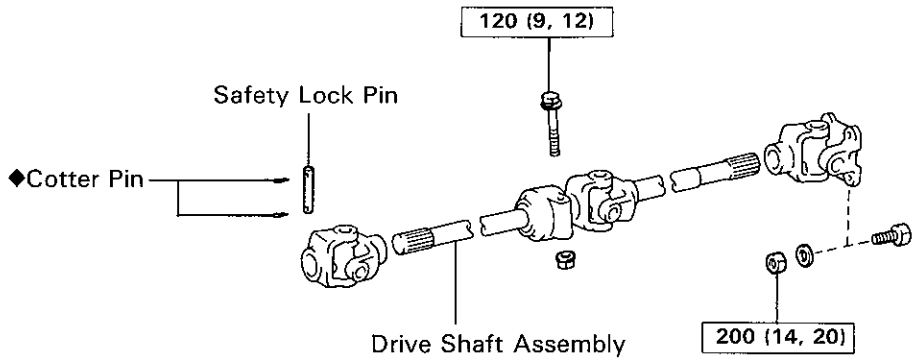
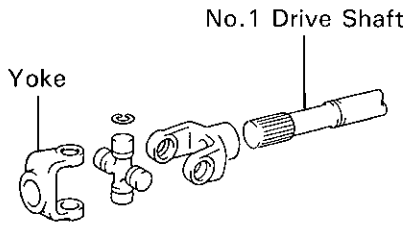
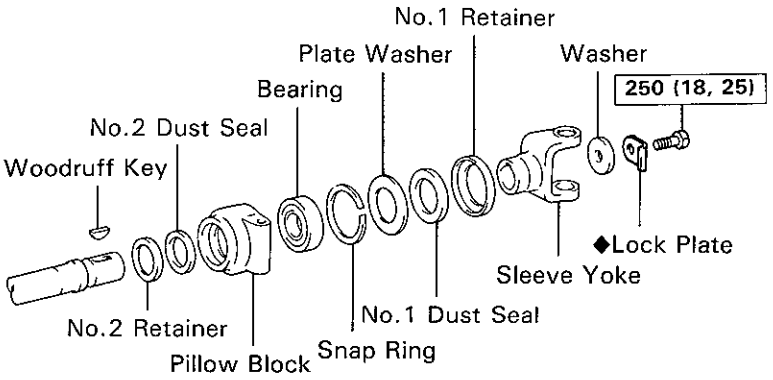
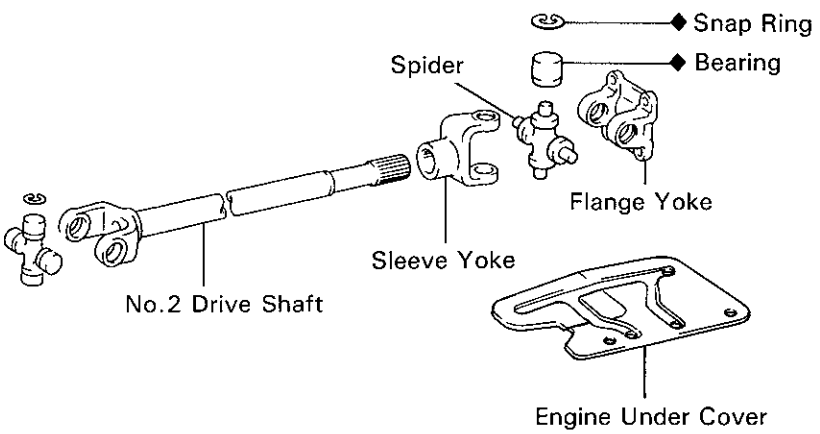
Drive Shaft

