

DIFFERENTIAL SYSTEM

PRECAUTION

NOTICE:

When disconnecting the negative (-) battery terminal, initialize the following systems after the terminal is is reconnected.

System Name	See procedure
Lighting System (Adaptive Front-Lighting System)	LI-17
Power Window Control System	WS-12
Power Back Door System	DL-8
Sliding Roof System	RF-22

1. Before disassembly, clean the outside of the rear differential assembly and remove any sand or mud to prevent it from entering the inside of the assembly during disassembly and reassembly.
2. When removing a connected part made of light alloy such as a rear differential carrier cover, tap it off with a plastic hammer. Do not attempt to pry it off with a screwdriver.
3. Always arrange disassembled parts in order and protect them from dust.
4. Before reassembly, thoroughly clean and dry each part or then apply hypoid gear oil LSD to it. Do not use alkaline cleaner for aluminum or rubber parts and ring gear set bolts. Also, do not clean rubber parts such as O-rings or oil seals with white gasoline.
5. Coat any sliding surface and rotating part with hypoid gear oil LSD.
6. When holding a component part in a vise, be sure to place an aluminum sheet under the part. Do not put it directly on the 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. Do not apply oil immediately after installing sealed parts. Leave it for at least an hour.
10. Damage on the surface of an oil seal, O-ring or gasket may cause oil leakage.
11. When press-fitting an oil seal, be careful not to damage the oil seal lip and outside periphery.
12. When replacing a bearing, replace the inner and outer races as a set.

PROBLEM SYMPTOMS TABLE

HINT:
Use the table below to help you find the cause of the problem.
The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

DIFFERENTIAL SYSTEM

Symptom	Suspected area	See page
Noise in front differential	1. Oil (low or wrong grade)	DF-3
	2. Excessive backlash between pinion and ring gear	DF-22
	3. Ring, pinion or side gears (worn or chipped)	DF-16
	4. Pinion shaft bearing (worn)	DF-16
	5. Side bearing (worn)	DF-16
Oil leak from front differential	1. Oil (level too high or wrong grade)	DF-3
	2. Front differential rear oil seal (worn or damaged)	DF-16
	3. Side gear oil seal (worn or damaged)	DF-16
	4. Companion flange (loosen or damaged)	DF-16
	5. Side gear shaft (damaged)	DF-16
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-4
	3. Companion flange (loosen or damaged)	DF-16

DIFFERENTIAL OIL

ADJUSTMENT

1. INSPECT AND ADJUST DIFFERENTIAL OIL

- (a) Stop the vehicle on a level place.
- (b) Remove the differential filler plug and gasket.
- (c) Check that the oil surface is within 5 mm (0.20 in.) of the lowest position of the inner surface of the differential filler plug opening.

NOTICE:

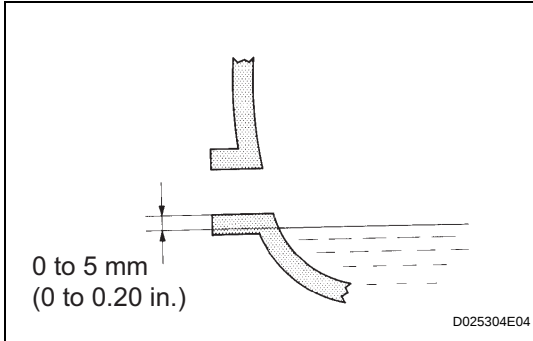
- Excessively large or small amounts of oil may cause trouble.
- After replacing oil, drive the vehicle and check the oil level.

HINT:

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

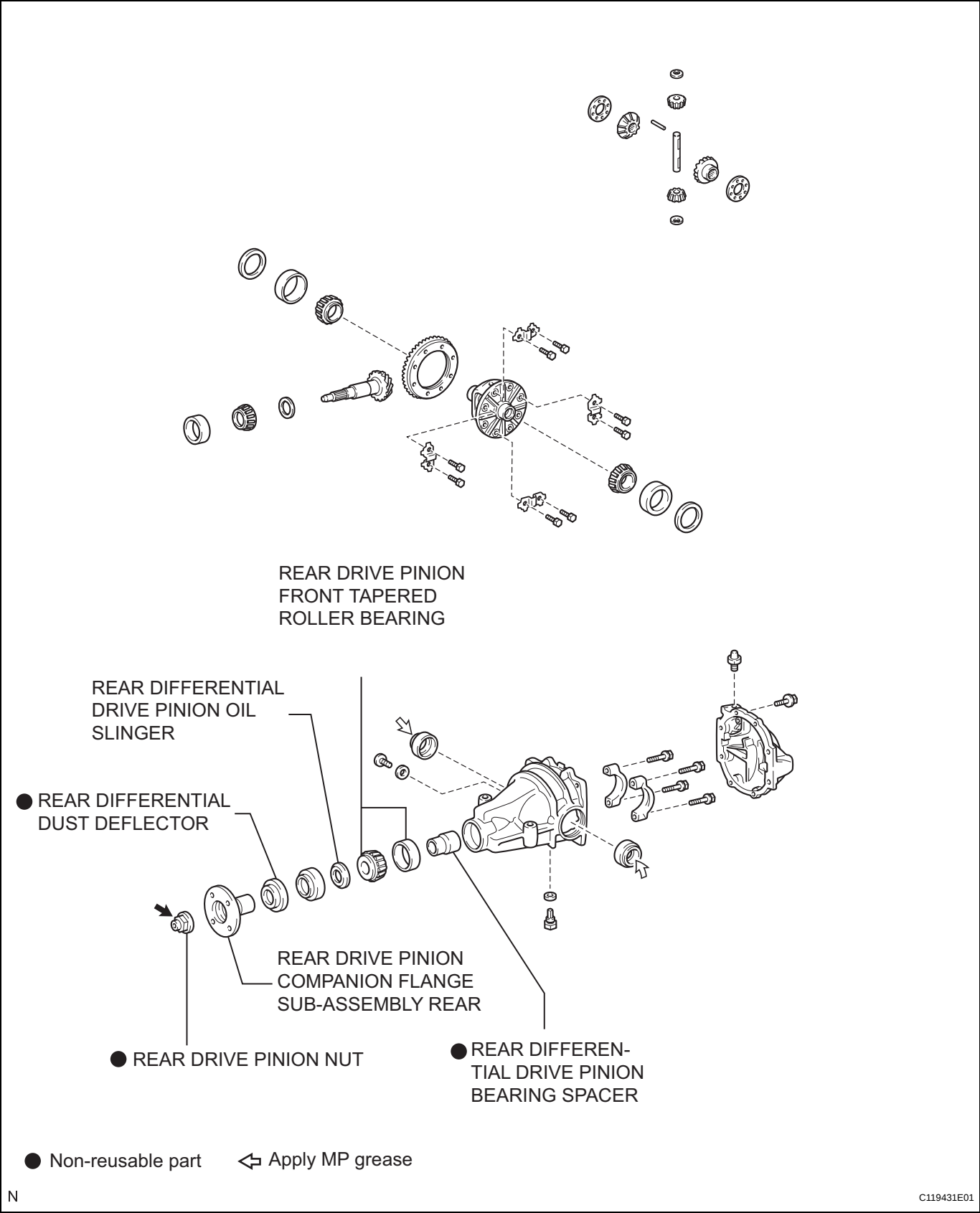
- (d) Check for oil leakage when the oil level is low.
- (e) Install the differential filler plug and a new gasket.

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



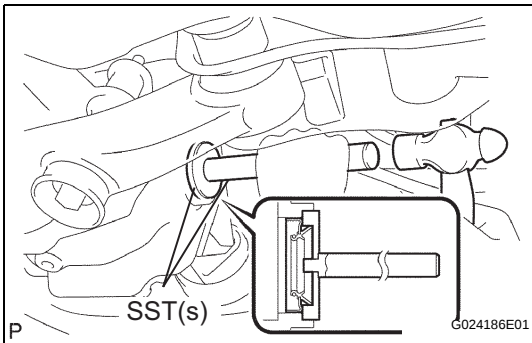
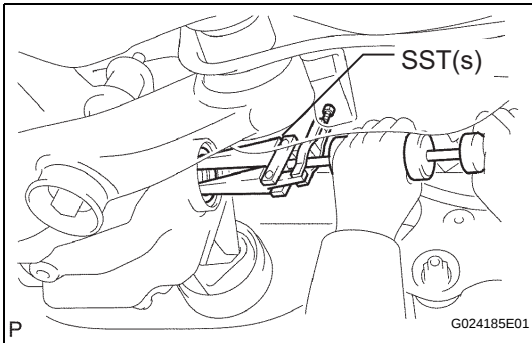
REAR DIFFERENTIAL CARRIER OIL SEAL

COMPONENTS



REMOVAL

1. **REMOVE REAR WHEEL**
2. **REMOVE EXHAUST PIPE ASSEMBLY**
HINT:
(See page [EX-3](#))
3. **REMOVE REAR DIFFERENTIAL FILLER PLUG**
(a) Using a hexagon wrench (10 mm), remove the filler plug and gasket.
4. **REMOVE REAR DIFFERENTIAL DRAIN PLUG**
(a) Using a hexagon wrench (10 mm), remove the drain plug and gasket, and drain the oil.
5. **REMOVE REAR DRIVE SHAFT ASSEMBLY LH**
HINT:
(See page [DS-21](#))
6. **REMOVE REAR DIFFERENTIAL SIDE GEAR SHAFT SEAL OIL**
(a) Using SST(s), remove the oil seal.
SST 09308-00010



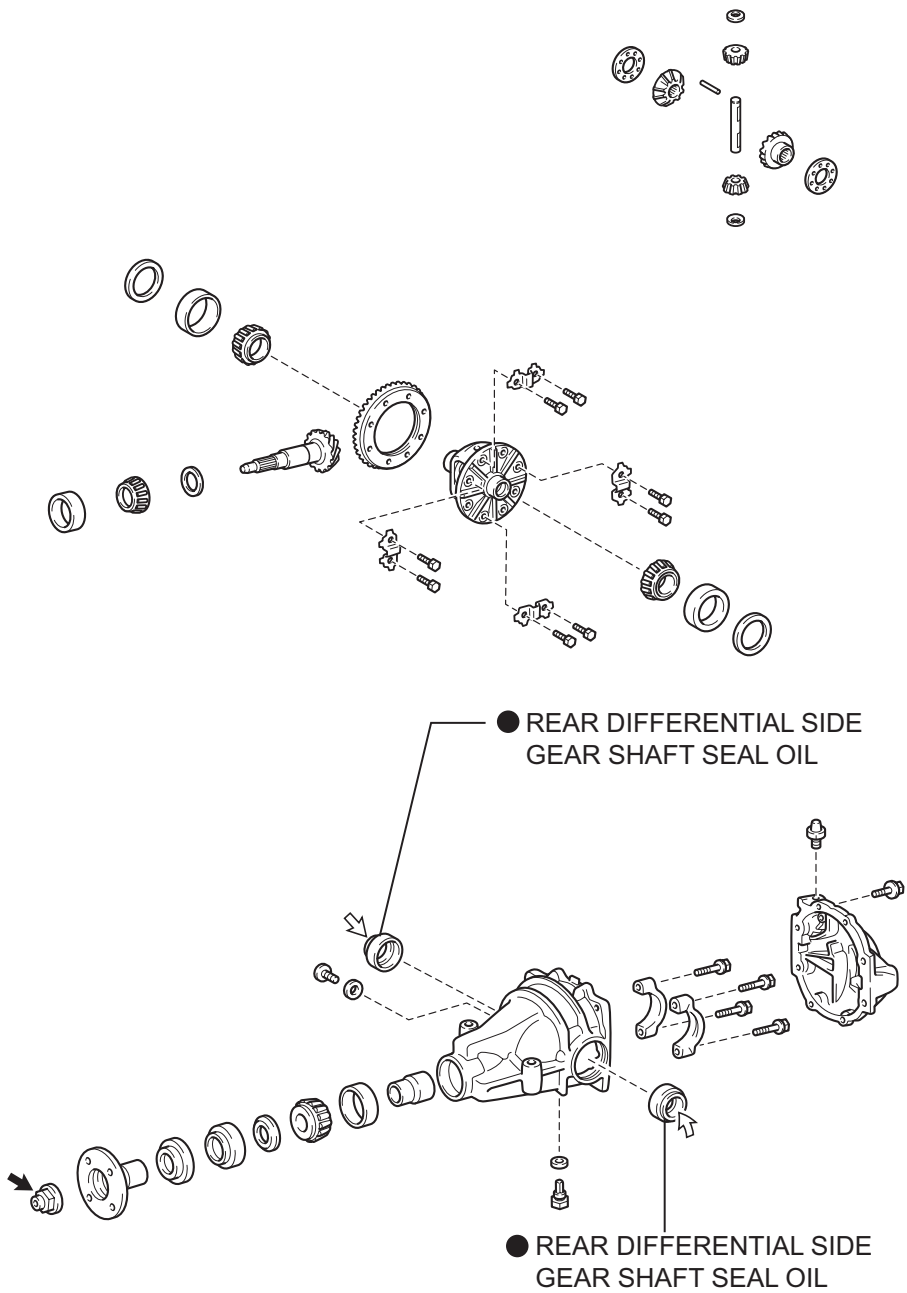
INSTALLATION

1. **INSTALL REAR DIFFERENTIAL SIDE GEAR SHAFT SEAL OIL**
(a) Using SST(s) and a hammer, install a new oil seal until it is flush with the carrier end surface.
SST 09550-00032, 09950-70010 (09951-07200)
(b) Apply MP grease to the oil seal lip.
2. **INSTALL REAR DRIVE SHAFT ASSEMBLY LH**
HINT:
(See page [DS-27](#))
3. **INSTALL EXHAUST PIPE ASSEMBLY**
HINT:
(See page [EX-6](#))
4. **INSTALL REAR DIFFERENTIAL DRAIN PLUG**
(a) Using a hexagon wrench (10 mm), install the filler plug with a new gasket.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
5. **ADD DIFFERENTIAL OIL**
(a) Fill the rear differential carrier assembly with hypoid gear oil.
6. **INSPECT DIFFERENTIAL OIL**
HINT:
(See page [DF-3](#))

