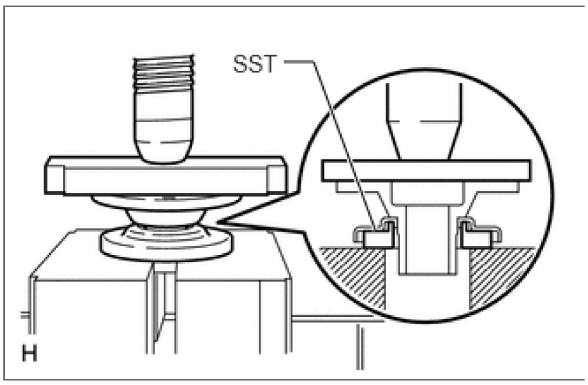
PROCEDURE

1.INSTALL FRONT DIFFERENTIAL DUST DEFLECTOR 41252A

a.



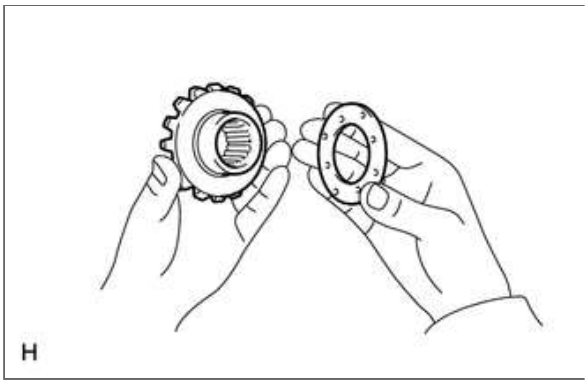
Using SST, a press and steel plate, press in a new front differential dust deflector.

SST
09726-40010

NOTICE:
Be careful not to damage the front differential dust deflector.

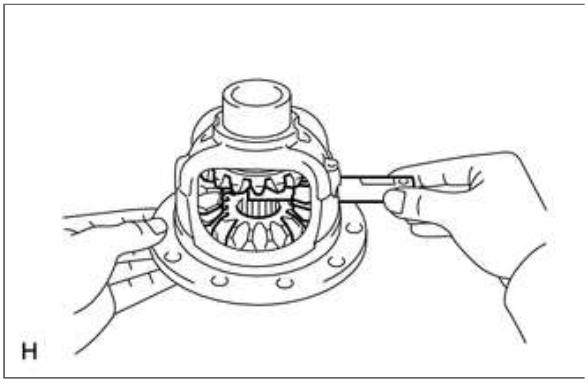
2.ASSEMBLE FRONT DIFFERENTIAL CASE (for 2 Pinion Gear Type) 41311

a.



Install the 2 front No. 1 differential side gear thrust washers to the 2 front differential side gears.

b.

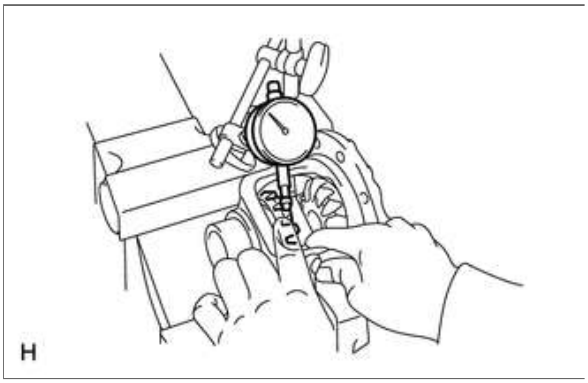


Install the 2 front differential side gears with the 2 front No. 1 differential side gear thrust washers, 2 front differential pinions, 2 front differential pinion thrust washers and front No. 1 differential pinion shaft.

HINT:

- Align the straight pin holes of the front differential case and front No. 1 differential pinion shaft.
- Apply hypoid gear oil to each sliding surface and rotating part.

c.



Using a dial indicator, measure the side gear backlash while holding one pinion gear toward the front differential case.

Standard backlash:
0.05 to 0.20 mm (0.00197 to 0.00787 in.)

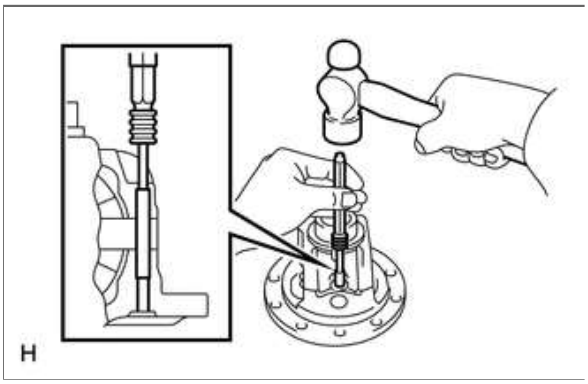
If the backlash is not within specification, replace the side gear thrust washer with an appropriate thickness.

HINT:
Refer to the following table to select side gear thrust washers which will ensure that the backlash is within the specified range.

Standard Side Gear Thrust Washer Thickness:

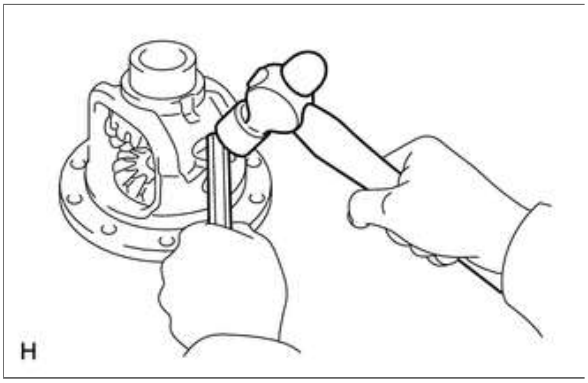
Thickness
1.6 mm (0.0629 in.)
1.7 mm (0.0669 in.)
1.8 mm (0.0708 in.)

d.



