

REMOVAL

(2005/11-2006/01)

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

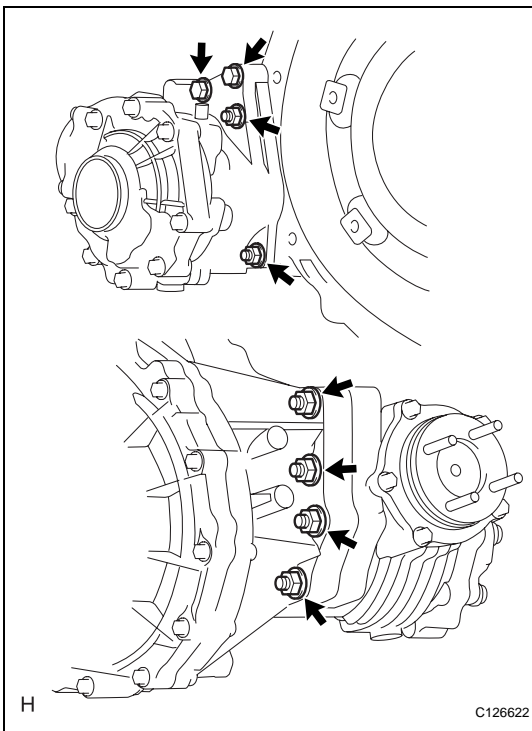
2. **REMOVE ENGINE ASSEMBLY WITH AUTOMATIC TRANSAXLE**

(a) Remove the engine with automatic transaxle (see page [EM-98](#)).

3. **REMOVE REAR ENGINE MOUNTING BRACKET (See page [AX-147](#))**

4. **REMOVE TRANSFER ASSEMBLY**

(a) Remove the 6 nuts, 2 bolts and transfer from the transaxle.

TF

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(2006/01-)

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CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. **REMOVE ENGINE ASSEMBLY WITH AUTOMATIC TRANSAXLE**

(a) for 2AZ-FE:

Remove the engine with automatic transaxle (see page [EM-98](#)).

(b) for 2GR-FE:

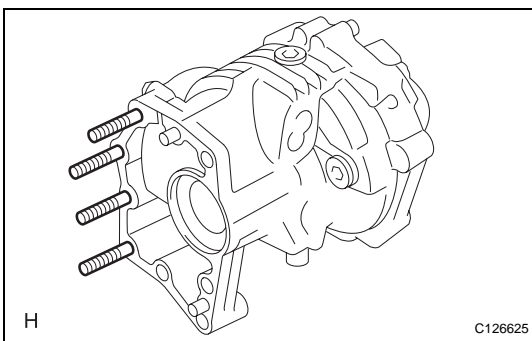
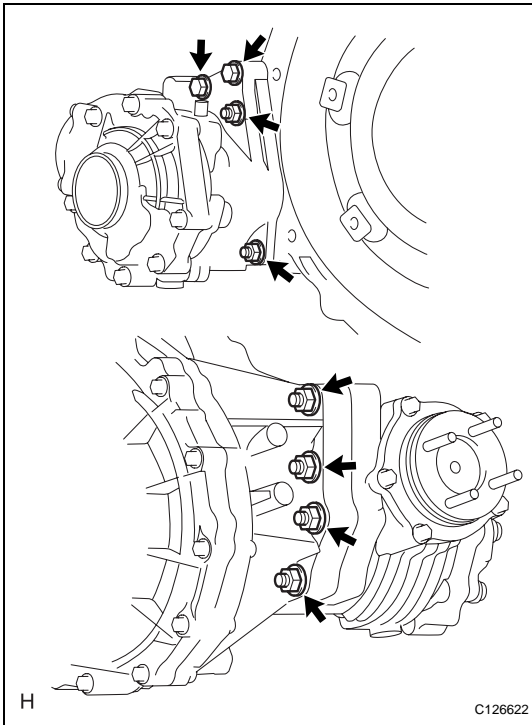
Remove the engine with automatic transaxle (see page [EM-21](#))

3. **REMOVE REAR ENGINE MOUNTING BRACKET (for 2GR-FE) (See page [AX-173](#))**

4. **REMOVE REAR ENGINE MOUNTING BRACKET (for 2AZ-FE) (See page [AX-147](#))**

5. **REMOVE TRANSFER ASSEMBLY**

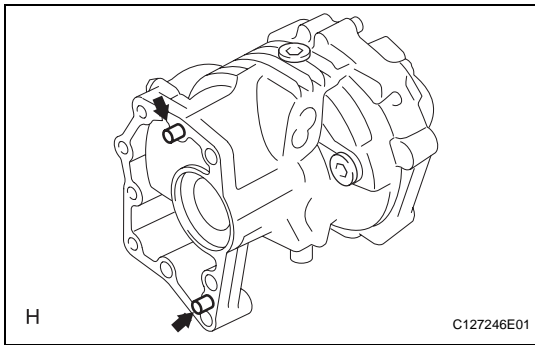
(a) Remove the 6 nuts, 2 bolts and transfer from the transaxle.



DISASSEMBLY

1. **REMOVE TRANSFER AND TRANSAXLE SETTING STUD BOLT**

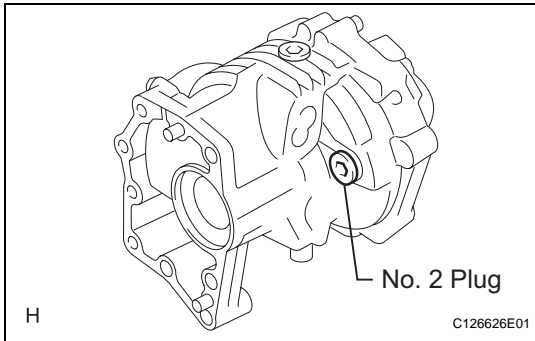
(a) Remove the stud bolt.

**2. REMOVE TRANSFER CASE STRAIGHT PIN**

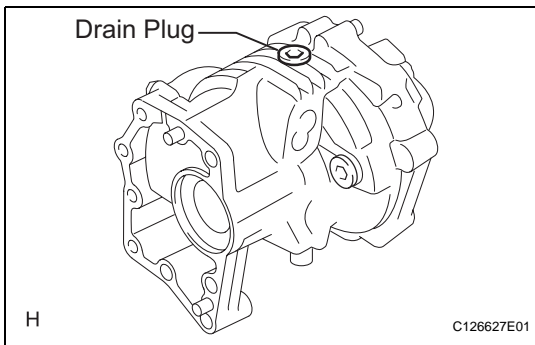
- (a) Remove the 2 straight pins.

3. REMOVE TRANSFER CASE NO. 1 PLUG

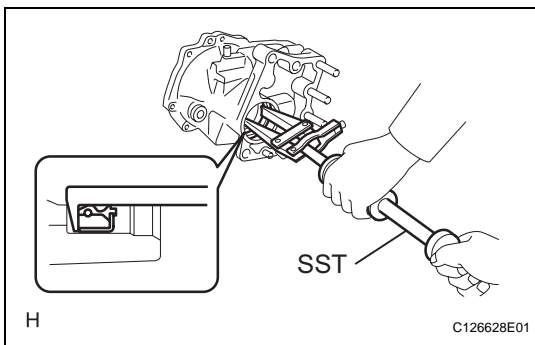
- (a) Remove the No. 1 plug.
 (b) Remove the gasket from the No. 1 plug.