- 7. INSTALL REAR DIFFERENTIAL FILLER PLUG**
 - (a) Using a hexagon wrench (10 mm), install the filler plug with a new gasket.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
- 8. INSTALL REAR WHEEL**
Torque: 103 N*m (1,050 kgf*cm, 76 ft.*lbf)
- 9. INSPECT AND ADJUST REAR WHEEL ALIGNMENT**
HINT:
(See page [SP-7](#))
- 10. CHECK FOR EXHAUST GAS LEAKAGE**
HINT:
(See page [EX-6](#))
- 11. ADJUST VEHICLE HEIGHT**
HINT:
(See page [SC-15](#))
- 12. ADJUST HEADLIGHT AIMING (w/ HID)**
HINT:
(See page [LI-14](#))
- 13. CHECK ABS SPEED SENSOR SIGNAL**
HINT:
(See page [BC-18](#))

FRONT DIFFERENTIAL SIDE GEAR SHAFT OIL SEAL

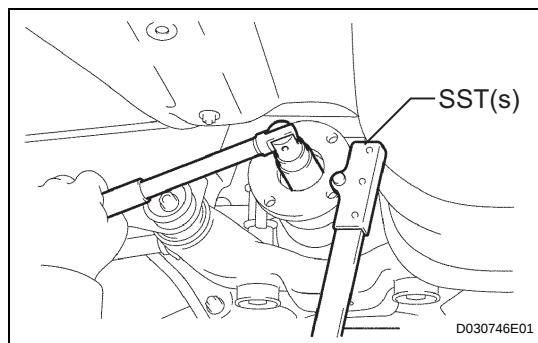
COMPONENTS



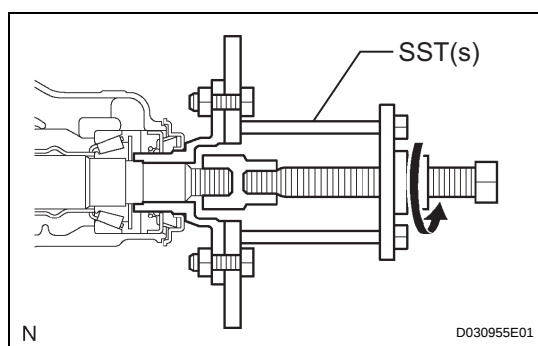
● Non-reusable part ⇐ Apply MP grease

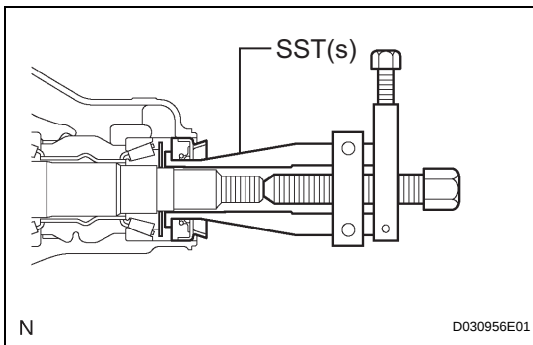
REMOVAL

1. **REMOVE ENGINE UNDER COVER ASSEMBLY** (See page [EX-3](#))
2. **REMOVE NO. 2 ENGINE UNDER COVER** (See page [EX-3](#))
3. **REMOVE PROPELLER W/CENTER BEARING SHAFT ASSEMBLY**
HINT:
(See page [PR-3](#))
4. **REMOVE EXHAUST PIPE ASSEMBLY**
HINT:
(See page [EX-3](#))
5. **REMOVE REAR DIFFERENTIAL FILLER PLUG**
(a) Using a hexagon wrench (10 mm), remove the filler plug and gasket.
6. **REMOVE REAR DIFFERENTIAL DRAIN PLUG**
(a) Using a hexagon wrench (10 mm), remove the drain plug, and the oil.
7. **REMOVE REAR DRIVE PINION NUT**
(a) Using a chisel and a hammer, unstake part of the nut.
(b) Using SST(s) to hold the flange, remove the nut.
SST 09330-00021 (09330-00030)



8. **REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR**
(a) Using SST(s), remove the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)



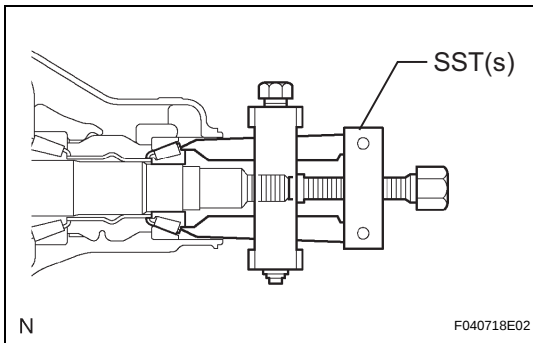
**9. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL**

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

SST 09308-10010

10. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

- (a) Remove the rear differential drive pinion oil slinger.

**11. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING**

- (a) Using SST(s), remove the front bearing.

SST 09556-22010

12. REMOVE REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

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

INSTALLATION

1. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

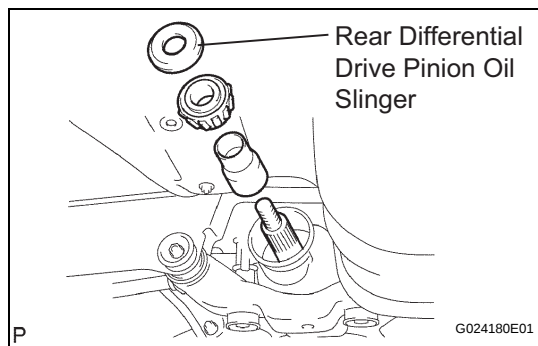
- (a) Install a new bearing spacer.

2. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

- (a) Install the rear drive pinion front tapered roller bearing.

3. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

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



4. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

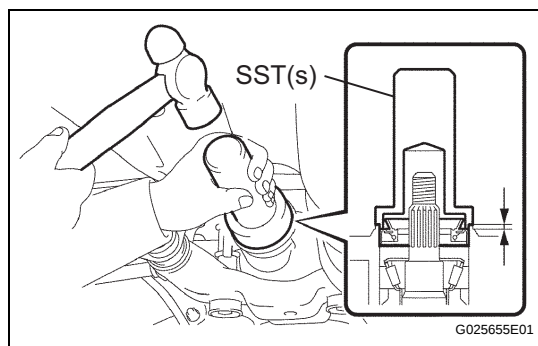
- (a) Using SST(s) and a hammer, install a new oil seal.

SST 09554-22010

Oil seal drive in depth:

2.0 +/- 0.3 mm (0.079 +/- 0.012 in.)

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

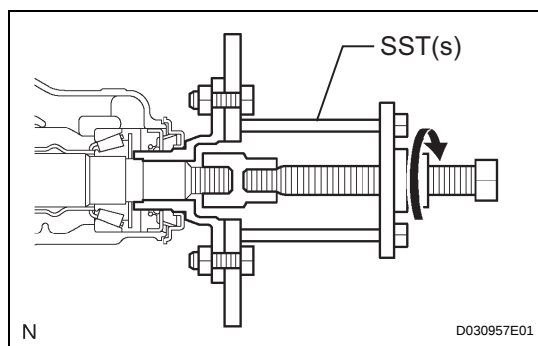


5. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY REAR

- (a) Using SST(s), install the companion flange to the shaft.

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

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



6. INSTALL REAR DRIVE PINION NUT

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

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

SST 09330-00021

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

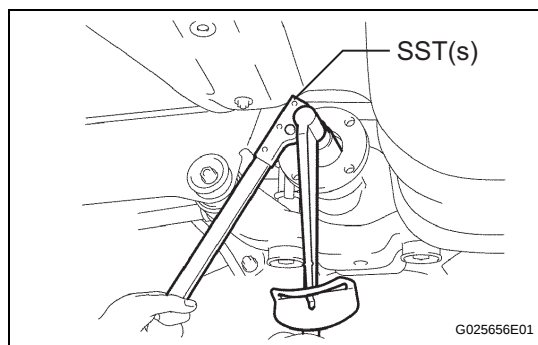
7. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

HINT:

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

8. INSTALL REAR DRIVE PINION NUT

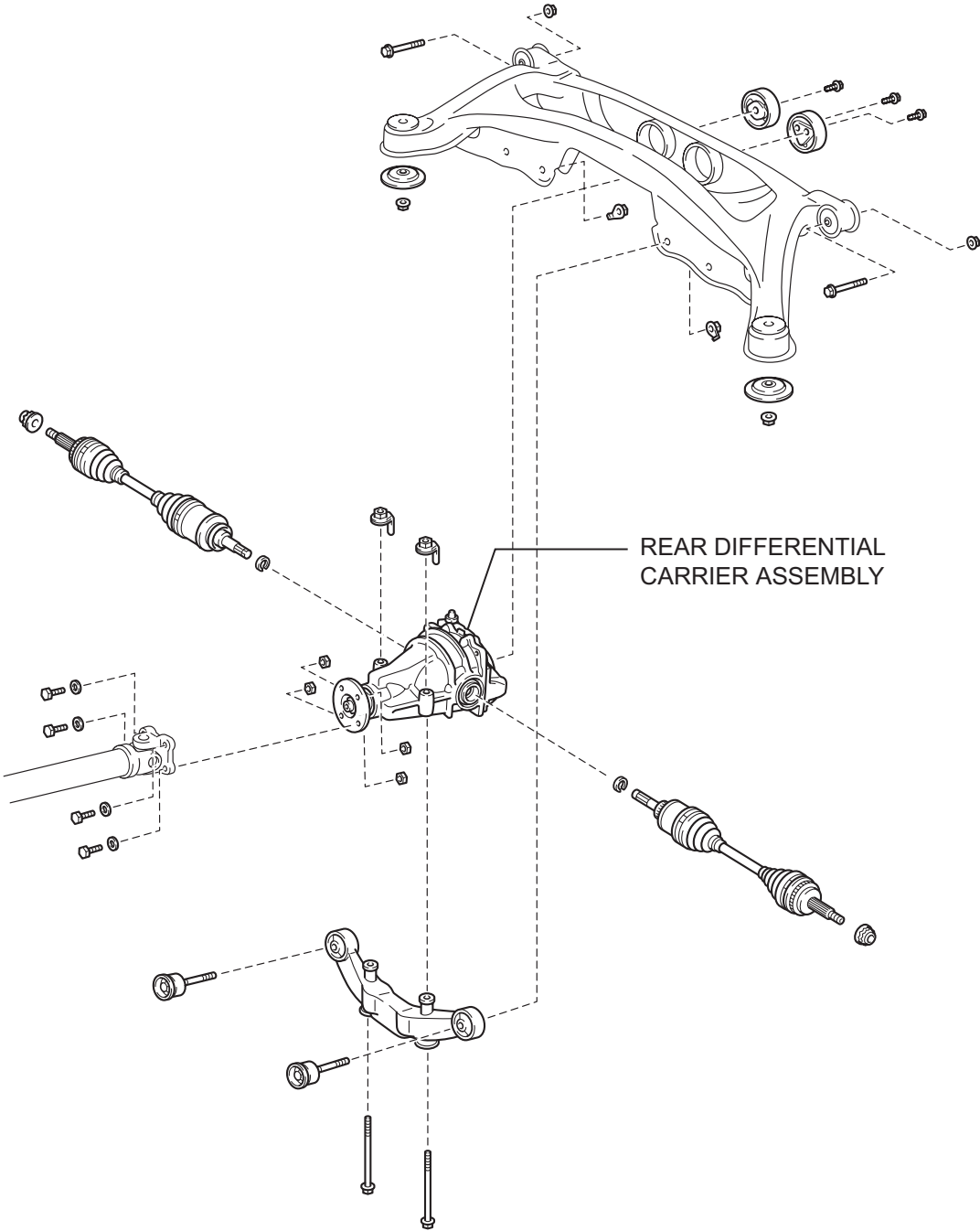
- (a) Using a chisel and hammer, stake the drive pinion nut.



