

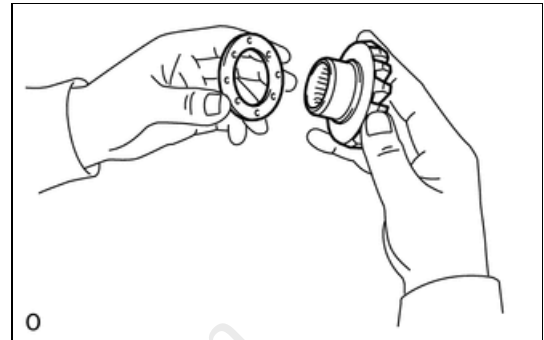
Last Modified: 12-21-2017	6.8:8.0.48	Doc ID: RM100000000T32O
Model Year Start: 2016	Model: LX570	Prod Date Range: [09/2015 -]
Title: AXLE AND DIFFERENTIAL: REAR DIFFERENTIAL CARRIER ASSEMBLY: REASSEMBLY; 2016 - 2018 MY LX570 [09/2015 -]		

REASSEMBLY

PROCEDURE

1. INSPECT DIFFERENTIAL SIDE GEAR BACKLASH

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



- (b) Install the side gears to the differential case.
 (c) Install the 4 pinion gears and 4 thrust washers to the spider.
 (d) Install the spider assembly to the differential case.

HINT:

Install the spider to the differential case tightly.

- (e) Using a dial indicator, measure the side gear backlash while holding the side gear and spider.

Standard backlash:
 0.02 to 0.15 mm (0.000787 to 0.00591 in.)

HINT:

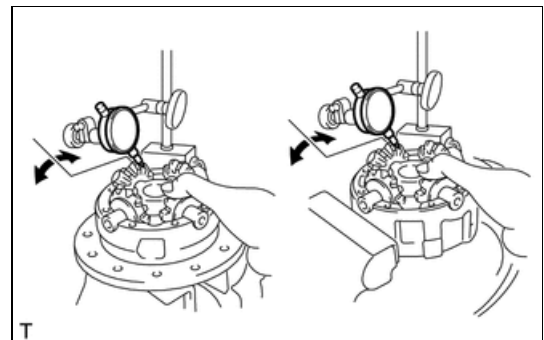
- Measure at all 4 pinion gear locations.
- Measure the backlash at the differential case LH and RH.
- Apply hypoid gear oil to each sliding surface and rotating part.

HINT:

If the backlash is not within the specification, replace the side gear thrust washers with washers of a different thickness.

Standard Thrust Washer Thickness:

PART NO.	SPECIFIED CONDITION	PART NO.	SPECIFIED CONDITION
41361-60560	1.53 to 1.57 mm (0.0603 to 0.0618 in.)	41361-60620	1.83 to 1.87 mm (0.0720 to 0.0736 in.)
41361-60570	1.58 to 1.62 mm (0.0622 to 0.0637 in.)	41361-60630	1.88 to 1.92 mm (0.0740 to 0.0755 in.)
41361-60580	1.63 to 1.67 mm (0.0642 to 0.0657 in.)	41361-60640	1.93 to 1.97 mm (0.0760 to 0.0775 in.)
41361-60590	1.68 to 1.72 mm (0.0662 to 0.0677 in.)	41361-60650	1.98 to 2.02 mm (0.0780 to 0.0795 in.)
41361-60600	1.73 to 1.77 mm (0.0682 to 0.0696 in.)	41361-60660	2.03 to 2.07 mm (0.0800 to 0.0814 in.)
41361-60610	1.78 to 1.82 mm (0.0701 to 0.0716 in.)	41361-60670	2.08 to 2.12 mm (0.0819 to 0.0834 in.)



2. ASSEMBLE DIFFERENTIAL CASE

- (a) Install the spider assembly to the differential case.

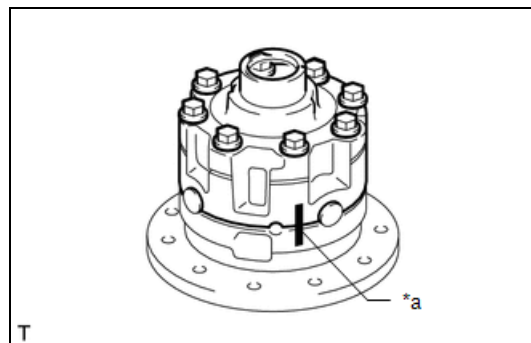
HINT:

Install the spider to the differential case tightly.

- (b) Align the matchmarks and assemble the differential case LH and RH.

Text in Illustration

*a	Matchmark
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- (c) Install the 8 bolts and tighten them uniformly, a little at a time.

