

REAR SUSPENSION SYSTEM

27012-01

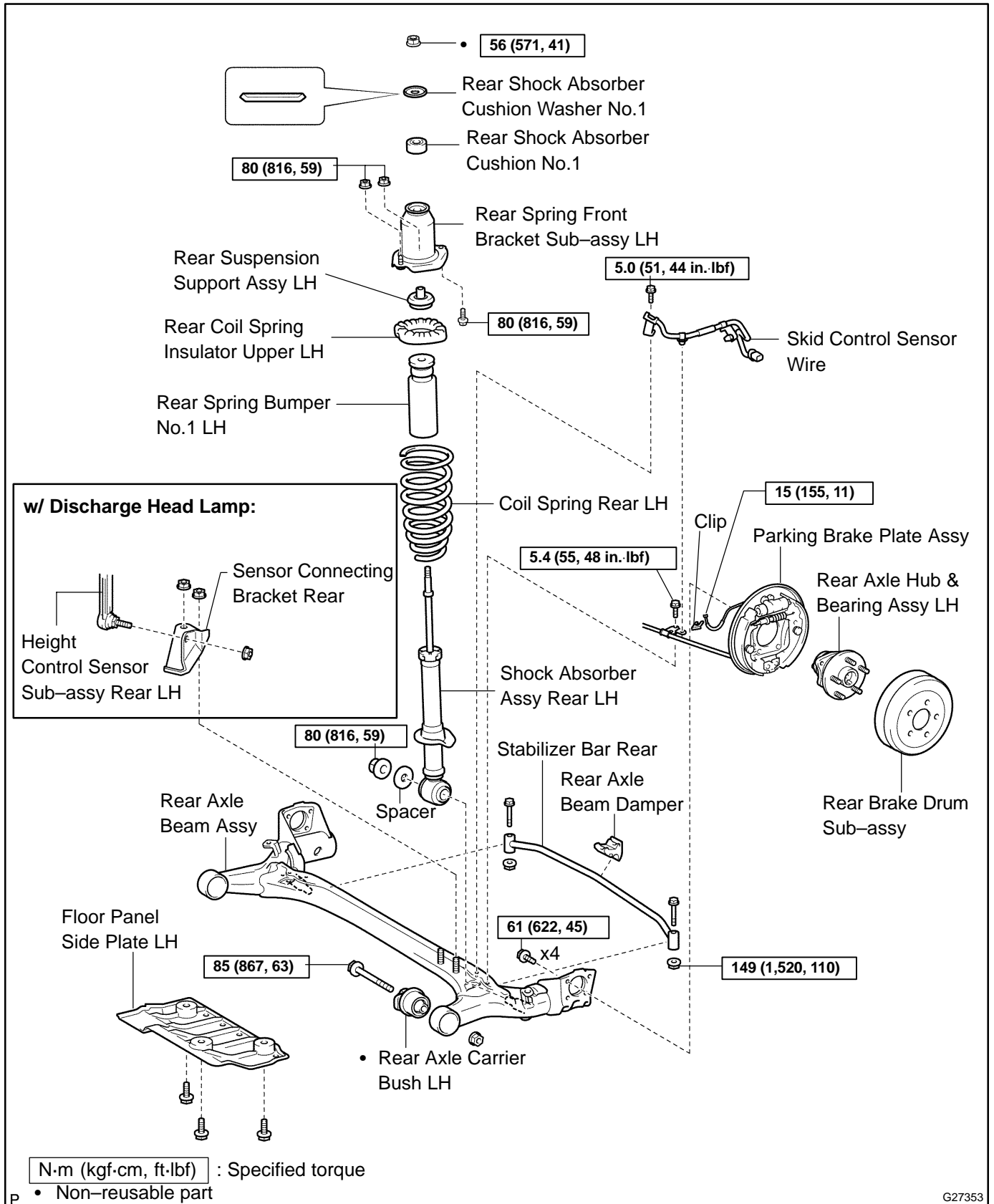
PROBLEM SYMPTOMS TABLE

Use the table below, with suspected areas listed in numerical order, to determine the cause of the problem. Inspect and repair or replace parts as necessary according to the steps on the following pages.

Symptom	Suspected Area	See page
Vehicle is unstable	<ol style="list-style-type: none"> 1. Tires (Worn or improperly inflated) 2. Rear wheel alignment 3. Hub bearing 4. Rear shock absorber with coil spring 	28-1 27-3 30-2 27-4
Bottoming	<ol style="list-style-type: none"> 1. Vehicle (Overloaded) 2. Rear shock absorber with coil spring 	– 27-4
Sways/pitches	<ol style="list-style-type: none"> 1. Tires (Worn or improperly inflated) 2. Stabilizer bar 3. Rear shock absorber with coil spring 	28-1 27-16 27-4
Rear wheel shimmy	<ol style="list-style-type: none"> 1. Tires (Worn or improperly inflated) 2. Wheels (Out of balance) 3. Rear wheel alignment 4. Rear axle beam 5. Rear shock absorber with coil spring 6. Hub bearing 	28-1 28-1 27-3 27-9 27-4 30-2
Abnormal tire wear	<ol style="list-style-type: none"> 1. Tires (Worn or improperly inflated) 2. Wheels (Out of balance) 3. Rear wheel alignment 	28-1 28-1 27-3

REAR SUSPENSION COMPONENTS

27013-01



G27353

REAR WHEEL ALIGNMENT

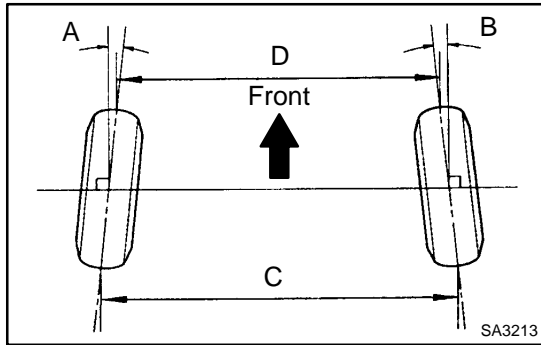
27014-01

INSPECTION

1. INSPECT TIRE (SEE PAGE 28-1)
2. MEASURE VEHICLE HEIGHT (SEE PAGE 26-6)

NOTICE:

Before inspecting wheel alignment, adjust the vehicle height to the specified value.