- 9. INSTALL EXHAUST PIPE ASSEMBLY**
HINT:
(See page [EX-6](#))
- 10. INSTALL PROPELLER W/CENTER BEARING SHAFT ASSEMBLY**
HINT:
(See page [PR-9](#))
- 11. FULLY TIGHTEN PROPELLER W/CENTER BEARING SHAFT ASSEMBLY**
HINT:
(See page [PR-9](#))
- 12. INSTALL NO. 2 ENGINE UNDER COVER (See page [EX-7](#))**
- 13. INSTALL ENGINE UNDER COVER ASSEMBLY (See page [EX-7](#))**
- 14. INSTALL REAR DIFFERENTIAL DRAIN PLUG**
 - (a) Using a hexagon wrench (10 mm), install the drain plug and a new gasket.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
- 15. ADD DIFFERENTIAL OIL**
 - (a) Fill the rear differential carrier assembly with hypoid gear oil.
- 16. INSPECT DIFFERENTIAL OIL**
HINT:
(See page [DF-3](#))
- 17. INSTALL REAR DIFFERENTIAL FILLER PLUG**
 - (a) Using a hexagon wrench (10 mm), install the drain plug and a new gasket.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
- 18. CHECK FOR EXHAUST GAS LEAKAGE**
HINT:
(See page [EX-6](#))

REAR DIFFERENTIAL CARRIER ASSEMBLY

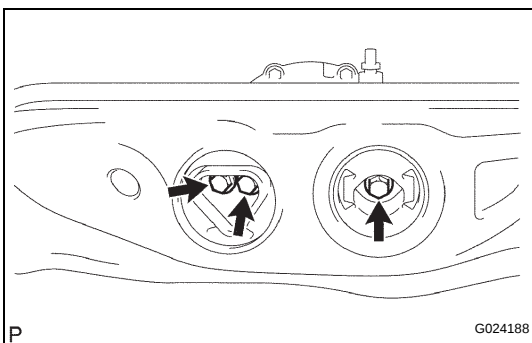
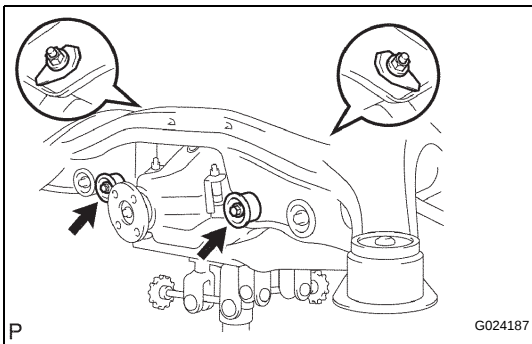
COMPONENTS



DF

REMOVAL

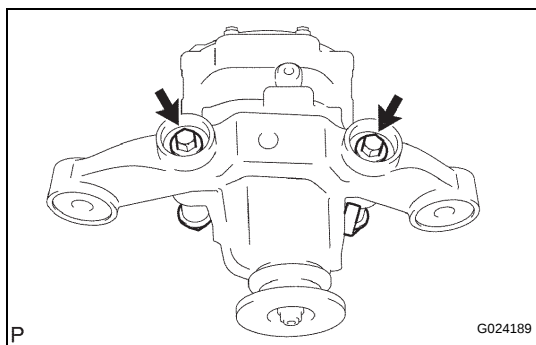
1. REMOVE REAR WHEEL
2. REMOVE ENGINE UNDER COVER ASSEMBLY (See page [EX-3](#))
3. REMOVE NO. 2 ENGINE UNDER COVER (See page [EX-3](#))
4. REMOVE PROPELLER W/CENTER BEARING SHAFT ASSEMBLY
HINT:
(See page [PR-3](#))
5. REMOVE EXHAUST PIPE ASSEMBLY
HINT:
(See page [EX-3](#))
6. REMOVE REAR DIFFERENTIAL FILLER PLUG
(a) Using a hexagon wrench (10 mm), remove the filler plug and gasket.
7. REMOVE REAR DIFFERENTIAL DRAIN PLUG
(a) Using a hexagon wrench (10 mm), remove the drain plug and gasket, and drain the oil.
8. REMOVE REAR DRIVE SHAFT ASSEMBLY LH
HINT:
(See page [DS-21](#))
9. REMOVE REAR SUSPENSION MEMBER SUB-ASSEMBLY
(a) Remove the rear suspension member sub-assembly.
10. REMOVE REAR DIFFERENTIAL CARRIER ASSEMBLY
(a) Support the differential carrier assembly rear with jack.
(b) Remove the 2 bolts and 2 lock nuts, and separate the rear differential support No. 1 from the rear suspension member sub-assembly.



- (c) Remove the 3 bolts and differential carrier assembly rear from the rear suspension member sub-assembly.

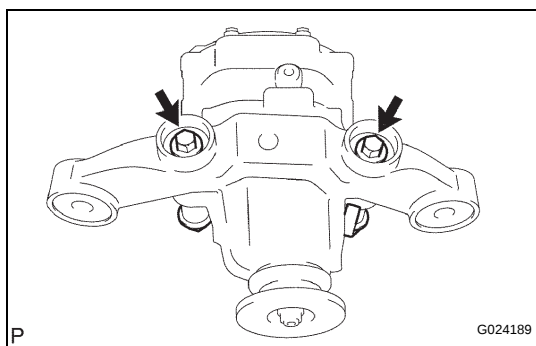
NOTICE:

Be careful not to drop the differential carrier assembly rear.



11. REMOVE NO. 1 REAR DIFFERENTIAL SUPPORT

- (a) Remove the 2 bolts, 2 lock nuts and rear differential support No. 1 from the differential carrier assembly rear.

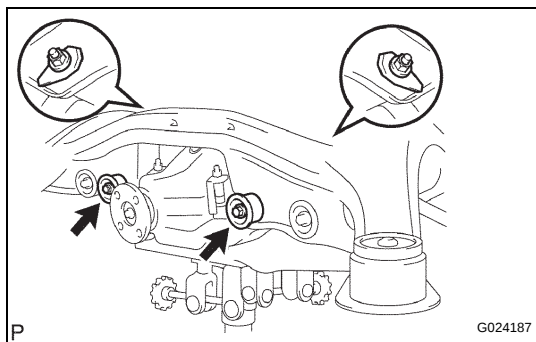


INSTALLATION

1. INSTALL NO. 1 REAR DIFFERENTIAL SUPPORT

- (a) Install the rear differential support No. 1 to the differential carrier assembly rear with the 2 bolts and 2 lock nuts.

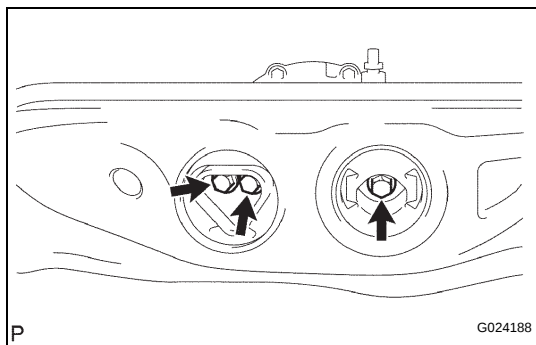
Torque: 103 N*m (1,050 kgf*cm, 76 ft.*lbf)



2. INSTALL REAR DIFFERENTIAL CARRIER ASSEMBLY

- (a) Jack up the differential carrier assembly rear and rear suspension member with a jack.
- (b) Connect the rear differential support No. 1 to the rear suspension member with 2 bolts and 2 lock nuts.

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



- (c) Install the differential carrier assembly rear to the rear suspension member sub-assembly with the 3 bolts.

Torque: 95 N*m (970 kgf*cm, 70 ft.*lbf)

3. INSTALL REAR SUSPENSION MEMBER SUB-ASSEMBLY

- (a) Install the rear suspension member sub-assembly.

4. INSTALL REAR DRIVE SHAFT ASSEMBLY LH

HINT:

(See page [DS-27](#))

5. INSTALL EXHAUST PIPE ASSEMBLY

HINT:

(See page [EX-6](#))

6. INSTALL PROPELLER W/CENTER BEARING SHAFT ASSEMBLY

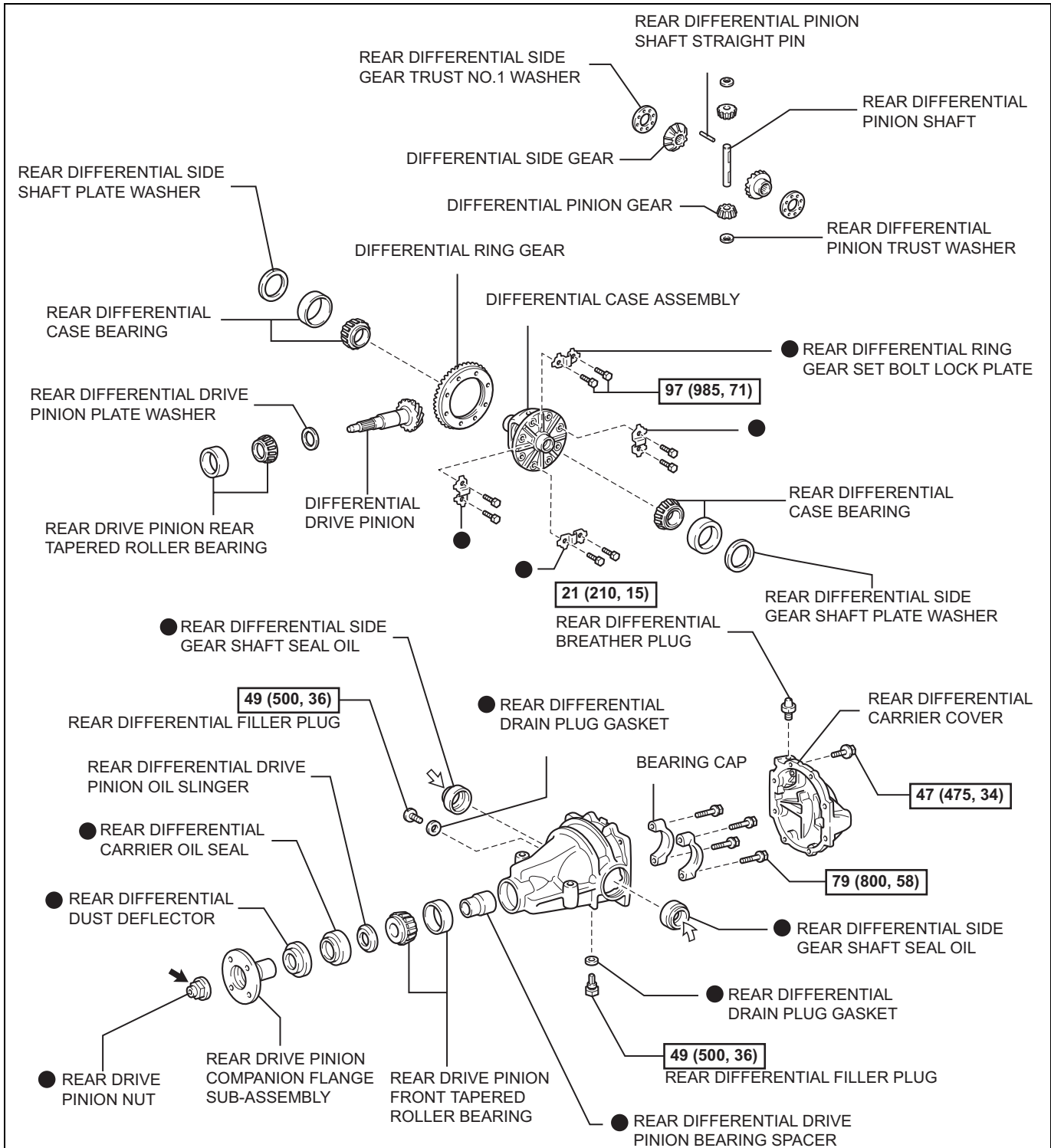
HINT:

(See page [PR-9](#))

7. **FULLY TIGHTEN PROPELLER W/CENTER BEARING SHAFT ASSEMBLY**
HINT:
(See page [PR-9](#))
8. **INSTALL NO. 2 ENGINE UNDER COVER** (See page [EX-7](#))
9. **INSTALL ENGINE UNDER COVER ASSEMBLY** (See page [EX-7](#))
10. **INSTALL REAR DIFFERENTIAL DRAIN PLUG**
(a) Using a hexagon wrench (10 mm), install the filler plug with a new gasket.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
11. **ADD DIFFERENTIAL OIL**
(a) Fill the rear differential carrier assembly with hypoid gear oil.
12. **INSPECT DIFFERENTIAL OIL**
HINT:
(See page [DF-3](#))
13. **INSTALL REAR DIFFERENTIAL FILLER PLUG**
(a) Using a hexagon wrench (10 mm), install the filler plug with a new gasket.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
14. **INSTALL REAR WHEEL**
Torque: 103 N*m (1,050 kgf*cm, 76 ft.*lbf)
15. **INSPECT AND ADJUST REAR WHEEL ALIGNMENT**
HINT:
(See page [SP-7](#))
16. **CHECK FOR EXHAUST GAS LEAKAGE**
HINT:
(See page [EX-6](#))
17. **ADJUST VEHICLE HEIGHT**
HINT:
(See page [SC-15](#))
18. **ADJUST HEADLIGHT AIMING (w/ HID)**
HINT:
(See page [LI-14](#))
19. **CHECK ABS SPEED SENSOR SIGNAL**
HINT:
(See page [BC-16](#))

REAR DIFFERENTIAL CARRIER

COMPONENTS

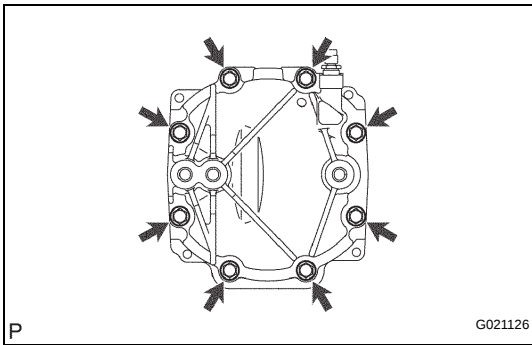


N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

↵ Apply MP grease

↵ Hypoid gear oil

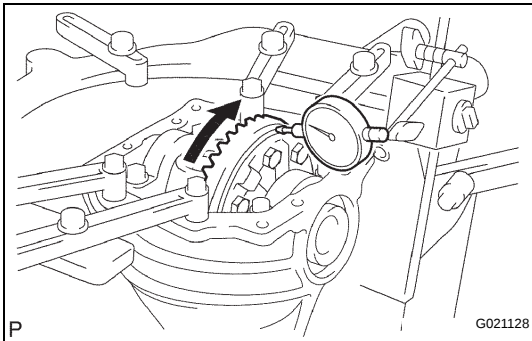


DISASSEMBLY

1. REMOVE REAR DIFFERENTIAL CARRIER COVER

- Remove the 8 bolts from the carrier cover.
- Using a brass bar and a hammer, separate the carrier cover from differential carrier assembly.
- Remove the breather plug from the differential carrier cover.

