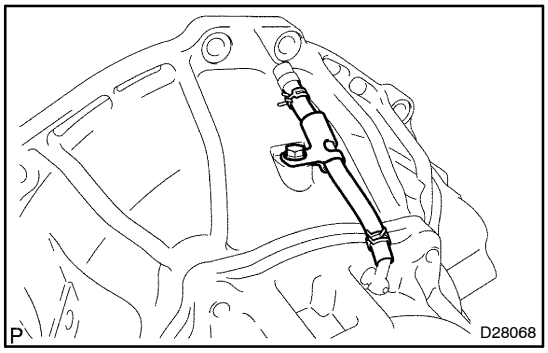
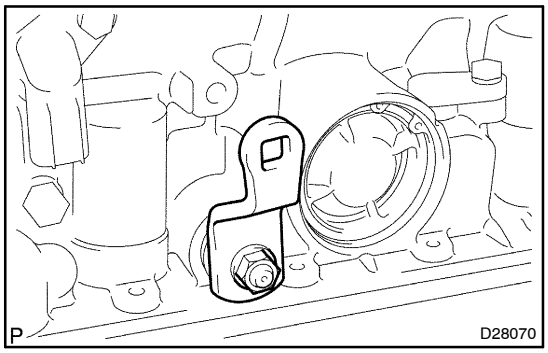
400W7–01

OVERHAUL

1. REMOVE DRAIN (ATM) PLUG SUB–ASSY

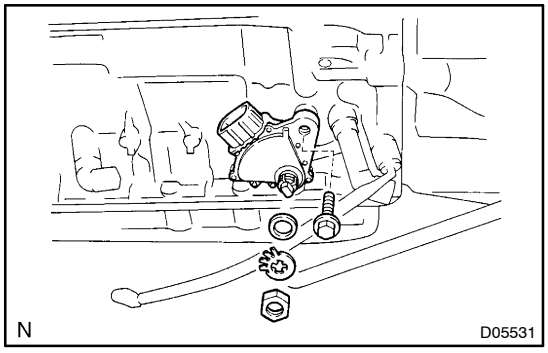


2. REMOVE BREATHER PLUG HOSE



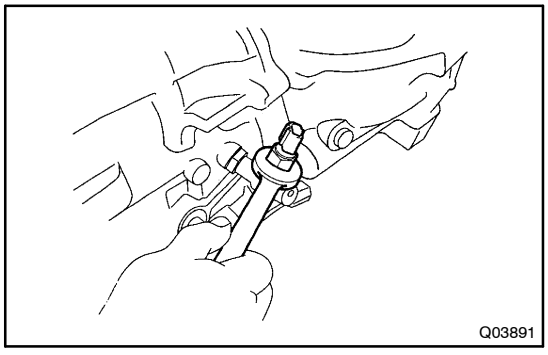
3. REMOVE TRANSMISSION CONTROL SHAFT LEVER LH

(a) Remove the nut, the washer and the control shaft lever.



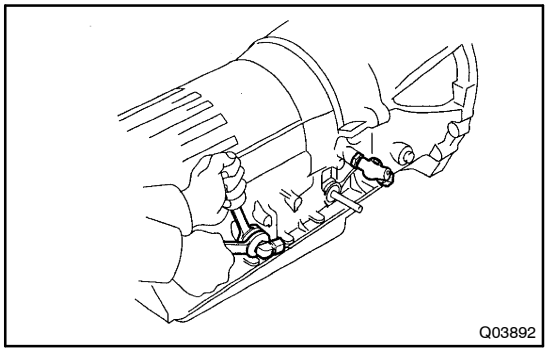
4. REMOVE PARK/NEUTRAL POSITION SWITCH ASSY

(a) Using a screwdriver, unstake the lock washer.
(b) Remove the nut, tne lock washer and the grommet.
(c) Remove the bolt and the park/neutral position switch.



5. REMOVE TEMPERATURE NO.2 SENSOR

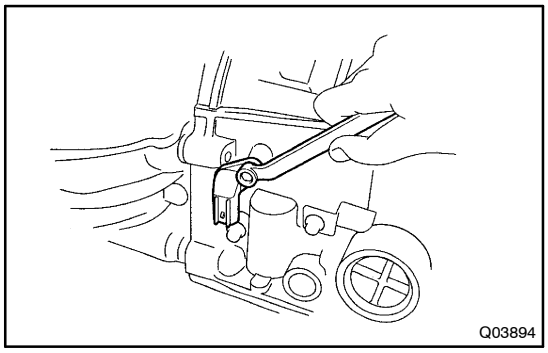
(a) Remove the temperature No.2 sensor.
(b) Remove the O–ring from the temperature No.2 sensor.



6. REMOVE OIL COOLER TUBE UNION

(a) Remove the 2 oil cooler tube unions.

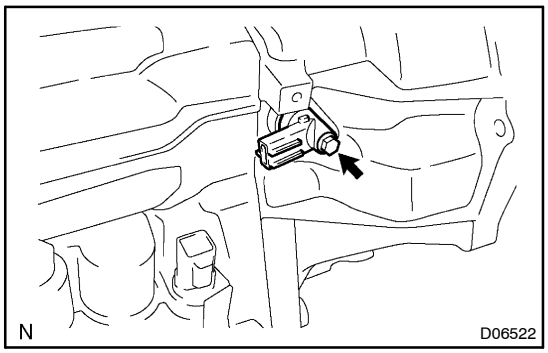
(b) Remove the O–rings from each oil cooler tube union.



7. REMOVE SPEED SENSOR

(a) Remove the bolt and the speed sensor.

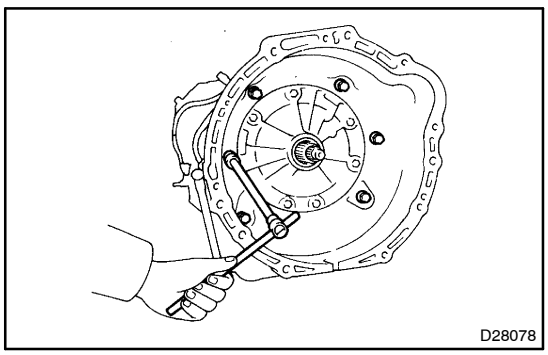
(b) Remove the O–ring from it.



8. REMOVE TRANSMISSION REVOLUTION SENSOR

(a) Remove the bolt and the transmission revolution sensor.

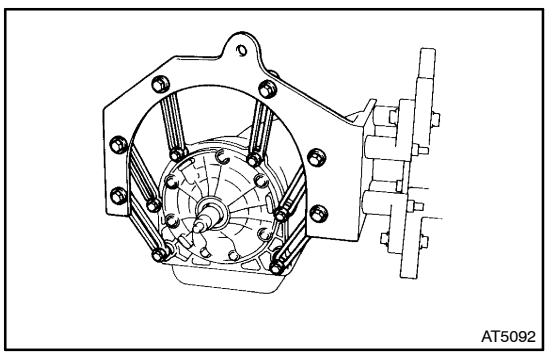
(b) Remove the O–ring from it.



9. REMOVE AUTOMATIC TRANSMISSION HOUSING

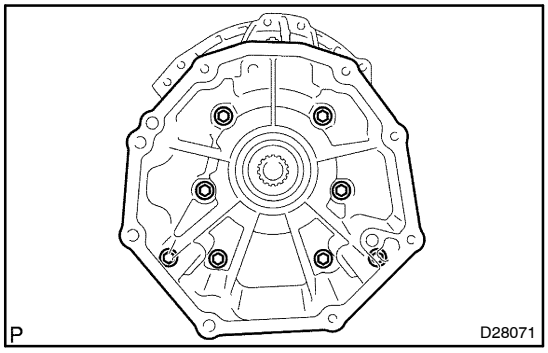
(a) Remove the 6 bolts.

(b) Remove the transmission housing.



10. FIX AUTOMATIC TRANSMISSION CASE SUB–ASSY

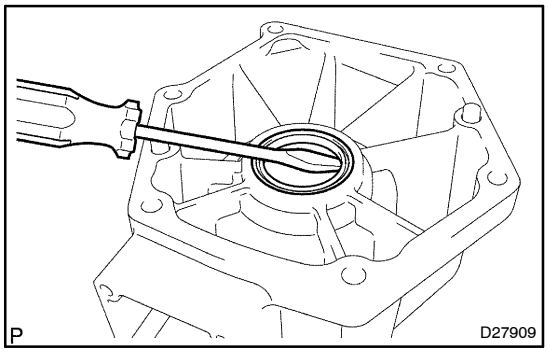
(a) Install the transmission case on the overhaul attachment.



11. REMOVE REAR ADAPTOR TRANSFER

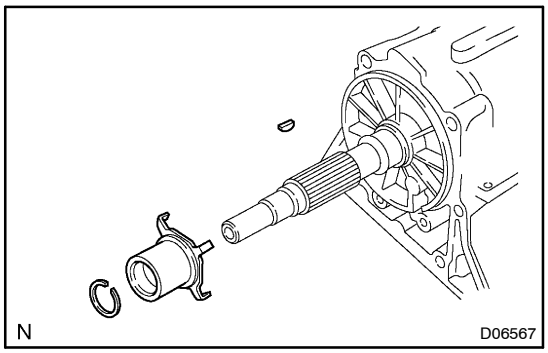
(a) Remove the 8 bolts.

(b) Remove the rear adaptor transfer.



12. REMOVE TRANSFER CASE ADAPTOR REAR OIL SEAL

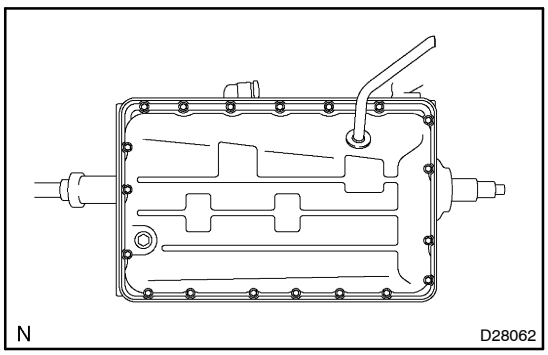
(a) Using a screwdriver, remove the transfer case adapter rear oil seal.



13. REMOVE SENSOR ROTOR

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

(b) Remove the sensor rotor and key.

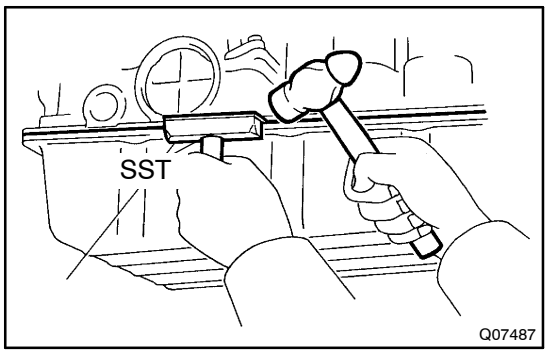


14. REMOVE AUTOMATIC TRANSMISSION OIL PAN SUB–ASSY

NOTICE:

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

(a) Remove the 19 bolts.

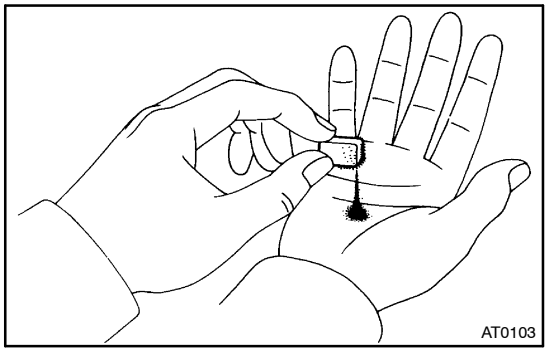


(b) Install the blade of SST between the transmission case and oil pan, and cut off the applied sealer.

NOTICE:

Be careful not to damage the oil pan and flange.

(c) Remove the pan by lifting the transmission case.
SST 09032–00100

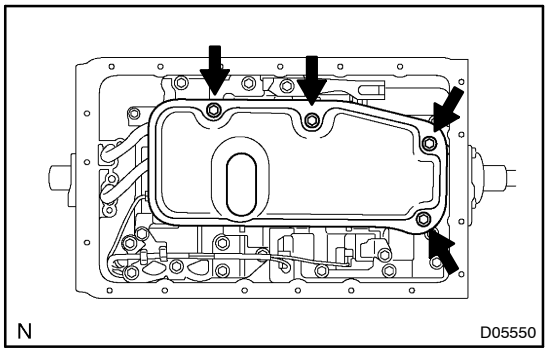


15. INSPECT AUTOMATIC TRANSMISSION OIL PAN SUB–ASSY

(a) Remove the magnets, and use them to collect steel particles.

Carefully lock 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.

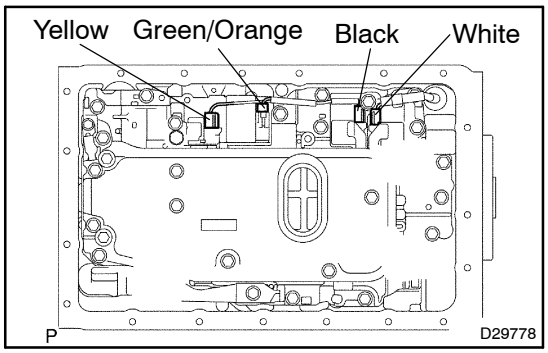
Steel (magnetic) : bearing, gear and clutch plate wear
Brass (non–magnetic) : bushing wear



16. REMOVE VALVE BODY OIL STRAINER ASSY

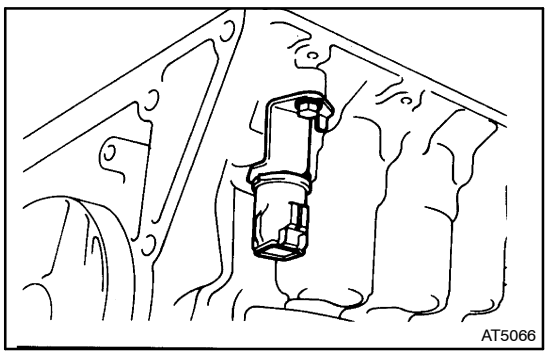
(a) Remove the 4 bolts holding the oil strainer to the valve body.

(b) Remove the oil strainer and 5 gaskets.



17. REMOVE TRANSMISSION WIRE

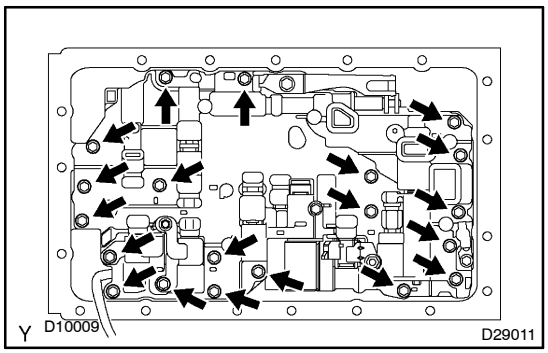
(a) Disconnect the 4 connectors from each shift solenoid valve.



(b) Remove the bolt and the stopper plate from the case.

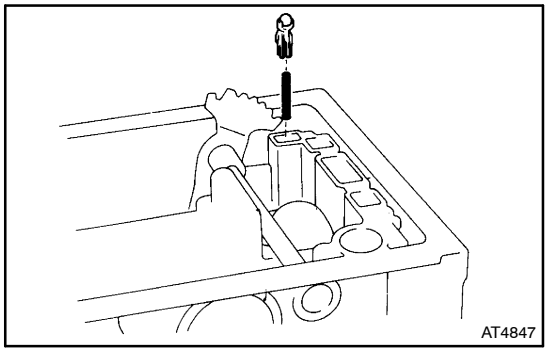
(c) Pull out the solenoid wiring from the transmission case.

(d) Remove the O–rings from the solenoid wiring.



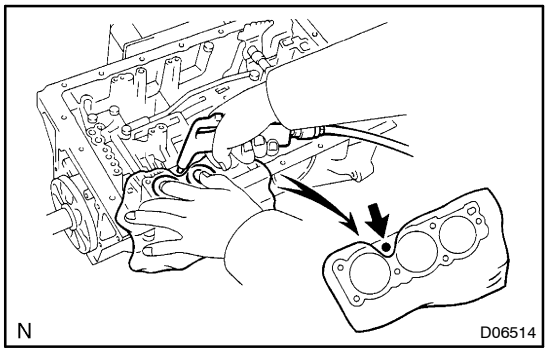
18. REMOVE TRANSMISSION VALVE BODY ASSY

(a) Remove the 20 bolts and the valve body.



19. REMOVE CHECK BALL BODY

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



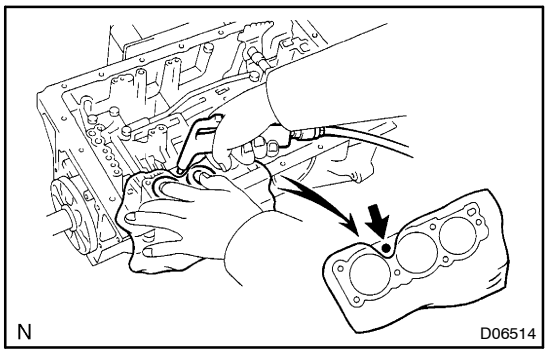
20. REMOVE B–2 ACCUMULATOR PISTON

(a) Applying compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the oil hole, remove the B_2 accumulator piston and the spring.

NOTICE:

- **Blowing off the air may cause the piston to jump out. When removing the piston, hold it by hand using a waste cloth.**
- **Take care not to splash ATF when air–blowing.**

(b) Remove the 2 O–rings from the B_2 accumulator piston.



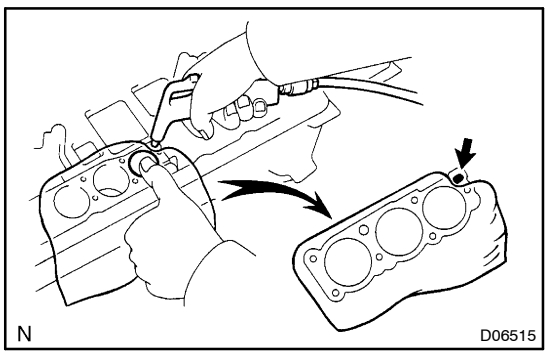
21. REMOVE C–2 ACCUMULATOR PISTON

(a) Applying compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the oil hole, remove the C_2 accumulator piston and the spring.

NOTICE:

- **Blowing off the air may cause the piston to jump out. When removing the piston, hold it by hand using a waste cloth.**
- **Take care not to splash ATF when air–blowing.**

(b) Remove the 2 O–rings from the C_2 accumulator piston.



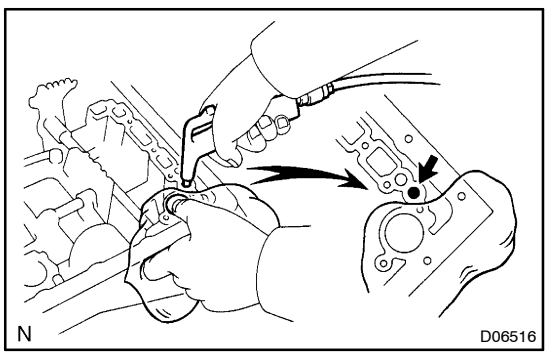
22. REMOVE B–0 ACCUMULATOR PISTON

(a) Applying compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the oil hole, remove the B_0 accumulator piston and the spring.

NOTICE:

- **Blowing off the air may cause the piston to jump out. When removing the piston, hold it by hand using a waste cloth.**
- **Take care not to splash ATF when air–blowing.**

(b) Remove the 2 O–rings from the B_0 accumulator piston.

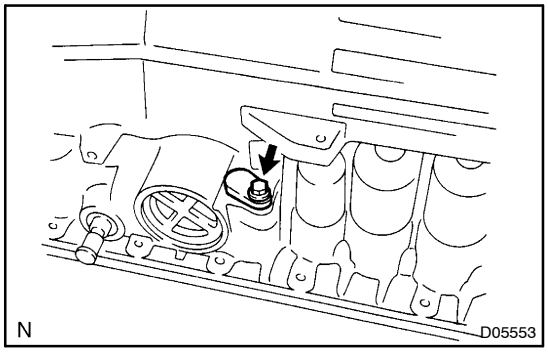


23. REMOVE C–0 ACCUMULATOR PISTON

(a) Applying compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the oil hole, remove the C_0 accumulator piston.

