

# REAR AXLE AND SUSPENSION

## RA-2

## REAR AXLE AND SUSPENSION – Troubleshooting

## TROUBLESHOOTING

| Problem                   | Possible cause                                                                                                            | Remedy                                                                                                                       | Page                                                                                                    |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Wanders/pulls</b>      | Tires worn or improperly inflated<br><br>Alignment incorrect<br>Hub bearing worn<br>Rear suspension parts loose or broken | Replace tires or inflate to proper pressure<br>Check alignment<br>Replace hub bearing<br>Tighten or replace suspension parts | <a href="#">RA-3</a><br><br><a href="#">RA-3</a><br><a href="#">RA-5,12</a>                             |
| <b>Bottoming</b>          | Vehicle overloaded<br>Shock absorbers worn out<br>Springs weak                                                            | Check loading<br>Replace shock absorbers<br>Replace springs                                                                  | <a href="#">RA-50</a><br><a href="#">RA-50</a>                                                          |
| <b>Sways/pitches</b>      | Tires improperly inflated<br>Stabilizer bar bent or broken<br>Shock absorber worn out                                     | Inflate tires to proper pressure<br>Inspect stabilizer bar<br>Replace shock absorber                                         | <a href="#">RA-3</a><br><a href="#">RA-60, 63</a><br><a href="#">RA-50</a>                              |
| <b>Abnormal tire wear</b> | Tire improperly inflated<br>Shock absorber worn out<br>Alignment incorrect<br>Suspension parts worn                       | Inflate tires to proper pressure<br>Replace shock absorbers<br>Check camber and toe-in<br>Replace suspension parts           | <a href="#">RA-3</a><br><a href="#">RA-50</a><br><a href="#">RA-3</a><br><a href="#">RA-5,12, 50,62</a> |

## REAR WHEEL ALIGNMENT

### 1. MAKE FOLLOWING CHECKS AND CORRECT ANY PROBLEMS

(a) Check the tires for wear, size and proper inflation pressure.

**Cold tire inflation pressure:**

**FWD/SV21 and 4WD 2.1 kg/cm<sup>2</sup> (30 psi, 206 kPa)**

**FWD/VZV21 1.9 kg/cm<sup>2</sup> (27 psi, 186 kPa)**

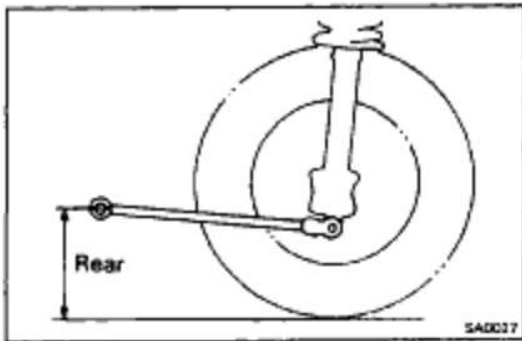
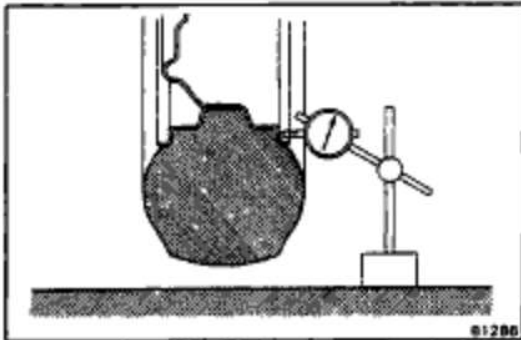
(b) Check the front wheel bearings for looseness.

(c) Check the wheel runout.

**Lateral runout: Less than 1.0 mm (0.039 in.)**

(d) Check the front suspension for looseness.

(e) Check that the front shock absorber function properly by using the standard bounce test.



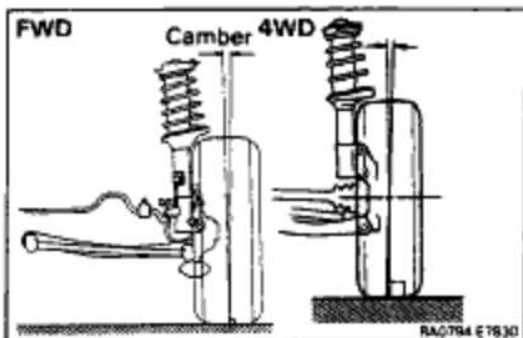
### 2. MEASURE CHASSIS GROUND CLEARANCE

Chassis ground clearance: m m (in.)

|           | Sedan       | Wagon       |
|-----------|-------------|-------------|
| FWD/SV21  | 260 (10.24) | 290 (11.42) |
| 4WD       | 256 (10.08) | —           |
| FWD/VZV21 | 254 (10.00) | 284 (11.18) |

If the clearance of the vehicle is not standard try to level by locking it down. If still not correct, check for bad springs or suspension parts.

HINT: Before inspecting wheel alignment, adjust chassis ground clearance to specification.



### 3. INSPECT CAMBER

Camber: Inspection standard

|     |         |                |
|-----|---------|----------------|
| FWD | (Sedan) | $-35' \pm 30'$ |
|     | (Wagon) | $-5' \pm 30'$  |
| 4WD |         | $-30' \pm 30'$ |

Left-right error  
30'

4. INSPECT TOE-IN

(See page FA-5)

Toe-in: Inspection standard mm (in.)

|           |                     |
|-----------|---------------------|
| FWD/SV21  | 4 ± 2 (0.16 ± 0.08) |
| 4WD       | 3 ± 2 (0.12 ± 0.08) |
| FWD/VZV21 | 4 ± 2 (0.16 ± 0.08) |

5. ADJUST TOE-IN

- (a) Measure the distance between each wheel disc and corner of the cam bracket and confirm that both are the same.

**Left-right error: Less than 3 mm (0.12 in. )**

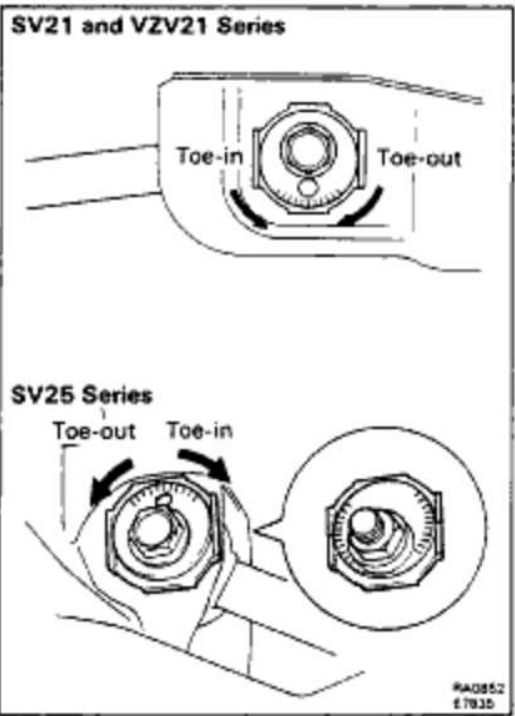
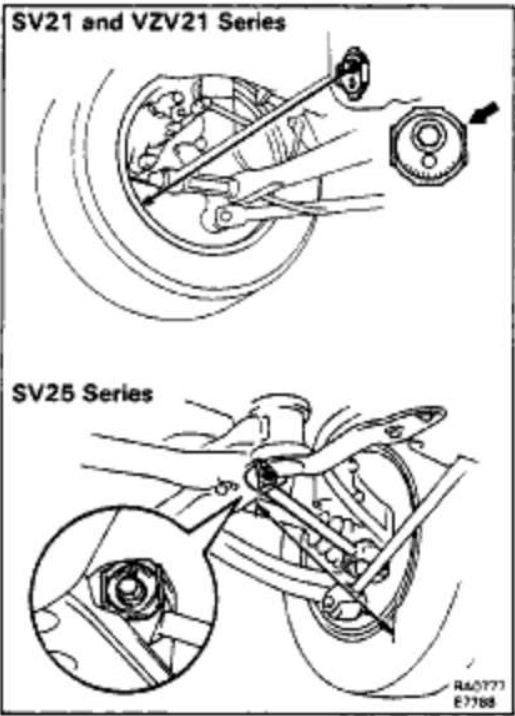
If the left-right error is greater than 3 mm (0.12 in.) adjust following the procedures below.

- If the toe-in is out of the standard toward toe-out side, lengthen the shorter arm by the cam.
- If the toe-in is out of the standard toward toe-in side, shorten the longer arm by the cam.

- (b) Measure the toe-in.

Toe-in: Inspection standard mm (in.)

|           |                     |
|-----------|---------------------|
| FWD/SV21  | 4 ± 1 (0.16 ± 0.04) |
| 4WD       | 3 ± 1 (0.12 ± 0.04) |
| FWD/VZV21 | 4 ± 1 (0.16 ± 0.04) |



If the left-right error is within specifications but the overall toe-in is not, lengthen or shorten both arms an equal amount by turning the two cams in the opposite direction, until the adjustment standard is obtained.

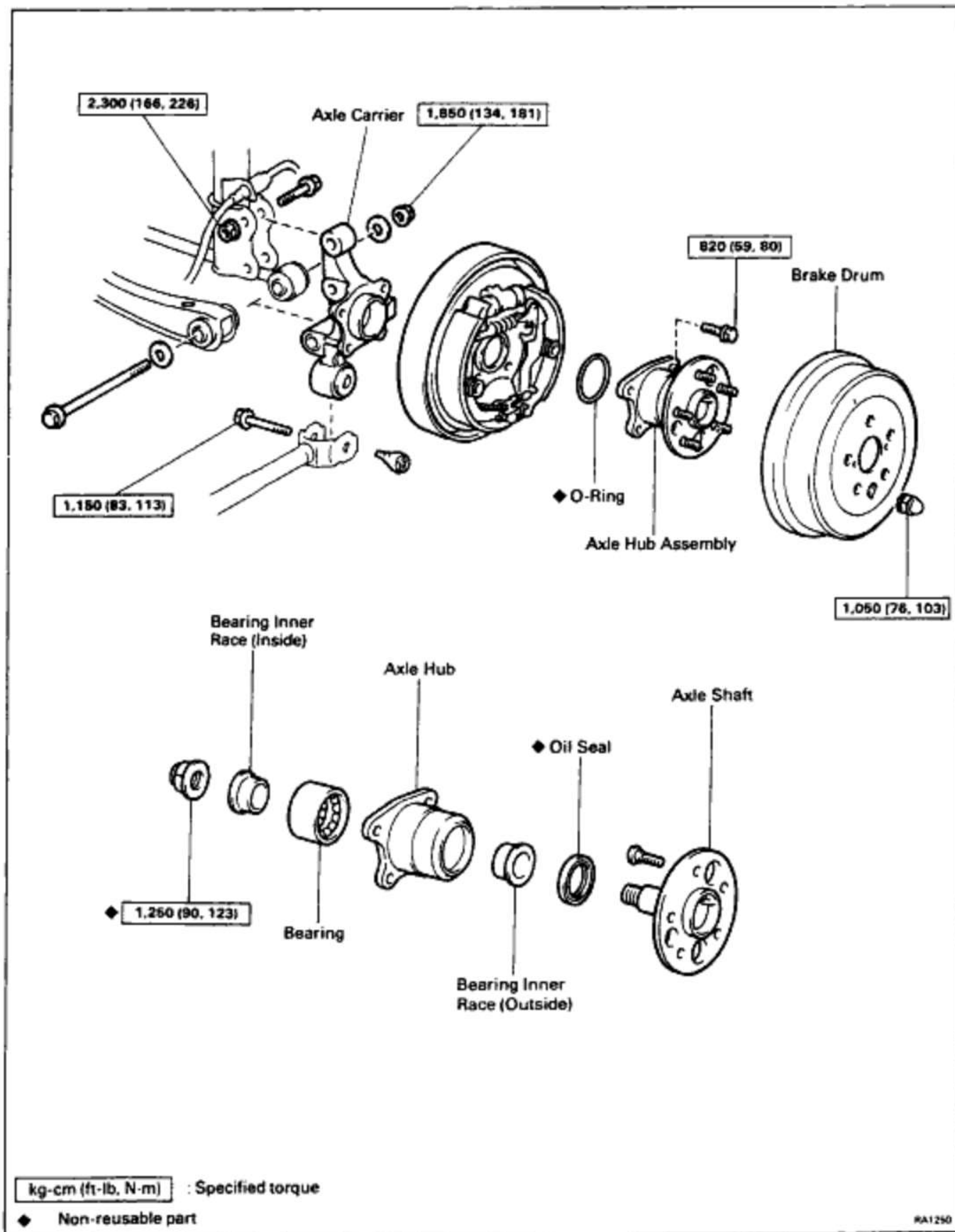
HINT: The toe-in will change about

1.5 mm (0.059 in.) for FWD

4.5 mm (0.177 in.) for 4WD

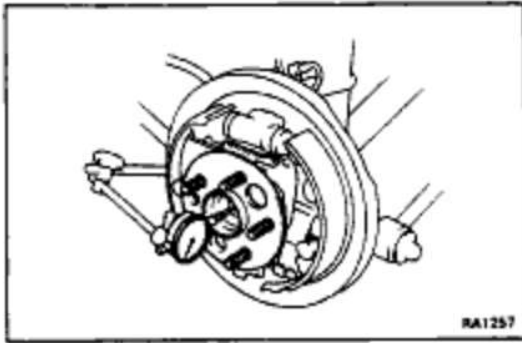
with each graduation of the cam (one side).

## REAR AXLE HUB AND CARRIER FWD COMPONENTS



## RA-6

## REAR AXLE AND SUSPENSION — Rear Axle Hub and Carrier (FWD)

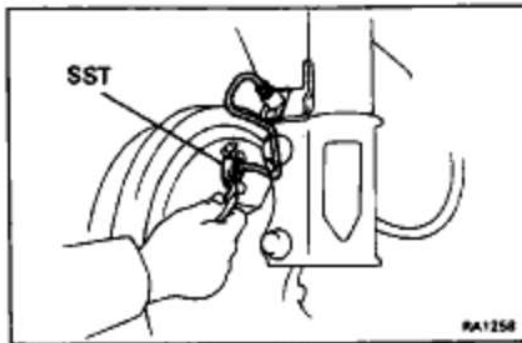
**INSPECTION OF AXLE HUB BEARING****1. ROTATE BRAKE DRUM**

Rotate the drum by hand, if the movement is not smooth and free, replace the axle hub bearing.

**2. REMOVE BRAKE DRUM****3. CHECK BEARING PLAY AXIAL DIRECTION**

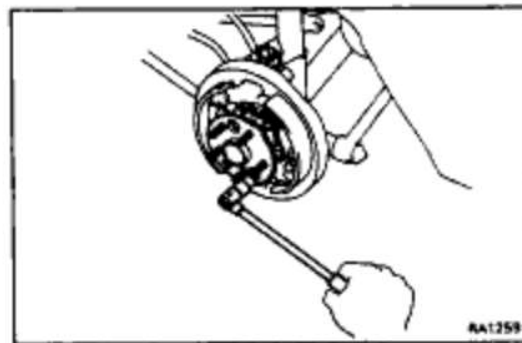
Limit: 0.05 mm (0.0020 in.)

If not within specification, disassembly and inspection the axle hub assembly.

**REMOVAL OF REAR AXLE HUB AND CARRIER****1. REMOVE BRAKE DRUM****2. DISCONNECT BRAKE TUBE FROM BACKING PLATE**

Using SST, disconnect the brake tube from the backing plate.

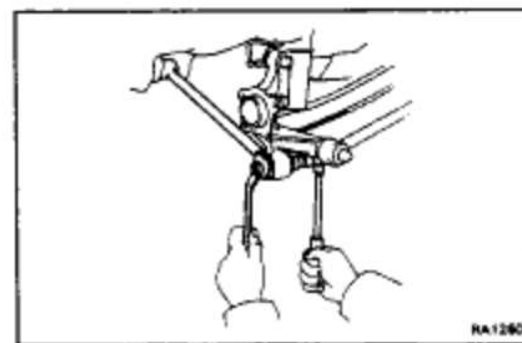
SST 09751-36011

**3. REMOVE REAR AXLE HUB**

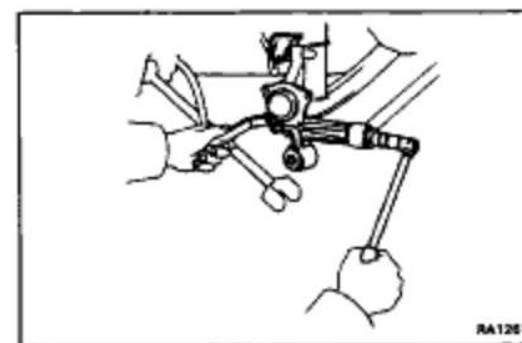
(a) Remove the four axle hub and carrier mounting bolts.

(b) Remove the axle hub and brake assembly.

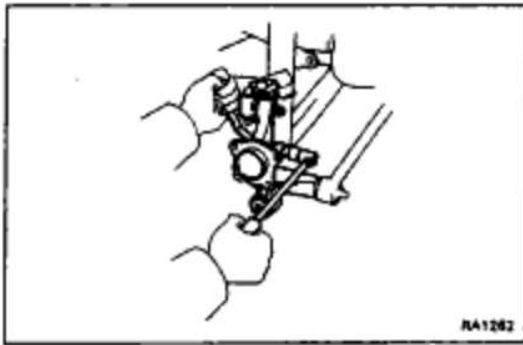
(c) Remove the O-ring from the backing plate.

**4. REMOVE REAR AXLE CARRIER**

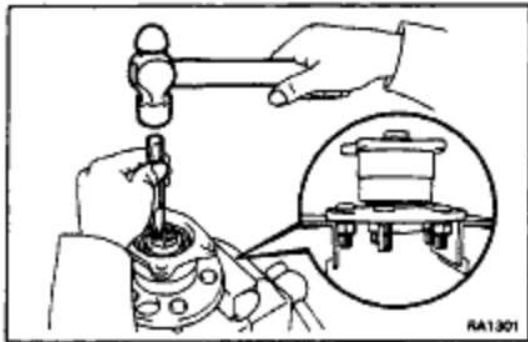
(a) Disconnect the strut rod from the axle carrier.



(b) Disconnect the No. 1 and No. 2 suspension arm from the axle carrier.



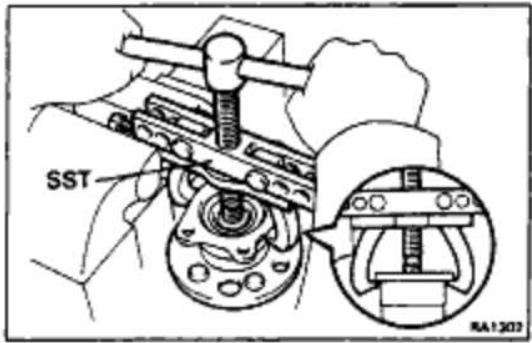
- (e) Remove the axle carrier from the rear shock absorber.



## REPLACEMENT OF REAR AXLE HUB AND BEARING

### 1. REMOVE LOCK NUT

- (a) Using a hammer and chisel, unstake the nut.
- (b) Remove the lock nut

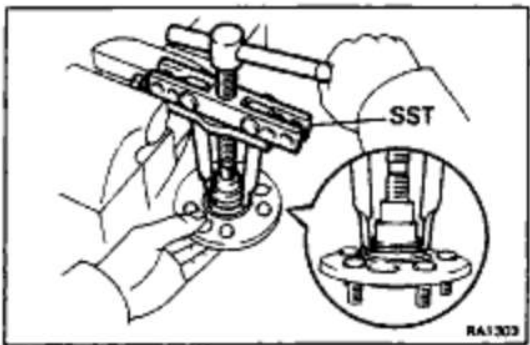


### 2. REMOVE AXLE SHAFT FROM AXLE HUB

Using SST, push the rear axle shaft, off the rear axle hub.

SST 09950-20017

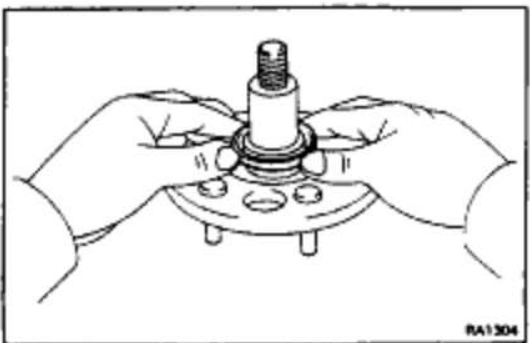
### 3. REMOVE BEARING INNER RACE (INSIDE)



### 4. REMOVE BEARING INNER RACE (OUTSIDE)

Using SST, pull off the bearing inner race (outside) from the axle shaft.

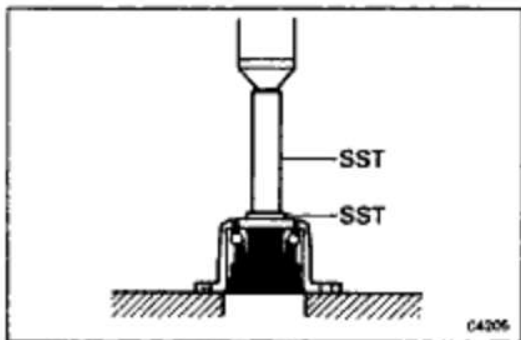
SST 09950-20017



### 5. REMOVE OIL SEAL

## RA-8

## REAR AXLE AND SUSPENSION — Rear Axle Hub and Carrier (FWD)

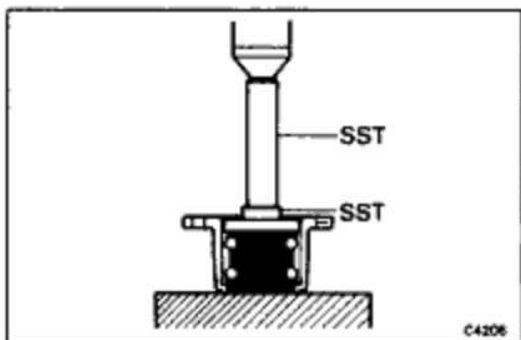
**6. REMOVE BEARING**

(a) First, install the inner race (outside) of the bearing to be removed.

(b) Using SST, press out the bearing.

SST 09550-10012 (09552-10010, 09558-10010)

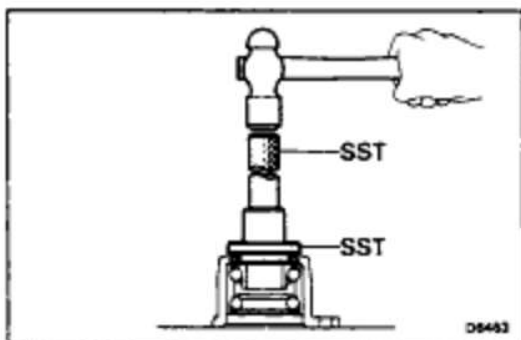
**NOTICE:** Always replace the bearing as an assembly.

**7. INSTALL BEARING**

(a) Apply MP grease around the outer race of a new bearing.

(b) Using SST, press the bearing into the axle hub.

SST 09550-10012 (09552-10010, 09554-10010)

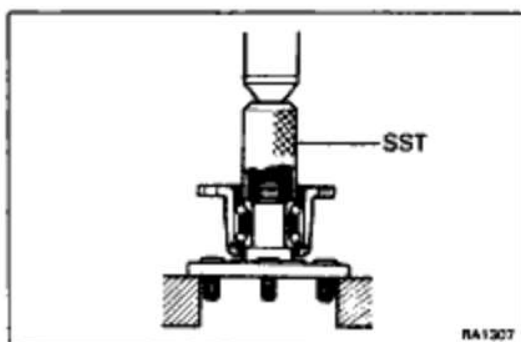
**8. INSTALL NEW OIL SEAL**

(a) Install a new bearing inner race (outside).

(b) Using SST, drive a new oil seal into the axle hub.

SST 09550-10012 (09552-10010, 09554-10010)

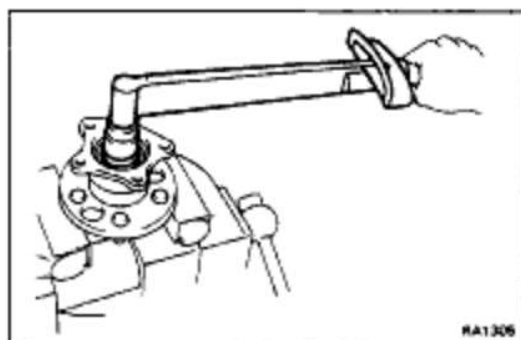
(c) Coat the oil seal lip with MP grease.

**9. INSTALL AXLE SHAFT**

(a) Install a new bearing inner race (inside).

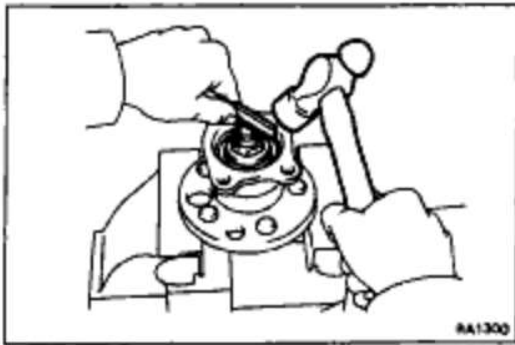
(b) Using SST, press the inner races onto the axle shaft.

SST 09636-20010

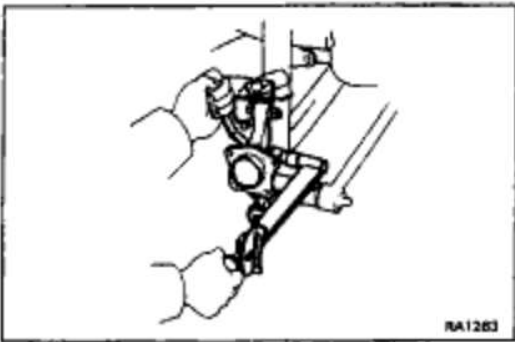


(c) Install and torque a new lock nut.

**Torque:** 1,250 kg-cm (90 ft-lb, 123 N-m)



(d) Using a hammer and a chisel, stake the nut.



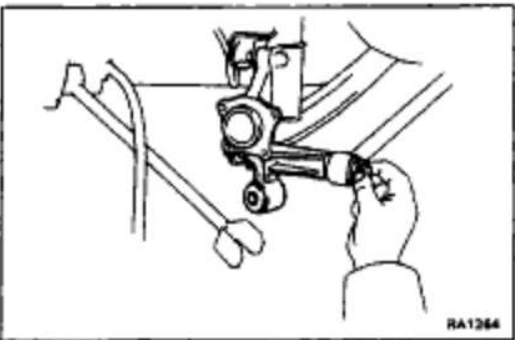
## INSTALLATION OF REAR AXLE HUB AND CARRIER

(see page [RA-5](#))

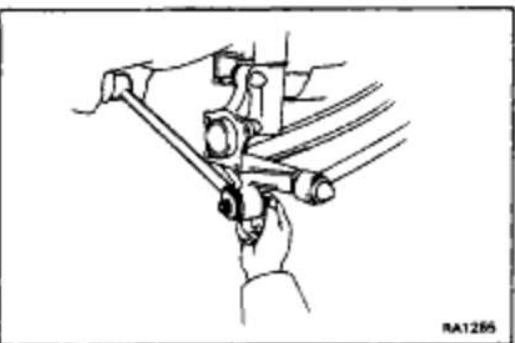
### 1. INSTALL REAR AXLE CARRIER

- Place the axle carrier position.
- Install and torque the axle carrier mounting bolts and nuts to the shock absorber.

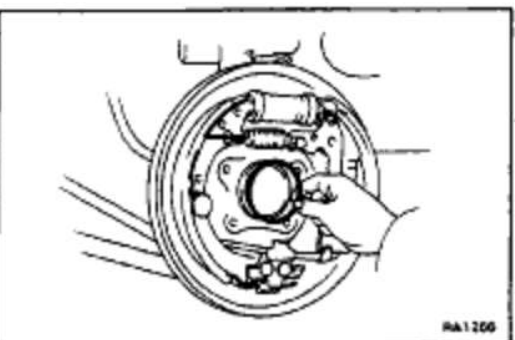
**Torque: 2,300 kg-cm (166 ft-lb, 226 N-m)**



- Connect the No. 1 and No.2 suspension arm to the axle carrier with the bolt, and temporarily install the retainer and nut.



- Temporarily connect the strut rod to the axle carrier with the bolt and the nut as shown in the figure.



### 2. INSTALL REAR AXLE HUB

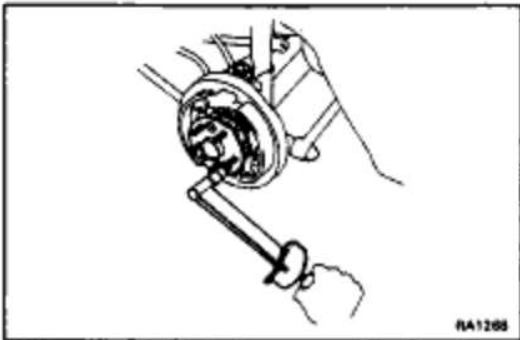
- Install the brake assembly and anew oil seal to the axle carrier.

