
SUSPENSION AND AXLE

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-3	SA-4	SA-21 SA-85	SA-32 SA-96	SA-32 SA-96	SA-26,29 SA-89,92	SA-13 SA-35	-	-	SA-20 SA-83	-	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	Overload	Wheel balance
Trouble													
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		

GENERAL INSPECTION

1. INSPECT TIRE

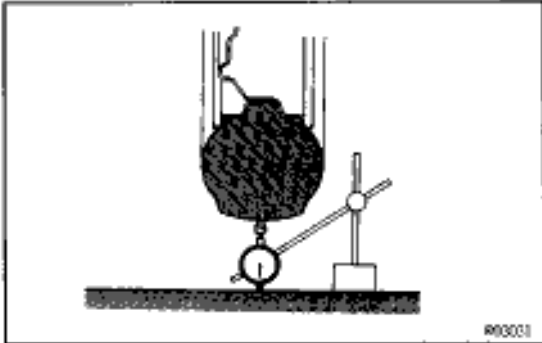
- (a) Check the tires for wear and for the proper inflation pressure.

Cold tire inflation pressure (2JZ-GE)

Tire size	Front kPa (kgf/cm ² , psi)	Rear kPa (kgf/cm ² , psi)
225/50ZR16	230 (2.3, 33)	—
245/50ZR16	—	250 (2.5, 36)

Cold tire inflation pressure (2JZ-GTE)

Tire size	Front kPa (kgf/cm ² , psi)	Rear kPa (kgf/cm ² , psi)
235/45ZR17	250 (2.5, 36)	—
255/40ZR17	—	250 (2.5, 36)



- (b) Check the tire runout.

Tire runout:

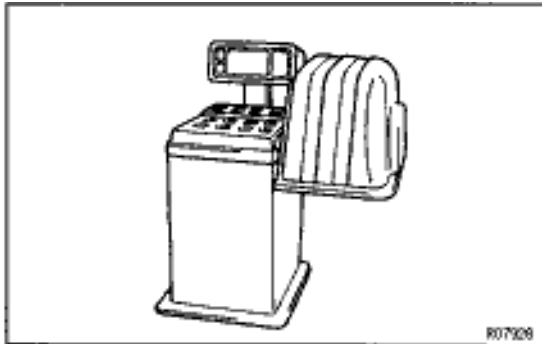
Less than 1.4 mm (0.055 in.)

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:

5.0 g (0.011 lb) or less



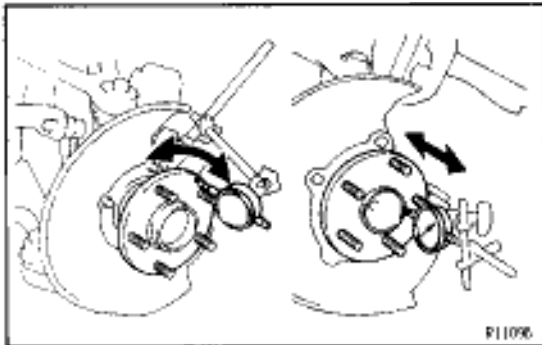
3. CHECK WHEEL BEARING LOOSENESS

- (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 LOOSENESS

7. CHECK SHOCK ABSORBER WORK PROPERLY

- Check for oil leak
- Check mounting bushings for wear
- Bounce front and rear of the vehicle

WHEEL ALIGNMENT

FRONT WHEEL ALIGNMENT

1. MEASURE VEHICLE HEIGHT

Front vehicle height

Engine	Tire size	Height
2JZ-GE	225/50ZR16	185 mm (7.28 in.)
2JZ-GTE	235/45ZR17	187 mm (7.36 in.)

Measuring point:

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

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

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

2. INSTALL CAMBER-CASTER-KINGPIN GAUGE OR ONTO WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.

3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

Specifications

	2JZ-GE	2JZ-GTE
Camber	$-0^{\circ}20' \pm 45'$	$-0^{\circ}30' \pm 45'$
Left-right error	30' or less	30' or less
Caster	$3^{\circ}20' \pm 45'$	$3^{\circ}30' \pm 45'$
Left-right error	30' or less	30' or less
Steering axis inclination	$9^{\circ}35' \pm 45'$ (Reference)	$9^{\circ}45' \pm 45'$ (Reference)

If the steering axis inclination is not as specified, after camber and caster have been correctly adjusted, recheck the steering knuckle front wheel for bearing or looseness.

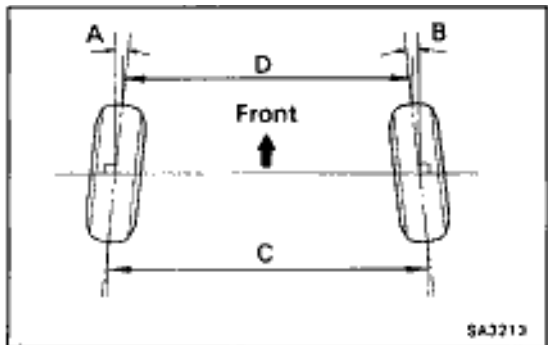
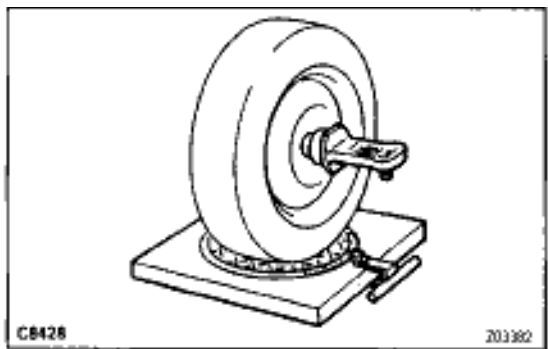
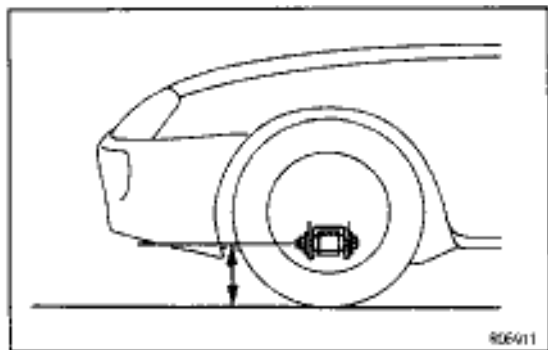
4. INSPECT TOE-IN

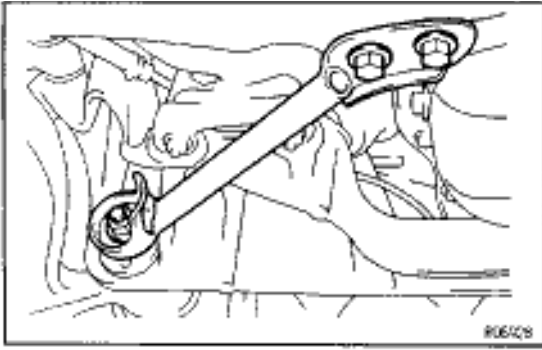
Toe-in (total):

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

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

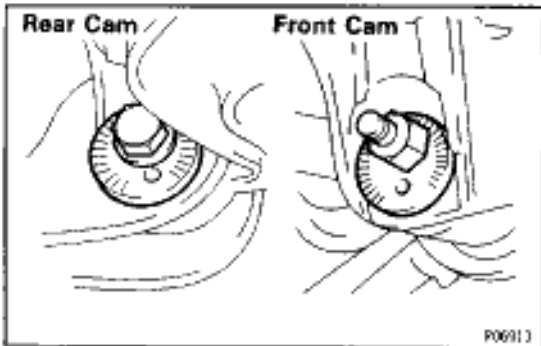
If toe-in is not within specification adjust by the tie rod end.





5. ADJUST CAMBER AND CASTER

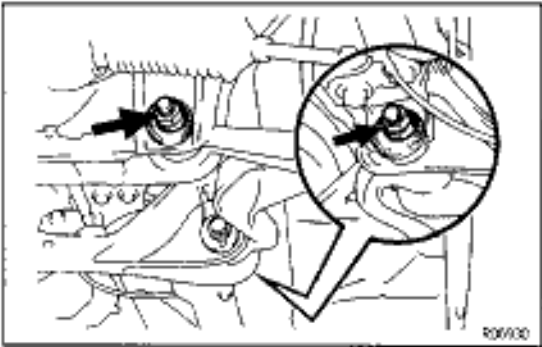
- Remove the engine under cover.
- Remove the nut, 2 bolts and front lower arm bracket stay.



- Loosen the front and/or rear adjusting cam nuts.
- Adjust the camber and caster by front and/or rear adjusting cams. (See adjustment chart)

Specifications

	2JZ-GE	2JZ-GTE
Camber	$-0^{\circ}20' \pm 30'$	$-0^{\circ}30' \pm 30'$
Left-right error	30' or less	30' or less
Caster	$3^{\circ}20' \pm 30'$	$3^{\circ}30' \pm 30'$
Left-right error	30' or less	30' or less



- Torque the front and/or rear adjusting cam nuts.

Torque: 226 N·m (2,300 kgf·cm, 166 ft·lbf)

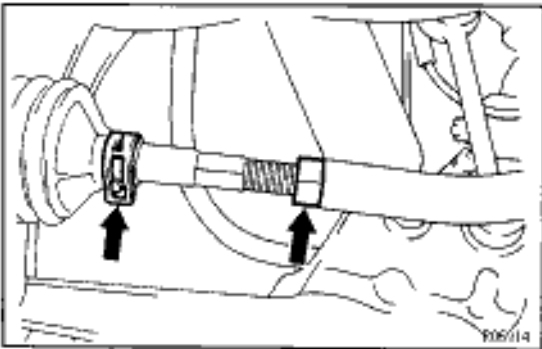
- Install the front lower arm bracket stay.

Torque:

Nut: 43 N·m (440 kgf·cm, 32 ft·lbf)

Bolt: 59 N·m (600 kgf·cm, 43 ft·lbf)

- Install the engine under cover.



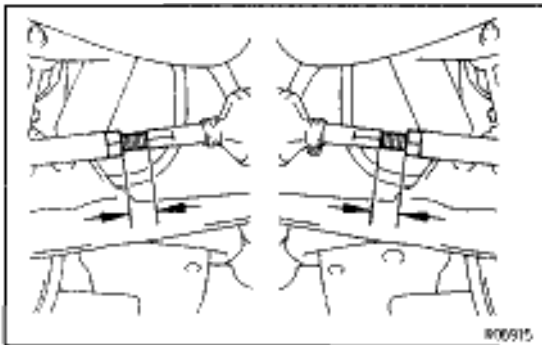
6. ADJUST TOE-IN

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

Toe-in (total):

A+B: $0^{\circ} \pm 0.1^{\circ}$

C-D: 0 ± 1 mm (0 ± 0.04 in.)



HINT: Ensure that the lengths of the left and right tie rods are the same.

Tie rod end length left-right error:

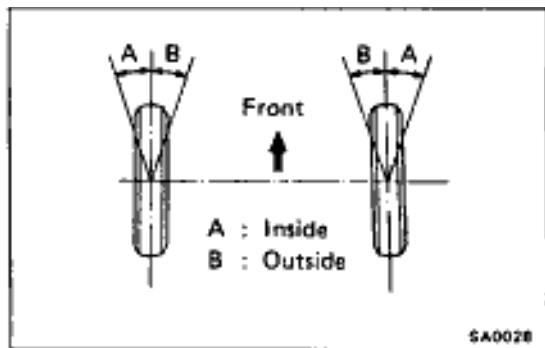
Less than 1.5 mm (0.059 in.)

- Tighten the tie rod end lock nut.

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

- Place the boot on the seat and clip it.

HINT: Ensure that the boots are not twisted.



7. INSPECT WHEEL ANGLE

Wheel angle

	2JZ-GE	2JZ-GTE
Inside wheel	35°00' (33°00'~36°00')	34°55' (32°55'~35°55')
Outside wheel	30°45' (Reference)	30°35' (Reference)

If wheel angle differ from the standard specifications, check to see if the lengths of the left and right tie rods are the same.
HINT: If the tie rods lengths are not equal, the wheel angle cannot be adjusted properly.

Reinspect the toe-in after adjusting the tie rods lengths.

ADJUSTMENT CHART

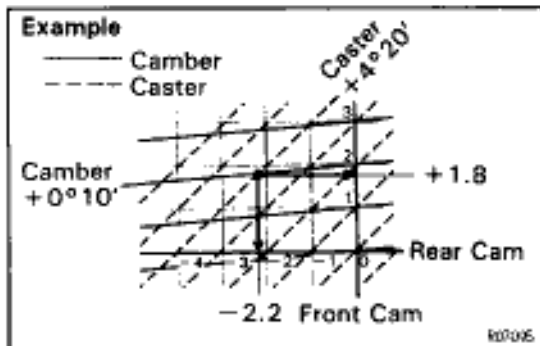
HOW TO READ ADJUSTMENT CART

- (a) Mark on the graph the measurements taken from the vehicle.

Example (2JZ-GE):

Camber: $+0^{\circ}10'$

Caster: $+4^{\circ}20'$

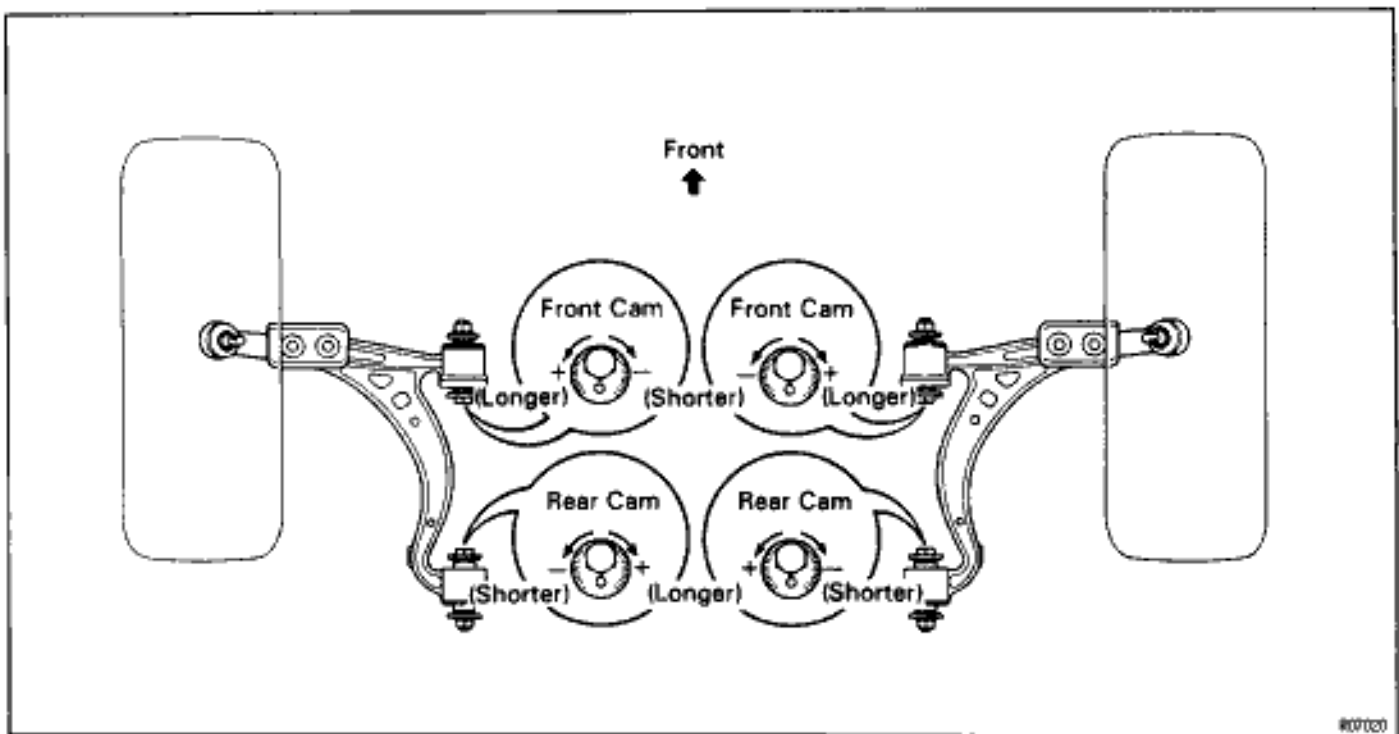


- (b) As shown in the illustration, read from the graph the amounts by which the front and/or rear cams are to be adjusted.

Amount to turn adjusting cam (by graduation):

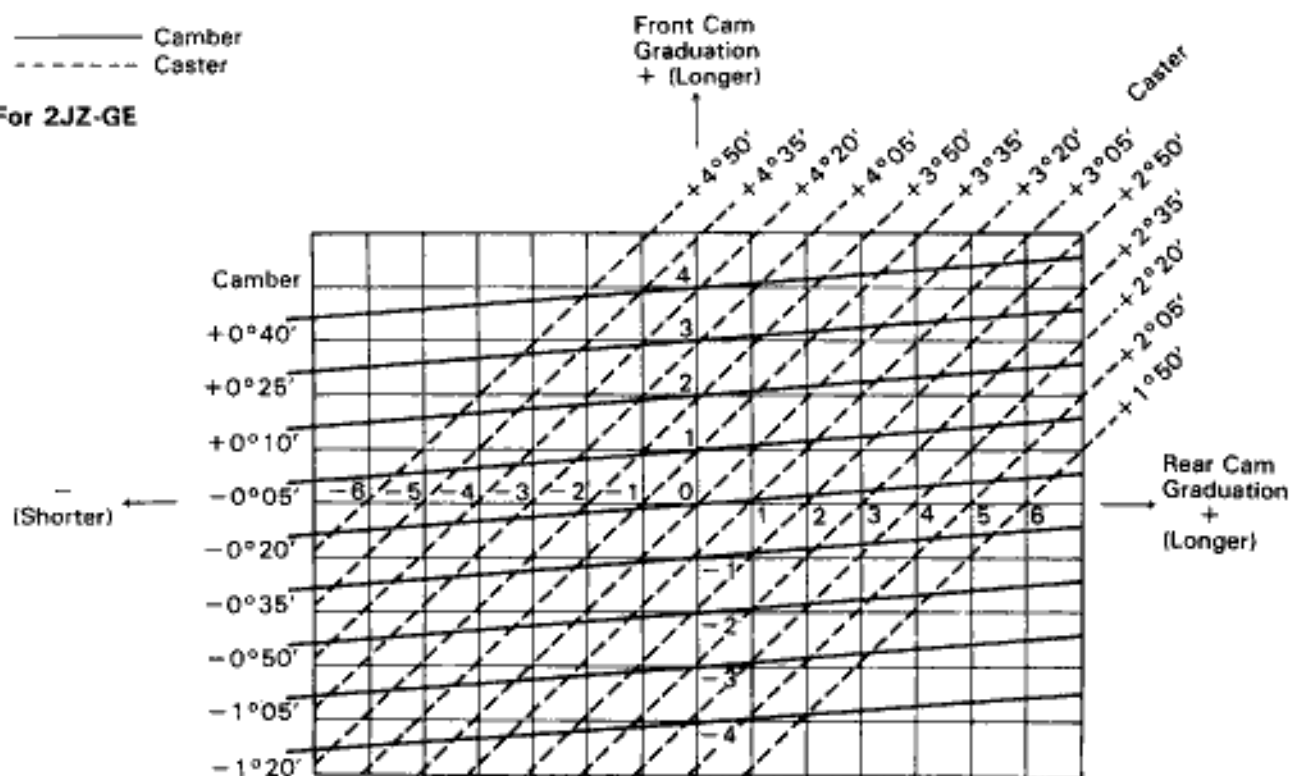
Front cam: + (Longer) 1.8

Rear cam: - (Shorter) 2.2

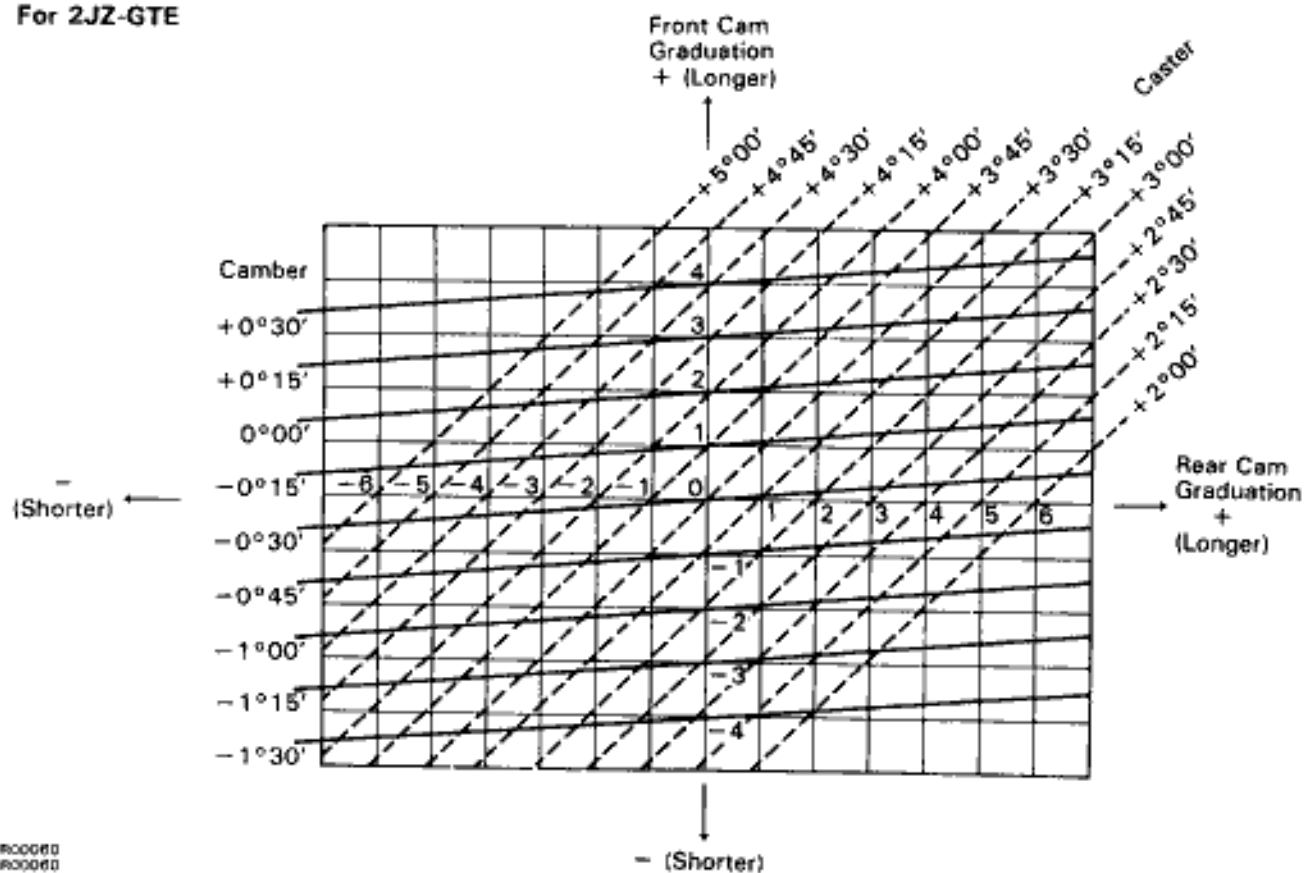


————— Camber
 - - - - - Caster

For 2JZ-GE



For 2JZ-GTE



ROO000
 ROO000

REAR WHEEL ALIGNMENT

1. MEASURE VEHICLE HEIGHT

Rear vehicle height

Engine	Tire size	Height
2JZ-GE	245/50ZR16	250 mm (9.84 in.)
2JZ-GTE	255/40ZR17	251 mm (9.88 in.)

Measuring point:

Measure from the ground to the center of the lower suspension arm No.2 mounting bolt.

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

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

2. INSTALL CAMBER-CASTER-KINGPIN GAUGE OR ONTO WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.

3. INSPECT CAMBER

	2JZ-GE	2JZ-GTE
Camber	$-1^{\circ}35' \pm 45'$	$-1^{\circ}30' \pm 45'$
Left-right error	30' or less	30' or less

4. INSPECT TOE-IN

Toe-in (total):

$$A + B: 0.3^{\circ} \pm 0.2^{\circ}$$

$$C - D: 3 \pm 2 \text{ mm } (0.12 \pm 0.08 \text{ in.})$$

5. ADJUST CAMBER AND TOE-IN

- (a) Measure the length of the lower suspension arm No.1 and No.2, as shown in the illustration.

Length:

(E-F) or (F-E) should be less 4.0 mm.

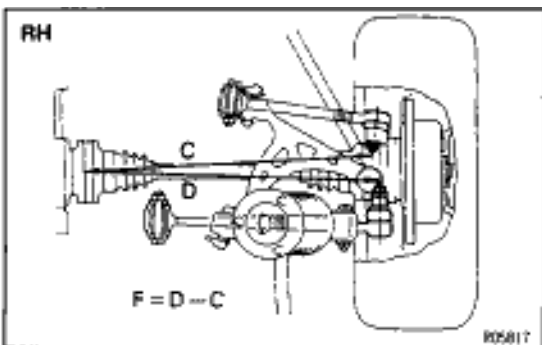
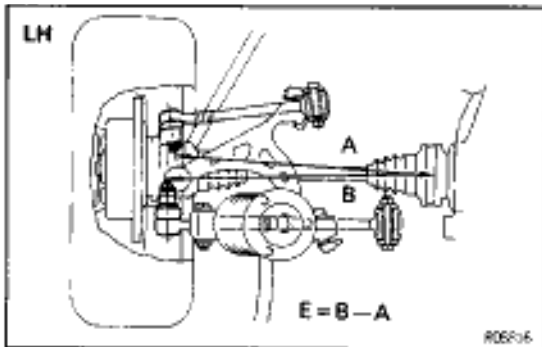
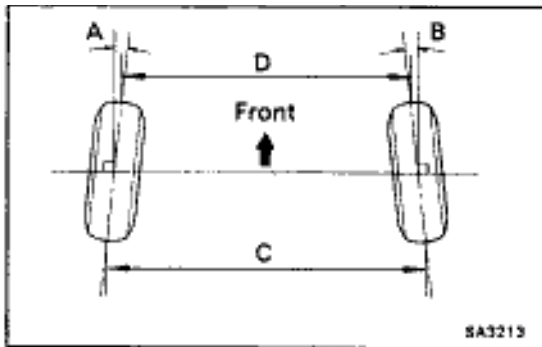
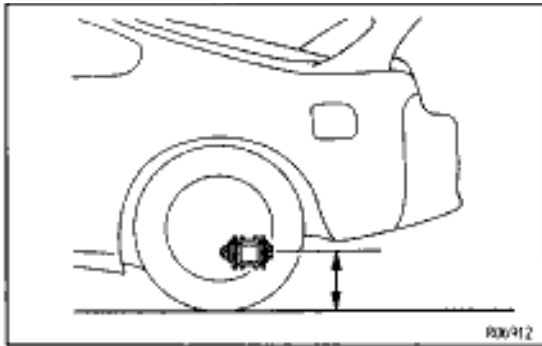
If not, adjust the length of the arms by turning the adjusting cam, as shown, until (E-F) or (F-E) is less than 4.0 mm.

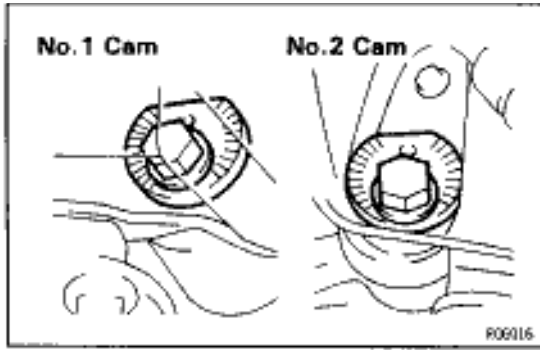
- (b) Measure the camber and toe-in.

Specifications

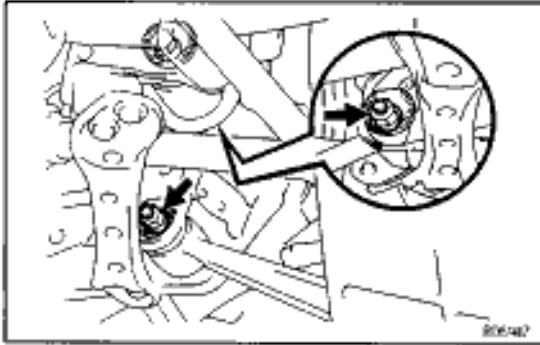
Toe-in	$A + B: 0.3^{\circ} \pm 0.1^{\circ}$ $C - D: 3 \pm 1 \text{ mm } (0.12 \pm 0.04 \text{ in.})$
Camber (2JZ-GE) Left-right error	$-1^{\circ}35' \pm 30'$ 30' or less
Camber (2JZ-GTE) Left-right error	$-1^{\circ}30' \pm 30'$ 30' or less

If the camber and toe-in are still not within the specification, adjust the camber and toe-in with the adjusting cam.

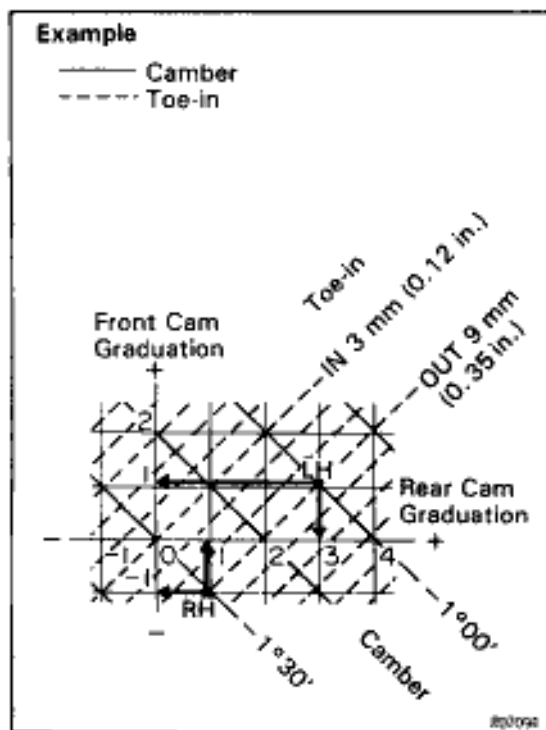




- (c) Remove the bolt and disconnect the parking brake cable bracket.
- (d) Loosen and adjust the No.1 and/or No.2 cams.
- (e) Adjust camber and toe-in by turning the No.1 and / or No.2 cams.
(See adjustment chart)



- (f) Torque the No.1 and/or No.2 cam nuts.
Torque: 184 N·m (1,880 kgf·cm, 134 ft·lbf)
- (g) Connect the parking brake cable bracket with the bolt.



ADJUSTMENT CHART

'HOW TO READ ADJUSTMENT CHART

- (a) Mark on the graph the measurements taken from the vehicle.

Example (2JZ-GTE):

Camber (LH): $-1^{\circ}00'$

Camber (RH): $-1^{\circ}30'$

Toe-in: OUT 9 mm (0.35 in.)

- (b) As shown the illustration, from the graph the amounts by which the front and/or rear cam are to be adjusted.

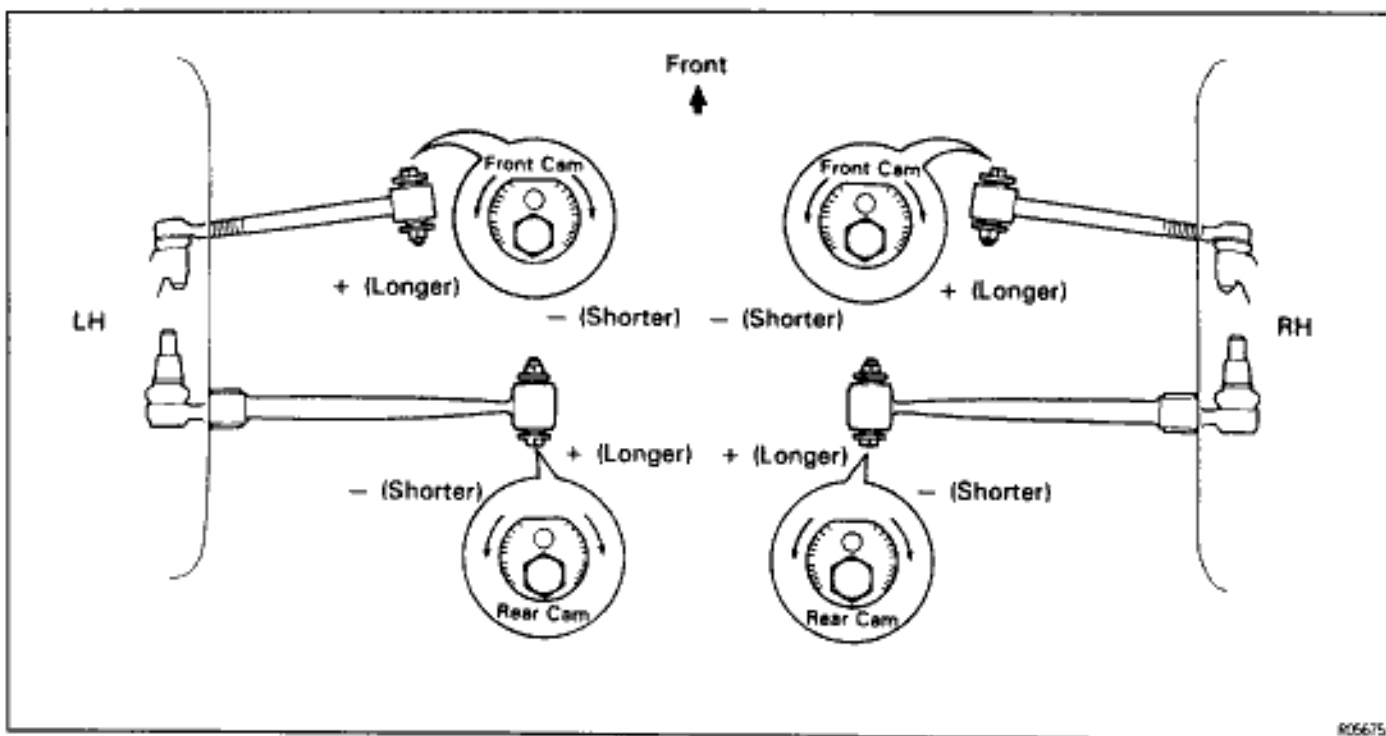
Amount to turn adjusting cam (by graduation):

LH Front cam: + (Longer) 1.1

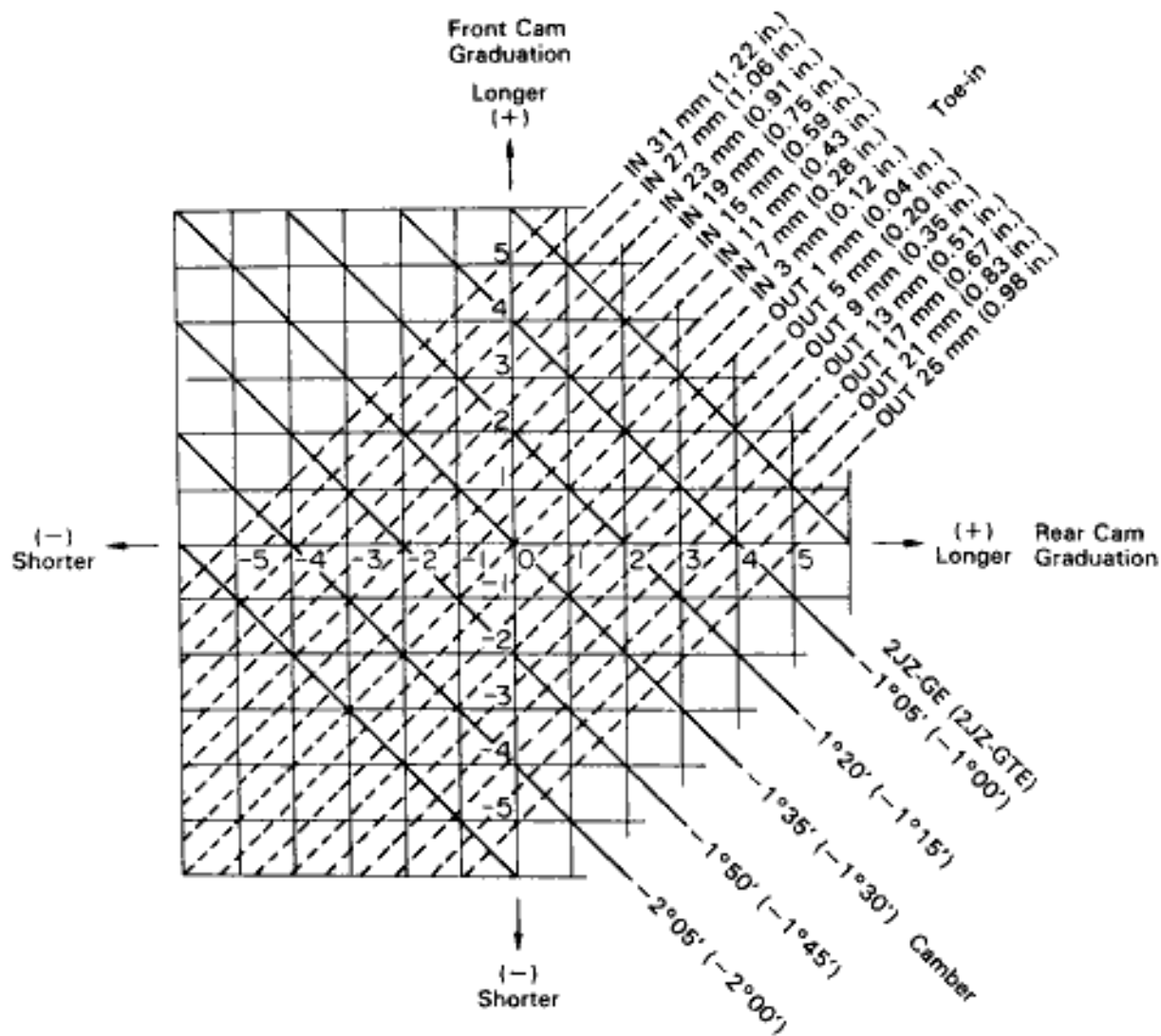
LH Rear cam: + (Longer) 3.0

RH Front cam: - (Shorter) 1.0

RH Rear cam: + (Longer) 0.9



— Camber
 --- Toe-in (total)



FRONT AXLE HUB

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09308-00010 Oil Seal Puller	Steering knuckle oil seal
	09608-00010 Steering Knuckle Oil Seal Replacer	
	09608-35014 Axle Hub & Drive Pinion Bearing Tool Set	
	(09608-06040) Front Hub Inner Bearing Cone Replacer	
	(09608-06100) Front Hub Outer Bearing Replacer	
	(09608-06200) Rear Axle Bearing Replacer	
	09611-12010 Tie Rod End Puller	
	09628-10011 Ball Joint Puller	Hub bolt
	09628-62011 Ball Joint Puller	
	09950-40010 Puller B Set	

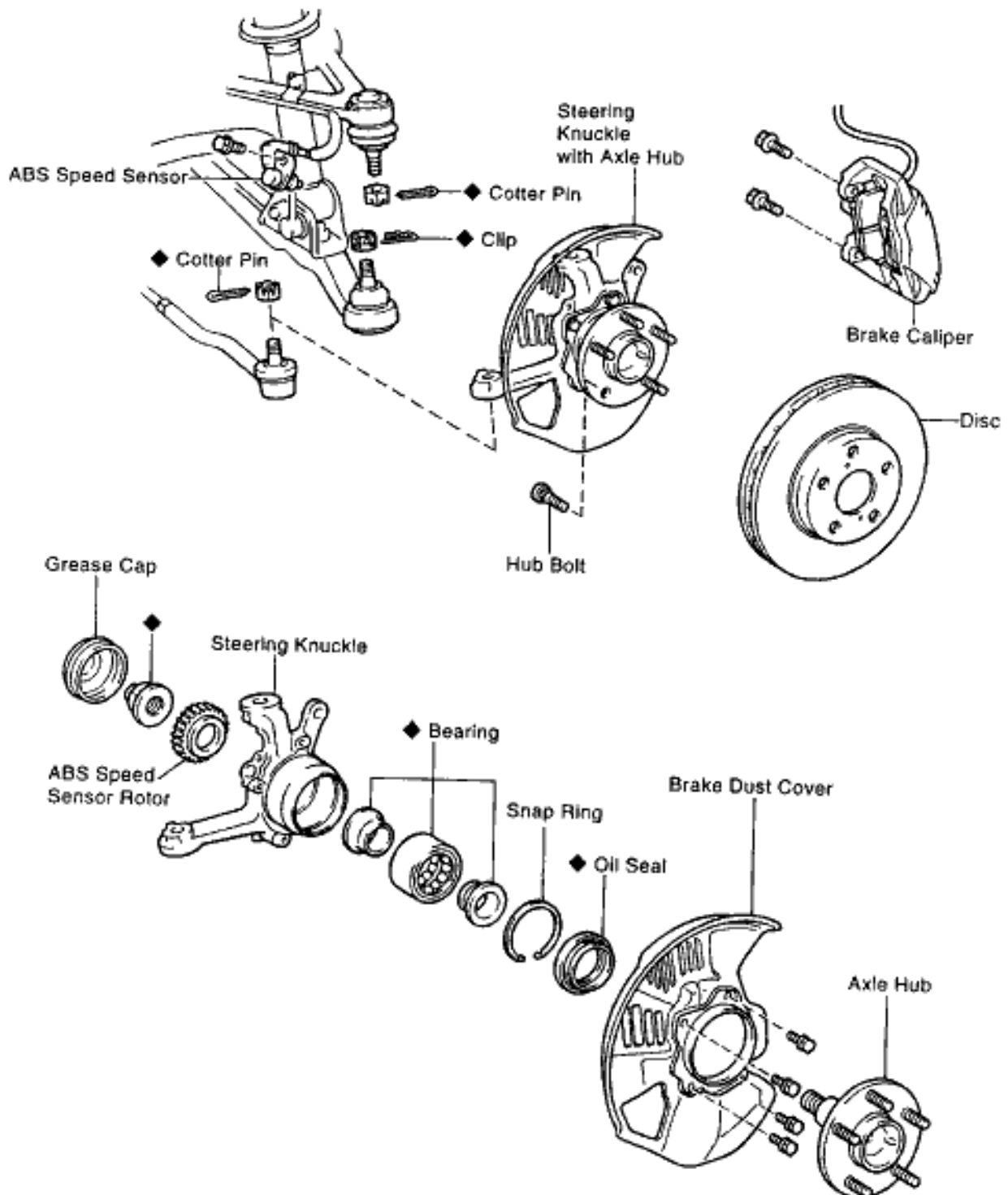
RECOMMENDED TOOLS

	09905-00013 Snap Ring Pliers.	Front axle hub bearing
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EQUIPMENT

Dial indicator	
Torque wrench	

FRONT AXLE HUB COMPONENTS



◆ Non-reusable part

STEERING KNUCKLE WITH AXLE HUB REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check ABS speed sensor signal and front wheel alignment.