NOTICE:

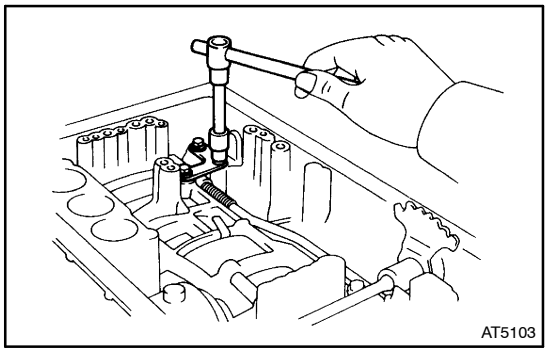
- **Blowing off the air may cause the piston jump out. When removing the piston, hold it by hand using a waste cloth.**
- **Take care not to splash ATF when air–blowing.**



24. REMOVE TRANSMISSION CASE PLUG ASSY

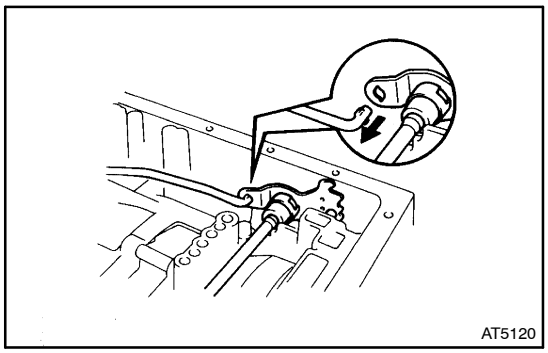
(a) Remove the bolt and pull out the plug.

(b) Remove the O–ring from the plug.



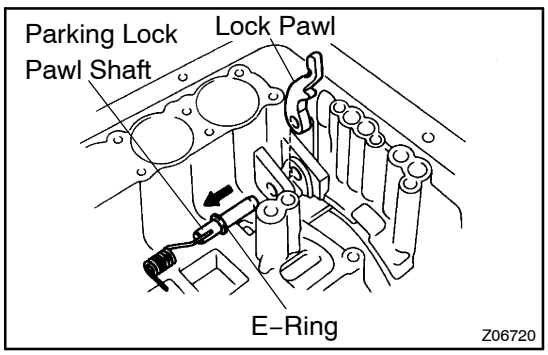
25. REMOVE PARKING LOCK PAWL BRACKET

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



26. REMOVE PARKING LOCK ROD SUB–ASSY

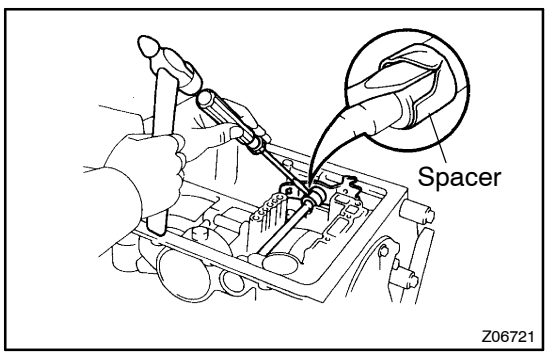
(a) Disconnect the parking lock rod from the manual valve lever.



27. REMOVE PARKING LOCK PAWL SHAFT

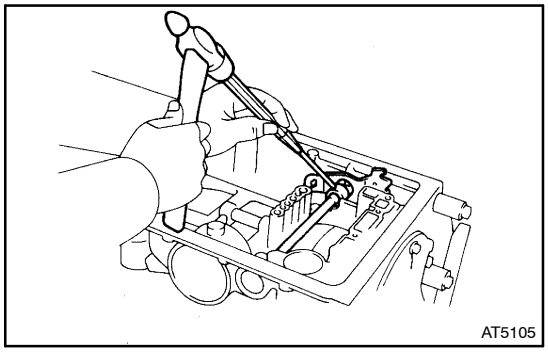
(a) Pull out the parking lock pawl shaft from the front side, then remove the lock pawl and the spring.

(b) Remove the E–ring from the shaft.



28. REMOVE MANUAL VALVE LEVER SUB–ASSY

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

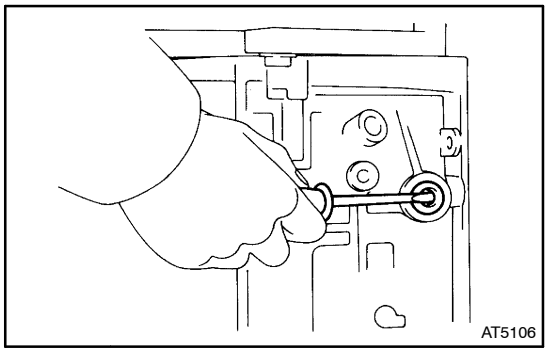


(b) Using a pin punch and a hammer, drive out the pin.

HINT:

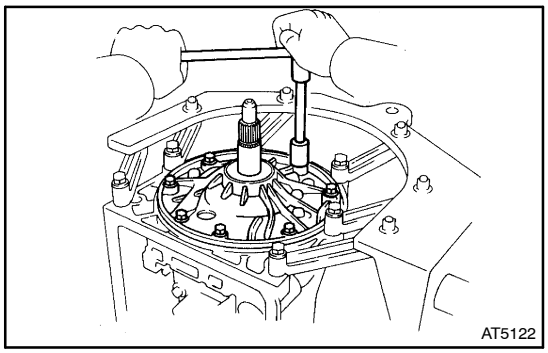
Slowly drive out the pin so that it does not fall into the transmission case.

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



29. REMOVE MANUAL VALVE LEVER SHAFT OIL SEAL

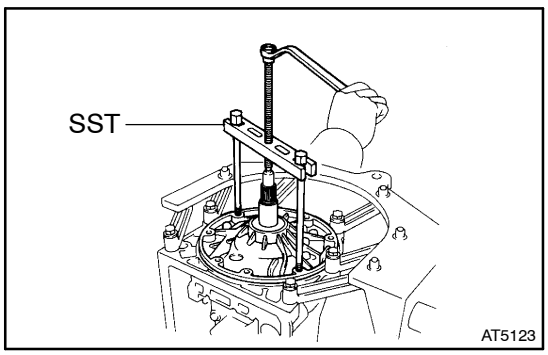
(a) Using screwdriver,remove the 2 manual valve lever shaft oil seals.



30. REMOVE OIL PUMP ASSY

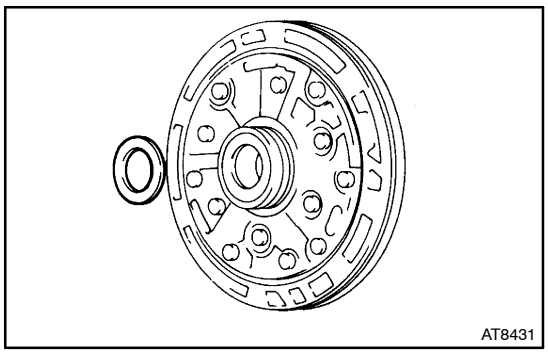
(a) Stand up the transmission.

(b) Remove the 7 bolts holding the oil pump to the transmission case.

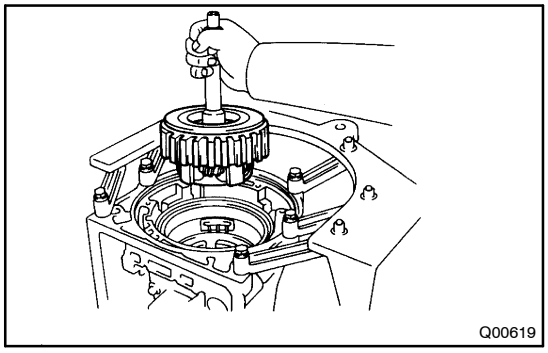


(c) Using SST, remove the oil pump.
SST 09350–30020 (09350–07020)

(d) Remove the O–ring from it.

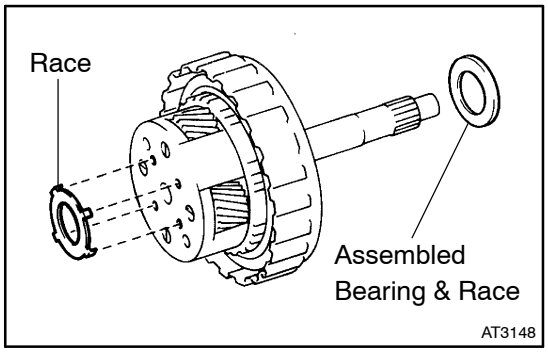


(e) Remove the race from the oil pump.


Q00619

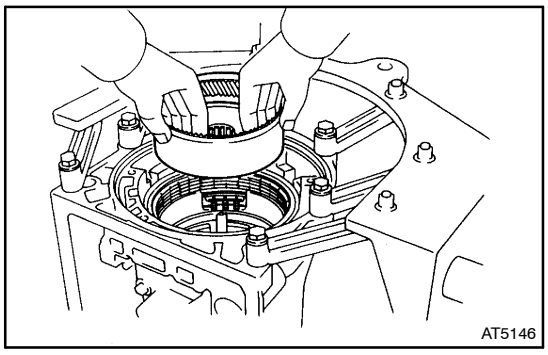
31. REMOVE OVERDRIVE PLANETARY GEAR ASSY

(a) Remove the O/D planetary gear, O/D direct clutch and one–way clutch from the transmission case.



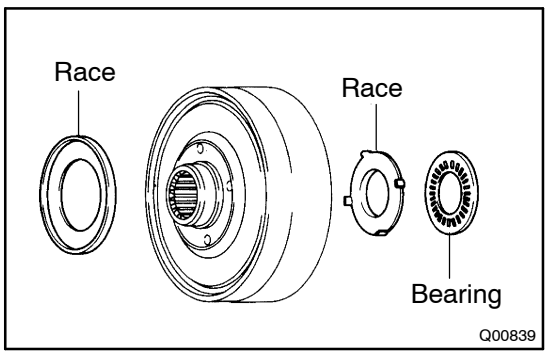
AT3148

(b) Remove the race and the assembled bearing & race.


AT5146

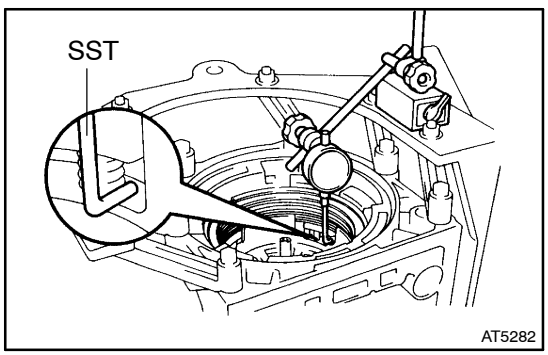
32. REMOVE OVERDRIVE PLANETARY RING GEAR

(a) Remove the O/D planetary ring gear from the transmission case.



Q00839

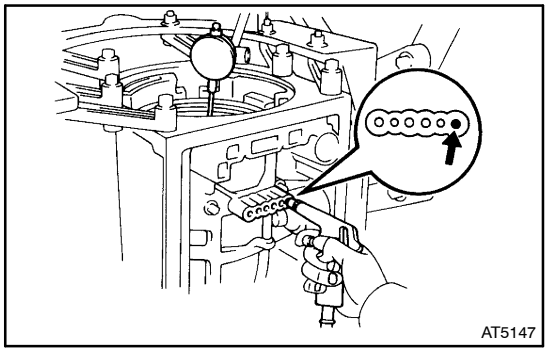
(b) Remove the bearing and the 2 races from the O/D planetary ring gear.



AT5282

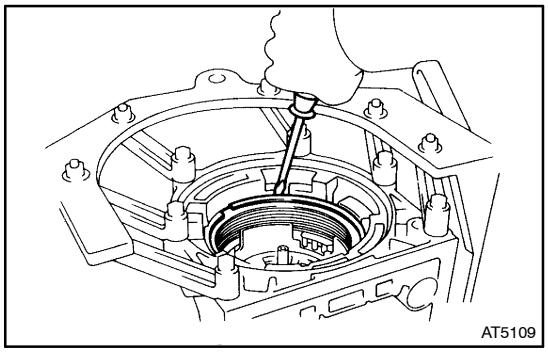
33. INSPECT OVERDRIVE BRAKE PISTON

(a) Place SST and a dial indicator onto the O/D brake piston.
SST 09350–30020 (09350–06120)



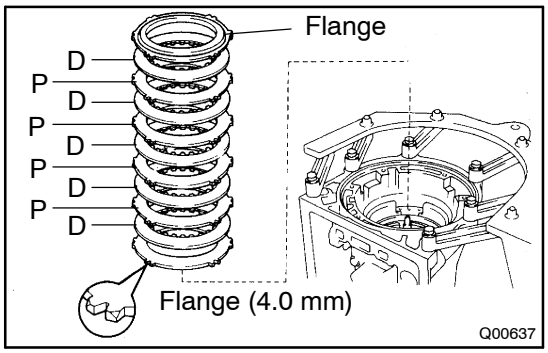
(b) Measure the stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi).
Piston stroke: 1.75 – 2.05 mm (0.0689 – 0.0807 in.)

If the stroke is outside the standard, inspect the discs.

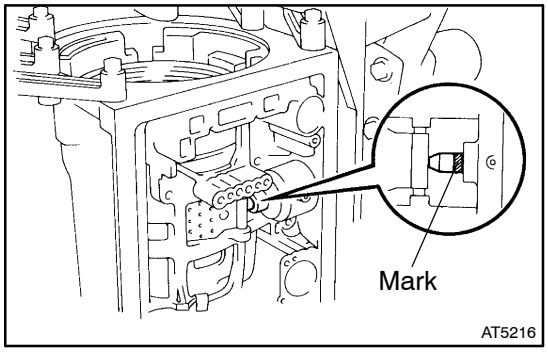


34. REMOVE OVERDRIVE BRAKE CLUTCH DISC

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

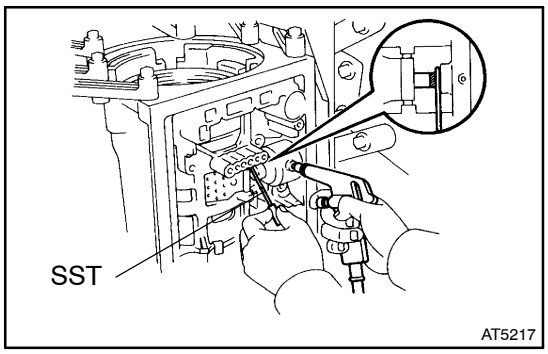


(b) Remove the O/D brake pack.



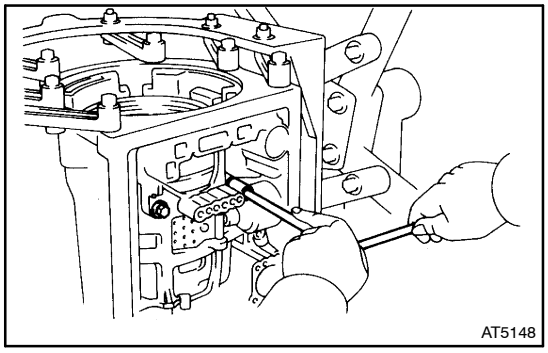
35. INSPECT PISTON STROKE OF 2ND COAST BRAKE

(a) Using a water proof pen, place a mark on the 2nd coast brake piston rod as shown in the illustration.



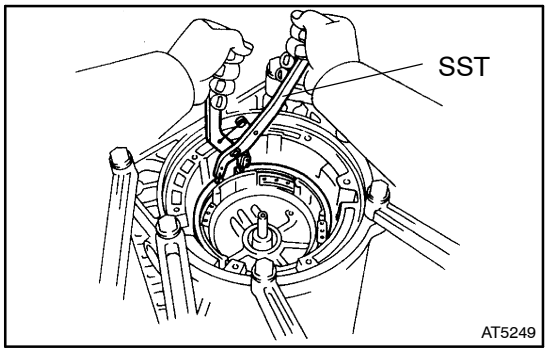
(b) Using SST, measure the stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi).
SST 09240–00020
Piston stroke: 1.5 – 3.0 mm (0.059 – 0.118 in.)

If the stroke is outside the standard, inspect the brake band.

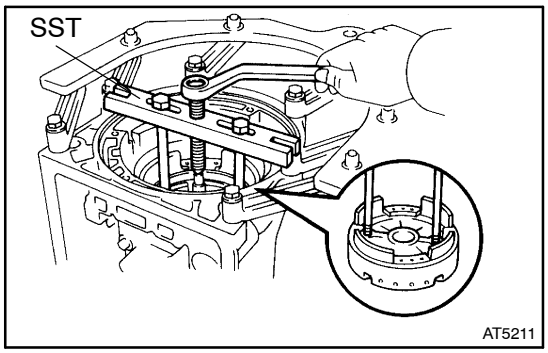


36. REMOVE OVERDRIVE SUPPORT SUB–ASSY

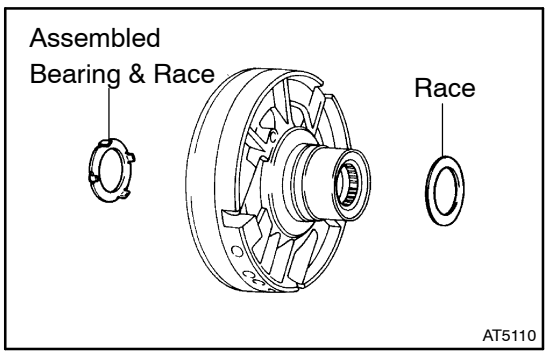
(a) Remove the 2 bolts holding the O/D support assembly from the case.



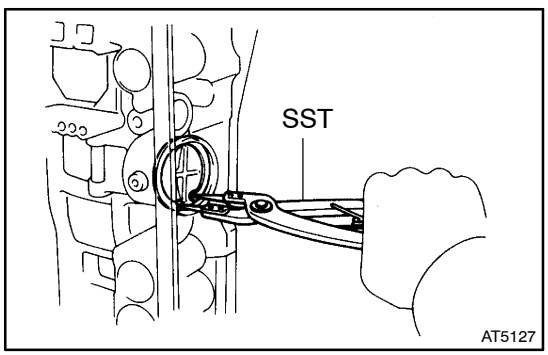
(b) Using SST, remove the snap ring.
SST 09350–30020 (09350–07060)



(c) Using SST, remove the O/D support assembly.
SST 09350–30020 (09350–07020)

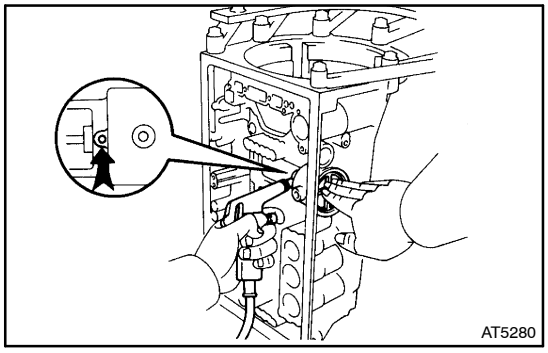


(d) Remove the assembled bearing & race and the race from the O/D support.

