

GROUP 4 AUXILIARY PUMP

1. REMOVAL AND INSTALL

1) REMOVAL

▲ If engine is running or full up pressure into hydraulic system, absolutely does not repair or tighten hose, fitting. As hydraulic line explode, dangerous accident may occur.

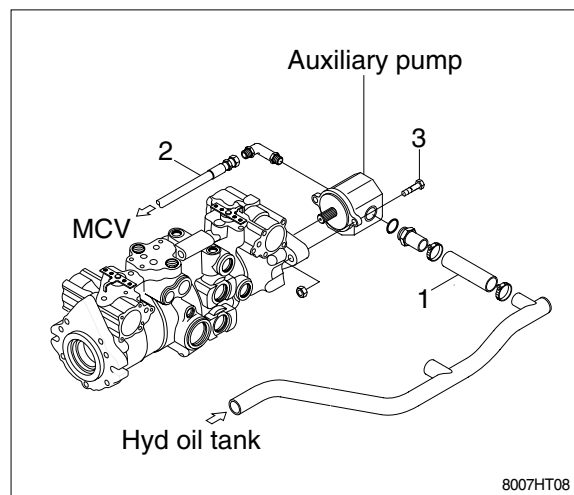
- (1) Lowered the bucket on the ground.
- (2) Shut off engine and raise the seat bar.
- (3) Raise canopy and remove the front cover.
※ **For Raising and lowering of the canopy, refer to page 4-15 of the operator's manual.**
- (4) Disassemble inlet hose(1) of auxiliary pump and oil tank.
- (5) Disassemble outlet hose(2) of auxiliary pump.
- (6) Loose two bolts(3) joined main pump and gear pump.
- (7) Disassemble gear pump from main pump.

2) INSTALL

- (1) Join gear pump to main pump, tighten with bolts(3).
 - Tightening torque : 3.7~4.2kgf · m
- (2) Assemble hose inlet hose(1) and outlet hose(2).



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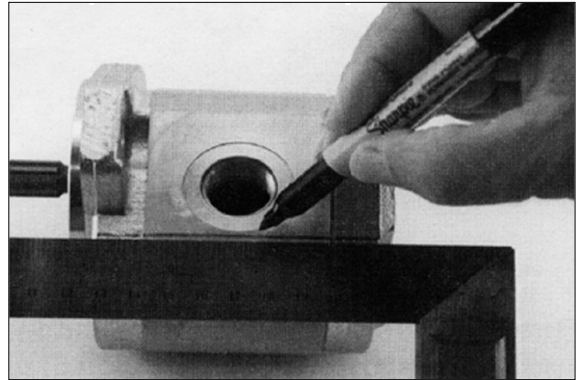
2. DISASSEMBLY AND ASSEMBLY

※ Tools required

- Metric socket set
- Internal snap ring pliers
- Shaft seal sleeve
- Torque wrench

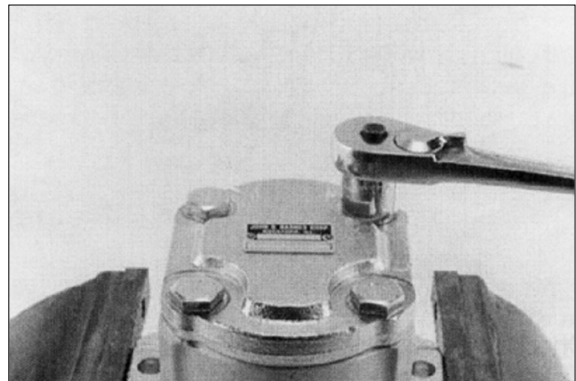
1) DISASSEMBLY

- (1) It is very important to work in a clean work area when repairing hydraulic products. Plug ports and wash exterior of pump with a proper cleaning solvent before continuing.
- (2) Remove port plugs and drain oil from pump.
- (3) Use a permanent marker pen to mark a line across the mounting flange, gear housing and end cover. This will assure proper reassembly and rotation of pump.



