

## REASSEMBLY

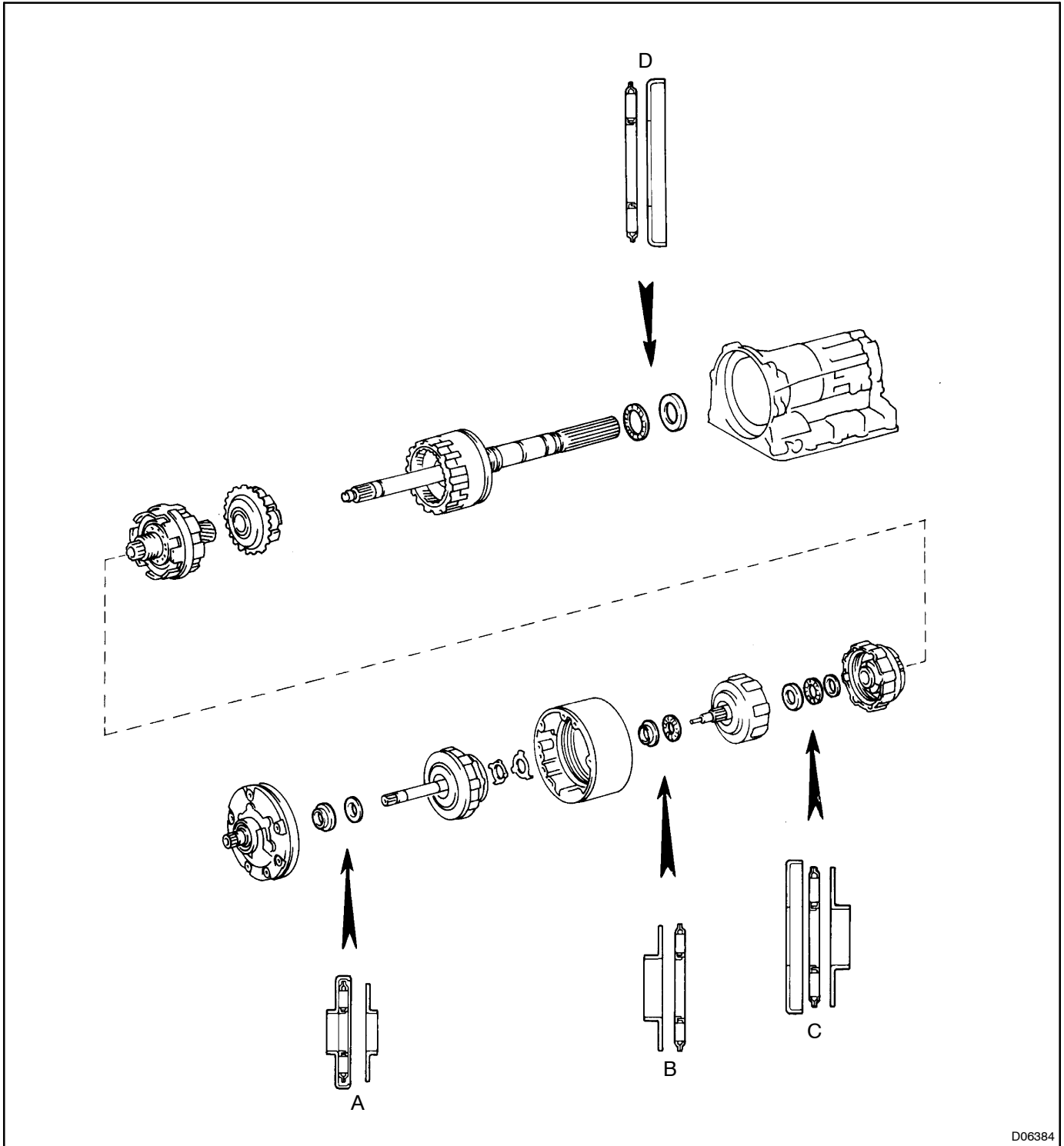
### NOTICE:

- The automatic transmission is composed of highly precision-finished parts, necessitating careful inspection before reassembly because even a small nick could cause fluid leakage or affect the performance. The instructions here are organized so that you work on only one component group at a time. This will help avoid confusion from similar-looking parts of different sub-assemblies being on your workbench at the same time. The component groups are inspected and repaired from the converter housing side. As much as possible, complete the inspection, repair and reassembly before proceeding to the next component group. If a defect is found in a certain component group during reassembly, inspect and repair this group immediately. If a component group cannot be assembled because parts are being ordered, be sure to keep all parts of the group in a separate container while proceeding with disassembly, inspection, repair and reassembly of other component groups.

**Recommended ATF: TYPE T-IV or equivalent**

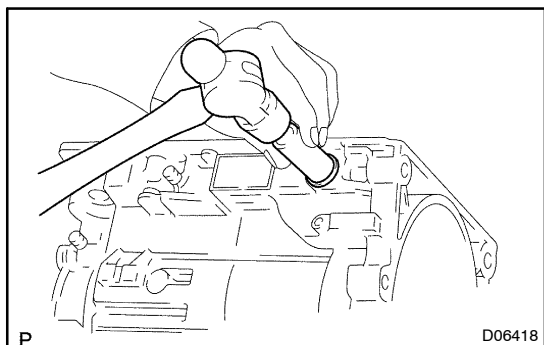
- All disassembled parts should be washed clean and any fluid passages and holes should be blown through with compressed air.
- Dry all parts with compressed air—never use shop rags.
- When using compressed air, always aim away from yourself to prevent accidentally spraying ATF or kerosene on your face.
- The recommended automatic transaxle fluid or kerosene should be used for cleaning.
- After cleaning, the parts should be arranged in the correct order for efficient inspection, repairs, and reassembly.
- When disassembling a valve body, be sure to match each valve together with the corresponding spring.
- New discs for the brakes and clutches that are to be used for replacement must be soaked in ATF for at least 15 minutes before reassembly.
- All oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces should be coated with ATF prior to reassembly.
- All gaskets and rubber O-rings should be replaced.
- Do not apply adhesive cements to gaskets and similar parts.
- Make sure that the ends of a snap ring are not aligned with one of the cutouts and are installed in the groove correctly.
- If a worn bushing is to be replaced, the sub-assembly containing the bushing must also be replaced.
- Check thrust bearings and races for wear or damage. Replace if necessary.
- Use petroleum jelly to keep parts in place.
- When working with FIPG material, you must observe the following.  
Using a razor blade and a gasket scraper, remove all the old packing (FIPG) material from the gasket surface.  
Thoroughly clean all components to remove all the loose material.  
Clean both sealing surfaces with a non-residue solvent.  
Parts must be reassembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

**BEARING AND RACES INSTALLATION POSITION AND DIRECTION**



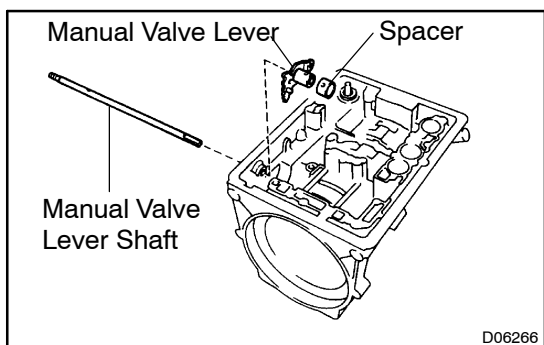
D06384

Mark	Front Race Diameter Inside / Outside mm (in.)	Thrust Bearing Diameter Inside / Outside mm (in.)	Rear Race Diameter Inside / Outside mm (in.)
A	-	24.3 (0.957) / 43.2 (1.701)	24.3 (0.957) / 39.1 (1.539)
B	24.1 (0.949) / 37.3 (1.469)	23.4 (0.921) / 37.5 (1.476)	-
C	30.1 (1.185) / 48.5 (1.909)	28.4 (1.118) / 46.4 (1.827)	27.6 (1.087) / 44.5 (1.752)
D	-	38.2 (1.504) / 55.2 (2.173)	39.2 (1.543) / 57.5 (2.264)

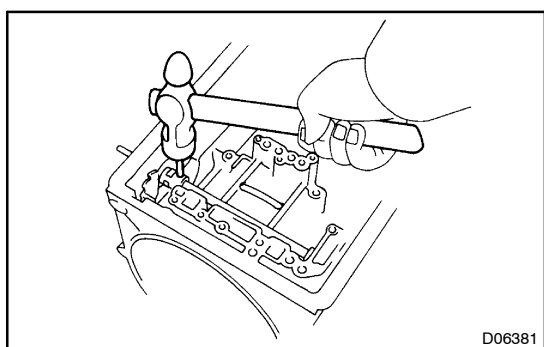


## 1. INSTALL MANUAL VALVE LEVER, SHAFT AND OIL SEAL

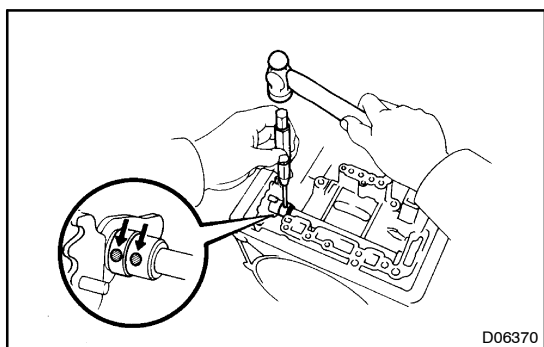
- (a) Using SST, drive in 2 new oil seals as far as they will go. SST 09350-20015 (09361-30011)
- (b) Coat the oil seal lips with MP grease.



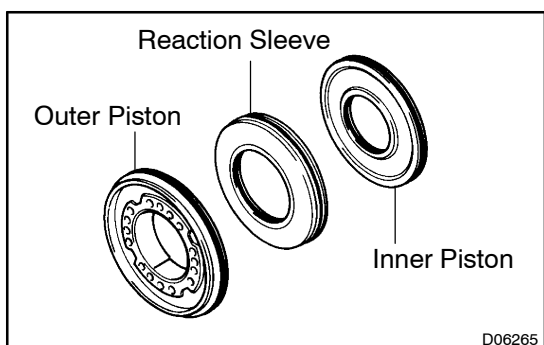
- (c) Assembled a new spacer to the manual valve lever.
- (d) Install the manual valve lever shaft to the transmission case through the manual valve lever.



- (e) Drive in the pin to the shaft.



- (f) Match the spacer hole to the lever calking hollow and calk the spacer to the lever.
- (g) Make sure that the manual valve lever shaft turns smoothly.



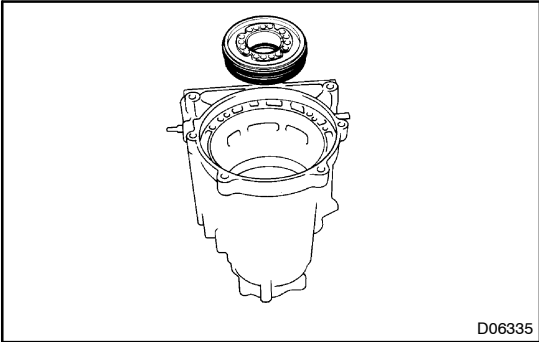
## 2. INSTALL COMPONENTS OF NO. 3 BRAKE PISTON

- (a) Coat 5 new O-rings to the inner piston, reaction sleeve and outer piston.

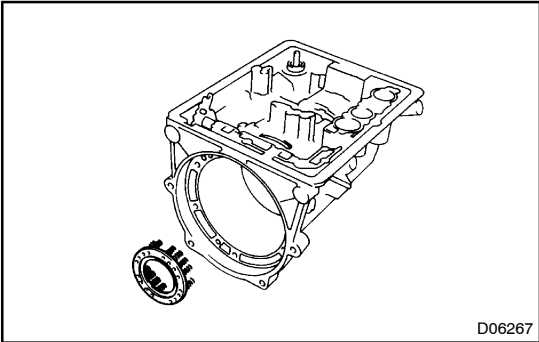
### NOTICE:

**The thinner O-ring goes on the outside of the reaction sleeve.**

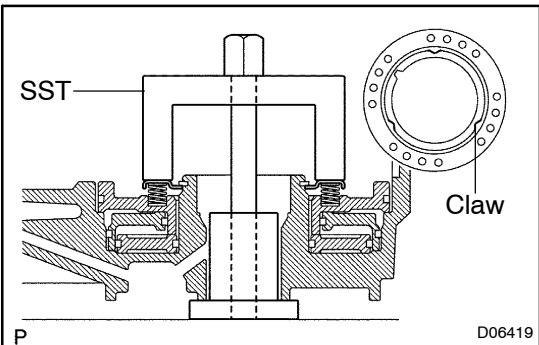
- (b) Assemble the inner piston, reaction sleeve and outer piston.



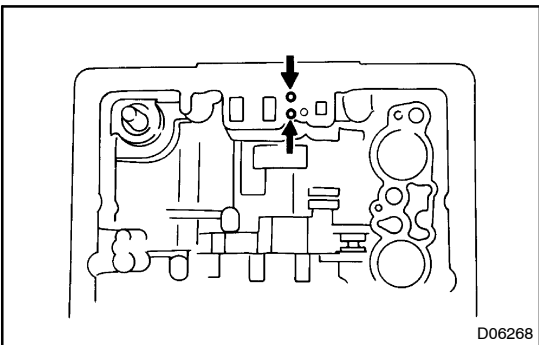
- (c) Stand up the transmission case.
- (d) Being careful not to damage the O-rings, press in the assembled pistons into the transmission case with hand.



- (e) Place the piston return spring onto the outer piston.

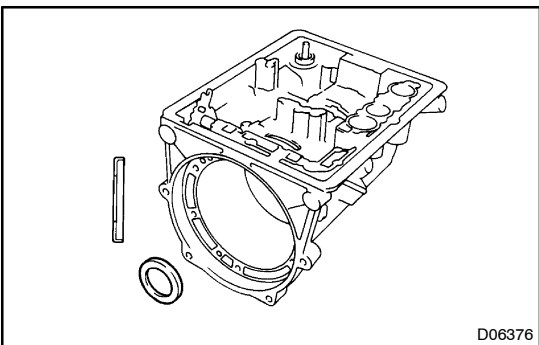


- (f) Set SST as shown, and compress the return springs with SST.  
SST 09350-20015 (09369-20040)
- (g) Install the snap ring with a snap ring expander. Be sure that the end gap of the snap ring is not aligned with the spring seat claw.



**3. CHECK NO. 3 BRAKE PISTONS MOVING**

Make sure that the No. 3 brake pistons move smoothly when applying and releasing the compressed air into the transmission case.

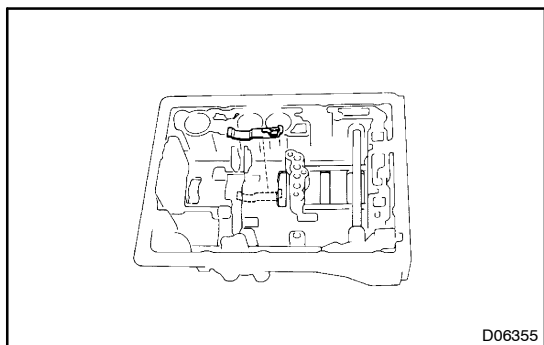


**4. INSTALL RACE**

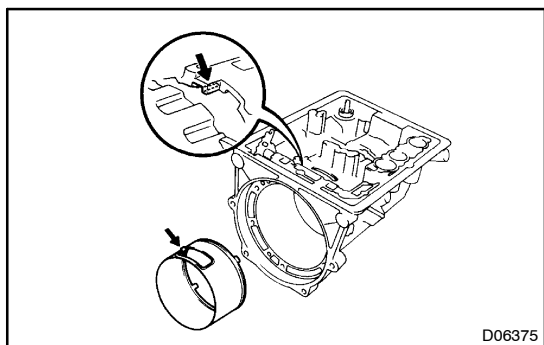
Coat the race with petroleum jelly and install it onto the transmission case.

**Race diameter:**

	Inside mm (in.)	Outside mm (in.)
Race	39.2 (1.543)	57.5 (2.264)



**5. INSTALL LEAF SPRING**

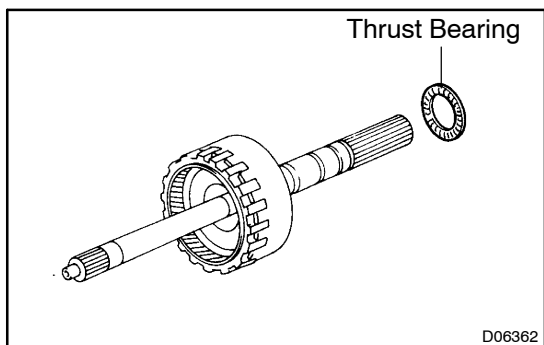


**6. INSTALL BREAK APPLY PIPE**

Install the pipe, aligning its locking tab with the cutout of the case.

**HINT:**

Make sure that the lips of the pipe end are completely inserted into the outer piston.

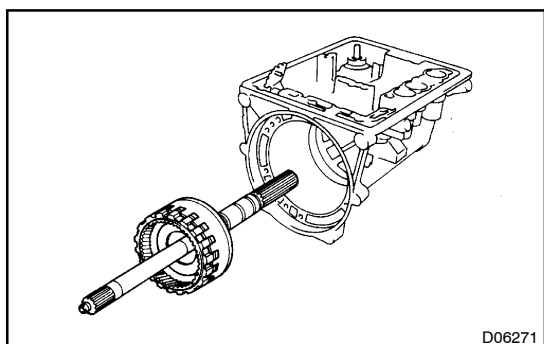


**7. INSTALL REAR PLANETARY GEAR UNIT AND OUTPUT SHAFT**

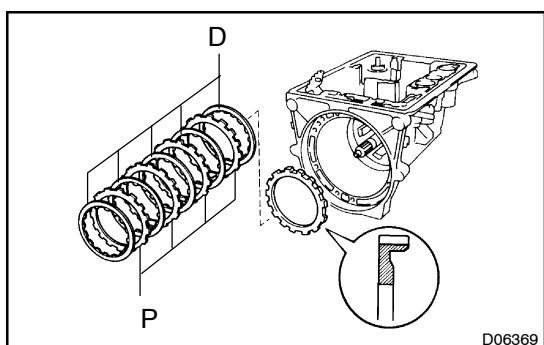
- (a) Coat the bearing with petroleum jelly and install them onto the rear planetary gear unit.

**Bearing diameter:**

	Inside mm (in.)	Outside mm (in.)
Bearing	38.2 (1.504)	55.2 (2.173)



- (b) Install the rear planetary gear unit to the transmission case.

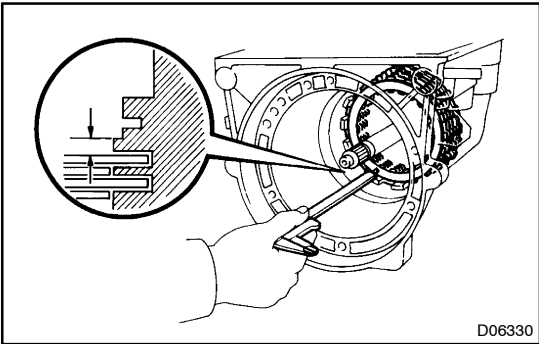


**8. INSTALL PRESSURE PLATE, DISC AND PLATE**

- (a) Install the pressure plate, the flat surface facing forward.
- (b) Install the 5 discs and 4 plates.

**Install in order: P = Plate D = Disc**

**D - P - D - P - D - P - D - P - D**



**9. CHECK PACK CLEARANCE OF NO. 3 BRAKE**

Using calipers, measure the clearance between the disc and transmission case, as shown.

**Clearance:**

**0.52 – 1.27 mm (0.0205 – 0.0500 in.)**

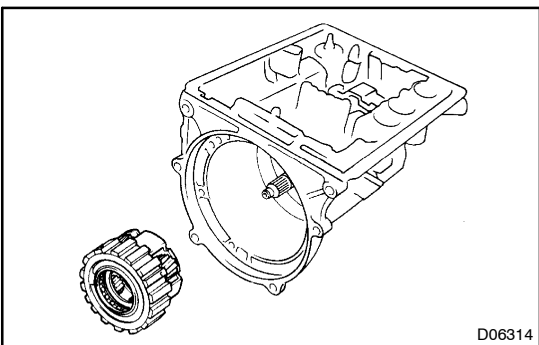
If the values are non-standard, select another flange.

**HINT:**

There are 6 different thickness for the flange.

**Flange thickness:**

No.	Thickness mm (in.)	No.	Thickness mm (in.)
-	3.00 (0.1181)	375	3.75 (0.1477)
325	3.25 (0.1280)	400	4.00 (0.1575)
350	3.50 (0.1378)	425	4.25 (0.1674)



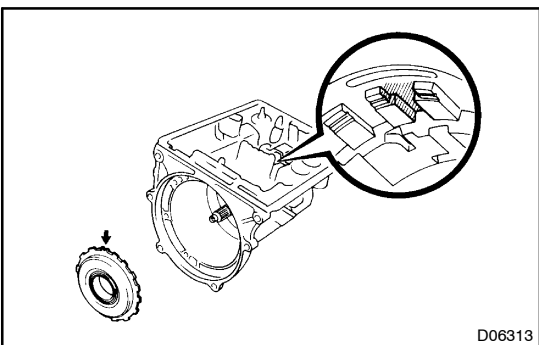
**10. INSTALL FRONT PLANETARY GEAR UNIT**

(a) Remove the one-way clutch inner race from the planetary gear unit.

(b) Install the front planetary gear unit.

**HINT:**

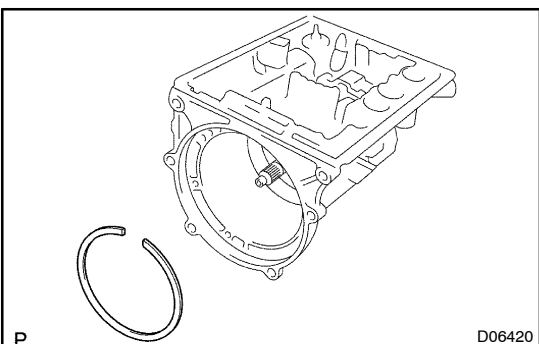
Mesh the splines of the planetary gear with the flukes of the discs by rotating and pushing the planetary gear.



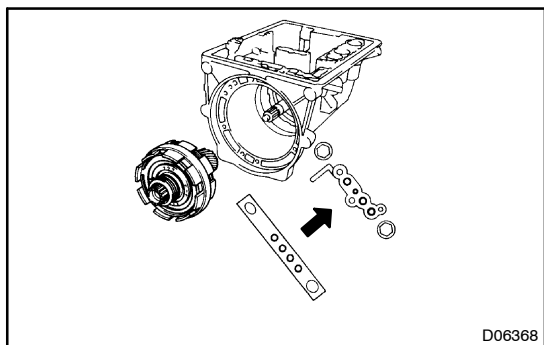
(c) Position the notched tooth of the inner race toward the valve body side of the case. Push it into place.

**HINT:**

The inner race is correctly installed if the snap rings groove is fully visible.

