflon seal is positioned in the groove it must be resized so that it is in uniform contact with the rubber expander underneath. A properly sized piston ring compressor can be used to resize the seal. Be sure to not mar the outside surface of the piston seal. Pad the piston seal by using tape or plastic to form a sleeve around the seal if the piston ring compressor is used. If nothing else is available, grasp the circumference of the seal between the thumb and forefinger of both hands and squeeze the seal into the groove as much as possible.
10. Install the retaining plate and snap ring loosely on the rod if they will not fit over the rod mount. Assemble the rod guide and piston onto the rod. Install and tighten the piston nut to the required torque.
11. Apply a light coating of clean oil to the piston and guide OD and to the mouth of the cylinder barrel. Carefully position the piston so that it is centered and square with the cylinder wall mouth. Once started, push firmly until the piston is about half way down the length of the cylinder bore. Carefully push the rod guide into the cylinder bore until the front face of clears the snap ring groove. Be careful to not mar the chromed rod surface. The rod guide may have to be driven down the cylinder bore using a hammer and a punch or dowel. Install the rod guide snap ring and be certain that it is completely nested into the bottom of the groove. Reinstall the outboard retaining plate or snap ring if either is used.
12. Check cylinder for external leaks using rated hydraulic pressure. Any leaks should be evident after the cylinder has been pressurized for one minute. Remove pressure from cylinder. If the seals are oil tight, the cylinder is ready for service.

<p>WARNING: Keep away from jets of high-pressure oil. High-pressure oil jets can penetrate skin and cause severe injury or death</p>