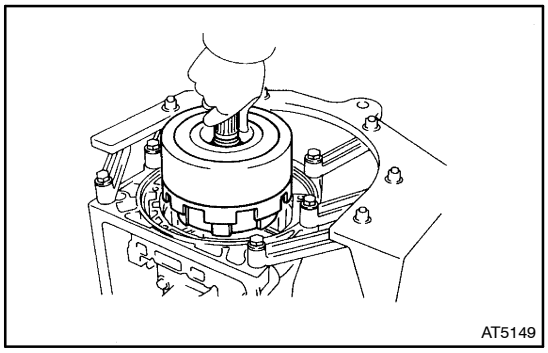


37. REMOVE 2ND COAST BRAKE PISTON

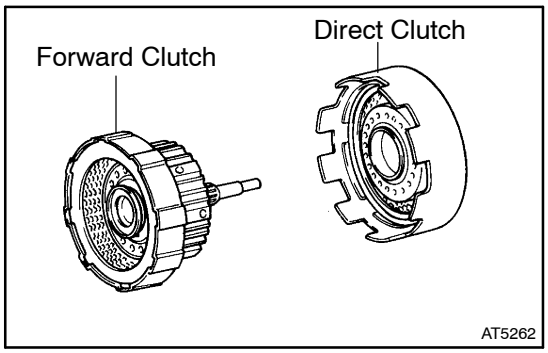
(a) Using SST, remove the snap ring.
SST 09350–30020 (09350–07060)



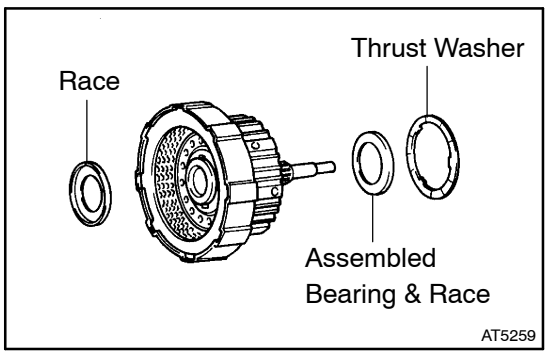
(b) Applying compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the oil hole, remove the 2nd coast brake cover, the piston assembly and the spring.
(c) Remove the 2 O–rings from the cover.



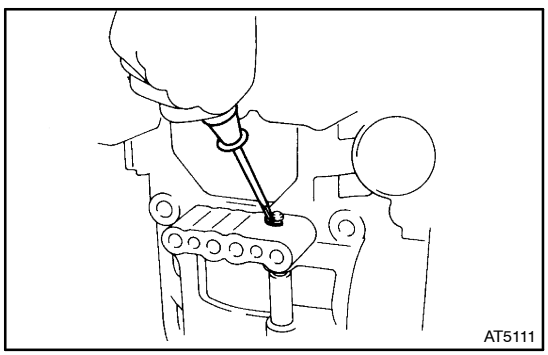
38. REMOVE DIRECT CLUTCH ASSY
(a) Remove the direct clutch with the forward clutch from the case.
(b) Remove the bearing from the direct clutch.



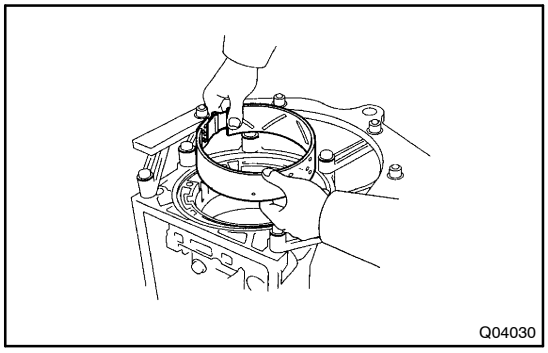
39. REMOVE FORWARD CLUTCH ASSY
(a) Remove the direct clutch from the forward clutch.



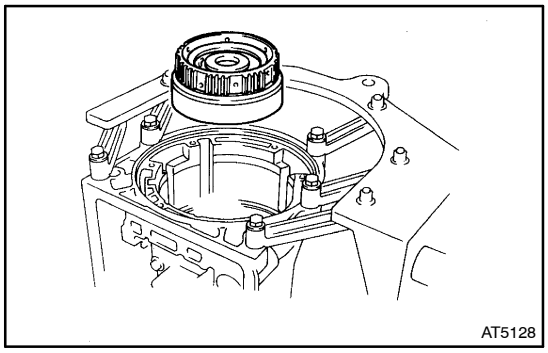
(b) Remove the assembled bearing & race, the thrust washer and the race from the forward clutch.



40. REMOVE 2ND COAST BRAKE BAND ASSY
(a) Using a screwdriver, remove the E–ring from the pin.
HINT:
Apply the grease to the E–ring and the pin before the work so that the ring does not fly out.
(b) Remove the pin from the brake band.
(c) Remove the E–ring from the pin.

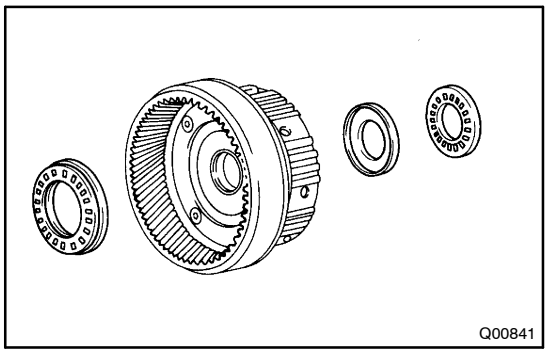

Q04030

(d) Remove the 2nd coast brake band from the case.

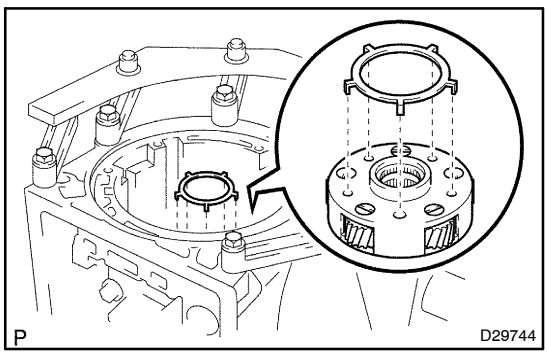

AT5128

41. REMOVE FRONT PLANETARY RING GEAR SUB–ASSY

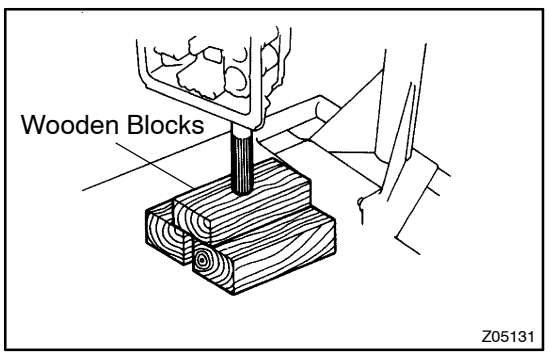
(a) Remove the front planetary ring gear from the case.


Q00841

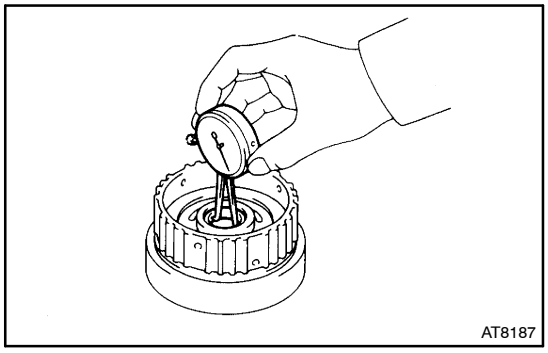
(b) Remove the assembled bearing & race, the bearing and the race from the front planetary ring gear.



(c) Remove the race from the front planetary gear.



(d) With wooden blocks or equivalent under the output shaft, stand the transmission on the output shaft.

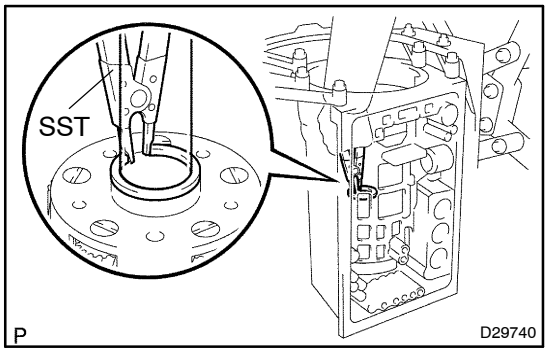


42. INSPECT FRONT PLANETARY RING GEAR SUB–ASSY

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

Maximum inside diameter: 24.65 mm (0.9705 in.)

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



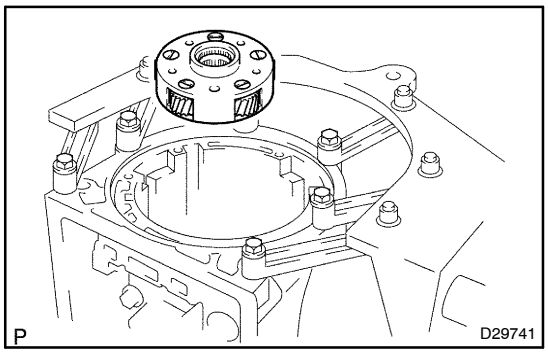
43. REMOVE FRONT PLANETARY GEAR ASSY

(a) Using SST, remove the snap ring.

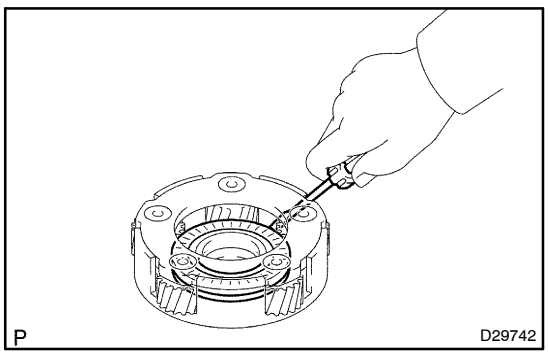
SST 09350–30020 (09350–07070)

HINT:

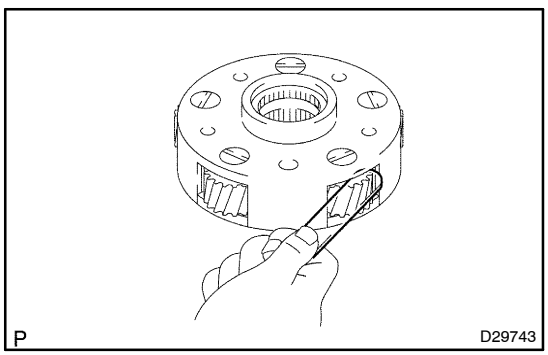
Pushing the output shaft towards the front makes it easier to remove the snap ring.



(b) Remove the front planetary gear from the case.



(c) Using a screwdriver, remove the bearing and the race from the front planetary gear.



44. INSPECT PLANETARY PINION GEAR THRUST CLEARANCE

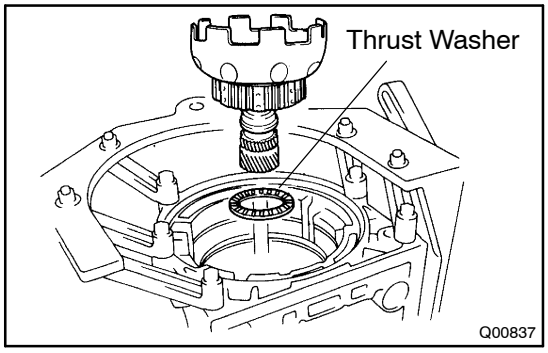
(a) Using a feeler gauge, measure the planetary pinion gear thrust clearance.

Standard clearance:

0.20 – 0.60 mm (0.0079 – 0.0236 in.)

Maximum clearance: 0.65 mm (0.0256 in.)

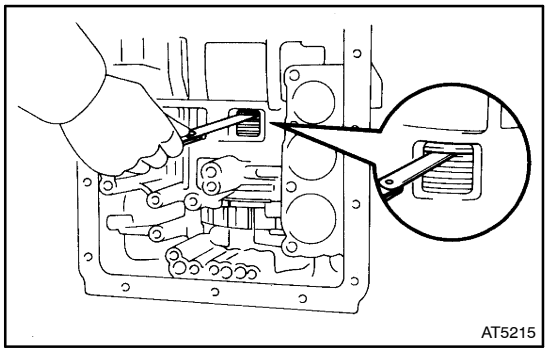
If the clearance is greater than the maximum, replace the planetary gear assembly.



45. REMOVE PLANETARY SUN GEAR SUB–ASSY

(a) Remove the planetary sun gear and No1 one–way clutch from the case.

(b) Remove the thrust washer.

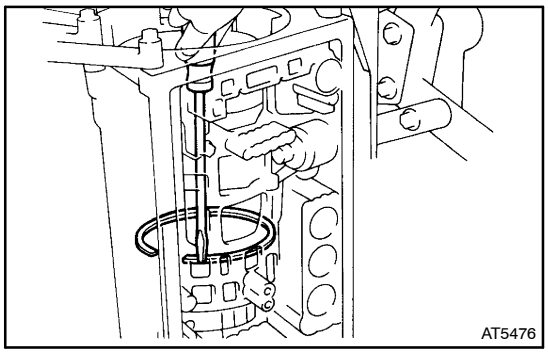


46. INSPECT PACK CLEARANCE OF SECOND BRAKE

(a) Using a feeler gauge, measure the clearance between the snap ring and the flange.

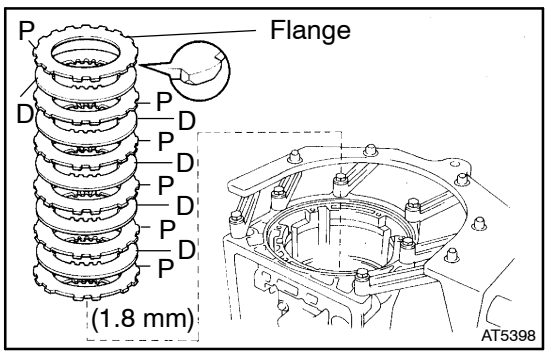
Clearance: 0.62 – 1.98 mm (0.0244 – 0.0780 in.)

If the clearance is outside the standard, inspect the discs.

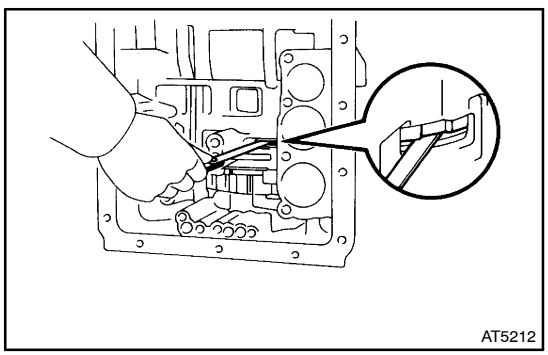


47. REMOVE 1ST & REVERSE BRAKE CLUTCH DISC

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



(b) Remove the 2nd brake pack.

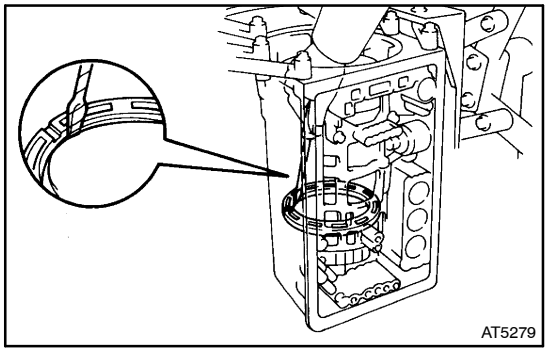


48. INSPECT PACK CLEARANCE OF FIRST & REVERSE BRAKE

(a) Using a feeler gauge, measure the clearance between the plate and the 2nd brake drum.

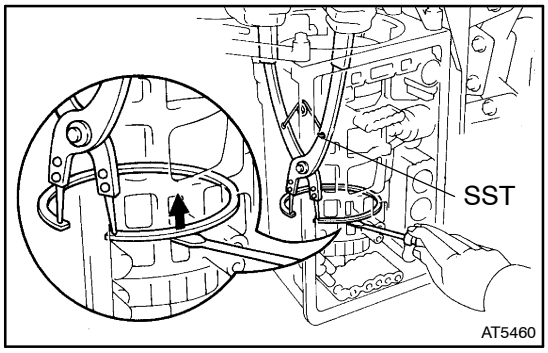
Clearance: 0.70 – 1.22 mm (0.0276 – 0.048 in.)

If the clearance is outside the standard, inspect the discs.



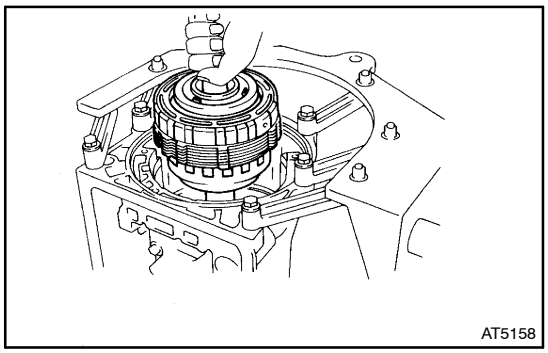
49. REMOVE 2ND BRAKE PISTON SLEEVE

(a) Using a screwdriver, remove the 2nd brake piston sleeve.

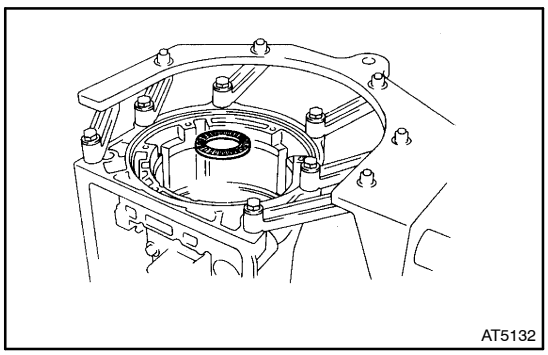


50. REMOVE REAR PLANETARY GEAR ASSY

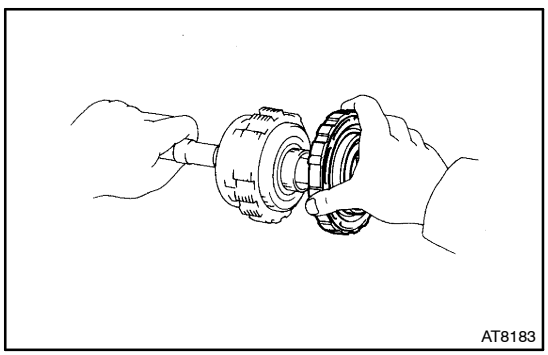
(a) Using SST and a screwdriver, remove the snap ring.
SST 09350–30020 (09350–07060)



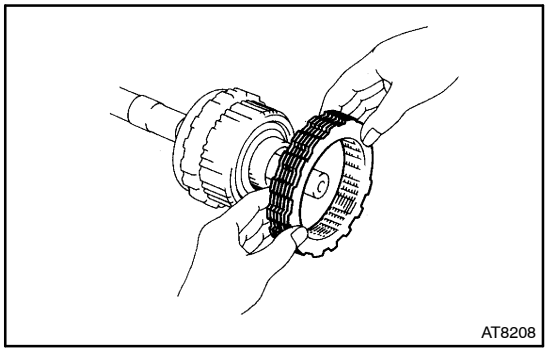
(b) Remove the 2nd brake drum, the 1st & reverse brake pack and the rear planetary gear, No.2 one–way clutch and output shaft.



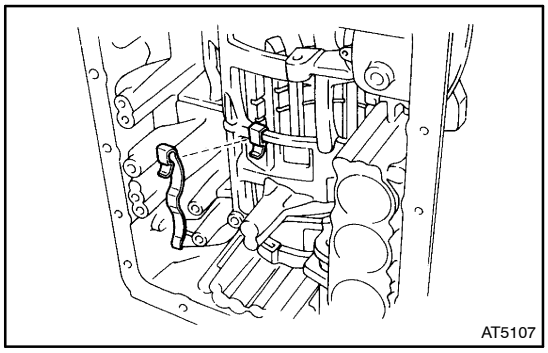
(c) Remove the assembled thrust bearing & race from the case.



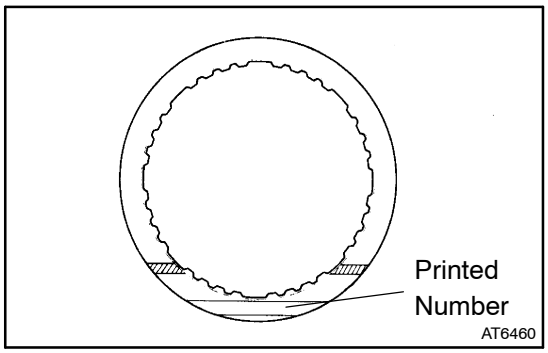
(d) Remove the 2nd brake drum.



