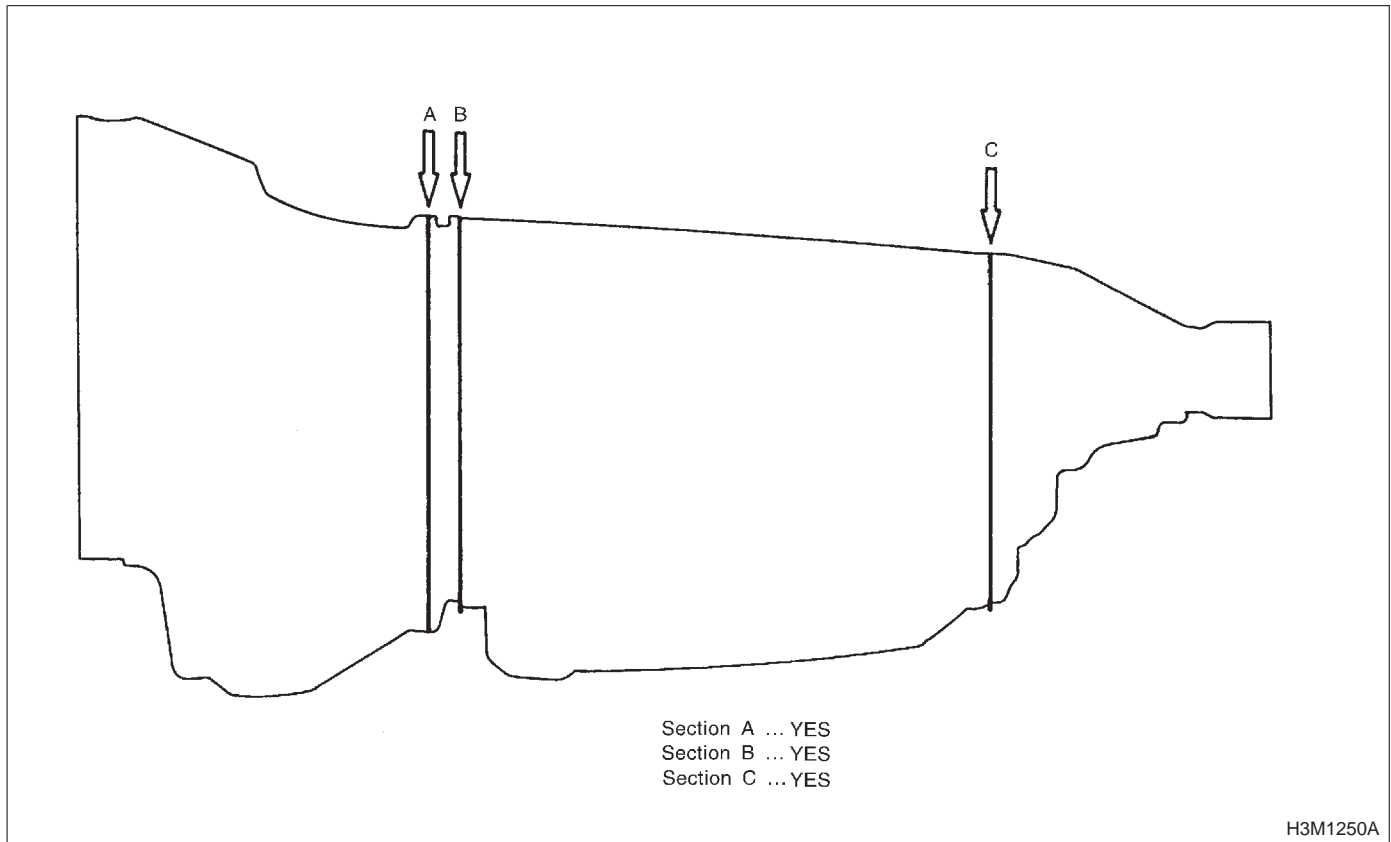


## 12. Overall Transmission

### A: SECTIONS THAT CAN BE DETACHED/ASSEMBLED



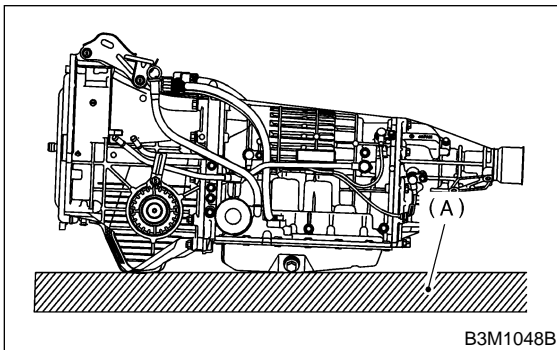
### B: DISASSEMBLY

#### 1. EXTERNAL PARTS

1) Place the transmission unit on a work bench, with the oil pan facing down.

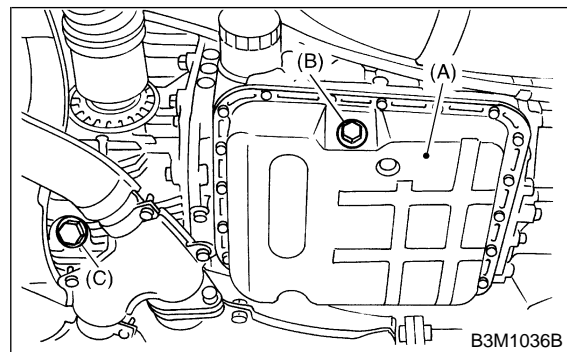
**CAUTION:**

Be careful not to bend or damage external parts.



(A) Work bench

- 2) Remove the drain plug, and drain differential oil. Tighten the plug temporarily after draining.
- 3) Remove the drain plug, and drain automatic transmission fluid (ATF). Tighten the plug temporarily after draining.

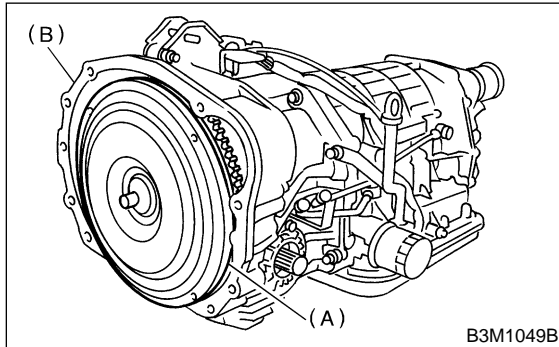


- (A) Oil pan
- (B) Drain plug
- (C) Differential oil drain plug

4) Extract the torque converter clutch assembly.

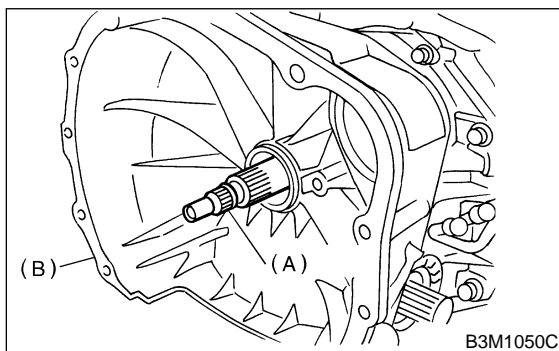
**NOTE:**

- Extract the torque converter clutch horizontally. Be careful not to scratch the bushing inside the oil pump shaft.
- Note that oil pump shaft also comes out.



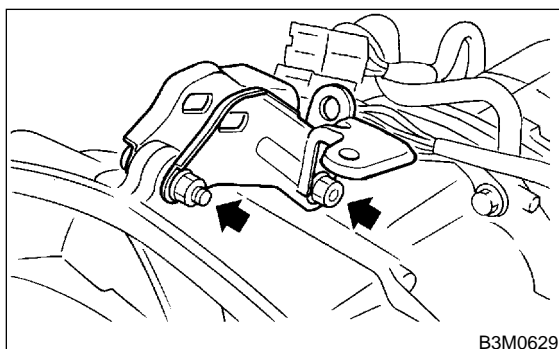
(A) Torque converter clutch ASSY  
(B) Torque converter clutch case

5) Remove the input shaft.



(A) Input shaft  
(B) Torque converter clutch case

6) Remove the pitching stopper bracket.



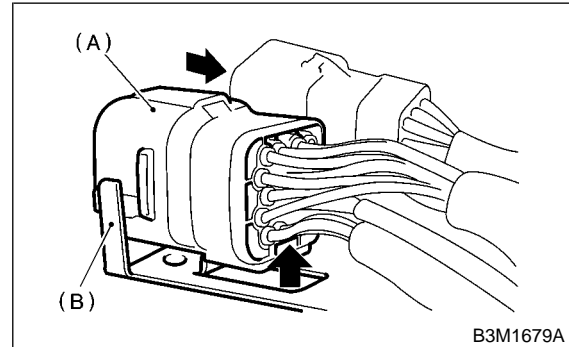
B3M0629

7) Remove harnesses from stay.

- (1) Disconnect transmission harness connector from stay.

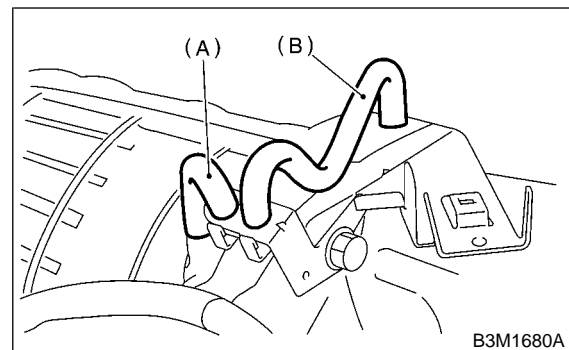
**NOTE:**

Lift-up lever behind connector and disconnect it from stay.



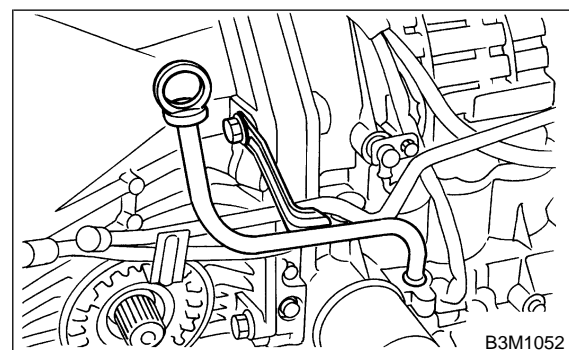
(A) Transmission harness  
(B) Stay

- (2) Disconnect inhibitor switch connector stay.
- 8) Disconnect the air breather hose.



(A) Air breather hose (Transmission case)  
(B) Air breather hose (Oil pump housing)

9) Remove the oil charger pipe, and remove the O-ring from the flange face. Attach the O-ring to the pipe.

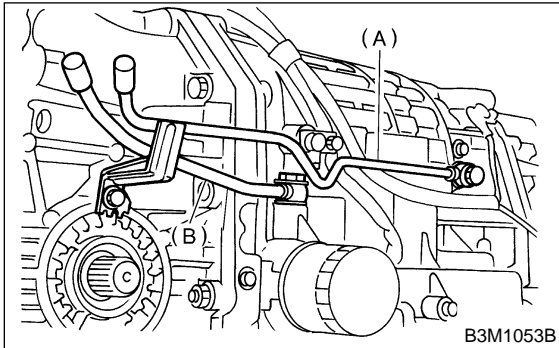


B3M1052

10) Remove the oil cooler inlet and outlet pipes.

**CAUTION:**

When removing outlet pipes, be careful not to lose balls and springs used with retaining screws.



- (A) Inlet pipe
- (B) Outlet pipe

**2. SEPARATION OF EACH SECTION**

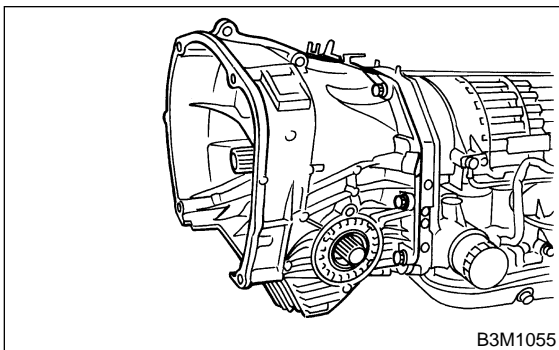
1) Separation of torque converter clutch case and transmission case sections

**CAUTION:**

- Be careful not to damage the oil seal and bushing inside the torque converter clutch case by the oil pump cover.
- Be careful not to lose the rubber seal.

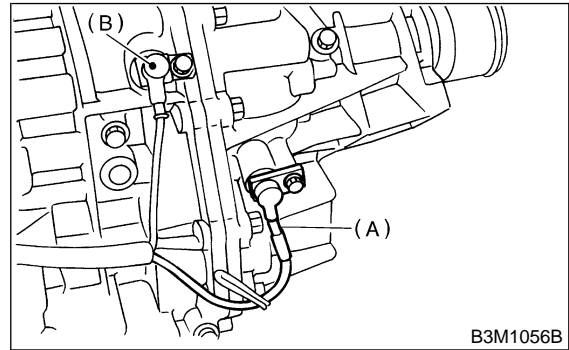
**NOTE:**

Separate these cases while tapping lightly on the housing.



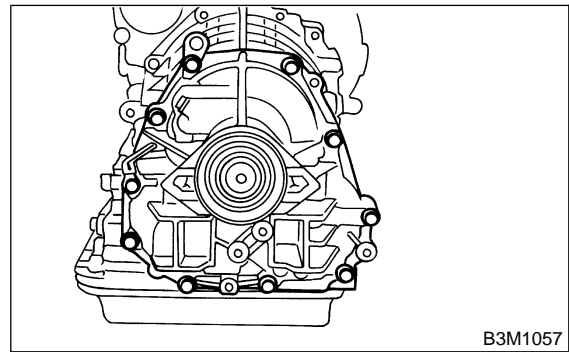
2) Separation of transmission case and extension sections

(1) Remove vehicle speed sensor 1 (rear).



- (A) Vehicle speed sensor 1 (rear)
- (B) Vehicle speed sensor 2 (front)

(2) Separation of transmission case and extension case sections



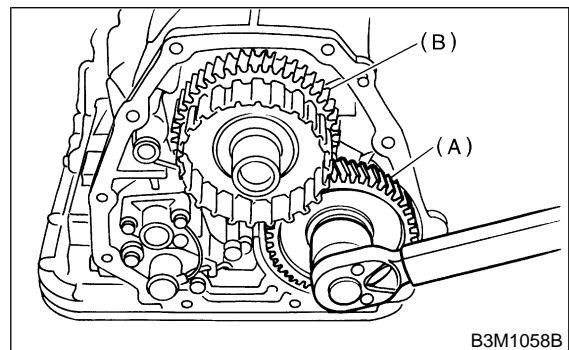
**3. TRANSMISSION CASE SECTION**

1) Remove the reduction driven gear.

(1) Straighten the staked portion, and remove the lock nut.

**NOTE:**

Set the range select lever to "P".

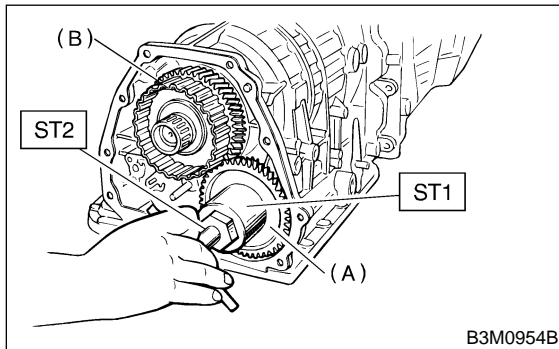


- (A) Reduction driven gear
- (B) Reduction drive gear

(2) Using the ST1 and ST2, extract the reduction driven gear.

**NOTE:**

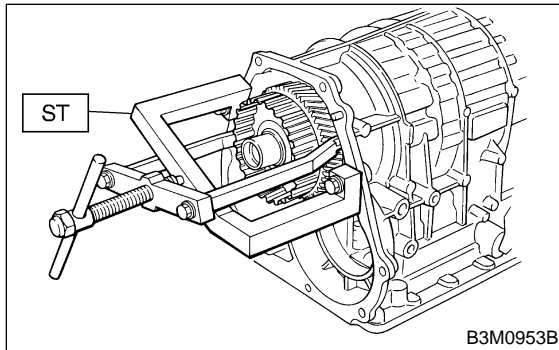
ST1 499737000 PULLER  
ST2 899524100 PULLER SET



- (A) Reduction driven gear
- (B) Reduction drive gear

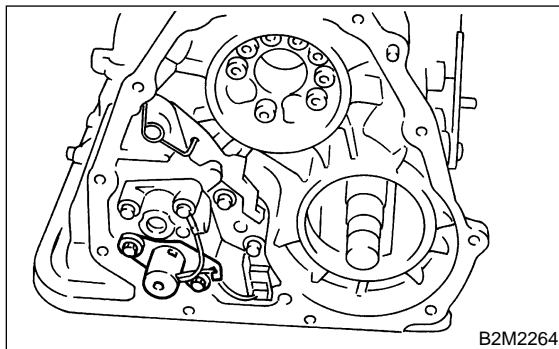
(3) Using the ST, extract the reduction drive gear.

ST 499737100 PULLER SET

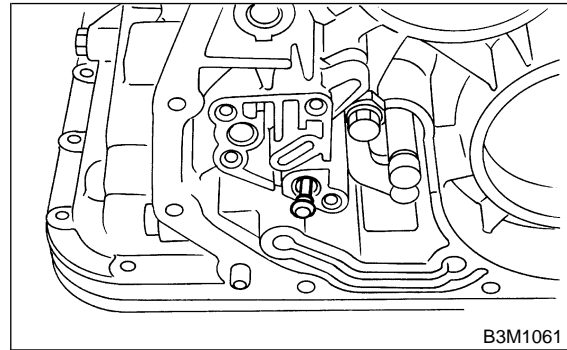


2) Remove transfer valve body and transfer duty solenoid.

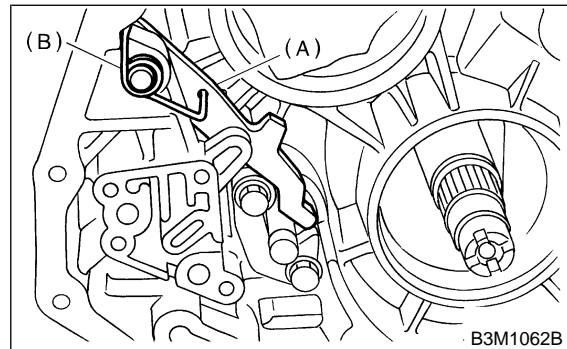
- (1) Disconnect connector from transfer duty solenoid.
- (2) Remove transfer valve body and transfer duty solenoid.



(3) Pull out inlet filter.

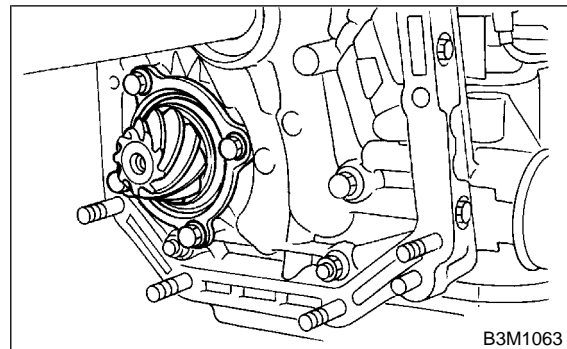


3) Remove the parking pawl, return spring and shaft.



- (A) Parking pawl
- (B) Return spring

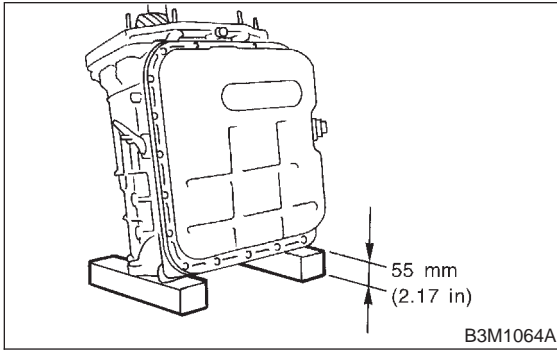
4) Loosen the taper roller bearing mounting bolts.



5) Place two wooden blocks on the workbench, and stand the transmission case with its rear end facing down.

**CAUTION:**

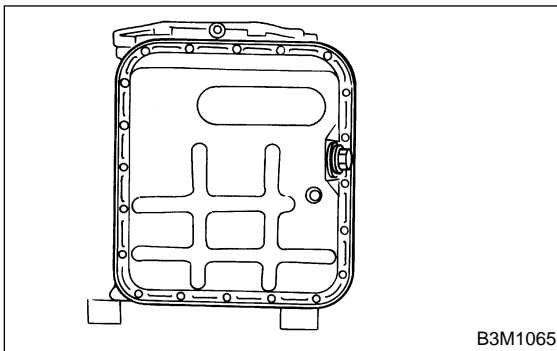
- Be careful not to scratch the rear mating surface of the transmission case.
- Note that the parking rod and drive pinion protrude from the mating surface.



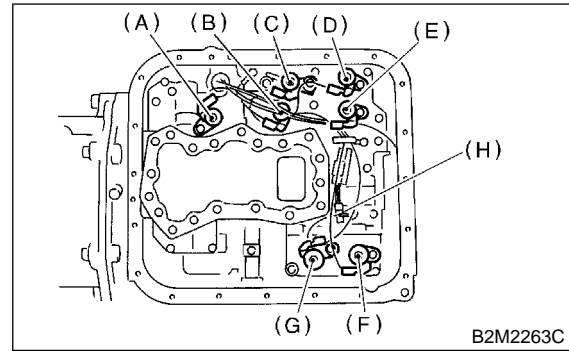
6) Remove the oil pan.

**NOTE:**

Use a scraper to remove oil pan.



7) Disconnect the harness connectors for the solenoids, duty solenoids, ATF temperature sensor and the ground cord.

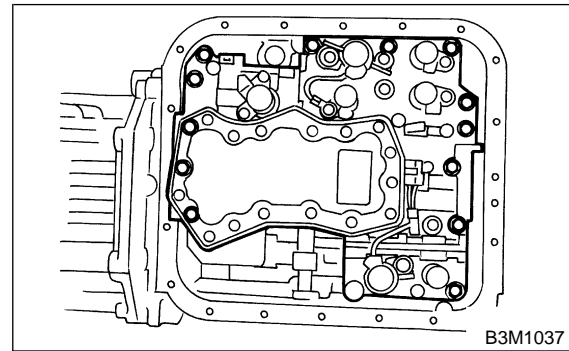


- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor

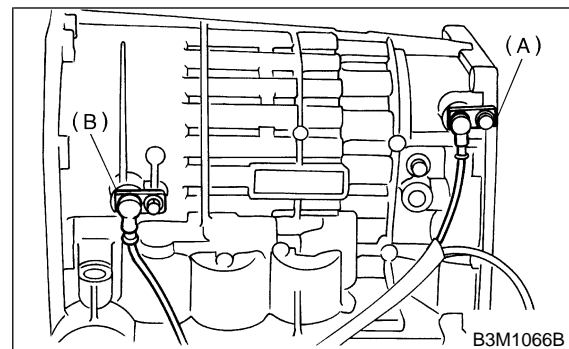
8) Remove the control valve body.

**CAUTION:**

When removing control valve body, be careful not to interfere with transfer duty solenoid wiring.

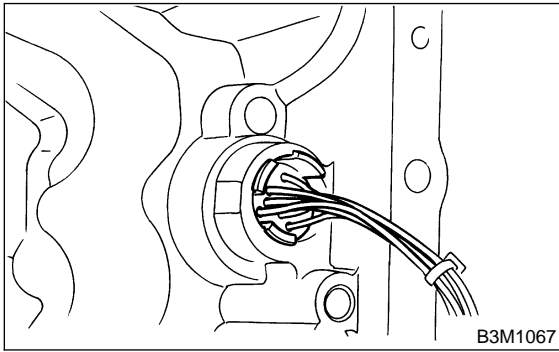


9) Remove vehicle speed sensor 2 (front) and torque converter turbine speed sensor.



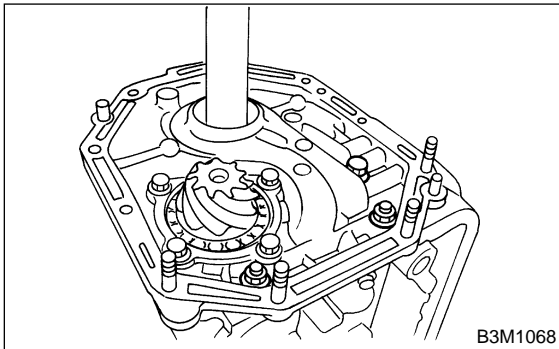
- (A) Vehicle speed sensor 2 (front)
- (B) Torque converter turbine speed sensor

10) Remove transmission harness.

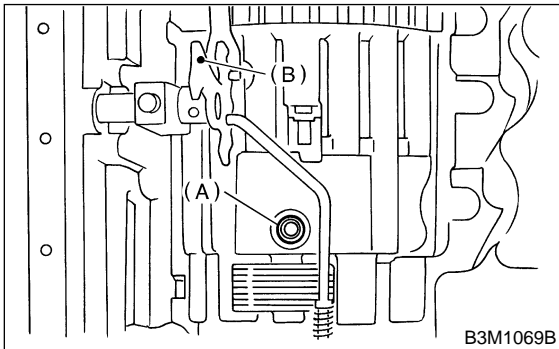


11) Remove the oil pump housing.

**CAUTION:**  
Be careful not to lose the total end play adjusting thrust washer.



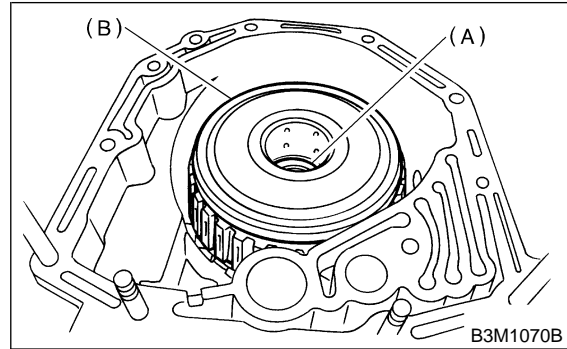
12) Remove 2-4 brake seal.



- (A) 2-4 brake
- (B) Manual lever

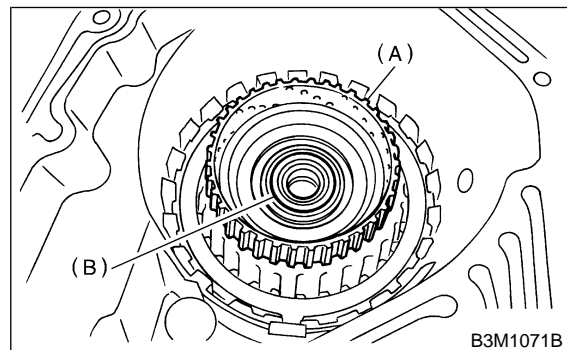
13) Take out the high clutch and reverse clutch assembly.

**CAUTION:**  
Be careful not to lose thrust needle bearing.



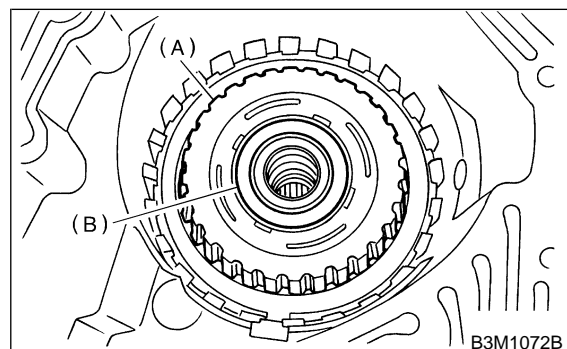
- (A) Thrust needle bearing
- (B) High clutch and reverse clutch ASSY

14) Take out the high clutch hub and the thrust bearing.



- (A) High clutch hub
- (B) Thrust needle bearing

15) Take out the front sun gear and the thrust bearing.



- (A) Front sun gear
- (B) Thrust needle bearing

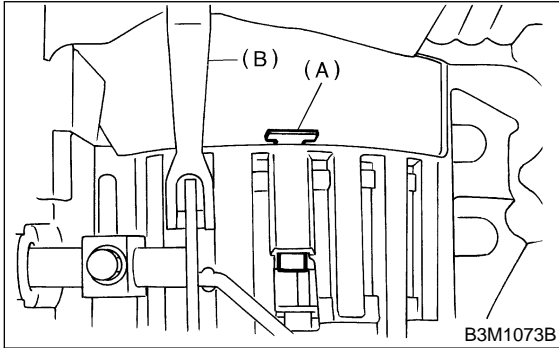
16) Pull out leaf spring.

**CAUTION:**

Be careful not to bend leaf spring during removal.

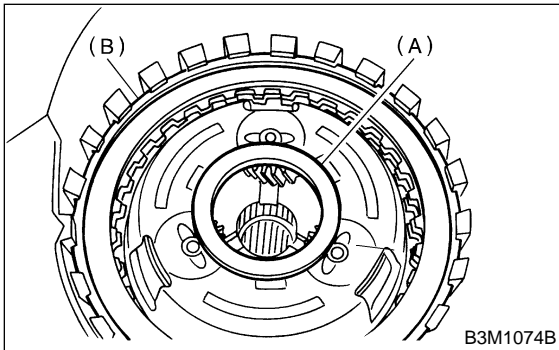
**NOTE:**

Remove it while pressing down on lower leaf spring.



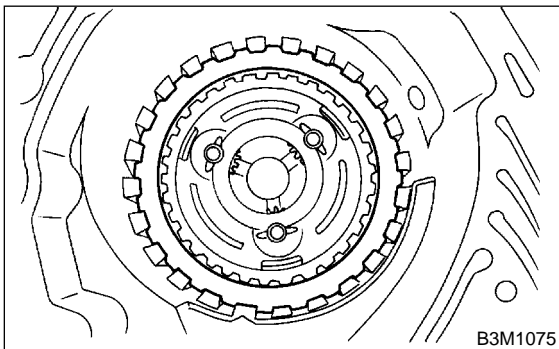
- (A) Leaf spring
- (B) Detention spring

17) Remove snap ring and thrust needle bearing.

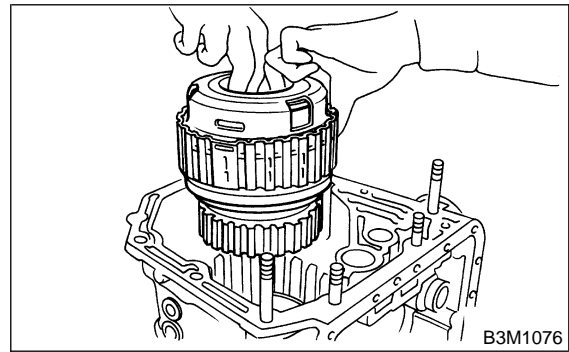


- (A) Thrust needle bearing
- (B) Snap ring

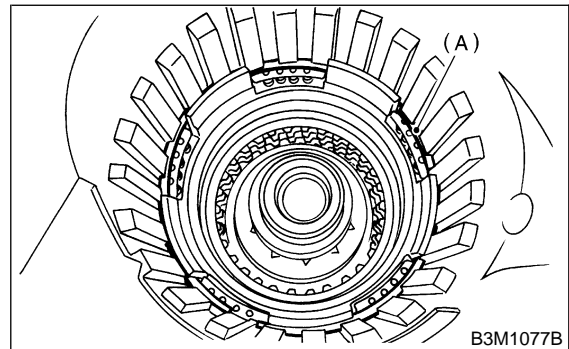
18) Take out retaining plate, drive plate and driven plate of 2-4 brake.



19) Take out the thrust needle bearing, planetary gear assembly and the low clutch assembly.

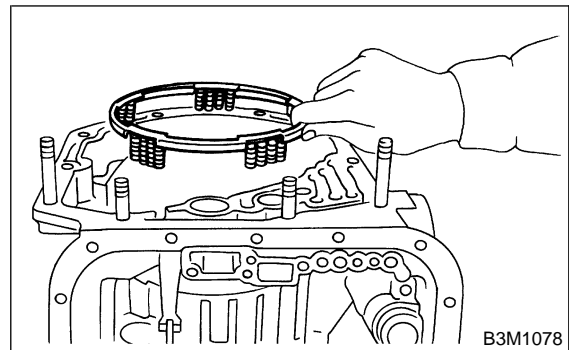


20) Remove snap ring.



- (A) Snap ring

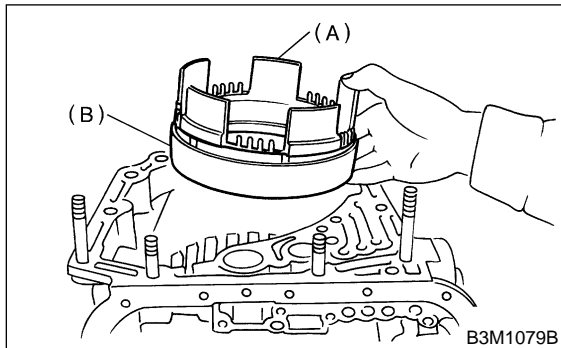
21) Take out 2-4 brake return spring.



22) Take out 2-4 brake piston and piston retainer.

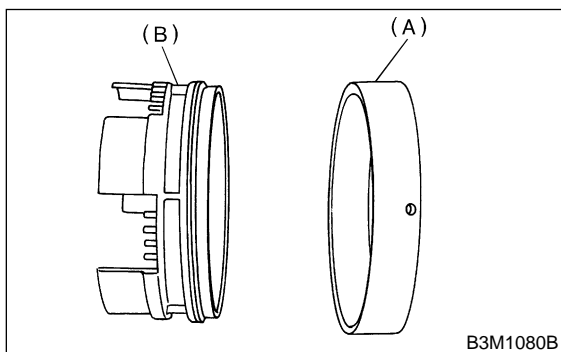
**CAUTION:**

When removing the brake piston 2-4 and piston retainer, be careful not to rub or bump them against the transmission case.



- (A) 2-4 brake piston
- (B) 2-4 brake piston retainer

23) Separate 2-4 brake piston and piston retainer.

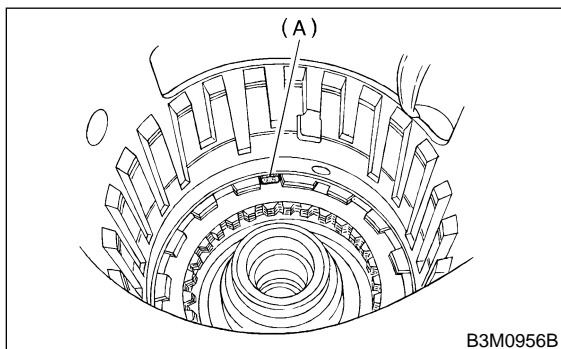


- (A) 2-4 brake piston retainer
- (B) 2-4 brake piston

24) Pull out leaf spring.

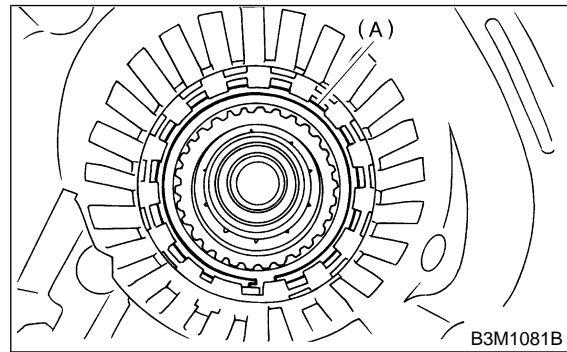
**CAUTION:**

Be careful not to bend leaf spring during removal.



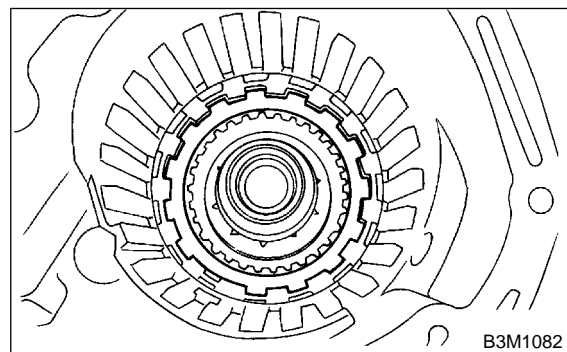
- (A) Leaf spring

25) Remove snap ring.



- (A) Snap ring

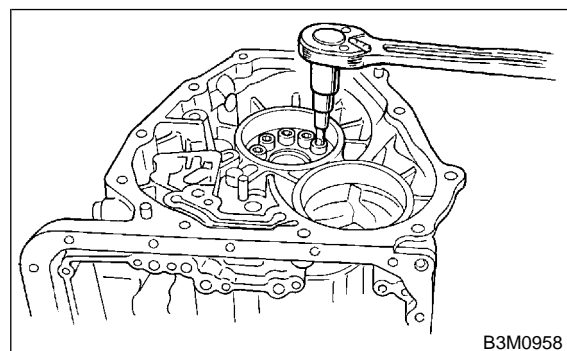
26) Take out retaining plate, drive plate, driven plate and dish plate.



27) Turning the case upside down, take out the one-way clutch inner race, retainer and wave spring.

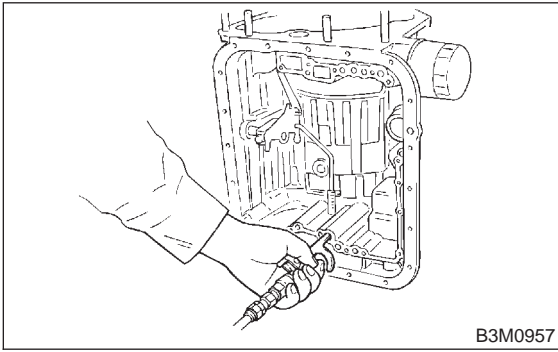
**NOTE:**

After loosening all socket bolts, place the side of the transmission case on the floor.





28) Take out the low & reverse piston by applying compressed air.

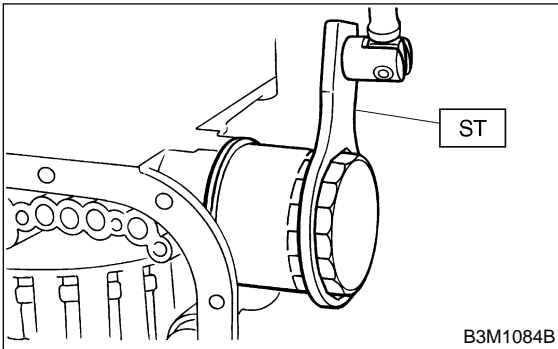


29) Using ST, remove ATF filter.

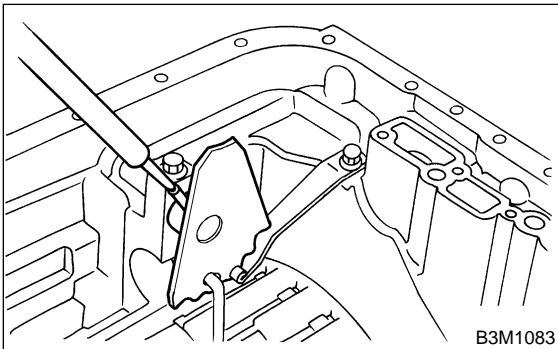
**NOTE:**

If any of the clutches or brakes are abnormally worn, replace ATF filter and oil seal with new ones.

ST 498545400 OIL FILTER WRENCH



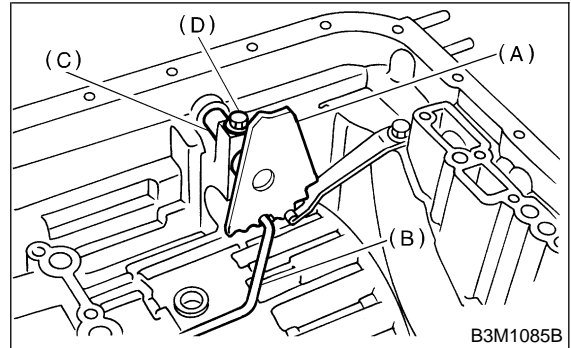
30) Pull off the straight pin of manual lever.



31) Remove bolts securing select lever, then remove select lever, manual lever and parking rod.

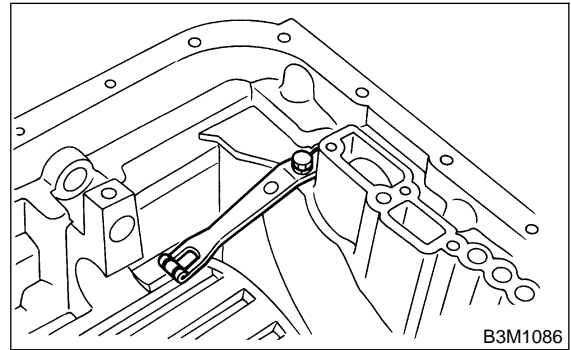
**CAUTION:**

Be careful not to damage the lips of the press-fitted oil seal in the case.

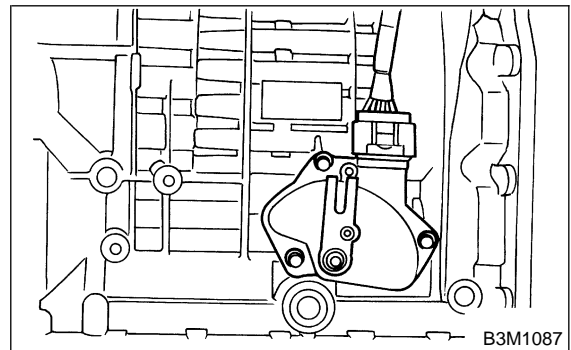


- (A) Manual lever
- (B) Parking rod
- (C) Range select lever
- (D) Bolt

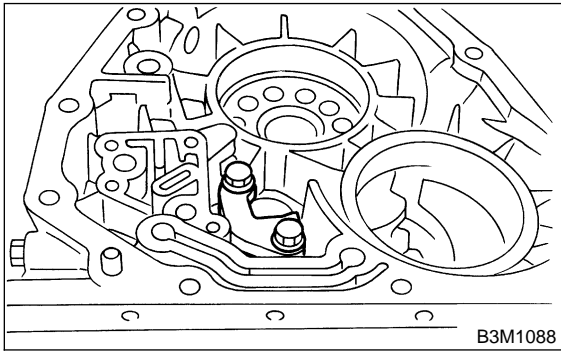
32) Remove the detention spring.



33) Remove the inhibitor switch.

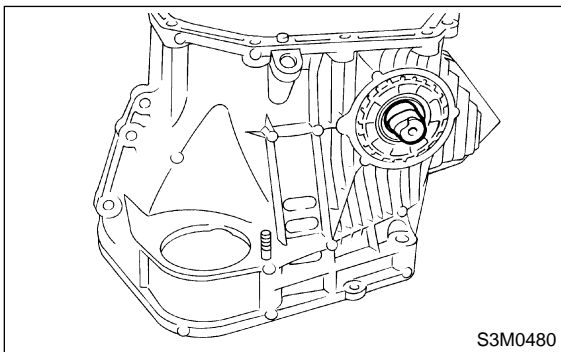


34) Remove parking support.



**4. TORQUE CONVERTER CLUTCH CASE SECTION**

1) Wrap the axle shaft serration with vinyl tape.



2) Remove the differential side retainer with ST.

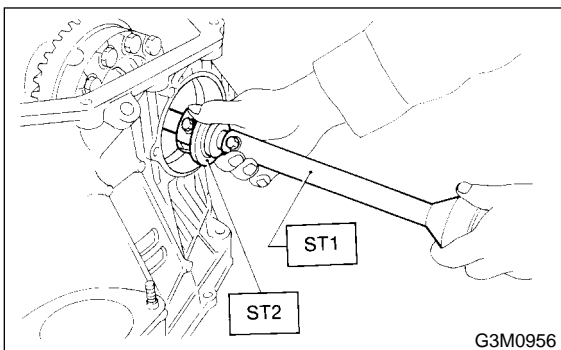
**CAUTION:**  
Hold the differential case assembly by hand to avoid damaging retainer mounting hole of the torque converter clutch case and speedometer gears.

ST 499787000 WRENCH ASSY

3) Extract the axle shaft with ST1 and ST2.

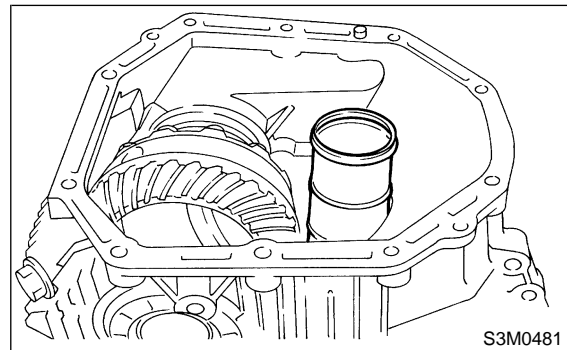
**CAUTION:**  
Do not reuse the circlip.

ST1 499095500 REMOVER  
ST2 499247300 INSTALLER



4) Remove the differential case assembly.

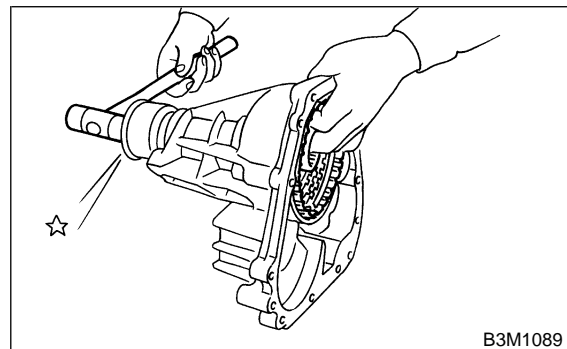
**CAUTION:**  
● Remove the seal pipe if it is attached. (Reusing is not allowed.)  
● Be careful not to damage the retainer mounting hole of the torque converter clutch case and the speedometer gears.



**5. EXTENSION SECTION**

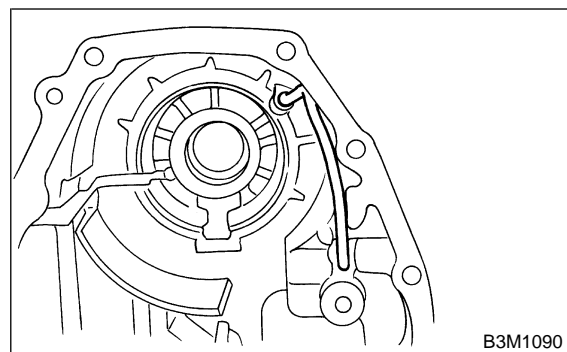
1) Take out the transfer clutch by lightly tapping the end of the rear drive shaft.

**CAUTION:**  
Be careful not to damage the oil seal in the extension.



2) Remove the transfer pipe.

**CAUTION:**  
Be careful not to bend the pipe.



## C: ASSEMBLY OF OVERALL TRANSMISSION

### 1. TORQUE CONVERTER CLUTCH CASE SECTION

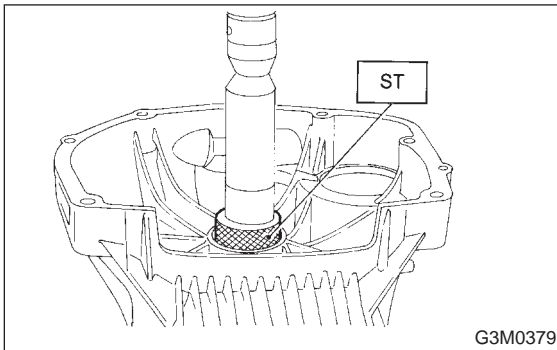
1) Check the appearance of each component and clean.

#### CAUTION:

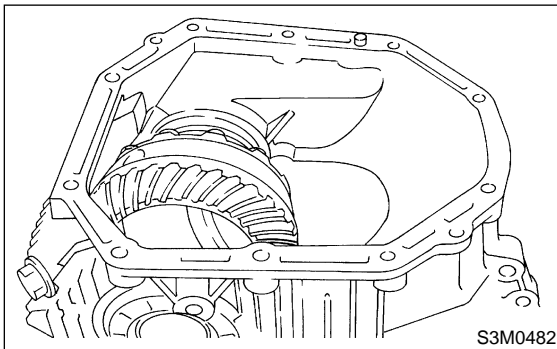
**Make sure each part is free of harmful cuts, damage and other faults.**

2) Force-fit the oil seal to the torque converter clutch case with ST.

ST 398437700 DRIFT



3) Install the differential assembly to the case, paying special attention not to damage the inside of the case (particularly, the differential side retainer contact surface).



4) Install the circlip to the axle shaft, insert the shaft into the differential assembly, and tap it into position with a plastic hammer.

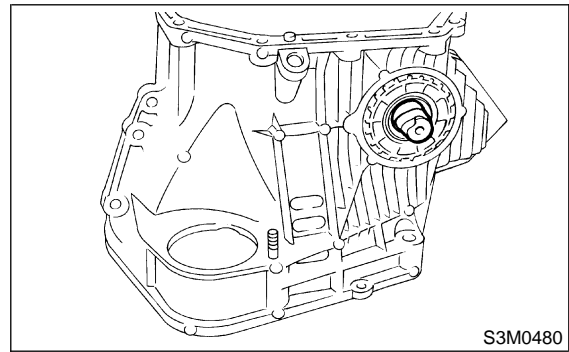
#### CAUTION:

- If no play is felt, check whether the shaft is fully inserted. If shaft insertion is correct, replace the axle shaft.
- Be sure to use a new circlip.

#### Thrust play:

**0.3 — 0.5 mm (0.012 — 0.020 in)**

5) Wrap vinyl tape around the splined portion of the axle shaft.



6) Install the oil seal and outer race (taper roller bearing) to the differential side retainer. Then screw in the retainer and the O-ring after coating the threads with oil.

#### CAUTION:

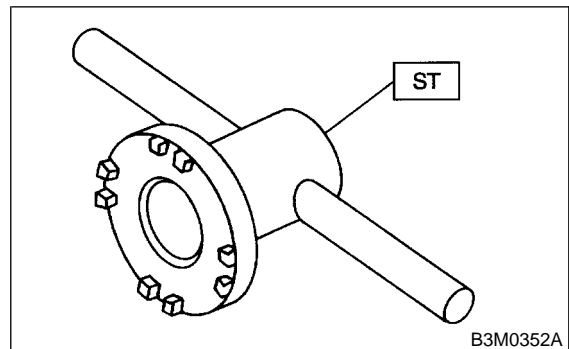
- Pay attention not to damage the oil seal lips.
- Do not confuse the RH and LH oil seals.
- Keep the O-ring removed from the retainer.

7) Using the ST, screw in the retainer until light contact is felt.

#### NOTE:

Screw in the RH side slightly deeper than the LH side.

ST 499787000 WRENCH ASSY



8) Hypoid gear backlash adjustment and tooth contact check

(1) Assemble the drive pinion assembly to the oil pump housing.

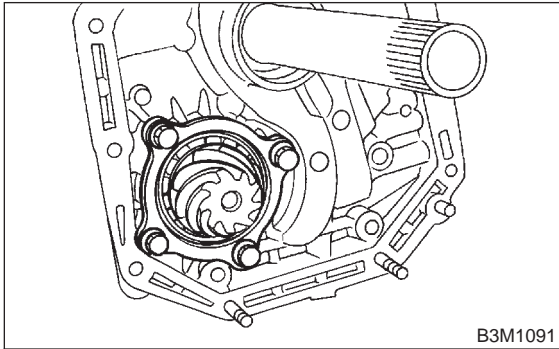
#### CAUTION:

- Be careful not to bend the shims.
- Be careful not to force the pinion against the housing bore.

(2) Tighten the four bolts to secure the roller bearing.

**Tightening torque:**

**41±3 N·m (4.2±0.3 kg·m, 30.4±2.2 ft·lb)**



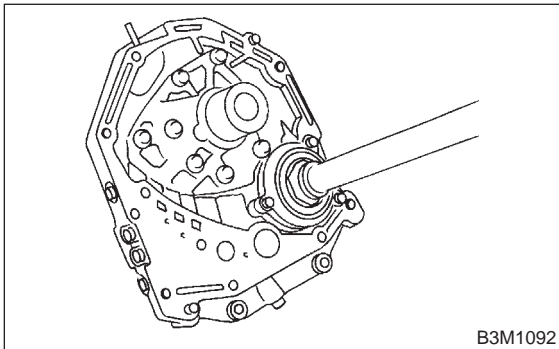
(3) Install the oil pump housing assembly to the torque converter clutch case, and secure evenly by tightening the four bolts.

**CAUTION:**

- Thoroughly remove the liquid gasket from the case mating surface beforehand.
- Use an old gasket or an aluminum washer so as not to damage the mating surface of the housing.

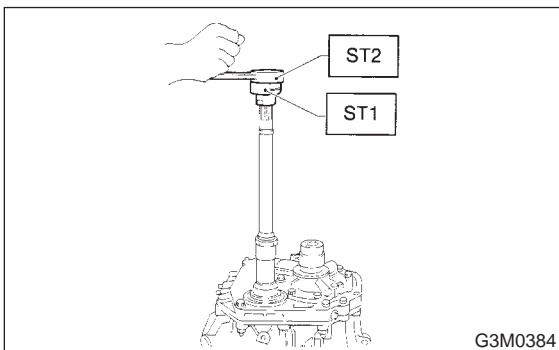
**Tightening torque:**

**41±3 N·m (4.2±0.3 kg·m, 30.4±2.2 ft·lb)**

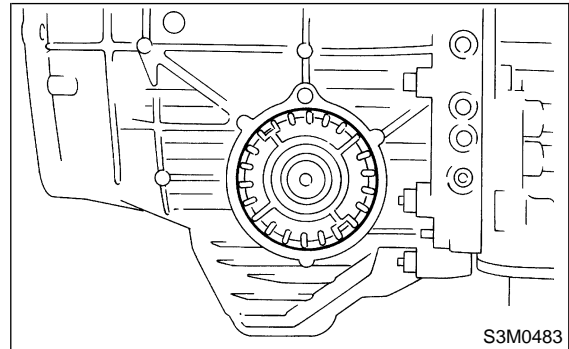


(4) Rotate the drive pinion several times with ST1 and ST2.

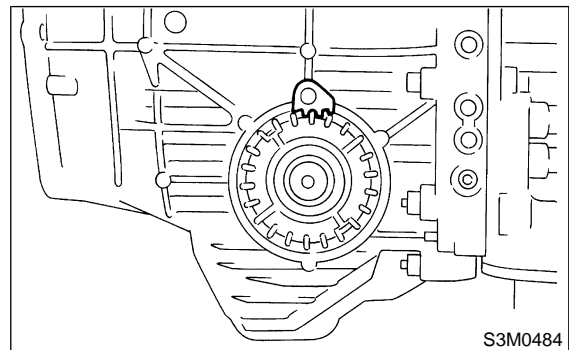
- ST1 498937110 HOLDER
- ST2 499787700 WRENCH



(5) Tighten the LH retainer until contact is felt while rotating the shaft. Then loosen the RH retainer. Keep tightening the LH retainer and loosening the RH retainer until the pinion shaft can no longer be turned. This is the “zero” state.

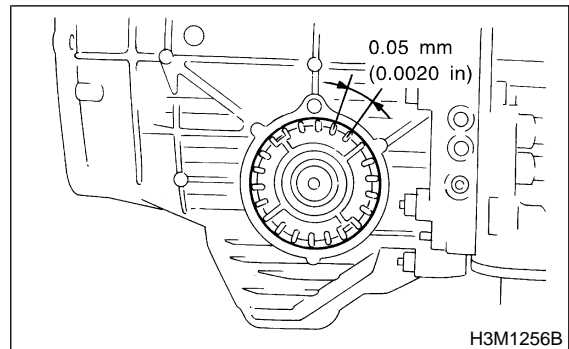


(6) After the “zero” state is established, back off the LH retainer three notches and secure it with the lock plate. Then back off the RH retainer and retighten until it stops. Repeat this procedure several times. Tighten the RH retainer 1-3/4 notches further. This sets the preload. Finally, secure the retainer with its lock plate.



**NOTE:**

Turning the retainer by one tooth changes the backlash about 0.05 mm (0.0020 in).



(7) Turn the drive pinion several rotations with ST1 and check to see if the backlash is within the standard value with ST3, ST4 and ST5.

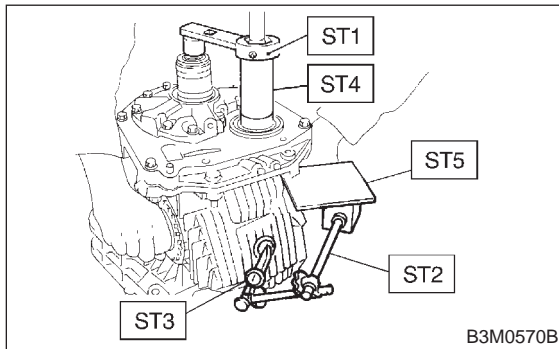
**NOTE:**

After confirming that the backlash is correct, check the tooth contact.

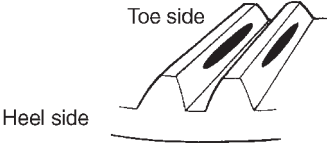
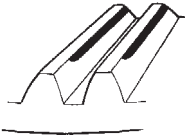
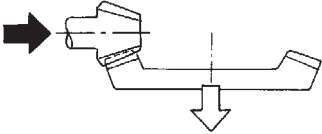

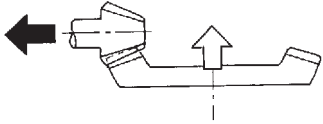

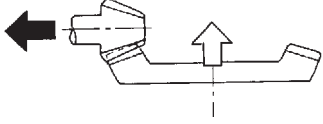

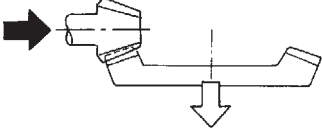
ST1	499787700	WRENCH
ST2	498247001	MAGNET BASE
ST3	498247100	DIAL GAUGE
ST4	499787500	ADAPTER WRENCH
ST5	498255400	PLATE

**Backlash:**

**0.13 — 0.18 mm (0.0051 — 0.0071 in)**



(8) Apply red lead evenly to the surfaces of three or four teeth of the crown gear. Rotate the drive pinion in the forward and reverse directions several times. Then remove the oil pump housing, and check the tooth contact pattern. If tooth contact is improper, readjust the backlash or shim thickness.

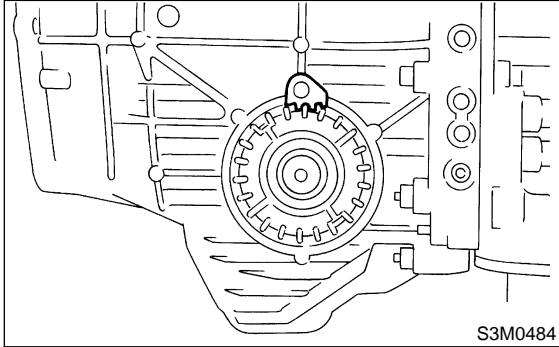
Checking item	Contact pattern	Corrective action
<p>Tooth contact Tooth contact pattern is slightly shifted toward to under no-load rotation. [When loaded, contact pattern moves toward heel.]</p>	 <p style="text-align: center;">B3M0317A</p>	<p style="text-align: center;">—</p>
<p>Face contact Backlash is too large.</p>	<p>This may cause noise and chipping at tooth ends.</p>  <p style="text-align: center;">B3M0319</p>	<p>Increase thickness of drive pinion height adjusting shim in order to bring drive pinion close to crown gear.</p>  <p style="text-align: right;">B3M0323</p>
<p>Flank contact Backlash is too small.</p>	<p>This may cause noise and stepped wear on surfaces.</p>  <p style="text-align: center;">B3M0320</p>	<p>Reduce thickness of drive pinion height adjusting shim in order to move drive pinion away from crown gear.</p>  <p style="text-align: right;">B3M0324</p>
<p>Toe contact (Inside end contact) Contact areas is small.</p>	<p>This may cause chipping at toe.</p>  <p style="text-align: center;">B3M0321</p>	<p>Adjust as for flank contact.</p>  <p style="text-align: right;">B3M0324</p>
<p>Heel contact (Outside end contact) Contact area is small.</p>	<p>This may cause chipping at heel ends.</p>  <p style="text-align: center;">B3M0322</p>	<p>Adjust as for face contact.</p>  <p style="text-align: right;">B3M0323</p>

 : Adjusting direction of drive pinion  
 : Adjusting direction of crown gear

(9) If tooth contact is correct, mark the retainer position and loosen it. After fitting the O-ring, screw in the retainer to the marked position. Then tighten the lock plate to the specified torque.

**Tightening torque:**

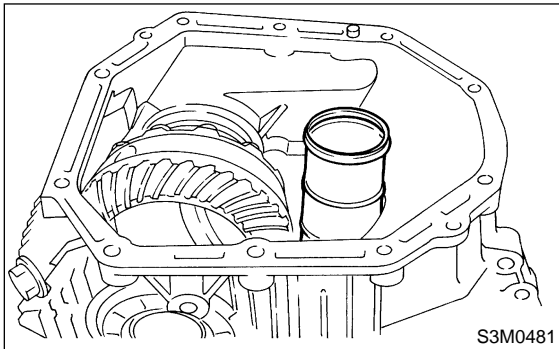
**25±2 N·m (2.5±0.2 kg·m, 18.1±1.4 ft·lb)**



9) Install the seal pipe to the torque converter clutch case.

**CAUTION:**

**Be sure to use a new seal pipe.**

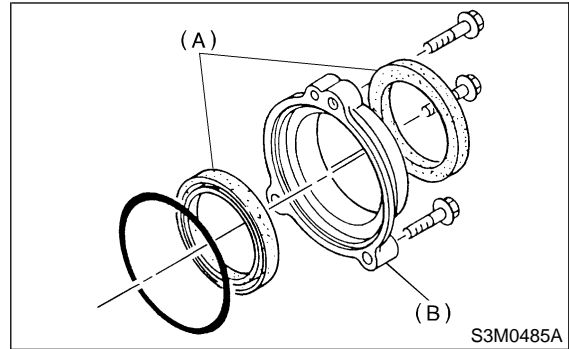


10) Install the two oil seals to the oil seal retainer with ST.

**CAUTION:**

- Always discard old oil seals, and install new ones.
- Pay attention to the orientation of the oil seals.

ST 499247300 INSTALLER

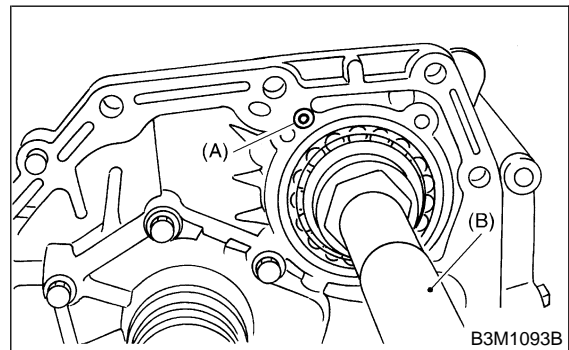


- (A) Oil seal
- (B) Oil seal retainer

11) Attach the O-ring to the oil seal retainer with vaseline. Install the seal to the oil pump housing bore.

**CAUTION:**

**Always discard old O-rings and install new ones.**



- (A) O-ring
- (B) Drive pinion shaft

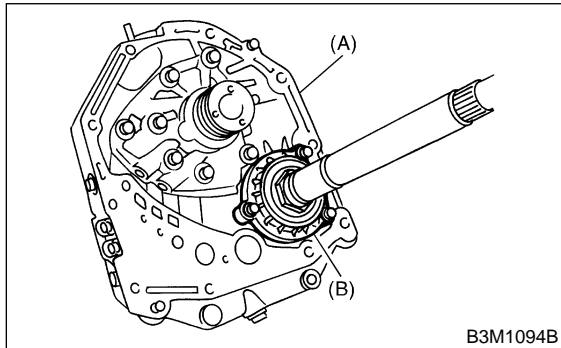
12) Install the oil seal retainer taking care not to damage the oil seal lips. Then secure with the three bolts.

**NOTE:**

Make sure the O-ring is fitted correctly in position.

**Tightening torque:**

**$7\pm1$  N-m ( $0.7\pm0.1$  kg-m,  $5.1\pm0.7$  ft-lb)**



- (A) Oil pump housing
- (B) Oil seal retainer

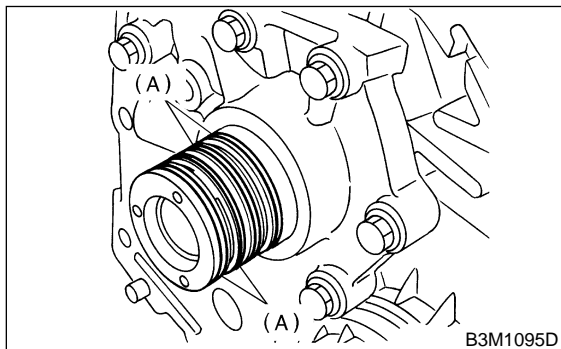
13) Apply vaseline to the groove on the oil pump cover, and install the four seal rings.

**CAUTION:**

**Be careful not to damage the seal ring.**

**NOTE:**

- Fit the seal ring after compressing, and rub vaseline into the seal ring to avoid expansion.

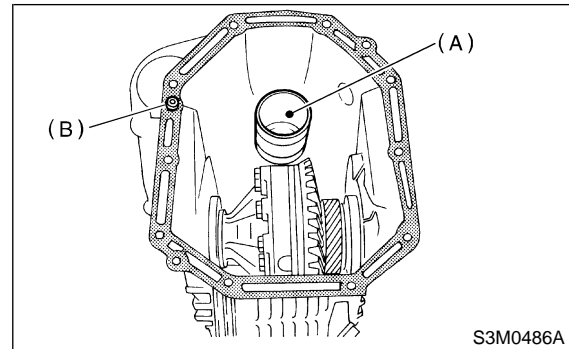


- (A) Seal rings

14) Install the rubber seal to the torque converter clutch case.

**CAUTION:**

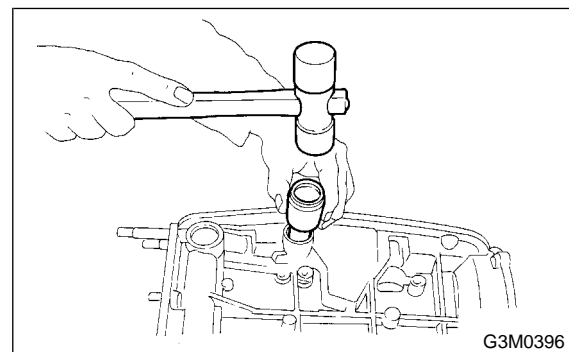
**Be careful not to lose the rubber seal.**



- (A) Seal pipe
- (B) Rubber seal

**2. TRANSMISSION CASE SECTION**

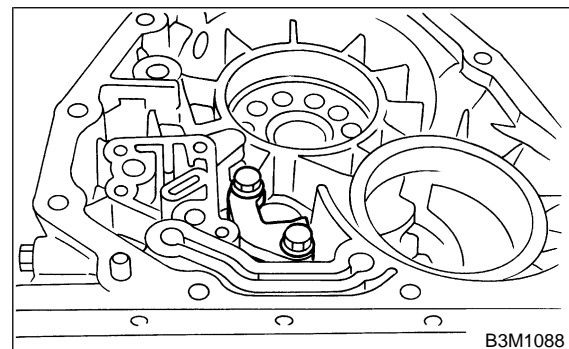
1) Using a plastic hammer, force-fit the oil seal.



2) Install parking support to transmission case.

**Tightening torque:**

**$25\pm2$  N-m ( $2.5\pm0.2$  kg-m,  $18.1\pm1.4$  ft-lb)**

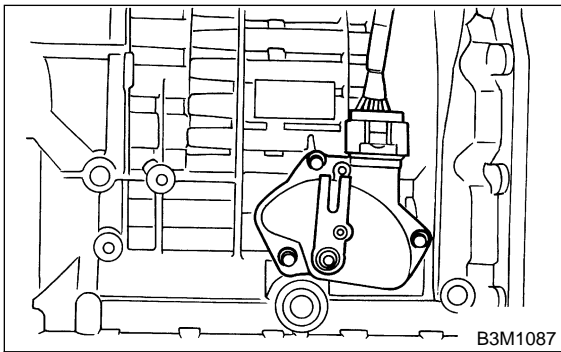




3) Install inhibitor switch to transmission case.

NOTE:

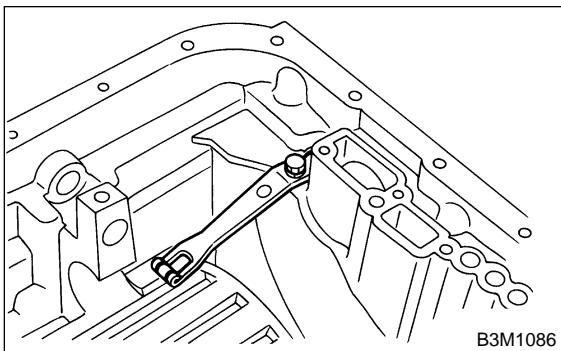
Temporary tighten inhibitor switch.



4) Install detention spring to transmission case.

**Tightening torque:**

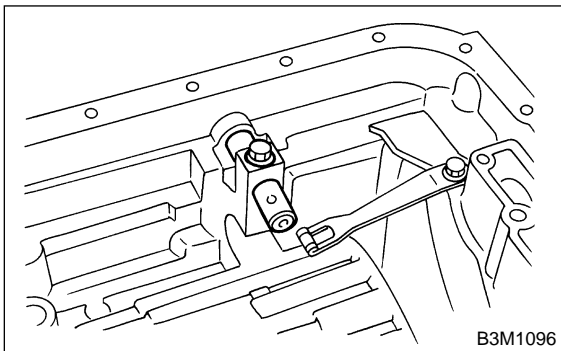
**$6 \pm 1 \text{ N}\cdot\text{m}$  ( $0.6 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $4.3 \pm 0.7 \text{ ft}\cdot\text{lb}$ )**



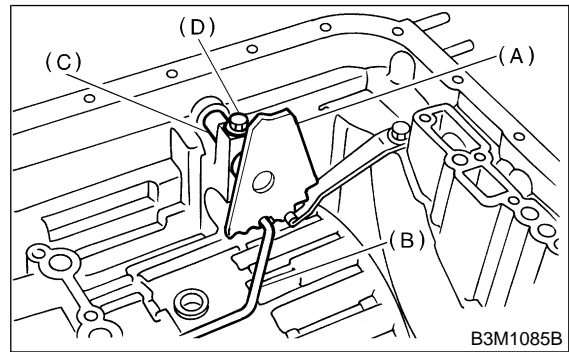
5) Insert range select lever, and tighten bolt.

**Tightening torque:**

**$6 \pm 1 \text{ N}\cdot\text{m}$  ( $0.6 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $4.3 \pm 0.7 \text{ ft}\cdot\text{lb}$ )**

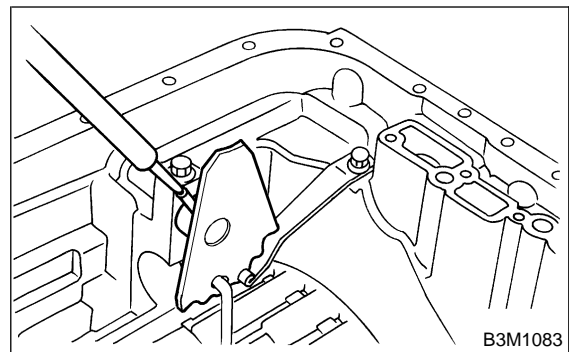


6) Insert manual lever and parking rod.



- (A) Manual lever
- (B) Parking pawl
- (B) Range select lever
- (B) Bolt

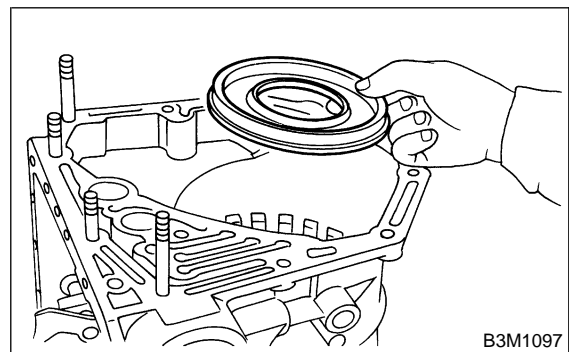
7) Insert spring pin to manual lever.



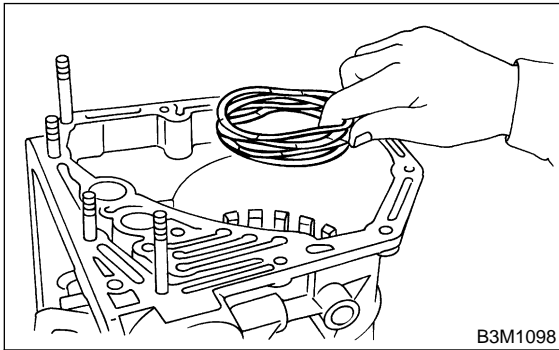
8) Install the low and reverse piston.

**CAUTION:**

- Be careful not to tilt the piston when installing.
- Be careful not to damage the lip seal.

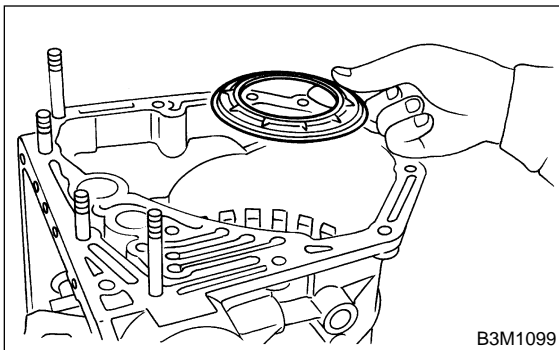


9) Install return spring.



B3M1098

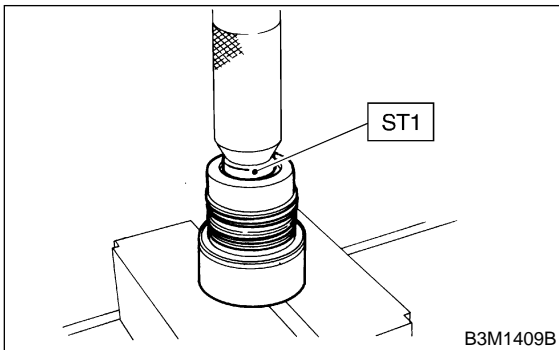
10) Install retainer.



B3M1099

11) Install the one-way clutch inner race.  
(1) Using a press and ST1, install the needle bearing to the inner race.  
ST1 398497701 INSTALLER

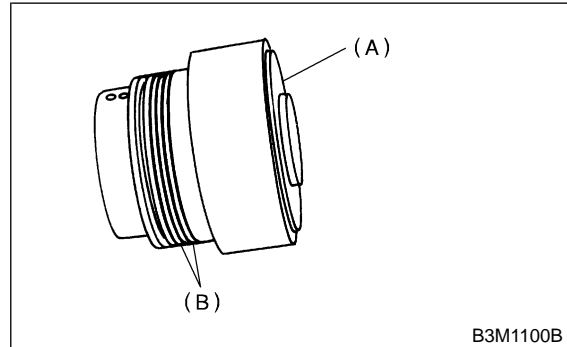
NOTE:  
Use the following ST when removing.  
ST 398527700 PULLER ASSY



B3M1409B

(2) Install the two seal rings to one-way clutch inner race.

NOTE:  
Apply vaseline to the groove of the inner race and to the seal ring after installation, so that the seal ring will not expand.



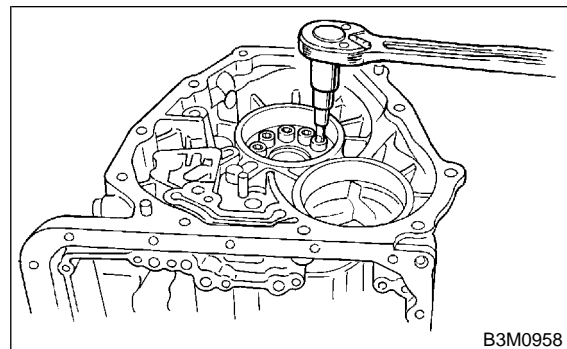
B3M1100B

(A) One-way clutch inner race  
(B) Seal rings

(3) Tighten the eight socket head bolts from the rear side of the transmission case.

**Tightening torque:**  
 $25 \pm 2 \text{ N}\cdot\text{m}$  ( $2.5 \pm 0.2 \text{ kg}\cdot\text{m}$ ,  $18.1 \pm 1.4 \text{ ft}\cdot\text{lb}$ )

**CAUTION:**  
Be sure to tighten evenly.



B3M0958

(4) Install thrust needle bearing.

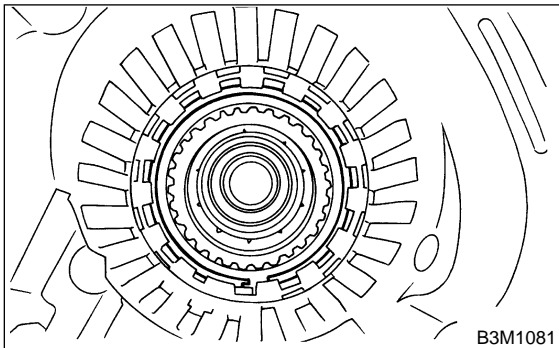
NOTE:  
Place transmission case with the front facing up.

12) Installation of the low & reverse brake:

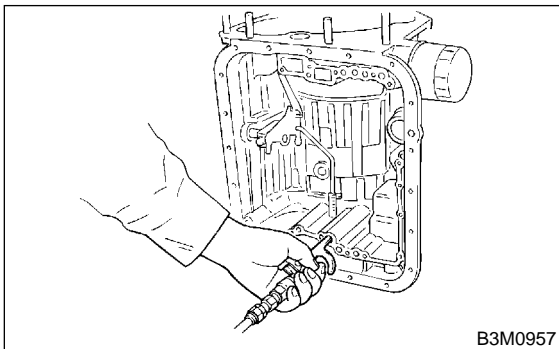
(1) Install dish plate, driven plates, drive plates, and a retaining plate, and secure with a snap ring.

**NOTE:**

Pay attention to the orientation of the dish plate.



(2) Apply compressed air intermittently to check for operation.



(3) Check the clearance. (Selection of retaining plate)

**NOTE:**

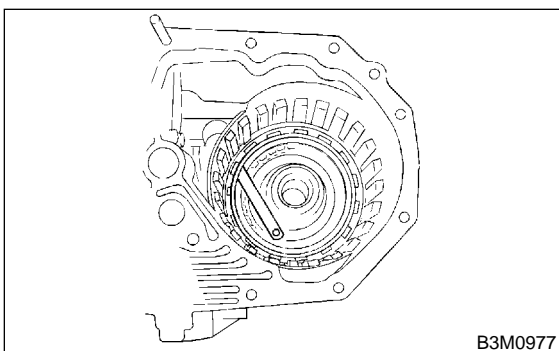
Before measuring clearance, place the same thickness of shim on both sides to prevent retaining plate from tilting.

**Standard value:**

0.7 — 1.2 mm (0.028 — 0.047 in)

**Allowable limit:**

2.2 mm (0.087 in)

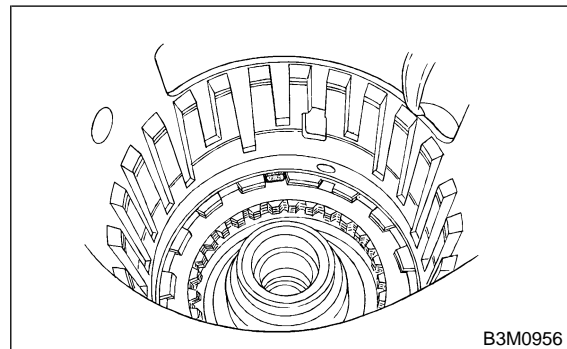


Available retaining plates	
Part No.	Thickness mm (in)
31667AA320	4.2 (0.165)
31667AA330	4.5 (0.177)
31667AA340	4.8 (0.189)
31667AA350	5.1 (0.201)
31667AA360	5.4 (0.213)
31667AA370	5.7 (0.224)
31667AA380	6.0 (0.236)

13) Install leaf spring of low and reverse brake.

**CAUTION:**

Pay attention to the direction and position of leaf spring during installation.

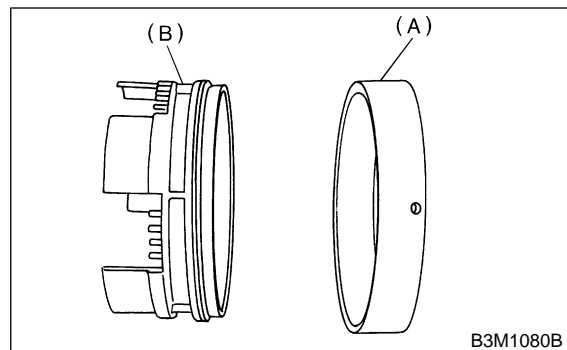


14) Install O-ring to 2-4 brake piston.

**CAUTION:**

- If O-ring breaks or damage is noted, replace with new O-ring.
- Apply a coat of vaseline to inner side of O-ring before installation.

15) Install 2-4 brake piston to 2-4 brake piston retainer.

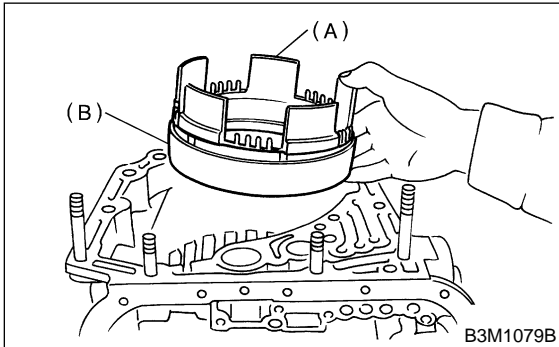


- (A) 2-4 brake piston retainer
- (B) 2-4 brake piston

16) Install 2-4 brake piston and retainer to transmission case.

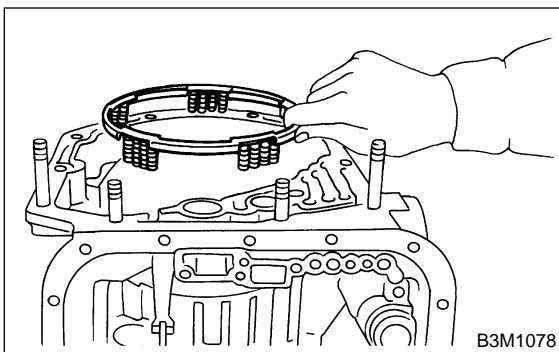
**CAUTION:**

**Align the hole in the 2-4 brake seal of transmission case with the hole in 2-4 brake piston retainer during installation.**

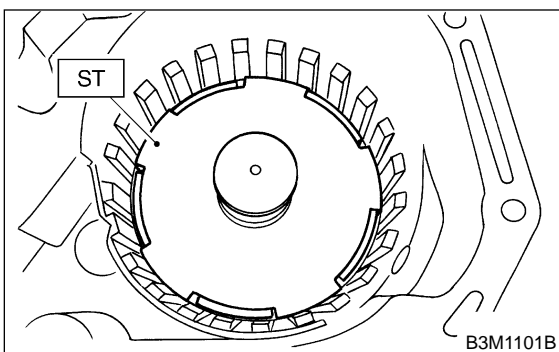


- (A) 2-4 brake piston
- (B) 2-4 brake piston retainer

17) Install 2-4 brake piston return spring to transmission case.

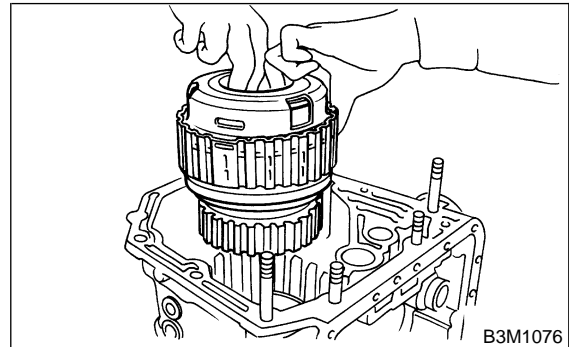


18) Position snap ring in transmission. Using ST, press the snap ring into place.  
ST 498677100 COMPRESSOR



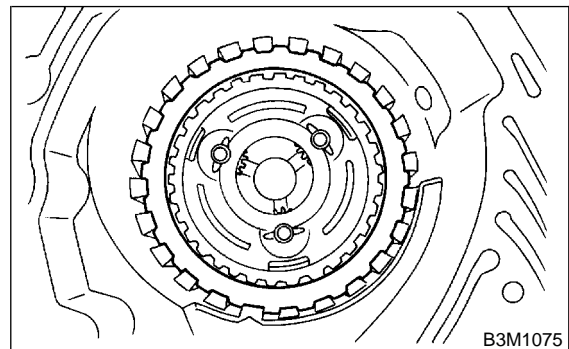
19) Install planetary gear and low clutch assembly to transmission case.

Install carefully while rotating the low clutch and planetary gear assembly slowly paying special attention not to damage the seal ring.



20) Installation of the 2-4 brake:

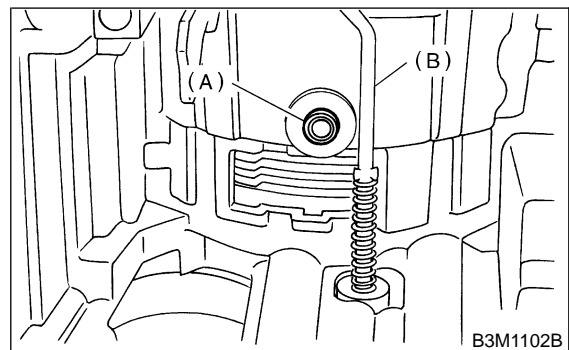
(1) Install pressure plate, drive plate, driven plate, retaining plate and snap ring.



(2) Install 2-4 brake oil seal to transmission case.

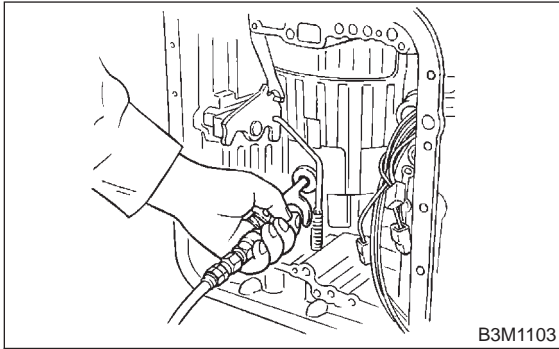
**NOTE:**

Be sure to use a new one.



- (A) 2-4 brake oil seal
- (B) Parking pawl

(3) After all 2-4 brake component parts have been installed, blow in air intermittently and confirm the operation of the brake.



(4) Measure the clearance between the retaining plate and the snap ring.

**NOTE:**

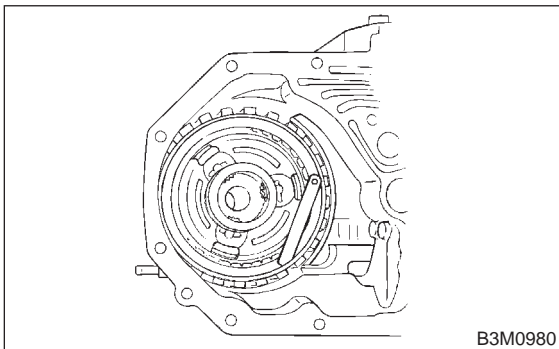
Select a retaining plate with a suitable value from the following table, so that the clearance becomes the standard value.

**Standard value:**

**0.8 — 1.2 mm (0.031 — 0.047 in)**

**Allowable limit:**

**1.5 mm (0.059 in)**

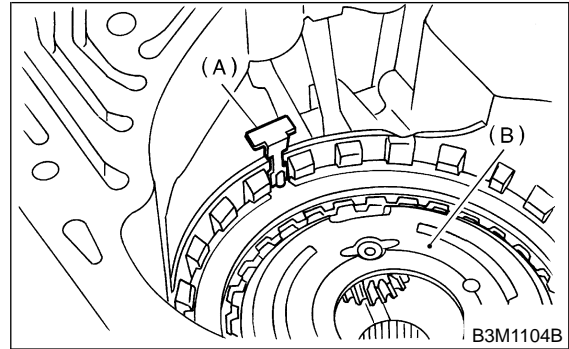


Available retaining plates	
Part No.	Thickness mm (in)
31567AA610	5.6 (0.220)
31567AA620	5.8 (0.228)
31567AA630	6.0 (0.236)
31567AA640	6.2 (0.244)
31567AA650	6.4 (0.252)
31567AA660	6.6 (0.260)

21) Install leaf spring of 2-4 brake.

**NOTE:**

Be careful not to mistake the location of the leaf spring to be inserted.

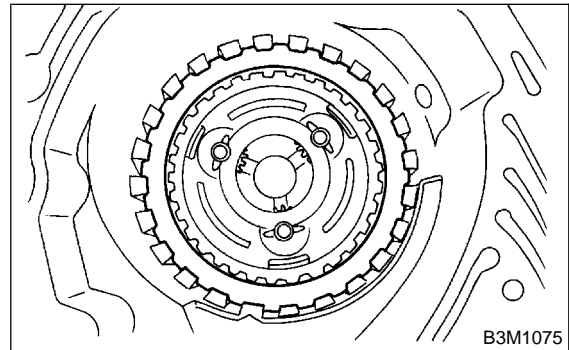


- (A) Leaf spring
- (B) Planetary gear ASSY and low clutch ASSY

22) Install thrust needle bearing.

**NOTE:**

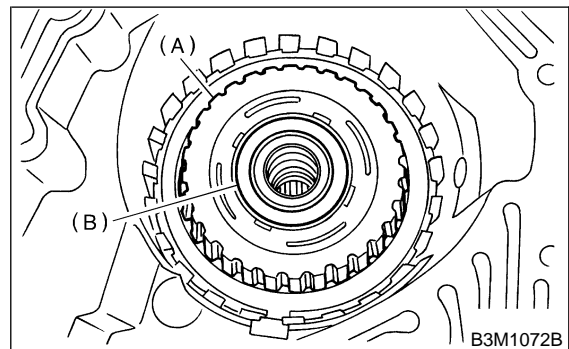
Install thrust needle bearing in the correct direction. <Ref. to 3-2 [S1200].>



23) Install front sun gear and thrust needle bearing.

**NOTE:**

Install thrust needle bearing in the correct direction. <Ref. to 3-2 [S1200].>



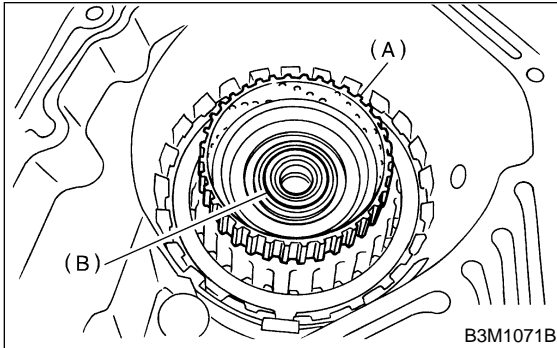
- (A) Front sun gear
- (B) Thrust needle bearing

24) Install the high clutch hub and thrust needle bearing.

Attach the thrust needle bearing to the hub with vaseline and install the hub by correctly engaging the splines of the front planetary carrier.

**NOTE:**

Install thrust needle bearing in the correct direction. <Ref. to 3-2 [S1200].>

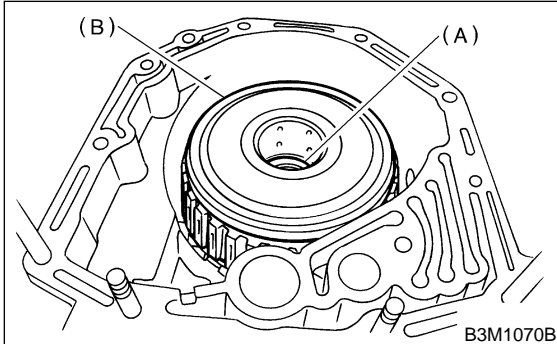


- (A) High clutch hub
- (B) Thrust needle bearing

25) Install the high clutch assembly.

**NOTE:**

Correctly engage the high clutch hub and clutch splines.

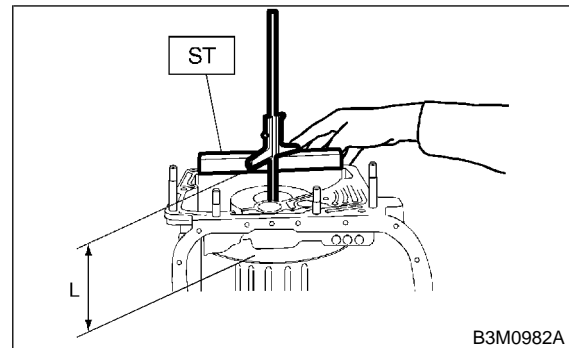


- (A) Thrust needle bearing
- (B) High clutch and reverse clutch ASSY

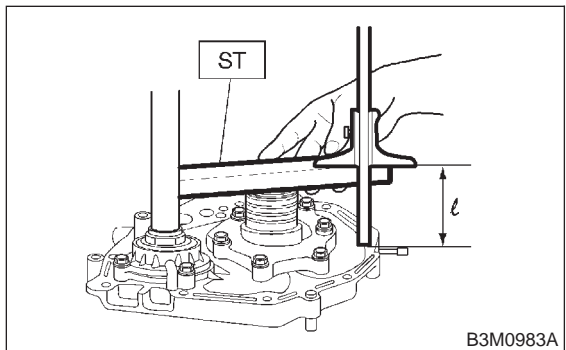
26) Adjustment of total end play:

- (1) Using ST, measure the distance from the transmission case mating surface to the recessed portion of the high clutch drum "L".

