DIFFERENTIAL SYSTEM

PRECAUTION

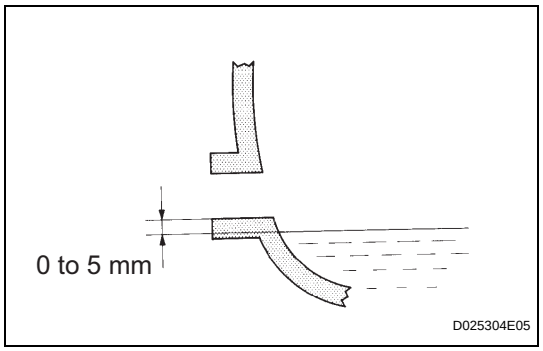
1. **Before disassembling the differential assembly, thoroughly clean it to remove any sand, mud or foreign matter. This will help prevent contamination during disassembly and reassembly.**
2. **When removing the rear differential carrier cover or any other light alloy part, do not pry it off with a screwdriver or other tool that may cause damage. Instead, tap the part with a plastic-faced hammer.**
3. **Always arrange disassembled parts in the order they were removed and protect them from foreign matter.**
4. **Before installation of each part, thoroughly clean and dry it. Then apply hypoid gear oil LSD to it. Do not use alkaline chemicals to clean aluminum parts, rubber parts or ring gear set bolts. Also, do not use white gasoline or other cleaning oils to clean O-rings, oil seals or rubber parts.**
5. **Coat sliding surfaces or rotating parts with hypoid gear oil LSD.**
6. **Do not fix a part directly in a vise. Place aluminum plates between the part and vise.**
7. **Be careful not to damage the contact surfaces of the case. Such damage may cause oil leakage.**
8. **Before applying sealant, remove deposited oil sealant and clean the part to be sealed using white gasoline.**
9. **After sealing parts, do not allow oil to come into contact with the seal for at least an hour.**
10. **Do not allow scratches on surfaces which contact an oil seal, O-ring or gasket. Scratches may lead to oil leakage.**
11. **When press-fitting an oil seal, be careful not to damage the lip of the oil seal or its outside periphery.**
12. **When replacing a bearing, replace the inner and outer races as a set.**

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Differential system

Symptom	Suspected area	See page
Oil leak from front differential	1. Oil (level too high or wrong grade)	DF-3
	2. Front differential side oil seal (worn or damaged)	DF-23
	3. Front differential rear oil seal (worn or damaged)	DF-24
	4. Companion flange (loose or damaged)	DF-22
Oil leak from rear differential	1. Oil (level too high or wrong grade)	DF-3
	2. Rear differential front oil seal (worn or damaged)	DF-9
	3. Companion flange (loose or damaged)	DF-48
Oil leak from front drive pinion shaft	1. Oil (level too high or wrong grade)	DF-3
	2. Front differential side oil seal (worn or damaged)	DF-13
	3. Front differential rear oil seal (worn or damaged)	DF-5
	4. Companion flange (loose or damaged)	DF-22
Oil leak from rear drive pinion shaft	1. Oil (level too high or wrong grade)	DF-3
	2. Rear differential front oil seal (worn or damaged)	DF-9
	3. Companion flange (loose or damaged)	DF-48
Differential lock does not operate	1. Differential lock switch	DF-102
	2. Rear differential lock actuator	DF-102
	3. Four wheel drive control ECU	DF-101
	4. Differential carrier (Faulty)	-
	5. Wiring or ground (Faulty)	-



DIFFERENTIAL OIL

ON-VEHICLE INSPECTION

1. CHECK DIFFERENTIAL OIL

(a) Stop the vehicle on a level surface.

(b) Remove the differential filler plug and gasket.

(c) Check that the oil level is between 0 to 5 mm (0 to 0.20 in.) from the bottom lip of the differential filler plug hole.

NOTICE:

- **After changing the oil seal, drive the vehicle and then check the oil level again.**
- **Too much or too little oil will lead to differential problems.**

HINT:

If necessary, fill the differential carrier assembly with hypoid gear oil.

Recommended viscosity

Item	Temperature	Viscosity
Front w/ A.D.D.		SAE 75W-90
Front differential for w/o A.D.D. Rear differential	Above -18°C (-0.4°F)	SAE 90
	Below -18°C (-0.4°F)	SAE 85W-90

Oil grade

Item	Grade
Front differential (4WD)	Hypoid gear oil API GL-4 or GL-5
Front differential (2WD) Rear differential (all type)	Hypoid gear oil API GL-5

Front differential oil capacity

Item	Capacity
w/o A.D.D.	1.35 to 1.45 liters (1.42 to 1.53 US qts., 1.18 to 1.27 Imp. qts.)
w/ A.D.D.	1.45 to 1.55 liters (1.53 to 1.63 US qts., 1.27 to 1.36 Imp. qts.)

Rear differential oil capacity

Item	Capacity
w/ Differential lock	2.85 to 2.95 liters (3.01 to 3.12 US qts, 2.51 to 2.60 Imp. qts.)
w/o Differential lock.	2.95 to 3.05 liters (3.12 to 3.22 US qts, 2.60 to 2.68 Imp. qts.)

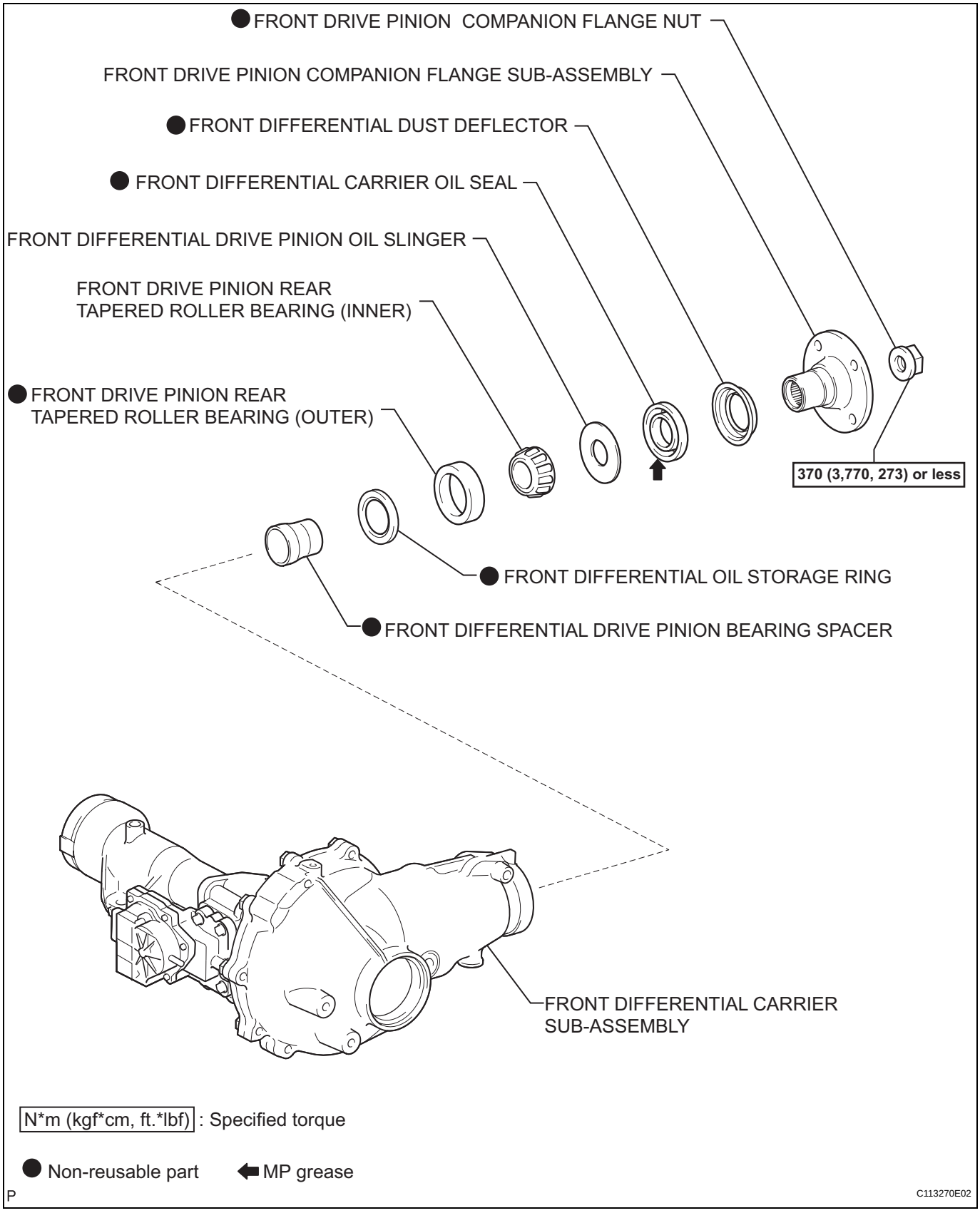
(d) Check for oil leakage when the oil level is low.

(e) Install the differential filler plug with a new gasket.

Torque: Front differential
39 N*m (400 kgf*cm, 29 ft.*lbf)
Rear differential
49 N*m (500 kgf*cm, 36 ft.*lbf)

FRONT DIFFERENTIAL CARRIER OIL SEAL

COMPONENTS



DF

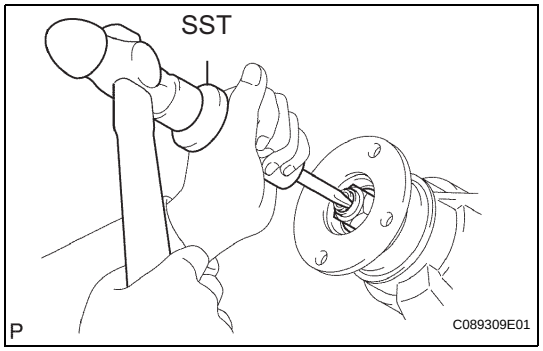
REMOVAL

1. **REMOVE NO. 1 ENGINE UNDER COVER (See page EM-6)**

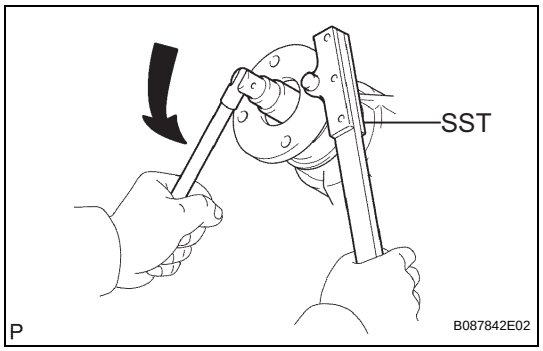
2. **REMOVE REAR ENGINE UNDER COVER ASSEMBLY**
   (a) Remove the 4 bolts, then remove the rear engine under cover.

3. **REMOVE FRONT PROPELLER SHAFT ASSEMBLY (See page PR-2)**

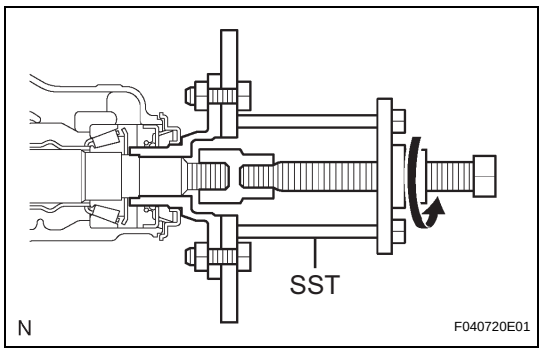
4. **REMOVE FRONT DRIVE PINION COMPANION FLANGE NUT**
   (a) Using SST and a hammer, loosen the staked part of the nut.
   SST 09930-00010



   (b) Using SST to hold the companion flange, remove the nut.
   SST 09330-00021 (09330-00030)

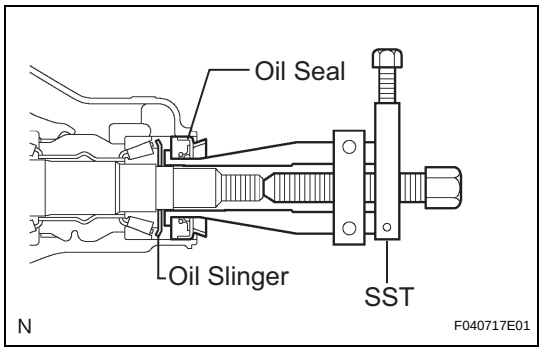


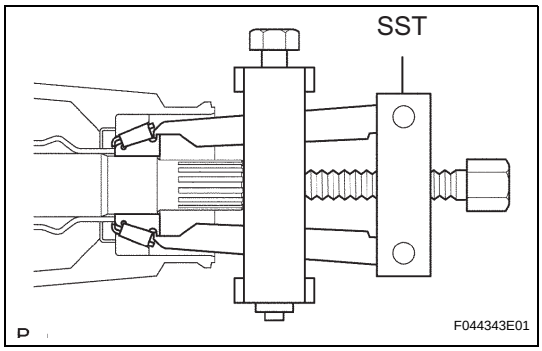
5. **REMOVE FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY**
   (a) Using SST, remove the companion flange.
   SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)
   NOTICE:
   Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



6. **REMOVE FRONT DIFFERENTIAL CARRIER OIL SEAL**
   (a) Using SST, remove the oil seal.
   SST 09308-10010

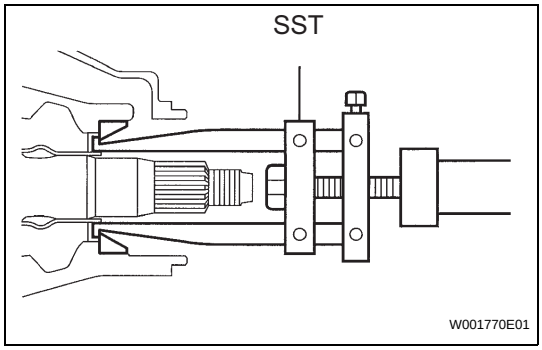
7. **REMOVE FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER**





8. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST, remove the roller bearing (inner).
SST 09556-22010

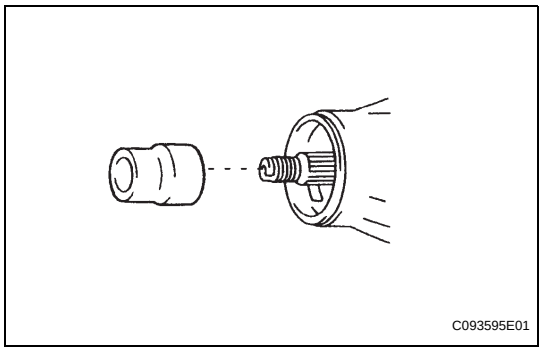


(b) Using SST, tap out the roller bearing (outer).
SST 09308-00010

9. REMOVE FRONT DIFFERENTIAL OIL STORAGE RING

(a) Using a screwdriver and hammer, tap out the oil storage ring.

10. REMOVE FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER



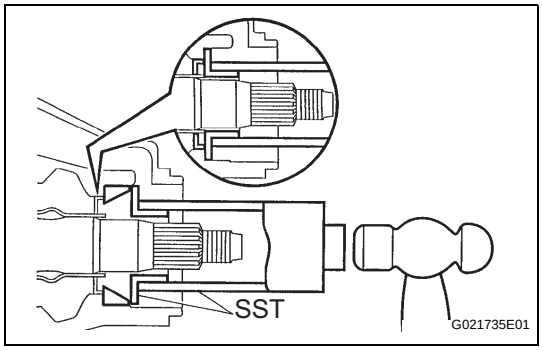
INSTALLATION

1. INSTALL FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER

(a) Install a new bearing spacer.
HINT:
Install the spacer in the correct direction.

2. INSTALL FRONT DIFFERENTIAL OIL STORAGE RING

(a) Using a brass bar and hammer, tap in a new oil storage ring.
NOTICE:
Be careful not to damage the oil storage ring.

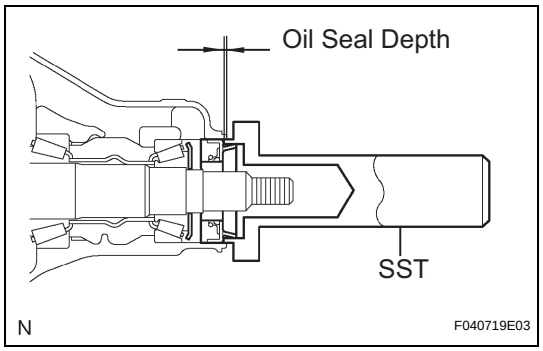


3. INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST and a hammer, install the roller bearing (outer).
SST 09316-60011 (09316-00011, 09316-00021)

(b) Install the roller bearing (inner).

4. INSTALL FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER



5. INSTALL FRONT DIFFERENTIAL CARRIER OIL SEAL

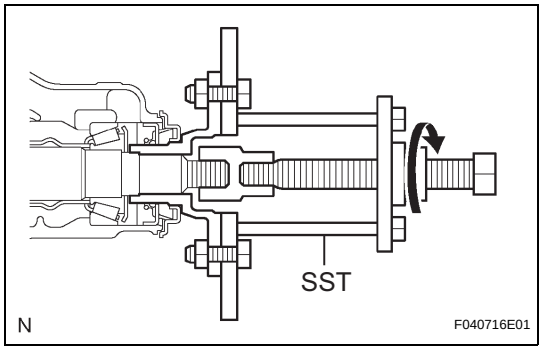
(a) Apply MP grease to the lip of a new oil seal.

(b) Using SST and a hammer, tap in the oil seal.

SST 09554-22010

Oil seal depth:

3.9 to 4.8 mm (0.152 to 0.188in.)



6. INSTALL FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, instal the companion flange.

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

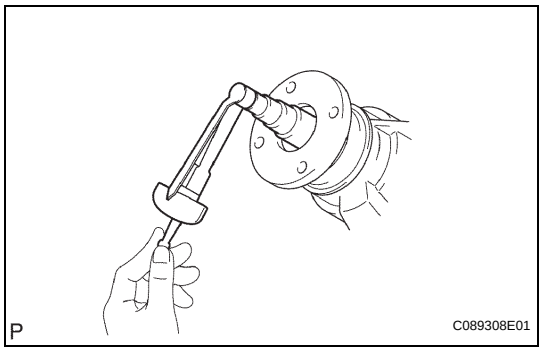
NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

(b) Using SST to hold the companion flange, install the nut.

SST 09330-00021 (09330-00030)

Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less



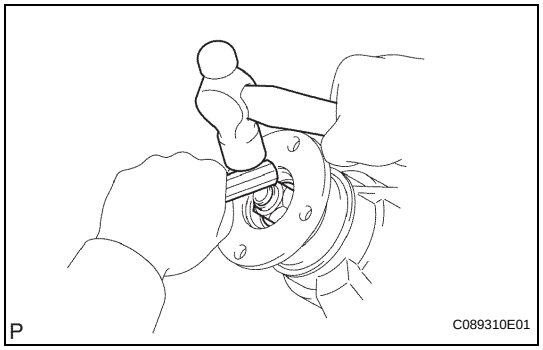
7. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(a) Using a torque wench, measure the preload.

Preload (at starting)

Item	Specified Condition
New bearing	0.98 to 1.57 N*m (10 to 16 kgf*cm, 8.7 to 13.9 in.*lbf)
Used bearing	0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)

If the result is not as specified, adjust the preload.



8. STAKE FRONT DRIVE PINION COMPANION FLANGE NUT

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

9. INSTALL FRONT PROPELLER SHAFT ASSEMBLY (See page PR-6)

10. ADD DIFFERENTIAL OIL (See page DF-3)

11. CHECK FOR DIFFERENTIAL OIL LEAKAGE

12. INSTALL REAR ENGINE UNDER COVER ASSEMBLY

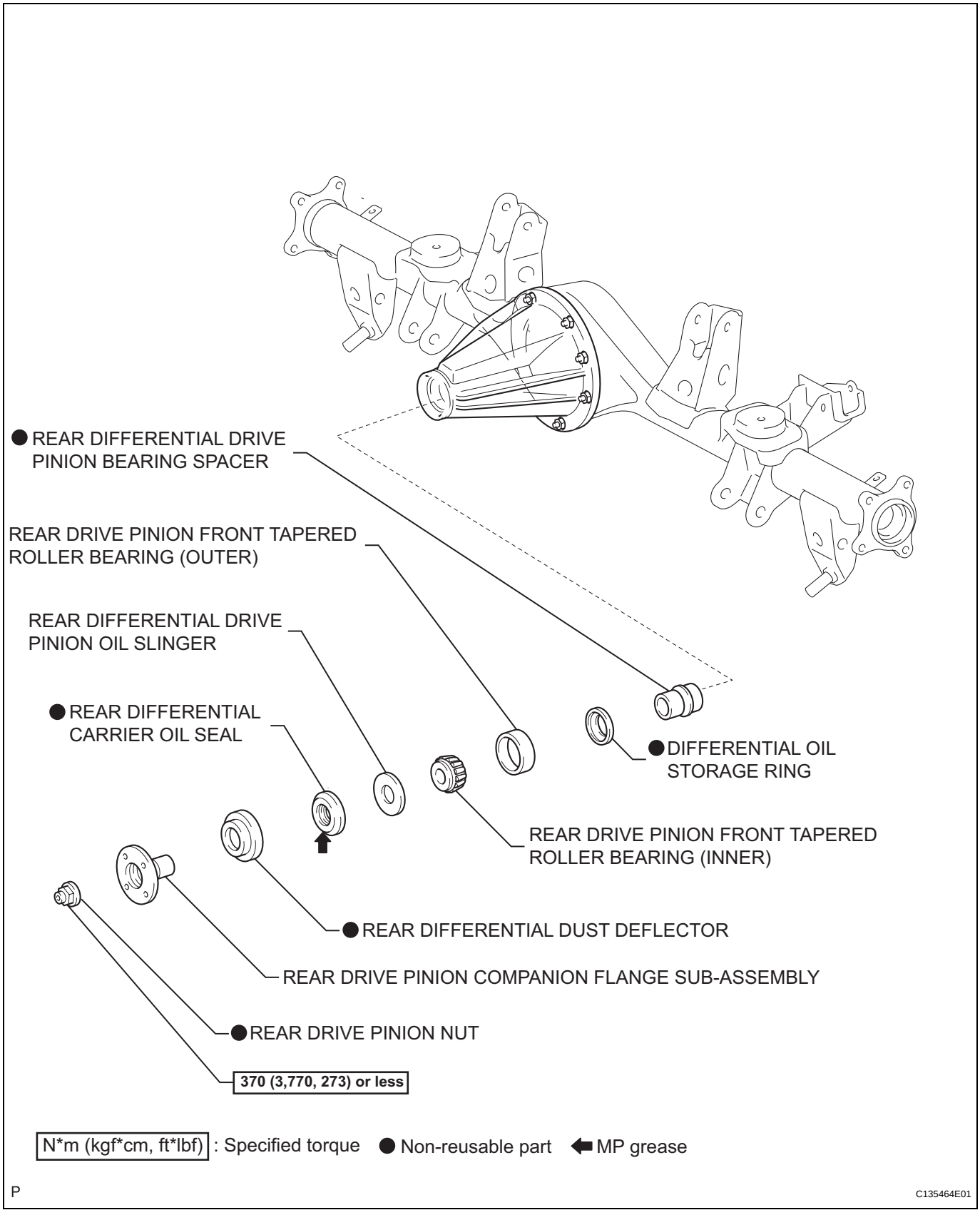
(a) Install the rear engine under cover with the 4 bolts.

Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)

13. INSTALL NO. 1 ENGINE UNDER COVER (See page EM-7)

REAR DIFFERENTIAL CARRIER OIL SEAL

COMPONENTS

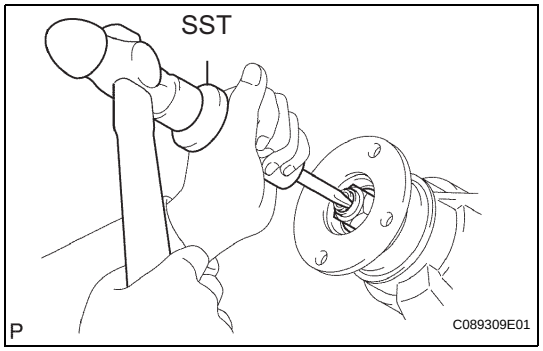


REMOVAL

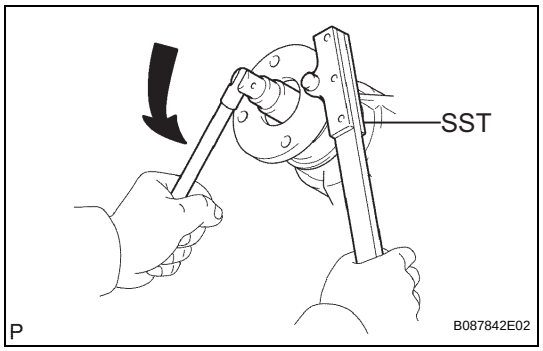
1. **REMOVE REAR PROPELLER SHAFT ASSEMBLY (for 2WD) (See page PR-9)**

2. **REMOVE PROPELLER SHAFT ASSEMBLY (for 4WD) (See page PR-9)**

3. **REMOVE REAR DRIVE PINION NUT**

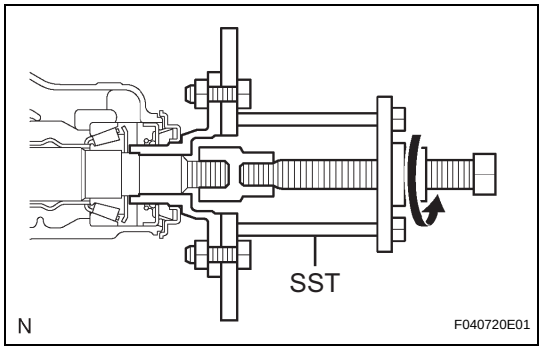


(a) Using SST and a hammer, loosen the staked part of the nut.
SST 09930-00010



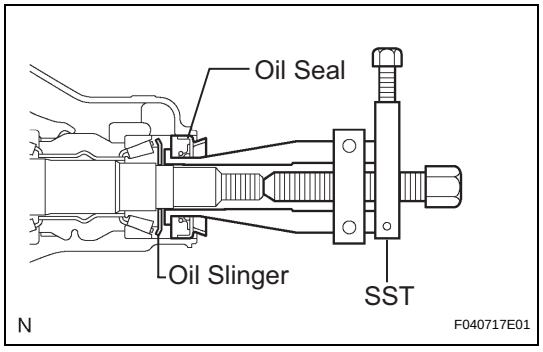
(b) Using SST to hold the companion flange in place, remove the nut.
SST 09330-00021 (09330-00030)

4. **REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY**



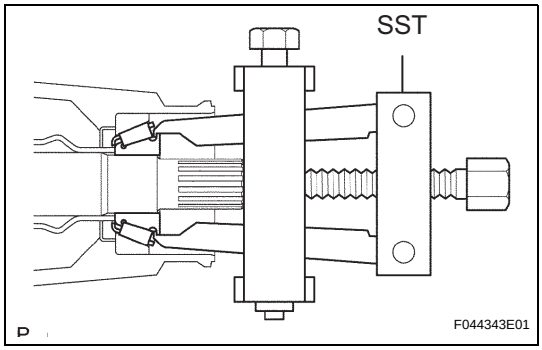
(a) Using SST, remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)
NOTICE:
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

5. **REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL**



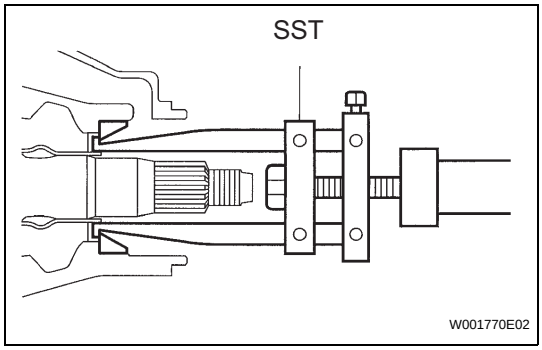
(a) Using SST, remove the oil seal.
SST 09308-10010

6. **REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER**



7. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST, remove the roller bearing (inner).
SST 09556-22010

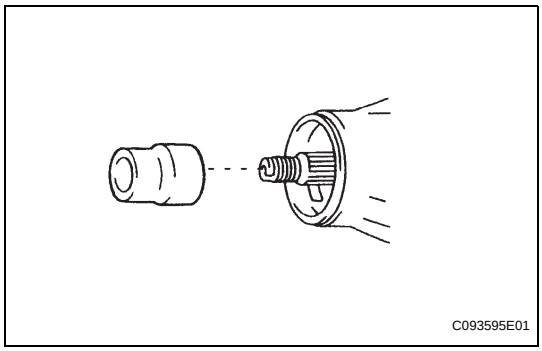


(b) Using SST, tap out the roller bearing (outer).
SST 09308-00010

8. REMOVE DIFFERENTIAL OIL STORAGE RING

(a) Using a screwdriver and hammer, tap out the oil storage ring.

9. REMOVE REAR DIFFERENTIAL DRIVE PINION BEARING SPACER



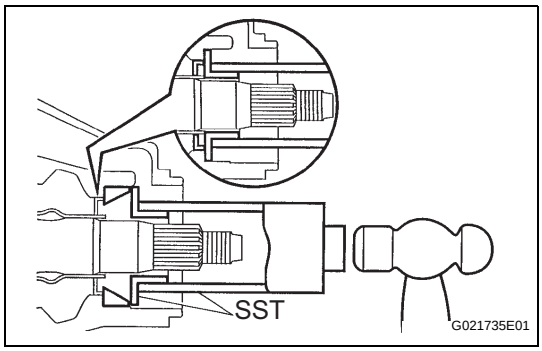
INSTALLATION

1. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

(a) Install a new bearing spacer.
HINT:
Install the spacer in the correct direction.

2. INSTALL DIFFERENTIAL OIL STORAGE RING

(a) Using a brass bar and hammer, tap in a new oil storage ring.
NOTICE:
Be careful not to damage the oil storage ring.

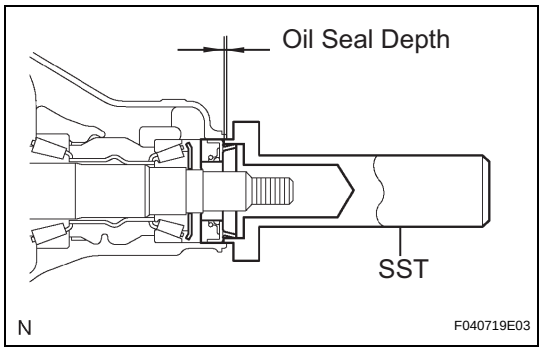


3. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using SST and hammer, tap in the roller bearing (outer).
SST 09316-60011 (09316-00011, 09316-00021)

(b) Install the roller bearing (inner).

4. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER



5. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

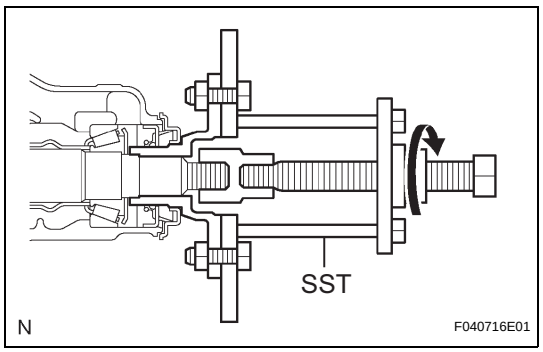
(a) Apply MP grease to the lip of a new oil seal.

(b) Using SST and hammer, tap in the oil seal.

SST 09554-30011

Oil seal depth:

0.55 to 1.45 mm (0.021 to 0.057 in.)



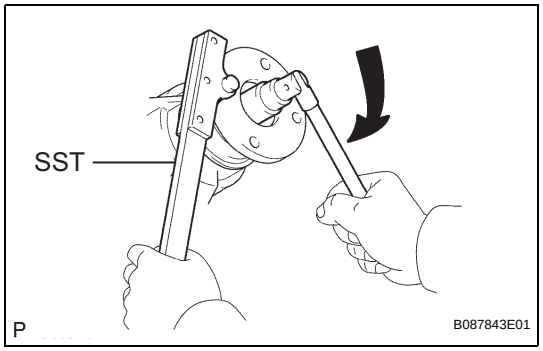
6. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, install the companion flange.

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

NOTICE:

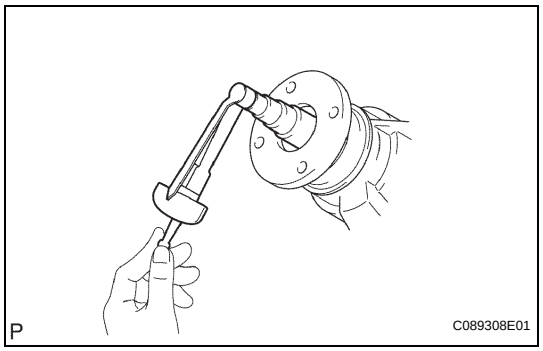
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



(b) Using SST to hold the companion flange in place, install the nut.

SST 09330-00021 (09330-00030)

Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less



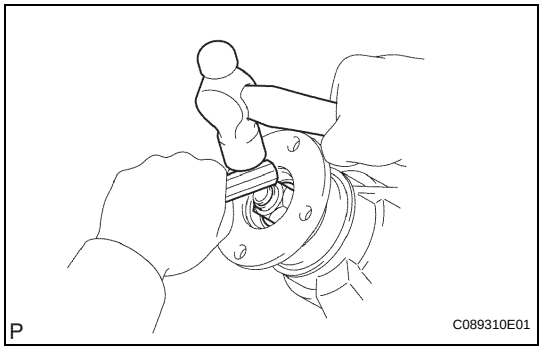
7. INSTALL DIFFERENTIAL DRIVE PINION PRELOAD

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

Preload (at starting)

Item	Specified Condition
New bearing	1.05 to 1.64 N*m (11 to 17 kgf*cm, 9.3 to 15 in.*lbf)
Reused bearing	0.56 to 0.85 N*m (6 to 9 kgf*cm, 4.9 to 7.5 in.*lbf)

If the result is not as specified, adjust the preload.



8. STAKE DRIVE PINION NUT

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

9. INSTALL REAR PROPELLER SHAFT ASSEMBLY (for 2WD) (See page PR-14)

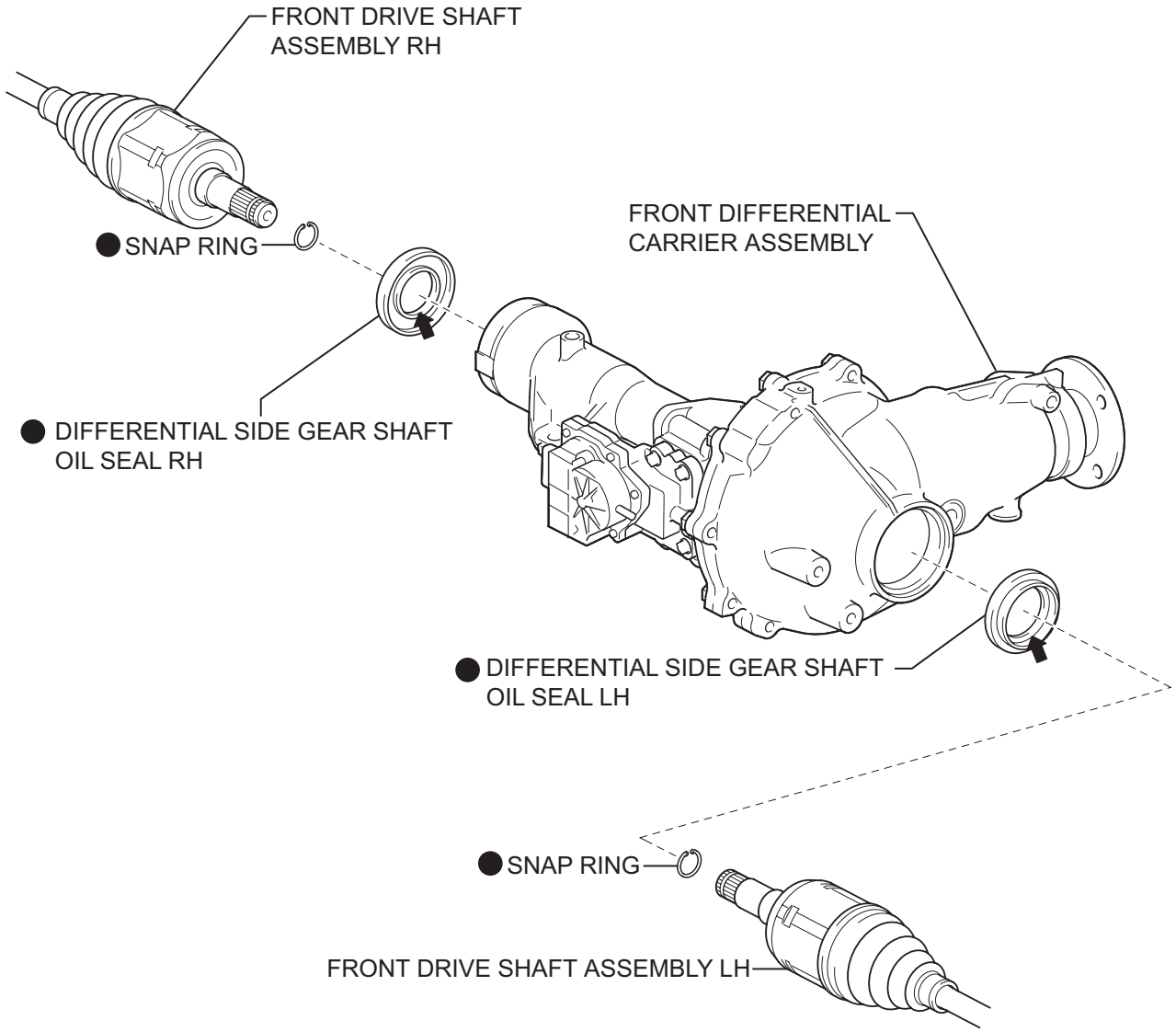
10. INSTALL PROPELLER SHAFT ASSEMBLY (for 4WD) (See page PR-14)

11. ADD DIFFERENTIAL OIL (See page DF-3)

12. CHECK FOR DIFFERENTIAL OIL LEAKAGE

FRONT DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

COMPONENTS



● Non-reusable part ⬅ MP grease

P C113271E02

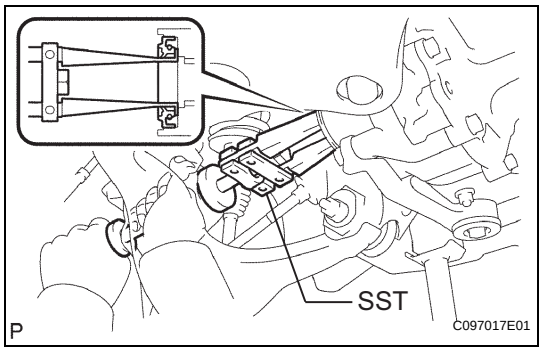
DF

REMOVAL

HINT:
The procedure described below is for the LH side. Use the same procedure for both the RH and LH sides, unless otherwise specified.

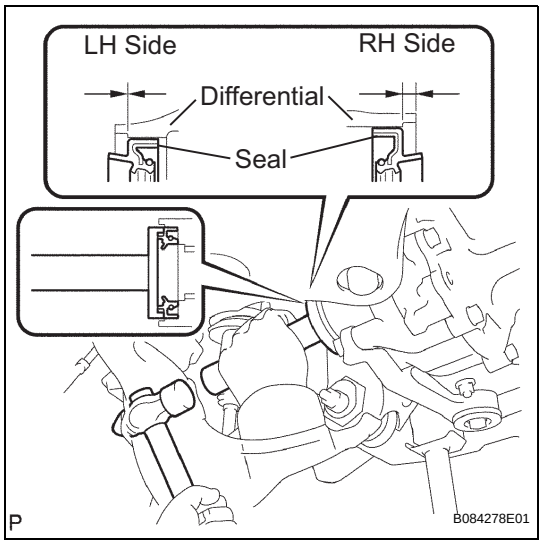
1. **REMOVE FRONT DRIVE SHAFT ASSEMBLY LH**
   (See page DS-3)

2. **REMOVE DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL**
   (a) Using SST, tap out the oil seal.
   SST 09308-10010



INSTALLATION

HINT:
The procedure described below is for the RH side. Use the same procedure for both the LH and RH sides, unless otherwise specified.



1. INSTALL DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

(a) Apply MP grease to 2 new oil seals.

(b) Using SST and a hammer, tap in the 2 oil seals.

NOTICE:
Make sure the LH and RH oil seals are installed in the proper locations.

SST 09550-00032, 09950-70010 (09951-07100)

Oil seal depth

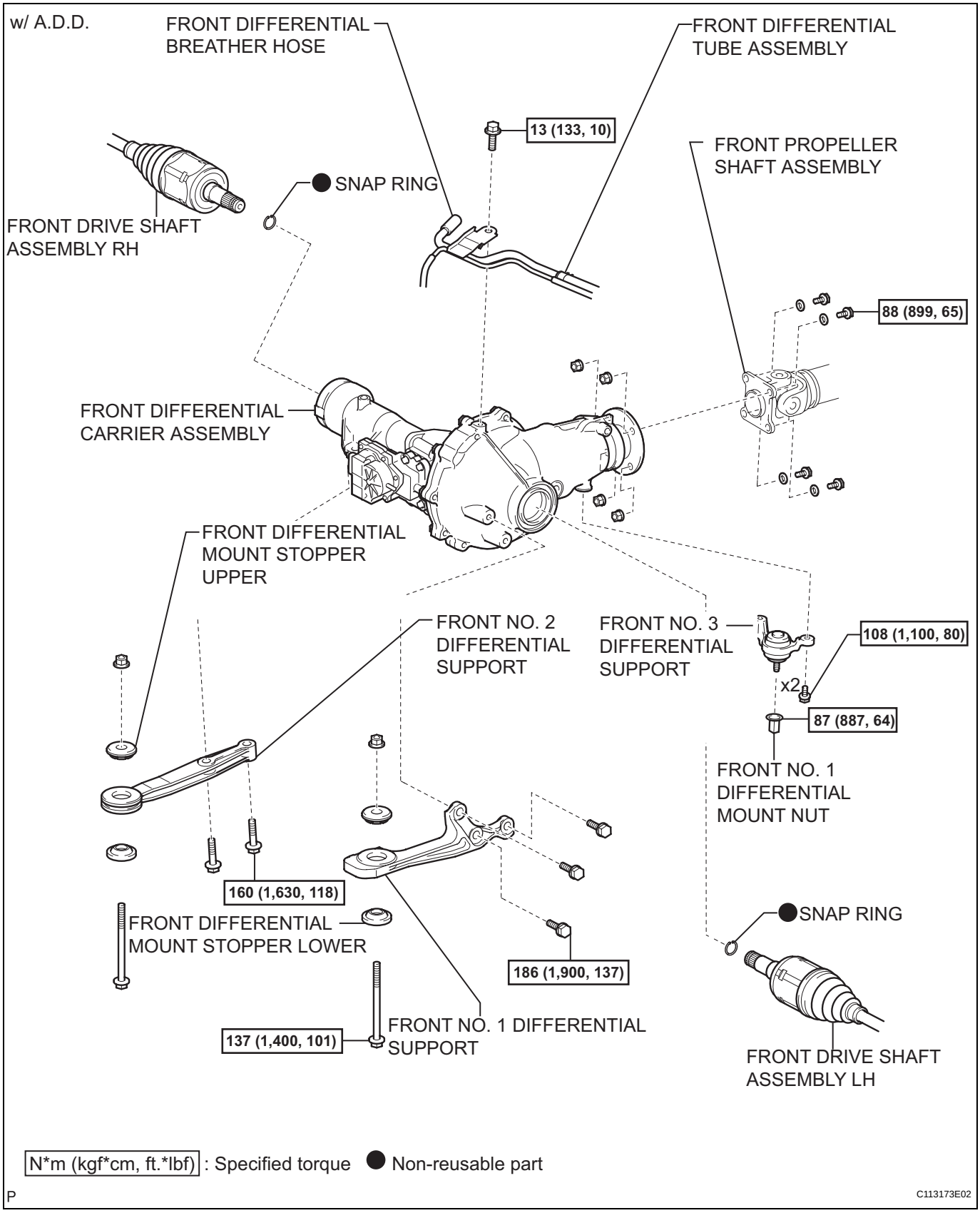
Side	Oil Seal Depth
LH side	-0.45 to 0.45 mm (-0.118 to 0.118 in.)
RH side	4.8 to 5.8 mm (0.189 to 0.229 in.)

2. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

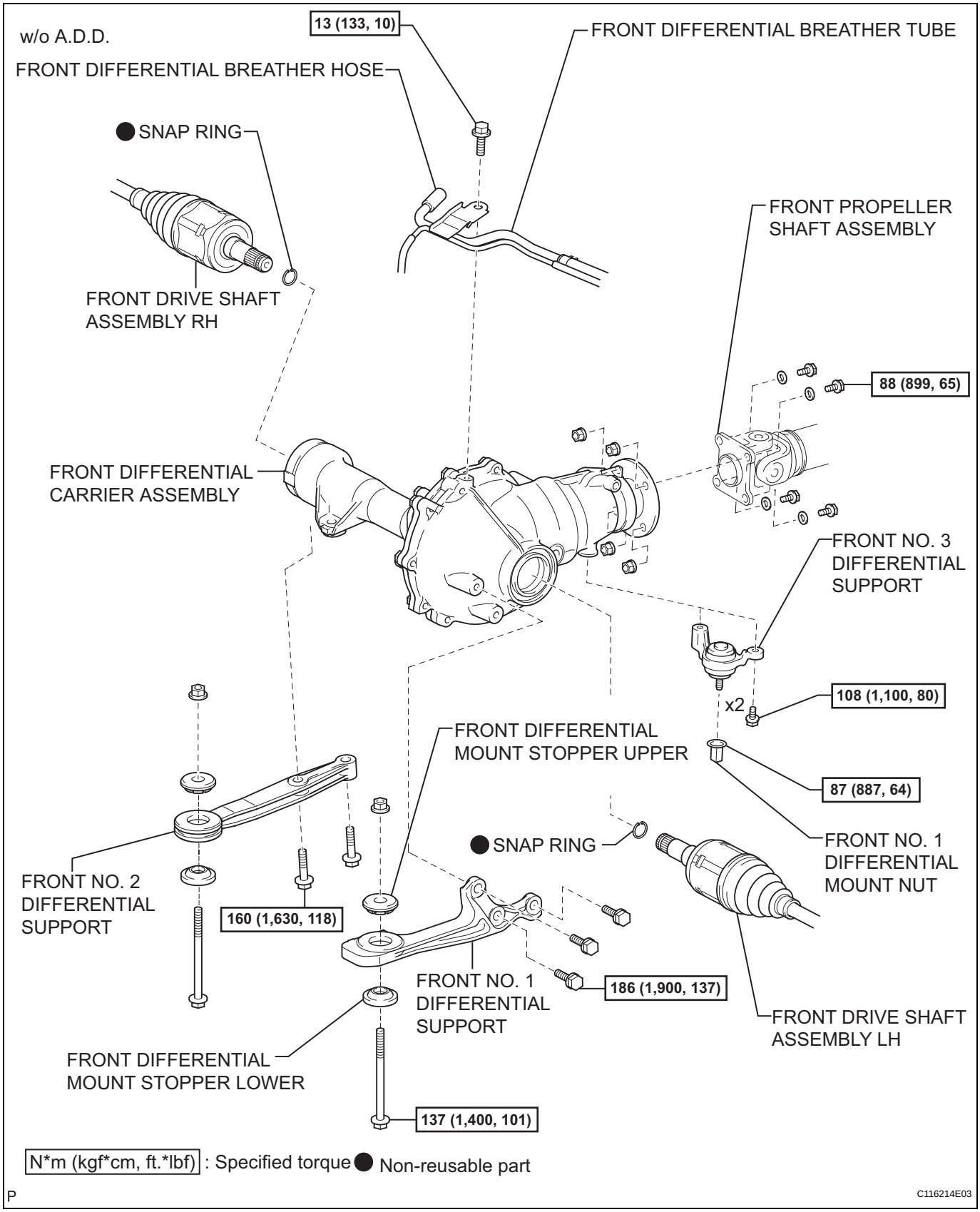
(See page DS-9)

FRONT DIFFERENTIAL CARRIER ASSEMBLY

COMPONENTS

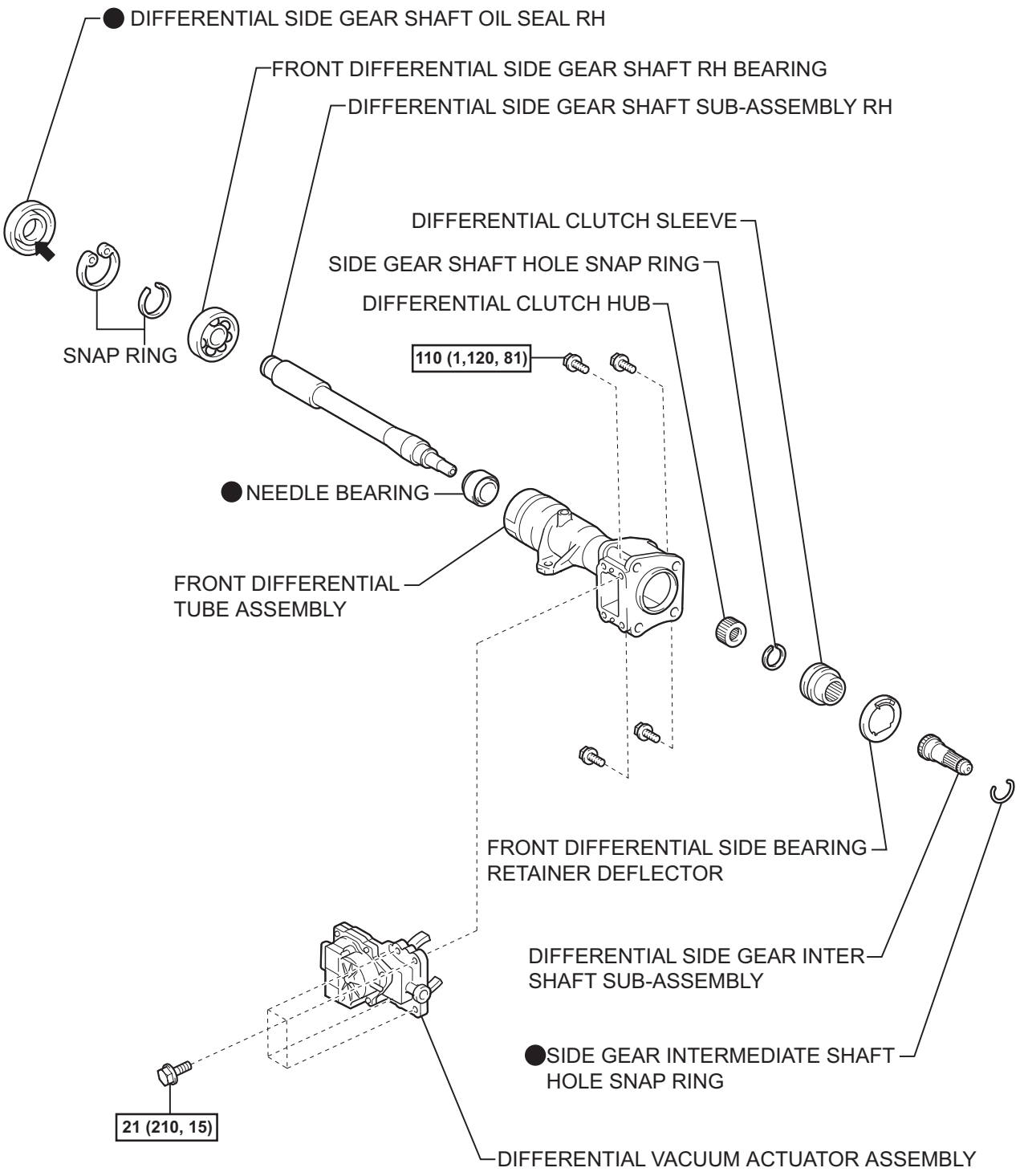


DF


w/o A.D.D.
13 (133, 10)
FRONT DIFFERENTIAL BREATHER TUBE
FRONT DIFFERENTIAL BREATHER HOSE
SNAP RING
FRONT PROPELLER SHAFT ASSEMBLY
FRONT DRIVE SHAFT ASSEMBLY RH
88 (899, 65)
FRONT DIFFERENTIAL CARRIER ASSEMBLY
FRONT NO. 3 DIFFERENTIAL SUPPORT
x2
108 (1,100, 80)
FRONT DIFFERENTIAL MOUNT STOPPER UPPER
87 (887, 64)
SNAP RING
FRONT NO. 1 DIFFERENTIAL MOUNT NUT
FRONT NO. 2 DIFFERENTIAL SUPPORT
160 (1,630, 118)
FRONT NO. 1 DIFFERENTIAL SUPPORT
186 (1,900, 137)
FRONT DRIVE SHAFT ASSEMBLY LH
FRONT DIFFERENTIAL MOUNT STOPPER LOWER
137 (1,400, 101)
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
P
C116214E03

DF

w/ A.D.D.



DF

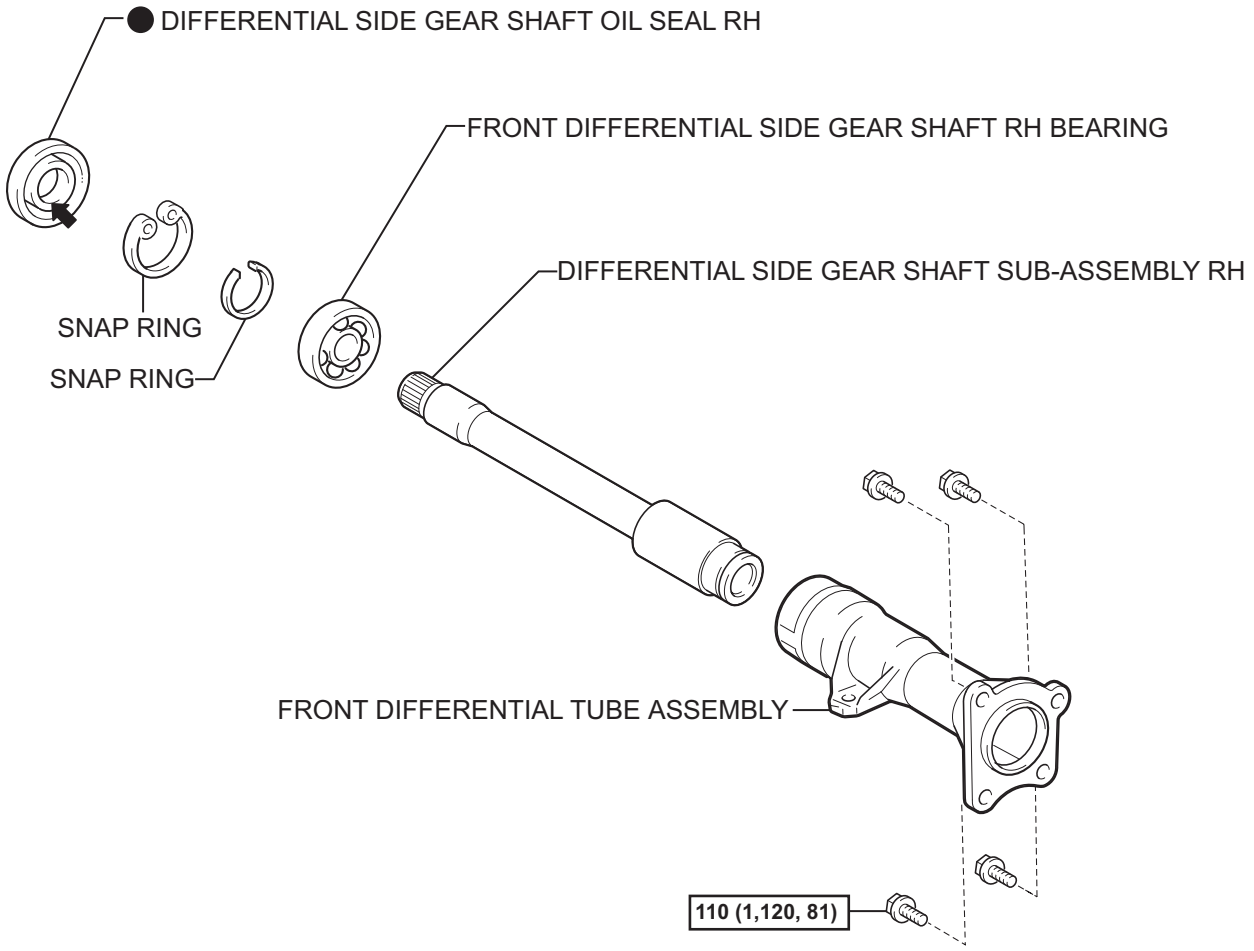
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part ⬅ MP grease

P

C113174E02

w/o A.D.D.

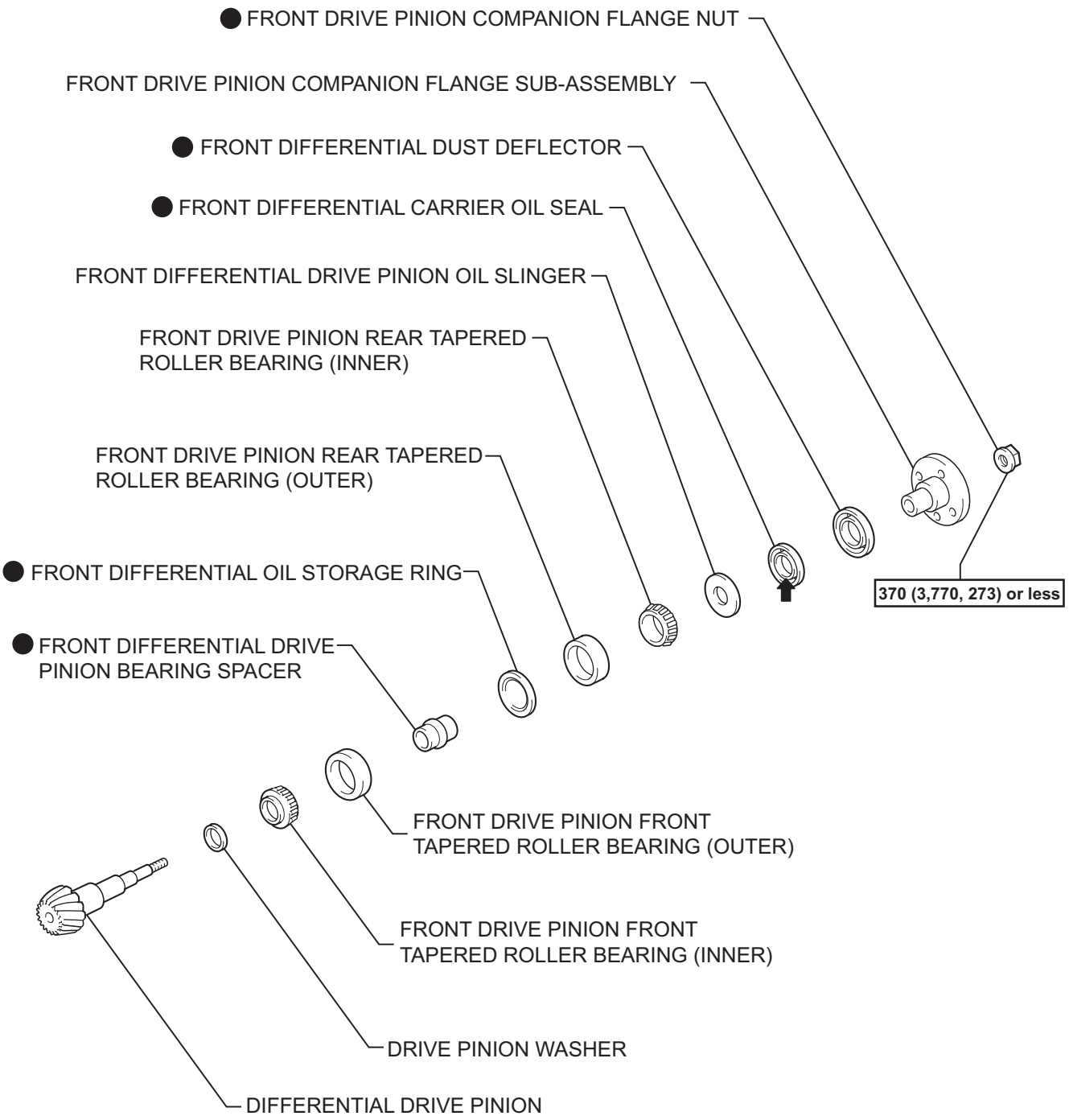


N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part ⬅ MP grease

P

C116213E03



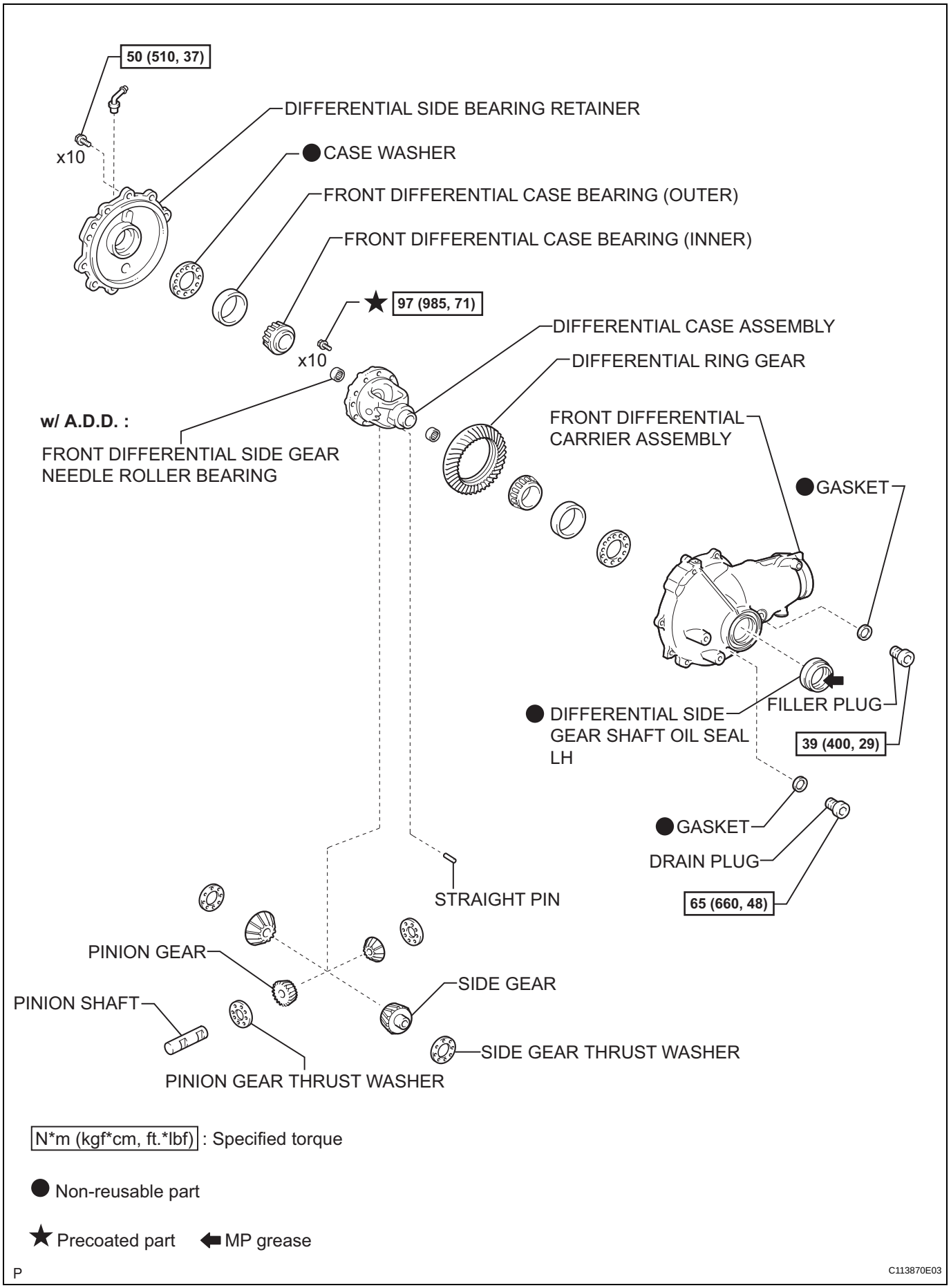
DF

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

● Non-reusable part ⬅ MP grease

P

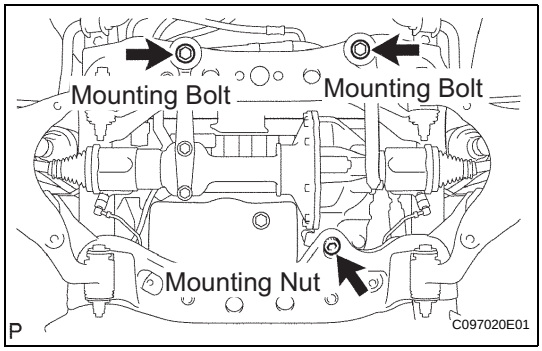
C113175E02


50 (510, 37)
DIFFERENTIAL SIDE BEARING RETAINER
x10
CASE WASHER
FRONT DIFFERENTIAL CASE BEARING (OUTER)
FRONT DIFFERENTIAL CASE BEARING (INNER)
97 (985, 71)
x10
DIFFERENTIAL CASE ASSEMBLY
DIFFERENTIAL RING GEAR
w/ A.D.D. :
FRONT DIFFERENTIAL SIDE GEAR NEEDLE ROLLER BEARING
FRONT DIFFERENTIAL CARRIER ASSEMBLY
GASKET
FILLER PLUG
39 (400, 29)
DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL LH
GASKET
DRAIN PLUG
65 (660, 48)
STRAIGHT PIN
PINION GEAR
SIDE GEAR
PINION SHAFT
SIDE GEAR THRUST WASHER
PINION GEAR THRUST WASHER
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Precoated part
MP grease
P
C113870E03

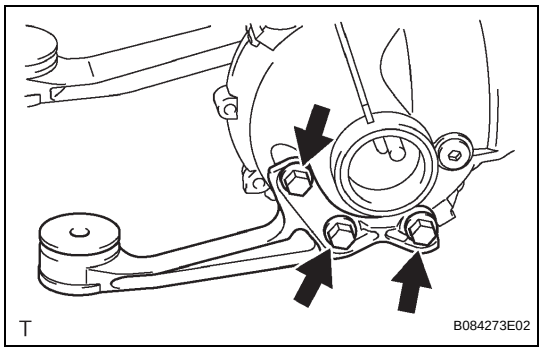
DF

REMOVAL

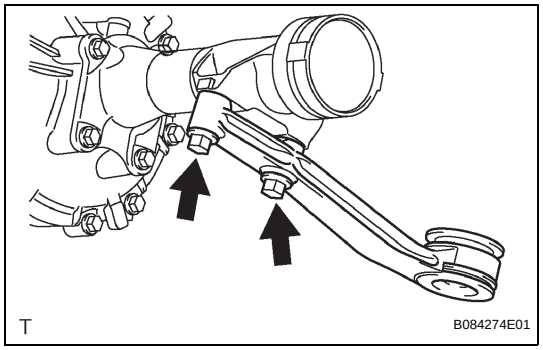
1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE FRONT WHEEL**
3. **REMOVE NO.1 ENGINE UNDER COVER SUB-ASSEMBLY**
4. **REMOVE REAR ENGINE UNDER COVER ASSEMBLY**
5. **DRAIN DIFFERENTIAL OIL**
6. **REMOVE FRONT PROPELLER SHAFT ASSEMBLY (See page PR-2)**
7. **SEPARATE SPEED SENSOR FRONT LH (See page DS-3)**
8. **SEPARATE FRONT SPEED SENSOR RH**
   HINT:
   Use the same procedure as for the RH side.
9. **REMOVE FRONT AXLE HUB GREASE CAP LH (See page DS-3)**
10. **REMOVE FRONT AXLE HUB GREASE CAP RH**
    HINT:
    Use the same procedure as for the RH side.
11. **SEPARATE TIE ROD END SUB-ASSEMBLY LH (See page DS-3)**
12. **SEPARATE TIE ROD END SUB-ASSEMBLY RH**
13. **SEPARATE FRONT LOWER BALL JOINT ATTACHMENT (See page DS-4)**
14. **REMOVE FRONT AXLE HUB NUT LH (See page DS-3)**
15. **REMOVE FRONT AXLE HUB NUT RH**
    HINT:
    Use the same procedure as for the RH side.
16. **REMOVE FRONT DRIVE SHAFT ASSEMBLY LH (See page DS-4)**
17. **REMOVE FRONT DRIVE SHAFT ASSEMBLY RH**
    HINT:
    Use the same procedure as for the RH side.
18. **REMOVE FRONT DIFFERENTIAL CARRIER ASSEMBLY**
    (a) Remove the bolt and disconnect the differential breather tube bracket.
    (b) Support the differential with a jack.
    (c) Remove the No. 1 differential mounting nut.
    (d) Remove the 2 mounting bolts and 2 nuts.
    (e) Lower the jack and remove the front differential.



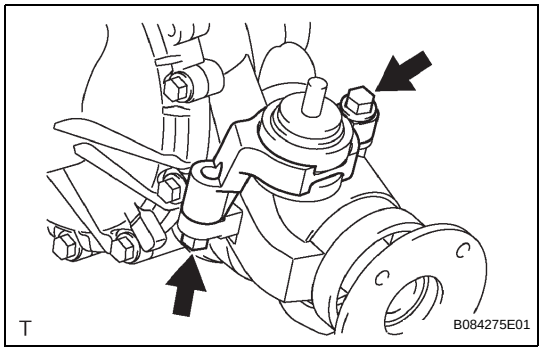
DF



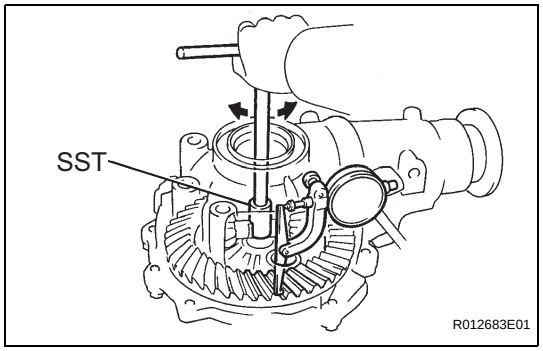
(f) Remove the 3 bolts and front No. 1 differential support.



(g) Remove the 2 bolts and front No. 2 differential support.



(h) Remove the 2 bolts and front No. 3 differential support.



DISASSEMBLY

1. INSPECT DIFFERENTIAL RING GEAR BACKLASH

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

SST 09564-32011

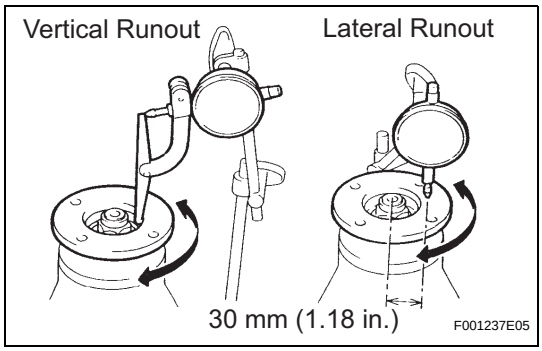
Standard:

0.11 to 0.21 mm (0.0043 to 0.0083 in.)

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

HINT:

Perform the measurements at 3 or more positions around the side bearing preload.



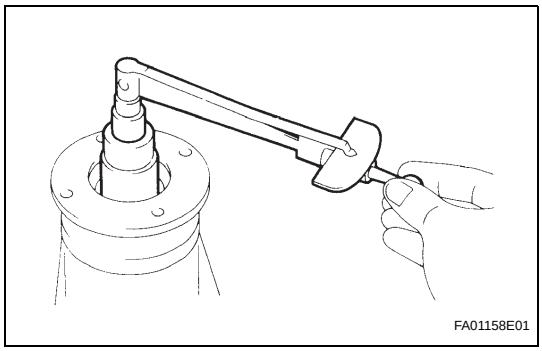
2. INSPECT FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using a dial indicator, measure the runout of the companion flange vertically and laterally.

Maximum runout

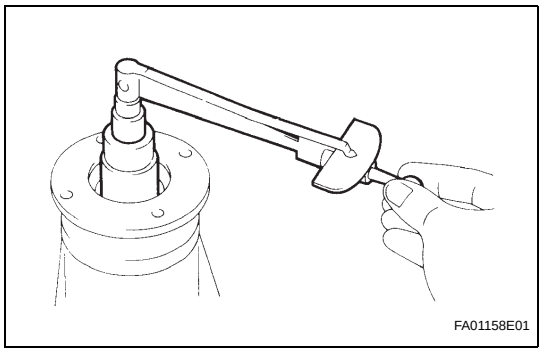
Runout	Maximum
Vertical runout	0.10 mm (0.0039 in.)
Lateral runout	0.10 mm (0.0039 in.)

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



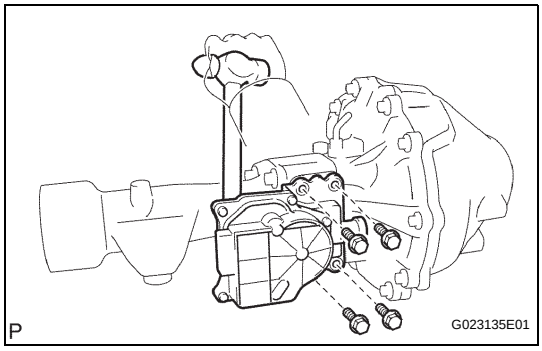
3. INSPECT DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.
HINT:
Bolts without torque specifications are shown in the service data (see page SS-43).



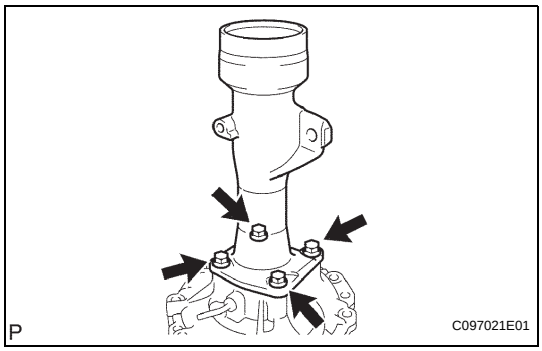
4. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
HINT:
Bolts without torque specifications are shown in the service data (see page SS-43).
If necessary, disassemble and inspect the differential.



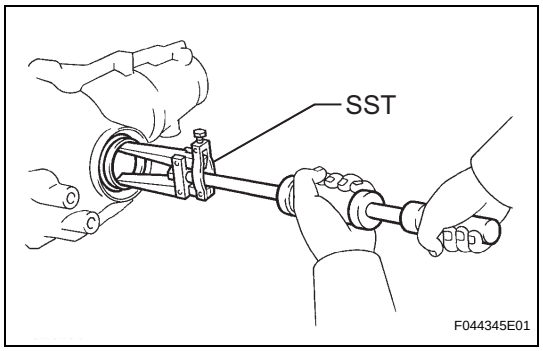
5. REMOVE DIFFERENTIAL VACUUM ACTUATOR ASSEMBLY

(a) Remove the 4 bolts.
(b) Using a hammer, pry out the actuator from the differential tube.



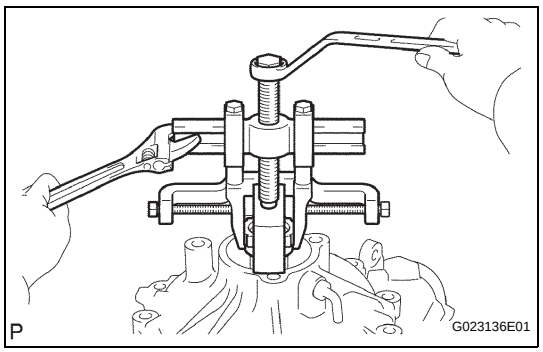
6. REMOVE FRONT DIFFERENTIAL TUBE ASSEMBLY

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



7. REMOVE DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

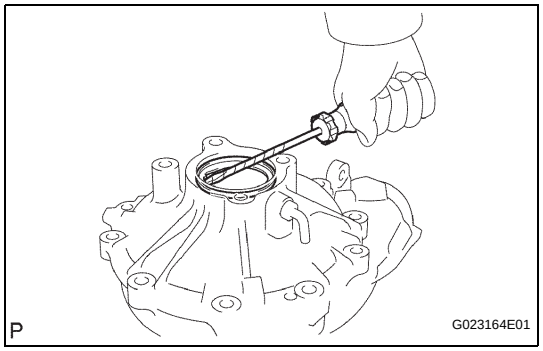
(a) Using SST, tap out the oil seal.
SST 09308-00010



8. REMOVE DIFFERENTIAL SIDE GEAR INTER SHAFT SUB-ASSEMBLY

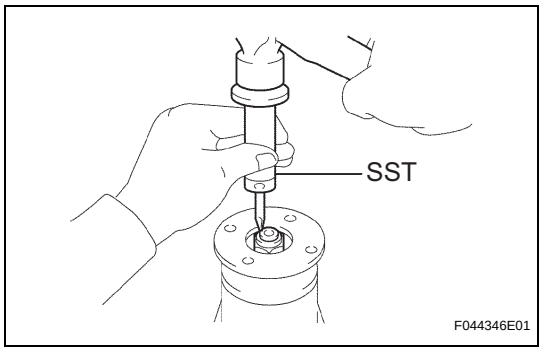
(a) Using SST, remove the inter shaft.
SST 09350-20015 (09369-20040), 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04011, 09957-04010, 09958-04011)

(b) Remove the snap ring from the inter shaft.



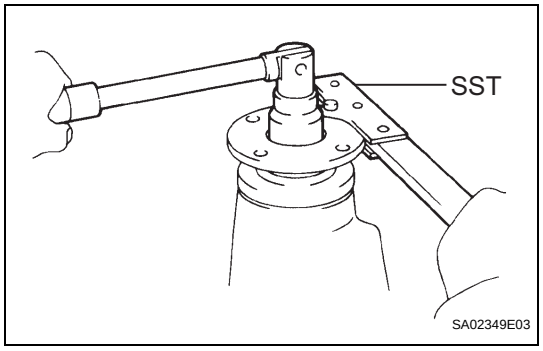
9. REMOVE FRONT DIFFERENTIAL SIDE BEARING RETAINER DEFLECTOR

(a) Using a screwdriver with its tip wrapped in protective tape, pry out the bearing retainer deflector.

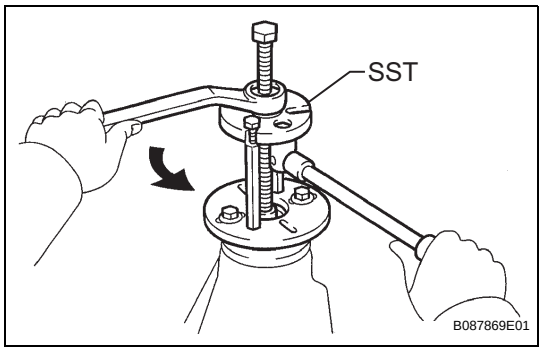


10. REMOVE FRONT DRIVE PINION COMPANION FLANGE NUT

(a) Using SST and a hammer, loosen the staked part of the nut.
SST 09930-00010



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



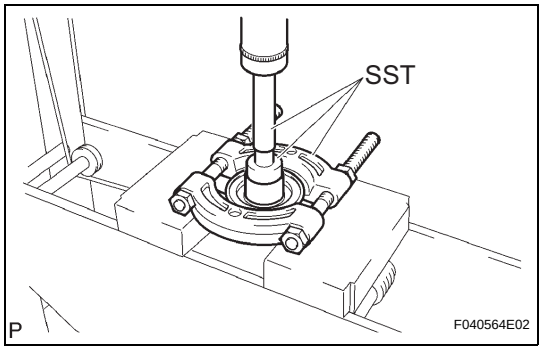
11. REMOVE FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, remove the companion flange.

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

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



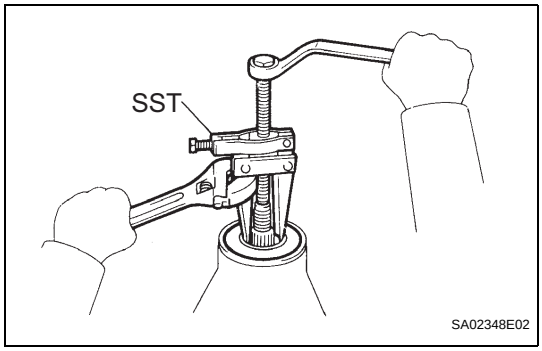
12. REMOVE FRONT DIFFERENTIAL DUST DEFLECTOR

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

SST 09950-00020, 09950-60010 (09951-00510), 09950-70010 (09951-07150)

NOTICE:

Do not drop the companion flange.



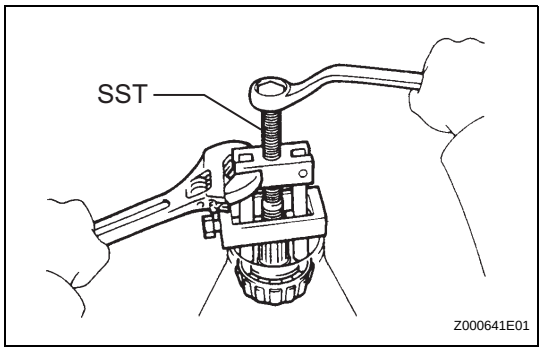
13. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL

(a) Using SST, remove the oil seal from the differential carrier.

SST 09308-10010

14. REMOVE FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

(a) Remove the oil slinger from the drive pinion.



15. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST, remove the roller bearing (inner) from the drive pinion.

SST 09556-22010

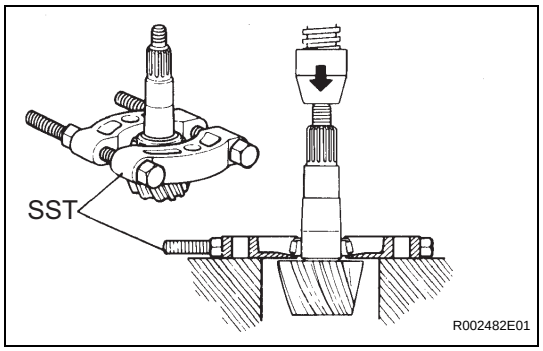
(b) Remove the bearing spacer.

16. REMOVE DIFFERENTIAL SIDE BEARING RETAINER

(a) Remove the 10 bolts and tap out the retainer with a plastic-faced hammer.

17. REMOVE DIFFERENTIAL CASE ASSEMBLY

18. REMOVE DIFFERENTIAL DRIVE PINION



19. REMOVE FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using SST and a press, press out the roller bearing (inner) from the drive pinion.

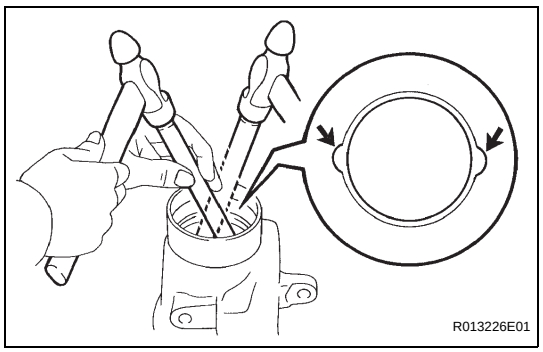
SST 09950-00020

NOTICE:

Do not drop the drive pinion.

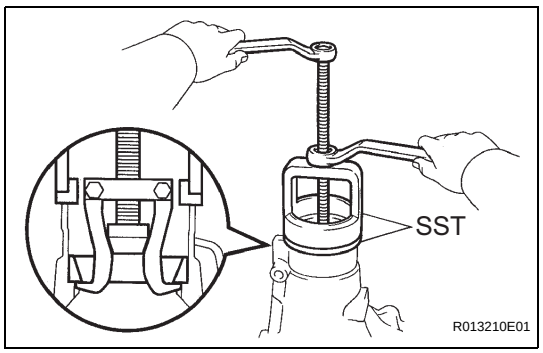
HINT:

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



20. REMOVE FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using a brass bar and hammer, tap out the roller bearing (outer).



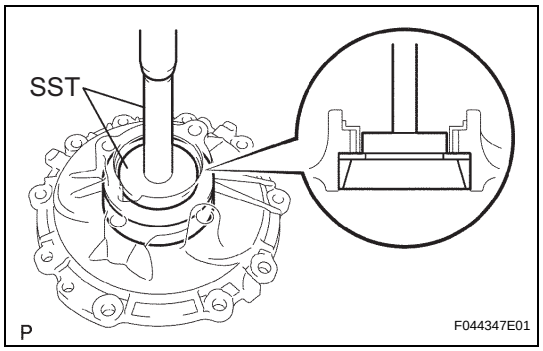
21. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST, remove the roller bearing (outer).

SST 09502-12010, 09612-65014 (09612-01020, 09612-01050)

22. REMOVE FRONT DIFFERENTIAL OIL STORAGE RING

(a) Using a brass bar and hammer, tap out the oil storage ring.



23. REMOVE FRONT DIFFERENTIAL CASE BEARING

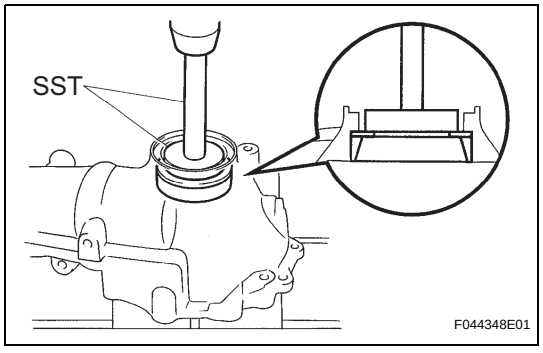
HINT:

- Measure the thickness of the case washer.
- Tag the bearing outer races to show the location for reassembly.

(a) Using SST and a press, press out the case bearing (outer race) and plate washer from the bearing retainer.

SST 09950-60020 (09951-00680), 09950-70010 (09951-07150)

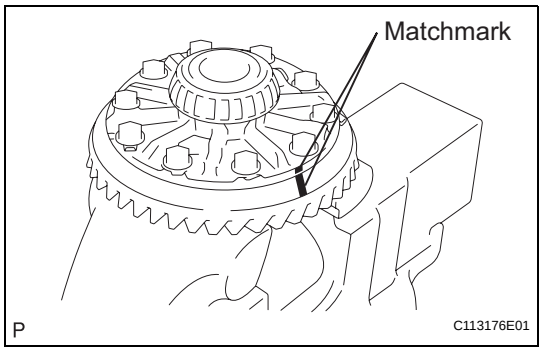
If the bearing is damaged during removal, replace it.



(b) Using SST and a press, press out the case bearing (outer race) and plate washer from the differential carrier.

SST 09950-60020 (09951-00680), 09950-70010 (09951-07150)

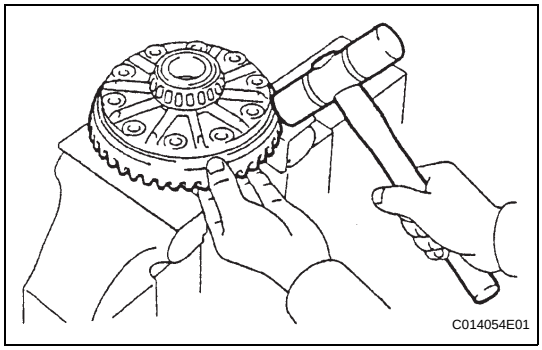
If the bearing is damaged during removal, replace it.



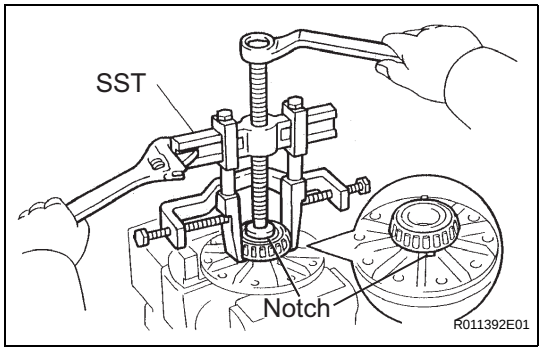
24. REMOVE DIFFERENTIAL RING GEAR

(a) Place matchmarks on the ring gear and differential case.

(b) Remove the 10 ring gear set bolts.



(c) Using a plastic-faced hammer, tap on the ring gear to separate it from the differential case.



25. REMOVE FRONT DIFFERENTIAL CASE BEARING

HINT:

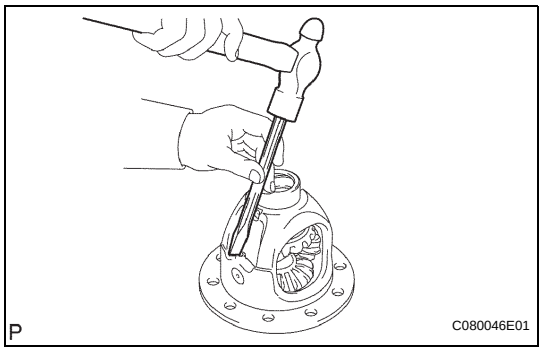
The differential case and case bearings should only be removed when replacement is necessary.

(a) Using SST, remove the 2 case bearings (inner) from the differential case.

SST 09950-60010 (09951-00480), 09950-40011 (09951-04020, 09952-04010, 09953-04030, 09954-04010, 09955-04061, 09953-04020, 09958-04011)

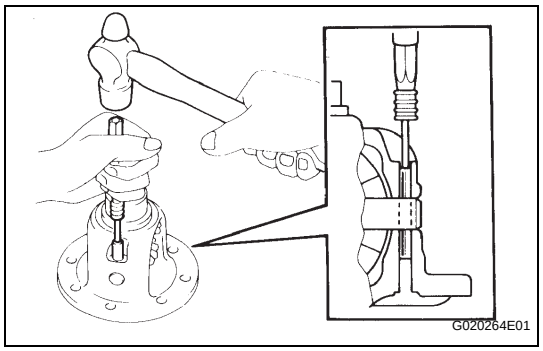
HINT:

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

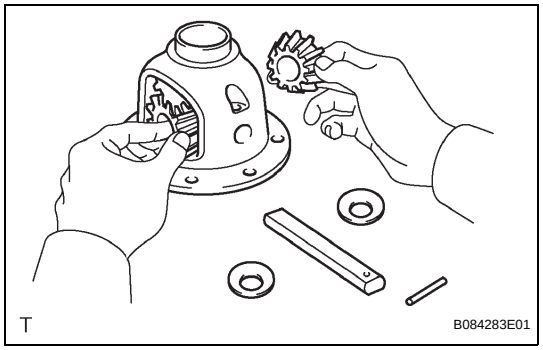


26. DISASSEMBLE DIFFERENTIAL CASE

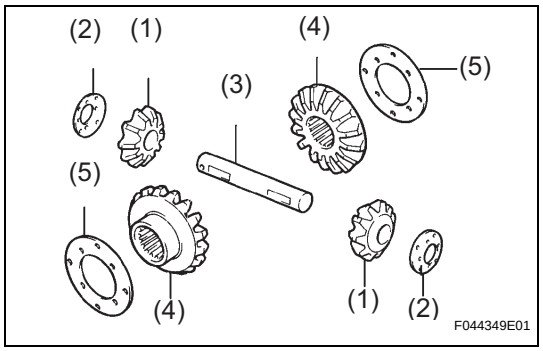
(a) Using a chisel and hammer, unstake the differential case.



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



(c) Remove the following parts from the differential case.



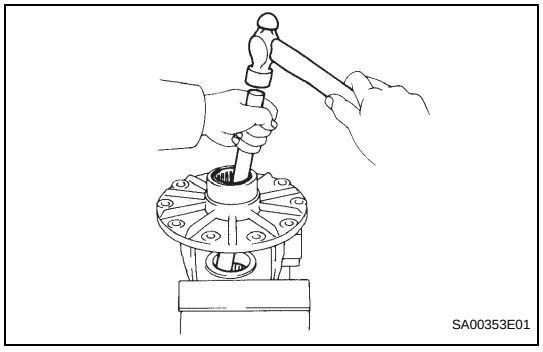
(1) Differential pinion gear (2 pieces)
(2) Differential pinion gear thrust washer (2 pieces)
(3) Differential pinion shaft
(4) Differential side gear (2 pieces)
(5) Differential side gear thrust washer (2 pieces)

27. INSPECT DIFFERENTIAL GEAR KIT

(a) Check that the differential pinion and differential side gear are not damaged.
If the differential pinion or differential side gear is damaged, replace the differential gear kit.

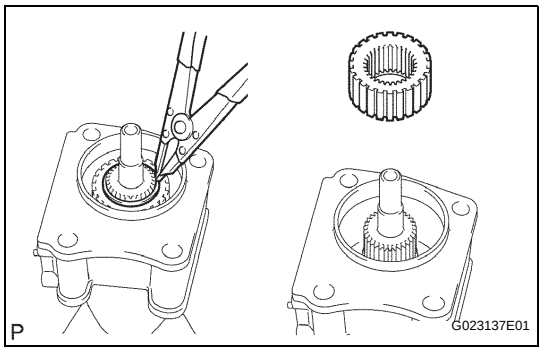
28. INSPECT FRONT DIFFERENTIAL CASE

(a) Check that the differential case is not damaged.
If the differential case is damaged, replace it.



29. REMOVE FRONT DIFFERENTIAL SIDE GEAR NEEDLE ROLLER BEARING

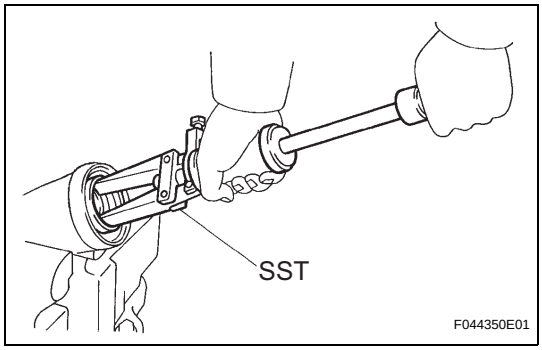
(a) Using a brass bar and hammer, tap out the 2 bearings.



30. REMOVE DIFFERENTIAL CLUTCH HUB

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

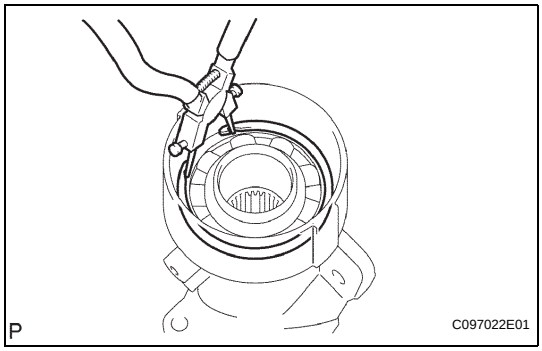
(b) Remove the differential clutch hub.



31. REMOVE DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

(a) Using SST, tap out the oil seal from the differential tube.

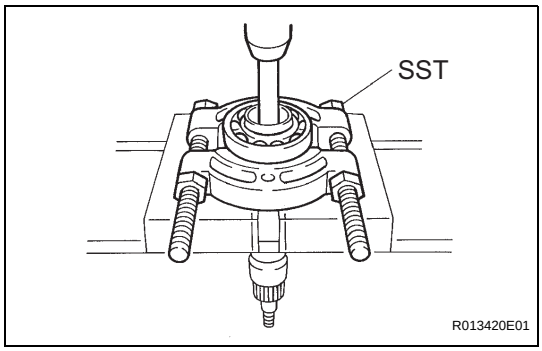
SST 09308-00010



32. REMOVE DIFFERENTIAL SIDE GEAR SHAFT SUB-ASSEMBLY RH

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

(b) Remove the shaft from the differential tube.



33. REMOVE FRONT DIFFERENTIAL SIDE GEAR SHAFT RH BEARING

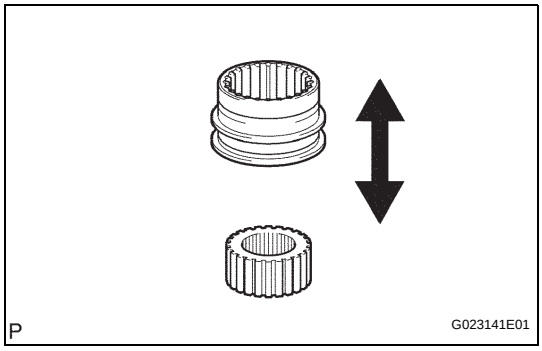
(a) Using a snap ring expander, remove the snap ring.

(b) Using SST, a brass bar and a press, press out the shaft RH bearing.

SST 09950-00020

NOTICE:

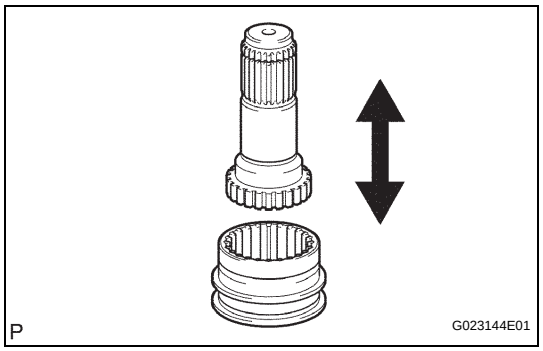
- **Do not damage the bearing.**
- **Do not drop the shaft.**



34. INSPECT DIFFERENTIAL CLUTCH SLEEVE AND DIFFERENTIAL CLUTCH HUB

(a) Check that there is no wear or damage on the clutch hub and clutch sleeve.
Replace parts as necessary.

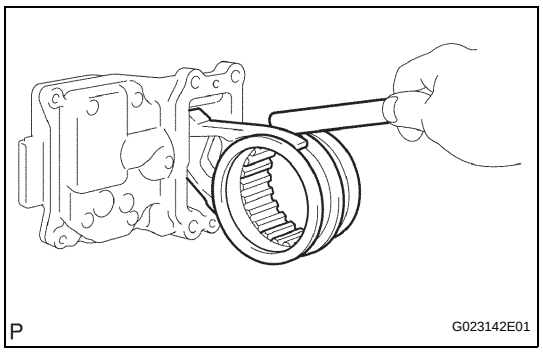
(b) Check that the clutch sleeve slides smoothly on the clutch hub.
Replace parts as necessary.



35. INSPECT DIFFERENTIAL CLUTCH SLEEVE AND DIFFERENTIAL SIDE GEAR INTER SHAFT

(a) Check that there is no wear or damage on the clutch sleeve and side gear inter shaft.
Replace parts as necessary.

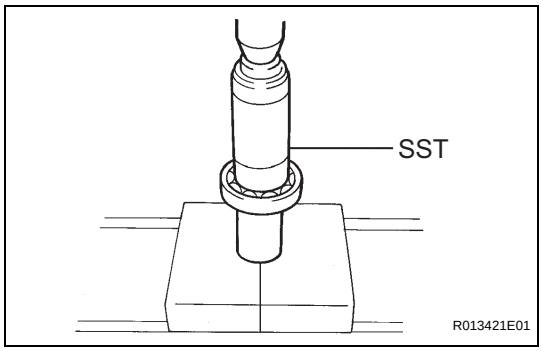
(b) Check that the clutch sleeve slides smoothly on the side gear inter shaft.
Replace parts as necessary.



36. INSPECT DIFFERENTIAL CLUTCH SLEEVE AND CLUTCH SLEEVE FORK CLEARANCE

(a) Using a feeler gauge, measure the clearance between the sleeve fork and clutch sleeve.
Maximum clearance:
0.15 to 0.35 mm (0.0059 to 0.0138 in.)
If the clearance is greater than the maximum, replace the fork or clutch sleeve.

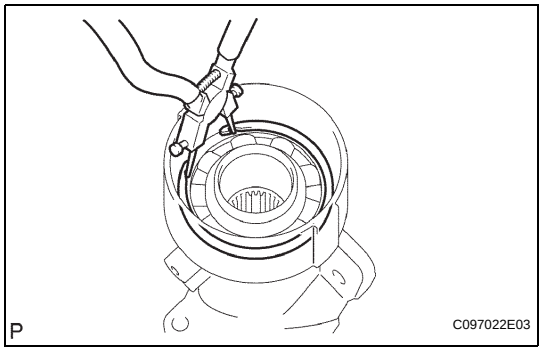
REASSEMBLY



1. INSTALL FRONT DIFFERENTIAL SIDE GEAR SHAFT RH BEARING

(a) Using SST and a press, press in the shaft bearing.
SST 09223-00010

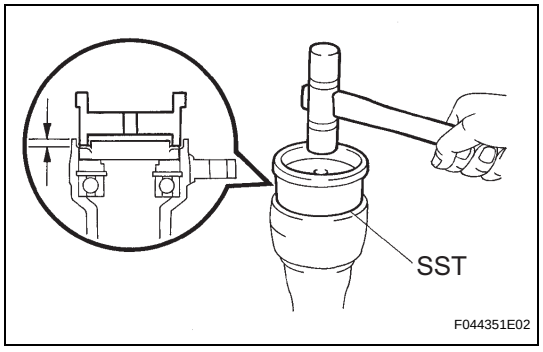
(b) Using a snap ring expander, install the snap ring.
HINT:
Install the snap ring securely.



2. INSTALL DIFFERENTIAL SIDE GEAR SHAFT SUB-ASSEMBLY RH

(a) Install the shaft into the differential tube.

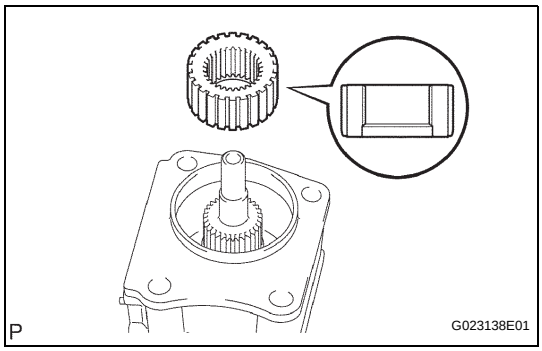
(b) Using needle nose pliers, install the snap ring.
HINT:
Install the snap ring securely.



3. INSTALL DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

(a) Coat the lip of a new oil seal with MP grease.
Oil seal depth:
4.8 to 5.8 mm (0.189 to 0.229in.)

(b) Using SST and a plastic-faced hammer, tap in the oil seal.
SST 09223-15020



4. INSTALL DIFFERENTIAL CLUTCH HUB

(a) Install the clutch hub onto the side gear inter shaft.

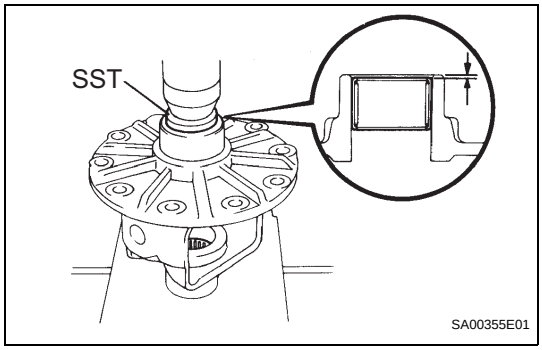
(b) Using snap ring pliers, install the snap ring.

HINT:

Install the snap ring securely.

NOTICE:

Install the differential clutch hub in the correct direction.



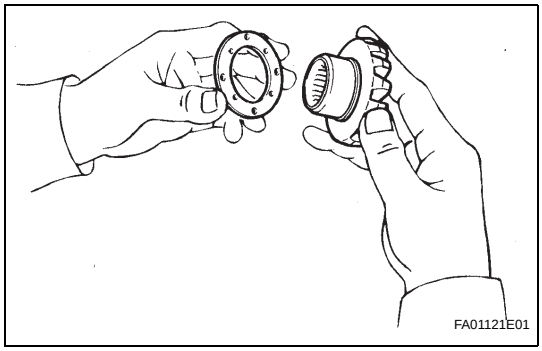
5. INSTALL FRONT DIFFERENTIAL SIDE GEAR NEEDLE ROLLER BEARING

(a) Using SST and a press, press in 2 new bearings.

SST 09950-60010 (09951-00380)

Needle roller bearing depth:

1.4 to 2.0mm (0.055 to 0.079in.)



6. ASSEMBLE DIFFERENTIAL CASE

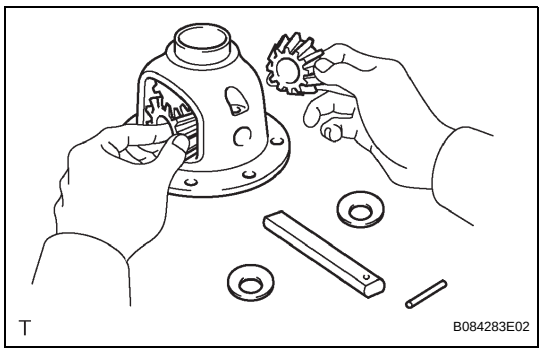
(a) Install the 2 thrust washers onto the 2 side gears.

HINT:

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

Thrust washer thickness

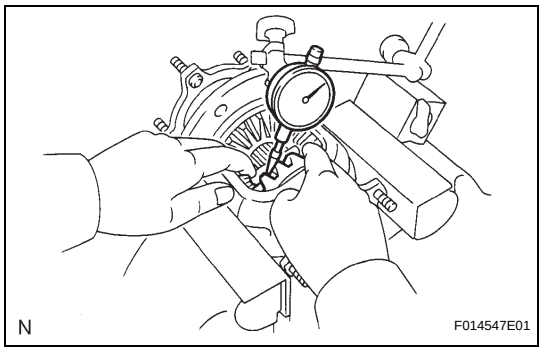
Thickness mm (in.)	Thickness mm (in.)
1.48 to 1.52 (0.0583 to 0.0598)	1.73 to 1.77 (0.0681 to 0.0697)
1.53 to 1.57 (0.0602 to 0.0618)	1.78 to 1.82 (0.0701 to 0.0717)
1.58 to 1.62 (0.0622 to 0.0638)	1.83 to 1.87 (0.0720 to 0.0736)
1.63 to 1.67 (0.0642 to 0.0657)	1.88 to 1.92 (0.0740 to 0.0756)
1.68 to 1.72 (0.0661 to 0.0677)	-



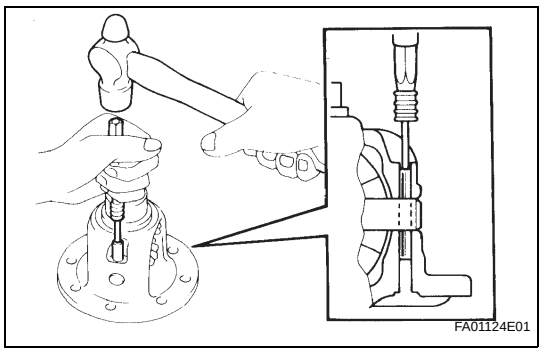
(b) Install the 2 side gears, 2 pinion gears, 2 side gear thrust washers, 2 pinion thrust washers and pinion shaft into the differential case.

HINT:

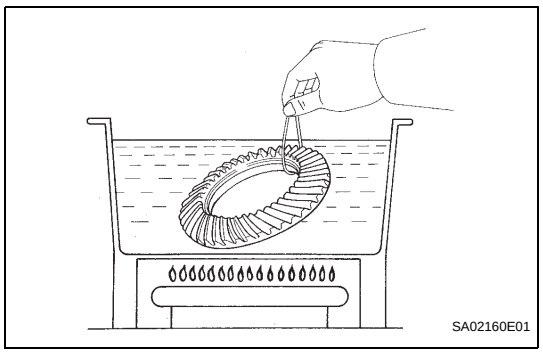
Align the holes of the differential case and pinion shaft.



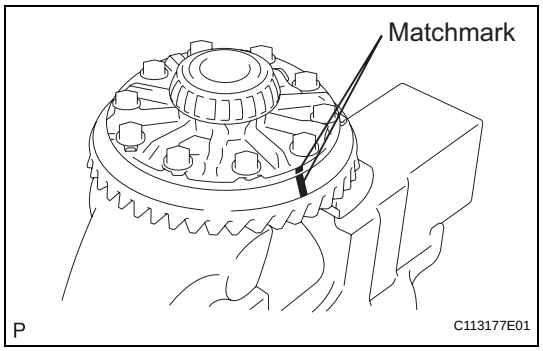
(c) Measure the side gear backlash.
  (1) Using a dial indicator, measure the side gear backlash while holding one pinion gear toward the differential case.
  Backlash:
  0.15 mm (0.0059 in.) or less
  If the backlash is not as specified, install 2 side gear thrust washers with different thicknesses.



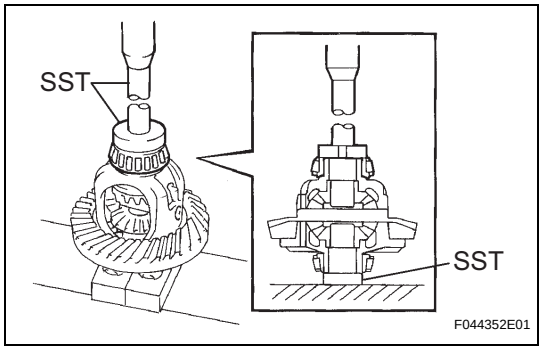
(d) Using a pin punch and hammer, tap in the straight pin through the differential case and hole of the pinion shaft.
(e) Stake the differential case.



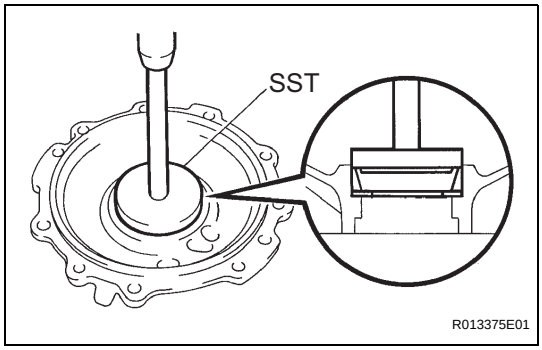
7. INSTALL DIFFERENTIAL RING GEAR
(a) Clean the contact surface of the differential case and ring gear.
(b) Heat the ring gear in water that is approximately 100°C (212°F).
(c) Carefully remove the ring gear from the boiling water.
(d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear onto the differential case.



(e) Align the matchmarks on the ring gear with those of the differential case.
(f) After the ring gear cools down, apply thread lock adhesive to the 10 set bolts and install them.
Thread lock:
Part No. 08833-00100, THREE BOND 1360k or the equivalent.
Torque: 115 N*m (1,173 kgf*cm, 85 ft.*lbf)



8. INSTALL FRONT DIFFERENTIAL CASE BEARING
(a) Using SST and a press, press the bearing into the differential case.
SST 09950-60010 (09951-00520, 09951-00610), 09950-70010 (09951-07150)



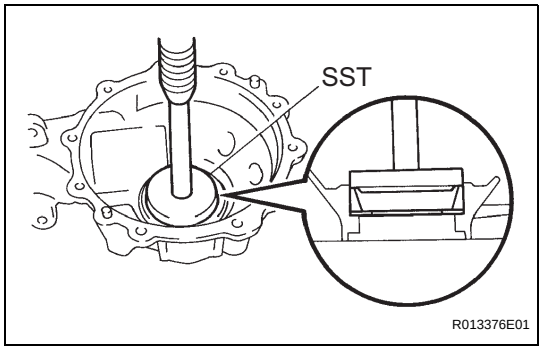
9. INSTALL FRONT DIFFERENTIAL CASE BEARING

HINT:

When replacing the 3 differential case bearings, fit the 2 thinnest new washers onto each bearing. When reusing the bearings, fit the new washers into the same places they were removed from.

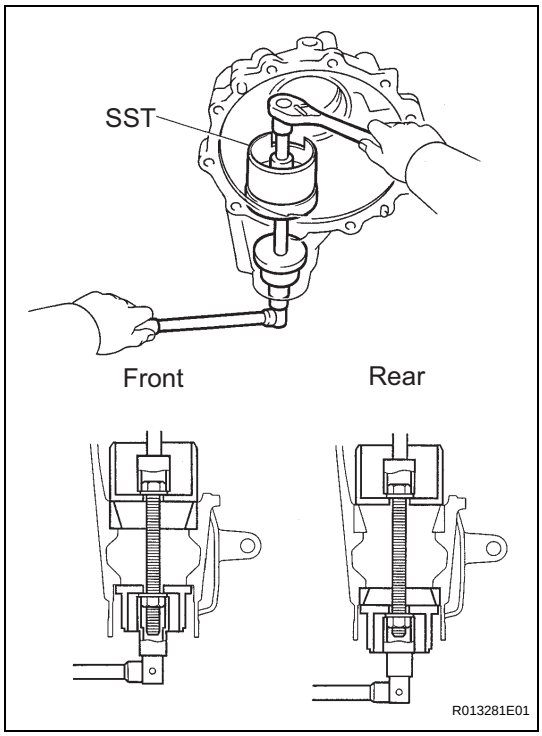
(a) Using SST and a press, press the case bearing (outer race) into the differential case bearing retainer.

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



(b) Using SST and a press, press the case bearing (outer) into the differential carrier.

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



10. INSTALL BEARING OUTER RACE

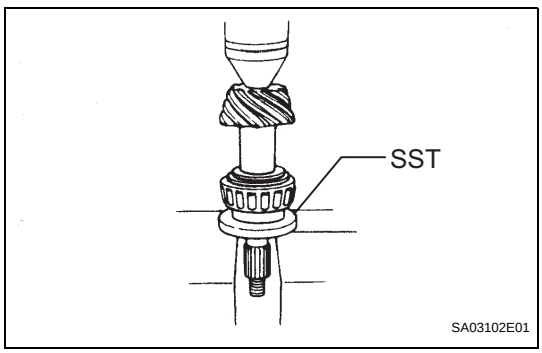
(a) Using SST, install the outer race front.

SST 09950-00020 (09951-00890, 09951-00680)

(b) Using a brass bar and hammer, tap in the oil storage ring.

(c) Using SST, install the outer race rear.

SST 09950-00020 (09951-00890, 09951-00680)



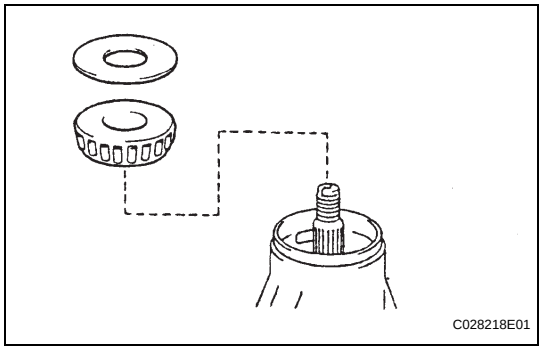
11. INSTALL FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Install the washer onto the drive pinion.

HINT:

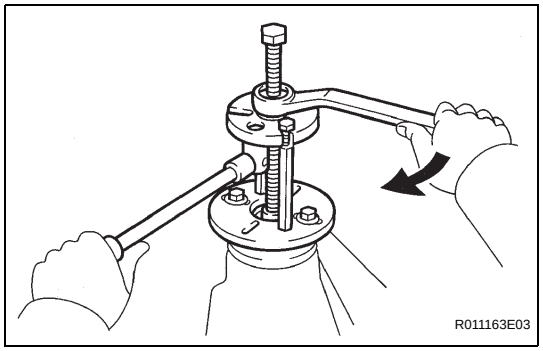
First fit a washer that has the same thickness as the removed washer. After checking the tooth contact pattern, replace the washer with one of a different thickness if necessary.

(b) Using SST and a press, press the front bearing onto the drive pinion.
SST 09506-30012

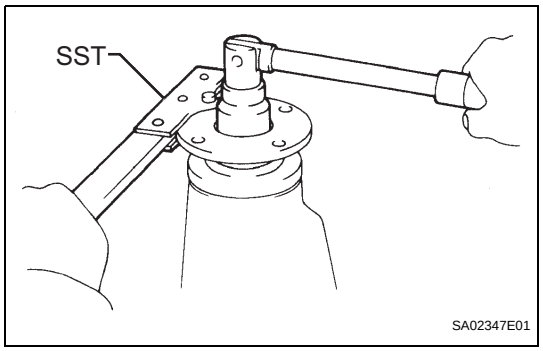

C028218E01

12. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

(a) Install the drive pinion and oil slinger.
HINT:
Assemble the spacer and oil seal after adjusting the gear contact pattern.


R011163E03

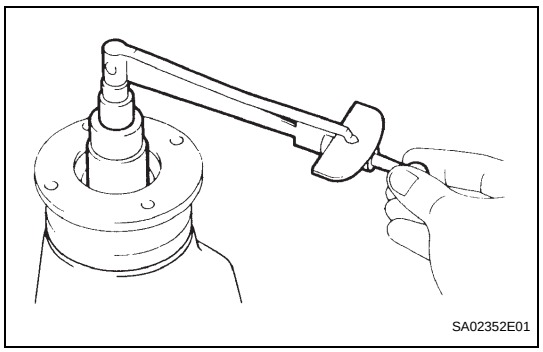
(b) Using SST, install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)
NOTICE:
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



SA02347E01

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

(d) Using SST to hold the flange in place, tighten the nut.
Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less
NOTICE:
- **As there is no spacer, tighten the nut a little at a time. Be careful not to overtighten it.**
- **Apply hypoid gear oil to the nut.**


SA02352E01

(e) Using a torque wrench, measure the preload.
Preload (at starting)

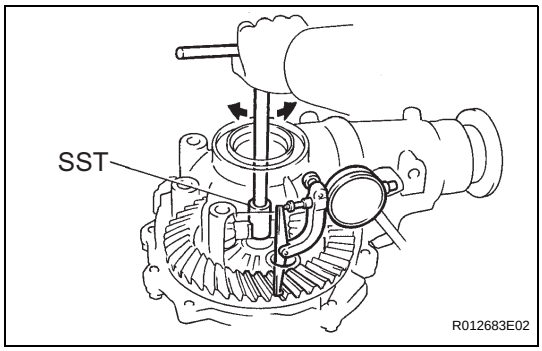
Item	Specified Condition
New bearing	0.98 to 1.57 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)
Used bearing	0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)

NOTICE:
For a more accurate measurement, rotate the bearing forward and backward several times before measuring.

13. INSTALL DIFFERENTIAL CASE ASSEMBLY

14. ADJUST DIFFERENTIAL RING GEAR BACKLASH

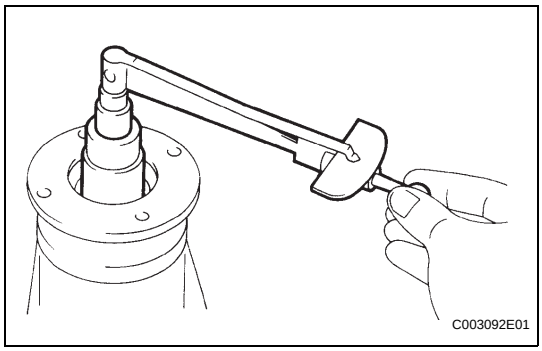
(a) Install the side bearing retainer with the 10 bolts.
Torque: 50 N*m (510 kgf*cm, 37 ft.*lbf)



(b) Using SST and a dial indicator, measure the ring gear backlash.
SST 09564-32011
Backlash:
0.11 to 0.21 mm (0.0043 to 0.0083 in.)
If the backlash is not as specified, adjust it by either increasing or decreasing the number of washers on both sides equally.
HINT:
There should be no clearance between the plate washer and case. Make sure that the ring gear has backlash.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
1.57 to 1.59 (0.0618 to 0.0626)	1.75 to 1.77 (0.0689 to 0.0697)	2.03 to 2.05 (0.0791 to 0.0807)
1.59 to 1.61 (0.0626 to 0.0634)	1.77 to 1.79 (0.0697 to 0.0705)	2.05 to 2.07 (0.0807 to 0.0815)
1.61 to 1.63 (0.0634 to 0.0642)	1.79 to 1.81 (0.0705 to 0.0713)	2.07 to 2.09 (0.0815 to 0.0822)
1.63 to 1.65 (0.0642 to 0.0650)	1.81 to 1.83 (0.0713 to 0.0720)	2.09 to 2.11 (0.0822 to 0.0830)
1.65 to 1.67 (0.0650 to 0.0657)	1.83 to 1.85 (0.0720 to 0.0728)	2.11 to 2.13 (0.0830 to 0.0839)
1.67 to 1.69 (0.0657 to 0.0665)	1.85 to 1.87 (0.0728 to 0.0736)	2.13 to 2.15 (0.0839 to 0.0846)
1.69 to 1.71 (0.0665 to 0.0673)	1.87 to 1.89 (0.0736 to 0.0744)	2.15 to 2.17 (0.0846 to 0.0854)
1.71 to 1.73 (0.0673 to 0.0681)	1.89 to 2.01 (0.0744 to 0.0791)	-
1.73 to 1.75 (0.0681 to 0.0689)	2.01 to 2.03 (0.0791 to 0.0799)	-

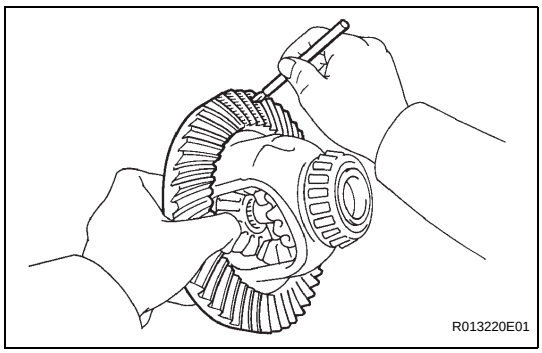


15. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
HINT:
Bolts without torque specifications are shown in the service data (see page SS-43).
If necessary, disassemble and inspect the differential.

16. ADJUST TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

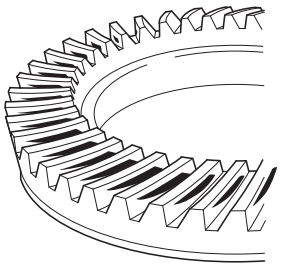
(a) Remove the differential case bearing retainer and differential case.



(b) Coat 3 or 4 teeth at 3 different positions on the ring gear with prussian blue.
(c) Install the differential case and differential case bearing retainer.
Torque: 50 N*m (510 kgf*cm, 37 ft.*lbf)
(d) Hold the companion flange firmly in place and rotate the ring gear in both directions.
(e) Remove the differential case bearing retainer and differential case.

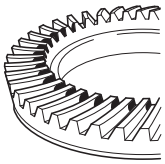
(f) Inspect the tooth contact pattern.

Proper Contact

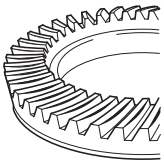


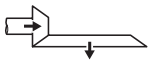
Drive Side

Toe Contact



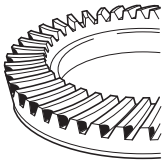
Face Contact



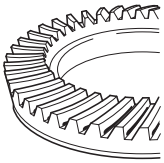


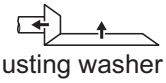
Select an adjusting washer that will shift the drive pinion closer to the ring gear.

Heel Contact



Flank Contact

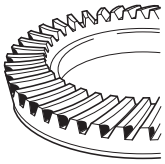




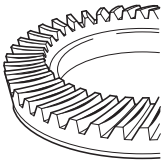
Select an adjusting washer that will shift the drive pinion away from the ring gear.

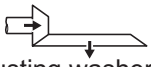
Coast Side

Heel Contact



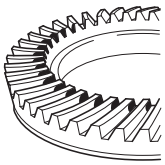
Flank Contact



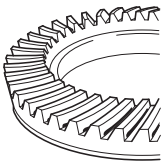


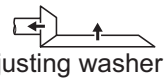
Select an adjusting washer that will shift the drive pinion closer to the ring gear.

Toe Contact



Face Contact





Select an adjusting washer that will shift the drive pinion away from the ring gear.

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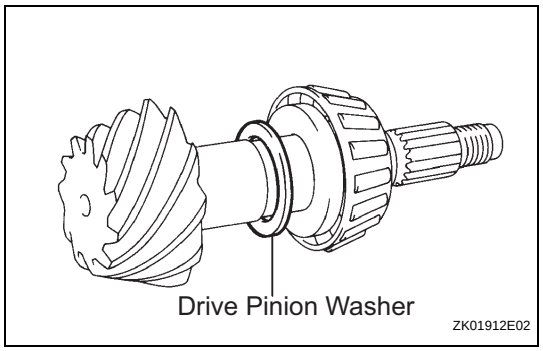


(g) If the teeth are not contacting properly, use the following chart to select an appropriate washer.

Washer thickness

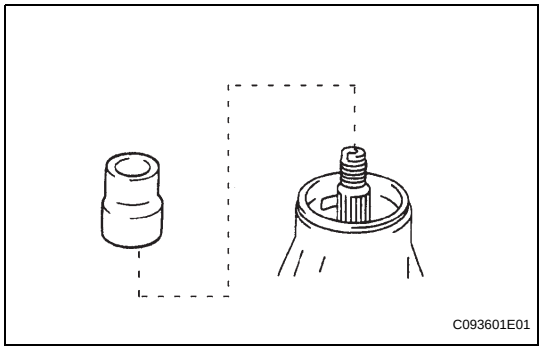
Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
1.69 to 1.71 (0.0665 to 0.0673)	1.93 to 1.95 (0.0760 to 0.0768)	2.17 to 2.19 (0.0854 to 0.0862)
1.72 to 1.74 (0.0677 to 0.0685)	1.96 to 1.98 (0.0772 to 0.0780)	2.20 to 2.22 (0.0866 to 0.0874)
1.75 to 1.77 (0.0689 to 0.0697)	1.99 to 2.01 (0.0783 to 0.0791)	2.23 to 2.25 (0.0878 to 0.0886)
1.78 to 1.80 (0.0700 to 0.0709)	2.02 to 2.04 (0.0795 to 0.0803)	2.26 to 2.28 (0.0890 to 0.0898)
1.81 to 1.83 (0.0713 to 0.0720)	2.05 to 2.07 (0.0807 to 0.0815)	2.29 to 2.31 (0.0902 to 0.0909)
1.84 to 1.86 (0.0724 to 0.0732)	2.08 to 2.10 (0.0819 to 0.0827)	2.32 to 2.34 (0.0913 to 0.0921)
1.87 to 1.89 (0.0736 to 0.0744)	2.11 to 2.13 (0.0831 to 0.0839)	-
1.90 to 1.92 (0.0748 to 0.0756)	2.14 to 2.16 (0.0843 to 0.0850)	-

17. **REMOVE FRONT DRIVE PINION COMPANION FLANGE NUT (See page DF-23)**

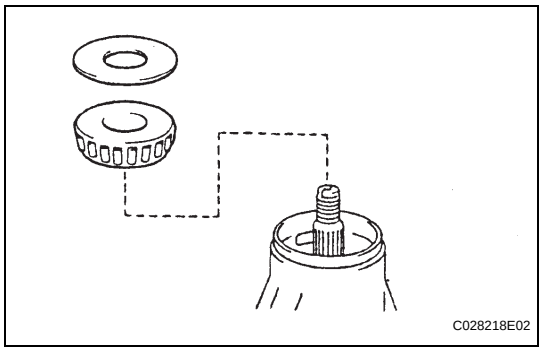
18. **REMOVE FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY (See page DF-24)**

19. **REMOVE FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER**

20. **REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING (See page DF-24)**

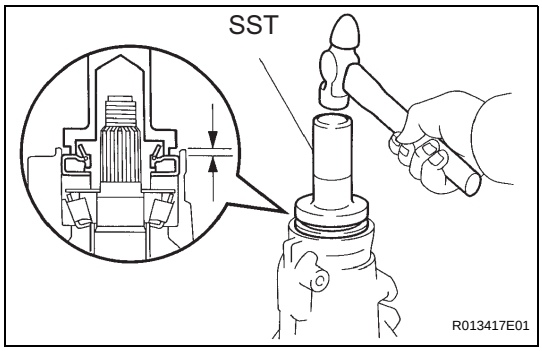


21. **INSTALL FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER**
    (a) Install a new bearing spacer onto the drive pinion.



22. **INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING**

23. **INSTALL FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER**



24. INSTALL FRONT DIFFERENTIAL CARRIER OIL SEAL

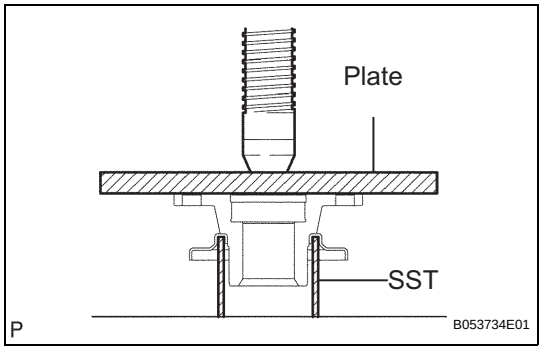
(a) Apply MP grease to the lip of a new oil seal.

(b) Using SST and a hammer, tap in the oil seal.

SST 09554-22010

Oil seal depth:

3.9 to 48 mm (0.1536 to 0.189 in.)

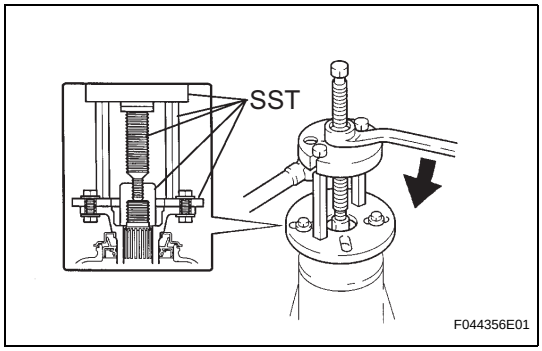


25. INSTALL FRONT DIFFERENTIAL DUST DEFLECTOR

(a) Using a steel plate and a press, press in a new dust deflector.

NOTICE:

Do not damage the dust deflector.



26. INSTALL FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Place the companion flange on the drive pinion.

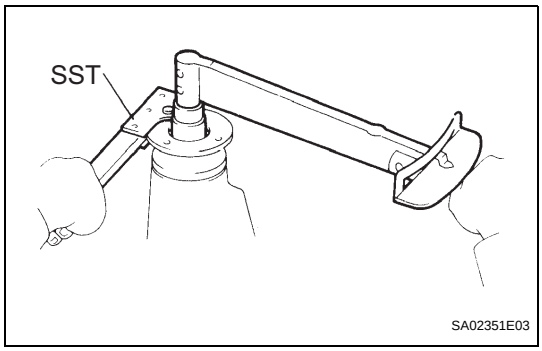
(b) Coat the threads of a new nut with hypoid gear oil.

(c) Using SST, install the companion flange.

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

NOTICE:

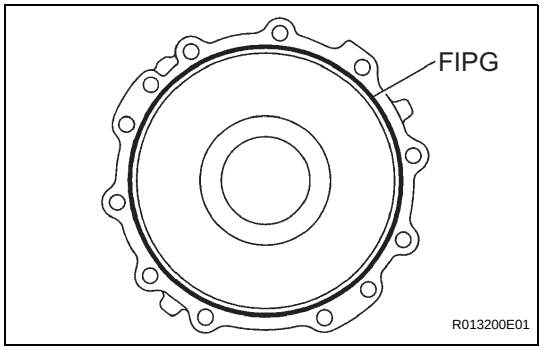
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



(d) Using SST to hold the companion flange in place, tighten the nut to the correct torque.

SST 09330-00021 (09330-00030)

Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less



27. INSTALL DIFFERENTIAL SIDE BEARING RETAINER

(a) Remove any old FIPG material from the side bearing retainer.

NOTICE:

Do not drop oil on the contact surfaces of the differential carrier and side bearing retainer.

(b) Clean residual FIPG material from the contact surface using gasoline or alcohol.

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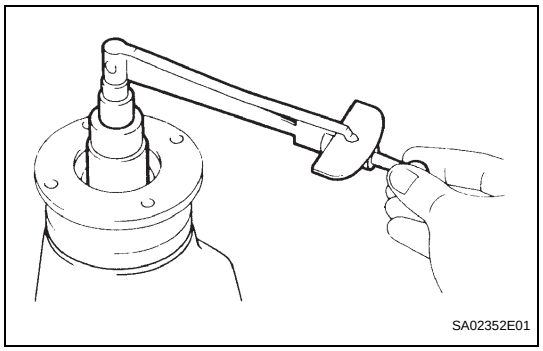
(c) Apply FIPG to the side bearing retainer, as shown.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or the equivalent
HINT:
Install the side bearing retainer within 10 minutes of applying FIPG.
(d) Install the side bearing retainer with the 10 bolts.
Torque: 50 N*m (510 kgf*cm, 37 ft.*lbf)

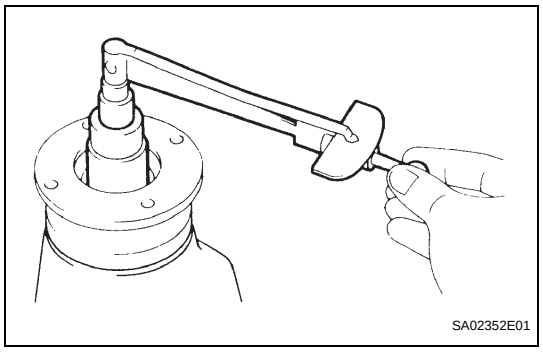

SA02352E01

28. INSPECT DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.
Preload (at starting)

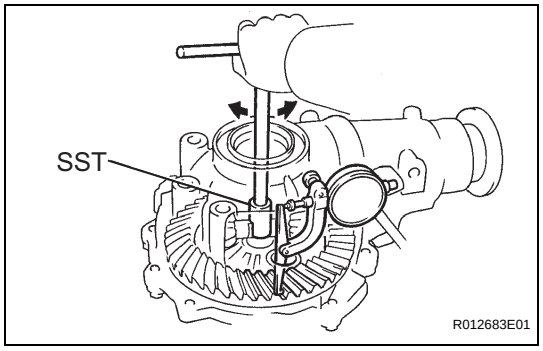
Item	Specified Condition
New bearing	0.98 to 1.57 N*m (10 to 16 kgf*cm, 8.7 to 14 in.*lbf)
Used bearing	0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)

If the preload is greater than the maximum, replace the bearing spacer.
If the preload is less than the minimum, retighten the nut with 13 N*m (130 kgf*cm, 9 ft.*lbf) of torque at a time until the specified preload is reached.
Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less
If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload adjusting procedure.
HINT:
Do not loosen the pinion nut to reduce the preload.


SA02352E01

29. INSPECT TOTAL PRELOAD

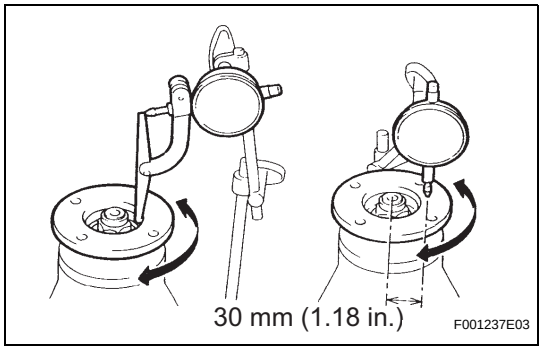
(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
Torque: Total preload (at starting)
0.22 to 0.88 N*m (6 to 9 kgf*cm, 1.9 to 8.8 in.*lbf) drive pinion preload plus
HINT:
Bolts without torque specifications are shown in the service data (see page SS-43).
If necessary, disassemble and inspect the differential.



R012683E01

30. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using SST and a dial indicator, measure the ring gear backlash.
SST 09564-32011
Backlash:
0.11 to 0.21 mm (0.0043 to 0.0083 in.)
If the backlash is not within the specification, adjust the side bearing preload.

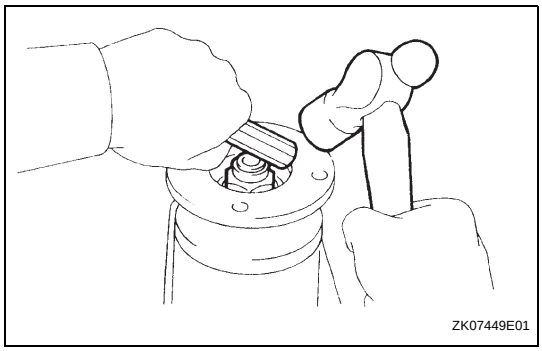


31. INSPECT FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using a dial indicator, measure the runout of the companion flange vertically and laterally.
Maximum runout

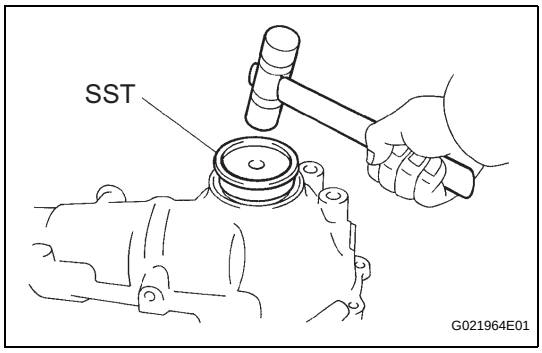
Runout	Maximum
Vertical runout	0.10 mm (0.0039 in.)
Lateral runout	0.10 mm (0.0039 in.)

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



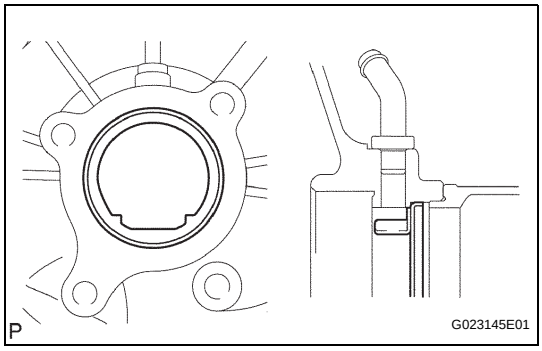
32. STAKE DRIVE PINION COMPANION FLANGE NUT

(a) Using a chisel and hammer, stake the drive pinion nut.



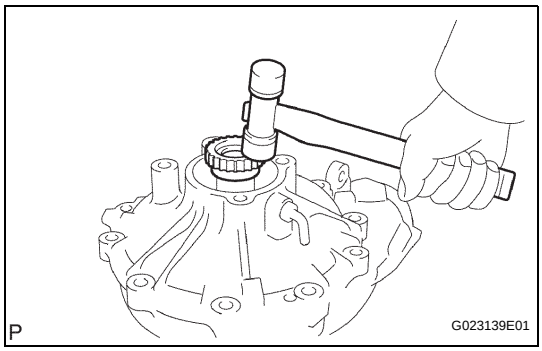
33. INSTALL DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

(a) Coat the lip of a new oil seal with MP grease.
(b) Using SST and a plastic-faced hammer, tap in the oil seal until its surface is flush with the differential carrier end.
SST 09608-32010
Oil seal depth:
-0.45 to 0.45 mm (-0.018 to 0.018 in.)



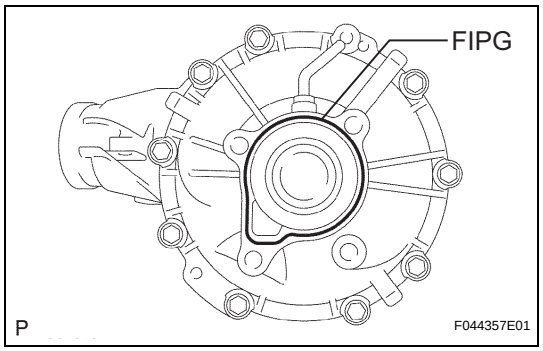
34. INSTALL FRONT DIFFERENTIAL SIDE BEARING RETAINER DEFLECTOR

(a) Using a brass bar and hammer, tap in the side bearing retainer deflector.
NOTICE:
Install the side bearing retainer deflector in the correct direction.



35. INSTALL DIFFERENTIAL SIDE GEAR INTER SHAFT SUB-ASSEMBLY

(a) Install a new snap ring onto the side gear inter shaft.
(b) Using a plastic-faced hammer, tap the side gear inter shaft into the differential case.
(c) Check that there is 2 to 3 mm (0.08 to 0.12 in.) of axial play.
(d) Check that the side gear inter shaft cannot be completely pulled out by hand.



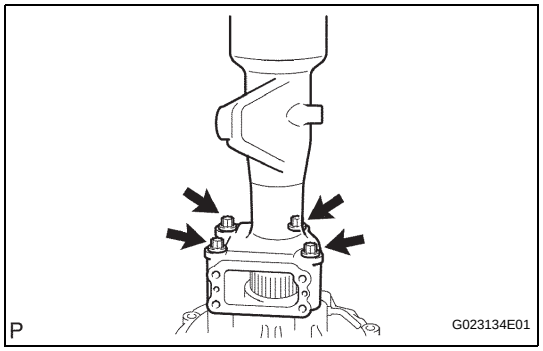
36. INSTALL FRONT DIFFERENTIAL TUBE ASSEMBLY

(a) Remove any old FIPG material from the contact surfaces of the differential and clutch case.
NOTICE:
Do not drop oil on the contact surfaces of the differential and clutch case.

(b) Clean residual FIPG material from the contact surface using gasoline or alcohol.

(c) Apply FIPG to the differential as shown.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or the equivalent
HINT:
Install the differential tube within 10 minutes of applying FIPG.

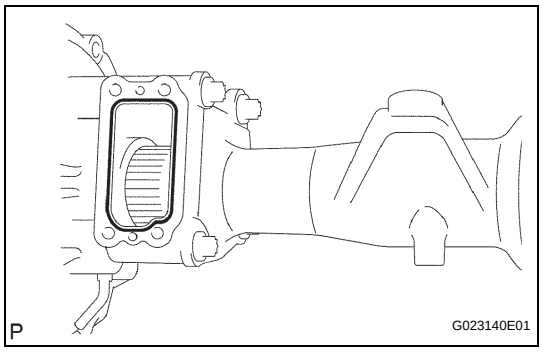
(d) Install the differential tube onto the differential.



(e) Clean the threads of the 4 bolts and retainer bolt holes with toluene or trichloroethylene.

(f) Apply adhesive to 2 or 3 threads of each bolt end.
Adhesive:
Part No. 08833-00070, THREE BOND 1281 or the equivalent

(g) Install the 4 bolts.
Torque: 110 N*m (1,120 kgf*cm, 81 ft.*lbf)

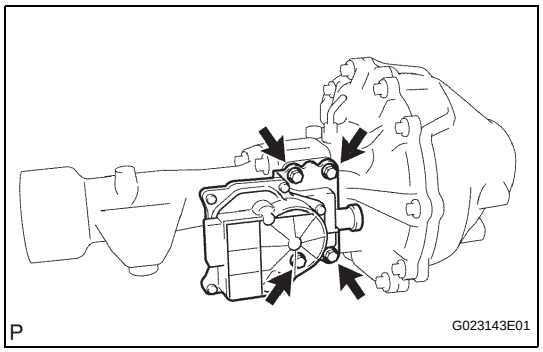


37. INSTALL DIFFERENTIAL VACUUM ACTUATOR ASSEMBLY

(a) Remove any FIPG material from the contact surface of the differential and clutch case. Also, do not drop oil on the contact surfaces.

(b) Clean residual FIPG material from the contact surfaces using gasoline or alcohol.

(c) Apply FIPG to the differential tube as shown.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or the equivalent
HINT:
Install the actuator within 10 minutes of applying FIPG.

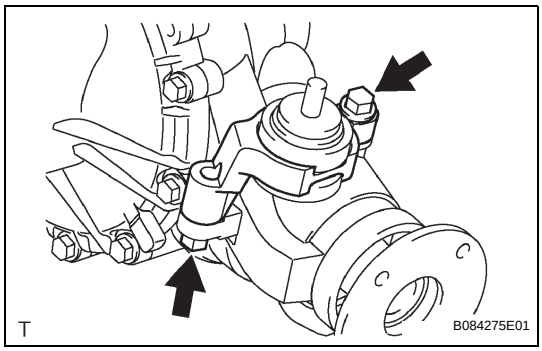


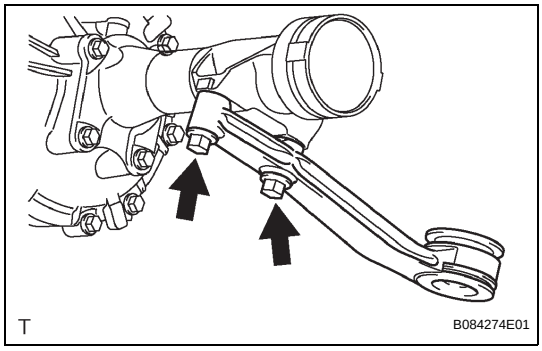
(d) Clean the threads of the 4 bolts and retainer bolt holes with toluene or trichloroethylene.

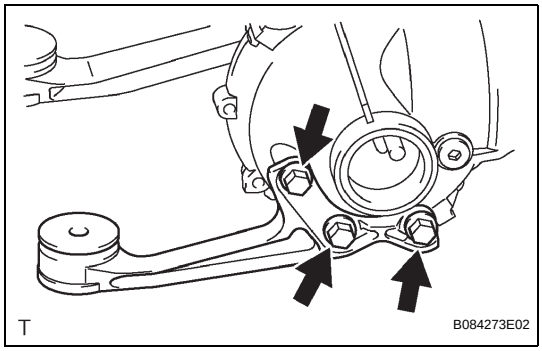
(e) Install the actuator onto the differential tube.

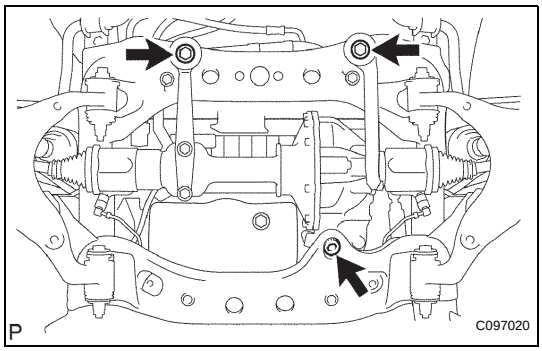
(f) Apply adhesive to 2 or 3 threads of each bolt end.
Adhesive:
Part No. 08833-00070, THREE BOND 1281 or the equivalent

(g) Install the 4 bolts.
Torque: 21 N*m (210 kgf*cm, 15 ft.*lbf)









INSTALLATION

1. **INSTALL FRONT DIFFERENTIAL CARRIER ASSEMBLY**
   (a) Install the front No. 3 differential support with the 2 bolts.
   Torque: 108 N*m (1,100 kgf*cm, 80 ft.*lbf)

   (b) Install the front No. 2 differential support with the 2 bolts.
   Torque: 160 N*m (1,630 kgf*cm, 11 ft.*lbf)

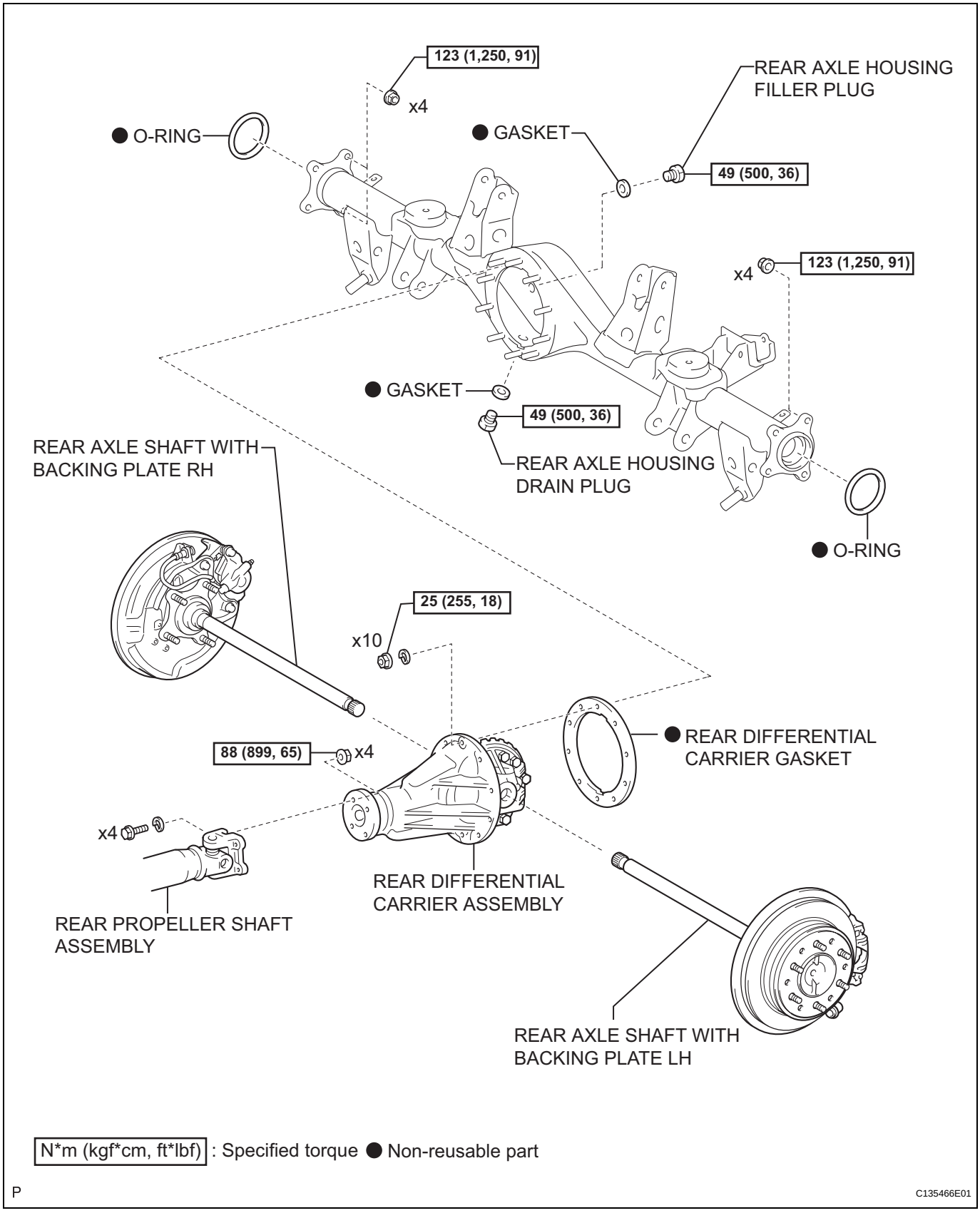
   (c) Install the front No. 1 differential support with the 3 bolts.
   Torque: 186 N*m (1,900 kgf*cm, 137 ft.*lbf)
   (d) Support the front differential with a jack.

   (e) Install the 2 front mounting bolts and 2 nuts.
   Torque: 137 N*m (1,400 kgf*cm, 101 ft.*lbf)
   (f) Install front differential mounting nut No. 1.
   Torque: 87 N*m (887 kgf*cm, 64 ft.*lbf)
   (g) Install the front differential breather tube bracket with the bolt.
   Torque: 13 N*m (133 kgf*cm, 10 ft.*lbf)
   (h) Lower the jack.
2. **INSTALL FRONT DRIVE SHAFT ASSEMBLY LH (See page DS-9)**
3. **INSTALL FRONT DRIVE SHAFT ASSEMBLY RH**
   HINT:
   Use the same procedure as for the LH side.
4. **INSTALL FRONT LOWER BALL JOINT ATTACHMENT (See page DS-10)**
5. **INSTALL TIE ROD END SUB-ASSEMBLY LH (See page DS-10)**

6. **INSTALL TIE ROD END SUB-ASSEMBLY RH**
   HINT:
   Use the same procedure as for the LH side.
7. **INSTALL FRONT AXLE HUB NUT LH (See page DS-10)**
8. **INSTALL FRONT AXLE HUB NUT RH**
   HINT:
   Use the same procedure as for the LH side.
9. **INSTALL FRONT AXLE HUB GREASE CAP**
10. **INSTALL FRONT SPEED SENSOR LH (See page DS-10)**
11. **INSTALL FRONT SPEED SENSOR RH**
    HINT:
    Use the same procedure as for the LH side.
12. **INSTALL FRONT WHEEL**
    Torque: 112 N*m (1,137 kgf*cm, 82 ft.*lbf)
13. **INSPECT DIFFERENTIAL OIL (See page DF-3)**
14. **CHECK FOR DIFFERENTIAL OIL LEAKAGE**
15. **INSTALL REAR ENGINE UNDER COVER ASSEMBLY**
16. **INSTALL NO. 1 ENGINE UNDER COVER**
17. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
    Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
18. **CHECK VSC SENSOR SIGNAL**
    (See page BC-28)
19. **INSPECT AND ADJUST FRONT WHEEL ALIGNMENT**
    (See page SP-2)

REAR DIFFERENTIAL CARRIER ASSEMBLY

COMPONENTS



N*m (kgf*cm, ft*lbf) : Specified torque ● Non-reusable part

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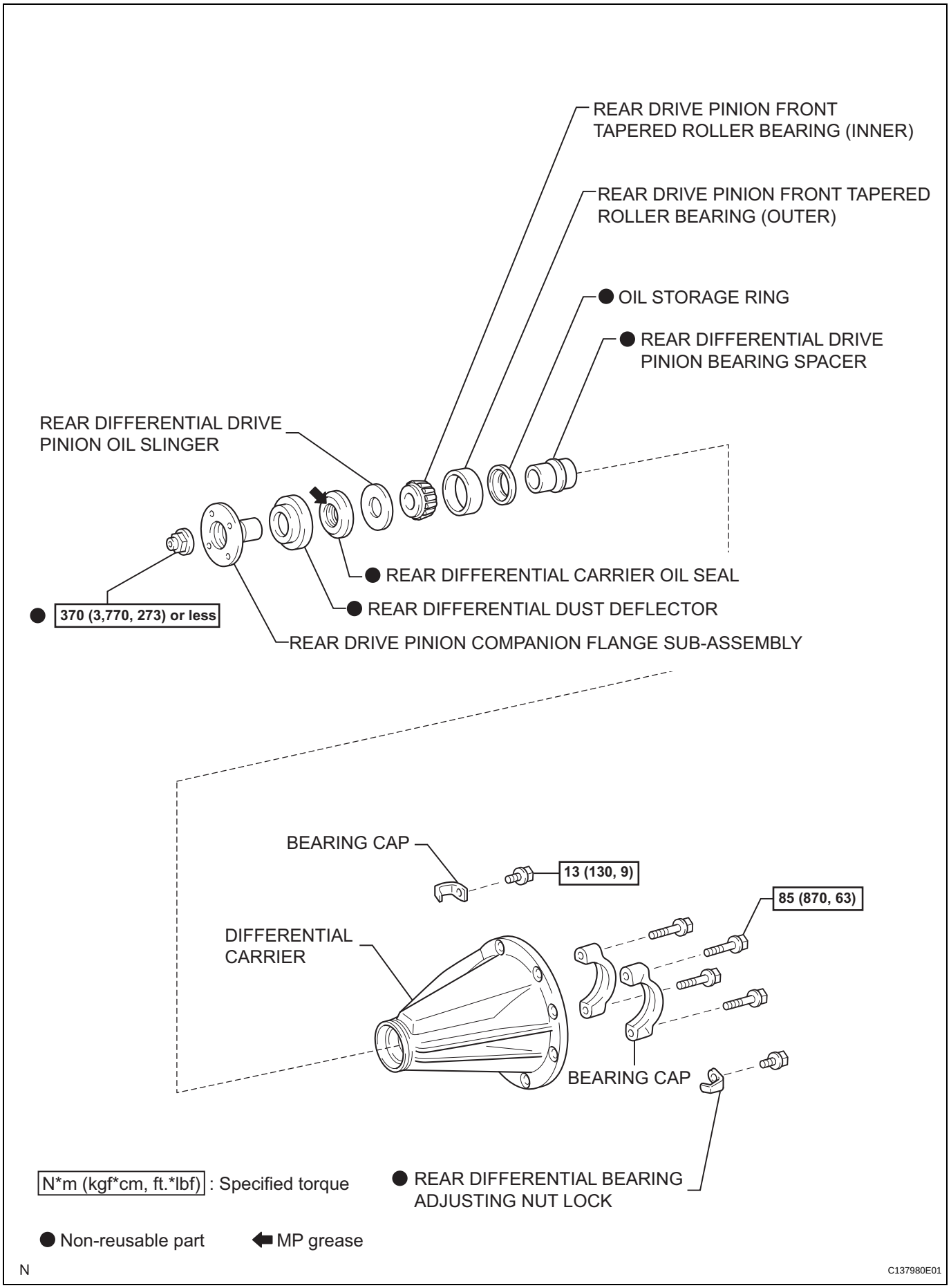
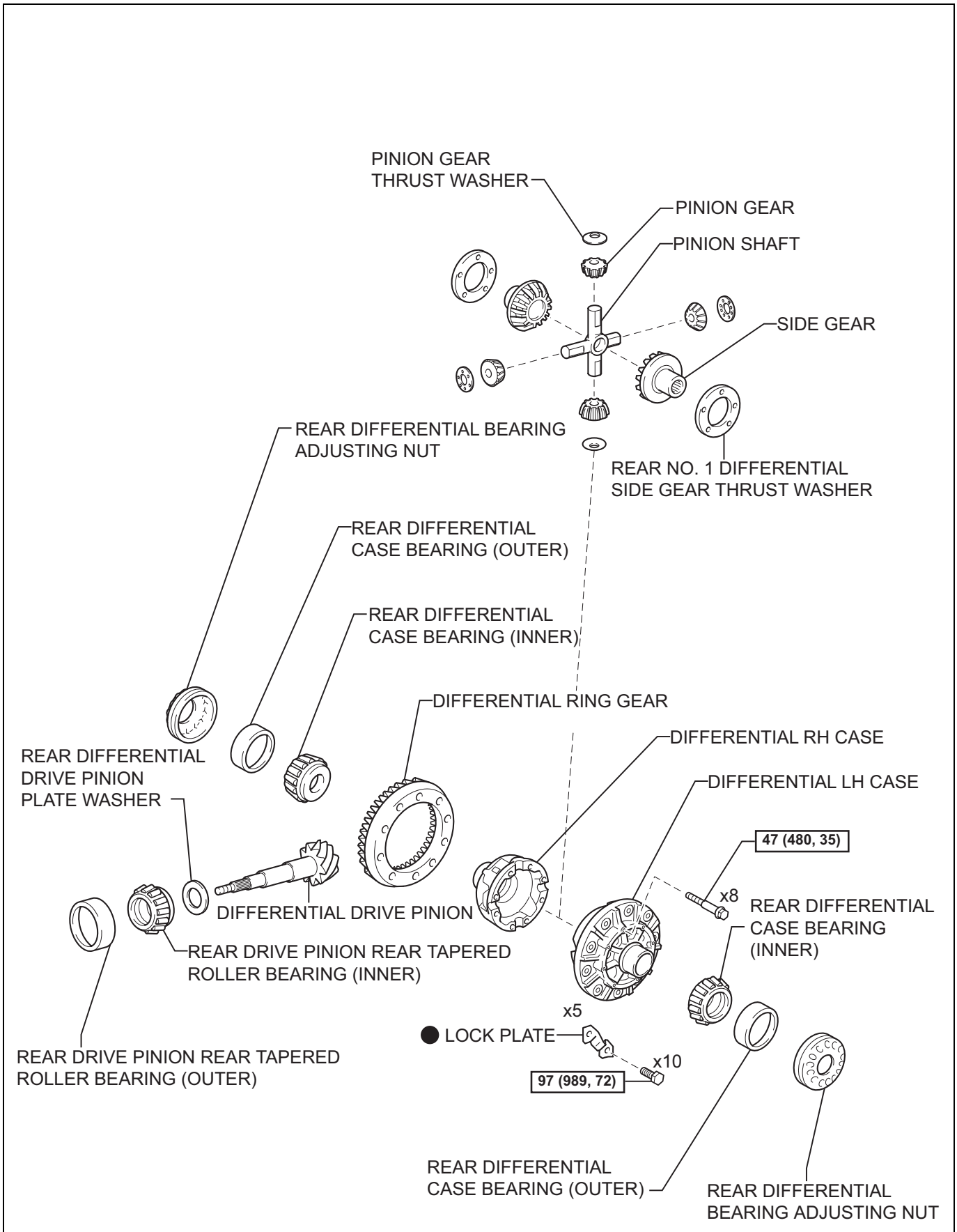
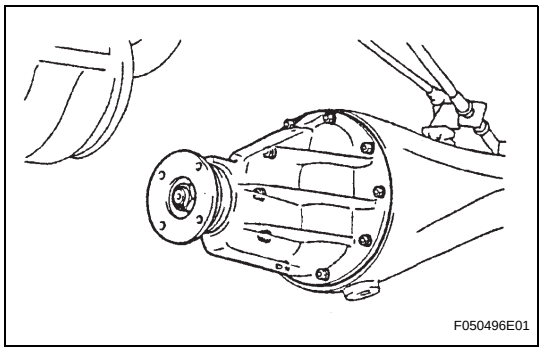

REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (INNER)
REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (OUTER)
● OIL STORAGE RING
● REAR DIFFERENTIAL DRIVE PINION BEARING SPACER
REAR DIFFERENTIAL DRIVE PINION OIL SLINGER
● REAR DIFFERENTIAL CARRIER OIL SEAL
● REAR DIFFERENTIAL DUST DEFLECTOR
● 370 (3,770, 273) or less
REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY
BEARING CAP
13 (130, 9)
85 (870, 63)
DIFFERENTIAL CARRIER
BEARING CAP
N*m (kgf*cm, ft.*lbf) : Specified torque
● REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK
● Non-reusable part
⬅ MP grease
N
C137980E01


PINION GEAR THRUST WASHER
PINION GEAR
PINION SHAFT
SIDE GEAR
REAR DIFFERENTIAL BEARING ADJUSTING NUT
REAR NO. 1 DIFFERENTIAL SIDE GEAR THRUST WASHER
REAR DIFFERENTIAL CASE BEARING (OUTER)
REAR DIFFERENTIAL CASE BEARING (INNER)
DIFFERENTIAL RING GEAR
DIFFERENTIAL RH CASE
DIFFERENTIAL LH CASE
REAR DIFFERENTIAL DRIVE PINION PLATE WASHER
47 (480, 35)
x8
REAR DIFFERENTIAL CASE BEARING (INNER)
DIFFERENTIAL DRIVE PINION
REAR DRIVE PINION REAR TAPERED ROLLER BEARING (INNER)
x5
● LOCK PLATE
x10
97 (989, 72)
REAR DRIVE PINION REAR TAPERED ROLLER BEARING (OUTER)
REAR DIFFERENTIAL CASE BEARING (OUTER)
REAR DIFFERENTIAL BEARING ADJUSTING NUT
N*m (kgf*cm, ft.*lbf) : Specified torque ● Non-reusable part
N
C137981E01

DF

REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE REAR WHEEL**
3. **DRAIN BRAKE FLUID**
   HINT:
   Immediately wash off any brake fluid that comes into contact with any painted surfaces.
4. **DRAIN DIFFERENTIAL OIL**
5. **REMOVE REAR DISC BRAKE CALIPER ASSEMBLY LH (See page AH-19)**
6. **REMOVE REAR DISC BRAKE CALIPER ASSEMBLY RH**
   HINT:
   Use the same procedure as for the LH side.
7. **REMOVE REAR DISC (See page PB-17)**
8. **REMOVE PARKING BRAKE SHOE RETURN TENSION SPRING (See page PB-17)**
9. **REMOVE PARKING BRAKE SHOE STRUT LH (See page PB-17)**
10. **REMOVE PARKING BRAKE SHOE (See page PB-17)**
11. **SEPARATE PARKING BRAKE CABLE LH (See page AH-19)**
12. **REMOVE PARKING BRAKE CABLE RH**
    HINT:
    Use the same procedure as for the LH side.
13. **REMOVE REAR SPEED SENSOR (See page BC-198)**
14. **REMOVE REAR SPEED SENSOR RH**
    HINT:
    Use the same procedure as for the LH side.
15. **REMOVE REAR AXLE SHAFT RH (See page AH-19)**
16. **REMOVE REAR AXLE SHAFT LH**
    HINT:
    Use the same procedure as for the LH side.
17. **REMOVE REAR AXLE SHAFT LH OIL SEAL (See page AH-20)**
18. **REMOVE REAR AXLE SHAFT RH OIL SEAL**
    HINT:
    Use the same procedure as for the LH side.
19. **REMOVE REAR PROPELLER SHAFT ASSEMBLY (for 2WD) (See page PR-9)**
20. **REMOVE PROPELLER SHAFT ASSEMBLY (for 4WD) (See page PR-9)**



21. REMOVE REAR DIFFERENTIAL CARRIER ASSEMBLY

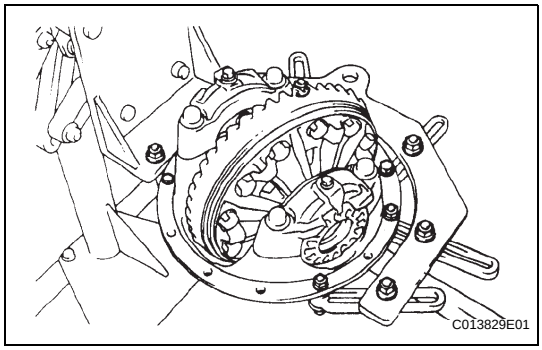
(a) Remove the 10 nuts and the differential carrier.

NOTICE:

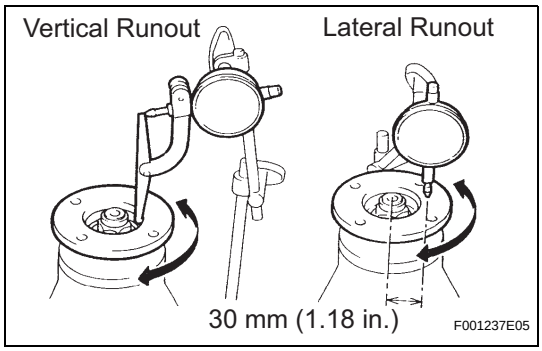
Be careful not to damage the contact surface.

22. REMOVE REAR DIFFERENTIAL CARRIER GASKET

DISASSEMBLY



1. FIX REAR DIFFERENTIAL CARRIER ASSEMBLY



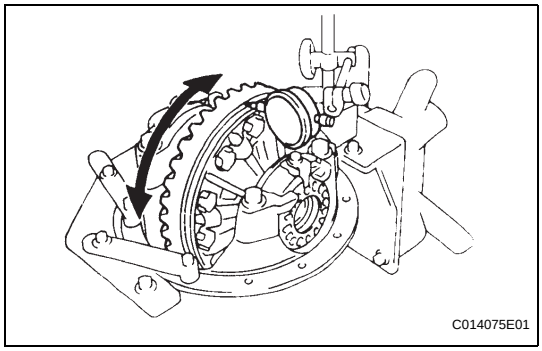
2. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

(a) Using a dial indicator, measure the runout of the companion flange vertically and laterally.

Maximum runout

Runout	Maximum
Vertical runout	0.10 mm (0.0039 in.)
Lateral runout	0.10 mm (0.0039 in.)

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



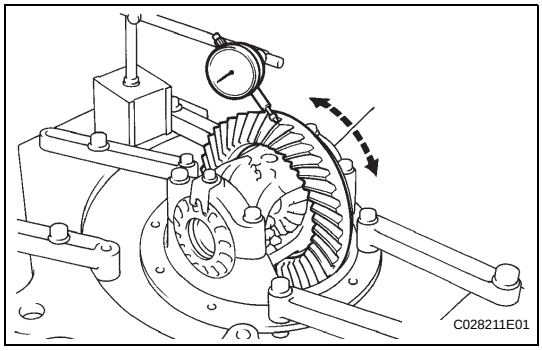
3. INSPECT RUNOUT OF DIFFERENTIAL RING GEAR

(a) Using a dial indicator, check the runout of the ring gear.

Maximum runout:

0.07 mm (0.0028 in.)

If the runout is greater than the maximum, replace the ring gear with a new one.



4. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using a dial indicator, check the backlash of the ring gear.

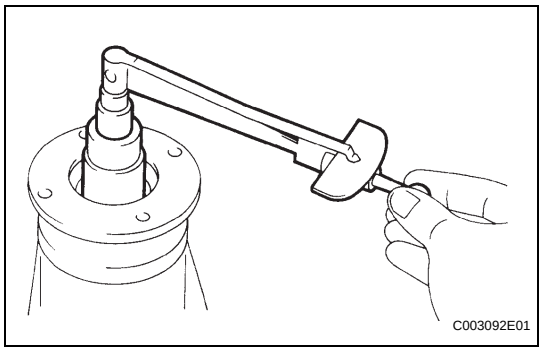
Backlash:

0.13 to 0.18 mm (0.0051 to 0.0071 in.)

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

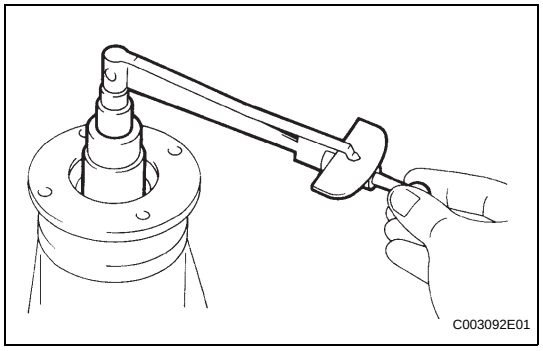
HINT:

Perform the measurements at 3 or more positions around the side bearing preload.



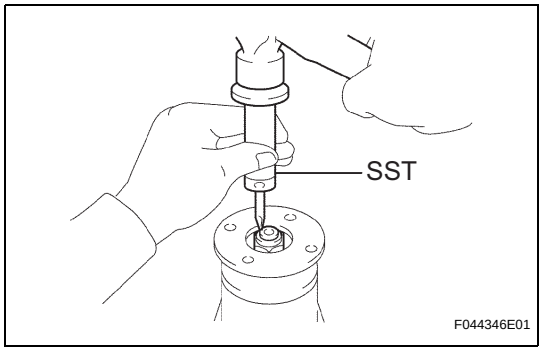
5. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of backlash between the drive pinion and ring gear.
Preload (at starting):
0.56 to 0.85 N*m (5.7 to 8.7 kgf*cm, 5.0 to 7.5 in.*lbf)
If necessary, disassemble and inspect the differential.



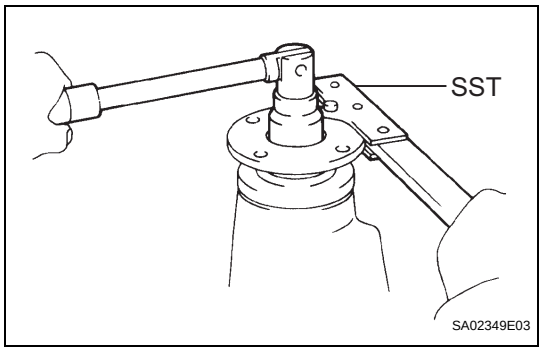
6. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
(b) Using a torque wrench, measure the total preload.
Total preload (at starting):
Drive pinion preload plus 0.39 to 0.59 N*m (4.0 to 6.0 kgf*cm, 3.5 to 5.2 in.*lbf)
If necessary, disassemble and inspect the differential.

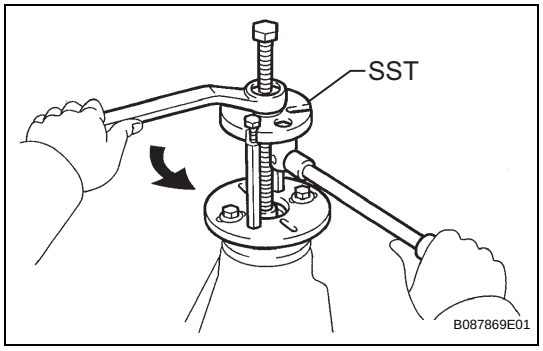


7. REMOVE REAR DRIVE PINION NUT

(a) Using SST and a hammer, loosen the staked part of the nut.
SST 09930-00010

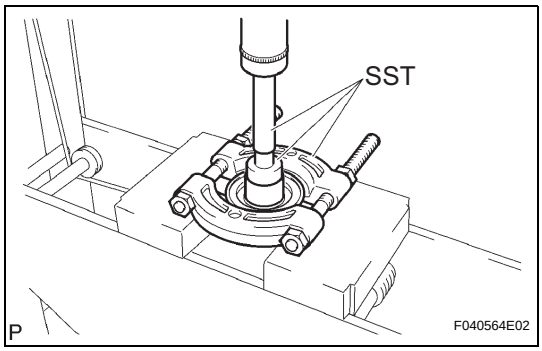


(b) Using SST to hold the companion flange in place, remove the nut.
SST 09330-00021



8. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)
NOTICE:
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



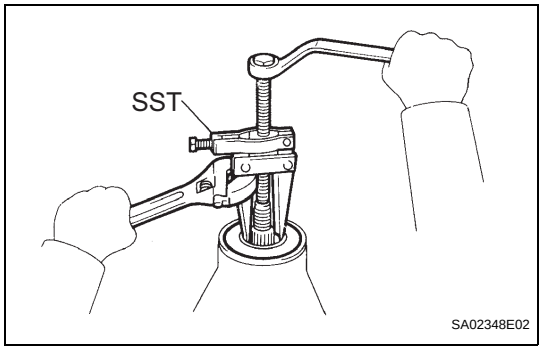
9. REMOVE REAR DIFFERENTIAL DUST DEFLECTOR

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

SST 09950-60010 (09951-00380), 09950-70010 (09951-07150), 09950-00020

NOTICE:

Do not drop the companion flange.

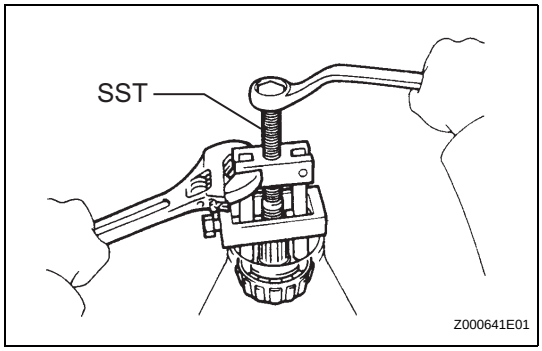


10. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL

(a) Using SST, remove the oil seal from the differential carrier.

SST 09308-10010

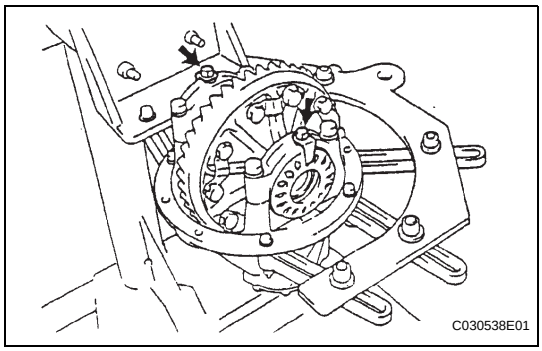
11. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER



12. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

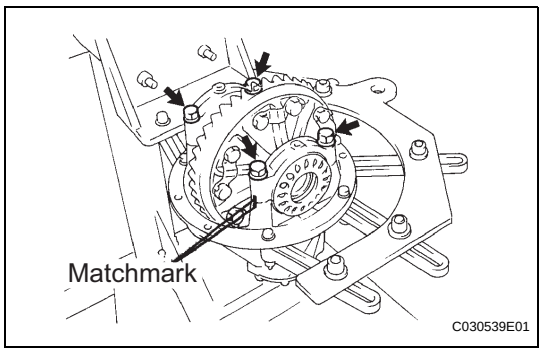
(a) Using SST, remove the roller bearing (inner) from the drive pinion.

SST 09556-22010



13. REMOVE REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK

(a) Remove the 2 bolts and 2 adjusting locks.



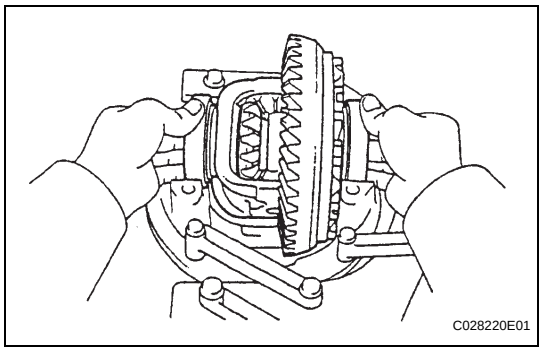
14. REMOVE DIFFERENTIAL CASE ASSEMBLY

(a) Place matchmarks on the bearing cap and differential carrier.

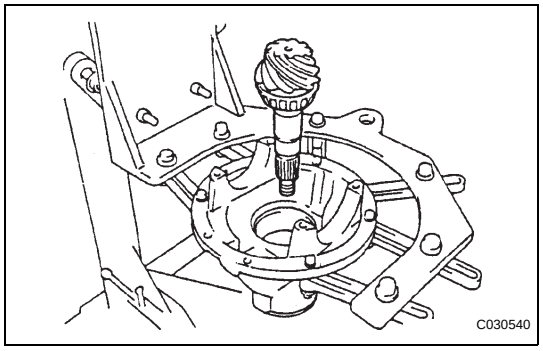
(b) Remove the 4 bolts and 2 differential bearing caps.

(c) Remove the 2 adjusting nuts.

DF

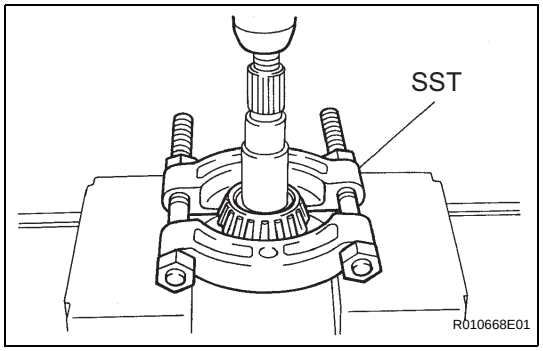


(d) Remove the rear differential case assembly from the differential carrier.
HINT:
Tag the 2 case bearing outer races to show the location for reassembly.



15. REMOVE DIFFERENTIAL DRIVE PINION

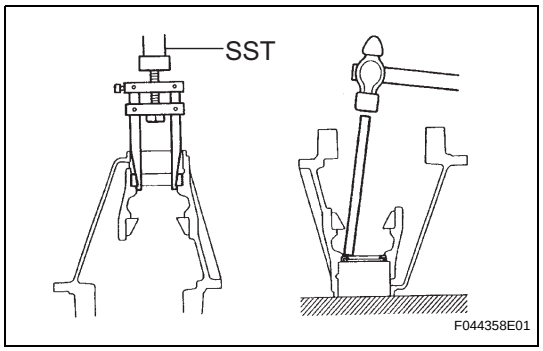
(a) Remove the drive pinion and bearing spacer from the differential carrier.



16. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST and a press, press out the roller bearing (inner) from the drive pinion.
SST 09950-00020
NOTICE:
Do not drop the drive pinion.
HINT:
If the drive pinion or ring gear is damaged, replace them as a set.

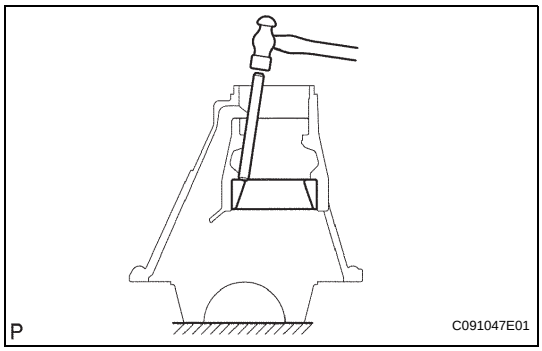
17. REMOVE REAR DIFFERENTIAL DRIVE PINION PLATE WASHER



18. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

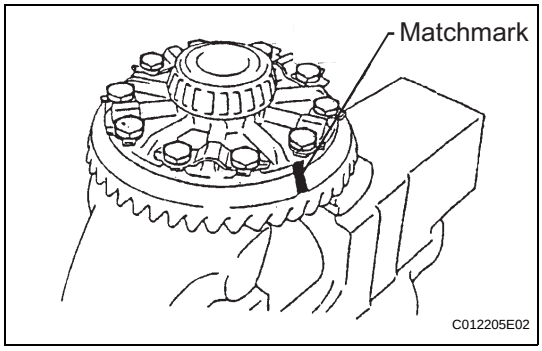
(a) Using SST, remove the roller bearing (outer) from the carrier.
SST 09308-00010

(b) Using a brass bar and hammer, tap out the oil storage ring from the carrier.
HINT:
If the bearing is damaged during removal, replace it.



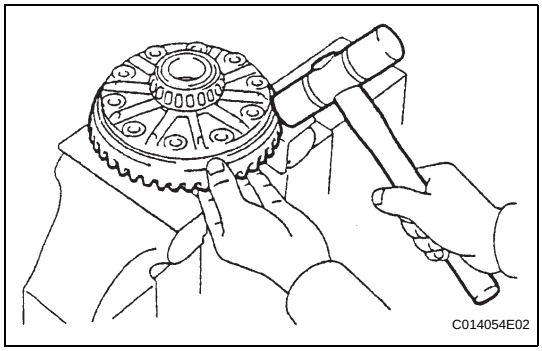
19. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using a brass bar and hammer, tap out the rear tapered roller bearing (outer) from the carrier.
HINT:
If the bearing is damaged during removal, replace it.

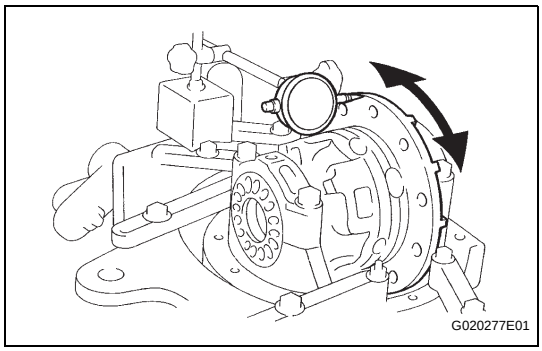


20. REMOVE DIFFERENTIAL RING GEAR

(a) Place matchmarks on the ring gear and differential case.
(b) Using a screwdriver and hammer, pry out the lock plates.
(c) Remove the 10 ring gear set bolts and 5 lock plates.

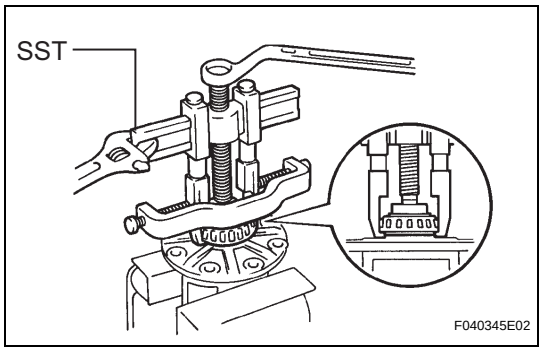


(d) Using a plastic-faced hammer, tap on the ring gear to separate it from the differential case.



21. INSPECT DIFFERENTIAL CASE ASSEMBLY RUNOUT

(a) Install the rear differential case bearing onto the differential case.
(b) Install the differential case onto the differential carrier.
(c) Install the 2 bearing caps onto the differential carrier with the 4 bolts.
Torque: 85 N*m (870 kgf*cm, 63 ft.*lbf)
(d) Using a dial indicator, measure the differential case runout.
Maximum runout:
0.07 mm (0.0028 in.)
(e) Remove the differential case.
(f) Remove the rear differential case bearing.



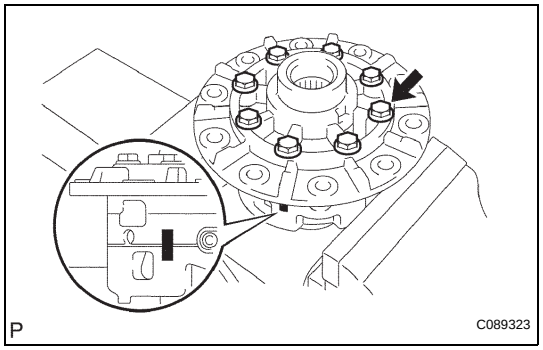
22. REMOVE REAR DIFFERENTIAL CASE BEARING

(a) Using SST, remove the 2 bearings from the differential case.

SST 09950-40011 (09951-04020, 09952-04010, 09953-04030, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00360)

HINT:

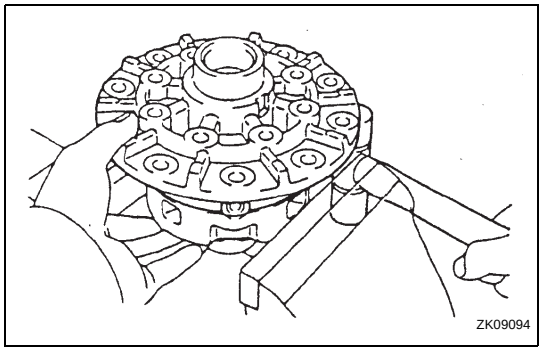
Do not remove the case bearing unless replacing the differential case.



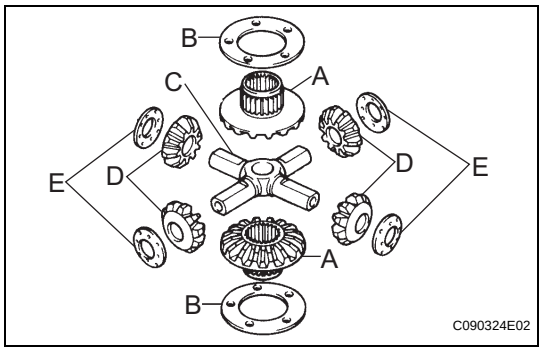
23. DISASSEMBLE DIFFERENTIAL CASE

(a) Place matchmarks on the LH and RH cases.

(b) Remove the 8 bolts.



(c) Using a plastic hammer, separate the LH and RH cases.



(d) Remove the following parts from the differential case.

A	Side gear
B	Side gear thrust washer
C	Spider
D	Pinion gear
E	Pinion gear thrust washer

INSPECTION

1. INSPECT DIFFERENTIAL PINION AND SIDE GEAR

(a) Check that there is no damage to the differential pinion or differential side gear.
If the differential pinion and/or differential side gear is damaged, replace the differential.

2. INSPECT DIFFERENTIAL CASE

(a) Check that the differential case is not damaged.
If the differential case is damaged, replace it.

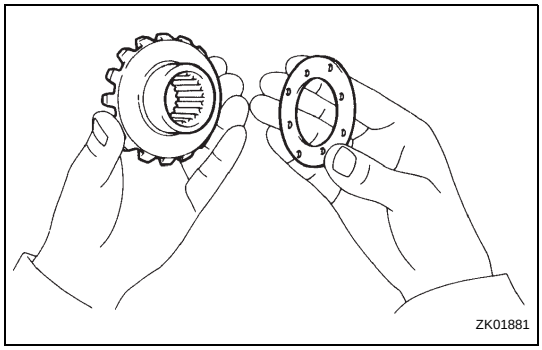
REASSEMBLY

1. ASSEMBLE DIFFERENTIAL CASE

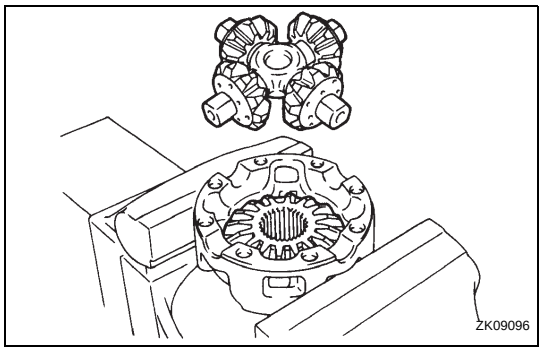
(a) Install the rear differential side gear thrust washer onto the rear differential side gear.

(b) Install the rear differential pinion thrust washer and rear differential pinion onto the rear differential spider.

(c) Fix the differential case RH.

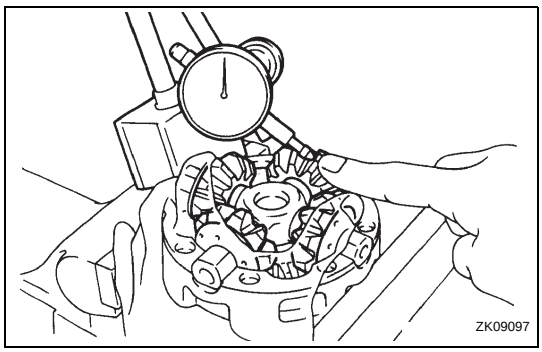

ZK01881

(d) Install the rear differential side gear and rear differential spider onto the differential case RH.


ZK09096

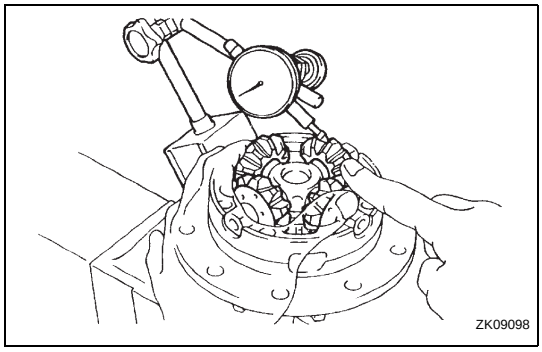
(e) Using a dial indicator, measure the differential case RH side backlash while holding the pinion toward the case.
Backlash:
0.05 to 0.20 mm (0.002 to 0.008 in.)

(f) Remove the rear differential spider from the differential case RH.


ZK09097

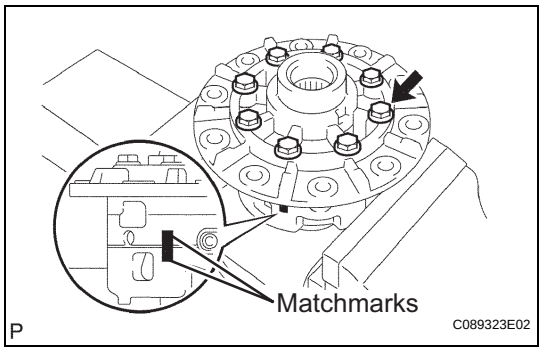
(g) Install the rear differential side gear and rear differential spider onto the differential case LH.

(h) Using a dial indicator, measure the differential case LH side backlash while holding the pinion toward the case.
Backlash:
0.05 to 0.20 mm (0.002 to 0.008 in.)
If the backlash is not within the specification, install 2 side gear thrust washers of a different thickness.

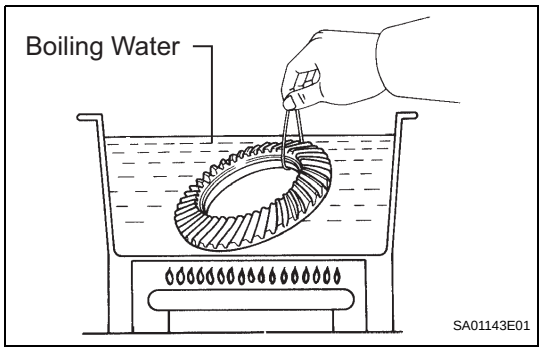

ZK09098

Thrust washer thickness

Thickness mm (in.)	Thickness mm (in.)
0.9 (0.0354)	1.2 (0.0472)
1.0 (0.0394)	1.3 (0.0512)
1.1 (0.0433)	-

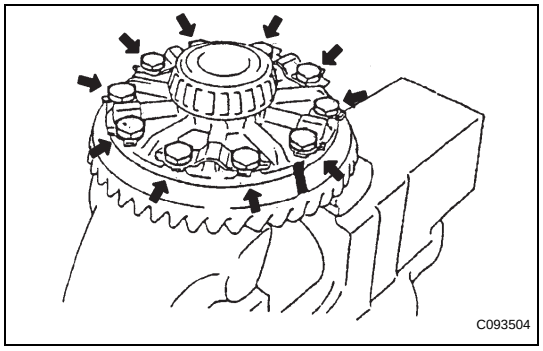


(i) Align the matchmarks and assemble the RH and LH cases.
(j) Using a plastic hammer, install the differential case.
(k) Install the 8 bolts.
Torque: 47 N*m (480 kgf*cm, 35 ft.*lbf)

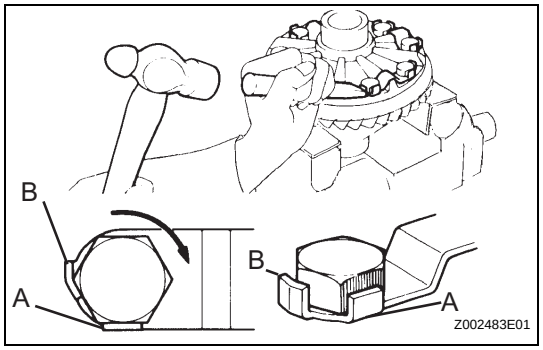


2. INSTALL DIFFERENTIAL RING GEAR

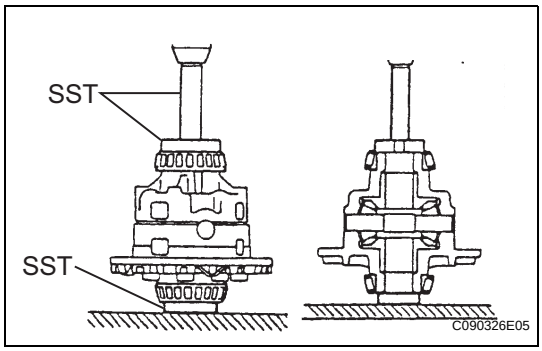
(a) Clean the contact surfaces of the differential case and ring gear.
(b) Heat the ring gear in water that is approximately 100°C (212°F).
(c) Carefully remove the ring gear from the boiling water.
(d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear onto the differential case.



(e) Align the matchmarks on the ring gear with those of the differential case.
(f) Temporarily install 5 new lock plates and the 10 bolts.
(g) After the ring gear cools down, install the 10 bolts by diametrically tightening the bolts uniformly in several steps.
Torque: 97 N*m (989 kgf*cm, 72 ft.*lbf)



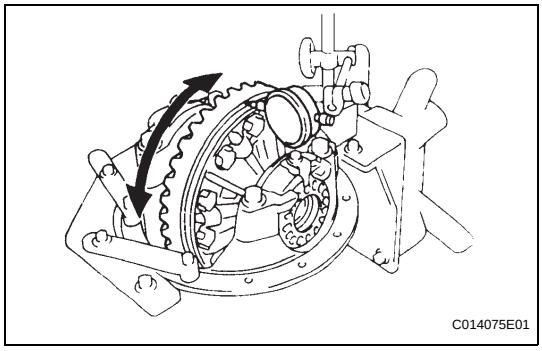
(h) Using a chisel and hammer, stake the 5 lock plates.
HINT:
Strike the tab labeled A so that it is flush with the flat surface of the bolt. Strike the tab labeled B so that half of the tab is in contact with the bolt as shown in the illustration.



3. INSTALL REAR DIFFERENTIAL CASE BEARING

(a) Using SST and a press, press the bearing onto the differential case.

SST 09950-60010 (09951-00430, 09951-00480, 09951-00470, 09951-00550), 09950-70010 (09951-07150, 09951-00560, 09951-00570)



4. INSPECT DIFFERENTIAL RING GEAR RUNOUT

(a) Install the differential case on the carrier, and install the 2 adjusting nuts so that there is no play in the bearing.

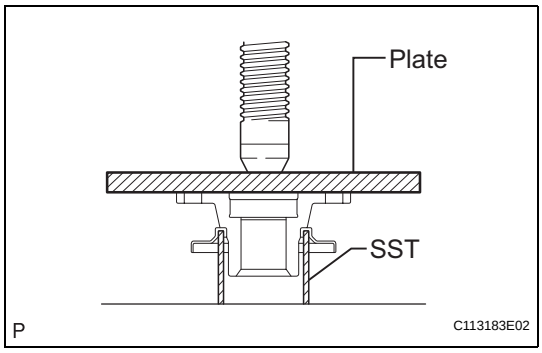
(b) Install the 2 bearing caps with the 4 bolts.

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

(c) Using a dial indicator, measure the runout of the ring gear.

Maximum runout:
0.07 mm (0.0028 in.)

(d) Remove the 2 bearing caps, 2 adjusting nuts and the differential case.

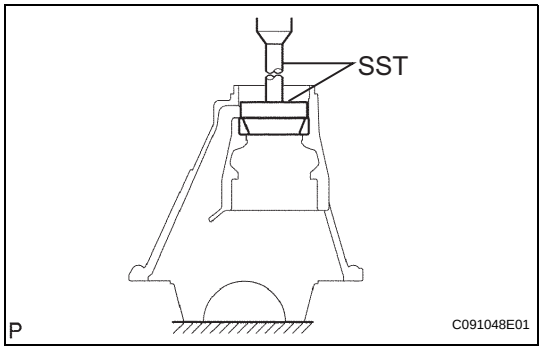


5. INSTALL REAR DIFFERENTIAL DUST DEFLECTOR

(a) Using SST, a plate and a press, press in a new dust deflector.

SST 09636-20010

NOTICE:
Be careful not to damage the dust deflector.

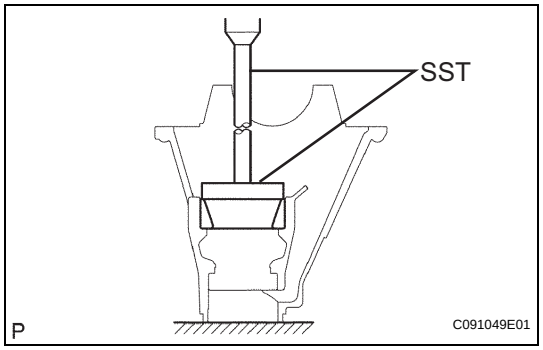


6. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using a brass bar and hammer, tap in the oil storage ring.

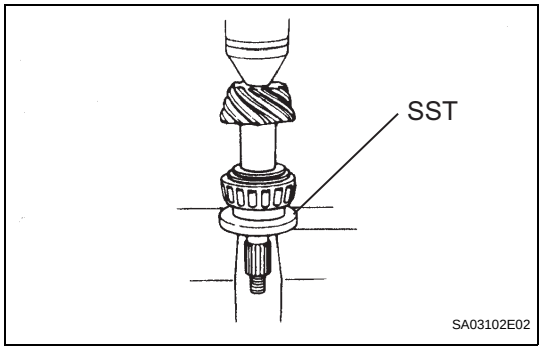
(b) Using SST and a press, press in the roller bearing (outer) to the carrier.

SST 09316-60011 (09316-00011, 09316-00021)



7. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

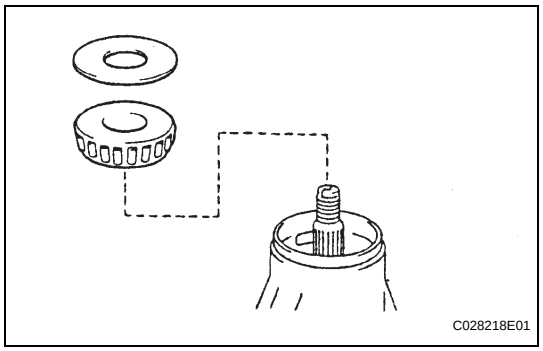
(a) Using SST and a press, press the roller bearing (outer) into the carrier.
SST 09316-60011 (09316-00041, 09316-00011)



8. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

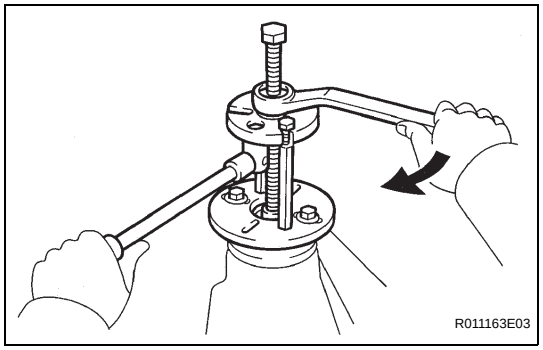
(a) Install the plate washer onto the drive pinion.
HINT:
First fit a washer with the same thickness as the removed washer, and then check the tooth contact pattern. Replace the washer with one of a different thickness if necessary.

(b) Using SST and a press, press the roller bearing (inner) onto the drive pinion.
SST 09506-30012

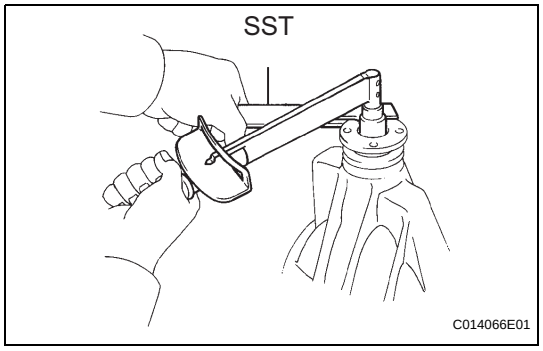


9. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

(a) Install the drive pinion, rear drive pinion tapered roller bearing and rear differential drive pinion oil slinger.
HINT:
Assemble the spacer and oil seal after adjusting the gear contact pattern.



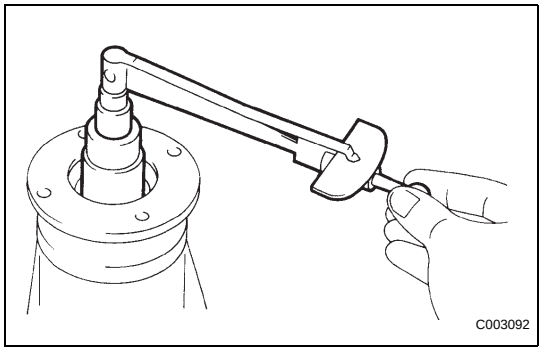
(b) Using SST, install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)
NOTICE:
Before using SST (center bolt), apply hypoid gear oil to its threads and tip.



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

(d) Using SST to hold the companion flange in place, torque the nut.
SST 09330-00021
Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less
NOTICE:
- **As there is no spacer, torque a little at a time. Be careful not to overtighten the nut.**

DF

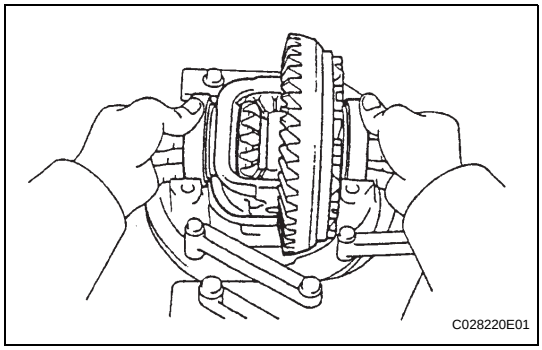


- **Apply hypoid gear oil to the nut.**

(e) Using a torque wrench, measure the preload.
Preload (at starting)

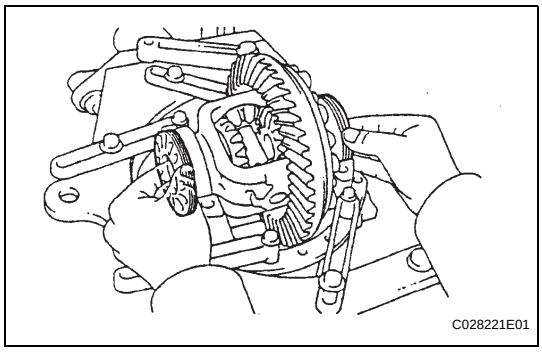
Bearing	Standard
New bearing	1.05 to 1.64 N*m (10.7 to 16.7 kgf*cm, 9.3 to 14.5 in.*lbf)
Used bearing	0.56 to 0.85 N*m (5.7 to 8.7 kgf*cm, 4.9 to 7.5 in.*lbf)

NOTICE:
For a more accurate measurement, rotate the bearing forward and backward several times before measuring.



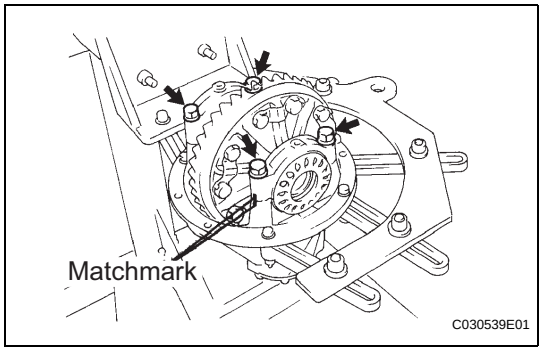
10. INSTALL DIFFERENTIAL CASE ASSEMBLY

(a) Place the 2 bearing outer races on their respective bearings.
HINT:
Do not interchange the right and left races.



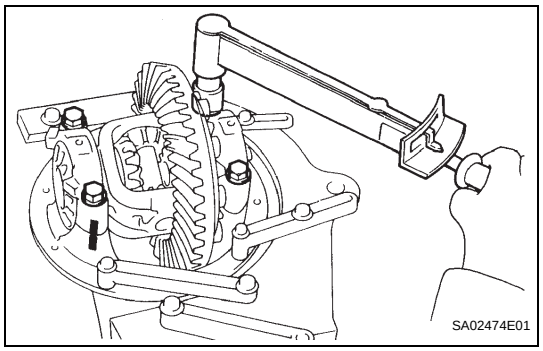
11. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT

(a) Install the 2 adjusting nuts onto the carrier, making sure the nuts are threaded properly.

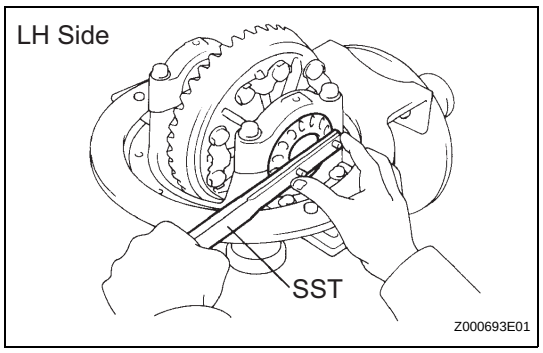


12. INSPECT AND ADJUST DIFFERENTIAL RING GEAR AND DIFFERENTIAL DRIVE PINION BACKLASH

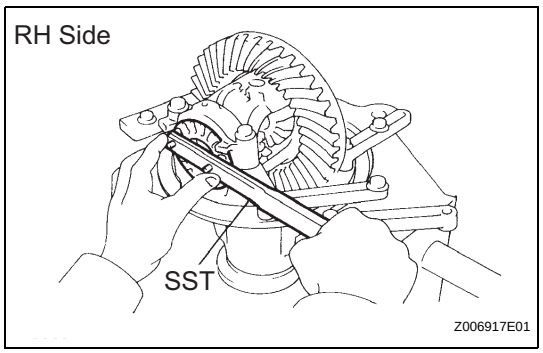
(a) Align the matchmarks on the cap and carrier.



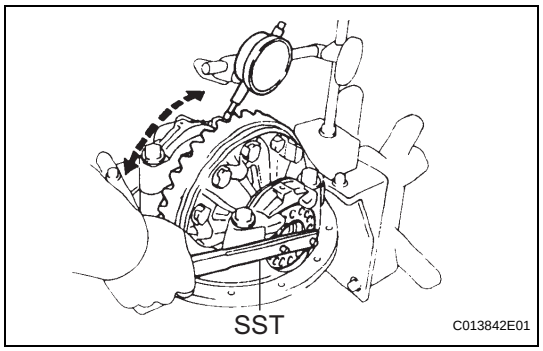
(b) Install the right and left bearing caps with the 4 bolts.
Torque: 85 N*m (870 kgf*cm, 63 ft.*lbf)
If the bearing cap does not fit tightly on the carrier, the adjusting nuts are not threaded properly.
HINT:
Reinstall the adjusting nuts if necessary.



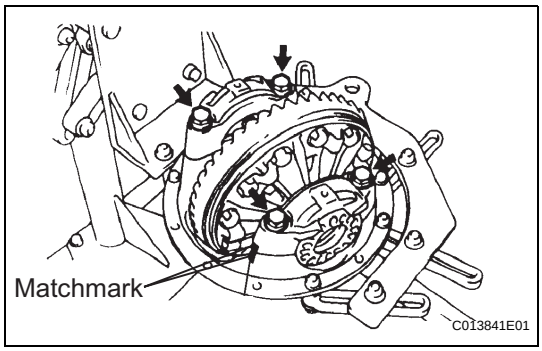
(c) Loosen the 4 bearing cap bolts to the point where the adjusting nuts can be turned using SST.
(d) Using SST, torque the adjusting nut on the ring gear side until the ring has a backlash of about 0.2 mm (0.008 in.).
SST 09504-00011



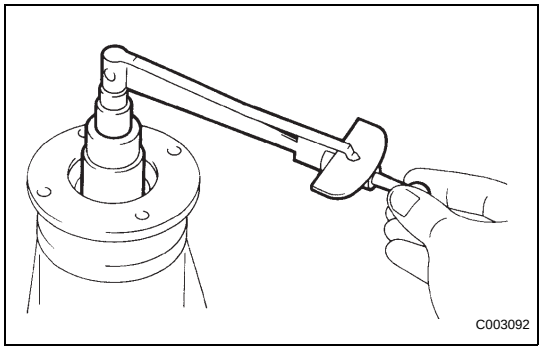
(e) While turning the ring gear, use SST to fully tighten the adjusting nut on the drive pinion side. After the bearings have settled, loosen the adjusting nut on the drive pinion side.
(f) Using SST, tighten the adjusting nut 1 to 1.5 notches from the 0 preload position.
SST 09504-00011



(g) Using a dial indicator, adjust the ring gear backlash until it is within the specification.
Standard backlash:
0.13 to 0.18 mm (0.0051 to 0.0071 in.)
HINT:
- The backlash is adjusted by turning the left and right adjusting nuts an equal amount. For example, loosen the nut on the right side one notch and loosen the nut on the left side one notch.
- Perform the measurement at 3 or more positions around the circumference of the ring gear.

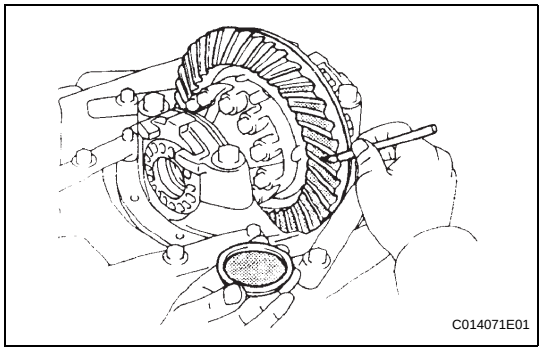


(h) Torque the bearing cap bolts.
Torque: 85 N*m (870 kgf*cm, 63 ft.*lbf)



13. INSPECT TOTAL PRELOAD

(a) 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 0.39 to 0.59 N*m (4.0 to 6.0 kgf*cm, 3.5 to 5.2 in.*lbf)
If necessary, disassemble and inspect the differential.

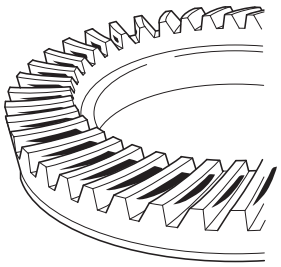


14. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

(a) Coat 3 or 4 teeth at 3 different positions on the ring gear with prussian blue.
(b) Hold the companion flange firmly in place and rotate the ring gear in both directions.

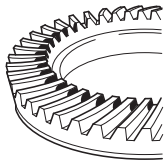
(c) Inspect the tooth contact pattern.

Proper Contact

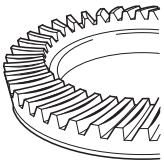


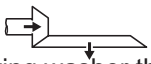
Drive Side

Toe Contact



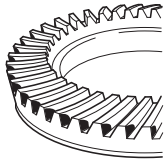
Face Contact



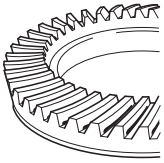


Select an adjusting washer that will shift the drive pinion closer to the ring gear.

Heel Contact



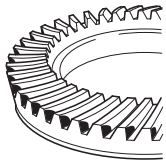
Flank Contact



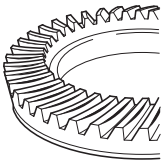
Select an adjusting washer that will shift the drive pinion away from the ring gear.

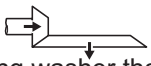
Coast Side

Heel Contact



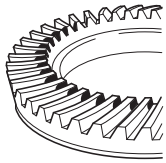
Flank Contact



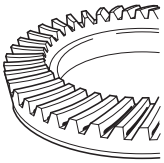


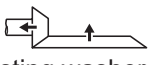
Select an adjusting washer that will shift the drive pinion closer to the ring gear.

Toe Contact



Face Contact





Select an adjusting washer that will shift the drive pinion away from the ring gear.

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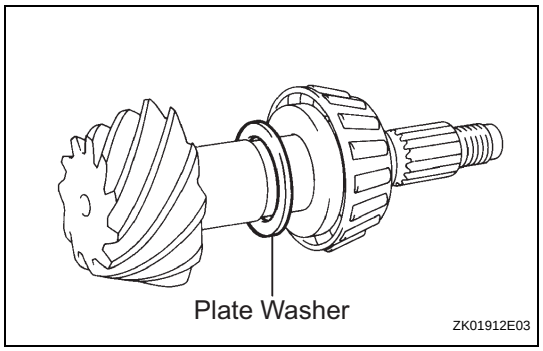


If the teeth are not engaged properly, use the following chart to select a proper washer.

Plate Washer Thickness

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

15. REMOVE REAR DRIVE PINION NUT (See page DF-49)

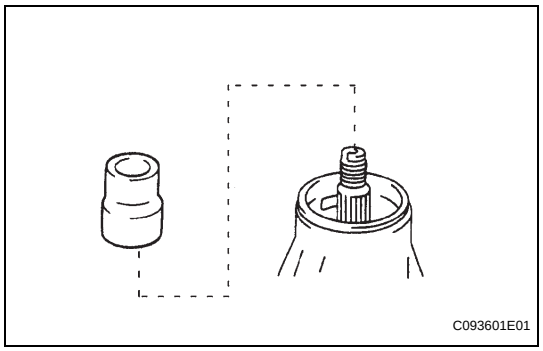
16. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

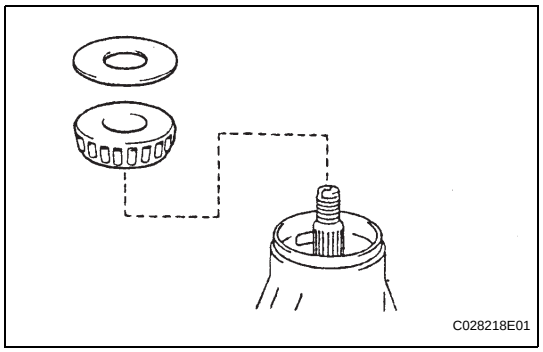
17. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

18. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (See page DF-51)

19. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

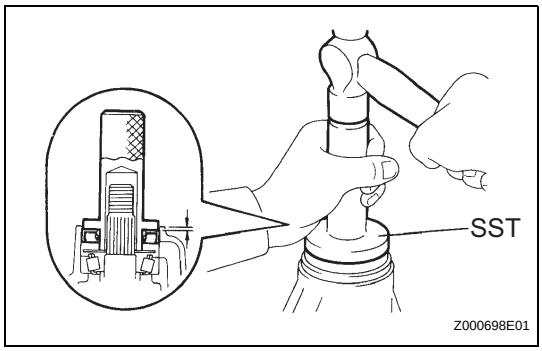
(a) Install a new bearing spacer onto the drive pinion.





20. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

21. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER



22. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

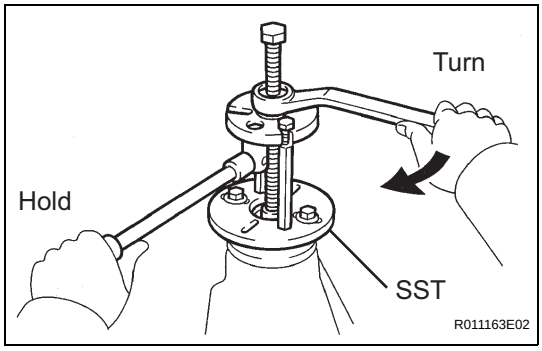
(a) Apply MP grease to a new oil seal.

(b) Using SST and a hammer, tap in the oil seal.

SST 09554-30011

Oil seal depth:

0.55 to 1.45 mm(0.0213 to 0.0567)



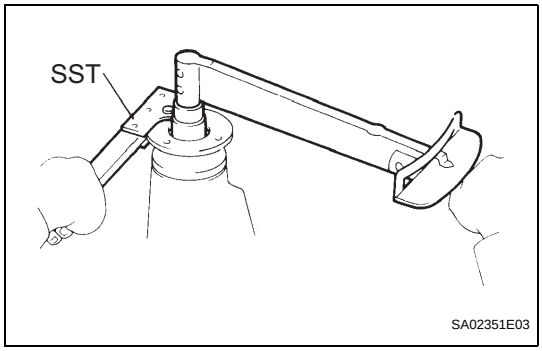
23. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, install the companion flange onto the drive pinion.

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

NOTICE:

Before using SST (center bolt), apply hypoid gear oil to its threads and tip.

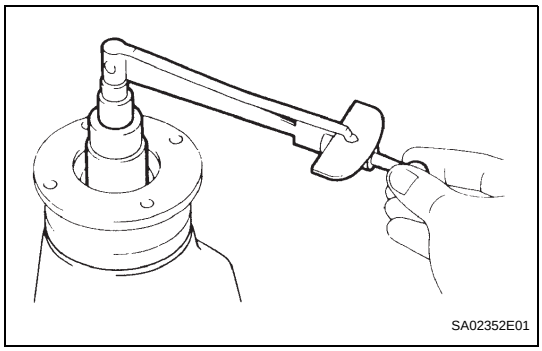


(b) Coat the threads of a new nut with hypoid gear oil.

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

SST 09330-00021

Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less



24. INSPECT DRIVE PINION PRELOAD

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

Preload (at starting)

Bearing	Standard
New bearing	1.05 to 1.64 N*m (11 to 17 kgf*cm, 9.3 to 15 in.*lbf)
Used bearing	0.56 to 0.85 N*m (6 to 9 kgf*cm, 4.9 to 7.5 in.*lbf)

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

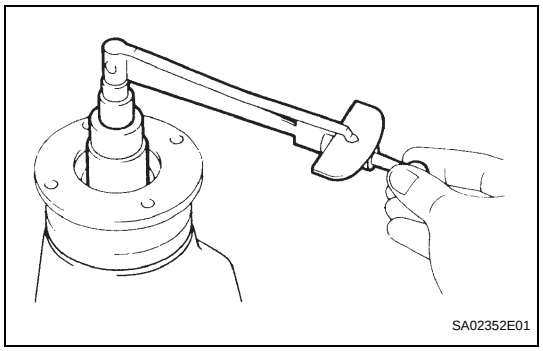
If the preload is less than the minimum, retighten the nut with 13 N*m (130 kgf*cm, 9 ft.*lbf) of torque at a time until the specified preload is reached.

Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload adjusting procedure.

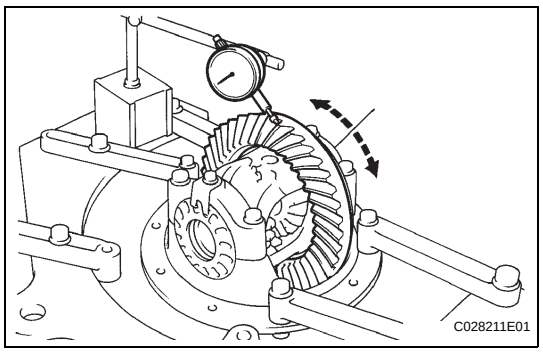
HINT:

Do not loosen the pinion nut to reduce the preload.


SA02352E01

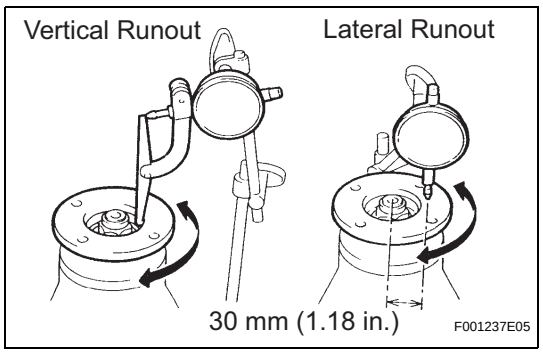
25. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload.
HINT:
Bolt without torque specifications are shown in the service data (see page SS-43).
If necessary, disassemble and inspect the differential.