COMPONENTS





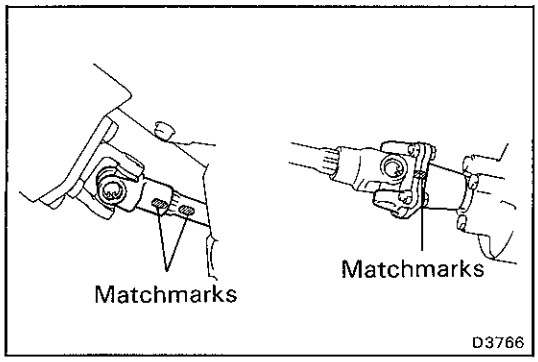




kg-cm (ft-lb, N·m) : Specified torque

◆ Non-reusable part

WI0165



REMOVAL OF DRIVE SHAFT

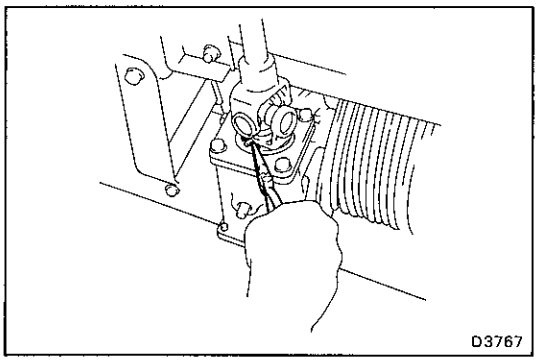
(See page WI-10)

1. **REMOVE ENGINE UNDER COVER**

2. **REMOVE TRANSMISSION UNDER COVER**

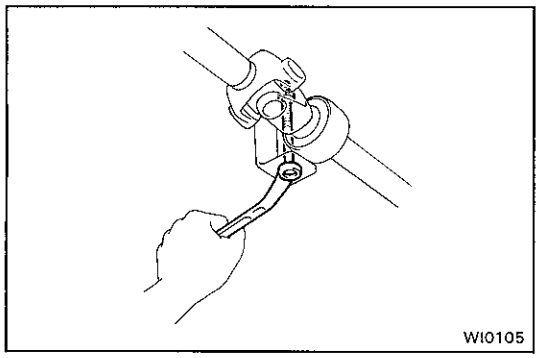
3. **PLACE MATCHMARKS**

   Place the matchmarks on the drive shaft and universal joint or P.T.O. companion flange.



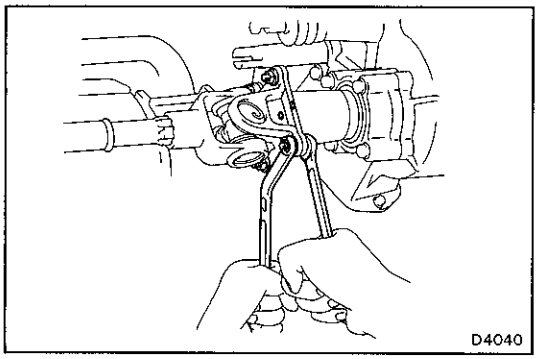
4. **REMOVE SAFETY LOCK PIN**

   Remove the two cotter pins and safety lock pin.



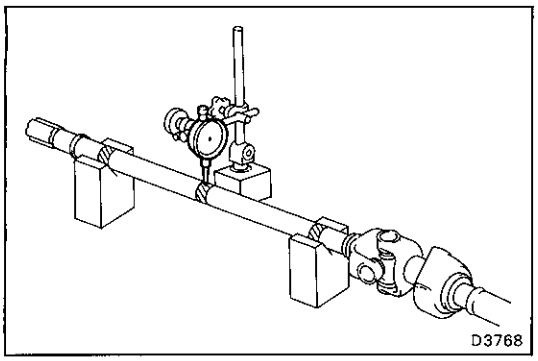
5. **DISCONNECT DRIVE SHAFT**

   (a) Remove the pillow block set bolt and nut.



   (b) Remove the P.T.O. companion flange set bolts and nuts, then disconnect the drive shaft assembly.

   HINT: Do not forcefully remove the universal joint.

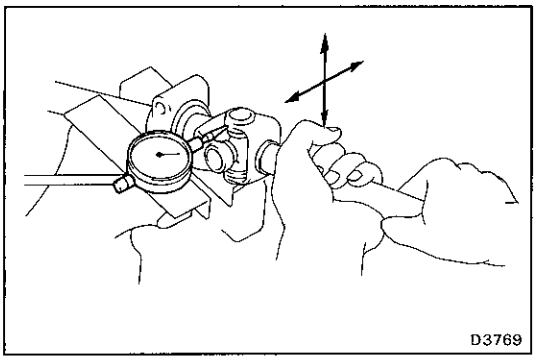


INSPECTION OF DRIVE SHAFT COMPONENTS

1. **INSPECT DRIVE SHAFT FOR DAMAGE OR RUNOUT**

   Maximum runout: 0.7 mm (0.028 in.)

   If the shaft runout is greater than the maximum, replace the shaft.



