

ABBREVIATIONS USED IN THIS MANUAL

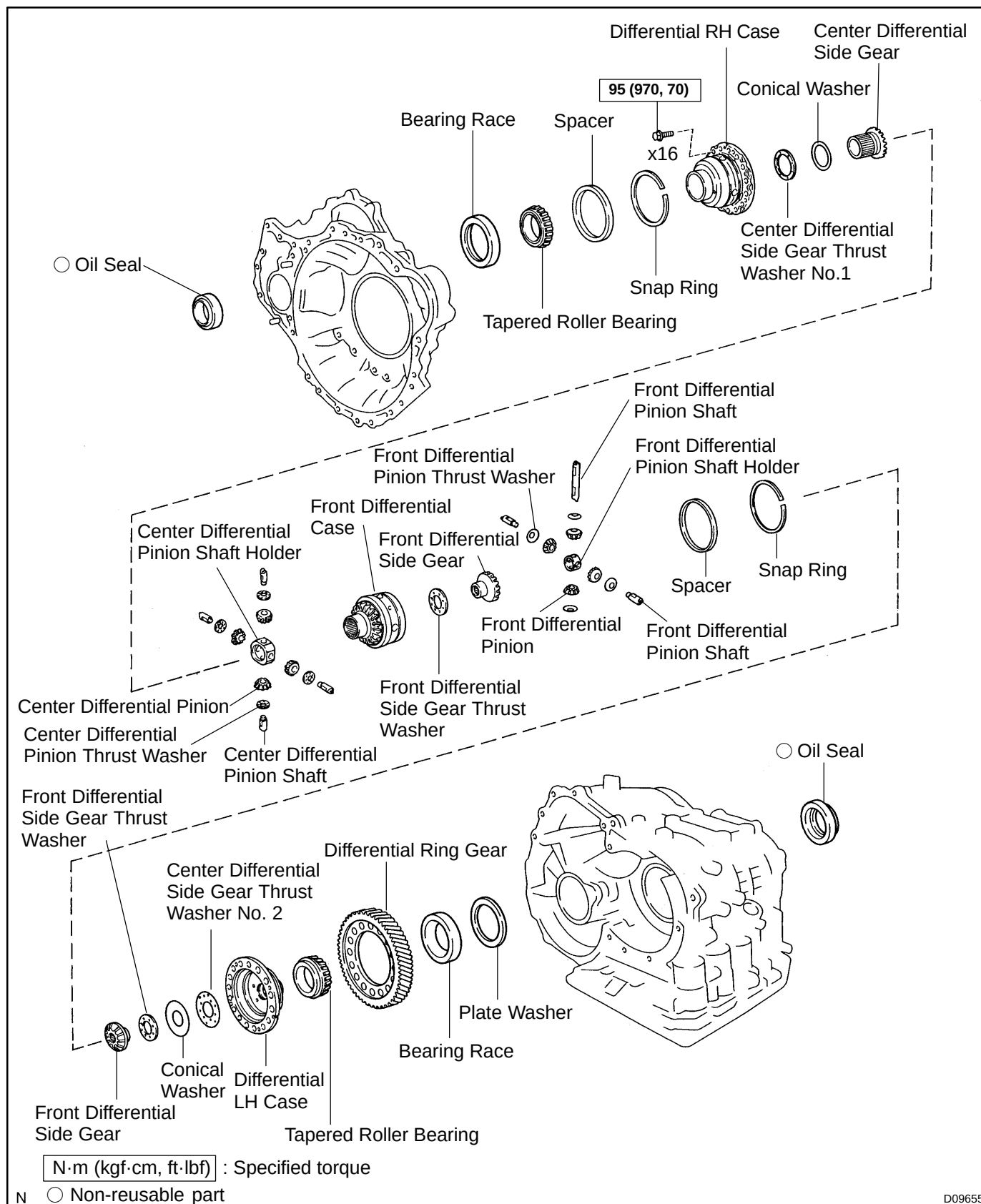
Abbreviations	Meaning
A/X	Automatic Transaxle
ATF	Automatic Transaxle Fluid
B ₁	2nd brake
B ₂	1st & reverse brake
B ₃	U/D brake
C ₁	Forward Clutch
C ₂	Direct Clutch
C ₃	Underdrive Clutch
D	Disc
F	Flange
F ₁	No.1 One-way Clutch
F ₂	No.2 One-way Clutch
FIPG	Formed in Place Gasket
MP	Multipurpose
O/D	Overdrive
P	Plate
SSM	Special Service Materials
SST	Special Service Tools
U/D	Underdrive
w/	with
w/o	without
1st	First
2nd	Second

AX0BF-02



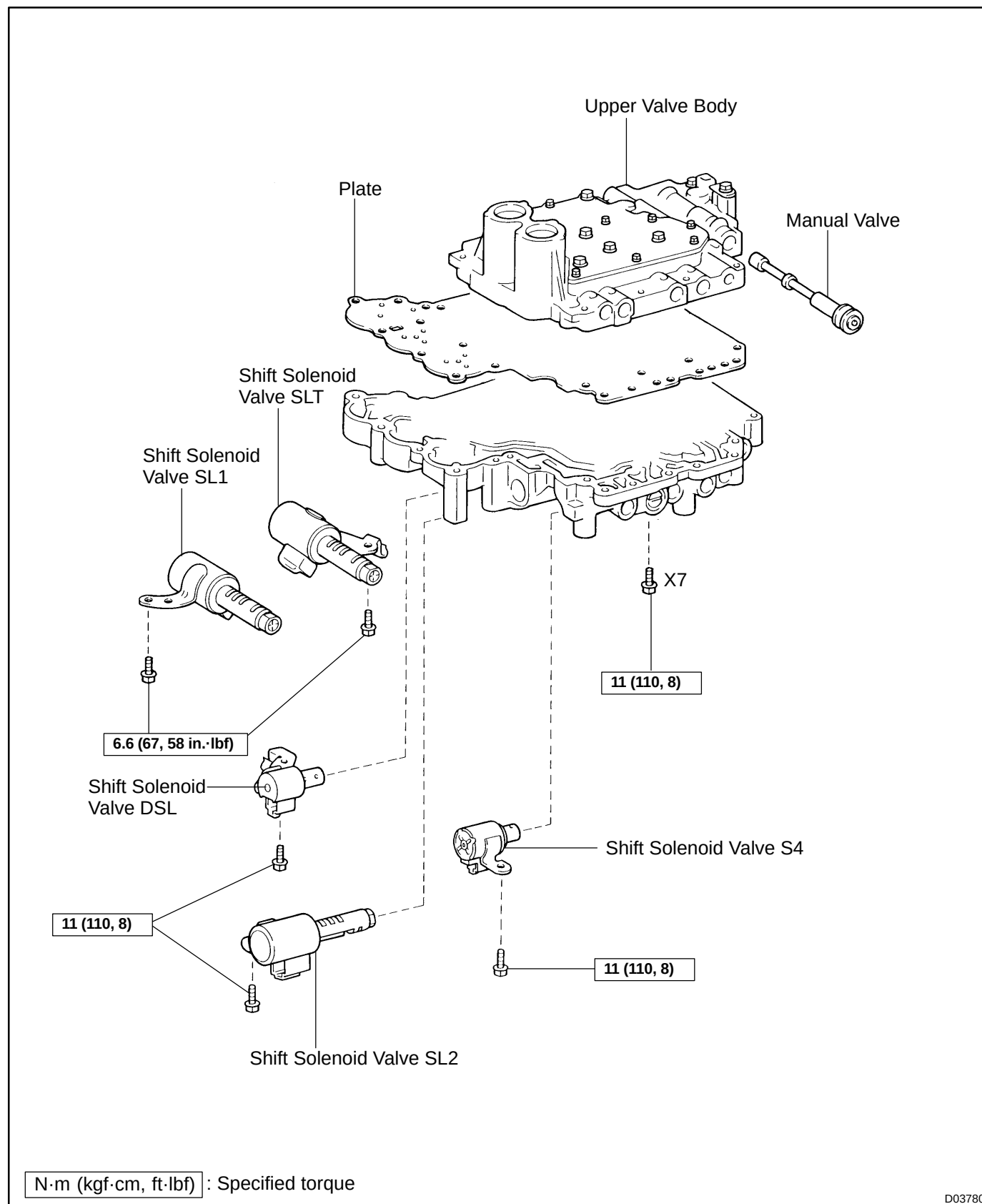
DIFFERENTIAL CASE COMPONENTS

AX0BC-03

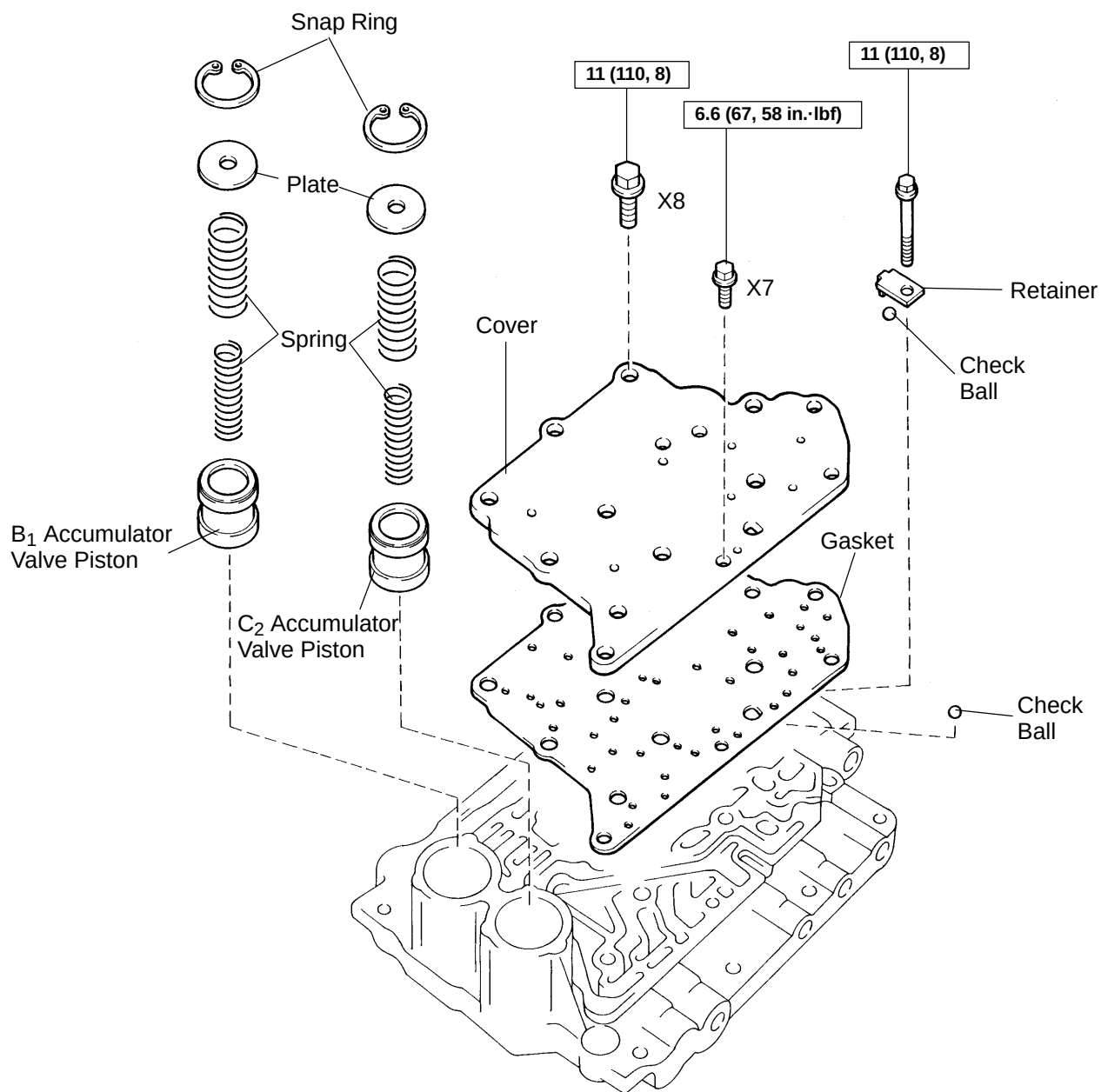


VALVE BODY COMPONENTS

AX0B7-02



D03780

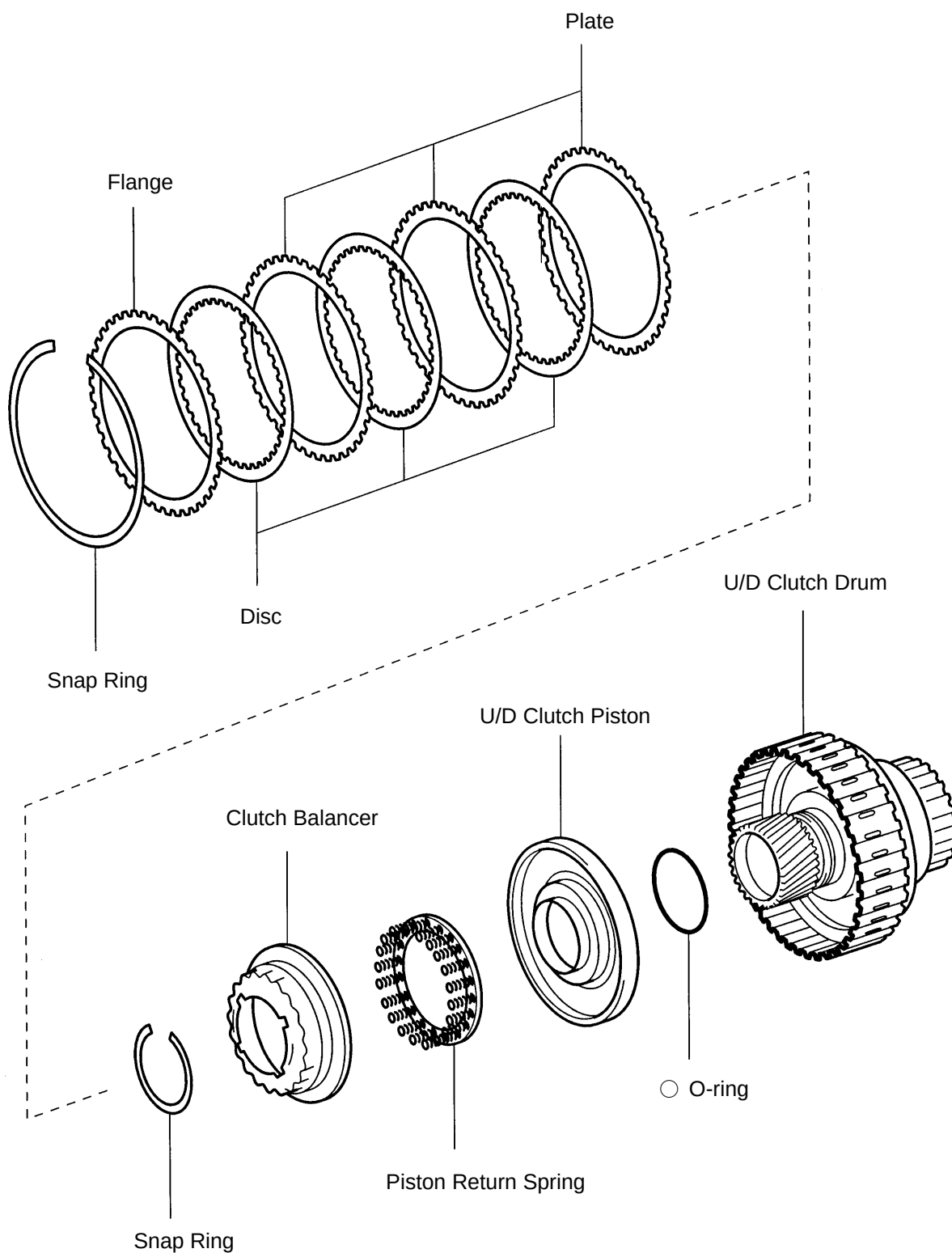


N·m (kgf·cm, ft·lbf) : Specified torque

D03781

UNDERDRIVE CLUTCH COMPONENTS

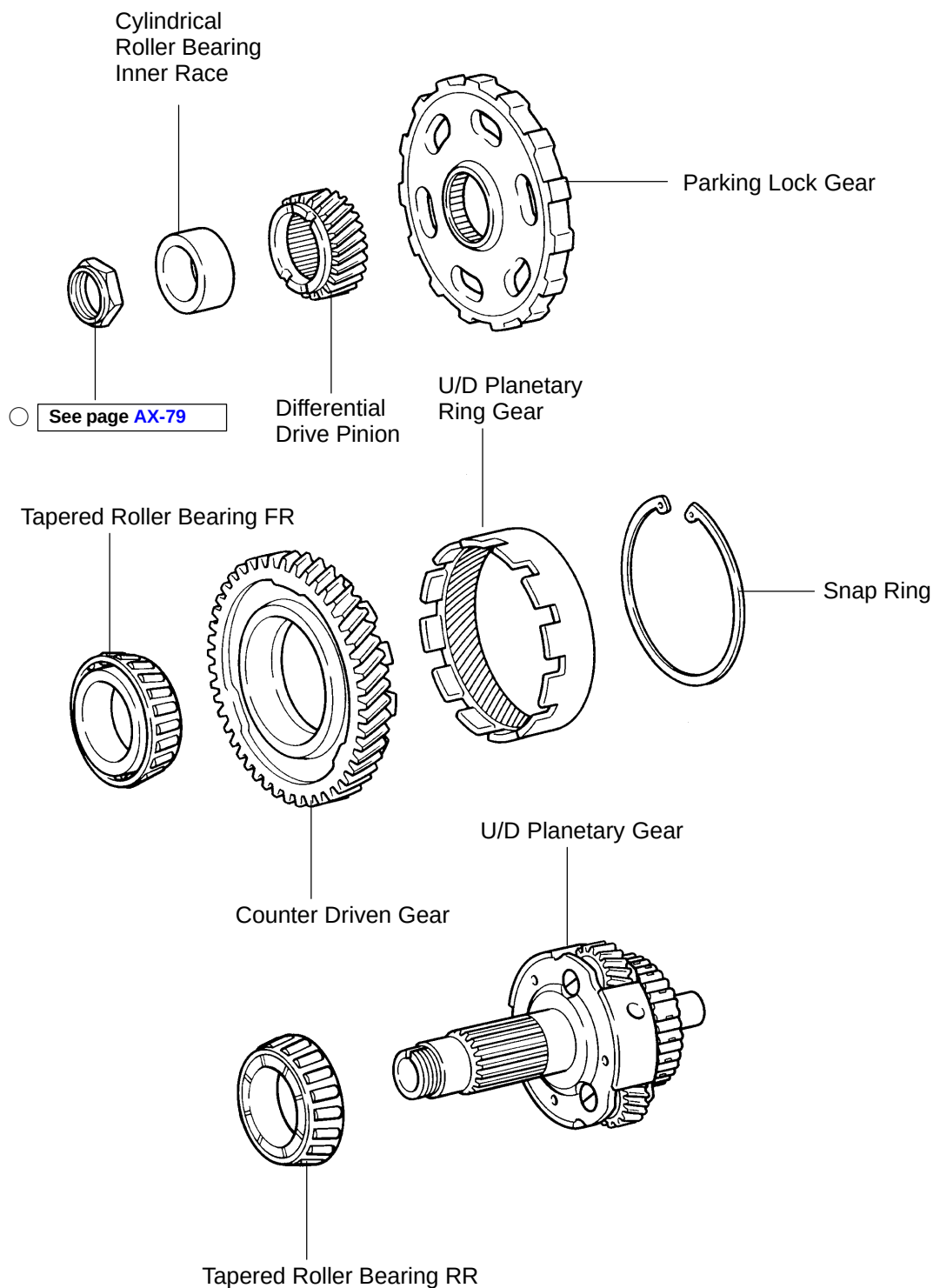
AX0B0-04



D08122

UNDERDRIVE PLANETARY GEAR COMPONENTS

AX0B4-01

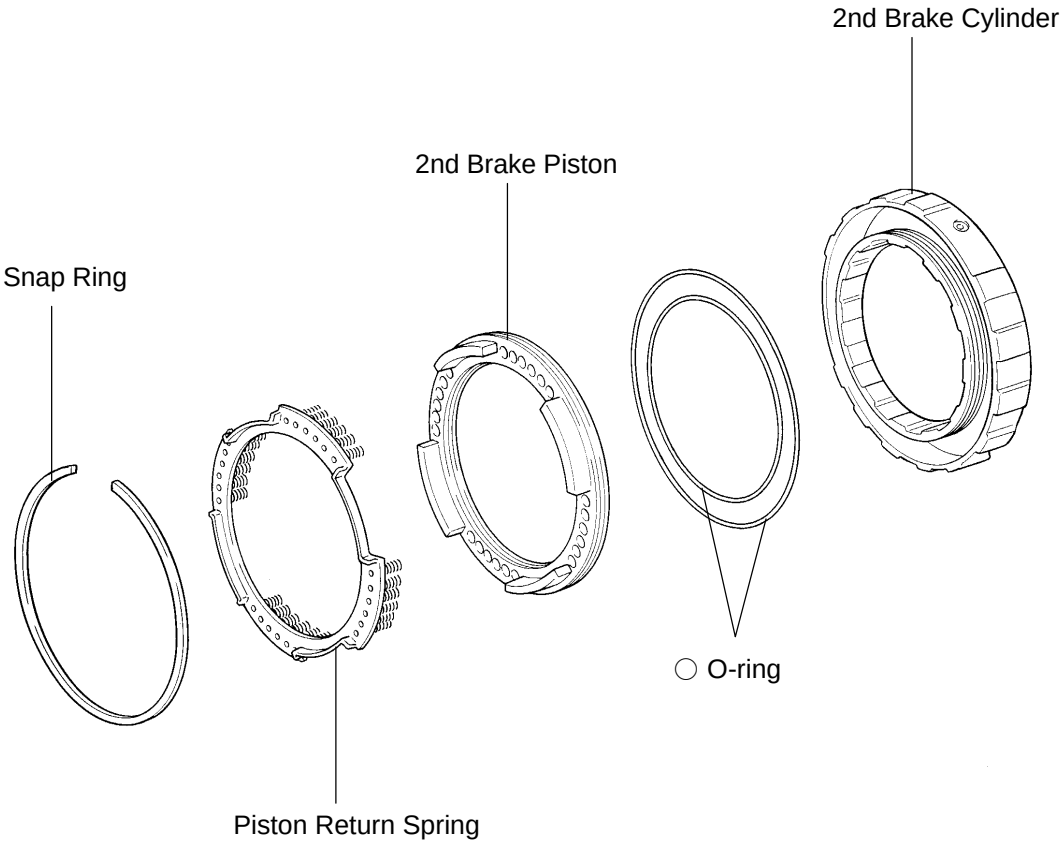


○ Non-reusable part

D03683

SECOND BRAKE COMPONENTS

AX0AW-01

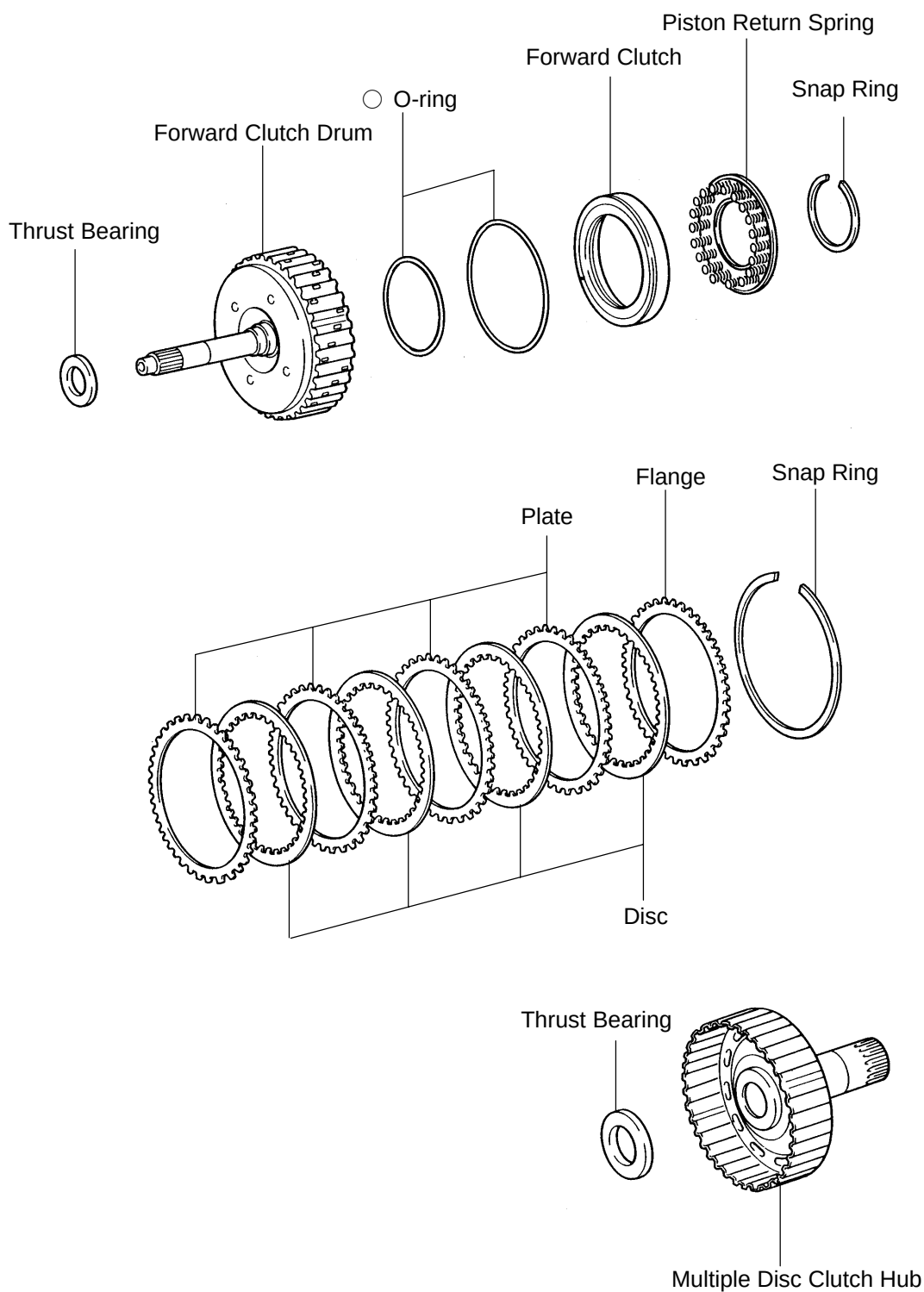


○ Non-reusable part

D03842

FORWARD CLUTCH COMPONENTS

AX0AS-04

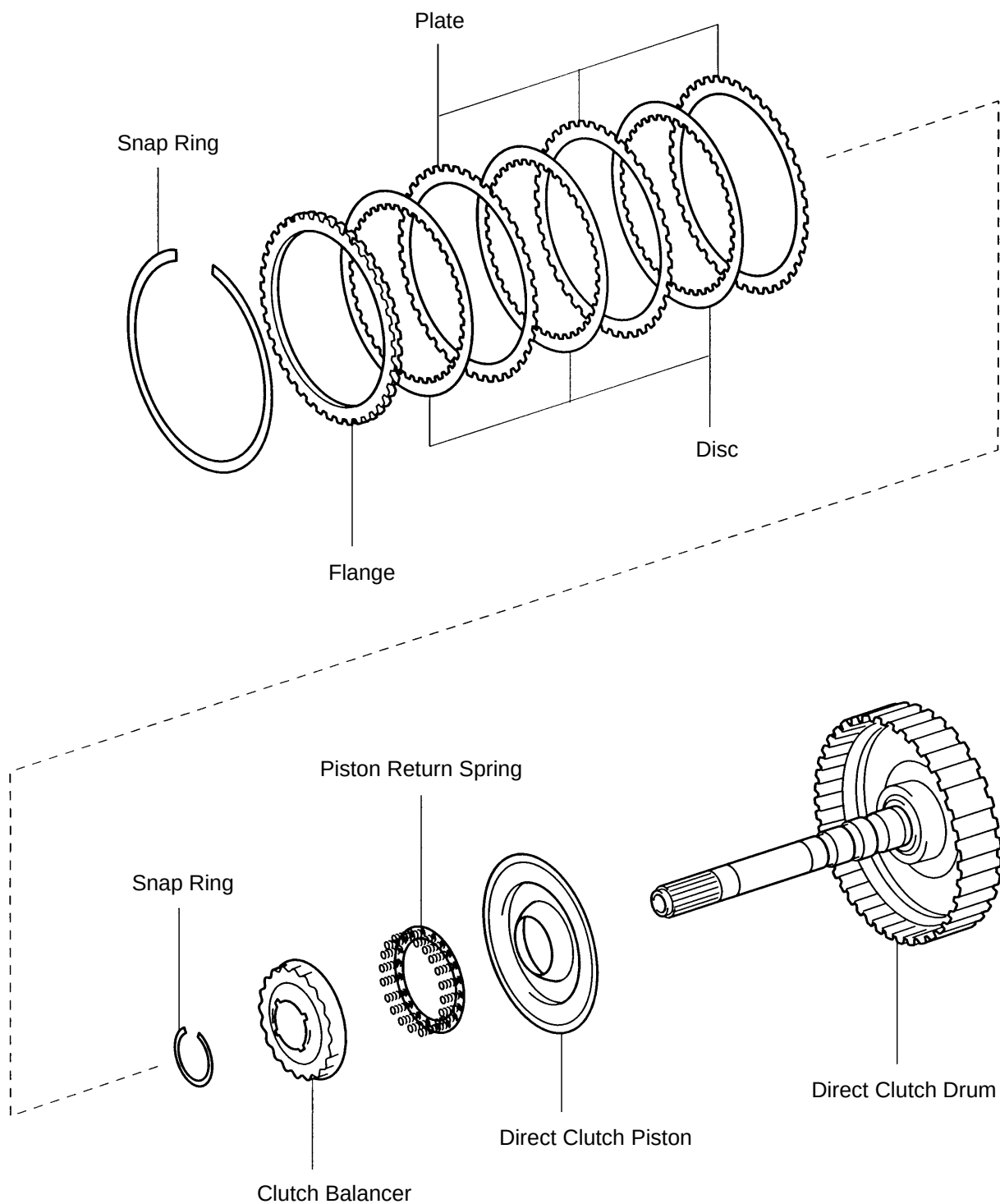


○ Non-reusable part
N

D09645

DIRECT CLUTCH COMPONENTS

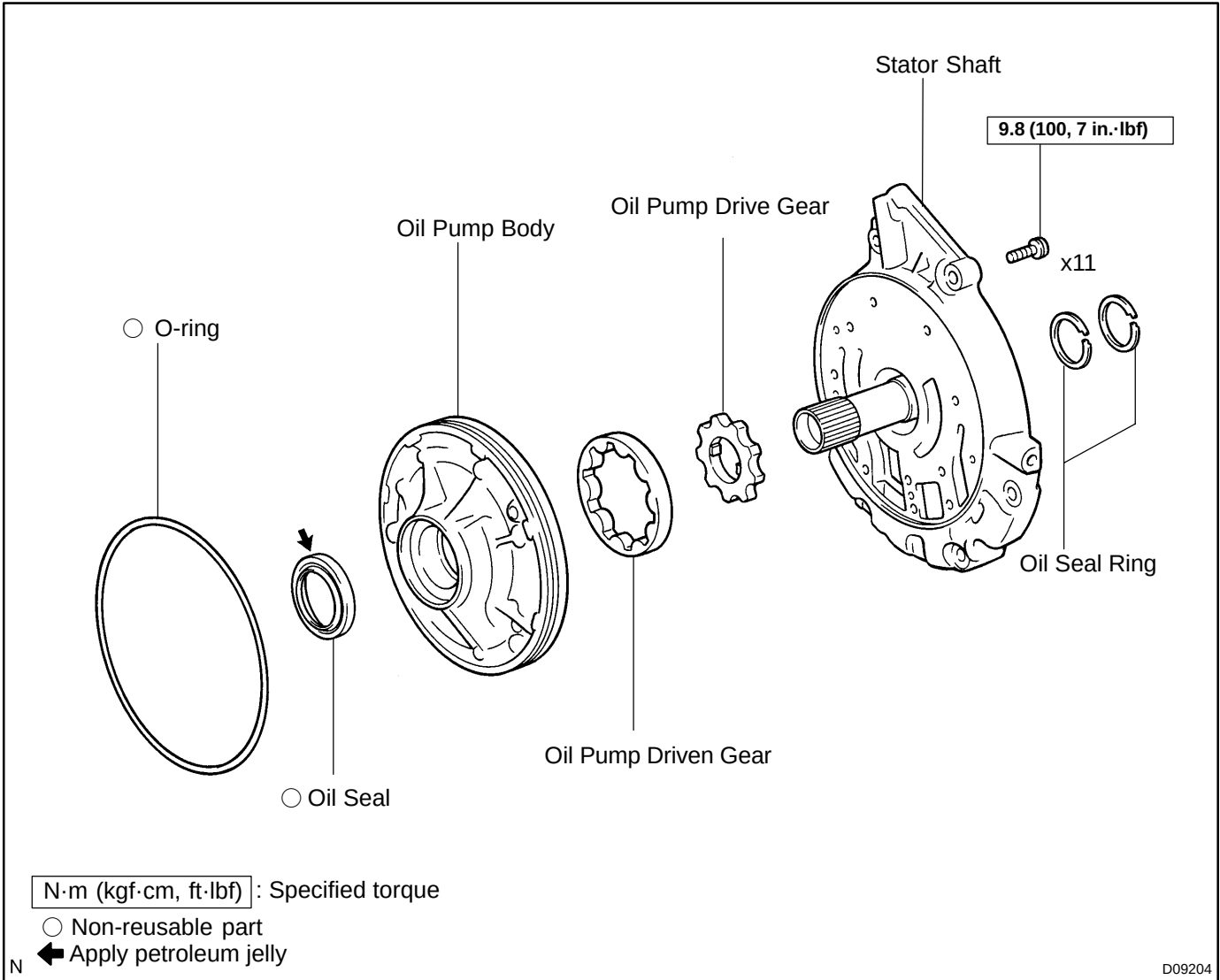
AX0AO-04



D08097

OIL PUMP COMPONENTS

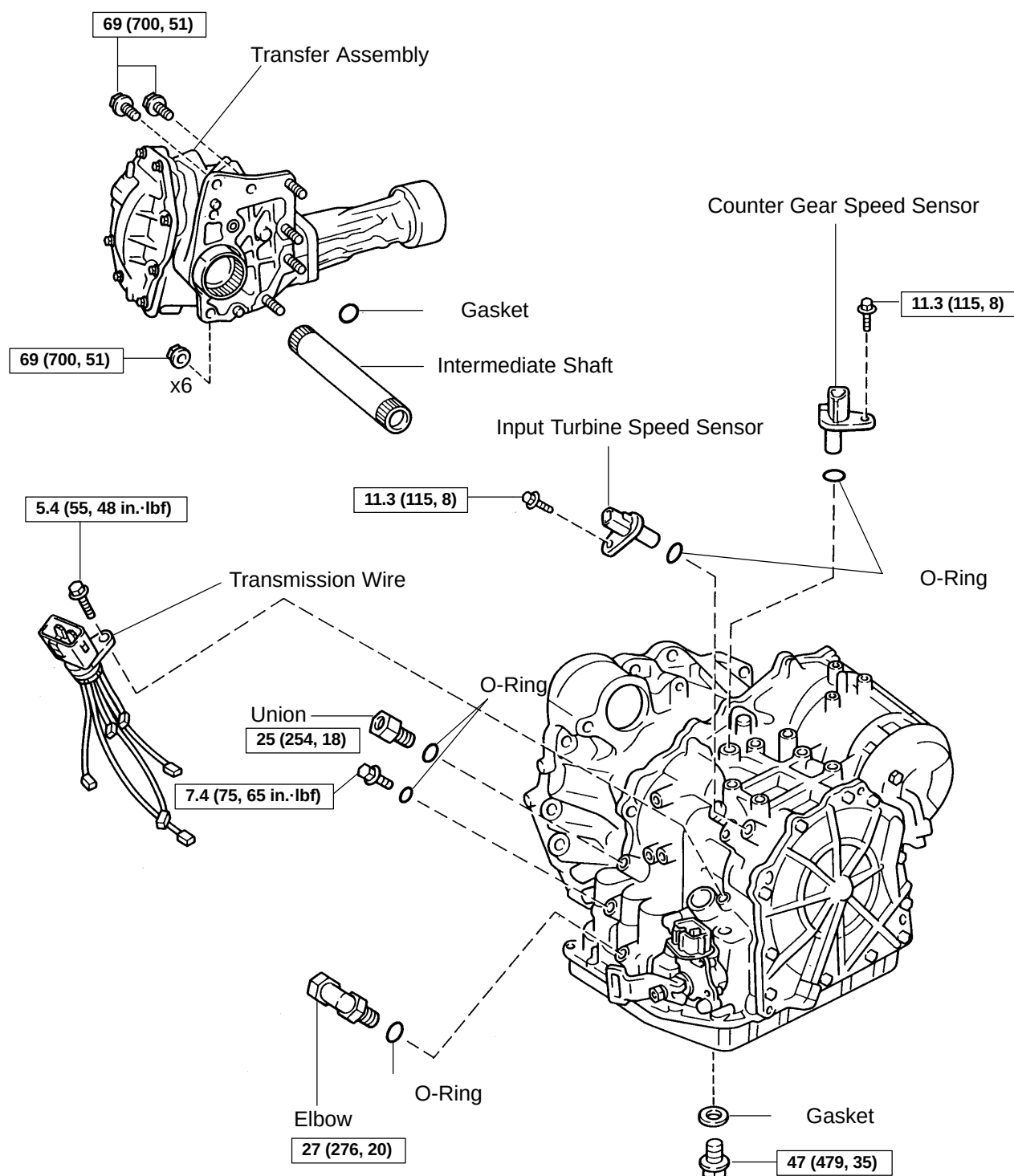
AX0AK-04



COMPONENT PARTS

COMPONENTS

AX0AH-03

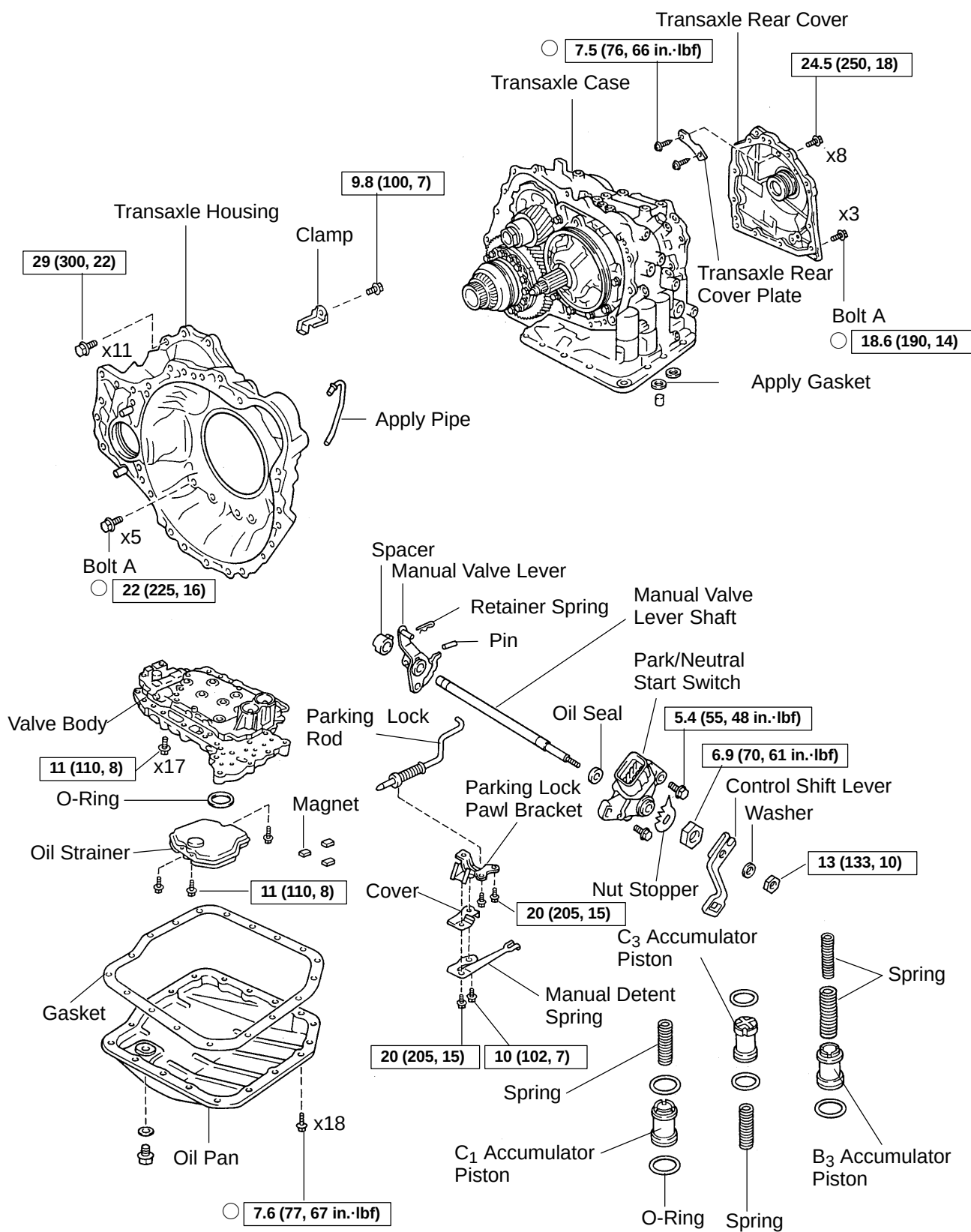


N·m (kgf·cm, ft·lbf) : Specified torque

Non-reusable part

N

D09944



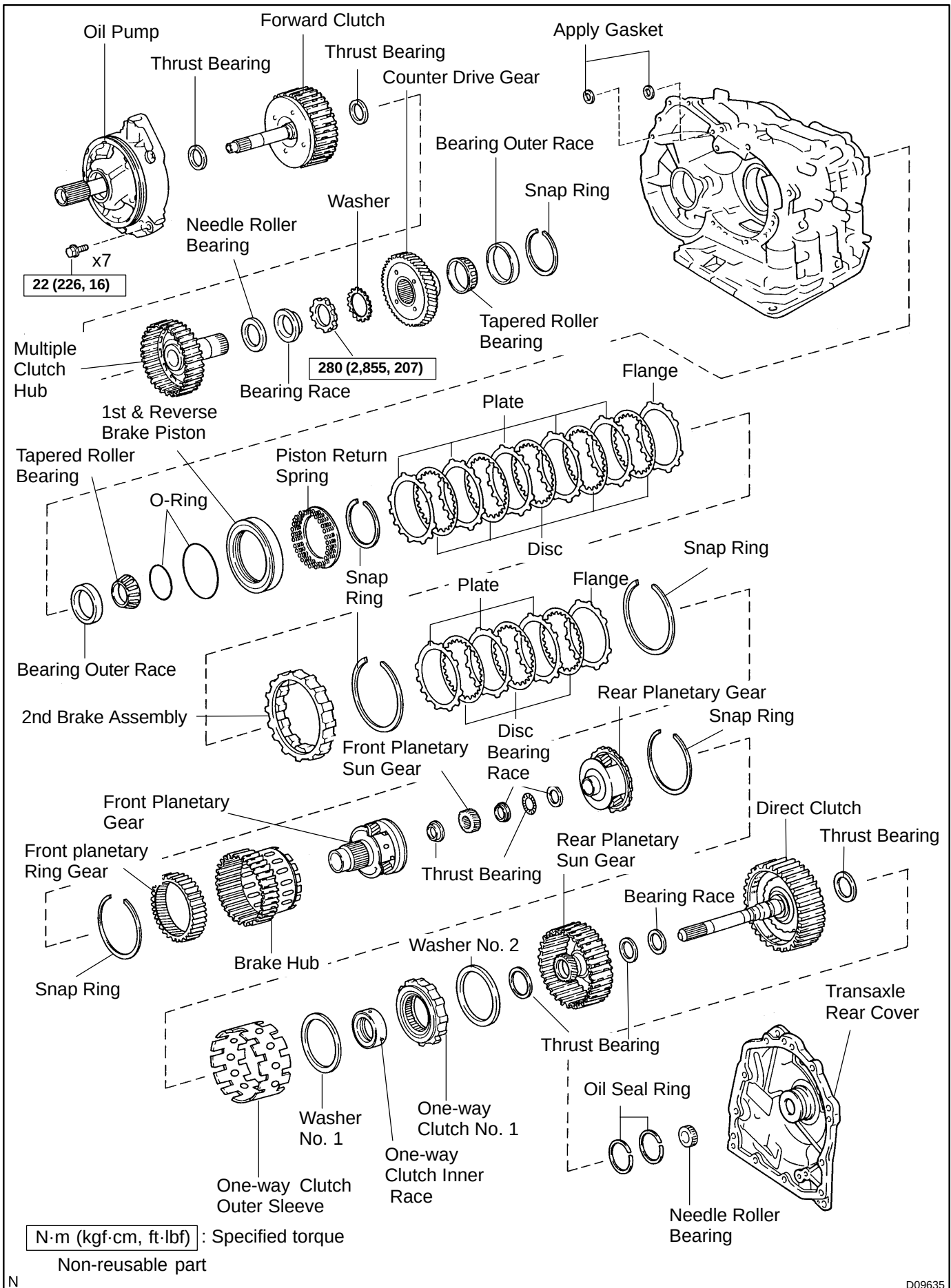
N·m (kgf·cm, ft·lbf) : Specified torque

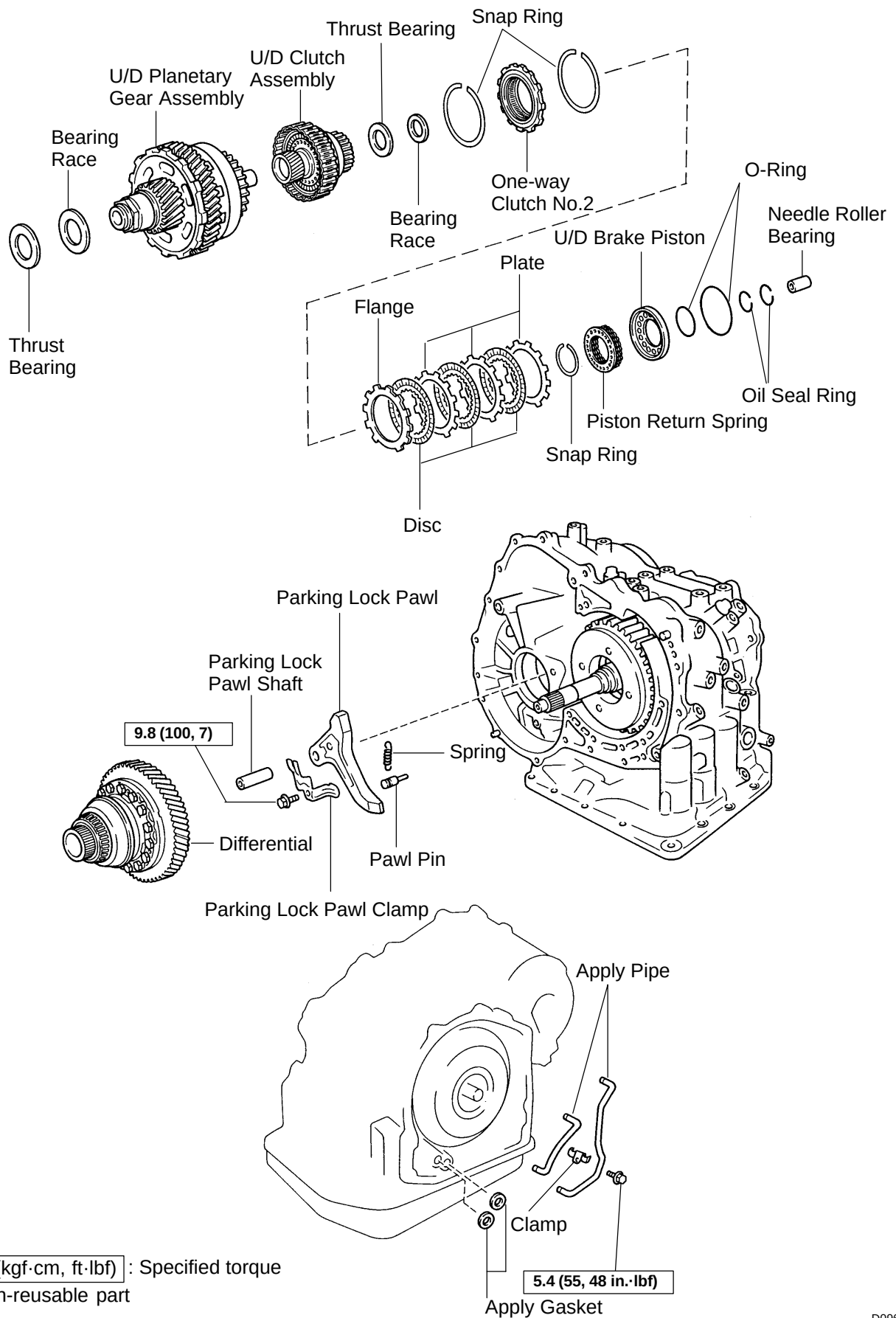
Non-reusable part

- Precoated part

IN

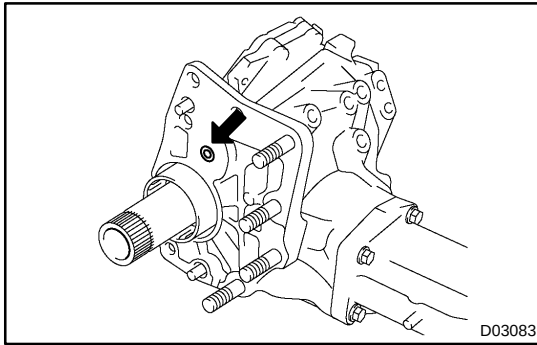
D09654





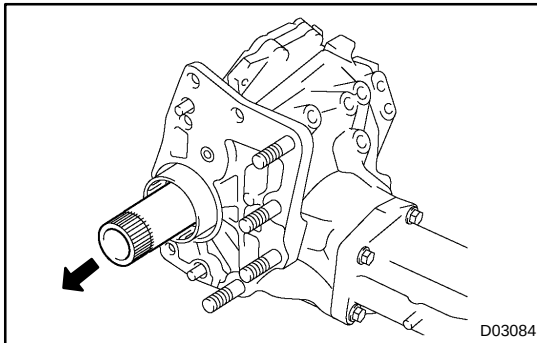
N

D09653

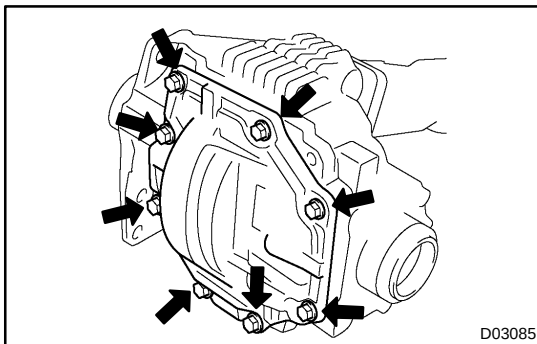


DISASSEMBLY

1. REMOVE GASKET

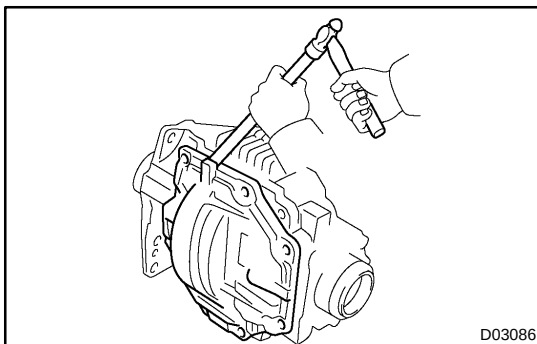


2. REMOVE NO. 2 INTERMEDIATE DIFFERENTIAL SIDE GEAR



3. REMOVE NO. 1 CASE COVER

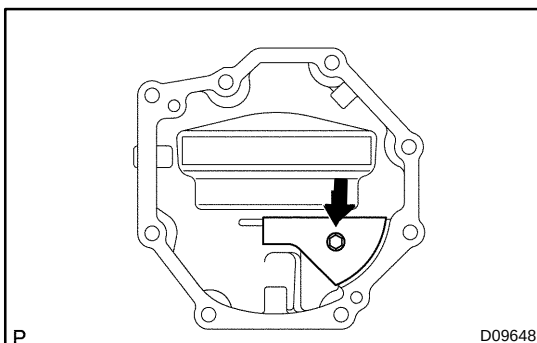
(a) Remove the 8 bolts.