**4. REMOVE TRANSFER CASE NO. 2 PLUG**

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

**5. REMOVE TRANSFER DRAIN PLUG**

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

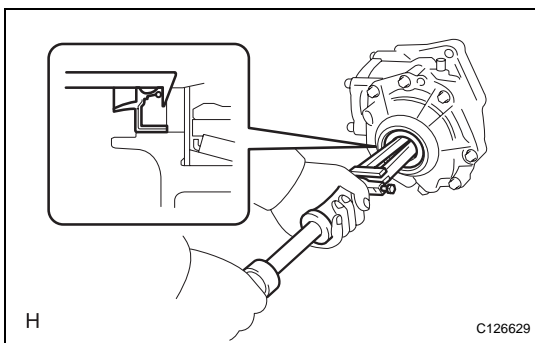
**6. REMOVE TRANSFER CASE OIL SEAL LH**

- (a) Using SST, tap out the oil seal from the case.

SST 09308-00010

NOTICE:

Do not damage the oil seal lip.

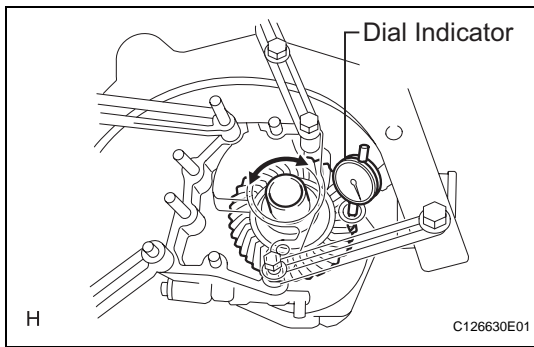
**7. REMOVE TRANSFER CASE OIL SEAL RH**

- (a) Using SST, tap out the oil seal from the case.

SST 09308-00010

NOTICE:

Do not damage the oil seal lip.

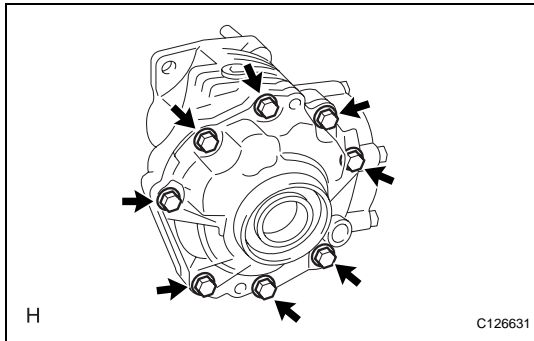
**8. INSPECT RING GEAR BACKLASH**

- (a) Using a dial indicator, measure the backlash of the ring gear at 3 points.

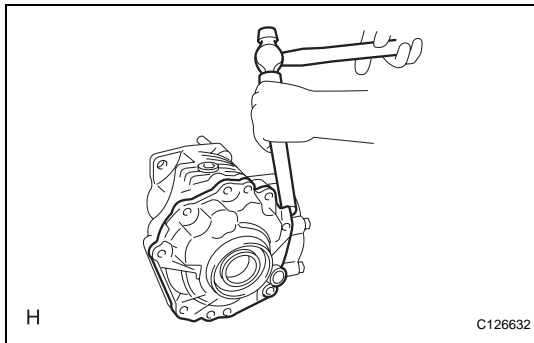
Standard backlash:

0.10 to 0.20 mm (0.0039 to 0.0079 in.)

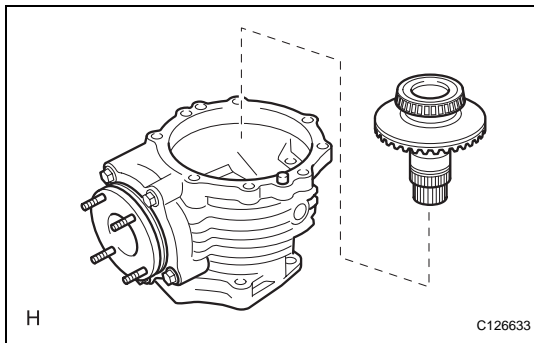
If the backlash is not within the specified range, adjust the backlash or repair as necessary.

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

- (a) Remove the 8 bolts.



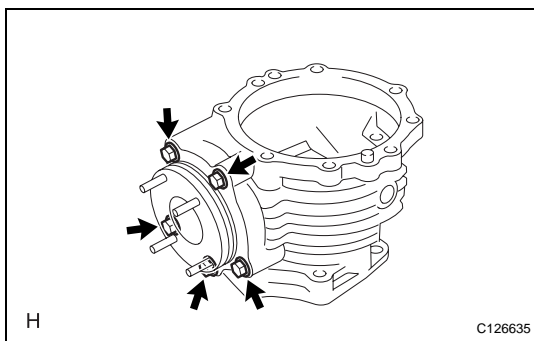
- (b) Using a brass bar and hammer, tap out the cover from the case.

**10. REMOVE TRANSFER RING GEAR**

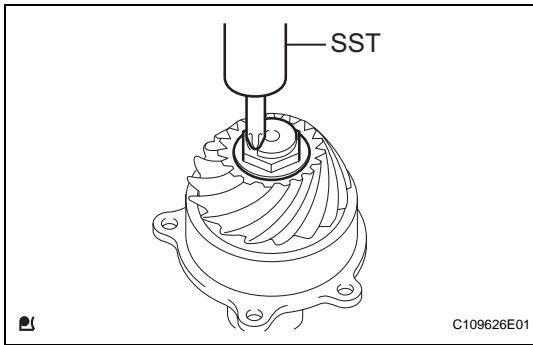
- (a) Remove the ring gear from the transfer case.

11. REMOVE TRANSFER CASE STRAIGHT PIN

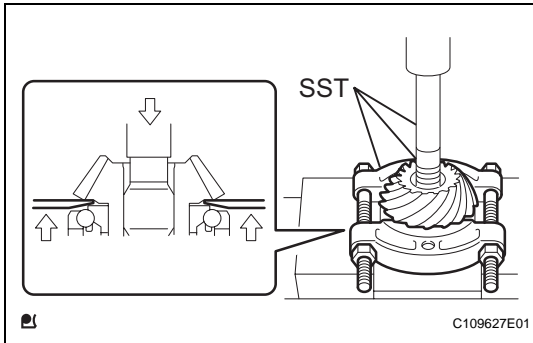
- (a) Remove the 2 straight pins from the transfer case.

**12. REMOVE TRANSFER OUTPUT SHAFT**

- (a) Remove the 5 bolts and output shaft.

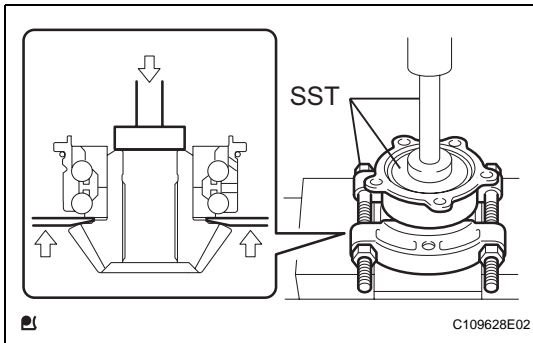


- (b) Using SST and a hammer, unseat the lock nut.
SST 09930-00010
- (c) Remove the lock nut.



