

SUSPENSION AND AXLE

SA-2

SUSPENSION AND AXLE – TROUBLESHOOTING

TROUBLESHOOTING

Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

See Page	SA-3	SA-96	SA-4 SA-6	SA-52	SA-66	SA-52	SA-63	SA-10	-	-	-	-	SA-3
Parts Name	Tires	Cold tire inflation pressure	Wheel alignment	Springs	Stabilizer bar	Shock absorber	Ball joint	Hub bearings	Steering linkage	Steering gear	Suspension parts	Overloaded	Wheel balance
Wander/pulls	1		2					4	3	5	6		
Bottoming				2		3						1	
Sways/pitches	1				2	3							
Front wheel shimmy	1		4			3	5	6	7	8			2
Abnormal tire wear		1	2			4					3		

W00913

GENERAL INSPECTION

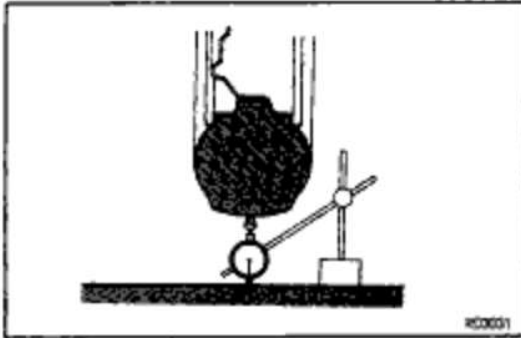
1. INSPECT TIRE

SA147-01

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

Cold inflation pressure:

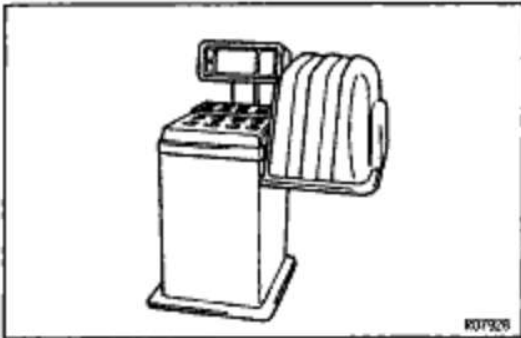
See page [SA-96](#)



(b) Check the tire runout.

Tire runout:

1.0 mm (0.039 in.) or less



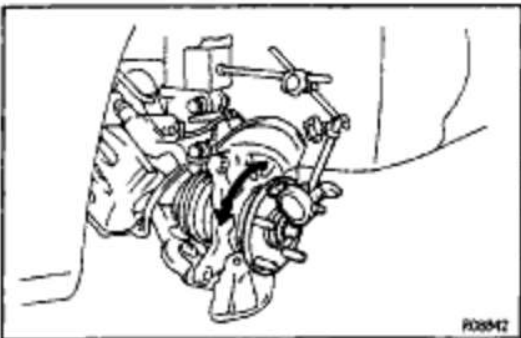
2. INSPECT WHEEL BALANCE

(a) Check and adjust the Off-the-car balance.

(b) If necessary, check and adjust the On-the-car balance.

Unbalance after adjustment:

8.0 g (0.018 lb) or less



3. CHECK WHEEL BEARING LOOSENESS

(a) Check the backlash in bearing shaft direction.

Maximum: 0.05 mm (0.0020 in.)

(b) Check the axle hub deviation.

Maximum: 0.05 mm (0.0020 in.)

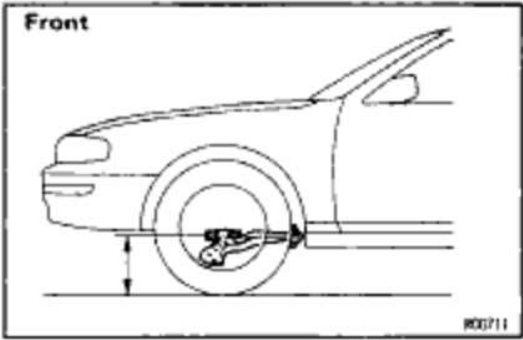
4. CHECK FRONT SUSPENSION FOR LOOSENESS

5. CHECK STEERING LINKAGE FOR LOOSENESS

6. CHECK BALL JOINT FOR EXCESSIVE LOOSENESS

7. CHECK SHOCK ABSORBERS WORK PROPERLY

- Check for oil leaks
- Check mounting bushings for looseness
- Bounce the vehicle up and down several times to stabilize the suspension.



WHEEL ALIGNMENT

FRONT WHEEL ALIGNMENT

BA1A2-01

1. MEASURE VEHICLE HEIGHT

Front vehicle height:
SEDAN/COUPE:

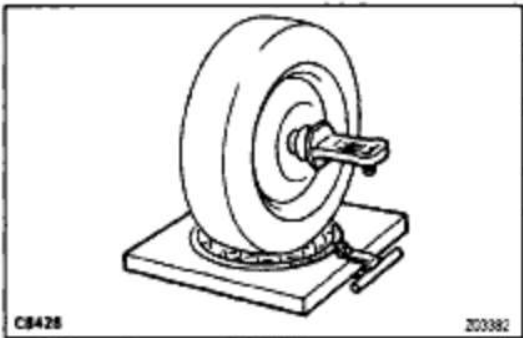
Tire size	Front
P195/70R14	210 mm (8.27 in.)
P205/65 R15	213 mm (8.39 in.)

WAGON:

Tire size	Front
P 195/70R 14	210 mm (8.27 in.)
P205/65R15	214 mm (8.43 in.)

Measuring point:

Measure from the ground to the center of the front side lower arm mounting bolt.

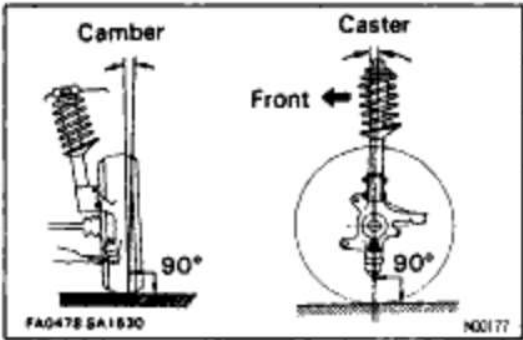


NOTICE: Before inspecting the wheel alignment, adjust the vehicle height to specification.

If the vehicle height is not standard, try to adjust it by pushing down on or lifting the body.

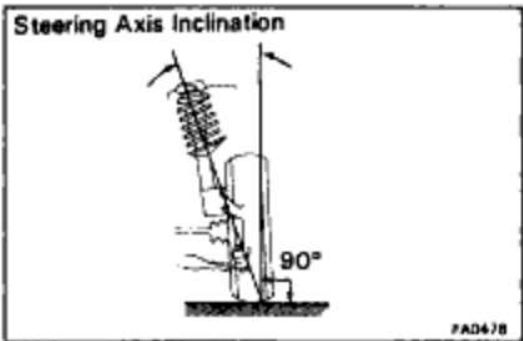
2. INSTALL CAMBER – CASTER – KINGPIN GAUGE ONTO VEHICLE OR POSITION VEHICLE ON WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.



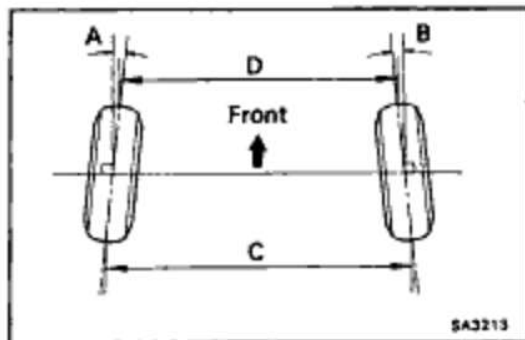
3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

	SEDAN/COUPE	WAGON
Camber (Left-right error)	-0°35' ± 45' (45' or less)	-0° 35'±45' (45' or less)
Caster (Left-right error)	1 ° 10' ±45' (45' or less)	1 ° 05'±45' (45' or less)
Steering axis inclination	13° 05' ±45'	13°00'±45'



HINT: Camber, caster and steering axis inclination are not adjustable. If measurements are not within specification, inspect the suspension parts for damaged and/or worn out parts and replace them as necessary.

SUSPENSION AND AXLE - WHEEL ALIGNMENT

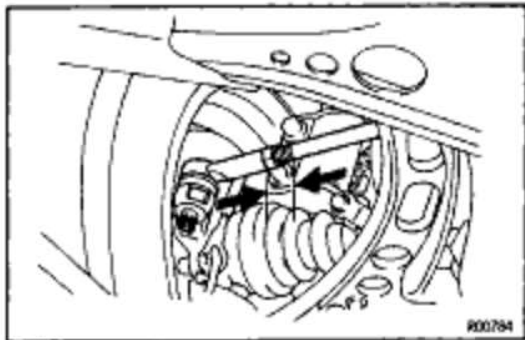
**4. INSPECT TOE-IN**

Toe-in (total):

$$A+B \ 0^{\circ} \pm 0.2^{\circ}$$

$$(C-D \ 0 \pm 2 \text{ mm}, \ 0 \pm 0.08 \text{ in.})$$

If the toe-in is not within specification, adjust it at the tie rod end.

**5. ADJUST TOE-IN**

- Remove the boot clamps.
- Loosen the tie rod end lock nuts.
- Turn the left and right tie rod ends an equal amount to adjust the toe-in.

HINT: Ensure that the lengths of the left and right tie rod end length are the same.

Tie rod end length difference:

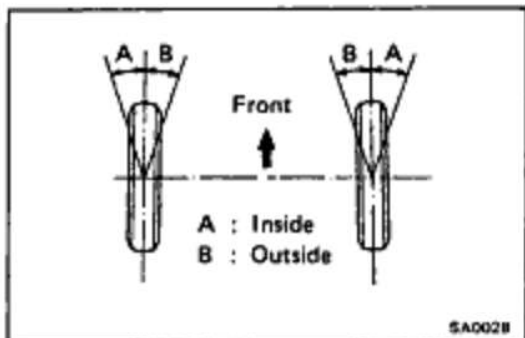
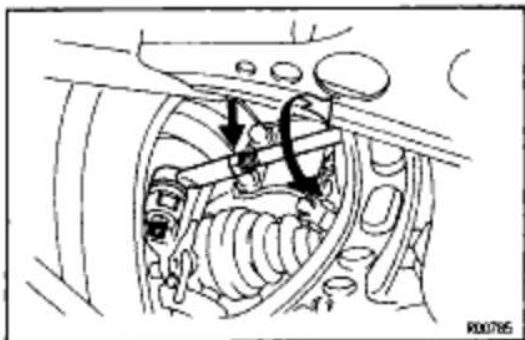
$$1.5 \text{ mm (0.059 in.) or less}$$

- Torque the tie rod end lock nuts.

Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

- Place the boot on the seat and install the clamp.

HINT: Make sure that the boots are not twisted.

**7. INSPECT WHEEL ANGLE**

Wheel angle:

SEDAN/COUPE:

Tire size	Inside wheel	Outside wheel (reference)
P195/70R14	$37^{\circ} 20' \pm 2^{\circ}$	$32^{\circ} 10'$
P205/65R15	$36^{\circ} 00' \pm 2^{\circ}$	$31^{\circ} 15'$

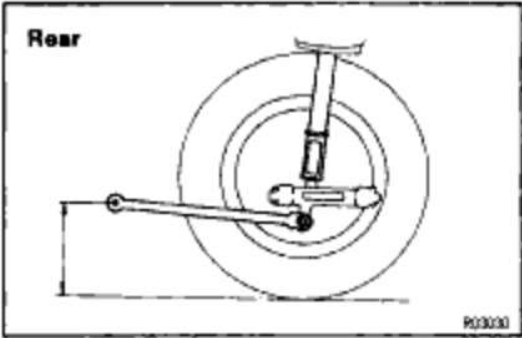
WAGON:

Tire size	Inside wheel	Outside wheel (reference)
P195/70R14	$37^{\circ} 20' \pm 2^{\circ}$	$32^{\circ} 15'$
P205/65R15	$36^{\circ} 00' \pm 2^{\circ}$	$31^{\circ} 20'$

If the wheel angles differ from specification, check the left and right tie rod end length.

Tie rod end length difference:

$$1.5 \text{ mm (0.059 in.) or less}$$



REAR WHEEL ALIGNMENT

7. MEASURE VEHICLE HEIGHT

Rear vehicle height:
SEDAN/COUPE:

Tire size	Rear
P 19 5/78 R 14	262 mm (10.31 in.)
P205/65R15	267 mm (10.51 in.)

WAGON:

Tire size	Rear
P195/70R14	272 mm (10.71 in.)
P205/65 R15	277 mm (10.91 in.)

Measuring point:

Measure from the ground to the center of the strut rod mounting bolt.

NOTICE: Before inspecting the wheel alignment, adjust the vehicle height to specification.

If the vehicle height is not standard, try to adjust it by pushing down on or lifting the body.

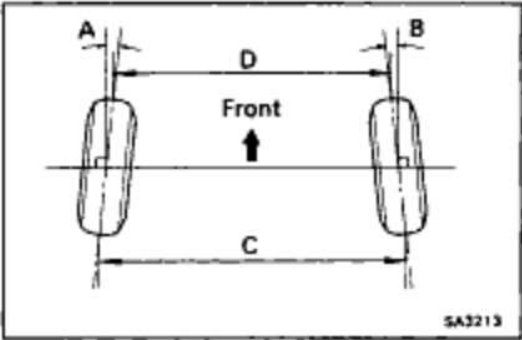
2. INSTALL CAMBER – CASTER – KINGPIN GAUGE ONTO VEHICLE OR POSITION VEHICLE ON WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.

3. INSPECT CAMBER

	SEDAN/COUPE	WAGON
Camber (Left-right error)	- 0 26' ± 45' (45' or less)	-0 15' ± 45' (45' or less)

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



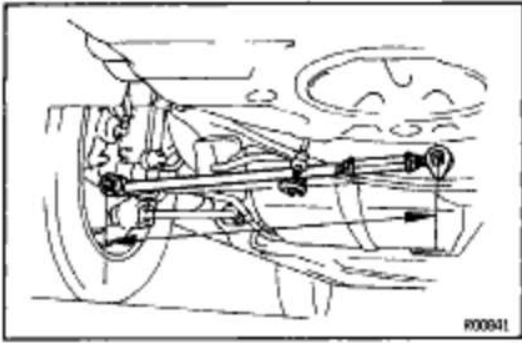
4. INSPECT TOE-IN

Toe-in (total):

$A+B \ 0.4 \pm 0.2$

$(C - D \ 4 \pm 2 \text{ mm}, 0.16 \pm 0.08 \text{ in.})$

If the toe-in is not within the specification, adjust it at the No.2 lower suspension arm.



5. ADJUST TOE-IN

- (a) Measure the length of the left and right No.2 lower suspension arm.

Left-right difference:

1 mm (0.04 in.) or less

If the left-right difference is greater than the specification, adjust the length.

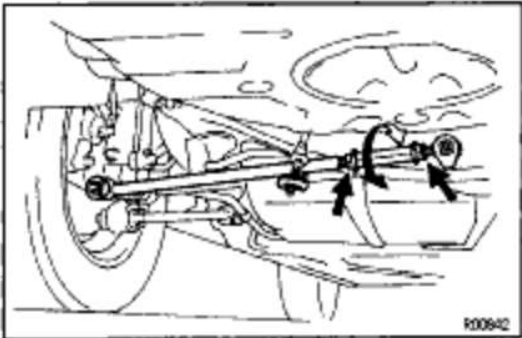
- (b) Loosen the lock nuts.

- (c) Turn the left and right adjusting tubes an equal amount to adjust toe-in.

HINT: One full turn of each adjusting tube will adjust the toe-in by about 0.6 (6.7 mm, 0.264 in.).

- (d) Torque the lock nuts.

Torque: 56 N·m (570 kgf·cm, 41 ft·lbf)



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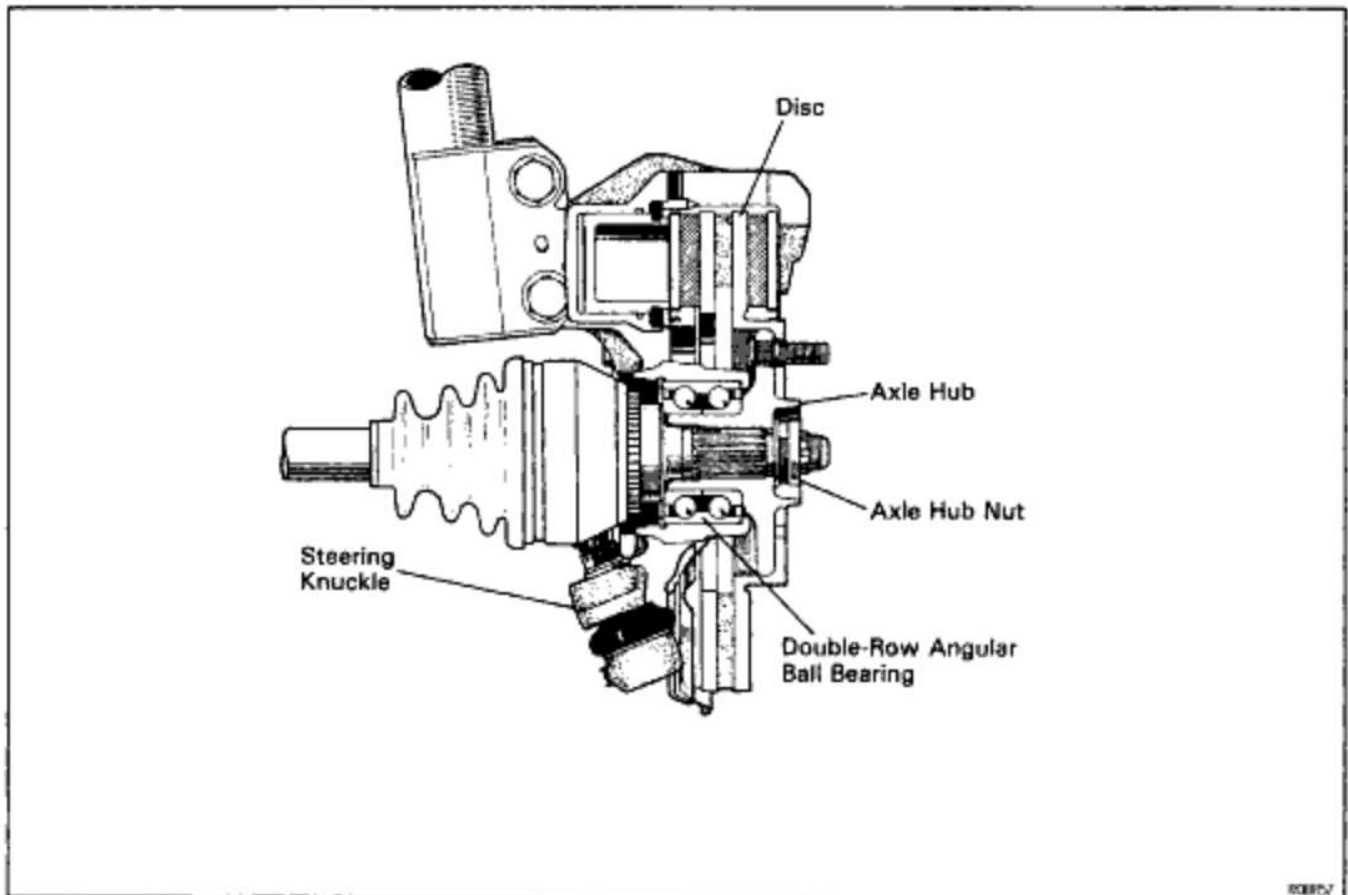
SUSPENSION AND AXLE — FRONT AXLE

FRONT AXLE

DESCRIPTION

The wheel bearings are double-row angular ball bearings combined with the oil seal. They have a small rolling resistance and are free from maintenance.

The preload of the bearings can be determined only by tightening the axle hub nut to a specified torque, improving serviceability.

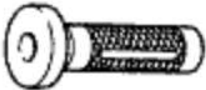


SUSPENSION AND AXLE - FRONT AXLE

PREPARATION

SST (SPECIAL SERVICE TOOLS)

SASTU-01

	09310-35010 Countershaft Bearing Replacer	Bearing removal Axle shaft installation
	09316-60010 Transmission & Transfer Bearing Replacer	Dust deflector Installation
	(09316-00010) Replacer Pipe	
	(09316-00040) Replacer "C"	
	09520-00031 Rear Axle Shaft Puller	
	09608-32010 Steering Knuckle Oil Seal Replacer	Bearing installation Axle hub installation Dust deflector installation
	09628-10011 Ball Joint Puller	Hub bolt removal
	09628-62011 Ball Joint Puller	
	09950-00020 Bearing Remover	

SASTV-01

RECOMMENDED TOOLS

	09905-00013 Snap Ring Pliers	
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SASTW-01

EQUIPMENT

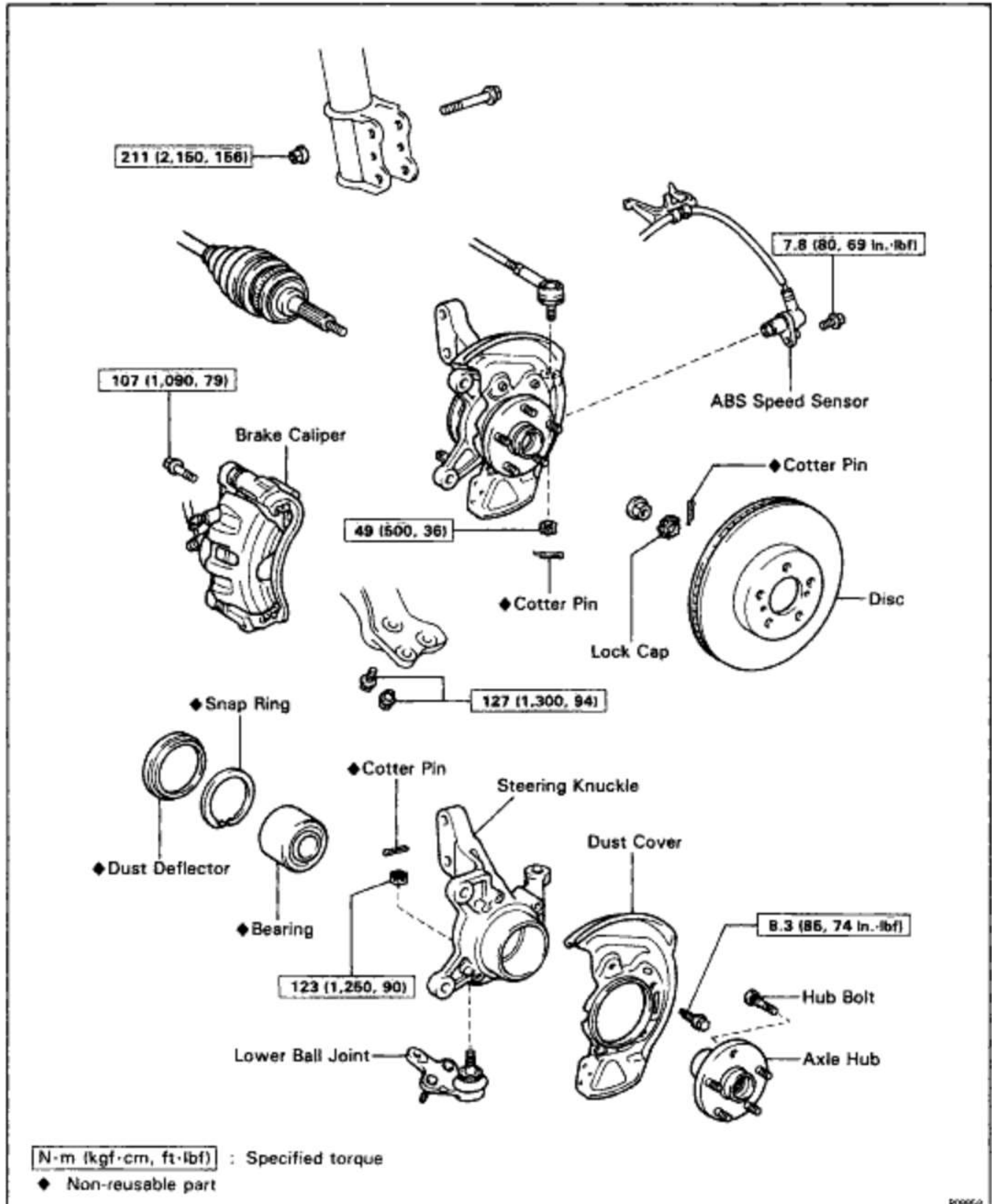
Dial indicator	
Torque wrench	

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SUSPENSION AND AXLE — FRONT AXLE

FRONT AXLE HUB COMPONENTS

SA001-01





STEERING KNUCKLE WITH AXLE HUB REMOVAL

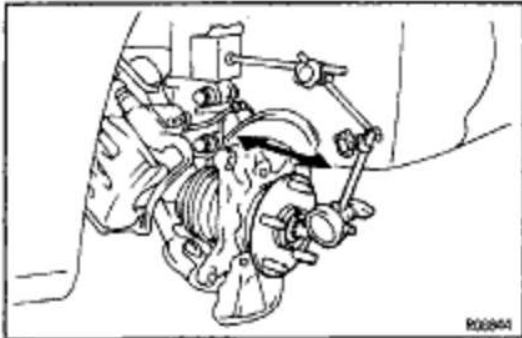
1. JACK UP VEHICLE, REMOVE FRONT WHEEL
2. CHECK BEARING BACKLASH AND AXLE HUB DEVIATION

- (a) Remove the 2 brake caliper set bolts.
- (b) Hang up the brake caliper using wire, etc.
- (c) Remove the disc.
- (d) Place the dial indicator near the center of the axle hub and check the backlash in the bearing shaft direction.

Maximum:

0.05 mm (0.0020 in.)

If greater than the specified maximum, replace the bearing.

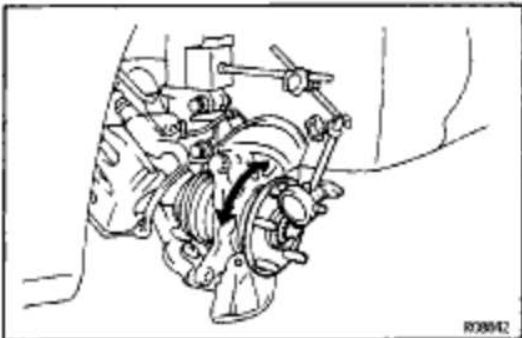


- (e) Using a dial indicator, check the deviation at the surface of the axle hub outside the hub bolt.

Maximum:

0.05 mm (0.0020 in.)

If greater than the specified maximum, replace the axle hub.



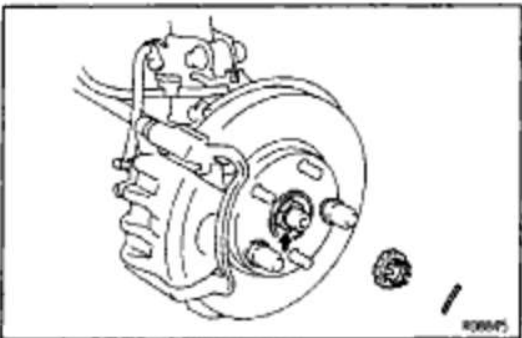
3. REMOVE DRIVE SHAFT LOCK NUT

- (a) Install the disc and brake caliper.
- (b) Remove the cotter pin and lock cap.
- (c) While applying the brakes, remove the nut.
- (d) Remove the brake caliper and disc.

4. w/ ABS:

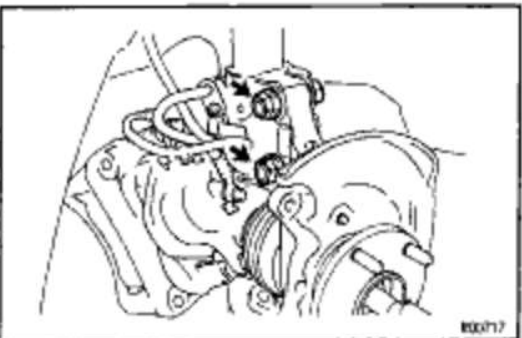
REMOVE ABS SPEED SENSOR

Remove the ABS speed sensor from the steering knuckle.



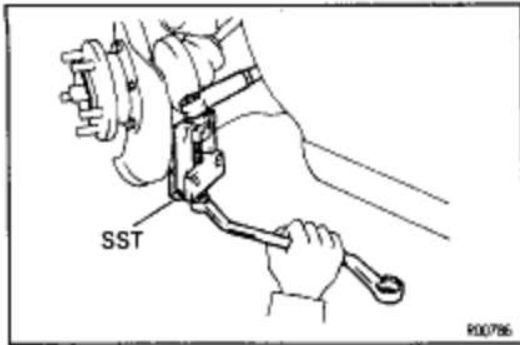
5. LOOSEN NUTS ON LOWER SIDE OF SHOCK ABS-ORBER

HINT: Do not remove the bolts.

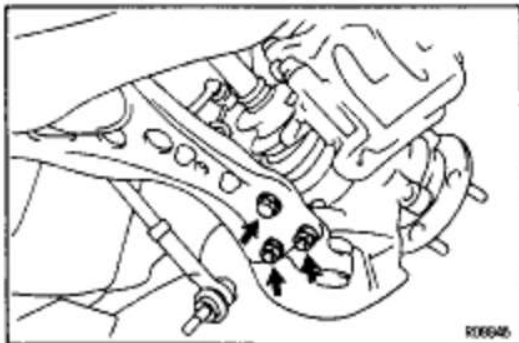


SA-12

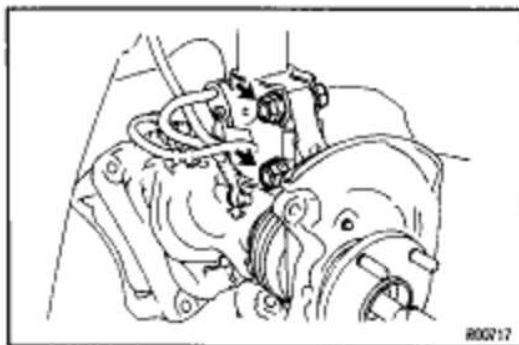
SUSPENSION AND AXLE – FRONT AXLE

**6. DISCONNECT TIE ROD END FROM STEERING KNUCKLE**

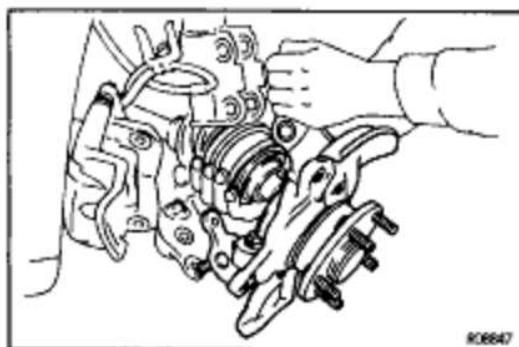
- (a) Remove the cotter pin and remove the nut.
- (b) Using SST, disconnect the tie rod end from the steering knuckle.
SST 09628-62011

**7. DISCONNECT LOWER BALL JOINT FROM LOWER ARM**

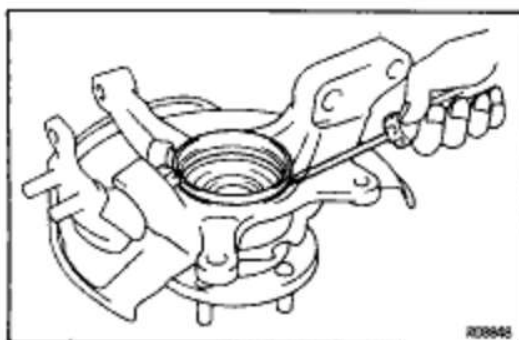
Remove the bolt and the two nuts.

**8. REMOVE STEERING KNUCKLE WITH AXLE HUB**

- (a) Remove the 2 nuts and bolts on lower side of the shock absorber.



- (b) Remove the steering knuckle with axle hub.

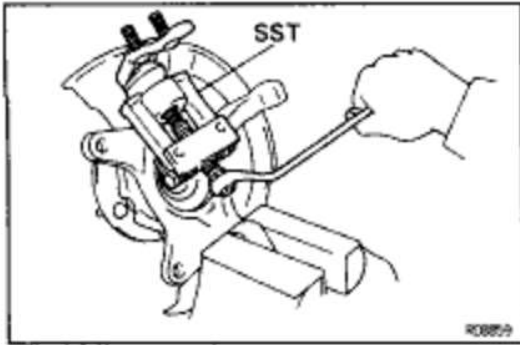
**FRONT AXLE HUB DISASSEMBLY**

SAB12-48

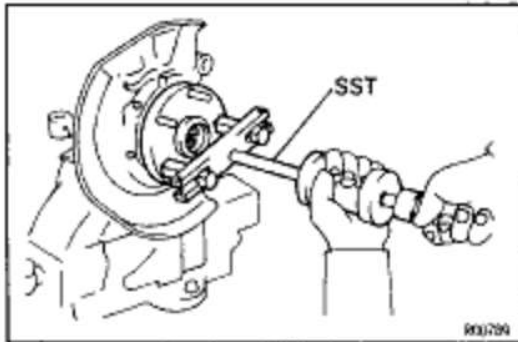
1. REMOVE DUST DEFLECTOR

Using a screwdriver, remove the dust deflector.

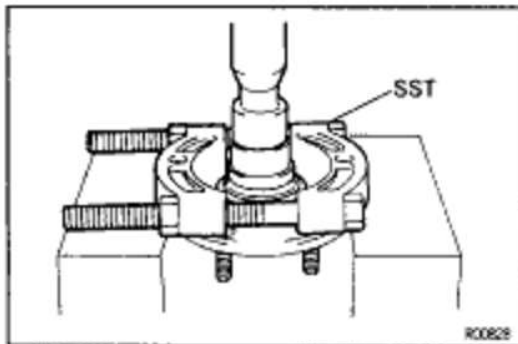
SUSPENSION AND AXLE – FRONT AXLE

**2. REMOVE LOWER BALL JOINT**

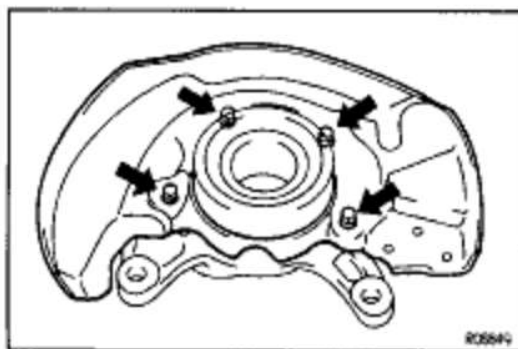
- (a) Remove the cotter pin and nut.
- (b) Using SST, remove the lower ball joint.
SST 09628-62011

**3. REMOVE AXLE HUB**

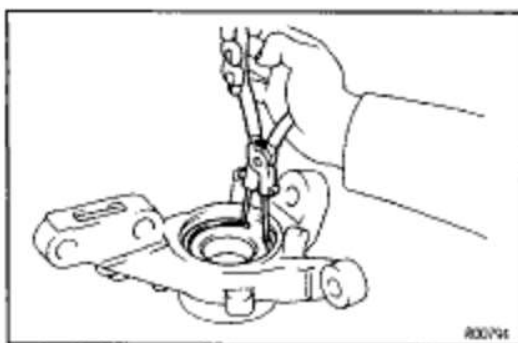
- (a) Using SST, remove the axle hub.
SST 09520-00031



- (b) Using SST and a press, remove the inner race (outside) from the axle hub.
SST 09950-00020

**4. REMOVE DUST COVER**

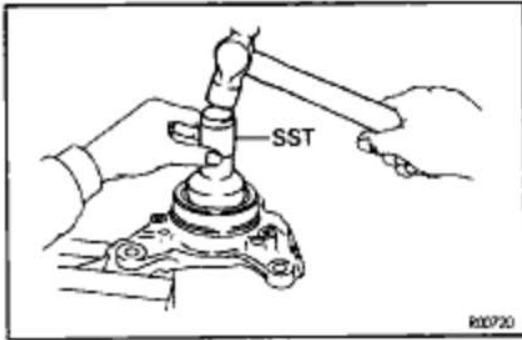
Remove the 4 bolts and dust cover—.

**5. REMOVE BEARING FROM STEERING KNUCKLE**

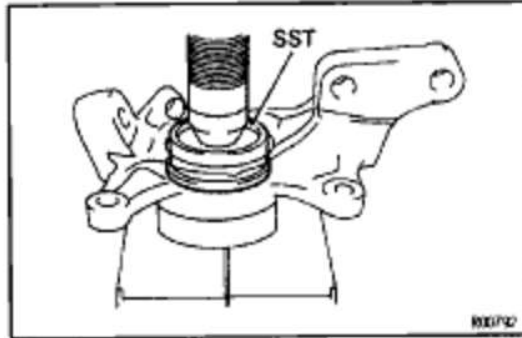
- (a) Using snap ring pliers, remove the snap ring.

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SUSPENSION AND AXLE – FRONT AXLE



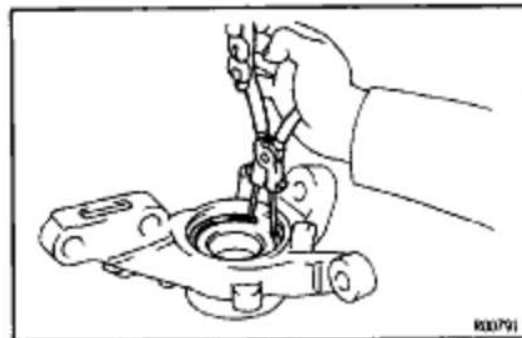
- (b) Place the inner race on the outside of the bearing.
 (c) Using SST and a hammer, remove the bearing.
 SST 09310-35010



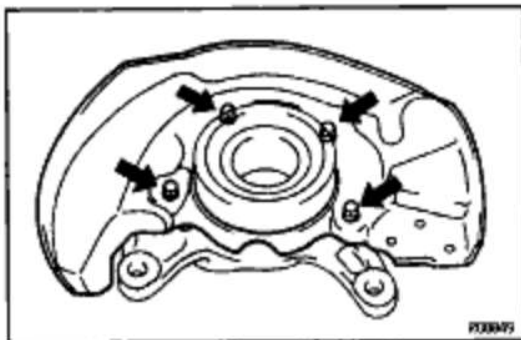
FRONT AXLE HUB ASSEMBLY

1. INSTALL BEARING

- (a) Using SST and a press, install a new bearing to the steering knuckle.
 SST 09608-32010

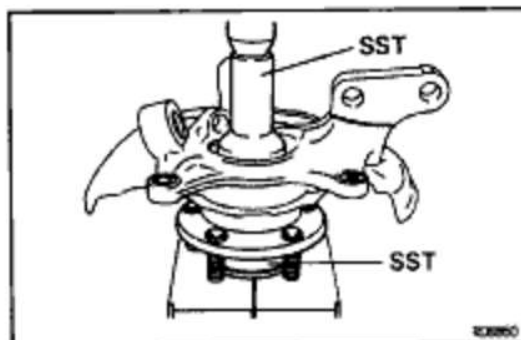


- (b) Using snap ring pliers, install a new snap ring.