(b) Using a brass bar and hammer, remove the No. 1 case cover.

NOTICE:

Be careful not to damage the transfer case and No. 1 case cover.



(c) Remove a bolt and breather oil deflector from the No. 1 case cover.

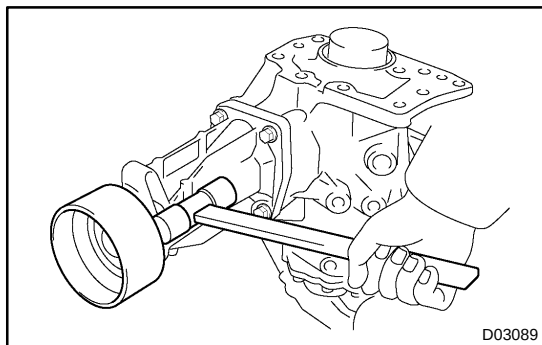
4. REMOVE PIN

Remove the 4 pins from the transfer case.

5. REMOVE STUD BOLT

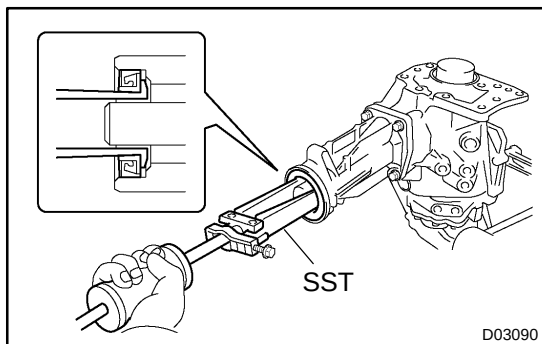
Remove the 4 stud bolts from the transfer case.

6. INSTALL TRANSFER ON OVERHAUL ATTACHMENT



7. REMOVE EXTENSION HOUSING

- (a) Using plastic hammer, remove the dust deflector from the extension housing.

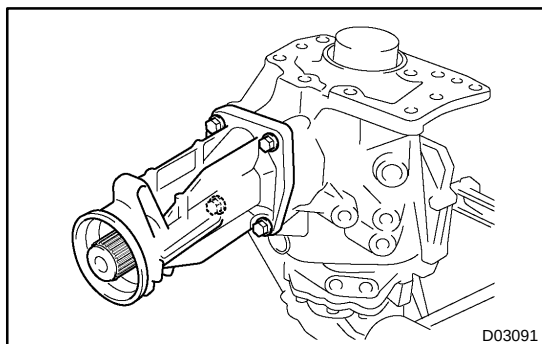


- (b) Using SST, remove the oil seal from the extension housing.

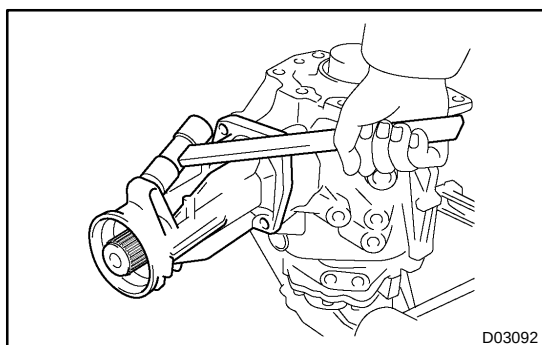
SST 09308-00010

NOTICE:

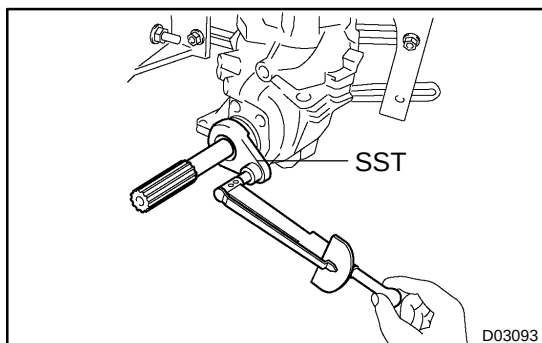
Be careful not to damage the extension housing.



- (c) Remove the 4 bolts.



- (d) Using a plastic hammer, remove the extension housing.



8. CHECK PRELOAD

- (a) Using SST and a torque wrench, measure the driven pinion preload of the backlash between the driven pinion and ring gear.

SST 09326-2001 1

Preload (at starting):

0.9 - 1.3 N·m (9 - 13 kgf·cm, 7.8 - 11.5 in.·lbf)

HINT:

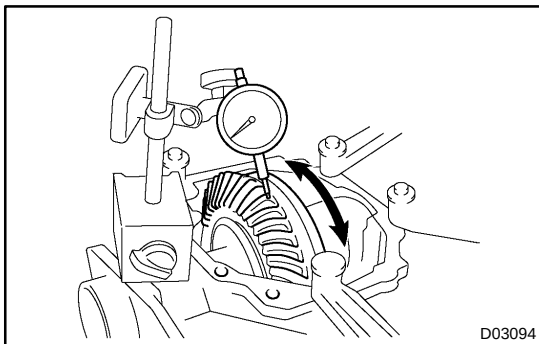
- Using a torque wrench with a fulcrum length of 160 mm (6.3 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.
- (b) Using SST and the torque wrench, measure the total preload.

SST 09326-2001 1

Total preload (at starting):**1.0 - 1.6 N·m (10 - 16 kgf·cm, 8.9 - 14.2 in.-lbf)**

HINT:

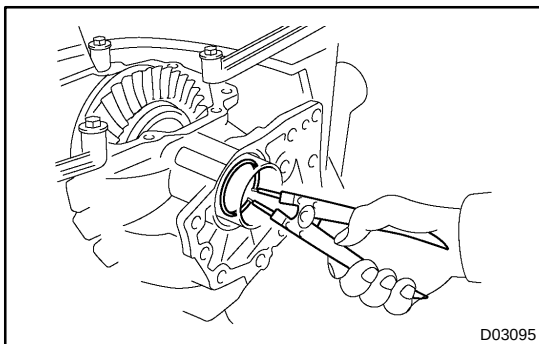
- Using a torque wrench with a fulcrum length of 160 mm (6.3 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.



D03094

9. CHECK RING GEAR BACK

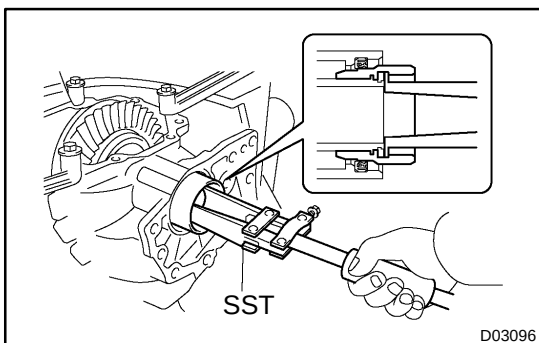
Using a dial indicator, measure the ring gear backlash.

Backlash: 0.10 - 0.15 mm**10. CHECK TOOTH CONTACT**(See page [AX-126](#))

D03095

11. REMOVE CENTER DIFFERENTIAL LOCK SLEEVE

- (a) Using a snap ring pliers, remove the shaft snap ring.

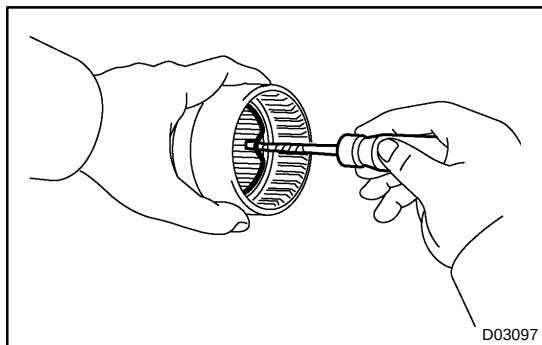


D03096

- (b) Using SST, remove the center differential lock sleeve.

SST 09308-00010

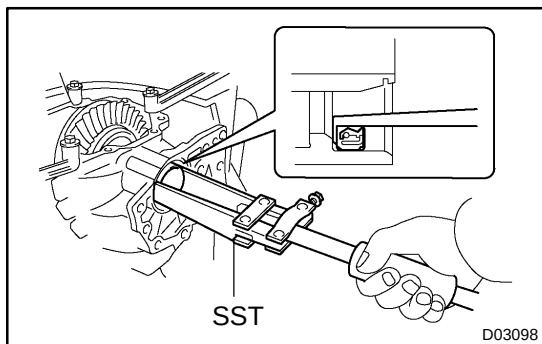
NOTICE:**Be careful not to damage the center differential lock sleeve.**



- (c) Using a screwdriver, remove the O-ring from the center differential lock sleeve.

NOTICE:

Be careful not to damage the center differential lock sleeve.



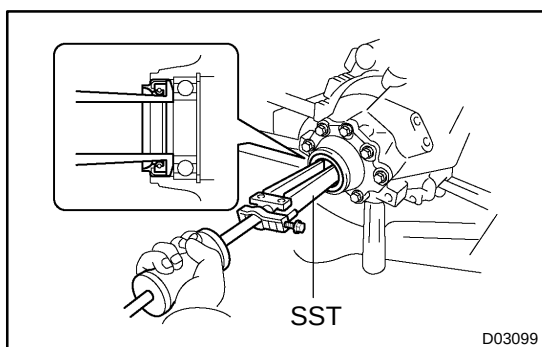
12. REMOVE OIL SEAL

Using SST, remove the oil seal from the transfer case.

SST 09308-00010

NOTICE:

Be careful not to damage the transfer case.



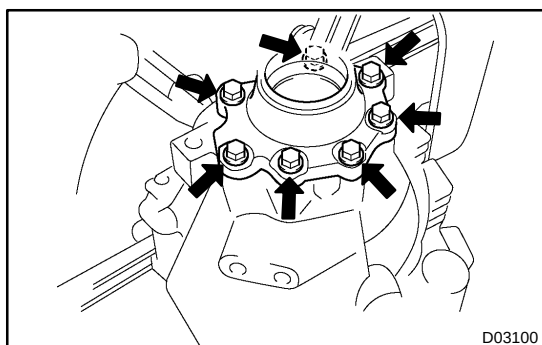
13. REMOVE BEARING RETAINER RH

- (a) Using SST, remove the oil seal from the bearing retainer RH.

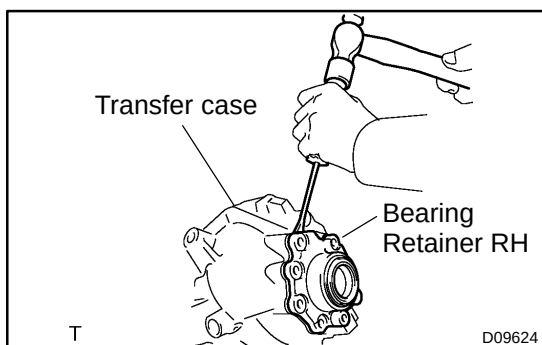
SST 09308-00010

NOTICE:

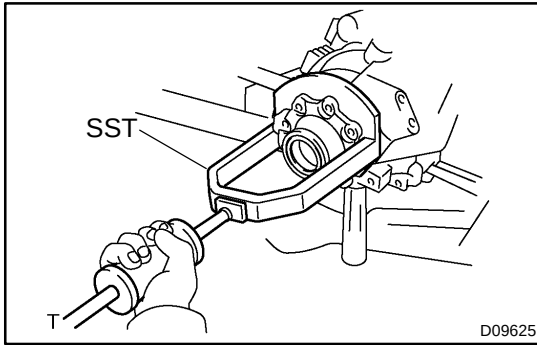
Be careful not to damage the bearing retainer.



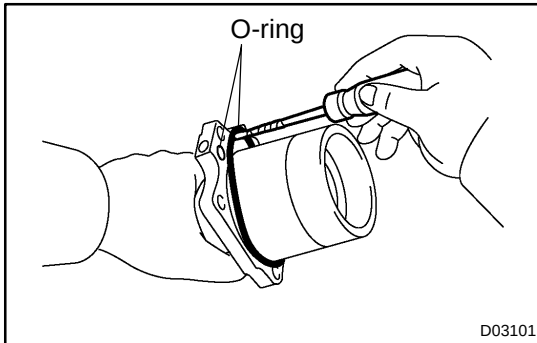
- (b) Remove the 7 bolts.



- (c) Using a screwdriver and hammer, make clearance by hitting between the bearing retainer RH and transfer case.



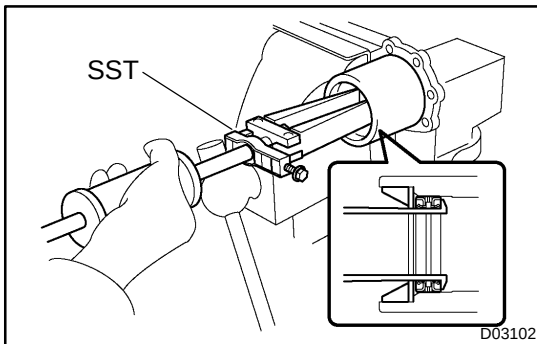
- (d) Using SST, remove the bearing retainer RH from the transfer case.
SST 09520-10021



- (e) Using a screwdriver, remove 2 O-rings from the bearing retainer RH.

NOTICE:

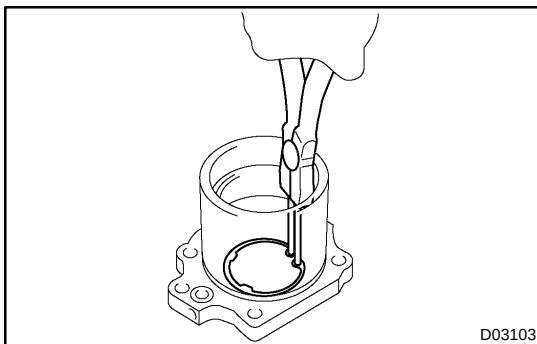
Be careful not to damage the bearing retainer RH.



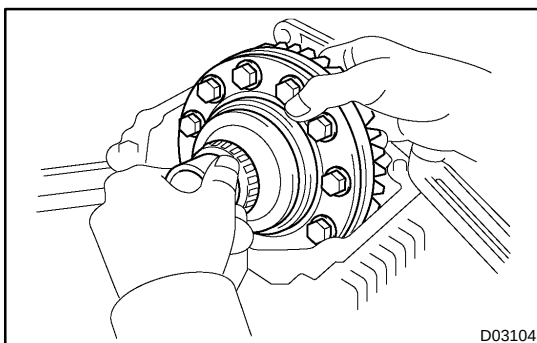
- (f) Using the soft jaws, hold the bearing retainer RH in a vise.
(g) Using SST, remove the outer race, washer and oil seal from the bearing retainer RH.
SST 09308-00010

NOTICE:

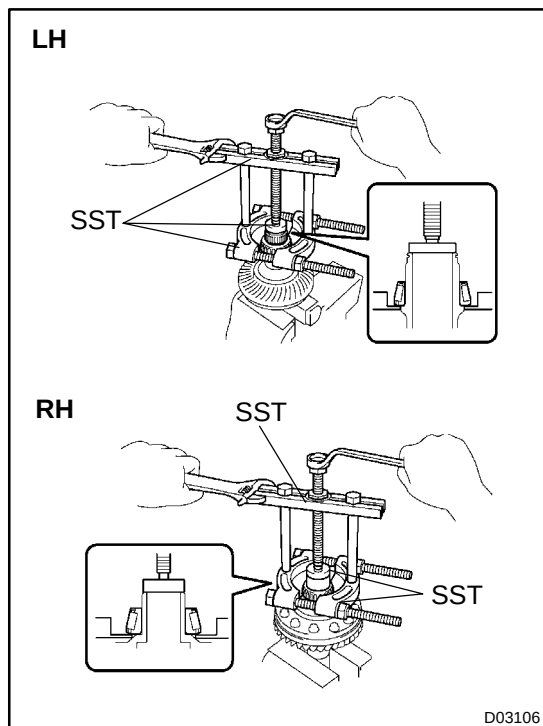
Be careful not to damage the bearing retainer RH.



- (h) Using snap ring pliers, remove the snap ring.
(i) Remove the side gear shaft holder bearing from the bearing retainer RH.



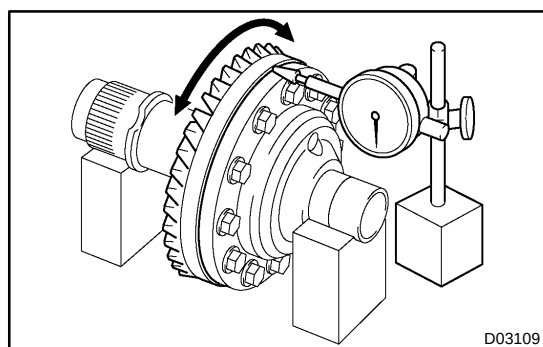
14. REMOVE CENTER DIFFERENTIAL CONTROL COUPLING ASSEMBLY



15. REMOVE TAPERED ROLLER BEARING LH AND RH

Using SST, remove the tapered roller bearing inner race LH and RH.

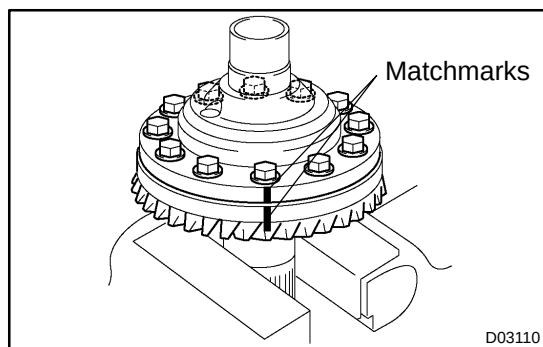
SST 09950-00020, 09950-00030, 09950-60010
(09951-00360)



16. CHECK RING GEAR RUNOUT

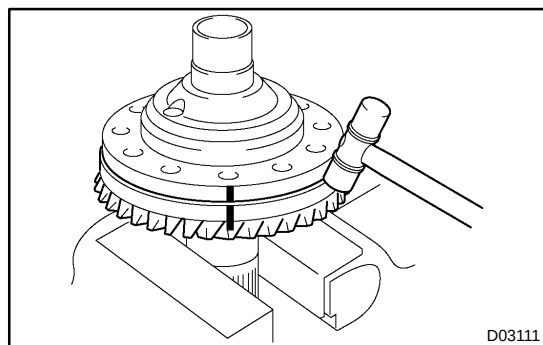
Using a dial indicator, check the ring gear runout.

Maximum runout: 0.1 mm (0.004 in.)

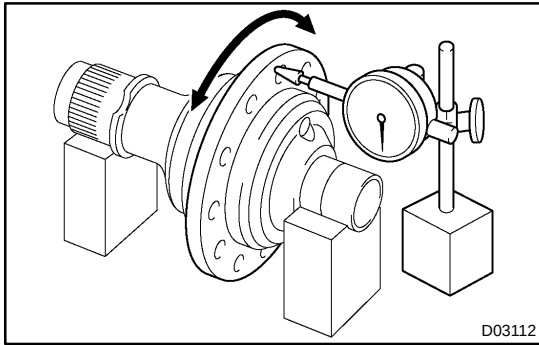


17. REMOVE RING GEAR

- Place matchmarks on both the ring gear and the center differential control coupling.
- Remove the 12 bolts.



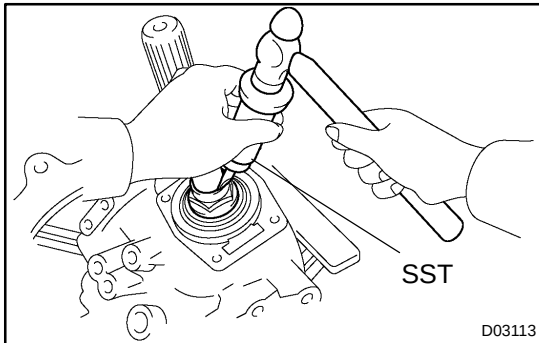
- Using a plastic hammer, remove the ring gear.



18. CHECK CENTER DIFFERENTIAL CONTROL COUPLING RUNOUT

Using a dial indicator, check the center differential control coupling runout.

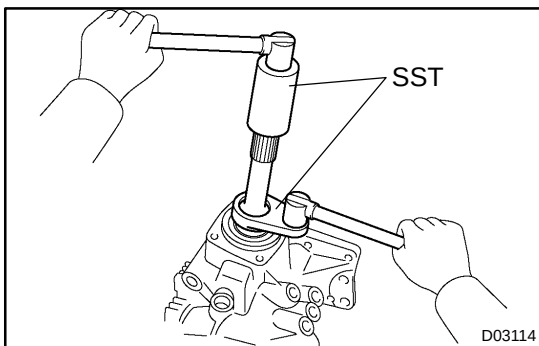
Maximum runout: 0.07 mm (0.0028 in.)



19. REMOVE DRIVEN PINION

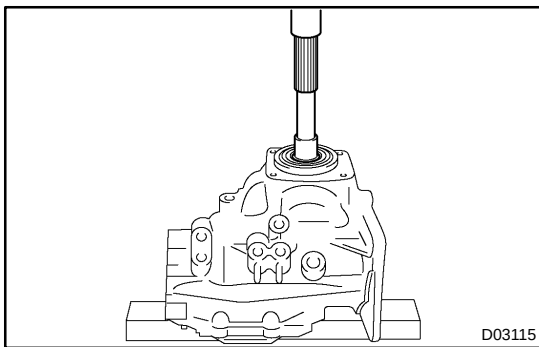
(a) Using SST and a hammer, unseat the lock nut.

SST 09930-00010 (09931-00010, 09931-00020)



(b) Using SST, remove the lock nut.

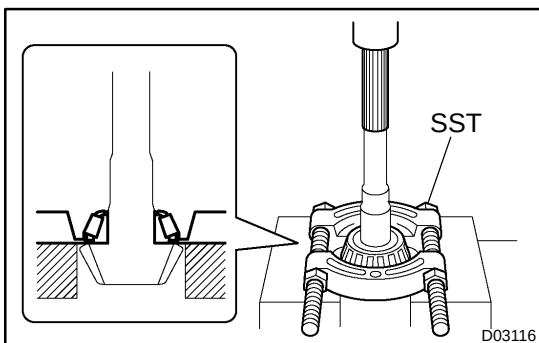
SST 09326-2001 1, 09556-16030



(c) Using a press, remove the driven pinion, the rear bearing inner race and spacer.

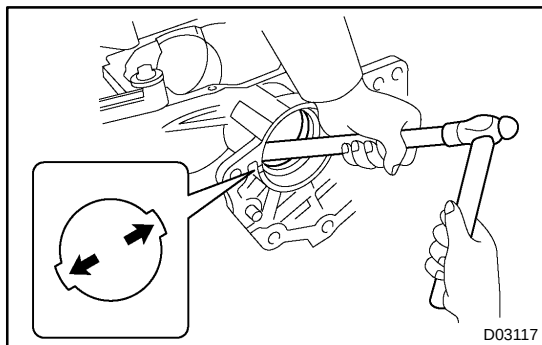
NOTICE:

- Place a waste cloth inside the case to prevent the driven pinion from dropping.
- Keep the case level using a wood plate.

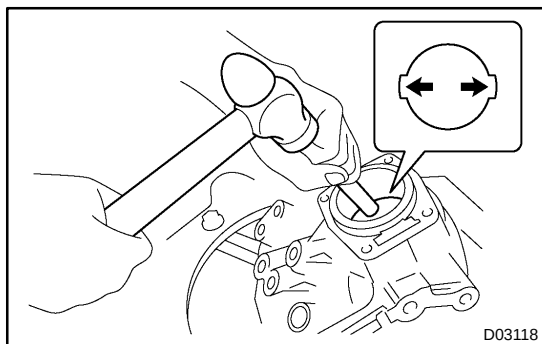


(d) Using SST and a press, remove the front bearing inner race from the driven pinion.

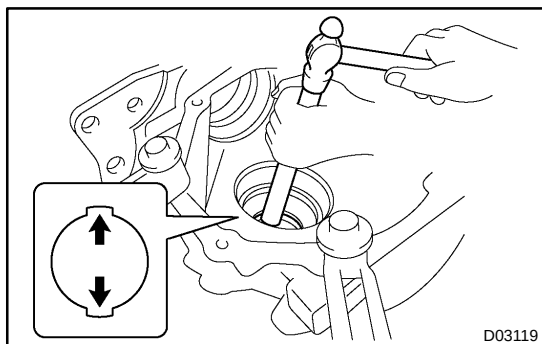
SST 09950-00020

**20. REMOVE BEARING OUTER RACE LH**

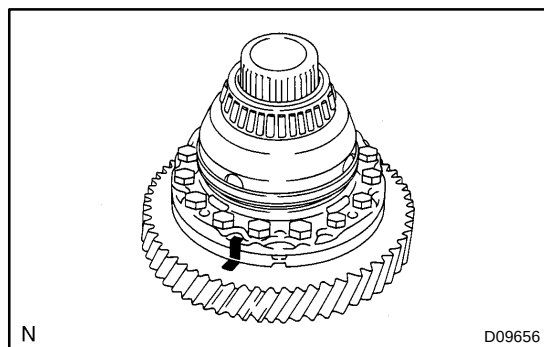
Using a brass bar and a hammer, remove the outer race and the washer.

**21. REMOVE FRONT BEARING OUTER RACE**

Using a brass bar and a hammer, remove outer race and washer.

**22. REMOVE REAR BEARING OUTER RACE**

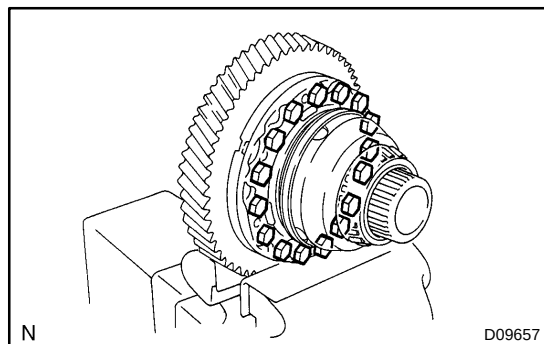
Using a brass bar and a hammer, remove outer race.



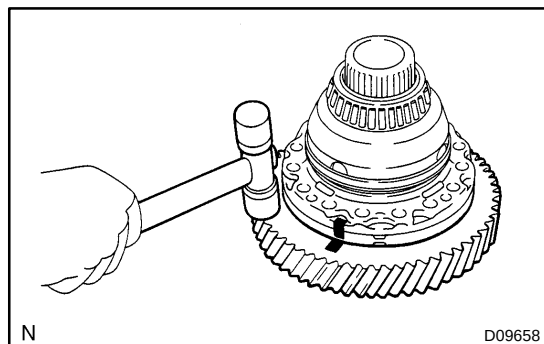
DISASSEMBLY

1. REMOVE DIFFERENTIAL RING GEAR

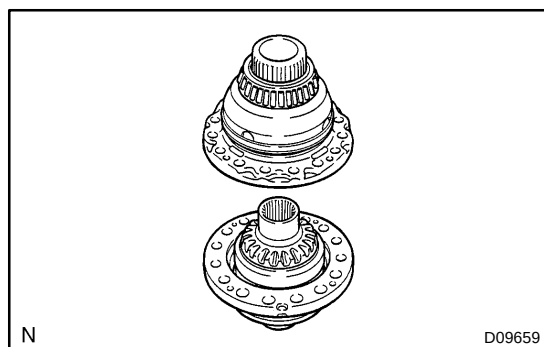
- (a) Place the matchmarks on the ring gear and the differential case.



- (b) Remove the 16 bolts.

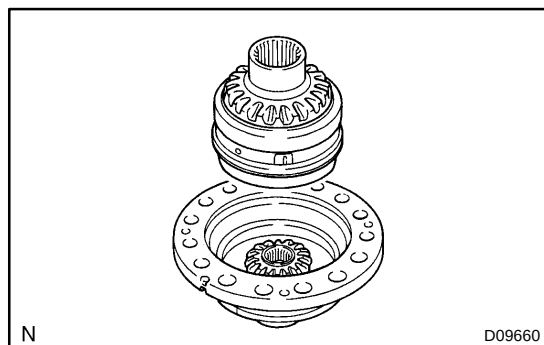


- (c) Using a plastic hammer, tap on the ring gear to remove it from the case.

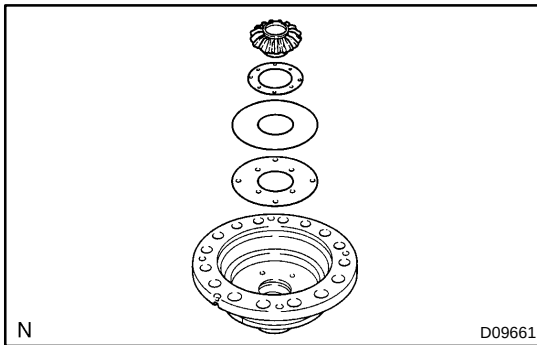


2. REMOVE FRONT DIFFERENTIAL

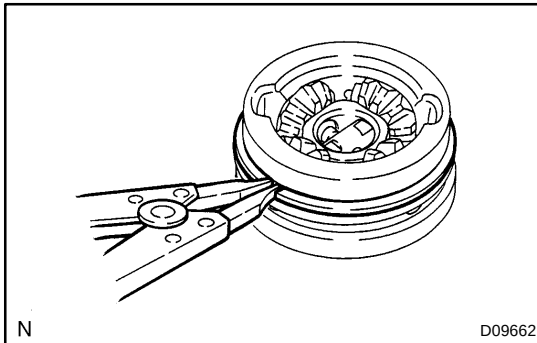
- (a) Remove the differential LH case from the differential case assembly.



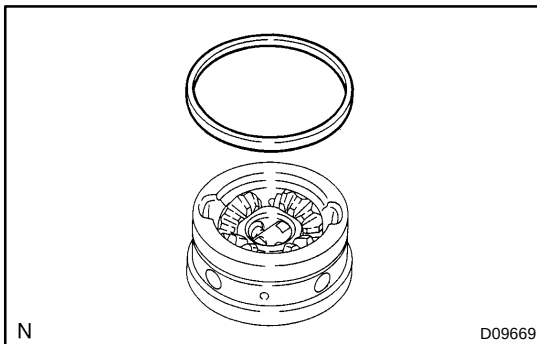
- (b) Remove the front differential case from the differential LH case.



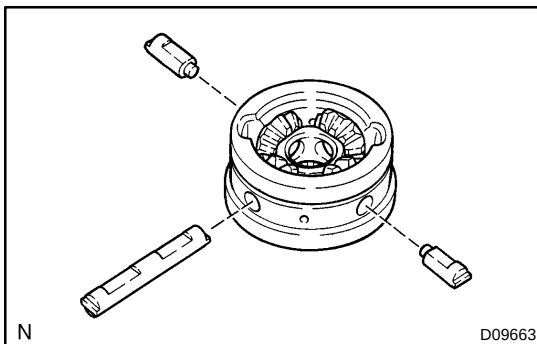
- (c) Remove the front differential side gear, front differential side gear thrust washer, conical washer and center differential side gear thrust washer No. 2 from the differential LH case.



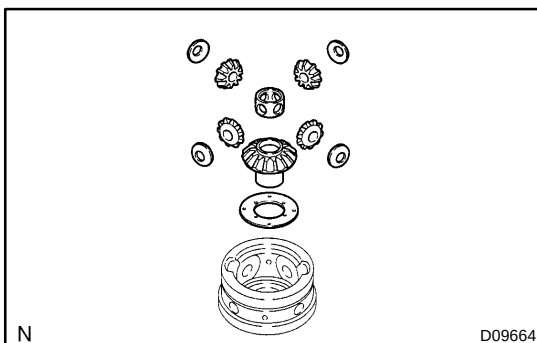
- (d) Using a snap ring expander, remove the snap ring from the front differential case.



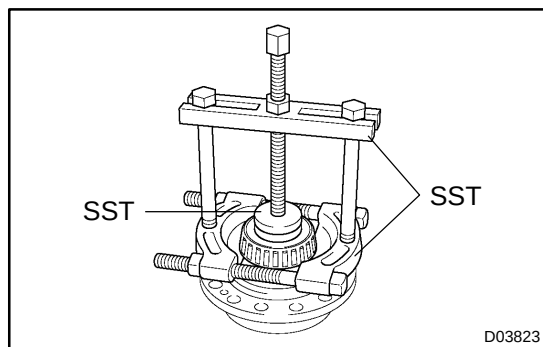
- (e) Remove the spacer from the front differential case.



- (f) Remove the 3 pinion shafts from the front differential case.



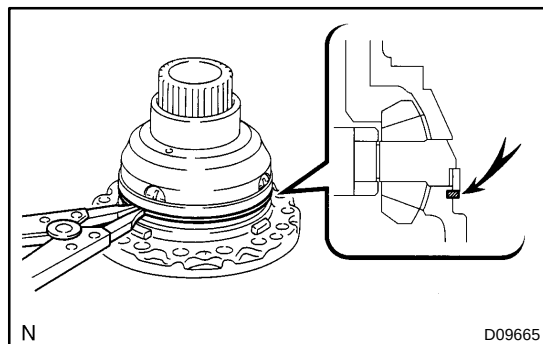
- (g) Remove the 4 front differential pinions, 4 front differential pinion thrust washers, front differential pinion shaft holder, front differential side gear and front differential side gear thrust washer from the front differential case.



3. REMOVE LH BEARING

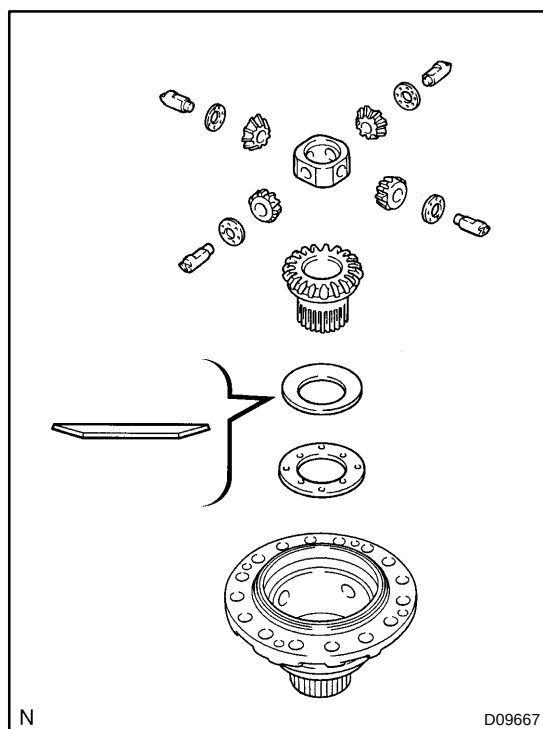
Using SST, remove the tapered roller bearing.

SST 09950-00020, 09950-00030, 09950-60010
(09951-00060)

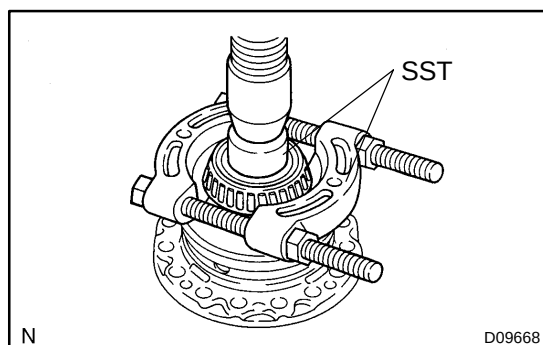


4. REMOVE CENTER DIFFERENTIAL

- Using snap ring expander, remove the snap ring.
- Slide down the spacer to remove the 4 center differential pinion shafts.



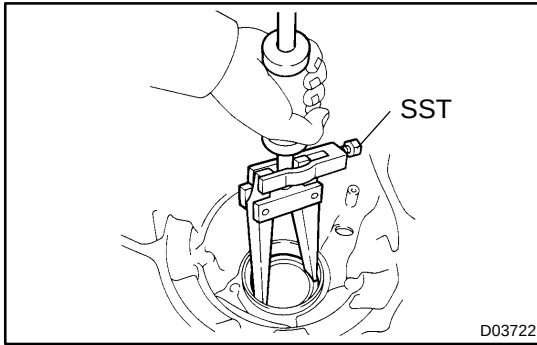
- Remove the 4 center differential pinion shafts, 4 center differential pinions, 4 center differential pinion thrust washers, center differential pinion shaft holder, center differential side gear, conical washer and center differential side gear thrust washer No. 1 from the differential RH case.
- Remove the spacer.



5. REMOVE RH BEARING

Using SST and a press, remove the tapered roller bearing.

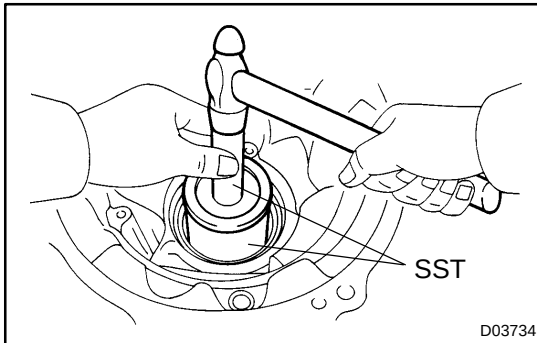
SST 09950-00020, 09950-60010 (09951-00600)



6. REMOVE TRANSAXLE HOUSING SIDE BEARING OUTER RACE

Using SST, remove the outer race.

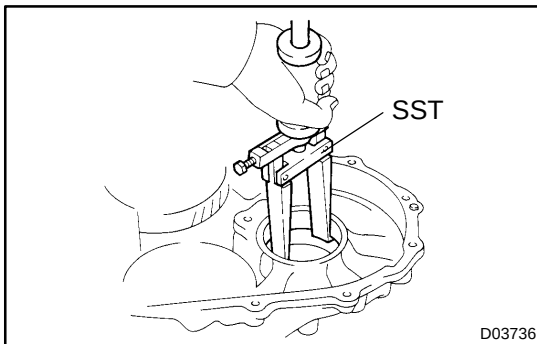
SST 09308-00010



7. REMOVE TRANSAXLE HOUSING OIL SEAL

Using SST, remove the oil seal from the transaxle housing.

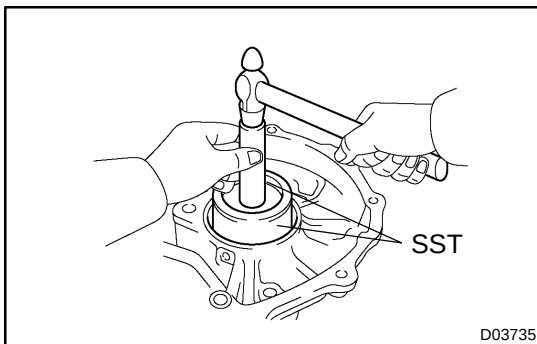
SST 09649-17010, 09950-70010 (09951-07100)



8. REMOVE TRANSAXLE CASE SIDE BEARING OUTER RACE

Using SST, remove the outer race.

SST 09308-00010



9. REMOVE TRANSAXLE CASE OIL SEAL

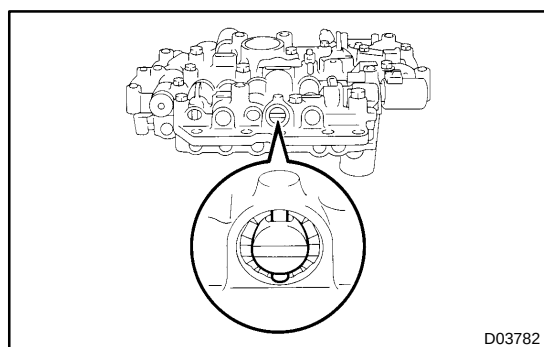
Using SST, remove the oil seal from the transaxle case.

SST 09649-17010, (09950-70010 (09951-07100)

DISASSEMBLY

NOTICE:

- Disassembling and reassembling should be conducted on a clean vinyl sheet or mat, or aluminum tray.
- Make the valve slide through the valve hole by its own weight. Do not forcibly pull out the valve using needle nose pliers. When having difficulty in removing it, slant and shake the valve body or use a magnet hand.
- Do not place the disassembled parts directly on metal work bench or waste cloth.
- Do not use dropped parts.
- Make sure that no burr is identified before assembling.

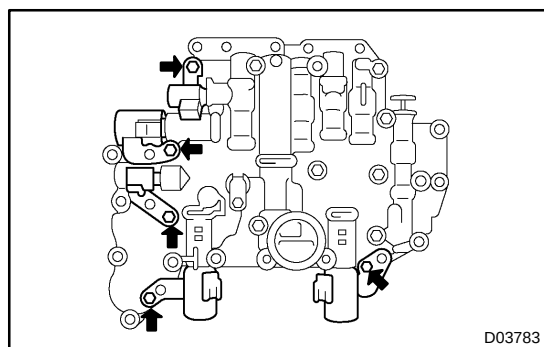


1. CHECK PRIMARY REGULATOR VALVE POSITION

Write down the relative position of the primary regulator valve sleeve, the plug and the pin.

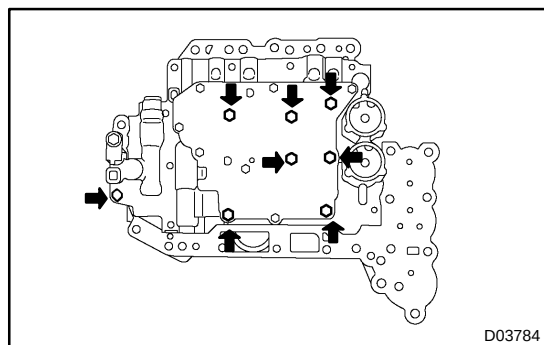
NOTICE:

Because the line pressure is changed by the position of the pin and the groove in the sleeve end, make sure to check the position.



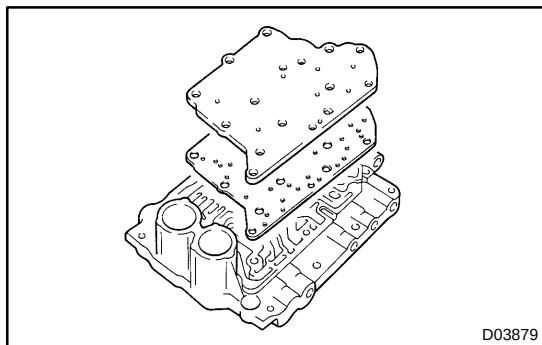
2. REMOVE SHIFT SOLENOID VALVE

- (a) Remove the 5 bolts and 5 shift solenoid valves.

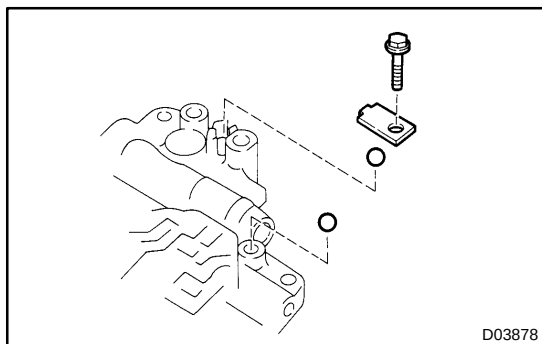


3. REMOVE LOWER VALVE BODY

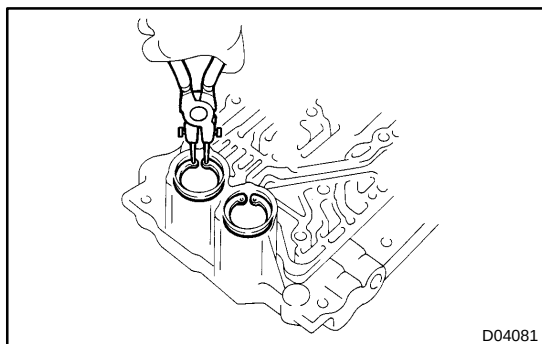
- (a) Remove the 8 bolts.



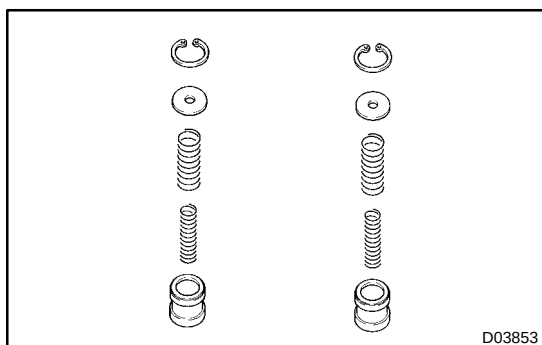
(b) Remove the 7 bolts, cover and gasket.



(c) Remove the bolt, retainer and 2 check balls.

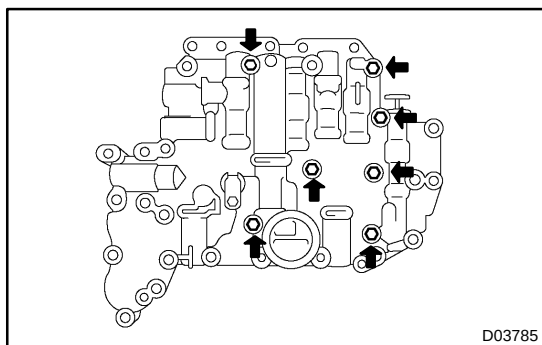


(d) Using snap ring pliers, remove the 2 snap rings.

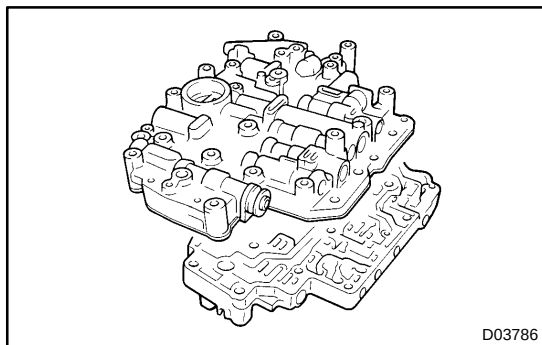


(e) Remove 4 springs from the valve body.

(f) Remove 2 pistons from the valve body.



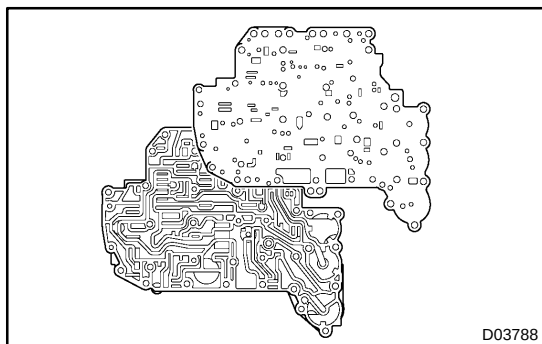
(g) Remove the 7 bolts from lower valve body.



- (h) Remove lower valve body with plate from the upper valve body.

NOTICE:

Be careful that the check balls do not fall out.

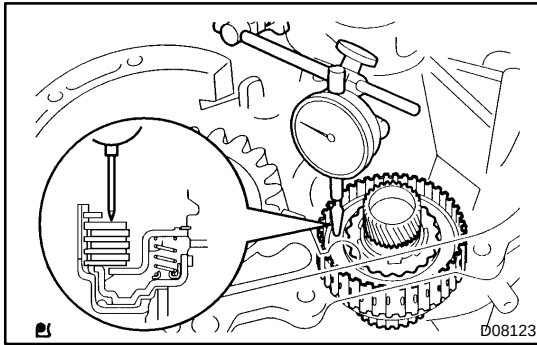


- (i) Turn over the lower valve body with plate.

- (j) Remove the plate from lower valve body.

NOTICE:

Be careful that the check balls do not fall out.



DISASSEMBLY

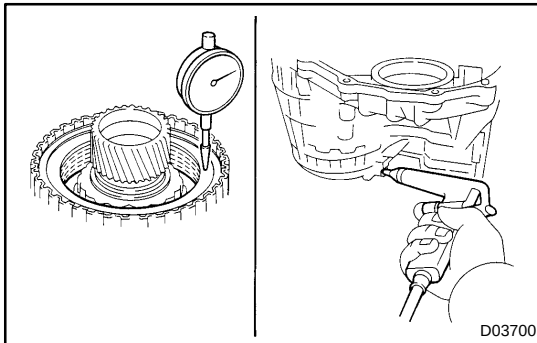
1. CHECK PISTON STROKE OF U/D CLUTCH

- (a) Install the U/D clutch to the transaxle case.

NOTICE:

Be careful not to damage the oil seal rings.

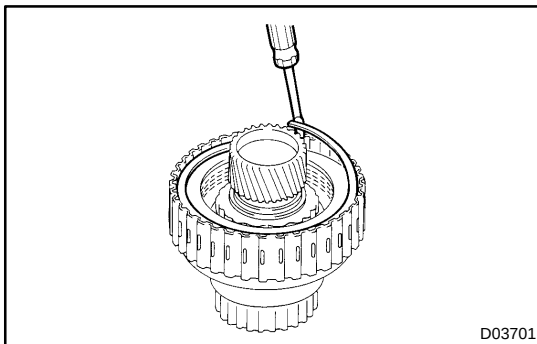
- (b) Install the dial indicator, as shown in the illustration.



- (c) Measure the U/D clutch piston stroke while applying and releasing compressed air (392 kgf/cm², 4.0 kPa, 57 psi).

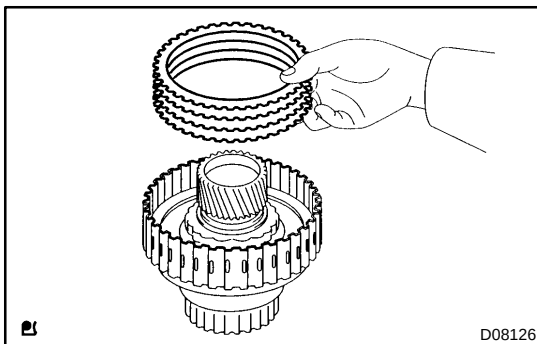
Piston stroke: 1.51 - 1.90 mm (0.0594 - 0.0748 in.)

If the piston stroke is non-standard inspect the discs, plates and flange.

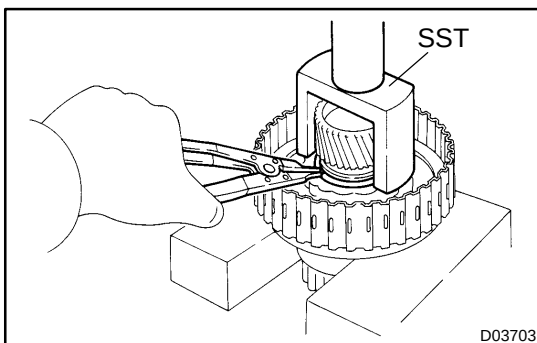


2. REMOVE FLANGE, DISC AND PLATE

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



- (b) Remove the flange, 3 discs and 3 plates from the U/D clutch drum.



3. REMOVE PISTON RETURN SPRING

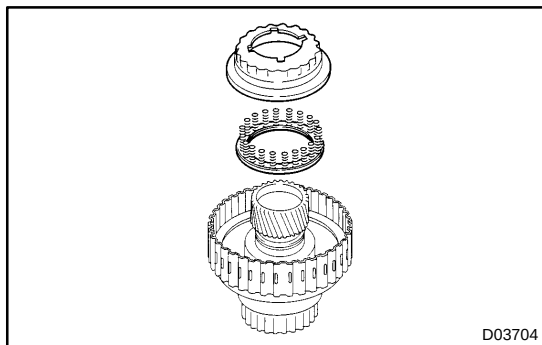
- (a) Place SST on the clutch balancer and compress the spring with a press.