(e) Remove the 1st & reverse brake clutch plate, the 1st & reverse brake clutch disc, and the 1st & reverse brake brake flange.



(f) Remove the leaf spring.

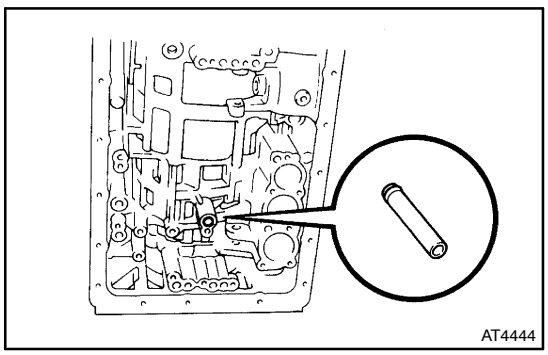


51. INSPECT 1ST & REVERSE BRAKE CLUTCH DISC

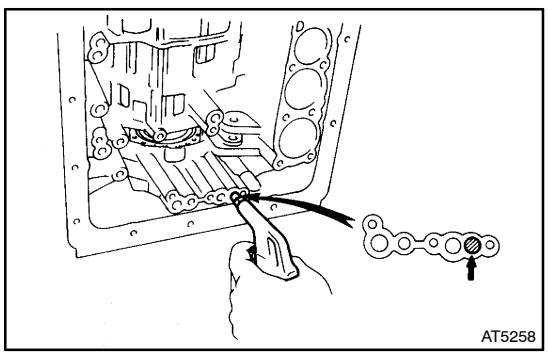
(a) Check if the sliding surfaces of the disc, the plate and flange are worn or burnt. If necessary, replace them.

HINT:

- If the lining of the disc is peeled off or discolored, or even if only a part of the printed numbers is corroded, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

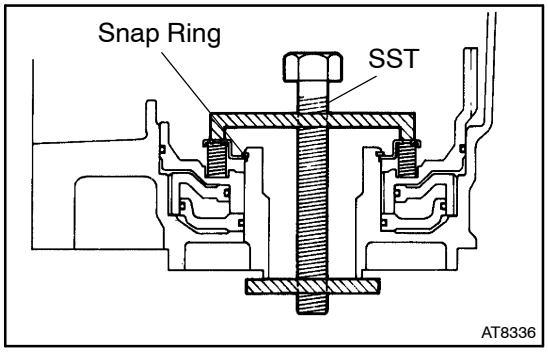


52. REMOVE BRAKE DRUM GASKET



53. INSPECT PISTON STROKE OF 1ST & REVERSE BRAKE

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



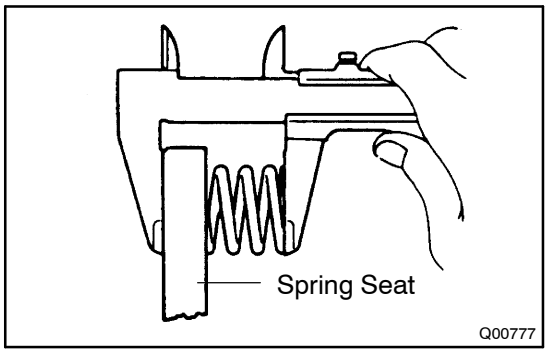
54. REMOVE 1ST & REVERSE BRAKE RETURN SPRING SUB–ASSY

(a) Set SST on the spring retainer, and compress the return spring.
SST 09350–30020 (09350–07050)

NOTICE:

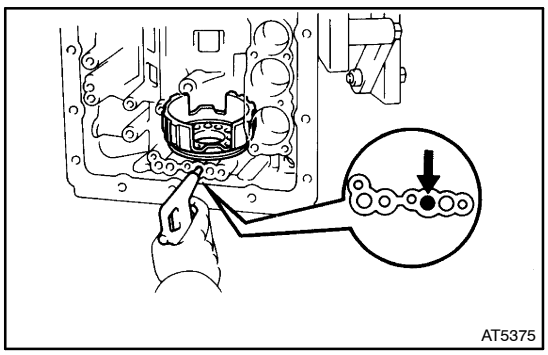
Stop compressing when the spring sheet is lowered to the place 1 – 2 mm (0.039 – 0.078 in.) from the snap ring groove, preventing the spring sheet from being deformed.

(b) Using snap ring pliers, remove the snap ring.
(c) Remove the piston return spring.
(d) Hold the No.2 1st & reverse brake piston by hand, and apply compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the transmission case to remove the No.2 1st & reverse brake piston.



55. INSPECT 1ST & REVERSE BRAKE RETURN SPRING SUB–ASSY

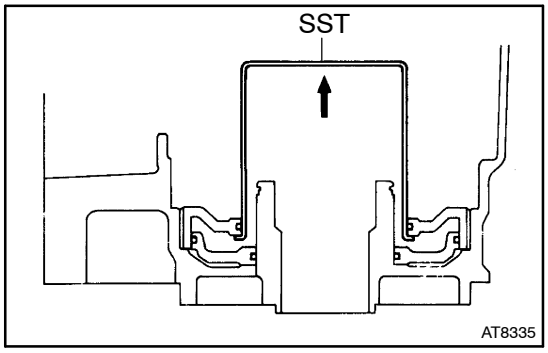
(a) Check the return spring free length together with the spring seat.
Standard free length: 12.9 mm (0.508 in.)



56. REMOVE 1ST & REVERSE BRAKE PISTON NO.2

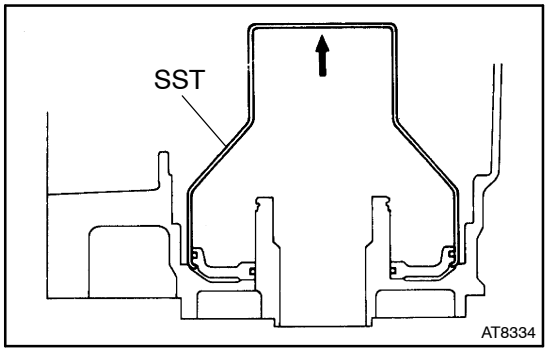
If the piston does not pop out with compressed air, lift the piston out with the needle–nose pliers.

(a) Remove the O–ring from the No.2 1st & reverse brake piston.



57. REMOVE BRAKE REACTION SLEEVE

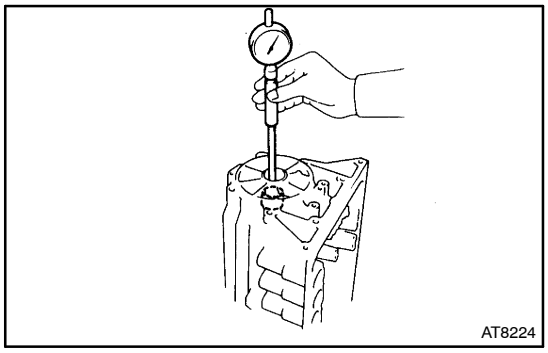
(a) Install SST behind the reaction sleeve, and gradually lift it out of the transmission case.
SST 09350–30020 (09350–07080, 09350–07090)



58. REMOVE BRAKE PISTON NO.2

(a) Install SST behind the No.1 1st & reverse brake piston, and gradually lift it out of the transmission case.
SST 09350–30020 (09350–07090)

(b) Remove the 2 O–rings from the No.1 1st & reverse brake piston.

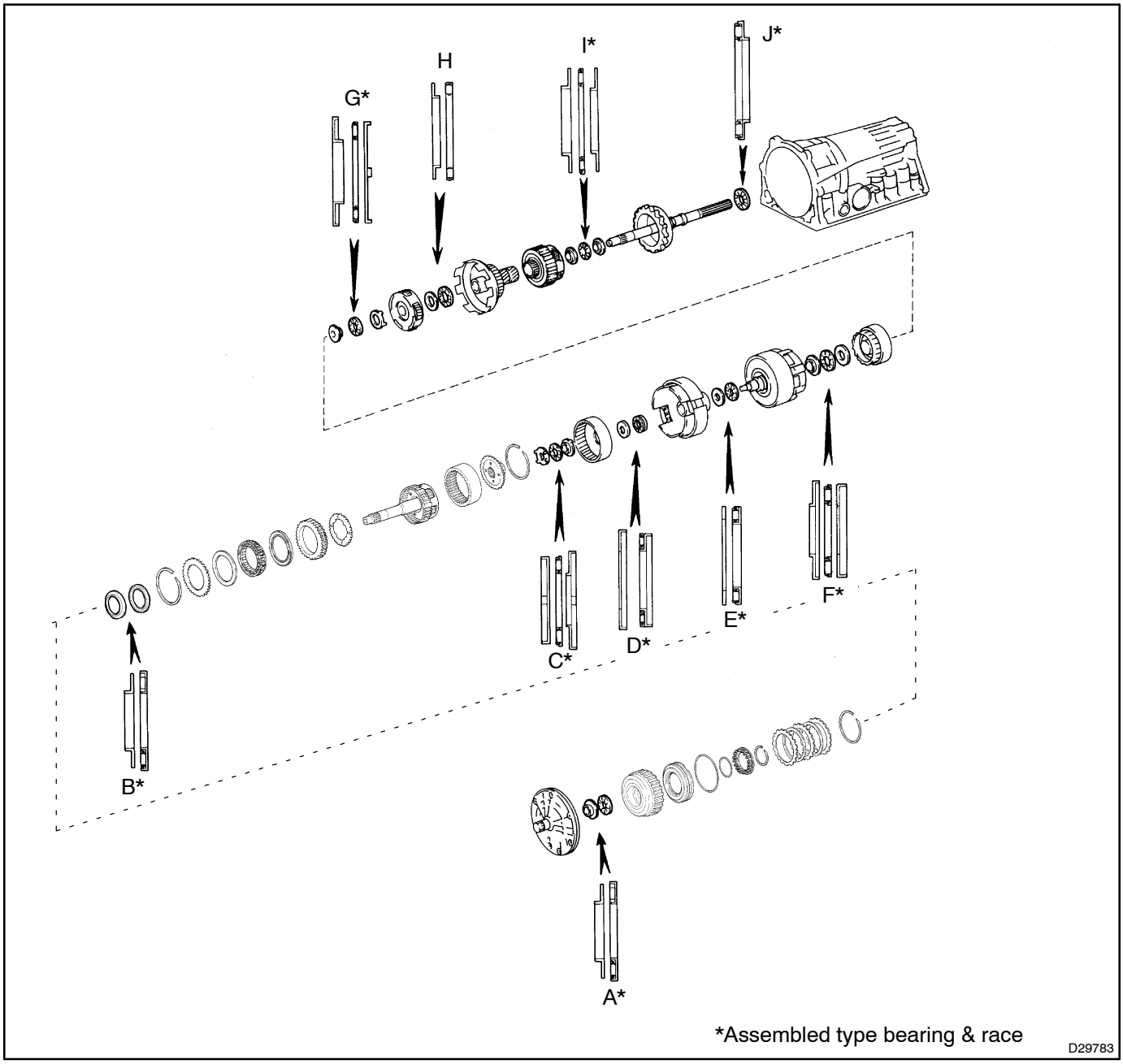


59. INSPECT AUTOMATIC TRANSMISSION CASE SUB–ASSY

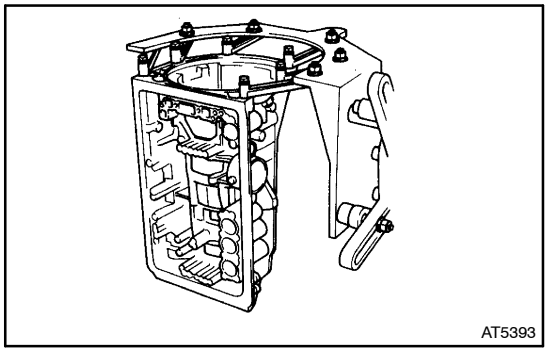
(a) Using a cylinder gauge, measure the inside diameter of the transmission case rear bushing.
Maximum inside diameter: 38.19 mm (1.5035 in.)

If the inside diameter is greater than the maximum, replace the transmission case.

60. BEARING POSITION

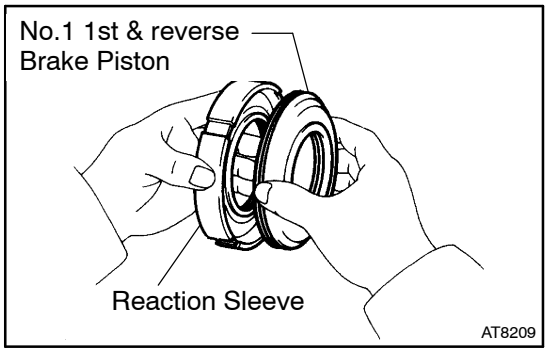


Mark	Front Race Diameter Inside / Outside mm (in.)	Thrust Bearing Diameter Inside / Outside mm (in.)	Rear Race Diameter Inside / Outside mm (in.)
A	28.45 (1.120) / 47.3 (1.862)	29.2 (1.15) / 50.2 (1.976)	–
B	28.6 (1.126) / 46.4 (1.827)	28.9 (1.138) / 50.2 (1.976)	–
C	24.7 (0.972) / 41.8 (1.646)	24.2 (0.953) / 47.8 (1.882)	–
D	37.2 (1.465) / 58.8 (2.315)	33.8 (1.331) / 50.0 (1.969)	–
E	36.8 (1.449) / 50.9 (2.004)	33.7 (1.327) / 47.6 (1.874)	–
F	–	26.0 (1.024) / 42.8 (1.685)	26.8 (1.055) / 53.67 (2.113)
G	–	49.9 (1.965) / 64.4 (2.535)	53.4 (2.102) / 63.6 (2.504)
H	33.7 (1.327) / 47.6 (1.874)	35.5 (1.398) / 47.7 (1.878)	–
I	28.5 (1.122) / 44.2 (1.740)	27.7 (1.091) / 44.2 (1.740)	–
J	–	39.38 (1.550) / 58.1 (2.287)	–



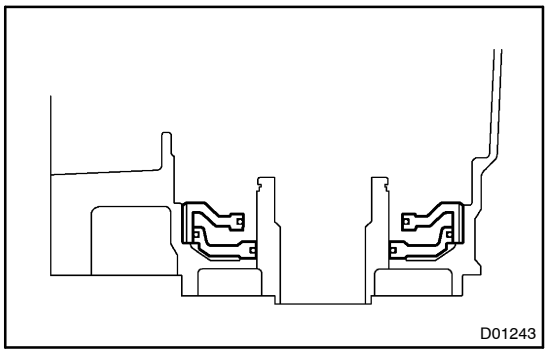
61. FIX AUTOMATIC TRANSMISSION CASE SUB–ASSY

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



62. INSTALL BRAKE PISTON NO.2

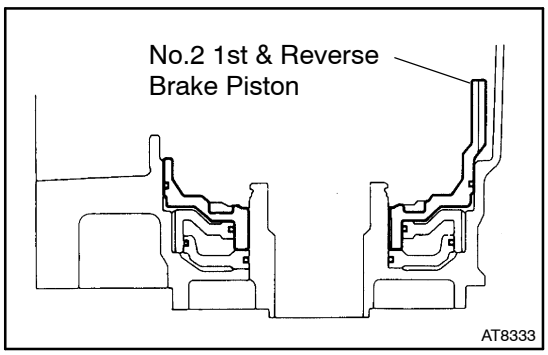
(a) Coat 3 new O–rings with ATF.
(b) Install the 2 O–rings on the No.1 1st & reverse brake piston.
(c) Install the O–rings on the reaction sleeve.
(d) Install the No.1 1st & reverse brake piston to the reaction sleeve.



63. INSTALL BRAKE REACTION SLEEVE

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

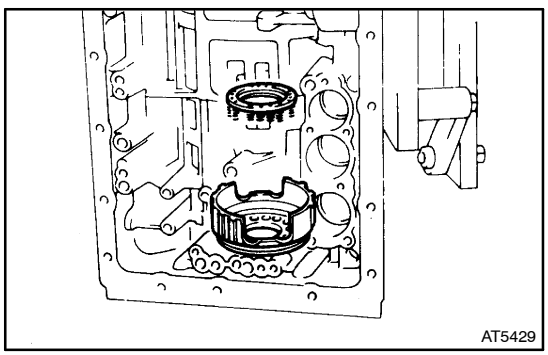
NOTICE:
Be careful not to damage the O–rings.



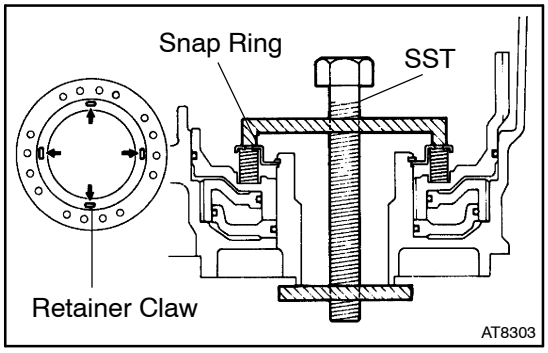
64. INSTALL 1ST & REVERSE BRAKE PISTON NO.2

(a) Coat new O–rings with ATF.
(b) Install the O–rings on brake piston No.2.
(c) With the spring seat of the piston upwards (the front side), place the piston in the transmission case.

NOTICE:
Be careful not to damage the O–ring.



(d) Place the piston return spring onto the brake piston No.2.



65. INSTALL 1ST & REVERSE BRAKE RETURN SPRING SUB–ASSY

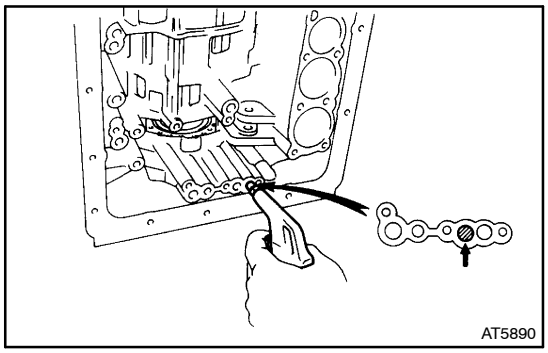
(a) Set SST as shown, and compress the return spring with SST.

SST 09350–30020 (09350–07050, 09350–07070)

NOTICE:

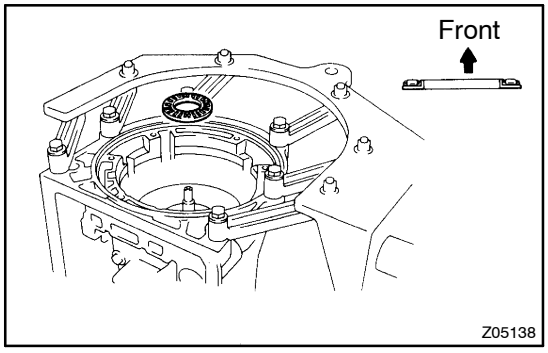
Stop compressing when the spring sheet is lowered to the place 1 – 2 mm (0.039 – 0.078 in.) from the snap ring groove, preventing the spring sheet from being deformed.

(b) Using a screwdriver, install the snap ring. Make sure the end gap of the snap ring is not aligned with the spring retainer claw.



66. INSPECT PISTON STROKE OF 1ST & REVERSE BRAKE

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



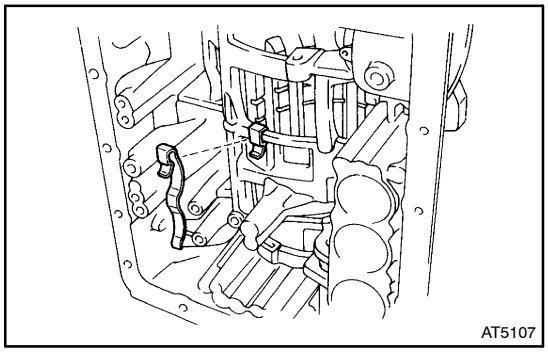
67. INSTALL REAR PLANETARY FLANGE THRUST NEEDLE ROLLER BEARING

(a) Coat the assembled bearing & race with petroleum jelly.

(b) Install it onto the case.

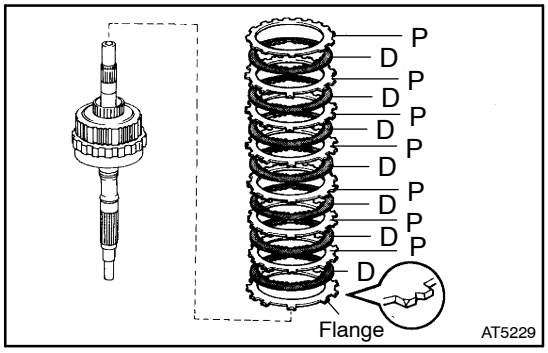
Assembled bearing & race diameter:

	Inside	Outside
Assembled bearing & race	39.38 mm (1.550 in.)	58.1 mm (2.287 in.)



68. INSTALL REAR PLANETARY GEAR ASSY

(a) Install the leaf.spring

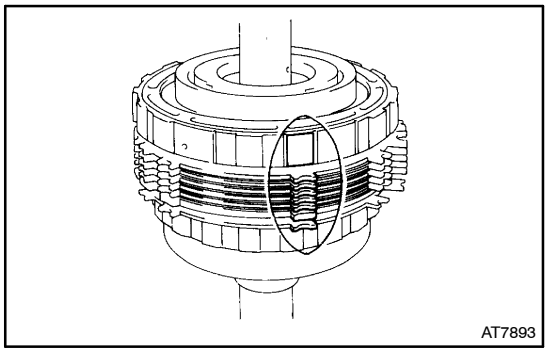


(b) Install the flange with the rounded edge facing upward.

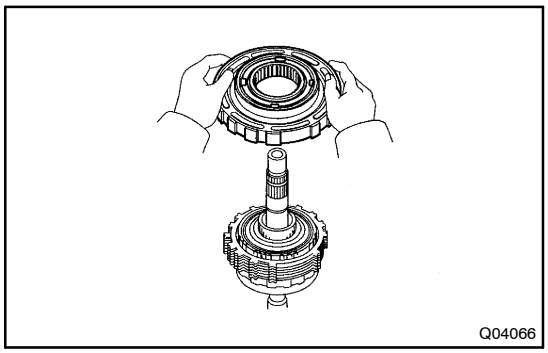
(c) Install the plates and discs.

Install in order: P = Plate D = Disc

D – P – D – P – D – P – D – P – D – P – D – P – D – P



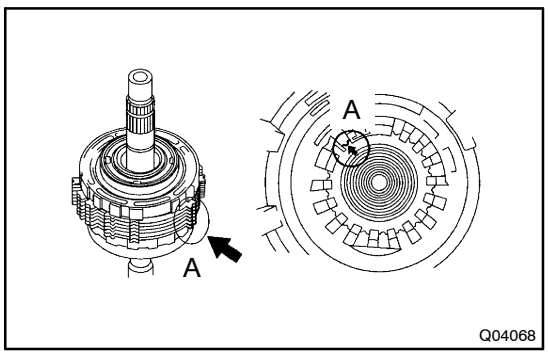
(d) Align the teeth on the flange, the discs and the plates.



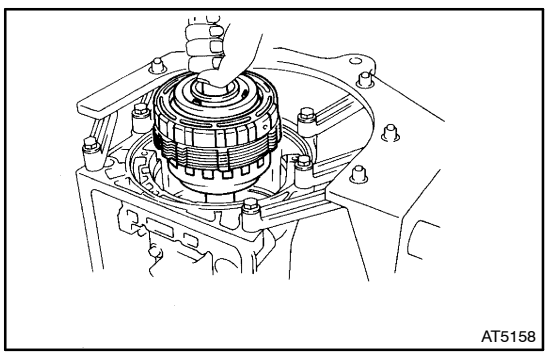
(e) Face the snap ring upward (front side) and install the 2nd brake drum to the planetary gear.

NOTICE:

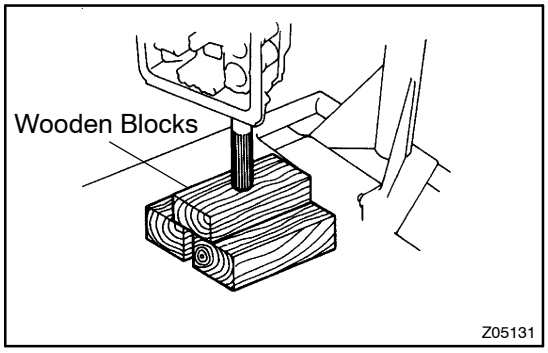
Face the oil hole in the drum towards the lower side of the transmission case (the side where the valve body is installed).



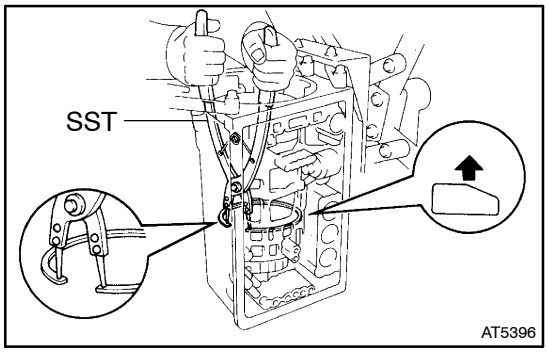
(f) Align the splines of the transmission case with the assembled rear planetary gear and the 1st & reverse brake with the output shaft, indicated by A.



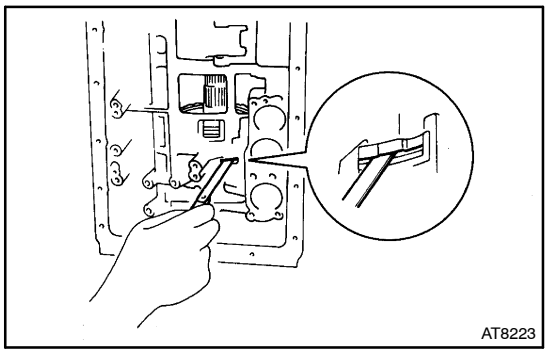
(g) Install the assembled output shaft.



(h) Rest the output shaft on wooden blocks.



(i) Using SST, install the snap ring.
SST 09350–30020 (09350–07060)

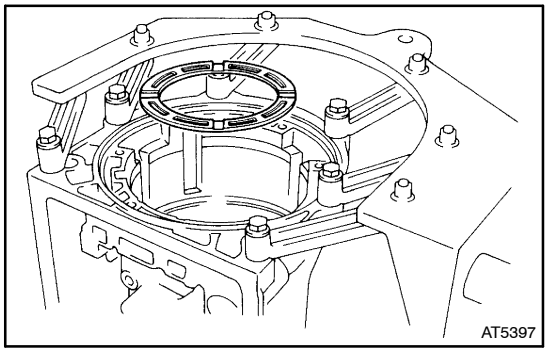


69. INSPECT PACK CLEARANCE OF FIRST & REVERSE BRAKE

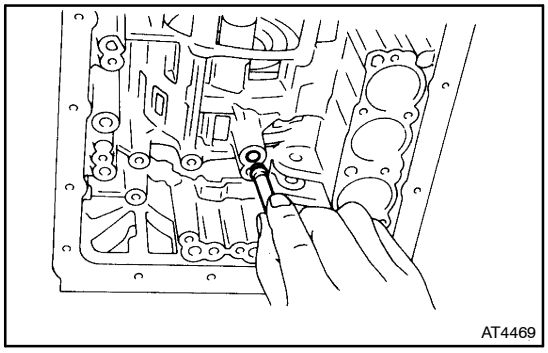
(a) Using a feeler gauge, measure the clearance between the plate and the 2nd brake drum.
Clearance: 0.70 – 1.22 mm (0.0276 – 0.048 in.)

If the clearance is outside the standard, select another flange.
HINT:
There are 8 different thicknesses for the flange.
Flange thickness:

No.	Thickness	No.	Thickness
67	5.4 mm (0.213 in.)	52	4.6 mm (0.181 in.)
66	5.2 mm (0.205 in.)	53	4.4 mm (0.173 in.)
50	5.0 mm (0.197 in.)	54	4.2 mm (0.165 in.)
51	4.8 mm (0.189 in.)	55	4.0 mm (0.157 in.)



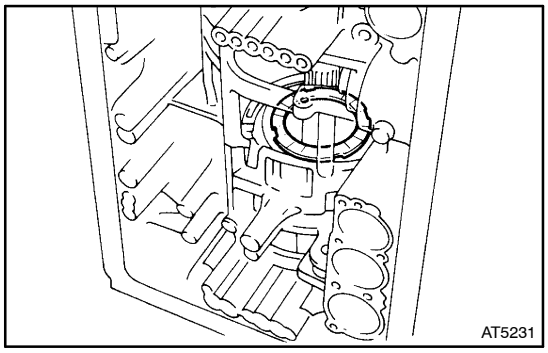
70. INSTALL 2ND BRAKE PISTON SLEEVE



71. INSTALL BRAKE DRUM GASKET

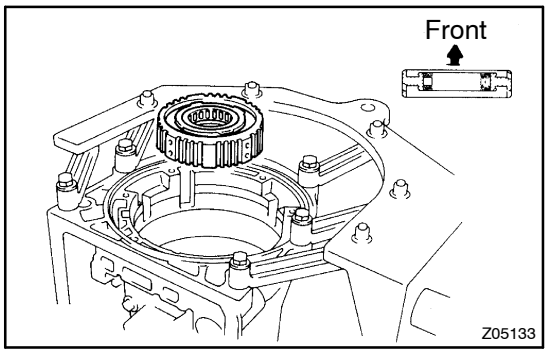
(a) Coat a new gasket with ATF.

(b) Install the brake drum gasket.

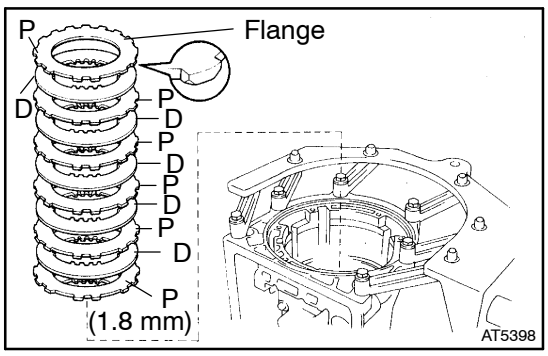


72. INSTALL 1 WAY CLUTCH ASSY

(a) Install the No.1 thrust washer onto the 2nd brake.



(b) Install the No.1 one–way clutch.

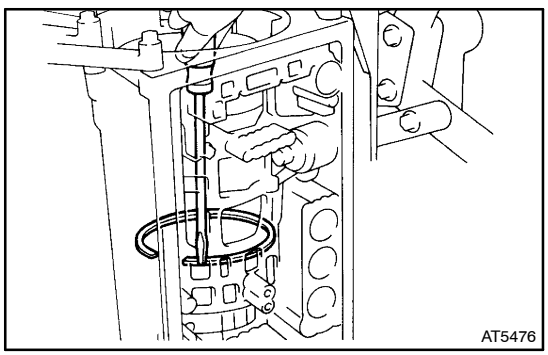


73. INSTALL 1ST & REVERSE BRAKE CLUTCH DISC

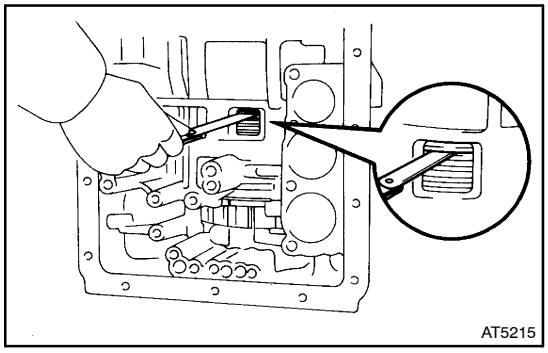
(a) Install the 1.8 mm (0.071 in.) thick plate with the rounded edge side of the plate facing the disc.

(b) Install the plates and discs.
Install in order: P = Plate D = Disc
D – P – D – P – D – P – D – P – D – P

(c) Install the flange with the rounded edge of the flange facing the disc.



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

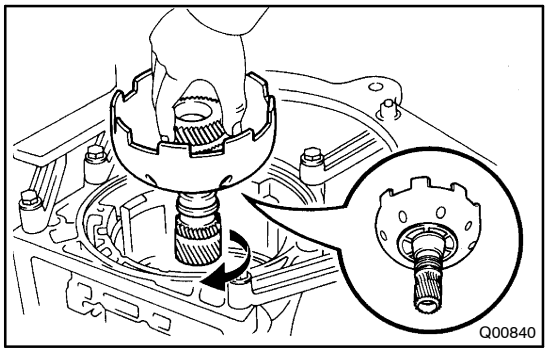


74. INSPECT PACK CLEARANCE OF SECOND BRAKE

(a) Using a feeler gauge, measure the clearance between the snap ring and the flange.

Clearance: 0.62 – 1.98 mm (0.0244 – 0.0780 in.)

If the clearance is outside the standard, check for an improper installation.

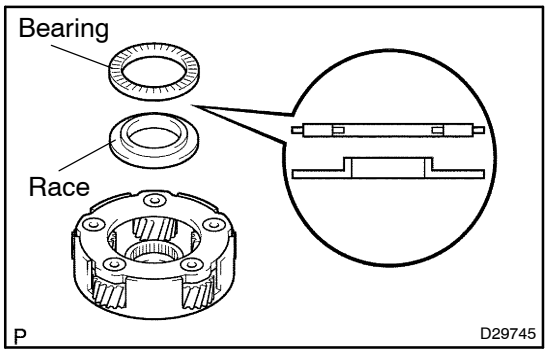


75. INSTALL PLANETARY SUN GEAR SUB–ASSY

(a) While turning the planetary sun gear clockwise, install it into the No.1 one–way clutch.

HINT:

Confirm the thrust washer is installed correctly.

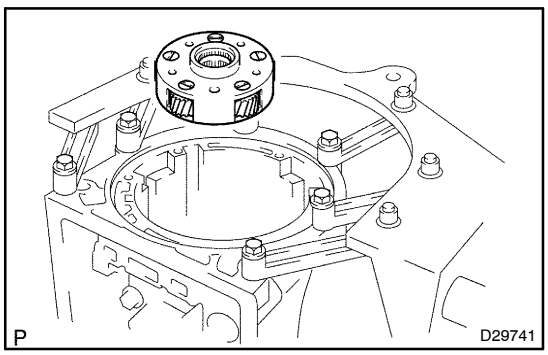


76. INSTALL FRONT PLANETARY GEAR ASSY

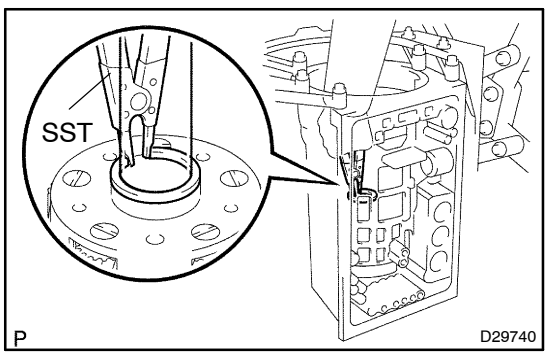
(a) Coat the bearing and the race with petroleum jelly, and install them onto the front planetary gear.

Bearing and race diameter:

	Inside	Outside
Bearing	35.5 mm (1.398 in.)	47.7 mm (1.878 in.)
Race	33.7 mm (1.327 in.)	47.6 mm (1.874 in.)

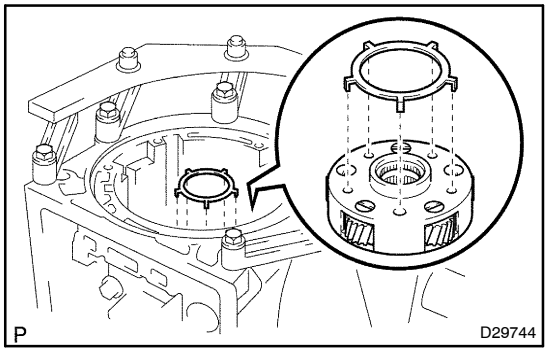


(b) Install the front planetary gear to the sun gear input drum.



(c) Using SST, install the snap ring.
SST 09350–30020 (09350–07070)

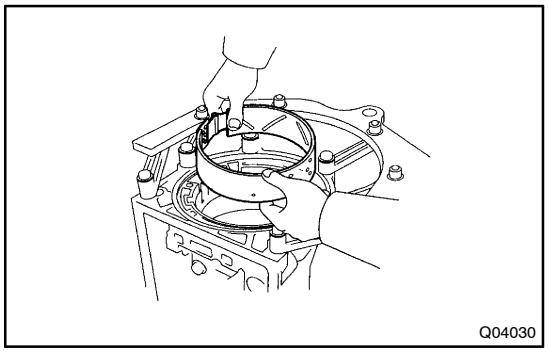
(d) Remove the wooden blocks or equivalent under the output shaft.



(e) Coat the bearing race with petroleum jelly, and install it onto the front planetary gear.

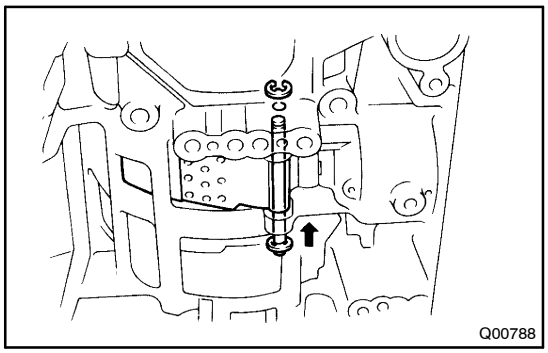
Race diameter:

	Inside	Outside
Race	53.4 mm (2.102 in.)	63.6 mm (2.504 in.)



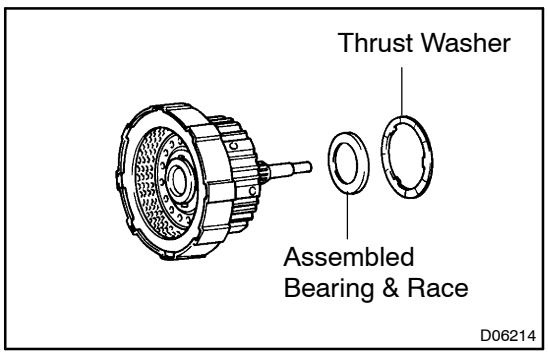
77. INSTALL 2ND COAST BRAKE BAND ASSY

(a) Install the 2nd coast brake band to the case.



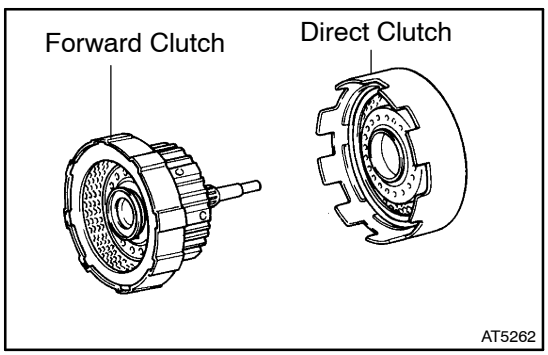
(b) Install the E–ring to the pin.

(c) Install the pin through the brake band.

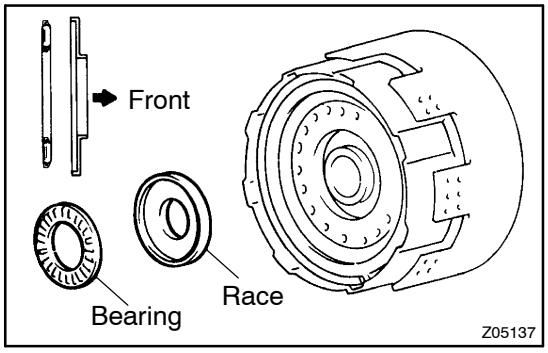


78. INSTALL DIRECT CLUTCH ASSY

(a) Install the assembled bearing & race and thethrust washer to the forward clutch.



(b) Install the direct clutch to the forward clutch.

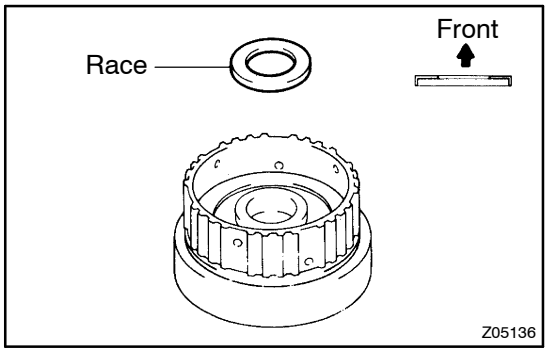


79. INSTALL FRONT PLANETARY RING GEAR SUB–ASSY

(a) Coat the bearing and the race with petroleum jelly, and install them onto the forward clutch.

Bearing and race diameter:

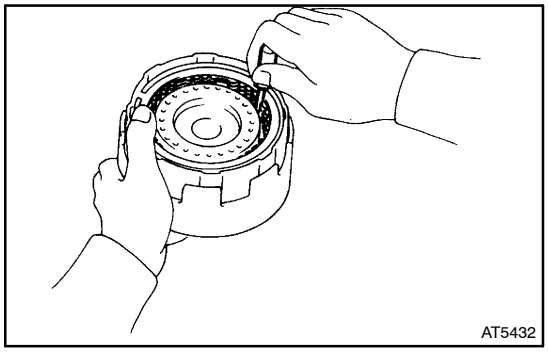
	Inside	Outside
Assembled Bearing & Race	26.0 mm (1.024 in.)	42.8 mm (1.685 in.)



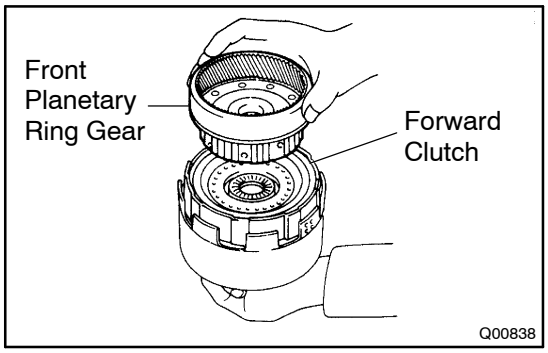
(b) Coat the race with petroleum jelly, and install it onto the front planetary ring gear.

Race diameter:

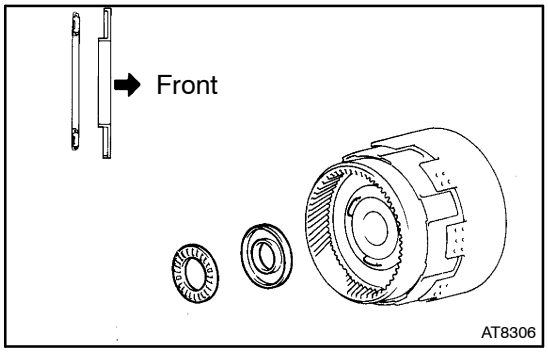
	Inside	Outside
Race	26.8 mm (1.055 in.)	53.67 mm (2.113 in.)



(c) Align the flukes of the discs in the forward clutch.



(d) Align the splines of the front planetary ring gear with the flukes of the discs and install the front planetary ring gear to the forward clutch.

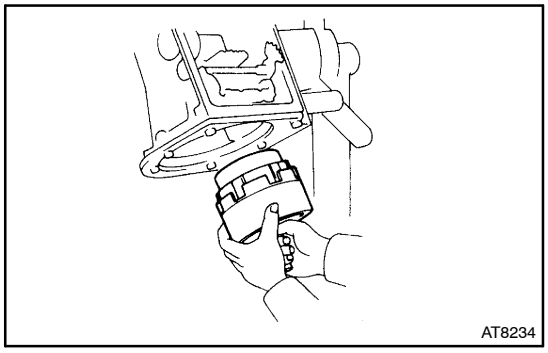


80. INSTALL FORWARD CLUTCH ASSY

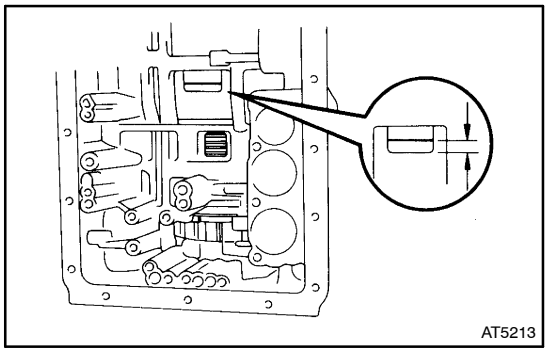
(a) Coat the bearing and the race with petroleum jelly, and install them onto the ring gear.

Bearing and race diameter:

	Inside	Outside
Assembled Bearing & Race	49.9 mm (1.965 in.)	64.4 mm (2.535 in.)

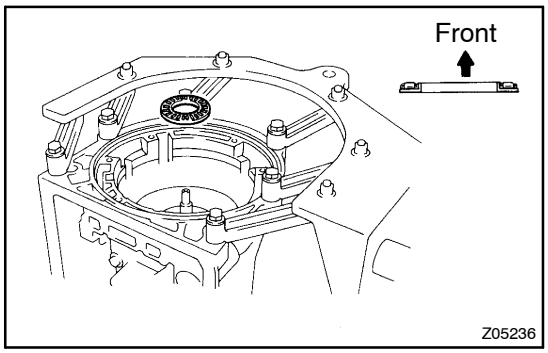

AT8234

(b) Install the assembled direct clutch, the forward clutch and the front planetary ring gear into the transmission case.


AT5213

(c) Using vernier calipers, measure the distance between the sun gear input drum and the direct clutch drum as shown in the illustration.
Distance: 5.3 – 7.3 mm (0.209 – 0.287 in.)

If the distance is non–standard, check for an improper installation.

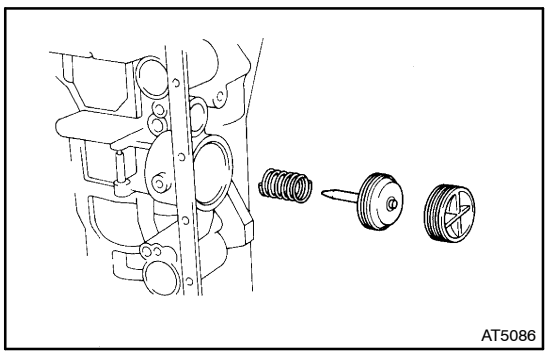


Z05236

(d) Coat the assembled bearing & race with petroleum jelly and install it onto the forward clutch.

Assembled bearing & race diameter:

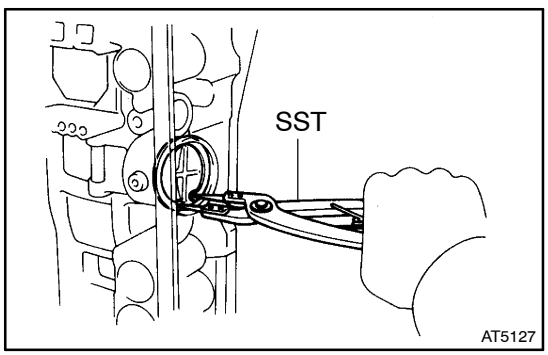
	Inside	Outside
Assembled bearing & race	33.7 mm (1.327 in.)	47.6 mm (1.874 in.)


AT5086

81. INSTALL 2ND COAST BRAKE PISTON

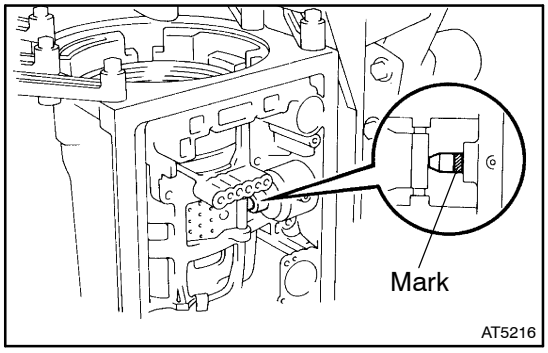
(a) Coat 2 new O–rings with ATF, and install them to the cover.

(b) Install the spring, the piston assembly and the cover to the case.



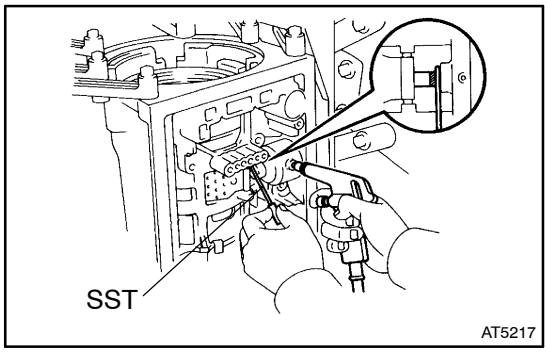
AT5127

(c) Using SST, install the snap ring.
SST 09350–30020 (09350–07060)



82. INSPECT PISTON STROKE OF 2ND COAST BRAKE

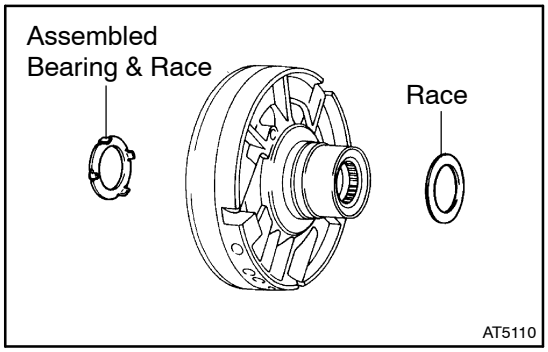
(a) Place a mark on the 2nd coast brake piston rod.



(b) Using SST, measure the stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi).
SST 09240–00020
Piston rod stroke: 1.5 – 3.0 mm (0.059 – 0.118 in.)

If the stroke is more than the specified, replace the piston rod.
Piston rod length:
78.4 mm (3.087 in.)
79.9 mm (3.146 in.)

If the stroke is still more than the standard value, replace the brake band with a new one.

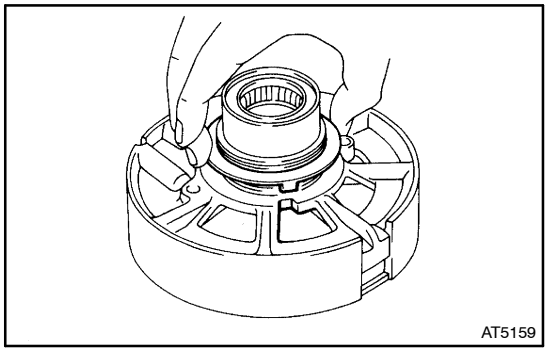


83. INSTALL OVERDRIVE SUPPORT SUB–ASSY

(a) Coat the bearing and the race with petroleum jelly, and install it onto the O/D support assembly.

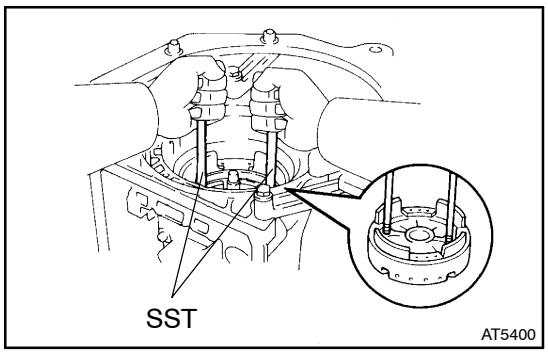
Bearing and race diameter:

	Inside	Outside
Race	36.8 mm (1.449 in.)	50.9 mm (2.004 in.)
Assembled bearing & race	33.8 mm (1.331 in.)	50.0 mm (1.969 in.)



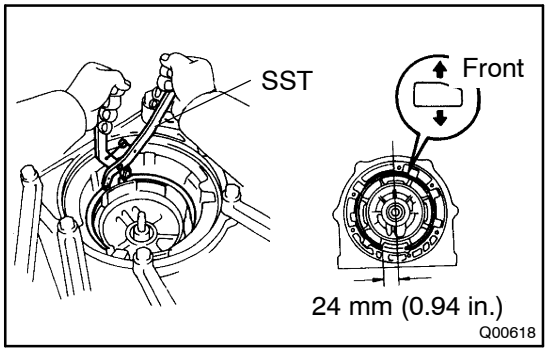
(b) Confirm the thrust washer is installed correctly.

HINT:
Make sure that the lug shape fits into the hole on the O/D support assembly.



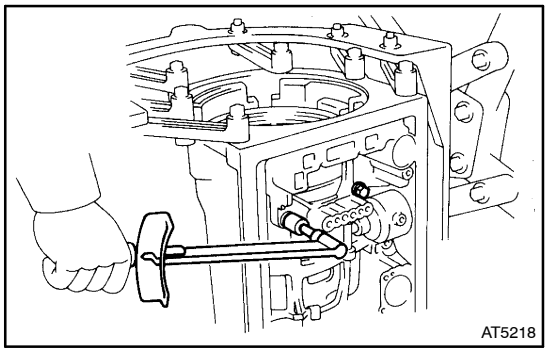
(c) Using 2 bolts of SST, aim the bolt and the oil holes of the O/D support toward the valve body side, and align them with the bolt holes of the transmission case, and insert.

(d) Temporarily tighten the 2 bolts.

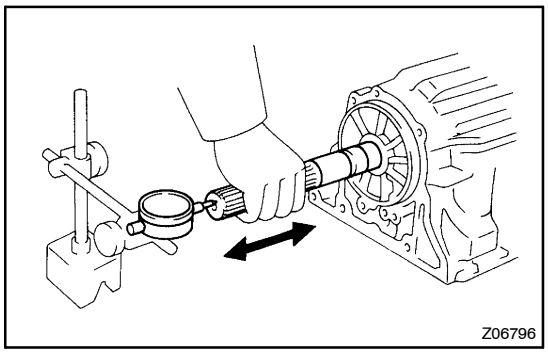


(e) Using SST, install the snap ring.
SST 09350–30020 (09350–07020, 09350–07060)

HINT:
Install the snap ring open end toward the valve body.



(f) Torque the 2 bolts.
Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)

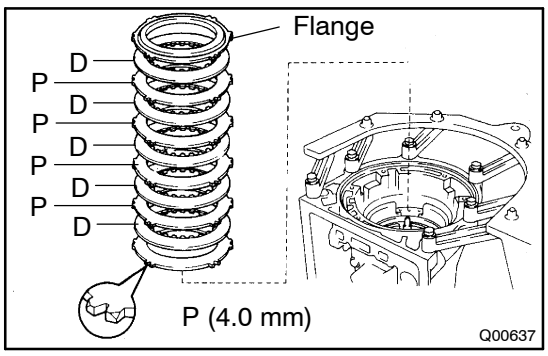


84. INSPECT OUTPUT SHAFT

(a) Using a dial indicator, measure the end play of the output shaft with hand.
End play: 0.30 – 1.04 mm (0.0118 – 0.0409 in.)

If the values are outside the standard, check for an improper installation.

(b) Check that the output shaft rotates smoothly.

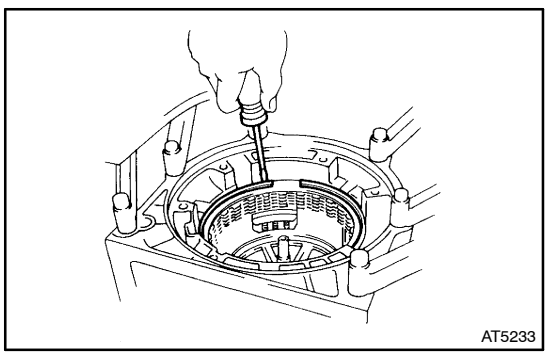


85. INSTALL OVERDRIVE BRAKE CLUTCH DISC

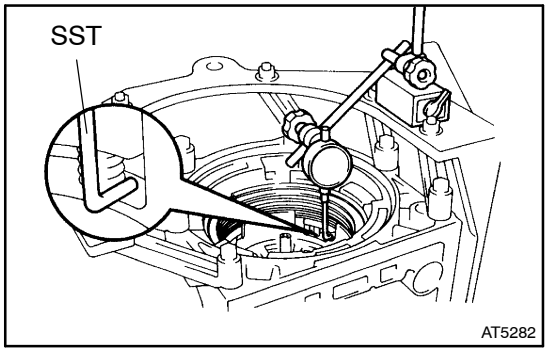
(a) Install the 4.0 mm (0.157 in.) thick flange (flat ring) with the rounded edge side of the flange facing the discs.

(b) Install the plates and discs.
Install in order: P = Plate D = Disc
P – D – P – D – P – D – P – D – P – D

(c) Install the flange (stepped ring) with the flat side of the flange facing the disc.

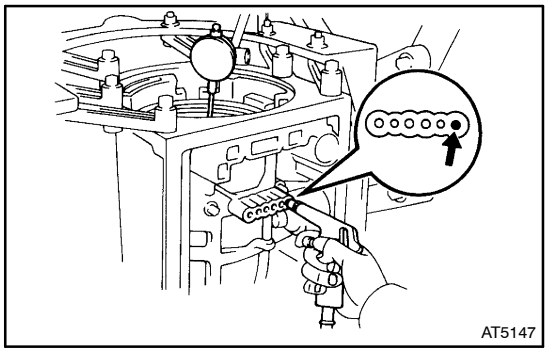


(d) Using a screwdriver, install the snap ring.



86. INSPECT OVERDRIVE BRAKE PISTON

(a) Place SST and a dial indicator onto the O/D brake piston.
SST 09350–30020 (09350–06120)



(b) Measure the stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi).
Piston stroke: 1.75 – 2.05 mm (0.0689 – 0.0807 in.)

If the piston stroke is less than the limit, parts may have been assembled incorrectly, so check and reassemble again.

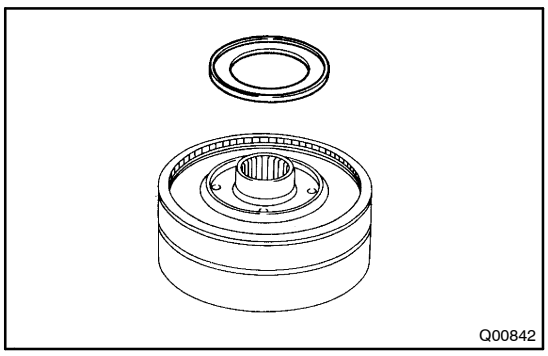
If the piston stroke is outside the standard, select another flange.

HINT:

There are 7 different thicknesses for the flange.

Flange thickness:

No.	Thickness	No.	Thickness
77	3.3 mm (0.130 in.)	81	3.8 mm (0.150 in.)
78	3.5 mm (0.138 in.)	82	3.9 mm (0.154 in.)
79	3.6 mm (0.142 in.)	83	4.0 mm (0.157 in.)
80	3.7 mm (0.146 in.)		

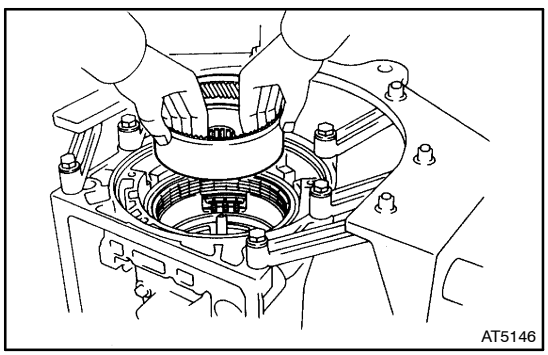


87. INSTALL OVERDRIVE PLANETARY GEAR ASSY

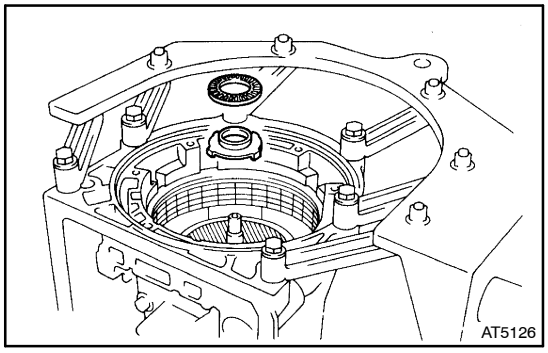
(a) Coat the race with petroleum jelly, and install it onto the O/D support.

