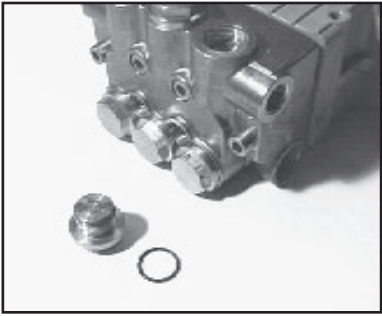
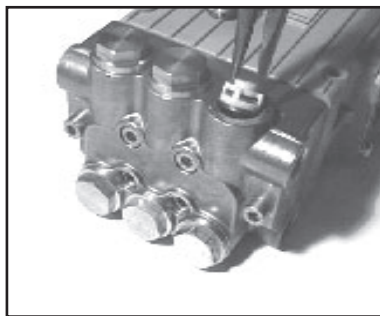


## REPAIR INSTRUCTIONS - P324-0021

**NOTE:** Always take time to lubricate all metal and nonmetal parts with a light film of oil before reassembly. This step will ensure proper fit, at the same time protecting the pump nonmetal parts (i.e., the elastomers) from cutting and scoring. If there are deposits of any kind (i.e., lime deposits) in the valve casing, be certain the weep holes in the weep return ring (#25) and valve casing (#26) have not been plugged.



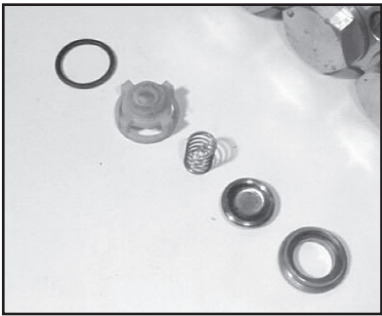
1. With a 24mm socket wrench, remove the (3) discharge valve plugs and (3) inlet valve plugs (#32). Inspect the o-ring (#33) for wear and replace if damaged.



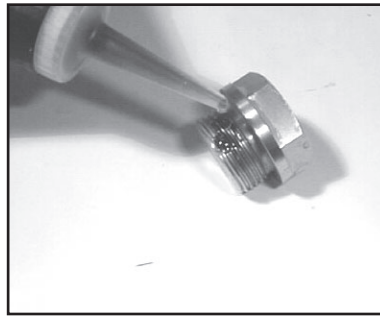
2. Using a needle nose pliers, remove the inlet and discharge valve assemblies (#32X).



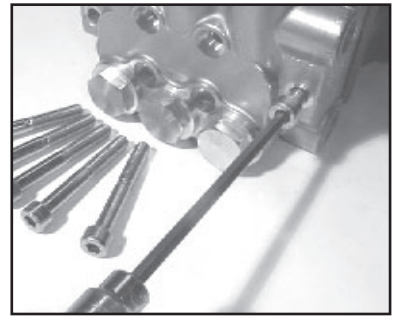
3. The valve assemblies can be separated by inserting a small screw driver between the valve seat (#27) and its valve spring retainer (#30).



4. Remove each o-ring (#31). Inspect all parts for wear and replace as necessary. Reassemble valve assy's (#32X) & place in valve casing (#26).



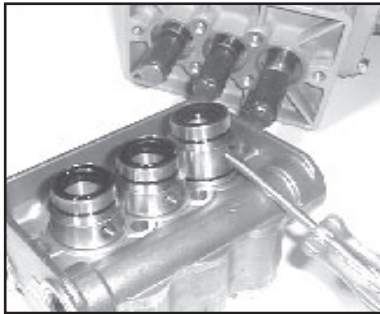
5. Apply one drop of Loctite 243 to valve plugs (#32) and tighten to 55 ft.-lbs. (75 Nm).



6. Next, use a 6mm allen wrench to remove the 6 hex head cap screws (#34).



7. Carefully slide the valve casing (#26) out over the plungers with a screwdriver placed between the valve casing and crankcase.

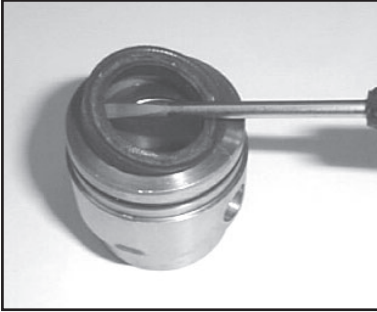


8. Remove weep return rings (#25) from the plungers (#16). Remove the seal case (#20) from either crankcases (#1) or manifold (#26) by using a screwdriver as shown above.