2. FIX REAR DIFFERENTIAL CARRIER ASSEMBLY



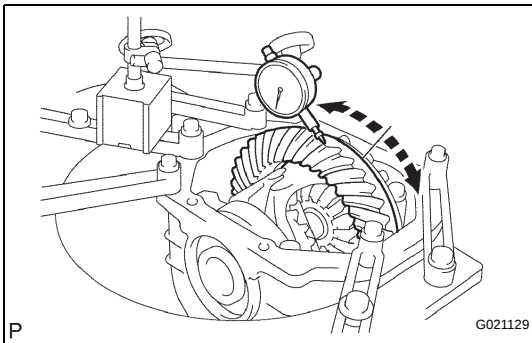
3. INSPECT RUNOUT OF DIFFERENTIAL RING GEAR

- Using a dial gauge, 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

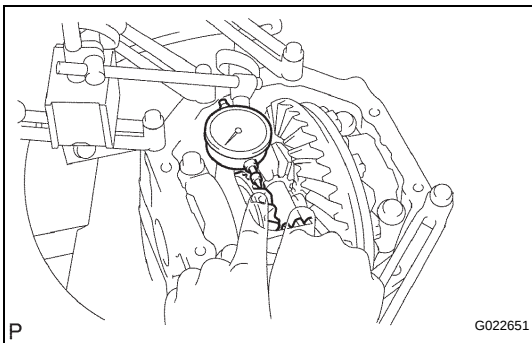
- Using a dial gauge, check the backlash of the ring gear.

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.

5. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION (See page [DF-28](#))



6. INSPECT DIFFERENTIAL PINION AND SIDE GEAR BACKLASH

- Using a dial gauge, check the backlash of the side gear while holding 1 pinion gear toward the differential case.

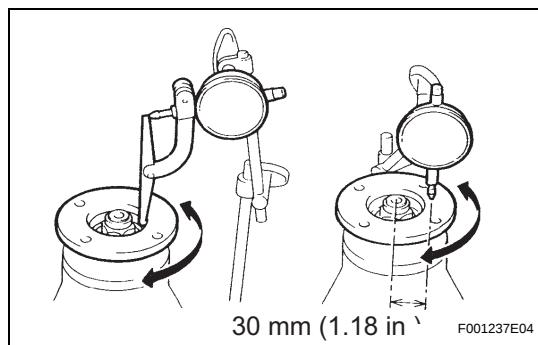
Backlash:

0.05 to 0.20 mm (0.0020 to 0.0079 in.)

If the backlash is not within the specification, install the 2 side gear thrust washers of differential thickness (See page [DF-26](#)).

HINT:

Measure the backlash of the side gear with the side gear shaft installed.

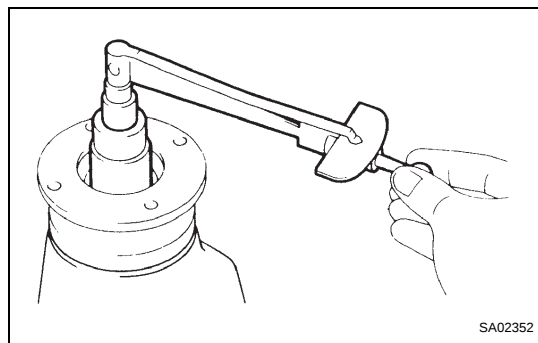


7. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

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

Maximum runout:

0.10 mm (0.0039 in.)

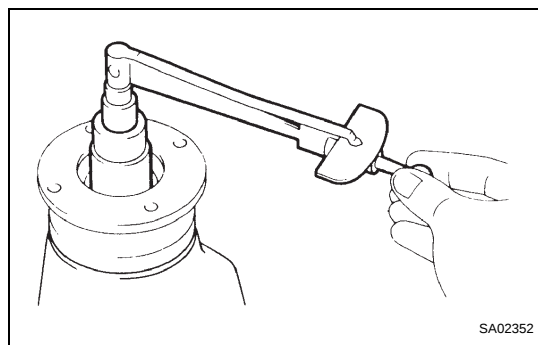


8. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

- (a) Using a torque wrench, measure the preload of the drive pinion.

Preload (at starting):

0.6 to 0.9 N*m (6 to 9 kgf*cm, 5.2 to 7.8 in.*lbf)



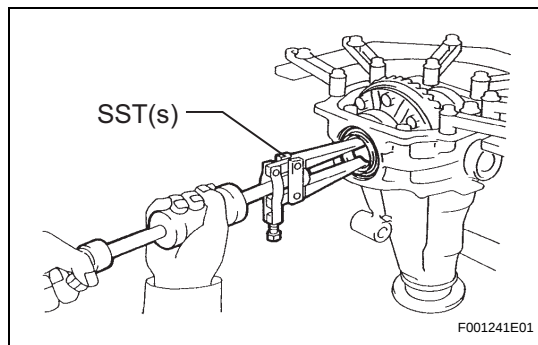
9. INSPECT TOTAL PRELOAD

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

Total preload (at starting):

Drive pinion preload plus 0.3 to 0.5 N*m (3 to 5 kgf*cm, 2.6 to 4.3 in.*lbf)

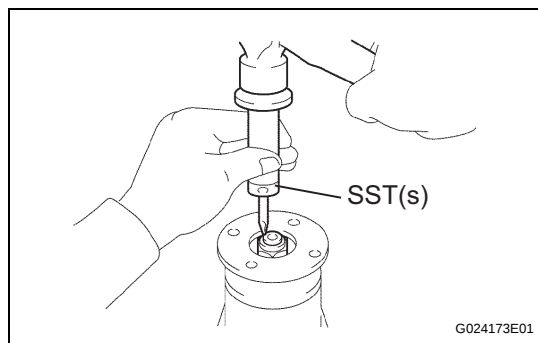
Disassemble and inspect the differential as necessary.



10. REMOVE REAR DIFFERENTIAL SIDE GEAR SHAFT SEAL OIL

- (a) Using SST(s), remove the 2 oil seal from the housing.

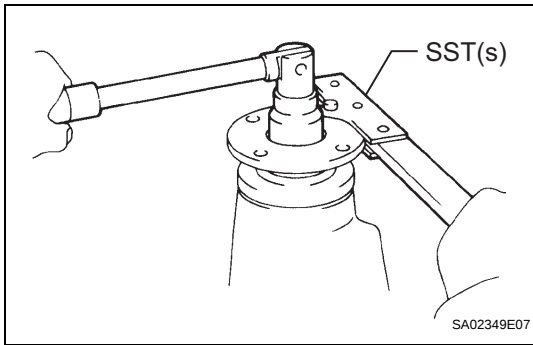
SST 09308-00010



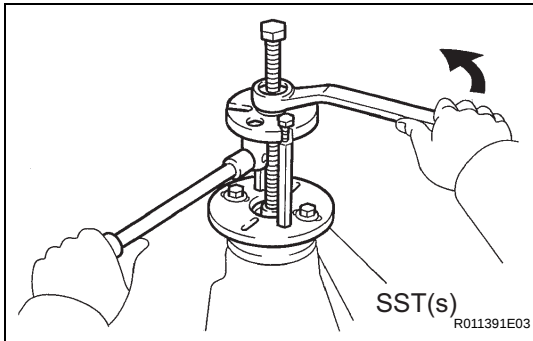
11. REMOVE REAR DRIVE PINION NUT

- (a) Using SST(s) and a hammer, unstake the staked part of the nut.

SST 09930-00010

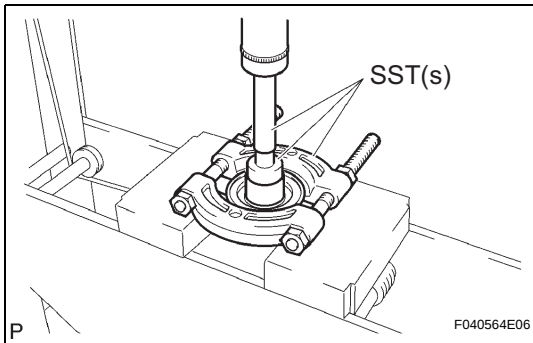


- (b) Using SST(s) to hold the flange, remove the nut.
SST 09330-00021



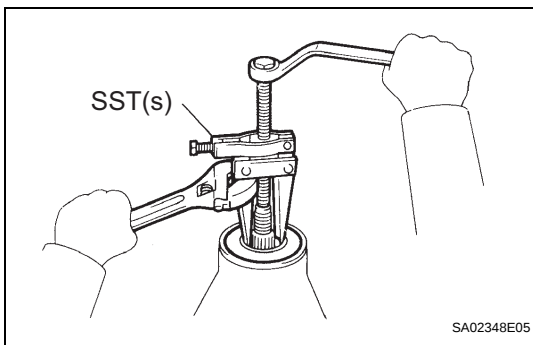
12. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

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



13. REMOVE REAR DIFFERENTIAL DUST DEFLECTOR

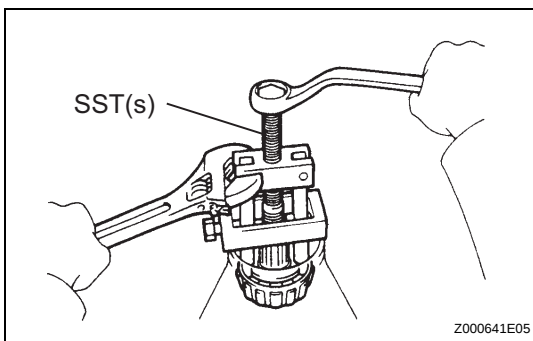
- (a) Using SST(s) and a press, remove the dust deflector.
SST 09950-60010 (09951-00360), 09950-70010 (09951-07150), 09950-00020



14. REMOVE REAR DIFFERENTIAL CARRIER OIL SEAL

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

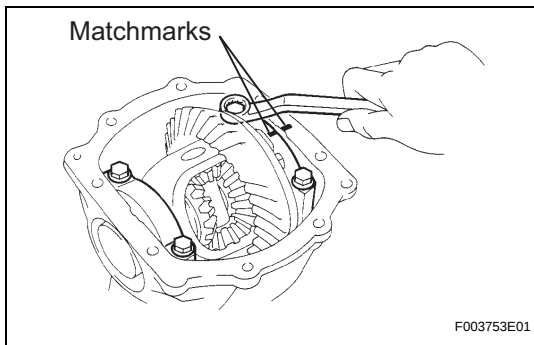
15. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER



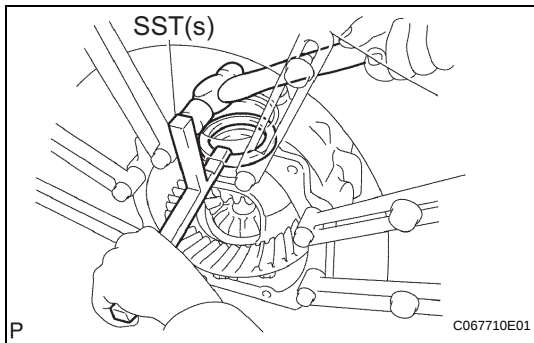
16. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

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

17. REMOVE REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

**18. REMOVE DIFFERENTIAL CASE ASSEMBLY**

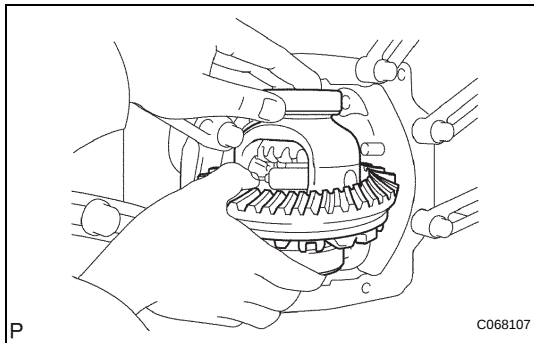
- (a) Align matchmarks on the bearing cap and differential carrier.
- (b) Remove the 4bolts and 2 bearing caps.



- (c) Using SST(s) and a screwdriver, remove the 2 plate washers.

SST 09504-22011**HINT:**

Measure the thickness of the plate washers and note it down.



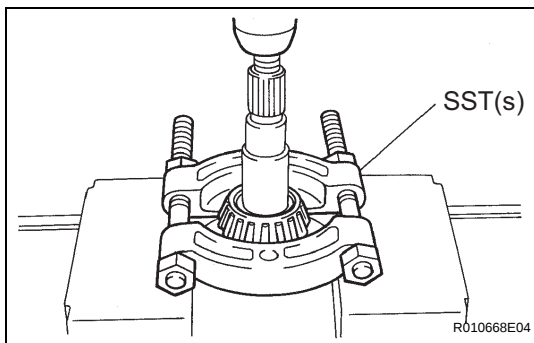
- (d) Remove the differential case assembly and the 2 bearing outer races from the differential carrier.

HINT:

Tag the 2 bearing outer races to show the location for reassembly.

19. REMOVE DIFFERENTIAL DRIVE PINION

- (a) Remove the differential drive pinion.

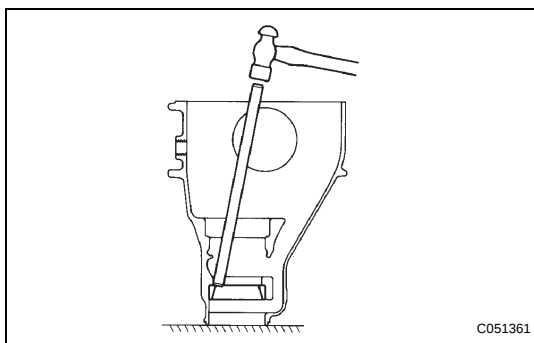
**20. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING**

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

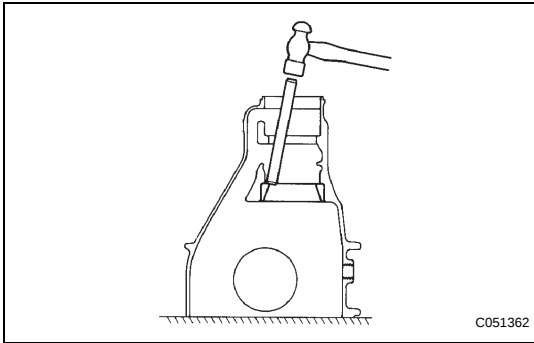
SST 09950-00020**HINT:**

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

- (b) Remove the plate washer.

