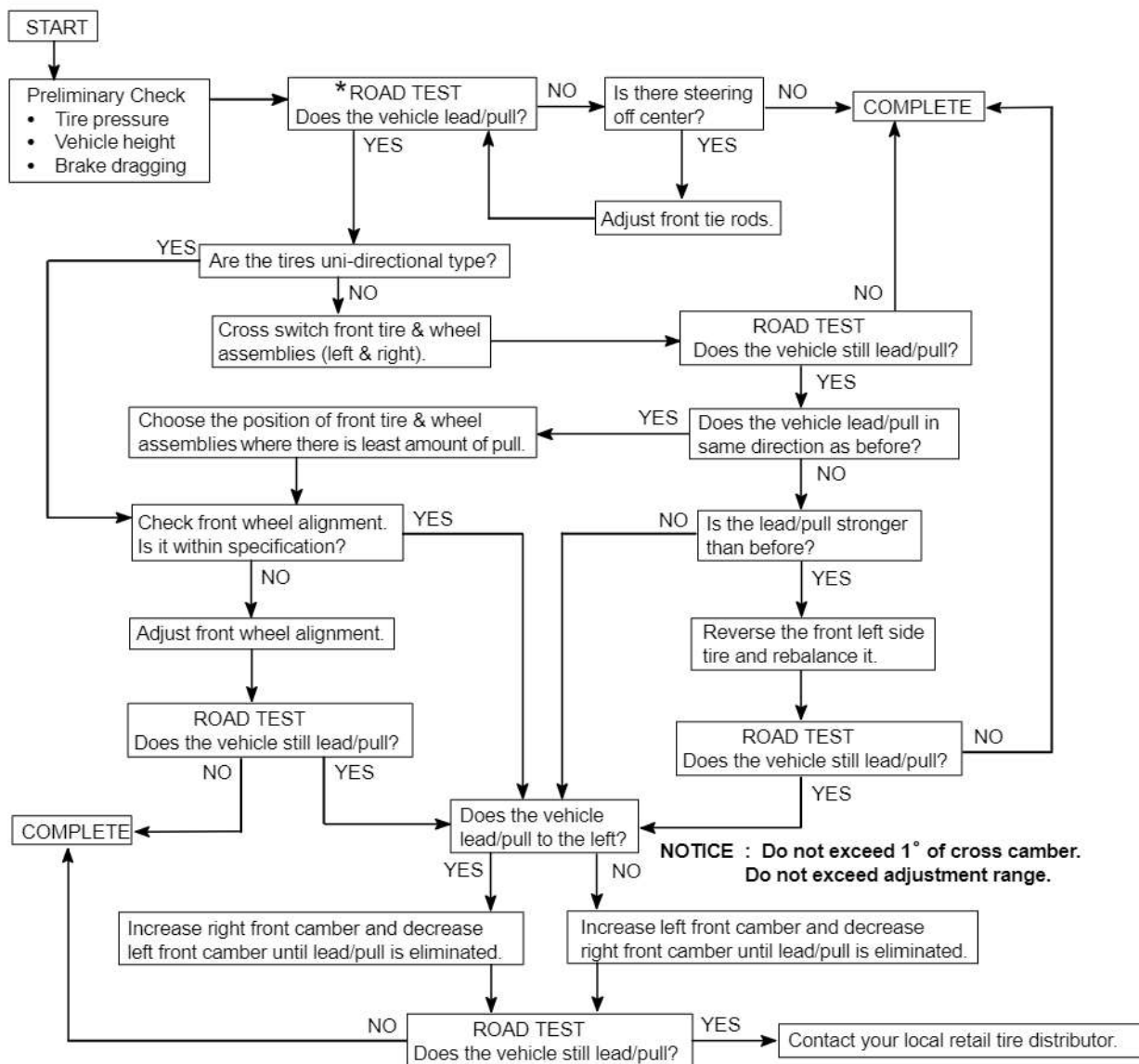


REPAIR PROCEDURES

HINT:

This is a flow chart for vehicle pull.



* Select a flat road where the vehicle can be driven in a straight line for 100 meters at a constant speed of 35mph. Please confirm safety and set the steering wheel to its straight position. Drive the vehicle in a straight line for 100 meters at a constant speed of 35mph without holding the steering wheel.

- (1) The vehicle can keep straight but the steering wheel has some angle.
→ STEERING OFF CENTER (See page [SR-9](#))
- (2) The vehicle cannot keep straight.
→ STEERING PULL

TROUBLESHOOTING

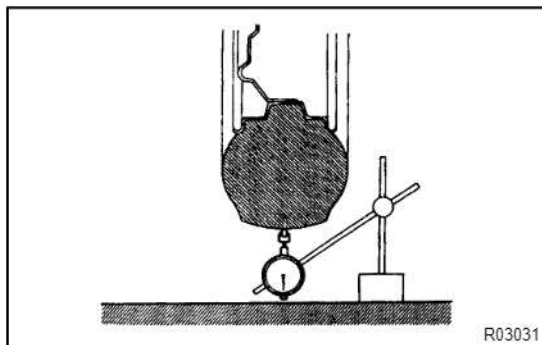
SA04S-03

PROBLEM SYMPTOMS TABLE

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.

Symptom	Suspect Area	See page
Bottoming	1. Vehicle (Overloaded) 2. Spring (Weak) 3. Shock absorber (Worn out)	- SA-51 SA-123 SA-51 SA-123
Sways/pitches	1. Tires (Worn or improperly inflated) 2. Stabilizer bar (Bent or broken) 3. Shock absorber (Worn out)	SA-4 SA-76 SA-134 SA-51 SA-123
Front wheel shimmy	1. Tires (Worn or improperly inflated) 2. Wheels (Out of balance) 3. Shock absorber (Worn out) 4. Wheel alignment (Incorrect) 5. Ball joints (Worn) 6. Hub bearings (Loosen or worn) 7. Steering linkage (Loosen or worn) 8. Steering gear (Out of adjustment or broken)	SA-4 SA-4 SA-51 SA-123 SA-5 SA-69 SA-71 SA-9 - -
Abnormal tire wear	1. Tires (Improperly inflated) 2. Wheels alignment (Incorrect) 3. Shock absorber (Worn out) 4. Suspension parts (Worn out)	SA-4 SA-5 SA-51 SA-123 -
Noise in front axle	1. Oil level (Low or wrong grade) 2. Excessive backlash between pinion and ring gear 3. Ring, pinion or side gears (Worn or chipped) 4. Pinion shaft bearing (Worn) 5. Side bearing (Worn) 6. Differential bearing (Loosen or worn)	SA-24 SA-30 SA-27 SA-27 SA-27 SA-27
Oil leak from front differential	1. Oil level (Too high or wrong grade) 2. Drive pinion oil seal (Worn or damaged) 3. Side gear oil seal (Worn or damaged) 4. Companion flange (Loose or damaged) 5. Side gear shaft (Damaged)	SA-24 SA-24 SA-27 SA-30 SA-27
Oil leak from pinion shaft	1. Oil level (Too high or wrong grade) 2. Oil seal (Worn or damaged) 3. Companion flange (Loose or damaged)	SA-24 SA-24 SA-30
Noise in rear axle	1. Oil level (Low or wrong grade) 2. Excessive backlash between pinion and ring gear 3. Ring, pinion or side gears (Worn or chipped) 4. Pinion shaft bearing (Worn) 5. Axle shaft bearing (Worn) 6. Differential bearing (Loosen or worn)	SA-88 SA-96 SA-91 SA-91 SA-81 SA-96

Oil leak from rear axle	1. Oil seal (Worn or damaged)	SA-88
	2. Rear axle housing (Cracked)	SA-96
Oil leak from pinion shaft	1. Oil level (Too high or wrong grade)	SA-88
	2. Oil seal (Worn or damaged)	SA-88
	3. Companion flange (Loose or damaged)	SA-96



TIRE AND WHEEL INSPECTION

SA04T-02

1. INSPECT TIRE

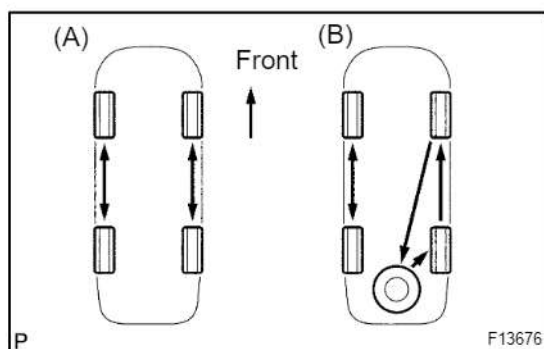
- (a) Check the tires for wear and for the proper inflation pressure.

Cold tire inflation pressure:

Tire size	Front kPa (kgf/cm ² , psi)	Rear kPa (kgf/cm ² , psi)
P225/75R15	200 (2.0, 29)	200 (2.0, 29)
P265/70R16	220 (2.2, 32)	220 (2.2, 32)

- (b) Check the tire runout.

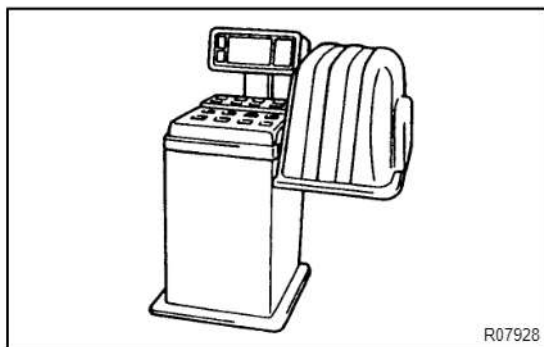
Tire runout: 3.0 mm (0.118 in.) or less



2. ROTATE TIRE

HINT:

- ◆ Rotate tires as shown in the illustration.
- ◆ Rotate as shown in (B) if the spare tire is included in the rotation.



3. INSPECT WHEEL BALANCE

Using the Off-the-car balance, check and adjust the wheel balance.

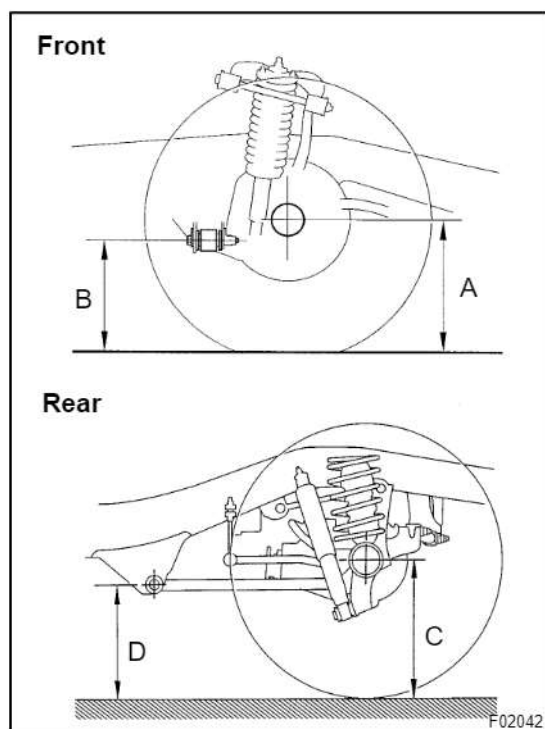
Unbalance after adjustment: 14.0 g (0.031 lb) or less

4. CHECK FRONT SUSPENSION FOR LOOSENESS
5. CHECK STEERING LINKAGE FOR LOOSENESS
6. CHECK BALL JOINT FOR LOOSENESS

(See page [SA-71](#))

7. CHECK SHOCK ABSORBER WORKS PROPERLY

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



FRONT WHEEL ALIGNMENT INSPECTION

SA04U-03

1. MEASURE VEHICLE HEIGHT

Vehicle height:

2WD:

Front	A - B: 72.2 mm (2.843 in.)
Rear	C - D: 52.0 mm (2.047 in.)

4WD:

Front	A - B: 69.9 mm (2.752 in.)
Rear	C - D: 50.7 mm (1.996 in.)

Measuring points:

A: Ground clearance of spindle center

B: Ground clearance of front adjusting cam bolt center

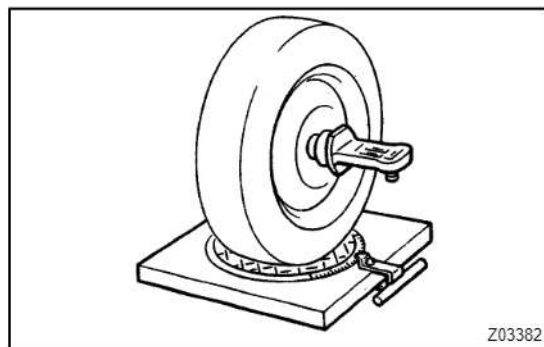
C: Ground clearance of rear axle shaft center

D: Ground clearance of lower control arm front bushing center

NOTICE:

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

If the vehicle height is not within the 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

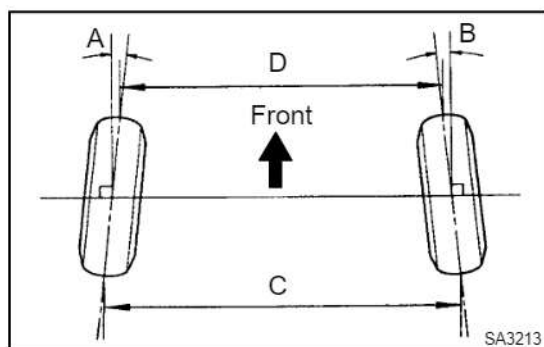
2WD:

Camber	-0°15' ± 45' (-0.25° ± 0.75°)
Left-right error	30' (0.5°) or less
Caster	3°15' ± 45' (3.25° ± 0.75°)
Left-right error	30' (0.5°) or less
Steering axis inclination	11°00' ± 45' (11° ± 0.75°)
Left-right error	30' (0.5°) or less

4WD:

Camber	-0°15' ± 45' (-0.25° ± 0.75°)
Left-right error	30' (0.5°) or less
Caster	3°05' ± 45' (3.06° ± 0.75°)
Left-right error	30' (0.5°) or less
Steering axis inclination	11°00' ± 45' (11.00° ± 0.75°)
Left-right error	30' (0.5°) or less

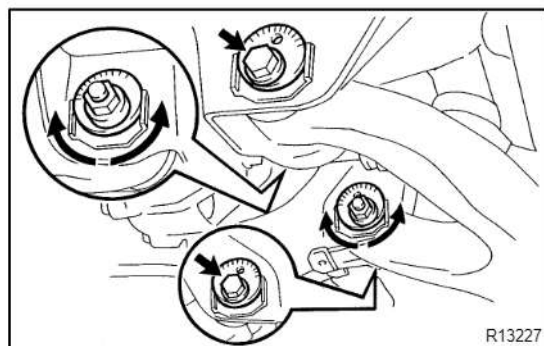
If the steering axis inclination is not within the specification, after the camber and caster have correctly adjusted, recheck the steering knuckle front wheel for bearing or looseness.



4. INSPECT TOE-IN

Toe-in	A + B: $0^{\circ}12' \pm 12'$ ($0.2^{\circ} \pm 0.2^{\circ}$)
(total)	C - D: 2 ± 2 mm (0.08 ± 0.08 in.)

If the toe-in is not within the specification, adjust the rack ends.



5. ADJUST CAMBER AND CASTER

NOTICE:

After the camber has been adjusted, inspect the toe-in.

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

HINT:

Try to adjust the camber and caster to the center value.

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

Torque: 130 N·m (1,325 kgf·cm, 96 ft·lbf)

6. ADJUST TOE-IN AND WHEEL ANGLE

HINT:

First, check or adjust the lengths of the tie rod ends, then adjust the toe-in.

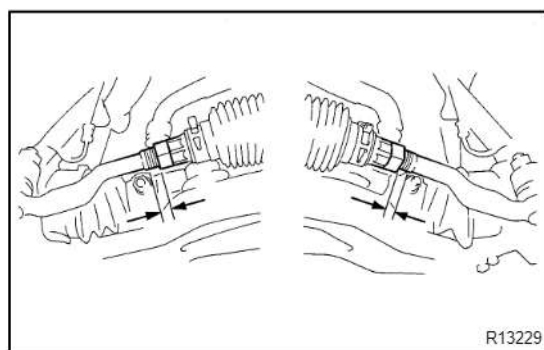
Tie rod end length left-right error:

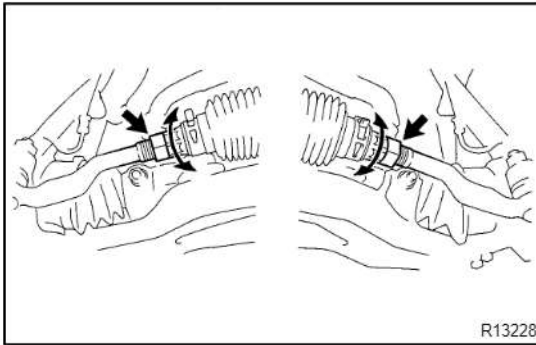
1.5 mm (0.059 in.) or less

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

HINT:

Try to adjust the toe-in the center value.





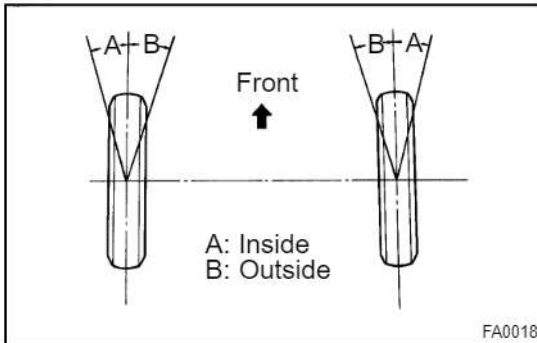
- (d) Tighten the rack end lock nuts.

Torque: 55 N·m (560 kgf·cm, 41 ft·lbf)

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

HINT:

Make sure that the boots are not twisted.



7. INSPECT WHEEL ANGLE

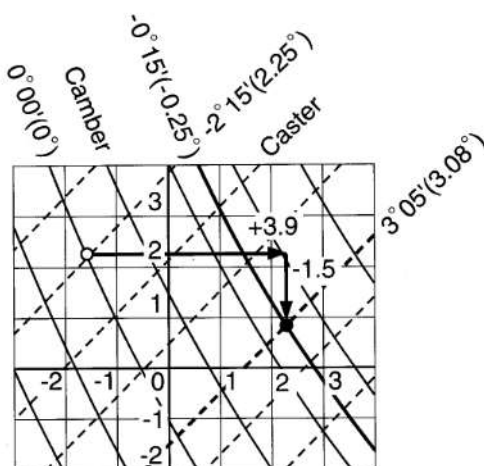
Turn the steering wheel fully, and measure the turning angle.

Inside wheel	Outside wheel (Reference)
35° (33° - 36°)	31°

If wheel angle deviates from the specifications, readjust the toe-in and wheel angle within the specifications. At this time, the lengths of the tie rod end may be within less than 1.5 mm (0.059 in.).

Example 2WD

- = Standard value point
- = Measurement point



8. HOW TO READ ADJUSTMENT CHART

- (a) Find the wheel alignment standard value applicable for the tire size.
- (b) Mark the selected standard value on the adjustment chart.

Example 2WD:

Camber -0°15' (-0.25°)

Caster 3°05' (3.08°)

- (c) Mark on the adjustment chart the alignment values measured at the vehicle height.

Example:

Camber 0°00' (0°)

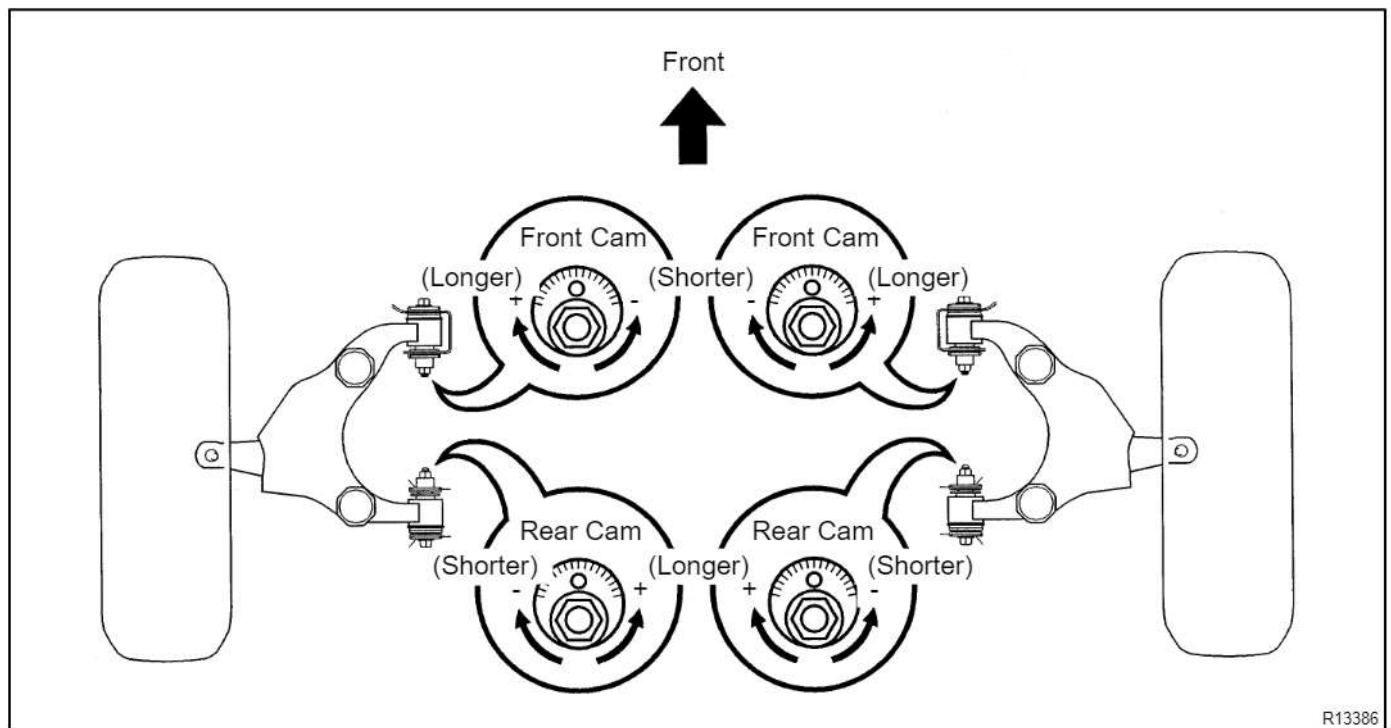
Caster 2°15' (2.25°)

- (d) As shown in the illustration, read the distance from the standard value to the measured value, and adjust the front and/or rear adjusting cams accordingly.

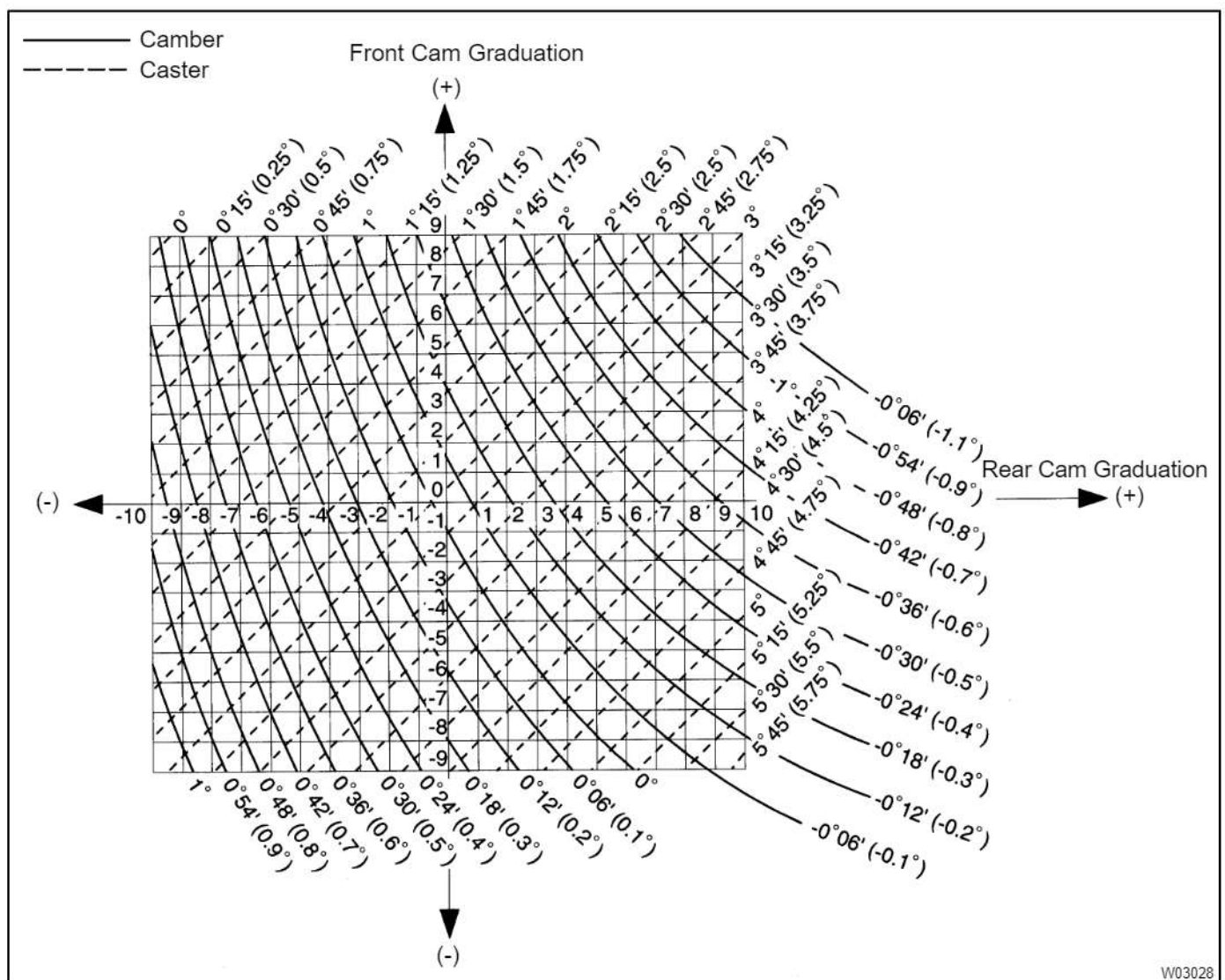
Example:

Front cam -(shorter) 1.5

Rear cam +(Longer) 3.9



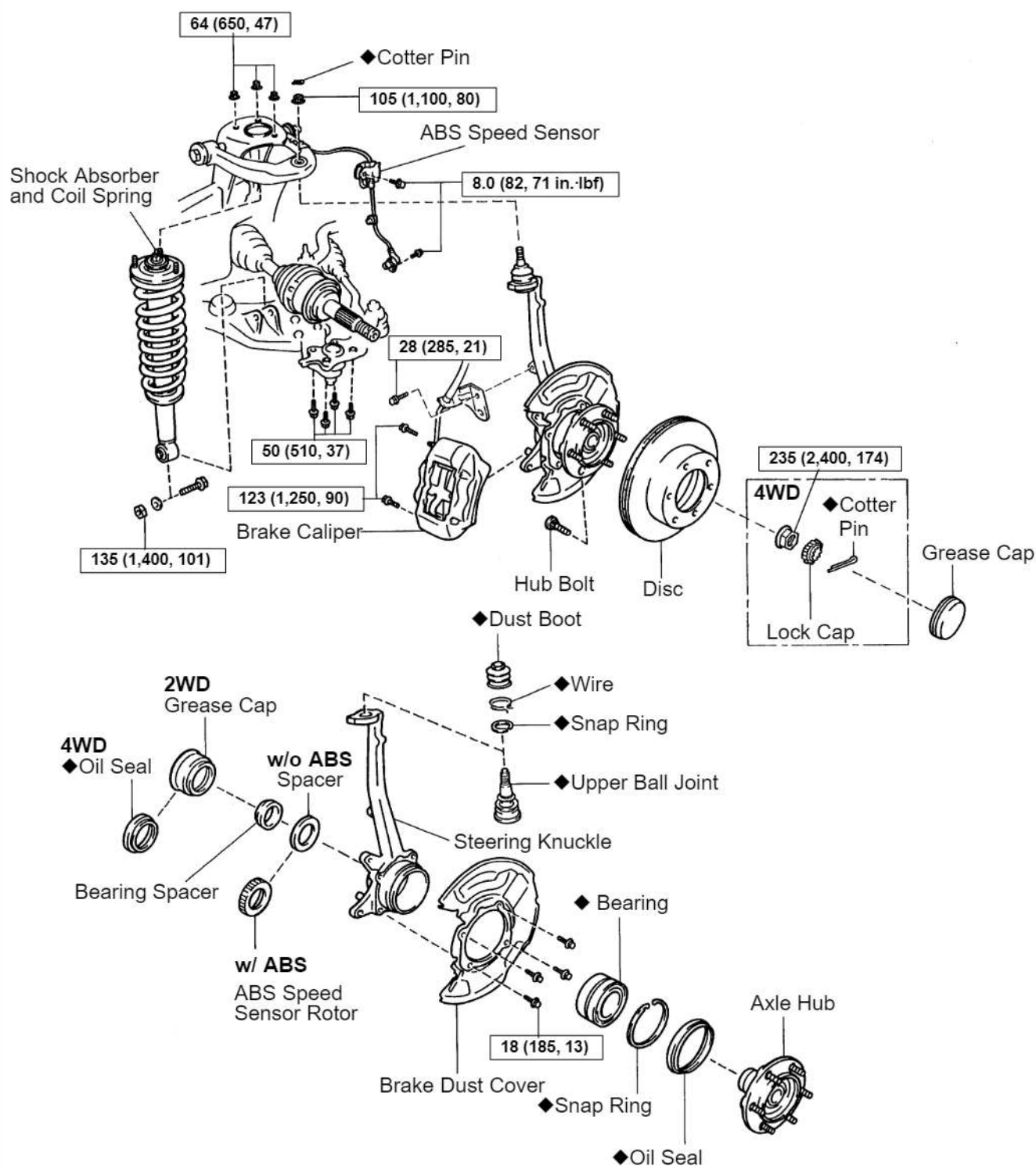
R13386



W03028

FRONT AXLE HUB COMPONENTS

SA04V-02



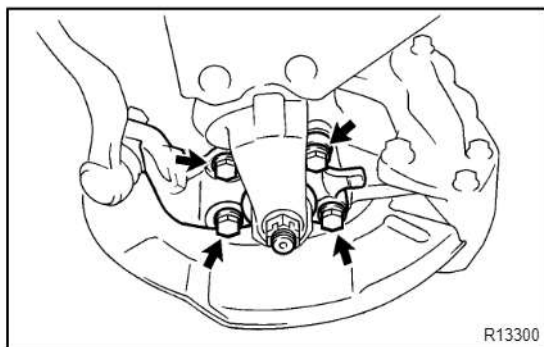
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

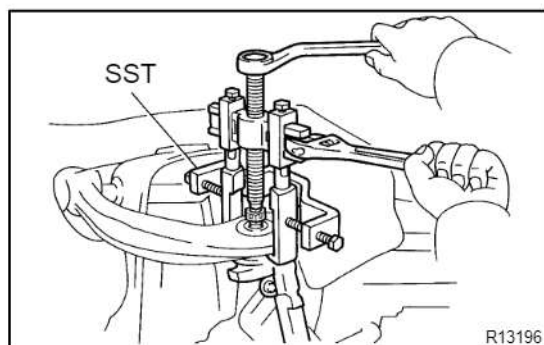
Z18520

REMOVAL

1. **REMOVE FRONT WHEEL**
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)
2. **REMOVE SHOCK ABSORBER** (See page SA-52)
3. **REMOVE GREASE CAP**
Using a screwdriver, remove the grease cap.
4. **4WD:**
DISCONNECT DRIVE SHAFT (See page SA-17)
 - (a) Remove the cotter pin and lock cap.
 - (b) With applying the brakes, remove the lock nut.
Torque: 235 N·m (2,400 kgf·cm, 174 ft·lbf)
5. **w/ ABS:**
REMOVE ABS SPEED SENSOR AND WIRE HARNESS CLAMP FROM STEERING KNUCKLE
Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)
6. **REMOVE BRAKE LINE BRACKET FROM STEERING KNUCKLE**
Torque: 28 N·m (285 kgf·cm, 21 ft·lbf)
7. **REMOVE FRONT BRAKE CALIPER AND DISC** (See page BR-16)



8. **DISCONNECT LOWER BALL JOINT**
Remove the 4 bolts and disconnect the lower ball joint.
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)



9. **REMOVE STEERING KNUCKLE WITH AXLE HUB**
 - (a) Remove the cotter pin and loosen the nut from the upper ball joint.
Torque: 105 N·m (1,100 kgf·cm, 80 ft·lbf)
 - (b) Using SST, disconnect the steering knuckle.
SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04031, 09958-0401 1)

(c) Remove the nut and steering knuckle.

NOTICE:

Be careful not to damage the oil seal and drive shaft boot.

HINT:

4WD:

When it is difficult to disconnect the drive shaft, tap the drive shaft with a plastic hammer.

DISASSEMBLY

1. REMOVE GREASE CAP OR OIL SEAL (INSIDE)

- (a) Clamp the axle hub in a soft jaw vise.

HINT:

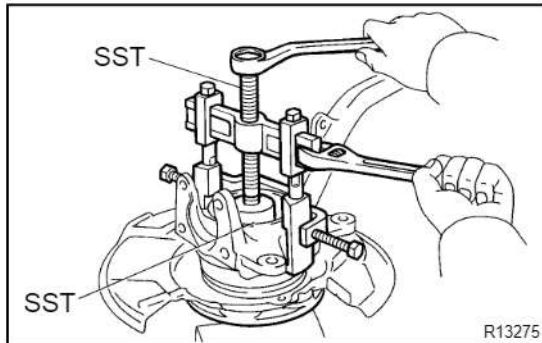
Close vise unit it holds hub bolts. Do not tighten it further.

- (b) 2WD:

Using a screwdriver, remove the grease cap.

- (c) 4WD:

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



2. REMOVE AXLE HUB FROM STEERING KNUCKLE

- (a) Remove the 4 bolts and shift the brake dust cover towards the hub side (outside).

- (b) Using SST, remove the axle hub from the steering knuckle.

SST 09710-30021 (09710-03051),
09950-40011 (09951-04020, 09952-04010,
09953-04020, 09954-04010, 09955-04031,
09957-04010, 09958-04011)

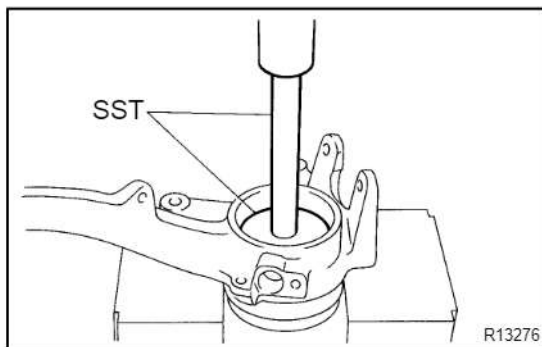
- (c) Remove the bearing spacer and ABS speed sensor rotor/spacer.

3. REMOVE OIL SEAL (OUTSIDE)

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

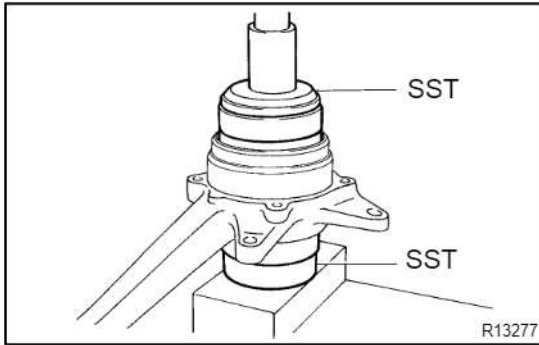
4. REMOVE BEARING FROM STEERING KNUCKLE

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



- (b) Using SST and a press, remove the bearing from the steering knuckle.

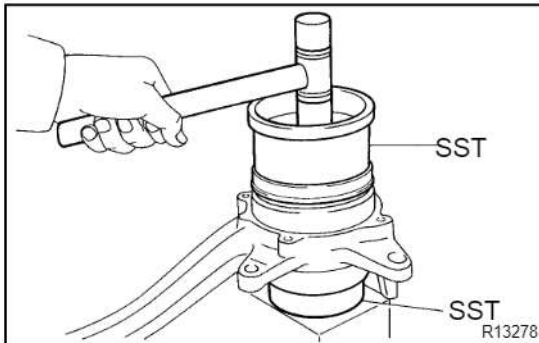
SST 09950-60020 (09951-00810),
09950-70010 (09951-07150)



REASSEMBLY

1. INSTALL NEW BEARING

- (a) Using SST and a press, install a new bearing to the steering knuckle.
SST 09527-1701 1, 09950-60020 (09951-00910)
- (b) Using snap ring pliers, install a new snap ring.

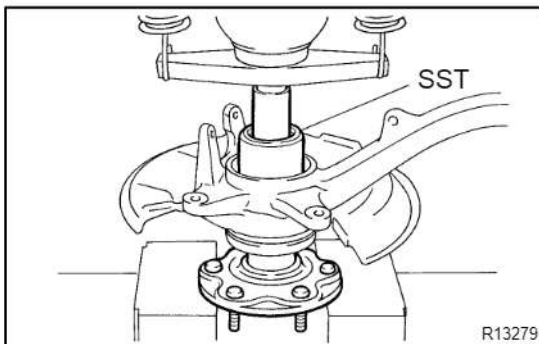


2. INSTALL NEW OIL SEAL (OUTSIDE)

- (a) Using SST and a plastic hammer, install a new oil seal (outside).
SST 09223-15030, 09527-17011
- (b) Coat MP grease to the oil seal lip.

3. INSTALL AXLE HUB TO STEERING KNUCKLE

- (a) Install the brake dust cover to the steering knuckle with the 4 bolts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

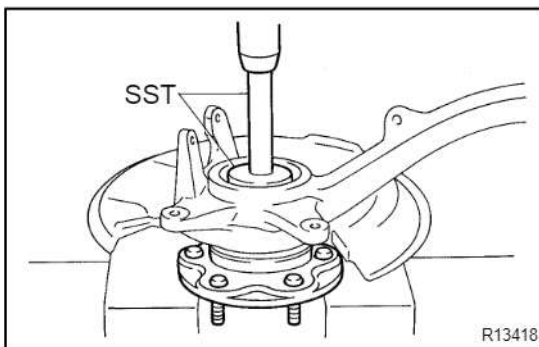


- (b) Using SST and a press, install the axle hub to the steering knuckle.
SST 09649-17010

4. INSTALL ABS SPEED SENSOR ROTOR/SPACER

NOTICE:

Do not scratch the serration of the speed sensor rotor.



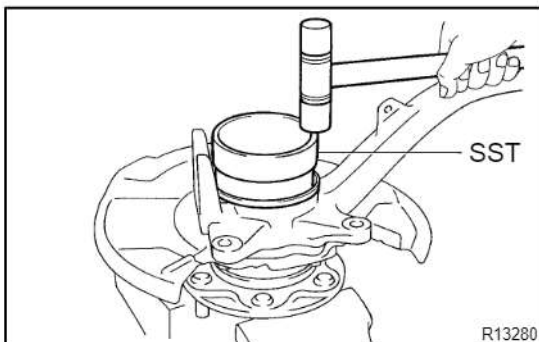
5. INSTALL BEARING SPACER

Using SST and a press, install the bearing spacer.

SST 09950-60010 (09951-00650),
09950-70010 (09951-07150)

6. 2WD:

INSTALL GREASE CAP



7. 4WD:

INSTALL NEW OIL SEAL (INSIDE)

- (a) Using SST and a plastic hammer, install a new oil seal (inside).
SST 09527-1701 1

HINT:

Strike the SST on its circumference evenly.

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

INSTALLATION

Installation is in the reverse order of removal (See page [SA-10](#)).

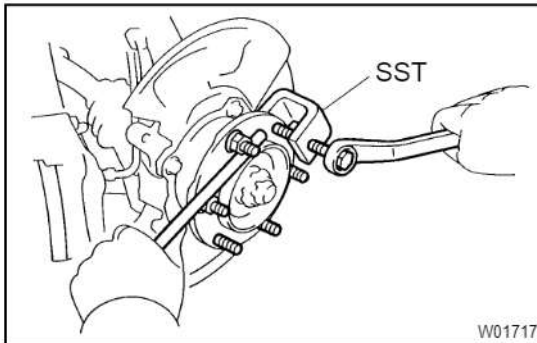
HINT:

After installation, check the ABS speed sensor signal (See page [DI-224](#)) and front wheel alignment (See page [SA-5](#)).

FRONT WHEEL HUB BOLT REPLACEMENT

SA050-01

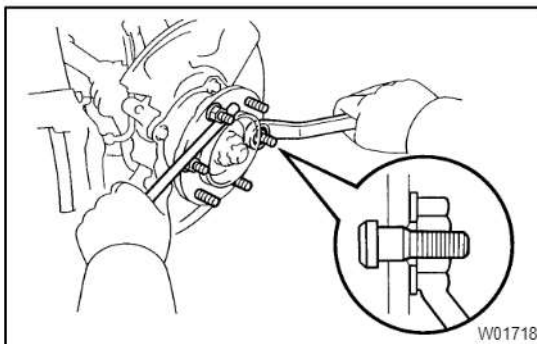
1. REMOVE FRONT WHEEL
2. REMOVE BRAKE LINE BRACKET FROM STEERING KNUCKLE
3. REMOVE BRAKE CALIPER AND DISC (See page [BR-16](#))



4. REMOVE HUB BOLT

Using SST, remove hub bolt.

SST 09650-1701 1



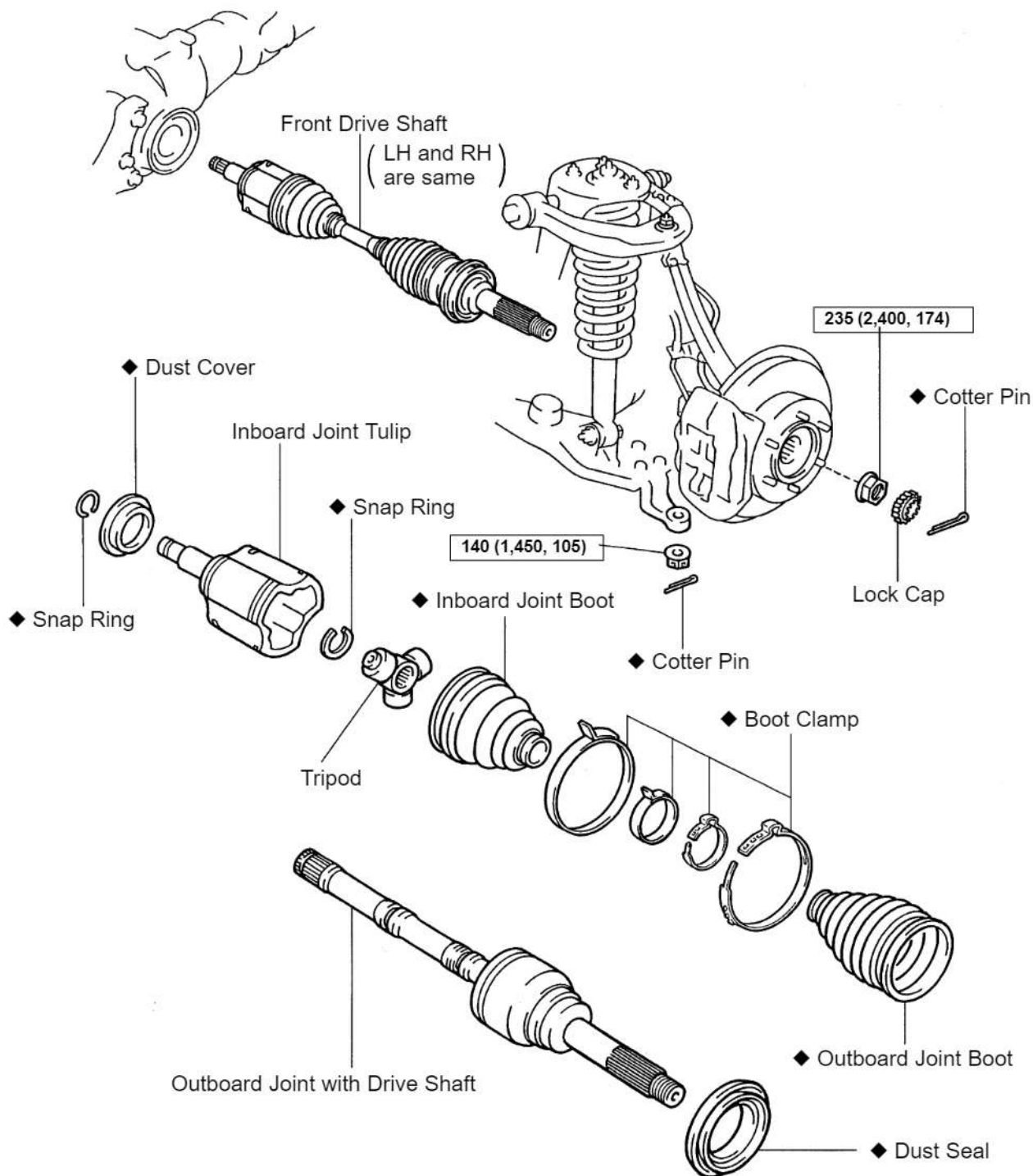
5. INSTALL HUB BOLT

Install a washer and nut to the hub bolt, as shown in the illustration, and install the hub bolt with torquing the nut.