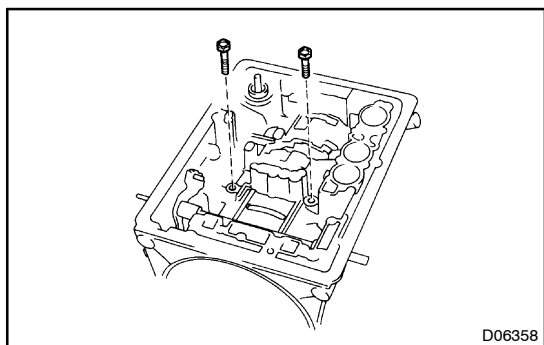


(d) Using a screwdriver, install the snap ring.



**11. INSTALL CENTER SUPPORT**

(a) Aim the bolt and oil holes of the center support toward the valve body side, and align them with the bolt and oil holes of the transmission case and insert.

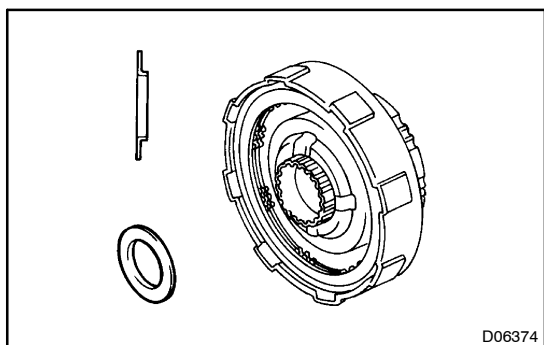


(b) Install the 2 wave washers and bolts.

HINT:

First tighten the accumulator piston side.

**Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)**

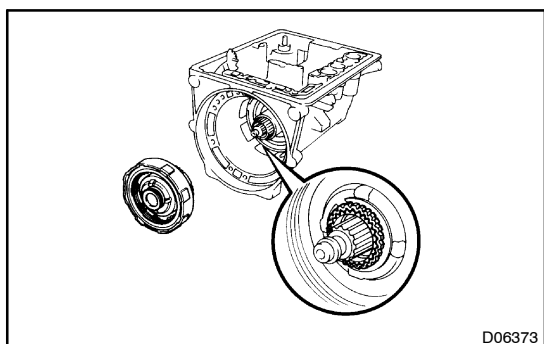


**12. INSTALL REAR CLUTCH**

(a) Coat the race with petroleum jelly and install it onto the rear clutch.

**Race diameter:**

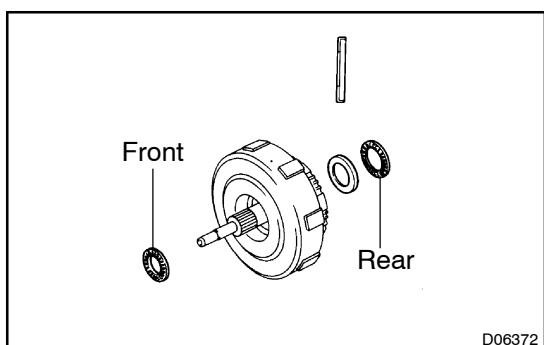
	Inside mm (in.)	Outside mm (in.)
Race	27.6 (1.087)	44.5 (1.752)



(b) Install the rear clutch.

HINT:

- Mesh the splines of the rear clutch with the flukes of the disc by rotating and pushing the rear clutch.
- If the rear clutch is fully meshed with the center support, the splined center of the clutch will be flush with the end of the sun gear shaft.

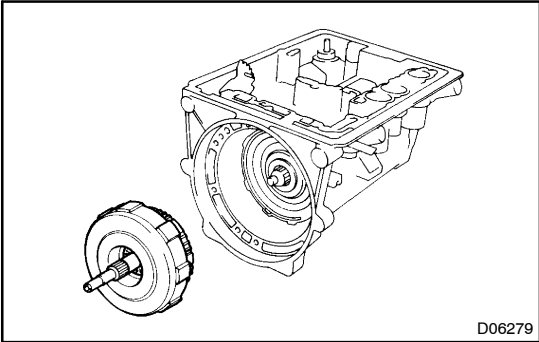


**13. INSTALL FRONT CLUTCH**

(a) Coat the bearings and race with petroleum jelly and install them onto the front clutch.

**Bearing and race diameter:**

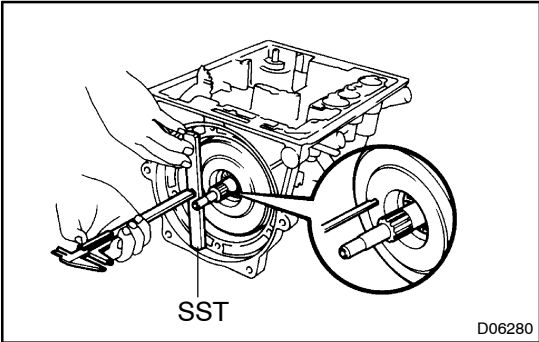
	Inside mm (in.)	Outside mm (in.)
Bearing (Front)	23.4 (0.921)	37.5 (1.476)
Race	30.1 (1.185)	48.5 (1.909)
Bearing (Rear)	28.4 (1.118)	46.4 (1.827)



(b) Install the front clutch.

HINT:

Mesh the splines of the front clutch with the flukes of the discs by rotating and pushing the front clutch.

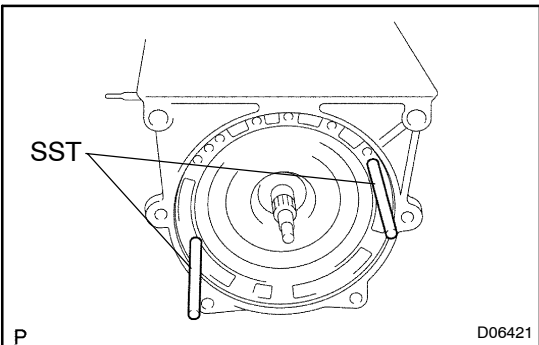


**14. MEASURE INSTALLATION DISTANCE OF FRONT CLUTCH**

(a) Place SST on the transmission case.  
SST 09350-20015 (09370-12010)

(b) Using calipers, measure the distance between the tops of SST and the clutch drum.

If the distance corresponds to that during disassembly, the front clutch is installed correctly.

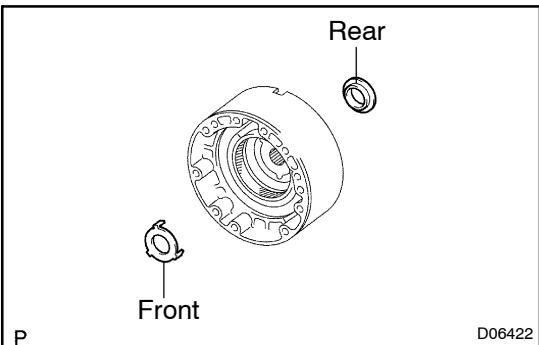


**15. INSTALL O/D CASE**

(a) Temporarily install 2 SSTs on the transmission case.  
SST 09350-20015 (09362-30011)

HINT:

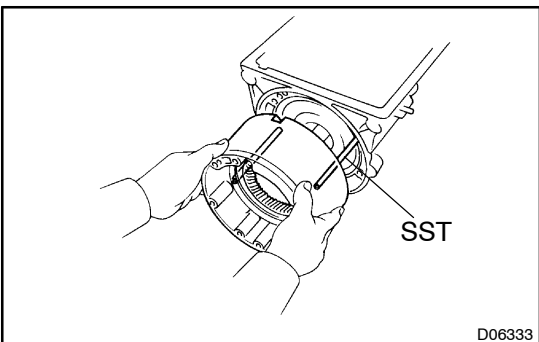
Remove the SST after installation of the oil pump.



(b) Coat the races with petroleum jelly and install them onto the O/D case.

