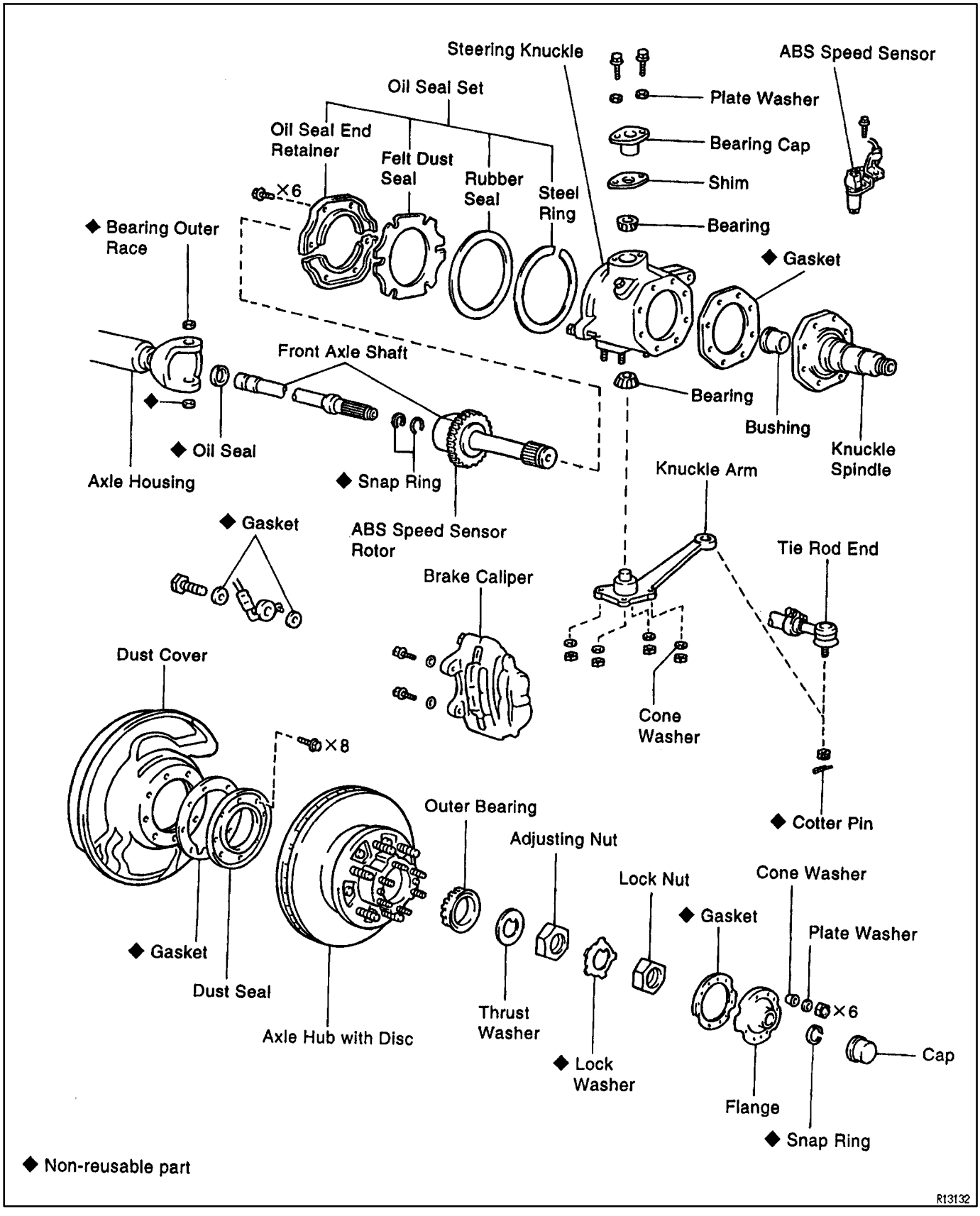
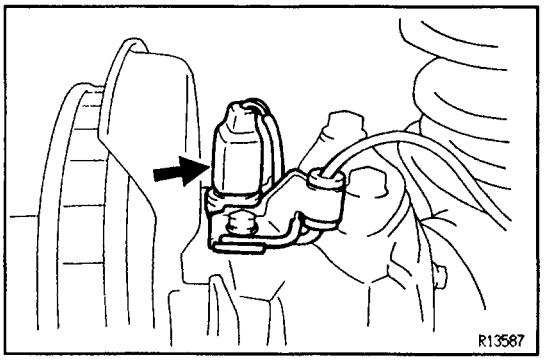
STEERING KNUCKLE AND AXLE SHAFT

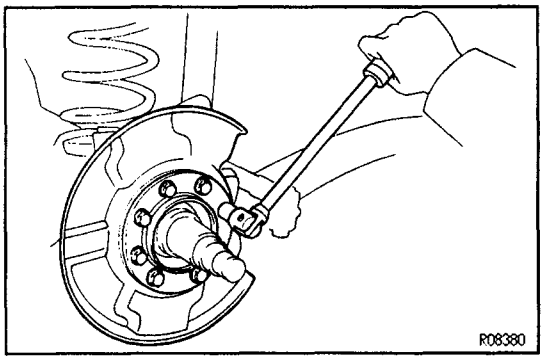
COMPONENTS



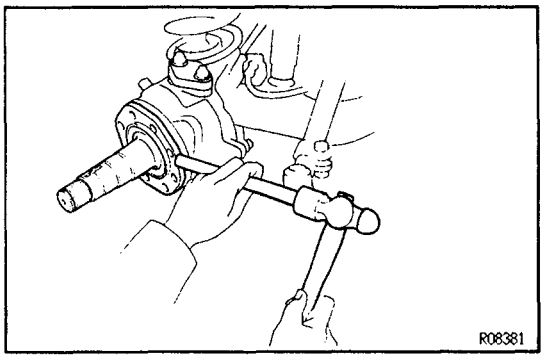


STEERING KNUCKLE AND AXLE SHAFT REMOVAL

1. **REMOVE FRONT AXLE HUB**
   (See page SA–8)
2. **REMOVE ABS SPEED SENSOR**
   Remove the bolt and disconnect the speed sensor from the steering knuckle.



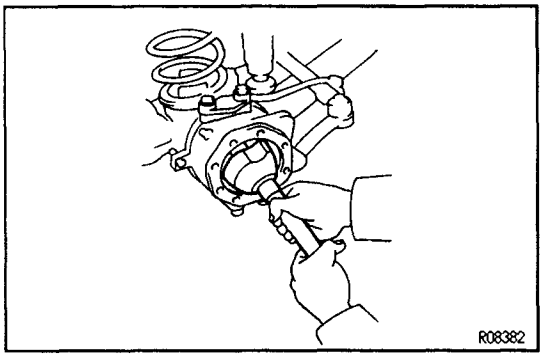
3. **REMOVE KNUCKLE SPINDLE MOUNTING BOLTS**
4. **REMOVE DUST SEAL AND DUST COVER**
   Remove the 8 bolts, dust seal, dust cover and gasket.



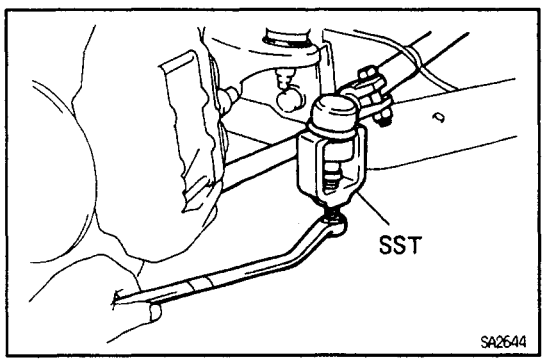
5. **REMOVE KNUCKLE SPINDLE**

(a) Using a brass bar and hammer, tap the knuckle spindle of the steering knuckle.

(b) Remove the knuckle spindle and gasket.



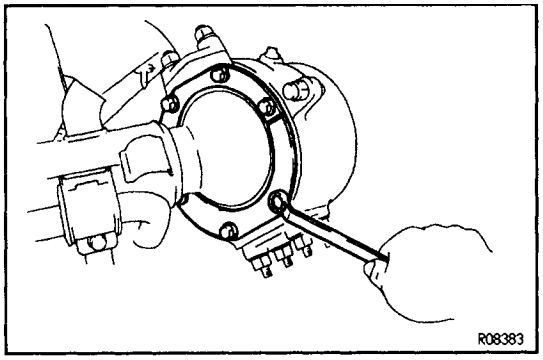
6. **REMOVE AXLE SHAFT**
   Position one flat part of the outer shaft upward and remove the axle shaft.



7. **DISCONNECT TIE ROD FROM KNUCKLE ARM**

(a) Remove the cotter pin and nut.

(b) Using SST, disconnect the tie rod from the knuckle arm.
SST 09611–22012

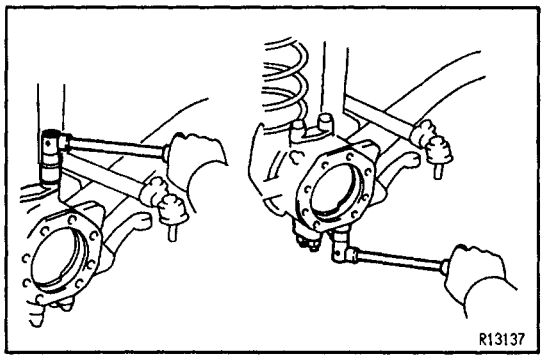


8. REMOVE OIL SEAL SET

(a) Remove the 6 bolts from the end retainer.

(b) Remove these parts:

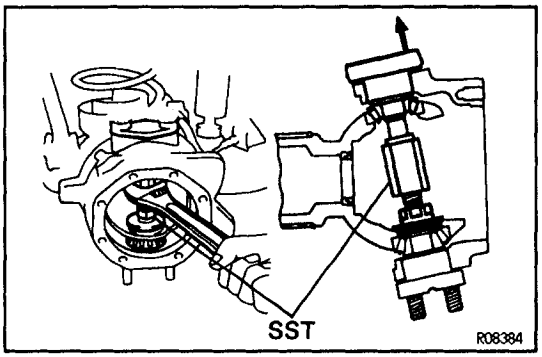
- Oil seal end retainer
- Felt dust seal
- Rubber seal
- Steel ring



9. REMOVE KNUCKLE ARM AND BEARING CAP

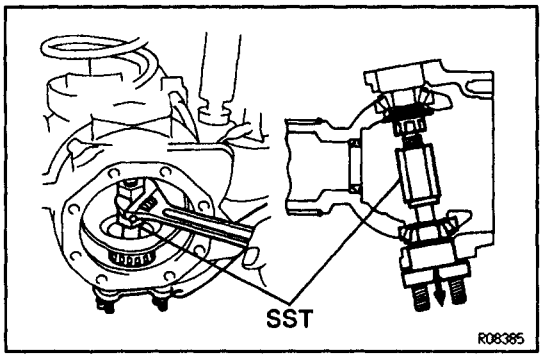
(a) Remove the 2 bolts and plate washers from the bearing cap.

(b) Remove the 4 nuts and cone washers from the knuckle arm.



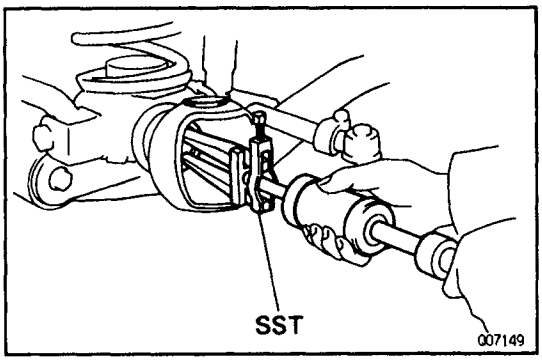
(c) Using SST, remove the bearing cap and shim from the steering knuckle.
SST 09606–60020
HINT:

- Use the SST without a collar.
- In some cases, to satisfy the standard value of preload, more than one shims are used.



(d) Using SST, remove the knuckle arm and shim from the steering knuckle.
SST 09606–60020
HINT:

- Use the SST without a collar.
- In some cases, to satisfy the standard value of preload, more than one shims are used.



10. REMOVE STEERING KNUCKLE AND BEARING

HINT: Mark the removed adjusting shim and bearings so as to enable reassembling them to their proper positions.

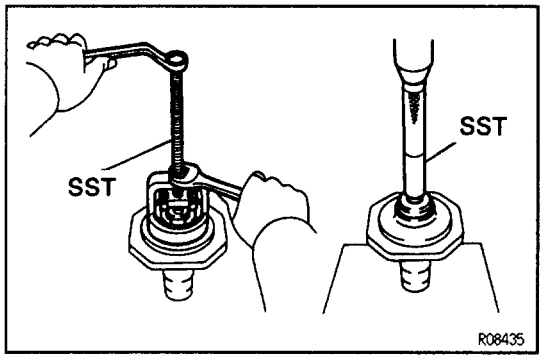
11. REMOVE OIL SEAL TO AXLE HOUSING

Using SST, remove the oil seal.
SST 09308–00010

STEERING KNUCKLE AND AXLE SHAFT INSPECTION AND REPLACEMENT

1. INSPECT KNUCKLE SPINDLE

Clean the knuckle spindle and inspect the bushing for wear or damage.



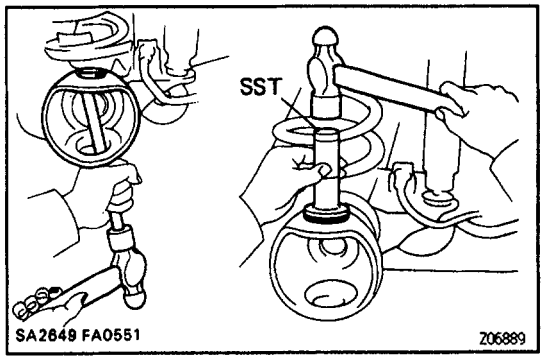
2. REPLACE BUSHING

(a) Using SST, remove the bushing.
SST 09612–65014 (09612–01010, 09612–01050)

(b) Using SST and a press, install a new bushing into the spindle.
SST 09618–60010

3. INSPECT BEARING

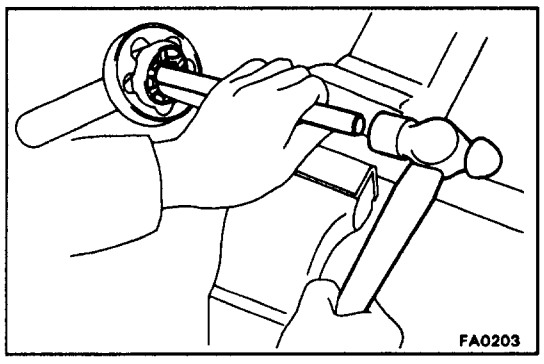
Clean the bearing and outer races and inspect them for wear or damage.



4. IF NECESSARY, REPLACE BEARING OUTER RACE

(a) Using a brass bar and hammer, remove the bearing outer race.

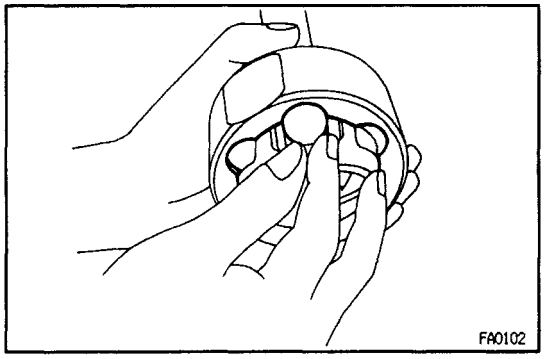
(b) Using SST, carefully install a new bearing outer race.
SST 09605–60010



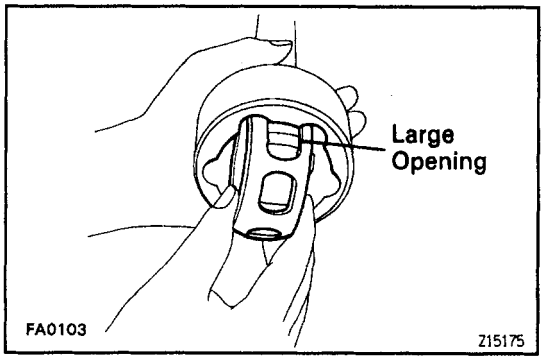
5. INSPECT BIRFIELD JOINT INNER PARTS

(a) Hold the inner shaft in a vise.

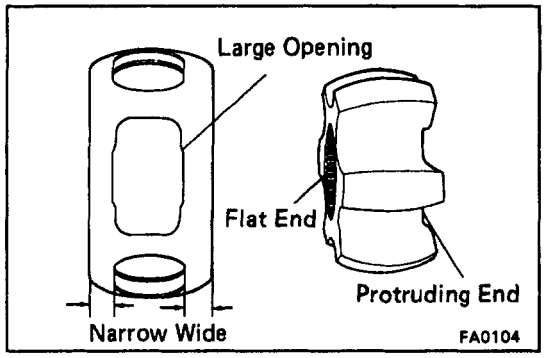
(b) Place a brass bar against the joint inner race and remove the outer shaft.



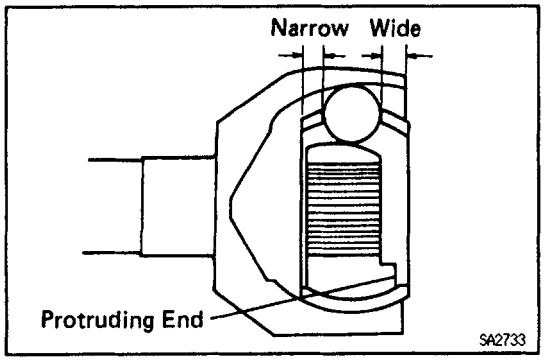
(c) Tilt the inner race and cage and take out the bearing balls one by one.



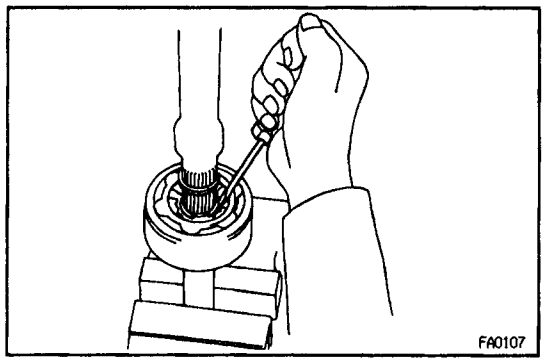
(d) Fit the 2 large openings in the cage against the protruding parts of the outer shaft and remove the cage and inner race.
(e) Remove the inner race from the cage though the large opening.
(f) Clean and inspect the joint parts for wear or damage.



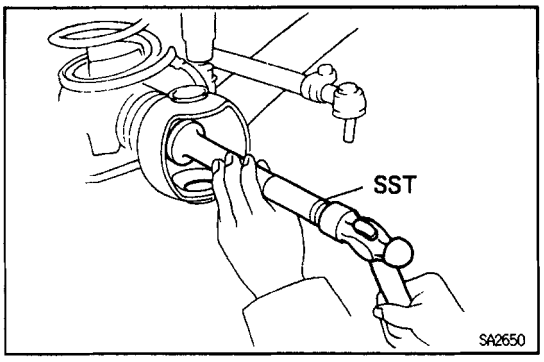
(g) Coat the joint inner parts and outer shaft inside with molybdenum disulphide lithium base grease, NLGI No.2.
(h) Install the inner race in the cage through the large opening.
(i) Position the protruding end of the inner race toward the wide side of the cage.
(j) Assemble the cage and inner race to the outer shaft by fitting the 2 large openings in the cage against the protruding parts of the outer shaft.



(k) Make sure to position the wide side of the cage and the inner race protruding end outward.
(l) Fit in the inner race and cage and install the 6 bearing balls in the outer shaft (See step (c)).
(m) Pack molybdenum disulphide lithium base grease, NLGI No.2 in the outer shaft.
(n) Install a new snap ring on the inner shaft.



(o) Hold the outer shaft in a vise and while compressing the snap ring, install the inner shaft to the outer shaft.
(p) Verify that the inner shaft cannot be pulled out.



STEERING KNUCKLE AND AXLE SHAFT INSTALLATION

1. INSTALL OIL SEAL TO AXLE HOUSING

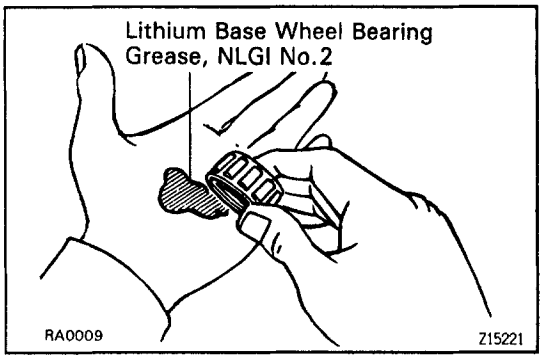
Using SST and a hammer, install a new oil seal into the axle housing.

SST 09618–60010

2. INSTALL OIL SEAL SET

Install these parts:

- Felt dust seal
- Rubber seal and steel ring

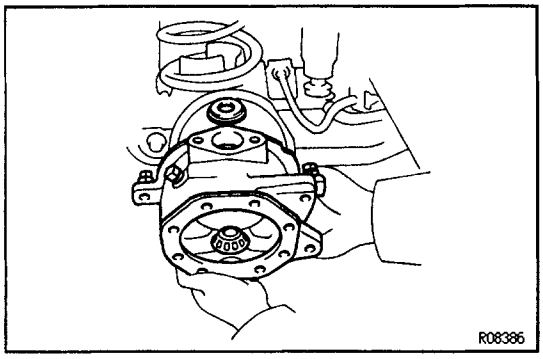


3. PACK BEARINGS WITH LITHIUM BASE WHEEL BEARING GREASE, NLGI NO.2

(a) Place lithium base wheel bearing grease, NLGI No.2 in your hand.

(b) Pack grease into the bearing until the grease oozes out from the outer side.

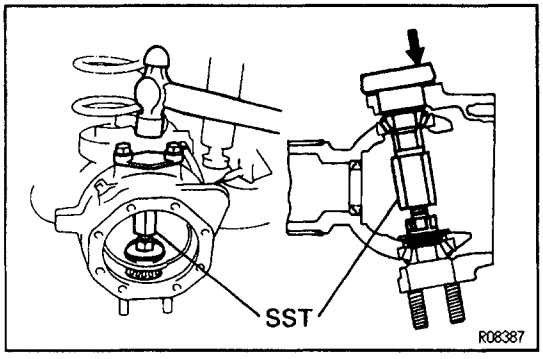
(c) Do the same around the bearing circumference.



4. INSTALL STEERING KNUCKLE AND BEARINGS

(a) Place the bearings in positions on the knuckle and axle housing.

(b) Install the knuckle on the axle housing.



5. INSTALL KNUCKLE ARM AND BEARING CAP

(a) Using SST, support the upper bearing inner race.

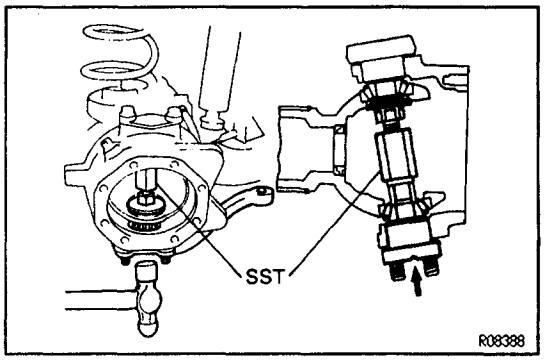
SST 09606–60020

HINT: Use the SST with a collar.