SST 09350-32014 (09351-32070)

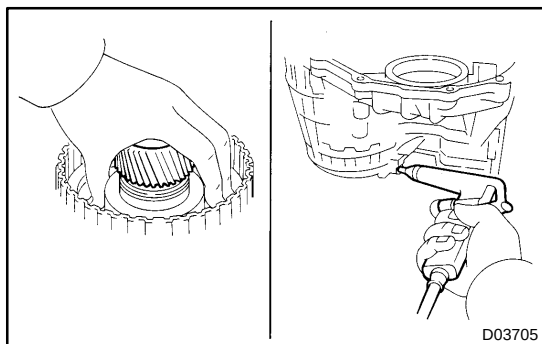
- (b) Using a snap ring expander, remove the snap ring.

NOTICE:

- Stop the press 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 deforming.
- Do not expand the snap ring excessively.



- (c) Remove the clutch balancer and piston return spring from the U/D clutch drum.



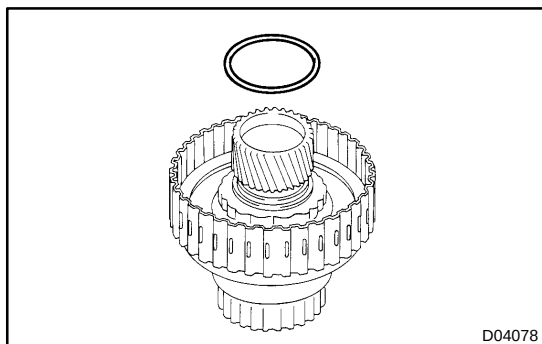
4. REMOVE U/D CLUTCH PISTON

- (a) Install the U/D clutch to the transfer case.

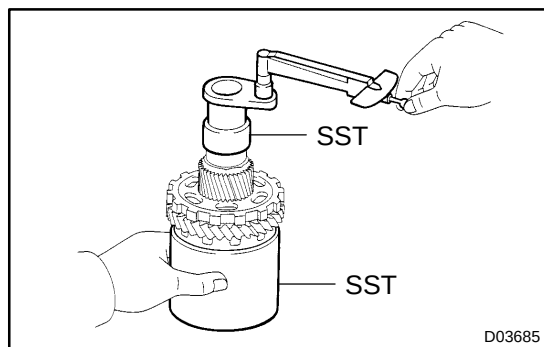
NOTICE:

Be careful not to damage the oil seal rings.

- (b) Holding the U/D clutch piston with your hand, apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the transaxle case to remove the U/D clutch piston.



5. REMOVE O-RING



DISASSEMBLY

1. MEASURE TURNING TORQUE OF U/D OUTPUT SHAFT

Using SST and a small torque wrench, measure the turning torque of the U/D output shaft.

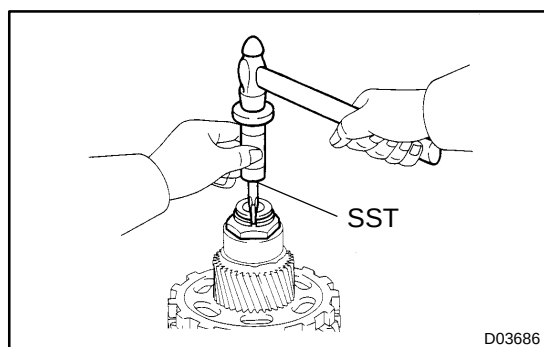
SST 09387-00050, 09564-16020

Turning torque at 60 rpm:

0.79 - 5.77 N·m (8 - 59 kgf·cm, 7.0 - 51.1 in.·lbf)

HINT:

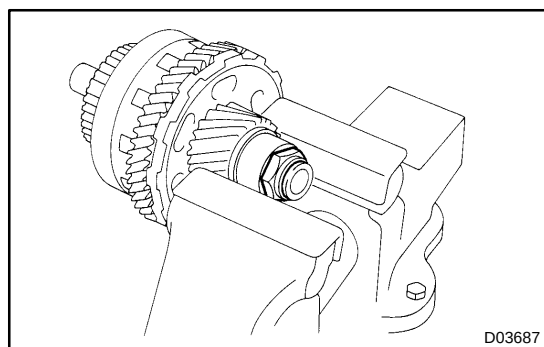
Use a torque wrench with a fulcrum length of 160 mm (6.3 in.).



2. REMOVE CYLINDRICAL ROLLER BEARING INNER RACE

(a) Using SST, loosen the staked part of the nut.

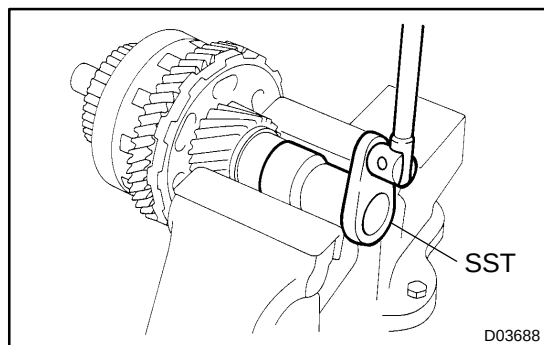
SST 09930-00010 (09931-00010, 09930-00020)



(b) Clamp the U/D planetary gear in soft jaw vise.

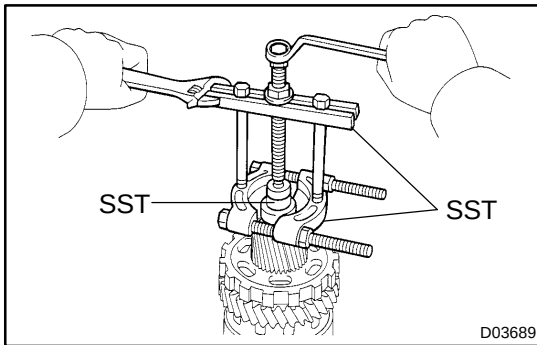
NOTICE:

Be careful not to damage the differential drive pinion.

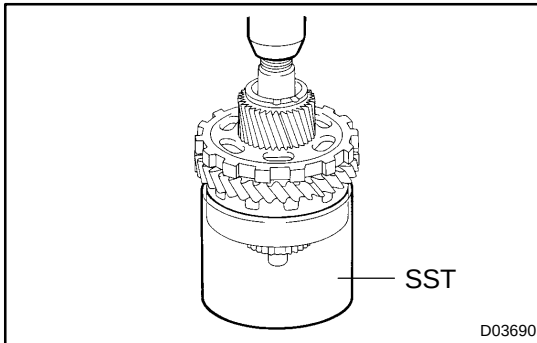


(c) Using SST, remove lock nut.

SST 09564-16020

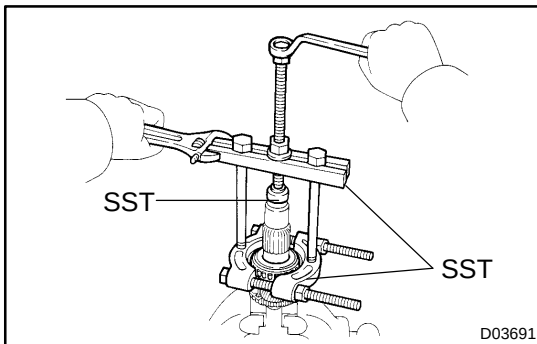


- (d) Using SST, remove cylindrical roller bearing inner race.
SST 09950-00020, 09950-00030, 09950-60010
(09951-00340)

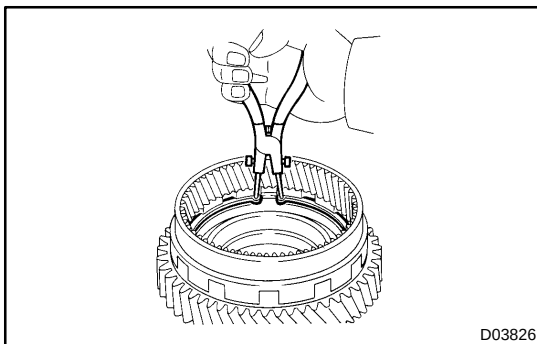


3. REMOVE U/D PLANETARY GEAR

- (a) Using SST and a press, remove the differential drive pinion, parking lock gear, counter driven gear with U/D planetary ring gear and tapered roller bearing FR.
SST 09387-00050

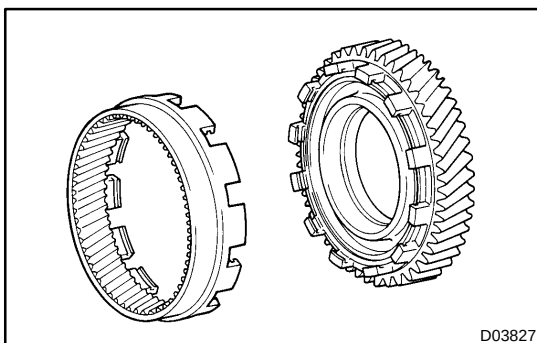


- (b) Clamp the U/D planetary gear in soft jaw vise.
(c) Using SST, remove the tapered roller bearing RR from the U/D planetary gear.
SST 09950-00020, 09950-00030, 09950-60010
(09951-00320)

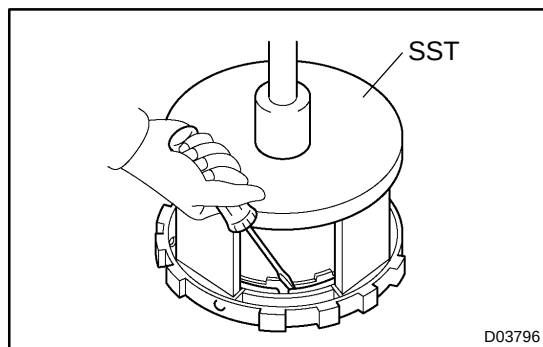


4. REMOVE U/D PLANETARY RING GEAR

- (a) Using snap ring pliers, remove snap ring.



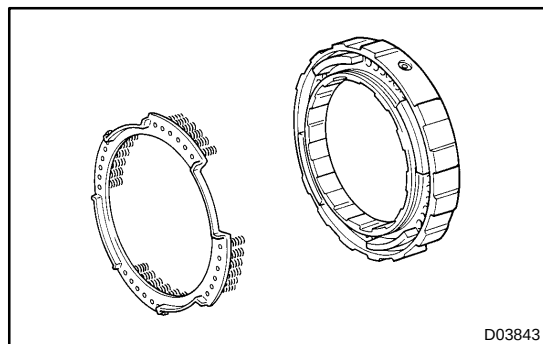
- (b) Remove the U/D planetary ring gear from the counter driven gear.



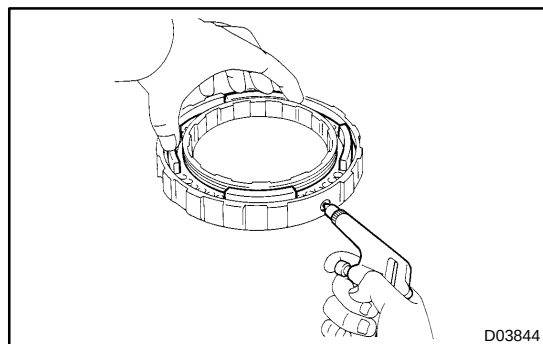
DISASSEMBLY

1. REMOVE PISTON RETURN SPRING

- (a) Place SST on the piston return spring and compress.
SST 09387-00060
- (b) Using a screwdriver, remove the snap ring.

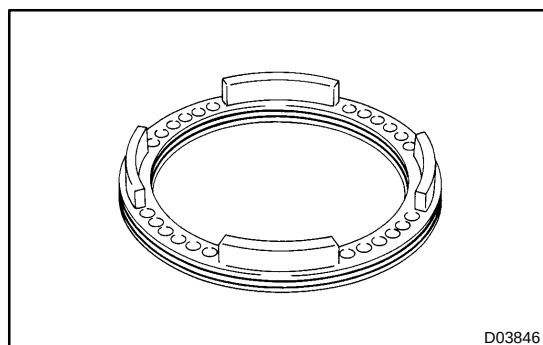


- (c) Remove the piston return spring.

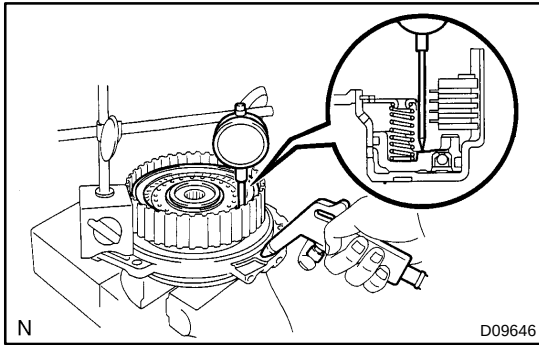


2. REMOVE 2ND BRAKE PISTON

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



- (b) Remove the 2 O-rings from the 2nd brake piston.



DISASSEMBLY

1. CHECK PISTON STROKE OF FORWARD CLUTCH

- (a) Install the forward clutch on the oil pump.

NOTICE:

Be careful not to damage the oil seal ring of oil pump.

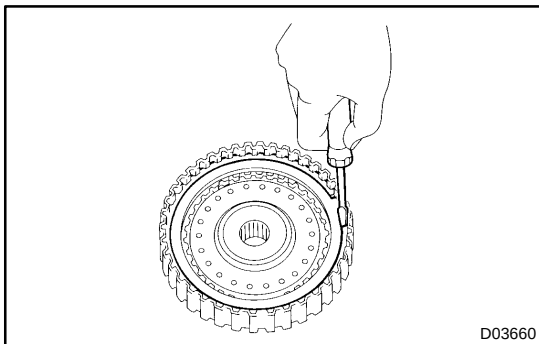
- (b) Using a dial indicator, measure the forward clutch piston stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Piston stroke: 1.41 - 1.75 mm (0.0555 - 0.0689 in.)

If the clearance is non-standard, inspect the discs, plates flange.

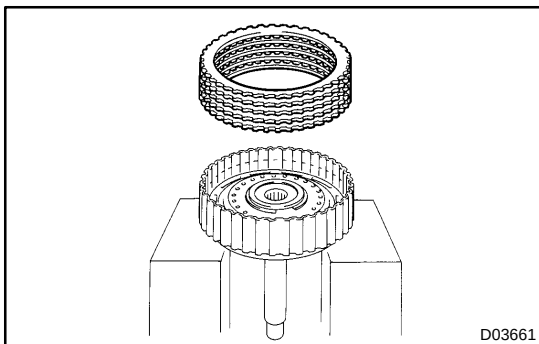
HINT:

As the opening is big, cover it with a shop rug as well as an compressed air th prevent the air from discharging.

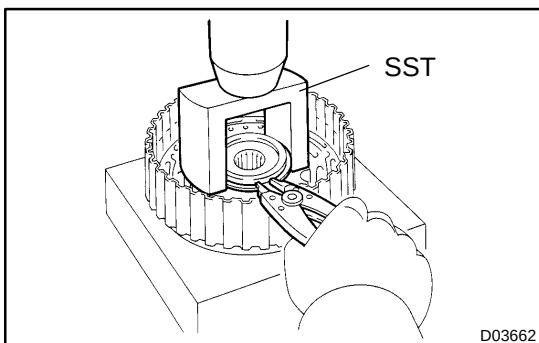


2. REMOVE FLANGE, PLATE AND DISC

- (a) Using a screwdriver, remove the snap ring from the forward clutch drum.



- (b) Remove the flange, 4 discs and 4 plates.

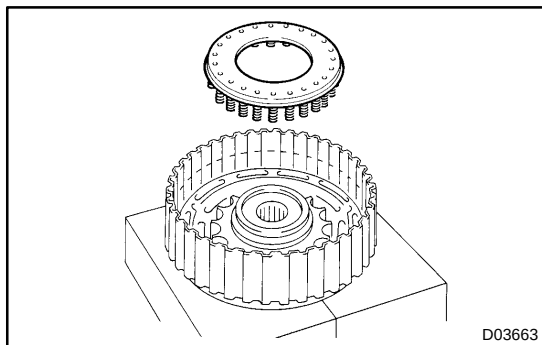


3. REMOVE PISTON RETURN SPRING

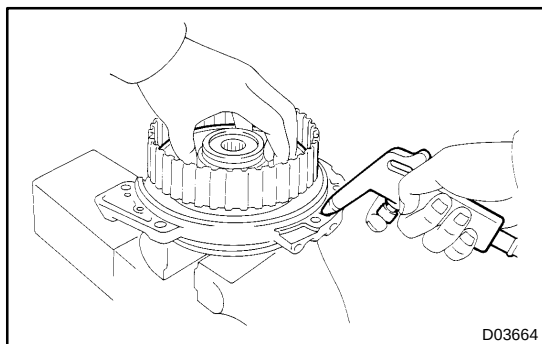
- (a) Place SST on the spring retainer and compress the return spring with a press.

SST 09350-32014 (09351-32070)

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



(c) Remove the piston return spring.

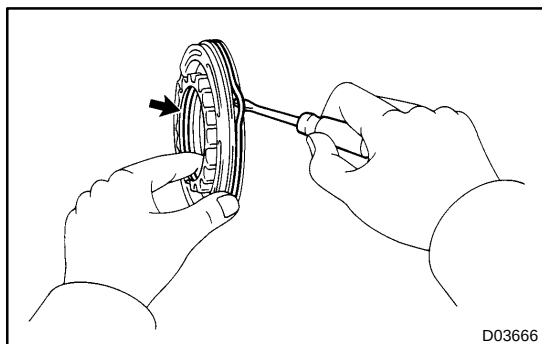


4. REMOVE FORWARD CLUTCH PISTON

- (a) Place the forward clutch drum onto the oil pump.
- (b) Holding the forward clutch piston with your hand, apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the oil pump to remove the forward clutch piston.

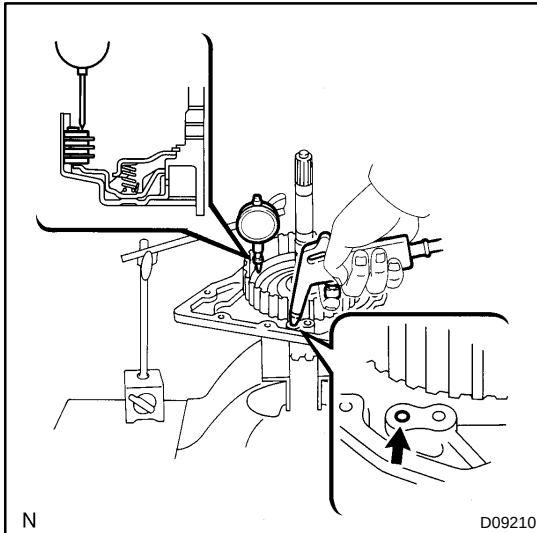
HINT:

When the piston can not be removed as it is slanted, either blow the air again with the protruding side pushed or remove the piston using the needle nose plier with vinyl tape on the tip.



5. REMOVE O-RING

Using a small screwdriver, remove the 2 O-rings.



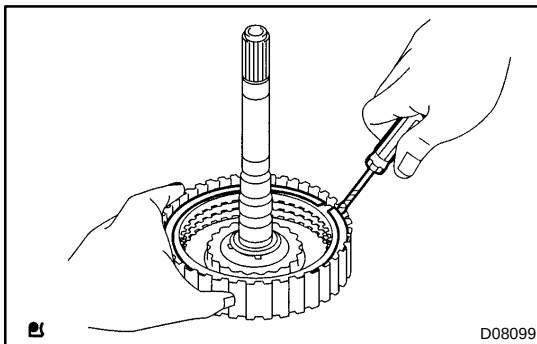
DISASSEMBLY

1. CHECK PISTON STROKE OF DIRECT CLUTCH

- Install the direct clutch and needle roller bearing on the transaxle rear cover.
- Using a dial indicator, measure the direct clutch piston stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

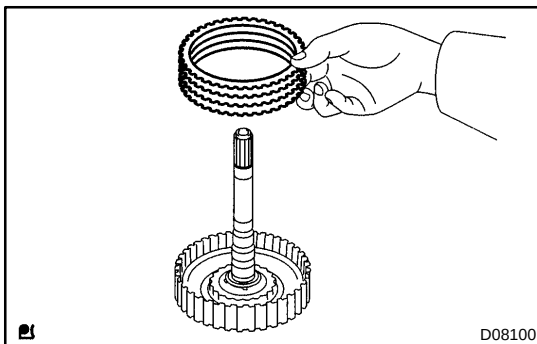
Piston stroke: 0.61 - 0.83 mm (0.0240 - 0.0327 in.)

If the stroke is non-standard, inspect the discs, plates and flange.



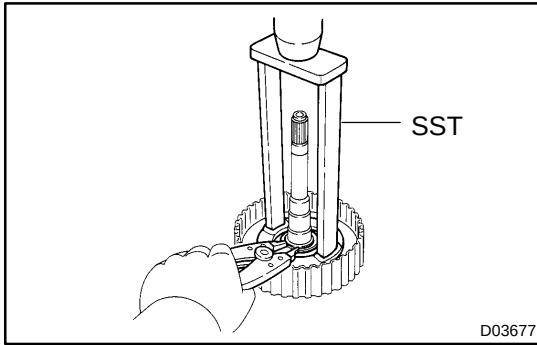
2. REMOVE SNAP RING

Using a screwdriver, remove the snap ring from the direct clutch drum.



3. REMOVE FLANGE, DISC AND PLATE

Remove the flange, 3 discs and 3 plates from the direct clutch drum.

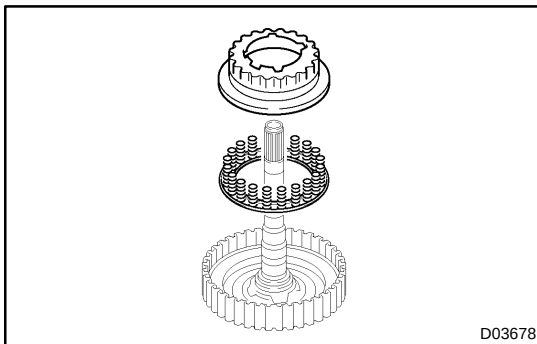


4. REMOVE PISTON RETURN SPRING

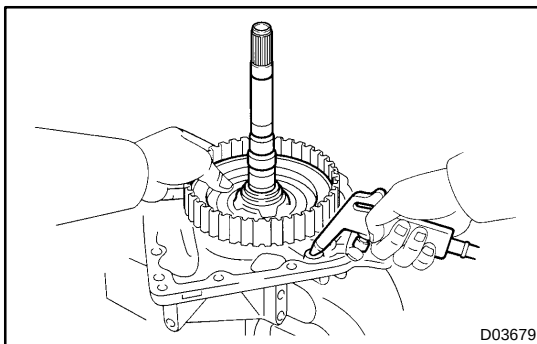
- (a) Place SST on the clutch balancer and compress the springs with a press.
SST 09387-00020
- (b) Using a snap ring expander, remove the snap ring from the direct clutch drum.

NOTICE:

- Stop the press 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 the deforming.
- Do not expand the snap ring excessively.

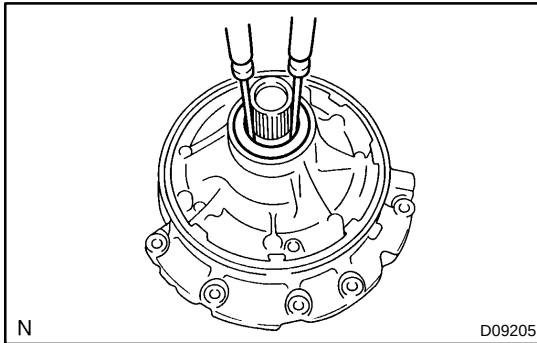


- (c) Remove the clutch balancer and piston return spring from the direct clutch drum.



5. REMOVE DIRECT CLUTCH PISTON

- (a) Install direct clutch on the transaxle rear cover.
- (b) Holding the direct clutch piston with your hand, apply compressed air (392 kPa, 4.0 kgf·cm², 57 psi) to the transaxle rear cover to remove the direct clutch piston.



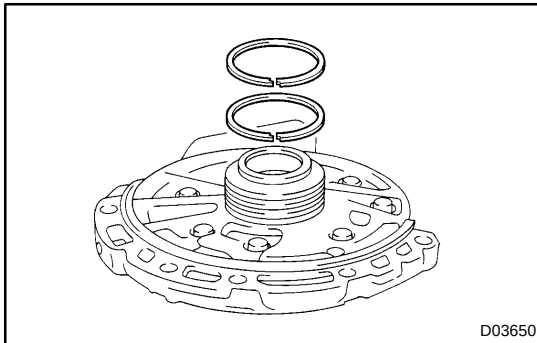
DISASSEMBLY

1. CHECK PUMP DRIVE GEAR ROTATION

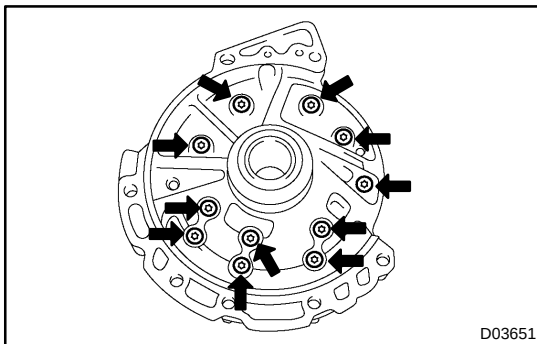
Turn the drive gear with 2 screwdrivers and make sure it rotates smoothly.

NOTICE:

Be careful not to damage the oil seal lip.

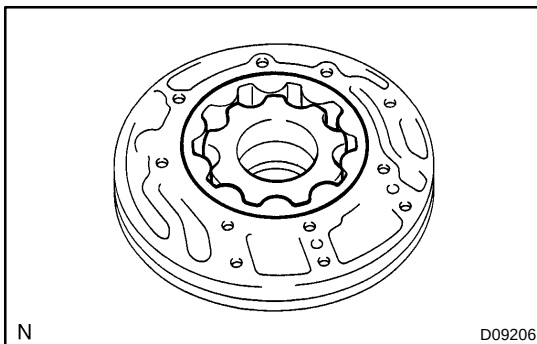


2. REMOVE 2 OIL SEAL RINGS

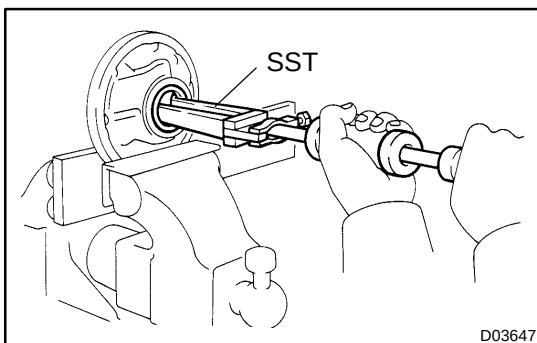


3. REMOVE STATOR SHAFT

Using a torx socket T30, remove the 11 bolts and stator shaft. Keep the gears in assembling order.

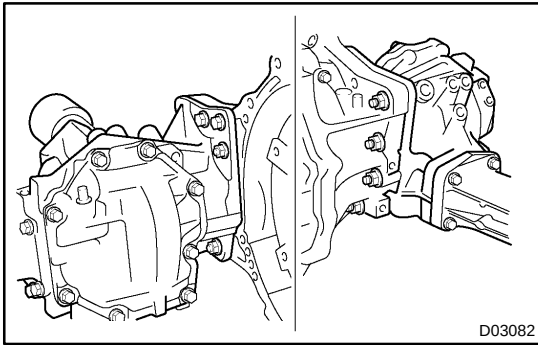


4. REMOVE OIL PUMP DRIVE GEAR AND DRIVEN GEAR



5. REMOVE OIL SEAL

- Mount oil pump in a soft jaw vise.
- Using SST, remove oil seal from the oil pump body.
SST 09308-00010



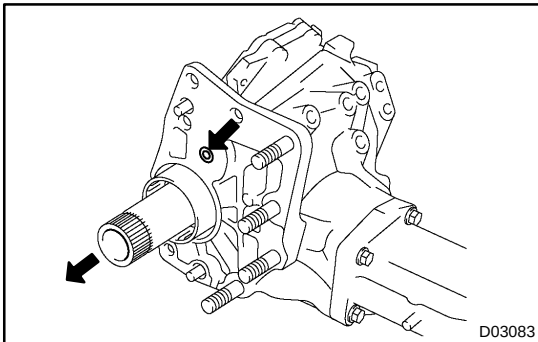
DISASSEMBLY

1. REMOVE TRANSFER ASSEMBLY

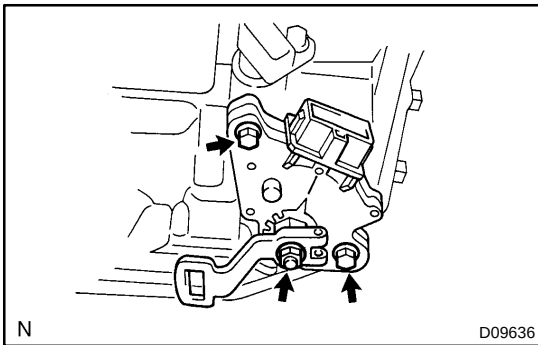
- Remove the 2 bolts and 6 nuts.
- Using a plastic hammer, remove the transfer assembly from the transaxle assembly.

NOTICE:

- Pull the transfer straight up and remove it from the transaxle.
- Pulling up the transfer case by inserting your fingers into the holes on both sides may cause damage to the oil seal lip. Be careful not to damage it.

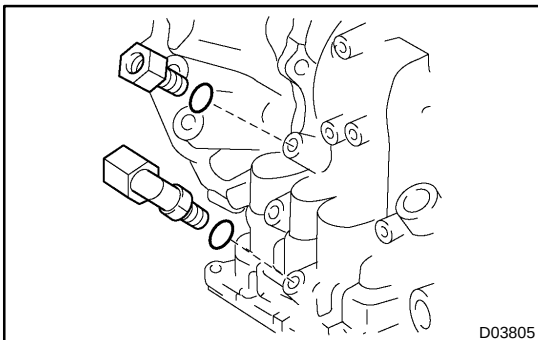


2. REMOVE GASKET AND INTERMEDIATE SHAFT



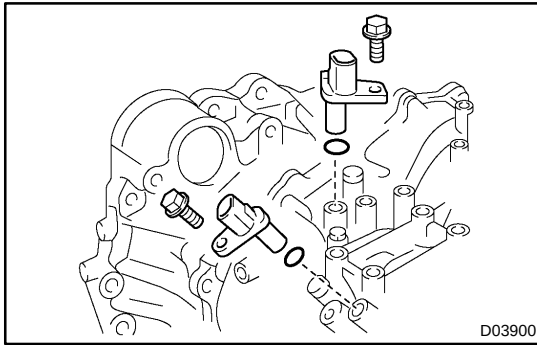
3. REMOVE PARK/NEUTRAL POSITION SWITCH

- Remove the nut, washer and control shaft lever.
- Using a screwdriver, unstake the nut stopper.
- Remove the nut.
- Remove the 2 bolts, and pull out the park/neutral position switch.

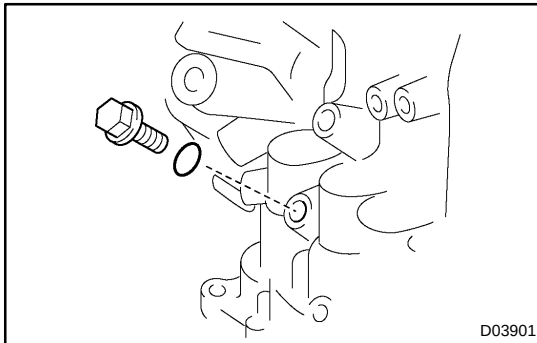


4. REMOVE UNION AND ELBOW

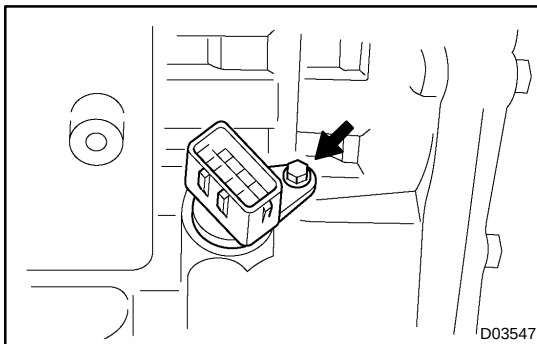
- Remove the union and elbow.
- Remove the 2 O-rings from the union and elbow.

**5. REMOVE SPEED SENSOR**

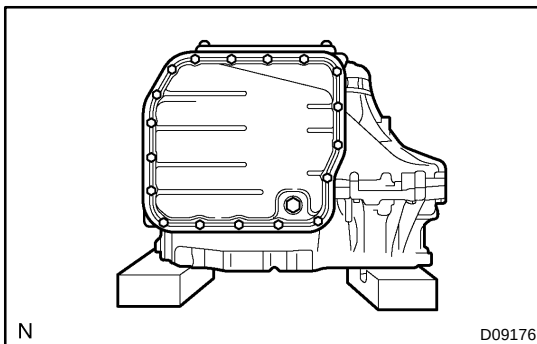
- (a) Remove the 2 bolts and the 2 speed sensors from the transaxle.
- (b) Remove the 2 O-rings from the sensors.

**6. REMOVE TRANSAXLE CASE PLUG NO.1**

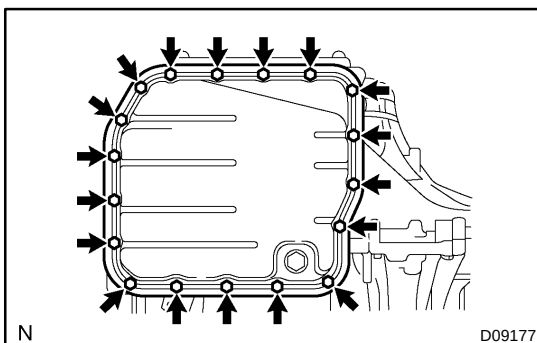
- (a) Remove the transaxle case plug No. 1 from the transaxle case.
- (b) Remove the O-ring from the transaxle case plug No. 1.

**7. REMOVE SOLENOID WIRE RETAINING BOLT****NOTICE:**

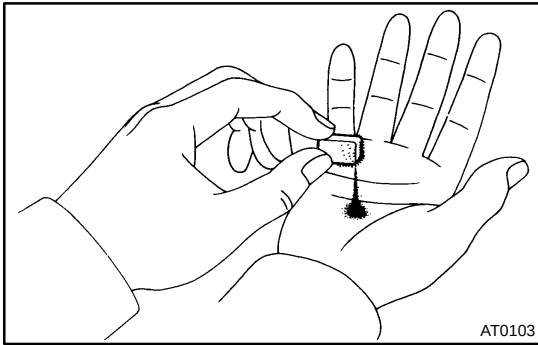
Remove the bolt only and do not remove the solenoid wire.

**8. PLACE TRANSAXLE ON WOODEN BLOCKS****NOTICE:**

Be careful not to damage the oil seal.

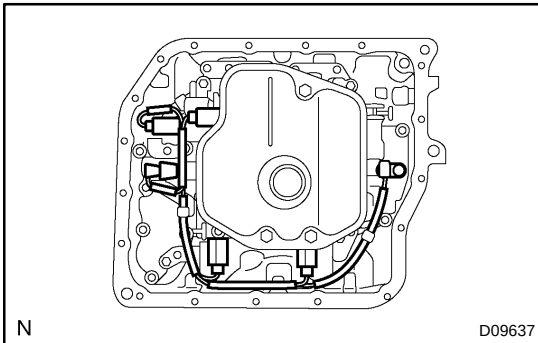
**9. REMOVE OIL PAN AND GASKET**

- (a) Remove the 18 bolts.
- (b) Remove the oil pan and gasket.



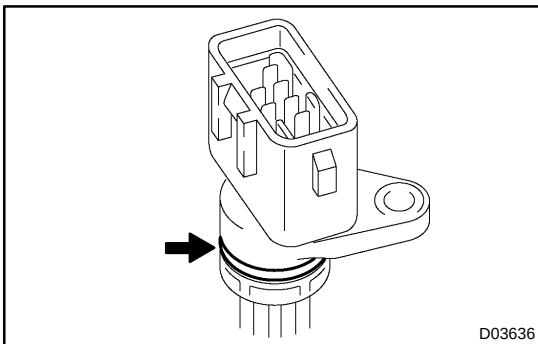
10. EXAMINE PARTICLES IN PAN

Remove the magnets and use them to collect any steel chips. Examine the chips and particles in the pan and on the magnet to determine what type of wear has occurred in the transaxle:
Steel (magnetic)..... bearing, gear and plate wear
Brass (non-magnetic)..... bushing wear

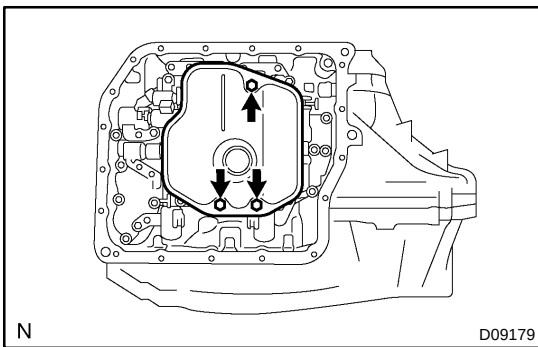


11. REMOVE TRANSAXLE SOLENOID WIRE

- Remove the 5 connectors from the shift solenoid valves.
- Remove the bolt, the clamp and the ATF temperature sensor.
- Remove the transaxle solenoid wire from the transaxle case.

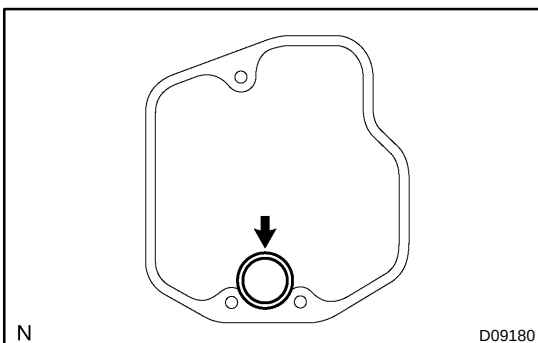


- Remove the O-ring from the transaxle solenoid wire.

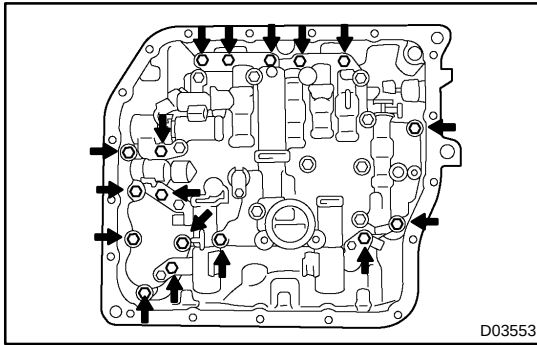


12. REMOVE OIL STRAINER

- Remove the 3 bolts and oil strainer.

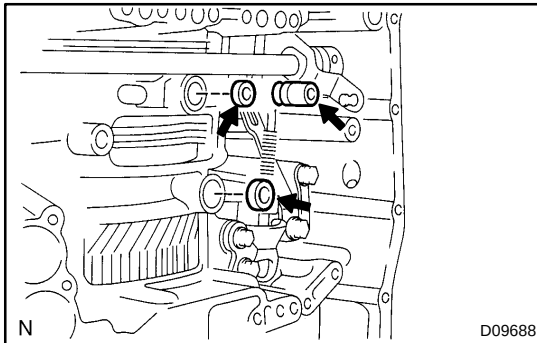


- Remove the O-ring from the oil strainer.

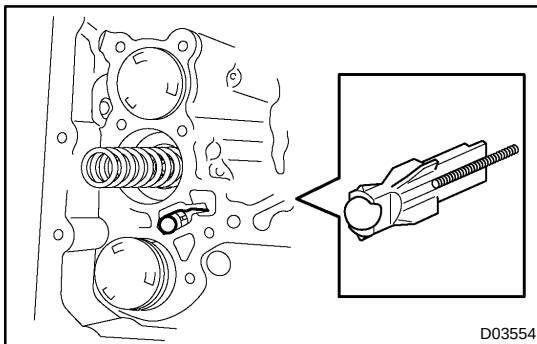


13. REMOVE VALVE BODY ASSEMBLY

Support the valve body assembly and remove the 17 bolts and the valve body assembly.

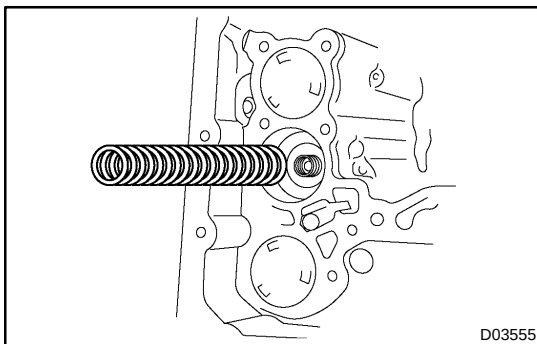


14. REMOVE 3 APPLY GASKETS



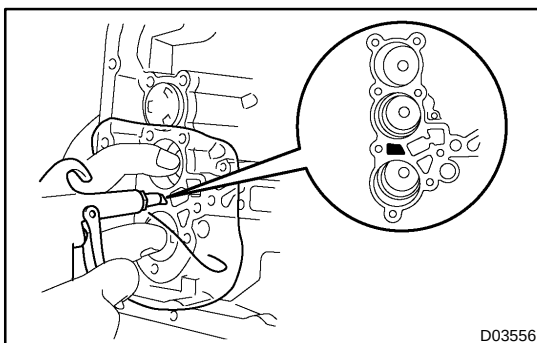
15. REMOVE CHECK BALL BODY

Remove the check ball body and spring.



16. REMOVE ACCUMULATOR SPRING AND PISTON

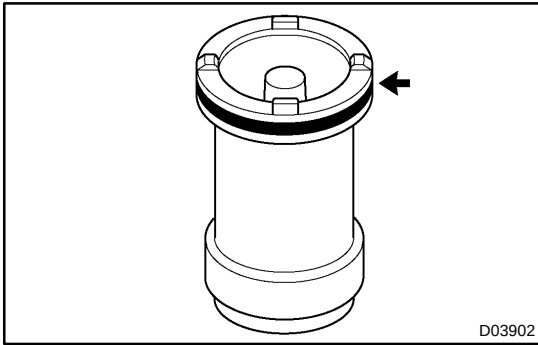
(a) Remove the spring from the C₃ accumulator piston.



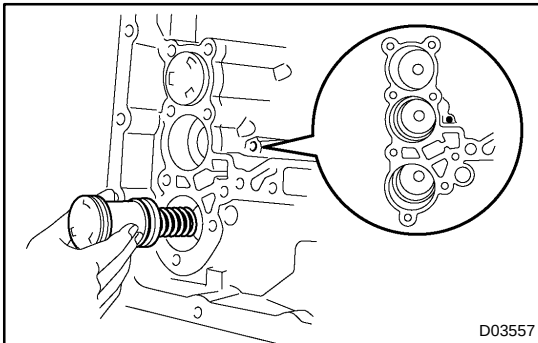
(b) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the oil hole and remove the C₃ accumulator piston.

NOTICE:

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



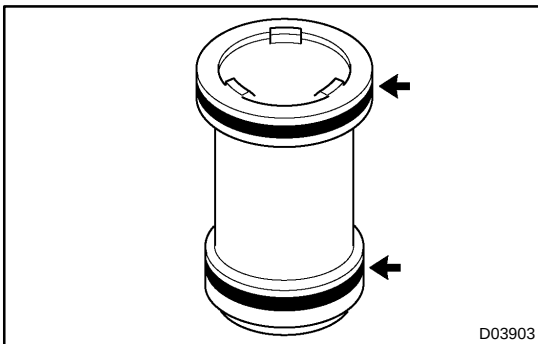
(c) Remove the O-ring from the piston.



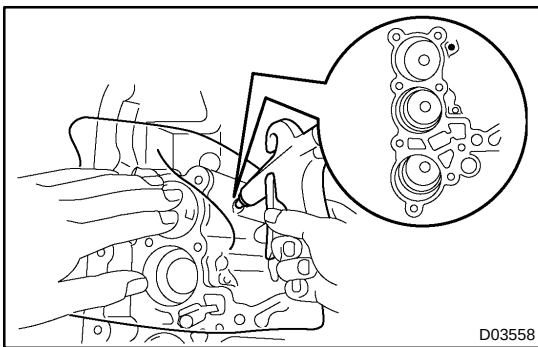
(d) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the oil hole and remove the C₁ accumulator piston and spring.

NOTICE:

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



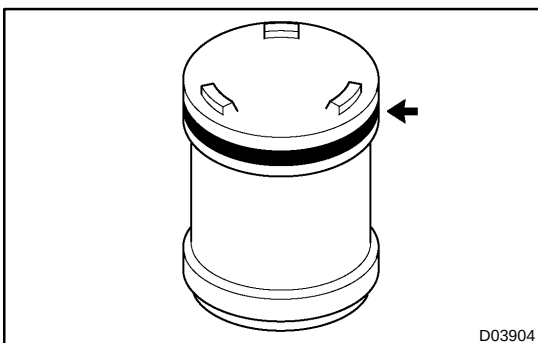
(e) Remove the 2 O-rings from the piston.



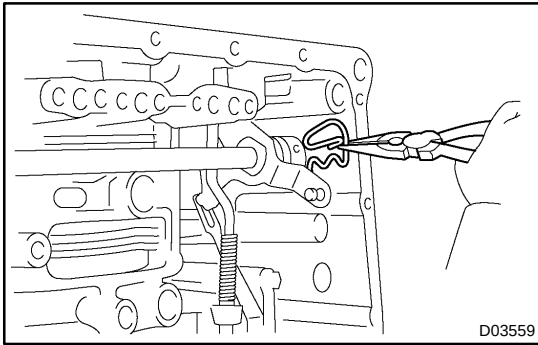
(f) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the oil hole and remove the B₃ accumulator piston and 2 springs.

NOTICE:

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

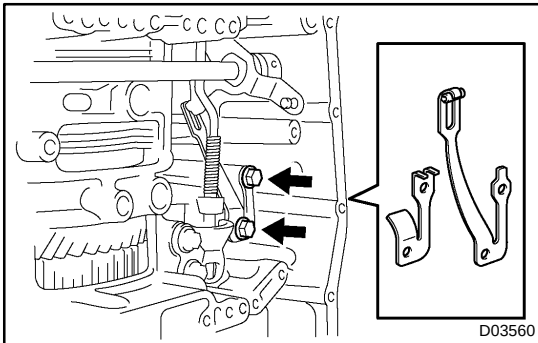


(g) Remove the O-ring from the piston.

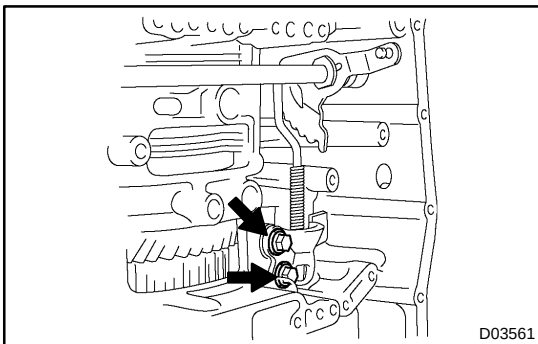


17. REMOVE MANUAL VALVE LEVER SHAFT

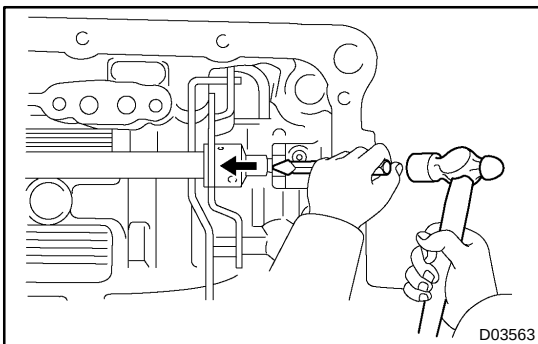
- (a) Using needle-nose pliers, remove the retainer spring.



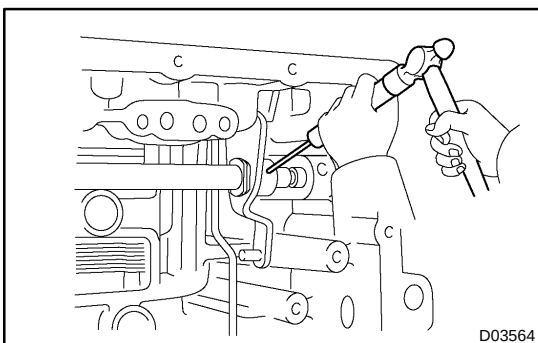
- (b) Remove the 2 bolts, the manual detent spring and cover.



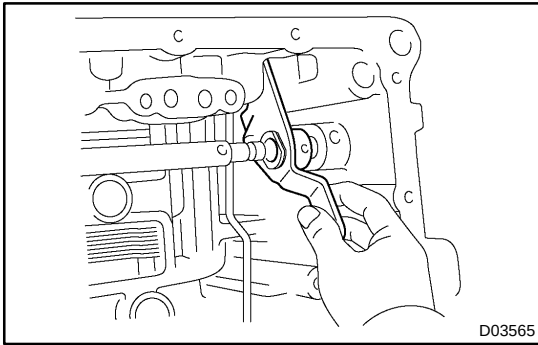
- (c) Remove the 2 bolts and the parking lock pawl bracket.



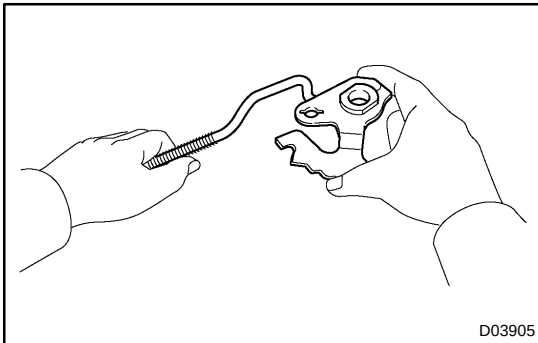
- (d) Using a chisel and hammer, unstake and remove the spacer.



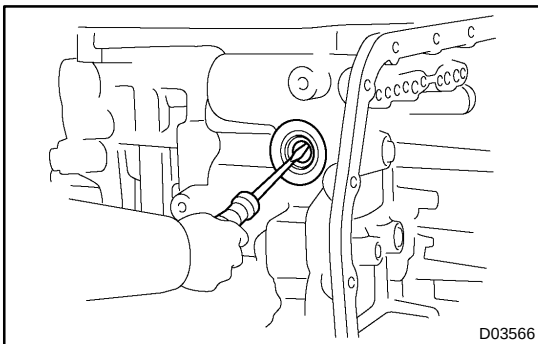
- (e) Using a pin punch and hammer, drive out the pin.
HINT:
Slowly drive out the pin so that it will not fall into the transaxle case.



- (f) Remove the manual valve lever shaft and manual valve lever.



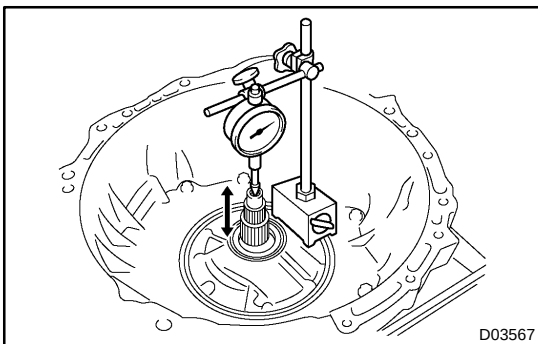
- (g) Remove the parking lock rod from the manual valve lever shaft.



- (h) Using a screwdriver, remove the oil seal.