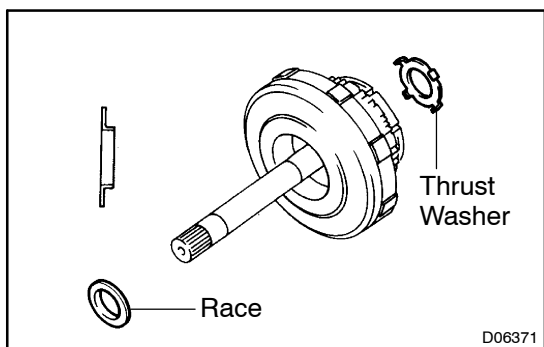
**Races diameter:**

	Inside mm (in.)	Outside mm (in.)
Race (Front)	23.0 (0.906)	48.0 (1.890)
Race (Rear)	24.1 (0.946)	37.3 (1.469)



(c) Insert the O/D case gently through the 2 guide bolts (SST) with cutout portion of the case facing the valve body side.



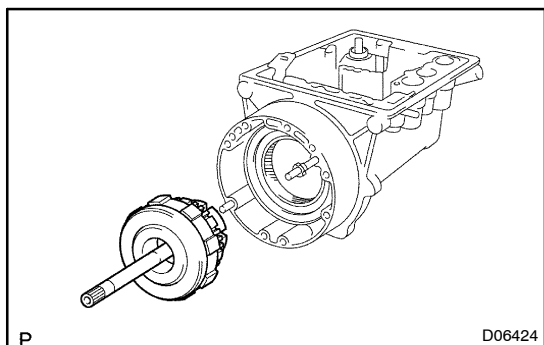


**16. INSTALL O/D PLANETARY GEAR UNIT WITH O/D DIRECT CLUTCH AND ONE-WAY CLUTCH**

- (a) Coat the thrust washer with petroleum jelly and install it onto the O/D planetary gear.
- (b) Coat the race with petroleum jelly and install it onto the O/D planetary gear.

**Race diameter:**

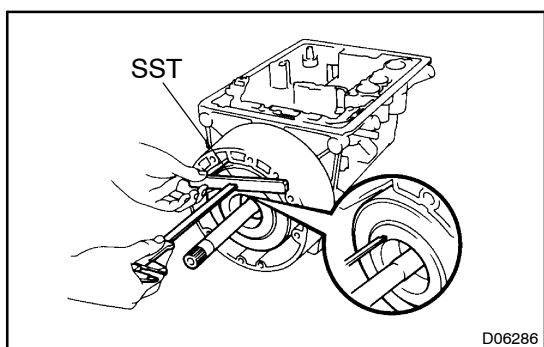
	Inside mm (in.)	Outside mm (in.)
Race	24.3 (0.957)	39.1 (1.539)



- (c) Install the O/D planetary gear with the O/D direct clutch and one-way clutch.

**HINT:**

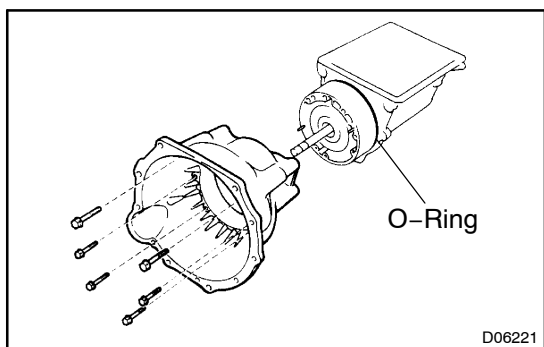
Mesh the splines of the O/D planetary gear with the flukes of the discs by rotating and pushing the O/D planetary gear.



**17. MEASURE INSTALLATION DISTANCE OF O/D DIRECT CLUTCH**

- (a) Place SST on the O/D case.  
SST 09350-20015 (09370-12010)
- (b) Using calipers, measure distance between the tops of SST and the clutch drum.

If the distance corresponds to that during disassembly, the O/D direct clutch is installed correctly.



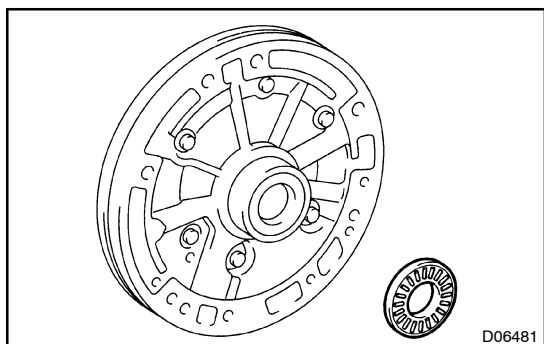
**18. INSTALL TRANSMISSION HOUSING**

- (a) Coat a new O-ring with ATF and install it around the O/D case.
- (b) Install the transmission housing and 6 bolts.
- (c) Tighten the bolts.

**Torque:**

**10 mm bolt: 34 N·m (345 kgf·cm, 25 ft·lbf)**

**12 mm bolt: 57 N·m (580 kgf·cm, 42 ft·lbf)**

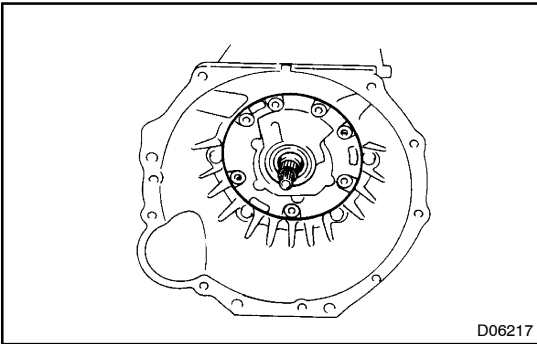


**19. INSTALL OIL PUMP**

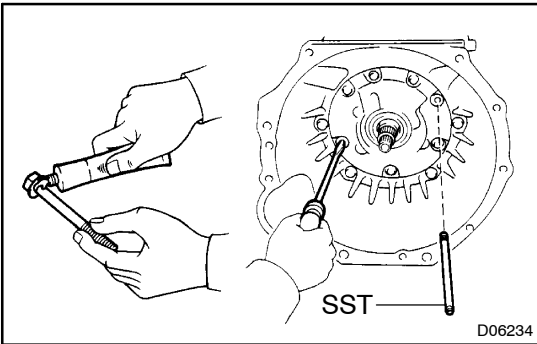
- (a) Coat the assembled bearing and race with petroleum jelly and install it onto the oil pump.

**Assembled bearing and race diameter:**

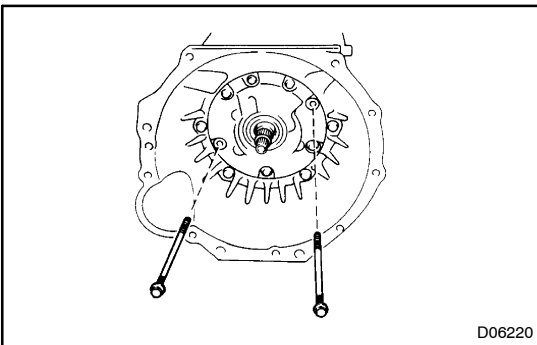
	Inside mm (in.)	Outside mm (in.)
Bearing and race	24.3 (0.957)	43.2 (1.701)



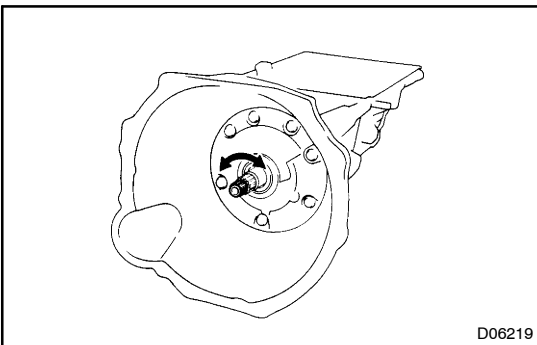
- (b) Coat a new O-ring with ATF and install it around the pump body.



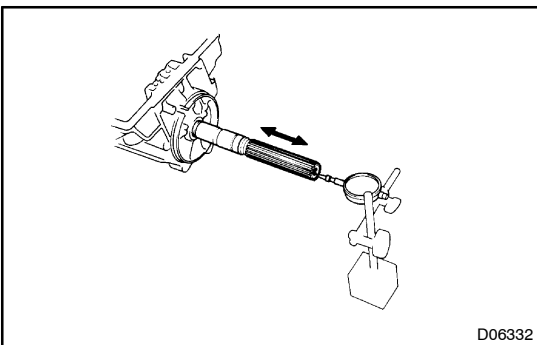
- (c) Install the oil pump gently through the 2 guide bolts (SST).
- (d) Apply sealant to the bolt heads.  
**FIG: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent**
- (e) Temporarily install the 5 bolts.
- (f) Using a screwdriver, remove the 2 SSTs.



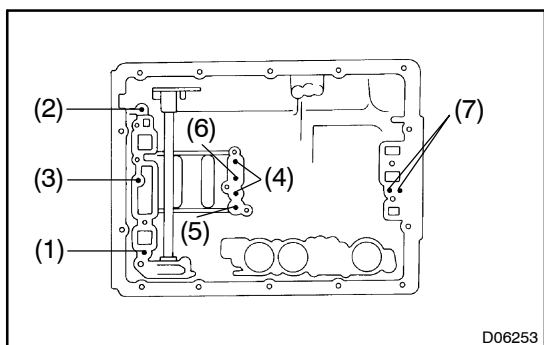
- (g) Temporarily install the 2 bolts.
- (h) Tighten the all bolts.  
**Torque: 21 N·m (215 kgf·cm, 16 ft·lbf)**



- 20. CHECK INPUT SHAFT ROTATION**  
Make sure the input shaft rotates smoothly.



- 21. CHECK OUTPUT SHAFT**
- (a) Using a dial indicator, measure the end play of the output shaft with hand.  
**End play: 0.3 - 0.9 mm (0.012 - 0.035 in.)**  
If the values are non-standard, check for an improper installation.
- (b) Check to see that output shaft rotates smoothly.

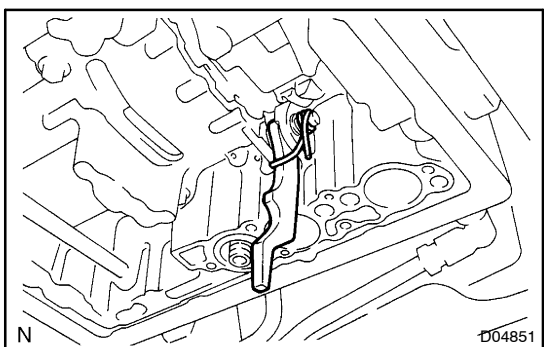


## 22. INDIVIDUAL PISTON OPERATION INSPECTION

Check for the sound of operation while applying compressed air into the oil holes indicated in the illustration.

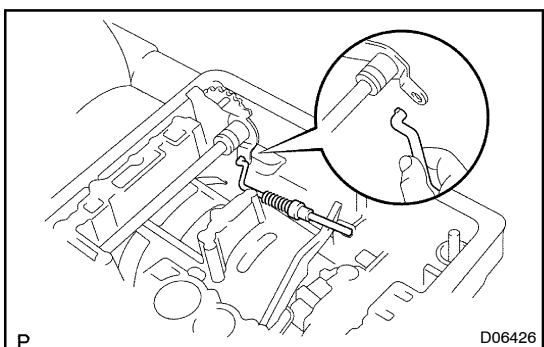
- (1) O/D direct clutch
- (2) O/D brake
- (3) Rear clutch
- (4) Front clutch
- (5) No. 1 brake
- (6) No. 2 brake
- (7) No. 3 brake

If there is no noise, disassembled and check the installation condition of the parts.

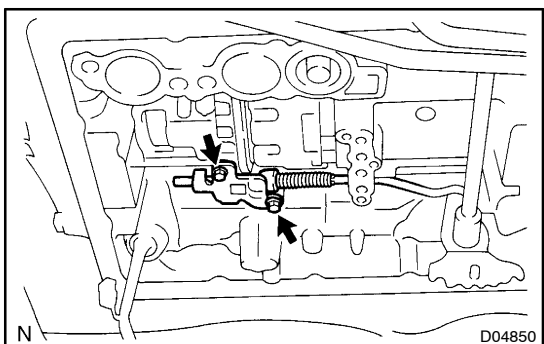


## 23. INSTALL PARKING LOCK PAWL AND ROD

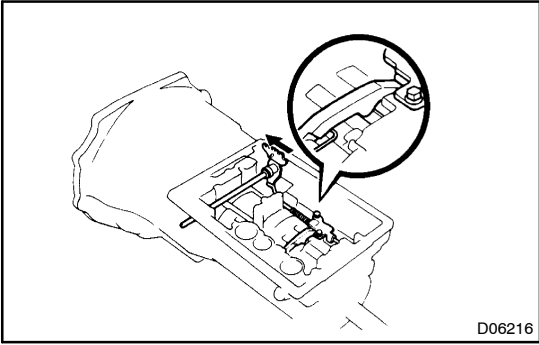
- (a) Install the E-ring to the shaft.
- (b) Install the parking lock pawl, shaft and spring.



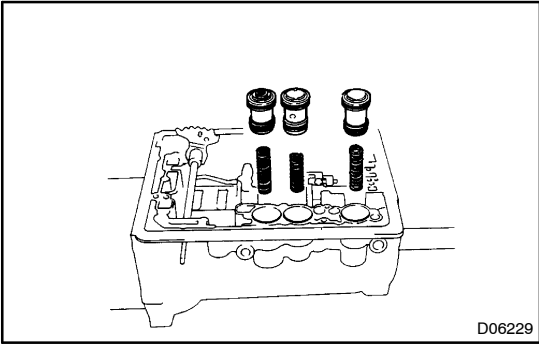
- (c) Connect the parking lock rod to the manual valve lever.



- (d) Install the parking lock pawl bracket.
  - (e) Install the 2 bolts with the wave washer.
- Torque: 7.4 N·m (75 kgf·cm, 65 in·lbf)**



- (f) Shift the manual valve lever to the P range, and confirm the planetary ring gear is correctly locked up by the lock pawl.



**24. INSTALL ACCUMULATOR SPRING AND PISTON**

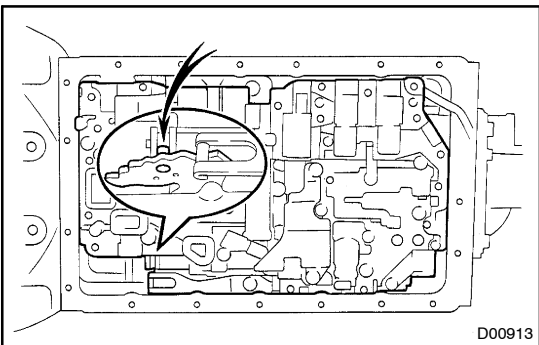
- (a) Coat new O-rings with ATF and install them to the pistons.
- (b) Install the 3 springs and 3 accumulator pistons to the bore, as shown.