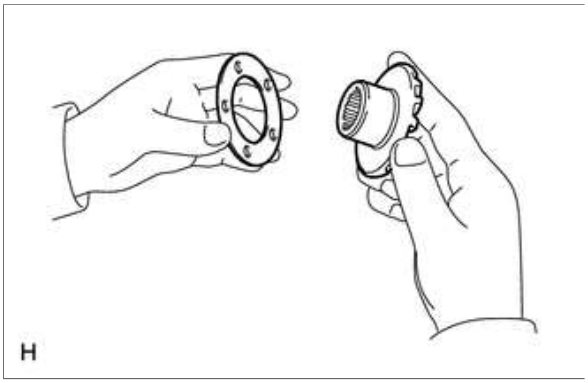
Using a pin punch and hammer, tap the straight pin through the holes in the front differential case and front No. 1 differential pinion shaft.

e.



Using a chisel and hammer, stake the outside of the front differential case pin hole.

a.

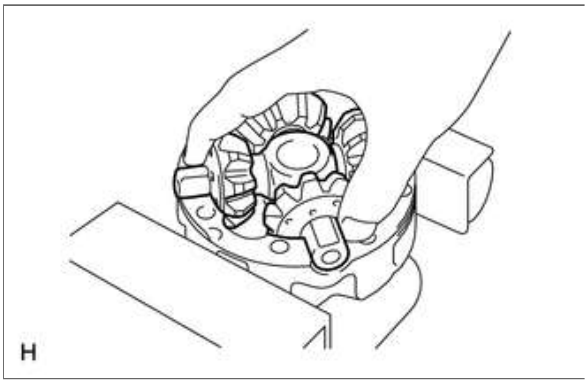


Apply hypoid gear oil to each part.

b. Install the front No. 1 differential side gear thrust washer to the front differential side gear.

c. Install the front differential side gear to the front differential case RH.

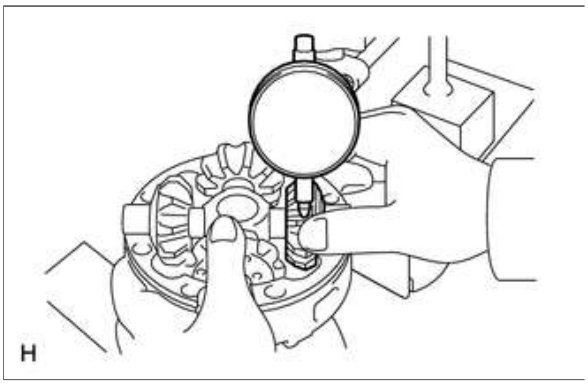
d.



Install the 4 front differential pinions and 4 front differential pinion thrust washers to the front differential spider.

e. Install the front differential pinions and front differential spider to the front differential case RH.

f.



While holding the front differential side gear and front differential spider, measure the side gear backlash.

Standard backlash:
0.05 to 0.20 mm (0.00197 to 0.00787 in.)

HINT:

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

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

Standard Side Gear Thrust Washer Thickness:

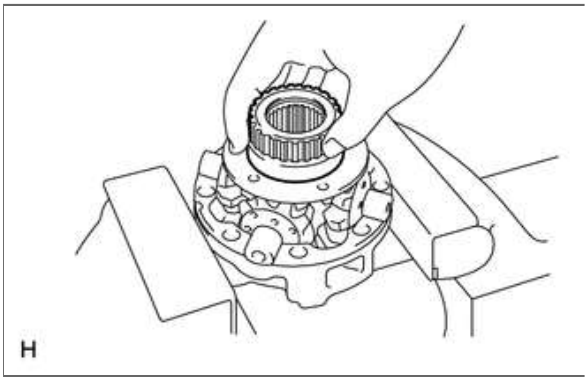
Thickness	Thickness

Thickness	Thickness
0.87 to 0.93 mm (0.0343 to 0.0366 in.)	1.17 to 1.23 mm (0.0461 to 0.0484 in.)
0.97 to 1.03 mm (0.0382 to 0.0405 in.)	1.27 to 1.33 mm (0.0500 to 0.0523 in.)
1.07 to 1.13 mm (0.0422 to 0.0444 in.)	-

g. Install the front differential side gear and front No. 1 differential side gear thrust washer to the front differential case RH.

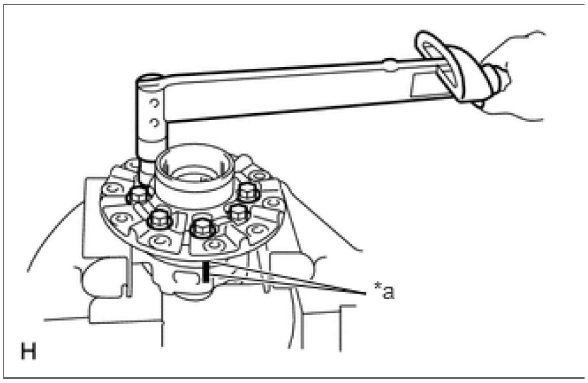
h. Install the 4 front differential pinions, 4 front differential pinion thrust washers and front differential spider to the front differential case RH.

i.



