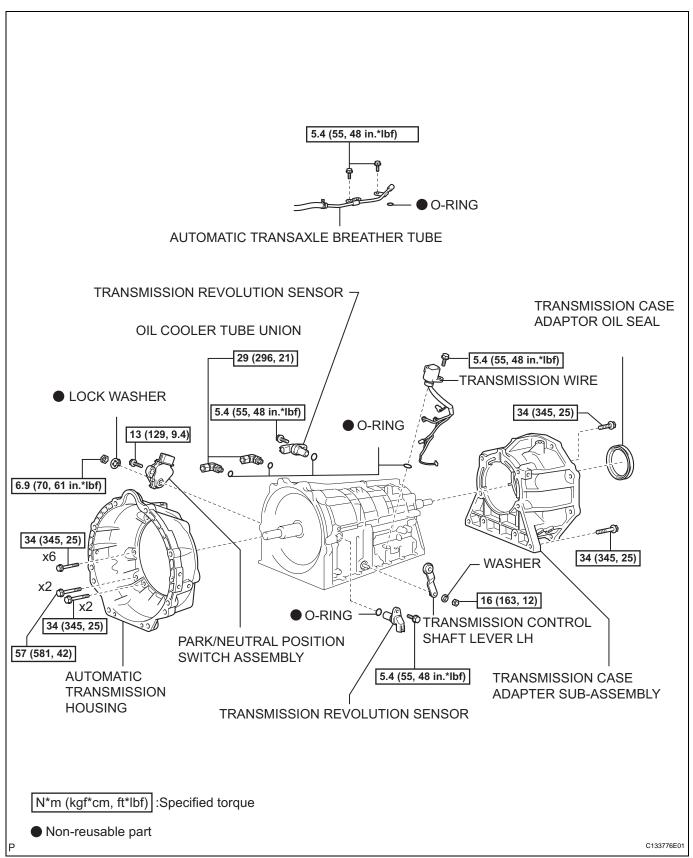
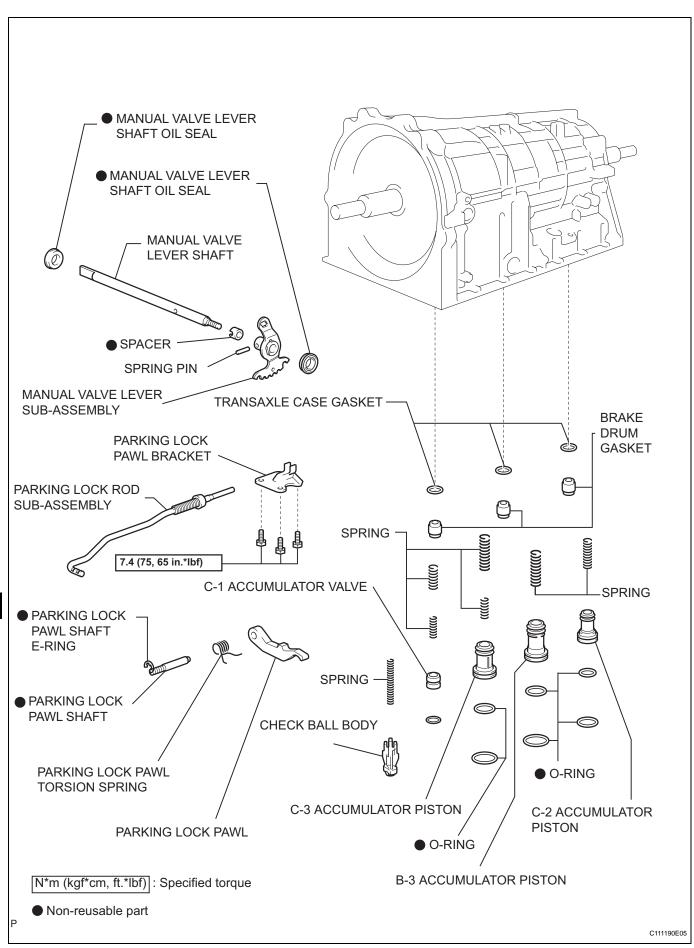
AUTOMATIC TRANSMISSION UNIT

