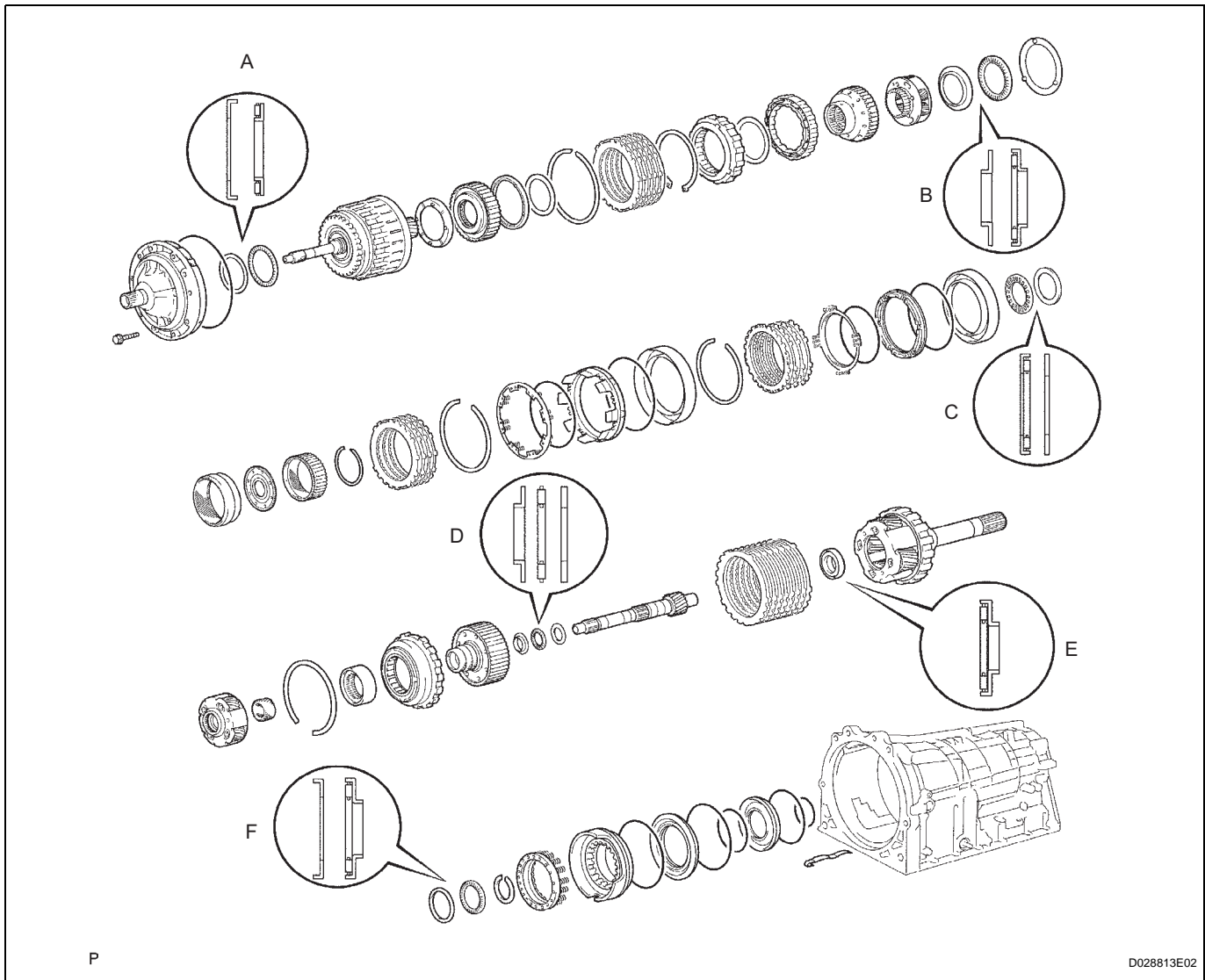


# REASSEMBLY

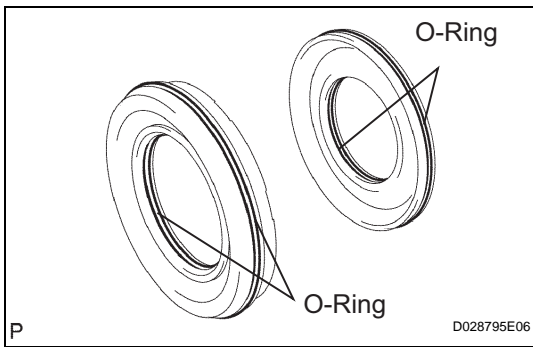
## 1. BEARING POSITION



AT

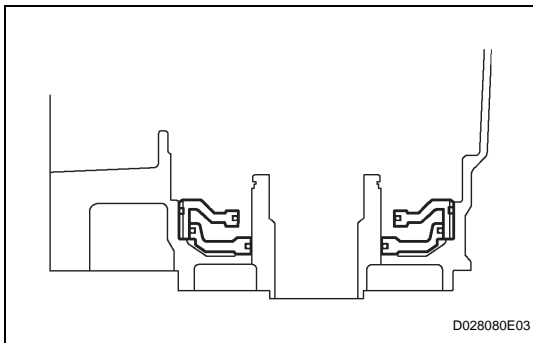
### Bearing diameter

Mark	Front Race Diameter Inside / Outside	Thrust Bearing Diameter Inside / Outside	Rear Race Diameter Inside / Outside
A	73.6 mm (2.898 in.) / 102.0 mm (4.016 in.)	71.9 mm (2.831 in.) / 85.6 mm (3.370 in.)	-
B	38.0 mm (1.496 in.) / 57.0 mm (2.244 in.)	43.4 mm (1.709 in.) / 58.3 mm (2.295 in.)	-
C	-	55.7 mm (2.193 in.) / 76.4 mm (3.008 in.)	53.7 mm (2.114 in.) / 74.0 mm (2.913 in.)
D	33.4 mm (1.315 in.) / 49.0 mm (1.929 in.)	32.1 mm (1.264 in.) / 49.35 mm (1.943 in.)	32.1 mm (1.2649 in.) / 49.0 mm (1.929 in.)
E	-	21.5 mm (0.847 in.) / 40.8 mm (1.606 in.)	-
F	48.5 mm (1.909 in.) / 62.7 mm (2.469 in.)	45.9 mm (1.807 in.) / 64.0 mm (2.520 in.)	-



## 2. INSTALL NO. 4 BRAKE PISTON

- Coat 2 new O-rings with ATF, and install them onto the brake reaction sleeve.
- Coat 2 new O-rings with ATF, and install them onto the No. 4 brake piston.
- Install the No. 4 brake piston onto the reaction sleeve.

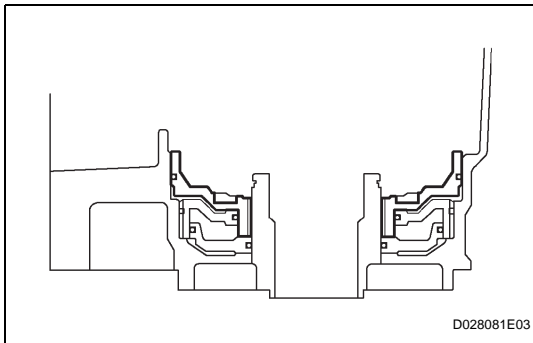


## 3. INSTALL BRAKE REACTION SLEEVE

- Coat a new O-ring with ATF, and install it to the reaction sleeve.
- With the No. 1 brake piston underneath (the rear side), install the brake reaction sleeve and No. 1 brake piston onto the transmission case.

### NOTICE:

**Be careful not to damage the O-rings.**

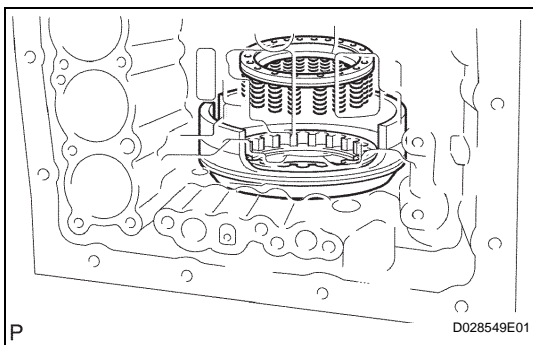


## 4. INSTALL 1ST AND REVERSE BRAKE PISTON

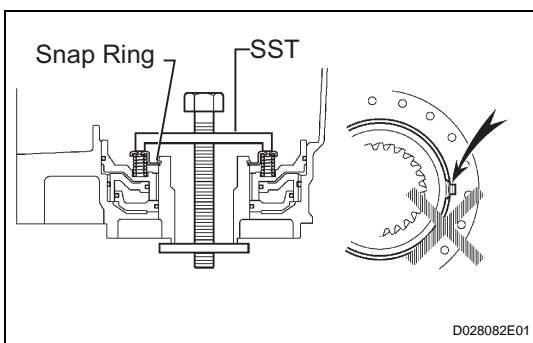
- Coat a new O-ring with ATF.
- Install the O-ring onto the 1st and reverse brake piston.
- With the spring seat of the piston facing upward (the front side), place the piston in the transmission case.

### NOTICE:

**Be careful not to damage the O-ring.**



- Place the piston return spring onto the 1st and reverse brake piston.



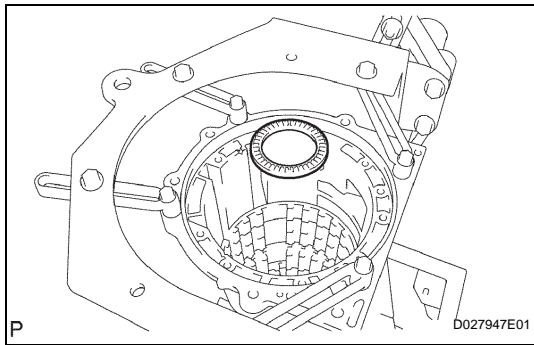
## 5. INSTALL 1ST AND REVERSE BRAKE RETURN SPRING SUB-ASSEMBLY

- Place SST on the spring retainer, and compress the return spring.