3. INSPECT TOE-IN

Toe-in (total)	A + B: $0^{\circ} 18' \pm 15'$ ($0.30^{\circ} \pm 0.25^{\circ}$) C - D: 3.0 ± 2.5 mm (0.12 ± 0.10 in.)
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HINT:

- Measure "C - D" only when "A + B" cannot be measured.
- If toe-in is not within the specified range, inspect the suspension parts for damage and/or wear, and replace them if necessary.

4. INSPECT CAMBER

- (a) Install the camber-caster-kingpin gauge or set the vehicle on the wheel alignment tester.
- (b) Inspect the camber.

Camber	Right-left error	$-1^{\circ} 30' \pm 30'$ ($-1.50^{\circ} \pm 0.5^{\circ}$) 30' (0.5°) or less
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HINT:

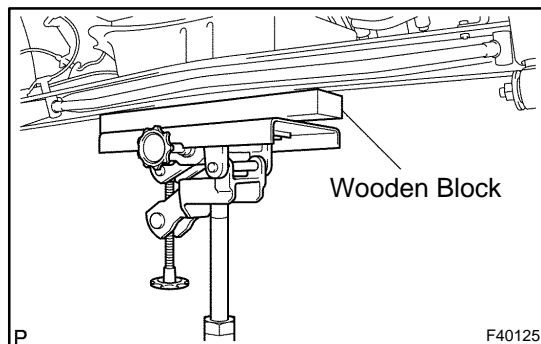
Camber is not adjustable. If the measurement is not within the specified range, inspect the suspension parts for damage and/or wear, and replace them if necessary.

REAR SHOCK ABSORBER WITH COIL SPRING OVERHAUL

27015-01

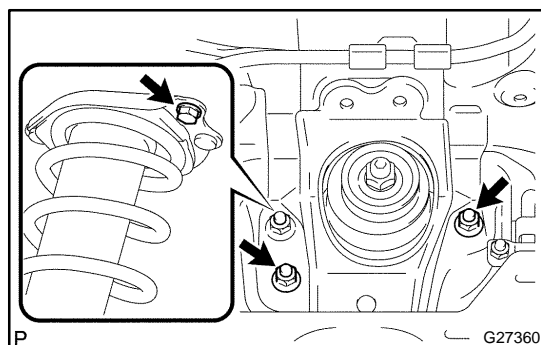
HINT:

- COMPONENTS: See page 27-2.
 - Installation is in the reverse order of removal.
1. REMOVE REAR FLOOR BOARD NO.2 (SEE PAGE 21-116)
 2. REMOVE DECK FLOOR BOX REAR (SEE PAGE 21-116)
 3. REMOVE DECK TRIM COVER REAR (SEE PAGE 21-54)
 4. REMOVE TONNEAU COVER ASSY (SEE PAGE 21-54)
 5. REMOVE REAR SEAT BACK ASSY LH (SEE PAGE 72-9)
 6. REMOVE REAR FLOOR BOARD NO.1 (SEE PAGE 21-54)
 7. REMOVE REAR SIDE SEAT BACK FRAME LH (SEE PAGE 21-54)
 8. REMOVE REAR FLOOR BOARD NO.4 (SEE PAGE 21-54)
 9. REMOVE DECK FLOOR BOX LH (SEE PAGE 21-54)
 10. REMOVE DECK TRIM SIDE PANEL ASSY LH (SEE PAGE 21-54)
 11. REMOVE BATTERY CARRIER BRACKET (SEE PAGE 21-54)
 12. REMOVE REAR WHEEL

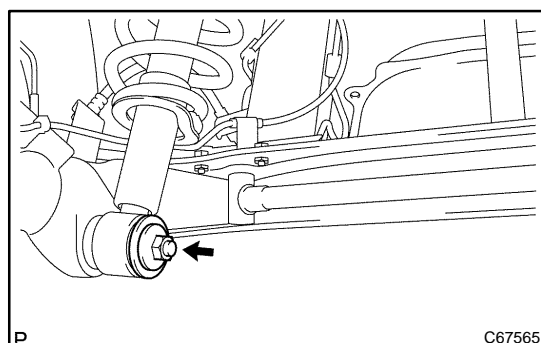


13. REMOVE REAR SHOCK ABSORBER WITH COIL SPRING

- (a) Support the rear axle beam with a jack. Insert a wooden block between the jack and the rear axle beam to prevent damage.



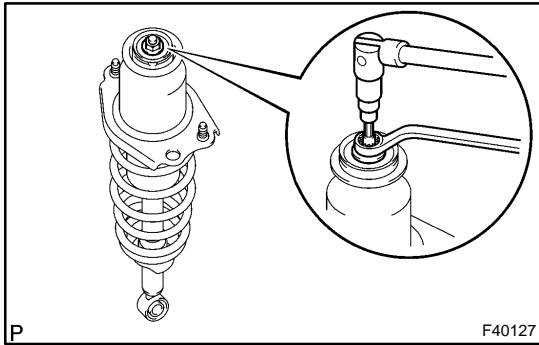
- (b) Remove the 2 nuts from the rear shock absorber with coil spring (upper side).
- (c) Remove the rear shock absorber with coil spring (upper side) bolt from the under-side of the vehicle.



- (d) Remove the nut and spacer from the rear shock absorber with coil spring (lower side).
- (e) Remove the rear shock absorber with coil spring while slowly lowering the jack.

NOTICE:

Set the jack so that no extra load is placed on the shock absorber assy on the opposite side of the vehicle.

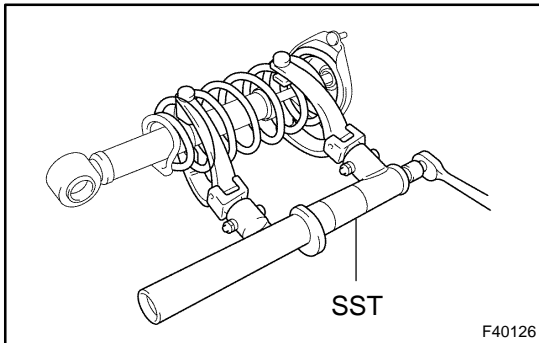


14. REMOVE SHOCK ABSORBER ASSY REAR LH

- (a) Use a socket hexagon wrench (6 mm) to secure the piston rod of the shock absorber assy and loosen the nut.

NOTICE:

- Do not remove the nut.
- Sufficiently insert the hexagon wrench.



