

**1. Plunger / Connecting Rod Assembly: (Fig. 5)**

Skip this step if assembly was left untouched, otherwise assemble stainless steel washer on shoulder bolt and slide ceramic plunger over bolt. Lubricate o-ring, and roll it over the end of the bolt threads until tight against the plunger. Spray Loctite activator on threads and then apply blue Loctite to threads. (Stainless steel requires activator for Loctite to adhere. Thread bolt into connecting rod and tighten with 3/16" Allen wrench, while holding connecting rod with a crescent wrench or in a vise (Fig. 6). Shoulder bolt should be tightened to approximately 100 to 115 in-lbs.



Figure 5

**2. Plunger Guide / Vacuum Seal Assembly: (Fig. 7)**

Assemble vacuum seal by lubricating o-ring with oil, then slipping Teflon® seal ring inside o-ring. Carefully insert vacuum seal assembly into brass plunger guide retainer at an angle and part way in (Fig. 8). Align carbon plunger guide with the brass retainer cup and start it into retainer. With a constant force, push carbon guide all the way down. This will align and locate the vacuum seal correctly against the bottom. Carbon guide should be even with the top of the brass plunger guide retainer when fully assembled.



Figure 6

**3. U-Cup / Valve Casing Assembly: (Fig. 9)**

Lubricate o-ring on valve with oil and push valve in casing as shown in Figure 9. Note: The cage should always be on the upper side of the assembly. Solution enters the valve through the stainless steel metal seat of the valve and exits through the plastic cage. On the plunger side of the casing, insert the U-cup with the open side facing in. This allows the pressure of the liquid to spread the lips of the U-cup and engergize it to seal against the ceramic plunger. Insert metal backup ring and then the o-ring to finish assembly.



Figure 7

**4. Assemble Sub-Assemblies:**

Push vacuum seal/plunger guide over ceramic plunger. Groove for o-ring on retainer should be facing outward. Next slip valve/U-cup casing onto plunger and mate it up to the retainer cup. Repeat for other side of plunger. Check orientation: inlet valve side of valve casing (metal seat side of valve) towards the bottom and the blue plastic cage side up. The connecting rod cupped face should be orientated to face the motor pilot of the body half (Fig. 10).



Figure 8



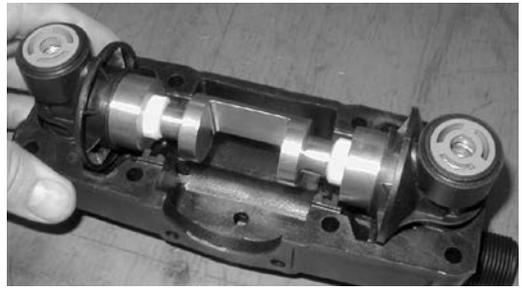
Figure 9



Figure 10

**5. Final Pump Head Assembly:**

Lubricate and insert o-ring No. 1720-0076 into the bottom of the pump body's two circular cavities (Fig.11). Use grease or vacuum seal grease to hold o-rings in place. Carefully place sub-assembly into pump body's lower half. Slide or reposition parts to get the assembly to fit into place (Fig. 12). Extra care is usually necessary for positioning of the brass plunger guide. Next, place lubricated o-rings in upper body half and squeeze lower body with sub-assembly into upper body. Some lateral pressure will have to be applied to the two valve casings to get them to feed into the pump body. Once the two identical body halves are together, drop the bolts in so that the flanged nuts are positioned on the bottom (inlet) side. Tighten nuts 35 to 40 in-lbs. Finally, lubricate connecting rod with wheel bearing grease (three pumps of grease gun). Pump head is now ready for assembly onto motor or gas engine.

**Figure 11****Figure 12**

 **California Proposition 65 Warning** -- This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

