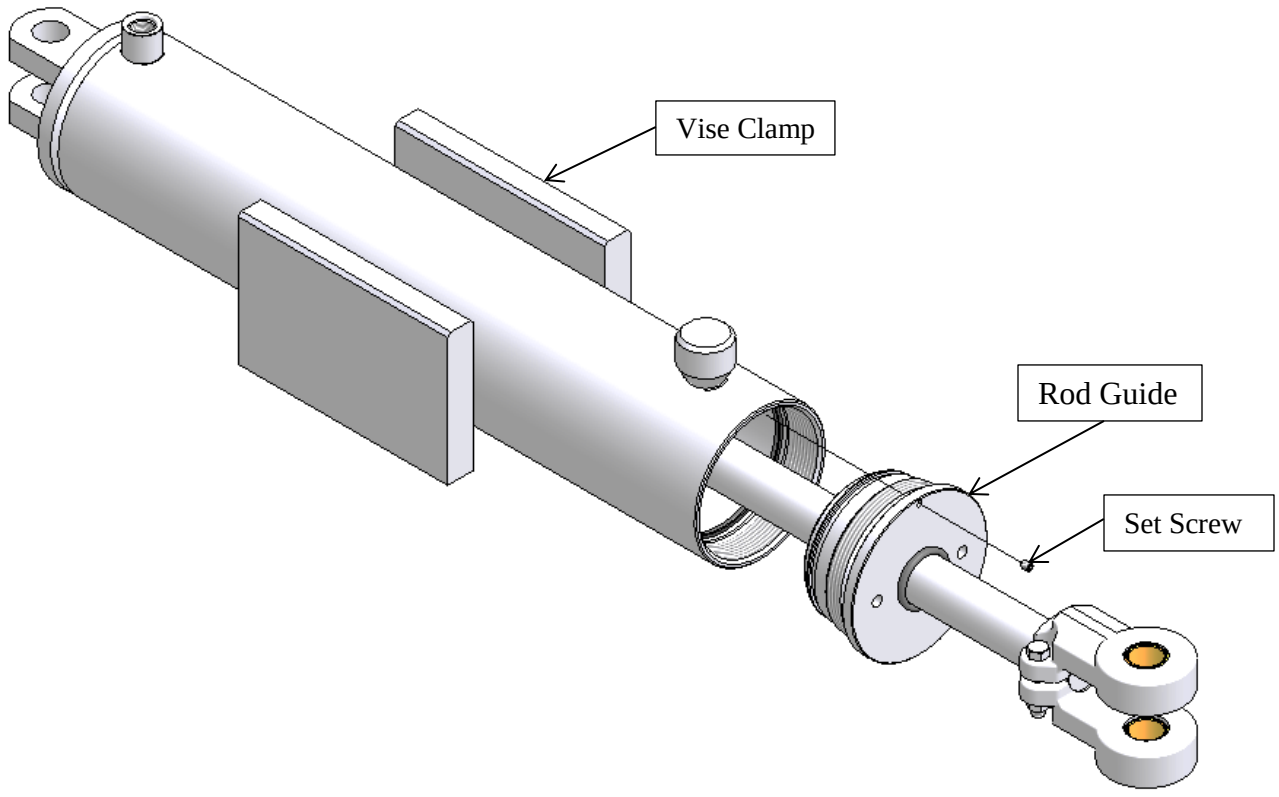
ENERGY HYDRAULICS
CHD REPHASING CYLINDER SEAL REPAIR INSTRUCTIONS

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. Items that should be at hand are a vise, spanner wrench or pipe wrench (for removing head gland), 1/8" allen wrench, clean oil, clean paper towels or shop towels and a wrench for removal of the piston nut.

2. Pull out the rod until the piston is approximately at mid-stroke. Secure the cylinder in a vise, clamping approximately at the mid-point of the body. Do not tighten the vise excessively or the cylinder wall may be permanently distorted.

3. Remove the locking setscrew from the rod guide. Loosen the rod guide with a spanner wrench or pipe wrench by turning it counterclockwise when viewing the rod end of the cylinder. Unscrew the rod guide and pull it from the cylinder wall.



4. Pull the rod assembly from the cylinder bore. If there is high resistance to movement at the piston, the vise may be clamping too tightly. Loosen the vise or reclamp at the base. Be careful to not mar the chromed surface of the rod.