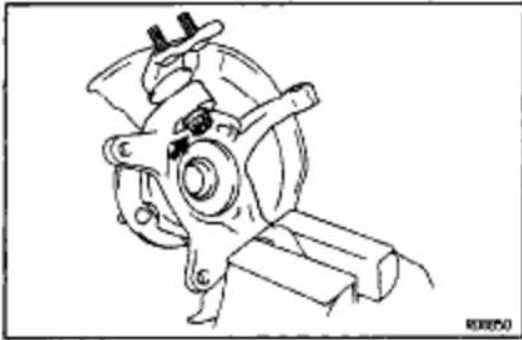
2. INSTALL DUST COVER

- Place the dust cover and torque the 4 bolts.
 Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)



3. INSTALL FRONT AXLE HUB

- Using SST and a press, install the axle hub.
 SST 09310 - 35010, 09608 - 32010

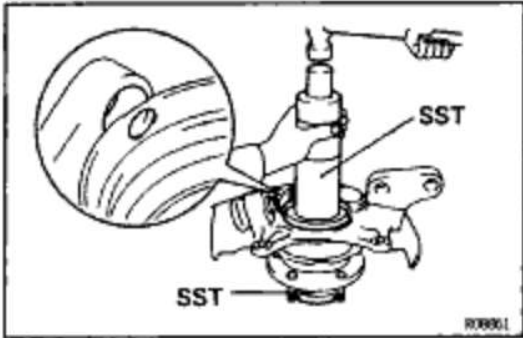


4. INSTALL LOWER BALL JOINT

(a) Install the lower ball joint and torque the nut.

Torque: 123 N·m (1,250 kgf·cm, 90 ft·lbf)

(b) Install a new cotter pin.



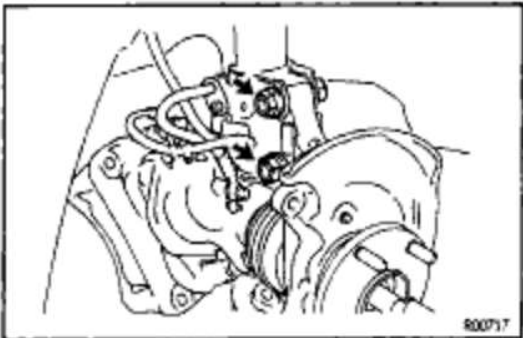
5. INSTALL DUST DEFLECTOR

Using SST and a hammer, install a new dust deflector.

SST 09316-60010(09316-00010, 09316-00040)

09608-32010

HINT: Align the holes for the ABS speed sensor in the dust deflector and steering knuckle.

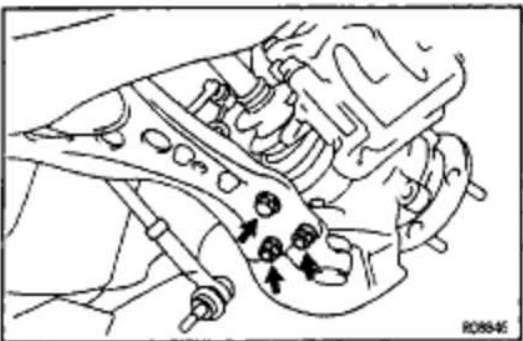


STEERING KNUCKLE WITH AXLE HUB INSTALLATION

1. INSTALL STEERING KNUCKLE

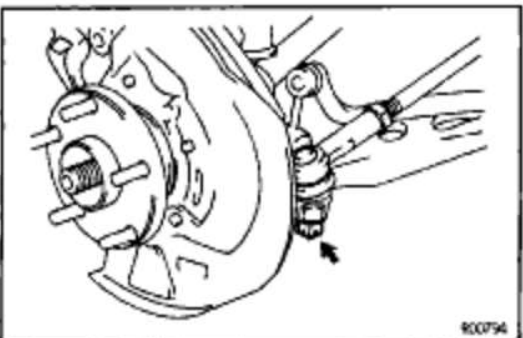
(a) Place the steering knuckle and temporarily install the 2 bolts and nut on lower side of shock absorber.

HINT: Coat the threads of nuts with engine oil.



(b) Connect the lower ball joint to the lower arm and tighten the bolt and nuts.

Torque: 127 N·m (1,300 kgf·cm, 94 ft·lbf)



2. CONNECT TIE ROD END TO STEERING KNUCKLE

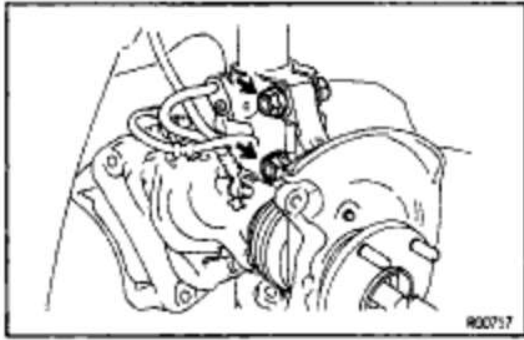
(a) Connect the tie rod end to the steering knuckle and tighten the nut.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

(b) Install a new cotter pin.

SA-16

SUSPENSION AND AXLE – FRONT AXLE



3. TORQUE BOLTS ON LOWER SIDE OF SHOCK ABSORBER

Torque: 211 N·m (2,150 kgf·cm, 156 ft·lbf)

4. w/ ABS:

INSTALL ABS SPEED SENSOR

Torque: 7.8 N·m (80 kgf·cm, 69 in·lbf)

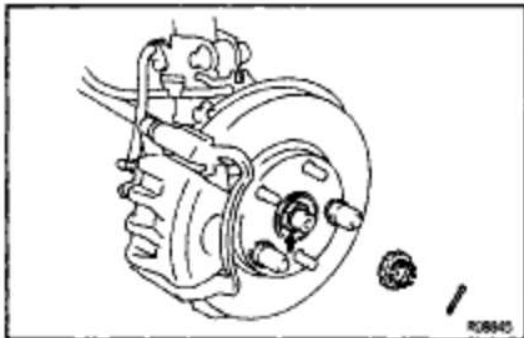


5. INSTALL FRONT BRAKE CALIPER

(a) Install the disc.

(b) Install the brake caliper.

Torque: 107 N·m (1,090 kgf·cm, 79 ft·lbf)



6. INSTALL DRIVE SHAFT LOCK NUT

(a) While applying the brakes, install the nut.

Torque: 294 N·m (3,000 kgf·cm, 217 ft·lbf)

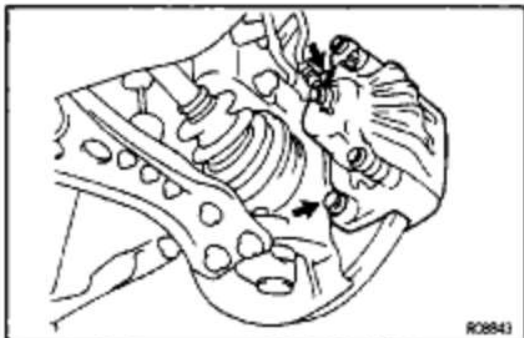
(b) Install the lock cap and a new cotter pin.

7. INSTALL FRONT WHEEL AND LOWER VEHICLE

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

8. INSPECT FRONT WHEEL ALIGNMENT

(SEE PAGE [SA-4](#))

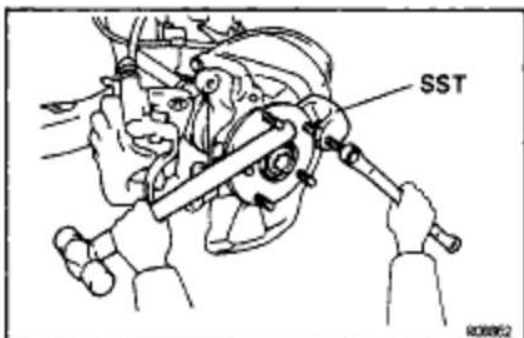


HUB BOLT REPLACEMENT

SA811-07

1. JACK UP VEHICLE AND REMOVE FRONT WHEEL

2. REMOVE FRONT BRAKE CALIPER AND DISC

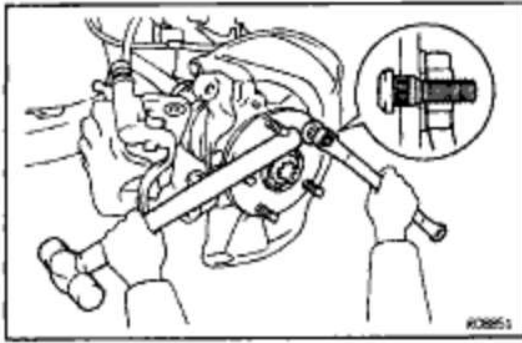


3. REMOVE HUB BOLT

Using SST, remove the hub bolt.

SST 09628 -10011

SUSPENSION AND AXLE – FRONT AXLE

**4. INSTALL HUB BOLT**

- (a) Install washer and nut to the hub bolt as shown in the illustration.
- (b) Install the hub bolt with torquing the nut. Install the hub bolt with torquing the nut.

**5. INSTALL FRONT DISC AND BRAKE CALIPER**

Torque: 107 N·m (1,090 kgf·cm, 79 ft·lbf)

6. INSTALL FRONT WHEEL AND LOWER VEHICLE

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

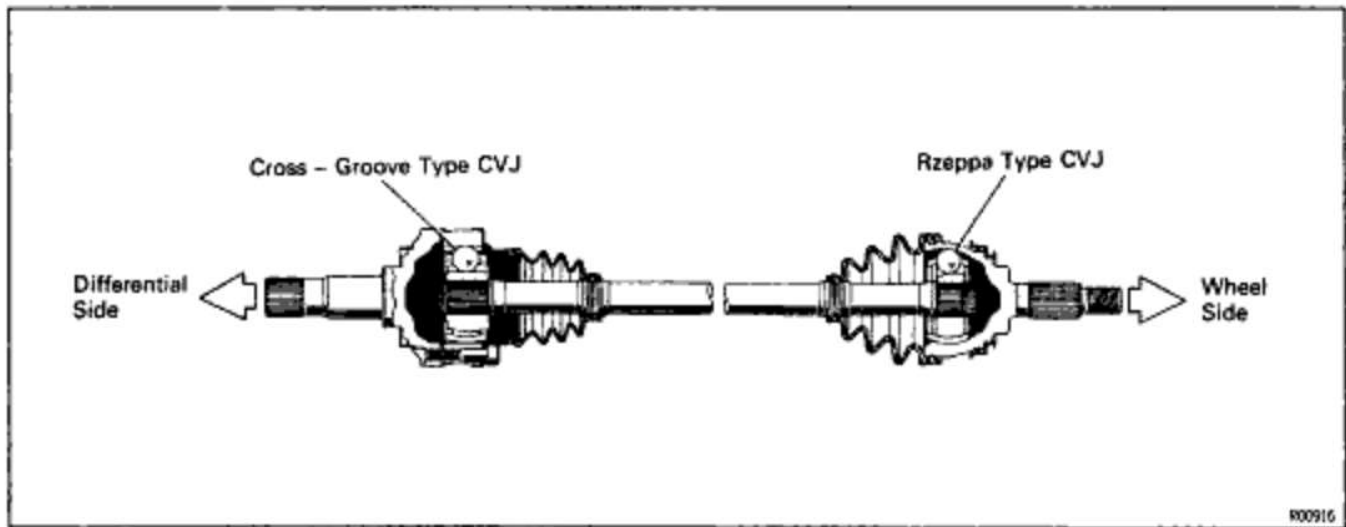
SA-18

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1mz-fe)

FRONT DRIVE SHAFT (1 MZ-FE)

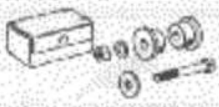
DESCRIPTION

The drive shaft has a cross-groove type CVJ (Constant Velocity Joint) on the differential side and Rzeppa type CVJ on the wheel side.



PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09608-1 6041 Front Hub Bearing Adjusting Tool	
	(09608-02020) Bolt & Nut	
	(09608-02040) Retainer	
	09628-62011 Ball Joint Puller	Tie rod end
	09726-10010 Lower Suspension Arm Bushing Remover & Replacer	
	(09726-00030) Spacer	Drive shaft inboard joint
	09923-00020 Hexagon 8 mm Wrench	
	09950-00020 Bearing Remover	Center drive shaft dust cover
	09521-24010 Drive Shaft Boot Clamping Tool	
	09240-00020 Wire Gauge Set	
	09242-00190 Wire Gauge	

SA204-01

RECOMMENDED TOOLS

	09905-00012 Snap Ring No. 1 Expander	For removing and installing snap ring
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Corrected 6/07/01 - MH

SA-20

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)

EQUIPMENT

SA-20-04

Torque wrench	
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LUBRICANT

SA-20-05

Drive shaft	Item	Capacity
Toyota type	Outboard joint grease	120-130 g (4.2-4.6 oz.)
	Inboard joint grease	133-153 g (4.7-5.4 oz.)

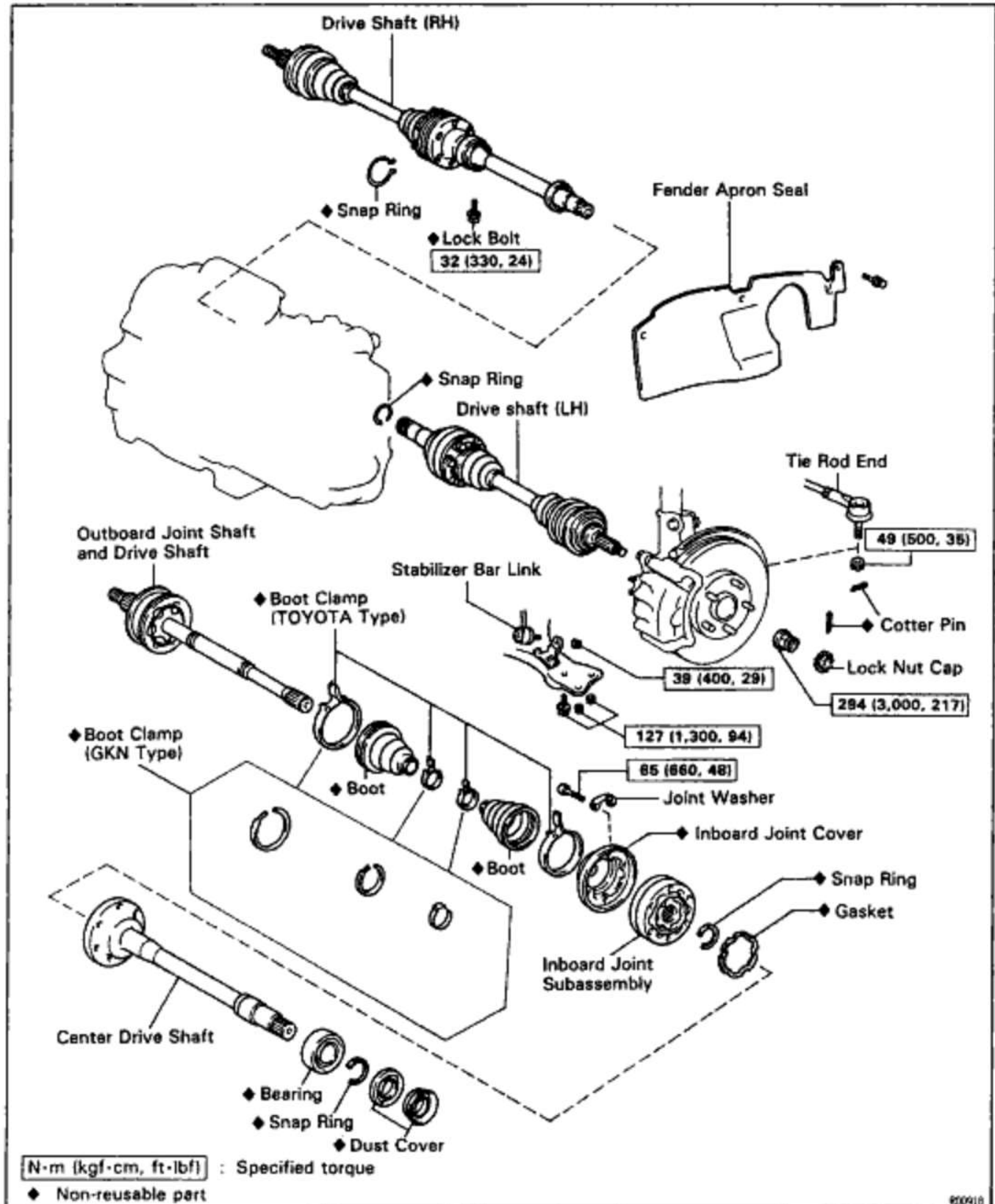
SSM (SPECIAL SERVICE MATERIALS)

SA-20-06

08826-00801 Seal Packing 1121, THREE BOND 1121 or equivalent	Drive shaft inboard joint cover
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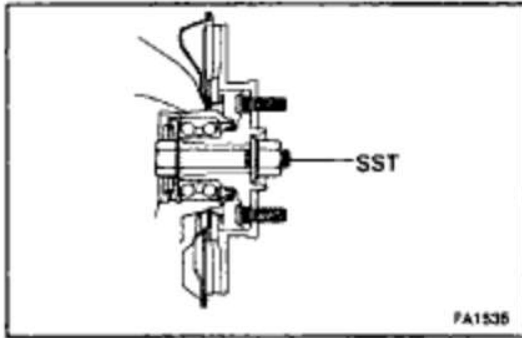
FRONT DRIVE SHAFT COMPONENTS

NAME - 01



SA-22

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)

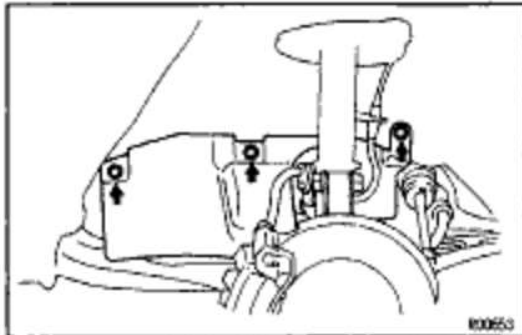


FRONT DRIVE SHAFT REMOVAL

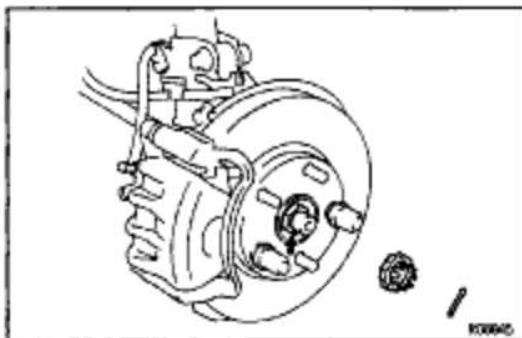
NOTICE: The hub bearing could be damaged if it is subjected to the vehicle weight, such as when moving the vehicle with the drive shaft removed.

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)

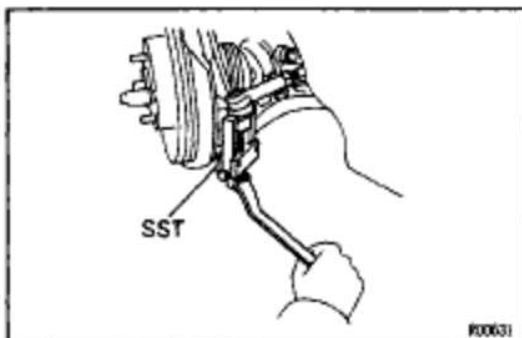


1. REMOVE FRONT FENDER APRON SEAL



2. 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.

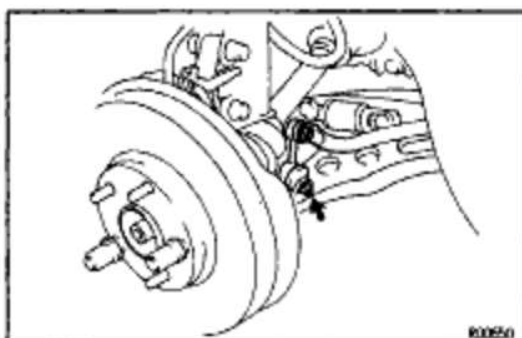


3. DRAIN TRANSAXLE OIL

4. DISCONNECT TIE ROD END FROM STEERING KNUCKLE

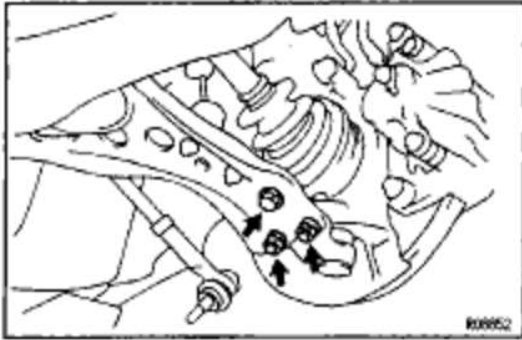
- (a) Remove the cotter pin and nut from the tie rod end.
- (b) Using SST, disconnect the tie rod end from the steering knuckle.

SST 09628-62011



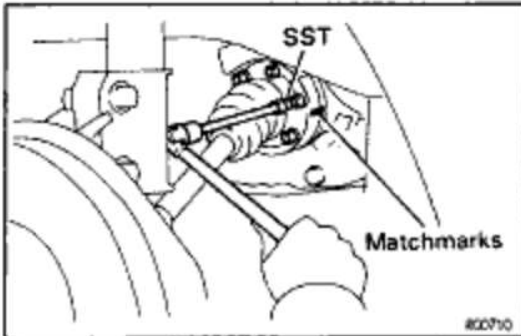
5. DISCONNECT STABILIZER BAR LINK FROM LOWER ARM

Remove the nut and disconnect the stabilizer bar link from lower arm.



6. DISCONNECT STEERING KNUCKLE FROM LOWER BALL JOINT

- Remove the bolt and the 2 nuts.
- Disconnect the steering knuckle from the lower ball joint.

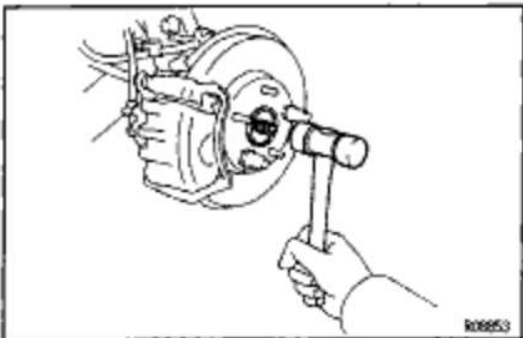


7. LOOSEN 6 BOLTS HOLDING DRIVE SHAFT TO DIFFERENTIAL SIDE GEAR SHAFT OR CENTER DRIVE SHAFT

- 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.

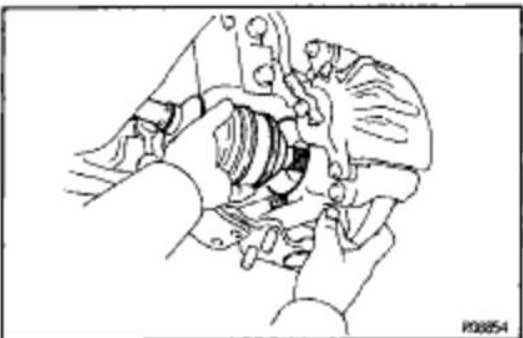
- Using SST, loosen the 6 hexagon bolts while depressing the brake pedal.
SST 09923 – 00020

HINT: Do not remove the bolts, leave them finger tight to avoid dropping the drive shaft.

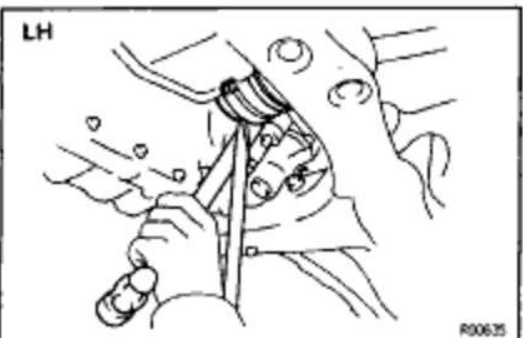


8. DISCONNECT DRIVE SHAFT FROM AXLE HUB

- 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.



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

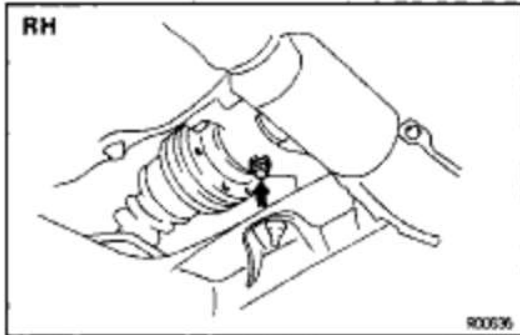


9. REMOVE LH DRIVE SHAFT

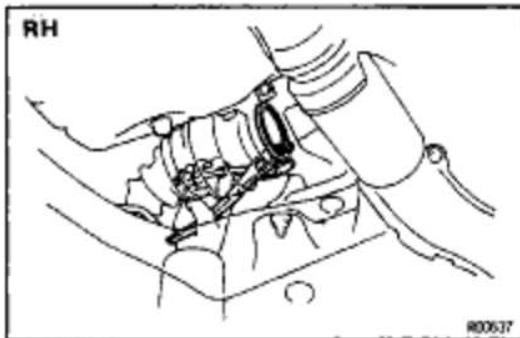
- Using hub nut wrench and hammer handle or equivalent, pull out the drive shaft as shown.

SA-24**SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)**

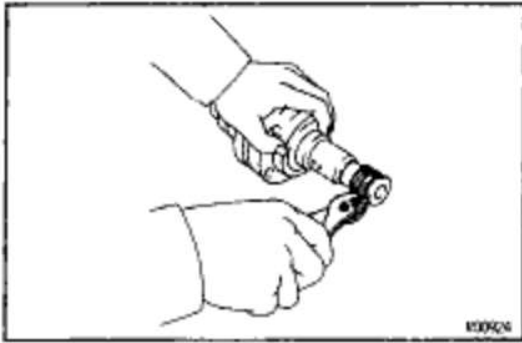
(b) Using a screwdriver, remove the snap ring.

**10. REMOVE RH DRIVE SHAFT**

(a) Remove the bearing lock bolt.



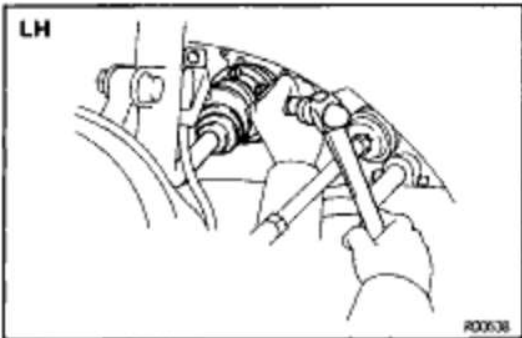
(b) Using pliers, remove the snap ring, and pull out the drive shaft.



FRONT DRIVE SHAFT INSTALLATION

1. INSTALL LH DRIVE SHAFT

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



(b) Coat gear oil to the side gear shaft and differential case sliding surface.

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

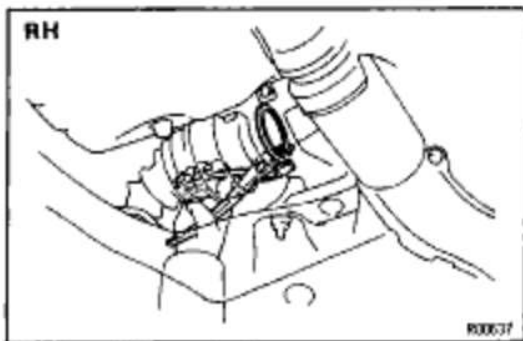
HINT:

- 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 LH DRIVE SHAFT

(a) Check that there is 2–3 mm (0.08–0.12 in.) of play in the axial direction.

(b) Check that the drive shaft can not be removed by hand.



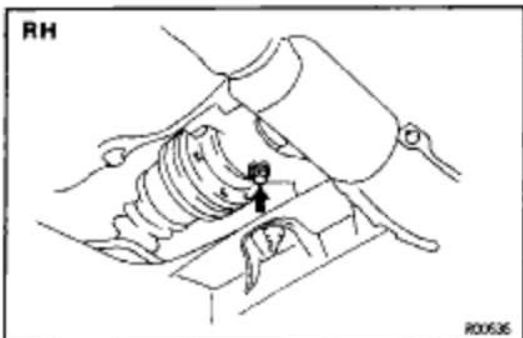
3. INSTALL RH DRIVE SHAFT

(a) Coat gear oil to the inboard joint and differential sliding surface.

(b) Install the drive shaft to the transaxle through the bearing bracket.

NOTICE: Do not damage the oil seal lip.

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

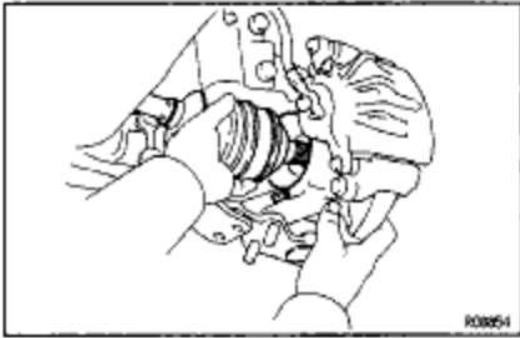


(d) Install a new bearing lock bolt and tighten it.

Torque: 32 N·m (330 kgf·cm, 24 ft·lbf)

SA-26

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)

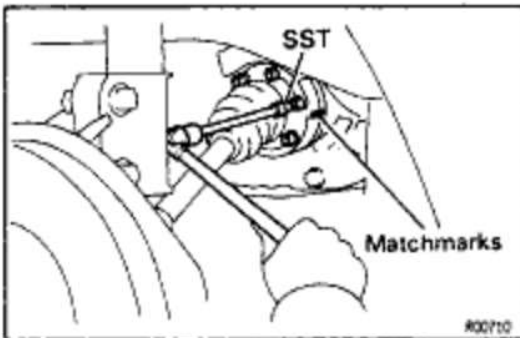
**4. CONNECT DRIVE SHAFT TO AXLE HUB**

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

NOTICE: Do not damage the boot.

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

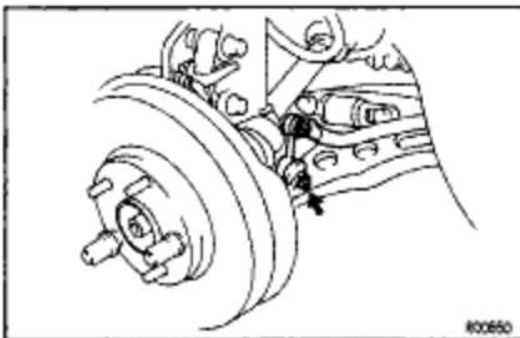
Torque: 127 N·m (1,300 kgf·cm, 94 ft·lbf)

**6. TIGHTEN 6 HEXAGON BOLTS**

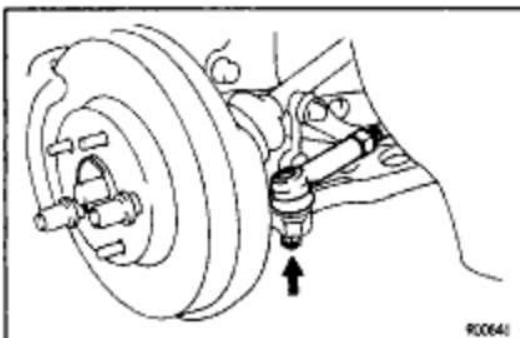
Using SST, tighten the 6 hexagon bolts while depressing the brake pedal.

SST 09043-88010

Torque: 65 N·m (660 kgf·cm, 48 ft·lbf)

**7. CONNECT STABILIZER BAR LINK TO LOWER ARM**

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

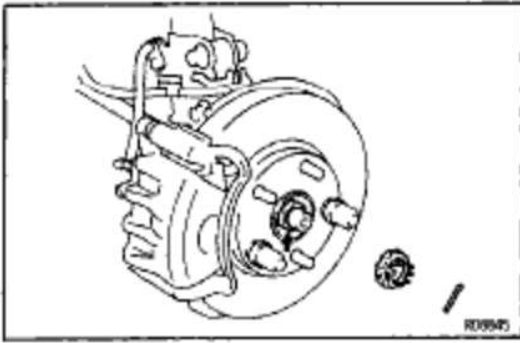
**8. CONNECT TIE ROD END TO STEERING KNUCKLE**

(a) Connect the tie rod end to the steering knuckle and torque the nut.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

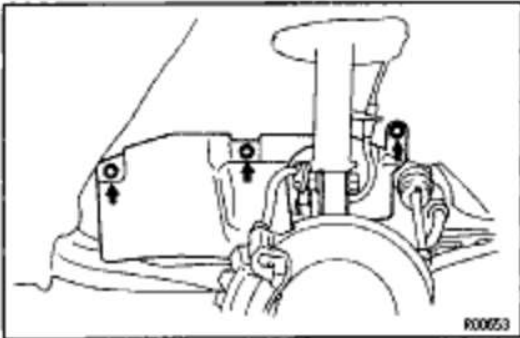
(b) Install a new cotter pin.

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

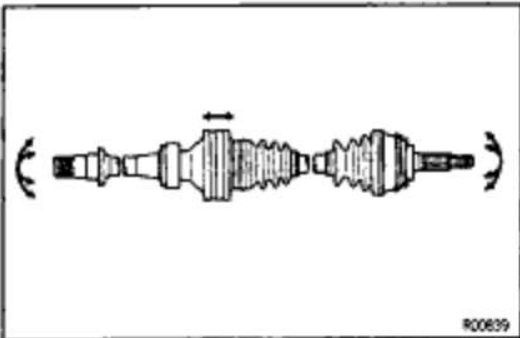


9. INSTALL BEARING LOCK NUT, LOCK NUT CAP AND NEW COTTER PIN

- (a) Install and torque the bearing lock nut
Torque: 294 N·m (3,000 kgf·cm, 217 ft·lbf)
- (b) Install the lock nut cap and secure it with a new cotter pin.



10. FILL TRANSAXLE WITH GEAR OIL
11. INSTALL FRONT FENDER APRON SEAL
12. CHECK FRONT WHEEL ALIGNMENT



FRONT DRIVE SHAFT DISASSEMBLY

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 significant play in the radial direction of the inboard joint.
- (d) Check the boot for damage.

2. DISCONNECT CENTER DRIVE SHAFT OR SIDE GEAR SHAFT

- (a) Using SST, remove the 6 bolts and 3 washers, and disconnect the center drive shaft or side gear shaft from the drive shaft.

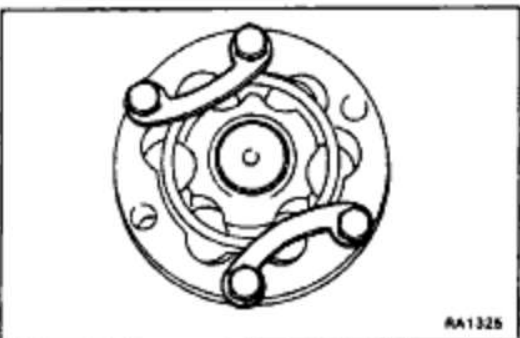
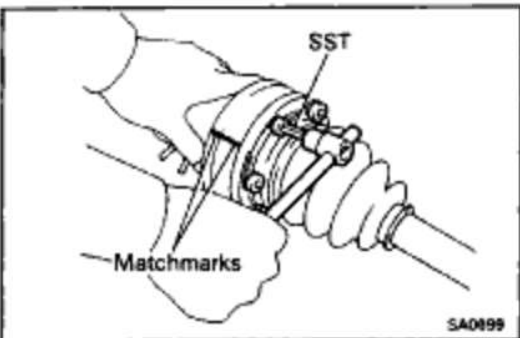
SST 09923-00020

NOTICE: Do not compress the inboard boot.

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

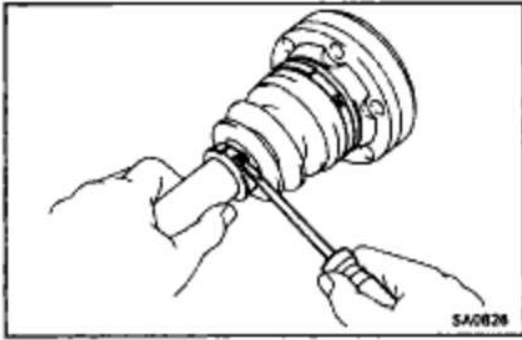
- (c) Use bolts, nuts and washers to keep the inboard joint together.

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

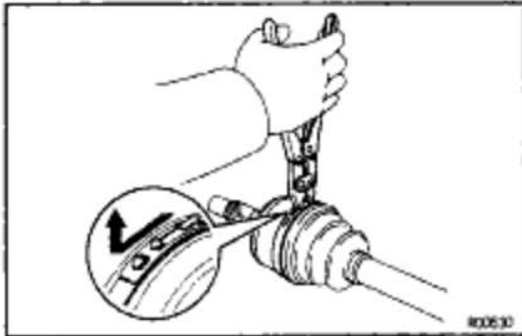


SA-28

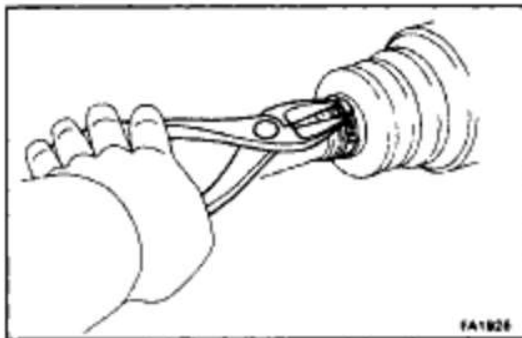
SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)

**3. TOYOTA TYPE:****REMOVE INBOARD AND OUTBOARD JOINT BOOT CLAMPS**

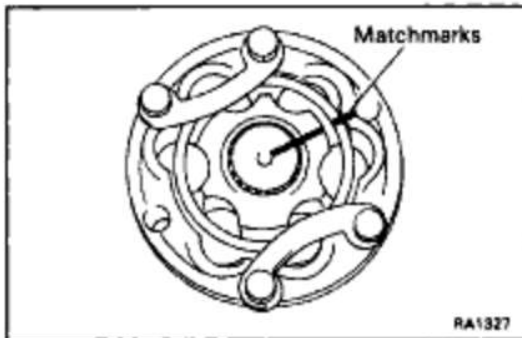
Using a screwdriver, remove the inboard and outboard joint clamps.