6. INSTALL DISC AND BRAKE CALIPER
(See page [BR-20](#))
7. INSTALL BRAKE LINE BRACKET FROM STEERING KNUCKLE
Torque: 28 N·m (285 kgf·cm, 21 ft·lbf)
8. INSTALL FRONT WHEEL
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

FRONT DRIVE SHAFT COMPONENTS

SA051-02



Z18521

REMOVAL

1. REMOVE FRONT WHEEL

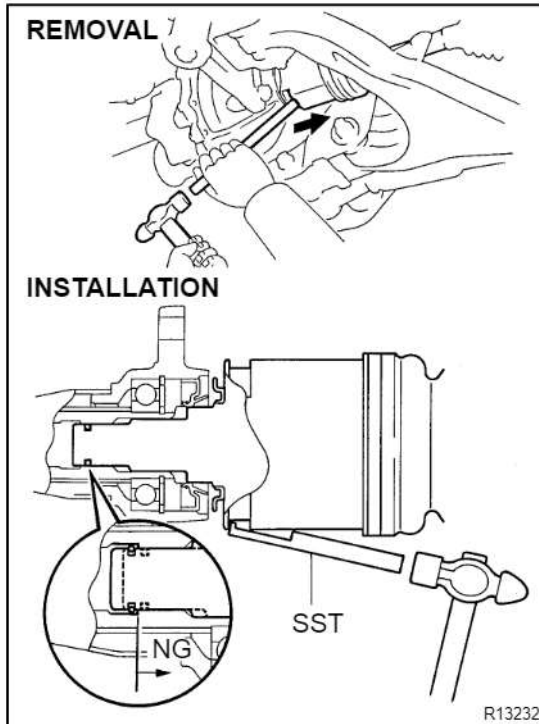
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. DRAIN DIFFERENTIAL OIL

3. REMOVE DRIVE SHAFT LOCK NUT

- Remove the cotter pin and lock cap.
- With applying the brakes, remove the lock nut.

Torque: 235 N·m (2,400 kgf·cm, 174 ft·lbf)



4. DISCONNECT DRIVE SHAFT

Using a brass bar and hammer, disconnect the drive shaft.

HINT:

When it is difficult to disconnect the drive shaft, tap in a screwdriver between differential side tube flange/differential carrier and drive shaft.

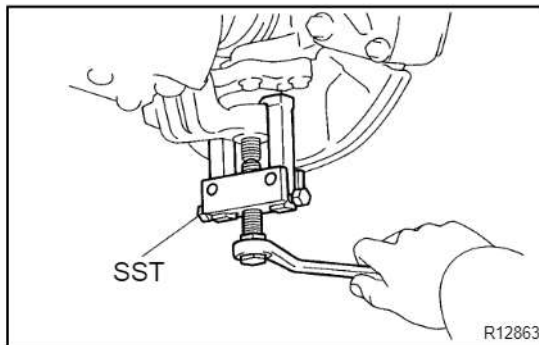
HINT:

At the time of installation, please refer to the following items.

- Before installation, set the snap ring opening side facing downward.
- Using SST and a hammer, strike the inboard joint into the differential. At that time, strike the snags evenly to avoid snags deformation.
SST 09631-10030
- After installation, check that the drive shaft cannot be pull out by hand.

NOTICE:

Be careful not to damage the dust cover of the drive shaft.

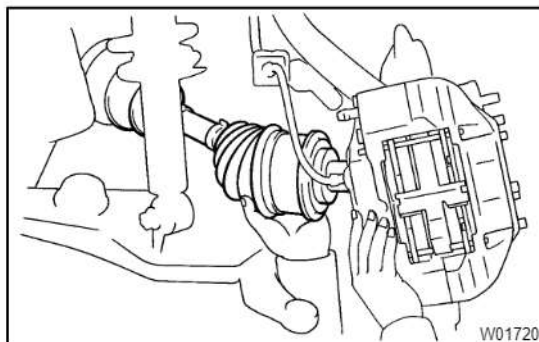


5. DISCONNECT LOWER SUSPENSION ARM

- Remove the cotter pin and nut.
Torque: 140 N·m (1,450 kgf·cm, 105 ft·lbf)
- Using SST, disconnect the lower suspension arm.
SST 09628-6201 1

HINT:

At the time of installation, face the cotter pin hole of the lower ball joint forward.



6. REMOVE DRIVE SHAFT

Push the steering knuckle outward and remove the drive shaft.

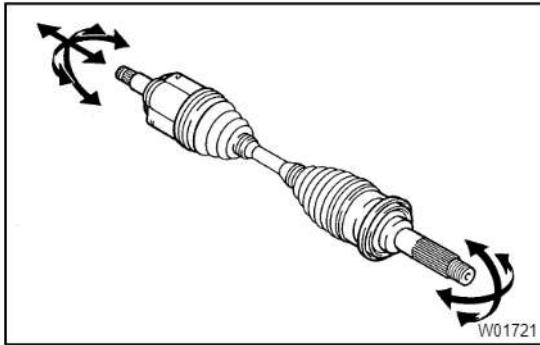
HINT:

When it is difficult to disconnect the drive shaft, tap the drive shaft with a plastic hammer.

NOTICE:

Be careful not to damage the oil seal, boots and dust seal.

7. REMOVE SNAP RING FROM INBOARD SHAFT



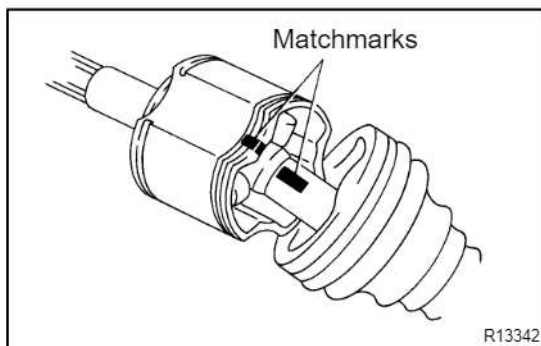
DISASSEMBLY

1. CHECK DRIVE SHAFT

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

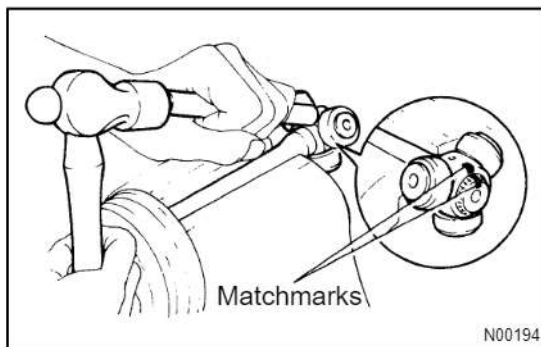
2. REMOVE INBOARD JOINT BOOT CLAMPS

- Using a screwdriver, remove the 2 inboard joint boot clamps.
- Slide the inboard joint boot toward the outboard joint.



3. REMOVE INBOARD JOINT TULIP

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



4. REMOVE TRIPOD FROM DRIVE SHAFT

- Using snap ring expander, remove the snap ring.
- Place matchmarks on the shaft and tripod.
- Using a brass bar and hammer, remove the tripod.

NOTICE:

Do not tap the roller.

5. REMOVE INBOARD AND OUTBOARD JOINT BOOTS

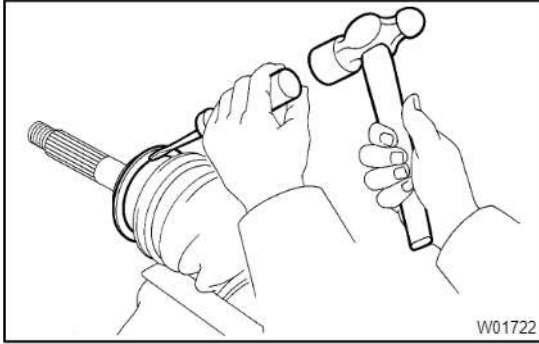
- Remove the inboard joint boot and 2 clamps from the drive shaft.
- Using a side cutter, cut the 2 outboard boot clamps.
- Remove the outboard joint boot from the drive shaft.

NOTICE:

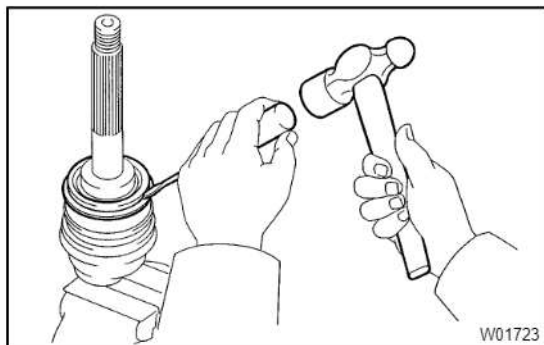
Do not disassemble the outboard joint.

6. REMOVE DUST COVER

Using a screwdriver, remove the dust cover from the inboard joint tulip.

**7. REMOVE DUST SEAL**

Using a screwdriver and hammer remove the dust seal from the drive shaft.



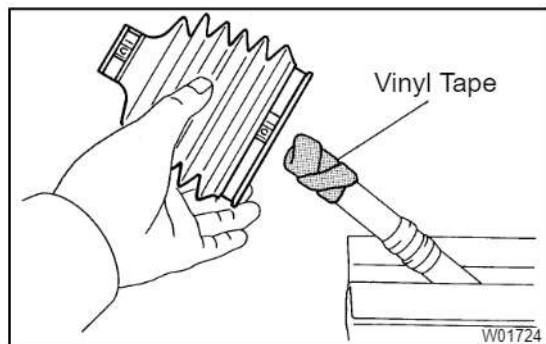
REASSEMBLY

1. INSTALL DUST COVER

Using a screwdriver and hammer, install a new dust cover.

2. INSTALL DUST SEAL

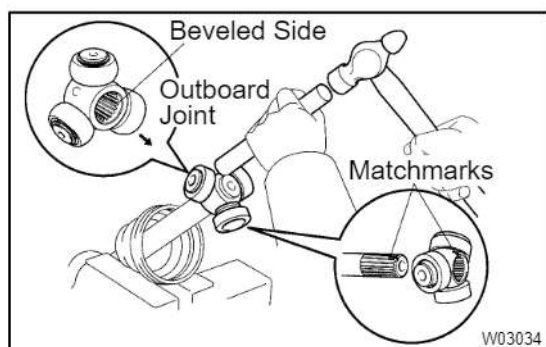
Using a screwdriver and hammer, install a new dust seal.



3. TEMPORARILY INSTALL NEW BOOTS TO DRIVE SHAFT

HINT:

- Before installing the 2 boots, wrap vinyl tape around the spline of the shaft to prevent the boots from damaging.
- Place 2 new clamps to the outboard joint boot and install them to the drive shaft.



4. INSTALL TRIPOD

- Place the beveled side of the tripod axial spline toward the outboard joint.
- Align the matchmarks placed before installation.
- Using a brass bar and a hammer, install the tripod onto the drive shaft.

NOTICE:

Do not tap the roller.

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

5. ASSEMBLE BOOT TO OUTBOARD JOINT

Grease capacity: 176 - 186 g (6.20 - 6.56 oz.)

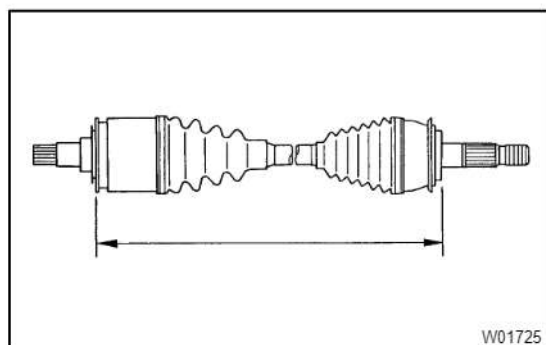
Before assembling the boot, pack in grease in the boot kit.

6. ASSEMBLE BOOT AND INBOARD JOINT TULIP

- Pack the inboard joint and boot with grease in the boot kit.

Grease capacity: 255 - 265 g (8.99 - 9.34 oz.)

- Align the matchmarks placed before installation.
- Install the inboard joint tulip to the drive shaft.
- Temporarily install the boot to the inboard joint tulip.



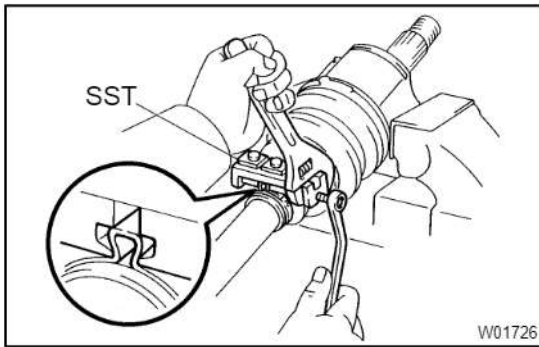
7. ASSEMBLE NEW INBOARD JOINT BOOT CLAMPS TO BOOT

- Make sure that the 2 boots are in the shaft groove.
- Make sure that the 2 boots are not stretched or contracted when the drive shaft is at the standard length.

Drive shaft standard length:

530.8 ± 5.0 mm (20.898 ± 0.197 in.)

- Place 2 new inboard joint boot clamps.
- Bend the band and lock it with a screwdriver.

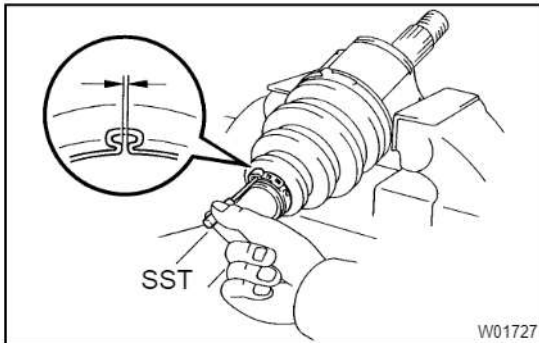


- (e) To assemble the 2 outboard joint boot clamps, pinch the clamps and adjust clearance with SST.

NOTICE:

Do not overtighten the SST.

SST 09521-24010



- (f) Measure the clearance of the 2 outboard joint boot clamps with SST.

SST 09240-00020

Clearance: 0.8 mm (0.0031 in.) or less

8. **CHECK DRIVE SHAFT** (See page [SA-18](#))

INSTALLATION

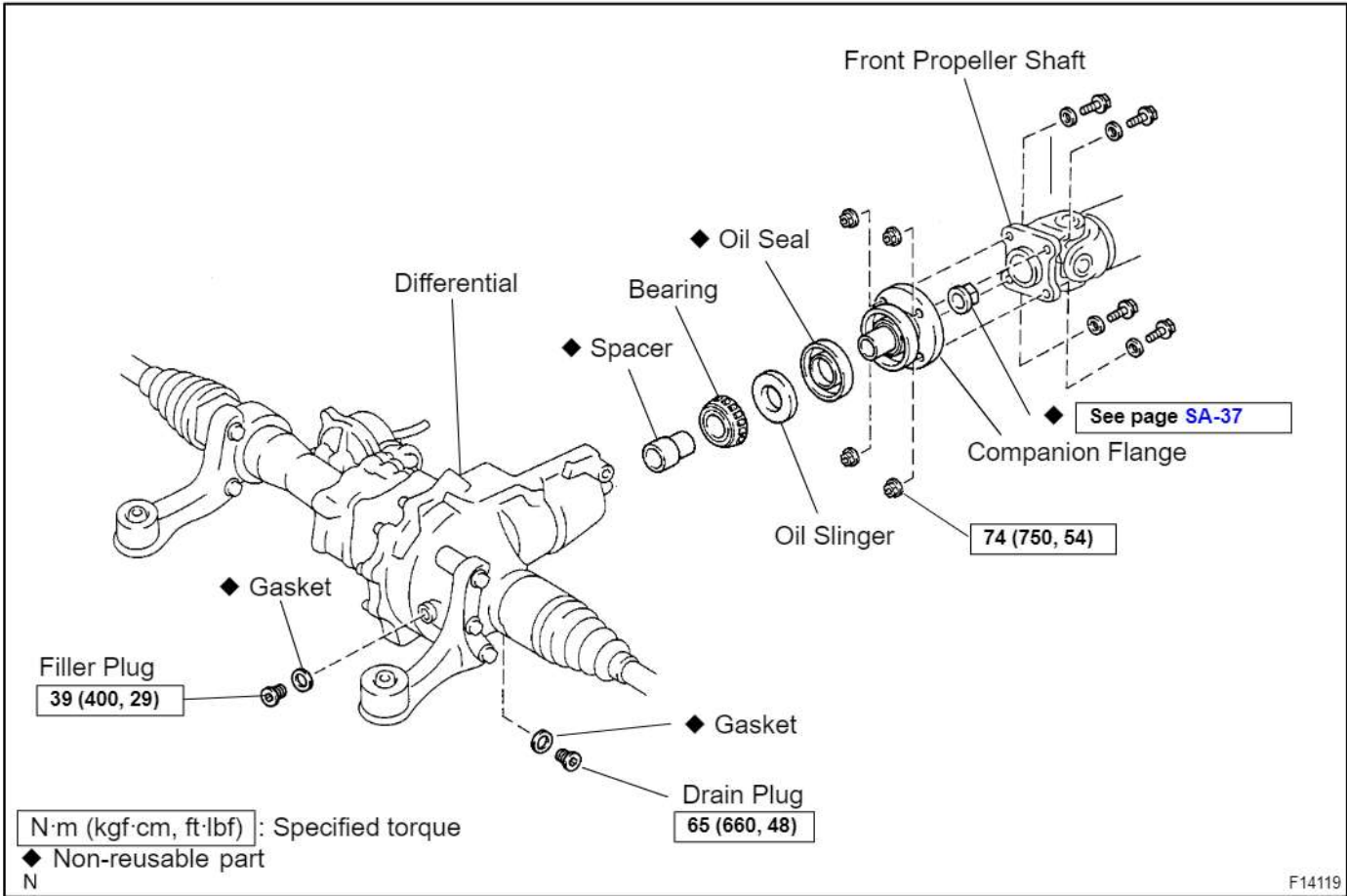
Installation is in the reverse order of removal (See page [SA-17](#)).

HINT:

After installation, fill the differential with differential oil (See page [SA-24](#)).

FRONT DIFFERENTIAL REAR OIL SEAL COMPONENTS

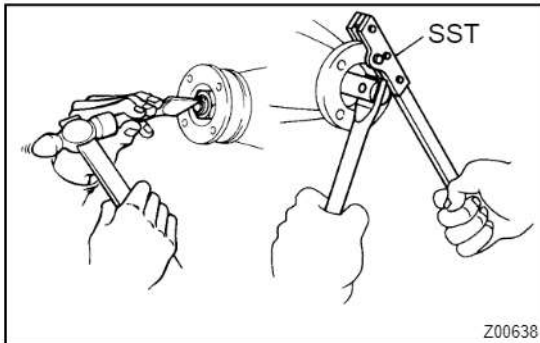
SA056-02



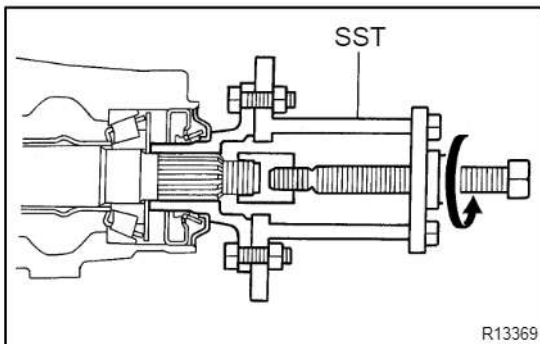
F14119

REPLACEMENT

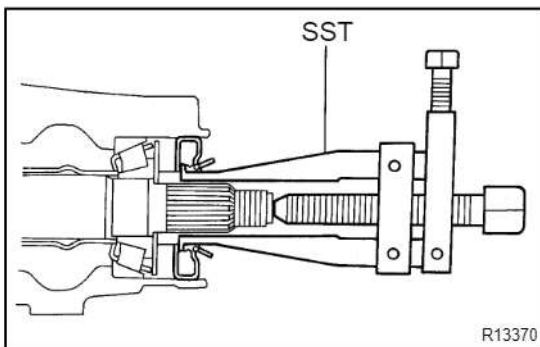
1. REMOVE UNDER COVER
2. REMOVE FRONT PROPELLER SHAFT
(See page [PR-8](#))



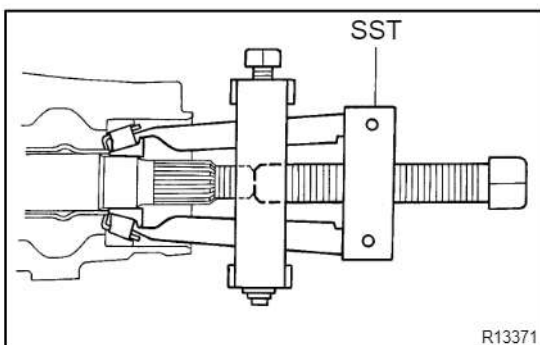
3. REMOVE COMPANION FLANGE
 - (a) Using a chisel and hammer, unstage the nut.
 - (b) Using SST to hold the flange, remove the nut.
SST 09330-00021



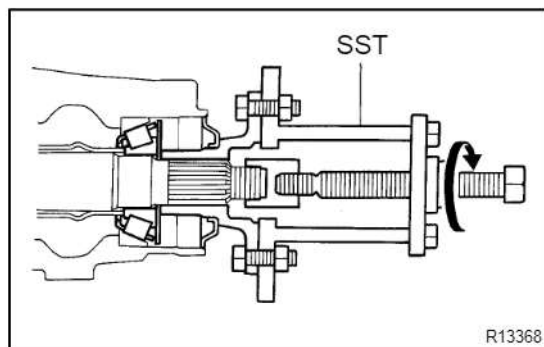
- (c) Using SST, remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)



4. REMOVE OIL SEAL AND OIL SLINGER
 - (a) Using SST, remove the oil seal.
SST 09308-10010
 - (b) Remove the oil slinger.



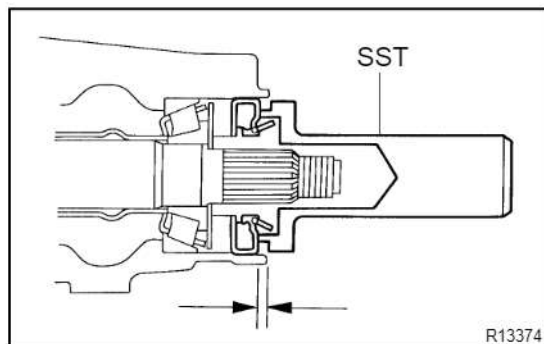
5. REMOVE REAR BEARING AND BEARING SPACER
 - (a) Using SST, remove the rear bearing from the drive pinion.
SST 09556-22010
 - (b) Remove the bearing spacer.



6. INSTALL BEARING SPACER, REAR BEARING AND OIL SLINGER

- Install a new bearing spacer and place the rear bearing and oil slinger.
- Using SST and the companion flange, install the rear bearing, then remove the companion flange.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)

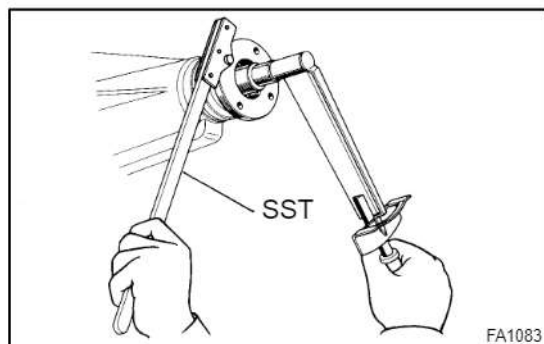


7. INSTALL NEW OIL SEAL

- Coat a new oil seal lip with MP grease.
- Using SST and a hammer, install the oil seal.

SST 09554-22010

Oil seal drive in depth: 4.5 mm (0.177 in.)



8. INSTALL COMPANION FLANGE

- Place the companion flange on the drive pinion.
- Coat the threads of a new nut with hypoid gear oil.
- Using SST to hold the flange, torque the nut.

SST 09330-00021

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)

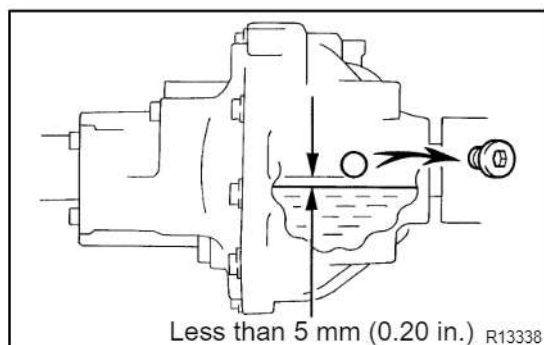
9. ADJUST DRIVE PINION PRELOAD

(See page [SA-37](#))

10. STAKE DRIVE PINION NUT

11. INSTALL FRONT PROPELLER SHAFT

(See page [PR-11](#))



12. FILL DIFFERENTIAL WITH DIFFERENTIAL OIL

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
w/o A.D.D.:

Oil type: Hypoid gear oil API GL-5

Recommended oil viscosity:

Above -18°C (0°F) SAE 90

Below -18°C (0°F) SAE 80W-90 or 80W

Capacity: 1.10 liters (1.16 US qts, 0.97 Imp.qts)

w/ A.D.D.:

Oil type: Hypoid gear oil API GL-5

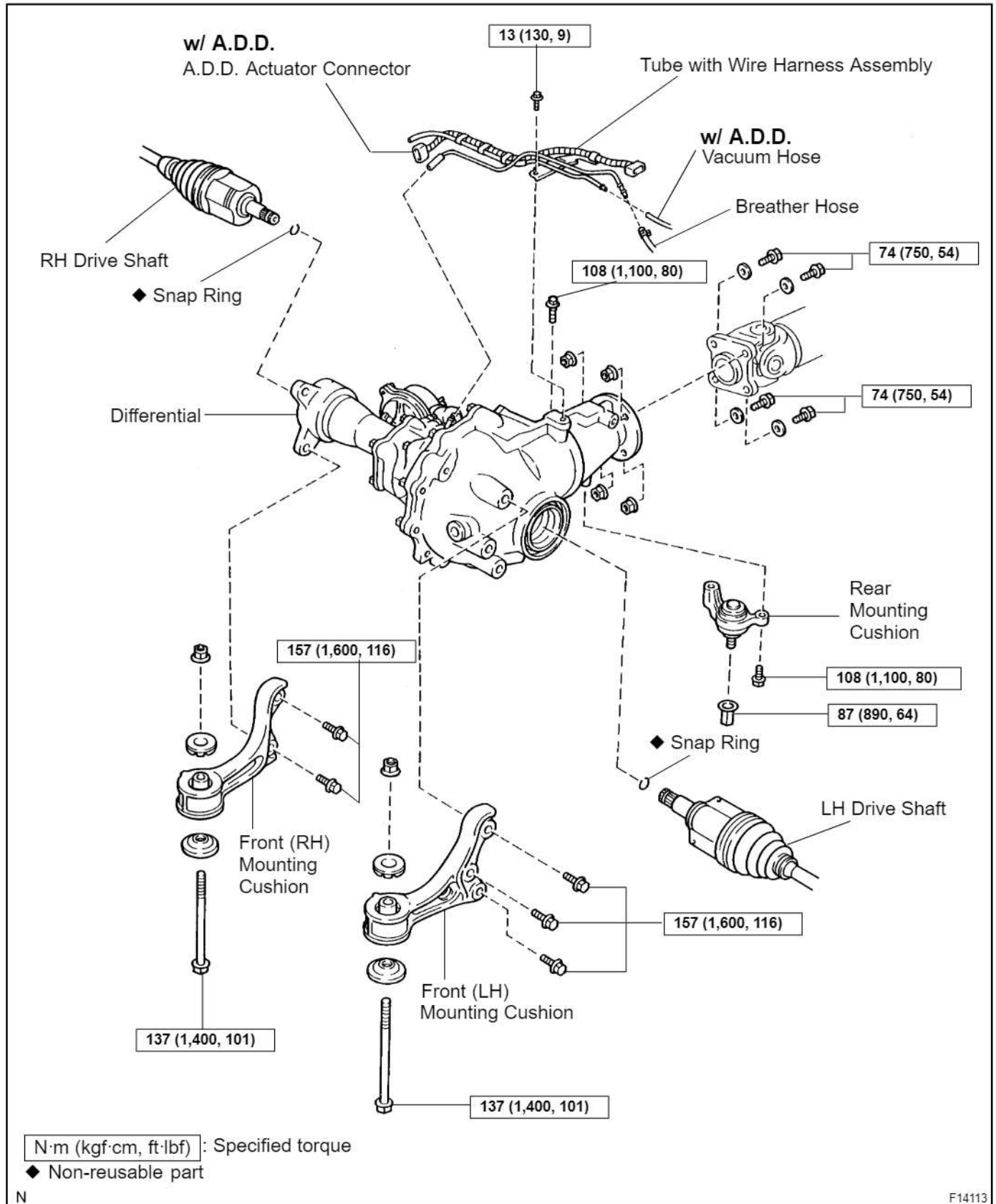
Recommended oil viscosity: SAE 75W-90

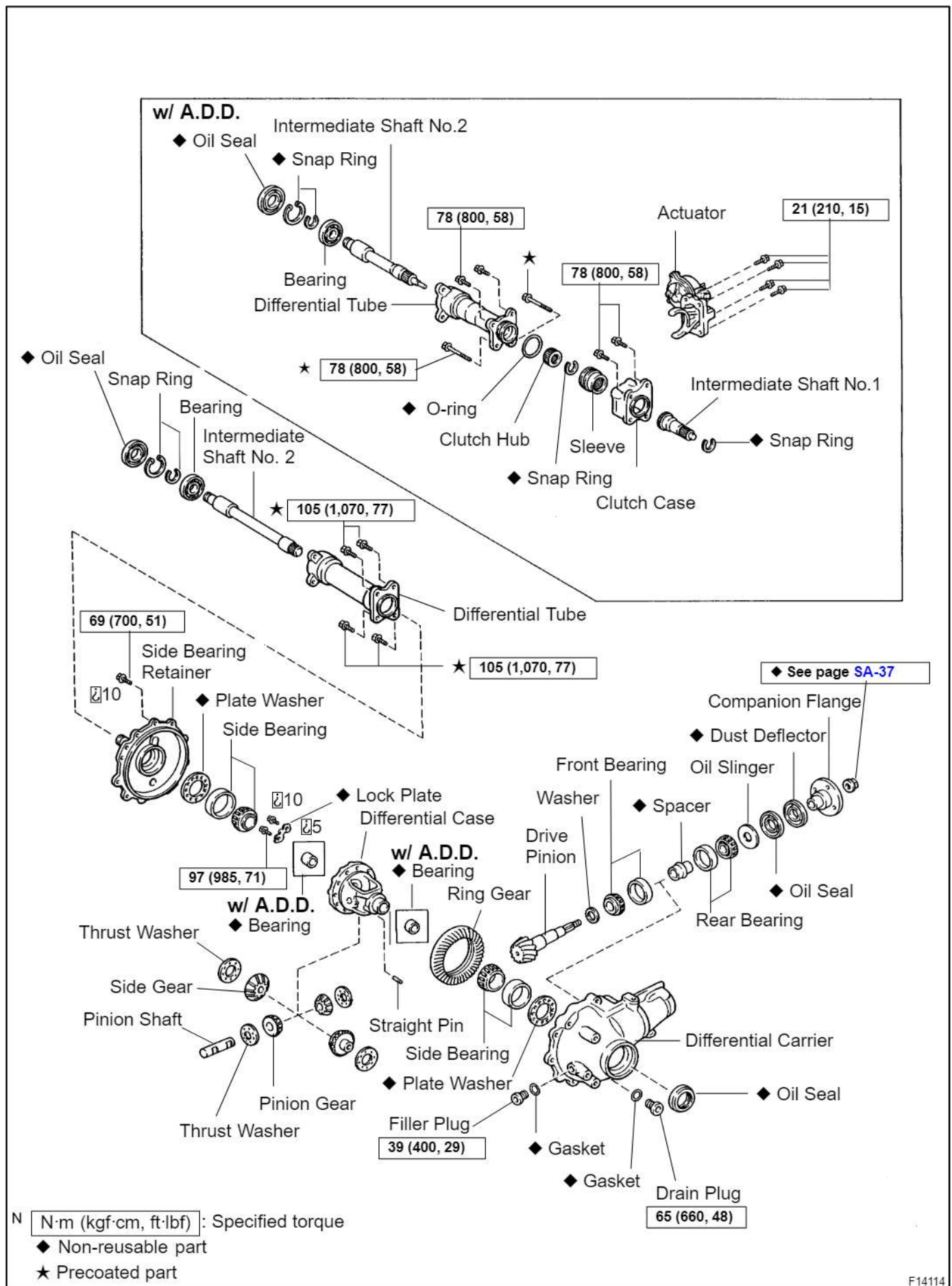
Capacity: 1.15 liters (1.22 US qts, 1.01 Imp.qts)

13. INSTALL UNDER COVER

FRONT DIFFERENTIAL CARRIER COMPONENTS

SA058-02





F14114

REMOVAL

1. **REMOVE UNDER COVER AND DRAIN DIFFERENTIAL OIL**

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

2. **REMOVE DRIVE SHAFTS (See page SA-17)**

3. **REMOVE FRONT PROPELLER SHAFT (See page PR-8)**

4. **REMOVE TUBE FROM DIFFERENTIAL**

- (a) w/o A.D.D.:

Disconnect the breather hose.

- (b) w/ A.D.D.:

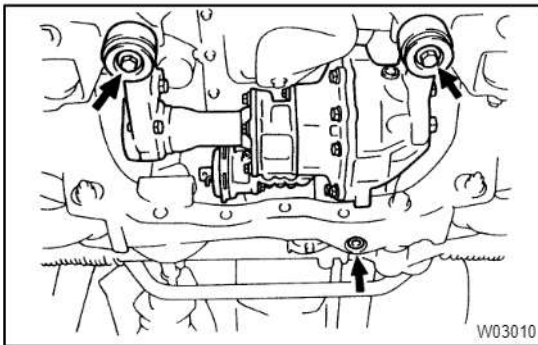
Disconnect the breather hose, A.D.D. switch connector.

- (c) Remove the 1 (w/o A.D.D.) or 2 (w/ A.D.D.) bolts and tube from the differential.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

5. **REMOVE FRONT DIFFERENTIAL ASSEMBLY**

- (a) Support the front differential with a jack.



- (b) Remove the rear mounting nut.

Torque: 87 N·m (890 kgf·cm, 64 ft·lbf)

- (c) Remove the 2 front mounting bolts and nuts.

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

- (d) Lower the jack and remove the front differential assembly.

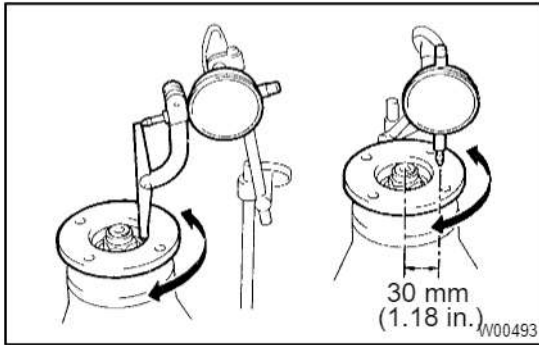
6. **REMOVE DIFFERENTIAL MOUNTING CUSHIONS**

- (a) Remove the 2 bolts and rear mounting cushion.

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)

- (b) Remove the 5 bolts and 2 front mounting cushions.

Torque: 157 N·m (1,600 kgf·cm, 116 ft·lbf)



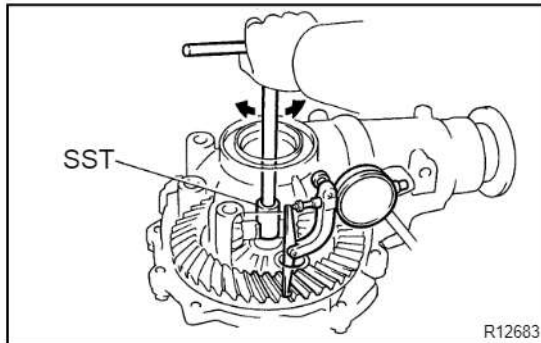
DISASSEMBLY

1. CHECK RUNOUT OF COMPANION FLANGE

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

Maximum runout: 0.10 mm (0.0039 in.)

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



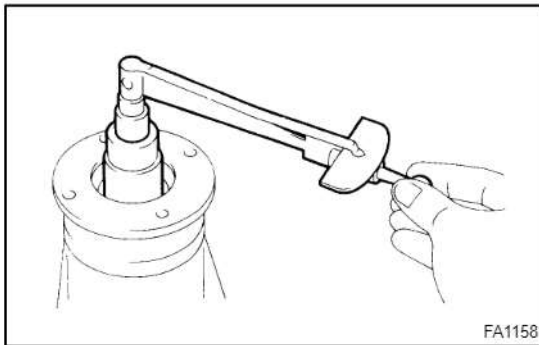
2. CHECK RING GEAR BACKLASH

Using SST and a dial indicator, measure the ring gear backlash.

SST 09564-3201 1

Backlash: 0.10 - 0.18 mm (0.0039 - 0.0071 in.)

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.



3. MEASURE DRIVE PINION PRELOAD

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

Preload (at starting):

0.6 - 1.0 N·m (6 - 10 kgf·cm, 5.2 - 8.7 in.·lbf)

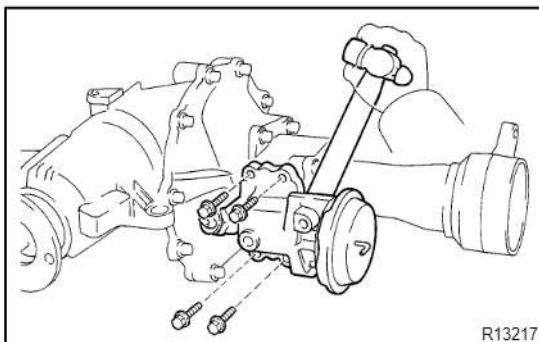
4. CHECK TOTAL PRELOAD

Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

Drive pinion preload plus 0.4 - 0.6 N·m (4 - 6 kgf·cm, 3.5 - 5.2 in.·lbf)

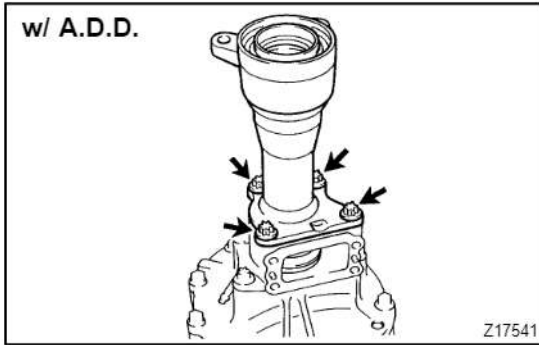
If necessary, disassemble and inspect the differential.



5. w/ A.D.D.:

REMOVE A.D.D. ACTUATOR

- Remove the 4 bolts.
- Using a hammer handle, remove the actuator.

**6. w/ A.D.D.:****REMOVE DIFFERENTIAL TUBE**

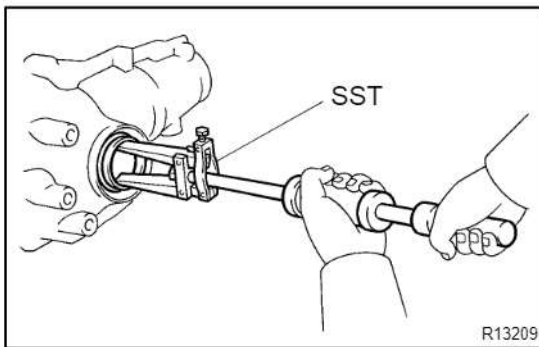
- (a) Using a torx socket E14, remove the 4 torx bolts.
- (b) Using a plastic hammer, remove the differential tube.
- (c) Remove the sleeve.
- (d) Remove the O-ring from the differential tube.

7. w/o A.D.D.:**REMOVE DIFFERENTIAL TUBE**

- (a) Remove the 4 bolts.
- (b) Using a plastic hammer, remove the differential tube.

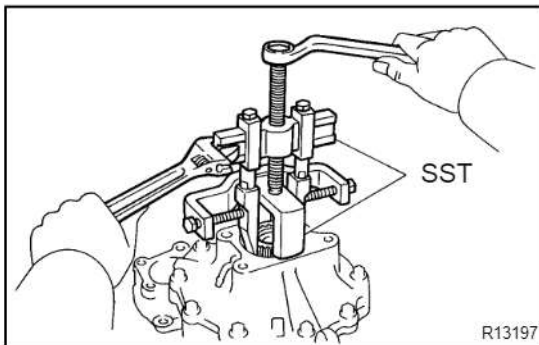
8. w/ A.D.D.:**REMOVE CLUTCH CASE**

- (a) Using a torx socket E14, remove the 2 torx bolts.
- (b) Using a plastic hammer, remove the clutch case.

**9. REMOVE SIDE OIL SEAL**

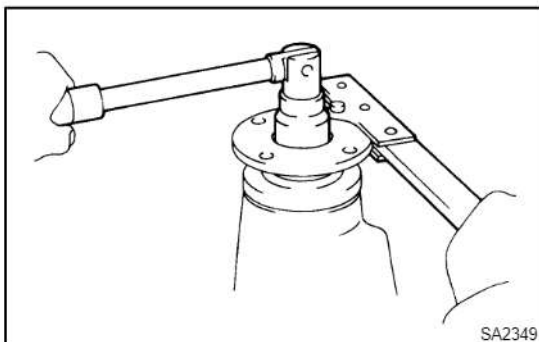
Using SST, remove the side oil seal.

SST 09308-00010

**10. w/ A.D.D.:****REMOVE INTERMEDIATE SHAFT NO. 1**

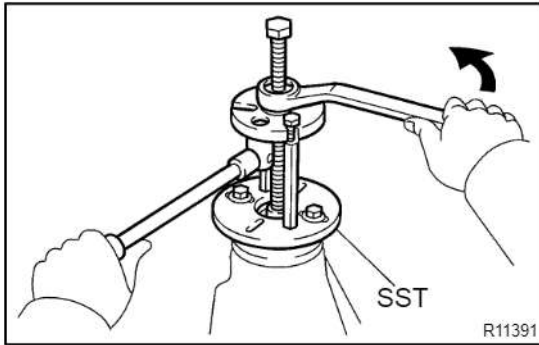
Using SST, remove the intermediate shaft No. 1.

SST 09350-20015 (09369-20040),
09950-40011 (09951-04010, 09952-04010,
09953-04020, 09954-04010, 09955-04011,
09957-04010, 09958-04011)

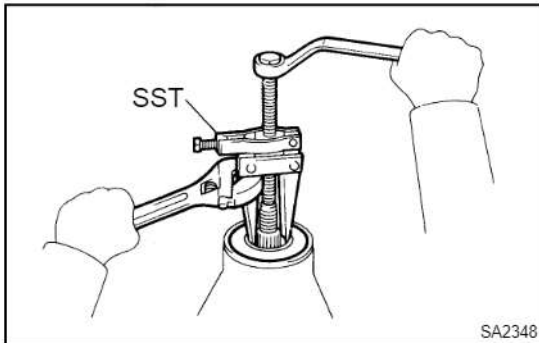
**11. REMOVE COMPANION FLANGE**

- (a) Using a chisel and hammer, unstake the nut.
- (b) Using SST to hold the flange, remove the nut.

SST 09330-00021

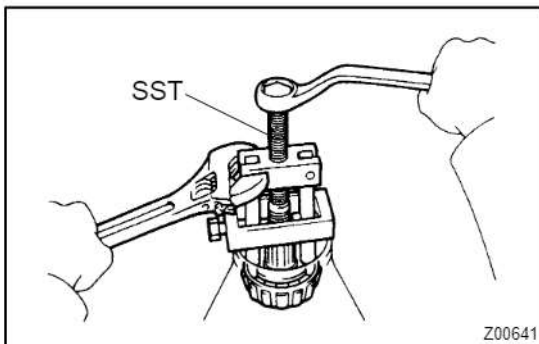


- (c) Using SST, remove the companion flange.
 SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)



12. REMOVE OIL SEAL AND OIL SLINGER

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



13. REMOVE REAR BEARING AND BEARING SPACER
 (a) Using SST, remove the rear bearing from the drive pinion.
 SST 09556-22010
 (b) Remove the bearing spacer.

14. REMOVE SIDE BEARING RETAINER

Remove the 10 bolts and tap out the retainer with a plastic hammer.

15. REMOVE DIFFERENTIAL CASE ASSEMBLY

16. REMOVE DRIVE PINION FROM DIFFERENTIAL CARRIER

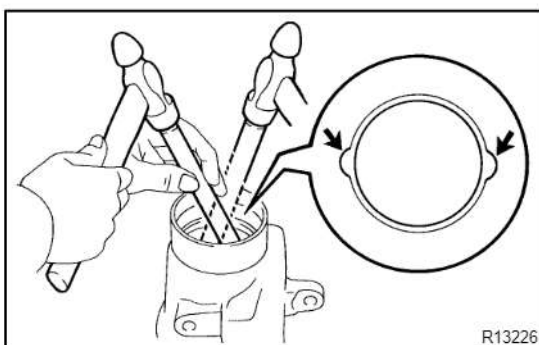
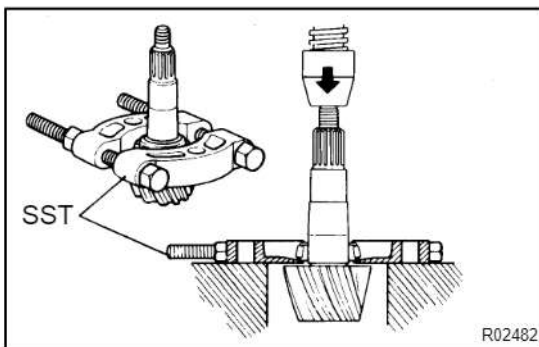
17. REMOVE DRIVE PINION FRONT BEARING

Using SST and a press, remove the bearing and washer from the drive pinion.

SST 09950-00020

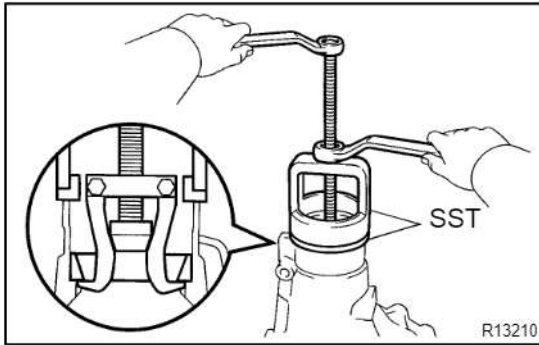
HINT:

If the drive pinion or ring gear are damaged, replace them as a set.

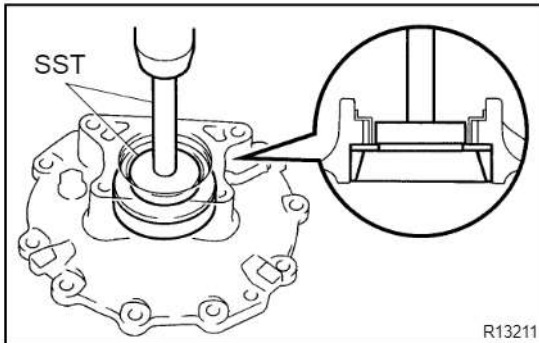


18. REMOVE DRIVE PINION BEARING OUTER RACES

- (a) Using a brass bar and hammer, remove the front bearing outer race.



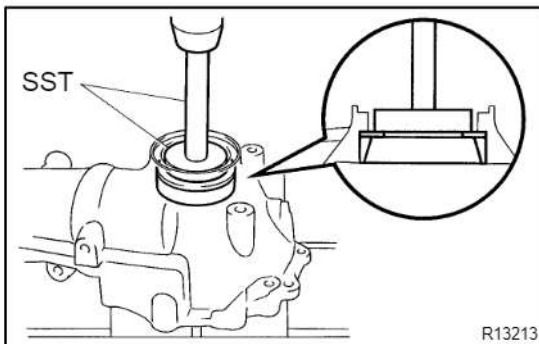
- (b) Using SST, remove the rear bearing outer race.
SST 09502-12010, 09612-65014 (09612-01020, 09612-01050)



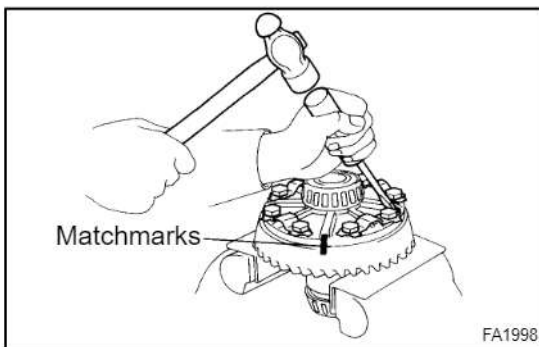
19. REMOVE SIDE BEARING OUTER RACES

HINT:

- Measure the plate washer and note the thickness.
 - Tag the bearing outer races to show the location for reassembly.
- (a) Using SST and a press, remove the outer race and plate washer from the bearing retainer.
SST 09950-60010 (09951-00540), 09550-70010 (09951-07150)

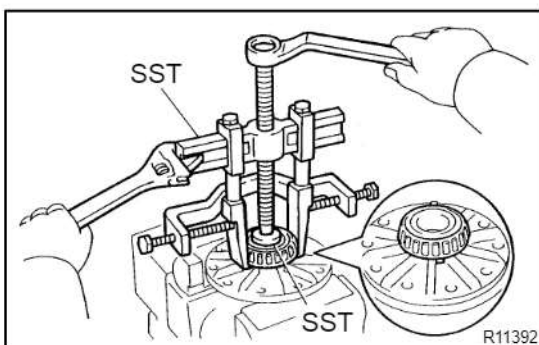


- (b) Using SST and a press, remove the outer race and plate washer from the differential carrier.
SST 09950-60010 (09951-00650), 09550-70010 (09951-07150)



20. REMOVE RING GEAR

- (a) Place matchmarks on the ring gear and differential case.
(b) Using a screwdriver, unstick the 5 lock plates.
(c) Remove the 10 bolts and 5 lock plates.
(d) Using a plastic hammer, tap on the ring gear to separate it from the differential case.



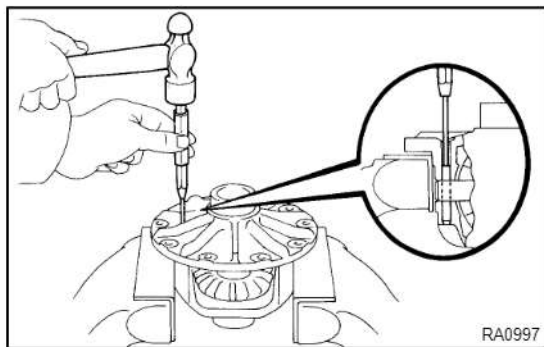
21. REMOVE SIDE BEARINGS

Using SST, remove the 2 side bearings from the differential case.

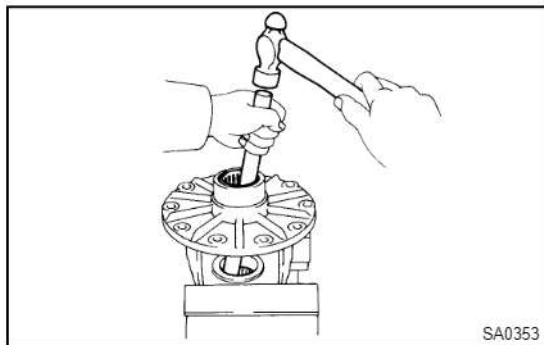
SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00480)

HINT:

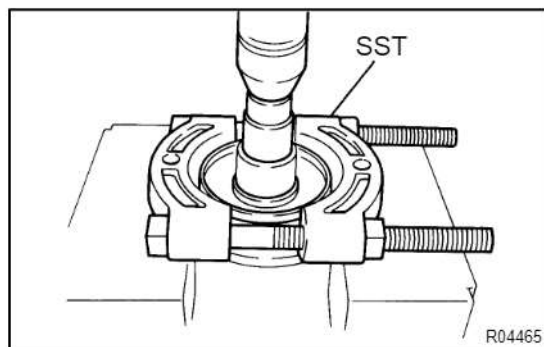
Fix the claws of SST to the notch in the differential case.

**22. DISASSEMBLE DIFFERENTIAL CASE ASSEMBLY**

- (a) Using a pin punch and hammer, remove the straight pin.
- (b) Remove the pinion shaft, 2 pinion gears, 2 pinion gears thrust washers, 2 side gears and 2 side gear thrust washers.

**23. w/ A.D.D.:
REMOVE BEARINGS**

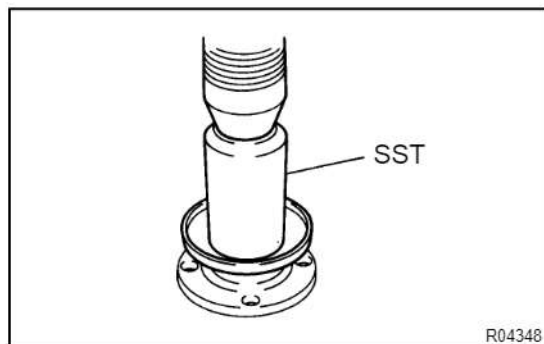
Using a brass bar and hammer, remove the 2 bearings.



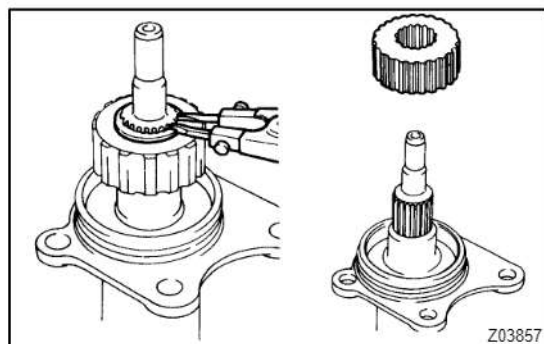
REPLACEMENT

1. REPLACE COMPANION FLANGE DUST DEFLECTOR, IF NECESSARY

- (a) Using SST and a press, remove the dust deflector.
SST 09950-00020

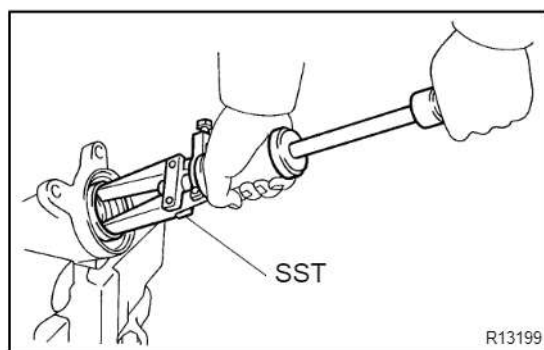


- (b) Using SST and a press, install a new dust deflector.
SST 09636-20010

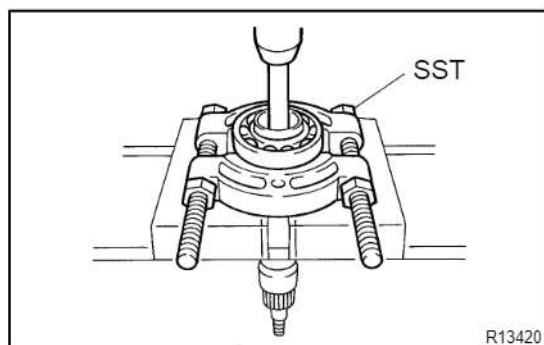


2. REPLACE INTERMEDIATE SHAFT NO. 2, IF NECESSARY

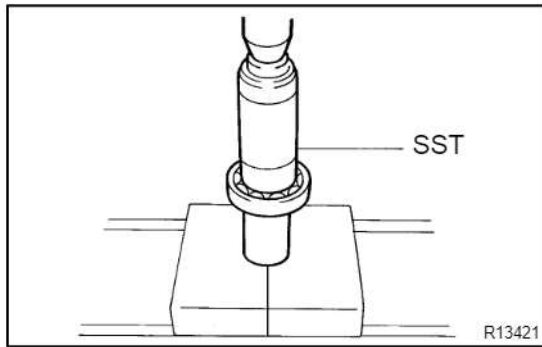
- (a) w/ A.D.D.:
Remove the clutch hub.
(1) Using a snap ring expander, remove the snap ring.
(2) Remove the clutch hub from the intermediate shaft No. 2.



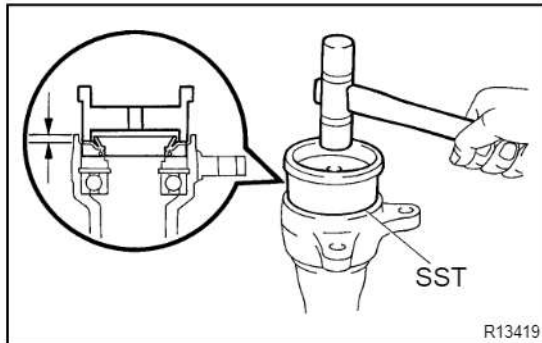
- (b) Remove the oil seal.
Using SST, remove the oil seal from the differential tube.
SST 09308-00010
(c) Remove the intermediate shaft No. 2
(1) Using needle nose pliers, remove the snap ring.
(2) Remove the shaft from the differential tube.



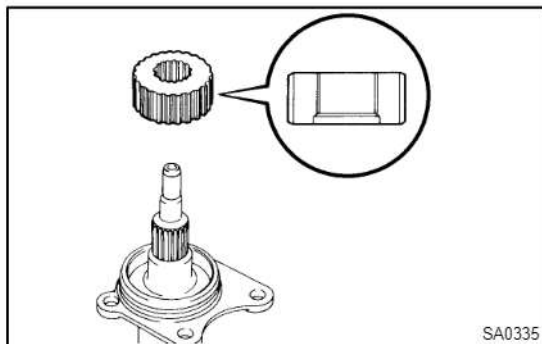
- (d) Remove the intermediate shaft No. 2 bearing.
(1) Using a snap ring expander, remove the snap ring.
(2) Using SST, a brass bar and press, remove the bearing.
SST 09950-00020



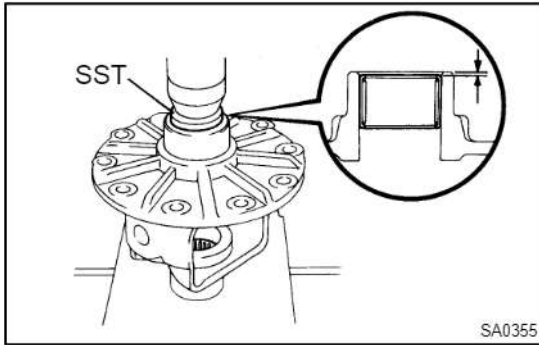
- (e) Install a new intermediate shaft No.2 bearing.
 - (1) Using SST and a press, install a new bearing.
SST 09309-37010
 - (2) Using a snap ring expander, install the snap ring.
- (f) Install the intermediate shaft No.2
 - (1) Install the shaft into the differential tube.
 - (2) Using needle nose pliers, install the snap ring.



- (g) Install a new oil seal.
 - (1) Using SST, install a new oil seal.
SST 09223-15020
 - Oil seal drive in depth: 5.5 mm (0.217 in.)**
 - (2) Coat the oil seal lip with MP grease.



- (h) w/ A.D.D.:
Install the clutch hub.
 - (1) Install the clutch hub to the intermediate shaft No.2.
 - (2) Using snap ring pliers, install the snap ring.



REASSEMBLY

1. w/ A.D.D.:

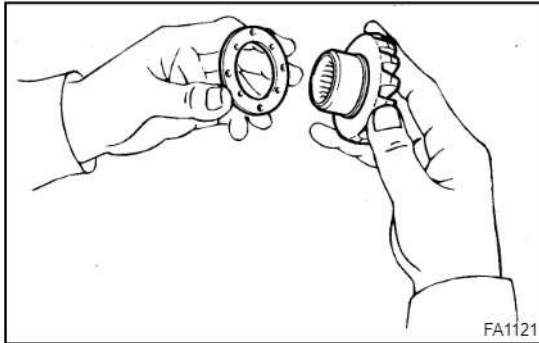
INSTALL NEW BEARINGS

Using SST and a press, install 2 new bearings.

SST 09950-60010 (09951-00380)

Bearing press in depth:

0.3 ± 0.3 mm (0.012 ± 0.012 in.)



2. ASSEMBLE DIFFERENTIAL CASE

(a) Install the 2 proper thrust washers on the 2 side gears.

HINT:

Using the table below, select 2 thrust washers which will ensure that the backlash is within the specifications.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)
0.96 - 1.04 (0.0378 - 0.0409)	1.16 - 1.24 (0.0457 - 0.0488)
1.06 - 1.14 (0.0417 - 0.0449)	1.26 - 1.34 (0.0496 - 0.0528)

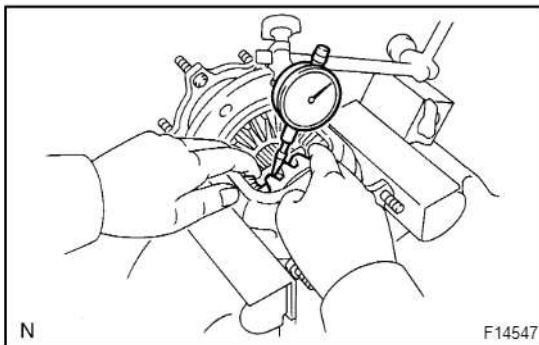
(b) Install the 2 side gears, 2 pinion gears, 2 pinion gear thrust washers and pinion shaft in the differential case.

HINT:

Align the holes of the differential case and pinion shaft.

(c) Measure the side gear backlash.

(1) Install the intermediate shaft to the differential case.

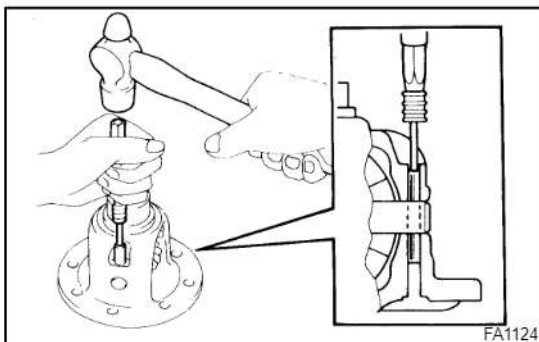


(2) Using a dial indicator, measure the side gear backlash with holding one pinion gear toward the differential case.

Backlash: 0 - 0.20 mm (0 - 0.0079 in.)

If the backlash is not within the specification, install 2 side gear thrust washers with different thicknesses.

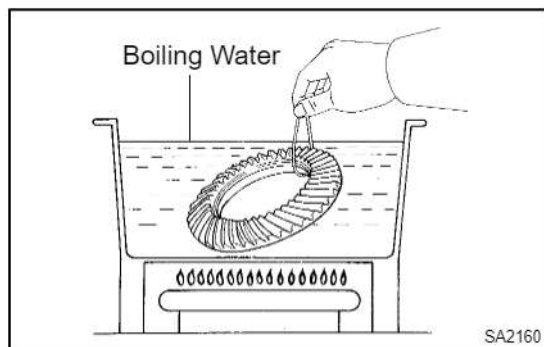
(3) Remove the intermediate shaft.



3. INSTALL STRAIGHT PIN AND STAKE DIFFERENTIAL CASE

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

(b) Stake the differential case.



4. INSTALL RING GEAR ON DIFFERENTIAL CASE

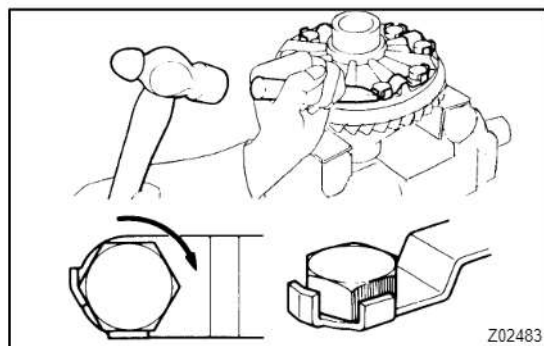
- Clean the contact surfaces of the differential case and ring gear.
- Heat the ring gear to about 100°C (212°F) in boiling water.
- Carefully remove the ring gear from the boiling water.
- After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

HINT:

Align the matchmarks on the ring gear and differential case.

- Temporarily install 5 new lock plates and 10 bolts so that the bolt holes in the ring gear and differential case are not misaligned.
- After the ring gear has cooled sufficiently, torque the ring gear set bolts.

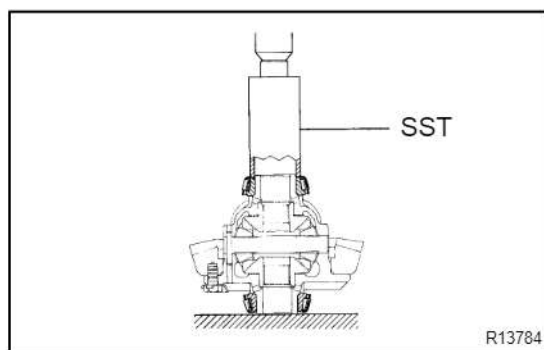
Torque: 97 N·m (985 kgf·cm, 71 ft·lbf)



- Using a drift punch and hammer, stake the 5 lock plates.

HINT:

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



5. INSTALL SIDE BEARINGS

Using SST and a press, install the 2 bearings into the differential case.

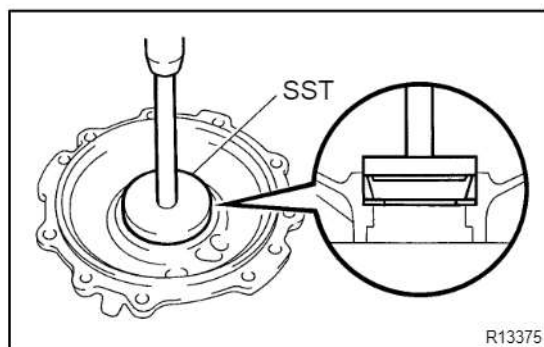
SST 09226-10010

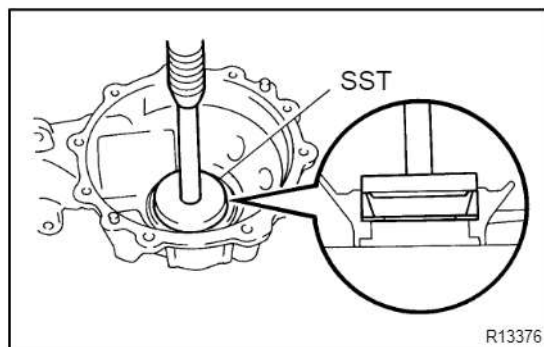
6. INSTALL SIDE BEARING OUTER RACES

HINT:

When replacing the 2 side bearings, fit the 2 thinnest washers to each bearing and when reusing the bearings, fit the washers with the same thickness as removed.

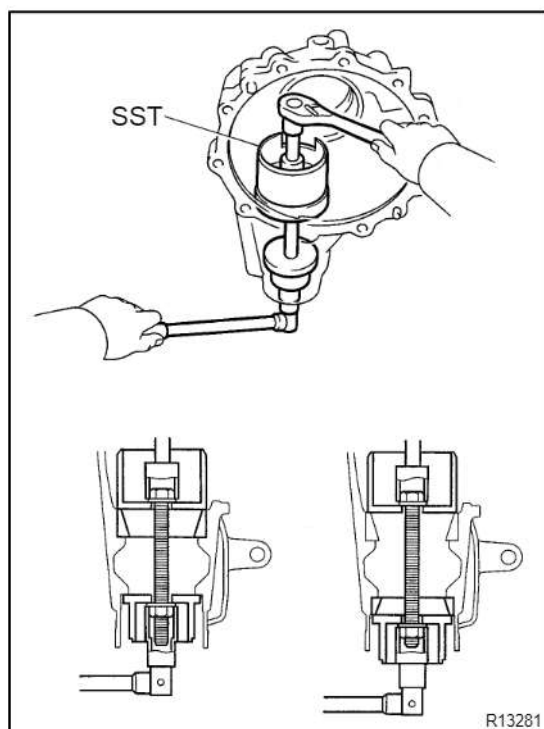
- Install a new plate washer to the side bearing retainer.
- Using SST and a press, install the bearing outer race to the side bearing retainer.
SST 09950-60020 (09951-00790),
09950-70010 (09951-07150)
- Install a new plate washer to the differential carrier.





- (d) Using SST and a press, install the bearing outer race to the differential carrier.

SST 09950-60020 (09951-00790),
09950-70010 (09951-07150)



7. INSTALL DRIVE PINION FRONT AND REAR BEARING OUTER RACES

Using SST, install the 2 outer races.

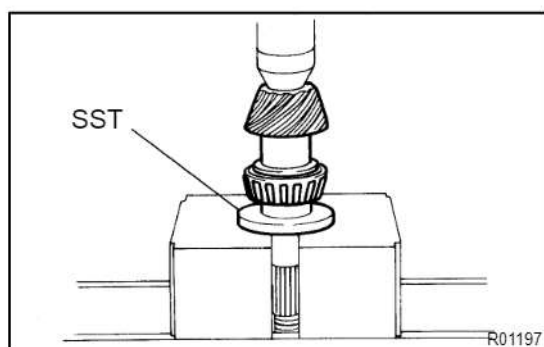
SST 09570-2201 1

8. INSTALL DRIVE PINION FRONT BEARING

- (a) Install the washer on the drive pinion.

HINT:

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



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

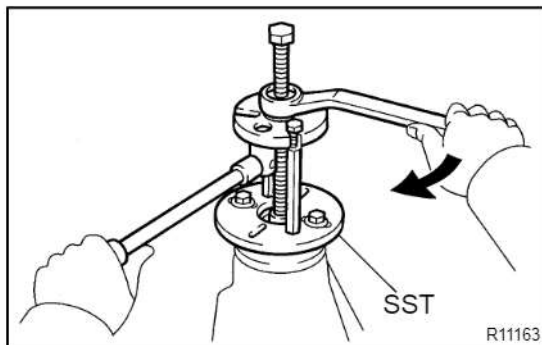
SST 09506-30012

9. TEMPORARILY ADJUST DRIVE PINION PRELOAD

- (a) Install the drive pinion and oil slinger.

HINT:

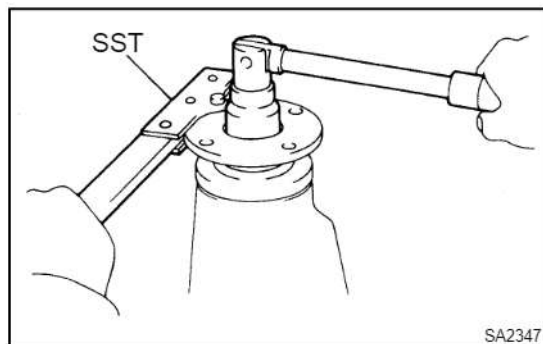
Assemble the spacer and oil seal after adjusting the ring gear tooth contact pattern.



- (b) Using SST, install the rear bearing, oil slinger and companion flange.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)

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



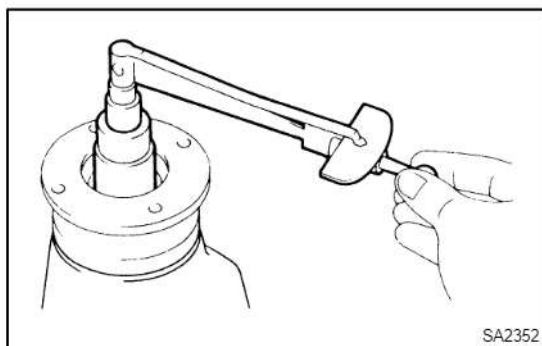
- (d) Adjust the drive pinion preload by tightening the companion flange nut.

Using SST to hold the flange, tighten the nut.

SST 09330-00021

NOTICE:

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



- (e) Using a torque wrench, measure the preload.

Preroid (at starting)

New bearing:

1.2 - 1.9 N·m (12 - 19 kgf·cm, 10.4 - 16.5 in.·lbf)

Reused bearing:

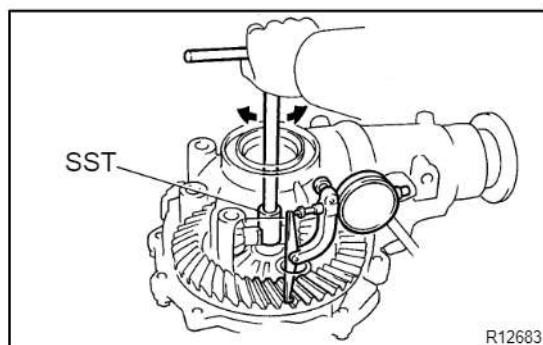
0.6 - 1.0 N·m (6 - 10 kgf·cm, 5.2 - 8.7 in.·lbf)

10. INSTALL DIFFERENTIAL CASE IN DIFFERENTIAL CARRIER

11. ADJUST RING GEAR BACKLASH

- (a) Install the side bearing retainer with the 10 bolts.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)



- (b) Using SST and a dial indicator, measure the ring gear backlash.

SST 09564-3201 1

Backlash: 0.10 - 0.18 mm (0.0039 - 0.0070 in.)

- (c) If it is not within the specification, adjust it by either in creasing or decreasing the washers on both sides by an equal amount.

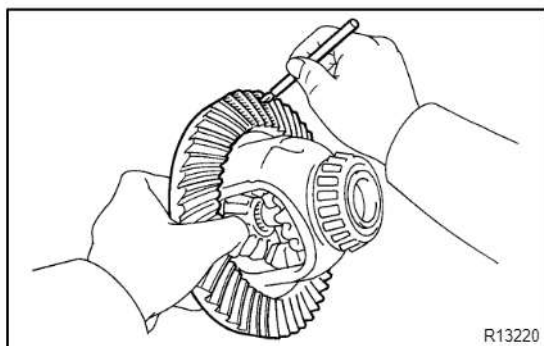
HINT:

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

Make sure that there is ring gear backlash.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
2.00 - 2.02 (0.0787 - 0.0795)	2.27 - 2.29 (0.0894 - 0.0902)	2.54 - 2.56 (0.1000 - 0.1008)
2.03 - 2.05 (0.0799 - 0.0807)	2.30 - 2.32 (0.0906 - 0.0913)	2.57 - 2.59 (0.1012 - 0.1020)
2.06 - 2.08 (0.0811 - 0.0819)	2.33 - 2.35 (0.0917 - 0.0925)	2.60 - 2.62 (0.1024 - 0.1031)
2.09 - 2.11 (0.0823 - 0.0831)	2.36 - 2.38 (0.0929 - 0.0937)	2.63 - 2.65 (0.1035 - 0.1043)
2.12 - 2.14 (0.0835 - 0.0843)	2.39 - 2.41 (0.0941 - 0.0949)	2.66 - 2.68 (0.1047 - 0.1055)
2.15 - 2.17 (0.0846 - 0.0854)	2.42 - 2.44 (0.0953 - 0.0961)	2.69 - 2.71 (0.1059 - 0.1067)
2.18 - 2.20 (0.0858 - 0.0866)	2.45 - 2.47 (0.0965 - 0.0972)	2.72 - 2.74 (0.1071 - 0.1079)
2.21 - 2.23 (0.0870 - 0.0878)	2.48 - 2.50 (0.0976 - 0.0984)	2.75 - 2.77 (0.1083 - 0.1091)
2.24 - 2.26 (0.0882 - 0.0890)	2.51 - 2.53 (0.0988 - 0.0996)	2.78 - 2.80 (0.1094 - 0.1102)

**12. MEASURE TOTAL PRELOAD**

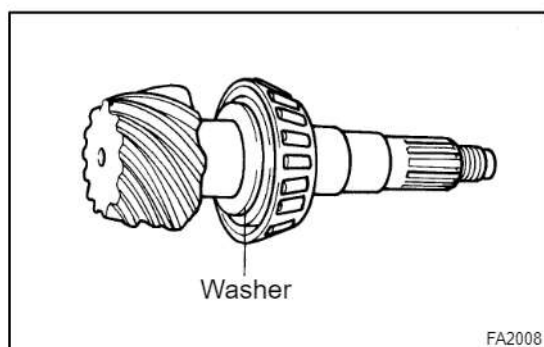
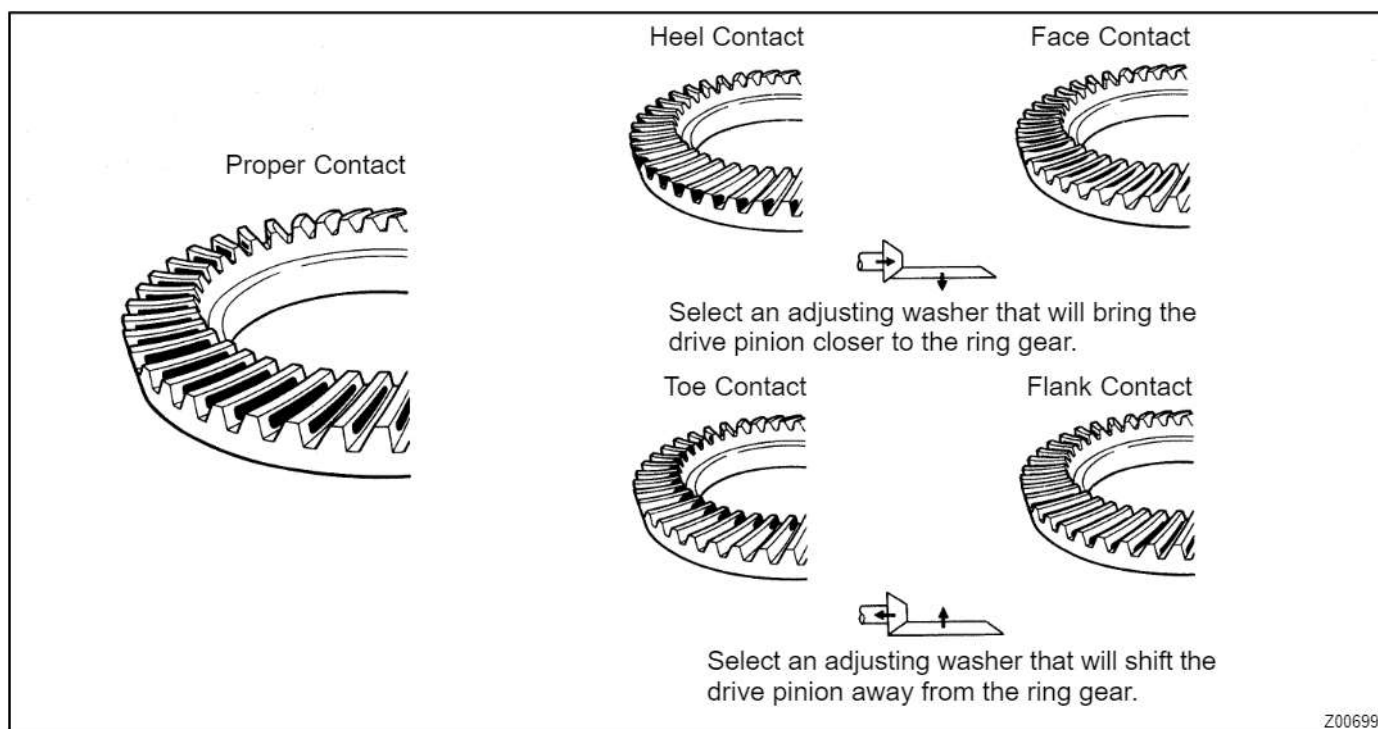
Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

Drive pinion preload plus 0.4 - 0.6 N·m (4 - 6 kgf·cm, 3.5 - 5.2 in.·lbf)

13. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

- Remove the side bearing retainer and differential case.
- Coat 3 or 4 teeth at the 3 different positions on the ring gear with red lead.
- Install the differential case and side bearing retainer.
Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)
- Hold the companion flange firmly and rotate the ring gear in both directions.
- Remove the side bearing retainer and differential case.
- Inspect the tooth contact pattern.



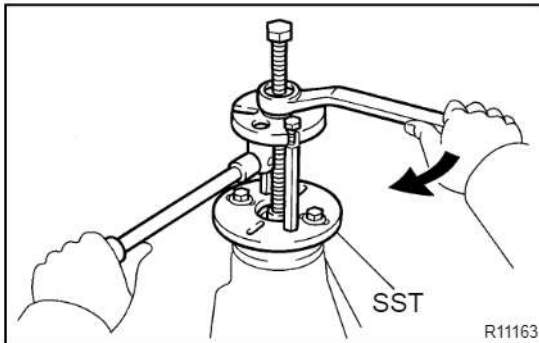
If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
1.69 - 1.71 (0.0665 - 0.0673)	1.93 - 1.95 (0.0760 - 0.0768)	2.17 - 2.19 (0.0854 - 0.0862)
1.72 - 1.74 (0.0677 - 0.0685)	1.96 - 1.98 (0.0772 - 0.0780)	2.20 - 2.22 (0.0866 - 0.0874)
1.75 - 1.77 (0.0689 - 0.0697)	1.99 - 2.01 (0.0783 - 0.0791)	2.23 - 2.25 (0.0878 - 0.0886)
1.78 - 1.80 (0.0701 - 0.0709)	2.02 - 2.04 (0.0795 - 0.0803)	2.26 - 2.28 (0.0890 - 0.0898)
1.81 - 1.83 (0.0713 - 0.0720)	2.05 - 2.07 (0.0807 - 0.0815)	2.29 - 2.31 (0.0902 - 0.0909)
1.84 - 1.86 (0.0724 - 0.0732)	2.08 - 2.10 (0.0819 - 0.0827)	2.32 - 2.34 (0.0913 - 0.0921)
1.87 - 1.89 (0.0736 - 0.0744)	2.11 - 2.13 (0.0831 - 0.0839)	-
1.90 - 1.92 (0.0748 - 0.0756)	2.14 - 2.16 (0.0843 - 0.0850)	-

14. **REMOVE COMPANION FLANGE AND OIL SLINGER**
(See page SA-30)
15. **REMOVE REAR BEARING** (See page SA-30)
16. **INSTALL NEW BEARING SPACER, REAR BEARING AND OIL SLINGER**

- (a) Install a new bearing spacer and place the rear bearing and oil slinger.

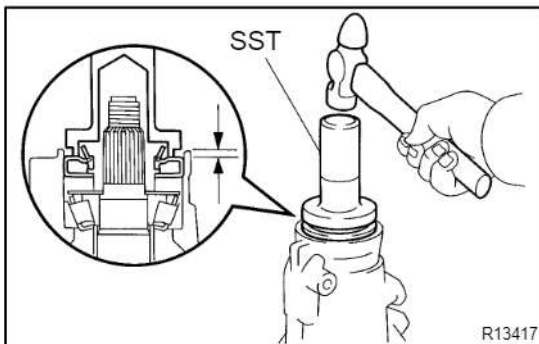


- (b) Using SST and the companion flange, install the rear bearing, then remove the companion flange.

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)

17. **INSTALL OIL SEAL**

- (a) Coat a new oil seal lip with MP grease.



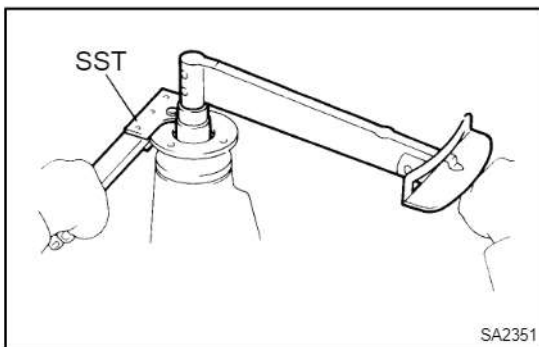
- (b) Using SST and a hammer, install the oil seal.

SST 09554-22010

Oil seal drive in depth: 4.5 mm (0.177 in.)

18. **INSTALL COMPANION FLANGE**

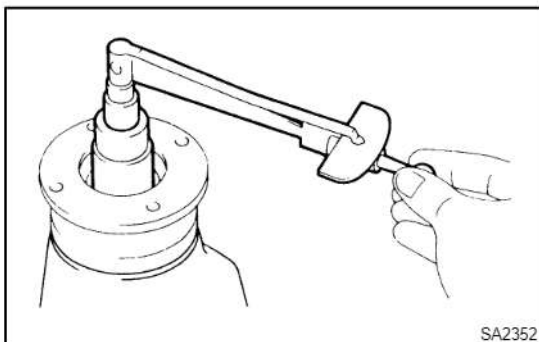
- (a) Place the companion flange on the drive pinion.
- (b) Coat the threads of a new nut with hypoid gear oil.



- (c) Using SST to hold the flange, torque the nut.

SST 09330-00021

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)



19. **ADJUST DRIVE PINION PRELOAD**

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

Preroad (at starting):

New bearing:

1.2 - 1.9 N·m (12 - 19 kgf·cm, 10.4 - 16.5 in·lbf)

Reused bearing:

0.6 - 1.0 N·m (6 - 10 kgf·cm, 5.2 - 8.7 in·lbf)

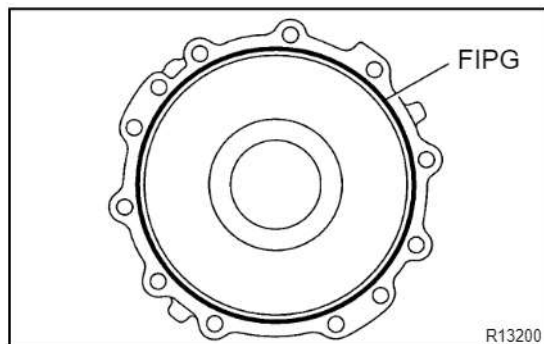
If the preload is greater than the specification, replace the bearing spacer.

If the preload is less than the specification, retighten the nut 13 N·m (130 kgf·cm, 9 ft·lbf) a little at a time until the specified preload is reached.

Torque: 223 N·m (2,275 kgf·cm, 165 ft·lbf) or less

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

20. INSTALL DIFFERENTIAL CASE



21. INSTALL SIDE BEARING RETAINER

- Remove any old FIPG material and be careful not to drop oil on the contact surfaces of the differential carrier and side bearing retainer.
- Clean contacting surfaces of any residual FIPG material using gasoline or alcohol.
- Apply FIPG to the side bearing retainer, as shown.

FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT:

Install the side bearing retainer within 10 minutes after applying FIPG.

- Install the side bearing retainer with the 10 bolts.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

22. CHECK TOTAL PRELOAD

23. RECHECK RING GEAR BACKLASH

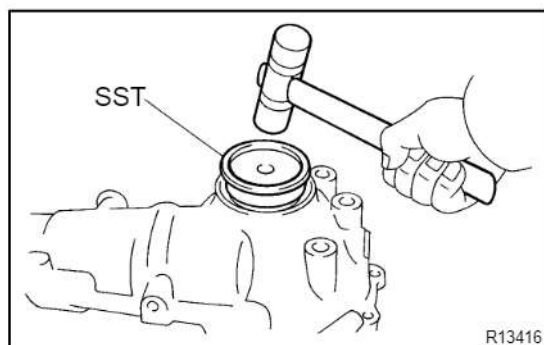
(See page [SA-30](#))

24. RECHECK TEETH CONTACT BETWEEN RING GEAR AND DRIVE PINION (See step 13)

25. CHECK RUNOUT OF COMPANION FLANGE

(See page [SA-30](#))

26. STAKE DRIVE PINION NUT

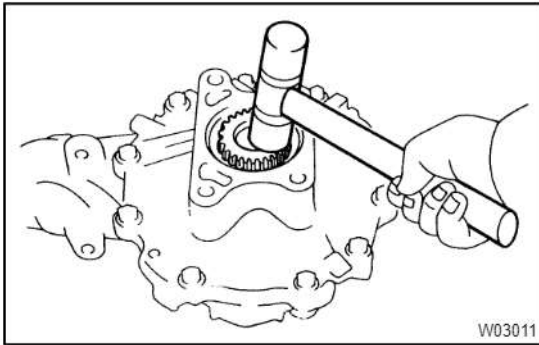


27. INSTALL SIDE OIL SEAL

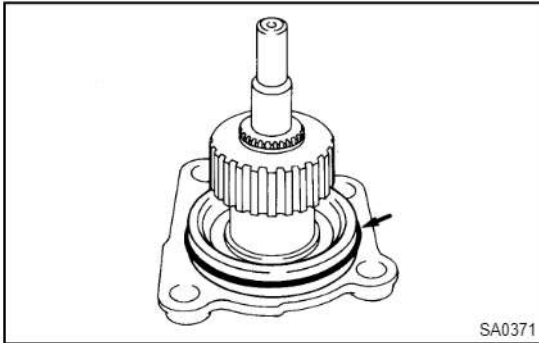
- Using SST and a plastic hammer, install a new oil seal until its surface is flush with the differential carrier end.

SST 09608-32010

- Coat the oil seal lip with MP grease.

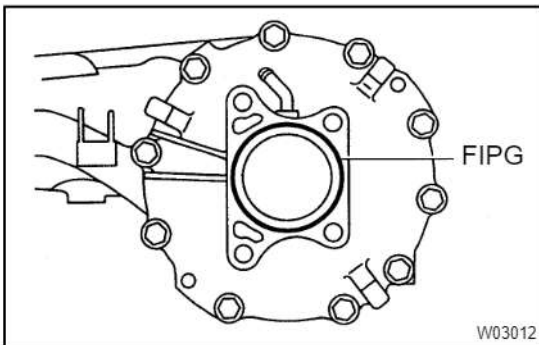
**28. w/ A.D.D.:****INSTALL INTERMEDIATE SHAFT NO. 1**

- (a) Install a new snap ring to the intermediate shaft No. 1.
- (b) Using a plastic hammer, install the intermediate shaft No. 1 to the differential case.
- (c) Check that there is 2 - 3 mm (0.08 - 0.12 in.) of play in axial direction.
- (d) Check that the intermediate shaft No. 1 will not come out by trying to pull it completely out by hand.

**29. w/ A.D.D.:****INSTALL CLUTCH CASE TO DIFFERENTIAL TUBE**

- (a) Coat the O-ring with MP grease.
- (b) Install a new O-ring to the tube.
- (c) Install the clutch case to the tube.
- (d) Using a torx socket E14, install the 2 torx bolts.

Torque: 78 N·m (800 kgf·cm, 58 ft·lbf)

30. w/ A.D.D.:**INSTALL CLUTCH SLEEVE****31. INSTALL DIFFERENTIAL TUBE TO DIFFERENTIAL**

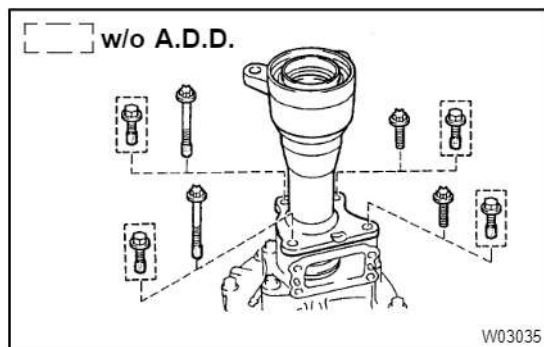
- (a) Remove any old FIPG material and be careful not to drop oil on the contact surfaces of the differential and clutch case.
- (b) Clean contacting surfaces of any residual FIPG material using gasoline or alcohol.
- (c) Apply FIPG to the differential, as shown.

FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

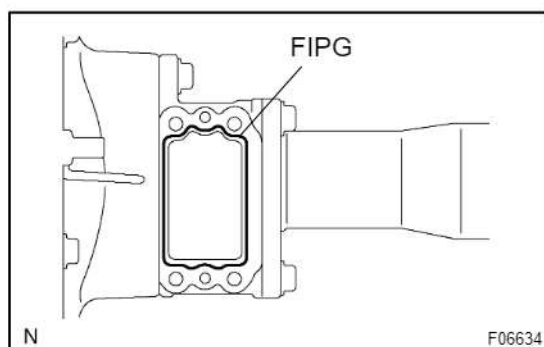
HINT:

Install the differential tube within 10 minutes after applying FIPG.

- (d) Install the differential tube to the differential.



- (e) Clean the threads of the 4 bolts (w/o A.D.D.) or 2 torx bolts (w/ A.D.D.) and retainer bolt holes with toluene or trichloroethylene.
- (f) Apply adhesive to 2 or 3 threads of the bolts end.
Adhesive: Part No. 08833-00070, THREE BOND 1324 or equivalent
- (g) w/o A.D.D.:
Install the 4 bolts.
Torque: 105 N·m (1,070 kgf·cm, 77 ft·lbf)
- (h) w/ A.D.D.:
Using a torx socket E14, install the 4 torx bolts.
Torque: 78 N·m (800 kgf·cm, 58 ft·lbf)



32. w/ A.D.D.:

INSTALL A.D.D. ACTUATOR

- (a) Remove any old FIPG material and be careful not to drop oil on the contact surfaces of the actuator and clutch case.
- (b) Clean contacting surfaces of any residual FIPG material using gasoline or alcohol.
- (c) Apply FIPG to the clutch case, as shown.
FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT:

Install the actuator within 10 minutes after applying FIPG.

- (d) Install the 4 bolts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)

INSTALLATION

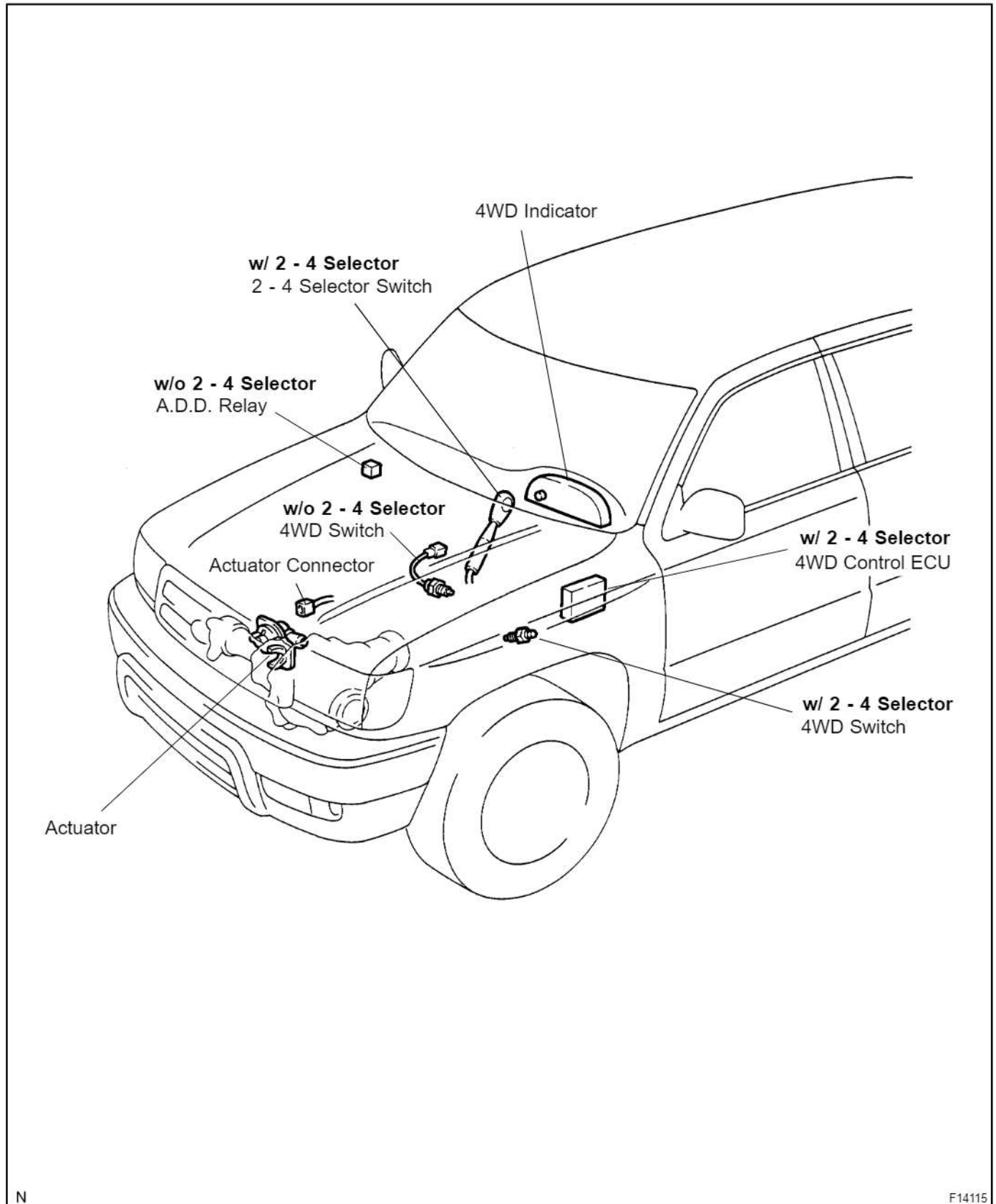
Installation is in the reverse order of removal (See page [SA-29](#)).

HINT:

After installation, fill the differential with gear oil (See page [SA-24](#)).

A.D.D. CONTROL SYSTEM LOCATION

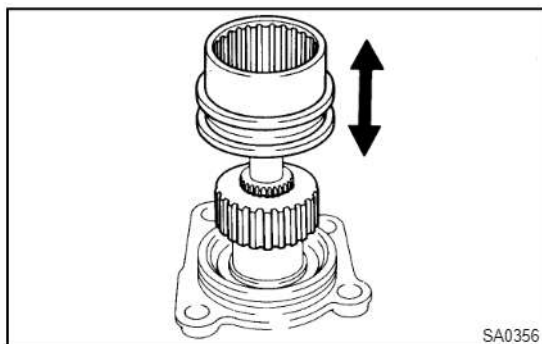
SA05E-02



INSPECTION

HINT:

First judge that the malfunction is found in A.D.D. control system or in 2 - 4 selector system (See page [TR-49](#)).

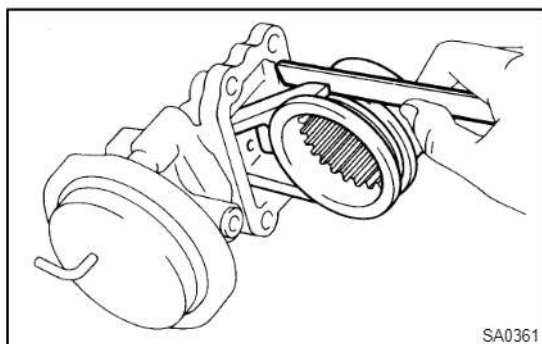


1. INSPECT CLUTCH HUB AND CLUTCH SLEEVE

- (a) Check the wear and damage of the clutch hub and clutch sleeve.

If necessary, replace them.

- (b) Check that clutch sleeve slides smoothly on the clutch hub.



2. MEASURE CLEARANCE OF SLEEVE FORK AND CLUTCH SLEEVE

Using a feeler gauge, measure the clearance between the sleeve fork and clutch sleeve.

Maximum clearance: 0.35 mm (0.0138 in.)

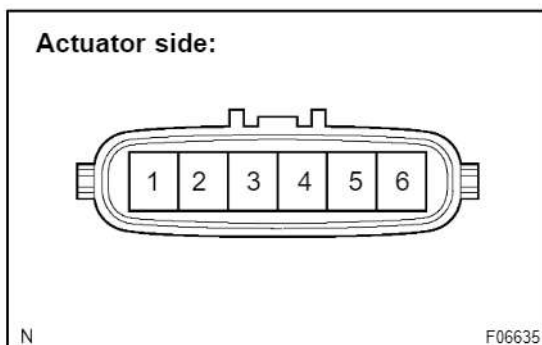
If the clearance exceeds the maximum, replace the fork or sleeve

3. INSPECT A.D.D. ACTUATOR

- (a) Disconnect the actuator connector.
 (b) Measure the resistance between the terminals 2 and 6.
Standard resistance: 0.3 - 100 Ω
 (c) Measure the resistance between the terminals 2 or 6 and body ground.

Standard resistance: More than 0.5 M Ω

If the resistance value is not as specified, replace the actuator assembly.



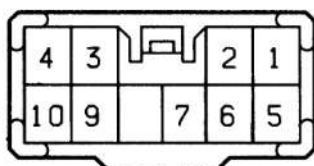
4. INSPECT A.D.D. ACTUATOR OPERATION

Apply battery positive voltage between the terminal 2 or 6, and check the actuator operation by sound, A.D.D. status and continuity between the terminal 3 and 4.

Battery voltage applied terminal	3-4 terminals continuity	A.D.D. status
2 (+) - 6 (-)	Continuity	Connected
2 (-) - 6 (+)	No continuity	Disconnected

If the operation is not as specified, replace the actuator assembly.

Relay side:



Z15367

5. INSPECT A.D.D. RELAY

- (a) Check the continuity between each terminal, as shown in the chart.

Tester connected terminal number	Specified condition
1 - 2	Continuity
2 - 4	Continuity
6 - 7	*

*: There is a diode between the terminals 6 and 7. If no continuity exists, check that continuity exists when changing the position of $\oplus$ probe for the position of negative $\ominus$ probe of tester.

- (b) Apply battery positive voltage between each terminal and check the continuity between each terminal, as shown in the chart.

Battery voltage applied terminal	Tester connected terminal number	Specified condition
6 (+) - 5 (-)	1 - 3	Continuity
	1 - 2	No continuity
7 (+) - 2 (-)	9 - 10	No continuity
9 (+) - 10 (-)	3 - 4	Continuity
	2 - 4	No continuity

If continuity is not as specified, replace the relay.

6. INSPECT TRANSFER 4WD POSITION SWITCH (See page [TR-11](#) or [TR-18](#))

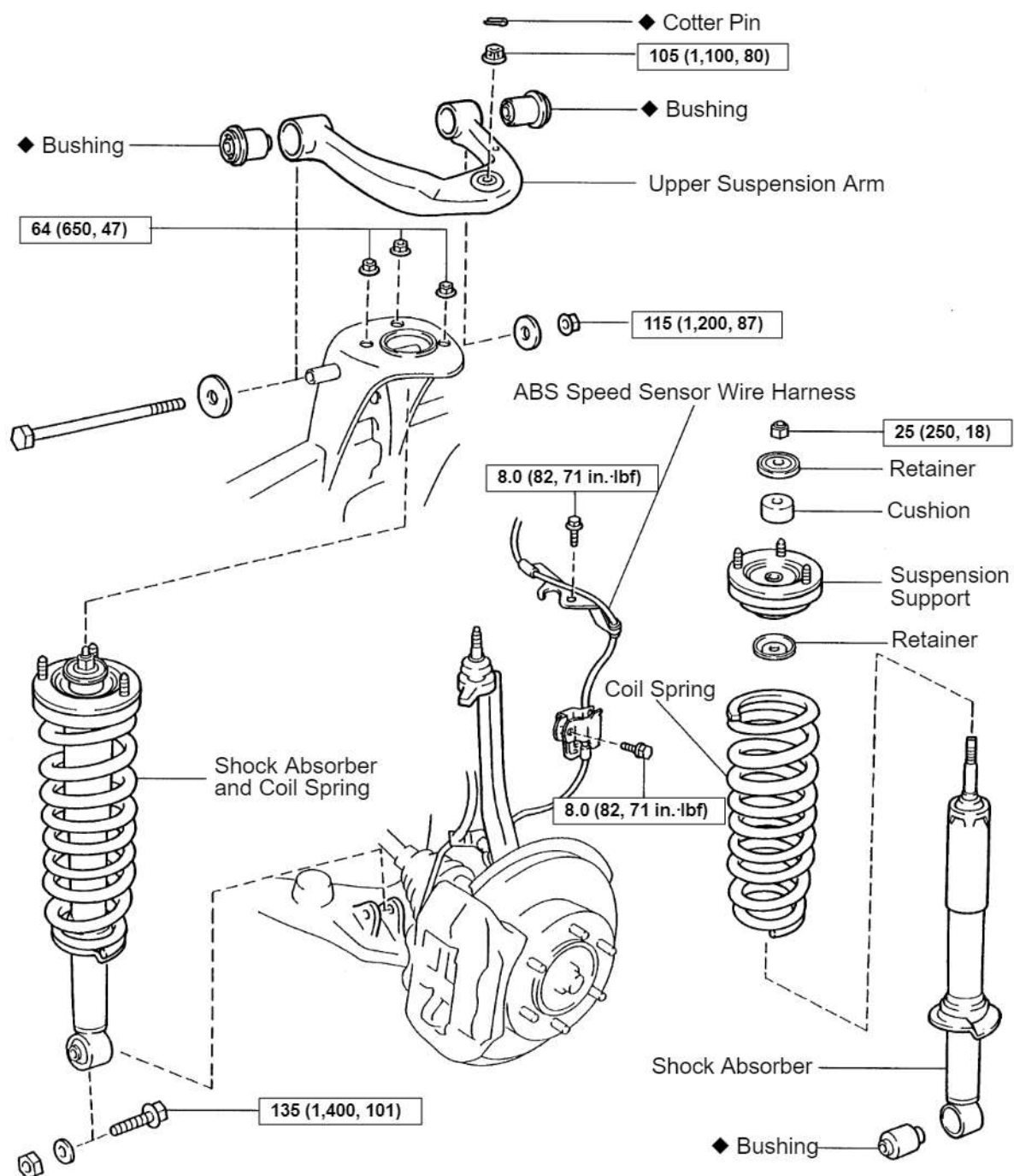
7. REMOVE A.D.D. ACTUATOR (See page [SA-30](#))

8. INSPECT CLUTCH HUB AND CLUTCH SLEEVE

Check the clutch hub and clutch sleeve for wear and damage. If necessary, replace them.

FRONT SHOCK ABSORBER COMPONENTS

SA05G-02



N·m (kgf·cm, ft·lbf) : Specified torque

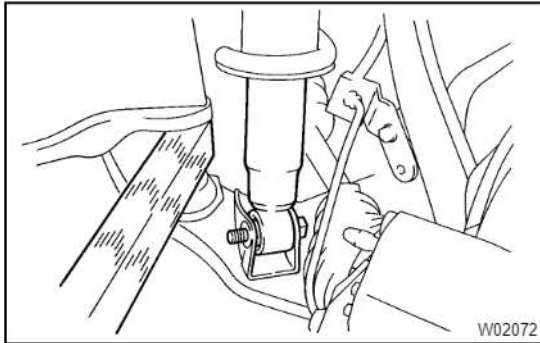
◆ Non-reusable part

Z18522

REMOVAL

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)



2. DISCONNECT SHOCK ABSORBER FROM LOWER SUSPENSION ARM

- (a) Loosen the bolt and remove the shock absorber lower nut and washer.

Torque: 135 N·m (1,400 kgf·cm, 101 ft·lbf)

HINT:

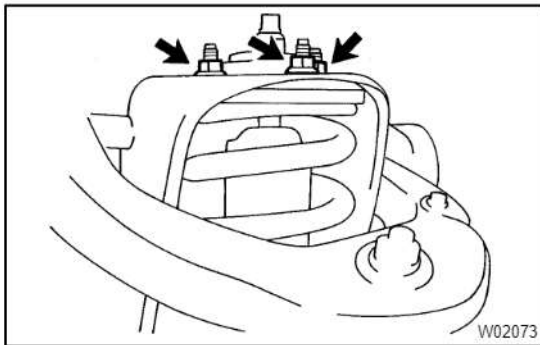
At the time of installation, after stabilizing the suspension, torque the bolt.

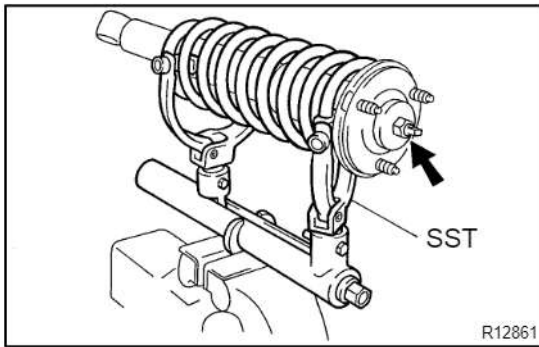
- (b) With lowering the lower suspension arm, remove the bolt and disconnect the shock absorber.

3. REMOVE SHOCK ABSORBER WITH COIL SPRING

Remove the 3 nuts, shock absorber with coil spring.

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





DISASSEMBLY

REMOVE SUSPENSION SUPPORT AND COIL SPRING

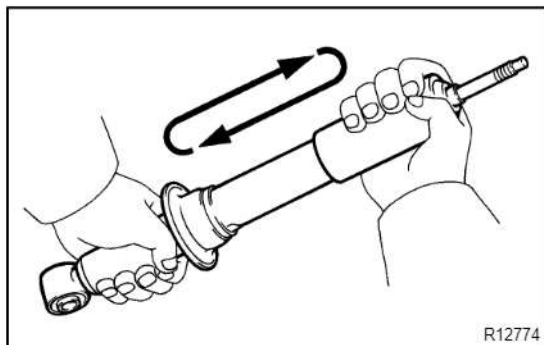
- (a) Using SST, compress the coil spring until there is a clearance on both ends.

SST 09727-00060, 09727-30021

NOTICE:

To avoid damage to SST:

- Set SST arms to allow clearance to hold a 8-roll coil between them.
 - Do not compress the coil spring more than necessary.
 - Do not use an impact wrench.
- (b) Remove suspension support center nut.
- (c) Remove the 2 retainers, cushion, suspension support and coil spring.



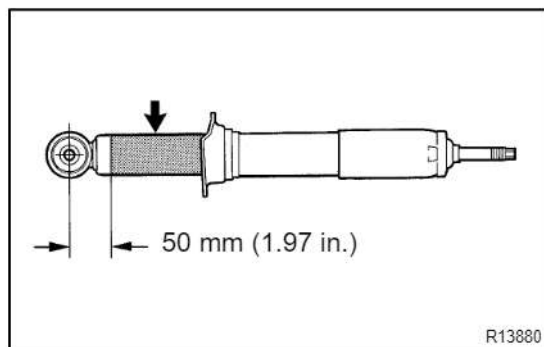
INSPECTION

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, see **DISPOSAL** on page [SA-55](#).



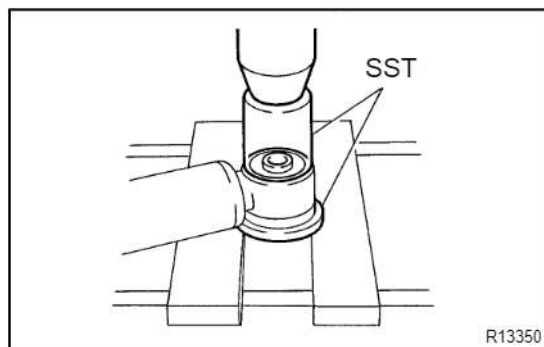
DISPOSAL

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

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

CAUTION:

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

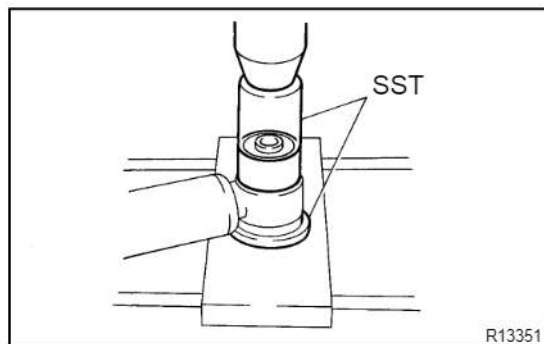


REPLACEMENT

1. REMOVE BUSHING

Using SST and a press, remove the bushing.

SST 09506-35010, 09632-36010



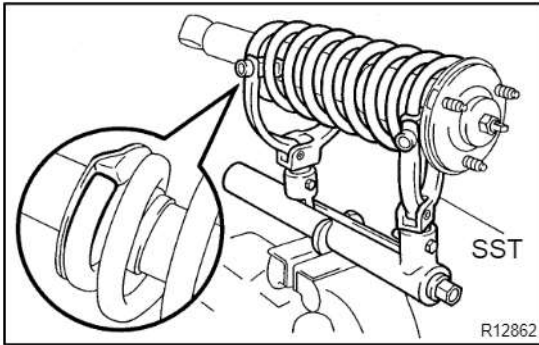
2. INSTALL NEW BUSHING

Using SST and a press, install a new bushing.

SST 09506-35010, 09632-36010

HINT:

Do not apply grease or oil to the bushing.



REASSEMBLY

1. INSTALL COIL SPRING TO SHOCK ABSORBER

- (a) Using SST, compress the coil spring.
SST 09727-00060, 09727-30021

NOTICE:

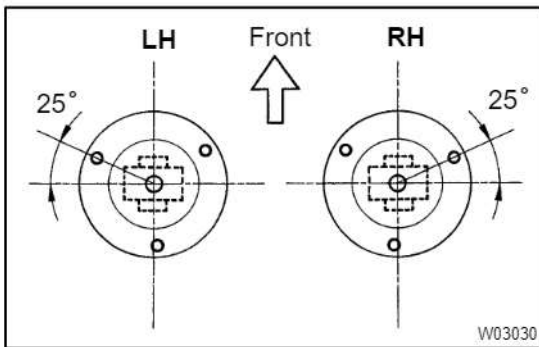
To avoid damage to SST:

- Set SST arms to allow clearance to hold a 8-roll coil between them.
- Do not compress the coil spring more than necessary.
- Do not use an impact wrench.

- (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.



2. INSTALL SUSPENSION SUPPORT

- (a) Install the 2 retainers, suspension support and cushion to the rod.
- (b) Temporarily tighten a new suspension support center nut.
- (c) Align the suspension support with the shock absorber lower bushing, as shown.

HINT:

Face the lower end of the coil spring to the outside of the vehicle.

- (d) Remove the SST.

SST 09727-00060, 09727-30021

HINT:

After removing the SST, recheck the direction of the suspension support.

- (e) Torque the suspension center nut.

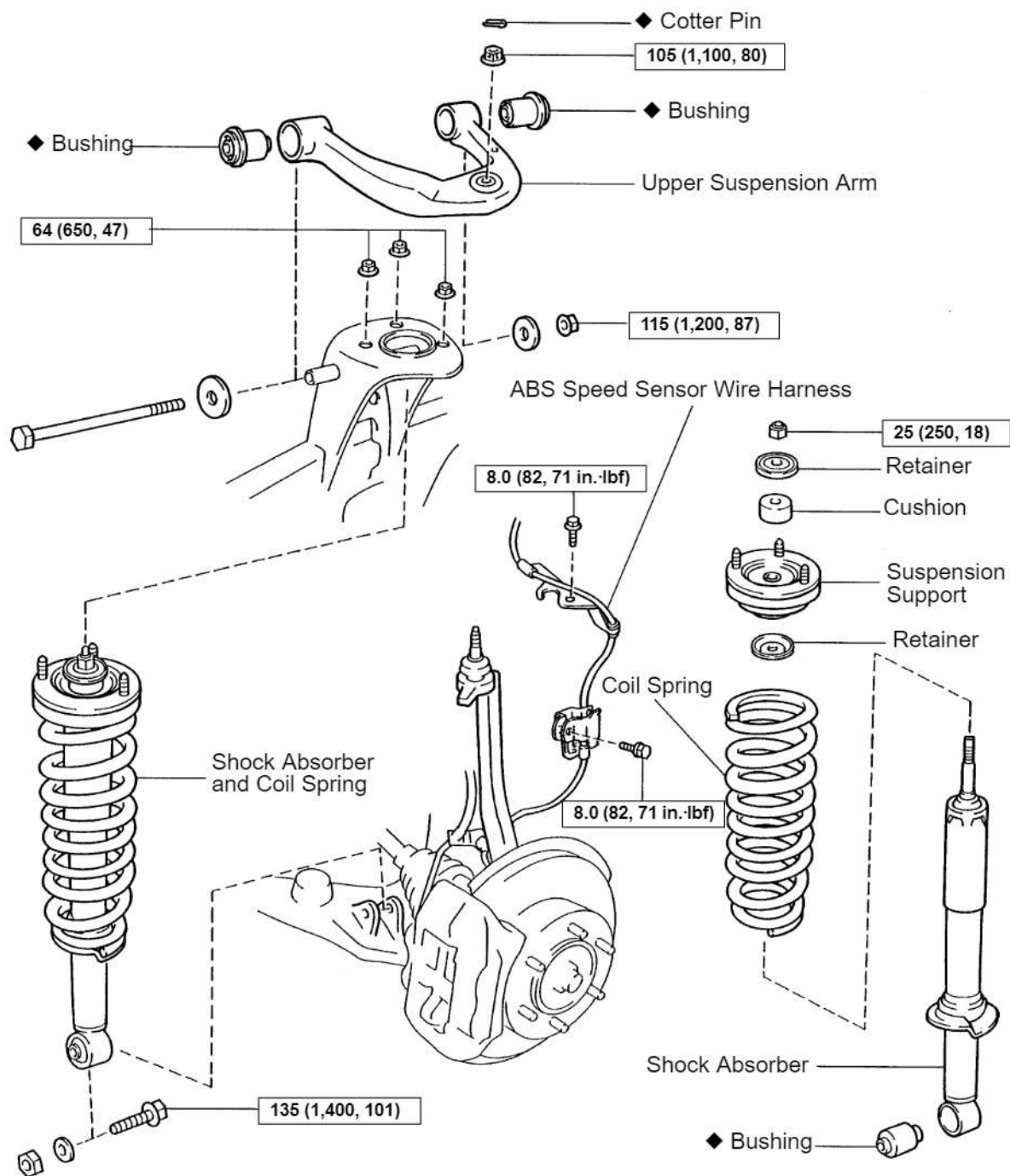
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

INSTALLATION

Installation is in the reverse order of removal (See page [SA-52](#)).

FRONT UPPER SUSPENSION ARM COMPONENTS

SA050-02



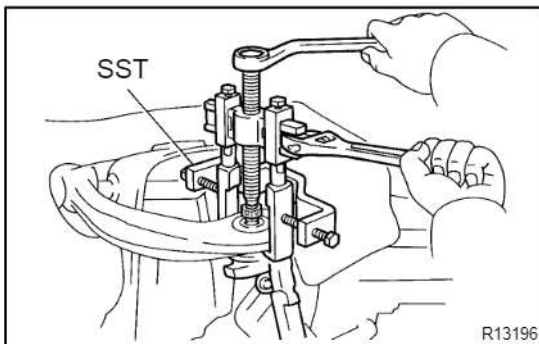
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

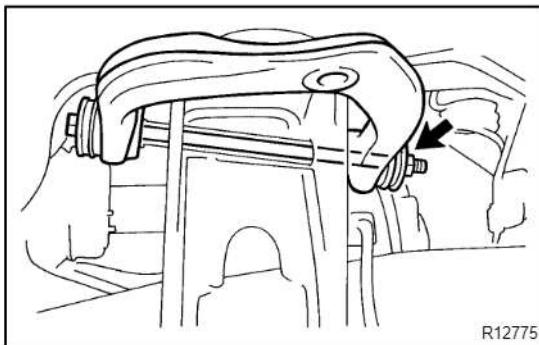
Z18522

REMOVAL

1. **REMOVE SHOCK ABSORBER AND COIL SPRING**
(See page [SA-52](#))
2. **w/ ABS:**
DISCONNECT ABS SPEED SENSOR WIRE HARNESS CLAMP
Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)
3. **DISCONNECT UPPER BALL JOINT**
 - (a) Remove the cotter pin and loosen the nut.
Torque: 105 N·m (1,100 kgf·cm, 80 ft·lbf)



- (b) Using SST, disconnect the upper ball joint.
SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04031, 09958-04011)
- (c) Support the steering knuckle securely.
- (d) Remove the nut.

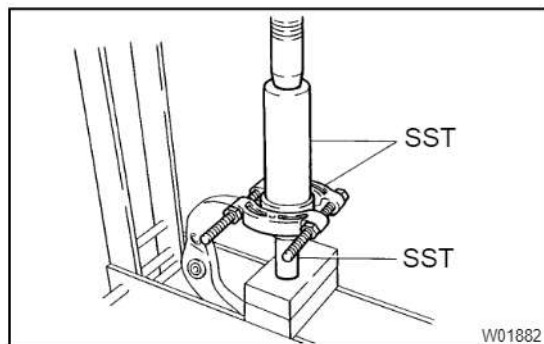


4. **REMOVE UPPER SUSPENSION ARM**
Remove the nut, bolt, washers and upper suspension arm.
Torque: 115 N·m (1,200 kgf·cm, 87 ft·lbf)
HINT:
At the time of installation, after stabilizing the suspension, torque the nut.

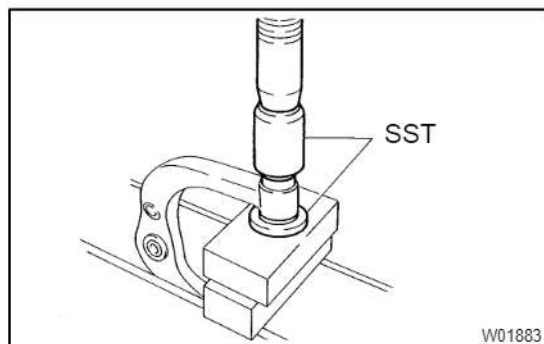
REPLACEMENT

1. REMOVE BUSHING

- (a) Using a chisel and hammer, pry up the flange of the bushing.



- (b) Using SST and a press, remove the bushing.
SST 09613-26010, 09631-20060, 09950-00020



2. INSTALL NEW BUSHING

- Using SST and a press, install a new bushing.
SST 09223-00010, 09506-35010

INSTALLATION

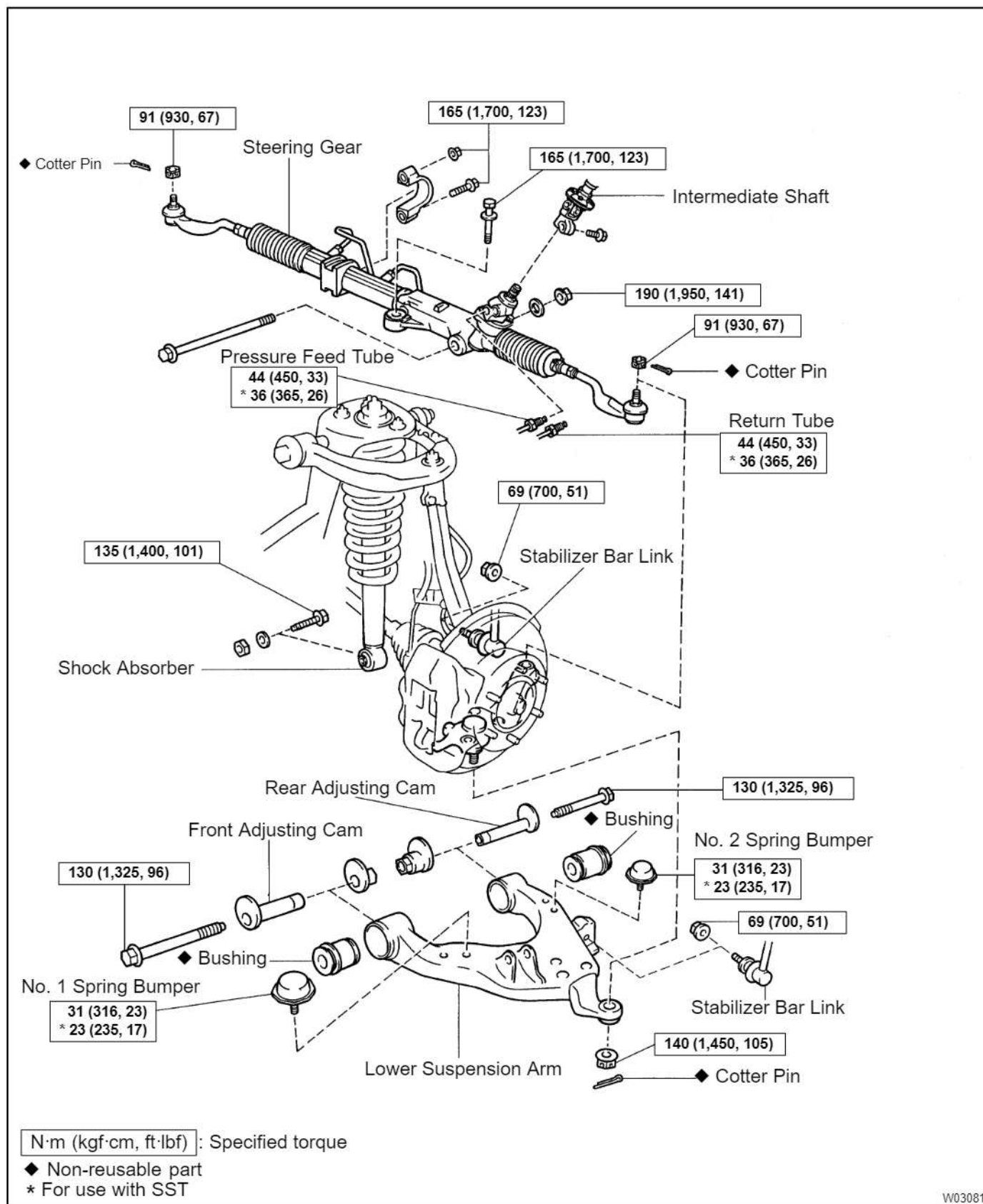
Installation is in the reverse order of removal (See page [SA-60](#)).

HINT:

After installation, check the front wheel alignment (See page [SA-5](#)).

FRONT LOWER SUSPENSION ARM COMPONENTS

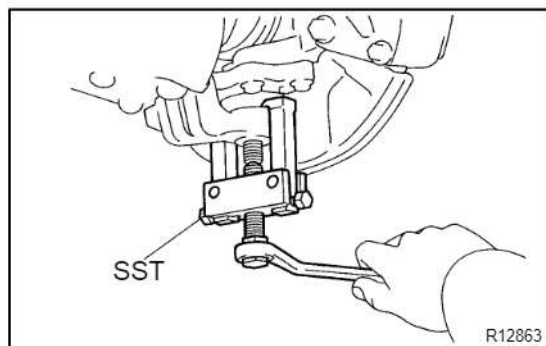
SA055-02



W03081

REMOVAL

1. **REMOVE FRONT WHEEL**
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)
2. **REMOVE STEERING GEAR ASSEMBLY**
(See page [SR-45](#))
3. **DISCONNECT STABILIZER BAR LINK**
(See page [SA-77](#))
4. **DISCONNECT SHOCK ABSORBER FROM LOWER SUSPENSION ARM** (See page [SA-52](#))
5. **DISCONNECT LOWER BALL JOINT**
 - (a) Support the upper suspension arm and steering knuckle securely.
 - (b) Remove the cotter pin and nut from the lower ball joint.
Torque: 140 N·m (1,450 kgf·cm, 105 ft·lbf)



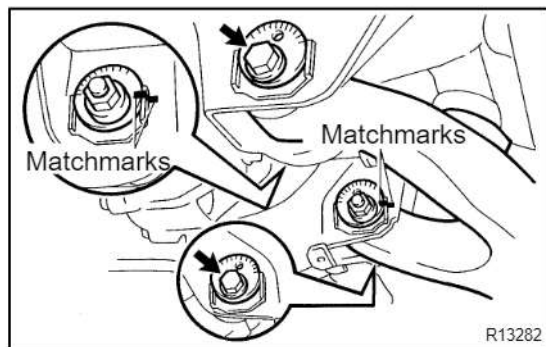
- (c) Using SST, disconnect the lower ball joint from the lower suspension arm.
SST 09628-6201 1

NOTICE:

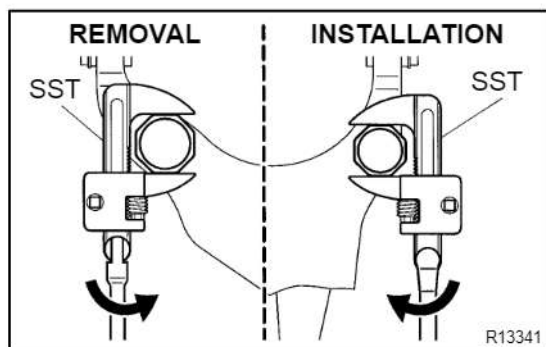
Be careful not to damage the lower ball joint.

HINT:

At the time of installation, face the cotter pin hole of the lower ball joint forward.



6. **REMOVE LOWER SUSPENSION ARM**
 - (a) Place matchmarks on the front and rear adjusting cams.
 - (b) Remove the 2 bolts, nuts, adjusting cams and lower suspension arm.
Torque: 130 N·m (1,325 kgf·cm, 96 ft·lbf)



7. **REMOVE NO. 1 AND NO. 2 SPRING BUMPERS**
Using SST, remove the No. 1 and No. 2 spring bumpers.
SST 09922-10010
Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)

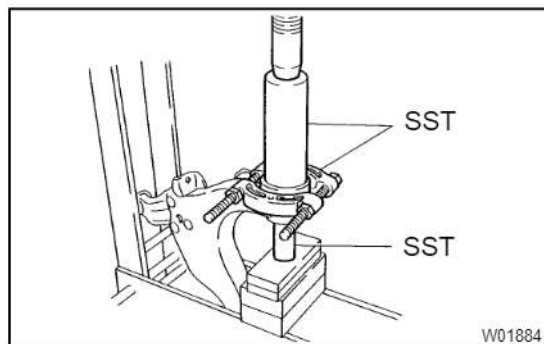
HINT:

At the time of installation, use a torque wrench with a fulcrum length of 34.5 cm (13.6 in.).

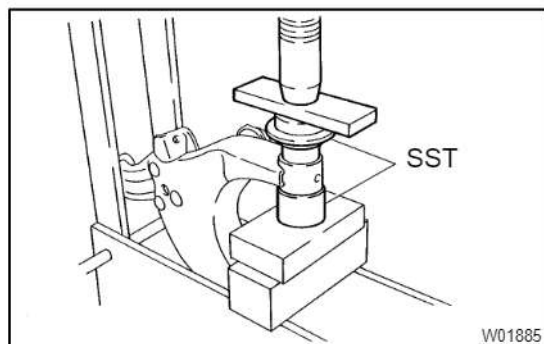
REPLACEMENT

1. REMOVE BUSHING

- (a) Using a chisel and hammer, pry up the flange of the bushing.



- (b) Using SST and a press, remove the bushing.
SST 09613-26010, 09632-36010, 09950-00020



2. INSTALL NEW BUSHING

- Using SST and a press, install a new bushing.
SST 09316-2001 1, 09710-30021 (09710-03121)

INSTALLATION

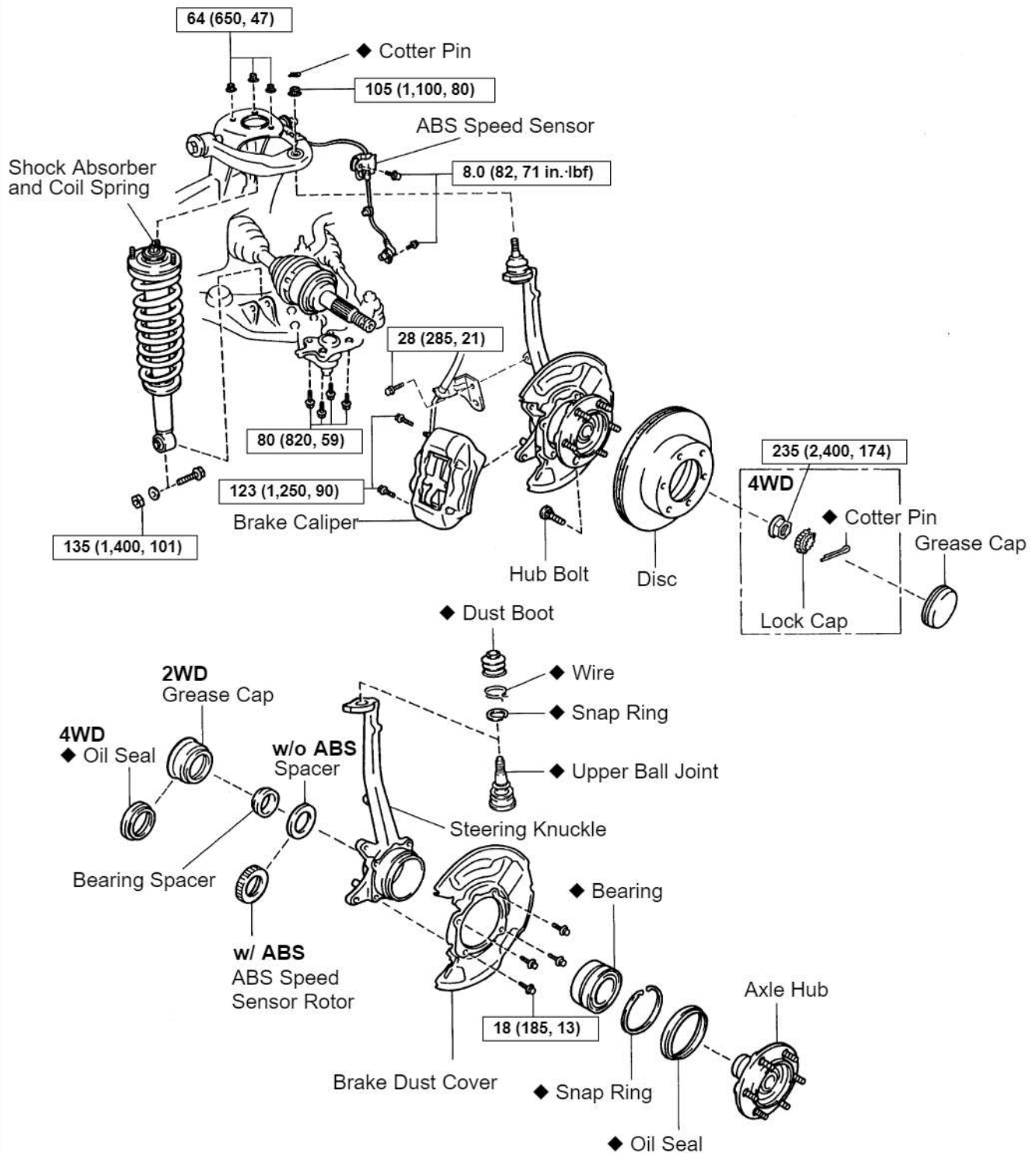
Installation is in the reverse order of removal (See page [SA-64](#)).

HINT:

After installation, check the front wheel alignment (See page [SA-5](#)).

FRONT UPPER BALL JOINT COMPONENTS

SA05W-02



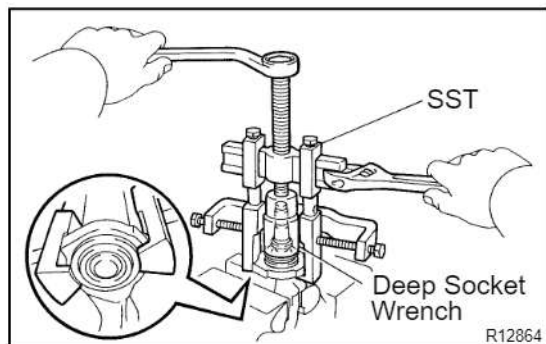
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

Z18520

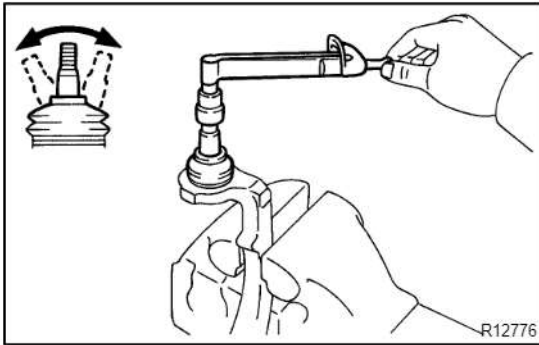
REMOVAL

1. REMOVE STEERING KNUCKLE WITH AXLE HUB (See page [SA-10](#))
2. REMOVE UPPER BALL JOINT
 - (a) Remove the wire and boot.
 - (b) Using a snap ring expander, remove the snap ring.



- (c) Using SST and a deep socket wrench, remove the upper ball joint.

SST 09950- 40011 (09951- 04010, 09952- 04010, 09953- 04020, 09954- 04010, 09955- 04031, 09957-04010, 09958-04011)



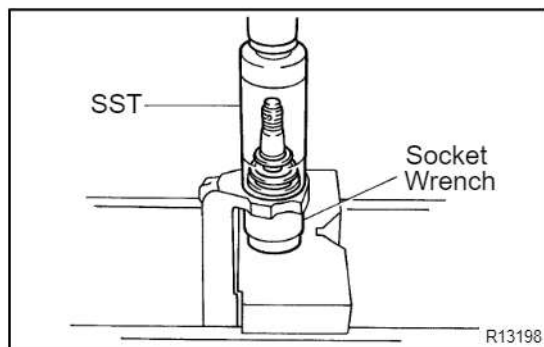
INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

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

Turning torque:

0.7 - 4.4 N·m (7 - 45 kgf·cm, 6 - 39 in.·lbf)



INSTALLATION

1. INSTALL UPPER BALL JOINT

- (a) Using SST, socket wrench and a press, install a new ball joint.

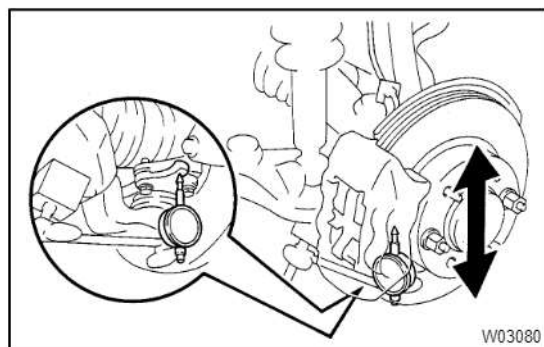
SST 09309-37010

- (b) Using a snap ring expander, install a new snap ring.
(c) Install a new boot and fix it with a new wire.

HINT:

Use the grease supplied in the kit.

2. INSTALL STEERING KNUCKLE WITH AXLE HUB (See page [SA-14](#))



FRONT LOWER BALL JOINT ON-VEHICLE INSPECTION

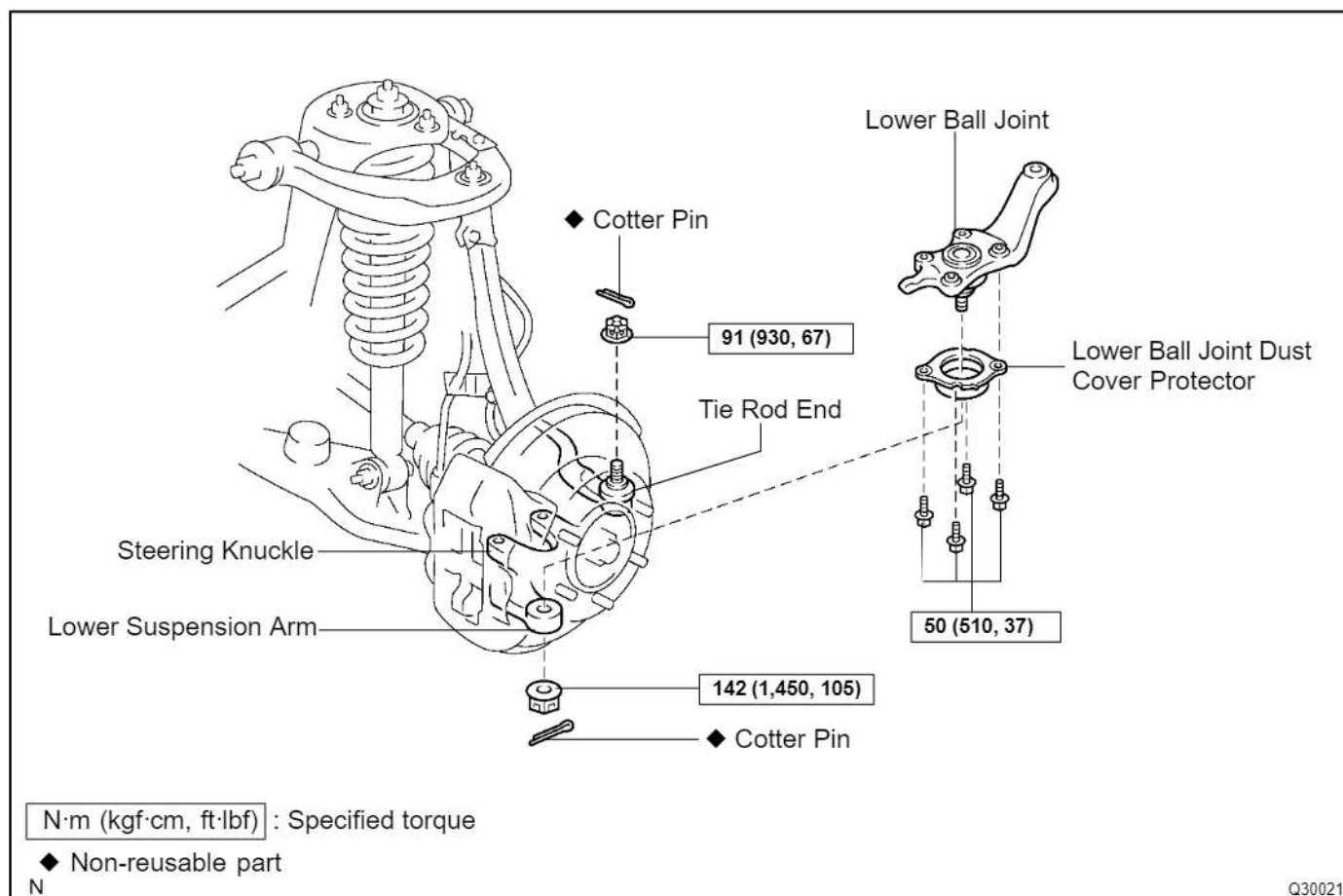
SA080-01

INSPECT LOWER BALL JOINT EXCESSIVE PLAY ON-VEHICLE

- (a) Remove the tire and install the hub nuts to the disc.
- (b) Using a dial indicator, check the lower ball joint for excessive play when you push the hub nuts up and down with a force of 294 N (30 kgf, 66 lbf).

Maximum: 0.5 mm (0.020 in.)

COMPONENTS

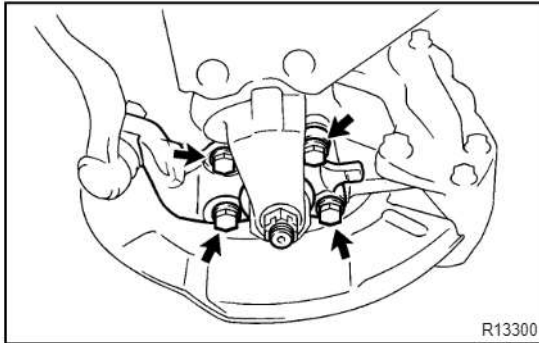


Q30021

REMOVAL

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)



2. LOOSEN 4 LOWER BALL JOINT SET BOLTS

HINT:

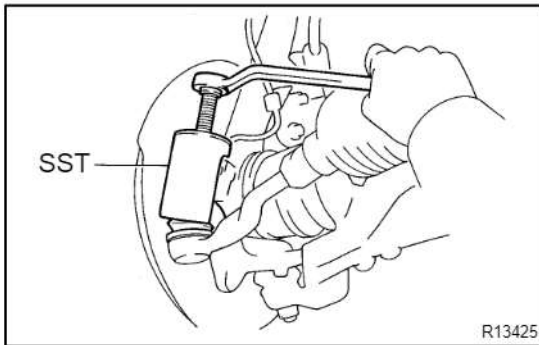
Do not remove the bolts.

Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

3. DISCONNECT TIE ROD END

- (a) Remove the cotter pin and nut from the tie rod end.

Torque: 91 N·m (930 kgf·cm, 67 ft·lbf)



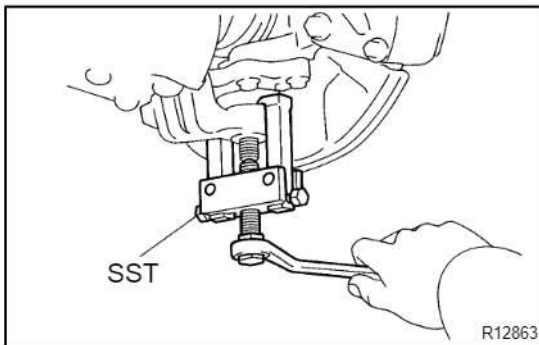
- (b) Using SST, disconnect the tie rod end from the steering knuckle.

SST 09610-20012

4. REMOVE LOWER BALL JOINT

- (a) Remove the cotter pin and nut from the lower ball joint.

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



- (b) Using SST, disconnect the lower ball joint from the lower suspension arm.

SST 09628-6201 1

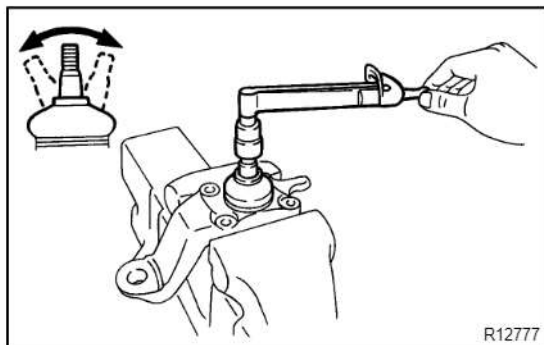
HINT:

At the time of installation, face the cotter pin hole of the lower ball joint forward.

- (c) Remove the 4 bolts.
(d) With lifting the upper suspension arm and steering knuckle, remove the lower ball joint and lower ball joint dust cover protector.

HINT:

After removing the lower ball joint, support the upper suspension arm and steering knuckle securely.



INSPECTION

INSPECT BALL JOINT FOR ROTATION CONDITION

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

Turning torque:

0.1 - 2.5 N·m (1 - 25 kgf·cm, 0.8 - 21.7 in.·lbf)

INSTALLATION

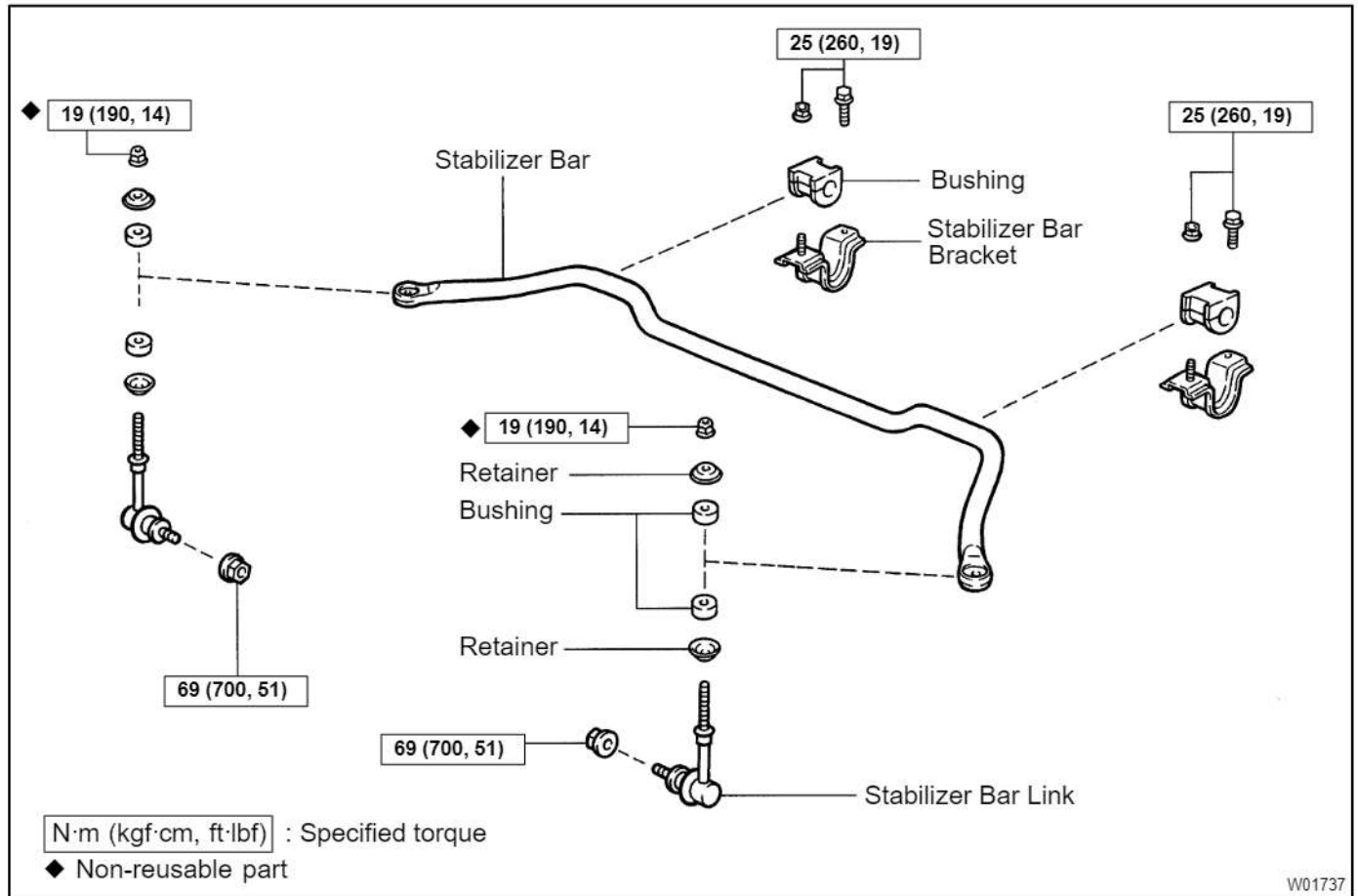
Installation is in the reverse order of removal (See page [SA-73](#)).

HINT:

After installation, check the front wheel alignment (See page [SA-5](#)).

FRONT STABILIZER BAR COMPONENTS

SA065-02

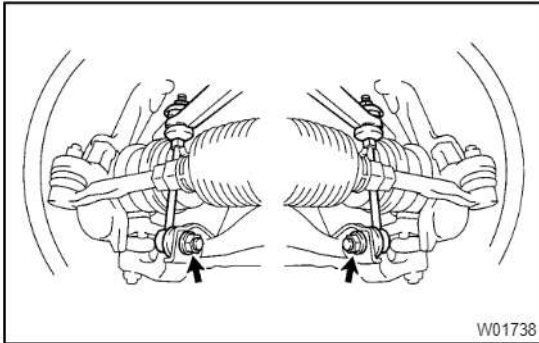


W01737

REMOVAL

1. REMOVE FRONT WHEELS

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)



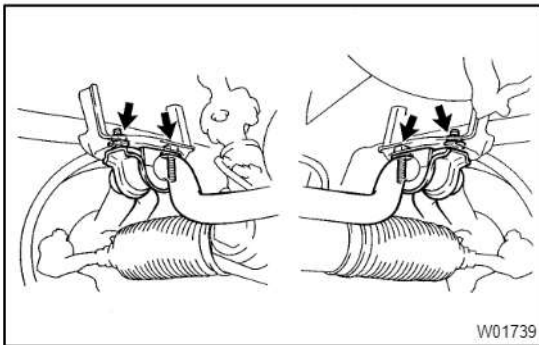
2. DISCONNECT STABILIZER BAR LINKS

Remove the 2 nuts and disconnect the stabilizer bar links from the lower suspension arm.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

HINT:

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



3. REMOVE STABILIZER BAR

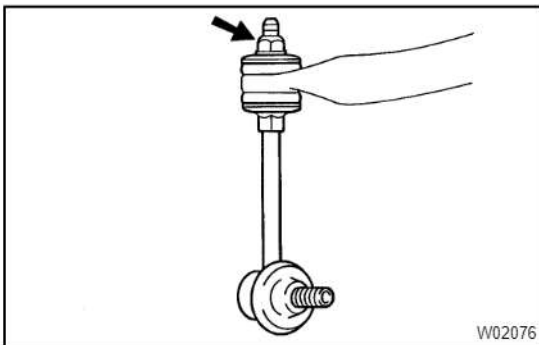
(a) Remove the 2 bolts, nuts and stabilizer bar with the bushings and brackets.

Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)

(b) Remove the 2 brackets and bushings from the stabilizer bar.

HINT:

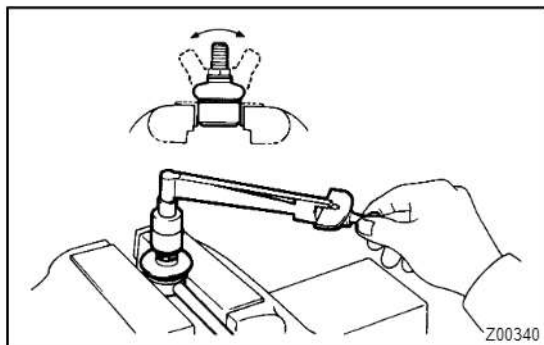
At the time of installation, install the bushings to the stabilizer bar so that the cutout of the bushings faces the front of the vehicle.



4. REMOVE STABILIZER BAR LINKS

Hold the stabilizer bar link, remove the nuts, retainers and bushings.

Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)



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 each 2 - 4 seconds and take the torque reading on the 5th turn.

Turning torque:

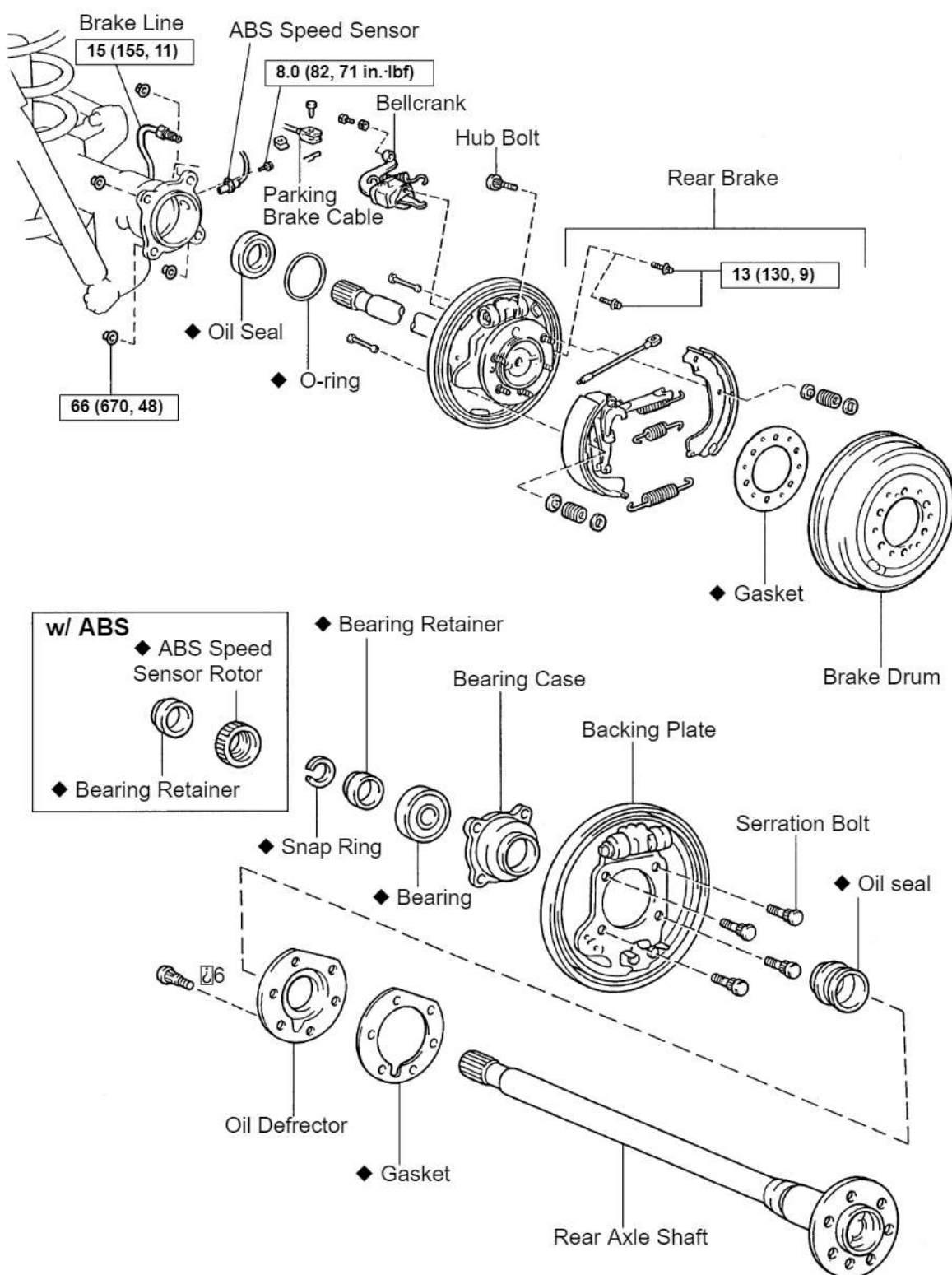
0.05 - 2.0 N·m (0.5 - 20 kgf·cm, 0.4 - 17 in·lbf)

INSTALLATION

Installation is in the reverse order of removal (See page [SA-77](#)).

REAR AXLE SHAFT COMPONENTS

SA088-02

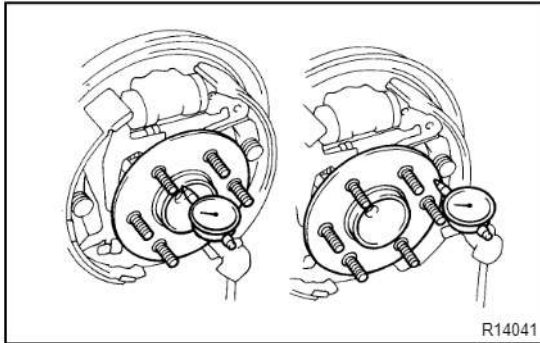


Z18523

REMOVAL

1. REMOVE REAR WHEEL AND BRAKE DRUM

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)



2. CHECK BEARING BACKLASH AND AXLE SHAFT DEVIATION

- (a) Using a dial indicator, check the backlash in the bearing shaft direction.

Maximum: 0.7 mm (0.027 in.)

If the backlash exceeds the maximum, replace the bearing.

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

Maximum: 0.1 mm (0.0039 in.)

If the deviation exceeds the maximum, replace the axle shaft.

3. w/ ABS:

REMOVE ABS SPEED SENSOR FROM REAR AXLE HOUSING

Torque: 8.0 N·m (82 kgf·cm, 71 in·lbf)

4. REMOVE REAR BRAKE ASSEMBLY

(See page [BR-22](#))

5. REMOVE REAR AXLE SHAFT ASSEMBLY

- (a) Remove the 4 backing plate mounting nuts.

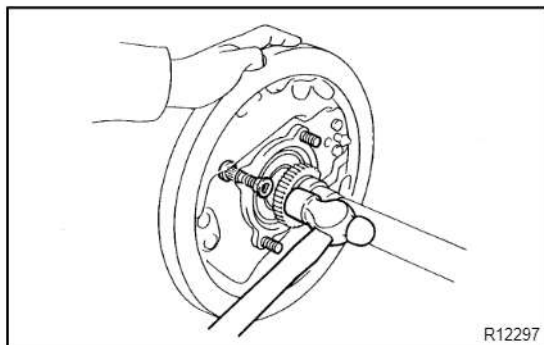
Torque: 66 N·m (670 kgf·cm, 48 ft·lbf)

- (b) Pull out the rear axle shaft assembly from the rear axle housing.

NOTICE:

Be careful not to damage the oil seal.

6. REMOVE O-RING FROM REAR AXLE HOUSING



INSPECTION

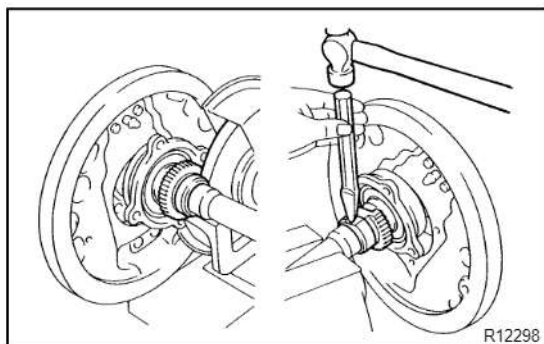
1. w/ ABS:

REMOVE BEARING RETAINER (DIFFERENTIAL SIDE) AND ABS SPEED SENSOR ROTOR

- (a) Attach 4 nuts to the serration bolts and remove the serration bolts from the backing plate using a hammer.

NOTICE:

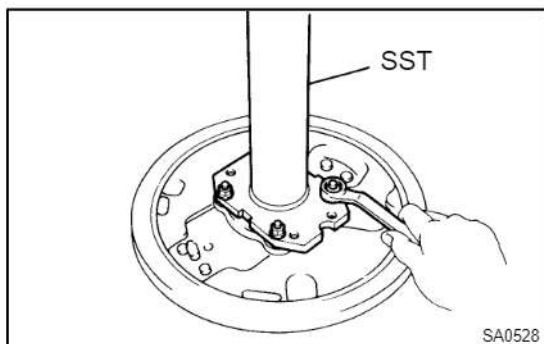
Do not reuse the nuts previously removed from the vehicle.



- (b) Grind the retainer and sensor rotor surfaces using a grinder, then chisel them out with a chisel.
- (c) Attach washers and nuts to the 4 serration bolts, then torque the nuts to install the serration bolts to the backing plate.
- (d) Remove the 4 nuts from the serration bolts.

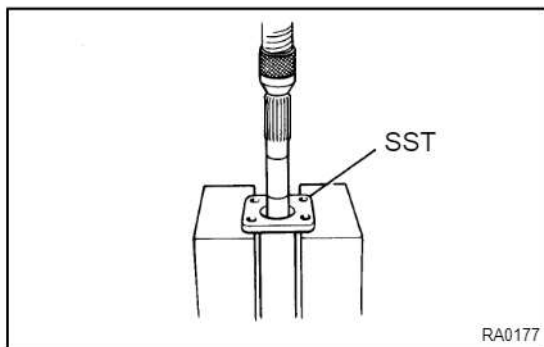
2. REMOVE SNAP RING FROM AXLE SHAFT

Using a snap ring expander, remove the snap ring.

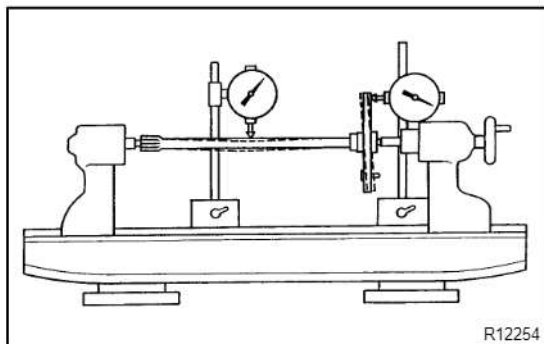


3. REMOVE REAR AXLE SHAFT FROM BACKING PLATE

- (a) Position SST on the backing plate with the 4 nuts.
SST 09521-2501 1



- (b) Using a press, remove the rear axle shaft with the bearing retainer from the backing plate.
- (c) Remove the SST.
SST 09521-2501 1



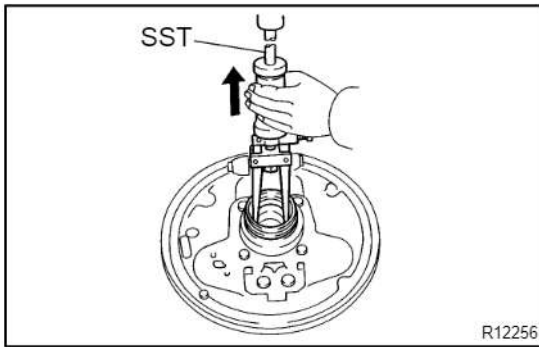
4. INSPECT AXLE SHAFT

Maximum runout:

Shaft runout: 2.0 mm (0.079 in.)

Flange runout: 0.1 mm (0.004 in.)

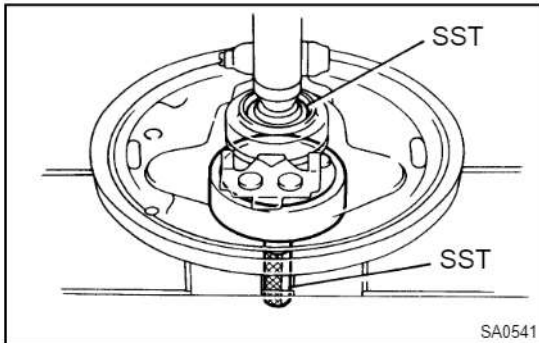
If the rear axle shaft or flange are damaged or worn, or if runout is greater than the maximum, replace the rear axle shaft.



5. REMOVE OUTER OIL SEAL

Using SST, remove the oil seal.

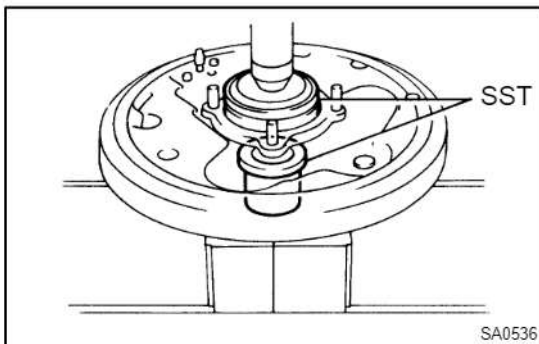
SST 09308-00010



6. REPLACE REAR AXLE BEARING

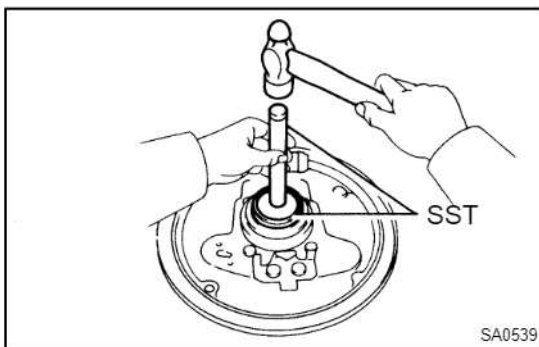
(a) Using SST, remove the bearing.

SST 09223-56010, 09950-60010 (09951-00560)



(b) Using SST, install a new bearing.

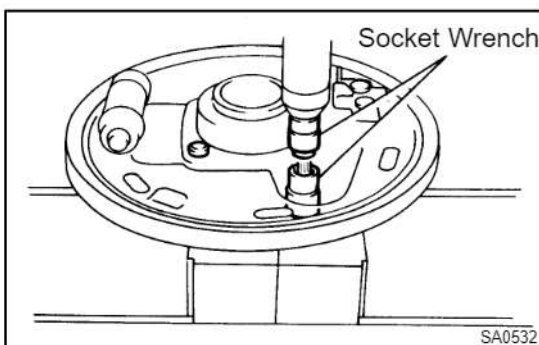
SST 09515-30010, 09950-60020 (09951-00890)



7. INSTALL NEW OUTER OIL SEAL

Using SST and a hammer, install a new oil seal.

SST 09950-60010 (09951-00610),
09950-70010 (09951-07150)



8. REPLACE BEARING CASE

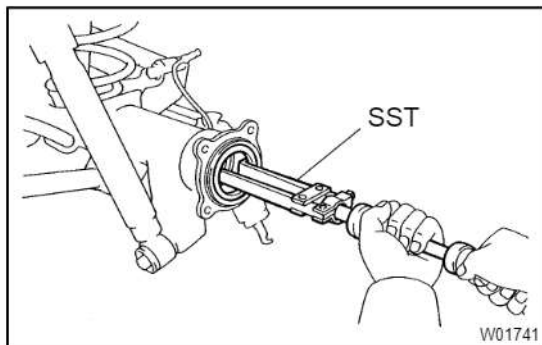
(a) Remove the oil seal (outer side) and bearing.

(b) Install 4 nuts to the serration bolts.

(c) Using a hammer, remove the 4 serration bolts and remove the bearing case.

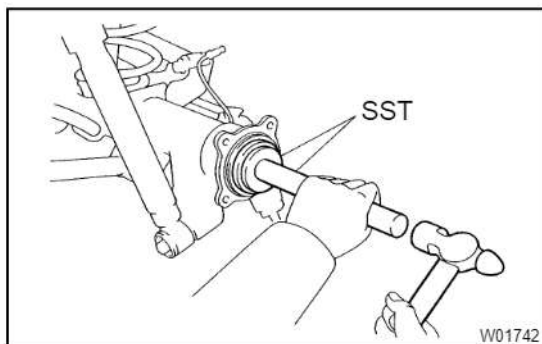
(d) Position the backing plate on a new bearing case and, using 2 socket wrenches, install the 4 serration bolts.

(e) Install a new bearing and oil seal (outer side).

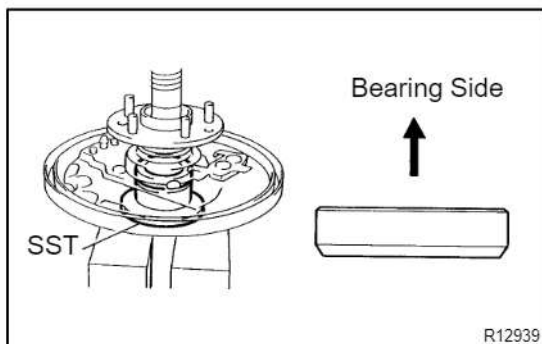


9. REPLACE OIL SEAL (INNER SIDE)

- (a) Using SST, remove the oil seal.
SST 09308-00010

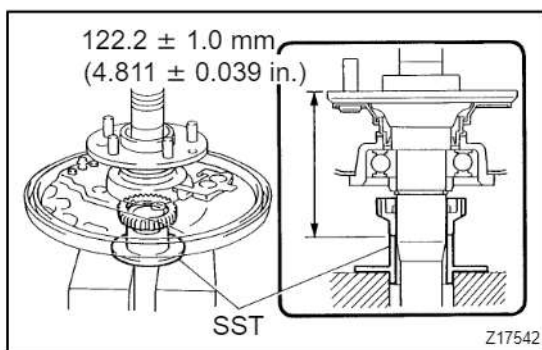


- (b) Using SST and a hammer, install a new oil seal.
SST 09950-60020 (09951-00710),
09950-70010 (09951-07150)
(c) Apply MP grease to the oil seal lip.



10. INSTALL REAR AXLE SHAFT IN BACKING PLATE

- (a) Apply MP grease to the oil seal lip.
(b) Install the backing plate and bearing retainer on the rear axle shaft.
(c) Using SST and a press, install the rear axle shaft into the backing plate.
SST 09316-60010 (09316-00051)
(d) Using snap ring pliers, install a new snap ring.



11. w/ ABS:

INSTALL ABS SPEED SENSOR ROTOR AND BEARING RETAINER (DIFFERENTIAL SIDE)

Using SST and a press, install a new sensor rotor and new bearing retainer to the axle shaft.

SST 09316-60010 (09316-00051)

Standard length:

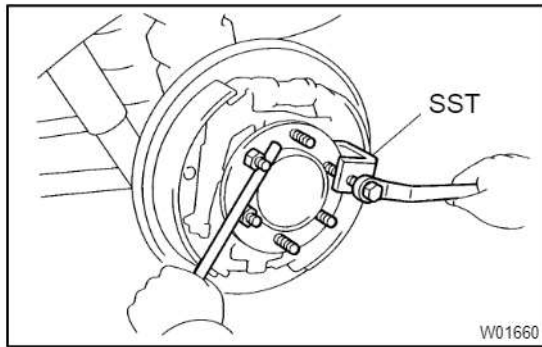
122.2 ± 1.0 mm (4.811 ± 0.039 in.)

INSTALLATION

Installation is in the reverse order of removal (See page [SA-81](#)).

HINT:

After installation, bleed the brake system (See page [BR-4](#)), check the ABS sensor sensor signal (See page [DI-224](#)) and check for leaks.



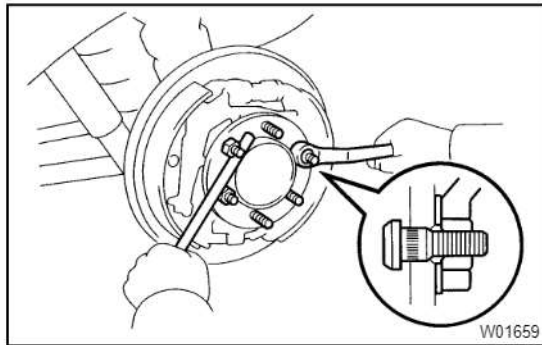
REAR WHEEL HUB BOLT REPLACEMENT

SA06D-01

1. REMOVE WHEEL AND BRAKE DRUM
2. REMOVE HUB BOLT

Using SST, remove the hub bolt.

SST 09650-1701 1



3. INSTALL HUB BOLT

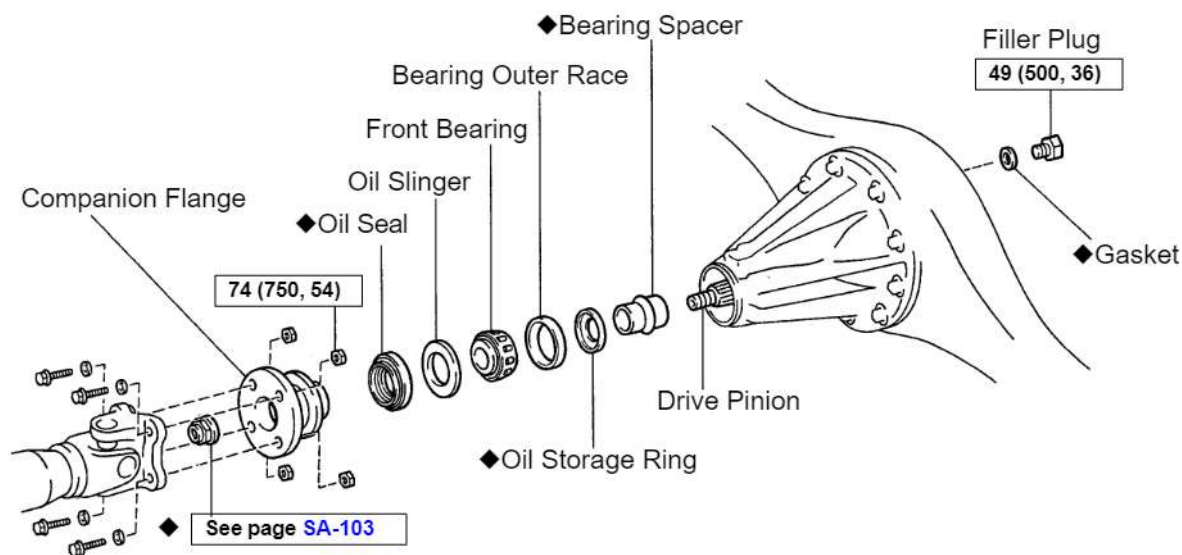
Install a washer and nut to a new hub bolt, as shown in the illustration, and install the hub bolt with torquing the nut.

4. INSTALL BRAKE DRUM AND WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

REAR DIFFERENTIAL FRONT OIL SEAL COMPONENTS

SA08E-02



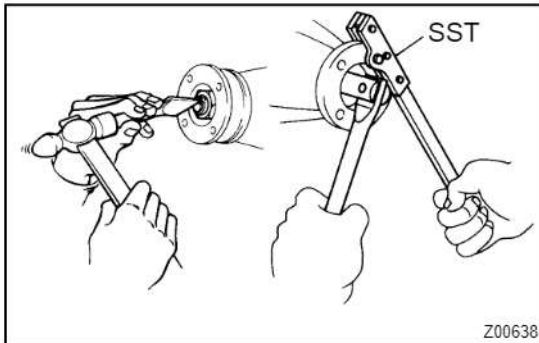
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

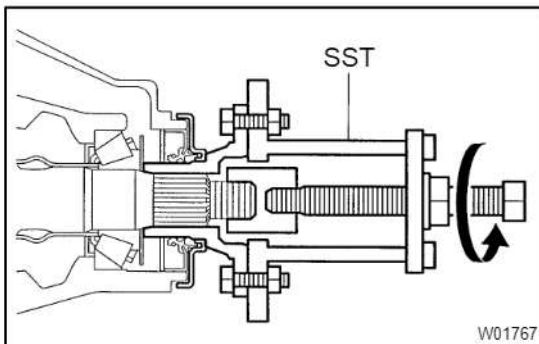
W01732

REPLACEMENT

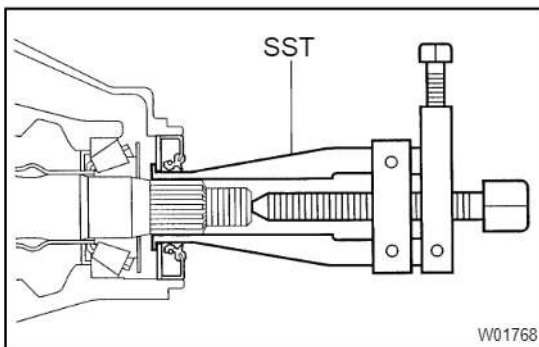
1. DRAIN DIFFERENTIAL OIL
2. REMOVE REAR PROPELLER SHAFT
(See page [PR-4](#) or [PR-8](#))
3. REMOVE COMPANION FLANGE
 - (a) Using a chisel and hammer, loosen the staked part of the nut.



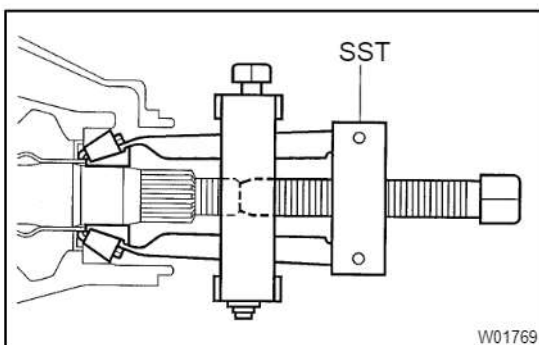
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00021



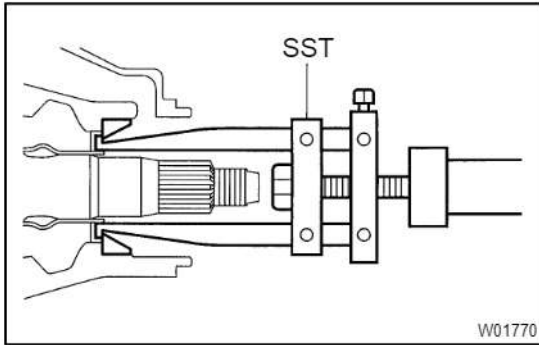
- (c) Using SST, remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)



4. REMOVE OIL SEAL
Using SST, remove the oil seal.
SST 09308-10010
5. REMOVE OIL SLINGER



6. REMOVE FRONT BEARING
Using SST, remove the front bearing from the drive pinion.
SST 09556-22010

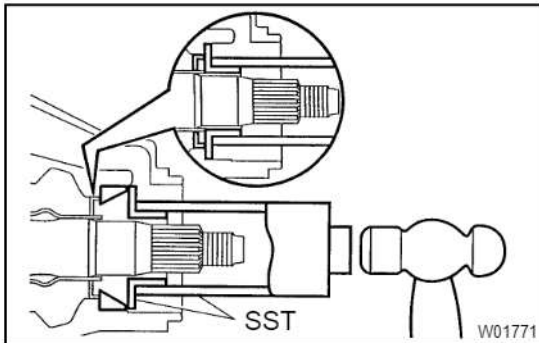


7. REMOVE FRONT BEARING OUTER RACE AND OIL STORAGE RING

- (a) Using SST, remove the front bearing outer race.
SST 09308-00010
- (b) Using a screwdriver, bend the oil storage ring and remove it.

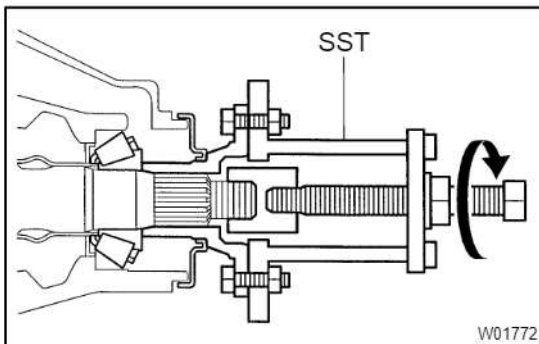
8. REMOVE BEARING SPACER

9. INSTALL NEW BEARING SPACER



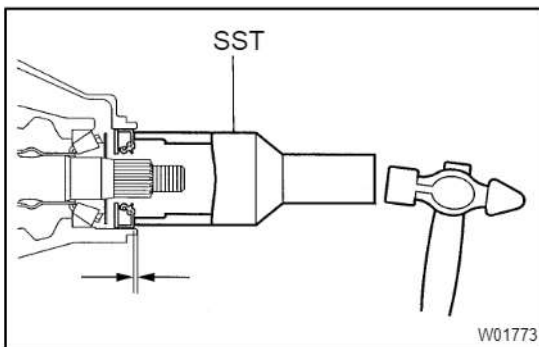
10. INSTALL OIL STORAGE RING AND FRONT BEARING OUTER RACE

- (a) Using SST and a hammer, install a new oil storage ring.
SST 09316-6001 1 (09316-00011, 09316-00021)
- (b) Using SST and a hammer, install the front bearing outer race.
SST 09316-6001 1 (09316-00011, 09316-00021)



11. INSTALL FRONT BEARING

- (a) Place the front bearing.
- (b) Place the oil slinger.
- (c) Using SST and the companion flange, install the front bearing, then remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)



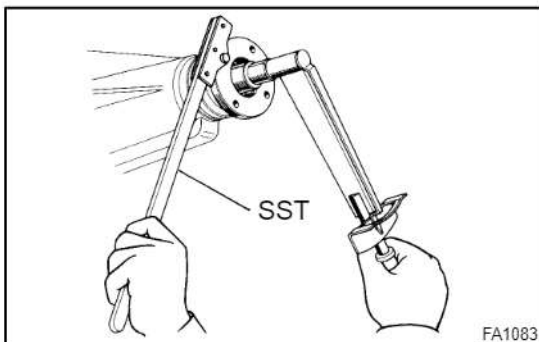
12. INSTALL NEW OIL SEAL

- (a) Apply MP grease to a new oil seal.
- (b) Using SST and a hammer, install the oil seal.
SST 09214-7601 1

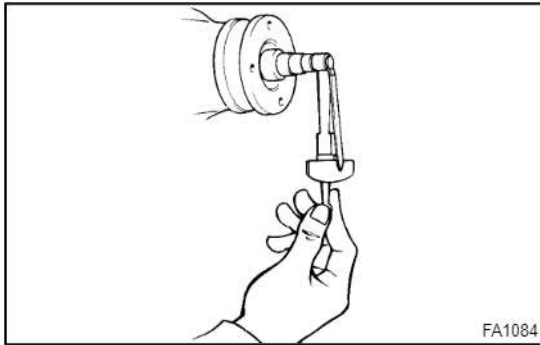
Oil seal drive in depth: 1.0 mm (0.039 in.)

13. INSTALL COMPANION FLANGE

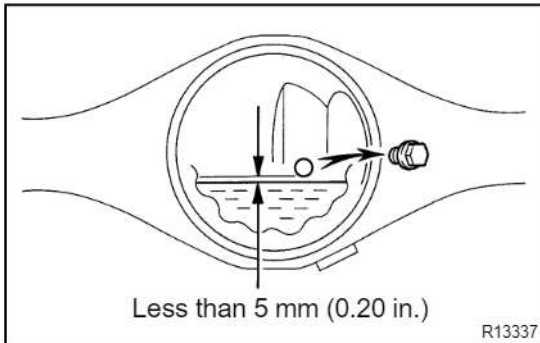
- (a) Place the companion flange on the drive pinion.
- (b) Apply light coat of hypoid gear oil on threads of a new companion flange nut.



- (c) Using SST to hold the flange, torque the nut.
SST 09330-00021
Torque: 196 N·m (2,000 kgf·cm, 145 ft·lbf)



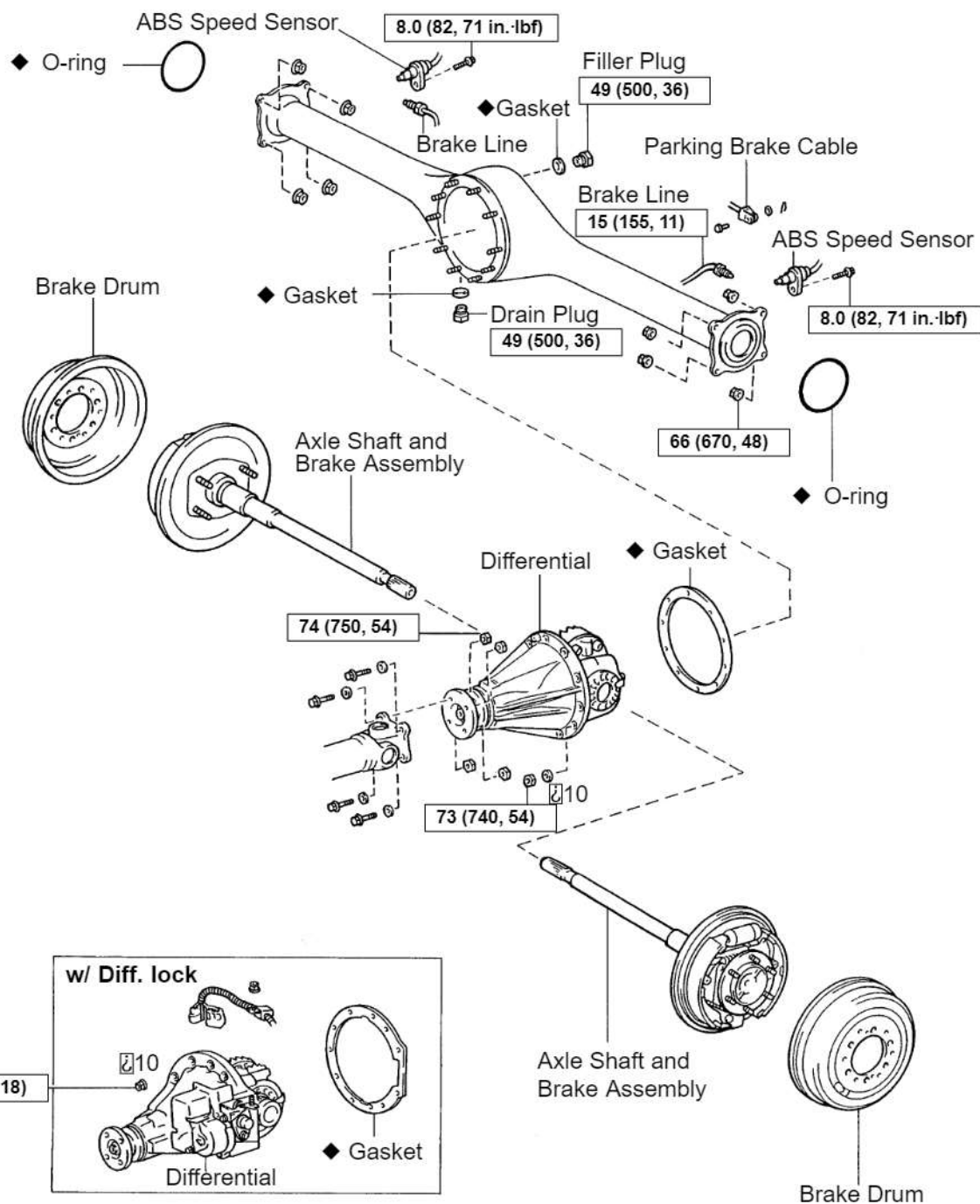
14. **ADJUST DRIVE PINION PRELOAD**
(See page [SA-103](#))
15. **STAKE DRIVE PINION NUT**
16. **INSTALL REAR PROPELLER SHAFT**
(See page [PR-6](#) or [PR-11](#))



17. **FILL DIFFERENTIAL WITH HYPOID GEAR OIL**
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)
Oil type: Hypoid gear oil API GL-5
Recommended oil viscosity:
Above - 18°C (0°F) SAE 90
Below - 18°C (0°F) SAE 80 W or 80 W - 90
Capacity:
2WD: 2.75 liters (2.91 US qts., 2.42 Imp.qts)
4WD:
w/o Diff. lock: 2.45 liters (2.59 US qts., 2.16 Imp.qts)
w/ Diff. lock: 2.75 liters (2.91 US qts., 2.42 Imp.qts)

REAR DIFFERENTIAL CARRIER COMPONENTS

SA06G-02

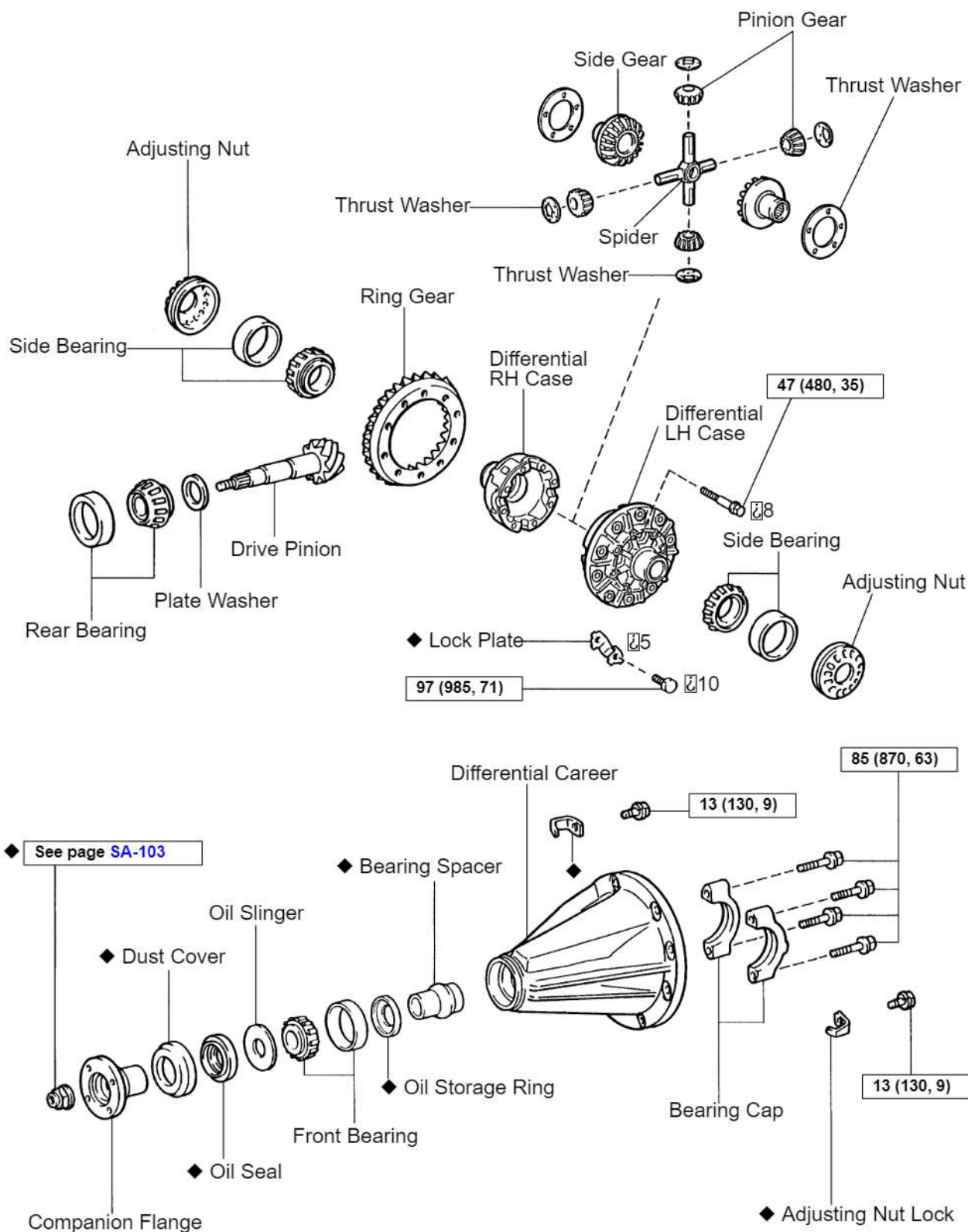


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

W01774

w/o Diff. lock

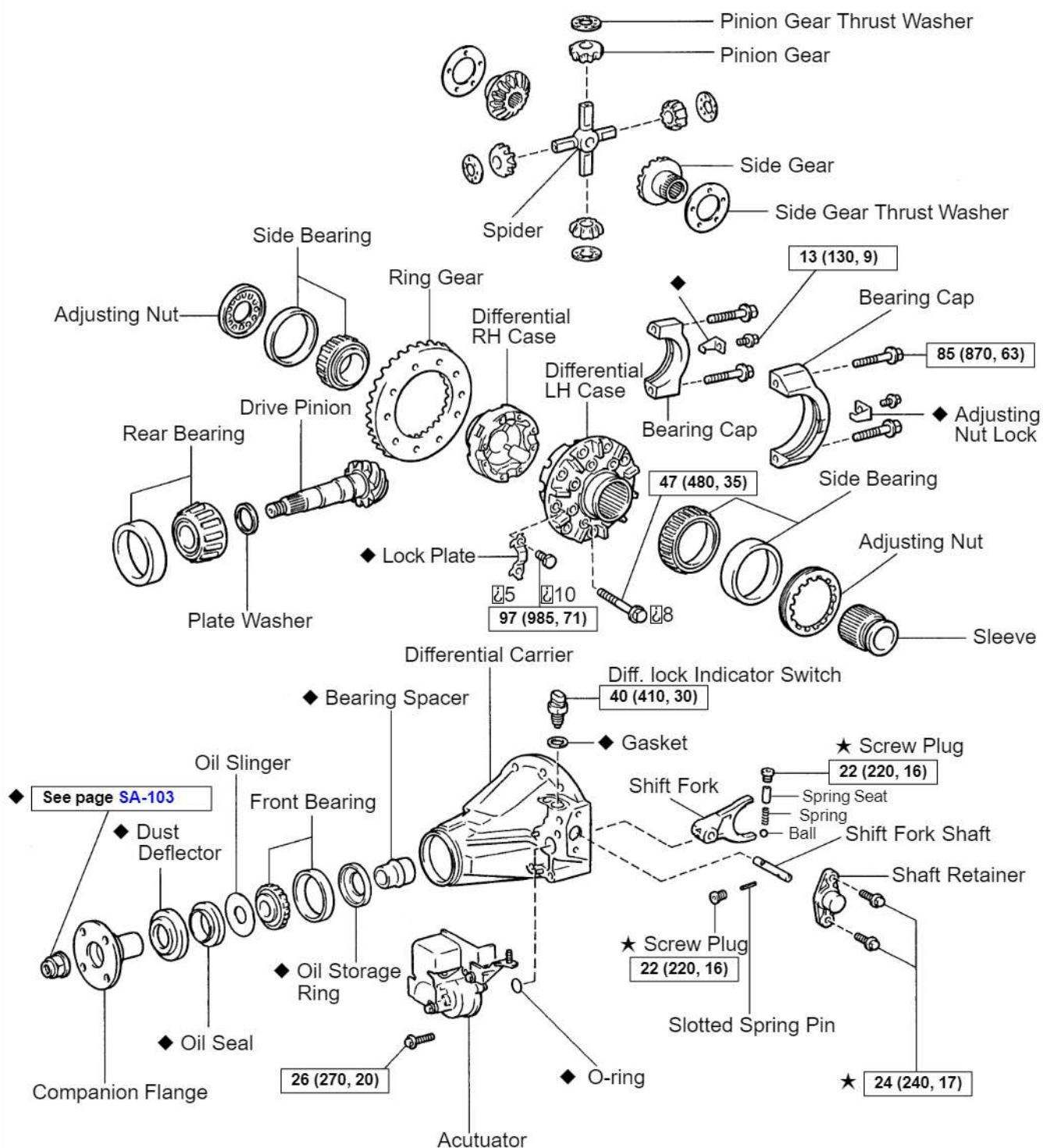


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

W01775

w/ Diff. lock



N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

★ Precoated part

Z18524

REMOVAL

1. w/ DIFF. LOCK:

SHIFTING DIFF. LOCK POSITION

- (a) Turn the ignition switch to the ON position.
- (b) Push the differential lock control switch to the ON position and lock the rear differential.

HINT:

Rotating the tires, check they are in the differential lock condition.

- (c) Disconnect the cable from the negative terminal of the battery.

HINT:

At the time of installation, after installation, check that the breather plug at the end of the breather tube (inside of the LH frame) is not damaged or worn.

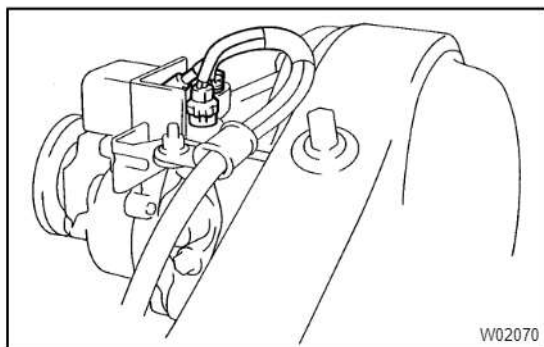
2. DRAIN DIFFERENTIAL OIL

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

3. REMOVE REAR AXLE SHAFTS (See page [SA-81](#))

4. REMOVE REAR PROPELLER SHAFT

(See page [PR-4](#) or [PR-8](#))



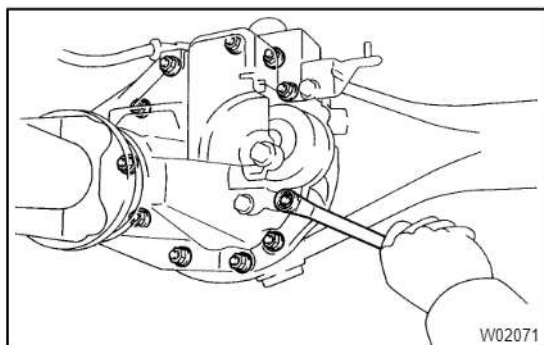
5. w/ DIFF. LOCK:

DISCONNECT CONNECTORS AND TUBE

HINT:

At the time of installation, please refer to the following items.

- When connecting the tube of the harness side to the hose of the actuator side, its depth of insertion is 15 mm (0.59 in.).
- Take care that water or equivalent dose not adhere to the connector and hose.



6. REMOVE DIFFERENTIAL CARRIER ASSEMBLY

- (a) Remove the 10 nuts, washers and differential carrier assembly.

NOTICE:

Be careful not to damage the installation surface.

Torque:

w/o Diff. lock: 73 N·m (740 kgf·cm, 54 ft·lbf)

w/ Diff. lock: 25 N·m (250 kgf·cm, 18 ft·lbf)

(b) Remove the gasket.

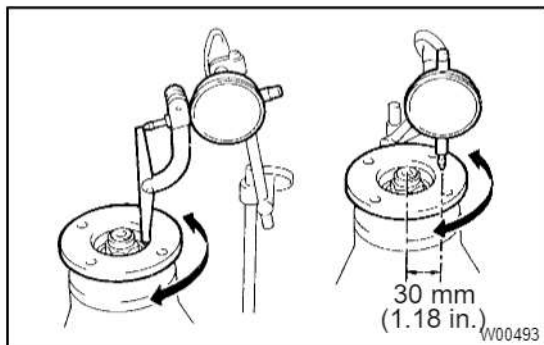
HINT:

At the time of installation, please refer to the following items.

w/ Diff. lock:

- Before installation, check differential lock operation connect the connector of the actuator to the connector of the vehicle side.
- Before installation, check that the sleeves on work with switching over the differential lock control switch.

After checking, lock the rear differential.



DISASSEMBLY

1. CHECK RUNOUT OF COMPANION FLANGE

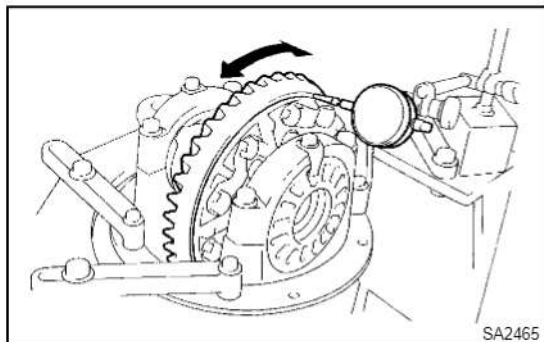
Using a dial indicator, measure the vertical and lateral runout of the companion flange.

Maximum runout:

Vertical runout: 0.10 mm (0.0039 in.)

Lateral runout: 0.10 mm (0.0039 in.)

If the runout are not within the specification, replace the companion flange.

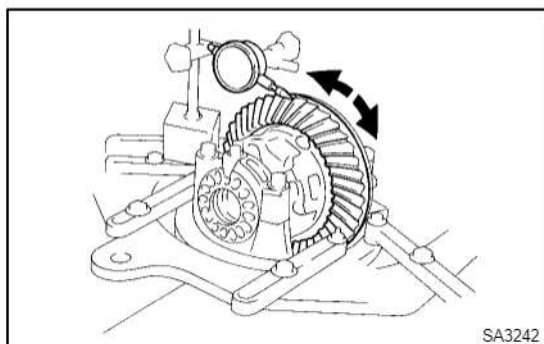


2. CHECK RING GEAR RUNOUT

Using a dial indicator, measure the ring gear runout.

Maximum runout: 0.07 mm (0.0028 in.)

If the runout is not within the specification, replace the ring gear.



3. CHECK RING GEAR BACKLASH

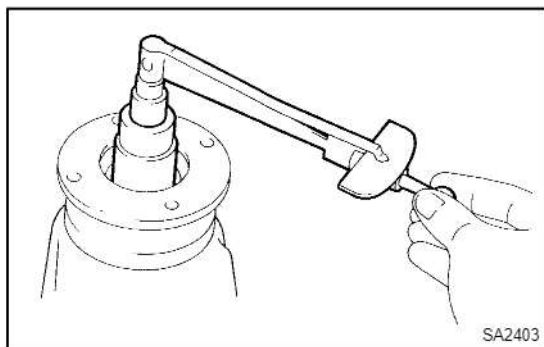
Using a dial indicator, measure the ring gear backlash.

Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

HINT:

Before measurement, rotate the ring gear 5 times or more.



4. MEASURE DRIVE PINION PRELOAD

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

Preload (at starting):

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

5. CHECK TOTAL PRELOAD

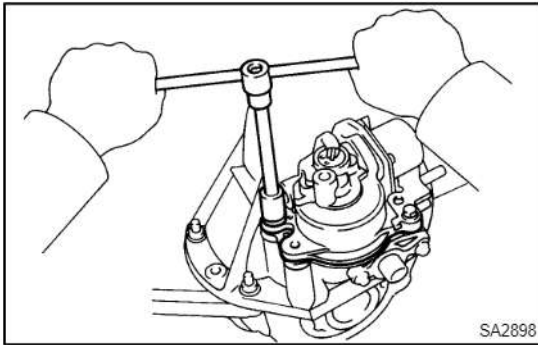
Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

Drive pinion preload plus 0.4 - 0.6 N·m (4 - 6 kgf·cm, 3.5 - 5.2 in.·lbf)

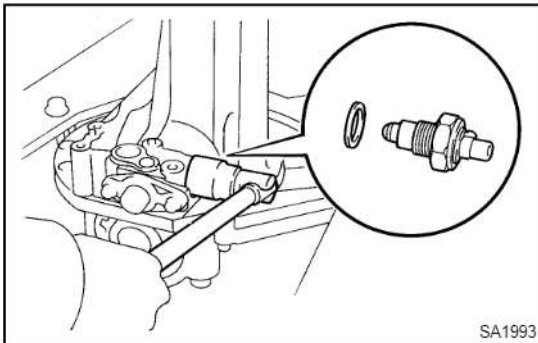
If necessary, disassemble and inspect the differential.

6. CHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION (See page SA-103)



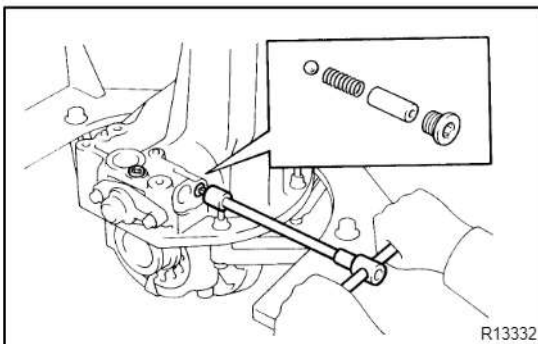
**7. w/ DIFF. LOCK:
REMOVE ACTUATOR**

- (a) Remove the bolt and actuator from the differential carrier.
- (b) Remove the O-ring.



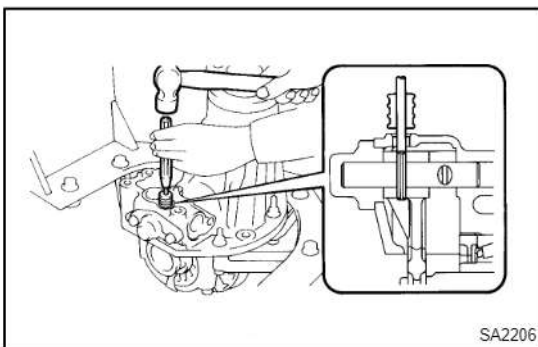
**8. w/ DIFF. LOCK:
REMOVE INDICATOR SWITCH**

Remove the indicator switch and gasket.

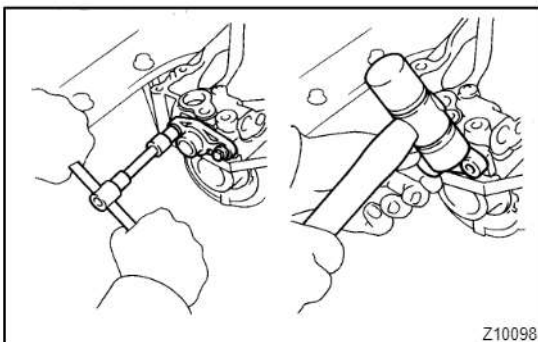


**9. w/ DIFF. LOCK:
REMOVE SHIFT FORK SHAFT**

- (a) Using a hexagon wrench, remove the 2 straight screw plugs.
- (b) Remove the spring seat, compression spring and ball.



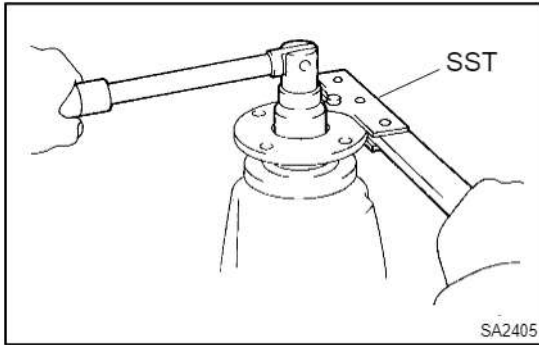
- (c) Using a pin punch and hammer, remove the slotted spring pin.



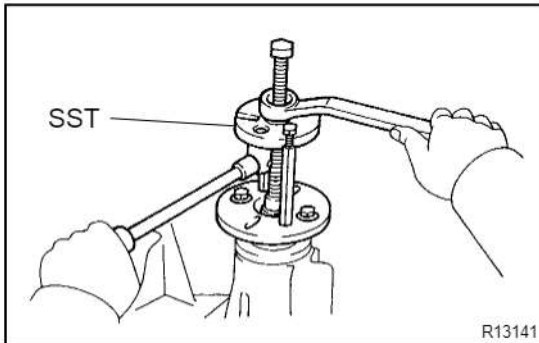
- (d) Remove the 2 bolts from the shaft retainer.
- (e) Using a plastic hammer, remove the shaft retainer.
- (f) Remove the shift fork shaft.

HINT:

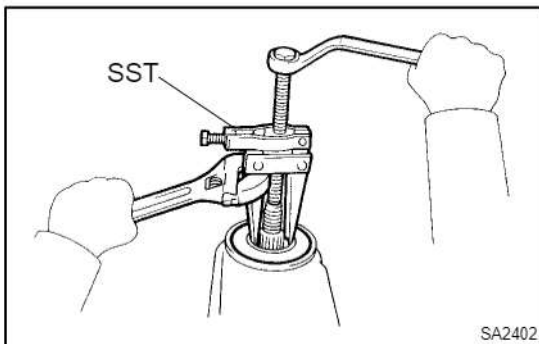
Pull out the shift fork shaft with a screwdriver turned round.

**10. REMOVE COMPANION FLANGE**

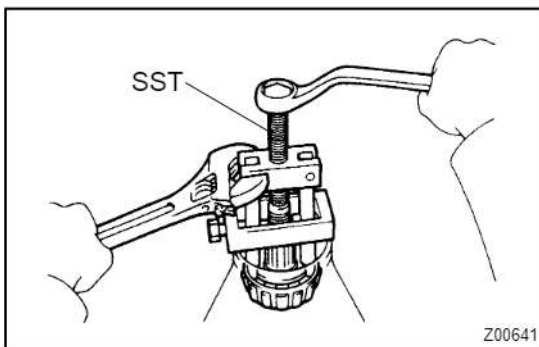
- (a) Using a chisel and hammer, unstake the nut.
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00021



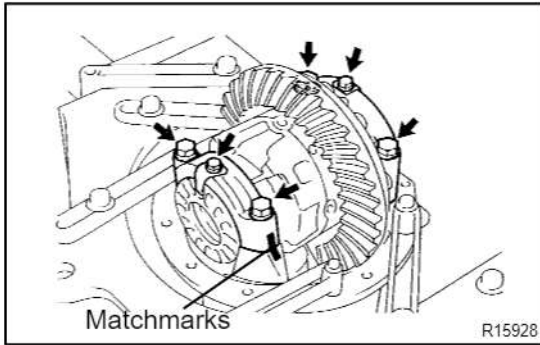
- (c) Using SST, remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)

**11. REMOVE OIL SEAL AND OIL SLINGER**

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

**12. REMOVE FRONT BEARING**

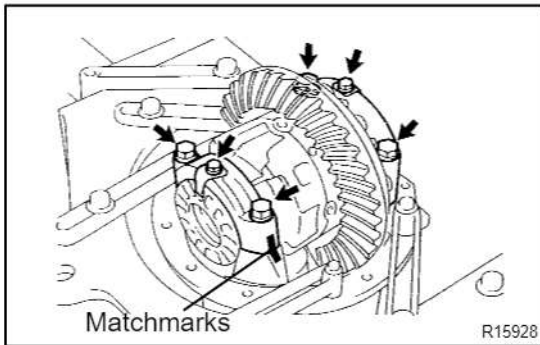
- Using SST, remove the front bearing from the drive pinion.
SST 09556-22010

**13. w/o Diff. lock:****REMOVE DIFFERENTIAL CASE**

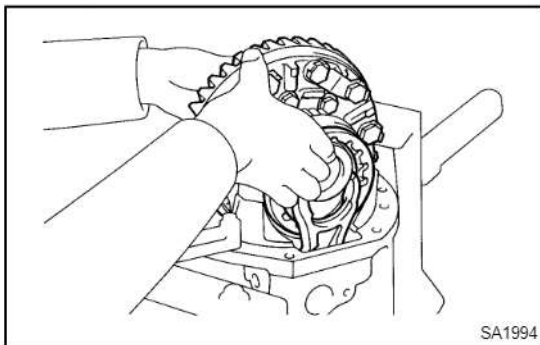
- (a) Place matchmarks on the bearing cap and differential carrier.
- (b) Remove the 2 adjusting nut locks.
- (c) Remove the 4 bolts and 2 bearing caps.
- (d) Remove the 2 adjusting nuts.
- (e) Remove the differential case with the side bearing outer races from the differential carrier.

HINT:

Tag the disassembled parts to show the location for reassembly.

**14. w/ Diff. lock:****REMOVE DIFFERENTIAL CASE**

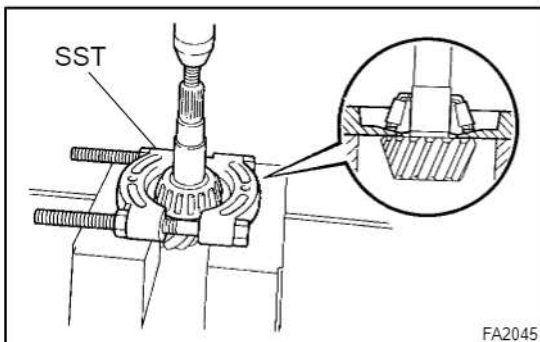
- (a) Place matchmarks on the bearing cap and differential carrier.
- (b) Remove the 2 adjusting nut locks.
- (c) Remove the 4 bolts and 2 bearing caps.



- (d) Remove the differential case with side bearing outer races, adjusting nut and sleeve from the differential carrier.
- (e) Remove the shift fork.

15. REMOVE DRIVE PINION AND BEARING SPACER

- (a) Remove the drive pinion with the rear bearing.
- (b) Remove the bearing spacer.

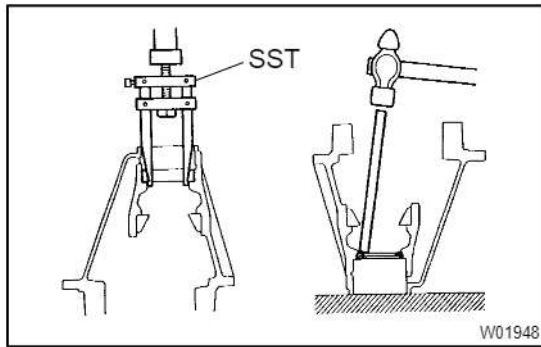
**16. REMOVE DRIVE PINION REAR BEARING**

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

HINT:

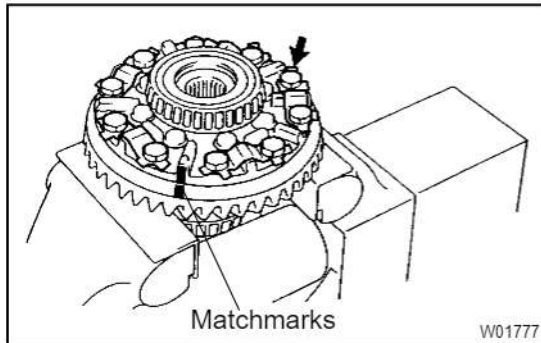
If the drive pinion or ring gear are damaged, replace them as a set.

- (b) Remove the plate washer from the drive pinion.



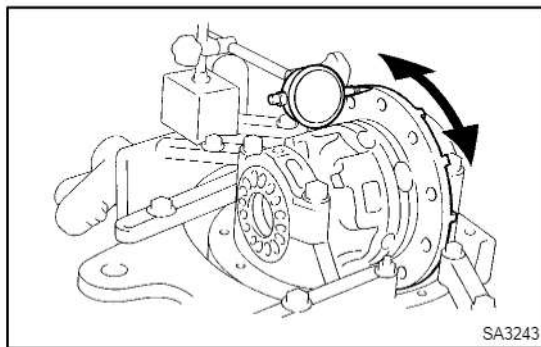
17. REMOVE FRONT AND REAR BEARING OUTER RACES AND OIL STORAGE RING

- Using SST, remove the front bearing outer race.
SST 09308-00010
- Using a brass bar and hammer, remove the oil storage ring.
- Using a brass bar and hammer, remove the rear bearing outer race.



18. REMOVE RING GEAR

- Place matchmarks on the ring gear and differential case.
- Using a screwdriver and hammer, unstake the 5 lock plates.
- Remove the 10 ring gear set bolts and 5 lock plates.
- Using a plastic hammer, tap on the ring gear to separate it from the differential case.



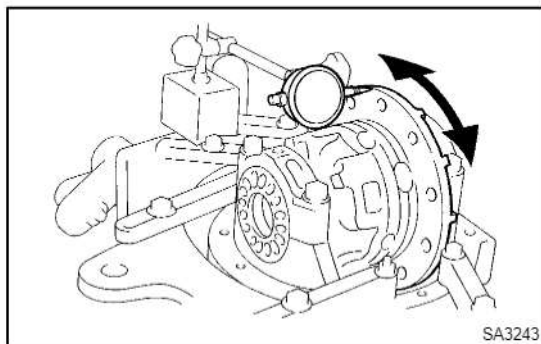
19. w/o Diff. lock:

CHECK DIFFERENTIAL CASE RUNOUT

- Place the bearing outer races on their respective bearings. Check that the left and right outer races are not interchanged.
- Install the differential case in the differential carrier.
- When there is no play left in the side bearings, install the plate washers.
- Align the matchmarks on the bearing cap and differential carrier.
- Install and uniformly tighten the 4 bearing cap bolts in several passes.
- Using a dial indicator, measure the differential case runout.

Maximum runout: 0.07 mm (0.0028 in.)

- Remove the differential case.



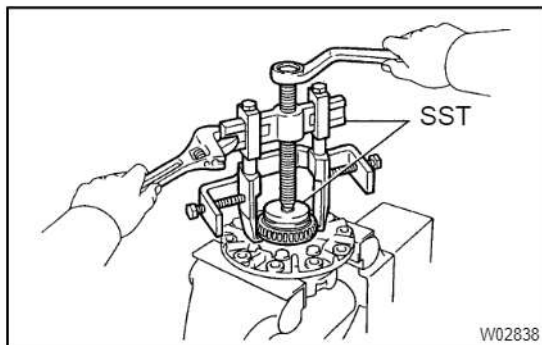
20. w/ Diff. lock:

CHECK DIFFERENTIAL CASE RUNOUT

- Install the differential case in the differential carrier and tighten the adjusting nut just to where there is no play in the bearing.
- Using a dial indicator, measure the differential case runout.

Maximum runout: 0.07 mm (0.0028 in.)

- Remove the differential case.



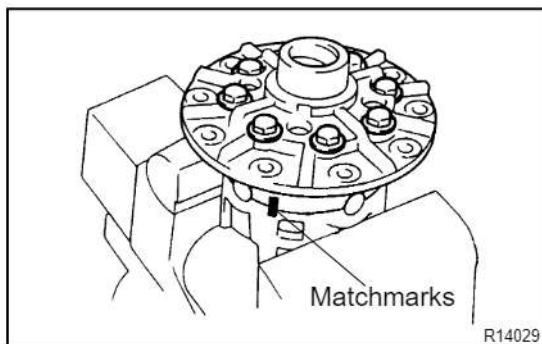
21. REMOVE SIDE BEARINGS FROM DIFFERENTIAL CASE

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

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04061, 09957-04010, 09958-04011),
09950-60010 (09951-00480),
09950-60020 (09951-00730)

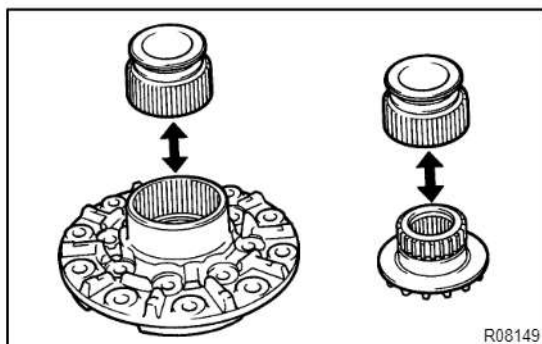
HINT:

Fix the claws of SST to the notches in the differential case.



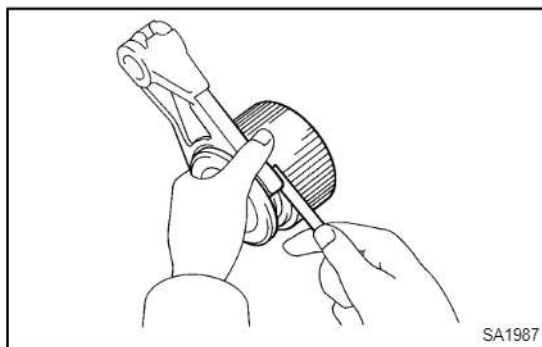
22. DISASSEMBLE DIFFERENTIAL CASE

- Place matchmarks on the LH and RH cases.
- Remove the 8 bolts uniformly, a little at a time.
- Using a plastic hammer, separate the LH and RH cases.
- Remove the 2 side gears, 2 side gear thrust washers, spider, 4 pinion gears and 4 pinion gear thrust washers.



23. w/ DIFF. LOCK: INSPECT SLEEVE

- Install the sleeve to the differential case (LH) and check that it moves smoothly.
- Install the sleeve to the side gear and check it moves smoothly.

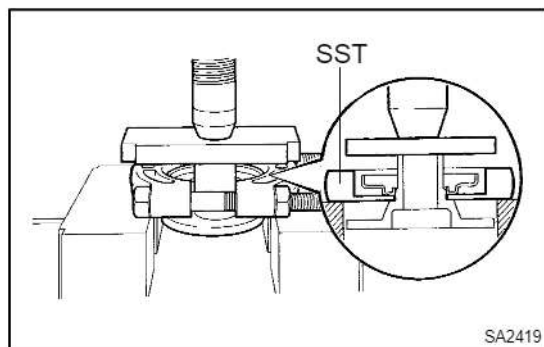


24. w/ DIFF. LOCK: MEASURE CLEARANCE OF SHIFT FORK AND SLEEVE

Using a feeler gauge, measure the clearance between the shift fork and sleeve.

Clearance (Reference):

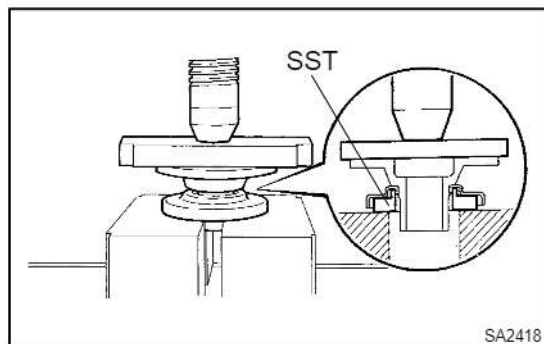
0.15 - 0.35 mm (0.006 - 0.014 in.)



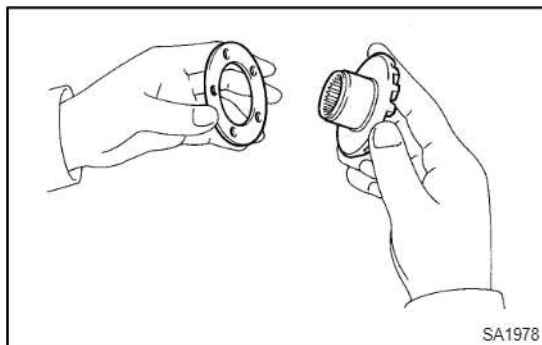
REPLACEMENT

REPLACE COMPANION FLANGE DUST DEFLECTOR

- (a) Using SST and a press, remove the dust deflector.
SST 09950-00020



- (b) Using SST and a press, install a new dust deflector.
SST 09726-40010

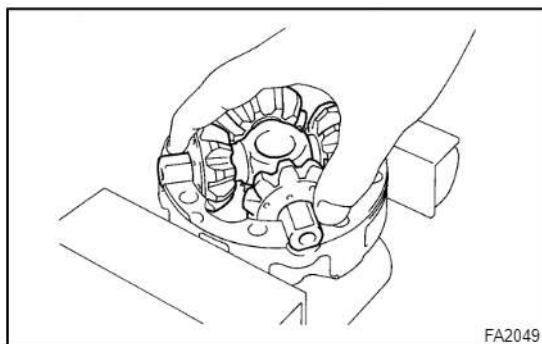


SA1978

REASSEMBLY

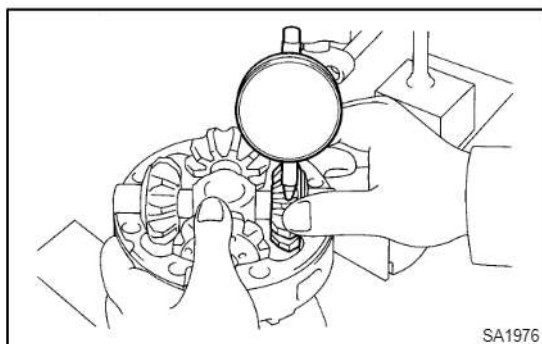
1. ASSEMBLE DIFFERENTIAL CASE

- (a) Apply all of the sliding and rotating surfaces with gear oil.
- (b) Install the side gear thrust washer to the side gear.
- (c) Install the side gear to the RH case.



FA2049

- (d) Install the 4 pinion gears and pinion gear thrust washers to the spider.
- (e) Install the 4 pinion gears with spider to the RH case.



SA1976

- (f) Using a dial indicator, measure the side gear backlash with holding the side gear and spider.

Standard backlash:

0.05 - 0.20 mm (0.0020 - 0.0079 in.)

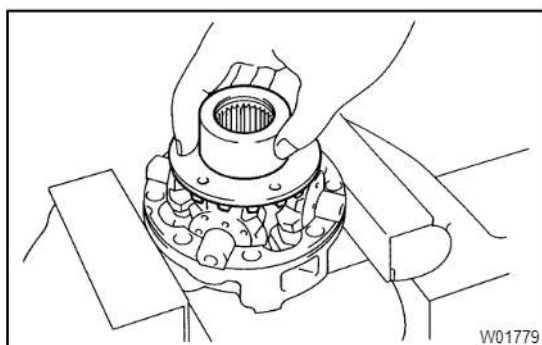
HINT:

- Measure at all 4 locations.
- Measure the backlash at the RH case at the LH case.

If the backlash is not within the specification, install a thrust washer of a different thickness.

Thrust washer thickness

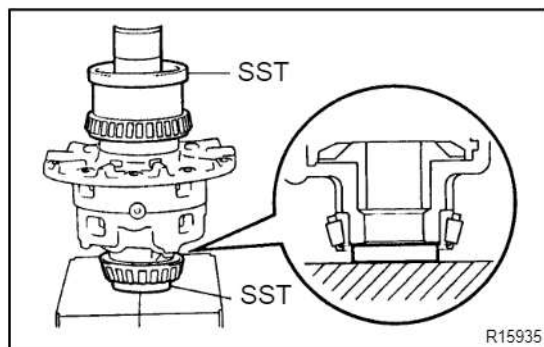
Thickness mm (in.)	Thickness mm (in.)
0.9 (0.035)	1.2 (0.047)
1.0 (0.039)	1.3 (0.051)
1.1 (0.043)	-



W01779

- (g) Install the side gear and side gear thrust washer to the RH case.
- (h) Install the pinion gears and spider to the RH case.
- (i) Install the side gear and side gear thrust washer to the RH case.
- (j) Align the matchmarks on the LH and RH cases.
- (k) Torque the 8 bolts uniformly, a little at a time.

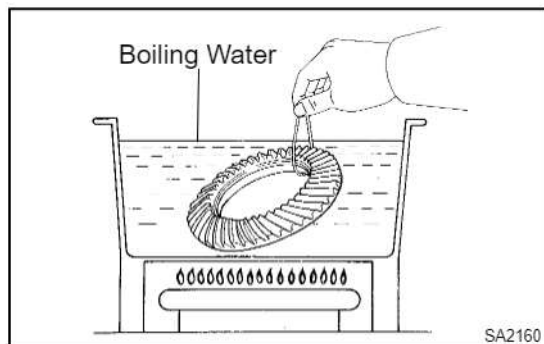
Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)



2. INSTALL SIDE BEARINGS

Using SST and a press, install the side bearings on the differential case.

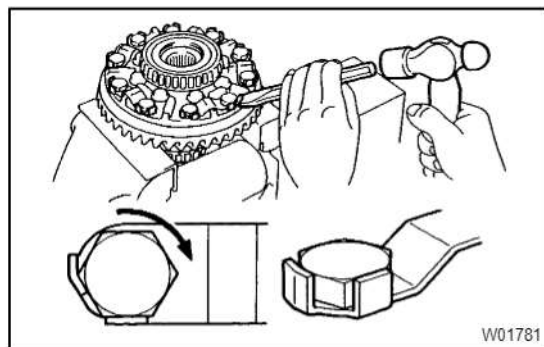
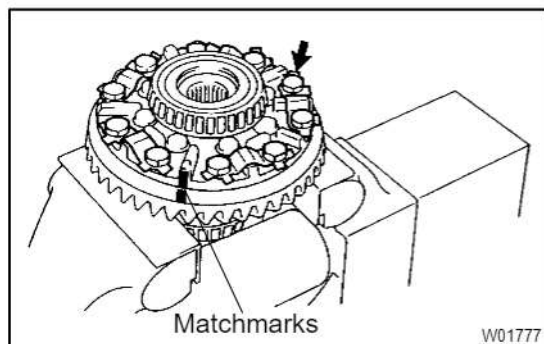
SST 09223-15020 09950-60010 (09951-00480, 09951-00550), 09950-60020 (09951-00730)



3. INSTALL RING GEAR ON DIFFERENTIAL CASE

- Clean the contact surfaces of the differential case and ring gear.
- Heat the ring gear to about 100 °C (212 °F) in boiling water.
- Carefully remove the ring gear from the boiling water.
- After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.
- Align the matchmarks on the ring gear and differential case.
- Temporarily install 5 new lock plates and 10 set bolts.
- After the ring gear cools down enough, tighten the set bolts uniformly and a little at a time.

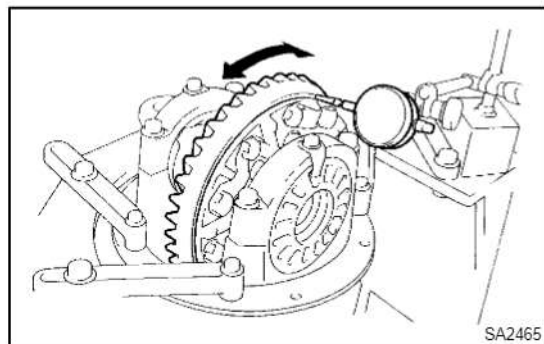
Torque: 97 N·m (985 kgf·cm, 71 ft·lbf)



- Using a drift punch and hammer, stake the 10 lock plates.

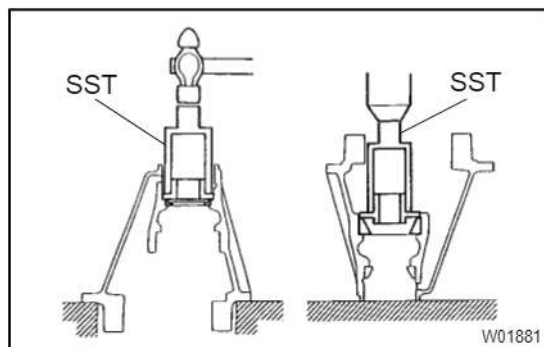
HINT:

Stake 1 claw flush with the flat surface of the bolt. For the claw contacting the protruding portion of the bolt, stake the half on the tightening side.



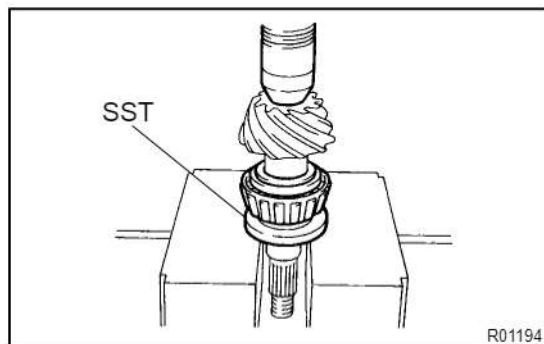
4. CHECK RING GEAR RUNOUT

- Install the differential case onto the carrier and tighten the adjusting nut just to where there is no play in the bearings.
- Using a dial indicator, check the ring gear runout.
Maximum runout: 0.07 mm (0.0028 in.)
- Remove the differential case from the carrier.



5. INSTALL NEW OIL STORAGE RING AND DRIVE PINION FRONT AND REAR BEARING OUTER RACES

- Using SST and a hammer, install a new oil storage ring.
SST 09316-6001 1 (09316-00011, 09316-00021)
- Using SST and a press, install the outer races.
SST 09316-6001 1 (09316-00011, 09316-00021, 09316-00051)



6. INSTALL DRIVE PINION FRONT BEARING

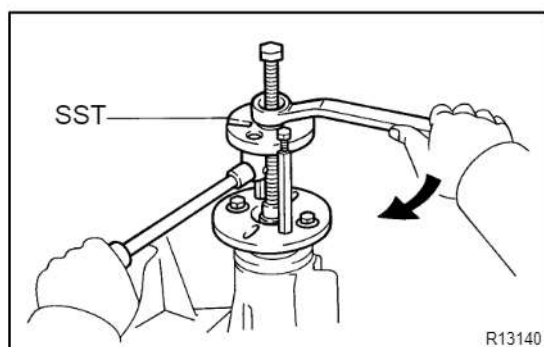
- Install the plate washer on the drive pinion.
- Using SST and a press, install the rear bearing onto the drive pinion.
SST 09506-30012

7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

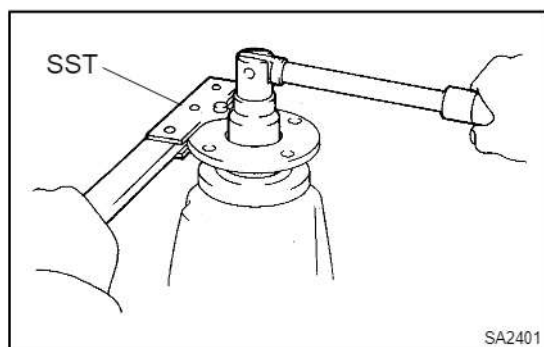
- Install the drive pinion, front bearing and oil slinger.

HINT:

Assemble the spacer and oil seal after adjusting the gear contact pattern.



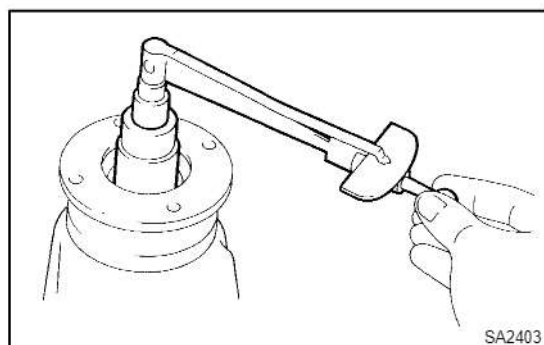
- Install the companion flange with SST.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)



- Adjust the drive pinion preload by tightening the companion flange nut.
Using SST to hold the flange, tighten the nut.
SST 09330-00021

NOTICE:

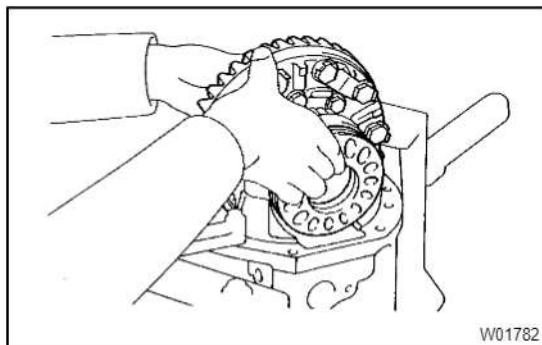
As there is no spacer, tighten a little at a time, being careful not to overtighten.



- Using a torque wrench, measure the preload.
Preload (at starting):
New bearing:
0.9 - 1.6 N·m (10 - 16 kgf·cm, 8.7 - 13.9 in.-lbf)
Reused bearing:
0.5 - 0.8 N·m (5 - 8 kgf·cm, 4.3 - 6.9 in.-lbf)

HINT:

Measure the total preload after first turning the bearing clockwise and counterclockwise several times to make the bearing smooth.

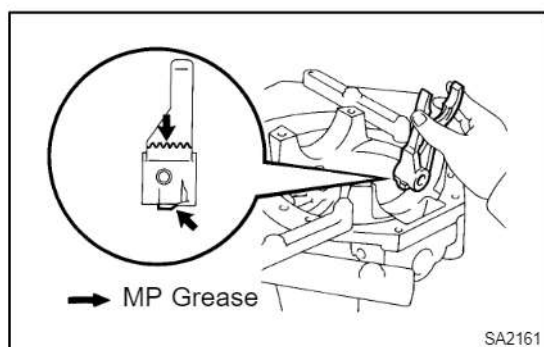
**8. w/o Diff. lock:****INSTALL DIFFERENTIAL CASE IN CARRIER**

- (a) Place the bearing outer races on their respective bearings. Make sure that the left and right outer races are not interchanged.
- (b) Install the case in the carrier.

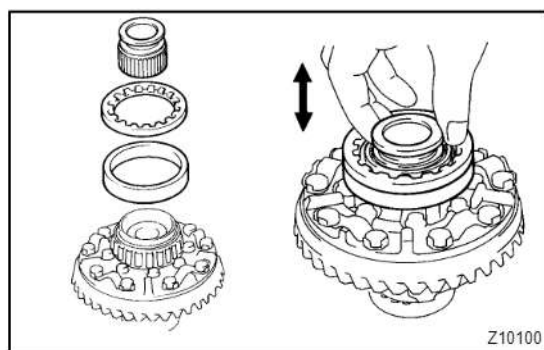
HINT:

Make sure that there is a backlash between the ring gear and drive pinion.

- (c) Install the adjusting nuts on the carrier, making sure the nuts are threaded properly.

**9. w/ Diff. lock:****INSTALL DIFFERENTIAL CASE IN CARRIER**

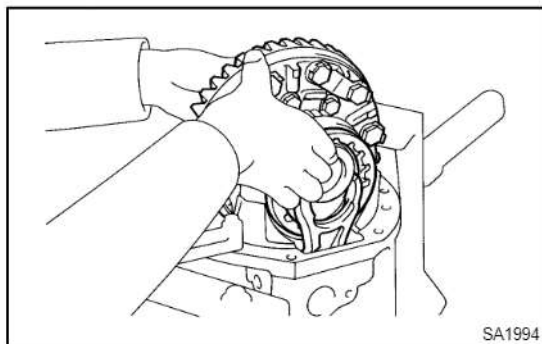
- (a) Apply MP grease on the rack of the shift fork and connecting part of the indicator switch.
- (b) Insert the shift fork into the differential carrier, as shown.



- (c) Place the outer races, adjusting nut and left side to sleeve.

HINT:

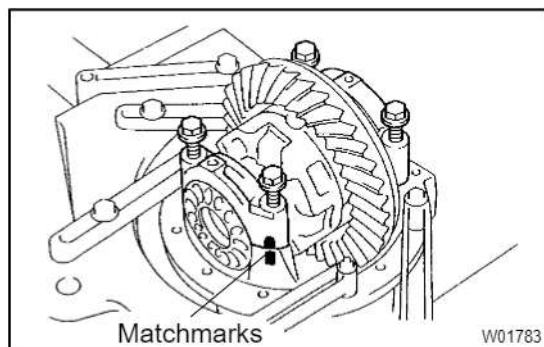
Check that the sleeve moves smoothly.



- (d) Install the shift fork in the groove of the sleeve holding it by hand and install the case in the carrier.

HINT:

Make sure that there is backlash between the ring gear and drive pinion.



10. INSTALL BEARING CAPS

Align the matchmarks on the cap and carrier. Screw in the 2 bearing cap bolts 2 or 3 turns and press down the bearing cap by hand.

HINT:

If the bearing cap does not fit tightly on the carrier, the adjusting nuts are not threaded properly.

Reinstall the adjusting nuts if necessary.

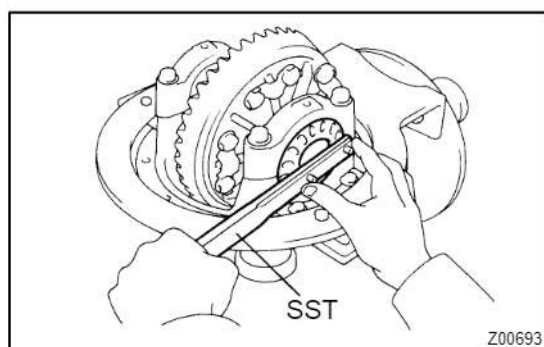
11. w/o Diff. lock:

ADJUST SIDE BEARING PRELOAD

- (a) Tighten the 4 bearing cap bolts to the specified torque, and loosen them to the point where they can be turned by hand.

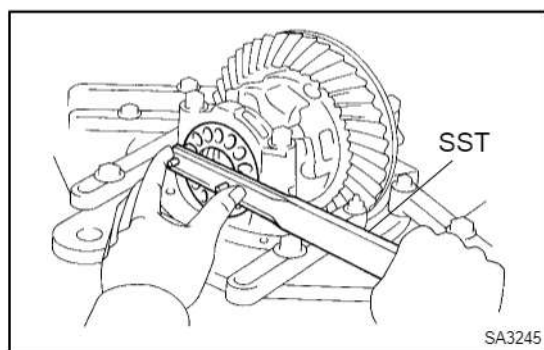
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)

- (b) Fully tighten the 4 bearing cap bolts by hand.



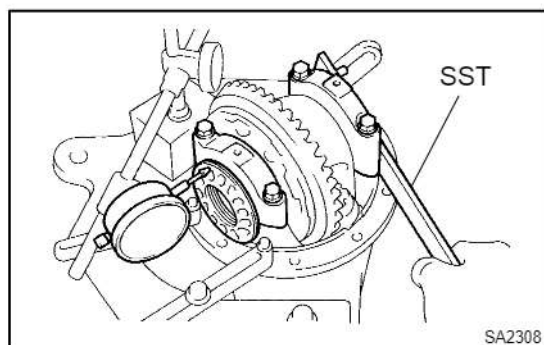
- (c) Using SST, tighten the adjusting nut on the ring gear back side until the ring gear has a backlash of about 0.2 mm (0.008 in.).

SST 09504-0001 1

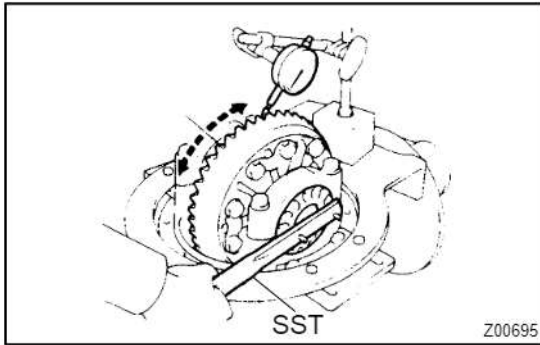


- (d) With turning the ring gear, use SST to fully tighten the adjusting nut on the ring gear teeth side. After the bearings are settled, loosen the adjusting nut on the drive pinion side.

SST 09504-0001 1



- (e) Place a dial indicator on the top of the adjusting nut on the ring gear back side.
- (f) Adjust the side bearing for zero preload by tightening the other adjusting nut until the pointer on the indicator begins to move.
- (g) Tighten the adjusting nut 1 - 1.5 notches from the zero preload position.



- (h) Using a dial indicator, adjust the ring gear backlash until it is within the specification.

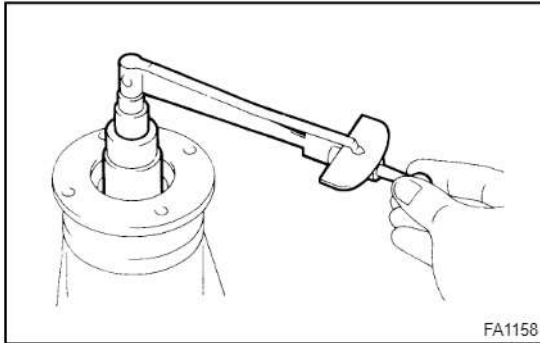
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

HINT:

The backlash is adjusted by turning the left and right adjusting nuts equal amounts. For example, loosen the nut of the left side one notch and tighten the nut on the right side one notch.

- (i) Torque the bearing cap bolts.

Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)



- (j) Recheck the ring gear backlash.

HINT:

Before measurement, rotate the ring gear 5 times or more.

Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

- (k) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

Drive pinion preload plus 0.4 - 0.6 N·m (4 - 6 kgf·cm, 3.5 - 5.2 in·lbf)

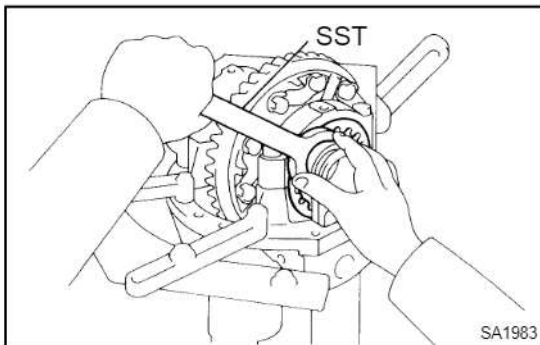
12. w/ Diff. lock:

ADJUST SIDE BEARING PRELOAD

- (a) Torque the 4 bearing cap bolts to the specified torque, then loosen them to the point where the adjusting nut can be turned by hand.

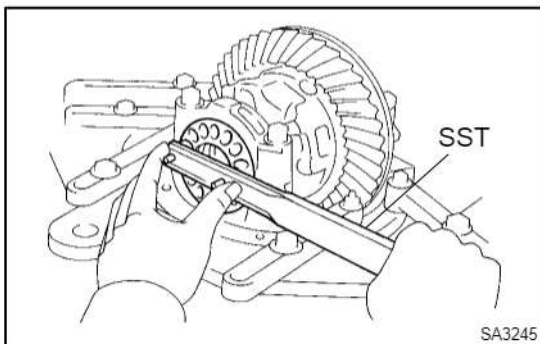
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)

- (b) Fully tighten the 4 bearing cap bolts by hand.



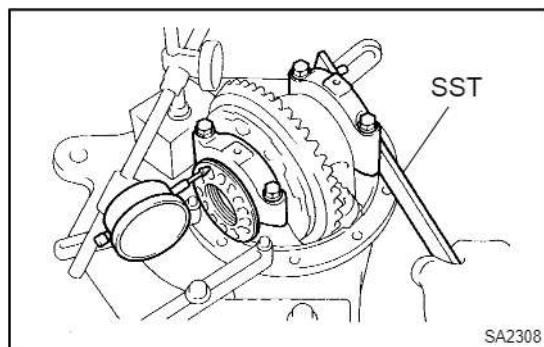
- (c) Using the SST, torque the adjusting nut on the ring gear side until the ring has a backlash of about 0.2 mm (0.008 in.).

SST 09960-10010

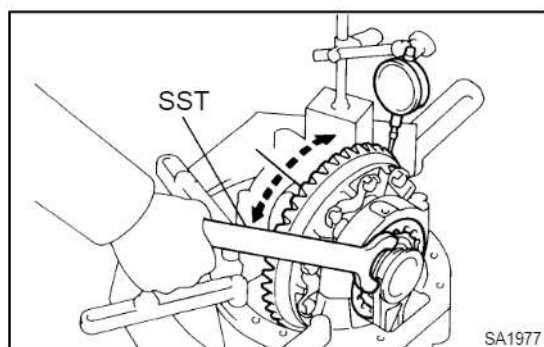


- (d) With turning the ring gear, use the SST to fully tighten the adjusting nut on the drive pinion side. After the bearings are settled, loosen the adjusting nut on the drive pinion side.

SST 09504-0001 1



- (e) Place a dial indicator on the top of the adjusting nut on the ring gear side.
- (f) Adjust the side bearing for zero preload by tightening the other adjusting nut until the pointer on the indicator begins to move.
- (g) Torque the adjusting nut 1 - 1.5 notches from the zero preload position.



- (h) Using a dial indicator, adjust the ring gear backlash until it is within specification.

Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

HINT:

The backlash is adjusted by turning the left and right adjusting nuts equal amounts. For example, loosen the nut on the left side one notch and torque the nut on the right side one notch.

- (i) Torque the bearing cap bolts.

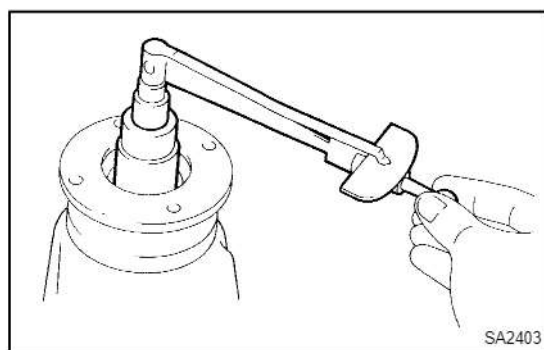
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)

- (j) Recheck the ring gear backlash.

HINT:

Before measurement, rotate the ring gear 5 times or more.

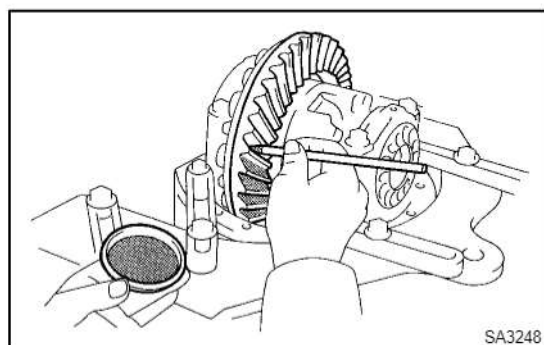
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)



- (k) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

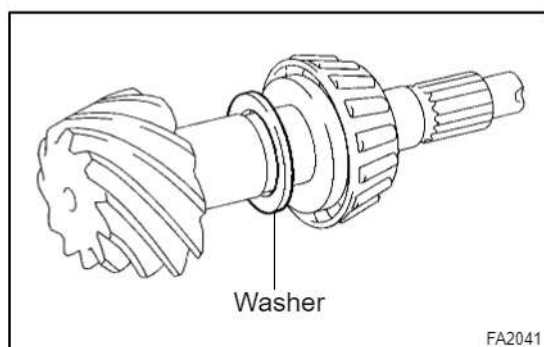
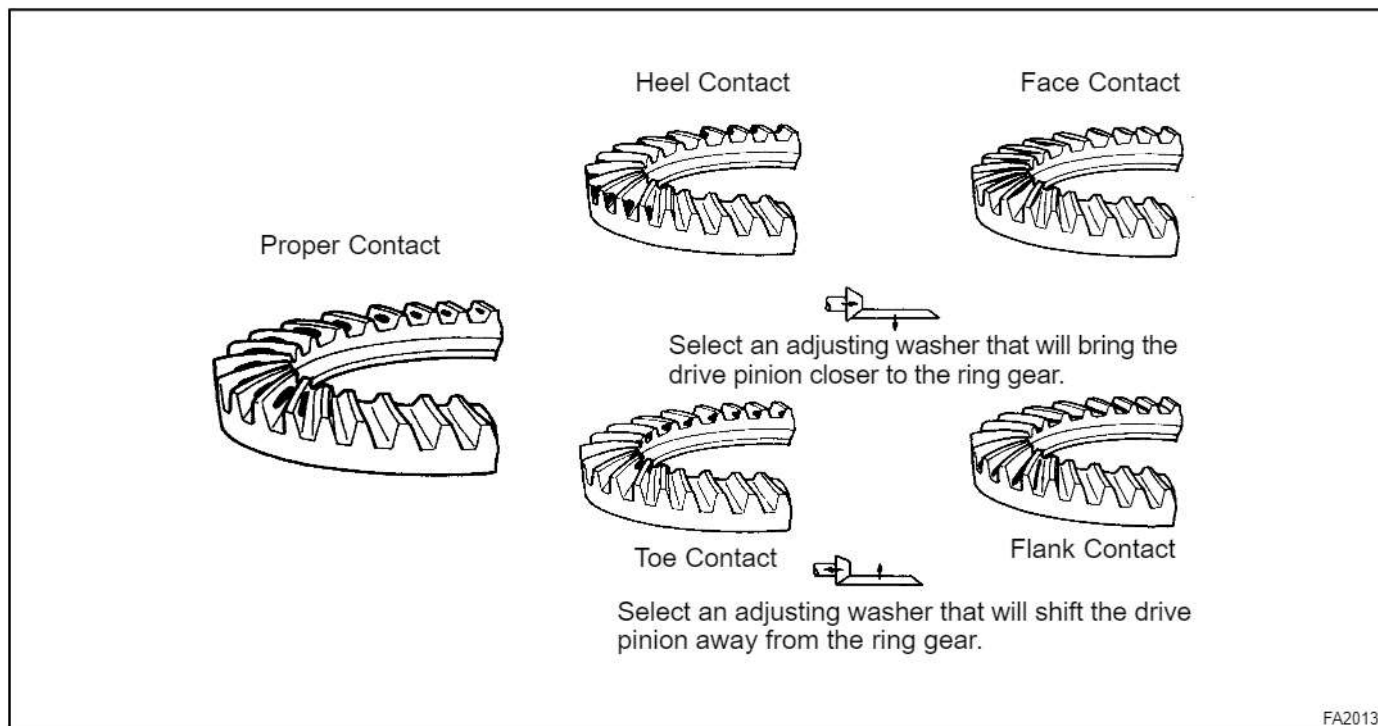
Total preload (starting):

Drive pinion preload plus 0.4 - 0.6 N·m (4 - 6 kgf·cm, 3.5 - 5.2 in·lbf)



13. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

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

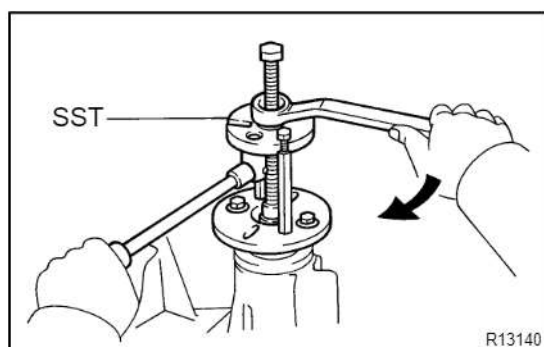


If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

Thickness mm (in.)	Thickness mm (in.)
1.70 (0.0669)	2.03 (0.0799)
1.73 (0.0681)	2.06 (0.0811)
1.76 (0.0693)	2.09 (0.0823)
1.79 (0.0705)	2.12 (0.0835)
1.82 (0.0717)	2.15 (0.0846)
1.85 (0.0728)	2.18 (0.0858)
1.88 (0.0740)	2.21 (0.0870)
1.91 (0.0752)	2.24 (0.0882)
1.94 (0.0764)	2.27 (0.0894)
1.97 (0.0776)	2.30 (0.0906)
2.00 (0.0787)	2.33 (0.0917)

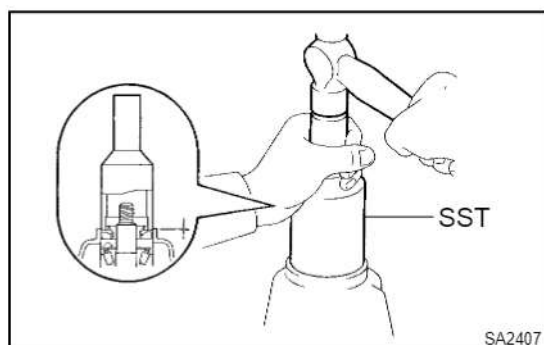
14. REMOVE COMPANION FLANGE (See page [SA-96](#))
15. REMOVE OIL SLINGER AND FRONT BEARING
(See page [SA-96](#))

16. INSTALL BEARING SPACER AND FRONT BEARING
 - (a) Place a new bearing spacer on the shaft.
 - (b) Place the front bearing and oil slinger.



- (c) Using SST and the companion flange, install the front bearing then remove the companion flange.

SST 09950-30012 (09951-06010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)



17. INSTALL OIL SEAL

- (a) Apply MP grease to the oil seal lip.
(b) Using SST and a hammer, install a new oil seal.

SST 09214-7601 1

Oil seal drive in depth: 1.0 mm (0.039 in.)

18. INSTALL COMPANION FLANGE

- (a) Place the companion flange on the drive pinion.
(b) Install a new nut.

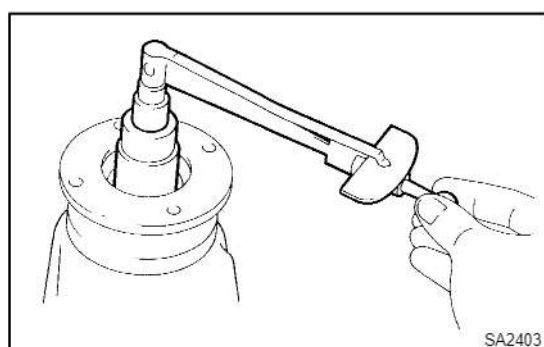
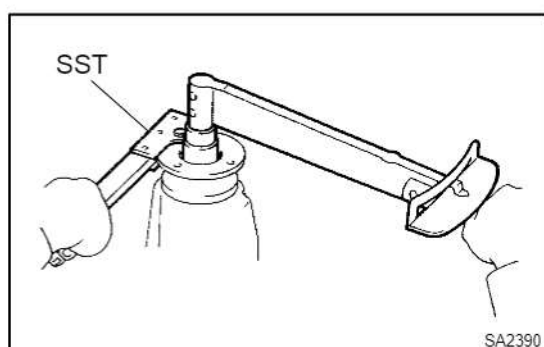
HINT:

Coat the threads of a new nut with hypoid gear oil.

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

SST 09330-00021

Torque: 196 N·m (2,000 kgf·cm, 145 ft·lbf)



19. ADJUST DRIVE PINION PRELOAD

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

Preload (at starting):

New bearing:

0.9 - 1.6 N·m (10 - 16 kgf·cm, 8.7 - 13.9 in·lbf)

Reused bearing:

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

If preload is greater than the specification, replace the bearing spacer.

If preload is less than the specification, retighten the nut a little at a time with a torque of 13 N·m (130 kgf·cm, 9 ft·lbf) until the specified preload is reached.

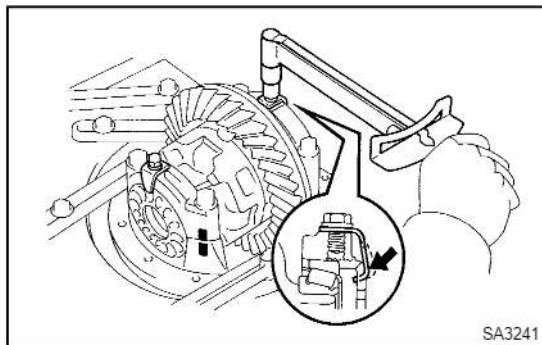
Torque: 343 N·m (3,500 kgf·cm, 253 ft·lbf) or less

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

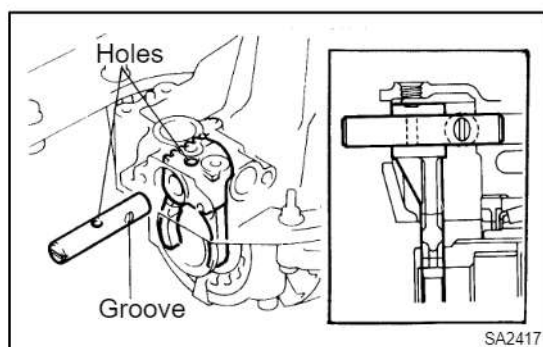
20. RECHECK RING GEAR BACKLASH

(See page [SA-96](#))

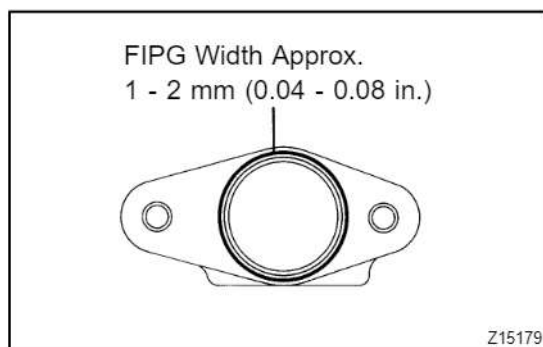
21. RECHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION (See step 14)
22. CHECK RUNOUT OF COMPANION FLANGE (See page SA-96)
23. STAKE DRIVE PINION NUT



24. INSTALL ADJUSTING NUT LOCKS
 - (a) Install 2 new nut locks on the bearing caps.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
 - (b) After tightening bolts, bend the nut locks.



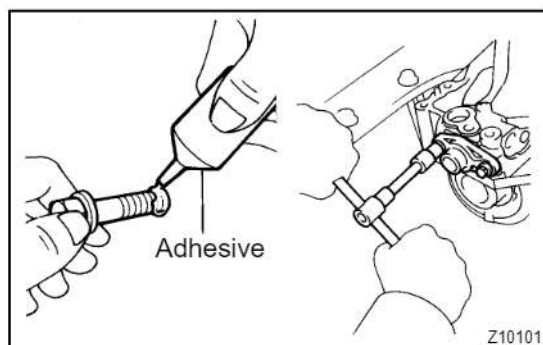
25. w/ DIFF. LOCK:
INSTALL SHIFT FORK SHAFT
 - (a) Apply MP grease onto the outer circuit of the fork shaft.
 - (b) Install the fork shaft to match the hole of the shift fork and that of the shift fork shaft.



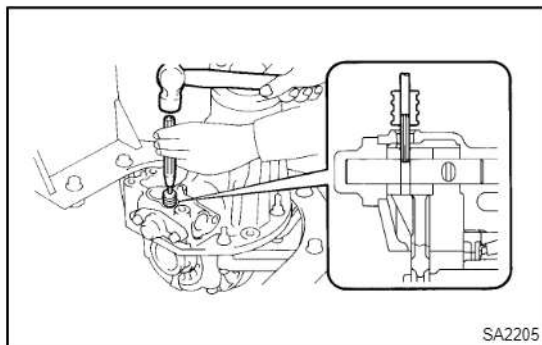
- (c) Remove any FIPG material and be careful not to drop oil on the contacting surface of the differential carrier and shaft retainer.
- (d) Apply FIPG to the carrier, as shown.
FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT:

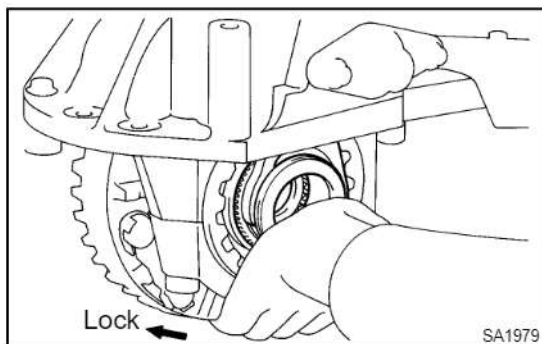
Install the shaft retainer within 10 minutes after applying FIPG.



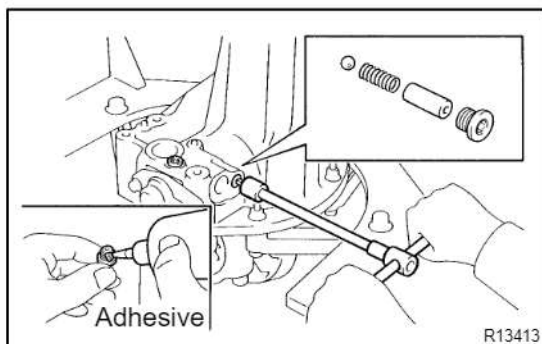
- (e) Clean the threads of the bolts and retainer bolts holes with toluene or trichloroethylene.
- (f) Apply adhesive to 2 or 3 threads of the mount bolt end.
Adhesive: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
- (g) Tighten the shaft retainer with the 2 bolts.
Torque: 24 N·m (240 kgf·cm, 17 ft·lbf)



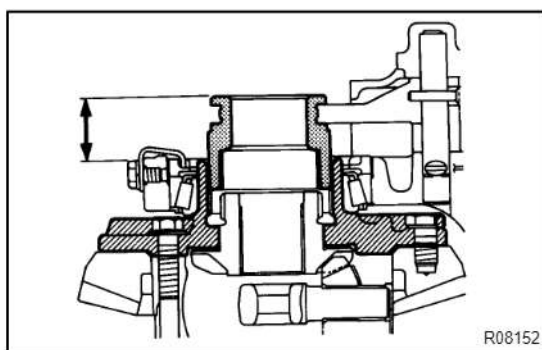
- (h) Using a pin punch and hammer, install the slotted spring pin to the shift fork.



- (i) Shift the fork deeply and keep the differential lock condition.



- (j) Install the ball, compression spring and spring seat.
 (k) Clean the threads of 2 plugs and plug holes with toluene or trichloroethylene.
 (l) Apply adhesive to the plug threads.
Adhesive: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
 (m) Using a hexagon wrench, install and tighten the screw plugs.
Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)



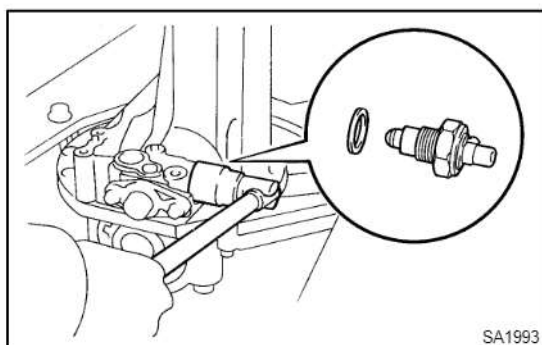
**26. w/ DIFF. LOCK:
 MEASURE DISTANCE BETWEEN SLEEVE AND DIFFERENTIAL CASE END SIDE**

Measure distance between the sleeve and tip of the differential case when differential is free and locked.

Standard distance:

LOCK: 17.44 - 18.86 mm (0.6866 - 0.7425 in.)

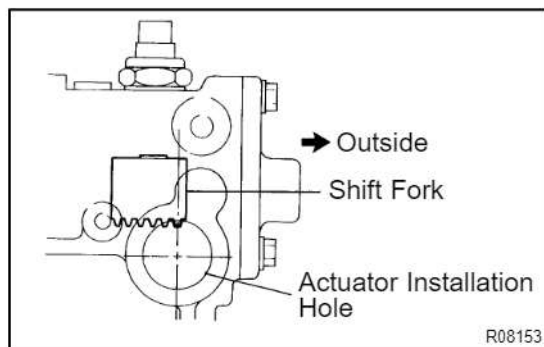
FREE: 32.40 - 33.90 mm (1.2756 - 1.3346 in.)



27. INSTALL INDICATOR SWITCH

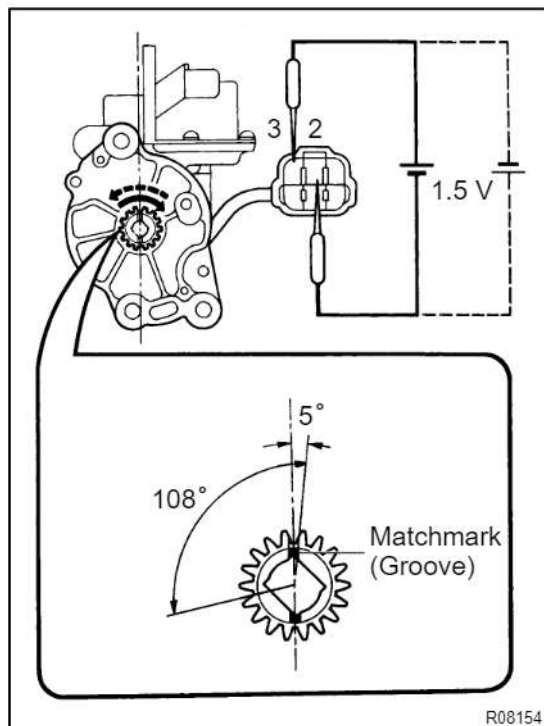
Install the indicator switch with a new gasket.

Torque: 40 N·m (410 kgf·cm, 30 ft·lbf)



28. INSTALL ACTUATOR

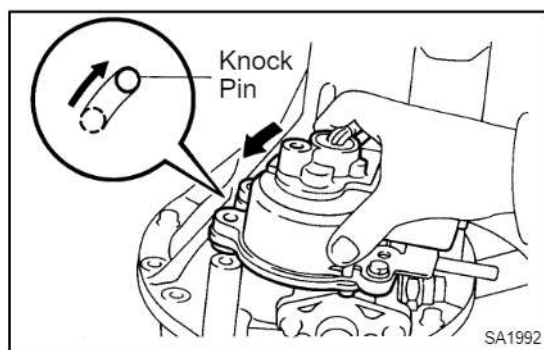
- (a) Check that the outermost rack tooth of the shift fork is virtually above the center line of the actuator installation hole.



- (b) Ensure that the matchmarks of the pinion of the actuator is in the extent between zero and 5 degrees clockwise above the center line of the actuator.

NOTICE:

- If the matchmarks is not in this extent, rotate the pinion to be matched.
 - Don't supply the battery positive voltage directly between terminals.
 - If the matchmarks come to the extension limit of the rotation, don't electrify moreover.
- (c) Install a new O-ring to the actuator.
 (d) Apply a light coat of gear oil on the O-ring.
 (e) Apply MP grease to the gear part.



- (f) Insert the actuator so that the long hole on the actuator side fits with the knock pin on the carrier side.

HINT:

Don't damage the O-ring of the actuator.

- (g) Align the actuator with the long hole and rotate the actuator counterclockwise when the knock pin reaches the right-hand side.
 (h) Install the actuator to the differential carrier with the bolt so that the outermost rack tooth of the shift fork will fit the matchmarks of the pinion of the actuator.