(See page [BR-62](#) and [SA-4](#))

1. REMOVE FRONT WHEEL

Torque: 103 N·m (1,050 kgf·cm, 96 ft·lbf)

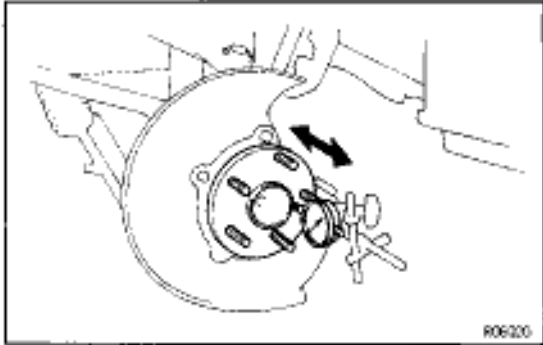


2. REMOVE FRONT BRAKE CALIPER AND DISC

- (a) Remove the 2 bolts and brake caliper from the steering knuckle.

Torque: 118 N·m (1,200 kgf·cm, 87 ft·lbf)

- (b) Support the brake caliper securely.
(c) Place matchmarks on the disc and axle hub.
(d) Remove the disc.



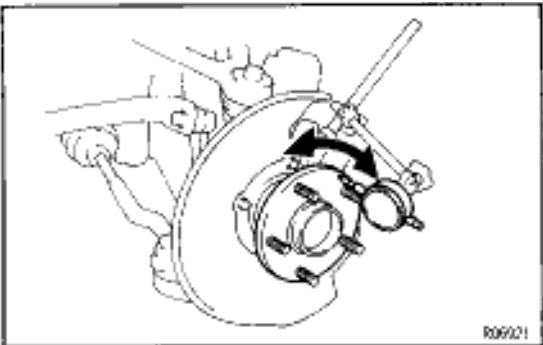
3. CHECK BACKLASH IN BEARING SHAFT DIRECTION

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.



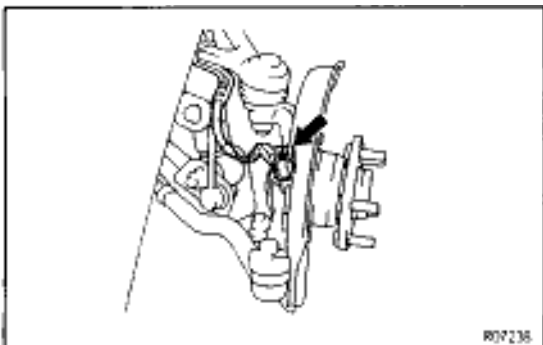
4. CHECK AXLE HUB DEVIATION

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.)

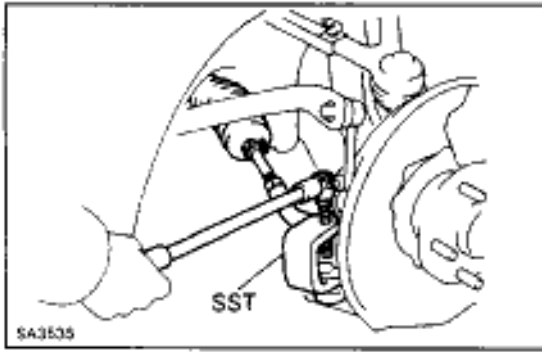
If greater than the specified maximum, replace the axle hub.



5. DISCONNECT ABS SPEED SENSOR FROM STEERING KNUCKLE

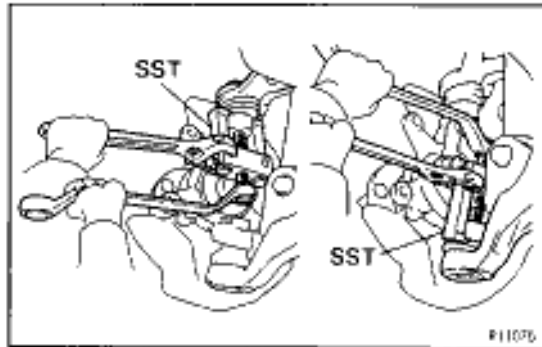
Remove the bolt and disconnect the sensor from the steering knuckle.

Torque: 8 N·m (80 kgf·cm, 69 in·lbf)



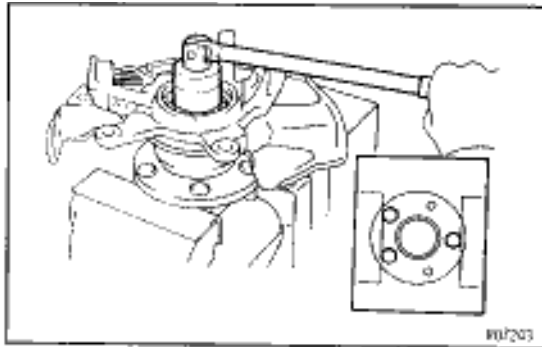
6. DISCONNECT TIE ROD END FROM STEERING KNUCKLE

- Remove the cotter pin and nut.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)
- Using SST, disconnect the tie rod end from the steering knuckle.
SST 09611-12010



7. REMOVE STEERING KNUCKLE

- Remove upper side of the cotter pin and nut.
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)
- Remove lower side of the clip and nut.
Torque: 125 N·m (1,270 kgf·cm, 92 ft·lbf)
- Using SST, remove the steering knuckle from the upper and lower suspension arms.
SST 09628-62011



FRONT AXLE HUB DISASSEMBLY

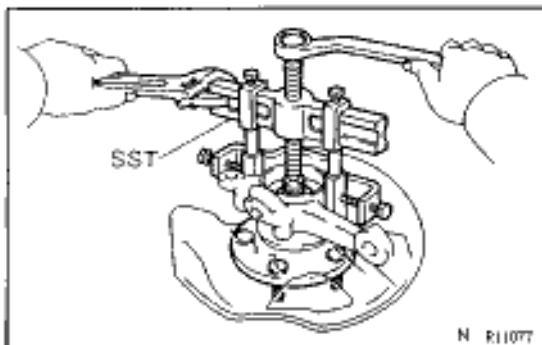
1. REMOVE HUB GREASE CAP

Using a screwdriver, remove the hub grease cap from the steering knuckle.

2. REMOVE FRONT AXLE HUB LOCK NUT AND ABS SPEED SENSOR ROTOR

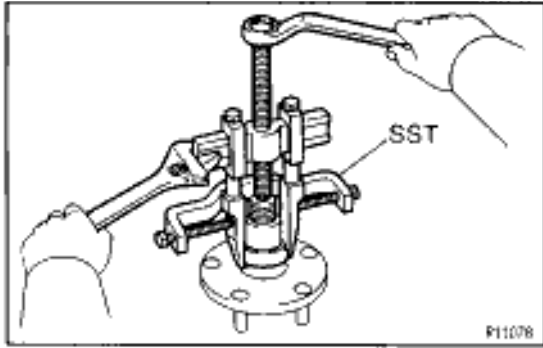
- Clamp the axle hub in a soft jaw vise.
HINT: Close vise until it holds hub bolt. Do not tighten further.
- Using a hammer and chisel, loosen the staked part of the lock nut and remove it.
- Remove the sensor rotor.

NOTICE: Take care not to scratch the serrations of the sensor rotor.



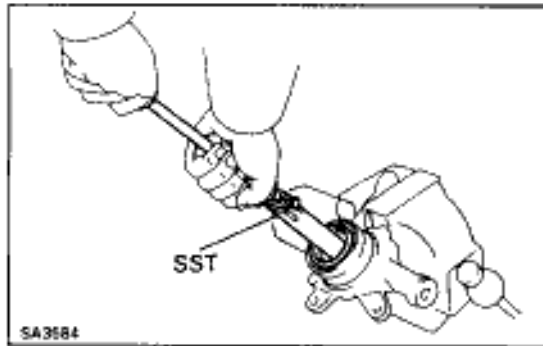
3. REMOVE AXLE HUB FROM STEERING KNUCKLE

- Remove the 4 bolts and shift the brake dust cover toward the hub side (outside).
- Using SST, remove the axle hub from the steering knuckle.
SST 09950-40010



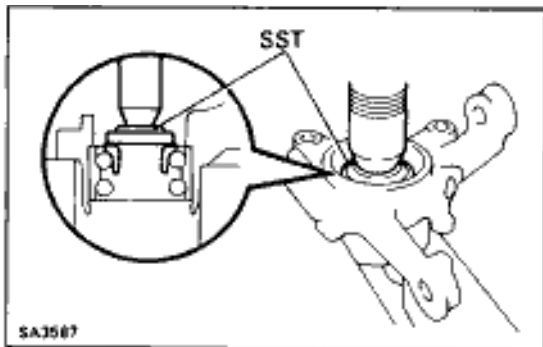
4. REMOVE INNER RACE (OUTSIDE) FROM AXLE HUB

Using SST, remove the inner race from the axle hub.
SST 09950-40010



5. REMOVE OIL SEAL

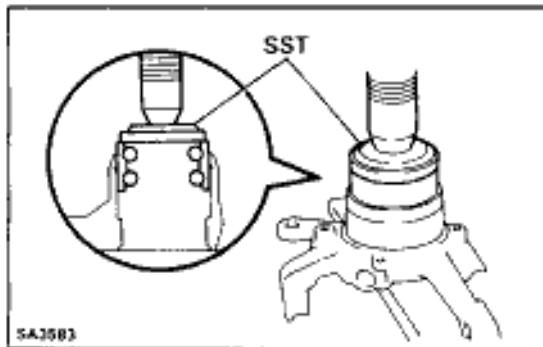
Using SST, remove the oil seal from the steering knuckle.
SST 09308-00010



6. REMOVE BEARING FROM STEERING KNUCKLE

- Using snap ring pliers, remove the snap ring.
- Position the inner race above the bearing on the inner side.
- Using SST and a press, remove the bearing from the steering knuckle.

SST 09608-35014 (09608-06100)



FRONT AXLE HUB ASSEMBLY

1. INSTALL BEARING TO STEERING KNUCKLE

- Using SST, install a new bearing.
SST 09608-35014 (09608-06200)

NOTICE: If the inner race and balls come loose from the bearing outer race, be sure to install them on the same side as before.

- Using snap ring pliers, install the snap ring.

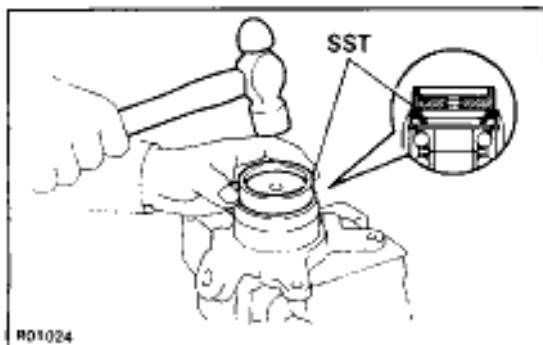
2. INSTALL OIL SEAL

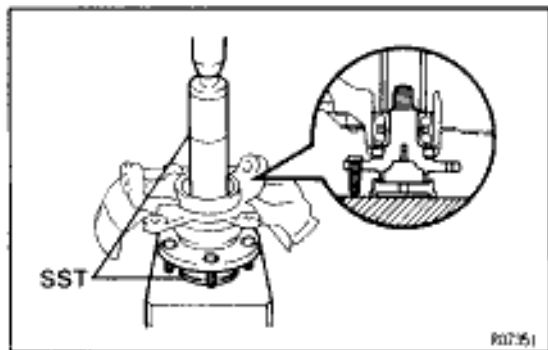
- Install the inner race (outside).
- Using SST and a hammer, tap in a new oil seal until it is flush with the end surface of the steering knuckle.
SST 09608-32010
- Coat MP grease to the oil seal lip.

3. INSTALL AXLE HUB TO STEERING KNUCKLE

- Install the brake dust cover to the steering knuckle with the 4 bolts.

Torque: 8 N·m (85 kgf·cm, 74 in·lbf)

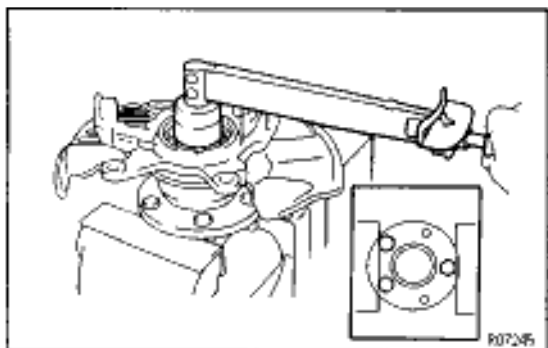




- (b) Using SST and a press, press the axle hub to steering knuckle.

SST 09608-32010, 09608-35014 (09608-06040)

4. **INSTALL ABS SPEED SENSOR ROTOR ON AXLE SHAFT**
NOTICE: Do not scratch the serrations of the sensor rotor.



5. **INSTALL AXLE HUB LOCK NUT**

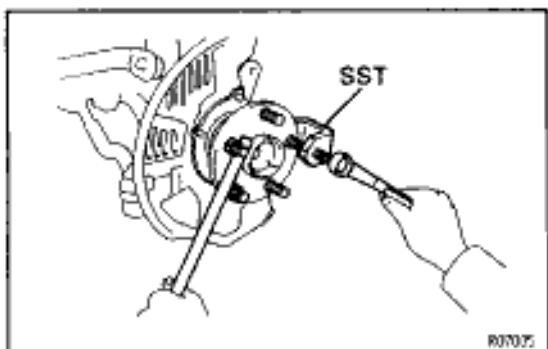
- (a) Install and torque a new axle hub lock nut.

Torque: 199 N·m (2,030 kgf·cm, 147 ft·lbf)

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

6. **INSTALL HUB GREASE CAP**

Using a screwdriver and hammer, install the hub grease cap to the steering knuckle.

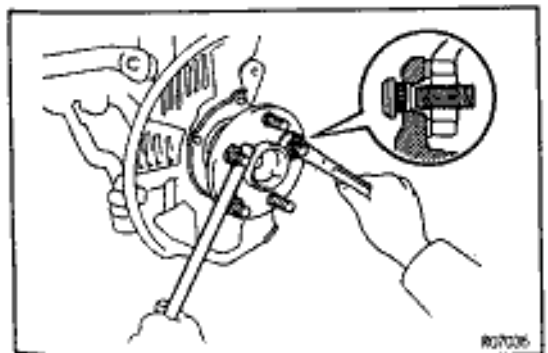


FRONT WHEEL HUB BOLT REPLACEMENT

1. **REMOVE FRONT WHEEL**
2. **REMOVE FRONT BRAKE CALIPER AND DISC**
 (See page [SA-16](#))
3. **REMOVE HUB BOLT**

Using SST, remove the hub bolt.

SST 09628-10011



4. **INSTALL HUB BOLT**

- (a) Install washer and nut to a new hub bolt, as shown in the illustration.

- (b) Turn the wheel nut to pull the hub bolt through until the underside of the hub bolt head touches the axle hub.

5. **INSTALL FRONT BRAKE DISC AND CALIPER**
 (See page [SA-16](#))

6. **INSTALL FRONT WHEEL**

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

FRONT SUSPENSION

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09628-62011 Ball Joint Puller	
	09710-14012 Rear Suspension Bushing Tool Set	Shock absorber bushing replacement
	(09710-00020) Pipe	
	09727-30020 Coil Spring Compressor	

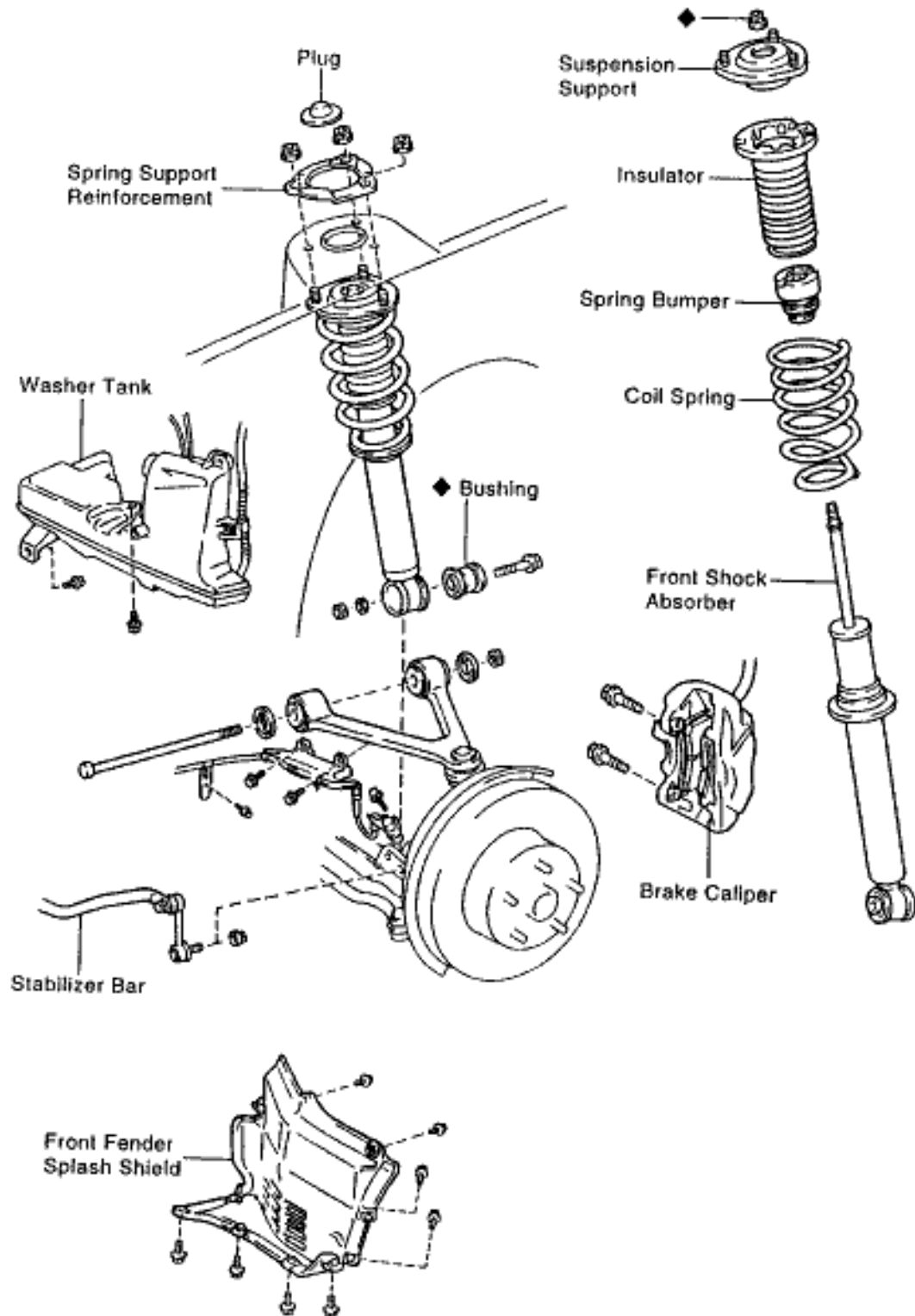
RECOMMENDED TOOLS

	09025-00010 Torque Wrench (30 kgf·cm)	
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EQUIPMENT

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

FRONT SHOCK ABSORBER COMPONENTS



FRONT SHOCK ABSORBER REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check ABS speed sensor signal and front wheel alignment.

(See page [BR-62](#) and [SA-4](#))

1. REMOVE FRONT WHEEL

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

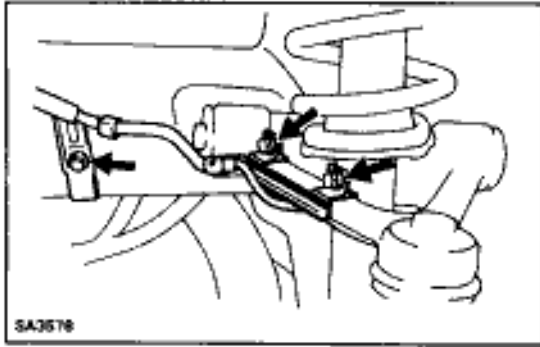


2. REMOVE DISC BRAKE CALIPER

- (a) Remove the 2 bolts and brake caliper from the steering knuckle.

Torque: 118 N·m (1,200 kgf·cm, 87 ft·lbf)

- (b) Support the brake caliper securely.

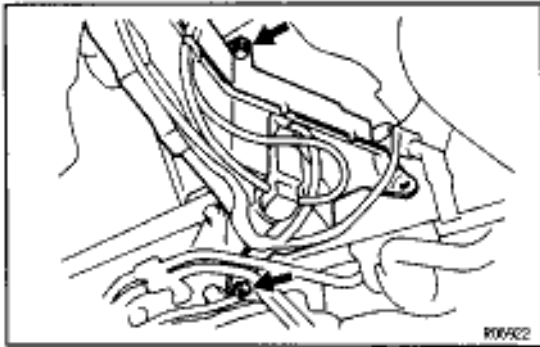


3. DISCONNECT ABS SPEED SENSOR AND WIRE HARNESS

- (a) Remove the bolt and disconnect the speed sensor from the steering knuckle.

Torque: 8 N·m (80 kgf·cm, 69 in·lbf)

- (b) Remove the 3 bolts and disconnect the wire harness clamp to prevent the wire harness being damaged when removing or installing the through bolt.

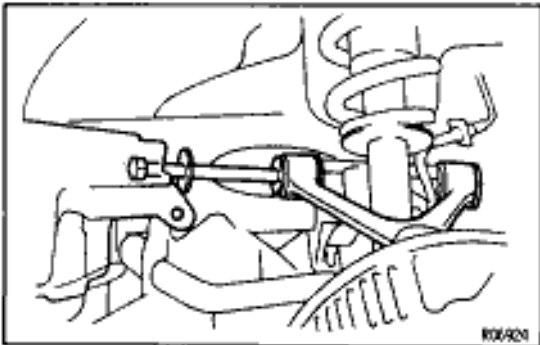


4. REMOVE FRONT FENDER SPLASH SHIELD

5. LH side only.

MOVE WASHER TANK

- (a) Remove the 2 washer tank set bolts.
- (b) Move the washer tank from the body.



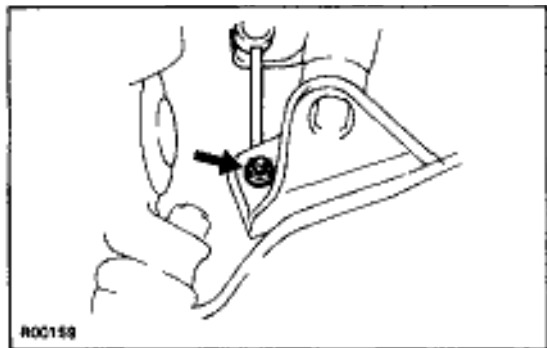
6. DISCONNECT UPPER SUSPENSION ARM

- (a) Remove the bolt and nut and disconnect the upper suspension arm from the subframe.

Torque: 164 N·m (1,670 kgf·cm, 121 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nut.

- (b) Support the upper suspension arm securely.

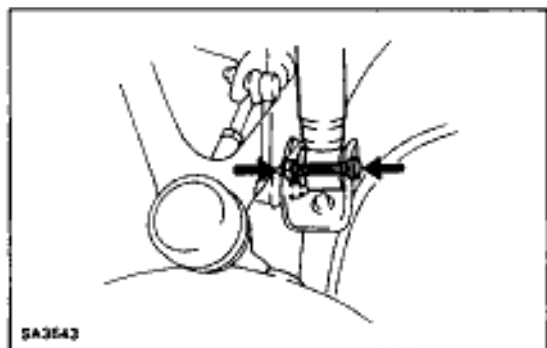


7. DISCONNECT STABILIZER BAR LINK

Remove the nut and disconnect the stabilizer link.

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

HINT: If the ball joint stud turns together with the nut, use a hexagon wrench to hold the stud.

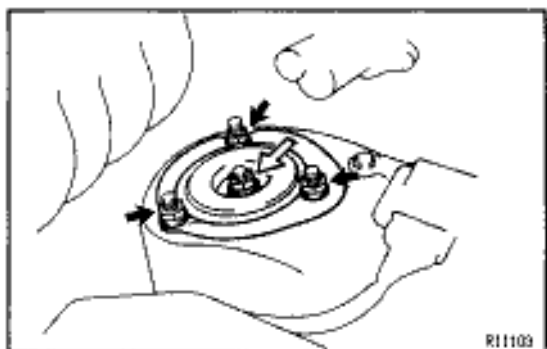


8. REMOVE SHOCK ABSORBER

- (a) Remove the bolt and nut and disconnect the shock absorber from the lower suspension arm.

Torque: 143 N·m (1,460 kgf·cm, 106 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension torque the nut.



- (b) Remove the plug from the support.

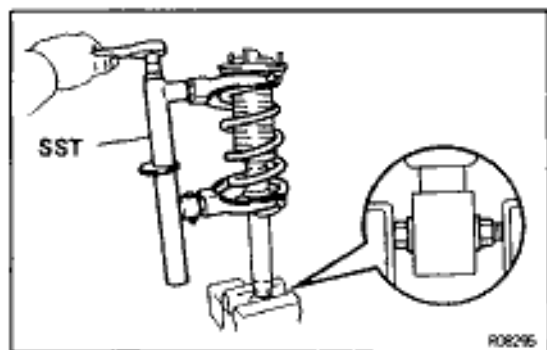
- (c) Loosen the lock nut in the middle of the suspension support.

REMOVAL NOTICE: Do not remove the nut.

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

- (d) Remove the 3 nuts, spring support reinforcement and shock absorber from the body.

Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)



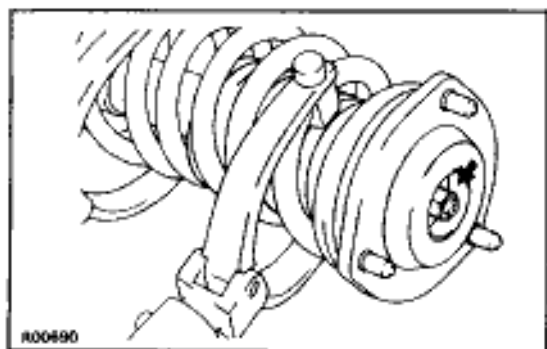
FRONT SHOCK ABSORBER DISASSEMBLY

1. REMOVE SUSPENSION SUPPORT AND COIL SPRING

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

SST 09727-30020

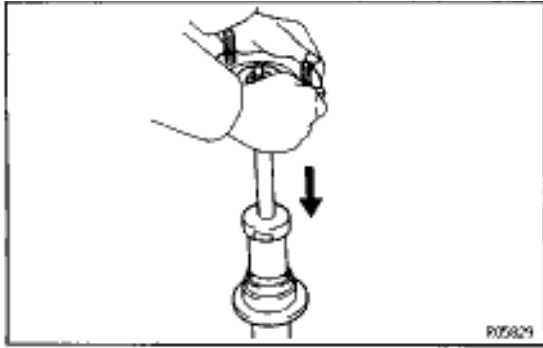
NOTICE: Do not use an impact wrench. It will damage the SST.



- (b) Remove the suspension support center nut.

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

2. REMOVE INSULATOR FROM SUSPENSION SUPPORT



FRONT 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.

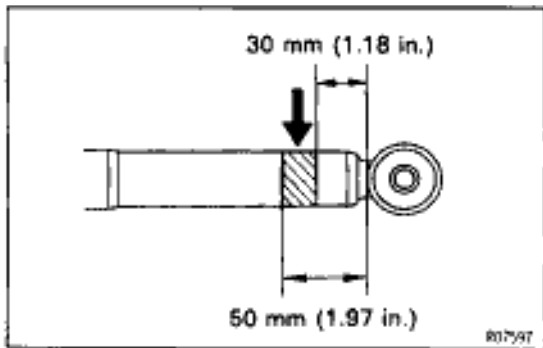
NOTICE: When discarding the shock absorber, use the following procedure.

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 within the shaded region to remove the gas inside.

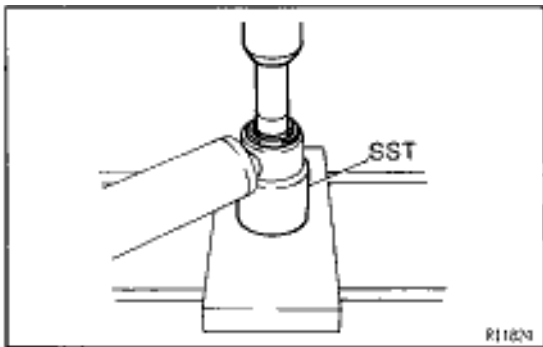
CAUTION: The gas coming out is harmless, but be careful of chips which may fly up when drilling.



SHOCK ABSORBER BUSHING REPLACEMENT

1. **REMOVE BUSHING**

Using SST and a deep socket wrench, press out the bushing.
SST 09710-14012 (09710-00020)

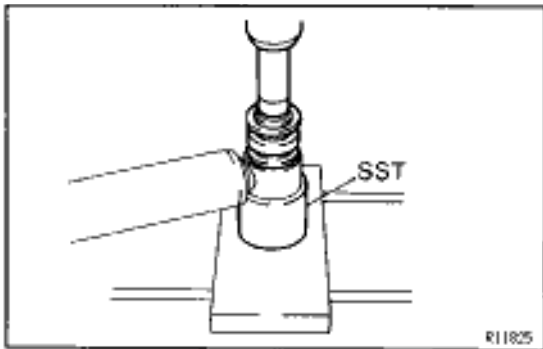


2. **INSTALL NEW BUSHING**

Using SST and a deep socket wrench, press in a new bushing.

SST 09710-14012 (09710-00020)

HINT: Do not apply grease or oil to the bushing.

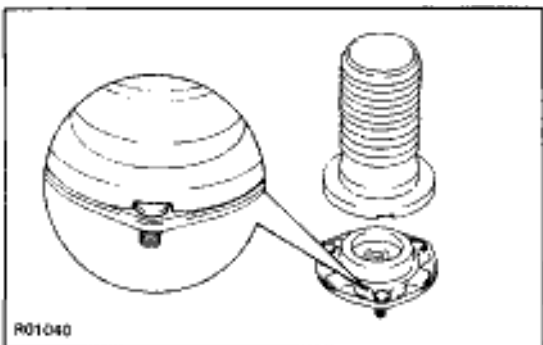


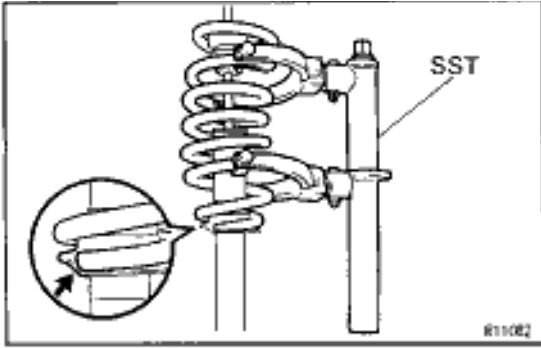
FRONT SHOCK ABSORBER ASSEMBLY

1. **INSTALL INSULATOR TO SUSPENSION SUPPORT**

HINT: Match the bolt of the suspension support with the cut-out part of the insulator.

2. **INSTALL SPRING BUMPER TO SHOCK ABSORBER**



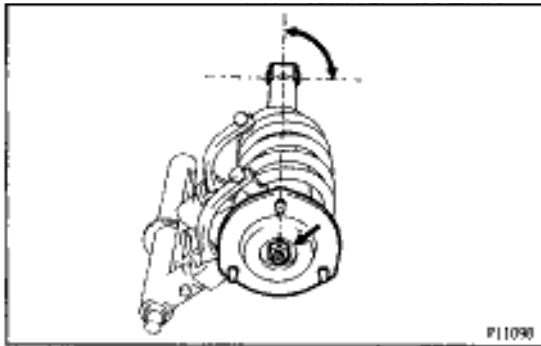


3. INSTALL COIL SPRING TO SHOCK ABSORBER

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

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

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



4. INSTALL SUSPENSION SUPPORT

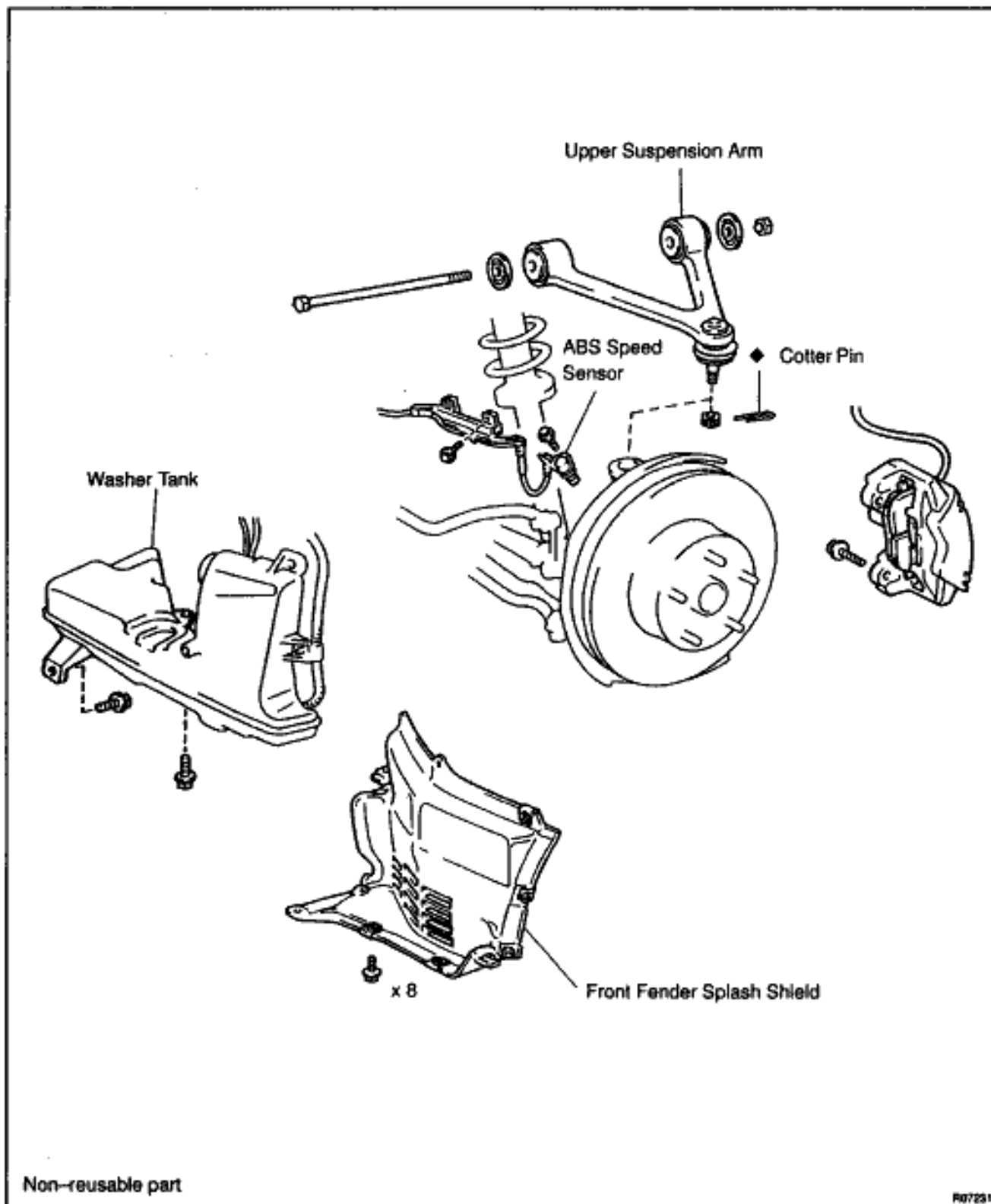
- (a) Install the suspension support to the rod.
(b) Temporarily tighten a new nut.
(c) Turn the suspension support so that one of the bolts on the suspension support faces the same direction, as shown in the illustration.

HINT: Align the bolt so that a line drawn between the rod and the bolt would be 90° to the direction of the lower bushing.

- (d) Remove the SST.

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

UPPER SUSPENSION ARM COMPONENTS



CORRECTION TO PUB.NO. RM408U2

UPPER SUSPENSION ARM REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check ABS speed sensor signal and front wheel alignment.

(See page [BR-62](#) and [SA-4](#))

1. REMOVE FRONT WHEEL

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

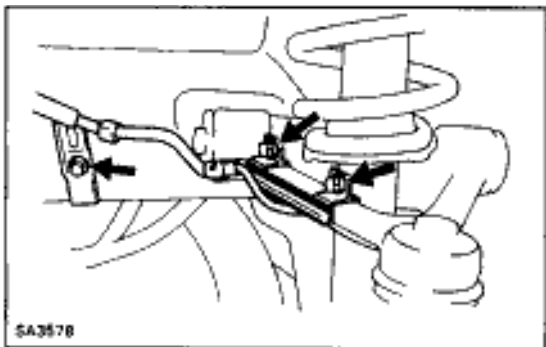


2. REMOVE DISC BRAKE CALIPER

- (a) Remove the 2 bolts and brake caliper from the steering knuckle.

Torque: 118 N·m (1,200 kgf·cm, 87 ft·lbf)

- (b) Support the brake caliper securely.

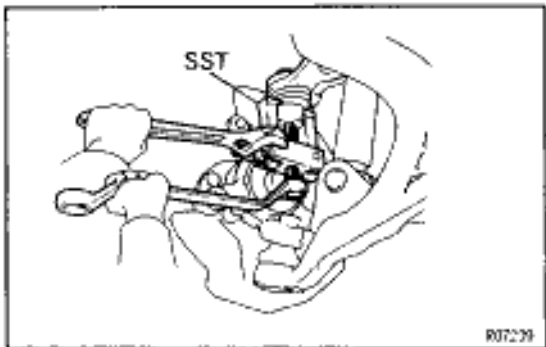


3. DISCONNECT ABS SPEED SENSOR AND WIRE HARNESS CLAMP

- (a) Remove the bolt and disconnect the speed sensor from the steering knuckle.

Torque: 8 N·m (80 kgf·cm, 69 in·lbf)

- (b) Remove the 3 bolts and wire harness clamp to prevent the wire harness being damaged when removing or installing the through bolt.



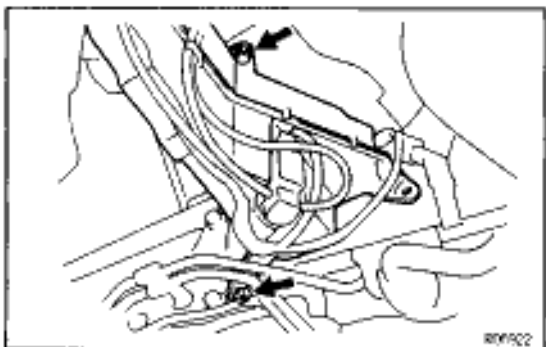
4. DISCONNECT UPPER SUSPENSION ARM

- (a) Remove the cotter pin and the nut.

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

- (b) Using SST, disconnect the upper suspension arm from the steering knuckle.

SST 09628-62011

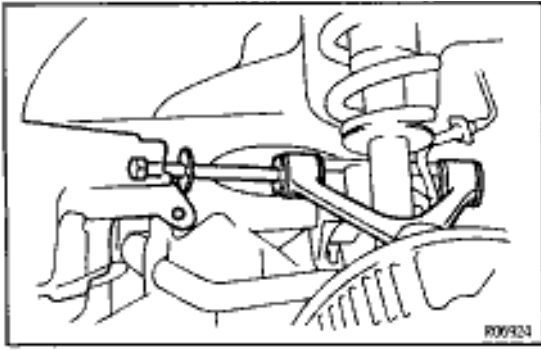


5. REMOVE FRONT FENDER SPLASH SHIELD

6. LH side only:

MOVE WASHER TANK

- (a) Remove the 2 washer tank set bolts.
- (b) Move the washer tank away from the body.