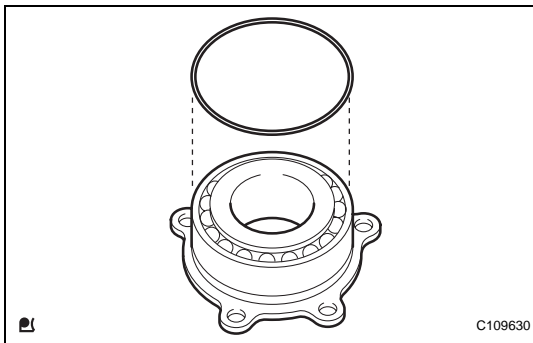
13. REMOVE TRANSFER OUTPUT REAR SHAFT SUB-ASSEMBLY

- (a) Using SST and a press, press out the shaft from the driven pinion.
SST 09950-00020, 09950-60010 (09951-00220), 09950-70010 (09951-07100)

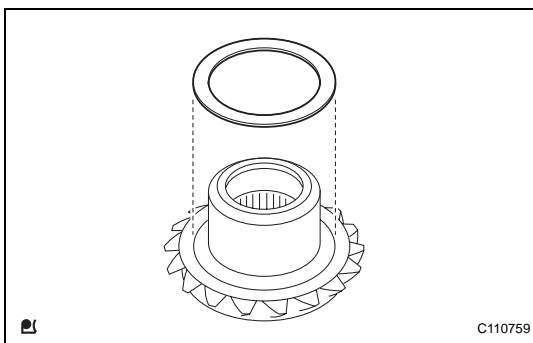


14. REMOVE TRANSFER DRIVEN PINION FRONT BEARING

- (a) Using SST and a press, press out the driven pinion from the bearing.
SST 09950-00020, 09950-60010 (09951-00220), 09950-70010 (09951-07100)

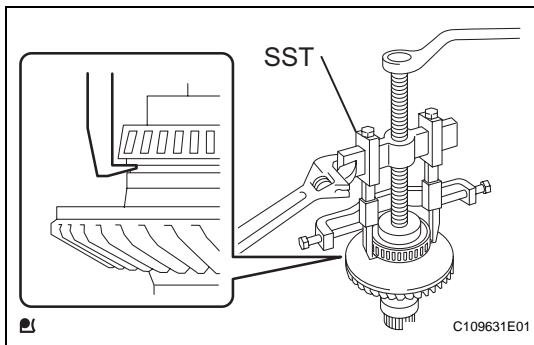


- (b) Remove the O-ring from the bearing.



15. REMOVE TRANSFER OUTPUT SHAFT WASHER

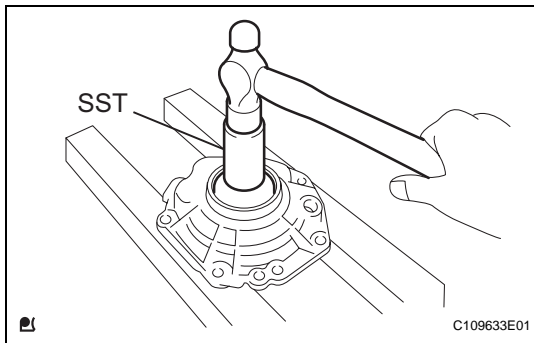
- (a) Remove the washer from the transfer pinion gear.



16. REMOVE RING GEAR MOUNTING CASE BEARING (for LH side)

- (a) Using SST, remove the bearing from the mounting case.

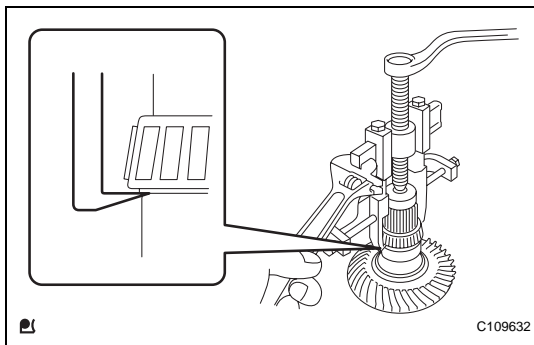
SST 09950-40011 (09951-04010, 09952-04010, 09953-04030, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00540)



- (b) Using SST and a hammer, tap out the bearing.

SST 09310-35010

17. REMOVE RING GEAR MOUNTING CASE WASHER



18. REMOVE RING GEAR MOUNTING CASE BEARING (for RH side)

- (a) Using SST, remove the bearing from the mounting case.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010 (09951-00540)

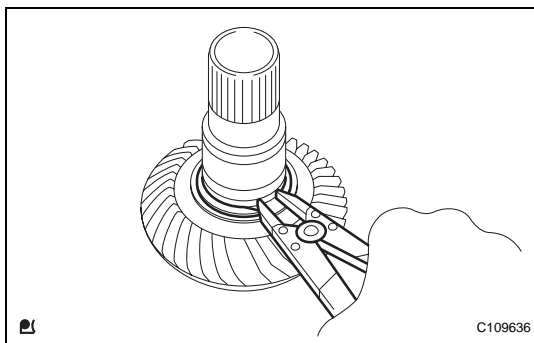
- (b) Using SST and a hammer, tap out the bearing (race) from the cover.

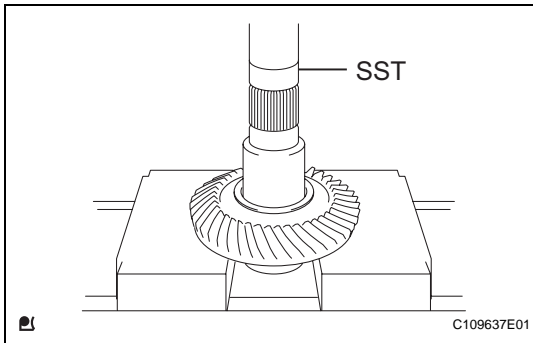
SST 09636-20010

19. REMOVE TRANSFER RING GEAR MOUNTING CASE NO. 2 WASHER

20. REMOVE SHAFT SNAP RING

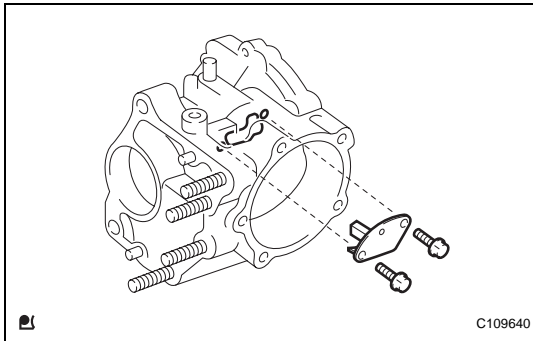
- (a) Using a snap ring expander, remove the snap ring.



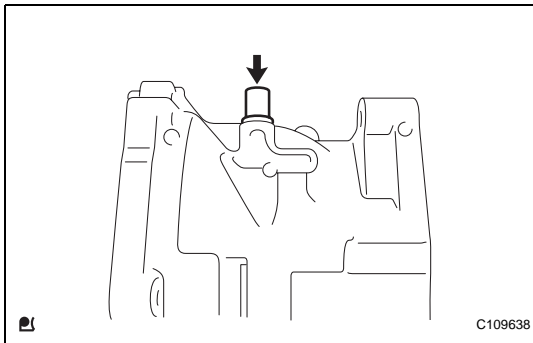
**21. REMOVE TRANSFER RING GEAR MOUNTING CASE**

- (a) Using SST and a press, press out the ring gear from the mounting case.

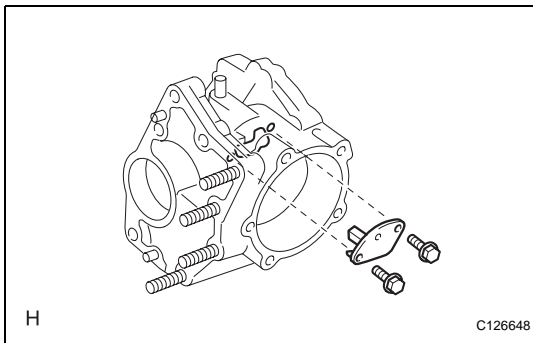
SST 09950-60010 (09951-00400)

**22. REMOVE BREATHER OIL DEFLECTOR**

- (a) Remove the 2 bolts and oil deflector.

**23. REMOVE TRANSFER CASE BREATHER PLUG**

- (a) Remove the breather plug from the transfer case.

**REASSEMBLY****1. INSTALL BREATHER OIL DEFLECTOR**

- (a) Install the deflector with the 2 bolts.

Torque: 6.5 N*m (66 kgf*cm, 58 in.*lbf)

2. INSTALL RING GEAR MOUNTING CASE PLATE WASHER

- (a) Install a new washer to the transfer case.