Torque: 26 N·m (270 kgf·cm, 20 ft·lbf)

INSTALLATION

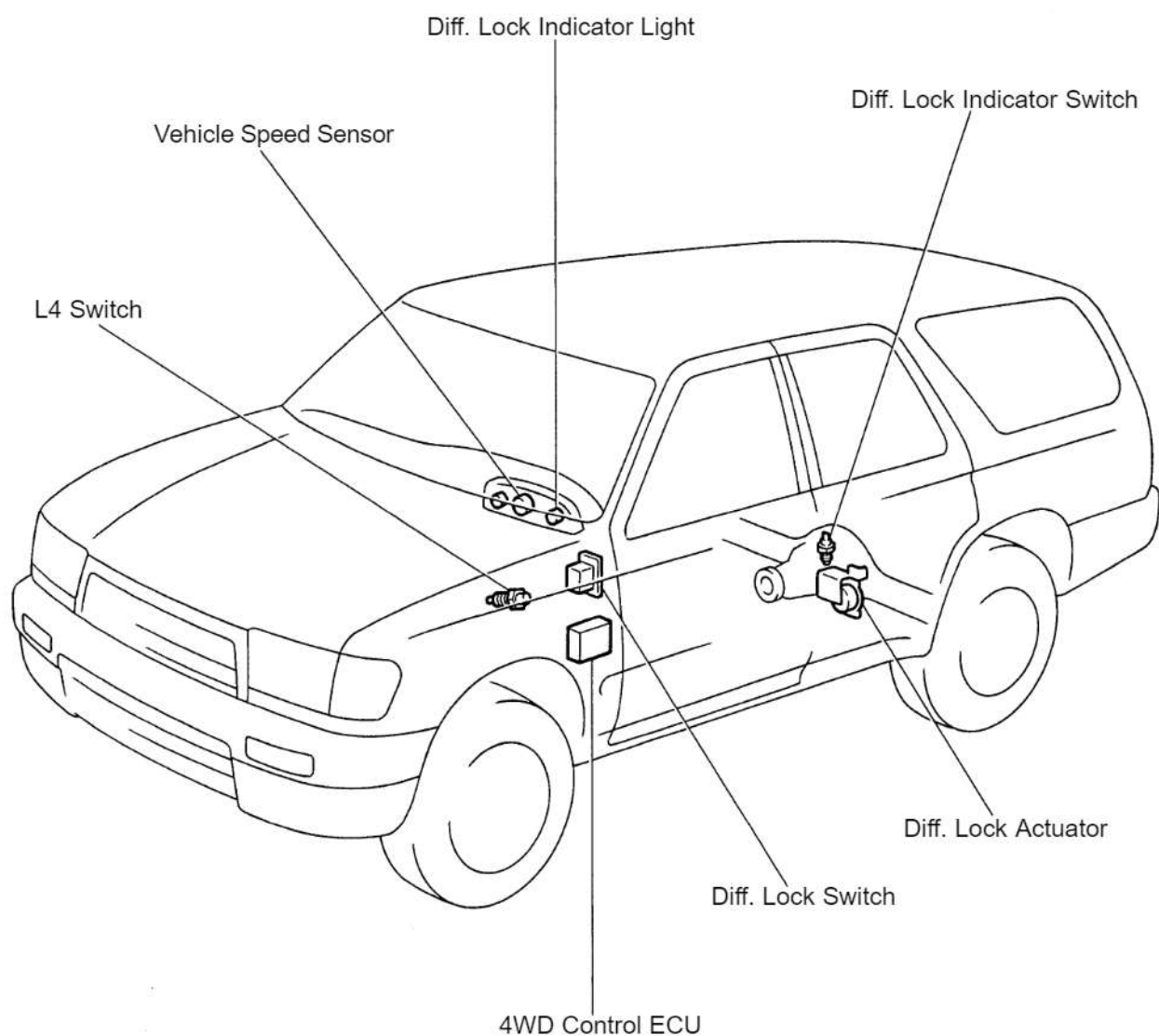
Installation is in the reverse order of removal (See page [SA-94](#)).

HINT:

After installation, fill the differential with differential oil (See page [SA-88](#)) and check the diff. lock operation (See page [SA-1 18](#)).

DIFFERENTIAL LOCKING SYSTEM LOCATION

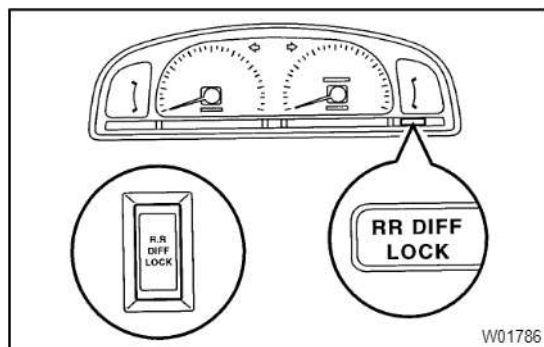
SA06N-02



W03031

REMOVAL

REMOVE DIFF. LOCK ACTUATOR (See page [SA-96](#))



INSPECTION

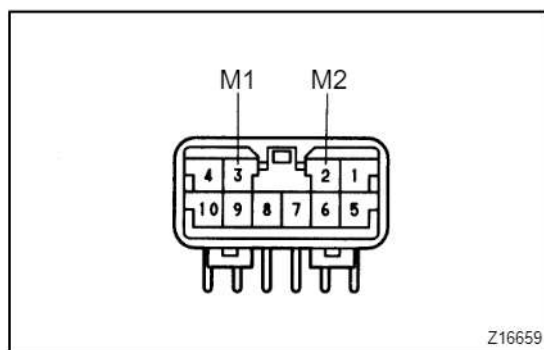
1. INSPECT DIFFERENTIAL LOCK SYSTEM

- (a) Inspect the indicator light.
Check that the indicator light lights up for approx. 1 second when the ignition switch is turned ON.
- (b) Inspect the differential lock operation.
 - (1) Jack up the vehicle then start the engine.
 - (2) Shift the transfer shift lever to the 4WD position.
 - (3) When the Diff. lock control switch is set to the ON position, the indicator light is turned on.
Differential lock is applied to the rear wheel at this time.

HINT:

If the gears of the differential lock system are not meshed, the indicator light remains blinking, so rotate the tires to mesh the gear.

- (4) When the Diff. lock control switch is at the OFF position, the indicator light goes off.
Differential lock is released for the rear wheel at this time.



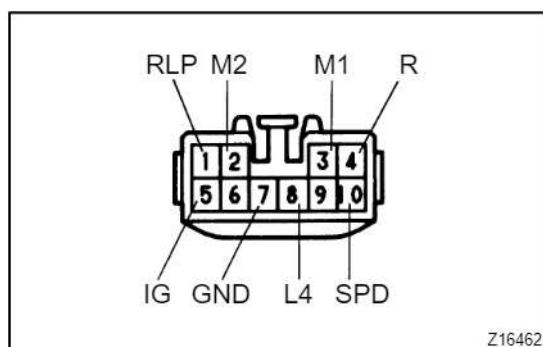
- (5) Check the voltage between the terminals of the 4WD control ECU when switching the Diff. lock control switch with the speedometer, registering approx. 8 km/h (5 mph) or more.

Switch position	Terminal	Specified value
ON	M1 - M2	0.5 V or less (No change)

- (6) Check that the indicator lights blink when 2WD mode is set.
Diff. lock is released for both the rear wheels at this time.
- (7) Return the Diff. lock control switch to OFF.
- (8) Stop the engine and lower the vehicle.

2. INSPECT DIFF. LOCK SYSTEM CIRCUIT

- (a) Inspect the battery positive voltage.
Battery positive voltage: 10 - 14 V



- (b) Inspect the system circuit with the connector disconnected.

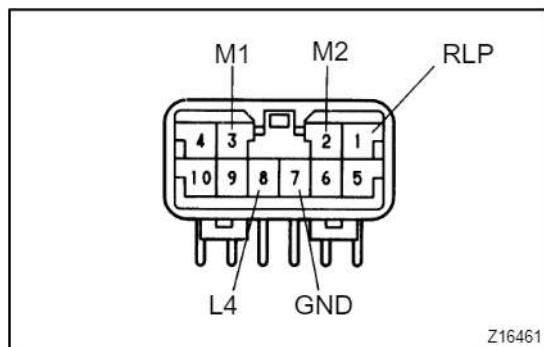
Disconnect the connector from the 4WD control ECU and inspect the connector on the wire harness side, as shown in the chart.

Symbols (Terminals No.)	Trouble part	Condition	Specified value
M ₁ - M ₂	RR Differential Lock Actuator	-	Less than 100 Ω
GND - Body ground	Body ground	-	Continuity
SPD - Body ground	Speed sensor	Vehicle moves slowly	1 pulse each 40 cm (15.75 in.)
IG - Body ground	DIFF Fuse	Ignition switch ON	10 - 14 V
RLP - Body ground	Rear Differential Lock Indicator Switch	Ignition switch ON with indicator light ON	About 0 V
		Ignition switch ON with indicator light OFF	10 - 14 V
L4 - Body ground	L4 Indicator Switch	Ignition switch ON with indicator light OFF	About 0 V
		Ignition switch ON with indicator light ON	10 - 14 V
R - Body ground	Differential Lock Control Switch	Ignition switch ON with differential lock control switch ON	10 - 14 V
		Ignition switch ON with differential lock control switch OFF	About 0 V

HINT:

If the circuit is not as specified, check and repair or replace the trouble part shown in the table above.

- (c) Inspect the system circuit with the connector connected.
- (1) Turn the ignition switch to the ON position.
 - (2) Keep the center Diff. lock condition.
 - (3) Remove the Diff. lock ECU.

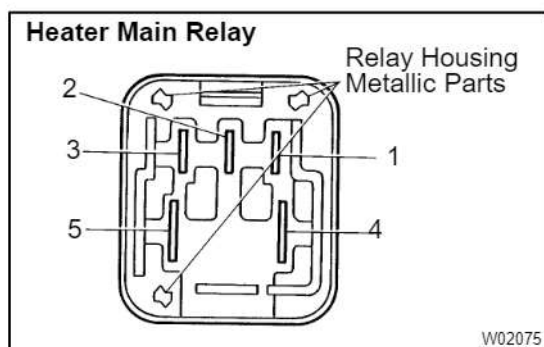


- (4) Using a voltmeter, measure the voltage when the differential lock control switch is in the position, as shown below.

Tester Connection ⊕ - ⊖	Switch position	Specified valve
L4 - GND	-	0.5 V or less
RLP - GND	ON	0.5 V or less → 10 - 14 V (Approx. 1 sec.) → 0.5 V or less
M1 - M2	OFF - ON	
M2 - M1	ON - OFF	

If the circuit is not as specified, replace the ECU.

- (5) Install the ECU in place.



3. INSPECT DIFF. LOCK COMPONENTS

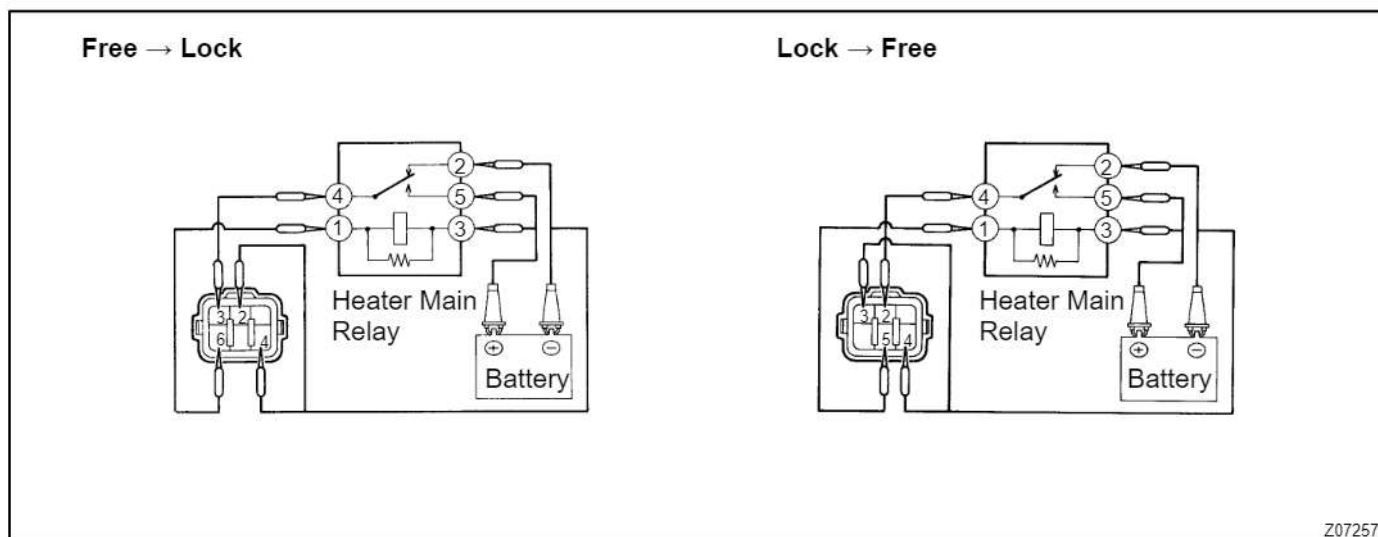
- (a) Inspect the relay operation.
- (1) Jack up the vehicle.
 - (2) Use a heater main relay and connect it, as shown below.

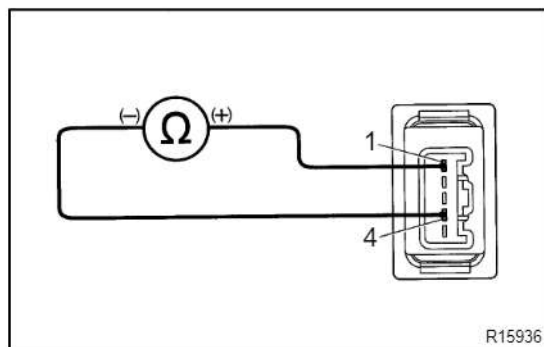
NOTICE:

Connect the terminals being careful not to touch the neighboring terminals or metallic parts of the relay housing.

- (3) Rotate the tire and check that differential lock has occurred.

If operation is not as specified, replace the actuator.

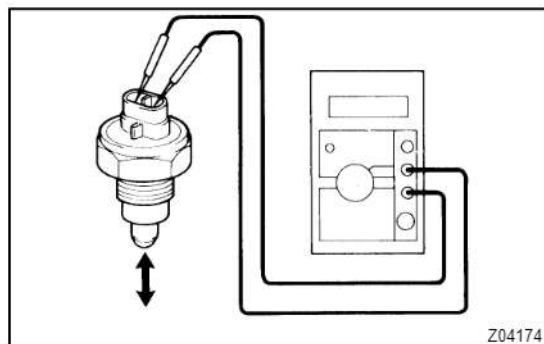




- (b) Inspect the Diff. lock control switch continuity.
Inspect the switch continuity between terminal 1 to terminal 4.

HINT:

If it is not continuity, replace the switch.



- (c) Inspect the Diff. lock indicator switch.
- (1) Check that there is continuity between terminals when the switch is pushed (differential connected position).
 - (2) Check that there is no continuity when the switch is free (differential disconnected position).

HINT:

If operation is not as specified, replace the switch.

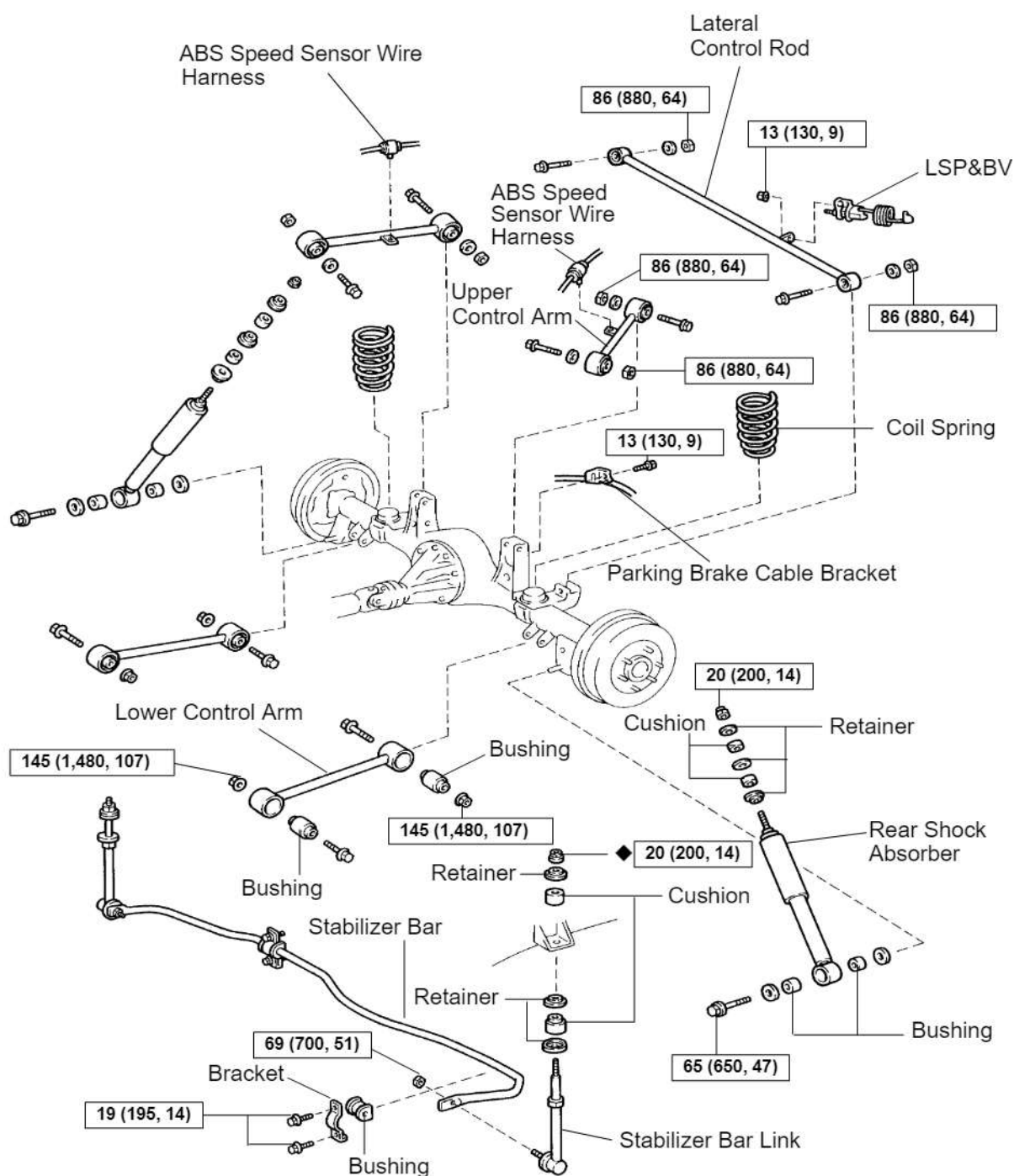
- (d) Inspect the transfer 4WD switch (See page [TR-11](#)).
(e) Inspect the vehicle speed sensor (See page [BE-45](#)).

INSTALLATION

INSTALL DIFF. LOCK ACTUATOR (See page [SA-103](#))

COIL SPRING AND REAR SHOCK ABSORBER COMPONENTS

SA06R-02



N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

F01920

REMOVAL

1. JACK UP AND SUPPORT VEHICLE

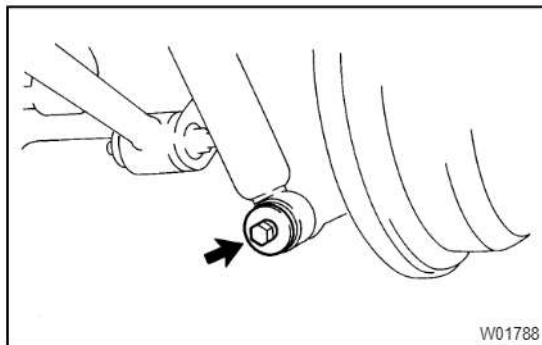
Jack up the rear axle housing and support the frame with stands. Hold the rear axle housing with a jack.

2. REMOVE WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

3. REMOVE PARKING BRAKE CABLE BRACKET FROM REAR AXLE HOUSING

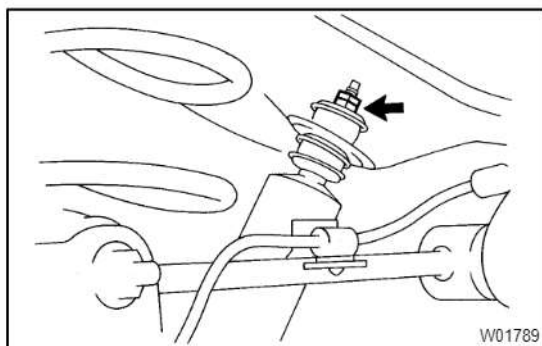
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)



4. DISCONNECT REAR SHOCK ABSORBER

- (a) Remove the bolt, 2 washers and 2 bushings, holding the shock absorber to the rear axle housing and disconnect the shock absorber.

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



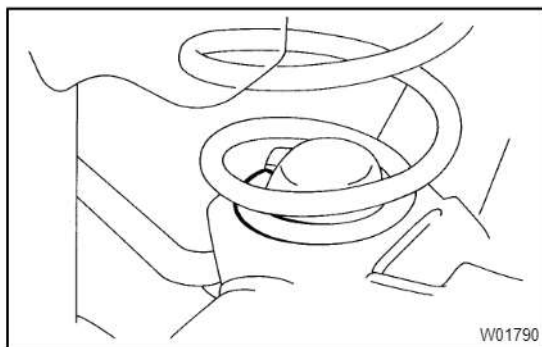
- (b) Turn the shock absorber with holding the nut, and remove the 3 retainers, 2 cushions and shock absorber.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

5. DISCONNECT STABILIZER BAR BRACKETS

(See page [SA-135](#))

6. DISCONNECT LATERAL CONTROL ROD FROM FRAME (See page [SA-128](#))



7. REMOVE COIL SPRING

- (a) Lower the rear axle housing.

NOTICE:

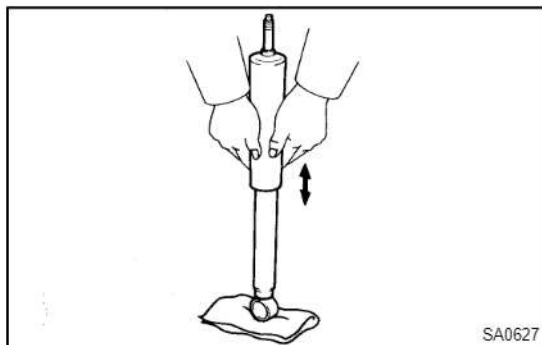
Be careful not to snag the brake line.

- (b) With lowering the rear axle housing, remove the coil spring.

HINT:

At the time of installation, check that the coil spring end is installed correctly.

If the coil spring end is not the correct position, reinstall the coil spring.



INSPECTION

1. INSPECT OPERATION OF SHOCK ABSORBER

- (a) With pushing the shock absorber, check that the pull throughout the stroke is even, and there is no abnormal resistance or noise.
- (b) Gas Filled Type:
Fully push the shock absorber in fully and release it. Check that it returns at a constant speed throughout.

HINT:

If the shock absorber is the gas filled type, this information will be engraved on the exterior of the outer shell.

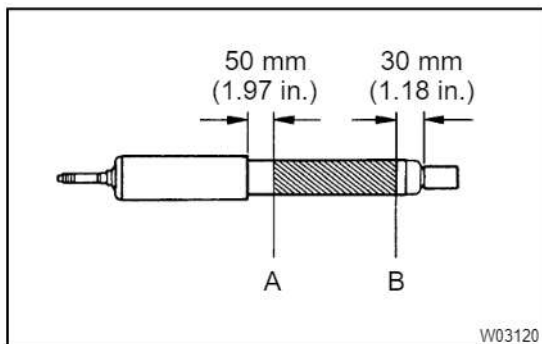
2. GAS FILLED TYPE:

DISCARD SHOCK ABSORBER

Before discarding the shock absorber, drill a hole 2 - 3 mm (0.079 - 0.118 in.) in diameter at the location shown in the illustration (A - B) to release the gas inside.

NOTICE:

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

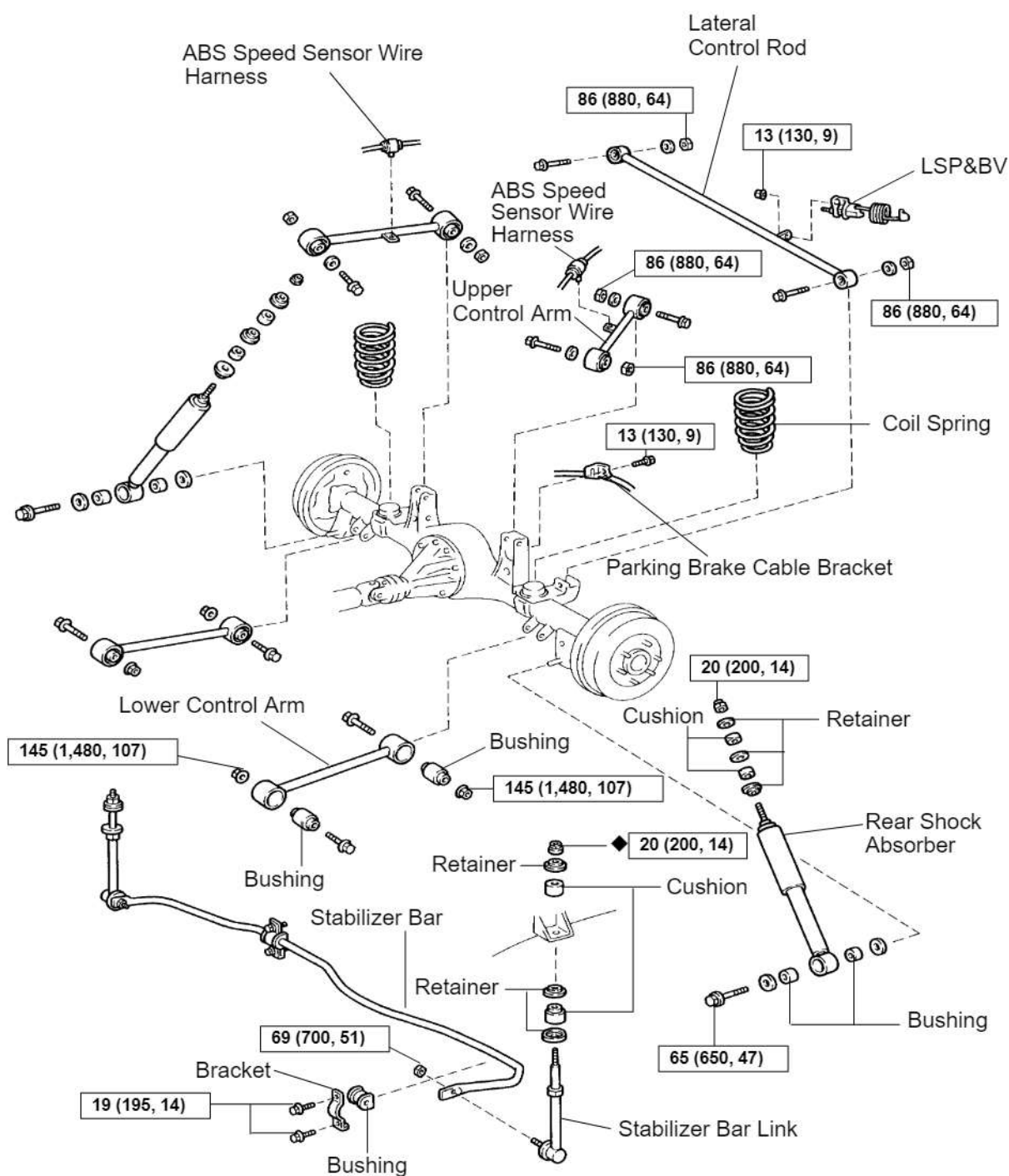


INSTALLATION

Installation is in the reverse order of removal (See page [SA-124](#)).

REAR LATERAL CONTROL ROD COMPONENTS

SA06V.02



N·m (kgf·cm, ft·lbf) : Specified torque

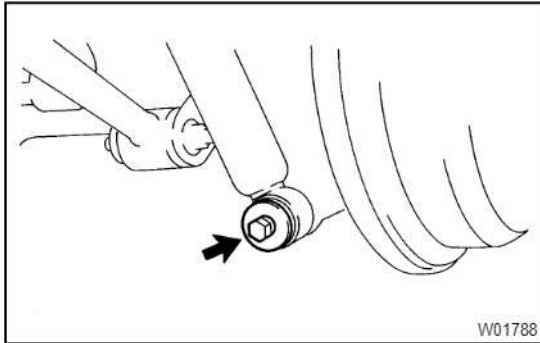
◆ Non-reusable part

F01920

REMOVAL

1. JACK UP AND SUPPORT VEHICLE

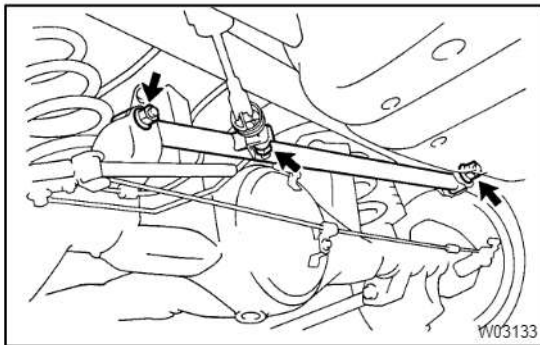
Jack up the rear axle housing and support the frame with stands. Hold the rear axle housing with a jack.



2. DISCONNECT RH SHOCK ABSORBER

Remove the bolt, washers and bushings, holding the RH shock absorber to the rear axle housing and disconnect the shock absorber.

Torque: 65 N·m (650 kgf·cm, 47 ft·lbf)



3. REMOVE LATERAL CONTROL ROD

(a) w/ LSP & BV:

Remove the nut and disconnect the LSP & BV.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(b) Remove the nut, washer and bolt from the frame and disconnect the lateral control rod.

Torque: 86 N·m (880 kgf·cm, 64 ft·lbf)

HINT:

At the time of installation, after stabilizing the suspension, torque the nut.

(c) Remove the nut and washers from the rear axle housing, and remove the lateral control rod.

Torque: 86 N·m (880 kgf·cm, 64 ft·lbf)

HINT:

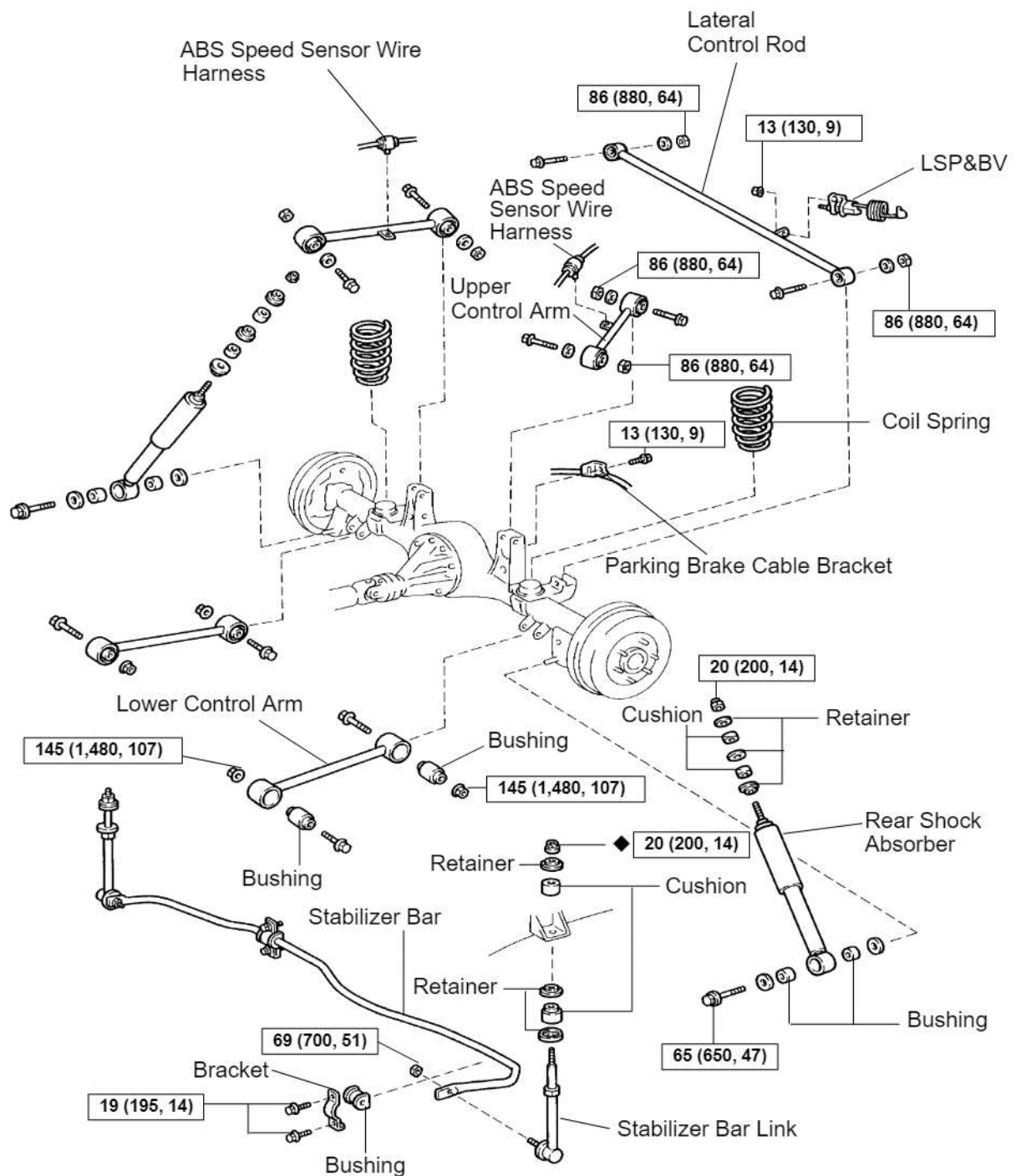
At the time of installation, after stabilizing the suspension, torque the nut.

INSTALLATION

Installation is in the reverse order of removal (See page [SA-128](#)).

REAR UPPER AND LOWER CONTROL ARM COMPONENTS

SA06Y-02



N·m (kgf·cm, ft·lbf) : Specified torque

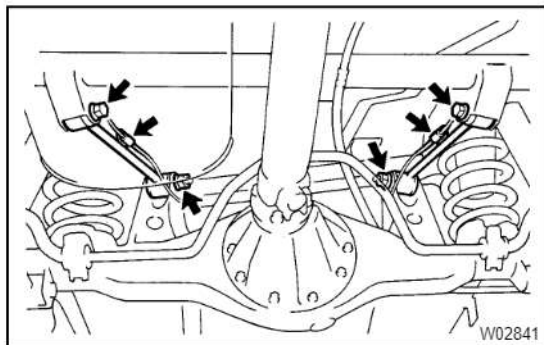
◆ Non-reusable part

F01920

REMOVAL

1. JACK UP AND SUPPORT VEHICLE

Jack up the rear axle housing and support the frame with stands. Hold the rear axle housing with a jack.



2. w/ ABS:

DISCONNECT ABS SPEED SENSOR WIRE HARNESS FROM UPPER SUSPENSION ARM

3. REMOVE UPPER CONTROL ARM

- (a) Remove the nut, washer and bolt holding the upper control arm to the frame.

Torque: 86 N·m (880 kgf·cm, 64 ft·lbf)

HINT:

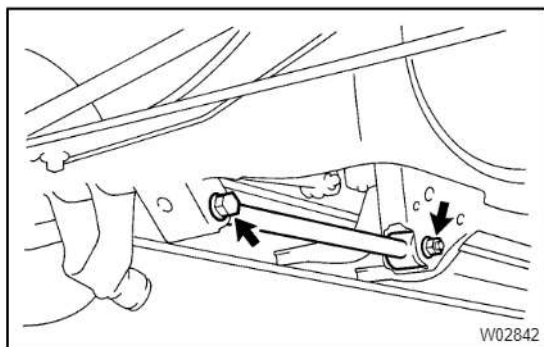
At the time of installation, after stabilizing the suspension, torque the nut.

- (b) Remove the nut, washer and bolt holding the upper control arm to the rear axle housing and remove the upper control arm.

Torque: 86 N·m (880 kgf·cm, 64 ft·lbf)

HINT:

At the time of installation, after stabilizing the suspension, torque the nut.



4. REMOVE LOWER CONTROL ARM

- (a) Remove the nut and bolt holding the lower control arm to the frame.

Torque: 145 N·m (1,480 kgf·cm, 107 ft·lbf)

HINT:

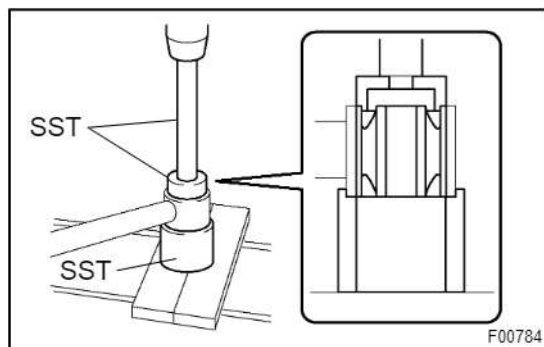
At the time of installation, after stabilizing the suspension, torque the nut.

- (b) Remove the nut, washer and bolt holding the lower control arm to the rear axle housing and remove the lower control arm.

Torque: 145 N·m (1,480 kgf·cm, 107 ft·lbf)

HINT:

At the time of installation, after stabilizing the suspension, torque the nut.

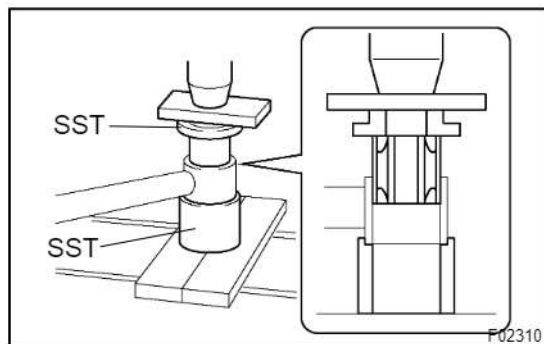


REPLACEMENT

REPLACE LOWER CONTROL ARM BUSHING

- (a) Using SST and a press, remove the bushing.

SST 09710-14013 (09710-00021, 09710-00061),
09950-70010 (09951-07150)



- (b) Using SST and a press, install the bushing.

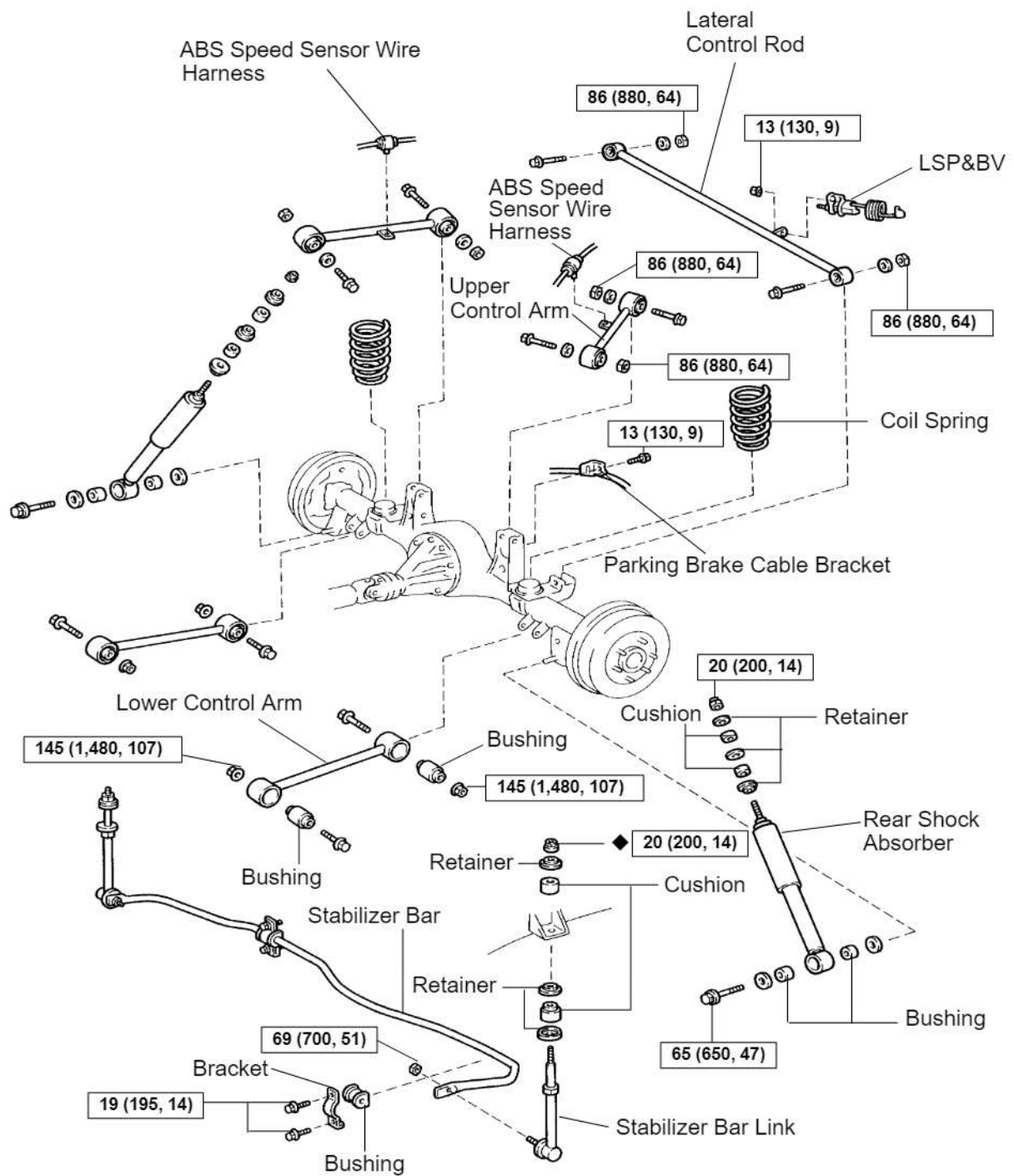
SST 09506-35010, 09710-14013 (09710-00021)

INSTALLATION

Installation is in the reverse order of removal (See page [SA-131](#)).

REAR STABILIZER BAR COMPONENTS

SA072-02



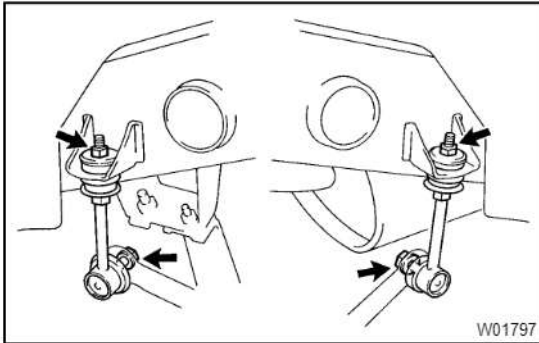
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

F01920

REMOVAL

1. JACK UP AND SUPPORT VEHICLE



2. REMOVE BOTH STABILIZER BAR LINKS

- (a) Remove the nuts and disconnect the stabilizer bar from the stabilizer bar links.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

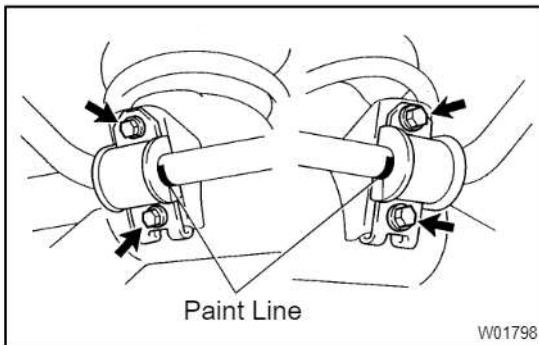
HINT:

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

- (b) Hold the stabilizer bar link with a wrench and remove the 2 nuts, 2 retainers, 2 cushions and 2 links.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

- (c) Remove the 4 retainers and 2 cushions from the stabilizer bar links.



3. REMOVE STABILIZER BAR FROM REAR AXLE HOUSING

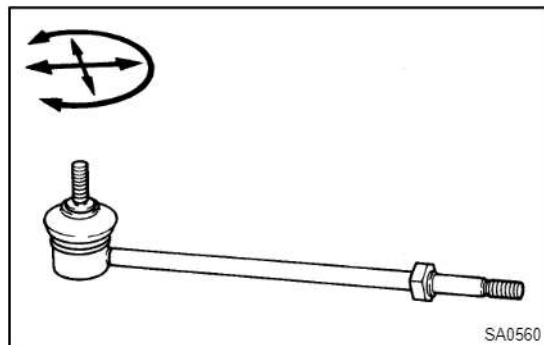
Remove the 4 bolts and stabilizer bar with bushings and brackets.

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

HINT:

At the time of installation, please refer to the following items.

- Install the bushing to outside of the paint line on the stabilizer bar.
- Install the bushings to the stabilizer bar so that the cutout of the bushing face the under of the vehicle, as shown.



INSPECTION

INSPECT STABILIZER BAR LINK

Rotate the ball joint stud in all directions.

If the movement is not smooth and free, replace the stabilizer link.

INSTALLATION

Installation is in the reverse order of removal (See page [SA-135](#)).