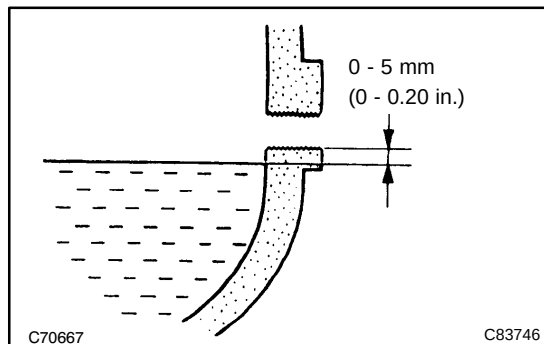


TRANSFER OIL (4WD)

ADJUSTMENT



1. INSPECT TRANSFER OIL

- Remove the No.1 plug and gasket.
- Check the oil level is within 0 - 5 mm (0 - 0.20 in.) below the lowest end of the hole for No.1 plug.

NOTICE:

- When changing oil, recheck the oil level after driving.
 - Excessively large or small quantity of oil may cause some trouble.
- When the oil level is too low, check for oil leakage.
 - Tighten the No.1 plug with a new gasket.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

2. ADD TRANSFER OIL

- Remove the No.1 plug and gasket and supply oil.

NOTICE:

- When supplying oil, pour it slowly.
- Supply oil several times at several minutes interval.

HINT:

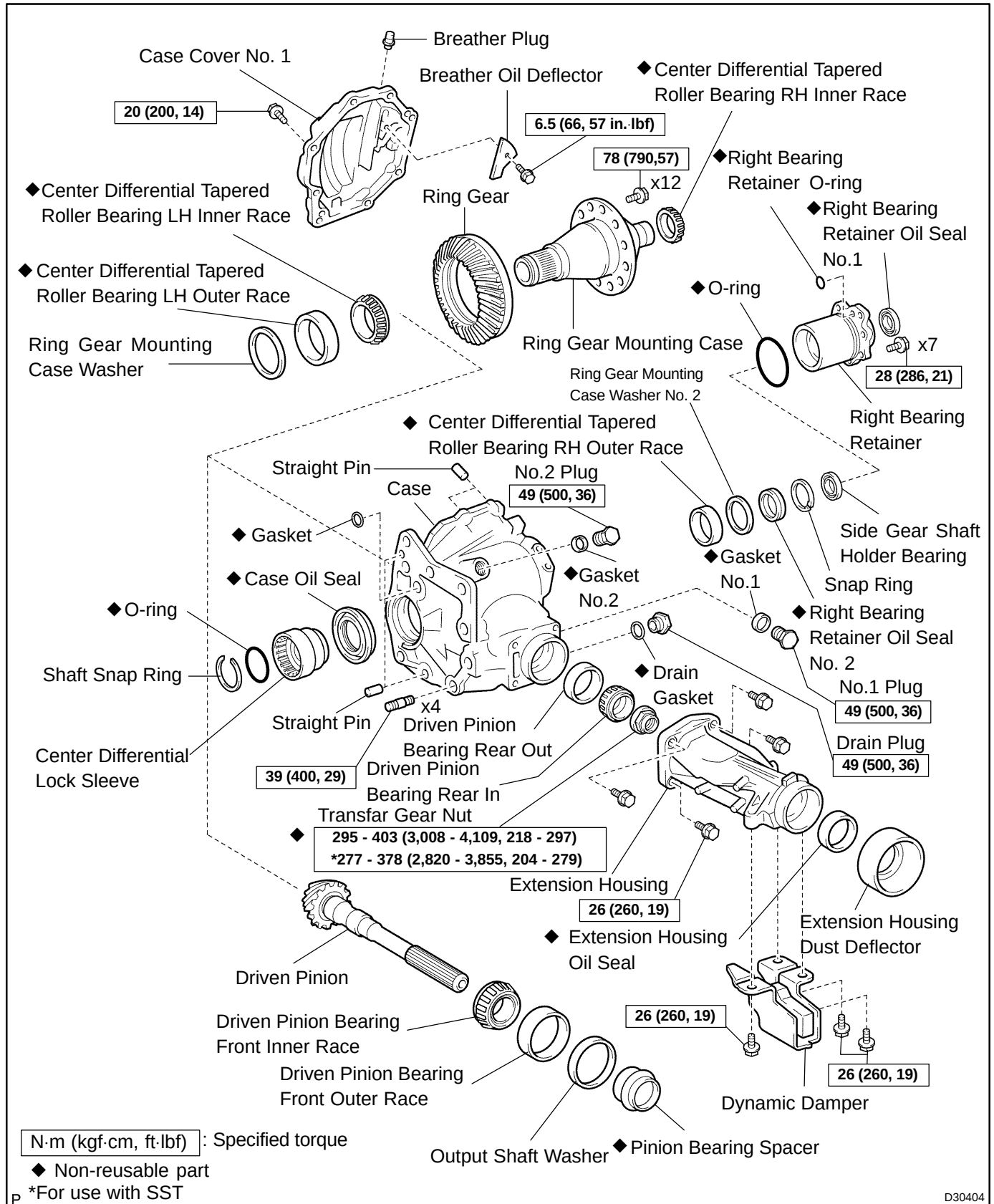
The oil level should be within 0 - 5 mm (0 - 0.20 in.) below the lowest end of the hole for the No.1 plug.

- After leaving it alone for 5 minutes, recheck the oil level.
- Tighten the No. 1 plug with a new gasket.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

TRANSFER (4WD)

COMPONENTS

3100R-02



D30404

TRANSFER SYSTEM (4WD)

3100Q-02

PRECAUTION

- Before disassembly, clean the transfer assy and remove any deposited sand or mud to prevent it from entering the inside of the transfer during disassembly and assembly.
- When removing any light alloy part such as a transfer cover, do not pry it off with a tool like a screwdriver but tap it out with a plastic hammer.
- Always organize the removed parts properly and protect them from dust.
- Before installation, clean all parts and dry them completely and then, apply hypoid gear oil to each part. Do not use alkaline chemicals when cleaning aluminum or rubber parts and ring gear set bolts. Also, do not use any cleansing oil (ex. white gasoline) to clean the rubber parts such as O rings and oil seals.
- Apply hypoid gear oil to any sliding surface or rotating part.
- Do not directly hold a part by a vise. Make sure that you put an aluminum sheet between them.
- Replace any damaged or deformed snap ring with a new one.
- If there is a scratch on the mating surface of the case, it may cause oil leakage. Therefore, be careful not to damage the contact surface when handling it.
- Before applying a sealant, completely remove old sealant stuck on sealed parts and clean them with white gasoline.
- Do not supply oil immediately after installing sealed parts. Leave 1 hour or more.
- Scratches on a contact surface of an oil seal, O ring or gasket may cause oil leakage. Be careful not to damage the contact surface when handling it.
- When press-fitting an oil seal, be careful not to damage the oil seal lip and its periphery.
- When replacing a bearing , replace both outer and inner races as one set.

PROBLEM SYMPTOMS TABLE

Symptom	Suspect Area	See page
Noise	1. Oil (Level low) 2. Backlash adjustment 3. Preload adjustment 4. Tooth contact adjustment 5. Transfer driven pinion bearing (Worn) 6. Ring gear mounting case bearing (Worn)	31-4 31-9 31-9 31-9 31-9 31-9
Oil leakage	1. Oil (Level high) 2. Oil seal (Worn or damaged) Right bearing retainer 3. Oil seal (Worn or damaged) Transfer case 4. Oil seal (Worn or damaged) Extension housing 5. Gasket (Damaged) 6. Seal (Damaged)	31-4 31-5 31-7 31-8 31-9 31-9

TRANSFER ASSY (4WD)

OVERHAUL

3104E-02

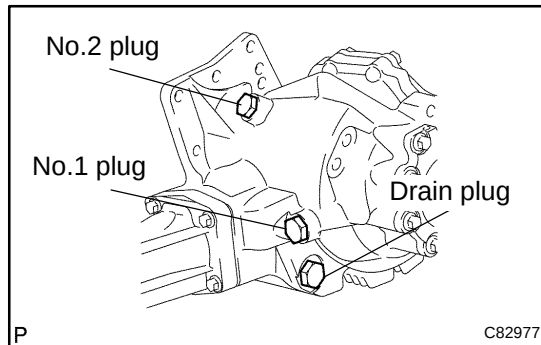
HINT:

ENGINE COMPONENTS: See page 14-17

AUTOMATIC TRANSMISSION COMPONENTS: See page 40-8

TRANSFER COMPONENTS: See page 31-3

1. REMOVE ENGINE ASSEMBLY WITH TRANSAXLE (See page 14-33)
2. REMOVE AUTOMATIC TRANSMISSION W/TRANSFER (See page 40-9)



3. REMOVE TRANSFER CASE NO.1 PLUG

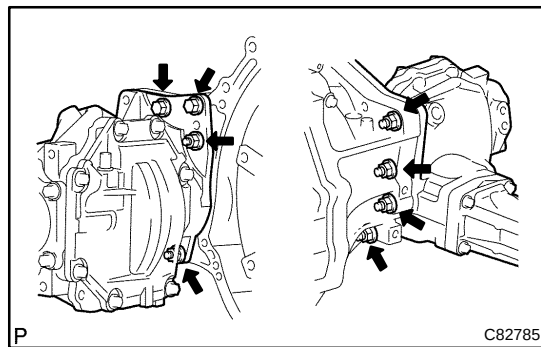
- (a) Remove the No.1 plug.
- (b) Remove the gasket from the plug.

4. REMOVE TRANSFER CASE NO.2 PLUG

- (a) Remove the No.2 plug.
- (b) Remove the gasket from the plug.

5. REMOVE TRANSFER DRAIN PLUG

- (a) Remove the drain plug and drain the oil.
- (b) Remove the gasket from the drain plug.

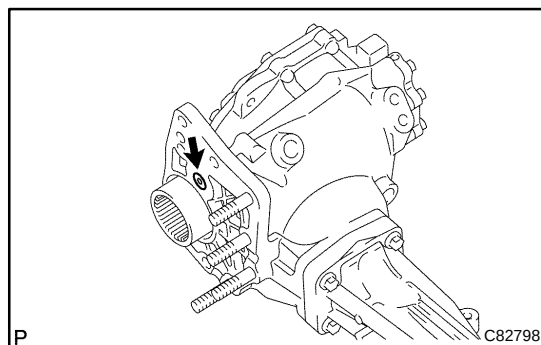


6. REMOVE TRANSFER ASSY

- (a) Remove the 2 bolts and 6 nuts.
- (b) Using a plastic hammer, drive out the transfer assy from the transaxle assy.

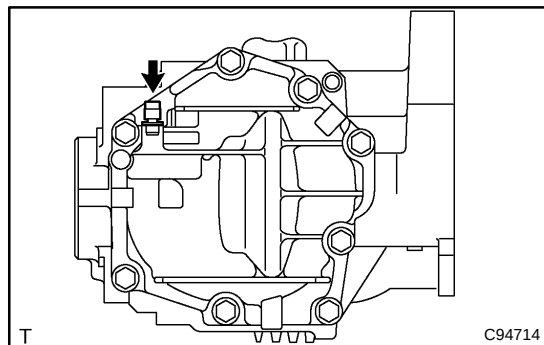
NOTICE:

- Disconnect the transfer assy from the transaxle assy without tilting.
- When moving the transfer assy, do not hold the oil seal parts by both sides of the assy.

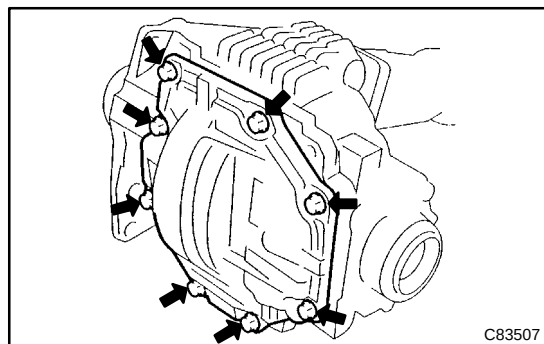


7. REMOVE TRANSFER COVER GASKET

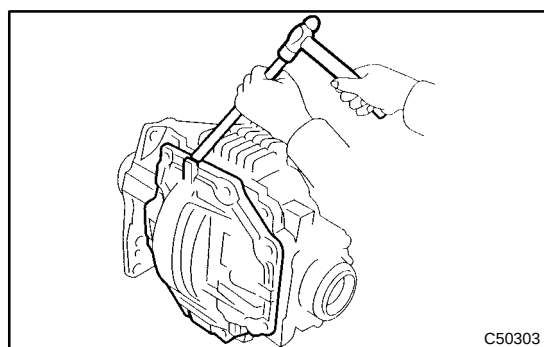
- (a) Remove the gasket from the transfer assy.

**8. REMOVE TRANSFER CASE BREATHER PLUG**

- (a) Using a screwdriver and a hammer, remove the breather plug from the case cover.

**9. REMOVE TRANSFER CASE COVER NO.1**

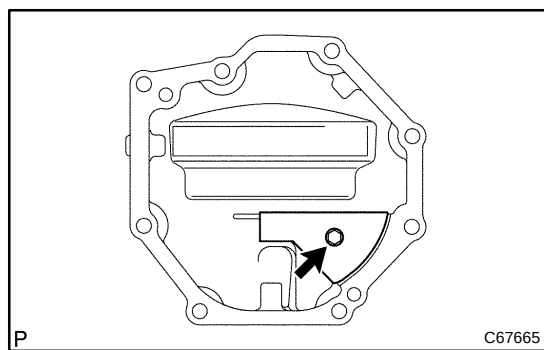
- (a) Remove the 8 bolts.



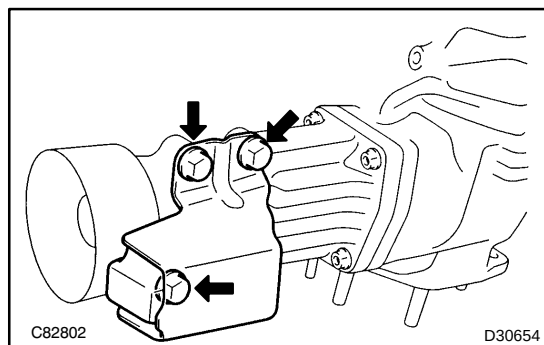
- (b) Using a brass bar and a hammer, remove the case cover from the case.

NOTICE:

Be careful not to damage the mating surfaces of the case and cover.

**10. REMOVE BREATHER OIL DEFLECTOR**

- (a) Remove the bolt and breather oil deflector from the case cover.

**11. REMOVE TRANSFER DYNAMIC DAMPER**

- (a) Remove the 3 bolts and the dynamic damper from the extension housing.