Torque:

47 N·m {479 kgf·cm, 35 ft·lbf}

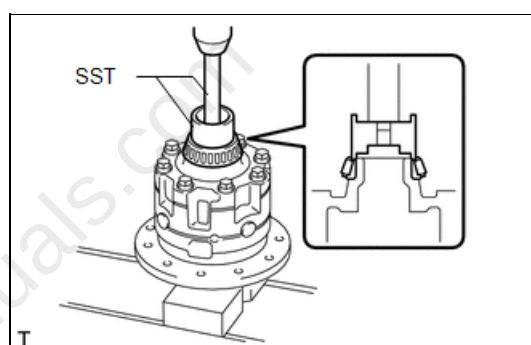
3. INSTALL REAR DIFFERENTIAL CASE BEARING

- (a) Using SST and a press, press the RH side bearing (inner race) into the differential case.

SST: 09710-30050

SST: 09950-70010

09951-07150



- (b) Using SST and a press, press the LH side bearing (inner race) into the differential case.

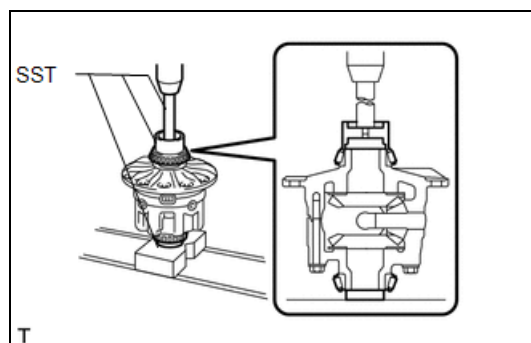
SST: 09710-30050

SST: 09950-60010

09951-00480

SST: 09950-70010

09951-07150



4. INSTALL DIFFERENTIAL RING GEAR

- (a) Clean the threads of the bolts and differential case with non-residue solvent.
- (b) Clean the contact surfaces of the differential case and ring gear.
- (c) Heat the ring gear to about 100°C (212°F) in boiling water.
- (d) Carefully take the ring gear out of the boiling water.
- (e) After the moisture on the ring gear has completely evaporated, quickly align the matchmarks on the ring gear and differential case and set the ring gear onto the differential case. Then temporarily install the 12 bolts so that the bolt holes in the ring gear and differential case are aligned.

- (f) After the ring gear cools down sufficiently, remove the 12 bolts. Then apply adhesive adhesive to the 12 bolts and install them.

Text in Illustration

*a

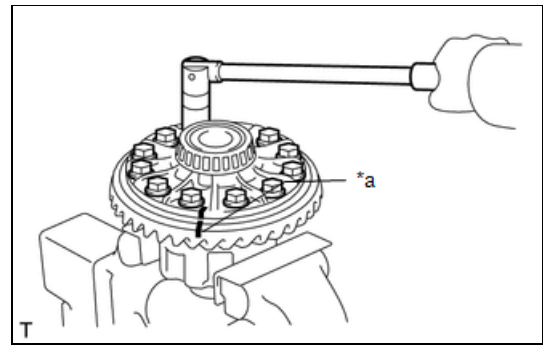
Matchmark

Adhesive:

Toyota Genuine Adhesive 1360K, Three Bond 1360K or equivalent

Torque:

137 N·m {1397 kgf·cm, 101 ft·lbf}



5. CHECK DIFFERENTIAL RING GEAR RUNOUT

- (a) Place the bearing outer races on their respective bearings.

HINT:

Do not interchange the left and right outer races.

- (b) Install the assembled plate washers onto the side bearing.
(c) Install the differential case onto the differential carrier.

HINT:

If it is difficult to install the differential case onto the carrier, replace the plate washer with a thinner one. However, select a plate washer that allows no clearance between it and the carrier.

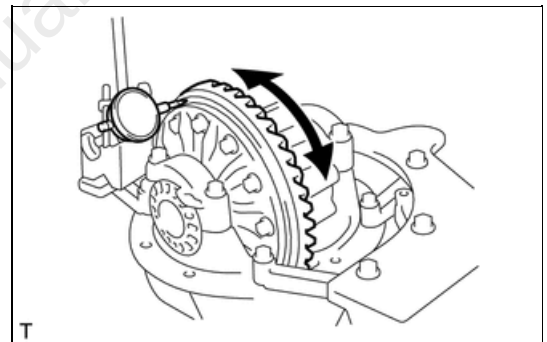
- (d) Align the matchmarks on the bearing caps and differential carrier.
(e) Install and uniformly tighten the 4 bolts a little at a time.

- (f) Using a dial indicator, check the ring runout.

Maximum runout:

0.05 mm (0.00197)

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



- (g) Remove the differential case.

6. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

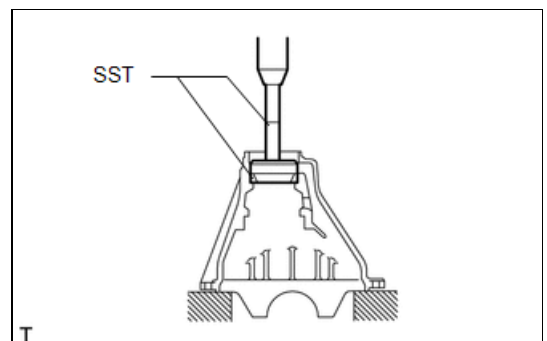
- (a) Using SST and a press, press in the bearing (outer race).

SST: 09950-60020

09951-00710

SST: 09950-70010

09951-07150



7. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

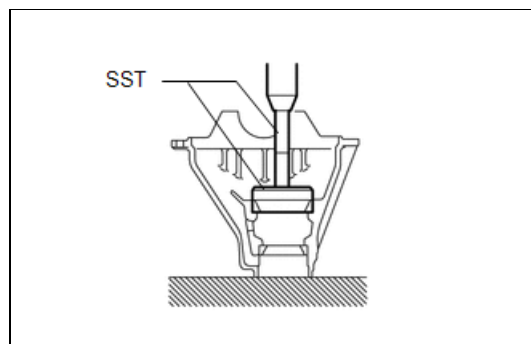
(a) Using SST and a press, press in the bearing (outer race).

SST: 09950-60020

09951-00890

SST: 09950-70010

09951-07150



8. INSTALL REAR DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Install the washer on the drive pinion.

HINT:

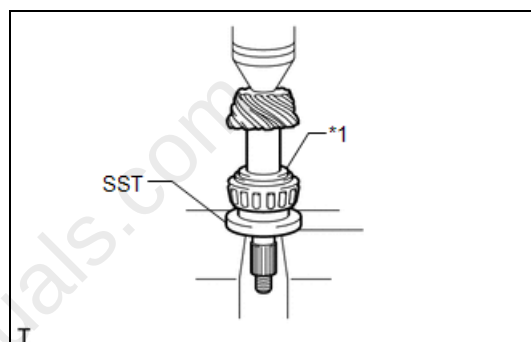
After installing the washer, check the tooth contact pattern. If necessary, replace the washer with one of a different thickness.

(b) Using SST and a press, press the rear bearing (inner race) into the drive pinion.

SST: 09506-35010

Text in Illustration

*1	Plate Washer
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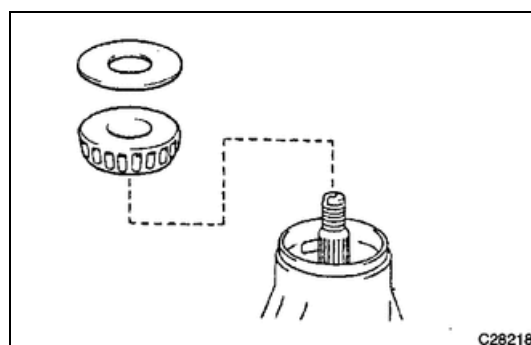


9. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

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

HINT:

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



(b) Using SST, install the companion flange.

SST: 09950-30012

09951-03010

09953-03010

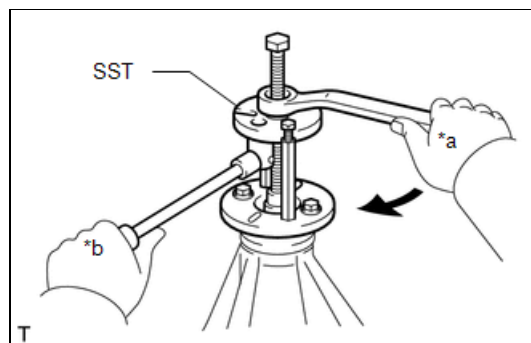
09954-03010

09955-03030

09956-03040

Text in Illustration

*a	Turn
*b	Hold



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

SST: 09330-00021

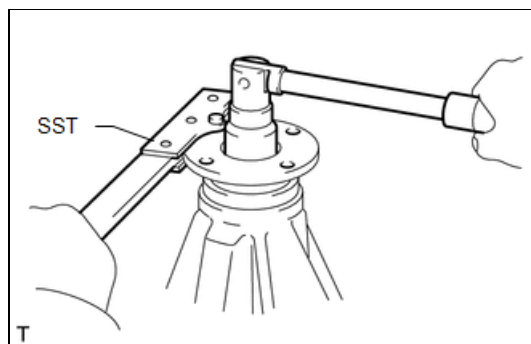
09330-00030

Torque:

441 N·m {4497 kgf·cm, 325 ft·lbf}
or less

NOTICE:

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



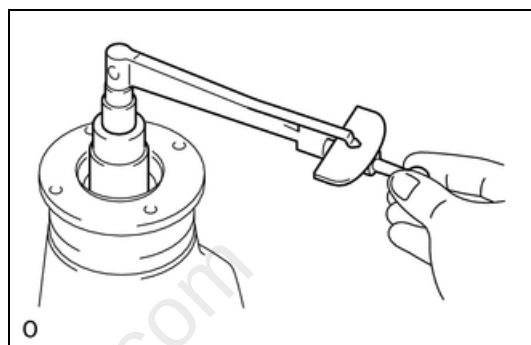
(d) Using a torque wrench, measure the preload.

