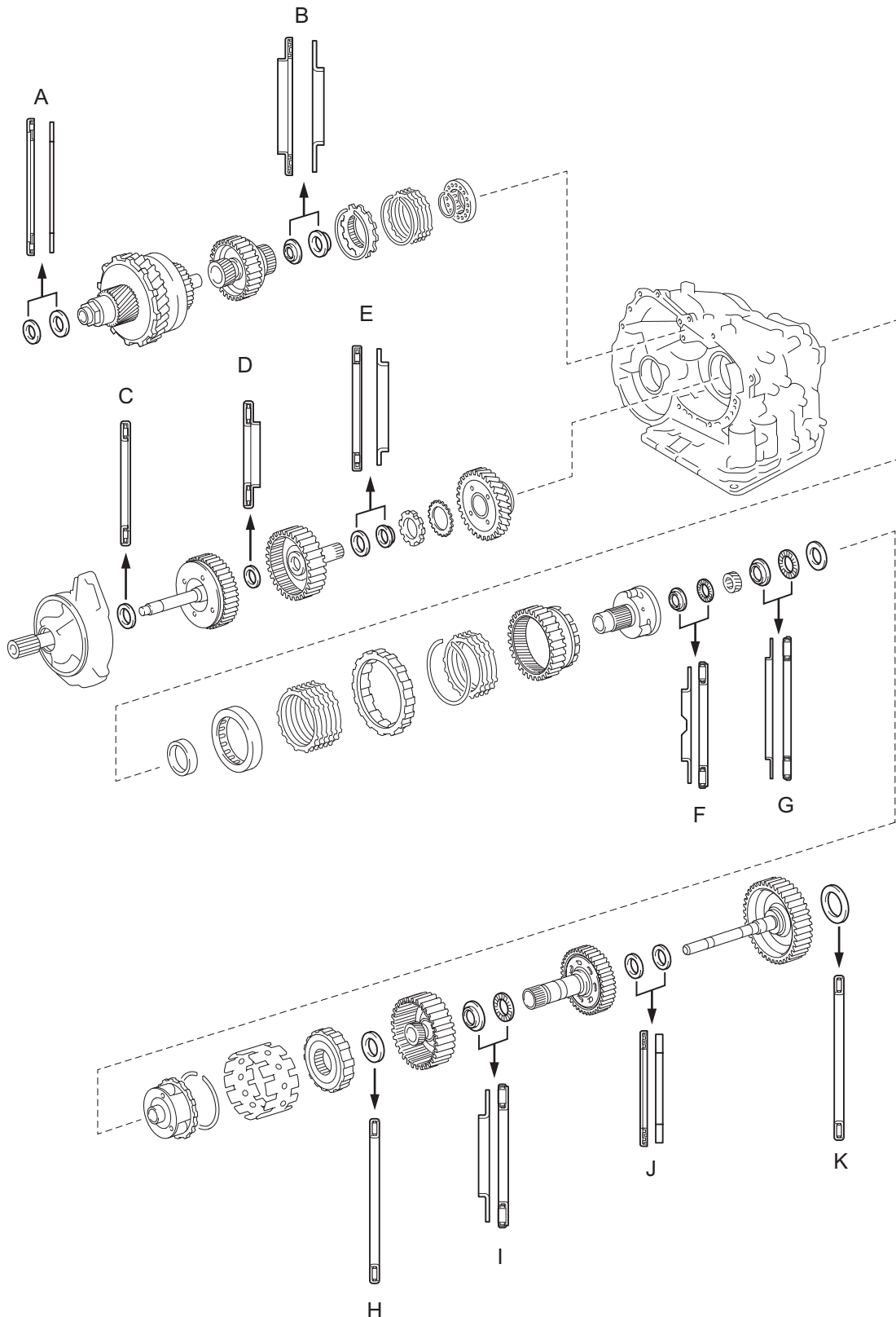


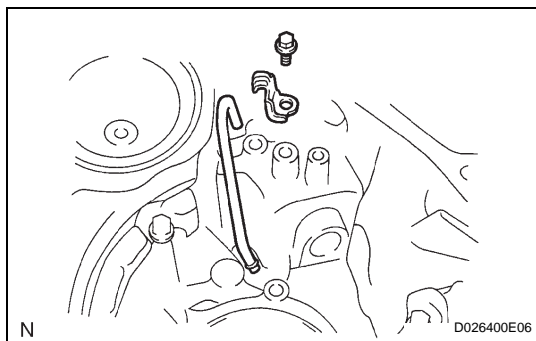
REASSEMBLY

1. BEARING POSITION



Standard bearing position

Mark	Front Race Diameter Inside / Outside	Thrust Bearing Diameter Inside / Outside	Rear Race Diameter Inside / Outside
A	-	57.2 mm (2.252 in.) / 84.96 mm (3.3449 in.)	56.4 mm (2.220 in.) / 83.0 mm (3.268 in.)
B	-	37.73 mm (1.4854 in.) / 58.0 mm (2.283 in.)	-
C	-	33.85 mm (1.3327 in.) / 52.2 mm (2.055 in.)	-
D	24.94 mm (0.982 in.)	23.5 mm (0.925 in.) / 44.0mm (1.732 in.)	-
E	-	36.3 mm (1.429 in.) / 51.93 mm (2.0445 in.)	34.5 mm (1.358 in.) / 48.35 mm (1.904 in.)
F	34.35 mm (1.3524 in.) / 56.57 mm (2.2272 in.)	32.45 mm (1.2776 in.) / 56.48 mm (2.2236 in.)	-
G	40.15 mm (1.5807 in.) / 59.25 mm (2.3327 in.)	38.65 mm (1.5217 in.) / 59.79 mm (2.3539 in.)	38.65 mm (1.5217 in.) / 59.25 mm (2.3327 in.)
H	-	53.6 mm (2.110 in.) / 69.6 mm (2.740 in.)	-
I	33.02 mm (1.3000 in.) / 45.8 mm (1.803 in.)	31.85 mm (1.2539 in.) / 57.3 mm (2.256 in.)	-
J	-	24.79 mm (0.9760 in.) / 39.5 mm (1.555 in.)	23.6 mm (0.929 in.) / 37.95 mm (1.4941 in.)
K	-	56.3 mm (2.216 in.) / 75.96 mm (2.9905 in.)	-



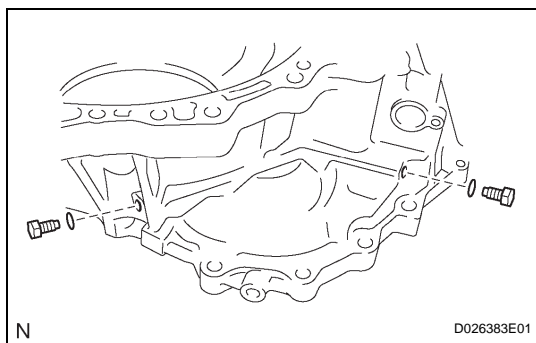
2. INSTALL DIFFERENTIAL GEAR LUBE APPLY TUBE

- (a) Install the differential gear lube apply tube and transaxle apply tube clamp to the transaxle housing with the bolt.

Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

NOTICE:

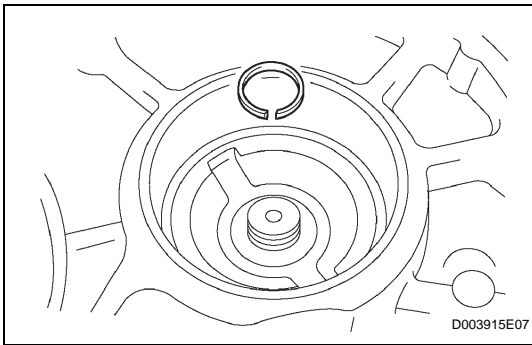
Make sure to insert the pipe to the stopper.



3. INSTALL NO. 1 TRANSAXLE CASE PLUG

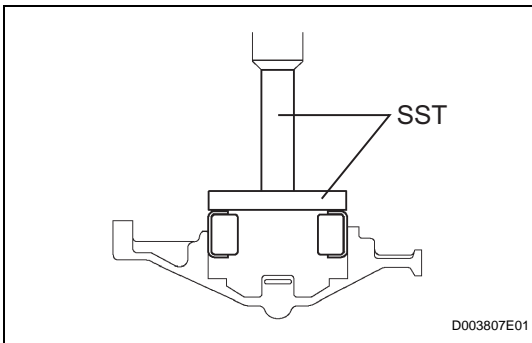
- (a) Install 2 new O-rings to the 2 plugs.
(b) Install the 2 plugs to the transaxle rear cover.

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



4. INSTALL UNDERDRIVE OUTPUT SHAFT OIL SEAL RING

- (a) Coat a new oil seal ring with ATF and install it to the transaxle housing.



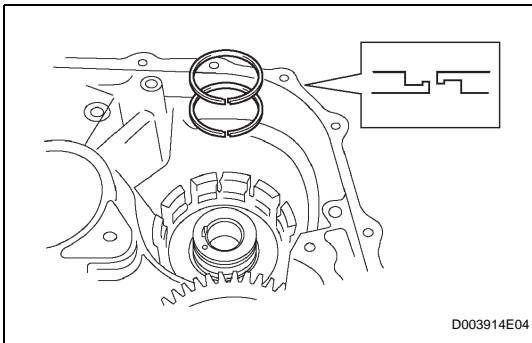
5. INSTALL UNDERDRIVE CYLINDRICAL ROLLER BEARING

- (a) Coat the underdrive cylindrical roller bearing with ATF.
 (b) Using SST and a press, press in the underdrive cylindrical roller bearing.

SST 09950-60020 (09951-00810), 09950-70010 (09951-07100)

NOTICE:

Do not apply excessive pressure to the bearing.

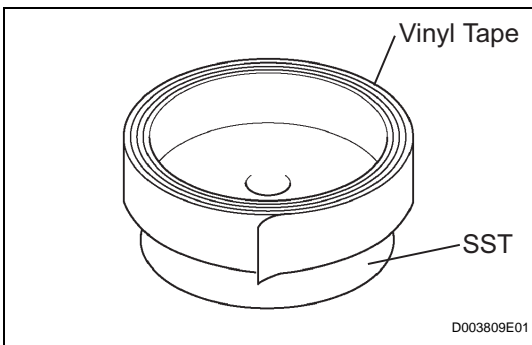


6. INSTALL UNDERDRIVE CLUTCH DRUM OIL SEAL RING

- (a) Coat 2 new oil seal rings with ATF, and install them to the transaxle rear cover.

NOTICE:

- Do not expand the end gap of the oil seal ring too much.
- Fix the hooks firmly. Confirm that the oil seal ring rotates freely in its groove.



7. INSTALL NEEDLE ROLLER BEARING

- (a) Wrap vinyl tape around SST 4.0 mm (0.157 in.) from the bottom of SST until the thickness of the tape is about 5.0 mm (0.197 in.).

SST 09950-60010 (09951-00320), 09950-70010 (09951-07100)

NOTICE:

Clean SST to remove deposited oil before wrapping vinyl tape.

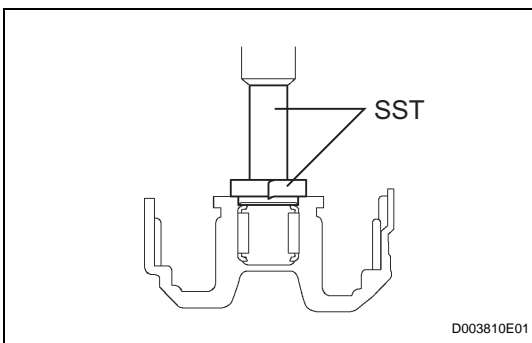
- (b) Coat the needle roller bearing with ATF.

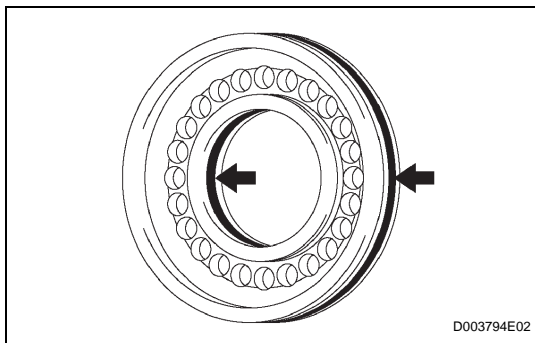
- (c) Using SST and a press, press in the needle-roller bearing to the transaxle case.

SST 09950-60010 (09951-00320), 09950-70010 (09951-07100)

NOTICE:

When the wrapped vinyl tape contacts the transaxle case, stop press-fitting.





8. INSTALL UNDERDRIVE BRAKE PISTON

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

NOTICE:

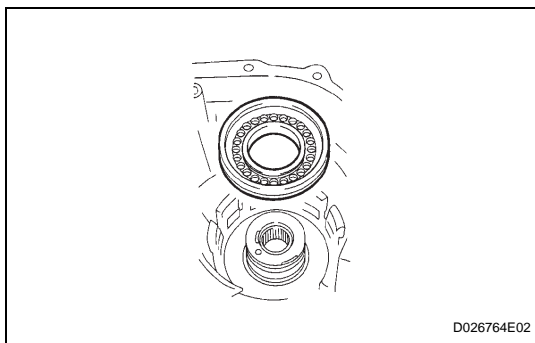
- Make sure that the O-rings are not twisted or pinched when they are installed.
- Apply sufficient ATF to the O-ring before installing.

- (b) Coat the underdrive brake piston with ATF.

- (c) Install the underdrive brake piston to the transaxle case.

NOTICE:

Be careful not to damage the O-ring.



9. INSTALL UNDERDRIVE BRAKE RETURN SPRING SUB-ASSEMBLY

- (a) Place SST on the return spring and compress the return spring with a press.

NOTICE:

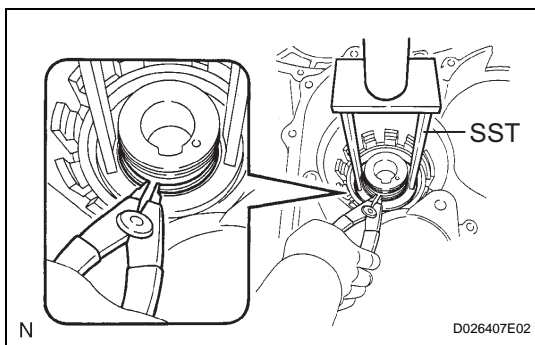
- Stop the press when the spring seat is lowered to a position 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove to prevent the spring seat from being deformed.
- After installing the return spring, check that all the return spring's springs fit in the piston correctly.

SST 09387-00020

- (b) Using a snap ring expander, press in the snap ring to the transaxle case.

NOTICE:

The snap ring must be fully engaged in the groove of the transaxle case.