Install the front differential side gear and front No. 1 differential side gear thrust washer to the front differential case RH.

j.



*a	Matchmark

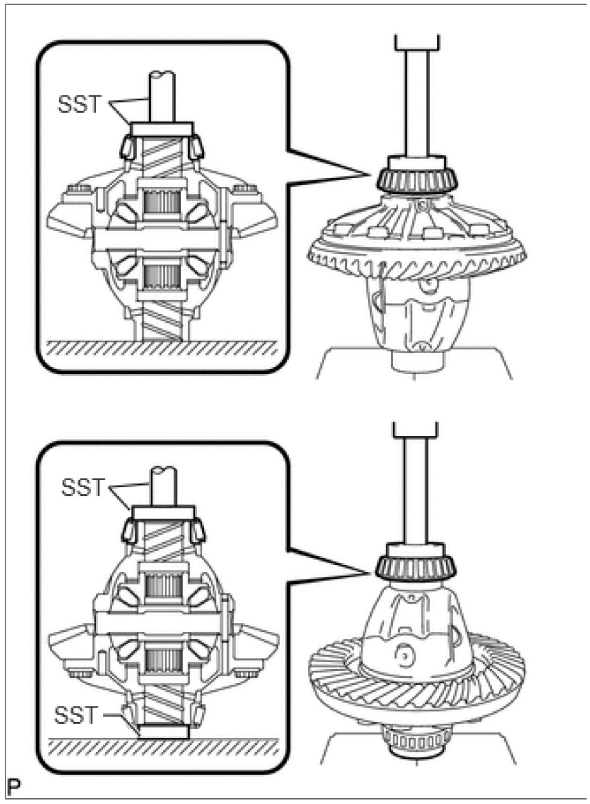
Align the matchmarks on the front differential case LH and RH.

k. Install the 8 bolts.

Torque:
47.1 N*m (480 kgf*cm, 35 ft.*lbf)

4.INSTALL FRONT DIFFERENTIAL CASE BEARING 41311A

a.



Using SST and a press, install the 2 front differential case bearings (inner race) to the front differential case.

SST

09950-60010 (09951-00480, 09951-00550)
09950-70010 (09951-07150)

5.INSTALL DIFFERENTIAL RING GEAR

a. Clean the contact surfaces of the front differential case and differential ring gear.

b. Heat the differential ring gear to approximately 100°C (212°F) in boiling water.

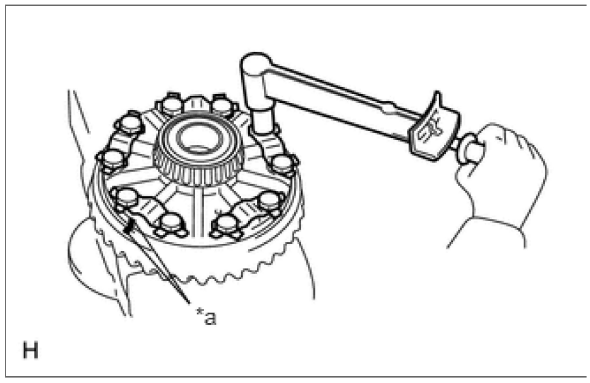
c. Carefully take the ring gear out of the boiling water.

d. After the moisture on the differential ring gear has completely evaporated, quickly set the ring gear onto the front differential case.

e. Align the matchmarks on the differential ring gear and front differential case.

f. Temporarily install 5 new lock plates and the 10 set bolts.

g.



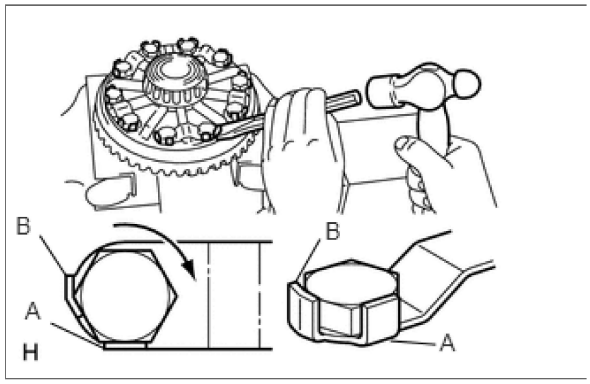
*a	Matchmark

After the differential ring gear cools down sufficiently, tighten the 10 bolts uniformly a little at a time.

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

HINT:
Tighten the bolts in diametrically opposite pairs.

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 contacts the bolt as shown in the illustration.

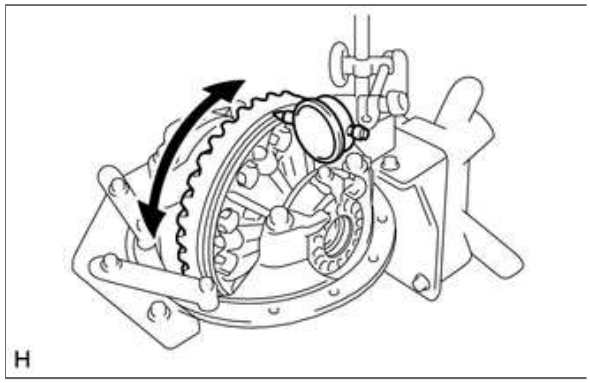
6.INSPECT RUNOUT OF RING GEAR

a. Install the front differential case and 2 front differential case bearings (outer race) to the differential carrier, and install the 2 front differential bearing adjusting nuts so that there is no play in the bearing.