**GKN TYPE:****REMOVE INBOARD AND OUTBOARD JOINT BOOT CLAMPS**

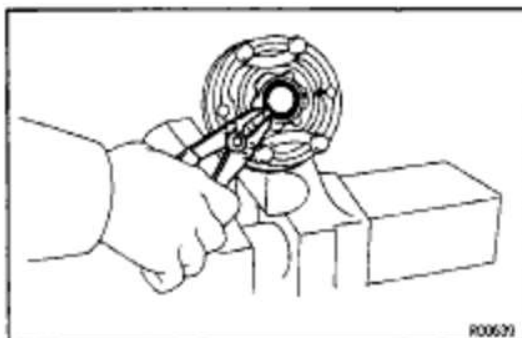
(a) Using a boot clamp tool, draw hooks together and remove the clamps.



(b) Using side cutters, cut the small boot clamps and remove them.

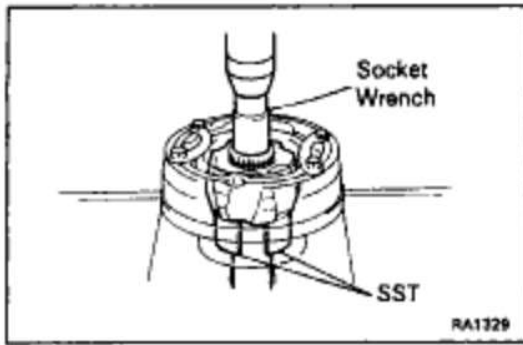
**4. DISASSEMBLE INBOARD JOINT**

(a) Place matchmarks on the inboard joint and drive shaft.



(b) Using a snap ring expander remove the snap ring.

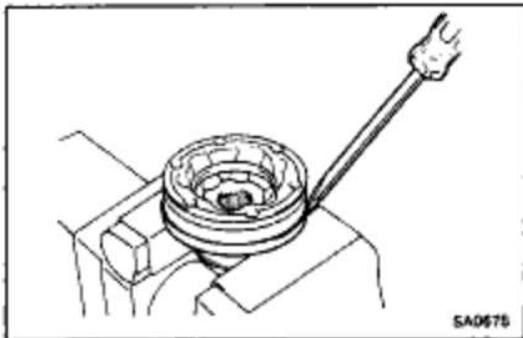
SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)



(c) Using SST, a socket wrench and a press, remove the inboard joint from the drive shaft.

SST 09726-10010(09726-00030)

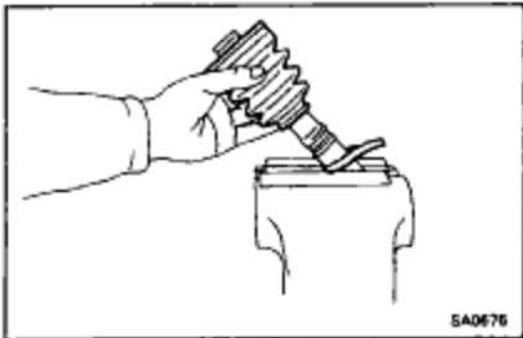
(d) Remove the bolts, nuts and washers.



(e) Using a screwdriver and a hammer, pry around the whole perimeter of the inboard joint cover.

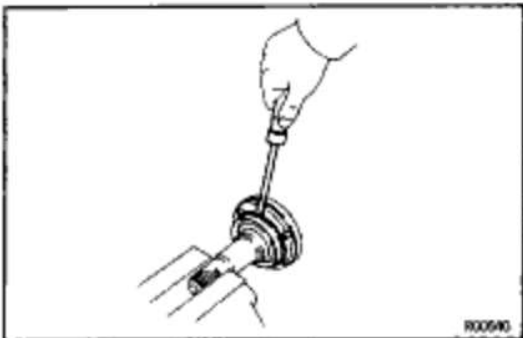
(f) Using a screwdriver, remove the inboard joint from inboard joint cover.

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



5. REMOVE BOOTS

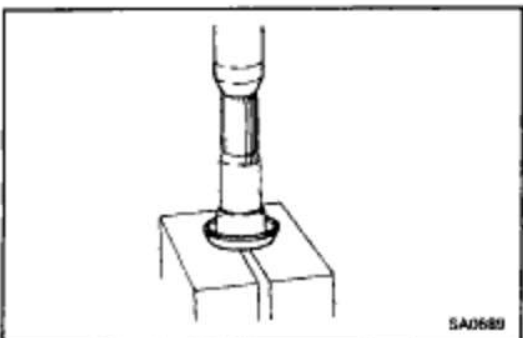
Remove the inboard joint boot and outboard joint boot.



6. LH DRIVE SHAFT:

DISASSEMBLE SIDE GEAR SHAFT

Using a screwdriver, remove the dust cover.



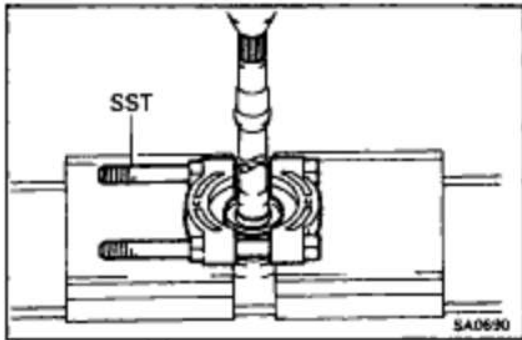
7. RH DRIVE SHAFT:

DISASSEMBLE CENTER DRIVE SHAFT

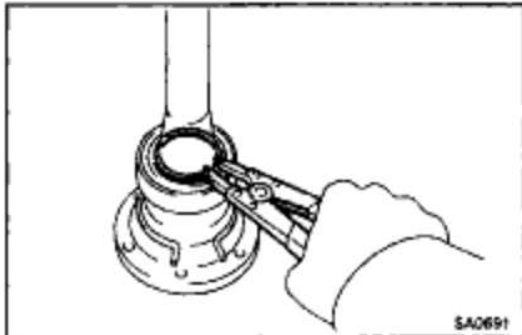
(a) Using a press, press out the transaxle side dust cover.

SA-30

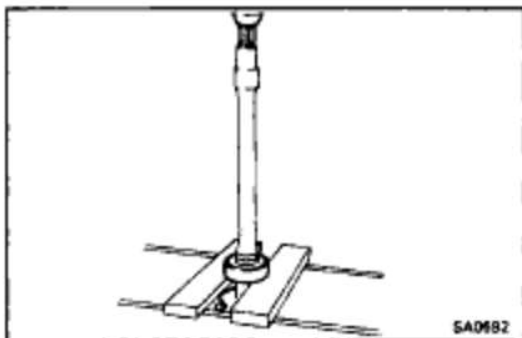
SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)



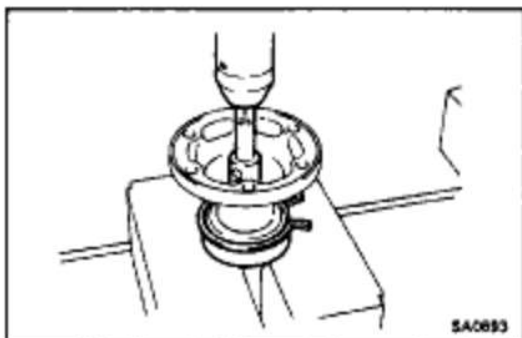
- (b) Using SST and a press, press out the drive shaft side dust cover.
SST 09950-00020



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



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



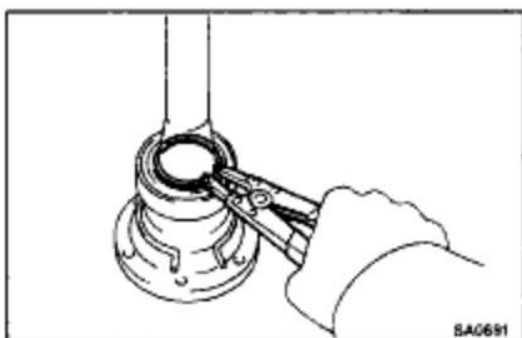
FRONT DRIVE SHAFT ASSEMBLY

SA0694-04

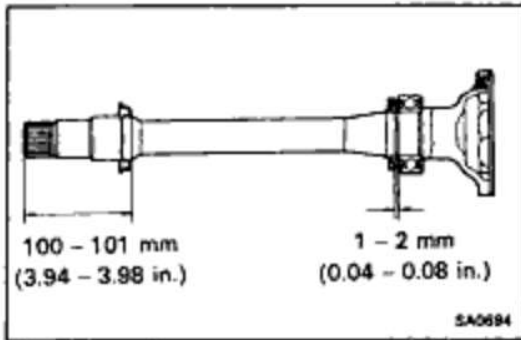
1. RH DRIVE SHAFT:

ASSEMBLE CENTER DRIVE SHAFT

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



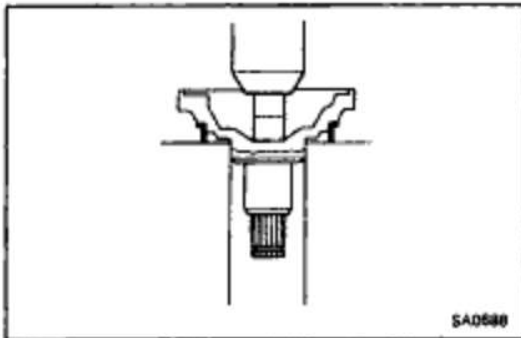
- (c) Using a snap ring expander, install a new snap ring.



(d) Using a press, press in a new drive shaft side dust cover.

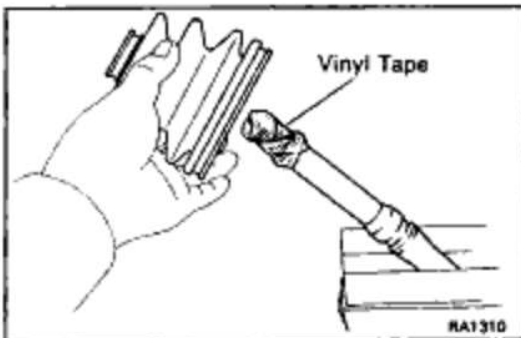
HINT: The clearance between the dust cover and the bearing should be kept in the range shown in the illustration.

(e) Using a press, press in a new transaxle side dust cover.



2. LH DRIVE SHAFT: ASSEMBLE SIDE GEAR SHAFT

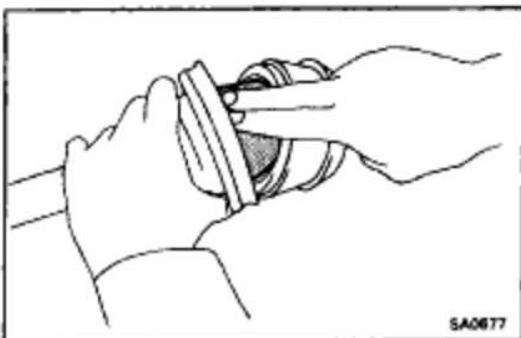
Using a press, press in a new dust cover.



3. INSTALL NEW 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 new boot and new clamps to the outboard joint.



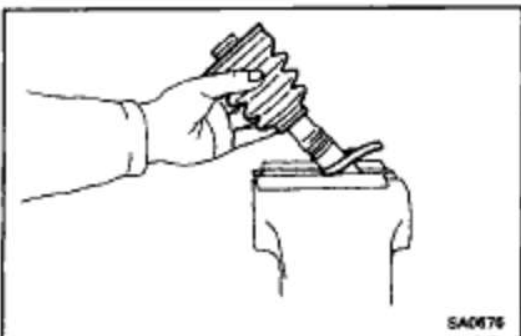
4. ASSEMBLE BOOT TO OUTBOARD JOINT

Before assembling the boot, pack in grease.

HINT: Use the grease supplied in the boot kit.

Grease capacity:

135-155 g (4.8-5.5 oz.)

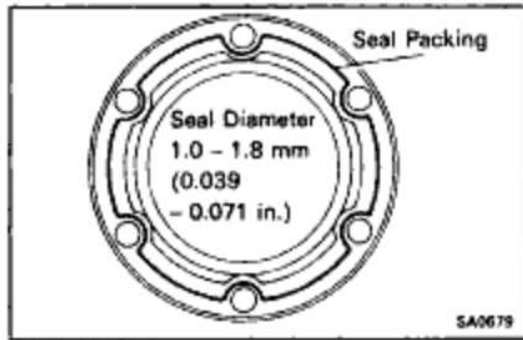


5. INSTALL NEW BOOT CLAMPS AND INBOARD JOINT BOOT

Temporarily install the 2 new boot clamps and inboard joint boot.

SA-32

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)

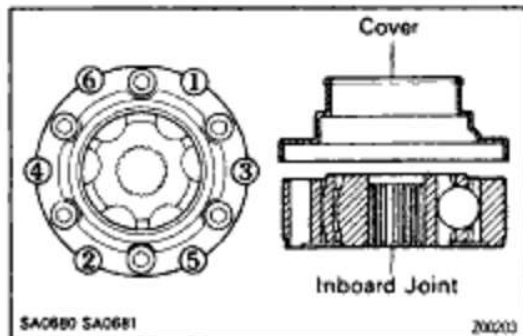
**6. ASSEMBLE NEW INBOARD JOINT COVER**

- (a) Clean contacting surfaces of any residual packing material using cleaner.
- (b) Apply seal packing to the inboard joint cover as shown in the illustration.

Seal packing:

Part No. 08826-00801. THREE BOND 1122 or equivalent

HINT: Avoid applying an excess amount to the surface.

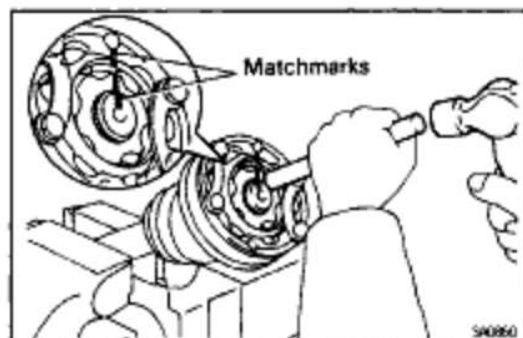


- (c) Align the bolt holes of the cover with those of the inboard joint, then insert the hexagon bolts.
- (d) Use a plastic hammer to tap the rim of the inboard joint cover into place. Do this in the order shown, and repeat several times.



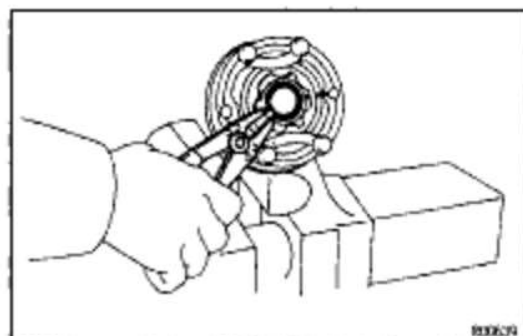
- (e) Use bolts, nuts and washers to keep the inboard joint together.

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

**7. ASSEMBLE INBOARD JOINT**

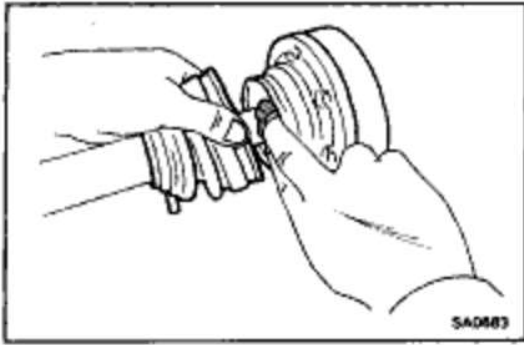
- (a) Align the matchmarks placed before disassembly.
- (b) Using a brass bar and hammer, tap the inboard joint onto the drive shaft.

NOTICE: Check that the brass bar is touching the inner race, and not the cage.



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

NOTICE: Work carefully so that the outer race does not come off.



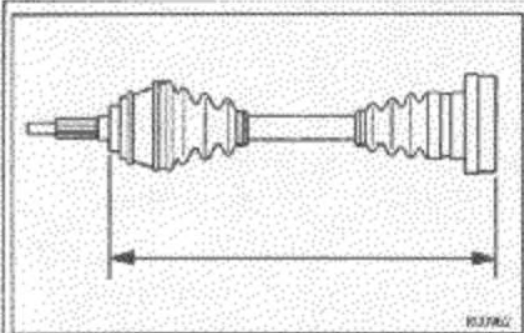
8. ASSEMBLE INBOARD JOINT BOOT TO INBOARD JOINT

Pack in grease to the inboard tulip and boot.

HINT: Use the grease supplied in the boot kit.

Grease capacity:

140–150 g (4.9–5.3 oz.)



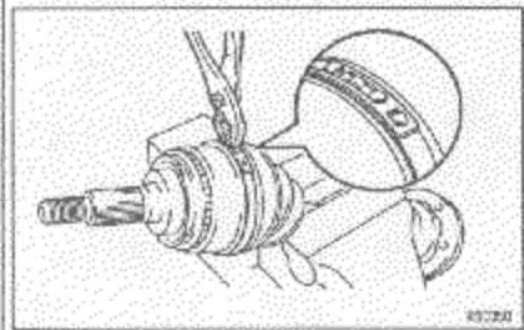
9. ASSEMBLE BOOT CLAMPS TO BOTH BOOTS

(a) Be sure the boots are in the shaft groove.

(b) Ensure that the boots are not stretched or contracted when the drive shaft is at standard length.

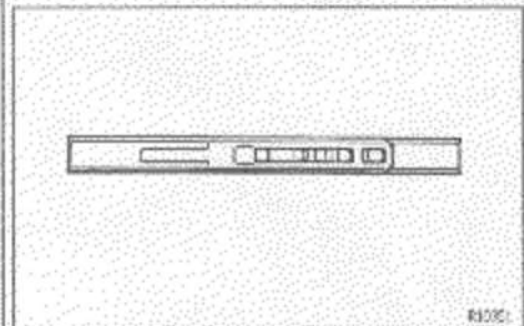
Drive shaft standard length:

452.35 ± 2.0 mm (17.8090 ± 0.079 in.)

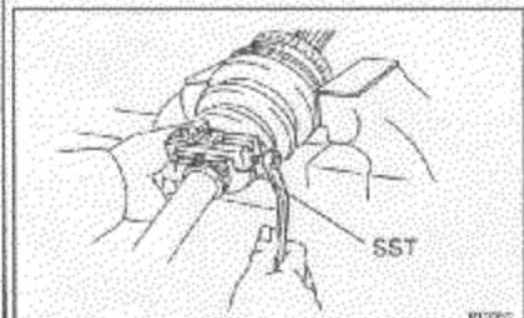


(c) Holding the clamp near the closing hooks, using pliers, position the holers in the clamp's free end over the closing hooks.

(d) Secure clamp by drawing the closing hooks together.



(e) Check that the clamp at closed position is the same as that shown in the illustration.



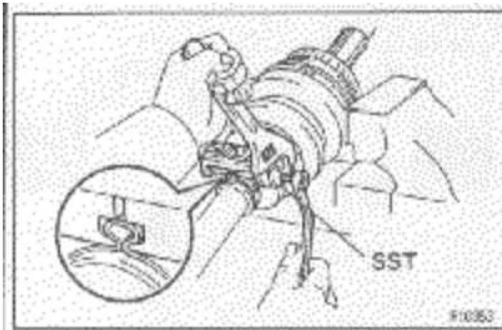
(f) Secure the clamp onto the boot.

(g) Place SST onto the clamp

SST 09521 – 24010

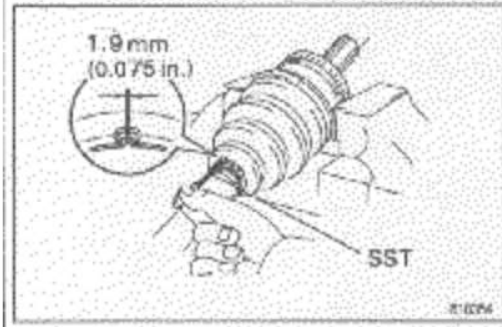
SA-34

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(1MZ-FE)



- (h) Tighten SST so that the clamp is pinched.
HINT: Pinch the inboard side of the boot clamp, as shown in the illustration.

NOTICE: Do not overtighten the SST.

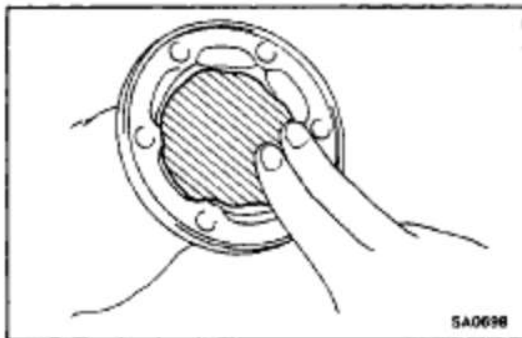


- (i) Using SST, adjust the clearance of the clamp.

SST 09240 – 00020

Clearance:

1.9 mm(0.0075 in.) or less



10. PACK IN GREASE TO CENTER DRIVE SHAFT OR SIDE GEAR SHAFT

Pack grease into the center drive shaft or side gear shaft.

Grease capacity:

50–60 g (1.8–2.1 oz.)

HINT: Use the grease supplied in the boot kit.

11. CONNECT DRIVE SHAFT AND CENTER DRIVE SHAFT OR SIDE GEAR SHAFT

- Remove the bolts, nuts and washers.
- Align the matchmarks on the drive shaft and center drive shaft or side gear shaft.
- Place a new gasket on the inboard joint.
- Install the center drive shaft or side gear shaft to the drive shaft.

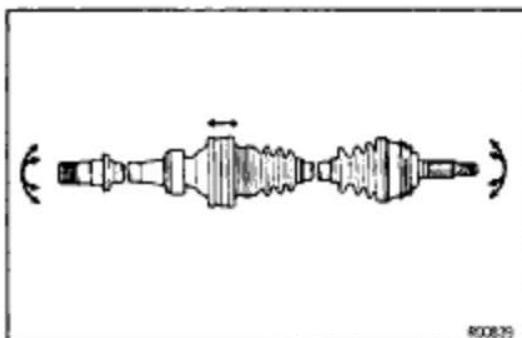
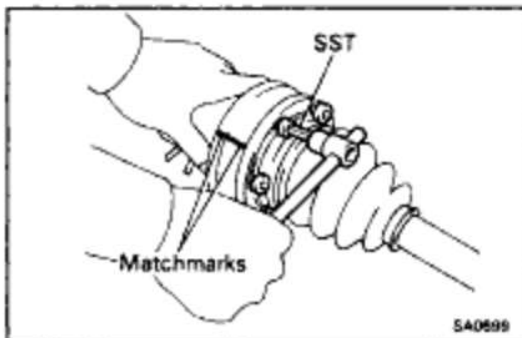
NOTICE: When moving the drive shaft, do not compress the inboard boot.

- Install the 3 washers and 6 hexagon bolts, and using SST, temporarily tighten them.

SST 09923–00020

12. CHECK DRIVE SHAFT

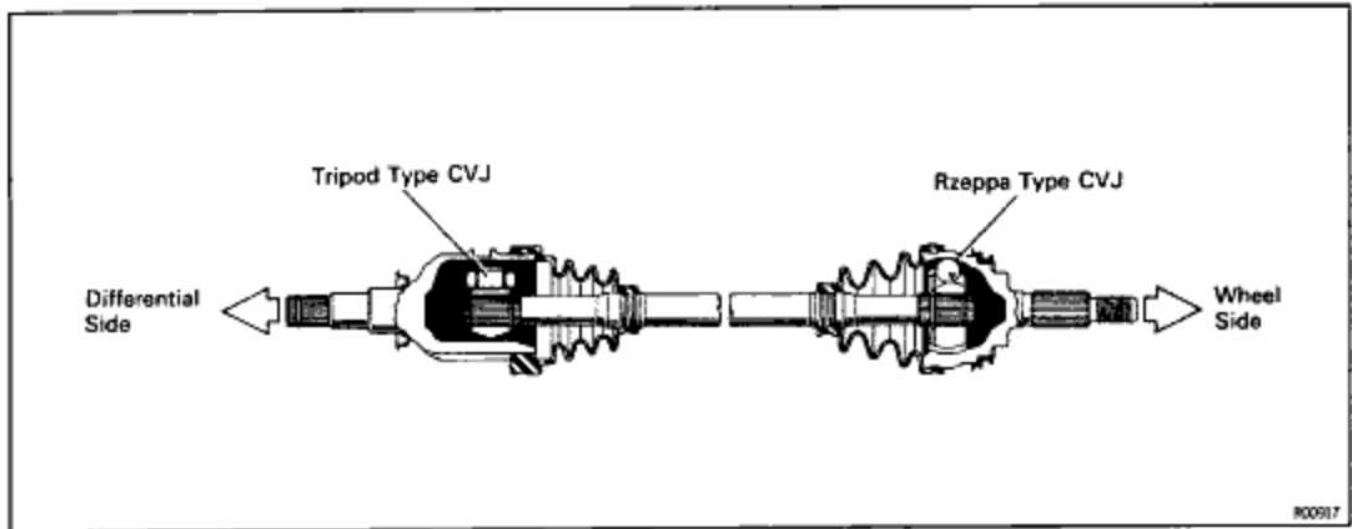
- Check to see that there is no play in the inboard joint and outboard joint.
- Check to see that inboard joint slides smoothly in the thrust direction.



FRONT DRIVE SHAFT (5S-FE)

DESCRIPTION

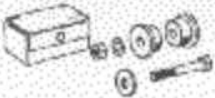
The drive has a tripod type CVJ (Constant Velocity Joint) on the differential side and Rzeppa type CVJ on the wheel side.



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SUSPENSION AND AXLE - FRONT DRIVE SHAFT(5S-FE)

PREPARATION**SST (SPECIAL SERVICE TOOLS)**

	0950fi-35010 Differential Drive Pinion Rear Bearing Replacer	
	09608-1fi041 Front Hub Bearing Adjusting Tool	
	(09608-02020) Bolt & Nut	
	(09608-02040) Retainer	
	09628-62011 Ball Joint Puller	Tie rod end
	09950-00020 Bearing Remover	Center drive shaft dust cover
	09521-24010 Drive Shaft Boot Clamping Tool	
	09240-00020 Wire Gauge Set	
	(09242-00190) Wire Gauge	

RECOMMENDED TOOLS

SA007-01

	09905-00012 Snap Ring No. 1 Expander	For removing and installing snap ring
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SA008-01

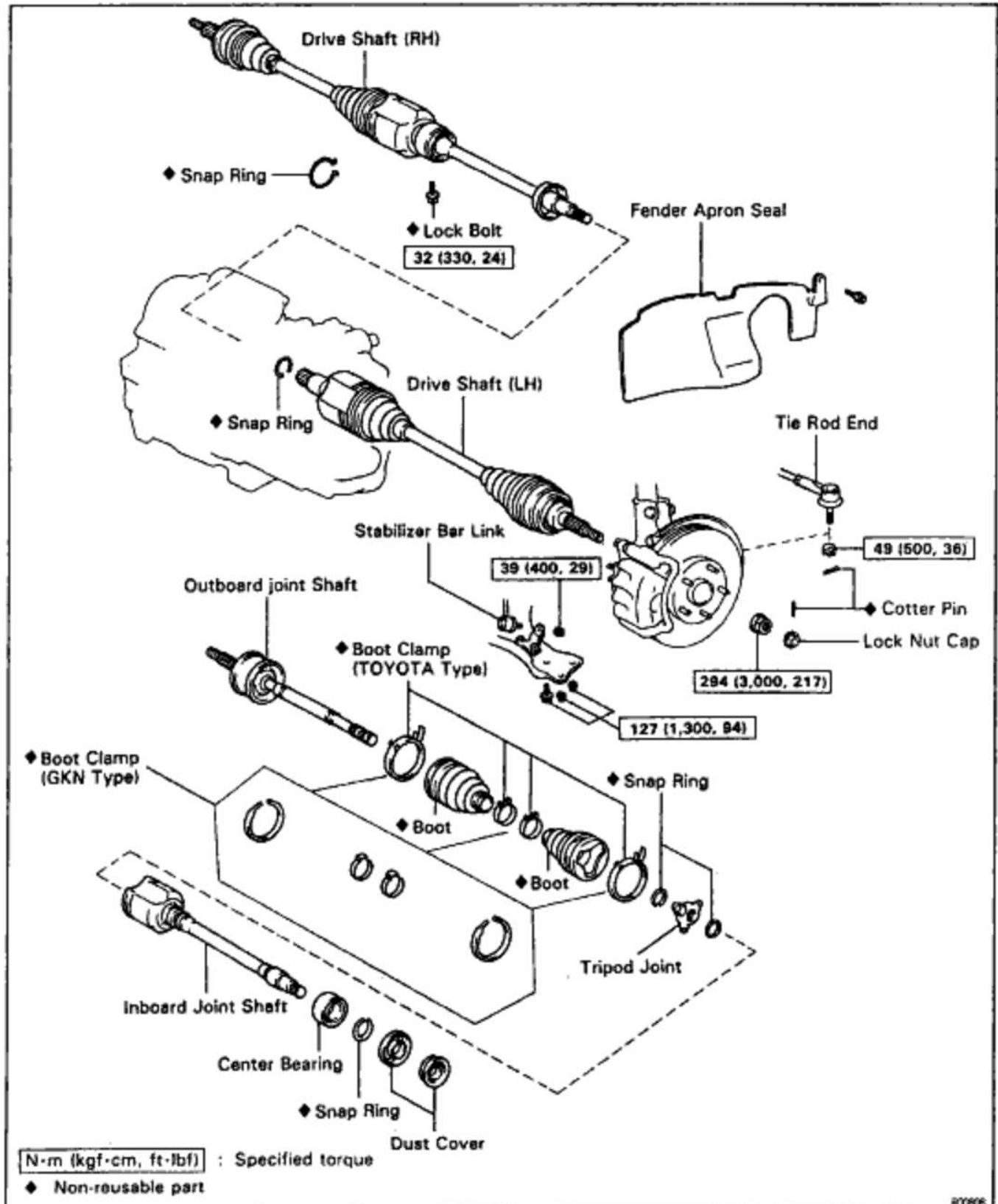
EQUIPMENT

Torque wrench	
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Correction for Pub. No. RM361U2, December 1993.

FRONT DRIVE SHAFT COMPONENTS

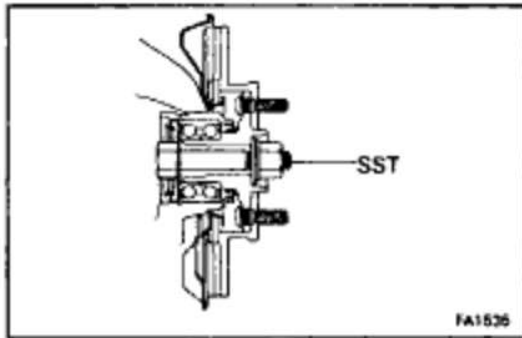
SABJ-81



R00806

SA-38

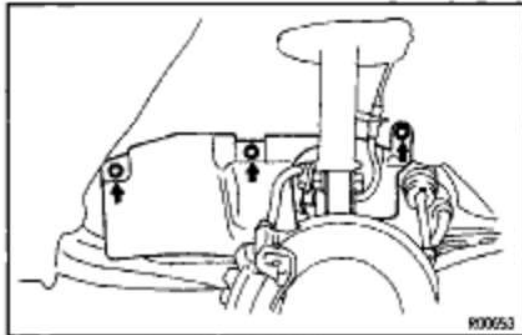
SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)



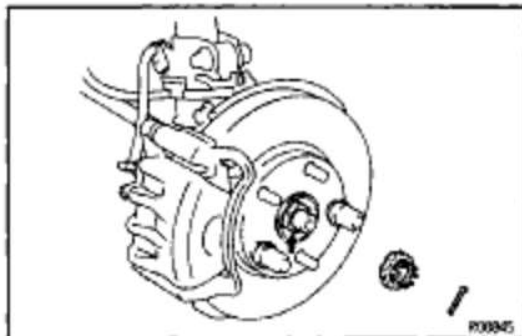
FRONT DRIVE SHAFT REMOVAL

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

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

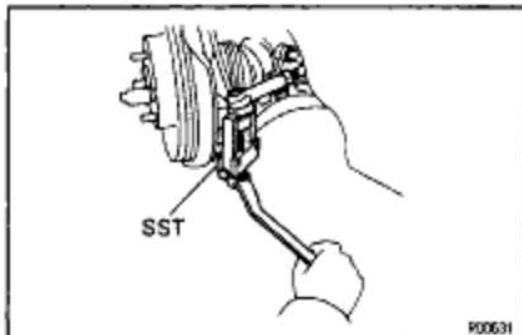


1. REMOVE FRONT FENDER APRON SEAL



2. REMOVE COTTER PIN, LOCK NUT CAP AND LOCK NUT

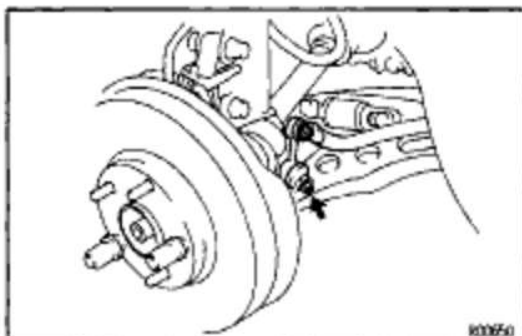
- (a) Remove the cotter pin and lock nut cap.
- (b) Loosen the bearing lock nut while depressing the brake pedal.



3. DRAIN TRANSAXLE OIL

4. 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



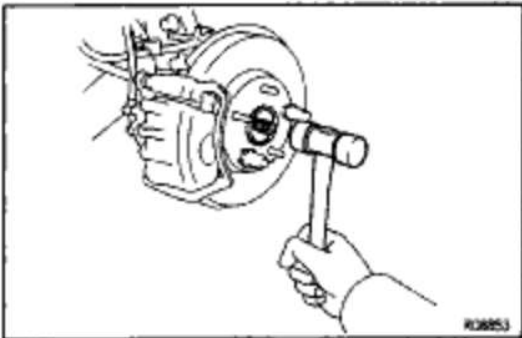
5. DISCONNECT STABILIZER BAR LINK FROM LOWER ARM

Remove the nut and disconnect the stabilizer bar link from lower arm.



6. DISCONNECT STEERING KNUCKLE FROM LOWER BALL JOINT

- Remove the bolt and the 2 nuts.
- Disconnect the steering knuckle from lower ball joint.



7. DISCONNECT DRIVE SHAFT FROM AXLE HUB

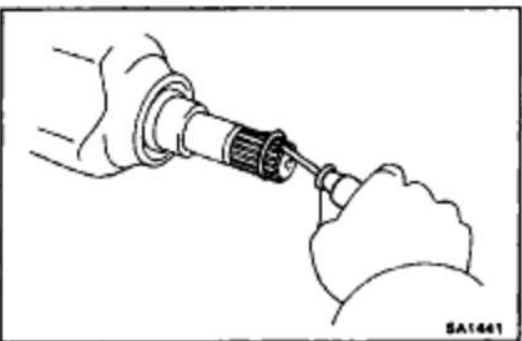
Using a plastic hammer, disconnect the drive shaft from the axle hub.

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

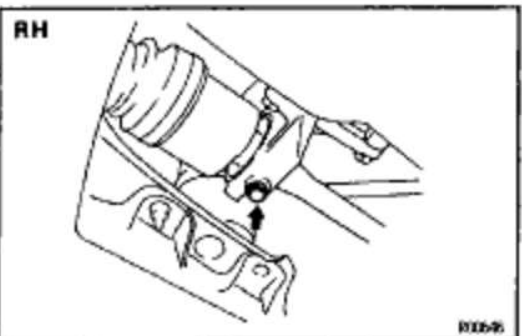


8. REMOVE LH DRIVE SHAFT

- Using hub nut wrench and hammer handle or an equivalent, pull out the drive shaft as shown.



- Using a screwdriver, remove the snap ring.

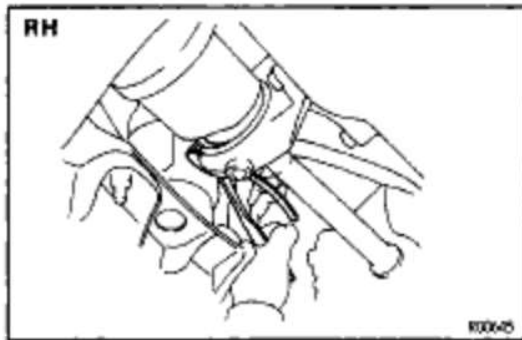


9. REMOVE RH DRIVE SHAFT

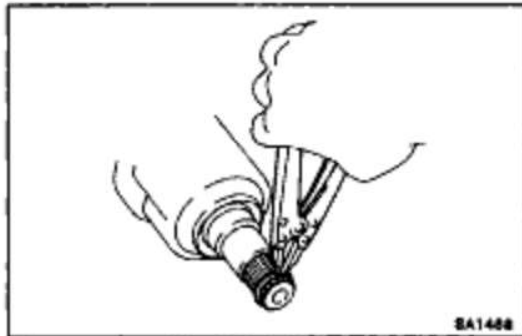
- Remove the bearing lock bolt.

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SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)



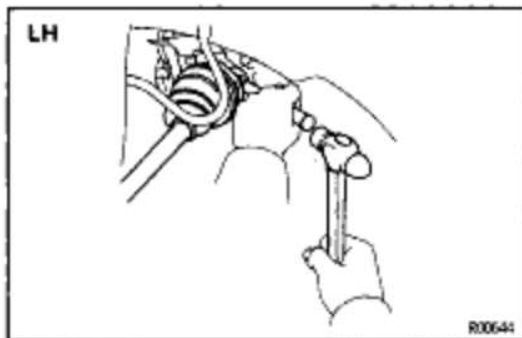
- (b) Using pliers, remove the snap ring, and pull out the drive shaft.



FRONT DRIVE SHAFT INSTALLATION

1. INSTALL LH DRIVE SHAFT

- (a) Using a snap ring expander, install a new snap ring.