C028211E01

26. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using a dial indicator, check the backlash of the ring gear.
Standard backlash:
0.13 to 0.18 mm (0.0051 to 0.0071 in.)
If the backlash is not as specified, adjust the side bearing preload or repair as necessary.
HINT:
Perform the measurements at 3 or more positions around the circumference of the ring gear.

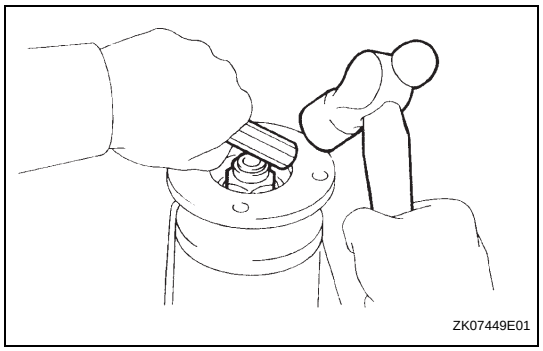


27. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

(a) Using a dial indicator, measure the runout of the drive pinion companion flange vertically and laterally.
Maximum runout

Runout	Maximum
Vertical runout	0.10 mm (0.0039 in.)
Lateral runout	0.10 mm (0.0039 in.)

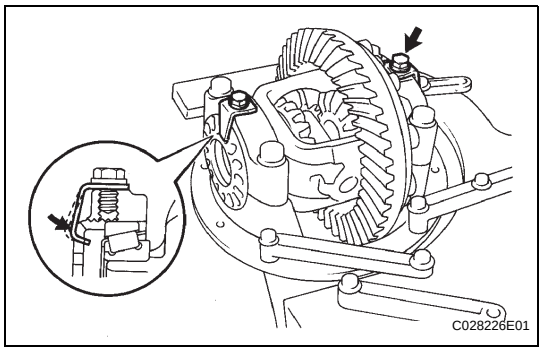
If the runout is greater than the maximum, replace the companion flange.


ZK07449E01

28. STAKE DRIVE PINION NUT

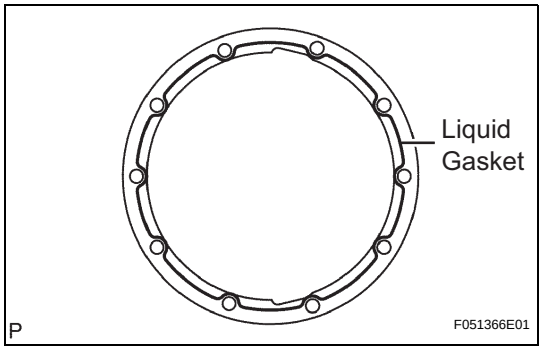
(a) Using a chisel and hammer, stake the nut.

DF

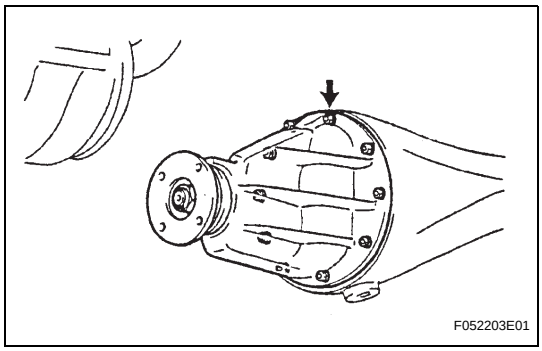


29. **INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK**
    (a) Install 2 new adjusting locks onto the bearing caps with the 2 bolts.
    Torque: 13 N*m (130 kgf*cm, 9 ft.*lbf)
    (b) Bend the nut locks.
    HINT:
    Perform the measurements at 3 or more positions around the circumference of the ring gear.

INSTALLATION



1. **INSTALL REAR DIFFERENTIAL CARRIER ASSEMBLY**
    (a) Remove any dust and oil from the differential carrier assembly and the contact surfaces of the axle housing.
    (b) Apply liquid gasket to both sides of a new gasket.
    NOTICE:
    Do not apply the liquid gasket to the stud bolt.

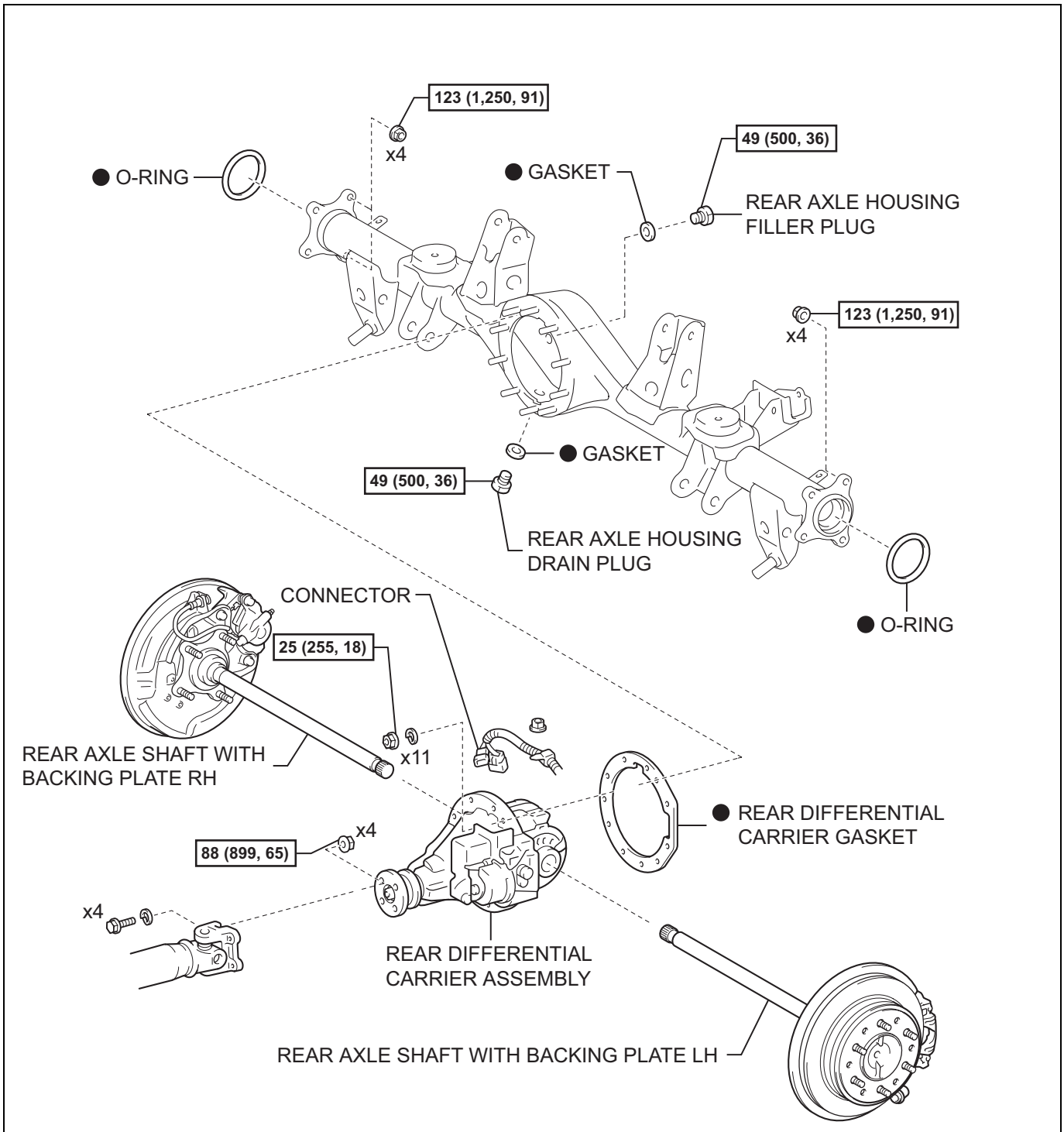


    (c) Install a new gasket and the differential carrier assembly with the 10 nuts and 10 washers.
    Torque: 25 N*m (255 kgf*cm, 18 ft.*lbf)
2. **INSTALL REAR AXLE SHAFT LH OIL SEAL (See page AH-22)**
3. **INSTALL REAR AXLE SHAFT RH OIL SEAL**
    HINT:
    Use the same procedure as for the LH side.
4. **INSTALL REAR AXLE SHAFT LH (See page AH-22)**
5. **INSTALL REAR AXLE SHAFT RH**
    HINT:
    Use the same procedure as for the LH side.
6. **INSPECT REAR AXLE SHAFT BEARING (See page AH-2)**
7. **INSTALL REAR SPEED SENSOR LH (See page BC-198)**
8. **INSTALL REAR SPEED SENSOR RH**
    HINT:
    Use the same procedure as for the LH side.
9. **INSTALL PARKING BRAKE CABLE LH (See page AH-23)**
10. **INSTALL PARKING BRAKE CABLE RH**
    HINT:
    Use the same procedure as for the LH side.
11. **APPLY HIGH TEMPERATURE GREASE (See page PB-19)**
12. **INSTALL PARKING BRAKE SHOE (See page PB-19)**

13. **INSTALL PARKING BRAKE SHOE STRUT (See page PB-19)**
14. **INSTALL PARKING BRAKE SHOE RETURN TENSION SPRING (See page PB-19)**
15. **CHECK PARKING BRAKE INSTALLATION (See page PB-20)**
16. **INSTALL REAR DISC (See page PB-20)**
17. **ADJUST PARKING BRAKE SHOE CLEARANCE (See page PB-20)**
18. **INSTALL REAR DISC BRAKE CALIPER ASSEMBLY LH (See page AH-23)**
19. **INSTALL REAR DISC BRAKE CALIPER ASSEMBLY RH**
    HINT:
    Use the same procedure as for the LH side.
20. **INSTALL PROPELLER SHAFT ASSEMBLY (for 2WD) (See page PR-14)**
21. **INSTALL PROPELLER SHAFT ASSEMBLY (for 4WD) (See page PR-14)**
22. **INSTALL REAR WHEEL**
    Torque: 112 N*m (1,137 kgf*cm, 82 ft.*lbf)
23. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
    Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
24. **INSPECT DIFFERENTIAL OIL (See page DF-3)**
25. **CHECK FOR DIFFERENTIAL OIL LEAKAGE**
26. **FILL RESERVOIR WITH BRAKE FLUID (See page BR-5)**
27. **BLEED BRAKE LINE (See page BR-5)**
28. **CHECK FLUID LEVEL IN RESERVOIR (See page BR-7)**
29. **CHECK FOR BRAKE FLUID LEAKAGE**
30. **INSPECT PARKING BRAKE LEVER TRAVEL (See page PB-4)**
31. **ADJUST PARKING BRAKE LEVER TRAVEL (See page PB-4)**
32. **CHECK VSC SENSOR SIGNAL**
    (See page BC-28)

REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock)

COMPONENTS



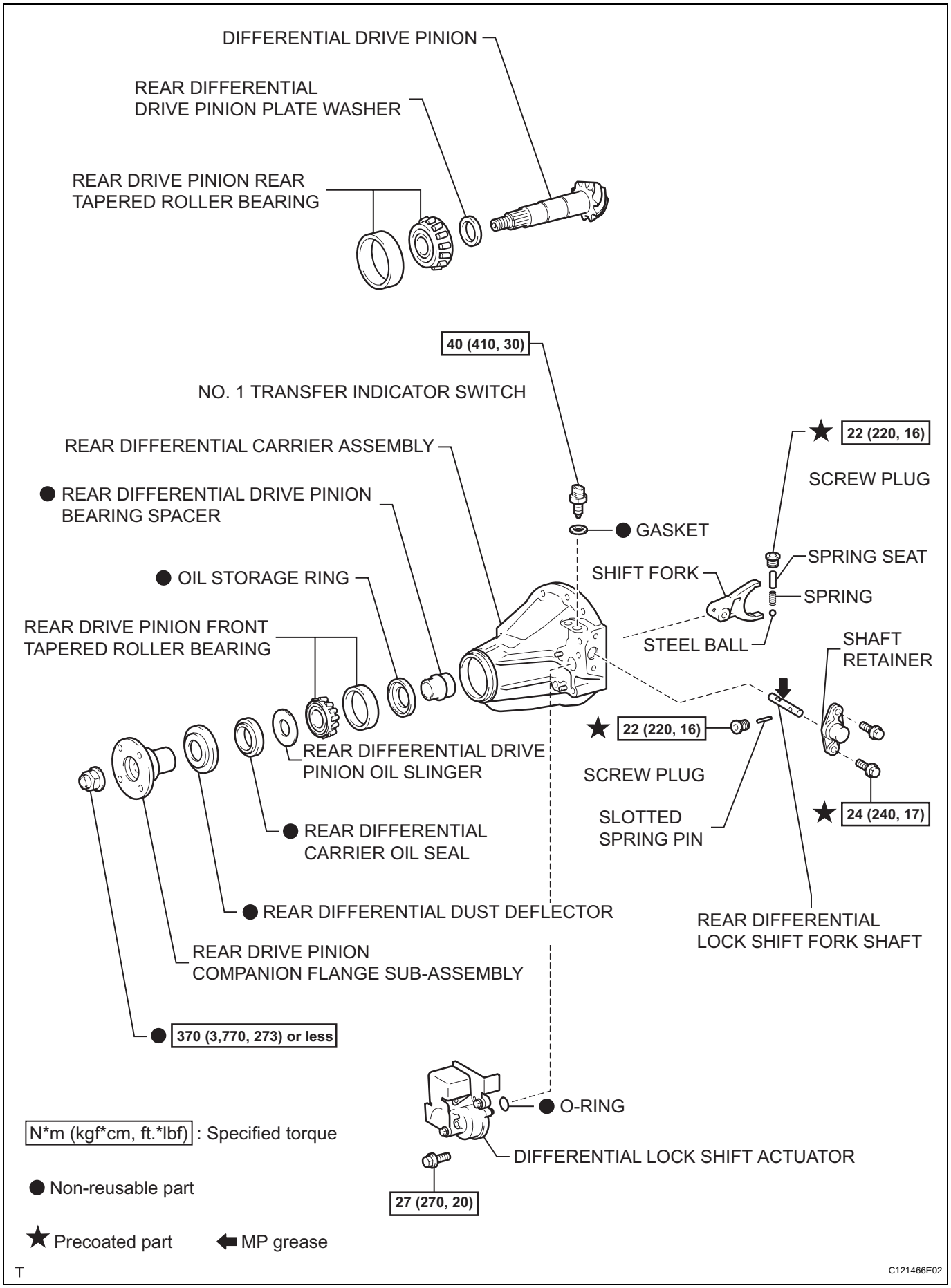
N*m (kgf*cm, ft*lbf) : Specified torque

● Non-reusable part

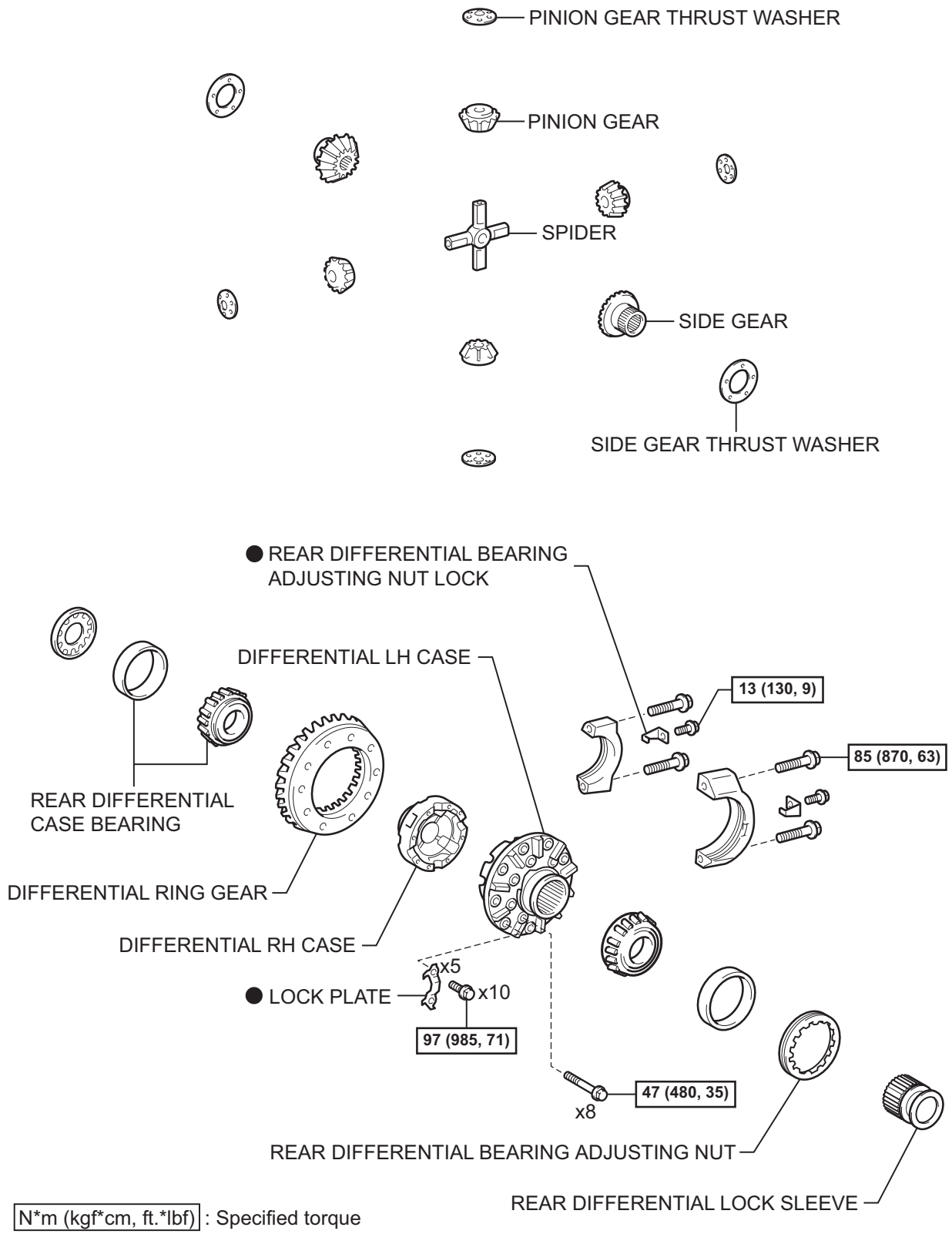
P

C135465E01

DF


DIFFERENTIAL DRIVE PINION
REAR DIFFERENTIAL DRIVE PINION PLATE WASHER
REAR DRIVE PINION REAR TAPERED ROLLER BEARING
40 (410, 30)
NO. 1 TRANSFER INDICATOR SWITCH
REAR DIFFERENTIAL CARRIER ASSEMBLY
★ 22 (220, 16)
SCREW PLUG
● REAR DIFFERENTIAL DRIVE PINION BEARING SPACER
● GASKET
SPRING SEAT
SHIFT FORK
● OIL STORAGE RING
SPRING
REAR DRIVE PINION FRONT TAPERED ROLLER BEARING
STEEL BALL
SHAFT RETAINER
★ 22 (220, 16)
SCREW PLUG
REAR DIFFERENTIAL DRIVE PINION OIL SLINGER
★ 24 (240, 17)
SLOTTED SPRING PIN
● REAR DIFFERENTIAL CARRIER OIL SEAL
● REAR DIFFERENTIAL DUST DEFLECTOR
REAR DIFFERENTIAL LOCK SHIFT FORK SHAFT
REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY
● 370 (3,770, 273) or less
● O-RING
DIFFERENTIAL LOCK SHIFT ACTUATOR
27 (270, 20)
N*m (kgf*cm, ft.*lbf) : Specified torque
● Non-reusable part
★ Precoated part
MP grease
T
C121466E02

DF



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

● Non-reusable part

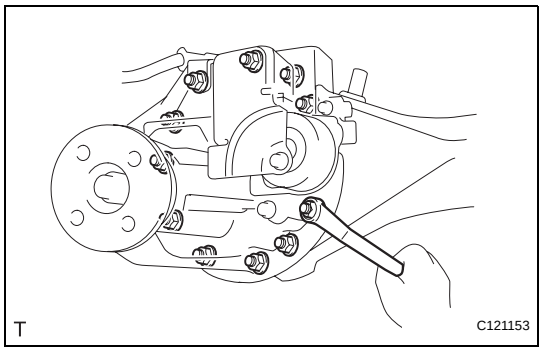
T

C121465E02

DF

REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE REAR WHEEL**
3. **DRAIN BRAKE FLUID**
   HINT:
   Immediately wash off any brake fluid that comes into contact with any painted surfaces.
4. **DRAIN DIFFERENTIAL OIL**
5. **REMOVE REAR DISC BRAKE CALIPER ASSEMBLY LH (See page AH-19)**
6. **REMOVE REAR DISC BRAKE CALIPER ASSEMBLY RH**
   HINT:
   Use the same procedure as for the LH side.
7. **REMOVE REAR DISC (See page PB-17)**
8. **REMOVE PARKING BRAKE SHOE RETURN TENSION SPRING (See page PB-17)**
9. **REMOVE PARKING BRAKE SHOE STRUT LH (See page PB-17)**
10. **REMOVE PARKING BRAKE SHOE (See page PB-17)**
11. **SEPARATE PARKING BRAKE CABLE LH (See page AH-19)**
12. **REMOVE PARKING BRAKE CABLE RH**
    HINT:
    Use the same procedure as for the LH side.
13. **REMOVE REAR SPEED SENSOR (See page BC-198)**
14. **REMOVE REAR SPEED SENSOR RH**
    HINT:
    Use the same procedure as for the LH side.
15. **REMOVE REAR AXLE SHAFT RH (See page AH-19)**
16. **REMOVE REAR AXLE SHAFT LH**
    HINT:
    Use the same procedure as for the LH side.
17. **REMOVE REAR AXLE SHAFT LH OIL SEAL (See page AH-20)**
18. **REMOVE REAR AXLE SHAFT RH OIL SEAL**
    HINT:
    Use the same procedure as for the LH side.
19. **REMOVE REAR PROPELLER SHAFT ASSEMBLY (for 2WD) (See page PR-9)**
20. **REMOVE PROPELLER SHAFT ASSEMBLY (for 4WD) (See page PR-9)**



21. REMOVE REAR DIFFERENTIAL CARRIER ASSEMBLY

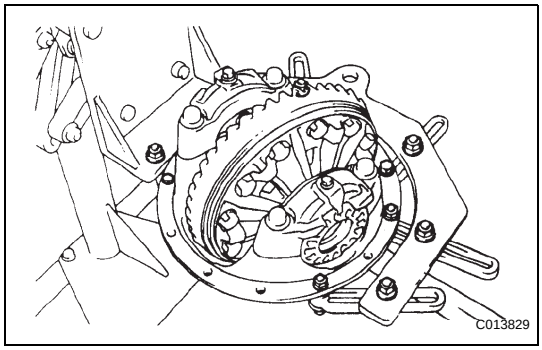
(a) Remove the 11 nuts and the differential carrier.

NOTICE:

Be careful not to damage the contact surface.

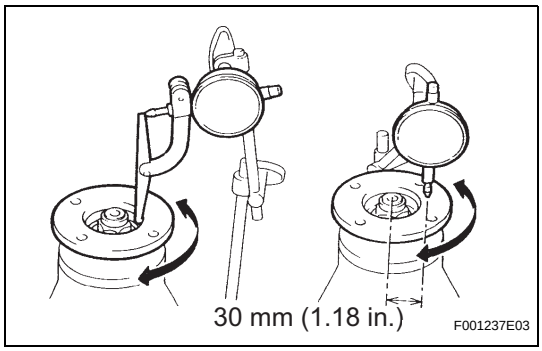
22. REMOVE REAR DIFFERENTIAL CARRIER GASKET

DISASSEMBLY



1. FIX REAR DIFFERENTIAL CARRIER ASSEMBLY

(a) Fix the rear differential carrier assembly to the overattachment.



2. INSPECT REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

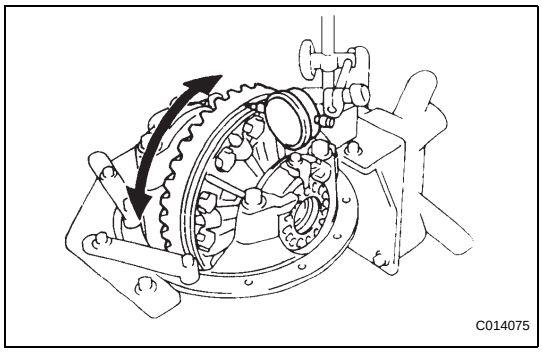
(a) Using a dial indicator, measure the runout of the companion flange vertically and horizontally.

Maximum runout:

Vertical runout: 0.10 mm (0.0039 in.)

Lateral runout: 0.10 mm (0.0039 in.)

If the runouts are not with the specifications, replace the companion flange.



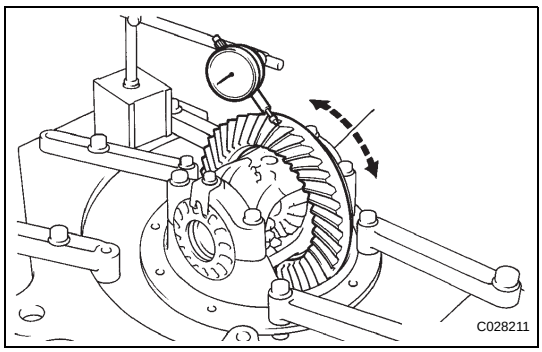
3. INSPECT RUNOUT OF DIFFERENTIAL RING GEAR

(a) Using a dial indicator, check the runout of the ring gear.

Maximum runout:

0.07 mm (0.0028 in.)

If the runout is greater than the maximum, replace the ring gear with a new one.



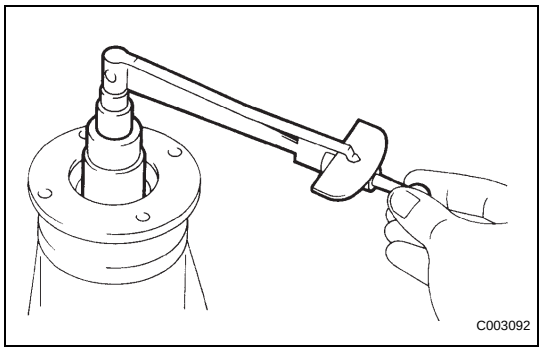
4. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using a dial indicator, check the backlash of the ring gear.

Backlash:

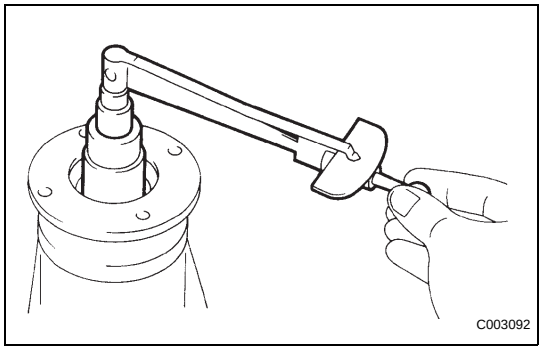
0.13 to 0.18 mm (0.0051 to 0.0071 in.)

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



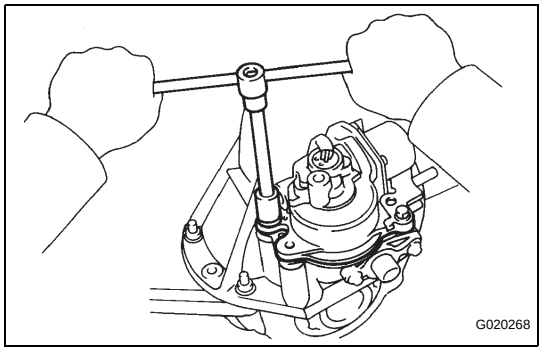
5. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.
Preload (at starting):
0.56 to 0.85 N*m (5.7 to 8.7 kgf*cm, 5.0 to 7.5 in.*lbf)
If necessary, disassemble and inspect the differential assembly.



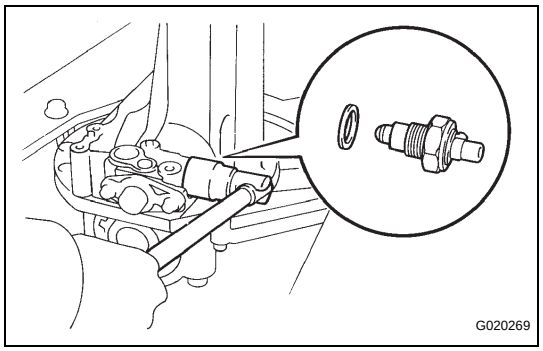
6. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
(b) Using a torque wrench, measure the total preload.
Total preload (at starting):
Drive pinion preload plus 0.39 to 0.59 N*m (4.0 to 6.0 kgf*cm, 3.5 to 5.2 in.*lbf)
If necessary, disassemble and inspect the differential.



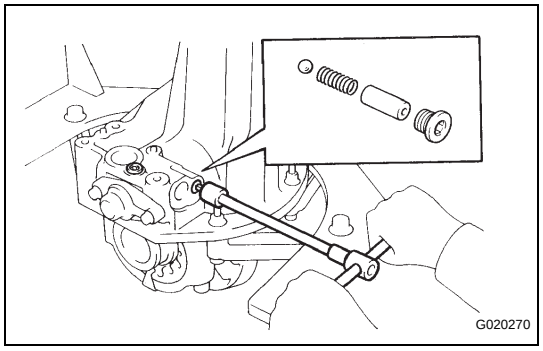
7. REMOVE DIFFERENTIAL LOCK SHIFT ACTUATOR

(a) Remove the 4 bolts and actuator from the differential carrier.
(b) Remove the O-ring.



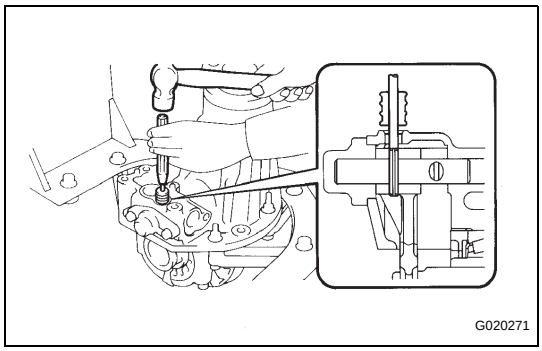
8. REMOVE NO.1 TRANSFER INDICATOR SWITCH

(a) Remove the indicator switch and gasket.

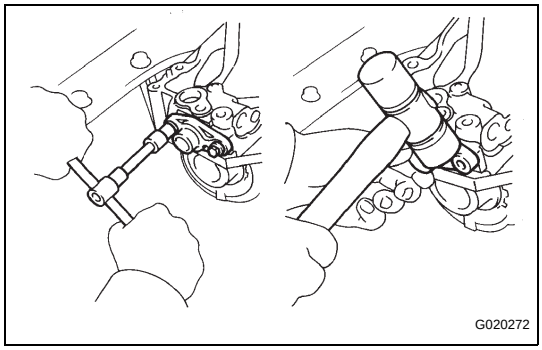


9. REMOVE REAR DIFFERENTIAL LOCK SHIFT FORK SHAFT

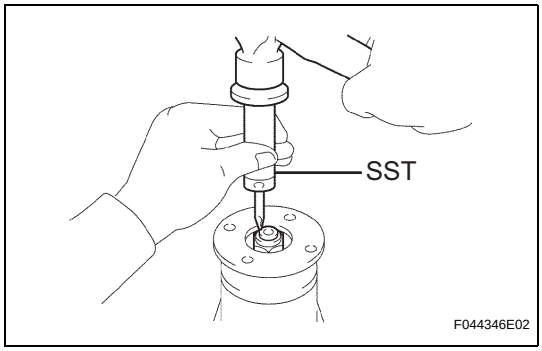
(a) Using a 6 mm hexagon wrench, remove the 2 screw plugs.
(b) Remove the spring seat, spring and ball.



(c) Using a 5 mm pin punch and hammer, remove the slotted pin.

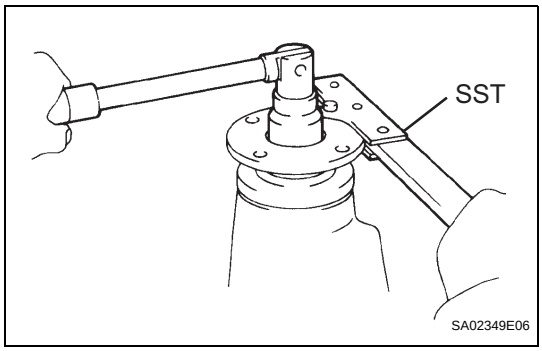


(d) Remove the 2 bolts from the shaft retainer.
(e) Using a plastic hammer, remove the shaft retainer.
(f) Remove the shift fork shaft.

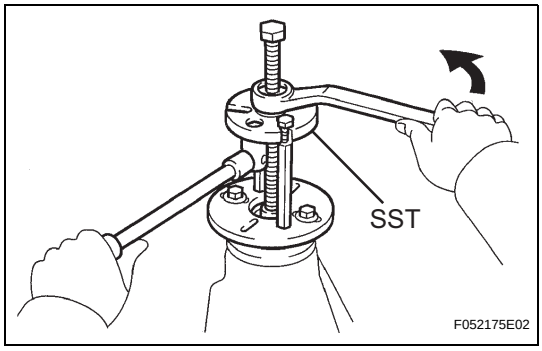


10. REMOVE REAR DRIVE PINION NUT

(a) Using SST and a hammer, loosen the staked part of the nut.
SST 09930-00010



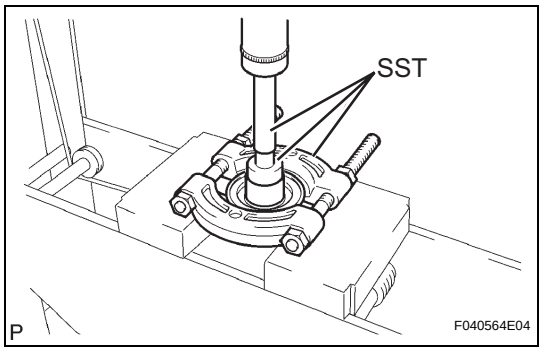
(b) Using SST to hold the drive pinion companion flange, remove the nut.
SST 09330-00021



11. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

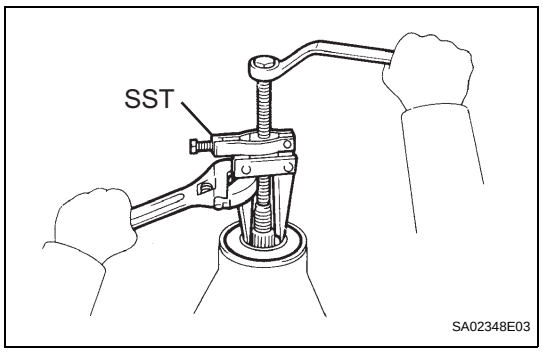
(a) Using SST, remove the drive pinion companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)

DF



12. REMOVE REAR DIFFERENTIAL DUST DEFLECTOR

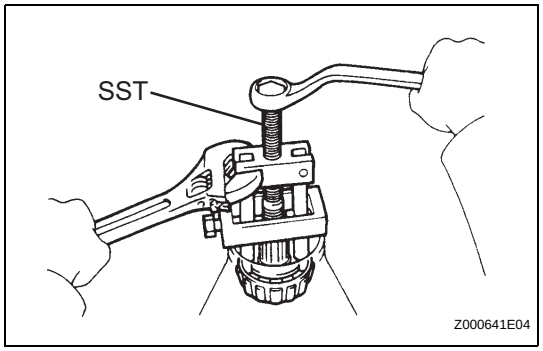
(a) Using SST and a press, remove the dust deflector.
SST 09950-60010 (09951-00380), 09950-70010 (09951-07150), 09950-00020



13. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL

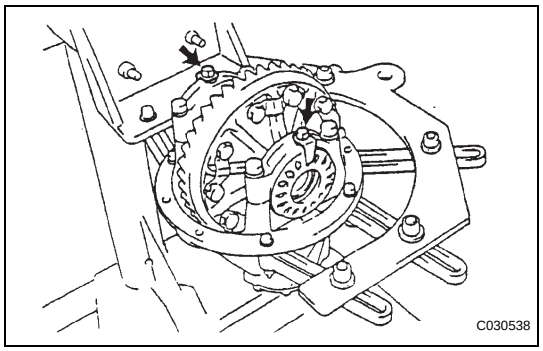
(a) Using SST, remove the oil seal from the differential carrier.
SST 09308-10010

14. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER



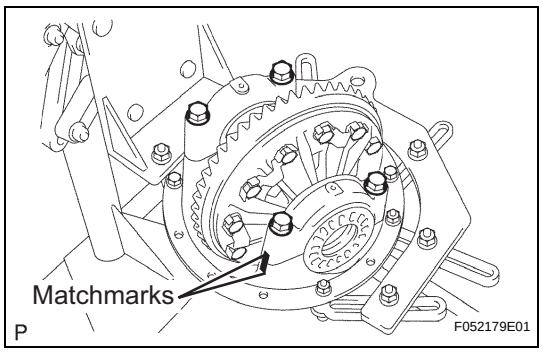
15. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using SST, remove the drive pinion tapered roller bearing from the drive pinion.
SST 09556-22010



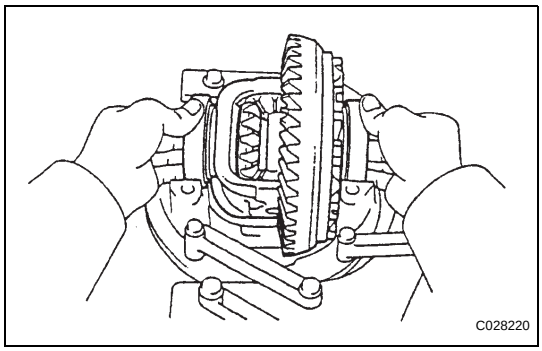
16. REMOVE REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK

(a) Remove the 2 bolts and 2 rear differential bearing adjusting nut locks.

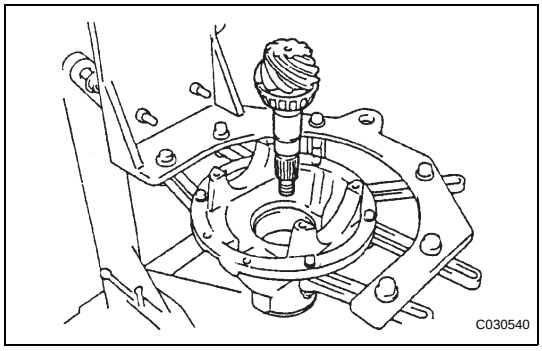


17. REMOVE DIFFERENTIAL CASE ASSEMBLY

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

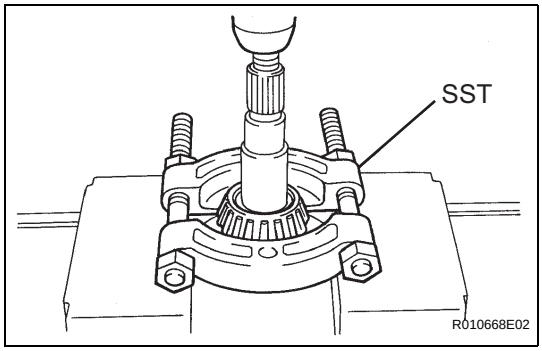


(d) Remove the rear differential case sub-assembly and 2 case bearings from the differential carrier.
HINT:
Tag the 2 case bearings outer races to show the locations for reassembly.



18. REMOVE DIFFERENTIAL DRIVE PINION

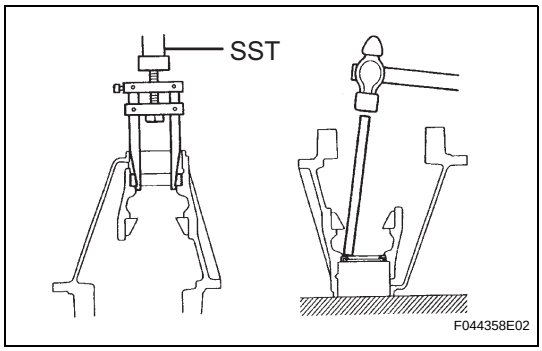
(a) Remove the differential drive pinion and bearing spacer from the differential carrier.



19. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST and a press, remove the drive pinion tapered roller bearing from the drive pinion.
SST 09950-00020
NOTICE:
Do not drop the drive pinion.
HINT:
If either the drive pinion or ring gear is damaged, replace them as a set.

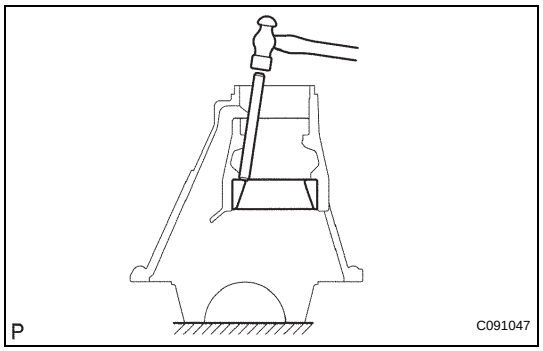
20. REMOVE REAR DIFFERENTIAL DRIVE PINION PLATE WASHER



21. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

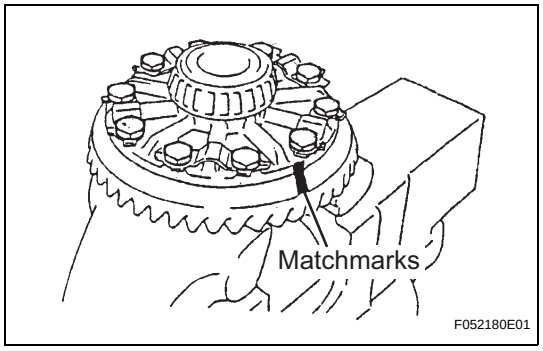
(a) Using SST, remove the front tapered roller bearing from the carrier.
SST 09308-00010

(b) Using a brass bar and a hammer, remove the oil storage ring from the carrier.
HINT:
If the bearing is damaged during the removal, replace it.



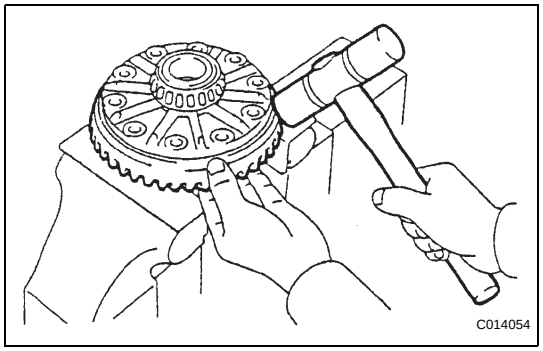
22. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using a brass bar and a hammer, remove the rear tapered roller bearing from the carrier.
HINT:
If the bearing is damaged during the removal, replace it.

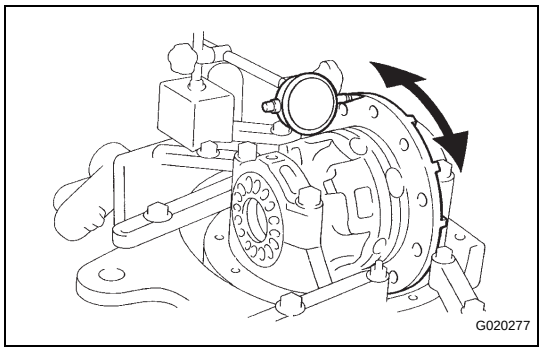


23. REMOVE DIFFERENTIAL RING GEAR

(a) Place matchmarks on the ring gear and differential case.
(b) Using a screwdriver and a hammer, unstake the lock plates.
(c) Remove the 10 ring gear set bolts and 5 lock plates.

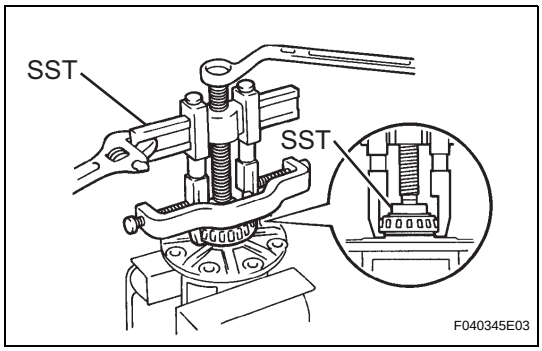


(d) Using a plastic hammer, tap on the ring gear to separate it from the differential case.