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

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

c.



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

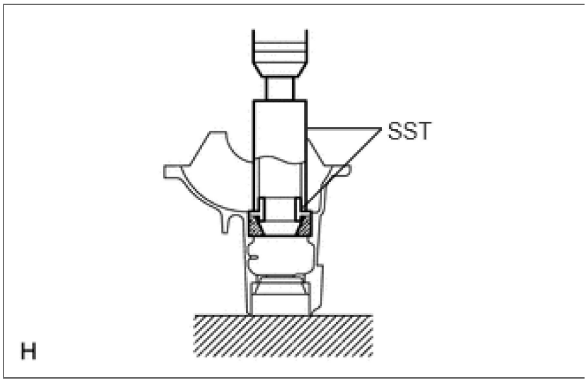
Maximum runout:
0.10 mm (0.00394 in.)

If the runout is more than the maximum, replace the differential ring gear.

d. Remove the 4 bolts, 2 bearing caps, 2 front differential bearing adjusting nuts and front differential case.

7.INSTALL FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING 41211A

a.



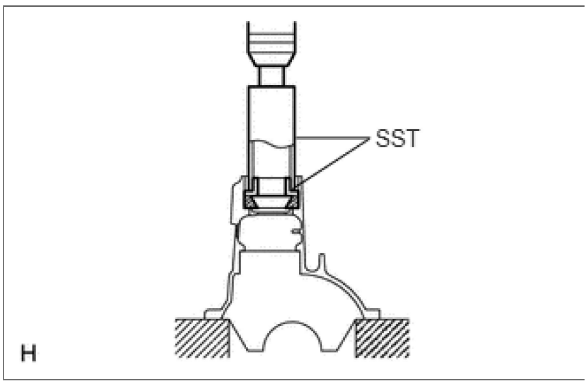
Using SST and a press, press in the front drive pinion front tapered roller bearing (outer race).

SST

09316-60011 (09316-00011, 09316-00051)

8.INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING 41211B

a.



Using SST and a press, press in the front drive pinion rear tapered roller bearing (outer race).

SST

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

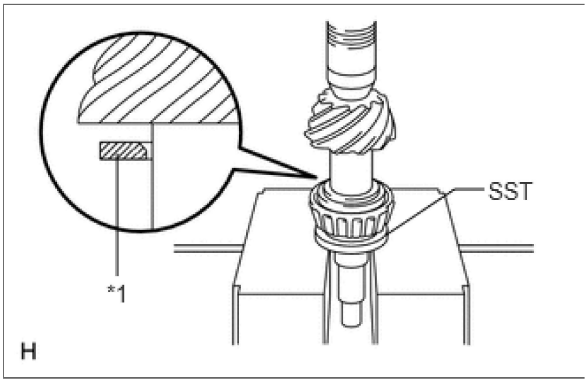
9.INSTALL FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING 41211A

a. Install the front differential drive pinion plate washer onto the differential drive pinion.

HINT:

First fit a front differential drive pinion plate washer with the same thickness as the removed front differential drive pinion plate washer, and then check the tooth contact pattern. Replace the front differential drive pinion plate washer with one of a different thickness if necessary.

b.



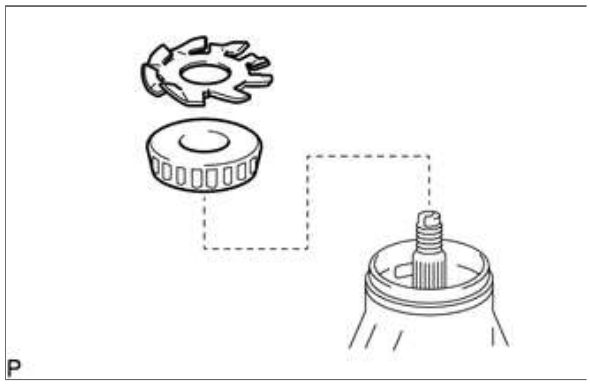
*1	Front Differential Drive Pinion Plate Washer

Using SST and a press, press in the front drive pinion front tapered roller bearing (inner race).

SST
09506-30012

10.ADJUST DIFFERENTIAL DRIVE PINION PRELOAD

a.

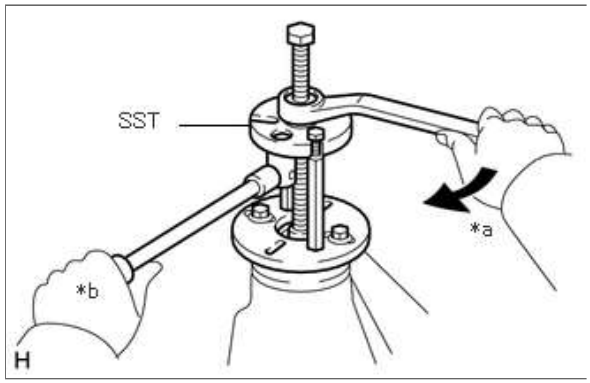


Install the differential drive pinion, front drive pinion front tapered roller bearing (inner race) and front differential drive pinion oil slinger.

HINT:

Install the front differential drive pinion bearing spacer and front differential carrier oil seal after adjusting the gear contact pattern.

b.



*a	Turn
*b	Hold

Using SST, install the front drive pinion companion flange sub-assembly with dust deflector.