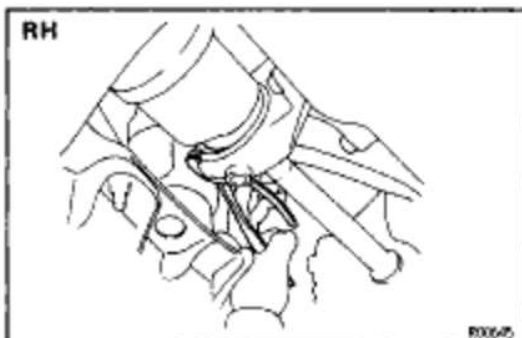
- (b) Coat gear oil to the inboard joint tulip and differential case sliding surface.
(c) Using a brass bar and hammer, tap in the drive shaft until it makes contact with the pinion shaft.

HINT:

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

2. CHECK INSTALLATION OF LH DRIVE SHAFT

- (a) Check that there is 2–3 mm (0.08–0.12 in.) of play in the axial direction.
(b) Check that the drive shaft can not be removed by hand.

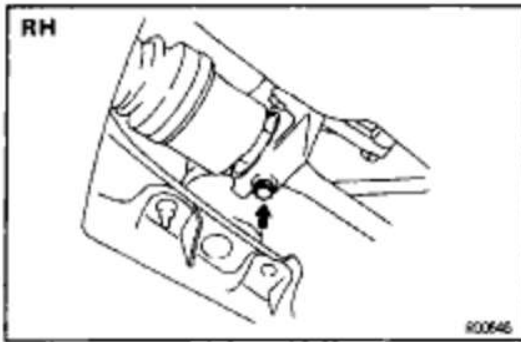


3. INSTALL RH DRIVE SHAFT

- (a) Coat gear oil to the inboard joint and differential sliding surface.
(b) Install the drive shaft to the transaxle through the bearing bracket.

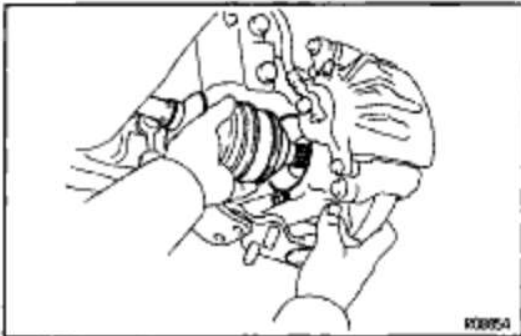
NOTICE: Do not damage the oil seal lip.

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



(d) Install a new bearing lock bolt and tighten it.

Torque: 32 N·m (330 kgf·cm, 24 ft·lbf)



4. CONNECT DRIVE SHAFT TO AXLE HUB

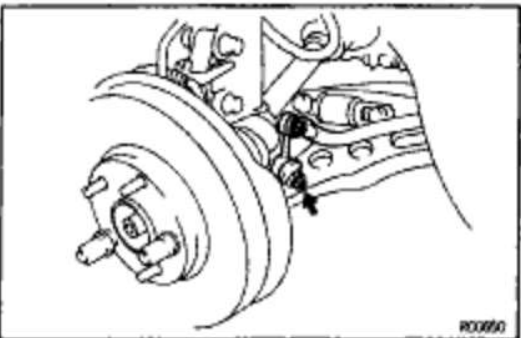
Install the outboard joint side of the drive shaft to the axle hub.

NOTICE: Do not damage the boot.



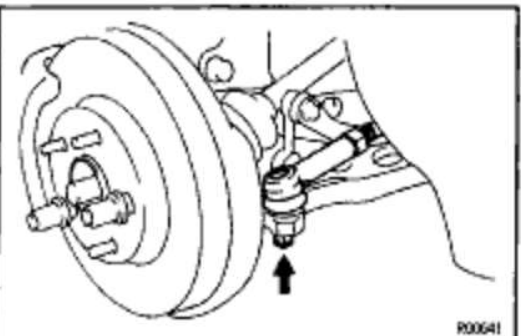
5. CONNECT STEERING KNUCKLE TO LOWER ARM

Torque: 127 N·m (1,300 kgf·cm, 94 ft·lbf)



6. CONNECT STABILIZER BAR LINK TO LOWER ARM

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)



7. CONNECT TIE ROD END TO STEERING KNUCKLE

(a) Connect the tie rod end to the steering knuckle and torque the nut.

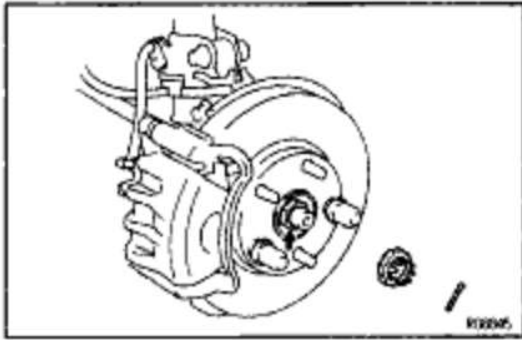
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

(b) Install a new cotter pin.

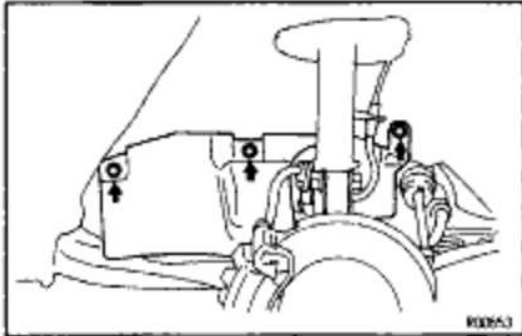
HINT: If the cotter pin hole does not line up, correct by tightening the nut by the smallest amount possible.

SA-42

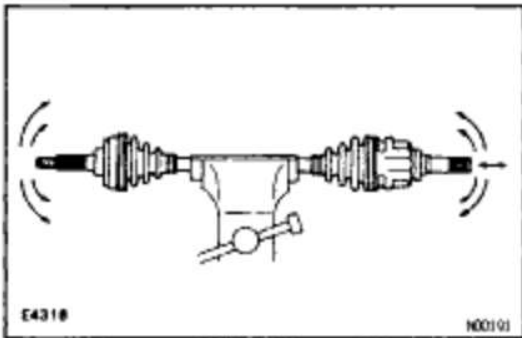
SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)

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

- (a) Install and torque the bearing lock nut.
Torque: 284 N·m (3,000 kgf·cm, 217 ft·lbf)
- (b) Install the lock nut cap and secure it with a new cotter pin.



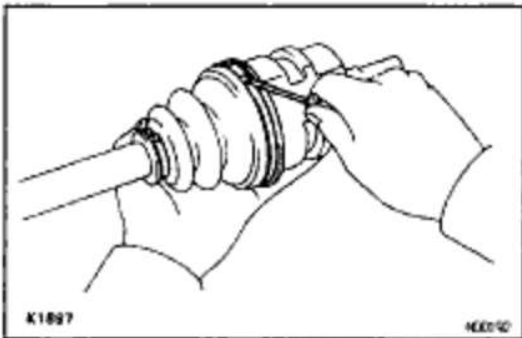
- 9. FILL TRANSAXLE WITH FLUID**
- 10. INSTALL FRONT FENDER APRON SEAL**
- 11. CHECK FRONT WHEEL ALIGNMENT**

**FRONT DRIVE SHAFT DISASSEMBLY****1. CHECK DRIVE SHAFT**

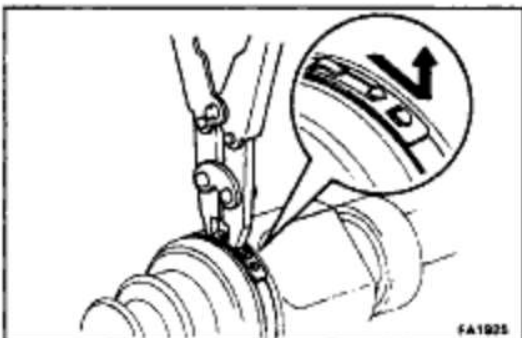
- (a) Check to see that there is no play in the outboard joint.
- (b) Check to see that the inboard joint slides smoothly in the thrust direction.
- (c) Check to see that there is not significant play in the radial direction of the inboard joint.
- (d) Check for damage to boots.

2. TOYOTA TYPE:**REMOVE INBOARD AND OUTBOARD JOINT BOOT CLAMPS**

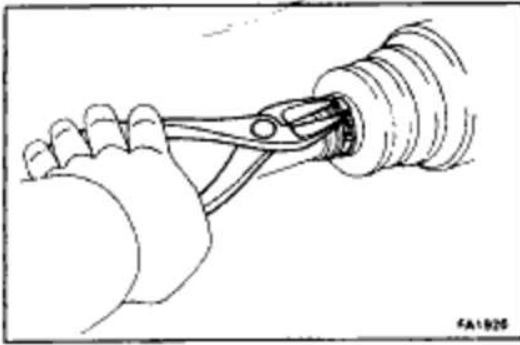
- (a) Using a screwdriver, remove the 4 boot clamps.
- (b) Slide the inboard joint boot toward the outboard joint.

**GKN TYPE:****REMOVE INBOARD AND OUTBOARD JOINT BOOT CLAMPS**

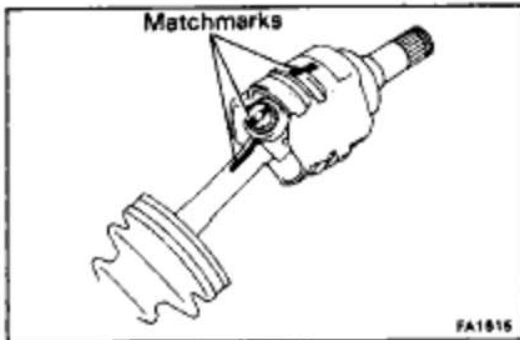
- (a) Using a boot clamp tool, draw hooks together and remove the 2 large clamps.



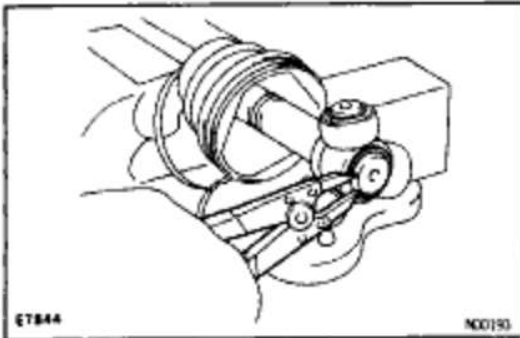
SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)



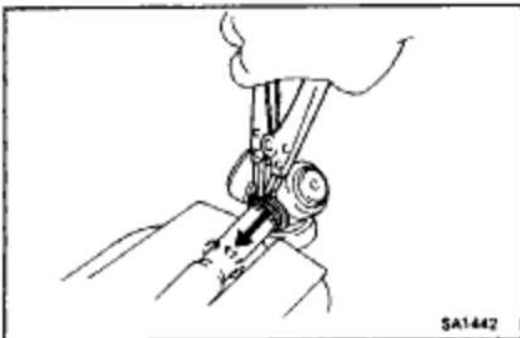
- (b) Using side cutters, cut small boot clamp and remove them.
 (c) Slide the inboard joint toward the outboard joint.

**3. DISASSEMBLE INBOARD JOINT TULIP**

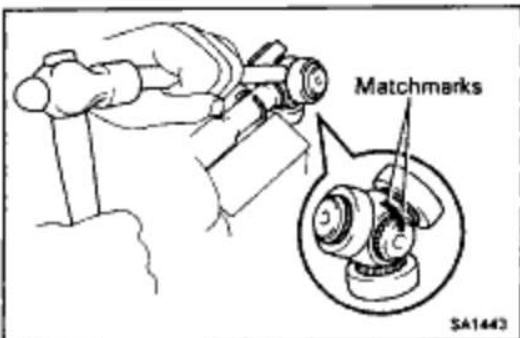
- (a) Place matchmarks on the tripod and inboard joint tulip or center drive shaft.
NOTICE: Do not punch the marks.
 (b) Remove the inboard joint tulip or center drive shaft from the drive shaft.

**4. REMOVE TRIPOD JOINT**

- (a) Using a snap ring expander remove the snap ring.



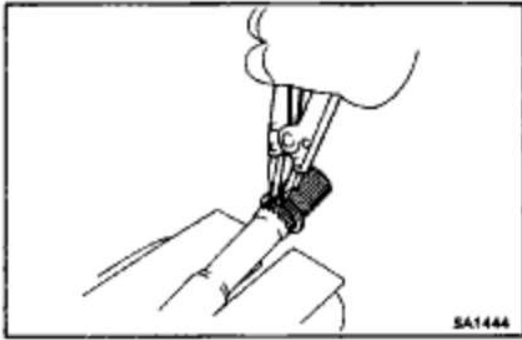
- (b) Using a snap ring expander, temporarily, slide the snap ring toward the outboard joint side.



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

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SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)

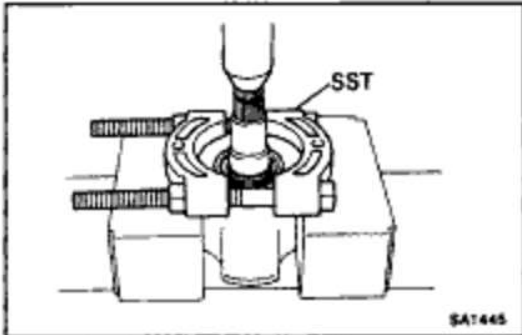


(e) Using a snap ring expander, remove the snap ring.

5. REMOVE INBOARD AND OUTBOARD JOINT BOOTS

Slide out the two boots.

NOTICE: Do not disassemble the outboard joint.

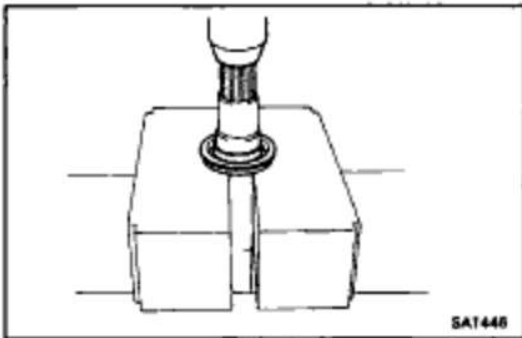


6. REMOVE DUST COVER

LH Drive Shaft:

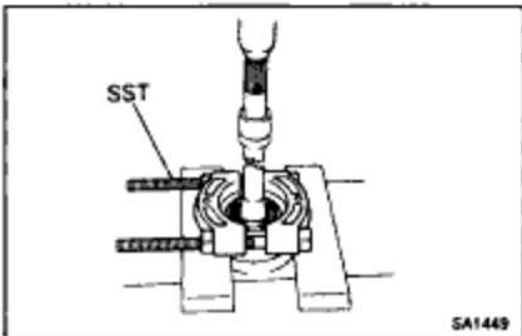
Using SST and a press, press out the dust cover from the inboard joint tulip.

SST 09950-00020



RH Drive Shaft:

Using a press, press out the dust cover from the center drive shaft.

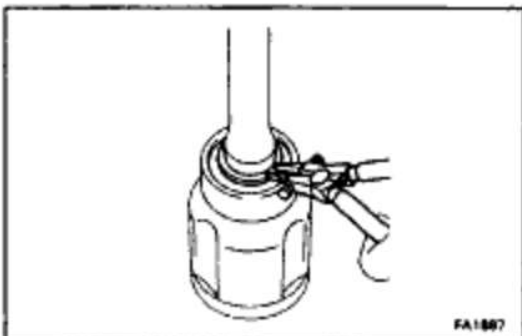


7. RH DRIVE SHAFT:

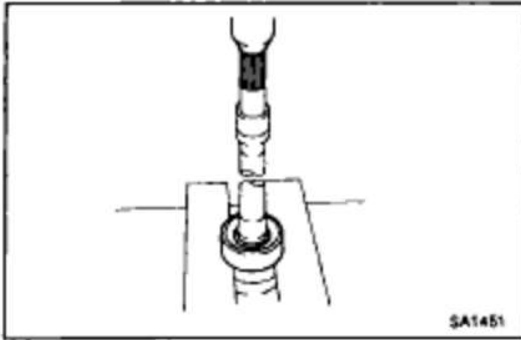
DISASSEMBLE CENTER DRIVE SHAFT

(a) Using SST and a press, press out the dust cover.

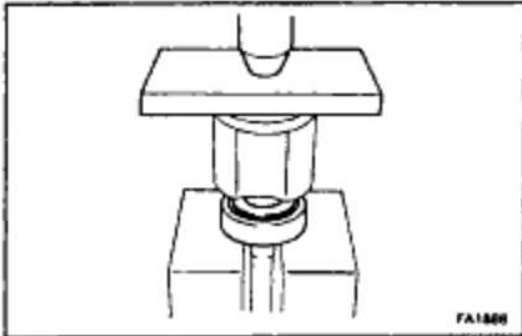
SST 09950-00020



(b) Using a snap ring expander, remove the snap ring.



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

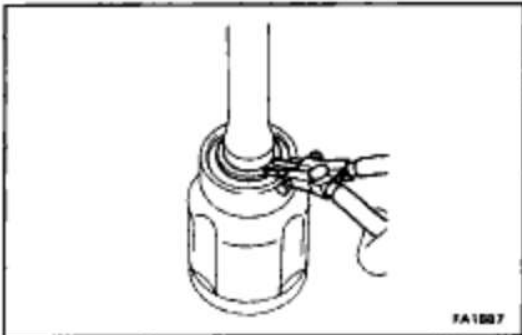


FRONT DRIVE SHAFT ASSEMBLY

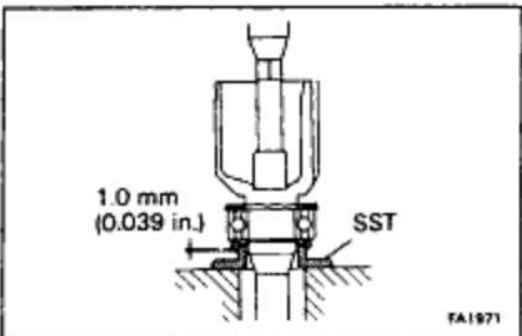
1. RH DRIVE SHAFT:

ASSEMBLE CENTER DRIVE SHAFT

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



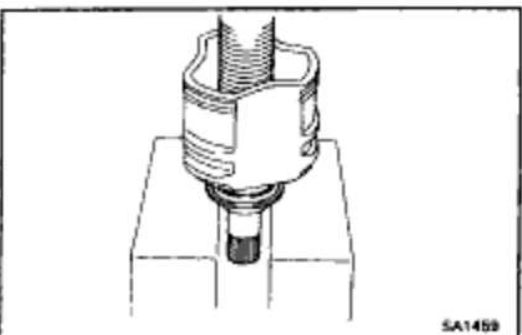
- (c) Using a snap ring expander, install a new snap ring.



- (d) Using SST, an extension bar and press, press in a new dust cover.

SST 09506 – 35010

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



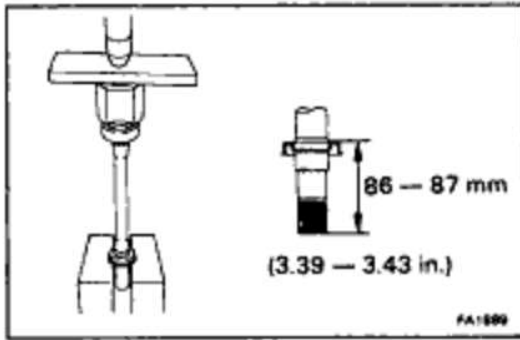
2. INSTALL DUST COVER

LH Drive Shaft:

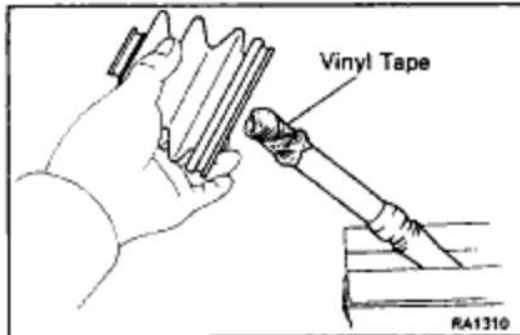
Using a press, install a new dust cover.

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SUSPENSION AND AXLE — FRONT DRIVE SHAFT(5S-FE)

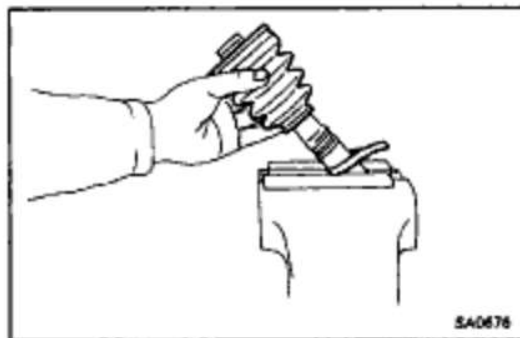
**RH Drive Shaft:**

Using a steel plate and press, press in a new dust cover until the distance from the tip of the center drive shaft to the dust cover falls within the specification as shown in the illustration.

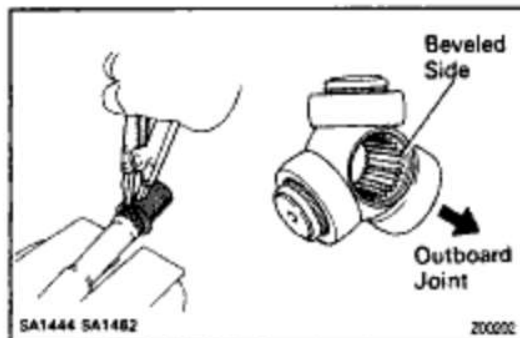
**3. TEMPORARILY INSTALL OUTBOARD JOINT BOOT AND NEW BOOT CLAMPS**

Temporarily install the boot and 2 new boot clamps for the outboard joint to the drive shaft.

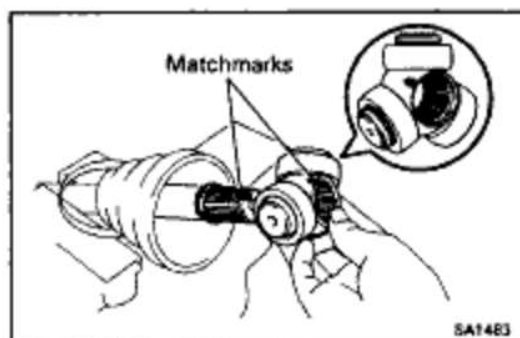
HINT: Before installing the boot, wrap vinyl tape around the spline of the drive shaft to prevent damaging the boot.

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

Temporarily install the boot and 2 new boot clamps for the inboard joint to the drive shaft.

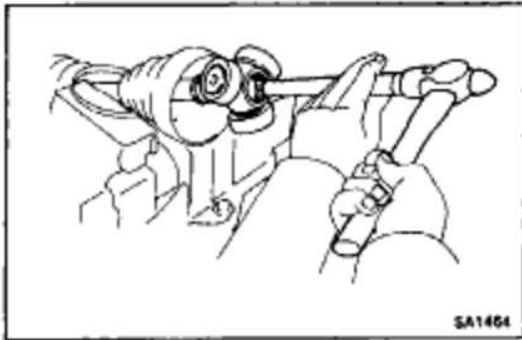
**5. INSTALL TRIPOD JOINT**

- Using a snap ring expander, install a new snap ring.
- Place the beveled side of the tripod joint axial spline toward the outboard joint.



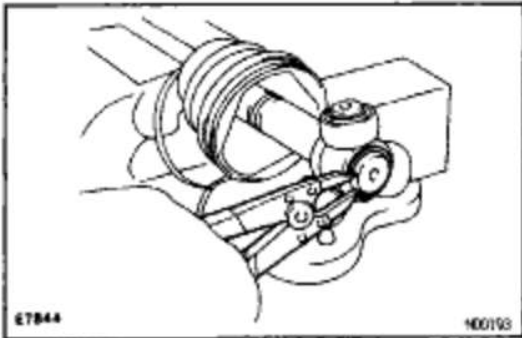
- Align the matchmarks placed before removal.

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)



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

NOTICE: Do not tap the roller.



- (e) Using a snap ring expander, install a new snap ring.



6. 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:

TOYOTA Type:

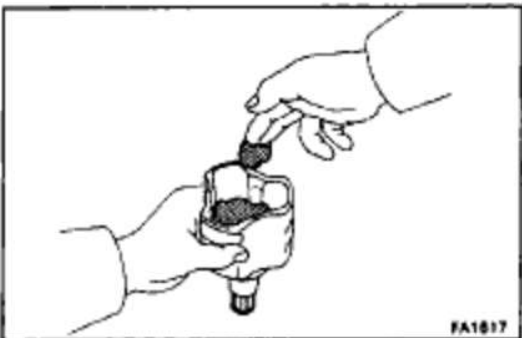
120–130 g (4.2–4.6 oz.)

GKN Type:

140–160 g (4.9–5.6 oz.)

Grease color:

Black



7. INSTALL INBOARD JOINT TULIP TO FRONT DRIVE SHAFT

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

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

Grease capacity:

TOYOTA Type:

232–242 g (8.2–8.5 oz.)

GKN Type:

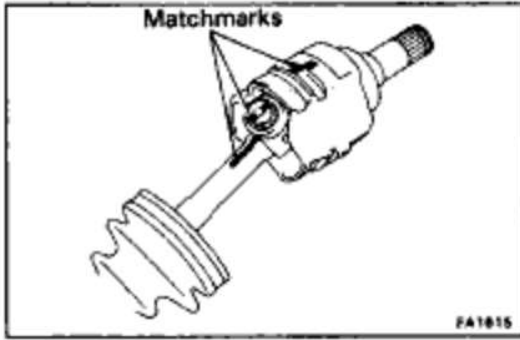
185–215 g (6.5–7.6 oz.)

Grease color:

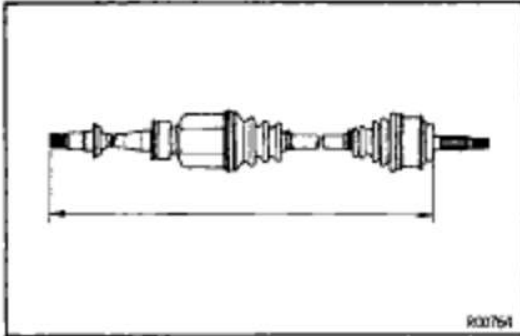
Yellow ochre

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SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)



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

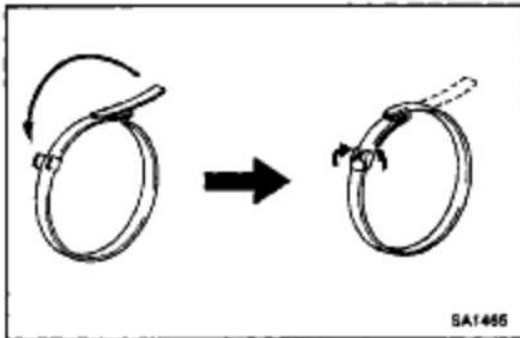
**S. TOYOTA TYPE:****ASSEMBLE BOOT CLAMPS TO BOTH BOOTS**

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

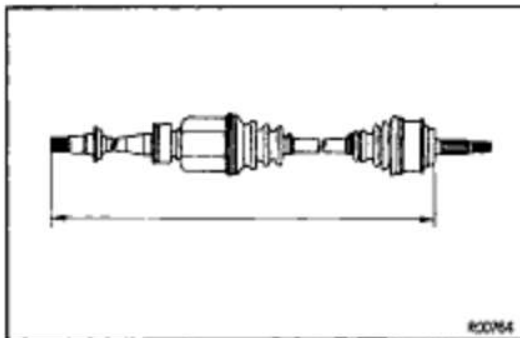
Drive shaft standard length:

LH 608.1 ±5.0 mm (23.941±0.197 in.)

RH 866.2±5.0 mm (34.102±0.197 in.)



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

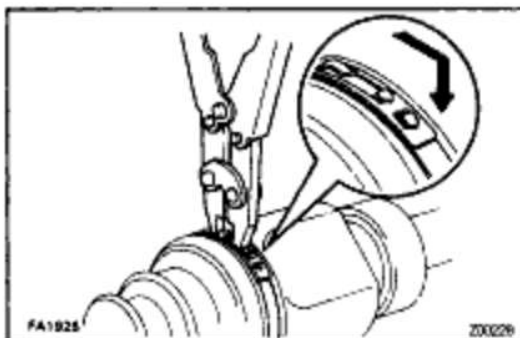
**GKN TYPE:****ASSEMBLE BOOT CLAMPS TO BOTH BOOT**

- (a) Be sure the boots are in the shaft groove.
- (b) Ensure that the boot is not stretched or contracted when the drive shaft is at standard length.

Drive shaft standard length:

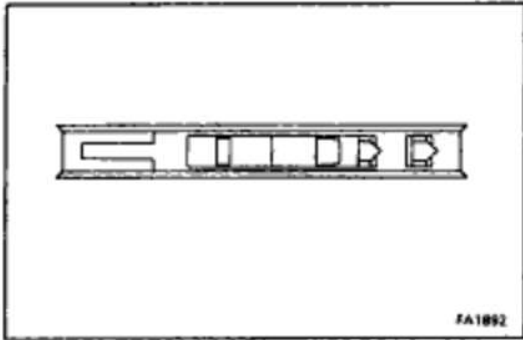
LH609Z±2.0 mm (23.984±0.079 in.)

RH 880.8±2.0 mm (34.677±0.079 in.)

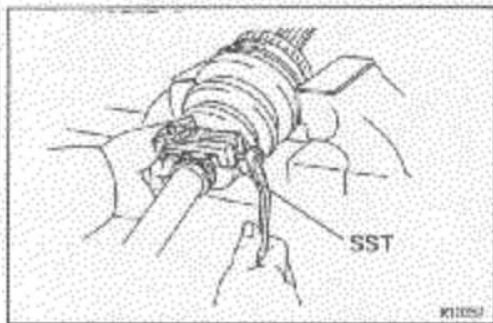


- (c) Using a boot clamp tool, place pincer jaws in closing hooks of large clamps.
- (d) Secure clamp by drawing closing hooks together.

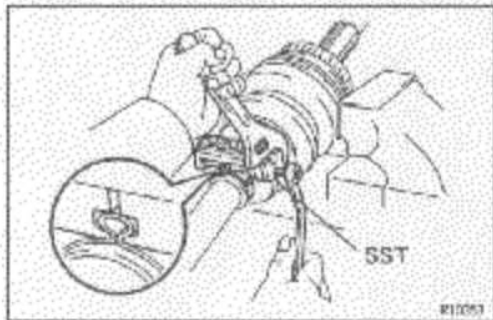
SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)



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

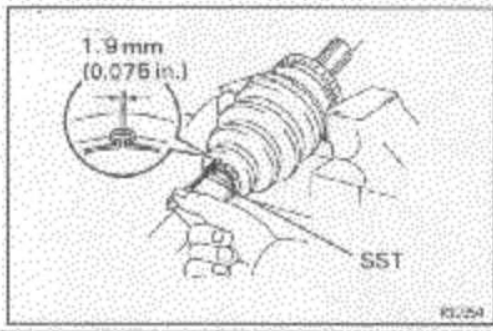


- (f) Secure the clamp onto the boot.
 (g) Place SST onto the clamp.
 SST 09521 – 24010



- (h) Tighten SST so that the clamp is pinched.
 HINT: Pinch the inboard side of the boot clamp, as shown in the illustration.

NOTICE: Do not overtighten the SST.



- (i) Using SST, adjust the clearance of the clamp.
 SST 09240 – 00020

Clearance:

1.9 mm (0.075 in.) or less

Corrected 12/27/93

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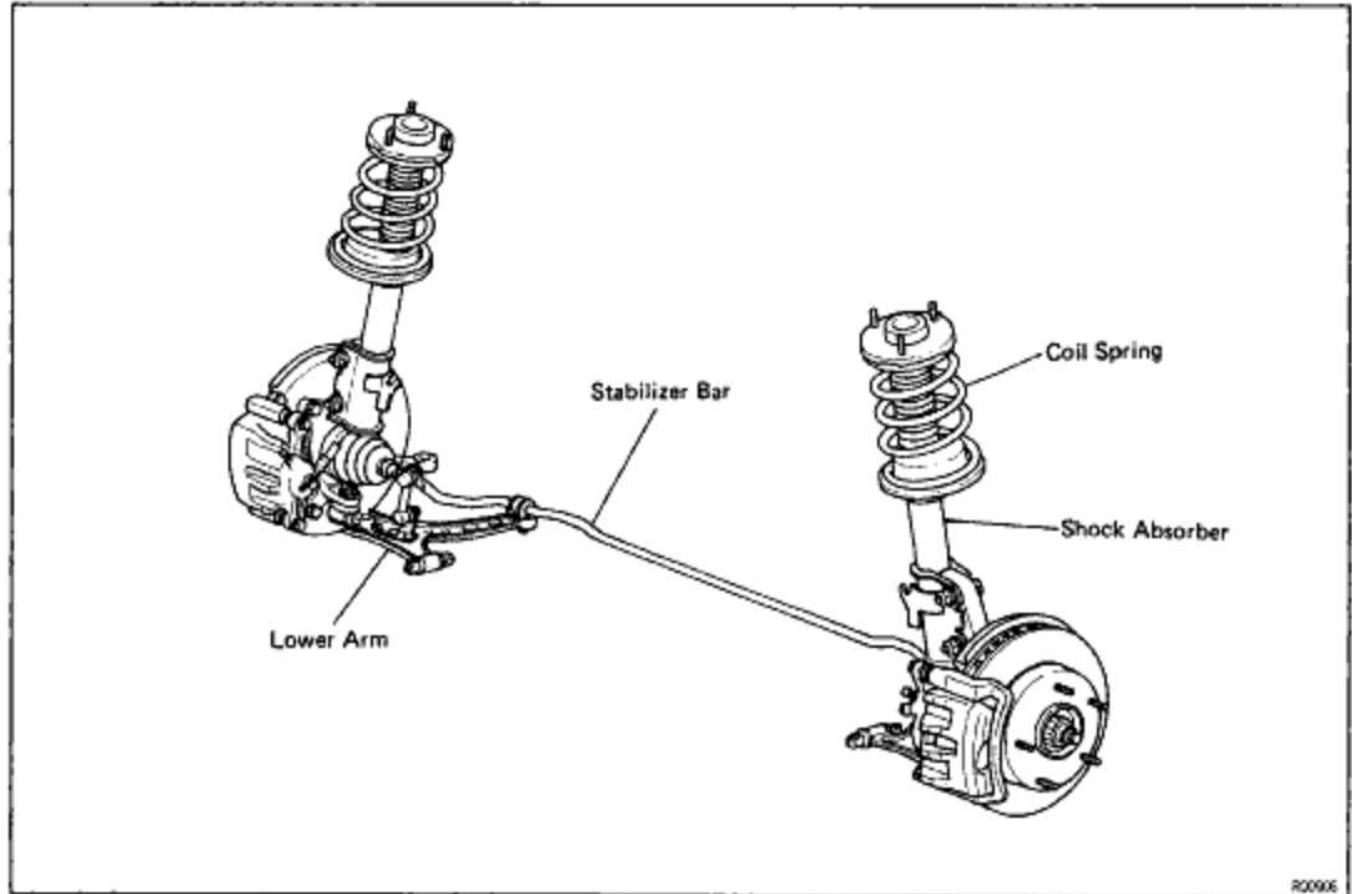
SUSPENSION AND AXLE — FRONT SUSPENSION

FRONT SUSPENSION

DESCRIPTION

The front suspension is MacPherson strut type suspension with L-shape lower arm.