**SST 09350-30020 (09350-07050)**

- Using SST, install the snap ring.

**SST 09350-30020 (09350-07070)**

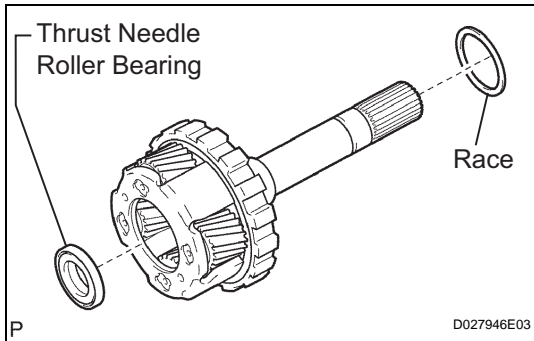


**6. INSTALL REAR PLANETARY GEAR ASSEMBLY**

(a) Install the thrust needle roller bearing.

**Thrust needle roller bearing diameter**

Item	Inside	Outside
Thrust needle roller bearing	45.9 mm (1.807 in.)	64.0 mm (2.520 in.)

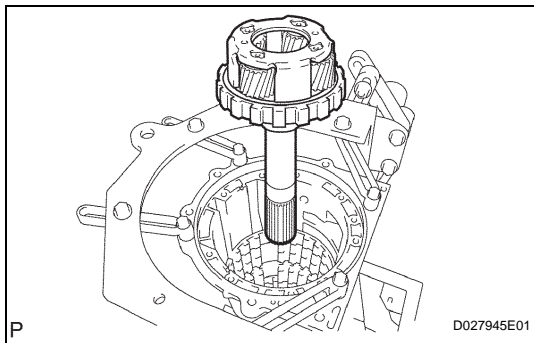


(b) Install the thrust needle roller bearing.

(c) Coat the No. 9 thrust bearing race with petroleum jelly, and install it onto the rear planetary ring gear.

**Bearing and race diameter**

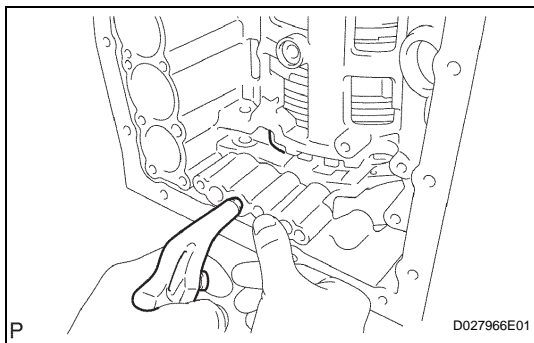
Item	Inside	Outside
Bearing	21.5 mm (0.847 in.)	40.8 mm (1.606 in.)
Race	48.5 mm (1.909 in.)	62.7 mm (2.469 in.)

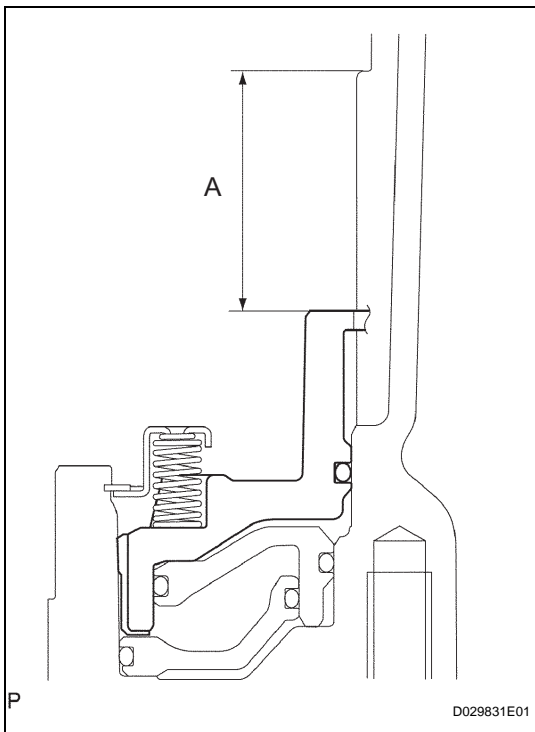


(d) Install the rear planetary gear assembly.

**7. INSPECT PACK CLEARANCE OF FIRST AND REVERSE BRAKE**

(a) Make sure the 1st and reverse brake pistons move smoothly when applying and releasing the compressed air into the transmission case.





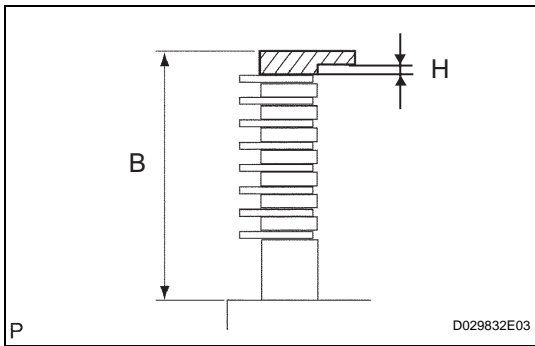
- (b) Using vernier calipers, measure the level difference (length A) between the upper surface of the 1st and reverse brake piston and the hitting surface of the No. 4 brake flange at both ends across a diameter, and calculate the average.

**NOTICE:**

**The 1st and reverse brake piston must be installed tightly to the end face of the transmission case.**

**HINT:**

Length A = 36.35 to 37.09 mm (1.431 to 1.460 in.)



- (c) Using vernier calipers, measure the thickness (length B) of the 2 brake flanges, the 7 No. 4 brake plates and the 8 No. 4 brake discs altogether at both ends across a diameter, and calculate the average.

**HINT:**

Pack clearance = Length A - Length B - 0.25 mm - 1.8 mm

Length B = 36.04 to 37.14 mm (1.419 to 1.462 in.)

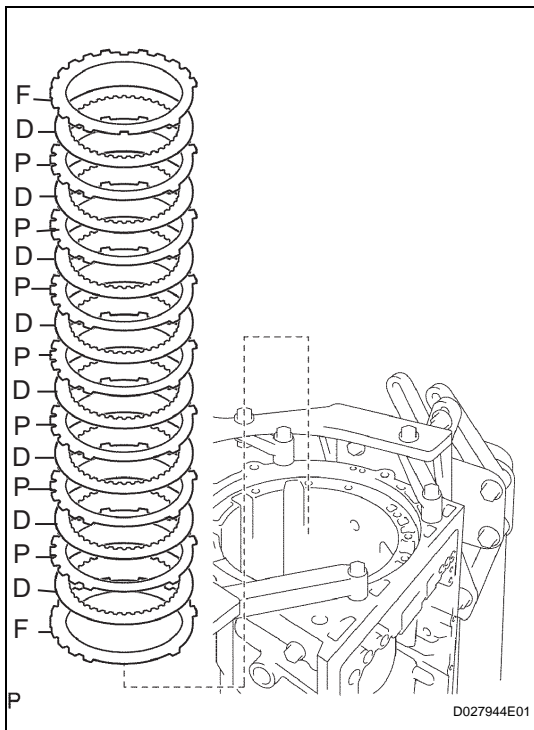
**Pack clearance:**

**0.8 to 1.1 mm (0.031 to 0.043 in.)**

- (d) If the pack clearance is outside the standard, select and install a brake flange that makes the pack clearance within the standard.

**H thickness**

No.	Thickness	No.	Thickness
0	0 mm (0 in.)	8	0.8 mm (0.032 in.)
2	0.2 mm (0.008 in.)	10	1.0 mm (0.039 in.)
4	0.4 mm (0.016 in.)	12	1.2 mm (0.047 in.)
6	0.6 mm (0.024 in.)	14	1.4 mm (0.055 in.)



**8. INSTALL NO. 4 BRAKE DISC**

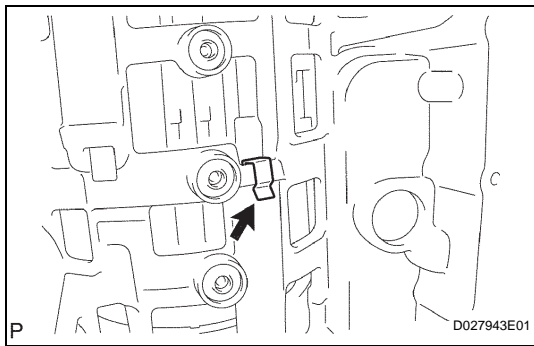
(a) Install the 7 plates, 8 discs and 2 flanges.

**Install in order:**

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

**HINT:**

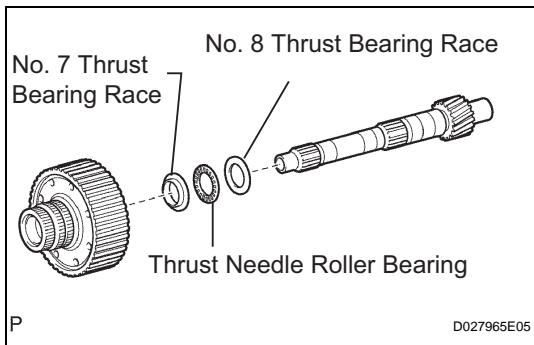
P = Plate, D = Disc, F = Flange



**9. INSTALL BRAKE PLATE STOPPER SPRING**

(a) Install the brake stopper spring.

**AT**

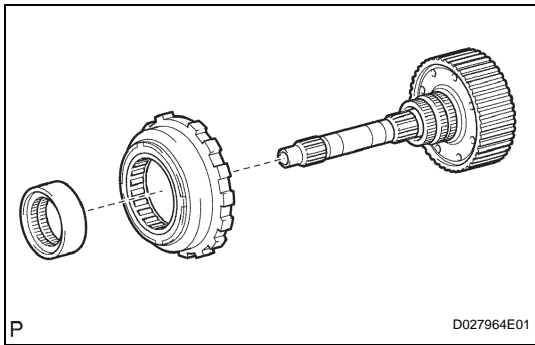


**10. INSTALL REAR PLANETARY RING GEAR FLANGE SUB-ASSEMBLY**

(a) Install the No. 8 thrust bearing race, thrust needle roller bearing, No. 7 thrust bearing race and planetary ring gear flange onto the intermediate shaft.

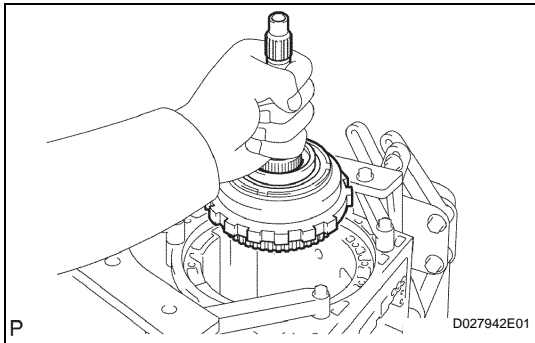
**Bearing and race diameter mm (in.)**

Item	Inside	Outside
No. 7 thrust bearing race	33.4 (1.315)	49.0 (1.929)
Thrust needle roller bearing	32.1 (1.264)	49.35 (1.943)
No. 8 thrust bearing race	32.1 (1.264)	49.0 (1.929)



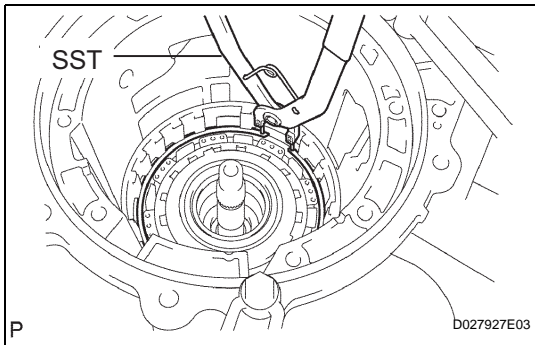
**11. INSTALL NO. 3 1-WAY CLUTCH ASSEMBLY**

- (a) Install the No. 3 1-way clutch assembly and the 1-way clutch inner race onto the intermediate shaft.

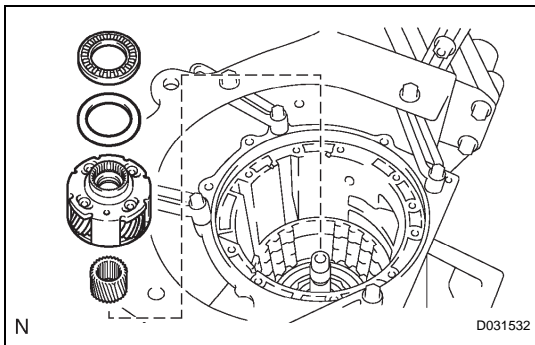


**12. INSTALL INTERMEDIATE SHAFT**

- (a) Install the intermediate shaft with the No. 3 1-way clutch assembly onto the case.



- (b) Using SST, install the snap ring.  
**SST 09350-30020 (09350-07050, 09350-07060)**

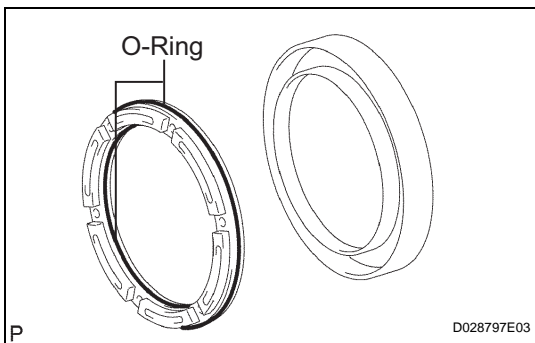


**13. INSTALL CENTER PLANETARY GEAR ASSEMBLY**

- (a) Install the center planetary gear assembly and planetary sun gear into the case.
- (b) Coat the No. 4 thrust bearing race and thrust needle roller bearing with petroleum jelly, and install them onto the center planetary ring gear.

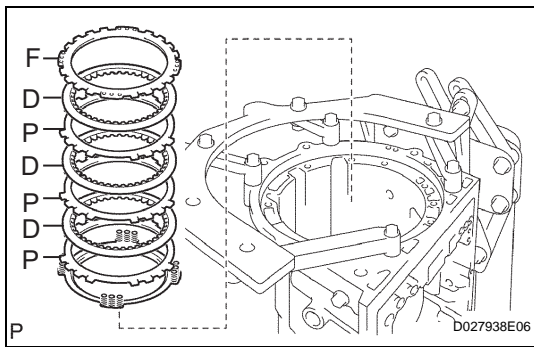
**Race and Bearing diameter**

Item	Inside	Outside
Race	53.7 mm (2.114 in.)	74.0 mm (2.913 in.)
Bearing	55.7 mm (2.192 in.)	76.4 mm (3.008 in.)



**14. INSTALL NO. 2 BRAKE PISTON**

- (a) Coat 2 new O-rings with ATF, and install them onto the No. 2 brake piston.
- (b) Be careful not to damage the O-rings. Press the No. 2 brake piston into the No. 2 brake cylinder with both hands.
- (c) Install the No. 2 brake piston onto the case.



### 15. INSTALL NO. 2 BRAKE DISC

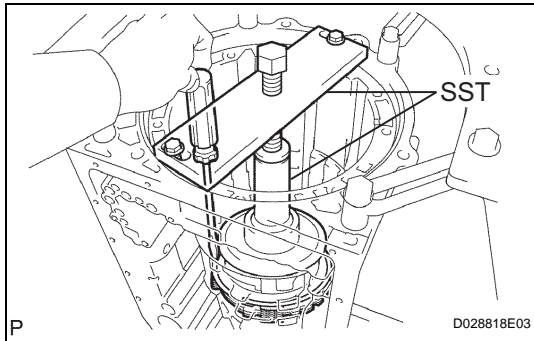
- (a) Install the flange, 3 plates, 3 discs and brake piston return spring.

**Install in order:**

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

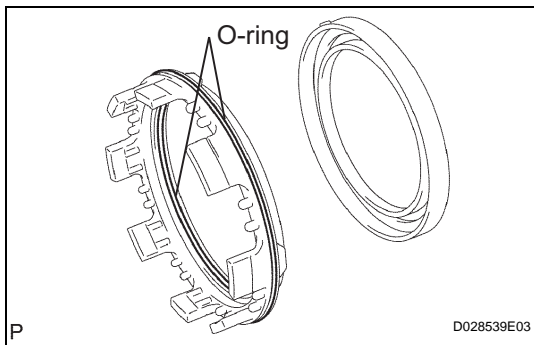
**HINT:**

P = Plate, D = Disc, F = Flange



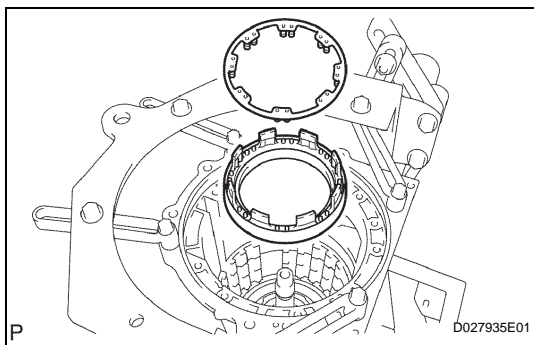
- (b) Using SST and press, install the No. 2 brake spring snap ring.

**SST 09351-40010**



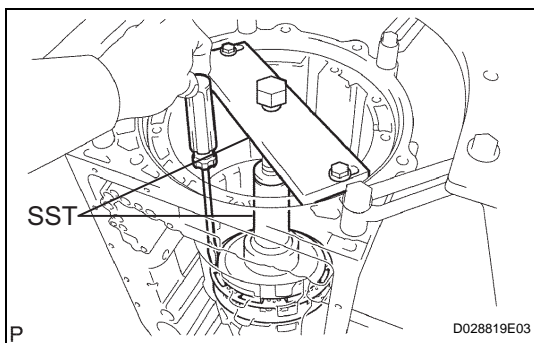
### 16. INSTALL NO. 1 BRAKE PISTON

- (a) Coat 2 new O-rings with ATF, and install them onto the No. 1 brake piston.
- (b) Be careful not to damage the O-rings. Press the No. 1 brake piston into the No. 1 brake cylinder with both hands.



### 17. INSTALL BRAKE PISTON RETURN SPRING SUB-ASSEMBLY

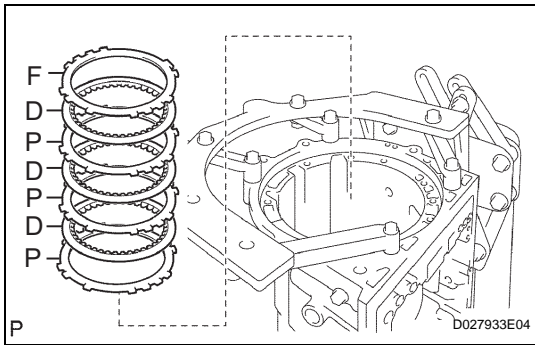
- (a) Install the brake piston return spring and No. 1 brake piston with the No. 1 brake cylinder into the transmission case.



### 18. INSTALL BRAKE PISTON RETURN SPRING SNAP RING

- (a) Using SST and a press, install the brake piston return spring snap ring.

**SST 09351-40010**



**19. INSTALL NO. 1 BRAKE DISC**

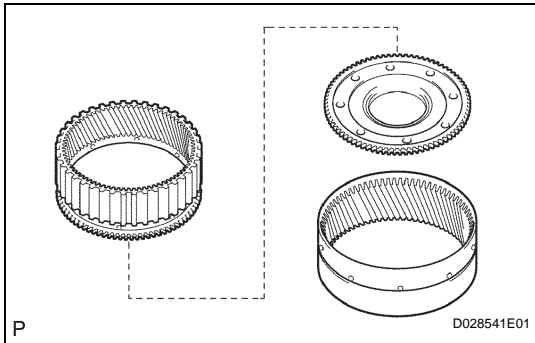
(a) Install the 3 plates, 3 discs and flange.

**Install in order:**

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

**HINT:**

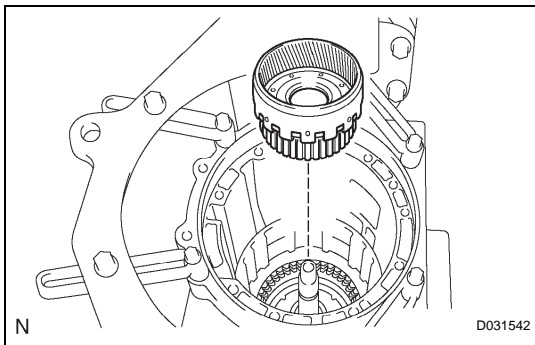
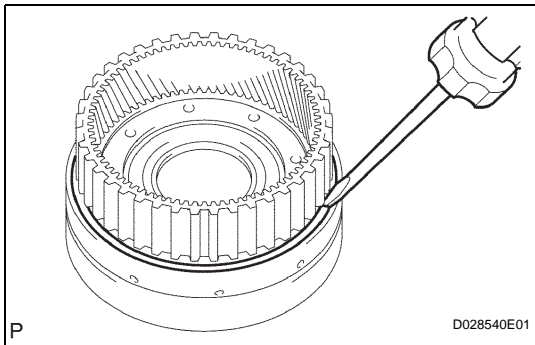
P = Plate, D = Disc, F = Flange



**20. INSTALL CENTER PLANETARY RING GEAR**

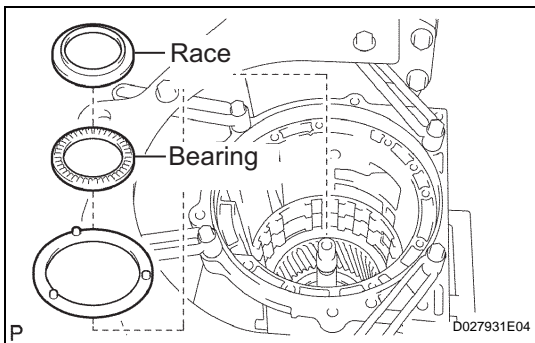
(a) Install the center planetary ring gear and front planetary ring gear flange into the front planetary ring gear.

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



**21. INSTALL FRONT PLANETARY RING GEAR**

(a) Install the front planetary ring gear into the case.



**22. INSTALL FRONT PLANETARY GEAR ASSEMBLY**

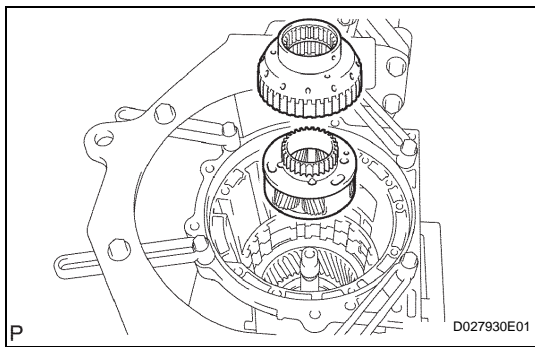
(a) Install the thrust needle roller bearing and No. 2 planetary carrier thrust washer.

(b) Coat the No. 3 thrust bearing race with petroleum jelly, and install it onto the front planetary ring gear.

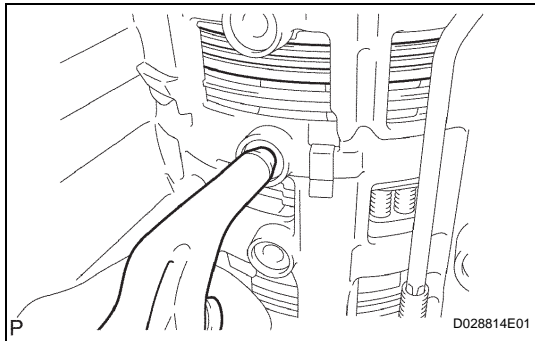
**Thrust needle roller bearing and race diameter**

Item	Inside	Outside
Thrust needle roller bearing	43.4 mm (1.709 in.)	58.3 mm (2.295 in.)
Race	38.0 mm (1.496 in.)	57.0 mm (2.244 in.)



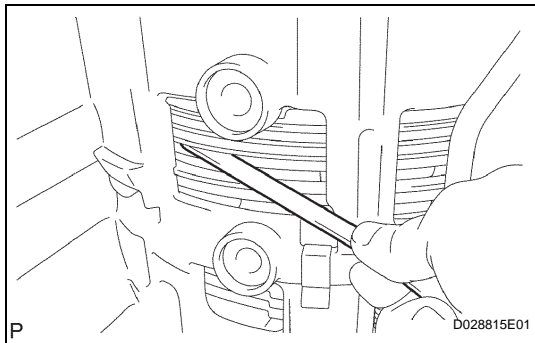


- (c) Install the front planetary gear assembly and 1-way clutch inner race into the case.



**23. INSPECT NO. 1 PISTON STROKE OF BRAKE PISTON**

- (a) Make sure the No. 1 brake piston moves smoothly when applying and releasing the compressed air into the transmission case.



- (b) Using a feeler gauge, measure the B3 brake pack clearance between the snap ring and flange.

**Piston stroke:**

**0.42 to 0.72 mm (0.017 to 0.028 in.)**

If the piston stroke is outside the specification, parts may have been assembled incorrectly.

Perform the reassembly again.

If the piston stroke is still outside the specification, select another flange.

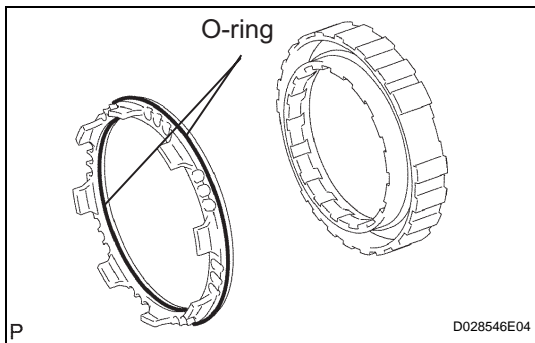
**HINT:**

There are 4 different thicknesses for the flange.

**Flange thickness**

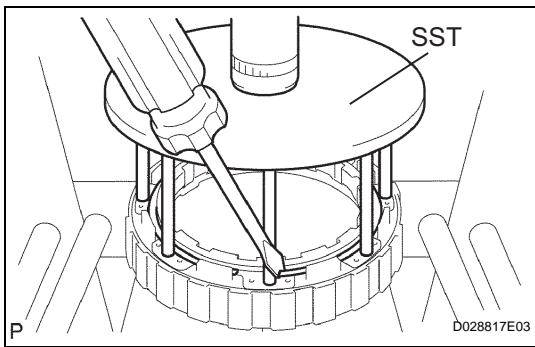
No.	Thickness	No.	Thickness
0	2.0 mm (0.079 in.)	2	2.4 mm (0.094 in.)
1	2.2 mm (0.087 in.)	3	2.6 mm (0.102 in.)

AT



**24. INSTALL 2ND BRAKE PISTON**

- (a) Coat 2 new O-rings with ATF, and install them onto the 2nd brake piston.
- (b) Be careful not to damage the O-rings. Press the 2nd brake cylinder into the 2nd brake piston with both hands.



(c) Using SST and press, install the snap ring.

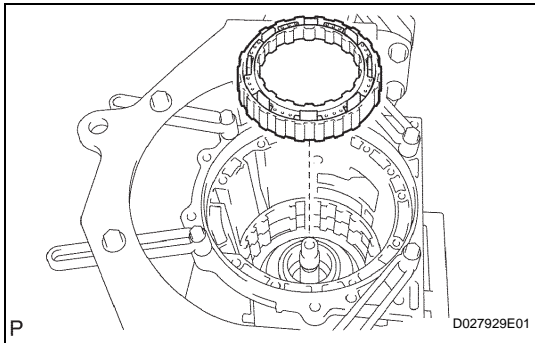
**SST 09351-40010**

**NOTICE:**

**Make sure that the end gap of the snap ring is not aligned with the spring retainer claw.**

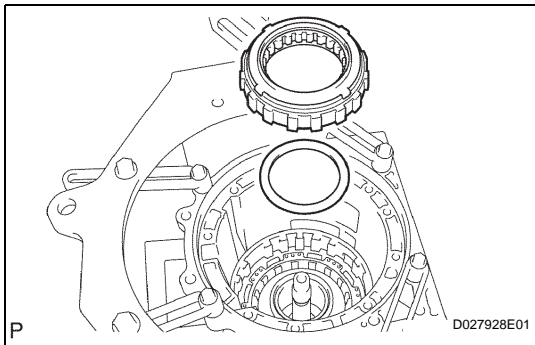
**25. INSTALL 2ND BRAKE CYLINDER**

(a) Install the 2nd brake cylinder into the case.



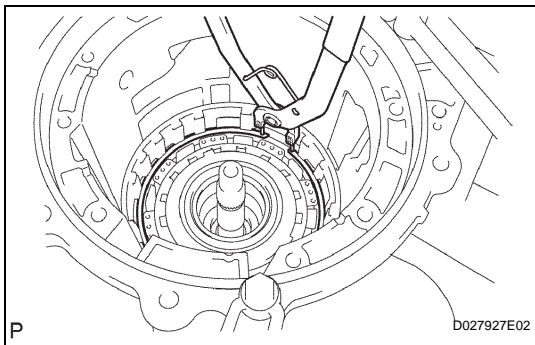
**26. INSTALL 1-WAY CLUTCH ASSEMBLY**

(a) Install the 1-way clutch assembly and the thrust washer into the case.



**27. INSTALL 2ND BRAKE PISTON HOLE SNAP RING**

(a) Using SST, install the snap ring.  
**SST 09350-30020 (09350-07060)**



**28. INSTALL NO. 3 BRAKE DISC**

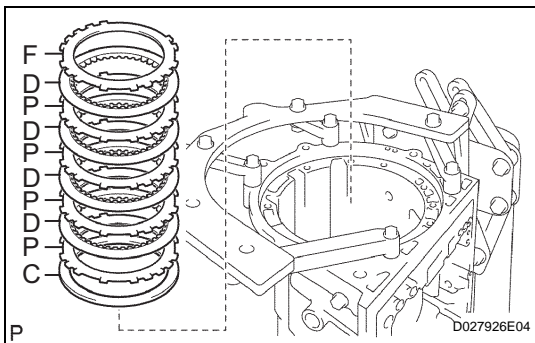
(a) Install the flanges, 4 discs, 4 plates and the cushion plate onto the case.

**Install in order:**

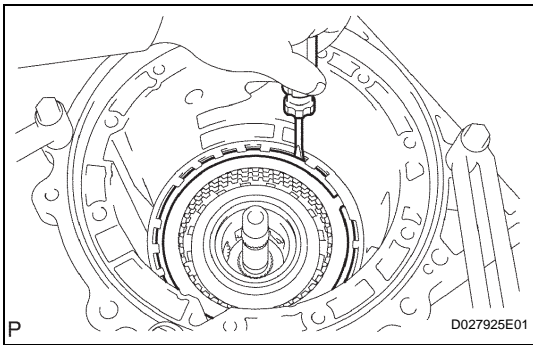
**F - D - P - D - P - D - P - D - P - C**

**HINT:**

P = Plate, D = Disc, F = Flange C = Cushion

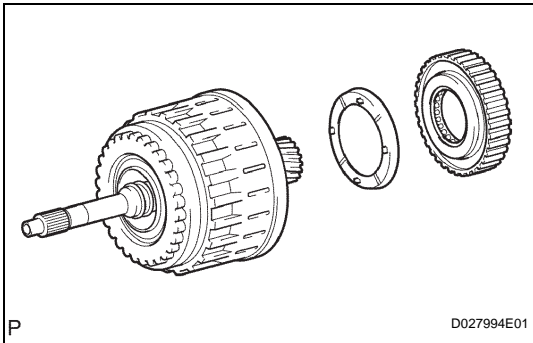


**AT**



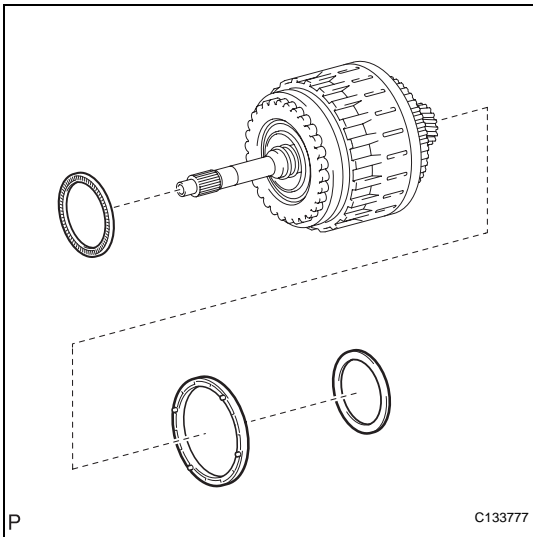
**29. INSTALL NO. 3 BRAKE SNAP RING**

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



**30. INSTALL NO. 2 1-WAY CLUTCH ASSEMBLY**

- (a) Coat the race with petroleum jelly and install it onto the No. 2 clutch drum thrust washer.
- (b) Install the No. 2 1-way clutch assembly washer.



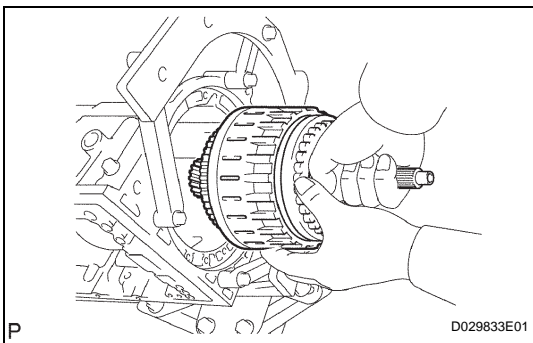
**31. INSTALL CLUTCH DRUM AND INPUT SHAFT ASSEMBLY**

- (a) Install the thrust needle roller bearing.
- (b) Coat the race with petroleum jelly and install it onto the clutch drum thrust washer.

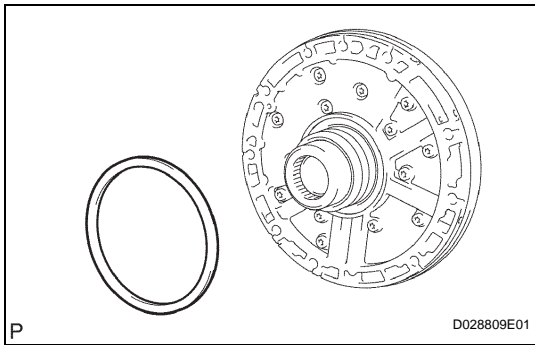
**Thrust needle roller bearing and diameter**

Item	Inside	Outside
Thrust needle roller bearing	71.9 mm (2.831 in.)	85.6 mm (3.370 in.)
Race	73.6 mm (2.898 in.)	102.0 mm (4.016 in.)

- (c) Install the clutch drum thrust washer and race onto the clutch drum and input shaft assembly.



- (d) Install the input shaft sub-assembly with the direct and reverse multiple disc assembly onto the transmission case.

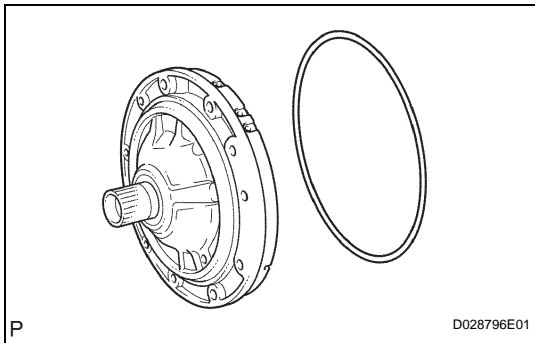


**32. INSTALL OIL PUMP ASSEMBLY**

- (a) Install the No. 1 thrust bearing race onto the front oil pump.

**No. 1 thrust bearing race diameter**

Item	Inside	Outside
Race	74.2 mm (2.921in.)	87.74 mm (3.454 in.)

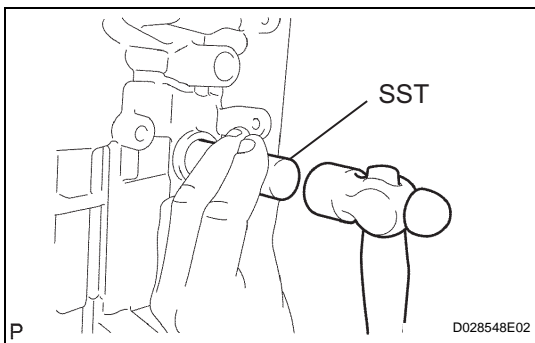
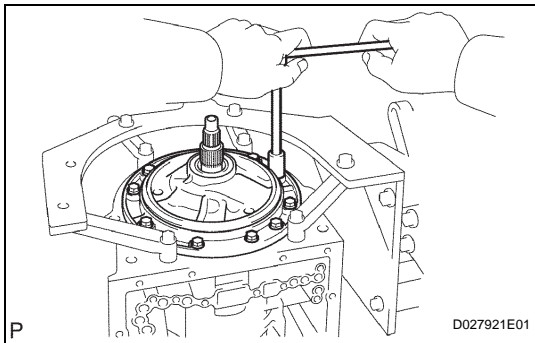


- (b) Coat a new O-ring with ATF, and install it onto the oil pump assembly.
- (c) Place the oil pump through the input shaft, and align the bolt holes in the oil pump assembly with the transmission case.
- (d) Hold the input shaft, and lightly press the oil pump body to slide the oil seal rings into the overdrive direct clutch drum.

**NOTICE:**

**Do not push on the oil pump strongly, as the oil seal ring will stick to the direct clutch drum.**

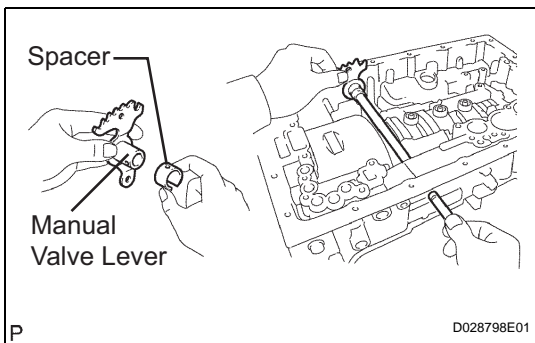
- (e) Install the 10 bolts.  
**Torque: 21 N\*m (214 kgf\*cm, 15 ft.\*lbf)**



**33. INSTALL MANUAL VALVE LEVER SHAFT OIL SEAL**

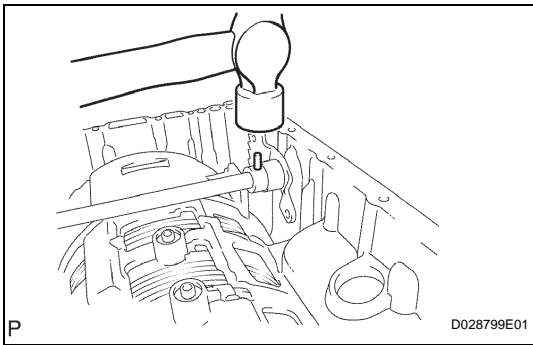
- (a) Using SST, tap in 2 new oil seals.  
**SST 09350-30020 (09350-07110)**
- (b) Coat the oil seal lips with MP grease.

**34. INSPECT INDIVIDUAL PISTON OPERATION INSPECTION (See page AT-223)**

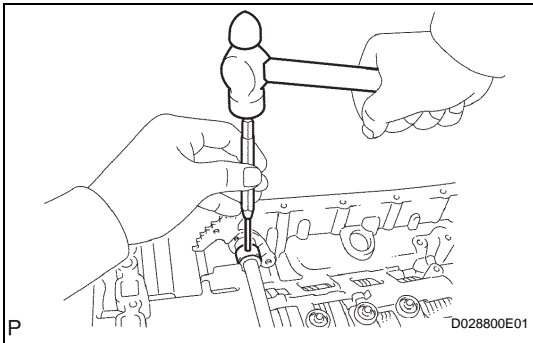


**35. INSTALL MANUAL VALVE LEVER SUB-ASSEMBLY**

- (a) Install a new spacer onto the manual valve lever.
- (b) Install the manual valve lever shaft onto the transmission case through the manual valve lever.

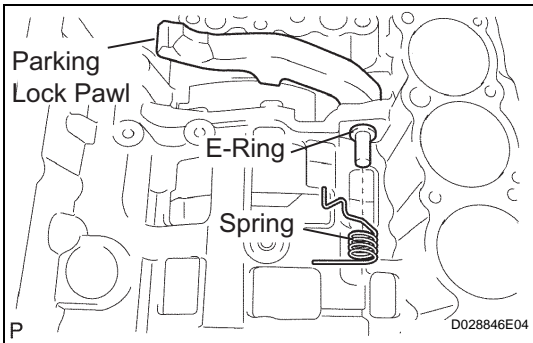


(c) Using a hammer, tap in a new spring pin.



(d) Align the manual valve lever indentation with the spacer hole, and stake them together with a punch and hammer.

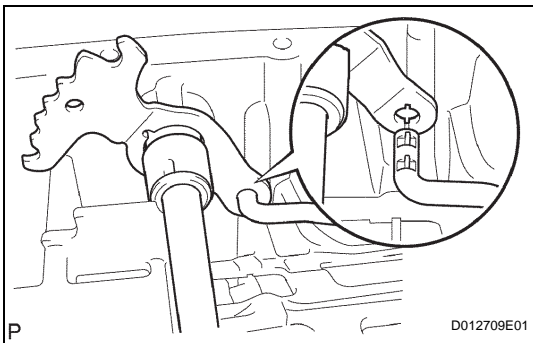
(e) Make sure the shaft rotates smoothly.



### 36. INSTALL PARKING LOCK PAWL SHAFT

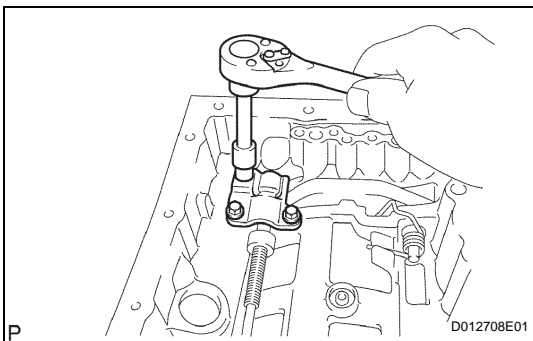
(a) Install the E-ring onto the shaft.

(b) Install the parking lock pawl, shaft and spring.



### 37. INSTALL PARKING LOCK ROD SUB-ASSEMBLY

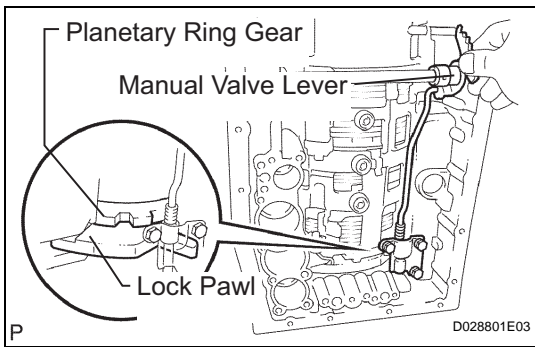
(a) Connect the parking lock rod to the manual valve lever.



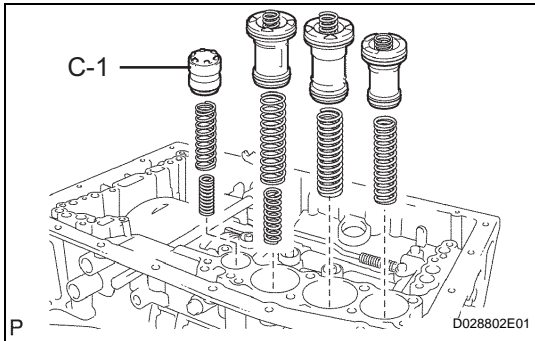
### 38. INSTALL PARKING LOCK PAWL BRACKET

(a) Place the parking lock pawl bracket onto the transmission case and tighten the 3 bolts.

**Torque: 7.4 N\*m (75 kgf\*cm, 65 in.\*lbf)**

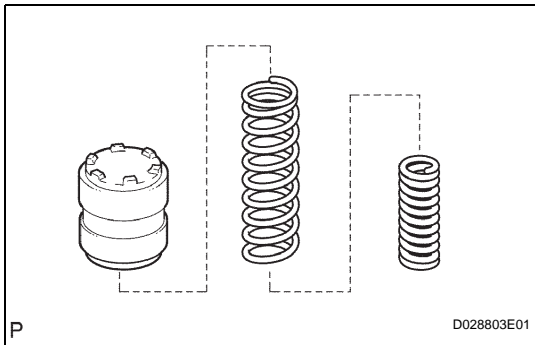


- (b) Shift the manual valve lever to the P position, and confirm that the planetary ring gear is correctly locked up by the lock pawl.



**39. INSTALL C-1 ACCUMULATOR VALVE**

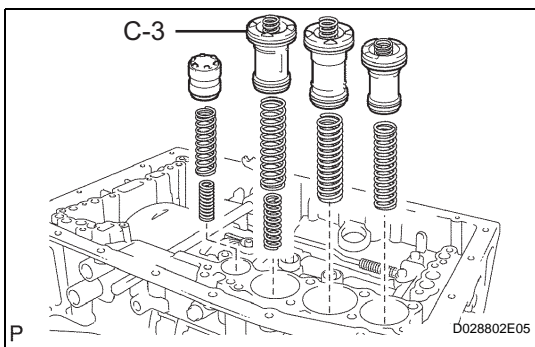
- (a) Coat a new O-ring with ATF, and install it onto the piston.



- (b) Install the 2 springs and accumulator valve into the hole.

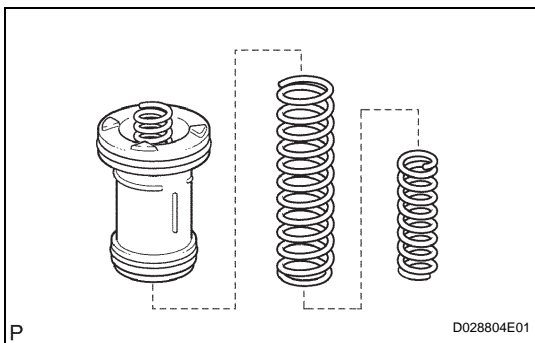
**Accumulator spring**

Spring	Free length Outer diameter	Color
C-1 Inner	30.40 mm (1.197 in.) 11.40 mm (0.449 in.)	Pink
C-1 Outer	48.76 mm (1.920 in.) 16.60 mm (0.654 in.)	Light green



**40. INSTALL C-3 ACCUMULATOR PISTON**

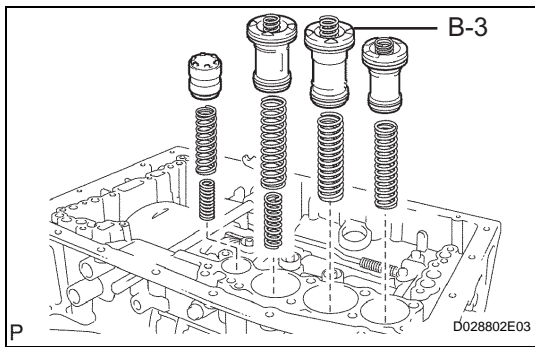
- (a) Coat a new O-ring with ATF, and install it into the piston.



- (b) Install the 2 springs and accumulator piston into the hole.

**Accumulator spring**

Spring	Free length Outer diameter	Color
C-3 Inner	44.0 mm (1.732 in.) 14.0 mm (0.551 in.)	Yellow
C-3 Outer	73.35 mm (2.888 in.) 19.90 mm (0.784 in.)	Red



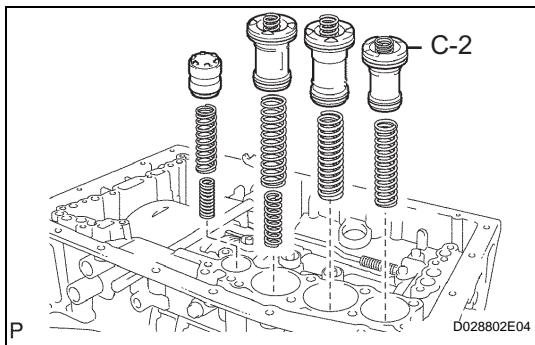
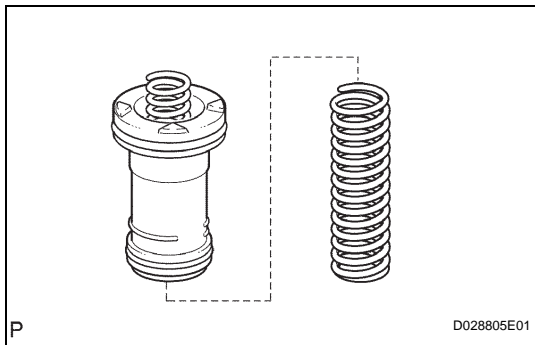
**41. INSTALL B-3 ACCUMULATOR PISTON**

- (a) Coat 2 new O-rings with ATF, and install them onto the piston.

- (b) Install the spring and accumulator piston into the hole.

**Accumulator spring**

Spring	Free length Outer diameter	Color
B-3	70.5 mm (2.776 in.) 19.7 mm (0.776 in.)	Purple



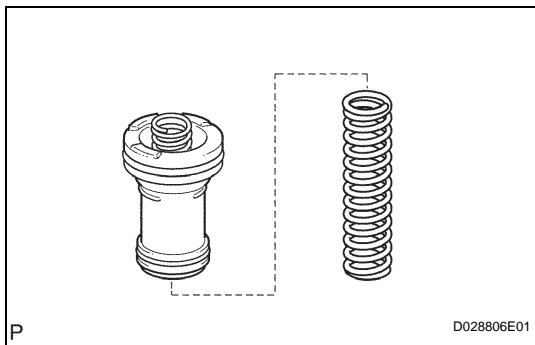
**42. INSTALL C-2 ACCUMULATOR PISTON**

- (a) Coat 2 new O-rings with ATF, and install them onto the piston.

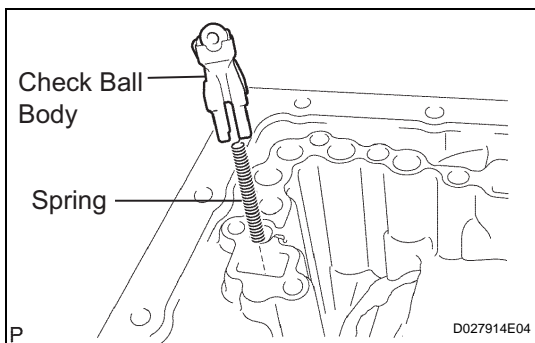
- (b) Install the spring and accumulator piston into the hole.

**Accumulator spring**

Spring	Free length Outer diameter	Color
C-2	62.0 mm (2.441 in.) 15.9 mm (0.626 in.)	White

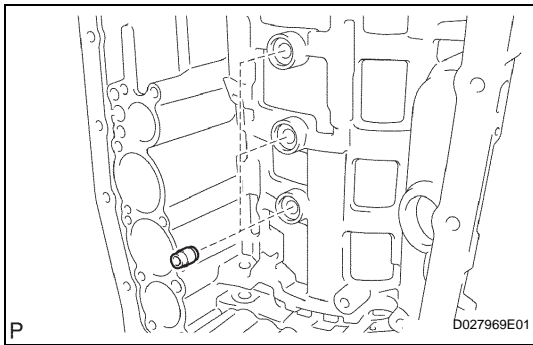


AT

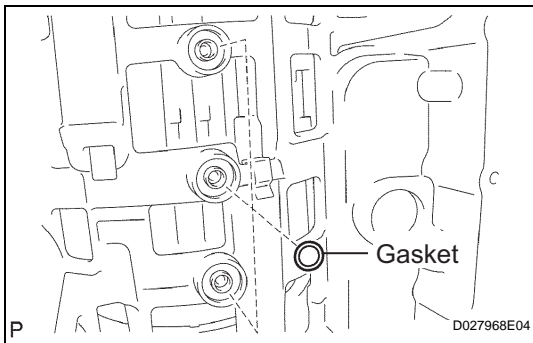


**43. INSTALL CHECK BALL BODY**

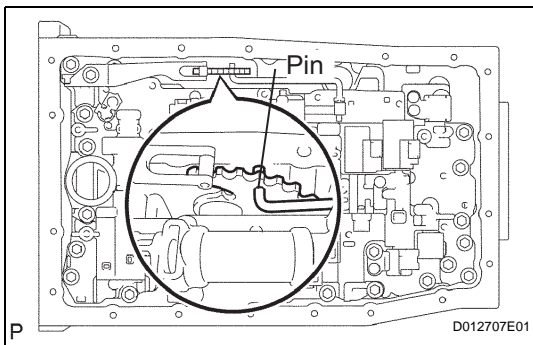
- (a) Install the check ball body and spring.



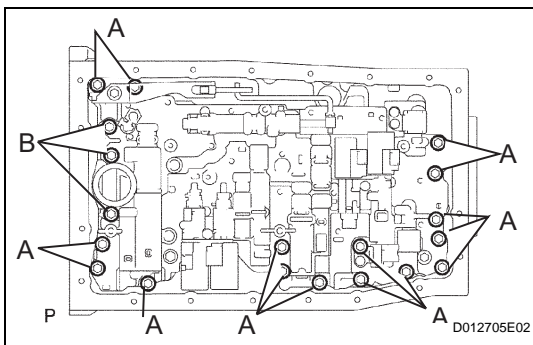
- 44. INSTALL BRAKE DRUM GASKET**  
 (a) Install the 3 brake drum gaskets.



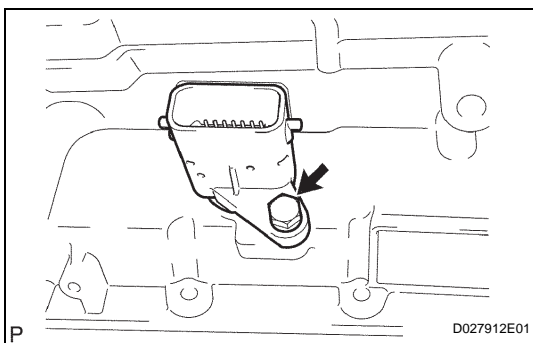
- 45. INSTALL TRANSAXLE CASE GASKET**  
 (a) Install the 3 transaxle case gaskets.



- 46. INSTALL TRANSMISSION VALVE BODY ASSEMBLY**  
 (a) Align the groove of the manual valve with the pin of the lever.

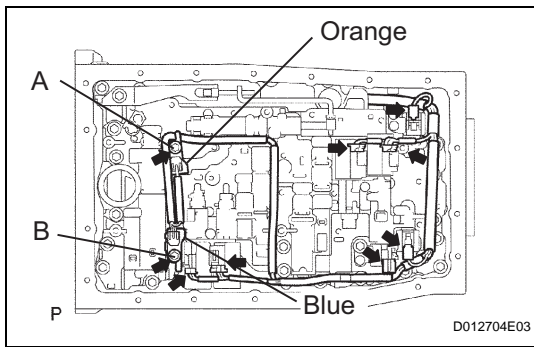


- (b) Install the 19 bolts.  
**Torque: 11 N\*m (112 kgf\*cm, 8 ft.\*lbf)**  
**HINT:**  
 Each bolt length is as indicated below.  
**Bolt length:**  
**25 mm (0.98 in.) for bolt A**  
**36 mm (1.42 in.) for bolt B**



- 47. INSTALL TRANSMISSION WIRE**  
 (a) Install a new O-ring onto the transmission wire.  
 (b) Install the transmission wire harness.  
 (c) Install the bolt.  
**Torque: 5.4 N\*m (55 kgf\*cm, 48 in.\*lbf)**  
 (d) Connect the solenoid connector.





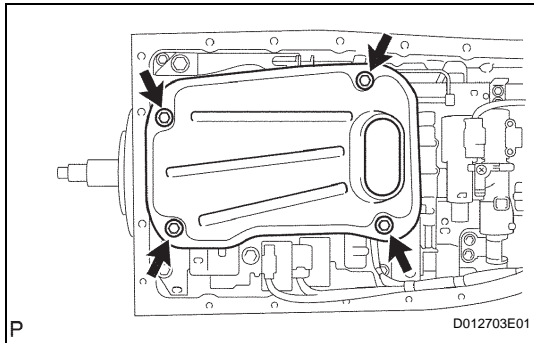
- (e) Connect the 7 solenoid connectors.
  - (f) Install the ATF temperature sensor.
  - (g) Install the 2 clamps and the 2 bolts.
- Torque: 10 N\*m (100 kgf\*cm, 7 ft.\*lbf) for bolt A**  
**11 N\*m (112 kgf\*cm, 8 ft.\*lbf) for bolt B**

HINT:

Each bolt length is indicated below.

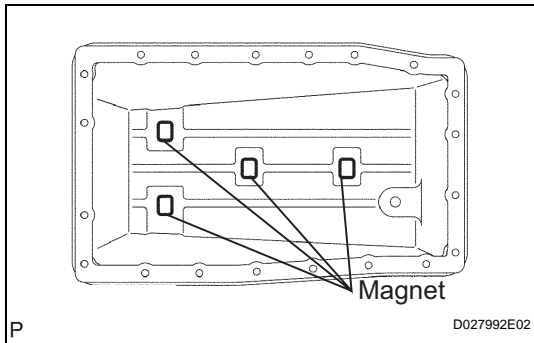
**Bolt length:**

- 12 mm (0.47 in.) for bolt A**
- 36 mm (1.42 in.) for bolt B**



**48. INSTALL VALVE BODY OIL STRAINER ASSEMBLY**

- (a) Coat a new O-ring with ATF, and install them onto the valve body oil strainer assembly.
  - (b) Install the oil strainer with the 4 bolts.
- Torque: 10 N\*m (100 kgf\*cm, 7 ft.\*lbf)**



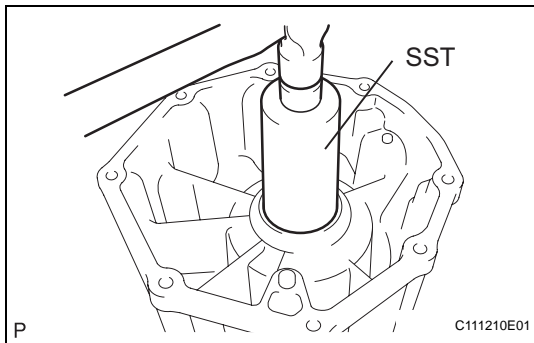
**49. INSTALL TRANSMISSION OIL CLEANER MAGNET**

- (a) Install the 4 transmission oil cleaner magnets.

**50. INSTALL AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY**

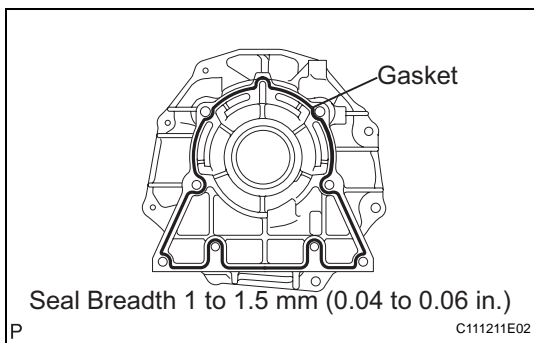
- (a) Install a new gasket onto the oil pan.
  - (b) Install the 20 bolts.
- Torque: 4.4 N\*m (45 kgf\*cm, 39 in.\*lbf)**
- (c) Install the drain plug.
- Torque: 28 N\*m (285 kgf\*cm, 21 ft.\*lbf)**

AT



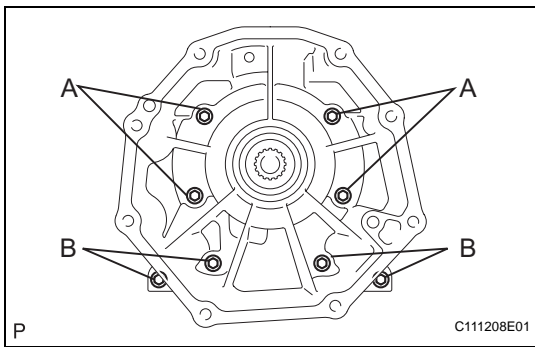
**51. INSTALL TRANSMISSION CASE ADAPTOR OIL SEAL**

- (a) Using SST and a hammer, tap in a new oil seal.
- SST 09226-10010**



**52. INSTALL TRANSMISSION CASE ADAPTER SUB-ASSEMBLY**

- (a) Apply seal packing or equivalent to the 8 bolts.
- Seal packing:**  
**Toyota Genuine Seal Packing 1281, Three Bond 1281 or Equivalent**



- (b) Install the transmission case adapter sub-assembly with the 8 bolts.

**Torque: 34 N\*m (345 kgf\*cm, 25 ft.\*lbf)**

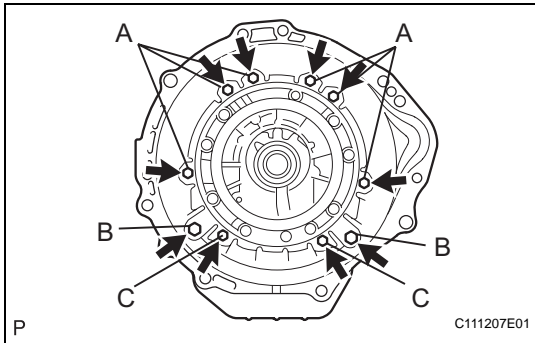
**HINT:**

Each bolt length is indicated below.

**Bolt length:**

**50 mm (1.969 in.) for bolt A**

**40 mm (1.575 in.) for bolt B**



### 53. INSTALL AUTOMATIC TRANSMISSION HOUSING

- (a) Clean the threads of the bolts and case with white gasoline.

- (b) Install the transmission housing with the 10 bolts.

**Torque: 34 N\*m (345 kgf\*cm, 25 ft.\*lbf) for bolt A**

**57 N\*m (581 kgf\*cm, 42 ft.\*lbf) for bolt B**

**34 N\*m (345 kgf\*cm, 25 ft.\*lbf) for bolt C**

**HINT:**

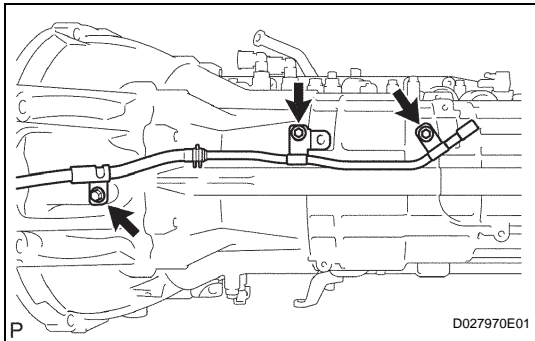
Each bolt length is indicated below.

**Bolt length:**

**Bolt A: 14 mm**

**Bolt B: 17 mm**

**Bolt C: 14 mm**

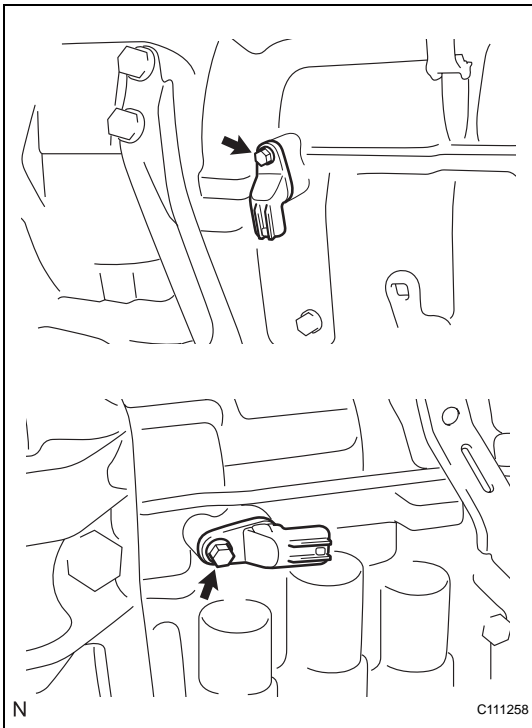


### 54. INSTALL AUTOMATIC TRANSAXLE BREATHER TUBE

- (a) Install a new O-ring onto the breather tube.

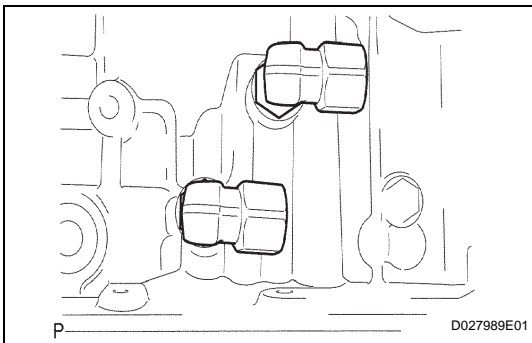
- (b) Install the breather tube with the 3 bolts.

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

**55. INSTALL TRANSMISSION REVOLUTION SENSOR**

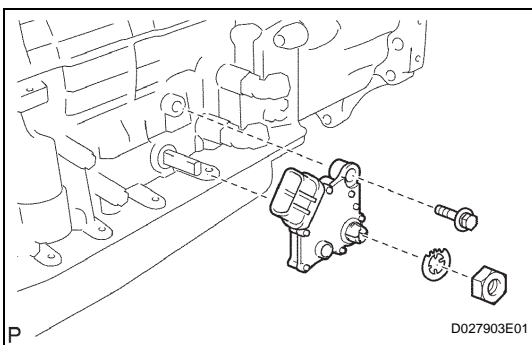
- Coat 2 new O-rings with ATF, and install one onto each transmission revolution sensor.
- Install the 2 transmission revolution sensors.
- Install the 2 bolts.

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

**56. INSTALL OIL COOLER TUBE UNION**

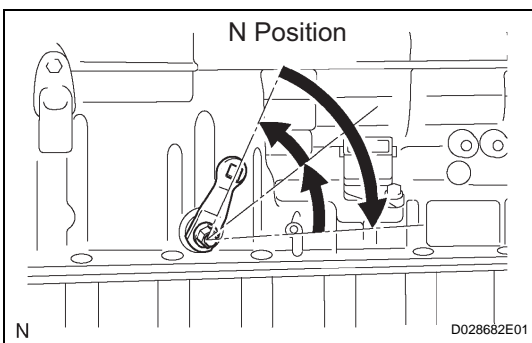
- Coat 2 new O-rings with ATF, and install one onto each oil cooler tube union.
- Install the 2 oil cooler tube unions.

**Torque: 29 N\*m (296 kgf\*cm, 21 ft.\*lbf)**

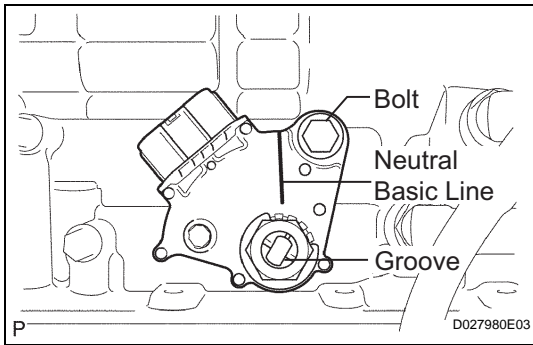
**57. INSTALL PARK/NEUTRAL POSITION SWITCH ASSEMBLY**

- Install the park/neutral position switch onto the manual valve lever shaft, and temporarily install the adjusting bolt.
- Install a new lock washer and tighten the nut.

**Torque: 6.9 N\*m (70 kgf\*cm, 61 in.\*lbf)**

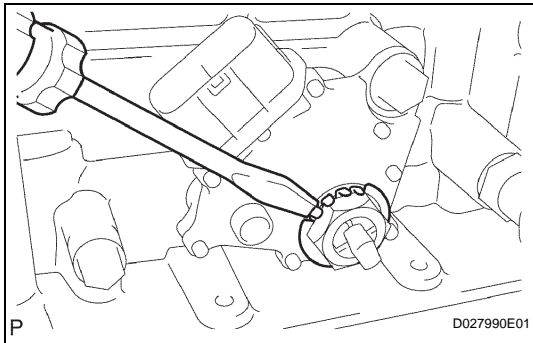


- Push the control shaft rearward as much as possible.
- Return the control shaft lever 2 notches to the N position.



- (e) Align the neutral basic line with the switch groove as shown in the illustration, and tighten the adjusting bolt.

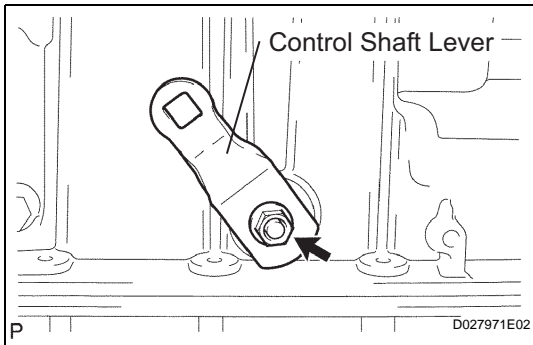
**Torque: 13 N\*m (129 kgf\*cm, 9.4 ft.\*lbf)**



- (f) Using a screwdriver, bend the tabs of the lock washer.

**HINT:**

Bend at least 2 of the lock washer tabs.



#### 58. INSTALL TRANSMISSION CONTROL SHAFT LEVER LH

- (a) Install the control shaft lever LH with the washer and nut.

**Torque: 16 N\*m (163 kgf\*cm, 12 ft.\*lbf)**