HINT:

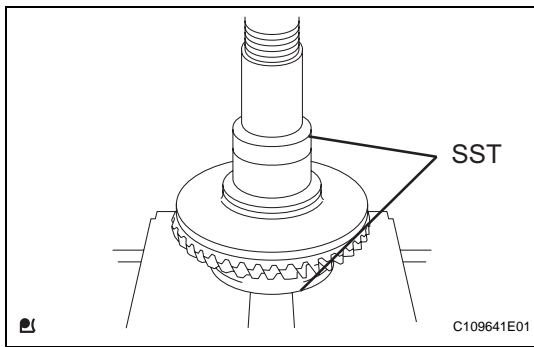
Install a washer of the same thickness as before.

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

- (a) Install a new washer to the cover.

HINT:

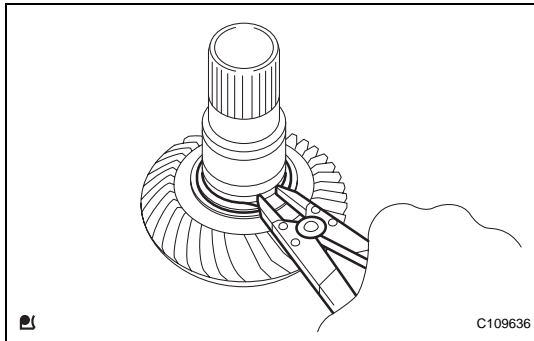
Install a washer of the same thickness as before.



4. INSTALL TRANSFER RING GEAR MOUNTING CASE

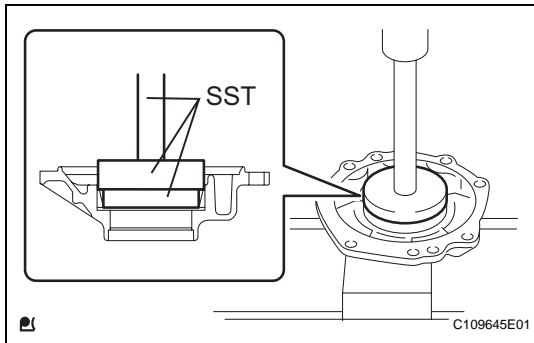
- (a) Using SST and a press, press in the mounting case to the ring gear.

SST 09316-12010, 09950-60010 (09951-00560)



5. INSTALL SHAFT SNAP RING

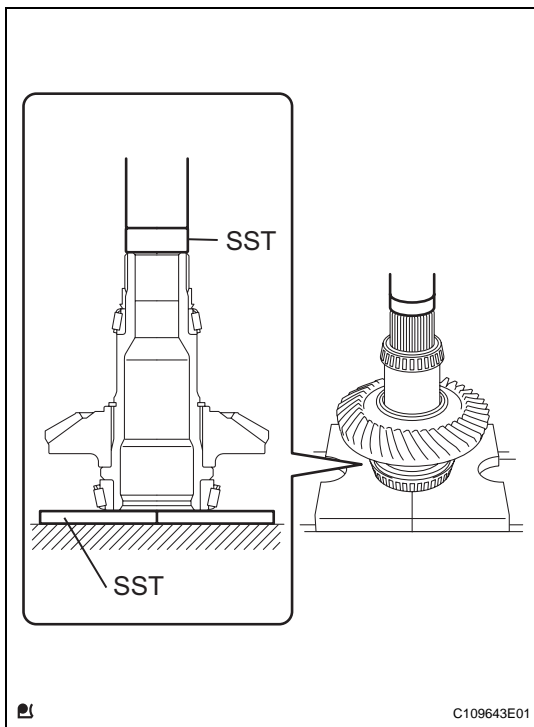
- (a) Using SST, install a new snap ring.



6. INSTALL RING GEAR MOUNTING CASE BEARING (for RH side)

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

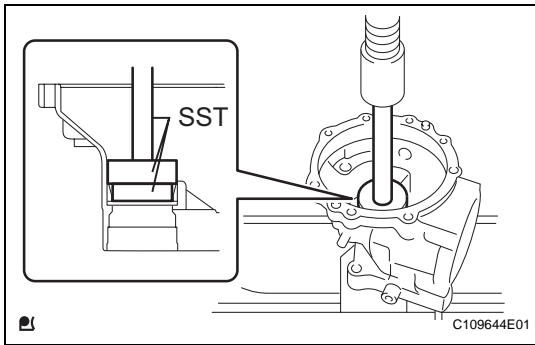
SST 09950-60020 (09951-00750, 09952-06010), 09950-70010 (09951-07150)



- (b) Using SST and a press, press in the bearing to the mounting case.

SST 09336-16010, 09950-60010 (09951-00400)

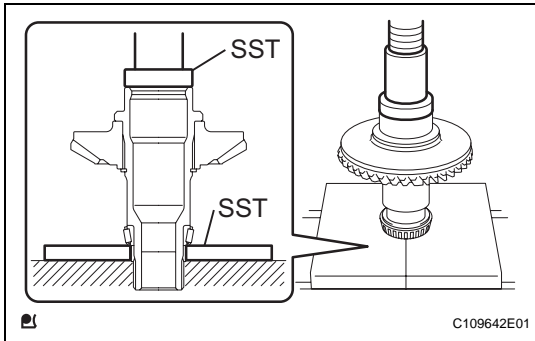
- (c) Apply gear oil to the bearing.



7. INSTALL RING GEAR MOUNTING CASE BEARING (for LH side)

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

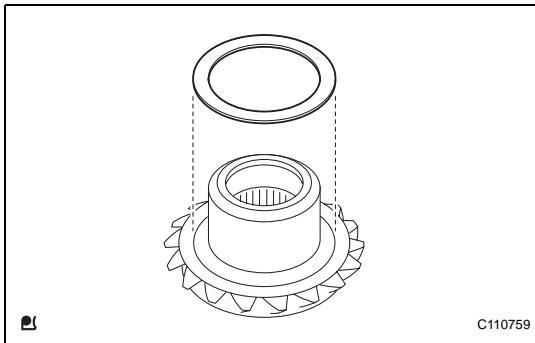
SST 09950-60010 (09951-00540, 09951-00620, 09952-06010), 09950-70010 (09951-07150)



- (b) Using SST and a press, press in the bearing to the mounting case.

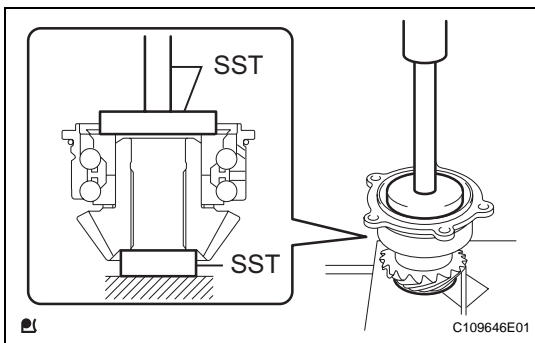
SST 09336-16010, 09950-60010 (09951-00560)

- (c) Apply gear oil to the mounting case bearing.



8. INSTALL TRANSFER OUTPUT WASHER

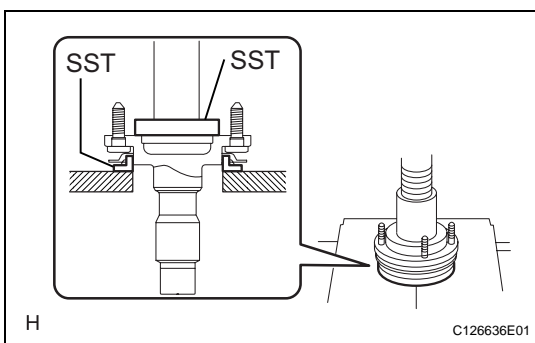
- (a) Install the washer to the driven pinion.