MOP-01



R00906

PREPARATION

SST (SPECIAL SERVICE TOOLS)

SAZ03-01

	09316-60010 Transmission & Transfer Bearing Replacer	Dust deflector installation
	(09316-00010) Replacer Pipe	
	(09316-00040) Replacer 'C'	
	09608-32010 Steering Knuckle Oil Seal Replacer	Dust deflector installation
	09628-62011 Ball Joint Puller	
	09727-00045 Arm Set "B"	
	09727-30020 Coil Spring Compressor	
	09729-22031 Front Spring Upper Seat Holder	

SAZ04-01

RECOMMENDED TOOLS

	09025-00010 Small Torque Wrench	
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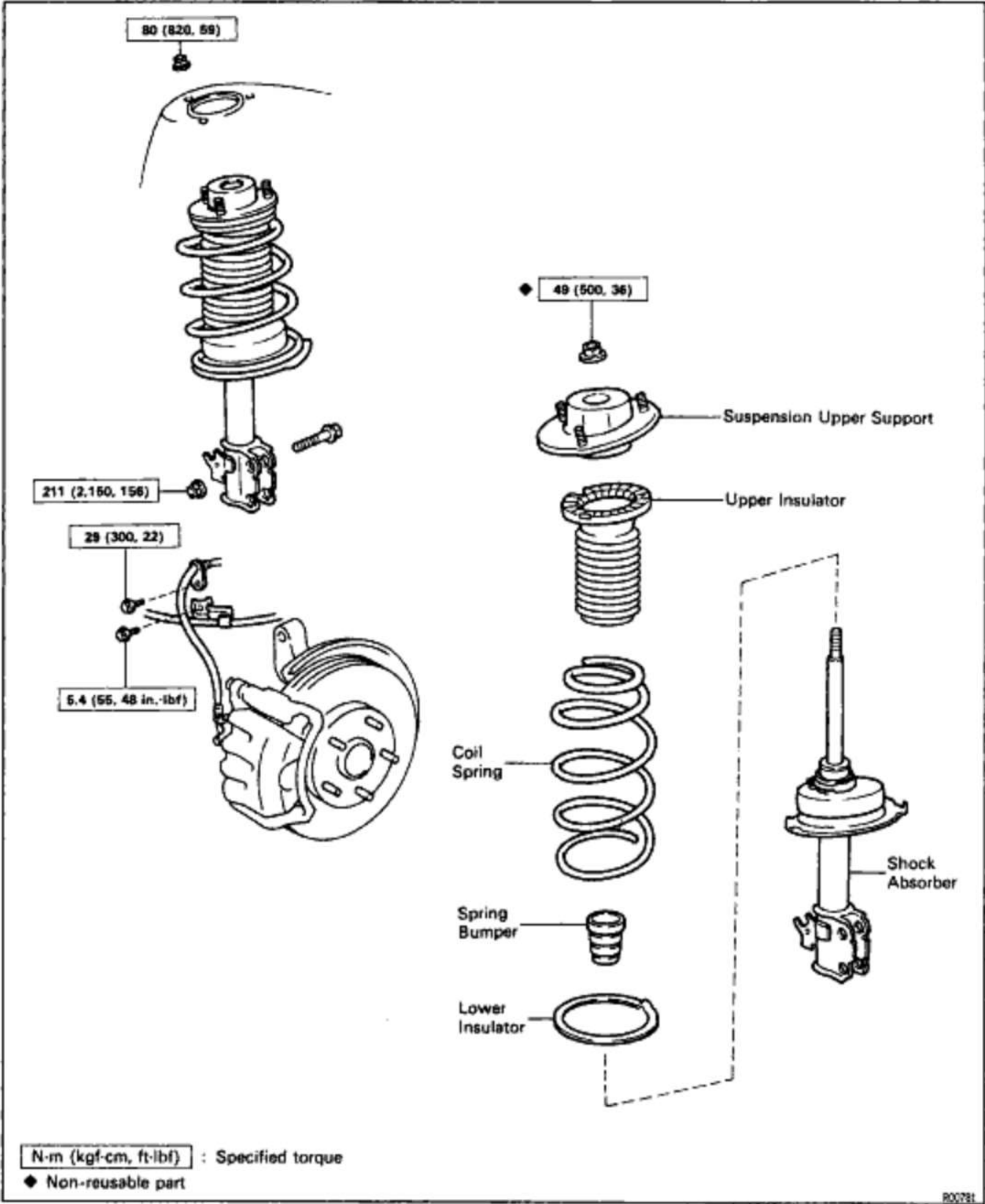
SAZ05-01

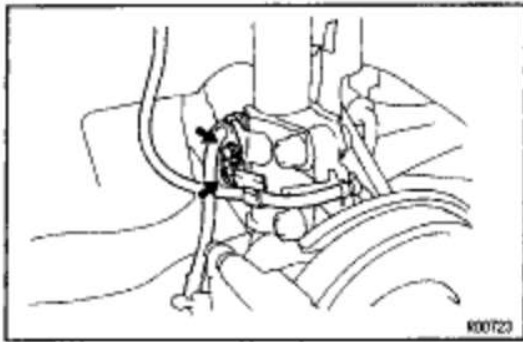
EQUIPMENT

Torque wrench	
---------------	--

FRONT SHOCK ABSORBER
COMPONENTS

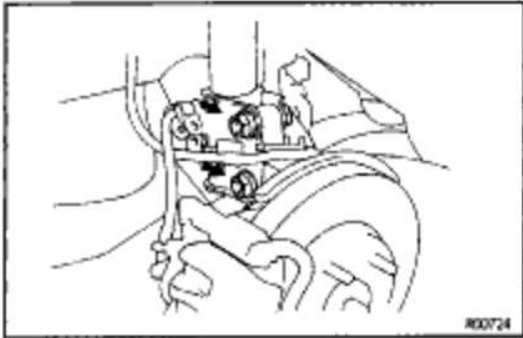
MMBT-01





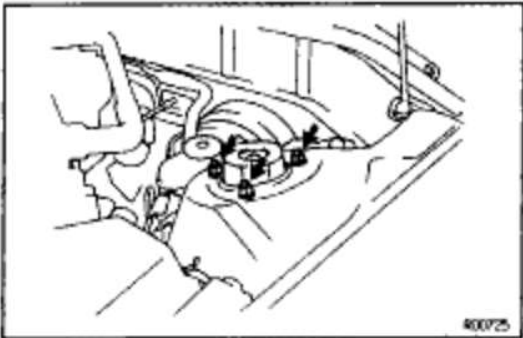
FRONT SHOCK ABSORBER REMOVAL

1. JACK UP VEHICLE AND REMOVE FRONT WHEEL
2. REMOVE BRAKE HOSE AND ABS SPEED SENSOR WIRE (W/ ABS) FROM SHOCK ABSORBER



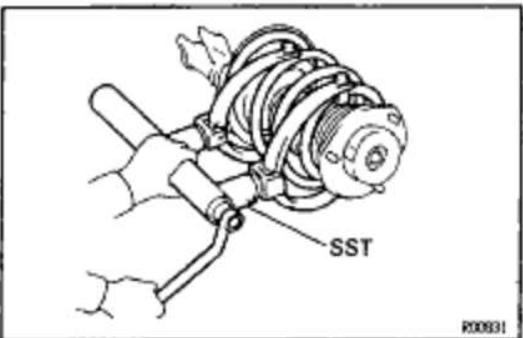
3. DISCONNECT SHOCK ABSORBER FROM STEERING KNUCKLE

Remove the 2 nuts and bolts and disconnect the shock absorber from the steering knuckle.



4. REMOVE SHOCK ABSORBER WITH COIL SPRING

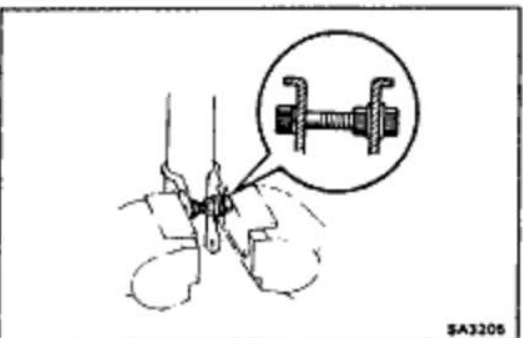
- (a) Remove the 3 nuts on upper side of the shock absorber.
- (b) Remove the shock absorber with coil spring.



5. REMOVE COIL SPRING

- (a) Using SST, compress the coil spring.
SST 09727-00045, 09727-30020

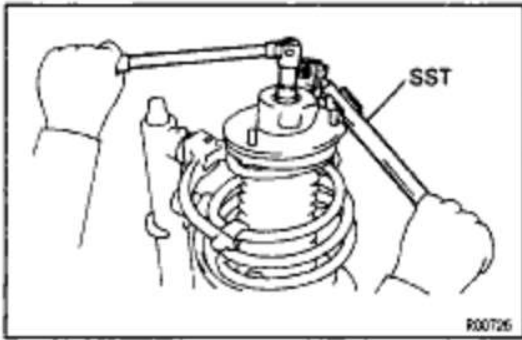
NOTICE: When holding the shock absorber with the coil spring removed, do not hold it by the spring lower seat. Also, do not knock the spring lower seat.



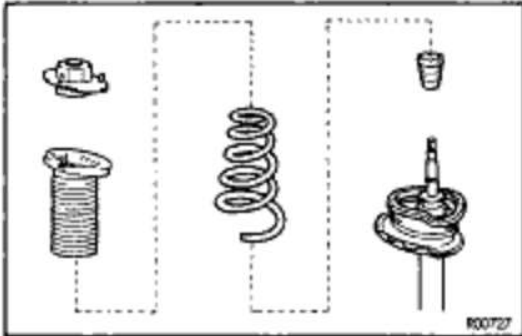
- (b) Install a bolt and 2 nuts to the bracket at the lower portion of the shock absorber and secure it in a vise.

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SUSPENSION AND AXLE – FRONT SUSPENSION

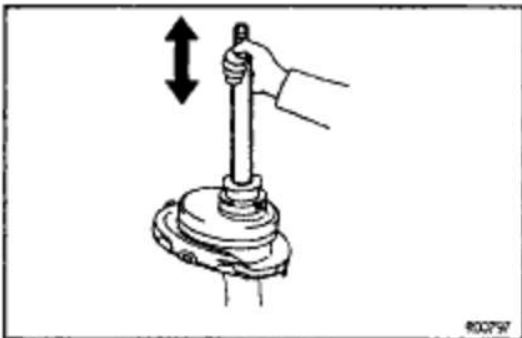


- (c) Using SST to hold the upper support remove the nut.
SST 09729-22031



- (d) Remove the following parts.
- Suspension upper support
 - Upper insulator
 - Coil spring
 - Spring bumper
 - Lower insulator

NOTICE: Do not disassemble the spring lower seat.



FRONT SHOCK ABSORBER INSPECTION

1. INSPECT SHOCK ABSORBER

Compress and extend the shock absorber rod and check that there is no abnormal resistance or unusual operation sounds.

If there is any abnormality, replace the shock absorber with a new one.

NOTICE: When discarding the shock absorber, use the following procedure.

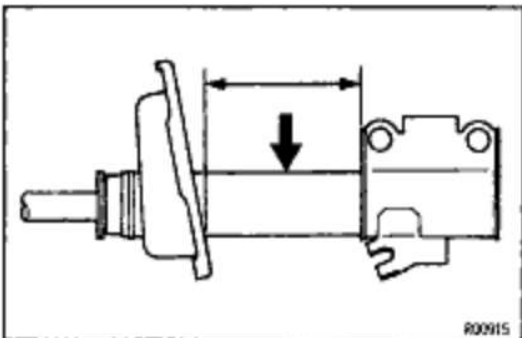
FRONT SHOCK ABSORBER DISPOSAL

1. FULLY EXTEND SHOCK ABSORBER ROD

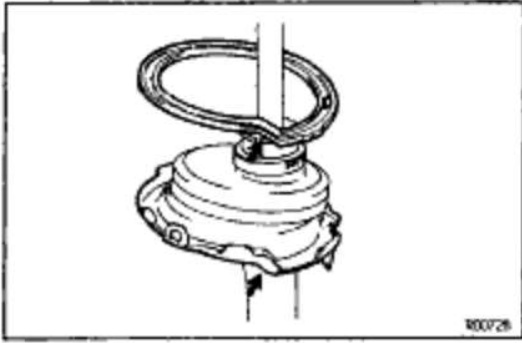
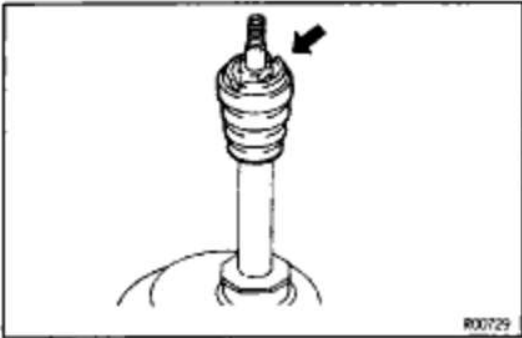
2. DRILL HOLE TO REMOVE GAS FROM CYLINDER

Using a drill, make a hole in the cylinder as shown to remove the gas inside.

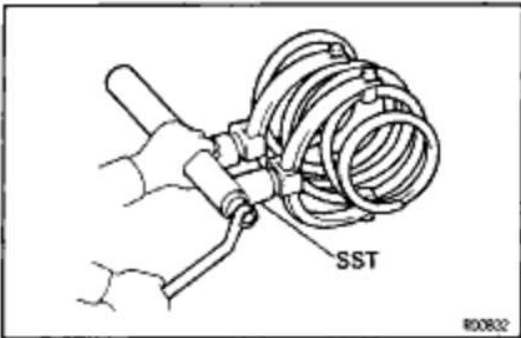
CAUTION: The gas coming out is harmless, but be careful of chips which may fly up when drilling.



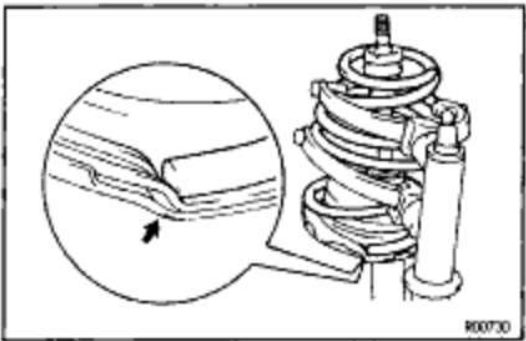
SUSPENSION AND AXLE – FRONT SUSPENSION

FRONT SHOCK ABSORBER INSTALLATION**7. INSTALL LOWER INSULATOR ONTO SHOCK ABSORBER****2. INSTALL SPRING BUMPER TO PISTON ROD****3. INSTALL COIL SPRING**

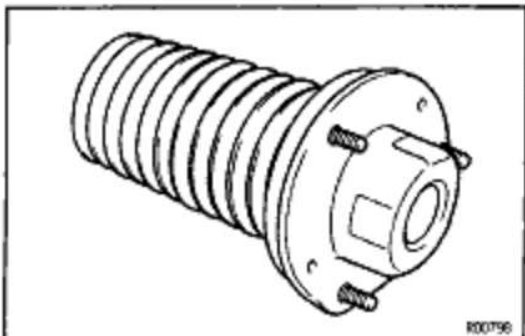
- (a) Using SST, compress the coil spring.
SST 09727-00045, 09727-30020



- (b) Install the coil spring to the shock absorber.
HINT: Fit the lower end of the coil spring into the gap of the lower seat.

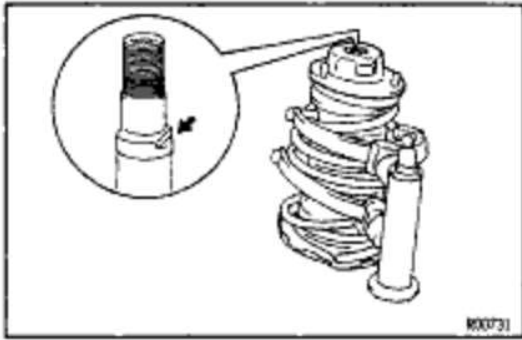
**4. INSTALL UPPER INSULATOR AND UPPER SUPPORT**

- (a) Install the upper insulator to the upper support.

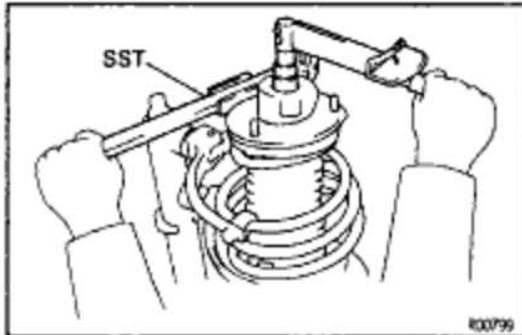


SA-56

SUSPENSION AND AXLE – FRONT SUSPENSION

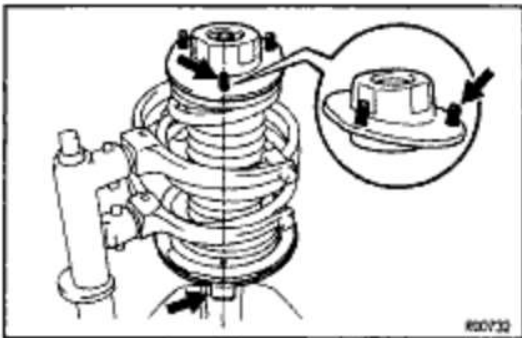


(b) Install the upper support to the piston rod.



(c) Using SST to hold the upper support, install a new nut.
SST 09729-20031

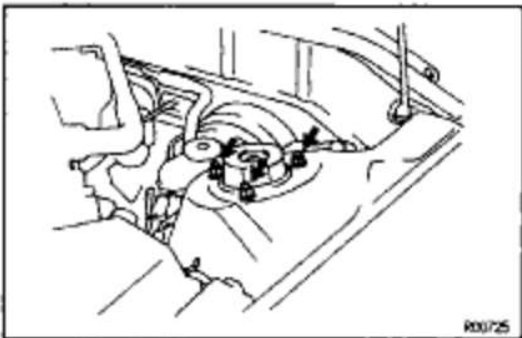
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)



(d) Rotate the upper support so that the lowest bolt on the upper support is aligned with the projection part of the spring lower seat shown in the illustration.

(e) Remove the SST.

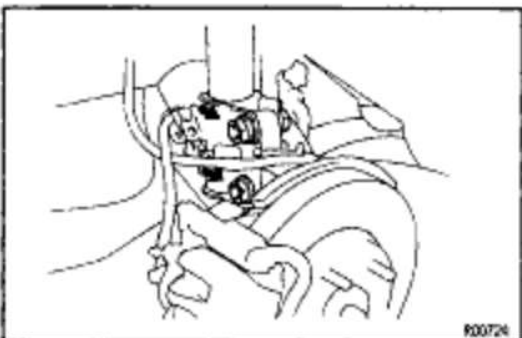
HINT: After removing SST, again check the direction of the upper support.



5. INSTALL SHOCK ABSORBER WITH COIL SPRING

Place the shock absorber and install the 3 nuts.

Torque: 80 N·m (820 kgf·cm, 59 ft·lbf)

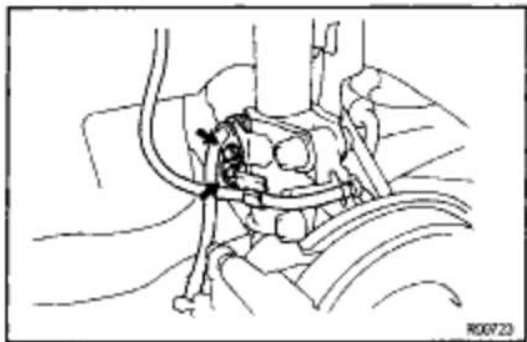


6. CONNECT SHOCK ABSORBER TO STEERING KNUCKLE

(a) Coat the threads of the nuts with engine oil.

(b) Install the 2 bolts and nuts.

Torque: 211 N·m (2,150 kgf·cm, 156 ft·lbf)

**7. INSTALL BRAKE HOSE AND ABS SPEED SENSOR WIRE (W/ ABS) TO SHOCK ABSORBER****Brake hose**

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

ABS wire

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)

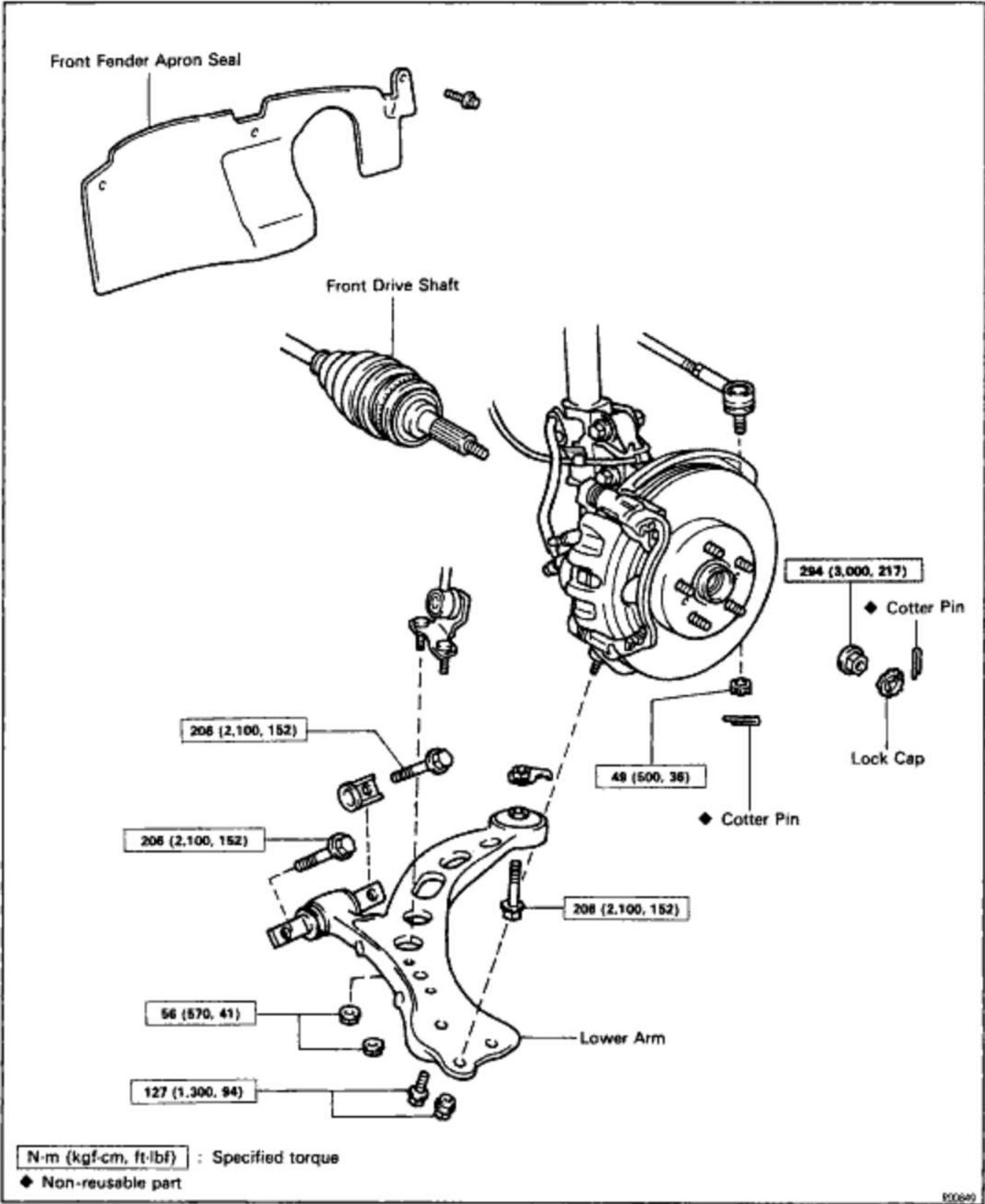
8. INSTALL FRONT WHEEL AND LOWER VEHICLE

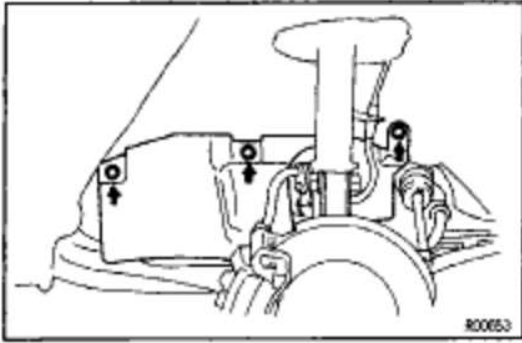
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

9. INSPECT FRONT WHEEL ALIGNMENT(See page [SA-4](#))

LOWER SUSPENSION ARM
COMPONENTS

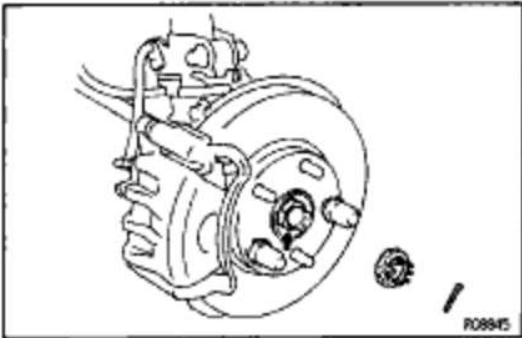
SA58W-31





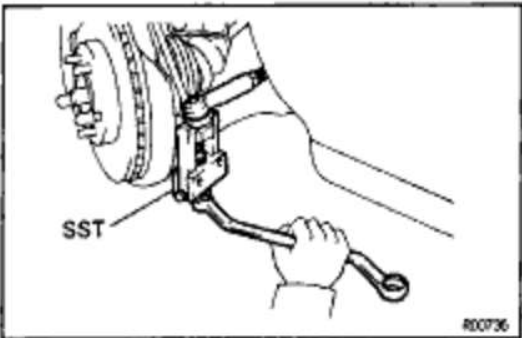
LOWER ARM REMOVAL

1. JACK UP VEHICLE AND REMOVE FRONT WHEEL
2. REMOVE FRONT FENDER APRON SEAL



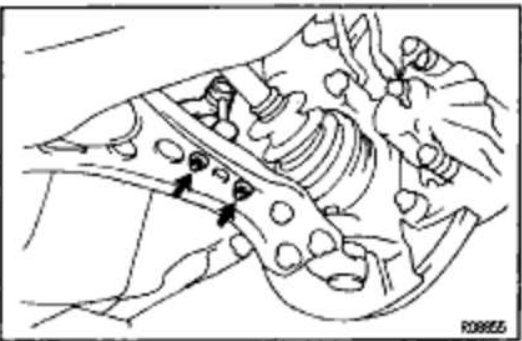
3. REMOVE DRIVE SHAFT LOCK NUT

- (a) Remove the cotter pin and lock cap.
- (b) While applying the brakes, remove the nut.



4. DISCONNECT TIE ROD END FROM STEERING KNUCKLE

- (a) Remove the cotter pin and remove the nut.
 - (b) Using SST, disconnect the tie rod end from the steering knuckle.
- SST 09628-62011



5. REMOVE LEFT AND RIGHT STABILIZER END BRACKETS FROM LOWER ARMS

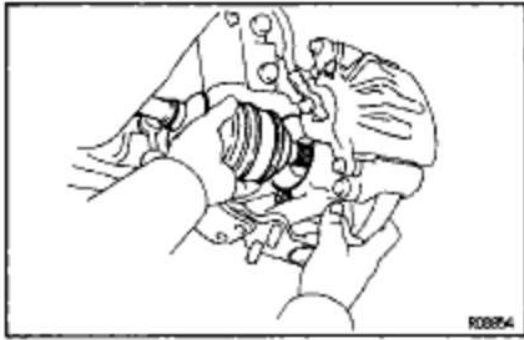


6. DISCONNECT LOWER ARM FROM LOWER BALL JOINT

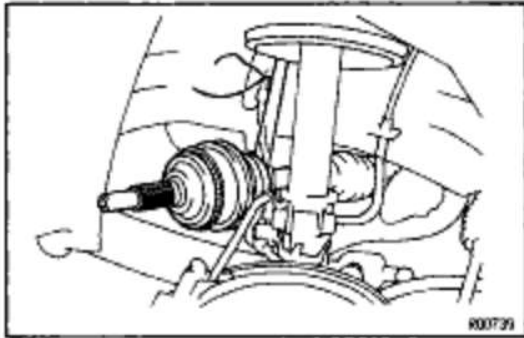
Remove the bolt and 2 nuts.

SA-60

SUSPENSION AND AXLE – FRONT SUSPENSION

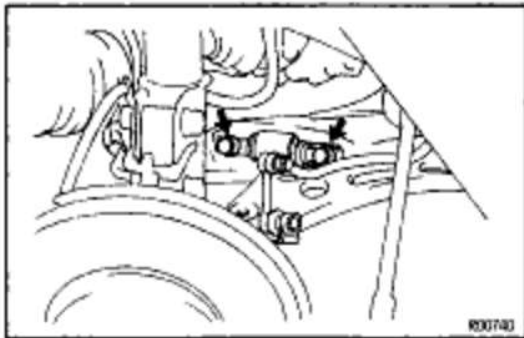
**7. REMOVE DRIVE SHAFT FROM AXLE HUB**

(a) Remove the drive shaft from the axle hub.

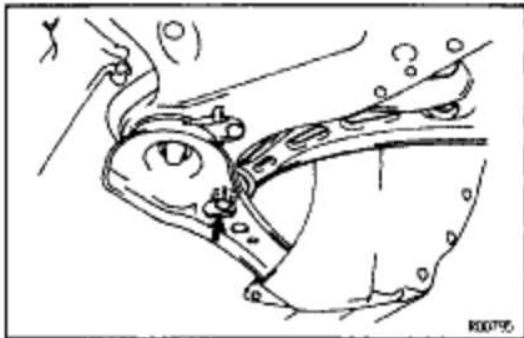


(b) Hang up the drive shaft using wire, etc.

NOTICE: Be careful not to damage the drive shaft boot and ABS sensor rotor.

**8. REMOVE LOWER ARM**

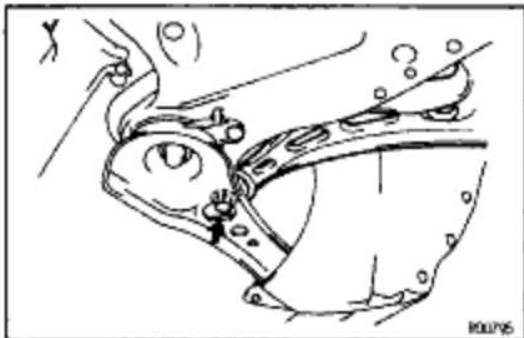
(a) Remove the 2 bolts on front side of the lower arm.



(b) Remove the bolt and nut on rear side of the lower arm.

(c) Remove the lower arm.

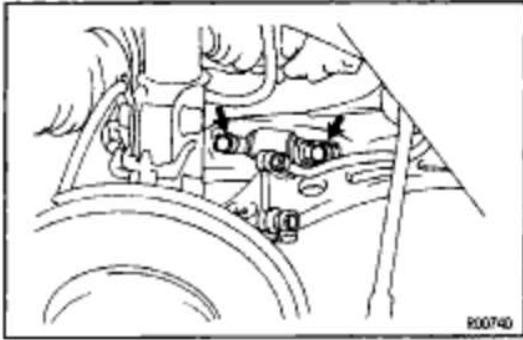
(d) Remove the lower arm bushing stopper from the lower arm shaft.

**LOWER ARM INSTALLATION****1. INSTALL LOWER ARM**

(a) Place the lower arm and temporarily install the rear side bolt and nut

SA-60

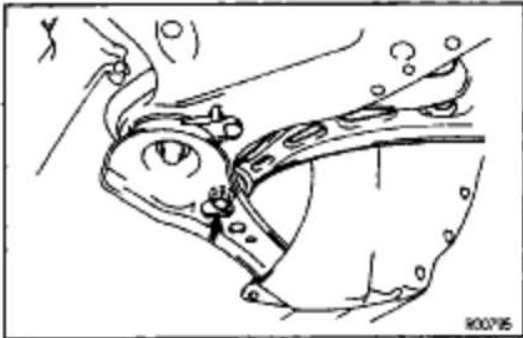
SUSPENSION AND AXLE – FRONT SUSPENSION



(b) Install the lower arm bushing stopper to the lower arm shaft.

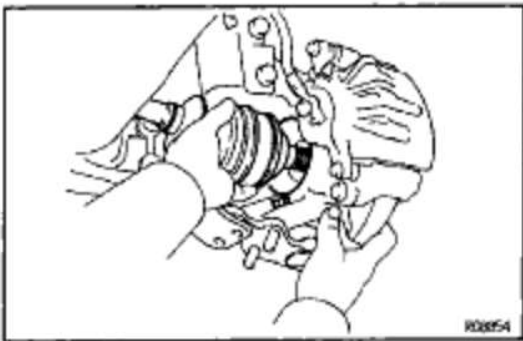
(c) Install the 2 bolts on the front side of the lower arm.

Torque: 206 N·m (2,100 kgf·cm, 152 ft·lbf)

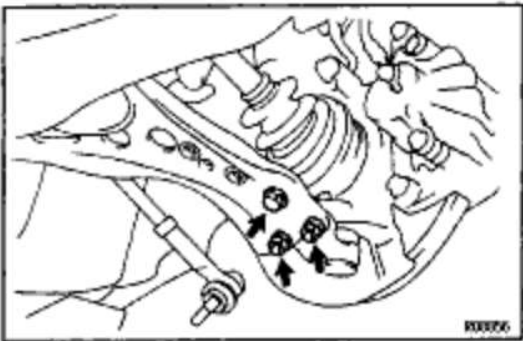


(d) Tighten the bolt on rear side of the lower arm.

Torque: 206 N·m (2,100 kgf·cm, 152 ft·lbf)



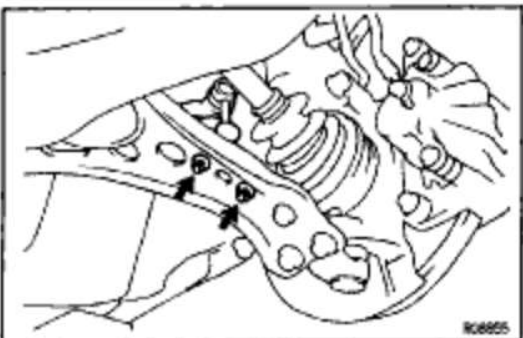
2. INSTALL DRIVE SHAFT TO AXLE HUB



3. CONNECT LOWER ARM TO LOWER BALL JOINT

Install the bolt and 2 nuts.

Torque: 127 N·m (1,300 kgf·cm, 94 ft·lbf)

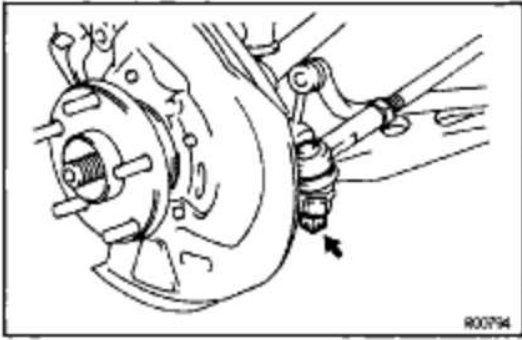


4. INSTALL LEFT AND RIGHT STABILIZER END BRACKETS TO LOWER ARMS

Torque: 56 N·m (570 kgf·cm, 41 ft·lbf)

SA-62

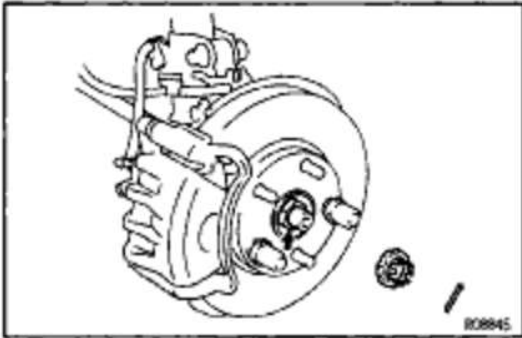
SUSPENSION AND AXLE – FRONT SUSPENSION

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

(a) Connect the tie rod end to the steering knuckle and tighten the nut.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

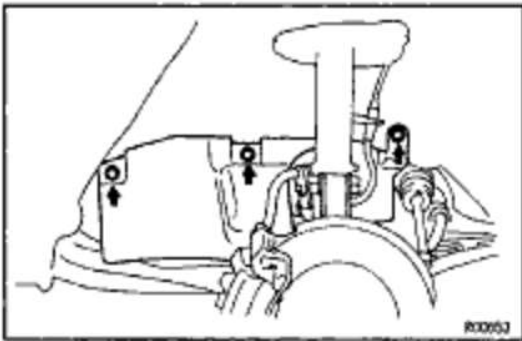
(b) Install a new cotter pin.

**6. INSTALL DRIVE SHAFT LOCK NUT**

(a) While applying the brakes, install the nut.

Torque: 294 N·m (3,000 kgf·cm, 217 ft·lbf)

(b) Install the lock cap and a new cotter pin.

**7. INSTALL FRONT FENDER APRON SEAL****8. INSTALL FRONT WHEEL AND LOWER VEHICLE**

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

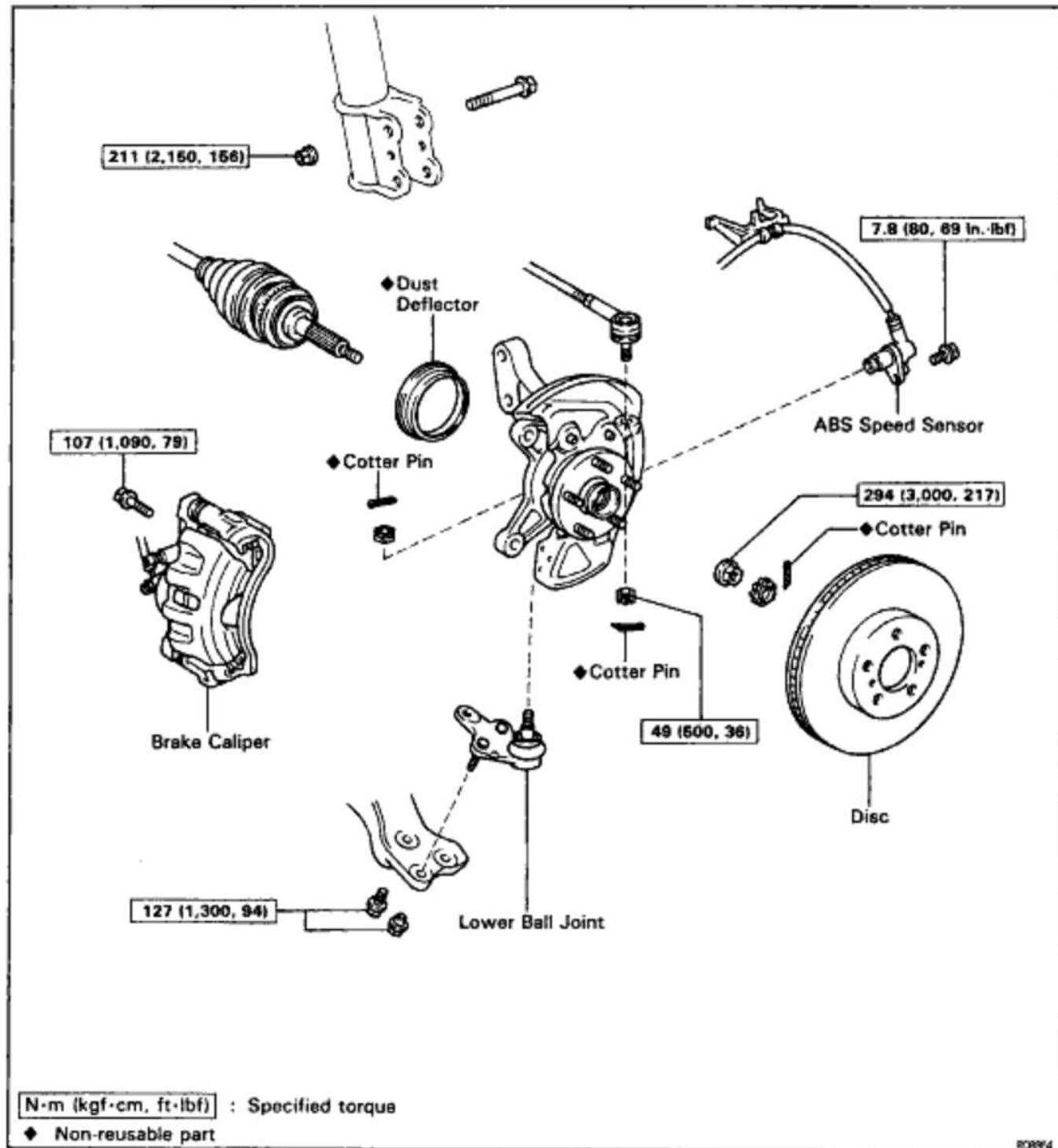
9. INSPECT FRONT WHEEL ALIGNMENT

(See page [SA-4](#))

SUSPENSION AND AXLE – FRONT SUSPENSION

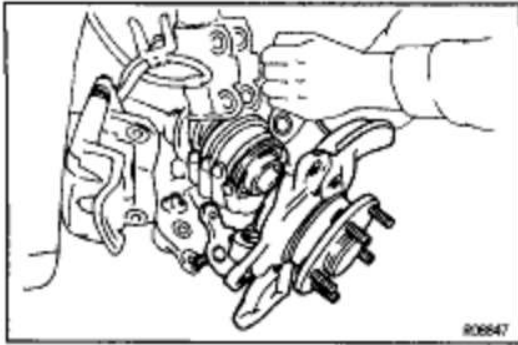
LOWER BALL JOINT COMPONENTS

64882-01



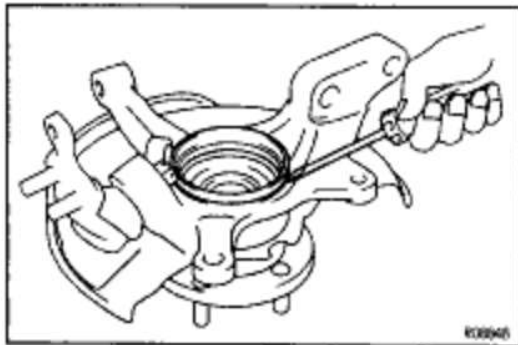
SA-64

SUSPENSION AND AXLE — FRONT SUSPENSION



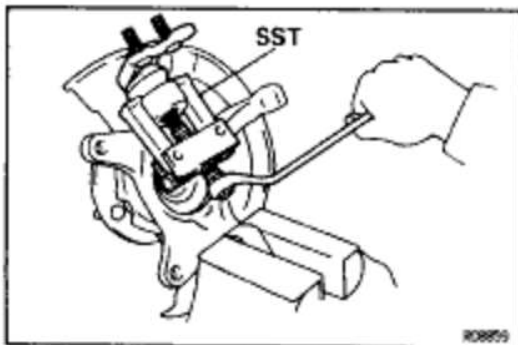
LOWER BALL JOINT REMOVAL

1. REMOVE STEERING KNUCKLE WITH AXLE HUB
(See page SA-11)



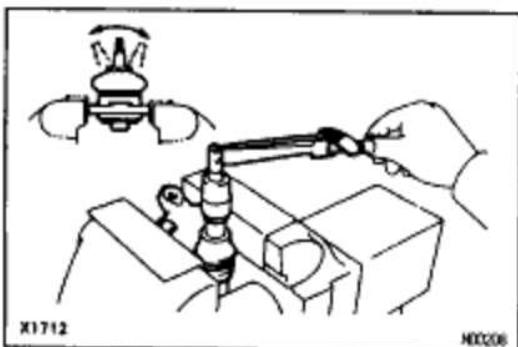
2. REMOVE LOWER BALL JOINT

(a) Using a screwdriver, remove the dust deflector.



