

# FRONT AXLE AND SUSPENSION

## TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Wanders/pulls	Tires worn or improperly inflated	Replace tire or inflate tires to proper pressure	FA-3
	Alignment incorrect	Check front wheel alignment	FA-3
	Hub bearing worn	Replace hub bearing	FA-7
	Front or rear suspension parts loose or broken	Tighten or replace suspension parts	
	Steering linkage loosen or worn	Tighten or replace steering linkage	
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR-43, 45 48
Bottoming	Vehicle overloaded	Check loading	
	Shock absorber worn out	Replace shock absorber	FA-51
	Springs weak	Replace spring	FA-51
Sways/pitches	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Stabilizer bar bent or broken	Inspect stabilizer bar	FA-61
	Shock absorber worn out	Replace shock absorber	FA-51
Front wheel shimmy	Tires worn or improperly inflated	Replace tire or inflate tires to proper pressure	FA-3
	Wheels out of balance	Balance wheels	
	Shock absorber worn out	Replace shock absorber	FA-51
	Alignment incorrect	Check front wheel alignment	FA-3
	Hub bearings worn	Replace hub bearings	FA-7
	Ball joints or bushings worn	Inspect ball joints and bushings	FA-56
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR-43,45. 48
Abnormal tire wear	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Shock absorbers worn out	Replace shock absorber	FA-51
	Alignment incorrect	Check toe-in	FA-3
	Suspension parts worn	Replace suspension parts	

# FRONT WHEEL ALIGNMENT

## 1. MAKE FOLLOWING CHECKS AND CORRECT ANY PROBLEMS

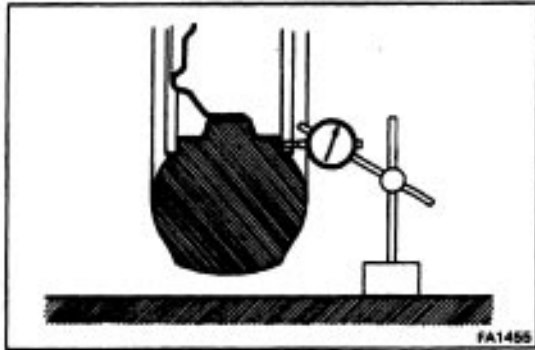
- (a) Check the tires for wear, size and proper inflation.

**Cold tire inflation pressure:**

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

**FWD/VZV21 2.2 kg-cm<sup>2</sup> (31 psi, 216 kPa)**

- (b) Check the front wheel bearings for looseness.



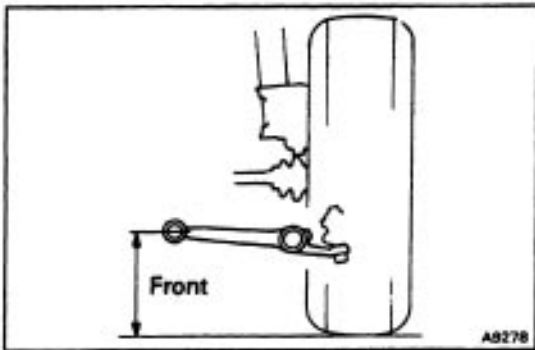
- (c) Check the wheel runout.

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

- (d) Check the front suspension for looseness.

- (e) Check the steering linkage for looseness.

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



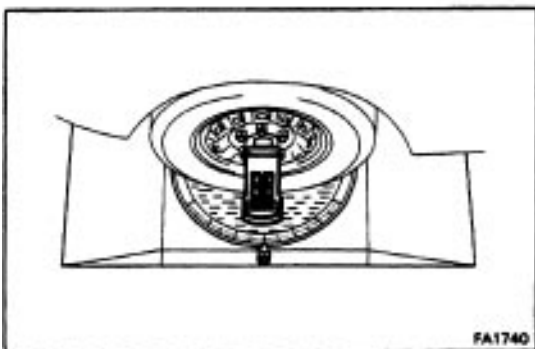
## 2. MEASURE CHASSIS GROUND CLEARANCE

**Chassis ground clearance: mm (in.)**

	Sedan	Wagon
FWD/SV21	233 (9.17)	231 (9.09)
4WD	233 (9.17)	—
FWD /VZV21	227 (8.94)	225 (8.86)

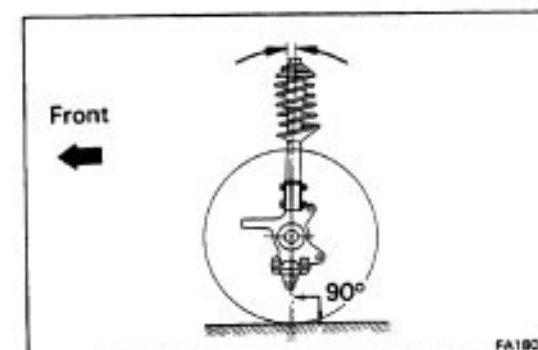
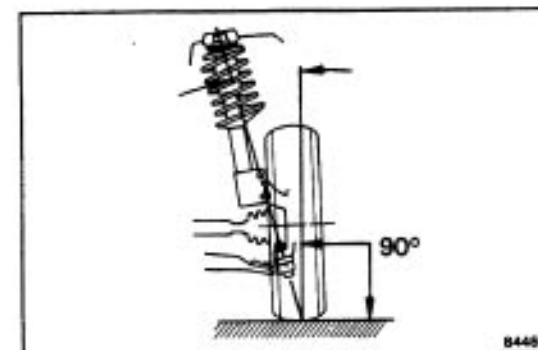
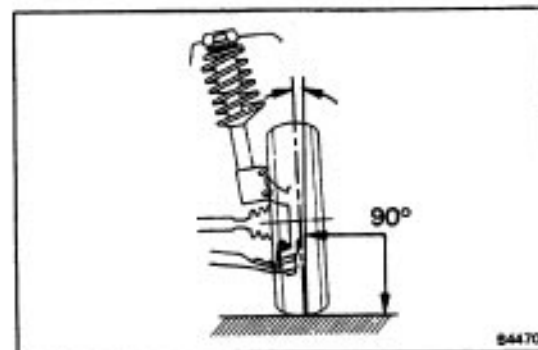
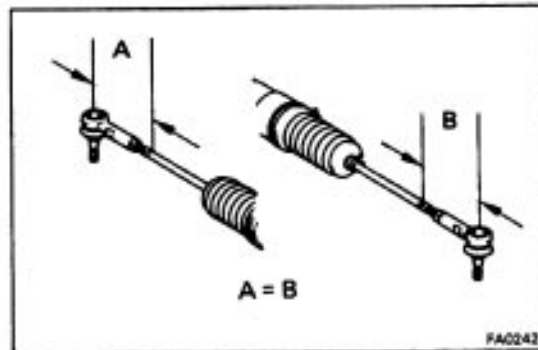
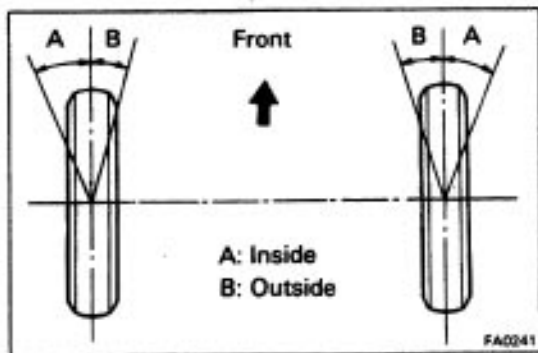
If the clearance of the vehicle is not standard, try to level by locking it down. If still not correct, check for bad springs or suspension parts.

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



## 3. INSTALL WHEEL ALIGNMENT EQUIPMENT

Follow the specific instructions of the equipment manufacturer.



#### 4. CHECK WHEEL ANGLE

##### Wheel angle:

Maximum angle	Inside wheel (A)	Outside wheel (B)
FWD/SV21	$37^{\circ}30' \pm 1^{\circ}00'$	$30^{\circ}45'$
4WD		
FWD/VZV21	$35^{\circ}45'$	$29^{\circ}45'$

At  $20^{\circ}$  (Outside wheel) inside wheel:  $22^{\circ}00'$

If steering angles differ from the standard specifications, check to see if the lengths of the left and right tie rods are the same.

HINT: If the tie rod lengths are not equal, the steering angle cannot be adjusted properly.

If the tie rod lengths were changed to adjust the wheel angle, reinspect the toe-in.

#### 5. CHECK CAMBER

##### Camber:

	Sedan	Wagon
Inspection standard	$0^{\circ}35' \pm 45'$	$0^{\circ}30' \pm 45'$
Left-right error	$30'$	$30'$

HINT: Camber is not adjustable, if measurement is not within specification, inspect and replace the suspension parts.

#### 6. CHECK STEERING AXIS INCLINATION

##### Steering axis inclination:

	Sedan	Wagon
Inspection standard	$12^{\circ}45' \pm 45'$	$12^{\circ}50' \pm 45'$
Left-right error	$30'$	$30'$

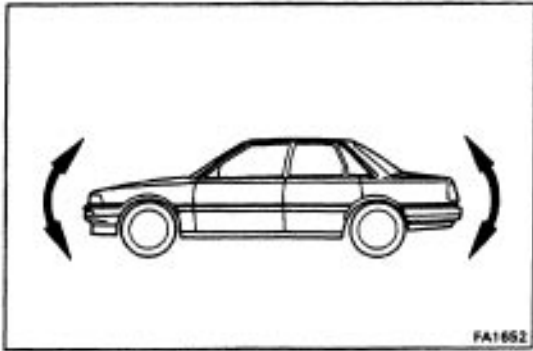
Steering axis inclination is not adjustable, if measurement is not within specification, inspect and replace the suspension parts.

#### 7. CHECK CASTER

##### Caster:

	Sedan	Wagon
Inspection standard	$1^{\circ}40' \pm 45'$	$1^{\circ}00' \pm 45'$
Adjustment standard	$1^{\circ}40' \pm 30'$	$1^{\circ}00' \pm 30'$
Left-right error	$30'$	$30'$

If caster is not within specification, adjust by increasing or decreasing the spacers. (See page [FA-61](#))



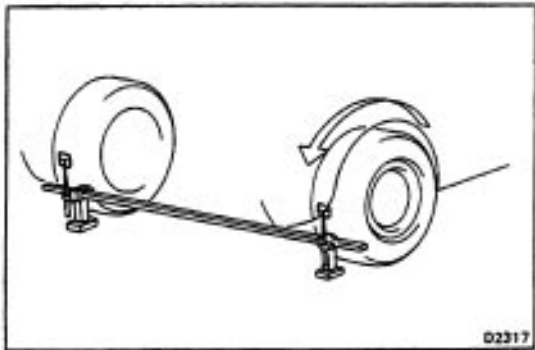
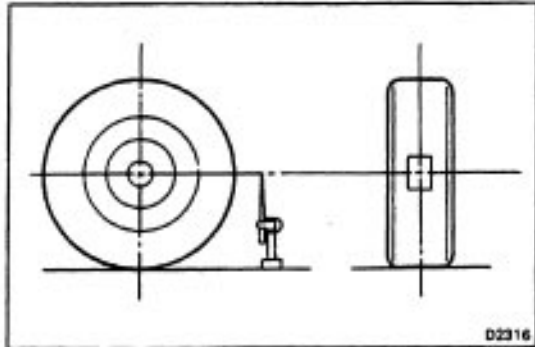
HINT:

- Caster changes 30' with each spacer.
- Do not install more than two spacers.

### 8. INSPECT TOE-IN

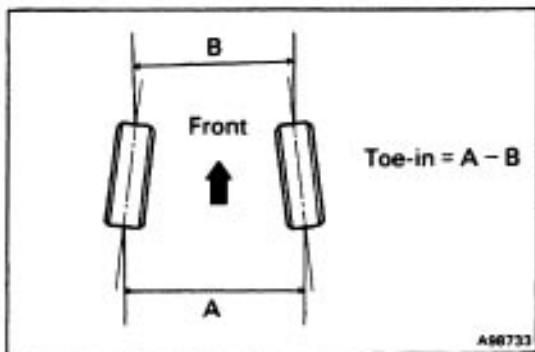
Measure toe-in with a toe-in gauge in the following procedure.

- Bounce the vehicle up and down to stabilize the suspension.
- Move the vehicle forward about 5 m (16.4 ft) with the front wheel in the straight-ahead position on a level place.
- Mark the center of each rear tread and measure the distance between the marks of the right and left tires.



- Advance the vehicle until the marks on the rear sides of the tires come to the measuring heights of the gauge on the front side.

HINT: If the tire rolls too far, repeat from step (b).



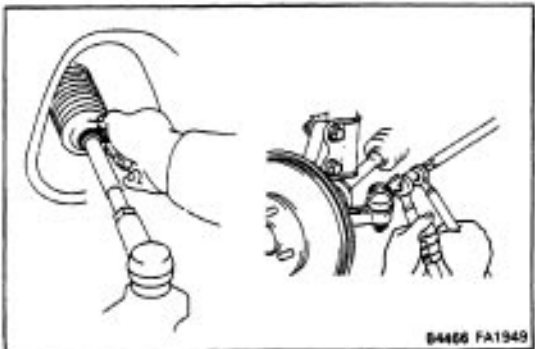
- Measure the distance between the marks on the front of the tires.

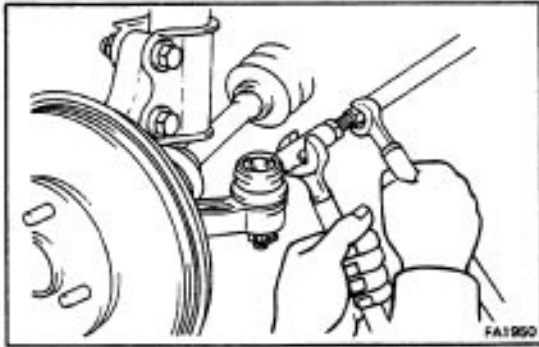
**Inspection standard:  $1 \pm 2 \text{ mm}$  ( $0.04 \pm 0.08 \text{ in.}$ )**

If necessary, adjust the toe-in.

### 9. ADJUST TOE-IN

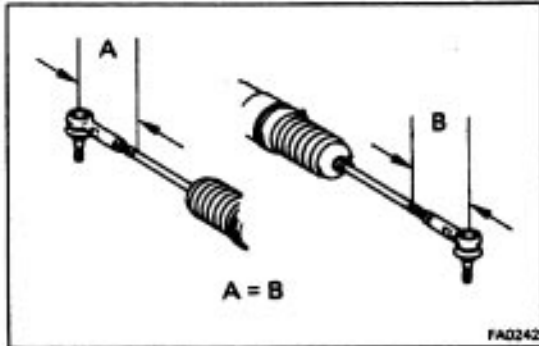
- Remove the boot clips.
- Loosen the tie rod end lock nut.





- (e) Turn the left and right tie rod ends an equal amount to adjust the toe-in.

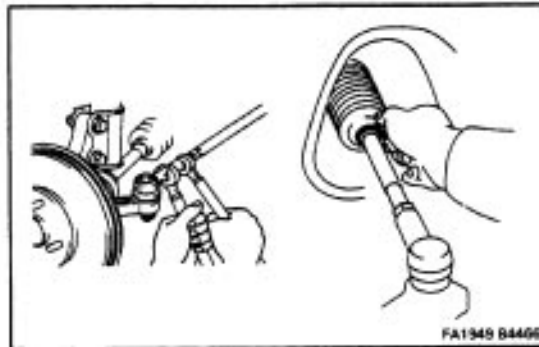
**Adjustment standard:  $1 \pm 1$  mm ( $0.04 \pm 0.04$  in.)**



HINT: Insure that the lengths of the left and right tie rod ends length are the same.

**Tie rod end length left-right error:**

**Less than 1.5 mm (0.059 in.)**

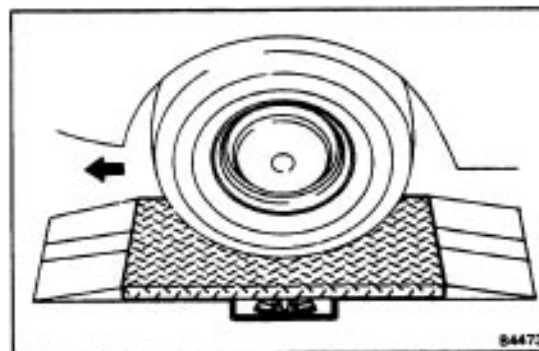


- (d) Torque the tie rod end lock nuts.

**Torque: 570 kg-cm (41 ft-lb , 56 N-M)**

- (e) Place the boot on the seat and clamp it.

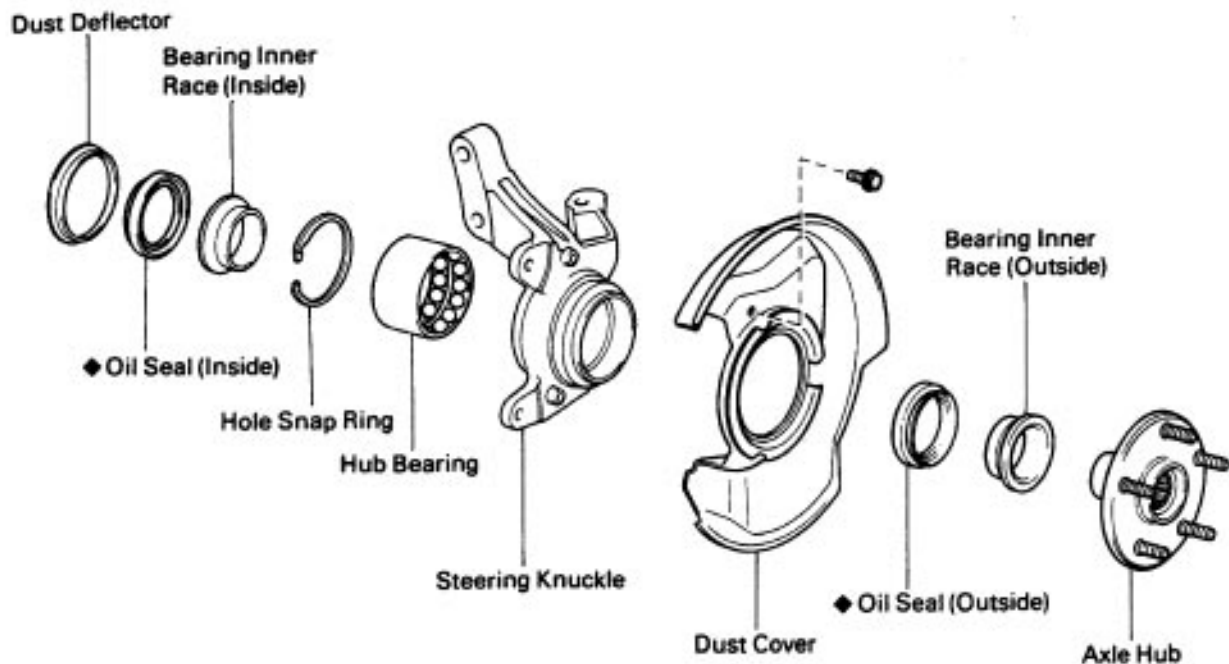
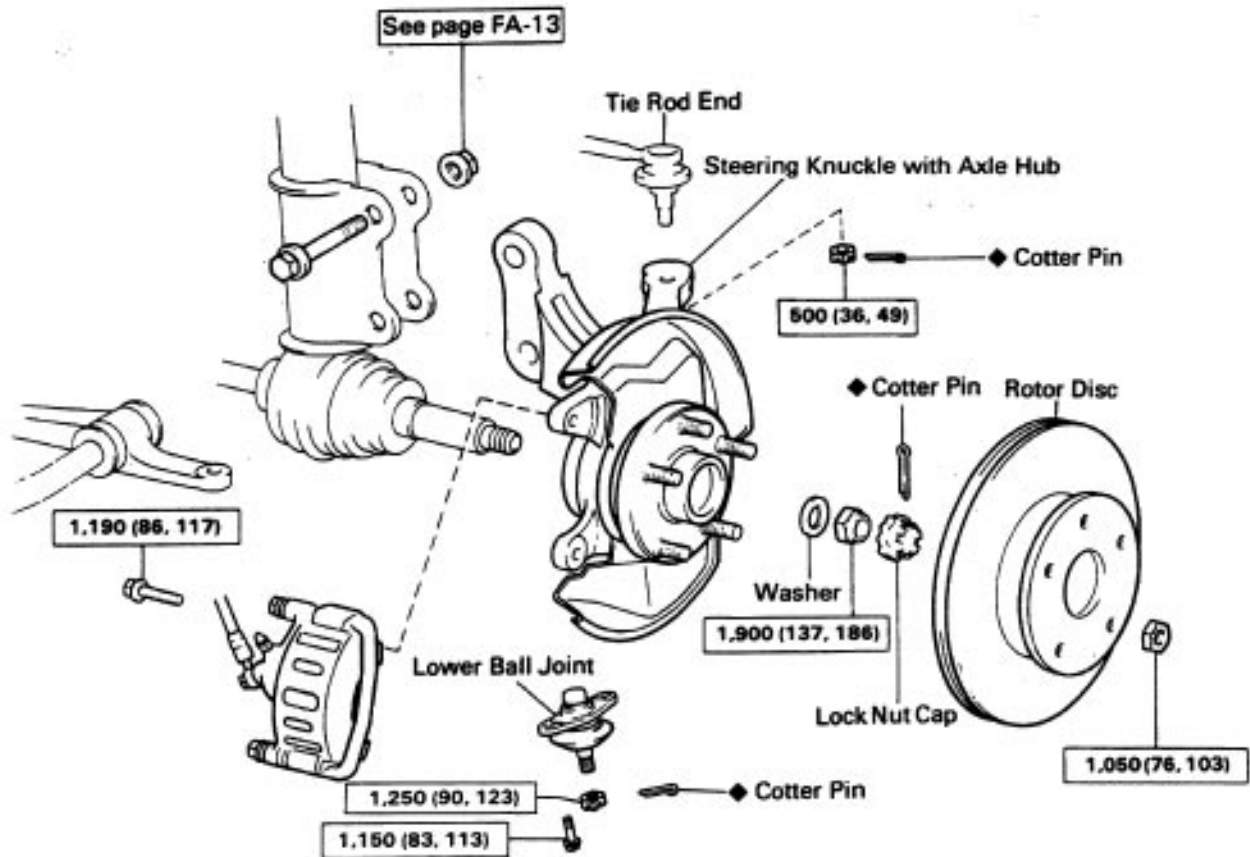
HINT: Insure that the boots are not twisted.



#### 10. INSPECT SIDE SLIP (REFERENCE ONLY)

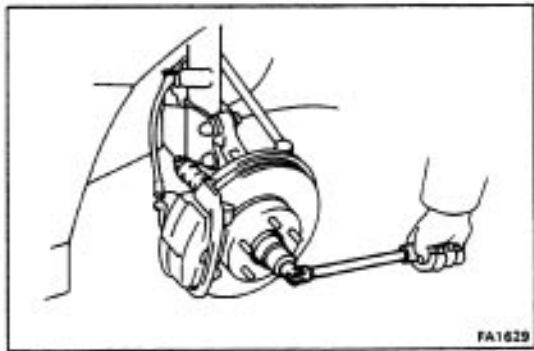
**Side slip: Less than 3.0 mm/m (0.118 in./3.3 ft)**

# FRONT AXLE HUB COMPONENTS



kg-cm (ft-lb, N·m) : Specified torque

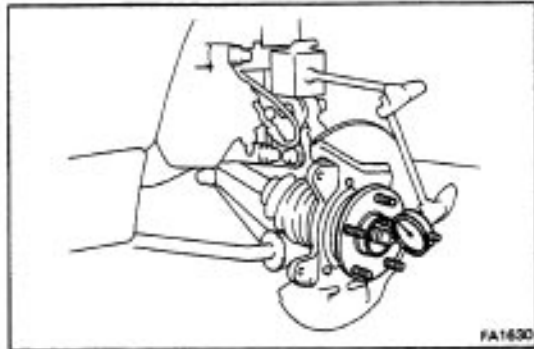
◆ Non-reusable part



## REMOVAL OF FRONT AXLE HUB

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

- (a) Remove the cotter pin and lock nut cap.
- (b) Before removing the disc brake caliper, loosen the bearing lock nut while depressing the brake pedal.



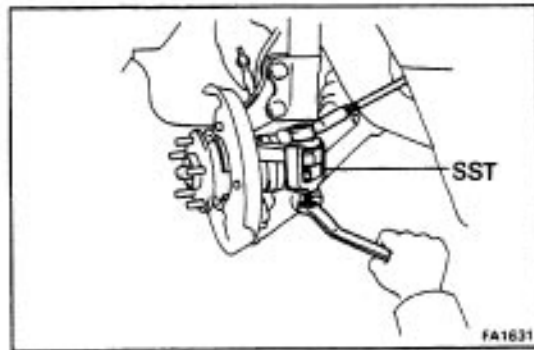
### 2. REMOVE DISC BRAKE CALIPER

Remove the disc brake caliper from the steering knuckle, and suspended it with wire.

### 3. REMOVE ROTOR DISC

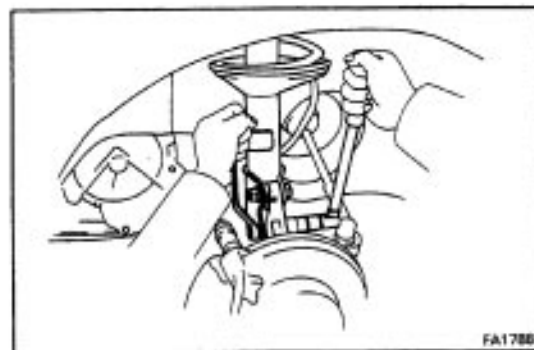
### 4. CHECK BEARING PLAY IN AXIAL DIRECTION

Limit: 0.05 mm (0.0020 in.)



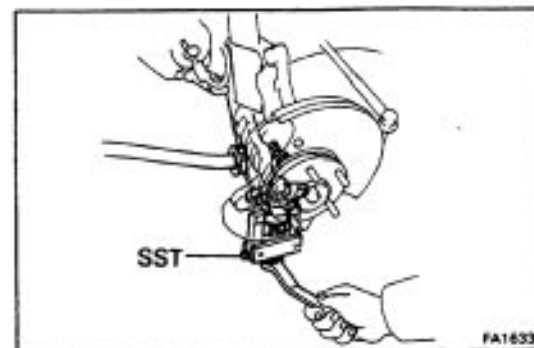
### 5. DISCONNECT TIE ROD END

- (a) Remove the cotter pin and nut.
- (b) Using SST, disconnect the tie rod end from the steering knuckle.  
SST 09610-55012



### 6. DISCONNECT STEERING KNUCKLE FROM SHOCK ABSORBER

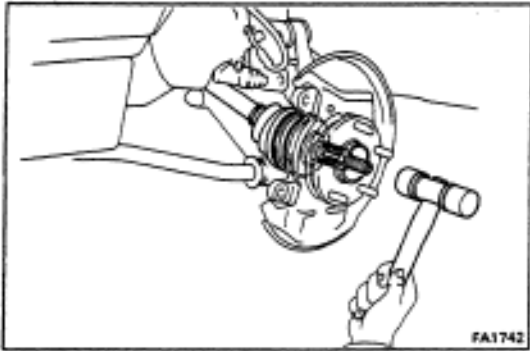
Remove two nuts and bolts, and disconnect the steering knuckle from the shock absorber.



