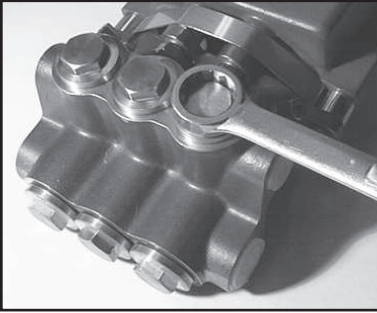


# REPAIR INSTRUCTION - MP4120-SWS/MP4124-SWS

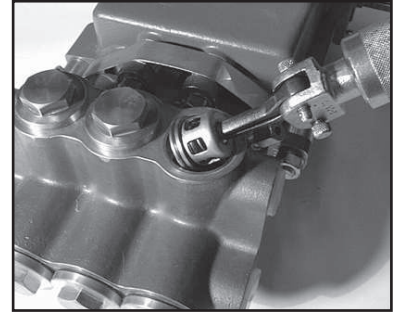
## Disassembly sequence



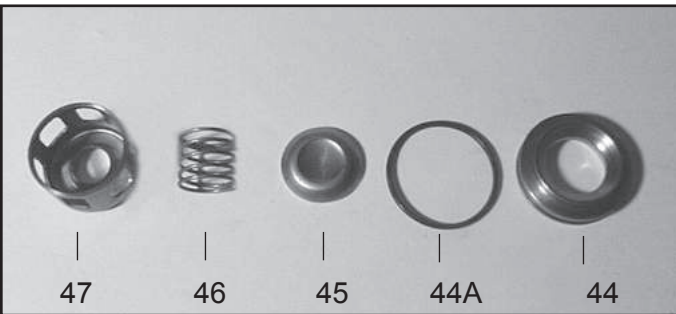
1. With a 27mm wrench, remove the three discharge plugs (#48) and three inlet plugs (#42A) from the manifold (#43).



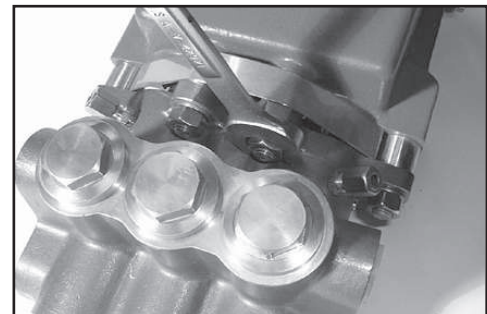
2. Inspect the plug o-rings (#48A and #42B) and replace as necessary.



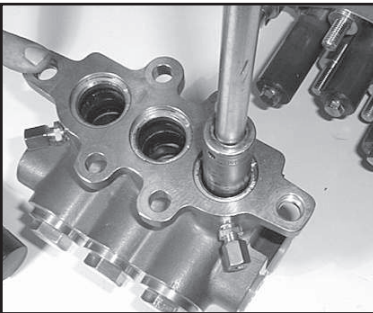
3. From the discharge port remove the spring retainer (#47) spring (#46) and the valve plate (#45). Using the valve puller (Available from Snap-On Tools) remove the valve seat (#44)



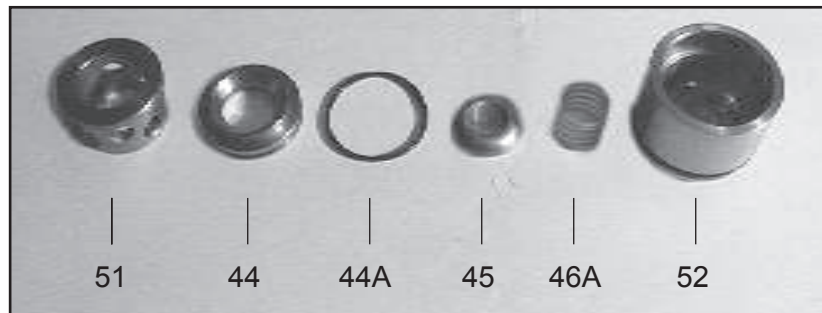
4. Inspect all parts, especially the seating surface of the valve plate (#45), and replace as necessary.



5. Remove the six manifold stud nuts (#50) with a 19mm wrench. Remove the spring washers (#50A). Tap the back of the manifold with a rubber mallet to dislodge and slide it off the studs (#49). The spacer (#51) can now be removed by prying gently outward with a screwdriver through the front of the inlet port.