(b) Remove the cotter pin and nut.

(c) Using SST, remove the lower ball joint.
SST 09628-62011



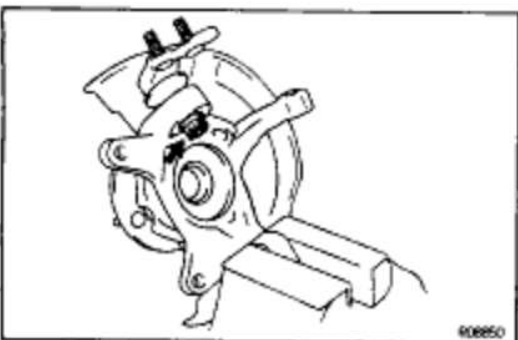
LOWER BALL JOINT INSPECTION

1. INSPECT BALL JOINT FOR ROTATION CONDITION

(a) As shown, flip the ball joint stud back and forth 5 times before installing the nut.
(b) Using a torque gauge, turn the nut continuously one turn per 2-4 seconds and take the torque reading on the 5th turn.

Turning torque:

1.0-2.9 N·m (10-30 kgf·cm, 8.7-26 in.·lbf)



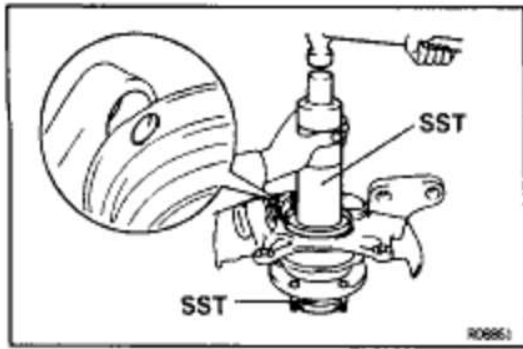
LOWER BALL JOINT INSTALLATION

1. INSTALL LOWER BALL JOINT

(a) Install the lower ball joint and tighten the nut.

Torque: 123 N·m (1,250 kgf·cm, 90 ft·lbf)

(b) Install a new cotter pin.

**2. INSTALL DUST DEFLECTOR**

Using SST and a hammer, install a new dust deflector.

SST 09316-60010 (09316-00010, 09316-00040)
09608-32010

HINT: Align the hoses for the ABS speed sensor in the dust deflector and steering knuckle.

3. INSTALL STEERING KNUCKLE WITH AXLE HUB

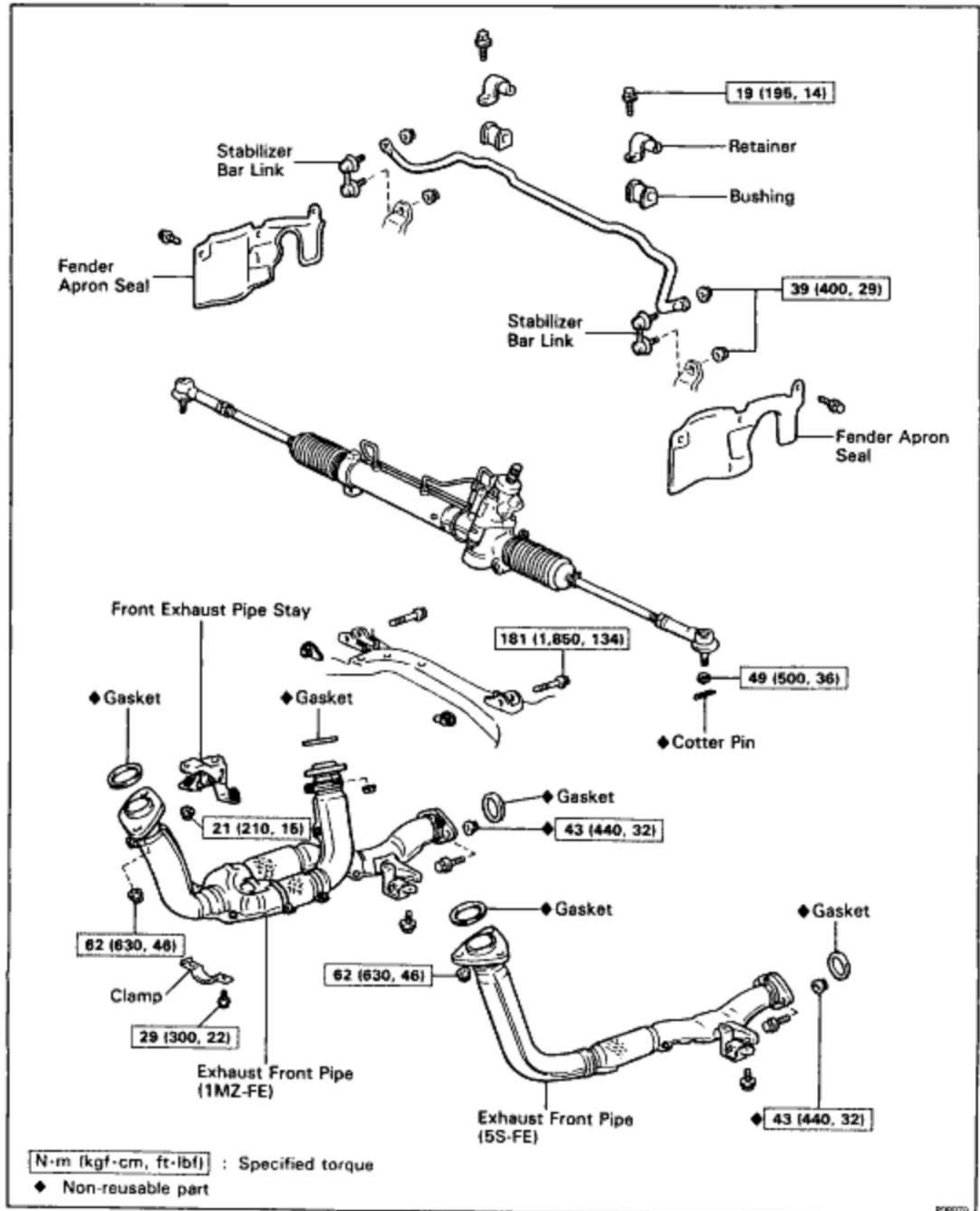
(See page [SA-15](#))

SA-66

SUSPENSION AND AXLE — FRONT SUSPENSION

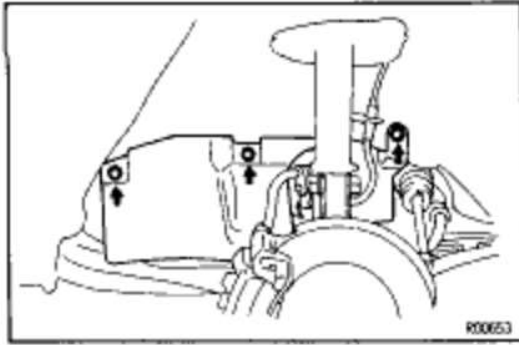
STABILIZER BAR COMPONENTS

AMBLE-51



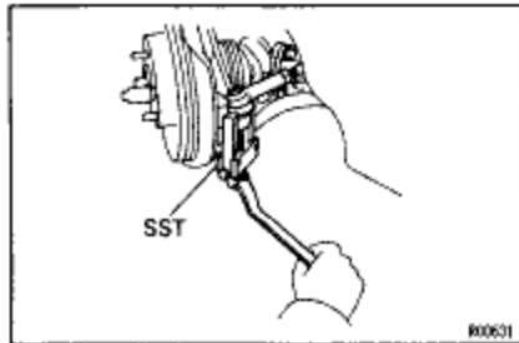
STABILIZER BAR REMOVAL

1. JACK UP VEHICLE AND REMOVE LEFT AND RIGHT FRONT WHEELS
2. REMOVE LEFT AND RIGHT FENDER APRON SEALS

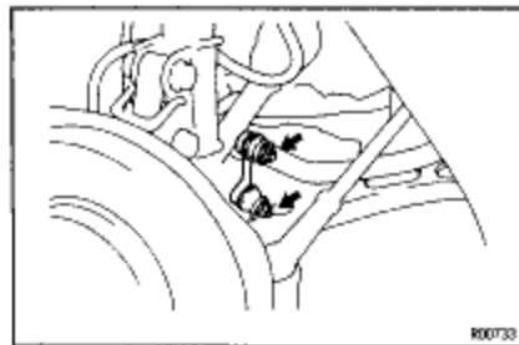


3. DISCONNECT LEFT AND RIGHT TIE ROD ENDS FROM STEERING KNUCKLES

- (a) Remove the cotter pin and nut.
- (b) Using SST, disconnect the tie rod end from the steering knuckle.
SST 09628-62011



4. REMOVE LEFT AND RIGHT STABILIZER BAR LINKS



5. REMOVE LEFT AND RIGHT STABILIZER BAR BUSHINGS

- (a) Remove the left and right bushing retainers.
- (b) Remove the stabilizer bar bushings.

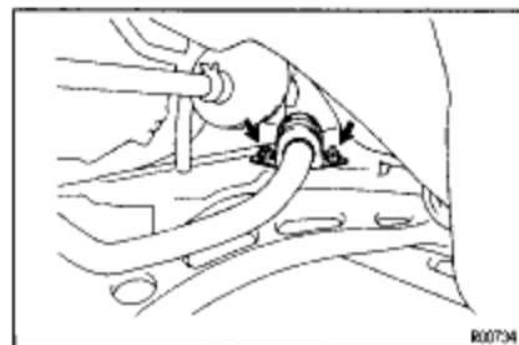
6. REMOVE EXHAUST FRONT PIPE

5S-FE Engine:

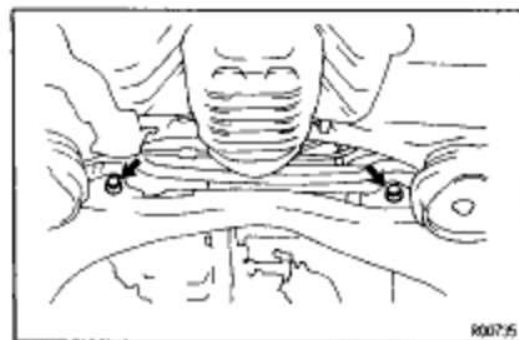
(See page [EG-139](#))

1 MZ-FE Engine:

(See page [EG-188](#))

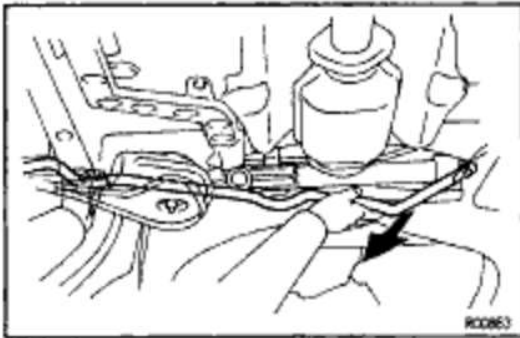


7. REMOVE STEERING GEAR BOX MOUNTING BOLTS AND NUTS

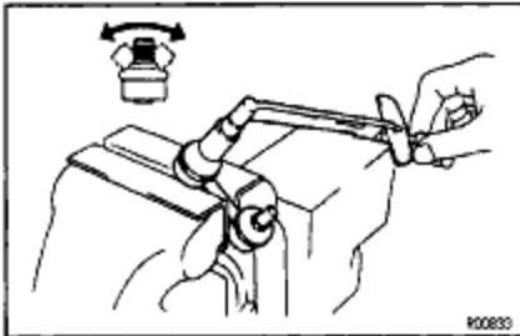


SA-68

SUSPENSION AND AXLE – FRONT SUSPENSION

**8. REMOVE STABILIZER BAR**

HINT: Lift the steering gear box and remove the stabilizer bar.

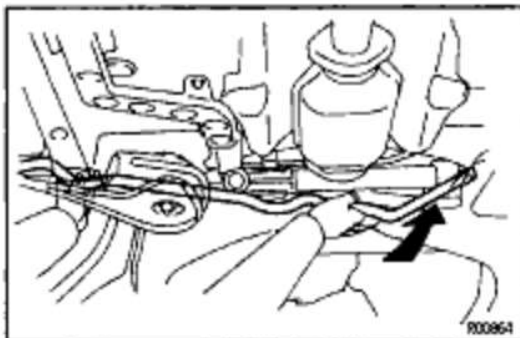
**STABILIZER BAR LINK INSPECTION****1. INSPECT BALL JOINT FOR ROTATION CONDITION**

- Flip the ball joint stud back and forth 5 times as shown in the illustration, before installing the nut.
- Using a torque gauge, turn the nut continuously one turn every 2–4 seconds and take the torque reading on the fifth turn.

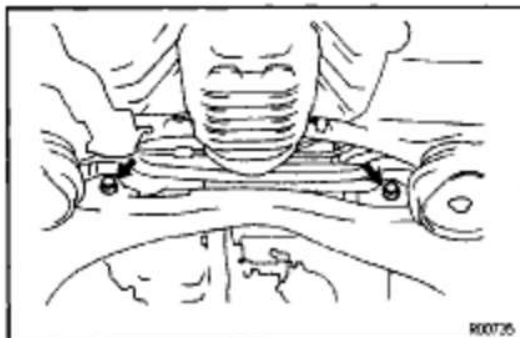
Turning torque:

0.05–1.0 N·m (0.5–10 kgf·cm, 0.4–8.7 in·lbf)

If not within specification, replace the stabilizer bar link.

**STABILIZER BAR INSTALLATION****1. POSITION STABILIZER BAR**

HINT: Lift the steering gear box and position the stabilizer bar.

**2. INSTALL STEERING GEAR BOX MOUNTING BOLTS AND NUTS**

Torque: 181 N·m (1.850 kgf·cm, 134 ft·lbf)

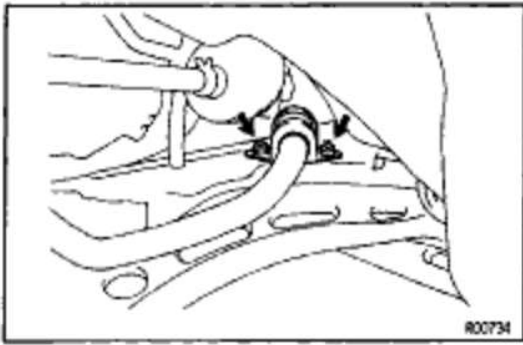
3. INSTALL EXHAUST FRONT PIPE

SS-FE Engine:

(See page EG-139)

1 MZ-FE Engine:

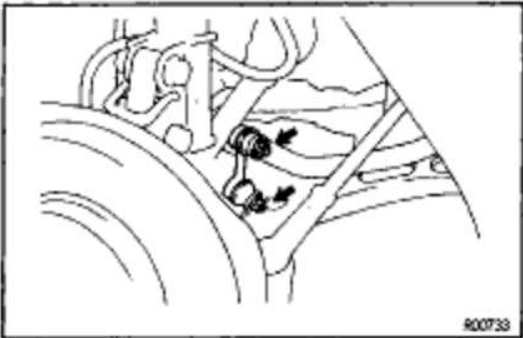
(See page EG-189)



4. INSTALL LEFT AND RIGHT STABILIZER BAR BUSHINGS

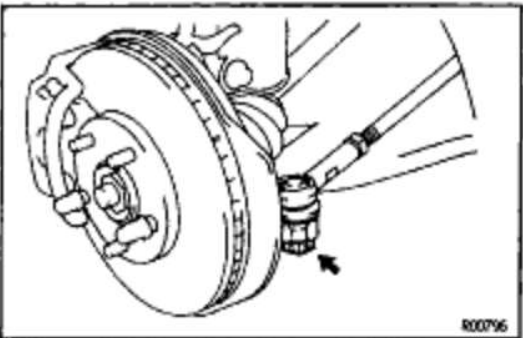
- (a) Install the stabilizer bar bushings.
- (b) Install the bushing retainers and bolts.

Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)



5. INSTALL LEFT AND RIGHT STABILIZER BAR LINKS

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

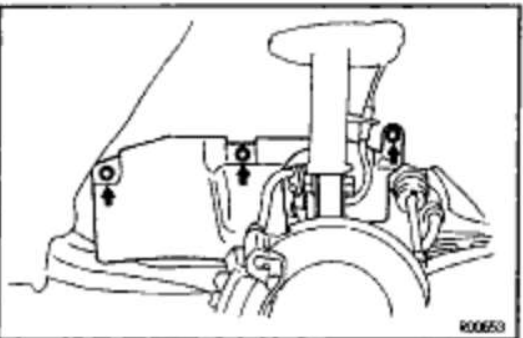


6. CONNECT LEFT AND RIGHT TIE ROD ENDS TO STEERING KNUCKLES

- (a) Connect the tie rod end to the steering knuckle and tighten the nut.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

- (b) Install a new cotter pin.



7. INSTALL LEFT AND RIGHT FENDER APRON SEALS

8. INSTALL FRONT WHEELS AND LOWER VEHICLE

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

SA-70

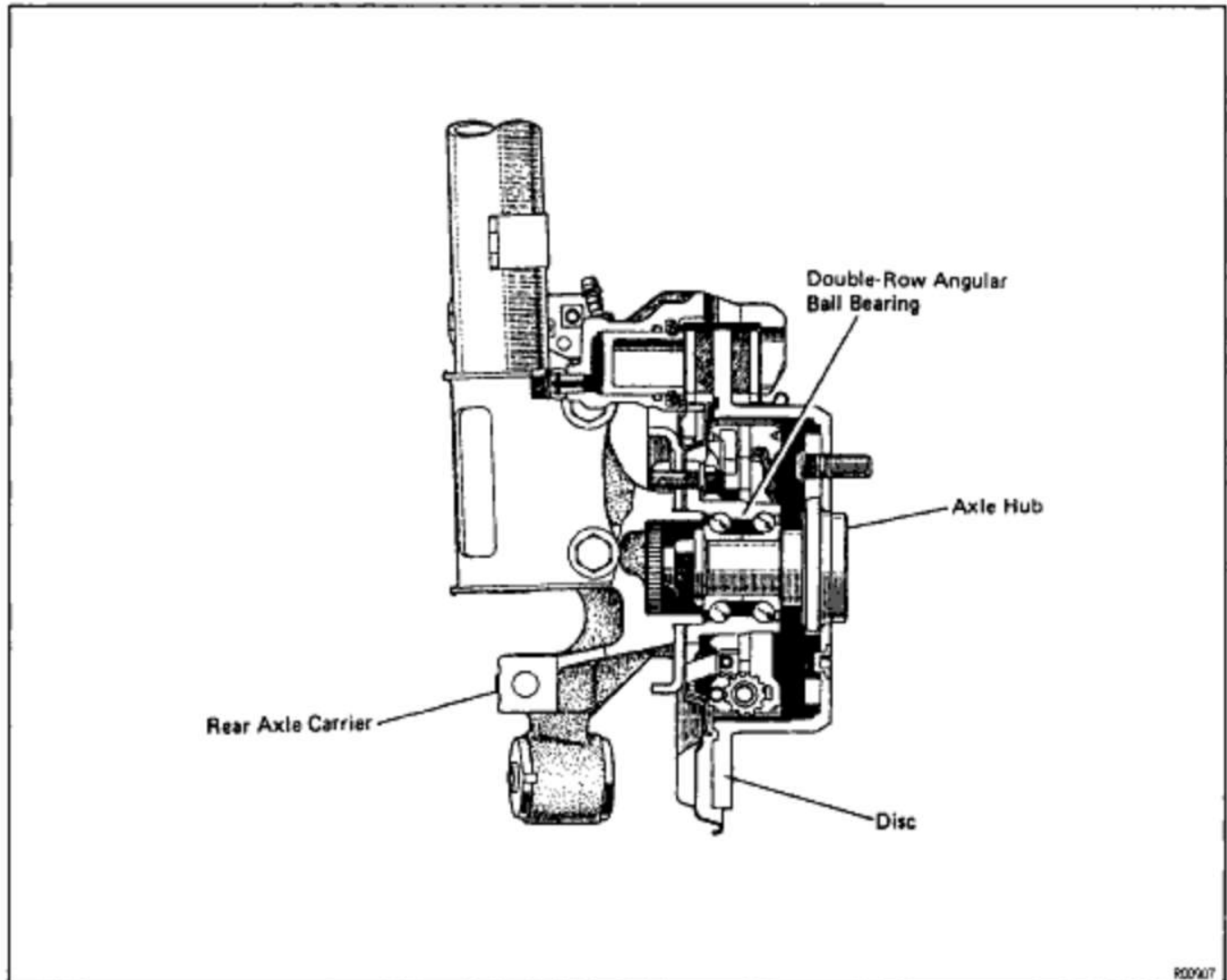
SUSPENSION AND AXLE — REAR AXLE

REAR AXLE

DESCRIPTION

The rear axle uses oil-sealed double-row angular ball bearings for wheel bearings. There is no need for bearing grease maintenance or preload adjustment.

SA027-08



PREPARATION

SST (SPECIAL SERVICE TOOLS)

SA-696-01

	09608-32010 Steering Knuckle oil Seal Replacer	Axle hub installation (w/o ABS)
	09628-10011 Ball Joint Puller	Hub bolt removal
	09636-20010 Upper Ball Joint Dust Cover Replacer	Axle hub installation (w/o ABS)
	09950-20017 Universal Puller	(w/o ABS)

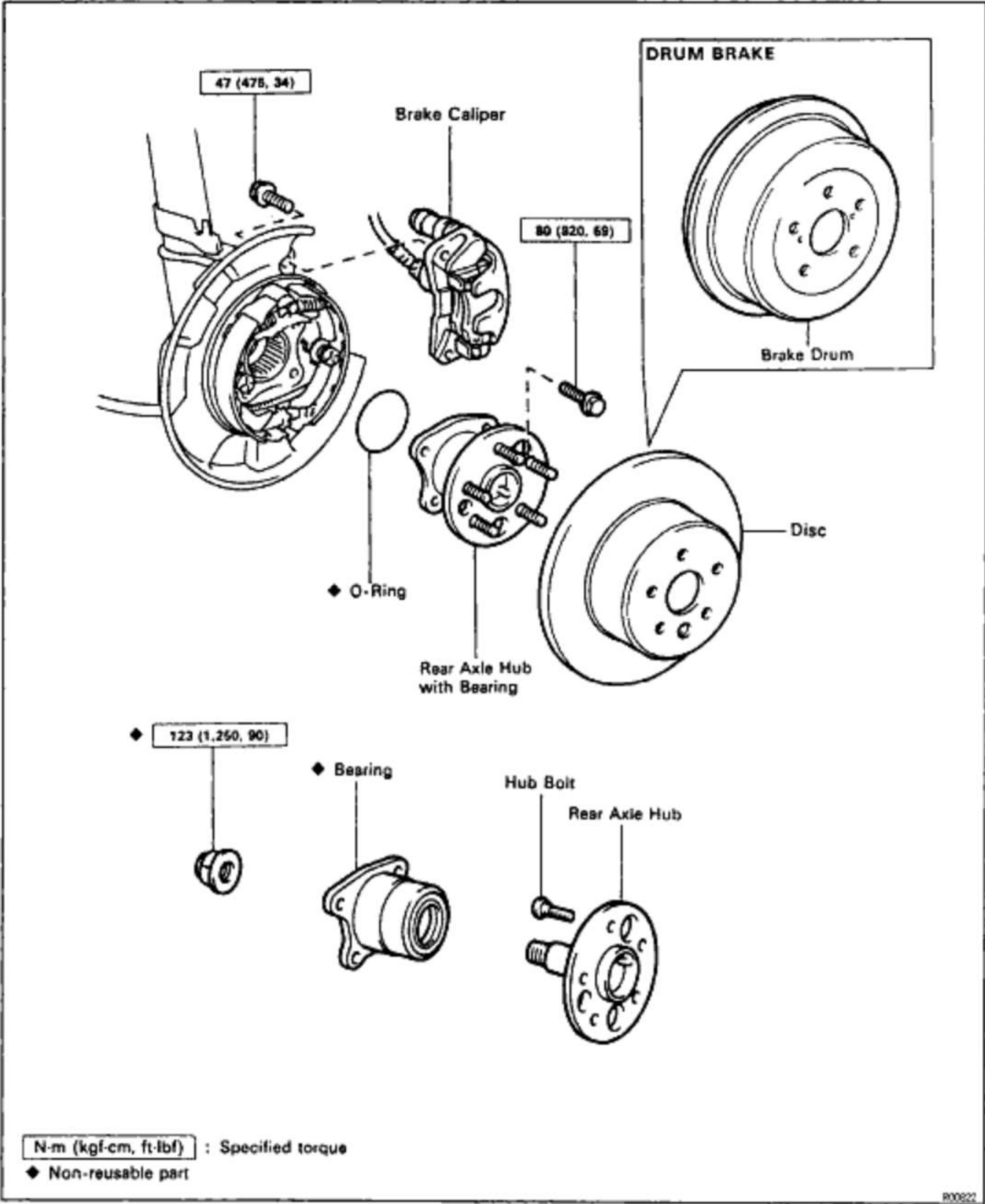
EQUIPMENT

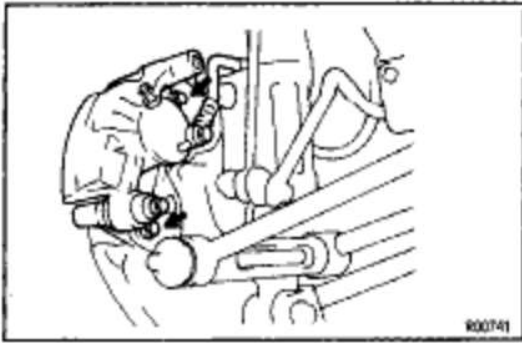
SA-696-01

Dial indicator	
Torque wrench	

REAR AXLE HUB COMPONENTS

SAH24-01





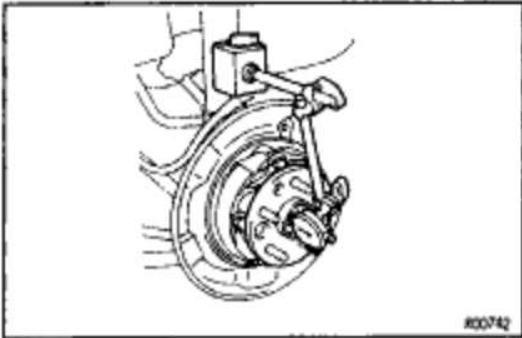
REAR AXLE HUB REMOVAL

1. JACK UP VEHICLE AND REMOVE REAR WHEEL

2. W/ DISC BRAKE:

REMOVE BRAKE CALIPER AND DISC

- (a) Remove the 2 brake caliper set bolts.
- (b) Hang up the brake caliper using wire, etc.
- (c) Remove the disc.



3. w/ DRUM BRAKE:

REMOVE BRAKE DRUM

4. CHECK BEARING BACKLASH AND AXLE HUB DEVIATION

- (a) Place the dial indicator near the center of the axle hub and check the backlash in the bearing shaft direction.

Maximum:

0.05 mm (0.0020 in.)

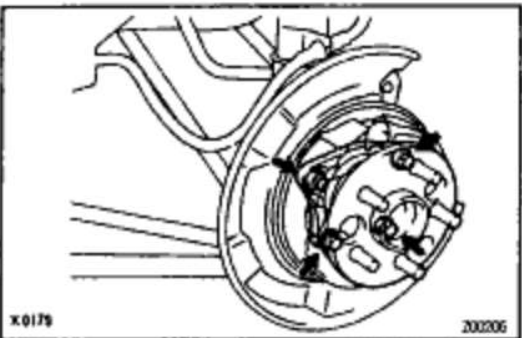
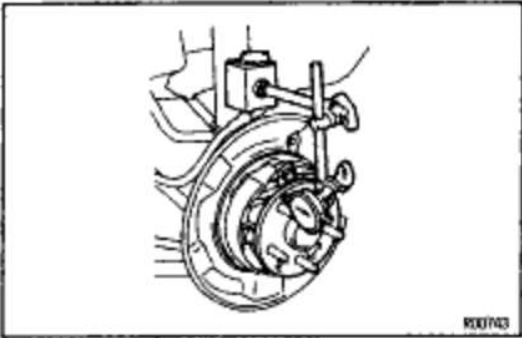
If greater than the specified maximum, replace the bearing.

- (b) Using a dial indicator, check the deviation at the surface of the axle hub outside the hub bolt.

Maximum:

0.47 mm (0.0028 in.)

If greater than the specified maximum, replace the axle shaft and bearing.

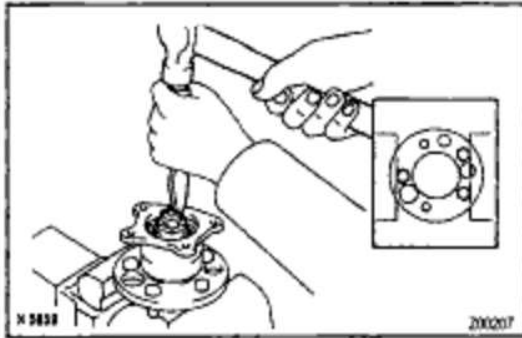


6. REMOVE REAR AXLE HUB

- (a) Remove the 4 bolts and rear axle hub.
- (b) Remove the O-ring.

SA-74

SUSPENSION AND AXLE – REAR AXLE



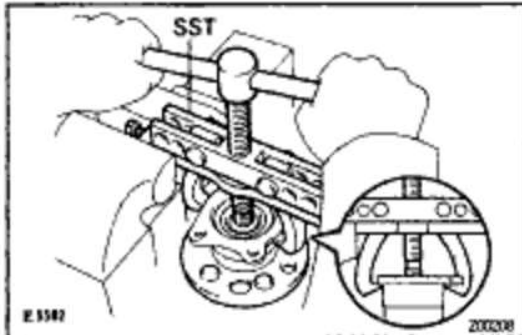
REAR AXLE HUB DISASSEMBLY

SA-982-01

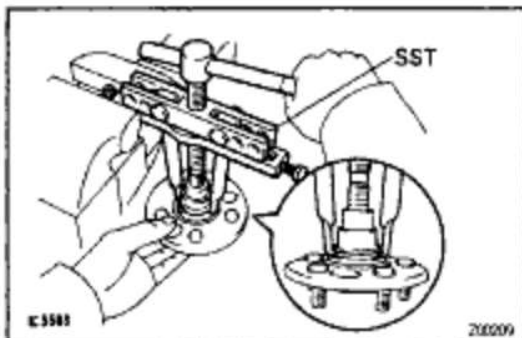
NOTICE: If equipped with ABS, do not disassemble the rear axle shaft and bearing.

1. REMOVE LOCK NUT

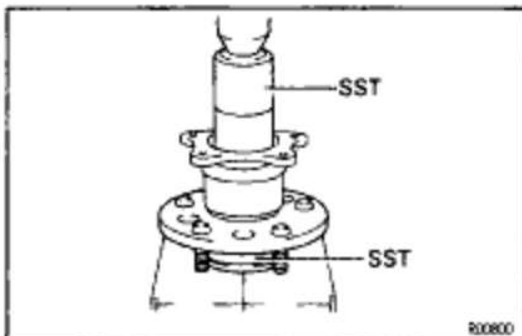
- (a) Using a hammer and chisel, release the nut caulking.
- (b) Remove the lock nut.

**2. REMOVE AXLE SHAFT FROM BEARING**

- (a) Using SST, remove the axle shaft from bearing.
SST 09950 – 20017



- (b) Using SST, remove the inner race (outside) from the axle shaft.
SST 09950–20017

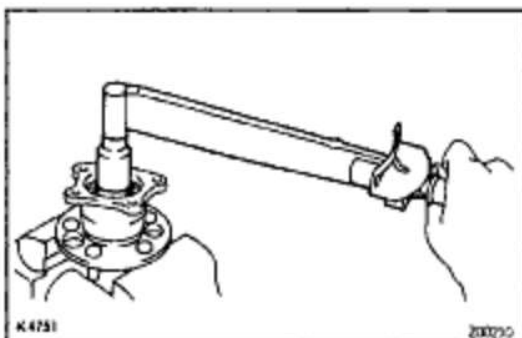


REAR AXLE HUB ASSEMBLY

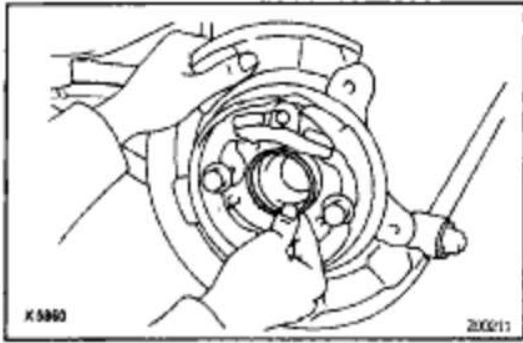
SA-982-04

1. INSTALL AXLE SHAFT TO BEARING

- (a) Using SST and a press, install the axle shaft to a new bearing.
ST 09608–32010, 09636–20010



- (b) Install a new lock nut.
Torque: 123 N·m (1250 kgf·cm, 90 ft·lbf)
- (c) Stake the lock nut.

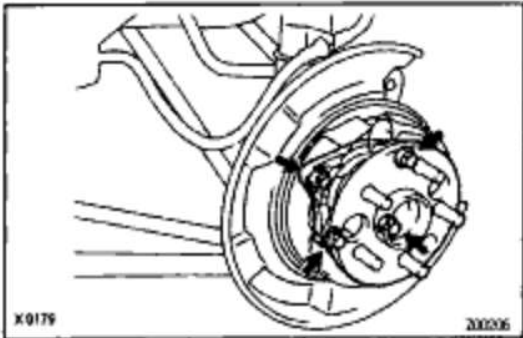


REAR AXLE HUB INSTALLATION

1. INSTALL REAR AXLE HUB

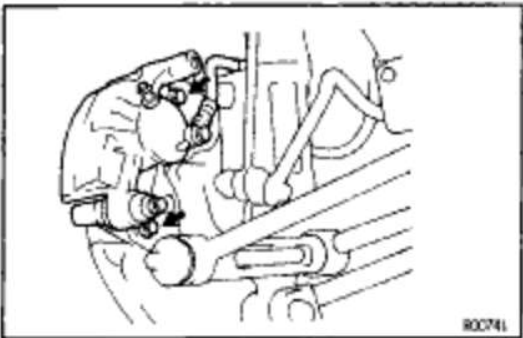
(a) Install a new O-ring.

HINT: Coat the O-ring with MP grease.



(b) Install the rear axle hub with the 4 bolts.

Torque: 80 N·m (820 kgf·cm, 59 ft·lbf)



2. w/ DISC BRAKE:

INSTALL DISC AND BRAKE CALIPER.

(a) Install the disc.

(b) Install the brake caliper.

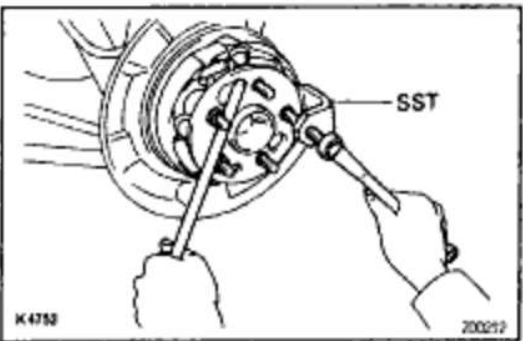
Torque: 47 N·m (475 kgf·cm, 34 ft·lbf)

3. w/ DRUM BRAKE:

INSTALL BRAKE DRUM

4. INSTALL REAR WHEEL AND LOWER VEHICLE

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)



HUB BOLT REPLACEMENT

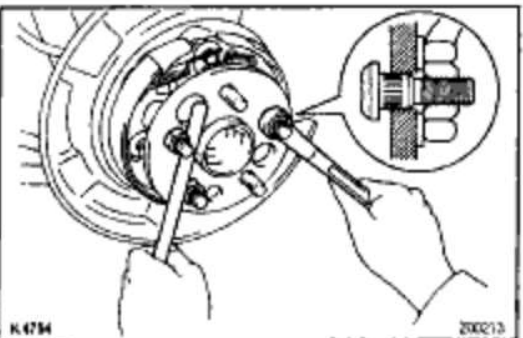
1. JACK UP VEHICLE AND REMOVE REAR WHEEL

2. REMOVE REAR DISC OR DRUM

3. REMOVE HUB BOLT

Using SST, remove the hub bolt.

SST 09628-10011



4. INSTALL HUB BOLT

Install washer- and nut to the hub bolt as shown in the illustration, and install the hub bolt by tightening the nut.