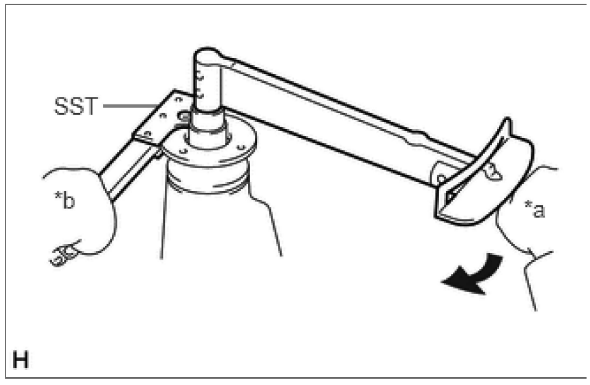
SST
09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)

NOTICE:

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

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

d.



*a	Turn

*b	Hold

Using SST, hold the front drive pinion companion flange sub-assembly.

SST

09330-00021 (09330-00030)

e. Using a 30 mm socket wrench and torque wrench, gradually tighten the front drive pinion companion flange nut within the adjustment range of the differential drive pinion preload.

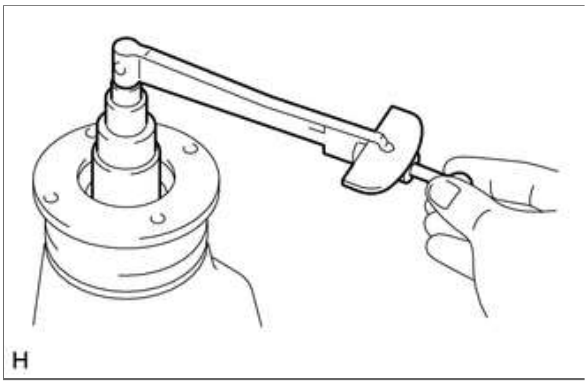
Torque:

370 N*m (3773 kgf*cm, 273 ft.*lbf)
or less

NOTICE:

- As there is no front differential drive pinion bearing spacer, tighten the front drive pinion companion flange nut a little at a time. Be careful not to overtighten it.
- Apply hypoid gear oil LSD to the drive pinion threads and front drive pinion companion flange nut seat face.

f.



Using a torque wrench, measure the preload.

Standard Preload (At Starting) (for 2 Pinion Gear Type):

Item	Specified Condition
New	1.05 to 1.64 N*m (11 to 16 kgf*cm, 10 to 14 in.*lbf)
Reused	0.56 to 0.85 N*m (6 to 8 kgf*cm, 5 to 7 in.*lbf)

Standard Preload (At Starting) (for 4 Pinion Gear Type):

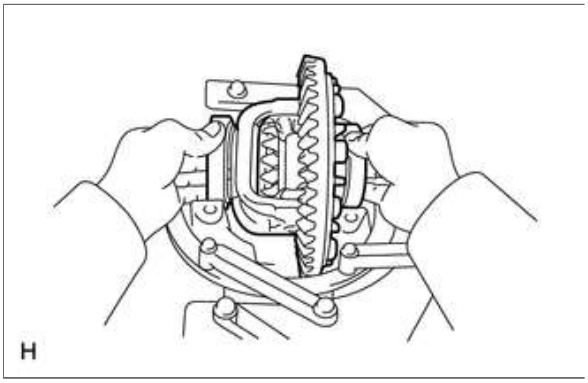
Item	Specified Condition
New	1.05 to 1.64 N*m (11 to 16 kgf*cm, 10 to 14 in.*lbf)
Reused	0.56 to 0.85 N*m (6 to 8 kgf*cm, 5 to 7 in.*lbf)

NOTICE:

- For a more accurate measurement, rotate the bearing forward and backward several times before measuring.
- Record the differential drive pinion preload for the total preload measurement.

11.INSTALL FRONT DIFFERENTIAL CASE 41311

a.



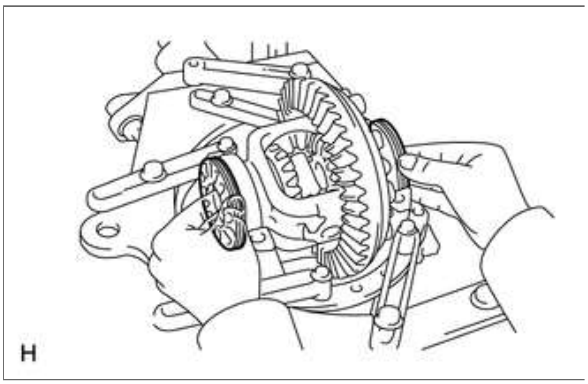
Place the 2 front differential case bearings (outer race) on their respective bearings.

NOTICE:

Do not interchange the right and left race.

12.INSTALL FRONT DIFFERENTIAL BEARING ADJUSTING NUT 41315A

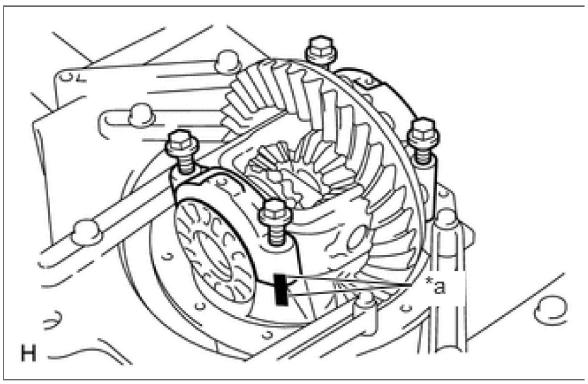
a.