9. INSTALL TRANSFER DRIVEN PINION FRONT BEARING

- (a) Using SST and a press, press in the bearing to the driven pinion.

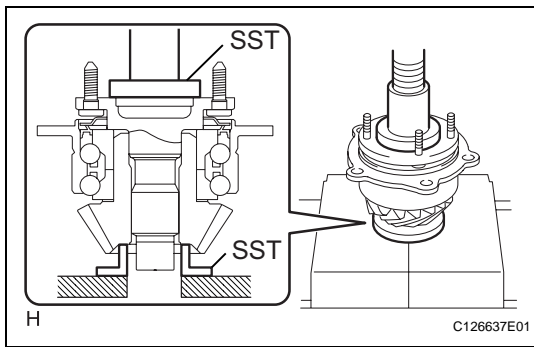
SST 09950-60010 (09951-00440), 09950-60020 (09951-00750), 09950-70010 (09951-07150)



10. INSTALL TRANSFER OUTPUT REAR SHAFT DUST DEFLECTOR

- (a) Using SST and a press, press in the dust deflector to the out put shaft.

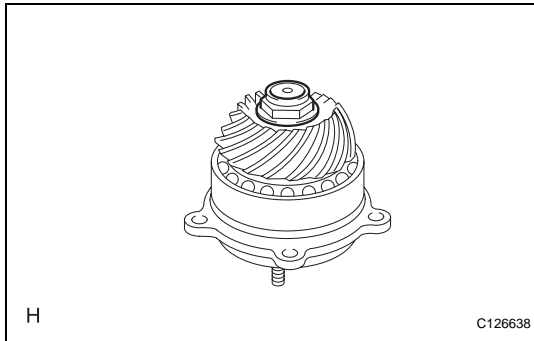
SST 09316-12010



11. INSTALL TRANSFER OUTPUT REAR SHAFT SUB-ASSEMBLY

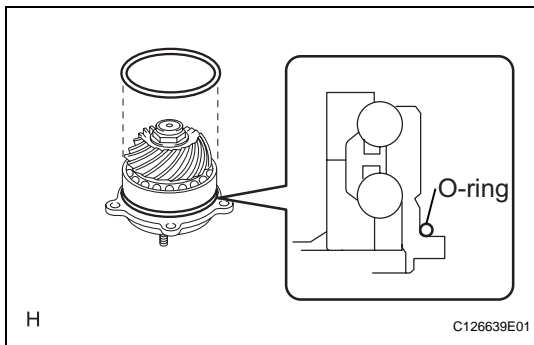
- (a) Using SST and a press, press in the output rear shaft to the driven pinion.

SST 09316-12010



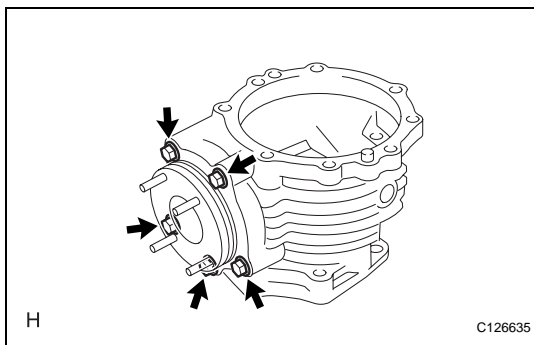
- (b) Install a new nut to the output shaft.

Torque: 360 N*m (3700 kgf*cm, 266 ft.*lbf)



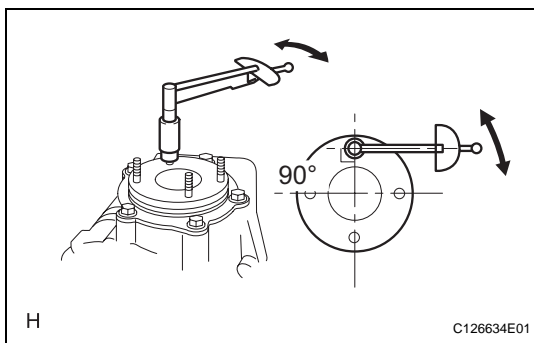
12. INSTALL TRANSFER SHAFT

- (a) Install a new O-ring to the driven pinion.



- (b) Install the driven pinion to the case with the 5 bolts.

Torque: 38 N*m (390 kgf*cm, 28 ft.*lbf)

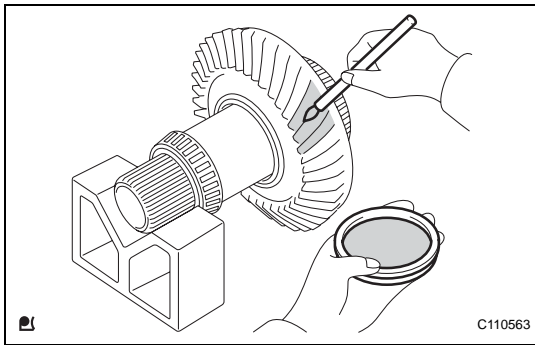


13. INSPECT DRIVEN PINION PRELOAD

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

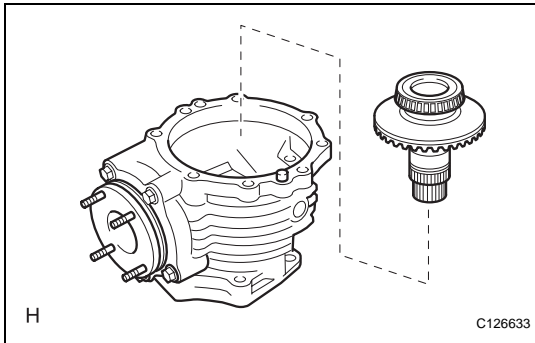
Standard preload (turning):

0.17 to 1.86 N*m (1.7 to 19.0 kgf*cm, 1.5 to 16.5 in.*lbf)

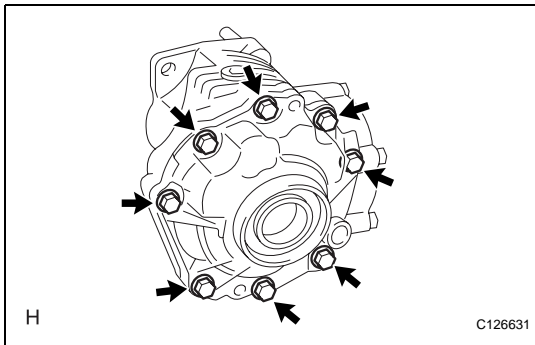


14. INSTALL TRANSFER RING GEAR

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

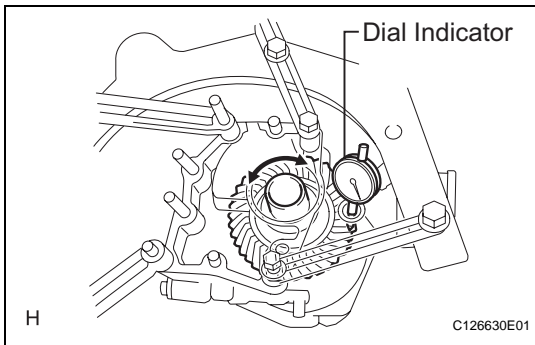


- (b) Install the mounting case to the transfer case.



15. INSTALL NO. 1 TRANSFER CASE COVER

- (a) Install the transfer cover with the 8 bolts.
Torque: 47 N*m (480 kgf*cm, 35 ft.*lbf)



16. ADJUST RING GEAR BACKLASH

- (a) Using a dial indicator, measure the backlash of the ring gear at 3 positions at least.

Standard backlash:

0.10 to 0.20 mm (0.0039 to 0.0079 in.)