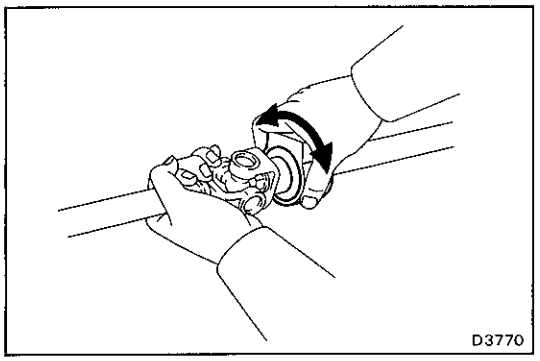
2. **INSPECT SPIDER BEARINGS**

   (a) Inspect the spider bearings for wear or damage.

   (b) Check the spider bearing axial play.

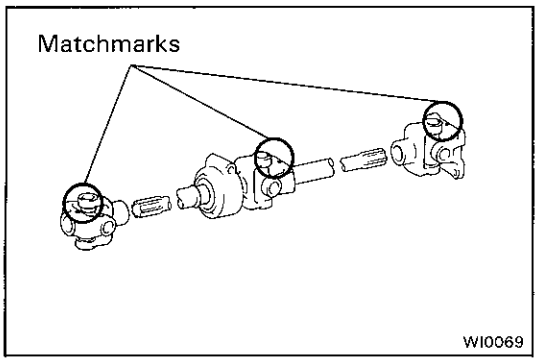
   Bearing axial play: 0.15 mm (0.0059 in.)

   If necessary, replace the spider bearing.



3. **INSPECT PILLOW BLOCK BEARING**

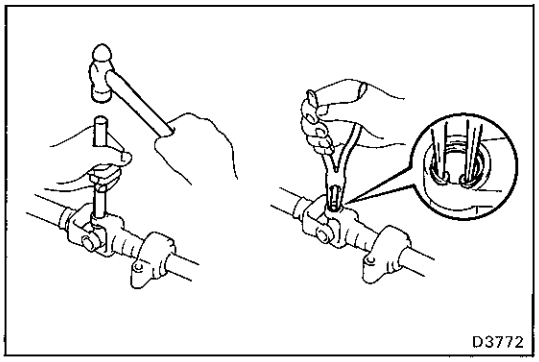
   Check that the bearing turns freely.
   If the bearing is damaged, worn or does not turn freely, replace it.



REPLACEMENT OF SPIDER BEARINGS

(See page WI-10)

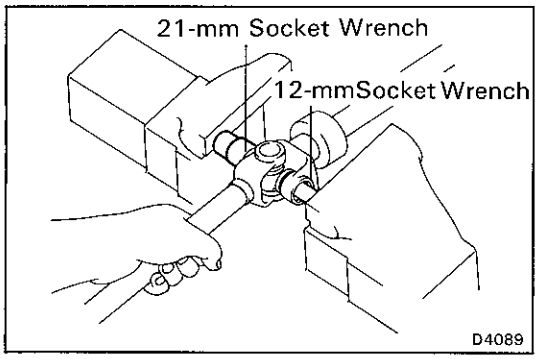
1. PLACE MATCHMARKS ON DRIVE SHAFT AND YOKES



2. REMOVE SNAP RINGS

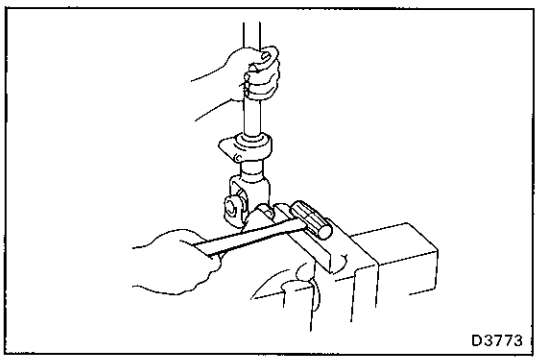
(a) Slightly tap in the bearing outer races.

(b) Using snap ring pliers, remove the four snap rings from the groove.

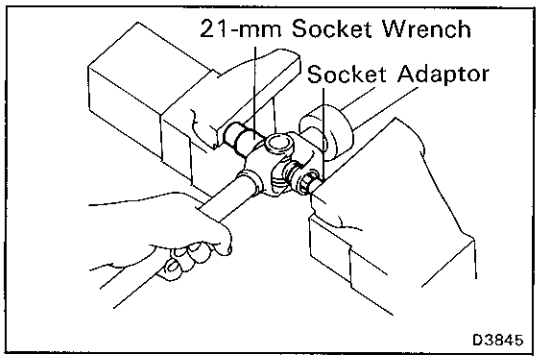


3. REMOVE SPIDER BEARINGS

(a) Using 12 mm and 21 mm socket wrenches and an vise, press out the bearing.