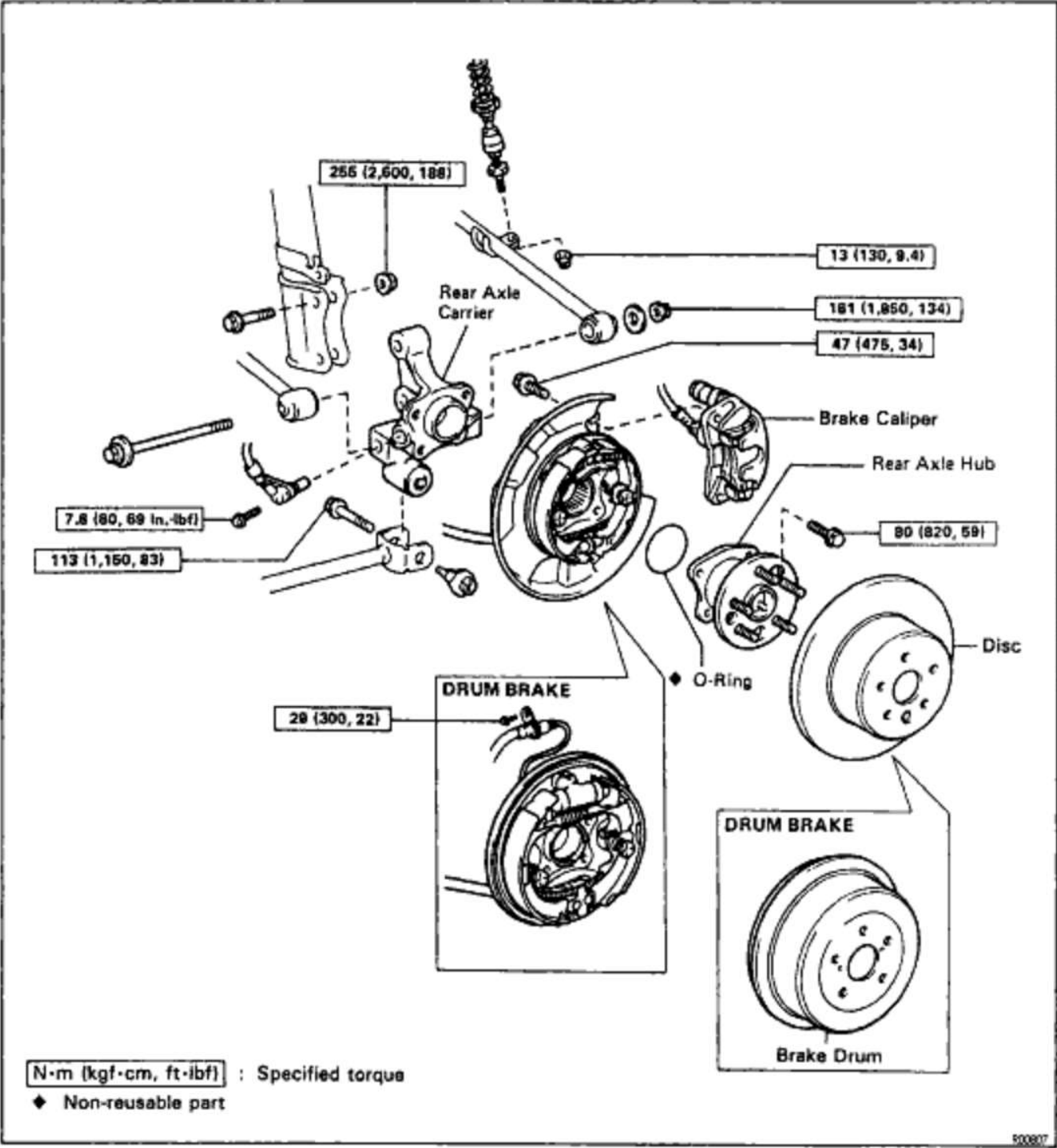
5. INSTALL REAR DISC OR DRUM

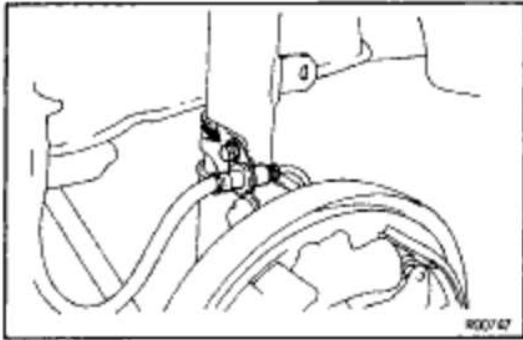
6. INSTALL REAR WHEEL AND LOWER VEHICLE

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

REAR AXLE CARRIER
COMPONENTS

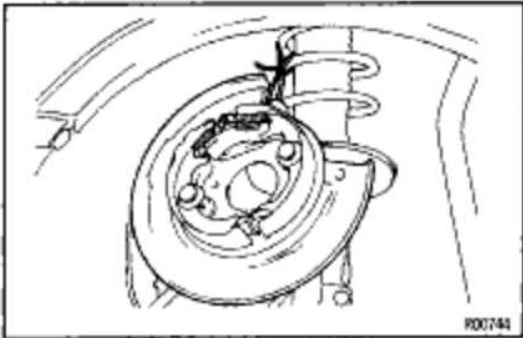
SA-897-01





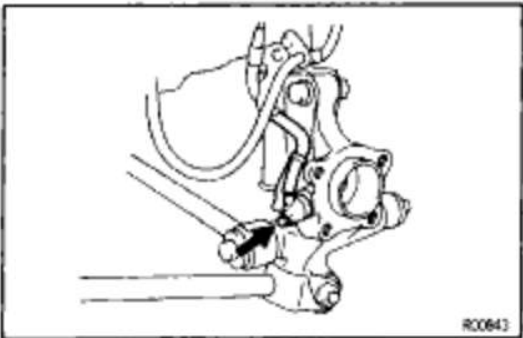
REAR AXLE CARRIER REMOVAL

1. REMOVE REAR AXLE HUB
2. w/ DRUM BRAKE:
REMOVE BRAKE HOSE FROM SHOCK ABSORBER



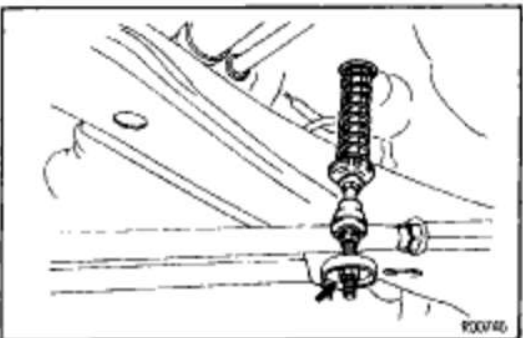
3. REMOVE BACKING PLATE FROM REAR AXLE CARRIER

Hang up the backing plate using wire, etc.



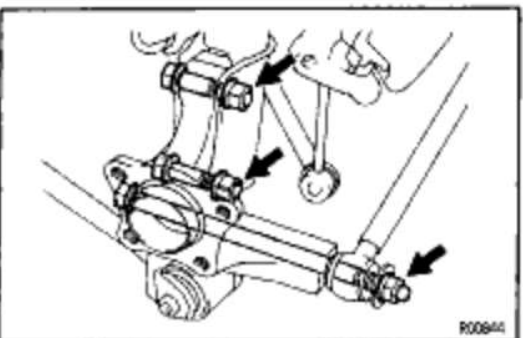
4. w/ ABS:
REMOVE ABS SPEED SENSOR

Remove the ABS speed sensor from rear axle carrier.



5. WAGON only:
REMOVE LSPV SPRING

Disconnect the LSPV spring from the lower arm.



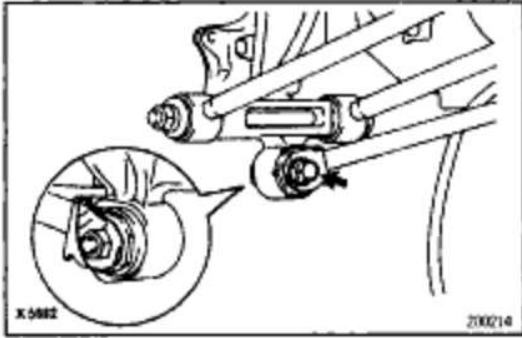
6. REMOVE REAR AXLE CARRIER

(a) Loosen the 3 nuts.

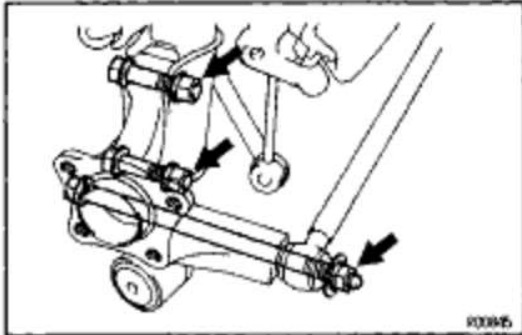
HINT: Do not remove the bolts.

SA-78

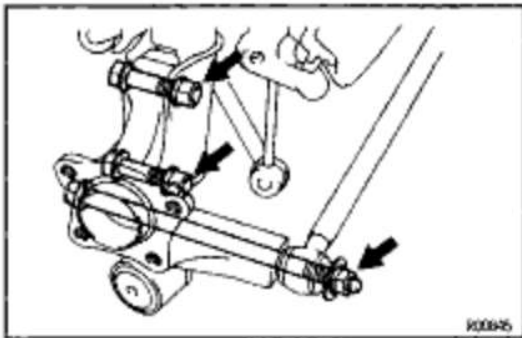
SUSPENSION AND AXLE – REAR AXLE



- (b) Remove the bolt and nut and disconnect the strut rod from the rear axle carrier.



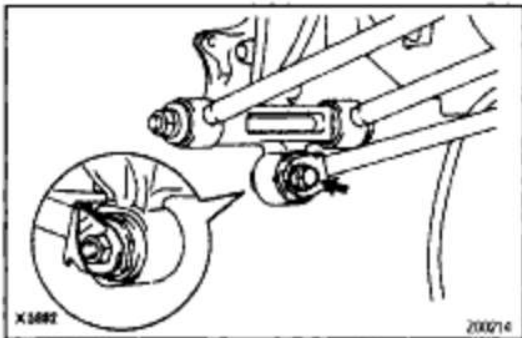
- (c) Remove the 3 nuts and bolts.
(d) Remove the rear axle carrier.



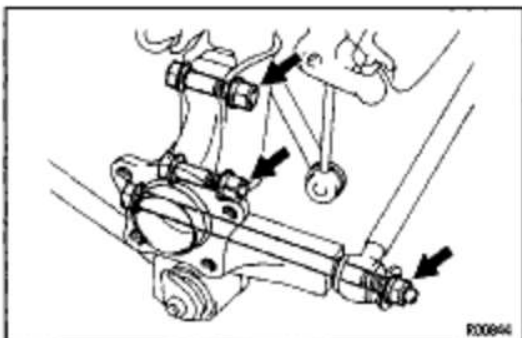
REAR AXLE CARRIER INSTALLATION SA-78H-08

1. INSTALL REAR AXLE CARRIER

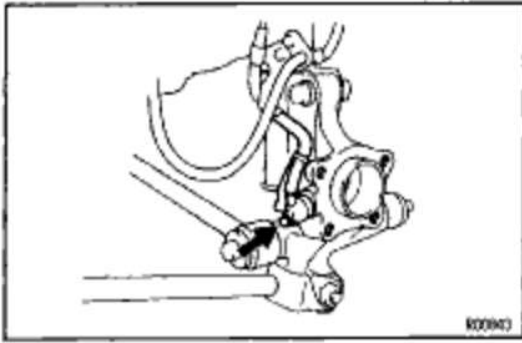
- (a) Place the rear axle carrier and temporarily install the 3 bolts and nuts.



- (b) Connect the strut rod to the rear axle carrier.
(c) Temporarily install the bolt and nut.

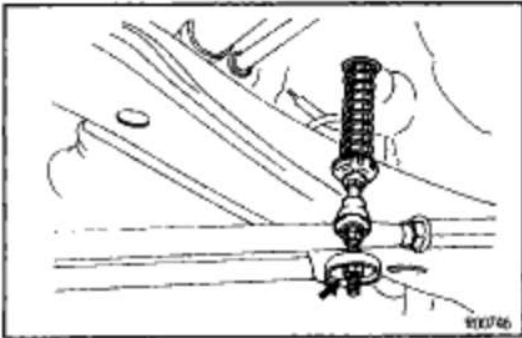


- (d) Torque the 3 nuts.
Lower side of shock absorber:
Torque: 255 N·m (2,600 kgf·cm, 188 ft·lbf)
Lower arm:
Torque: 181 N·m (1,850 kgf·cm, 134 ft·lbf)

**2. w/ ABS:****INSTALL ABS SPEED SENSOR**

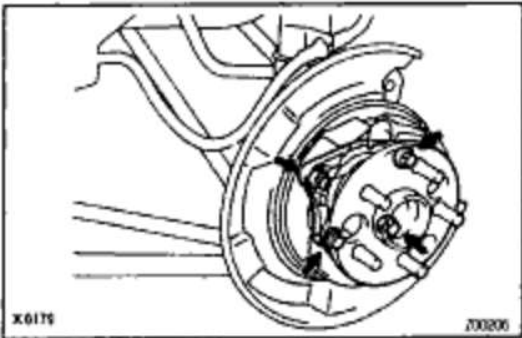
Install the ABS speed sensor to the rear axle carrier.

Torque: 7.8 N·m (80 kgf·cm, 69 in·lbf)

**3. WAGON only:****INSTALL LSPV SPRING**

Connect the LSPV spring to the lower arm.

Torque: 13 N·m (130 kgf·cm, 9.4 ft·lbf)

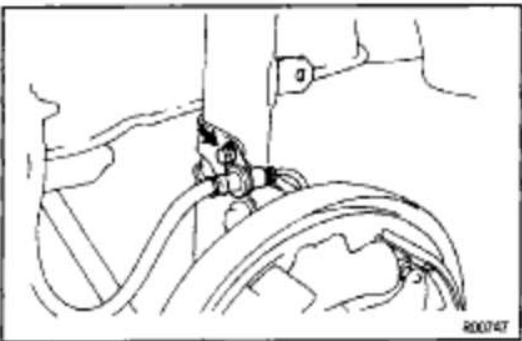
**4. INSTALL BACKING PLATE AND REAR AXLE HUB**

(a) Place the backing plate.

(b) Install a new O-ring.

(c) Install the rear axis hub.

Torque: 80 N·m (820 kgf·cm, 59 ft·lbf)

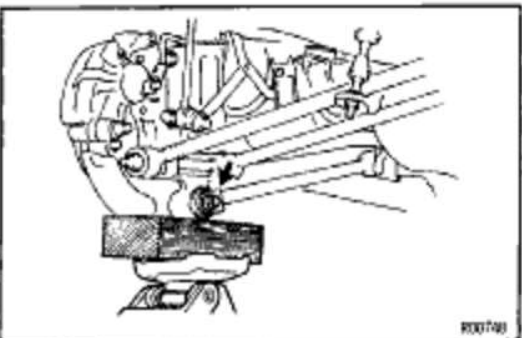
**5. w/ DRUM BRAKE:****INSTALL BRAKE LINE TO SHOCK ABSORBER**

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

6. STABILIZE SUSPENSION

(a) Install the rear wheel and lower the vehicle.

(b) Bounce the vehicle up and down several times to stabilize the suspension.

**7. TORQUE STRUT ROD BOLT**

(a) Jack up the vehicle and support the body.

(b) Remove the rear wheel.

(c) Support the rear axle carrier with a jack.

(d) Torque the bolt.

Torque: 113 N·m (1,150 kgf·cm, 83 ft·lbf)

8. INSTALL REAR WHEEL AND LOWER VEHICLE

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

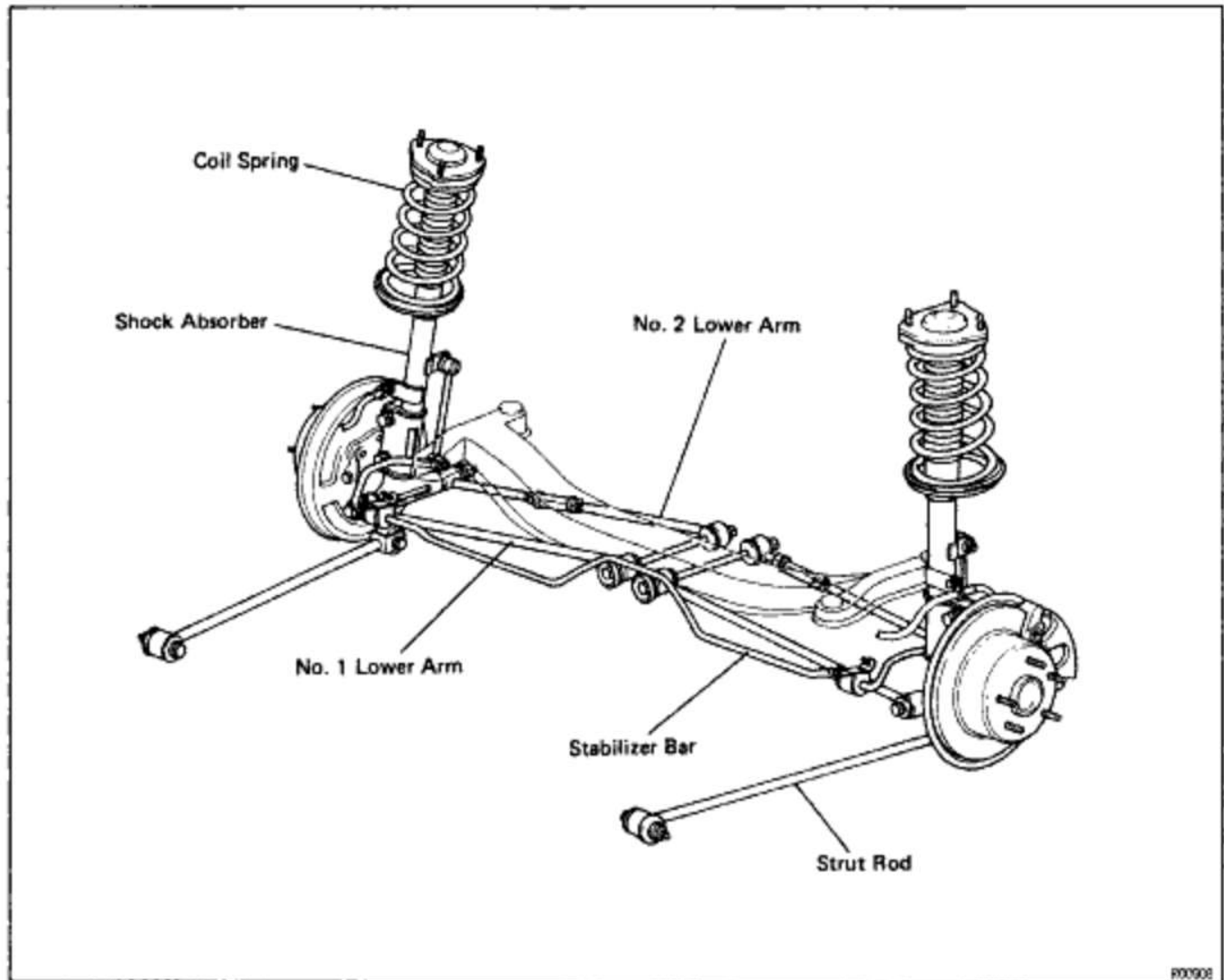
SA-80

SUSPENSION AND AXLE — REAR SUSPENSION

REAR SUSPENSION

DESCRIPTION

The rear suspension is a dual-link strut independent suspension type composed of two lower arms in parallel at the side, and strut rods which extend forward.



PREPARATION
SST (SPECIAL SERVICE TOOLS)

SA-81-01

	09727-30020 Coil Spring Compressor	
	09729-22031 Front Spring Upper Seat Holder	

RECOMMENDED TOOLS

SA-81-01

	09025-00010 Small Torque Wrench	
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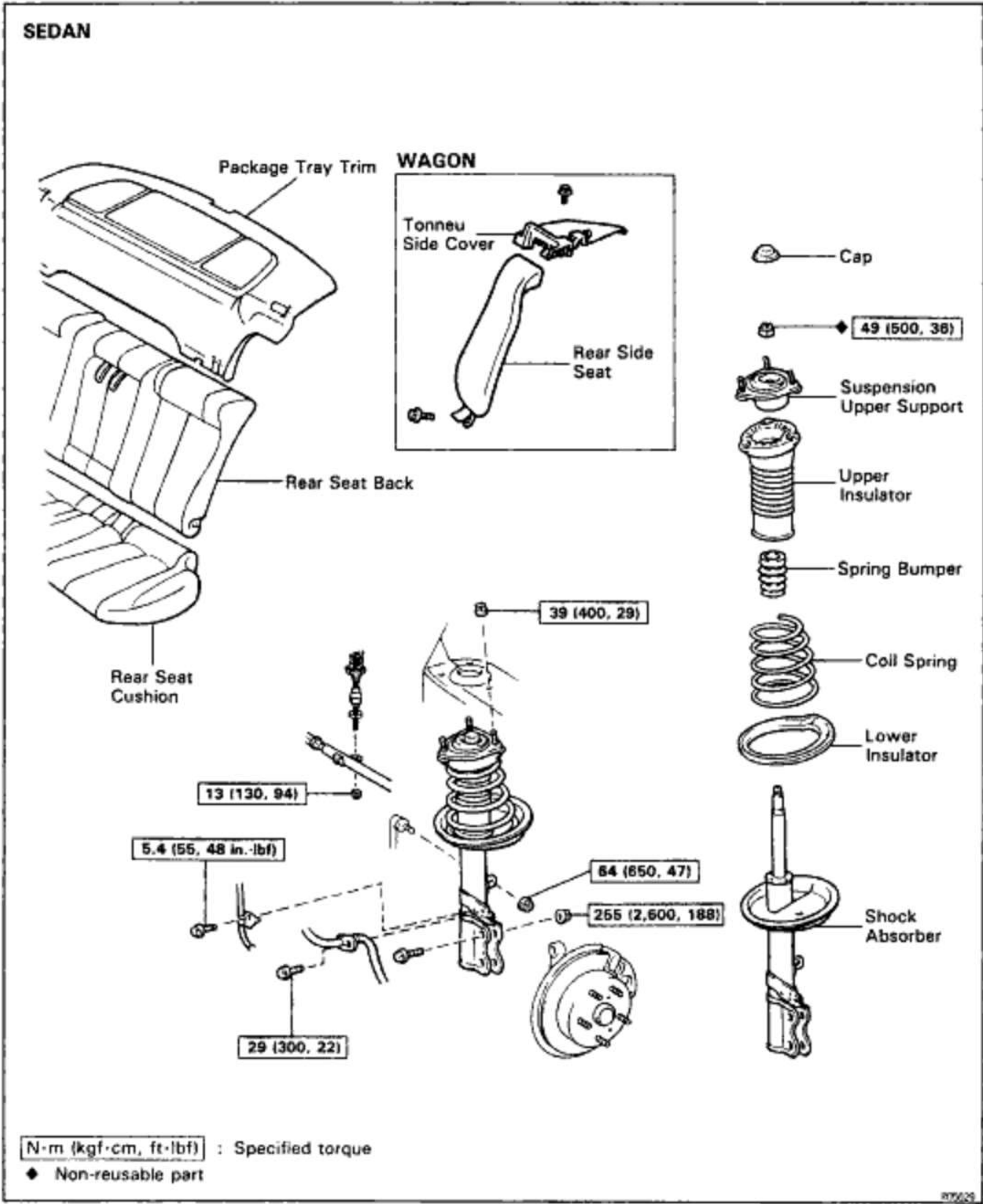
EQUIPMENT

SA-81-01

Torque wrench	
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REAR SHOCK ABSORBER COMPONENTS

AL/MS-96



REAR SHOCK ABSORBER REMOVAL

1. SEDAN/COUPE

REMOVE REAR SEAT AND PACKAGE TRAY TRIM
(SEE THE BO SECTION)

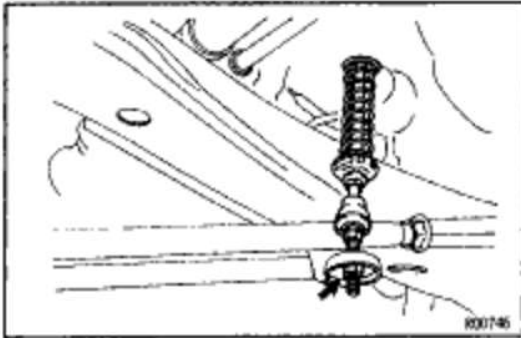
WAGON:

REMOVE REAR SIDE SEATBACK AND TONNEAU
SIDE COVER
(SEE PAGE BO SECTION)

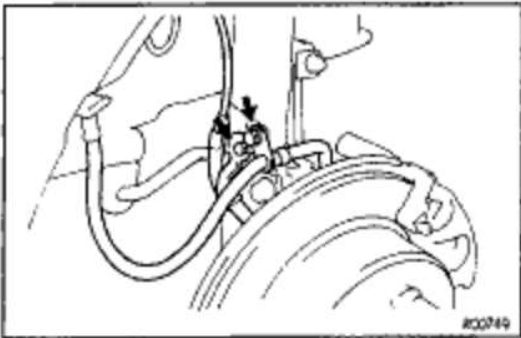
2. JACK UP VEHICLE AND REMOVE REAR WHEEL

3. WAGON ONLY:

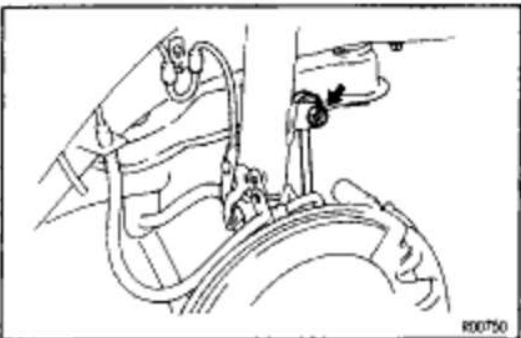
DISCONNECT LSPV SPRING FROM LOWER ARM



4. REMOVE ABS SPEED SENSOR WIRE (w/ ABS) AND BRAKE HOSE FROM SHOCK ABSORBER

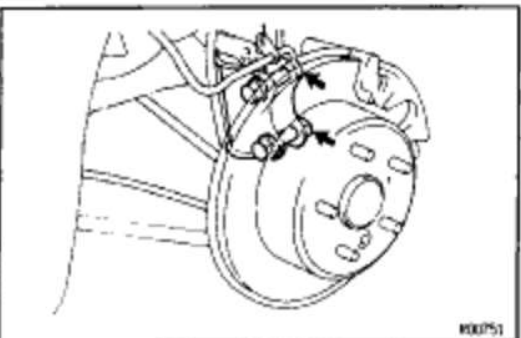


5. DISCONNECT STABILIZER BAR LINK FROM SHOCK ABSORBER



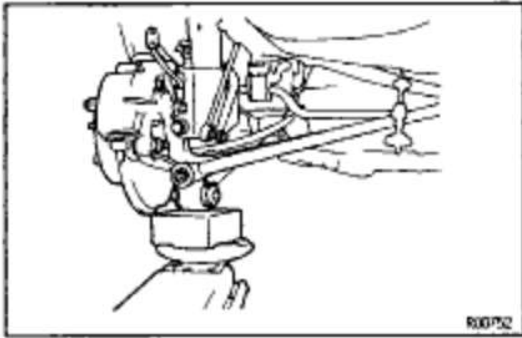
6. REMOVE SHOCK ABSORBER WITH COIL SPRING

(a) Loosen the 2 nuts on lower side of shock absorber.

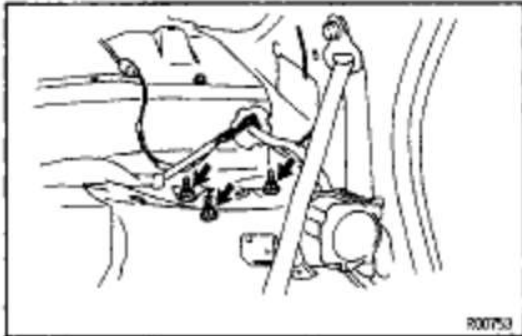


SA-84

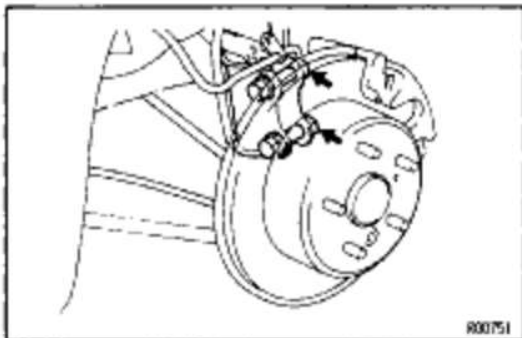
SUSPENSION AND AXLE – REAR SUSPENSION



(b) Support the rear axle carrier with a jack.

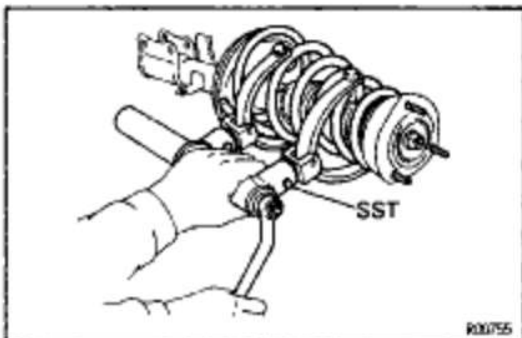


(c) Remove the 3 nuts of upper support.



(d) Lower the rear axle carrier and remove the 2 bolts.

(e) Remove the shock absorber with coil spring.

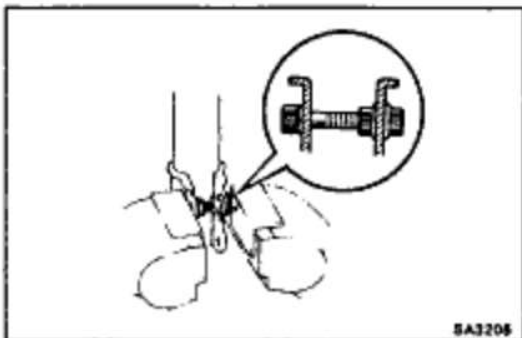


7. REMOVE COIL SPRING

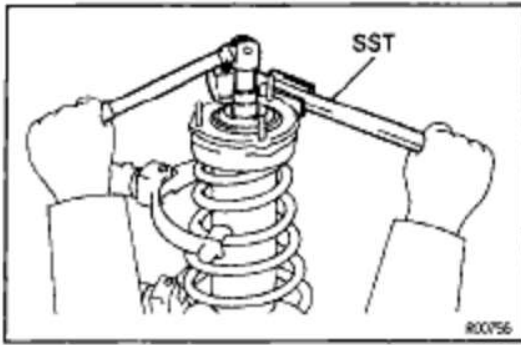
(a) Remove the cap.

(b) Using SST, compress the coil spring.

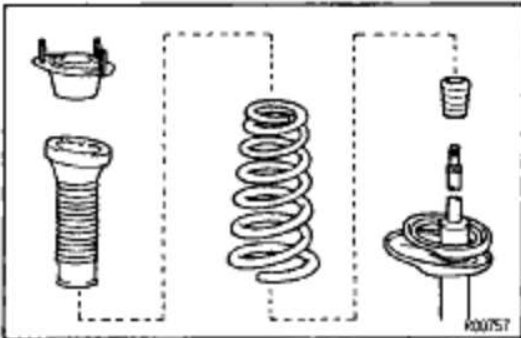
SST 09727-30020



(c) Install a bolt and 2 nuts to the bracket at the lower portion of the shock absorber and secure it in a visa.

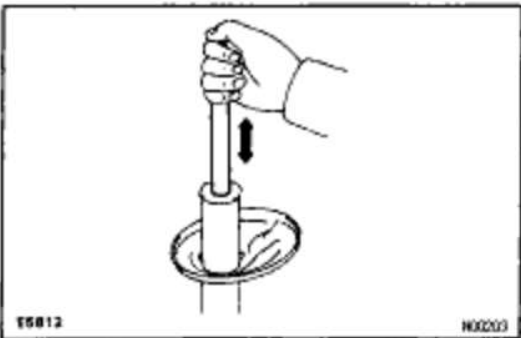


(d) Using SST to hold the upper support, remove the nut.
SST 09729-22031



(e) Remove the following parts.

- Suspension upper support
- Upper insulator
- Coil spring
- Spring bumper
- Lower insulator



REAR SHOCK ABSORBER INSPECTION

INSPECT SHOCK ABSORBER

Compress and extend the shock absorber rod and check that there is no abnormal resistance or unusual operation sounds.

If there is any abnormality, replace the shock absorber with a new one.

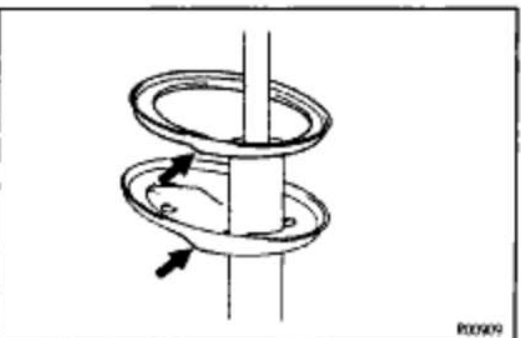
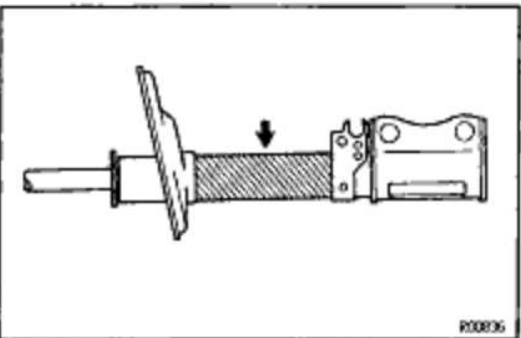
NOTICE: When discarding the shock absorber, use the following procedure.

REAR SHOCK ABSORBER DISPOSAL

1. FULLY EXTEND SHOCK ABSORBER ROD
2. DRILL HOLE TO REMOVE GAS FROM CYLINDER

Using a drill, make a hole in the cylinder as shown to remove the gas inside.

CAUTION: The gas coming out is harmless, but be careful of chips which may fly up when drilling.

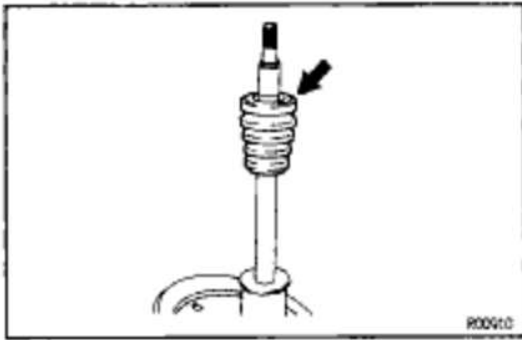
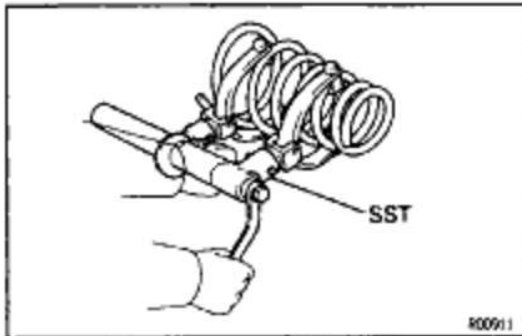


REAR SHOCK ABSORBER INSTALLATION

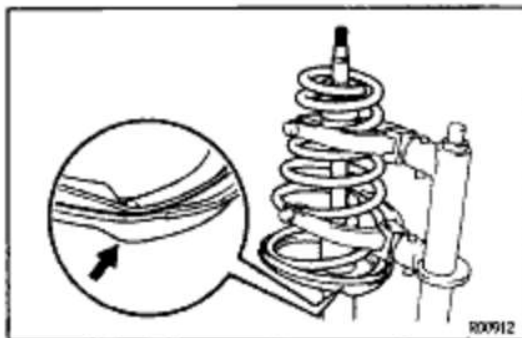
1. INSTALL LOWER INSULATOR ONTO SHOCK ABSORBER

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SUSPENSION AND AXLE – REAR SUSPENSION

**2. INSTALL SPRING BUMPER TO PISTON ROD****3. INSTALL COIL SPRING**

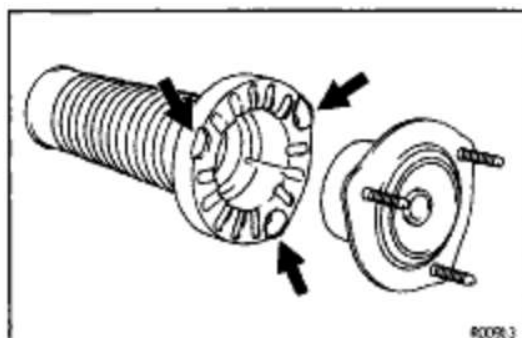
- (a) Using SST, compress the coil spring
SST 09727-30020



- (b) Install the coil spring to the shock absorber.
HINT: Fit the lower end of the coil spring into the gap of the lower seat.

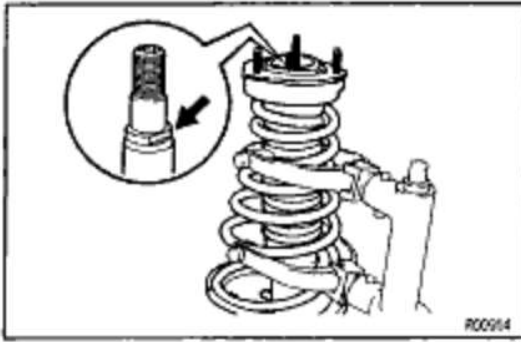
**4. INSTALL UPPER INSULATOR AND UPPER SUPPORT**

- (a) Before installing the upper support and insulator, apply the lithium or silicon based grease as shown in the illustration.

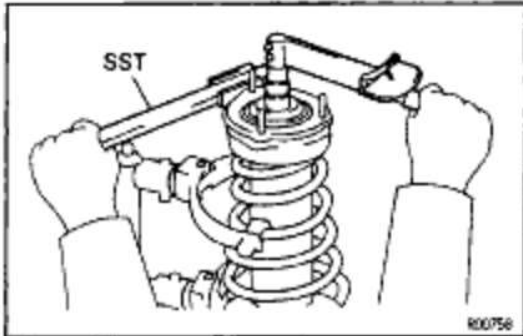


- (b) Install the upper insulator to the upper support.
HINT: Match the bolt of the upper support with the cut-off part of the insulator.