HINT:

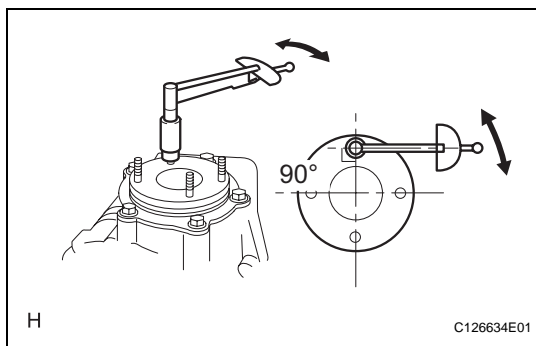
The measure values should be used as reference when selecting washer, so take a note of the values. If the backlash is not within the specification, replace the washer on the ring gear side with one of a different thickness using the following procedure.

Standard washer thickness

Mark	Thickness	Mark	Thickness
A0	1.97 mm (0.0776 in.)	C0	2.37 mm (0.0933 in.)
A1	1.99 mm (0.0783 in.)	C1	2.39 mm (0.0941 in.)
A2	2.01 mm (0.0791 in.)	C2	2.41 mm (0.0949 in.)
A3	2.03 mm (0.0799 in.)	C3	2.43 mm (0.957 in.)

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Mark	Thickness	Mark	Thickness
A4	2.05 mm (0.0807 in.)	C4	2.45 mm (0.0965 in.)
A5	2.07 mm (0.0815 in.)	C5	2.47 mm (0.0972 in.)
A6	2.09 mm (0.0823 in.)	C6	2.49 mm (0.098 in.)
A7	2.11 mm (0.0831 in.)	C7	2.51 mm (0.0988 in.)
A8	2.13 mm (0.0839 in.)	C8	2.53 mm (0.0996 in.)
A9	2.15 mm (0.0846 in.)	C9	2.55 mm (0.1004 in.)
B0	2.17 mm (0.0854 in.)	D0	2.57 mm (0.1012 in.)
B1	2.19 mm (0.0862 in.)	D1	2.59 mm (0.102 in.)
B2	2.21 mm (0.087 in.)	D2	2.61 mm (0.1028 in.)
B3	2.23 mm (0.0878 in.)	D3	2.63 mm (0.1035 in.)
B4	2.25 mm (0.0886 in.)	D4	2.65 mm (0.1043 in.)
B5	2.27 mm (0.0894 in.)	D5	2.67 mm (0.1051 in.)
B6	2.29 mm (0.0902 in.)	D6	2.39 mm (0.0941 in.)
B7	2.31 mm (0.0909 in.)	D7	2.71 mm (0.1067 in.)
B8	2.33 mm (0.0917 in.)	D8	2.73 mm (0.1075 in.)
B9	2.35 mm (0.0925 in.)	D9	2.75 mm (0.1083 in.)



17. ADJUST TOTAL PRELOAD

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

Driven pinion preload:

0.28 to 0.79 N*m (2.86 to 8.06 kgf*cm, 2.48 to 7.0 in.*lbf)

HINT:

Turn the driven pinion counterclockwise and clockwise several times.

If the preload is not as standard, select a proper washer again.

Standard washer thickness

Mark	Thickness	Mark	Thickness
A0	1.18 mm (0.0465 in.)	C2	1.62 mm (0.0638 in.)
A1	1.20 mm (0.0472 in.)	C3	1.64 mm (0.0646 in.)
A2	1.22 mm (0.048 in.)	C4	1.66 mm (0.0654 in.)
A3	1.24 mm (0.0488 in.)	C5	1.68 mm (0.0661 in.)
A4	1.26 mm (0.0496 in.)	C6	1.70 mm (0.067 in.)
A5	1.28 mm (0.0504 in.)	C7	1.72 mm (0.0677 in.)

Mark	Thickness	Mark	Thickness
A6	1.30 mm (0.0512 in.)	C8	1.74 mm (0.0685 in.)
A7	1.32 mm (0.052 in.)	C9	1.76 mm (0.0693 in.)
A8	1.34 mm (0.0528 in.)	D0	1.78 mm (0.0701 in.)
A9	1.36 mm (0.0535 in.)	D1	1.80 mm (0.0709 in.)
B0	1.38 mm (0.0543 in.)	D2	1.82 mm (0.0717 in.)
B1	1.40 mm (0.0551 in.)	D3	1.84 mm (0.0724 in.)
B2	1.42 mm (0.0559 in.)	D4	1.86 mm (0.0732 in.)
B3	1.44 mm (0.0567 in.)	D5	1.88 mm (0.074 in.)
B4	1.46 mm (0.0575 in.)	D6	1.90 mm (0.0748 in.)
B5	1.48 mm (0.0583 in.)	D7	1.92 mm (0.0756 in.)
B6	1.50 mm (0.0591 in.)	D8	1.94 mm (0.0764 in.)
B7	1.52 mm (0.0598 in.)	D9	1.96 mm (0.0772 in.)
B8	1.54 mm (0.0606 in.)	E0	1.98 mm (0.0781 in.)
B9	1.56 mm (0.0614 in.)	E1	2.00 mm (0.0787 in.)
C0	1.58 mm (0.0622 in.)	E2	2.02 mm (0.0795 in.)
C1	1.60 mm (0.063 in.)	-	-

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18. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

- (a) Rotate the ring gear several times.
- (b) Peer into the service filler hole or remove the ring gear to check the tooth contact pattern.

NOTICE:

- Check the tooth contact pattern at 4 or more positions around the circumference of the ring gear.
- When replacing washers (backlash adjustment, preload adjustment or tooth contact adjustment), reapply Prussian blue.

HINT:

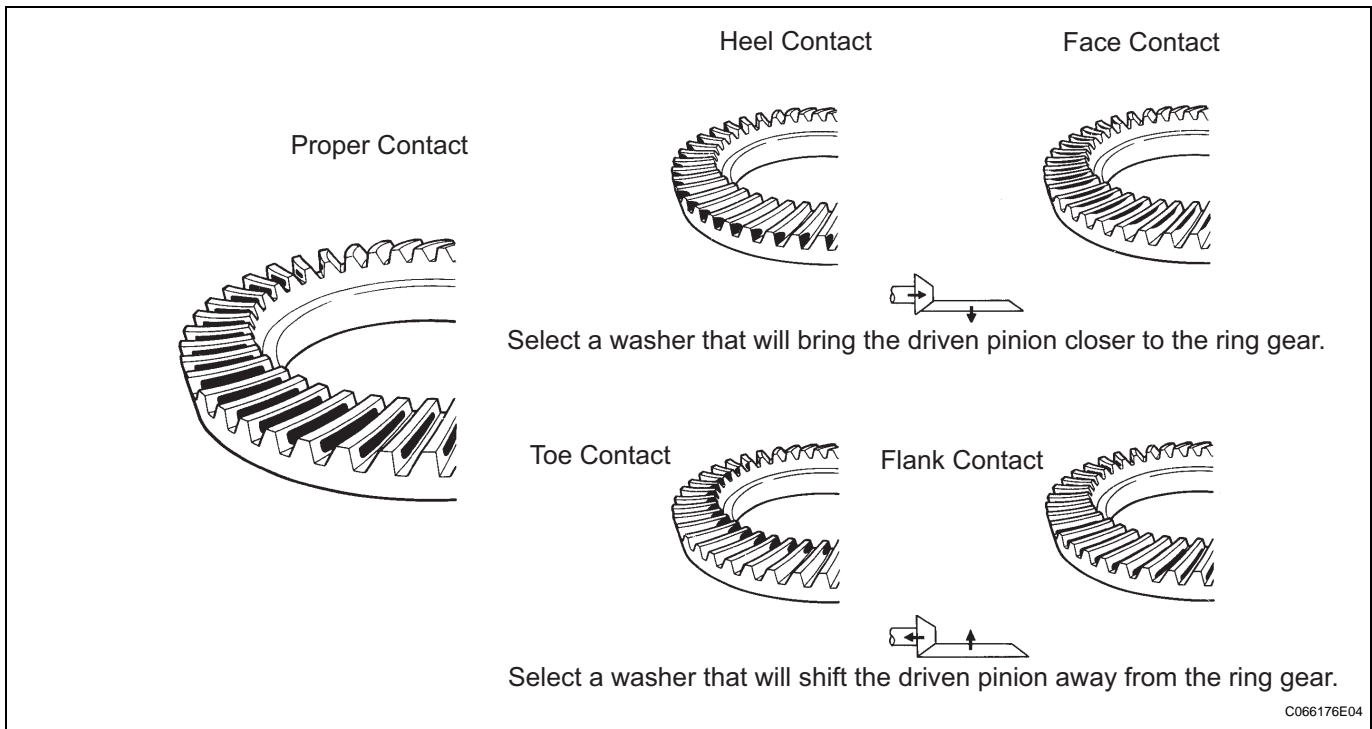
The Prussian blue pattern indicates the tooth contact points.