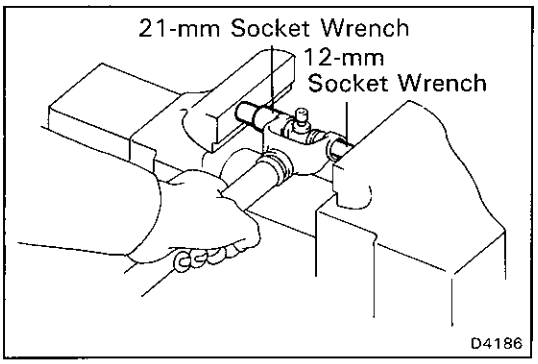


(b) Clamp the outer bearing race in a vise and tap off the shaft with a plastic hammer or copper hammer.

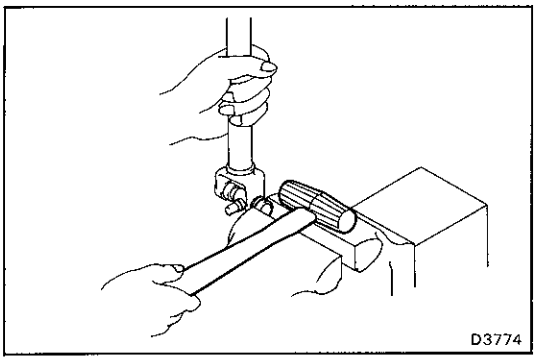


(c) Using a socket adaptor, 21 mm socket wrench and vise, press out the bearing on the opposite side.

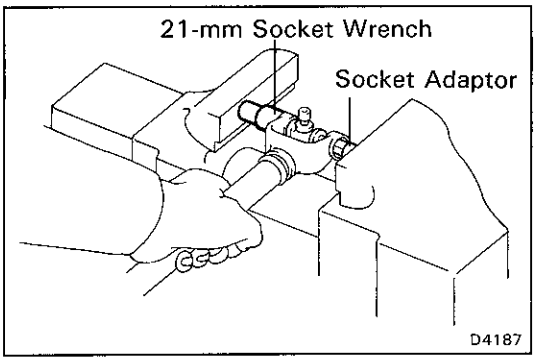
(d) Remove the bearing on the opposite in the same procedure as shown in step (b).



(e) Using 12 mm and 21 mm socket wrenches and a vise, press out the bearing.

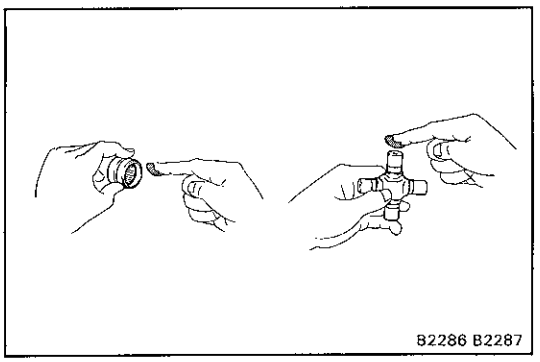


(f) Clamp the outer bearing race in an vise, and tap off the yoke with a plastic hammer or copper hammer.



(g) Using a socket adaptor, 21 mm socket wrench and vise, press out the bearing on the opposite side.

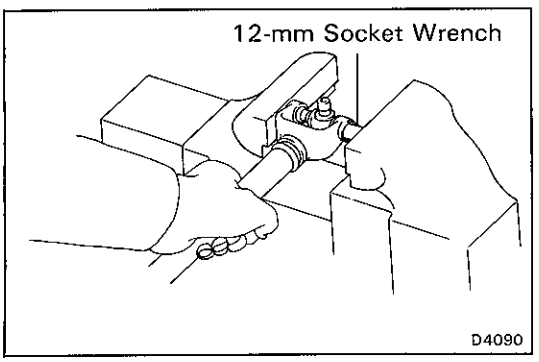
(h) Remove the bearing on the opposite side in the same procedure as shown in step (f).



4. INSTALL SPIDER BEARINGS

(a) Apply molybdenum disulphide lithium base grease to the spider and bearings.

