

REASSEMBLY

1. ASSEMBLE DIFFERENTIAL SIDE

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

HINT:

Refer to the table below to select thrust washers which will ensure that the backlash is within the specification.

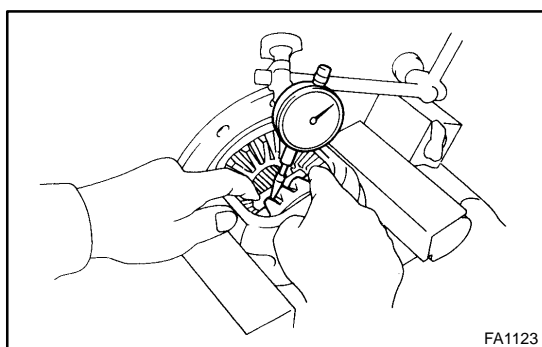
Washer thickness:

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

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

HINT:

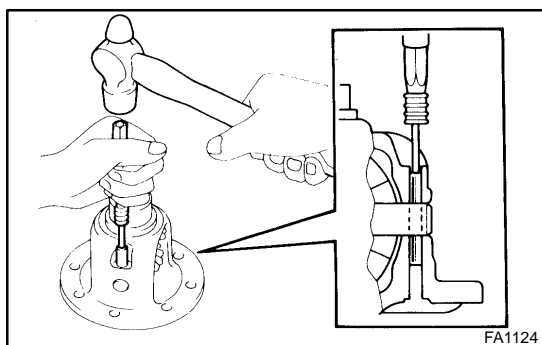
Align the holes of the differential case and pinion shaft.



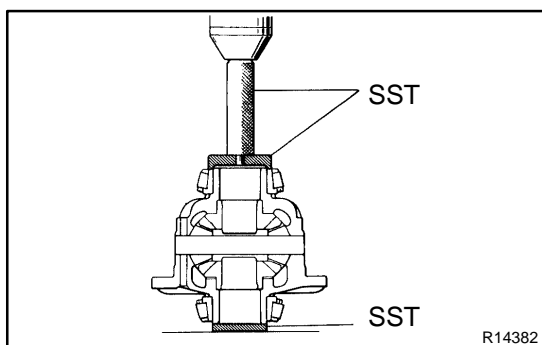
- (c) Using a dial indicator, measure the side gear backlash with holding one pinion gear toward the differential case.

Backlash: 0.05 – 0.20 mm (0.0020 – 0.0079 in.)

If the backlash is not within the specified value, select an appropriate thickness for the side gear thrust washer.



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



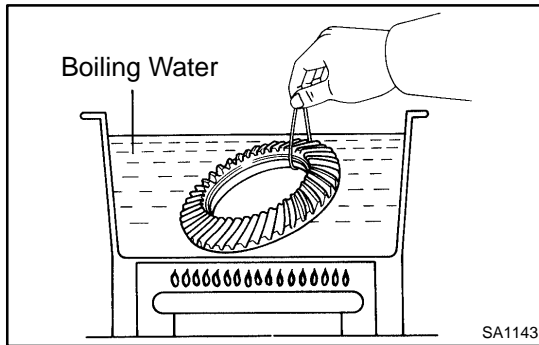
2. INSTALL SIDE BEARINGS

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

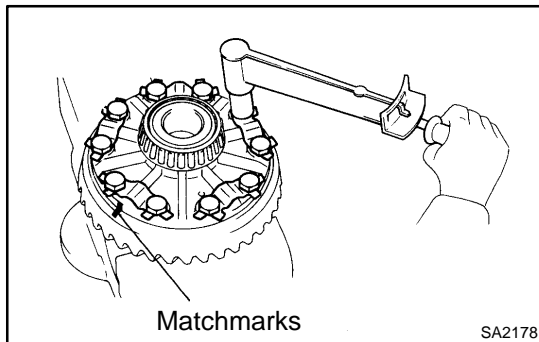
SST 09550-10013 (09252-10010, 09557-10011),
09950-60010 (09951-00450)

3. INSTALL RING GEAR ON DIFFERENTIAL CASE

- (a) Clean the contact surfaces of the differential case and ring gear.
- (b) Heat the ring gear to about 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 to the differential case.

HINT:

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

- (e) Temporarily install 5 new lock plates and the 10 bolts so that the bolt holes in the ring gear and differential case are not misaligned.