12. REMOVE TRANSFER CASE STRAIGHT PIN

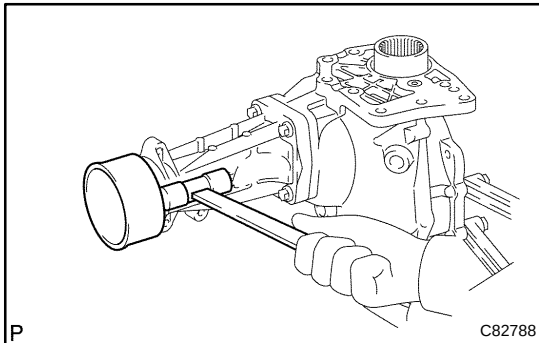
- (a) Remove the 4 transfer case straight pins from the transfer case.

13. REMOVE TRANSFER & TRANSAXLE SETTING STUD BOLT

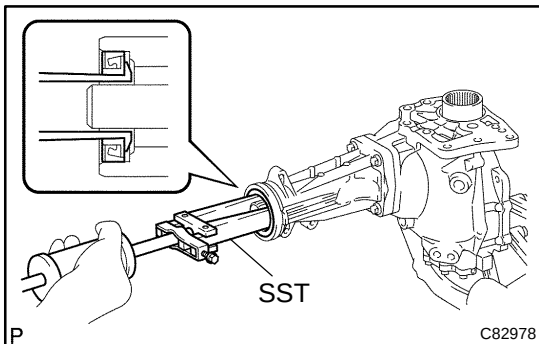
- (a) Remove the 4 stud bolts.

14. FIX TRANSFER ASSY

- (a) Fix the transfer assy to the overhaul attachment.

**15. REMOVE TRANSFER EXTENSION HOUSING DUST DEFLECTOR**

- (a) Using a plastic hammer, remove the dust deflector from the extension housing.

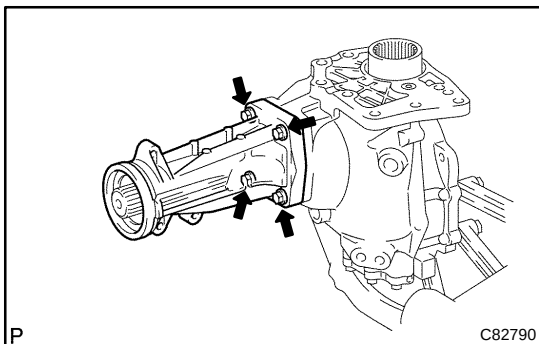
**16. REMOVE TRANSFER EXTENSION HOUSING TYPE T OIL SEAL**

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

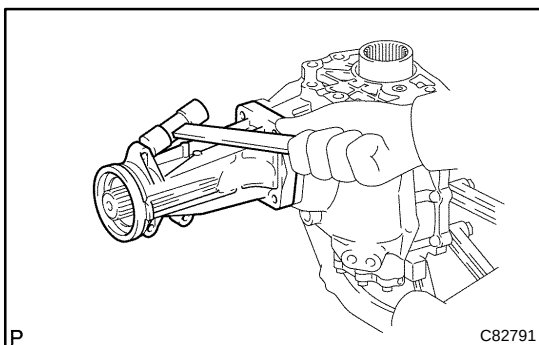
SST 09308-00010

NOTICE:

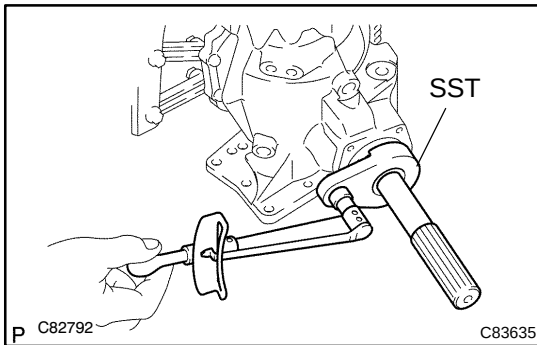
Be careful not to damage the oil-seal-fitted surface of the housing and the inside surface of the bush.

**17. REMOVE TRANSFER EXTENSION HOUSING SUB-ASSY**

- (a) Remove the 4 bolts.



- (b) Using a plastic hammer, remove the extension housing from the case.

**18. INSPECT PRELOAD**

- (a) Using SST and a torque wrench, check the initial torque within the backlash range.

SST 09326-2001 1

Torque: 0.9 - 1.4 N·m (9 - 14 kgf·cm, 8.0 - 12.4 in.·lbf)

HINT:

Use a torque wrench with a fulcrum length of 160 mm (6.30 in.)

- (b) Using SST and a torque wrench, check the initial torque with the driven pinion being contact with the ring gear face.

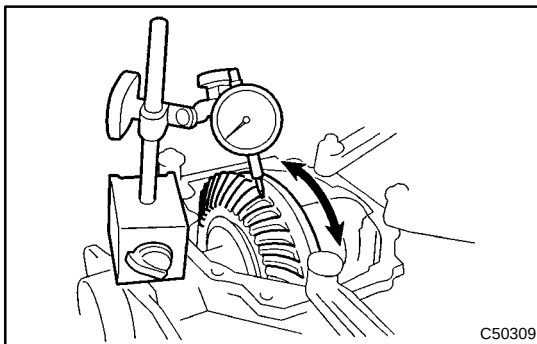
SST 09326-2001 1

Torque: Driven pinion preload

+0.15 - 0.30 N·m (+1.6 - 3.1 kgf·cm, +1.3 - 2.7 in.·lbf)

HINT:

Use a torque wrench with a fulcrum length of 160 mm (6.30 in.)

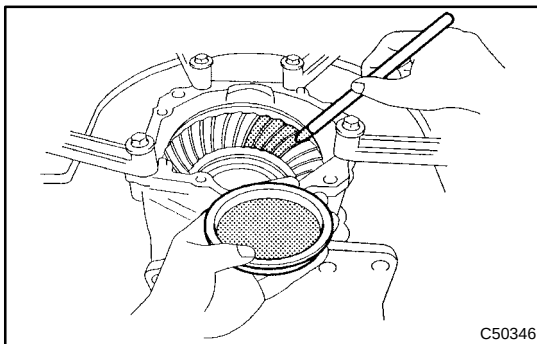
**19. INSPECT BACKLASH**

- (a) Set the dial gauge perpendicular to the tooth face of the ring gear, fix the driven pinion and check the backlash while moving the gear.

Backlash: 0.10 - 0.15 mm (0.0039 - 0.0059 in.)

NOTICE:

Check it at 3 points or more on the gear periphery.

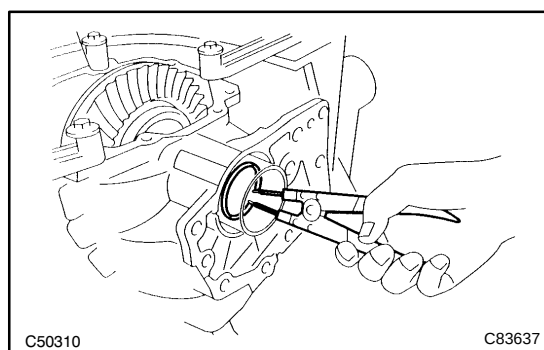
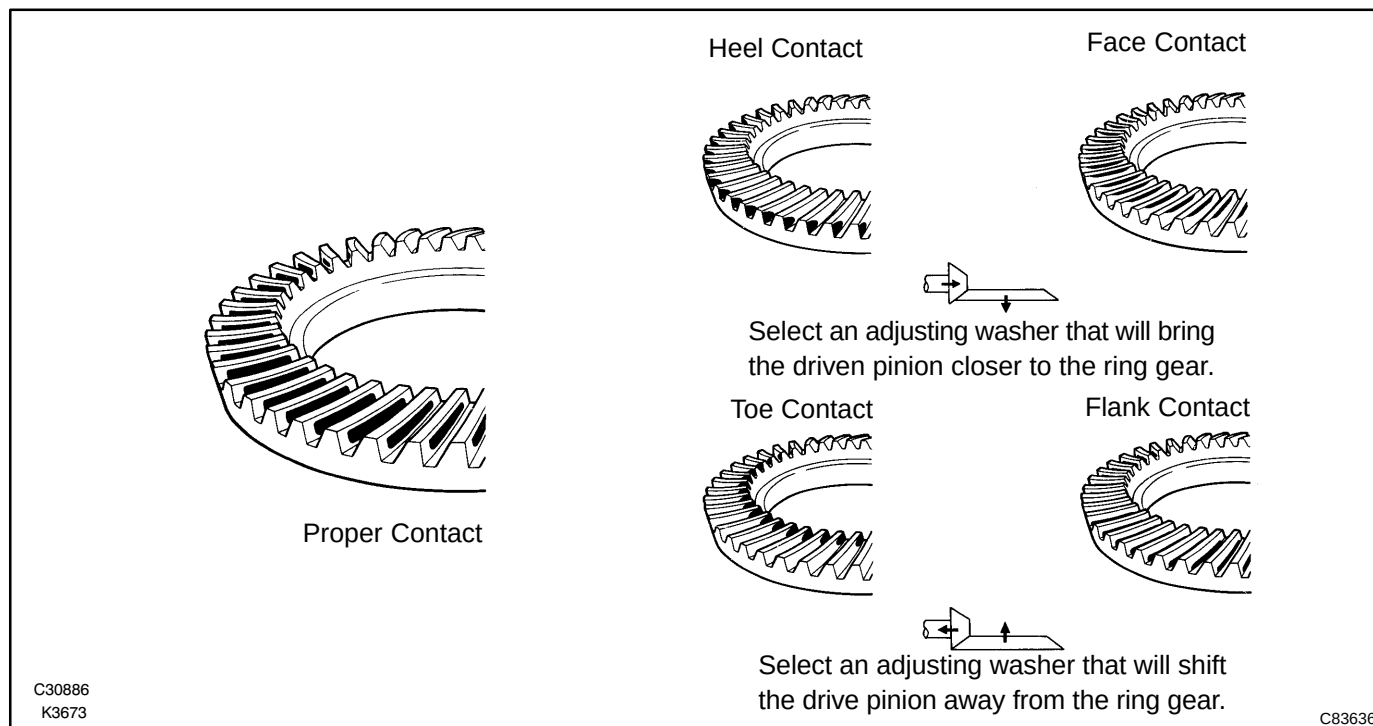
**20. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVEN PINION**

- (a) Apply red lead primer thinly and uniformly to both faces of the ring gear and rotate it several times.

NOTICE:

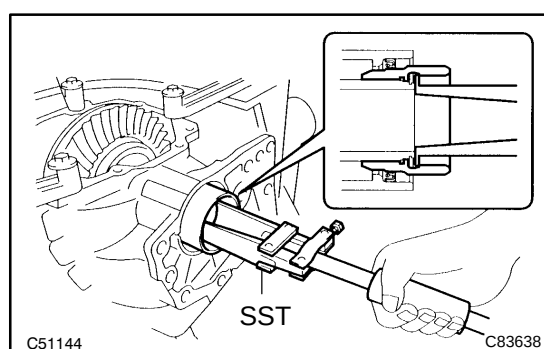
Check the tooth contact on the ring gear at 4 places or more.

(b) Proper washer location is shown in the illustration.

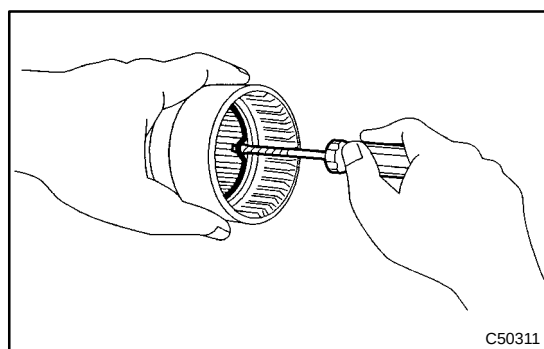


21. REMOVE CTR DIFFERENTIAL LOCK SLEEVE

(a) Using a snap ring pliers, remove the shaft snap ring.



(b) Using SST, remove the center differential lock sleeve.
SST 09308-00010

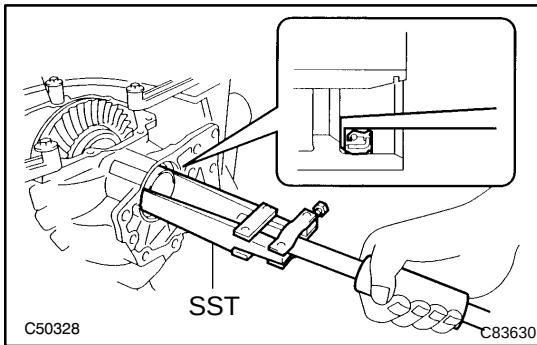


22. REMOVE O-RING

(a) Using a screwdriver with the tip protected by taping, remove the O-ring from the center differential lock sleeve.

NOTICE:

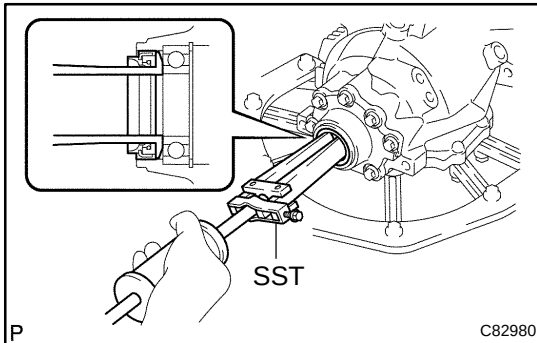
Be careful not to damage the lock sleeve's groove for the O-ring.

**23. REMOVE TRANSFER CASE OIL SEAL**

- (a) Using SST, remove the oil seal from the case.
SST 09308-00010

NOTICE:

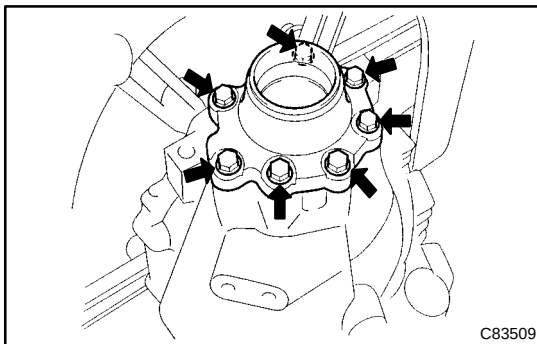
Be careful not to damage the oil-seal-fitted surface of the case.