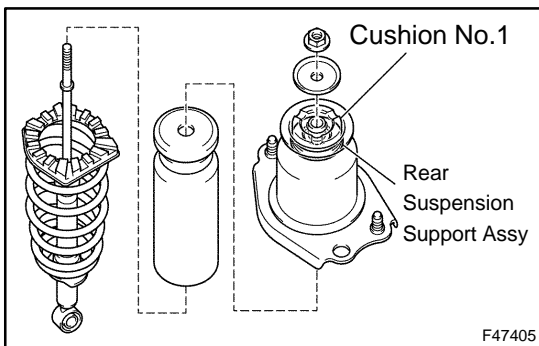
- (b) Attach the SST to the coil spring so that the upper and lower hooks of the installed area are as wide as possible. SST 09727-30021 (09727-00010, 09727-00021, 09727-00031)

- (c) Compress the coil spring until it moves freely.

NOTICE:

Do not use an impact wrench. It will damage the SST.

- (d) Remove the nut.



- (e) Remove cushion washer No.1, cushion No.1, the rear spring front bracket, the rear suspension support assy, the rear coil spring insulator upper and rear spring bumper No.1.

HINT:

The shock absorber assy can be replaced without removing cushion No.1 and the rear suspension support assy from the rear spring front bracket.

- (f) Release the SST and remove it from the coil spring after removing the coil spring from the shock absorber assy.

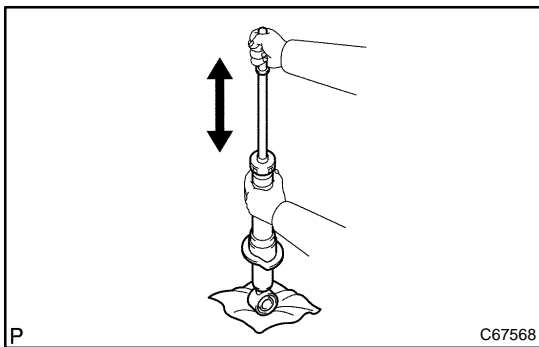
15. INSPECT SHOCK ABSORBER ASSY REAR LH

- (a) Compress and extend the shock absorber rod, and check that there is no abnormal resistance or unusual sound.

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

NOTICE:

When disposing of the shock absorber, see DISPOSAL on page 27-8.



16. INSTALL SHOCK ABSORBER ASSY REAR LH

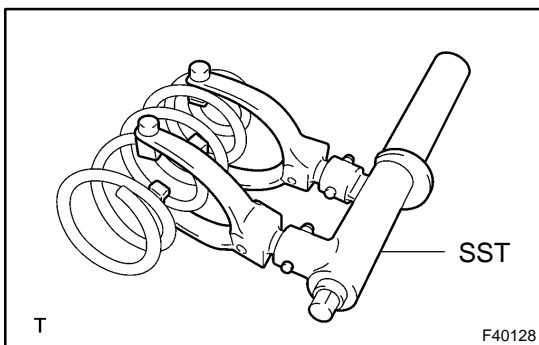
- (a) Compress the coil spring using SST. SST 09727-30021 (09727-00010, 09727-00021, 09727-00031)

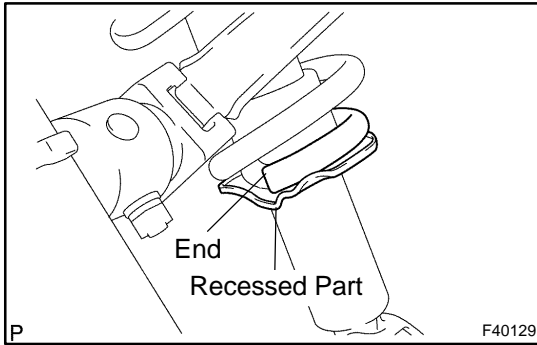
NOTICE:

Do not use an impact wrench. It will damage the SST.

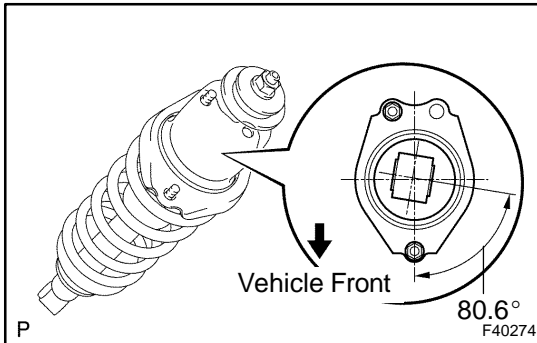
HINT:

The coil spring can also be installed/removed using the hydraulic spring compressor.





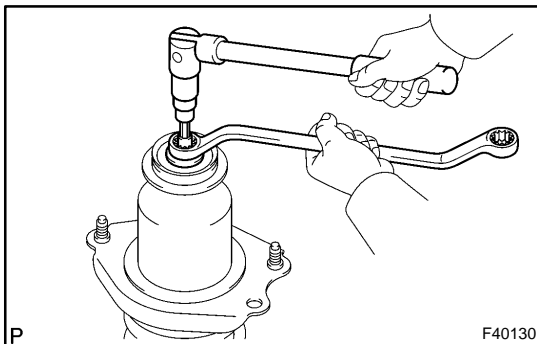
- (b) Fit the coil spring end into the recessed part of the shock absorber assy lower seat.
- (c) Fit the rear coil spring insulator upper to the rear spring front bracket.



- (d) Install rear spring bumper No.1, the rear suspension support assy, the rear spring front bracket, cushion No.1 and cushion washer No.1.

NOTICE:

- Install the rear spring front bracket so that it is aligned with the shock absorber assy lower bush, as shown in the illustration.
- Install cushion washer No.1 with the protruding portion facing down.



- (e) Use a socket hexagon wrench (6 mm) to fix the shock absorber assy piston rod and tighten the nut.
Torque: 56 N·m (571 kgf·cm, 41 ft·lbf)

NOTICE:

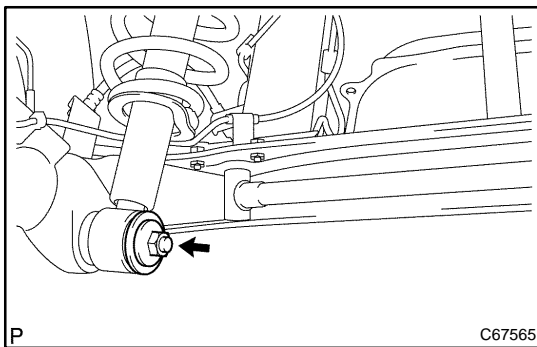
Sufficiently insert the hexagon wrench.

- (f) Release the SST and remove it from the coil spring.