**Piston**

Piston	Outer diameter mm (in.)
C <sub>1</sub>	31.8 (1.252)
C <sub>2</sub>	31.8 (1.252)
B <sub>2</sub>	34.8 (1.370)

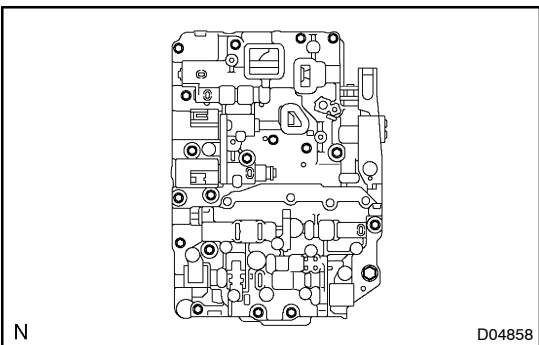
**Spring**

Spring (Color)	Free length mm (in.)	Outer diameter mm (in.)
C <sub>1</sub> (White or Blue)	75.03 (2.9540)	17.00 (0.6693)
C <sub>2</sub> (White or Purple)	57.74 (2.2732)	16.54 (0.6512)
B <sub>2</sub> (Green)	56.40 (2.2205)	18.79 (0.7398)

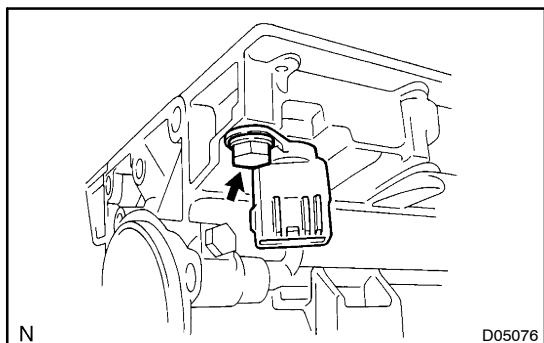


**25. INSTALL VALVE BODY**

- (a) Align the groove of the manual valve to the pin of the lever.

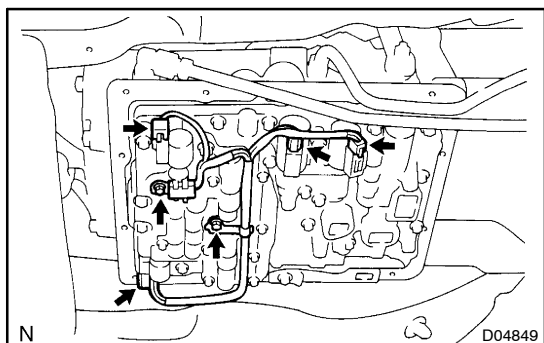


- (b) Install the 17 bolts.  
**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)**

**26. INSTALL SOLENOID WIRE**

Install the solenoid wire retaining bolt with the bolt.

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

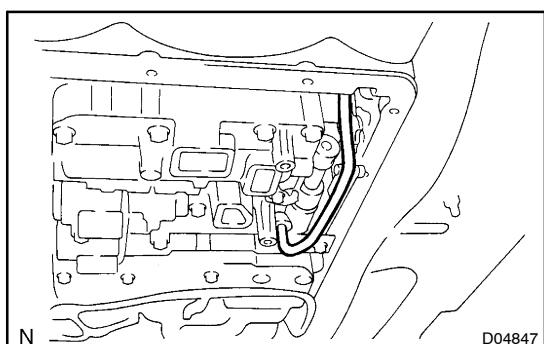
**27. INSTALL SOLENOID WIRING WITH ATF TEMPERATURE SENSOR**

- (a) Install the clamp to the ATF temperature sensor.
- (b) Connect the 4 connectors to the solenoid.
- (c) Install the clamp and bolt.

**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)**

- (d) Install the ATF temperature sensor with the bolt.

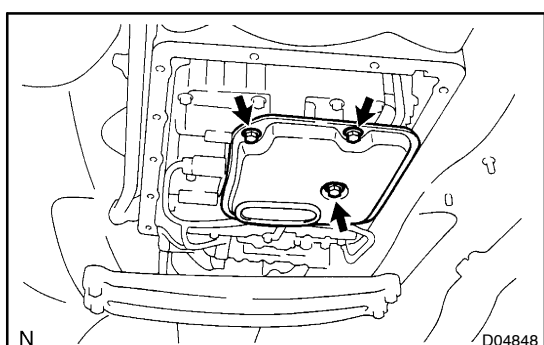
**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)**

**28. INSTALL OIL PIPE**

Using a plastic hammer, install the oil pipe into position.

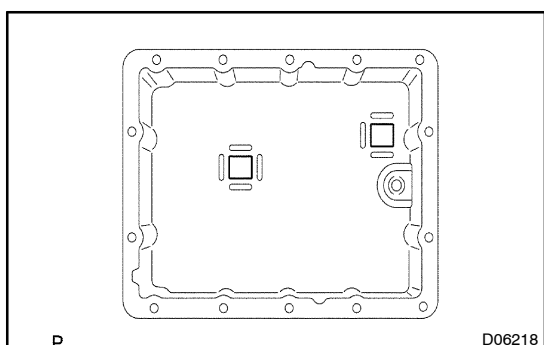
**NOTICE:**

**Be careful not to bend or damage the pipe.**

**29. INSTALL OIL STRAINER**

- (a) Install a new gasket to the oil strainer.
- (b) Install the oil strainer, oil strainer cover and 6 bolts.

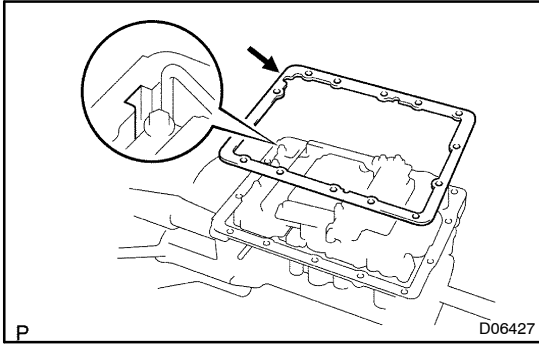
**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)**

**30. INSTALL OIL PAN**

- (a) Install the 2 magnets in the oil pan.

**NOTICE:**

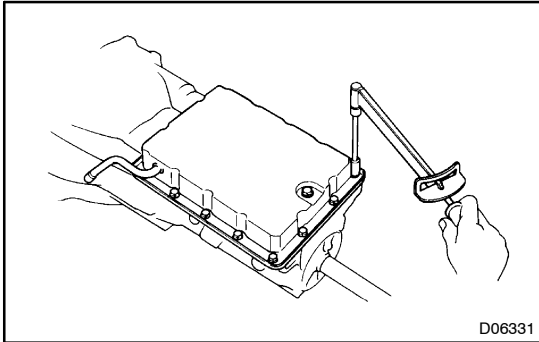
**Make sure that the magnets do not interfere with the oil pipes.**



(b) Install a new gasket to the transmission case.

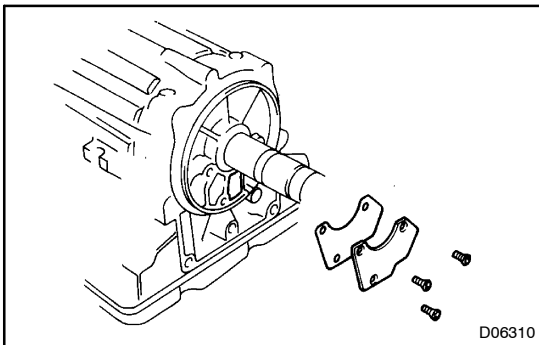
HINT:

Align the cut part of the gasket and case.



(c) Install the 14 bolts.

**Torque: 4.4 N·m (45 kgf·cm, 39 in·lbf)**



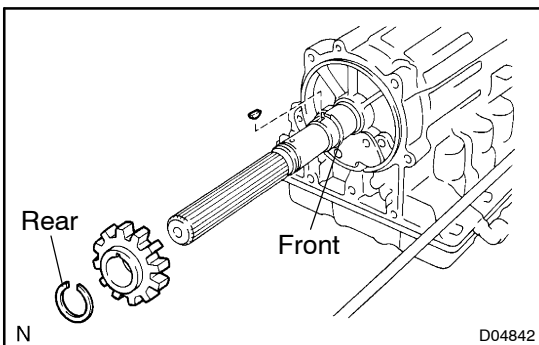
### 31. INSTALL GOVERNOR OIL STRAINER

(a) Insert the governor oil strainer into the transmission case.