10. INSTALL NO. 2 BREATHER PLUG

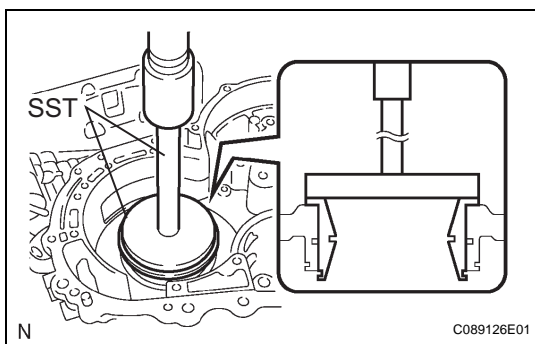
11. INSTALL COUNTER DRIVE GEAR BEARING

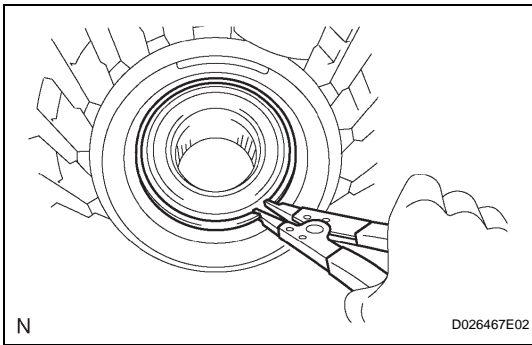
- (a) Coat the counter drive gear bearing with ATF.
- (b) Using SST and a press, press in the bearing outer race.

SST 09950-60020 (09951-01030), 09950-70010 (09951-07150), 09649-17010

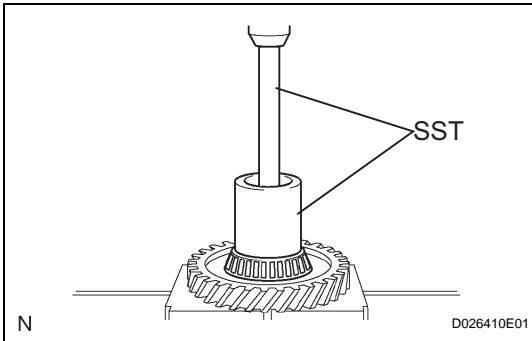
NOTICE:

- Do not apply excessive pressure to the bearing.
- Press-fit the bearing outer race until it contacts the transaxle case.



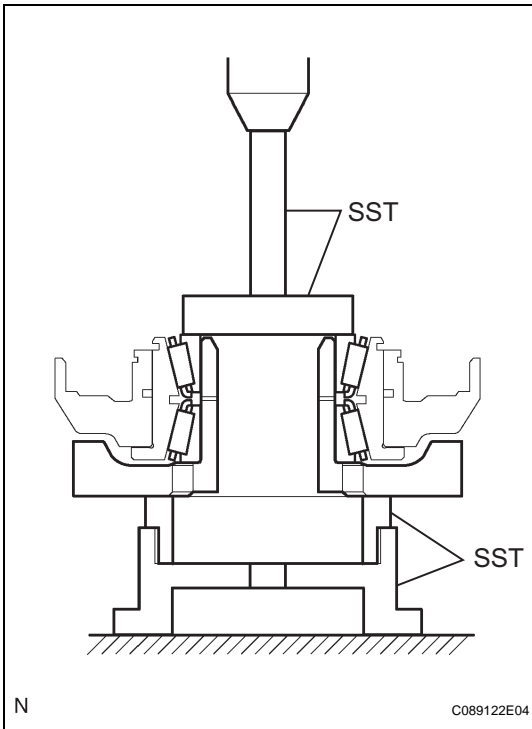


- (c) Using a snap ring expander, install the snap ring.
NOTICE:
 The white mark side of the snap ring should face upward.

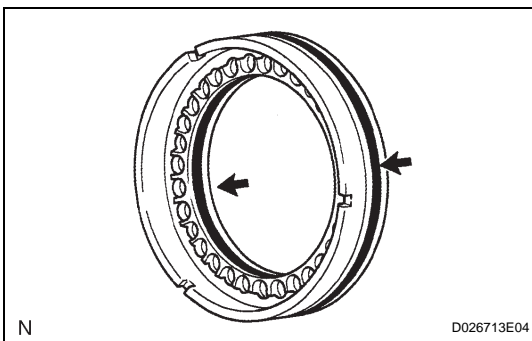


12. INSTALL COUNTER DRIVE GEAR

- (a) Coat the counter drive gear with ATF.
 (b) Using SST and a press, press in the tapered roller bearing to the counter drive gear.
SST 09950-70010 (09951-07150), 09649-17010
NOTICE:
 Do not apply excessive pressure to the bearing.



- (c) Using SST and a press, press in the counter drive gear and bearing to the transaxle case.
SST 09950-70010 (09951-07150), 09223-15030, 09527-17011, 09950-60020 (09951-00750)
NOTICE:
 Do not apply excessive pressure to the counter drive gear.

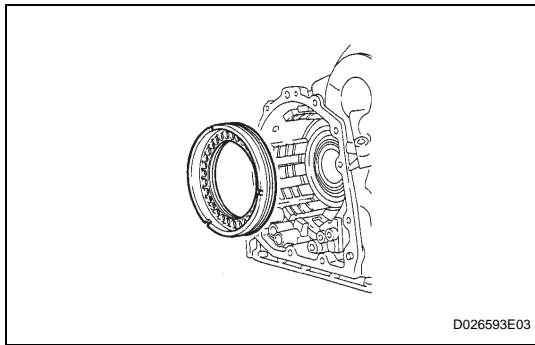


13. INSTALL 1ST AND REVERSE BRAKE PISTON

- (a) Coat 2 new O-rings with ATF.
 (b) Install the 2 O-rings to the 1st and reverse brake piston.

NOTICE:

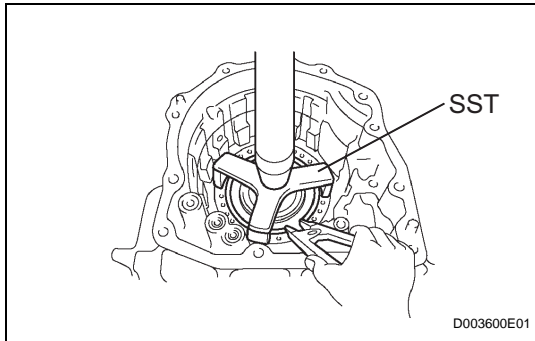
- Make sure that the O-rings are not twisted or pinched when they are installed.
- Apply sufficient ATF to the O-ring prior to assembling.



- (c) Coat the 1st and reverse brake piston with ATF, and install it to the transaxle case.

NOTICE:

Be careful not to damage the O-ring.



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

- (a) Place SST on the return spring and compress the return spring with a press.

NOTICE:

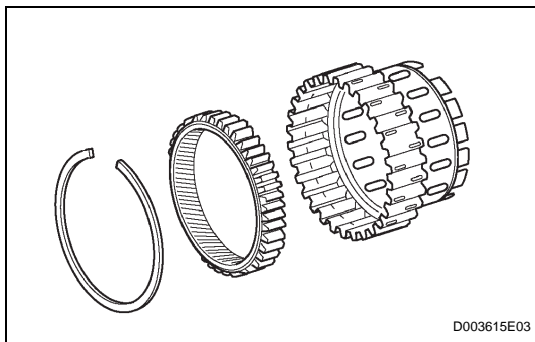
- Stop the press when the spring seat is lowered 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove to prevent the spring seat from being deformed.
- After installing the return spring, check that all the return spring's springs fit in the piston correctly.

SST 09387-00070

- (b) Using a snap ring expander, press in the snap ring to the transaxle case.

NOTICE:

- The snap ring must be fully engaged in the groove of the transaxle case.
- Fix the snap ring to the inside of the claw of the spring seat firmly.

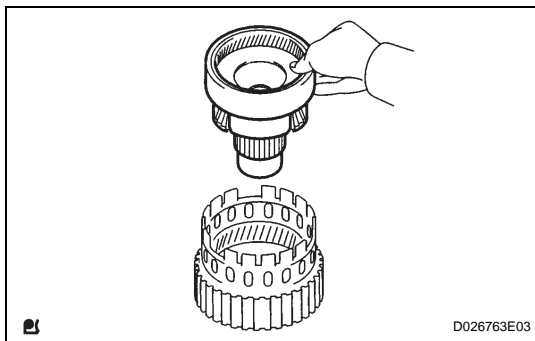


15. INSTALL FRONT PLANETARY RING GEAR

- (a) Using a screwdriver, install the front planetary ring gear and snap ring to the brake hub.

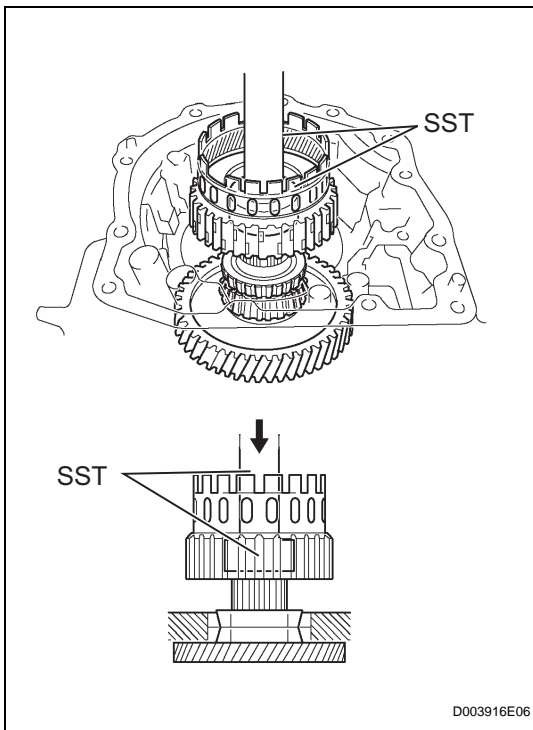
NOTICE:

Confirm that the snap ring is engaged in the groove of the brake hub correctly.



16. INSTALL FRONT PLANETARY GEAR ASSEMBLY

- (a) Install the front planetary gear to the brake hub.

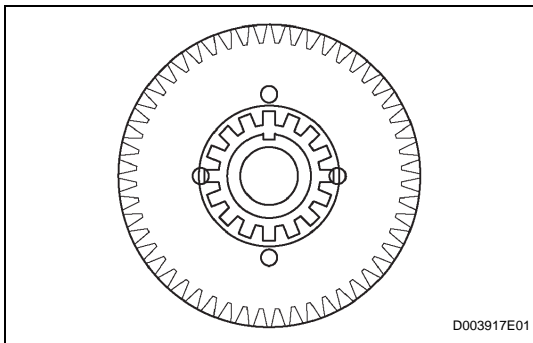


- (b) Using SST and a press, press-fit the front planetary gear.

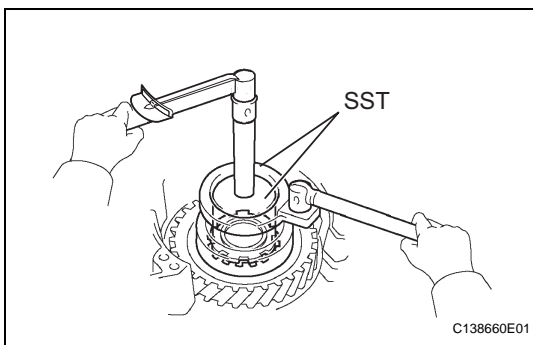
SST 09950-60010 (09951-00500), 09950-70010 (09951-07100)

NOTICE:

- Do not apply excessive pressure to the planetary gear.
- Press the inner race of the LH tapered roller bearing, counter gear and front planetary gear to the position where no preload should be applied to one pair of tapered roller bearings (left and right).



- (c) Install a new washer as shown in the illustration.



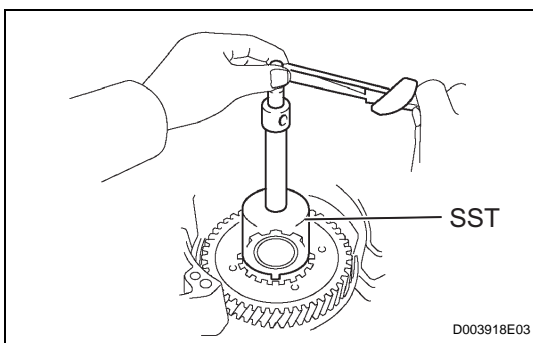
- (d) Using SST, install the nut.

SST 09387-00030, 09387-00080

Torque: 280 N*m (3,355 kgf*cm, 207 ft.*lbf)

NOTICE:

Assemble the washer after pressing each part, then tighten the nut to the standard torque.



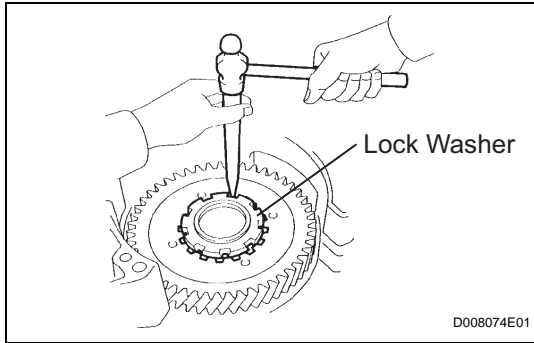
- (e) Using SST and a torque wrench, measure the turning torque of the bearing while rotating SST at 60 rpm. When the measured value is not as specified, gradually tighten the nut until it reaches the specified value.

SST 09387-00080

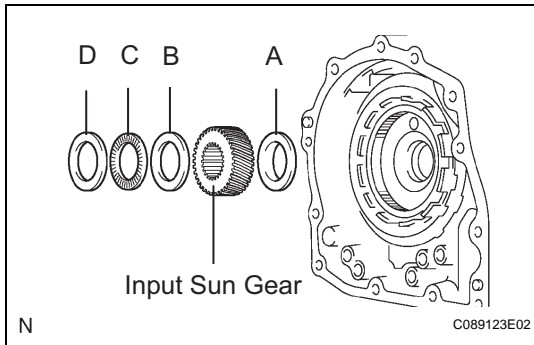
Standard turning torque at 60 rpm:

0.51 to 1.02 N*m (5.1 to 10.0 kgf*cm, 4.4 to 8.7 in.*lbf) for new bearing

0.26 to 0.51 N*m (2.7 to 5.2 kgf*cm, 2.3 to 4.5 in.*lbf) for used bearing



- (f) Tighten the nut gradually until the specified turning torque of the tapered roller bearing is measured.
Torque: 350 N*m (3,569 kgf*cm, 258 ft.*lbf)
- (g) Using a chisel and hammer, stake the front lock washer.



17. INSTALL INPUT SUN GEAR

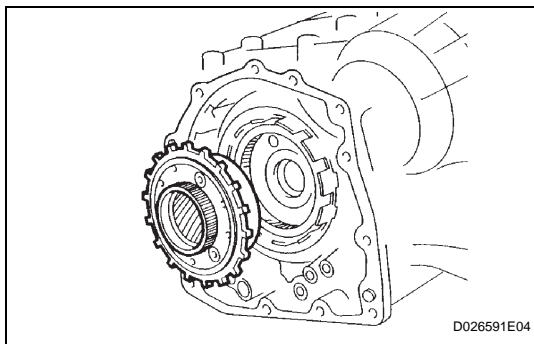
- (a) Coat the 2 thrust bearings with ATF.
- (b) Install the 2 thrust bearings, bearing race and input sun gear to the front planetary gear.