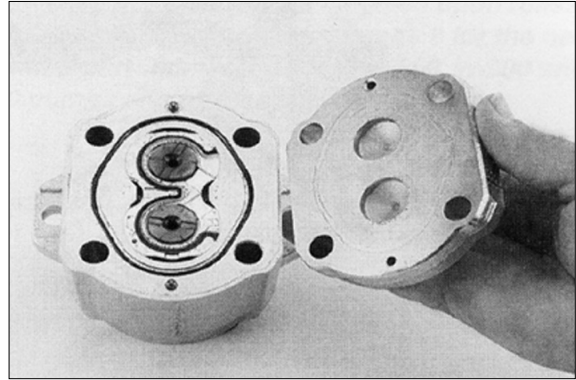
PUMP 01

- (4) Clamp mounting flange in a protected jaw vise with pump shaft facing down.
- (5) Loosen the four metric hexagon head bolts.
- (6) Remove pump from vise and place on clean work bench, remove the four hexagon head bolts and spacers if applicable.



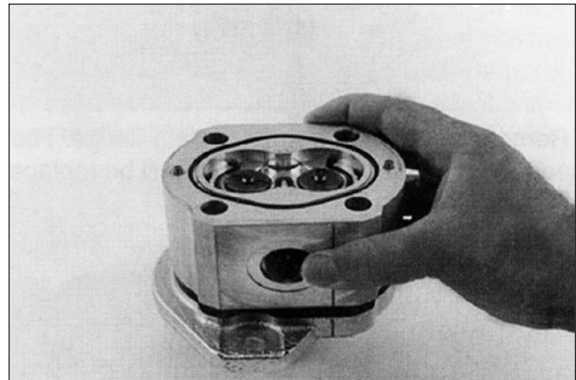
PUMP 02

(7) Lift and remove end cover.



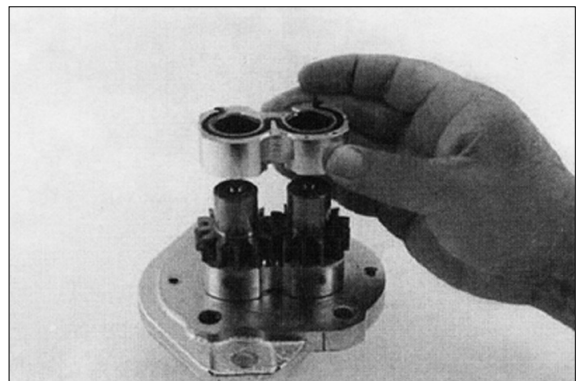
PUMP 03

(8) Carefully remove gear housing and place on work bench. Make sure the rear bearing block remains on the drive and idler shafts.



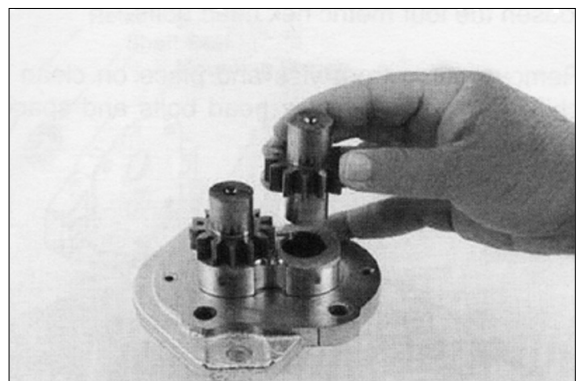
PUMP 04

(9) Remove rear bearing block from drive and idler shafts.