NOTICE:

- Do not use an impact wrench. It will damage the SST.
- Remove the SST while confirming the direction of the rear spring front bracket.

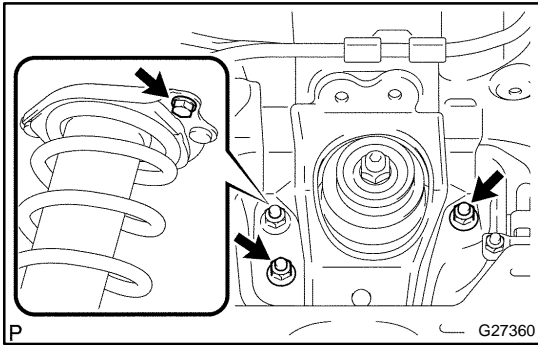
17. INSTALL REAR SHOCK ABSORBER WITH COIL SPRING



- (a) Install the rear shock absorber with coil spring to the rear axle beam. Place the spacer and temporarily tighten the nut.
- (b) Install the rear shock absorber with coil spring (upper side) to the vehicle by slowly raising the rear axle beam assy on a jack. Insert a wooden block between the jack and the rear axle beam assy to prevent damage.

NOTICE:

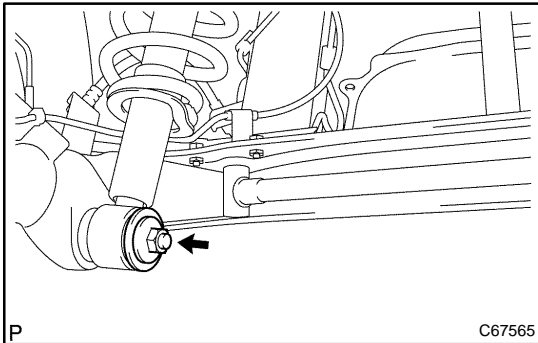
- Do not raise the rear axle beam assy more than necessary.
- Securely insert the rear spring front bracket stud bolt into the vehicle.



- (c) Tighten the bolt and 2 nuts of the rear shock absorber with coil spring (upper side).
Torque: 80 N·m (816 kgf·cm, 59 ft·lbf)

18. STABILIZE SUSPENSION

- (a) Install the rear wheel.
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
- (b) After jacking down the vehicle, bounce the vehicle up and down to stabilize the rear suspension.



19. FULLY TIGHTEN REAR SHOCK ABSORBER WITH COIL SPRING

- (a) Tighten the rear shock absorber with coil spring (lower side) installation nut.
Torque: 80 N·m (816 kgf·cm, 59 ft·lbf)

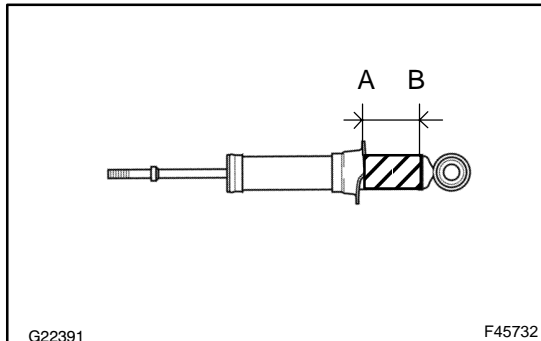
NOTICE:

Ensure the vehicle is lowered to the ground.

20. INSPECT REAR WHEEL ALIGNMENT (SEE PAGE [27-3](#))

21. PERFORM INITIALIZATION (W/ DISCHARGE HEAD LAMP) (SEE PAGE [05-1675](#))

DISPOSAL



1. **DISPOSE OF SHOCK ABSORBER ASSY REAR LH**
 - (a) Fully extend the shock absorber rod.
 - (b) Make a hole in the cylinder somewhere between A and B as shown in the illustration to discharge the gas inside using a drill.

CAUTION:

- **Be careful when drilling because shards of metal may fly about, so always use the proper safety equipment.**
- **The gas is colorless, odorless and non-poisonous.**

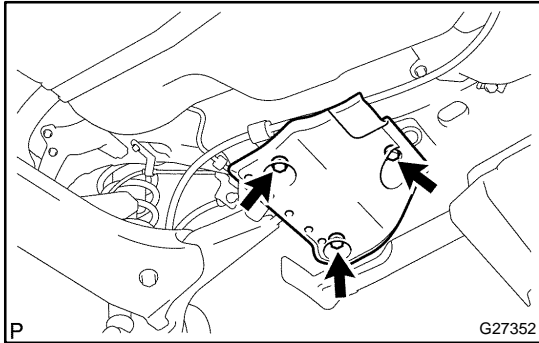
REAR AXLE BEAM ASSY REPLACEMENT

27017-01

HINT:

COMPONENTS: See page 27-2.

1. REMOVE REAR WHEEL



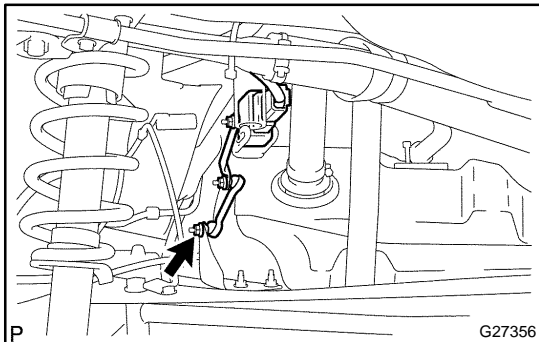
2. REMOVE FLOOR PANEL SIDE PLATE LH

- (a) Remove the 3 bolts and the floor panel side plate.

3. REMOVE FLOOR PANEL SIDE PLATE RH

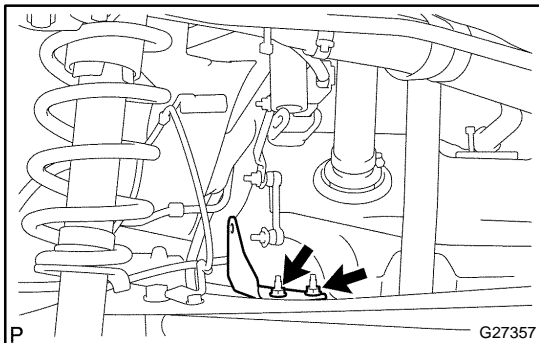
HINT:

Use the same procedures for the RH side and LH side.