**24. REMOVE TRANSFER RH BEARING RETAINER OIL SEAL**

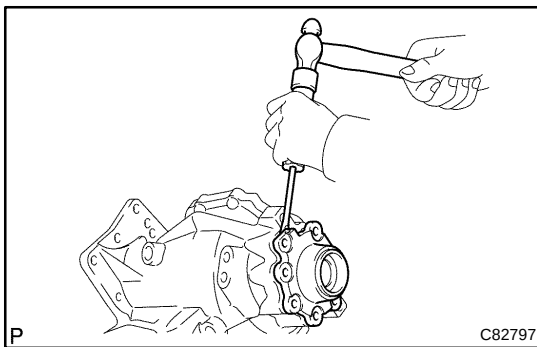
- (a) Using SST, remove the oil seal from the right bearing retainer.
SST 09308-00010

NOTICE:

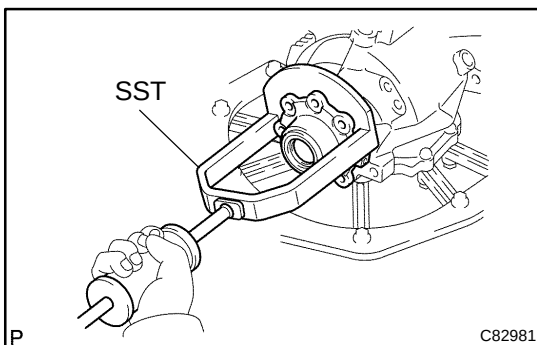
Be careful not to damage the oil-seal-fitted surface of the retainer.

**25. REMOVE TRANSFER RH BEARING RETAINER SUB-ASSY**

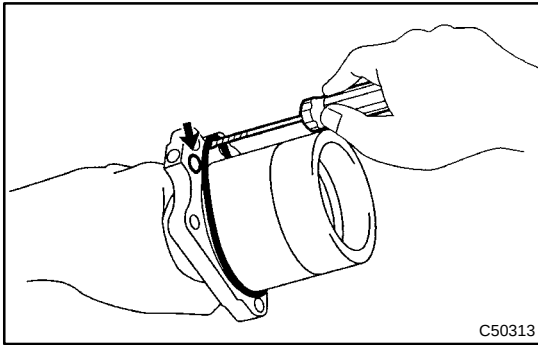
- (a) Remove the 7 bolts from the right bearing retainer.



- (b) Using a screwdriver and a hammer, make a clearance between the right bearing retainer and the transfer case.



- (c) Using SST, remove the right bearing retainer from the transfer case.
SST 09520-10021

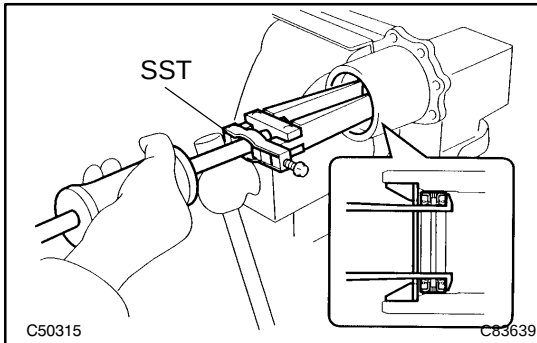


26. REMOVE TRANSFER RH BEARING RETAINER O-RING

- (a) Using a screwdriver with the tip protected by taping, remove the 2 O-rings from the right bearing retainer.

NOTICE:

Be careful not to damage the retainer's groove for the O-ring.



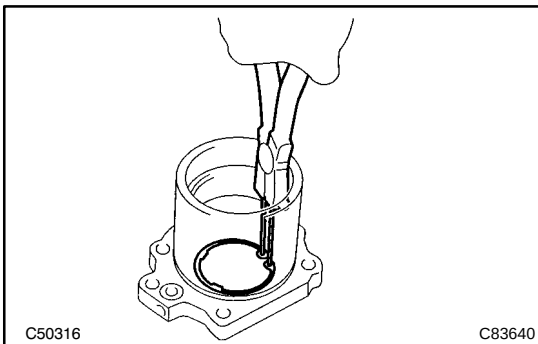
27. REMOVE CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING

- (a) Hold the right bearing retainer in a vise.
 (b) Using SST, remove the outer race, washer and oil seal from the right bearing retainer.

SST 09308-00010

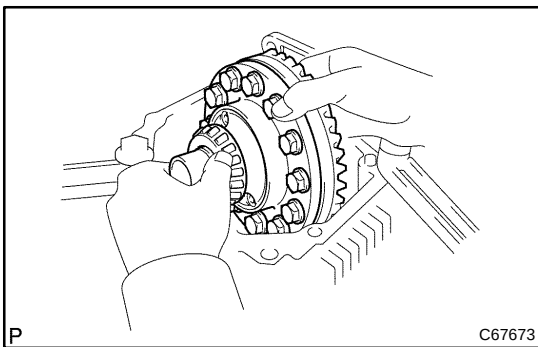
NOTICE:

Be careful not to damage the oil-seal-fitted surface of the retainer.



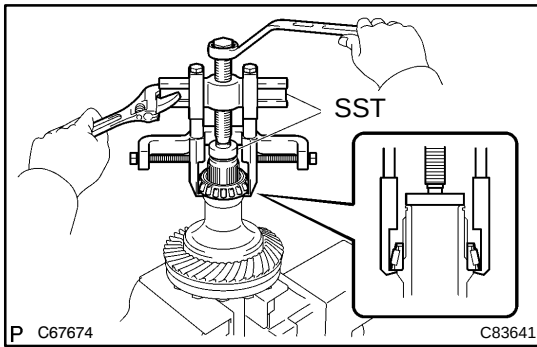
28. REMOVE SIDE GEAR SHAFT HOLDER BEARING

- (a) Using a snap ring pliers, remove the side gear shaft holder hole snap ring.
 (b) Remove the side gear shaft holder bearing from the right bearing retainer.



29. REMOVE TRANSFER RING GEAR MOUNTING CASE

- (a) Remove the ring gear mounting case assy from the case.



30. REMOVE CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING

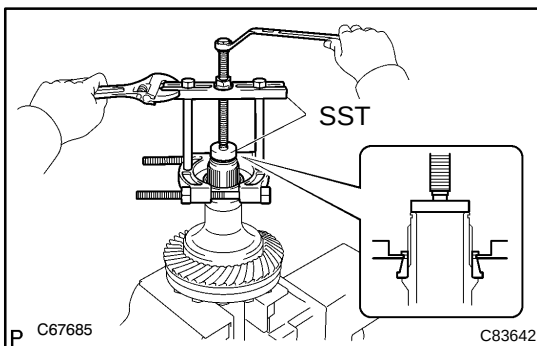
(a) RH side:

Using SST, remove the inner race of the center differential case tapered roller bearing from the ring gear mounting case assy.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00420)

NOTICE:

Apply grease to the screw thread and the tip of the SST before use.



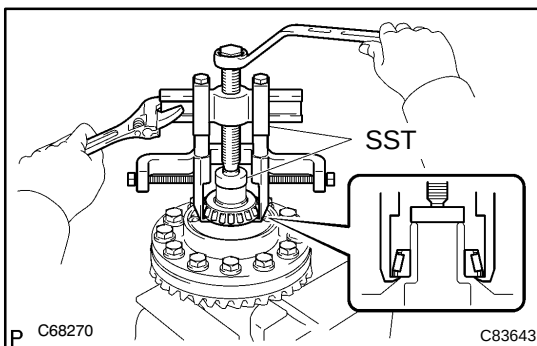
HINT:

When the roller comes off due to deformation of the gauge, completely remove the roller and take away remaining inner races of the center differential case tapered roller bearing from the ring gear mounting case assy.

SST 09950-00020, 09950-00030, 09950-60010 (09951-00430)

NOTICE:

Apply grease to the screw thread and the tip of the SST before use.



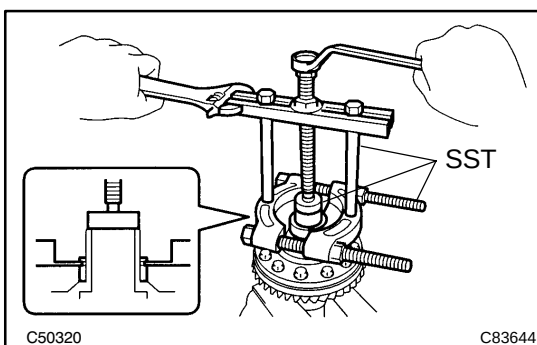
(b) LH side:

Using SST, remove the inner race of the center differential case tapered roller bearing from the ring gear mounting case assy.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00360)

NOTICE:

Apply grease to the screw thread and the tip of the SST before use.



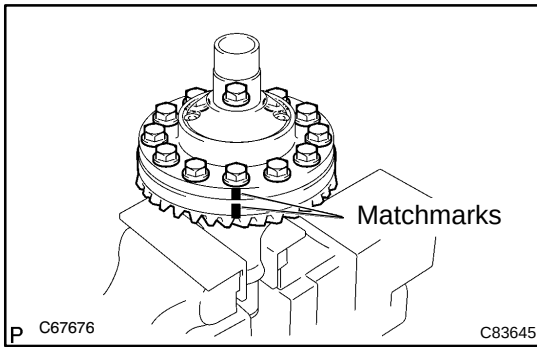
HINT:

When the roller comes off due to deformation of the gauge, completely remove the roller and take away remaining inner races of the center differential case tapered roller bearing from the ring gear mounting case assy.

SST 09950-00020, 09950-00030, 09950-60010 (09951-00360)

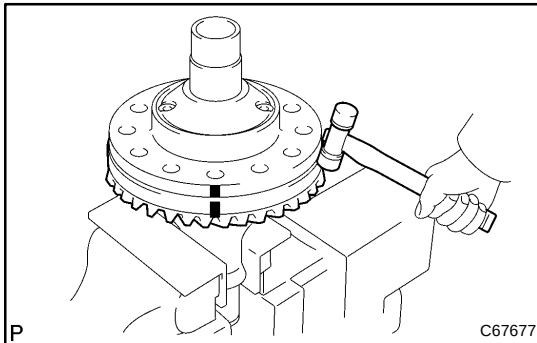
NOTICE:

Apply grease to the screw thread and the tip of the SST before use.



31. REMOVE RING GEAR

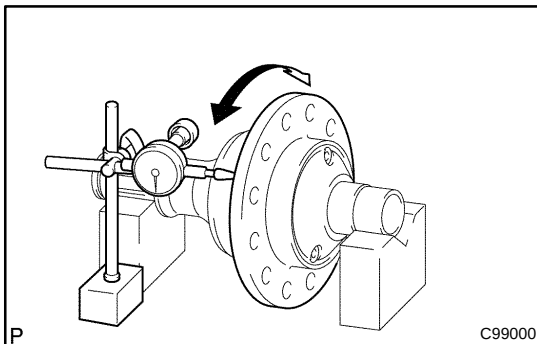
- Put matchmarks on the ring gear mounting case assy and the ring gear.
- Remove the 12 bolts.



- Using a plastic hammer, remove the ring gear by tapping around its periphery.

NOTICE:

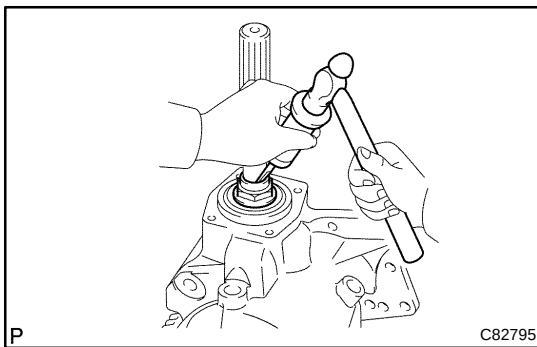
Do not damage the tooth face of the ring gear.



32. INSPECT RUNOUT OF TRANSFER RING GEAR MOUNTING CASE

- Using a dial indicator, check for the ring gear mounting case runout.

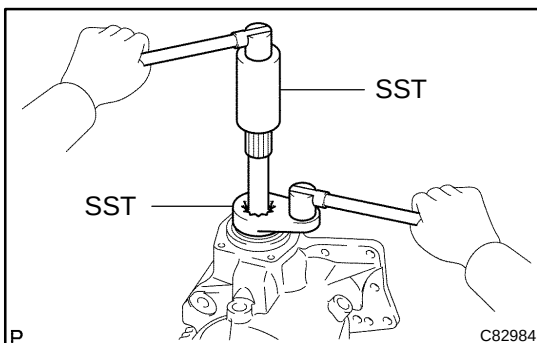
Maximum runout: 0.03 mm (0.0012 in.)



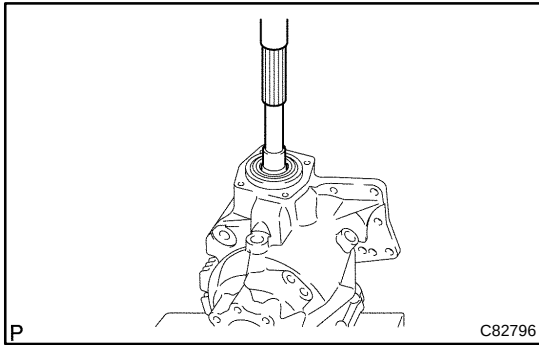
33. REMOVE DRIVEN PINION

- Using SST and a hammer, unstake the staked part of the gear nut.

SST 09930-00010



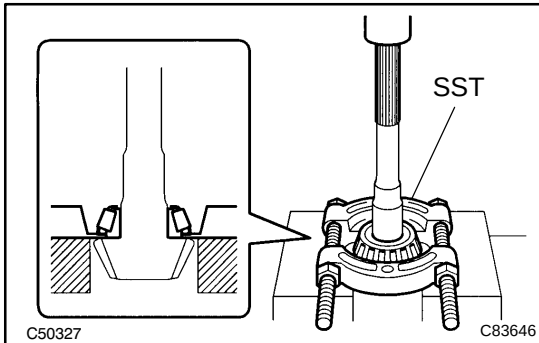
- Using SST, remove the gear nut.
SST 09326-2001 1, 09556-16030



- (c) Using a press, remove the driven pinion, bearing inner rear race and bearing spacer.

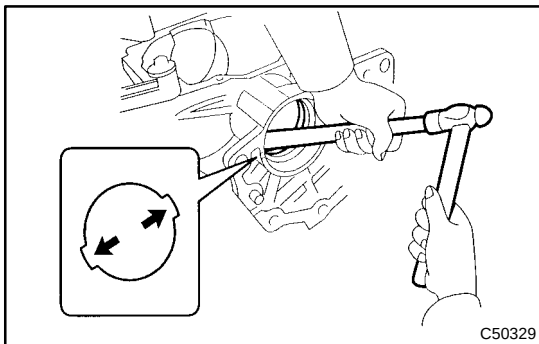
NOTICE:

- Put a shop rug to prevent the driven pinion from dropping.
- Place something like wood blocks under the case to keep it level.

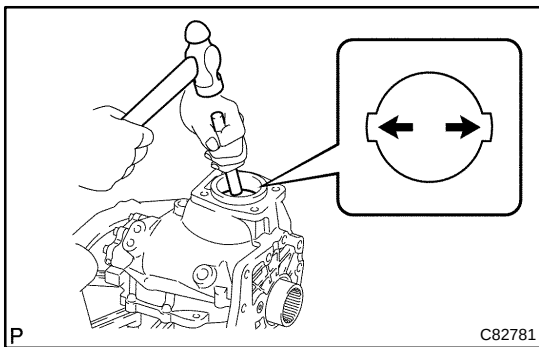
**34. REMOVE TRANSFER DRIVEN PINION FRONT BEARING**

- (a) Using SST and a press, remove the inner race from the driven pinion.

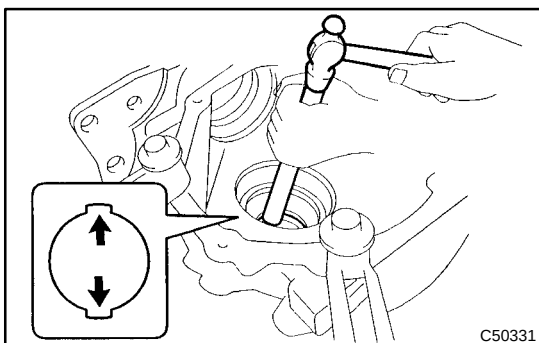
SST 09950-00020

**35. REMOVE CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING**

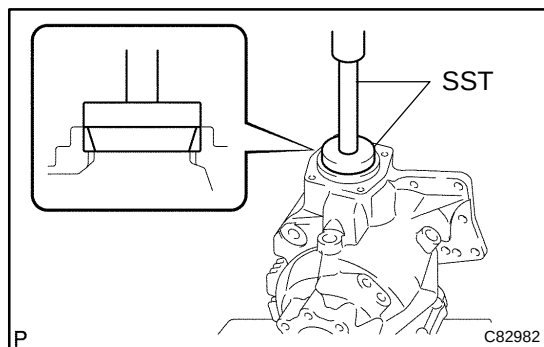
- (a) Using a brass bar and a hammer, lightly strike the outer race at 2 points to remove it from the case.

36. REMOVE RING GEAR MOUNTING CASE PLATE WASHER**37. REMOVE TRANSFER DRIVEN PINION FRONT BEARING**

- (a) Using a brass bar and a hammer, lightly strike the outer race at 2 points to remove it from the case.

38. REMOVE TRANSFER OUTPUT WASHER**39. REMOVE TRANSFER DRIVEN PINION REAR BEARING**

- (a) Using a brass bar and a hammer, lightly strike the outer race at 2 points to remove it from the case.



40. INSTALL TRANSFER DRIVEN PINION REAR BEARING

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

NOTICE:

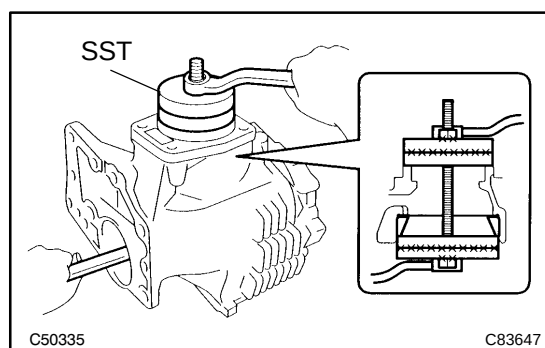
Place something like wood blocks under the case to keep it level.

41. INSTALL TRANSFER OUTPUT WASHER

- (a) Install the washer to the case.

HINT:

Reuse the washer used before disassembly.



42. INSTALL TRANSFER DRIVEN PINION FRONT BEARING

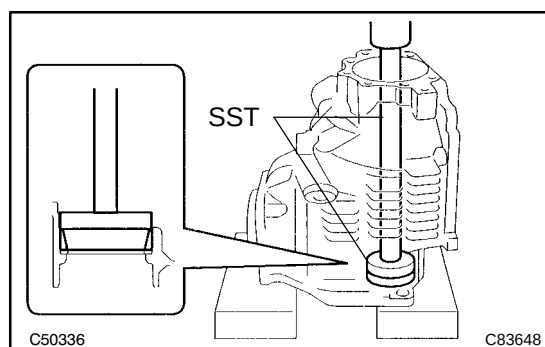
- (a) Install the outer race to the case with SST, a bolt and a nut.
SST 09950-60010 (09951-00750, 09951-00770, 09951-00810), 09316-60011 (09316-00061)

43. INSTALL RING GEAR MOUNTING CASE PLATE WASHER

- (a) Install the washer to the case.

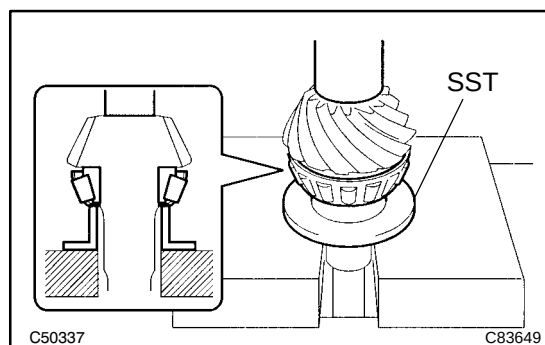
HINT:

Reuse the washer used before disassembly.



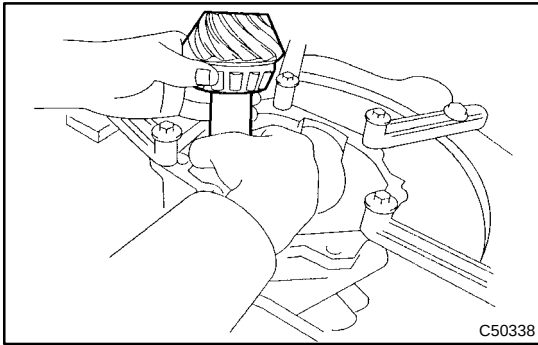
44. INSTALL CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING

- (a) Using SST and a press, install the outer race to the case.
SST 09950-70010 (09951-07200), 09316-60011 (09316-00021)

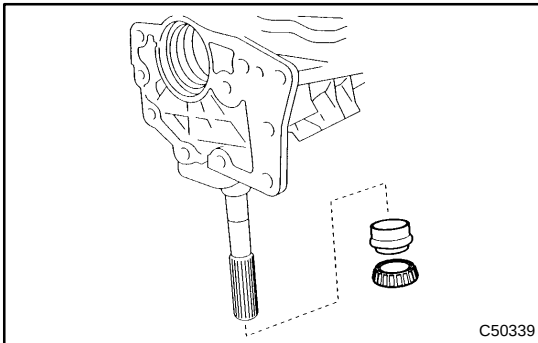


45. INSTALL TRANSFER DRIVEN PINION FRONT BEARING

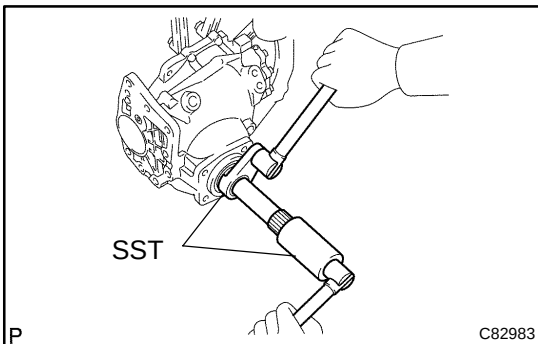
- (a) Using SST and a press, install the inner race to the driven pinion.
SST 09316-60011 (09316-00041)

**46. INSTALL DRIVEN PINION**

- (a) Install the driven pinion to the case.



- (b) Install a new bearing spacer and a new bearing rear to the driven pinion.



- (c) Using SST, tighten a new gear nut with a standard torque.
SST 09326-2001 1, 09556-16030

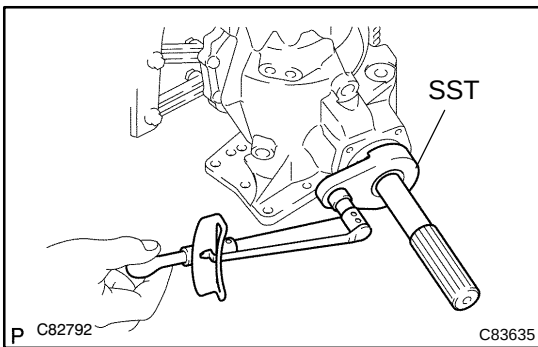
Torque: 277 - 378 N·m (2,820 - 3,853 kgf·cm, 204 - 279 ft·lbf)

NOTICE:

Do not stake the gear nut.

HINT:

Use a torque wrench with a fulcrum length of 750 mm (29.53 in.)

**47. INSPECT AND ADJUST DRIVEN PINION PRELOAD**

- (a) Using SST and a torque wrench, measure the initial torque of the driven pinion.

SST 09326-2001 1

Preload (at starting):**New bearing:**

1.1 - 1.6 N·m (11 - 16 kgf·cm, 9.7 - 14.2 in·lbf)

Used bearing:

0.9 - 1.4 N·m (9 - 14 kgf·cm, 8.0 - 12.4 in·lbf)

HINT:

Use a torque wrench with a fulcrum length of 160 mm (6.30 in.)

NOTICE:

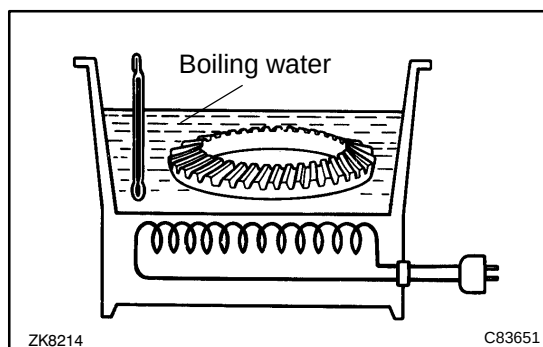
Measure it after rotating the bearing in both clockwise and counter clockwise directions to make it fit.

- (b) If the preload is too large, replace the bearing spacer with new one.
- (c) If the preload is too small, repeatedly adjust the preload by tightening the lock nut 5 - 10 degrees at a time until the standard value is obtained.

- (d) If the preload is insufficient even though the tightening torque of the lock nut exceeds the maximum of the standard value, loosen the lock nut and apply gear oil SAE 90 (GL-5) to the lock nut and the screw thread and the base of the driven pinion. And then repeat the preceding operation. If the tightening torque is smaller than the standard, replace the bearing spacer with new one and adjust it.

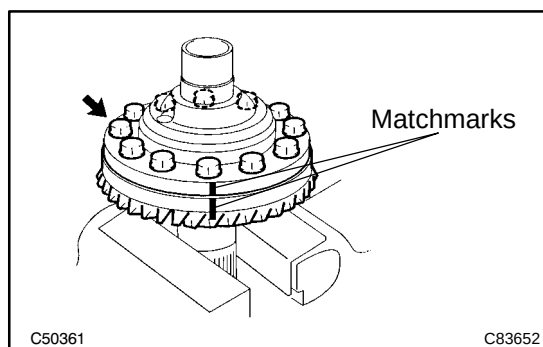
SST 09326-2001 1, 09556-16030

Torque: 378 N·m (3,855 kgf·cm, 279 ft·lbf)



48. INSTALL RING GEAR

- (a) Heat the ring gear in boiling water to 90 - 100 °C (194 - 212 °F).
- (b) Completely remove grease and moisture on the mating surfaces of the ring gear and the ring gear mounting case.

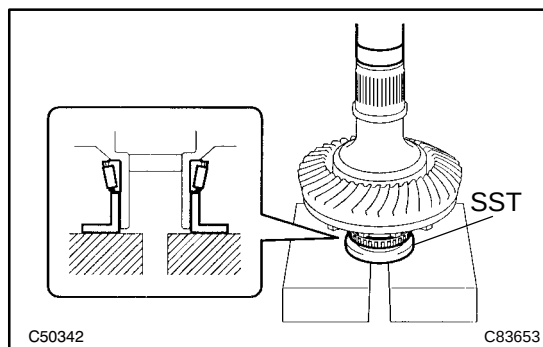


- (c) Align the matchmarks on the ring gear and ring gear mounting case and quickly assemble them.
- (d) Tighten the 12 bolts.

Torque: 78 N·m (790 kgf·cm, 57 ft·lbf)

NOTICE:

- Tighten the bolts in diagonal order in splitting several times.
- After the ring gear has well cooled down, tighten the bolts.
- Make paint marks, etc, do the procedure while checking the bolts retightened.



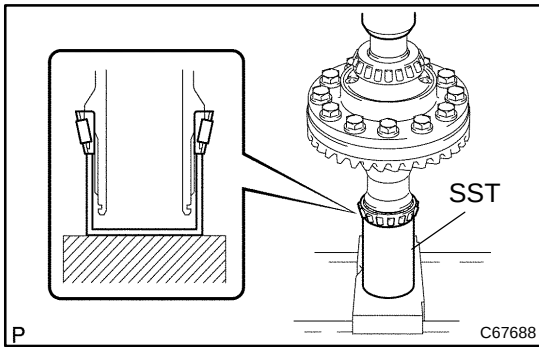
49. INSTALL CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING

- (a) RH side:
- Using SST and a press, install the inner race of the center differential case tapered roller bearing to the ring gear mounting case assy.

SST 09506-35010, 09950-60010 (09951-00430)

NOTICE:

When replacing the inner race, replace the outer race, too.



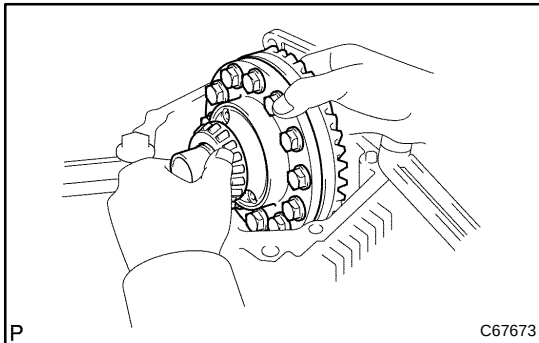
(b) LH side:

Using SST and a press, install the inner race of the center differential case tapered roller bearing to the ring gear mounting case assy.

SST 09223-00010

NOTICE:

When replacing the inner race, replace the outer race, too.



50. INSTALL TRANSFER RING GEAR MOUNTING CASE

(a) Install the ring gear mounting case assy to the case.

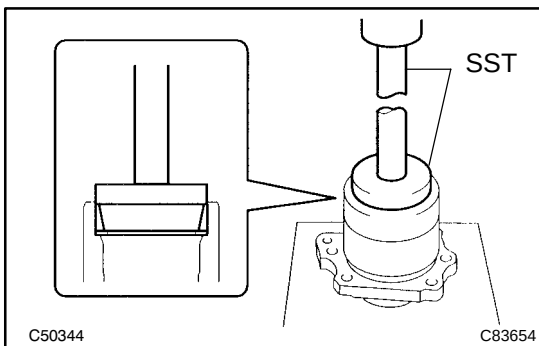
NOTICE:

Damage to the spline, bearing's rotating surface and gear face may cause decrease in their strength. Care should be taken at the time of installation.