(b) Install the bearing cap over the shim that were originally used or were selected as described in the adjustment operations.

HINT: Install the same number of shims that have been removed.

(c) Using a hammer, install the bearing cap into the bearing inner race.



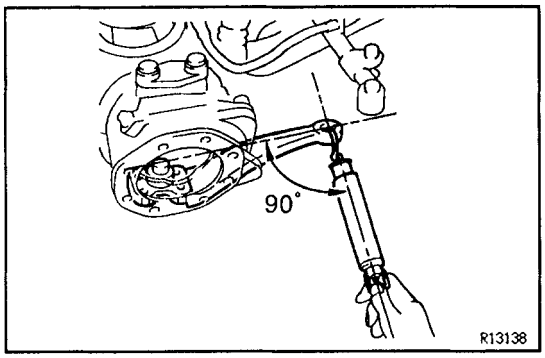
(d) Using SST, support the lower bearing inner race.
SST 09606–60020
HINT: Use the SST with a collar.

(e) Using a hammer, tap the knuckle arm and shim into the bearing inner race.
HINT: Install the same number of shims that have been removed.

(f) Remove the SST from the knuckle.

(g) Install the 4 cone washers and nuts.
Torque: 96 N·m (980 kgf·cm, 71 ft·lbf)

(h) Install the 2 plate washers and bolts.
Torque: 96 N·m (980 kgf·cm, 71 ft·lbf)



6. MEASURE BEARINGS PRELOAD

Using a spring tension gauge, measure the preload.
Preload (starting):
25 – 44 N (2.5 – 4.5 kgf, 5.6 – 9.9 lbf)

7. ADJUST BEARING PRELOAD

(a) Remove the bearing cap and knuckle arm.
(See page SA–15)

(b) Select the adjusting shim.
Adjusting shim thickness

Thickness mm (in.)	Thickness mm (in.)
0.1 (0.004)	0.5 (0.020)
0.2 (0.008)	1.0 (0.039)

(c) Install the bearing cap and knuckle arm.
(See page SA–18)

8. CONNECT TIE ROD TO KNUCKLE ARM

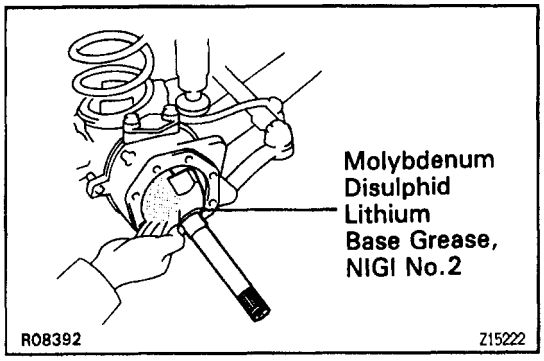
Torque the nut and secure it with a new cotter pin.
Torque: 91 N·m (925 kgf·cm, 67 ft·lbf)

9. INSTALL OIL SEAL END RETAINER TO KNUCKLE ARM

Install the oil seal end retainer to steering knuckle with the 6 bolts.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

10. INSTALL AXLE SHAFT

Position one flat part of the outer shaft upward and install the shaft.



11. PACK MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE, NLGI NO.2

Pack molybdenum disulphide lithium base grease, NLGI No.2 into the knuckle to about 3 fourths of the knuckle.

12. INSTALL KNUCKLE SPINDLE, DUST COVER WITH GASKETS AND DUST SEAL

(a) Place a new gasket in the position on the knuckle and install the spindle.

(b) Place the dust cover, dust seal and a new gasket on the spindle.

(c) Torque the spindle mounting bolts.

Torque: 47 N·m (475 kgf·cm, 34 ft·lbf)

13. CONNECT ABS SPEED SENSOR

Connect the speed sensor and bolts to the steering knuckle.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

14. INSTALL AXLE HUB

(See page SA–10)

15. CHECK FRONT WHEEL ALIGNMENT

(See page SA–4)

16. CHECK ABS SPEED SENSOR SIGNAL

(See page BR–46)