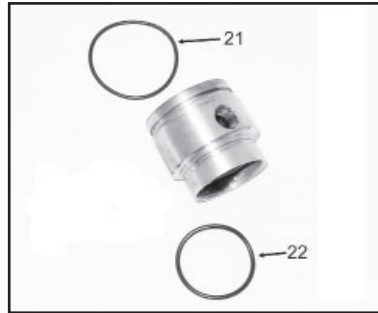


9. Remove the pressure rings (#24) and grooved seals (#23) from the valve casing (#26). Inspect parts for wear and replace if necessary.

## REPAIR INSTRUCTIONS - P324-0021



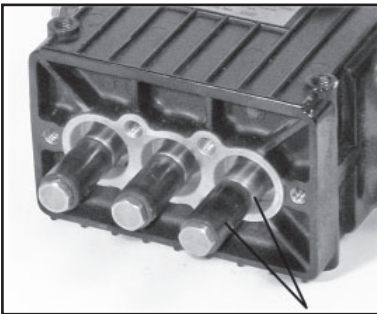
10. Remove the weep grooved seals (#23) from the seal case (#20).



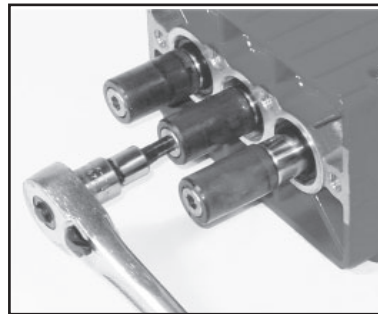
11. Inspect o-rings (#18, #21 and 22) and replace as necessary.



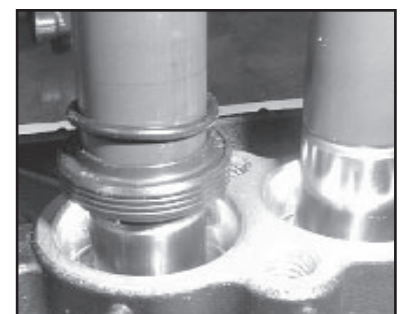
12. Use a 6mm allen wrench to first loosen and remove the tension screw (#16C) from the plunger pipes (#16B). Use a flat screwdriver to pry the oil seals loose from the crankcase (#1).



13. Check surfaces of the plunger bases and plunger pipes (#16B). A damaged surface will cause accelerated wear on the seals. Deposits of any kind must be carefully removed from the plunger surface. A damaged plunger must be replaced!

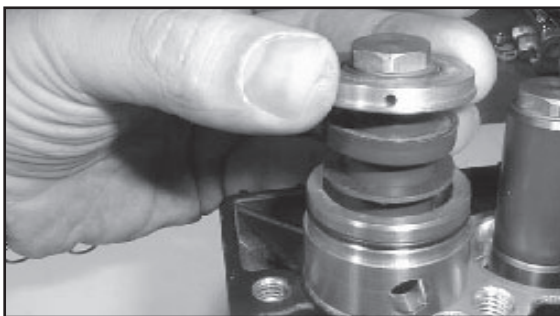


- 13A. Clean the old sealant from the threads of the tension screw and the plunger base (#16A). Replace the copper washer (#16D). Place plunger pipes over plunger base and secure with tension screw to 200 in.-lbs. (22.5 Nm).



### Reassembly Sequence

14. If the oil seals (#19) were removed, replace them with the primary seal lip (grooved side) towards the crankcase and the dust lip (tapered end) towards the valve casing (#26). Lubricate the seal before replacing. Install the oil scraper (#18) over the plunger.



15. Place each seal case (#20) with o-rings (#21, 22) over the plungers (#16). Be certain the oil seal is centered with the seal case and tap firmly until the seal case is seated squarely on the crankcase (#1).

16. With the grooved side pointed toward the valve casing, place the weep grooved seals (#23) over each plunger and into each seal case (#20).
17. Generously lubricate the grooved seals (#23) and assemble these items into the valve casing. Place the weep return rings (#25) onto each plunger (#16). Place the pressure rings (#24) over the plungers. Slide the valve casing over the plungers and seat firmly. Replace the 6 hex head cap screws (#34) and tighten to 221 in.-lbs. (25 Nm) in a crossing pattern.