TOYOTA SERVICE BULLETIN

Group: 06 No.: 07 Date: Mar, 15

LandCruiser 200

Corrections to Repair Manual RM19U1E

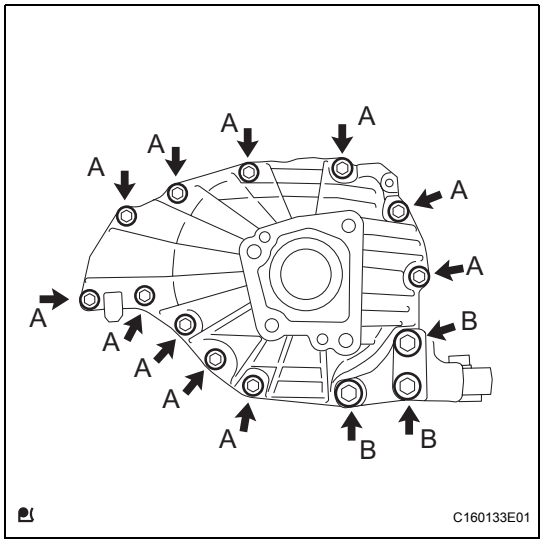
Please ensure these pages are distributed to all relevant staff for their information; and a copy made available for future reference, with the above repair manual.

Section	Title	Paragraph
AXLE AND DIFFERENTIAL	FRONT DIFFERENTIAL CARRIER ASSEMBLY	REASSEMBLY
	REAR DIFFERENTIAL CARRIER OIL SEAL	REPLACEMENT
	REAR DIFFERENTIAL CARRIER ASSEMBLY (for Standard)	REASSEMBLY
	REAR DIFFERENTIAL CARRIER ASSEMBLY (for LSD)	REASSEMBLY
	REAR DIFFERENTIAL CARRIER ASSEMBLY (w/ Differential Lock)	REASSEMBLY

The revised pages listed above are attached.
(The corrected parts are indicated by arrows.)

This Bulletin does not cause the Flat Rate Manual to be changed.

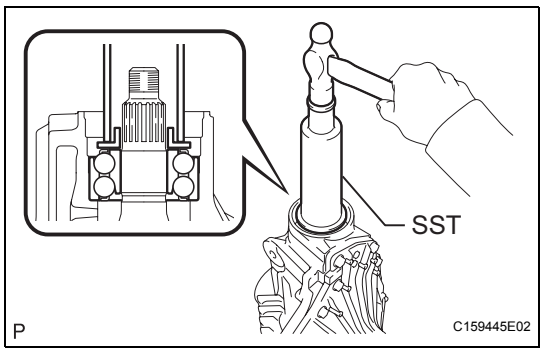
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17. INSTALL FRONT DIFFERENTIAL CROSS SHAFT BEARING RETAINER

(a) Install the differential cross shaft bearing retainer and differential support with the 14 bolts.

Torque: for bolt A
65 N*m (633 kgf*cm, 48 ft.*lbf)
for bolt B
155 N*m (1581 kgf*cm, 114 ft.*lbf)

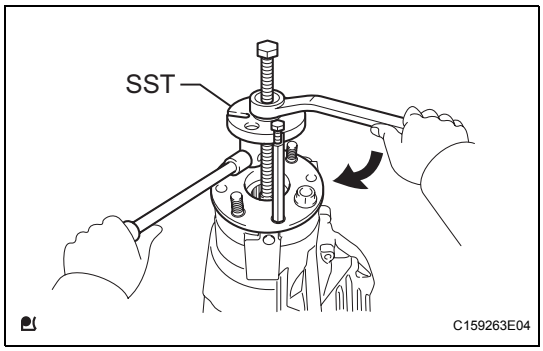


18. INSTALL FRONT DRIVE PINION FRONT RADIAL BALL BEARING

(a) Using SST and a hammer, lightly tap in the bearing (inner race) to install it.

SST 09316-60011 (09316-00041)

19. INSTALL FRONT DIFFERENTIAL DRIVE PINION OIL SLINGER

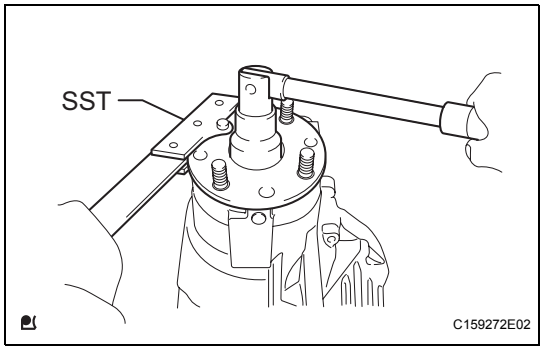


20. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(a) Using SST, install the companion flange.