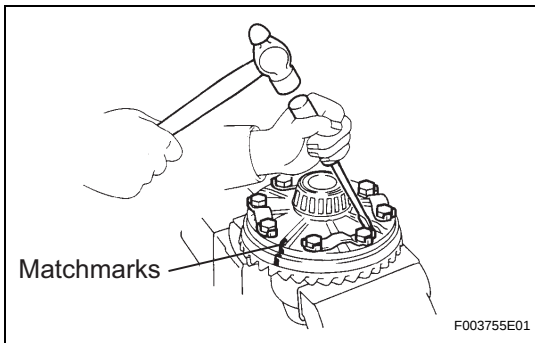
**21. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING**

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



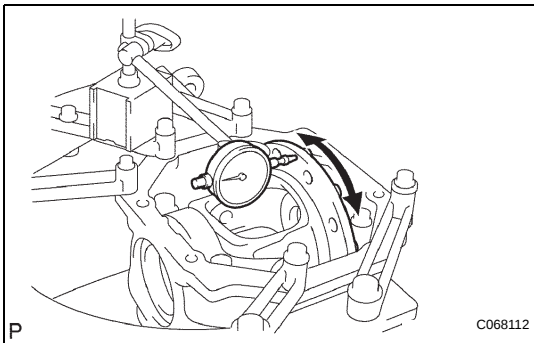
22. REMOVE REAR DRIVE PINION REAR TAPERED ROLLER BEARING

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



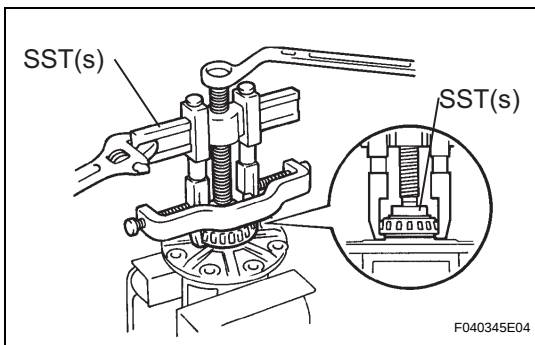
23. REMOVE DIFFERENTIAL RING GEAR

- Align matchmarks on the ring gear and differential case.
- Using a screwdriver and a hammer, unstake the 4 lock plates.
- Remove the 8 ring gear set bolts and 4 lock plates.



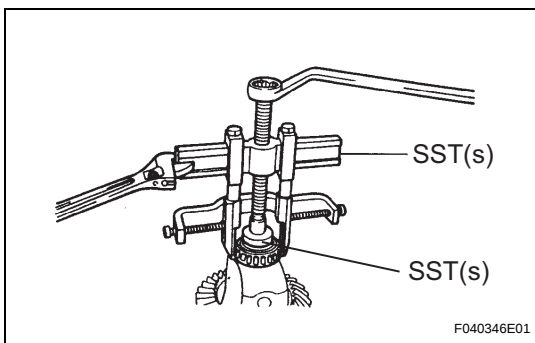
24. INSPECT DIFFERENTIAL CASE ASSEMBLY

- Install the differential case to the differential carrier.
- Install the right and left bearing caps with the 4 bolts.
Torque: 79 N*m (800 kgf*cm, 58 ft.*lbf)
- Using a dial gauge, measure the differential case runout.
Maximum case runout:
0.07 mm (0.0028 in.)
- Remove the differential case.



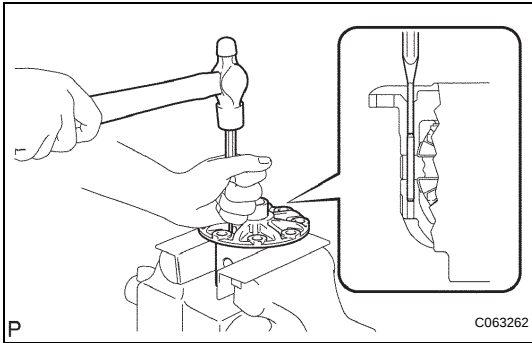
25. REMOVE REAR DIFFERENTIAL CASE BEARING

- Using SST(s), remove the case bearing (LH) from the differential case.
SST 09950-40011 (09951-00240, 09951-04020, 09952-04010, 09953-04030, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00360)



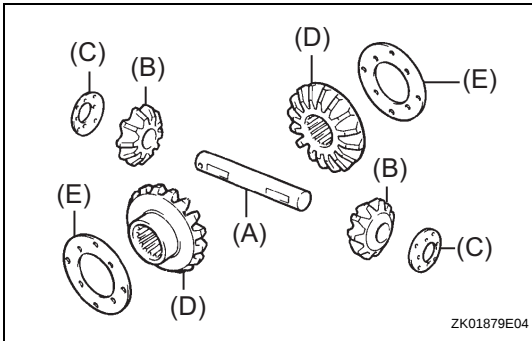
26. REMOVE REAR DIFFERENTIAL CASE BEARING

- Using SST(s), remove the case bearing (RH) 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)

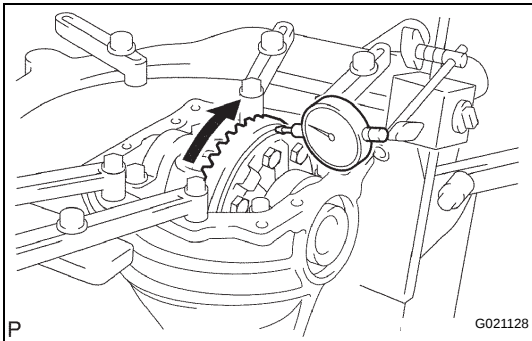


27. REMOVE REAR DIFFERENTIAL PINION SHAFT

- (a) Using a pin punch (5 mm) and a hammer, remove the straight pin.



- (b) Remove the differential pinion shaft. (A)
 (c) Remove the 2 differential pinion gears. (B)
 (d) Remove the 2 differential pinion thrust washers. (C)
 (e) Remove the 2 side gears. (D)
 (f) Remove the 2 side gear thrust washers. (E)



INSPECTION

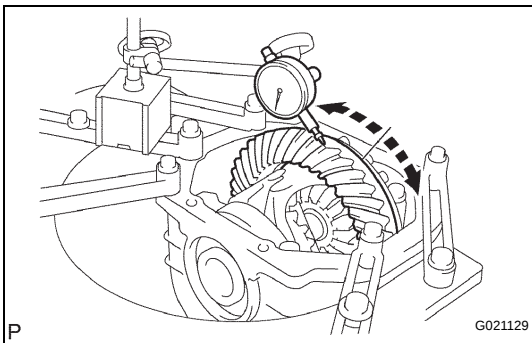
1. INSPECT RUNOUT OF DIFFERENTIAL RING GEAR

- (a) Using a dial gauge, 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.



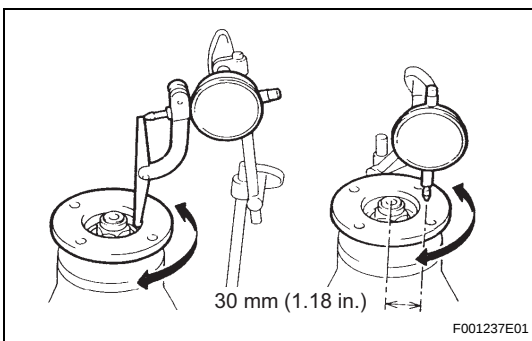
2. INSPECT DIFFERENTIAL RING GEAR BACKLASH

- (a) Using a dial gauge, 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.

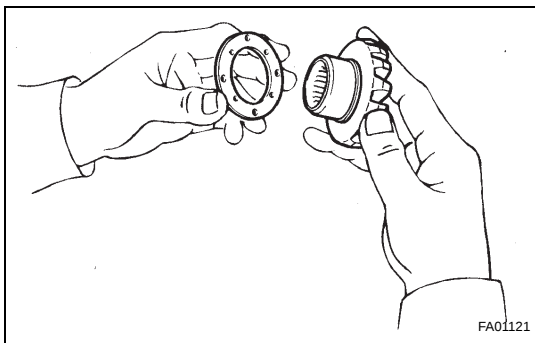


3. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY

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

Maximum runout:

0.10 mm (0.0039 in.)



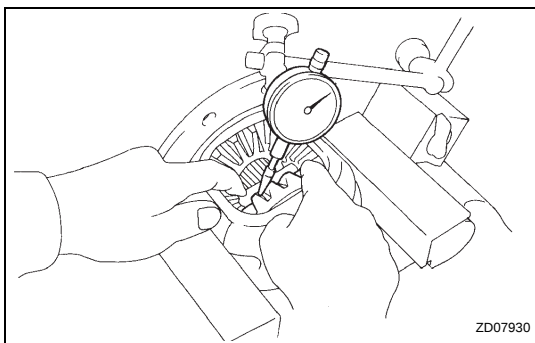
REASSEMBLY

1. INSTALL REAR DIFFERENTIAL PINION SHAFT

- Install the 2 thrust washers to the 2 side gears.
- Install the 2 side gears, 2 differential pinion gears, 2 differential pinion thrust washers and differential pinion shaft to the differential case.

HINT:

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



2. ADJUST DIFFERENTIAL PINION GEAR BACKLASH

- Measure the side gear backlash while holding 1 pinion gear toward the differential case.

Backlash:

0.05 to 0.20 mm (0.0020 to 0.0079 in.)

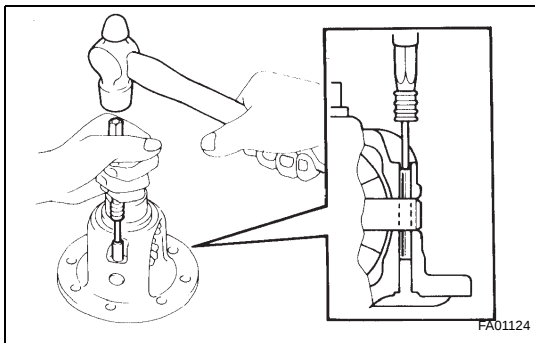
If the backlash is not within the specification, install the 2 side gear thrust washers of different thicknesses.

HINT:

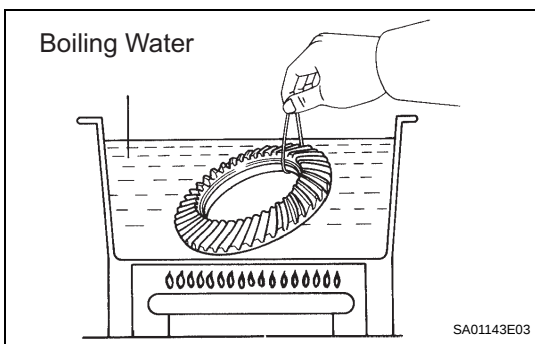
Refer to the following table to select 2 thrust washers.

Thrust washer thickness

Thickness mm (in.)	Thickness mm (in.)
0.93 to 0.97 (0.0366 to 0.0382)	1.18 to 1.22 (0.0465 to 0.0480)
0.98 to 1.02 (0.0386 to 0.0402)	1.23 to 1.27 (0.0484 to 0.0500)
1.03 to 1.07 (0.0406 to 0.0421)	1.28 to 1.32 (0.0504 to 0.0520)
1.08 to 1.12 (0.0425 to 0.0441)	1.33 to 1.37 (0.0524 to 0.0539)
1.13 to 1.17 (0.0445 to 0.0461)	1.38 to 1.42 (0.0543 to 0.0559)

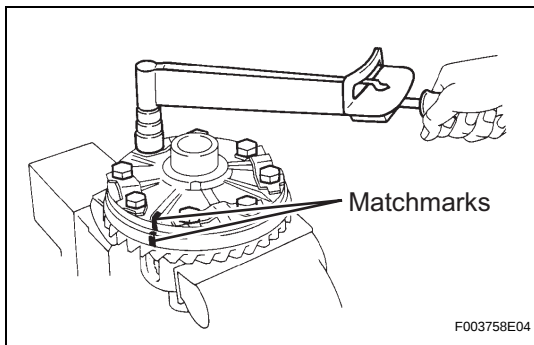


- Using a pin punch (5 mm) and a hammer, install the straight pin through the differential case and hole of the pinion shaft.
- Using a chisel and a hammer, stake the outside of the differential case pin hole.



3. INSTALL DIFFERENTIAL RING GEAR

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

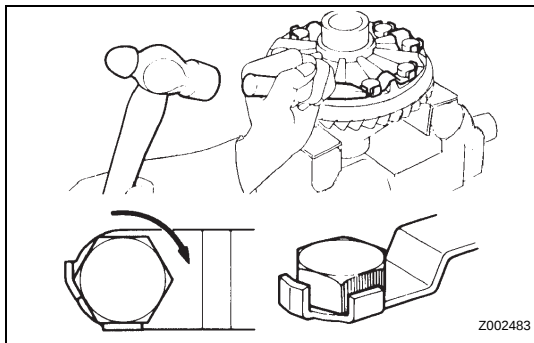


- (e) Align the matchmarks on the ring gear and differential case.
- (f) Temporarily install 4 new lock plates and 8 bolts.
- (g) After the ring gear cools down enough, torque the 8 bolts uniformly.

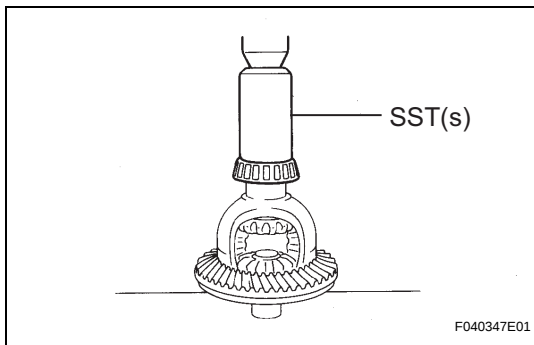
Torque: 97 N*m (985 kgf*cm, 71 ft.*lbf)

HINT:

Tighten the bolts, in diagonal order, a little at a time until they are all tightened.