NOTICE:

- Install the bearing race on the side of the front planetary carrier. Be careful about the direction of the race.
- When installing the thrust bearing and front sun gears, be careful about the direction of the parts.
- When install the bearing race on the side of the front sun gear, be careful of the direction of the race.
- Install the thrust bearing and the race after holding the parts on the input sun gear by applying grease. Make sure that the assembling order is correct.

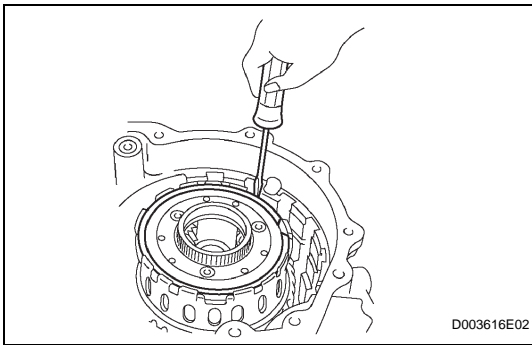
Standard thrust bearing and bearing race diameter

Item	Inside	Outside
Thrust Bearing, A	32.5 mm (1.28 in.)	56.5 mm (2.224 in.)
Thrust Bearing, C	38.6 mm (1.520 in.)	59.7 mm (2.35 in.)
Bearing Race, B	40.2 mm (1.583 in.)	59.3 mm (2.335 in.)
Bearing Race, D	38.6 mm (1.520 in.)	59.3 mm (2.335 in.)



18. INSTALL REAR PLANETARY GEAR ASSEMBLY

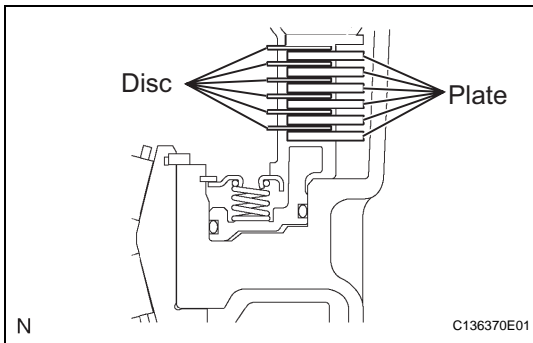
- (a) Install the rear planetary gear to the rear planetary ring gear.



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

NOTICE:

Confirm that the snap ring is fixed in the groove of the 1st and reverse brake hub correctly.

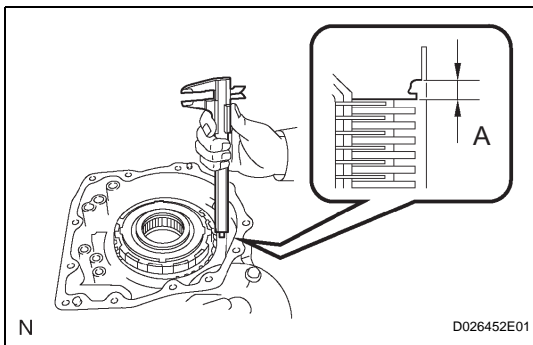


19. INSTALL 1ST AND REVERSE BRAKE CLUTCH DISC

- (a) Coat the 6 discs with the ATF.
(b) Install the 6 plates and 6 discs.

NOTICE:

Make sure that the plates and discs are installed as shown in the illustration.



20. INSPECT PACK CLEARANCE OF FIRST AND REVERSE BRAKE

- (a) Using a vernier caliper, measure the distance between the disc surface and the contact surface of the 2nd brake cylinder and transaxle case (Dimension A).
(b) Select an appropriate flange so that the pack clearance will meet the specified value.

Standard pack clearance:

1.16 to 1.35 mm (0.0457 to 0.0531 in.)

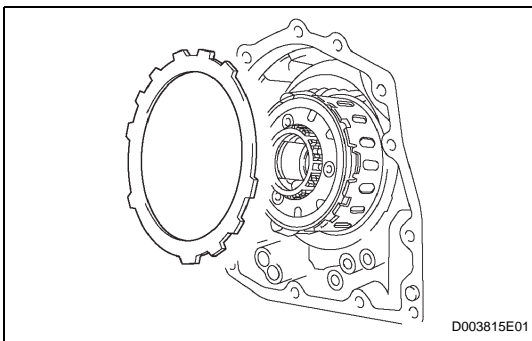
HINT:

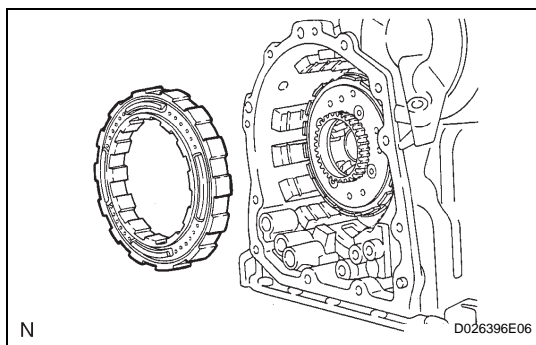
Piston stroke = Dimension A - Flange thickness

Standard flange thickness

Mark	Thickness	Mark	Thickness
1	1.8 mm (0.071 in.)	5	2.2 mm (0.087 in.)
2	1.9 mm (0.075 in.)	6	2.3 mm (0.091 in.)
3	2.0 mm (0.079 in.)	7	2.4 mm (0.094 in.)
4	2.1 mm (0.083 in.)	8	2.5 mm (0.098 in.)

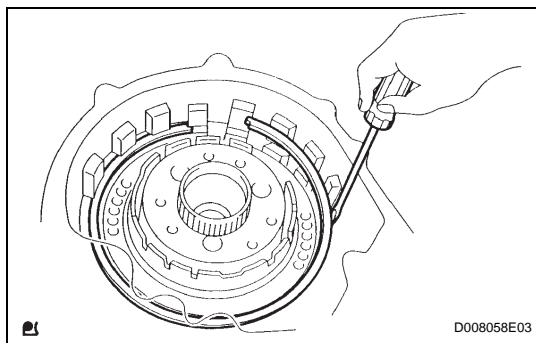
- (c) Install the flange.





21. INSTALL SECOND BRAKE PISTON ASSEMBLY

- (a) Install the second brake piston to the transaxle case.



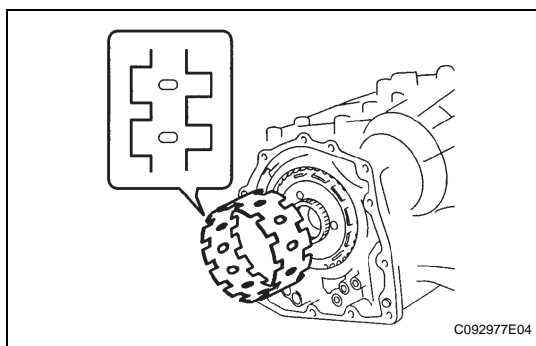
- (b) Install the snap ring and measure the inside diameter.

Inside diameter:

Greater than 167 mm (6.57 in.)

NOTICE:

- Make sure that the taper snap ring is installed in the correct direction.
- When the diameter does not meet the specified value, replace the snap ring with a new one.
- After installing the snap ring, confirm that there is no clearance between the 2nd brake cylinder and the fitting surface of the cylinder in the transaxle case.

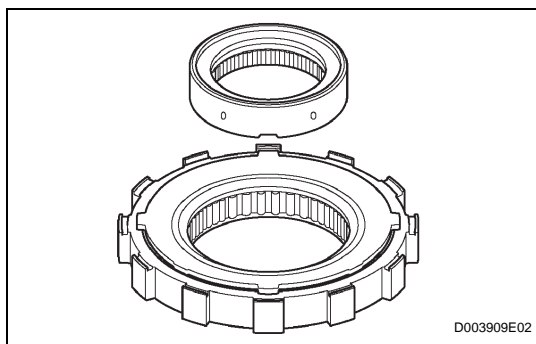


22. INSTALL 1-WAY CLUTCH SLEEVE OUTER

- (a) Install the 1-way clutch sleeve outer to the 2nd brake cylinder.

NOTICE:

Make sure that the outer sleeve is installed in the correct direction.

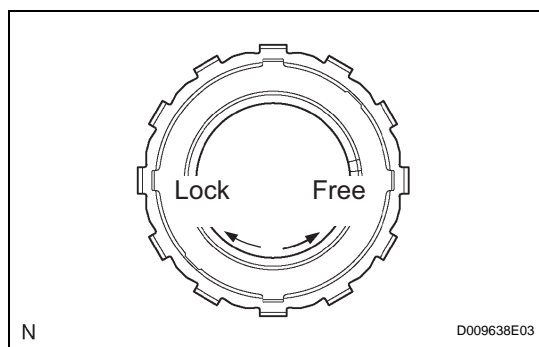


23. INSTALL 1-WAY CLUTCH ASSEMBLY

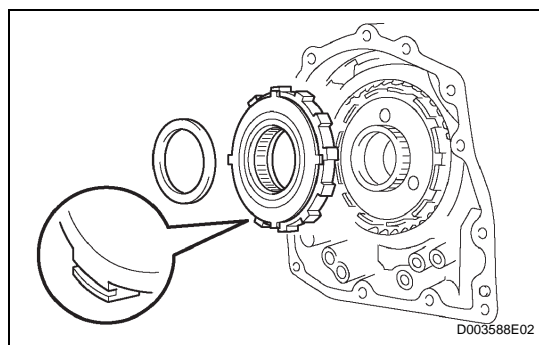
- (a) Install the 1-way clutch inner race to the 1-way clutch.

NOTICE:

- Make sure that the inner race is installed in the correct direction.
- Confirm that the discrimination mark is visible.



- (b) Check that the 1-way clutch locks when turned clockwise and rotates freely when turned counterclockwise as shown in the illustration. If the result is not as specified, replace the 1-way clutch.



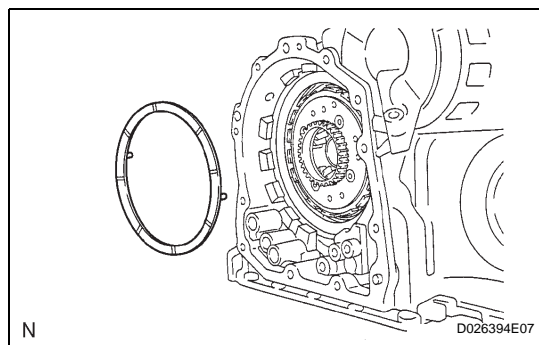
- (c) Install the 1-way clutch and thrust needle roller bearing to the 1-way clutch sleeve outer.

Standard bearing diameter

Item	Inside	Outside
Bearing	53.6 mm (2.110 in.)	69.4 mm (2.732 in.)

NOTICE:

Install the thrust bearing properly so that the non-colored race will be visible.

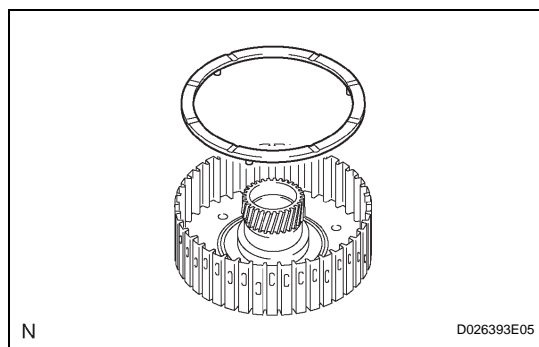


24. INSTALL NO. 1 PLANETARY CARRIER THRUST WASHER

- (a) Coat the planetary carrier thrust washer with yellow petrolatum, and install the washer onto the planetary sun gear.

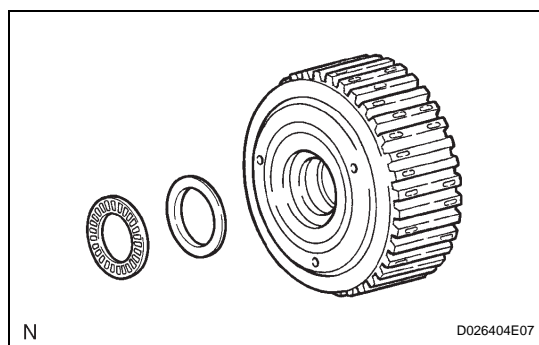
NOTICE:

After installing the washer, confirm that the projection of the washer is fixed firmly in the hole of the planetary sun gear.



25. REMOVE REAR PLANETARY SUN GEAR ASSEMBLY

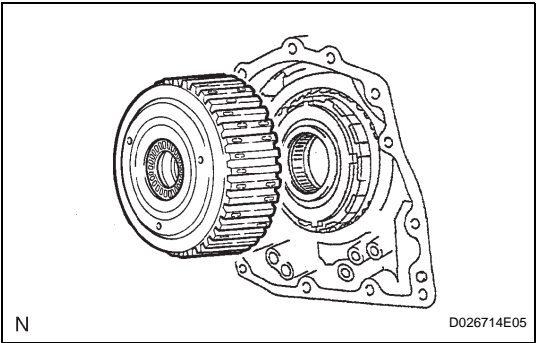
- (a) Coat the planetary carrier thrust washer with yellow petrolatum, and install the washer onto the rear planetary sun gear.



- (b) Coat the bearing with yellow petrolatum, and install the bearing onto the rear planetary sun gear.

Standard bearing diameter

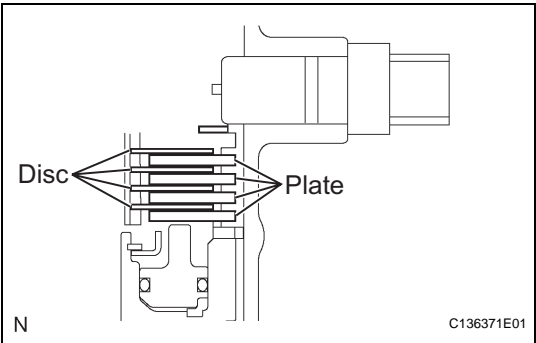
Item	Inside	Outside
Race	33.0 mm (1.299 in.)	45.4 mm (1.787 in.)
Bearing	31.85 mm (1.254 in.)	45.2 mm (1.78 in.)



- (c) Install the rear planetary sun gear to the rear planetary gear.

NOTICE:

After installing the rear planetary sun gear, make sure that the B1 discs are engaged.



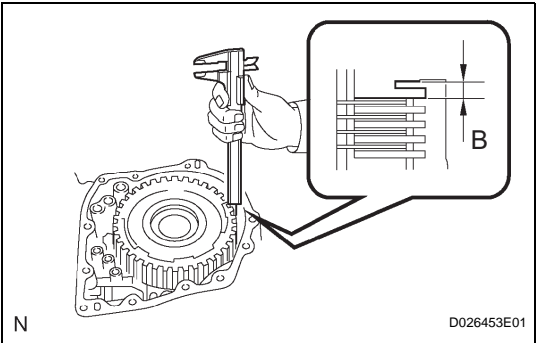
26. INSTALL 2ND BRAKE CLUTCH DISC

- (a) Coat the 4 discs with ATF.
(b) Install the 4 plates and 4 discs to the transaxle case.