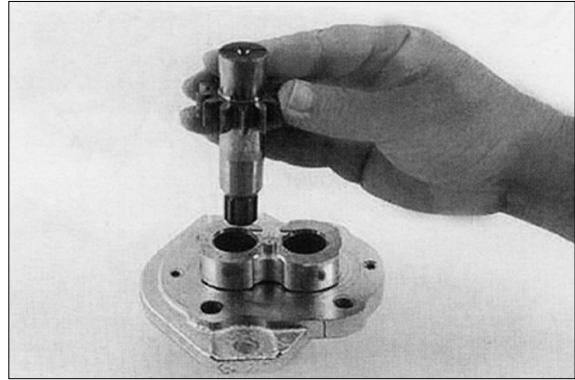
PUMP 05

(10) Remove idler shaft from bearing block.



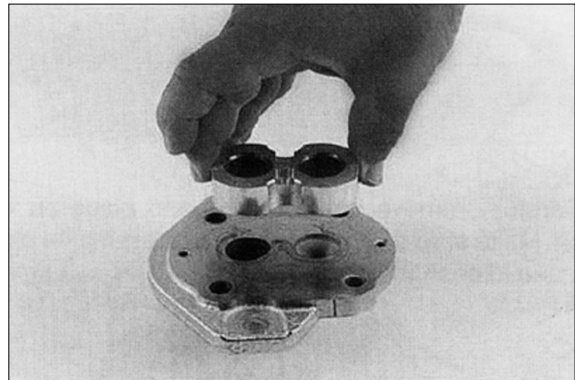
PUMP 06

- (11) Remove drive shaft from mounting flange.
There is no need to protect the shaft seal
as it will be replaced as a new item.



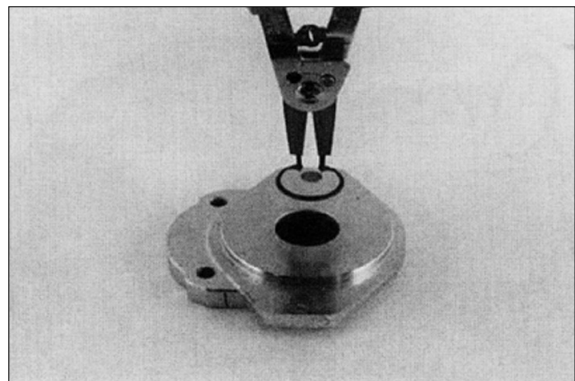
PUMP 07

- (12) Remove the front bearing block.



PUMP 08

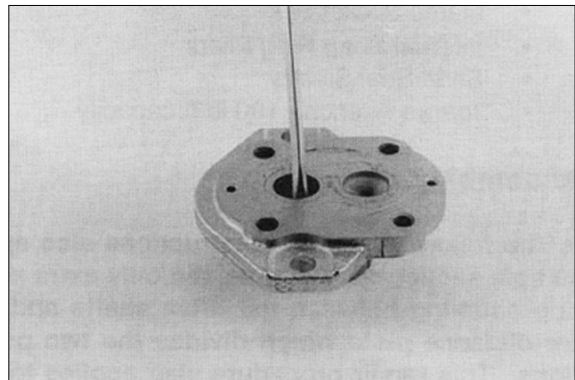
- (13) Turn mounting flange over, with shaft seal up, and remove the retaining ring with proper snap ring pliers.



PUMP 09

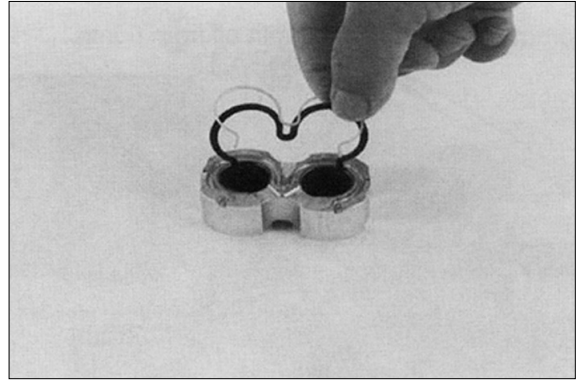
- (14) Remove the oil seal from mounting flange,
be careful not to mar or scratch the seal
bore.

- (15) Remove the dowel pins from the gear
housing. Do not lose pins.