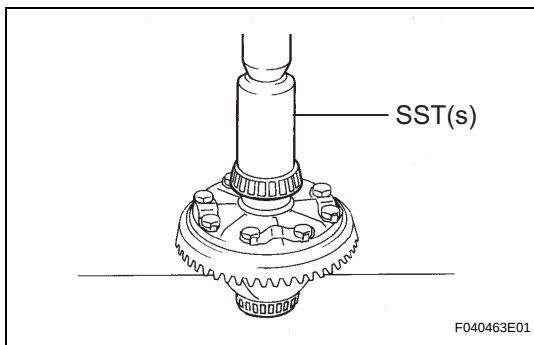
- (h) Using a chisel and a hammer, stake the 4 lock plates.
 - (1) Stake one claw so that it is flush against the flat surface of the bolt.
 - (2) As for the head so as to act as a stopper if the bolt should start to loosen.



4. INSTALL REAR DIFFERENTIAL CASE BEARING RH

- (a) Using SST(s) and a press, install the case bearing (RH) to the differential case.

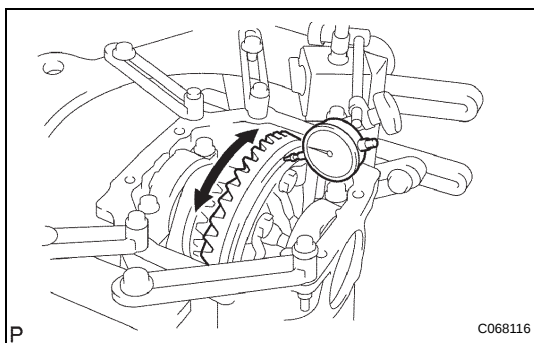
SST 09636-20010



5. INSTALL REAR DIFFERENTIAL CASE BEARING LH

- (a) Using SST(s) and a press, install the case bearing (LH) to the differential case.

SST 09636-20010



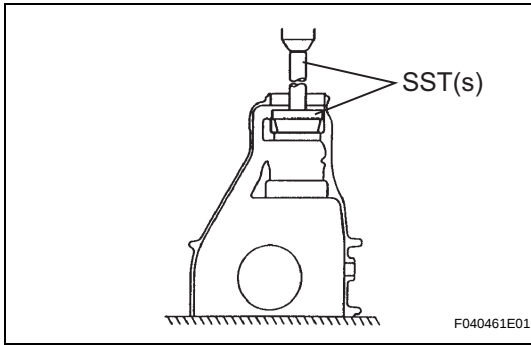
6. INSPECT RUNOUT OF DIFFERENTIAL RING GEAR

- (a) Install the differential case to the carrier, and install the 2 plate washers so that there is no play in the bearing.
- (b) Install the 2 bearing caps with the 4 bolts
- (c) Using a dial gage, measure the runout of the ring gear.

Maximum runout:

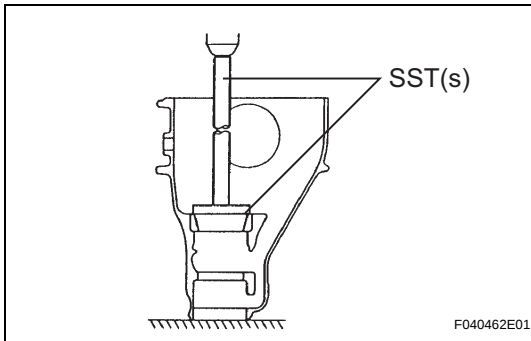
0.07 mm (0.0028 in.)

- (d) Remove the 2 bearing caps, 2 plate washers and differential carrier.



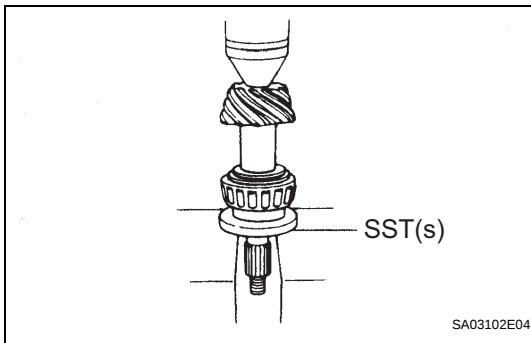
7. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

- (a) Using SST(s) and a press, install the front bearing (outer race) to the carrier.
SST 09950-60010 (09951-00620), 09950-70010 (09951-07150)

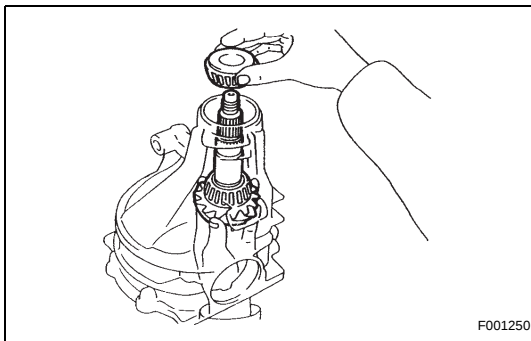


8. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

- (a) Using SST(s) and a press, install the rear bearing (outer race) to the carrier.
SST 09950-60020 (09951-00710), 09950-70010 (09951-07150)
- (b) Install the removed plate washer to the drive pinion.

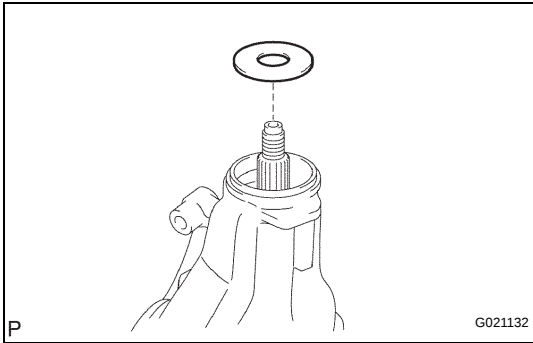


- (c) Using SST(s) and a press, install the bearing to the drive pinion.
SST 09506-30012

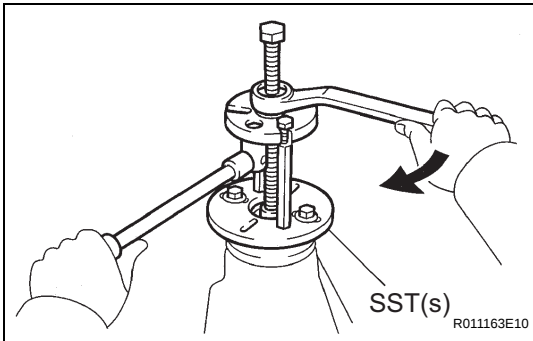


9. ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

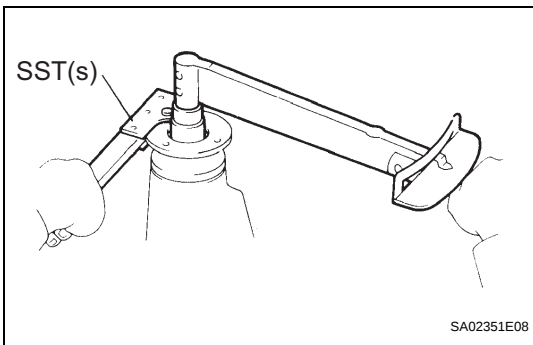
- (a) Install the drive pinion and front bearing.
HINT:
Assemble the spacer and oil seal after adjusting the gear contact pattern.



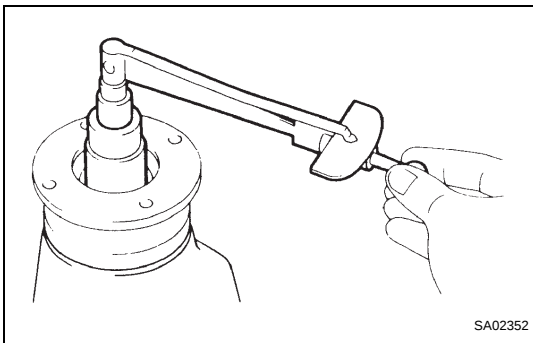
- (b) Install the rear differential drive pinion oil slinger to the drive pinion.



- (c) Using SST(s), install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)
 (d) Coat the threads of the nut with hypoid gear oil LSD.



- (e) Using SST(s) to hold the flange, torque the nut.
SST 09330-00021
Torque: 108 N*m (1,100 kgf*cm, 80 ft.*lbf)
NOTICE:
 • Torque the nut a little at a time, being careful not to overtighten it.
 • Apply hypoid gear oil LSD to the nut.



- (f) Using a torque wrench, measure the preload.
New bearing:
1.1 to 1.7 N*m (1.1 to 1.7 kgf*cm, 9.6 to 14.8 in.*lbf)
Reused bearing:
0.6 to 0.9 N*m (6 to 9 kgf*cm, 5.2 to 7.8 in.*lbf)

10. INSTALL DIFFERENTIAL CASE ASSEMBLY

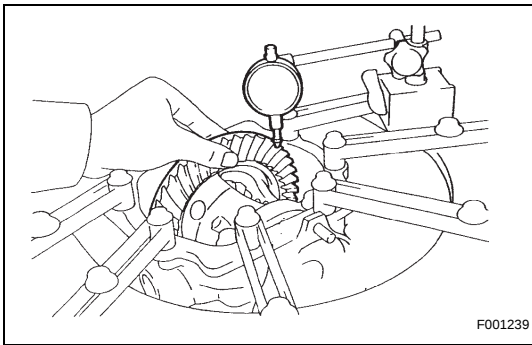
- (a) Place the 2 bearing outer races on their respective bearings. Make sure the right and left races are not interchanged.

11. ADJUST DIFFERENTIAL RING GEAR BACKLASH

- (a) Install the right and left bearing caps with the 4 bolts.
Torque: 79 N*m (800 kgf*cm, 58 ft.*lbf)

HINT:

- When using a new side bearing select a thrust shim which is thinner than the removed one.
 - If the side bearing is reused, select a thrust shim of the same thickness as the removed one.
- (b) Make sure the differential case bearing and thrust shim by tapping on the ring gear with a plastic hammer.



- (c) Set the dial gauge perpendicular to the end of the ring gear face.
- (d) While holding the rear drive pinion companion flange rear, rotate the ring gear and measure the backlash.

Backlash:

0.13 to 0.18 mm (0.0051 to 0.0071 in.)

NOTICE:

Measure it at 3 points or more on the ring gear periphery.

If the measured value is out of the specified value, select a proper thrust shim so that the backlash of the differential ring gear is within the value, and install it to the ring gear back side.

Washer thickness

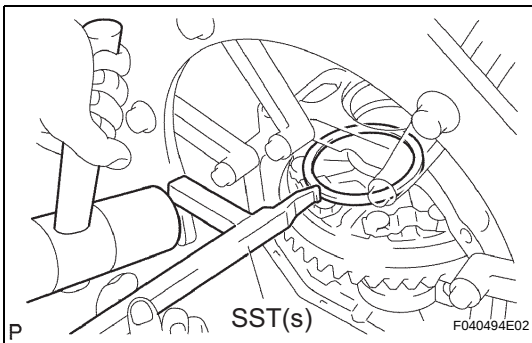
Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
2.21 to 2.23 (0.0870 to 0.0878)	2.57 to 2.59 (0.1012 to 0.1020)	2.93 to 2.95 (0.1154 to 0.1161)
2.24 to 2.26 (0.0882 to 0.0890)	2.60 to 2.62 (0.1024 to 0.1030)	2.96 to 2.98 (0.1165 to 0.1173)
2.27 to 2.29 (0.0894 to 0.0902)	2.63 to 2.65 (0.1035 to 0.1043)	2.99 to 3.01 (0.1177 to 0.1185)
2.30 to 2.32 (0.0906 to 0.0913)	2.66 to 2.68 (0.1047 to 0.1055)	3.02 to 3.04 (0.1189 to 0.1197)
2.33 to 2.35 (0.0917 to 0.0925)	2.69 to 2.71 (0.1059 to 0.1067)	3.05 to 3.07 (0.1201 to 0.1209)
2.36 to 2.38 (0.0929 to 0.0937)	2.72 to 2.74 (0.1071 to 0.1079)	3.08 to 3.10 (0.1213 to 0.1220)
2.39 to 2.41 (0.0941 to 0.0949)	2.75 to 2.77 (0.1083 to 0.1091)	3.11 to 3.13 (0.1224 to 0.1232)
2.42 to 2.44 (0.0953 to 0.0961)	2.78 to 2.80 (0.1094 to 0.1102)	3.14 to 3.16 (0.1236 to 0.1244)
2.45 to 2.47 (0.0965 to 0.0972)	2.81 to 2.83 (0.1106 to 0.1114)	3.17 to 3.19 (0.1248 to 0.1256)
2.48 to 2.50 (0.0976 to 0.0984)	2.84 to 2.86 (0.1118 to 0.1126)	3.20 to 3.22 (0.1260 to 0.1268)
2.51 to 2.53 (0.0988 to 0.0996)	2.87 to 2.89 (0.1130 to 0.1138)	-
2.54 to 2.56 (0.1000 to 0.1008)	2.90 to 2.92 (0.1142 to 0.1150)	-

12. ADJUST TOTAL PRELOAD

- (a) After adjusting the backlash of the differential ring gear, remove the teeth side thrust shim.
- (b) Using a micrometer, measure the thickness of the removed thrust shim.
- (c) Select a new thrust shim 0.06 to 0.09 mm (0.0024 to 0.0035 in.) which is thicker than the removed one.

HINT:

Select a thrust shim which can pressed in 2/3 rds of the way by finger.



- (d) Using SST(s) and a plastic hammer, drive in the thrust shim.

SST 09504-22011

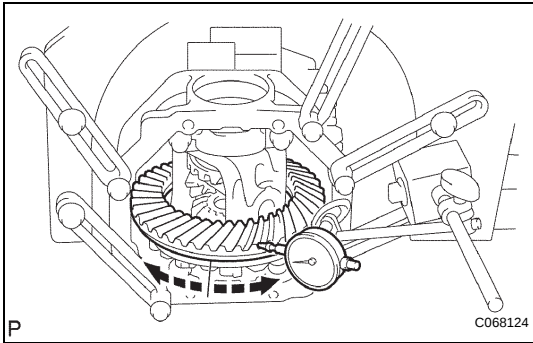
- (e) Align matchmarks on the bearing cap and differential carrier, and install the 2 bearing caps.

NOTICE:

Make sure the right and left bearing caps are not interchanged.

- (f) Tighten both bearing caps with the 4 bolts.

Torque: 79 N*m (800 kgf*cm, 58 ft.*lbf)



- (g) Set the dial gauge to the end of the differential ring gear face.
- (h) While holding the rear drive pinion companion flange rear, rotate the differential ring gear and measure the backlash.

Backlash:

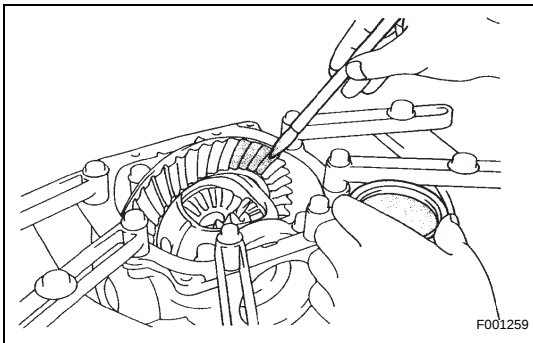
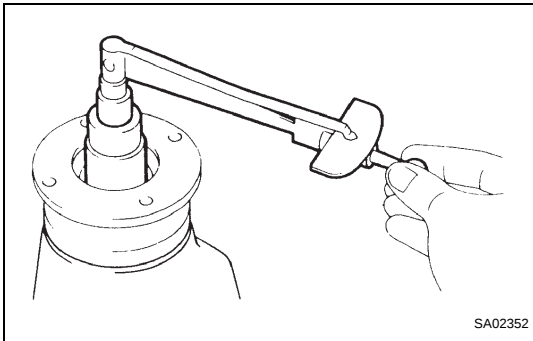
0.13 to 0.18 mm (0.0051 to 0.0071 in.)

- (i) If the measured value is out of the specified value, adjust it by increasing or decreasing the thickness of both right and left thrust shims equally.

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

Total preload (at starting):

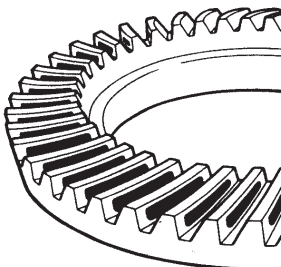
Drive pinion preload plus 0.3 to 0.5 N*m (3 to 5 kgf*cm, 2.6 to 4.3 in.*lbf)



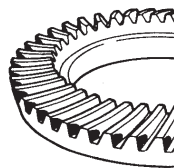
13. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

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

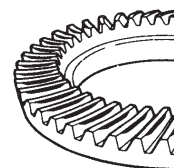
Proper Contact



Heel Contact

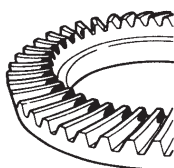


Face Contact

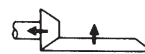
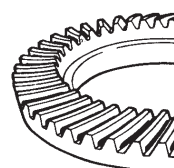


Select an adjusting washer that brings the drive pinion closer to the ring gear

Toe Contact



Flank Contact



Select an adjusting washer that shifts the drive pinion away from the ring gear

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

Washer thickness

Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
2.26 to 2.28 (0.0890 to 0.0898)	2.41 to 2.43 (0.0949 to 0.0957)	2.56 to 2.58 (0.1008 to 0.1016)
2.29 to 2.31 (0.0902 to 0.0909)	2.44 to 2.46 (0.0961 to 0.0969)	2.59 to 2.61 (0.1020 to 0.1028)
2.32 to 2.34 (0.0913 to 0.0921)	2.47 to 2.49 (0.0972 to 0.0980)	2.62 to 2.64 (0.1031 to 0.1039)
2.35 to 2.37 (0.0925 to 0.0933)	2.50 to 2.52 (0.0984 to 0.0992)	2.65 to 2.67 (0.1043 to 0.1051)
2.38 to 2.40 (0.0937 to 0.0945)	2.53 to 2.55 (0.0996 to 0.1004)	2.68 to 2.70 (0.1055 to 0.1063)

14. REMOVE REAR DRIVE PINION NUT (See page [DF-18](#))

15. REMOVE REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY (See page [DF-19](#))

16. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

(a) Remove the rear differential drive pinion oil slinger.

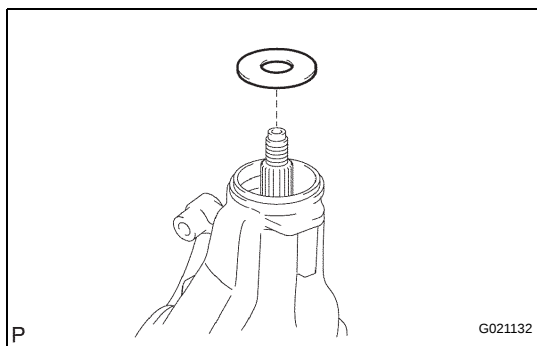
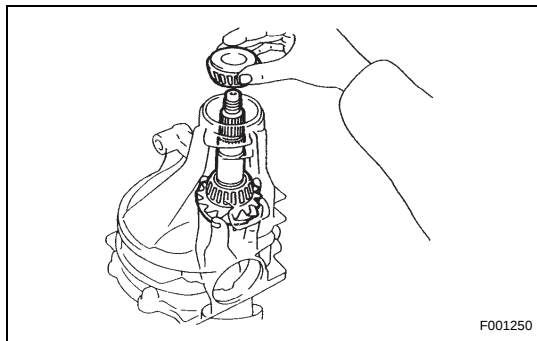
17. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING (See page [DF-19](#))

18. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

(a) Install a new bearing spacer.

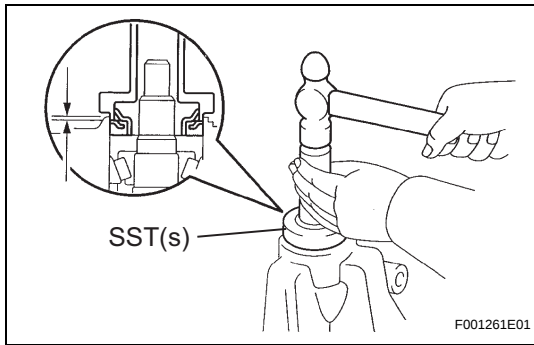
19. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Install the rear drive pinion front tapered roller bearing to the drive pinion.

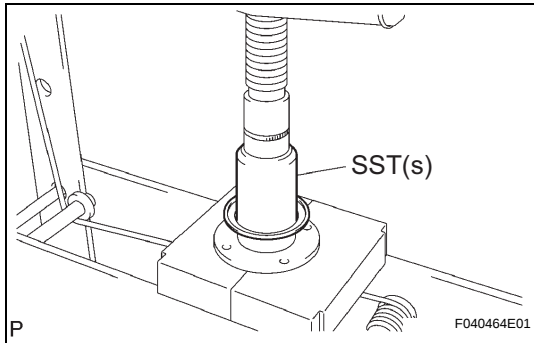


20. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

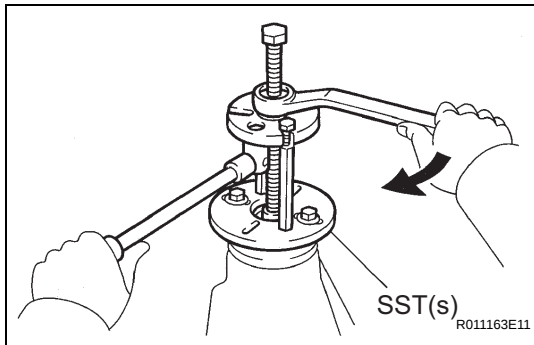
(a) Install the rear differential drive pinion oil slinger to the drive pinion.

**21. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL**

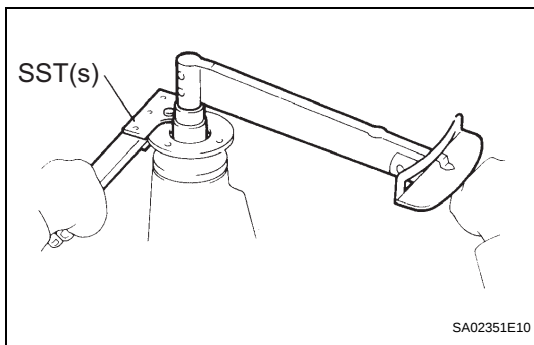
- (a) Using SST(s) and a hammer, install a new oil seal.
SST 09554-22010
Oil seal drive in depth:
2.0+ 0.3 mm (0.079 + 0.012 in.)
- (b) Apply MP grease to the oil seal lip.

**22. INSTALL REAR DIFFERENTIAL DUST DEFLECTOR**

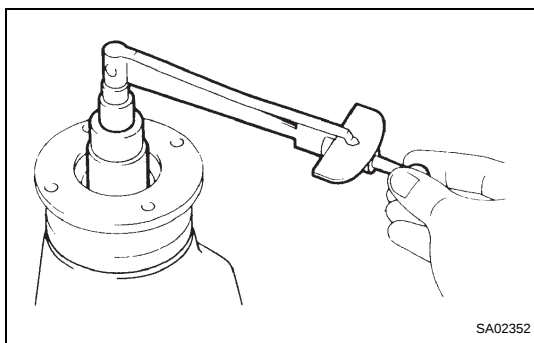
- (a) Using SST(s) and a press, install a new dust deflector.
SST 09223-00010
NOTICE:
Be careful not to damage the dust deflector.

**23. INSTALL REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY**

- (a) Using SST(s), install the companion flange to the drive pinion.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)
- (b) Coat the threads of a new nut with hypoid gear oil LSD.



- (c) Using SST(s) to hold the flange, torque the nut.
SST 09330-00021
Torque: 108 N*m (1,100 kgf*cm, 80 ft.*lbf)

**24. INSTALL DIFFERENTIAL DRIVE PINION PRELOAD**

- (a) Using a torque wrench, measure the preload of the drive pinion.
New bearing:
1.1 to 1.7 N*m (11 to 17 kgf*cm, 9.6 to 14.8 in.*lbf)
Reused bearing:
0.6 to 0.9 N*m (6 to 9 kgf*cm, 5.2 to 7.8 in.*lbf)
 - If the preload is greater than the specification, replace the bearing spacer.

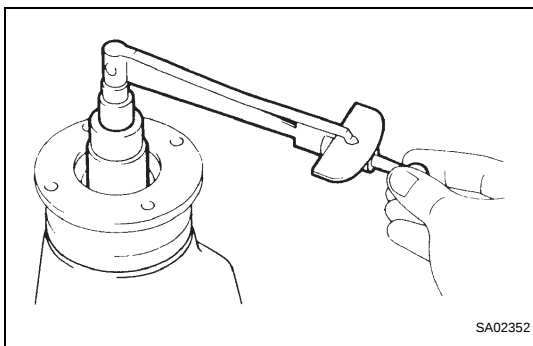
- If the preload is less than the specification, replace the nut with 13 N*m (130 kgf*cm, 9 ft.*lbf) of torque at a time until the specified preload is reached.

Torque:**235 N*m (2.400 kgf*cm, 174 ft.*lbf) or less**

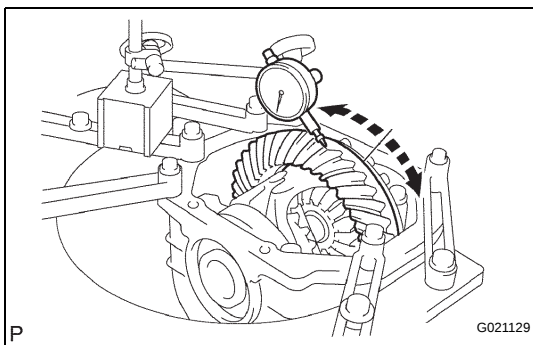
- If the torque exceeds the maximum while retightening the nut, replace the bearing spacer and repeat the preload adjusting procedure.

NOTICE:**Do not loosen the pinion nut to reduce the preload.****HINT:**

This preload is within the backlash between the drive pinion and ring gear.

**25. INSPECT TOTAL PRELOAD**

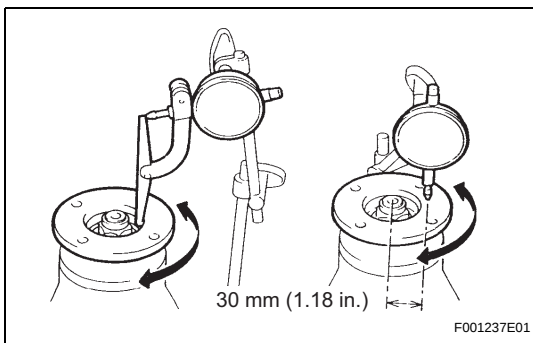
- Using a torque wrench, measure the preload.

Total preload (at starting):**Drive pinion preload plus 0.3 to 0.5 N*m (3 to 5 kgf*cm, 2.6 to 4.3 in.*lbf)****26. INSPECT DIFFERENTIAL RING GEAR BACKLASH**

- Using a dial gauge, check the backlash of the ring gear.