24. INSPECT DIFFERENTIAL CASE ASSEMBLY RUNOUT

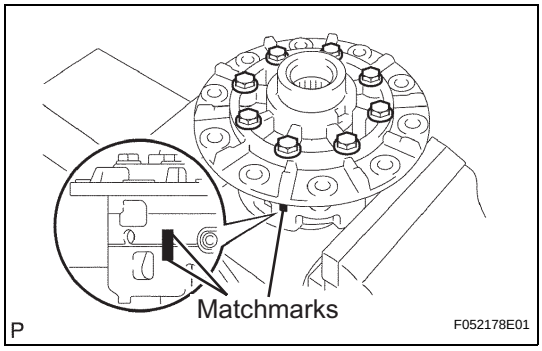
(a) Install the rear differential case bearing onto the differential case.
(b) Install the differential case onto the differential carrier.
(c) Install the 2 bearing caps and 4 bolts onto the differential carrier.
Torque: 85 N*m (870 kgf*cm, 63 ft.*lbf)
(d) Inspect the differential case runout.
Maximum runout:
0.07 mm (0.0028 in.)
(e) Remove the differential case.
(f) Remove the rear differential case bearing.



25. REMOVE REAR DIFFERENTIAL CASE BEARING

(a) Using SST, remove the 2 rear differential case bearings from the differential case.

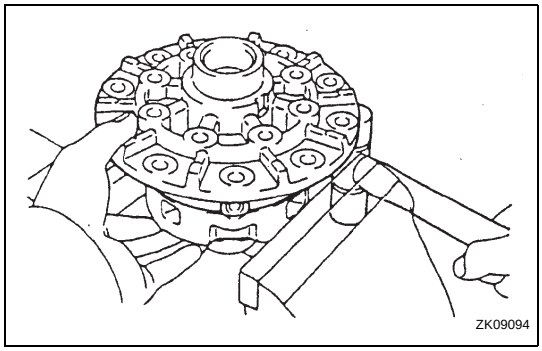
SST 09950-40011 (09951-04020, 09952-04010, 09953-04030, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00360)



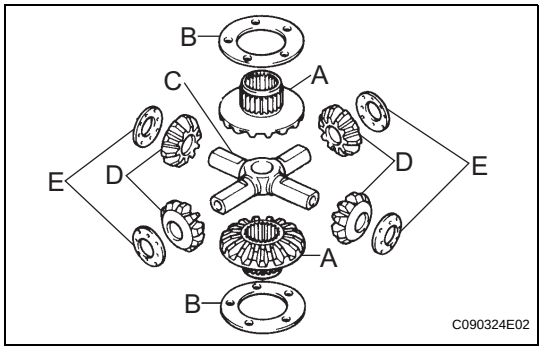
26. DISASSEMBLE DIFFERENTIAL CASE

(a) Place matchmarks on the LH and RH cases.

(b) Remove the 8 bolts.

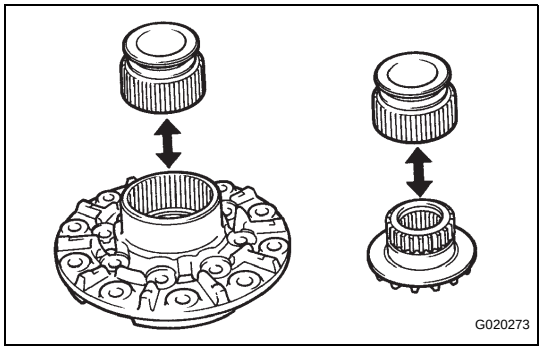


(c) Using a plastic hammer, separate the LH and RH cases.



(d) Remove these parts from the differential case.

A	Side gear
B	Side gear thrust washer
C	Spider
D	Pinion gear
E	Pinion gear thrust washer

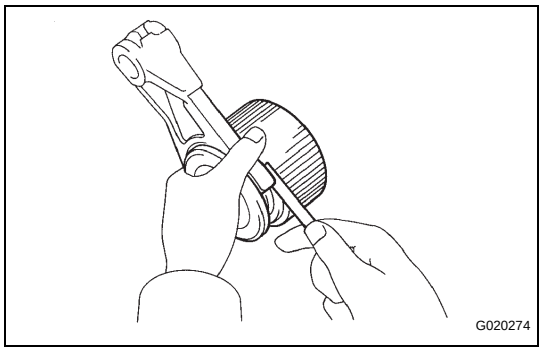


27. INSPECT REAR DIFFERENTIAL LOCK SLEEVE

(a) Install the sleeve onto the differential case (LH) and check that it moves smoothly.

(b) Install the side gear onto the sleeve and check that it moves smoothly.

DF



(c) Using a feeler gauge, measure the clearance between the shift fork and sleeve.
Maximum clearance:
0.15 to 0.35 mm (0.0059 to 0.0138 in.)

28. INSPECT DIFFERENTIAL PINION AND SIDE GEAR

(a) Check that there is no damage to the differential pinion and differential side gear.
If the differential pinion and/or differential side gear is damaged, replace the differential.

29. INSPECT DIFFERENTIAL CASE ASSEMBLY

(a) Check that the differential case is not damaged.
If the differential case is damaged, replace the differential case.

INSPECTION

1. INSPECT DIFFERENTIAL PINION AND SIDE GEAR

(a) Check that there is no damage to the differential pinion or differential side gear.
If the differential pinion and/or differential side gear is damaged, replace the differential.

2. INSPECT DIFFERENTIAL CASE

(a) Check that the differential case is not damaged.
If the differential case is damaged, replace it.

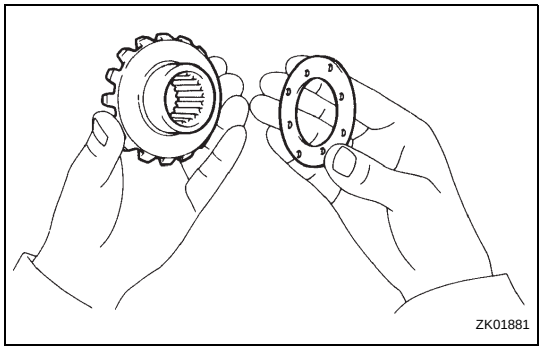
REASSEMBLY

1. INSTALL DIFFERENTIAL CASE ASSEMBLY

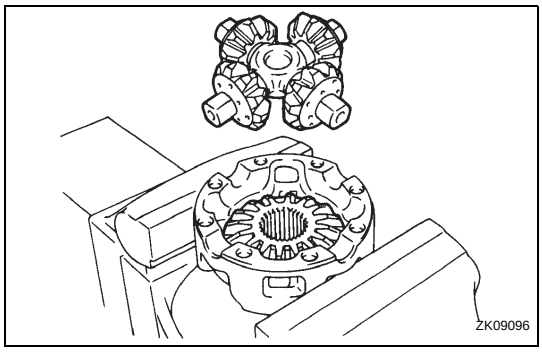
(a) Install the rear differential side gear thrust washer onto the rear differential side gear.

(b) Install the rear differential pinion thrust washer and rear differential pinion onto the rear differential spider.

(c) Fix the differential case RH.

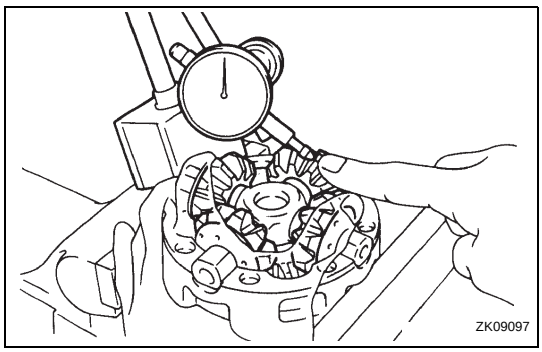

ZK01881

(d) Install the rear differential side gear and rear differential spider onto the differential case RH.


ZK09096

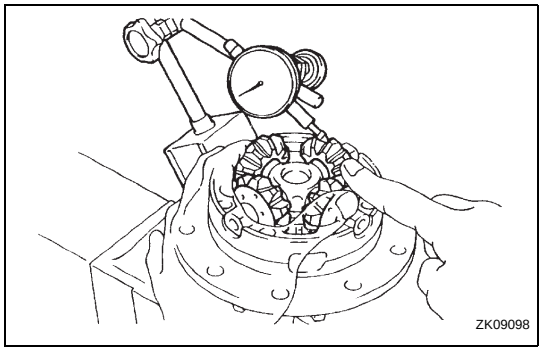
(e) Using a dial indicator, measure the differential case RH side backlash while holding the pinion toward the case.
Backlash:
0.05 to 0.20 mm (0.002 to 0.008 in.)

(f) Remove the rear differential spider from the differential case RH.


ZK09097

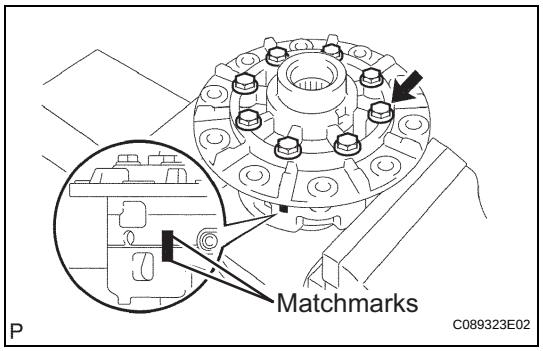
(g) Install the rear differential side gear and rear differential spider onto the differential case LH.

(h) Using a dial indicator, measure the differential case LH side backlash while holding the pinion toward the case.
Backlash:
0.05 to 0.20 mm (0.002 to 0.008 in.)
If the backlash is not within the specification, install 2 side gear thrust washers of a different thickness.

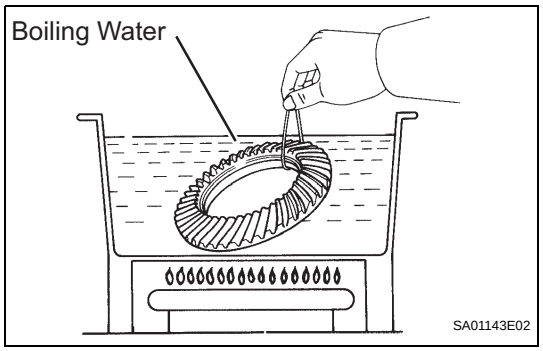

ZK09098

Thrust washer thickness

Thickness mm (in.)	Thickness mm (in.)
0.9 (0.0354)	1.2 (0.0472)
1.0 (0.0394)	1.3 (0.0512)
1.1 (0.0433)	-

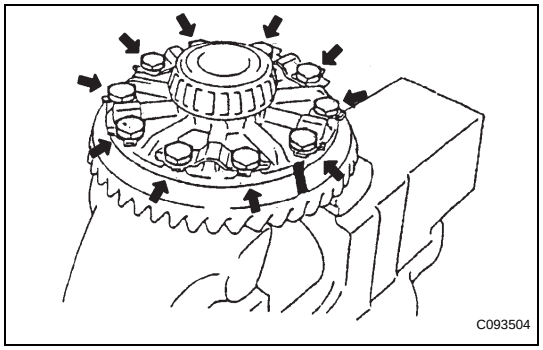


(i) Align the matchmarks and assemble the RH and LH cases.
(j) Using a plastic hammer, install the differential case.
(k) Install the 8 bolts.
Torque: 47 N*m (480 kgf*cm, 35 ft.*lbf)

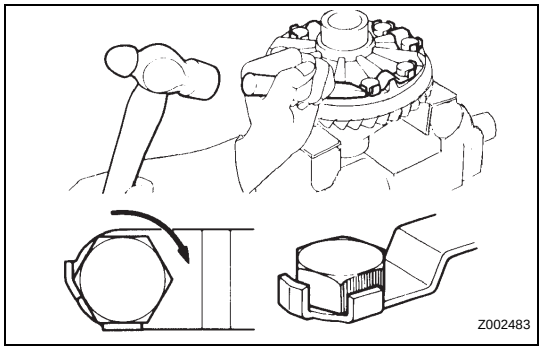


2. INSTALL DIFFERENTIAL RING GEAR

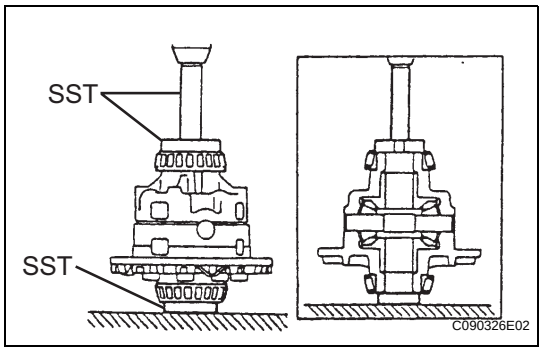
(a) Clean the contact surfaces of the differential case and ring gear.
(b) Heat the ring gear to approximately 100°C (212°F) in boiling water.
(c) Carefully take the ring gear out of the boiling water.
(d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear onto the differential case.



(e) Align the matchmarks on the ring gear and differential case.
(f) Temporarily install 5 new lock plates and 10 bolts.
(g) After the ring gear cools down sufficiently, torque the 10 bolts uniformly.
Torque: 97 N*m (985 kgf*cm, 71 ft.*lbf)
HINT:
Tighten the bolts in diagonal order little by little in several steps.



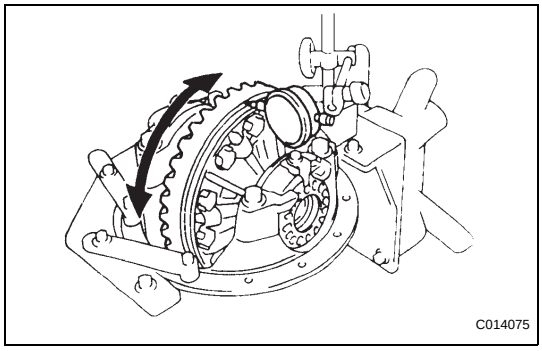
(h) Using a chisel and a hammer, stake the 5 lock plates.
HINT:
Strike the tab labeled A so that it is flush with the flat surface of the bolt. Strike the tab labeled B so that half of the tab is in contact with the bolt as shown in the illustration.



3. INSTALL REAR DIFFERENTIAL CASE BEARING

(a) Using SST and a press, install the bearing onto the differential case.

SST 09950-60010 (09951-00430, 09951-00480, 09951-00470, 09951-00550), 09950-70010 (09951-07150, 09951-00560, 09951-00570)



4. INSPECT DIFFERENTIAL RING GEAR RUNOUT

(a) Install the differential case onto the carrier, and install the 2 adjusting nuts so that there is no play in the bearing.

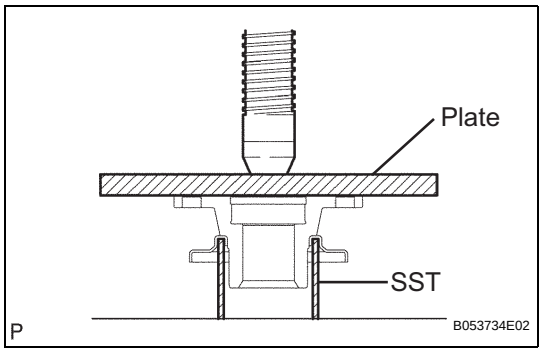
(b) Install the 2 bearing caps with the 4 bolts.

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

(c) Using a dial indicator, measure the runout of the ring gear.

Maximum runout:
0.07 mm (0.0028 in.)

(d) Remove the 2 bearing caps, 2 adjusting nuts and differential case.

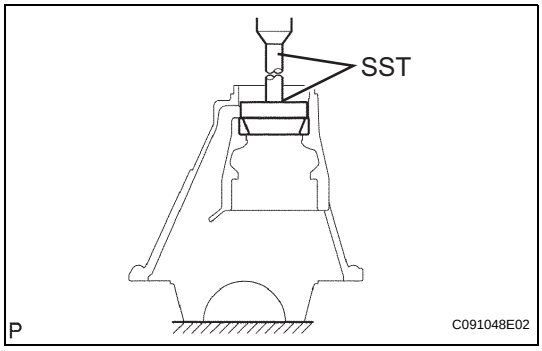


5. INSTALL REAR DIFFERENTIAL DUST DEFLECTOR

(a) Using a press, install a new dust deflector.

NOTICE:
Be careful not to damage the dust deflector.

SST 09636-20010

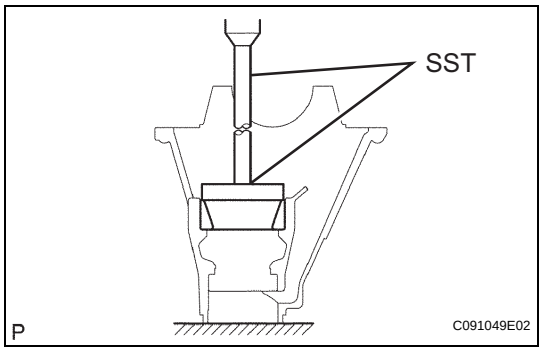


6. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using a brass bar and a hammer, install the oil storage ring.

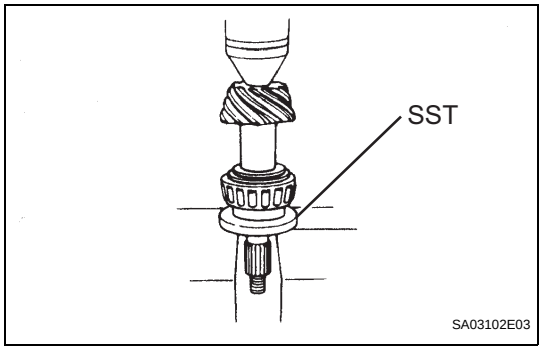
(b) Using SST and a press, install the tapered roller bearing onto the carrier.

SST 09316-60011 (09316-00011, 09316-00021)



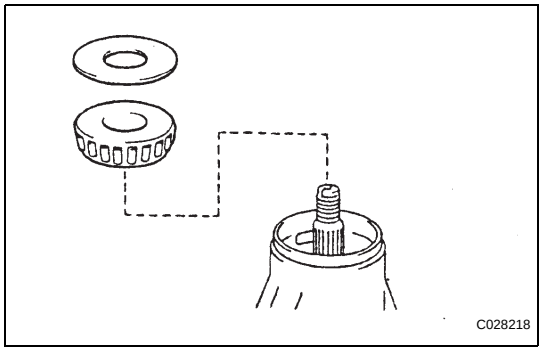
7. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST and a press, install the tapered roller bearing onto the carrier.
SST 09316-60011 (09316-00041, 09316-00011)



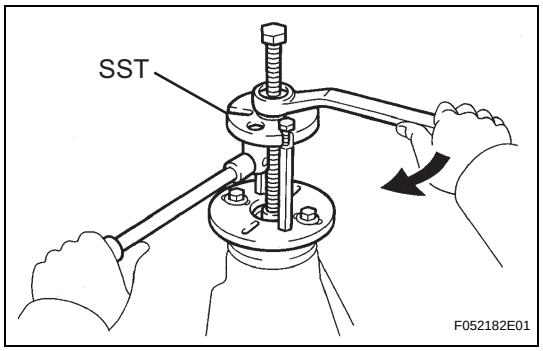
8. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

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

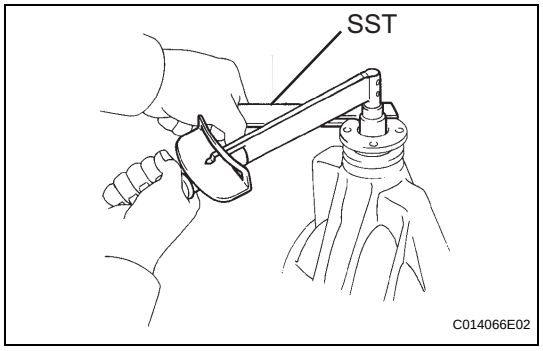


9. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

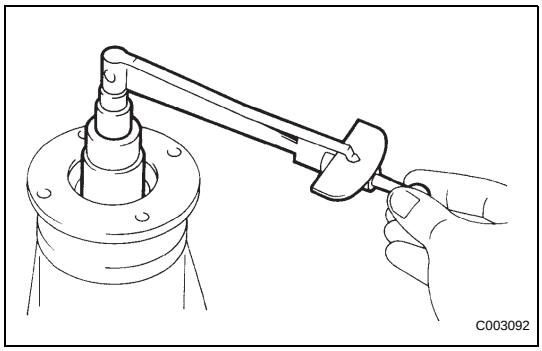
(a) Install the drive pinion, rear drive pinion tapered roller bearing and rear differential drive oil slinger.
HINT:
Assemble the spacer and oil seal after adjusting the gear contact pattern.



(b) Using SST, install the drive pinion companion flange.
(c) Coat the threads of the nut with hypoid gear oil LSD.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)



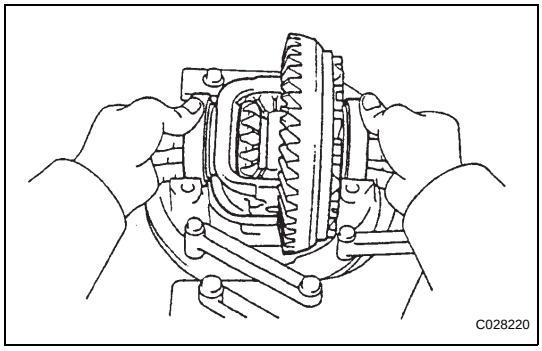
(d) Using SST to hold the drive pinion companion flange, tighten the nut.
Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less
SST 09330-00021
NOTICE:
- **As there is no spacer, tighten the nut a little at a time, being careful not to overtighten it.**
- **Apply hypoid gear oil to the nut.**



(e) Using a torque wrench, measure the preload.
Preload (at starting)

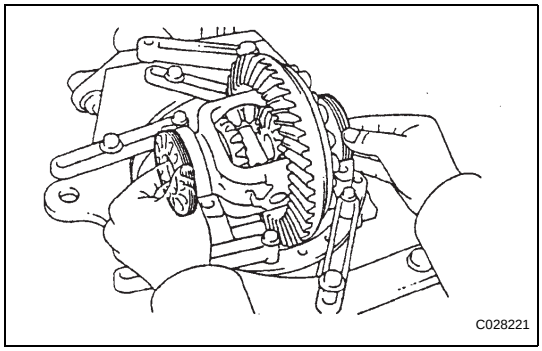
Bearing	Standard
New	1.05 to 1.64 N*m (10.7 to 16.7 kgf*cm, 9.3 to 14.5 in.*lbf)
Reused	0.56 to 0.85 N*m (5.7 to 8.7 kgf*cm, 4.9 to 7.5 in.*lbf)

NOTICE:
For a more accurate measurement, rotate the bearing forward and backward several times before measuring.



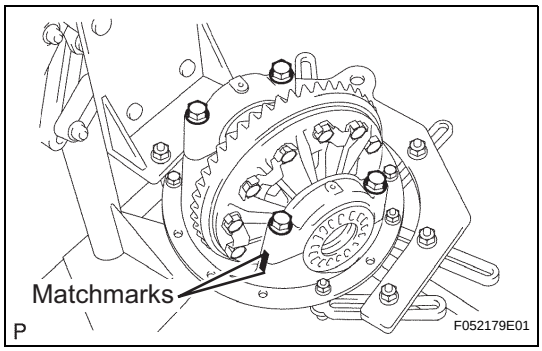
10. INSTALL DIFFERENTIAL CASE ASSEMBLY

(a) Place the 2 bearing outer races on their corresponding bearings.
HINT:
Make sure the right and left races are not interchanged.



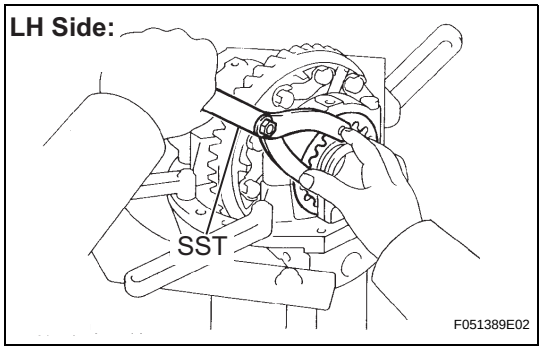
11. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT

(a) Install the 2 adjusting nuts into the carrier, making sure the nuts are threaded properly.

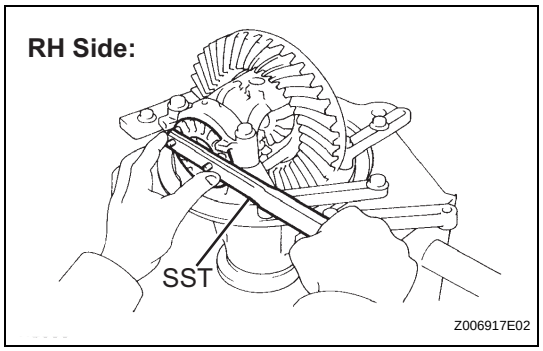


12. INSPECT AND ADJUST DIFFERENTIAL RING GEAR AND DIFFERENTIAL DRIVE PINION BACKLASH

(a) Align the matchmarks on the cap and carrier.
(b) Install the right and left bearing caps with the 4 bolts.
Torque: 85 N*m (870 kgf*cm, 63 ft.*lbf)
HINT:
If the bearing cap does not fit tightly onto the carrier, the adjusting nuts are not threaded properly. Reinstall the adjusting nuts if necessary.

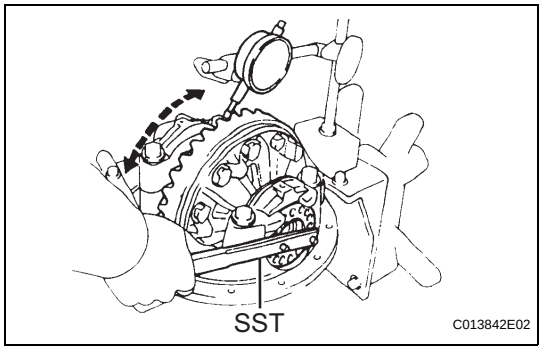


(c) Tighten the 4 bearing cap bolts to the specified torque, then loosen them to the point where the adjusting nuts can be turned by SST.
Torque: 85 N*m (870 kgf*cm, 63 ft.*lbf)
(d) Using the SST, tighten the adjusting nut on the ring gear side until the ring has a backlash of about 0.2 mm (0.008 in.).
SST 09960-10010 (09962-01000, 09963-00700)

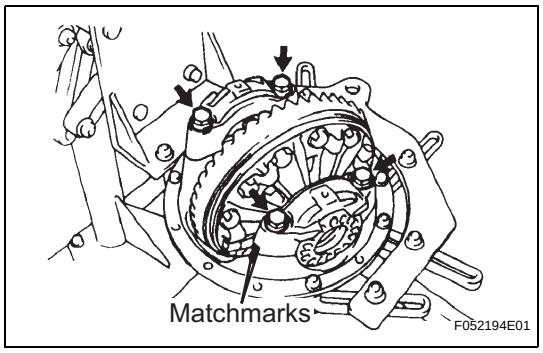


(e) While turning the ring gear, use the SST to fully tighten the adjusting nut on the drive pinion side. After the bearings have settled, loosen the adjusting nut on the drive pinion side.

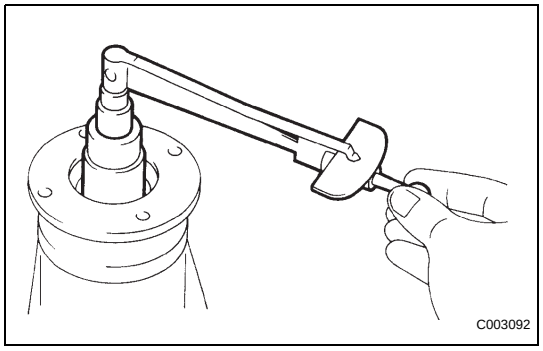
(f) Using SST, torque the adjusting nut 1 to 1.5 notches from the 0 preload position.
SST 09504-00011



(g) Using a dial indicator, adjust the ring gear backlash until it is within the specification.
Backlash:
0.13 to 0.18 mm (0.0051 to 0.0071 in.)
HINT:
- The backlash is adjusted by turning the left and right adjusting nuts an equal amount. For example, loosen the nut on the right side one notch and loosen the nut on the left side one notch.
- Perform the measurement at 3 or more positions around the circumference of the ring gear.

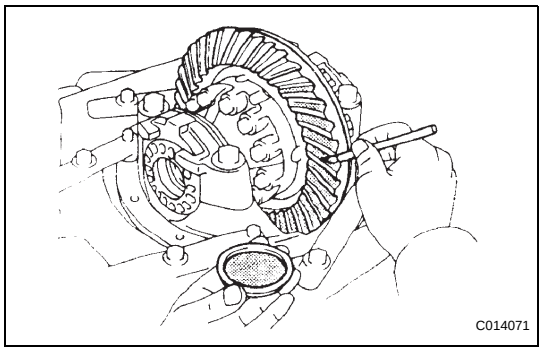


(h) Torque the bearing cap bolts.
Torque: 85 N*m (870 kgf*cm, 63 ft.*lbf)



13. INSPECT TOTAL PRELOAD

(a) 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 0.39 to 0.59 N*m (4.0 to 6.0 kgf*cm, 3.5 to 5.2 in.*lbf)
If necessary, disassemble and inspect the differential.



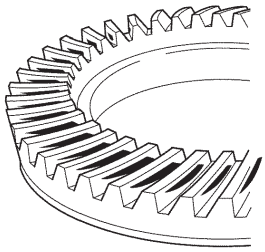
14. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

(a) Coat 3 or 4 teeth at 3 different positions on the ring gear with prussian blue.

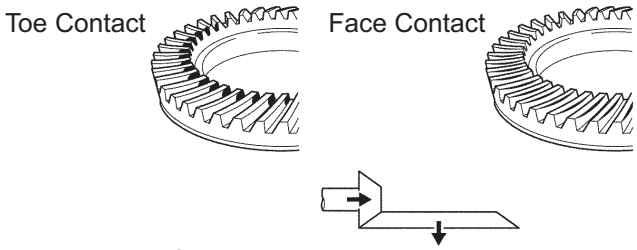
(b) Hold the companion flange firmly and rotate the ring gear in both directions.

(c) Inspect the tooth contact pattern.

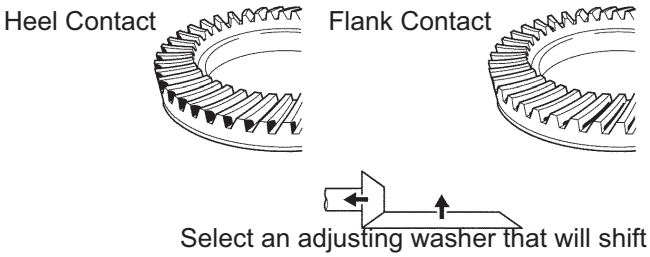
Driver Side:



Proper Contact

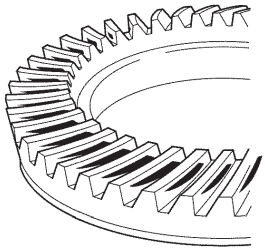


Select an adjusting washer that will bring the drive pinion closer to the ring gear.

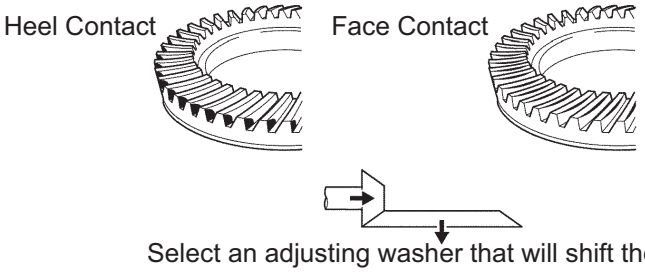


Select an adjusting washer that will shift the drive pinion away from the ring gear.

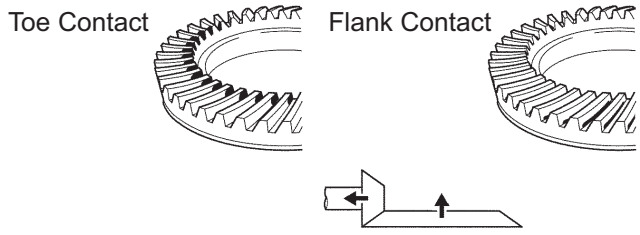
Coast Side:



Proper Contact



Select an adjusting washer that will shift the drive pinion closer to the ring gear.



Select an adjusting washer that will bring the drive pinion away from the ring gear.

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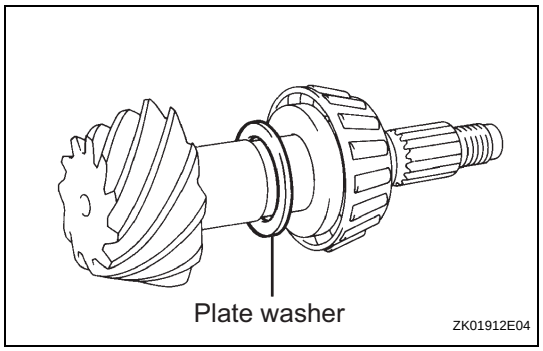
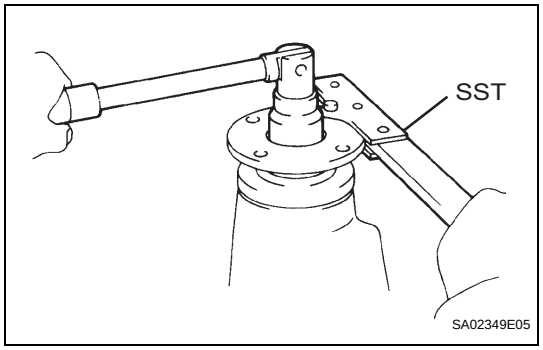


If the teeth are not engaged properly, use the following chart to select an appropriate washer for correction.

Plate Washer Thickness

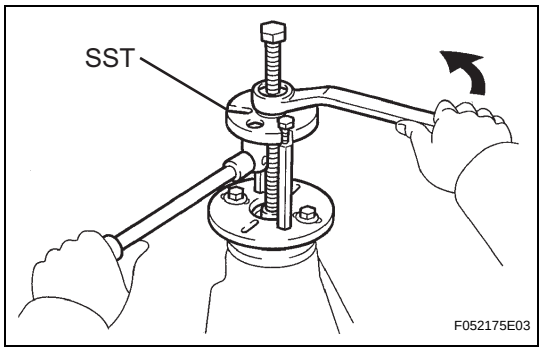
Thickness mm (in.)	Thickness mm (in.)
1.70 (0.0669)	2.03 (0.0799)
1.73 (0.0681)	2.06 (0.0811)
1.76 (0.0693)	2.09 (0.0823)
1.79 (0.0705)	2.12 (0.0835)
1.82 (0.0717)	2.15 (0.0847)
1.85 (0.0728)	2.18 (0.0853)
1.88 (0.0740)	2.21 (0.0870)
1.91 (0.0752)	2.24 (0.0882)
1.94 (0.0764)	2.27 (0.0894)
1.97 (0.0776)	2.30 (0.0906)
2.00 (0.0787)	2.33 (0.0917)



15. REMOVE REAR DRIVE PINION NUT

(a) Using SST to hold the drive pinion companion flange, remove the nut.

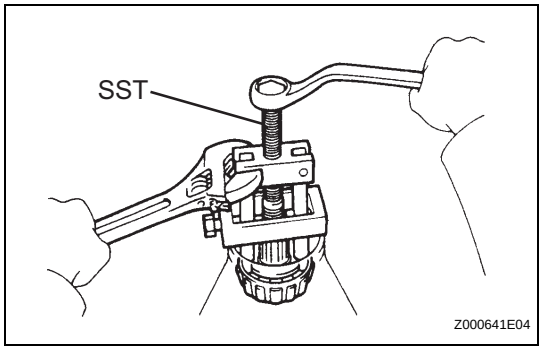
SST 09330-00021



16. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

(a) Using SST, remove the drive pinion companion flange.

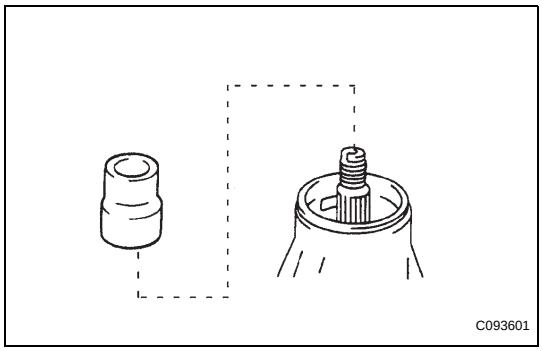
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)



17. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

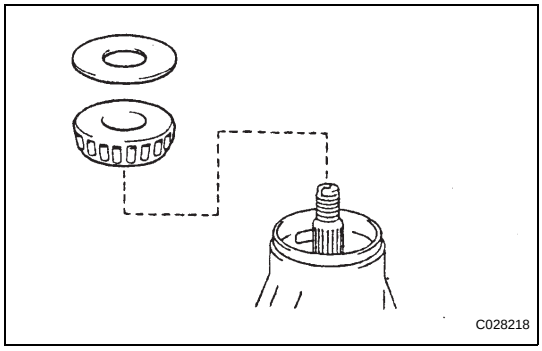
(a) Using SST, remove the drive pinion tapered roller bearing from the drive pinion.

SST 09556-22010



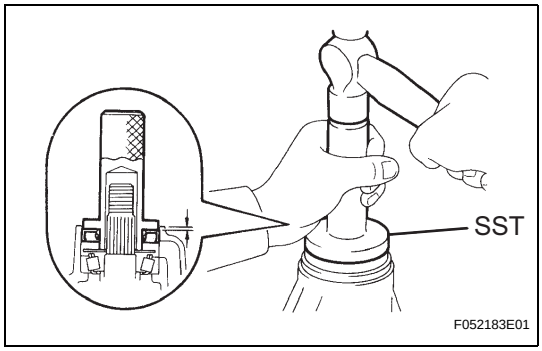
18. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

(a) Install a new bearing spacer onto the drive pinion.



19. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Install the drive pinion, rear drive pinion taper roller bearing and rear differential drive oil slinger.



20. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

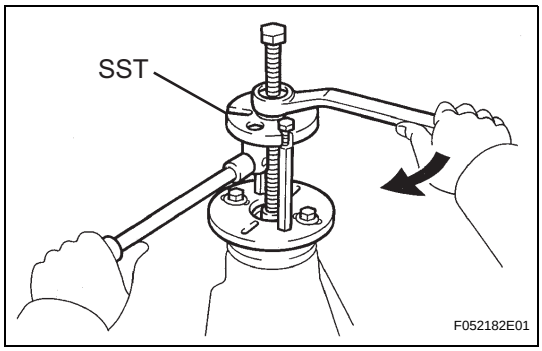
(a) Apply MP grease to the oil seal lip.

(b) Using SST and a hammer, install a new carrier oil seal.

SST 09554-30011

Oil seal drive in depth:

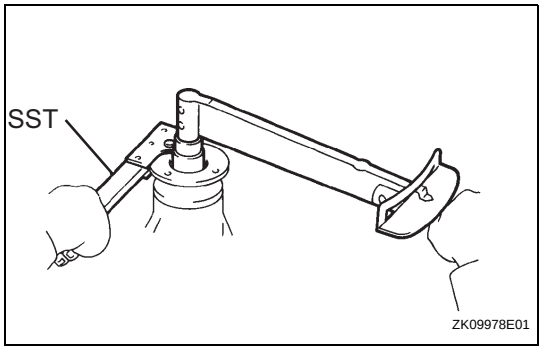
0.55 to 1.45 mm (0.021 to 0.057 in.)



21. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

(a) Using SST, install the drive pinion companion flange onto the drive pinion.

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

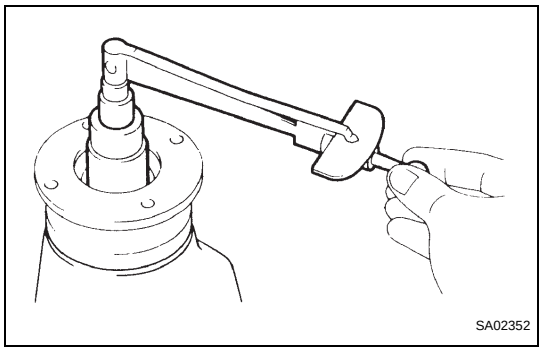


(b) Coat the threads of a new nut with hypoid gear oil LSD.

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

SST 09330-00021

Torque: 370 N*m (3,770 kgf*cm, 273 ft.*lbf) or less

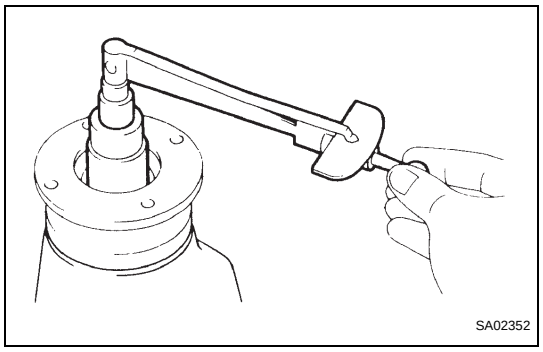


22. INSPECT DRIVE PINION PRELOAD

(a) Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.
Preload (at starting)

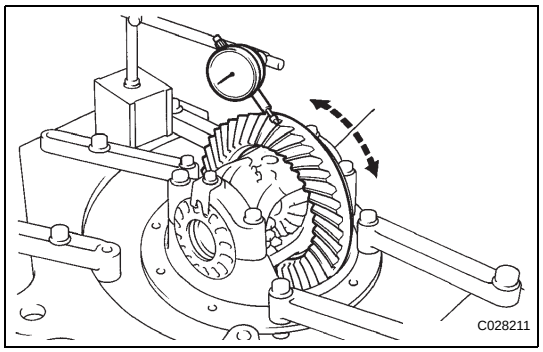
Bearing	Standard
New	1.05 to 1.64 N*m (10.7 to 16.7 kgf*cm, 9.3 to 14.5 in.*lbf)
Used	0.56 to 0.85 N*m (5.7 to 8.7 kgf*cm, 4.9 to 7.5 in.*lbf)

If the preload is greater than the specification, replace the bearing spacer.
If the preload is less than the specification, retighten the nut to 13 N*m (130 kgf*cm, 9 ft*lbf) of torque at a time until the specified preload is reached.
Torque: 370 N*m (3,770 kgf*cm, 27 ft.*lbf) or less
If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload adjusting procedure.
HINT:
Do not loosen the pinion nut to reduce the preload.



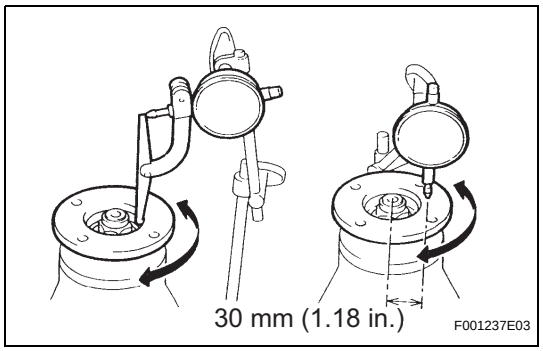
23. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, measure the preload.
Total preload (at starting):
Drive pinion preload plus 0.39 to 0.59 N*m (4.0 to 6.0 kgf*cm, 3.5 to 5.2 in.*lbf)
If necessary, disassemble and inspect the differential.



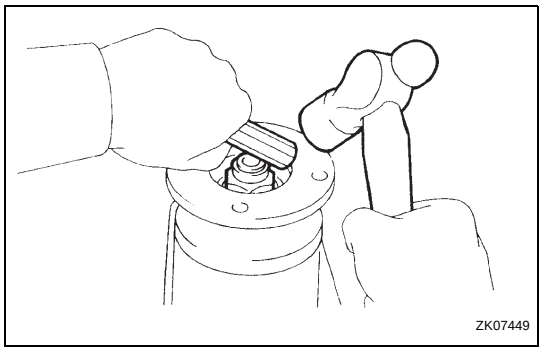
24. INSPECT DIFFERENTIAL RING GEAR BACKLASH

(a) Using a dial indicator, check the backlash of the ring gear.
Backlash:
0.13 to 0.18 mm (0.0051 to 0.0071 in.)
If the backlash is not within the specification, adjust or repair the side bearing preload as necessary.
HINT:
Perform the measurements at 3 or more positions around the circumference of the ring gear.