PUMP 10

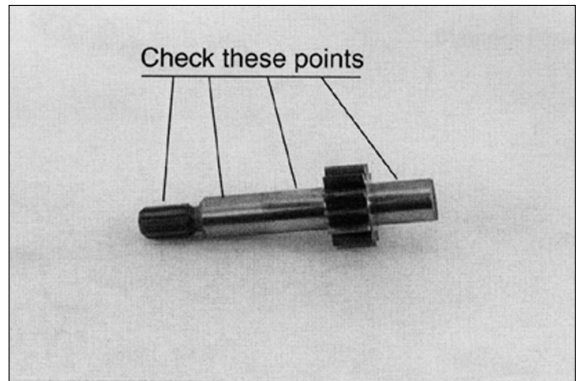
- (16) Remove seals from both bearing blocks and discard.



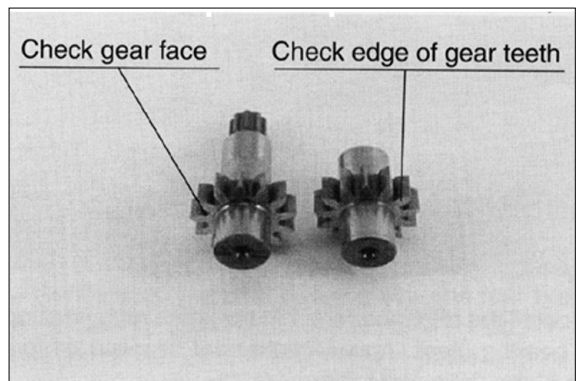
PUMP 11

2) INSPECT PARTS FOR WEAR

- (1) Clean and dry all parts thoroughly prior to inspection. It is not necessary to inspect the seals as they will be replaced as new items.
- (2) Check drive shaft spline for twisted or broken teeth, check keyed drive shaft for broken or chipped keyway. No marks or grooves on shaft in seal area, some discoloration of shaft is allowable.
- (3) Inspect both the drive gear shaft and idler gear shafts at the bearing points and seal area for rough surfaces and excessive wear.
- (4) Inspect gear face for scoring or excessive wear. If the face edge of gear teeth are sharp, they will mill into the bearing blocks. If wear has occurred, the parts are unusable.



PUMP 12



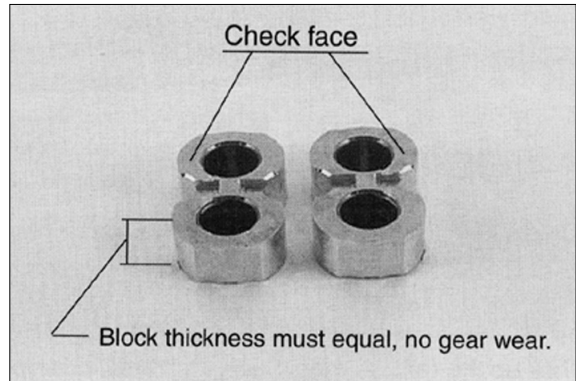
PUMP 13

- (5) Inspect bearing blocks for excessive wear or scoring on the surfaces which are in contact with the gears. Also inspect the bearings for excessive wear or scoring.
- (6) Inspect the area inside the gear housing. It is normal for the surface inside the gear housing to show a clean "wipe" on the inside surface on the intake side. There should not be excessive wear or deep scratches and gouges.

※ **General information**

It is important that the relationship of the mounting flange, bearing blocks and gear housing is correct. Failure to properly assemble this pump will result with little or no flow at rated pressure.