Backlash:**0.13 to 0.18 mm (0.0051 to 0.0071 in.)**

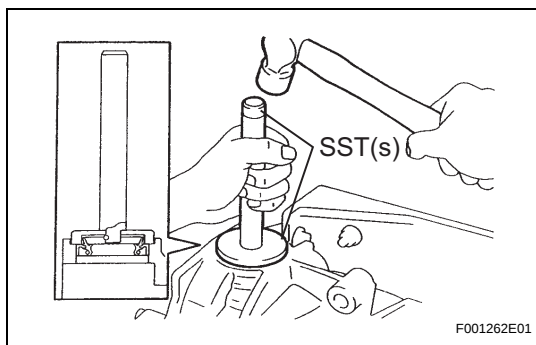
If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

**27. INSPECT REAR DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY**

- Using a dial gauge, measure the runout of the companion flange vertically.

Maximum runout:**0.10 mm (0.0039 in.)****28. INSTALL REAR DRIVE PINION NUT**

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



29. INSTALL REAR DIFFERENTIAL SIDE GEAR SHAFT SEAL OIL

- (a) Using SST(s) and a hammer, install 2 new oil seals.
SST 09550-00032, 09950-70010 (09951-07200)
Oil seal drive in depth:
0 +/- 0.5 mm (0 +/- 0.019 in.)
- (b) Apply MP grease to the oil seal lip.

30. INSTALL REAR DIFFERENTIAL CARRIER COVER

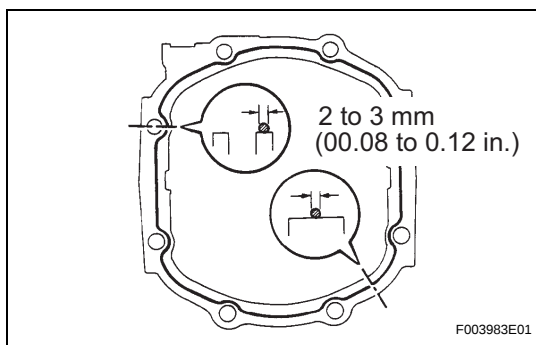
- (a) Install the breather plug to the carrier cover.
Torque: 21 N*m (210 kgf*cm, 15 ft.*lbf)
- (b) Clean contacting surfaces of any residual FIPG material using gasoline or alcohol.
- (c) Apply FIPG to the carrier.

HINT:

- FIPG should be applied 2 to 3 mm (0.08 to 0.12 in.) in diameter with no break.
- Allow for an overlap of 10 mm (0.37 in.) or more between the start and end of FIPG application.
- Install the carrier cover within 3 minutes after applying FIPG.
- Do not add oil or drive the vehicle immediately after installing the cover, and leave it as is for at least an hour or more. Also, for 12 hours or more, avoid rapid acceleration/deceleration.

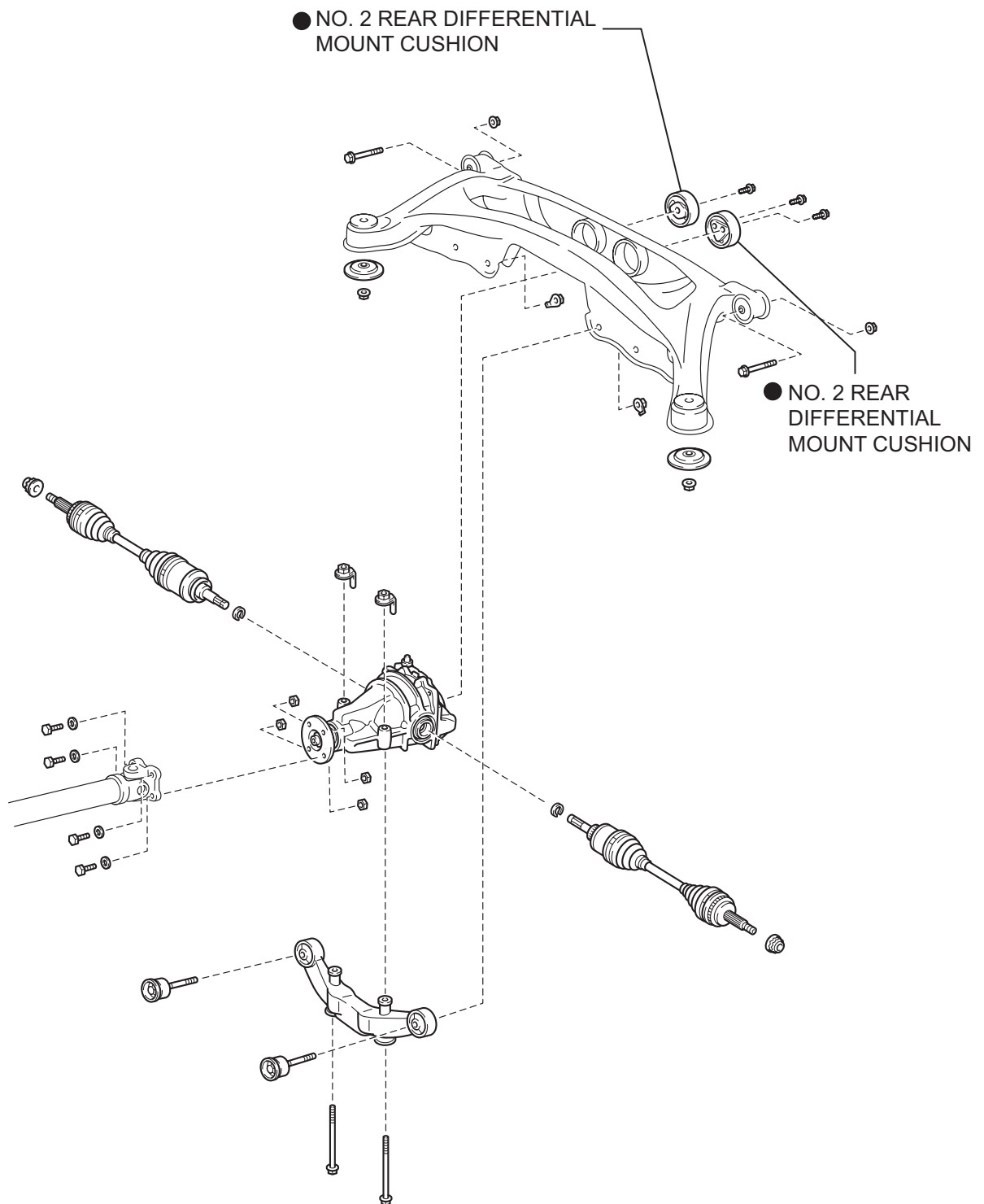
- (d) Install the carrier cover with the 8 bolts.

Torque: 47 N*m (475 kgf*cm, 34 ft.*lbf)



DIFFERENTIAL MOUNT CUSHION

COMPONENTS



DF

REMOVAL

1. REMOVE REAR DIFFERENTIAL CARRIER ASSEMBLY

HINT:

(See page [DF-13](#))

2. REMOVE NO. 1 REAR DIFFERENTIAL MOUNT CUSHION

- (a) Using SST(s), remove the No. 1 rear differential mount cushion.

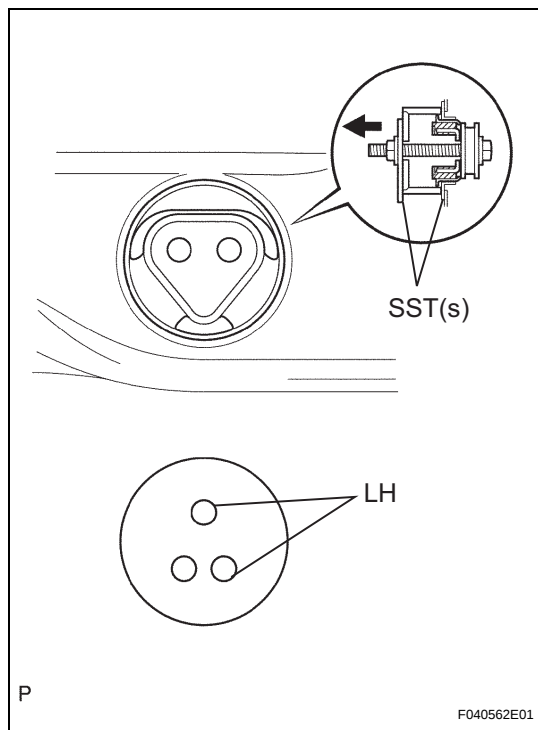
SST 09570-24011, 09316-12010

NOTICE:

- Do not bring SST(s) into contact with the sub-frame.
- Do not slant the bolts of SST(s).
- Do not set the SST(s) in wrong direction.
- Screw the 2 bolts of SST(s) equally into the 2 holes of the rear differential mount.

HINT:

Perform this operation only when the No. 1 rear differential mount cushion is damaged.



3. REMOVE NO. 2 REAR DIFFERENTIAL MOUNT CUSHION

- (a) Using SST(s), remove the No. 2 rear differential mount cushion.

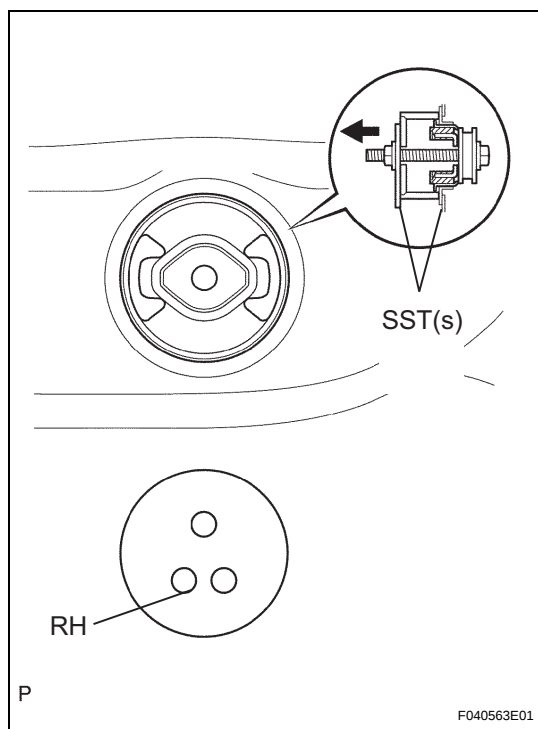
SST 09570-24011, 09316-12010

NOTICE:

- Do not bring SST(s) into contact with the sub-frame.
- Do not slant the bolt of SST(s).
- Do not set the SST(s) in wrong direction.

HINT:

Perform this operation only when the No. 2 rear differential mount cushion is damaged.



INSTALLATION

1. INSTALL NO. 1 REAR DIFFERENTIAL MOUNT CUSHION

- (a) Using SST(s), install a new No. 1 rear differential mount cushion.

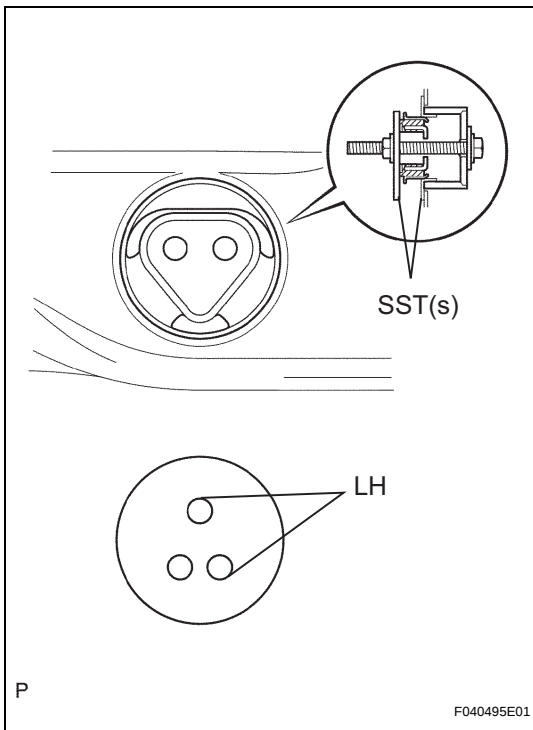
SST 09570-24011, 09316-12010

NOTICE:

Do not set the SST(s) in wrong direction.

HINT:

Perform this operation only when the No. 1 rear differential mount cushion is replaced.



2. INSTALL NO. 2 REAR DIFFERENTIAL MOUNT CUSHION

- (a) Using SST(s), install a new No. 2 rear differential mount cushion.

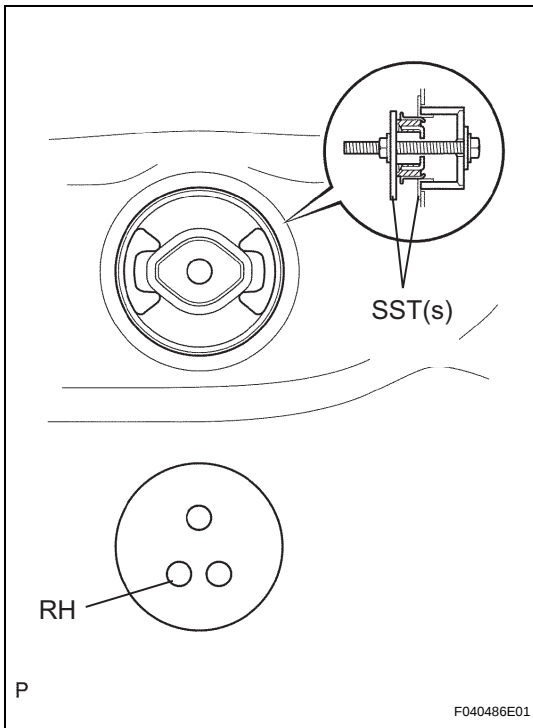
SST 09570-24011, 09316-12010

NOTICE:

Do not set the SST(s), install a new No. 2 rear differential mount cushion.

HINT:

Perform this operation only when the No. 2 rear differential mount cushion is replaced.



3. INSTALL REAR DIFFERENTIAL CARRIER ASSEMBLY

HINT:

(See page [DF-14](#))