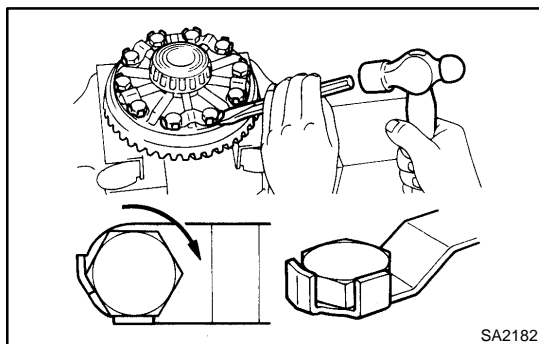
- (f) After the ring gear has cooled sufficiently, torque the ring gear set bolts.

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

- (g) Using a chisel and hammer, stake the lock plates.

HINT:

Stake the claws of the lock plates to fix the bolts. For the claw contacting the protruding portion of the bolt, stake only the half of it along the tightening direction.



4. CHECK RING GEAR RUNOUT

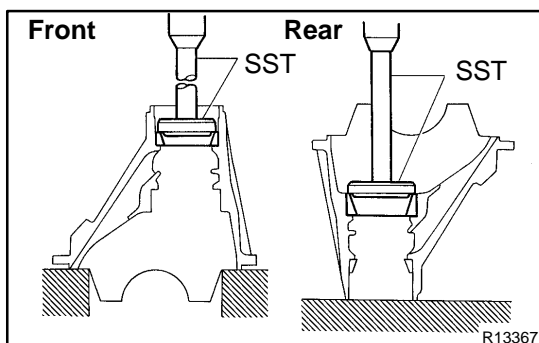
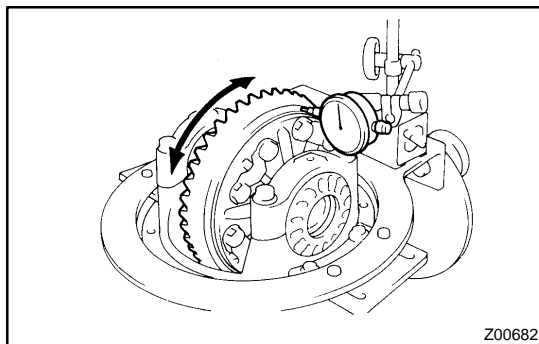
- (a) Install the differential case into the differential carrier and tighten the adjusting nut just to make sure there is no play in the bearing (See step 8. to 9.).

- (b) Install the bearing caps (See step 10.).

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

Maximum runout: 0.07 mm (0.0028 in.)

- (d) Remove the bearing caps and differential case.



5. INSTALL DRIVE PINION FRONT AND REAR BEARING OUTER RACES

- (a) Using SST and a press, install the front bearing outer race.

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

- (b) Using SST and a press, install the rear bearing outer race.

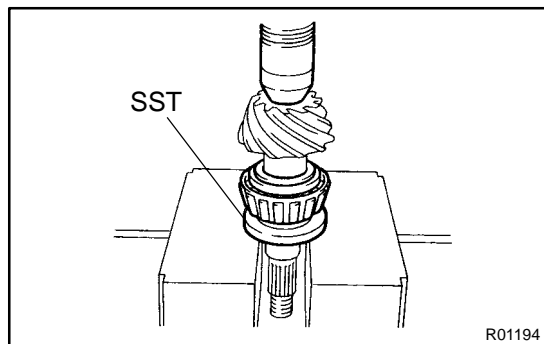
SST 09950-60020 (09951-00710),
09950-70010 (09951-07150)

6. INSTALL DRIVE PINION REAR BEARING

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

HINT:

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



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

SST 09506-30012

7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

- (a) Place the drive pinion and front bearing.

HINT:

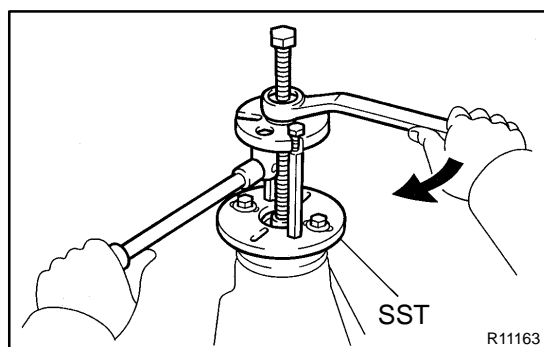
Assemble the spacer and oil seal after adjusting the tooth contact pattern.