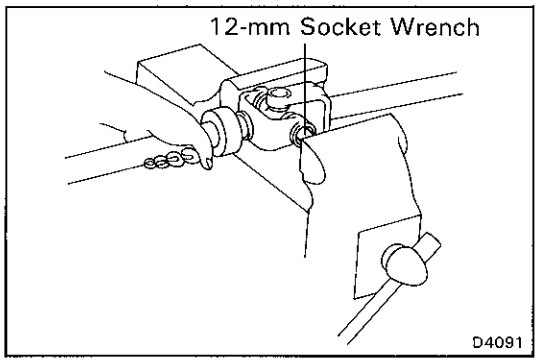
HINT: Be careful not to apply too much grease.



(b) Put the new spider into the yoke.

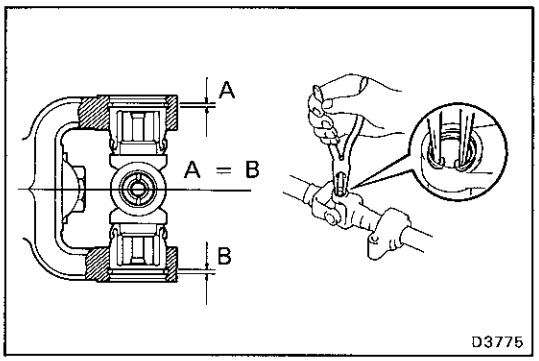
(c) Using a 12 mm socket wrench and vise, press the bearing onto the spider.

(d) Install the bearing on the opposite side using the procedure in (c).



(e) Align the matchmarks on the yoke and shaft.

(f) Install new spider bearings in the shaft side using the procedure in steps (c) and (d).



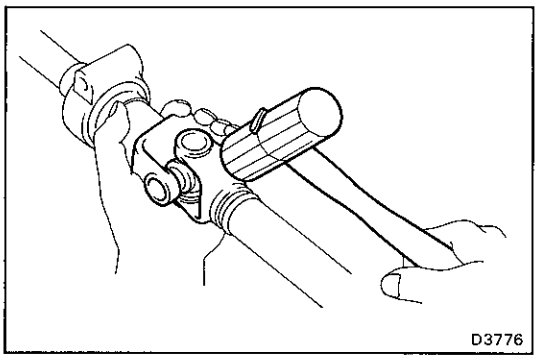
5. INSTALL SNAP RINGS

(a) Install two snap rings of a thickness which will allow 0 — 0.15 mm (0 — 0.0059 in.) of axial play.

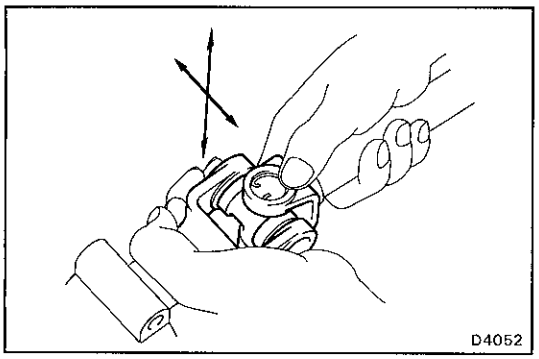
HINT: Do not reuse the snap rings.

Snap ring thicknesses

Thickness mm (in.)	Color
1.20 (0.0472)	None
1.25 (0.0492)	Brown
1.30 (0.0512)	Blue



(b) Using a plastic hammer or copper hammer, tap the yoke until there is no clearance between the bearing outer race and snap ring.

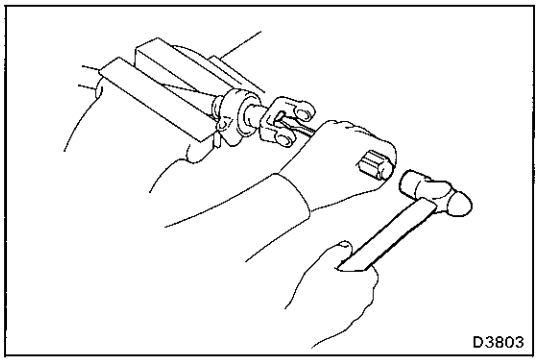


6. CHECK SPIDER BEARING

(a) Check that the spider bearing moves smoothly.

(b) Check the spider bearing axial play.

Bearing axial play: Less than 0.15 mm (0.0059 in.)