- (c) If the teeth are not contacting properly, select a driven pinion bearing front (outer race) side washer from the chart and install the washer.

NOTICE:

If a washer (for tooth contact adjustment) is replaced with one of a different thickness, the backlash will also change. Therefore, it is necessary to adjust the backlash.

TF



- (d) Perform the following procedures for face or flank contact.
 - (1) Use the backlash adjustment washer (ring gear mounting case washer) to move and adjust the ring gear. (*1)
 - (2) Perform the ring gear and driven pinion tooth contact inspection again.
- HINT:
If the tooth contact is incorrect, repeat step *1.
- (3) Perform the ring gear and driven pinion backlash inspection. If the ring gear and driven pinion backlash is not within the standard range, replace the ring gear and driven pinion with new ones.
- (e) Perform the following procedures for heel or toe contact.
 - (1) Select a transfer driven pinion bearing front (outer race) side washer (transfer output shaft washer) from the chart and install the washer.

NOTICE:

Do not reuse a transfer pinion bearing spacer.

Standard washer thickness

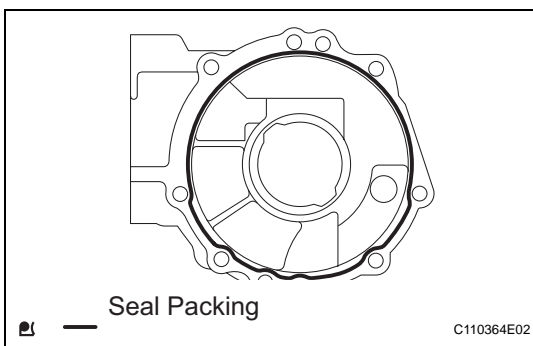
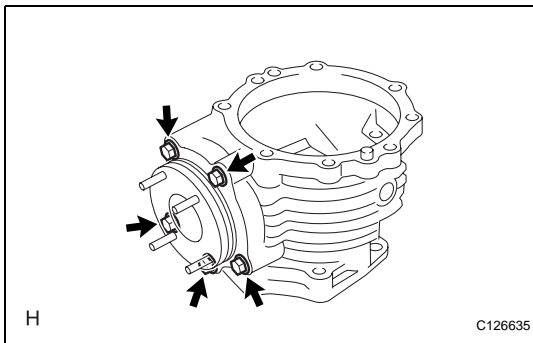
Mark	Thickness	Mark	Thickness
01	1.02 mm (0.0402 in.)	15	1.30 mm (0.0512 in.)
02	1.04 mm (0.0409 in.)	16	1.32 mm (0.0520 in.)
03	1.06 mm (0.0417 in.)	17	1.34 mm (0.0528 in.)
04	1.08 mm (0.0425 in.)	18	1.36 mm (0.0535 in.)

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Mark	Thickness	Mark	Thickness
05	1.10 mm (0.0433 in.)	19	1.38 mm (0.0543 in.)
06	1.12 mm (0.0441 in.)	20	1.40 mm (0.0551 in.)
07	1.14 mm (0.0449 in.)	21	1.42 mm (0.0559 in.)
08	1.16 mm (0.0457 in.)	22	1.44 mm (0.0567 in.)
09	1.18 mm (0.0465 in.)	23	1.46 mm (0.0575 in.)
10	1.20 mm (0.0472 in.)	24	1.48 mm (0.0583 in.)
11	1.22 mm (0.0480 in.)	25	1.50 mm (0.0591 in.)
12	1.24 mm (0.0488 in.)	26	1.52 mm (0.0598 in.)
13	1.26 mm (0.0496 in.)	27	1.54 mm (0.0606 in.)
14	1.28 mm (0.0504 in.)	28	1.56 mm (0.0614 in.)

19. COMPLETELY INSTALL TRANSFER SHAFT

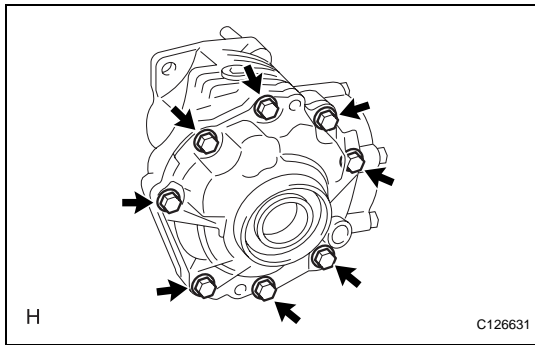
- (a) Using a screwdriver and hammer, unstake the pinion gear nut.
- (b) Install the 5 bolts with the transfer shaft to the case.
Torque: 38 N*m (390 kgf*cm, 28 ft.*lbf)
- (c) Install the No. 1 transfer case cover.
 - (1) Using white gasoline, clean the contact surfaces of the housing and cover.



- (2) Apply seal packing to the cover as shown in the illustration.

Seal packing:

Toyota Genuine Seal Packing Black, Three Bond 1207B or Equivalent



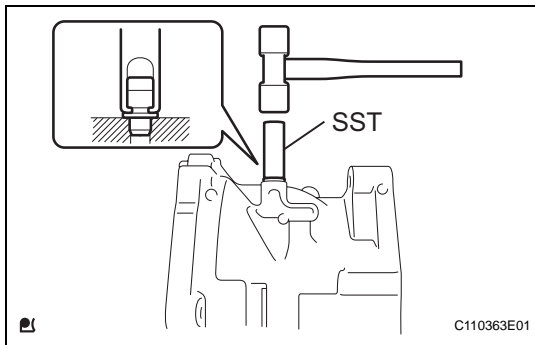
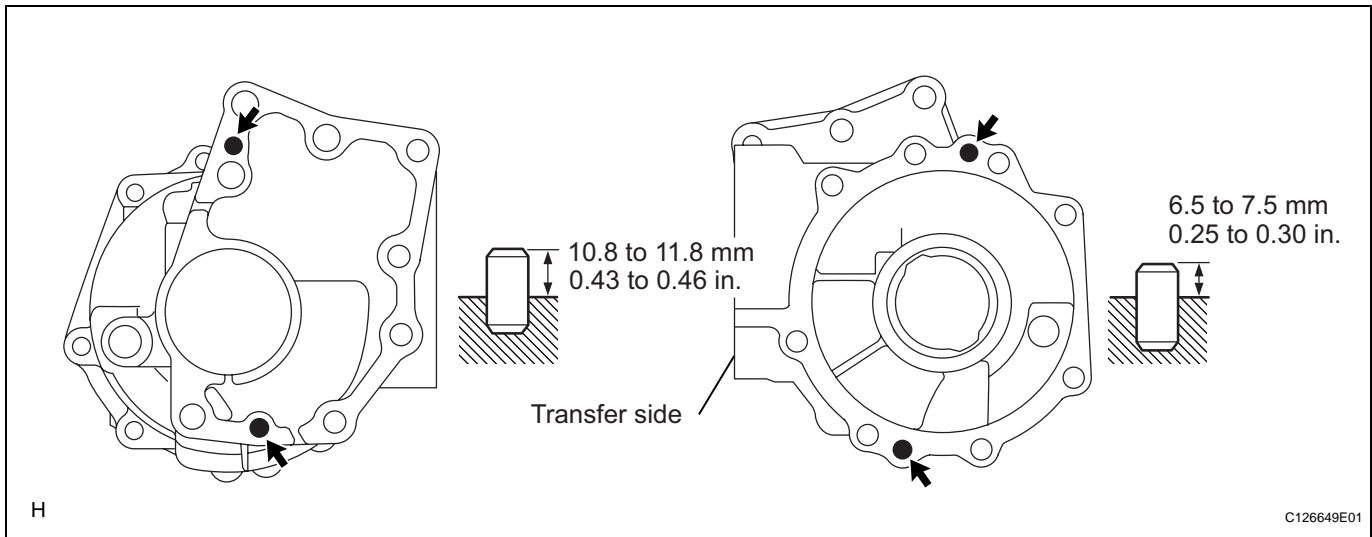
(3) Install the 8 bolts with the cover to the case.
Torque: 47 N*m (480 kgf*cm, 35 ft.*lbf)