5. Secure the rod mount in the vise 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 directly on the chromed surface, use clean cardboard to pad the vise jaws. Remove the piston nut, piston, spacer tube (if any), and rod guide.

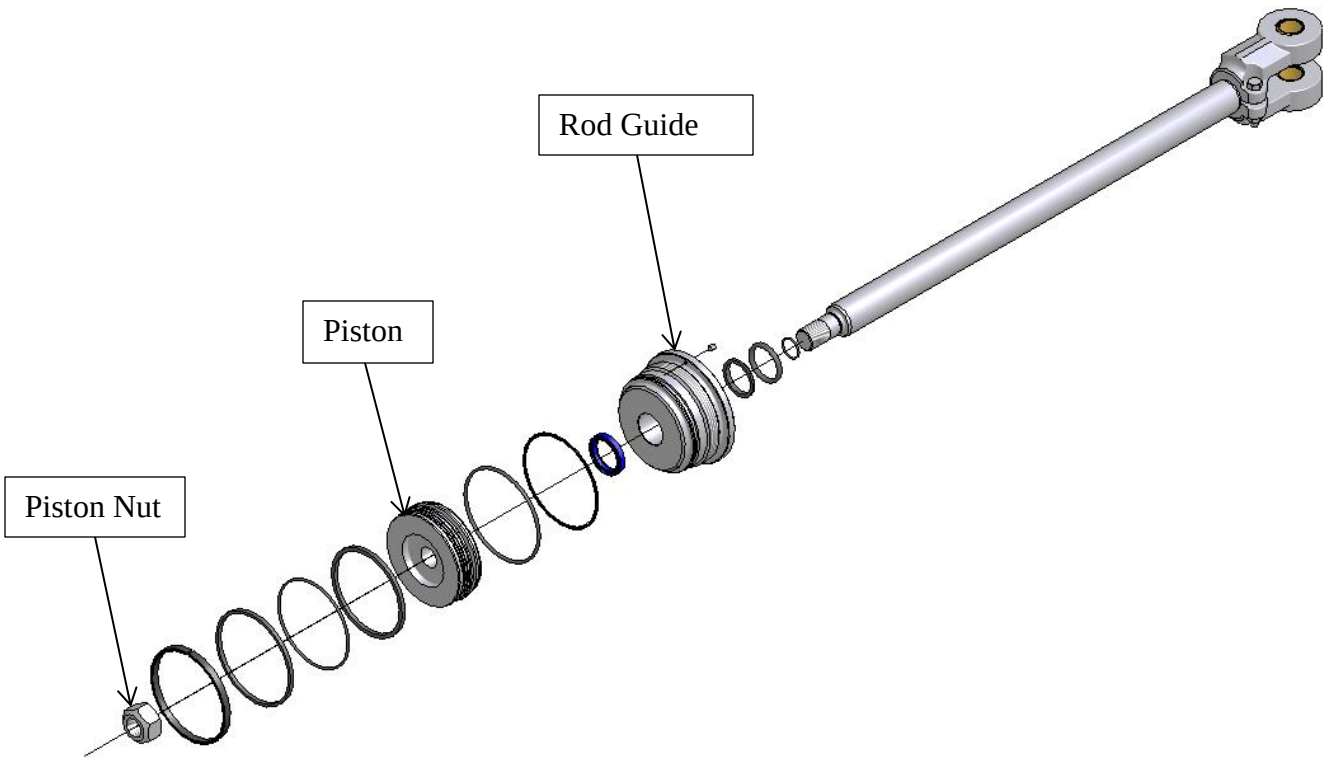
6. Note the position and orientation of the seals on the piston and rod guide before replacing them. Be careful to not scratch the seal grooves when removing the old seals. The seals can be removed with a sharp tool like an awl by carefully pushing the point partially into the seal and prying the seal 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. Any reduction in seal cross section from stretching could cause the seal to leak. Heating the Teflon ring to about 150° 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 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 cable tie under 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 in 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 careful 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. 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 squarely aligned 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 threads engage. Screw the rod guide into the barrel and tighten. Be careful to not mar the chromed rod surface.

12. Check cylinder for external leaks using rated hydraulic pressure in both extend and retract modes. 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.

WARNING: Keep away from jets of high-pressure oil at hydraulic line or hydraulic fitting connection leaks. High-pressure oil jets can penetrate skin and cause severe injury or death.