51. INSTALL TRANSFER RING GEAR MOUNTING CASE WASHER NO.2

HINT:

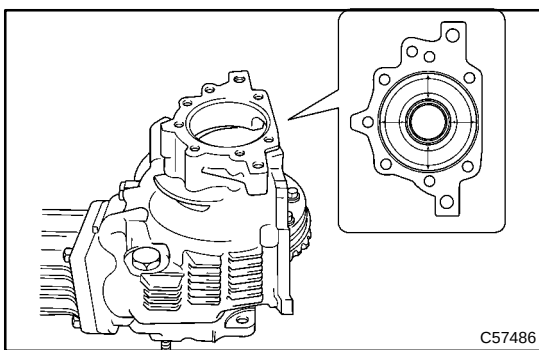
Reuse the washer used before disassembly.



52. INSTALL CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING

(a) Using SST and a press, install the outer race to the right bearing retainer.

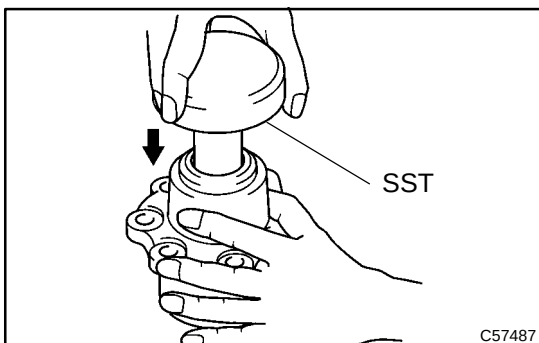
SST 09950-60010 (09951-00620), 09950-70010 (09951-07150)



53. INSTALL TRANSFER RH BEARING RETAINER SUB-ASSY

(a) Place the transfer with the face where the right bearing retainer is to be installed facing up.

(b) Center-align the ring gear mounting case assy and the case.

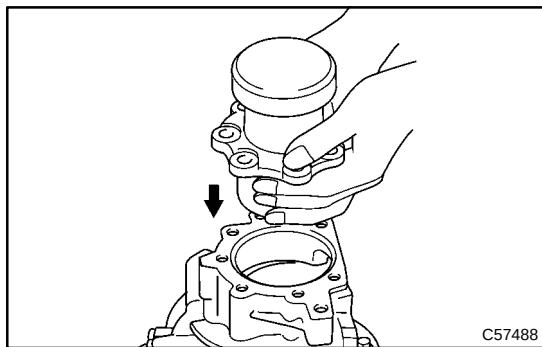


(c) Insert the SST into the right bearing retainer.

SST 09387-00090

NOTICE:

Insert SST straight in order not to damage the oil seal lip.



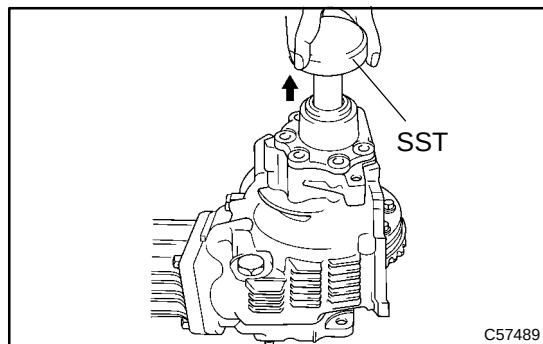
- (d) Insert the right bearing retainer together with the SST into the case.

NOTICE:

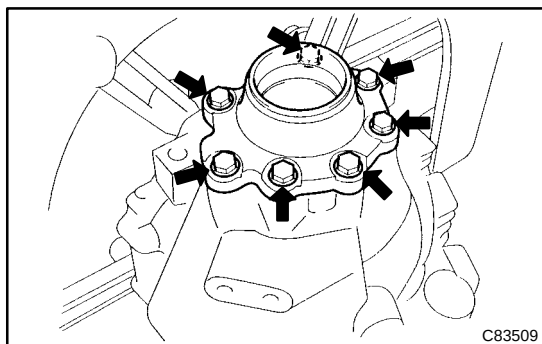
Hard interference between the case and the retainer, and between the center differential control coupling assy and SST should be carefully avoided.

HINT:

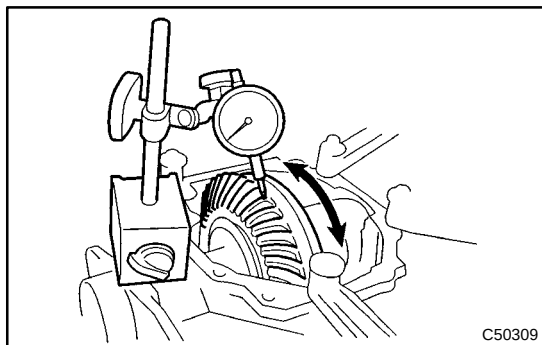
If the retainer cannot be inserted, tap it in with a plastic hammer.



- (e) After inserting the right bearing retainer into the case, remove the SST.



- (f) Tighten the 7 bolts.
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)

**54. INSPECT BACKLASH**

- (a) Set the dial gauge perpendicular to the ring gear face, fix the driven pinion, and check the backlash by moving the ring gear.

Backlash: 0.10 - 0.15 mm (0.0039 - 0.0059 in.)

NOTICE:

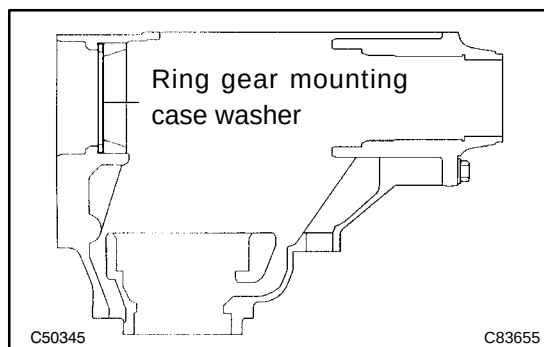
Measure it at 3 points or more on the ring gear periphery.

- (b) If the measured value is out of the standard, select a proper washer for the center differential case tapered roller bearing on the LH side from the table below and install it to obtain the standard value.

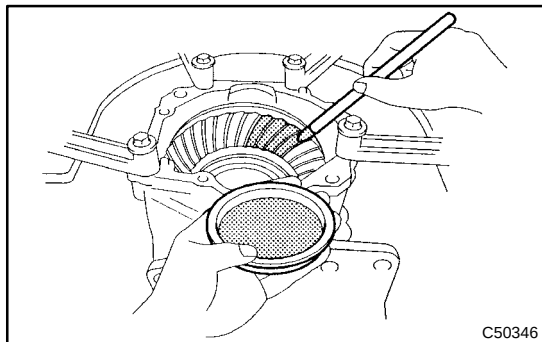
Mark	Washer Thickness mm (in.)	Mark	Washer Thickness mm (in.)	Mark	Washer Thickness mm (in.)
AA	2.07 (0.0814)	AB	2.10 (0.0826)	AC	2.13 (0.0838)
BA	2.16 (0.0850)	BB	2.19 (0.0862)	BC	2.22 (0.0874)
CA	2.25 (0.0885)	CB	2.28 (0.0897)	CC	2.31 (0.0909)
DA	2.34 (0.0921)	DB	2.37 (0.0933)	DC	2.40 (0.0944)
EA	2.43 (0.0956)	EB	2.46 (0.0968)	EC	2.49 (0.0980)
FA	2.52 (0.0992)	FB	2.55 (0.1003)	FC	2.58 (0.1015)
GA	2.61 (0.1027)	GB	2.64 (0.1039)	GC	2.67 (0.1051)
HA	2.70 (0.1062)	HB	2.73 (0.1074)	HC	2.76 (0.1086)
JA	2.79 (0.1098)	JB	2.82 (0.1110)	JC	2.85 (0.1122)
KA	2.88 (0.1133)	KB	2.91 (0.1145)	KC	2.94 (0.1157)
LA	2.97 (0.1169)	LB	3.00 (0.1181)		

HINT:

When the backlash is larger or smaller than the standard, select a thinner or thicker washer respectively.



- (c) Proper washer location is shown in the illustration.

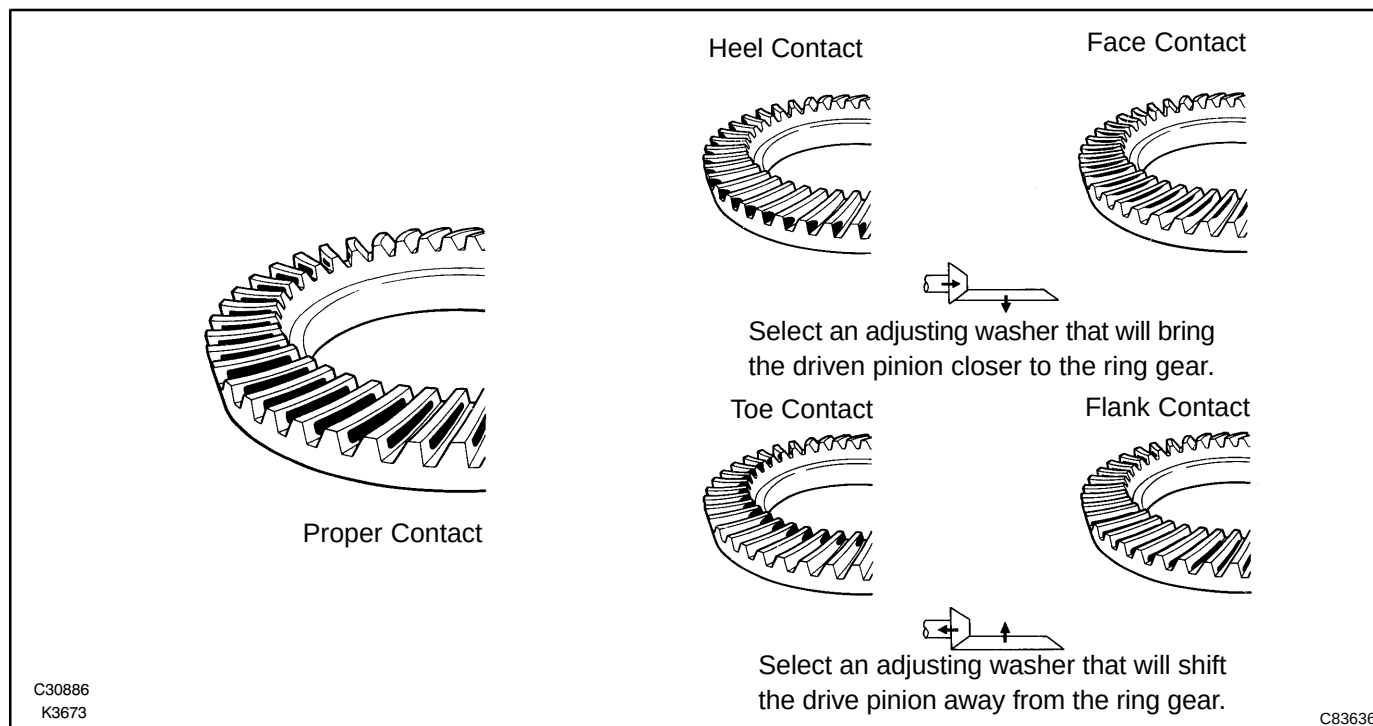
**55. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVEN PINION**

- (a) Apply red lead primer thinly and uniformly to both faces of the ring gear and rotate it several times.

NOTICE:

Check the tooth contact on the ring gear at 4 places or more.

- (b) Observe the pattern shown by red lead primer.

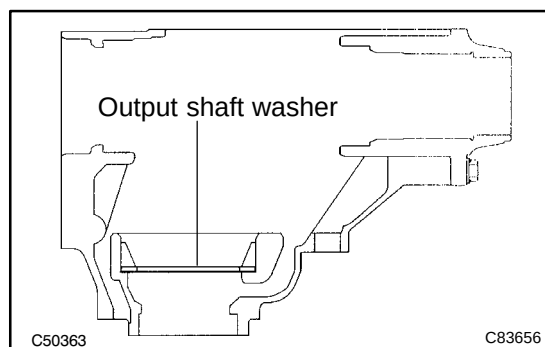


- (c) In the case of faulty tooth contact, select a washer for the driven pinion bearing front side from the following table and reinstall it.

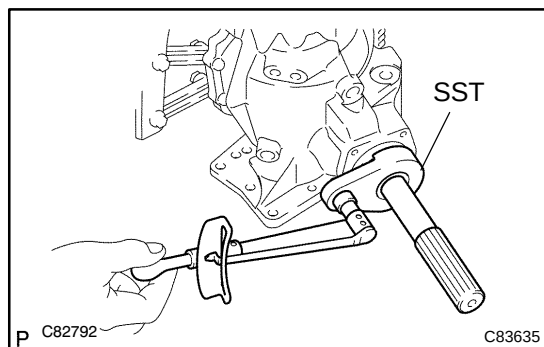
NOTICE:

If the washer thickness is changed, the backlash will be also changed.

Mark	Washer Thickness mm (in.)	Mark	Washer Thickness mm (in.)	Mark	Washer Thickness mm (in.)
AA	1.20 (0.0472)	AC	1.22 (0.0480)	BB	1.24 (0.0488)
CA	1.26 (0.0496)	CC	1.28 (0.0503)	DB	1.30 (0.0511)
EA	1.32 (0.0519)	EC	1.34 (0.0527)	FB	1.36 (0.0535)
GA	1.38 (0.0543)	GC	1.40 (0.0551)	HB	1.42 (0.0559)
JA	1.44 (0.0566)	JC	1.46 (0.0574)	KB	1.48 (0.0582)
LA	1.50 (0.0590)	LC	1.52 (0.0598)	MB	1.54 (0.0606)
NA	1.56 (0.0614)	NC	1.58 (0.0622)	PB	1.60 (0.0629)
QA	1.62 (0.0637)	QC	1.64 (0.0645)		



- (d) The location of the washer for tooth contact adjustment is shown in the illustration.



56. ADJUST TOTAL PRELOAD

- (a) Using SST and a torque wrench, measure the initial torque with the driven pinion being contact with the ring gear face.

SST 09326-2001 1

Torque:

New bearing:

Driven pinion preload +0.2 - 0.4 N·m (+2.3 - 3.9 kgf·cm, +1.8 - 3.5 in.·lbf)

Used bearing:

Driven pinion preload +0.15 - 0.30 N·m (+1.6 - 3.1 kgf·cm, +1.3 - 2.7 in.·lbf)

NOTICE:

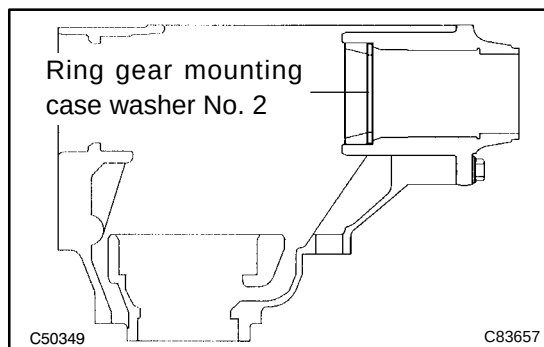
Before measurement, rotate the bearing in both directions several times to make it fit.

HINT:

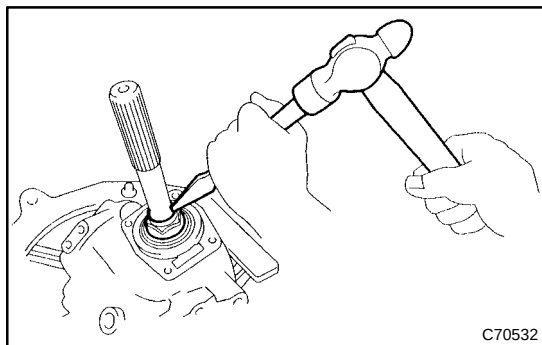
Use a torque wrench with a fulcrum length of 160 mm (6.30 in.)

- (b) If the value is out of the standard range, select the washer for the center differential case tapered roller bearing RH side from the following table and reinstall it.

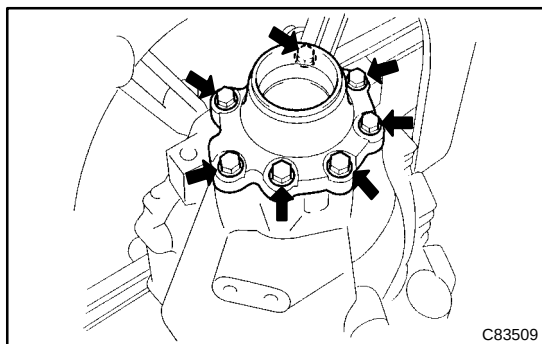
Mark	Washer Thickness mm (in.)	Mark	Washer Thickness mm (in.)	Mark	Washer Thickness mm (in.)
AA	1.47 (0.0578)	AB	1.50 (0.0590)	AC	1.53 (0.0602)
BA	1.56 (0.0614)	BB	1.59 (0.0625)	BC	1.62 (0.0637)
CA	1.65 (0.0649)	CB	1.68 (0.0661)	CC	1.71 (0.0673)
DA	1.74 (0.0685)	DB	1.77 (0.0696)	DC	1.80 (0.0708)
EA	1.83 (0.0720)	EB	1.86 (0.0732)	EC	1.89 (0.0744)
FA	1.92 (0.0755)	FB	1.95 (0.0767)	FC	1.98 (0.0779)
GA	2.01 (0.0790)	GB	2.04 (0.0803)	GC	2.07 (0.0814)
HA	2.10 (0.0826)	HB	2.13 (0.0838)	HC	2.16 (0.0850)
JA	2.19 (0.0862)	JB	2.22 (0.0874)	JC	2.25 (0.0885)
KA	2.28 (0.0897)	KB	2.31 (0.0909)	KC	2.34 (0.0921)
LA	2.37 (0.0933)	LB	2.40 (0.0944)	LC	2.43 (0.0956)
MA	2.46 (0.0968)	MB	2.49 (0.0980)	MC	2.52 (0.0992)
NA	2.55 (0.1003)	NB	2.58 (0.1015)		



- (c) The location of the washer for preload adjustment is shown in the illustration.

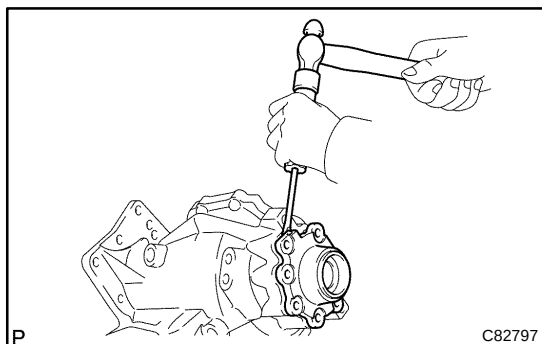


- (d) Using a chisel, stake the gear nut.

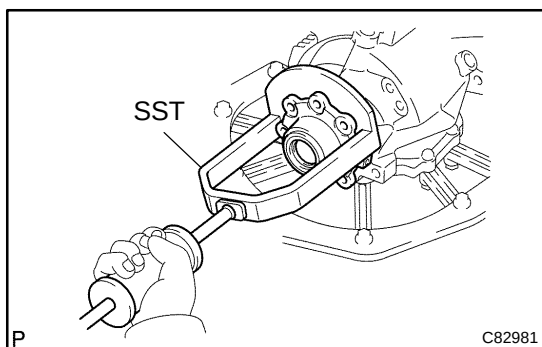


57. REMOVE TRANSFER RH BEARING RETAINER SUB-ASSY

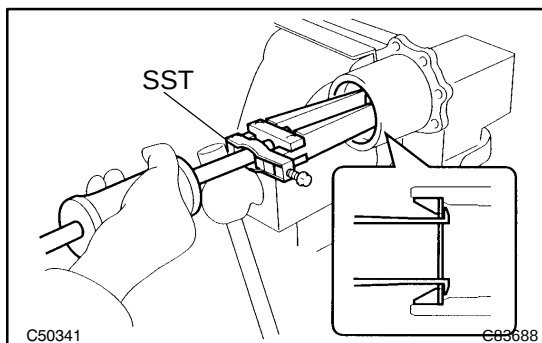
- (a) Remove the 7 bolts from the right bearing retainer.



- (b) Using a screwdriver and a hammer, make a clearance between the right bearing retainer and the transfer case.

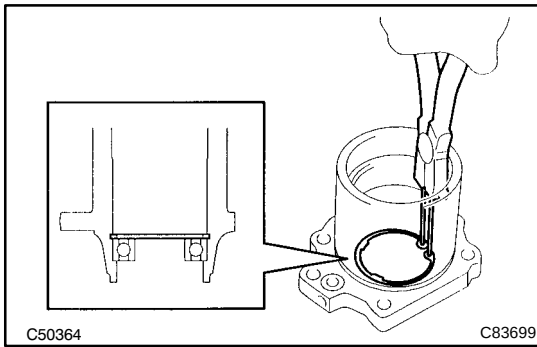


- (c) Using SST, remove the right bearing retainer from the transfer case.
SST 09520-10021



58. REMOVE CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING

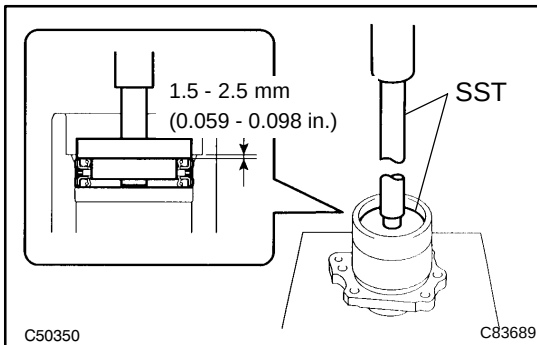
- (a) Hold the right bearing retainer in a vise.
(b) Using SST, remove the outer race and washer from the right bearing retainer.
SST 09308-00010

**59. INSTALL SIDE GEAR SHAFT HOLDER BEARING**

- (a) Install the side gear shaft holder bearing to the right bearing retainer.
- (b) Using a snap ring pliers, install the side gear shaft holder hole snap ring.

HINT:

Check that the snap ring is fit in the groove of the retainer.

**60. INSTALL TRANSFER RH BEARING RETAINER OIL SEAL**

- (a) Using SST and a press, install the oil seal to the right bearing retainer.

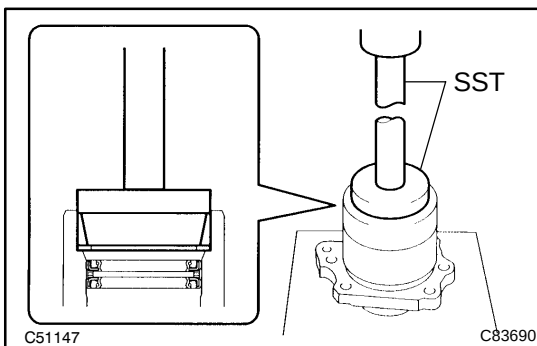
NOTICE:

Carefully press-fit so that the oil seal will not be tilted.

- (b) Apply small amount of MP grease No. 2 to the oil seal lip.
SST 09950-60010 (09951-00360, 09951-00540, 09952-06010), 09950-70010 (09951-07150)

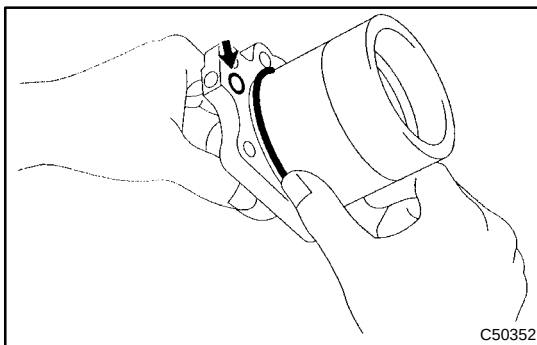
61. INSTALL TRANSFER RING GEAR MOUNTING CASE WASHER NO.2

- (a) Install the selected ring gear mounting washer to the right bearing retainer.

**62. INSTALL CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING**

- (a) Using SST and a press, install the outer race to the right bearing retainer.

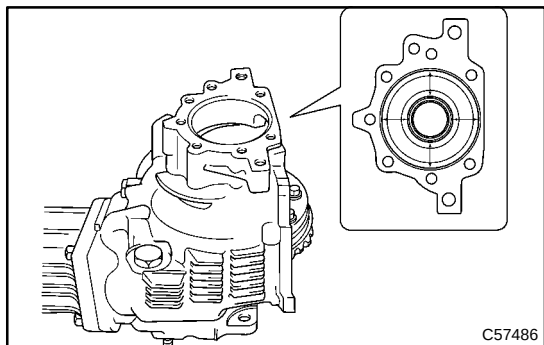
SST 09950-60010 (09951-00620), 09950-70010 (09951-07150)

**63. INSTALL O-RING**

- (a) Apply hypoid gear oil to a new O-ring.
- (b) Install the 2 O-rings to the right bearing retainer.

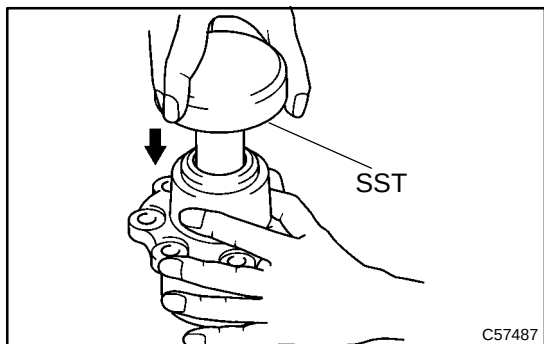
NOTICE:

Be careful not to twist the O-ring and fit it into the retainer's groove properly.



64. INSTALL TRANSFER RH BEARING RETAINER SUB-ASSY

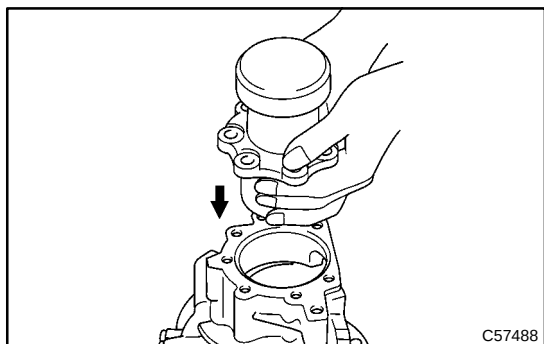
- (a) Place the transfer with the face where the right bearing retainer is to be installed facing up.
- (b) Center-align the center differential control coupling assy and the case.



- (c) Insert SST into the right bearing retainer.
SST 09387-00090

NOTICE:

Insert SST straight in order not to damage the oil seal.



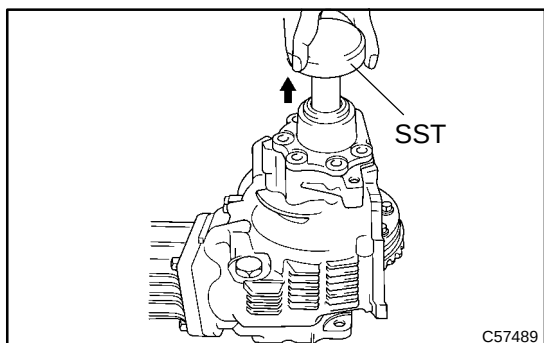
- (d) Insert the right bearing retainer together with SST into the case.

NOTICE:

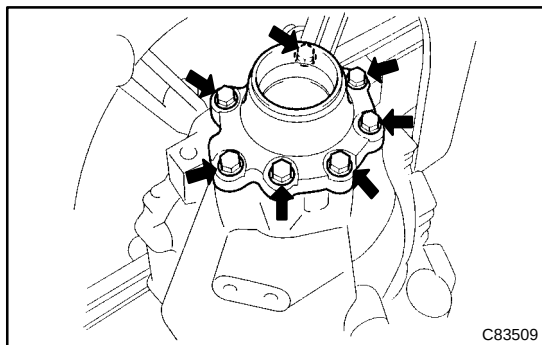
- Prevent hard interference between the case and the retainer, and between the SST and the center differential control coupling assy.
- Carefully check for damage and incorrect fitting of the retainer's O-ring.

HINT:

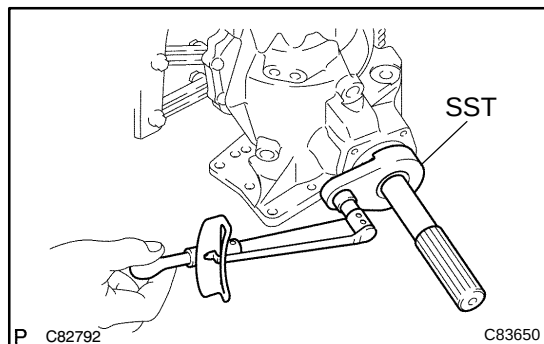
If the retainer cannot be inserted into the case, tap it in with a plastic hammer.



- (e) After inserting the right bearing retainer into the case, remove the SST.



- (f) Tighten the 7 bolts.
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)



65. INSPECT TOTAL PRELOAD

- (a) Using SST and a torque wrench, measure the initial torque with the driven pinion being contact with the ring gear face.

SST 09326-2001 1

Torque:

New bearing:

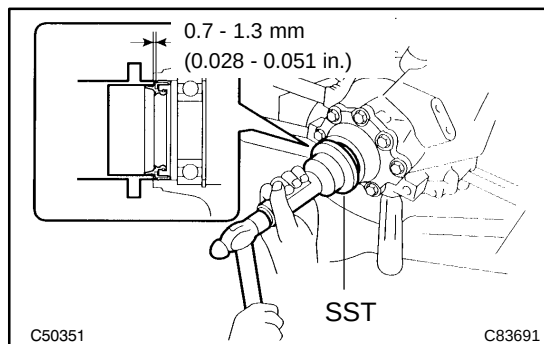
**Driven pinion preload +0.2 - 0.4 N·m
 (+2.3 - 3.9 kgf·cm, +1.8 - 3.5 in·lbf)**

Used bearing:

**Driven pinion preload +0.15 - 0.30 N·m
 (+1.6 - 3.1 kgf·cm, +1.3 - 2.7 in·lbf)**

HINT:

Use a torque wrench with a fulcrum length of 160 mm (6.30 in.)



66. INSTALL TRANSFER RH BEARING RETAINER OIL SEAL

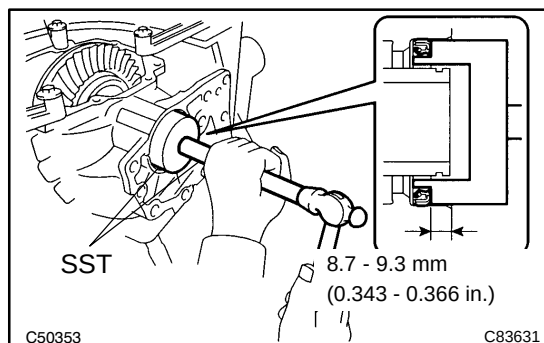
- (a) Using SST, drive the oil seal into the right bearing retainer to the position shown in the illustration.

SST 09223-4601 1

NOTICE:

Drive it in carefully so that it will not be tilted.

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



67. INSTALL TRANSFER CASE OIL SEAL

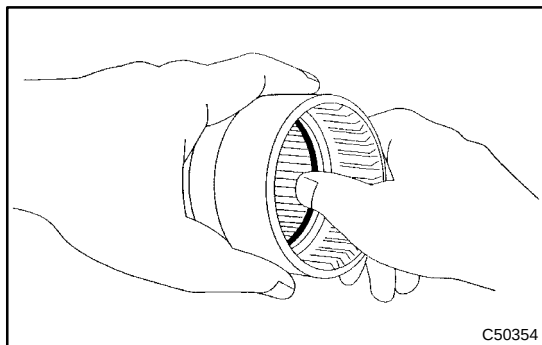
- (a) Using SST, drive the case oil seal into the case to the position shown in the illustration.

SST 09387-00010, 09950-70010 (09951-07150)

NOTICE:

Drive it in carefully so that it will not be tilted.

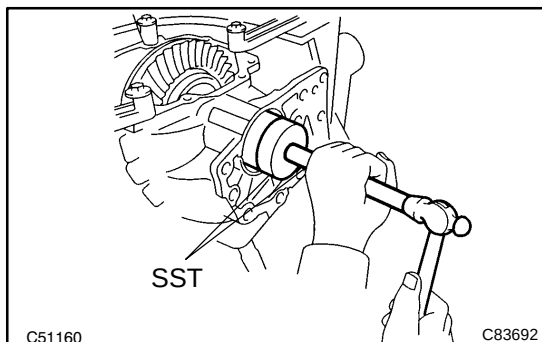
- (b) Apply small amount of MP grease to the oil seal lip.

**68. INSTALL CTR DIFFERENTIAL LOCK SLEEVE**

- (a) Apply hypoid gear oil to a new O-ring.
- (b) Install the O-ring to the center differential lock sleeve.

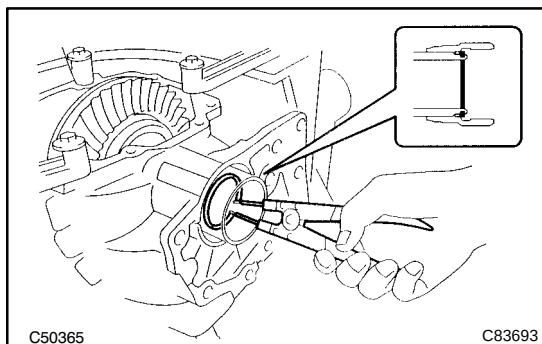
NOTICE:

Be careful not to twist the O-ring and fit it into the retainer's groove properly.



- (c) Using SST, install the center differential lock sleeve to the case.

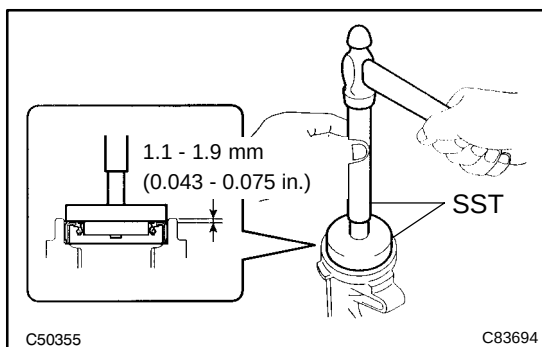
SST 09950-60010 (09951-00610), 09950-70010 (09951-07150)



- (d) Using a snap ring pliers, install the shaft snap ring.

NOTICE:

Check that the snap ring is fitted in the groove of the center differential control coupling assy.

**69. INSTALL TRANSFER EXTENSION HOUSING TYPE T OIL SEAL**

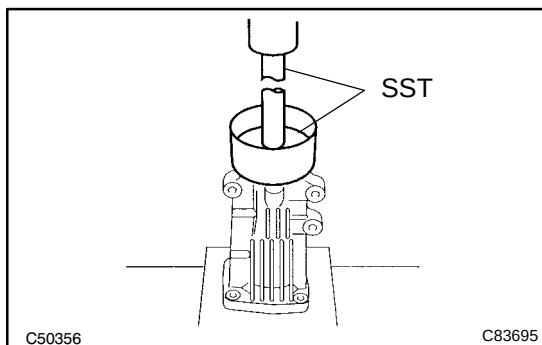
- (a) Using SST, drive the oil seal into the extension housing to the position shown in the illustration.

SST 09950-60010 (09951-00380, 09951-00580, 09952-06010), 09950-70010 (09951-07150)

NOTICE:

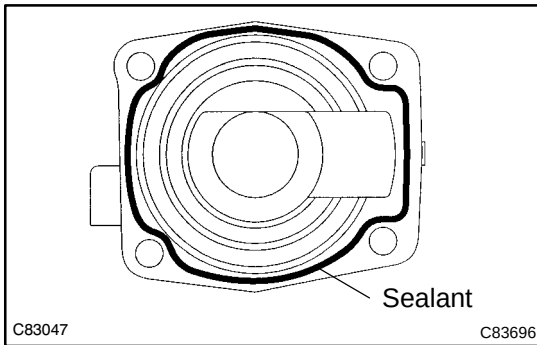
Drive it in carefully so that it will not be tilted.

- (b) Apply small amount of MP grease No. 2 to the oil seal lip.

**70. INSTALL TRANSFER EXTENSION HOUSING DUST DEFLECTOR**

- (a) Using SST and a press, install the dust deflector to the extension housing.

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

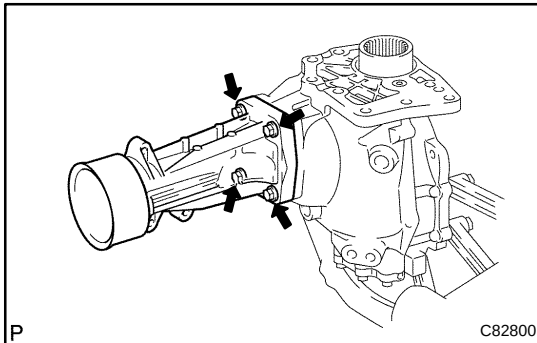


71. INSTALL TRANSFER EXTENSION HOUSING SUB-ASSY

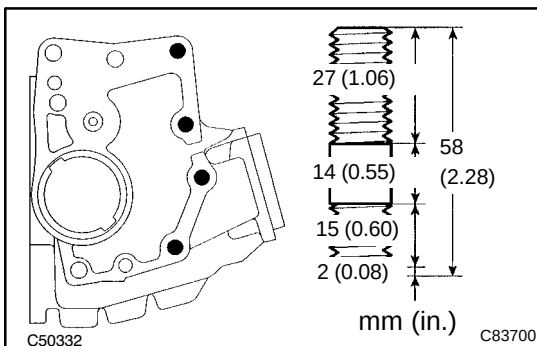
- (a) Apply sealant 1281 to the extension housing in continuous beaded form of 1.2 mm diameter as shown in the illustration.

NOTICE:

- Remove any grease from the attaching surfaces.
- Attach it within 10 minutes after application of the sealant.



- (b) Install the extension housing to the case with the 4 bolts. **Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)**
- (c) Remove the transfer assy from the overhaul attachment.



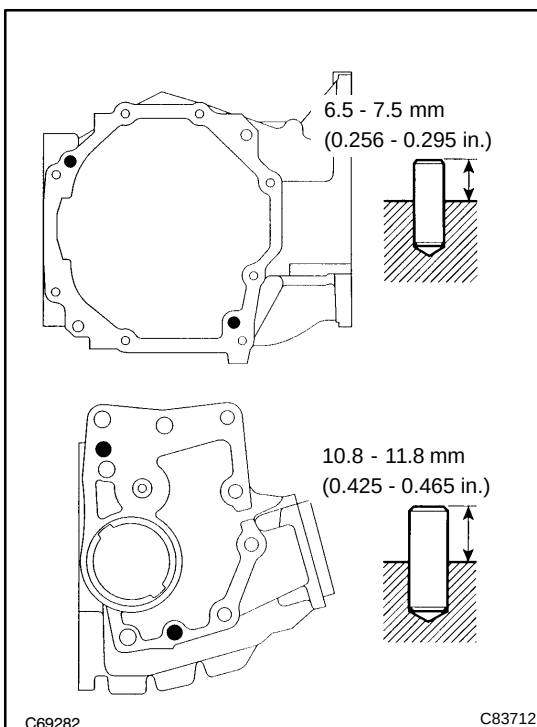
72. INSTALL TRANSFER & TRANSAXLE SETTING STUD BOLT

- (a) Install the stud bolts to the parts of the case as shown in the illustration.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

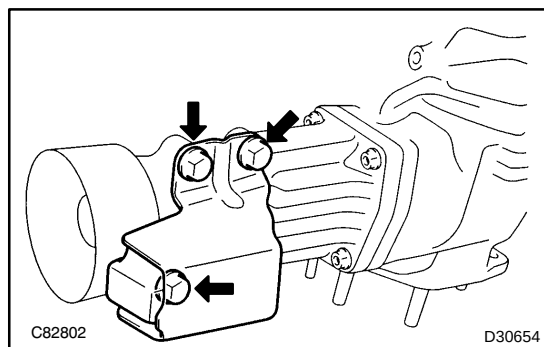
NOTICE:

Install the stud bolt as its sealant-coated side faces the case.



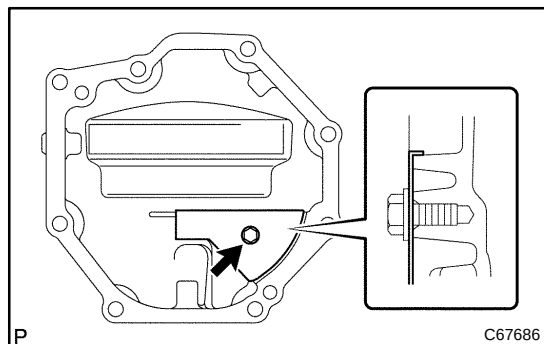
73. INSTALL TRANSFER CASE STRAIGHT PIN

- (a) Using a plastic hammer, drive the straight pins into the transfer assy case as shown in the illustration.

**74. INSTALL TRANSFER DYNAMIC DAMPER**

- (a) Install the dynamic damper to the extension housing with the 3 bolts.

Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)

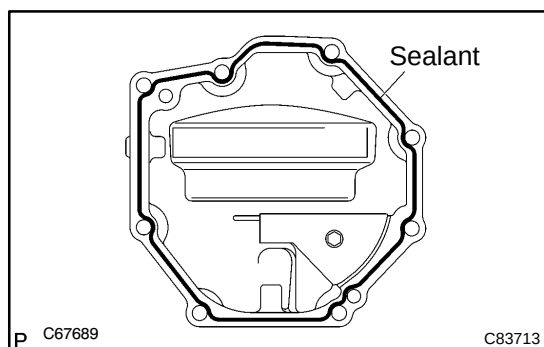
**75. INSTALL BREATHER OIL DEFLECTOR**

- (a) Install the breather oil deflector to the case cover with the bolt.

Torque: 6.5 N·m (66 kgf·cm, 57 in·lbf)

NOTICE:

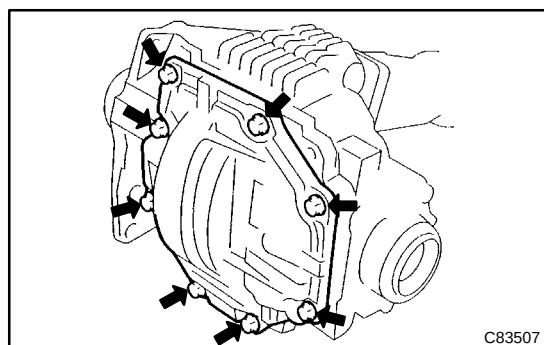
Be careful about the direction of the deflector's folding.

**76. INSTALL TRANSFER CASE COVER NO.1**

- (a) Apply sealant 1281 to the case cover in continuous beaded form of 1.2 mm diameter as shown in the illustration.

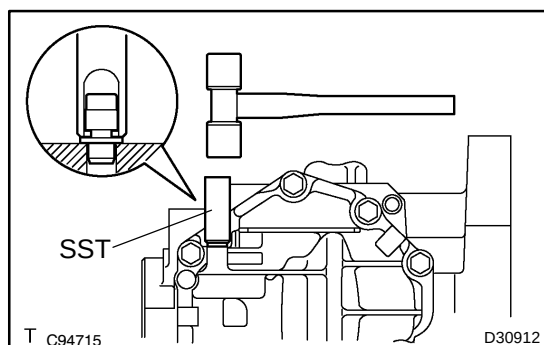
NOTICE:

- Remove any grease from the attaching surfaces.
- Attach it within 10 minutes after application of the sealant.



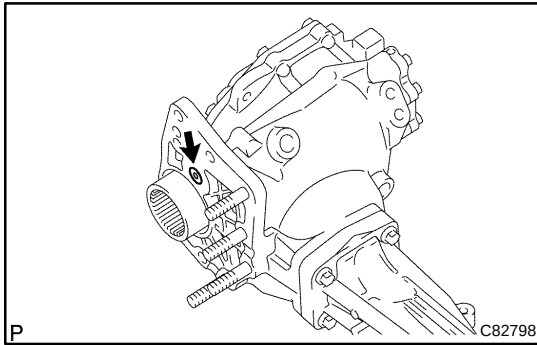
- (b) Install the case cover to the case with the 8 bolts.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

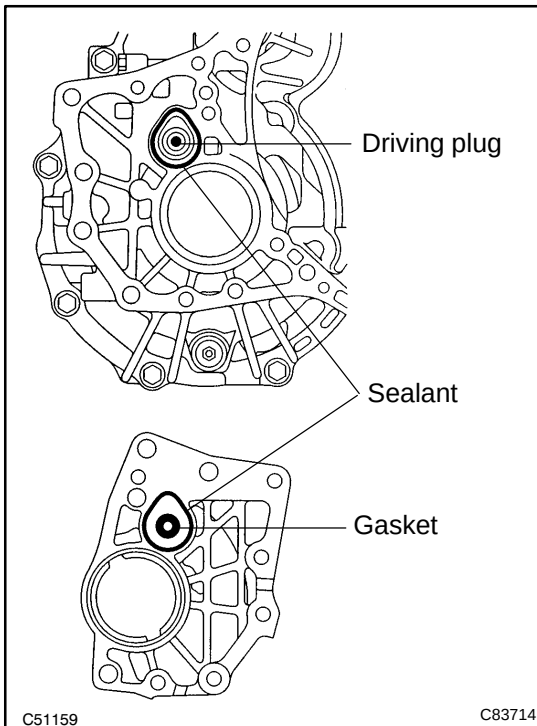
**77. INSTALL TRANSFER CASE BREATHER PLUG**

- (a) Using SST and a hammer, install the breather plug to the case cover.

SST 09612-10061

**78. INSTALL TRANSFER COVER GASKET**

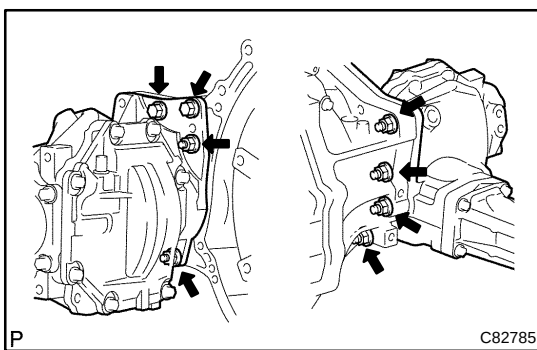
- (a) Install a new gasket to the case.

**79. INSTALL TRANSFER ASSY**

- (a) Apply sealant 1281 to the transaxle assy and the transfer assy in continuous beaded form of 1.2 mm diameter as shown in the illustration.

NOTICE:

- Remove any grease from the attaching surfaces.
- Install it within 10 minutes after application of the sealant.
- Sealant stuck on the gasket, case oil seal and driving plug may cause oil leakage and seizure due to oil shortage. Care must be taken.



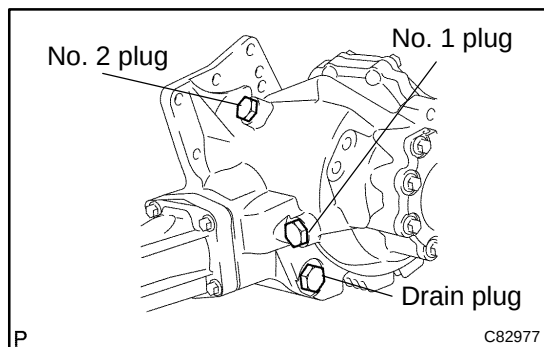
- (b) Install the transfer assy to the transaxle assy with the 2 bolts and 6 nuts.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

NOTICE:

- Check that the gasket is installed to the transfer assy before installing them to the transaxle assy.
- Install the transfer assy to the transaxle assy without tilting.
- When moving the transfer assy, do not hold the oil seal by both sides.

80. AUTOMATIC TRANSMISSION W/TRANSFER (See page 40-9)**81. INSTALL ENGINE ASSEMBLY WITH TRANSAXLE (See page 14-33)**

**82. INSTALL TRANSFER DRAIN PLUG**

- (a) Install the drain plug with a new gasket.

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

83. INSTALL TRANSFER CASE NO.2 PLUG

- (a) Install the No.2 plug with a new gasket.

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

84. INSTALL TRANSFER CASE NO.1 PLUG

- (a) Supply oil up to the level 0 - 5 mm below the lowest end of the plug hole.

Oil quantity: 0.9 L (0.95 US qts, 0.71 Imp. qts)

NOTICE:

When supplying oil, fill it slowly.

- (b) Install the No.1 plug with a new gasket.

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

85. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT (See page 26-7)**86. CHECK ABS SPEED SENSOR SIGNAL**

- (a) ABS WITH EBD & BA & TRAC & VSC SYSTEM (See page 05-435)

TRANSFER RH BEARING RETAINER OIL SEAL (4WD)

REPLACEMENT

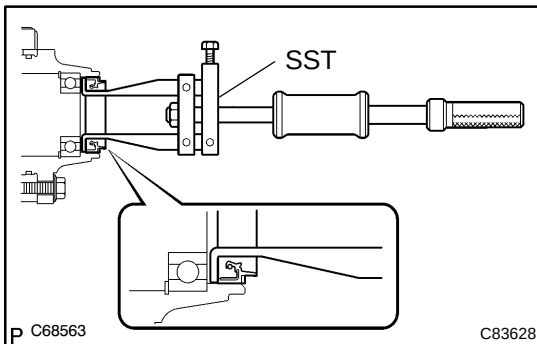
3100T-05

HINT:

COMPONENTS: See page 31-3

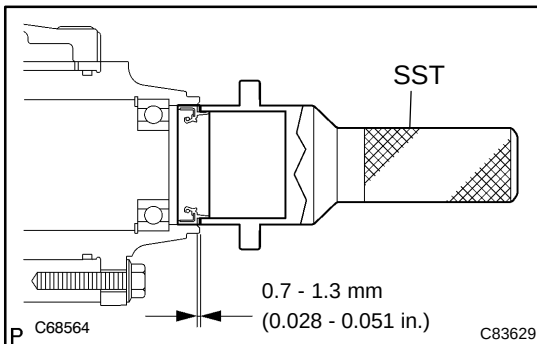
1. DRAIN AUTOMATIC TRANSAXLE FLUID (See page 40-9)
2. REMOVE TRANSFER CASE NO.1 PLUG
3. REMOVE TRANSFER DRAIN PLUG
 - (a) Remove the drain plug, gasket and drain transfer oil.
4. REMOVE FRONT WHEEL
5. REMOVE FRONT DRIVE SHAFT ASSY RH (See page 30-18)

SST 09520-01010, 09520-24010 (09520-32040)



6. REMOVE TRANSFER RH BEARING RETAINER OIL SEAL

- (a) Using SST, remove the RH bearing retainer oil seal.
SST 09308-00010

NOTICE:**Do not damage the oil-seal-fitted surface of the case.**

7. INSTALL TRANSFER RH BEARING RETAINER OIL SEAL

- (a) Using SST, drive a new oil seal into the case to the position shown in the illustration.
SST 09223-4601 1

NOTICE:**Do not install the oil seal obliquely.**

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

8. INSTALL FRONT DRIVE SHAFT ASSY RH (See page 30-18)
9. INSTALL FRONT WHEEL

Torque: 103 N·m (1050 kgf·cm, 76 ft·lbf)
10. ADD AUTOMATIC TRANSAXLE FLUID
11. INSPECT AUTOMATIC TRANSAXLE FLUID (See page 40-2)
12. INSTALL TRANSFER DRAIN PLUG
 - (a) Install the drain plug with a new gasket.
Torque: 49 N·m (500 kgf·cm 36 ft·lbf)
13. INSTALL TRANSFER CASE NO.1 PLUG
 - (a) Supply oil up to the level 0 - 5 mm (0 - 0.20 in.) below the lowest end of the plug hole.
Oil quantity: 0.9 L (0.95 US qts, 0.71 Imp.qts)

NOTICE:**When supplying oil, fill it slowly.**

- (b) Install the plug No. 1 with a new gasket.

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

2005 SIENNA REPAIR MANUAL (RM1163U)

14. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT (See page [26-7](#))
15. CHECK ABS SPEED SENSOR SIGNAL (See page [05-435](#))

TRANSFER CASE OIL SEAL (4WD)

REPLACEMENT

3100U-04

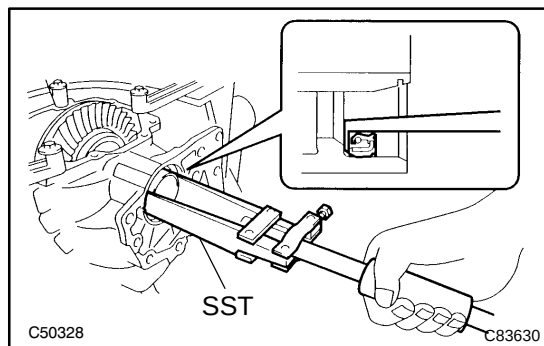
HINT:

ENGINE COMPONENTS: See page 14-17

AUTOMATIC TRANSAXLE COMPONENTS: See page 40-8

TRANSFER COMPONENTS: See page 31-3

1. REMOVE ENGINE ASSEMBLY WITH TRANSAXLE (See page 14-33)
2. REMOVE AUTOMATIC TRANSMISSION W/TRANSFER (See page 40-9)
3. REMOVE TRANSFER ASSY (See page 31-9)
4. REMOVE CTR DIFFERENTIAL LOCK SLEEVE (See page 31-9)

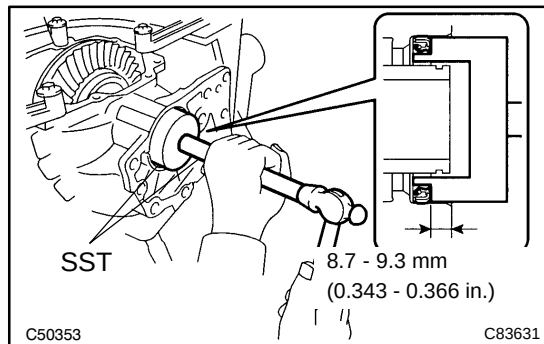


5. REMOVE TRANSFER CASE OIL SEAL

- (a) Using SST, remove the oil seal from the case.
SST 09308-00010

NOTICE:

Do not damage the oil-seal-fitted surface of the case.



6. INSTALL TRANSFER CASE OIL SEAL

- (a) Using SST, drive a new oil seal into the case to the position shown in the illustration.
SST 09387-00010, 09950-70010 (09951-07150)

NOTICE:

Do not install it obliquely.

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

7. INSTALL CTR DIFFERENTIAL LOCK SLEEVE (See page 31-9)
8. INSTALL TRANSFER ASSY (See page 31-9)
9. INSTALL AUTOMATIC TRANSMISSION W/TRANSFER (See page 40-9)
10. INSTALL ENGINE ASSEMBLY WITH TRANSAXLE (See page 14-33)
11. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT (See page 26-7)
12. CHECK ABS SPEED SENSOR SIGNAL
- (a) ABS WITH EBD & BA & TRAC & VSC SYSTEM (See page 05-435)

TRANSFER EXTENSION HOUSING TYPE T OIL SEAL (4WD)

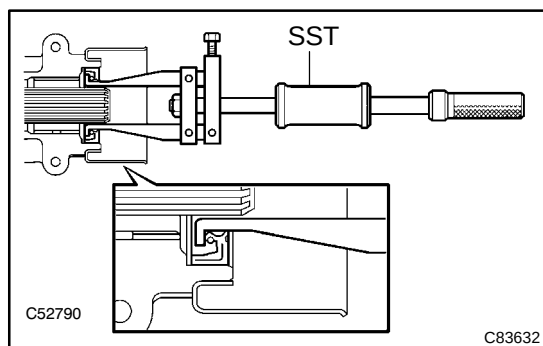
REPLACEMENT

3100V-05

HINT:

COMPONENTS: See page 31-3

1. REMOVE TRANSFER CASE NO.1 PLUG
2. REMOVE TRANSFER DRAIN PLUG
 - (a) Remove the drain plug, gasket and drain transfer oil.
3. REMOVE EXHAUST PIPE ASSY (See page 15-6)
4. REMOVE PROPELLER W/CENTER BEARING SHAFT ASSY (See page 30-6)



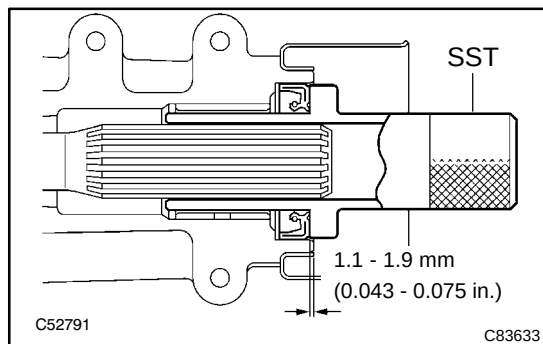
5. REMOVE TRANSFER EXTENSION HOUSING TYPE T OIL SEAL

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

SST 09308-00010

NOTICE:

Be careful not to damage the oil-seal-fitted surface and the inside surface of the bush.



6. INSTALL TRANSFER EXTENSION HOUSING TYPE T OIL SEAL

- (a) Using SST, drive a new oil seal into the extension housing to the position shown in the illustration.

SST 09325-20010

NOTICE:

Do not install the oil seal obliquely.

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

7. TEMPORARILY TIGHTEN PROPELLER W/CENTER BEARING SHAFT ASSY (See page 30-6)
8. FULLY TIGHTEN PROPELLER W/CENTER BEARING SHAFT ASSY (See page 30-6)
9. INSTALL EXHAUST PIPE ASSY (See page 15-6)
10. INSTALL TRANSFER DRAIN PLUG
 - (a) Install the drain plug with a new gasket.
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)
11. INSTALL TRANSFER CASE NO.1 PLUG
 - (a) Supply oil up to the level 0 - 5 mm (0 - 0.20 in.) below the lowest end of the plug hole.
Oil quantity: 0.9 L (0.95 US qts, 0.71 Imp.qts)

NOTICE:

When supplying oil, fill it slowly.

- (b) Install the No. 1 plug with a new gasket.

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