Standard Preload (at Starting):

BEARING	SPECIFIED CONDITION
New	1.32 to 2.22 N·m (14 to 22 kgf·cm, 12 to 19 in.*lbf)
Reused	0.52 to 0.87 N·m (6 to 8 kgf·cm, 5 to 7 in.*lbf)

HINT:

Measure the total preload after first turning the bearing clockwise and counterclockwise several times to make the bearing smooth.



10. INSTALL DIFFERENTIAL CASE ASSEMBLY

(a) Place the bearing (outer races) on their respective bearings.

HINT:

Do not interchange the left and right outer races.

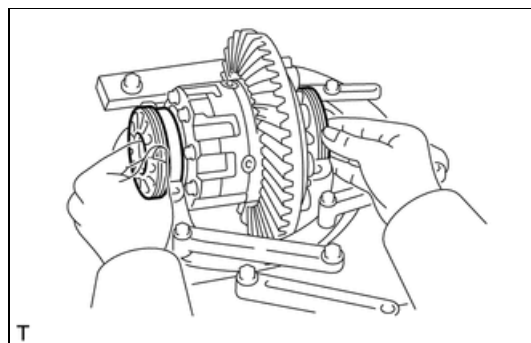
(b) Install the differential case onto the carrier.

HINT:

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

11. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT

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



12. INSPECT AND ADJUST DIFFERENTIAL RING GEAR BACKLASH

(a) Align the matchmarks on the bearing caps and carrier. Screw in the 4 bearing cap bolts 2 or 3 turns and press down the bearing caps by hand.

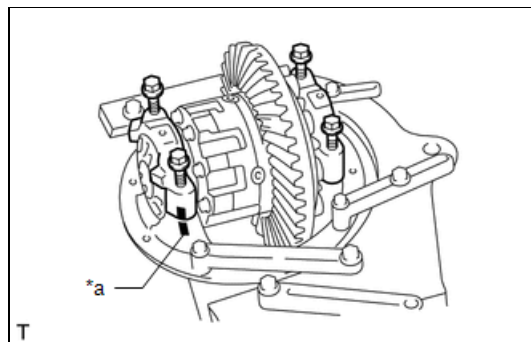
Text in Illustration

*a	Matchmark
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HINT:

If the bearing caps do not fit tightly on the carrier, the adjusting nuts are not engaged properly.

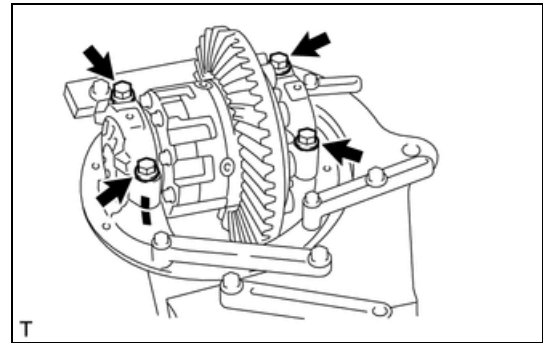
Reinstall the adjusting nuts if necessary.



(b) Tighten the 4 bolts.

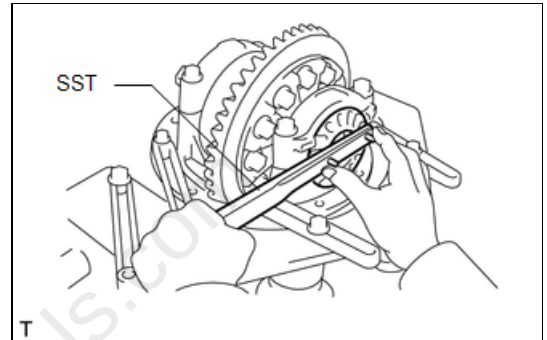
Torque:

90 N·m {918 kgf·cm, 66 ft·lbf}



(c) Loosen the 4 bolts to the point where the adjusting nuts can be turned by SST.

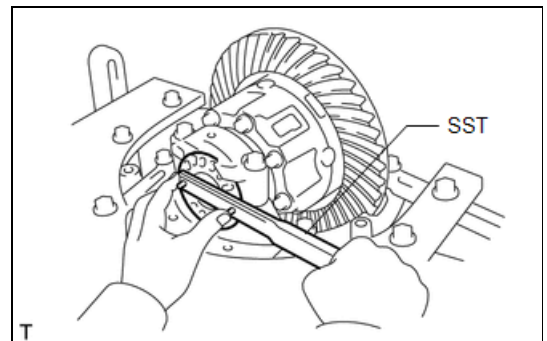
SST: 09504-00011



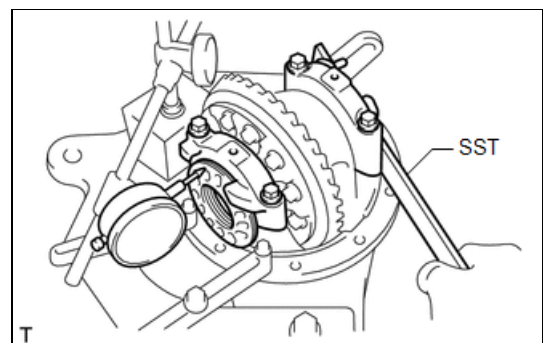
(d) Using SST, tighten the adjusting nut on the ring gear side until the ring gear has a backlash of about 0.2 mm (0.00787 in.).

SST: 09504-00011

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



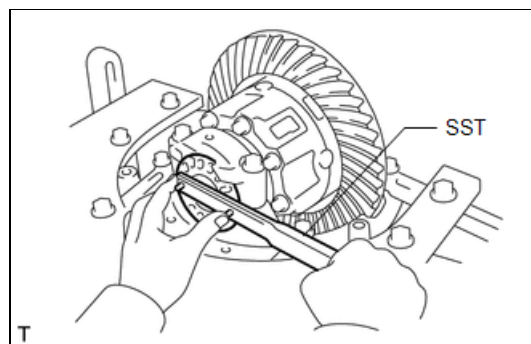
(f) Place a dial indicator on the top of the adjusting nut on the ring gear side.



(g) Adjust the side bearing to zero preload by tightening the other adjusting nut until the pointer on the indicator begins to move.

(h) Using SST, tighten the adjusting nut 1 to 1.5 notches from the zero preload position.

SST: 09504-00011



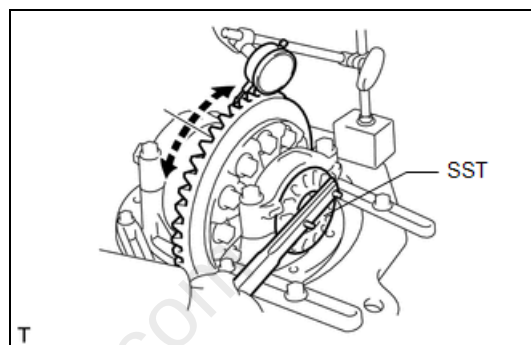
(i) Using a dial indicator, adjust the ring gear backlash until it is within the specification.

Standard backlash:

0.10 to 0.20 mm (0.00394 to 0.00787 in.)

HINT:

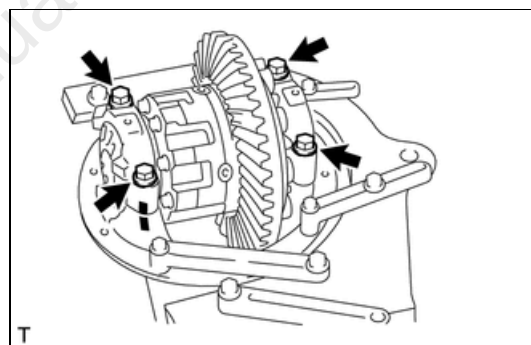
The backlash is adjusted by turning the left and right adjusting nuts by an equal amount. For example, loosen the nut on the left side 1 notch and tighten the nut on the right side 1 notch.



(j) Tighten the 4 bearing cap bolts.

Torque:

90 N·m {918 kgf·cm, 66 ft·lbf}



(k) After rotating the ring gear 5 turns or more, recheck the ring gear backlash.

Standard backlash:

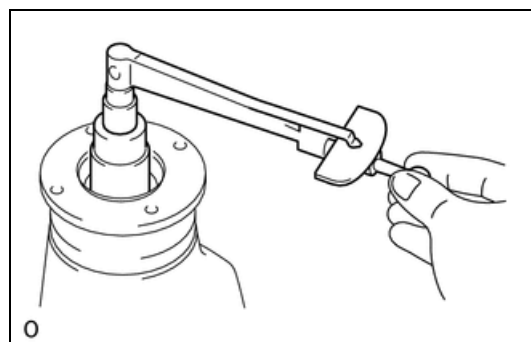
0.10 to 0.20 mm (0.00394 to 0.00787 in.)

13. INSPECT TOTAL PRELOAD

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

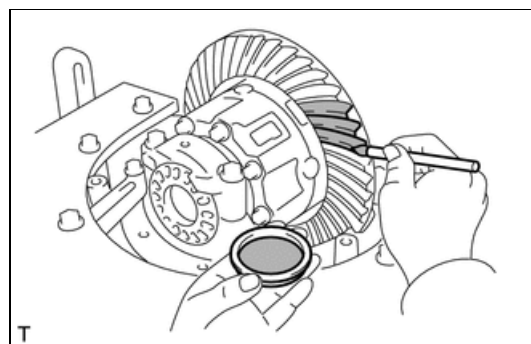
Standard Drive Pinion Preload (at Starting):

SIDE BEARING	SPECIFIED CONDITION
New	1.77 to 2.95 N·m (19 to 30 kgf·cm, 16 to 26 in.*lbf)
Reused	0.97 to 1.60 N·m (10 to 16 kgf·cm, 9 to 14 in.*lbf)

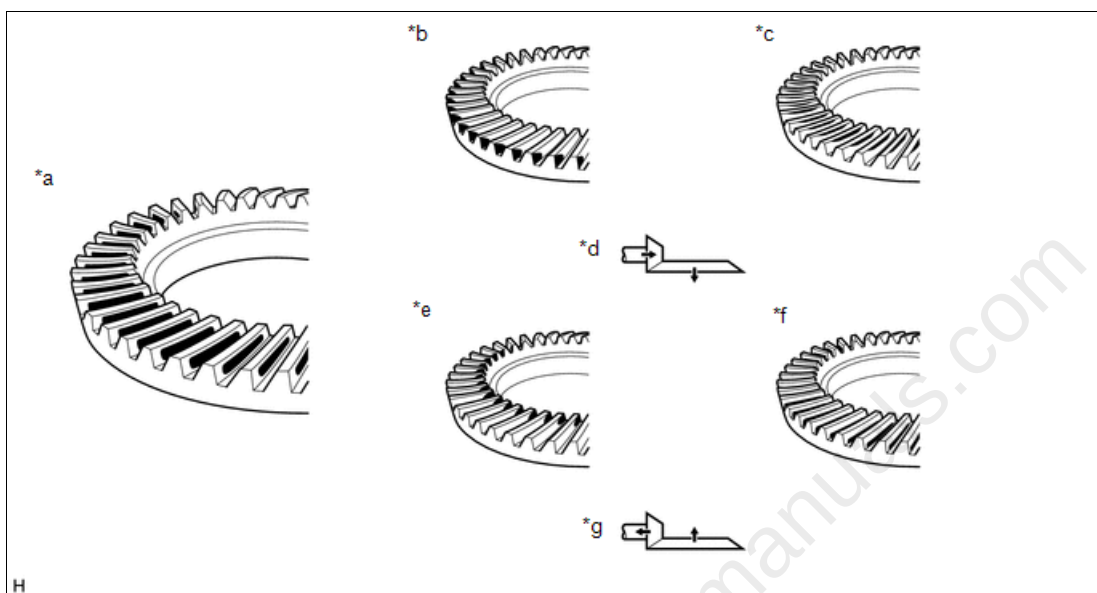


14. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

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



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



Text in Illustration

*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)	-	-

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

Standard Plate Washer Thickness:

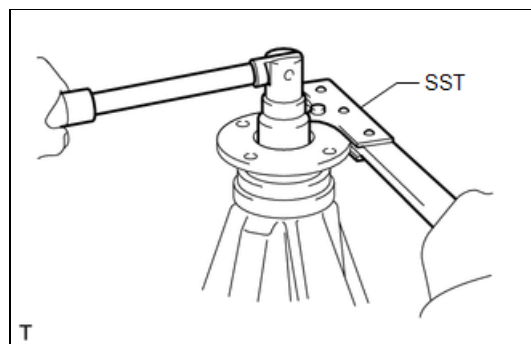
PART NO.	SPECIFIED CONDITION	PART NO.	SPECIFIED CONDITION
90564-40004	1.04 to 1.06 mm (0.0410 to 0.0417 in.)	90564-40016	1.315 to 1.335 mm (0.0518 to 0.0525 in.)
90564-40006	1.065 to 1.085 mm (0.0420 to 0.0427 in.)	90564-40017	1.34 to 1.36 mm (0.0528 to 0.0535 in.)
90564-40007	1.09 to 1.11 mm (0.0430 to 0.0437 in.)	90564-40018	1.365 to 1.385 mm (0.0538 to 0.0545 in.)
90564-40008	1.115 to 1.135 mm (0.0439 to 0.0446 in.)	90564-40019	1.39 to 1.41 mm (0.0548 to 0.0555 in.)
90564-40009	1.14 to 1.16 mm (0.0449 to 0.0456 in.)	90564-40020	1.415 to 1.435 mm (0.0557 to 0.0564 in.)
90564-40010	1.165 to 1.185 mm (0.0459 to 0.0466 in.)	90564-40021	1.44 to 1.46 mm (0.0567 to 0.0574 in.)
90564-40011	1.19 to 1.21 mm (0.0469 to 0.0476 in.)	90564-40022	1.465 to 1.485 mm (0.0577 to 0.0584 in.)
90564-40012	1.215 to 1.235 mm (0.0479 to 0.0486 in.)	90564-40023	1.49 to 1.51 mm (0.0587 to 0.0594 in.)
90564-40013	1.24 to 1.26 mm (0.0489 to 0.0496 in.)	90564-40024	1.515 to 1.535 mm (0.0597 to 0.0604 in.)
90564-40014	1.265 to 1.285 mm (0.0498 to 0.0505 in.)	90564-40025	1.54 to 1.56 mm (0.0607 to 0.0614 in.)
90564-40015	1.29 to 1.31 mm (0.0508 to 0.0515 in.)	-	-

15. REMOVE DRIVE PINION COMPANION FLANGE REAR NUT

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

SST: 09330-00021

09330-00030



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

INFO

17. REMOVE REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

18. REMOVE REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

INFO

19. INSTALL REAR DIFFERENTIAL DRIVE PINION BEARING SPACER

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

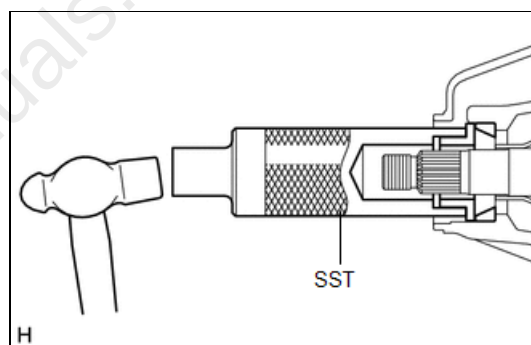
20. INSTALL REAR DRIVE PINION FRONT TAPERED ROLLER BEARING

(a) Using SST and a hammer, tap in the bearing (outer race).

SST: 09316-60011

09316-00011

09316-00021



(b) Install the bearing (inner race).

21. INSTALL REAR DIFFERENTIAL DRIVE PINION OIL SLINGER

22. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

INFO

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

(a) Using SST, install the companion flange.

SST: 09950-30012

09951-03010

09953-03010

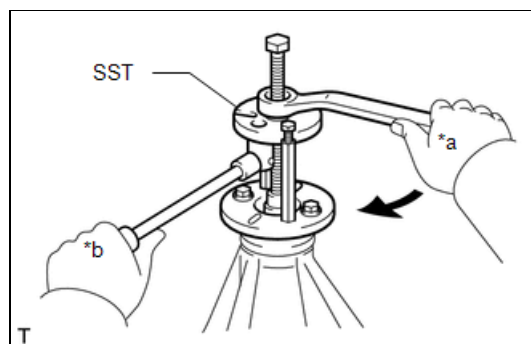
09954-03010

09955-03030

09956-03040

Text in Illustration

*a	Turn
*b	Hold



24. INSPECT DRIVE PINION PRELOAD

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

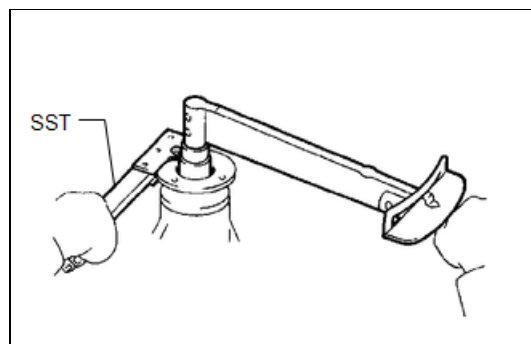
- (b) Using SST to hold the companion flange, install the nut by tightening it until the standard preload is reached.

SST: 09330-00021

09330-00030

Torque:

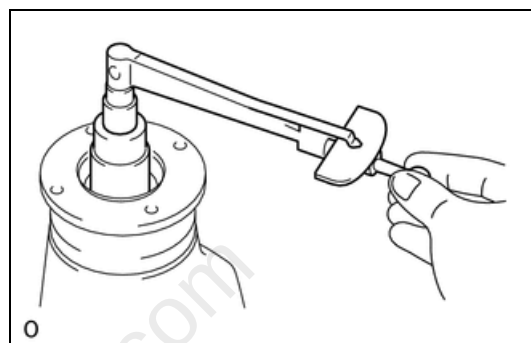
**441 N·m {4497 kgf·cm, 325 ft·lbf}
or less**