4. SEPARATE HEIGHT CONTROL SENSOR SUB-ASSY REAR LH (W/ DISCHARGE HEAD LAMP)

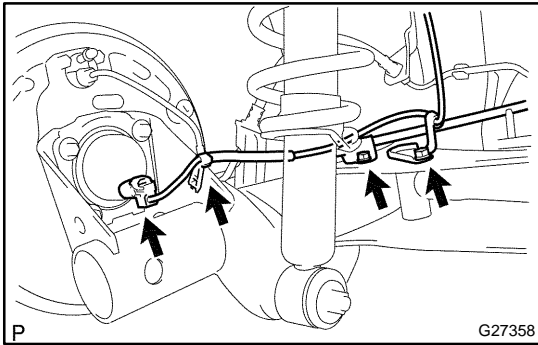
- (a) Remove the nut and separate the height control sensor sub-assy.



5. REMOVE SENSOR CONNECTING BRACKET REAR (W/ DISCHARGE HEAD LAMP)

- (a) Remove the 2 nuts and the sensor connecting bracket.

6. REMOVE REAR BRAKE DRUM SUB-ASSY

**7. SEPARATE SKID CONTROL SENSOR WIRE**

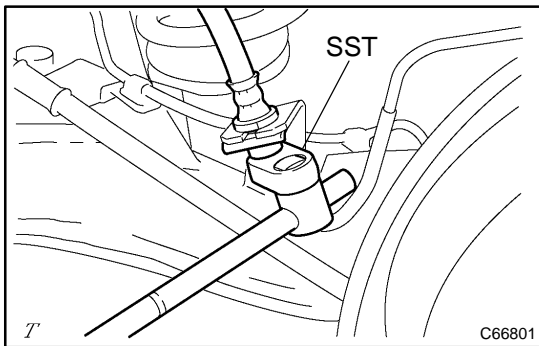
- (a) Remove the 2 bolts and clip, and separate the skid control sensor wire and parking brake cable from the rear axle beam.

NOTICE:

- Ensure no foreign matter is on the end of the skid control sensor wire.
- Ensure that the skid control sensor wire is separated from the rear axle beam.

HINT:

Use the same procedures for the RH side and LH side.

8. REMOVE REAR AXLE BEAM DAMPER (SEE PAGE 27-16)**9. REMOVE STABILIZER BAR REAR (SEE PAGE 27-16)****10. SEPARATE REAR BRAKE TUBE NO.4**

- (a) Separate the rear brake tube from the flexible hose using SST.

SST 09023-00100

NOTICE:

Do not damage the rear brake tube or flexible hose.

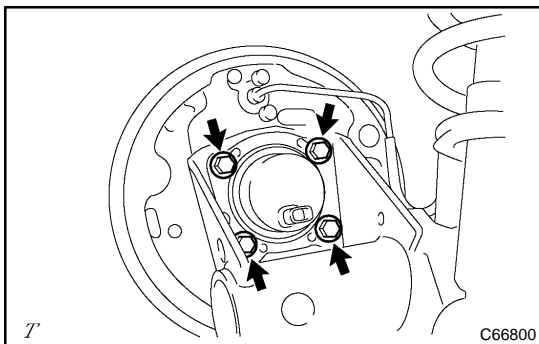
- (b) Remove the clip.

11. SEPARATE REAR BRAKE TUBE NO.3

SST 09023-00100

HINT:

Use the same procedures for the RH side and LH side.

**12. REMOVE REAR AXLE HUB & BEARING ASSY LH**

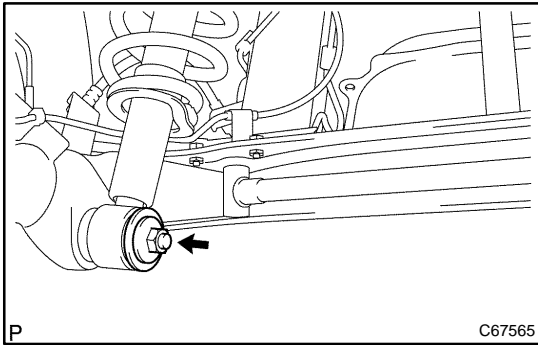
- (a) Remove the 4 bolts. Remove the axle hub & bearing assy and parking brake plate assy from the rear axle beam.

NOTICE:

- Do not twist the parking brake cable.
- Use rope, etc. to suspend the parking brake plate assy.

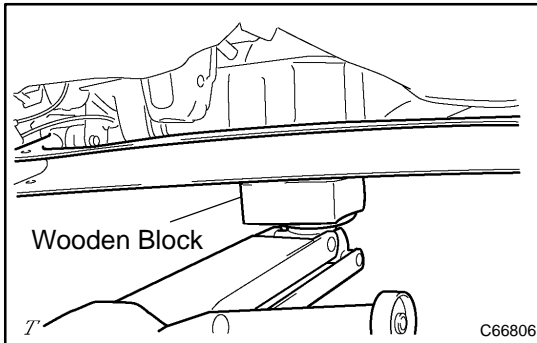
13. REMOVE REAR AXLE HUB & BEARING ASSY RH**HINT:**

Use the same procedures for the RH side and LH side.



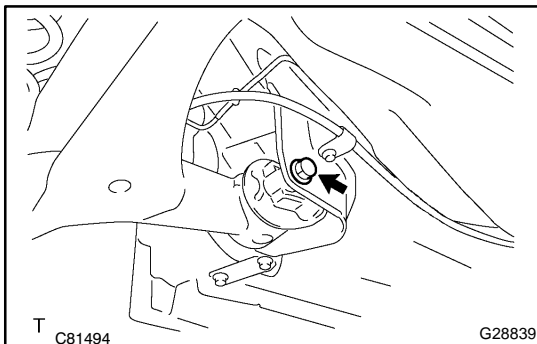
14. SEPARATE REAR SHOCK ABSORBER WITH COIL SPRING

- (a) Remove the 2 nuts from the left- and right-hand sides. Remove the rear shock absorber with coil spring (lower side) from the rear axle beam.



15. REMOVE REAR AXLE BEAM ASSY

- (a) Support the rear axle beam with a jack. Insert a wooden block between the jack and the center of the rear axle beam to prevent damage.



- (b) Remove the 2 bolts and 2 nuts from the left- and right-hand sides.