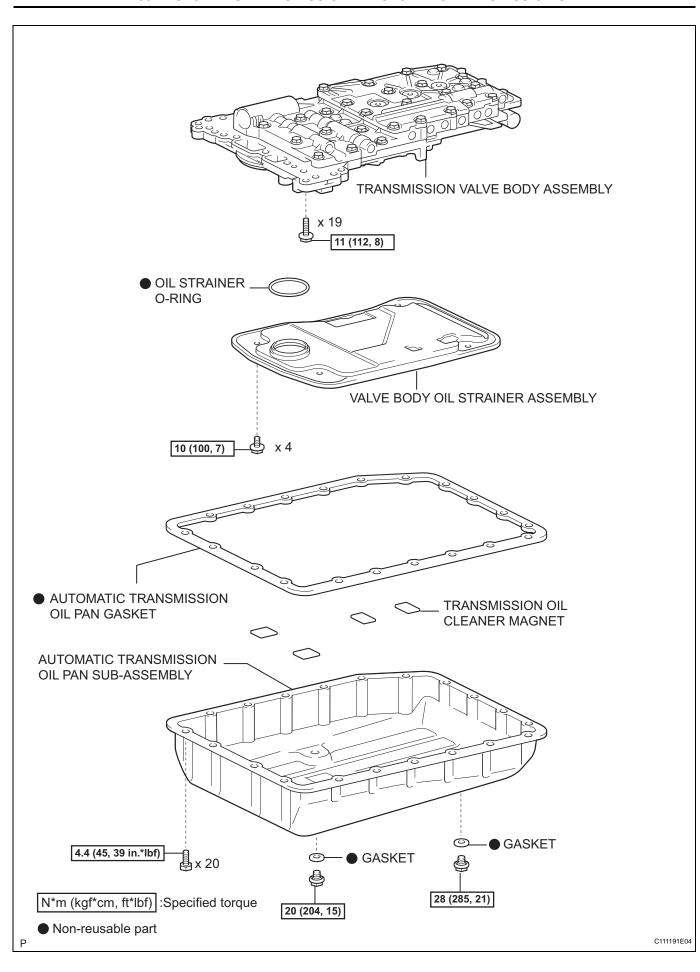
COMPONENTS



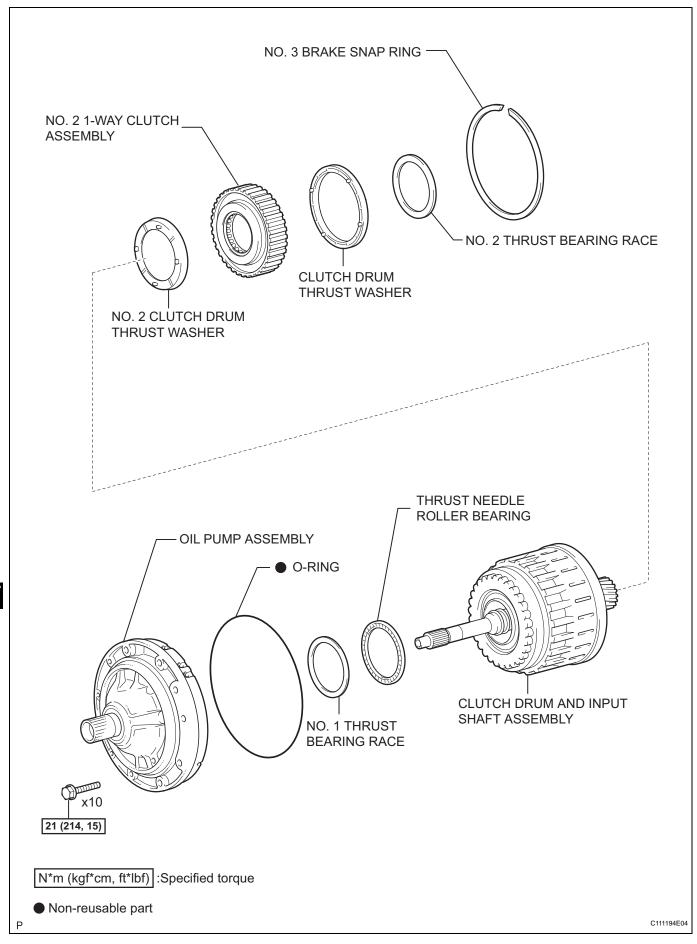
ΑI

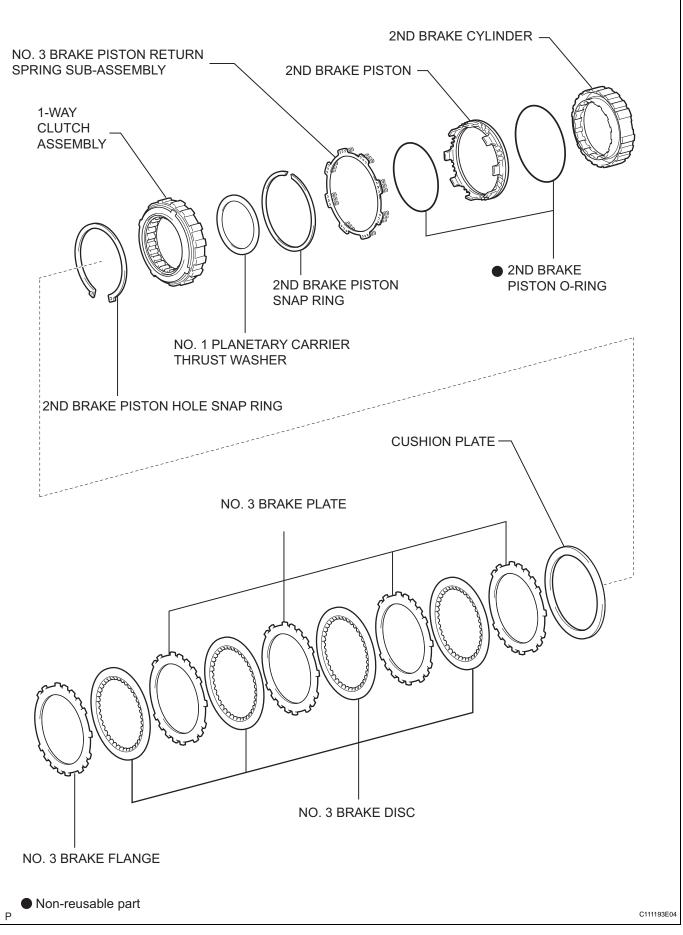


AT

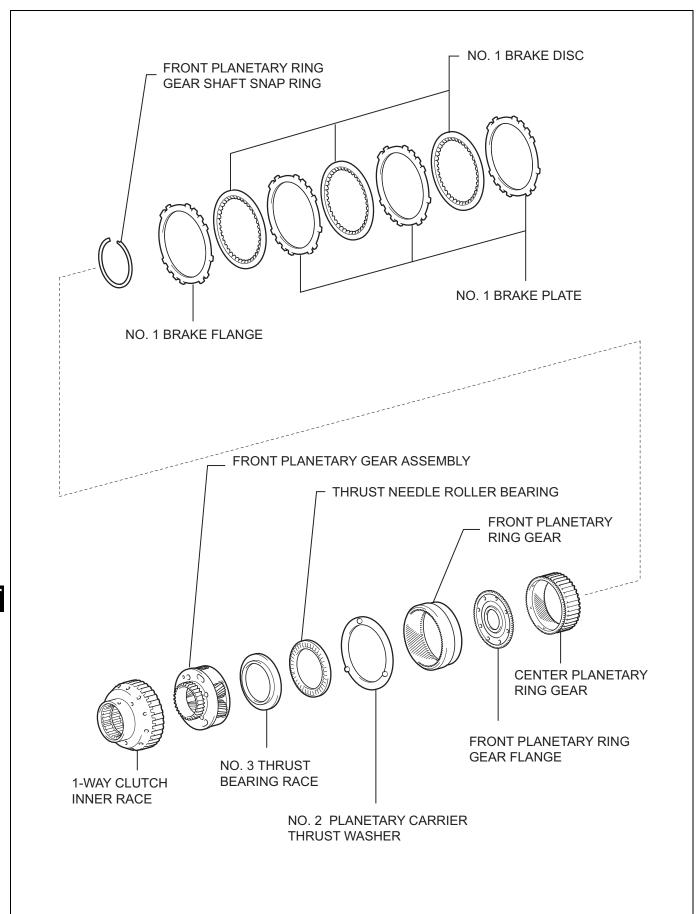


ΑI

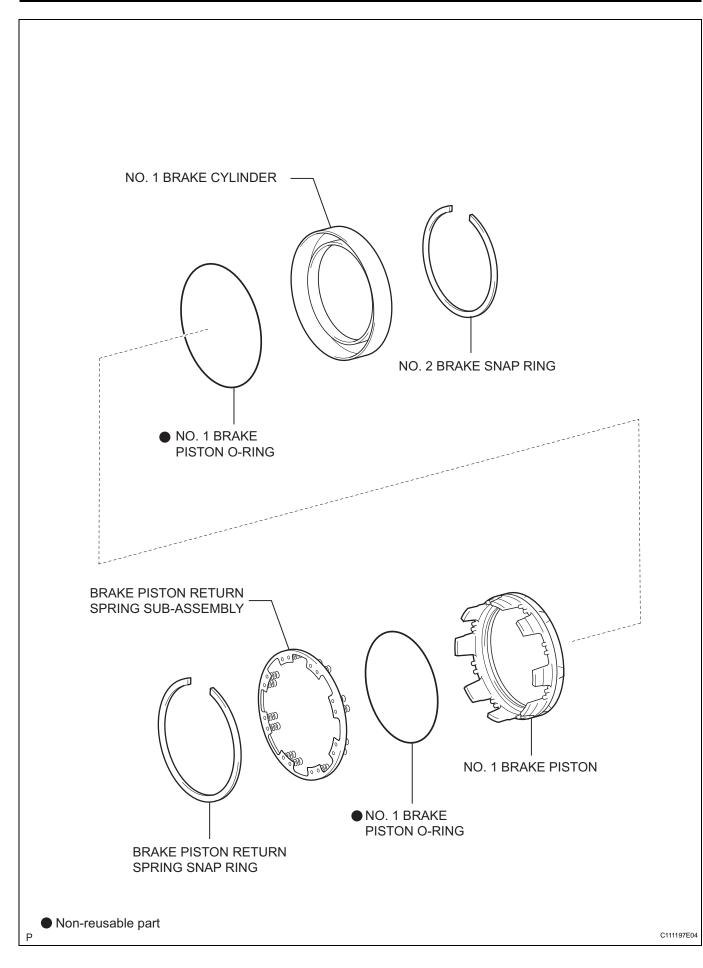




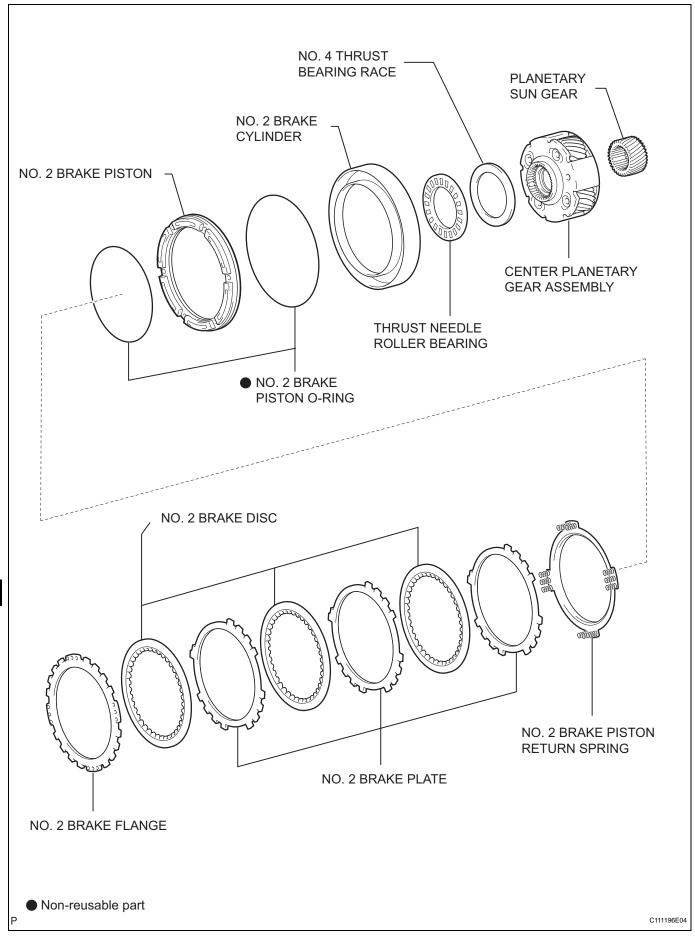
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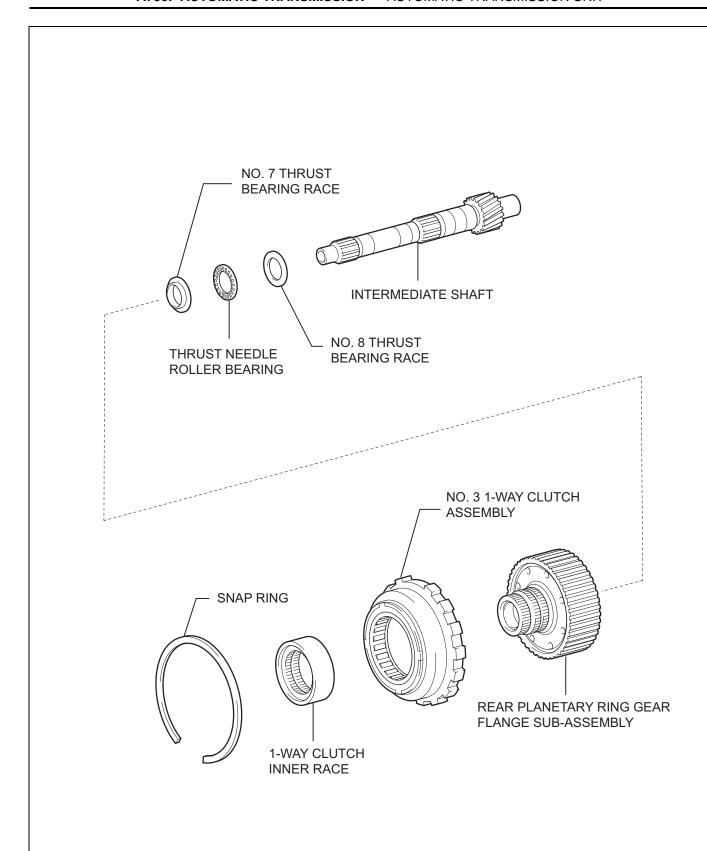


 AT

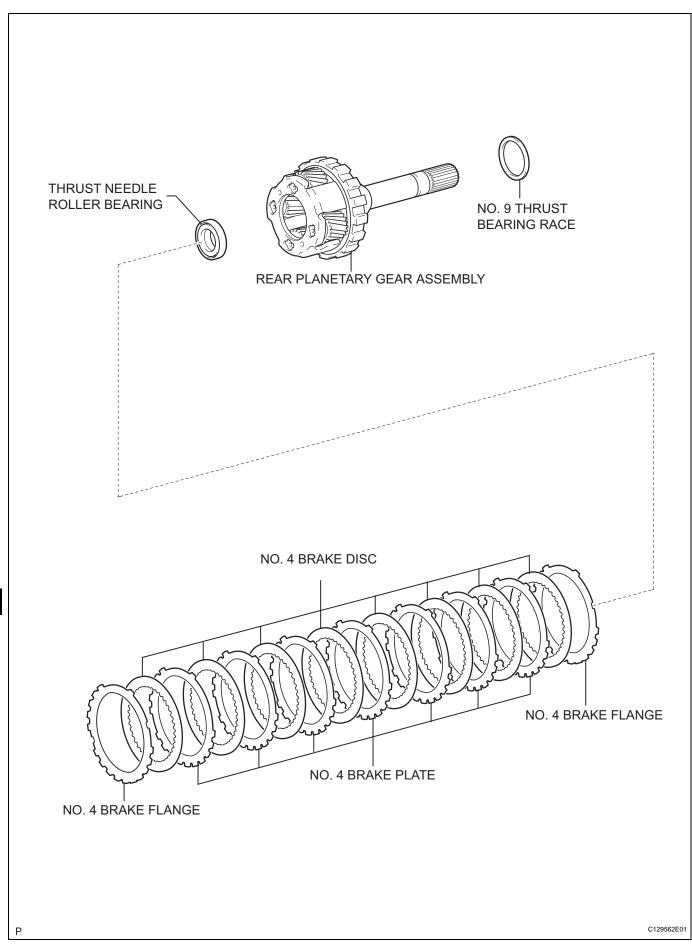


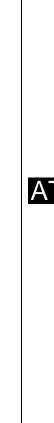


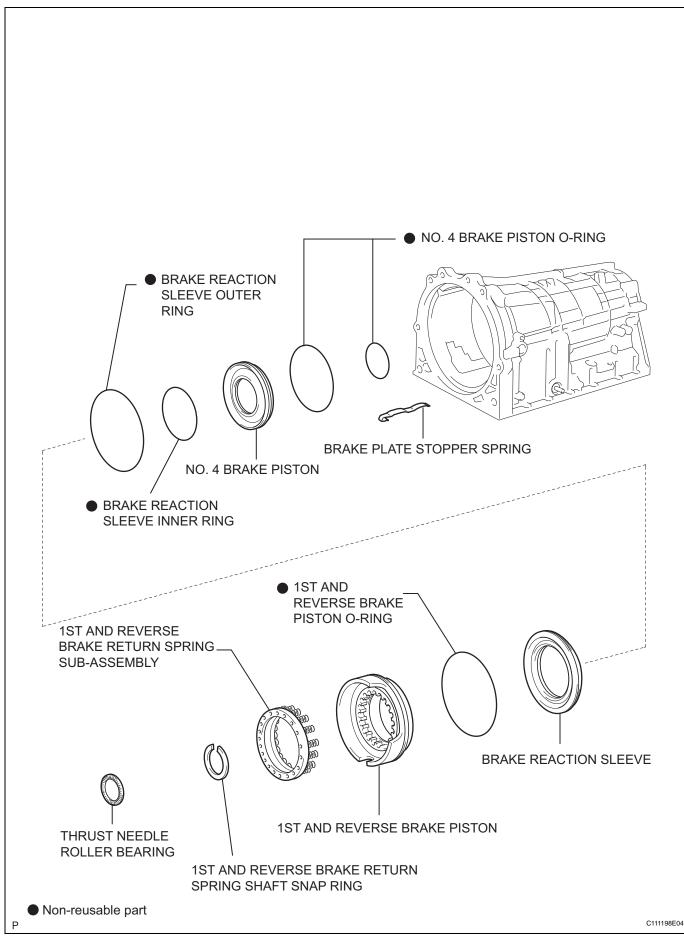
C111195E05

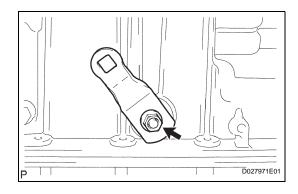


Р



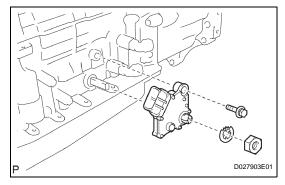






DISASSEMBLY

- 1. REMOVE TRANSMISSION CONTROL SHAFT LEVER LH
 - (a) Remove the nut, washer and control shaft lever LH.

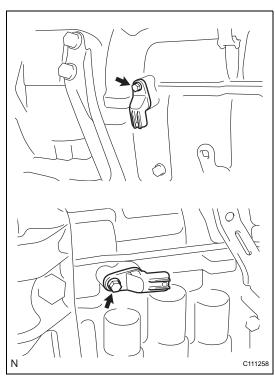


2. REMOVE PARK/NEUTRAL POSITION SWITCH ASSEMBLY

- (a) Using a screwdriver, pry out the lock washer.
- (b) Remove the nut, lock washer and bolt.
- (c) Remove the park/neutral position switch.

3. REMOVE OIL COOLER TUBE UNION

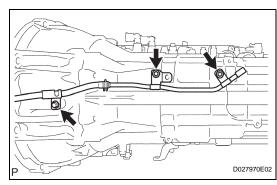
- (a) Remove the 2 oil cooler tube unions.
- (b) Remove the O-ring from the oil cooler tube union.



AT

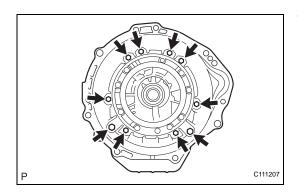
4. REMOVE TRANSMISSION REVOLUTION SENSOR

- (a) Remove the 2 bolts and 2 transmission revolution sensors.
- (b) Remove the O-ring from each sensor.



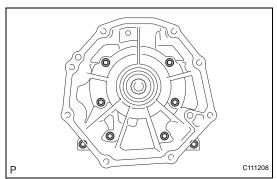
5. REMOVE AUTOMATIC TRANSAXLE BREATHER TUBE

- (a) Remove the 3 bolts.
- (b) Remove the breather tube.
- (c) Remove the O-ring from breather tube.



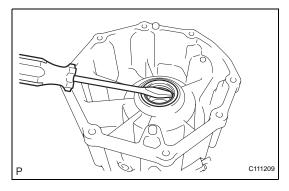
6. REMOVE AUTOMATIC TRANSMISSION HOUSING

- (a) Remove the 10 bolts.
- (b) Remove the transmission housing.



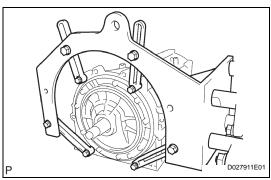
7. REMOVE TRANSMISSION CASE ADAPTER SUB-ASSEMBLY

(a) Remove the 8 bolts and transmission case adapter.



8. REMOVE TRANSMISSION CASE ADAPTOR OIL SEAL

(a) Using a screwdriver, pry out the oil seal.



9. FIX AUTOMATIC TRANSMISSION CASE SUB-ASSEMBLY

(a) Install the transmission case onto the overhaul attachment.

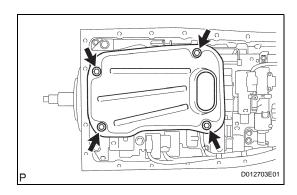
10. REMOVE AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY

NOTICE:

Do not turn the transmission over as this will contaminate the valve body with foreign matter on the bottom of the pan.

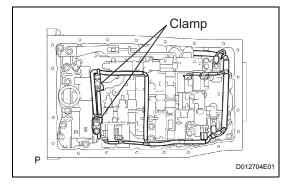
- (a) Remove the drain plug and the 20 bolts.
- 11. INSPECT AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY (See page AT-217)





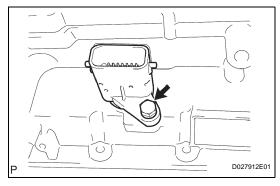
12. REMOVE VALVE BODY OIL STRAINER ASSEMBLY

- (a) Turn over the transmission.
- (b) Remove the 4 bolts holding the valve body oil strainer assembly from the valve body.
- (c) Remove the O-ring form the valve body oil strainer assembly.



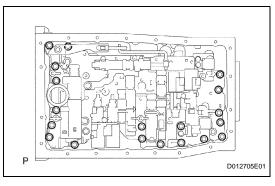
13. REMOVE TRANSMISSION WIRE

- (a) Remove the ATF temperature sensor.
- (b) Remove the 2 bolts and 2 clamps.
- (c) Disconnect the 7 connectors from the shift solenoid valves.



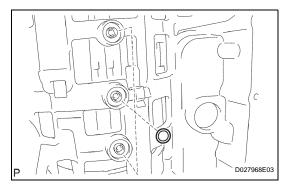
- (d) Remove the bolt from the case.
- (e) Pull the transmission wire out of the transmission case.
- (f) Remove the O-ring from the transmission wire.





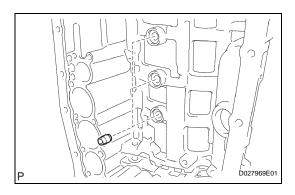
14. REMOVE TRANSMISSION VALVE BODY ASSEMBLY

- (a) Remove the 19 bolts.
- (b) Remove the valve body assembly.



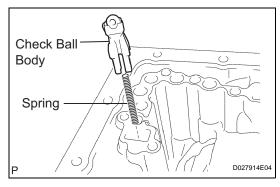
15. REMOVE TRANSAXLE CASE GASKET

(a) Remove the 3 transaxle case gaskets.



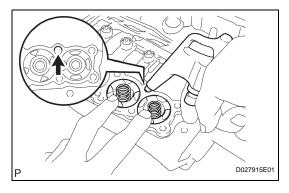
16. REMOVE BRAKE DRUM GASKET

(a) Remove the 3 brake drum gaskets.



17. REMOVE CHECK BALL BODY

(a) Remove the check ball body and the spring.

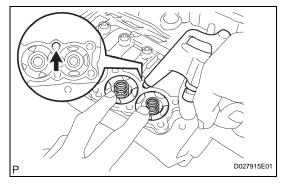


18. REMOVE C-2 ACCUMULATOR PISTON

- (a) Applying compressed air to the oil hole, remove the C-2 accumulator piston and spring.
- (b) Remove the 2 O-rings from the piston.

NOTICE:

Be careful as the C-3 and B-3 accumulator pistons may jump out.

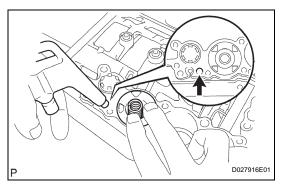


19. REMOVE B-3 ACCUMULATOR PISTON

- (a) Applying compressed air to the oil hole, remove the B-3 accumulator piston and spring.
- (b) Remove the 2 O-rings from the piston.

NOTICE:

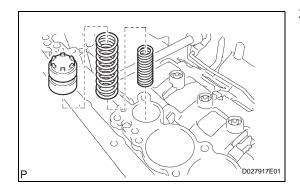
Be careful as the C-3 accumulator piston may jump out.



20. REMOVE C-3 ACCUMULATOR PISTON

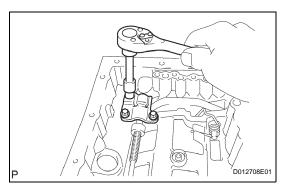
- (a) Applying compressed air to the oil hole, remove the C-3 accumulator piston and 2 springs.
- (b) Remove the 2 O-rings from the piston.





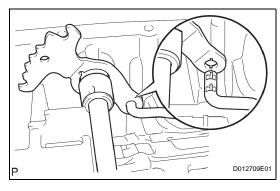
21. REMOVE C-1 ACCUMULATOR VALVE

(a) Remove the C-1 accumulator valve and 2 springs.



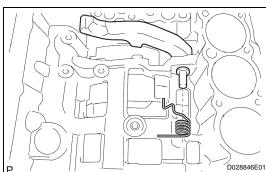
22. REMOVE PARKING LOCK PAWL BRACKET

(a) Remove the 3 bolts and parking lock pawl bracket.



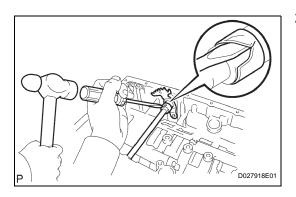
23. REMOVE PARKING LOCK ROD SUB-ASSEMBLY

(a) Disconnect the parking lock rod from the manual valve lever.



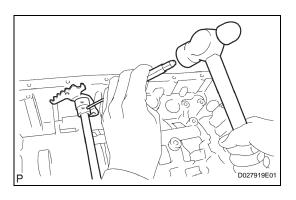
24. REMOVE PARKING LOCK PAWL SHAFT

- (a) Pull out the parking lock pawl shaft from the front side, and then remove the lock pawl and spring.
- (b) Remove the E-ring from the shaft.



25. REMOVE MANUAL VALVE LEVER SUB-ASSEMBLY

(a) Using a hammer and screwdriver, cut off the spacer and remove it from the shaft.

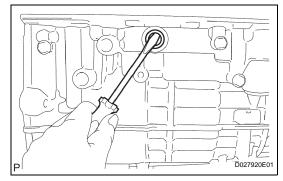


(b) Using a pin punch and hammer, tap out the spring pin.

HINT:

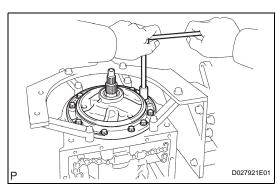
Slowly drive out the spring pin so that it does not fall into the transmission case.

(c) Pull the manual valve lever shaft out through the case, and remove the manual valve lever.



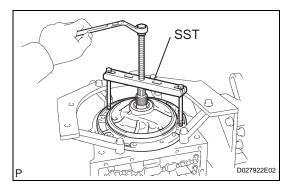
26. REMOVE MANUAL VALVE LEVER SHAFT OIL SEAL

(a) Using a screwdriver, remove the 2 oil seals.



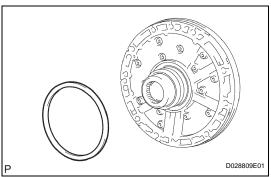
27. REMOVE OIL PUMP ASSEMBLY

(a) Remove the 10 bolts holding the oil pump from the transmission case.

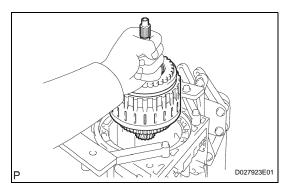


(b) Using SST, remove the oil pump. **SST 09350-30020 (09350-07020)**



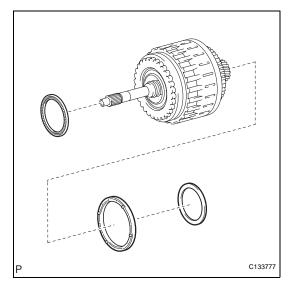


(c) Remove the No. 1 thrust bearing race from the front oil pump.

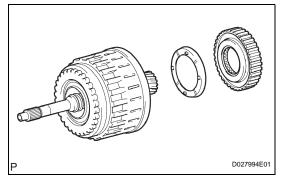


28. REMOVE CLUTCH DRUM AND INPUT SHAFT ASSEMBLY

(a) Remove the clutch drum and input shaft drum assembly from the transmission case.

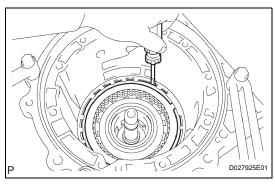


- (b) Remove the clutch drum thrust washer, No. 2 thrust bearing race and thrust needle roller bearing.
- 29. INSPECT NO. 2 1-WAY CLUTCH ASSEMBLY (See page AT-218)



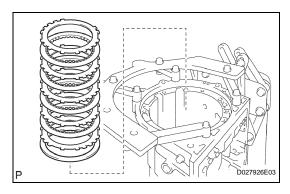
30. REMOVE NO. 2 1-WAY CLUTCH ASSEMBLY

(a) Remove the No. 2 1-way clutch assembly and No. 2 clutch drum thrust washer from the clutch drum and input shaft assembly.



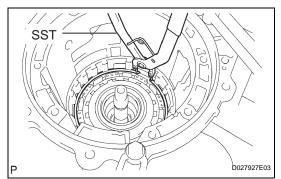
31. REMOVE NO. 3 BRAKE SNAP RING

(a) Using a screwdriver, remove the No. 3 brake snap ring from the case.



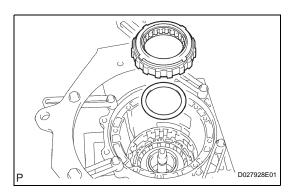
32. REMOVE NO. 3 BRAKE DISC

- (a) Remove the flange, cushion plate, 4 discs and 4 plates from the case.
- 33. INSPECT NO. 3 BRAKE DISC (See page AT-218)



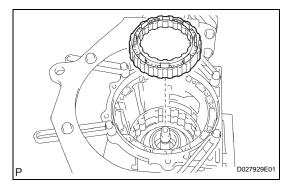
34. REMOVE 2ND BRAKE PISTON HOLE SNAP RING

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



35. REMOVE 1-WAY CLUTCH ASSEMBLY

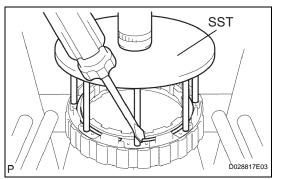
(a) Remove the 1-way clutch assembly and No. 1 planetary carrier thrust washer from the case.



36. REMOVE 2ND BRAKE CYLINDER

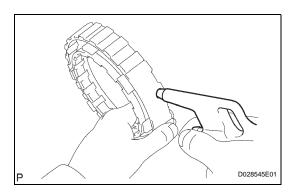
(a) Remove the 2nd brake cylinder from the case.



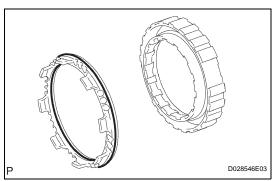


37. REMOVE 2ND BRAKE PISTON

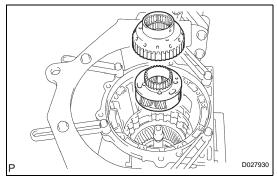
- (a) Using SST and a press, remove the snap ring. SST 09351-40010
- (b) Remove the 2nd brake piston return spring from the 2nd brake piston.



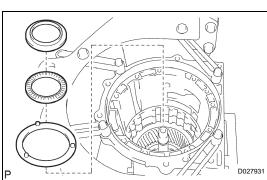
(c) Hold the 2nd brake piston and apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the brake cylinder to remove the 2nd brake piston.



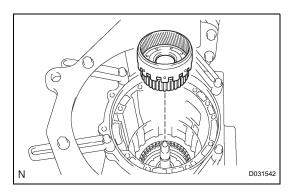
- (d) Remove the 2 O-rings from the 2nd brake piston.
- 38. INSPECT NO. 3 BRAKE PISTON RETURN SPRING SUB-ASSEMBLY (See page AT-218)



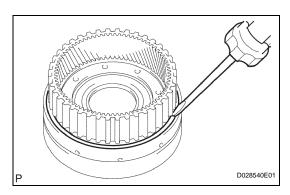
- 39. REMOVE FRONT PLANETARY GEAR ASSEMBLY
 - (a) Remove the front planetary gear and 1-way clutch inner race from the case.



- (b) Remove the thrust needle roller bearing, No. 3 thrust bearing race and No. 2 planetary carrier thrust washer from the front planetary gear.
- 40. INSPECT FRONT PLANETARY GEAR ASSEMBLY (See page AT-218)
- 41. INSPECT 1-WAY CLUTCH ASSEMBLY (See page AT-219)

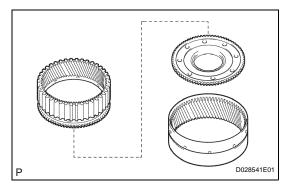


- 42. REMOVE FRONT PLANETARY RING GEAR
 - (a) Remove the front planetary ring gear from the transmission case.

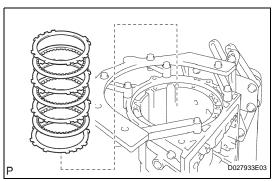


43. REMOVE CENTER PLANETARY RING GEAR

(a) Using a screwdriver, remove the snap ring.

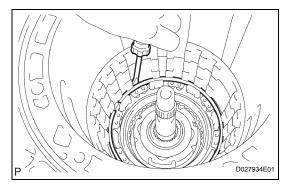


(b) Remove the center planetary ring gear and front planetary ring gear flange from the front planetary ring gear.



44. REMOVE NO. 1 BRAKE DISC

- (a) Remove the flange, 3 discs and 3 plates from the case.
- 45. INSPECT NO. 1 BRAKE DISC (See page AT-219)



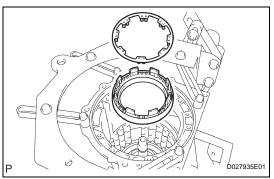
46. REMOVE BRAKE PISTON RETURN SPRING SNAP RING

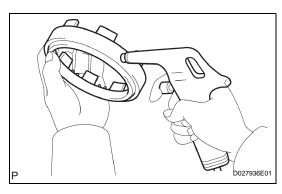
(a) Using a screwdriver, remove the brake piston return spring snap ring from the case.

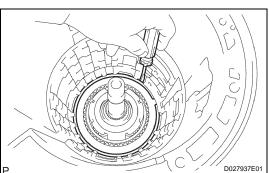


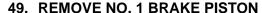
- (a) Remove the brake piston return spring and No. 1 brake piston with the No. 1 brake cylinder from the transmission case.
- 48. INSPECT BRAKE PISTON RETURN SPRING SUB-ASSEMBLY (See page AT-219)







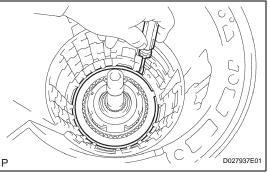




(a) Hold the No. 1 brake piston and apply compressed air (392 kPa, 4 kgf/cm², 57 psi) to the transmission case to remove the No. 1 brake piston. HINT:

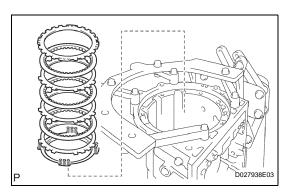
If the piston does not pop out with compressed air, lift the piston out with needle-nose pliers.

(b) Remove the 2 O-rings from the No. 1 brake piston.



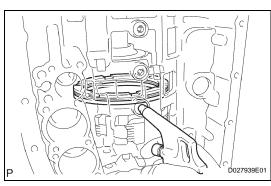
50. REMOVE NO. 2 BRAKE DISC

(a) Using a screwdriver, remove the snap ring from the case.



- (b) Remove the flange, brake piston return spring, 3 discs and 3 plates from the case.
- 51. INSPECT NO. 2 BRAKE DISC (See page AT-219)
- **52. INSPECT NO.2 BRAKE PISTON RETURN SPRING** SUB-ASSEMBLY (See page AT-219)



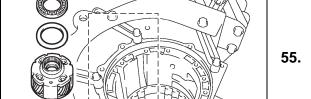


53. REMOVE NO. 2 BRAKE PISTON

(a) Hold the No. 2 brake piston and apply compressed air (392 kPa, 4 kgf/cm², 57 psi) to the transmission case to remove the No. 2 brake piston. HINT:

If the piston does not pop out with compressed air, lift the piston out with needle-nose pliers.

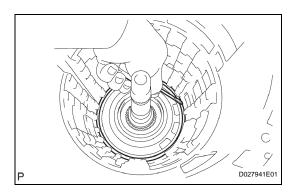
(b) Remove the 2 O-rings from the No. 2 brake piston.



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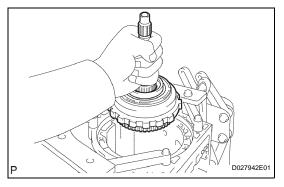
54. REMOVE CENTER PLANETARY GEAR ASSEMBLY

- (a) Remove the center planetary gear assembly, planetary sun gear, thrust needle roller bearing and No. 4 thrust bearing race from the case.
- 55. INSPECT CENTER PLANETARY GEAR ASSEMBLY (See page AT-220)

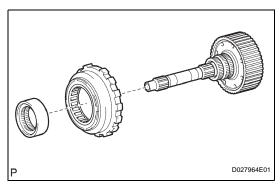


56. REMOVE INTERMEDIATE SHAFT

(a) Using a screwdriver, remove the snap ring from the case.

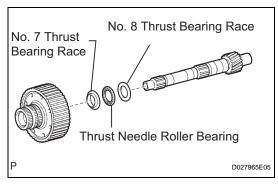


- (b) Remove the intermediate shaft with the No. 3 1-way clutch assembly from the case.
- 57. INSPECT NO. 3 1-WAY CLUTCH ASSEMBLY (See page AT-220)

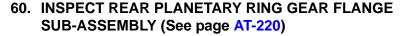


58. REMOVE NO. 3 1-WAY CLUTCH ASSEMBLY

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



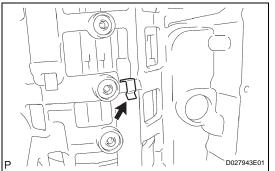
- 59. REMOVE REAR PLANETARY RING GEAR FLANGE SUB-ASSEMBLY
 - (a) Remove the No. 8 thrust bearing race, thrust needle roller bearing, No. 7 thrust bearing race and rear planetary ring gear flange from the intermediate shaft.



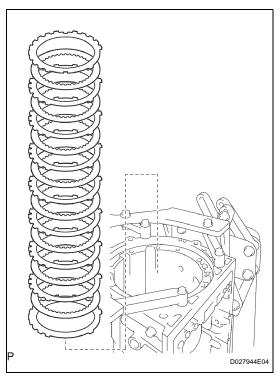
61. INSPECT INTERMEDIATE SHAFT (See page AT-220)



(a) Remove the brake plate stopper spring from the case.

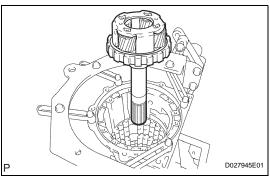






63. REMOVE NO. 4 BRAKE DISC

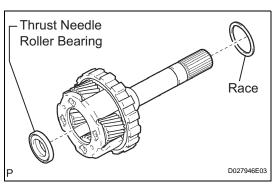
- (a) Remove the 7 plates, 8 discs and 2 flanges from the case.
- 64. INSPECT NO. 4 BRAKE DISC (See page AT-221)



65. REMOVE REAR PLANETARY GEAR ASSEMBLY

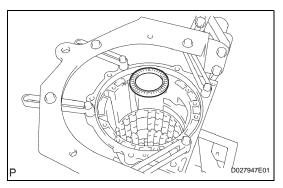
(a) Remove the rear planetary gear assembly from the case.

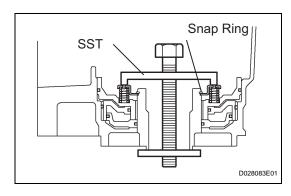


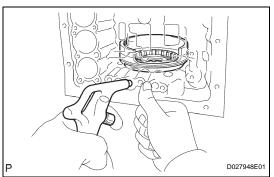


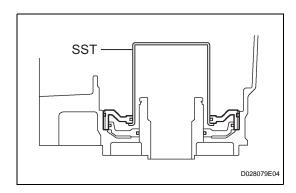
(b) Remove the No. 9 thrust bearing race and thrust needle roller bearing from the rear planetary gear assembly.

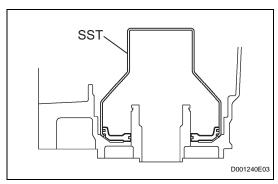
- (c) Remove the thrust needle roller bearing from the case.
- 66. INSPECT REAR PLANETARY GEAR ASSEMBLY (See page AT-221)

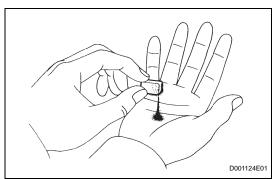












67. REMOVE 1ST AND REVERSE BRAKE RETURN SPRING SUB-ASSEMBLY

(a) Place SST on the spring retainer and compress the brake return spring.

SST 09350-30020 (09350-07050)

(b) Using SST, remove the snap ring and brake return spring.

SST 09350-30020 (09350-07070)

68. INSPECT 1ST AND REVERSE BRAKE RETURN SPRING SUB-ASSEMBLY (See page AT-222)

69. REMOVE 1ST AND REVERSE BRAKE PISTON

(a) Hold the 1st and reverse brake piston and apply compressed air (392 kPa, 4 kgf/cm², 57 psi) to the transmission case to remove the No. 2 brake piston. HINT:

If the piston does not pop out with compressed air, lift the piston out with needle-nose pliers.

(b) Remove the O-ring from the 1st and reverse brake piston.

70. REMOVE BRAKE REACTION SLEEVE

- (a) Using SST, remove the reaction sleeve. **SST 09350-30020 (09350-07080)**
- (b) Remove the O-ring from the reaction sleeve.

71. REMOVE NO. 4 BRAKE PISTON

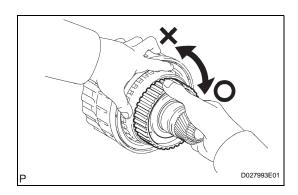
- (a) Using SST, remove the No. 4 brake piston. **SST 09350-30020 (09350-07090)**
- (b) Remove the 2 O-rings from the No. 4 piston.

INSPECTION

I. INSPECT AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY

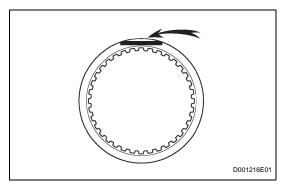
- (a) Remove the magnets, and use them to collect steel particles.
- (b) Carefully look at the foreign matter and particles in the pan and on the magnets to anticipate the type of wear you will find in the transmission.
 - Steel (magnetic): bearing, gear and clutch plate wear
 - · Brass (non-magnetic): bushing wear





2. INSPECT NO. 2 1-WAY CLUTCH ASSEMBLY

- (a) Hold the reverse clutch hub and turn the No. 2 1-way clutch assembly.
- (b) Check that the No. 2 1-way clutch assembly turns freely clockwise and locks when turned counterclockwise.

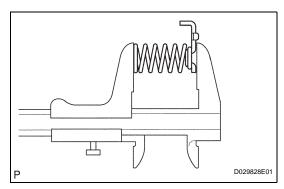


3. INSPECT NO. 3 BRAKE DISC

(a) Replace all discs if one of the following problems is present: 1) a disc, plate or flange is worn or burnt, 2) the lining of a disc is peeled off or discolored, or 3) grooves or printed numbers have even slight damage.

NOTICE:

Before assembling new discs, soak them in ATF for at least 15 minutes.



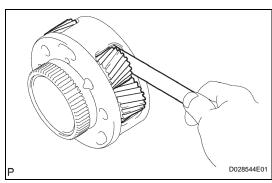
4. INSPECT NO. 3 BRAKE PISTON RETURN SPRING SUB-ASSEMBLY

(a) Using vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length:

15.72 mm (0.619 in.)





5. INSPECT FRONT PLANETARY GEAR ASSEMBLY

(a) Using a feeler gauge, measure the front planetary pinion gear thrust clearance.

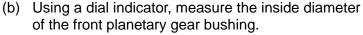
Standard clearance:

0.2 to 0.60 mm (0.008 to 0.024 in.)

Maximum clearance:

0.65 mm (0.026 in.)

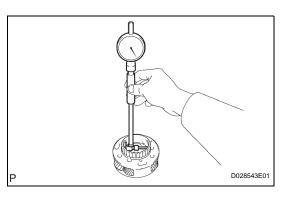
If the clearance is greater than the maximum, replace the front planetary gear assembly.

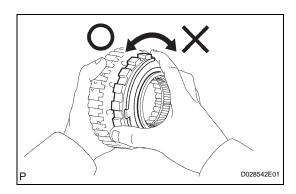


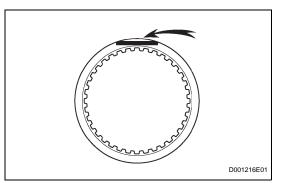
Maximum inside diameter:

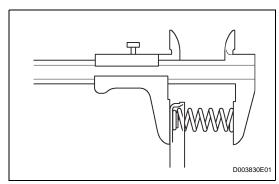
57.48 mm (2.263 in.)

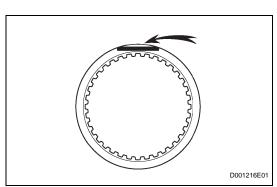
If the inside diameter is greater than the maximum, replace the front planetary gear.

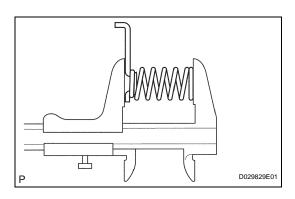












6. INSPECT 1-WAY CLUTCH ASSEMBLY

- (a) Install the 1-way clutch assembly onto the 1-way clutch inner race.
- (b) Hold the 1-way clutch inner race and turn the 1-way clutch assembly.
- (c) Check that the 1-way clutch assembly turns freely counterclockwise and locks when turned clockwise.
- (d) Remove the 1-way clutch assembly from the 1-way clutch inner race.

7. INSPECT NO. 1 BRAKE DISC

(a) Replace all discs if one of the following problems is present: 1) a disc, plate or flange is worn or burnt, 2) the lining of a disc is peeled off or discolored, or 3) grooves or printed numbers have even slight damage.

NOTICE:

Before assembling new discs, soak them in ATF for at least 15 minutes.

8. INSPECT BRAKE PISTON RETURN SPRING SUB-ASSEMBLY

(a) Using vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length: 17.05 mm (0.671 in.)

INSPECT NO. 2 BRAKE DISC

(a) Replace all discs if one of the following problems is present: 1) a disc, plate or flange is worn or burnt, 2) the lining of a disc is peeled off or discolored, or 3) grooves or printed numbers have even slight damage.

NOTICE:

Before assembling new discs, soak them in ATF for at least 15 minutes.

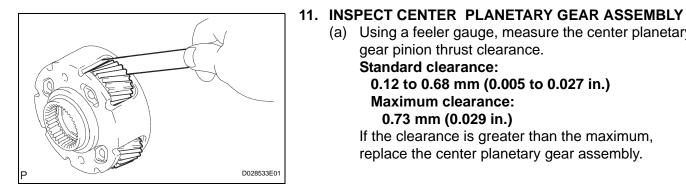
10. INSPECT NO. 2 BRAKE PISTON RETURN SPRING SUB-ASSEMBLY

(a) Using vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length:

17.45 mm (0.687 in.)





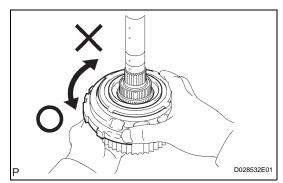
(a) Using a feeler gauge, measure the center planetary gear pinion thrust clearance.

Standard clearance:

0.12 to 0.68 mm (0.005 to 0.027 in.) Maximum clearance:

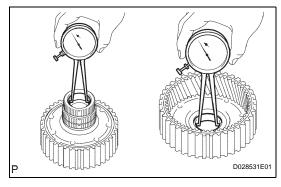
0.73 mm (0.029 in.)

If the clearance is greater than the maximum, replace the center planetary gear assembly.



12. INSPECT NO. 3 1-WAY CLUTCH ASSEMBLY

- (a) Hold the rear planetary ring gear flange sub assembly and turn the 1-way clutch assembly.
- (b) Check that the 1-way clutch assembly turns freely counterclockwise and locks when turned clockwise.



13. INSPECT REAR PLANETARY RING GEAR FLANGE **SUB-ASSEMBLY**

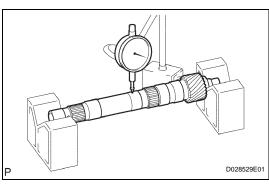
(a) Using a dial indicator, measure the inside diameter of the rear planetary ring gear bushing.

Maximum inside diameter:

32.18 mm (1.2667 in.)

If the inside diameter is greater than the maximum, replace the rear planetary ring gear.





14. INSPECT INTERMEDIATE SHAFT

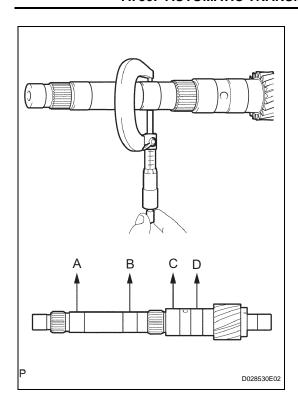
(a) Using a dial indicator, check the intermediate shaft runout.

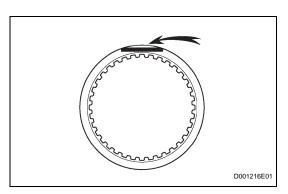
Maximum runout:

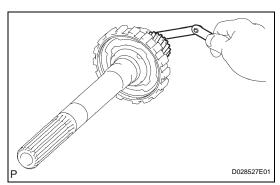
0.08 mm (0.003 in.)

NOTICE:

If the bend exceeds the specification, replace the intermediate shaft with a new one.







(b) Using a micrometer, check the outer diameter of the intermediate shaft positions shown in the diagram.

Standard diameter:

A: 25.962 to 25.975 mm (1.022 to 1.023 in.)

25.962 to 25.975 mm (1.022 to 1.023 in.)

C:

32.062 to 32.075 mm (1.262 to 1.263 in.)

D:

32.062 to 32.075 mm (1.262 to 1.263 in.)

Minimum diameter:

A:

25.912 mm (1.020 in.)

B:

25.912 mm (1.020in.)

C

32.012 mm (1.260 in.)

D:

32.012 mm (1.260 in.)

NOTICE:

If the outer diameter is outside the standard, replace the intermediate shaft with a new one.

15. INSPECT NO. 4 BRAKE DISC

(a) Replace all discs if one of the following problems is present: 1) a disc, plate or flange is worn or burnt, 2) the lining of a disc is peeled off or discolored, or 3) grooves or printed numbers have even slight damage.

NOTICE:

Before assembling new discs, soak them in ATF for at least 15 minutes.

16. INSPECT REAR PLANETARY GEAR ASSEMBLY

(a) Using a feeler gauge, measure the rear planetary gear pinion thrust clearance.

Standard clearance:

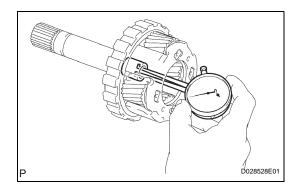
0.2 to 0.6 mm (0.008 to 0.024 in.)

Maximum clearance:

0.65 mm (0.026 in.)

If the clearance is greater than the maximum, replace the planetary gear assembly.

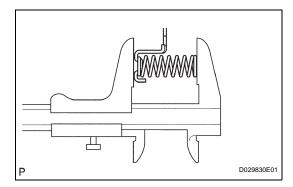




(b) Using a dial indicator, measure the inside diameter of the rear planetary gear bushing.

Maximum inside diameter: 20.075 mm (0.7904 in.)

If the inside diameter is greater than the maximum, replace the rear planetary gear assembly.

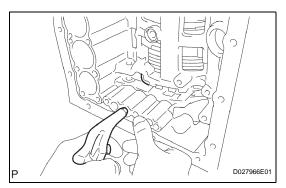


17. INSPECT 1ST AND REVERSE BRAKE RETURN SPRING SUB-ASSEMBLY

(a) Using vernier calipers, measure the free length of the spring together with the spring seat.

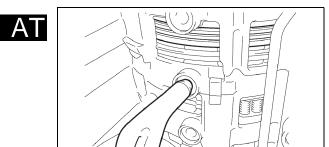
Standard free length:

23.74 mm (0.9347 in.)



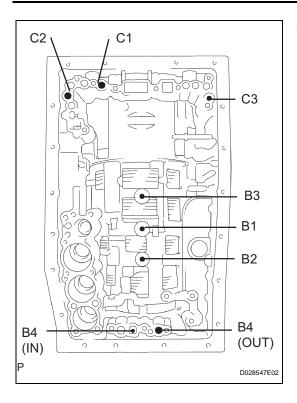
18. INSPECT PACK CLEARANCE OF FIRST AND REVERSE BRAKE

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



19. 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.



20. INSPECT INDIVIDUAL PISTON OPERATION INSPECTION

(a) Check the operating sound while applying compressed air into the oil holes indicated in the illustration.

HINT:

When inspecting the O/D direct clutch, use the C3 accumulator piston holes indicated in the illustration. If there is no sound, disassemble and check the installation condition of the parts.

- (1) No. 2 clutch (C2)
- (2) No. 3 clutch (C3)
- (3) No. 1clutch (C1)
- (4) No. 3 brake (B3)
- (5) No. 1 brake (B1)
- (6) No. 2 brake (B2)
- (7) No. 4 brake (B4)