18. PLACE TRANSAXLE CASE

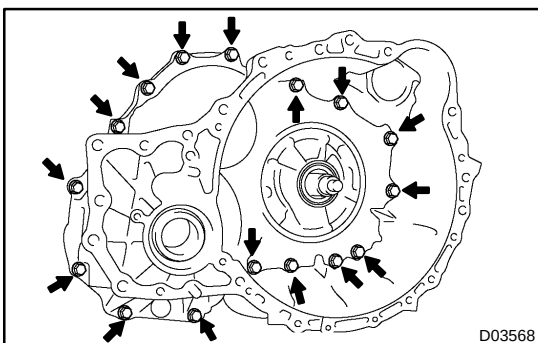
Fix the transaxle case with the oil pump side facing up.



19. INSPECT INPUT SHAFT END PLAY

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

End play: 0.26 - 1.25 mm (0.0103 - 0.0492 in.)

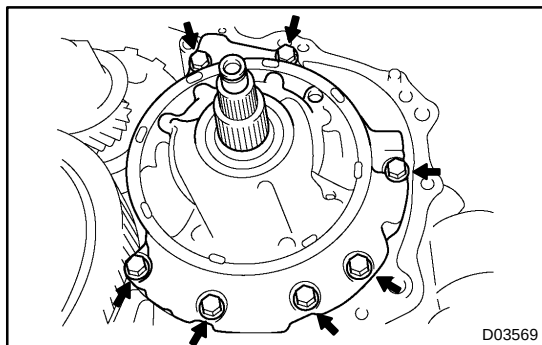


20. REMOVE TRANSAXLE HOUSING

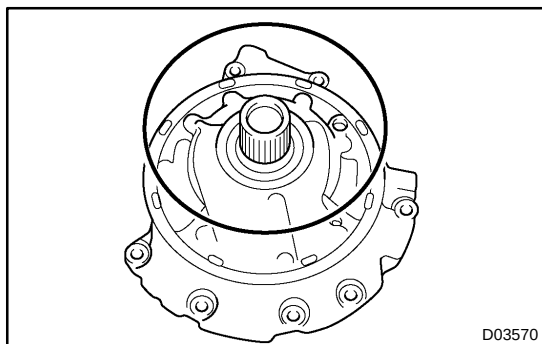
- Remove the 16 bolts.
- Tap on the circumference of the transaxle housing with a plastic hammer to remove the transaxle housing from the transaxle case.

NOTICE:

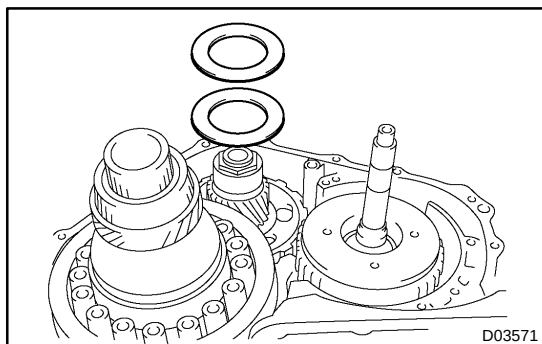
Differential may be accidentally removed when the transaxle housing is removed.

**21. REMOVE OIL PUMP**

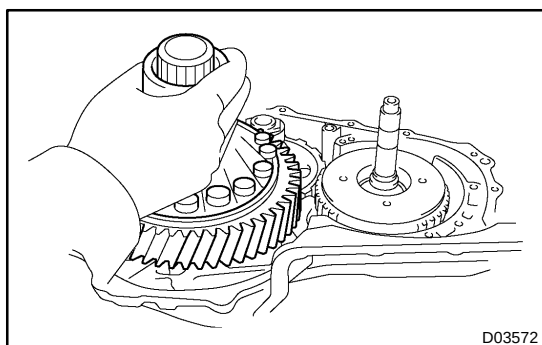
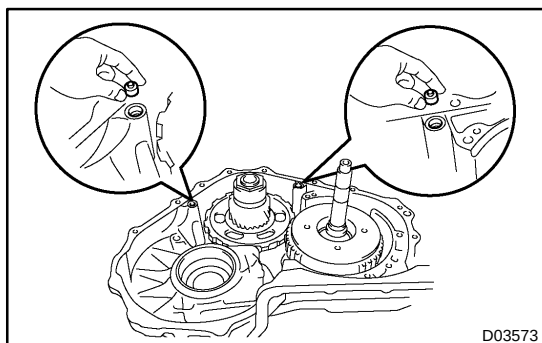
- (a) Remove the 7 bolts and oil pump.

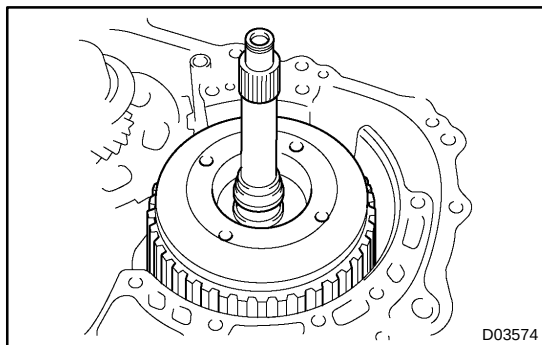


- (b) Remove the O-ring from the oil pump.

**22. REMOVE THRUST BEARING AND BEARING RACE**

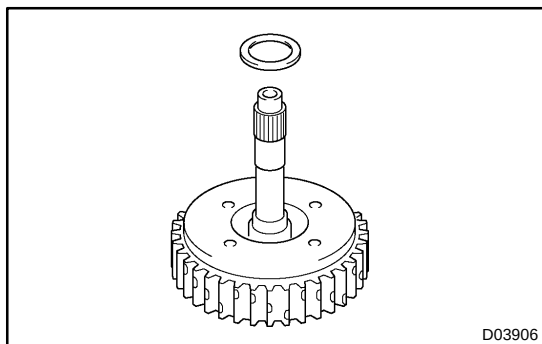
Remove thrust bearing and bearing race from the U/D planetary gear assembly.

**23. REMOVE DIFFERENTIAL****24. REMOVE 2 APPLY GASKETS**

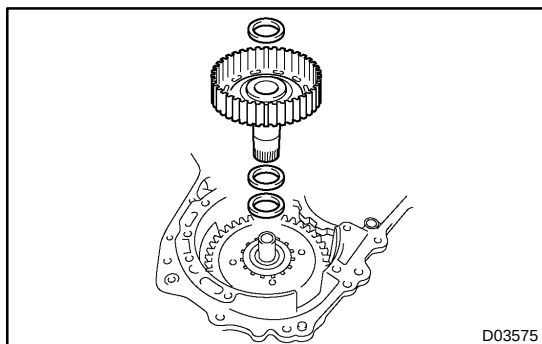


25. REMOVE FORWARD CLUTCH

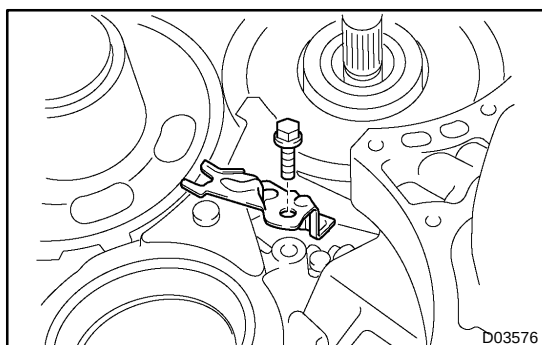
- (a) Remove the forward clutch from the transaxle case.



- (b) Remove the thrust bearing from the forward clutch.

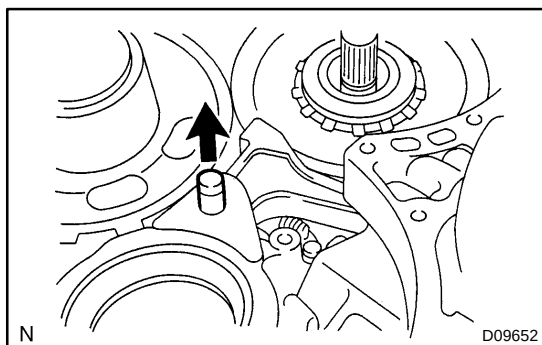


- (c) Remove the thrust bearing, multiple clutch hub, needle roller bearing and bearing race from the transaxle case.

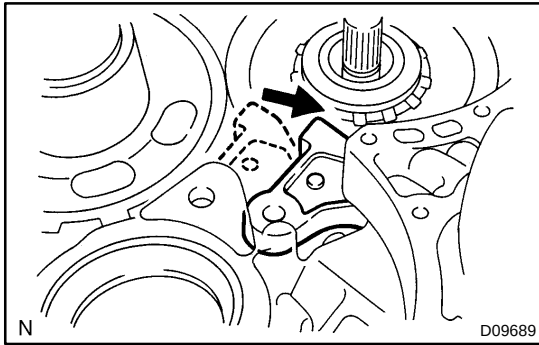


26. REMOVE U/D PLANETARY GEAR ASSEMBLY

- (a) Remove the bolt and parking pawl shaft clamp.



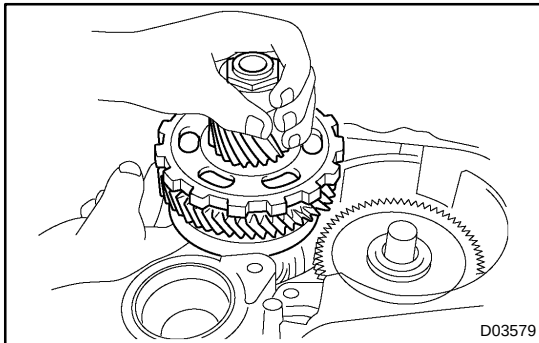
- (b) Remove the parking lock pawl shaft.



(c) Push the parking lock pawl.

HINT:

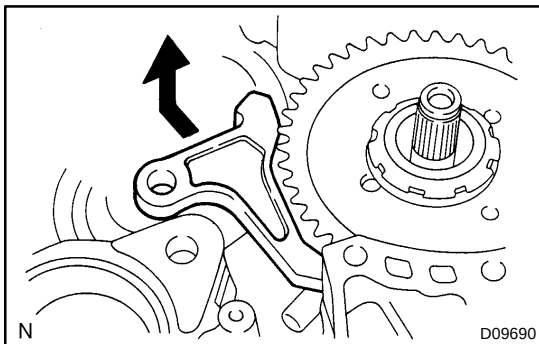
Failure to do so will cause interference when the U/D planetary gear is removed.



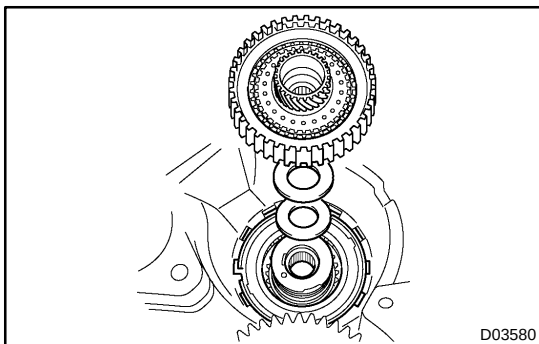
(d) Remove the U/D planetary gear assembly from the transaxle case.

NOTICE:

Be careful that the U/D planetary gear assembly do not fall out.

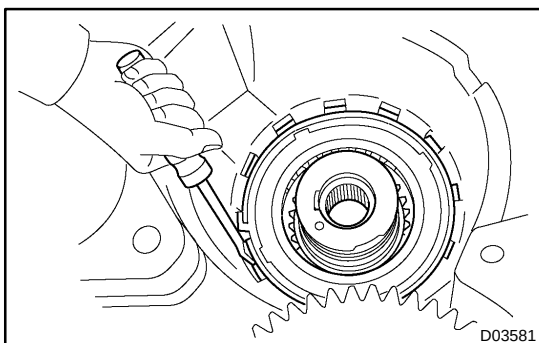


(e) Remove the spring, pawl pin and parking lock pawl.



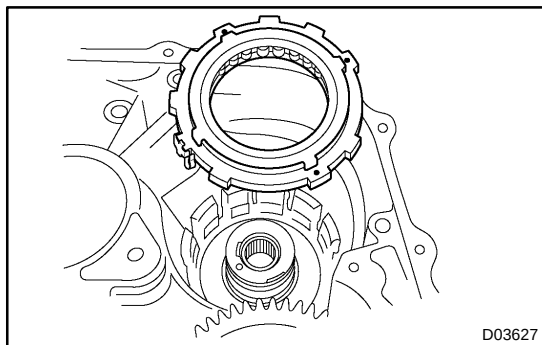
27. REMOVE U/D CLUTCH ASSEMBLY

Remove the U/D clutch assembly, thrust bearing and bearing race from the transaxle case.

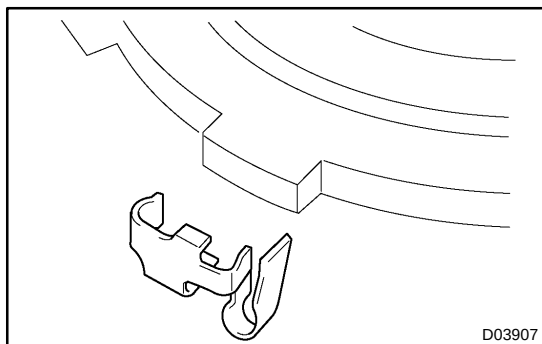


28. REMOVE ONE-WAY CLUTCH NO. 2

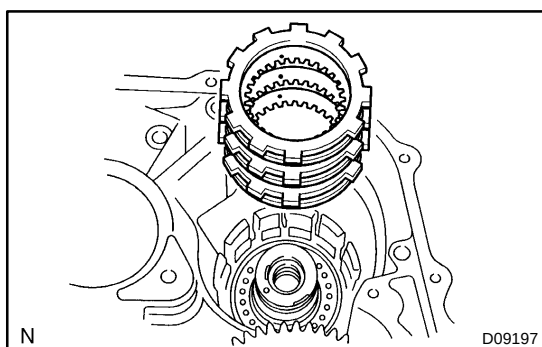
(a) Using a screwdriver, remove the snap ring.



- (b) Remove the one-way clutch No. 2 from the transaxle case.

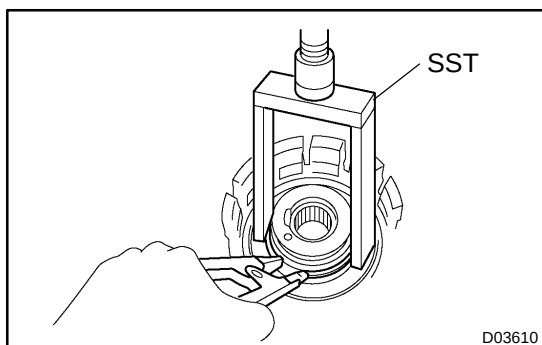


- (c) Remove the outer race retainer from the one-way clutch No. 2.

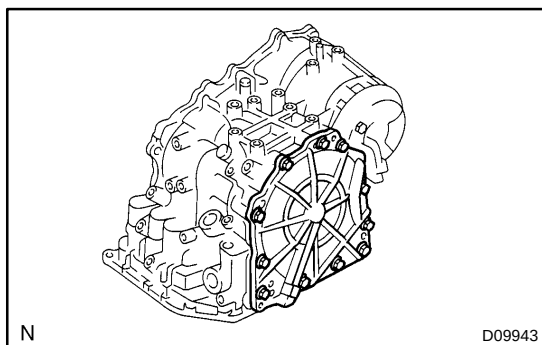


29. REMOVE U/D BRAKE

- (a) Using a screwdriver, remove the snap ring.
(b) Remove the flange, 3 discs and 3 plates from the transaxle case.

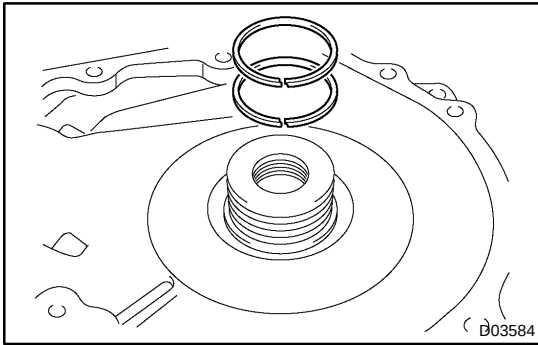


- (c) Using SST, a snap ring expander and a press, remove the snap ring and piston return spring.
SST 09387-00020

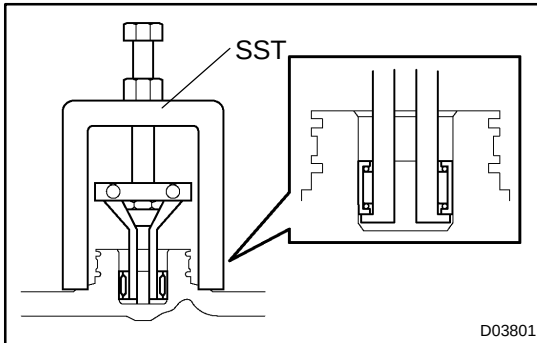


30. REMOVE TRANSAXLE REAR COVER

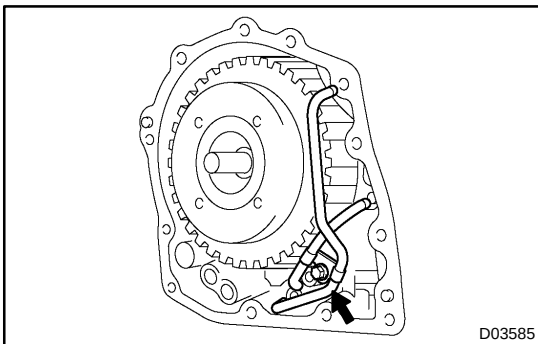
- (a) Remove the 11 bolts.
(b) Tap on the circumference of the rear cover with a plastic hammer to remove the transaxle rear cover from the transaxle case.



- (c) Remove the 2 oil seal rings from the transaxle rear cover.
- (d) Remove the 2 screws and transaxle rear cover plate.

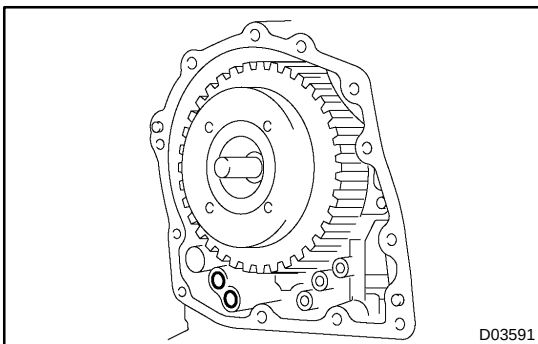


- (e) Using SST, remove the needle-roller bearing.
SST 09387-00040 (09387-01010, 09387-01030, 09387-01040)



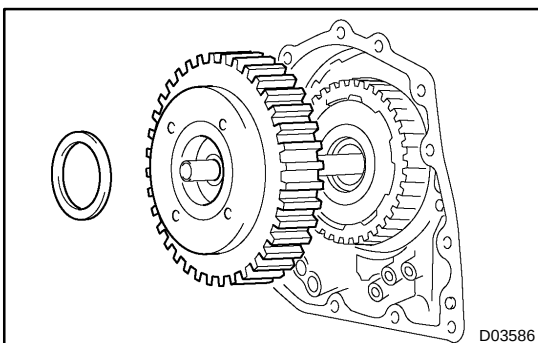
31. REMOVE BRAKE APPLY PIPE

- (a) Remove a bolt, clamp and 2 brake apply pipes.



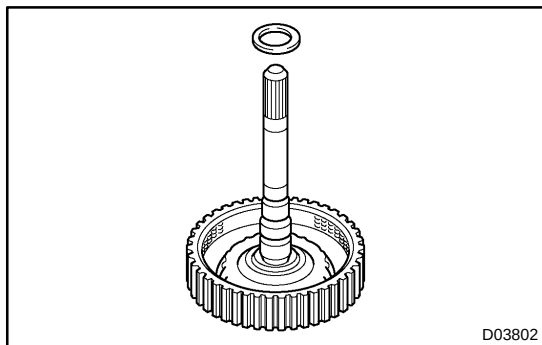
32. REMOVE TRANSAXLE CASE APPLY GASKET

Using a screwdriver, remove the 2 apply gaskets.

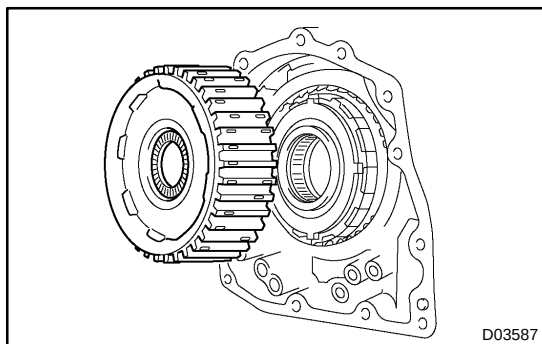


33. REMOVE DIRECT CLUTCH ASSEMBLY

- (a) Remove the thrust bearing and the direct clutch from the transaxle case.

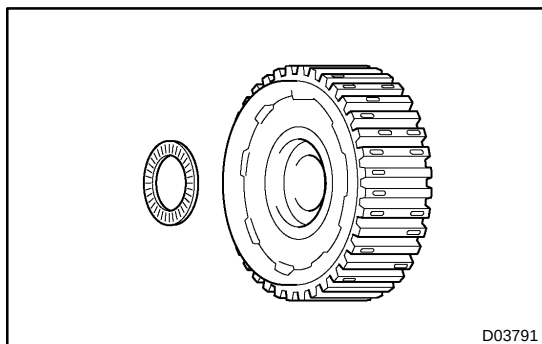


- (b) Remove the bearing race from the direct clutch.

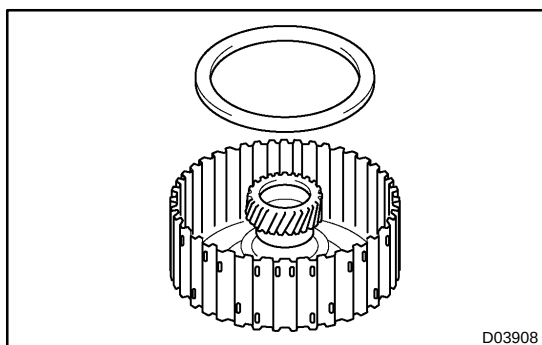


34. REMOVE REAR PLANETARY SUN GEAR ASSEMBLY

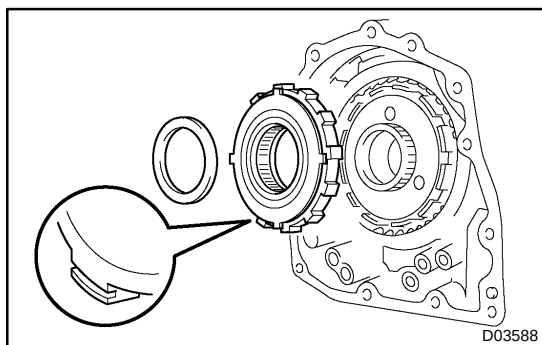
- (a) Remove the rear planetary sun gear assembly from the transaxle case.



- (b) Remove the thrust bearing from the rear planetary sun gear.

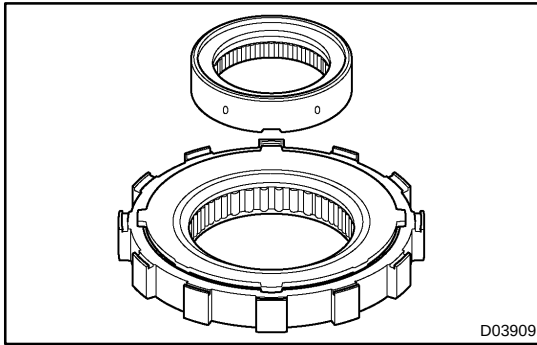


- (c) Remove the thrust washer No. 1 from the rear planetary sun gear.

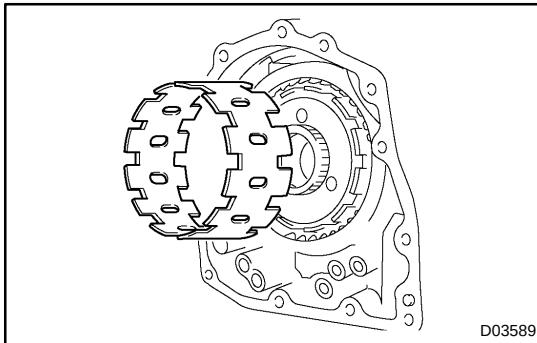


35. REMOVE ONE-WAY CLUTCH NO.1

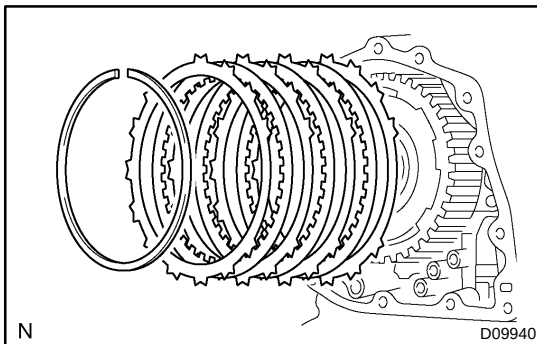
- (a) Remove the one-way clutch No. 1 and the thrust bearing from the transaxle case.



- (b) Remove the inner race from the one-way clutch No. 1.

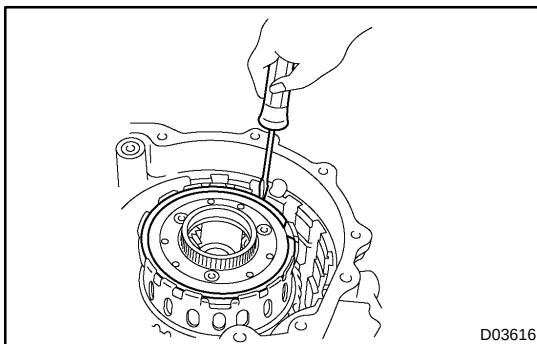


36. REMOVE ONE-WAY CLUTCH OUTER SLEEVE



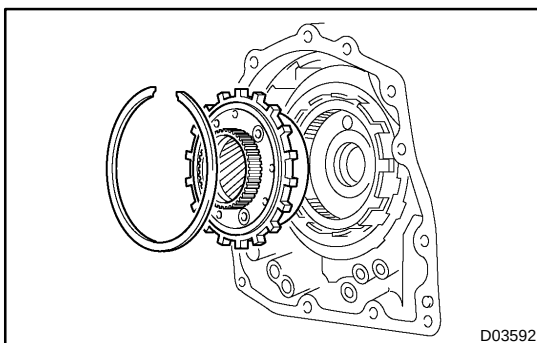
37. REMOVE 2ND BRAKE

- (a) Using a screwdriver, remove the snap ring.
(b) Remove the flange, 3 discs and 3 plates from the transaxle case.

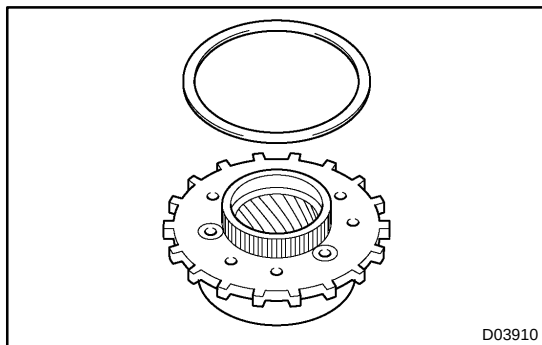


38. REMOVE REAR PLANETARY GEAR

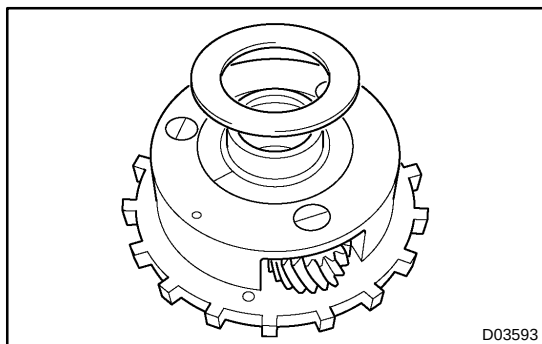
- (a) Using a screwdriver, remove the snap ring.



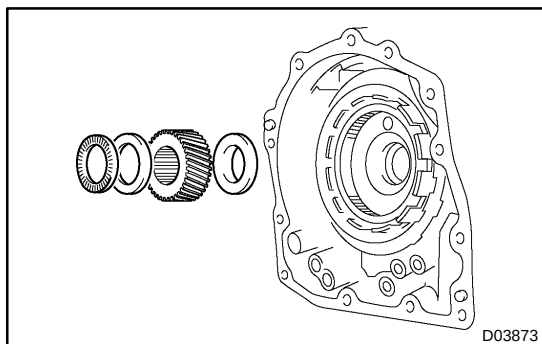
- (b) Remove the rear planetary gear from the transaxle case.



- (c) Remove the thrust washer No. 2 from the rear planetary gear.

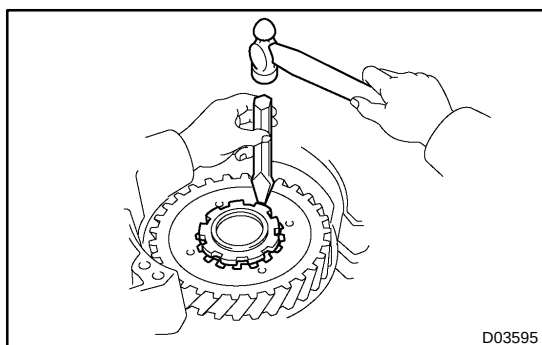


- (d) Remove the bearing race from the rear planetary gear.



39. REMOVE FRONT PLANETARY SUN GEAR

- (a) Remove the 2 thrust bearings, the bearing race and the front planetary sun gear from the transaxle case.

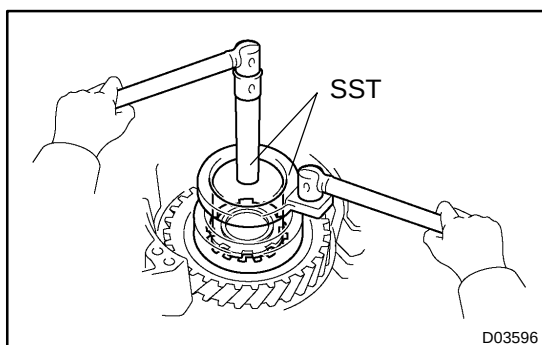


40. REMOVE FRONT PLANETARY GEAR ASSEMBLY AND BRAKE HUB

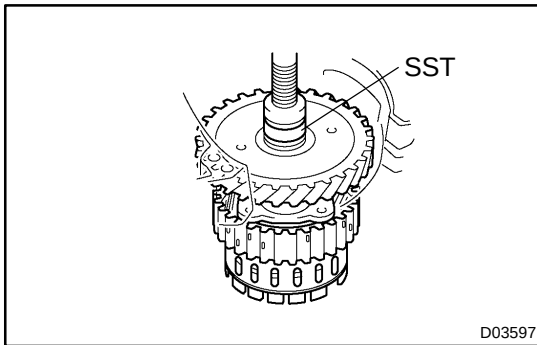
- (a) Using a chisel and a hammer, unstick the lock washer.

NOTICE:

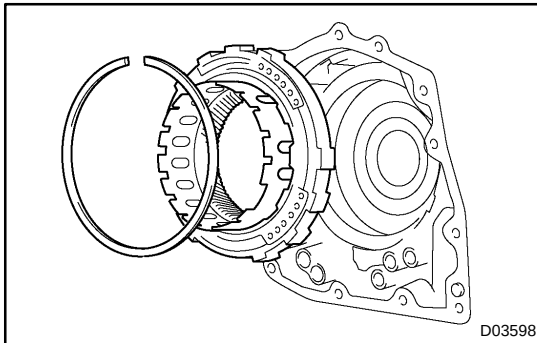
Push down all claws of the washer. Otherwise SST can not be fully pressed against the nut and can not loosen the nut.



- (b) Using SST, remove the nut.
SST 09387-00030, 09387-00080

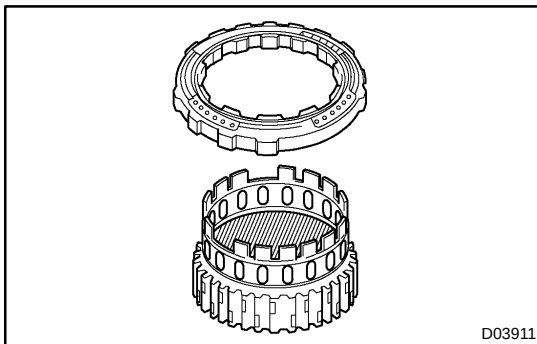


- (c) Using SST and a press, remove the front planetary gear assembly from the counter drive gear.
SST 09950-60010 (09951-00450)

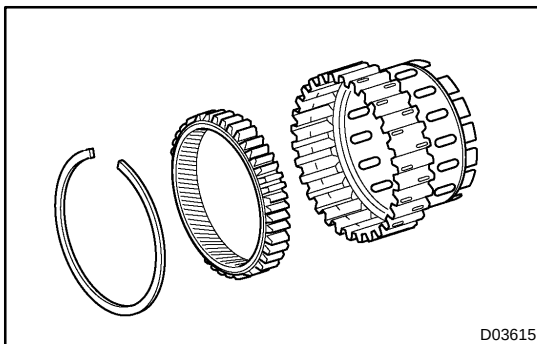


41. REMOVE 2ND BRAKE ASSEMBLY AND FRONT PLANETARY RING GEAR

- (a) Using a screwdriver, remove the snap ring and the brake hub with 2nd brake cylinder assembly.

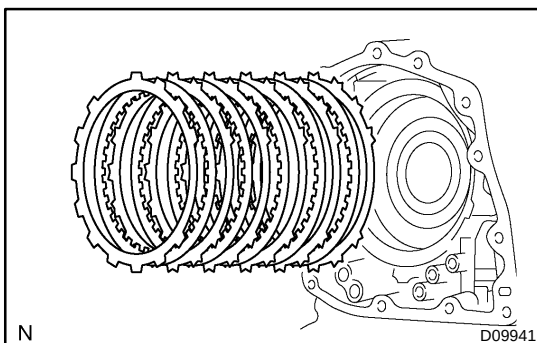


- (b) Remove the brake hub from the 2nd brake cylinder assembly.



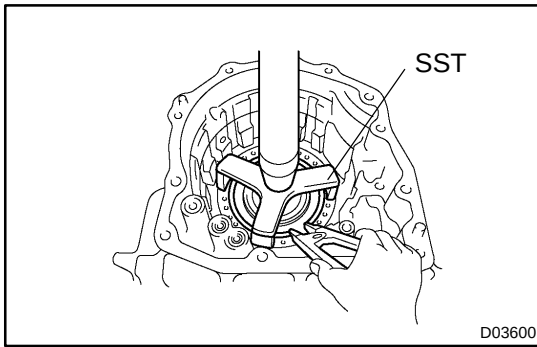
42. REMOVE FRONT PLANETARY RING GEAR

Using a screwdriver, remove the snap ring and front planetary ring gear from the brake hub.



43. REMOVE 1ST & REVERSE BRAKE

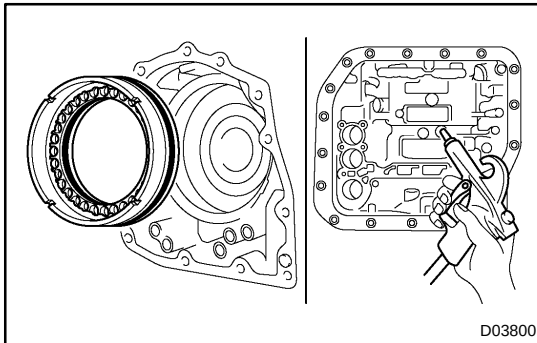
- (a) Remove the flange, 5 discs and 5 plates from the trans-axle case.



- (b) Using SST, a press and a snap ring expander, remove the snap ring and the piston return spring.
SST 09387-00070

NOTICE:

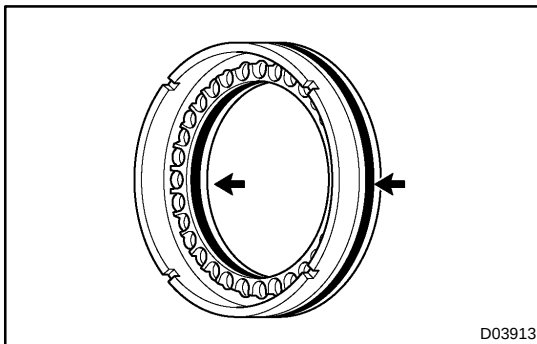
- Stop the press when the spring sheet is lowered 1 - 2 mm (0.039 - 0.078 in.) from the snap ring groove, preventing the spring sheet from deforming.
- Do not expand the snap ring excessively.



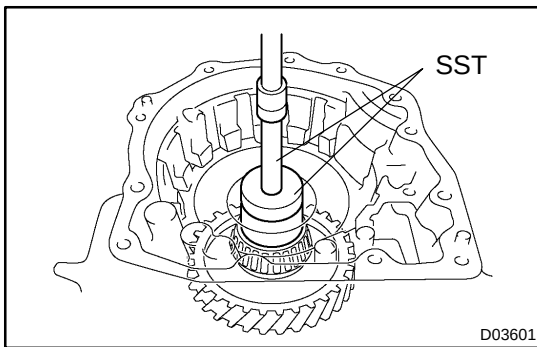
- (c) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the transaxle case to remove 1st & reverse brake piston.

NOTICE:

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



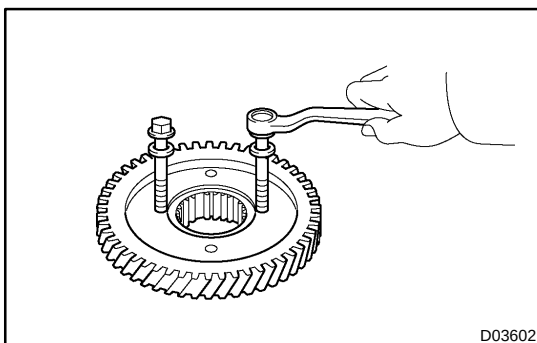
- (d) Remove 2 O-rings from the 1st & reverse brake piston.



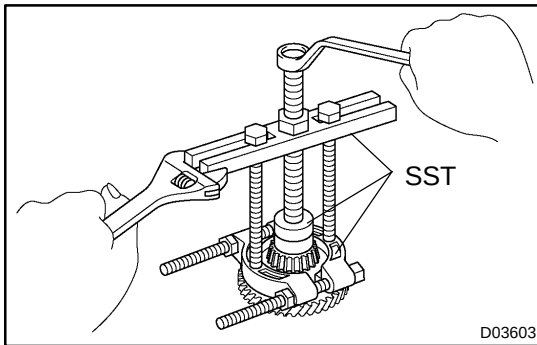
44. REMOVE COUNTER DRIVE GEAR

- (a) Using SST and a press, remove the counter drive gear from the transaxle case.

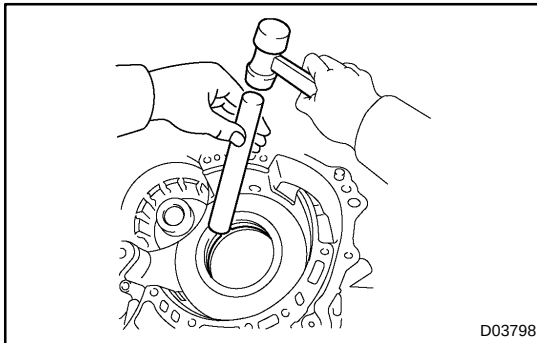
SST 09950-60010 (09951-00600), 09950-70010 (09951-07100)



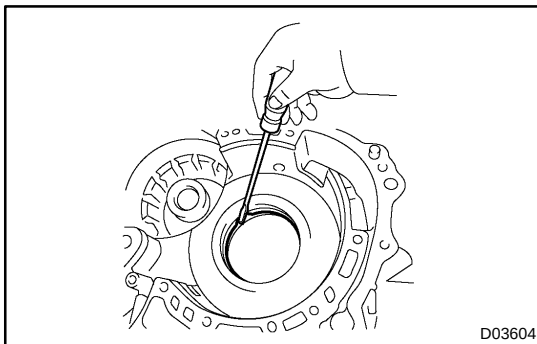
- (b) As shown in the illustration, tighten 2 bolts evenly and make clearance of approx. 20.0 mm (0.797 in.) between the counter drive gear and the inner race.



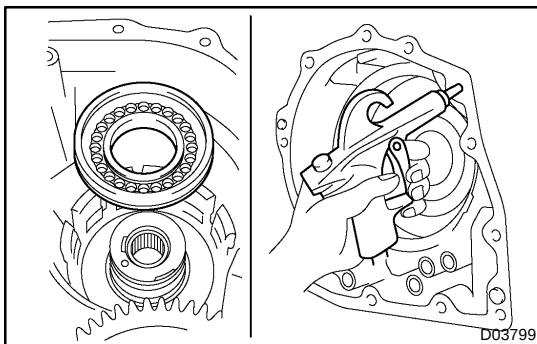
- (c) Using SST, remove the tapered roller bearing RH.
SST 09950-00020, 09950-00030, 09950-60010
(09951-00600)



- (d) Using a brass bar and a hammer, remove the 2 bearing outer races.

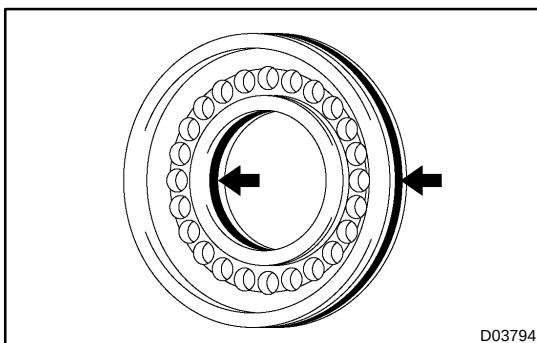


- (e) Using a screwdriver, remove the snap ring from the trans-
axle case.

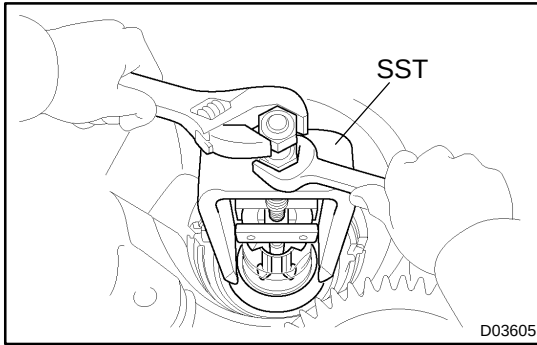


45. REMOVE U/D BRAKE PISTON

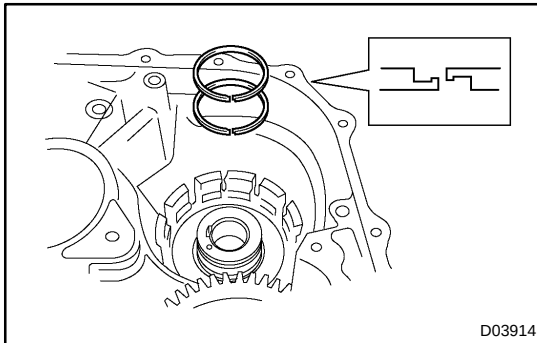
- (a) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the
transaxle case to remove the U/D brake piston.



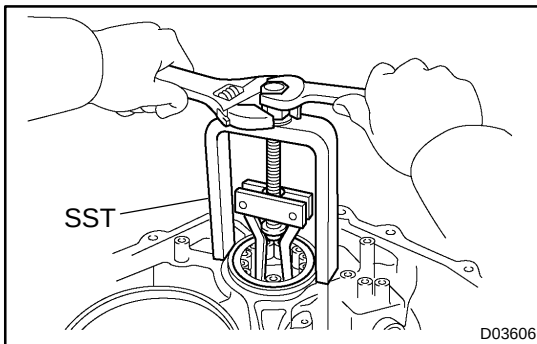
- (b) Remove the 2 O-rings from the U/D brake piston.



- (c) Using SST, remove the needle-roller bearing from the transaxle case.
SST 09387-00040, (09387-01020, 09387-01030, 09387-01040)

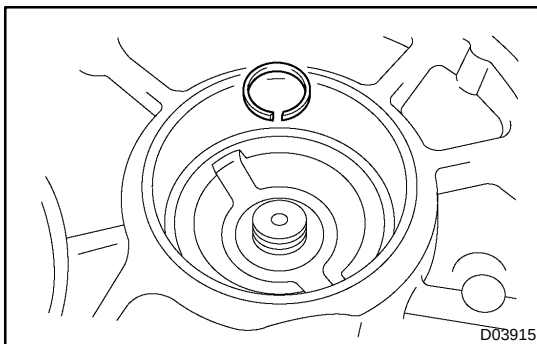


- (d) Remove the 2 oil seal rings from the transaxle case.

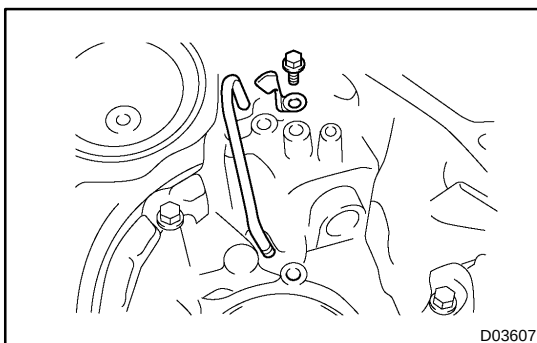


46. REMOVE U/D CYLINDRICAL ROLLER BEARING

- (a) Using SST, remove the cylindrical roller bearing from the transaxle case.
SST 09514-3501 1



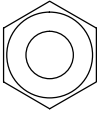
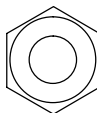
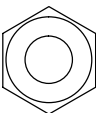
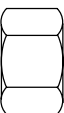
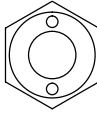
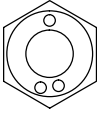
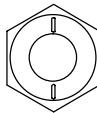
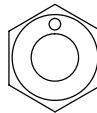
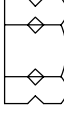
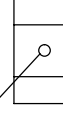
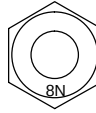
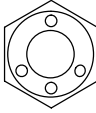
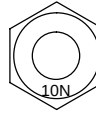
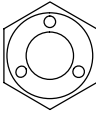
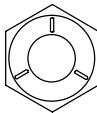
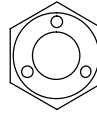
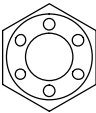
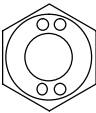
- (b) Remove the oil seal ring from the transaxle housing.



47. REMOVE APPLY PIPE

Remove the bolt, the clamp and the apply pipe from the trans-axle case.

HOW TO DETERMINE NUT STRENGTH

Nut Type			Class
Present Standard Hexagon Nut	Old Standard Hexagon Nut		
	Cold Forging Nut	Cutting Processed Nut	
 No Mark			4N
 No Mark (w/ Washer)	 No Mark (w/ Washer)	 No Mark	5N (4T)
  			6N
	 	 	7N (5T)
 			8N
 	 	 No Mark	10N (7T)
 			11N
 			12N

*: Nut with 1 or more marks on one side surface of the nut.

B06432

HINT:

Use the nut with the same number of the nut strength classification or the greater than the bolt strength classification number when tightening parts with a bolt and nut.

Example: Bolt = 4T

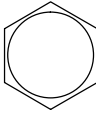
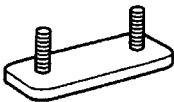
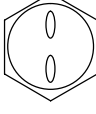
Nut = 4N or more

U140F AX (RM772U)

STANDARD BOLT

HOW TO DETERMINE BOLT STRENGTH

SS02S-01

Bolt Type				Class
Hexagon Head Bolt		Stud Bolt	Weld Bolt	
Normal Recess Bolt	Deep Recess Bolt			
 No Mark	 No Mark	 No Mark		4T
 No Mark	 No Mark			5T
 w/ Washer	 w/ Washer			6T
 No Mark	 No Mark			7T
 No Mark	 No Mark	 		8T
 No Mark	 No Mark			9T
 No Mark	 No Mark			10T
 No Mark	 No Mark			11T

B06431

HOW TO USE THIS MANUAL

IN047-01

GENERAL INFORMATION

1. INDEX

An INDEX is provided on the first page of each section to guide you to the item to be repaired. To assist you in finding your way through the manual, the Section Title and major heading are given at the top of every page.

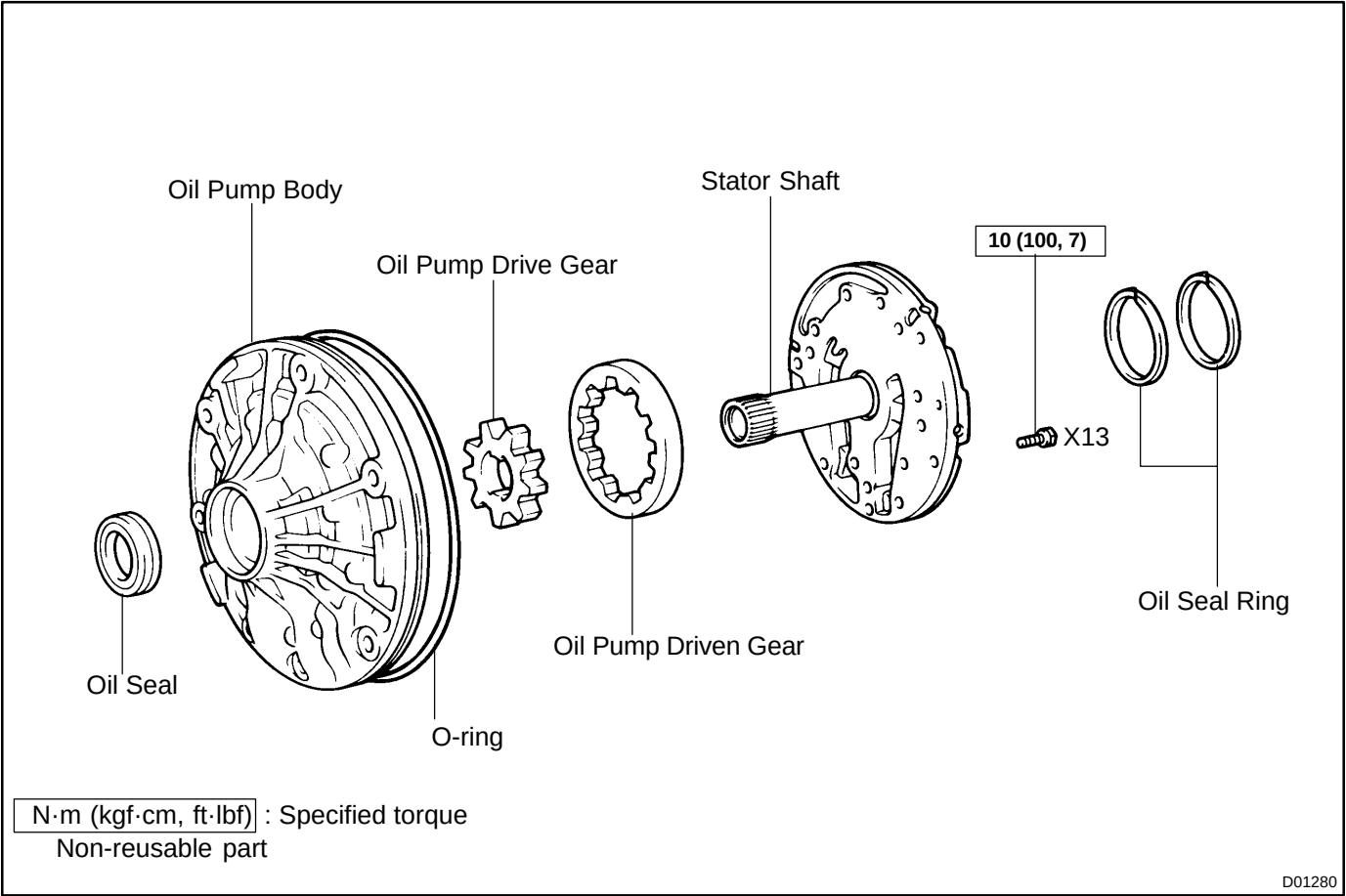
2. PREPARATION

Preparation lists the SST (Special Service Tools), recommended tools, equipment, lubricant and SSM (Special Service Materials) which should be prepared before beginning the operation and explains the purpose of each one.