Install the 2 front differential bearing adjusting nuts onto the differential carrier, making sure the nuts are threaded properly.

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

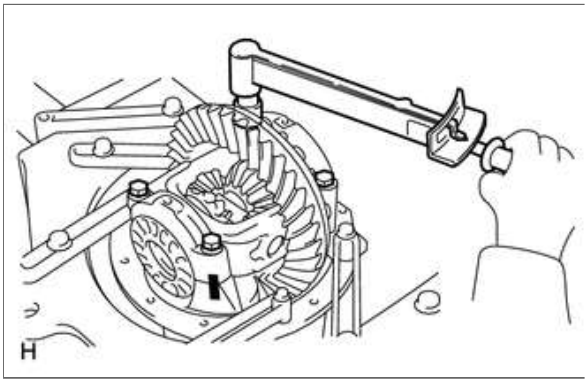
a.



*a	Matchmark

Align the matchmarks on the bearing caps and differential carrier.

b.



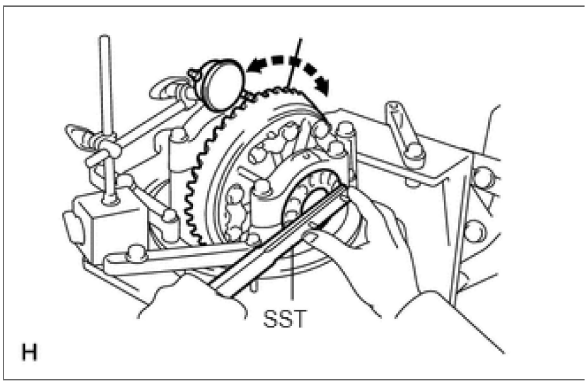
Install the 2 bearing caps with the 4 bolts.

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

HINT:
If the bearing caps do not fit tightly on the carrier, the front differential bearing adjusting nuts are not threaded properly.

Reinstall the adjusting nuts if necessary.

c.

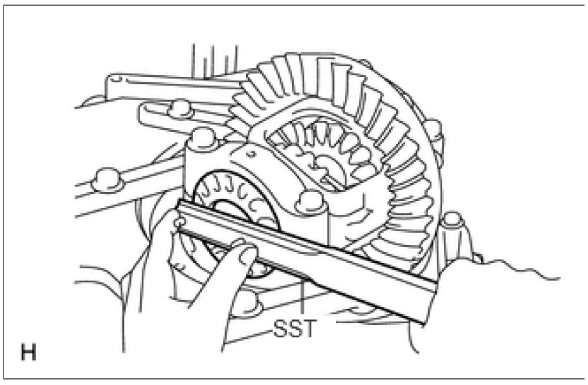


Loosen the 4 bearing cap bolts to the point where the front differential bearing adjusting nuts can be turned using SST.

SST
09504-00011

d. Using SST, tighten the adjusting nut on the ring gear side until the ring has a backlash of about 0.2 mm (0.00787 in.).

e.

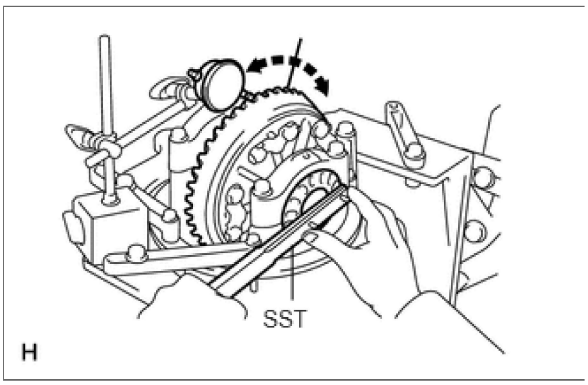


While turning the differential ring gear, use SST to tighten the front differential bearing adjusting nut on the drive pinion side. After the bearings have settled, loosen the front differential bearing adjusting nut on the drive pinion side.

SST
09504-00011

f. Using SST, tighten the front differential bearing adjusting nut 1 to 1.5 notches from the 0 preload position.

g.



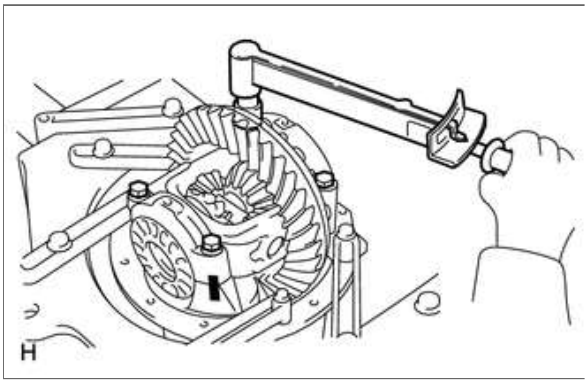
Using a dial indicator, adjust the ring gear backlash until it is within the specification.

Standard backlash:
0.13 to 0.18 mm (0.00512 to 0.00708 in.)

HINT:

- The backlash is adjusted by turning the left and right front differential bearing adjusting nuts by 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.