- (b) Install the oil slinger.

- (c) Using SST, 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.



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

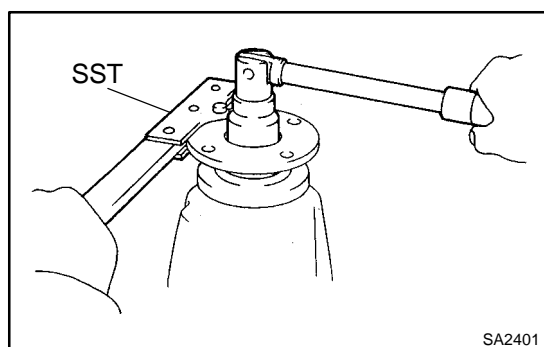
HINT:

Using SST to hold the flange, tighten the nut.

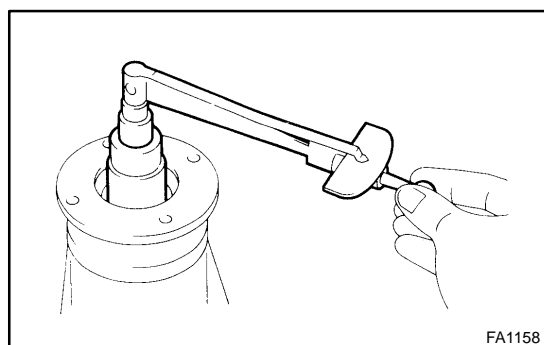
SST 09330-00021

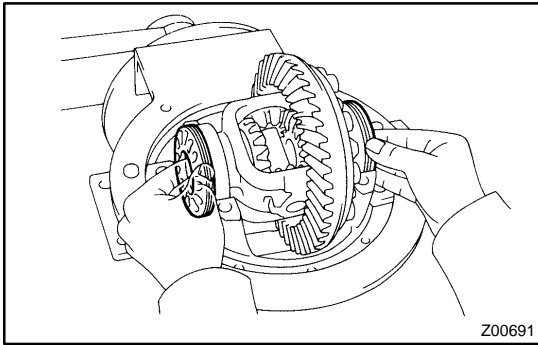
NOTICE:

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



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

Preload (at starting):**New bearing****1.4 - 2.1 N·m (14 - 21 kgf·cm, 12.2 - 18.3 in.-lbf)****Reused bearing****0.6 - 1.0 N·m (6 - 10 kgf·cm, 5.2 - 8.7 in.-lbf)**

**8. INSTALL DIFFERENTIAL CASE IN CARRIER**

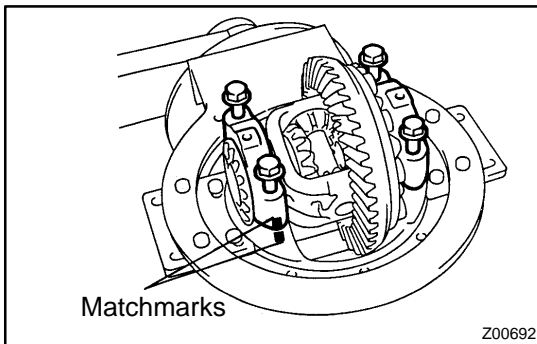
- (a) Place the 2 bearing outer races on their respective bearings. Make sure the right and left outer races are not interchanged.
- (b) Install the case in the carrier.

HINT:

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

9. INSTALL ADJUSTING NUTS

Install the 2 adjusting nuts on the carrier, making sure the nuts are threaded properly.

**10. INSTALL BEARING CAPS**

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

HINT:

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

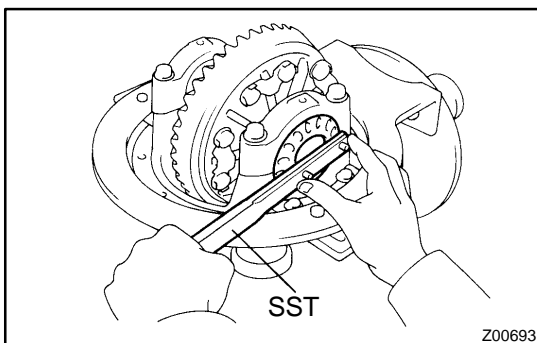
Reinstall the adjusting nuts if necessary.