Race diameter:

	Inside	Outside
Race	37.2 mm (1.465 in.)	58.8 mm (2.315 in.)



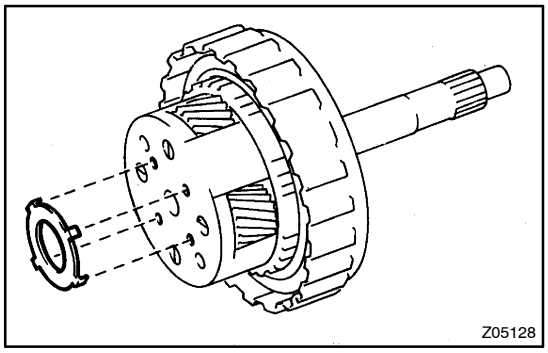
(b) Install the O/D planetary ring gear.



(c) Coat the bearing and race with petroleum jelly, and install them onto the planetary ring gear.

Bearing and race diameter:

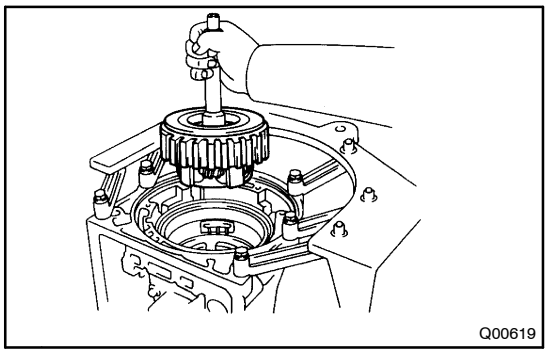
	Inside	Outside
Assembled bearing & race	24.2 mm (0.953 in.)	47.8 mm (1.882 in.)



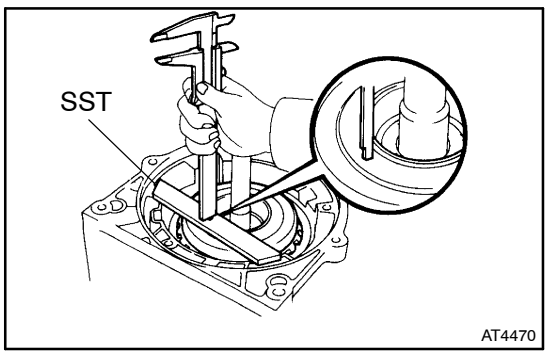
(d) Coat the race with petroleum jelly, and install it onto the planetary gear.

Race diameter:

	Inside	Outside
Race	24.7 mm (0.972 in.)	41.8 mm (1.646 in.)



(e) Install the O/D planetary gear, O/D direct clutch and one–way clutch.

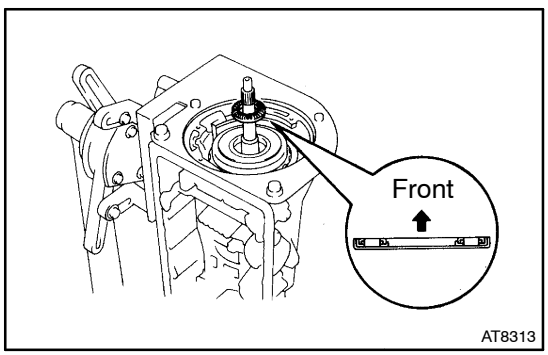


(f) Place SST on the transmission case.

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

Standard distance: 15.5 – 16.5 mm (0.610 – 0.650 in.)

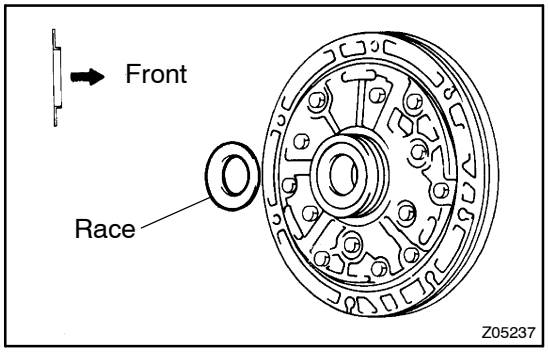
If the distance is outside the standard, check for an improper installation.



(h) Coat the assembled bearing & race with petroleum jelly, and install it onto the O/D direct clutch.

Bearing and race diameter:

	Inside	Outside
Assembled bearing & race	29.2 mm (1.150 in.)	50.2 mm (1.976 in.)



88. INSTALL OIL PUMP ASSY

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

Race diameter:

	Inside	Outside
Race	28.45 mm (1.120 in.)	47.3 mm (1.862 in.)

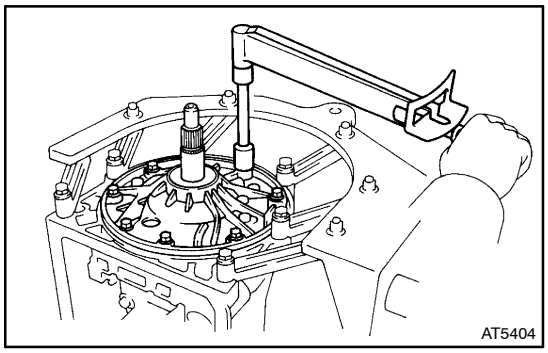
(b) Coat a new O–ring with ATF, and install it around the pump body.

(c) Place the oil pump through the input shaft, and align the bolt holes of the pump body with the transmission case.

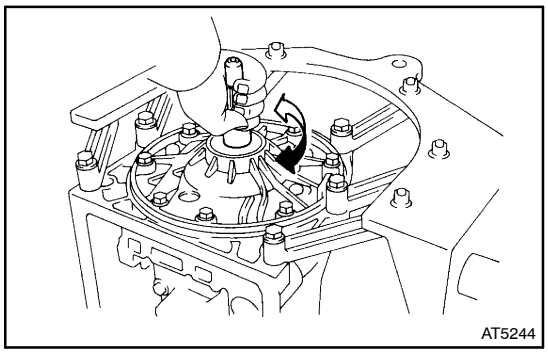
(d) Hold the input shaft, and lightly press the oil pump body to slide the oil seal rings into the O/D direct clutch drum.

NOTICE:

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

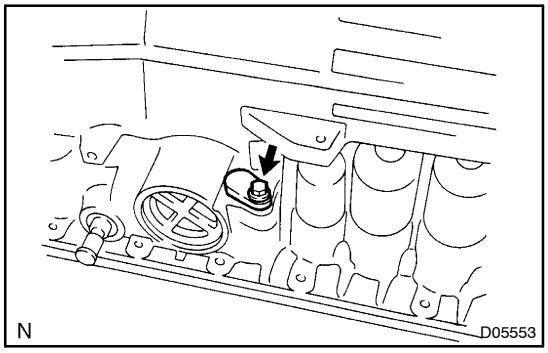


(e) Install the 7 bolts.
Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)



89. INSPECT INPUT SHAFT SUB–ASSY

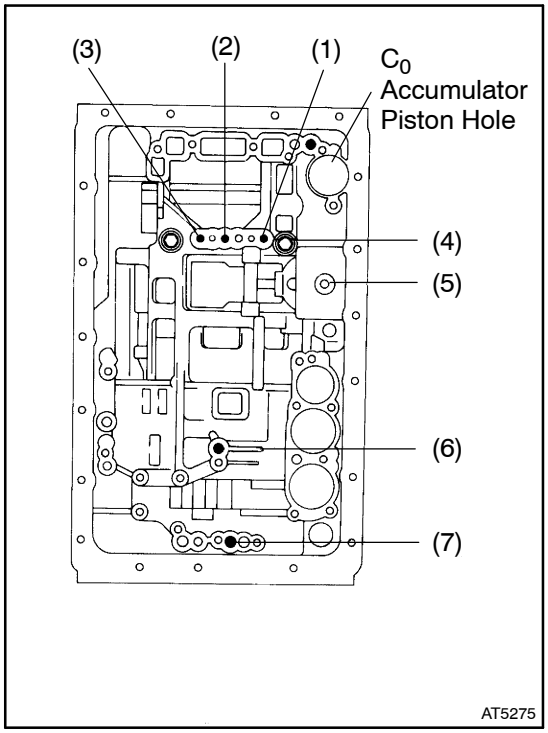
(a) Make sure the input shaft rotates smoothly.



90. INSTALL TRANSMISSION CASE PLUG ASSY

(a) Coat a new O–ring with ATF, and install it to the plug.

(b) Install the cable to the case with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)



91. INSPECT INDIVIDUAL PISTON OPERATION INSPECTION

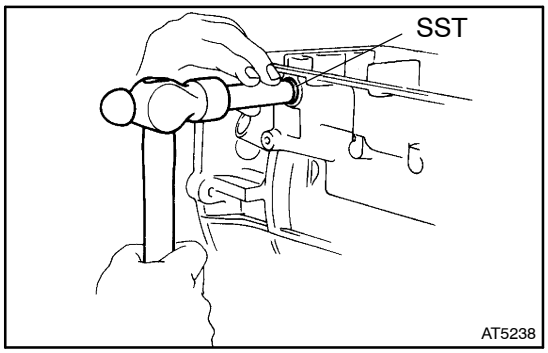
(a) Check for the sound while applying compressed air into the oil hole indicated in the illustration.

HINT:

When inspecting the O/D direct clutch, check the C_0 accumulator piston hole is closed.

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

(1) O/D direct clutch
(2) Direct clutch
(3) Forward clutch
(4) O/D brake
(5) 2nd coast brake
(6) 2nd brake
(7) 1st & reverse brake

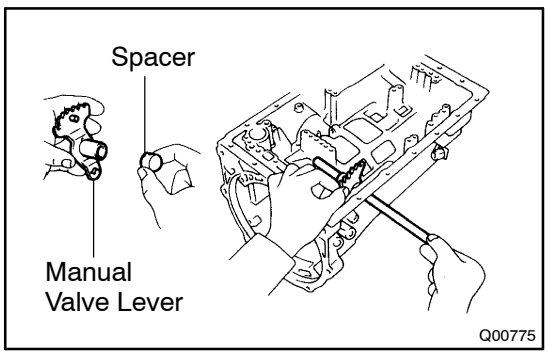


92. INSTALL MANUAL VALVE LEVER SHAFT OIL SEAL

(a) Using SST, drive in 2 new manual valve lever shaft oil seals.

SST 09350–30020 (09350–07110)

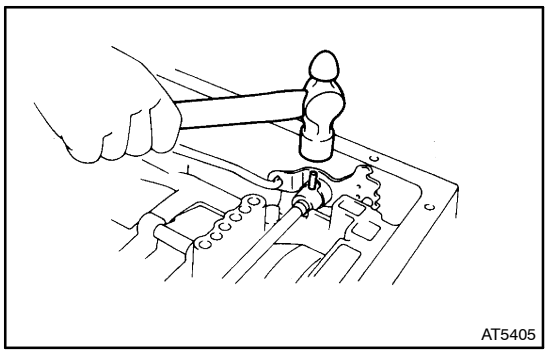
(b) Coat the oil seal lip with MP grease.



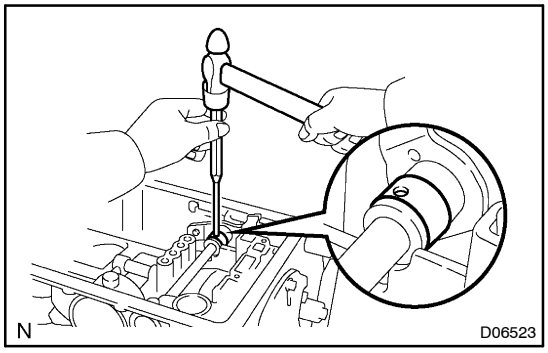
93. INSTALL MANUAL VALVE LEVER SUB–ASSY

(a) Install a new spacer to the manual valve lever.

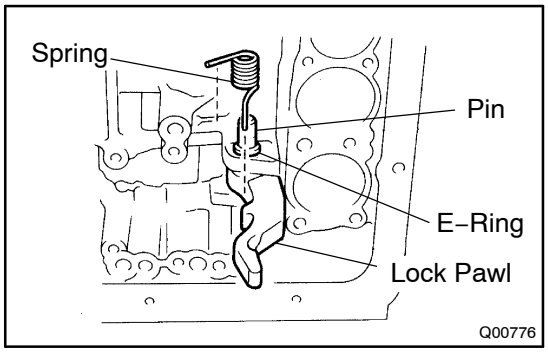
(b) Install the manual valve lever shaft to the transmission case through the manual valve lever.



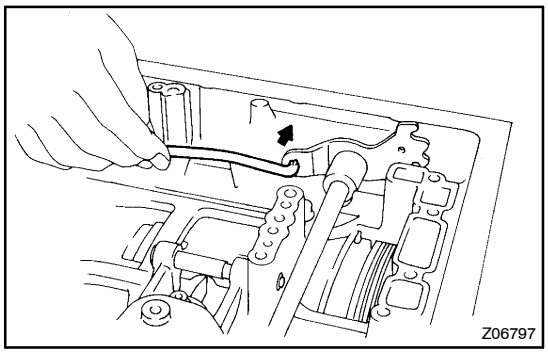
(c) Using a hammer, drive in a new spring pin.



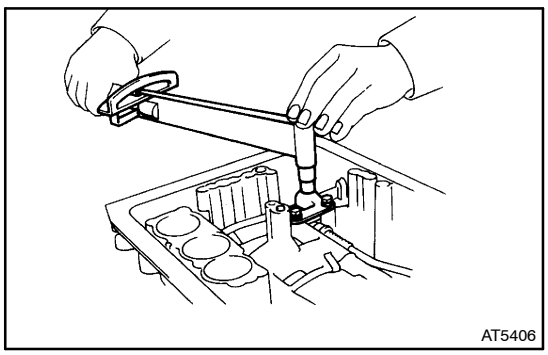
(d) Align the manual valve lever indentation with the spacer hole, and stake them with a punch.
(e) Make sure the shaft rotates smoothly.



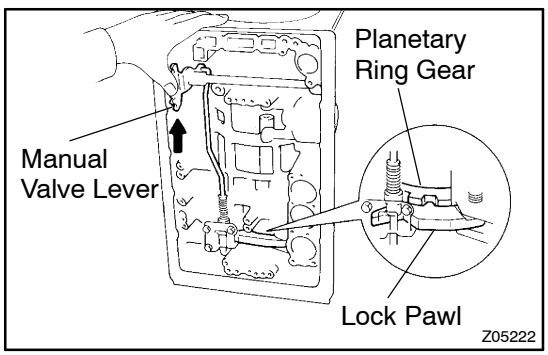
94. INSTALL PARKING LOCK PAWL SHAFT
(a) Install the E–ring to the shaft.
(b) Install the parking lock pawl, the shaft and the spring.



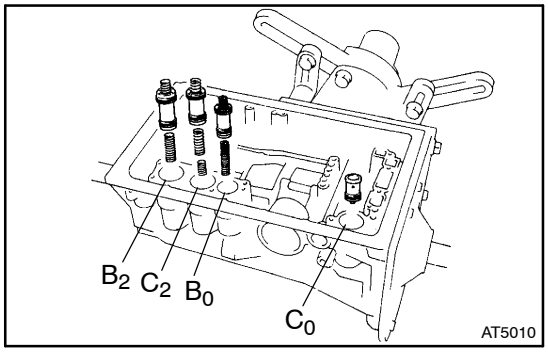
95. INSTALL PARKING LOCK ROD SUB–ASSY
(a) Connect the parking lock rod to the manual valve lever.



96. INSTALL PARKING LOCK PAWL BRACKET
(a) Install the parking lock pawl bracket with the 3 bolts.
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)



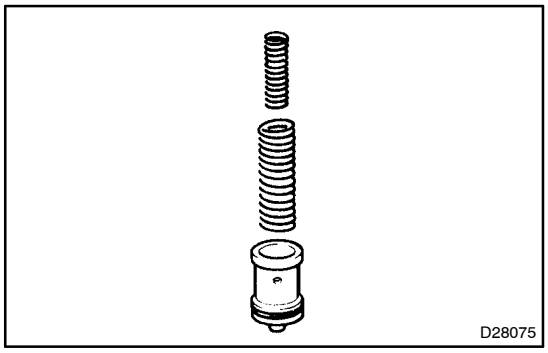
(b) Shift the manual valve lever to the P position, and confirm that the planetary ring gear is correctly locked up by the pawl.



97. INSTALL C–0 ACCUMULATOR PISTON

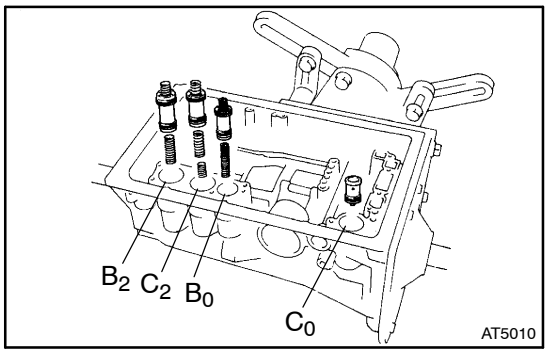
(a) Coat new O–ring with ATF, and install them to the piston.

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



Accumulator spring:

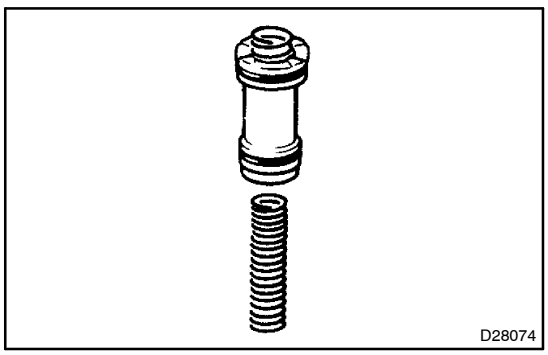
Spring		Free length Outer diameter mm (in.)	Color
C_0	Inner	51.5 mm (2.028 in.) 14.02 mm (0.552 in.)	Red
	Outer	79.9 mm (3.146 in.) 20.9 mm (0.823 in.)	Light Blue



98. INSTALL B–0 ACCUMULATOR PISTON

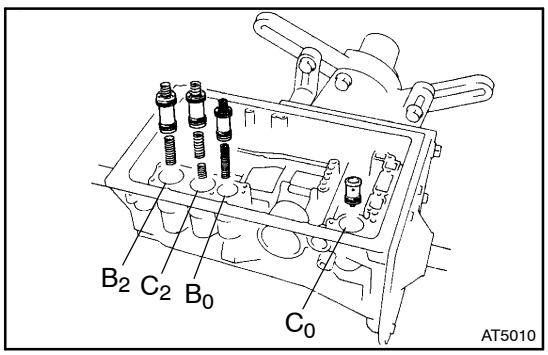
(a) Coat new O–ring with ATF, and install them to the piston.

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



Accumulator spring:

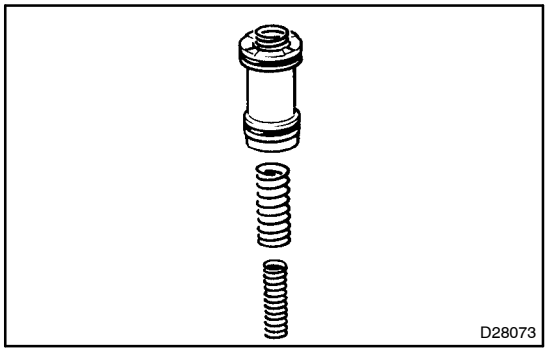
Spring	Free length Outer diameter mm (in.)	Color
B_0	62.0 mm (2.441 in.) 16.0 mm (0.630 in.)	Green



99. INSTALL C–2 ACCUMULATOR PISTON

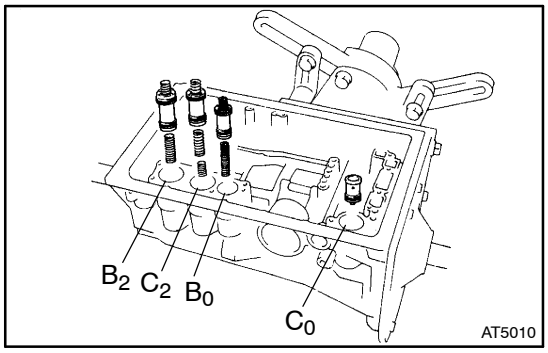
(a) Coat new O–ring with ATF, and install them to the piston.