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

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



[Corrected]

(c) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).

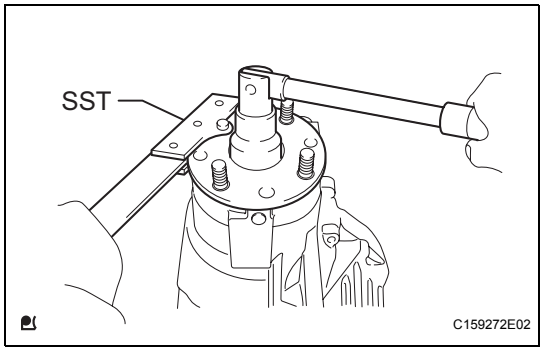
SST 09330-00021 (09330-00030)

Limit Torque Value:
451 N*m (4599 kgf*cm, 332ft.*lbf) or less

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

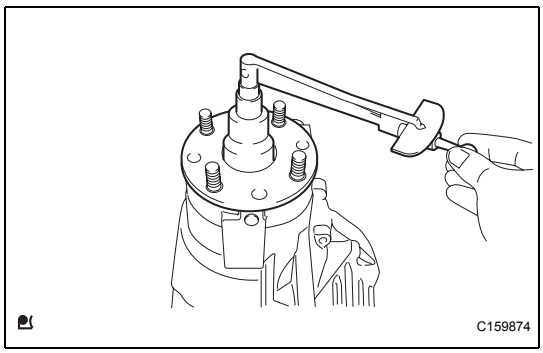
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(b) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).
SST 09330-00021 (09330-00030)
Limit Torque Value:
451 N*m (4599 kgf*cm, 332ft.*lbf) or less

[Corrected]



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

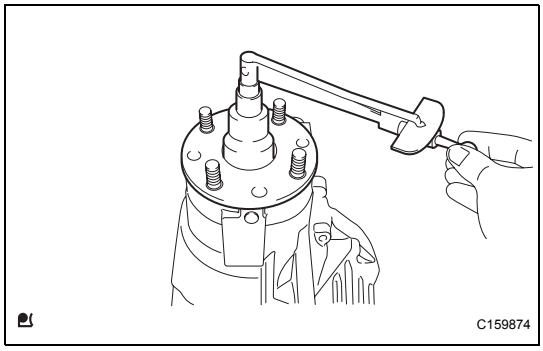
Bearing	Specified Condition
New	3.0 to 3.5 N*m (31 to 35 kgf*cm, 27 to 50 in.*lbf)
Reused	2.1 to 2.5 N*m (22 to 24 kgf*cm, 19 to 21 in.*lbf)

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

[Corrected]

Limit Torque Value:
451 N*m (4599 kgf*cm, 332ft.*lbf) or less

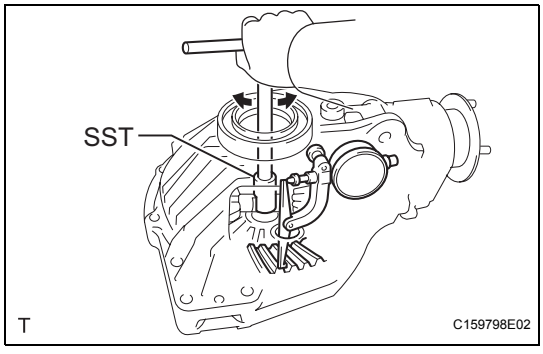
If the maximum torque is exceeded while tightening the nut, replace the bearing spacer and repeat the preload procedure.
HINT:
Do not loosen the nut to reduce the preload.



39. INSPECT TOTAL PRELOAD

(a) With the drive pinion contacting the tooth side of the ring gear, use a torque wrench to measure the total preload.
Standard Total Preload (at Starting)

Bearing	Specified Condition
New	Standard drive pinion preload plus 1.6 to 2.4 N*m (17 to 24 kgf*cm, 15 to 21 in.*lbf)
Reused	Standard drive pinion preload plus 1.3 to 2.1 N*m (14 to 21 kgf*cm, 12 to 18 in.*lbf)