- ※ **This pump is not bi-rotational.**

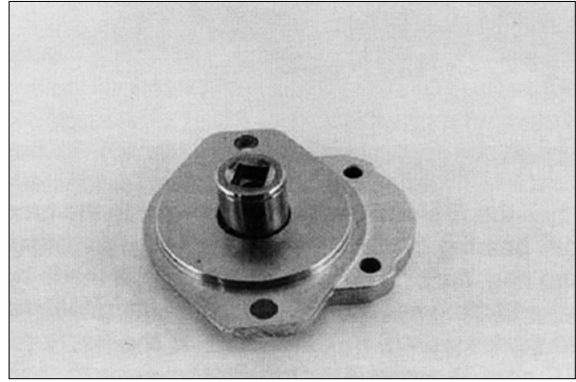


PUMP 14

3) ASSEMBLY

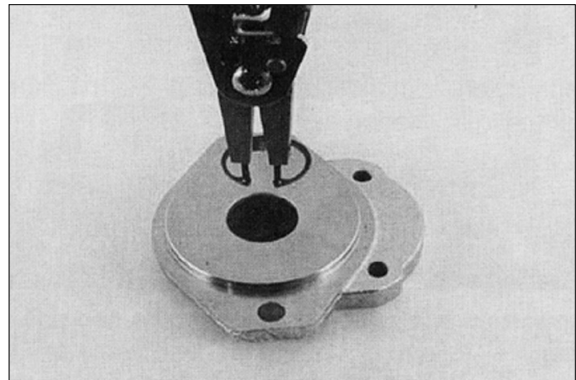
※ New seals should be installed upon reassembly of pump.

- (1) Install new shaft seal in mounting flange with part number side facing outboard. Press the seal into the seal bore until the seal reaches the bottom of the bore. Uniform pressure must be used to prevent misalignment or damage to the seal.



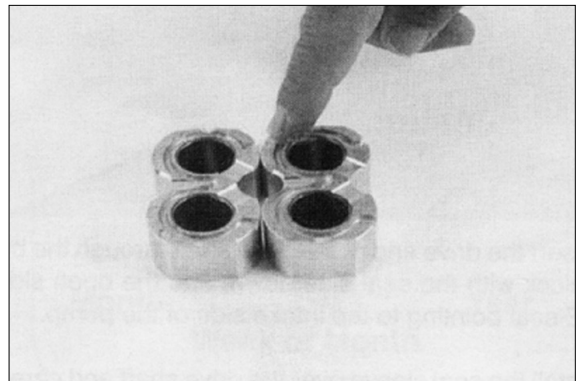
PUMP 15

- (2) Install retaining ring in groove in seal bore of mounting flange.



PUMP 16

- (3) Place front and back bearing blocks on a clean surface with the E-seal grooves facing up. Apply a light coating of petroleum jelly in the grooves. Also coat the E-seal and backup with the petroleum jelly, this will help keep the seals in place during assembly.

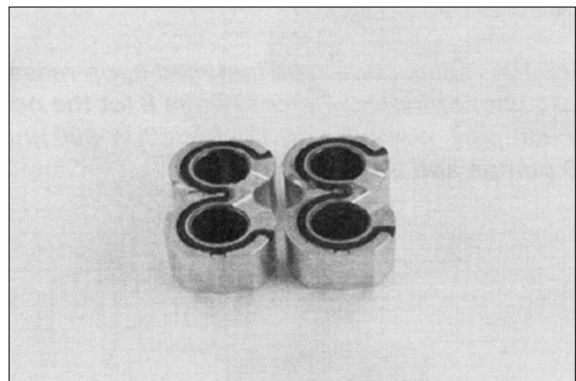


PUMP 17

- (4) Place the E-seals, flat side outward, into the grooves in both bearing blocks. Follow by carefully placing the backup ring, flat side outward, in the groove made by the E-seal and the groove in the bearing block.

- (5) Place mounting flange, with shaft seal side down, on a clean flat surface.

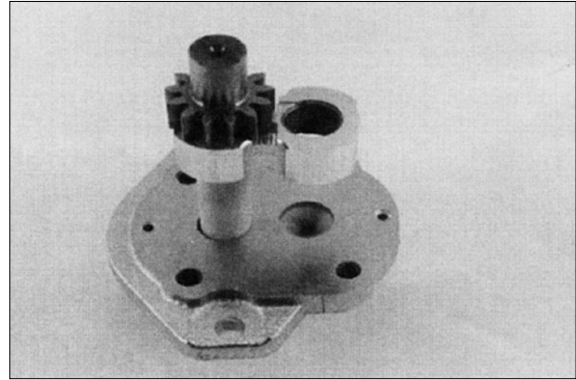
- (6) Apply a light coating of petroleum jelly to the exposed face of the front bearing block.



PUMP 18

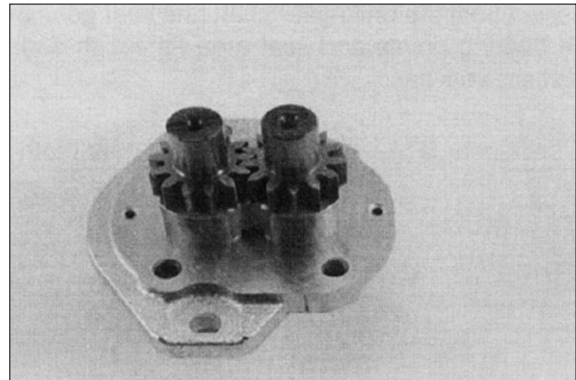
(7) Insert the drive end of the drive shaft through the bearing block with the seal side down, and the open side of the E-seal pointing to the intake side of the pump.

(8) Install the seal sleeve over the drive shaft and carefully slide the drive shaft through the shaft seal. Remove the seal sleeve from shaft.



PUMP 19

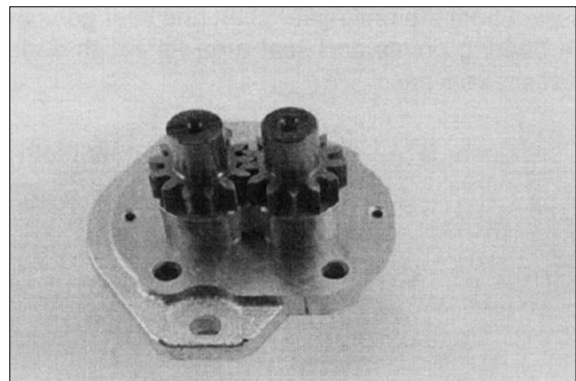
(9) Install the idler gear shaft in the remaining position in the bearing block. Apply a light coat of clean oil to the face of the drive and idler gears.



PUMP 20

(10) Pick up the rear bearing block, with seal side up and with open end of the E-seal facing the intake side of the pump, place over the drive and idler gear shafts.

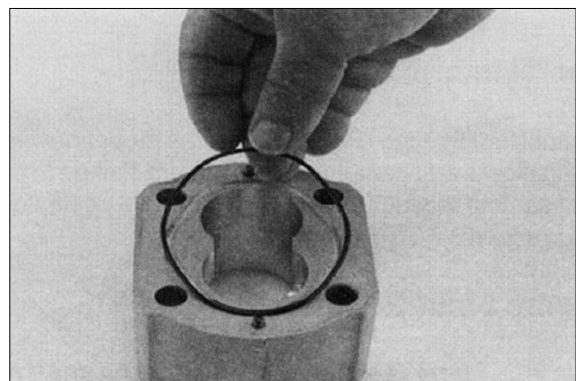
(11) Install two dowel pins in the holes in the mounting flange or two long dowel pins through gear housing if pump is a multiple section pump.



PUMP 21

(12) To install the O-rings in the gear housing, apply a light coating of petroleum jelly in the grooves on both sides of the gear housing.