3. REPAIR PROCEDURES

Most repair operations begin with an overview illustration. It identifies the components and shows how the parts fit together.

Example:



The procedures are presented in a step-by-step format:

- The illustration shows what to do and where to do it.
- The task heading tells what to do.
- The detailed text tells how to perform the task and gives other information such as specifications and warnings.

Example:

*Illustration:
what to do and where*

Task heading : what to do

21. CHECK PISTON STROKE OF OVERDRIVE BRAKE

(a) Place SST and a dial indicator onto the overdrive brake piston as shown in the illustration.

SST 09350-30020 (09350-06120)

Set part No.

Component part No.

Detailed text : how to do task

(b) Measure the stroke applying and releasing the compressed air (392 - 785 kPa, 4 - 8 kgf.cm² or 57 - 114 psi) as shown in the illustration.

Piston stroke: 1.40 — 1.70 mm (0.0551 — 0.0669 in.)

Specification

This format provides the experienced technician with a FAST TRACK to the information needed. The upper case task heading can be read at a glance when necessary, and the text below it provides detailed information. Important specifications and warnings always stand out in bold type.

4. REFERENCES

References have been kept to a minimum. However, when they are required you are given the page to refer to.

5. SPECIFICATIONS

Specifications are presented in bold type throughout the text where needed. You never have to leave the procedure to look up your specifications. They are also found at the end of each section, for quick reference.

6. CAUTIONS, NOTICES, HINTS:

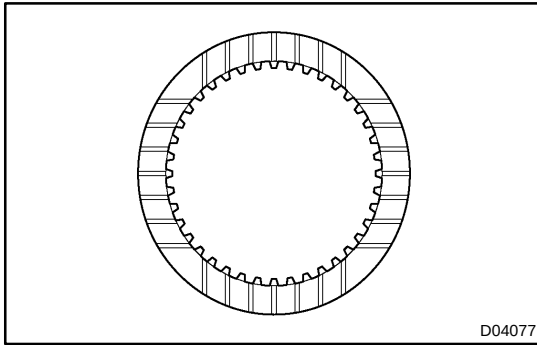
- CAUTIONS are presented in bold type, and indicate there is a possibility of injury to you or other people.
- NOTICES are also presented in bold type, and indicate the possibility of damage to the components being repaired.
- HINTS are separated from the text but do not appear in bold. They provide additional information to help you perform the repair efficiently.

7. SI UNIT

The UNITS given in this manual are primarily expressed according to the SI UNIT (International System of Unit), and alternately expressed in the metric system and in the English System.

Example:

Torque: 30 N·m (310 kgf·cm, 22 ft·lbf)



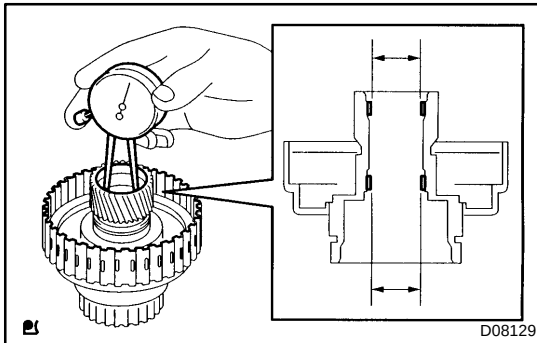
INSPECTION

1. INSPECT DISC, PLATE AND FLANGE

Check to see if the sliding surface of the disc, plate and flange are worn or burnt. If necessary, replace them.

HINT:

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



2. CHECK U/D CLUTCH DRUM BUSHING

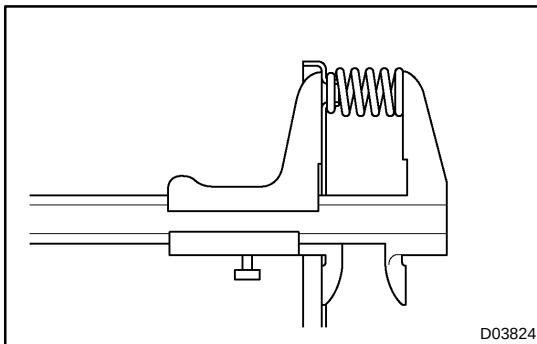
Using a dial indicator, measure the inside diameter of the U/D clutch drum bushing.

Standard drum bushing:

37.06 - 37.08 mm (1.4591 - 1.4598 in.)

Maximum drum bushing: 37.13 mm (1.4618 in.)

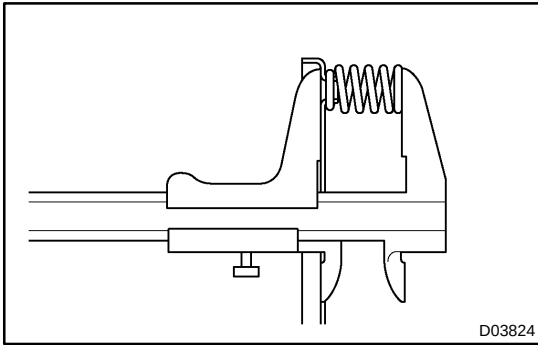
If the inside diameter is greater than the maximum, replace the U/D clutch drum.



3. CHECK U/D CLUTCH PISTON RETURN SPRING

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

Standard free length: 17.14 mm (0.6748 in.)

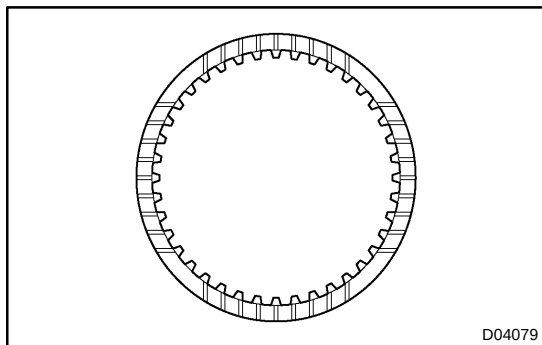


INSPECTION

CHECK 2ND BRAKE PISTON RETURN SPRING

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

Standard free length: 16.61 mm (0.6539 in.)



INSPECTION

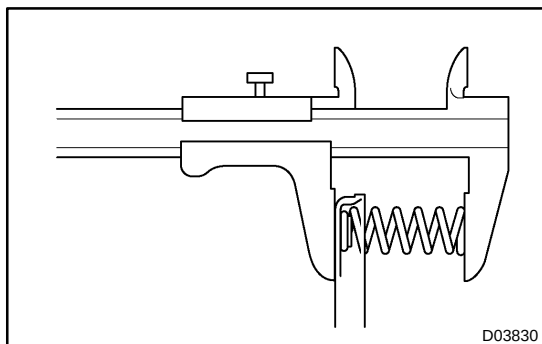
1. INSPECT DISC AND FLANGE

Check to see if the sliding surface of the disc, plate and flange are worn or burnt.

If necessary, replace them.

HINT:

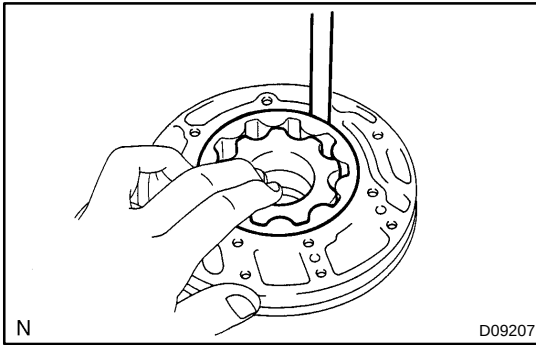
- If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



2. CHECK DIRECT CLUTCH RETURN SPRING

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

Standard free length: 22.58 mm (0.8890 in.)



INSPECTION

1. CHECK BODY CLEARANCE OF DRIVEN GEAR

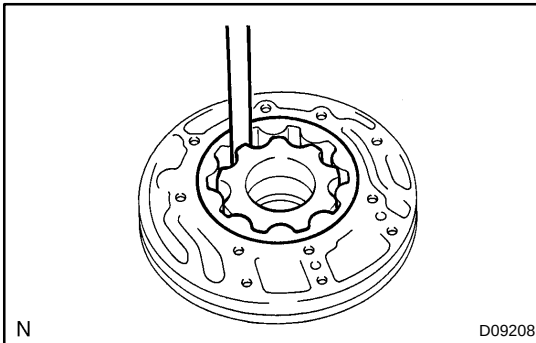
Push the driven gear to one side of the body. Using a feeler gauge, measure the clearance.

Standard body clearance:

0.10 - 0.17 mm (0.0039 - 0.0067 in.)

Maximum body clearance: 0.17 mm (0.0067 in.)

If the body clearance is greater than the maximum, replace the oil pump body sub-assembly.



2. CHECK TIP CLEARANCE OF DRIVEN GEAR

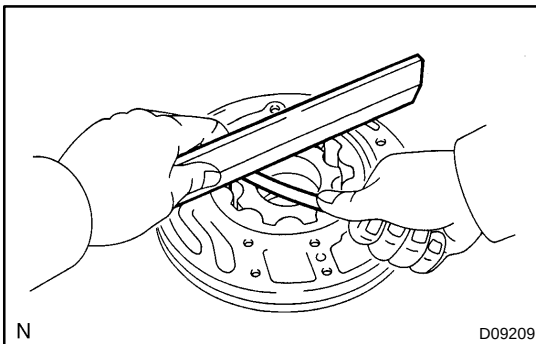
Measure the tip clearance between the driven gear teeth and drive gear teeth.

Standard tip clearance:

0.07 - 0.15 mm (0.0028 - 0.0059 in.)

Maximum tip clearance: 0.15 mm (0.0059 in.)

If the tip clearance is greater than the maximum, replace the oil pump body sub assembly.



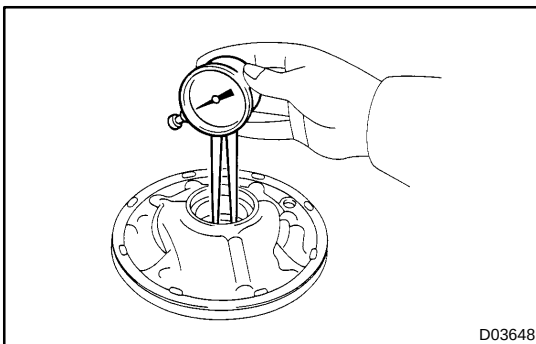
3. CHECK SIDE CLEARANCE OF BOTH GEAR

Using a steel straight edge and feeler gauge, measure the side clearance of both gears.

Standard side clearance:

0.02 - 0.05 mm (0.0008 - 0.0020 in.)

Maximum side clearance: 0.05 mm (0.0020 in.)



4. CHECK OIL PUMP BODY BUSHING

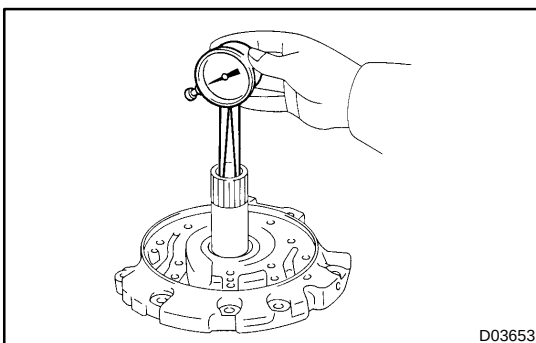
Using a dial indicator, measure the inside diameter of the oil pump body bushing.

Standard inside diameter:

38.12 - 38.13 mm (1.5008 - 1.5012 in.)

Maximum inside diameter: 38.18 mm (1.5031 in.)

If the inside diameter is greater than the maximum, replace the oil pump body sub-assembly.



5. CHECK STATOR SHAFT BUSHING

Using a dial indicator, measure the inside diameter of the stator shaft bushings.

Standard inside diameter:

21.50 - 21.52 mm (0.8465 - 0.8472 in.)

Maximum inside diameter: 21.57 (0.8492 in.)

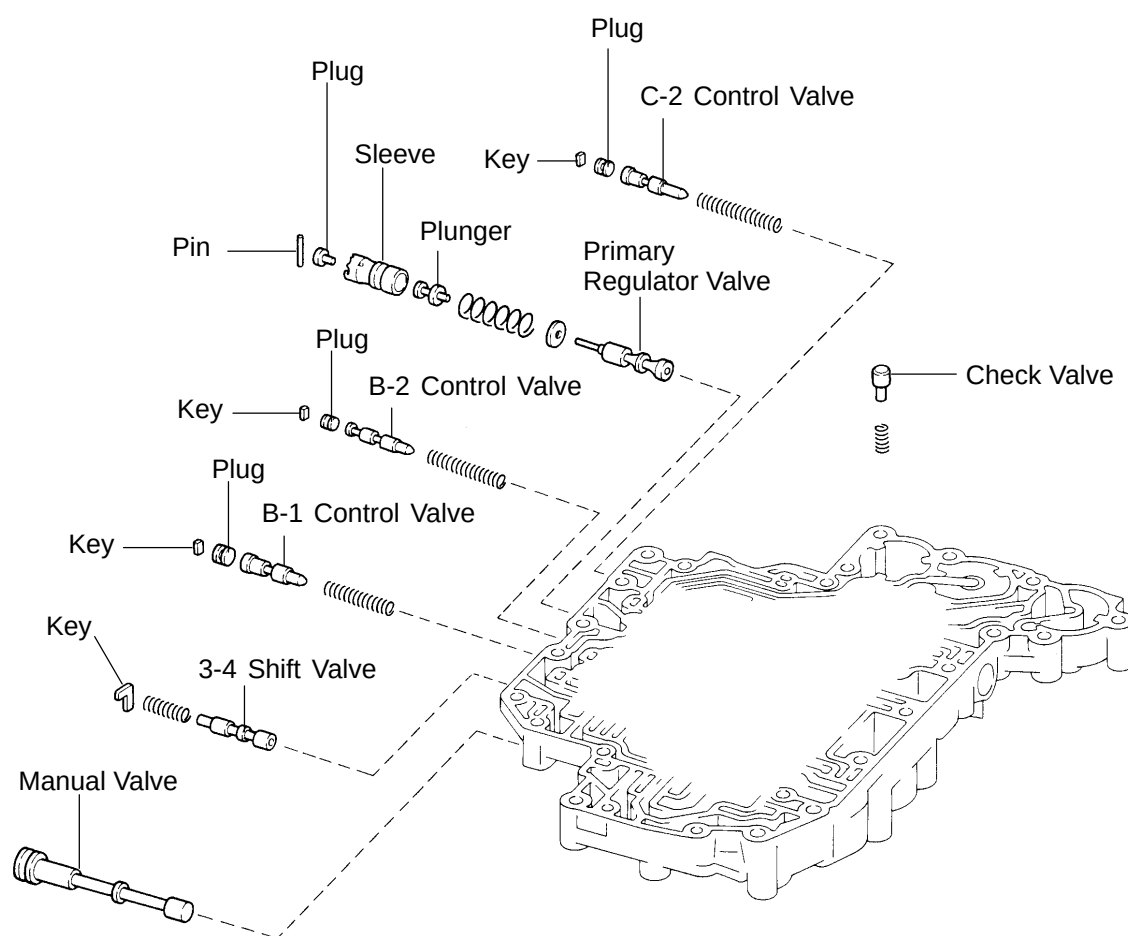
If the inside diameter is greater than the maximum, replace the stator shaft.

LOWER VALVE BODY

LOCATION

AX0BB-04

1. COMPONENTS

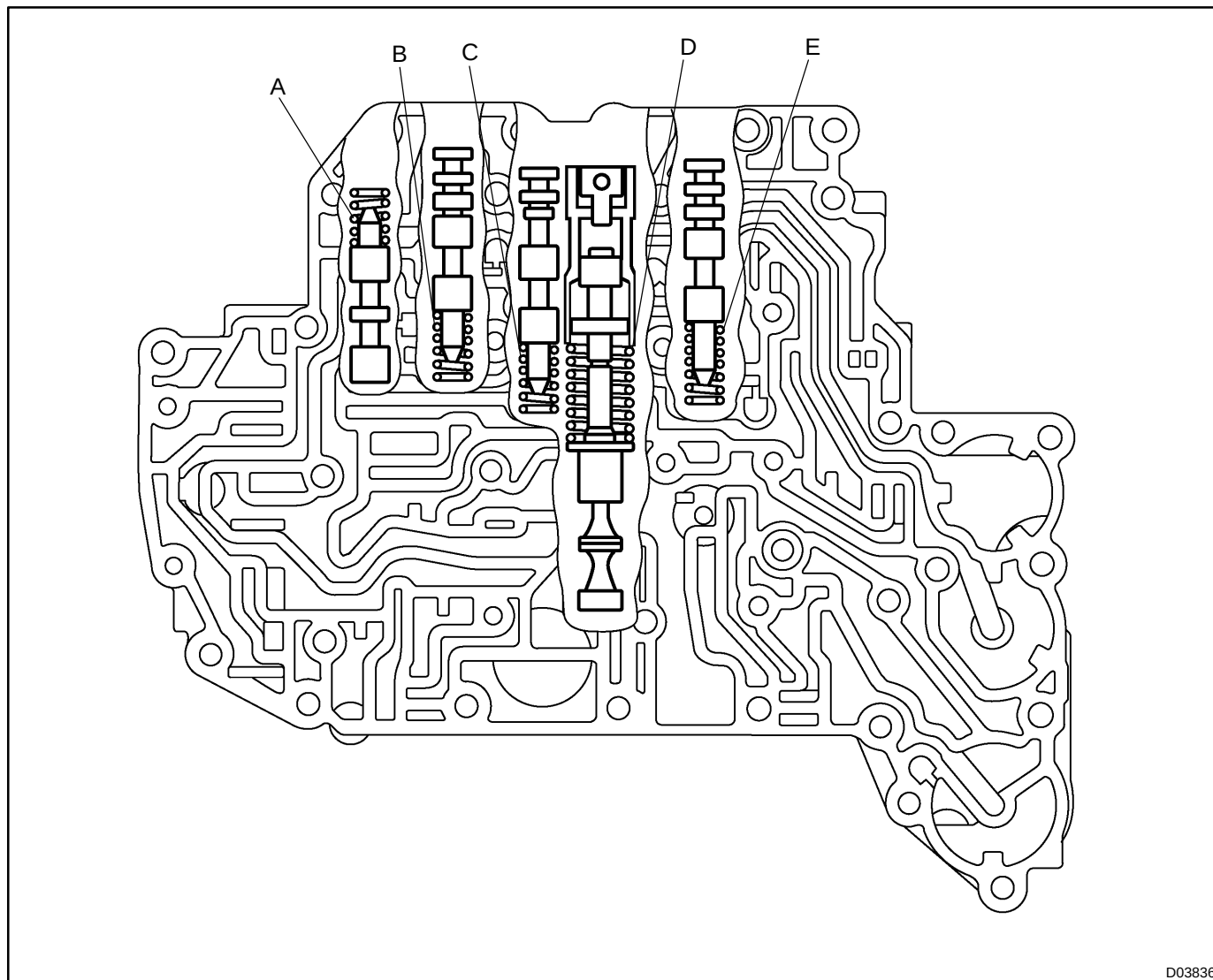


D03835

2. SPRING

HINT:

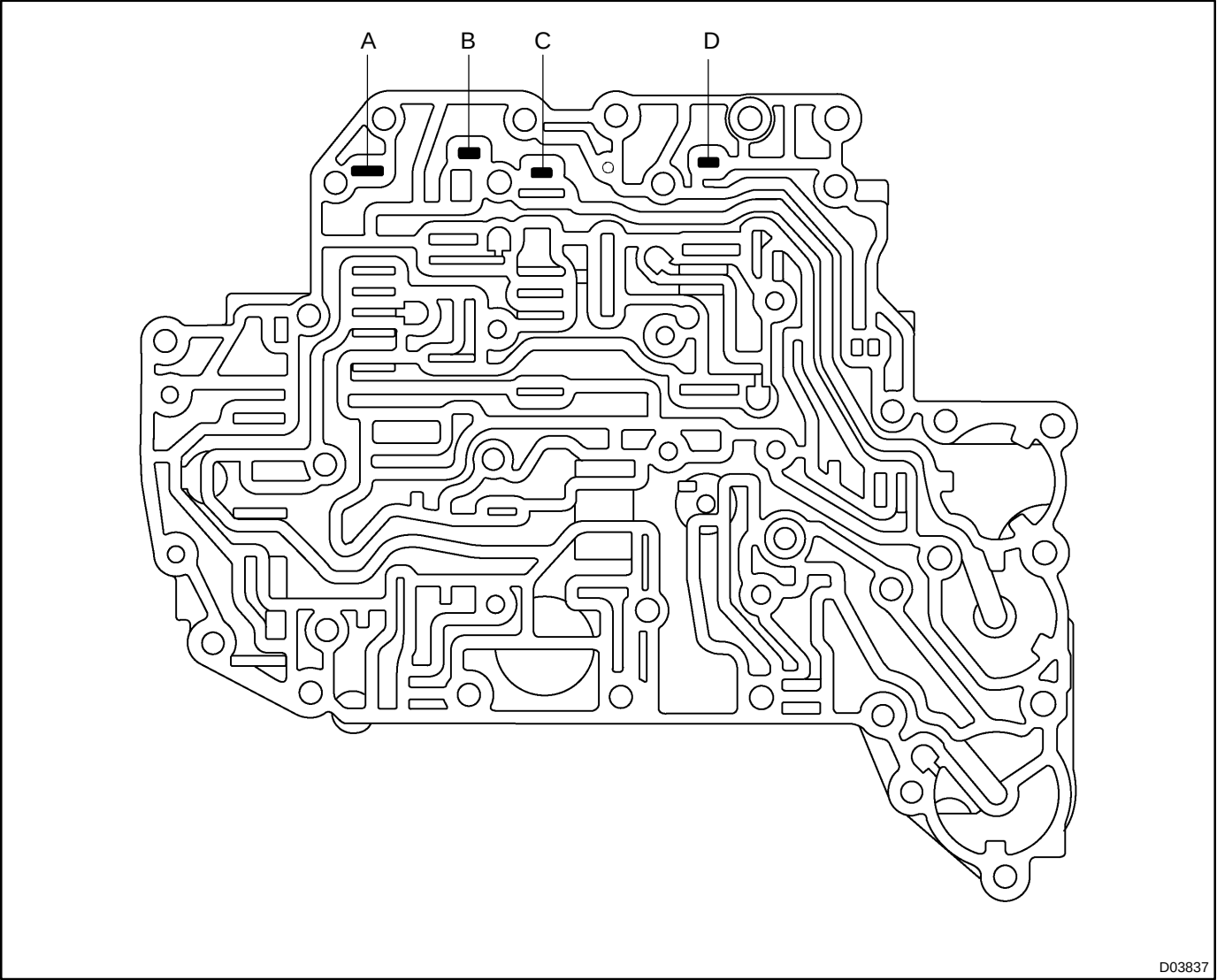
During re-assembly please refer to the spring specifications below to help you to discriminate between the different springs:



D03836

Mark	Name (Color)	Free length / Outer diameter mm (in.)	Total number of coils
A	3-4 shift valve (None)	29.25 (1.1516) / 9.7 (0.382)	10.5
B	B-1 control valve (Light Green)	48.55 (1.9114) / 9.8 (0.386)	13.43
C	B-2 control valve (Pink)	57.05 (2.2461) / 9.8 (0.386)	15.34
D	Primary regulator valve (Orange)	57.55 (2.2657) / 19.9 (0.783)	7.87
E	C-2 control valve (Brown)	34.20 (1.3465) / 9.9 (0.390)	8.79

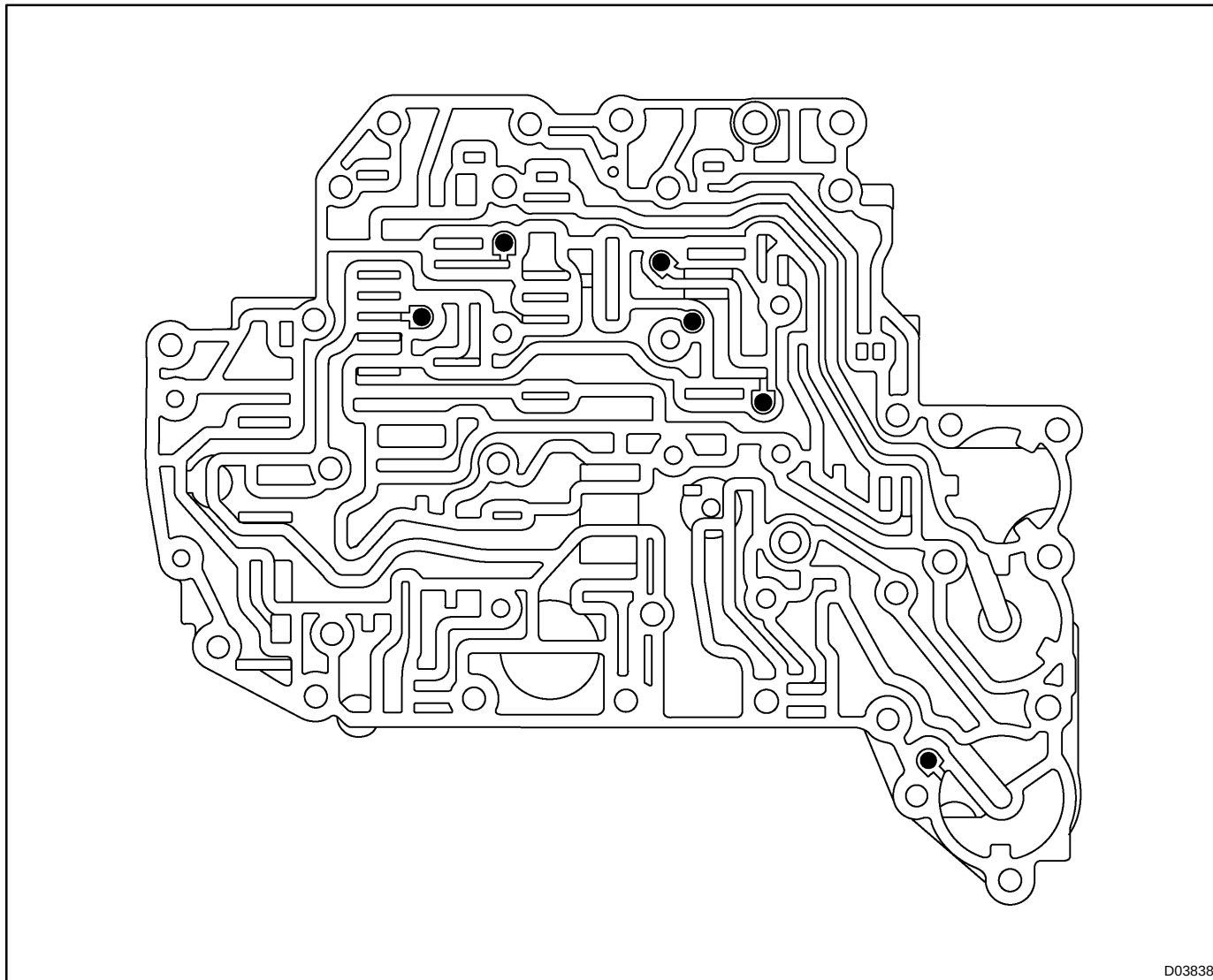
3. KEY



D03837

Mark	Retainer	Height / Width / Thickness mm (in.)
A	3-4 shift valve	25.5 (1.004) / - / 2.3 (0.091)
B	B-1 control valve	14.5 (0.571) / 5.0 (0.197) / 3.2 (0.126)
C	B-2 control valve	14.5 (0.571) / 5.0 (0.197) / 3.2 (0.126)
E	C-2 control valve	14.5 (0.571) / 5.0 (0.197) / 3.2 (0.126)

4. Check ball



D03838

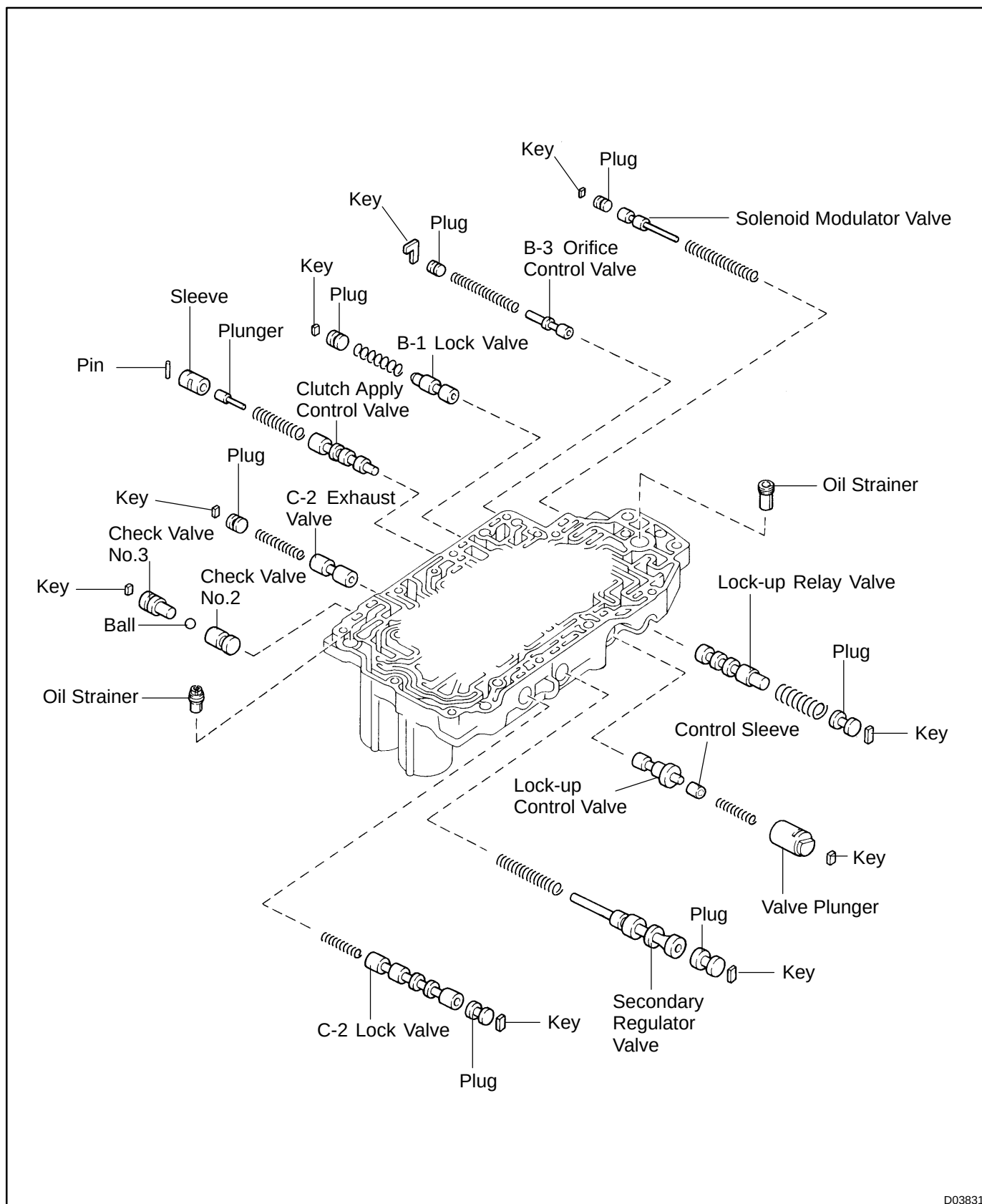
Check ball	mm (in.)	5.5 (0.217)
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UPPER VALVE BODY

AX0BA-02

LOCATION

1. COMPONENTS

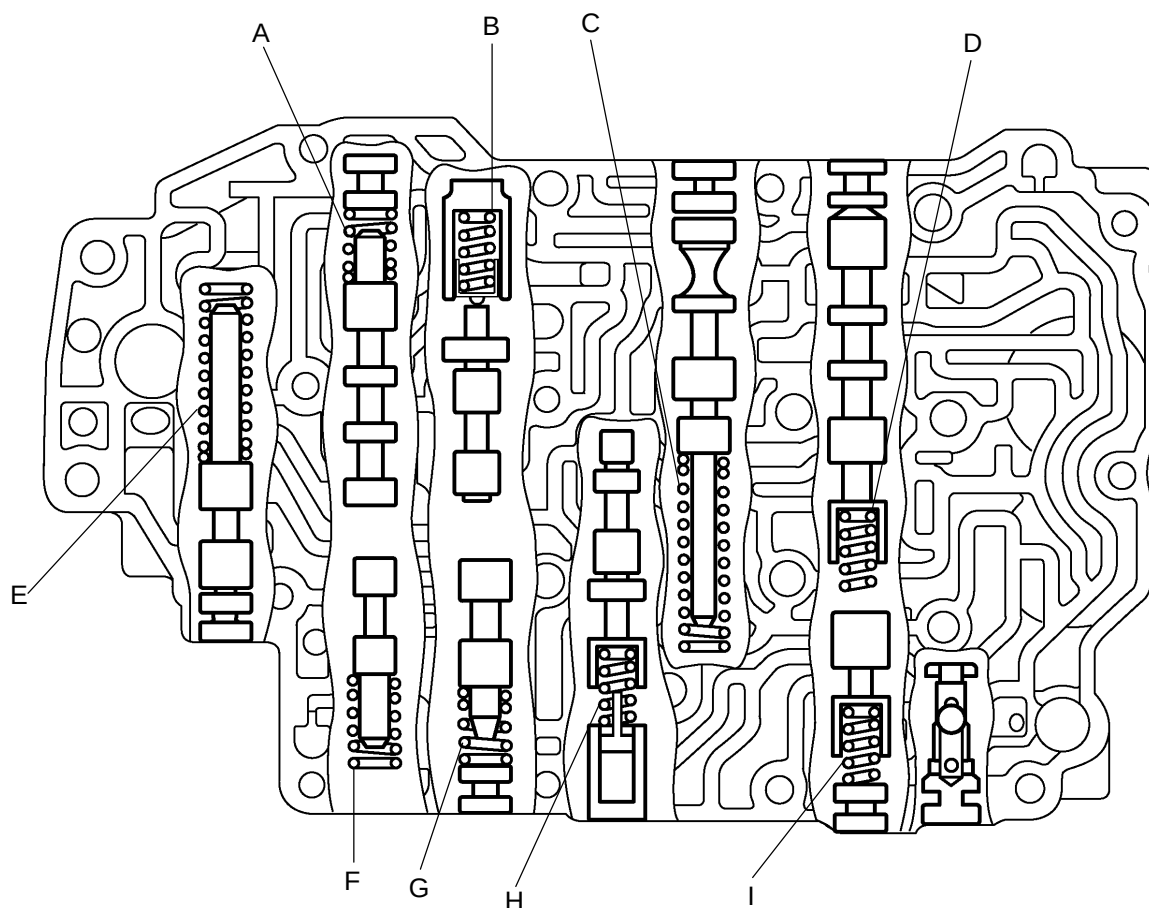


D03831

2. SPRING

HINT:

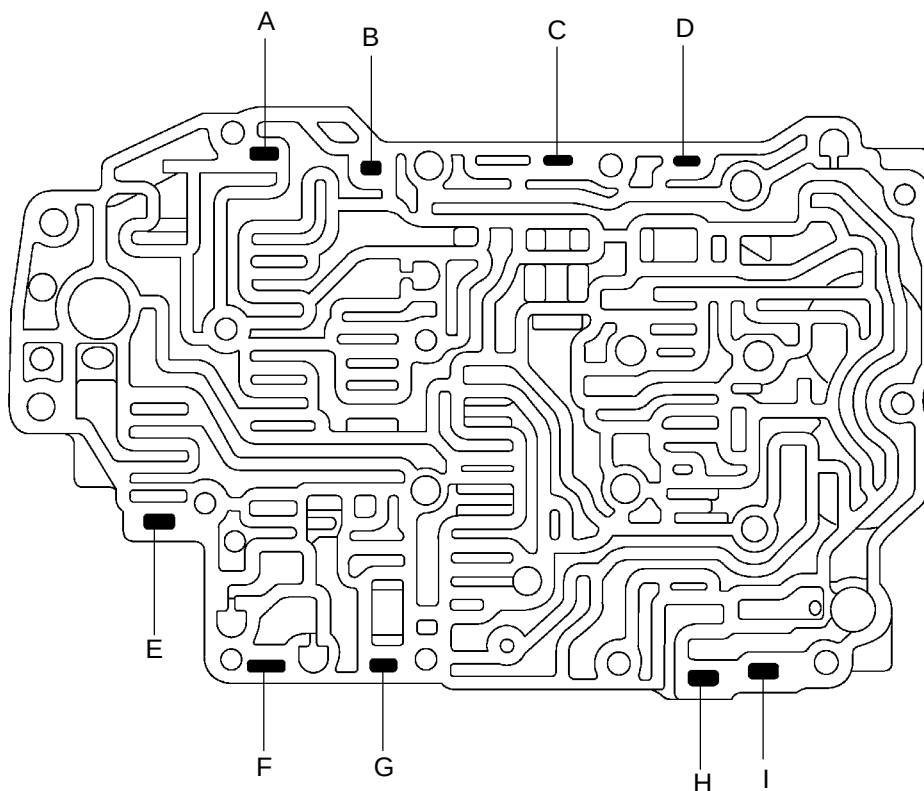
During reassembly please refer to the spring specifications below to help you to discriminate between the different springs.



D03832

Mark	Name (Color)	Free length / Outer diameter mm (in.)	Total number of coils
A	Lock-up relay valve (None)	29.27 (1.1524) / 9.7 (0.382)	10.50
B	Lock-up control valve (None)	23.98 (0.9441) / 5.4 (0.213)	14.94
C	Secondary regulator valve (Blue)	58.35 (2.2972) / 8.7 (0.343)	20.58
D	C-2 lock valve (Yellow)	33.65 (1.3247) / 7.4 (0.291)	11.82
E	Solenoid modulator valve (Red)	62.40 (2.4567) / 9.8 (0.386)	22.31
F	B-3 orifice control valve (Gray)	62.65 (2.4665) / 7.8 (0.307)	19.60
G	B-1 lock valve (White)	37.40 (1.4724) / 9.8 (0.386)	8.84
H	Clutch apply control valve (Purple)	40.29 (1.5862) / 9.0 (0.354)	13.00
I	C-2 exhaust check valve (Orange)	40.27 (1.5854) / 7.4 (0.291)	17.10

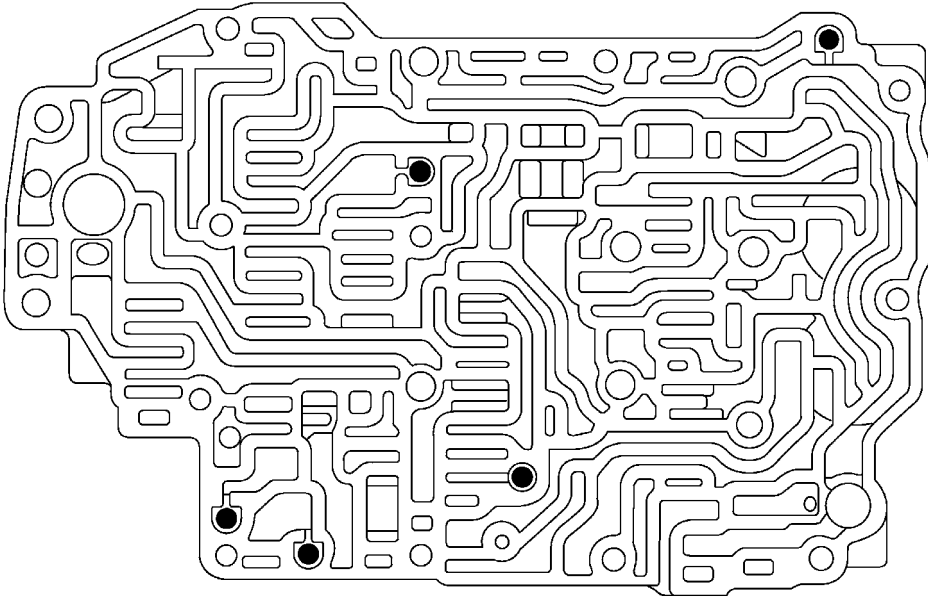
3. KEY



D03833

Mark	Retainer	Height / Width / Thickness
		mm (in.)
A	Lock-up relay valve	10.0 (0.394) / 5.0 (0.197) / 3.2 (0.126)
B	Lock-up control valve	10.0 (0.394) / 5.0 (0.197) / 3.2 (0.126)
C	Secondary regulator valve	8.0 (0.315) / 5.0 (0.197) / 3.2 (0.126)
D	C-2 lock valve	10.0 (0.394) / 5.0 (0.197) / 3.2 (0.126)
E	Solenoid modulator valve	8.0 (0.315) / 5.0 (0.197) / 3.2 (0.126)
F	B-3 orifice control valve	18.5 (0.728) / - / 2.3 (0.091)
G	B-1 lock valve	8.0 (0.315) / 5.0 (0.197) / 3.2 (0.126)
H	C-2 exhaust check valve	8.0 (0.315) / 5.0 (0.197) / 3.2 (0.126)
I	3-way check valve	8.0 (0.315) / 5.0 (0.197) / 3.2 (0.126)

4. CHECK BALL



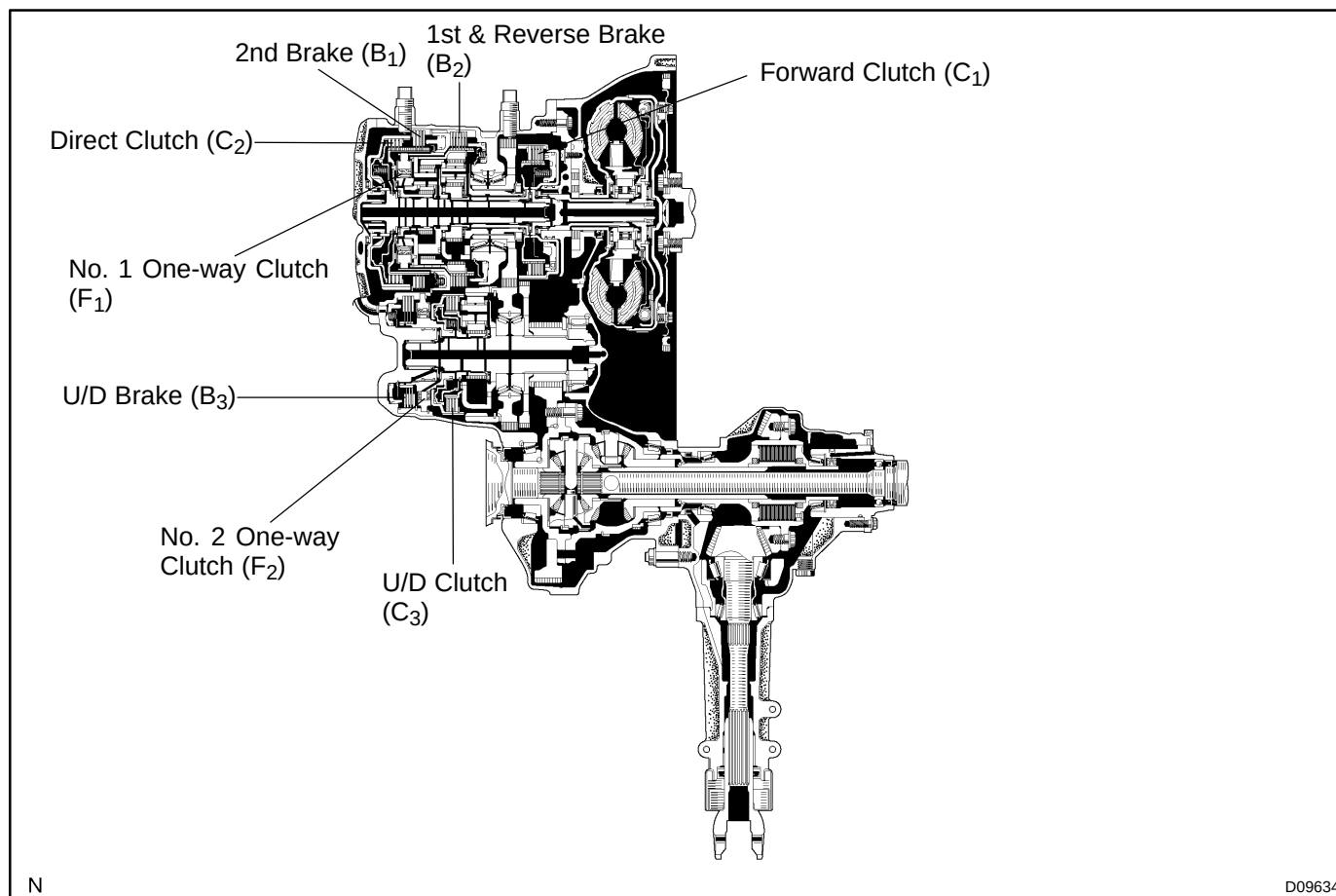
D03834

Check ball	mm (in.)	5.5 (0.217)
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AUTOMATIC TRANSAXLE SYSTEM

OPERATION

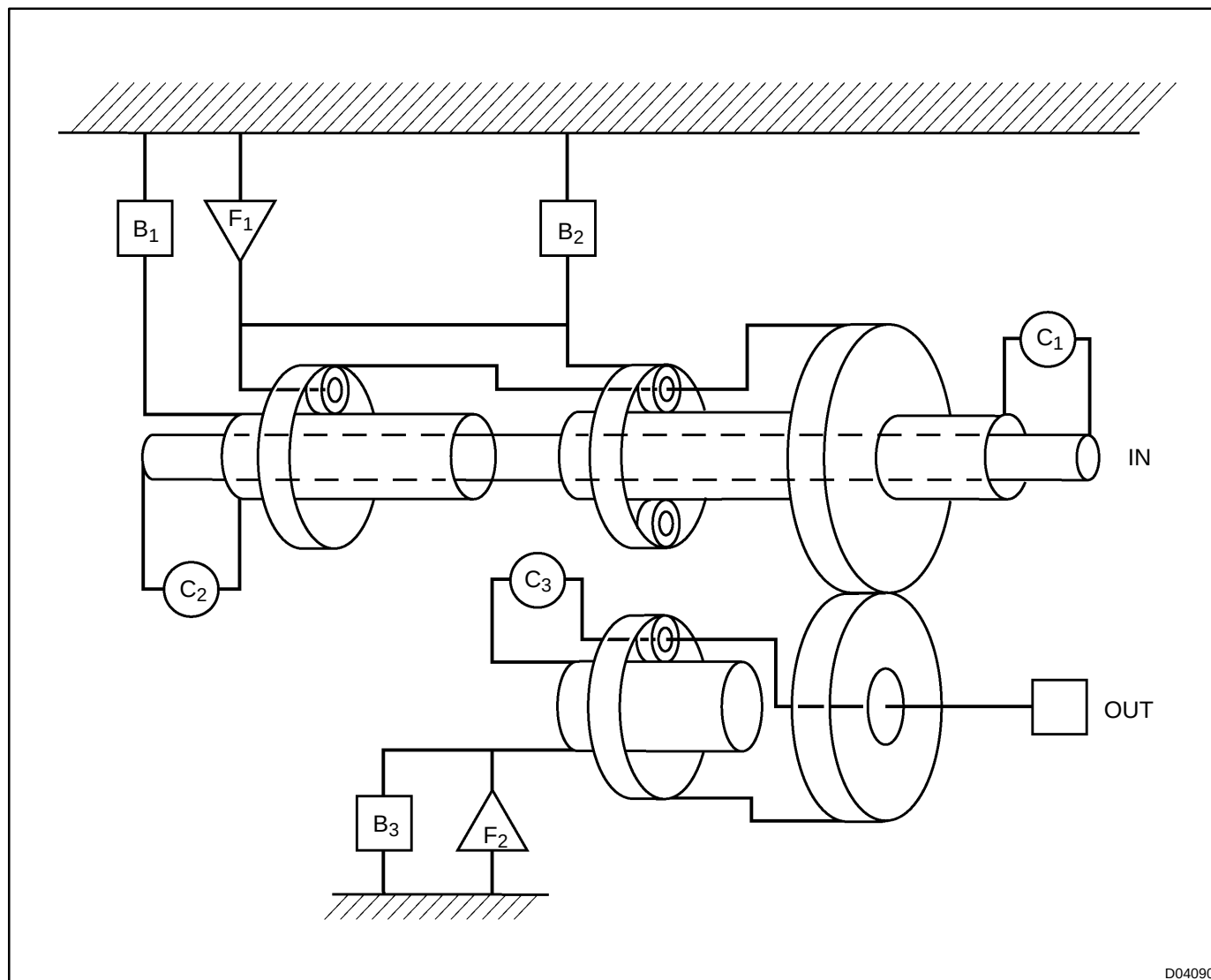
AX0AG-07



○ ... Operating

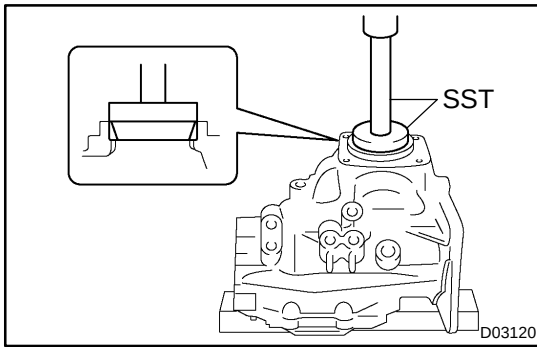
Shift lever position	Gear position	C ₁	C ₂	C ₃	B ₁	B ₂	B ₃	F ₁	F ₂
P	Parking						○		
R	Reverse		○			○	○		
N	Neutral						○		
D	1st	○					○	○	○
	2nd	○			○		○		○
	3rd	○	○				○		○
	O/D	○	○	○					
2	1st	○					○	○	○
	2nd	○			○		○		○
L	1st	○				○	○	○	○

FUNCTION OF COMPONENTS



D04090

Component		Function
C ₁	Forward Clutch	Connects input shaft and front planetary sun gear.
C ₂	Direct Clutch	Connects input shaft and rear planetary sun gear.
C ₃	U/D Clutch	Connects U/D sun gear and U/D planetary carrier.
B ₁	2nd Brake	Prevents rear planetary sun gear from turning either clockwise or counterclockwise.
B ₂	1st & Reverse Brake	Prevents rear planetary carrier and front planetary ring gear from turning either clockwise or counterclockwise.
B ₃	U/D Brake	Prevents U/D sun gear from turning either clockwise or counterclockwise.
F ₁	No.1 One-way Clutch	Prevents rear planetary carrier from turning counterclockwise.
F ₂	No.2 One-way Clutch	Prevents U/D planetary sun gear from turning clockwise.
Planetary Gears		These gears change the route through which driving force is transmitted, in accordance with the operation of each clutch and brake, in order to increase or reduce the input and output speed.

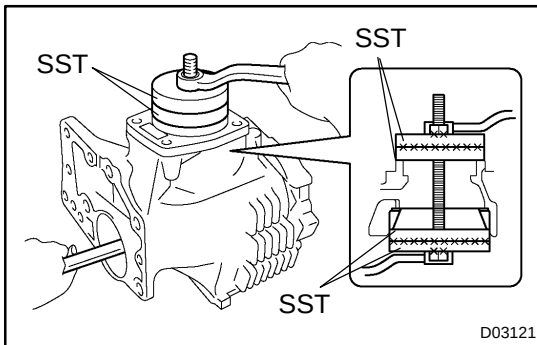


REASSEMBLY

1. INSTALL REAR BEARING OUTER RACE

Using SST and a press, install the outer race.

SST 09950-60010 (09951-00620), 09950-70010 (09951-07150)



2. INSTALL FRONT BEARING OUTER RACE

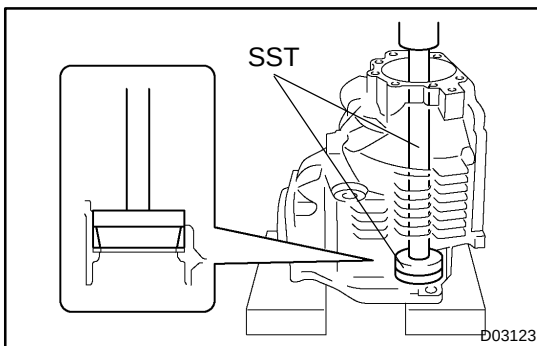
(a) Install the washer to the transfer case.