ST 398643600 GAUGE

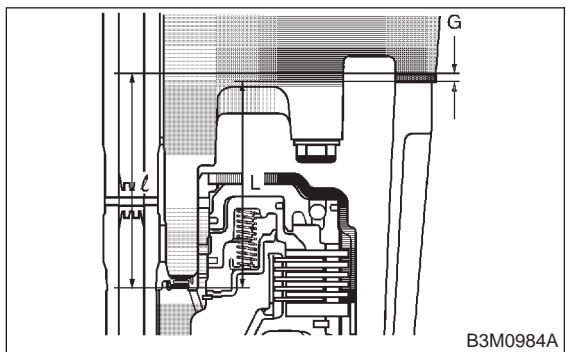


(2) Using ST, measure the distance from the oil pump housing mating surface to the top surface of the oil pump cover with thrust needle bearing.  
ST 398643600 GAUGE



(3) Calculation of total end play  
Select suitable bearing race from among those listed in this table so that clearance C is in the 0.25 — 0.55 mm (0.0098 — 0.0217 in) range.  
 $C = (L + G) - \ell$

C	Clearance between concave portion of high clutch and end of clutch drum support
L	Length from case mating surface to concave portion of high clutch
G	Gasket thickness (0.28 mm, 0.0110 in)
$\ell$	Height from housing mating surface to upper surface of clutch drum support



Thrust needle bearing	
Part No.	Thickness mm (in)
806528050	4.1 (0.161)
806528060	4.3 (0.169)
806528070	4.5 (0.177)
806528080	4.7 (0.185)
806528090	4.9 (0.193)
806528100	5.1 (0.201)

27) Install the oil pump housing assembly.  
(1) After completing end play adjustment, insert the bearing race in the recess of the high clutch. Attach the thrust needle bearing to the oil pump cover with vaseline.

(2) After correctly installing the gasket to the case mating surface, carefully install the oil pump housing assembly. Be careful to avoid hitting the drive pinion against the inside of the case.

**CAUTION:**

- Be careful not to damage the seal ring.
- Be sure to use a new gasket.

(3) Install both parts with dowel pins aligned. Make sure no clearance exists at the mating surface.

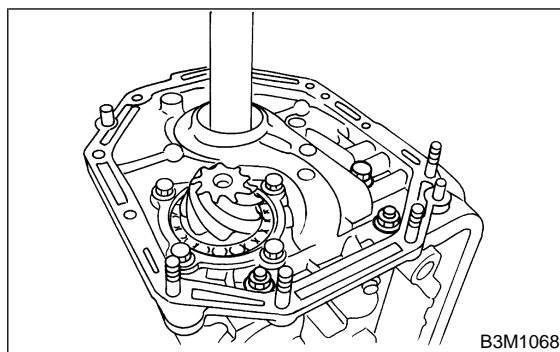
**NOTE:**

Any clearance suggests a damaged seal ring.

(4) Secure the housing with the two nuts.

**Tightening torque:**

**T: 41±3 N·m (4.2±0.3 kg·m, 30.4±2.2 ft·lb)**

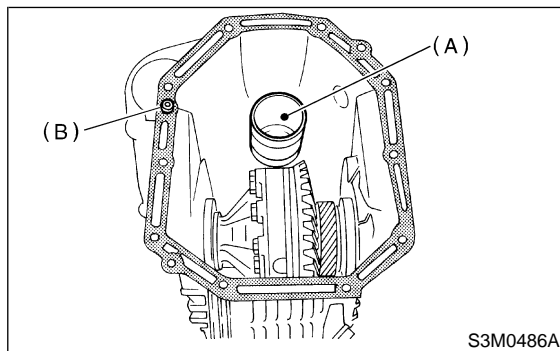


**3. TORQUE CONVERTER CLUTCH CASE AND TRANSMISSION CASE**

1) Apply proper amount of liquid gasket (THREE BOND Part No. 1215) to the entire torque converter clutch case mating surface.

**NOTE:**

Make sure that the rubber seal and seal pipe are fitted in position.



- (A) Seal pipe
- (B) Rubber seal

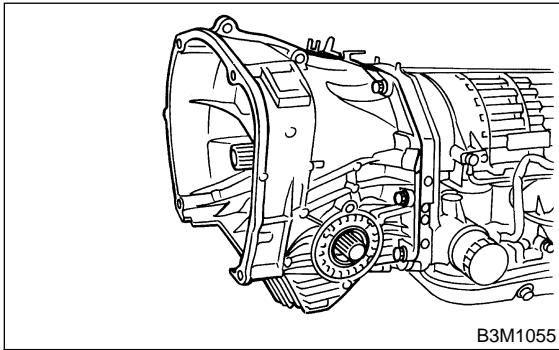
2) Install the torque converter clutch case assembly to the transmission case assembly, and secure with six bolts and four nuts.

**CAUTION:**

When installing, be careful not to damage the torque converter clutch case bushing and oil seal.

**Tightening torque:**

$41 \pm 3 \text{ N}\cdot\text{m}$  ( $4.2 \pm 0.3 \text{ kg}\cdot\text{m}$ ,  $30.4 \pm 2.2 \text{ ft}\cdot\text{lb}$ )

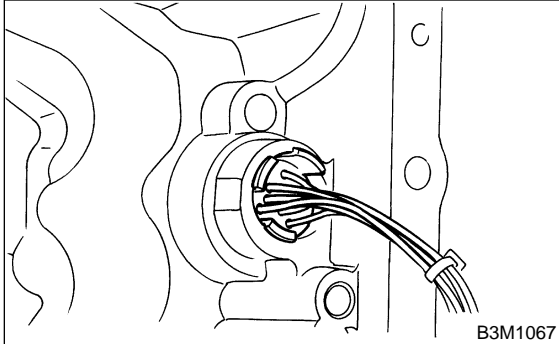


**4. CONTROL VALVE AND OIL PAN**

1) Install and route the transmission harness.

**CAUTION:**

Be careful not to damage the harness.



2) Install the control valve assembly.

(1) Set the select lever in range "N".

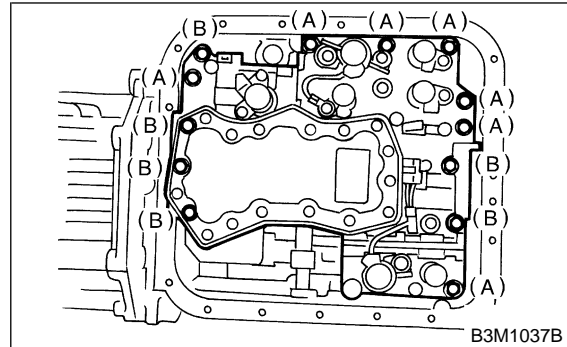
(2) Install the control valve by engaging the manual valve and manual level, then tighten the seventeen bolts.

**CAUTION:**

Tighten the control valve mounting bolts evenly.

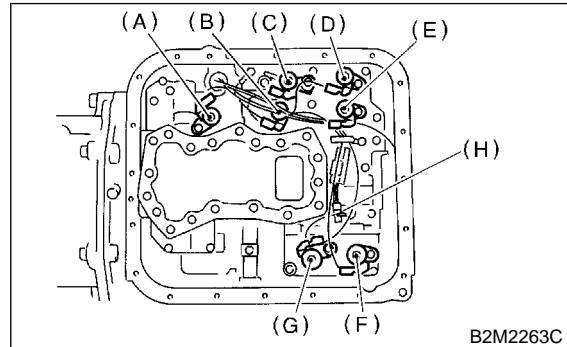
**Tightening torque:**

$8 \pm 1 \text{ N}\cdot\text{m}$  ( $0.8 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $5.8 \pm 0.7 \text{ ft}\cdot\text{lb}$ )



- (A) Short bolts
- (B) Long bolts

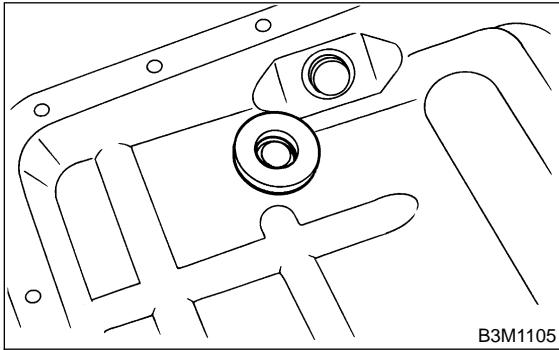
3) Connect all connectors.



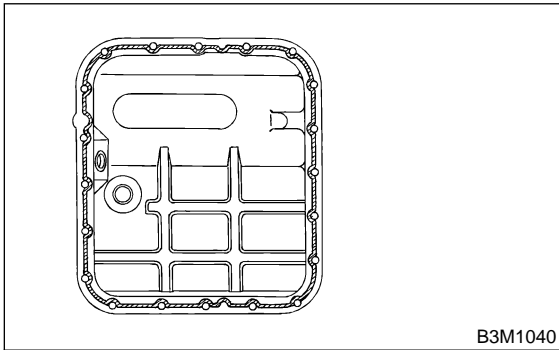
- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Transmission ground
- (D) Line pressure duty solenoid (Red)
- (E) Shift solenoid 2 (Yellow)
- (F) Shift solenoid 1 (Green)
- (G) 2-4 brake timing solenoid (Black)
- (H) 2-4 brake duty solenoid (Red)
- (I) ATF temperature sensor



- 4) Install the oil pan.  
 (1) Attach the magnet at the specified position.



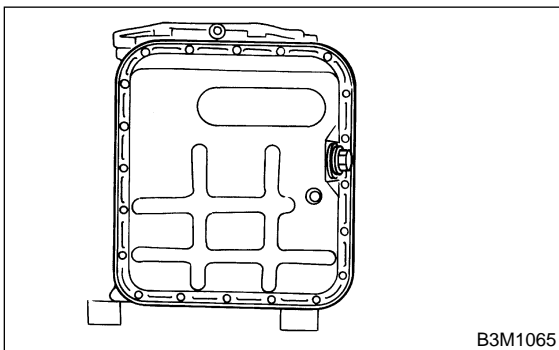
- (2) Apply proper amount of liquid gasket (THREE BOND Part No. 1217B) to the entire oil pan mating surface.



- (3) Install the oil pan to the transmission case assembly, and secure with the twenty bolts.

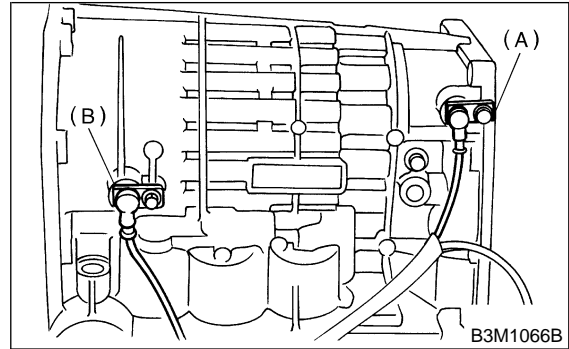
NOTE:  
Tighten the bolts evenly.

**Tightening torque:**  
 $4.9 \pm 0.5 \text{ N-m}$  ( $0.50 \pm 0.05 \text{ kg-m}$ ,  $3.6 \pm 0.4 \text{ ft-lb}$ )



- 5) Install torque converter turbine speed sensor and vehicle speed sensor 2 (front).

**Tightening torque:**  
 $7 \pm 1 \text{ N-m}$  ( $0.7 \pm 0.1 \text{ kg-m}$ ,  $5.1 \pm 0.7 \text{ ft-lb}$ )



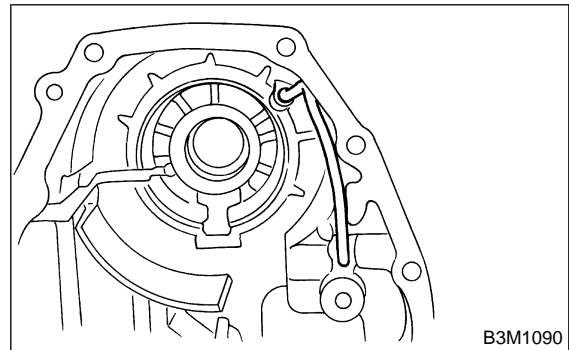
- (A) Vehicle speed sensor 2 (front)  
 (B) Torque converter turbine speed sensor

### 5. EXTENSION SECTION

NOTE:  
When installing new oil seal into extension case, press it with ST.

ST 498057300 INSTALLER

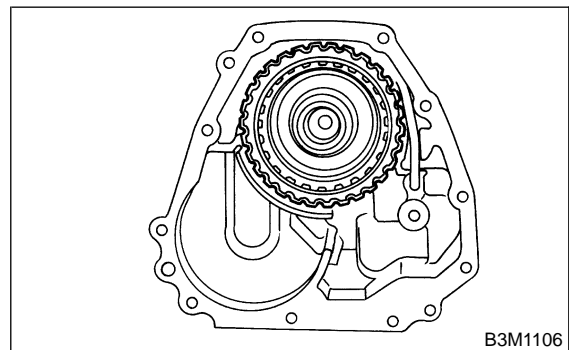
- 1) Install the transfer pipe to extension case.



- 2) Install the transfer clutch assembly to the case.

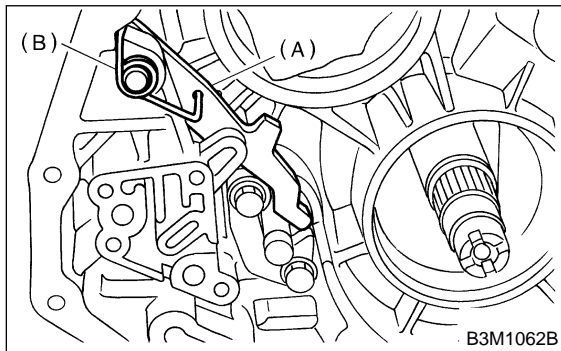
**CAUTION:**  
 Be careful not to damage the seal rings.

NOTE:  
Insert the clutch assembly fully into position until the bearing shoulder bottoms.



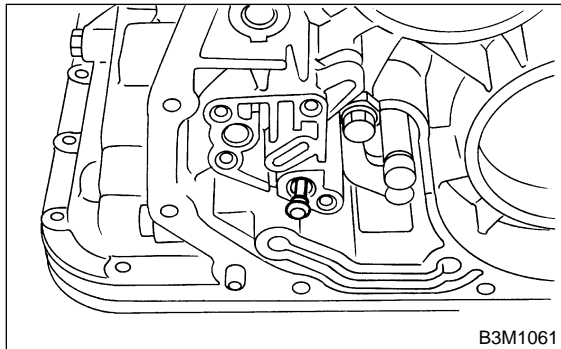
6. CONNECTION OF EACH SECTION

1) Install the parking pawl, shaft and return spring.



(A) Parking pawl  
(B) Return spring

2) Install inlet filter to transmission case.



B3M1061

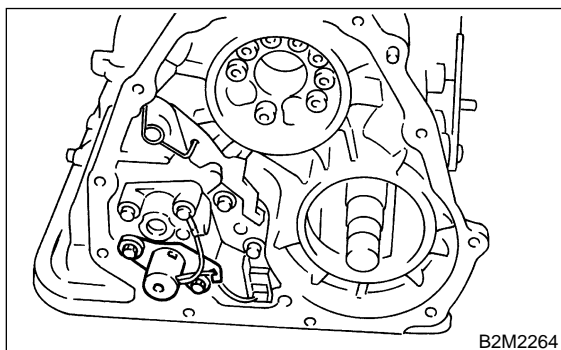
3) Install transfer valve plate, valve body and transfer duty solenoid to transmission case.

**CAUTION:**

- Be sure to install transfer seal lip to transfer control valve body.
- If transfer seal lip is damaged, replace seal with new one.

**Tightening torque:**

**$8 \pm 1 \text{ N}\cdot\text{m}$  ( $0.8 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $5.8 \pm 0.7 \text{ ft}\cdot\text{lb}$ )**



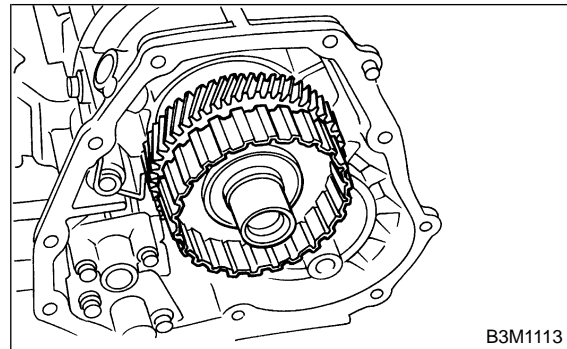
B2M2264

4) Connect connector to transfer duty solenoid.

5) Install the reduction drive gear assembly.

**NOTE:**

Insert it fully into position until the bearing shoulder bottoms.