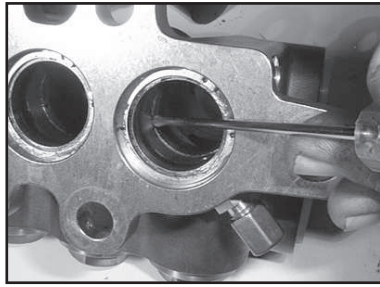


6. To remove the inlet valve assembly, insert a 13mm socket with extension through the rear of the inlet manifold (#43) port and tap it firmly with a hammer. This will force the tension spring (#46A), valve housing (#52) and the remainder of the inlet valve assembly out through the front of the inlet port.

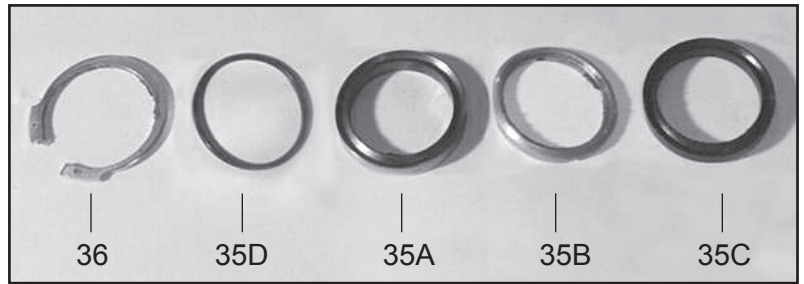


7. Pull the inlet valve assembly apart for inspection. Any resistance may be overcome by placing the valve housing (#52) in a brass jawed vise and carefully tapping the back of the valve plate (#45) with a screwdriver. Inspect the valve seats (#44), spring (#46A), o-ring (#44A) and o-ring (#53A) for wear and replace them as necessary.

## REPAIR INSTRUCTION - MP4120-SWS/MP4124-SWS

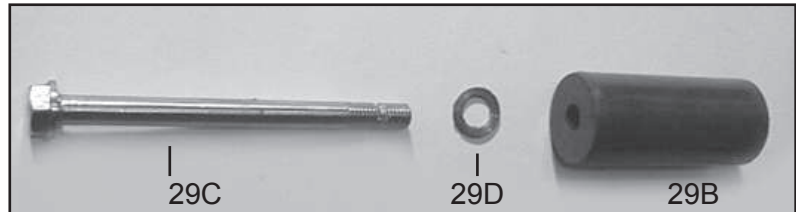


8. From the front of the manifold (#43), remove the packing assembly (#41A, 41, 40, and 39). Use a small slide hammer puller if necessary, or insert a wooden dowel through the back of the manifold and tap the assembly out from the back to the front.

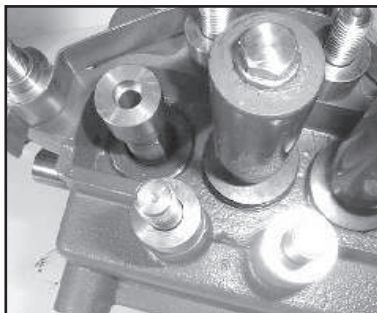


9. Turn the manifold (#43) over and remove the rear v-sleeve snap ring (#36) and rear v-sleeve assembly (#35A-35D). These parts should slide out with little resistance. If necessary, a screwdriver may be used to pry outward. Replace all rubber parts and inspect the metal parts for wear.

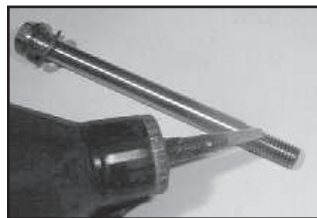
10. **Note: The following procedure is only necessary if a stud bolt (#49) has been damaged and must be replaced.** To remove the manifold studs (#49), place a stud nut (#50), lock washer (#50A), and second nut on each stud. Tighten the nuts against each other. Hold the front nut with one wrench, and remove the stud bolt by turning the rear nut counterclockwise with another wrench. To reassemble, turn the front stud bolt nut clockwise.



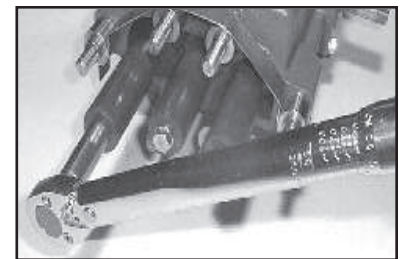
11. Inspect ceramic plunger pipe (29B). Clean any dirt or grime. If the surface of the pipe is rough, scored or pitted, replace plunger pipe. To remove the ceramic plunger pipe, turn the plunger bolt (#29C) counterclockwise with a 13mm socket. Use a steady torque to prevent ceramic plunger pipe damage. Loosen and remove the plunger bolt assembly (#29C and #29D) and replace the seal washer (#29D).



12. Inspect the crankcase oil seals (#31) for evidence of leaking. If there is oil on the crankcase (#1) at the sight of the oil seals, they must be replaced. The oil seals are replaced after removing the crosshead/plunger assembly (#25) as described on page 9.