HINT:

First install a washer of the same thickness as before.

(b) Using SST, bolt and nut, install outer race to the transfer case.

SST 09950-60010 (09951-00610, 09951-00620), 09950-60020 (09951-00790, 09951-00810)



3. INSTALL BEARING OUTER RACE LH

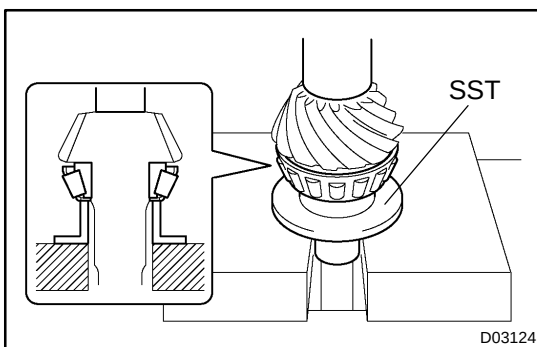
(a) Install the washer to the transfer case.

HINT:

First install a washer of the same thickness as before.

(b) Using SST and a press, install outer race to the transfer case.

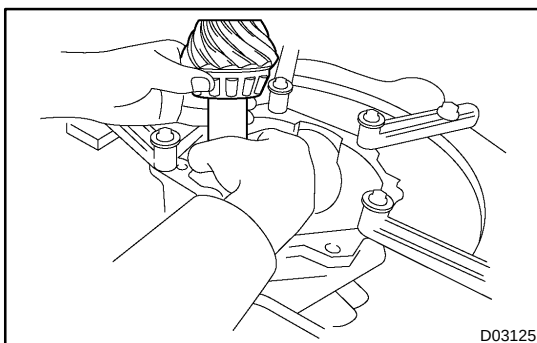
SST 09950-60010 (09951-00700), 09950-70010 (09951-07200)



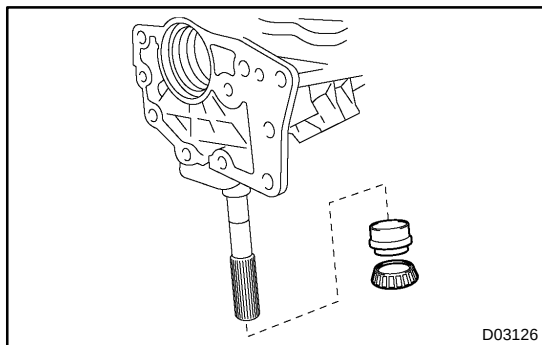
4. INSTALL DRIVEN PINION

(a) Using SST and a press, install the front bearing inner race to the driven pinion.

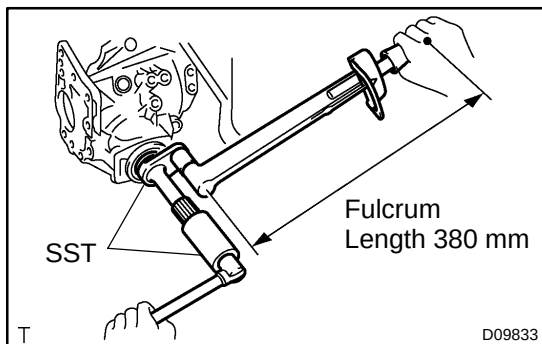
SST 09316-6001 1 (09316-00041)



(b) Install the driven pinion to the transfer case.



- (c) Install a new spacer and rear bearing inner race to the driven pinion.



- (d) Using SST, install the lock nut.
SST 09326-2001 1, 09556-16030

Torque:

308 N·m (3,142 kgf·cm, 227 ft·lbf) for use with SST

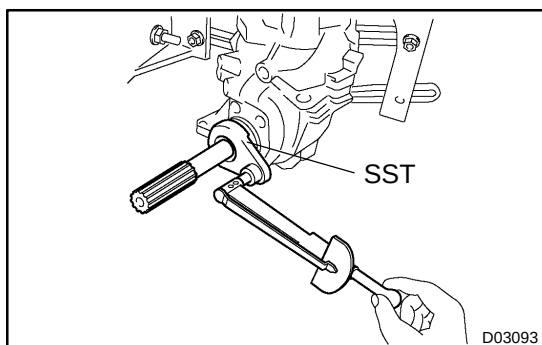
349 N·m (3,560 kgf·cm, 257 ft·lbf)

HINT:

- Using a torque wrench with a fulcrum length of 380 mm (15.03 in.).
- This torque value is effective in case the SST is parallel to torque wrench.

NOTICE:

Do not tighten the nut until the final adjustment of the preload, tooth contact and backlash is completed.



5. CHECK DRIVEN PINION PRELOAD

Using SST and torque wrench, measure the driven pinion preload.

SST 09326-2001 1

Preload (at starting):

New bearing:

0.9 - 1.4 N·m (9 - 14 kgf·cm, 7.8 - 12.4 in·lbf)

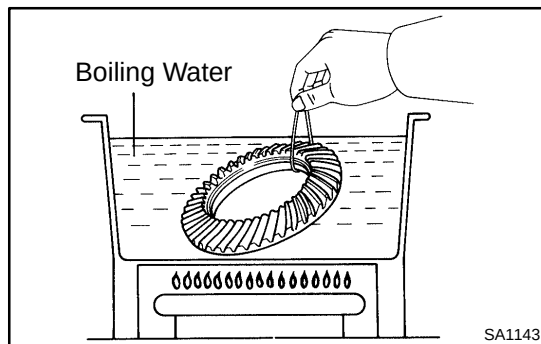
Reused bearing:

0.8 - 1.1 N·m (8 - 11 kgf·cm, 7.1 - 9.7 in·lbf)

HINT:

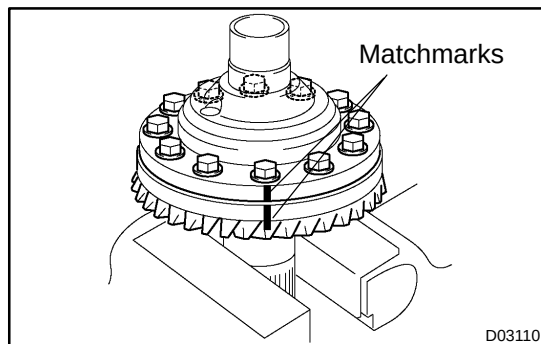
- Using a torque wrench with a fulcrum length of 160 mm (6.3 in.).
- This torque value is effective in case that SST is parallel to torque wrench.
- If the preload is not sufficient, adjust the driven pinion by tightening the lock nut by 5° to 10° and measuring the preload until the preload is within the standard value.
- If the preload is more than the standard value, replace the spacer with a new one.

- If the tightening torque for a driven pinion nut is more than the standard value, and the preload is not sufficient, loosen the lock nut, apply gear oil on the thread and bearing surface and adjust it as described above. When the tightening torque is less than the standard value, replace the spacer with a new one



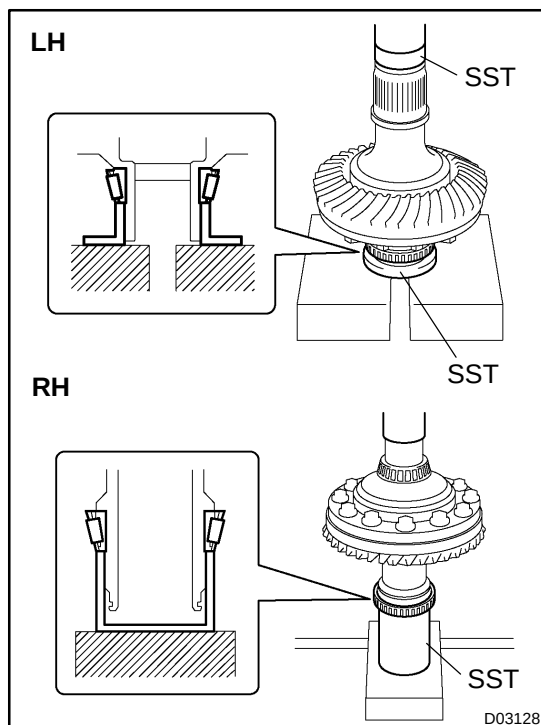
6. ASSEMBLE CENTER DIFFERENTIAL CONTROL COUPLING

- (a) Clean the contact surface of the ring gear and center differential control coupling.
- (b) Heat the ring gear in water and boil for 10 minutes.
- (c) Carefully remove the ring gear from the water.

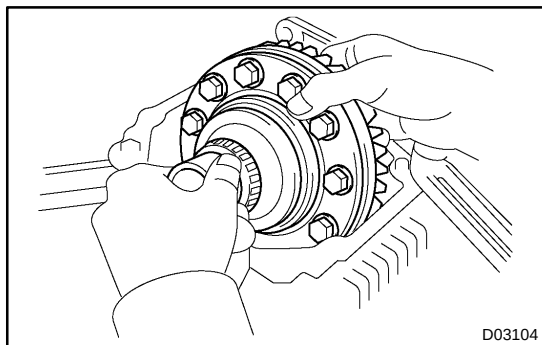


- (d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the center differential control coupling.
- (e) Install the 12 bolts.

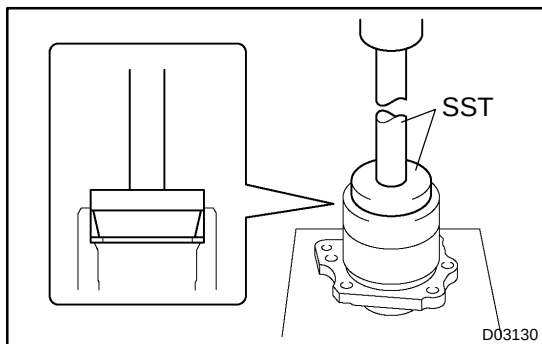
Torque: 77.5 N·m (791 kgf·cm, 57 ft·lbf)



- (f) Using SST and a press, install the center differential case tapered roller bearing inner race LH and RH.
SST 09223-00010, 09506-35010, 09950-60010
(09951-00420)



7. INSTALL CENTER DIFFERENTIAL CONTROL COUPLING



8. INSTALL CENTER DIFFERENTIAL CASE TAPERED ROLLER BEARING OUTER RACE RH

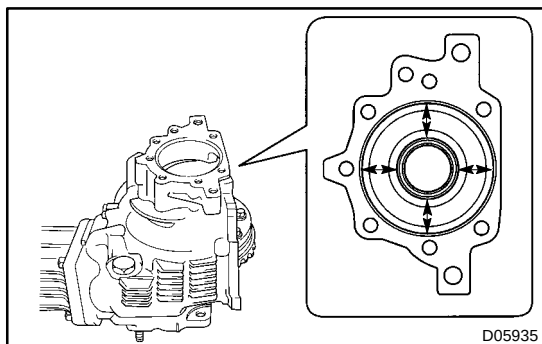
- (a) Install the washer to the bearing retainer RH.

HINT:

First install a washer of the same thickness as before.

- (b) Using SST and a press, install the outer race to the bearing retainer RH.

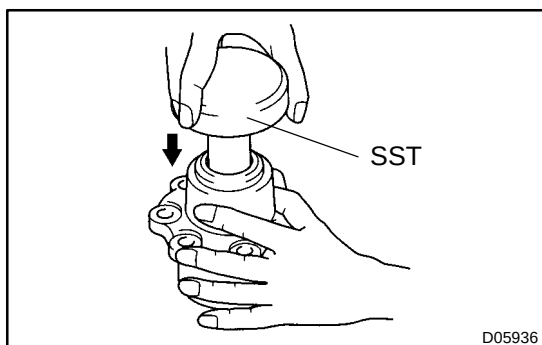
SST 09550-60010 (09951-00620), 09950-70010 (09951-07150)



9. INSTALL BEARING RETAINER RH

- (a) Put the installation surface for the bearing retainer RH of the transfer case upward.

- (b) Install the center differential control coupling onto the transfer case and make the center meet each other.

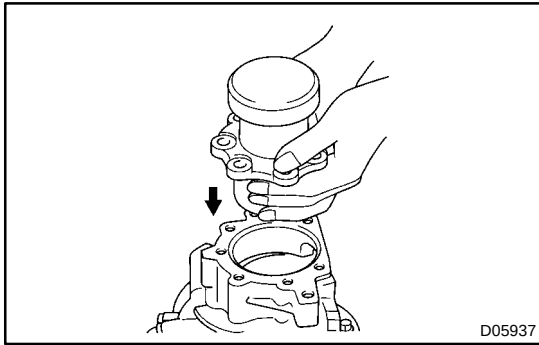


- (c) Insert the SST to the bearing retainer RH.

SST 09387-00090

NOTICE:

Insert SST straight in order not to damage the oil seal.



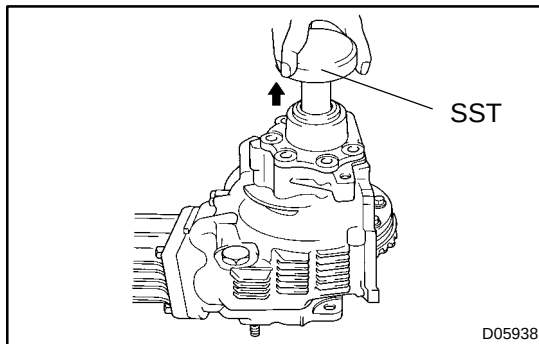
- (d) Install the bearing retainer RH with the SST to the transfer center differential control coupling.

NOTICE:

- Do not make the transfer case, bearing retainer RH and SST interfere forcibly with the center differential control coupling.
- Pay attention for the damage and peeling off in the O-ring of the retainer.

HINT:

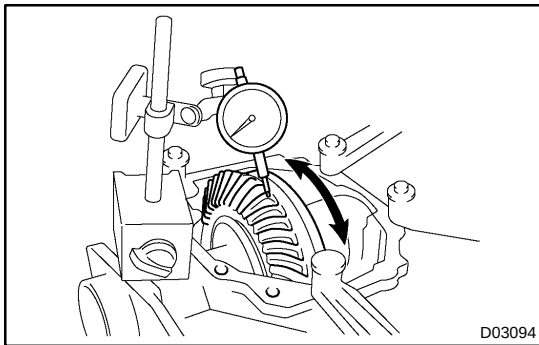
When the bearing retainer cannot be inserted, hit it soft with the plastic hammer and insert it.



- (e) After having inserted the bearing retainer to the transfer case, remove SST.

- (f) Install 7 bolts.

Torque: 28 N·m (286 kgf·cm, 115 ft·lbf)

**10. INSPECT BACKLASH**

Using a dial indicator, measure the backlash of the ring gear at 3 positions at least.

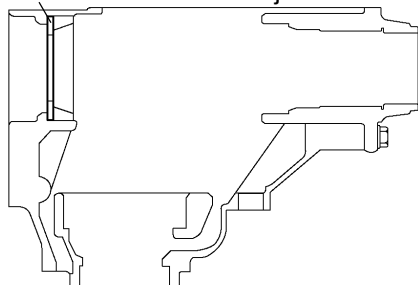
Backlash: 0.10 - 0.15 mm (0.0039 - 0.0059 in.)

HINT:

The measure values should be used as reference when selecting washer, so take a note of the values.

If the backlash is not within the specification replace the washer on the ring gear side with one of a different thickness using the following procedure.

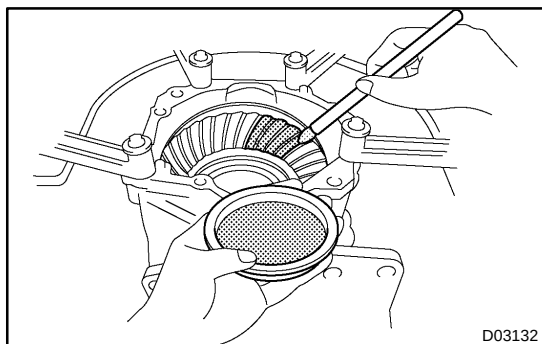
Washer: Backlash adjust



D03131

Washer thickness: mm (in.)

Mark0	Thickness	Mark	Thickness
AA	2.07 (0.0815)	FB	2.55 (0.1004)
AB	2.10 (0.0827)	FC	2.58 (0.1016)
AC	2.13 (0.0839)	GA	2.61 (0.1028)
BA	2.16 (0.0850)	GB	2.64 (0.1039)
BB	2.19 (0.0862)	GC	2.67 (0.1051)
BC	2.22 (0.0874)	HA	2.70 (0.1063)
CA	2.25 (0.0886)	HB	2.73 (0.1075)
CB	2.28 (0.0898)	HC	2.76 (0.1087)
CD	2.31 (0.0909)	JA	2.79 (0.1098)
DA	2.34 (0.0921)	JB	2.82 (0.1110)
DB	2.37 (0.0933)	JC	2.85 (0.1122)
DC	2.40 (0.0945)	KA	2.88 (0.1134)
EA	2.43 (0.0957)	KB	2.91 (0.1146)
EB	2.46 (0.0969)	KC	2.94 (0.1157)
EC	2.49 (0.0980)	LA	2.97 (0.1169)
FA	2.52 (0.0992)	LB	3.00 (0.1181)

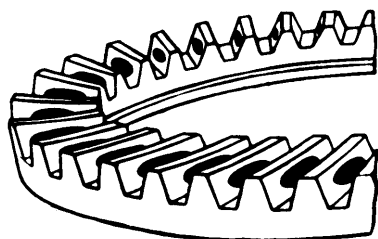


D03132

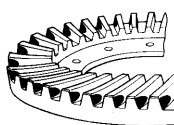
11. INSPECT TOOTH CONTACT PATTERN

- Coat 3 or 4 teeth at the 4 different positions on the ring gear with red lead.
- Rotate the ring gear, inspect the teeth pattern.

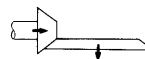
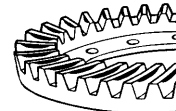
Proper Contact



Heel Contact

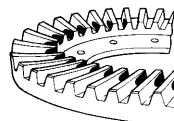


Face Contact

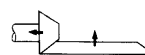
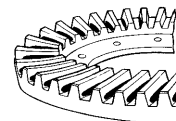


Select an washer that will bring the driven pinion closer to the ring gear.

Toe Contact

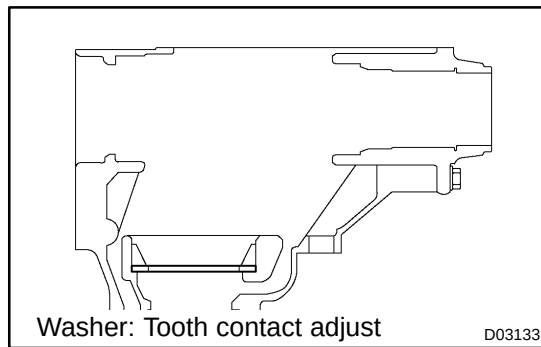


Flank Contact



Select an washer that will shift the driven pinion away from the ring gear.

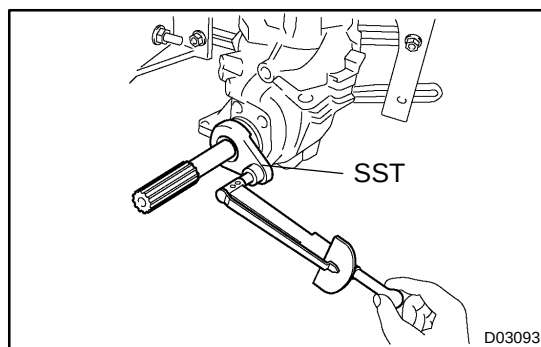
Z16229



- (c) If the teeth are not contacting properly, select the proper washer again.

Washer thickness: mm (in.)

Mark	Thickness	Mark	Thickness
AA	1.20 (0.0472)	HC	1.43 (0.0563)
AB	1.21 (0.0476)	JA	1.44 (0.0567)
AC	1.22 (0.0480)	JB	1.45 (0.0571)
BA	1.23 (0.0484)	JC	1.46 (0.0575)
BB	1.24 (0.0488)	KA	1.47 (0.0579)
BC	1.25 (0.0492)	KB	1.48 (0.0583)
CA	1.26 (0.0496)	KC	1.49 (0.0587)
CB	1.27 (0.0500)	LA	1.50 (0.0591)
CC	1.28 (0.0504)	LB	1.51 (0.0594)
DA	1.29 (0.0508)	LC	1.52 (0.0598)
DB	1.30 (0.0512)	MA	1.53 (0.0602)
DC	1.31 (0.0516)	MB	1.54 (0.0606)
EA	1.32 (0.0520)	MC	1.55 (0.0610)
EB	1.33 (0.0524)	NA	1.56 (0.0614)
EC	1.34 (0.0528)	NB	1.57 (0.0618)
FA	1.35 (0.0531)	NC	1.58 (0.0622)
FB	1.36 (0.0535)	PA	1.59 (0.0626)
FC	1.37 (0.0539)	PB	1.60 (0.0630)
GA	1.38 (0.0543)	PC	1.61 (0.0634)
GB	1.39 (0.0547)	QA	1.62 (0.0638)
GC	1.40 (0.0551)	QB	1.63 (0.0642)
HA	1.41 (0.0555)	QC	1.64 (0.0646)
HB	1.42 (0.0559)	RA	1.65 (0.0650)



12. ADJUST TOTAL PRELOAD

Using SST and a torque wrench, measure the total preload.

SST 09326-2001 1

Total preload:

New bearing:

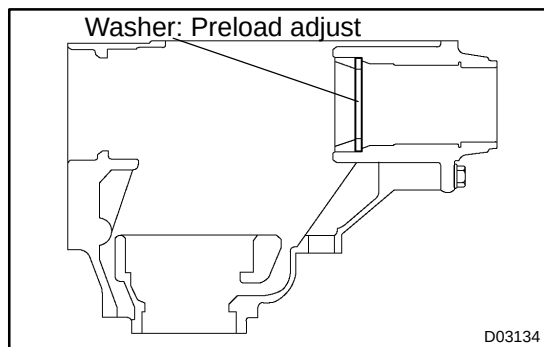
Driven pinion preload + 0.2 - 0.4 N·m (2 - 4 kgf·cm, 1.7 - 3.5 in.·lbf)

Reused bearing:

Driven pinion preload + 0.1 - 0.3 N·m (1 - 3 kgf·cm, 0.9 - 2.7 in.·lbf)

HINT:

Using a torque wrench with a fulcrum length of 160 mm (6.3 in.)

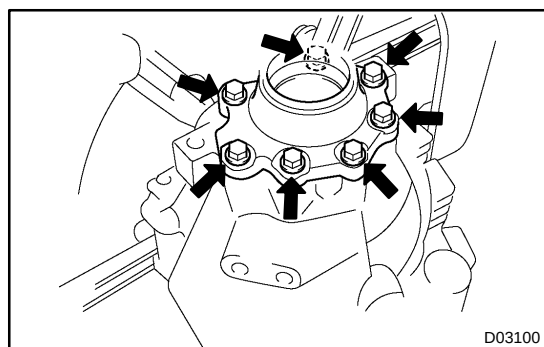
**HINT:**

Turn the driven pinion counterclockwise and clockwise several times.

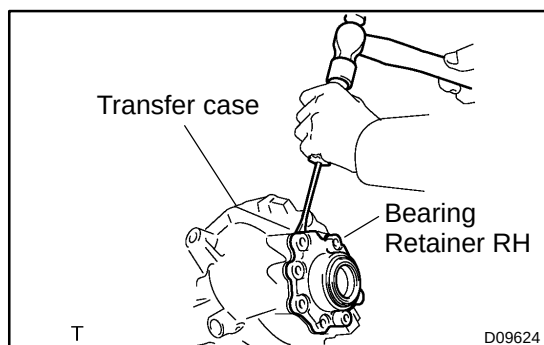
If the preload non-standard, again select proper washer.

Washer thickness: mm (in.)

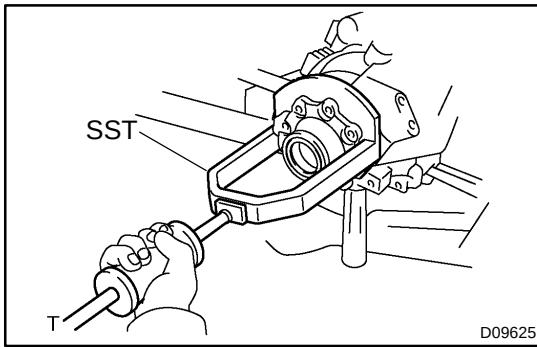
Mark	Thickness	Mark	Thickness
AA	1.47 (0.0579)	GB	2.04 (0.0803)
AB	1.50 (0.0591)	GC	2.07 (0.0815)
AC	1.53 (0.0602)	HA	2.10 (0.0827)
BA	1.56 (0.0614)	HB	2.13 (0.0839)
BB	1.59 (0.0626)	HC	2.16 (0.0850)
BC	1.62 (0.0638)	JA	2.19 (0.0862)
CA	1.65 (0.0650)	JB	2.22 (0.0874)
CB	1.68 (0.0661)	JC	2.25 (0.0886)
CC	1.71 (0.0673)	KA	2.28 (0.0898)
DA	1.74 (0.0685)	KB	2.31 (0.0909)
DB	1.77 (0.0697)	KC	2.34 (0.0921)
DC	1.80 (0.0709)	LA	2.37 (0.0933)
EA	1.83 (0.0720)	LB	2.40 (0.0945)
EB	1.86 (0.0734)	LC	2.43 (0.0957)
EC	1.89 (0.0744)	MA	2.46 (0.0969)
FA	1.92 (0.0756)	MB	2.49 (0.0980)
FB	1.95 (0.0768)	MC	2.52 (0.0992)
FC	1.98 (0.0780)	NA	2.55 (0.1004)
GA	2.01 (0.0791)	NB	2.58 (0.1016)

**13. REMOVE BEARING RETAINER RH**

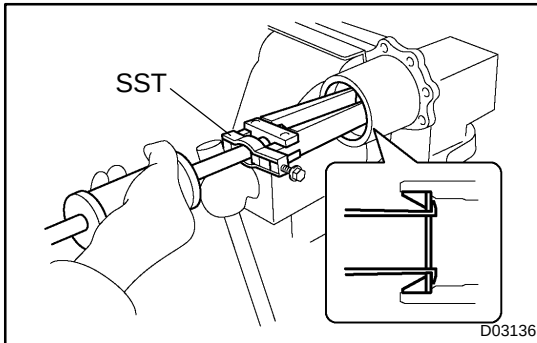
(a) Remove the 7 bolts.



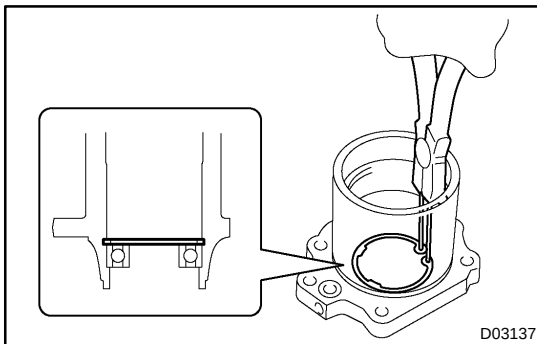
(b) Using a screwdriver and a hammer, make clearance by hitting between the bearing retainer RH and the transfer case.



- (c) Using SST, remove the bearing retainer RH from the transfer case.
SST 09520-10021

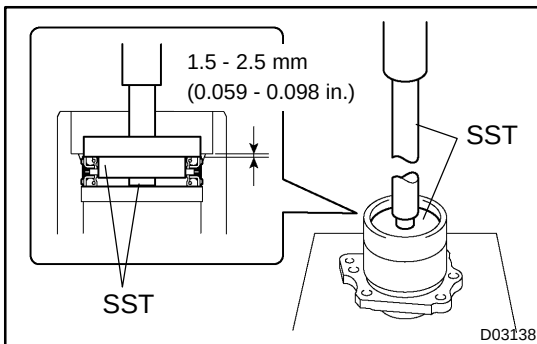


- (d) Using SST, remove the outer race and washer from the bearing retainer RH.
SST 09308-00010

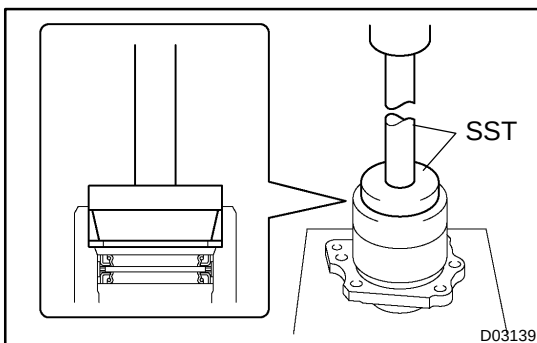


14. ASSEMBLE BEARING RETAINER RH

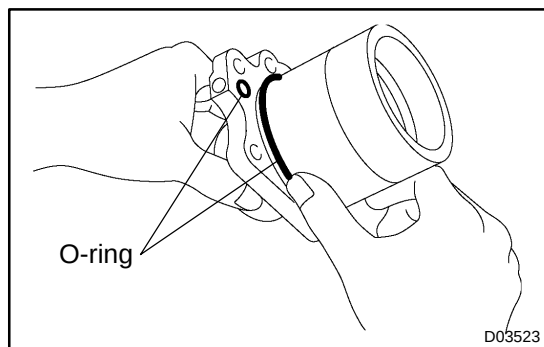
- (a) Install the side gear shaft holder bearing to the bearing retainer RH.
(b) Using a snap ring pliers, install the snap ring.
(c) Coat a new oil seal lip with MP grease.



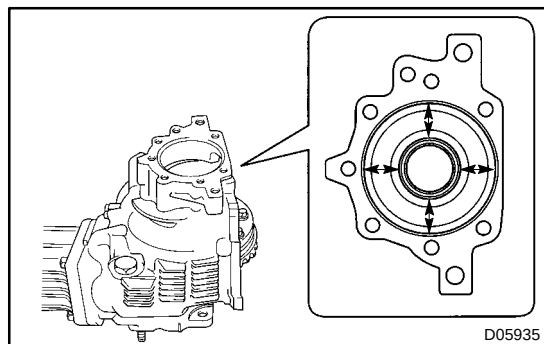
- (d) Using SST and a press, install the oil seal to the bearing retainer RH.
SST 09950-60010 (09951-00370, 09951-00540, 09952-06010), 09950-70010 (09951-07150)
(e) Install the washer.



- (f) Using SST and a press, install the outer race to the bearing retainer RH.
SST 09950-60010 (09951-00620), 09950-70010 (09951-07150)

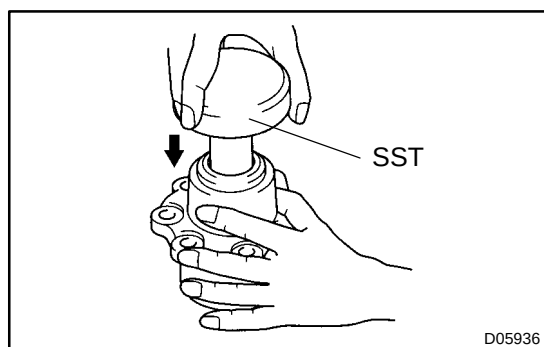


- (g) Coat 2 new O-rings with gear oil, then install them to the bearing retainer RH.



15. INSTALL BEARING RETAINER RH

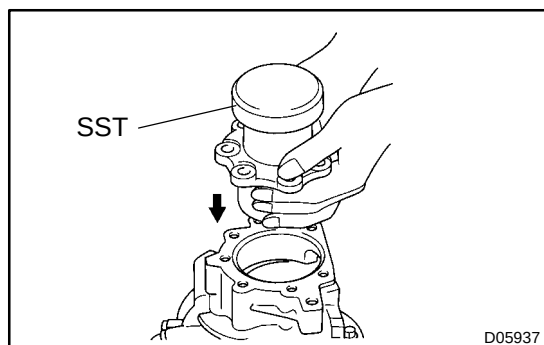
- (a) Put the installation surface for the bearing retainer RH of the transfer case upward.
- (b) Install the center differential control coupling onto the transfer case and make the center meet each other.



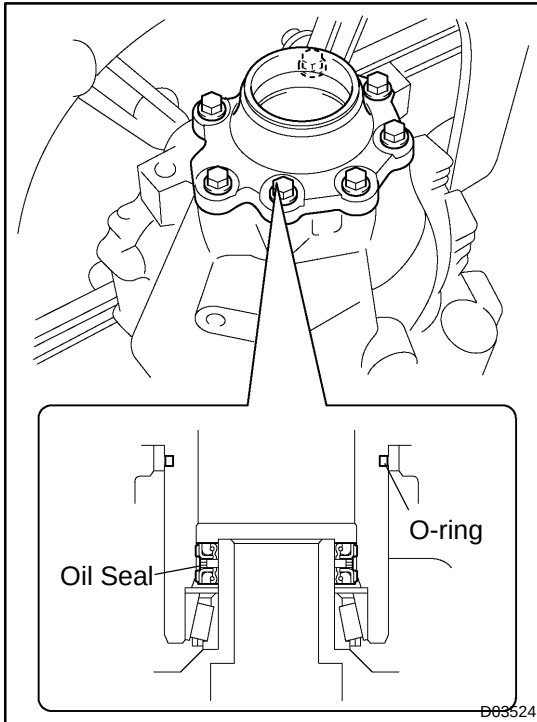
- (c) Insert the SST to the bearing retainer RH.
SST 09387-00090

NOTICE:

Insert SST straight in order not to damage the oil seal.



- (d) Install the bearing retainer RH with the SST to the transfer case center differential control coupling.

**NOTICE:**

- Do not make the transfer case, bearing retainer RH and SST interfere forcibly with the center differential control coupling.
- Pay attention for the damage and peeling off in the O-ring of the retainer.

HINT:

When the bearing retainer cannot be inserted, hit it soft with the plastic hammer and insert it.

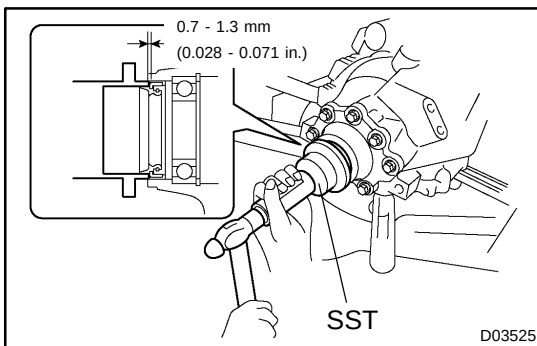
(e) After having inserted the bearing retainer to the transfer case, remove SST.

(f) Install 7 bolts.

Torque: 28 N·m (286 kgf·cm, 115 ft·lbf)

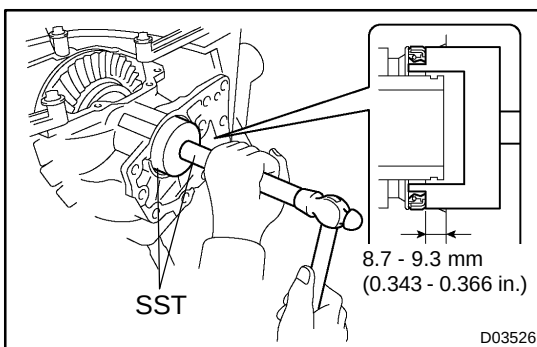
16. PRECHECK TOTAL PRELOAD

(See Step 12)

**17. INSTALL OIL SEAL**

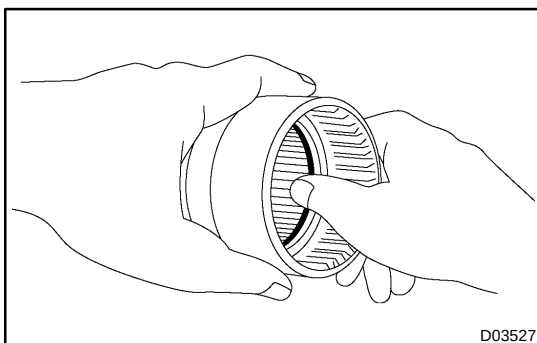
(a) Coat a new oil seal lip with MP grease.

(b) Using SST, install the oil seal to the bearing retainer RH.
SST 09223-4601 1

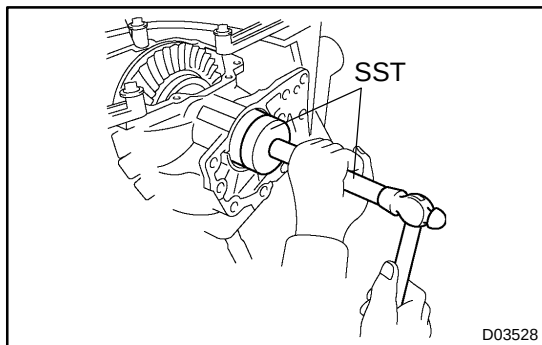


(c) Coat a new oil seal lip with MP grease.

(d) Using SST, install the oil seal to the transfer case.
SST 09387-00010, 09950-70010 (09951-07150)

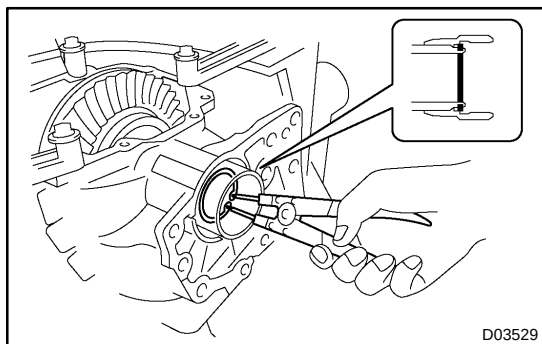
**18. INSTALL CENTER DIFFERENTIAL LOCK SLEEVE**

(a) Coat new O-ring with gear oil, install it to the center differential lock sleeve.

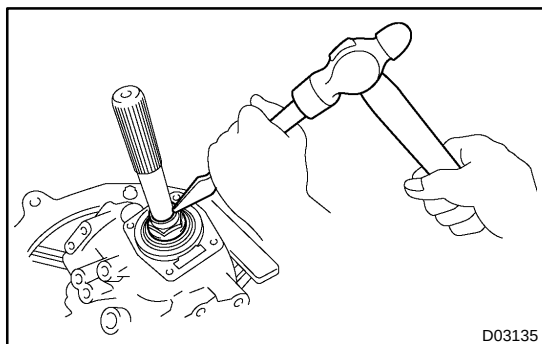


- (b) Using SST, install the center differential lock sleeve to the transfer case.

SST 09950-60010 (09951-00600), 09950-70010 (09951-07150)

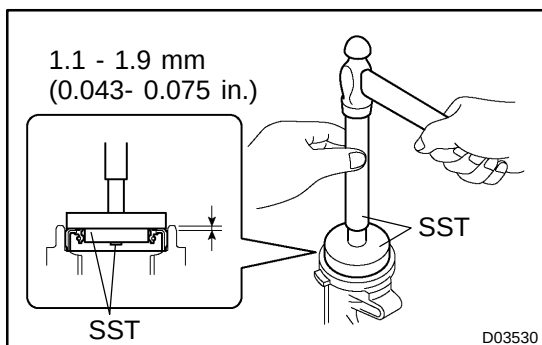


- (c) Using snap ring pliers, install the snap ring.



19. STAKE LOCK NUT

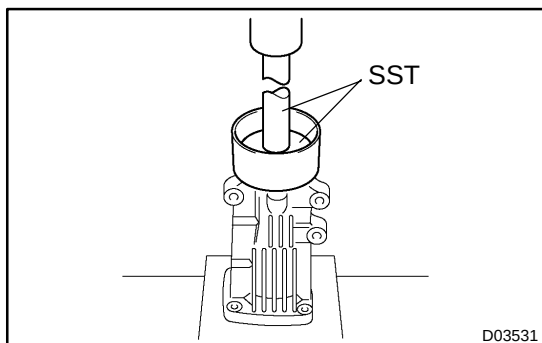
Using a chisel and a hammer, stake the lock nut.



20. INSTALL EXTENSION HOUSING

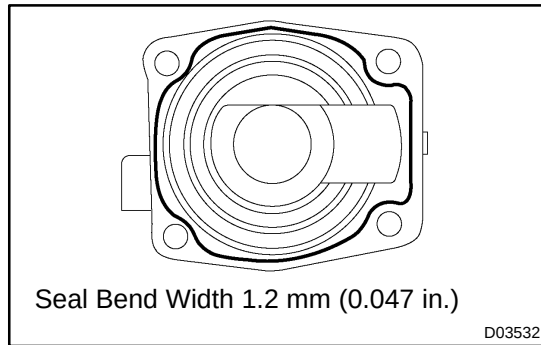
- (a) Coat the oil seal lip with MP grease.
(b) Using SST, install the oil seal to the extension housing.

SST 09950-60010 (09951-00380, 09951-00590, 09952-06010) 09950-70010 (09951-07150)



- (c) Using SST and a press, install the dust deflector to the extension housing.

SST 09950-60010 (09951-00640), 09950-70010 (09951-07150)

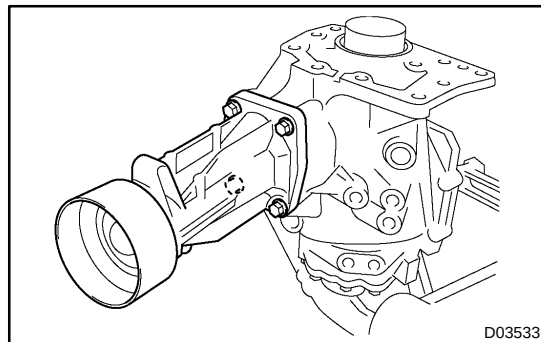


- (d) Remove any FIPG material and be careful not to drop oil on the contacting surfaces of the extension housing and the transfer case.

- (e) Apply FIPG to the extension housing.

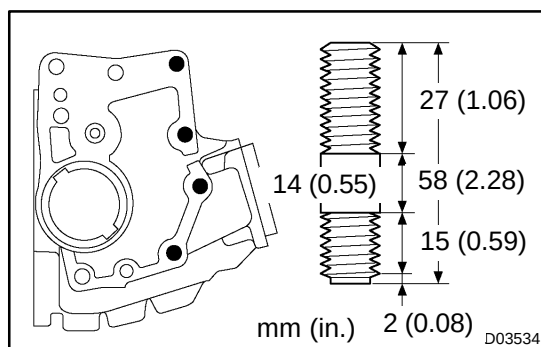
FIPG:

Part No.08826-00090, THREE BOND 1281 or equivalent



- (f) Install the extension housing with the 4 bolts.

Torque: 25.5 N·m (260 kgf·cm, 19 ft·lbf)



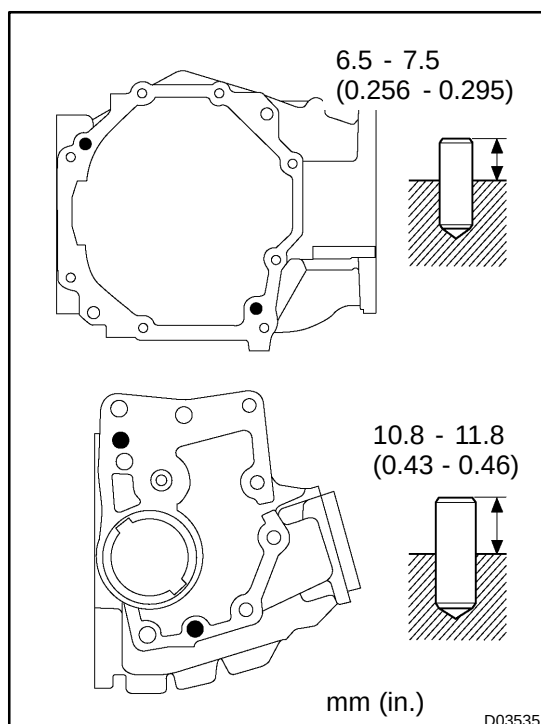
21. INSTALL STUD BOLT

Install the 4 stud bolts to the transfer case.

Torque: 39.2 N·m (400 kgf·cm, 29 ft·lbf)

HINT:

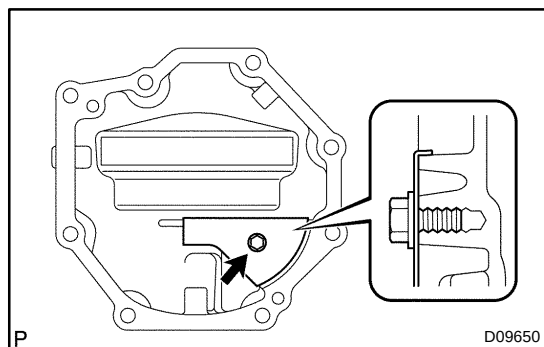
From the bottom side of the stud bolt shown in the illustration it should be installed to the case.



22. INSTALL PIN

Using a plastic hammer, install the 4 pins.

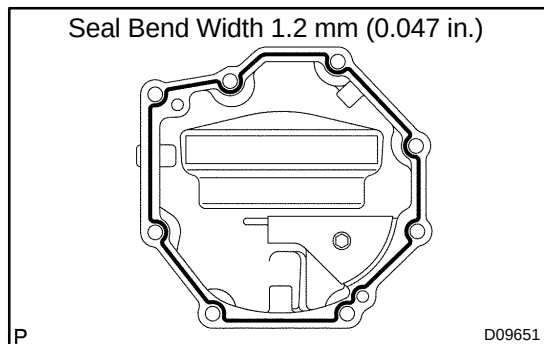
23. REMOVE TRANSFER FROM OVERHAUL ATTACHMENT

**24. INSTALL NO. 1 CASE COVER**

- (a) Install the oil deflector with the bolt to the No. 1 case cover.
Torque: 6.5 N·m (66 kgf·cm, 58 in·lbf)

NOTICE:

Pay due attention to the direction of deflector bending.

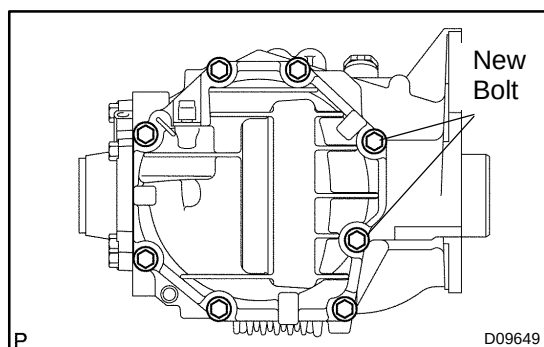


- (b) Remove any FIPG material and be careful not to drop oil on the contacting surfaces of the No. 1 case cover and the transfer case.

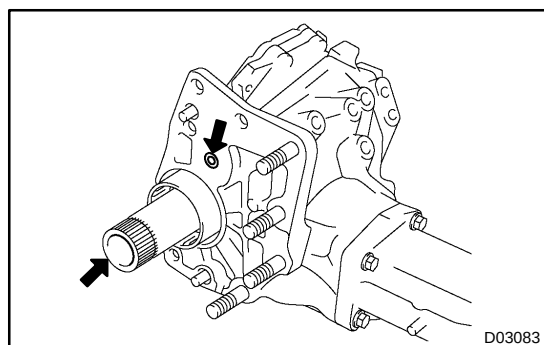
- (c) Apply FIPG to the No. 1 case cover.

FIPG:

Part No.08826-00090, THREE BOND 1281 or equivalent



- (d) Install the case cover with 2 new bolts and 6 bolts.
Torque: 19.6 N·m (200 kgf·cm, 14 ft·lbf)

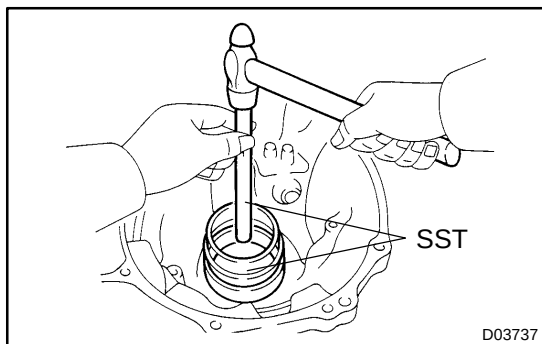
**25. INSTALL NO. 2 INTERMEDIATE SIDE GEAR****26. INSTALL GASKET**

Coat new gasket with ATF, install it to the transfer case.

REASSEMBLY

HINT:

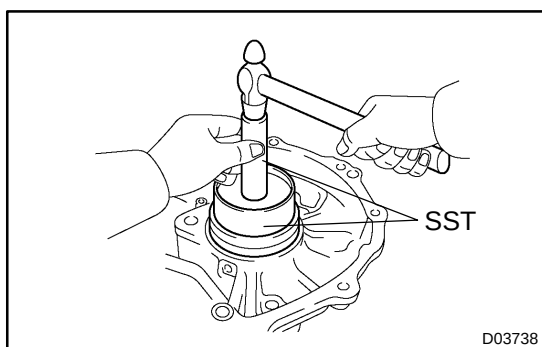
Coat all of the sliding and rotating surfaces with ATF before reassembly.



1. INSTALL TRANSAXLE HOUSING SIDE BEARING OUTER RACE

Using SST and a hammer, install the bearing outer race.

SST 09350-32014 (09351-32111), 09950-70010 (09951-07150)



2. INSTALL TRANSAXLE CASE SIDE BEARING OUTER RACE

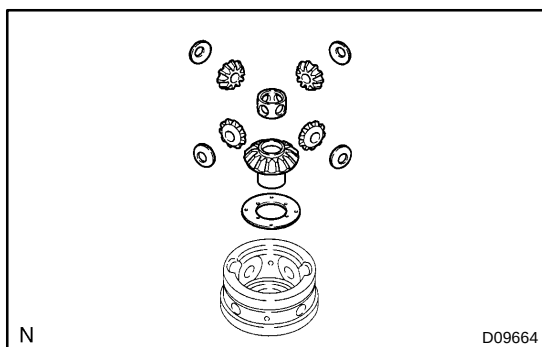
(a) Install the plate washer to the transaxle case.

HINT:

First select and install a plate washer of less thickness than before.

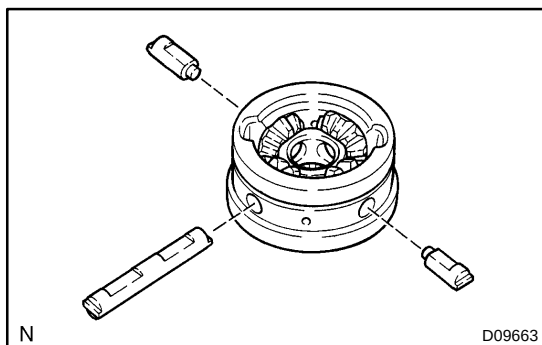
(b) Using SST and a hammer, install the bearing outer race.

SST 09223-15020, 09950-70010 (09951-07100)

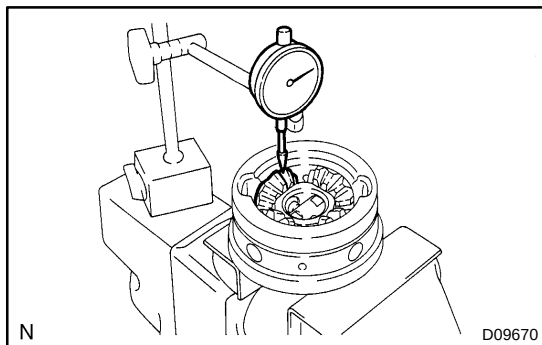


3. INSTALL FRONT DIFFERENTIAL CASE

(a) Coat the front differential side gear thrust washer, front differential side gear, front differential pinion shaft holder, 4 front differential pinion thrust washers, the 4 front differential pinions with ATF, install them to the front differential case.



(b) Install the 3 pinion shafts to the front differential case.



- (c) Using a dial indicator, measure the backlash of one pinion gear while holding the front differential side gear toward the case.

Standard backlash: 0.05 - 0.20 mm (0.002 - 0.008 in.)