B3M1113

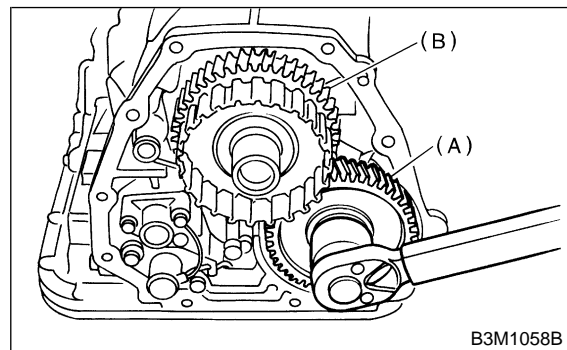
6) Using a plastic hammer, install reduction driven gear assembly, and tighten drive pinion lock nut.

**NOTE:**

- Be sure to use a new lock nut and a washer.
- Set the select lever in the "P" range.
- After tightening, stake the lock nut securely.

**Tightening torque:**

**$98 \pm 5 \text{ N}\cdot\text{m}$  ( $10.0 \pm 0.5 \text{ kg}\cdot\text{m}$ ,  $72.3 \pm 3.6 \text{ ft}\cdot\text{lb}$ )**



B3M1058B

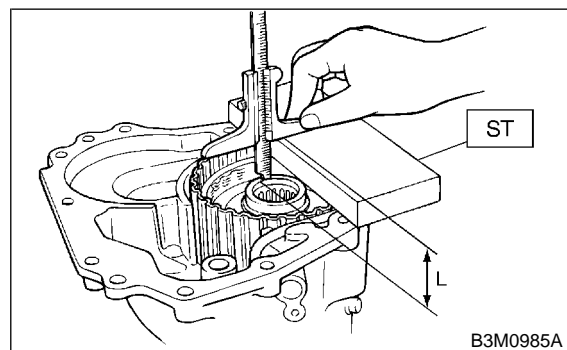
(A) Reduction driven gear  
(B) Reduction drive gear

7) Measurement and adjustment of extension end play

(1) Measure distance L from end of extension case and rear drive shaft with ST.

ST 398643600 GAUGE

L = Measured value - 15 mm



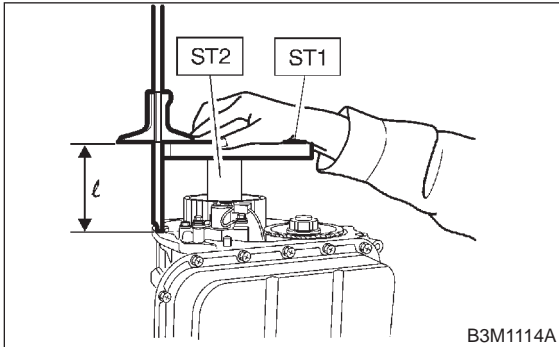
B3M0985A

(2) Measure the distance “ℓ” from the transmission case mating surface to the reduction drive gear end surface with ST1 and ST2.

ℓ = Measured value – 50 mm

ST1 398643600 GAUGE

ST2 499577000 GAUGE



(3) Calculation equation:

**NOTE:**

Add 0.05 mm (0.0020 in) and 0.20 mm (0.0079 in) thick shims to area “T”. Calculate formula 2 to determine “H”. The calculated “H” refers to the shim thickness range. Select shims of suitable thicknesses within the calculated “H” range.

$$T = (L + G) - \ell - H$$

T : Shim clearance

L : Distance from end of extension case to end of rear drive shaft

G: Gasket thickness (0.45 mm, 0.0177 in)

ℓ : Height from end of transmission case to end of reduction drive gear

H : Thrust needle bearing thickness

0.05 — 0.25 mm (0.0020 — 0.0098 in)

Thrust needle bearing	
Part No.	Thickness mm (in)
806536020	3.8 (0.150)
806535030	4.0 (0.157)
806535040	4.2 (0.165)
806535050	4.4 (0.173)
806535060	4.6 (0.181)
806535070	4.8 (0.189)
806536090	5.0 (0.197)

8) Installation of extension case and transmission case

(1) Attach the selected thrust needle bearing to the end surface of reduction drive gear with vaseline.

**NOTE:**

Install thrust needle bearing in the correct direction. <Ref. to 3-2 [S1200].>

(2) Install the extension case to the transmission case.

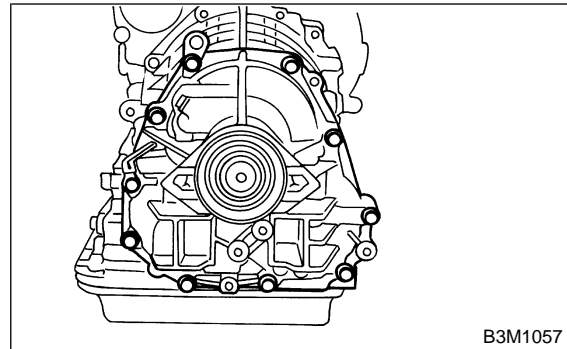
**CAUTION:**

Be sure to use a new gasket.

(3) Tighten bolts to secure the case.

**Tightening torque:**

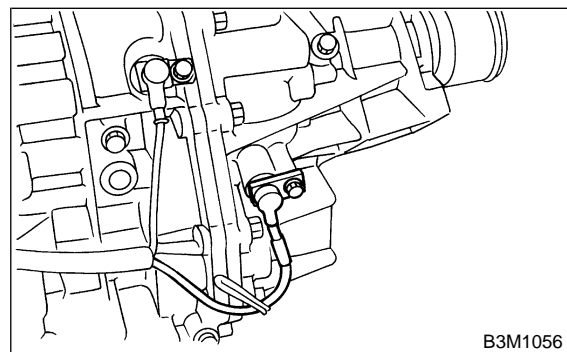
25±2 N·m (2.5±0.2 kg·m, 18.1±1.4 ft·lb)



9) Install the vehicle speed sensor 1 (rear).

**Tightening torque:**

7±1 N·m (0.7±0.1 kg·m, 5.1±0.7 ft·lb)



7. EXTERNAL PARTS

1) Using ST, install ATF filter to transmission case. Calculate ATF filter torque specifications using the following formula.

$$T_2 = L_2 / (L_1 + L_2) \times T_1$$

T<sub>1</sub>: 14±2 N·m (1.4±0.2 kg-m, 10.1±1.4 ft-lb)

[Required torque setting]

T<sub>2</sub>: Tightening torque

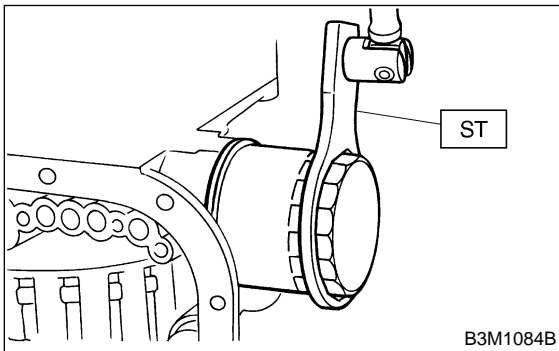
L<sub>1</sub>: ST length 0.078 m (3.07 in)

L<sub>2</sub>: Torque wrench length

**CAUTION:**

**Align ST with torque wrench while tightening ATF filter.**

ST 498545400 OIL FILTER WRENCH



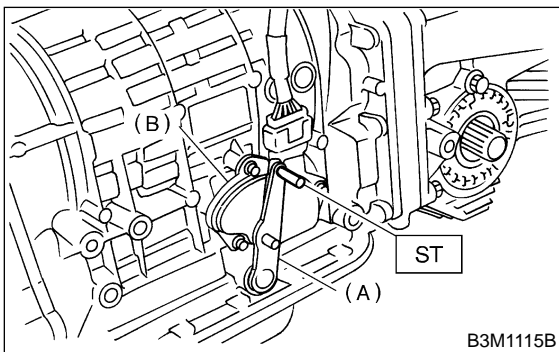
2) Adjustment of inhibitor switch

(1) With the select lever set to "N" adjust the inhibitor switch so that the hole of range select lever is aligned with the inhibitor switch hole with ST.

**NOTE:**

Ensure that gauge moves properly.

ST 499267300 STOPPER PIN



(A) Range select lever

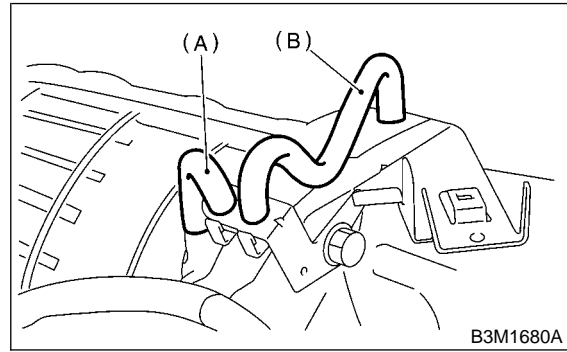
(B) Inhibitor switch

(2) With hole aligned, tighten the three bolts to secure the inhibitor switch.

**Tightening torque:**

**3.4±0.5 N·m (0.35±0.05 kg-m, 2.5±0.4 ft-lb)**

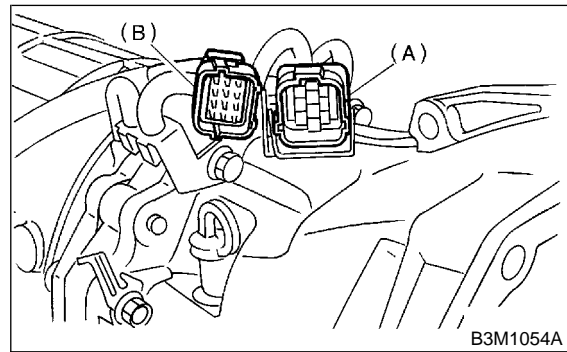
3) Install air breather hose.



(A) Air breather hose (Transmission case)

(B) Air breather hose (Oil pump housing)

4) Insert inhibitor switch harness and transmission harness connector into stay.



(A) Transmission harness

(B) Inhibitor switch harness

5) Install the oil cooler outlet pipe.

**CAUTION:**

**Be sure to use a new aluminum washer.**

**Tightening torque:**

**44±4 N·m (4.5±0.4 kg-m, 32.5±2.9 ft-lb)**

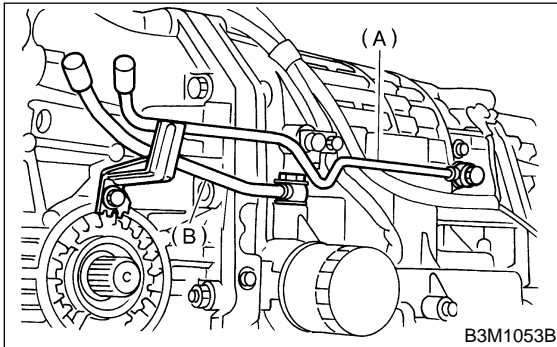
6) Install the oil cooler inlet pipe.

**CAUTION:**

Be sure to use a new aluminum washer.

**Tightening torque:**

$25 \pm 2 \text{ N}\cdot\text{m}$  ( $2.5 \pm 0.2 \text{ kg}\cdot\text{m}$ ,  $18.1 \pm 1.4 \text{ ft}\cdot\text{lb}$ )



- (A) Inlet pipe  
(B) Outlet pipe

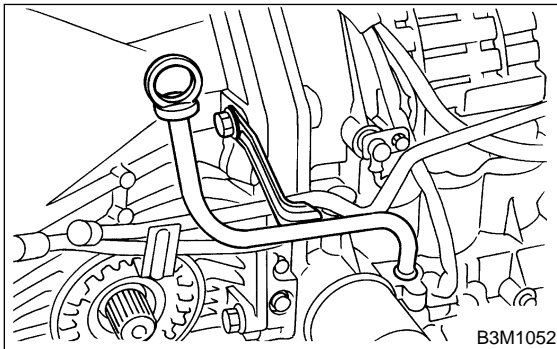
7) Install the oil charge pipe.

**CAUTION:**

Be careful not to damage the O-ring.

**Tightening torque:**

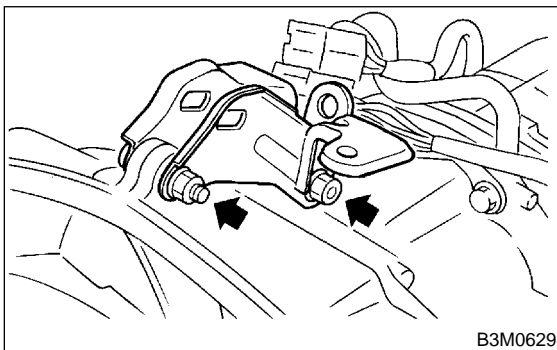
$41 \pm 3 \text{ N}\cdot\text{m}$  ( $4.2 \pm 0.3 \text{ kg}\cdot\text{m}$ ,  $30.4 \pm 2.2 \text{ ft}\cdot\text{lb}$ )



8) Install the pitching stopper bracket.

**Tightening torque:**

$41 \pm 3 \text{ N}\cdot\text{m}$  ( $4.2 \pm 0.3 \text{ kg}\cdot\text{m}$ ,  $30.4 \pm 2.2 \text{ ft}\cdot\text{lb}$ )



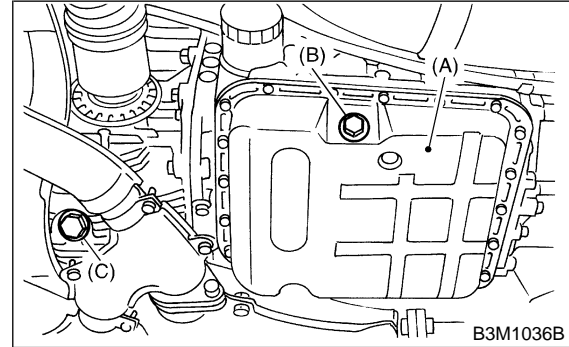
9) Tighten the drain plugs.

**Tightening torque:****Diff.**

$44 \pm 3 \text{ N}\cdot\text{m}$  ( $4.5 \pm 0.3 \text{ kg}\cdot\text{m}$ ,  $32.5 \pm 2.2 \text{ ft}\cdot\text{lb}$ )

**ATF**

$25 \pm 2 \text{ N}\cdot\text{m}$  ( $2.5 \pm 0.2 \text{ kg}\cdot\text{m}$ ,  $18.1 \pm 1.4 \text{ ft}\cdot\text{lb}$ )



- (A) Oil pan  
(B) Drain plug  
(C) Differential oil drain plug

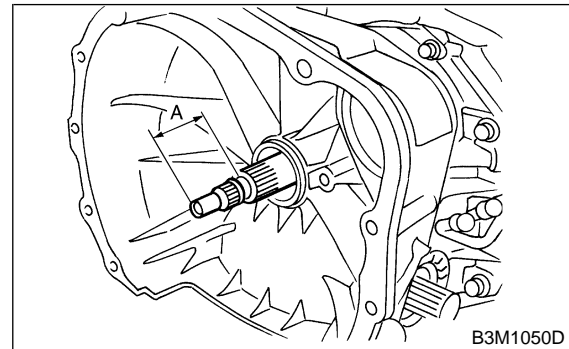
10) Insert the input shaft while turning lightly by hand.

**CAUTION:**

Be careful not to damage the bushing.

**Normal protrusion A:**

$50 - 55 \text{ mm}$  ( $1.97 - 2.17 \text{ in}$ )



11) Install the torque converter clutch assembly.

- (1) Install the oil pump shaft to the torque converter clutch.

**NOTE:**

Make sure the clip fits securely in its groove.

- (2) Holding the torque converter clutch assembly by hand, carefully install it to the torque converter clutch case. Be careful not to damage the bushing. Also avoid undue contact between the oil pump shaft bushing and stator shaft portion of the oil pump cover.

(3) Rotate the shaft lightly by hand to engage the splines securely.

**Dimension A:**

**2.7 — 2.9 mm (0.106 — 0.114 in)**