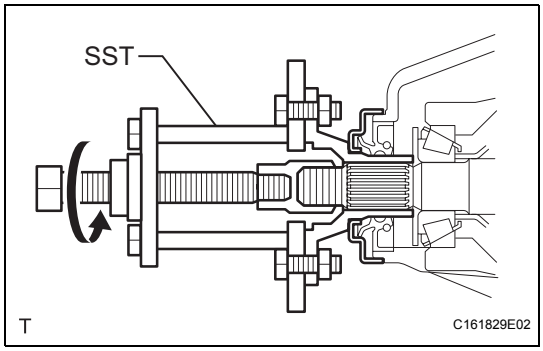


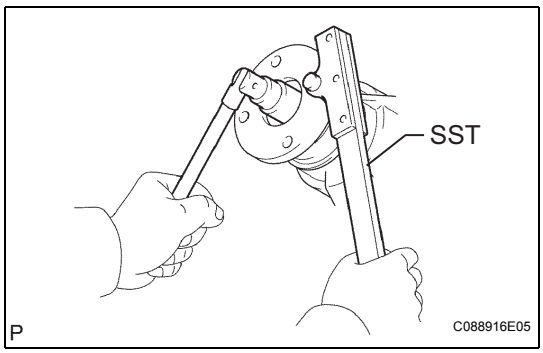
40. INSPECT BACKLASH BETWEEN DIFFERENTIAL RING GEAR AND DIFFERENTIAL DRIVE PINION

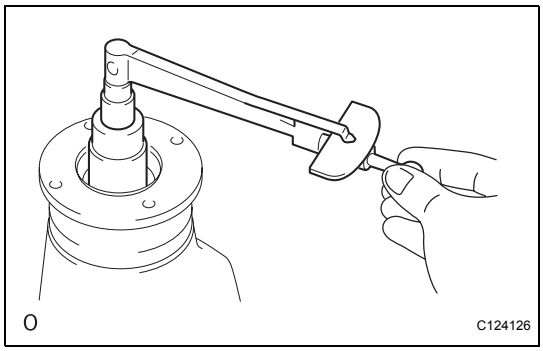
(a) Using SST and a dial indicator, measure the ring gear backlash.
SST 09564-33010
Standard backlash:
0.17 to 0.27 mm (0.00670 to 0.0106 in.)

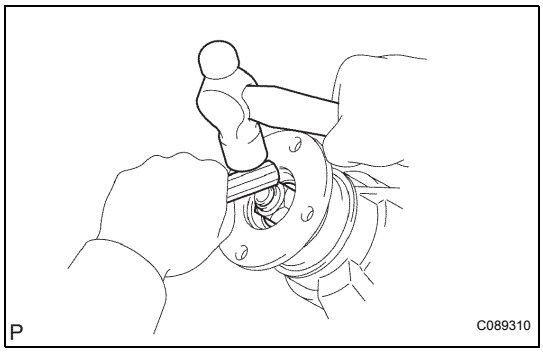
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12. INSTALL REAR DRIVE PINION COMPANION FLANGE REAR SUB-ASSEMBLY

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

SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03040)

13. ADJUST DRIVE PINION PRELOAD

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

(b) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).

SST 09330-00021 (09330-00030)

Limit Torque Value:

441 N*m (4497 kgf*cm, 325 ft.*lbf) or less

[Corrected]

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

Standard Preload (at Starting)

Bearing	Specified Condition
New	1.0 to 1.7 N*m (11 to 17 kgf*cm, 10 to 14 in.*lbf)
Reused	0.9 to 1.4 N*m (9 to 13 kgf*cm, 8 to 12 in.*lbf)

If the preload is not within the specification, adjust the preload.

14. STAKE DRIVE PINION COMPANION FLANGE REAR NUT

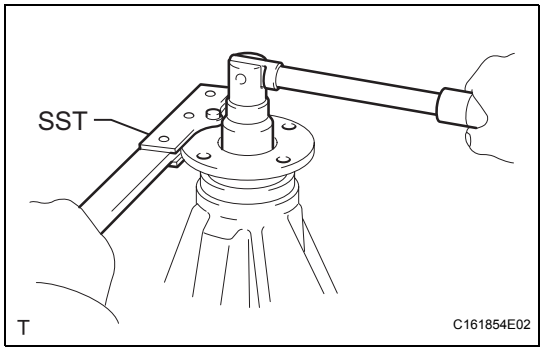
(a) Using a chisel and hammer, stake the nut.

15. CONNECT PROPELLER SHAFT ASSEMBLY (See page)

16. ADD DIFFERENTIAL OIL (See page AD-34)

AD

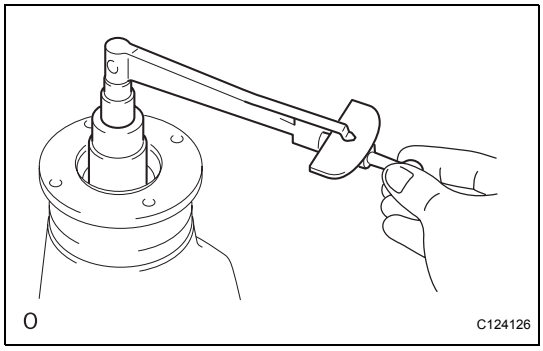
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(c) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).
SST 09330-00021 (09330-00030)
Limit Torque Value:
441 N*m (4497 kgf*cm, 325 ft.*lbf) or less

[Corrected]

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	1.0 to 1.7 N*m (11 to 17 kgf*cm, 10 to 14 in.*lbf)
Reused	0.9 to 1.4 N*m (9 to 13 kgf*cm, 8 to 12 in.*lbf)

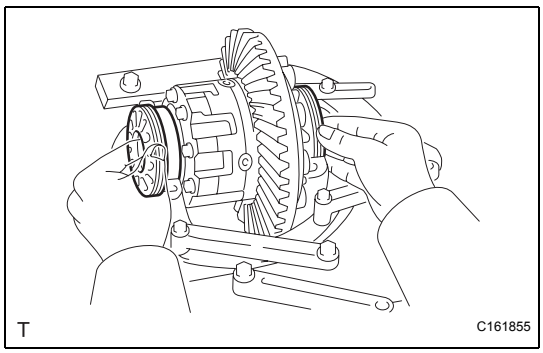
HINT:
Measure the total preload after turning the bearing clockwise and counterclockwise several times to make the bearing smooth.

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.

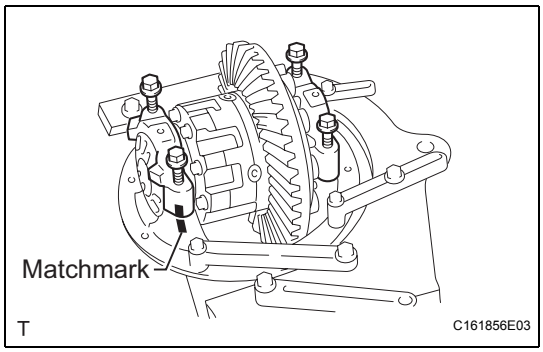
(b) Install the differential case to the carrier.
HINT:
Make sure that there is backlash between the ring gear and drive pinion.

11. INSTALL REAR DIFFERENTIAL BEARING ADJUSTING NUT



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

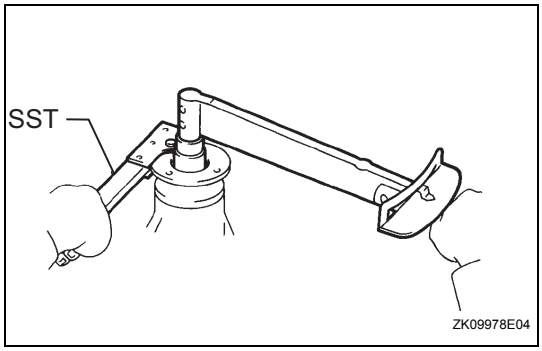
12. INSPECT AND ADJUST DIFFERENTIAL RING GEAR BACKLASH



(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.
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.

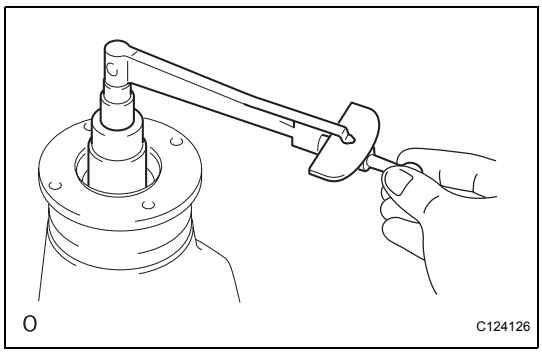
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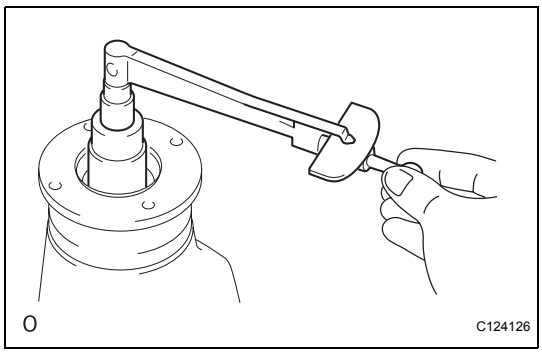
(b) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).
SST 09330-00021 (09330-00030)
Limit Torque Value:
441 N*m (4497 kgf*cm, 325 ft.*lbf) or less

[Corrected]



(c) Using a torque wrench, measure the preload.
Standard Preload (at Starting)

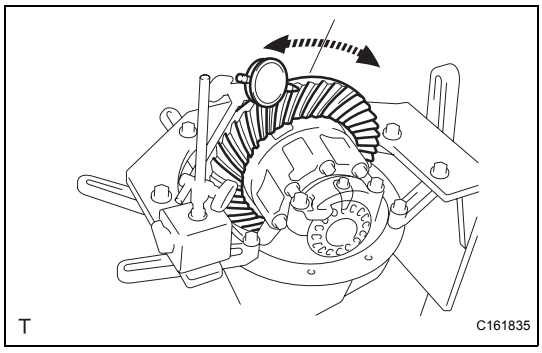
Bearing	Specified Condition
New	1.0 to 1.7 N*m (11 to 17 kgf*cm, 10 to 14 in.*lbf)
Reused	0.9 to 1.4 N*m (9 to 13 kgf*cm, 8 to 12 in.*lbf)



25. INSPECT TOTAL PRELOAD

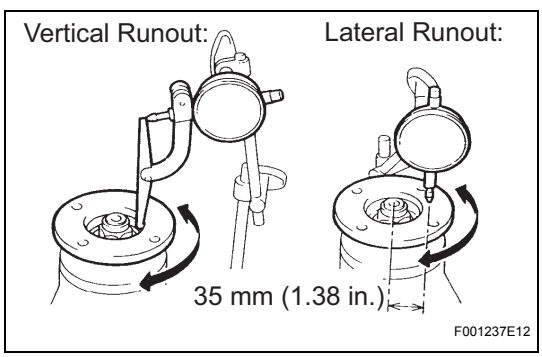
(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
Standard Drive Pinion Preload (at Starting)

Bearing	Specified Condition
New	Standard drive pinion preload plus 0.4 to 0.6 N*m (4 to 6 kgf*cm, 4 to 5 in.*lbf)
Reused	Standard drive pinion preload plus 0.4 to 0.6 N*m (4 to 6 kgf*cm, 4 to 5 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.



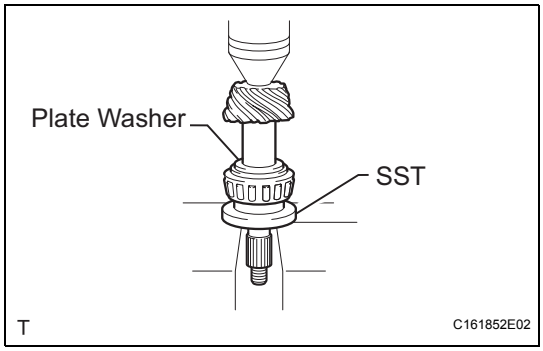
27. INSPECT RUNOUT OF REAR DRIVE PINION COMPANION FLANGE REAR SUB-ASSEMBLY

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

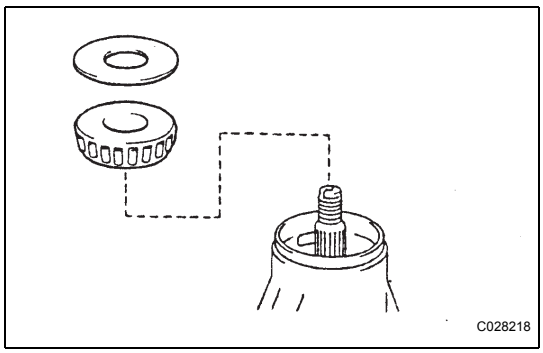
Runout	Specified Condition
Vertical runout	0.10 mm (0.00394 in.)
Lateral runout	0.10 mm (0.00394 in.)

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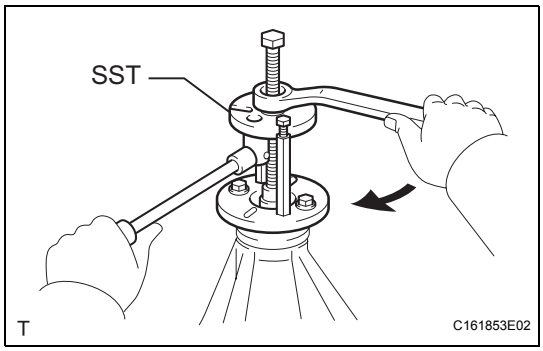


(b) Using SST and a press, press the rear bearing (inner race) into the drive pinion.
SST 09506-35010



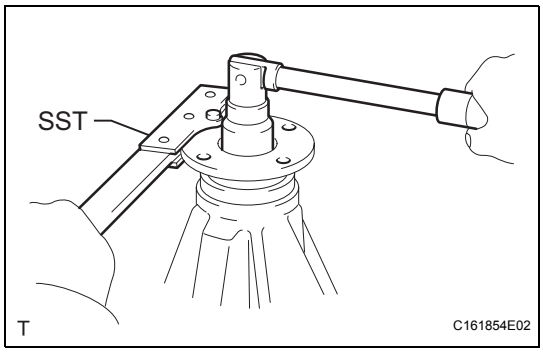
10. INSPECT DIFFERENTIAL DRIVE PINION PRELOAD

(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.

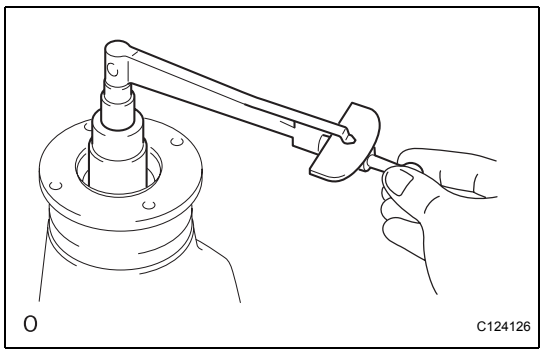


(b) Using SST, install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03040)

[Corrected]



(c) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).
SST 09330-00021 (09330-00030)
Limit Torque Value:
441 N*m (4497 kgf*cm, 325 ft.*lbf) or less
NOTICE:
- **Apply hypoid gear oil LSD to the nut.**
- **As there is no spacer, tighten a little at a time, being careful not to overtighten it.**

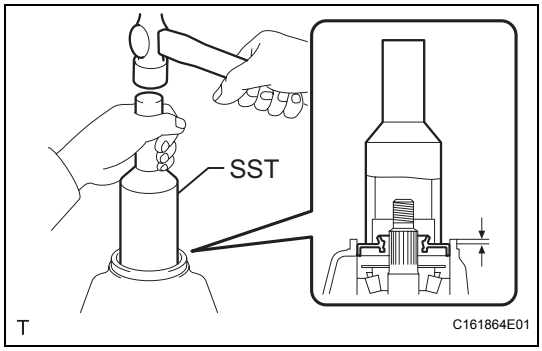


(d) Using a torque wrench, measure the preload.
Standard Preload (at Starting)

Bearing	Specified Condition
New	1.0 to 1.7 N*m (11 to 17 kgf*cm, 10 to 14 in.*lbf)
Reused	0.9 to 1.4 N*m (9 to 13 kgf*cm, 8 to 12 in.*lbf)

AD

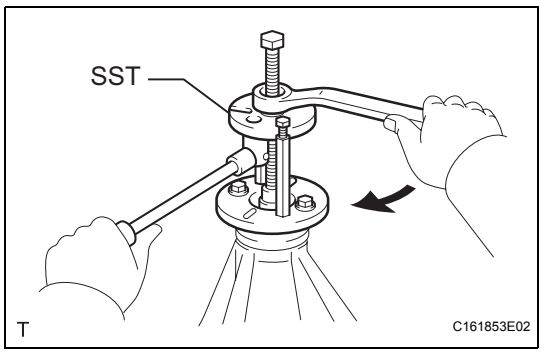
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23. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

(a) Using SST and a hammer, tap in a new oil seal.
SST 09214-76011
Standard oil seal depth:
0.05 to 0.95 mm (0.00197 to 0.0374)

(b) Coat the lip of the oil seal with MP grease.

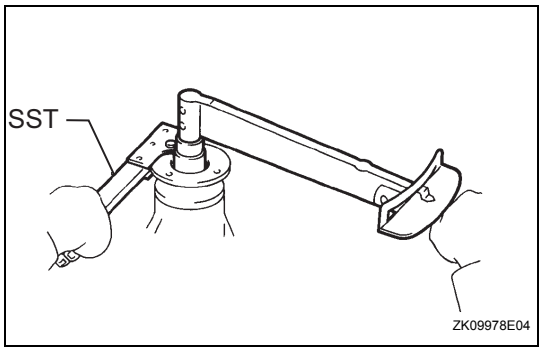


24. INSTALL REAR DRIVE PINION REAR COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03040)

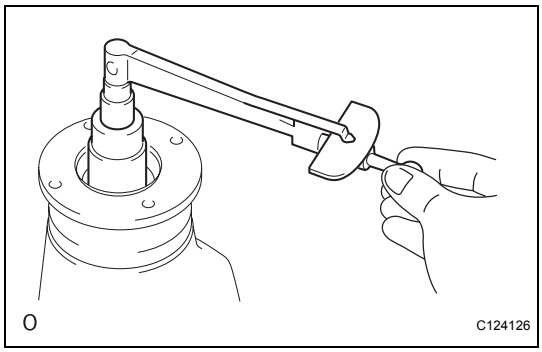
25. INSPECT DRIVE PINION PRELOAD

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



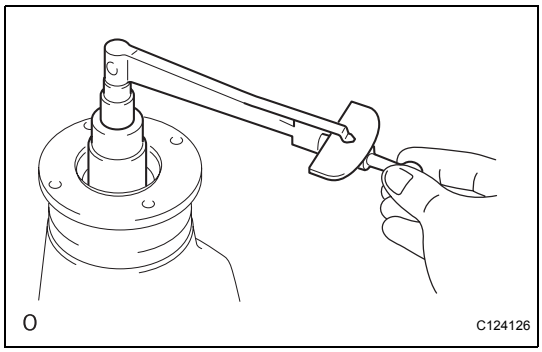
(b) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).
SST 09330-00021 (09330-00030)
Limit Torque Value:
441 N*m (4497 kgf*cm, 325 ft.*lbf) or less

[Corrected]



(c) Using a torque wrench, measure the preload.
Standard Preload (at Starting)

Bearing	Specified Condition
New	1.0 to 1.7 N*m (11 to 17 kgf*cm, 10 to 14 in.*lbf)
Reused	0.9 to 1.4 N*m (9 to 13 kgf*cm, 8 to 12 in.*lbf)



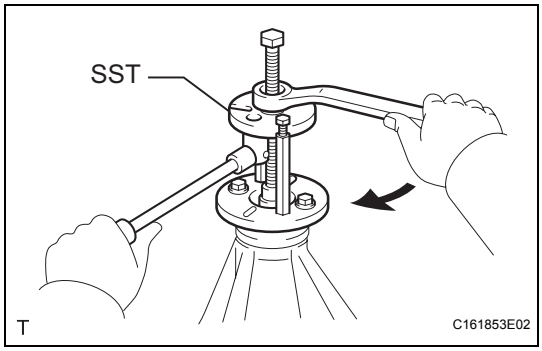
26. INSPECT TOTAL PRELOAD

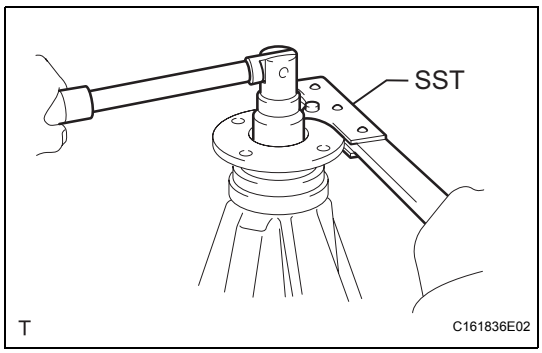
(a) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.
Standard Drive Pinion Preload (at Starting)

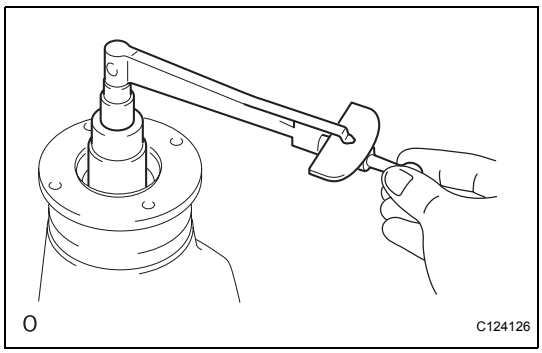
Bearing	Specified Condition
New	Standard drive pinion preload plus 0.4 to 0.6 N*m (4 to 6 kgf*cm, 4 to 5 in.*lbf)
Reused	Standard drive pinion preload plus 0.4 to 0.6 N*m (4 to 6 kgf*cm, 4 to 5 in.*lbf)

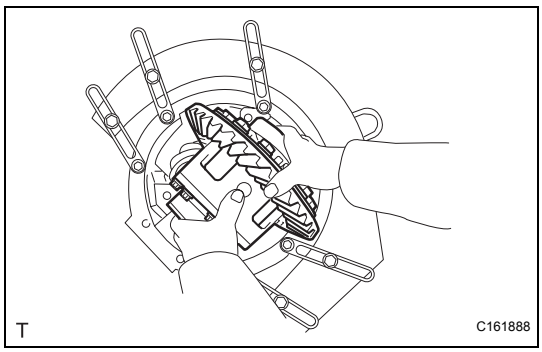
AD

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(c) Using SST, install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03040)

[Corrected]

(d) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).
SST 09330-00021 (09330-00030)
Limit Torque Value:
441 N*m (4497 kgf*cm, 325 ft.*lbf) or less

NOTICE:
- **Coat the nut and threads of the drive pinion with gear oil.**
- **As there is no spacer, tighten the nut a little at a time, being careful not to overtighten it.**

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

Bearing	Specified Condition
New	1.0 to 1.7 N*m (11 to 17 kgf*cm, 10 to 14 in.*lbf)
Reused	0.9 to 1.4 N*m (9 to 13 kgf*cm, 8 to 12 in.*lbf)

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

10. INSTALL REAR DIFFERENTIAL CASE SUB-ASSEMBLY

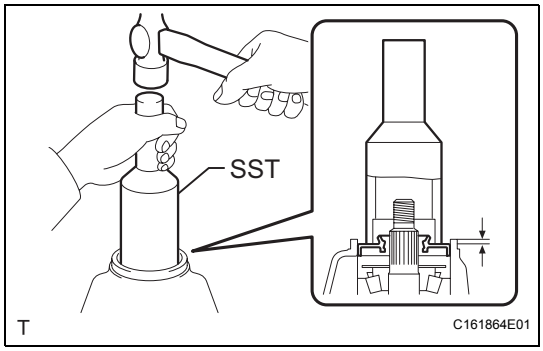
(a) Place the bearing outer races on their respective bearings.
HINT:
Do not interchange the left and right outer races.

(b) Install the assembled plate washer to the side bearing.

(c) Install the differential case to the carrier.

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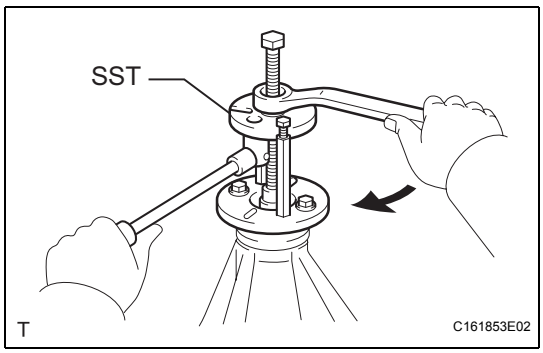
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22. INSTALL REAR DIFFERENTIAL CARRIER OIL SEAL

(a) Using SST and a hammer, tap in a new oil seal.
SST 09214-76011
Standard oil seal depth:
0.05 to 0.95 mm (0.00197 to 0.0374)

(b) Coat the lip of the oil seal with MP grease.

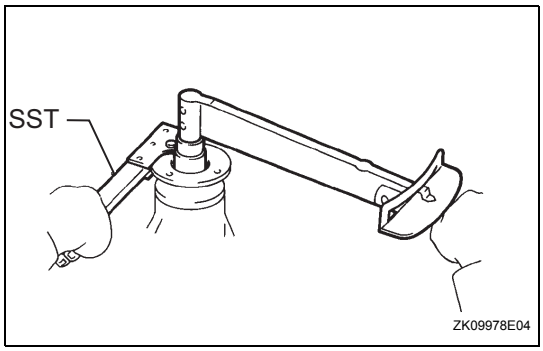


23. INSTALL REAR DRIVE PINION REAR COMPANION FLANGE SUB-ASSEMBLY

(a) Using SST, install the companion flange.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03040)

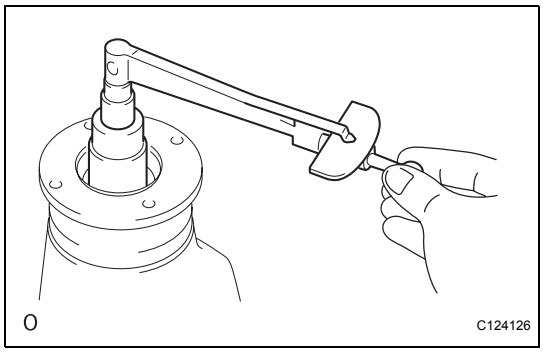
24. INSPECT DRIVE PINION PRELOAD

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



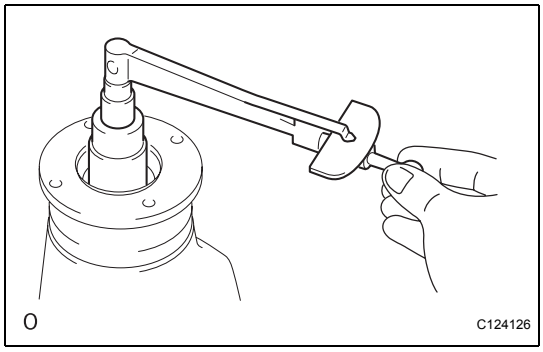
(b) Using SST to hold the companion flange in place, then slowly tighten the nut within the drive pinion preload adjustment range so that it reaches the specified drive pinion preload (at Starting).
SST 09330-00021 (09330-00030)
Limit Torque Value:
441 N*m (4497 kgf*cm, 325 ft.*lbf) or less

[Corrected]



(c) Using a torque wrench, measure the preload.
Standard Preload (at Starting)

Bearing	Specified Condition
New	1.0 to 1.7 N*m (11 to 17 kgf*cm, 10 to 14 in.*lbf)
Reused	0.9 to 1.4 N*m (9 to 13 kgf*cm, 8 to 12 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 total preload (at starting):
Standard drive pinion preload plus 0.29 to 0.49 N*m (3 to 5 kgf*cm, 3 to 4 in.*lbf)

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