REPLACEMENT OF PILLOW BLOCK BEARING

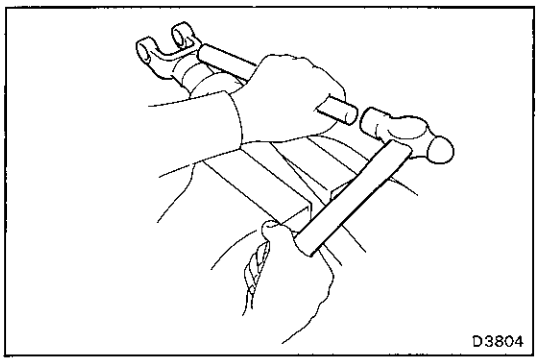
(See page WI-10)

1. **REMOVE UNIVERSAL JOINT**
(See page WI-13)

2. **REMOVE SLEEVE YOKE**

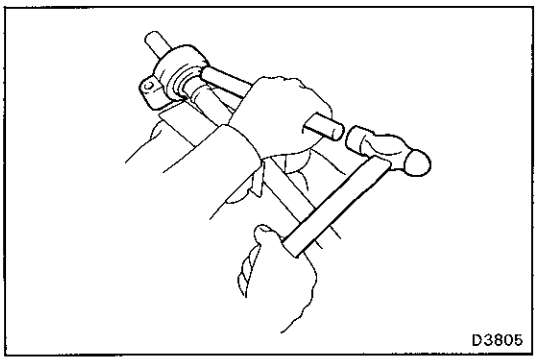
(a) Using a chisel and hammer, loosen the staked part of the lock plate.

(b) Remove the bolt, lock plate and plate washer.



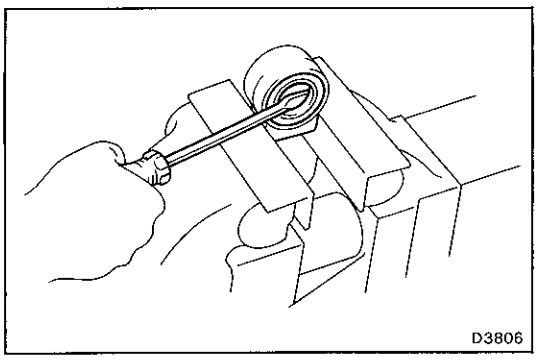
(c) Using a brass bar and hammer, remove the sleeve yoke.

(d) Remove the woodruff key.



3. **REMOVE PILLOW BLOCK**

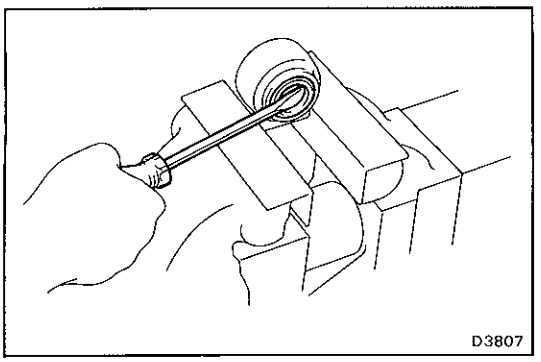
Using a brass bar and hammer, drive out the pillow block.



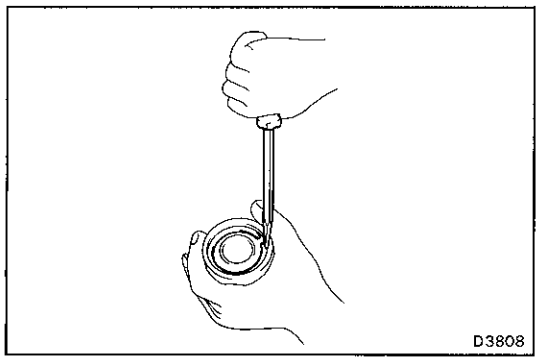
4. **REMOVE DUST SEALS, RETAINERS AND PLATE WASHER**

(a) Using a screwdriver, pry out the No.1 dust seal retainer and No.1 dust seal.

(b) Remove the plate washer.

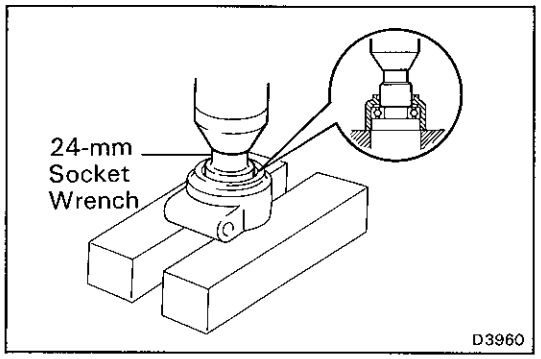


(c) Using a screwdriver, pry out the No.2 dust seal retainer and No.2 dust seal.