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



Accumulator spring:

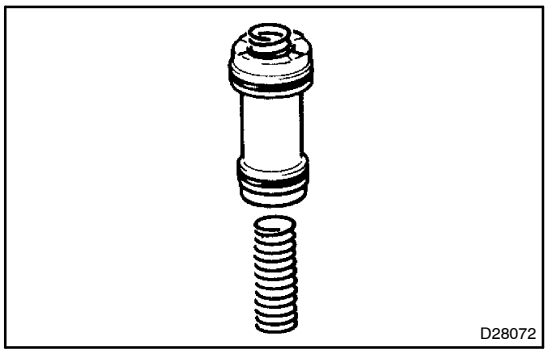
Spring		Free length Outer diameter mm (in.)	Color
C_2	Inner	42.1 mm (1.657 in.) 14.7 mm (0.579 in.)	Pink
	Outer	68.53 mm (2.698 in.) 20.2 mm (0.795 in.)	Blue



100. INSTALL B–2 ACCUMULATOR PISTON

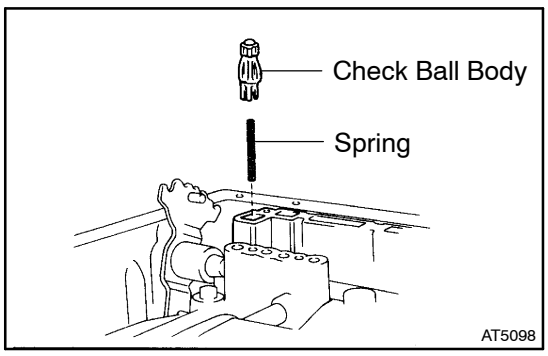
(a) Coat new O–ring with ATF, and install them to the piston.

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

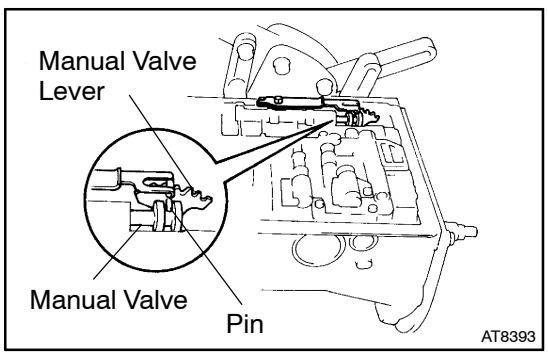


Accumulator spring:

Spring	Free length Outer diameter mm (in.)	Color
B_2	70.5 mm (2.776 in.) 19.9 mm (0.784 in.)	Light Gray

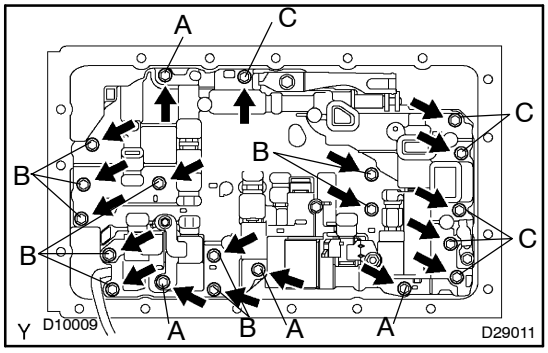


101. INSTALL CHECK BALL BODY

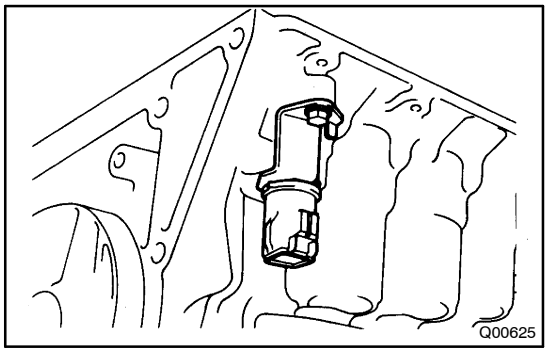


102. INSTALL TRANSMISSION VALVE BODY ASSY

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



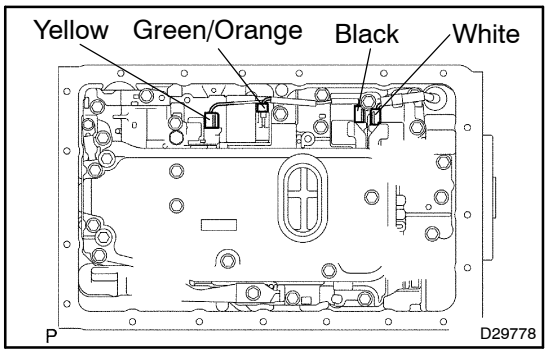
(b) Install the 20 bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
Bolt length:
Bolt A: 23 mm (0.91 in.)
Bolt B: 28 mm (1.10 in.)
Bolt C: 36 mm (1.42 in.)



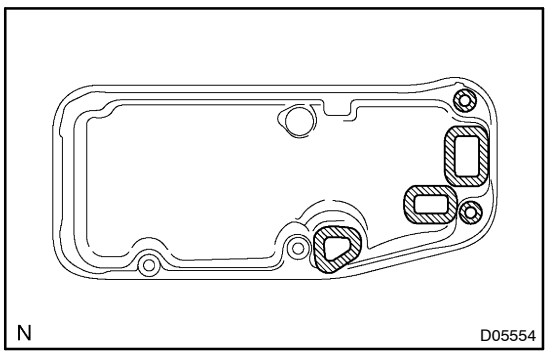
103. INSTALL TRANSMISSION WIRE

(a) Coat a new O–ring with ATF, and install it to the solenoid wiring.

(b) Install the solenoid wiring to the case, and install the stopper plate.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

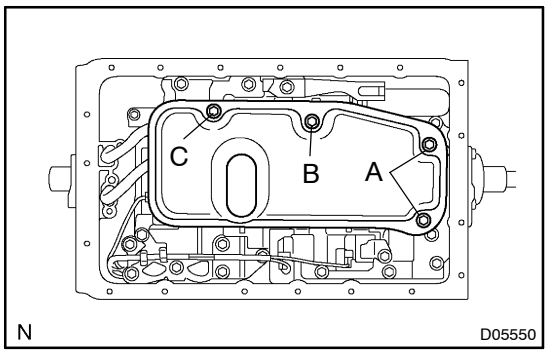


(c) Connect the connectors to each shift solenoid valve.

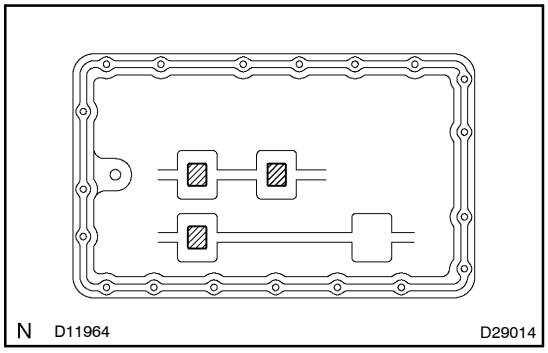


104. INSTALL VALVE BODY OIL STRAINER ASSY

(a) Install 5 new gaskets on the oil strainer.

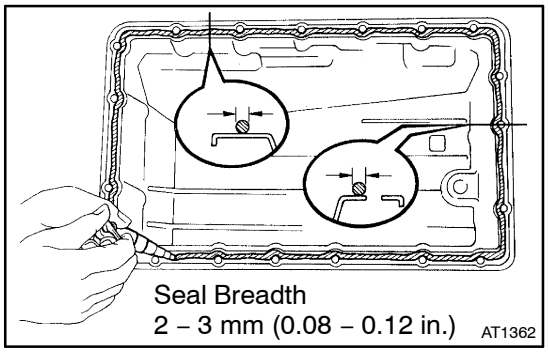


(b) Install the oil strainer with the 4 bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
Bolt length:
Bolt A: 14 mm (0.55 in.)
Bolt B: 20 mm (0.79 in.)
Bolt C: 23 mm (0.91 in.)



105. INSTALL TRANSMISSION OIL CLEANER MAGNET

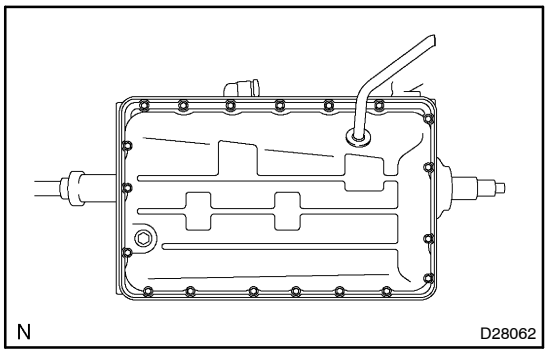
(a) Install the 3 magnets on the oil pan.



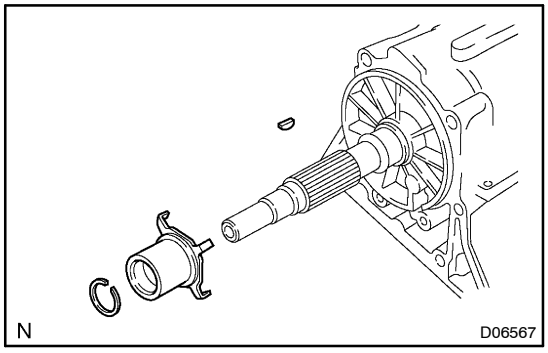
106. INSTALL AUTOMATIC TRANSMISSION OIL PAN SUB–ASSY

(a) Remove any FIPG material, and be careful not to drop oil on the contacting surfaces of the transmission case and the oil pan.

(b) Apply FIPG to the oil pan.
FIPG:
Part No.08826–00090, THREE BOND 1281 or equivalent



(c) Install the oil pan with the 19 bolts.
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)

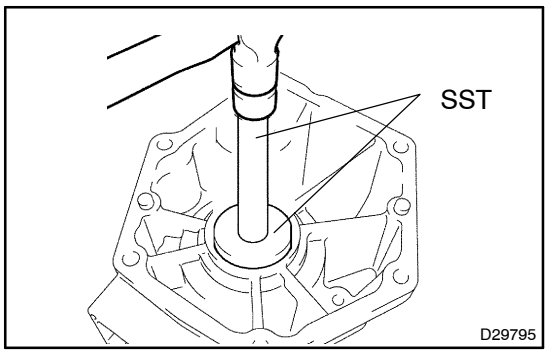


107. INSTALL SENSOR ROTOR

(a) Install the key on the output shaft.

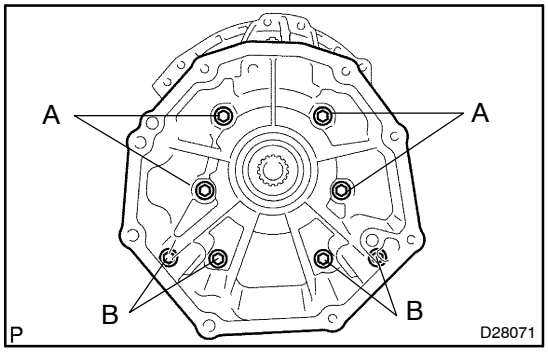
(b) Align the groove of the sensor rotor with the key, and install the No.2 vehicle sensor rotor.

(c) Using snap ring pliers, install the snap ring.



108. INSTALL TRANSFER CASE ADAPTOR REAR OIL SEAL

(a) Using SST and a hammer, install a new oil seal.
SST 09950–60010 (09951–00560), 09950–70010 (09951–07150)



109. INSTALL REAR ADAPTOR TRANSFER

(a) Install the rear adaptor transfer and the gasket.

(b) Install the 8 bolts.

Torque: 34 N·m (345 kgf·cm, 25 ft·lbf)

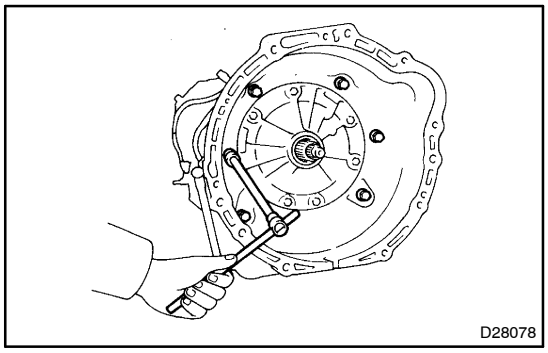
HINT:

Each blot length is indicated below.

Bolt length:

Bolt A: 50 mm (1.969 in.)

Bolt B: 40 mm (1.575 in.)



110. INSTALL AUTOMATIC TRANSMISSION HOUSING

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

(b) Apply seal packing or equivalent to the 6 bolts.

Seal packing:

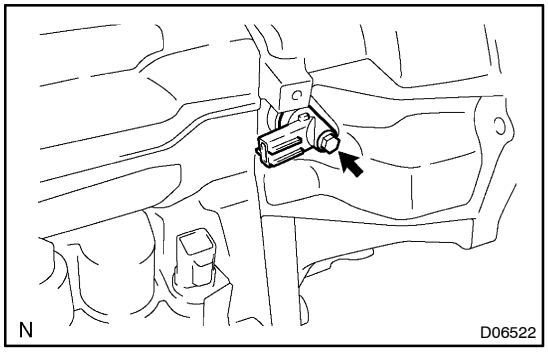
Part No.08833–00080, THREE BOND 1344 LOCTITE 242 or equivalent

(c) Install the transmission housing with the 6 bolts.

Torque:

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

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

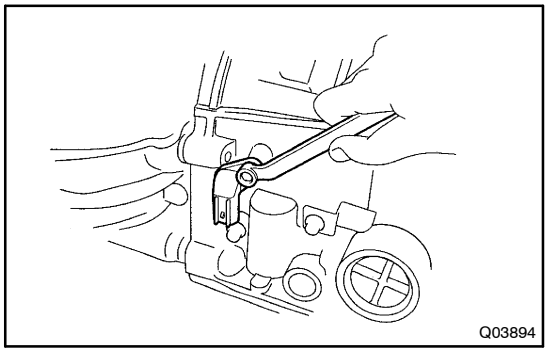


111. INSTALL TRANSMISSION REVOLUTION SENSOR

(a) Install a new O–ring to the sensor.

(b) Install the No.2 vehicle speed sensor with the bolt.

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

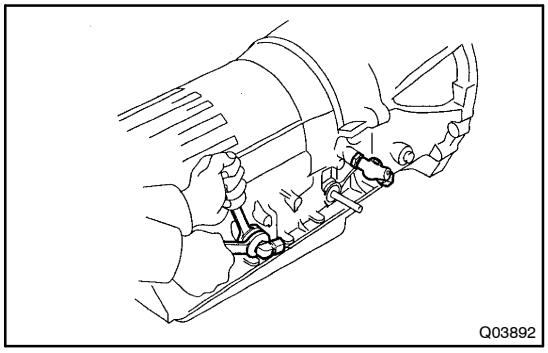


112. INSTALL SPEED SENSOR

(a) Install a new O–ring to the sensor.

(b) Install the No.1 vehicle speed sensor with the bolt.

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

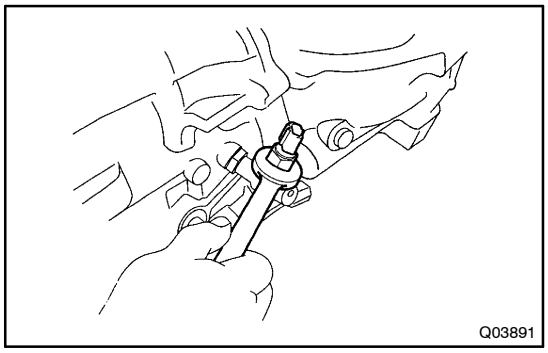


113. INSTALL OIL COOLER TUBE UNION

(a) Coat new O–rings with ATF, and install them to each oil cooler tube union.

(b) Install the 2 oil cooler tube unions.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

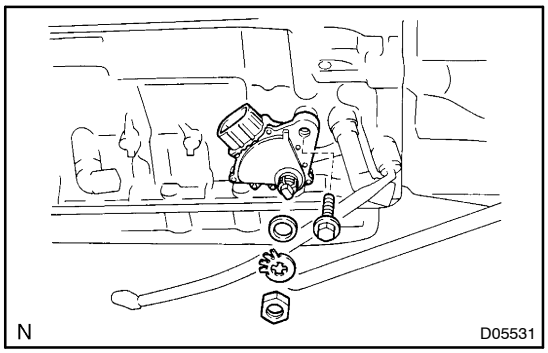
(c) Install the union.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)



114. INSTALL TEMPERATURE NO.2 SENSOR

(a) Coat a new O–ring with ATF, and install it to the temperature No.2 sensor.

(b) Install the temperature No.2 sensor.
Torque: 24 N·m (250 kgf·cm, 18 ft·lbf)

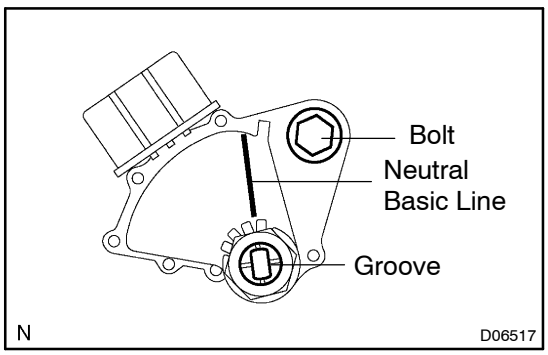


115. INSTALL PARK/NEUTRAL POSITION SWITCH ASSY

(a) Install the park/neutral position switch onto the manual valve lever shaft, and temporarily tighten the adjusting bolt.

(b) Install the grommet and a new lock washer. Install the nut.
Torque: 6.9 N·m (70 kgf·cm, 61 in.·lbf)

(c) Using the control shaft lever, fully turn the manual lever shaft back, and then return 2 notches. It is now in neutral.

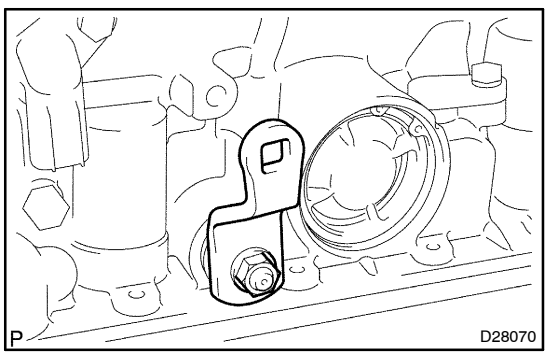


(d) Align the neutral basic line with the switch groove, and tighten the adjusting bolt.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(e) Bend the tabs of the lock washer.

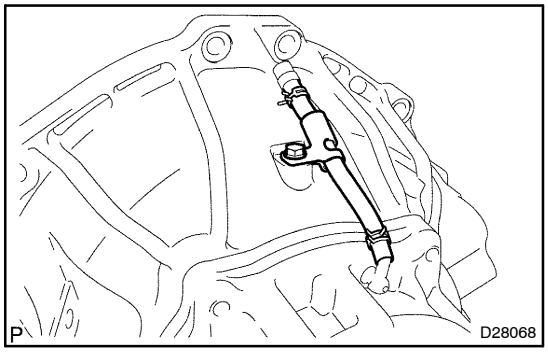
HINT:

Bend at least 2 of the lock washer tabs.



116. INSTALL TRANSMISSION CONTROL SHAFT LEVER LH

(a) Install the transmission control shaft lever LH.
Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)



117. INSTALL BREATHER PLUG HOSE

(a) Install the breather plug hose.

118. INSTALL DRAIN (ATM) PLUG SUB–ASSY

Torque: 20 N·m (205 kgf·cm, 15 ft·lbf)