NOTICE:

Make sure that the plates and discs are installed as shown in the illustration.

- (c) Temporarily install the snap ring.



27. INSPECT PACK CLEARANCE OF 2ND BRAKE

- (a) Using a vernier caliper, measure the distance between the disc surface and snap ring surface (Dimension B).
(b) Select an appropriate flange so that the pack clearance will meet the specified value.

Standard clearance:

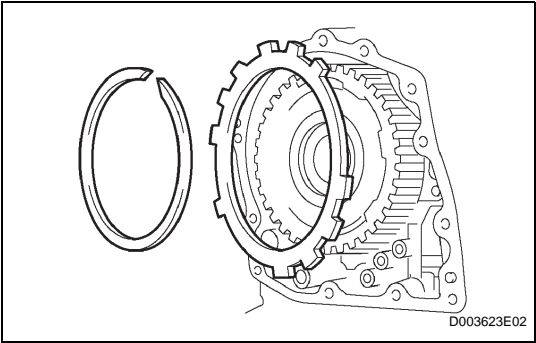
0.62 to 0.91 mm (0.0244 to 0.0358 in.)

HINT:

Piston stroke = Dimension B - Flange thickness - Snap ring thickness 1.6 mm (0.063 in.)

Standard flange thickness

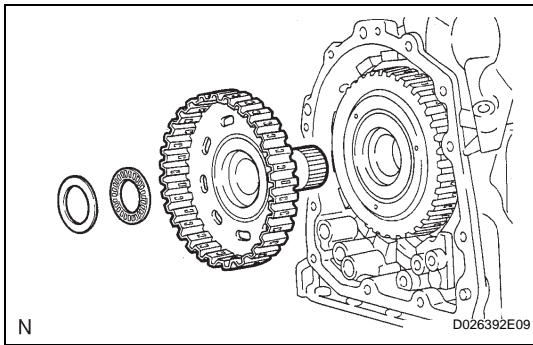
Mark	Thickness	Mark	Thickness
1	3.0 mm (0.118 in.)	5	3.4 mm (0.134 in.)
2	3.1 mm (0.122 in.)	6	3.5 mm (0.138 in.)
3	3.2 mm (0.126 in.)	7	3.6 mm (0.142 in.)
4	3.3 mm (0.130 in.)	8	-



- (c) Temporarily remove the snap ring, attach the selected flange and reinstall the snap ring.

NOTICE:

Secure the snap ring so that the ends are visible through the groove of the transaxle case.



28. INSTALL OVERDRIVE DIRECT CLUTCH HUB SUB-ASSEMBLY

- (a) Install the direct clutch hub to the planetary gear.

NOTICE:

Be careful not to damage the bushing inside the overdrive clutch hub during installation.

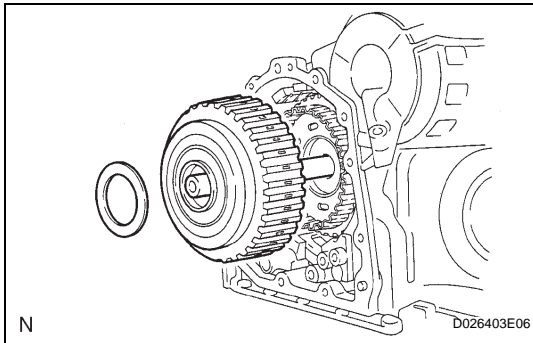
- (b) Coat the thrust bearing with ATF.
(c) Install the bearing race and the thrust bearing to the direct clutch hub.

NOTICE:

Be careful not to drop the bearing when it is installed.

Standard bearing and race diameter

Item	Inside	Outside
Bearing	24.7 mm (0.972 in.)	39.5 mm (1.555 in.)
Race	23.6 mm (0.929 in.)	38.0 mm (1.496 in.)

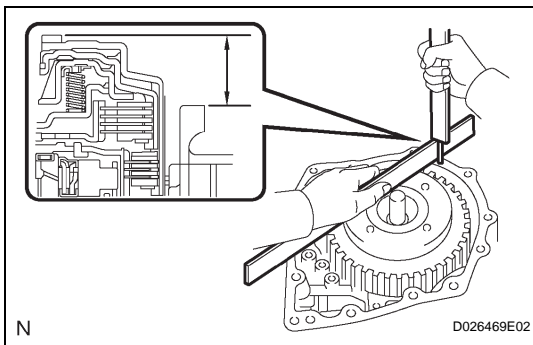


29. INSTALL DIRECT CLUTCH ASSEMBLY

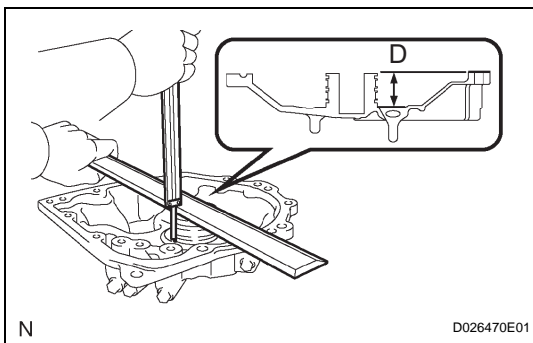
- (a) Coat the thrust bearing with ATF.
(b) Install the direct clutch and thrust bearing to the rear planetary sun gear.

NOTICE:

The disc in the direct clutch should completely match with the hub attached outside the rear planetary sun gear. Otherwise, the rear cover cannot be installed.



- (c) Clean the connecting part of the transaxle case and the rear cover.
(d) As shown in the illustration, place a straightedge on the direct clutch drum and measure the distance between the transaxle case and the straightedge using a vernier caliper (Dimension C).



- (e) Using a vernier caliper and straightedge, measure the dimension shown in the illustration (Dimension D).
(f) Calculate the end play value using the following formula. Select a thrust bearing which satisfies the end play value and install the selected bearing.

Standard end play:

0.244 to 0.901 mm (0.0096 to 0.0355 in.)

NOTICE:

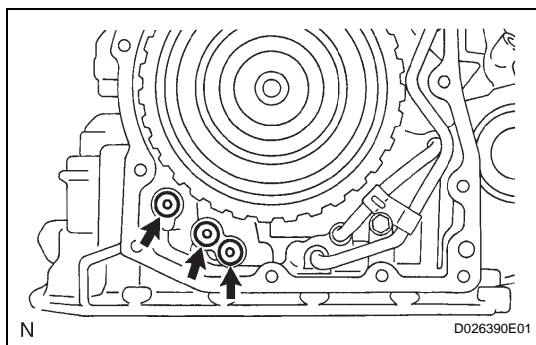
Make sure that the non-collared race side is facing the direct clutch.

HINT:

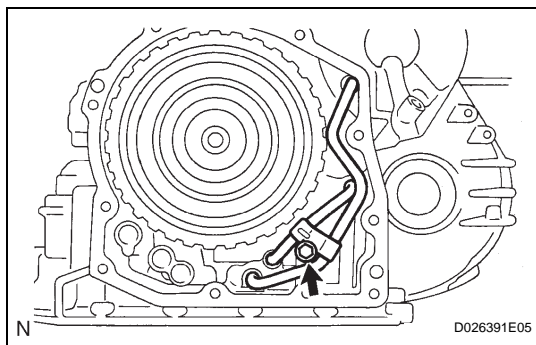
End play = Dimension D - Dimension C

Standard bearing thickness and diameter

Thickness	Inside	Outside
3.6 mm (0.1417 in.)	56.3 mm (2.217 in.)	75.7 mm (2.980 in.)
3.8 mm (0.1496 in.)	56.3 mm (2.217 in.)	75.7 mm (2.980 in.)

**30. INSTALL NO. 1 GOVERNOR APPLY GASKET**

- (a) Install 3 new governor apply gaskets to the transaxle case.

**31. INSTALL BRAKE APPLY TUBE**

- (a) Install the clamp to the brake apply tube.

NOTICE:

Make sure to install the clamp to the apply tube before installing the apply tube to the transaxle case. This prevents the apply tube from being deformed or damaged.

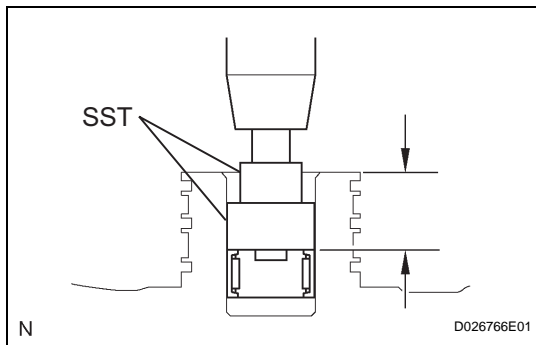
- (b) Install the clutch apply tube.

- (c) Install the brake apply tube to the transaxle case with the bolt.

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

NOTICE:

The tube should be securely inserted until it reaches the stopper.

**32. INSTALL NEEDLE ROLLER BEARING**

- (a) Using SST and a press, press the needle roller bearing into the transaxle rear cover.

SST 09950-60010 (09951-00230, 09952-06010)

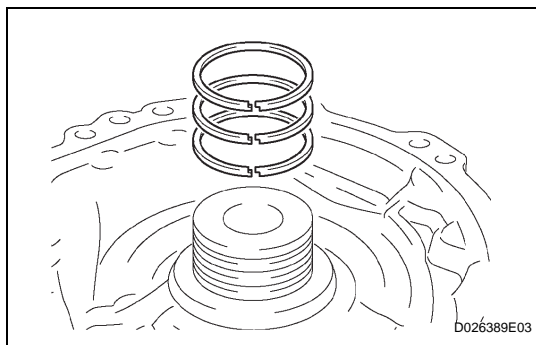
Standard depth:

20.55 to 21.25 mm (0.8091 to 0.8366 in.)

NOTICE:

- The engraved mark side of the bearing should face upward.
- Continue pressing until the specified value is obtained.

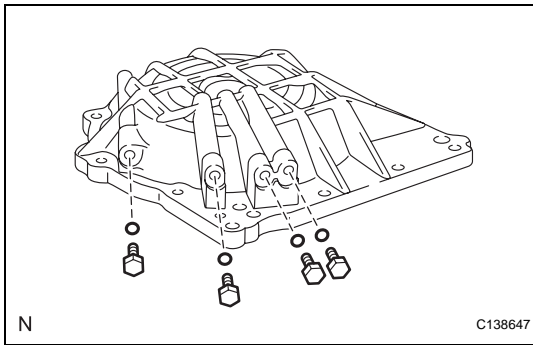
- (b) Coat a needle roller bearing with ATF.

**33. INSTALL REAR CLUTCH OIL SEAL RING OUTER**

- (a) Coat 3 new rear clutch oil seal rings with ATF, and install them to the transaxle rear cover.

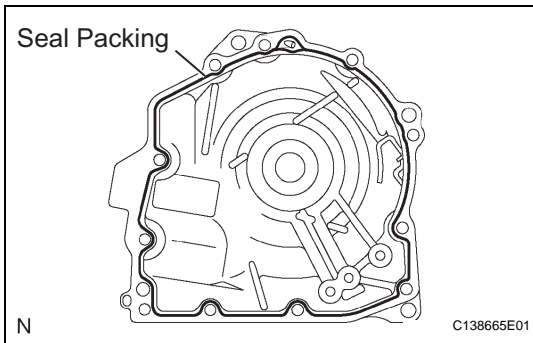
NOTICE:

The snap ring should be fully engaged in the groove of the drum.

**34. INSTALL NO. 1 TRANSAXLE CASE PLUG**

- (a) Coat 4 new O-rings with ATF.
- (b) Install the 4 O-rings to the 4 plugs.
- (c) Install the 4 plugs to the transaxle rear cover.

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

**35. INSTALL TRANSAXLE REAR COVER SUB-ASSEMBLY**

- (a) Remove any packing material and be careful not to spill oil on the contact surfaces of the transaxle rear cover or the transaxle case.
- (b) Apply FIPG to the cover.

Seal packing:

**Toyota Genuine Seal Packing 1281,
Three Bond 1281 or Equivalent**

NOTICE:

Make sure that the seal packing is applied in a bead (section diameter: $\phi 1.2$ mm (0.047 in.)) so that the entire sealing surface will be evenly sealed. The seal packing should also protrude slightly from the flange after the installation of the cover has been completed.

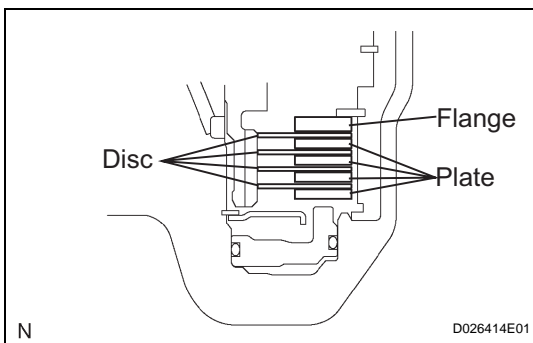
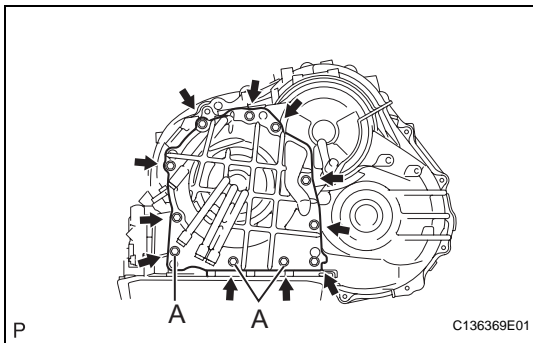
- (c) Apply adhesive to the threads of bolt A.

Adhesive:

**Toyota Genuine Adhesive 1344,
Three Bond 1344 or Equivalent**

- (d) Install the cover with the 11 bolts.

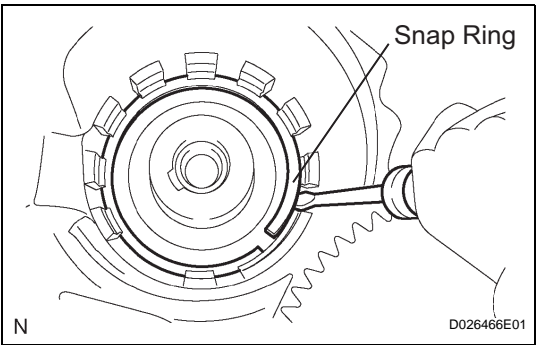
**Torque: 19 N*m (194 kgf*cm, 14 ft.*lbf) for bolt A
25 N*m (255 kgf*cm, 18 ft.*lbf) for other bolts**

**36. INSTALL NO. 2 UNDERDRIVE CLUTCH DISC**

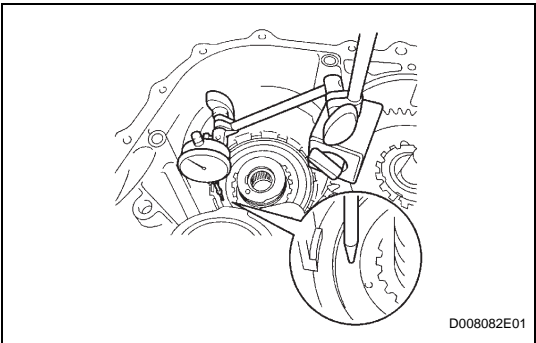
- (a) Coat the 4 discs with ATF.
- (b) Install the 4 discs, 4 plates and flange to the transaxle case.

NOTICE:

Be careful of the order of the discs, plate and flange.



- (c) Using a screwdriver, install the snap ring.
NOTICE:
The snap ring should be fully engaged in the groove of the drum.



37. INSPECT PACK CLEARANCE OF UNDERDRIVE BRAKE

- (a) Using a dial indicator, measure the underdrive brake pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

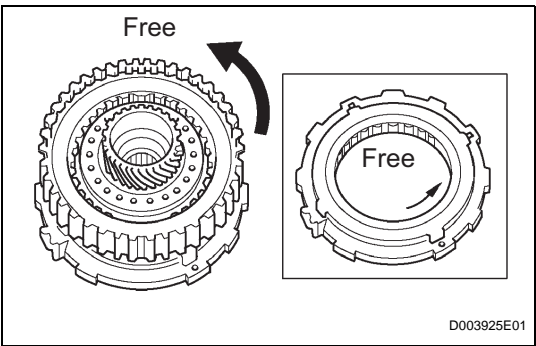
Standard pack clearance:
1.81 to 2.20 mm (0.0713 to 0.0866 in.)

HINT:
Select an appropriate flange from the table below so that it will meet the specified value.

Standard flange thickness

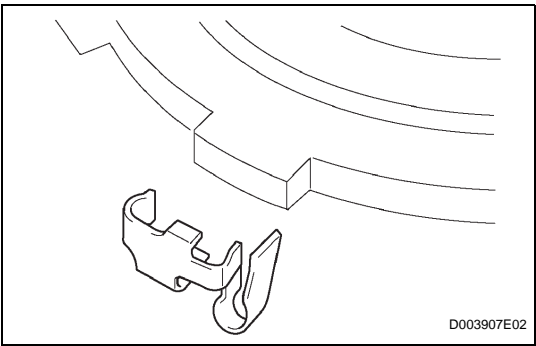
Mark	Thickness	Mark	Thickness
1	3.0 mm (0.118 in.)	4	3.1 mm (0.122 in.)
2	3.2 mm (0.126 in.)	5	3.3 mm (0.130 in.)
3	3.4 mm (0.134 in.)	-	-

- (b) Temporarily remove the snap ring, attach the selected flange and reinstall the snap ring.
(c) Reinstall the snap ring.



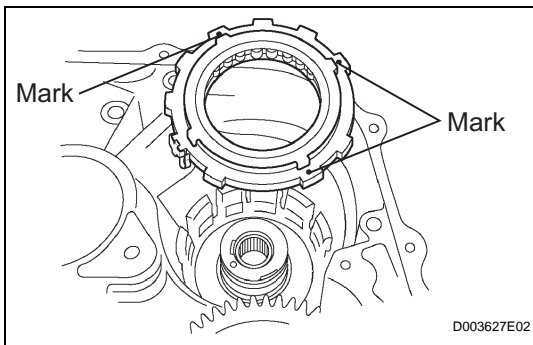
38. INSPECT UNDERDRIVE 1-WAY CLUTCH ASSEMBLY

- (a) Install the underdrive clutch to the 1-way clutch.
(b) Check that the underdrive 1-way clutch locks when turned clockwise and rotates freely when turned counterclockwise as shown in the illustration. If the result is not as specified, replace the underdrive 1-way clutch.



39. INSTALL UNDERDRIVE 1-WAY CLUTCH ASSEMBLY

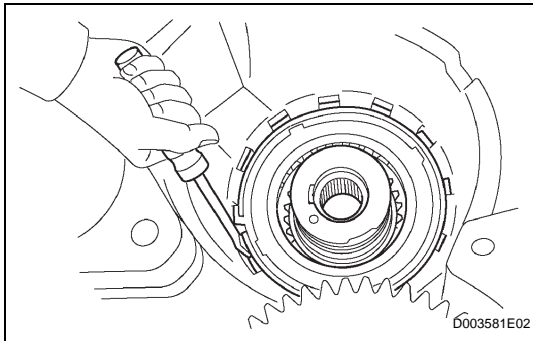
- (a) Install the outer race retainer to the 1-way clutch.
NOTICE:
Fix the outer race retainer to the external tooth of the 1-way clutch firmly.



- (b) Install the 1-way clutch to the transaxle case.

NOTICE:

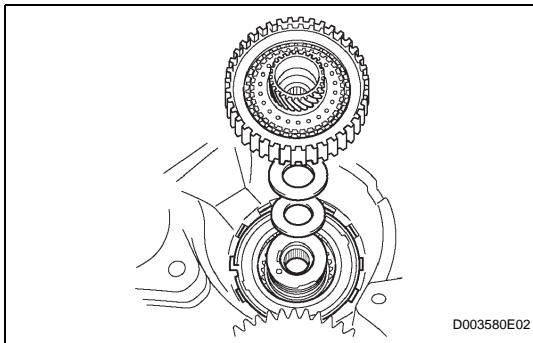
Make sure that the mark on the 1-way clutch outer race is visible.



- (c) Using a screwdriver, install the snap ring to the transaxle case.

NOTICE:

The snap ring should be fully engaged in the groove of the transaxle case.



40. INSTALL UNDERDRIVE CLUTCH ASSEMBLY

- (a) Coat the bearing and bearing race with petrolatum, and install them onto the underdrive clutch.

Standard bearing and bearing race diameter

Item	Inside	Outside
Bearing	37.73 mm (1.4854 in.)	58.0 mm (2.2835 in.)
Race	29.9 mm (1.1772 in.)	55.5 mm (2.185 in.)

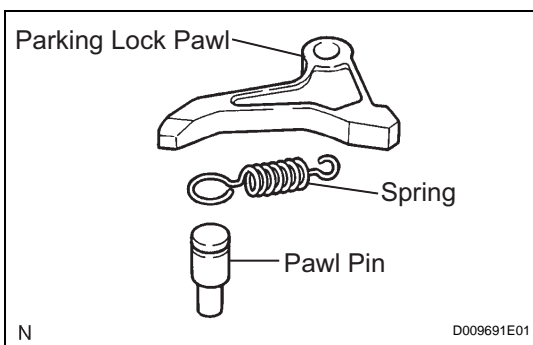
- (b) Install the underdrive clutch to the transaxle case.

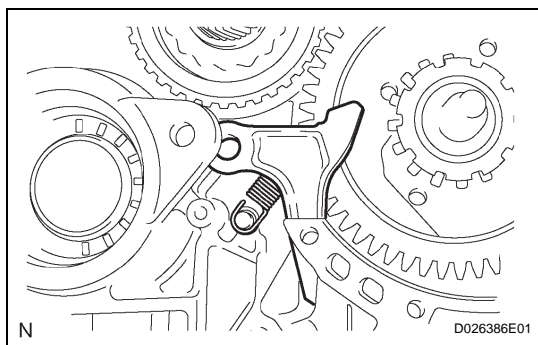
NOTICE:

Do not damage the oil seal when installing the underdrive clutch drum.

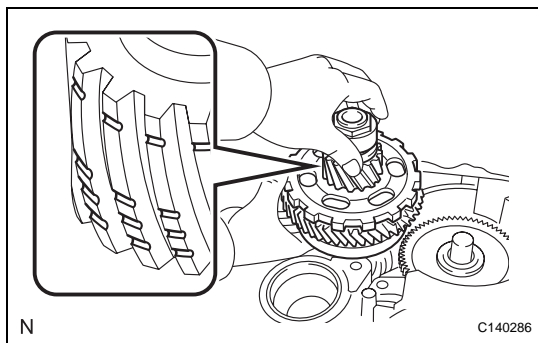
41. INSTALL PARKING LOCK PAWL

- (a) Install the pawl pin and spring to the parking lock pawl.





- (b) Temporarily install the parking lock pawl, shaft and spring to the transaxle case, as shown in the illustration.

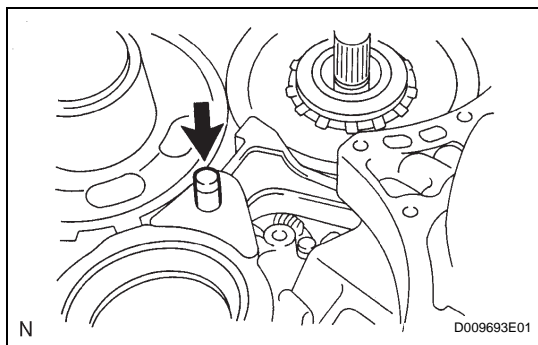


42. INSTALL UNDERDRIVE PLANETARY GEAR ASSEMBLY

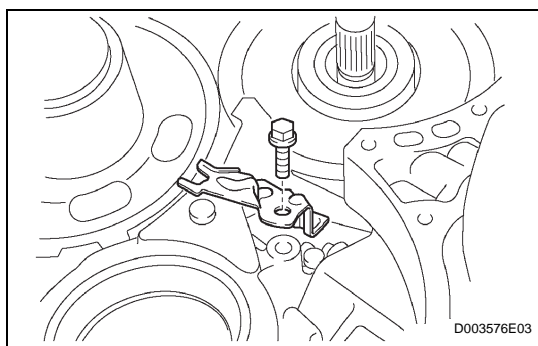
- (a) Install the underdrive planetary gear to the transaxle case.

NOTICE:

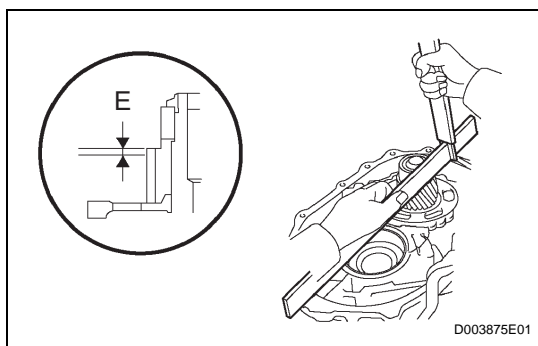
- Fully engage all the discs of underdrive clutch and hub splines of the underdrive planetary gear and install them securely.
- Check the position and number of the grooves on each end face of the differential drive pinion gear.



- (b) Install the parking lock pawl shaft.



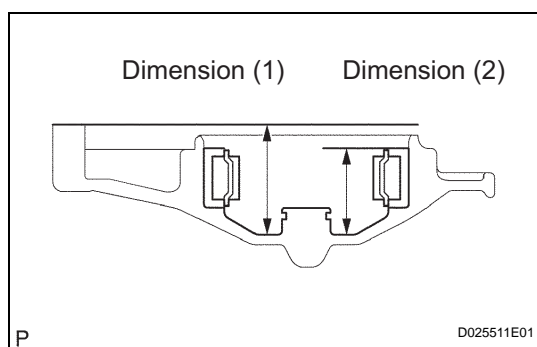
- (c) Install the pawl shaft clamp with the bolt.
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)



- (d) Using a straightedge and vernier caliper as shown in the illustration, measure the gap between the top of the differential drive pinion in the underdrive planetary gear and the contact surface of the transaxle case and housing (Dimension E).

NOTICE:

Record dimension E for the following process.



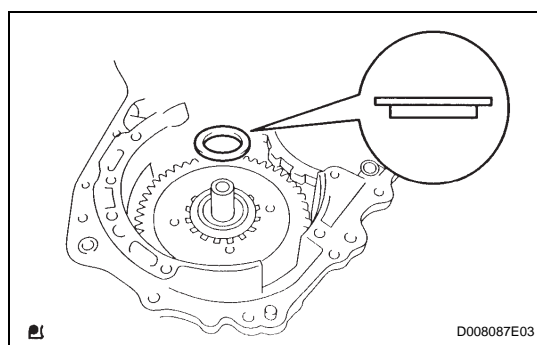
- (e) As shown in the illustration, measure the 2 places of the transaxle housing, and calculate dimension F using the formula below.

NOTICE:

Record dimension F for the following process.

HINT:

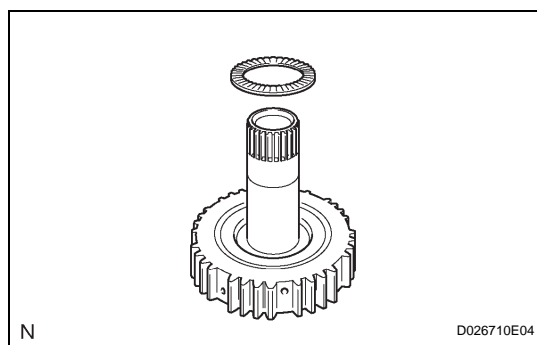
Dimension F = Dimension (1) - Dimension (2)

**43. INSTALL MULTIPLE DISC CLUTCH HUB**

- (a) Install the thrust bearing race to the transaxle case while checking its direction.

Standard bearing race diameter

Item	Inside	Outside
Bearing race	39.5 mm (1.555 in.)	45.8 mm (1.803 in.)

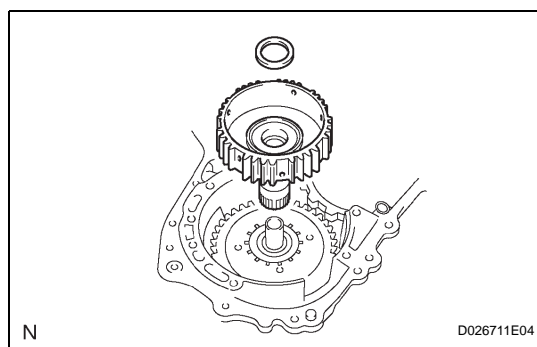


- (b) Coat the thrust needle roller bearing and race with yellow petrolatum, and install them onto the multiple disc clutch hub.

Standard thrust bearing and race diameter

Item	Inside	Outside
Thrust Bearing	36.4 mm (1.433 in.)	52.2 mm (2.055 in.)

- (c) Coat the needle roller bearing with ATF.

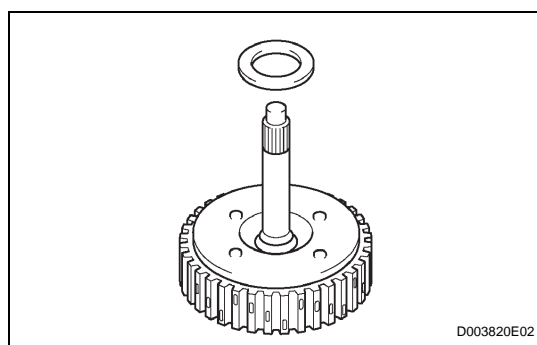


- (d) Install the needle roller bearing to the multiple clutch hub.

Standard bearing diameter

Item	Inside	Outside
Bearing	23.6 mm (0.929 in.)	44 mm (1.732 in.)

- (e) Install the multiple clutch hub to the transaxle case.

**44. INSTALL FORWARD CLUTCH ASSEMBLY**

- (a) Coat the thrust needle roller bearing with ATF.
(b) Install the thrust needle roller bearing to the forward clutch.

Standard thrust bearing diameter

Item	Inside	Outside
Thrust Bearing	33.58 mm (1.3220 in.)	51.9 mm (2.043 in.)

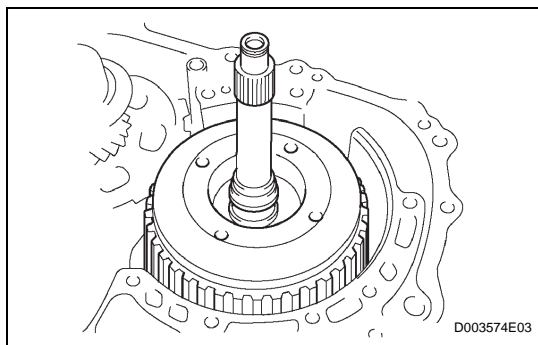
NOTICE:

Install the thrust bearing properly so that the non-collared race or blue ink jet race will be visible.

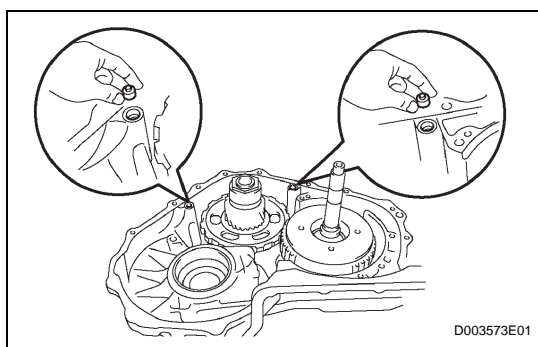
- (c) Install the forward clutch to the transaxle case.

NOTICE:

- Align the splines of all discs in the forward clutch with those of multiple clutch hub to install them securely.
- Be careful not to damage the bushing inside of the forward clutch hub during installation.

**45. INSTALL OVERDRIVE BRAKE GASKET**

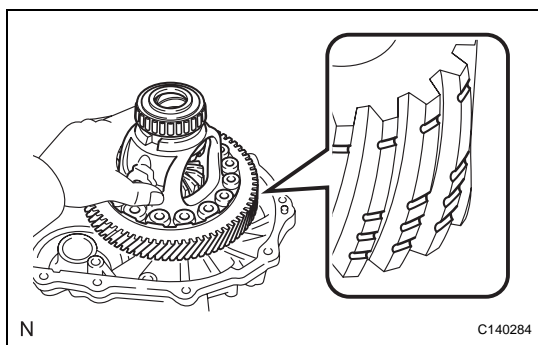
- (a) Install 2 new overdrive brake gaskets.

**46. INSTALL DIFFERENTIAL GEAR ASSEMBLY**

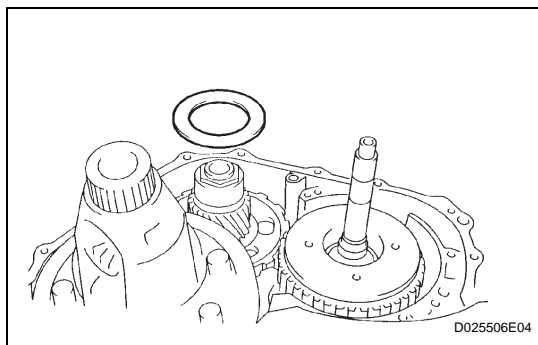
- (a) Install the differential gear to the transaxle case.

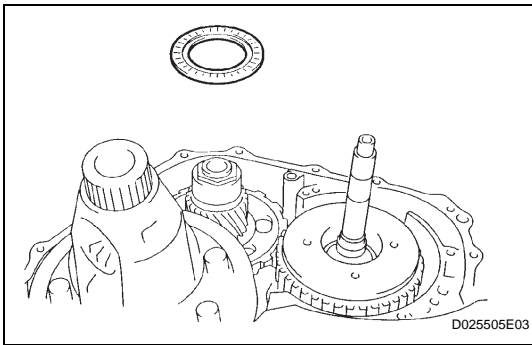
NOTICE:

Check the position and number of the grooves on each end face of the differential ring gear.

**47. INSTALL NO. 2 THRUST BEARING UNDERDRIVE RACE**

- (a) Install the thrust bearing underdrive race to the underdrive planetary gear.



**48. INSTALL THRUST NEEDLE ROLLER BEARING**

- (a) Coat the thrust needle roller bearing with ATF.
- (b) Calculate the end play value using the following formula and values of Dimension E and F that were measured when installing the cylindrical roller bearing and underdrive planetary gear. Select an appropriate underdrive planetary gear thrust bearing race which satisfies the specified end play value, and install the selected bearing race.

Standard end play:

0.498 to 0.993 mm (0.0196 to 0.0391 in.)

HINT:

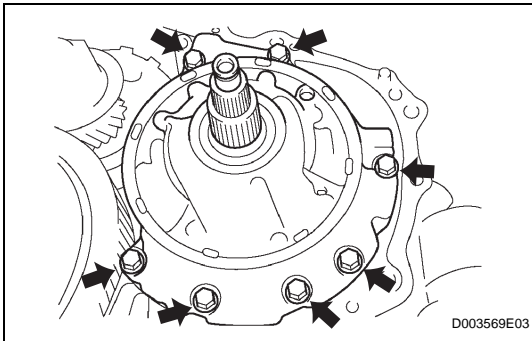
End play = Dimension F - Dimension E - thrust bearing thickness 2.5 mm (0.0984 in.) - underdrive thrust bearing race thickness.

Standard race thickness

F - E	Thickness
Less than 7.72 mm (0.3039 in.)	3.5 mm (0.138 in.)
7.72 mm (0.3039 in.)	3.8 mm (0.150 in.)

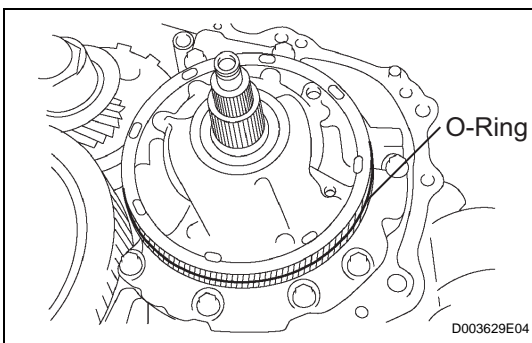
Standard bearing and bearing race diameter

Item	Inside	Outside
Bearing	57.2 mm (2.252 in.)	84.96 mm (3.345 in.)
Bearing race	56.4 mm (2.22 in.)	83 mm (3.268 in.)

**49. INSTALL OIL PUMP ASSEMBLY**

- (a) Install the oil pump to the transaxle case with the 7 bolts.

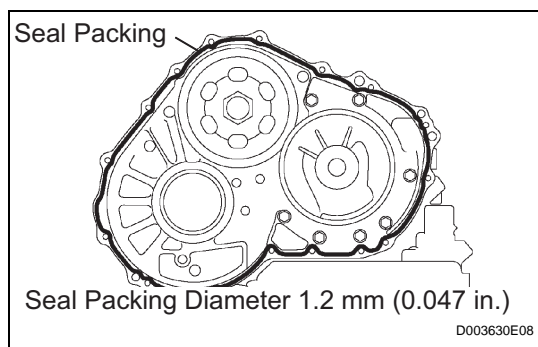
Torque: 22 N*m (226 kgf*cm, 16 ft.*lbf)



- (b) Coat the O-ring of oil pump with ATF.

NOTICE:

Confirm that the input shaft rotates smoothly by manual operation after installing the oil pump.



50. INSTALL TRANSAXLE HOUSING

- (a) Remove any packing material and be careful not to spill oil on the contact surface of the transaxle case or transaxle housing.
- (b) Apply seal packing to the transaxle case.

Seal packing:

**Toyota Genuine Seal Packing 1281,
Three Bond 1281 or Equivalent**

- (c) Apply adhesive or equivalent to bolts A and D.

Adhesive:

**Toyota Genuine Adhesive 1344,
Three Bond 1344 or Equivalent**

- (d) Install the transaxle housing and 16 bolts to the transaxle case.

Torque: 22 N*m (224 kgf*cm, 16 ft.*lbf) for bolt A
 29 N*m (295 kgf*cm, 21 ft.*lbf) for bolt B
 29 N*m (295 kgf*cm, 21 ft.*lbf) for bolt C
 22 N*m (226 kgf*cm, 16 ft.*lbf) for bolt D

HINT:

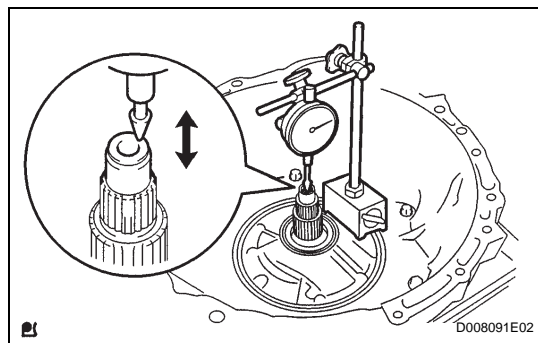
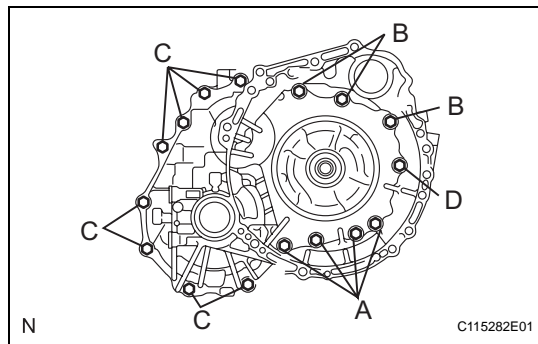
Each bolt length is indicated below.

Bolt length:

50 mm (1.97 in.) for bolt A
 50 mm (1.97 in.) for bolt B
 42 mm (1.65 in.) for bolt C
 72 mm (2.84 in.) for bolt D

NOTICE:

Tighten the bolts within 10 minutes of adhesive application.

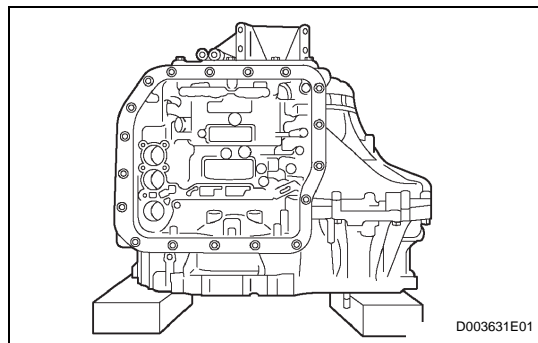


51. INSPECT INPUT SHAFT END PLAY

- (a) Using a dial indicator, measure the input shaft end play.

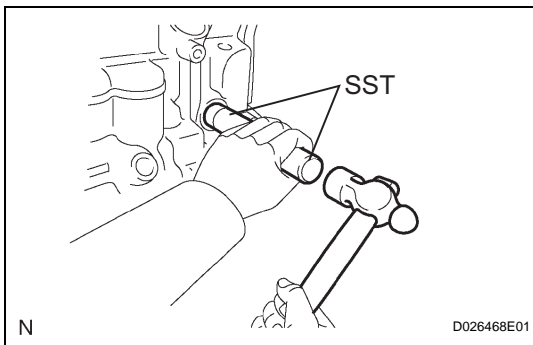
Standard end play:

0.262 to 1.249 mm (0.0100 to 0.0494 in.)



52. FIX AUTOMATIC TRANSAXLE ASSEMBLY

- (a) Fix the transaxle.

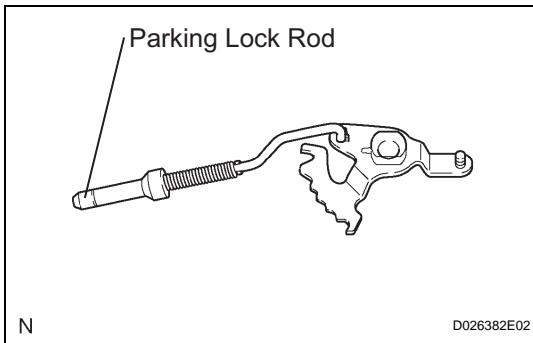
**53. INSTALL MANUAL VALVE LEVER SHAFT OIL SEAL**

- (a) Coat a new oil seal with MP grease.
- (b) Install the oil seal to the transaxle case.

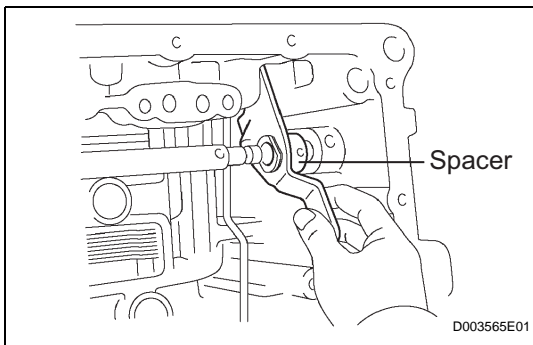
SST 09950-60010 (09951-00230), 09950-70010 (09951-07100)

Standard depth:

0 \pm 0.5 mm (0 \pm 0.197 in.)

**54. INSTALL PARKING LOCK ROD SUB-ASSEMBLY**

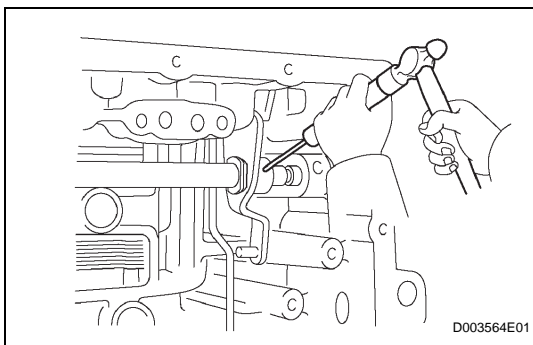
- (a) Install the parking lock rod to the manual valve lever.

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

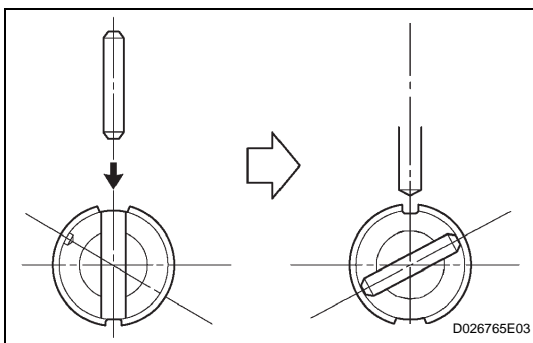
- (a) Install a new spacer and manual valve lever shaft to the transaxle case.

NOTICE:

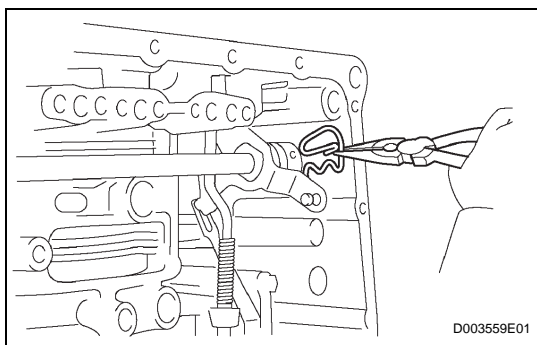
Do not damage the oil seal when installing the shaft to the transaxle case.



- (b) Using a pin punch and hammer, drive in a new pin.



- (c) Turn the spacer and the lever shaft to align the small hole for locating the staking position in the spacer with the staking position mark on the lever shaft.
- (d) Using a pin punch, stake the spacer through the small hole.
- (e) Check that the spacer does not turn.

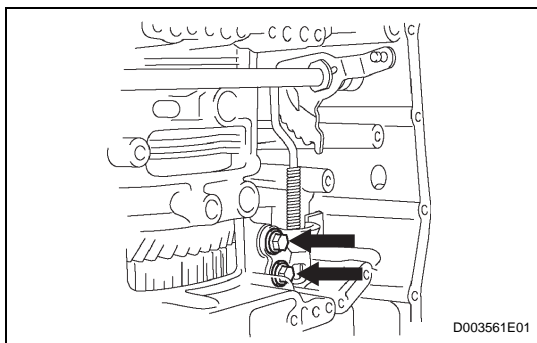


56. INSTALL MANUAL VALVE LEVER SHAFT RETAINER SPRING

- (a) Using needle-nose pliers, install the retainer spring.

NOTICE:

Hang the spring on the shaft firmly.



57. INSTALL PARKING LOCK PAWL BRACKET

- (a) Install the parking lock pawl bracket with the 2 bolts.

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

HINT:

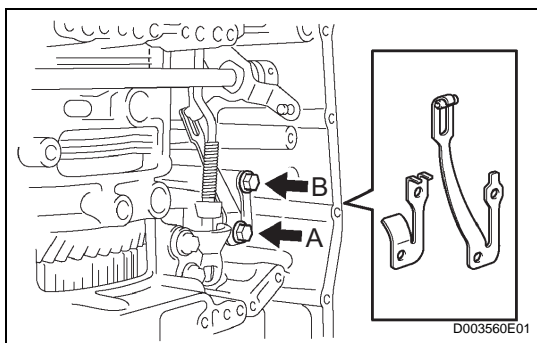
The bolt length is indicated below.

Bolt length:

25.0 mm (0.984 in.)

NOTICE:

Make sure that the parking rod is placed between the parking pawl and the guide of the parking bracket when the parking bracket is installed.



58. INSTALL MANUAL DETENT SPRING SUB-ASSEMBLY

- (a) Install the manual detent spring and cover with the 2 bolts.

Torque: 20 N*m (205 kgf*cm, 15 ft.*lbf) for bolt A

12 N*m (122 kgf*cm, 9 ft.*lbf) for bolt B

HINT:

- Tighten bolt A first, and then bolt B.
- Each bolt length is indicated below.

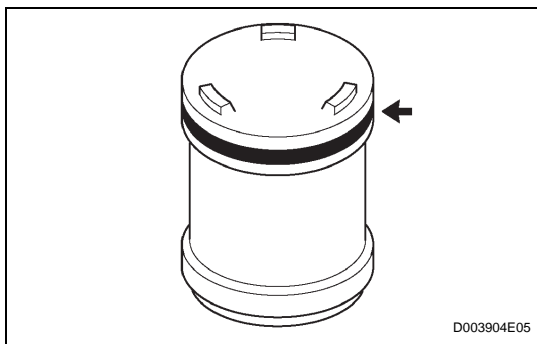
Bolt length:

27 mm (1.06 in.) for bolt A

16 mm (0.63 in.) for bolt B

NOTICE:

Make sure to install the manual detent spring and cover in this order.

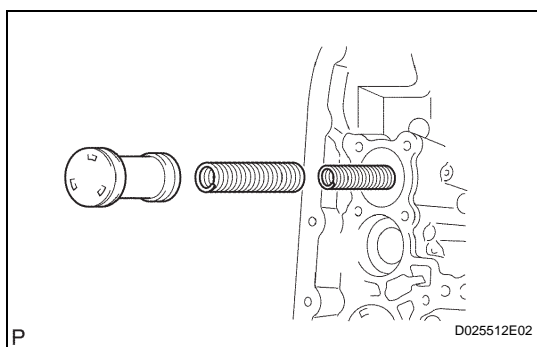


59. INSTALL B-3 ACCUMULATOR PISTON

- (a) Coat a new O-ring with ATF, and install it to the B-3 accumulator piston.

NOTICE:

Make sure that the O-ring is not twisted and that it does not protrude abnormally from the accumulator piston. Apply sufficient ATF before installing the O-ring. The O-ring must be installed in the correct position.



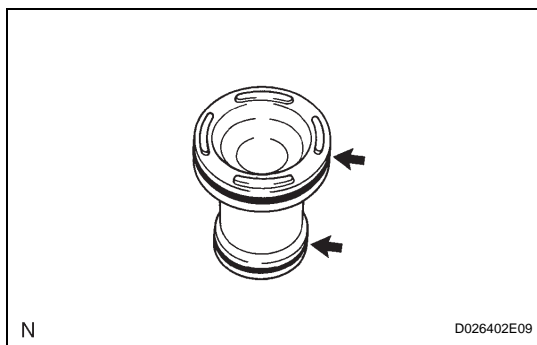
- (b) Install the accumulator piston to the transaxle case.
- (1) Coat the piston with ATF.
 - (2) Install the 2 springs to the piston, and install the piston (with springs) to the transaxle case.

NOTICE:

Before installing the springs, check the identification color of each spring. Standard accumulator spring

Standard accumulator spring

Spring	Free length / Outer diameter	Identification Color
Inner	Inner 62.00 mm (2.4409 in.) / 15.50 mm (0.610 in.)	Purple
Outer	Outer 74.23 mm (2.9224 in.) / 21.70 mm (0.8543 in.)	

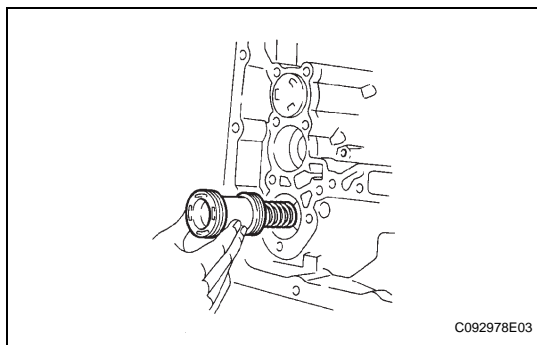


60. INSTALL REVERSE CLUTCH ACCUMULATOR PISTON

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

NOTICE:

Make sure that the O-ring is not twisted and that it does not protrude abnormally from the accumulator piston. Apply sufficient ATF before installing the O-ring. The O-ring must be installed in the correct position.



- (b) Install the piston to the transaxle case.
- (1) Coat the accumulator piston with ATF.
 - (2) Install the spring to the piston, and install the piston (with spring) to the transaxle case.

NOTICE:

Before installing the spring, check the identification color of the spring.

Standard accumulator spring

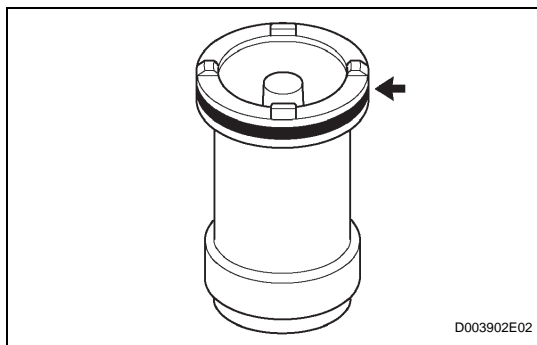
Free length Outer diameter	Identification Color
60.96 mm (2.3999 in.) / 14.10 mm (0.5551 in.)	Yellow

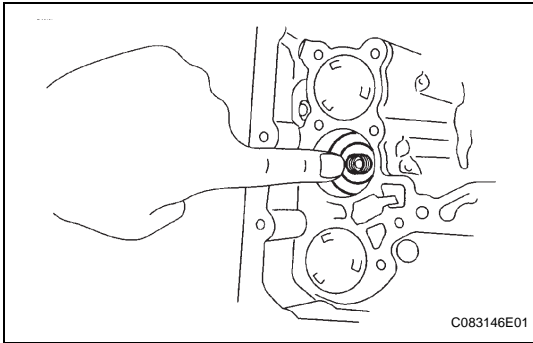
61. INSTALL C-3 ACCUMULATOR PISTON

- (a) Coat a new O-ring with ATF, and install it to the C-3 accumulator piston.

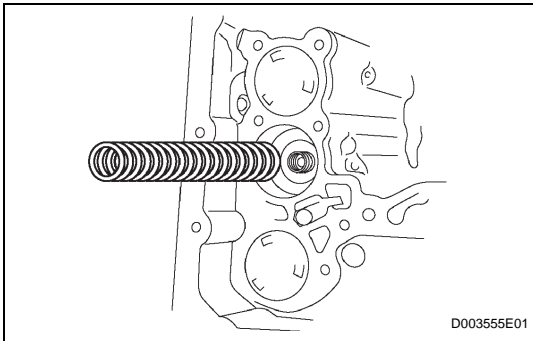
NOTICE:

Make sure that the O-ring is not twisted and that it does not protrude abnormally from the accumulator piston. Apply sufficient ATF before installing the O-ring. The O-ring must be installed in the correct position.





- (b) Install the piston to the transaxle case and coat the piston with ATF.

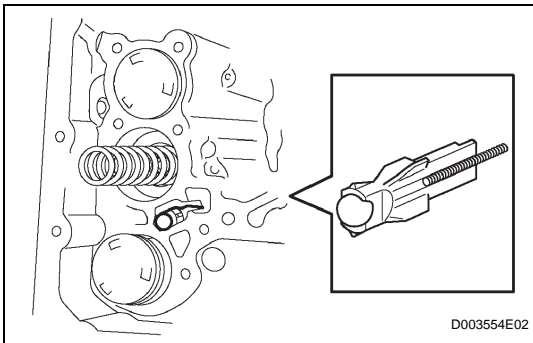


- (c) Install the spring to the C-3 accumulator piston.
(d) Install the spring to the C-3 accumulator piston.

NOTICE:

**Before installing the spring, check the identification color of the spring.
Standard accumulator spring**

Free length Outer diameter	Color
72.20 mm (2.8425 in.) / 19.0 mm (0.748 in.)	Colorless

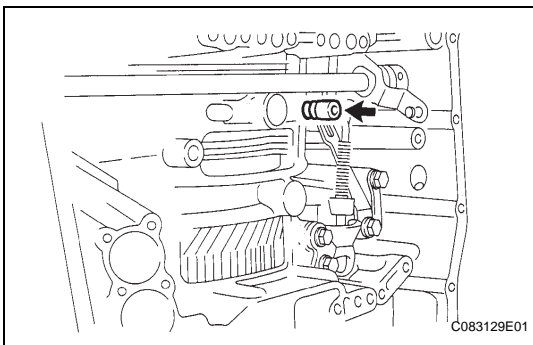


62. INSTALL CHECK BALL BODY

- (a) Coat the check ball body with ATF.
(b) Install the check ball body and spring.

NOTICE:

Be sure to place the spring in the hole in the check ball body. Be careful of the direction of the parts.

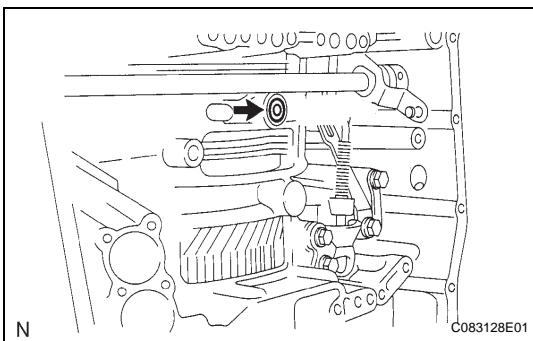


63. INSTALL BRAKE DRUM GASKET

- (a) Coat a new brake drum gasket with ATF, and install it to the transaxle case.

NOTICE:

Be sure not to damage the lip of the transaxle case brake gasket when inserting the gasket to the case. Apply sufficient ATF to the gasket before installation. Be careful of the direction of parts.

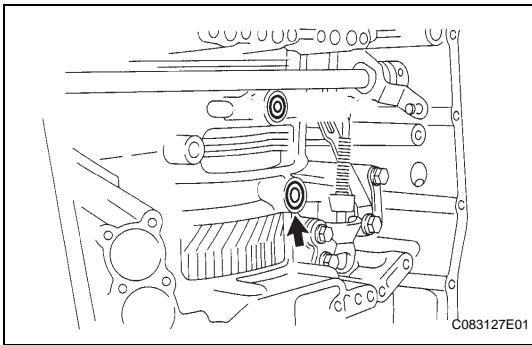


64. INSTALL TRANSAXLE CASE 2ND BRAKE GASKET

- (a) Coat a new transaxle case 2nd brake gasket with ATF, and install it to the transaxle case.

NOTICE:

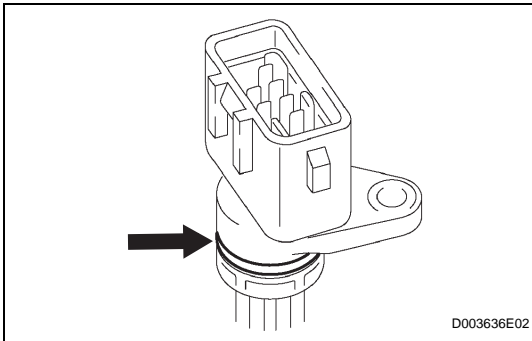
Be sure not to damage the lip of the transaxle case brake gasket when inserting the gasket to the case. Apply sufficient ATF to the gasket before installation. Be careful of the direction of parts.

**65. INSTALL NO. 1 GOVERNOR APPLY GASKET**

- (a) Coat a new governor apply gasket with ATF, and install it to the transaxle case.

NOTICE:

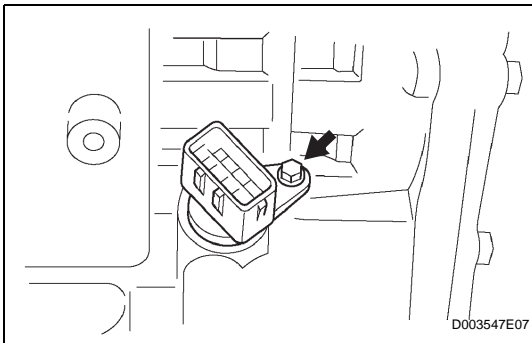
Be sure not to damage the lip of the transaxle case brake gasket when inserting the gasket to the case. Apply sufficient ATF to the gasket before installation. Be careful of the direction of parts.

**66. INSTALL TRANSMISSION WIRE**

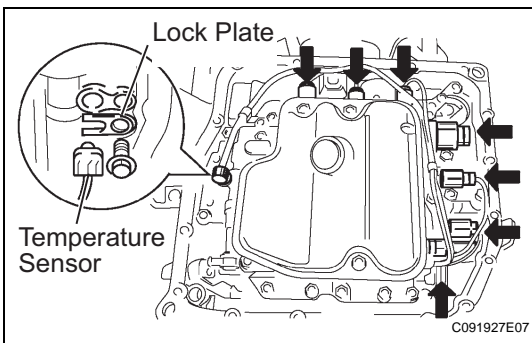
- (a) Coat a new O-ring with ATF, and install it to the transmission wire.

NOTICE:

Make sure that the O-ring is not twisted, protruded, or pinched when installing the wire transmission to the transaxle case. Apply sufficient ATF to the O-ring before installation.



- (b) Install the transmission wire retaining bolt.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

**67. CONNECT TRANSMISSION WIRE**

- (a) Coat the O-ring of the ATF temperature sensor with ATF.
(b) Apply ATF to the bolt.
(c) Install the ATF temperature sensor with the lock plate and bolt.
Torque: 6.6 N*m (67 kgf*cm, 58 in.*lbf)
(d) Connect the 7 solenoid valve connectors.

68. INSTALL TRANSMISSION VALVE BODY ASSEMBLY

- (a) Apply ATF to the 17 bolts.
(b) While positioning the manual valve lever position, install the valve body to the transaxle case with the 17 bolts.

Torque: 11 N*m (112 kgf*cm, 8 ft.*lbf)

HINT:

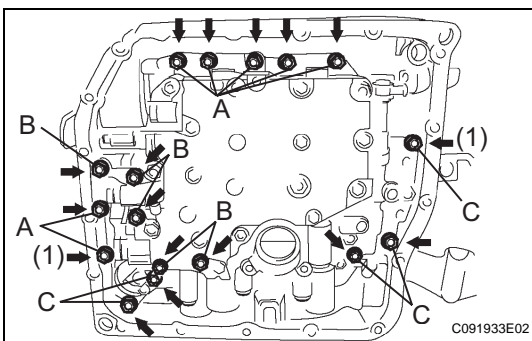
Each bolt length is indicated below.

Bolt length:

25.0 mm (0.984 in.) for bolt A

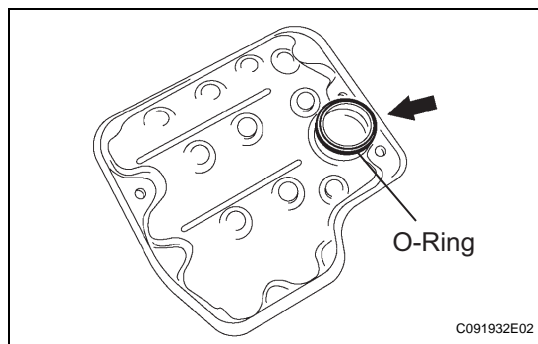
57.0 mm (2.244 in.) for bolt B

41.0 mm (1.614 in.) for bolt C



NOTICE:

- Push the valve body against the accumulator piston spring and the check ball body to install the valve body.
- When installing the valve body to the transaxle case, do not hold the solenoids.
- Temporarily tighten the bolts marked with (1) in the illustration first because they are positioning bolts.

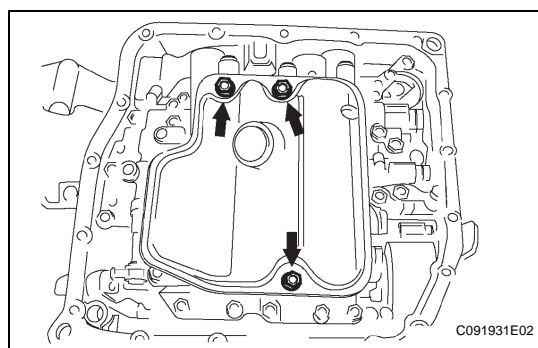
**69. INSTALL VALVE BODY OIL STRAINER ASSEMBLY**

- (a) Coat a new O-ring with ATF and install it to the oil strainer.

NOTICE:

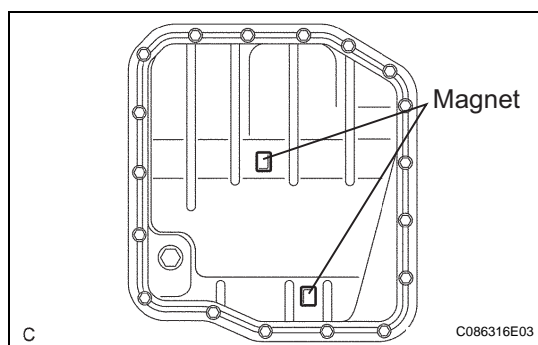
Make sure that the O-ring is not twisted or pinched. Apply sufficient ATF to the O-ring before installation.

- (b) Apply ATF to the 3 bolts.

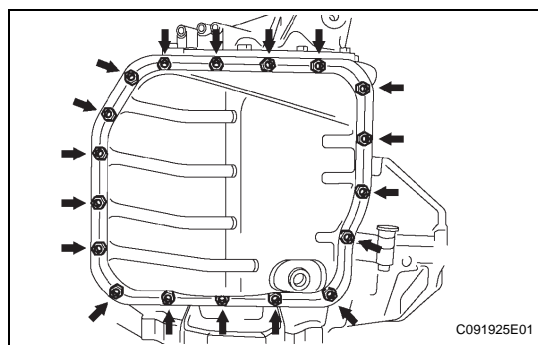


- (c) Install the oil strainer to the valve body with the 3 bolts.

Torque: 11 N*m (112 kgf*cm, 8 ft.*lbf)

**70. INSTALL AUTOMATIC TRANSAXLE OIL PAN SUB-ASSEMBLY**

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

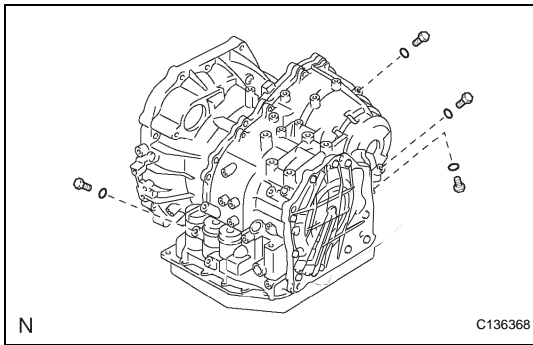


- (b) Install the oil pan and a new oil pan gasket to the transaxle case with the 18 bolts.

Torque: 7.6 N*m (77 kgf*cm, 67 in.*lbf)

NOTICE:

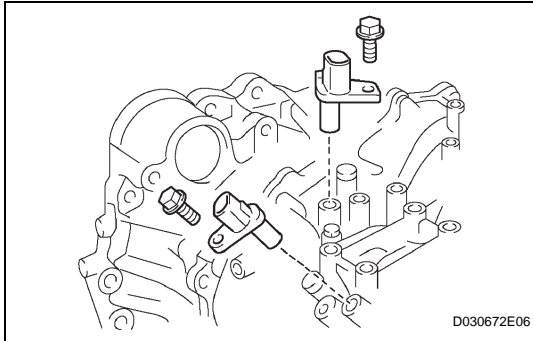
Completely remove any oil or grease from the contact surface of the transaxle case and the oil pan with the gasket before installing the oil pan to the case.

**71. INSTALL NO. 1 TRANSAXLE CASE PLUG**

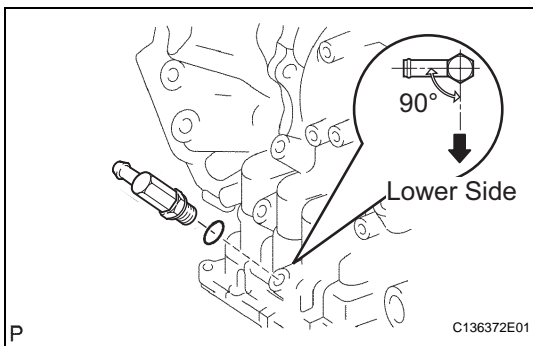
- (a) Coat 4 new O-rings with ATF, and install them to the 4 plugs.
- (b) Install the 4 plugs to the transaxle case.
Torque: 7.4 N*m (75 kgf*cm, 65 in.*lbf)

72. INSTALL SPEEDOMETER DRIVEN HOLE COVER SUB-ASSEMBLY

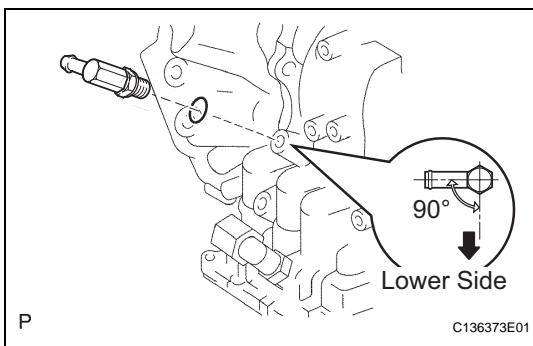
- (a) Coat a new O-ring with ATF, and install it to the cover.
- (b) Install the cover with the bolt.
Torque: 5.5 N*m (56 kgf*cm, 49 in.*lbf)

**73. INSTALL SPEED SENSOR**

- (a) Coat 2 new O-rings with ATF and install them to the 2 sensors.
- (b) Install the 2 sensors to the transaxle case with the 2 bolts.
Torque: 11 N*m (112 kgf*cm, 8 ft.*lbf)

**74. INSTALL OIL COOLER INLET TUBE ELBOW**

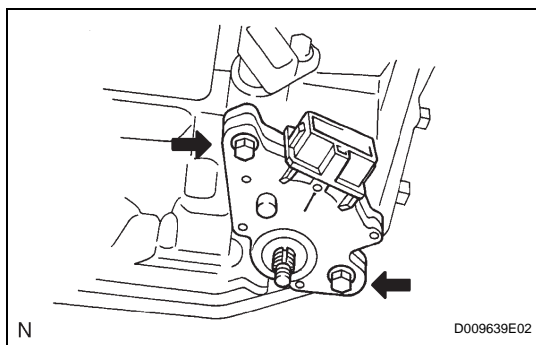
- (a) Coat a new O-ring with ATF, and install it to the elbow.
- (b) Install the elbow to the transaxle case.
Torque: 27 N*m (276 kgf*cm, 20 ft.*lbf)

**75. INSTALL OIL COOLER OUTLET TUBE ELBOW**

- (a) Coat a new O-ring with ATF, and install it to the elbow.
- (b) Install the elbow to the transaxle case.
Torque: 27 N*m (276 kgf*cm, 20 ft.*lbf)

76. INSTALL BREATHER PLUG HOSE

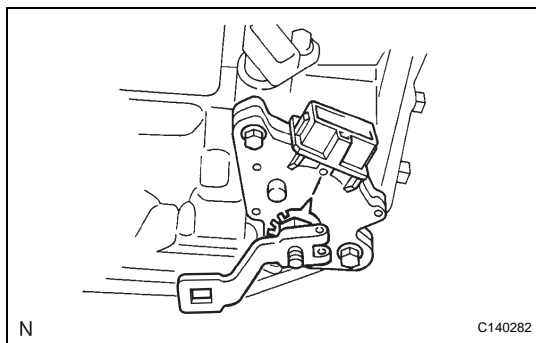
- (a) Install the breather plug hose to the transaxle case firmly.



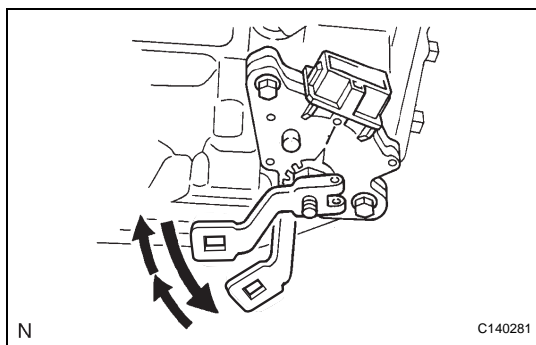
77. INSTALL PARK/NEUTRAL POSITION SWITCH ASSEMBLY

- (a) Install the switch to the manual valve shaft.
- (b) Temporarily install the 2 bolts.
- (c) Install a new lock washer and tighten the manual valve shaft nut.

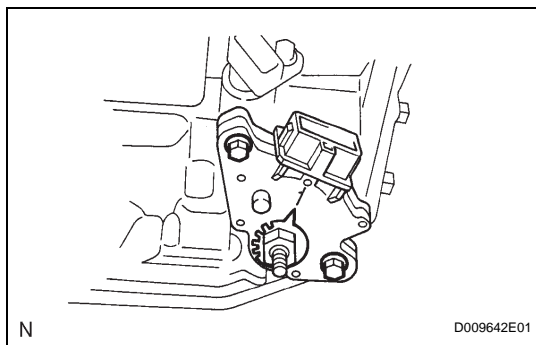
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)



- (d) Temporarily install the control shaft lever.

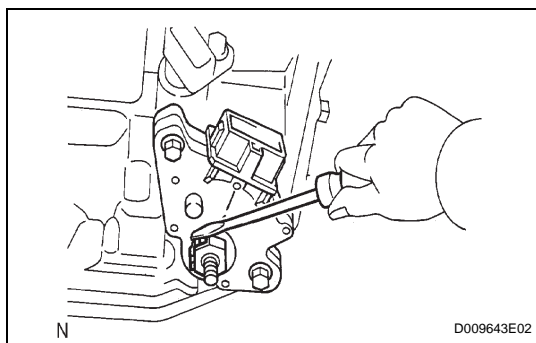


- (e) Turn the lever counterclockwise until it stops, and then turn it clockwise 2 notches.
- (f) Remove the control shaft lever.

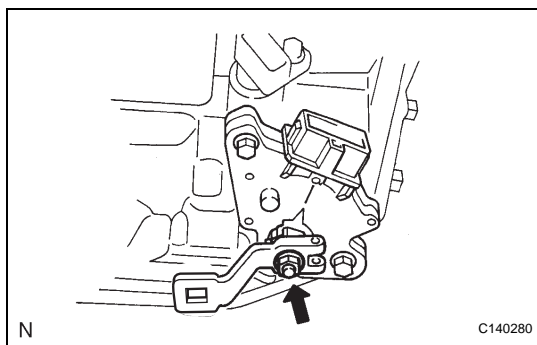


- (g) Align the groove and neutral basic line.
- (h) Hold the switch in this position and tighten the 2 bolts.

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



- (i) Using a screwdriver, stake the nut with the lock washer.



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

Torque: 13 N*m (130 kgf*cm, 9 ft.*lbf)

78. INSTALL SPEEDOMETER DRIVEN HOLE COVER SUB-ASSEMBLY

- (a) Coat a new O-ring with ATF and install it to the speedometer driven hole cover.
- (b) Install the bolt and hole cover to the transaxle.

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