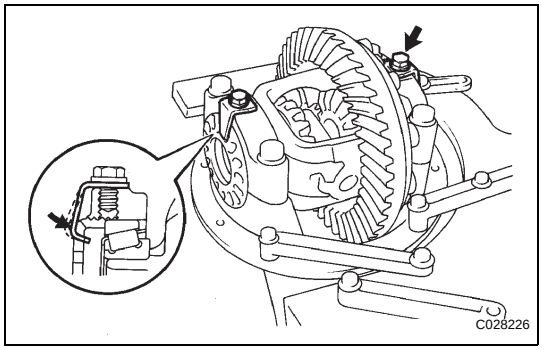
25. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

(a) Using a dial indicator, measure the runout of the drive pinion companion flange vertically and horizontally.
Maximum runout:
Vertical runout: 0.10 mm (0.0039 in.)
Lateral runout: 0.10 mm (0.0039 in.)
If the runouts are not within the specifications, replace the companion flange.



26. INSTALL REAR DRIVE PINION NUT

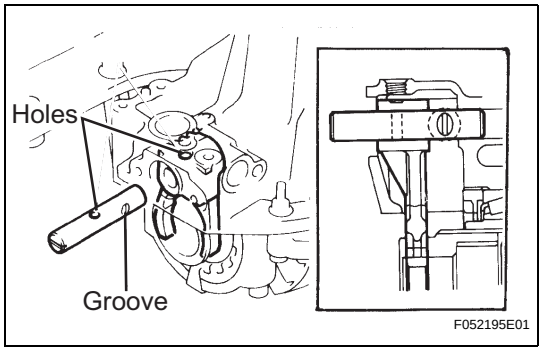
(a) Using a chisel and hammer, stake the drive pinion nut.



27. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK

(a) Install 2 new adjusting nut locks onto the bearing caps with the 2 bolts.
Torque: 13 N*m (129 kgf*cm, 9 ft.*lbf)

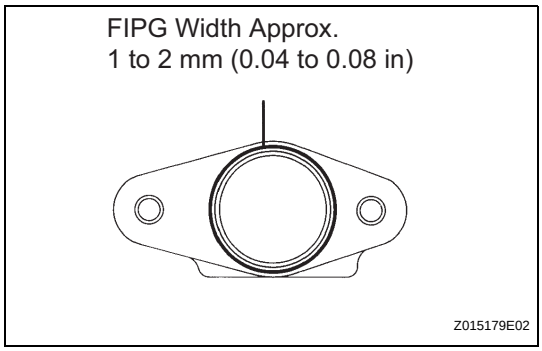
(b) After tightening the bolts, bend the nut locks.



28. INSTALL REAR DIFFERENTIAL LOCK SHIFT FORK

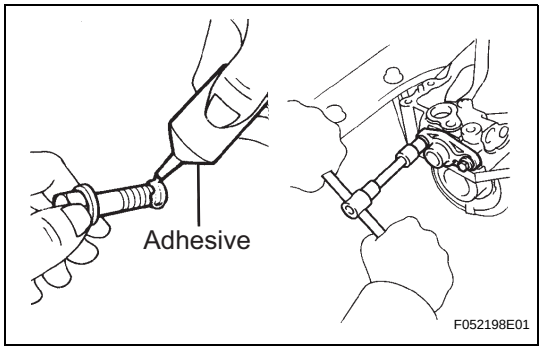
(a) Apply MP grease onto the outer circuit of the shaft.

(b) Install the fork shaft to align the hole of the shift fork with that of the shift fork shaft.



(c) Remove any FIPG material and be careful not to drop the oil shaft retainer.

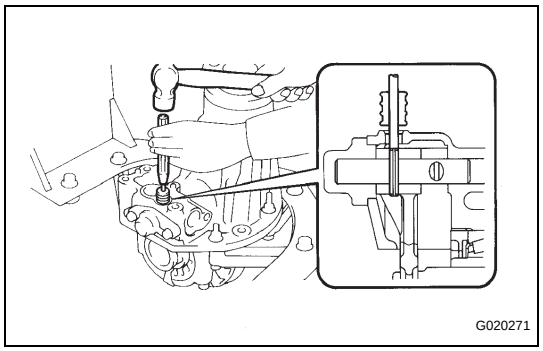
(d) Apply FIPG to the carrier, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or the equivalent
HINT:
Install the shaft retainer within 10 minutes of applying FIPG.



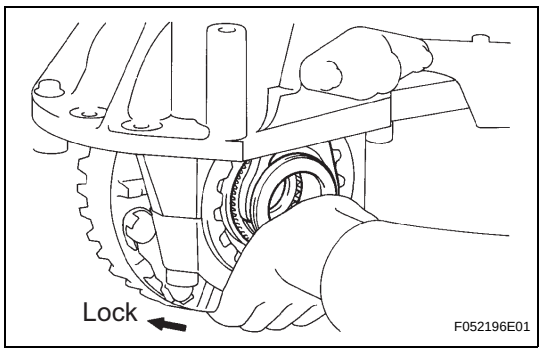
(e) Clean the threads of the bolts and retainer bolts holes with toluene or trichorethyene.

(f) Apply adhesive to 2 or 3 threads of each mount bolt end.
Adhesive:
Part No. 08833-00080, THREE BOND 1344, LOCTITE: 242 or the equivalent

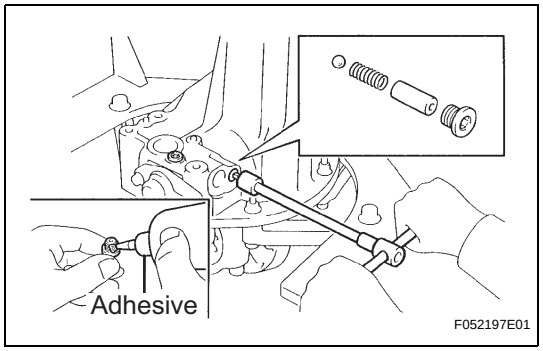
(g) Tighten the shaft retainer with the 2 bolts.
Torque: 24 N*m (240 kgf*cm, 17 ft.*lbf)



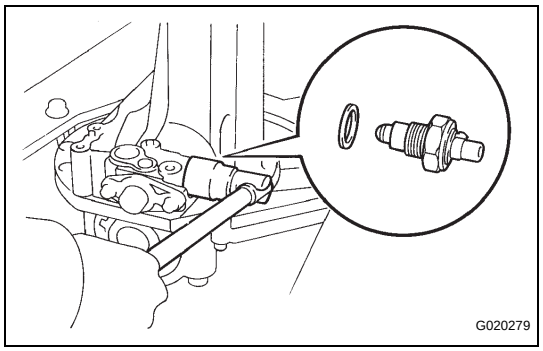
(h) Using a 5 mm pin punch and hammer, install the slotted spring pin into the shift fork.
Torque: 22 N*m (220 kgf*cm, 16 ft.*lbf)



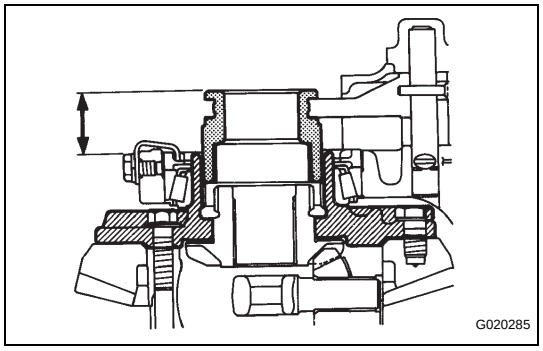
(i) Push the differential lock sleeve in deeply and hold it in position.



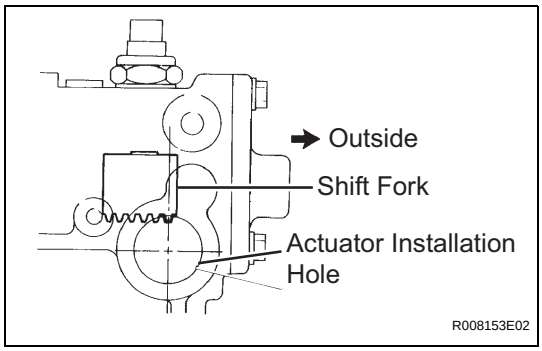
(j) Install the ball, spring and spring seat.
(k) Clean the threads of 2 plugs and plug holes with toluene or trichlorethylene.
Adhesive:
Part No. 08833-00080, THREE BOND 1344, LOCTITE: 242 or the equivalent
(l) Using a 6 mm hexagon wrench, install and tighten the screw plugs.
Torque: 22 N*m (220 kgf*cm, 16 ft.*lbf)



29. INSTALL NO.1 TRANSFER INDICATOR SWITCH
(a) Install the indicator switch with a new gasket.
Torque: 40 N*m (410 kgf*cm, 30 ft.*lbf)

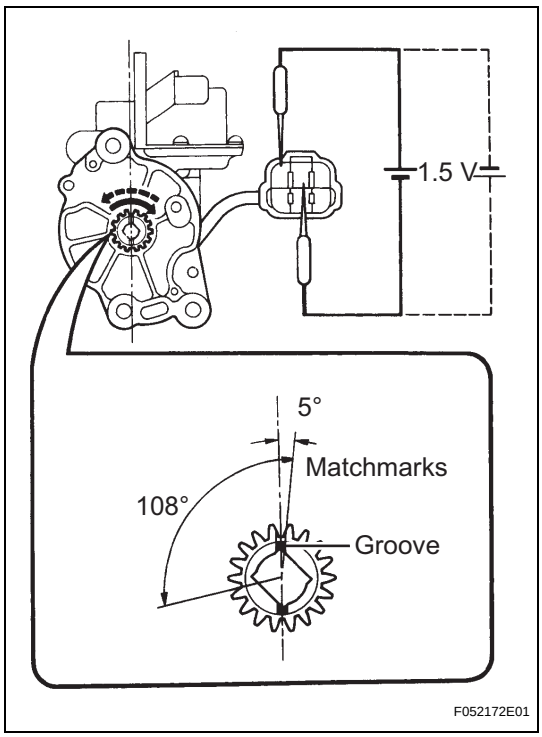


30. INSPECT REAR DIFFERENTIAL LOCK SLEEVE
(a) Measure the distances between the sleeve and tip of the differential case when the differential is free and locked, respectively.
Standard distance:
LOCKED: 17.44 to 18.86 mm (0.6866 to 0.7425 in.)
FREE: 32.40 to 33.90 mm (1.2756 to 1.3346 in.)



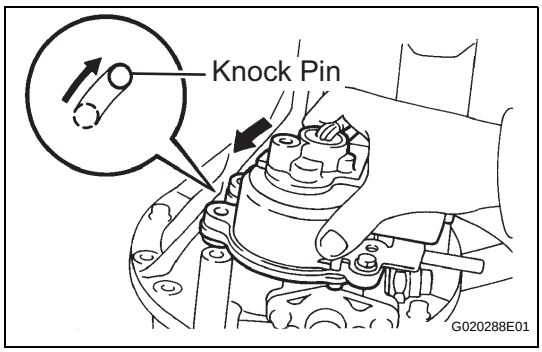
31. INSTALL DIFFERENTIAL LOCK SHIFT ACTUATOR

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



(b) Ensure that the matchmarks on the pinion of the actuator are in the range between 0 and 5 degrees clockwise above the center line of the actuator.
NOTICE:
- **If the matchmarks are not within this range, rotate the pinion.**
- **Do not supply the battery positive voltage directly the between the terminals.**
- **If the matchmarks come to the limit of rotation, do not apply the electric current.**

(c) Install a new O-ring onto the actuator.
(d) Apply a light coat of gear oil to the O-ring.
(e) Apply MP grease to the gear part.



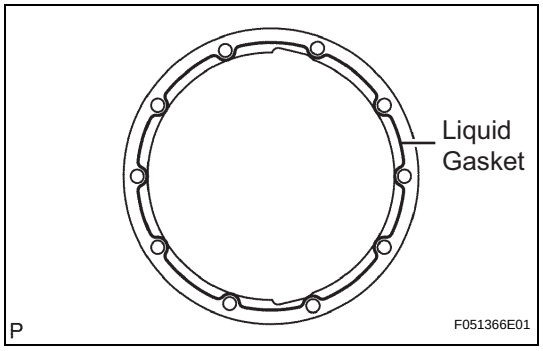
(f) Ensure that the outermost rack tooth of the shift fork fits the matchmarks on the pinion of the actuator.
(g) Install the actuator so that the long hole on the actuator side fits into the knock pin on the carrier side.
HINT:
Do not damage the O-ring of the actuator.
(h) Align the actuator with the long hole and rotate the actuator counterclockwise when the knock pin is set in the left-hand side.
(i) Install and tighten the bolts.
Torque: 27 N*m (270 kgf*cm, 20 ft.*lbf)

INSTALLATION

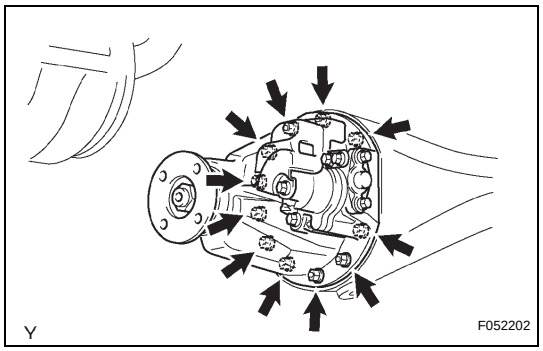
1. INSTALL REAR DIFFERENTIAL CARRIER ASSEMBLY

(a) Remove any dust and oil from the differential carrier assembly and the contact surfaces of the axle housing.

(b) Apply liquid gasket to both sides of a new gasket.
NOTICE:
Do not apply the liquid gasket to the stud bolt.

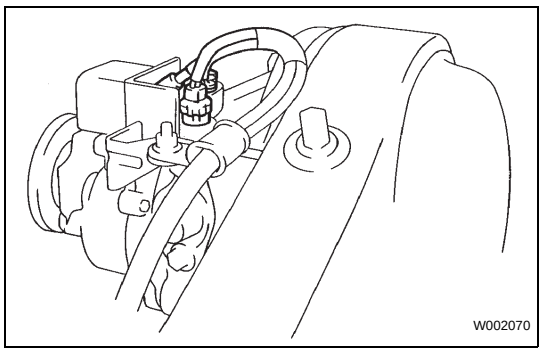


(c) Install a new gasket and the differential carrier assembly with the 11 nuts and 11 washers.
Torque: 25 N*m (255 kgf*cm, 18 ft.*lbf)



(d) Connect the differential lock actuator connector.

(e) Connect the rear differential lock actuator breather hose to the differential actuator assembly.



2. INSTALL REAR AXLE SHAFT LH OIL SEAL (See page AH-22)

3. INSTALL REAR AXLE SHAFT RH OIL SEAL
HINT:
Use the same procedure as for the LH side.

4. INSTALL REAR AXLE SHAFT LH (See page AH-22)

5. INSTALL REAR AXLE SHAFT RH
HINT:
Use the same procedure as for the LH side.

6. INSPECT REAR AXLE SHAFT BEARING (See page AH-2)

7. INSTALL REAR SPEED SENSOR LH (See page BC-198)

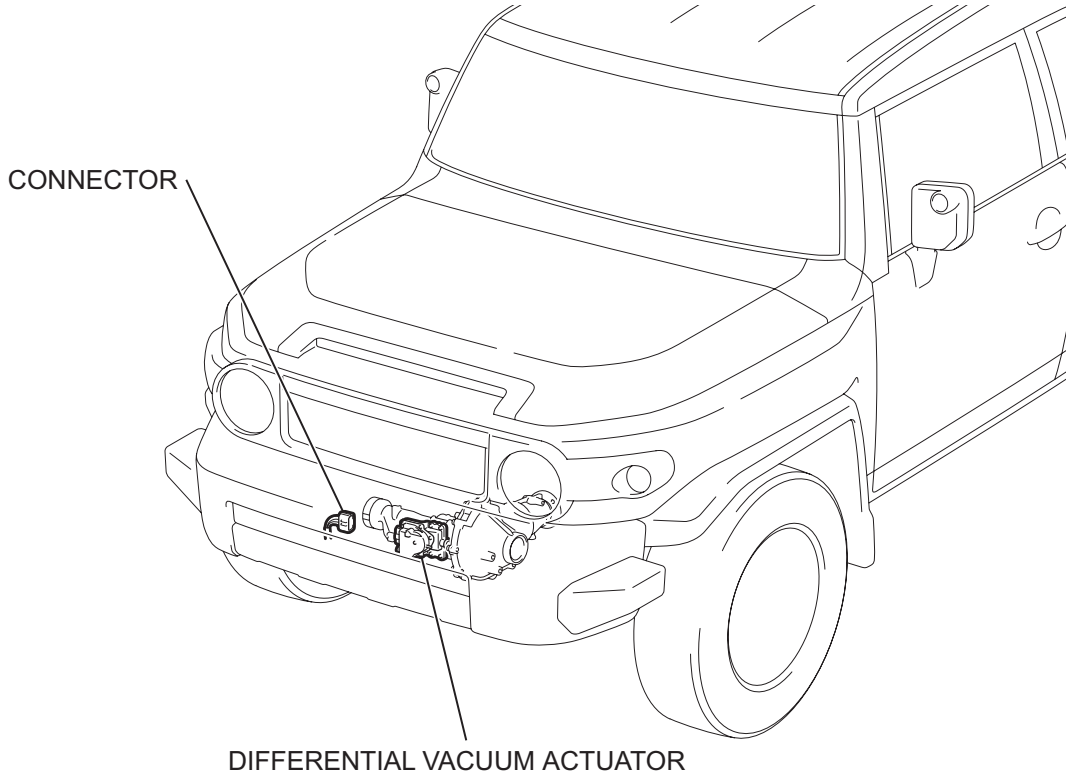
8. INSTALL REAR SPEED SENSOR RH
HINT:
Use the same procedure as for the LH side.

9. INSTALL PARKING BRAKE CABLE LH (See page AH-23)

10. **INSTALL PARKING BRAKE CABLE RH**
    HINT:
    Use the same procedure as for the LH side.
11. **APPLY HIGH TEMPERATURE GREASE (See page PB-19)**
12. **INSTALL PARKING BRAKE SHOE (See page PB-19)**
13. **INSTALL PARKING BRAKE SHOE STRUT (See page PB-19)**
14. **INSTALL PARKING BRAKE SHOE RETURN TENSION SPRING (See page PB-19)**
15. **CHECK PARKING BRAKE INSTALLATION (See page PB-20)**
16. **INSTALL REAR DISC (See page PB-20)**
17. **ADJUST PARKING BRAKE SHOE CLEARANCE (See page PB-20)**
18. **INSTALL REAR DISC BRAKE CALIPER ASSEMBLY LH (See page AH-23)**
19. **INSTALL REAR DISC BRAKE CALIPER ASSEMBLY RH**
    HINT:
    Use the same procedure as for the LH side.
20. **INSTALL PROPELLER SHAFT ASSEMBLY (for 2WD) (See page PR-14)**
21. **INSTALL PROPELLER SHAFT ASSEMBLY (for 4WD) (See page PR-14)**
22. **INSTALL REAR WHEEL**
    Torque: 112 N*m (1,137 kgf*cm, 82 ft.*lbf)
23. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
    Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
24. **INSPECT DIFFERENTIAL OIL (See page DF-3)**
25. **CHECK FOR DIFFERENTIAL OIL LEAKAGE**
26. **FILL RESERVOIR WITH BRAKE FLUID (See page BR-5)**
27. **BLEED BRAKE LINE (See page BR-5)**
28. **CHECK FLUID LEVEL IN RESERVOIR (See page BR-7)**
29. **CHECK FOR BRAKE FLUID LEAKAGE**
30. **INSPECT PARKING BRAKE LEVER TRAVEL (See page PB-4)**
31. **ADJUST PARKING BRAKE LEVER TRAVEL (See page PB-4)**
32. **CHECK VSC SENSOR SIGNAL**
    (See page BC-28)

DIFFERENTIAL VACUUM ACTUATOR

PARTS LOCATION



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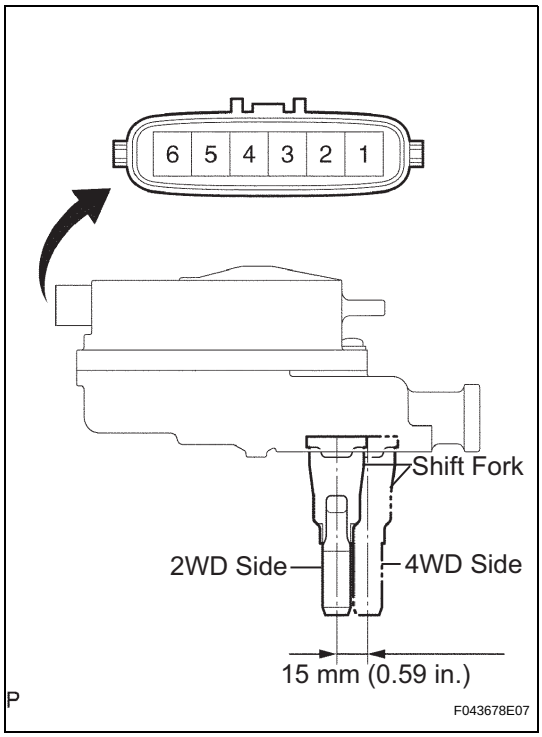


INSPECTION

1. INSPECT DIFFERENTIAL VACUUM ACTUATOR ASSEMBLY

(a) Measure the resistance between terminals 1 and 2.
Standard resistance:
0.1 to 100 Ω

(b) Measure the resistance between terminal 1 or 2 and body ground.
Standard resistance:
5 MΩ or more
If the result is not as specified, replace the differential vacuum actuator.

(c) Check the actuator using one of the following methods.

(1) Measure the resistance of the actuator.

Standard resistance

Tester Connection	Measurement Condition	Specified Condition
3 to 4	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 2	Below 1 Ω
3 to 4	Battery positive (+) → Terminal 2 Battery negative (-) → Terminal 1	10 kΩ or more
4 to 5	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 2	Below 1 Ω
4 to 5	Battery positive (+) → Terminal 2 Battery negative (-) → Terminal 1	10 kΩ or more
4 to 6	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 2	Below 1 Ω
4 to 6	Battery positive (+) → Terminal 2 Battery negative (-) → Terminal 1	10 kΩ or more

If the result is not as specified, replace the actuator.

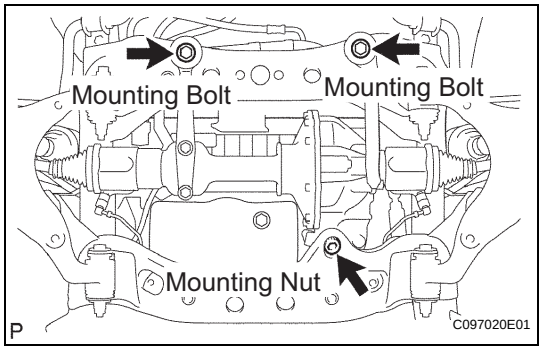
(2) Check the actuator status.
Actuator operation

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 2	2WD → 4WD
Battery positive (+) → Terminal 2 Battery negative (-) → Terminal 1	4WD → 2WD

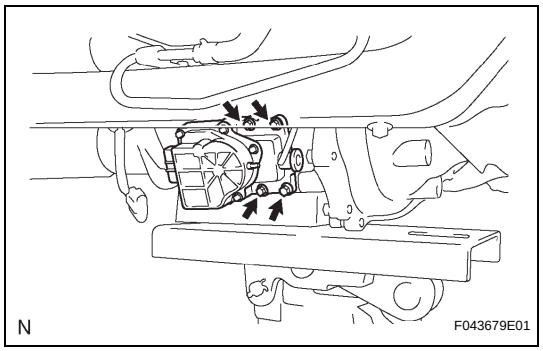
If the result is not as specified, replace the actuator.

REPLACEMENT

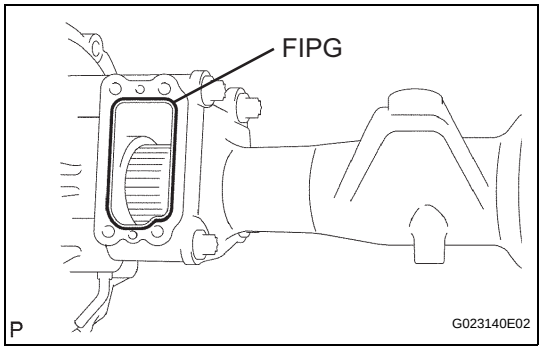
1. **REMOVE FRONT SIDE MEMBER TO FRONT SUSPENSION CROSSMEMBER BRACE**
2. **REMOVE NO. 1 ENGINE UNDER COVER**
3. **REMOVE REAR ENGINE UNDER COVER ASSEMBLY**
4. **DRAIN DIFFERENTIAL OIL**
5. **REMOVE DIFFERENTIAL VACUUM ACTUATOR ASSEMBLY**
   (a) Remove the bolt and disconnect the differential breather tube bracket.
   (b) Support the differential with a jack.
   (c) Remove differential mounting nut No. 1.
   (d) Remove the 2 mounting bolts and 2 nuts.
   (e) Disconnect the actuator hose and connector.
   (f) Lower the jack.

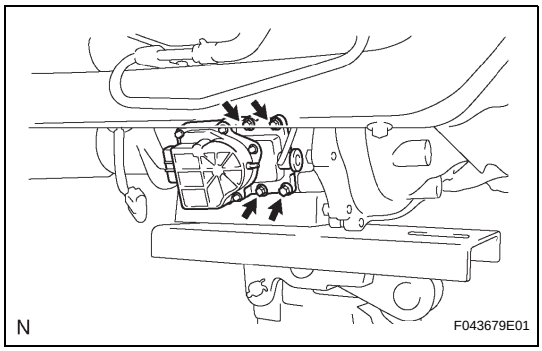


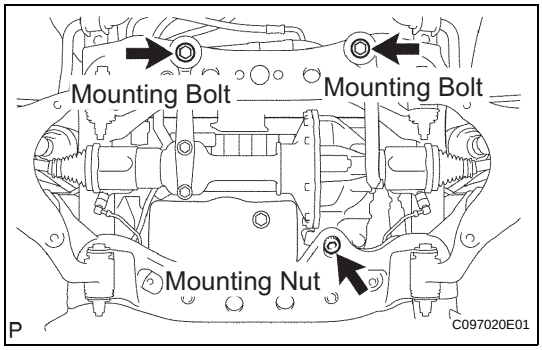
   (g) Remove the 4 bolts and vacuum actuator.



6. **INSTALL DIFFERENTIAL VACUUM ACTUATOR ASSEMBLY**
   (a) Remove any old FIPG material.
   NOTICE:
   Be careful not to drop oil on the contact surfaces of the actuator and clutch case.
   (b) Using gasoline or alcohol, clean any residual FIPG material on the contact surfaces.
   (c) Apply FIPG to the differential tube, as shown in the illustration.
   FIPG:
   Part No. 08826-00090, THREE BOND 1281 or the equivalent
   HINT:
   Install the actuator within 10 minutes of applying FIPG.







(d) Clean the threads of the 4 bolts and retainer bolt holes with toluene or trichloroethylene.

(e) Apply adhesive to 2 or 3 threads at the tip of the bolt.
Adhesive:
Part No. 0883-00070, THREE BOND 1281 or the equivalent

(f) Install the differential vacuum actuator onto the differential tube with the 4 bolts.
Torque: 21 N*m (210 kgf*cm, 15 ft.*lbf)

(g) Connect the actuator hose and connector.

(h) Support the differential with a jack.

(i) Install the 2 front mounting bolts and 2 nuts.
Torque: 137 N*m (1,400 kgf*cm, 101 ft.*lbf)

(j) Install differential mounting nut No. 1.
Torque: 87 N*m (887 kgf*cm, 64 ft.*lbf)

(k) Install the differential breather tube bracket with the bolt.
Torque: 13 N*m (133 kgf*cm, 10 ft.*lbf)

7. REFILL DIFFERENTIAL OIL

(a) Refill differential oil (see page DF-3).

8. CHECK FOR DIFFERENTIAL OIL LEAKAGE

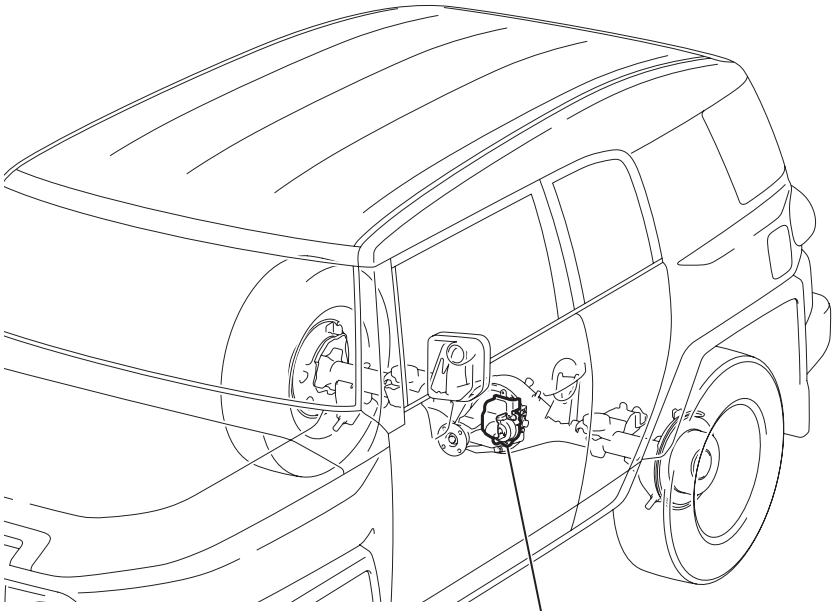
9. INSTALL REAR ENGINE UNDER COVER ASSEMBLY

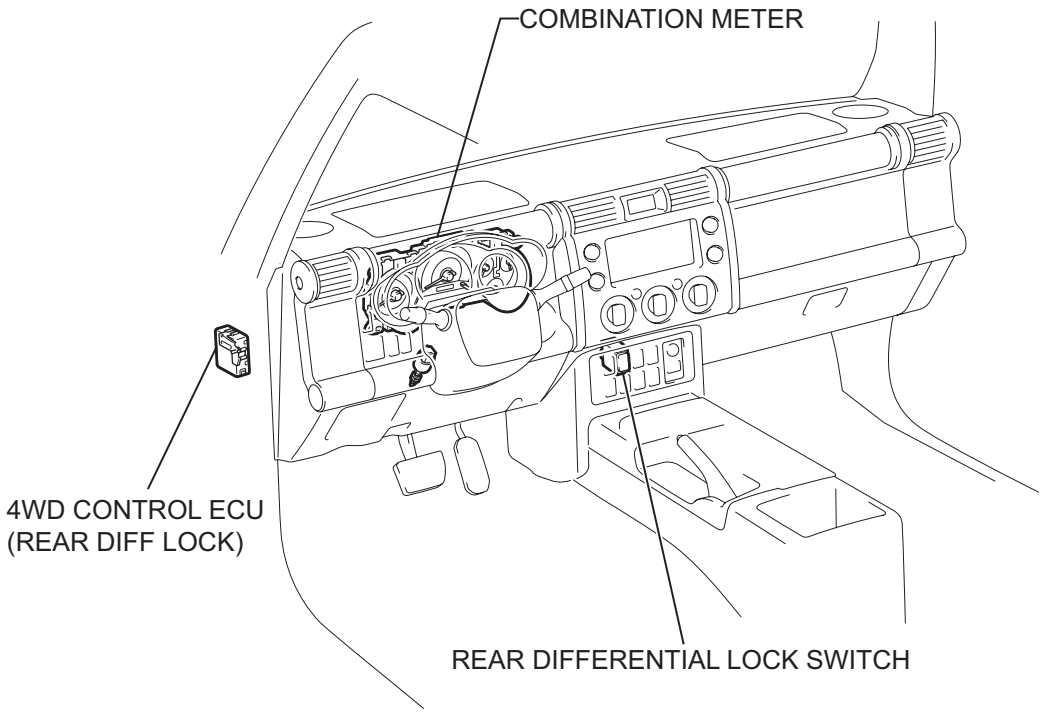
10. INSTALL NO. 1 ENGINE UNDER COVER

11. INSTALL FRONT SIDE MEMBER TO FRONT SUSPENSION CROSSMEMBER BRACE

DIFFERENTIAL LOCK SYSTEM

PARTS LOCATION





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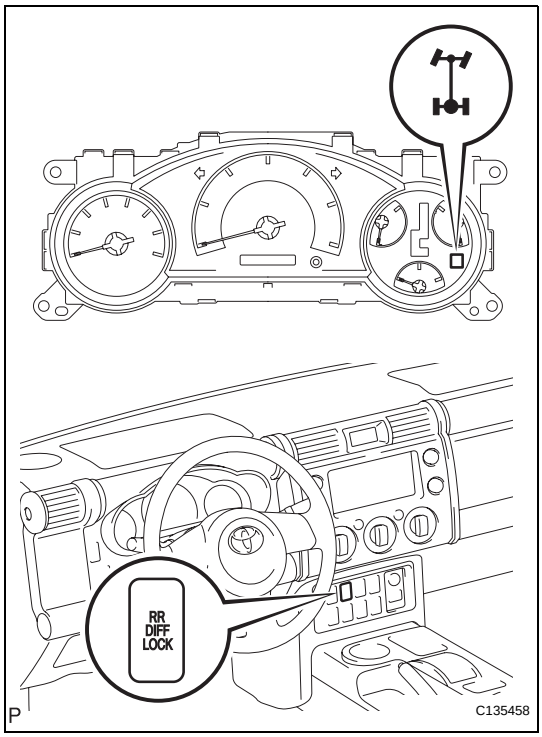
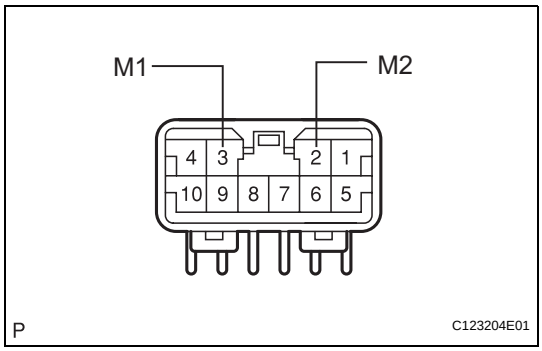


INSPECTION

1. INSPECT DIFFERENTIAL LOCK SYSTEM

(a) Inspect the indicator light.
  (1) Check that the indicator light lights up for approximately 1 second when the ignition switch is turned ON.

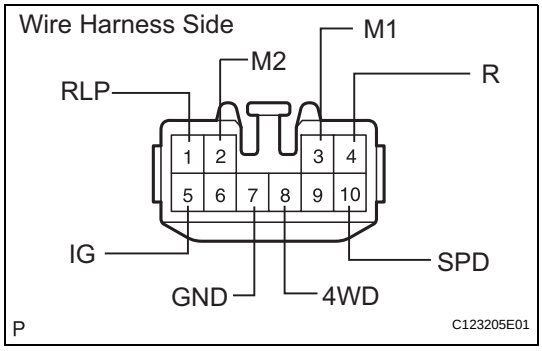
(b) Inspect the differential lock operation.
  (1) Jack up the vehicle then start the engine.
  (2) Shift the transfer shift lever to L position.
  (3) When the differential lock control switch is set to the ON position, the indicator light is pushed on. Differential lock is applied to the rear wheel at this time.
  HINT:
  If the gears of the differential lock system are not engaged, the indicator light remains blinking, so rotate the tires to engage the gear.
  (4) When the differential lock control switch is in the OFF position, the indicator light goes off. The rear differential lock is released at this time.



  (5) Check the voltage between the terminals of the four wheel drive control ECU when switching the differential control ON, with the speedometer registering approximately 5 mph (8 km/h) or more.
  Standard voltage

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

  (6) Return the differential lock control switch to OFF.
  (7) Stop the engine and lower the vehicle.



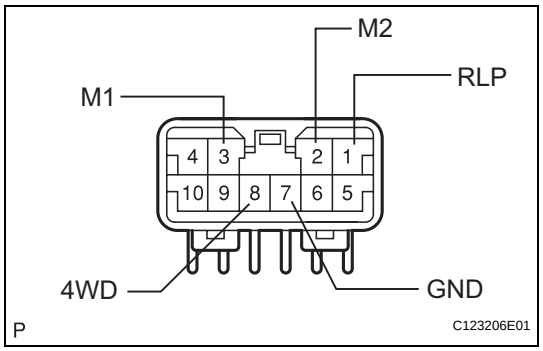
2. CHECK WIRE HARNESS AND CONNECTOR

(a) Inspect the system circuit with the connector disconnected.
  (1) Disconnect the connector from the four wheel drive control ECU and inspect the connector on the wire harness side, as shown in the table.
  Standard

Tester Connection	Trouble Part	Condition	Specified value
M1 - M2	Rear differential lock actuator	-	Less than 100 Ω
GND - Body ground	Body ground	-	Continuity
SPD - Body ground	Speed sensor	Vehicle moves slowly	1 pulse 40 cm (15.75 in.)
IG - Body ground	Differential fuse	Ignition switch ON	11 to 14 V

Tester Connection	Trouble Part	Condition	Specified value
RLP - Body ground	Rear differential lock indicator switch	Ignition switch ON with indicator light ON	Approx. 0 V
		Ignition switch ON with indicator light OFF	11 to 14 V
4WD - Body ground (4WD)	L position switch	Ignition switch ON with transfer shift lever except L	Approx. 0 V
		Ignition switch ON with transfer shift lever L	11 to 14 V
R - Body ground	Differential lock control switch	Ignition switch ON with differential lock control switch ON	11 to 14 V
		Ignition switch ON with differential lock control switch OFF	Approx. 0 V

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



3. CHECK FOUR WHEEL DRIVE CONTROL ECU

(a) Inspect the system circuit with the connector connected.
(1) Turn the ignition switch to the ON position.
(2) Shift the transfer shift lever to the L position.
(3) Using a voltmeter, measure the voltage when the differential lock control switch is in the position, as shown in the table.

Standard voltage

Tester connection	Switch position	Specified value
4WD - GND	-	0.5 V or less
RLP - GND	ON*	0.5 V or less
M1 - M2	OFF → ON	0.5 V or less → 11 to 14 V (approx. 1 sec.) → 0.5 V or less
M2 - M1	ON → OFF	

HINT:
*The rear differential should be locked mechanically.
If the circuit is not as specified, replace the ECU.

(4) Install the ECU in place.

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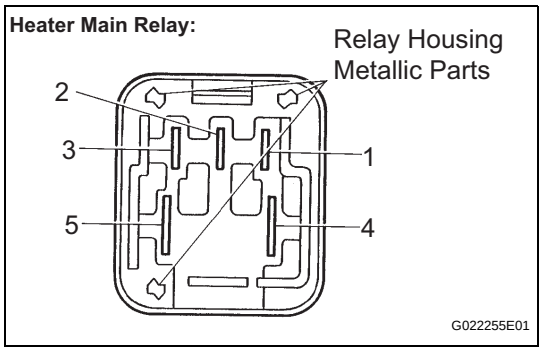


4. INSPECT DIFFERENTIAL LOCK COMPONENTS

(a) Inspect the relay operation.

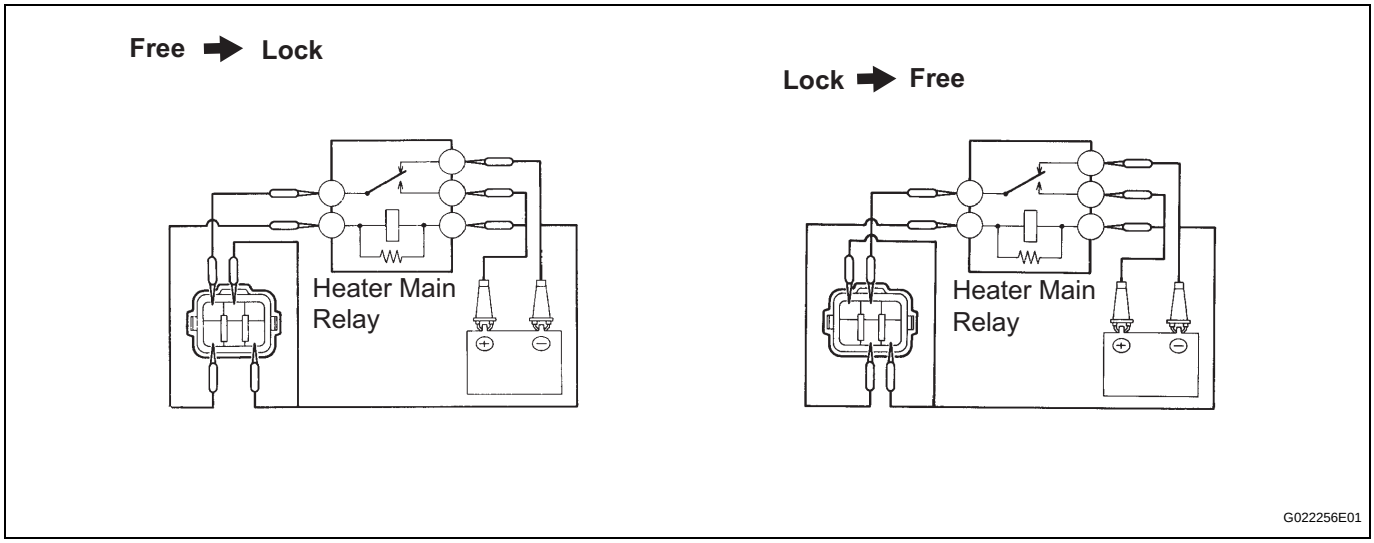
(1) Jack up the vehicle.

(2) Use a heater main relay and connect it, as shown below.

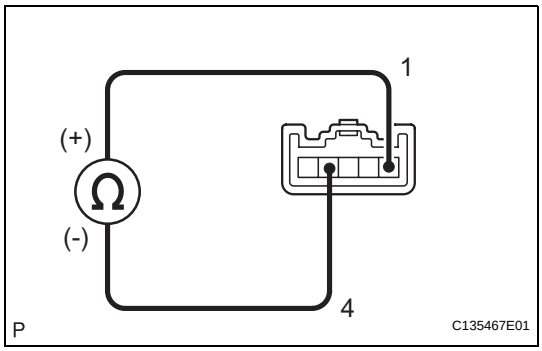
NOTICE:

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 the differential locks.



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



5. INSPECT REAR DIFFERENTIAL LOCK SWITCH

(a) Inspect the differential lock switch.

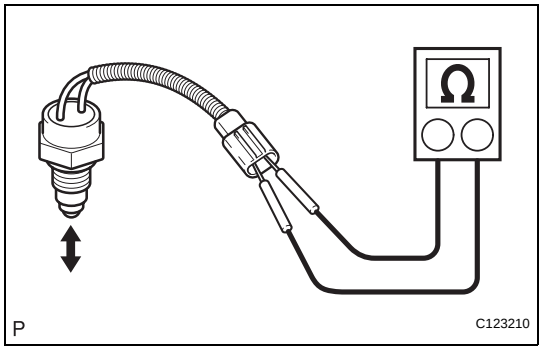
(1) Inspect the resistance between terminals 1and 4.

Standard resistance:

Below 1 Ω

HINT:

If the result is not as specified, replace the switch.



6. INSPECT REAR DIFFERENTIAL LOCK INDICATOR SWITCH

(a) Inspect the No. 4 transfer indicator switch.

(1) Measure the resistance between the terminals when the switch is pushed (differential connected position).

Standard resistance:

Below 1 Ω

(2) Measure the resistance between the terminals when switch is released (differential disconnected position).

Standard resistance:

10 kΩ or higher

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HINT:
If the operation is not as specified, replace the switch.

(b) Inspect the L position switch (see page TF-45).
(c) Inspect the vehicle speed sensor (see page BC-47).