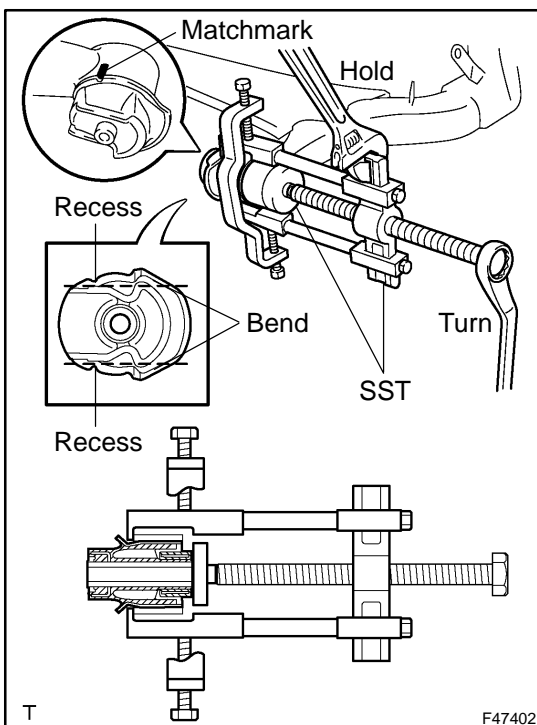
NOTICE:

Keep the nut from rotating when removing the bolt.

- (c) Remove the rear axle beam by slowly lowering the jack.

NOTICE:

Ensure that the skid control sensor wire is completely separated from the rear axle beam.



16. REMOVE REAR AXLE CARRIER BUSH LH

- (a) Place a matchmark on the rear axle beam after aligning it with the bush recess.
- (b) Make 2 bends in the rim of the bush using a chisel and hammer.
- (c) Remove the bush from the rear axle beam using SST.
SST 09950-40011 (09951-04020, 09952-04010, 09953-04030, 09954-04020, 09955-04051, 09957-04010, 09958-04011), 09950-60010 (09951-00630)

NOTICE:

- Do not erase the matchmark on the rear axle beam when removing the bush.
- Apply chassis black if the rear axle beam is scratched.

17. REMOVE REAR AXLE CARRIER BUSH RH

SST 09950-40011 (09951-04020, 09952-04010, 09953-04030, 09954-04020, 09955-04051, 09957-04010, 09958-04011), 09950-60010 (09951-00630)

HINT:

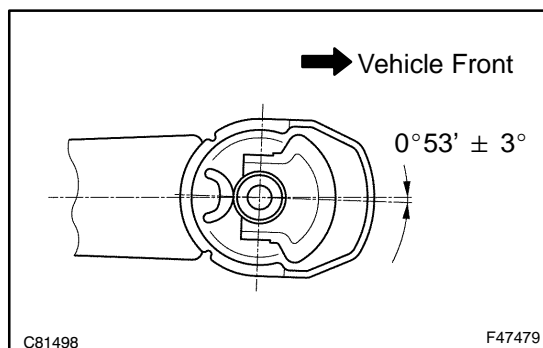
Use the same procedures for the RH side and LH side.

18. INSTALL REAR AXLE CARRIER BUSH LH

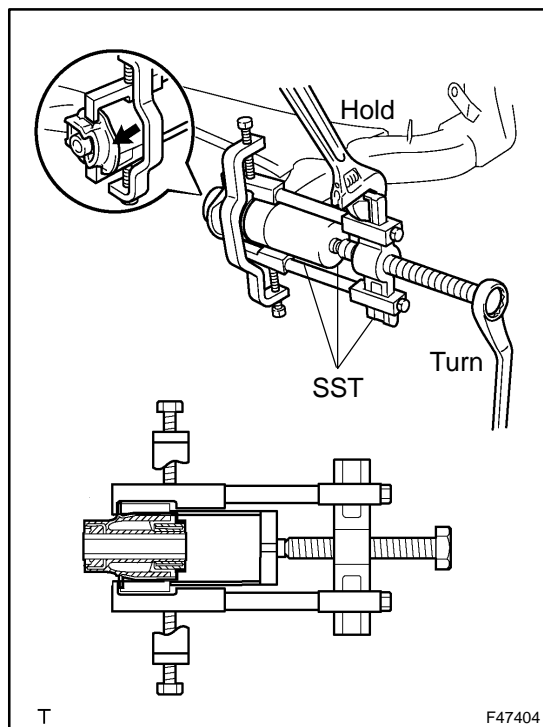
- (a) Temporarily install a new bush recess by aligning it with the matchmark on the rear axle beam (when replacing bush only).

NOTICE:

Install the bush in the same direction as before it was removed.



- (b) Temporarily install a new bush as shown in the illustration (when replacing the rear axle beam).



- (c) Install the bush to the rear axle beam using SST.

SST 09950-40011 (09951-04020, 09952-04010, 09953-04030, 09954-04020, 09955-04051, 09957-04010, 09958-04011), 09950-60010 (09951-00620), 09710-04101

NOTICE:

- Hang the claw of SST to the bush deeply and firmly.
- Do not damage the rubber sections indicated by the arrow in the illustration when installing the bush.

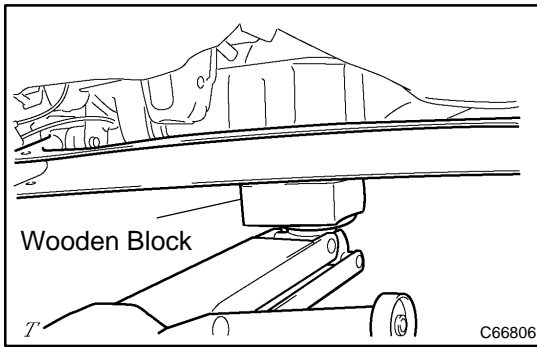
19. INSTALL REAR AXLE CARRIER BUSH RH

SST 09950-40011 (09951-04020, 09952-04010, 09953-04030, 09954-04020, 09955-04051, 09957-04010, 09958-04011), 09950-60010 (09951-00620), 09710-04101

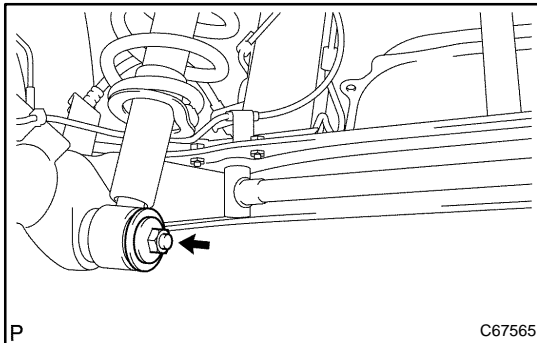
HINT:

Use the same procedures for the RH side and LH side.