### 7. DISCONNECT STEERING KNUCKLE FROM LOWER SUSPENSION ARM

- (a) Remove the cotter pin and the nut.
- (b) Using SST, disconnect the steering knuckle from the lower suspension arm.  
SST 096 10-55012

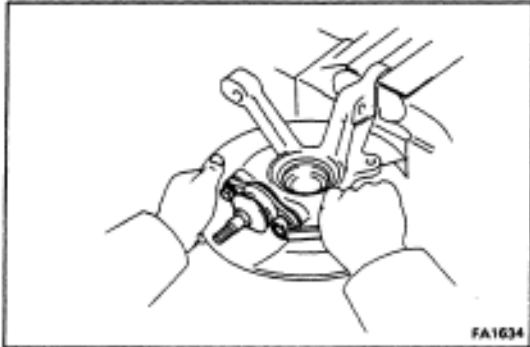




## 8. REMOVE STEERING KNUCKLE FROM FRONT DRIVE SHAFT

Using a plastic hammer, tap the drive shaft and remove the steering knuckle.

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

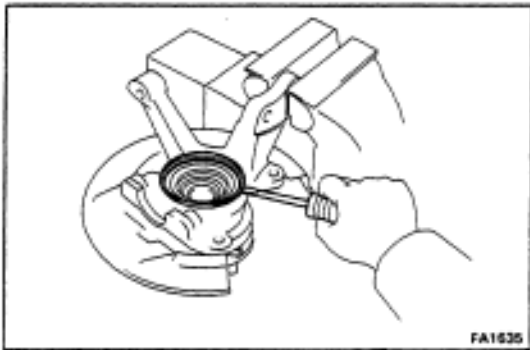


## 9. REMOVE BALL JOINT FROM STEERING KNUCKLE

(a) Clamp the steering knuckle in a vise.

HINT: Use a set of soft jaws in the vise to protect the steering knuckle.

(b) Remove the ball joint.

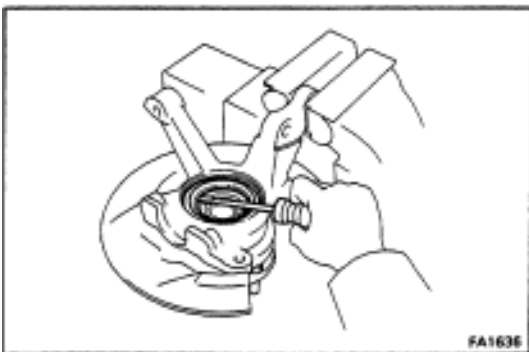


# DISASSEMBLY OF FRONT AXLE HUB

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

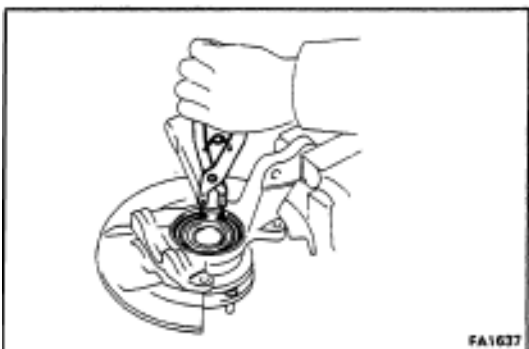
## 1. REMOVE DUST DEFLECTOR

Using a screwdriver remove the dust deflector.



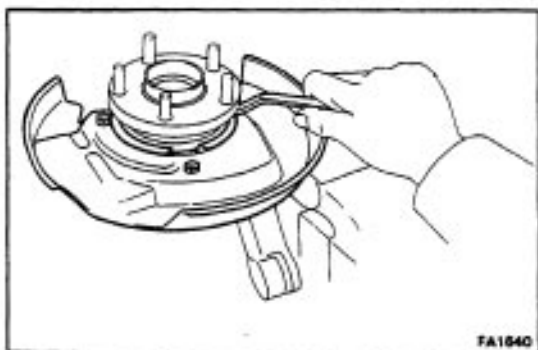
## 2. REMOVE INNER OIL SEAL

Using a screwdriver, remove the inner oil seal from the steering knuckle.



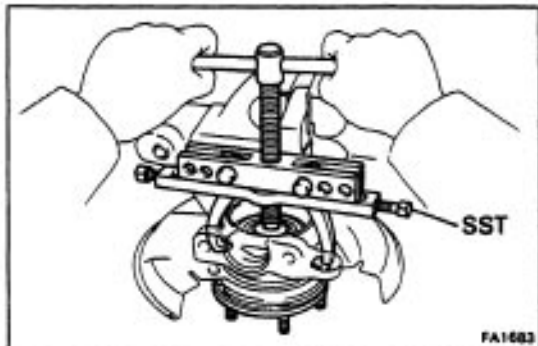
## 3. REMOVE HOLE SNAP RING

Using snap ring pliers, remove the hole snap ring from the steering knuckle.



#### 4. SEPARATE DISC BRAKE DUST COVER ANY STEERING KNUCKLE

Remove the three bolts and separate the disc brake dust cover and the steering knuckle.

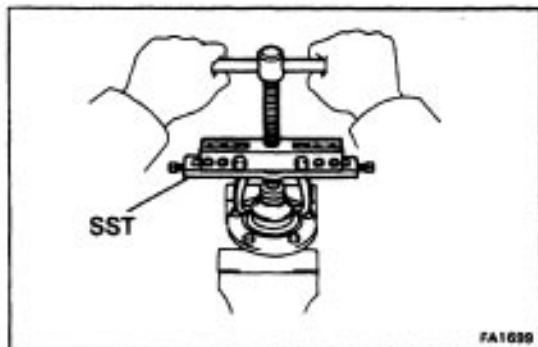


#### 5. REMOVE AXLE HUB FROM STEERING KNUCKLE

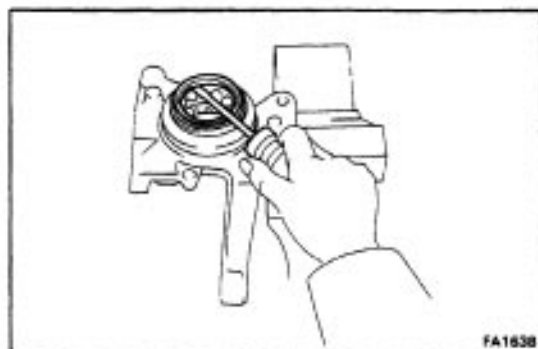
(a) Using SST, push out the axle hub.

HINT: If the axle hub has been removed, be sure to replace.  
SST 09950-20017

(b) Remove the bearing inner race (inside) from the bearing.

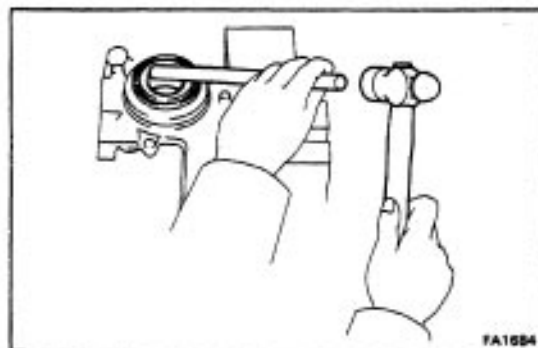


(c) Using SST, remove the bearing inner race (outside) from the axle hub.  
SST 09950-20017



#### 6. REMOVE OUTER OIL SEAL

Using a screwdriver, remove the oil seal from the steering knuckle.

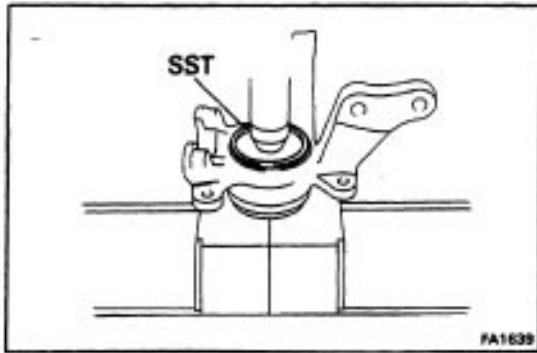


#### 7. REMOVE BEARING

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

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

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

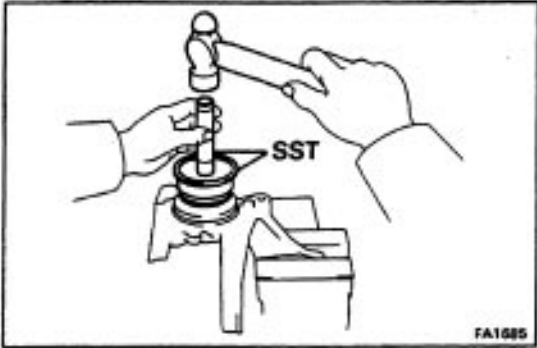


## ASSEMBLY OF FRONT AXLE HUB

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

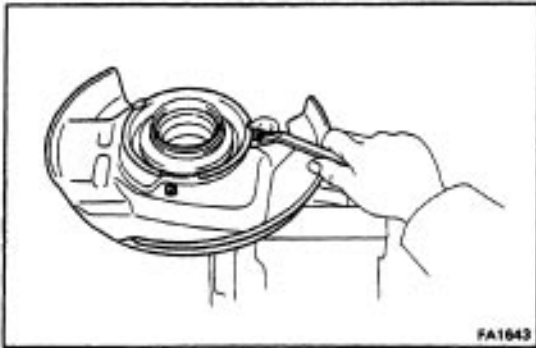
### 1. INSTALL BEARING

Using SST, install a new bearing into the steering knuckle.  
SST 09608-32010

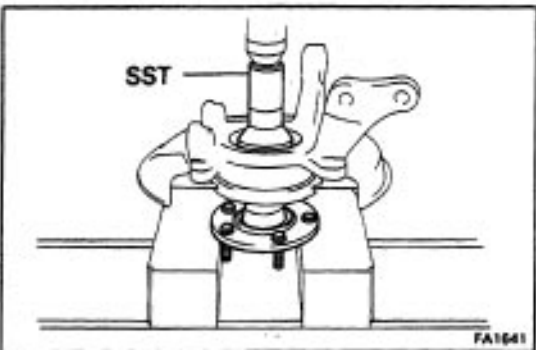


### 2. INSTALL OUTER OIL SEAL

- (a) Rotate and insert the side tip of a new oil seal into the SST.  
SST 09608-32010
- (b) Using SST, install the oil seal into the steering knuckle.  
SST 09608-32010 and 09710-14012 (09710-00050)



### 3. INSTALL DISC BRAKE DUST COVER



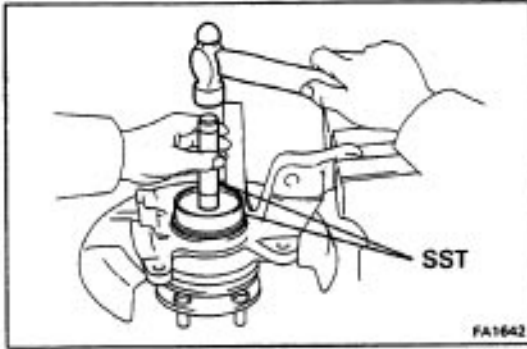
### 4. INSTALL AXLE HUB

- (a) Apply MP grease between the oil seal lip, oil seal and the bearing.
- (b) Using SST, install the axle hub into the steering knuckle.  
SST 09310-35010



### 5. INSTALL HOLE SNAP RING

Using snap ring pliers, install the hole snap ring into the steering knuckle.



## 6. INSTALL INNER OIL SEAL

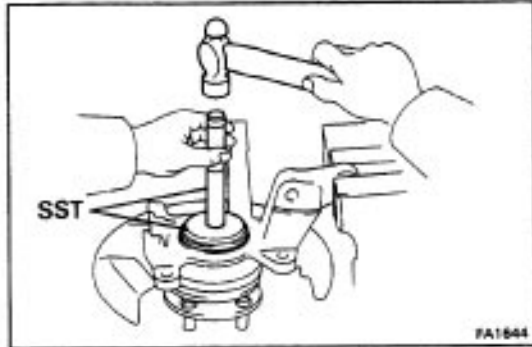
- (a) Rotate and insert the side lip of a new oil seal into the SST.

SST 09608-32010

- (b) Using SST, install the oil seal into the steering knuckle.

SST 09608-32010 and 09710-14012 (09710-00050)

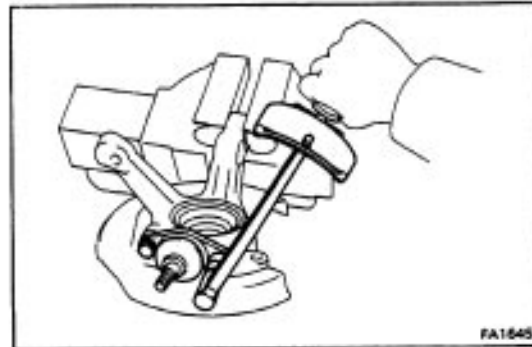
- (c) Coat the oil seal lip with MP grease.



## 7. INSTALL DUST DEFLECTOR

Using SST, drive the dust deflector to the steering knuckle.

SST 09608-35014 (09608-06020, 09608-06180)



## 8. INSTALL BALL JOINT TO STEERING KNUCKLE

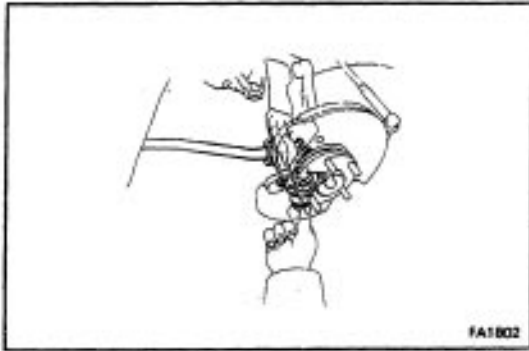
Torque: 1,150 kg-cm (83 ft-lb, 113 N-m)

## INSTALLATION OF FRONT AXLE HUB

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

### 1. INSTALL STEERING KNUCKLE TO LOWER SUSPENSION ARM

install the steering knuckle to the lower suspension arm, and temporarily install the nut.



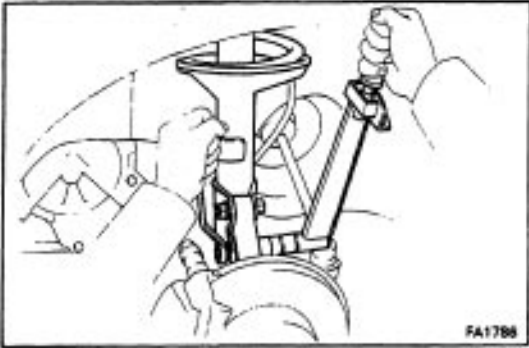
FA1602

### 2. CONNECT STEERING KNUCKLE TO SHOCK ABSORBER

**NOTICE:** Apply engine oil to the threads of the two bolts.

- (a) Connect the steering knuckle to the shock absorber lower bracket.
- (b) Insert the bolts and align the matchmarks of the camber adjusting cam.
- (c) Torque the nuts.

Torque: 3,100 kg-cm (224 ft-lb, 304 N-m)

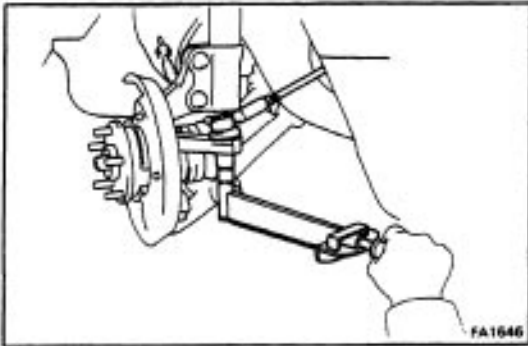


FA1786

### 3. CONNECT TIE ROD END TO STEERING KNUCKLE

Torque the castle nut and secure it with a new cotter pin.

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

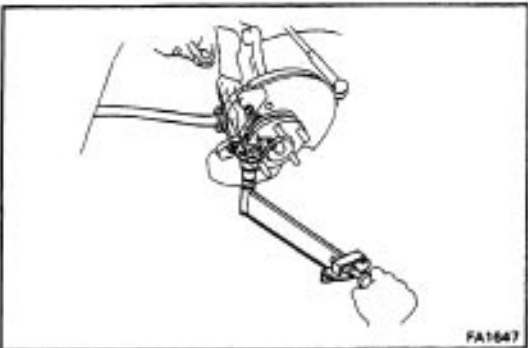


FA1646

### 4. TORQUE BALL JOINT TO LOWER ARM

Install and torque the castle nut and secure it with a new cotter pin.

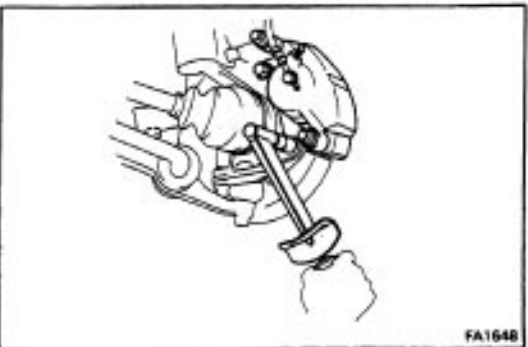
Torque: 1,250 kg-cm (90 ft-lb, 123 N-m)



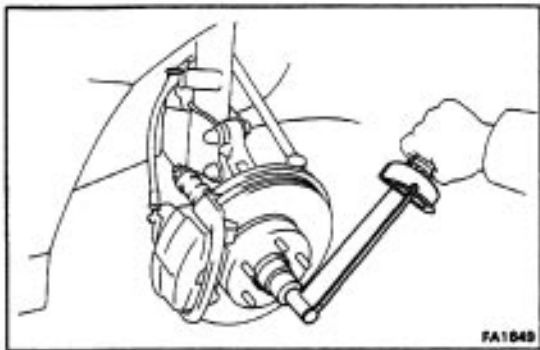
FA1647

### 6. INSTALL DISC BRAKE CALIPER TO STEERING KNUCKLE

Torque: 1,190 kg-cm (86 ft-lb, 117 N-m)



FA1648



## 7. INSTALL BEARING LOCK NUT, LOCK NUT CAP AND COTTER PIN

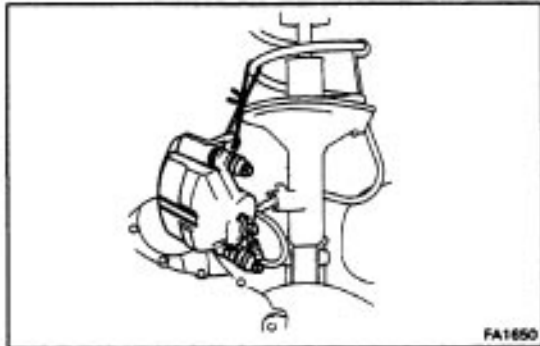
- (a) Torque the bearing lock nut while depressing the brake pedal.

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

- (b) Install the lock nut cap, and secure it with a new cotter pin.

## 8. CHECK FRONT WHEEL ALIGNMENT

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

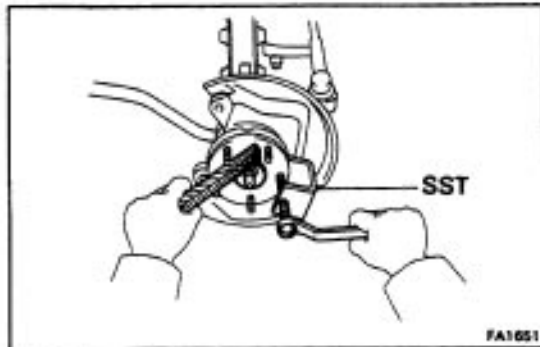


# REPLACEMENT OF FRONT AXLE HUB BOLT

## 1. MOVE DISC BRAKE CALIPER

Remove the disc brake caliper from the steering knuckle and suspended it with wire.

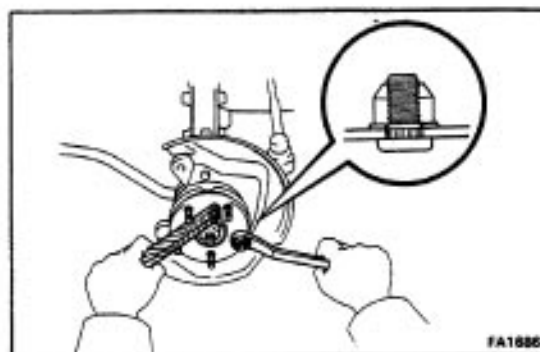
## 2. REMOVE ROTOR DISC



## 3. REMOVE FRONT AXLE HUB BOLT

- (a) Align the disc brake dust cover cutting portion and axle hub bolt.

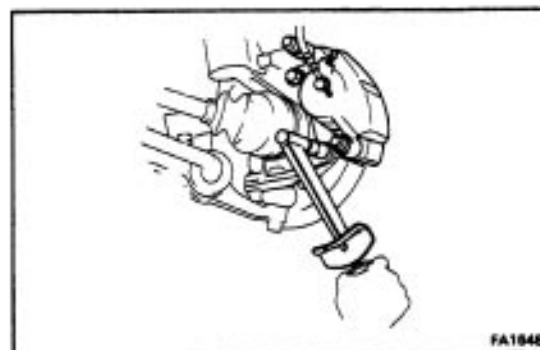
- (b) Using SST, remove the axle hub bolt.  
SST 09650-17011



## 4. INSTALL FRONT AXLE HUB BOLT

- (a) Hold the front axle hub, and install a new hub bolt.

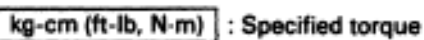
## 5. INSTALL ROTOR DISC



## 6. INSTALL DISC BRAKE CALIPER TO STEERING KNUCKLE

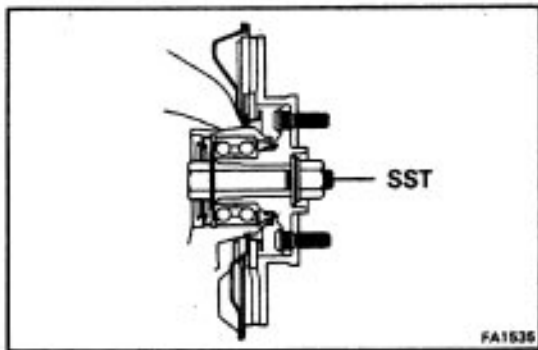
**Torque: 1,190kg-cm (86 ft-lb , 117 N-m)**

TOYOTA Type



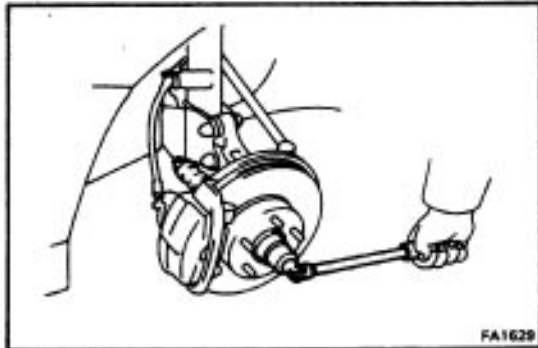
◆ **Non-reusable part**





**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)

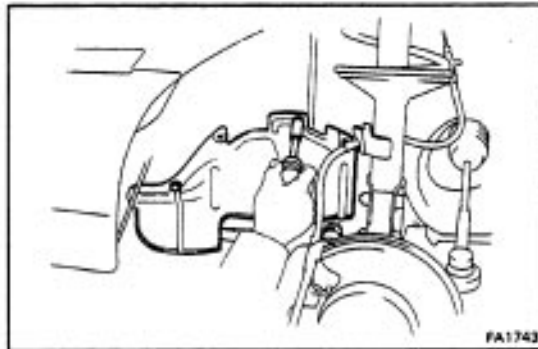


## REMOVAL OF FRONT DRIVE SHAFT

### 1. REMOVE COTTER PIN, LOCK NUT CUP 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 ENGINE UNDER COVER



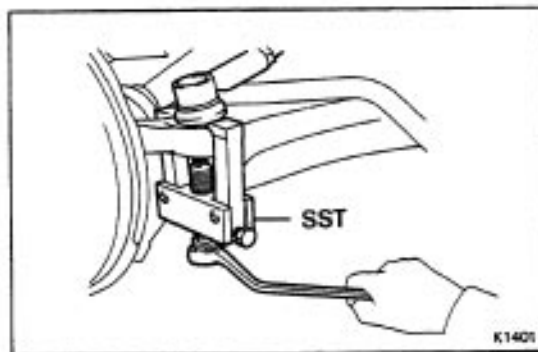
### 3. REMOVE FRONT FENDER APRON SEAL

### 4. DRAIN OUT GEAR OIL FLUID

### 5. DISCONNECT TIE ROD END FROM STEERING KNUCKLE

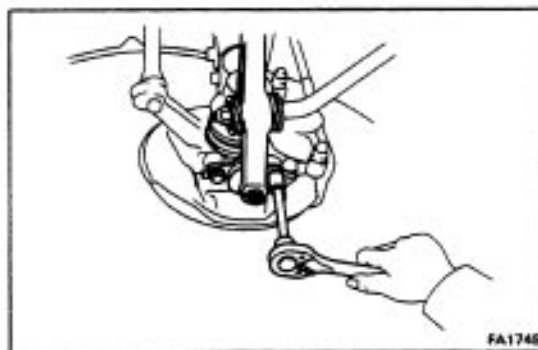
- (a) Remove the cotter pin and nut from the steering knuckle.
- (b) Using SST, disconnect the tie rod end from the steering knuckle.

SST 09628-62011

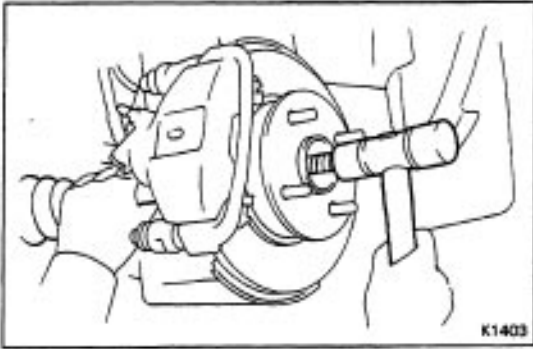


### 6. DISCONNECT STEERING KNUCKLE FROM LOWER BALL JOINT

Remove the two bolts and disconnect the steering knuckle from lower ball joint.



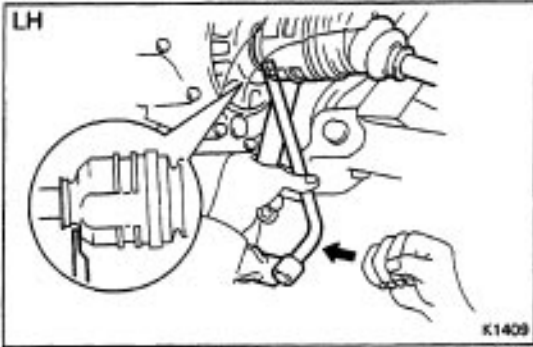




## 7. DISCONNECT DRIVE SHAFT FROM AXLE HUB

Using a plastic hammer, disconnect the drive shaft from the axle hub.