## RA-10

## REAR AXLE AND SUSPENSION – Rear Axle Hub and Carrier (FWD)

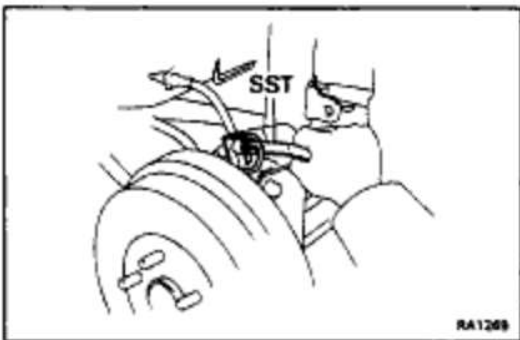


(b) Temporarily connect the brake tube to the backing plate.



(c) Install the axle hub and torque the four bolts.

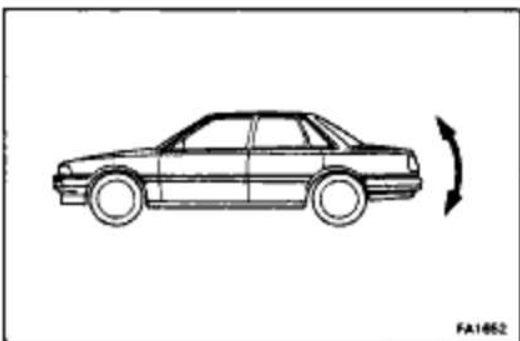
Torque: 820 kg-cm (59 ft-lb, 80 N - m )



### 3. TORQUE BRAKE TUBE

Using SST, torque the brake tube union.  
SST 09751-36011

### 4. INSTALL BRAKE DRUM



### 5. INSTALL WHEELS AND LOWER VEHICLE

- (a) Install the wheels.
- (b) Remove the stands and bounce the vehicle up and down to stabilize the suspension.

### 6. TORQUE AXLE CARRIER MOUNTING BOLTS

Torque the axle carrier mounting bolts with the vehicle weight on the suspension.

Torque:

Strut rod x Axle carrier

1,150 kg-cm (83 ft-lb, 113 N-m)

No. 1 and No. 2 suspension arm x Axle carrier

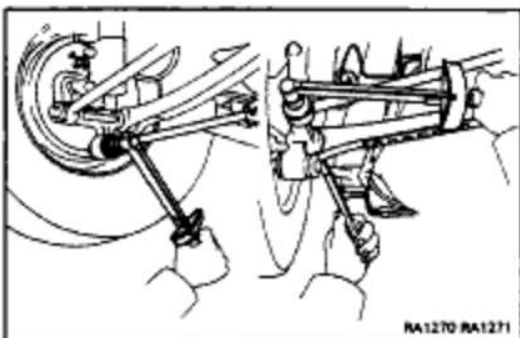
1,850 kg-cm (134 ft-lb, 181 N-m)

### 7. BLEED BRAKE SYSTEM

(See page [BR-7](#))

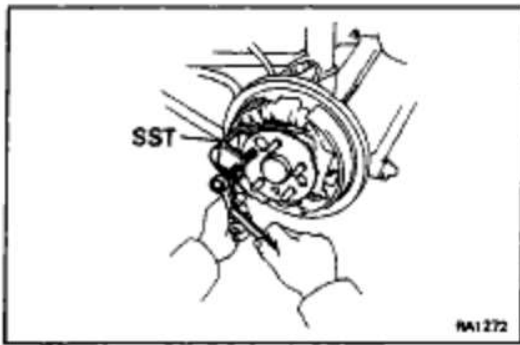
### 8. CHECK REAR WHEEL ALIGNMENT

(See page [RA-3](#))

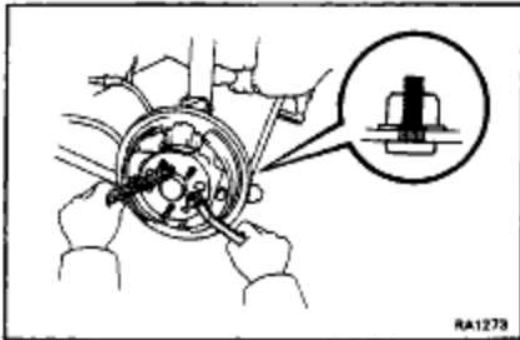


**REPLACEMENT OF REAR AXLE HUB BOLT****1. REMOVE BRAKE DRUM****2. REMOVE HUB BOLT**

Using SST, remove the hub bolt.  
SST 09650-17011

**3. INSTALL HUB BOLT**

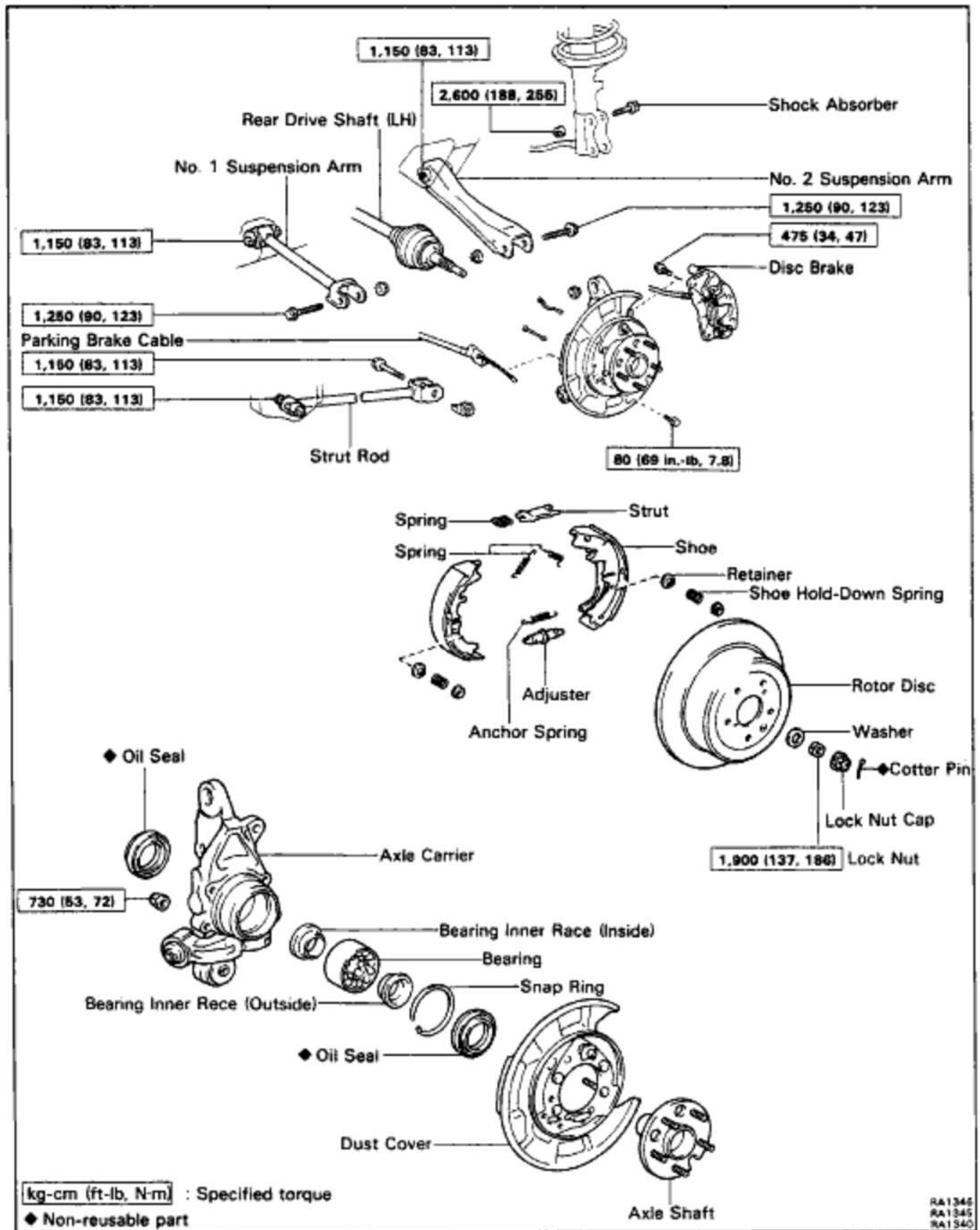
Install a new hub bolt.

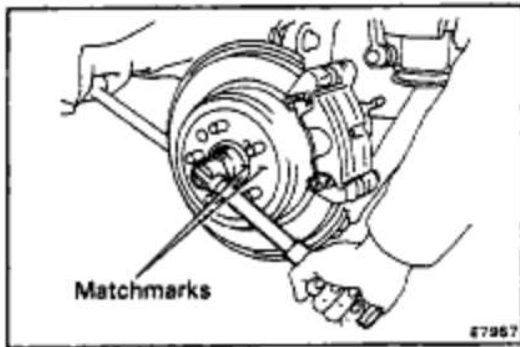
**4. INSTALL BRAKE DRUM**

RA-12

REAR AXLE AND SUSPENSION — Rear Axle Hub and Carrier 4WD

## REAR AXLE HUB AND CARRIER 4WD COMPONENTS


RA1345  
RA1345  
RA1340

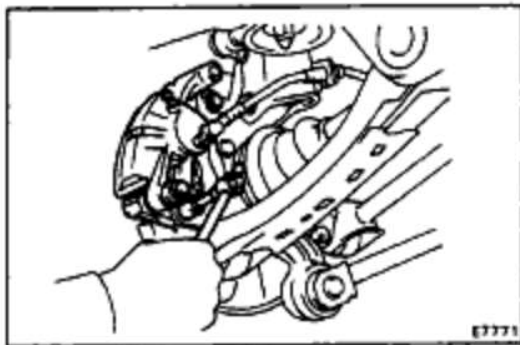


## REMOVAL OF REAR AXLE HUB AND CARRIER

(See page [RA-12](#))

### 1. REMOVE COTTER PIN, BEARING LOCK NUT CAP AND BEARING LOCK NUT

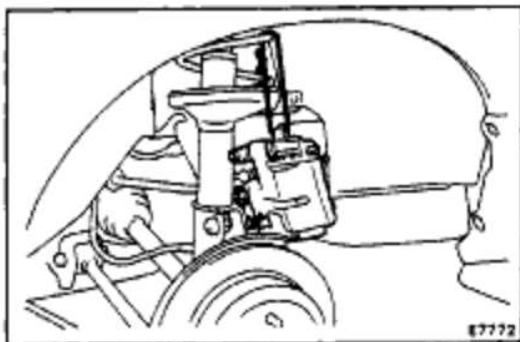
- (a) Remove the cotter pin and bearing lock nut cap.
- (b) With the parking brake engaged, remove the bearing lock nut.



### 2. DISCONNECT PARKING BRAKE CABLE

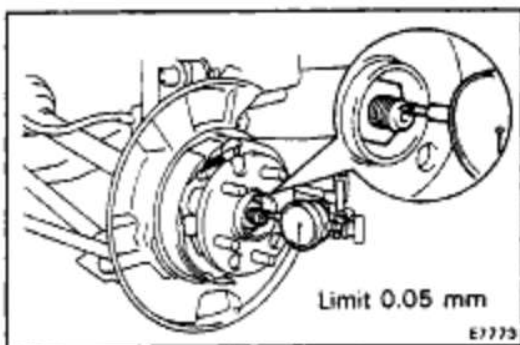
### 3. REMOVE BRAKE CALIPER

Remove the brake caliper from the rear axle carrier and suspend it with wire.



### 4. REMOVE ROTOR DISC

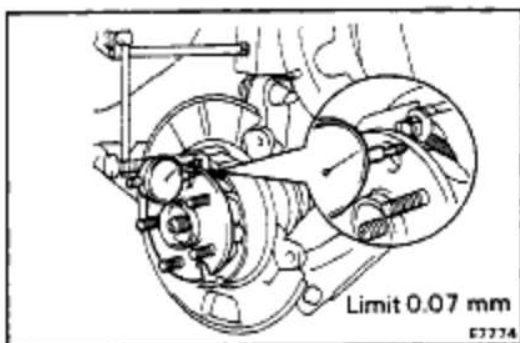
HINT: Before removing the rotor disc, plate the matchmarks on the axle hub and rotor disc.



### 5. CHECK BEARING PLAY IN AXIAL DIRECTION

**Bearing play: 0.05 mm (0.0020 in.) or less**

If the bearing play is greater than the maximum, replace the bearing.

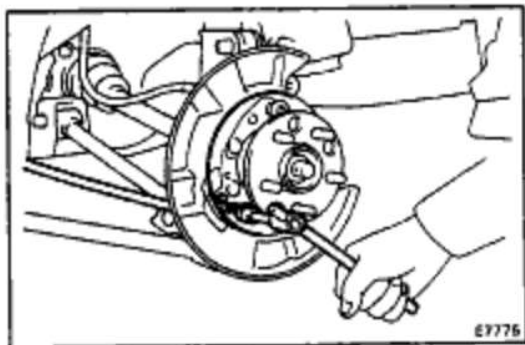
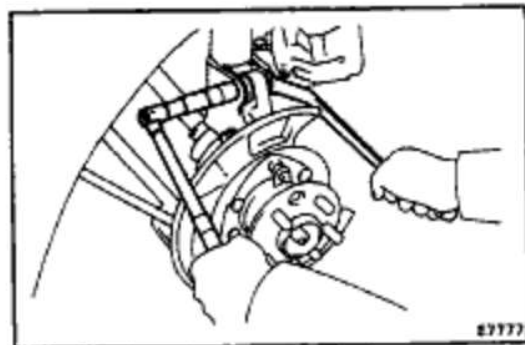


### 6. CHECK AXLE SHAFT FLANGE RUNOUT

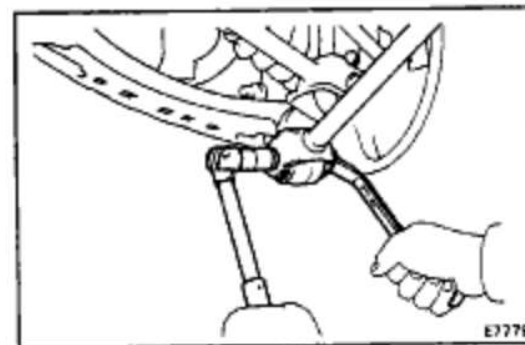
**Maximum flange runout: 0.07 mm (0.0028 in.) or less**

## RA-14

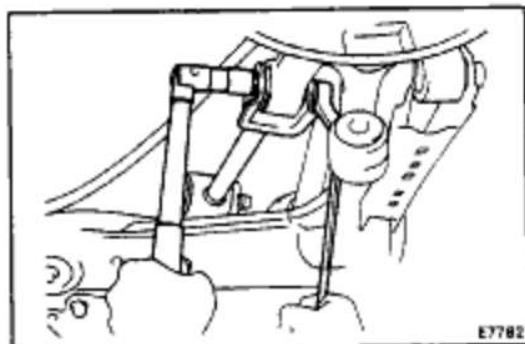
## REAR AXLE AND SUSPENSION — Rear Axle Hub and Carrier 4WD

**7. REMOVE PARKING BRAKE ASSEMBLY**(See page [RA-12](#))**B. REMOVE PARKING BRAKE CABLE****9. REMOVE AXLE CARRIER WITH AXLE HUB**

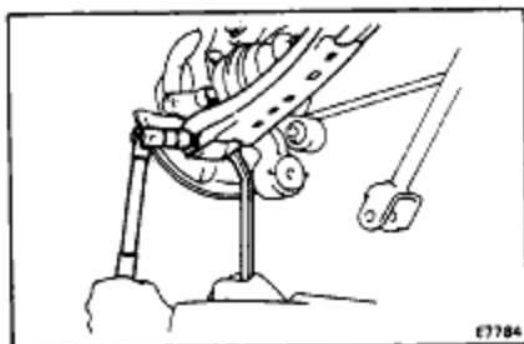
(a) Remove the two axle carrier set nuts and two bolts with the camber adjusting cam.



(b) Disconnect the strut rod from the axle carrier.



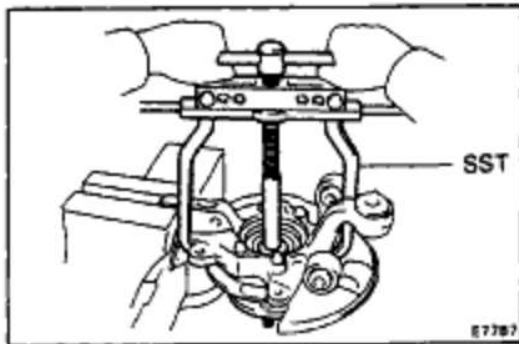
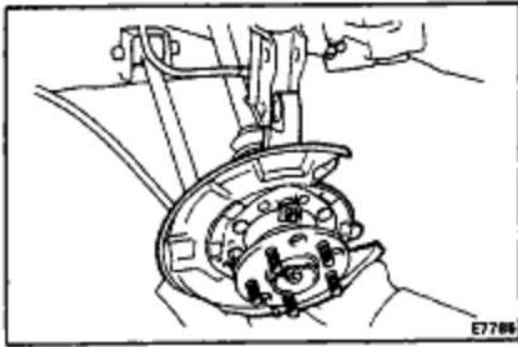
(c) Disconnect the No. 1 suspension arm from the axle carrier.



(d) Disconnect the No. 2 suspension arm from the axle carrier.

(e) Remove the axle carrier with axle hub.

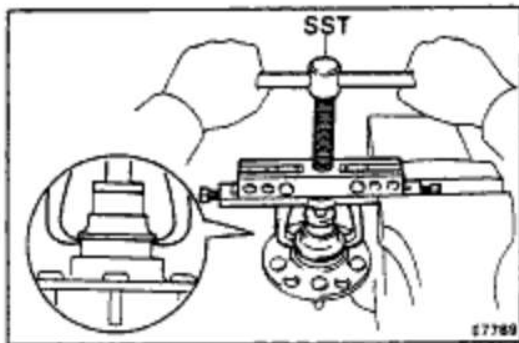
**NOTICE:** Cover the drive shaft boot with cloth to protect it from damage.



## REPLACEMENT OF AXLE HUB AND BEARING

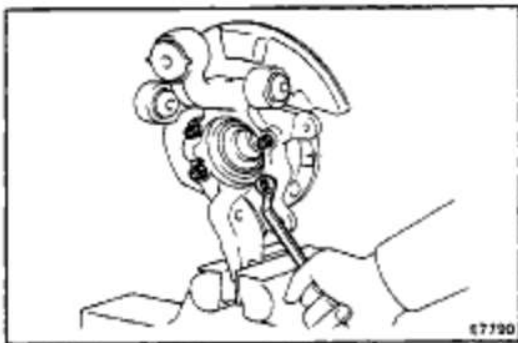
### 1. REMOVE AXLE SHAFT FROM AXLE HUB

Using SST, push the axle shaft off the axle hub.  
SST 09950-20017

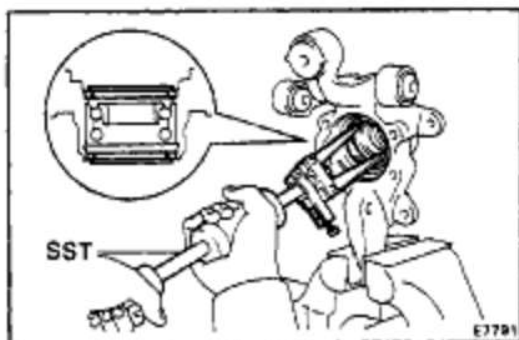


### 2. REMOVE BEARING INNER RACE (OUTSIDE) FROM AXLE SHAFT

Using SST, pull off the bearing inner race (outside) from the axle shaft.

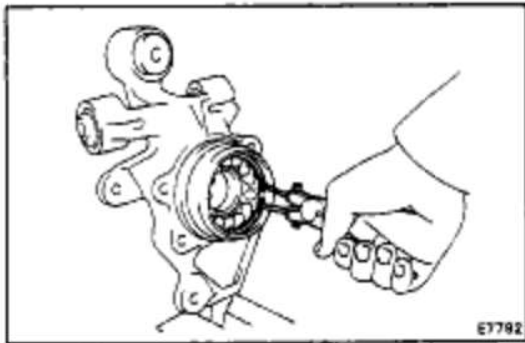


### 3. REMOVE DUST COVER

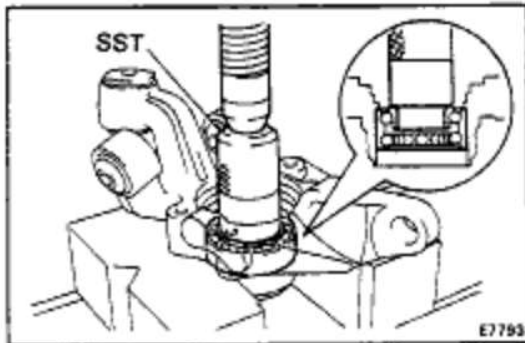


### 4. REMOVE INNER AND OUTER OIL SEAL

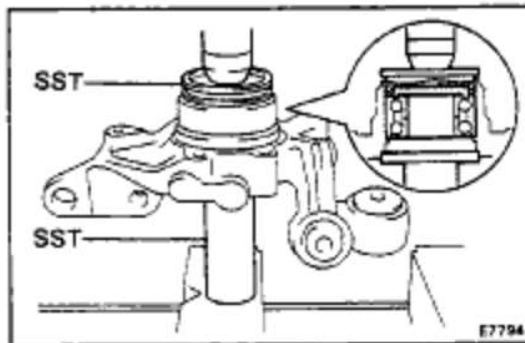
Using SST, remove the oil seal from the axle carrier.  
SST 09308-00010

**RA-16****REAR AXLE AND SUSPENSION** — Rear Axle Hub and Carrier (4WD)**5. REMOVE HOLE SNAP RING**

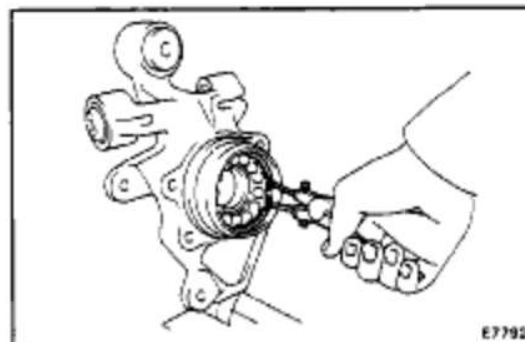
Using snap ring pliers, remove the hole snap ring from the axle carrier.

**6. REMOVE BEARING**

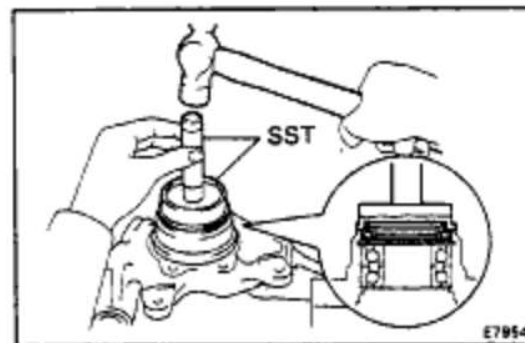
Using SST, press out the bearing from the axle carrier.  
SST 09636-20010

**7. INSTALL BEARING**

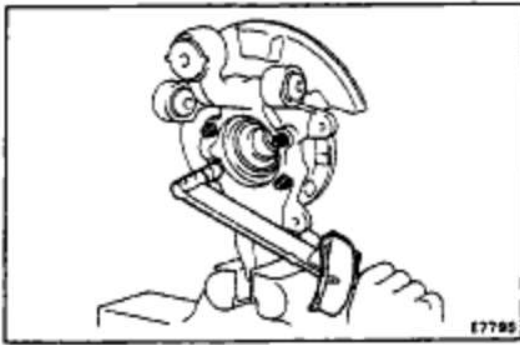
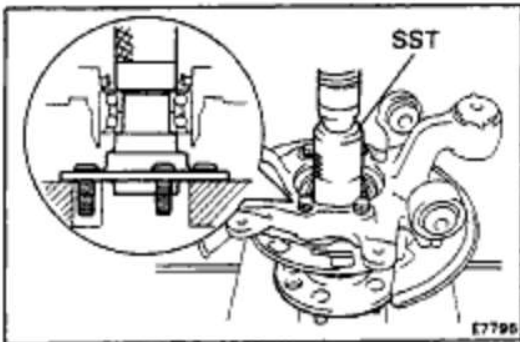
Using SST, press the bearing into the axle hub.  
SST 09309-36010, 09608-32010

**8. INSTALL HOLE SNAP RING**

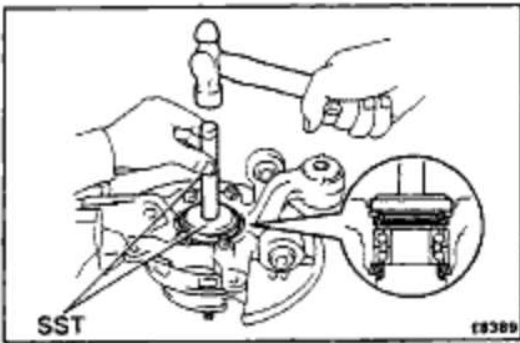
Using pliers, install a hole snap ring into the rear axle carrier.

**9. INSTALL OUTER OIL SEAL**

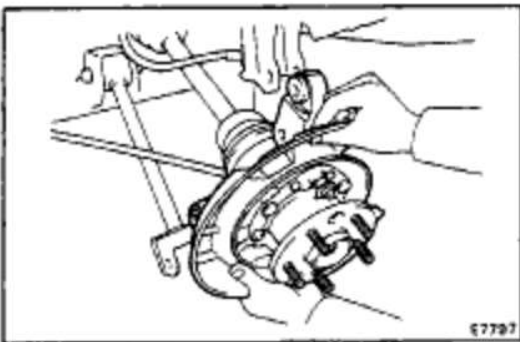
- (a) Using SST, drive in a new oil seal to the axle carrier.  
SST 09608-30012 (09608-04020), 09608-32010
- (b) Apply MP grease to the oil seal lip.

**10. INSTALL DUST COVER****11. INSTALL AXLE SHAFT**

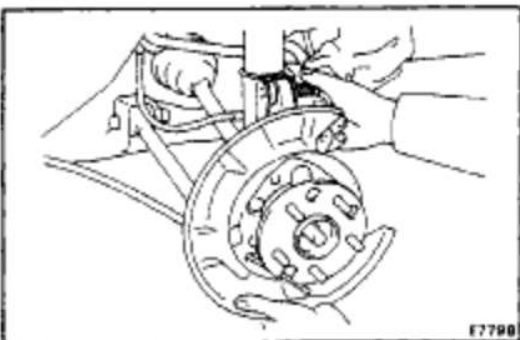
Using SST, install the axle shaft to the axle carrier.  
SST 09636-20010

**12. INSTALL INNER OIL SEAL.**

- (a) Using SST, drive in a new oil seal to the axle carrier.  
SST 09608-30012 (09608-04020, 09608-04110)
- (b) Apply MP grease to the oil seal lip.

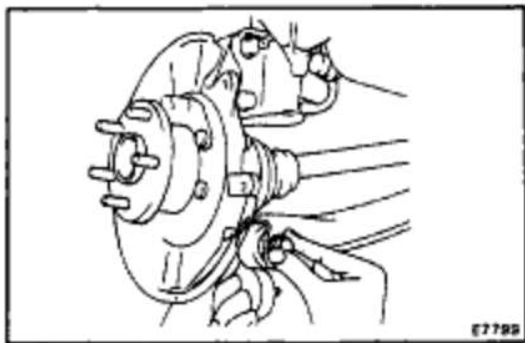
**13. INSTALL AXLE CARRIER WITH AXLE HUB**

- (a) Install the axle carrier with axle hub.

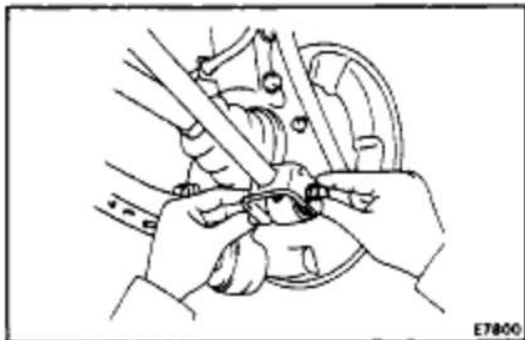


- (b) Install the axle carrier with axle hub.
- (1) Place the rear axle carrier to the shock absorber's lower bracket.
- (2) Install the two set bolts and two nuts.
- (3) Torque the nuts.

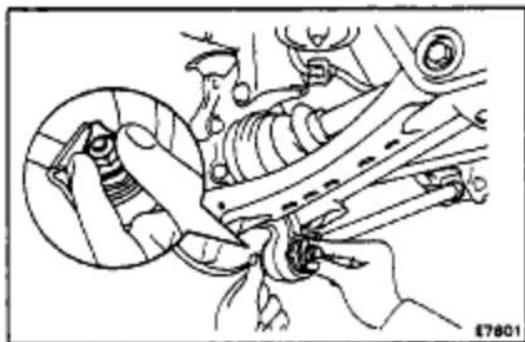
**Torque: 2,600 kg-cm (188 ft-lb, 255 N-m)**

**RA-18****REAR AXLE AND SUSPENSION** – Rear Axle Hub and Carrier (4WD)

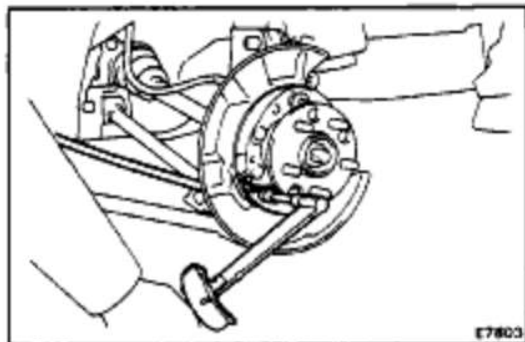
(c) Temporarily connect the No. 2 suspension arm to the axle carrier.



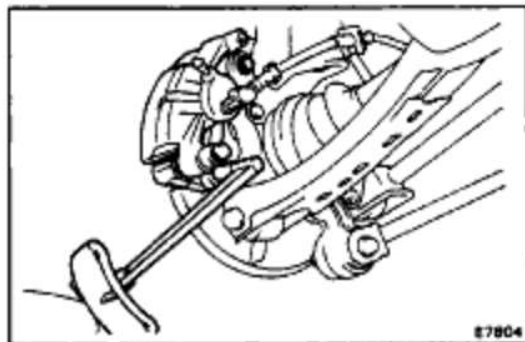
(d) Temporarily connect the No. 1 suspension arm to the axle carrier.



(e) Temporarily connect the strut rod to the axle carrier.

**14. INSTALL PARKING BRAKE CABLE****15. INSTALL PARKING BRAKE ASSEMBLY**

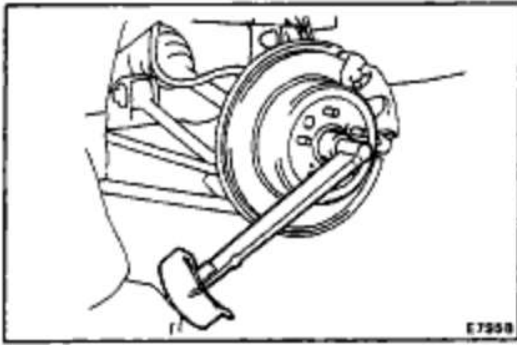
(See page [RA-12](#))

**16. INSTALL ROTOR DISC**

HINT: Align the matchmarks on the axle hub and rotor disc.

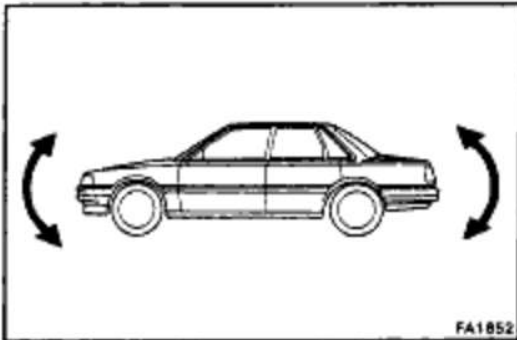
**17. INSTALL BRAKE CALIPER**

Torque: 475 kg-cm (34 ft-lb, 47 N-m)



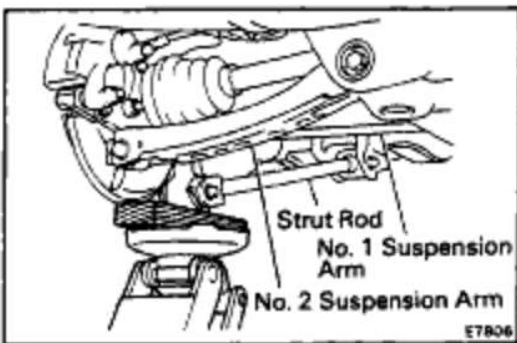
#### 18. INSTALL PLATE WASHER, BEARING LOCK NUT, BEARING LOCK NUT CAP AND NEW COTTER PIN

- (a) Install the plate washer and lock nut.
- (b) With the parking brake engaged, and tighten the nut.  
**Torque: 1,900 kg-cm (137 ft-lb, 186 N-m)**
- (c) Install the lock nut cap and a new cotter pin.



#### 19. INSTALL WHEELS AND LOWER VEHICLE

- (a) Install the wheel.
- (b) Remove the stands and bounce the vehicle up and down to stabilize the suspension.



#### 20. TORQUE AXLE CARRIER MOUNTING BOLTS

Torque the axle carrier mounting bolts with the vehicle weight on the suspension.

**Torque: Strut rod x Axle carrier**

**1,150 kg-cm (83 ft-lb, 113 N-m)**

**No. 1 and No. 2 suspension arm x Axle carrier**

**1,250 kg-cm (90 ft-lb, 123 N-m)**

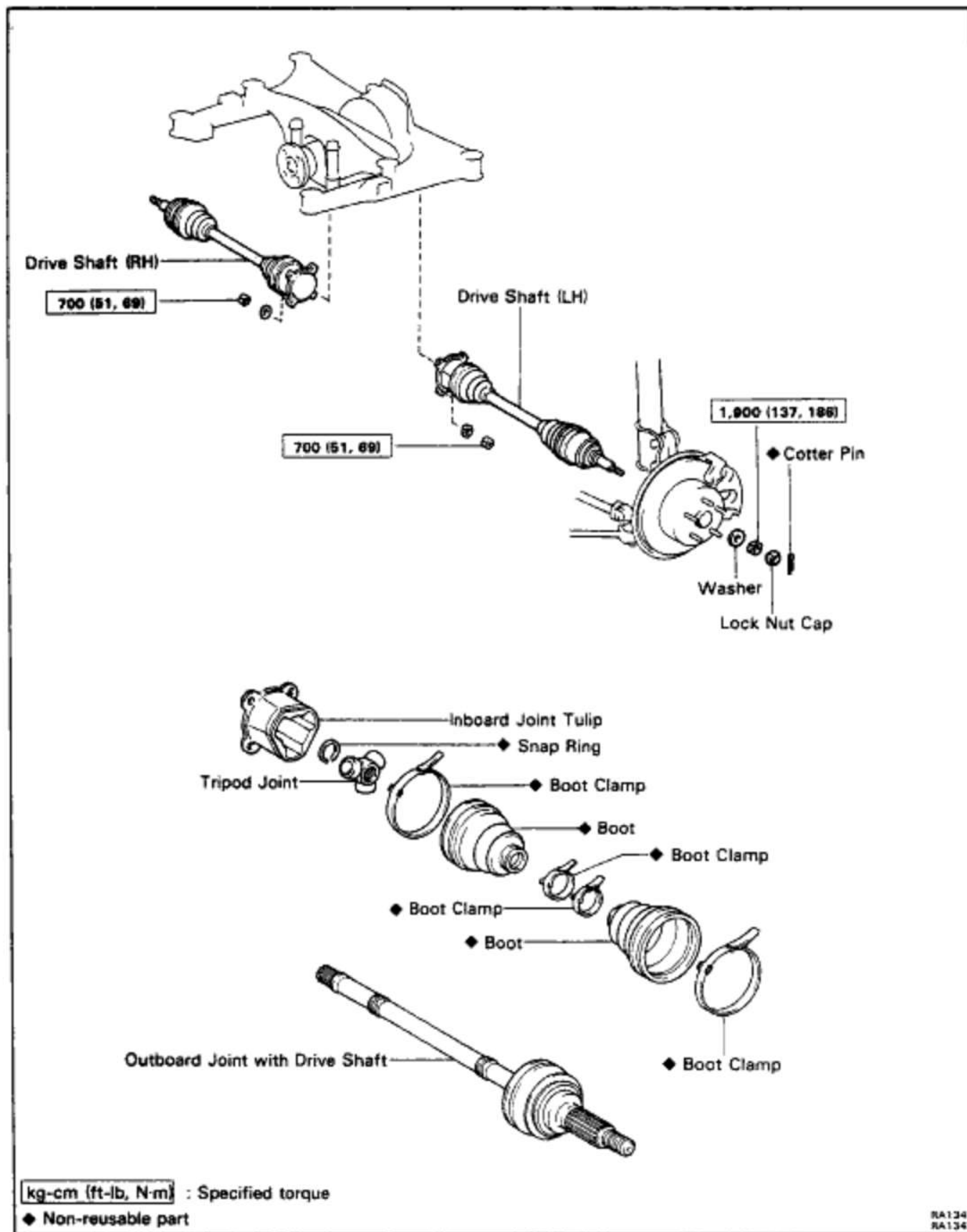
#### 21. CHECK REAR WHEEL ALIGNMENT

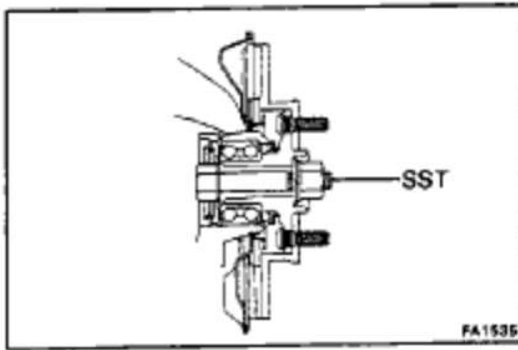
(See page [RA-31](#))

RA-20

REAR AXLE AND SUSPENSION — Rear Drive Shaft (4WD)

## REAR DRIVE SHAFT (4WD) COMPONENTS



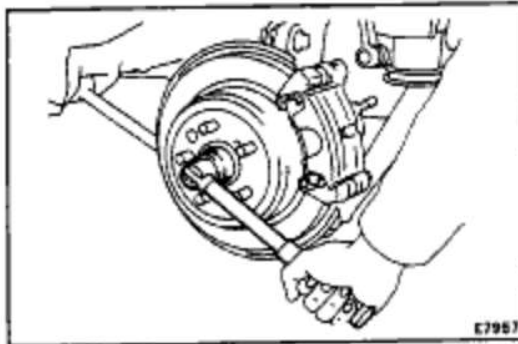


## REMOVAL OF REAR DRIVE SHAFT

(See page [RA-20](#))

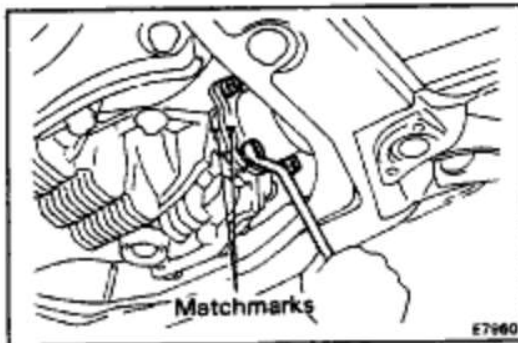
**NOTICE:** The hub bearing could be damaged if it is subjected to the vehicle weight, such as when moving the vehicle with the drive shaft removed. Therefore, if it is bearing first support it with SST.

SST 09608-16041 (09608-02020, 09608-02040)



### 1. REMOVE COTTER PIN, LOCK NUT CAP AND LOCK NUT

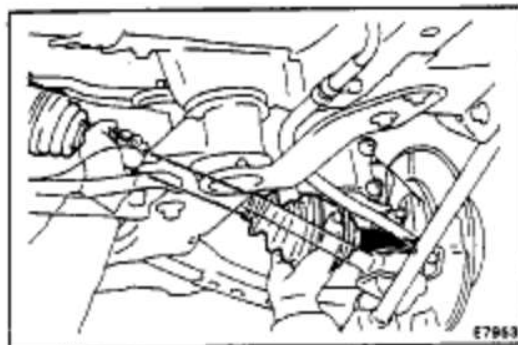
- (a) Remove the cotter pin and lock nut cap.
- (b) Loosen the bearing lock nut while depressing the brake pedal.



### 2. REMOVE DRIVE SHAFT

**HINT:** Be careful not to damage the boots.

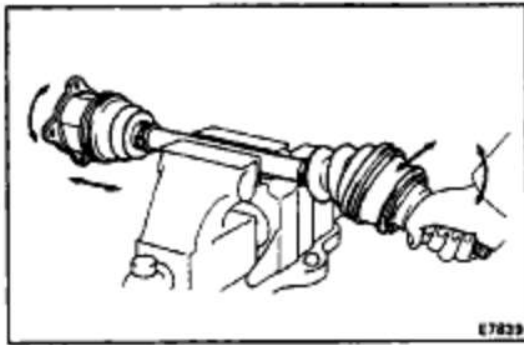
- (a) Place matchmarks on the inboard joint tulip and the side gear shaft flange.
- (b) Loosen four nuts holding the drive shaft to the side gear shaft.
- (c) Disconnect the drive shaft from the side gear shaft.



- (d) Remove the drive shaft from the axle carrier.

## RA-22

## REAR AXLE AND SUSPENSION – Rear Drive Shaft (4WD)



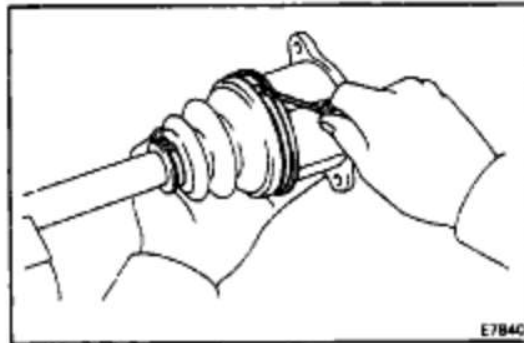
## DISASSEMBLY OF REAR DRIVE SHAFT

(See page RA-20)

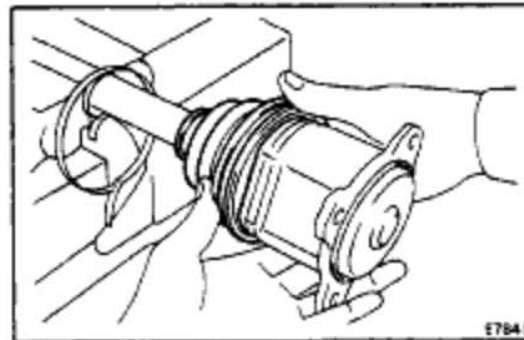
### 1. CHECK DRIVE SHAFT

- Check to see that there is no play in the inboard and outboard joints.
- Check to see that the inboard joint slide smoothly in the thrust direction.
- Check to see that there is no remarkable play in the radial direction of the inboard joint.
- Check the damage of boot.

### 2. REMOVE INBOARD JOINT BOOT CLAMPS



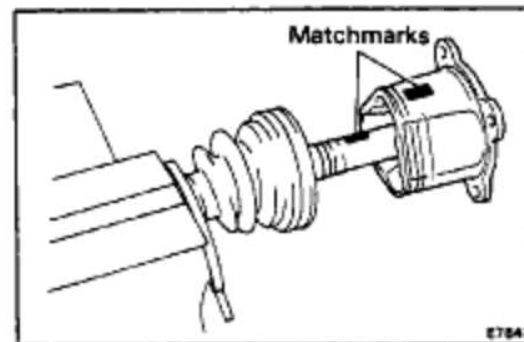
### 3. REMOVE INBOARD JOINT BOOT FROM INBOARD JOINT TULIP



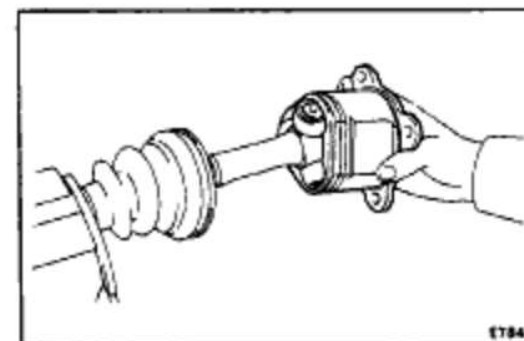
### 4. REMOVE INBOARD JOINT TULIP FROM DRIVE SHAFT

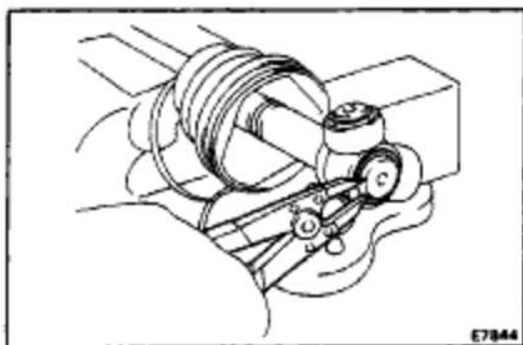
- Place matchmarks on the inboard joint tulip and drive shaft.

**NOTICE:** Do not punch the marks.



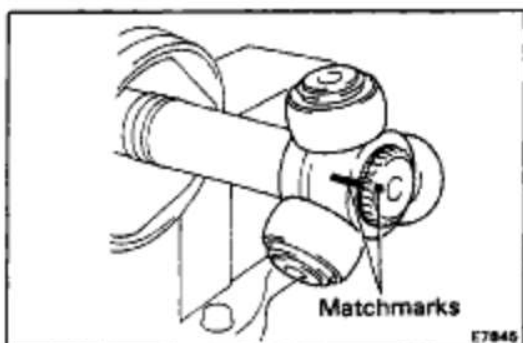
- Remove the inboard joint tulip from the drive shaft.



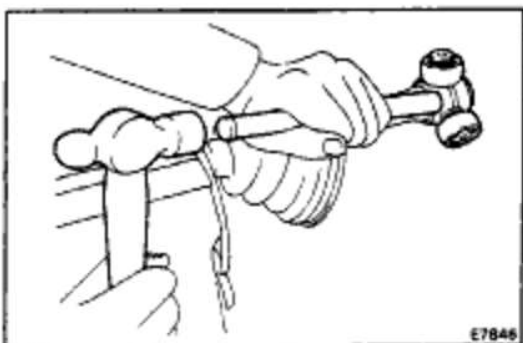


## 5. REMOVE TRIPOD JOINT

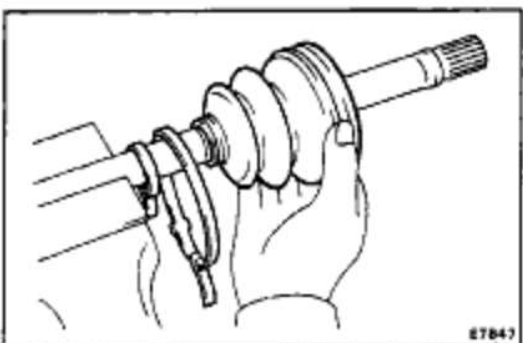
(a) Using snap ring pliers, remove the snap ring.



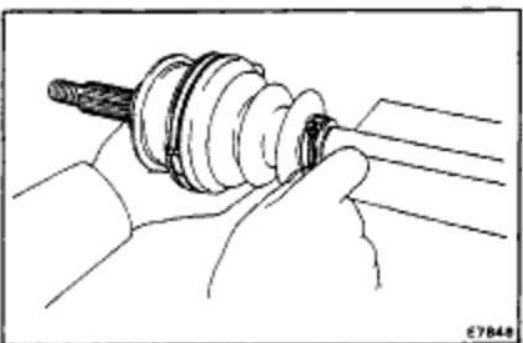
(b) Place matchmarks on the shaft and the tripod.



(c) Using a hammer and brass bar, drive out the tripod joint from the drive shaft.



## 6. REMOVE INBOARD JOINT BOOT AND CLAMP



## 7. REMOVE OUTBOARD JOINT BOOT

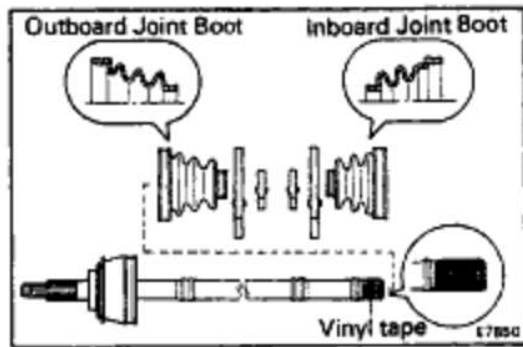
(a) Using a screwdriver, remove the two boot clamps of the outboard joint boot.

(b) Remove the boot from the outboard joint.

**NOTICE:** Do not disassemble the outboard joint.

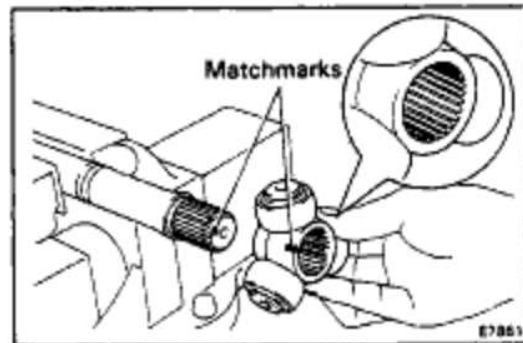
## RA-24

## REAR AXLE AND SUSPENSION – Rear Drive Shaft (4WD)

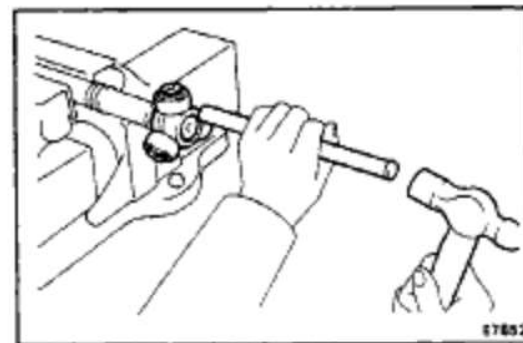
**ASSEMBLY OF REAR DRIVE SHAFT**(See page [RA-20](#))**1. TEMPORARILY INSTALL BOOTS AND NEW BOOT CLAMPS**

**CAUTION:** The boot and clamp of the outboard joint are smaller than those of the inboard joint.

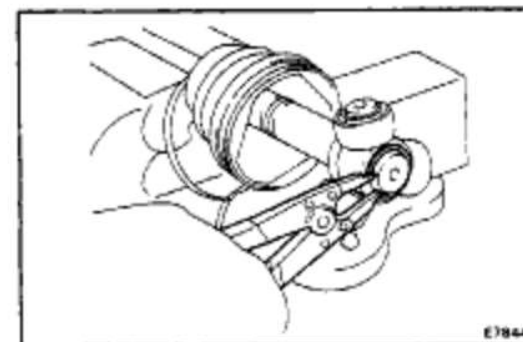
**HINT:** Before installing the boot, wrap vinyl tape around the spline of the shaft to prevent damaging the boot. Temporarily install the boots and a new clamps to the drive shaft.

**2. INSTALL TRIPOD JOINT**

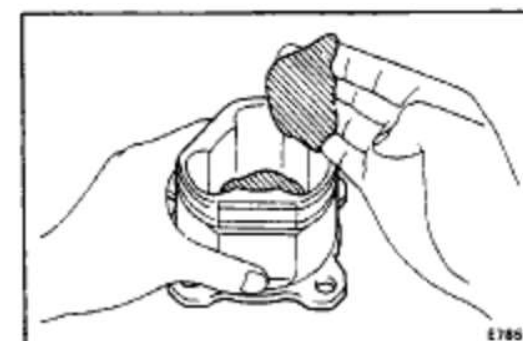
(a) Align the matchmarks placed before remove.



(b) Using a brass bar and hammer, tap in the tripod joint to the drive shaft.



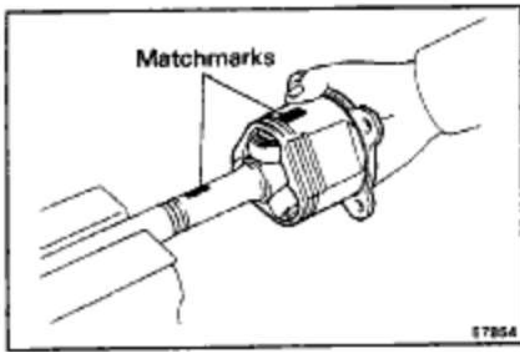
(c) Using snap ring pliers, install a new snap ring.

**3. INSTALL INBOARD JOINT TULIP TO DRIVE SHAFT**

(a) Pack in the grease to the inboard tulip.

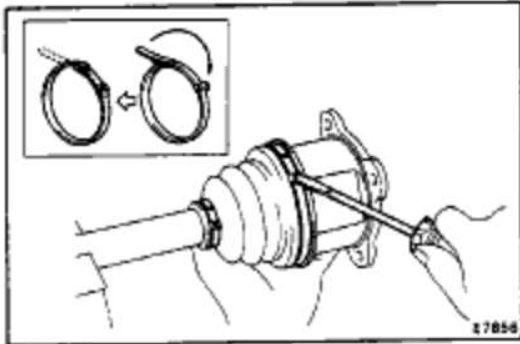
**HINT:** Use the grease supplied in the boot kit.

**Grease capacity: 180g (0.40 lb)**



- (b) Align the matchmarks placed before remove, and install the inboard joint tulip to the drive shaft.

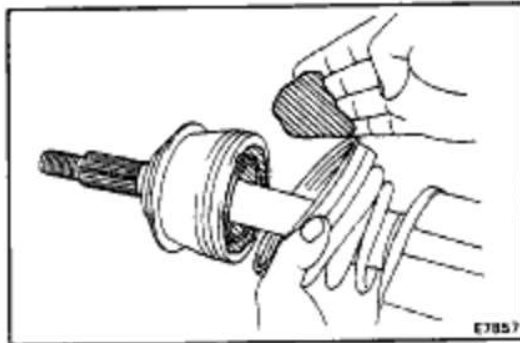
#### 5. INSTALL INBOARD JOINT BOOT TO INBOARD JOINT TULIP .



#### 6. INSTALL INBOARD JOINT BOOT CLAMPS

**NOTICE:** The clamps of the outboard joint are smaller than those of the inboard joint.

- (a) Be sure the boot is on the shaft groove.  
(b) Using a screwdriver, bend the band and lock it as shown in the illustration.

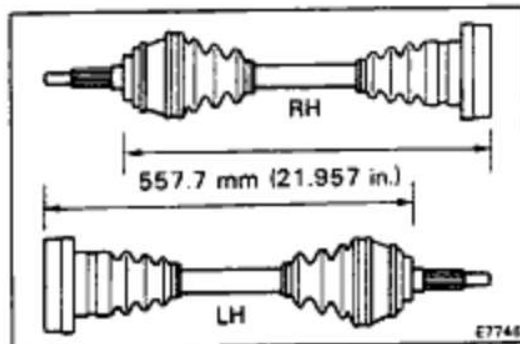


#### 7. INSTALL OUTBOARD JOINT BOOT

- (a) Before install the boot, back in grease.  
**HINT:** Use the grease supplied in the boot kit.

**Grease capacity: 124 g (0.26 lb)**

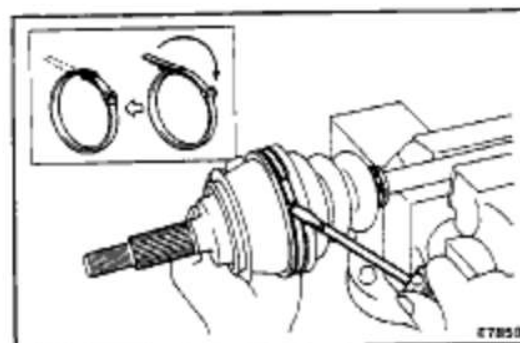
- (b) Install the boot to the outboard joint.



#### 8. INSTALL OUTBOARD JOINT BOOT CLAMPS

- (a) Be sure the boot is on the shaft groove.  
(b) In sure that the boot is not stretched or contracted when drive shaft is at standard length.

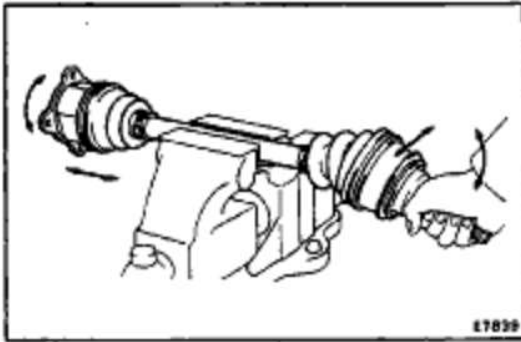
**Drive shaft length: 557.7 mm (21.957 in.)**



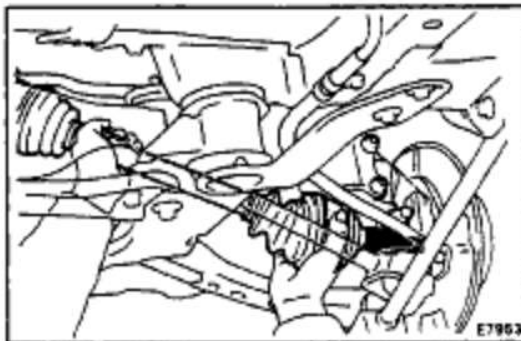
- (c) Using a screwdriver, bend the band and lock it as shown in the illustration.

## RA-26

## REAR AXLE AND SUSPENSION — Rear Drive Shaft (4WD)

**9. CHECK DRIVE SHAFT**

- (a) Check to see that there is no play in the inboard joint and outboard joint.
- (b) Check to see that the inboard joint side smoothly in the thrust direction.

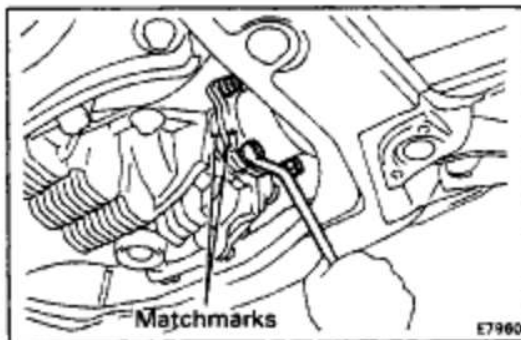
**INSTALLATION OF REAR DRIVE SHAFT**

(See page [RA-20](#))

**1. INSTALL DRIVE SHAFT**

HINT: Be careful not to damage the boots.

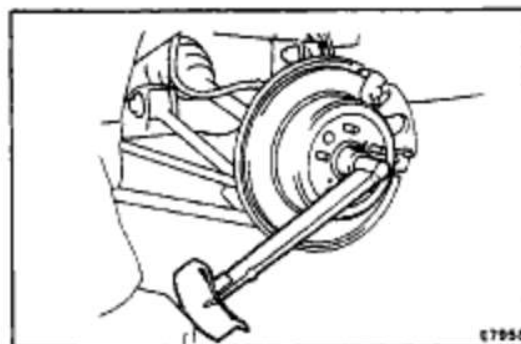
- (a) Install the drive shaft to the axle carrier.



- (b) Align the matchmarks on the inboard joint tulip and the side gear shaft flange.

- (e) Connect the drive shaft to the side gear shaft.

**Torque: 700 kg-cm (51 ft-tb, 69 N-m)**

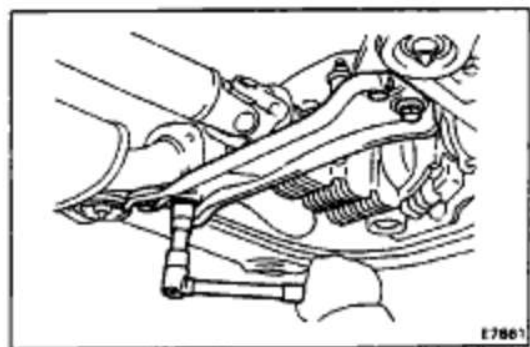
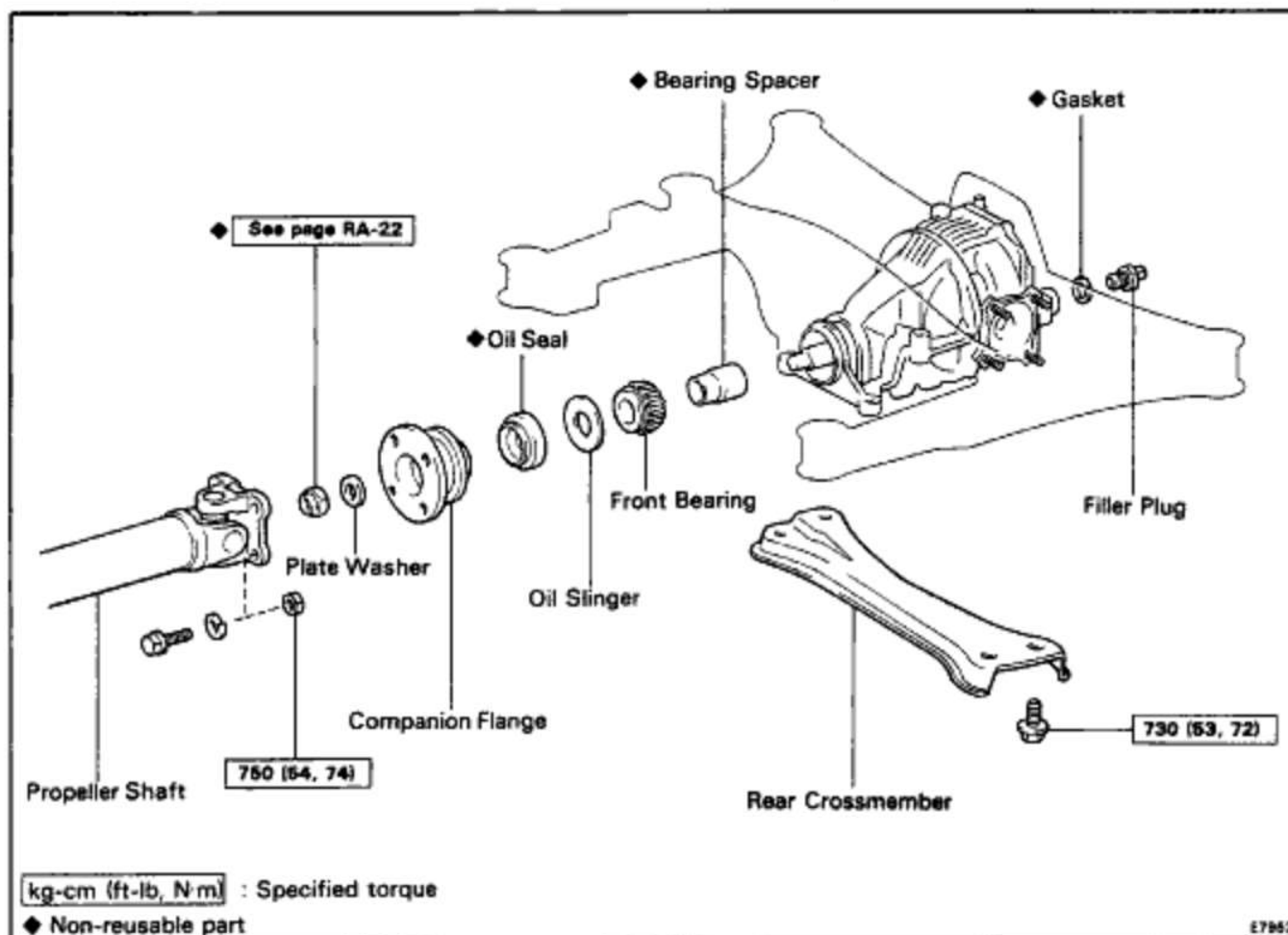
**2. INSTALL BEARING LOCK NUT, LOCK NUT CAP AND COTTER PIN**

- (a) Torque the bearing lock nut while depressing the brake pedal.

**Torque: 1,900 kg-cm (137 ft-lb, 186 N-m)**

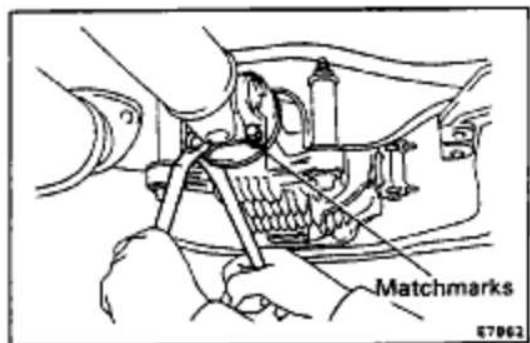
- (b) Install the lock nut cap and, using pliers, install a new cotter pin.

## DIFFERENTIAL On-Vehicle Repair



### REPLACEMENT OF FRONT OIL SEAL

#### 1. REMOVE REAR CROSSMEMBER

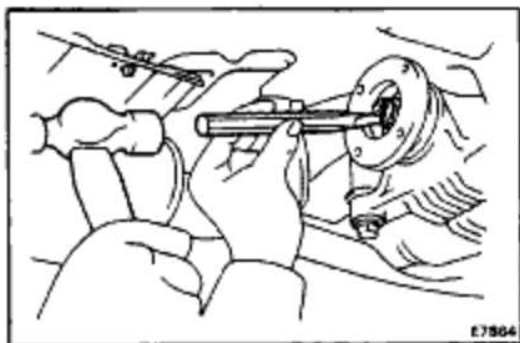


#### 2. DISCONNECT PROPELLER SHAFT

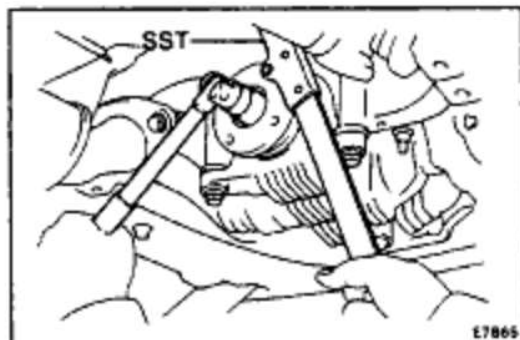
- Place the matchmarks on the both flanges.
- Remove the four bolts, washers and nuts.
- Disconnect the propeller shaft from the differential.

## RA-28

## REAR AXLE AND SUSPENSION – Differential (4WD)

**3. REMOVE COMPANION FLANGE**

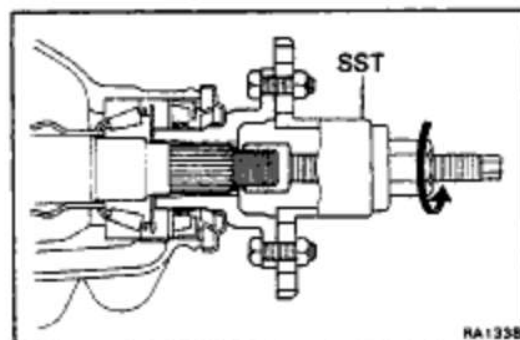
- (a) Using a hammer and chisel, loosen the staked part of the nut.



- (b) Using SST to hold the flange, remove the nut.

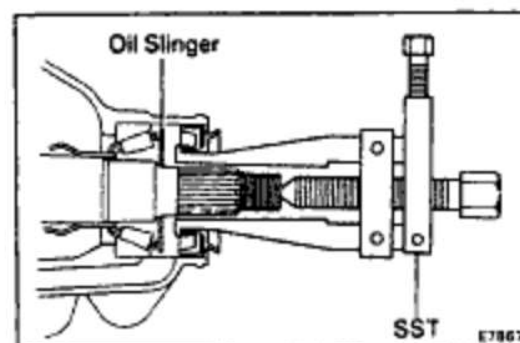
SST 09330-00021

- (c) Remove the plate washer.



- (d) Using SST, remove the companion flange.

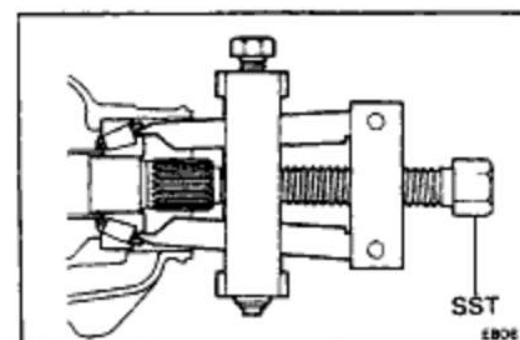
SST 09557-22022

**4. REMOVE FRONT OIL SEAL AND OIL SLINGER**

- (a) Using SST, remove the front oil seal.

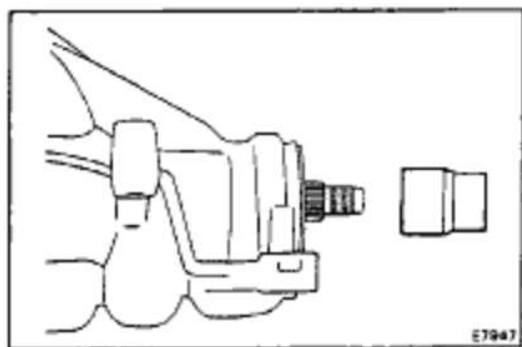
SST 09308-10010

- (b) Remove the oil slinger.

**5. REMOVE FRONT BEARING AND BEARING SPACER**

- (a) Using SST, remove the front bearing.

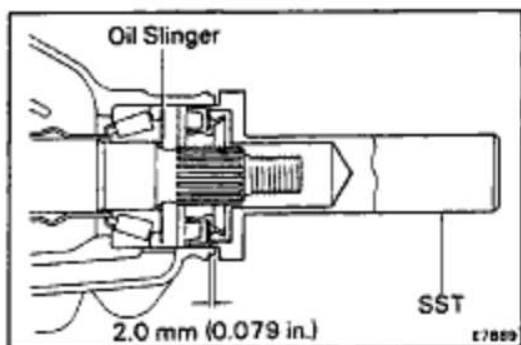
SST 09556-22010



(b) Remove the bearing spacer.

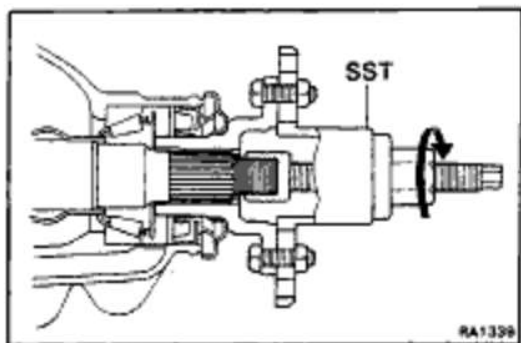
## 6. INSTALL NEW BEARING SPACER AND FRONT BEARING

- (a) Install a new bearing spacer on the shaft.  
 (b) Install the front bearing on the shaft.



## 7. INSTALL OIL SLINGER AND NEW OIL SEAL

- (a) Install the oil slinger on the shaft.  
 (b) Using SST, drive in a new oil seal.  
 SST 09554-22010  
**Oil seal drive in depth: 2.0 mm (0.079 in)**  
 (c) Apply MP grease to the oil seal lip.



## 8. INSTALL COMPANION FLANGE

- (a) Using SST, install the companion flange.  
 SST 09557-22022

- (b) Install the plate washer.  
 W Coat the threads of a new nut with gear oil.  
 (d) Using SST to hold the flange, tighten the nut.  
 SST 09330-0002 1

**Torque: 1,100 kg-cm (80 ft-lb, 108 N-m)**

## 9. CHECK DRIVE PINION BEARING PRELOAD

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

**Preload (at starting) :**

**New bearing 10 – 16 kg-cm**

**(8.7 – 13.9 in.-lb, 1.0 – 1.6 N-m)**

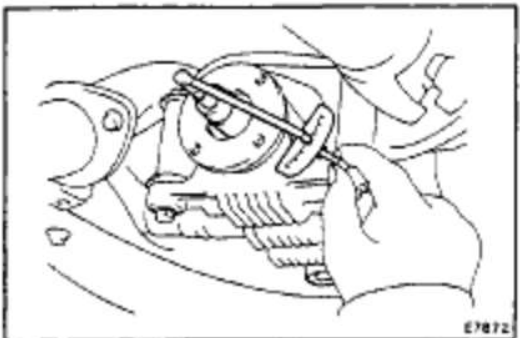
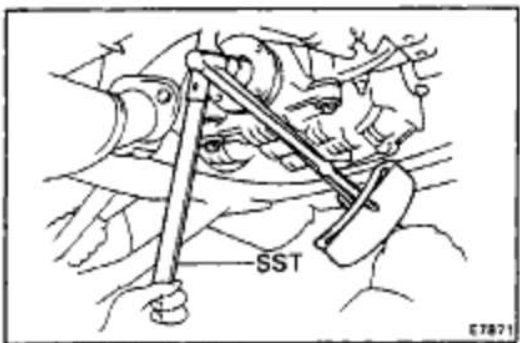
**Reused bearing 5 – 8 kg-cm**

**(4.3 – 6.9 in.-lb, 0.5 – 0.8 N-m)**

- If preload is greater than specification, replace the bearing spacer.
- If preload is less than specification, retighten the nut 130 kg-cm (9 ft-lb, 13 N-m) at a time until the specified preload is reached.

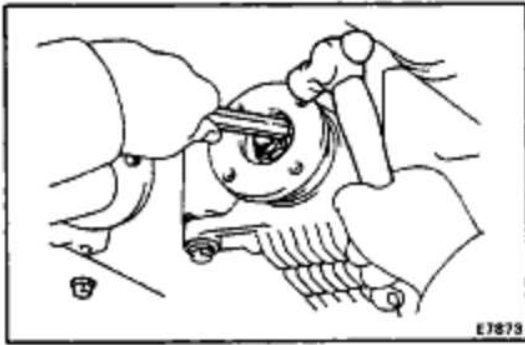
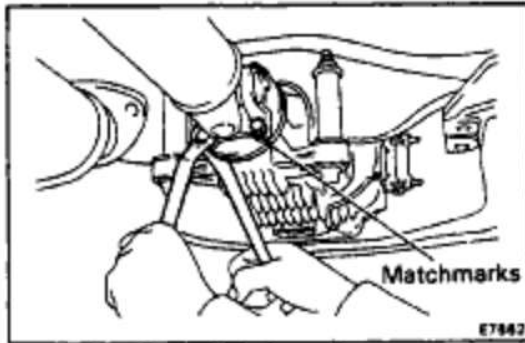
If the maximum torque is exceed while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the preload.

**Maximum torque: 2,400 kg-cm (174 ft-lb, 235 N-m)**



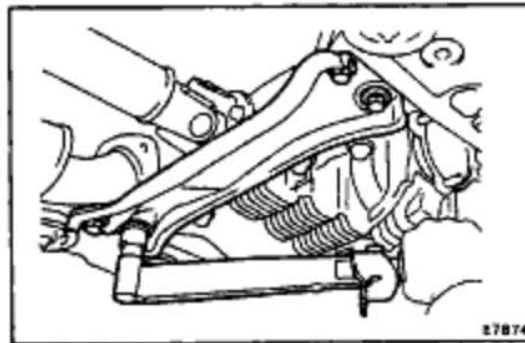
## RA-30

## REAR AXLE AND SUSPENSION – Differential (4WD)

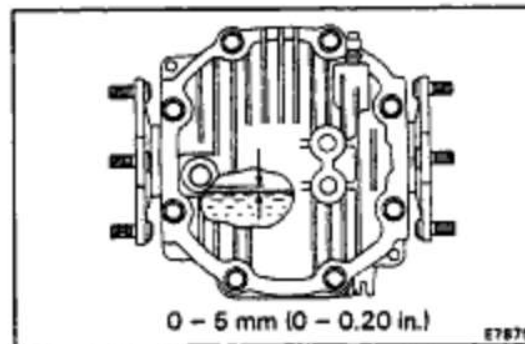
**10. STAKE DRIVE PINION NUT****11. CONNECT PROPELLER SHAFT**

- (a) Align the matchmarks on the flanges and connect the propeller shaft with the four bolts, washers and nuts.
- (b) Torque the bolts and nuts.

Torque: 760 kg-cm (54 ft-lb, 74 N-m)

**12. INSTALL REAR CROSSMEMBER**

Torque: 730 kg-cm (53 ft-lb, 72 N-m)

**13. CHECK OIL LEVEL**

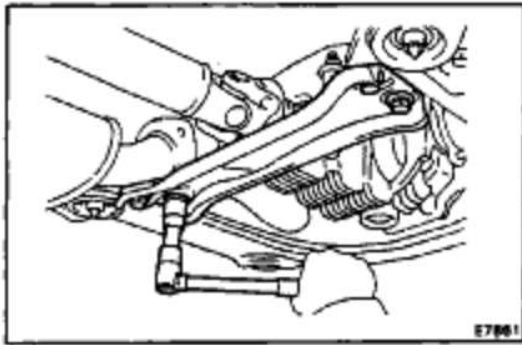
Oil grade: AN GL-5 hypoid gear oil

Viscosity: Above – 18°C (0°F) SAE 90

Below – 18°C (0°F) SAE 80 W – 90

Capacity: 1.1 liters (1.2 US qts, 1.0 Imp.qts)

0 – 5 mm (0 – 0.20 in.)



## Removal of Differential

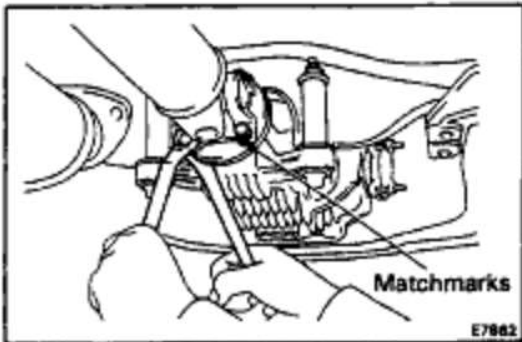
(See page [RA-27](#))

### 1. DRAIN DIFFERENTIAL OIL

### 2. REMOVE DRIVE SHAFTS

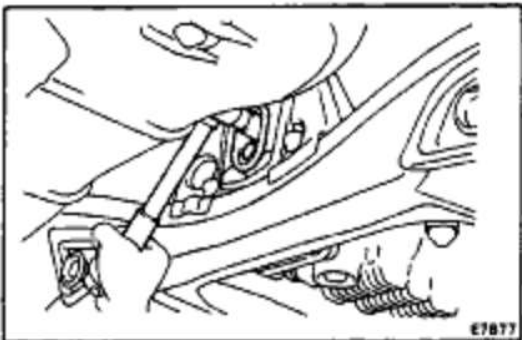
(See page [RA-20](#))

### 3. REMOVE REAR CROSSMEMBER



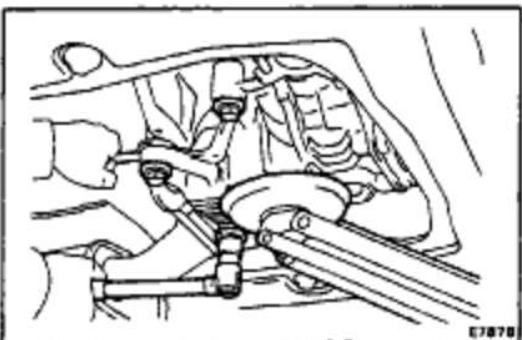
### 4. DISCONNECT PROPELLER SHAFT

- Place the matchmarks on the both flanges.
- Remove the four bolts, washers and nuts.
- Disconnect the propeller shaft from the differential.

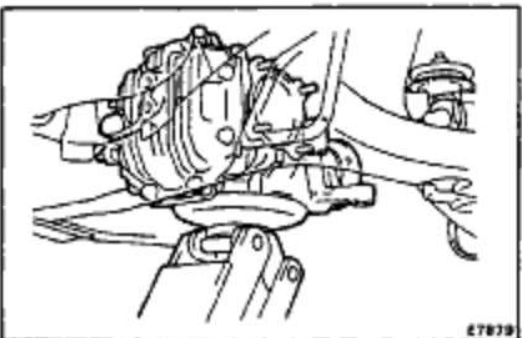


### S. REMOVE DIFFERENTIAL

- Jack up the differential slightly.
- Remove the two bolts.

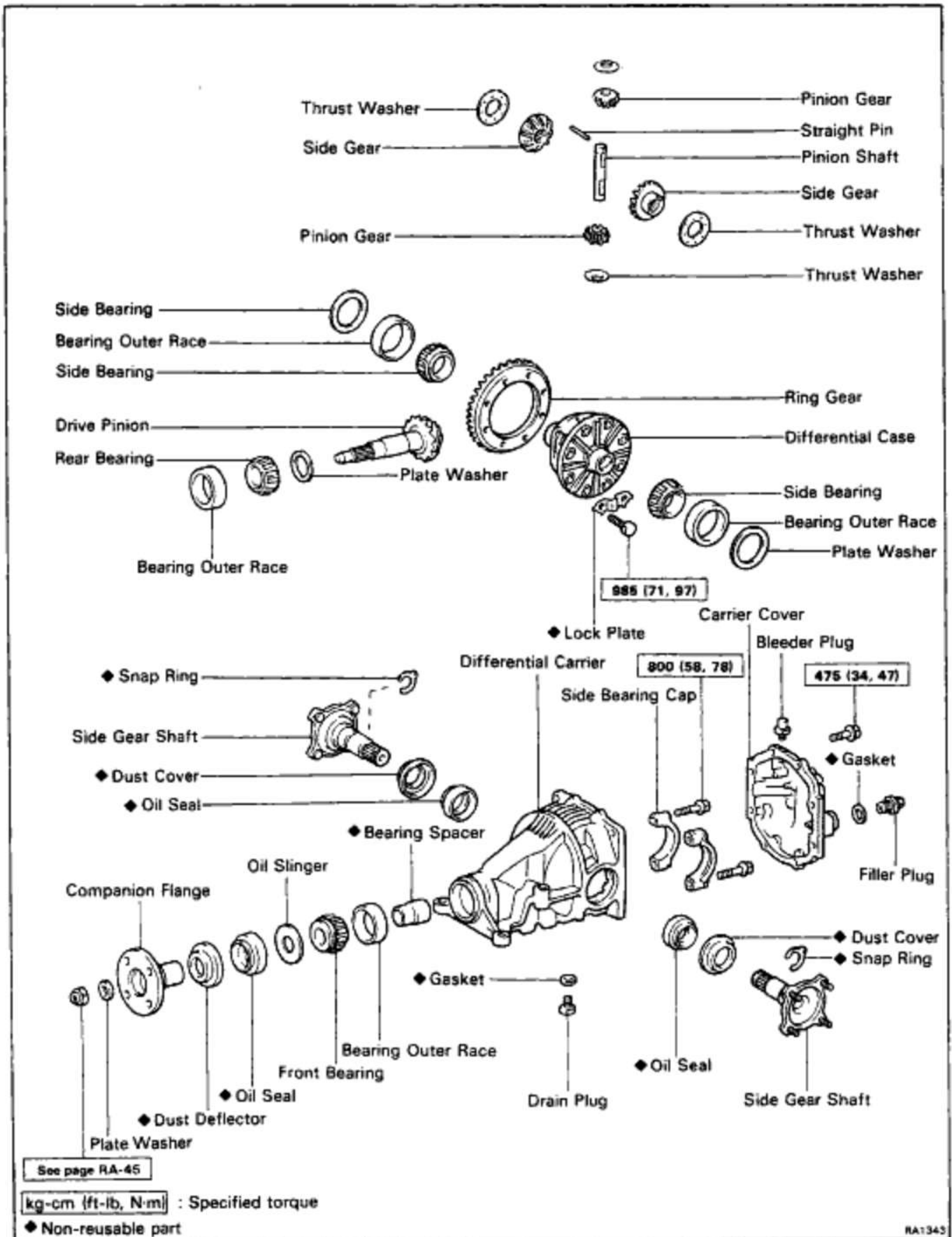


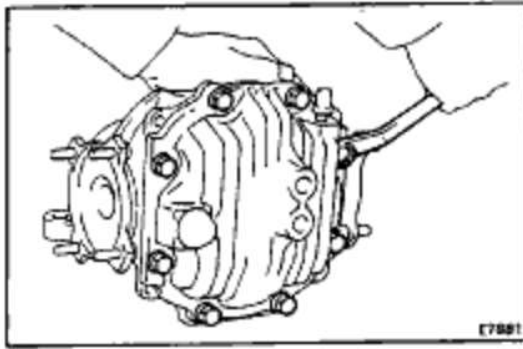
- Remove the four nuts and bolts.



- Remove the differential from the body.

## Differential Carrier

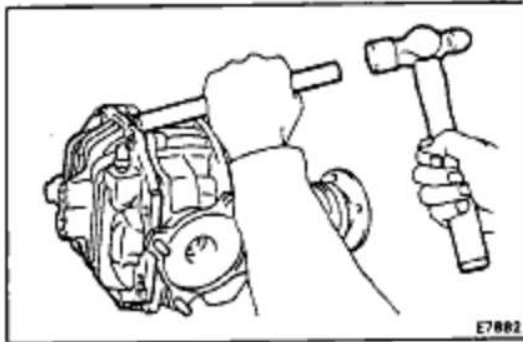




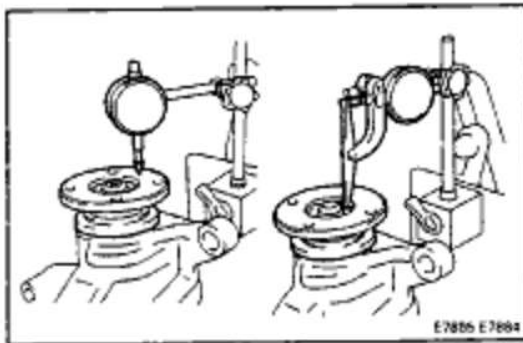
## PRE-INSPECTION OF DIFFERENTIAL CARRIER

### 1. REMOVE DIFFERENTIAL CARRIER COVER

(a) Remove the eight bolts.



(b) Using a brass bar and hammer, separate the cover and carrier. .



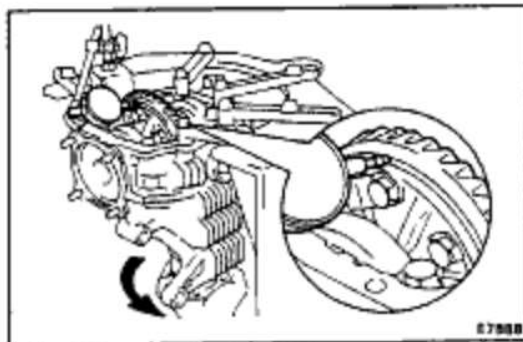
### 2. CHECK COMPANION FLANGE RUNOUT

Using a dial indicator, measure the lateral and radial runout of the companion flange.

**Maximum lateral runout: 0.10 mm (0.0039 in.)**

**Maximum radial runout: 0.10 mm (0.0039 in.)**

If the runout is greater than the maximum, replace the companion flange.

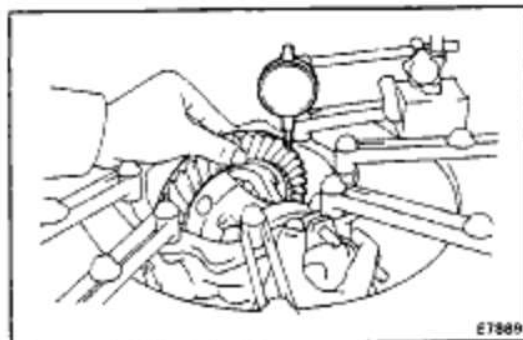


### 3. CHECK RING GEAR RUNOUT

Using a dial indicator, measure the runout of the ring gear.

**Maximum runout: 0.07 mm (0.0028 in.)**

If the runout is greater than the maximum, replace the ring gear.



### 4. CHECK RING GEAR BACKLASH

Using a dial indicator, check the backlash of the ring gear.

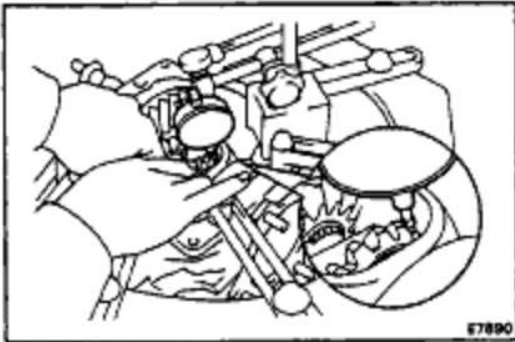
**Backlash: 0.13 mm – 0.18 mm (0.0051 – 0.0071 in.)**

If the backlash is not within specification, adjust the side bearing preload.

## RA-34

## REAR AXLE AND SUSPENSION – Differential (4WD)

## 5. CHECK TOOTH CONTACT (See page RA-45)

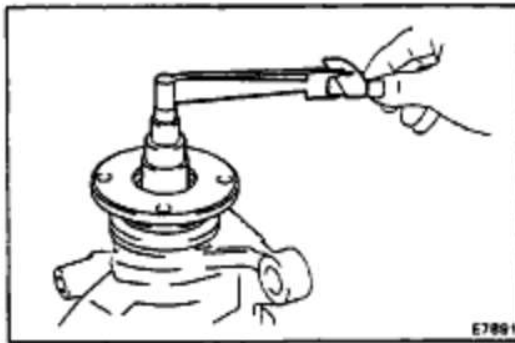


## 6. CHECK SIDE GEAR BACKLASH

Using a dial indicator, check the backlash of the side gear while holding one pinion gear toward the differential case.

**Backlash: 0.05 – 0.20 mm (0.0020 – 0.0079 in.)**

If the backlash is not within specification, install the side gear thrust washers of different thickness.



## 7. MEASURE DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

**Preload (at starting):**

**5–8kg–cm (4.3–6.9in.–lb, 0.5–0.8N–m)**

## 8. CHECK TOTAL PRELOAD

Using a torque wrench, measure the total preload.

**Total preload (at starting):**

**In addition to drive pinion preload**

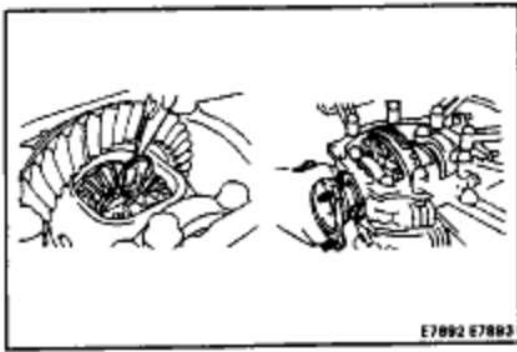
**3 – 5 kg–cm (2.6 – 4.3 in.–lb, 0.3 – 0.5 N–m)**

If necessary disassembly and inspect a differential.

## DISASSEMBLY OF DIFFERENTIAL CARRIER

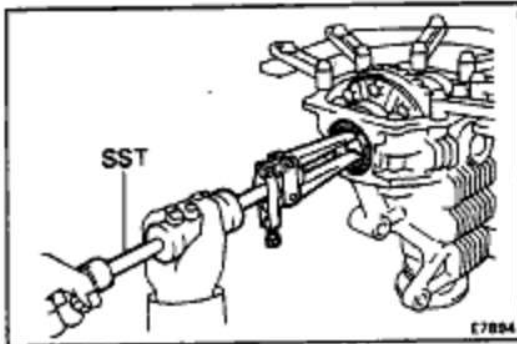
### 1. REMOVE SIDE GEAR SHAFTS

- (a) Remove the two shaft snap rings.
- (b) Remove the two side gear shafts.



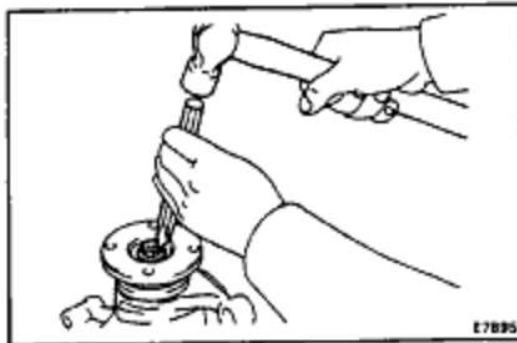
### 2. REMOVE SIDE GEAR SHAFT OIL SEALS

- Using SST, remove the two oil seals from the housing.  
SST 09308-00010

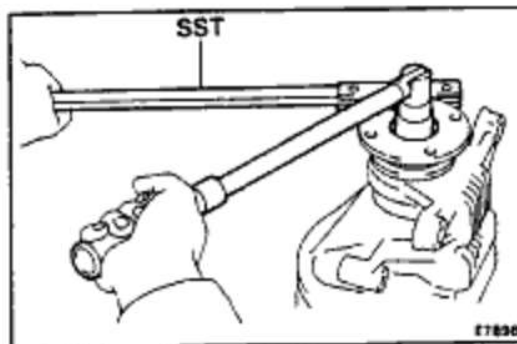


### 3. REMOVE COMPANION FLANGE

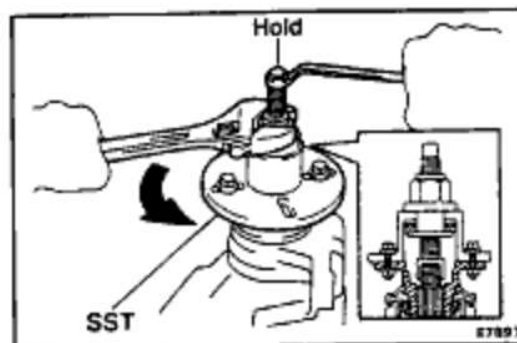
- (a) Using a hammer and chisel, loosen the staked part of the nut.



- (b) Using SST to hold the flange, remove the nut.  
SST 09330-00021
- (c) Remove the plate washer.



- (d) Using SST, remove the companion flange.  
SST 09557-22022

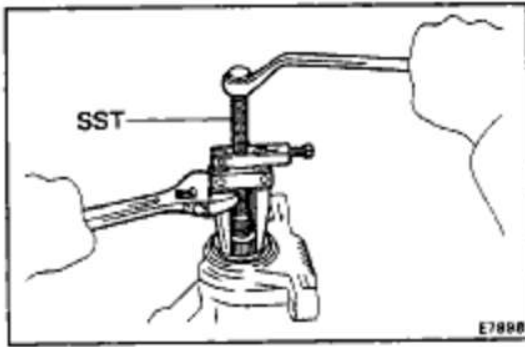


## RA-36

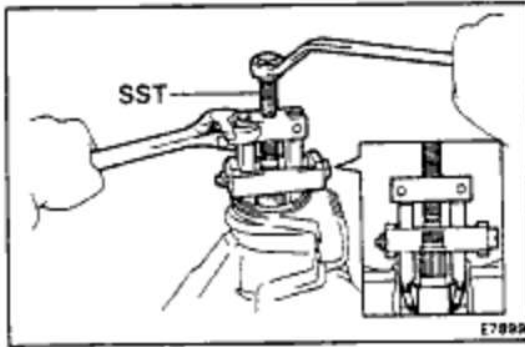
## REAR AXLE AND SUSPENSION – Differential (4WD)

**4. REMOVE FRONT OIL SEAL AND OIL SLINGER**

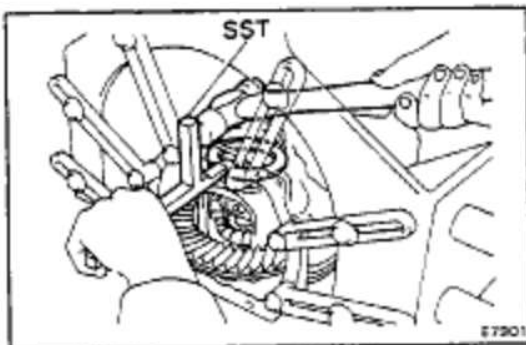
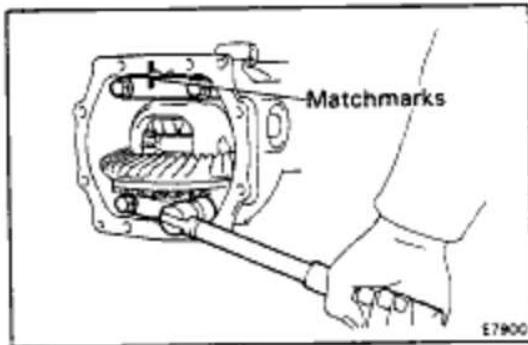
- (a) Using SST, remove the oil seal from the housing.  
SST 09308-10010
- (b) Remove the oil slinger.

**5. REMOVE FRONT BEARING AND BEARING SPACER**

- (a) Using SST, remove the bearing from the housing.  
SST 09556-22010
- (b) Remove the bearing spacer.

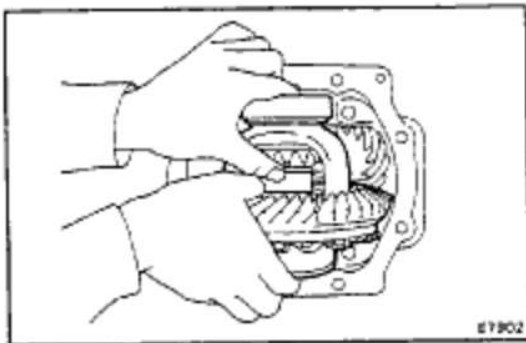
**6. REMOVE DIFFERENTIAL CASE**

- (a) Place matchmarks on the bearing cap and differential carrier.
- (b) Remove the two bearing caps.

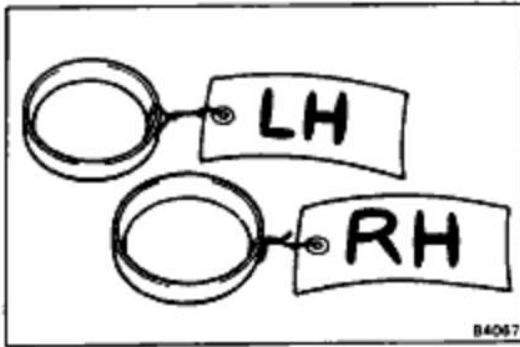


- (c) Using SST, remove the two side bearing preload adjusting plate.  
SST 09504-22011

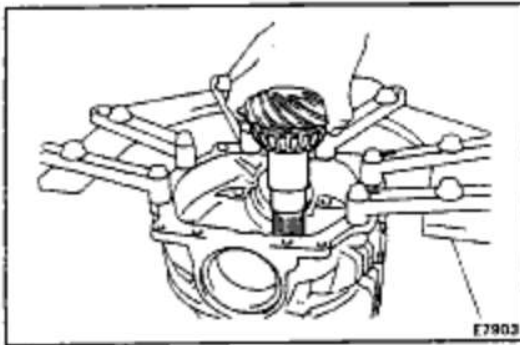
HINT: Measure the adjusting plate washer and note the thickness.



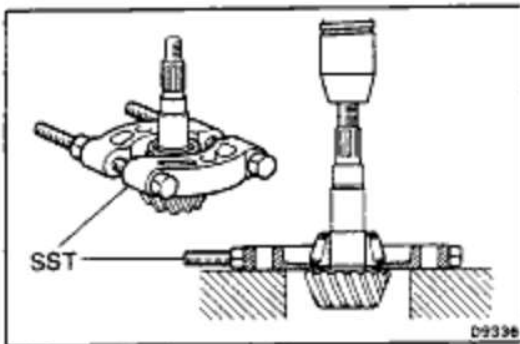
- (d) Remove the differential case and bearing outer race from the carrier.



HINT: Tag the bearing outer races to show the location for reassembly.



#### 7. REMOVE DRIVE PINION FROM DIFFERENTIAL CARRIER



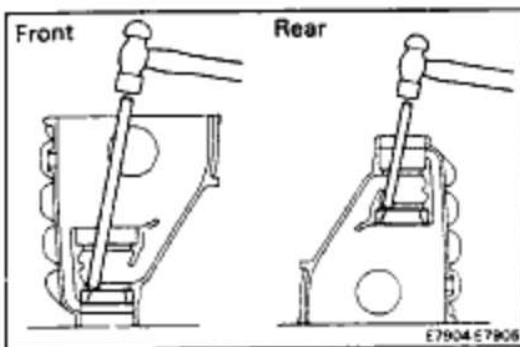
#### 8. REMOVE DRIVE PINION REAR BEARING

- (a) Using SST and a press, remove the bearing from the drive pinion.

SST 09950-00020

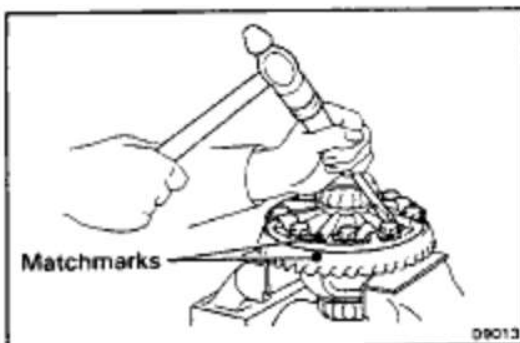
HINT: If the drive pinion or ring gear are damaged replace them a set.

- (b) Remove the plate washer.



#### 9. REMOVE FRONT AND REAR BEARING OUTER RACES

Using a hammer and brass bar, drive out the outer races from the carrier.



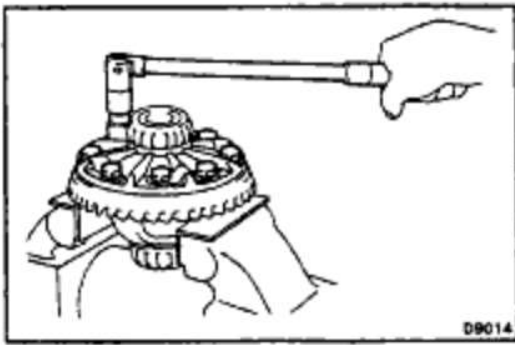
#### 10. REMOVE RING GEAR

- (a) Place the matchmarks on the ring gear and differential case.

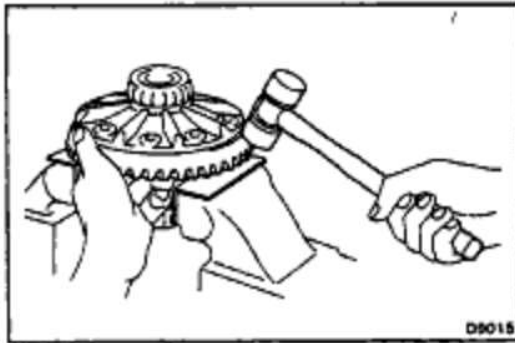
- (b) Unstake the lock plates.

## RA-38

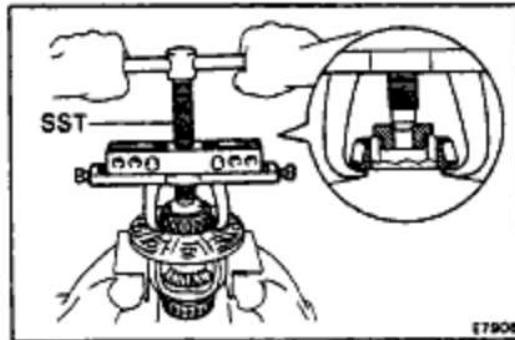
## REAR AXLE AND SUSPENSION – Differential (4WD)



(c) Remove the eight bolts and lock plates.



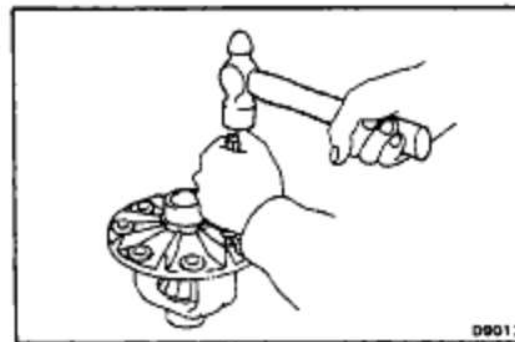
(d) Using a plastic hammer, tap on the ring gear to separate it from differential case.



### 11. REMOVE SIDE BEARINGS

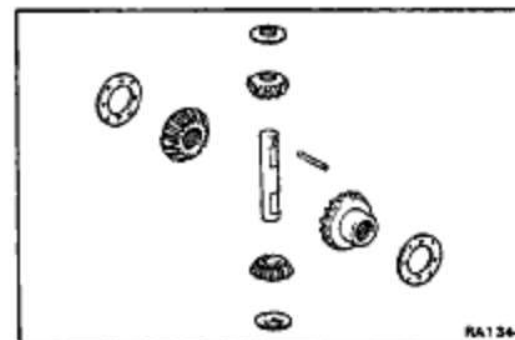
Using SST, remove the two side bearings from differential case.

SST 09950-24017



### 12. DISASSEMBLE DIFFERENTIAL CASE

(a) Using a hammer and punch, drive out the straight pin.



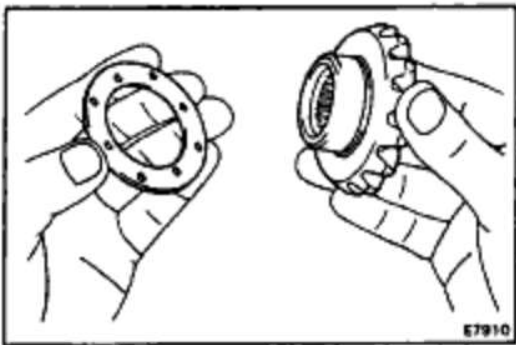
(b) Remove the following parts from differential case:

- Pinion shaft
- Two pinion gears
- Two side gears
- Four thrust washers

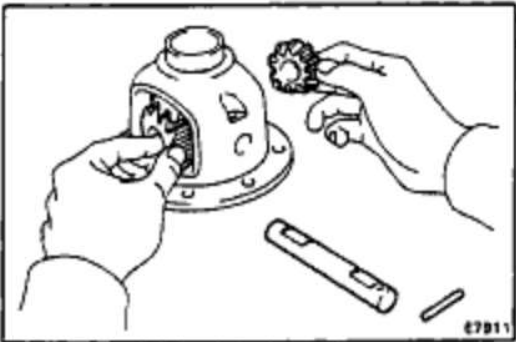
ASSEMBLY OF DIFFERENTIAL CARRIER

1. ASSEMBLE DIFFERENTIAL CASE

(a) Install the thrust washers to the side gears.



- (b) Install the side gears with thrust washers and pinion gears with thrust washers.  
(c) Install the pinion shaft.



(d) Check the side gear backlash.

Measure the side gear backlash while holding one pinion gear toward the case.

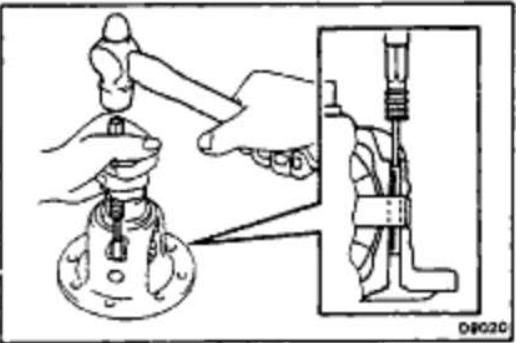
**Backlash: 0.05 – 0.20 mm (0.0020 – 0.079 in.)**

If the backlash is not within specification, install the side gear thrust washers of different thickness.

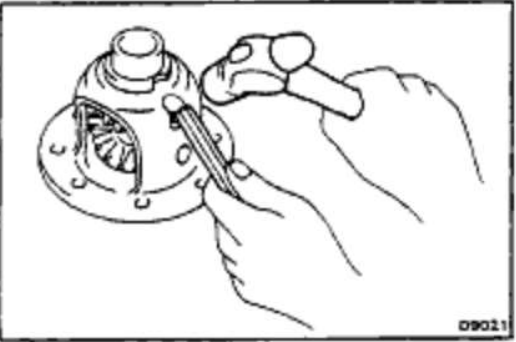
| Thrust washer thickness |               | mm    |
|-------------------------|---------------|-------|
| 0.95 (0.0374)           | 1.10 (0.0433) | (in.) |
| 1.00 (0.0394)           | 1.15 (0.0453) |       |
| 1.05 (0.0413)           | 1.20 (0.0472) |       |

HINT: Use washers of same thickness on both the right and left sides.

(e) Using a hammer and punch, drive in the straight pin through the case and hole in the pinion shaft.

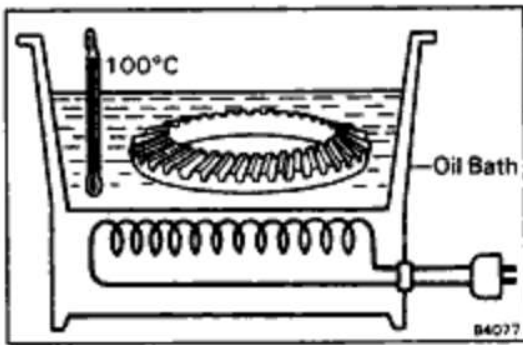


(f) Stake the case.



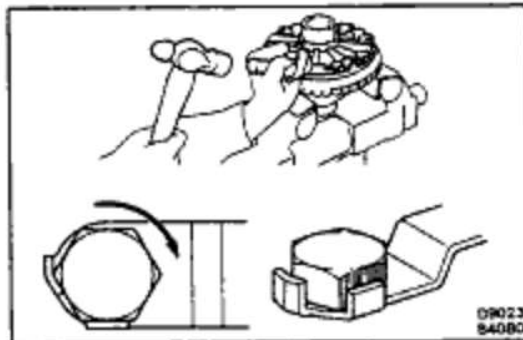
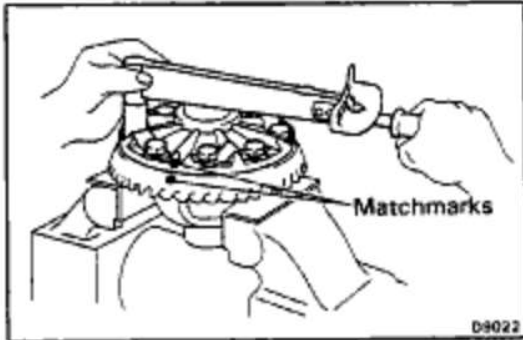
## RA-40

## REAR AXLE AND SUSPENSION – Differential (4WD)

**2. INSTALL RING GEAR ON DIFFERENTIAL CASE**

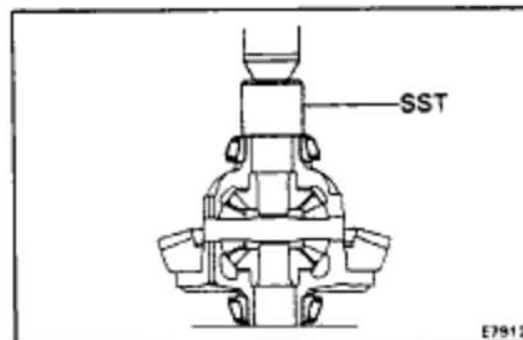
- (a) Clean the contact surface of the differential case.
- (b) Heat the ring gear to about 100°C (212°F) in an oil bath.  
**NOTICE: Do not heat the ring gear above 110°C (230°F).**
- (c) Clean the contact surface of the ring gear with cleaning solvent.
- (d) Then quickly install the ring gear on the differential case.
- (e) Align the matchmarks on the ring gear and differential case.
- (f) Coat the ring gear set bolts with gear oil.
- (g) Temporarily install the lock plates and set bolts.
- (h) After the ring gear cools down enough, tighten the set bolts uniformly and a little at a time.

**Torque: 985 kg-cm (71 ft-lb, 97 N-m)**



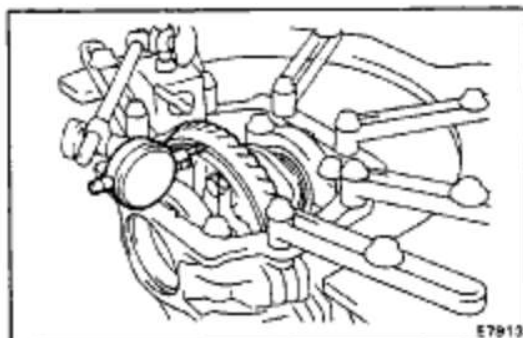
Using a hammer and drift punch, stake the lock plates.

**HINT:** Stake one claw flush with the flat surface of the nut. For the claw contacting the protruding portion of the nut, stake only the half on the tightening side.

**3. INSTALL SIDE BEARINGS**

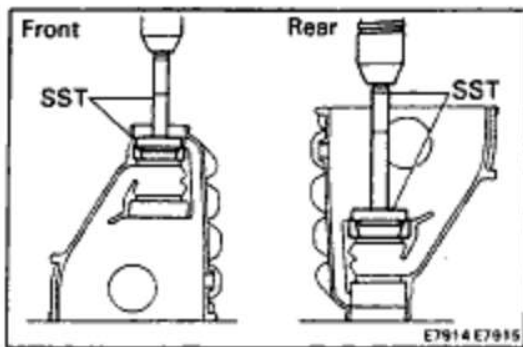
Using a press and SST, drive in the side bearings into the differential case.

SST 09710-22020 (09710-01030)

**4. CHECK RING GEAR RUNOUT**

- (a) Install the differential case onto the carrier and install the plate washers to where there is no play in the bearing (See page [RA-42](#))
- (b) Install bearing caps. (See page [RA-44](#))
- (c) Using a dial indicator, measure the runout of ring gear.

**Maximum runout: 0.07 mm (0.0028 in.)**



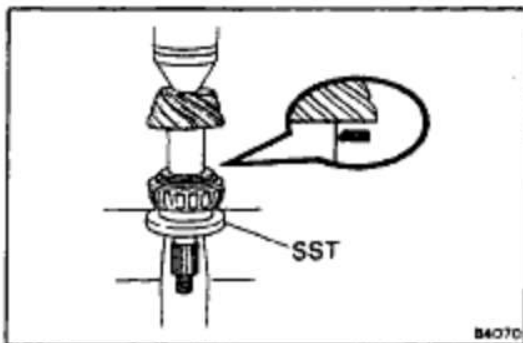
## 5. INSTALL FRONT AND REAR BEARING OUTER RACES

Using a press and SST, drive in the front and rear bearing outer races.

SST 09608-30012

Front (09608-04020 and 09608-00060)

Rear (09608-04020 and 09608-04100)



## 6. INSTALL REAR BEARING TO DRIVE PINION

(a) install the plate washer on the drive pinion with the chamfered end facing toward the pinion gear.

(b) Using a press and SST, install the rear bearing onto the drive pinion.

SST 09506-30012

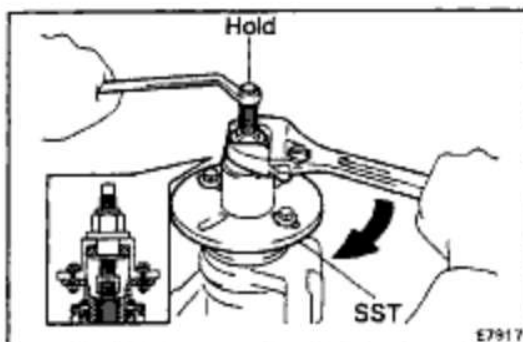


## 7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

(a) Install the following parts:

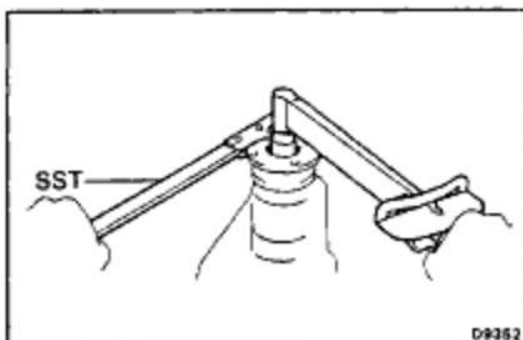
- Drive pinion
- Front bearing

HINT: Assemble the spacer, oil slinger and oil seal after adjusting the gear contact pattern.



(b) Install the companion flange with SST.

SST 09557-22022



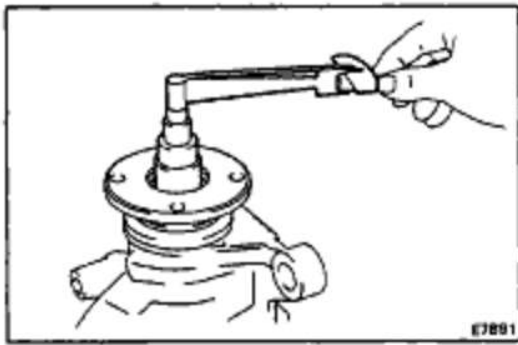
(c) Adjusting the drive pinion preload by tightening the companion flange nut.

Using SST to hold the flange, tighten the nut.

SST 09330-00021

## RA-42

## REAR AXLE AND SUSPENSION – Differential (4WD)



(d) Using a torque meter, measure the preload.

**Preload (at starting):**

**New bearing**

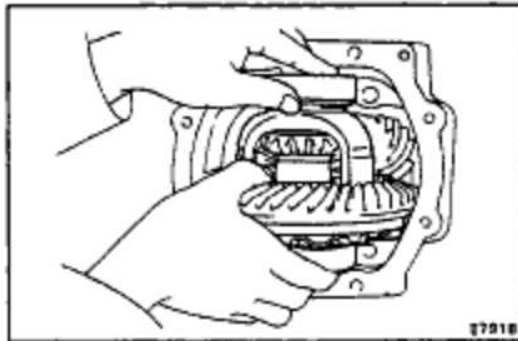
10 – 16 kg-cm

(8.7 – 13.9 in.-lb, 1.0 – 1.6 N-m)

**Reused bearing**

5 – 8 kg-cm

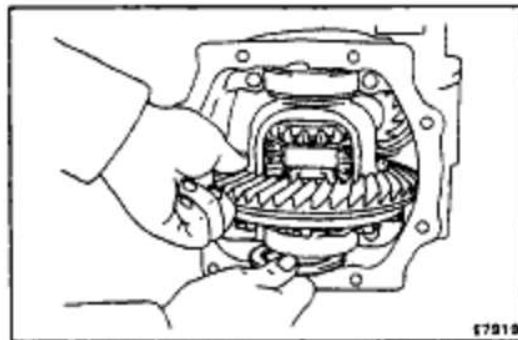
(4.3 – 6.9 in.-lb, 0.5 – 0.8 N-m)



## 8. INSTALL DIFFERENTIAL CASE IN CARRIER

(a) Place the bearing outer races on their respective bearings. Make sure the left and right outer races are not interchanged.

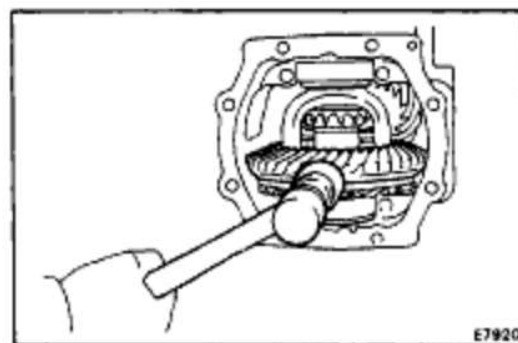
(b) Install the differential case in the carrier.



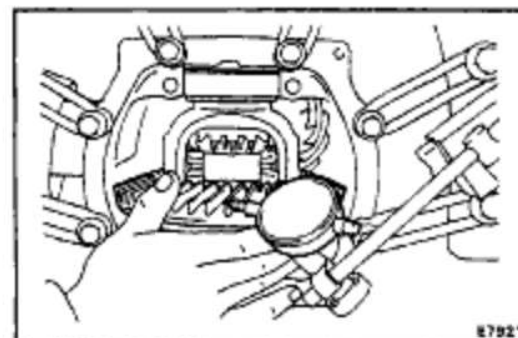
## 9. ADJUST RING GEAR BACKLASH

(a) Install only the plate washer on the ring gear back side.

HINT: Insure that the ring gear has backlash.



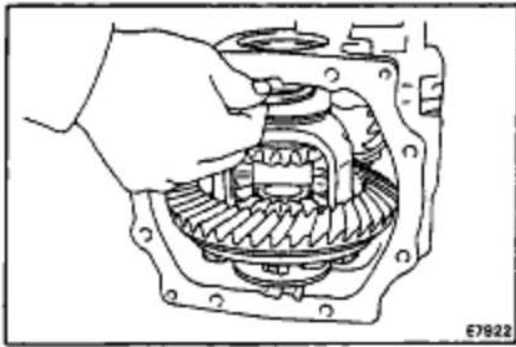
(b) Snug down the washer and bearing by tapping on the ring gear with a plastic hammer.



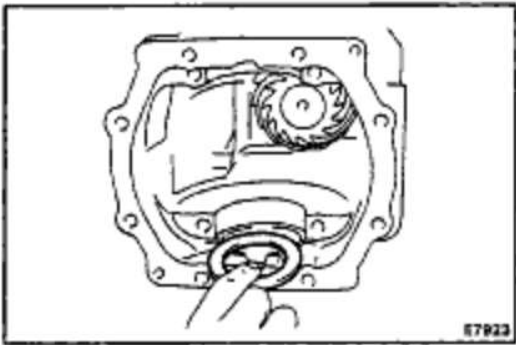
(c) Using a dial indicator, measure the backlash.

(d) Select a ring gear back side plate washer so that the backlash is 0.13 mm (0.0051 in.).

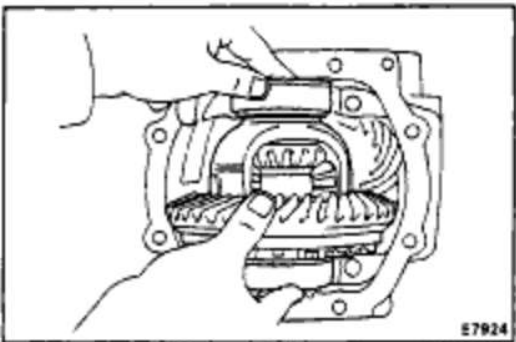
(See table on page [RA-44](#))



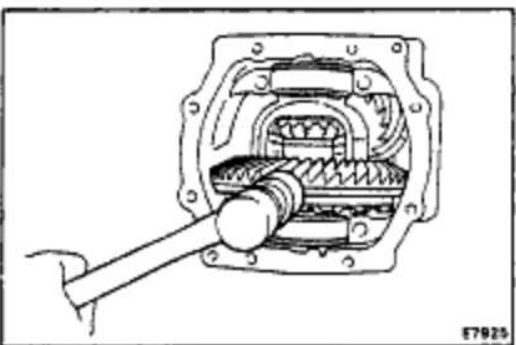
- (e) Select a ring gear teeth side washer with a thickness which eliminates any clearance between the outer race and case.



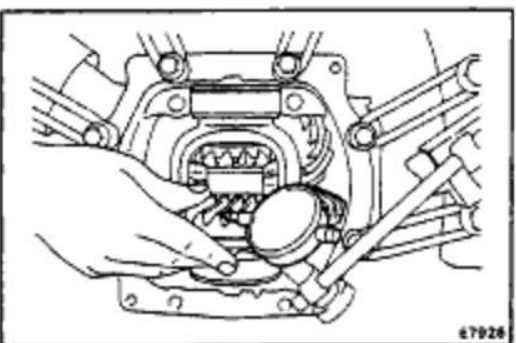
- (f) Remove the plate washer and differential case. Install the plate washer into the ring gear back side.



- (g) Place the other plate washer onto the differential case together with the outer race, and install the differential case with the outer race into the carrier.



- (h) Using a plastic hammer, snug down the washer and bearing by tapping the ring gear.



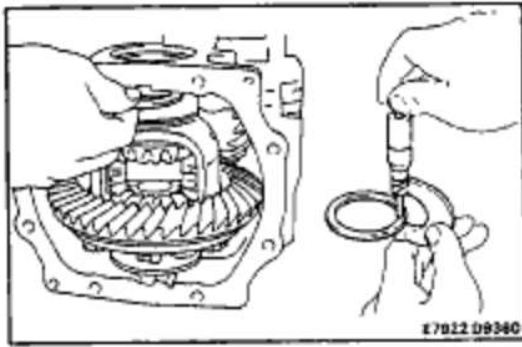
- (j) Using a dial indicator, measure the ring gear backlash.  
**Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)**  
 (k) If not within the specification, adjust by either increasing or decreasing the number of washers on both sides by an equal amount.

HINT: There should be no clearance between the plate washer and case.

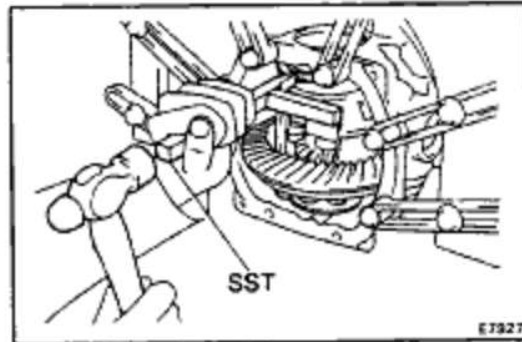
Insure that there is ring gear backlash.

## RA-44

## REAR AXLE AND SUSPENSION – Differential (4WD)

**10. ADJUST SIDE BEARING PRELOAD**

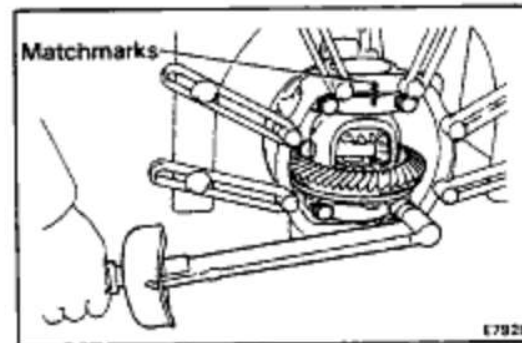
- (a) Remove the ring gear teeth side plate washer and measure the thickness.



- (b) Install a new plate washer of 0.06 – 0.09 mm (0.0024 – 0.0035 in.) thicker than the removed washer.

HINT: Select a washer which can be pressed in 2/3 of the way by finger.

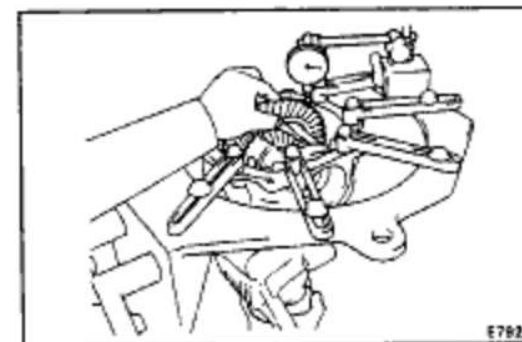
- (c) Using a hammer and SST, tap in the side washer.  
SST 09504-22011



- (d) Install the side bearing caps.

HINT: Align the matchmarks on the cap and carrier.

**Torque: 800 kg-cm (58 ft-lb, 78 N-m)**



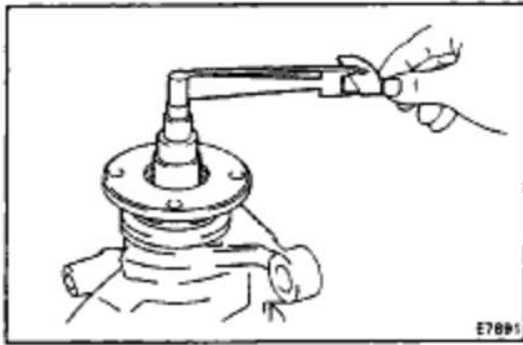
- (e) Recheck the ring gear backlash.

**Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)**

- (f) If not within the standard, adjust by either increasing or decreasing the washers on both sides by equal amount.

HINT: The backlash will change about 0.02 mm (0.0008 in.) with 0.03 mm (0.0012 in.) alteration of the side washer.

| Washer thickness          | mm (in.)                  |
|---------------------------|---------------------------|
| 2.21-2.23 (0.0870-0.0878) | 2.72-2.74 (0.1071-0.1079) |
| 2.24-2.26 (0.0882-0.0890) | 2.75-2.77 (0.1083-0.1091) |
| 2.27-2.29 (0.0894-0.0902) | 2.78-2.80 (0.1094-0.1102) |
| 2.30-2.32 (0.0906-0.0913) | 2.81-2.83 (0.1106-0.1114) |
| 2.33-2.35 (0.0917-0.0925) | 2.84-2.86 (0.1118-0.1126) |
| 2.36-2.38 (0.0929-0.0937) | 2.87-2.89 (0.1130-0.1138) |
| 2.39-2.41 (0.0941-0.0949) | 2.90-2.92 (0.1142-0.1150) |
| 2.42-2.44 (0.0953-0.0961) | 2.93-2.95 (0.1154-0.1161) |
| 2.45-2.47 (0.0965-0.0972) | 2.96-2.98 (0.1165-0.1173) |
| 2.48-2.50 (0.0976-0.0984) | 2.99-3.01 (0.1177-0.1185) |
| 2.51-2.53 (0.0988-0.0996) | 3.02-3.04 (0.1189-0.1197) |
| 2.54-2.56 (0.1000-0.1008) | 3.05-3.07 (0.1201-0.1209) |
| 2.57-2.59 (0.1012-0.1020) | 3.08-3.10 (0.1213-0.1220) |
| 2.60-2.62 (0.1024-0.1031) | 3.11-3.13 (0.1224-0.1232) |
| 2.63-2.65 (0.1035-0.1043) | 3.14-3.16 (0.1236-0.1244) |
| 2.66-2.68 (0.1047-0.1055) | 3.17-3.19 (0.1248-0.1256) |
| 2.69-2.71 (0.1059-0.1067) | 3.20-3.22 (0.1260-0.1268) |



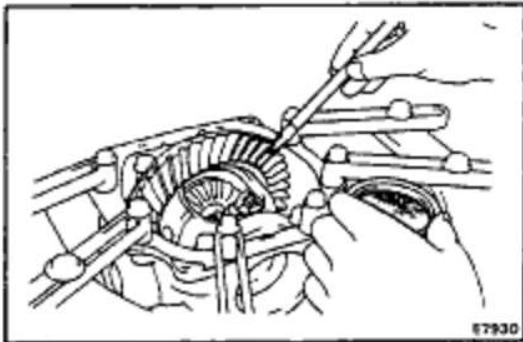
### 11. MEASURE TOTAL PRELOAD

Using a torque wrench, measure the total preload.

**Total preload (at starting):**

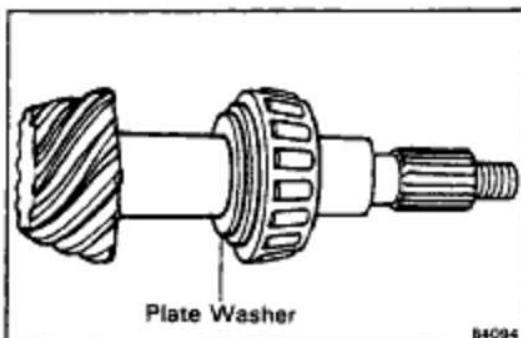
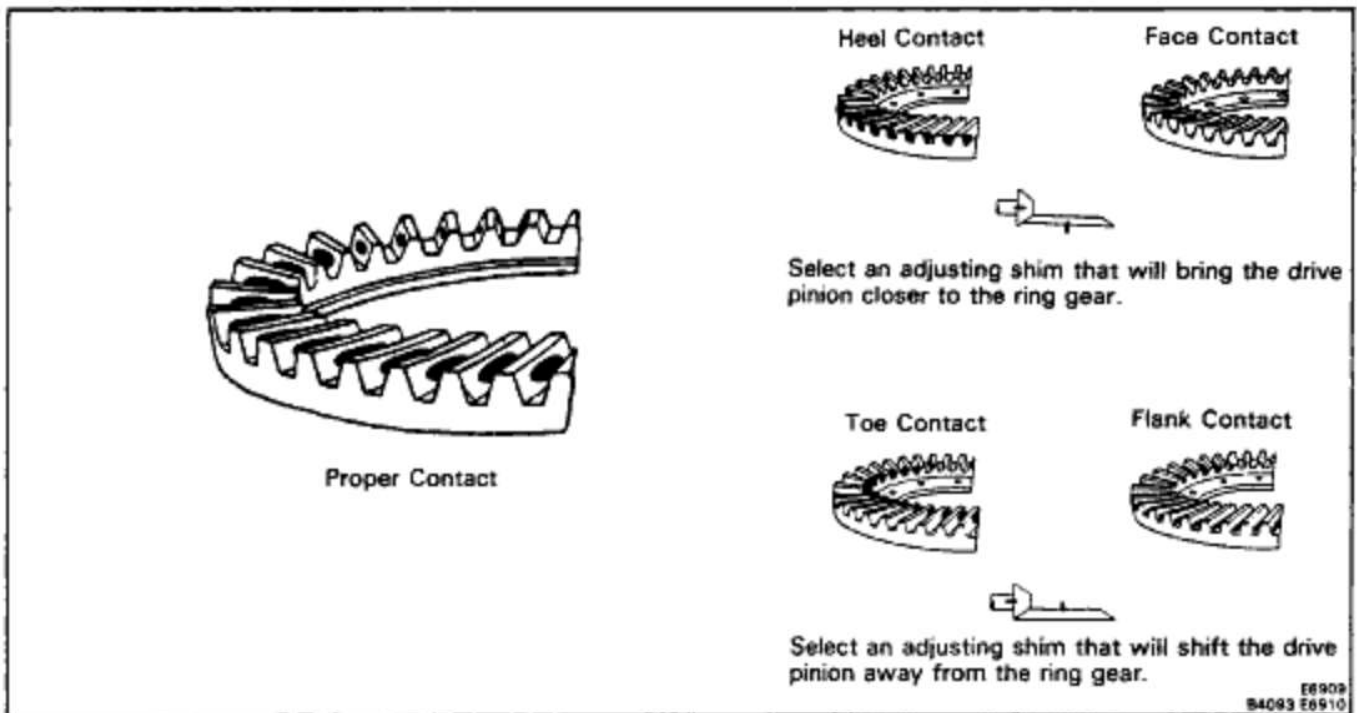
**Add drive pinion preload**

**3 – 5 kg-cm (2.6 – 4.3 in.-lb, 0.3 – 0.5 N-m)**



### 12. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

- Coat 3 or 4 teeth at three different positions on the ring gear with red lead.
- Hold the companion flange firmly and rotate the ring gear in both directions.
- Inspect the tooth contact.

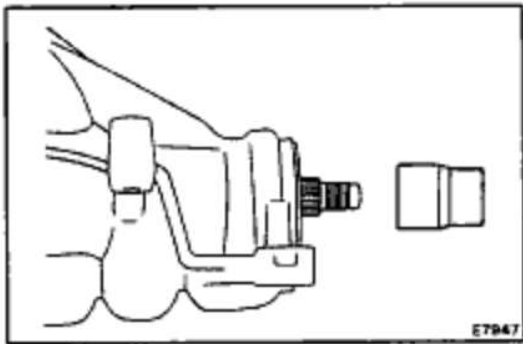


If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

| Thickness |          | mm (in.) |          |
|-----------|----------|----------|----------|
| 2.27      | (0.0894) | 2.54     | (0.1000) |
| 2.30      | (0.0906) | 2.57     | (0.1012) |
| 2.33      | (0.0917) | 2.60     | (0.1024) |
| 2.36      | (0.0929) | 2.63     | (0.1035) |
| 2.39      | (0.0941) | 2.66     | (0.1047) |
| 2.42      | (0.0953) | 2.69     | (0.1059) |
| 2.45      | (0.0965) |          |          |
| 2.48      | (0.0976) |          |          |
| 2.51      | (0.0988) |          |          |

## RA-46

## REAR AXLE AND SUSPENSION – Differential (4WD)

**13. REMOVE COMPANION FLANGE**

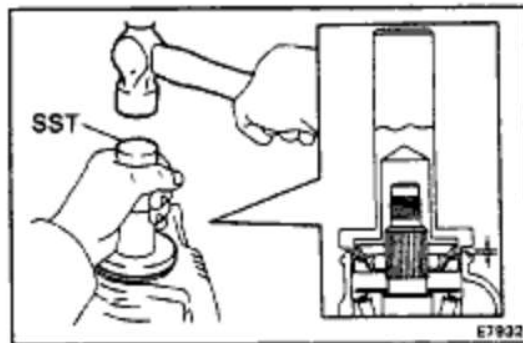
(See step 3 on page RA-35)

**14. REMOVE FRONT BEARING**

(See step 5 on page RA-36)

**15. INSTALL NEW BEARING SPACER AND FRONT BEARING**

- (a) Install a new bearing spacer on the drive pinion.
- (b) Install the front bearing on the drive pinion.

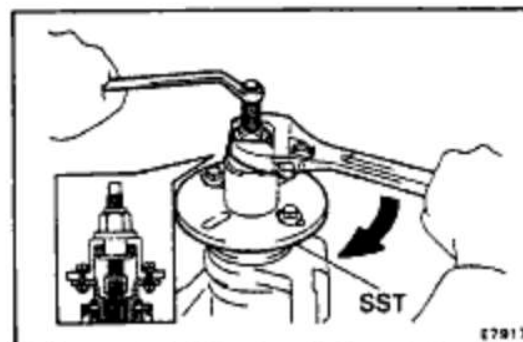
**16. INSTALL OIL SLINGER****17. INSTALL NEW OIL SEAL**

- (a) Using SST, drive in a new oil seal.

SST 09554-22010

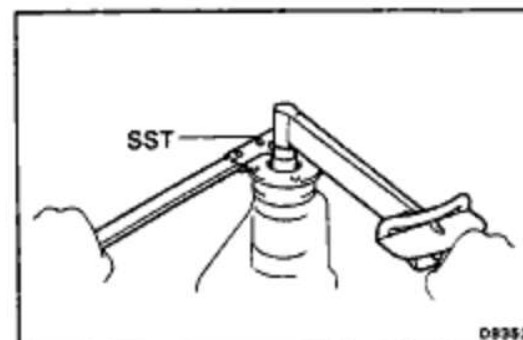
**Oil seal drive in depth: 2.0 mm (0.079 in.)**

- (b) Apply MP grease to oil seal lip.

**18. INSTALL COMPANION FLANGE**

- (a) Using SST, install the companion flange on the shaft.

SST 09557-22022



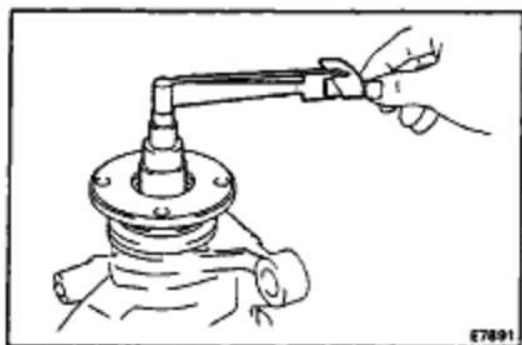
- (b) Install the plate washer.

- (c) Coat the threads of a new nut with gear oil.

- (d) Using SST to hold the flange, tighten the nut.

SST 09330-00021

**Torque: 1,100 kg-cm (80 ft-lb, 108 N-m)**

**19. CHECK DRIVE PINION BEARING PRELOAD**

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

**Preload (at starting):**

**New bearing**

10 – 16 kg-cm

(8.7 – 13.9 in.-lb, 1.0 – 1.6 N-m)

**Reused bearing**

5–8kg-cm

(4.3 – 6.9 in.-lb, 0.5 – 0.8 N-m)

- If preload is greater than specification, replace the bearing spacer.
- If preload is less than specification, re-tighten the nut 130 kg-cm (9 ft-lb, 13 N-m) at a time until the specified preload is reached. .  
If the maximum torque is exceed while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the preload.

**Maximum torque: 2,400 kg-cm (174 ft-lb, 235 N-m)**

**20. CHECK TOTAL PRELOAD**

**Total preload (at starting):**

**Add drive pinion preload**

3 – 5 kg-cm (2.6 – 4.3 in.-lb, 0.3 – 0.5 N-m)

**21. CHECK RING GEAR BACKLASH**

Using a dial indicator, check the backlash of the ring gear.

**Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)**

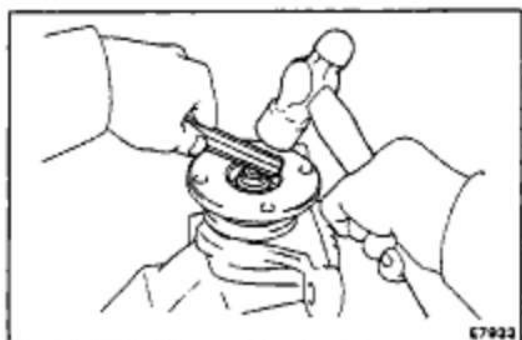
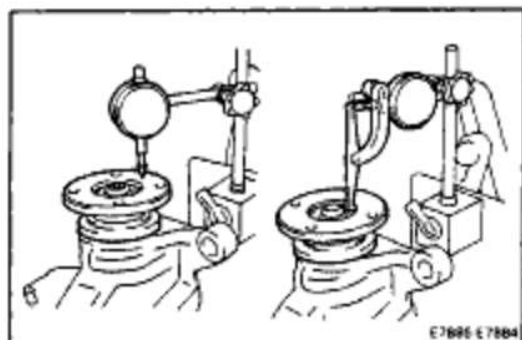
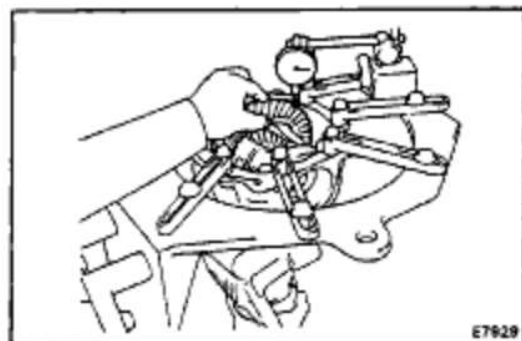
If the backlash is not within specification, adjust the side bearing pt-load.

**22. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION (See page RA-39)****23. CHECK COMPANION FLANGE RUNOUT**

Using a dial indicator, measure the lateral and radial runout of the companion flange.

**Maximum lateral runout: 0.10 mm (0.0039 in.)**

**Maximum radial runout: 0.10 mm (0.0039 in.)**

**24. STAKE DRIVE PINION NUT**

## RA-48

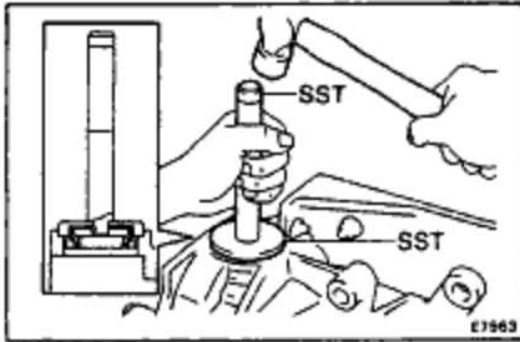
## REAR AXLE AND SUSPENSION — Differential (4WD)

**25. INSTALL NEW SIDE GEAR SHAFT OIL SEALS**

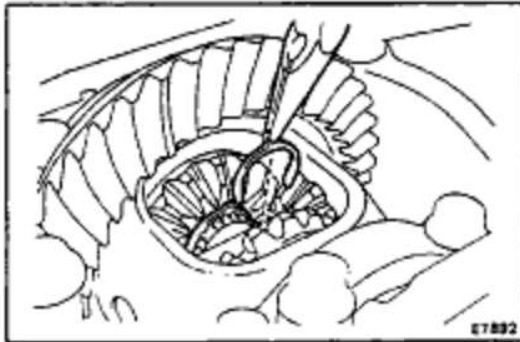
- (a) Using SST, drive in two new oil seals until they are flush with the carrier end surface.

SST 09550-22011 (09550-00020 and 09550-00031)

- (b) Coat the oil seal lips with MP grease.

**26. INSTALL SIDE GEAR SHAFTS**

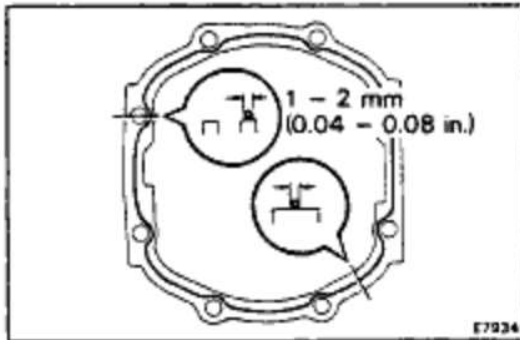
- (a) Install the two side gear shafts to the differential case.
- (b) Install two new shaft snap rings to the side gear shafts.

**27. INSTALL DIFFERENTIAL CARRIER COVER**

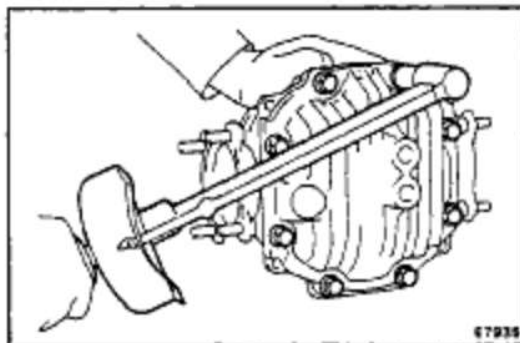
- (a) Clean contacting surfaces of any residual packing material using gasoline or alcohol.
- (b) Apply seal packing to the carrier.

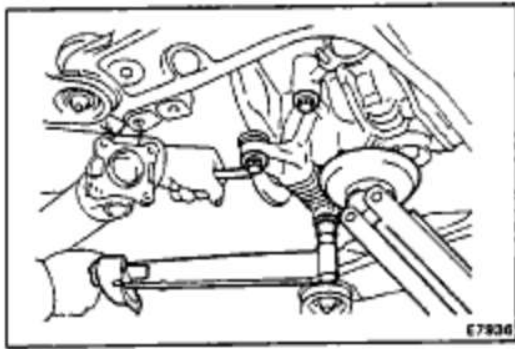
**Seal packing: Par No. 08826-00090, THREE BOND 1281 or equivalent**

**HINT:** Install the carrier cover within 3 minutes after applying seal packing.



- (c) Install and tighten the eight set bolts.
- Torque: 475 kg-cm (34 ft-lb, 47 N-m)**





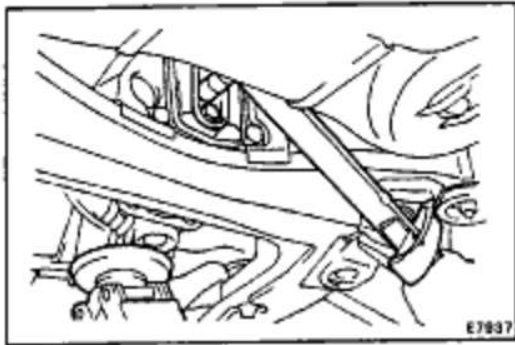
## INSTALLATION OF DIFFERENTIAL

(See page [RA-27](#))

### 1. INSTALL DIFFERENTIAL

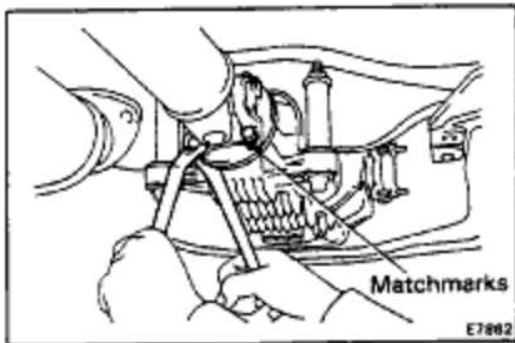
(a) Position the differential and torque the four bolts and nuts.

Torque: 970 kg-cm (70 ft-lb, 95 N-m)



(b) Install and torque the two bolts.

Torque: 1,500 kg-cm 108 ft-lb, 147 N-m)

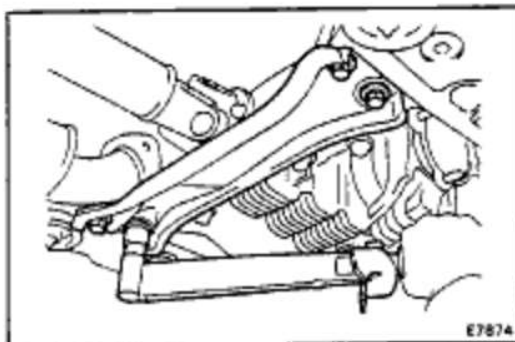


### 2. CONNECT PROPELLER SHAFT

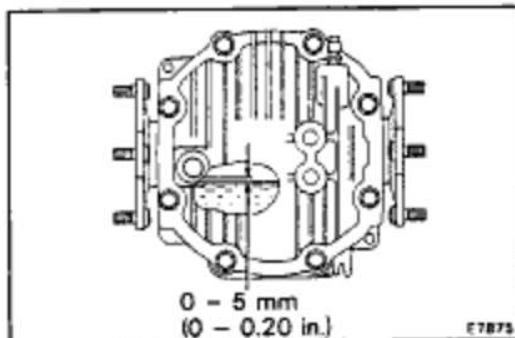
(a) Align the matchmarks on the flanges and connect the flanges with four bolts, nuts and washers.

(b) Torque the four bolts and nuts.

Torque: 750 kg-cm (54 ft-lb, 74 N-m)



### 4. CONNECT DRIVE SHAFTS (See page [RA-131](#))



### 5. FILL DIFFERENTIAL WITH GEAR OIL

(a) Install the drain plug with new gasket.

Torque: 500 kg-cm (36 ft-lb, 49 N-m)

(b) Fill the differential with gear oil.

Oil grade: API GL-5 hypoid gear oil

Viscosity: Above -18°C (0°F) SAE 90

Below -18°C

(0°F) SAE 80W-90

Capacity: 1.1 liters (1.2 US qts, 1.0 Imp.qts)

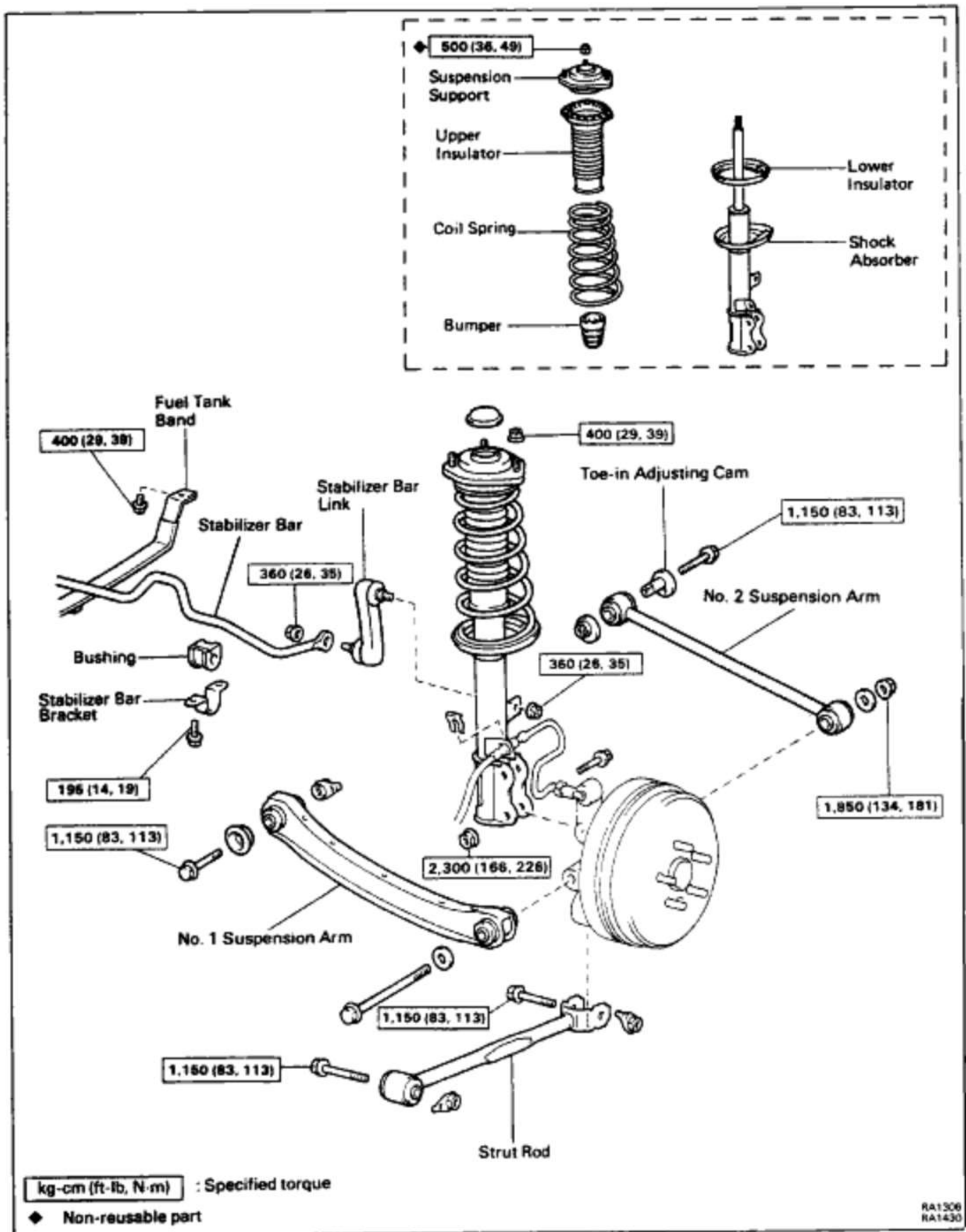
(c) Install the filler plug with new gasket.

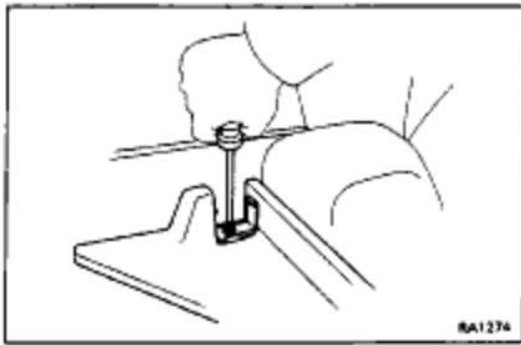
Torque: 400 kg-cm (29 ft-lb, 39 N-m)

RA-50

REAR AXLE AND SUSPENSION — Rear Suspension (FIND)

## REAR SUSPENSION (FWD) COMPONENTS

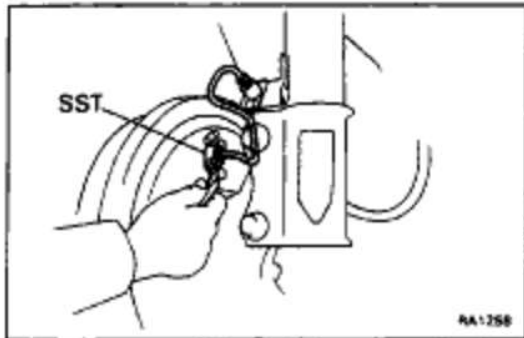




## Rear Shock Absorber

### REMOVAL OF REAR SHOCK ABSORBER

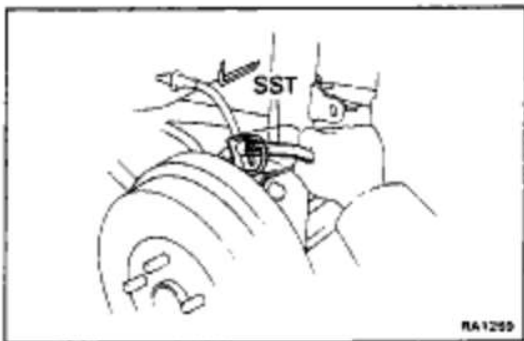
#### 1. REMOVE TONNEAU COVER HOLDER (Wagon)



#### 2. REMOVE BRAKE HOSE FROM SHOCK ABSORBER

(a) Using SST, disconnect the backing plate.

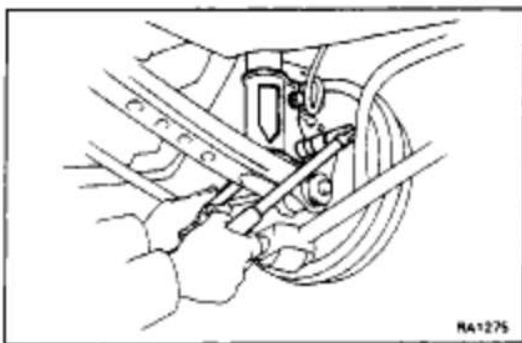
SST 09751-36011



(b) Using SST, remove the brake tube from the brake hose.

SST 09751-36011

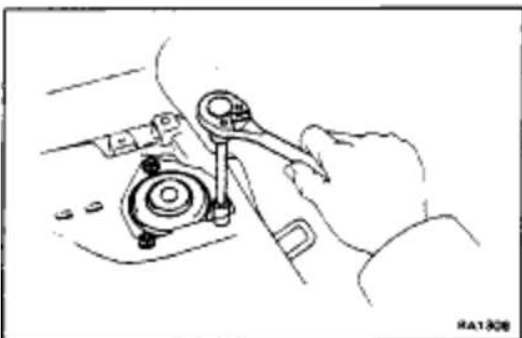
(c) Remove the clip and remove the brake hose from the shock absorber.



#### 3. DISCONNECT SHOCK ABSORBER FROM AXLE CARRIER

Remove the axle carrier mounting bolts and the nut and disconnect the shock absorber.

NOTE: Before removing the axle carrier mounting bolt, support the axle carrier with a jack.

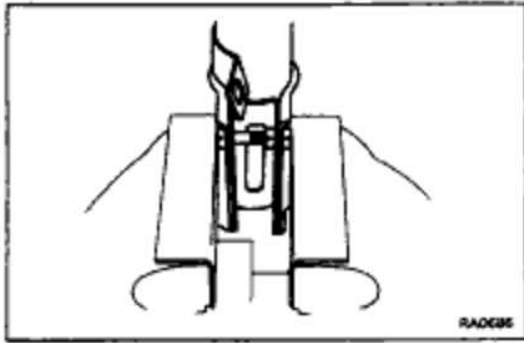


#### 4. REMOVE SHOCK ABSORBER

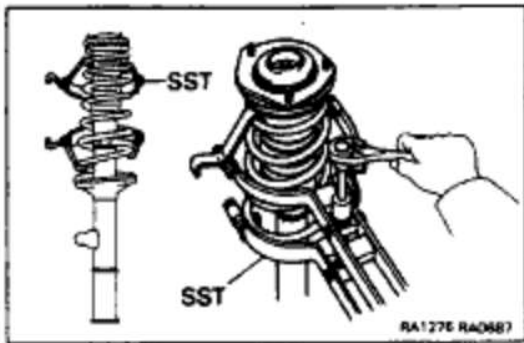
With holding the shock absorber, remove the three mounting nuts, and shock absorber from the body.

## RA-52

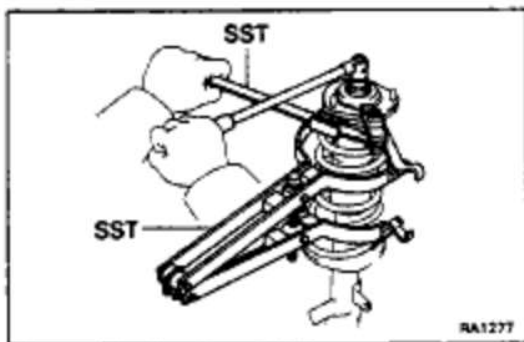
## REAR AXLE AND SUSPENSION – Rear Suspension (FWD)

**5. REMOVE COIL SPRING**

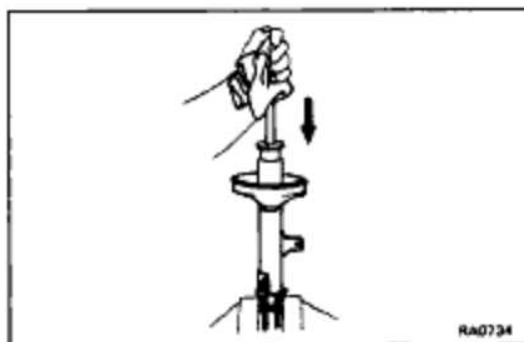
- (a) Mount the shock absorber with a bolt and two nuts as shown in the figure in a vise.



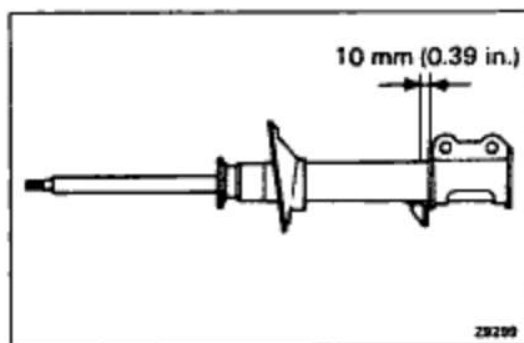
- (b) Using SST, compress the coil spring.  
SST 09727-22032 or 09727-30020



- (c) Remove the cover from the suspension support.  
(d) Using SST, hold the suspension support and remove the lock nut.  
SST 09729-22031  
(e) Remove the suspension support, coil spring, upper insulator, bumper and lower insulator.

**6. INSPECT OPERATION OF SHOCK ABSORBER**

- (a) While pushing the piston rod, check that the pull throughout the stroke is even, and there is no abnormal resistance or noise.  
(b) Push the piston rod in fully and release it. Check that it returns at a constant speed throughout.

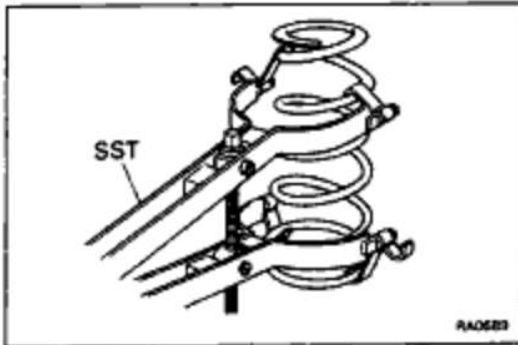
**7. DISCARD SHOCK ABSORBER**

Before discarding the absorber, drill a hole 2 – 3 mm (0.079 – 0.118 in.) in diameter at the location shown in the figure to release the gas inside.

**NOTICE:**

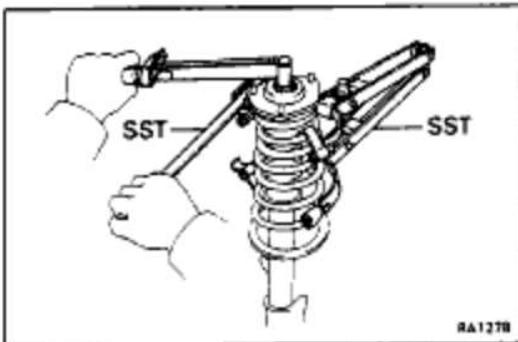
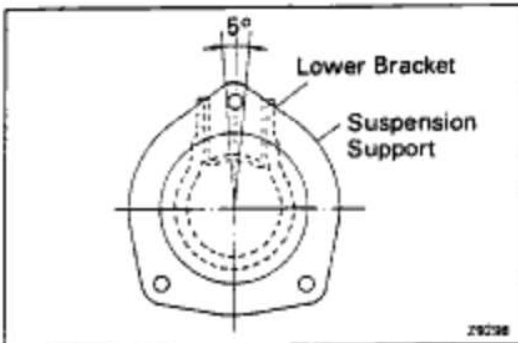
- When drilling, chips may fly out, so work carefully.
- The gas is colorless, odorless, and non-poisonous.

## INSTALLATION OF REAR SHOCK ABSORBER



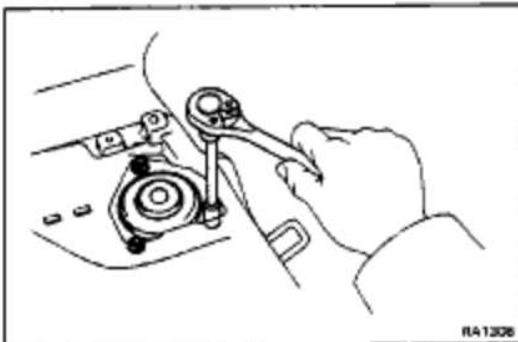
### 1. INSTALL SPRING BUMPER, INSULATOR, COIL SPRING, AND SUSPENSION SUPPORT

- (a) Mount the shock absorber in a vise.
- (b) Using SST, compress the coil spring.  
SST 09727-22032 or 09727-30020
- (c) Install the lower insulator to the shock absorber.
- (d) Align the coil spring end with the lower seat hollow and install the coil spring.
- (e) Install the spring bumper to the shock absorber piston rod.
- (f) Install the upper insulator.
- (g) Align the suspension support with the piston rod and install it.
- (h) Align the suspension support.



- (i) Using SST, hold the suspension support and install and torque a new lock nut.

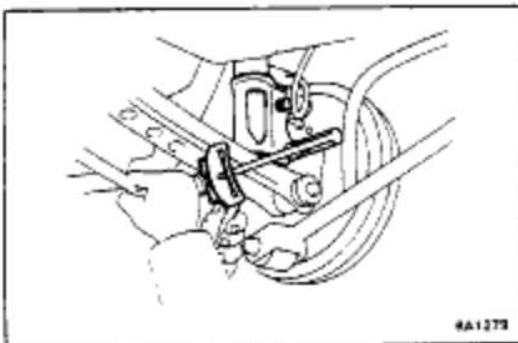
**Torque: 500 kg-cm (36 ft-lb, 49N-m)**



### 2. INSTALL SHOCK ABSORBER TO BODY

Install the shock absorber to the body and torque the three nuts.

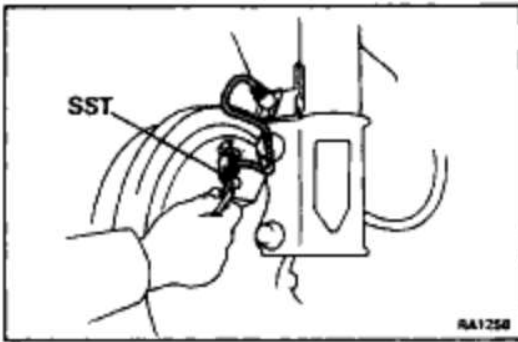
**Torque: 400 kg-cm (29 ft-lb, 39 N-m)**



### 3. CONNECT AXLE CARRIER TO SHOCK ABSORBER

Connect the axle carrier to the shock absorber with the two bolts and torque the two nuts.

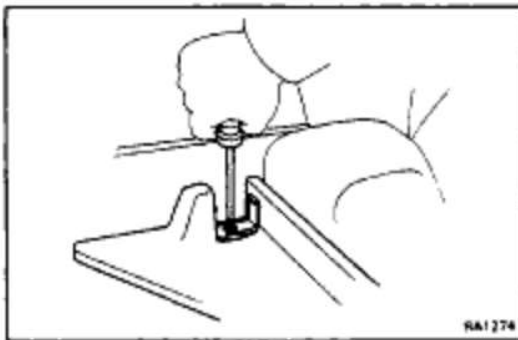
**Torque: 2,300 kg-cm (166 ft-lb, 226 N-m)**

**RA-54****REAR AXLE AND SUSPENSION** – Rear Suspension (FWD)**4. INSTALL BRAKE HOSE AND TUBE**

- (a) Temporarily connect the brake tube to the backing plate.
- (b) Temporarily connect the brake tube to the brake hose.
- (c) Install the clip.
- (d) Using SST, torque the two brake tube union nuts.

SST 09751-36011

**Torque: 155 kg-cm (11 ft-lb, 15 N-m )**

**5. INSTALL TONNEAU COVER HOLDER (Wagon)****6. BLEED BRAKE LINE**

(See page [BR-7](#))

**7. CHECK WHEEL ALIGNMENT**

(See page [RA-3](#))

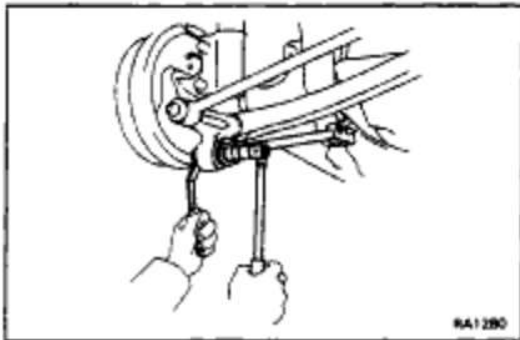
## Suspension Arm

(See page [RA-50](#))

### REMOVAL OF SUSPENSION ARMS

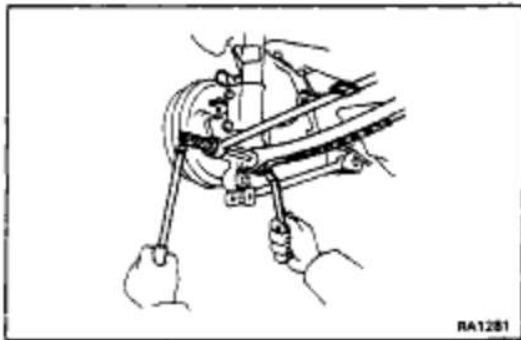
#### 1. JACK UP VEHICLE

Jack up the vehicle and support the body with stands.



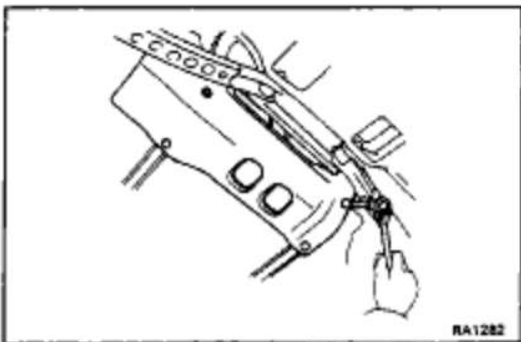
#### 2. DISCONNECT STRUT ROD FROM AXLE CARRIER

Remove the bolt and nut and disconnect the strut rod from the axle carrier.



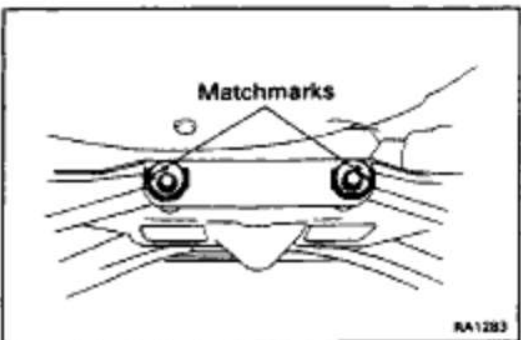
#### 3. DISCONNECT NO. 1 AND NO. 2 SUSPENSION ARMS FROM AXLE CARRIER

Remove the suspension holding bolt and nut from the No. 1 and No.2 suspension arms.



#### 4. REMOVE FUEL TANK PROTECTOR

Remove the two bolts, two clips, and the protector.

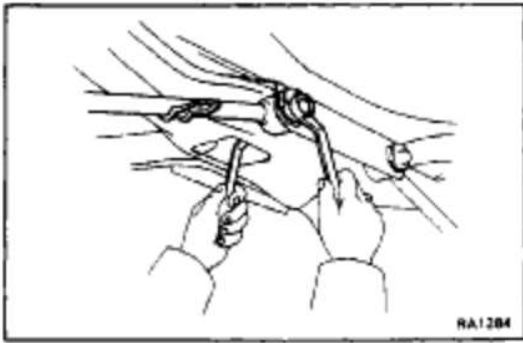


#### 5. REMOVE NO.2 SUSPENSION ARM

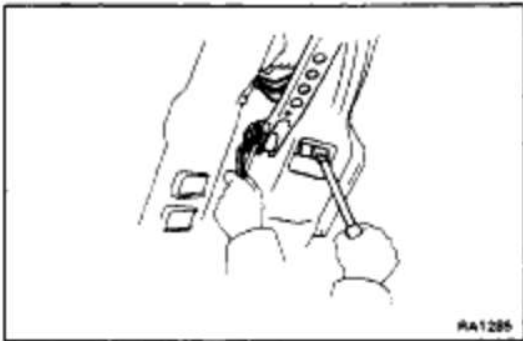
(a) Place matchmarks on the adjusting cam and body.

## RA-56

## REAR AXLE AND SUSPENSION — Rear Suspension (FWD)

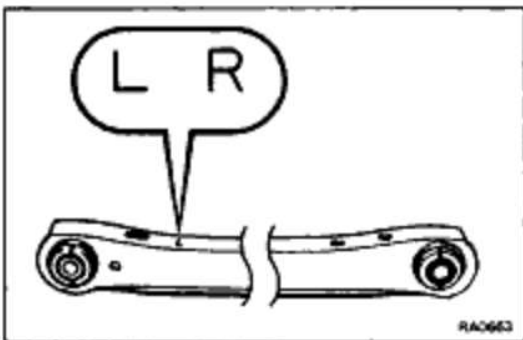


- (b) Remove the cam and the cam bolt from the body and remove the No.2 suspension arm.



## 6. REMOVE NO.1 SUSPENSION ARM

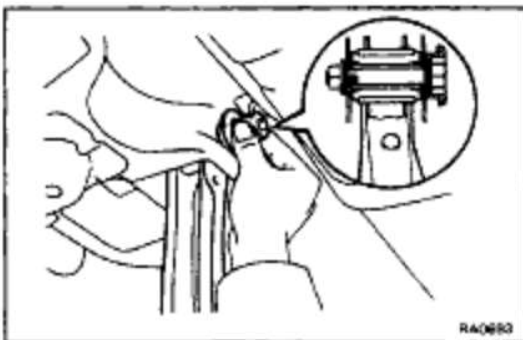
Remove the nut, retainer from the body and remove the No. 1 suspension arm.



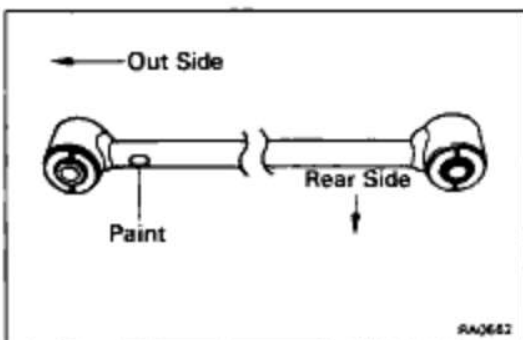
## INSTALLATION OF NO.1 AND NO.2 SUSPENSION ARMS

### 1. INSTALL NO.1 SUSPENSION ARM

HINT: Install the bushing with the slit side towards the rear. The right and left suspension arms have been stamped with a "R" and "L" respectively for identification.

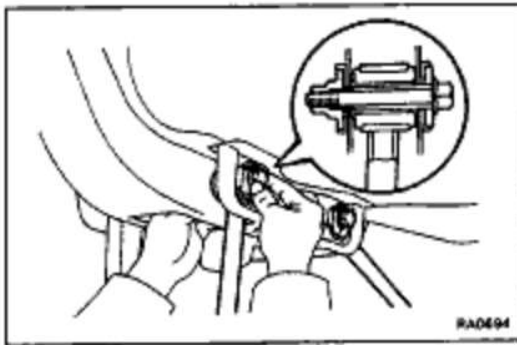


Temporarily install the No. 1 suspension arm to the body with the bolt, plate and nut.

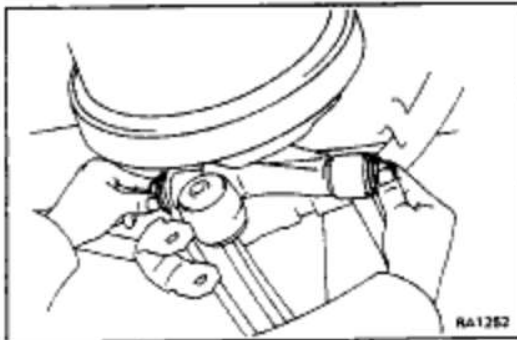


### 2. INSTALL NO.2 SUSPENSION ARM TO BODY

HINT: Install the bushing with the slit side towards the rear. Then install the suspension arm with the small paint spot towards the outside of the vehicle.

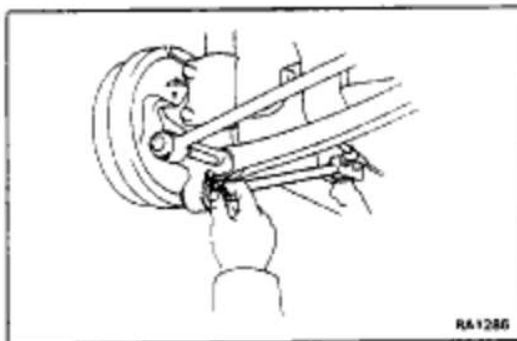


- (a) Place the No.2 suspension arm in position.
- (b) Temporarily install the cam bolt and cam to the body.



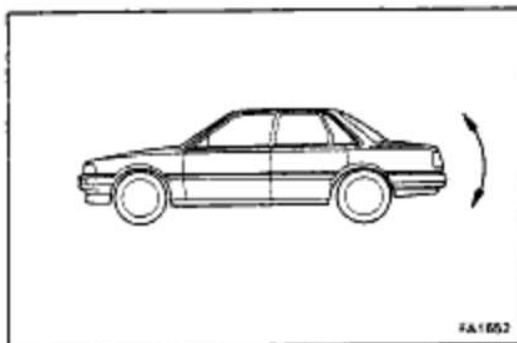
### 3. CONNECT NO.1 AND NO.2 SUSPENSION ARM TO AXLE CARRIER

Connect the No. 1 and No.2 suspension arms with the bolt and the two retainers to the axle carrier and temporarily install the nut.



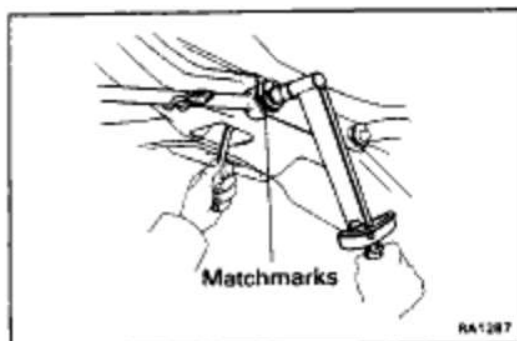
### 4. CONNECT STRUT BAR TO AXLE CARRIER

Connect the strut rod to the axle carrier and temporarily install the bolt and nut.



### 5. INSTALL WHEELS AND LOWER VEHICLE

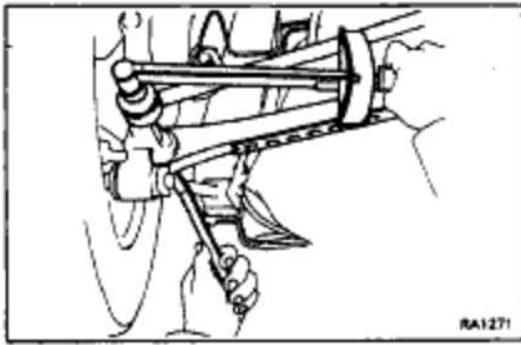
- (a) Install the wheels.
- (b) Remove the stands and bounce the vehicle up and down to stabilize the suspension.



### 6. TORQUE NO.1 AND NO.2 SUSPENSION ARM INSTALLATION BOLTS

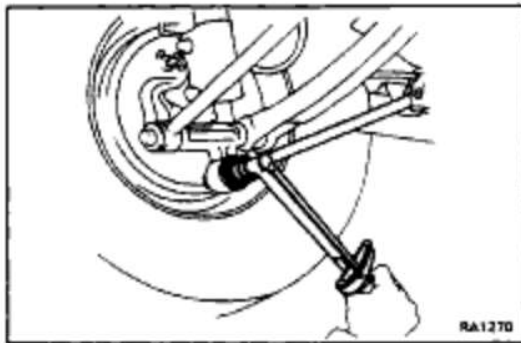
- (a) Align the matchmarks on the cam and the body torque the installation bolt with the vehicle weight on the suspension.

**Torque: 1,150 kg-cm (83 ft-lb, 113 N-m)**

**RA-58****REAR AXLE AND SUSPENSION** – Rear Suspension (FWD)

- (b) Torque the suspension arm installation bolt to the axle carrier with the vehicle weight on the suspension.

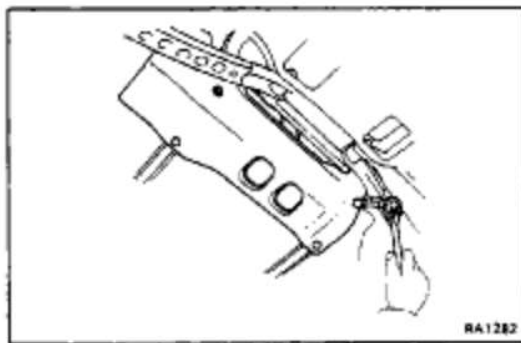
**Torque: 1,850 kg-cm (134 ft-lb, 181 N - m)**



### 7. TORQUE STRUT ROD INSTALLATION BOLT TO AXLE CARRIER

Torque the strut rod installation bolt to the axle carrier with the vehicle weight on the suspension.

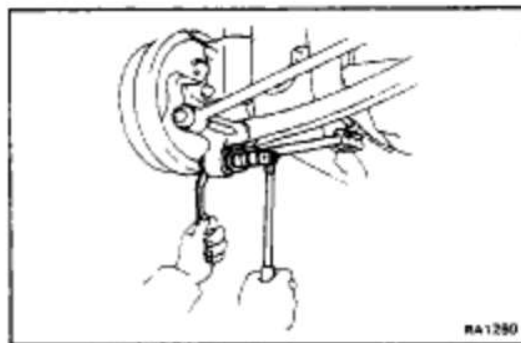
**Torque: 1,150 kg-cm (83 ft-lb, 113 N - m)**



### 8. INSTALL FUEL TANK PROTECTOR

Install the fuel tank protector with the two bolts and the two clips.

### 9. CHECK REAR WHEEL ALIGNMENT



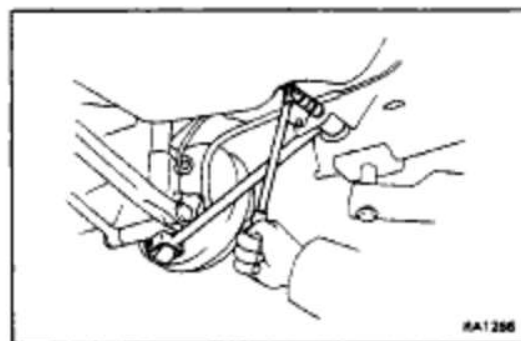
## Strut Rod

(See page [RA-50](#))

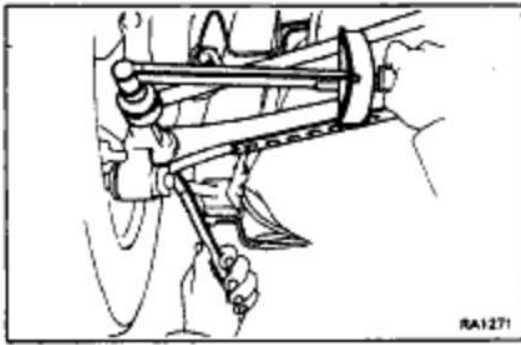
## REMOVAL OF STRUT ROD

### REMOVE STRUT ROD

- (a) Remove the strut rod installation bolt and nut from the axle carrier.

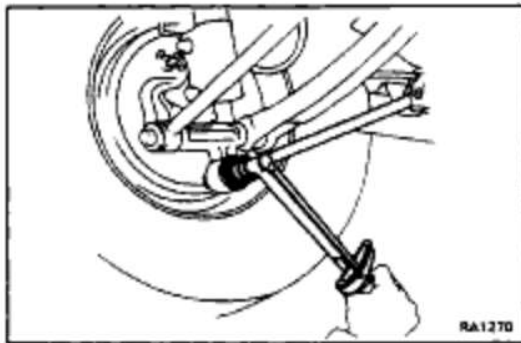


- (b) Remove the strut rod installation bolt and nut from the body.

**RA-58****REAR AXLE AND SUSPENSION** – Rear Suspension (FWD)

- (b) Torque the suspension arm installation bolt to the axle carrier with the vehicle weight on the suspension.

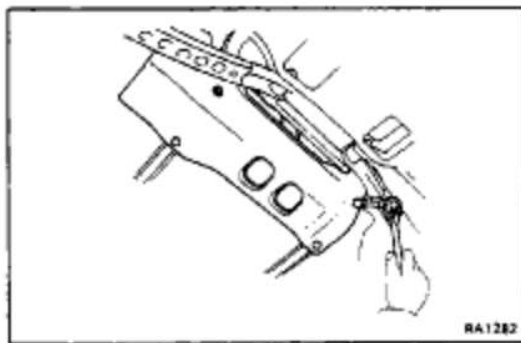
**Torque: 1,850 kg-cm (134 ft-lb, 181 N – m)**



### 7. TORQUE STRUT ROD INSTALLATION BOLT TO AXLE CARRIER

Torque the strut rod installation bolt to the axle carrier with the vehicle weight on the suspension.

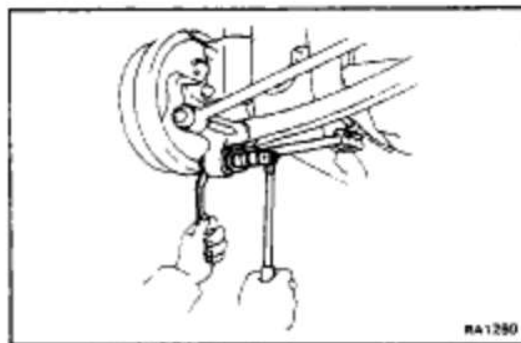
**Torque: 1,150 kg-cm (83 ft-lb, 113 N – m)**



### 8. INSTALL FUEL TANK PROTECTOR

Install the fuel tank protector with the two bolts and the two clips.

### 9. CHECK REAR WHEEL ALIGNMENT



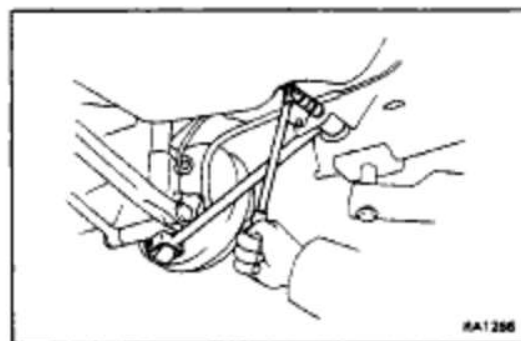
## Strut Rod

(See page [RA-50](#))

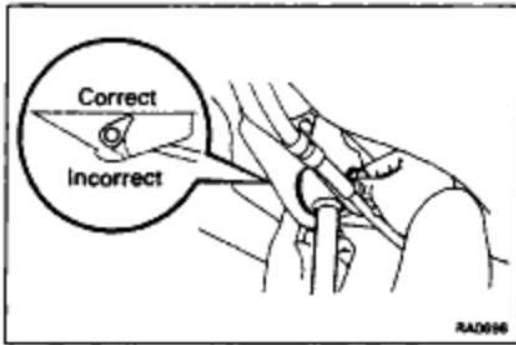
## REMOVAL OF STRUT ROD

### REMOVE STRUT ROD

- (a) Remove the strut rod installation bolt and nut from the axle carrier.



- (b) Remove the strut rod installation bolt and nut from the body.

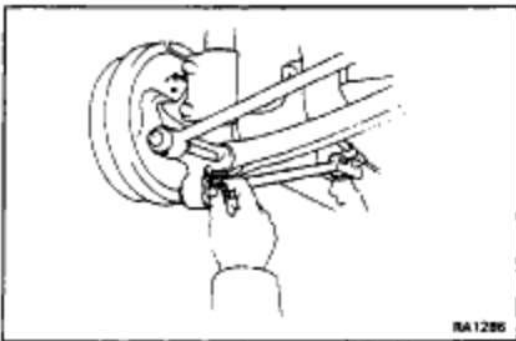


## INSTALLATION OF STRUT ROD

### 1. INSTALL STRUT ROD

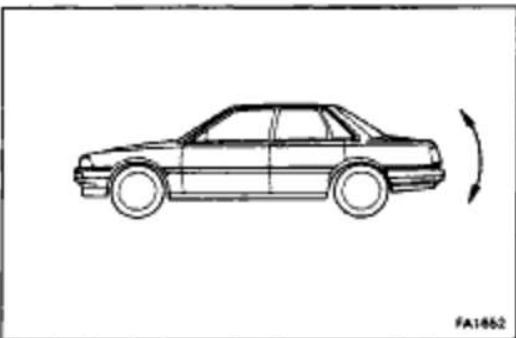
- (a) Position the strut rod to the body and temporarily install the bolt and nut.

HINT: Be sure the lip of the nut is resting on the flange of the bracket as shown in the figure.



- (b) Temporarily connect the strut rod with the bolt and nut.

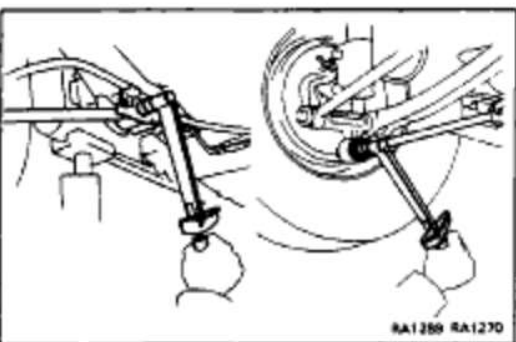
HINT: Be sure the lip of the nut is resting on the flange of the bracket as shown in the figure.



### 2. INSTALL WHEELS AND LOWER VEHICLE

- (a) install the wheels.

- (b) Remove the stands and bounce the vehicle up and down to stabilize the suspension.



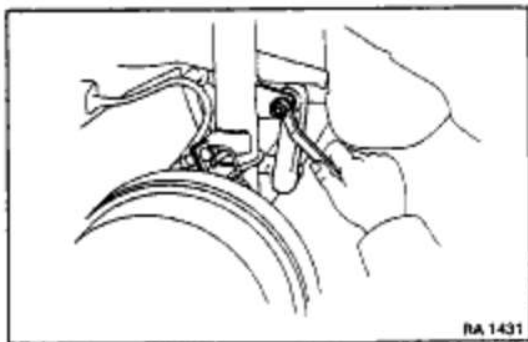
### 3. TORQUE STRUT ROD INSTALLATION BOLTS AND NUTS

Torque the mounting bolt with the vehicle weight on the suspension.

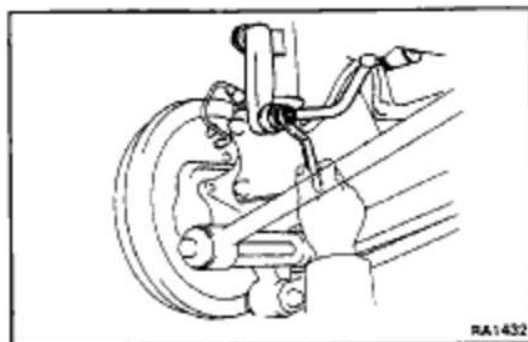
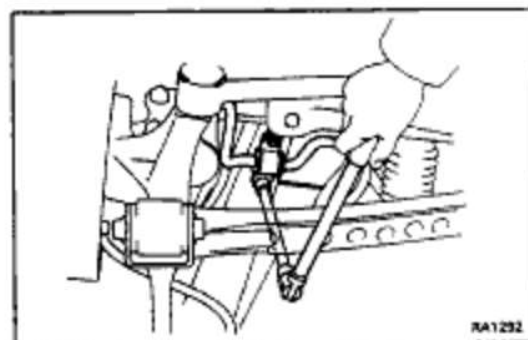
Torque: 1,150 kg-cm (83 ft-lb, 113 N-m)

### 4. CHECK WHEEL ALIGNMENT

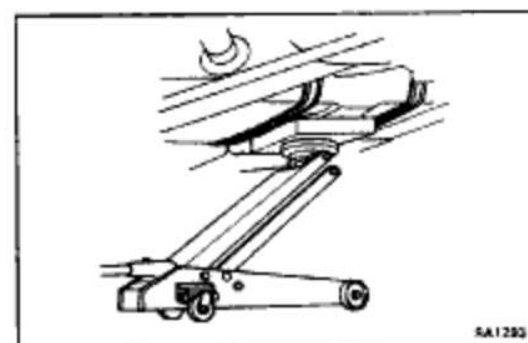
(See page [RA-3](#))

**RA-60****REAR AXLE AND SUSPENSION** – Rear Suspension (FWD)**Stabilizer Bar**

(See page [RA-50](#))

**REMOVAL OF STABILIZER BAR****1. DISCONNECT STABILIZER LINK FROM SHOCK ABSORBER****2. REMOVE STABILIZER BAR LINK FROM STABILIZER BAR****3. REMOVE STABILIZER BAR BRACKET**

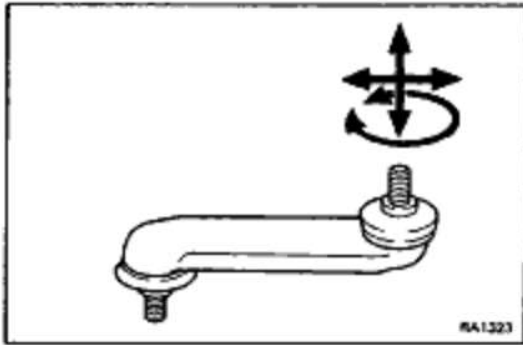
- (a) Remove the four bolts.
- (b) Remove the stabilizer bar brackets and cushions from the stabilizer bar.

**4. DISCONNECT TANK BAND FROM BODY**

- (a) Using a jack and wooden block, support the fuel tank.
- (b) Remove the two tank and installation bolts.

**5. REMOVE STABILIZER BAR**

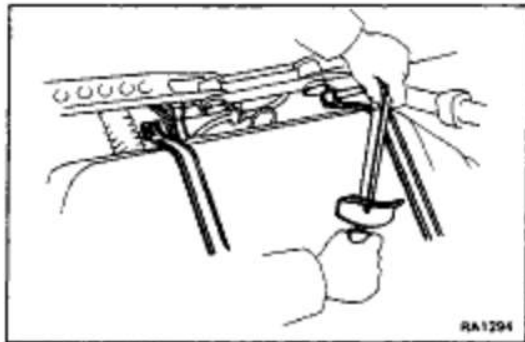
Lower the fuel tank about 40 mm (1.57 in.) and then remove the stabilizer bar from the body.



## INSTALLATION OF STABILIZER BAR

### 1. INSPECT STABILIZER LINK

Move the ball joint stud in all directions, if the movement is not smooth and free, replace the stabilizer link.

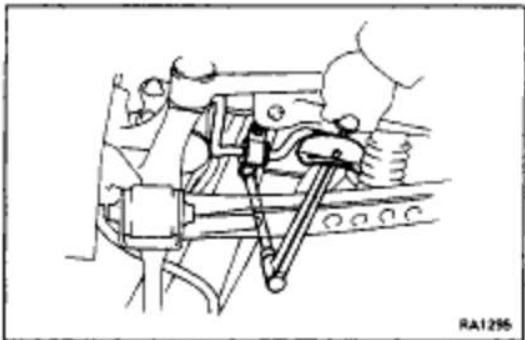


### 2. PLACE STABILIZER BAR

### 3. CONNECT TANK BAND TO BODY

Position the fuel tank in position, connect the tank bands to the body and torque the installation bolts.

Torque: 400 kg-cm (29 ft-lb, 39 N-m)

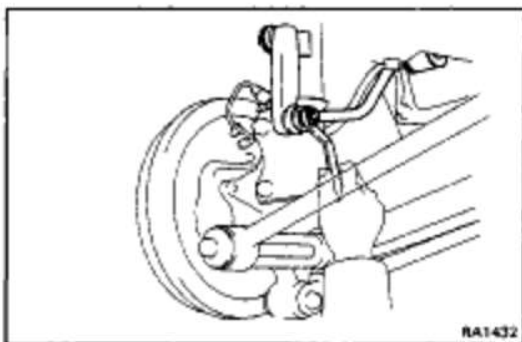


### 4. INSTALL STABILIZER BAR TO BODY

(a) Install the cushion and brackets to the stabilizer bar.

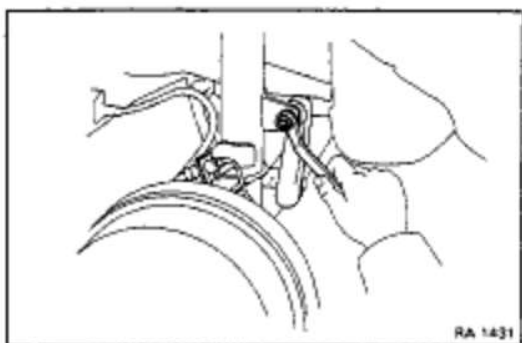
(b) Torque the four bolts.

Torque: 195 kg-cm (14 ft-lb, 19 N-m)



### 5. INSTALL STABILIZER LINK TO STABILIZER BAR

Torque: 650 kg-cm (47 ft-lb, 64 N-m)



### 6. CONNECT STABILIZER LINK TO SHOCK ABSORBER

Torque: 650 kg-cm (47 ft-lb, 64 N-m)

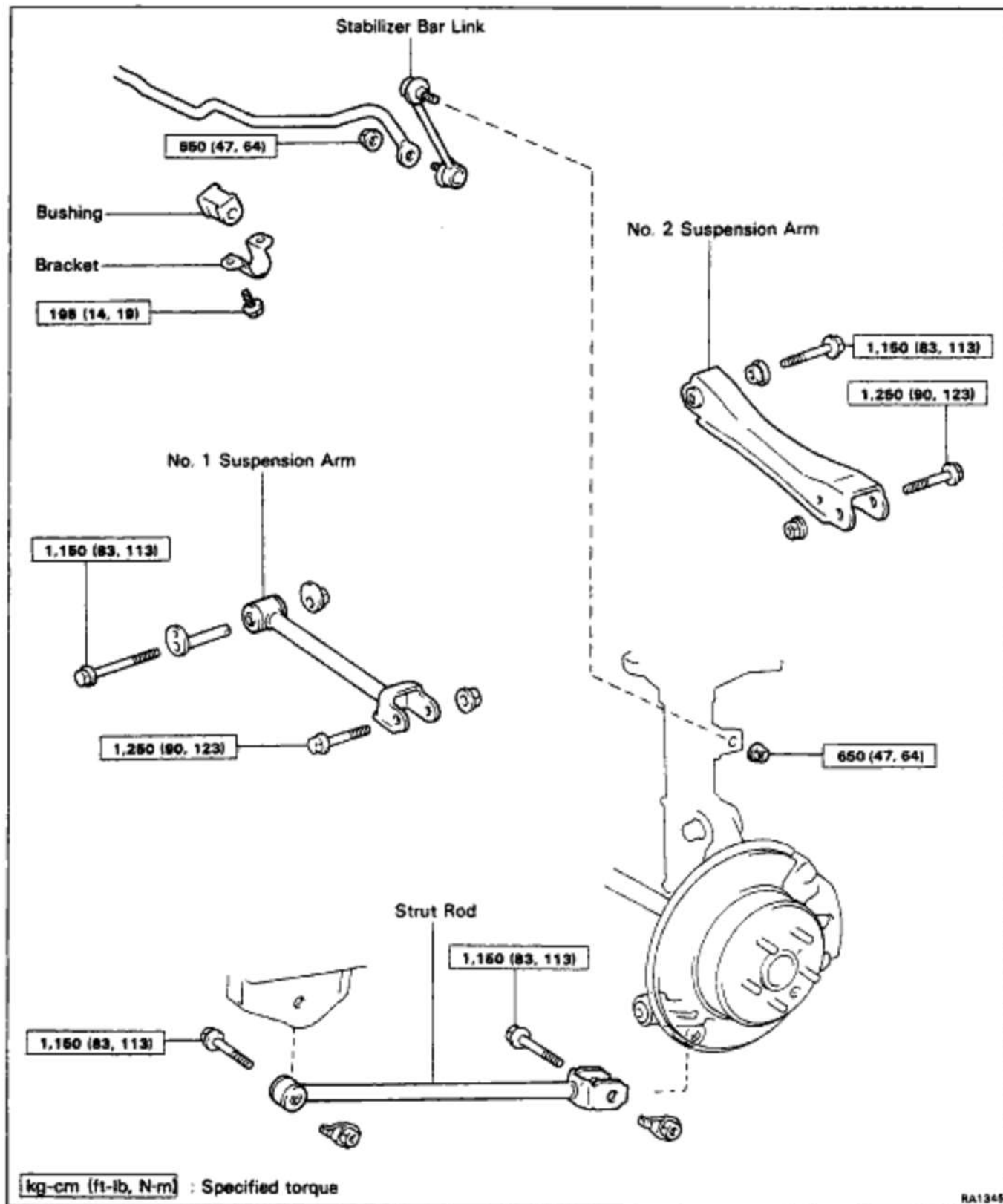
RA-62

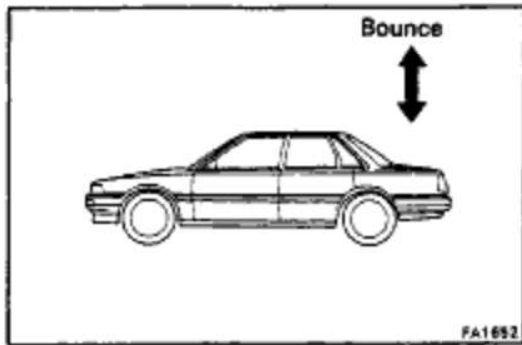
REAR AXLE AND SUSPENSION — Rear Suspension (4WD)

## REAR SUSPENSION (4WD)

HINT: Refer to RA-50 except following points about 4WD.

### COMPONENTS





## Suspension Arm and Strut Rod REMOVAL AND INSTALLATION OF SUSPENSION ARM AND STRUT ROD

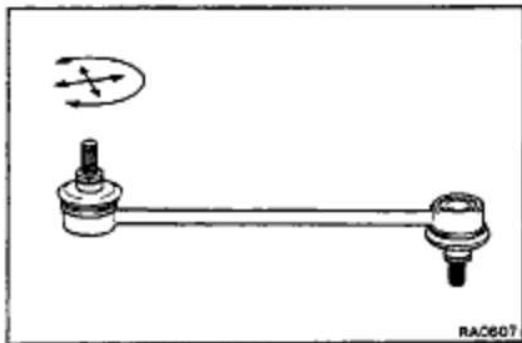
Remove and install the parts as shown components on page [RA-62](#).

### (MAIN POINT OF REMOVAL SUSPENSION ARM AND STRUT ROD)

- Place matchmarks on the adjusting cam and body. (No.2 suspension arm only)

### (MAIN POINT OF INSTALLATION SUSPENSION ARM AND STRUT ROD)

- Place suspension arm or the strut rod in position.
- Temporarily install the bolt to the body and the axle carrier.
- Bounce the vehicle up and down to stabilize the suspension arm on strut rod.
- Align the matchmarks on the cam and body (No. 2 suspension arm only)
- Torque the installation bolt with the vehicle weight on the suspension. (See page [RA-62](#))
- Check rear wheel alignment. (See page [RA-3](#))

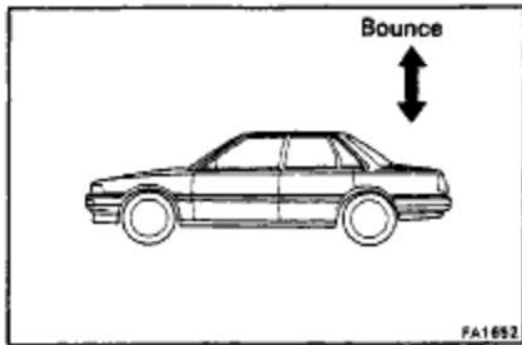


## Stabilizer Bar REMOVAL AND INSTALLATION OF STABILIZER BAR

Remove and install the stabilizer bar as shown components on page [RA-44](#).

### INSPECT STABILIZER BAR LINK

Move the ball joint stud in all directions, if the movement is not smooth and free, replace the stabilizer link.



## Suspension Arm and Strut Rod REMOVAL AND INSTALLATION OF SUSPENSION ARM AND STRUT ROD

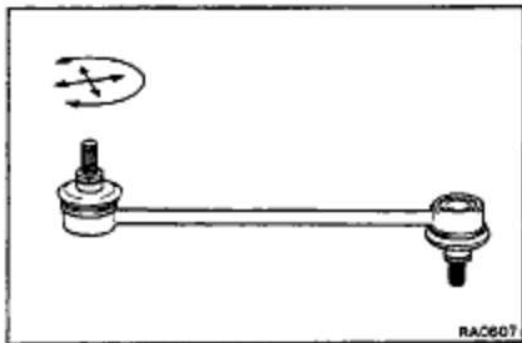
Remove and install the parts as shown components on page [RA-62](#).

### (MAIN POINT OF REMOVAL SUSPENSION ARM AND STRUT ROD)

- Place matchmarks on the adjusting cam and body. (No.2 suspension arm only)

### (MAIN POINT OF INSTALLATION SUSPENSION ARM AND STRUT ROD)

- Place suspension arm or the strut rod in position.
- Temporarily install the bolt to the body and the axle carrier.
- Bounce the vehicle up and down to stabilize the suspension arm on strut rod.
- Align the matchmarks on the cam and body (No. 2 suspension arm only)
- Torque the installation bolt with the vehicle weight on the suspension. (See page [RA-62](#))
- Check rear wheel alignment. (See page [RA-3](#))



## Stabilizer Bar REMOVAL AND INSTALLATION OF STABILIZER BAR

Remove and install the stabilizer bar as shown components on page [RA-44](#).

### INSPECT STABILIZER BAR LINK

Move the ball joint stud in all directions, if the movement is not smooth and free, replace the stabilizer link.