20. INSTALL TRANSFER CASE OIL SEAL LH (See page TF-48)

21. INSTALL TRANSFER CASE OIL SEAL RH (See page TF-51)

22. INSTALL TRANSFER CASE STRAIGHT PIN

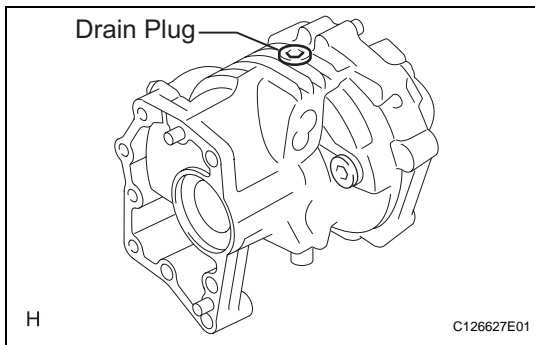
(a) Using a plastic-faced hammer, install the straight pin as shown in the straight pin.



23. INSTALL TRANSFER CASE BREATHER PLUG

(a) Using SST and a hammer, tap in a new breather plug.

SST 09612-10093 (09612-10061)



24. INSTALL TRANSFER DRAIN PLUG

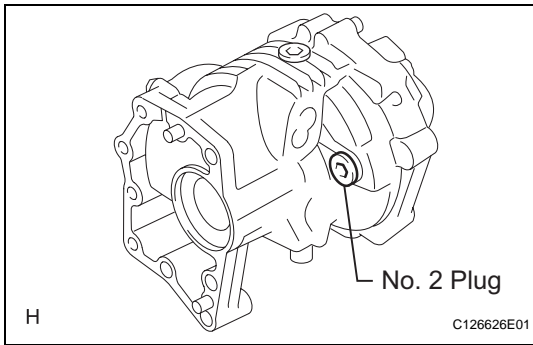
(a) Install a new gasket and the plug to the transfer case.

Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)

25. INSTALL TRANSFER CASE NO. 1 PLUG

(a) Install a new gasket and the plug to the transfer case.

Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)

**26. INSTALL TRANSFER CASE NO. 2 PLUG**

- (a) Install a new gasket and the plug to the transfer case.

Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)

27. INSTALL TRANSFER AND TRANSAXLE SETTING STUD BOLT

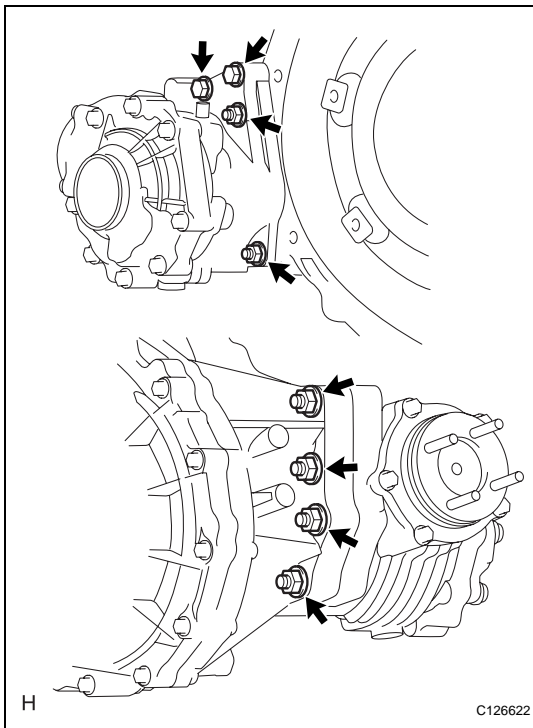
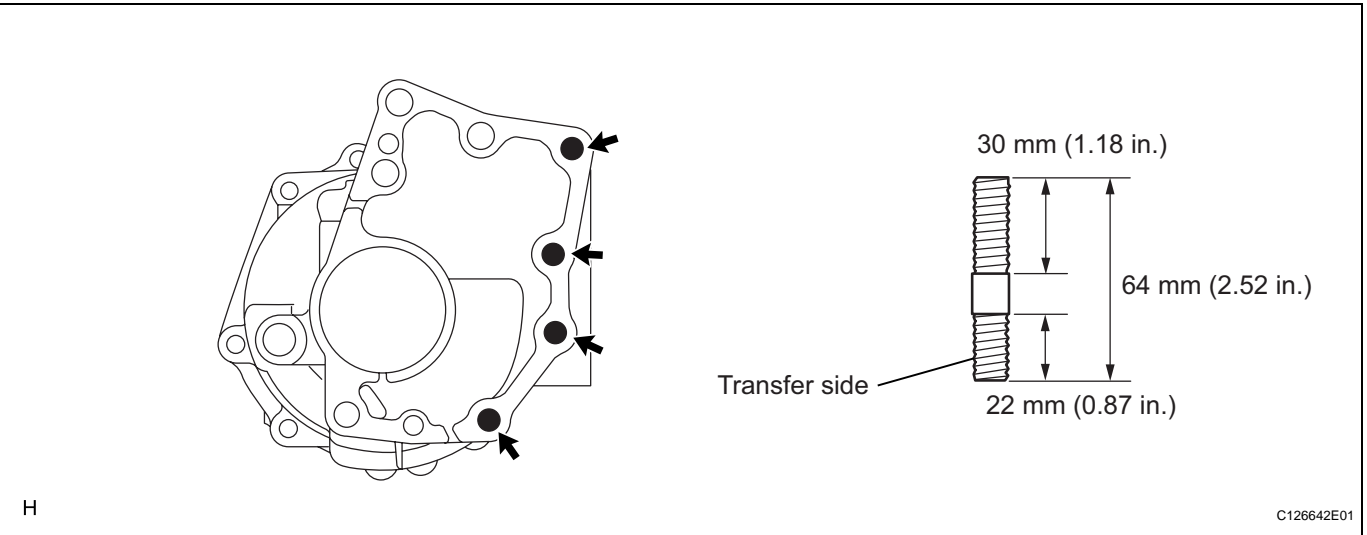
- (a) Apply sealer to stud bolts.

- (b) Install the stud bolts.

Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)

HINT:

Install the transfer side of the stud bolt (see illustration below) to the case.

**INSTALLATION**

(2005/11-2006/01)

1. INSTALL TRANSFER ASSEMBLY

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

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

2. INSTALL REAR ENGINE MOUNTING BRACKET (See page [AX-151](#))**3. INSTALL ENGINE ASSEMBLY WITH AUTOMATIC TRANSAXLE**

- (a) Install the engine with automatic transaxle (see page [EM-105](#)).

4. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL