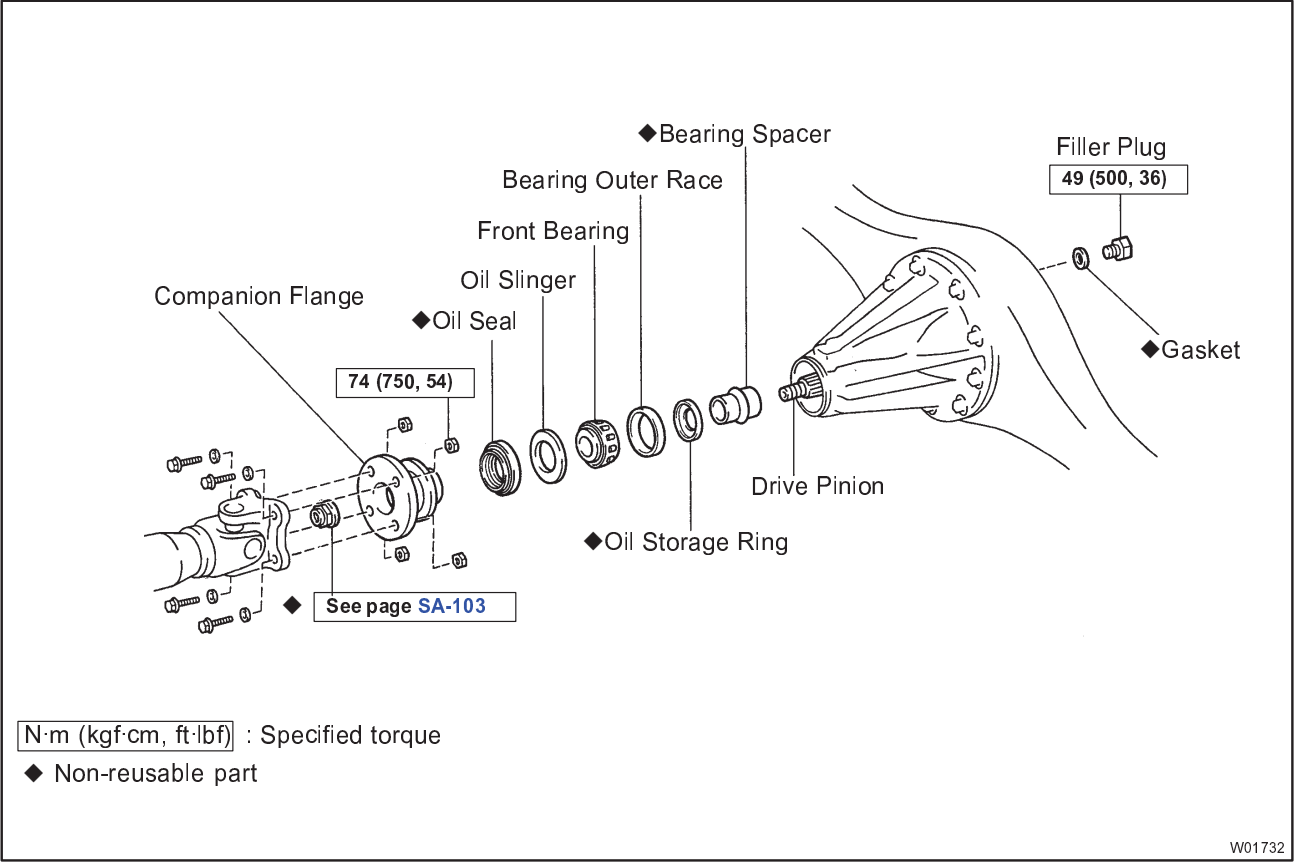


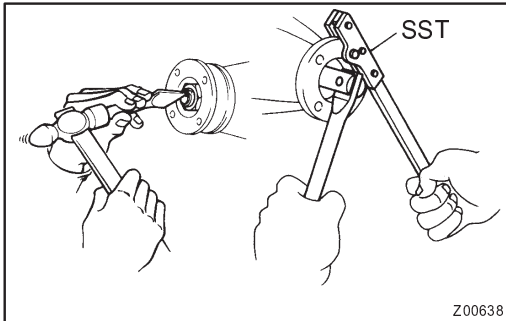
REAR DIFFERENTIAL FRONT OIL SEAL COMPONENTS



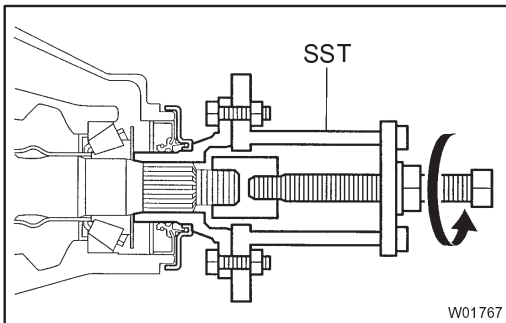
W01732

REPLACEMENT

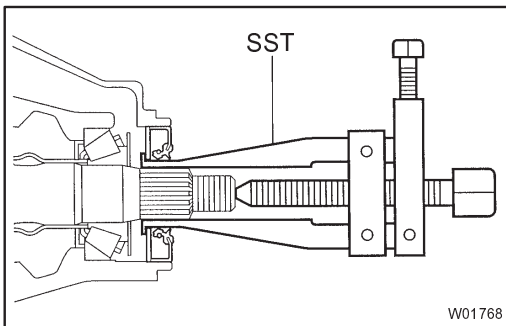
1. **DRAIN DIFFERENTIAL OIL**
2. **REMOVE REAR PROPELLER SHAFT**
(See page [PR-4](#) or [PR-8](#))
3. **REMOVE COMPANION FLANGE**
 - (a) Using a chisel and hammer, loosen the staked part of the nut.



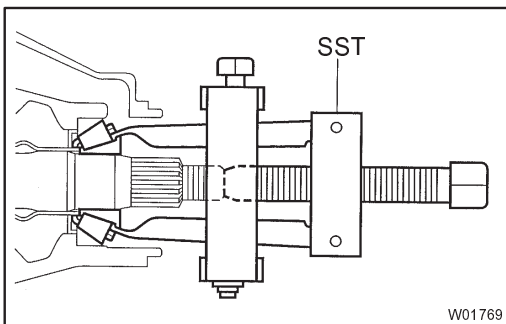
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00021



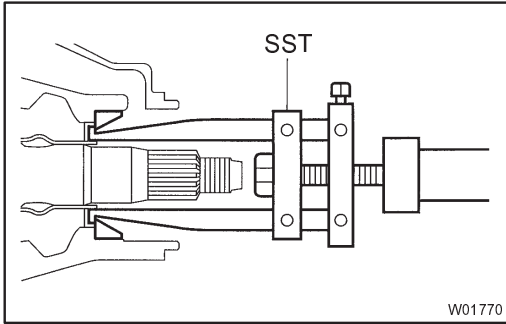
- (c) Using SST, remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)



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

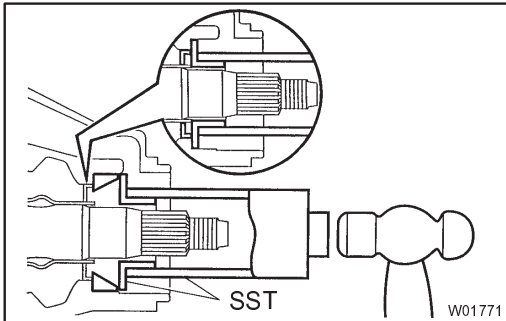


7. REMOVE FRONT BEARING OUTER RACE AND OIL STORAGE RING

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

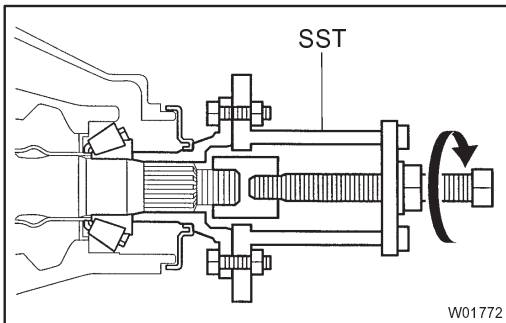
8. REMOVE BEARING SPACER

9. INSTALL NEW BEARING SPACER



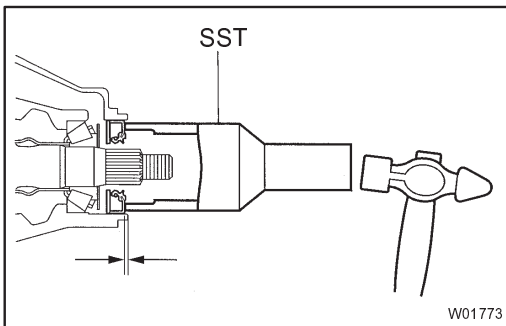
10. INSTALL OIL STORAGE RING AND FRONT BEARING OUTER RACE

- (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)



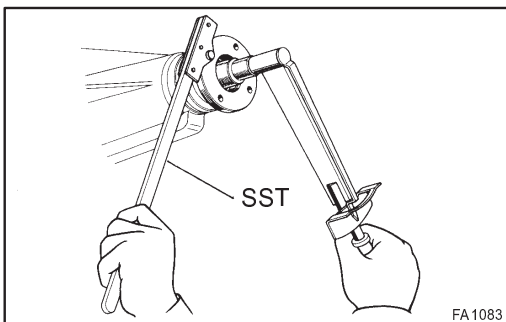
12. INSTALL NEW OIL SEAL

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

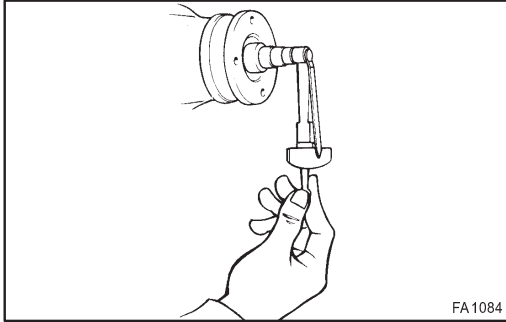
Oil seal drive in depth: 1.0 mm (0.039 in.)

13. INSTALL COMPANION FLANGE

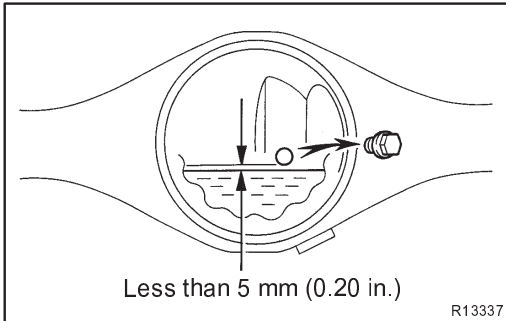
- (a) Place the companion flange on the drive pinion.
- (b) Apply light coat of hypoid gear oil on threads of a new companion flange nut.



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



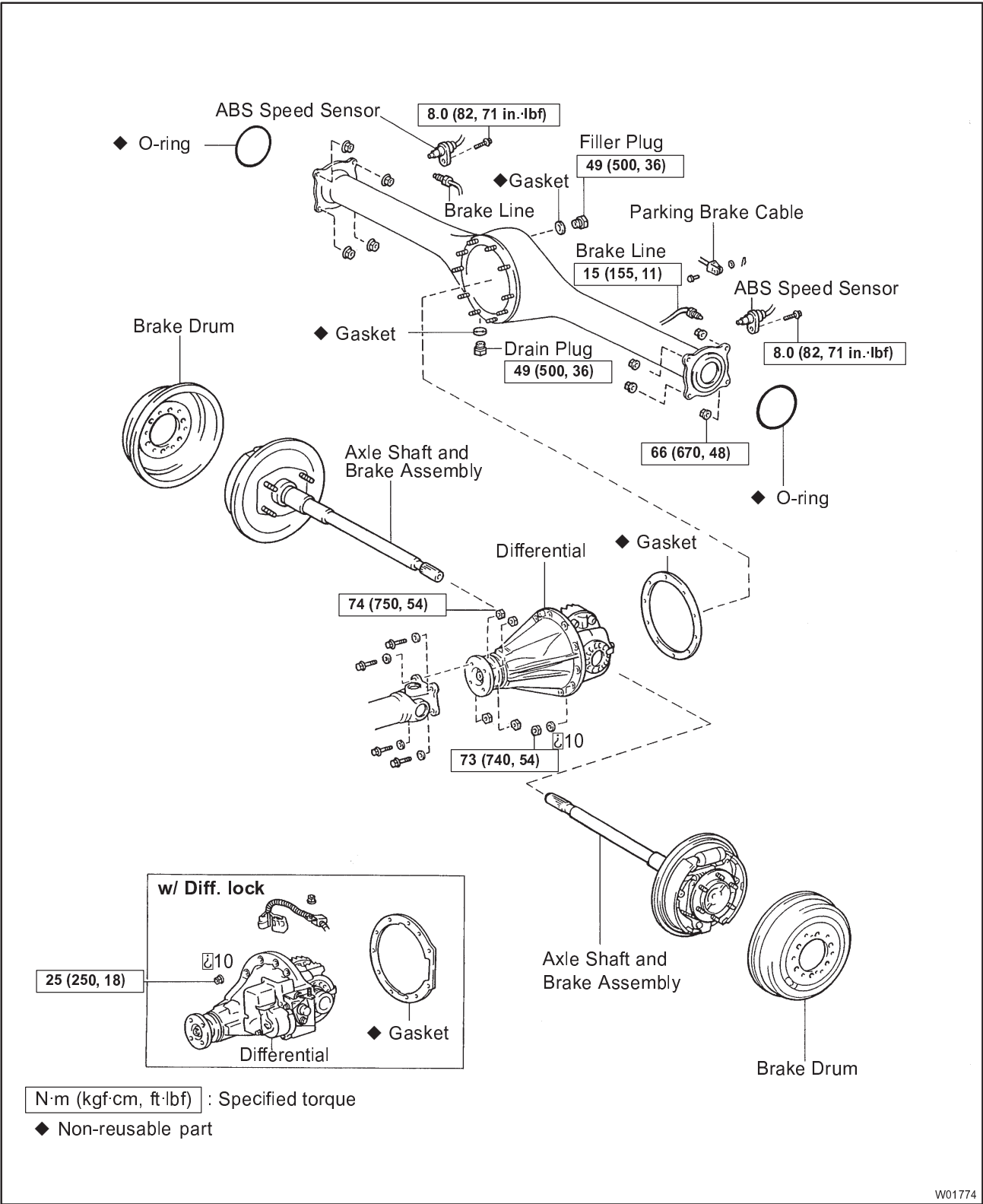
14. **ADJUST DRIVE PINION PRELOAD**
(See page [SA-103](#))
15. **STAKE DRIVE PINION NUT**
16. **INSTALL REAR PROPELLER SHAFT**
(See page [PR-6](#) or [PR-11](#))



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)

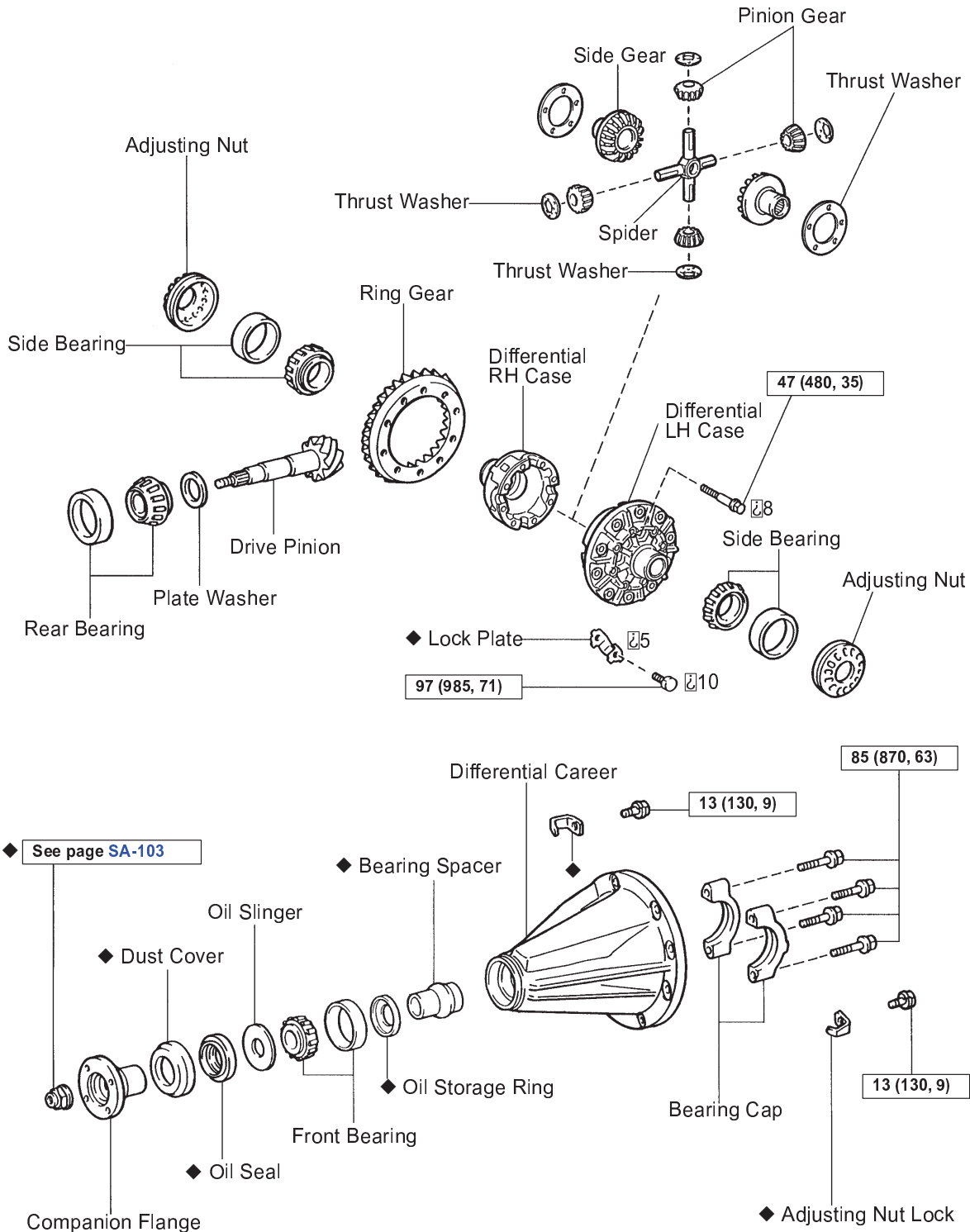
REAR DIFFERENTIAL CARRIER COMPONENTS

SA06G-02



W01774

w/o Diff. lock



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

◆ Non-reusable part

W01775

1263

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.

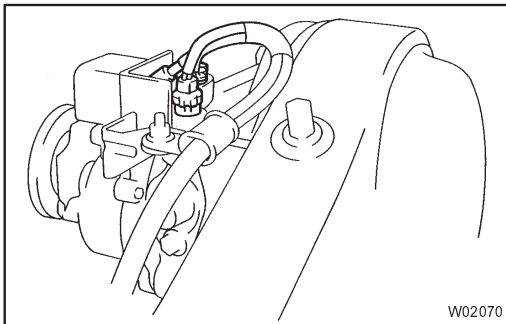
2. DRAIN DIFFERENTIAL OIL

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)



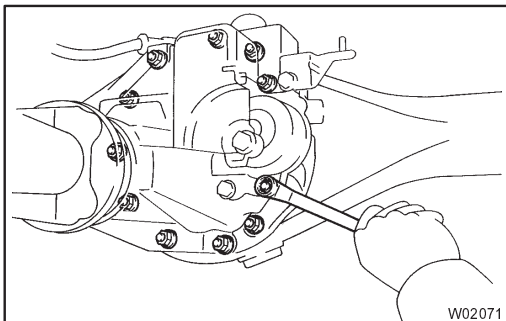
5. w/ DIFF. LOCK:

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)

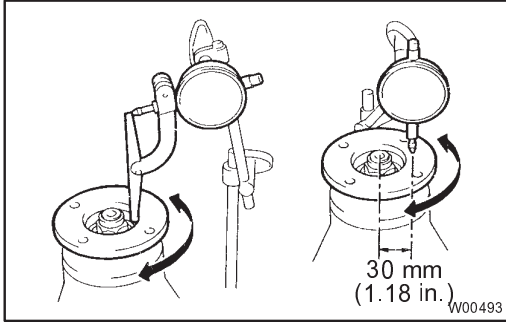
(b) Remove the gasket.

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

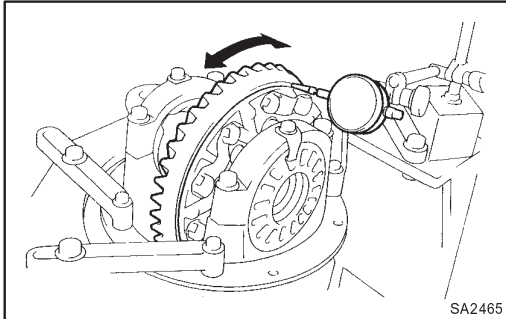
Using a dial indicator, measure the vertical and lateral runout of the companion flange.

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.

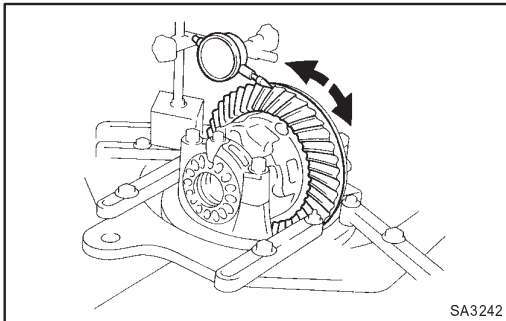


2. CHECK RING GEAR RUNOUT

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

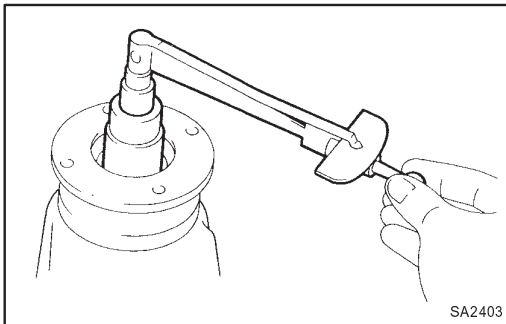
Using a dial indicator, measure the ring gear backlash.

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

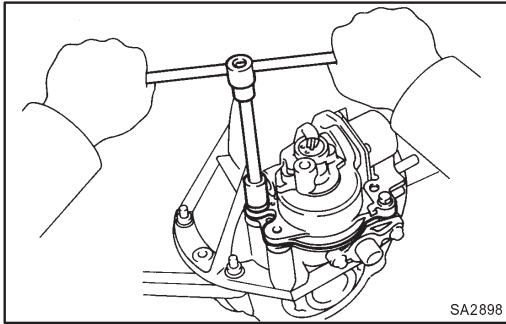
Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

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

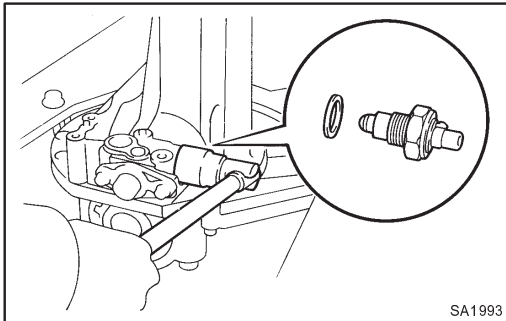
If necessary, disassemble and inspect the differential.

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



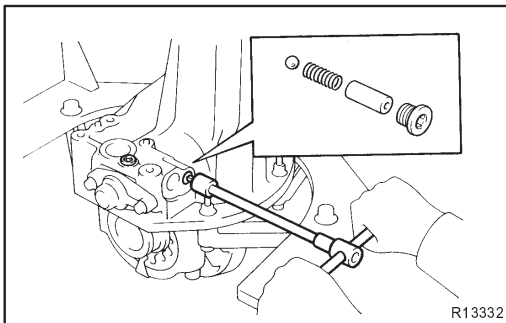
**7. w/ DIFF. LOCK:
REMOVE ACTUATOR**

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



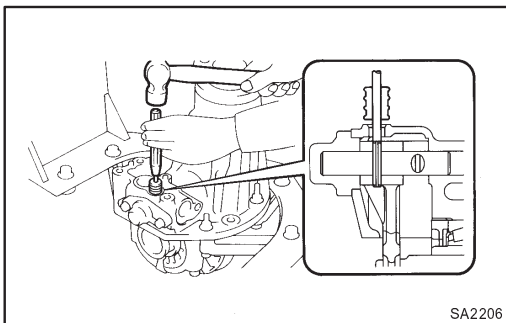
**8. w/ DIFF. LOCK:
REMOVE INDICATOR SWITCH**

Remove the indicator switch and gasket.

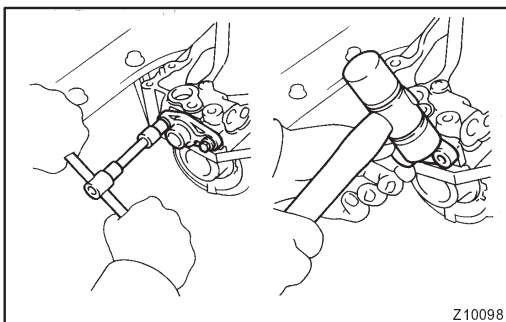


**9. w/ DIFF. LOCK:
REMOVE SHIFT FORK SHAFT**

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



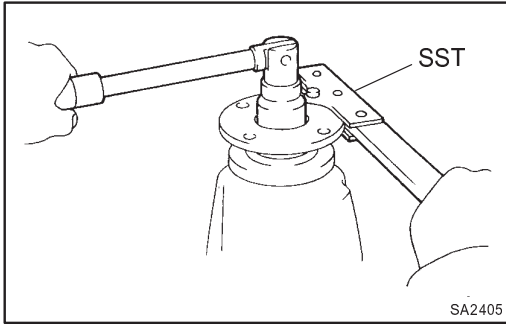
- (c) Using a pin punch and hammer, remove the slotted spring pin.



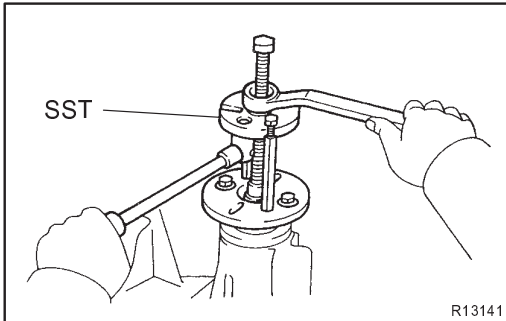
- (d) Remove the 2 bolts from the shaft retainer.
- (e) Using a plastic hammer, remove the shaft retainer.
- (f) Remove the shift fork shaft.

HINT:

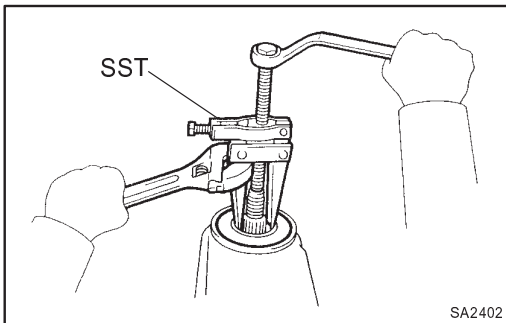
Pull out the shift fork shaft with a screwdriver turned round.

**10. REMOVE COMPANION FLANGE**

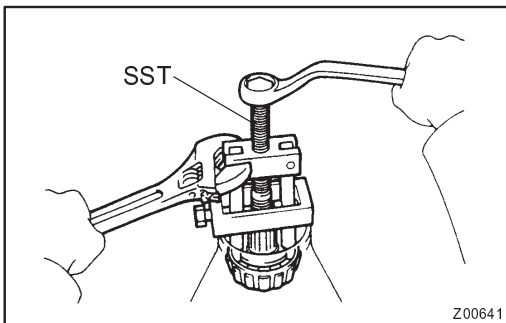
- (a) Using a chisel and hammer, unstake the nut.
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00021



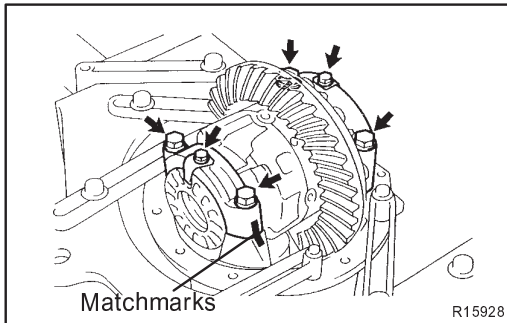
- (c) Using SST, remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)

**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**

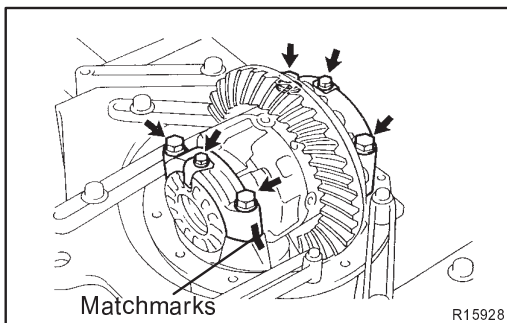
- Using SST, remove the front bearing from the drive pinion.
SST 09556-22010

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

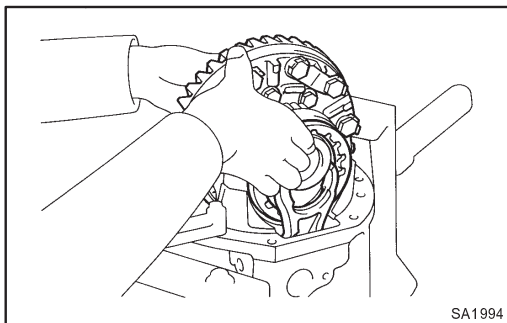
- (a) Place matchmarks on the bearing cap and differential carrier.
- (b) Remove the 2 adjusting nut locks.
- (c) Remove the 4 bolts and 2 bearing caps.
- (d) Remove the 2 adjusting nuts.
- (e) Remove the differential case with the side bearing outer races from the differential carrier.

HINT:

Tag the disassembled parts to show the location for reassembly.

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

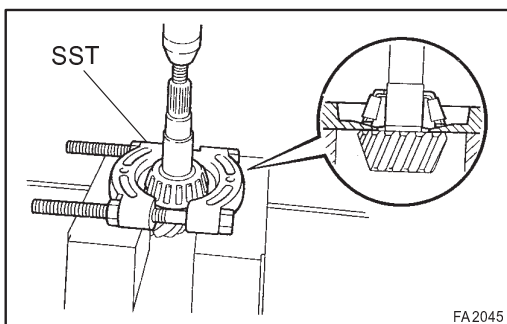
- (a) Place matchmarks on the bearing cap and differential carrier.
- (b) Remove the 2 adjusting nut locks.
- (c) Remove the 4 bolts and 2 bearing caps.



- (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.

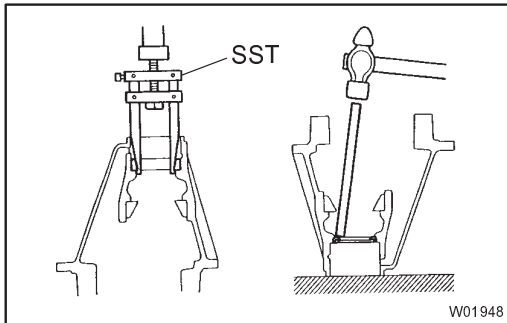
**16. REMOVE DRIVE PINION REAR BEARING**

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

HINT:

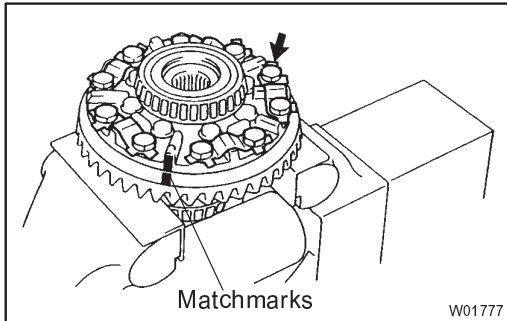
If the drive pinion or ring gear are damaged, replace them as a set.

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



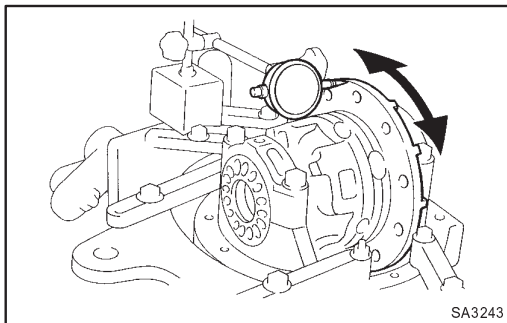
17. REMOVE FRONT AND REAR BEARING OUTER RACES AND OIL STORAGE RING

- 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.



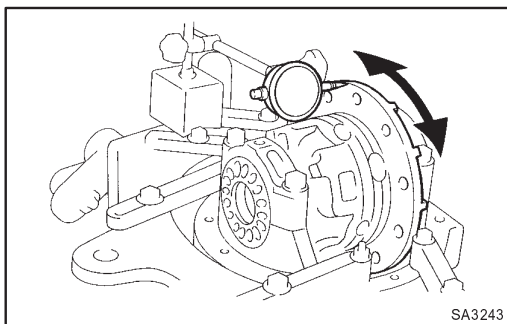
19. w/o Diff. lock:

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.



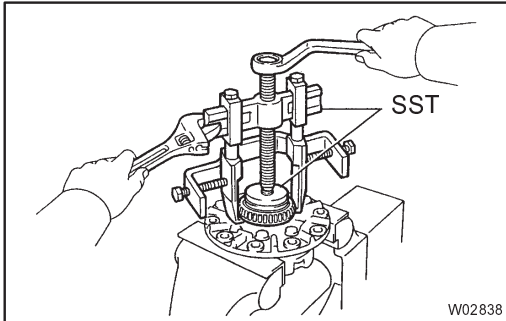
20. w/ Diff. lock:

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.



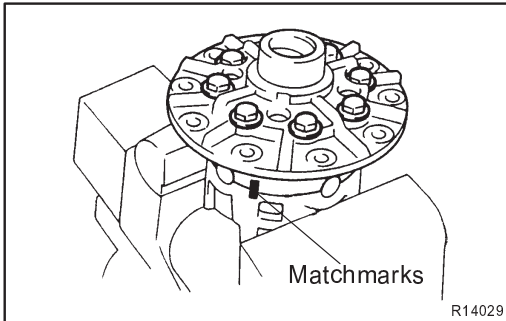
21. REMOVE SIDE BEARINGS FROM DIFFERENTIAL CASE

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)

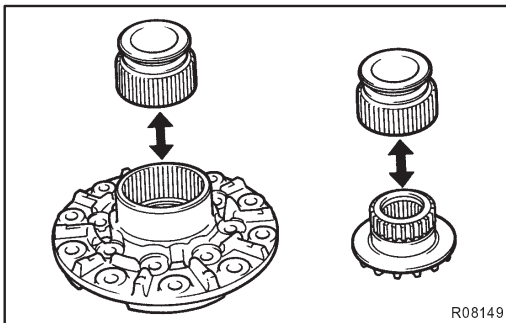
HINT:

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



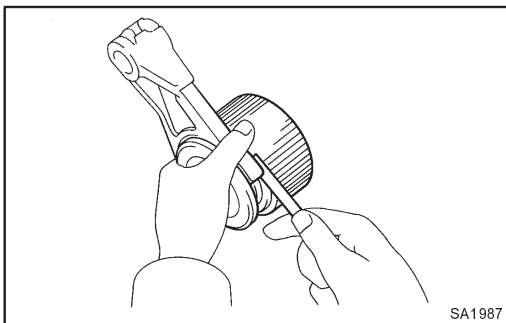
22. DISASSEMBLE DIFFERENTIAL CASE

- 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.

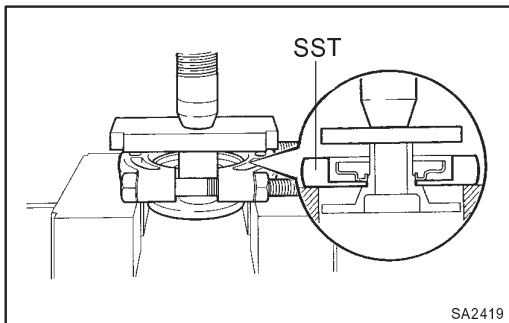


24. w/ DIFF. LOCK: MEASURE CLEARANCE OF SHIFT FORK AND SLEEVE

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

Clearance (Reference):

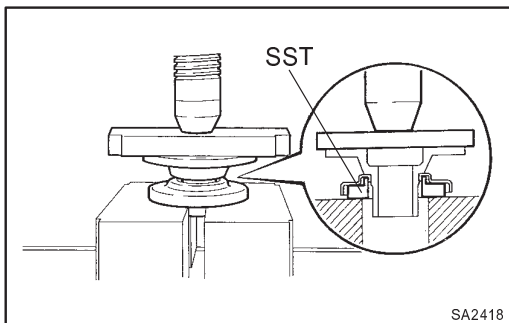
0.15 - 0.35 mm (0.006 - 0.014 in.)



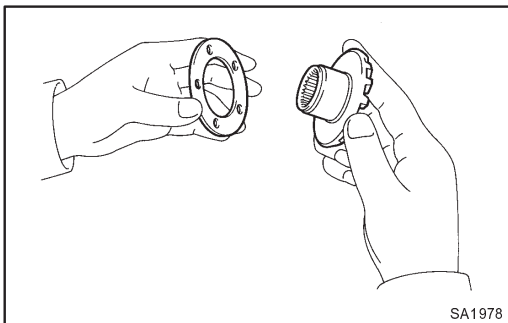
REPLACEMENT

REPLACE COMPANION FLANGE DUST DEFLECTOR

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



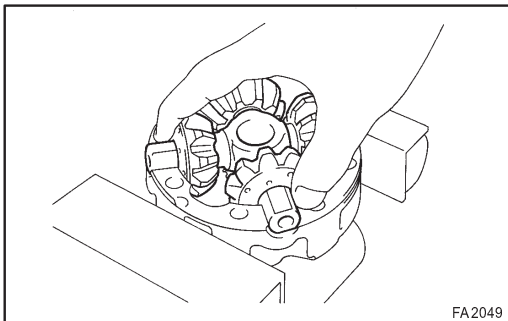
- (b) Using SST and a press, install a new dust deflector.
SST 09726-40010



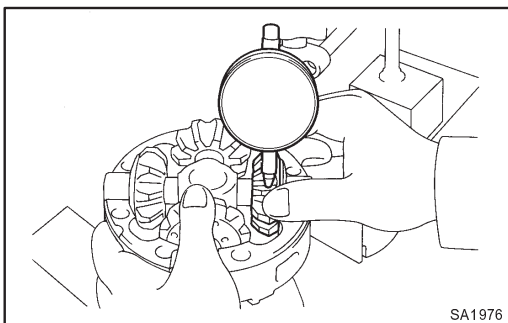
REASSEMBLY

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.



- (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.



- (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.)

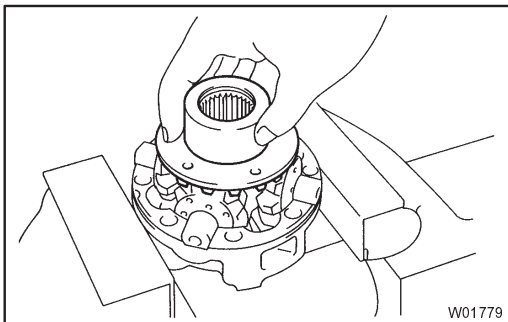
HINT:

- 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.

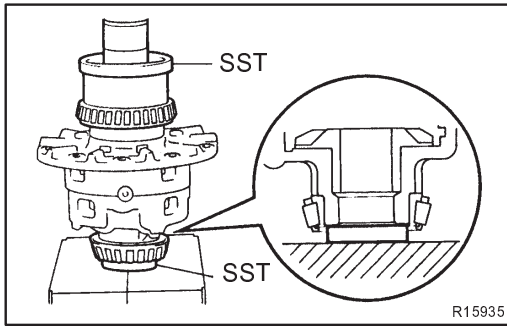
Thrust washer thickness

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)	-



- (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.

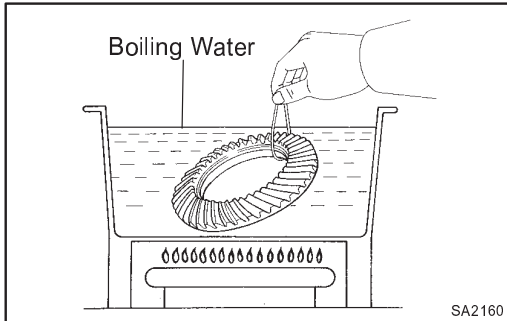
Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)



2. INSTALL SIDE BEARINGS

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

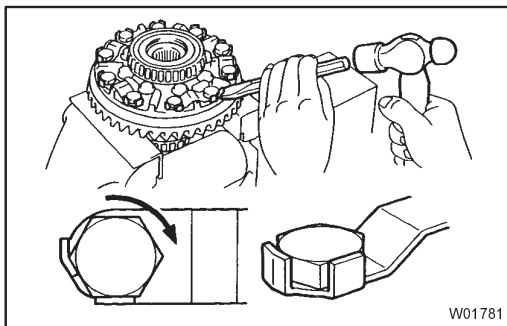
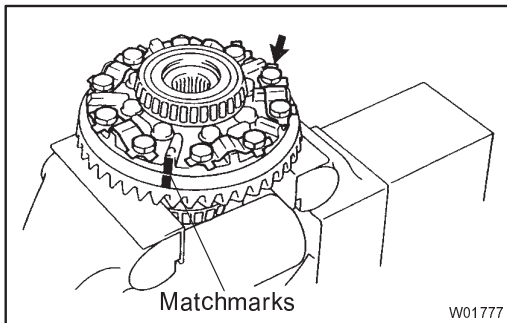
SST 09223-15020 09950-60010 (09951-00480, 09951-00550), 09950-60020 (09951-00730)



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.

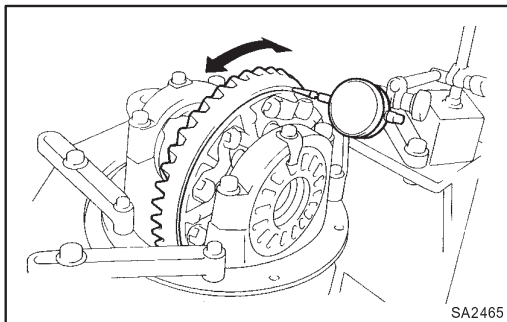
Torque: 97 N·m (985 kgf·cm, 71 ft·lbf)



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

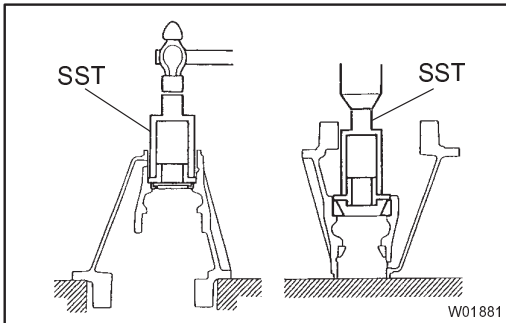
HINT:

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.



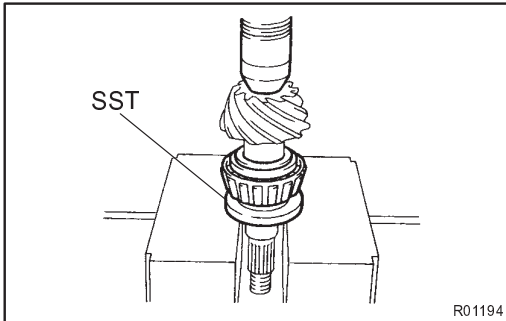
4. CHECK RING GEAR RUNOUT

- 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

- (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 press, install the outer races.
SST 09316-6001 1 (09316-00011, 09316-00021, 09316-00051)



6. INSTALL DRIVE PINION FRONT BEARING

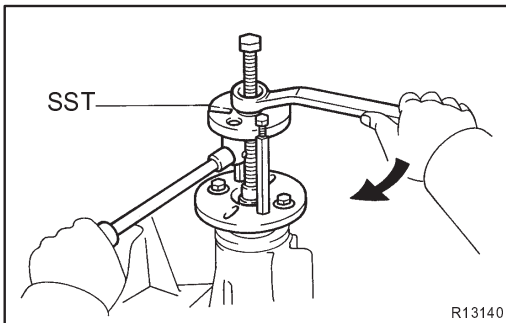
- (a) Install the plate washer on the drive pinion.
- (b) Using SST and a press, install the rear bearing onto the drive pinion.
SST 09506-30012

7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

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

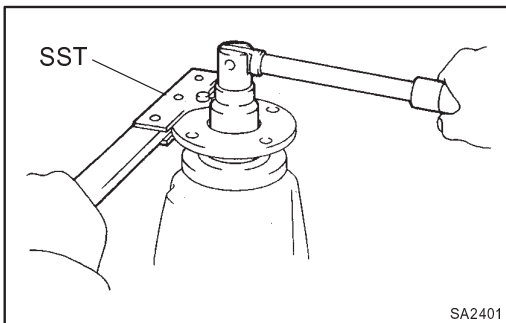
HINT:

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



- (b) Install the companion flange with SST.

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



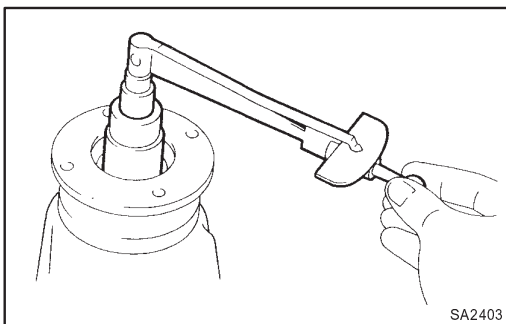
- (c) Adjust the drive pinion preload by tightening the companion flange nut.

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.



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

Preload (at starting):

New bearing:

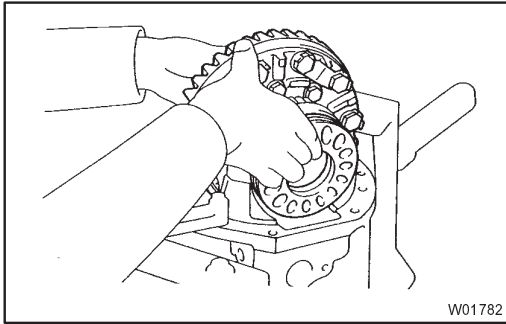
0.9 - 1.6 N·m (10 - 16 kgf·cm, 8.7 - 13.9 in.·lbf)

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.

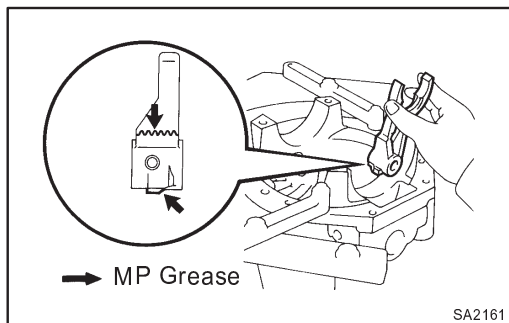
**8. w/o Diff. lock:****INSTALL DIFFERENTIAL CASE IN CARRIER**

- (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.

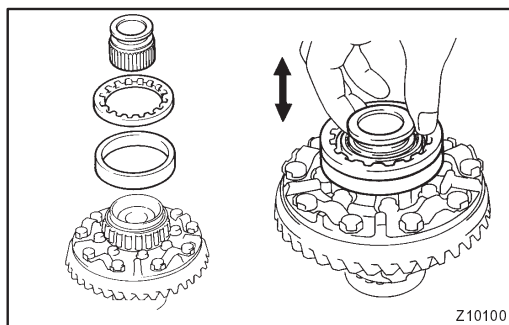
HINT:

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**

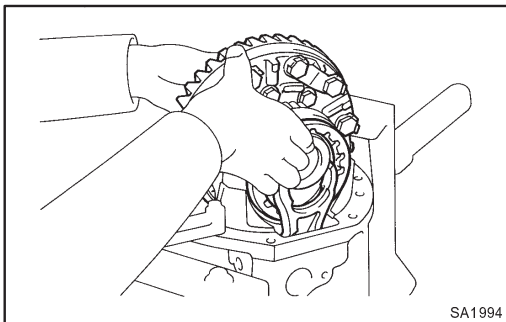
- (a) Apply MP grease on the rack of the shift fork and connecting part of the indicator switch.
- (b) Insert the shift fork into the differential carrier, as shown.



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

HINT:

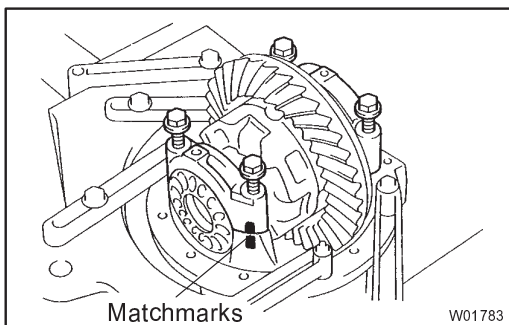
Check that the sleeve moves smoothly.



- (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.

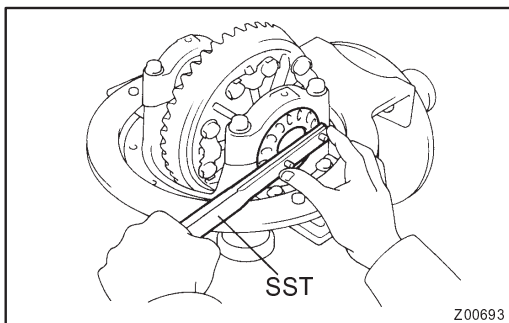
11. w/o Diff. lock:

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.

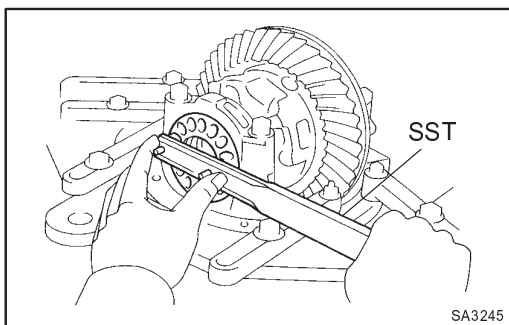
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)

- (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.).

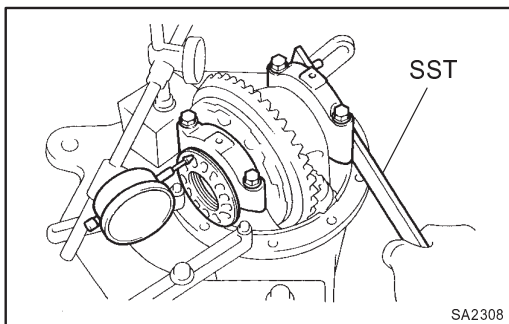
SST 09504-0001 1



- (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.

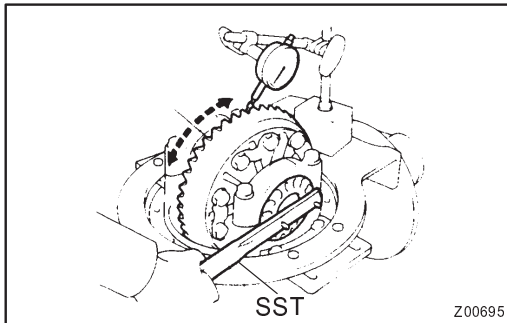
SST 09504-0001 1



- (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.

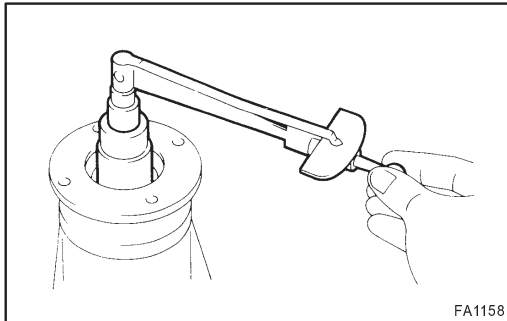
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

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)

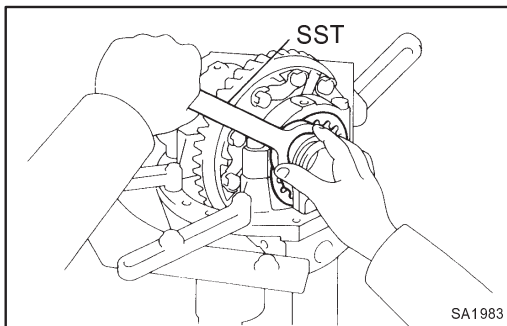
12. w/ Diff. lock:

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.

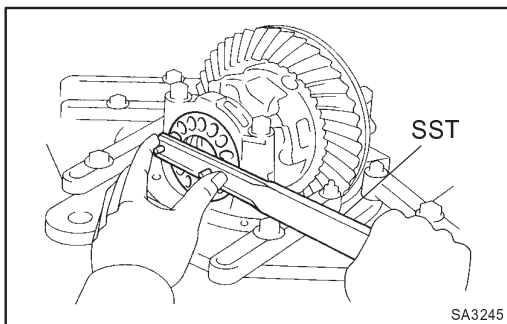
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)

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



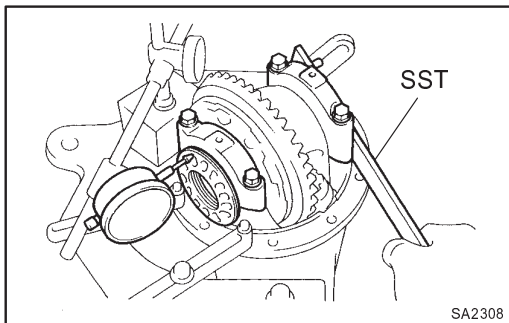
- (c) Using the SST, torque the adjusting nut on the ring gear side until the ring has a backlash of about 0.2 mm (0.008 in.).

SST 09960-10010

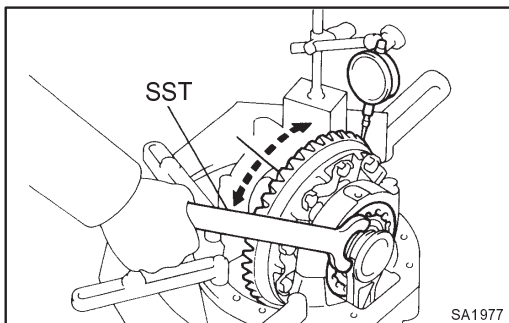


- (d) With turning the ring gear, use the SST to fully tighten the adjusting nut on the drive pinion side. After the bearings are settled, loosen the adjusting nut on the drive pinion side.

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:

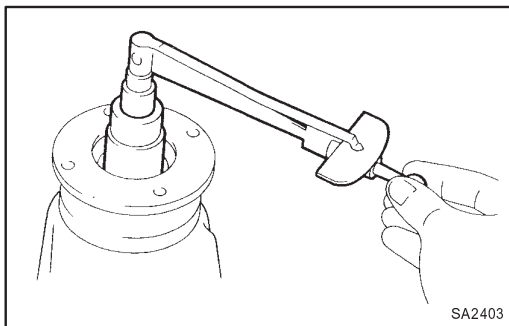
The backlash is adjusted by turning the left and right adjusting nuts equal amounts. For example, loosen the nut on the left side one notch and torque the nut on the right side one notch.

- (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.

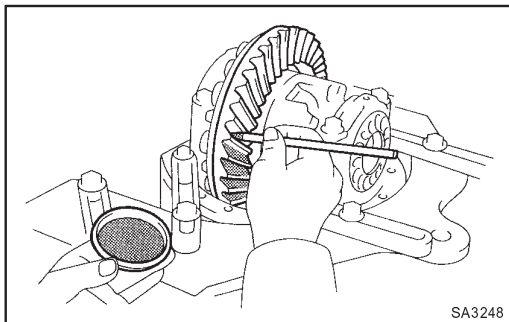
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)



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

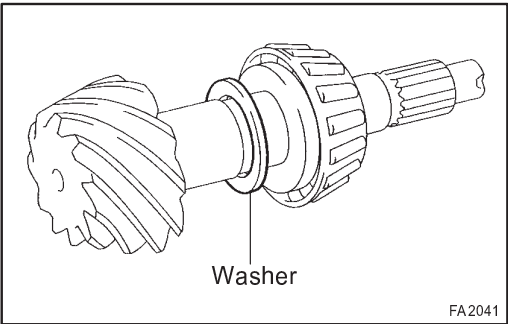
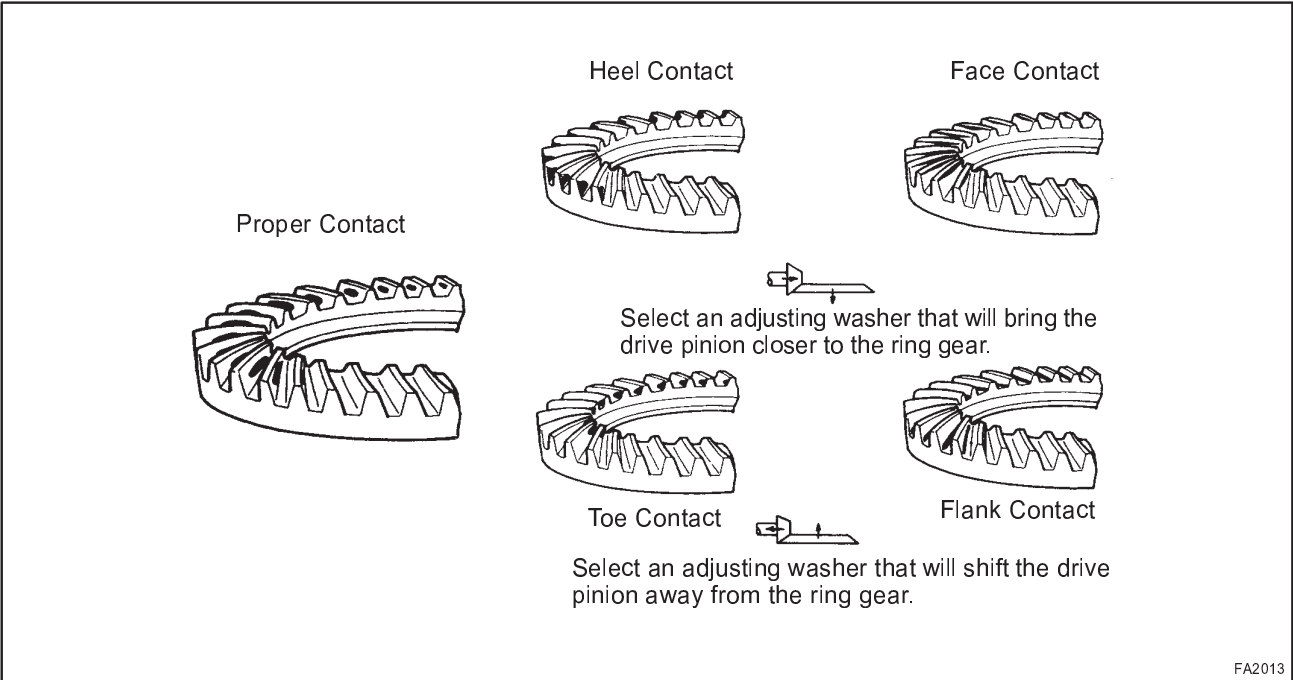
Total preload (starting):

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

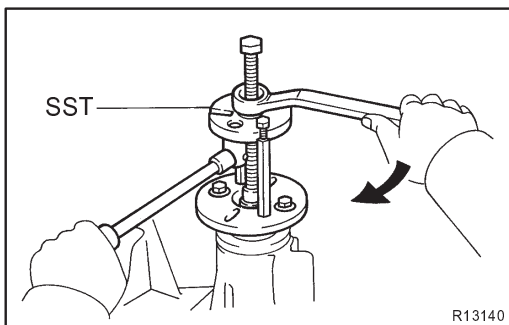
- (a) Coat 3 or 4 teeth at the 3 different positions on the ring gear with red lead.
- (b) Hold the companion flange firmly and rotate the ring gear in both directions.
- (c) Inspect the tooth pattern.



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

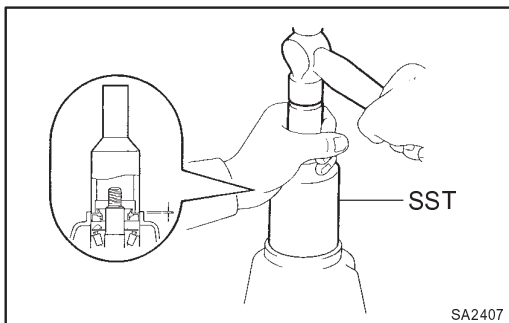
Thickness mm (in.)	Thickness mm (in.)
1.70 (0.0669)	2.03 (0.0799)
1.73 (0.0681)	2.06 (0.0811)
1.76 (0.0693)	2.09 (0.0823)
1.79 (0.0705)	2.12 (0.0835)
1.82 (0.0717)	2.15 (0.0846)
1.85 (0.0728)	2.18 (0.0858)
1.88 (0.0740)	2.21 (0.0870)
1.91 (0.0752)	2.24 (0.0882)
1.94 (0.0764)	2.27 (0.0894)
1.97 (0.0776)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

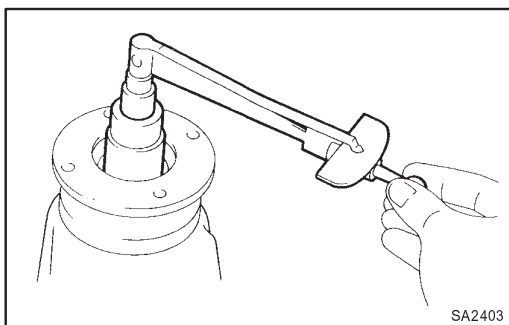
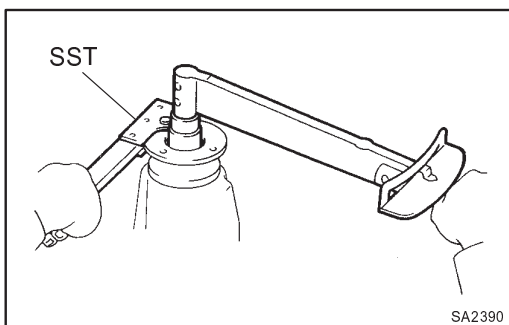
HINT:

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.

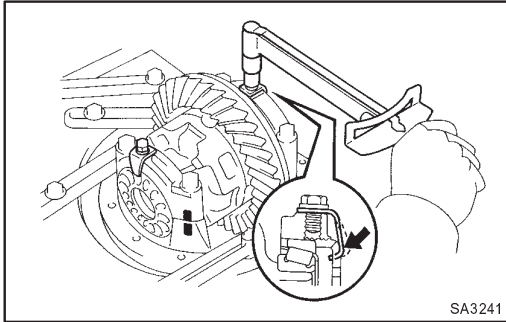
Torque: 343 N·m (3,500 kgf·cm, 253 ft·lbf) or less

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.

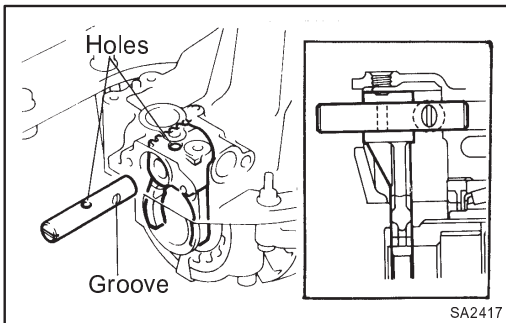
20. RECHECK RING GEAR BACKLASH

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

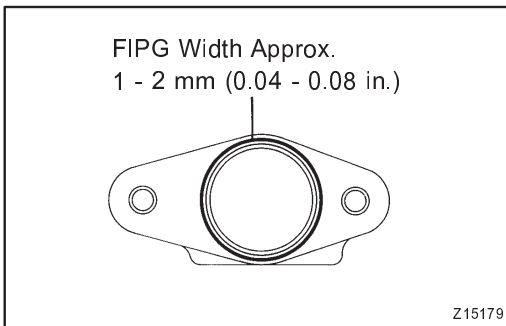
21. **RECHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION** (See step 14)
22. **CHECK RUNOUT OF COMPANION FLANGE** (See page [SA-96](#))
23. **STAKE DRIVE PINION NUT**



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.



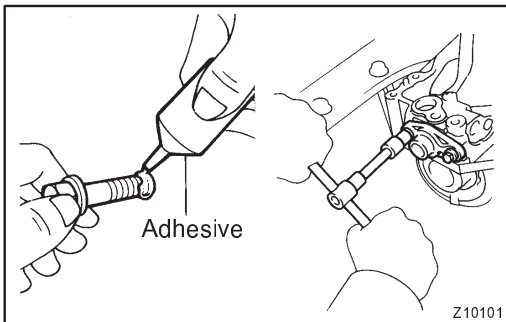
25. **w/ DIFF. LOCK:
INSTALL SHIFT FORK SHAFT**
 - (a) Apply MP grease onto the outer circuit of the fork shaft.
 - (b) Install the fork shaft to match the hole of the shift fork and that of the shift fork shaft.



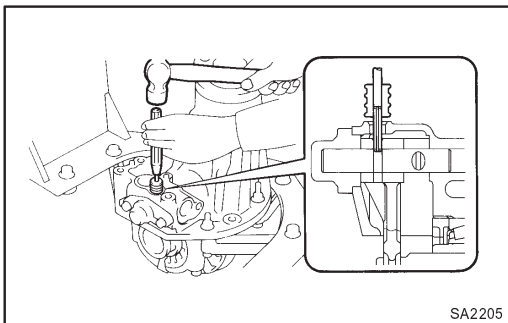
- (c) Remove any FIPG material and be careful not to drop oil on the contacting surface of the differential carrier and shaft retainer.
- (d) Apply FIPG to the carrier, as shown.
FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT:

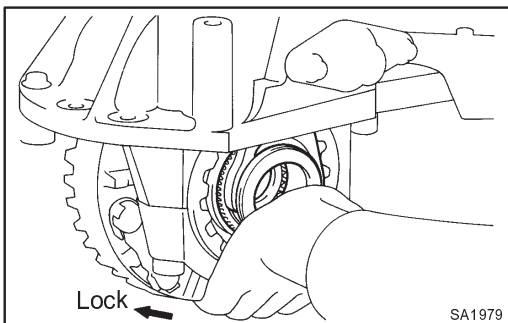
Install the shaft retainer within 10 minutes after applying FIPG.



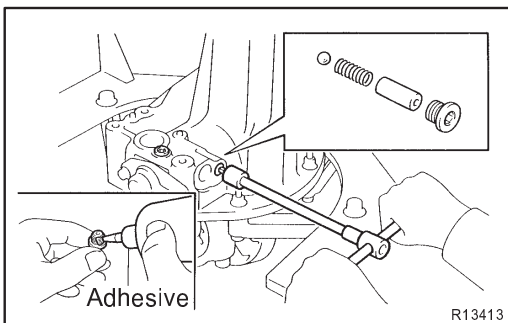
- (e) Clean the threads of the bolts and retainer bolts holes with toluene or trichloroethylene.
- (f) Apply adhesive to 2 or 3 threads of the mount bolt end.
Adhesive: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
- (g) Tighten the shaft retainer with the 2 bolts.
Torque: 24 N·m (240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



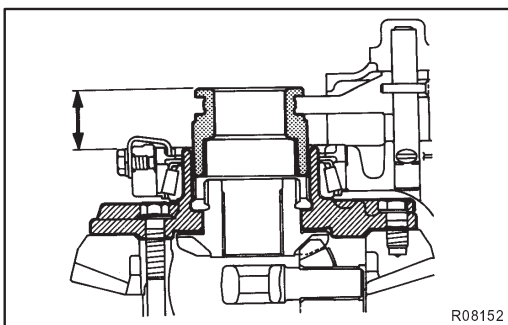
- (h) Using a pin punch and hammer, install the slotted spring pin to the shift fork.



- (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)



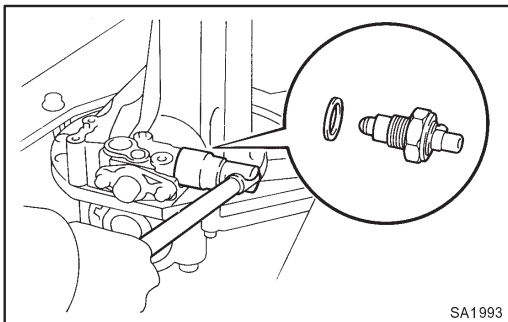
**26. w/ DIFF. LOCK:
 MEASURE DISTANCE BETWEEN SLEEVE AND DIFFERENTIAL CASE END SIDE**

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.)

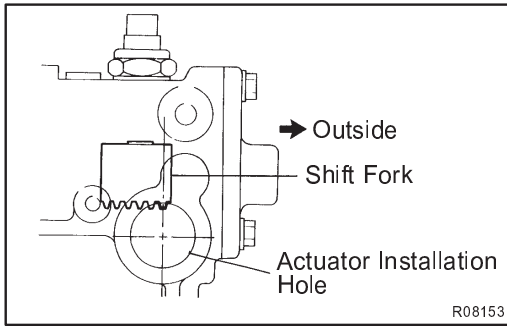
FREE: 32.40 - 33.90 mm (1.2756 - 1.3346 in.)



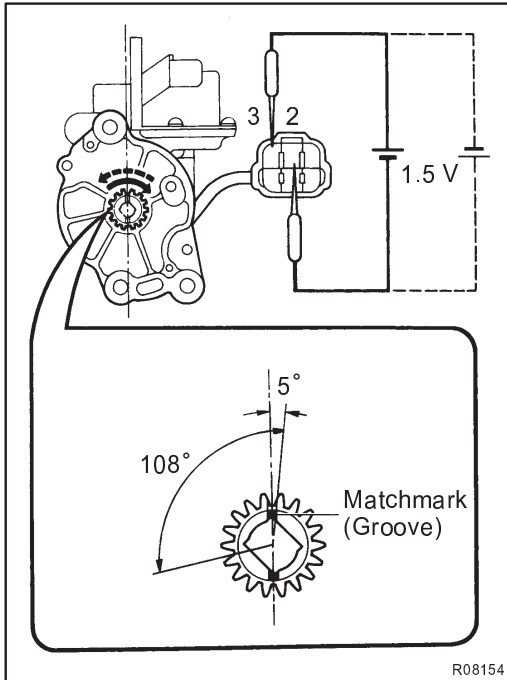
27. INSTALL INDICATOR SWITCH

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.

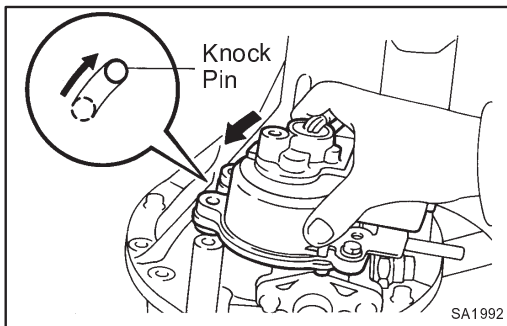


- (b) Ensure that the matchmarks of the pinion of the actuator is in the extent between zero and 5 degrees clockwise above the center line of the actuator.

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

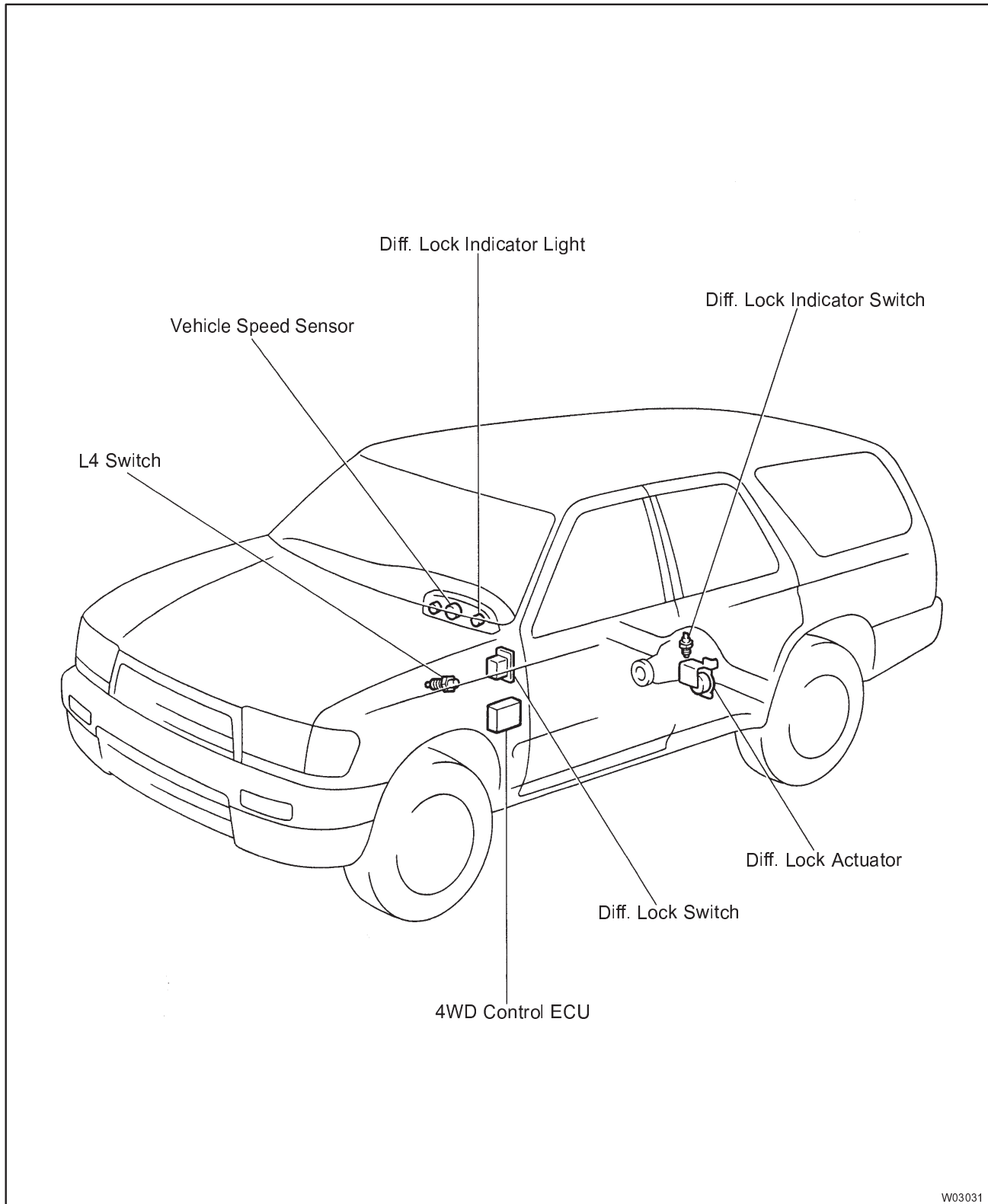
Installation is in the reverse order of removal (See page [SA-94](#)).

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

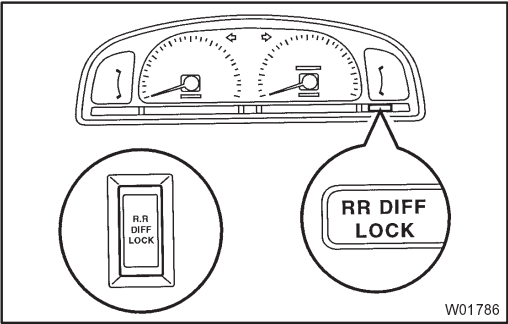
SA06N-02



W03031

REMOVAL

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



INSPECTION

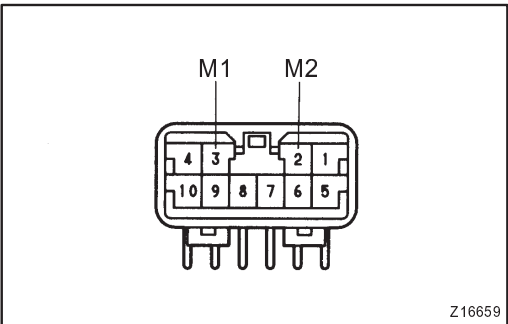
1. INSPECT DIFFERENTIAL LOCK SYSTEM

- (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.



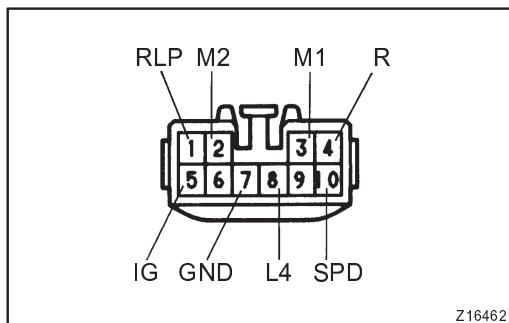
- (5) Check the voltage between the terminals of the 4WD control ECU when switching the Diff. lock control switch with the speedometer, registering approx. 8 km/h (5 mph) or more.

Swith 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.

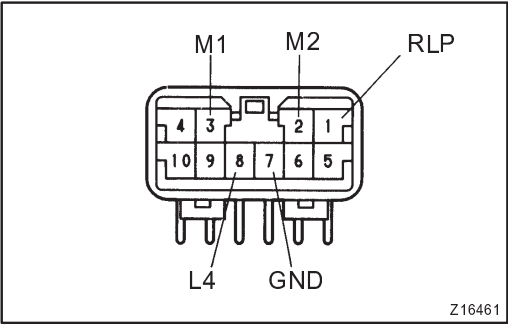
Disconnect the connector from the 4WD control ECU and inspect the connector on the wire harness side, as shown in the chart.

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 OFF	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.

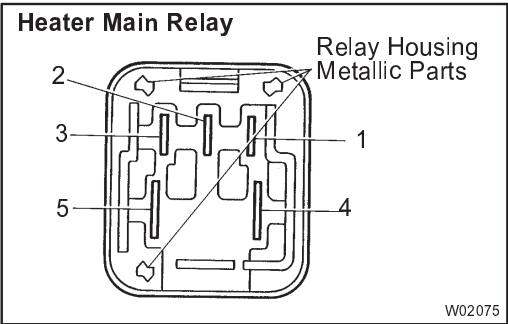


- (4) Using a voltmeter, measure the voltage when the differential lock control switch is in the position, as shown below.

Tester Connection ⊕ - ⊖	Switch position	Specified value
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

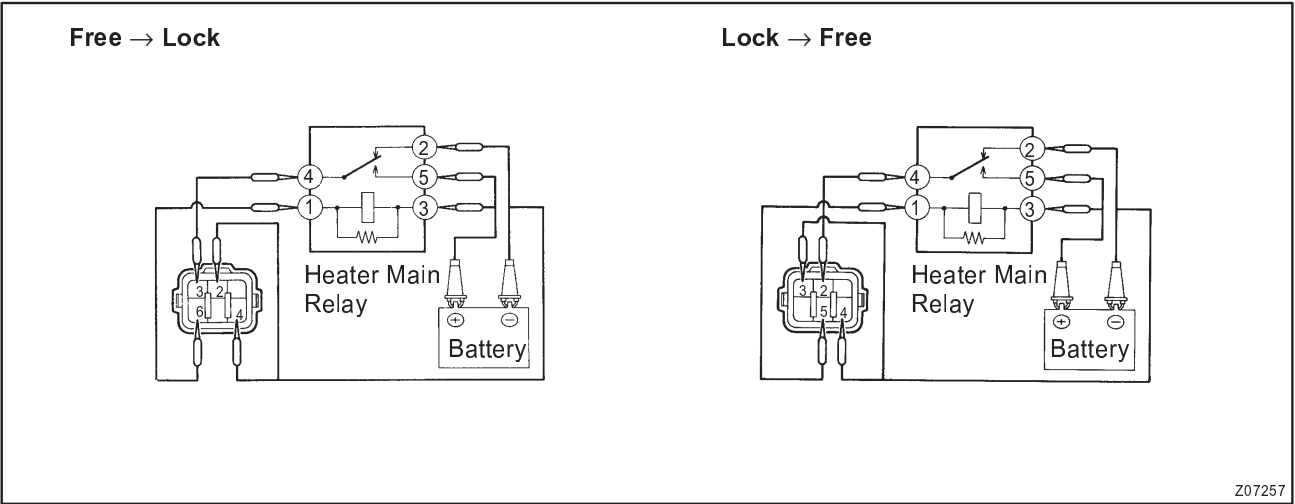
- (a) Inspect the relay operation.
- (1) Jack up the vehicle.
 - (2) Use a heater main relay and connect it, as shown below.

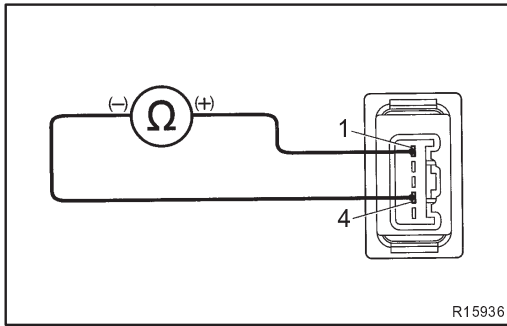
NOTICE:

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.

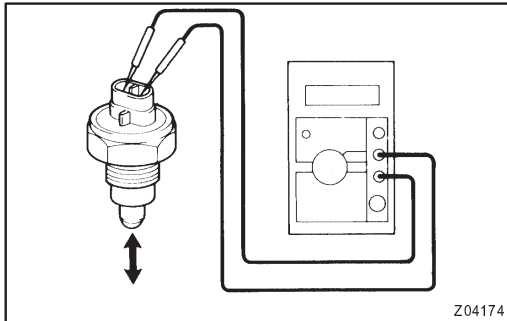




- (b) Inspect the Diff. lock control switch continuity.
Inspect the switch continuity between terminal 1 to terminal 4.

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](#))