(b) Install a new gasket and cover.

(c) Install the 3 screws.

**Torque: 7.5 N·m (75 kgf·cm, 65 in·lbf)**

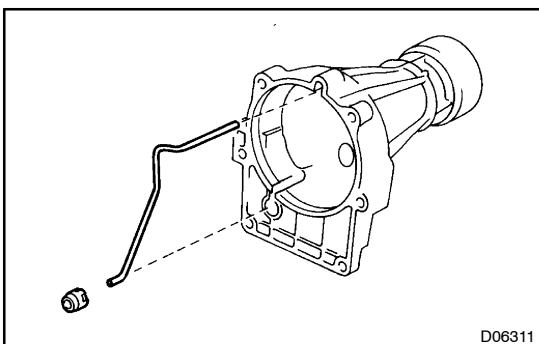


### 32. INSTALL KEY AND SENSOR ROTOR

(a) Using a snap ring expander, install the front side snap ring.

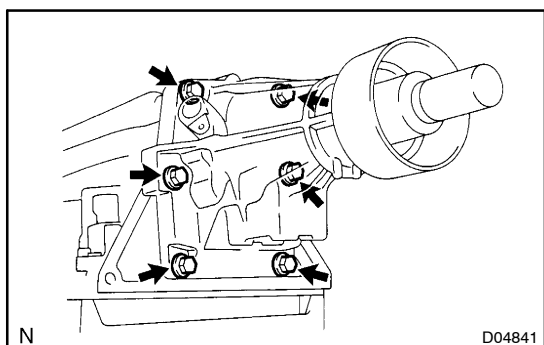
(b) Install the key and sensor rotor.

(c) Using a snap ring expander, install the rear side snap ring.



### 33. INSTALL EXTENSION HOUSING

(a) Install the oil apply pipe and a new gasket to the extension housing.



- (b) Install the extension housing with a new gasket to the case.
- (c) Apply sealant to the bolt A.  
**FIGP: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent**
- (d) Install the 6 bolts.

HINT:

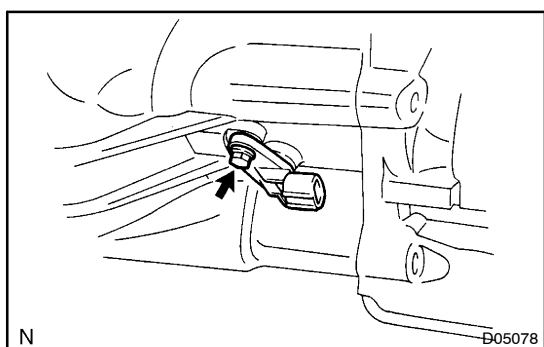
The 2 lower bolts are shorter.

**Torque: 36 N·m (370 kgf·cm, 27 ft·lbf)**

**Bolt length:**

**Bolt A: 45 mm (1.77 in.)**

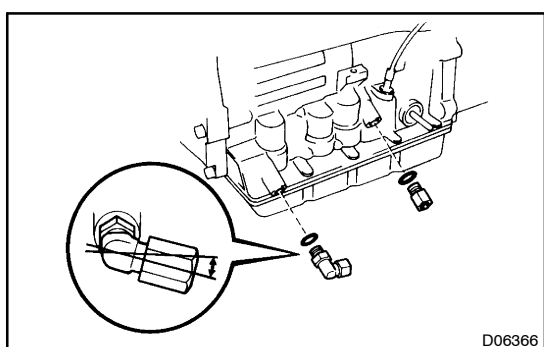
**Bolt B: 35 mm (1.38 in.)**



#### 34. INSTALL TRANSMISSION INPUT SPEED SENSOR

- (a) Coat a new O-ring with ATF and install it to the transmission input speed sensor.
- (b) Install the transmission input speed sensor and bolt.

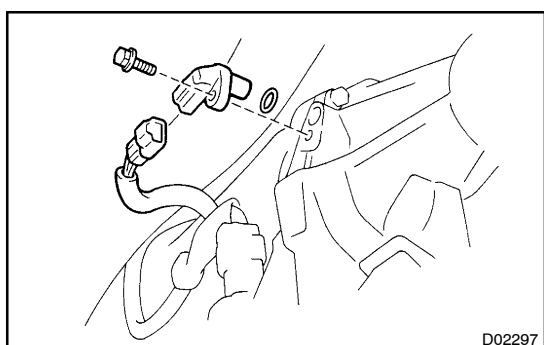
**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**



#### 35. INSTALL UNION AND ELBOW

- (a) Coat new 2 O-rings with ATF and install them to union and elbow.
- (b) Install the union and elbow.

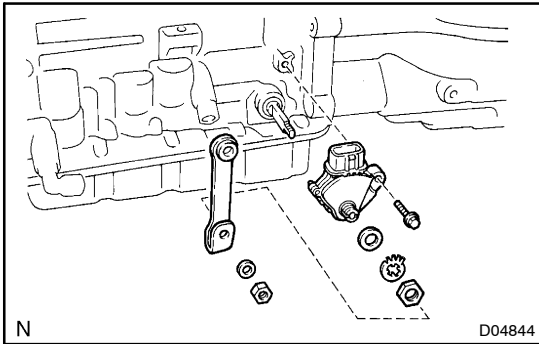
**Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)**



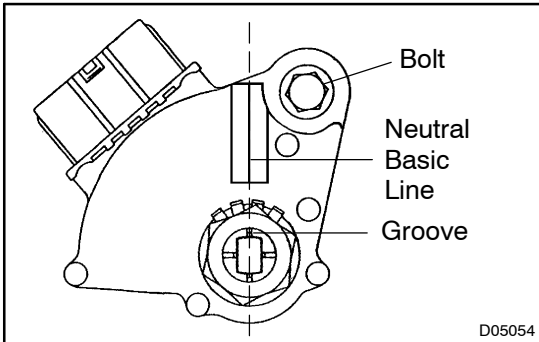
#### 36. INSTALL TRANSMISSION OUTPUT SPEED SENSOR

- (a) Coat a new O-ring with ATF and install it to the transmission output speed sensor.
- (b) Install the transmission output speed sensor and bolt.

**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

**37. INSTALL NEUTRAL START SWITCH**

- (a) Insert the neutral start switch onto the manual valve lever shaft and temporarily install the adjusting bolt.
- (b) Install a new lock washer.
- (c) Install and tighten the nut.  
**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**
- (d) Using the control shaft leer, fully turn the manual valve lever shaft back and return 2 notches. It is now in neutral.



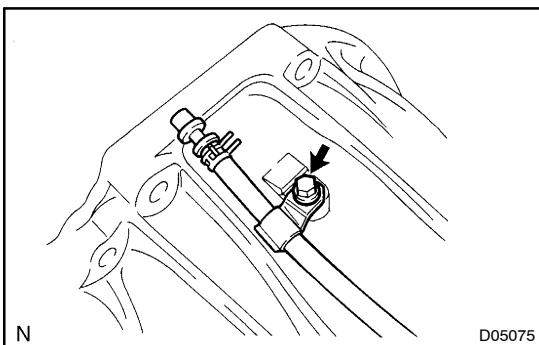
- (e) Align the neutral basic line and the switch groove, and tighten the adjusting bolt.  
**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**
- (f) Bend the tabs of the lock washer.

**HINT:**

Bend at least 2 of the lock washer tabs.

**38. INSTALL CONTROL SHAFT LEVER**

- (a) Install the control shaft lever with the spring washer and nut.
- (b) Tighten the nut.  
**Torque: 6.9 N·m (70 kgf·cm, 61 in·lbf)**

**39. INSTALL BREATHER HOSE**

Install the breather hose with the bolt.

**Torque: 7.5 N·m (75 kgf·cm, 65 in·lbf)**