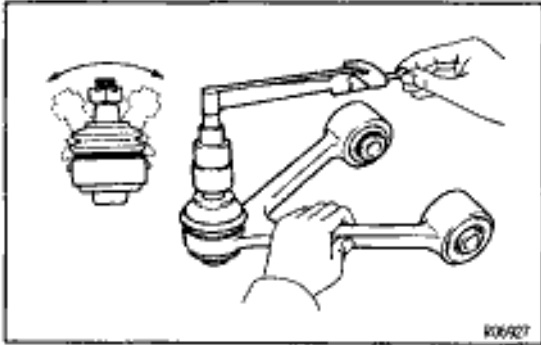
7. REMOVE UPPER SUSPENSION ARM

- (a) Remove the bolt and nut.

Torque: 164 N·m (1,670 kgf·cm, 121 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension torque the nut.

- (b) Remove the upper suspension arm.



UPPER BALL JOINT INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

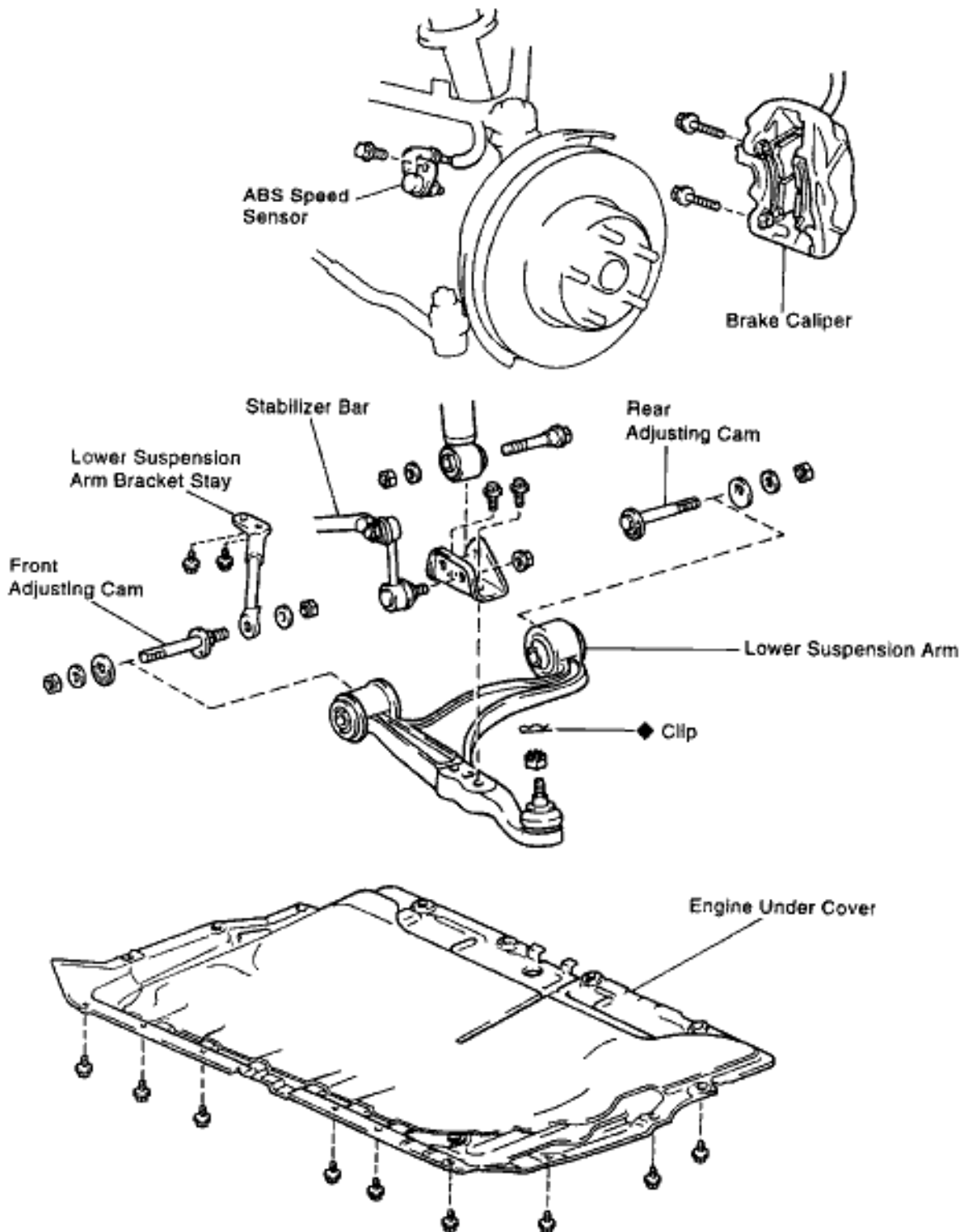
- (a) As shown, flip the ball joint stud back and forth 5 times before installing the nut.
- (b) Using a torque wrench, turn the nut continuously one turn every 2–4 seconds and take the torque reading on the 5th turn.

Torque (turning):

1.0–3.4 N·m (10–35 kgf·cm, 9–30 in·lbf)

If not within specification, replace the upper suspension arm.

LOWER SUSPENSION ARM COMPONENTS



◆ Non-reusable part

LOWER SUSPENSION ARM REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check front wheel alignment.

(See page SA-4)

1. REMOVE FRONT WHEEL

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

2. REMOVE ENGINE UNDER COVER

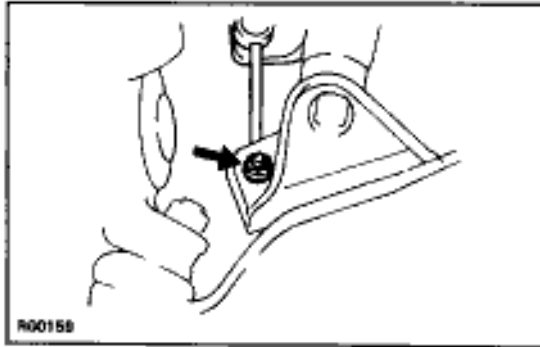


3. REMOVE BRAKE CALIPER

- (a) Remove the 2 bolts and brake caliper from the steering knuckle.

Torque: 118 N·m (1,200 kgf·cm, 87 ft·lbf)

- (b) Support the brake caliper securely.

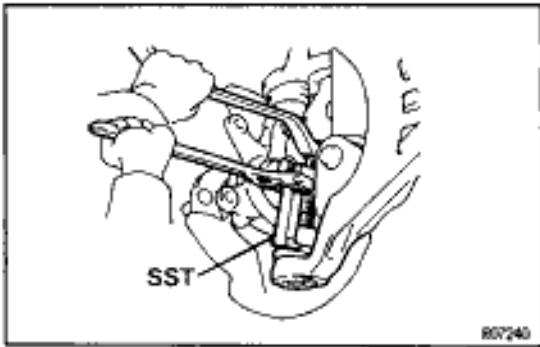


4. DISCONNECT STABILIZER BAR LINK FROM LOWER SUSPENSION ARM

Remove the nut and disconnect the link from the arm.

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

HINT: If the ball joint stud turns together with the nut, use a hexagon wrench to hold the stud.



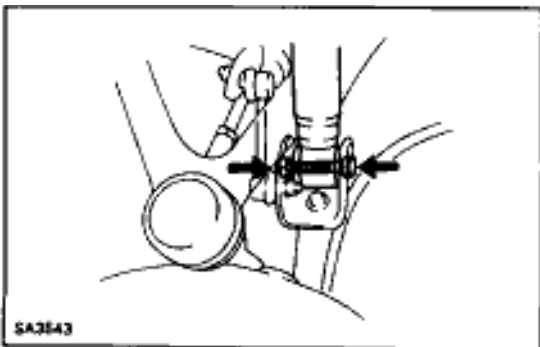
5. DISCONNECT STEERING KNUCKLE

- (a) Remove the clip and nut.

Torque: 125 N·m (1,270 kgf·cm, 92 ft·lbf)

- (b) Using SST, disconnect the steering knuckle from the lower suspension arm.

SST 09628-62011

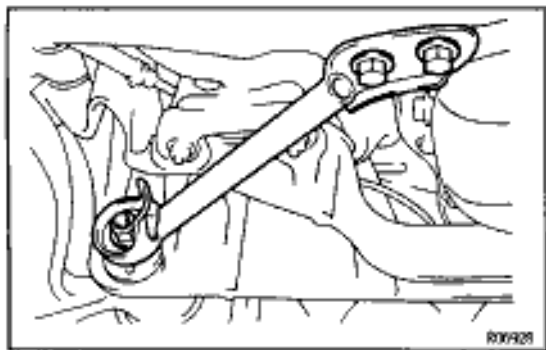


6. REMOVE LOWER SUSPENSION ARM

- (a) Remove the bolt, nut and disconnect the lower suspension arm from the shock absorber.

Torque: 143 N·m (1,460 kgf·cm, 106 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nut.



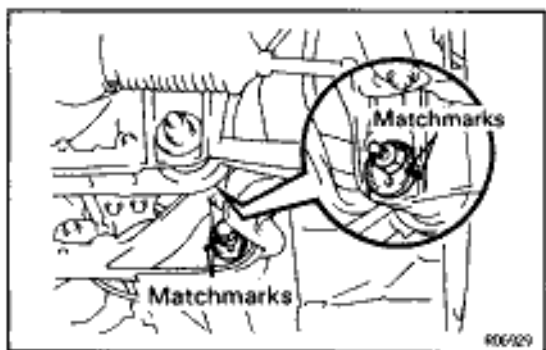
- (b) Remove the nut, 2 bolts and the front lower arm bracket stay.

Torque:

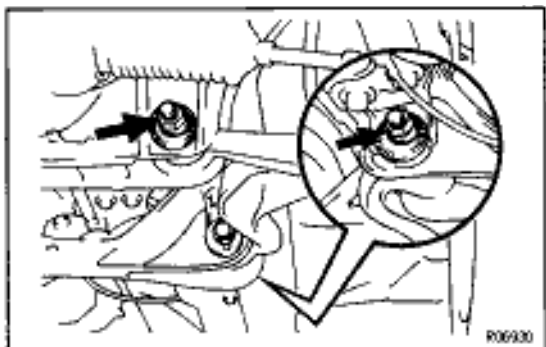
Bolt: 44 N·m (450 kgf·cm, 33 ft·lbf)

Nut: 59 N·m (600 kgf·cm, 43 ft·lbf)

INSTALLATION HINT: Before installing the lower arm bracket stay, adjust front wheel alignment.



- (c) Before loosening the adjusting cam, place matchmarks on the front and rear adjusting cams and subframe.



- (d) Remove the nuts, adjusting cams and lower suspension arm.

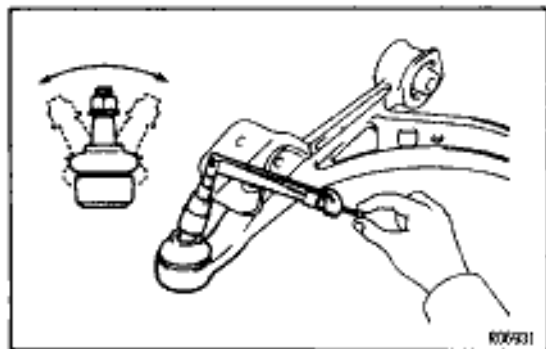
Torque: 226 N·m (2,300 kgf·cm, 166 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nuts.

7. REMOVE SHOCK ABSORBER BRACKET FROM LOWER SUSPENSION ARM

Remove the 2 bolts and bracket from the lower arm.

Torque: 52 N·m (530 kgf·cm, 38 ft·lbf)



LOWER BALL JOINT INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

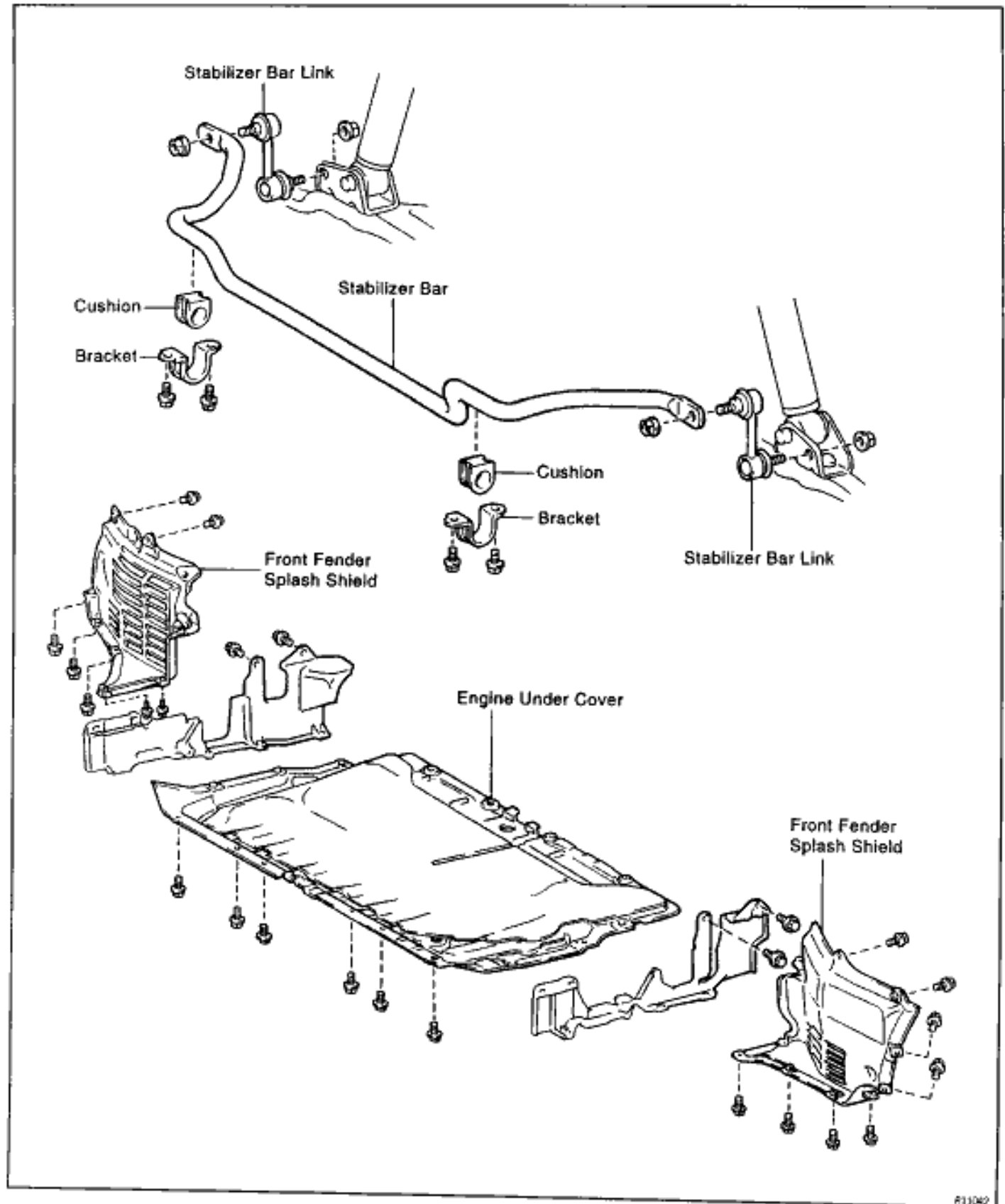
- (a) As shown, flip the ball joint stud back and forth 5 times before installing the nut.
- (b) Using torque wrench, turn the nut continuously one turn every 2–4 seconds and take the torque reading on the 5th turn.

Torque (turning):

1.0–3.4 N·m (10–35 kgf·cm, 9–30 in·lbf)

If not within specification, replace the lower suspension arm.

STABILIZER BAR COMPONENTS



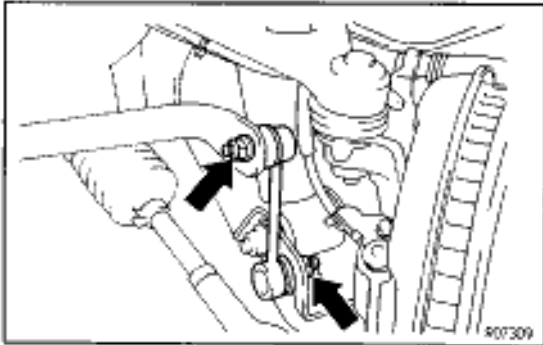
STABILIZER BAR AND LINK REMOVAL

Installation is in the reverse order of removal.

1. REMOVE FRONT WHEELS

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

2. REMOVE ENGINE UNDER COVER

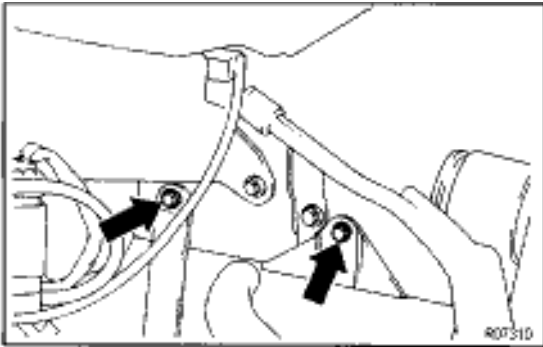


3. REMOVE BOTH STABILIZER BAR LINKS

Remove the nuts and stabilizer bar links from the stabilizer bar and the lower suspension arm.

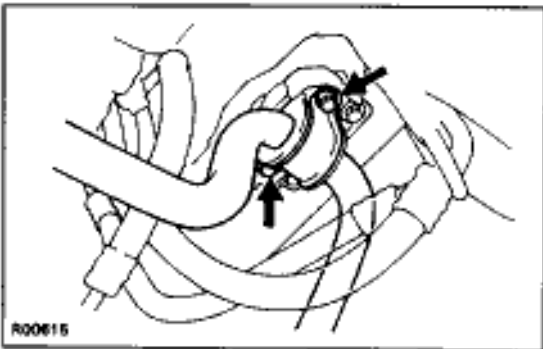
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

HINT: If the ball joint stud turns together with the nut, use a hexagon wrench to hold the stud.



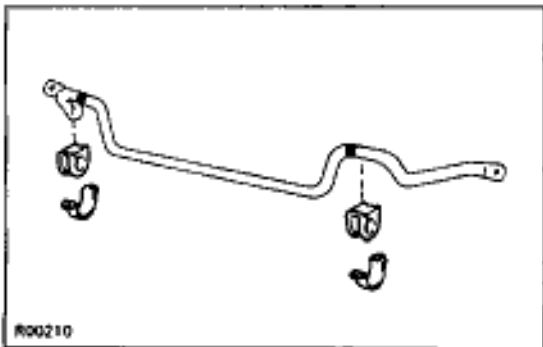
4. REMOVE STABILIZER BAR

(a) Remove the left and right apron seal set bolts.



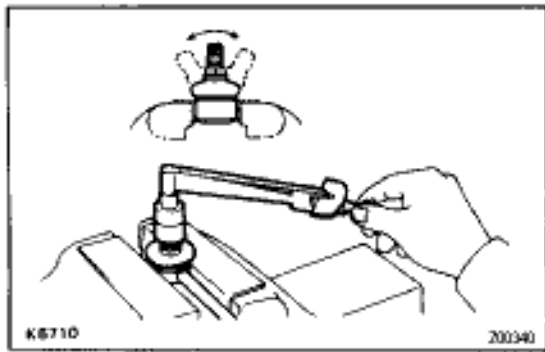
(b) Remove the 4 bracket bolts and the stabilizer bar with the cushions and brackets.

Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)



5. REMOVE CUSHIONS AND BRACKETS

INSTALLATION HINT: Install the cushion to the outside of the line.



STABILIZER BAR LINK INSPECTION

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 wrench, turn the stud continuously one turn every 2–4 seconds and take the torque reading on the 5th turn.

Torque (turning):

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.

REAR AXLE HUB

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09223-15030	Oil Seal & Bearing Replacer	Oil seal (inner) installation
	09308-00010	Oil Seal Puller	Oil seal removal
	09520-00031	Rear Axle Shaft Puller	
	09527-17011	Rear Axle Shaft Bearing Remover	Axle bearing installation
	09608-12010	Front Hub & Drive Pinion Bearing Replacer Set	
	(09608-00020)	Remover & Replacer Handle	
	(09608-00060)	Drive Pinion Front Bearing Cup Replacer	
	(09608-00080)	Replacer	
	09608-32010	Steering Knuckle Oil Seal Replacer	
	09608-35014	Axle Hub & Drive Pinion Bearing Tool Set	
	(09608-06020)	Handle	
	(09608-06160)	Rear Hub Inner Bearing Cup Replacer	
			Dust deflector installation

	09610-20012	Pitman Arm Puller	
	09628-10011	Ball Joint Puller	Hub bolt removal
	09628-62011	Ball Joint Puller	
	09950-40010	Puller B Set	Axle bearing inner race (outside) removal

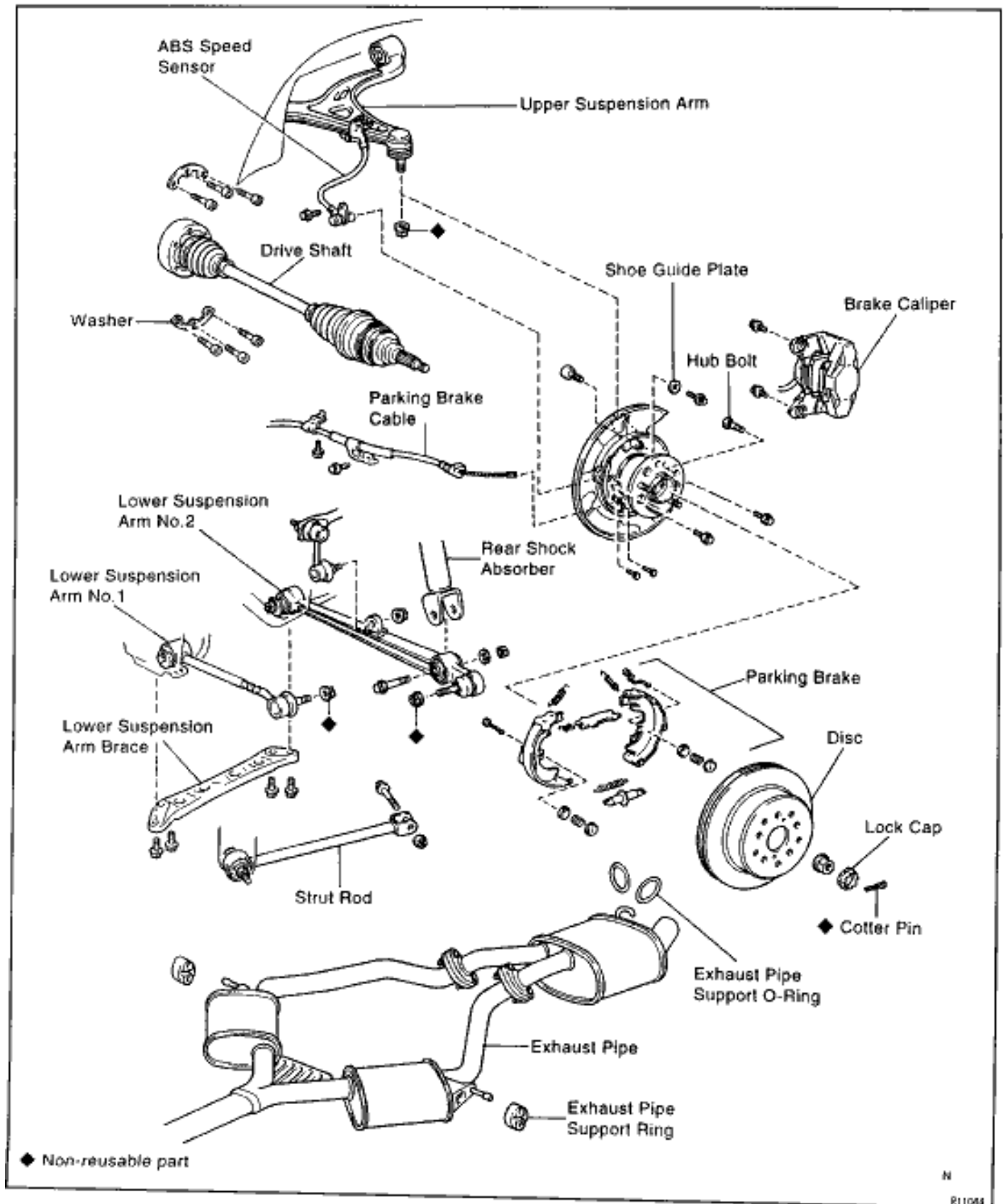
RECOMMENDED TOOLS

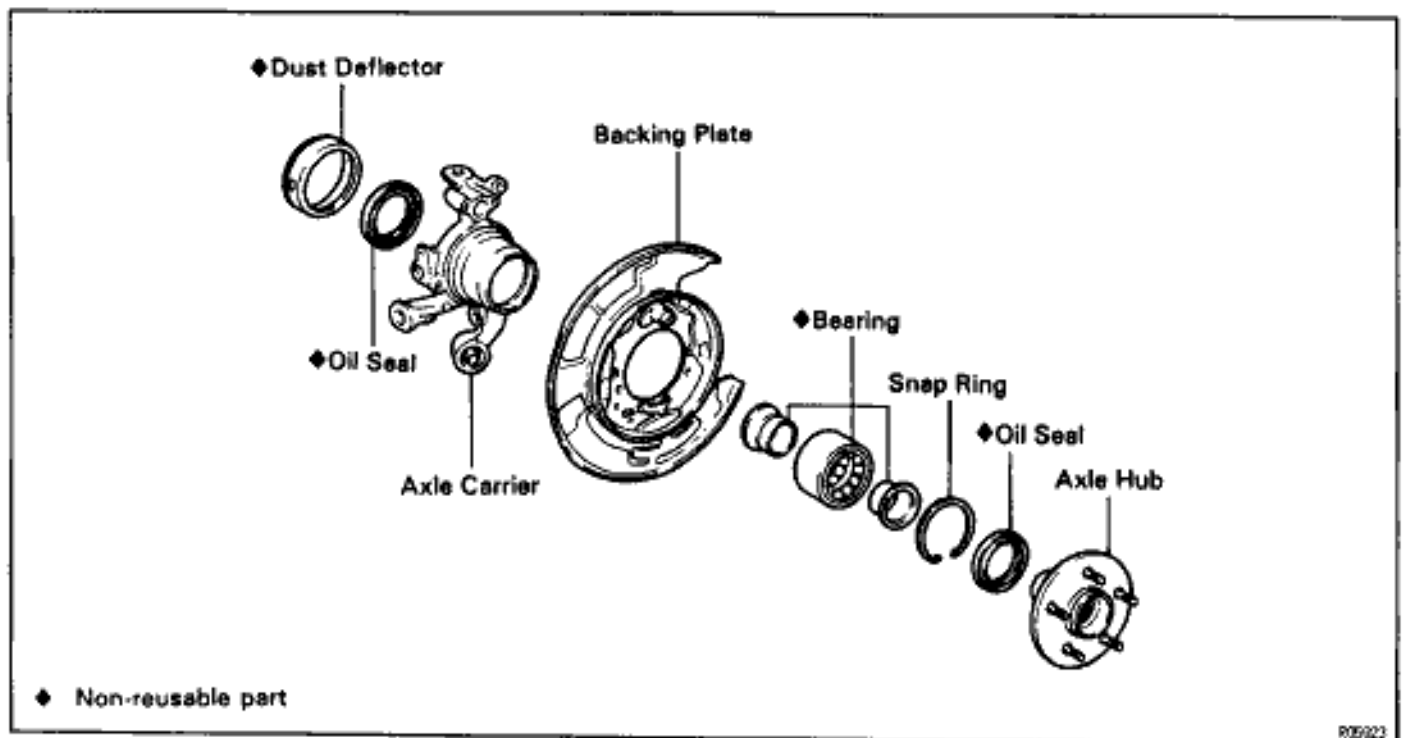
	09905-00013	Snap Ring Pliers	Rear axle hub bearing
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EQUIPMENT

Dial indicator	
Torque wrench	

REAR AXLE HUB COMPONENTS





SA1JL-91

REAR AXLE CARRIER REMOVAL

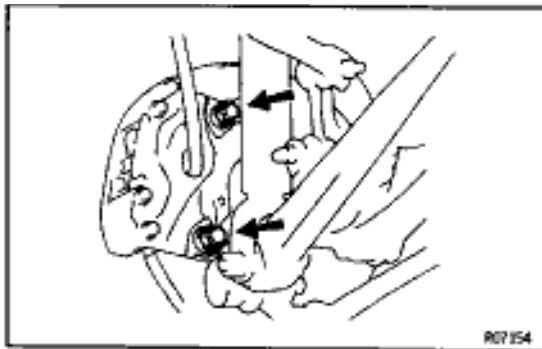
Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check ABS speed sensor signal and rear wheel alignment.

(See page [BR-64](#) and [SA-9](#))

1. REMOVE REAR WHEEL

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

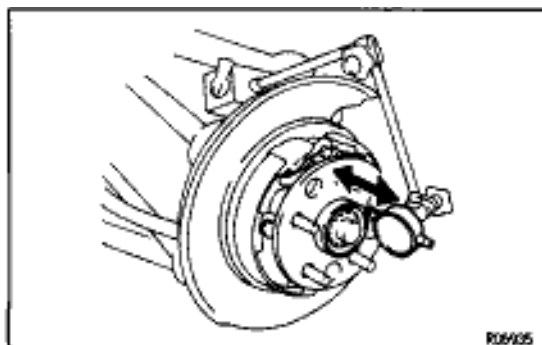


2. REMOVE REAR BRAKE CALIPER AND DISC

- (a) Remove the 2 bolts and brake caliper from the rear axle hub.

Torque: 104 N·m (1,065 kgf·cm, 77 ft·lbf)

- (b) Support the brake caliper securely.
 (c) Place matchmarks on the disc and axle hub.
 (d) Remove the disc.



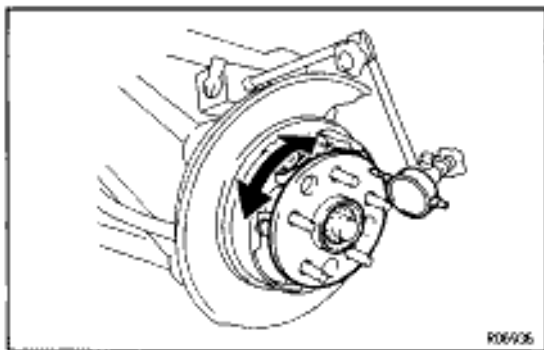
3. CHECK BACKLASH IN BEARING SHAFT DIRECTION

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.



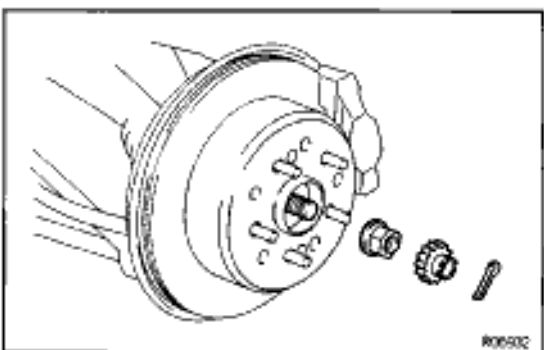
4. CHECK AXLE HUB DEVIATION

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.



5. REMOVE DRIVE SHAFT LOCK NUT

- Install the disc and brake caliper.
- Remove the cotter pin and lock cap.
- While depressing the brake pedal, remove the nut.
- Remove the brake caliper and disc.

Torque: 289 N·m (2,950 kgf·cm, 213 ft·lbf)

6. REMOVE DRIVE SHAFT

(See page [SA-46](#))

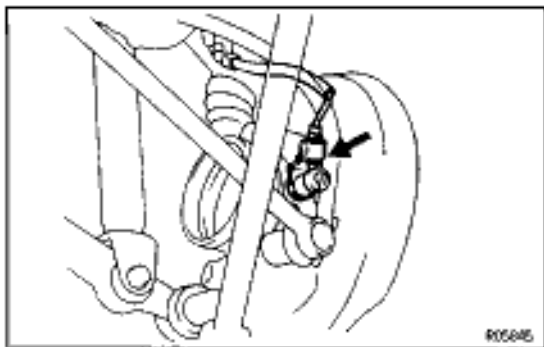
7. REMOVE PARKING BRAKE SHOE

(See page [BR-35](#))

8. DISCONNECT ABS SPEED SENSOR

Remove the bolt and disconnect the ABS speed sensor.

Torque: 8 N·m (80 kgf·cm, 69 in·lbf)



9. DISCONNECT PARKING BRAKE CABLE

- Remove the 2 parking brake cable set bolts.

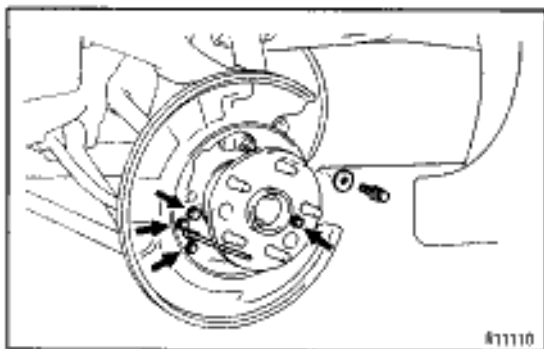
Torque: 8 N·m (80 kgf·cm, 69 in·lbf)

- Remove the 2 backing plate set bolts.

Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)

- Remove the bolt and shoe guide plate.

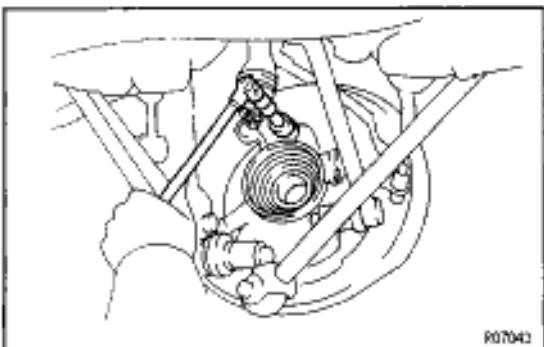
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

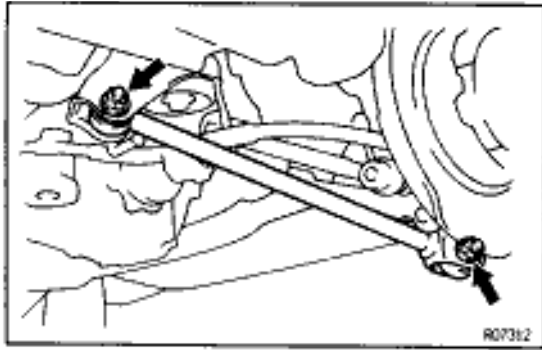


- Using a 14 mm hexagon wrench, remove the hexagon bolt.

Torque: 180 N·m (1,825 kgf·cm, 132 ft·lbf)

- Slide the backing plate to the outside and disconnect the parking brake cable.

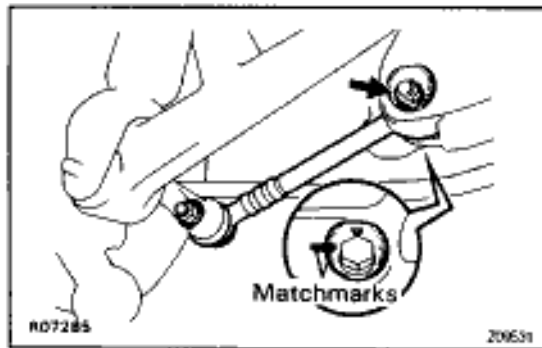


**10. REMOVE STRUT ROD**

Remove the 2 bolts and nuts.

Torque: 184 N·m (1,880 kgf·cm, 136 ft·lbf)

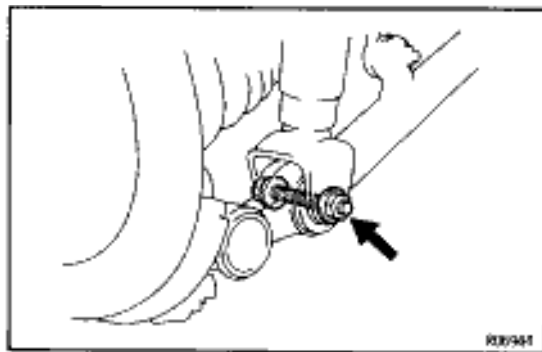
INSTALLATION HINT: After stabilizing the suspension, torque the bolts.

**11. DISCONNECT LOWER SUSPENSION ARM NO.1**

- (a) Remove the bolt and disconnect the parking brake cable bracket.
- (b) Place matchmarks on the adjusting cam and subframe.
- (c) Remove the nut, adjusting cam and disconnect the lower suspension arm No.1.

Torque: 184 N·m (1,880 kgf·cm, 136 ft·lbf)

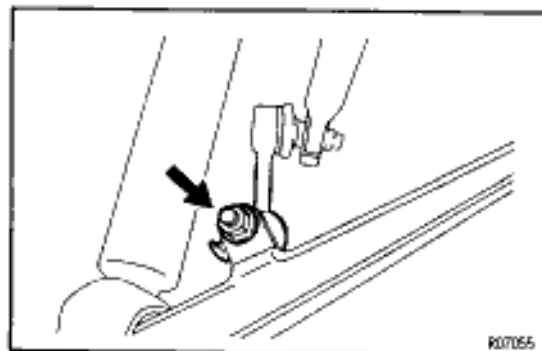
INSTALLATION HINT: After stabilizing the suspension, torque the nut.

**12. DISCONNECT LOWER SUSPENSION ARM NO.2**

- (a) Remove the bolt, nut and disconnect the shock absorber from the lower suspension arm No.2.

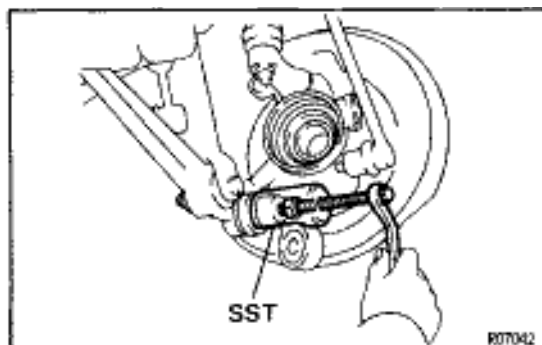
Torque: 137 N·m (1,400 kgf·cm, 101 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nut.



- (b) Remove the nut and disconnect the stabilizer bar link from the lower suspension arm No.2.

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

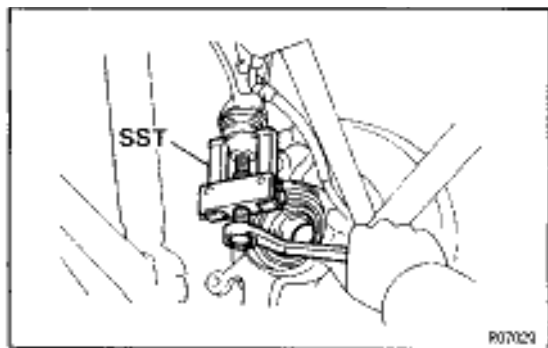


- (c) Loosen the nut.
- (d) Using SST, disconnect the lower suspension arm No.2 from the axle carrier.
- (e) Remove the nut.

Torque: 150 N·m (1,525 kgf·cm, 110 ft·lbf)

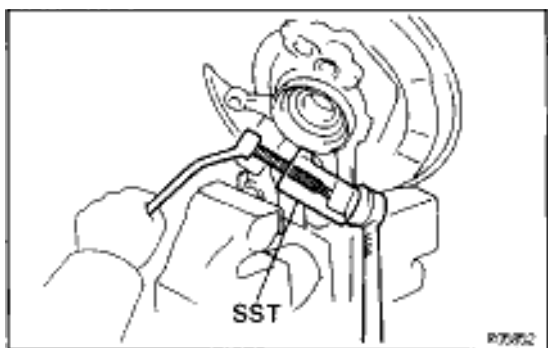
SST 09610-20012

NOTICE: Be careful not to damage the ball joint bolt.



13. REMOVE REAR AXLE CARRIER

- (a) Remove the nut.
Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)
- (b) Using SST, disconnect the upper suspension arm from the axle carrier.
SST 09628-62011
NOTICE: Be careful not to damage the dust boot.
- (c) Remove the rear axle carrier.



14. REMOVE REAR SUSPENSION ARM NO.1

- (a) Remove the nut.
Torque: 59 N·m (600 kgf·cm, 43 ft·lbf)
- (b) Using SST, disconnect the lower suspension arm No.1 from the axle carrier.
SST 09610-20012
NOTICE: Be careful not to damage the dust boot.
INSTALLATION HINT: Before install the suspension arm No.1, install the axle carrier to the vehicle.

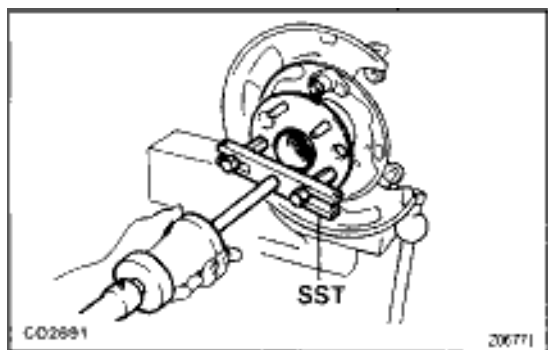
AXLE HUB DISASSEMBLY

1. REMOVE DUST DEFLECTOR

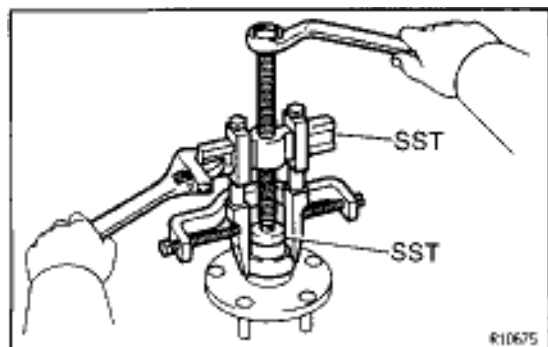
Using a screwdriver, remove the dust deflector.

2. REMOVE AXLE HUB FROM AXLE CARRIER

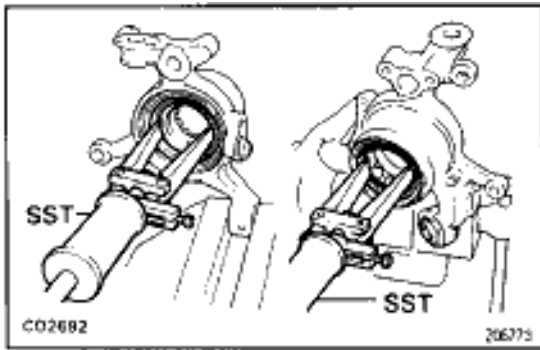
- (a) Mount the axle carrier in a vise.
HINT: Use a set of soft jaws in the vise to protect the axle carrier.
NOTICE: Do not tighten the vise too tight.



- (b) Using SST, remove the axle hub.
SST 09520-00031
- (c) Remove the backing plate.

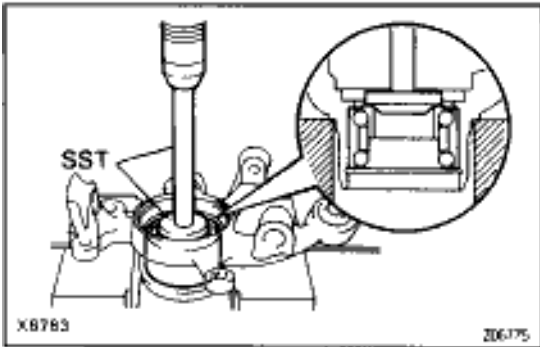


- (d) Using SST, remove the outside inner race from the axle hub.
SST 09608-12010 (09608-00080),
09950-40010



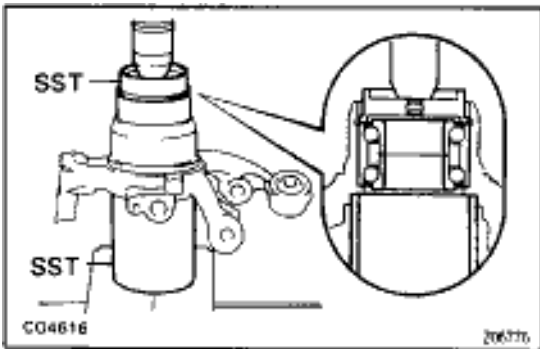
3. REMOVE OIL SEALS

Using SST, remove the inner and outer oil seals.
SST 09308-00010



4. REMOVE BEARING

- Using snap ring pliers, remove the snap ring.
- Place the inner race (inside) to the bearing.
- Using SST and a press, remove the bearing.
SST 09608-12010 (09608-00020, 09608-00060)



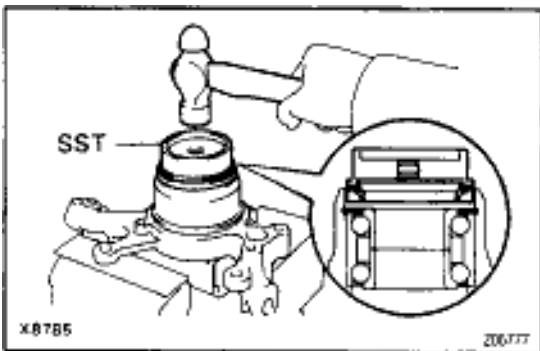
AXLE HUB ASSEMBLY

1. INSTALL NEW BEARING

- Using SST, install the bearing to the axle carrier.
SST 09527-17011, 09608-32010

NOTICE: If the inner races come loose from the bearing outer race, be sure to install them on the same side as before.

- Using snap ring pliers, install the snap ring.

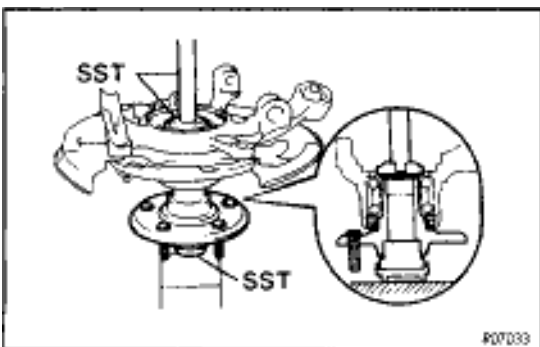


2. INSTALL OIL SEAL (Outer)

- Place the inner race (outside).
- Using SST and hammer, tap in a new oil seal until it is flush with end surface of the carrier.
SST 09608-32010

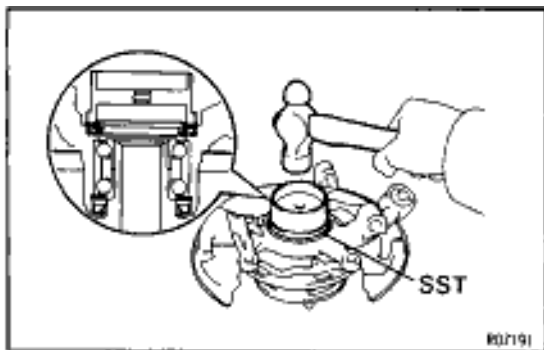
NOTICE: Be careful not to damage the oil seal.

- Coat MP grease to the oil seal lip.



3. INSTALL AXLE HUB

- Temporarily install the backing plate with the hexagon bolt.
- Place the inner race (inside).
- Using SST and a press, install the axle hub.
SST 09608-12010 (09608-00020, 09608-00060),
09608-32010

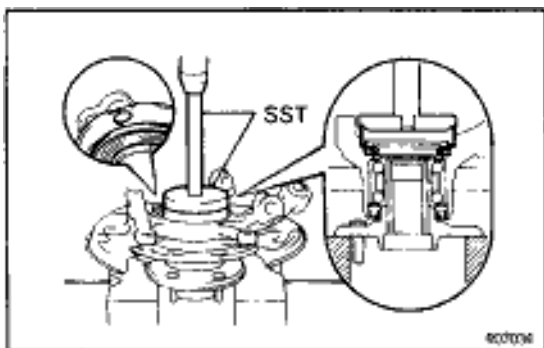


4. INSTALL OIL SEAL (Inner)

- (a) Using SST and a hammer, install a new oil seal.
SST 09223-15020

NOTICE: Be careful not to damage the oil seal.

- (b) Coat MP grease to the oil seal lip.

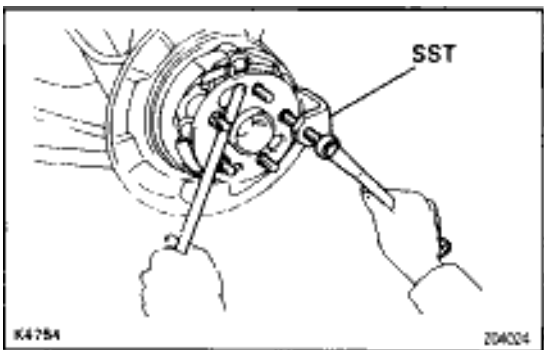


5. INSTALL DUST DEFLECTOR

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

SST 09608-35014 (09608-06020, 09608-06160)

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



HUB BOLT REPLACEMENT

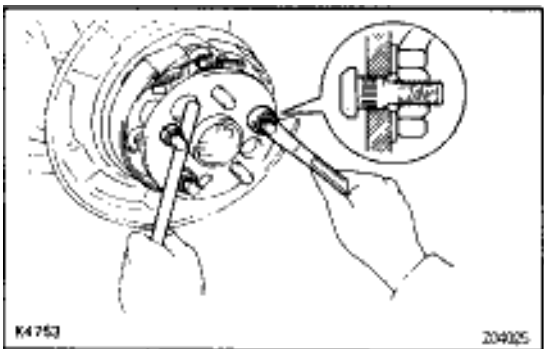
1. REMOVE REAR WHEEL

2. REMOVE REAR BRAKE CALIPER AND DISC (See page [SA-38](#))

3. REMOVE HUB BOLT

Using SST, remove the hub bolt.

SST 09628-10011



4. INSTALL HUB BOLT

- (a) Install washer and nut to a new hub bolt, as shown in the illustration.

- (b) Turn the wheel nut to pull the hub bolt through until the underside of the hub bolt head touches the axle hub.

5. INSTALL REAR BRAKE DISC AND BRAKE CALIPER (See page [SA-35](#))

6. INSTALL REAR WHEEL

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

REAR DRIVE SHAFT

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09240-00020 Wire Gauge Set	
	(09242-00080) Wire Gauge	
	09521-24010 Drive Shaft Boot Clamping Tool	
	09726-10010 Lower Suspension Arm Bushing Remover & Replacer	Drive shaft inboard joint
	(09726-00030) Spacer	

RECOMMENDED TOOLS

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

Torque wrench	
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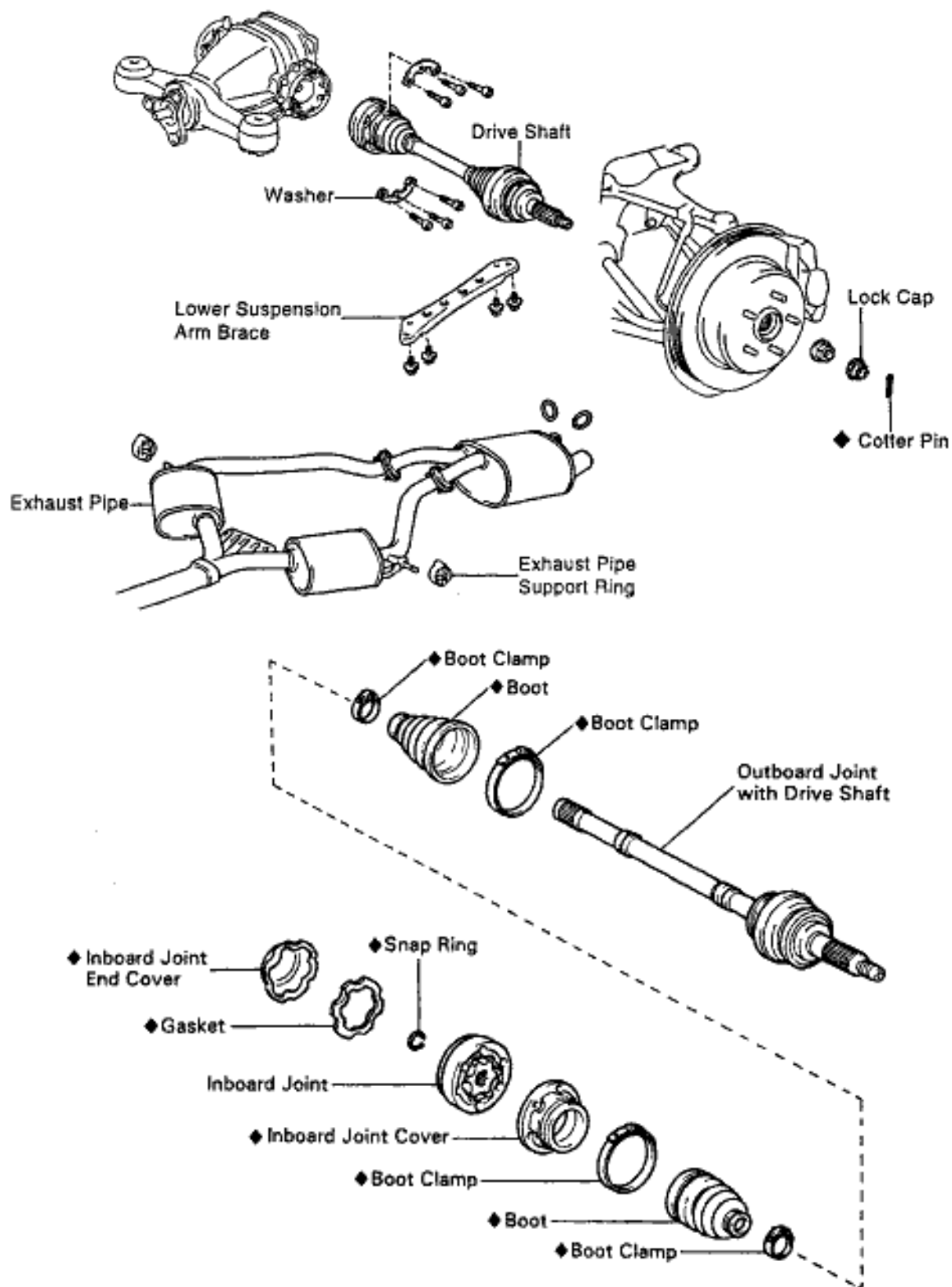
LUBRICANT

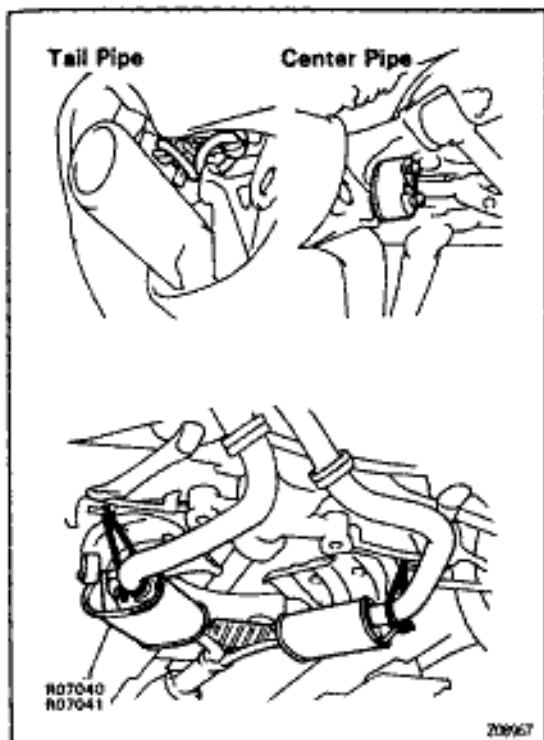
Item	Capacity	Classification
Outboard Joint	100–105 g (0.22–0.23 lb, 3.5–3.7 oz.)	
Inboard Joint	100–105 g (0.22–0.23 lb, 3.5–3.7 oz.)	
End cover	50–55 g (0.11–0.12 lb, 1.8–1.9 oz.)	

SSM (SPECIAL SERVICE MATERIALS)

08826-00801	Seal Packing 1121, THREE BOND 1121 or equivalent (FIPG)	
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REAR DRIVE SHAFT COMPONENTS

R11370
R07088



REAR DRIVE SHAFT REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check ABS speed sensor signal.

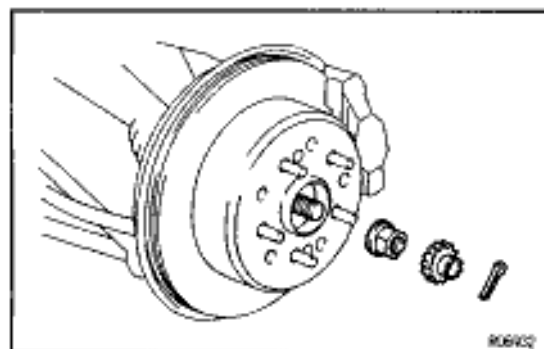
(See page BR-62)

1. REMOVE REAR WHEEL

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

2. DISCONNECT EXHAUST PIPE MOUNTING

- Remove the 2 exhaust pipe support rings.
- Support the exhaust pipe securely.
- Remove the 2 exhaust pipe support O-rings.



3. REMOVE COTTER PIN, LOCK CAP AND LOCK NUT

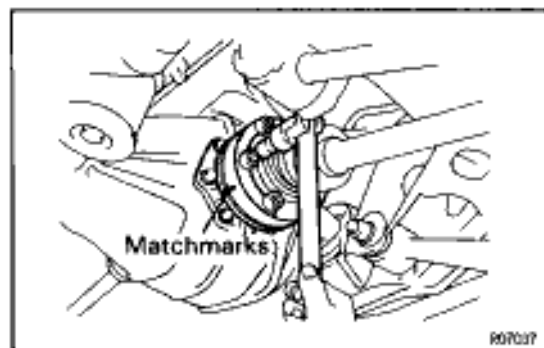
- Remove the cotter pin and lock cap.
- While depressing the brake pedal, remove the nut.

Torque: 289 N·m (2,950 kgf·cm, 213 ft·lbf)

4. REMOVE LOWER SUSPENSION ARM BRACE

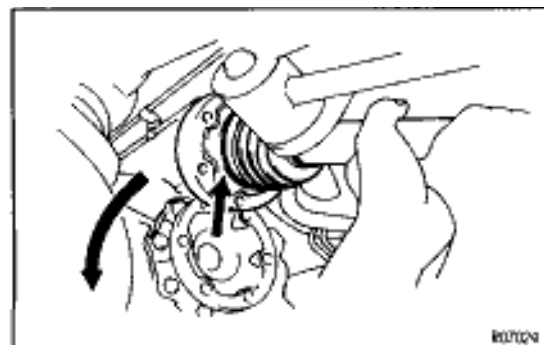
Remove the 4 bolts and lower suspension arm brace.

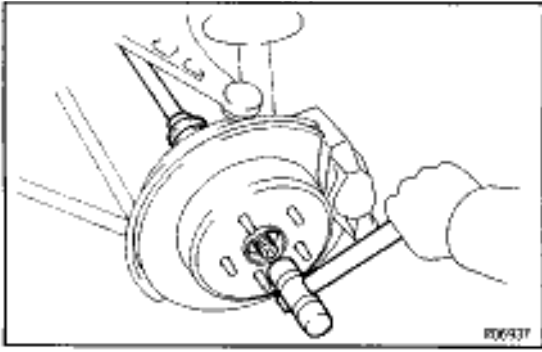
Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)



5. REMOVE REAR DRIVE SHAFT

- Place matchmarks on the drive shaft and side gear shaft.
NOTICE: Do not use a punch to mark the matchmarks. Use paint, etc.
- Using a 10 mm hexagon wrench, remove the 6 hexagon bolts and 2 washers while depressing the brake pedal.
Torque: 83 N·m (850 kgf·cm, 61 ft·lbf)
INSTALLATION HINT: Apply a light coat of engine oil on the threads of the bolts.
- Disconnect the inboard joint from the differential side gear shaft.
- Hold the inboard joint side of the drive shaft so that the outboard joint side does not bend too much.

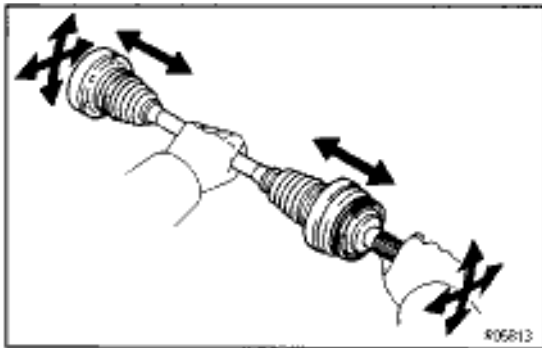




- (e) Using a hammer, lightly tap the end of the drive shaft, disengage the axle hub and remove the drive shaft.

NOTICE: Be careful not to damage the boots and speed sensor rotor of the drive shaft, and oil seal of the axle hub.

INSTALLATION NOTICE: Make sure the outboard joint side of the drive shaft does not bend too much.



REAR DRIVE SHAFT DISASSEMBLY

1. CHECK DRIVE SHAFT

- (a) Check that operation of the joint is smooth within the sliding region in the axial direction.

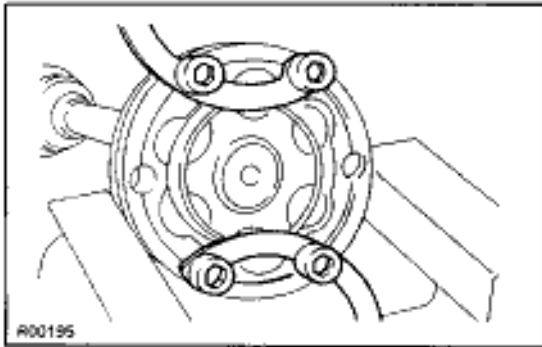
HINT: If a large angle is used for the cross-groove type joint, the joint will feel like it is catching, but this does not indicate an abnormality.

- (b) Check that the boots are not cracked, damaged or leaking.
(c) Check that there are no scratches on the speed sensor rotor.

2. REMOVE END COVER

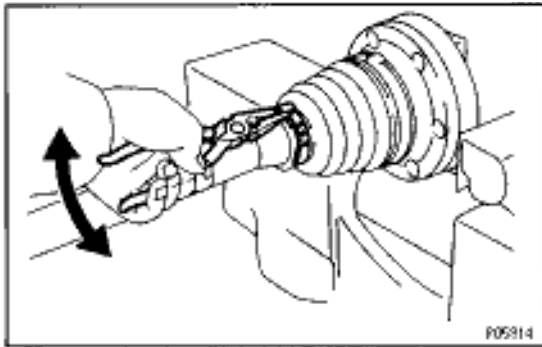
- (a) Using a screwdriver, remove the end cover.
(b) Use bolts, nuts and washers to keep the inboard joint together.

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



3. REMOVE BOOT CLAMPS

Using a side cutter or pliers, remove the clamps.

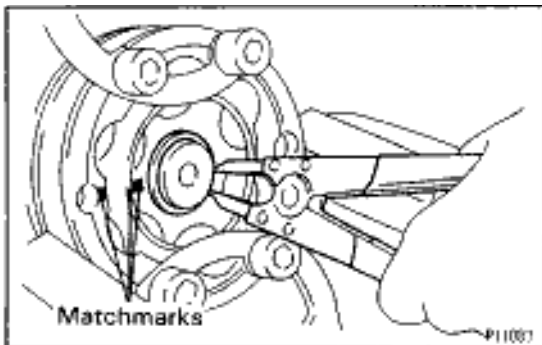


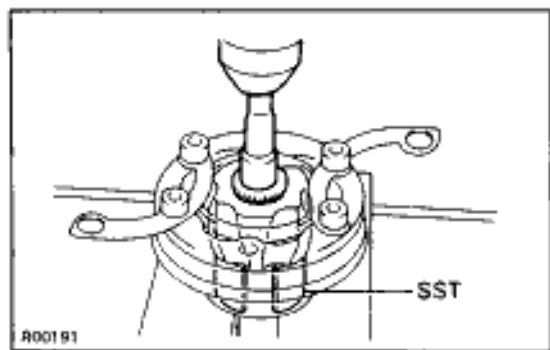
4. REMOVE INBOARD JOINT

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

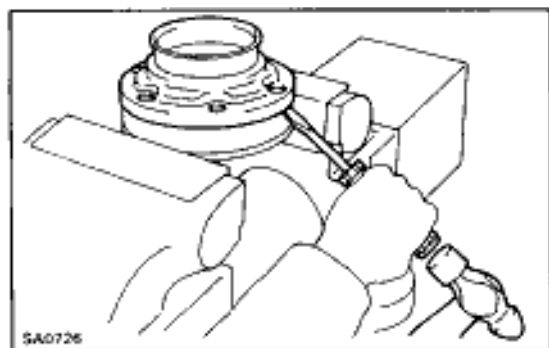
NOTICE: Do not punch the marks.

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





- (c) Using SST, an extension bar and a press, press out the inboard joint from the drive shaft.
SST 09726-12022 (09726-01030)

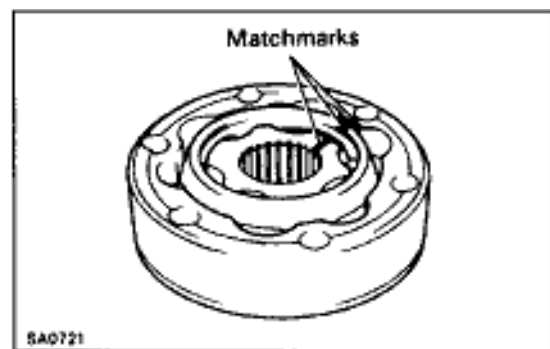


- (d) Mount the inboard joint in a soft jaw vise.
(e) Using a screwdriver and hammer, tap out the inboard joint cover from the inboard joint.

NOTICE: Make sure the cage and inner race are not positioned too much to one side of the outer race.

5. REMOVE BOOTS FROM DRIVE SHAFT

Remove the inboard joint boot and outboard boot.

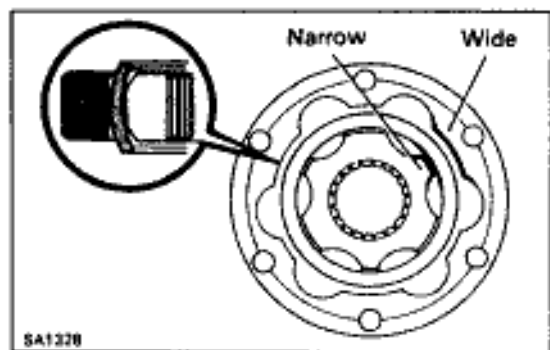


REAR DRIVE SHAFT ASSEMBLY

1. ASSEMBLE INBOARD JOINT

If the joint has come apart, reassemble it in the following order.

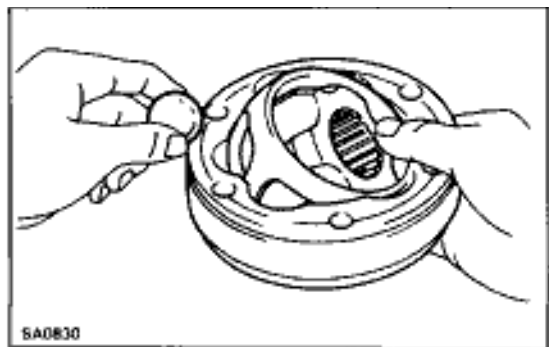
- (a) Align the matchmarks placed before removal.

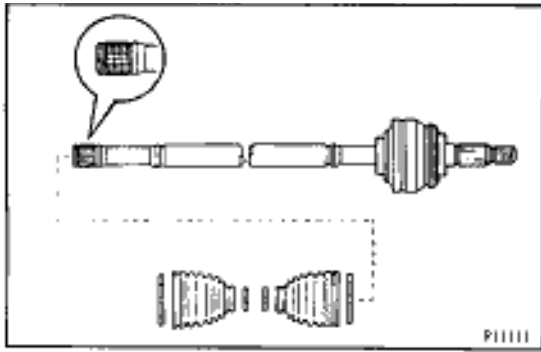


HINT: When the matchmarks have disappeared, do the following procedure.

- (1) Install the inner race to the cage so that the indented bevelled part of the inner race is on the opposite side to the bevelled top of the cage.
 - (2) Install the outer race so that the indented side of the outer race is facing the same side as the bevelled surface of the cage.
 - (3) Match the narrow projections of the inner race with the wide projections of the outer race.
- (b) Tilt the cage and inner race to the side and insert the balls one by one.

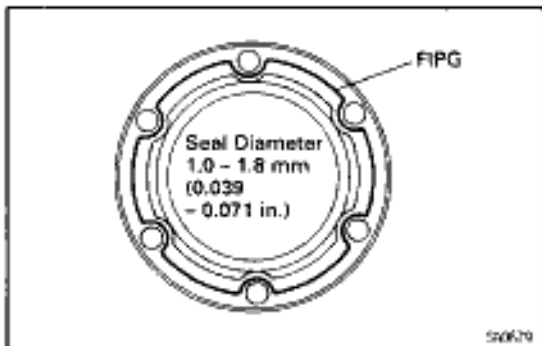
NOTICE: When the cage and inner race are tilted over, support the joint with your hand to prevent the balls from falling out.





2. TEMPORARILY INSTALL NEW BOOTS AND NEW BOOT CLAMPS

- (a) Place 4 new boot clamps to boots.
HINT: Before installing the boots, wrap vinyl tape around the spline of the shaft to prevent damaging the boots.
- (b) Install 2 boots to the drive shaft.



3. INSTALL INBOARD JOINT COVER

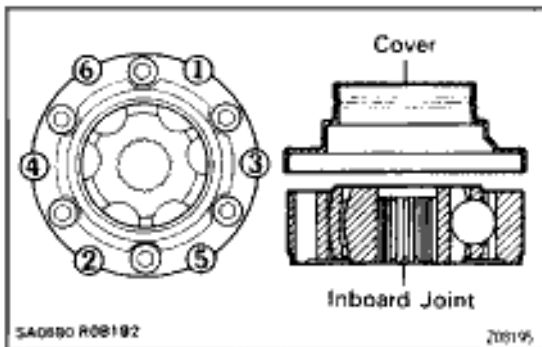
- (a) Apply FIPG to the inboard joint cover as shown in the illustration.

FIPG:

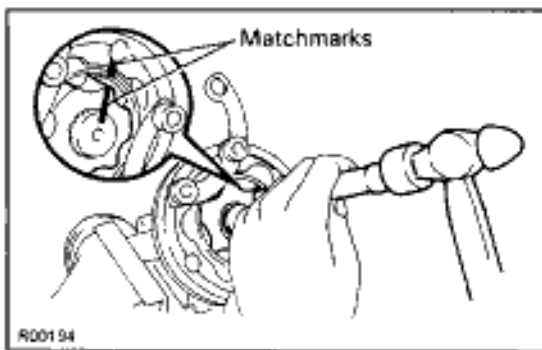
Part No.08826-00801, THREE BOND 1121 or equivalent

- Install a nozzle that has been cut to a 1 mm (0.04 in.) opening.

HINT: Avoid applying an excessive amount to the surface



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

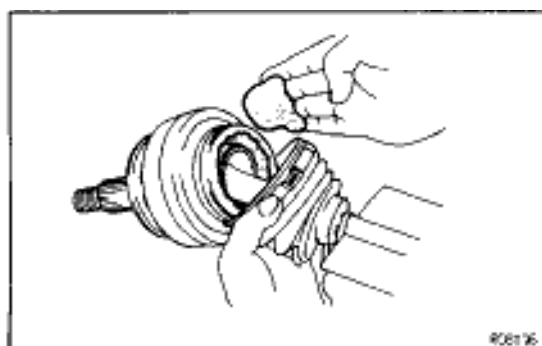


4. INSTALL INBOARD JOINT

- (a) Align the matchmarks placed before removal.
- (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.

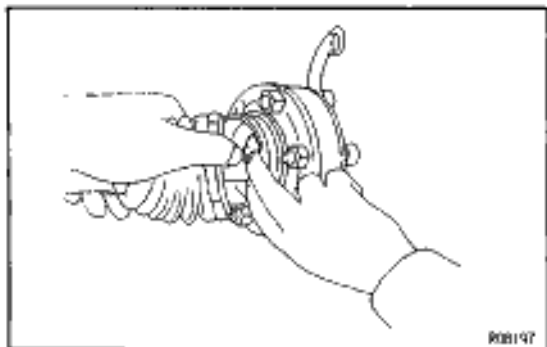


5. ASSEMBLE BOOTS TO JOINTS

Before assembling the boot, pack with only the same amount of grease that was wiped off.

Grease capacity (Outboard joint):

100 - 105 g (0.22-0.23 lb, 3.5 - 3.7 oz.)

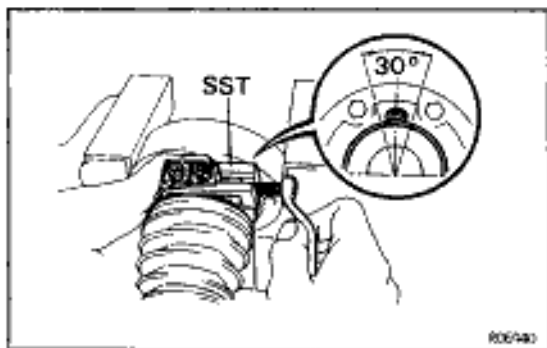
**Grease capacity (Inboard joint):**

100–105 g (0.22–0.23 lb, 3.5–3.7 oz.)

HINT: Use the grease supplied in the boot kit.

NOTICE:

- Keep grease off the joint connection groove of the boot.
- Pack with grease all over the ball contact surface inside the joint.

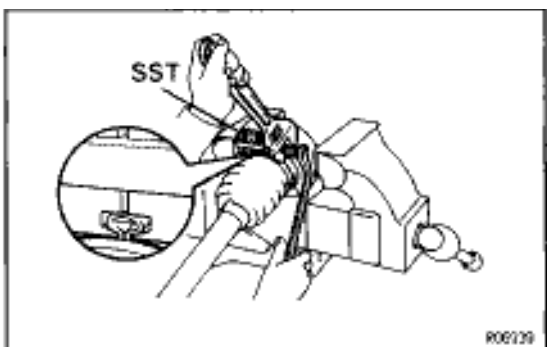
**6. INSTALL NEW BOOT CLAMPS TO BOTH BOOTS**

- (a) Position the clamp onto the boot.

HINT: Pinch the inboard side of the boot clamp, as shown in the illustration.

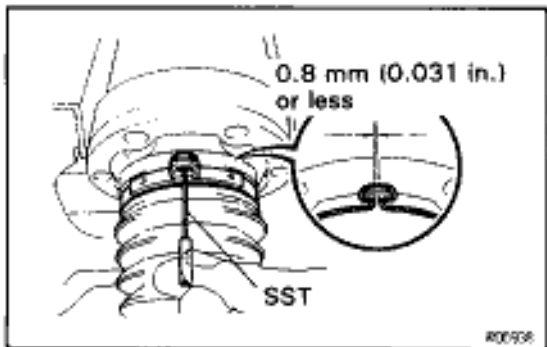
- (b) Place SST onto the clamp.

SST 09521–24010



- (c) Tighten SST so that the clamp is pinched.

NOTICE: Do not overtighten the SST.

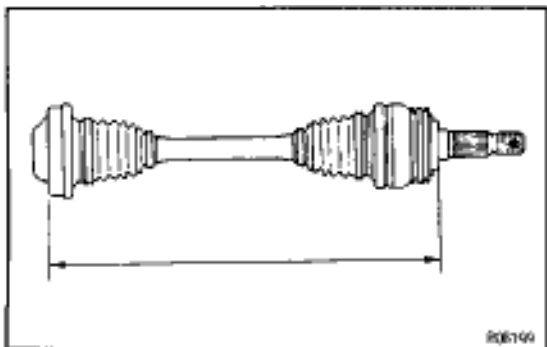


- (d) Using SST, adjust the clearance of the clamp.

SST 09240–00020

Clearance:

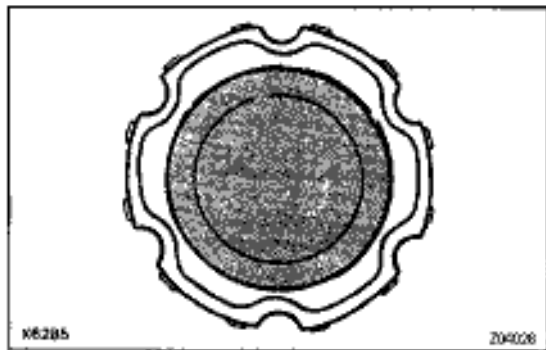
0.8 mm (0.031 in.) or less



- (e) The drive shaft is designed to move +20 mm from the normal position.

Drive shaft standard length

	2JZ–GTE (M/T)	Others
RH	598.5 mm (23.602 in.)	598.5 mm (23.602 in.)
LH	547.5 mm (21.555 in.)	553.5 mm (21.791 in.)



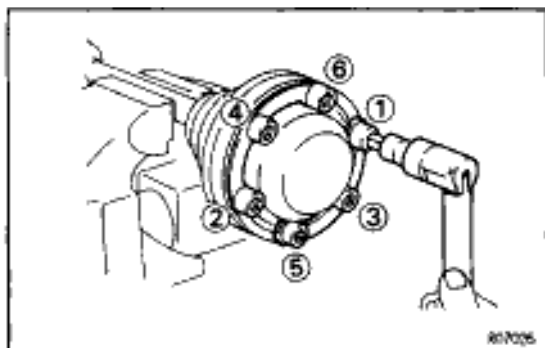
7. INSTALL NEW END COVER

- (a) Pack grease into the end cover.

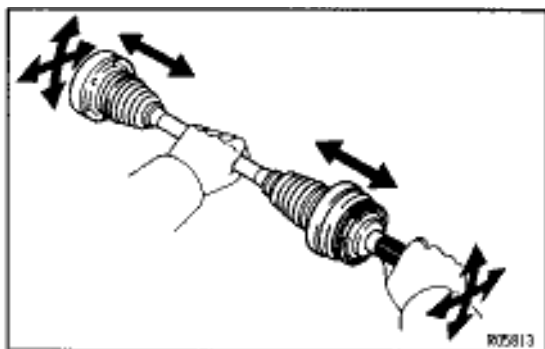
Grease capacity:

50–55 g (0.11–0.12 lb, 1.8–1.9 oz.)

- (b) Remove grease from the surface of the inboard joint facing the cover.
- (c) Glue on a new gasket, with the side with adhesive on it facing toward the outer race side of the inboard joint.



- (d) Align the bolt holes of the cover with those of the inboard joint.
- (e) Install the 6 hexagon bolts and washer from the end cover side.
- (f) Install the 6 nuts to the boot side.
- (g) Using a 10 mm hexagon wrench, tighten the bolts. Do this in the order shown, and repeat several times.
- (h) Check that the claw of the end cover touches the inboard joint.



8. CHECK DRIVE SHAFT

Check that operation of the joint is smooth within the sliding region in the axial direction.

HINT: If a large angle is used for the cross-groove type joint, the joint will feel like it is catching, but this does not indicate an abnormality.

REAR DIFFERENTIAL

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09223-15030	Oil Seal & Bearing Replacer	(2JZ-GTE M/T) Side gear shaft oil seal installation
	09229-55010	Oil Cooler Relief Valve Wrench	Drive pinion nut removal and installation
	09250-10011	Replacer Set "A"	
	(09252-10010)	No. 1 Replacer Handle	
	(09255-10011)	Crankshaft Rear Bearing Remover & Replacer	(Except 2JZ-GTE M/T) Rear bearing outer race installation
	09308-00010	Oil Seal Puller	Side gear shaft oil seal removal Drive pinion oil seal removal
	09316-12010	Transfer Bearing Replacer	Differential mounting cushion removal
	09316-20011	Transfer Bearing Replacer	(2JZ-GTE M/T) Rear bearing installation
	09316-60010	Transmission & Transfer Bearing Replacer	
	(09316-00010)	Replacer Pipe	(Except 2JZ-GTE M/T) Dust cover installation Drive pinion oil seal installation
	(09316-00040)	Replacer "C"	(Except 2JZ-GTE M/T) Drive pinion oil seal installation
	(09316-00070)	Replacer "F"	(2JZ-GTE M/T) Drive pinion oil seal installation

	09330-00021	Companion Flange Holding Tool	
	09502-12010	Differential Bearing Replacer	(Except 2JZ-GTE M/T) Drive pinion oil seal installation
	09502-24010	Bearing Replacer	
	09502-24010	Differential Side Gear Shaft Puller	
	09502-10012	Replacer Set "B"	
	(09558-10010)	Rear Axle Shaft Oil Seal Replacer	
	09570-24010	Differential Mounting Cushion Remover & Replacer	
	09608-30012	Front Hub & Drive Pinion Bearing Tool Set	
	(09608-04030)	Front Hub Inner Bearing Cone Replacer	
	09608-32010	Steering Knuckle Oil Seal Replacer	(Except 2JZ-GTE M/T) Side gear oil seal installation
	09608-35014	Axle Hub Drive Pinion Bearing Tool Set	
	(09608-06020)	Handle	
	(09608-06040)	Front Hub Inner Bearing Cone Replacer	
	(09608-06090)	Front Hub Outer & Steering Worm Bearing Replacer	Dust deflector removal

	(09608-06100) Front Hub Outer Bearing Replacer	(Except 2JZ-GTE M/T) Side bearing installation (2JZ-GTE M/T) Dust deflector installation
	(09608-06110) Front Hub Inner & Drive Pinion Front Bearing Cup Replacer	(Except 2JZ-GTE M/T) Side bearing outer race removal Front bearing outer race installation
	(09608-06120) Front Hub Outer Bearing Cup Replacer	Dust cover installation
	(09608-06150) Rear Hub Outer Bearing Cup Replacer	(2JZ-GTE M/T) Side bearing outer race Carrier retainer installation
	(09608-06160) Rear Hub Inner Bearing Cup Replacer	(2JZ-GTE M/T) Rear bearing outer race installation
	(09608-06180) Drive Pinion Rear Bearing Cup Replacer	(Except 2JZ-GTE M/T) Carrier retainer installation
	(09608-06210) Rear Axle Bearing Replacer	(Except 2JZ-GTE M/T) Side bearing outer race installation
	09631-32020 Seal Ring Tool	(2JZ-GTE M/T) Dust cover installation
	09710-30050 Suspension Arm Bushing Replacer	Side bearing installation
	09726-36010 Lower Control Arm Bushing Replacer	(2JZ-GTE M/T) Side bearing installation
	09950-00020 Bearing Remover	Rear bearing removal Dust deflector and dust cover removal
	09950-40010 Puller B Set	Carrier retainer removal Side bearing removal

RECOMMENDED TOOLS

	09924-12361	Deep socket Wrench 36.	(2JZ-GTE M/T) Drive pinion nut removal and installation
	09025-00010	Torque Wrench (30 kgf•cm)	Differential preload
	09031-00030	Pin Punch.	(Conventional differential only) Pinion shaft removal

EQUIPMENT

Dial indicator with magnetic base	
Micrometer	
Torque wrench	
Vernier calipers	

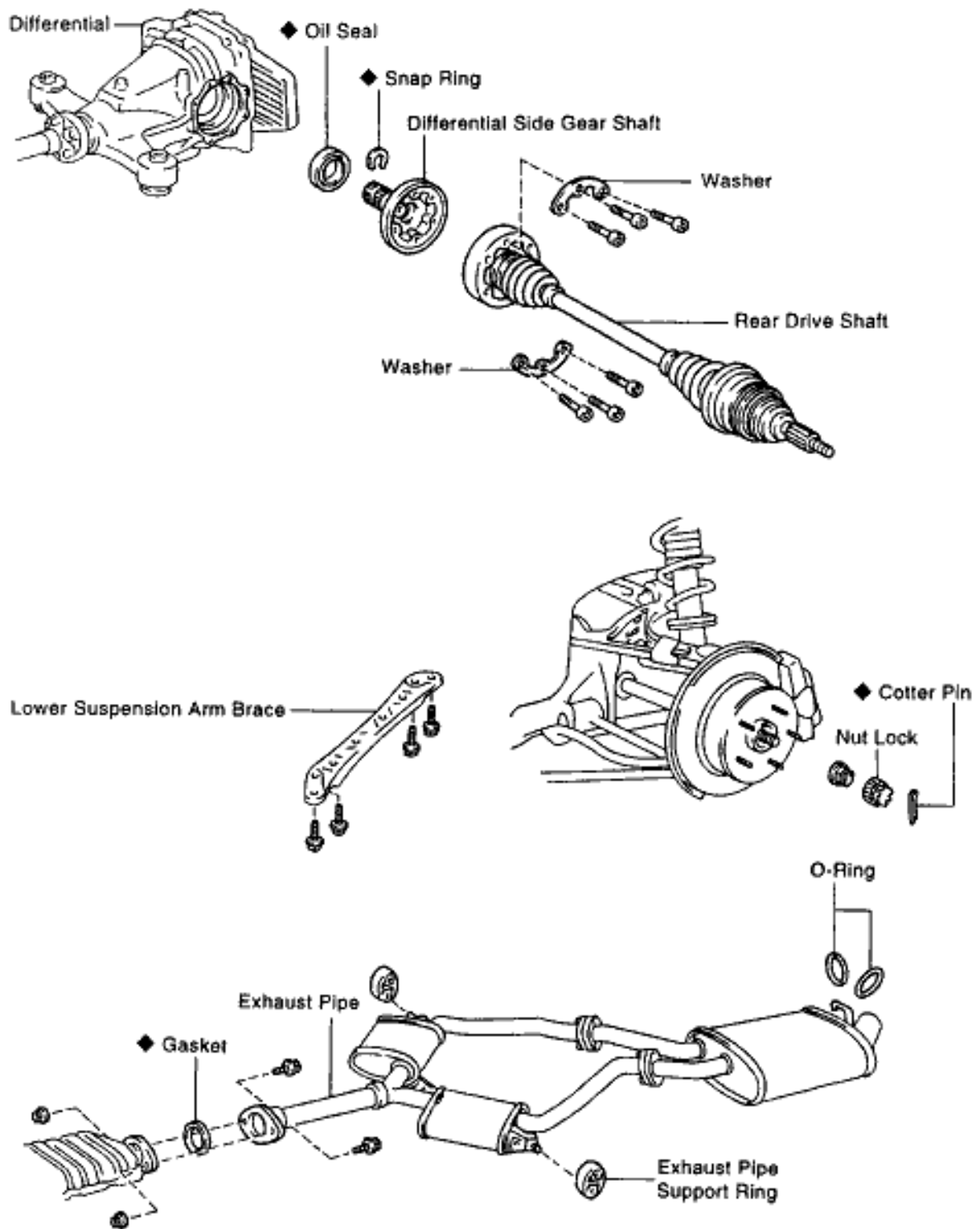
SSM (SPECIAL SERVICE MATERIALS)

08826-00090	Seal Packing 1281, THREE BOND 1281 or equivalent (FIPG)	Differential carrier X Cover
08833-00100	THREE BOND 1360K or equivalent	Differential case X Ring gear

LUBRICANT

Item	Capacity	Classification
Differential oil	1.35 liters (1.43 US qts, 1.19 Imp.qts)	API GL-5 Hypoid gear oil [Above – 18°C (0°F)] SAE 90 [Below – 18°C (0°F)] SAE 80W or 80W-90

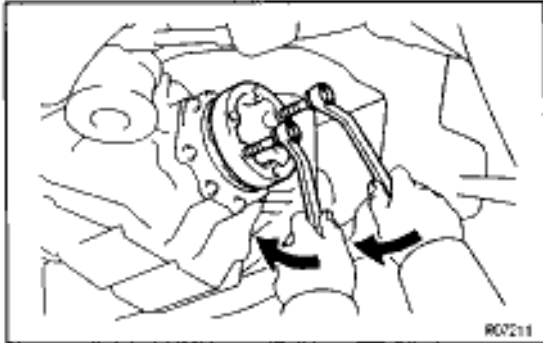
ON-VEHICLE REPAIR COMPONENTS



◆ Non-reusable part

SIDE GEAR SHAFT OIL SEAL REPLACEMENT

1. DRAIN DIFFERENTIAL OIL
2. REMOVE REAR DRIVE SHAFT
(See page [SA-46](#))

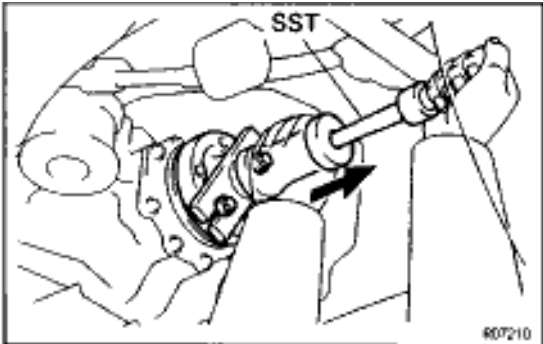


3. REMOVE SIDE GEAR SHAFT

- (a) 2JZ-GTE M/T only:

Equally tighten both bolts at the same time and pull out the side gear shaft.

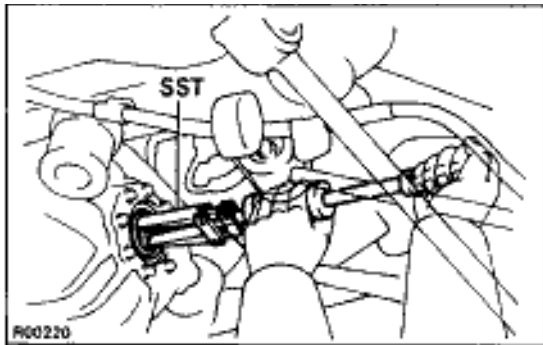
NOTICE: Pull out the side gear shaft until a nut can fit behind the shaft. Pulling the shaft out too far will damage the dust cover.



- (b) Using SST and 2 bolts, nuts, remove the side gear shaft.
SST 09520-24010

4. REMOVE SNAP RING

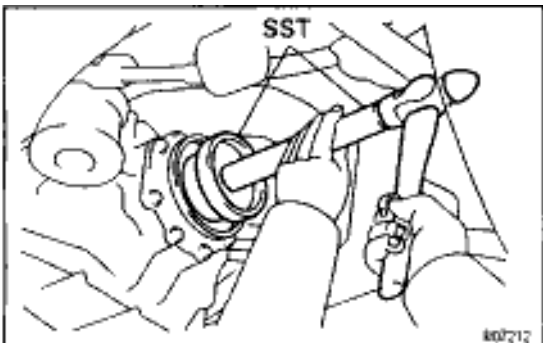
Remove the snap ring from the side gear shaft.



5. REMOVE SIDE GEAR SHAFT OIL SEAL

Using SST, remove the oil seal.

SST 09308-00010



6. INSTALL SIDE GEAR SHAFT OIL SEAL

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

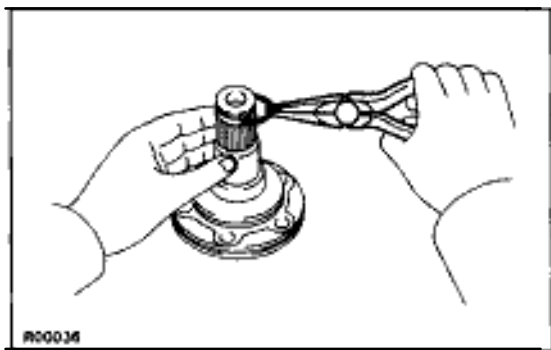
2JZ-GTE M/T:

SST 09223-15030, 09608-35014 (09608-06020)

Except 2JZ-GTE M/T:

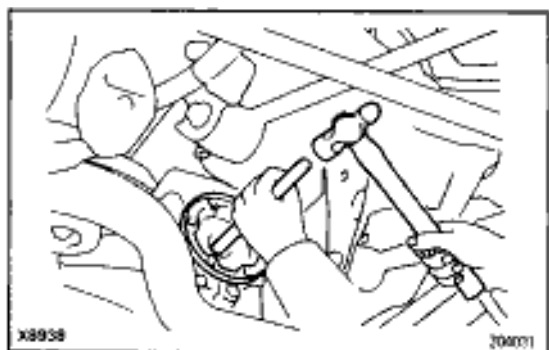
SST 09608-32010, 09608-35014 (09608-06020)

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



7. INSTALL SIDE GEAR SHAFT

- (a) Install a new snap ring to the side gear shaft.
- (b) Coat MP grease onto the snap ring.



- (c) Using a hammer and brass bar, tap in the side gear shaft to the differential.

NOTICE: Be careful not damage the side gear shaft and oil seal.

HINT: Whether or not the side gear shaft is making contact with the pinion shaft can be determined by the sound or feeling when driving it in.

8. CHECK INSTALLATION OF SIDE GEAR SHAFT

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

9. INSTALL REAR DRIVE SHAFT

(See page [SA-46](#))

10. FILL DIFFERENTIAL WITH OIL

Oil grade:

API GL-5 Hypoid gear oil

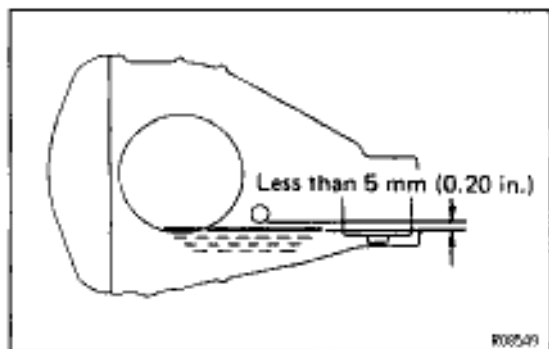
Viscosity:

Above – 18°C (0°F) SAE 90

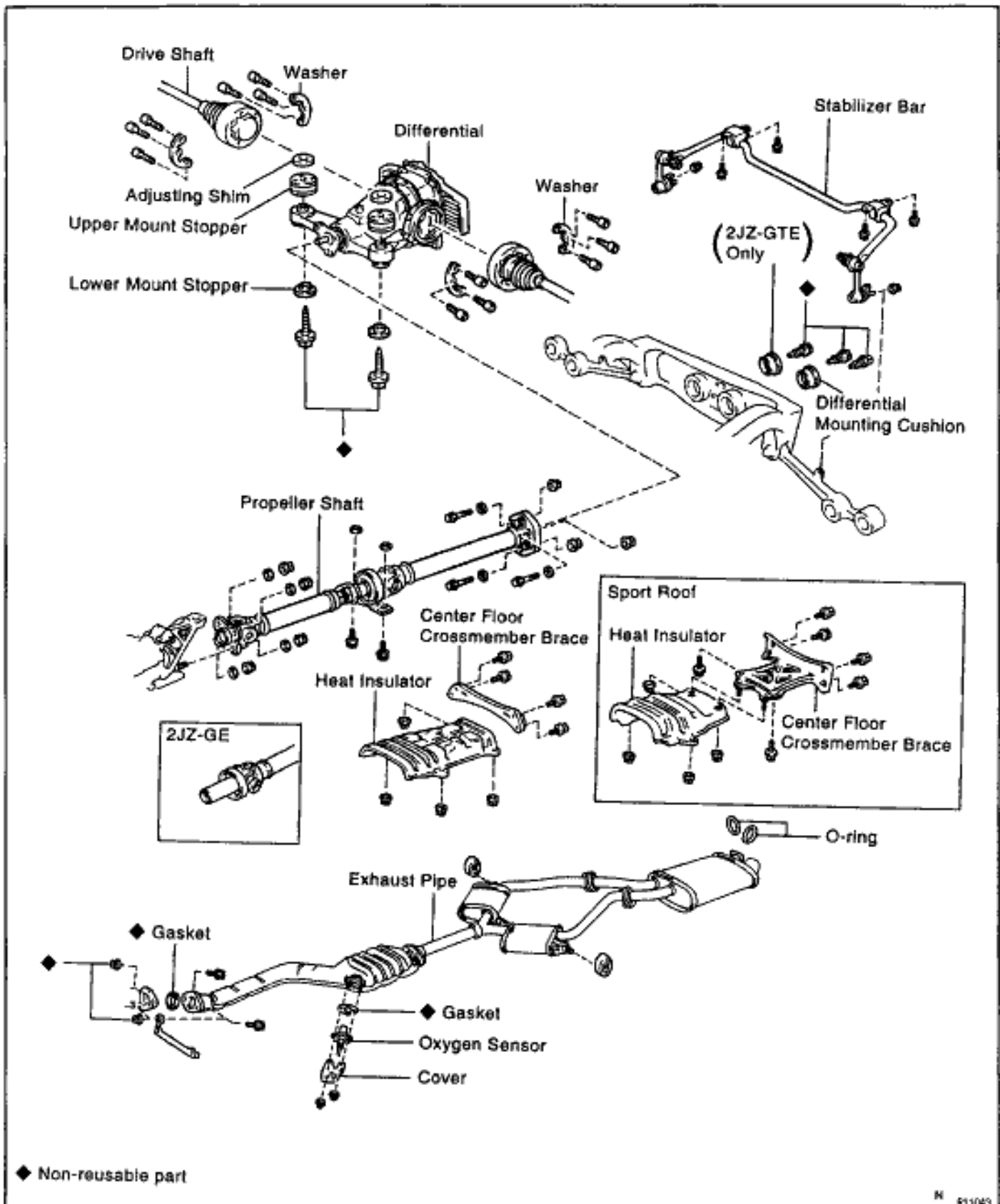
Below – 18°C (0°F) SAE 80W-90 or 80W

Capacity:

1.35 liters (1.43 US qts, 1.19 Imp. qts)



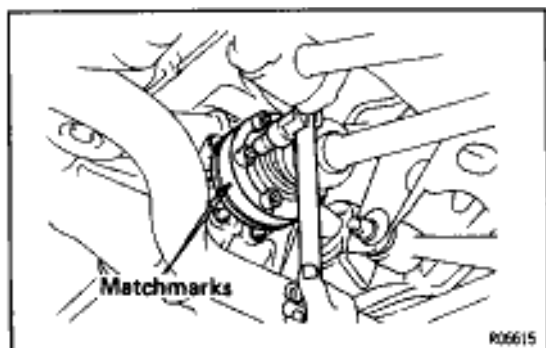
ASSEMBLY REMOVAL AND INSTALLATION COMPONENTS



DIFFERENTIAL REMOVAL

Installation is in the reverse order of removal.

1. **DRAIN DIFFERENTIAL OIL**
2. **REMOVE PROPELLER SHAFT**
(See page [PR-5](#))



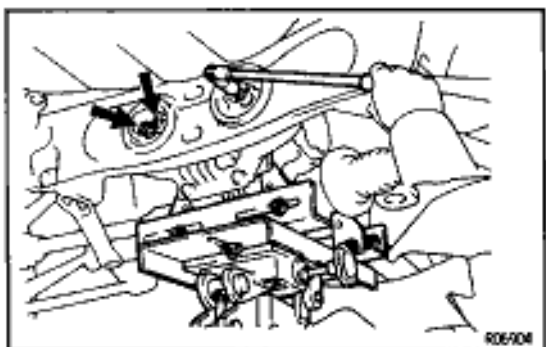
3. **DISCONNECT BOTH REAR DRIVE SHAFTS FROM DIFFERENTIAL**

- (a) Place matchmarks on the drive shaft and side gear shaft.
- (b) Using a 10 mm hexagon wrench, disconnect both drive shafts from the differential.

Torque: 83 N·m (850 kgf·cm, 64 ft·lbf)

INSTALLATION HINT: Apply a light coat of engine oil on the threads of the bolts.

- (c) Support both drive shafts securely.

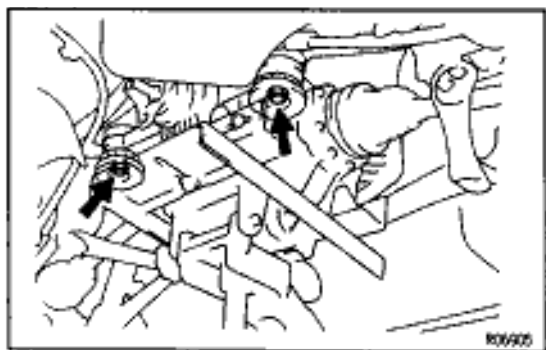


4. **REMOVE REAR STABILIZER BAR**
(See page [SA-96](#))

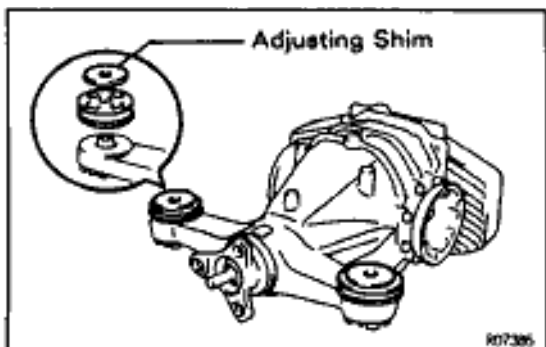
5. **REMOVE DIFFERENTIAL**

- (a) Support the differential with a jack.
- (b) Using a 12 mm hexagon wrench, remove the bolts.

Torque: 142 N·m (1,450 kgf·cm, 105 ft·lbf)



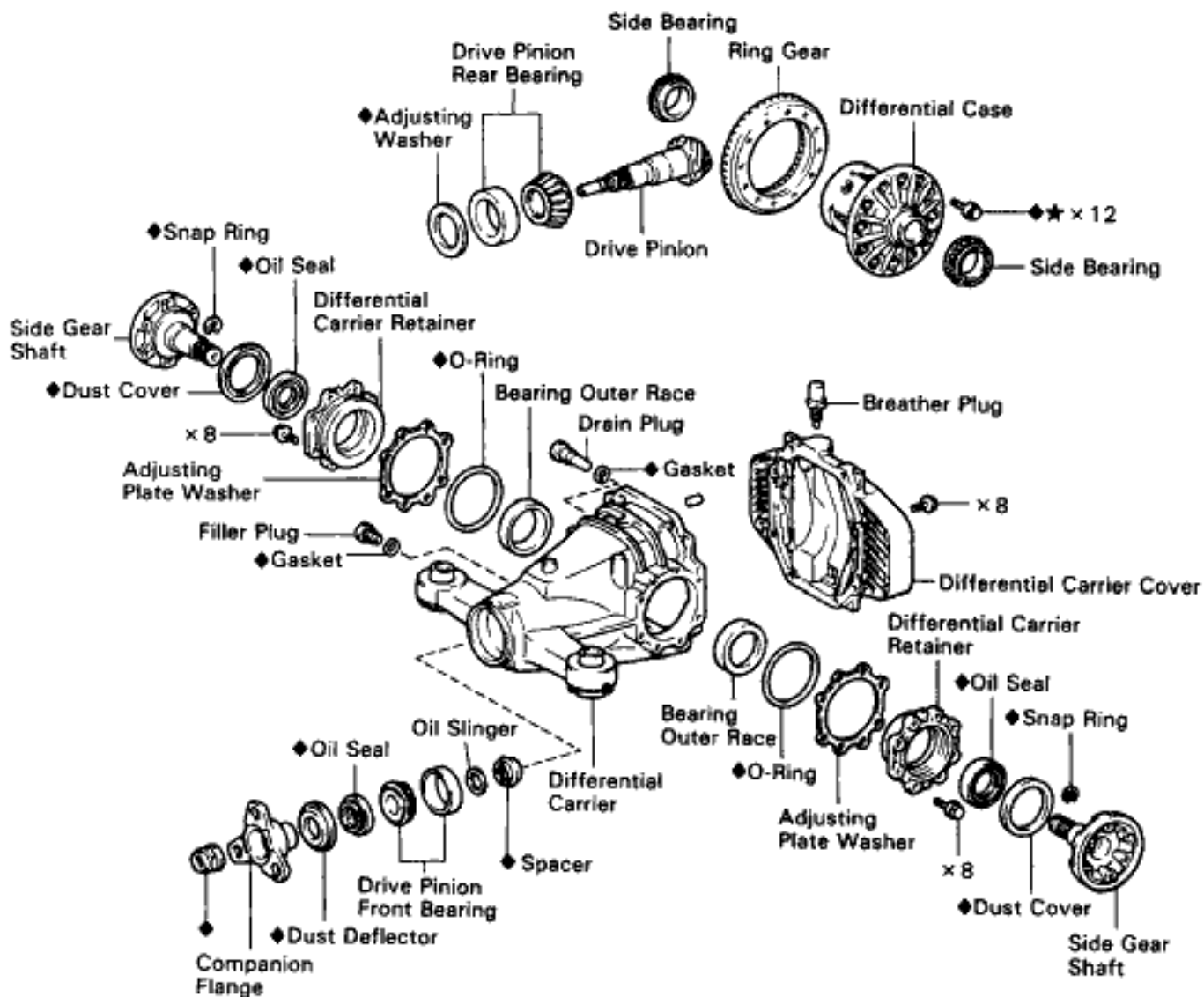
- (c) Remove the 2 bolts and lower mount stoppers.
- Torque: 147 N·m (1,500 kgf·cm, 108 ft·lbf)**
- (d) Remove the differential.



- (e) Remove the upper mount stopper from the differential carrier.
HINT: During production, some vehicles did not need adjusting shims to be fitted.
INSTALLATION HINT: Use the upper mount stopper which was removed.

DIFFERENTIAL CARRIER COMPONENTS

2JZ-GTE M/T



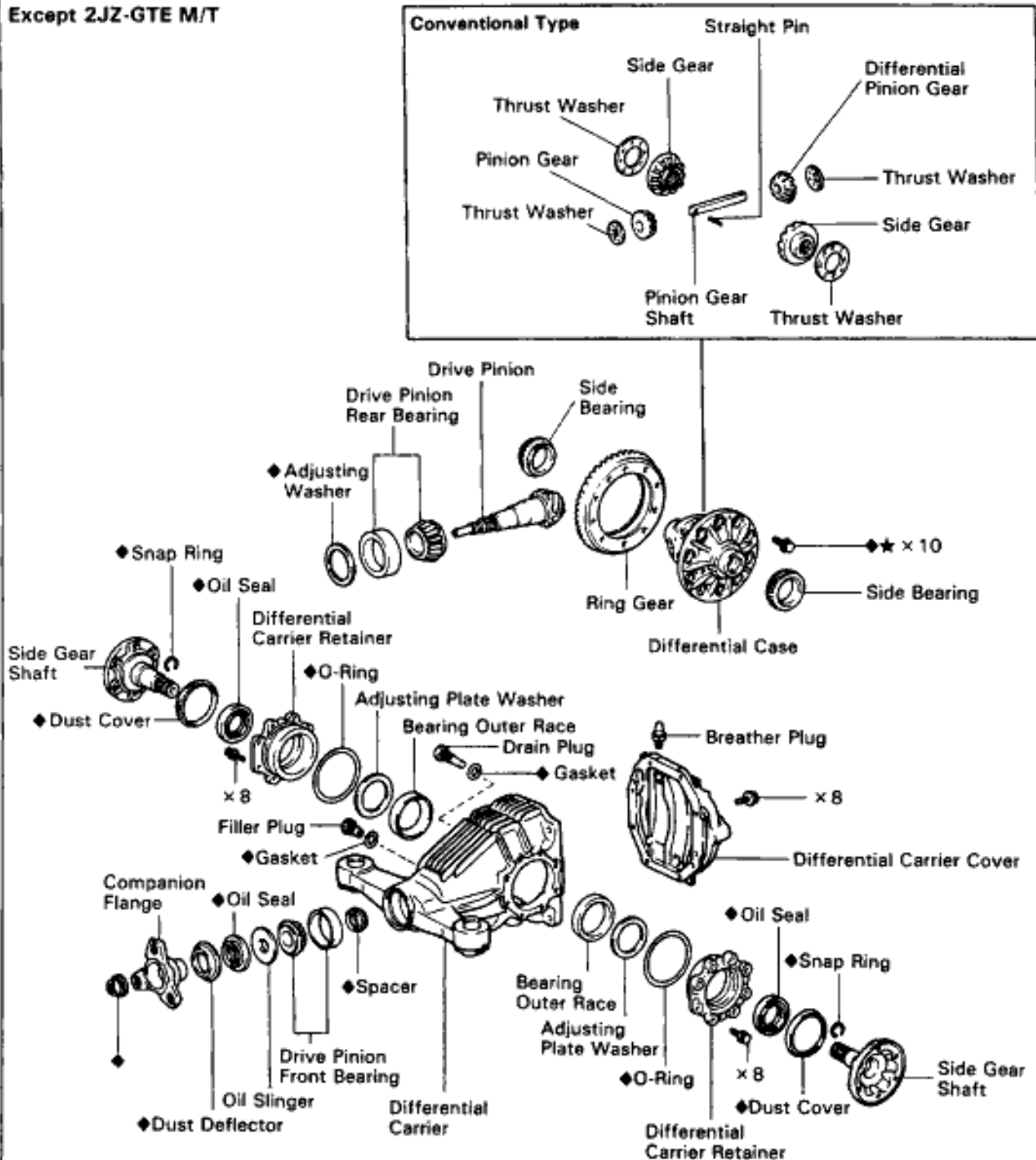
◆ Non-reusable part

★ Precoated part

R07208

7/30/07

Except 2JZ-GTE M/T

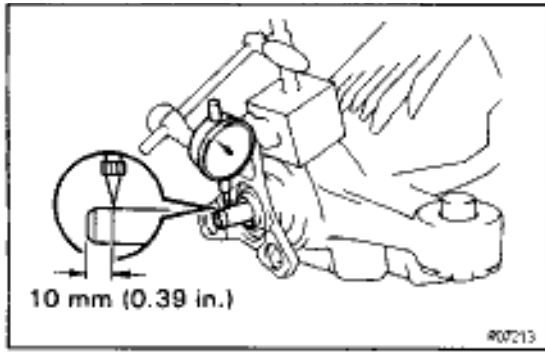


◆ Non-reusable part

★ Precoated part

R07207

713406



DIFFERENTIAL CARRIER INSPECTION

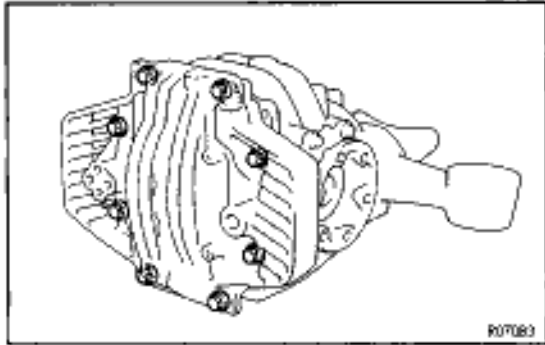
1. CHECK DRIVE PINION SHAFT RUNOUT

Measure the drive pinion shaft runout at a position 10 mm (0.39 in.) from the end of the shaft.

Maximum runout:

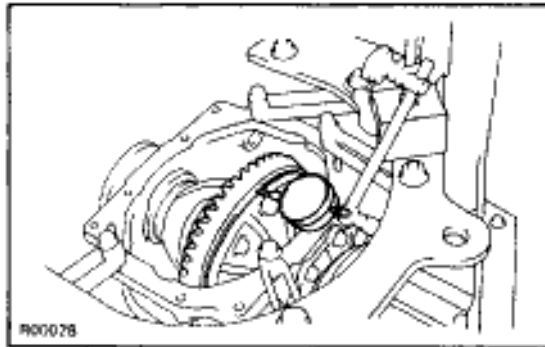
0.08 mm (0.0031 in.)

If the runout is greater than the maximum, replace the drive pinion and/or ring gear.



2. REMOVE DIFFERENTIAL CARRIER COVER

- (a) Remove the 8 bolts from the carrier cover.
- (b) Using a brass bar and hammer, separate the cover and carrier.



3. CHECK RING GEAR RUNOUT

Maximum runout:

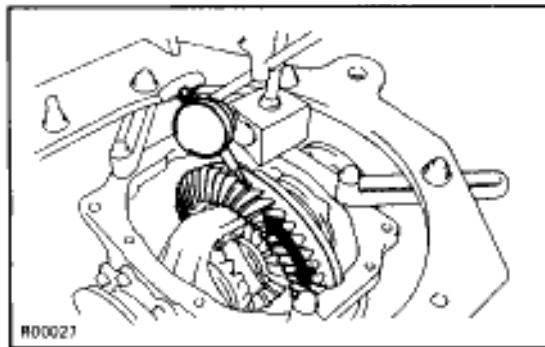
2JZ-GTE M/T

0.08 mm (0.0031 in.)

Except 2JZ-GTE M/T

0.05 mm (0.0020 in.)

If the runout is greater than the maximum, replace the drive pinion, ring gear and/or differential case.



4. CHECK RING GEAR BACKLASH

Measure the backlash of the ring gear and drive pinion at 3 points (minimum) and check that the average value is within the specification.

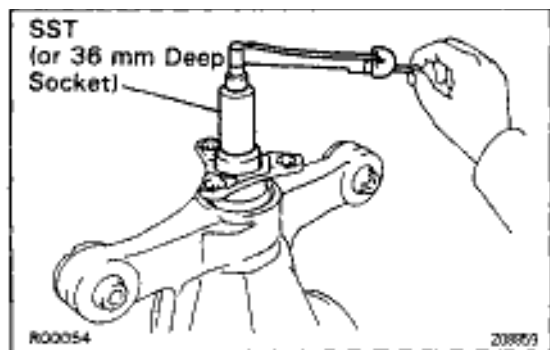
Backlash (average value):

0.08–0.13 mm (0.0031–0.0051 in.)

NOTICE: The difference between the maximum and minimum measured values must be less than 0.05 mm (0.0020 in.).

If the backlash is not within the specification, adjust the ring gear backlash.

(See page [SA-74](#))



5. MEASURE DRIVE PINION PRELOAD

Using SST (or a 36 mm deep socket) and a torque wrench, measure the drive pinion preload using the backlash of the drive pinion and ring gear.

SST 09229-55010

Preload (at start):

2JZ-GTE M/T

1.0–1.2 N·m (10–12 kgf·cm, 8.9–10.6 in.·lbf)

Except 2JZ-GTE M/T

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.·lbf)

6. CHECK TOTAL PRELOAD

Using SST (or a 36 mm deep socket) and a torque wrench, measure the total preload.

SST 09229-55010

Total preload (at start):

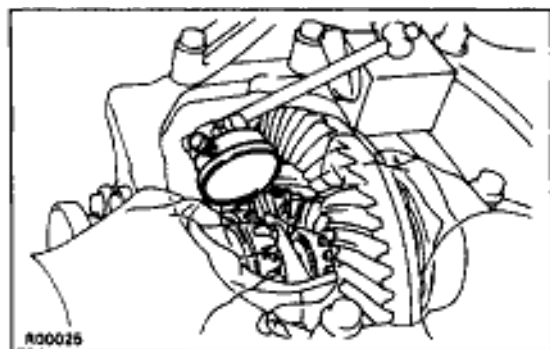
In addition to drive pinion preload

2JZ-GTE M/T

0.4–0.6 N·m (4–6 kgf·cm, 3.4–5.2 in.·lbf)

Except 2JZ-GTE M/T

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.·lbf)



If necessary, disassemble and inspect the differential

7. CONVENTIONAL TYPE ONLY:

CHECK PINION GEAR BACKLASH

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

Backlash:

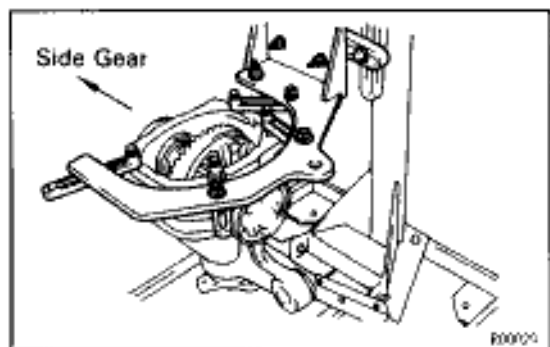
0.05–0.20 mm (0.0020–0.0079 in.)

If the backlash is not within the specification, install the correct thrust washer.

(See page [SA-70](#))

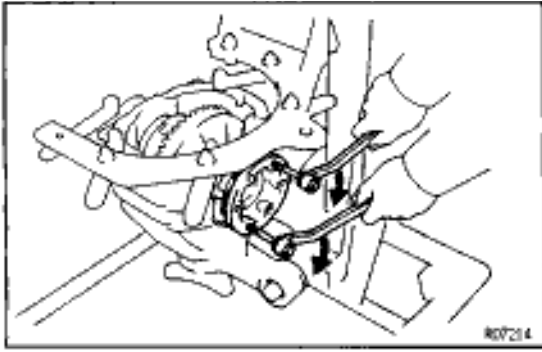
8. CHECK TOOTH CONTACT PATTERN

(See page [SA-75](#))



DIFFERENTIAL CARRIER DISASSEMBLY

HINT: When fastening the differential carrier to an overhaul stand, etc., fasten it at the 4 places on the ring gear side shown in the illustration.

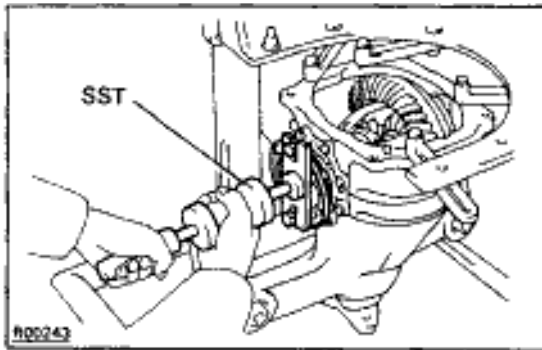


1. REMOVE SIDE GEAR SHAFT

- (a) 2JZ-GTE M/T only:

Equally tighten both bolts at the same time and pull out the side gear shaft.

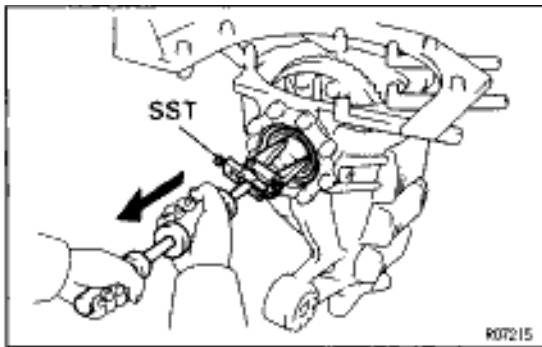
NOTICE: Pull out the side gear shaft until a nut can fit behind the shaft. Pulling the shaft out too far will damage the dust cover.



- (b) Using SST and 2 bolts, nuts, remove the side gear shaft.

SST 09520-24010

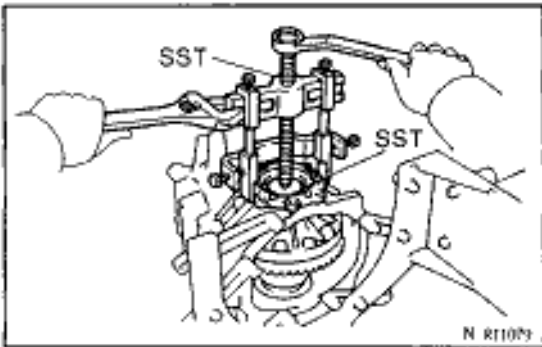
- (c) Using a screwdriver, remove the snap ring from the side gear shaft.



2. REMOVE SIDE GEAR SHAFT OIL SEALS

Using SST, remove the oil seal.

SST 09308-00010



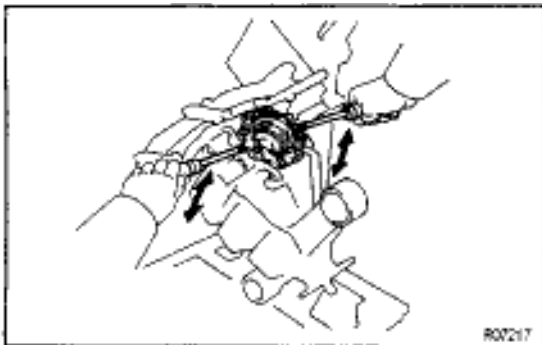
3. REMOVE DIFFERENTIAL CARRIER RETAINER (AND ADJUSTING PLATE WASHER)

- (a) Remove the 8 bolts.

- (b) 2JZ-GTE M/T:

Using SST, remove the carrier retainer and adjusting plate washer.

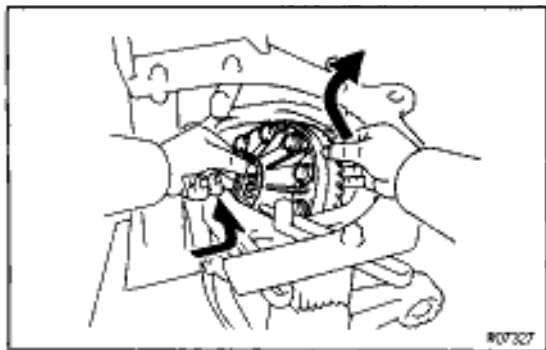
SST 09550-10012 (09558-10010),
09950-40010



Except 2JZ-GTE M/T:

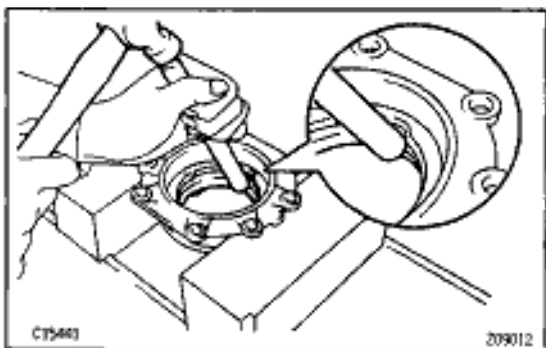
Using 2 screwdrivers, remove the carrier retainer.

- (c) Using a screwdriver, remove the O-ring from the carrier retainer.



4. REMOVE DIFFERENTIAL CASE

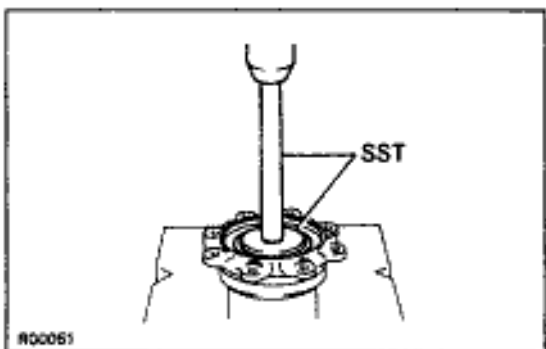
Take the differential case out of the carrier while lifting the ring gear side, as shown in the illustration.



5. REMOVE SIDE BEARING OUTER RACE (AND ADJUSTING PLATE WASHER)

2JZ-GTE M/T:

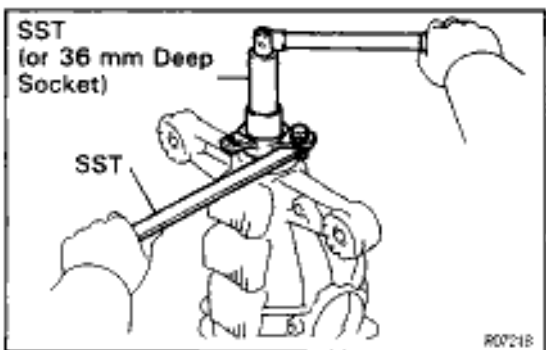
Using a brass bar and hammer, drive out the outer race.



Except 2JZ-GTE M/T:

Using SST and a press, press out the outer race and adjusting plate washer.

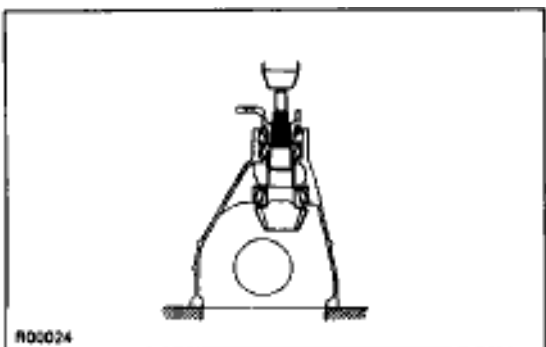
SST 09608-35014 (09608-06020, 09608-06110)



6. REMOVE DRIVE PINION, (OIL SLINGER), SPACER AND COMPANION FLANGE

- (a) Using a hammer and chisel, loosen the staked part of the nut.
- (b) Using SST (and a 36 mm deep socket wrench), remove the nut.

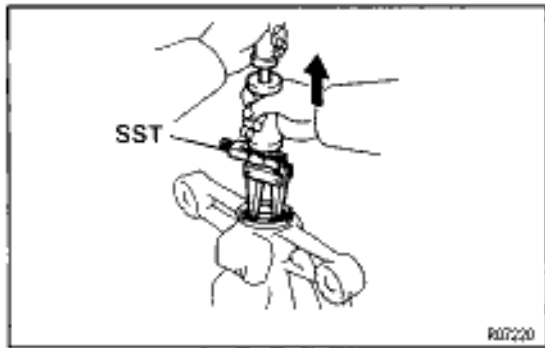
SST 09229-55010 (Except 2JZ-GTE M/T only),
09330-00021



- (c) Using a press, press out the drive pinion with the rear bearing and spacer.

NOTICE: Be careful not to drop the drive pinion.

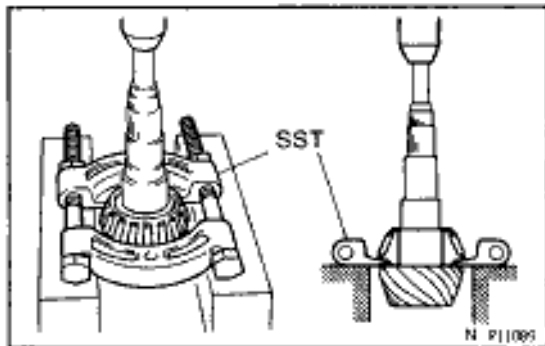
- (d) Remove the companion flange.
- (e) Remove the oil slinger (2JZ-GTE M/T only) and spacer from the drive pinion.

**7. REMOVE OIL SEAL**

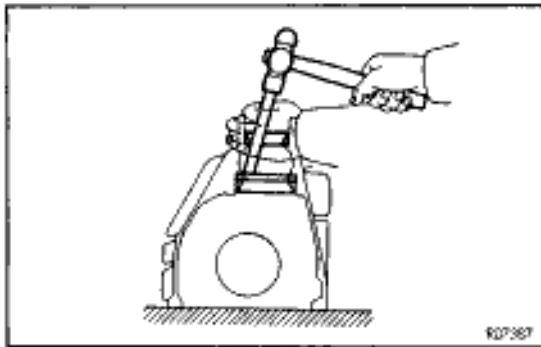
Using SST, remove the oil seal.
SST 09308-00010

8. REMOVE (OIL SLINGER AND) FRONT BEARING

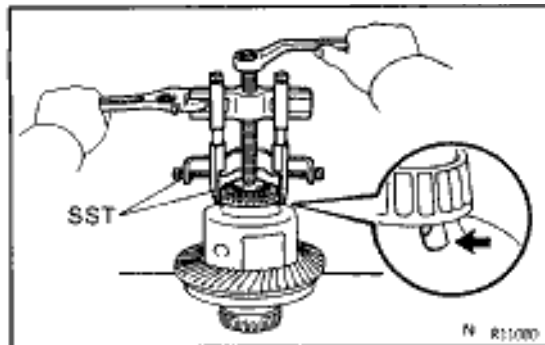
Remove the oil slinger (Except 2JZ-GTE M/T only) and front bearing by hand.

**9. REMOVE REAR BEARING FROM DRIVE PINION**

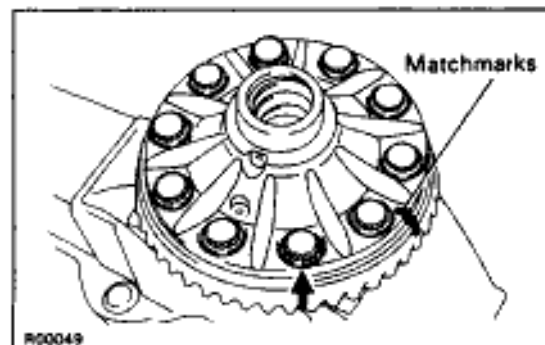
Using SST and a press, remove the rear bearing from the drive pinion.
SST 09950-00020

**10. REMOVE FRONT AND REAR BEARING OUTER RACES AND ADJUSTING PLATE WASHER**

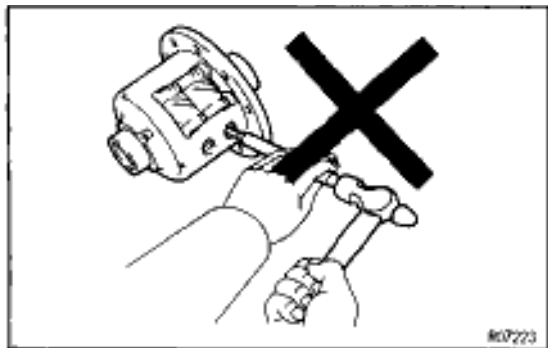
Using a brass bar and hammer, drive out the outer races and adjusting plate washer from the differential carrier.
HINT: Measure the adjusting plate washer thickness and make a note of it for reassembly.

**11. REMOVE LH AND RH SIDE BEARINGS**

Using SST, remove the LH and RH side bearings from the differential case.
SST 09550-10012 (09558-10010), 09950-40010

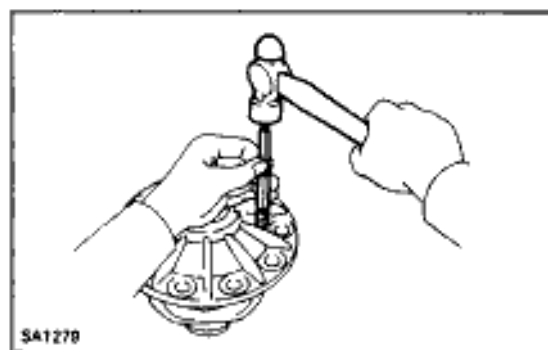
**12. REMOVE RING GEAR**

- Place matchmarks on the ring gear and differential case.
- Remove the ring gear set bolts.
- Using a plastic hammer, tap on the ring gear to separate it from the differential case.



13. CONVENTIONAL DIFFERENTIAL ONLY: DISASSEMBLE DIFFERENTIAL CASE

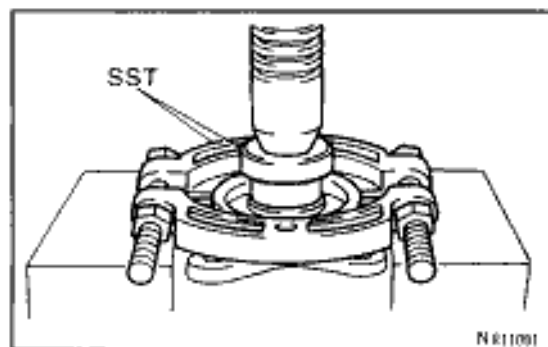
NOTICE: If equipped with Torque Sensing LSD, do not disassemble the differential case.



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

(b) Remove these parts from the differential case.

- Pinion shaft
- Differential pinion
- Pinion thrust washer
- Side gear
- Side gears thrust washer



DUST DEFLECTOR AND DUST COVER REPLACEMENT

1. REPLACE COMPANION FLANGE DUST DEFLECTOR

(a) Using SST and a press, remove the dust deflector.

SST 09608-35014 (09608-06090),
09950-00020

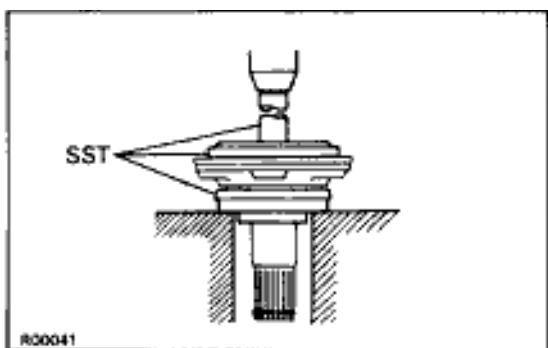
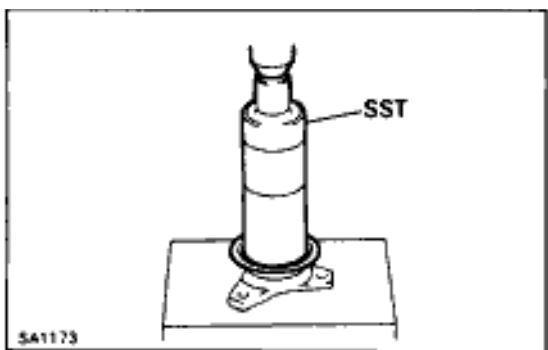
(b) Using SST and a press, install a new dust deflector.

2JZ-GTE M/T:

SST 09608-35014 (09608-06020, 09608-06100),
09631-32020

Except 2JZ-GTE M/T:

SST 09316-60010 (09316-00010)

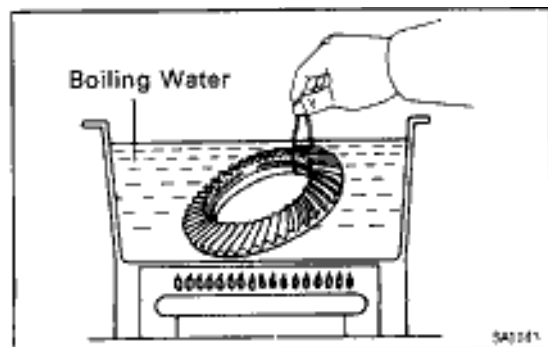
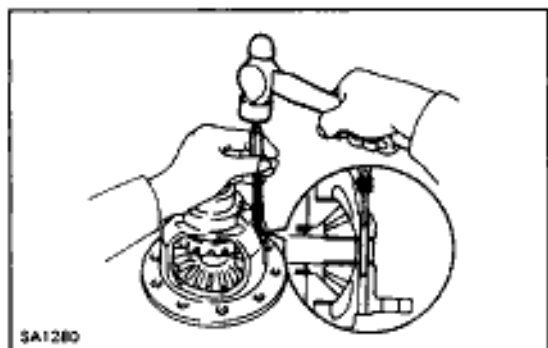
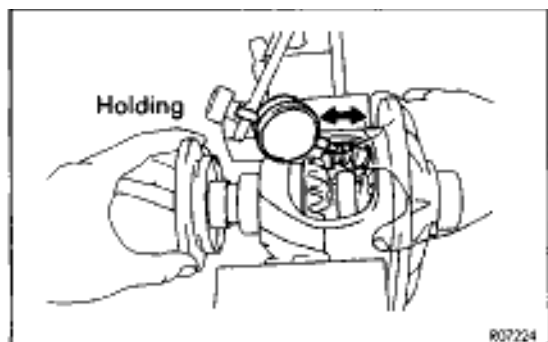
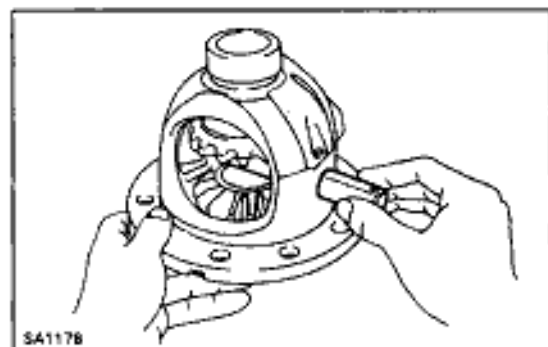
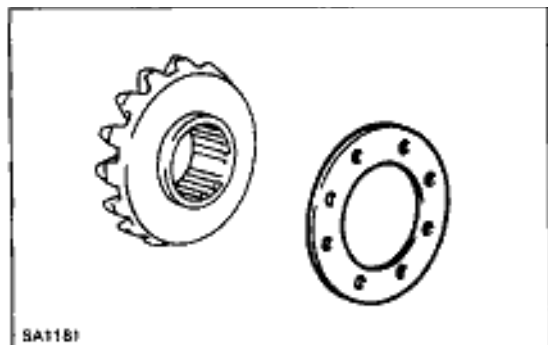


2. REPLACE SIDE GEAR SHAFT DUST COVER

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

(b) Using SST and a press, install a new dust cover.

SST 09502-24010, 09608-35014 (09608-06020,
09608-06120)



DIFFERENTIAL CARRIER ASSEMBLY

1. CONVENTIONAL DIFFERENTIAL ONLY:

ADJUST DIFFERENTIAL PINION GEAR BACKLASH

- (a) Install the proper thrust washers on the side gears.

HINT: Using the table below, select thrust washers which will ensure that the backlash is within specification.

Thrust washer thickness

Thickness mm (in.)	Thickness mm (in.)
1.6 (0.063)	1.8 (0.071)
1.7 (0.067)	—

- (b) Install the side gears, pinion gears, pinion gear thrust washers and pinion shaft in the differential case.

HINT: Align the holes of the differential case and pinion shaft.

- (c) Push the side gear shafts gently into the differential case by hand and install them.

- (d) Measure the pinion gear backlash while holding one side gear toward the case.

Backlash:

0.05–0.20 mm (0.0020–0.0079 in.)

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

- (e) Remove the side gear shaft.

2. CONVENTIONAL DIFFERENTIAL ONLY: INSTALL RING GEAR ON DIFFERENTIAL CASE

- (a) Using a hammer and pin punch, install the straight pin through the differential case and hole of the pinion shaft.

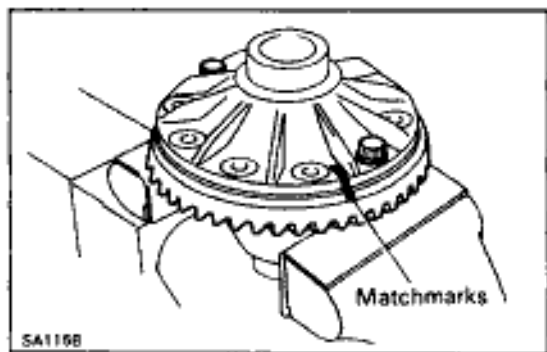
- (b) Stake the differential case.

3. INSTALL RING GEAR ON DIFFERENTIAL CASE

- (a) Clean the contact surfaces of the differential case and the threads of the ring gear and differential case.

- (b) Heat the ring gear in boiling water.

- (c) Carefully remove the ring gear from the boiling water.

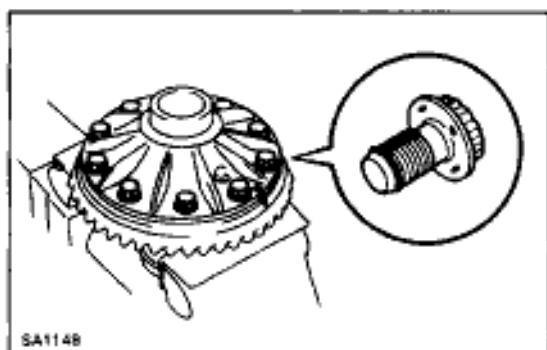


- (d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

HINT: Align the matchmarks on the ring gear and the differential case.

- (e) Temporarily tighten the 2 bolts so that the bolt holes in the ring gear and differential case are not misaligned.

NOTICE: The ring gear set bolts should not be tightened until the ring gear has cooled sufficiently.



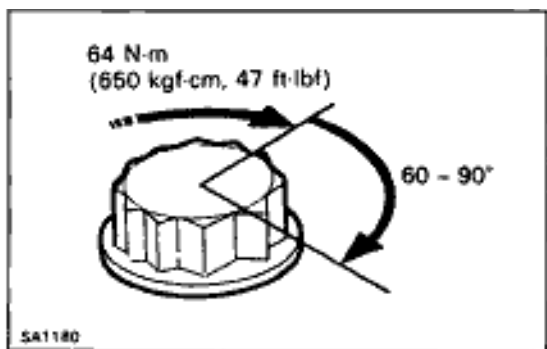
4. INSTALL RING GEAR SET BOLTS

- (a) After the ring gear has cooled sufficiently, install new ring gear set bolts to which thread lock has been applied.

Thread lock:

Part No. 08833-00100, THREE BOND 1360 K or equivalent.

NOTICE: New ring gear set bolts should be used in every case.

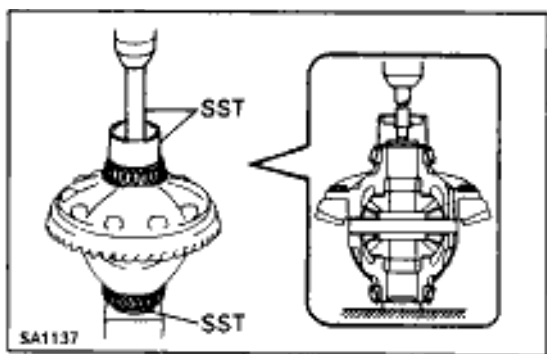


- (b) Torque the set bolts uniformly and a little at a time.

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

- (c) Tighten the bolts an additional 60–90°.

NOTICE: Tighten the bolts in diagonally opposite pairs.



5. INSTALL SIDE BEARINGS

Using SST and a press, install the side bearings.

2JZ-GTE M/T:

SST 09608-35014 (09608-06020),
09710-30050, 09726-36010

Except 2JZ-GTE M/T:

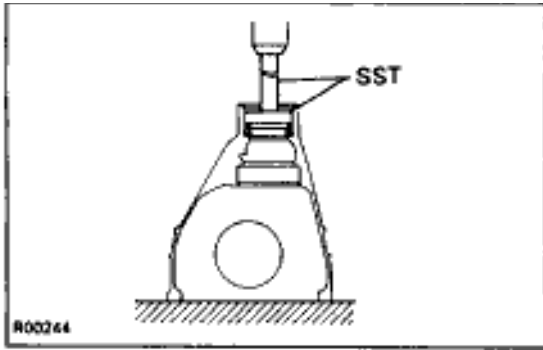
SST 09608-35014 (09608-06020,
09608-06100), 09710-30050

6. INSTALL DRIVE PINION BEARING OUTER RACES AND ADJUSTING PLATE WASHER

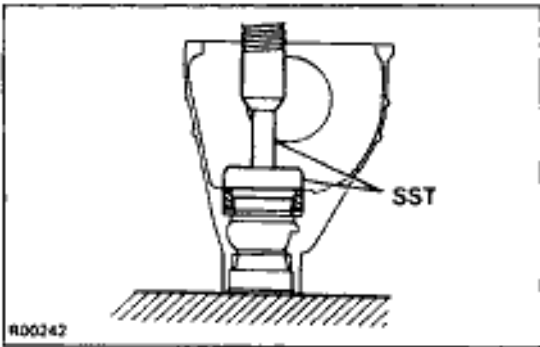
NOTICE: Always reassemble with a new adjusting plate washer.

HINT: The adjusting plate washer is used for adjusting the tooth contact pattern. 42 types of washer with differential thicknesses are available.

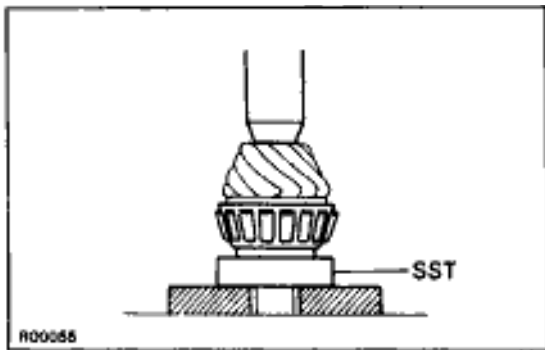
First fit a washer with the same thickness as the washer which was removed, then after checking the tooth contact pattern, replace the washer with one of a different thickness if necessary.



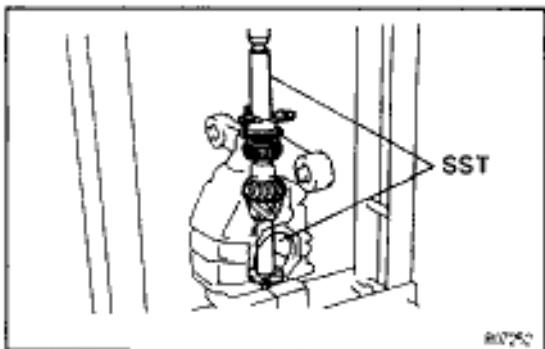
- (a) Using SST and a press, install the front bearing outer race.
 2JZ-GTE M/T:
 SST 09502-24010, 09608-35014 (09608-06020)
 Except 2JZ-GTE M/T:
 SST 09608-35014 (09608-06020, 09608-06110)



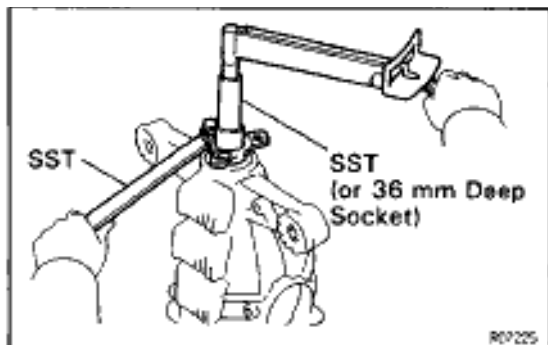
- (b) Using SST and a press, install a new adjusting plate washer and the rear bearing outer race.
 2JZ-GTE M/T:
 SST 09608-35014 (09608-06020, 09608-06160)
 Except 2JZ-GTE M/T:
 SST 09250-10011 (09252-10010, 09255-10011)



- 7. INSTALL REAR BEARING TO DRIVE PINION**
 Using SST and a press, install the rear bearing.
 2JZ-GTE M/T:
 SST 09316-20011
 Except 2JZ-GTE M/T:
 SST 09502-24010



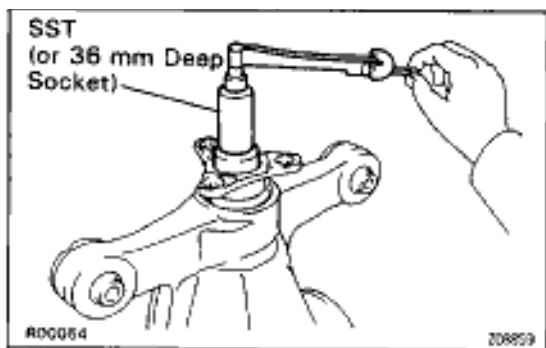
- 8. TEMPORARILY INSTALL DRIVE PINION, FRONT BEARING, (OIL SLINGER) AND COMPANION FLANGE**
- (a) Position the drive pinion in the differential carrier.
- (b) Using SST and a press, install the front bearing, oil slinger (Except 2 JZ-GTE M / T) and companion flange.
 SST 09608-30012 (09608-04030),
 09608-35014 (09608-06040)
- HINT: Assemble the spacer, oil slinger (2JZ-GTE M/ T) and oil seal after adjusting the tooth contact pattern.
- NOTICE: Be careful not to press the bearing too far onto the drive pinion's bearing surface.**



9. TEMPORARILY ADJUST DRIVE PINION PRELOAD

- (a) Adjust the drive pinion preload by tightening the nut.
 HINT: Using SST (and a 36 mm deep socket wrench) to hold the companion flange, tighten the nut.
 SST 09229-55010 (Except 2JZ-GTE M/T),
 09330-00021

NOTICE: As there is no spacer, tighten the nut a little at a time, being careful not to overtighten it.



- (b) Using SST (or a 36 mm deep socket) and a torque wrench, measure the drive pinion preload.
 SST 09229-55010

Preload (at start):

New bearing

2JZ-GTE M/T

2.0-2.5 N·m (20-25 kgf·cm, 17.3-21.7 in.·lbf)

Except 2JZ-GTE M/T

1.2-1.8 N·m (12-18 kgf·cm, 10.8-16.0 in.·lbf)

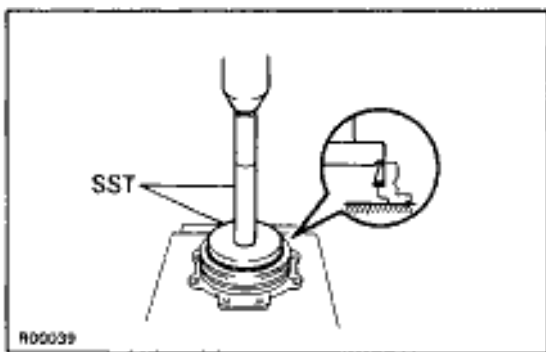
Reused bearing

2JZ-GTE M/T

1.0-1.2 N·m (10-12 kgf·cm, 8.9-10.6 in.·lbf)

Except 2JZ-GTE M/T

0.5-0.8 N·m (5-8 kgf·cm, 4.3-6.9 in.·lbf)



10. INSTALL SIDE BEARING OUTER RACE (AND ADJUST PLATE WASHER)

2JZ-GTE M/T:

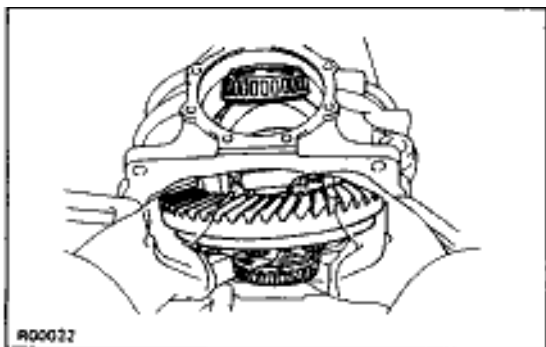
Using SST and a press, press the outer race.

SST 09608-35014 (09608-06020, 09608-06150)

Except 2JZ-GTE M/T:

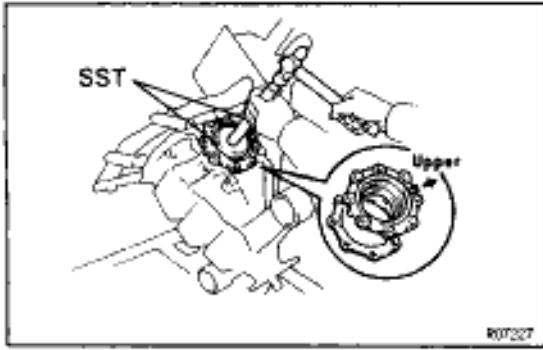
Using SST and a press, press the outer race and adjusting plate washer.

SST 09608-35014 (09608-06020, 09608-06210)



11. INSTALL DIFFERENTIAL CASE IN CARRIER

Install the drive side bearing in the differential carrier first, as shown in the illustration, then install the differential case.



12. INSTALL (ADJUSTING PLATE WASHER AND) DIFFERENTIAL CARRIER RETAINERS

2JZ-GTE M/T:

- Place the adjusting washer to the carrier retainer.
- Using SST and hammer, install the carrier retainer with adjusting washer.

SST 09608-35014 (09608-06020, 09608-06150)

HINT: Do not install a new O-ring and a new oil seal. Install it after inspect tooth contact pattern.

- Tighten the 8 bolts.

Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)

Except 2JZ-GTE M/T:

- Using SST and hammer, install the carrier retainer. SST 09608-35014 (09608-06020, 09608-06180)
- Tighten the 8 bolts.

Torque: 22 N·m (225 kgf·cm, 16 ft·lbf)

13. CHECK RING GEAR BACKLASH

Using dial gauge, measure the backlash of the ring gear and drive pinion at 3 positions at least.

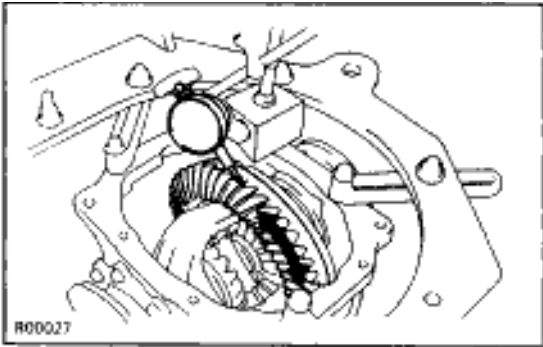
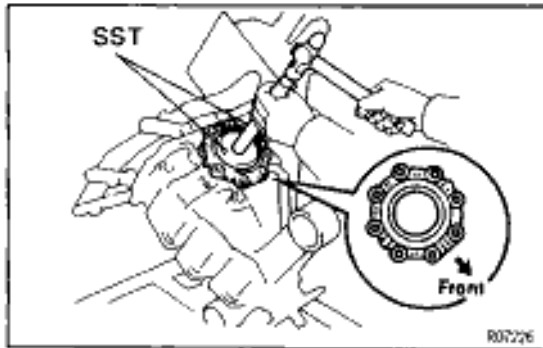
Backlash (average value):

0.08–0.13 mm (0.0031–0.0051 in.)

NOTICE: The difference between the maximum and minimum measured values must be less than 0.05 mm (0.0020 in.).

HINT: The measured values should be used for reference when selecting washers, so make a memo of the values.

If the backlash is not within the specification replace the washer on the ring gear side with one of a different thickness using the following procedure.



Adjusting washer thickness

2JZ-GTE M/T:

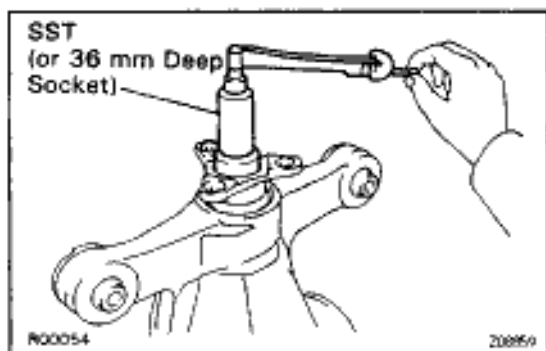
mm (in.)

Thickness	Thickness	Thickness
1.18 (0.0465)	1.48 (0.0583)	1.78 (0.0701)
1.20 (0.0472)	1.50 (0.0591)	1.80 (0.0709)
1.22 (0.0480)	1.52 (0.0598)	1.82 (0.0717)
1.24 (0.0488)	1.54 (0.0606)	1.84 (0.0724)
1.26 (0.0496)	1.56 (0.0614)	1.86 (0.0732)
1.28 (0.0504)	1.58 (0.0622)	1.88 (0.0740)
1.30 (0.0512)	1.60 (0.0630)	1.90 (0.0748)
1.32 (0.0520)	1.62 (0.0638)	1.92 (0.0756)
1.34 (0.0528)	1.64 (0.0646)	1.08 (0.0425)
1.36 (0.0535)	1.66 (0.0654)	1.10 (0.0433)
1.38 (0.0543)	1.68 (0.0661)	1.12 (0.0441)
1.40 (0.0551)	1.70 (0.0669)	1.14 (0.0449)
1.42 (0.0559)	1.72 (0.0677)	1.16 (0.0457)
1.44 (0.0567)	1.74 (0.0685)	
1.46 (0.0575)	1.76 (0.0693)	

Except 2JZ-GTE M/T:

mm (in.)

No.	Thickness	No.	Thickness	No.	Thickness
02	2.02 (0.0795)	32	2.32 (0.0913)	62	2.62 (0.1031)
04	2.04 (0.0803)	34	2.34 (0.0921)	64	2.64 (0.1039)
06	2.06 (0.0811)	36	2.36 (0.0929)	66	2.66 (0.1047)
08	2.08 (0.0819)	38	2.38 (0.0937)	68	2.68 (0.1055)
10	2.10 (0.0827)	40	2.40 (0.0945)	70	2.70 (0.1063)
12	2.12 (0.0835)	42	2.42 (0.0953)	72	2.72 (0.1071)
14	2.14 (0.0843)	44	2.44 (0.0961)	74	2.74 (0.1079)
16	2.16 (0.0850)	46	2.46 (0.0969)	76	2.76 (0.1087)
18	2.18 (0.0858)	48	2.48 (0.0976)	78	2.78 (0.1094)
20	2.20 (0.0866)	50	2.50 (0.0984)	80	2.80 (0.1102)
22	2.22 (0.0874)	52	2.52 (0.0992)	82	2.82 (0.1110)
24	2.24 (0.0882)	54	2.54 (0.1000)	84	2.84 (0.1118)
26	2.26 (0.0890)	56	2.56 (0.1008)	86	2.86 (0.1126)
28	2.28 (0.0898)	58	2.58 (0.1016)		
30	2.30 (0.0906)	60	2.60 (0.1024)		

**14. MEASURE TOTAL PRELOAD**

Using SST (or a 36 mm deep socket) and a torque wrench, measure the total preload.

SST 09229-55010

Total preload (In addition to drive pinion preload):

New and Reused bearing

2JZ-GTE M/T

0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in.-lbf)

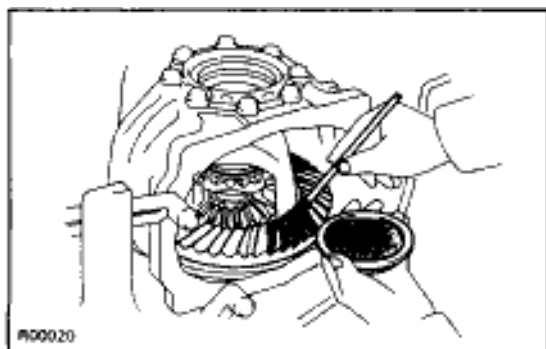
Except 2JZ-GTE M/T

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.-lbf)

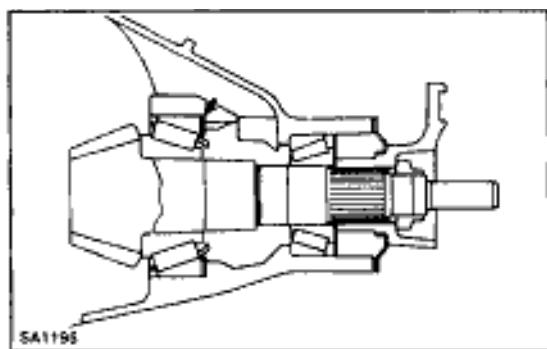
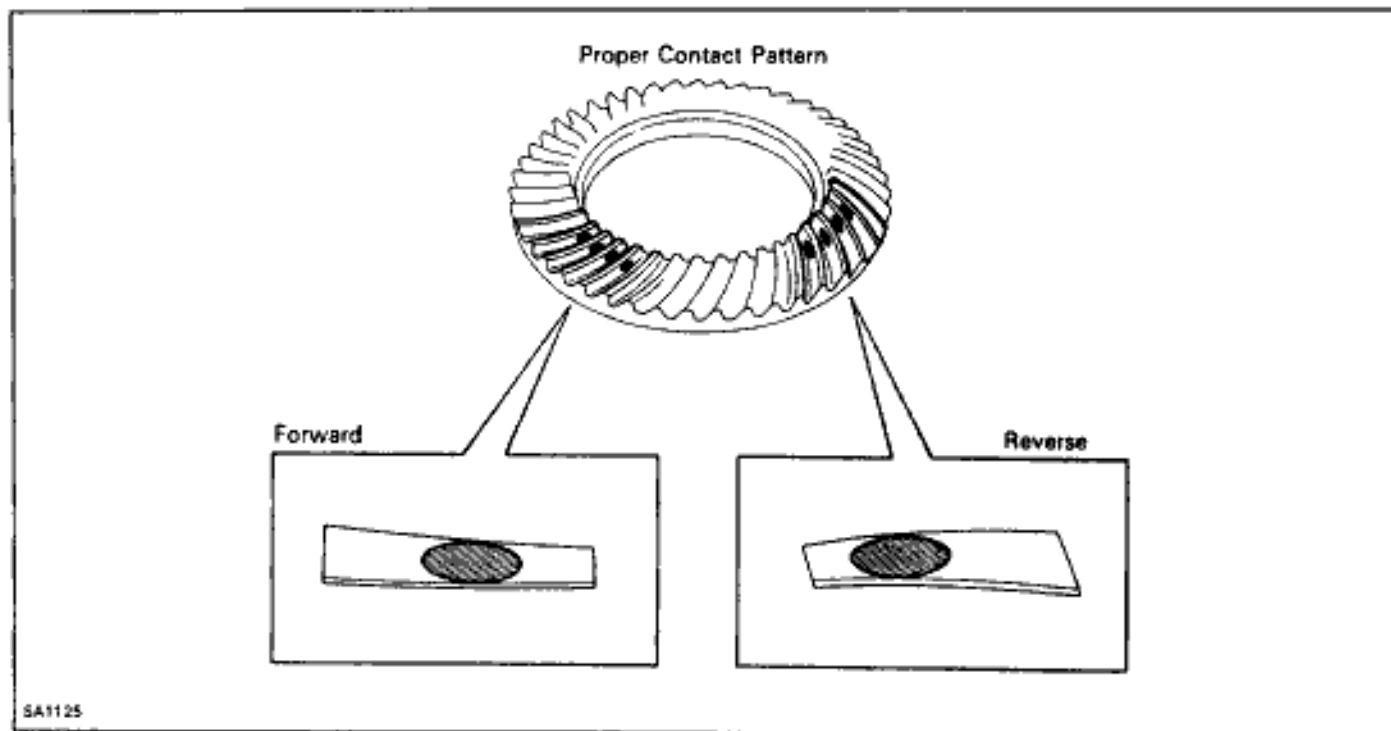
If the measured preload is less than specification, replace the washer of the ring gear's tooth surface side with a thicker one.

If the preload is greater than the specification, replace the washer of the ring gear's tooth surface side with thinner one.

HINT: Changing the washer thickness by 0.02 mm (0.0008 in.) will change the total preload by approx. 0.1 N·m (1 kgf·cm, 0.9 in.-lbf).

**15. INSPECT TOOTH CONTACT PATTERN**

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



If tooth contact pattern is not correct, replace the adjusting washer installed on the front of the drive pinion rear bearing to adjust it.

NOTICE: Be sure to always use a new part when replacing adjusting washer.

HINT: Refer to the table below for selection of the adjusting washer.

Tooth contact pattern		Adjusting washer selection	
Forward	Reverse		
 SA1117	 SA1121	+ 0.08 mm (+ 0.0031 in.)	Replacing the washer with one 0.08 mm (0.0031 in.) thicker will give proper contact pattern.
 SA1118	 SA1124	+ 0.14 mm (+ 0.0055 in.)	Replacing the washer with one 0.14 mm (0.0055 in.) thicker will give proper contact pattern.
 SA1119	 SA1123	+ 0.08 mm (+ 0.0031 in.)	Replacing the washer with one 0.08 mm (0.0031 in.) thicker will give proper contact pattern.
 SA1120	 SA1122	+ 0.14 mm (+ 0.0055 in.)	Replacing the washer with one 0.14 mm (0.0055 in.) thicker will give proper contact pattern.

HINT: Adjust washer are available in 42 different thicknesses, in increments of 0.01 mm (0.004 in.).

Adjusting washer thickness

2JZ-GTE M/T:

mm (in.)

No.	Thickness	No.	Thickness	No.	Thickness	No.	Thickness
80	1.80 (0.0709)	91	1.91 (0.0752)	02	2.02 (0.0795)	13	2.13 (0.0839)
81	1.81 (0.0713)	92	1.92 (0.0756)	03	2.03 (0.0799)	14	2.14 (0.0843)
82	1.82 (0.0717)	93	1.93 (0.0760)	04	2.04 (0.0803)	15	2.15 (0.0846)
83	1.83 (0.0720)	94	1.94 (0.0764)	05	2.05 (0.0807)	16	2.16 (0.0850)
84	1.84 (0.0724)	95	1.95 (0.0768)	06	2.06 (0.0811)	17	2.17 (0.0854)
85	1.85 (0.0728)	96	1.96 (0.0772)	07	2.07 (0.0815)	18	2.18 (0.0858)
86	1.86 (0.0732)	97	1.97 (0.0776)	08	2.08 (0.0819)	77	1.77 (0.0697)
87	1.87 (0.0736)	98	1.98 (0.0780)	09	2.09 (0.0823)	78	1.78 (0.0701)
88	1.88 (0.0740)	99	1.99 (0.0783)	10	2.10 (0.0827)	79	1.79 (0.0705)
89	1.89 (0.0744)	00	2.00 (0.0787)	11	2.11 (0.0831)		
90	1.90 (0.0748)	01	2.01 (0.0791)	12	2.12 (0.0835)		

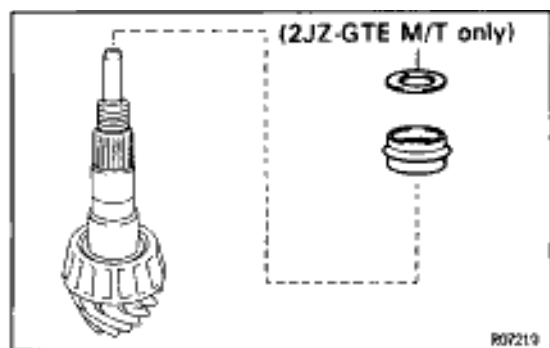
Except 2JZ-GTE M/T:

mm (in.)

No.	Thickness	No.	Thickness	No.	Thickness	No.	Thickness
87	1.87 (0.0736)	98	1.98 (0.0780)	09	2.09 (0.0823)	20	2.20 (0.0866)
88	1.88 (0.0740)	99	1.99 (0.0783)	10	2.10 (0.0827)	21	2.21 (0.0870)
89	1.89 (0.0744)	00	2.00 (0.0787)	11	2.11 (0.0831)	22	2.22 (0.0874)
90	1.90 (0.0748)	01	2.01 (0.0791)	12	2.12 (0.0835)	23	2.23 (0.0878)
91	1.91 (0.0752)	02	2.02 (0.0795)	13	2.13 (0.0839)	24	2.24 (0.0882)
92	1.92 (0.0756)	03	2.03 (0.0799)	14	2.14 (0.0843)	25	2.25 (0.0886)
93	1.93 (0.0760)	04	2.04 (0.0803)	15	2.15 (0.0846)	26	2.26 (0.0890)
94	1.94 (0.0764)	05	2.05 (0.0807)	16	2.16 (0.0850)	27	2.27 (0.0894)
95	1.95 (0.0768)	06	2.06 (0.0811)	17	2.17 (0.0854)	28	2.28 (0.0898)
96	1.96 (0.0772)	07	2.07 (0.0815)	18	2.18 (0.0858)		
97	1.97 (0.0776)	08	2.08 (0.0819)	19	2.19 (0.0862)		

16. REMOVE DIFFERENTIAL RETAINER, DIFFERENTIAL CASE AND DRIVE PINION

(See page [SA-66](#), 67)



17. INSTALL SPACER (AND OIL SLINGER) ON DRIVE PINION

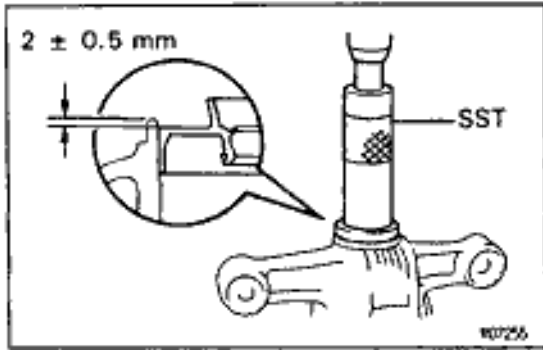
Install a new spacer and the oil slinger (2JZ-GTE M/ T only) on the drive pinion.

18. POSITION DRIVE PINION IN DIFFERENTIAL CARRIER

(See page [SA-72](#))

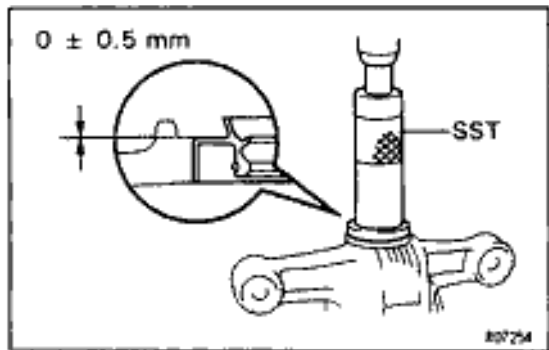
19. INSTALL FRONT BEARING (AND OIL SLINGER)

(See page [SA-72](#))



20. INSTALL OIL SEAL

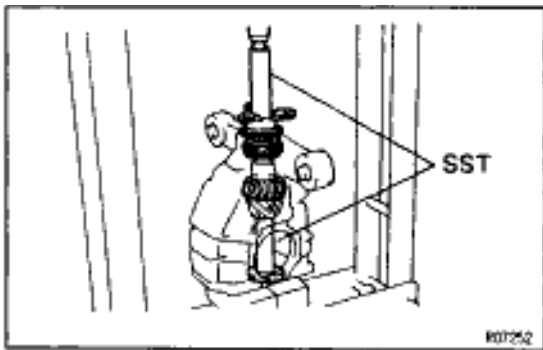
- (a) Using SST, install a new oil seal to the differential carrier.
 2JZ-GTE M/T:
 SST 09316-60010 (09316-00010,
 09316-00070), 09502-24010



Except 2JZ-GTE M/T:

SST 09316-60010 (09316-00010,
 09316-00040), 09502-12010

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



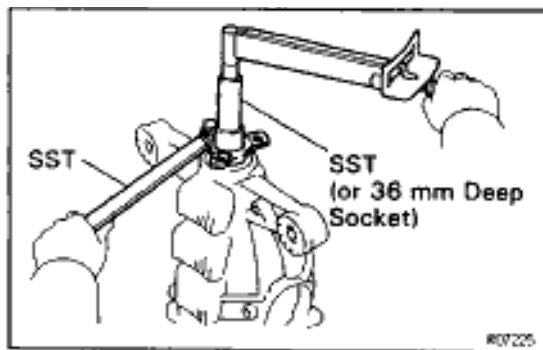
21. INSTALL COMPANION FLANGE

Using SST and a press, install the companion flange.

SST 09608-30012 (09608-04030), 09608-35014
 (09608-06040)

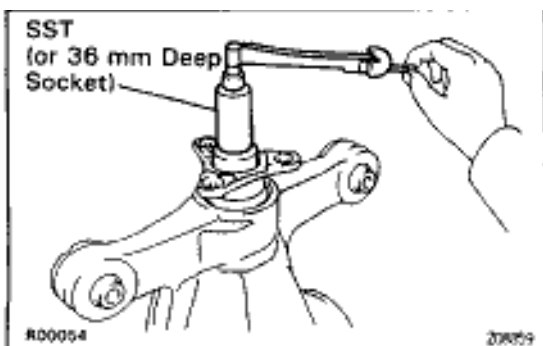
NOTICE:

- Be careful not to damage the oil seal.
- Be careful not to press the bearing too far onto the drive pinion's bearing surface.



22. ADJUST DRIVE PINION PRELOAD

- (a) Coat the drive pinion's threads and a new nut's flange with hypoid gear oil for LSD.
 (b) Using SST (and a 36 mm deep socket wrench), tighten the nut.
 SST 09229-55010 (Except 2JZ-GTE M/T only),
 09330-00021



- (c) Using SST (or a 36 mm deep socket) and a torque wrench, measure the drive pinion preload.

SST 09229-55010

Preload (at starting):

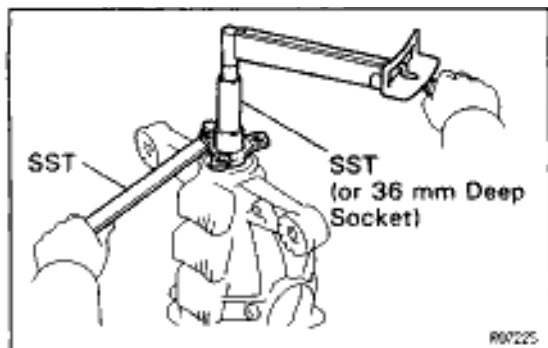
New bearing

2JZ-GTE M/T

2.0–2.5 N·m (20–25 kgf·cm, 17.3–21.7 in.·lbf)

Except 2JZ-GTE M/T

1.2–1.8 N·m (12–18 kgf·cm, 10.8–16.0 in.·lbf)

**Reused bearing****2JZ-GTE M/T**

1.0–1.2 N·m (10–12 kgf·cm, 8.9–10.6 in.·lbf)

Except 2JZ-GTE M/T

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.·lbf)

- If the preload is greater than the specification, replace the spacer and repeat the preload procedure.
- If the preload is less than the specification, retighten the nut 13 NVm (130 kgfVcm, 9 ftVlbf) at a time until the specified preload is reached.

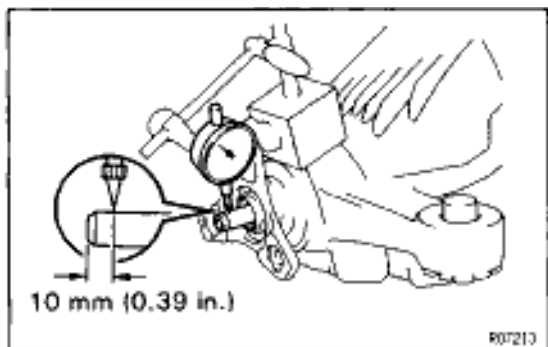
Maximum torque:**2JZ-GTE M/T**

510 N·m (5,200 kgf·cm, 376 ft·lbf)

Except 2JZ-GTE M/T

490 N·m (5,000 kgf·cm, 362 ft·lbf)

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

**23. CHECK DRIVE PINION SHAFT RUNOUT**

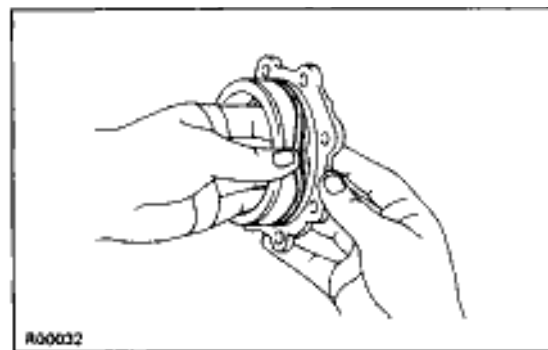
Measure the drive pinion shaft runout at a point 10 mm (0.39 in.) from the end of the shaft.

Maximum runout:

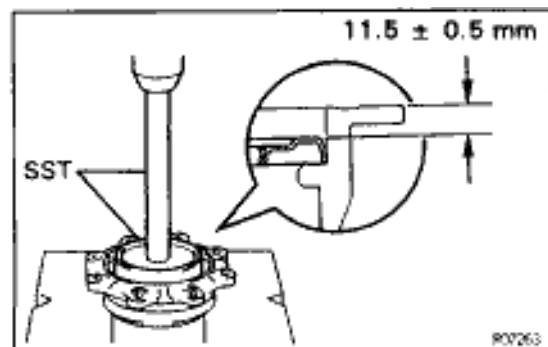
0.08 mm (0.0031 in.)

24. INSTALL DIFFERENTIAL CASE IN CARRIER

(See page [SA-73](#))

**25. INSTALL O-RING**

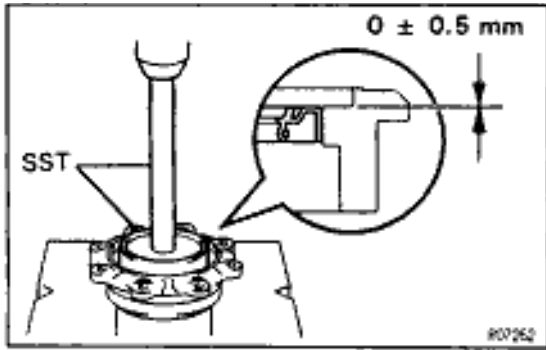
- Coat a new O-ring with hypoid gear oil.
- Install the O-ring to the carrier retainer.

**26. INSTALL OIL SEAL**

- Using SST and a press, install a new oil seal to the carrier retainer.

2JZ-GTE M/T:

SST 09223-15030, 09608-35014 (09608-06020)



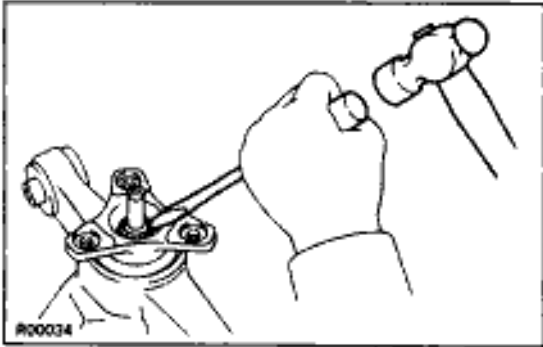
Except 2JZ-GTE M/T:

SST 09608-32010, 09608-35014 (09608-06020)

(b) Coat MP grease to the oil seal lip.

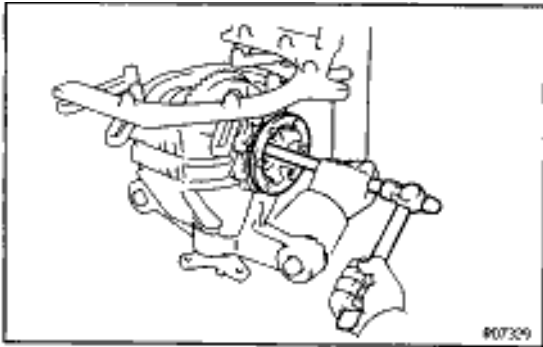
27. INSTALL SIDE BEARING RETAINER

(See page [SA-74](#))



28. STAKE NUT

NOTICE: Do not damage the drive pinion.



29. INSTALL BOTH GEAR SHAFTS

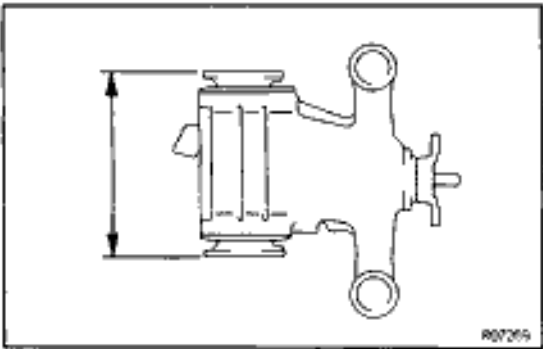
(a) Install a new snap ring to the shaft.

(b) Coat MP grease onto the snap ring.

(c) Using a hammer and brass bar, install both side gear shafts.

NOTICE: Be careful not to damage the side gear shaft and the oil seal.

HINT: 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.



30. INSPECT DIFFERENTIAL CARRIER

Using vernier calipers, measure the distance between the mating surfaces of the 2 side gear shafts, as shown.

Standard Distance:

2JZ-GTE M/T

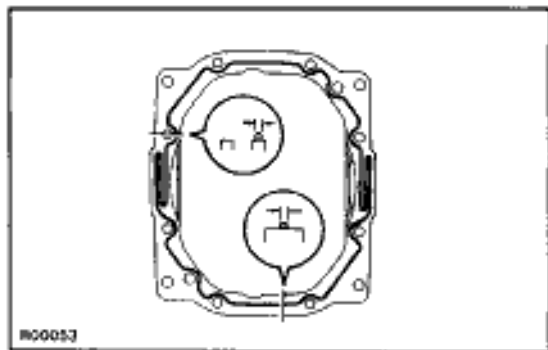
293.4 ± 0.65 mm

Except 2JZ-GTE M/T

281.8 ± 0.95 mm

31. RECHECK BACKLASH, TOTAL PRELOAD AND TOOTH CONTACT PATTERN

32. REMOVE DIFFERENTIAL CARRIER FROM OVERHAUL STAND, ETC.

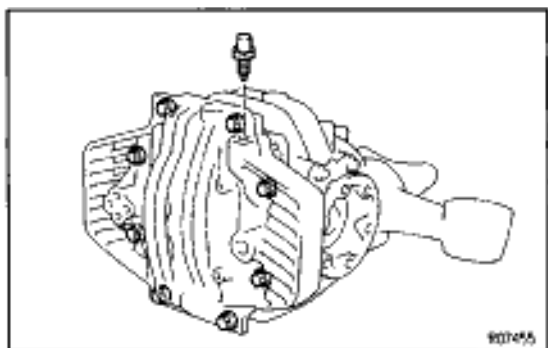
**33. INSTALL DIFFERENTIAL CARRIER COVER**

- (a) Clean the contact surfaces of the carrier and cover of any residual FIPG material using cleaner.
- (b) Coat the FIPG to the carrier or cover.

FIPG:

Part No. 08826-00090. THREE BOND 1281 or equivalent

NOTICE: After installing the cover, wait at least 1 hour before filling it with oil or running the vehicle.



- (c) Install the carrier cover to the carrier with the 8 bolts.

Torque:

2JZ-GTE M/OT

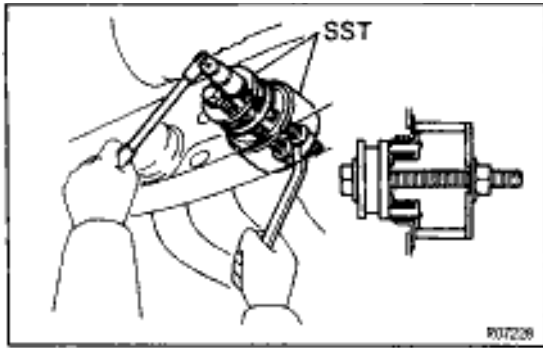
78 N·m (800 kgf·cm, 58 ft·lbf)

Except 2JZ-GTE M/T

47 N·m (475 kgf·cm, 34 ft·lbf)

- (d) Install the breather plug.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)



DIFFERENTIAL MOUNTING CUSHION REPLACEMENT

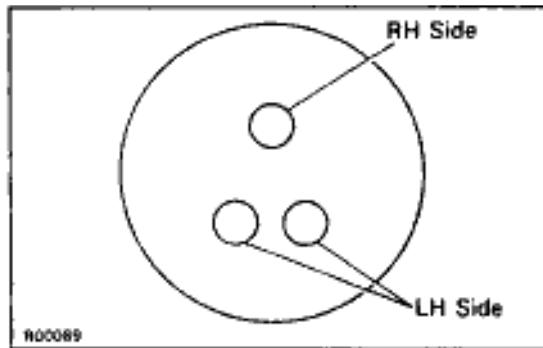
1. DIFFERENTIAL ASSEMBLY REMOVAL

(See page [SA-60](#))

2. REMOVE DIFFERENTIAL MOUNT CUSHION

Using SST, remove the differential mount cushion.

SST 09316-12010, 09570-24010



NOTICE:

- When driving out the mount cushion, be careful not to touch the member with the SST.
- Align the SST straight so that the bolt of the SST is parallel with the center line of the mount cushion.
- When installing the bolts to the LH and RH differential mount cushions, make sure the bolts are passed through the correct holes in the SST, as shown in the illustration.

3. INSTALL DIFFERENTIAL MOUNT CUSHION

Using SST, install the cushion so that the marks are positioned, as shown in the illustration.

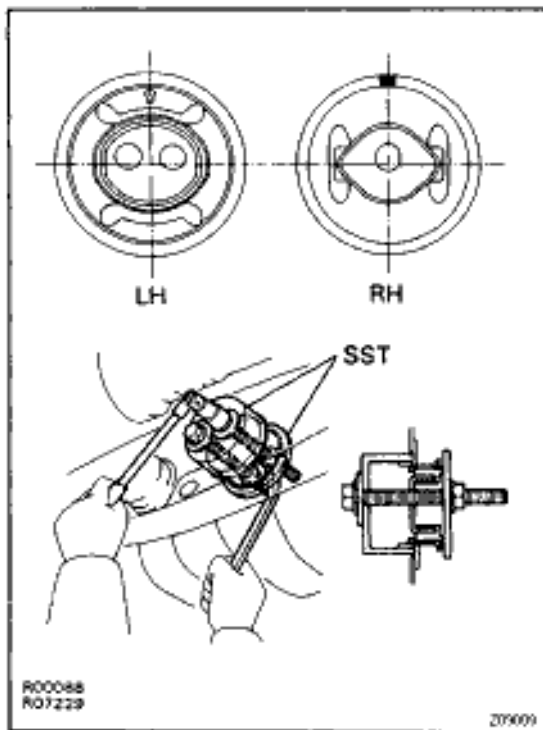
SST 09570-24010

NOTICE:

- Do not make a mistake with left and right sides or top and bottom.
- Set the SST after temporarily installing the differential mount cushion into the member so as not to be installed at an angle.
- To confirm that the differential mount cushion is aligned straight in relation to the member, check that the SST is fully in contact with all of the cushion.

4. DIFFERENTIAL ASSEMBLY INSTALLATION

(See page [SA-60](#))



REAR SUSPENSION

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09506-35010 Differential Drive Pinion Rear Bearing Replacer	Strut rod bushing replacement
	09610-20012 Pitman Arm Puller	
	09628-10011 Ball Joint Puller	
	09628-62011 Ball Joint Puller	
	09710-26010 Front Suspension Bushing Tool Set	Upper suspension arm bushing replacement
	(09710-05050) Remover	
	(09710-05070) Front Base	
	09710-30020 Suspension Bushing Tool Set	Upper suspension arm bushing replacement
	(09710-03030) Front Suspension Upper Arm Bushing Remover	
	(09710-03120) Rear Suspension Upper & Lower Arm Bushing Removing Base	
	09727-30020 Coil Spring Compressor	

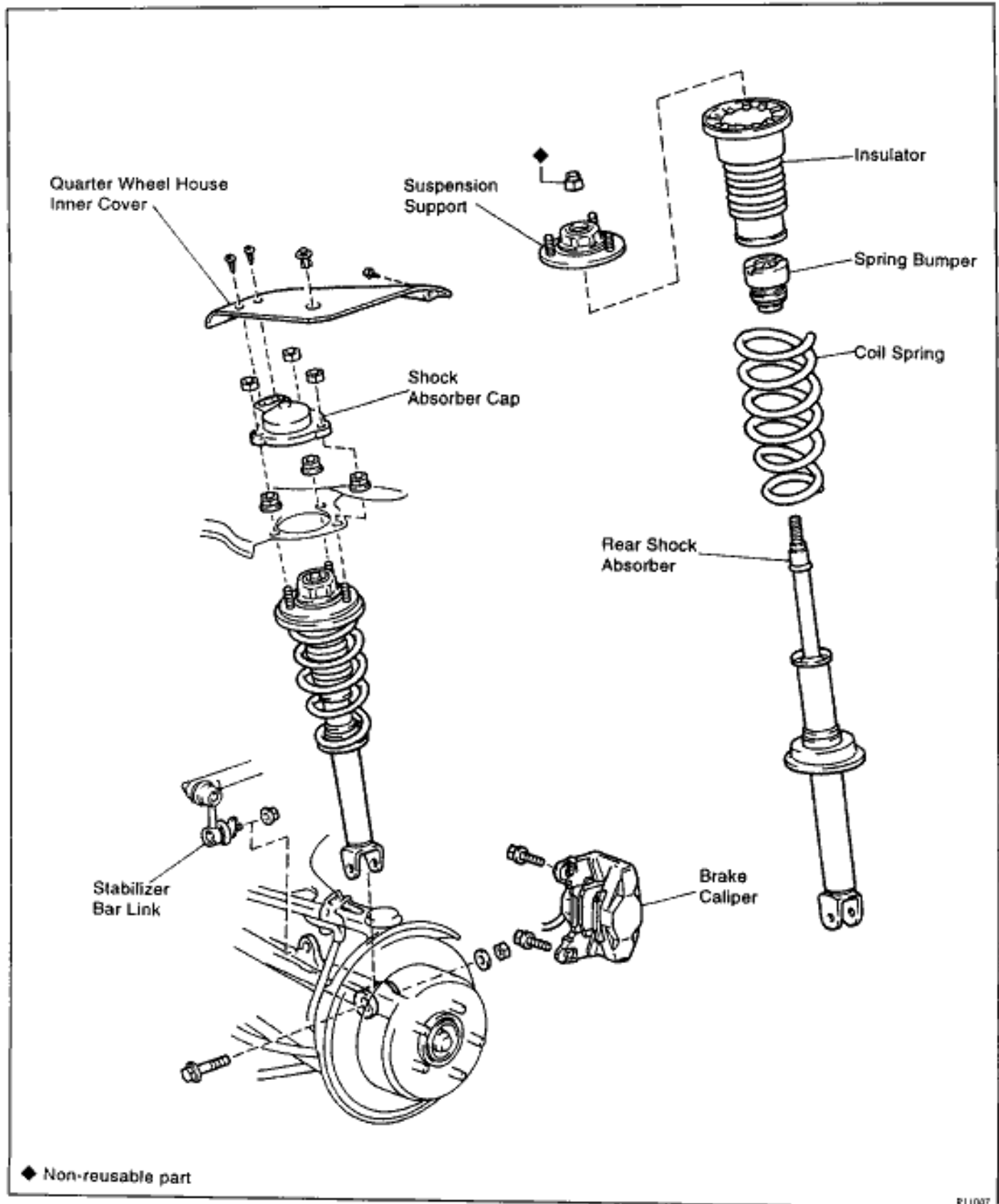
RECOMMENDED TOOLS

	09025-00010 Torque Wrench (30 kgf-cm).	
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EQUIPMENT

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

REAR SHOCK ABSORBER COMPONENTS



REAR SHOCK ABSORBER REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check rear wheel alignment.

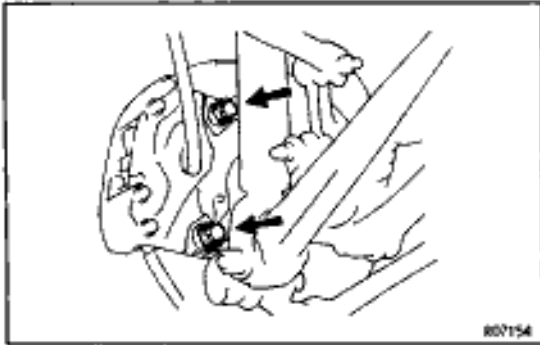
(See page SA-9)

1. w/ SPORT ROOF:

REMOVE THESE PARTS:

(See BO section)

- Rear seat cushion and Rear seat back
- Tonneau cover retainer
- Holder garnish and Holder
- Speaker grill and Quarter trim



2. REMOVE REAR WHEEL

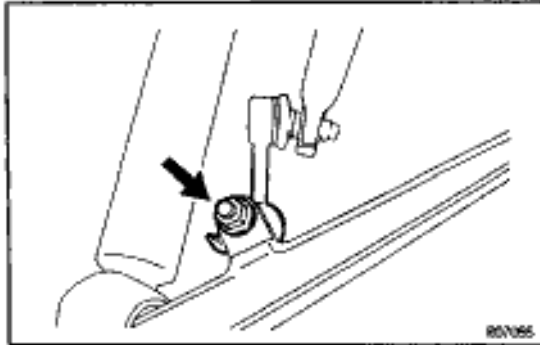
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

3. REMOVE REAR BRAKE CALIPER

- (a) Remove the 2 bolts and brake caliper from the rear axle carrier.

Torque: 104 N·m (1,065 kgf·cm, 77 ft·lbf)

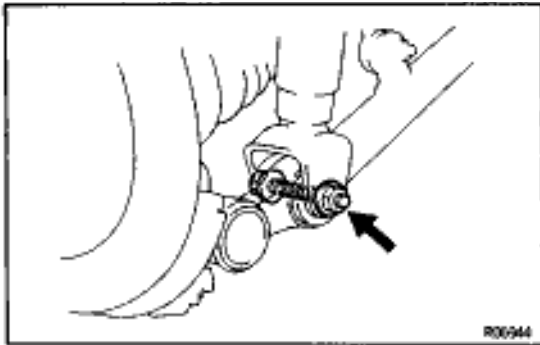
- (b) Support the brake caliper securely.



4. DISCONNECT REAR STABILIZER BAR LINK

Remove the nut and disconnect the stabilizer bar link from the lower suspension arm No.2.

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

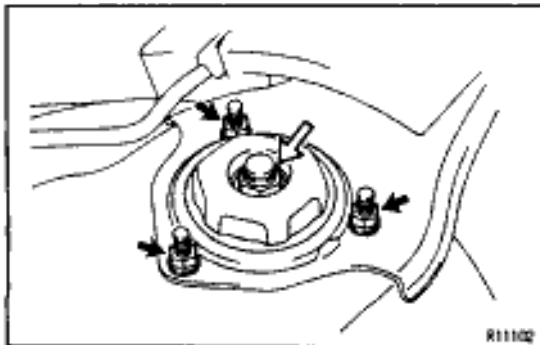


5. REMOVE SHOCK ABSORBER WITH COIL SPRING

- (a) Remove the nut and bolt on lower side of the shock absorber.

Torque: 137 N·m (1,400 kgf·cm, 101 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nut.



- (b) Remove the quarter wheel house inner cover.

- (c) Remove the 3 nuts and the shock absorber cap.

Torque: 10 N·m (105 kgf·cm, 8 ft·lbf)

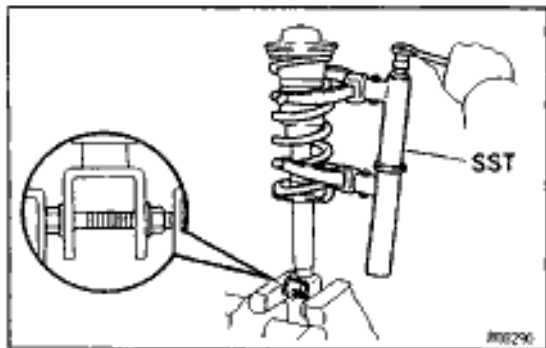
- (d) Loosen the nut in the middle of the suspension support.

REMOVAL NOTICE: Do not remove the nut.

Torque: 27 N·m (280 kgf·cm, 20 ft·lbf)

- (e) Remove the 3 nuts and shock absorber with the coil spring.

Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)



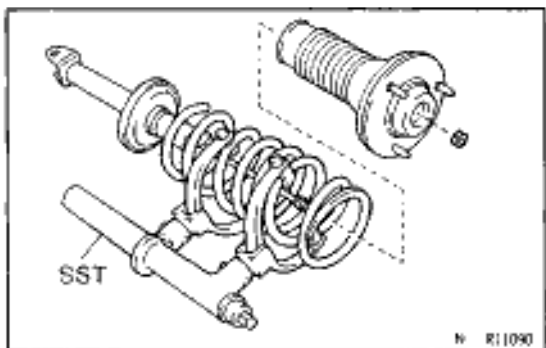
REAR SHOCK ABSORBER DISASSEMBLY

1. REMOVE SUSPENSION SUPPORT AND COIL SPRING

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

SST 09727-30020

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

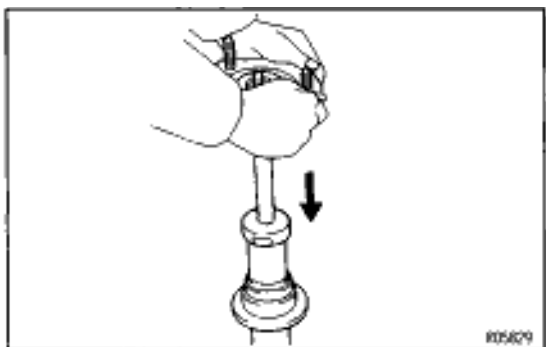


- (b) Remove the suspension support nut.

- (c) Remove the suspension support, coil spring and insulator.

2. REMOVE INSULATOR AND SPRING BUMPER

Remove the insulator and spring bumper from the suspension support.



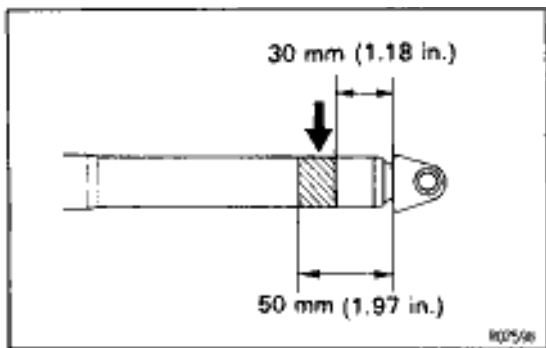
REAR SHOCK ABSORBER INSPECTION

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.



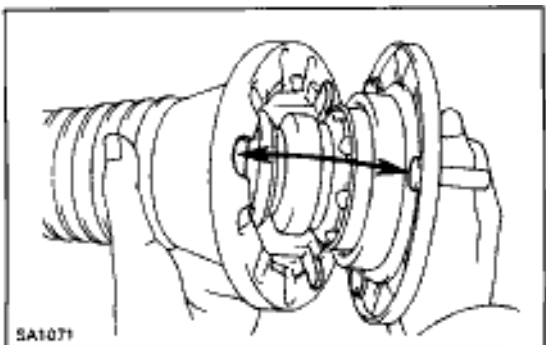
REAR SHOCK ABSORBER DISPOSAL

1. FULLY EXTEND SHOCK ABSORBER ROD

2. DRILL HOLE TO REMOVE GAS FROM CYLINDER

Using a drill, make a hole in the cylinder within the shaded region to remove the gas inside.

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



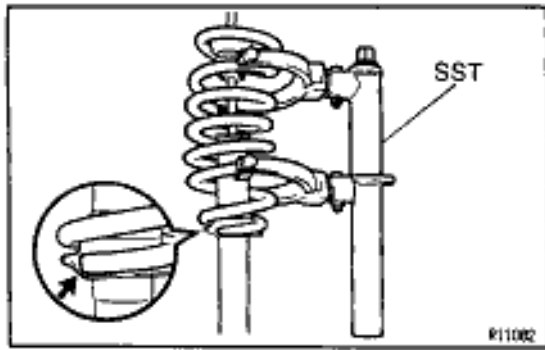
REAR SHOCK ABSORBER ASSEMBLY

1. INSTALL SUSPENSION SUPPORT AND COIL SPRING

- (a) Install the spring bumper to the suspension support.

- (b) Install the insulator to the suspension support.

HINT: Match the bolt of the suspension support with the cut-off part of the insulator.



2. INSTALL COIL SPRING AND SUSPENSION SUPPORT

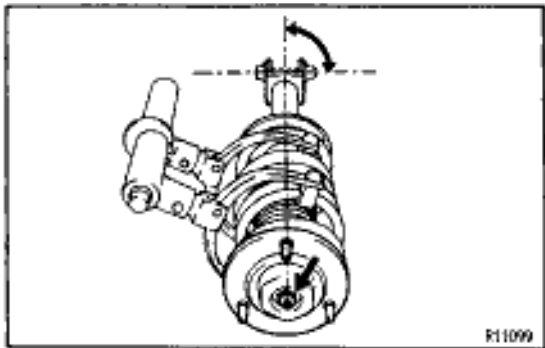
- (a) Using SST, compress the coil spring.

SST 09727-30020

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

- (b) Install the coil spring to the shock absorber.

HINT: Fit the lower end of the coil spring into the recess of the shock absorber's spring seat.



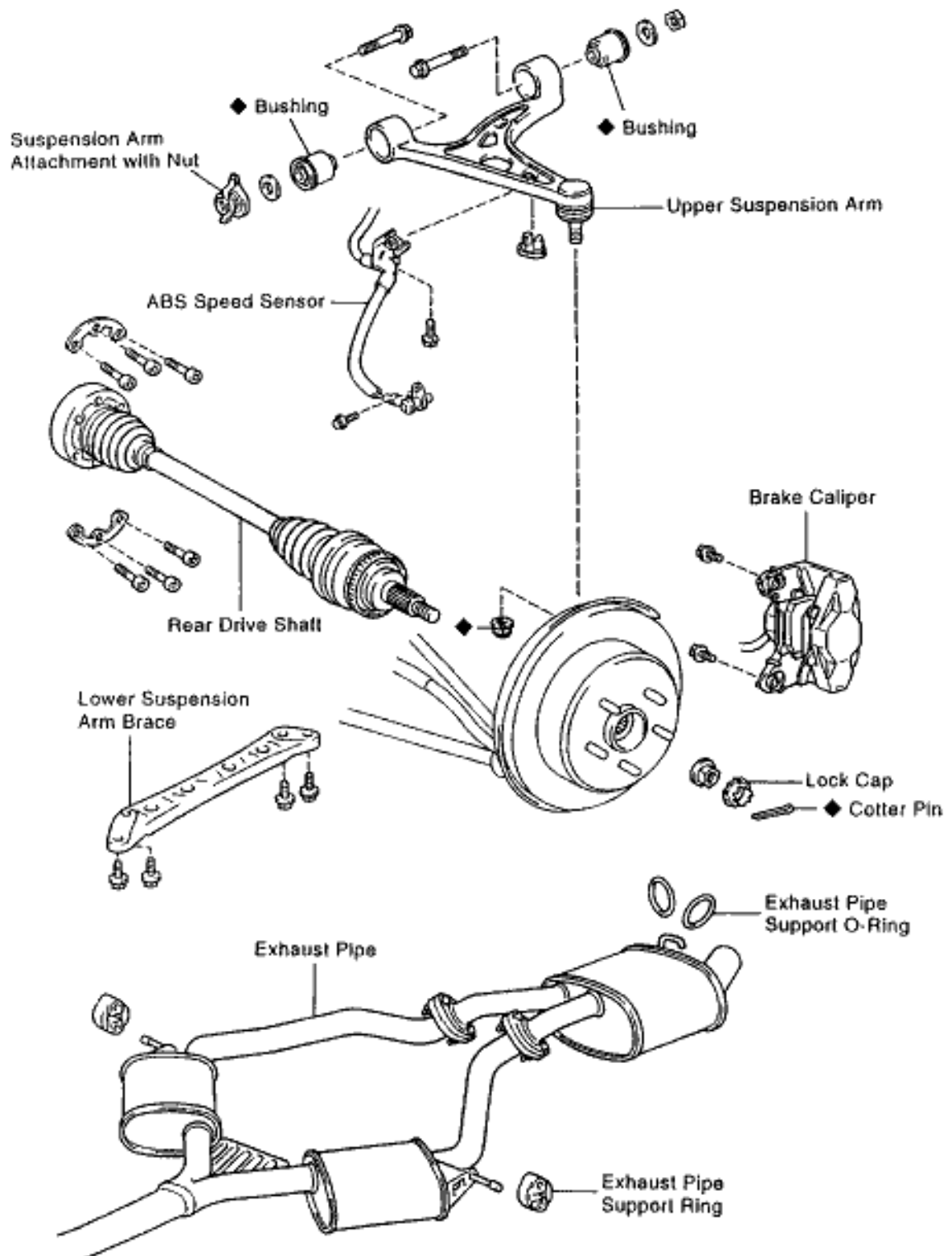
- (c) Install the suspension support to the rod and temporarily tighten a new nut.

- (d) Rotate the suspension support so that the rod and one of the bolts on suspension support are aligned with the lower bracket.

- (e) Remove the SST.

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

UPPER SUSPENSION ARM COMPONENTS



◆ Non-reusable part

UPPER SUSPENSION ARM REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check ABS speed sensor signal and rear wheel alignment.

(See page [BR-62](#) and [SA-9](#))

1. REMOVE REAR WHEEL

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

2. REMOVE REAR DRIVE SHAFT

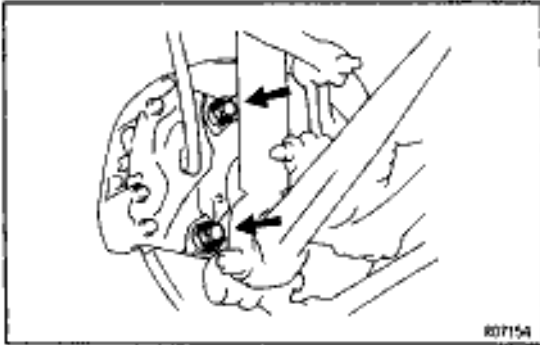
(See page [SA-46](#))

3. REMOVE REAR BRAKE CALIPER

- (a) Remove the 2 bolts and brake caliper from the rear axle carrier.

Torque: 104 N·m (1,065 kgf·cm, 77 ft·lbf)

- (b) Support the brake caliper securely.



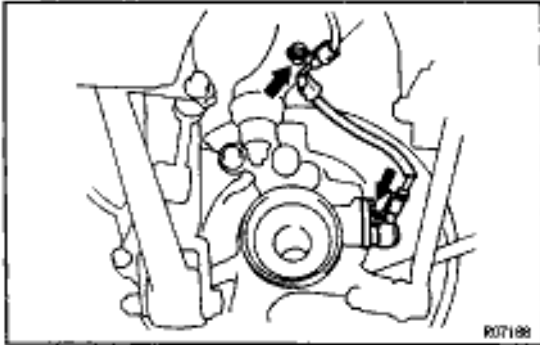
R07154

4. DISCONNECT ABS SPEED SENSOR AND WIRE HARNESS

- (a) Remove the bolt and disconnect the speed sensor from the axle carrier.

Torque: 8 N·m (80 kgf·cm, 69 in·lbf)

- (b) Remove the bolt and disconnect the speed sensor wire harness clamp from the upper suspension arm.



R07188

5. REMOVE UPPER SUSPENSION ARM

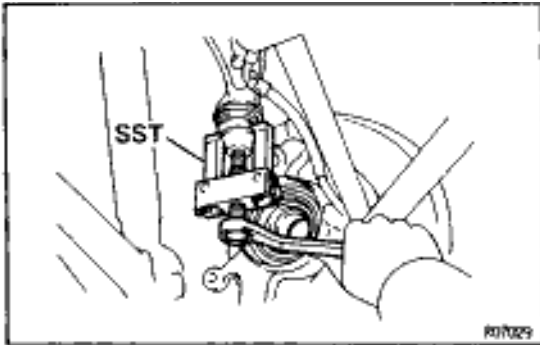
- (a) Remove the nut from the upper suspension arm.

Torque: 109 N·m (1,100 kgf·cm, 80 ft·lbf)

- (b) Using SST, disconnect the upper suspension arm from the axle carrier.

SST 09628-62011

NOTICE: Be careful not to damage the dust cover.

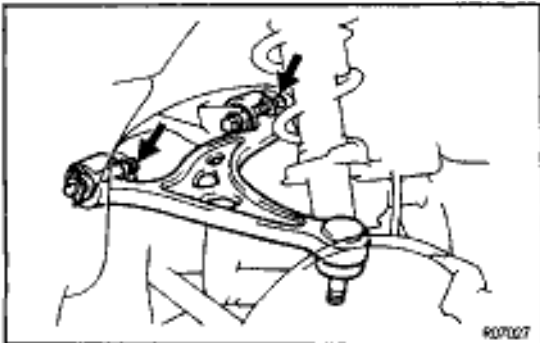


R07029

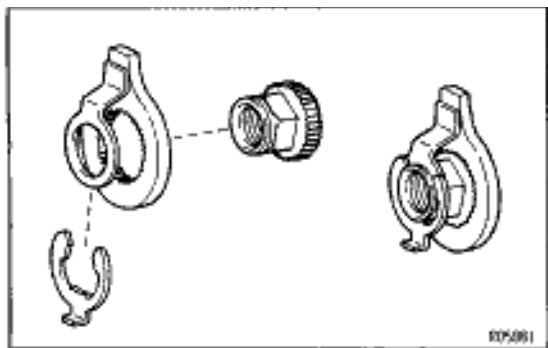
- (c) Remove the bolts, nuts and upper suspension arm.

Torque: 164 N·m (1,670 kgf·cm, 121 ft·lbf)

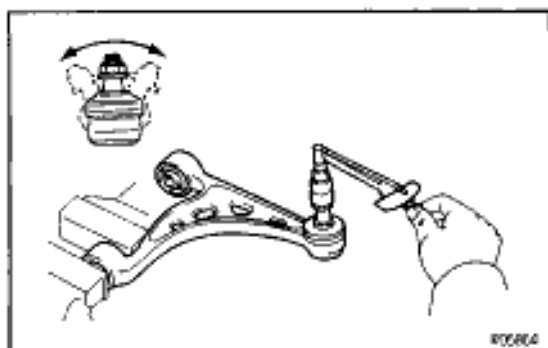
INSTALLATION HINT: After stabilizing the suspension, torque the bolt and nut.



R07027



INSTALLATION HINT: If replacing the front nut, assemble the nut and E-ring to the washer with lock protrusion before installing.



UPPER SUSPENSION ARM BALL JOINT INSPECTION

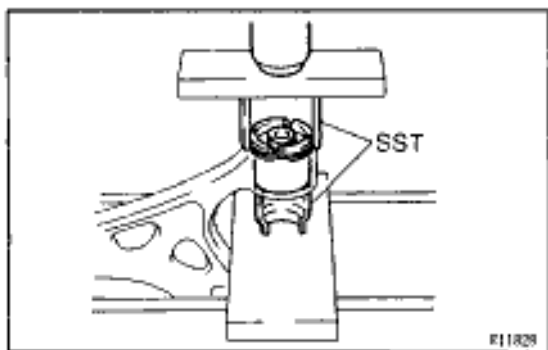
INSPECT BALL JOINT FOR ROTATION CONDITION

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

Torque (turning):

1.0–3.4 N·m (10–35 kgf·cm, 9–30 in.-lbf)

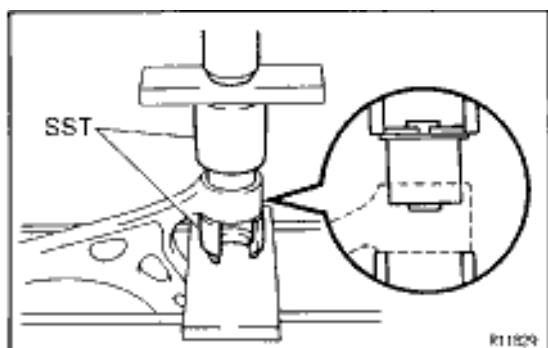
If not within specification, replace the upper suspension arm.



UPPER SUSPENSION ARM BUSHING REPLACEMENT

1. REMOVE BUSHING

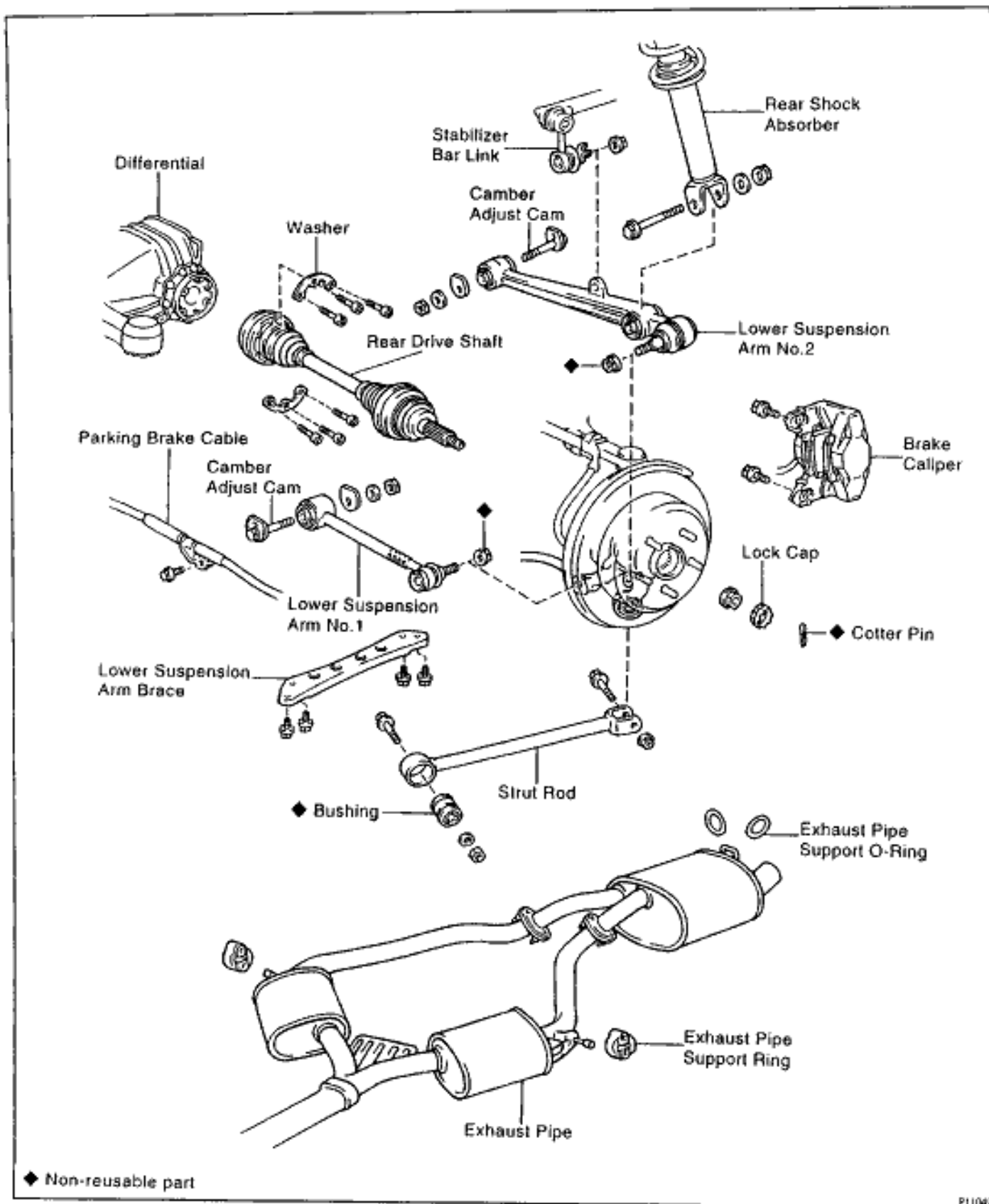
Using SST, press out the bushing.
SST 09710-26010 (09710-05070),
09710-30020 (09710-03030)



2. INSTALL NEW BUSHING

Using SST, press in a new bushing.
SST 09710-26010 (09710-05050),
09710-30020 (09710-03120)

LOWER SUSPENSION ARM AND STRUT ROD COMPONENTS



LOWER SUSPENSION ARM AND STRUT ROD REMOVAL

Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, check ABS speed sensor signal and rear wheel alignment.

(See page BR-62 and SA-9)

1. REMOVE REAR WHEEL

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

2. REMOVE REAR DRIVE SHAFT

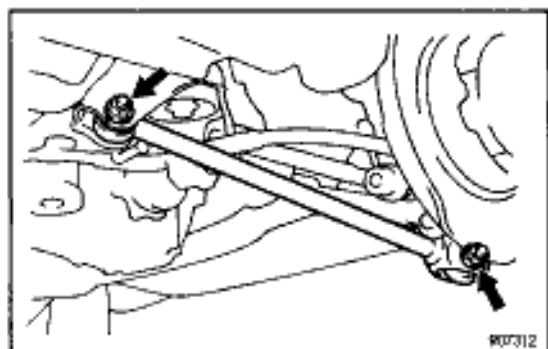
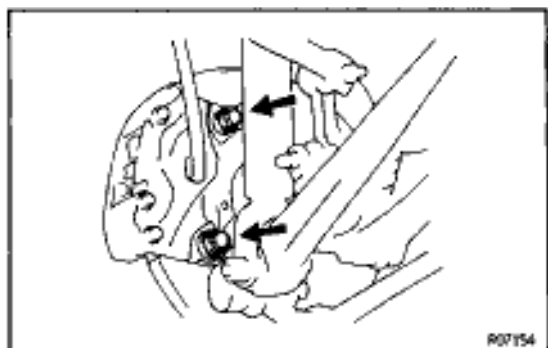
(See page SA-46)

3. REMOVE REAR BRAKE CALIPER

- (a) Remove the 2 bolts and brake caliper from the rear axle carrier.

Torque: 104 N·m (1,065 kgf·cm, 77 ft·lbf)

- (b) Support the brake caliper securely.

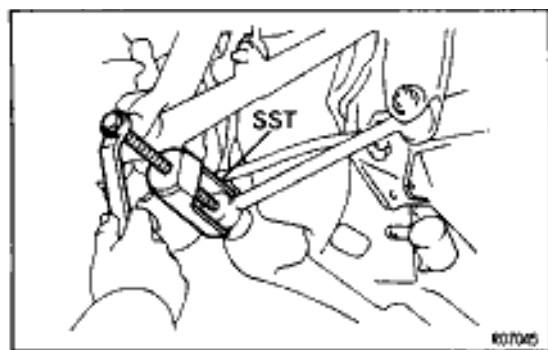


4. REMOVE STRUT ROD

Remove the 2 bolts, nuts and strut rod.

Torque: 184 N·m (1,880 kgf·cm, 134 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the bolts.



5. REMOVE LOWER SUSPENSION ARM NO.1

- (a) Remove the nut.

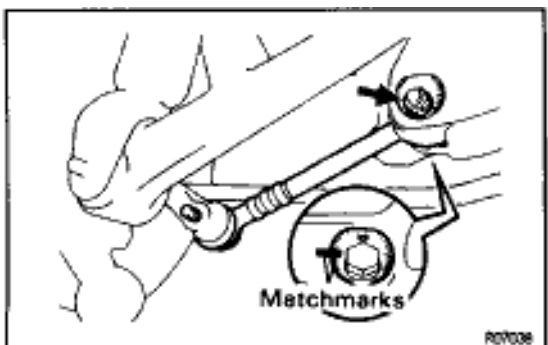
Torque: 59 N·m (600 kgf·cm, 43 ft·lbf)

- (b) Using SST, disconnect the lower suspension arm No.1 from the rear axle carrier.

SST 09610-20012

NOTICE: Be careful not to damage the dust boot.

- (c) Remove the bolt and disconnect the parking brake cable bracket.



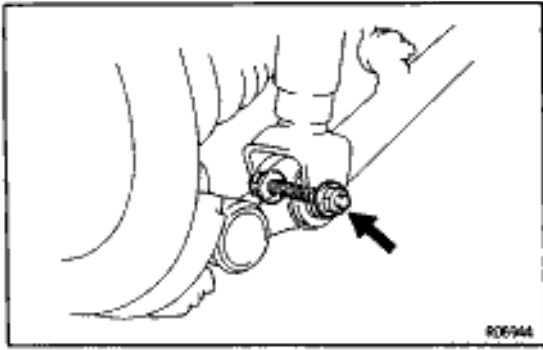
- (d) Place matchmarks on the adjusting cam and subframe.

- (e) Remove the adjusting cam and nut.

Torque: 184 N·m (1,880 kgf·cm, 134 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nut.

- (f) Remove the lower suspension arm No.1.

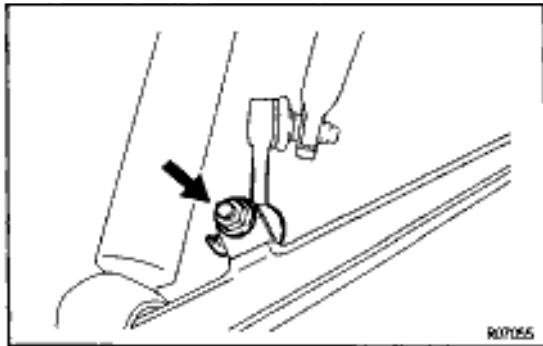


6. REMOVE LOWER SUSPENSION ARM NO.2

- (a) Remove the bolt, nut and disconnect the shock absorber from the lower suspension arm No.2.

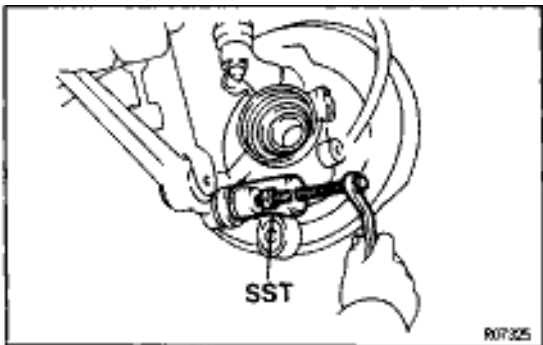
Torque: 137 N·m (1,400 kgf·cm, 101 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nuts.



- (b) Remove the nut and disconnect the stabilizer bar link from the lower suspension arm No.2.

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



- (c) Loosen the nut.

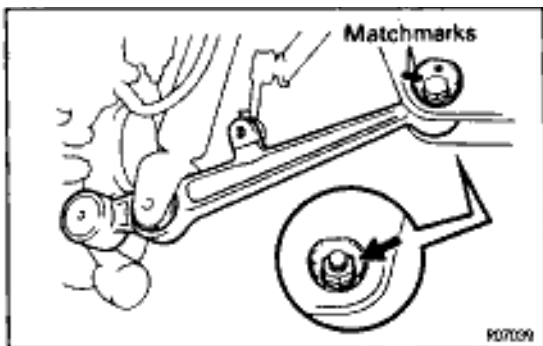
Torque: 150 N·m (1,525 kgf·cm, 110 ft·lbf)

- (d) Using SST, disconnect the lower suspension arm No.2 from the rear axle carrier.

SST 09610-20012

NOTICE: Be careful not to damage the ball joint bolt.

- (e) Remove the nut.

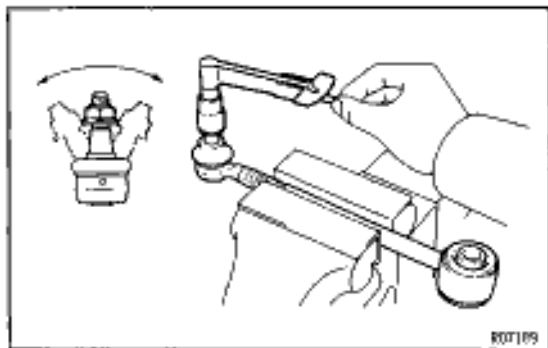


- (f) Place matchmarks on the adjusting cam and subframe.

- (g) Remove the nut, adjusting cam and lower suspension arm No.2.

Torque: 184 N·m (1,880 kgf·cm, 134 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the nut.



LOWER SUSPENSION ARM NO.1 AND NO.2 BALL JOINT INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

- Flip the ball joint stud back and forth 5 times, before installing the nut.
- Using a torque wrench, turn the nut continuously one turn every 2–4 seconds and take the torque reading on the 5th turn.

Torque (turning):

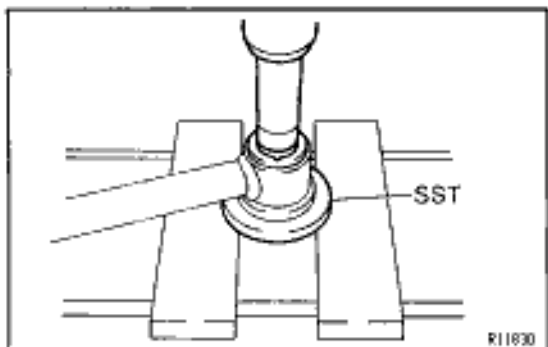
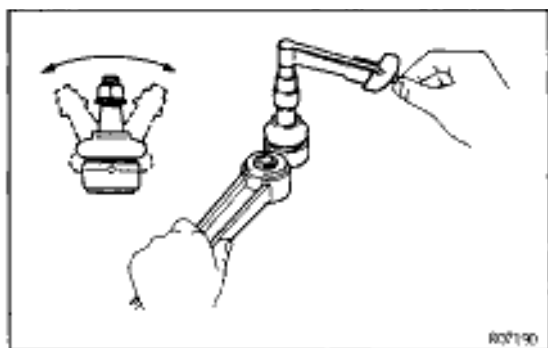
Lower suspension arm No.1

1.0–3.4 N·m (10–35 kgf·cm, 9–30 in.·lbf)

Lower suspension arm No.2

1.0–3.4 N·m (10–35 kgf·cm, 9–30 in.·lbf)

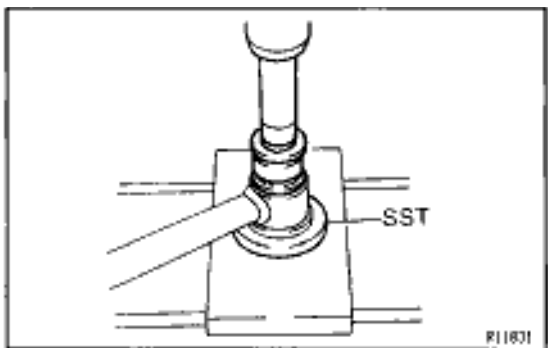
If not within specification, replace the lower suspension arm No.1 or/and No.2.



STRUT ROD BUSHING REPLACEMENT

1. REMOVE BUSHING

Using SST and a deep socket wrench, press out the bushing.
SST 09506–35010



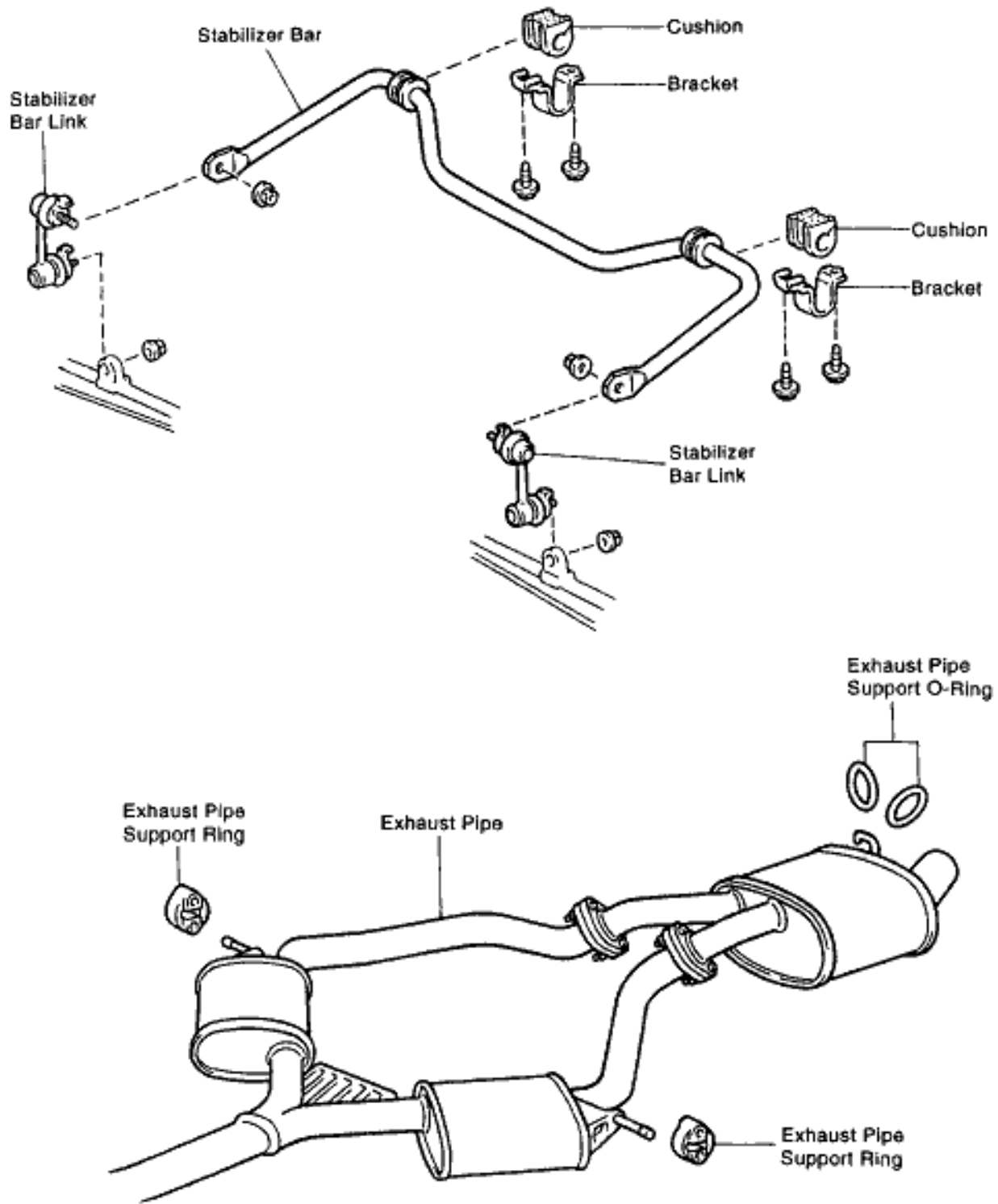
2. INSTALL NEW BUSHING

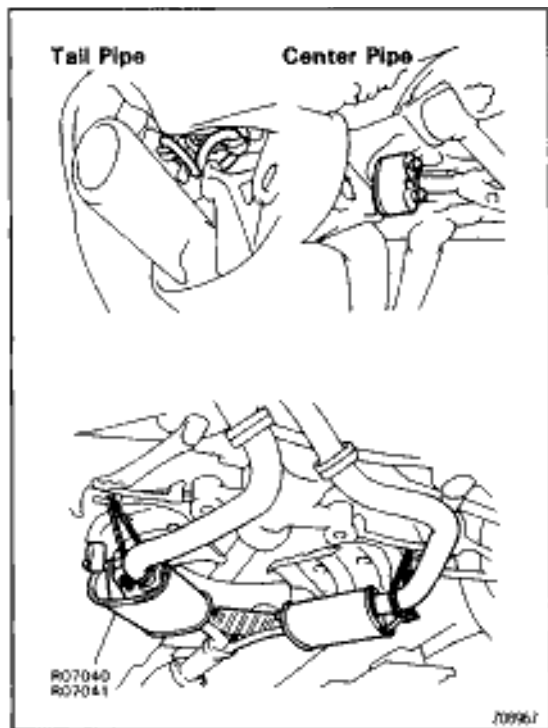
Using SST and a deep socket wrench, press in a new bushing.

SST 09506–35010

HINT: Do not apply grease or oil to the bushing.

STABILIZER BAR COMPONENTS



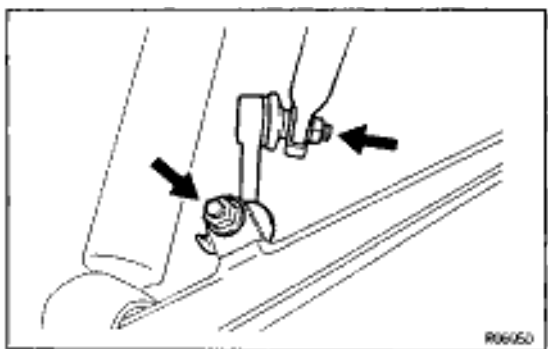


STABILIZER BAR REMOVAL

Installation is in the reverse order of removal.

1. DISCONNECT EXHAUST PIPE SUPPORTS

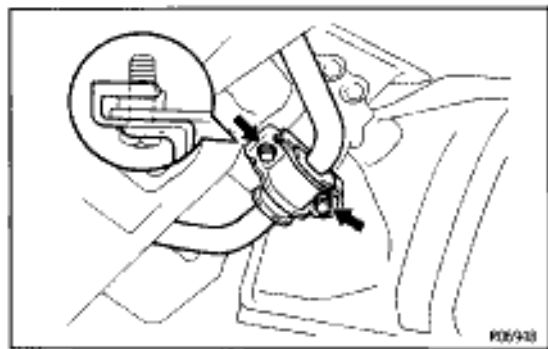
- (a) Remove the 2 exhaust pipe support rings.
- (b) Support the exhaust pipe securely.
- (c) Remove the 2 exhaust pipe support O-rings.



2. REMOVE BOTH STABILIZER BAR LINKS

Remove the 4 nuts and 2 stabilizer bar links.

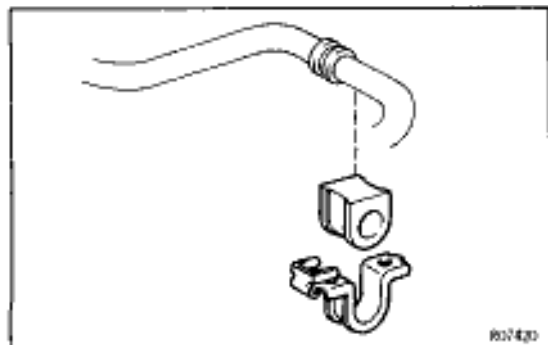
Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)



3. REMOVE BOTH STABILIZER BAR BRACKETS

Remove the 4 bolts and both stabilizer bar brackets from the subframe.

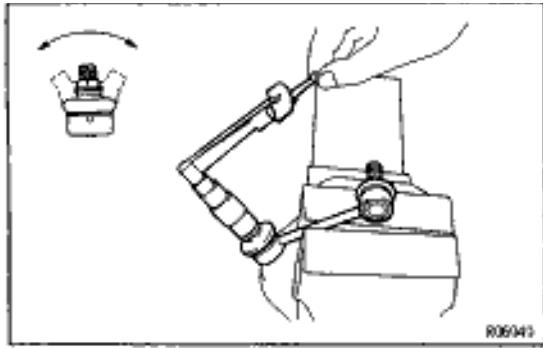
Torque: 31 N·m (320 kgf·cm, 23 ft·lbf)



4. REMOVE BOTH CUSHIONS AND BRACKETS

Remove the cushions and brackets from the stabilizer bar.

INSTALLATION HINT: Install the cushion to the outside of the bush stopper.



STABILIZER BAR LINK BALL JOINT INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

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

Torque (turning):

0.05–1.0 N·m (0.5–10 kgf·cm, 2.6–8.7 in·lbf)

If not within specification, replace the stabilizer bar link.

SERVICE SPECIFICATIONS

SERVICE DATA

Cold tire inflation pressure	2JZ-GE	Front	225/50ZR16	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear	245/50ZR16	250 kPa (2.5 kgf/cm ² , 36 psi)
	2JZ-GTE	Front	235/45ZR17	250 kPa (2.5 kgf/cm ² , 36 psi)
		Rear	255/40ZR17	250 kPa (2.5 kgf/cm ² , 36 psi)
Vehicle height	2JZ-GE	Front	225/50ZR16	185 mm (7.28 in.)
		Rear	245/50ZR16	250 mm (9.84 in.)
	2JZ-GTE	Front	235/45ZR17	187 mm (7.36 in.)
		Rear	255/40ZR17	251 mm (9.88 in.)
Front wheel alignment	Toe-in		0° ± 0.2° (0 ± 2 mm, 0.04 ± 0.08 in.)	
	Tie rod end left-right error			1.5 mm (0.059 in.) or less
	Camber	2JZ-GE		-0°20' ± 45'
		2JZ-GTE		-0°30' ± 45'
		Left-right error		30' or less
	Caster	2JZ-GE		3°20' ± 45'
		2JZ-GTE		3°30' ± 45'
		Left-right error		30' or less
	Steering axis inclination	2JZ-GE		9°35' ± 45'
		2JZ-GTE		9°45' ± 45'
		Left-right error		30' or less
	Wheel angle (Max.)	2JZ-GE	Inside wheel	35°00' $\pm \begin{smallmatrix} +1^{\circ} \\ -2^{\circ} \end{smallmatrix}$
			Outside wheel	30°45' (reference)
2JZ-GTE		Inside wheel	34°55' $\pm \begin{smallmatrix} +1^{\circ} \\ -2^{\circ} \end{smallmatrix}$	
		Outside wheel	30°35' (reference)	
Front axle hub	Bearing axial direction play		Maximum	0.05 mm (0.0020 in.)
	Axle hub flange runout		Maximum	0.05 mm (0.0020 in.)
Front suspension	Upper ball joint turning torque			1.0 – 3.4 N·m (10 – 35 kgf·cm, 9 – 30 in.-lbft)
	Lower ball joint turning torque			1.0 – 3.4 N·m (10 – 35 kgf·cm, 9 – 30 in.-lbft)
	Stabilizer bar link ball joint turning torque			0.05 – 1.0 N·m (0.5 – 10 kgf·cm, 0.4 – 8.7 in.-lbft)
Rear wheel alignment	Toe-in		0.3° ± 0.2° (3 ± 2 mm, 0.12 ± 0.08 in.)	
	Camber	2JZ-GE		-1°35' ± 45'
		2JZ-GTE		-1°30' ± 45'
		Left-right error		30' or less
Rear axle hub	Bearing axial direction play		Maximum	0.05 mm (0.0020 in.)
	Axle hub flange runout		Maximum	0.05 mm (0.0020 in.)
Rear suspension	Lower ball joint turning torque			1.0 – 3.4 N·m (10 – 35 kgf·cm, 9 – 30 in.-lbft)
	Lower ball joint turning torque		No.1	1.0 – 3.4 N·m (10 – 35 kgf·cm, 9 – 30 in.-lbft)
			No.2	1.0 – 3.4 N·m (10 – 35 kgf·cm, 9 – 30 in.-lbft)
	Stabilizer bar link ball joint turning torque			0.05 – 1.0 N·m (0.5 – 10 kgf·cm, 0.4 – 8.7 in.-lbft)
Rear drive shaft	2JZ-GTE (M/T)	LH standard length		547.5 mm (21.555 in.)
		RH standard length		598.5 mm (23.602 in.)
	Others	LH standard length		553.5 mm (21.791 in.)
		RH standard length		598.5 mm (23.602 in.)

REAR DIFFERENTIAL (Except 2JZ-GTE M/T)

Rear differential	Drive pinion oil seal drive in depth		0 ± 0.5 mm			
	Drive pinion shaft runout		Maximum	0.08 mm (0.0031 in.)		
	Ring gear runout		Maximum	0.05 mm (0.0020 in.)		
	Ring gear backlash		0.08 – 0.13 mm (0.0031 – 0.0051 in.)			
	Drive pinion preload		0.5 – 0.8 N·m (5 – 8 kgf·cm, 4.3 – 6.9 in.·lbf)			
	Total preload (add drive pinion preload)		0.5 – 0.8 N·m (5 – 8 kgf·cm, 4.3 – 6.9 in.·lbf)			
	Pinion gear backlash(Conventional type)		0.05 – 0.20 mm (0.0020 – 0.0079 in.)			
	Pinion gear backlash adjusting thrust washer (Conventional type)					
	1.6 mm (0.063 in.)		1.7 mm (0.067 in.)		1.8 mm (0.071 in.)	
	Ring gear backlash adjusting washer					
	No.	Thickness mm (in.)	No.	Thickness mm (in.)	No.	Thickness mm (in.)
	02	2.02 (0.0795)	32	2.32 (0.0913)	62	2.62 (0.1031)
	04	2.04 (0.0803)	34	2.34 (0.0921)	64	2.64 (0.1039)
	06	2.06 (0.0811)	36	2.36 (0.0929)	66	2.66 (0.1047)
	08	2.08 (0.0819)	38	2.38 (0.0937)	68	2.68 (0.1055)
	10	2.10 (0.0827)	40	2.40 (0.0945)	70	2.70 (0.1063)
	12	2.12 (0.0835)	42	2.42 (0.0953)	72	2.72 (0.1071)
	14	2.14 (0.0843)	44	2.44 (0.0961)	74	2.74 (0.1079)
	16	2.16 (0.0850)	46	2.46 (0.0969)	76	2.76 (0.1087)
	18	2.18 (0.0858)	48	2.48 (0.0976)	78	2.78 (0.1094)
	20	2.20 (0.0866)	50	2.50 (0.0984)	80	2.80 (0.1102)
	22	2.22 (0.0974)	52	2.52 (0.0992)	82	2.82 (0.1110)
	24	2.24 (0.0882)	54	2.54 (0.1000)	84	2.84 (0.1118)
26	2.26 (0.0890)	56	2.56 (0.1008)	86	2.86 (0.1126)	
28	2.28 (0.0898)	58	2.58 (0.1016)			
30	2.30 (0.0906)	60	2.60 (0.1024)			
Tooth contact pattern adjusting washer						
No.	Thickness mm (in.)	No.	Thickness mm (in.)	No.	Thickness mm (in.)	
87	1.87 (0.0736)	02	2.02 (0.0795)	17	2.17 (0.0854)	
88	1.88 (0.0740)	03	2.03 (0.0799)	18	2.18 (0.0858)	
89	1.89 (0.0744)	04	2.04 (0.0803)	19	2.19 (0.0862)	
90	1.90 (0.0748)	05	2.05 (0.0807)	20	2.20 (0.0866)	
91	1.91 (0.0752)	06	2.06 (0.0811)	21	2.21 (0.0870)	
92	1.92 (0.0756)	07	2.07 (0.0815)	22	2.22 (0.0874)	
93	1.93 (0.0760)	08	2.08 (0.0819)	23	2.23 (0.0878)	
94	1.94 (0.0764)	09	2.09 (0.0823)	24	2.24 (0.0882)	
95	1.95 (0.0768)	10	2.10 (0.0827)	25	2.25 (0.0886)	
96	1.96 (0.0772)	11	2.11 (0.0831)	26	2.26 (0.0890)	
97	1.97 (0.0776)	12	2.12 (0.0835)	27	2.27 (0.0894)	
98	1.98 (0.0780)	13	2.13 (0.0839)	28	2.28 (0.0898)	
99	1.99 (0.0783)	14	2.14 (0.0843)			
00	2.00 (0.0787)	15	2.15 (0.0846)			
01	2.01 (0.0791)	16	2.16 (0.0850)			

REAR DIFFERENTIAL (2JZ-GTE M/T)

Rear differential	Drive pinion oil seal drive in depth		2 ± 0.5 mm			
	Drive pinion shaft runout	Maximum	0.08 mm (0.0031 in.)			
	Ring gear runout	Maximum	0.08 mm (0.0031 in.)			
	Ring gear backlash		0.08 – 0.13 mm (0.0031 – 0.0051 in.)			
	Drive pinion preload		1.0 – 1.2 N·m (10 – 12 kgf·cm, 8.9 – 10.6 in.-lbft)			
	Total preload (add drive pinion preload)		0.4 – 0.6 N·m (4 – 6 kgf·cm, 3.5 – 5.2 in.-lbft)			
	Ring gear backlash adjusting washer					
	No.	Thickness mm (in.)	No.	Thickness mm (in.)	No.	Thickness mm (in.)
	18	1.18 (0.0465)	48	1.48 (0.0583)	78	1.78 (0.0701)
	20	1.20 (0.0472)	50	1.50 (0.0591)	80	1.80 (0.0709)
	22	1.22 (0.0480)	52	1.52 (0.0598)	82	1.82 (0.0717)
	24	1.24 (0.0488)	54	1.54 (0.0606)	84	1.84 (0.0724)
	26	1.26 (0.0496)	56	1.56 (0.0614)	86	1.86 (0.0732)
	28	1.28 (0.0504)	58	1.58 (0.0622)	88	1.88 (0.0740)
	30	1.30 (0.0512)	60	1.60 (0.0630)	90	1.90 (0.0748)
	32	1.32 (0.0520)	62	1.62 (0.0638)	92	1.92 (0.0756)
	34	1.34 (0.0528)	64	1.64 (0.0646)	08	1.08 (0.0425)
36	1.36 (0.0535)	66	1.66 (0.0654)	10	1.10 (0.0433)	
38	1.38 (0.0543)	68	1.68 (0.0661)	12	1.12 (0.0441)	
40	1.40 (0.0551)	70	1.70 (0.0669)	14	1.14 (0.0449)	
42	1.42 (0.0559)	72	1.72 (0.0677)	16	1.16 (0.0457)	
44	1.44 (0.0567)	74	1.74 (0.0685)			
46	1.46 (0.0575)	76	1.76 (0.0693)			
Tooth contact pattern adjusting washer						
No.	Thickness mm (in.)	No.	Thickness mm (in.)	No.	Thickness mm (in.)	
80	1.80 (0.0709)	95	1.95 (0.0768)	10	2.10 (0.0827)	
81	1.81 (0.0713)	96	1.96 (0.0772)	11	2.11 (0.0831)	
82	1.82 (0.0717)	97	1.97 (0.0776)	12	2.12 (0.0835)	
83	1.83 (0.0720)	98	1.98 (0.0780)	13	2.13 (0.0839)	
84	1.84 (0.0724)	99	1.99 (0.0783)	14	2.14 (0.0843)	
85	1.85 (0.0728)	00	2.00 (0.0787)	15	2.15 (0.0846)	
86	1.86 (0.0732)	01	2.01 (0.0791)	16	2.16 (0.0850)	
87	1.87 (0.0736)	02	2.02 (0.0795)	17	2.17 (0.0854)	
88	1.88 (0.0740)	03	2.03 (0.0799)	18	2.18 (0.0858)	
89	1.89 (0.0744)	04	2.04 (0.0803)	77	1.77 (0.0697)	
90	1.90 (0.0748)	05	2.05 (0.0807)	78	1.78 (0.0701)	
91	1.91 (0.0752)	06	2.06 (0.0811)	79	1.79 (0.0705)	
92	1.92 (0.0756)	07	2.07 (0.0815)			
93	1.93 (0.0760)	08	2.08 (0.0819)			
94	1.94 (0.0764)	09	2.09 (0.0823)			

TORQUE SPECIFICATIONS

(FRONT)

Part tightened		N·m	kgf·cm	ft·lbf
Hub nut		103	1,050	76
Lower suspension arm x Suspension crossmember		226	2,300	166
Lower suspension arm bracket stay	Bolt	43	440	32
	Nut	59	600	43
Axle hub lock nut		199	2,030	147
Upper suspension arm x Subframe		164	1,670	121
Lower suspension arm x Shock absorber bracket		52	530	38
Tie rod end x Steering knuckle		49	500	36
Steering knuckle x Upper suspension arm		103	1,050	76
Steering knuckle x Lower suspension arm		125	1,270	92
Disc brake caliper x Steering knuckle		118	1,200	87
ABS speed sensor x Steering knuckle		8	80	69in.·lbf
Front shock absorber x Body		35	360	26
Front shock absorber x Lower suspension arm		143	1,460	106
Front shock absorber x Suspension support		29	300	22
Stabilizer bar link x Lower suspension arm		74	750	54
Stabilizer bar link x Stabilizer bar		74	750	54
Stabilizer bar bracket x Body		18	180	13
Steering knuckle x Dust cover		8	85	74in.·lbf

(REAR)

Part tightened	N·m	kgf·cm	ft·lbf	
Hub nut	103	1,050	76	
Rear shock absorber x Lower suspension arm No.2	137	1,400	101	
Upper suspension arm x Suspension crossmember	164	1,670	271	
Rear axle carrier x Disc brake caliper	104	1,065	77	
Lower suspension arm No.1 x Rear axle carrier	59	600	43	
Lower suspension arm No.1 x Subframe	184	1,880	136	
Lower suspension arm No.2 x Rear axle carrier	150	1,525	110	
Lower suspension arm No.2 x suspension crossmember	184	1,880	136	
Lower suspension arm bracket x Subframe	18	180	13	
ABS speed sensor x Rear axle carrier	8	80	69in·lbf	
Strut rod x Rear axle carrier	184	1,880	136	
Strut rod x Body	184	1,880	136	
Rear drive shaft x Axle hub	289	2,950	213	
Upper suspension arm x Rear axle carrier	109	1,110	80	
Backing plate x Rear axle carrier	26	260	19	
Rear axle carrier x Backing plate (Hexagon bolt)	180	1,825	132	
Rear drive shaft x Differential	83	850	61	
Differential x Propeller shaft	79	805	58	
Differential mounting bolt	Front Rear	123 142	90 105	
Ring gear x Differential case	See page SA-71			
Differential carrier retainer set bolt	2JZ-GTE M/T	47	480	35
	Except 2JZ-GTE M/T	22	225	16
Differential carrier cover set bolt	2JZ-GTE M/T	78	800	58
	Except 2JZ-GTE M/T	47	475	34
Drain (Filler) plug	49	500	36	
Breather plug	21	210	15	
Shock absorber x Body	26	260	19	
Suspension support x Shock absorber	27	280	20	
Stabilizer bar link x Lower suspension arm No.2	74	750	54	
Stabilizer bar link x Stabilizer bar	74	750	54	
Stabilizer bar bracket x Body	31	320	23	