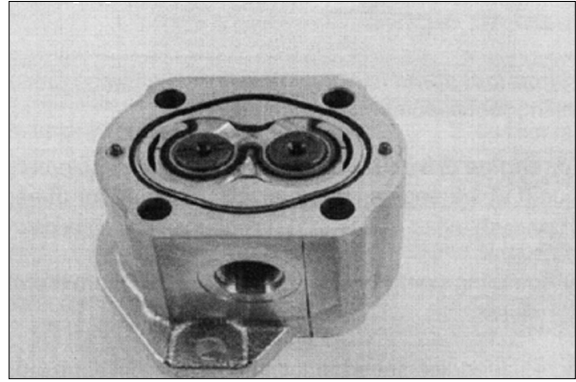
Also coat the new O-ring and install them in the grooves.



PUMP 22

- (13) Gently slide the gear housing over the rear bearing block assembly, slide housing down until the housing engages the dowel pins. Press firmly in place with hands, do not force or use any tool.

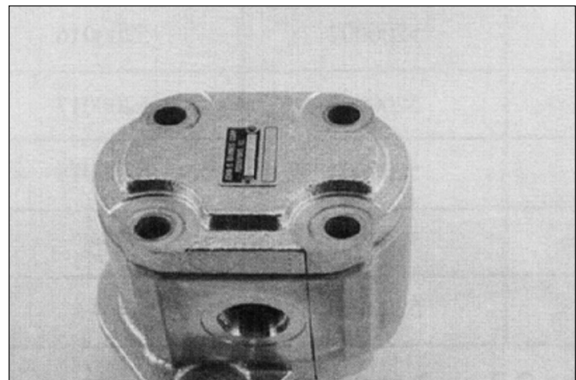
Check to make sure the intake port in the housing is on the same side as the open end of the E-seal and that the marked lines on the mounting flange and gear housing are in alignment.



PUMP 23

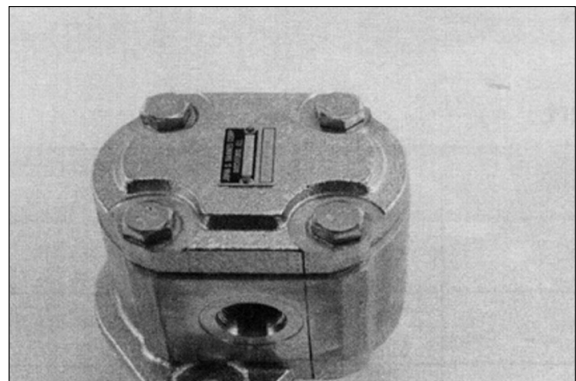
- (14) The surface of the rear bearing block should be slightly below the face of the gear housing. If the bearing block sits higher than the rear face of the gear housing then the E-seal or O-ring have shifted out of the groove. If this is the case, remove the gear housing and check for proper seal installation.

- (15) Install the two remaining dowel pins in the rear of the gear housing and place the end cover over the back of the pump.



PUMP 24

- (16) Install the four spacers and hexagon head bolts through the bolt holes in the end cover, hand tighten.



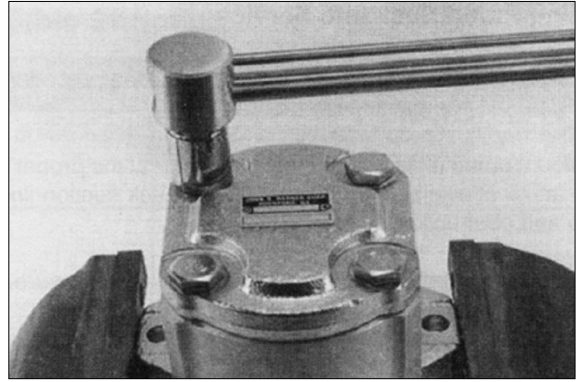
PUMP 25

(17) Place mounting flange of the pump back in the protected jawed vise and alternately torque the bolts.

- Tighten torque : 3.0~4.0kgf · m
(22~29lbf · ft)

(18) Remove pump from vise.

(19) Place a small amount of clean oil in the inlet of the pump and rotate the drive shaft away from the inlet one revolution. If the drive shaft binds, disassemble the pump and check for assembly problems, then reassemble the pump.



PUMP 26