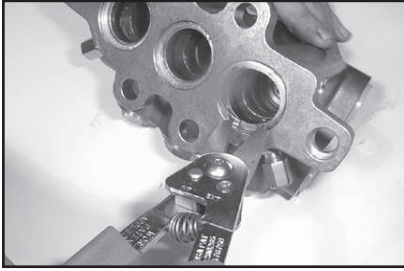


13. Clean the bolt threads (#29C), apply locktite, and remount.

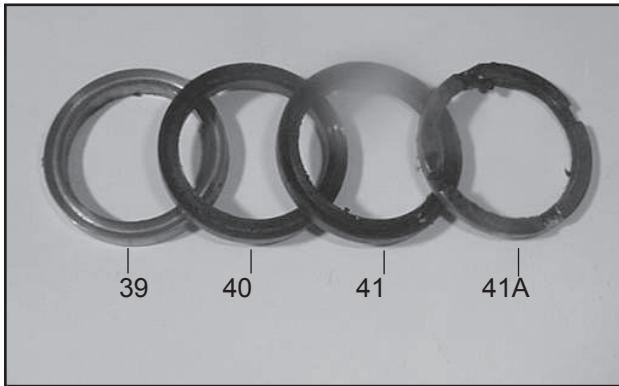


14. Torque the ceramic plunger bolt assembly to 300 inch-pounds (34 Nm). If originally removed, reinstall the stud bolts (#49).

## REPAIR INSTRUCTIONS - MP4120-SWS/MP4124-SWS



15. Replace the rear v-sleeve assembly (#35A-35D) and replace the snap ring (#36).



16. Reinstall the pressure ring (#39), v-sleeve (#40), support ring (#41), and intermediate ring (#41A) into each plunger bore. Re-install the spacer ring (#52A).

17. Reassemble the inlet valve assembly in the reverse order of step #6. Make certain all the components are press fit together and that the spring retainer (#54) is slightly counter sunk in the valve housing (#52). Grease the o-ring (#53) and replace it on to the valve housing. Reinstall the entire inlet valve assembly into the manifold (#43). Replace the tension plugs (#42A) and tighten.



18. Reassemble the discharge valve assembly by placing the valve plate (#45), spring (#46), and spring retainer (#47) on top of the valve seat (#44). Press fit together. Place the entire discharge assembly into discharge port making certain the assembly is properly seated. Replace discharge plug (#48) and tighten securely.
19. Again lubricate the plungers (29B) and slide the manifold (#43) gently and evenly over the plungers. Press the manifold firmly into place against the crankcase (#1). Replace the spring washer (#50A) and tighten the manifold stud nuts (#50) to 59 ft.-lbs. (80 Nm).

# REPAIR INSTRUCTIONS - MP4120-SWS/MP4124-SWS

## Gear End Disassembly

20. Remove the manifold and plunger assemblies as described earlier. Make sure the oil is drained from the pump before removing the crankcase cover (#4). Remove all screws (#10). Inspect the crankcase cover o-ring (#5) for damage and replace it as necessary.
21. Remove the connecting rod screws and washers with a 6mm allen wrench. Remove the back halves of each connecting rod (#24) . Push the connecting rods down as far as possible into the crankcase (#1) housing. Note that the connecting rod halves are numbered (or colored) and that the numbers (or colors) must be matched for reassembly.
22. Remove the crankshaft bearing cover screws (#17) with a 13mm wrench. Remove the key (#23) from the crankshaft (#22).
23. Remove the bearing cover (#14) and any shims (#20A) if any. **Remember to replace shims on the same side of the crankcase (#1) during the reassembly.**
24. Steady the pump rear assembly and, using a rubber mallet, tap the crankshaft (#22) from one side. The far side bearing race will be removed and the near side race will remain in the crankcase. The roller bearings (#20) will remain on the crankshaft. When both ends are free, the crankshaft can be removed by hand.
25. To remove the remaining bearing race, place a dowel against the inside edge of the race and tap it out with a rubber mallet. This is done only if the race wear surface has been damaged.
26. Inspect the bearing race removed with the crankshaft (#22) and replace if wear surface is damaged.
27. **Note: The following procedure is only necessary if the inspection shows evidence of heavy wear.** Inspect the crankshaft (#22) and bearings (#20) for wear. To remove the roller bearings from the crankshaft, use a three inch push puller with a pulley attachment. To remount the bearings, tap the bearings down the well-lubricated crankshaft with the Giant Bearing Tool. Be sure that the bearing is firmly seated.
28. Remove the connecting rod (#24) with the attached crosshead/plunger assembly (#25) from the crankcase (#1) by pulling it straight out. The oil seals (#31) may now be removed by tapping them out through the front of the crankcase. Be careful not to damage the snap ring.
29. Inspect the surfaces of the crosshead/plunger assembly (#25) and connecting rods (#24) for heavy scoring or galling due to poor lubrication. Check for play at the joint between connecting rod crosshead/plunger assembly.
30. To remove the crosshead pin (#28) from the crosshead/plunger assembly (#25), the assembly should be positioned in such a manner to prevent damage to the crosshead when driving the pin out. The crosshead pin can be driven out by tapping on the tapered side of the pin.