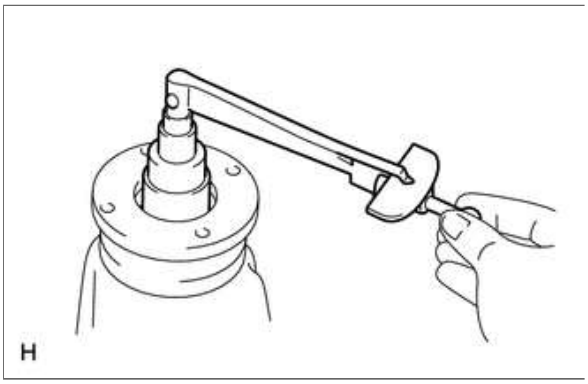


Tighten the 4 bearing cap bolts.

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

14.INSPECT TOTAL PRELOAD

a.



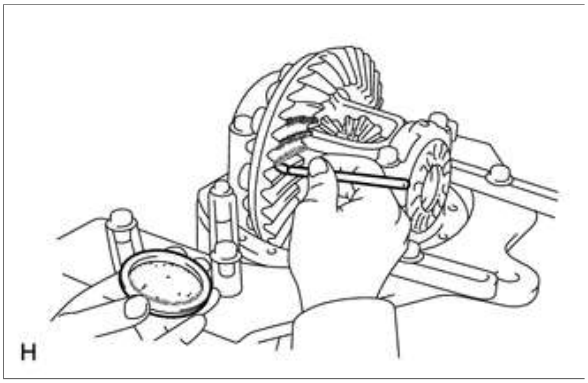
Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Standard total preload (at starting):
0.39 to 0.59 N*m (4 to 6 kgf*cm, 4 to 5 in.*lbf) + drive pinion preload

HINT:
Record the differential ring gear preload.

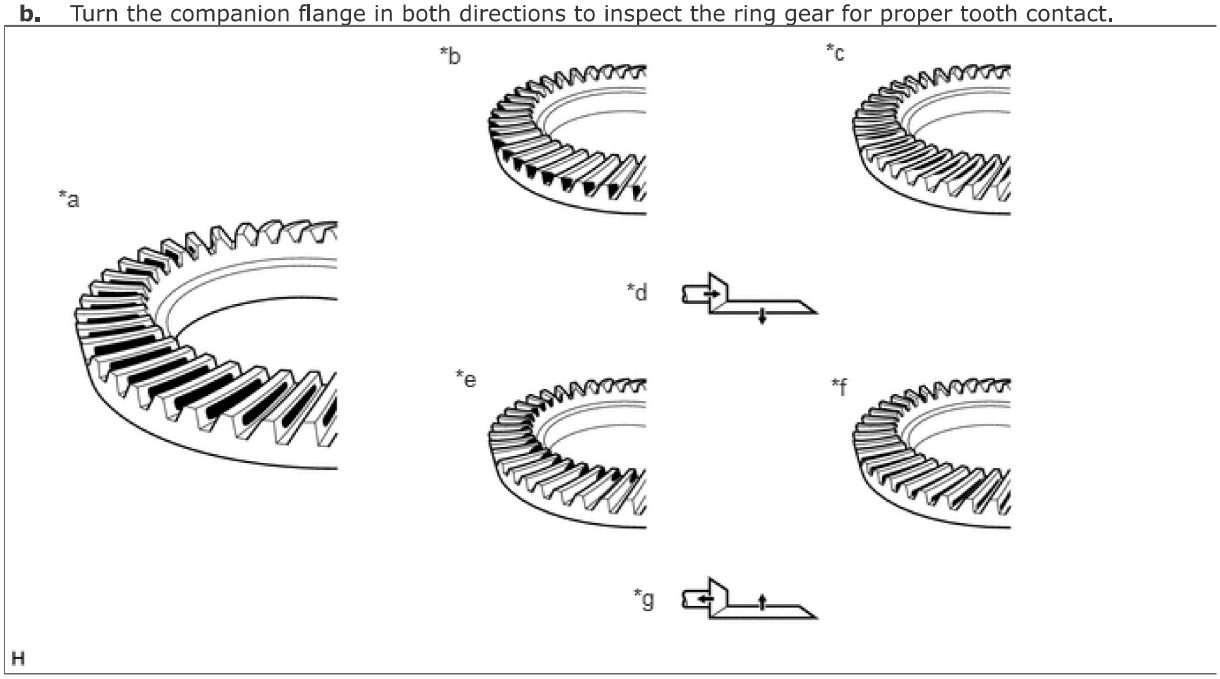
15.INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

a.



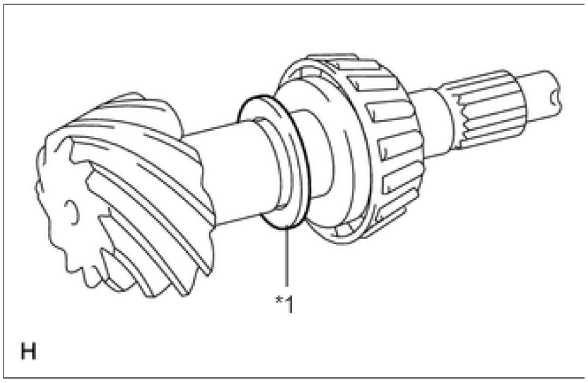
Coat 3 or 4 teeth at 3 different positions on the ring gear with Prussian blue.

b. Turn the companion flange in both directions to inspect the ring gear for proper tooth contact.



*a	Proper Contact	*b	Heel Contact
*c	Face Contact	*d	Select an adjusting washer that will shift the drive pinion closer to the ring gear (*b, *c)
*e	Toe Contact	*f	Flank Contact
*g	Select an adjusting washer that will shift the drive pinion away from the ring gear (*e, *f)	-	-

c.