SUSPENSION AND AXLE – REAR SUSPENSION



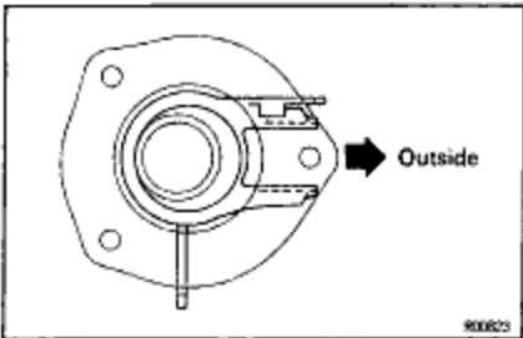
(c) Install the upper support to the piston rod.



(d) Using SST to hold the upper support, install a new nut.

SST 09729-22031

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

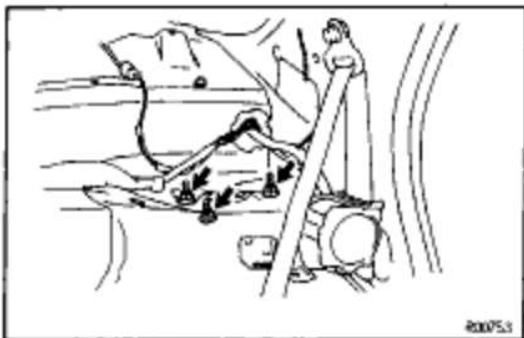


(e) Rotate the upper support and set it in the direction shown in the illustration.

(f) Remove the SST.

HINT: After removing SST, again check the direction of the upper support.

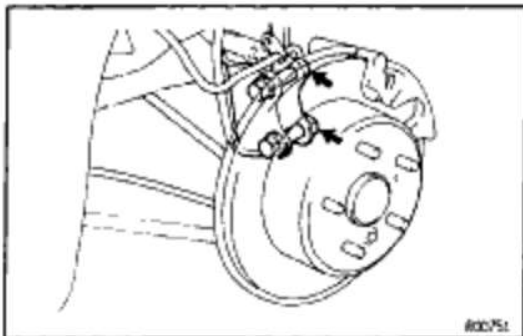
(g) Install the cap.



5. INSTALL SHOCK ABSORBER WITH COIL SPRING

Install the shock absorber and install the 3 nuts of upper support.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)



6. CONNECT SHOCK ABSORBER TO REAR AXLE CARRIER

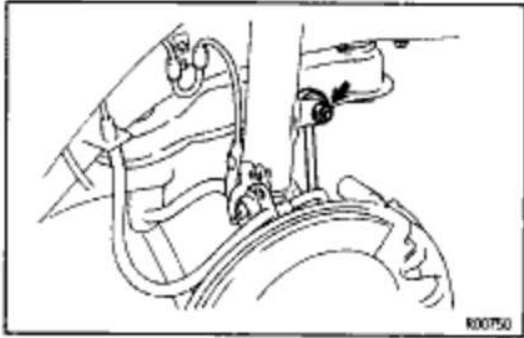
(a) Coat the threads of the nuts with engine oil.

(b) Install the 2 bolts and nuts.

Torque: 255 N·m (2,600 kgf·cm, 188 ft·lbf)

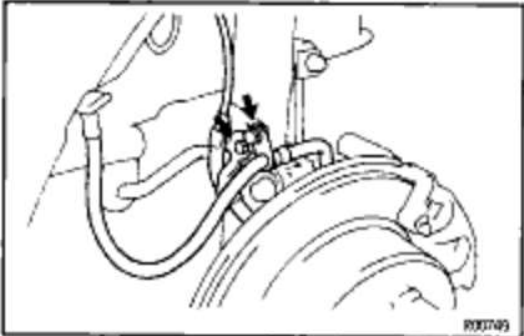
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SUSPENSION AND AXLE – REAR SUSPENSION



7. CONNECT STABILIZER BAR LINK TO SHOCK ABSORBER

Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)



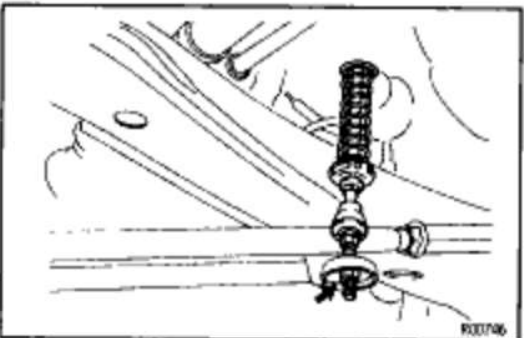
8. INSTALL ABS SPEED SENSOR WIRE (w/ ABS) AND BRAKE HOSE TO SHOCK ABSORBER

Brake hose

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

ABS wire

Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)



9. WAGON only:

CONNECT LSPV SPRING FROM LOWER ARM

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

10. INSTALL REAR WHEEL AND LOWER VEHICLE

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

11. SEDAN/COUPE:

INSTALL PACKAGE TRAY TRIM AND REAR SEAT

(See the BO section)

WAGON:

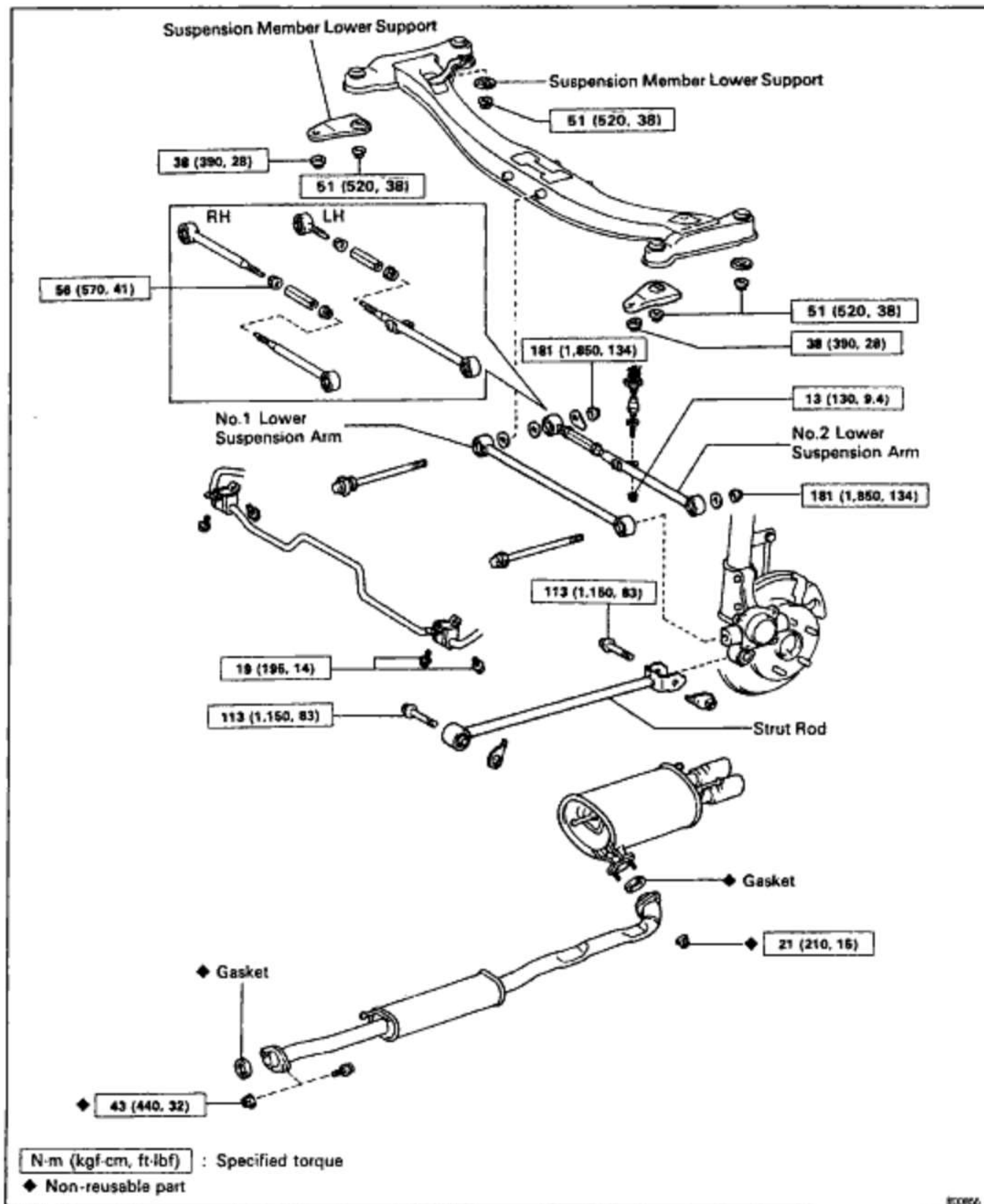
INSTALL TONNEAU SIDE COVER AND REAR SIDE SEATBACK

(See the BO section)

SUSPENSION AND AXLE – REAR SUSPENSION

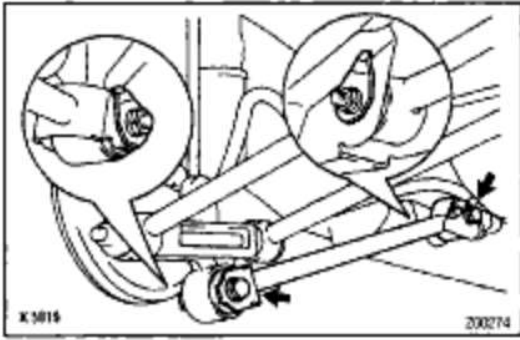
LOWER SUSPENSION ARM AND STRUT ROD COMPONENTS

E.4.002-04



SA-90

SUSPENSION AND AXLE – REAR SUSPENSION

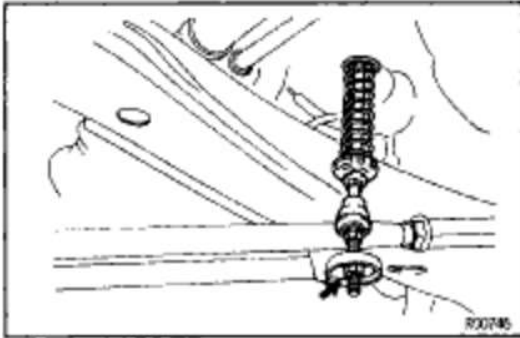


LOWER SUSPENSION ARM AND STRUT ROD REMOVAL

1. JACK UP VEHICLE AND REMOVE REAR WHEEL

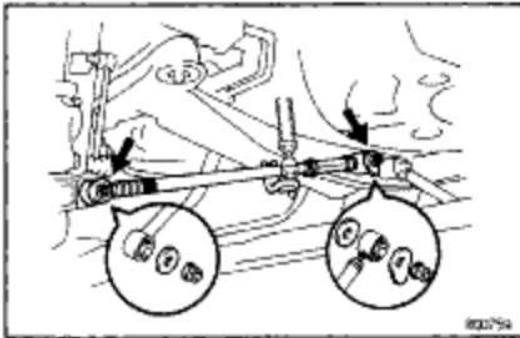
2. REMOVE STRUT ROD

- (a) Remove the 2 bolts and nuts.
- (b) Remove the strut rod.



3. WAGON only:

DISCONNECT LSPV SPRING FROM LOWER ARM



4. REMOVE NO.2 LOWER SUSPENSION ARM

- (a) Remove the 2 nuts and washers.
- (b) Remove the No.2 lower suspension arm.



5. REMOVE LEFT AND RIGHT STABILIZER BUSHING RETAINER

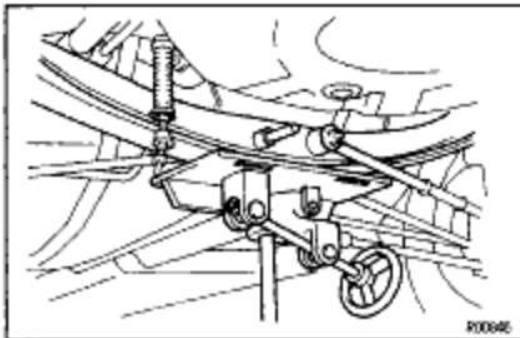
6. REMOVE EXHAUST CENTER PIPE AND TALE PIPE

5S-FE Engine:

(See page [EG1-139](#))

1MZ-FE Engine:

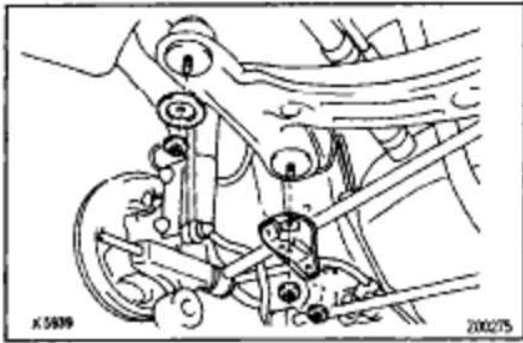
(See page [EG2-189](#))



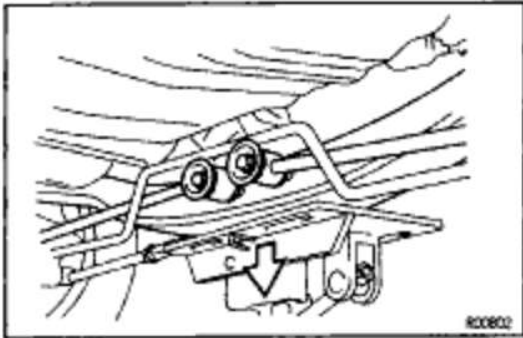
7. REMOVE NO.1 LOWER SUSPENSION ARM

- (a) Support the suspension member with a jack.

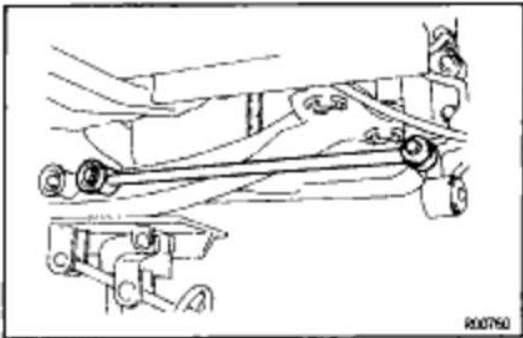
SUSPENSION AND AXLE - REAR SUSPENSION



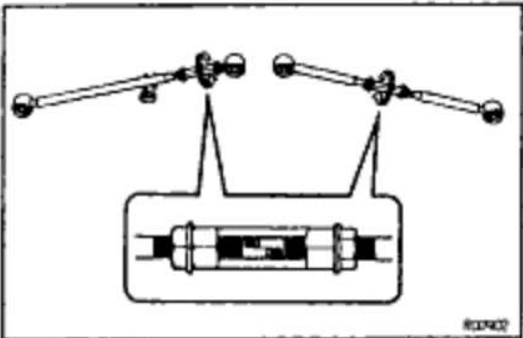
- (b) Remove the 6 nuts and the left and right suspension member lower stopper.



- (c) Lower the suspension member.



- (d) Remove the No. 1 lower suspension arm with the 2 bolts and the washer.

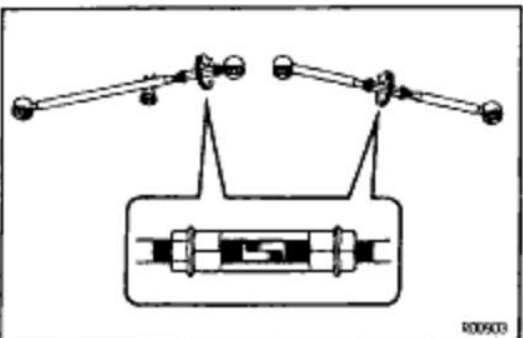


NO.2 LOWER SUSPENSION ARM DISASSEMBLY

SABV-04

1. DISASSEMBLE NO.2 LOWER SUSPENSION ARM

- Loosen the 2 lock nuts.
- Turn the adjusting tube and disassemble the No.2 lower suspension arm.
- Remove the lock nuts from the arms.



NO.2 LOWER SUSPENSION ARM ASSEMBLY

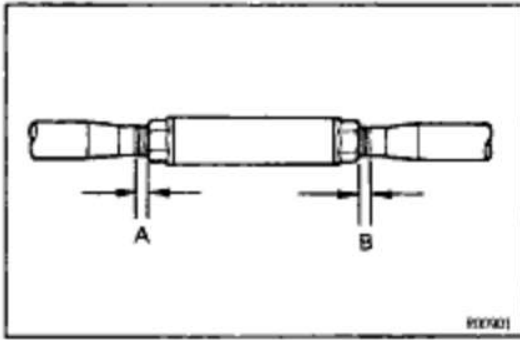
SABV-04

1. ASSEMBLE NO.2 LOWER SUSPENSION ARM

- Install the lock nuts to the arms.
- Turn the adjusting tube and assemble the No.2 lower suspension arm.

SA-92

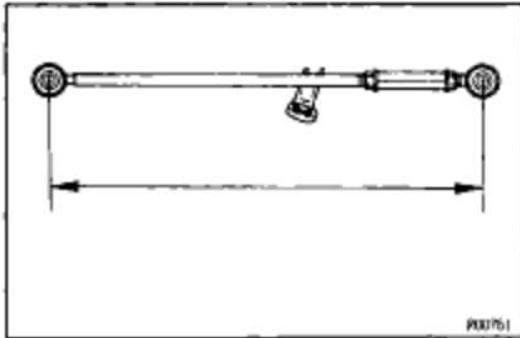
SUSPENSION AND AXLE — REAR SUSPENSION



HINT: When assembling the No.2 lower suspension arm, try to make dimensions A and B shown in the illustration as close as possible.

Maximum difference:

3 mm (0.12 in.)



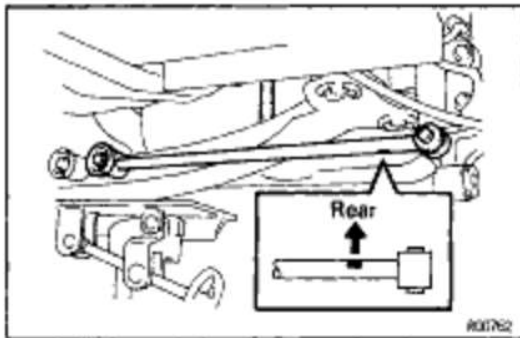
(c) Adjust the No.2 lower suspension arm length by turning the adjusting tube.

Arm length:

584.2 mm (23.000 in.)

(d) Temporarily tighten the 2 lock nuts.

HINT: After adjusting the rear wheel alignment, torque the lock nuts.

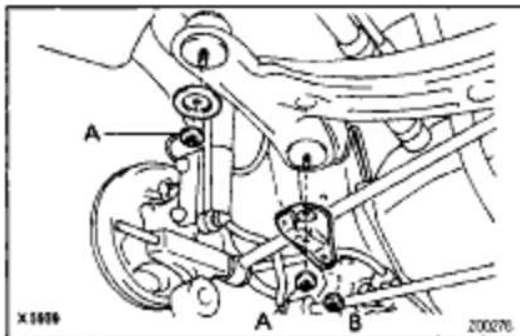


LOWER SUSPENSION ARM AND STRUT ROD INSTALLATION

1. INSTALL NO.1 LOWER SUSPENSION ARM

Install the No. 1 lower suspension arm with the washer and the 2 bolts.

HINT: Face the paint mark to the rear.



2. INSTALL SUSPENSION MEMBER TO BODY

(a) Jack up the suspension member.

(b) Install the suspension member lower supports and the 6 nuts.

Nut A:

Torque: 51 N·m (520 kgf·cm, 38 ft·lbf)

Nut B:

Torque: 38 N·m (390 kgf·cm, 28 ft·lbf)



3. INSTALL LEFT AND RIGHT STABILIZER BUSHING RETAINERS

Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

4. INSTALL EXHAUST CENTER PIPE AND TALE PIPE

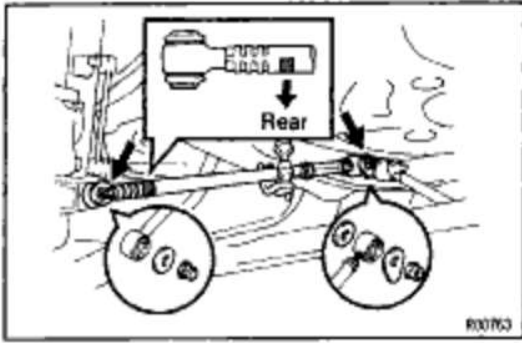
5S-FE Engine:

(See page [EG1-139](#))

1MZ-FE Engine:

(See page [EG2-189](#))

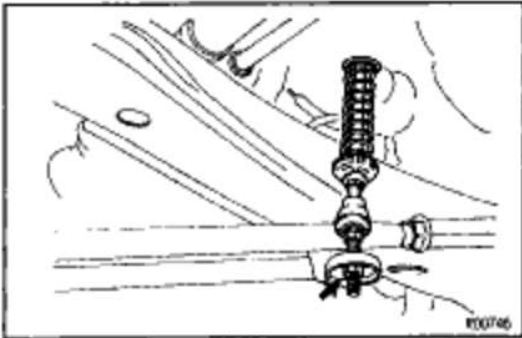
SUSPENSION AND AXLE – REAR SUSPENSION

**5. INSTALL NO.2 LOWER SUSPENSION ARM**

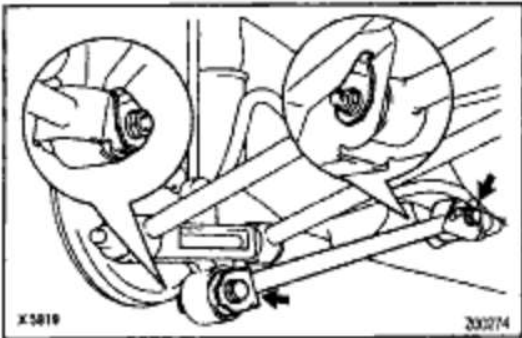
(a) Install the No.2 lower suspension arm with the 3 washers.

HINT: Face the paint mark to the rear.

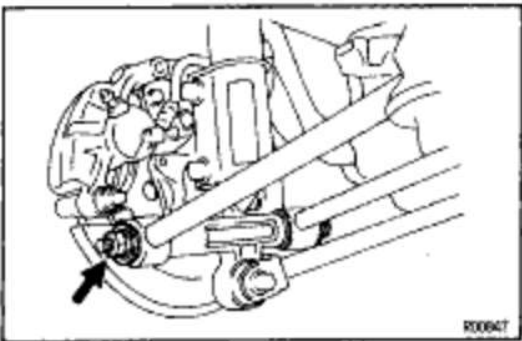
(b) Temporarily install the 2 lock nuts.

**6. WAGON only:****CONNECT LSPV SPRING TO LOWER ARM**

Torque: 13 N·m (130 kgf·cm, 9.4 ft·lbf)

**7. INSTALL STRUT ROD**

Place the strut rod and temporarily install the 2 bolts and nuts.

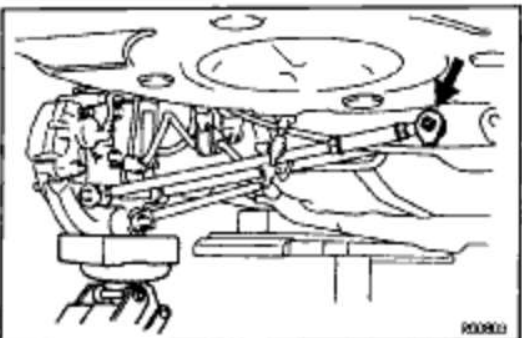
**8. TORQUE BOLTS AND NUTS**

(a) Torque the nut on outside of the lower arm.

Torque: 181 N·m (1,850 kgf·cm, 134 ft·lbf)

(b) Install the rear wheel and lower the vehicle.

(c) Bounce the vehicle up and down several times to stabilize the suspension.



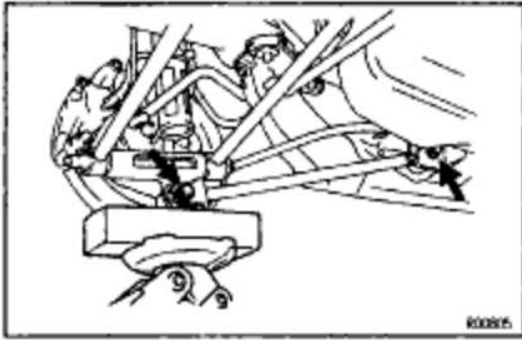
(d) Jack up the vehicle and support the body with stands.

(e) Remove the rear wheel.

(f) Support the rear axle carrier with a jack.

(g) Torque the nut on inside of lower arm.

Torque: 181 N·m (1,850 kgf·cm, 134 ft·lbf)

SA-94**SUSPENSION AND AXLE – REAR SUSPENSION**

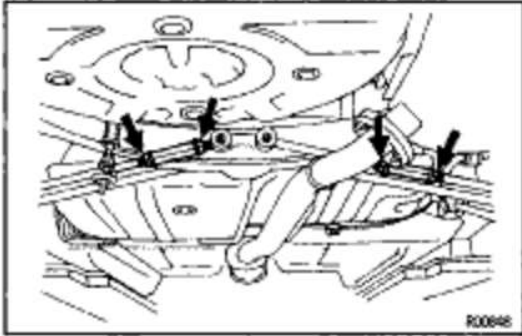
(h) Torque the strut rod set bolts.

Torque: 113 N·m (1,150 kgf·cm, 83 ft·lbf)

9. INSTALL REAR WHEEL AND LOWER VEHICLE

10. INSPECT AND ADJUST REAR WHEEL ALIGNMENT

(See page [SA-6](#))

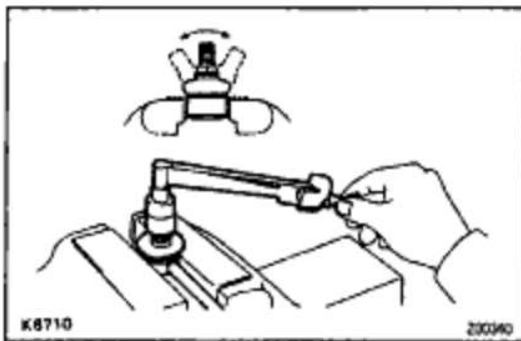
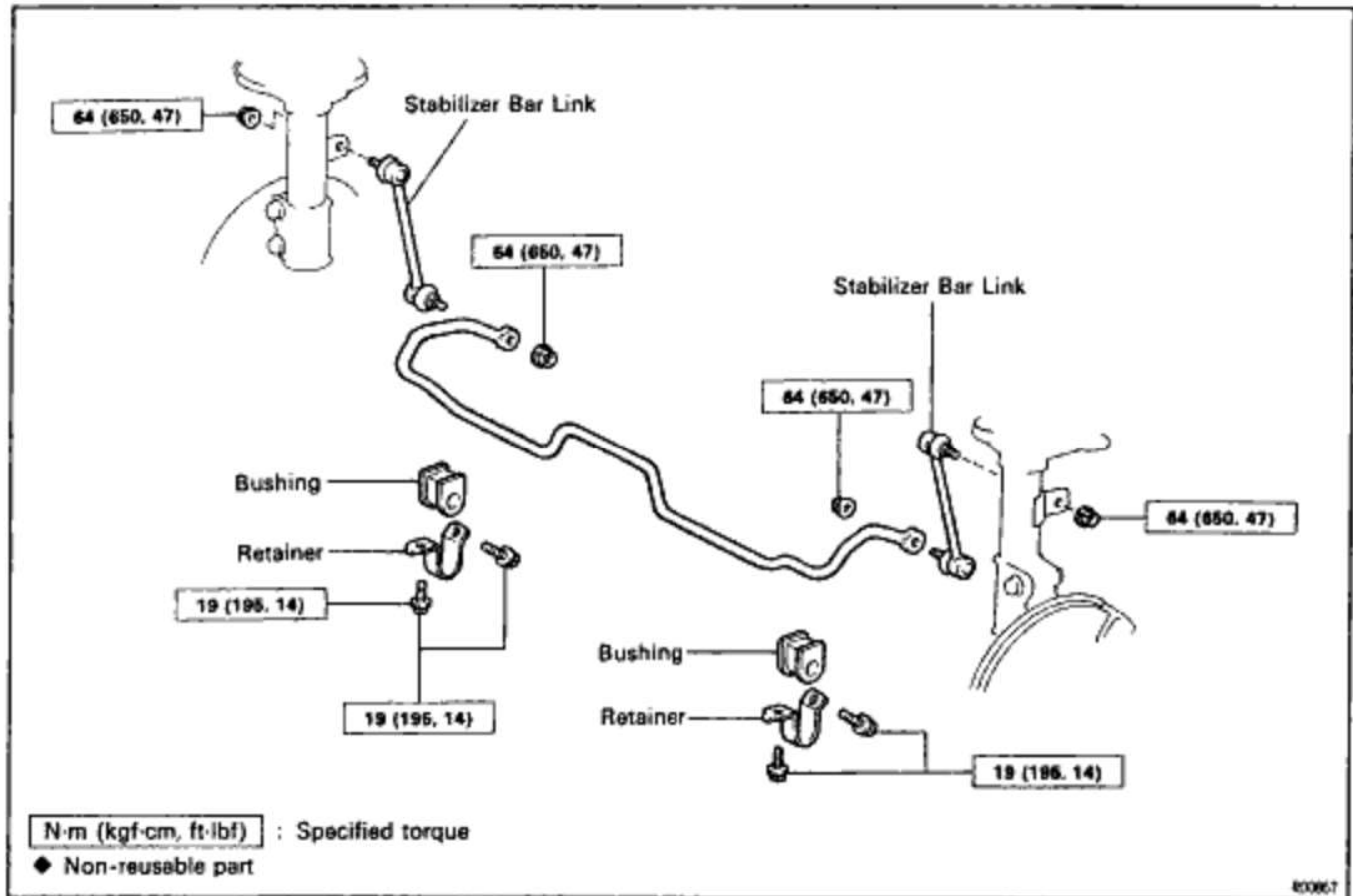


11. TORQUE NO.2 LOWER SUSPENSION ARM LOCK NUTS

Torque: 56 N·m (570 kgf·cm, 41 ft·lbf)

STABILIZER BAR COMPONENTS

SA-95C-01



STABILIZER BAR LINK INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

- Flip the ball joint stud back and forth 5 times as shown in the illustration, before installing the nut.
- Using a torque gauge, turn the nut continuously one turn every 2–4 seconds and take the torque reading on the fifth turn.

Turning torque:

0.05–1.0 N·m (0.5–10 kgf·cm, 0.4–8.7 in·lbf)

If not within specification, replace the stabilizer bar link.

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SUSPENSION AND AXLE – SERVICE SPECIFICATIONS

SERVICE SPECIFICATIONS

SERVICE DATA
SEDAN/COUPE

SA-96-02

Cold tire inflation pressure	Tire size		Pressure	
			Front	Rear
	P195/70R14 90H		180 kPa (1.8 kgf/cm ² , 26 psi)	180 kPa (1.8 kgf/cm ² , 26 psi)
	P205/65R15 92H		180 kPa (1.8 kgf/cm ² , 26 psi)	180 kPa (1.8 kgf/cm ² , 26 psi)
	P205/65R15 92V		220 kPa (2.2 kgf/cm ² , 32 psi)	205 kPa (2.05 kgf/cm ² , 30 psi)
Tire runout			1.0 mm (0.039 in.) or less	
Wheel balance	Unbalance after adjustment		8.0 g (0.018 lb) or less	
Vehicle height	Tire size		Height	
			Front	Rear
	P195/70R14		210 mm (8.27 in.)	262 mm (10.31 in.)
	P205/65R15		213 mm (8.39 in.)	267 mm (10.51 in.)
Front wheel alignment	Toe – in (total)		0° ± 0.2° (0 ± 2 mm, 0 ± 0.08 in.)	
	Wheel angle	Tire size	Inside wheel	Outside wheel (reference)
		P195/70R14	37°20' ± 2°	32°10'
		P205/65R15	36°00' ± 2°	31°15'
	Camber Left–right error		–0°35' ± 45'	
	Caster Left–right error		1°10' ± 45'	
	Steering axis inclination		13°05' ± 45'	
Rear wheel alignment	Toe–in (total)		0.4° ± 0.2° (4 ± 2 mm, 0.16 ± 0.08 in.)	
	Camber Left – right error		–0°26' ± 45'	
Front axle	Axle bearing backlash		0.05 mm (0.0020 in.) or less	
	Axle hub deviation		0.05 mm (0.0020 in.) or less	
Front suspension	Lower ball joint turning torque		1.0 – 2.9 N·m (10 – 30 kgf·cm, 8.7 – 26 in.·lbf)	
	Stabilizer bar link turning torque		0.05 – 1.0 N·m (0.5 – 10 kgf·cm, 0.4 – 8.7 in.·lbf)	
Rear axle	Axle bearing backlash		0.05 mm (0.0020 in.) or less	
	Axle hub deviation		0.07 mm (0.0028 in.) or less	
Rear suspension	Stabilizer bar link turning torque		0.05 – 1.0 N·m (0.5 – 10 kgf·cm, 0.4 – 8.7 in.·lbf)	

1104727

SUSPENSION AND AXLE – SERVICE SPECIFICATIONS

WAGON

Cold tire inflation pressure		Tire size	Pressure	
			Front	Rear
	For all roads including full rated loads	P195/70R14 90H	220 kPa (2.2 kgf/cm ² , 32 psi)	240 kPa (2.4 kgf/cm ² , 35 psi)
		P205/65R15 92H	220 kPa (2.2 kgf/cm ² , 32 psi)	240 kPa (2.4 kgf/cm ² , 35 psi)
	Optional inflation for reduced loads (1 or 4 passengers)	P195/70R14 90H	200 kPa (2.0 kgf/cm ² , 29 psi)	200 kPa (2.0 kgf/cm ² , 29 psi)
		P205/65R15 92H	200 kPa (2.0 kgf/cm ² , 29 psi)	200 kPa (2.0 kgf/cm ² , 29 psi)
Tire runout			1.0 mm (0.039 in.) or less	
Wheel balance	Unbalance after adjustment		8.0 g (0.018 lb) or less	
Vehicle height		Tire size	Height	
			Front	Rear
		P195/70R14	210 mm (8.27 in.)	272 mm (10.71 in.)
		P205/65R15	214 mm (8.43 in.)	277 mm (10.91 in.)
Front wheel alignment	Toe -in (total)		0° ± 0.2° (0 ± 2 mm, 0 ± 0.08 in.)	
	Wheel angle	Tire size	Inside wheel	Outside wheel (reference)
		P195/70R14	37°20' ± 2°	32°15'
		P205/65R15	36°00' ± 2°	31°20'
	Camber Left-right error		-0°35' ± 45' 45' or less	
	Caster Left-right error		1°05' ± 45' 45' or less	
	Steering axis inclination		13°00' ± 45'	
Rear wheel alignment	Toe-in (total)		0.4° ± 0.2° (4 ± 2 mm, 0.16 ± 0.08 in.)	
	Camber Left - right error		-0°15' ± 45' 45' or less	
Front axle	Axle bearing backlash		0.05 mm (0.0020 in.) or less	
	Axle hub deviation		0.05 mm (0.0020 in.) or less	
Front suspension	Lower ball joint turning torque		1.0 – 2.9 N·m (10 – 30 kgf·cm, 8.7 – 26 in·lbf)	
	Stabilizer bar link turning torque		0.05 – 1.0 N·m (0.5 – 10 kgf·cm, 0.4 – 8.7 in·lbf)	
Rear axle	Axle bearing backlash		0.05 mm (0.0020 in.) or less	
	Axle hub deviation		0.07 mm (0.0028 in.) or less	
Rear suspension	Stabilizer bar link turning torque		0.05 – 1.0 N·m (0.5 – 10 kgf·cm, 0.4 – 8.7 in·lbf)	

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SUSPENSION AND AXLE – SERVICE SPECIFICATIONS

SA98-08

TORQUE SPECIFICATIONS FRONT

Part tightened	N·m	kgf·cm	ft·lbf
Tie rod end lock nut	74	750	54
Steering knuckle x Shock absorber	211	2,150	156
Steering knuckle x Brake caliper	107	1,090	79
Steering knuckle x Tie rod end	49	500	36
Axle hub nut	294	3,000	217
Ball joint x Lower arm	127	1,300	94
Ball joint x Steering knuckle	123	1,250	90
Steering knuckle x Disc brake dust cover	8.3	85	74in·lbf
Drive shaft x Side gear shaft (1 MZ-FE)	65	660	48
Drive shaft center bearing lock bolt	32	330	24
Suspension upper support x Body	80	820	59
Suspension upper support x Piston rod	49	500	36
Brake hose x Shock absorber	29	300	22
ABS speed sensor wire x Shock absorber	5.4	55	48in·lbf
Lower arm set bolt	208	2,100	152
Lower arm x Stabilizer bar link bracket	58	570	41
Stabilizer bar bushing retainer	19	195	14
Stabilizer bar link set nut	39	400	29
Steering gear box set bolt	181	1,850	134
Front exhaust pipe stay x Clamp (1 MZ-FE)	29	300	22
Front exhaust pipe stay x Body (1 MZ-FE)	21	210	15

REAR

Part tightened	N·m	kgf·cm	ft·lbf
Brake caliper x Rear axle carrier	47	475	34
Axle bearing set bolt	80	820	59
Bearing lock nut (w/o ABS)	123	1,250	90
Shock absorber x Rear axle carrier	255	2,600	188
Brake hose x Shock absorber	29	300	22
ABS speed sensor set bolt	7.8	80	69in·lbf
ABS speed sensor wire x Shock absorber	5.4	55	48in·lbf
Suspension upper support x Body	39	400	29
Suspension upper support x Piston rod	49	500	36
Lower suspension arm x Suspension member	181	1,850	134
Lower suspension arm X Rear axis carrier	181	1,850	134
Strut rod x Body	113	1,150	83
Strut rod x Rear axle carrier	113	1,150	83
Suspension member x Body (17mm)	51	520	38
Suspension member x Body (14mm)	38	390	28
LSPV spring x Lower suspension arm	13	130	9.4
Stabilizer bar bushing retainer	19	195	14
Stabilizer bar link set nut	64	650	47

SUSPENSION AND AXLE – FRONT DRIVE SHAFT(5S-FE)

LUBRICANT

Drive shaft	Item	Capacity
Toyota type	Outboard joint grease	120–130 g (4.2–4.6 oz.)
	Inboard joint grease	232–242 g (8.2–8.5 oz.)
GKN type	Outboard joint grease	140–160 g (4.9–5.6 oz.)
	Inboard joint grease	185–215 g (6.5–7.6 oz.)