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



## 8. REMOVE LH DRIVE SHAFT

Using hub nut wrench and hammer handle or an equivalent; remove the front drive shaft as shown.

HINT: Be careful not to damage the dust cover.

## 9. REMOVE RH DRIVE SHAFT

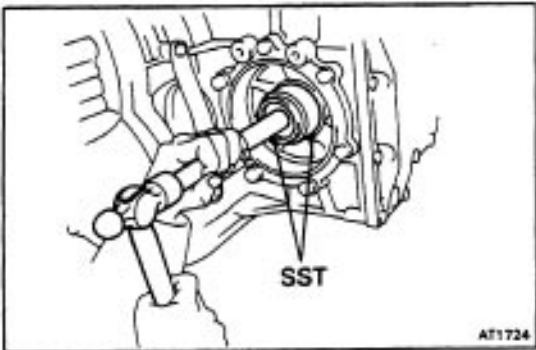
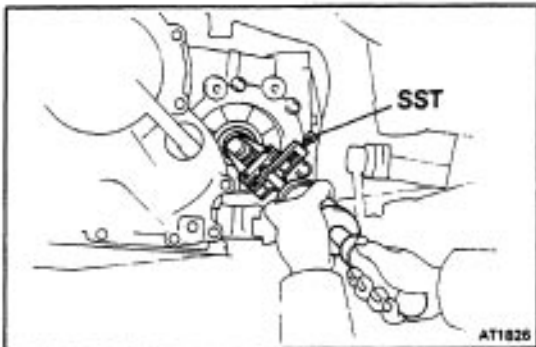
(a) Remove the drive shaft.

(b) Remove the three bolts, bearing bracket and stay.

## 10. IF NECESSARY, REPLACE DRIVE SHAFT OIL SEAL

(a) Using SST, drive out the oil seal.

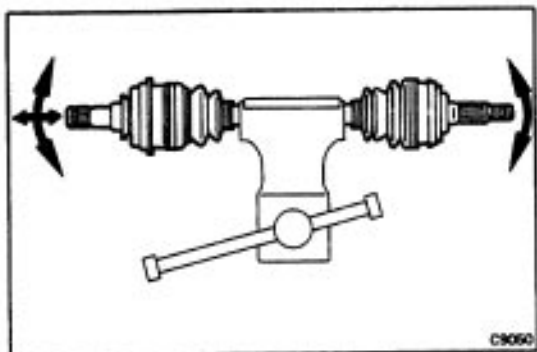
SST 09308-00010



(b) Using SST, press in a new oil seal.

SST A/T 09350-32013 (09351-32150), 09631-12020

M/T 09316-60010 (09316-00010)

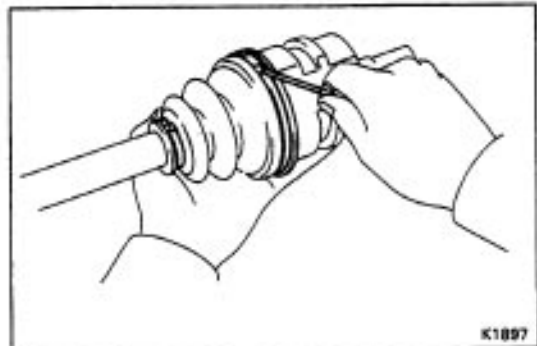


## DISASSEMBLY OF FRONT DRIVE SHAFT

(See page [FA-15](#))

### 1. CHECK DRIVE SHAFT

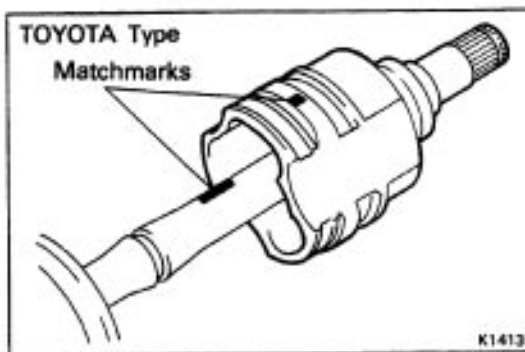
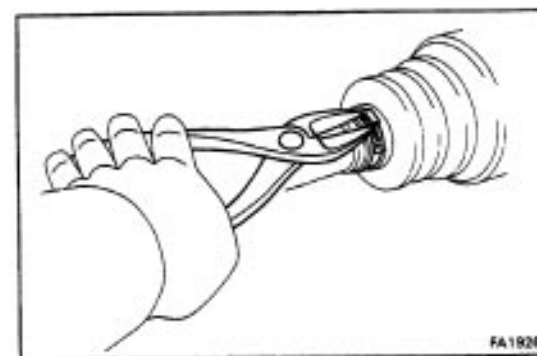
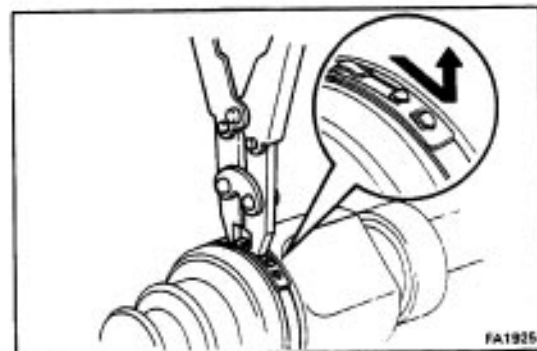
- Check to see that there is no play in the inboard and outboard joints.
- Check to see that the inboard joint slide smoothly in the thrust direction.
- Check to see that there is no remarkable play in the radial direction of the inboard joint.
- Check the damage of boot.



### 2-1. (TOYOTA TYPE) REMOVE INBOARD JOINT BOOT CLAMP

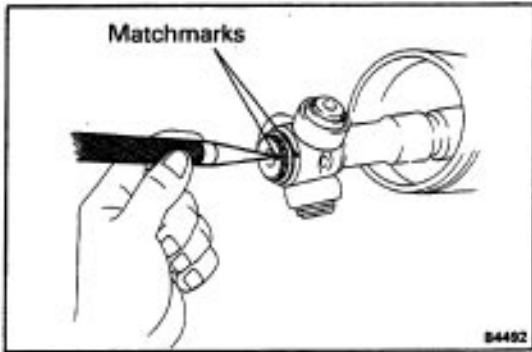
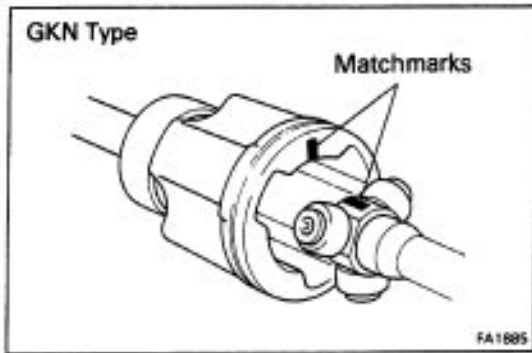
### 2-2. (GKN TYPE) REMOVE INBOARD JOINT BOOT CLAMP

- Using a boot clamp tool, draw hooks together and remove the large clamp.
- Using side cutters, cut small boot clamp and remove it.



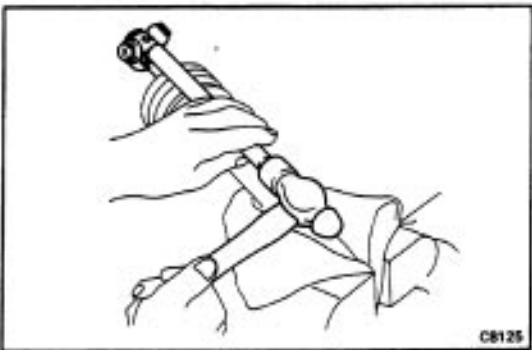
### 3. DISASSEMBLE INBOARD JOINT TULIP

- Place matchmarks on the inboard joint tulip and tripod.  
**NOTICE: Do not punch the marks.**
- Remove the inboard joint tulip from the drive shaft.



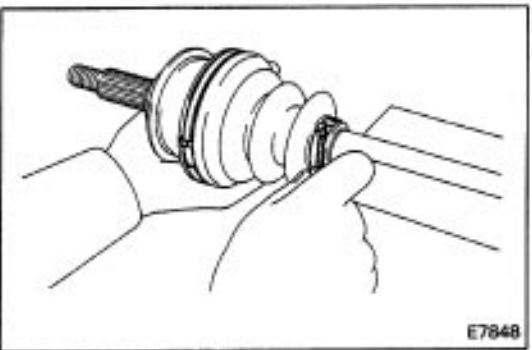
#### 4. DISASSEMBLE TRIPOD JOINT

- (a) Using snap ring pliers, remove the snap ring.
- (b) Using a punch, place matchmarks on the shaft and tripod.



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

#### 5. REMOVE JOINT BOOT

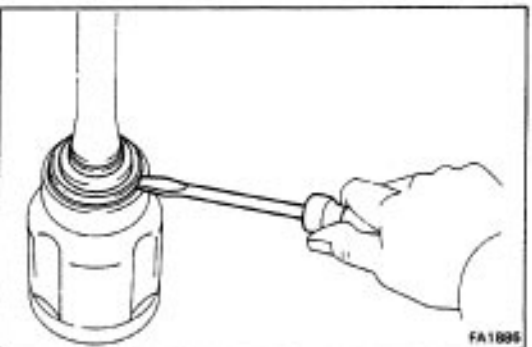


#### 6. (TOYOTA TYPE)

##### REMOVE OUTBOARD JOINT BOOT

Remove two boot clamp and the boot.

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

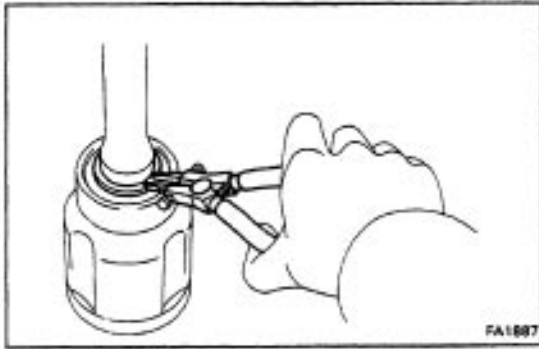


#### 7. REMOVE DUST COVER

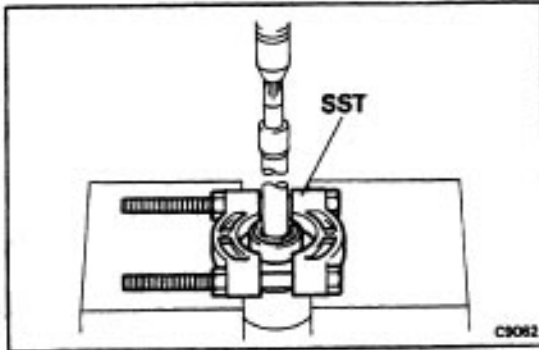
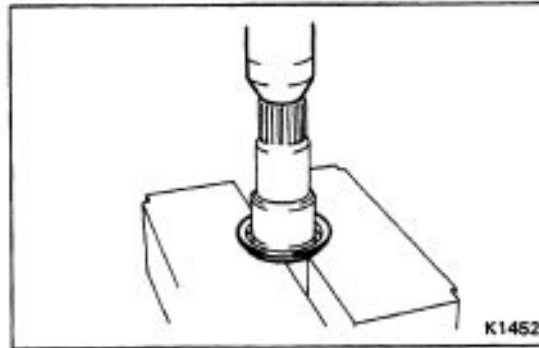
Using a screwdriver, remove dust covers.

**8. REMOVE SNAP RING**

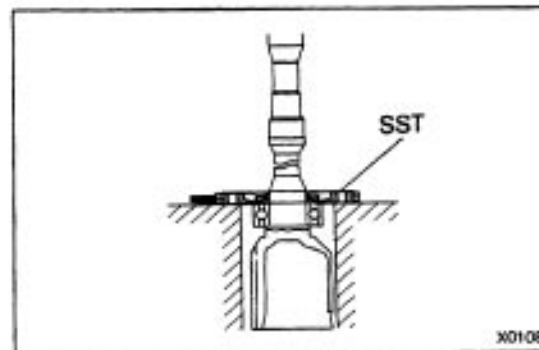
Using snap ring pliers, remove the snap ring.

**9. REMOVE BEARING**

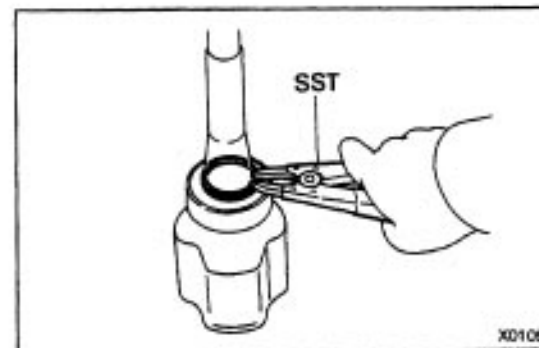
- (a) Using SST and a press, press out the bearing.  
SST 09950-00020
- (b) Remove the snap ring.

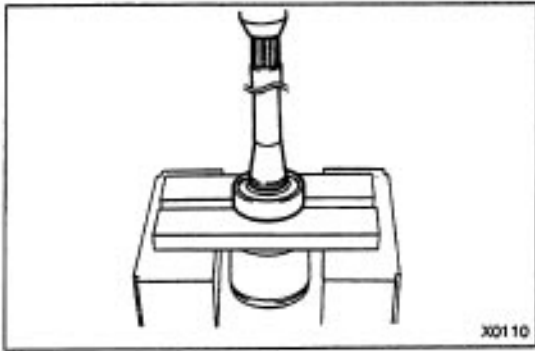
**10. REMOVE INBOARD JOINT DUST COVER****1. REMOVE DUST COVER**

Using SST, press out the dust cover.  
SST 09950-00020

**12. REMOVE BEARING**

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





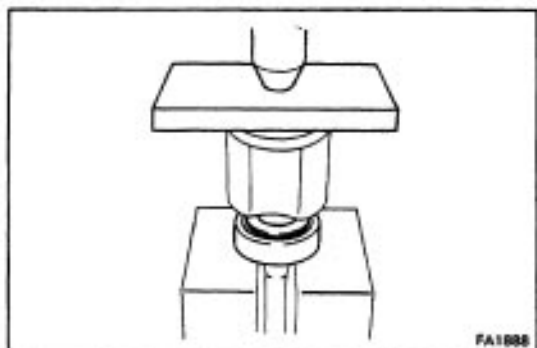
- (b) Using a press, remove the bearing from the in-board joint.
- (c) Remove the snap ring.

## ASSEMBLE OF FRONT DRIVE SHAFT

(See page [FA-15](#))

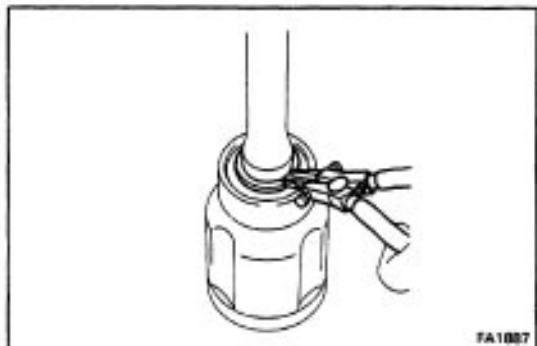
### 1. INSTALL BEARING

Using a steel plate, press in the bearing.



### 2. INSTALL SNAP RING

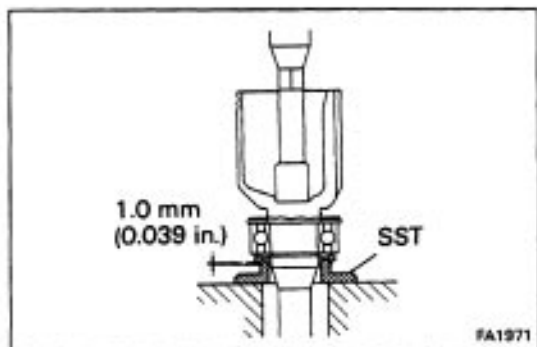
Using snap ring pliers, install a new snap ring.



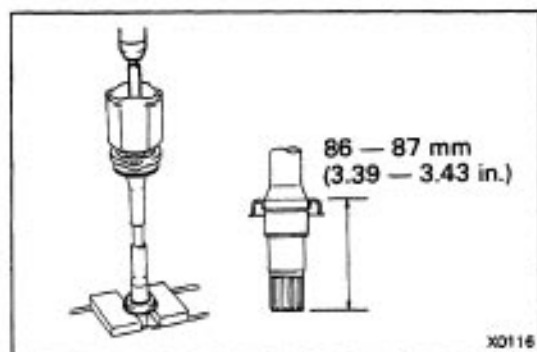
### 3-1. (TOYOTA TYPE) INSTALL DUST COVERS

(a) Using SST, press in the dust cover.

SST 09506-35010



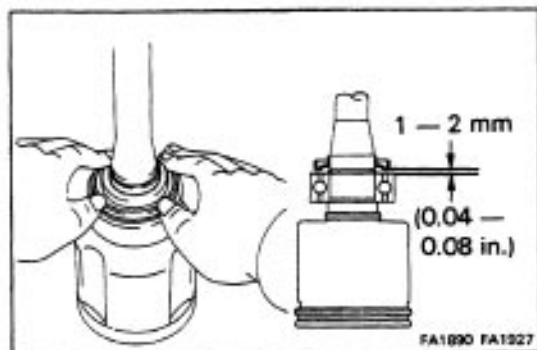
(b) Press in the dust cover as shown.

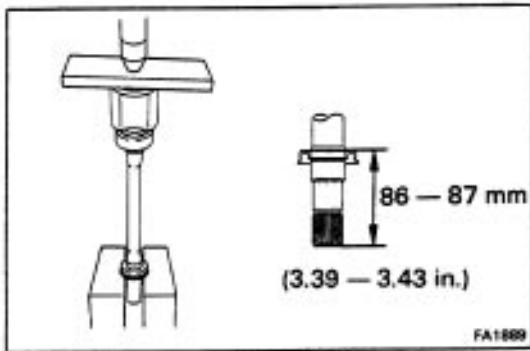


### 3-2. (GKN TYPE) INSTALL DUST COVERS

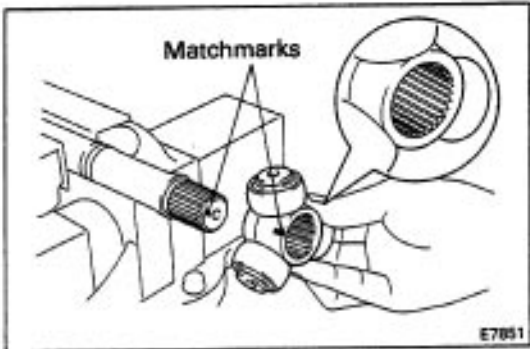
a) Install the dust cover by your hand. (Drive shaft side)

HINT: The clearance between the dust cover and the bearing should be kept in the range shown in the illustration.



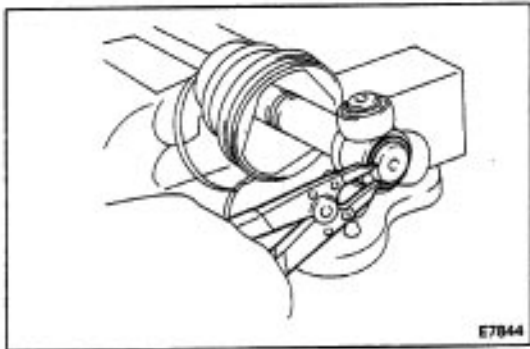


- (b) Using a steel plate and press, press in the dust cover.  
(Transaxle side)

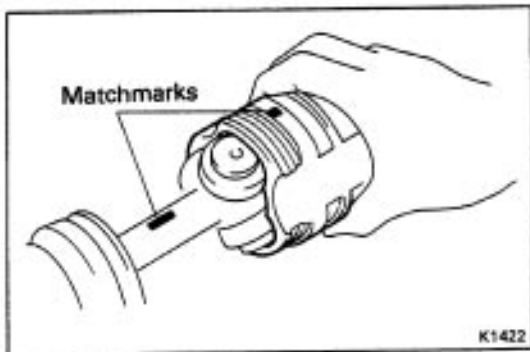


#### 4. INSTALL TRIPOD JOINT

- (a) Install a new snap ring.  
(b) Align matchmarks to the tripod joint and drive shaft.  
(c) Drive in the tripod joint.  
HINT: do not drive the tripod joint roller.



- (d) Using snap ring pliers, install the snap ring.



#### 5. ASSEMBLE INBOARD JOINT

- (a) Pack in grease to the inboard joint tulip.  
HINT: Use the grease supplied in the boot kit.

##### Grease capacity:

**TOYOTA Type: 232 g (0.51 lb)**

**GKN Type: 185 – 215 g (0.41 – 0.47 lb)**

**Grease color: Yellow ocher**

- (b) Align matchmarks drive shaft and inboard joint tulip.

#### 8. PACK IN GREASE. TO OUTBOARD JOINT

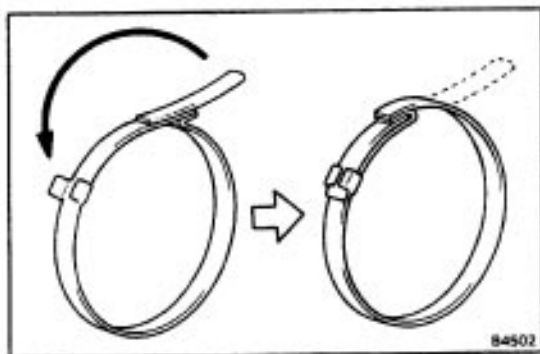
- (a) Pack in grease to the outboard joint.  
HINT: Use the grease supplied in the boot kit.

##### Grease capacity:

**TOYOTA Type: 120 g (0.26 lb)**

**GKN Type: 80 – 100 g (0.18 – 0.22 lb)**

**Grease color: Black**

**7.(TOYOTA TYPE)****INSTALL BOOT CLAMPS TO BOTH BOOT**

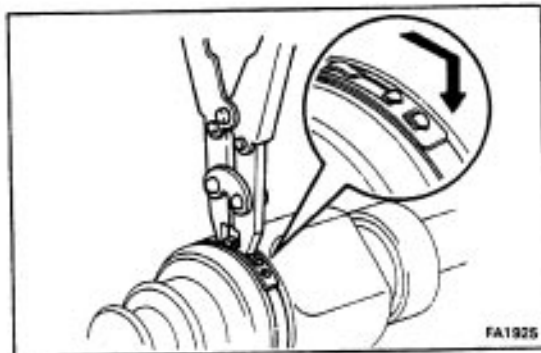
- (a) Be sure the boot is on the shaft groove.
- (b) Bend the band and lock it as shown.

- (c) Insure that the boot is no stretched or contracted when the drive shaft is at standard length.

**Drive shaft length:**

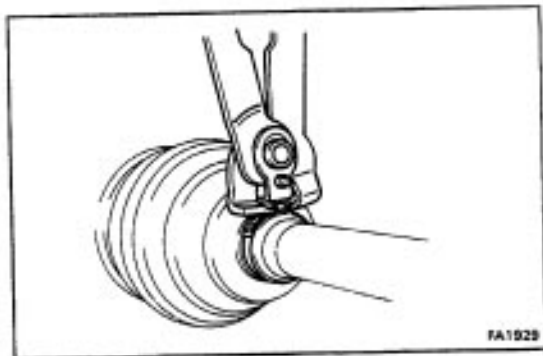
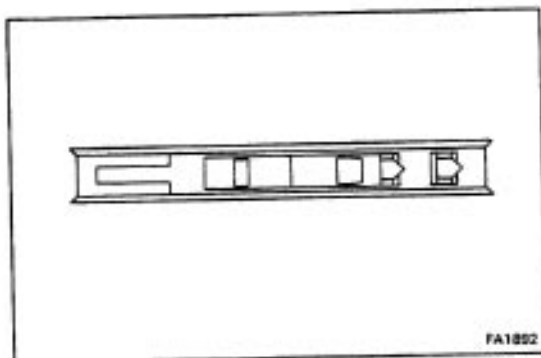
**LH  $558.7 \pm 5.0$  mm ( $21.996 \pm 0.197$  in.)**

**R H  $845.2 \pm 5.0$  mm ( $33.276 \pm 0.197$  in.)**

**7-2. (GKN TYPE)****ASSEMBLE BOOT CLAMPS TO BOTH BOOT**

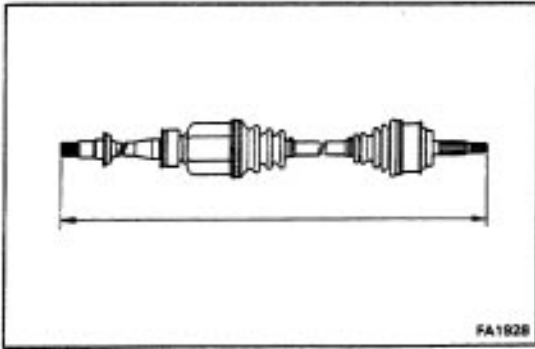
- (a) Be sure the boot (large side) is on shaft groove.
- (b) Using a boot clamp tool, place pincer jaws in closing hooks of large clamp.
- (c) Secure clamp by drawing closing hooks together.

- (d) Check that the clamp at closed position is the same as in the illustration.



- (e) Be sure the boot (small side) is on the shaft groove.
- (f) Using a boot clamp tool, tighten the clamp.



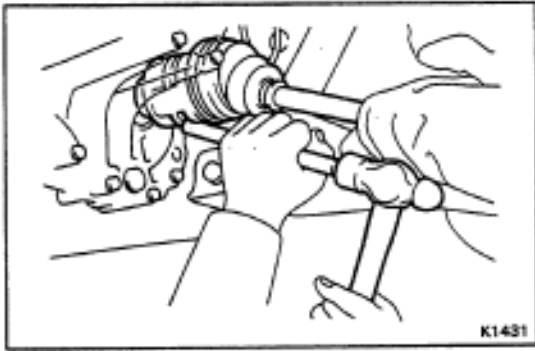


Insure that the boot is no stretched or contracted when the drive shaft is at standard length.

**Drive shaft length:**

**LH  $652.0 \pm 6.0$  mm ( $25.669 \pm 0.236$  in.)**

**R H  $937.0 \pm 6.0$  mm ( $36.890 \pm 0.236$  in.)**



## INSTALLATION OF FRONT DRIVE SHAFT

(See page FA-15)

### 1. INSTALL LH DRIVE SHAFT

- Coat gear oil to the inboard joint tulip and differential case sliding surface.
- Using a brass bar and hammer, tap in the drive shaft unit it makes contact with the pinion shaft.

#### HINT:

Before installing the drive shaft, set the snap ring opening side facing downward.

Whether or not the drive shaft is making contact with the pinion shaft can be known by the sound or feeling when driving it in.

### 2. INSTALL RH DRIVE SHAFT

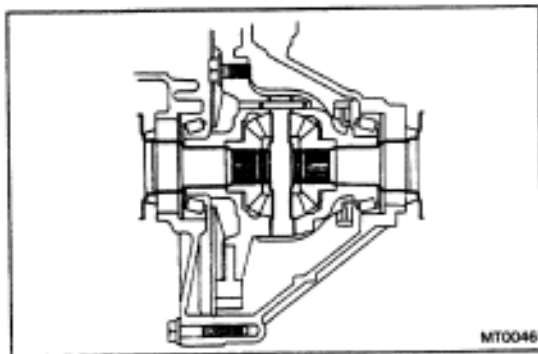
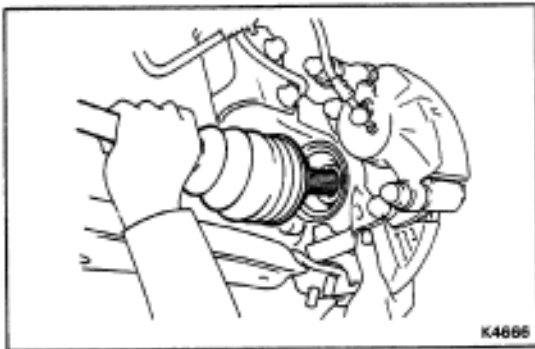
- Install the bearing bracket and stay with three bolts.  
**Torque: 650 kg-cm (47 ft-lb, 64 N-m)**
- Coat gear oil to the inboard joint and differential sliding surface.
- Insert the RH drive shaft.

**NOTICE: Do not damage the oil seal lip.**

### 3. CONNECT DRIVE SHAFT TO AXLE HUB

Install the outboard joint side of the drive shaft to the axle hub.

**NOTICE: Do not damage the boot.**

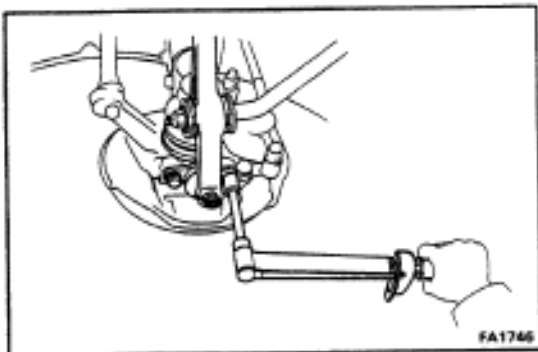


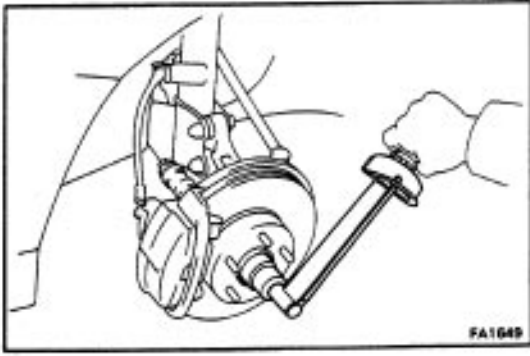
### 4. CHECK INSTALLATION OF FRONT DRIVE SHAFT

- Check that there is 2-3 mm (0.08-0.12 in.) of play in axial direction.
- Check that the drive shaft will not come out by trying to pull it completely out by hand.

### 5. CONNECT STEERING KNUCKLE TO LOWER BALL JOINT

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





**6. INSTALL BEARING LOCK NUT, LOCK NUT CAP AND NEW COTTER PIN**

(a) Install and torque the bearing lock nut.

**Torque: 1,900 kg-cm (137 ft-lb, 187 N-m)**

(b) Install the lock nut cap and secure it with a new cotter pin.

**7. FILL TRANSAXLE WITH FLU 16**

(See page [MT-39](#))

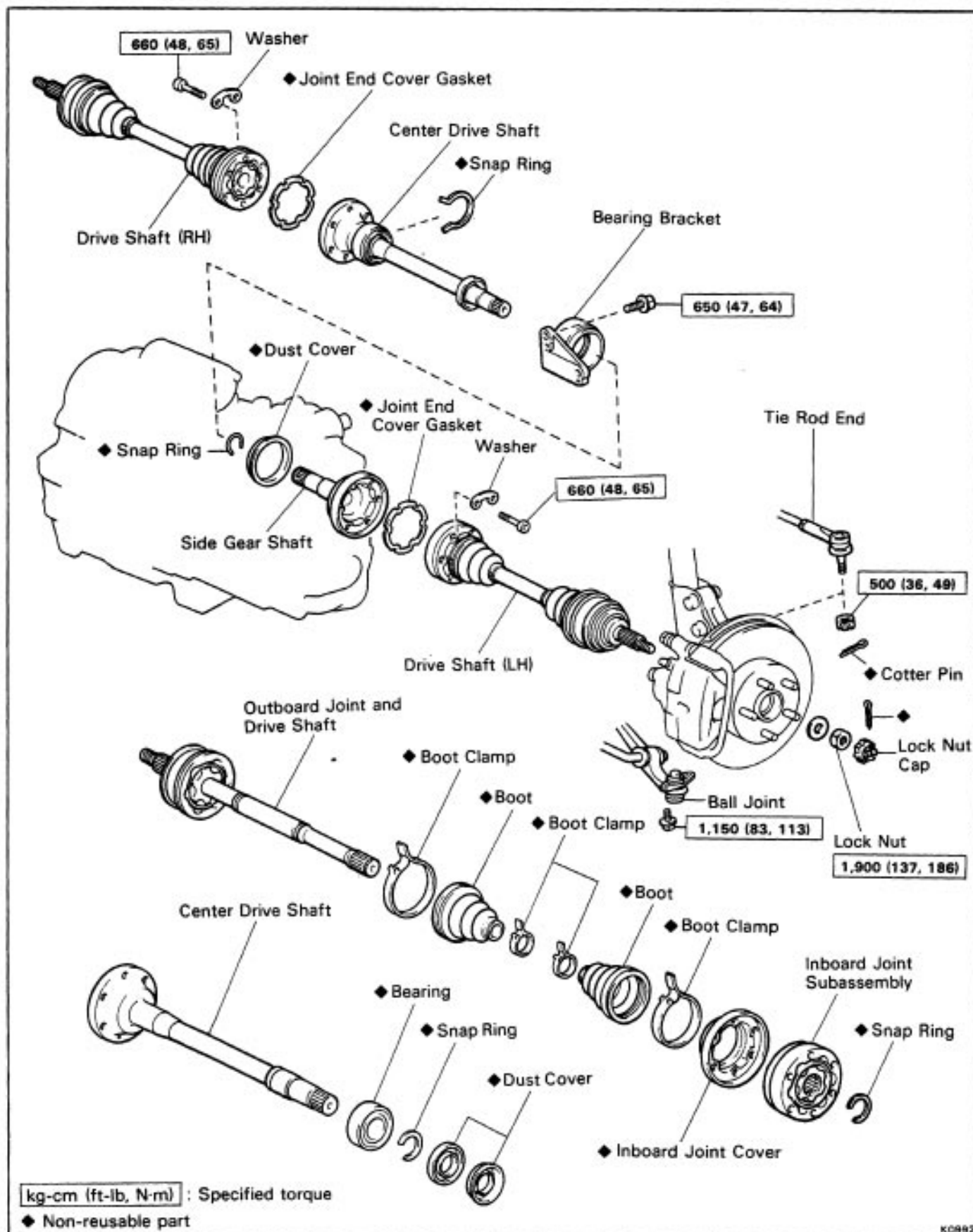
**8. INSTALL FRONT FENDER APRON SEAL**

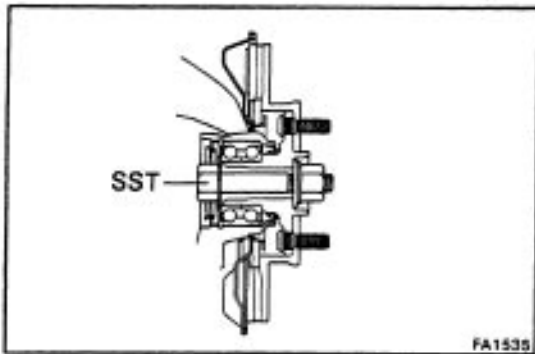
**9. INSTALL ENGINE UNDER COVER**

**10. CHECK FRONT WHEEL ALIGNMENT**

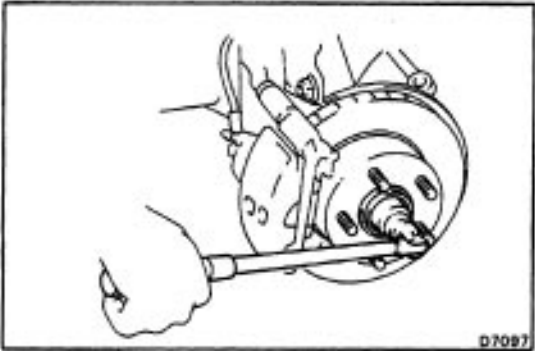
(See page [FA-3](#))

## FRONT DRIVE SHAFT (FWD VZV21) COMPONENTS





**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 absolutely necessary to place the vehicle weight on the hub bearing, first support it with SST. .  
SST 09608-16041 (09608-02020,09608-02040)



## REMOVAL OF DRIVE SHAFT

(See page [FA-28](#))

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

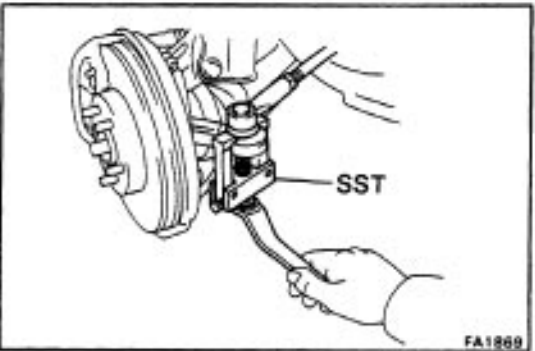
- Remove the cotter pin and lock nut cap.
- Loosen the bearing lock nut while depressing the brake pedal.

### 2. REMOVE ENGINE UNDER COVERS

### 3. DISCONNECT TIE ROD END

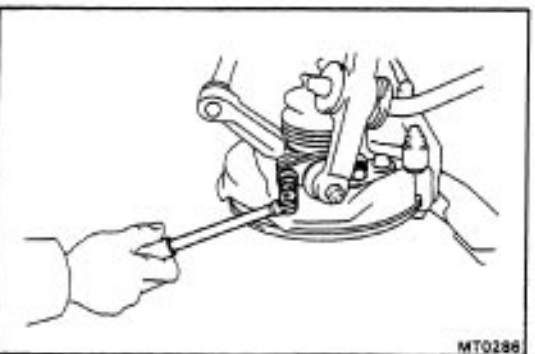
- Remove the cotter pin and nut from the tie rod end.
- Using SST, disconnect the tie rod end from the steering knuckle.

SST 09628-62011



### 4. DISCONNECT STEERING KNUCKLE FROM LOWER ARM

Remove the two bolts and disconnect the steering knuckle from the lower arm.



### 5. LOOSEN SIX BOLTS HOLDING DRIVE SHAFT TO DIFFERENTIAL SIDE GEAR SHAFT OR CENTER DRIVE SHAFT

- Place matchmarks on the drive shaft and side gear shaft or center drive shaft.

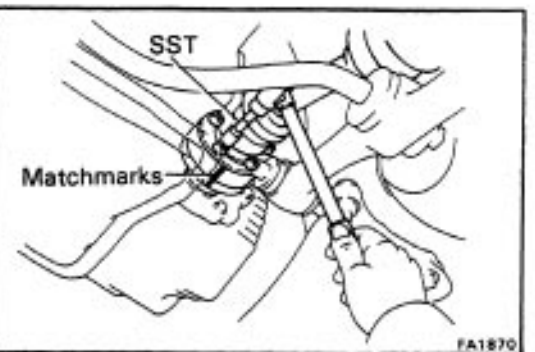
**NOTICE:** Do not use a punch to mark the matchmarks.

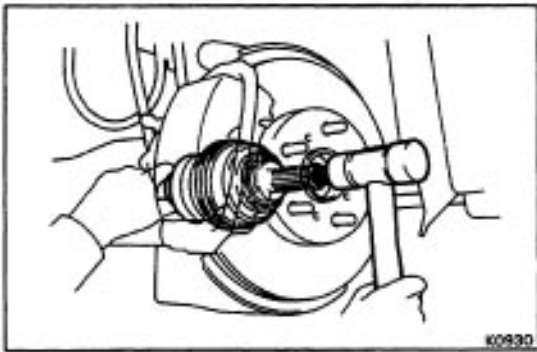
Use paint, etc.

- Using SST, loosen the six hexagon bolts while depressing the brake pedal.

SST 09043-88010

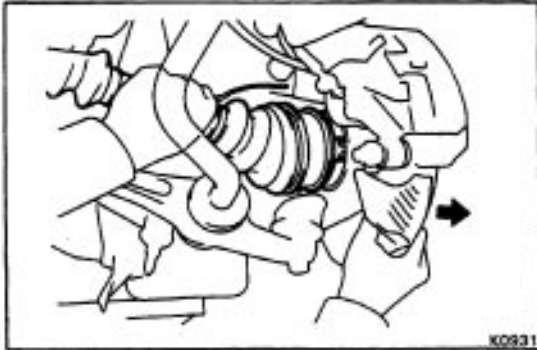
**HINT:** Do not remove the bolts, finger tighten them not to drop down the drive shaft.



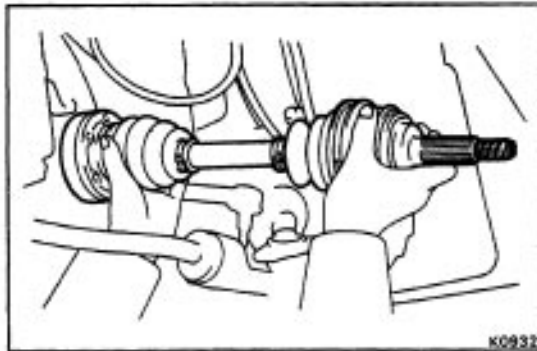


- (c) Using a plastic hammer, disconnect the drive shaft from axle hub.

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



- (d) Push the front axle hub toward the outside of the vehicle, and separate the drive shaft from the axle hub.

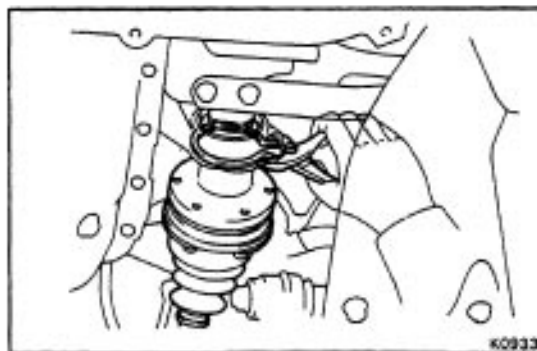


## 6. REMOVE DRIVE SHAFT (LH drive shaft)

- (a) Remove the six bolts and three washers, and remove the LH drive shaft carefully.

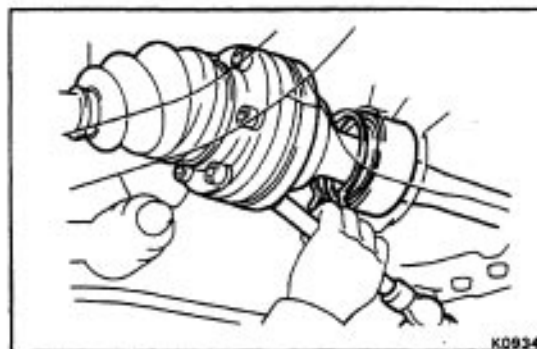
**NOTICE:** When moving the drive shaft, do not compress the in-board boot so that the inside bails might be dropped out.

- (b) Remove the joint end cover gasket from the drive shaft.



## (RH drive shaft)

- (a) Drain out the gear oil.  
 (b) Remove the bearing lock bolt.  
 (c) Using pliers, remove the snap ring, and pull out the drive shaft with the center drive shaft.



**HINT:** If the drive shaft could not be pulled out, using a brass bar and a hammer, tap out the drive shaft.

**7. (LH SIDE)**

**DRAIN OUT GEAR OIL**

**8. (LH SIDE)**

**REMOVE SIDE GEAR SHAFT FROM TRANSAXLE**

(a) In order to install the side gear shaft, push the side gear shaft to the differential.

Measure and note the distance between the trans-axle case and the side gear shaft.

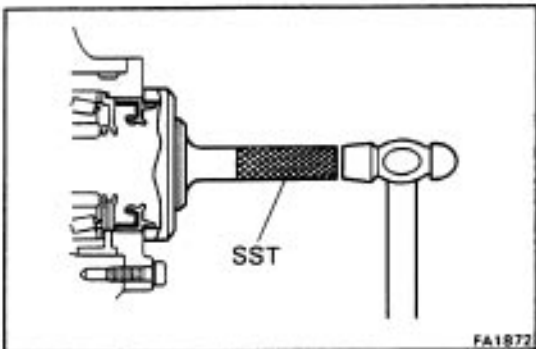
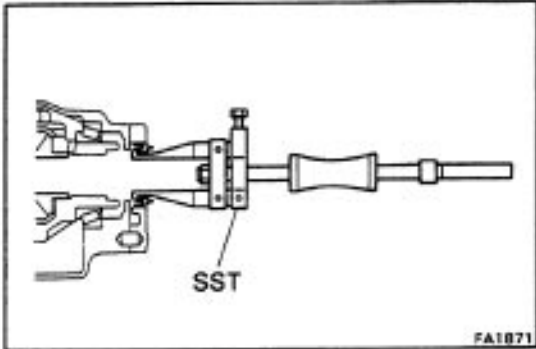
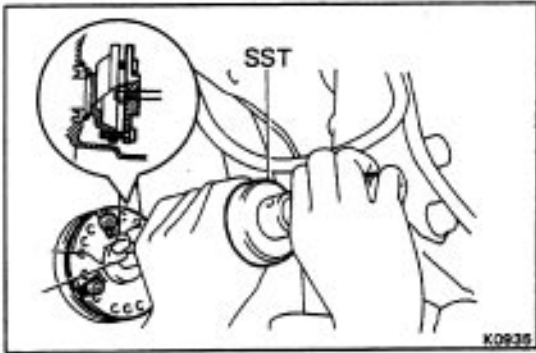
(b) Using SST, drive out the side gear shaft.

SST 09520-32012

**9. IF NECESSARY, REPLACE SIDE GEAR SHAFT OIL SEAL**

(a) Using SST, pull out the oil seal from the case.

SST 09308-00010

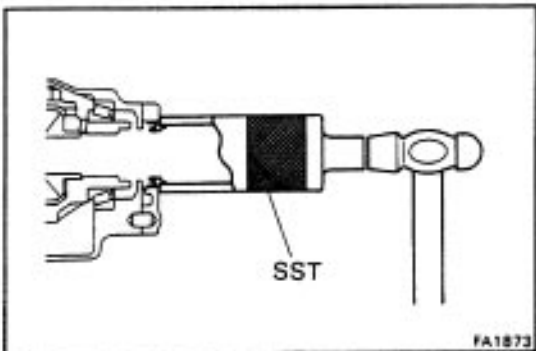


(b) Using SST and a hammer, tap in a new oil seal.

SST LH side

09223-15010

HINT: Coat the oil seal lip with MP grease.



SST RH side

09316-60010 (09316-00010)

HINT: Coat the oil seal lip with MP grease.



## DISASSEMBLY OF FRONT DRIVE SHAFT

(See page [FA-28](#))

### 1. CHECK DRIVE SHAFT

- (a) Check to see that there is no play in the inboard and outboard joints.
- (b) Check to see that the inboard joint slides smoothly in the thrust direction.
- (c) Check to see that there is no play in the radial direction of the inboard joint.
- (d) Check the damage of boot.

### 2. (RH DRIVE SHAFT)

#### DISCONNECT CENTER DRIVE SHAFT

- (a) Using SST, remove the six bolts and three washers, and disconnect the center drive shaft from the RH drive shaft.

SST 09923-00020

**NOTICE:** Do not compress the inboard boot.

- (b) Remove the joint end cover gasket from the drive shaft.

### 3. REMOVE INBOARD JOINT BOOT CLAMPS

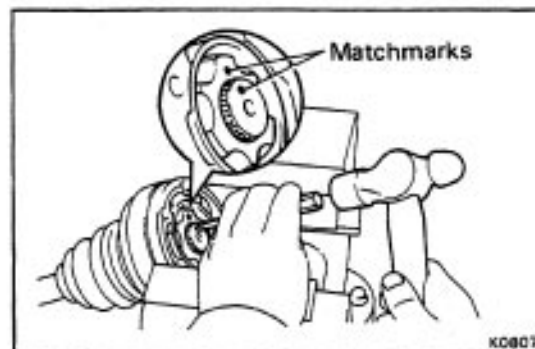
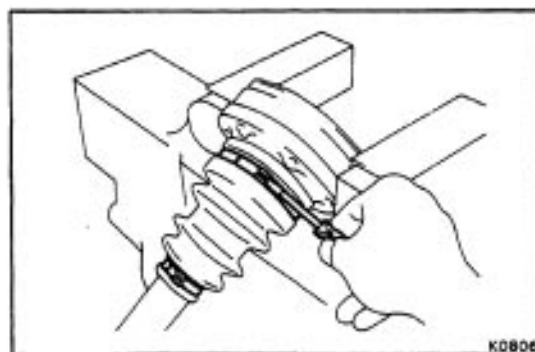
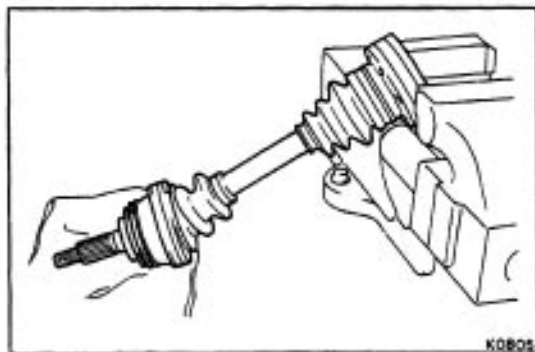
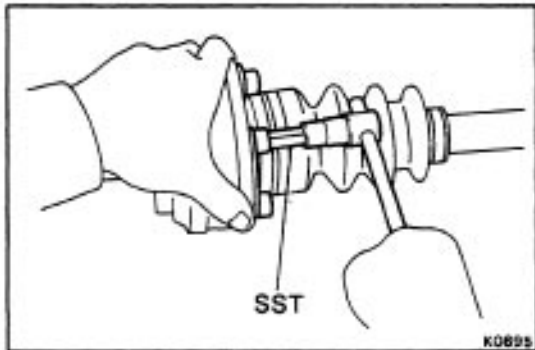
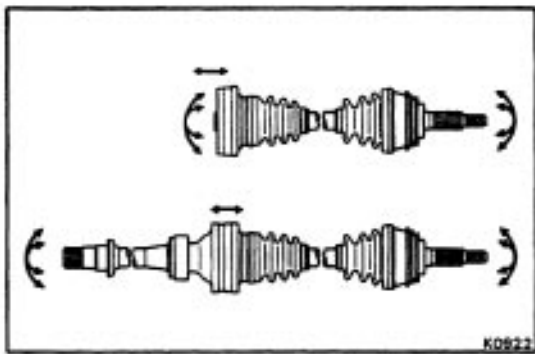
- (a) Using soft jaws, clamp the inboard joint in the vise.

**NOTICE:** Do not tighten the vise too tight not to damage the inboard joint.

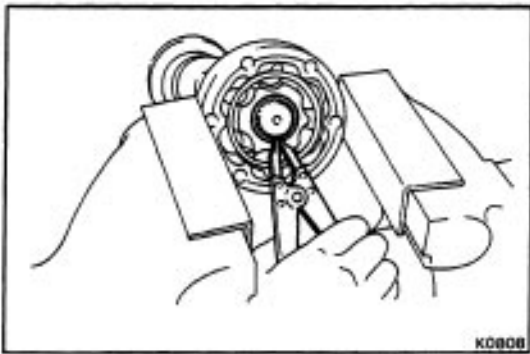
- (b) Using a screwdriver, remove the inboard joint boot clamps.

### 4. DISASSEMBLE INBOARD JOINT

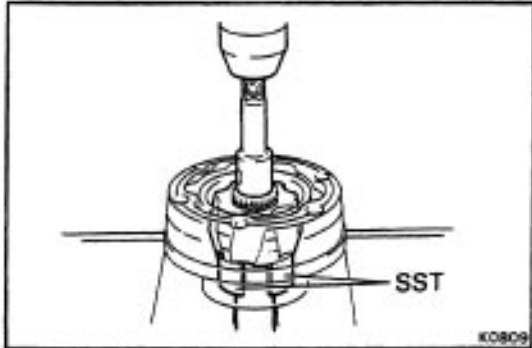
- (a) Using a punch and a hammer, place the matchmarks on the shaft and inner race.



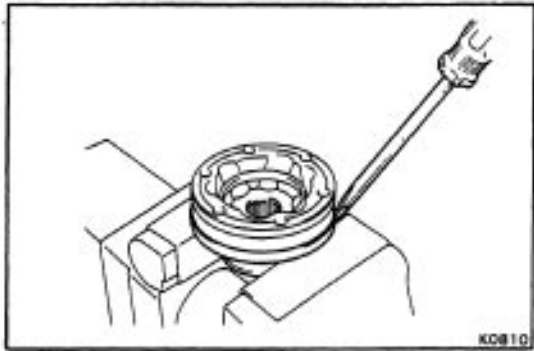




- (b) Using snap ring pliers, remove the snap ring.

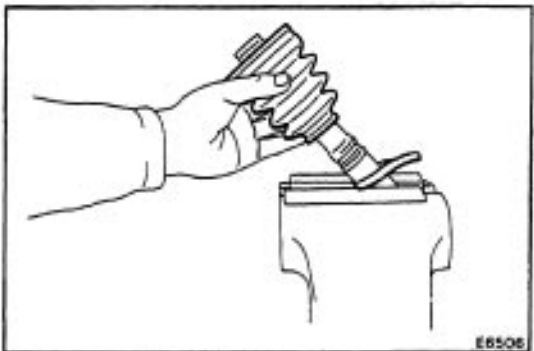


- (c) Using SST, an extension bar and a press, remove the inboard joint from the drive shaft.  
SST 09726-10010 (09726-00030)



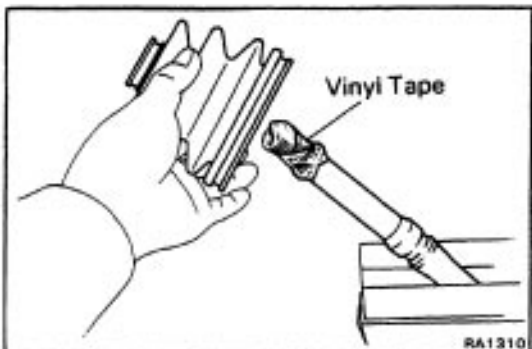
- (d) Using a screwdriver and a hammer, remove the inboard joint from inboard joint cover.

**NOTICE:** When lifting the inboard joint, hold onto the inner race and outer race.



## 5. REMOVE BOOTS

- (a) Remove the inboard joint boot and outboard joint boot.  
(b) Check the inside and outside of the boots for damage.

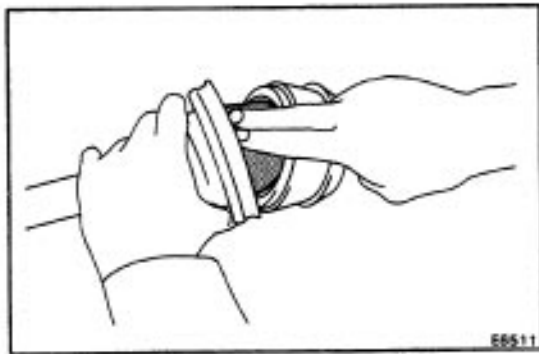


## ASSEMBLY OF DRIVE SHAFT

(See page [FA-28](#))

### 1. INSTALL OUTBOARD JOINT BOOT AND NEW BOOT CLAMP

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

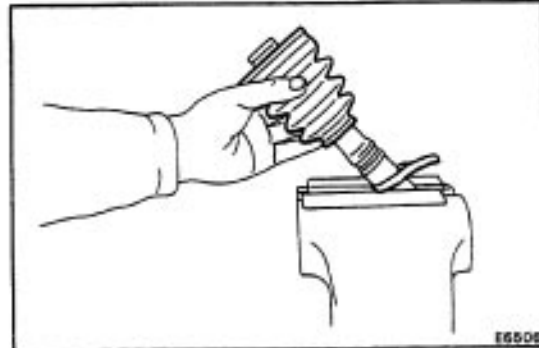


## 2. ASSEMBLE BOOT TO OUTBOARD JOINT

Before assembling the boot, pack in grease.

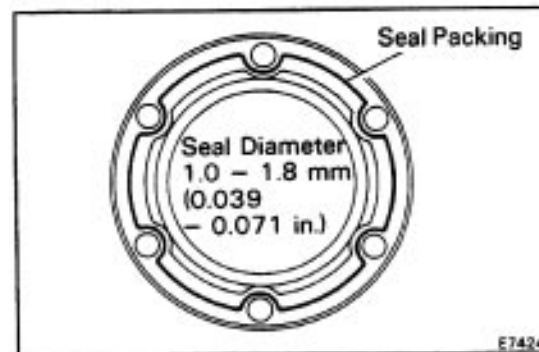
HINT: Use the grease supplied in the boot kit.

**Grease capacity: 120 – 130 g (0.26 0.29 lb)**



## 3. INSTALL NEW BOOT CLAMPS AND INBOARD JOINT BOOT

Temporarily install the two new boot clamps and in-board joint.

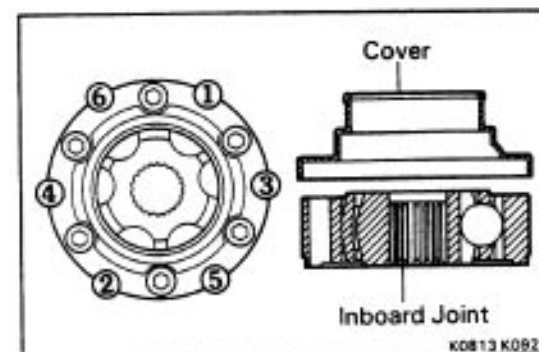


## 4. ASSEMBLE NEW INBOARD JOINT COVER

(a) Apply seal packing to the inboard joint cover as shown in the illustration.

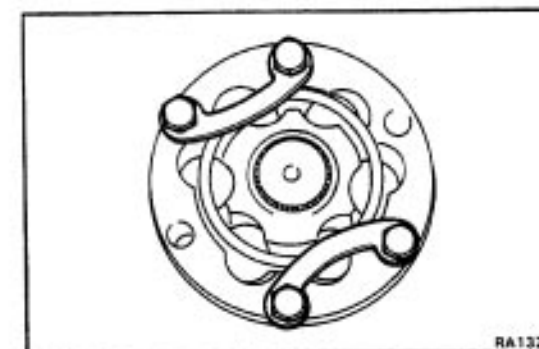
**Seal packing: Part No. 08826-00801, THREE BOND 1121 or equivalent**

HINT: Avoid applying an excess amount to the surface.



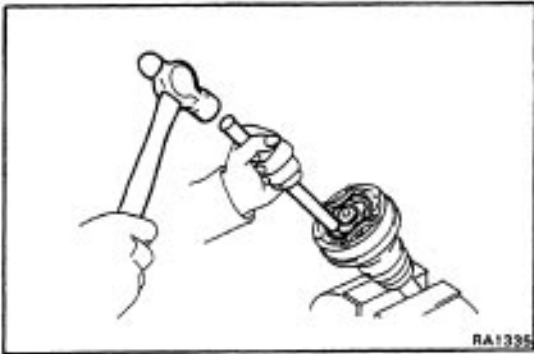
(b) Align the bolt holes of the cover with those of the inboard joint, then insert the hexagon bolts.

(c) Using a plastic hammer to tap the rim of the inboard joint cover into place. Do this in the order shown, and repeat several times.



(d) Use bolts, nuts and washers to keep the inboard joint together.

**NOTICE: Tighten the bolts by hand to avoid scratching the flange surface.**

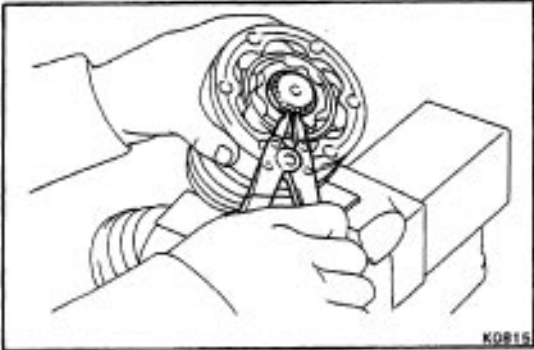


## 5. ASSEMBLE INBOARD JOINT

- (a) Align the nmatchmarks placed before disassembly.
- (b) Using a brass bar and hammer, tap the inboard joint onto the drive shaft.

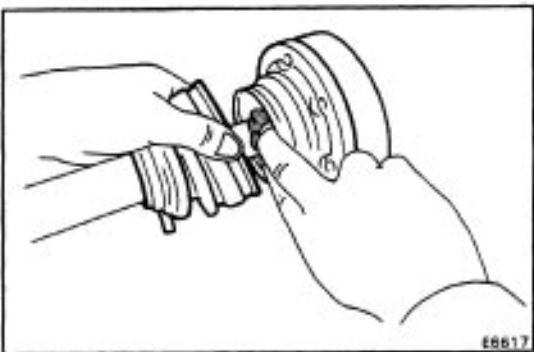
**NOTICE:** Make sure that the brass bar is touching the inner race, and not the cage.

- (c) Remove the bolts, nuts and washers.



- (d) Using snap ring pliers, install a new snap ring.

**NOTICE:** Work carefully not to come off the outer race.

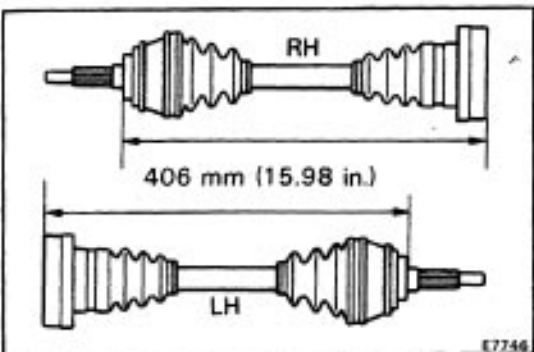


## 6. ASSEMBLE INBOARD JOINT BOOT TO INBOARD JOINT

Pack in grease to the inboard tulip and boot.

HINT: Use the grease supplied in the boot kit.

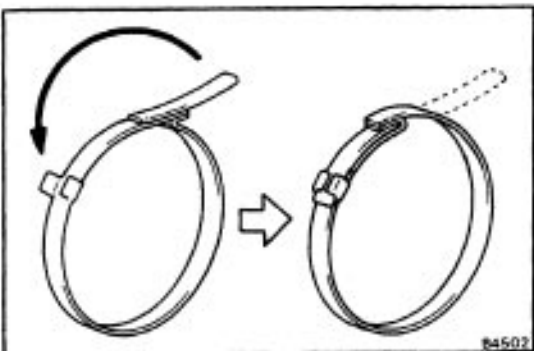
**Grease capacity: 90 – 100 g (0.20 – 0.22 lb)**



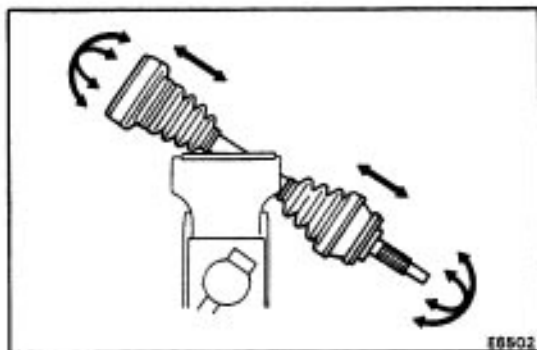
## 7. ASSEMBLE BOOT CLAMPS TO BOTH BOOTS

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

**Drive shaft length: 406 mm (15.98 in.)**

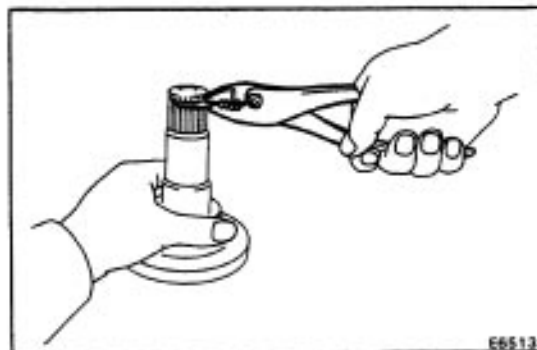


- (c) Bend the band and lock it as shown.



## 8. CHECK DRIVE SHAFT

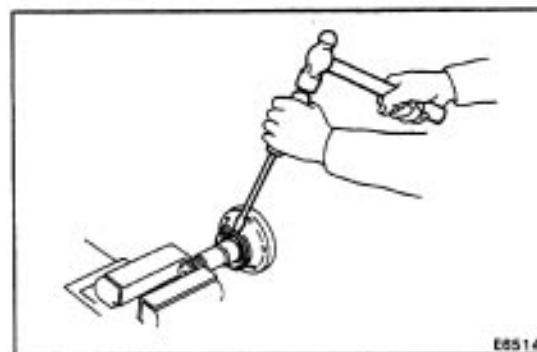
- (a) Check to see that there is no play in the inboard joint and outboard joint.
- (b) Check to see that the inboard joint slides smoothly in the thrust direction.



## DISASSEMBLY OF SIDE GEAR SHAFT

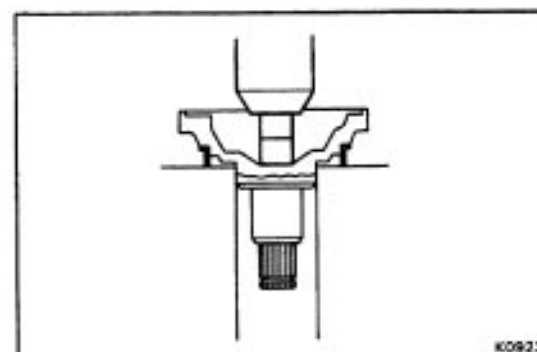
### 1. REMOVE SNAP RING

Using pliers, remove the snap ring.



### 2. REMOVE DUST COVER

Using a screwdriver and a hammer, remove the dust cover.

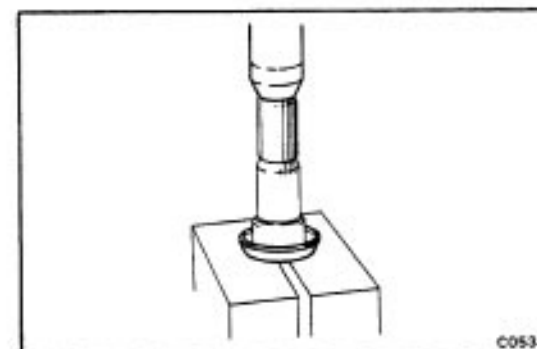


## ASSEMBLY OF SIDE GEAR SHAFT

### 1. INSTALL DUST COVER

Using a press, press in the dust cover.

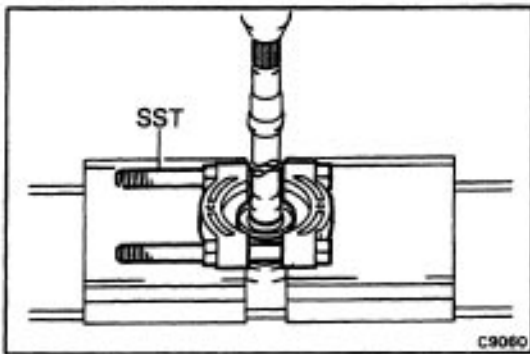
### 2. INSTALL SNAP RING



## DISASSEMBLY OF CENTER DRIVE SHAFT

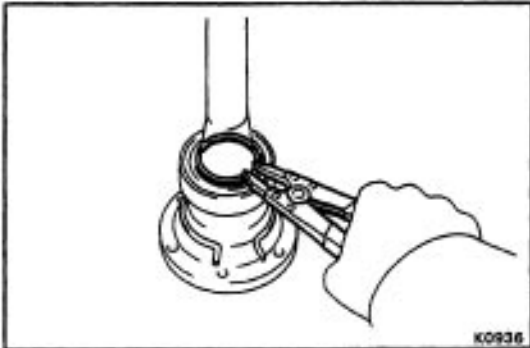
### 1. REMOVE DUST COVERS

- (a) Using a press, press out the transaxle side dust cover.



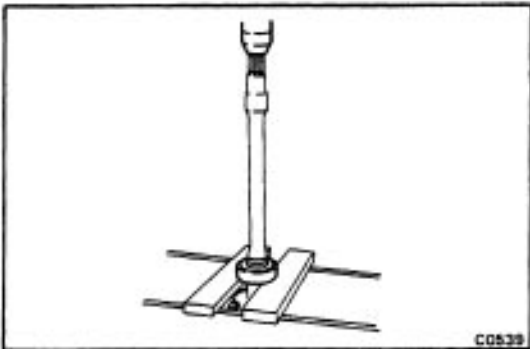
- (b) Using SST and a press, press out the drive shaft side dust cover.

SST 09950-00020



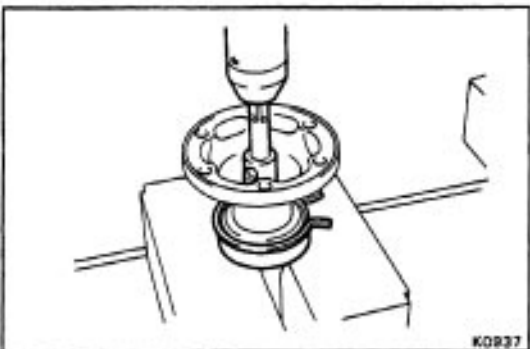
## 2. REMOVE SNAP RING

Using snap ring pliers, remove the snap ring.



## 3. REMOVE BEARING

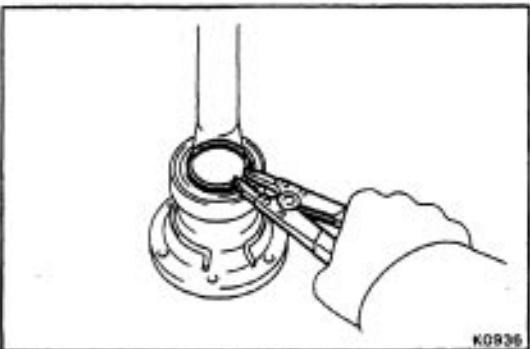
- (a) Using a press, press out the bearing.  
(b) Remove the snap ring.



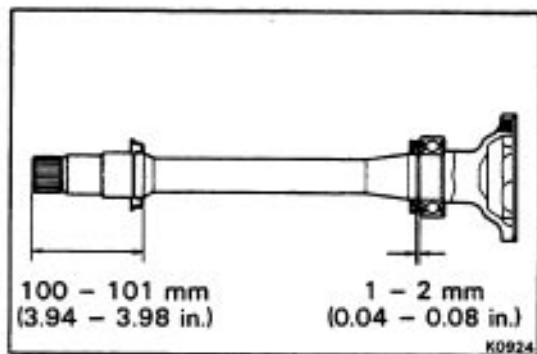
# ASSEMBLY OF CENTER DRIVE SHAFT

## 1. INSTALL BEARING

- (a) Install the snap ring to the center drive shaft.  
(b) Using a press and extension bar, press in the bearing.



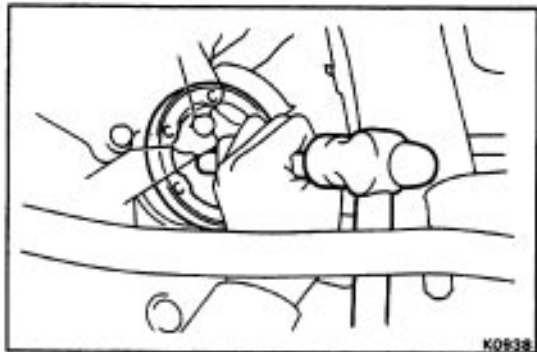
- (c) Using snap ring pliers, install a new snap ring.



## 2. INSTALL DUST COVERS

(a) Using a press, press in the drive shaft side dust cover.  
HINT: The clearance between the dust cover and the bearing should be kept in the range shown in the illustration.

(b) Using a press, press in the transaxle side dust cover.



## INSTALLATION OF DRIVE SHAFT

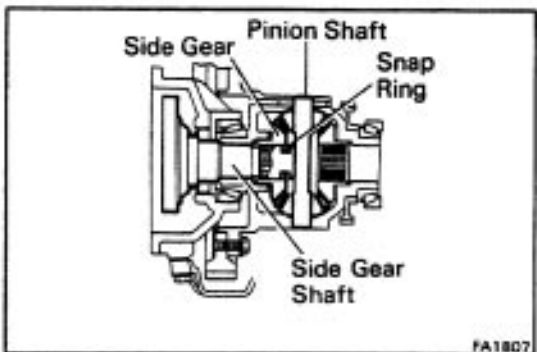
### 1. INSTALL SIDE GEAR SHAFT

(a) Insure that a new snap ring is positioned securely in the groove of the side gear shaft.

(b) Using a brass bar and hammer, tap in the drive shaft until it makes contact with the pinion shaft.

HINT:

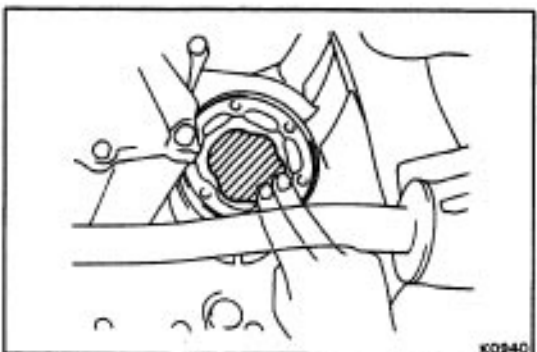
- Before installing the drive shaft, set the snap ring opening side facing downward.
- Whether or not the side gear shaft is making contact with the pinion shaft can be known by the sound or feeling when driving it in.



### 2. CHECK INSTALLATION OF SIDE GEAR SHAFT

(a) Check that the side gear shaft will not come out by trying to pull it completely out by hand.

(b) Push the side gear shaft to the differential and measure the distance between the side gear shaft and the transaxle case. Check that the distance between the two is the same as the measurement taken before removing the side gear shaft.



### 3. PACK IN GREASE TO SIDE GEAR SHAFT

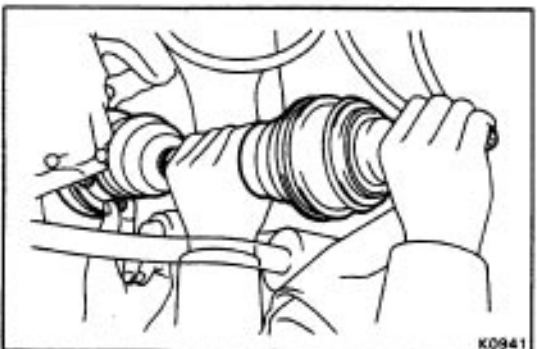
Pack in grease to the side gear shaft.

**Grease capacity: 43 - 53 g (0.09 - 0.12 lb)**

HINT: Use the grease supplied in the boot kit.

Supply of grease only is also available.

Part No. 90999-94029



### 4. INSTALL DRIVE SHAFT

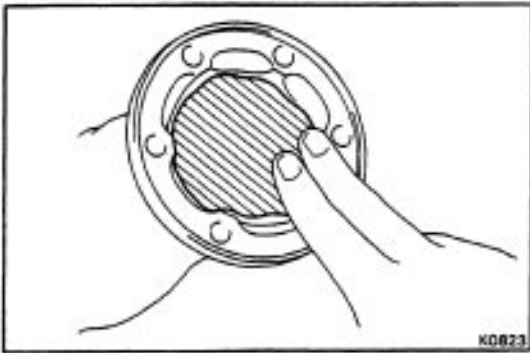
(LH drive shaft)

(a) Place the new gasket on the inboard joint.

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

**NOTICE: When moving the drive shaft, do not compress the inboard boot.**

(c) Insert and finger tighten the six hexagon bolts and the three washers.



(RH drive shaft)

(a) Pack in grease to the center drive shaft.

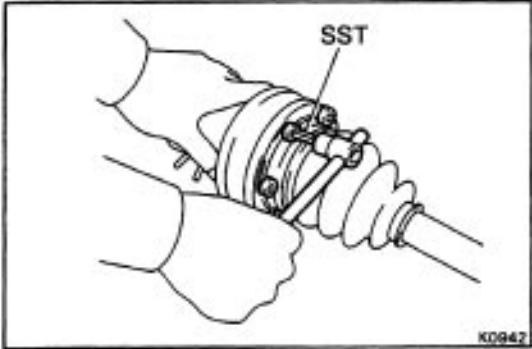
**Grease capacity: 43 53 g (0.09 0.12 lb)**

HINT: Use the grease supplied in the boot kit.

Supply of grease only is also available.

Part No. 90999-94029

(b) Place the new gasket on the inboard joint.

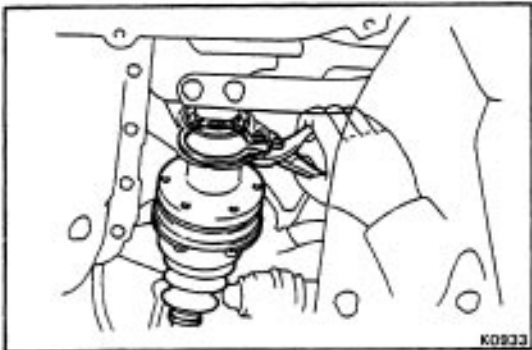


(c) Install the center drive shaft to the RH drive shaft.

**NOTICE: When moving the drive shaft, do not compress the inboard boot.**

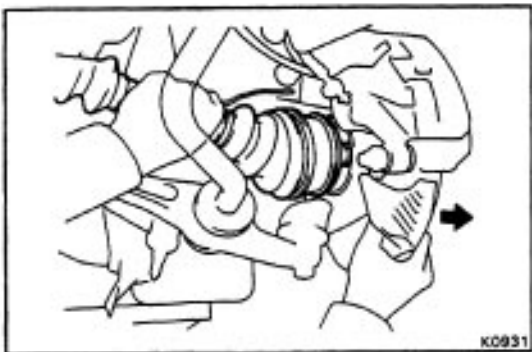
(d) Install the three washers and six hexagon bolts, and using SST, temporarily tighten them.

SST 09923-00020



(e) Install the drive shaft with the center drive shaft to the transaxle through the bearing bracket.

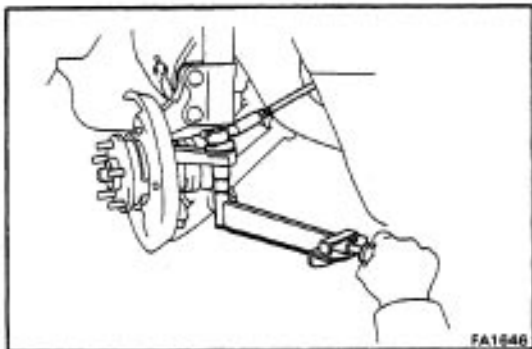
(f) Using pliers, install the snap ring.



## 5. INSTALL DRIVE SHAFT TO AXLE HUB

Install the outboard joint side of the drive shaft to the axle hub.

**NOTICE: Be careful not to damage the boot, oil seal and deflector.**



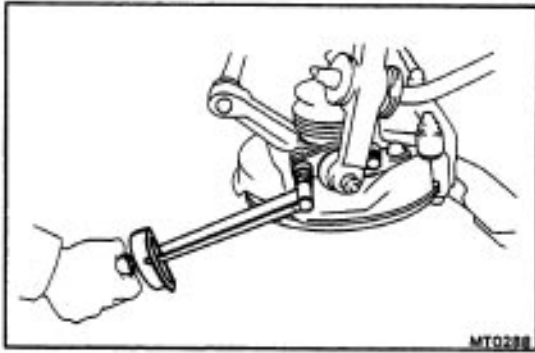
## 6. CONNECT TIE ROD END TO STEERING KNUCKLE

(a) Install and torque the nut.

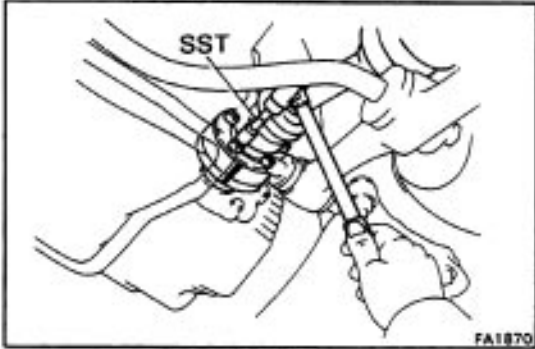
**Torque: 500 kg-cm (36 ft-lb, 49 N-m)**

(b) Install a new cotter pin.

HINT: If the cotter pin hole does not line up, correct by tightening the nut by the smallest amount possible.

**7. CONNECT STEERING KNUCKLE TO LOWER ARM**

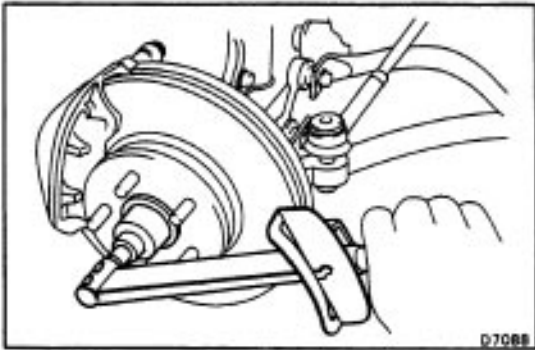
Torque: 1,150 kg-cm (83 ft-lb, 113 N-m)

**8. TIGHTEN SIX HEXAGON BOLTS**

Using SST, tighten the six hexagon bolts while depressing the brake pedal.

SST 09043-88010

Torque: 660 kg-cm (48 ft-lb, 65 N-m)

**9. INSTALL BEARING LOCK NUT, LOCK NUT CAP AND NEW 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.

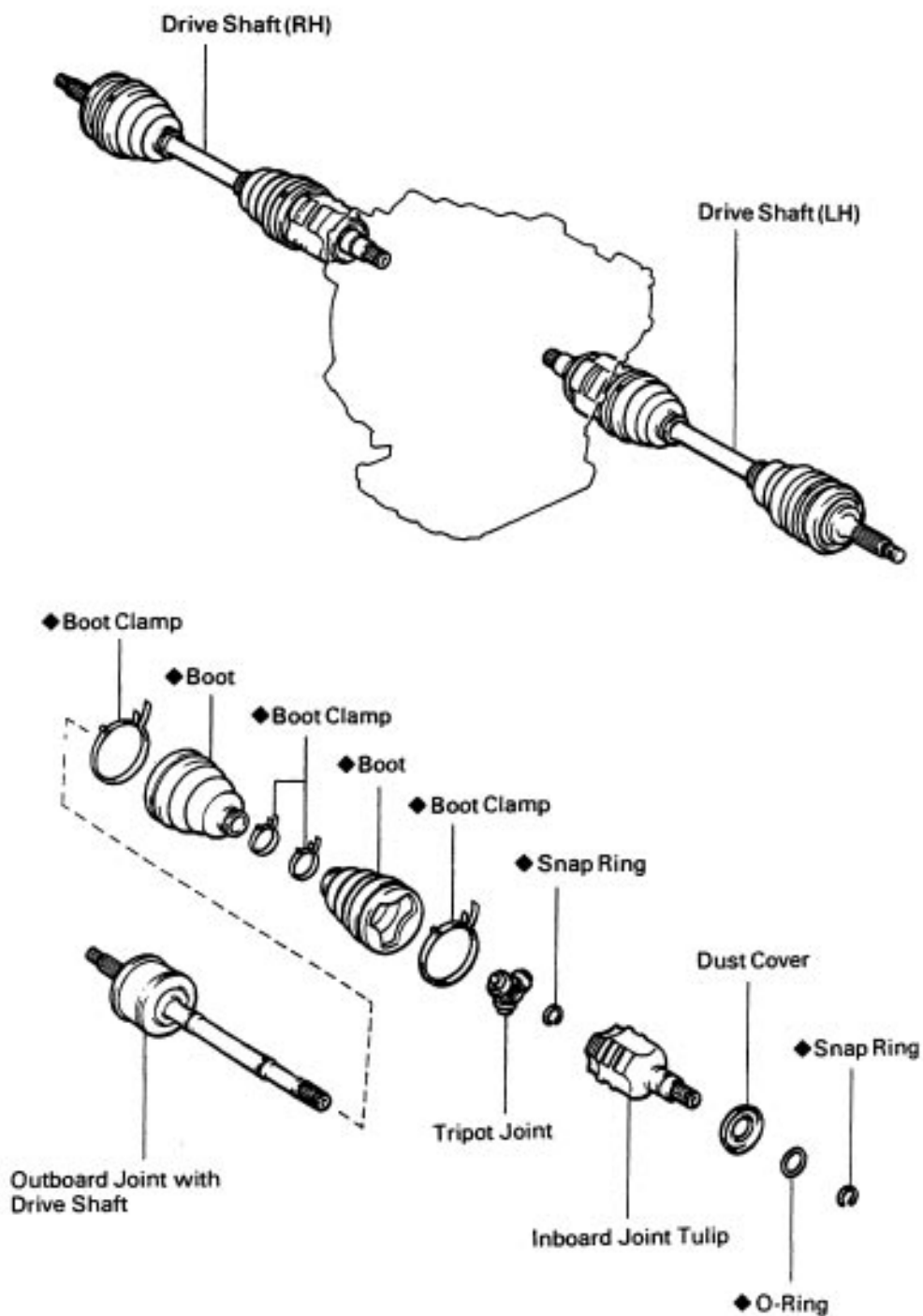
**10. FILL TRANSAXLE WITH GEAR OIL**

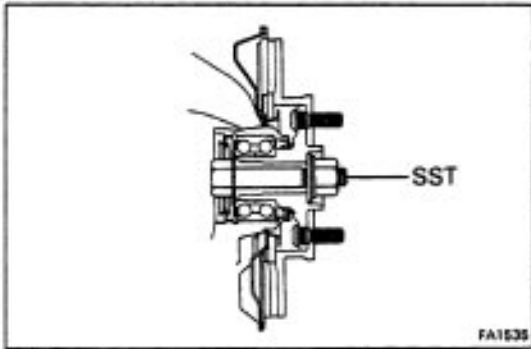
(See page [MT-45](#))

**11. INSTALL ENGINE UNDER COVERS****12. CHECK FRONT WHEEL ALIGNMENT**

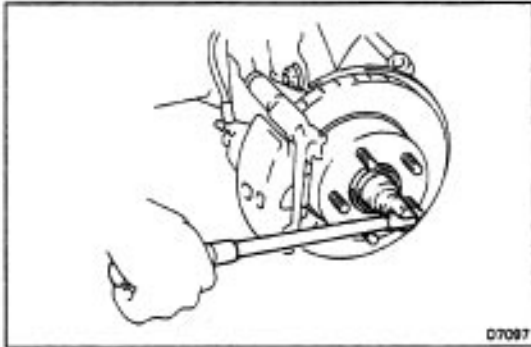


## FRONT DRIVE SHAFT (4WD) COMPONENTS





**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 absolutely necessary to place the vehicle weight on the hub bearing, first support it with SST..  
SST09608-16041 (09608-02020,09608-02040)



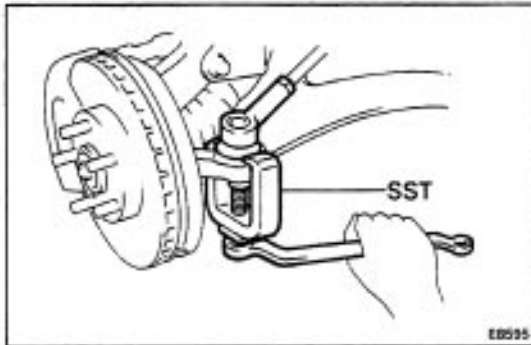
## REMOVAL OF FRONT DRIVE SHAFT

(See page [FA-41](#))

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

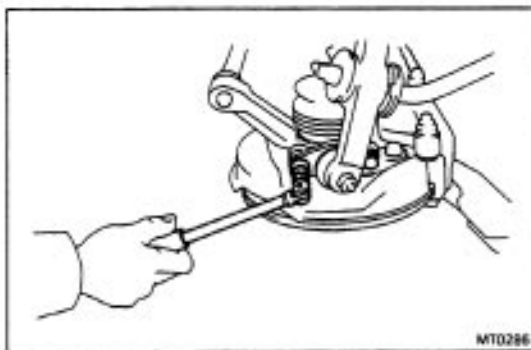
- (a) Remove the cotter pin and lock nut cap.
- (b) Loosen the bearing lock nut while depressing the brake pedal.

### 2. REMOVE ENGINE UNDER COVER RH AND LH



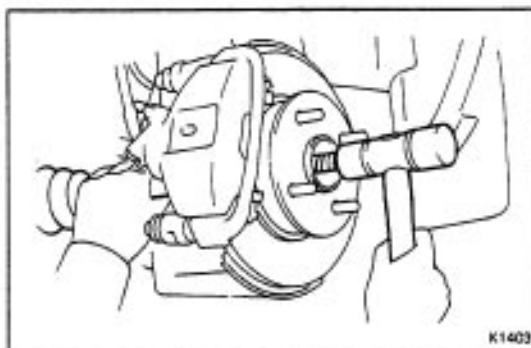
### 3. DISCONNECT TIE ROD END

- (a) Remove the cotter pin and nut from the tie rod end.
- (b) Using SST, disconnect the tie rod end from the steering knuckle.  
SST 09610-55021



### 4. DISCONNECT STEERING KNUCKLE FROM LOWER ARM

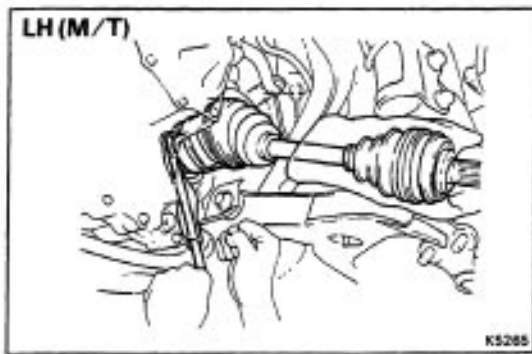
Remove the bolt and two nuts and disconnect the steering knuckle from the lower arm.



### 5. REMOVE FRONT DRIVE SHAFT

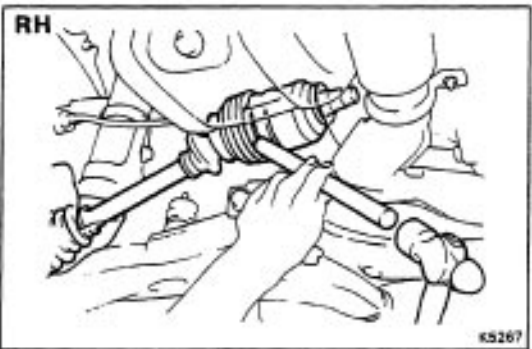
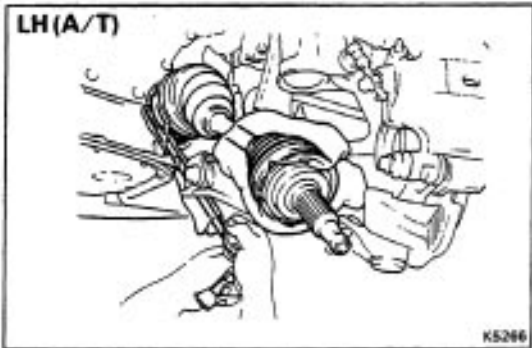
- (a) Using a plastic hammer, disconnect the drive shaft from the axle hub.

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

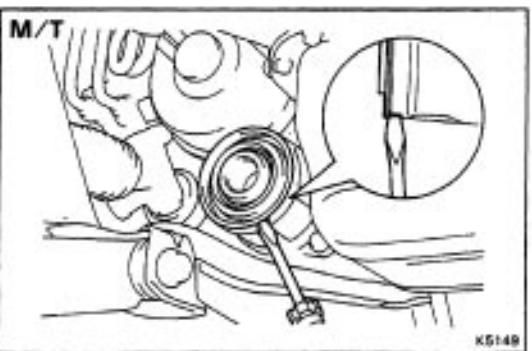


(b) Using hub nut wrench, remove the LH drive shaft as shown.

HINT: Be careful not to damage the dust cover.

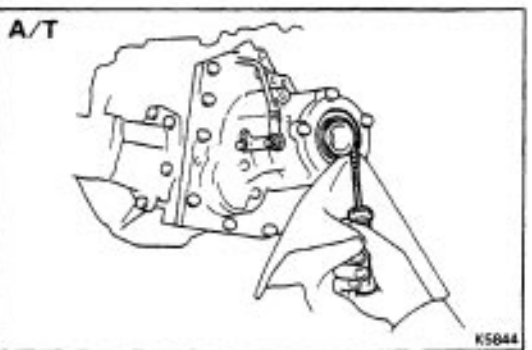


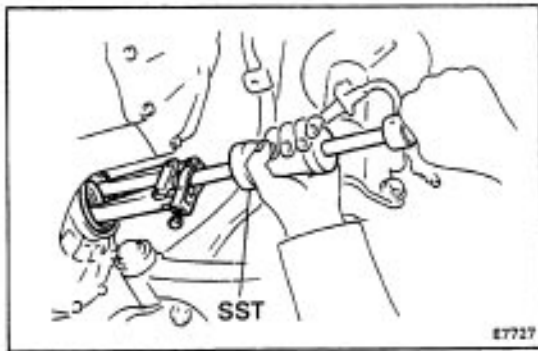
(c) Using a brass bar and a hammer, remove the RH drive shaft.



#### 6. IF NECESSARY, REPLACE OIL SEAL

(a) Using a screwdriver, remove the RH oil seal.

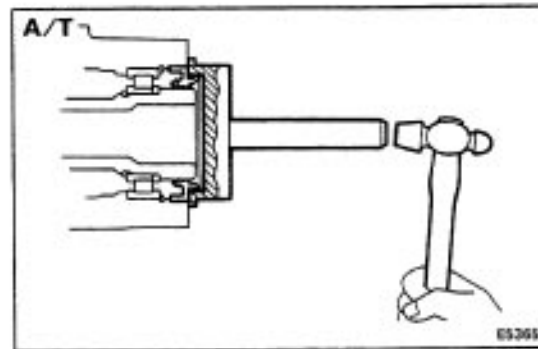




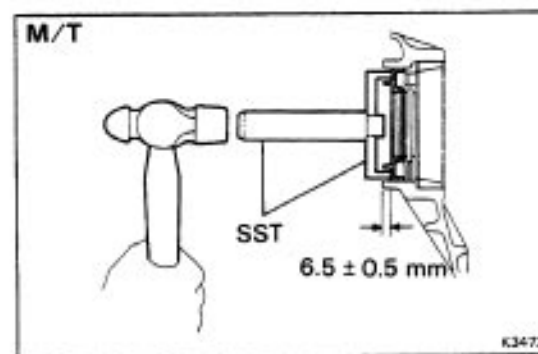
- (b) Using SST, pull out the LH oil seal.  
SST 09308-00010



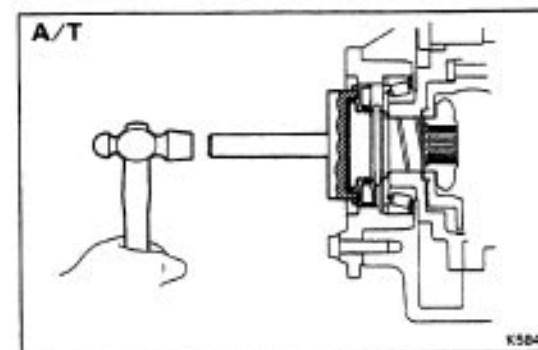
- (c) Before installing the RH oil seal, coat the lip of oil seal with IMP grease.  
(d) (M/T)  
Using a brass bar, drive in a new oil seal.



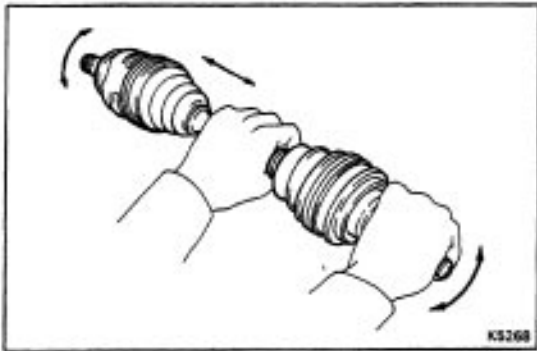
- (e) (A/T)  
Using SST, drive in a new oil seal.  
SST 09608-30022 (09608-05010), 09608-32010  
**Oil seal depth:  $0 \pm 0.3$  mm (0.012 in.)**



- (f) Before installing the LH oil seal, coat the lip of oil seal with MP grease.  
(g) (M/T)  
Using SST, drive in a new oil seal.  
SST 09550-22011 (09550-00020, 09550-00031)  
**Drive in depth:  $6.5 \pm 0.5$  mm ( $0.26 \pm 0.02$  in.)**



- (h) (A/T)  
Using SST, drive in a new oil seal.  
SST 09608-30022 (09608-05010),  
09608-32010  
**Drive in depth:  $0 \pm 0.5$  mm ( $0 \pm 0.02$  in.)**



## DISASSEMBLY OF FRONT DRIVE SHAFT

(See page FA-41)

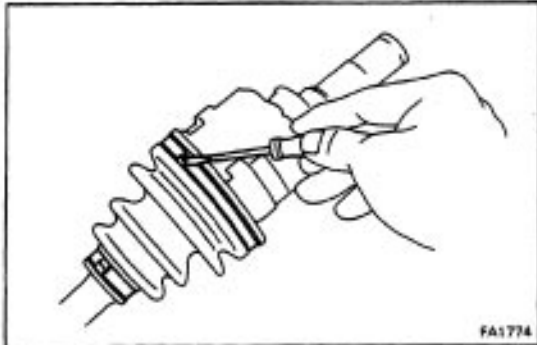
### 1. CHECK DRIVE SHAFT

- Check to see that there is no play in the outboard joint.
- Check to see that the inboard joint slides smoothly in the thrust direction.
- Check to see that there is not remarkable play in the radial direction of the inboard joint.
- Check for damage to boots.

### 2. REMOVE SNAP RING FROM INBOARD JOINT SHAFT

### 3. REMOVE INBOARD JOINT BOOT CLAMPS

- Using a screwdriver, remove the two boot clamps.
- Slide the inboard joint boot toward the outboard joint.

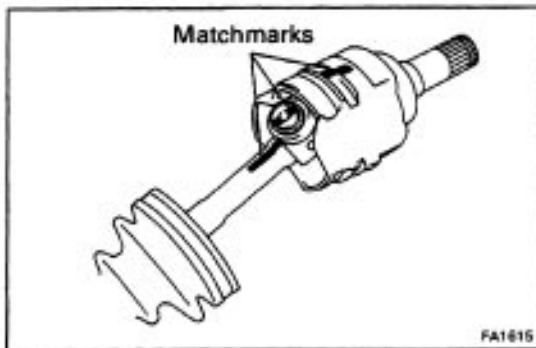


### 4. REMOVE INBOARD JOINT TULIP

- Place the matchmarks on the inboard joint tulip and tripod.

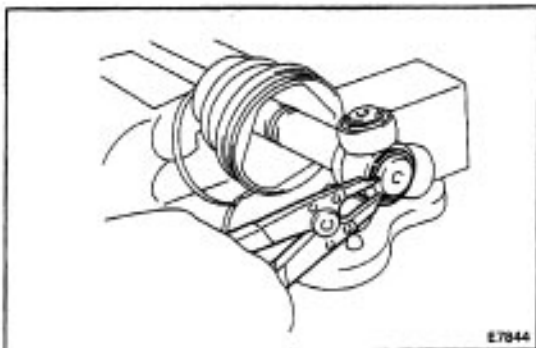
**NOTICE: Do not punch the marks.**

- Remove the inboard joint tulip from the drive shaft.



### 5. REMOVE TRIPOD JOINT

- Using snap ring pliers, remove the snap ring.



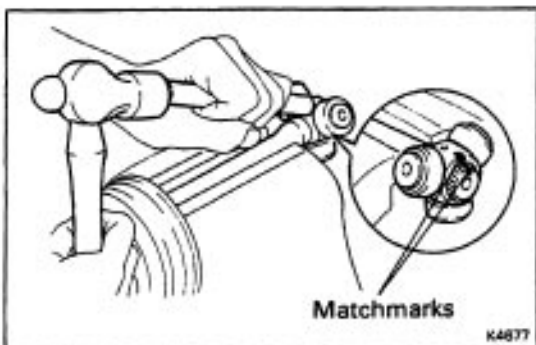
- Place the matchmarks on the drive shaft and tripod.

- Using a brass bar and a hammer, remove the tripod joint from the drive shaft.

**NOTICE: Do not tap the roller.**

### 6. REMOVE INBOARD JOINT BOOT

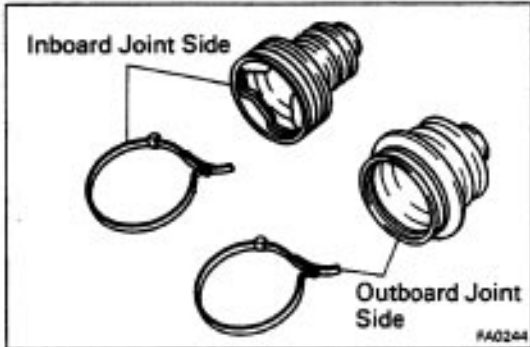
Slide out the inboard joint boot.



**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.

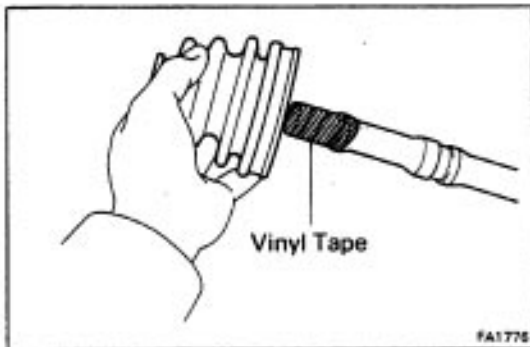
**NOTICE:** Do not disassemble the outboard joint.

**ASSEMBLE OF FRONT DRIVE SHAFT**

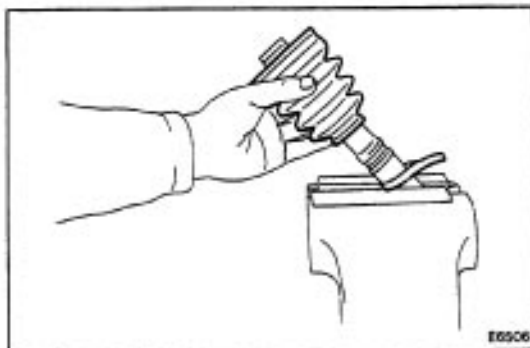
(See page [FA-41](#))

**1. TEMPORARILY INSTALL NEW OUTBOARD JOINT BOOT AND NEW BOOT CLAMPS**

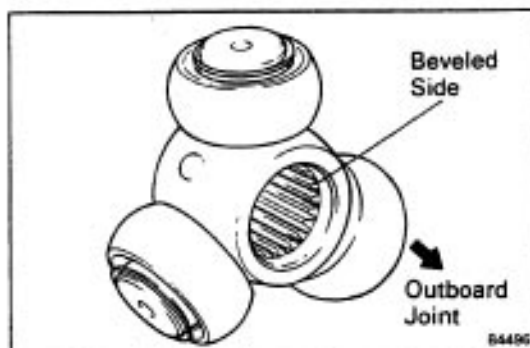
**NOTICE:** The boot and clamp of the outboard joint are smaller than those of the inboard joint.



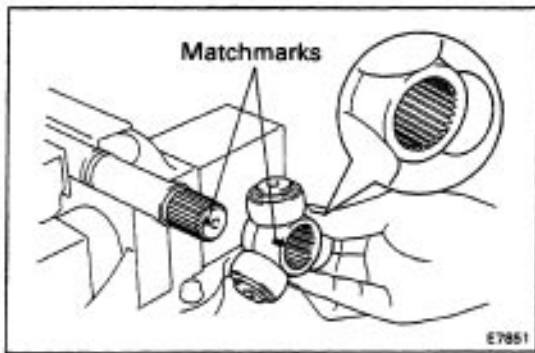
Temporarily install the boot and two new boot clamps for the outboard joint to the drive shaft.  
**HINT:** Before installing the boot, wrap vinyl tape around the spline of the drive shaft to prevent damaging the boot.

**2. TEMPORARILY INSTALL INBOARD JOINT BOOT AND NEW BOOT CLAMPS**

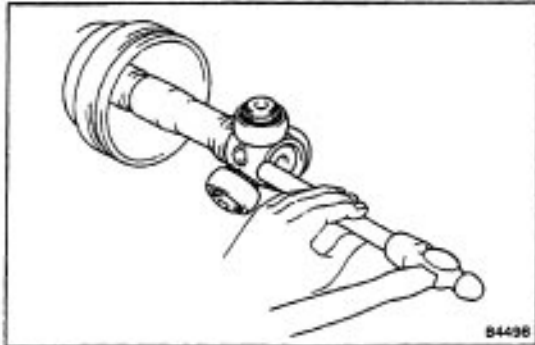
Temporarily install the boot and two new boot clamps for the inboard joint to the drive shaft.

**3. INSTALL TRIPOD JOINT**

- (a) Place the beveled side of the tripod joint axial spline toward the outboard joint.

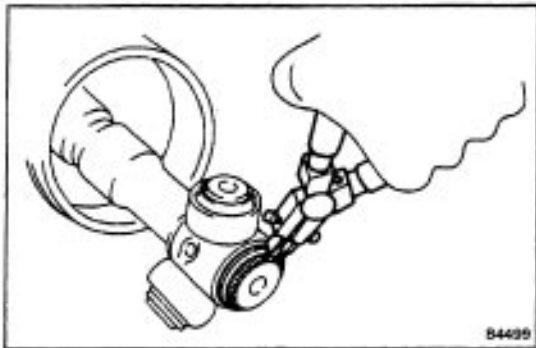


- (b) Align the matchmarks placed before remove.

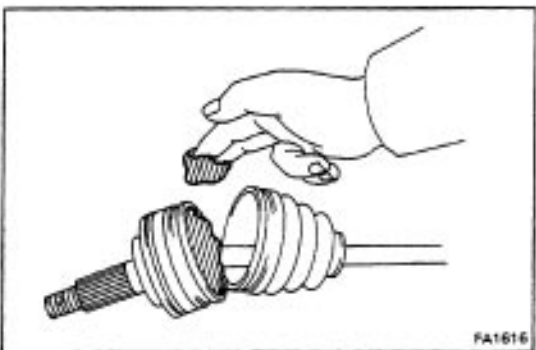


- (c) Using a brass bar and a hammer, tap in the tripod joint to the drive shaft.

**NOTICE:** Do not tap the roller.



- (d) Using snap ring pliers, install a new snap ring.



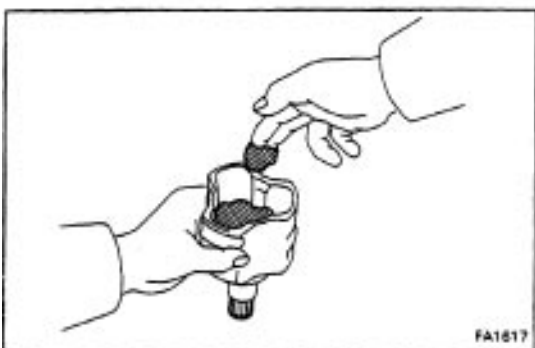
#### 4. INSTALL BOOT TO OUTBOARD JOINT

Before assembling the boot, fill grease into the outboard joint and boot.

HINT: Use the grease supplied in the boot kit.

**Grease capacity: 120 – 130 g (0.26 – 0.29 lb)**

**Grease color: Black**



#### INSTALL INBOARD JOINT TULIP TO FRONT DRIVE SHAFT

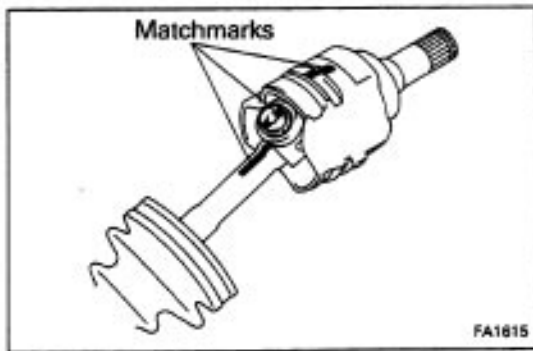
- (a) Pack in the grease to the inboard joint tulip and boot.

HINT: Use the grease supplied in the boot kit.

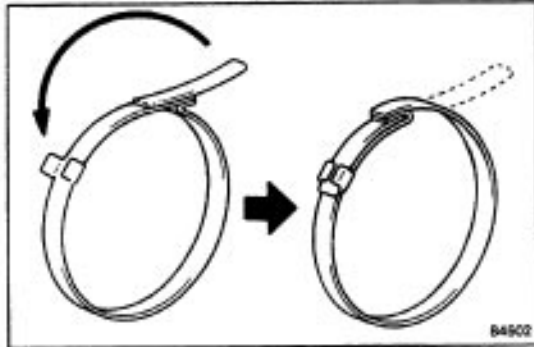
**Grease capacity: 180 – 190 g (0.40 – 0.42 lb)**

**Grease color: Yellow ocher**



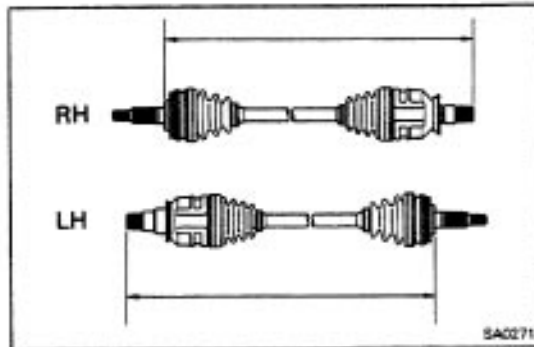


- (b) Align the matchmarks placed before remove, and install the inboard joint tulip to the drive shaft.
- (e) Install the boot to the inboard joint tulip.



## 6. ASSEMBLE BOOT CLAMPS

- (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.



- (c) Insure that the boot is not stretched or contracted when the drive shaft is at standard length.

### Drive shaft standard length:

(M/T) LH  $512.5 \pm 5.0$  mm (20.177  $\pm$  0.197 in.)

R H  $512.5 \pm 5.0$  mm (20.177  $\pm$  0.197 in.)

(A/T) LH  $512.5 \pm 5.0$  mm (20.177  $\pm$  0.197 in.)

R H  $515.7 \pm 5.0$  mm (20.303  $\pm$  0.197 in.)

- (d) Install the snap ring.



## INSTALLATION OF FRONT DRIVE SHAFT

(See page [FA-41](#))

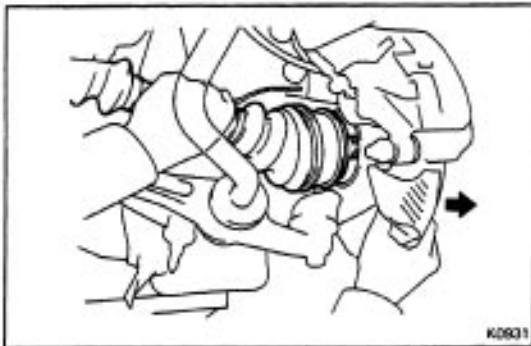
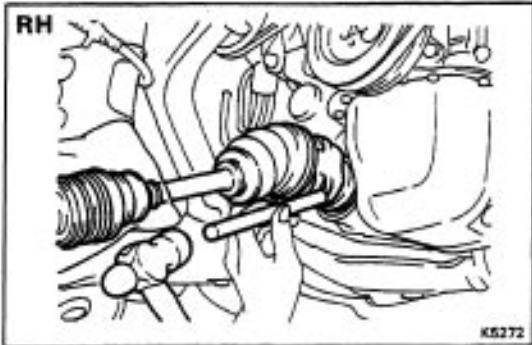
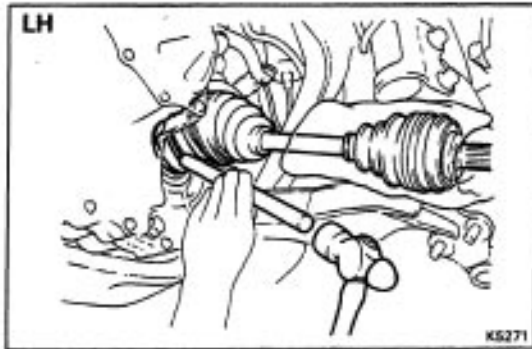
### 1. INSTALL FRONT DRIVE SHAFT

- Coat MP grease to the oil seal lip.
- Using a brass bar and a hammer, tap in the drive shaft until it makes contact with the pinion shaft.

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

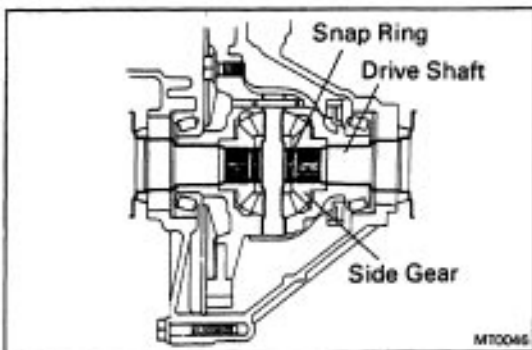
**HINT:**

- Before installing the drive shaft, set the snap ring opening side facing downward.
- Whether or not the drive shaft is making contact with the pinion shaft can be known by the sound or feeling when driving it in.



- Install the outboard joint side of the drive shaft to the axle hub.

**NOTICE:** Be careful not to damage the boot.



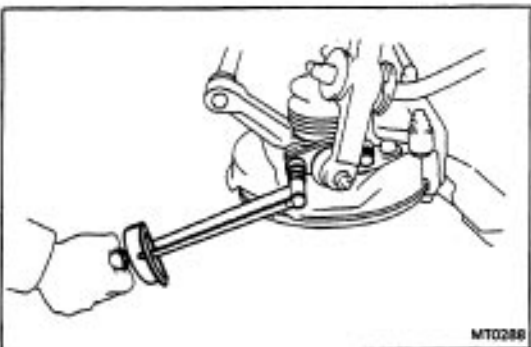
### 2. CHECK INSTALLATION OF FRONT DRIVE SHAFT

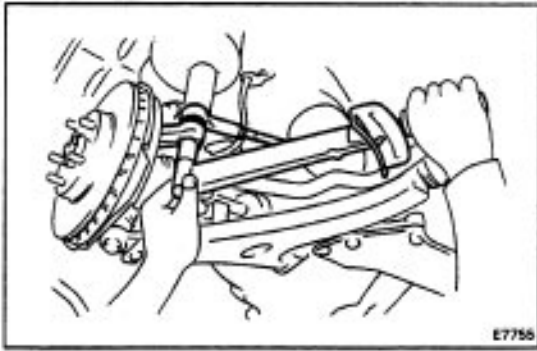
- Check that there is 2 3 mm (0.08 0.12 in.) of play in axial direction.
- Check that the drive shaft will not come out by trying to pull it completely out by hand.

**HINT:** When checking pull the inboard joint so as not to damage the boot.

### 3. CONNECT STEERING KNUCKLE TO LOWER ARM

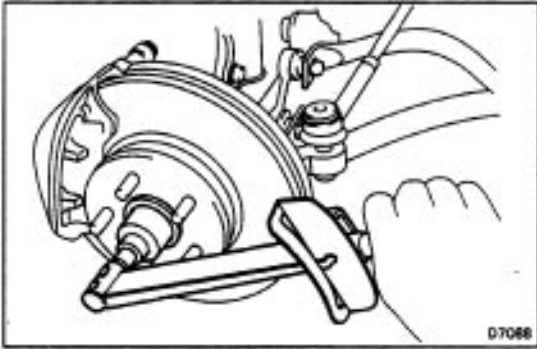
**Torque:** 1,150 kg-cm (83 ft-lb, 113 N-m)



**4. CONNECT TIE ROD END TO STEERING KNUCKLE**

Install and torque the nut, and secure it with a new cotter pin.

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

**5. 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.

**6. FILL TRANSAXLE WITH GEAR OIL OR FLUID**

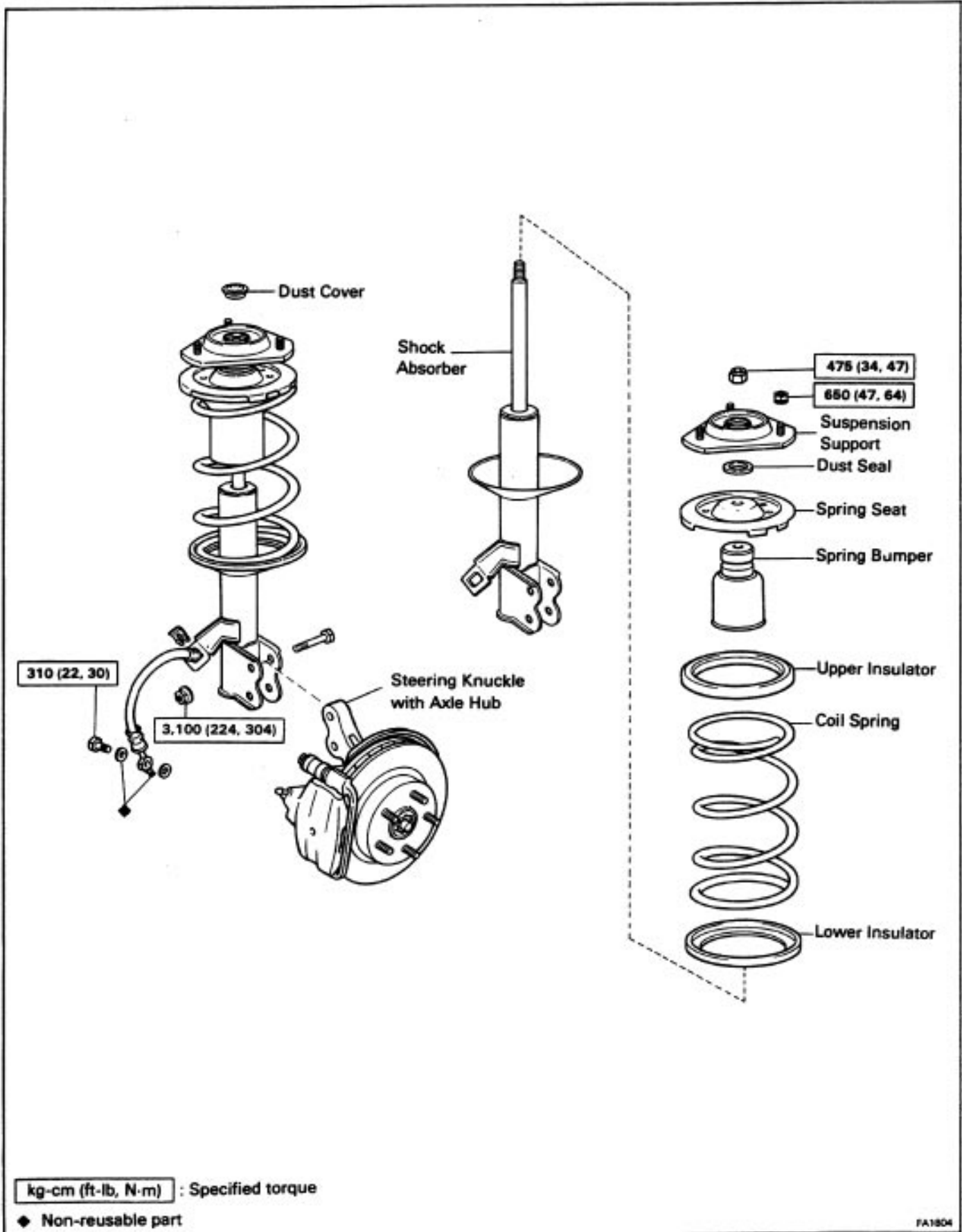
**M/T (See page [MT-1](#) 17)**

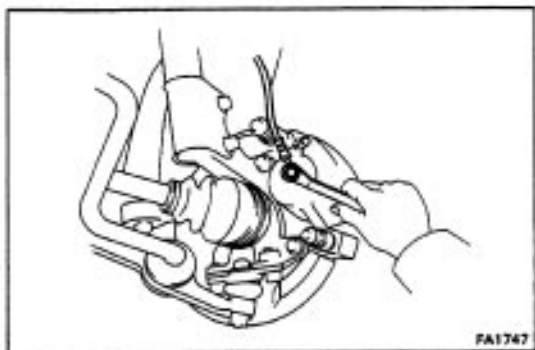
**A/T Fluid type: ATF DEXRON® II**

**7. INSTALL ENGINE UNDER COVERS****8. INSTALL WHEELS****9. CHECK FRONT WHEEL ALIGNMENT**

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

# FRONT SHOCK ABSORBER COMPONENTS

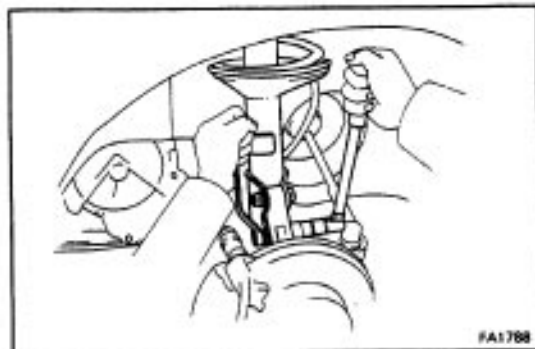
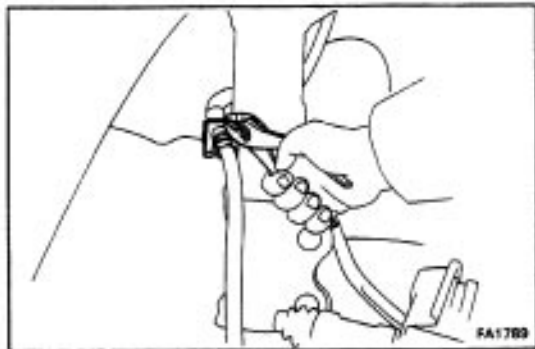




## REMOVAL OF FRONT SHOCK ABSORBER ASSEMBLY

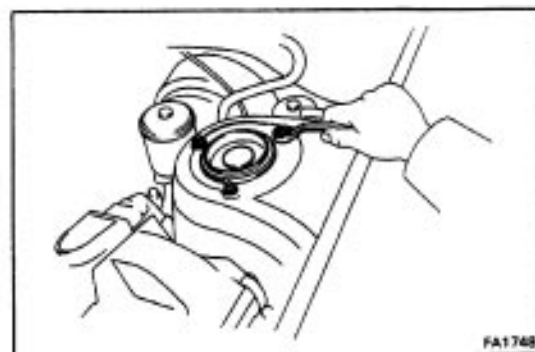
### 1. DISCONNECT BRAKE HOSE

- (a) Remove union bolt, and disconnect the brake hose from the disc brake caliper.
- (b) Drain the brake fluid into a container.
- (c) Remove the clip from the brake hose bracket.
- (d) Pull off the brake hose from the brake hose bracket.



### 2. DISCONNECT STEERING KNUCKLE FROM SHOCK ABSORBER

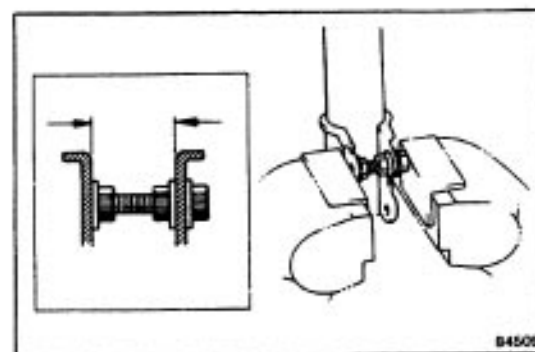
Remove the bolts and nuts, and disconnect the steering knuckle from the shock absorber.



### 3. REMOVE SHOCK ABSORBER FROM BODY

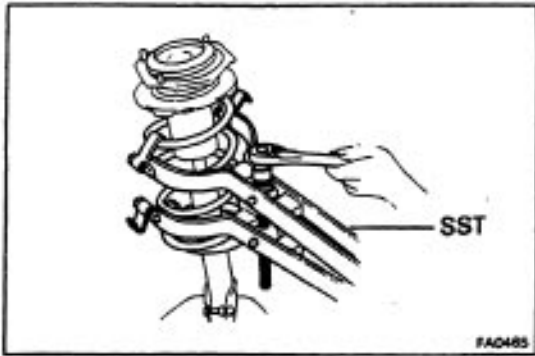
- (a) Remove the three bolts holding the top of the suspension support.
- (b) Remove the shock absorber from the body.

**NOTICE:** Cover the drive shaft boot with cloth to avoid damaging it.



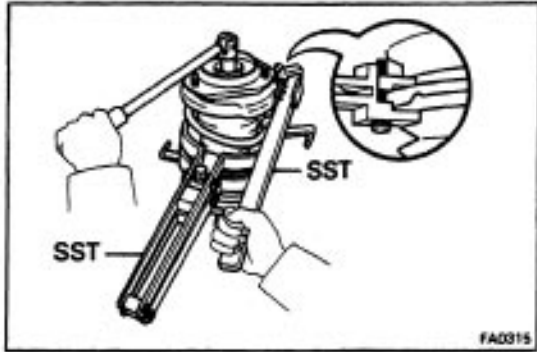
### 4. CLAMP SHOCK ABSORBER IN VISE

Install a bolt and two nuts to the bracket at the lower portion of the shock absorber shell and secure it in a vise.



## 5. REMOVE COIL SPRING

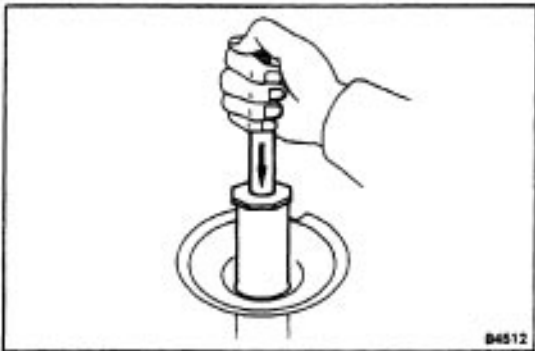
- (a) Using SST, compress the coil spring.  
SST 09727-22032 or 09727-30020



- (b) Using SST, hold the spring seat so that it will not turn, and remove the nut.

SST 09727-22032 or 09727-30020, 09729-22031

- (c) Remove the suspension support, spring seat, spring, insulators and bumper.



## INSPECTION OF FRONT SHOCK ABSORBER

### INSPECT FRONT SHOCK ABSORBER

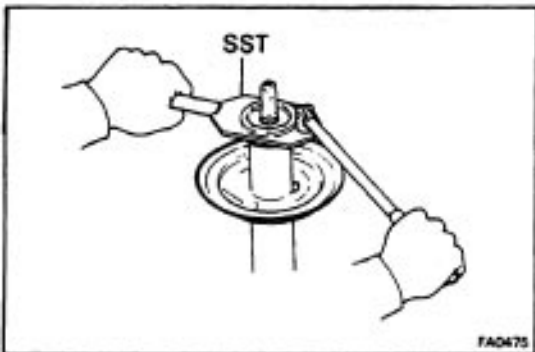
- (a) While pushing the piston rod, check that the pull through out the stroke is even, and there is no abnormal resistance or noise.

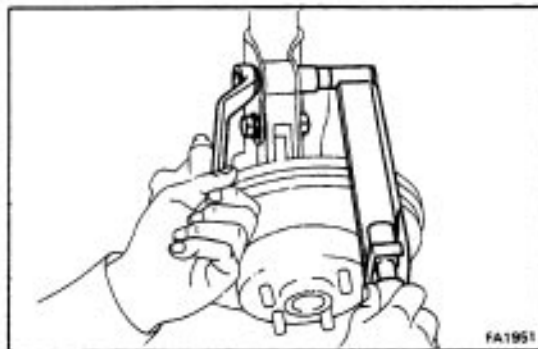
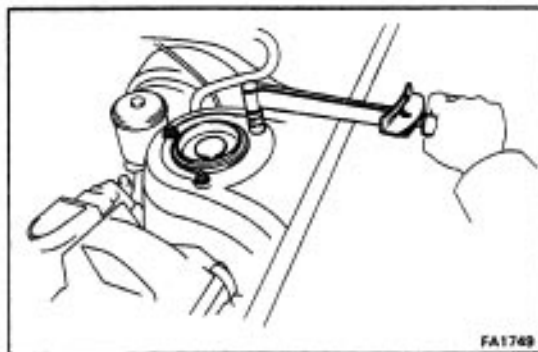
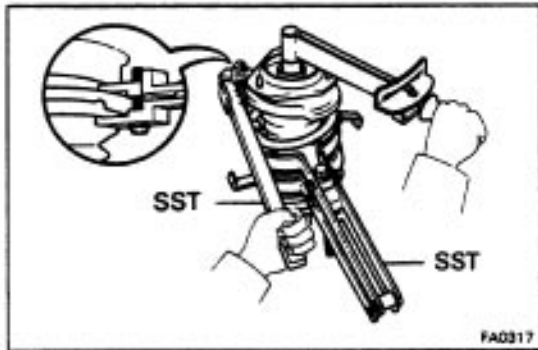
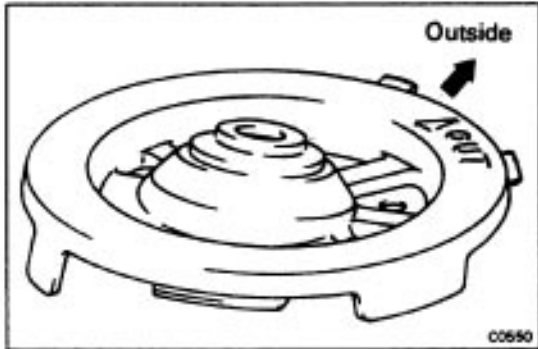
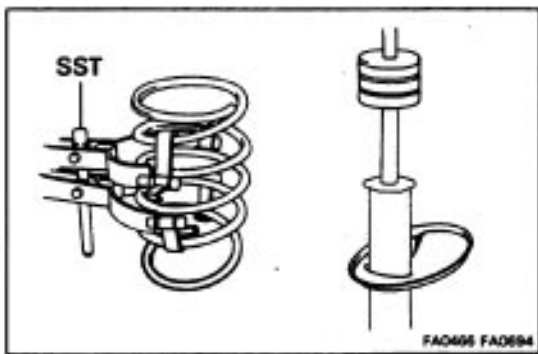
- (b) Push the piston rod in fully and release it. Check that it returns at a constant speed through out.

If the shock absorber operation is defective, replace the shock absorber as an assembly.

**NOTICE:** Before discarding the shock absorber, first loosen the ring nut 2 or 3 turns with SST to release the gas completely.

SST 09720-00012 (09721-00071)





## INSTALLATION OF FRONT SHOCK ABSORBER

(See page [FA-51](#))

### 1. INSTALL BUMPER, COIL SPRING, INSULATOR, SPRING SEAT AND DUST SEAL

- (a) Install the bumper to piston rod.
- (b) Using SST, compress the coil spring.  
SST 09727-22032 or 09727-30020
- (c) Install the lower insulator.
- (d) Align the coil spring end with the lower seat hollow and install.
- (e) Install the upper insulator.
- (f) Face the "OUT" mark of the spring seat toward the outside of the vehicle.
- (g) Install the dust seal on the spring seat.
- (h) Install the suspension support.

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

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

**SST 09727-22032 or 09727-30020, 09729-22031**

### 2. INSTALL SHOCK ABSORBER TO BODY

Install the three bolts holding the shock absorber to the body.  
Torque the nut.

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

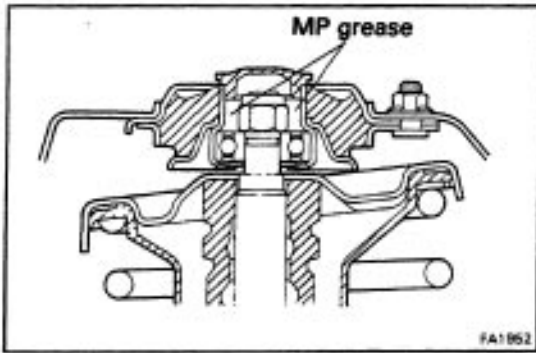
**NOTICE: Be careful not to damage the drive shaft boot.**

### 3. CONNECT STEERING KNUCKLE TO SHOCK ABSORBER

- (a) Connect the steering knuckle to shock absorber lower bracket.
- (b) Torque the nuts.

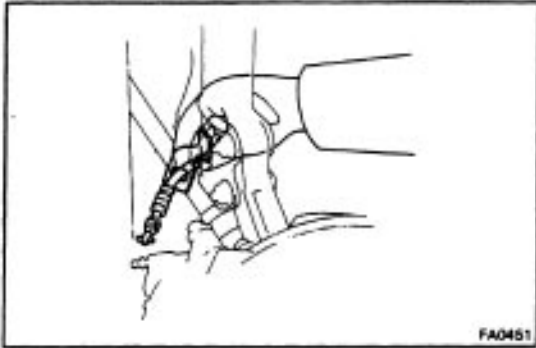
**Torque: 3,100 kg-cm (224 ft-lb, 304 N-m)**





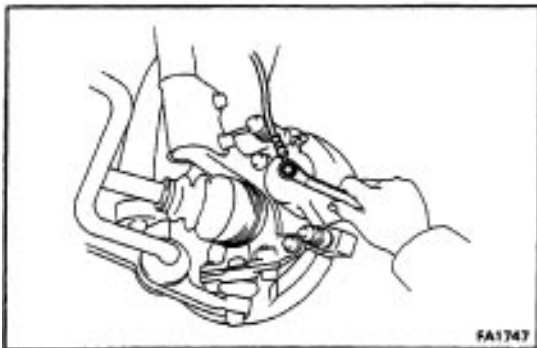
#### 4. INSTALL DUST COVER

Pack the bearing in the suspension support with MP grease, and install the dust cover.



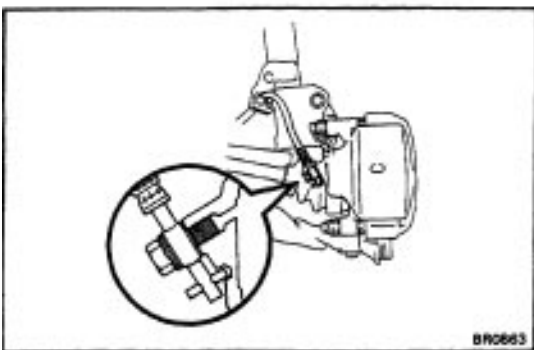
#### 5. CONNECT BRAKE HOSE

- (a) Run the brake hose through the brake hose bracket.
- (b) Install the clip to the brake hose bracket.



- (c) Connect the brake hose with the union bolt and new gaskets to the disc brake caliper.

**Torque: 310 kg-cm (22 ft-lb, 30 N - m)**



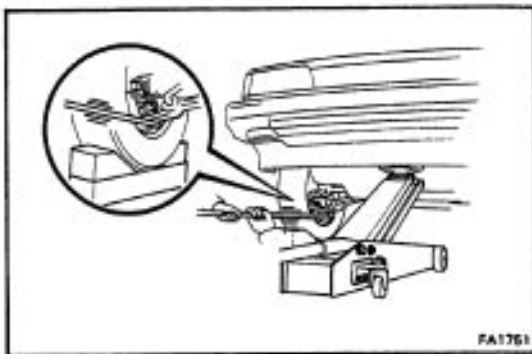
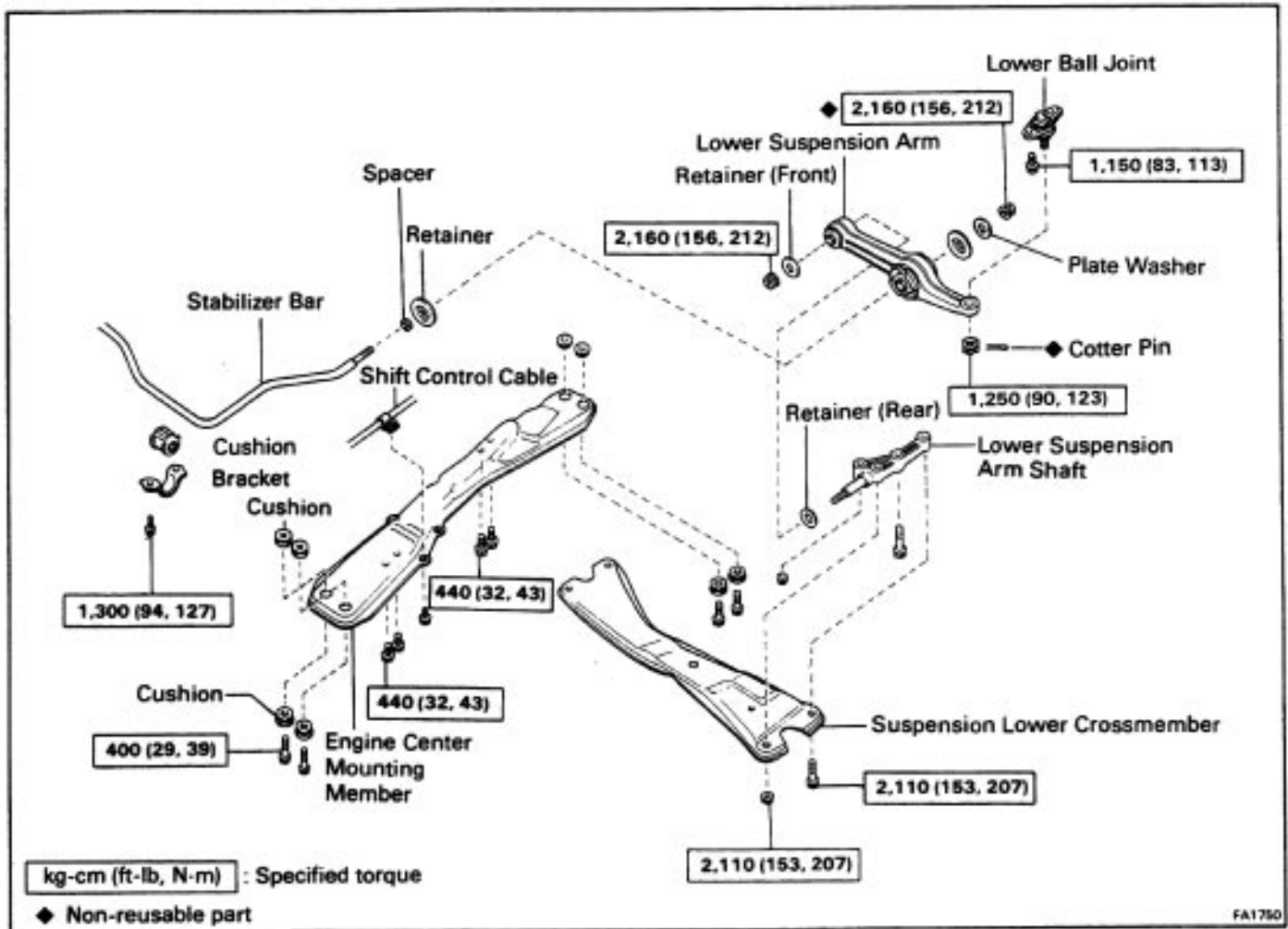
**HINT:** When connecting the brake hose to the disc brake caliper, connect so the peg aligns with the hole.

#### 6. INSTALL CLIP

#### 7. BLEED BRAKE LINE (See page [BR-7](#))

#### 8. INSPECT CAMBER (See page [FA-4](#))

# FRONT SUSPENSION COMPONENTS



## Ball Joints

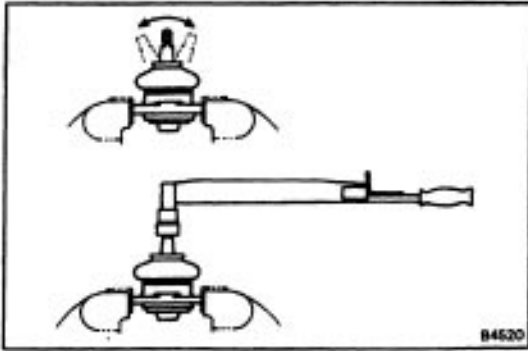
### INSPECTION OF BALL JOINTS

#### 1. INSPECT BALL JOINTS FOR EXCESSIVE LOOSENESS

- Jack up the front of the vehicle and place a wooden block with the height of 180 – 200 mm (7.09 – 7.87 in.) under one front tire.
- Lower the jack until there is about half a load on one front of coil spring. Place stands under the vehicle for safety.
- Make sure the front wheels are in a straight forward position and block the wheel with chocks.
- Move the lower arm up and down and check that the ball joint has no excessive play.

**Ball joint vertical play: 0 mm (0 in.)**





## 2. INSPECT BALL JOINT ROTATION CONDITION

- (a) Remove the ball joint. (See page [FA-8](#))
- (b) Flip the ball joint stud back and forth 5 times as shown in the figure, before installing the nut.
- (e) Using a torque gauge, turn the nut continuously on turn each 2 –4 seconds and take the torque reading on the fifth turn.

### Torque (turning):

10 – 33 kg-cm (9 – 29 in.-lb, 1.0 – 3.2 N-m)

If not within specification, replace the ball joint.

- (d) Install the ball joint.

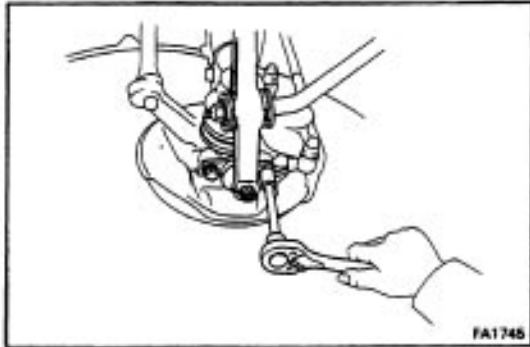
(See page [FA-13](#))

## Lower Suspension Arm

(See page [FA-56](#))

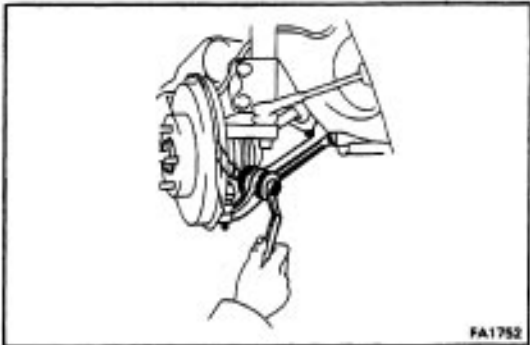
## REMOVAL OF LOWER SUSPENSION ARM

### 1. DISCONNECT LOWER BALL JOINT FROM STEERING KNUCKLE



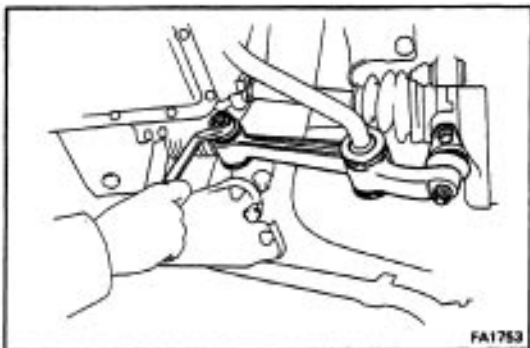
### 2. REMOVE STABILIZER NUT AND RETAINER

Remove the stabilizer nut holding the stabilizer bar to the lower arm.



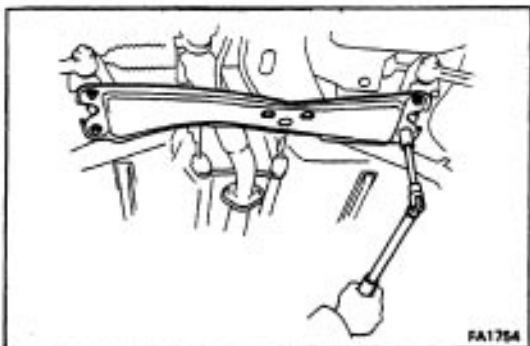
### 3. REMOVE LOWER SUSPENSION ARM SHAFT NUT AND RETAINER

Remove the lower arm shaft nut holding the lower arm shaft to the lower arm.



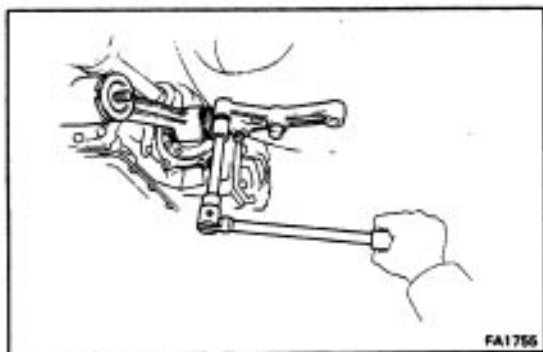
### 4. REMOVE SUSPENSION LOWER CROSSMEMBER

Remove the two bolts and the two nuts, and the suspension lower crossmember.



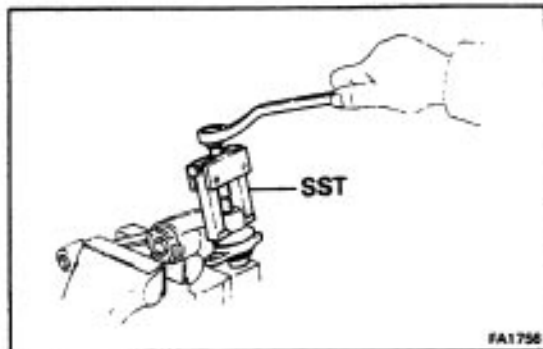
### 5. REMOVE LOWER SUSPENSION ARM WITH LOWER SUSPENSION ARM SHAFT

- Remove the lower arm shaft mounting nut and bolt.
- Remove the lower arm with the lower arm shaft.



### S. REMOVE LOWER BALL JOINT FROM LOWER SUSPENSION ARM

- Remove the cotter pin and the nut.
- Using SST, remove the lower ball joint from the lower arm.  
SST 09628-62011

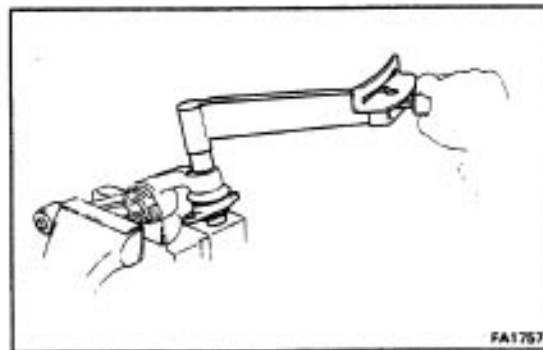


## INSTALLATION OF LOWER SUSPENSION ARM

### 1. INSTALL LOWER BALL JOINT TO LOWER SUSPENSION ARM

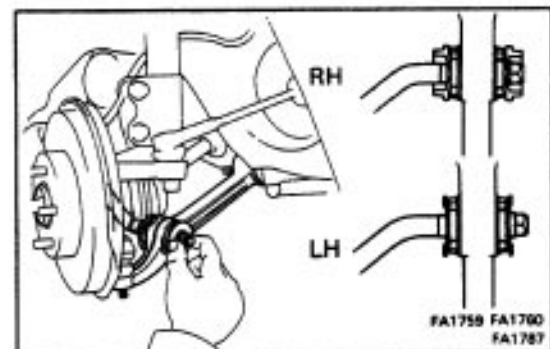
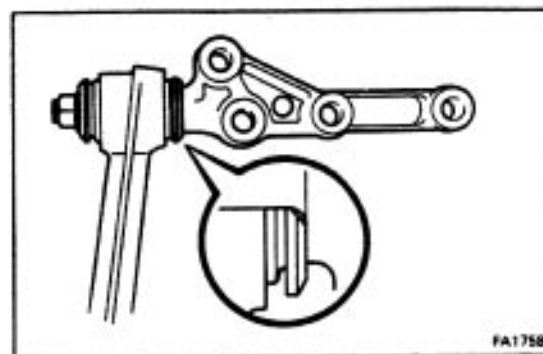
Install the lower ball joint to the lower arm and torque the nut. Install a new cotter pin.

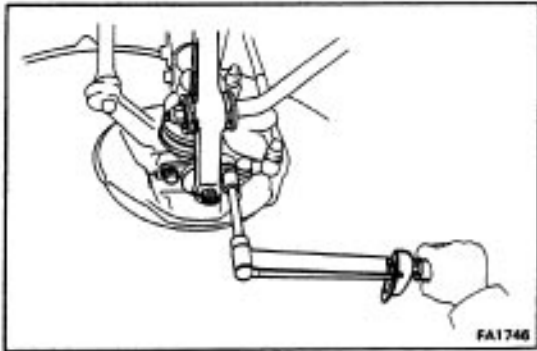
**Torque: 1,250 kg-cm (90 ft-lb , 123 N-m)**



### 2. TEMPORARILY INSTALL LOWER SUSPENSION ARM SHAFT TO LOWER SUSPENSION ARM

- First insert the lower arm to the stabilizer bar, and then install the lower arm shaft to the body.
- Temporarily install the lower arm installation nut with the retainer.
- Temporarily install the stabilizer nut with the retainer and washer, holding the stabilizer bar to the lower arm.

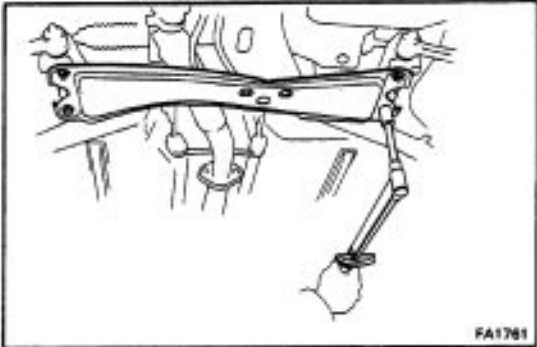




### 3. CONNECT LOWER BALL JOINT TO STEERING KNUCKLE

Connect the steering knuckle to the lower ball joint and torque the two bolts.

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

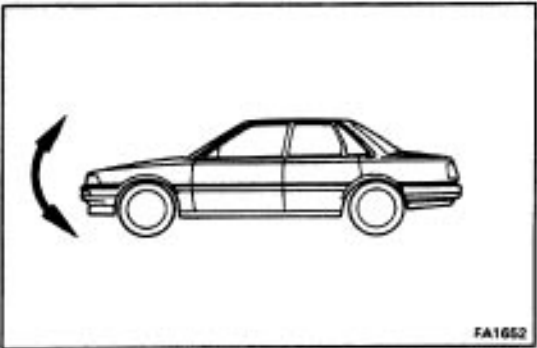


### 4. INSTALL SUSPENSION LOWER CROSSMEMBER

Temporarily install the two bolts and two nuts by hand, and then torque the bolts and nuts.

**Torque: 2,110 kg-cm (153 ft-lb, 207 N-m)**

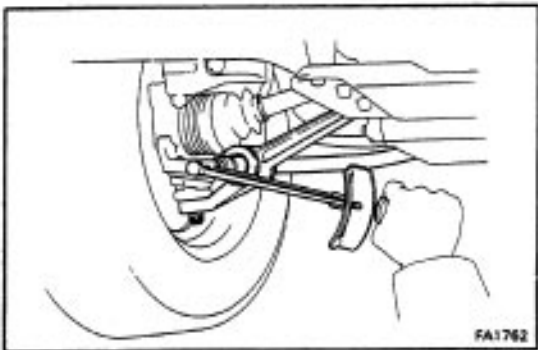
**HINT:** Temporarily first install the lower arm shaft to the body with lower arm shaft installation bolt and nut and then temporarily install the suspension lower cross-member.



### 5. INSTALL WHEELS AND LOWER VEHICLE

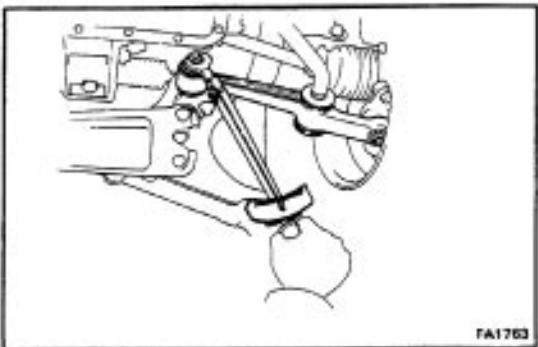
(a) Install the wheels.

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



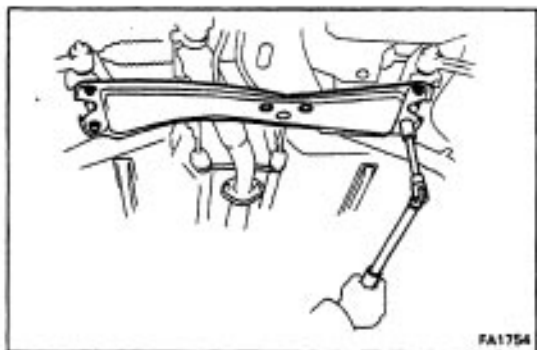
### 6. TORQUE LOWER SUSPENSION ARM INSTALLATION NUT

**Torque: Stabilizer bar X Lower suspension arm  
2,160 kg-cm (156 ft-lb, 212 N-m)**



**Torque: Lower arm shaft x Lower suspension arm  
2,160 kg-cm (156 ft-lb , 212 N-m)**

### 7. CHECK FRONT WHEEL ALIGNMENT

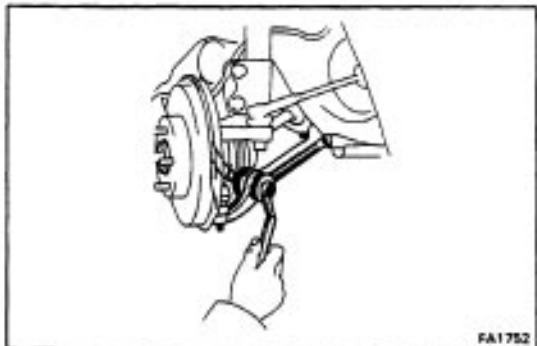


## Stabilizer Bar

### REMOVAL OF STABILIZER BAR

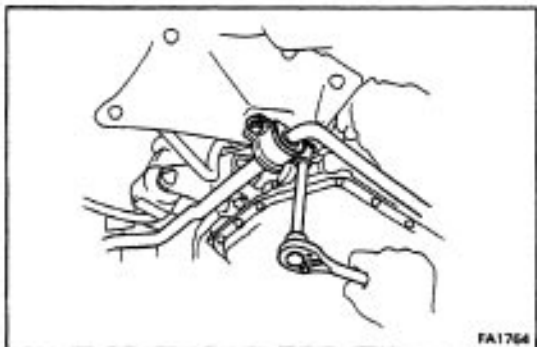
#### 1. REMOVE SUSPENSION LOWER CROSSMEMBER

Remove the two bolts, two nuts and the suspension lower crossmember.

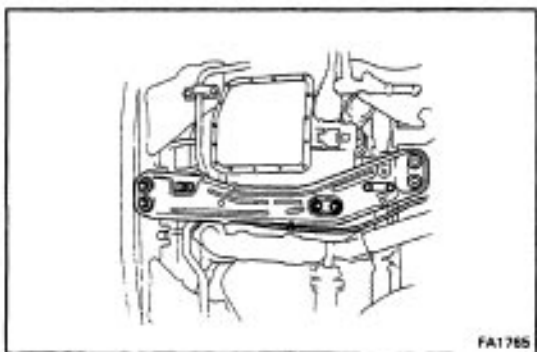


#### 2. REMOVE STABILIZER NUTS AND RETAINER

Remove the stabilizer nuts holding the stabilizer bar to the lower arm.



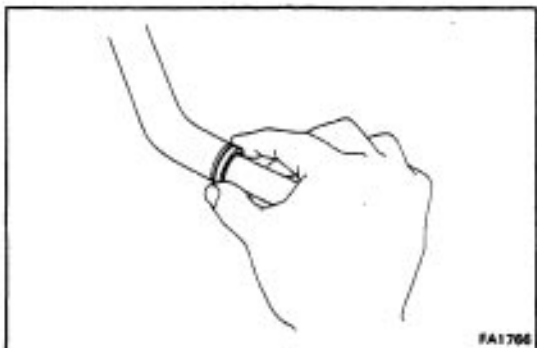
#### 3. REMOVE STABILIZER BAR BRACKET



#### 4. REMOVE ENGINE CENTER MOUNTING MEMBER

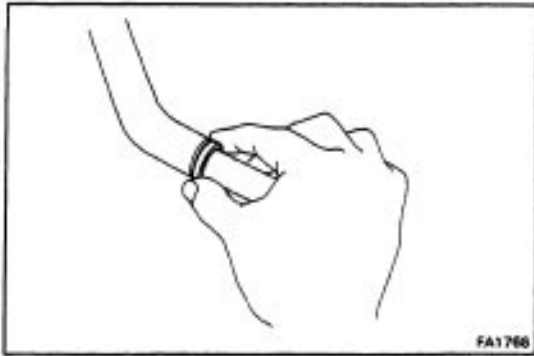
(a) Remove the control cable clamp bolt from the engine center mounting member.

(b) Remove the ten bolts and the engine center mounting member.



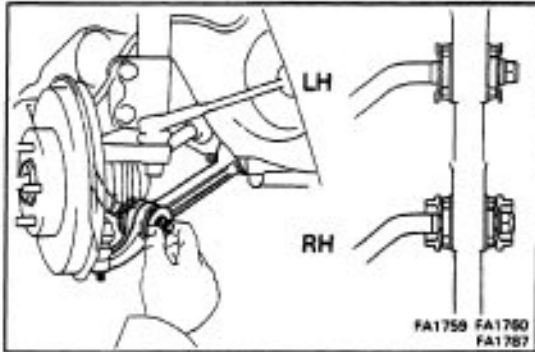
#### 5. PULL OFF STABILIZER BAR FROM LOWER SUSPENSION ARMS

#### 6. REMOVE RETAINERS AND SPACERS FROM STABILIZER BAR

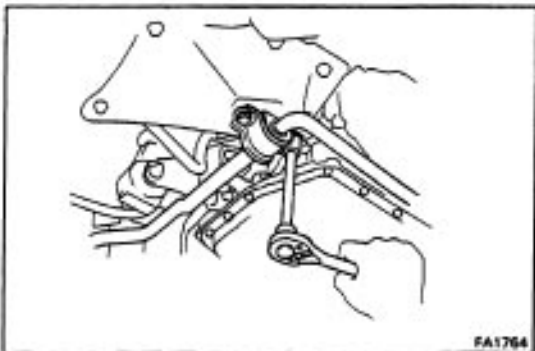


## INSTALLATION OF STABILIZER BAR

1. INSTALL SPACERS AND RETAINERS TO STABILIZER BAR
2. INSTALL STABILIZER BAR TO LOWER SUSPENSION ARMS

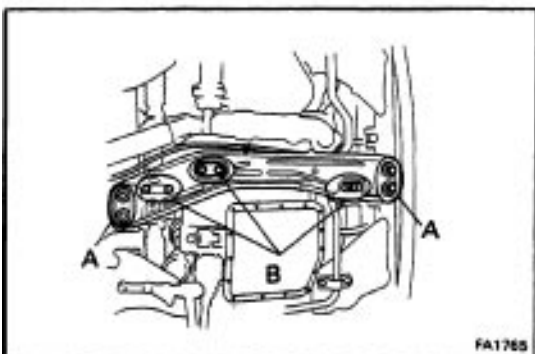


3. INSTALL RETAINERS, WASHERS AND TEMPORARILY INSTALL TWO NUTS TO STABILIZER BAR



4. INSTALL STABILIZER BAR BRACKETS WITH CUSHIONS

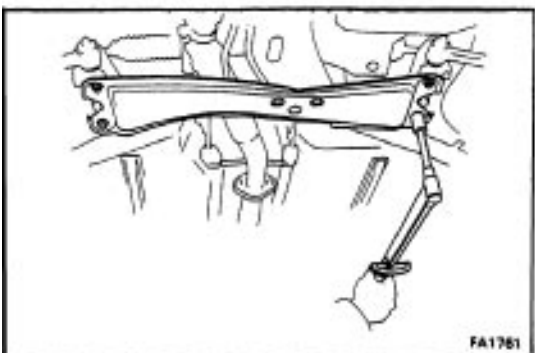
Torque: 1,300 kg-cm (94 ft-lb, 127 N-m)



5. INSTALL ENGINE CENTER MOUNTING MEMBER

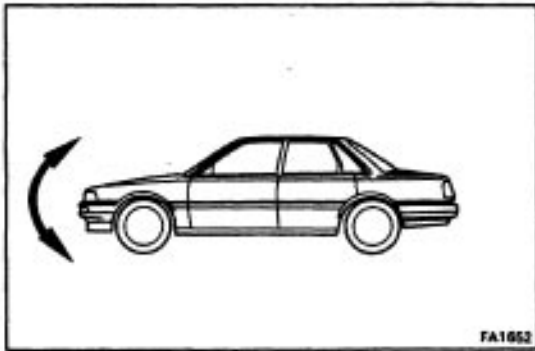
Torque: A 400 kg-cm (29 ft-lb, 39 N-m)

B 440 kg-cm (32 ft-lb, 43 N-m)



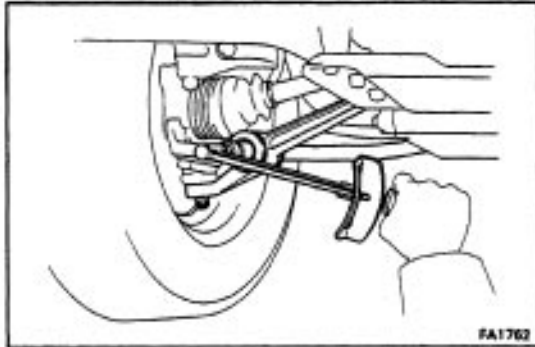
6. INSTALL AND TORQUE SUSPENSION LOWER CROSSMEMBER

Torque: 2,110 kg-cm (153 ft-lb, 207 N-m)



## 7. INSTALL WHEELS AND LOWER VEHICLE

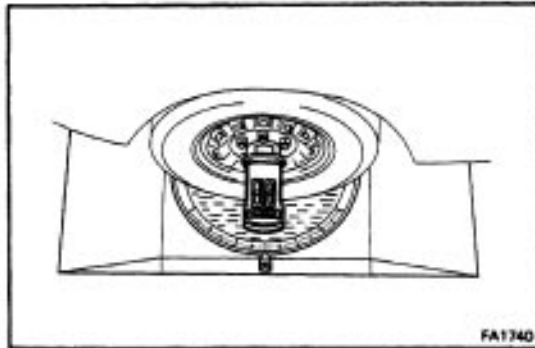
- (a) Install the wheels.
- (b) Remove the stands and bounce the vehicle up and down to stabilize the suspension.



## 8. TORQUE STABILIZER NUTS

Torque the stabilizer nuts holding the stabilizer bar to the lower arm.

**Torque: 2,160 kg-mm (156 ft-lb, 212 N-m)**



## 9. CHECK FRONT WHEEL ALIGNMENT

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