*1	Front Differential Drive Pinion Plate Washer

Inspect the tooth contact pattern.

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

Standard Plate Washer Thickness:

Thickness	Thickness
1.69 to 1.71 mm (0.0666 to 0.0673 in.)	2.02 to 2.04 mm (0.0796 to 0.0803 in.)
1.72 to 1.74 mm (0.0678 to 0.0685 in.)	2.05 to 2.07 mm (0.0808 to 0.0814 in.)
1.75 to 1.77 mm (0.0689 to 0.0696 in.)	2.08 to 2.10 mm (0.0819 to 0.0826 in.)
1.78 to 1.80 mm (0.0701 to 0.0708 in.)	2.11 to 2.13 mm (0.0831 to 0.0838 in.)
1.81 to 1.83 mm (0.0713 to 0.0720 in.)	2.14 to 2.16 mm (0.0843 to 0.0850 in.)
1.84 to 1.86 mm (0.0725 to 0.0732 in.)	2.17 to 2.19 mm (0.0855 to 0.0862 in.)
1.87 to 1.89 mm (0.0737 to 0.0744 in.)	2.20 to 2.22 mm (0.0867 to 0.0874 in.)
1.90 to 1.92 mm (0.0749 to 0.0755 in.)	2.23 to 2.25 mm (0.0878 to 0.0885 in.)
1.93 to 1.95 mm (0.0760 to 0.0767 in.)	2.26 to 2.28 mm (0.0890 to 0.0897 in.)
1.96 to 1.98 mm (0.0772 to 0.0779 in.)	2.29 to 2.31 mm (0.0902 to 0.0909 in.)
1.99 to 2.01 mm (0.0784 to 0.0791 in.)	2.32 to 2.34 mm (0.0914 to 0.0921 in.)

16.REMOVE FRONT DRIVE PINION COMPANION FLANGE NUT **41204E**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

17.REMOVE FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY WITH DUST DEFLECTOR **41204D**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

18.REMOVE FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER **41214C**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

19.REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING **41211B**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

20.INSTALL FRONT DIFFERENTIAL DRIVE PINION BEARING SPACER **41231F**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

21.INSTALL FRONT DIFFERENTIAL OIL STORAGE RING **41115F**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

22.INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING **41211B**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

23.INSTALL FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER **41214C**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

24.INSTALL FRONT DIFFERENTIAL CARRIER OIL SEAL **41101D**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

25.INSTALL FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY WITH DUST DEFLECTOR **41204D**

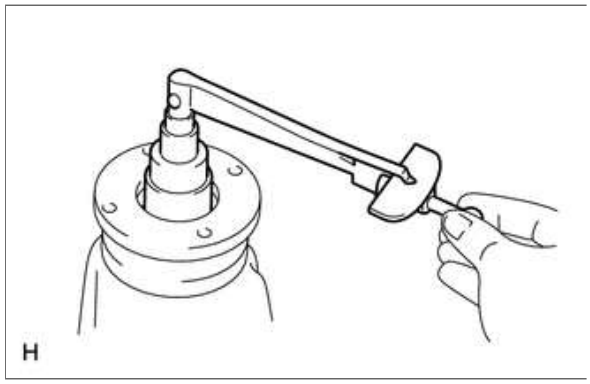
Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

26.INSPECT DRIVE PINION PRELOAD

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

27.INSPECT TOTAL PRELOAD

a.



Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
Standard total preload (at starting):
0.39 to 0.59 N*m (4 to 6 kgf*cm, 4 to 5 in.*lbf) + drive pinion preload

If necessary, disassemble and inspect the differential.

28.INSPECT DIFFERENTIAL RING GEAR BACKLASH

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER ASSEMBLY (for Standard)>DISASSEMBLY

29.INSPECT RUNOUT OF FRONT DRIVE PINION COMPANION FLANGE SUB-ASSEMBLY **41204D**

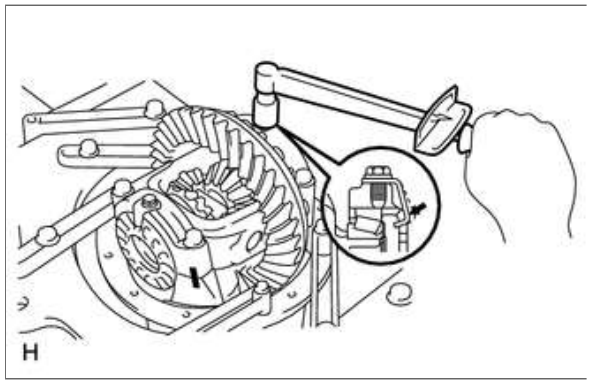
Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER ASSEMBLY (for Standard)>DISASSEMBLY

30.STAKE FRONT DRIVE PINION COMPANION FLANGE NUT **41204E**

Click hereDrivetrain>AXLE AND DIFFERENTIAL>FRONT DIFFERENTIAL CARRIER OIL SEAL>REPLACEMENT

31.INSTALL FRONT DIFFERENTIAL BEARING ADJUSTING NUT LOCK **41316A**

a.



Install 2 new front differential bearing adjusting nut locks onto the bearing caps with the 2 bolts.
Torque:
12.7 N*m (130 kgf*cm, 9 ft.*lbf)

b. Bend the nut locks.