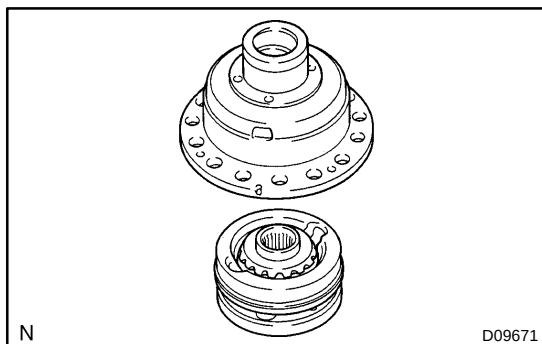
NOTICE:

Do not mount the surface of front differential case which contacts with bushing in a vise.

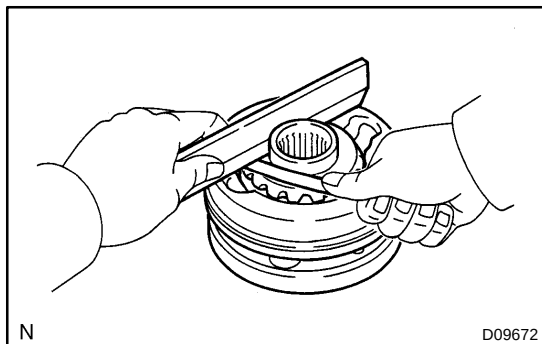
If the backlash is not within the specified value, refer to the table below and select a thrust washer which will ensure that the backlash is within the specified value.

Thrust washer thickness: mm (in.)

Mark	Thickness mm (in.)
B	1.00 (0.0394)
C	1.05 (0.0413)
D	1.10 (0.0433)
E	1.15 (0.0453)
F	1.20 (0.0472)
G	1.25 (0.0492)



- (d) Engage the front differential side gear to the above mentioned front differential case.
- (e) Install the differential case LH to the front differential case and measure its center.
- (f) After that, remove the differential case LH.



- (g) Using a straight edge and feeler gauge, measure the clearance between the front differential case and the front differential side gear.

t= Thrust washer thickness

L= Clearance

t= L- 0.16 - 0.27 mm (0.0063 - 0.0106 in.)

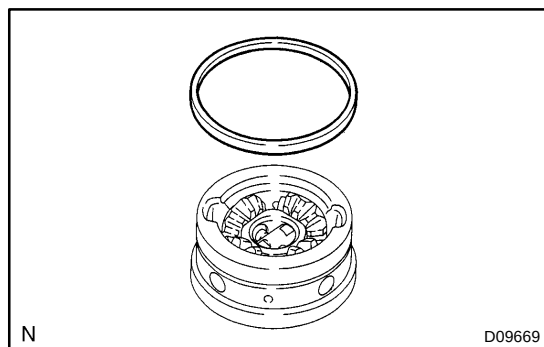
HINT:

Refer to the table below and select a thrust washer which will ensure that the clearance is within the specification.

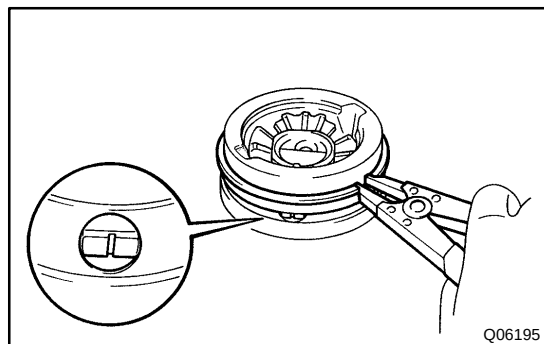
Thrust washer thickness: mm (in.)

Mark	Thickness	Mark	Thickness
A	0.95 (0.0373)	F	1.20 (0.0472)
B	1.00 (0.0393)	G	1.25 (0.0492)
C	1.05 (0.0413)	H	1.30 (0.0512)
D	1.10 (0.0433)	J	1.35 (0.0532)
E	1.15 (0.0453)	K	1.40 (0.0552)

If the clearance is not within the specified value, parts may have been assembled incorrectly, so check and reassemble it.



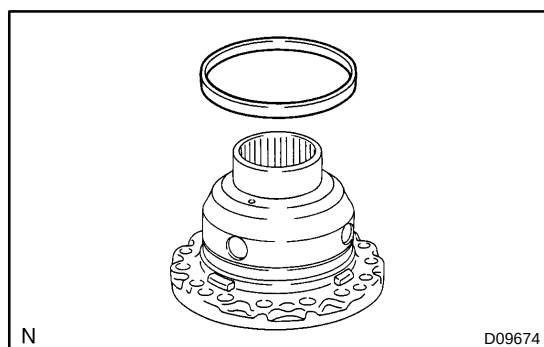
(h) Install the spacer to the front differential case.



(i) Using a snap ring expander, install the snap ring, as shown.

HINT:

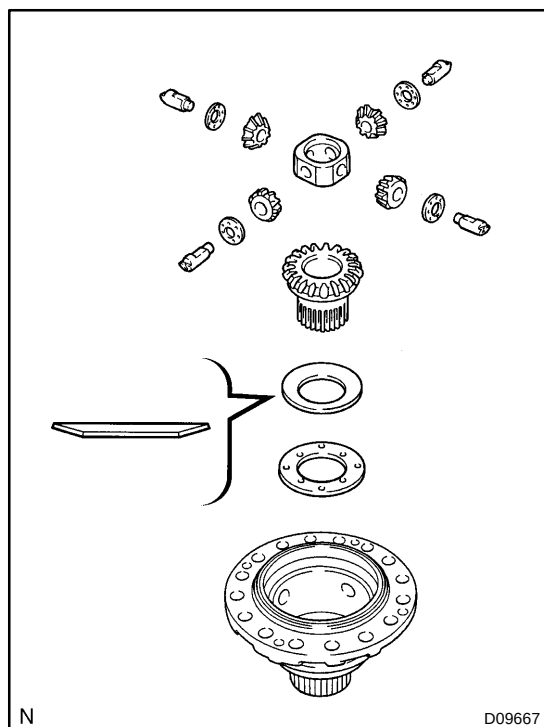
Before installing the shaft snap ring, wrap vinyl tape around the case to avoid damaging the case.



4. INSTALL DIFFERENTIAL RH CASE

(a) Install the spacer to the differential RH case.

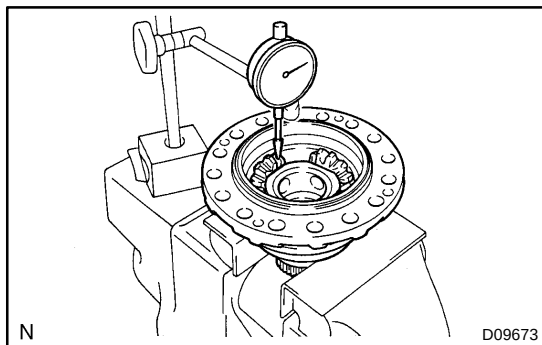
(b) Slide down the spacer to install the 4 center differential pinion shafts.



(c) Install the center differential side gear thrust washer No. 1, conical washer, center differential side gear, center differential pinion shaft holder, 4 center differential pinions, 4 center differential pinion thrust washers and 4 center differential pinion shafts to the differential RH case.

HINT:

Ensure that the conical washers is installed correctly.



5. CHECK CENTER DIFFERENTIAL PINION GEAR BACKLASH OF DIFFERENTIAL RH CASE SIDE

- (a) Using a dial indicator, measure the backlash of one pinion gear while holding the front differential side gear toward the case.

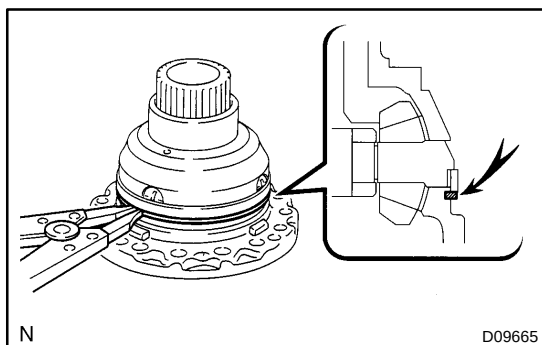
Standard backlash:

0.05 - 0.20 mm (0.0020 - 0.0079 in.)

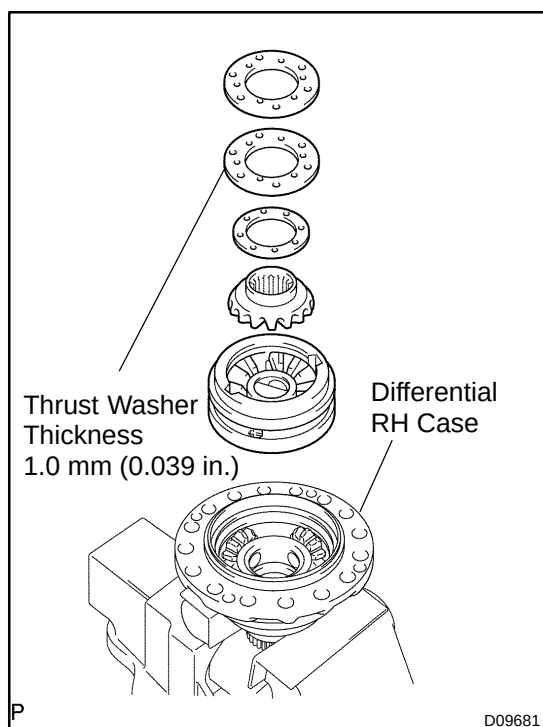
If the backlash is not within the specified value, refer to the table below and select a thrust washer which satisfied the specified value.

Thrust washer thickness: mm (in.)

Mark	Thickness	Mark	Thickness
MA	0.80 (0.0315)	MH	1.15 (0.0453)
MB	0.85 (0.0335)	MJ	1.20 (0.0472)
MC	0.90 (0.0354)	MK	1.25 (0.0492)
MD	0.95 (0.0374)	ML	1.30 (0.0512)
ME	1.00 (0.0394)	MM	1.35 (0.0531)
MF	1.05 (0.0413)	MN	1.40 (0.0551)
MG	1.10 (0.0433)		



- (b) Slide up the spacer to the install the snap ring.
 (c) Using a snap ring expander, install the snap ring as shown.

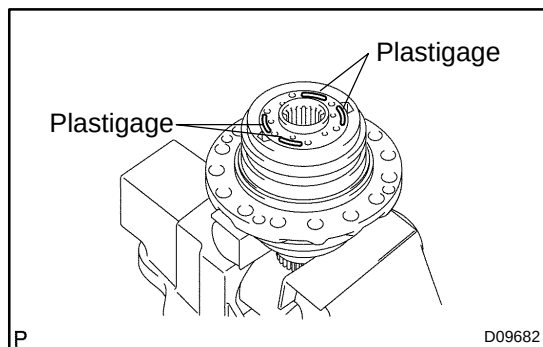


6. CHECK AND ADJUST CENTER DIFFERENTIAL SIDE GEAR THRUST CLEARANCE (FRONT DIFFERENTIAL LH CASE SIDE)

- (a) Temporarily install the front differential case assembly, front differential side gear, front differential side gear thrust washer, (temporarily install) a 1.0 mm (0.039 in.) thick center differential side gear thrust washer No. 2 and center differential side gear thrust washer No. 2 to the differential RH case.

HINT:

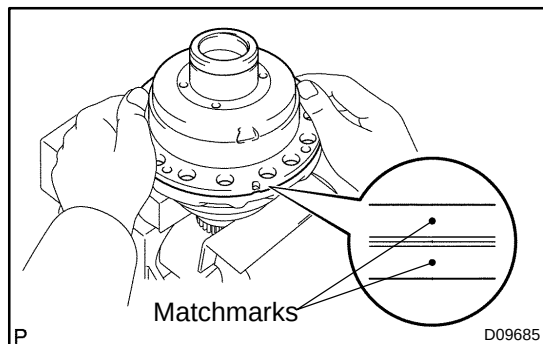
- Engage the front differential side gear and pinion gear of the differential RH case.
- The temporarily installed a 1.0 mm (0.039 in.) thick center differential side gear thrust washer No. 2 is used for reference when checking backlash.



- (b) Clean the contact surface of the center differential side gear thrust washer No. 2 and differential LH case.
- (c) Apply plastigage on the center differential side gear thrust washer No. 2, as shown.

HINT:

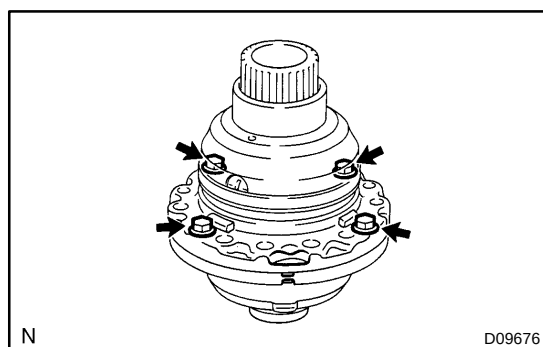
Apply the plastigage on the center differential side gear thrust washer No. 2 in the 4 positions directly above the pinion shafts in the differential RH case's position.



- (d) Install the differential LH case downward.

HINT:

Align the matchmarks on the differential RH case and contact the differential LH case.



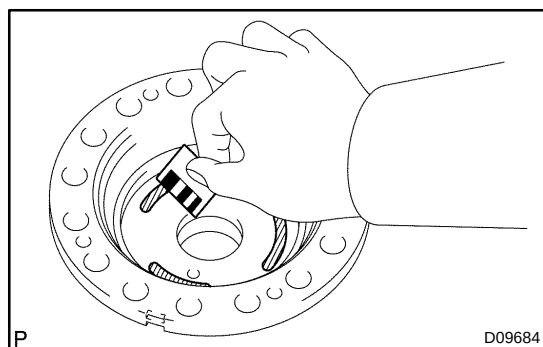
- (e) Temporarily install the differential RH case and service 4 bolts to the differential LH case.

Parts No:

Service bolt: 90105-08100

Torque: 33 N·m (337 kgf·cm, 24 ft·lbf)

- (f) Remove the 4 bolts and differential LH case upward.



- (g) Measure the plastigage at widest point.

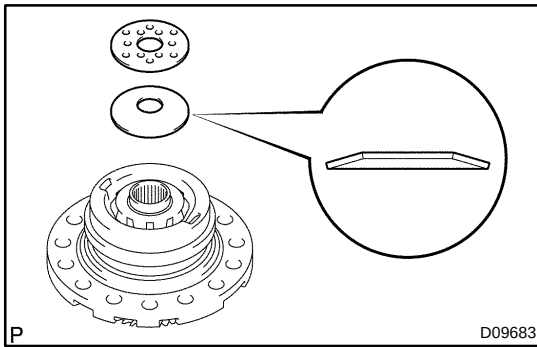
Standard clearance: 0.16 - 0.25 mm (0.006 - 0.010 in.)

Refer to the table below, select the thrust washer No. 2 which will ensure that the backlash is within the specification. Try to select a washer of the same size.

Thrust washer thickness: mm (in.)

Mark	Thickness	Mark	Thickness
0	0.80 (0.0315)	7	1.15 (0.0453)
1	0.85 (0.0335)	8	1.20 (0.0472)
2	0.90 (0.0354)	9	1.25 (0.0492)
3	0.95 (0.0374)	A	1.30 (0.0512)
4	1.00 (0.0394)	B	1.35 (0.0531)
5	1.05 (0.0413)	C	1.40 (0.0551)
6	1.10 (0.0433)		

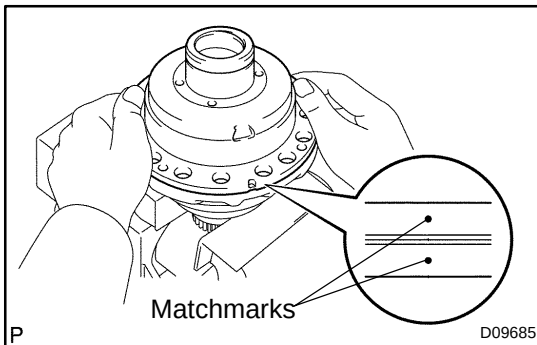
- (h) Remove the differential LH case, center differential side gear thrust washer No. 2 and (temporarily install) a 1.0 mm (0.039 in.) thick center differential side gear thrust washer No. 2.



- (i) Install the conical washer and center differential side gear thrust washer No. 2 (previously selected) from differential case.

HINT:

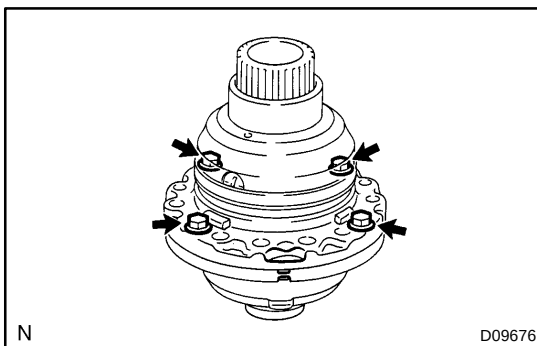
Be careful not to mistake the direction of the conical washer.



- (j) Install the differential LH case downward.

HINT:

Align the matchmarks on the differential RH case and contact the differential LH case.

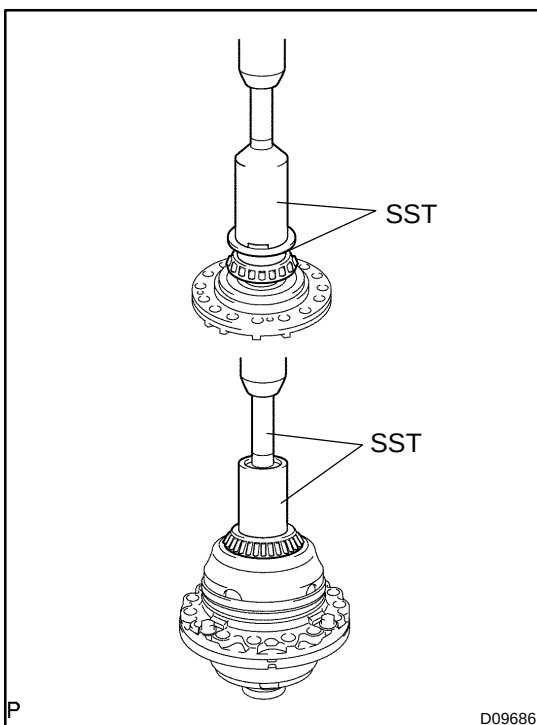


- (k) Temporarily install the differential RH case and 4 service bolts to the differential LH case.

Parts No:

Service bolt: 90105-08100

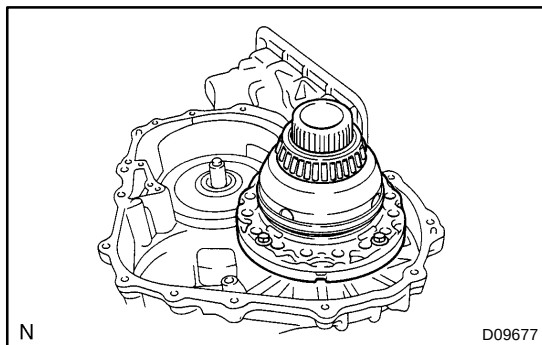
Torque: 33 N·m (337 kgf·cm, 24 ft·lbf)



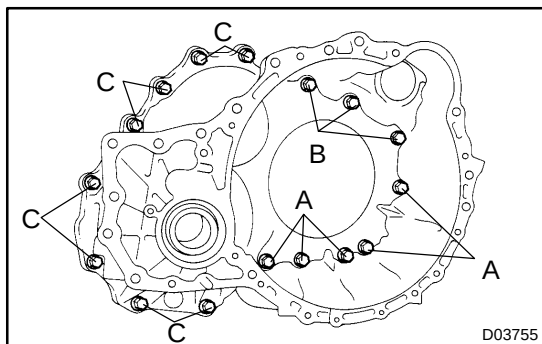
7. CHECK PRELOAD OF DIFFERENTIAL CASE

- (a) Using SST and a press, install the side bearing RR and FR to the differential case.

SST 09214- 76011, 09252- 10010, 09316- 20011, 09649-17010



- (b) Install the differential to the T/F case.



- (c) Remove any FIPG material and be careful not to drop oil on the contacting surfaces of the transaxle case and the transaxle housing.
- (d) Install the transaxle housing and 16 bolts to the transaxle case.

HINT:

Although the bolt A is a non-reusable seal bolt, in the case, clean the bolts and tighten them as well as the bolts B and C.

Torque:

Bolt A: 22 N·m (226 kgf·cm, 16 ft·lbf)

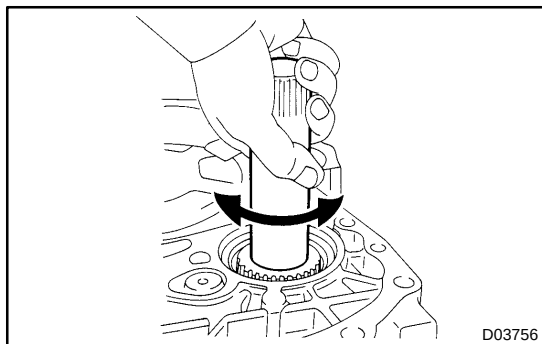
Bolt B and C: 29 N·m (300 kgf·cm, 22 ft·lbf)

Bolt length:

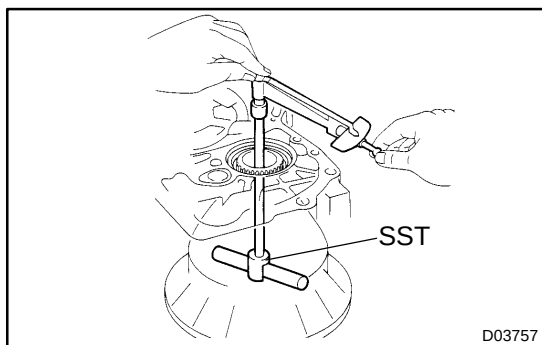
Bolt A: 50.0 mm (1.969 in.)

Bolt B: 50.0 mm (1.969 in.)

Bolt C: 42.0 mm (1.654 in.)



- (e) Temporarily install the intermediate shaft.
- (f) Turn the intermediate shaft right and left 2 or 3 times to allow the bearing settle.
- (g) Remove the intermediate shaft.



- (h) Using SST and torque wrench, measure the turning torque of the differential.

SST 09564-3201 1

Turning torque at 60 rpm:

New bearing:

0.20 - 0.69 N·m (2 - 7 kgf·cm, 1.8 - 6.1 in·lbf)

Used bearing:

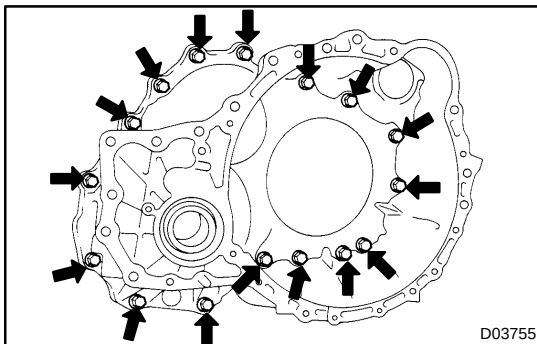
0.10 - 0.35 N·m (1 - 4 kgf·cm, 0.9 - 3.1 in·lbf)

HINT:

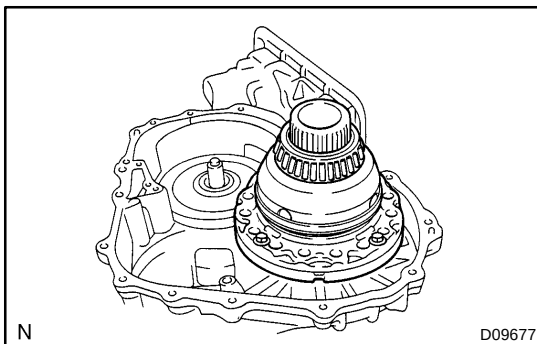
If the preload is not within the specified value, refer to the table below and select a thrust washer which preload is within the specified value.

Plate washer thickness: mm (in.)

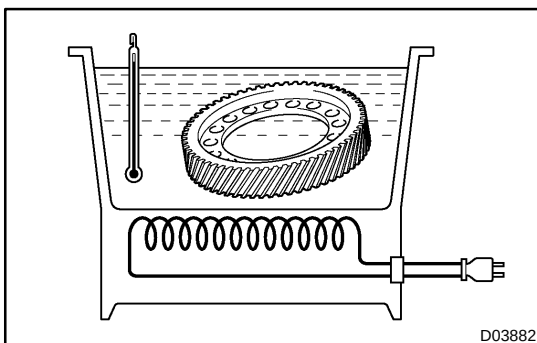
Mark	Thickness	Mark	Thickness
0	2.00 (0.0787)	9	2.45 (0.0965)
1	2.05 (0.0807)	A	2.50 (0.0984)
2	2.10 (0.0827)	B	2.55 (0.1004)
3	2.15 (0.0846)	C	2.60 (0.1024)
4	2.20 (0.0866)	D	2.65 (0.1043)
5	2.25 (0.0886)	E	2.70 (0.1063)
6	2.30 (0.0906)	F	2.75 (0.1083)
7	2.35 (0.0925)	G	2.80 (0.1102)
8	2.40 (0.0945)	H	2.85 (0.1122)



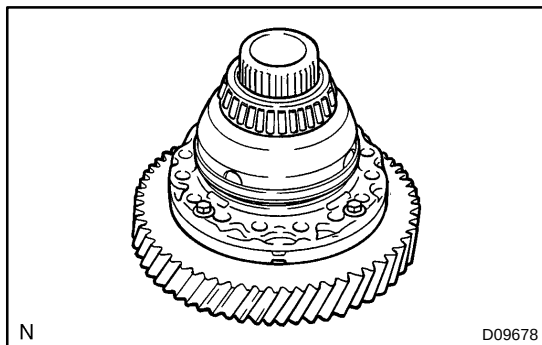
- (i) Remove the 16 bolts and the transaxle housing.



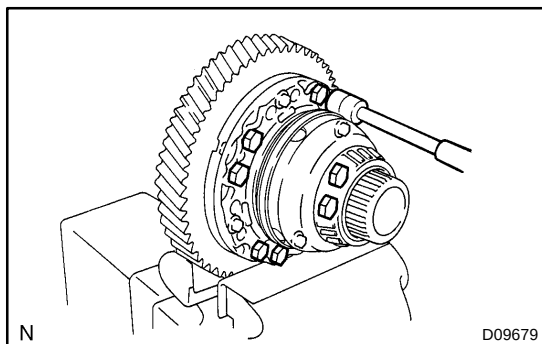
- (j) Remove the differential from the transaxle case.

**8. INSTALL RING GEAR ON DIFFERENTIAL CASE**

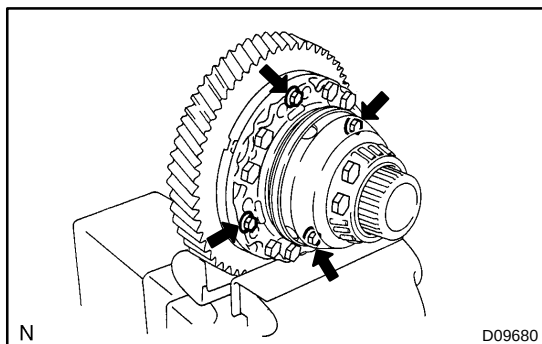
- Clean the contact surfaces of the differential case and the ring gear.
- Heat the ring gear in boiling water.
- Carefully remove the ring gear from the boiling water.



(d) Install the ring gear to the differential.



(e) Temporarily install the 8 bolts.

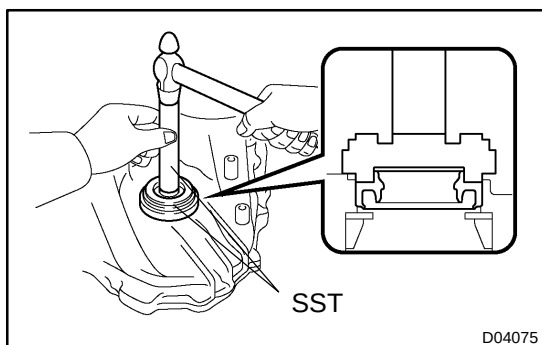


(f) Remove the 4 service bolts.

(g) Temporarily install the 8 bolts.

(h) Tighten the 16 bolts.

Torque: 95 N·m (970 kgf·cm, 70 ft·lbf)

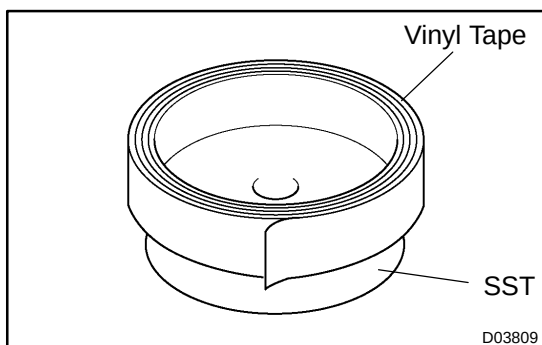


9. INSTALL DIFFERENTIAL SIDE BEARING RETAINER OIL SEAL

(a) Using SST, install the new oil seal.

SST 09608-10010, 09950-70010 (09951-07150)

(b) Coat a lip of oil seal with petroleum jelly.



10. INSTALL TRANSAXLE HOUSING OIL SEAL

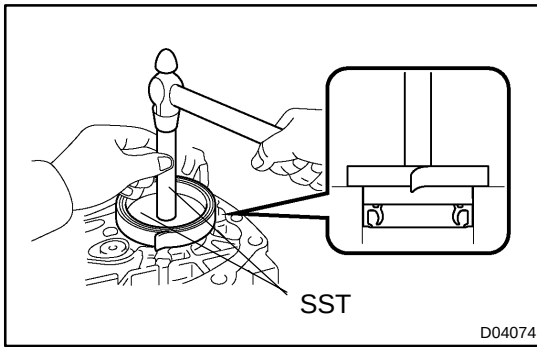
(a) Wind a vinyl tape around SST at the place 6.0 mm (0.236 in.) above from the bottom end until the thickness of the wound tape is about 5.0 mm (0.197 in.).

SST 09950-60010 (09951-00730)

NOTICE:

Clean SST to remove deposited oil, before winding a vinyl tape.

(b) Coat the lip of oil seal with petroleum jelly.



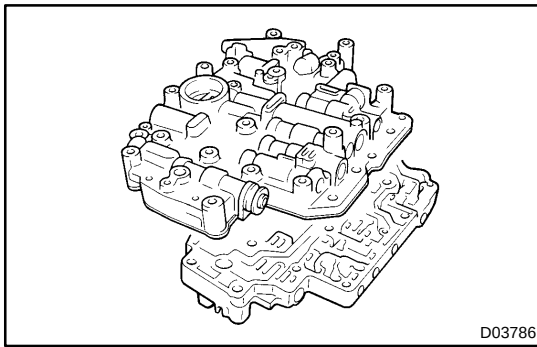
- (c) Using SST, install the new oil seal.

SST 09950-60020 (09951-00730), 09950-70010
(09951-07150)

Oil seal depth: 5.5 - 6.5 mm (0.217 - 0.256 in.)

NOTICE:

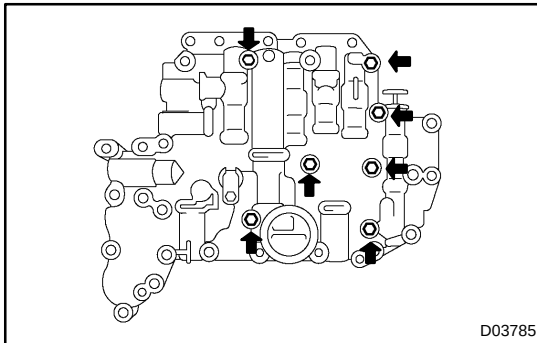
When the wound vinyl tape contacts the transaxle housing stop press-fitting.



REASSEMBLY

1. ASSEMBLE VALVE BODY

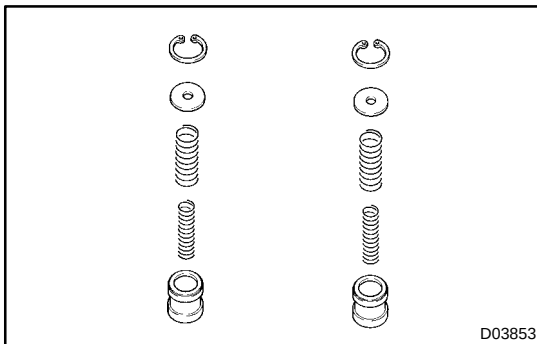
- (a) Install the check balls to the upper and lower valve body.
- (b) Install the plate to the lower valve body.
- (c) Install the lower valve body with plate to the upper valve body.



- (d) Install the 7 bolts to the lower valve body.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)

Bolt length: 41 mm (1.614 in.)

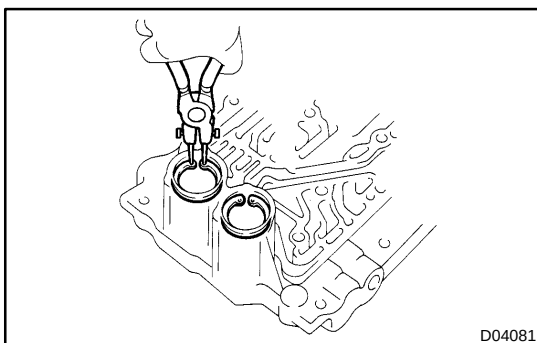


2. INSTALL ACCUMULATOR

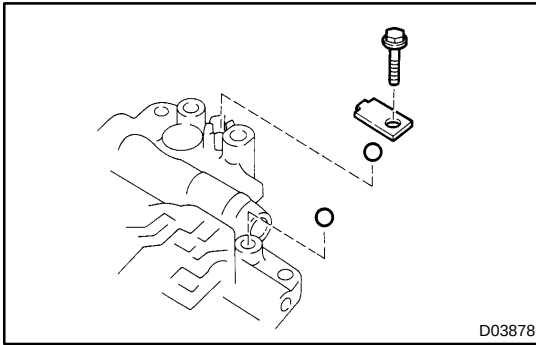
- (a) Install the 2 accumulator valves to the valve body.
- (b) Install the 4 springs to the valve body.

Spring length: mm (in.)

Spring		Free length / Outer diameter mm (in.)	Color
C ₂	Inner:	47.58 (1.8732) / 11.2 (0.441)	Brown
	Outer:	47.61 (1.8744) / 12.0 (0.472)	Brown
B ₁	Inner:	43.88 (1.7276) / 11.0 (0.433)	Purple
	Outer:	45.12 (1.7764) / 11.8 (0.465)	White

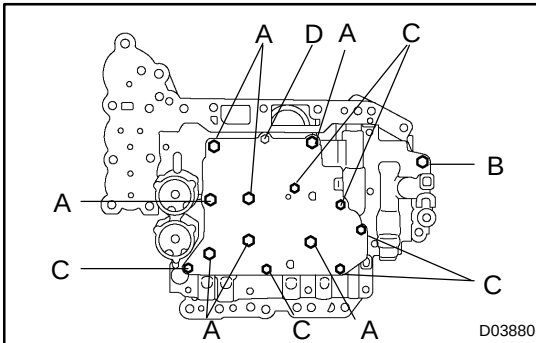


- (c) Using snap ring pliers, install the snap ring.



- (d) Install 2 check balls, a retainer and a bolt to the upper valve body.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)



- (e) Turn over the valve body.
(f) Install the 15 bolts, gasket and upper body cover.

Torque:

Bolt A: 11 N·m (110 kgf·cm, 8 ft·lbf)

Bolt B: 11 N·m (110 kgf·cm, 8 ft·lbf)

Bolt C: 6.6 N·m (67 kgf·cm, 58 in·lbf)

Bolt D: 6.6 N·m (67 kgf·cm, 58 in·lbf)

HINT:

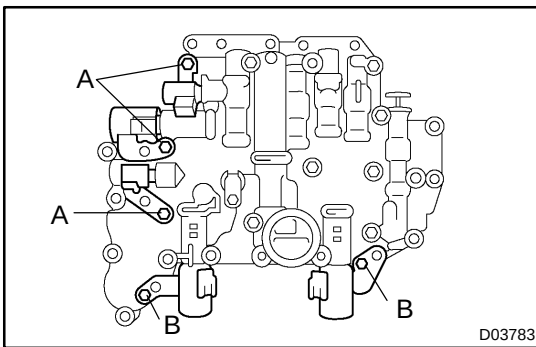
Each bolts length is indicated below.

Bolt A: 41 mm (1.614 in.)

Bolt B: 30 mm (1.181 in.)

Bolt C: 14 mm (0.551 in.)

Bolt D: 10 mm (0.394 in.)



3. INSTALL SHIFT SOLENOID VALVE

Install the 5 shift solenoid valves with 5 bolts.

Torque:

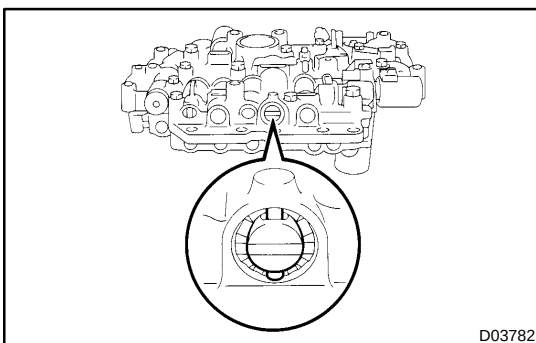
Bolt A: 11 N·m (110 kgf·cm, 8 ft·lbf)

Bolt B: 6.6 N·m (67 kgf·cm, 58 in·lbf)

Bolt length:

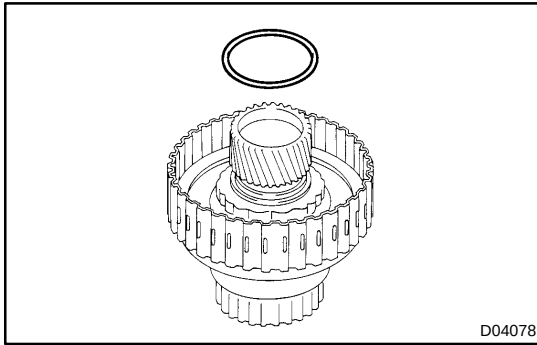
Bolt A: 45 mm (1.77 in.)

Bolt B: 12 mm (0.45 in.)



4. CHECK PRIMARY REGULATOR VALVE POSITION

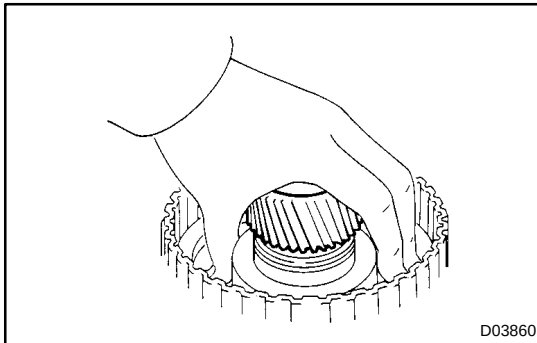
Make sure that the primary regulator valve is positioned in the same place where it was removed.



REASSEMBLY

1. INSTALL O-RING

Coat new O-ring with ATF, install it to the U/D clutch drum.

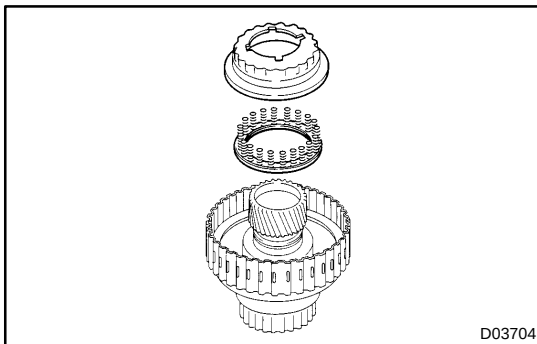


2. INSTALL U/D CLUTCH PISTON

Coat the U/D clutch piston with ATF, install it to the U/D clutch piston drum.

NOTICE:

Be careful not to damage the O-ring.

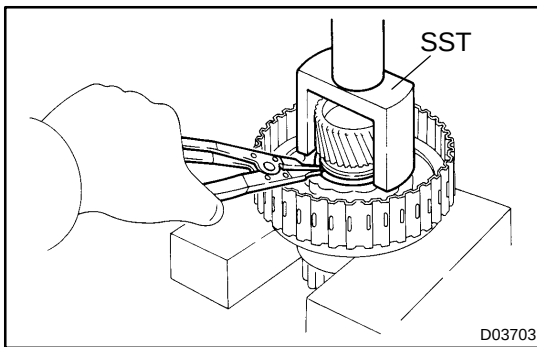


3. INSTALL PISTON RETURN SPRING

- (a) Install the piston return spring and clutch balancer to the U/D clutch drum.

NOTICE:

Be careful not to damage the lip seal of clutch balancer.



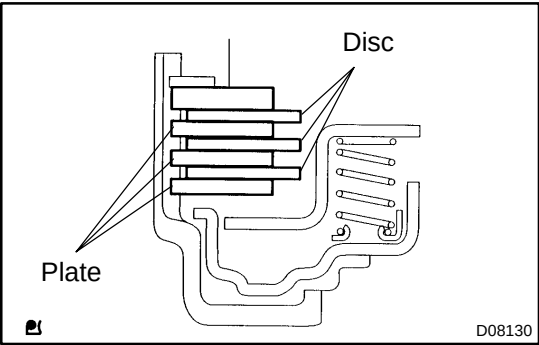
- (b) Place SST on the clutch balancer and compress the piston return spring with a press.

SST 09350-32014 (09351-32070)

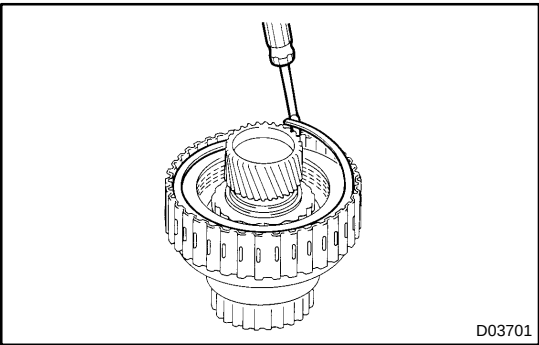
- (c) Using a snap ring expander, install the snap ring to U/D clutch drum.

NOTICE:

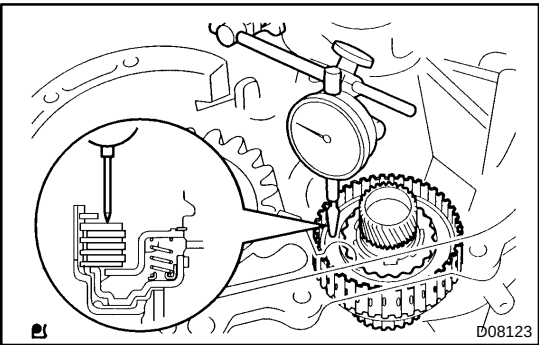
- Be sure the end gap of the snap ring is not aligned with the clutch balancer claw.
- Stop the press when the spring sheet is lowered to the place 1 - 2 mm (0.039 - 0.078 in.) from the snap ring groove, preventing the spring sheet from deforming.
- Do not expand the snap ring excessively.



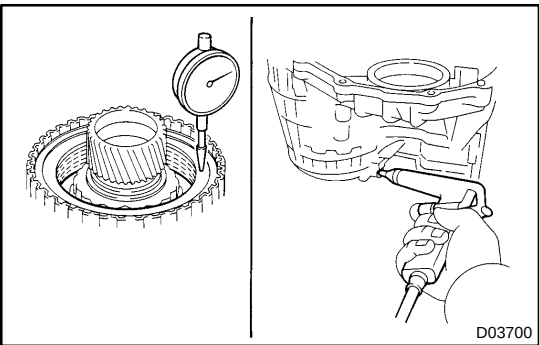
- 4. INSTALL PLATE, DISC AND FLANGE**
- (a) Install the 3 plates, 3 discs and flange.
Install in order: P = Plate, D = Disc, F = Flange
P - D - P - D - P - D - F



- (b) Using a screwdriver, install the snap ring.
 (c) Check that the end gap of snap ring is not aligned with one of the cutouts.



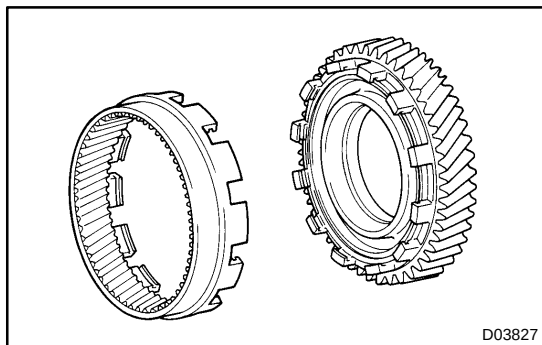
- 5. CHECK PISTON STROKE OF U/D CLUTCH**
- (a) Install the U/D clutch to the transaxle case.
NOTICE:
Be careful not to damage the oil seal rings.
 (b) Install the dial indicator, as shown in the illustration.



- (c) Measure the U/D clutch piston stroke while applying and releasing compressed air (392 kgf/cm², 4.0 kPa, 57 psi).
Piston stroke: 1.51 - 1.90 mm (0.0594 - 0.0748 in.)
 If the piston stroke is less than the limit of piston stroke, parts may have been assembled incorrectly, so check and reassemble again.
 If the stroke is non-standard, select another flange.
HINT:
 There are 3 flanges in different thickness.

Flange Thickness: mm (in.)

No.	Thickness	No.	Thickness
1	3.0 (0.118)	3	3.4 (0.134)
2	3.2 (0.126)		

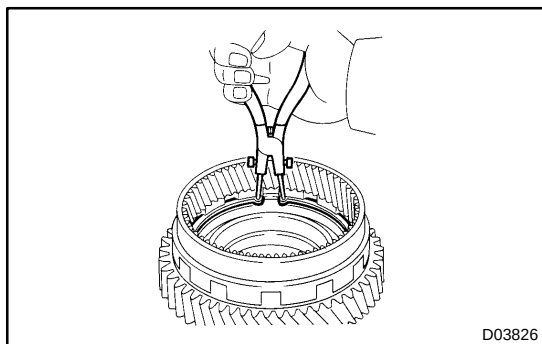


REASSEMBLY

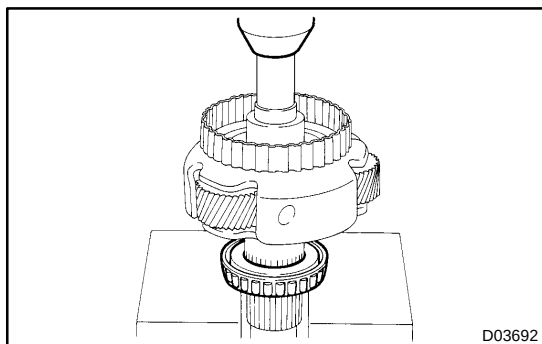
1. INSTALL U/D PLANETARY RING GEAR

- (a) Install the U/D planetary ring gear to the counter driven gear.

AX0B6-02



- (b) Using snap ring pliers, install snap ring.

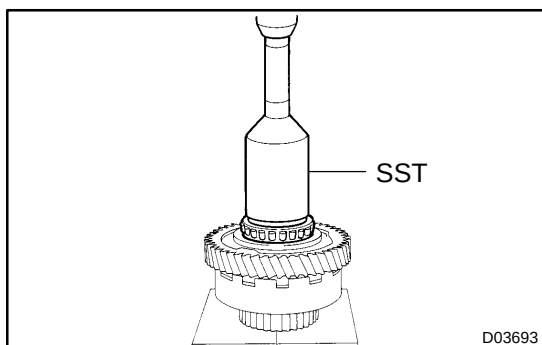


2. INSTALL U/D PLANETARY GEAR

- (a) Using a press, install the tapered roller bearing RR to the U/D planetary gear.

NOTICE:

Press in the bearing until it becomes flat at the bottom.



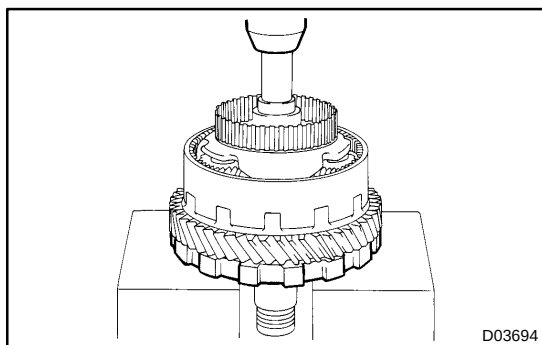
- (b) Install the counter driven gear with the U/D planetary ring gear.

- (c) Using SST and a press, install the tapered roller bearing FR.

SST 09214-7601 1

NOTICE:

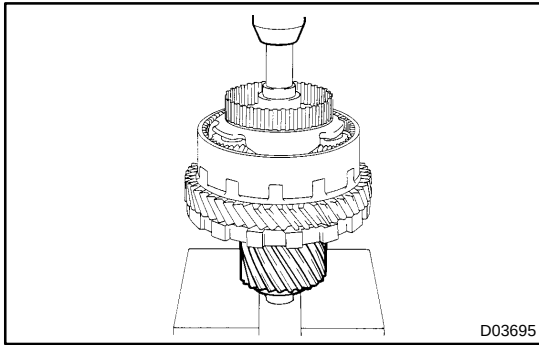
Press in the counter driven gear while rotating it.



- (d) Using a press, install the parking lock gear.

NOTICE:

Press in the counter driven gear while rotating it.



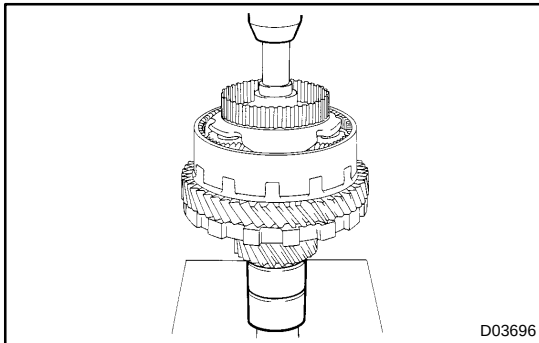
(e) Using a press, install the differential drive pinion.

NOTICE:

Press in the counter driven gear while rotating it.

HINT:

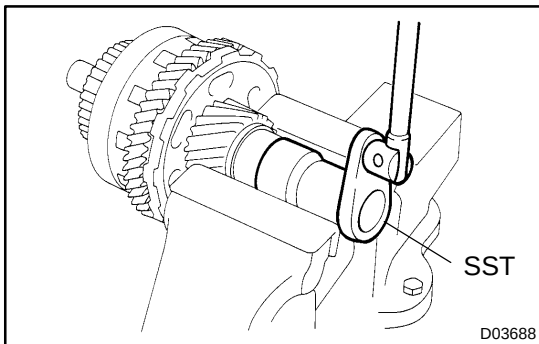
When replacing the differential drive pinion, replace it together with the U/D planetary gear.



(f) Using a press, install the cylindrical roller bearing inner race.

NOTICE:

Press in the counter driven gear while rotating it.



(g) Clamp the U/D planetary gear in soft jaw vise.

NOTICE:

Be careful not to damage the differential drive pinion.

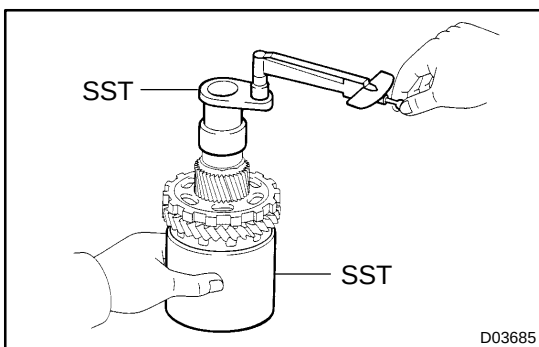
(h) Using SST, install a new lock nut.

Torque: 280 N·m (2,855 kgf·cm, 207 ft·lbf)

SST 09564-16020

HINT:

Use a torque wrench with a fulcrum length of 750 mm (29.53 in.).