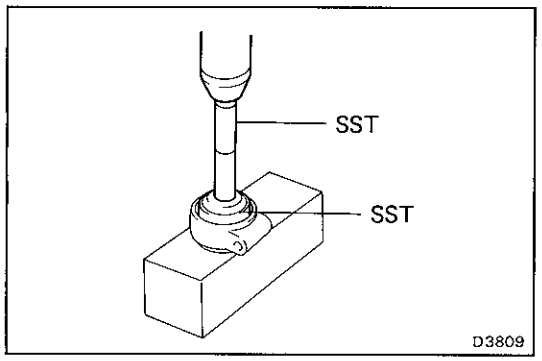


5. REMOVE BEARING

(a) Using a screwdriver, remove the snap ring.



(b) Using a press and 24 mm socket wrench, press bearing.

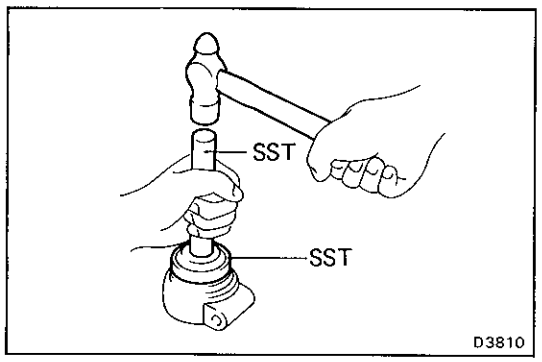


6. INSTALL NEW BEARING

(a) Using a press and SST, install a new bearing.

SST 09608-35013

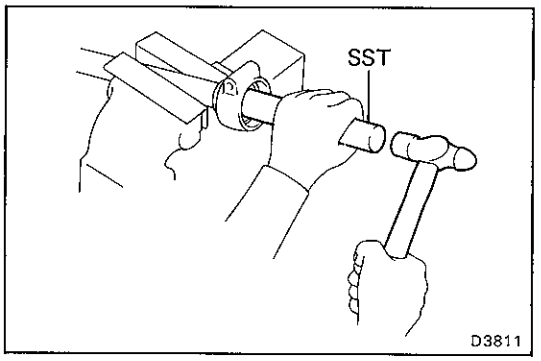
(b) Install the snap ring.



7. INSTALL NO.2 DUST SEAL AND NO.2 RETAINER

Using SST, install the No.2 dust seal and No.2 retainer.

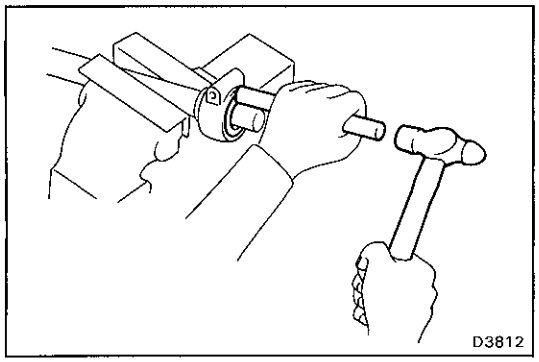
SST 09608-35013



8. INSTALL PILLOW BLOCK

Using SST, install the pillow block.

SST 09612-22011

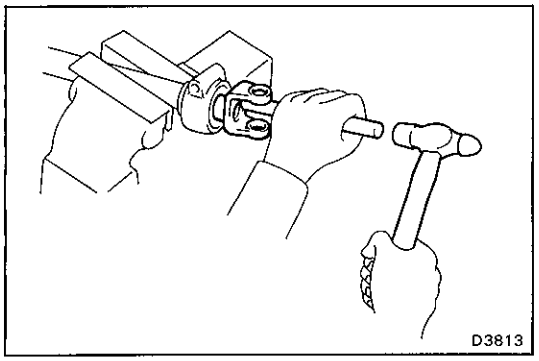


9. INSTALL PLATE WASHER, NO.1 DUST SEAL AND NO.1 RETAINER

(a) Install the plate washer.

(b) Using a brass bar and hammer, drive in the No.1 dust seal and No.1 retainer.

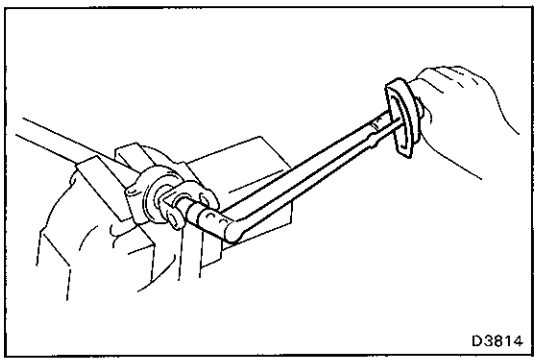
HINT: Be careful not to damage the retainer.



10. INSTALL SLEEVE YOKE

(a) Install the woodruff key.

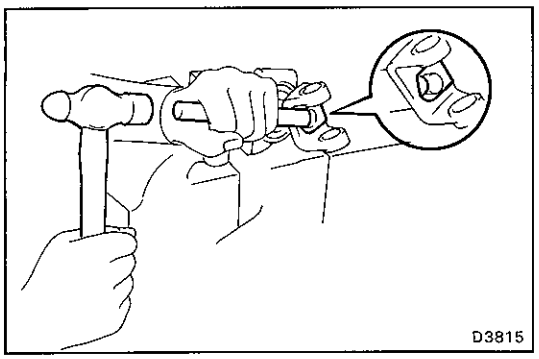
(b) Using a brass bar and hammer, drive in the sleeve yoke.



(c) Install the washer, lock plate.

(d) Install and torque the bolt.

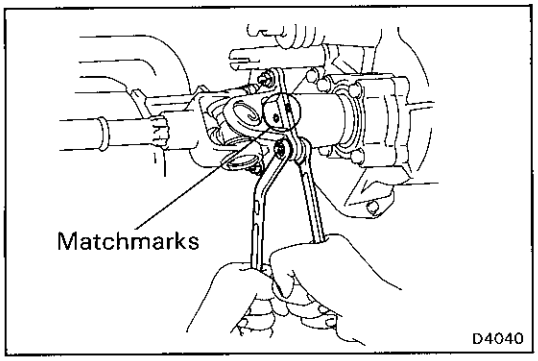
Torque: 250 kg-cm (18 ft-lb, 25 N·m)



(e) Using a brass bar and hammer, stake the lock plate.

HINT: Stake claw flush with the flat surface of the bolt.

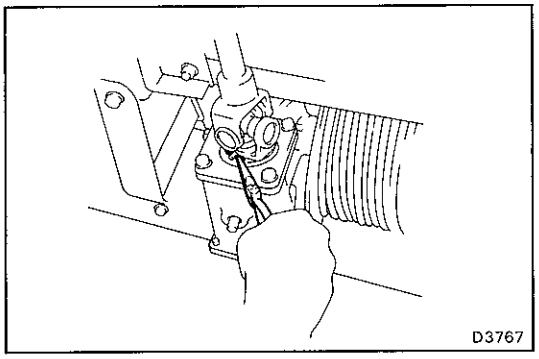
11. INSTALL UNIVERSAL JOINT
(See page WI-14)



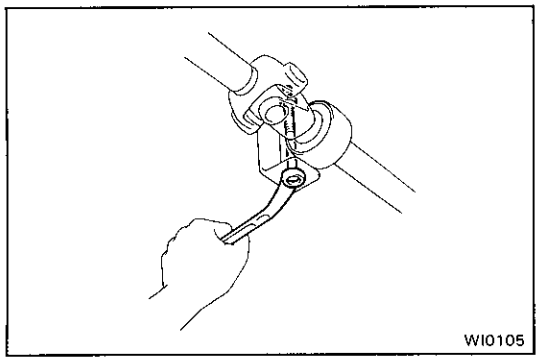
INSTALLATION OF DRIVE SHAFT

(See page WI-10)

1. **INSTALL DRIVE SHAFT**
   (a) Align the matchmarks on the drive shaft and universal joint or P.T.O companion flange.
   (b) Install and torque the bolts and nuts.
   Torque: 200 kg-cm (14 ft-lb, 20 N·m)



2. **INSTALL SAFETY LOCK PIN**
   (a) Align the safety lock pin hole of the universal joint and worm.
   (b) Install the safety lock pin and two cotter pins.



3. **INSTALL PILLOW BLOCK**
   (a) Install the pillow blocks.
   (b) Install and torque the bolts and nuts.
   Torque: 120 kg-cm (9 ft-lb, 12 N·m)

4. **INSTALL ENGINE UNDER COVER**

5. **INSTALL TRANSMISSION UNDER COVER**