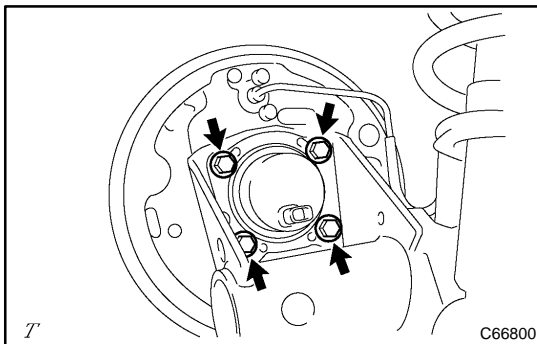
2004 Prius - Preliminary Release (RM1075U)



- 20. TEMPORARILY TIGHTEN REAR AXLE BEAM ASSY**
- Support the rear axle beam with a jack. Insert a wooden block between the jack and the center of the rear axle beam to prevent damage.
 - Slowly raise the jack to install the rear axle beam on the vehicle. Insert the 2 bolts from inside the vehicle and temporarily tighten them with the 2 nuts (one nut and bolt each for both the left- and right-hand sides).



- 21. TEMPORARILY TIGHTEN REAR SHOCK ABSORBER WITH COIL SPRING**
- Install the left- and right-hand side rear shock absorber with coil spring (lower side) to the rear axle beam. Temporarily tighten the nuts.

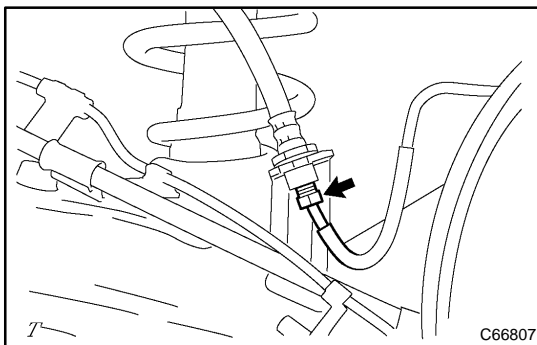


- 22. INSTALL REAR AXLE HUB & BEARING ASSY LH**
- Install the parking brake plate assy and the axle hub & bearing assy to the rear axle beam using the 4 bolts.
Torque: 61 N·m (622 kgf·cm, 45 ft·lbf)

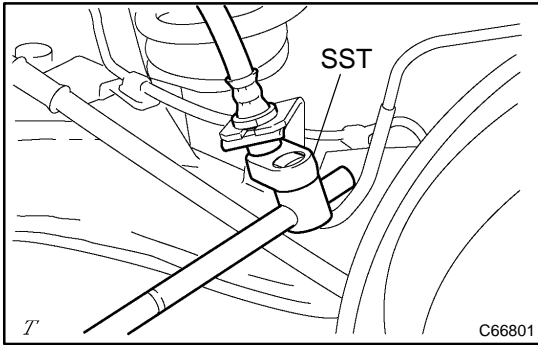
23. INSTALL REAR AXLE HUB & BEARING ASSY RH

HINT:

Use the same procedures for the RH side and LH side.



- 24. INSTALL REAR BRAKE TUBE NO.4**
- Temporarily tighten the rear brake tube and flexible hose.
- NOTICE:**
- Do not damage the rear brake tube or flexible hose.
 - Replace the rear brake tube and flexible hose with new parts if they are damaged.
- Install the rear brake tube to the rear axle beam and secure it with the clip.



- (c) Fully tighten the rear brake tube using SST.
 SST 09023-00100
Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)

25. INSTALL REAR BRAKE TUBE NO.3

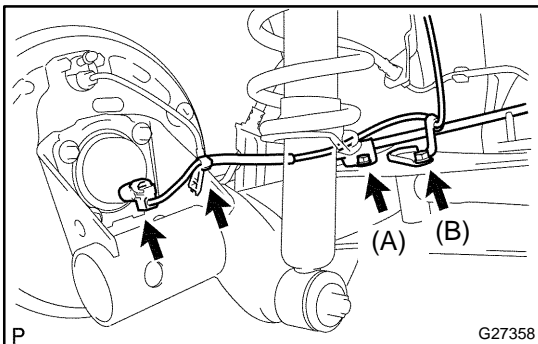
SST 09023-00100

HINT:

Use the same procedures for the RH side and LH side.

26. INSTALL STABILIZER BAR REAR (SEE PAGE 27-16)

27. INSTALL REAR AXLE BEAM DAMPER (SEE PAGE 27-16)



28. INSTALL SKID CONTROL SENSOR WIRE

- (a) Install the skid control sensor wire and parking brake cable to the rear axle beam using the 2 bolts and clip.

Torque:

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

Bolt B: 5.0 N·m (51 kgf·cm, 44 in·lbf)

NOTICE:

Do not twist the skid control sensor wire while installing.

HINT:

Use the same procedures for the RH side and LH side.

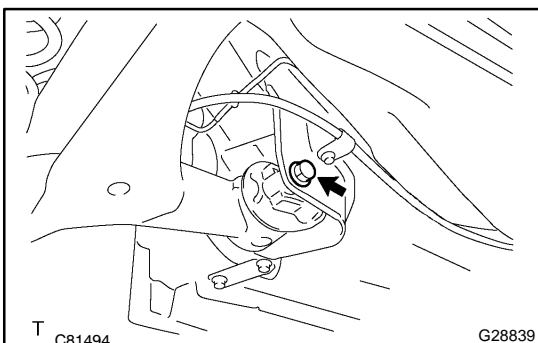
29. INSTALL REAR BRAKE DRUM SUB-ASSY

30. STABILIZE SUSPENSION

- (a) Install the rear wheel.

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

- (b) After jacking down the vehicle, bounce the vehicle up and down to stabilize the rear suspension.



31. FULLY TIGHTEN REAR AXLE BEAM ASSY

- (a) Hold the nut and rotate the bolt to fully tighten the rear axle beam on the LH side.

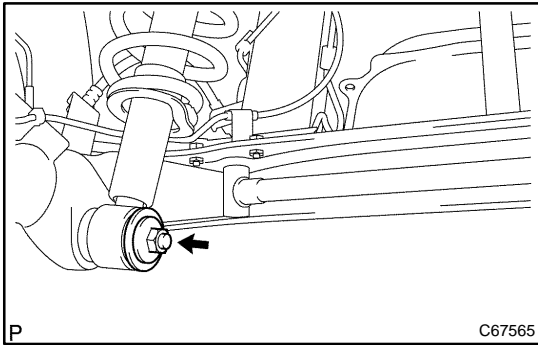
Torque: 85 N·m (867 kgf·cm, 63 ft·lbf)

NOTICE:

Ensure the vehicle is lowered to the ground.