11. ADJUST SIDE BEARING PRELOAD

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

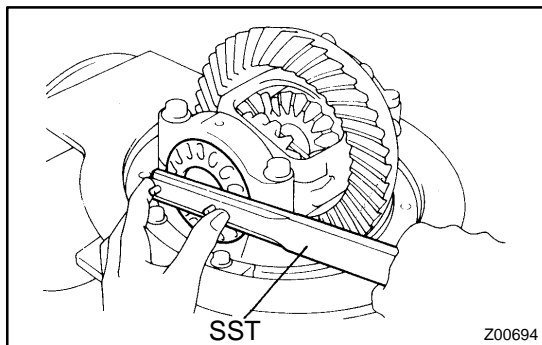
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)

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

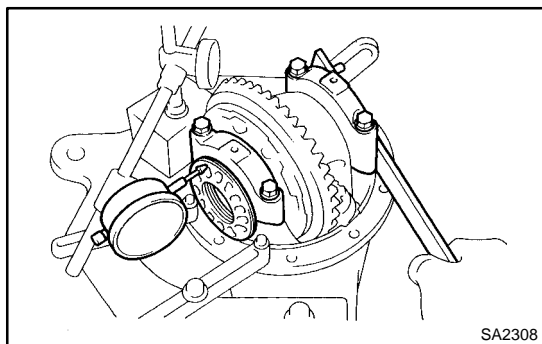


- (c) Using SST, tighten the adjusting nut on the ring gear back side until the ring gear has a backlash of about 0.2 mm (0.008 in.).

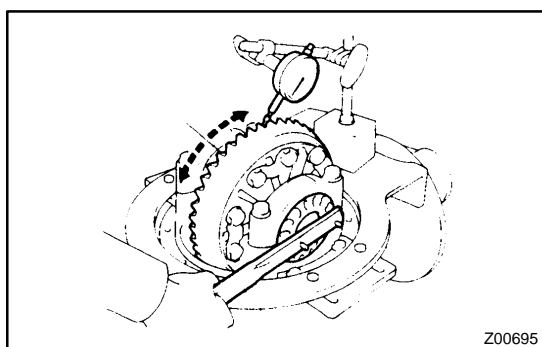
SST 09504-00011



- (d) With turning the ring gear, use SST to fully tighten the adjusting nut on the ring gear teeth side.
After the bearings are settled, loosen the adjusting nut on the drive pinion side.
SST 09504-00011



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



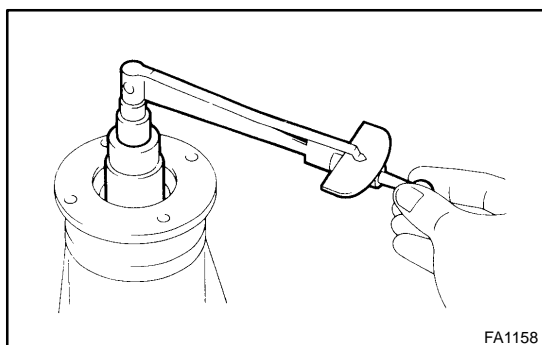
- (h) Using a dial indicator, adjust the ring gear backlash until it is within the specified value.
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)

HINT:

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

- (i) Torque the 4 bearing cap bolts.

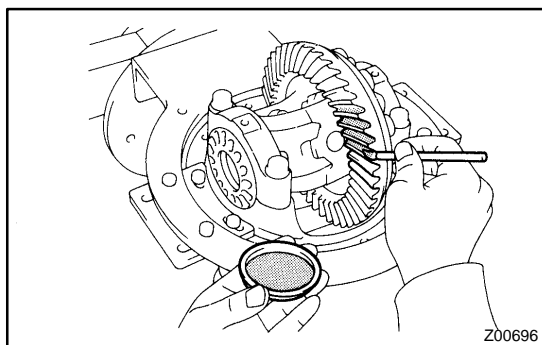
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)



- (j) Recheck the ring gear backlash.
Backlash: 0.13 - 0.18 mm (0.0051 - 0.0071 in.)
(k) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

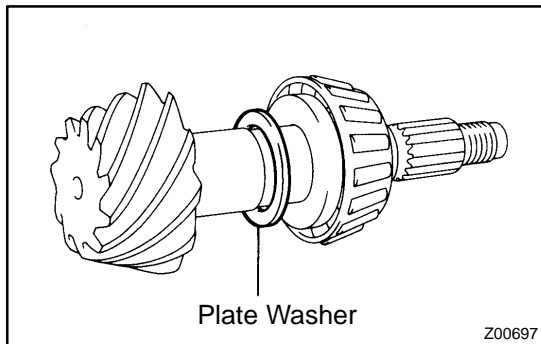
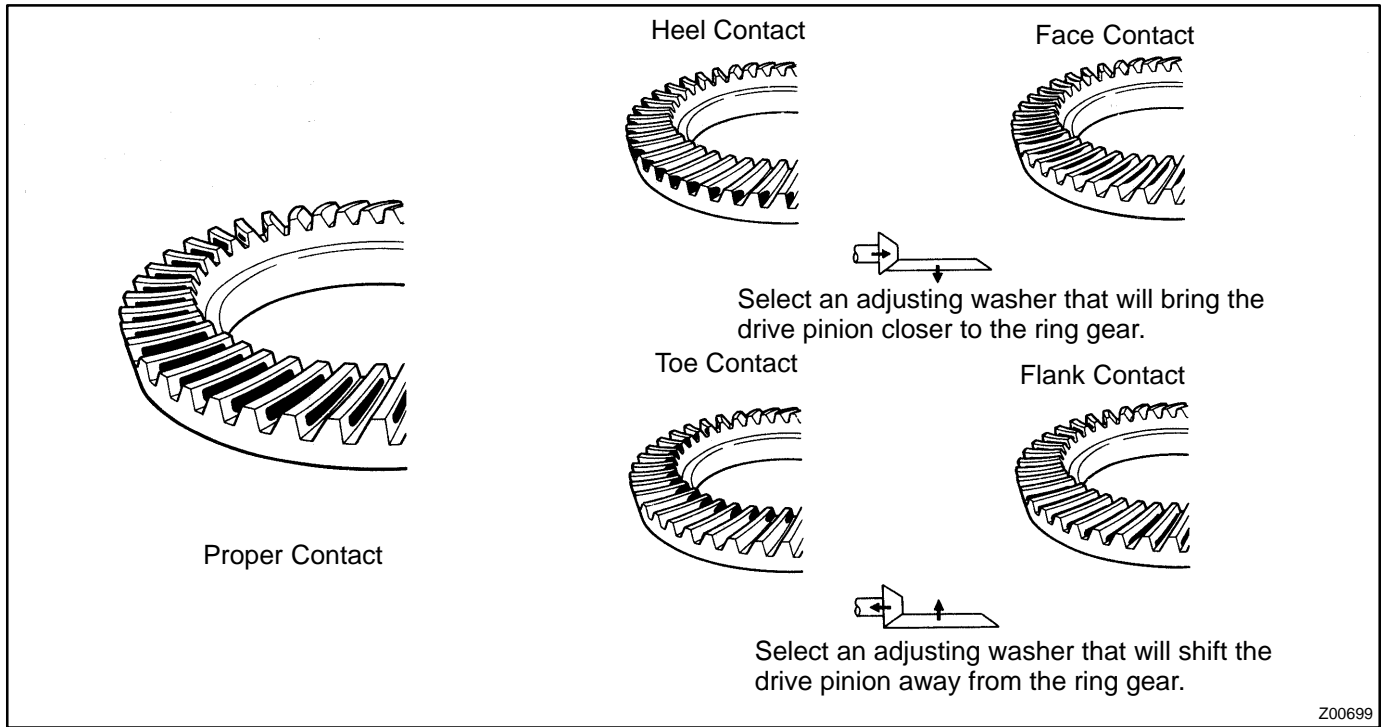
Total preload (at starting):

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



12. 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) Inspect the tooth pattern.

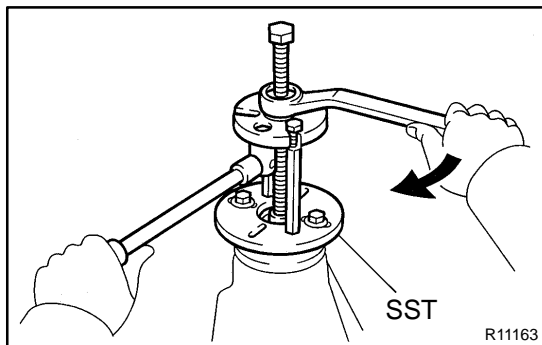


If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

Washer thickness:

Thickness mm (in.)	Thickness mm (in.)
2.24 (0.0882)	2.51 (0.0988)
2.27 (0.0894)	2.54 (0.1000)
2.30 (0.0906)	2.57 (0.1012)
2.33 (0.0917)	2.60 (0.1024)
2.36 (0.0929)	2.63 (0.1035)
2.39 (0.0941)	2.66 (0.1047)
2.42 (0.0953)	2.69 (0.1059)
2.45 (0.0965)	2.72 (0.1071)
2.48 (0.0976)	-

13. REMOVE COMPANION FLANGE AND OIL SLINGER
(See page SA-144)
14. REMOVE FRONT BEARING (See page SA-144)
15. INSTALL NEW BEARING SPACER, FRONT BEARING AND OIL SLINGER
 - (a) Install a new bearing spacer and place the front bearing and oil slinger.

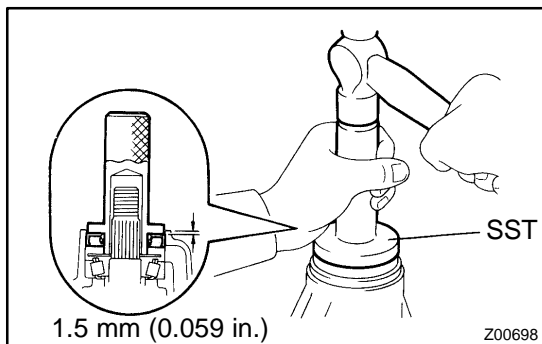


- (b) Using SST and the companion flange, install the front bearing then remove the companion flange.

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

16. INSTALL NEW OIL SEAL

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

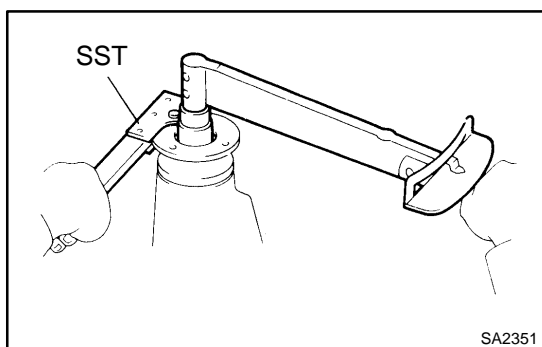


- (b) Using SST and a hammer, install the oil seal.
SST 09554-30011

Oil seal drive in depth: 1.5 mm (0.059 in.)

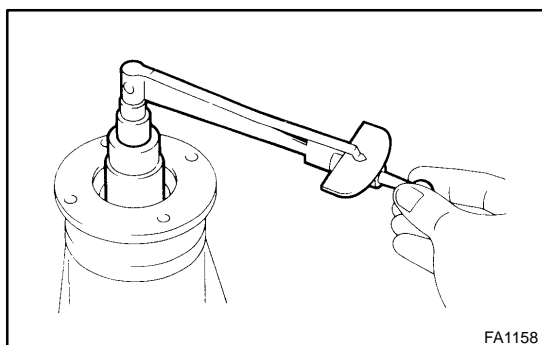
17. INSTALL COMPANION FLANGE

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



- (c) Using SST to hold the flange, torque the nut.
SST 09330-00021

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



18. ADJUST DRIVE PINION PRELOAD

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

Preload (at starting):

New bearing

1.4 – 2.1 N·m (14 – 21 kgf·cm, 12.2 – 18.3 in.-lbf)

Reused bearing

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

If the preload is greater than the specified value, replace the bearing spacer.

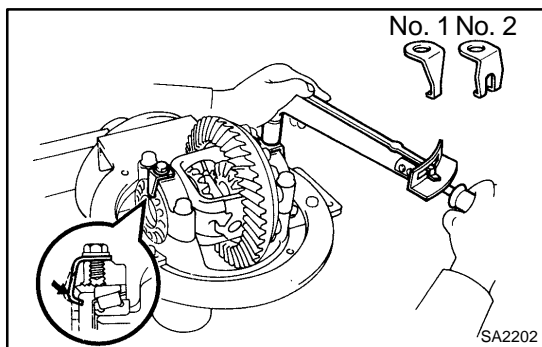
If the preload is less than the specified value, retighten the nut 13 N·m (130 kgf·cm, 9 ft·lbf) a little at a time until the specified preload is reached.

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

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

19. CHECK COMPANION FLANGE RUNOUT (See page SA-144)

20. STAKE DRIVE PINION NUT

**21. INSTALL ADJUSTING NUT LOCKS**

- (a) Select either a lock No. 1 or No. 2, whichever will fit the adjusting nuts.
- (b) Install new nut locks on the bearing caps.

Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)