## Reassembly Sequence

- Note:** Always take time to lubricate all metal and nonmetal parts with a light film of oil before reassembly. This step will help ensure a proper fit, at the same time it will protect the pump non-metal parts (elastomers) from cutting and scoring.
31. Take the crosshead/plunger rod assembly and insert the connecting rod (#24) into the crosshead/plunger assembly (#25). Drive the tapered end of the crosshead pin (#28) into the beveled side of the crosshead and through the connecting rod completing the assembly.
- Note:** The crosshead pin should not extend beyond either side of the crosshead in order to prevent damage to the crosshead bore of the crankcase.
32. Inspect the crankcase crosshead guides for any possible damage.
  33. Replace the connecting rod (#24), crosshead/plunger rod assembly (#25) into the crankcase (#1).
  34. If removed previously, replace the far side bearing race into the crankcase. Tap with a rubber mallet until the edges are flush with the crankcase surface.
  35. Remove the old crankshaft seal (#15) from the bearing cover (#14). Lubricate the edges of the new seal and install using the standard Giant Bearing Tool. Remove the bearing tool and tap around the perimeter of the seal with a rubber mallet to firmly seat the seal. Position the far bearing cover on the crankcase (#1) and insert the cover bolts (#17). Tighten the cover evenly to the crankcase, setting the bearing into position. Torque the cover bolts to 221 in.-lbs. (25 Nm).

## REPAIR INSTRUCTIONS - MP-4120-SWS/MP4124-SWS

### Reassembly Sequence

36. Insert the crankshaft (#22) with the mounted bearings (#20) through the near side of the crankcase (#1). Make certain that the numbers (or colors) on the crankshaft correspond to the numbers (or colors) on the connecting rods (#24). Reinstall the near side bearing race by inserting it into the crankcase. Supporting the crankshaft with one hand, tap the race with a rubber mallet until the edge is flush with the crankcase.
37. Replace any shims (#20A, 20B) and position the bearing cover (#14) as before. Tighten the bearing cover bolts (#17) evenly to position the bearing race. Torque the bolts to 125 inch-pounds. Once the crankshaft reassembly is complete, oil the crankshaft races freely before replacing the connecting rod (#24) end caps.
38. Reassemble the connecting rods (#24), matching the numbered (or colored) halves. Torque the connecting rod bolts (#24A) to 250 in-lbs. (28 Nm).
39. To replace the oil seal (#31) apply Loctite to the outside edges of the seal and install from the front of the crankcase (#1). The side of the seal with the spring must face the oil. Make sure that the face of the seal is flush with the crankcase.
40. Clean the back edge of the crankcase and replace the crankcase cover (#4). be careful not to pinch the crankcase cover o-ring (#5).
41. Fill the crankcase with 32 fluid ounces of Giant oil or the equivalent SAE 80W-90 Industrial Gear oil and check the oil level with the dip stick (#8). The proper level is center of the two lines. Reinstall the Giant pump into your system.

### MP4120-SWS/MP4124-SWS TORQUE SPECIFICATIONS

<u>Position</u>	<u>Item#</u>	<u>Description</u>		<u>Torque Amount</u>
1	06100	Crankcase	Loctite 270	N/A
10	01010	Screw, Crankcase Cover	N/A	221 in.-lbs. (25 Nm)
12	07109	Oil Drain Plug		30 ft.-lbs. (40 Nm)
17	07114	Hex Screw, Bearing Cover		221 in.-lbs. (25 Nm)
24	07253	Hex Screw, Connecting Rod		106 in.-lbs. (12 Nm)
29C	13007	Bolt, Plunger	Loctite 243	247 in.-lbs. (28 Nm)
31	07260	Crankcase Oil Seal	Loctite 403	N/A
42A	06102/06103	Plug, Inlet		107 ft.-lbs. (145 Nm)
48	06108/07356	Plug, Discharge		107 ft.-lbs. (145 Nm)
50	07158	Nut, Manifold Stud		59 ft.-lbs. (80 Nm)

**NOTE: Contact Giant Industries for  
Service School Information.  
Phone: (419)-531-4600**