HINT:

Use the same procedures for the RH side and LH side.



32. FULLY TIGHTEN REAR SHOCK ABSORBER WITH COIL SPRING

- (a) Install the rear shock absorber with coil spring (lower side) and tighten the nut.

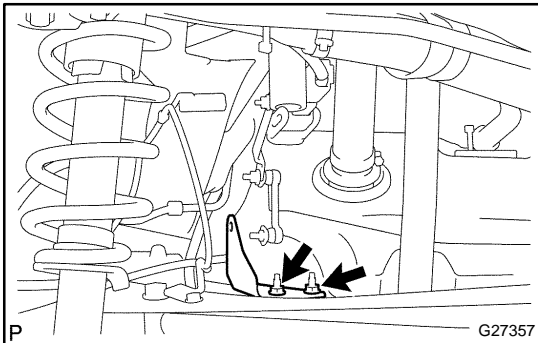
Torque: 80 N·m (816 kgf·cm, 59 ft·lbf)

NOTICE:

Ensure the vehicle is lowered to the ground.

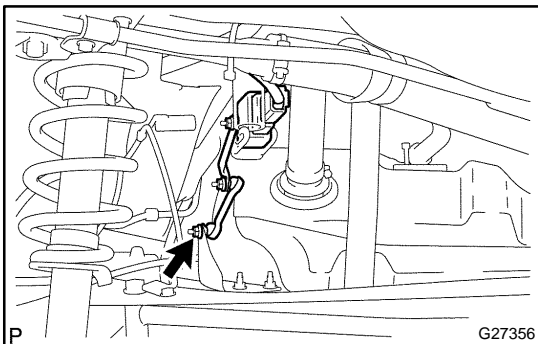
HINT:

Use the same procedures for the RH side and LH side.



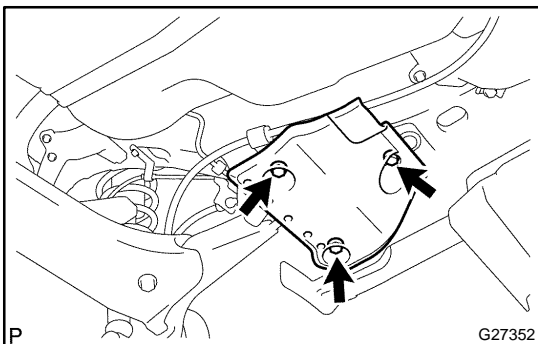
33. INSTALL SENSOR CONNECTING BRACKET REAR (W/ DISCHARGE HEAD LAMP)

- (a) Install the sensor connecting bracket using the 2 nuts.



34. INSTALL HEIGHT CONTROL SENSOR SUB-ASSY REAR LH (W/ DISCHARGE HEAD LAMP)

- (a) Install the height control sensor sub-assy using the nut.



35. INSTALL FLOOR PANEL SIDE PLATE LH

- (a) Install the floor panel side plate using the 3 bolts.

36. INSTALL FLOOR PANEL SIDE PLATE RH

HINT:

Use the same procedures for the RH side and LH side.

37. BLEED BRAKE LINE (SEE PAGE 32-4)

38. INSPECT BRAKE FLUID

39. INSPECT REAR WHEEL ALIGNMENT (SEE PAGE 27-3)

40. PERFORM INITIALIZATION (W/ DISCHARGE HEAD LAMP) (SEE PAGE 05-1675)

41. ADJUST HEADLIGHT AIM ONLY (W/ DISCHARGE HEAD LAMP) (SEE PAGE 65-16)

42. CHECK ABS SPEED SENSOR SIGNAL (SEE PAGE 05-961)

STABILIZER BAR REAR REPLACEMENT

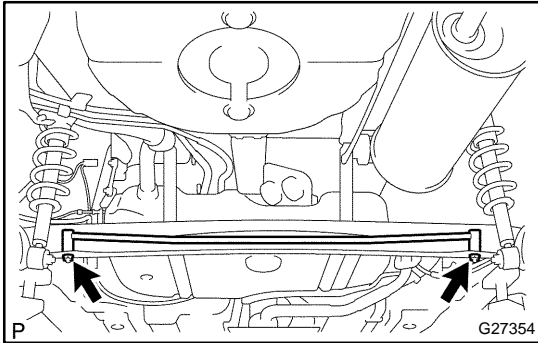
27018-01

HINT:

COMPONENTS: See page 27-2.

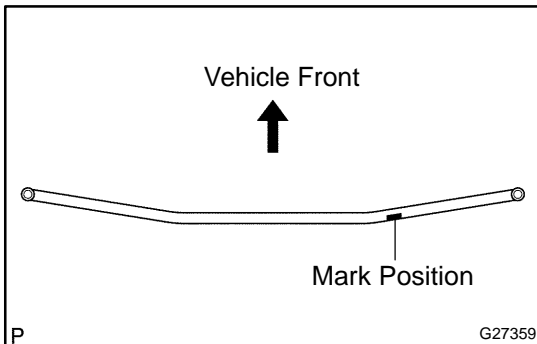
1. REMOVE REAR AXLE BEAM DAMPER

- (a) Remove the rear axle beam damper from the rear axle beam Assy.



2. REMOVE STABILIZER BAR REAR

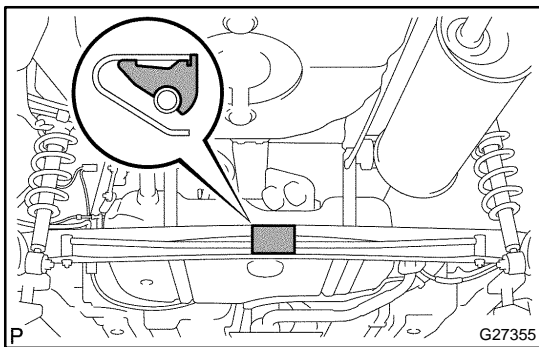
- (a) Remove the 2 bolts, the 2 nuts and then the stabilizer bar.



3. INSTALL STABILIZER BAR REAR

- (a) Install the stabilizer bar so that the mark position faces towards the vehicle's right rear. Hold the bolts and tighten the nuts.

Torque: 149 N·m (1,520 kgf·cm, 110 ft·lbf)



4. INSTALL REAR AXLE BEAM DAMPER

- (a) Install the rear axle beam damper to the center of the rear axle beam Assy.