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

Standard Preload (at Starting):

BEARING	SPECIFIED CONDITION
New	1.67 to 2.57 N·m (18 to 26 kgf·cm, 15 to 22 in.*lbf)
Reused	0.87 to 1.22 N·m (9 to 12 kgf·cm, 8 to 10 in.*lbf)

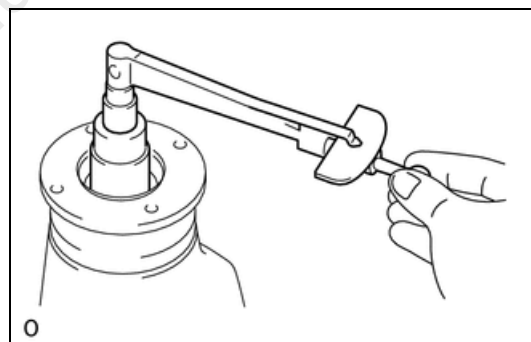


25. INSPECT TOTAL PRELOAD

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

Standard Drive Pinion Preload (at Starting):

SIDE BEARING	SPECIFIED CONDITION
New	2.12 to 3.30 N·m (22 to 33 kgf·cm, 19 to 29 in.*lbf)
Reused	1.32 to 1.95 N·m (14 to 19 kgf·cm, 12 to 17 in.*lbf)



26. INSPECT DIFFERENTIAL RING GEAR BACKLASH

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

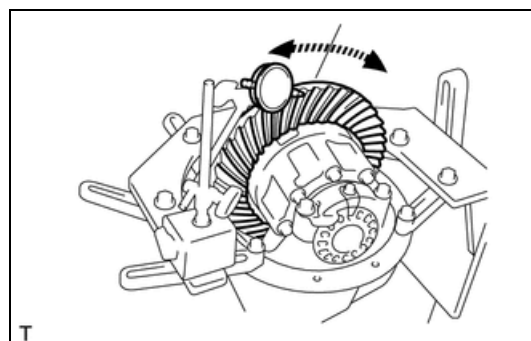
Standard backlash:

0.10 to 0.20 mm (0.00394 to 0.00787 in.)

HINT:

Measure at 3 or more positions around the circumference of the ring gear.

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



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

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

Maximum Runout:

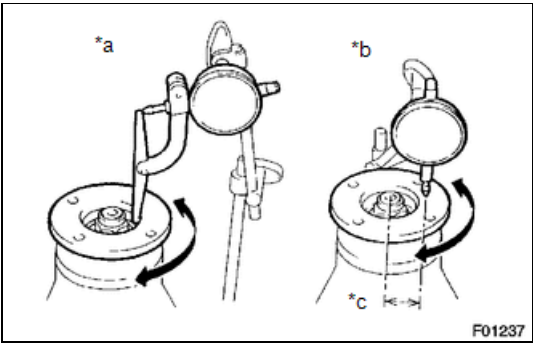
RUNOUT	SPECIFIED CONDITION

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

Text in Illustration

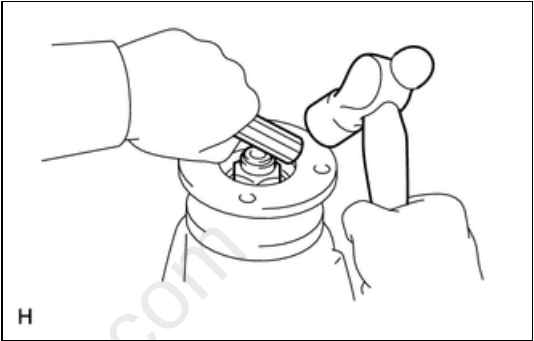
*a	Vertical Runout
*b	Lateral Runout
*c	35 mm (1.38 in.)

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



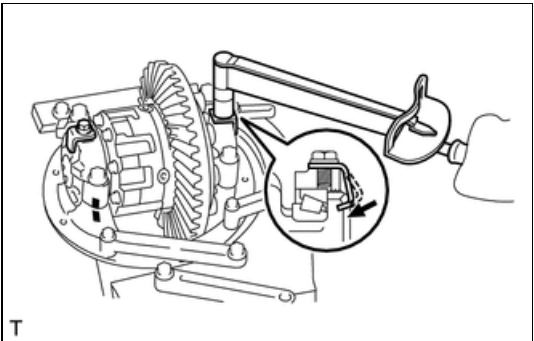
28. STAKE DRIVE PINION COMPANION FLANGE REAR NUT

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



29. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT LOCK

- (a) Install 2 new nut locks on the bearing caps.



- (b) Install the 2 bolts, and bend the nut locks.

Torque:
13 N·m {133 kgf·cm, 10 ft·lbf}

- (c) Bend the nut locks.