3. MEASURE TURNING TORQUE OF U/D OUTPUT SHAFT

Using SST and a small torque wrench, measure the turning torque of U/D output shaft.

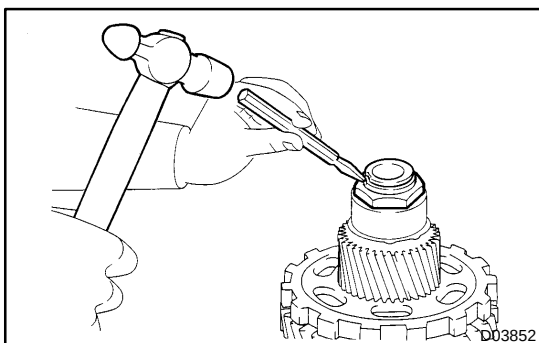
SST 09387-00050, 09564-16020

Turning torque at 60 rpm:

0.79 - 5.77 N·m (8 - 59 kgf·cm, 7.0 - 51.1 in·lbf)

HINT:

Use a torque wrench with a fulcrum length 160 mm (6.3 in.).

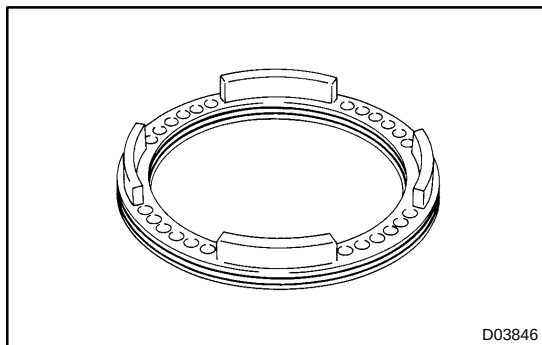


4. STAKE LOCK NUT

Using a pin punch and hammer, stake the lock nut.

NOTICE:

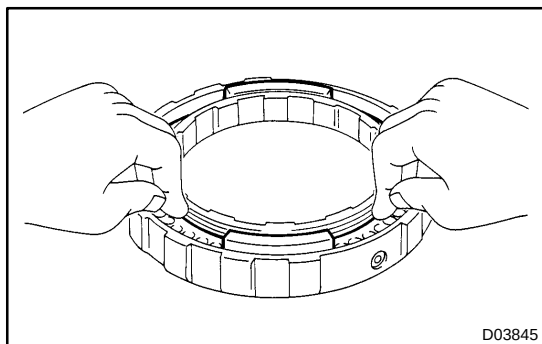
Also, make sure that there are no cracks on the nut.



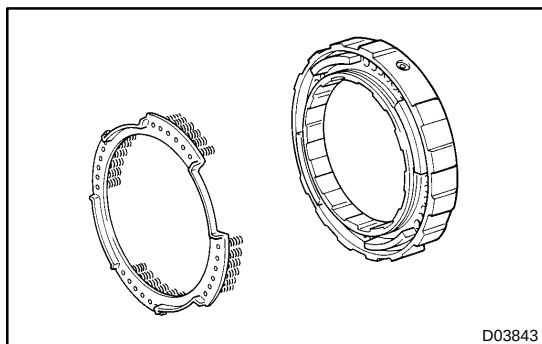
REASSEMBLY

1. INSTALL 2ND BRAKE PISTON

- (a) Coat 2 new O-rings with ATF and install them in the 2nd brake piston.

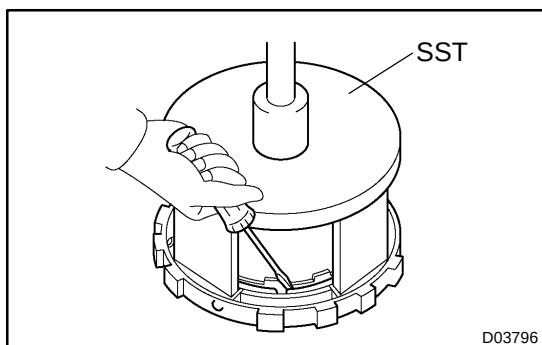


- (b) Be careful not to damage the O-rings and press in the 2nd brake piston into the 2nd brake cylinder with your hands.



2. INSTALL PISTON RETURN SPRING

- (a) Install the piston return spring.



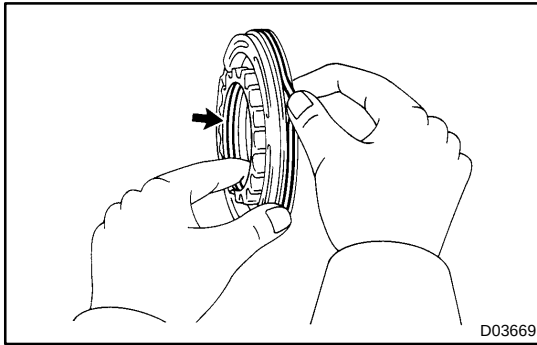
- (b) Place SST on the piston return spring, and compress the piston return spring with a press.

SST 09387-00060

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

NOTICE:

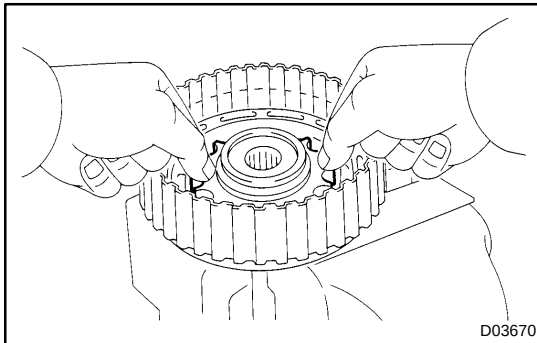
Be sure the end gap of the snap ring is not aligned with the piston return spring claw.



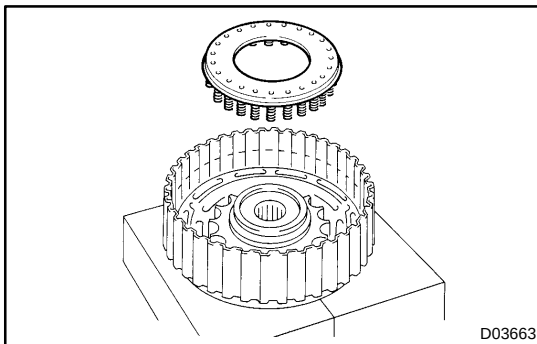
REASSEMBLY

1. INSTALL FORWARD CLUTCH PISTON

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

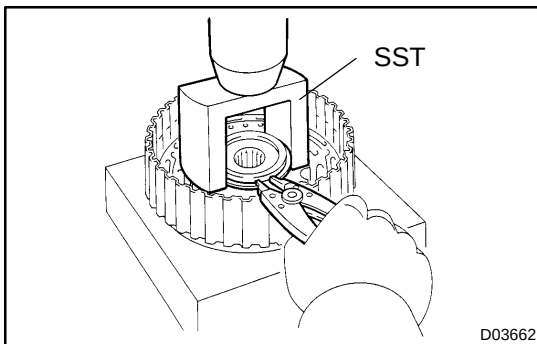


- (b) Install the forward clutch piston to the forward clutch drum.



2. INSTALL PISTON RETURN SPRING

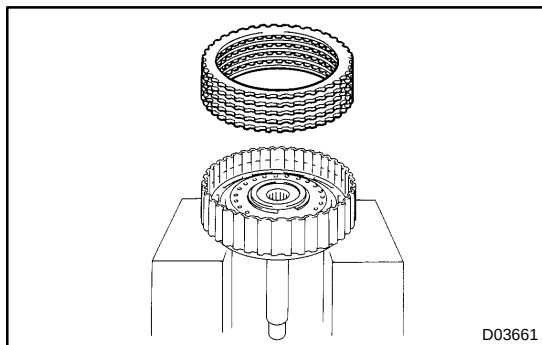
- (a) Place the return spring onto the piston.



- (b) Place SST on the return spring, and compress the return spring with a press.
SST 09350-32014 (09351-32070)
- (c) Install the snap ring with a snap ring expander. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

NOTICE:

- Stop the press 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 the deforming.
- Do not expand the snap ring excessively.

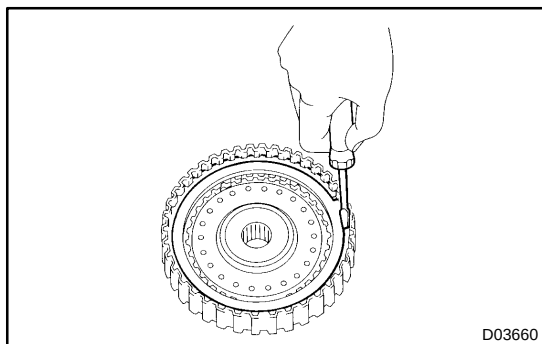


3. INSTALL PLATE, DISC AND FLANGE

Install the flange, 4 plates and 4 discs in order.

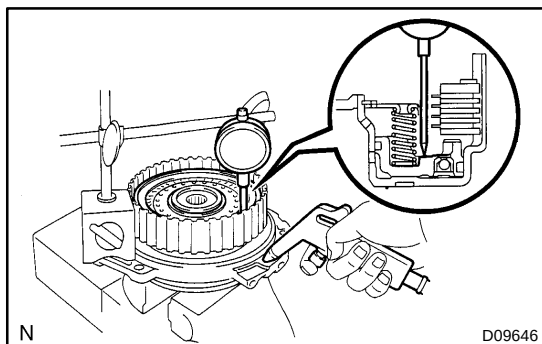
Install in order: P=Plate, D=Disc, F=Flange

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



4. INSTALL SNAP RING

- Using a screwdriver, install the snap ring.
- Check that the end gap of the snap ring is not aligned with one of the cutouts.



5. CHECK PISTON STROKE OF FORWARD CLUTCH

- Using a dial indicator, measure the forward clutch piston stroke while applying and releasing compressed air (392 kgf/cm², 4.0 kPa, 57 psi).

Piston stroke: 1.41 - 1.75 mm (0.0555 - 0.0689 in.)

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

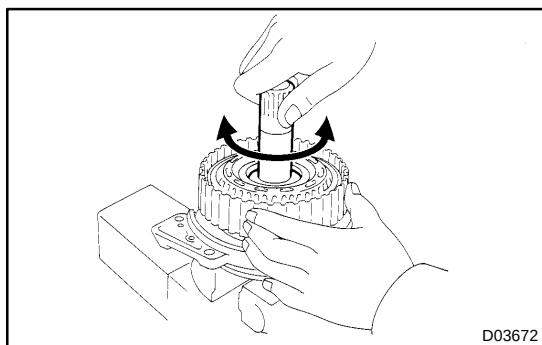
If the clearance is non-standard, select another flange.

HINT:

There are 5 different flanges in thickness.

Flange thickness: mm (in.)

No.	Thickness	No.	Thickness
1	3.00 (0.1181)	4	3.45 (0.1358)
2	3.15 (0.1240)	5	3.60 (0.1417)
3	3.30 (0.1299)	-	-

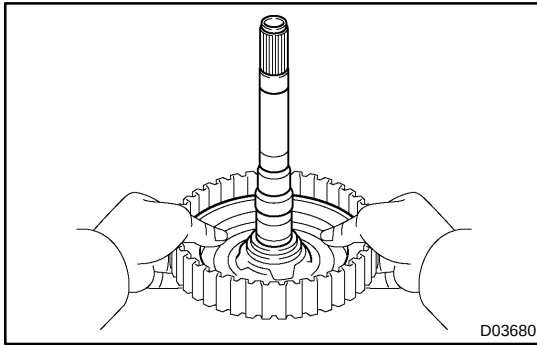


6. CHECK DISK ROTATE

Check that the disc lightly rotates when rotating the forward clutch assembly after inserting the multiple disc clutch into it.

NOTICE:

Do not place the forward clutch assembly in a vise.



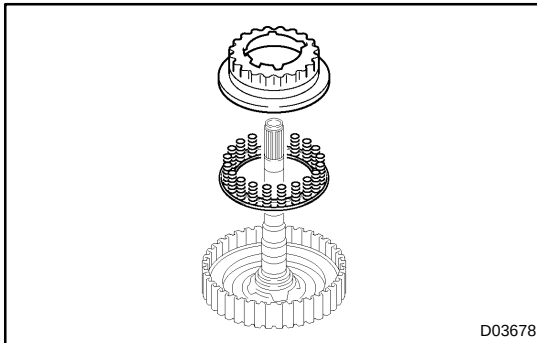
REASSEMBLY

1. INSTALL DIRECT CLUTCH PISTON

Coat the direct clutch piston with ATF, install it to the direct clutch drum.

NOTICE:

Be careful not to damage the lip seal of direct clutch piston.

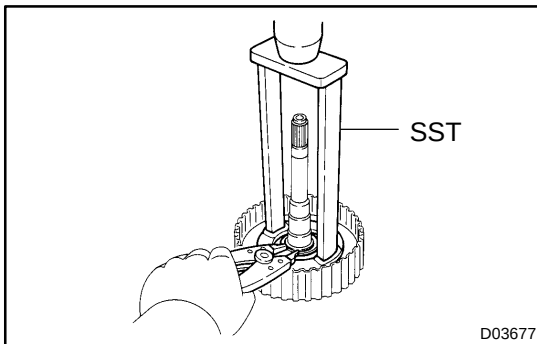


2. INSTALL PISTON RETURN SPRING

- (a) Install the piston return spring and clutch balancer to the direct clutch drum.

NOTICE:

Be careful not to damage the lip seal of direct clutch balancer.



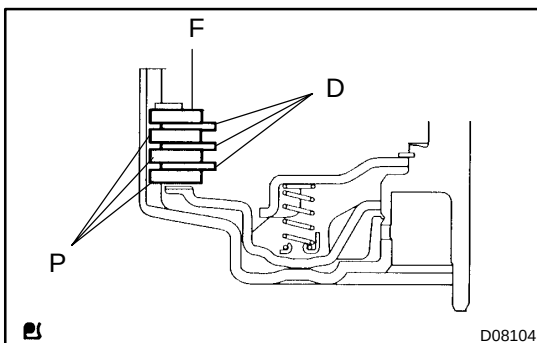
- (b) Place SST, on the clutch balancer and compress the piston return spring with a press.

SST 09387-00020

- (c) Using a snap ring expander, install the snap ring to the direct clutch drum.

NOTICE:

- Be sure the end gap of the snap ring is not aligned with the clutch balancer claw.
- Stop the press 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 the deforming.
- Do not expand the snap ring excessively.

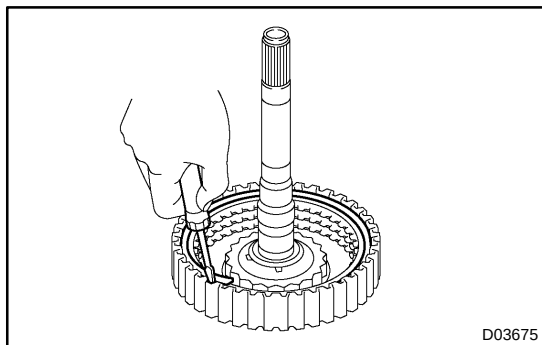


3. INSTALL PLATE, DISC AND FLANGE

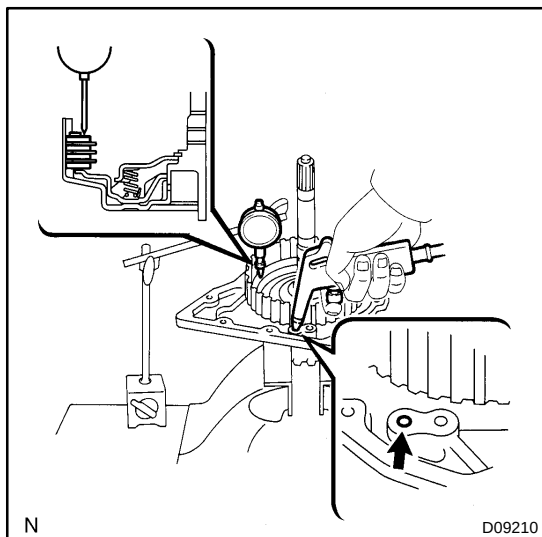
- (a) Install the 3 plates, 3 discs and flange.

Install in order: P=Plate, D=Disc, F=Flange

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



- (b) Using a screwdriver, install the snap ring.
- (c) Check that the end gap of the snap ring is not aligned with one of the cutouts.



4. CHECK PISTON STROKE OF DIRECT CLUTCH

- (a) Install the direct clutch on the transaxle rear cover.
- (b) Using and a dial indicator, measure the direct clutch piston stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Piston stroke: 0.61 - 0.83 mm (0.0240 - 0.0327 in.)

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

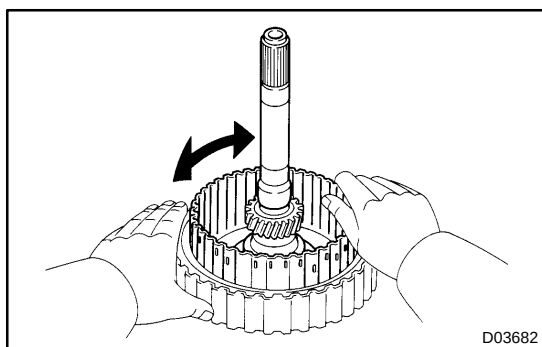
If the stroke is non-standard, select another flange.

HINT:

There are 6 flanges in different thickness.

Flange Thickness: mm (in.)

No.	Thickness	No.	Thickness
1	3.0 (0.118)	4	3.3 (0.130)
2	3.1 (0.122)	5	3.4 (0.134)
3	3.2 (0.126)	6	3.5 (0.138)

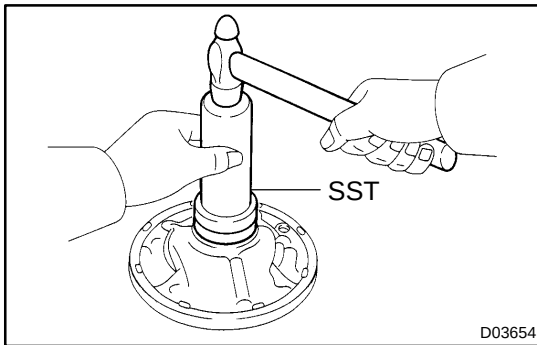


5. CHECK DISK ROTATE

Check that the disk rotates when rotating the disk after inserting the rear planetary sun gear.

NOTICE:

Do not place the rear planetary sun gear in a vise.



REASSEMBLY

1. INSTALL OIL SEAL

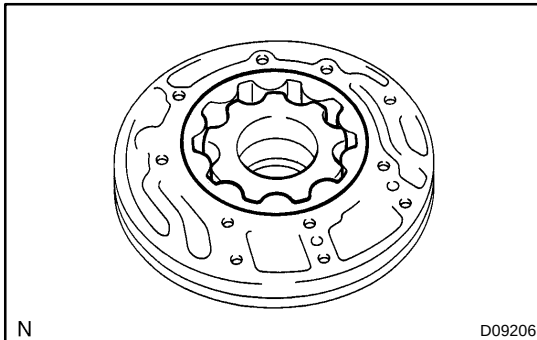
- (a) Using SST and a hammer, install a new oil seal from oil pump.

SST 09350-32014 (09351-32140)

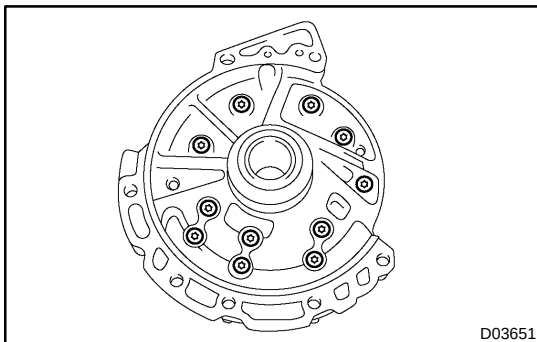
HINT:

The seal end should be flat with the outer edge of the oil pump.

- (b) Coat the lip of oil seal with petroleum jelly.



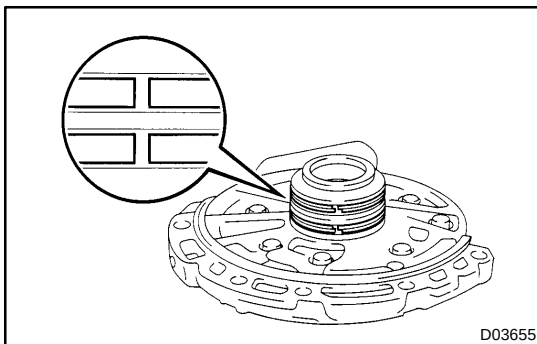
2. INSTALL OIL PUMP DRIVE GEAR AND DRIVEN GEAR



3. INSTALL STATOR SHAFT

- (a) Align the stator shaft with each bolt hole.
(b) Using a torx socket T30, install the 11 bolts.

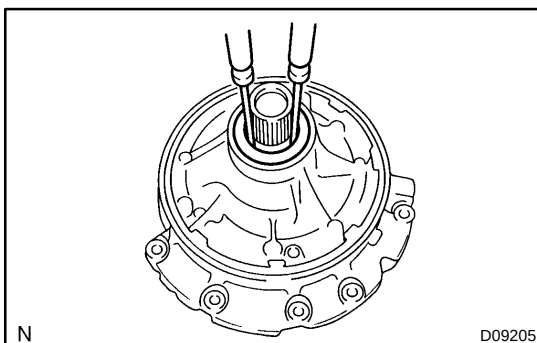
Torque: 9.8 N·m (100 kgf·cm, 7 in.·lbf)



4. INSTALL 2 OIL SEAL RINGS

NOTICE:

Do not expand the ring ends excessively.



5. CHECK PUMP DRIVE GEAR ROTATION

Turn the drive gear with 2 screwdrivers and make sure it rotates smoothly.

NOTICE:

Be careful not to damage the oil seal lip.

REASSEMBLY

NOTICE:

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

Recommended ATF: TYPE T-IV

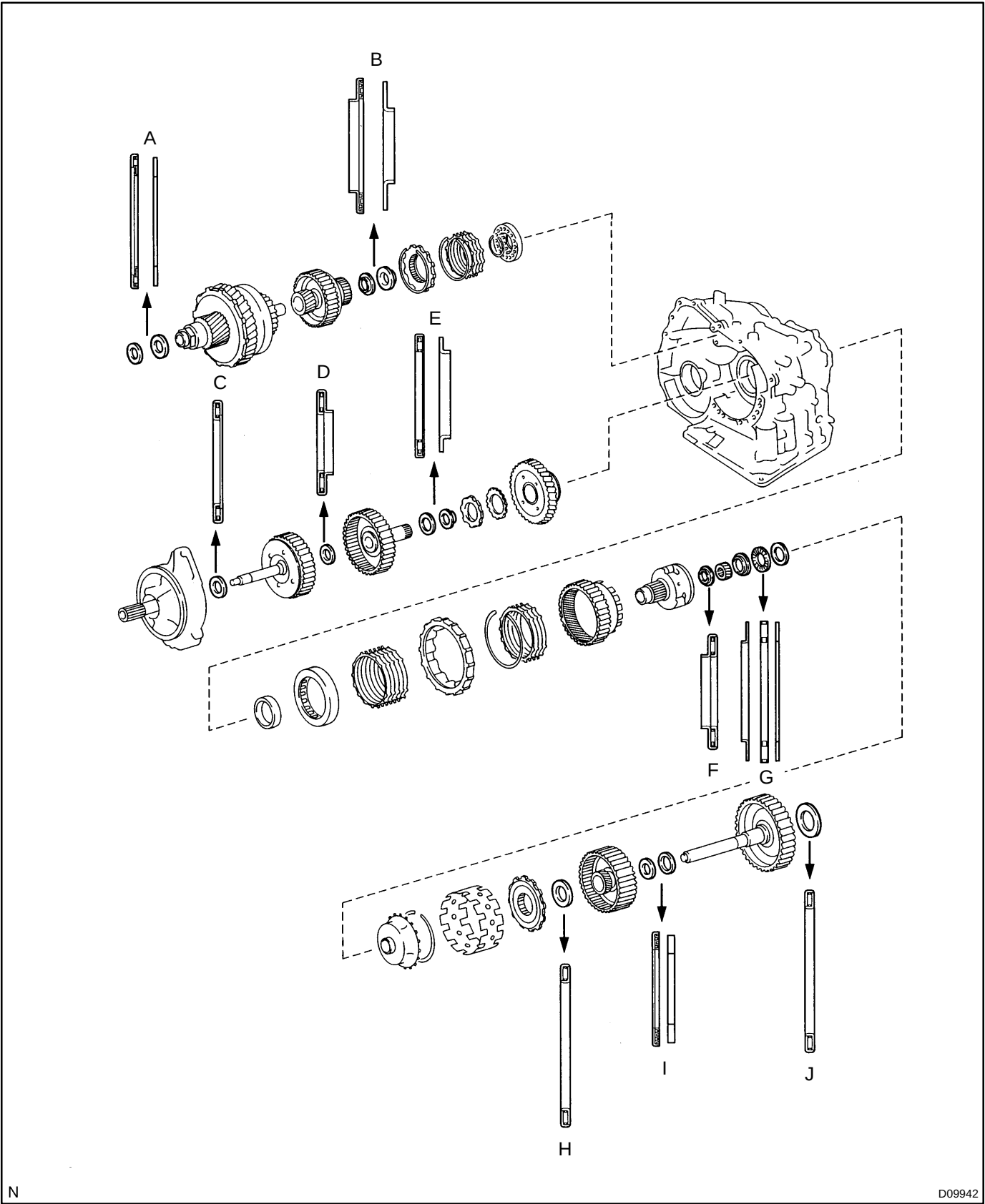
- All disassembled parts should be washed clean and any fluid passages and holes should be blown through with compressed air.
- Dry all parts with compressed air-never use shop rags.
- When using compressed air, always aim away from yourself to prevent accidentally spraying ATF or kerosene on your face.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

Thoroughly clean all components to remove all the loose material.

Clean both sealing surfaces with a non-residue solvent.

Parts must be reassembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

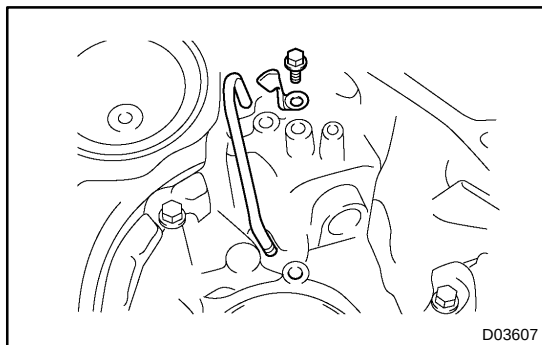
BEARING AND RACES INSTALLATION POSITION AND DIRECTION



N

D09942

Mark	Front Race Diameter Inside / Outside mm (in.)	Thrust Bearing Diameter Inside / Outside mm (in.)	Rear Race Diameter Inside / Outside mm (in.)
A	-	57.2 (2.252) / 84.96 (3.3449)	56.4 (2.220) / 83.0 (3.268)
B	-	37.73 (1.4854) / 58.0 (2.283)	29.9 (1.177) / 55.5 (2.185)
C	-	33.85 (1.3327) / 52.2 (2.055)	-
D	-	23.5 (0.925) / 44.0 (1.732)	-
E	-	36.3 (1.429) / 52.2 (2.055)	34.5 (1.358) / 48.5 (1.909)
F	-	34.6 (1.362) / 52.2 (2.055)	-
G	40.3 (1.587) / 58.0 (2.283)	38.6 (1.520) / 60.0 (2.362)	38.6 (1.520) / 58.0 (2.283)
H	-	53.6 (2.110) / 69.6 (2.740)	-
I	-	33.7 (1.327) / 48.2 (1.898)	30.3 (1.193) / 46.0 (1.811)
J	-	53.6 (2.110) / 70.18 (2.763) or 69.6 (2.740)	-



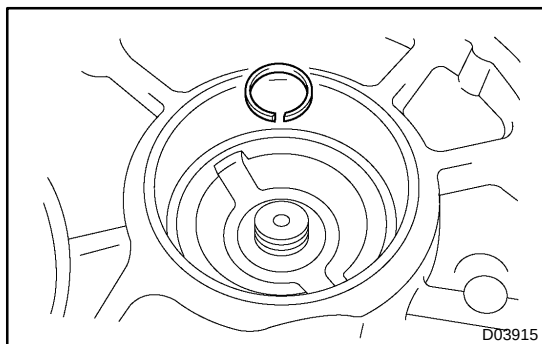
1. INSTALL APPLY PIPE

Install the apply pipe, and clamp with the bolt to the transaxle case.

Torque: 9.8 N·m (100 kgf·cm, 7 ft·lbf)

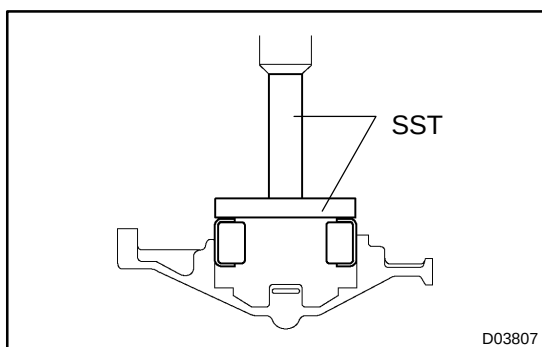
NOTICE:

Make sure to insert the pipe to the stopper.



2. INSTALL U/D CYLINDRICAL ROLLER BEARING

(a) Install the oil seal ring to the transaxle housing.

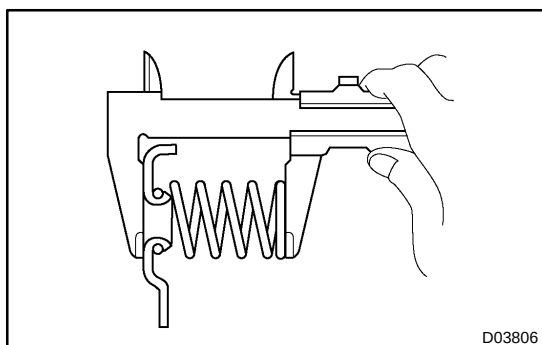


(b) Using SST and a press, install the U/D cylindrical roller bearing.

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

NOTICE:

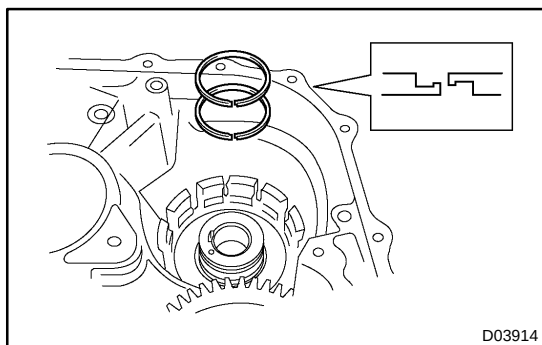
Do not apply excessive pressure to it.



3. CHECK U/D BRAKE PISTON RETURN SPRING

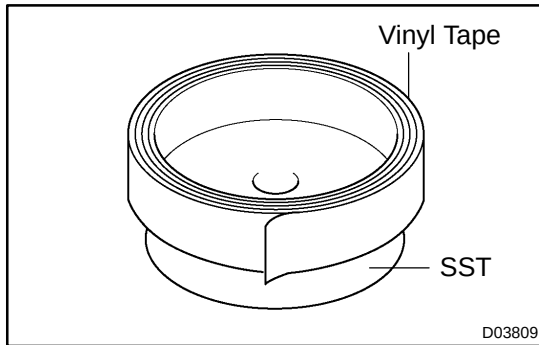
Using vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length: 14.04 mm (0.5528 in.)



4. INSTALL U/D BRAKE

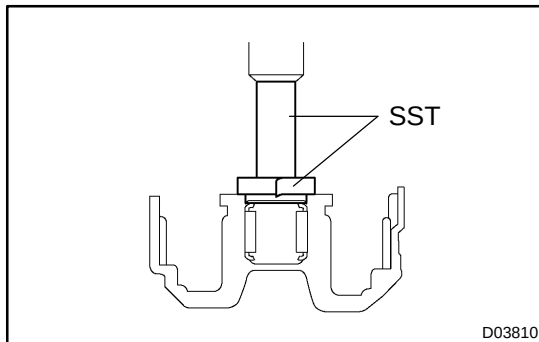
(a) Install the 2 oil seal rings to the transaxle case.



- (b) Wind a vinyl tape around SST at the place 4.0 mm (0.157 in.) above from the bottom end until the thickness of the wound tape is about 5.0 mm (0.197 in.).
SST 09550-60010 (09951-00320)

NOTICE:

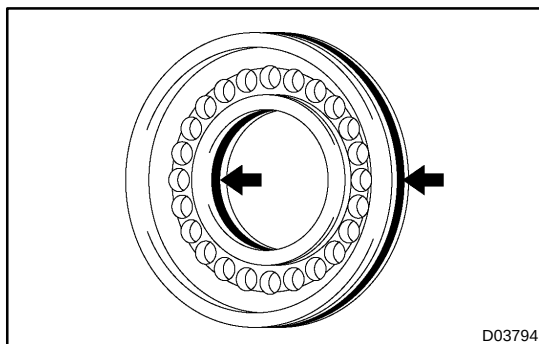
Clean SST to remove deposited oil, before winding a vinyl tape.



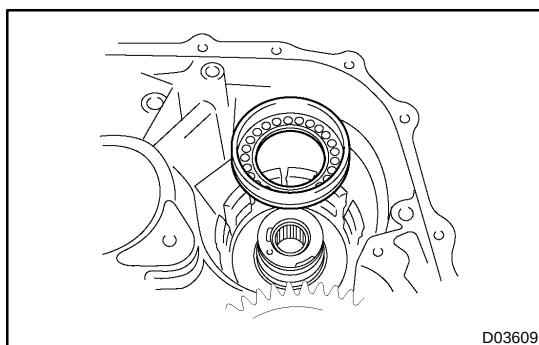
- (c) Using SST and a press, install the needle-roller bearing to the transaxle case.
SST 09950-60010, (09951-00320), 09950-70010 (09951-07100)

NOTICE:

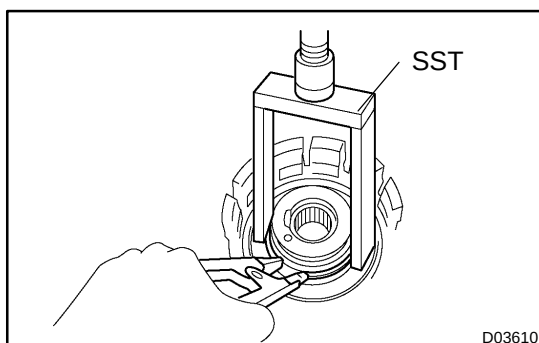
When the wound vinyl tape contacts the transaxle case, stop press-fitting.



- (d) Coat 2 new O-rings with ATF, install them to the U/D brake piston.



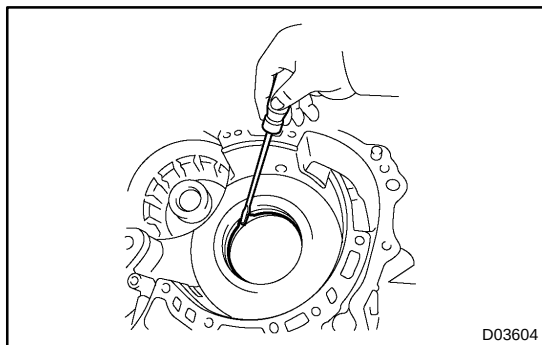
- (e) Install the U/D brake piston to the transaxle case.



- (f) Using SST, a snap ring expander and a press, install the piston return spring and snap ring to the transaxle case.
SST 09387-00020

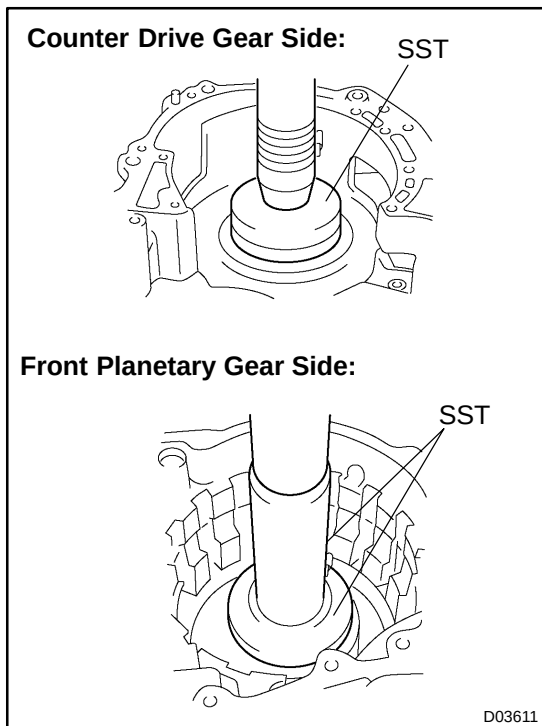
NOTICE:

- **Press-fit the bearing race RH until it contacts the snap ring.**
- **Do not apply excessive pressure to it.**



5. INSTALL COUNTER DRIVE GEAR

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

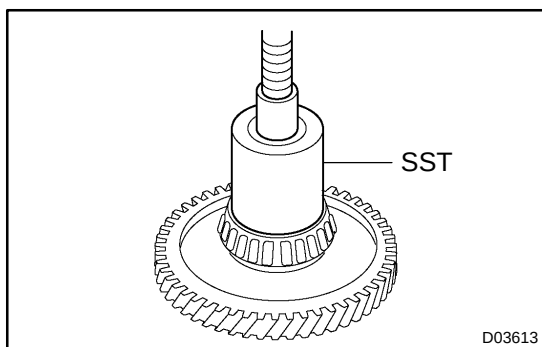


- (b) Using SST and a press, install the 2 bearing outer races to the transaxle case.

SST 09950-60020 (09951-00890), 09950-70010 (09951-07150)

NOTICE:

- Press-fit the bearing race until it contacts the snap ring.
- Do not apply excessive pressure to it.

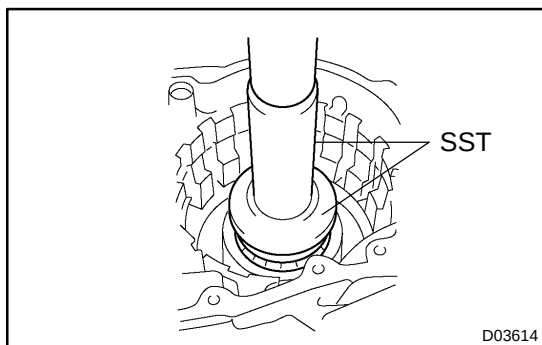


- (c) Using SST and a press, install the tapered roller bearing to the counter drive gear.

SST 09649-17010

NOTICE:

- Press-fit the bearing inner race until it contacts the counter drive gear.
- Do not apply excessive pressure to it.

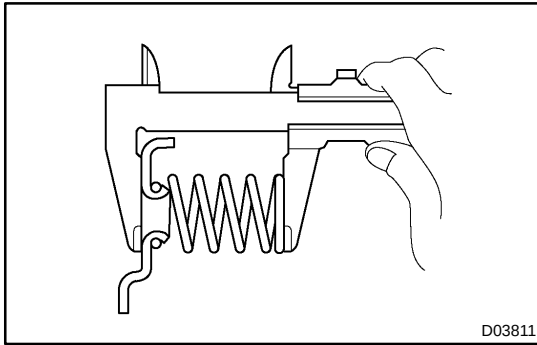


- (d) Using SST and a press, install the counter drive gear and bearing to the transaxle case.

SST 09950-60010 (09951-00890), 09950-70010 (09951-07150)

NOTICE:

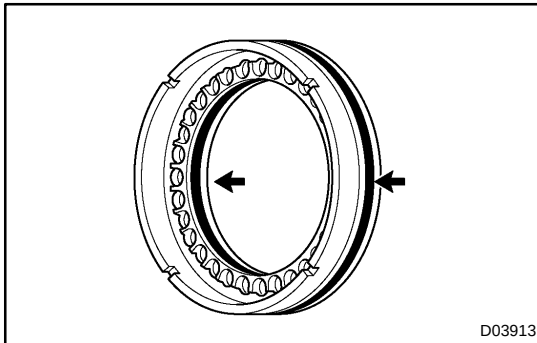
Do not apply excessive pressure to it.



6. CHECK 1ST & REVERSE BRAKE PISTON RETURN SPRING

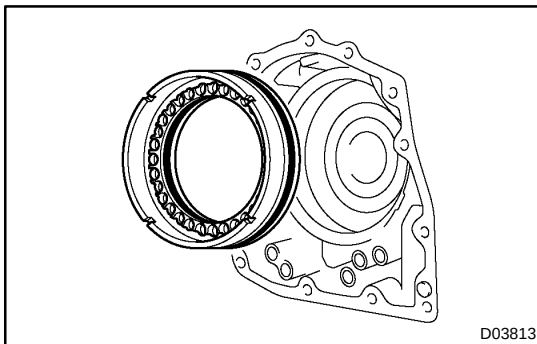
Using vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length: 15.51 mm (0.6106 in.)

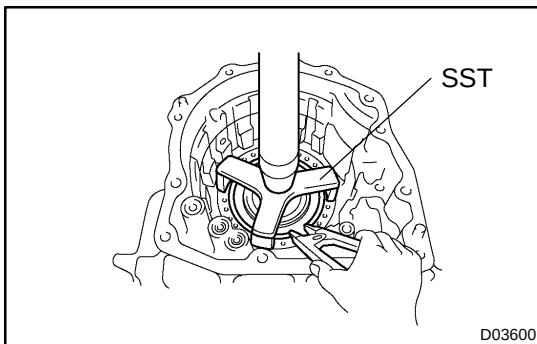


7. INSTALL 1ST & REVERSE BRAKE PISTON

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



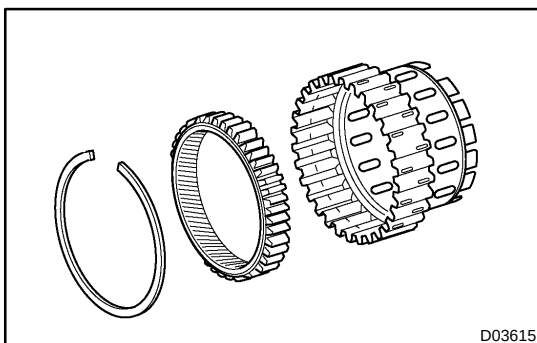
- (c) Coat a 1st & reverse brake piston with ATF, install the 1st & reverse brake piston to the transaxle case.



- (d) Using SST, a press, and snap ring pliers, install the piston return spring and snap ring to the transaxle case.
SST 09387-00070

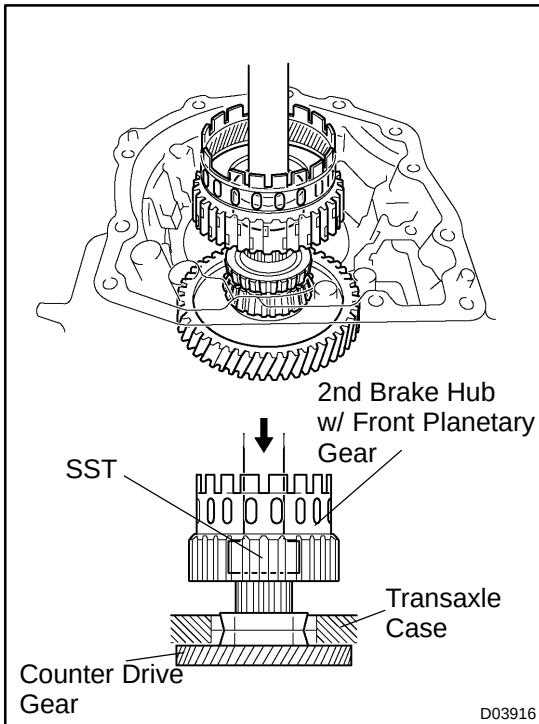
NOTICE:

- Stop the press 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 deforming.
- Do not expand the snap ring excessively.



8. INSTALL FRONT PLANETARY GEAR ASSEMBLY

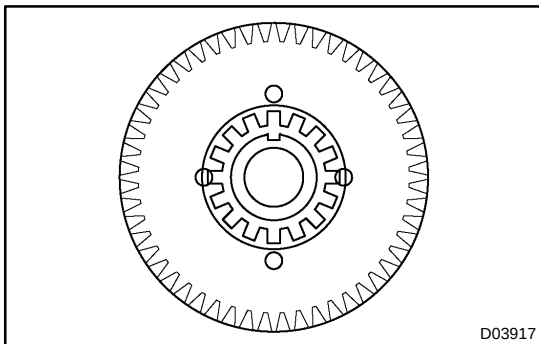
- (a) Using a screwdriver, install the front planetary ring gear and snap ring to the brake hub.



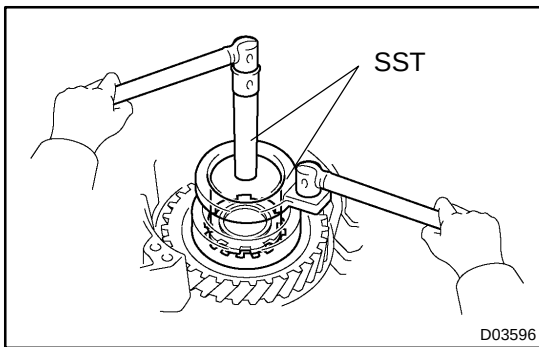
- (b) Install the front planetary gear to the brake hub.
 (c) Using SST, a press and press-fit the front planetary gear.
 SST 09950-60010 (09951-00400)

NOTICE:

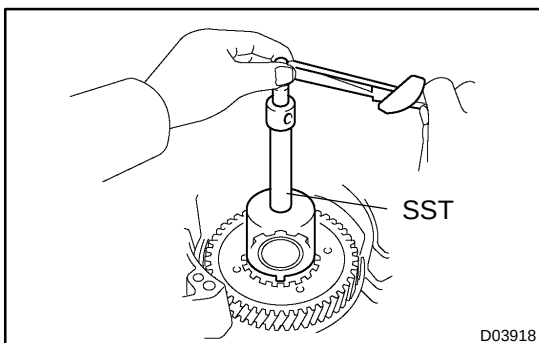
Do not apply excessive pressure to it.



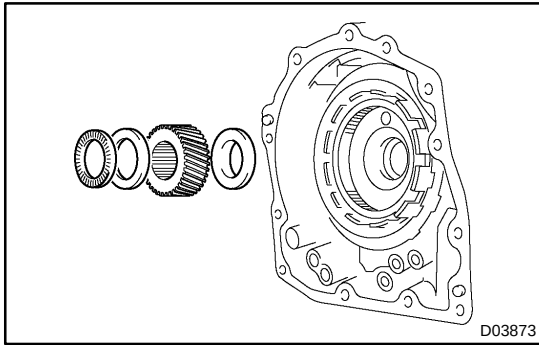
- (d) Install the washer, as shown in the illustration.



- (e) Using SST, install the nut.
 SST 09387-00030, 09387-00080
Torque: 280 N·m (2855 kgf·cm, 207 ft·lbf)



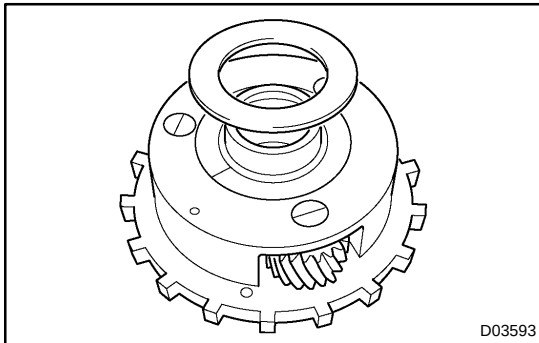
- (f) Using SST and a torque wrench, measure the starting torque of the bearing. When the measured value is not within the specified value, gradually tighten the nut until it reaches the specified value.
 SST 09387-00080
Starting torque:
0.5 - 1.0 N·m (5.1 - 10.0 kgf·cm, 4.4 - 8.7 in·lbf)



- (g) Install the 2 bearings, 2 races and front planetary sun gear to the front planetary gear.

Bearing and race diameter: mm (in.)

	inside	out side
Bearing	34.6 (1.362)	52.2 (2.055)
Race	40.3 (1.587)	58.0 (2.283)
Bearing	38.6 (1.520)	60.0 (2.362)

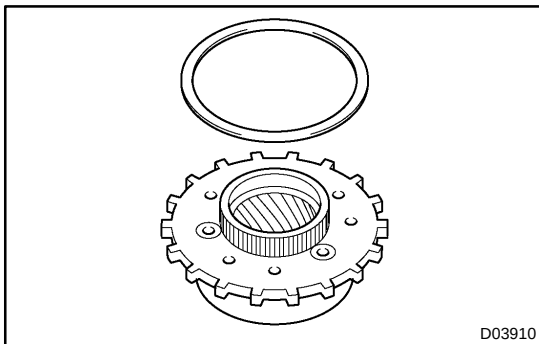


9. INSTALL REAR PLANETARY GEAR

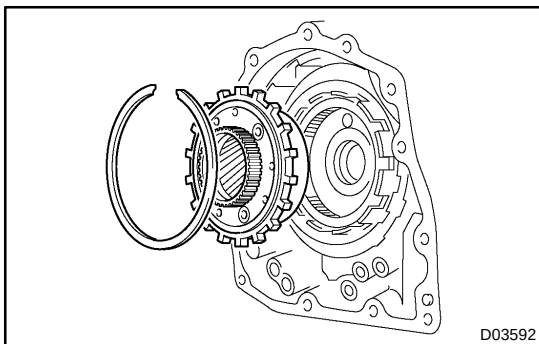
- (a) Coat a bearing race with ATF, install it to the rear planetary gear assembly.

Bearing race diameter: mm (in.)

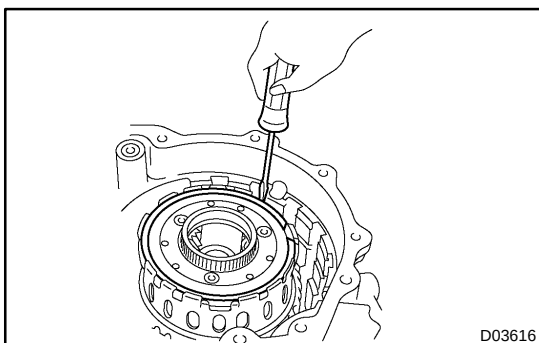
	inside	out side
Race	38.6 (1.520)	58.0 (2.283)



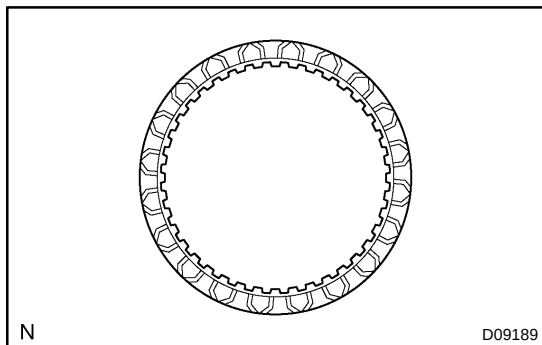
- (b) Install the thrust washer No. 2.



- (c) Install the rear planetary gear from the rear planetary ring gear.



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

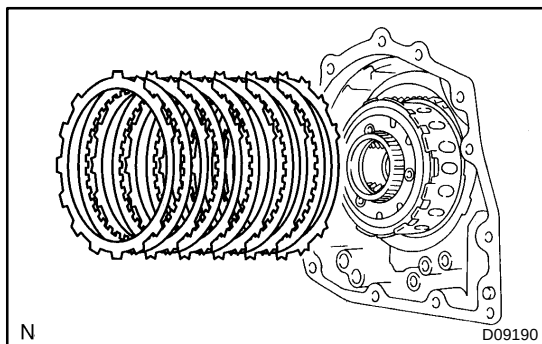


10. INSPECT DISC AND FLANGE OF 1ST & REVERSE BRAKE

Check to see if the sliding surface of the disc, plate and flange are worn or burnt. If necessary, replace them.

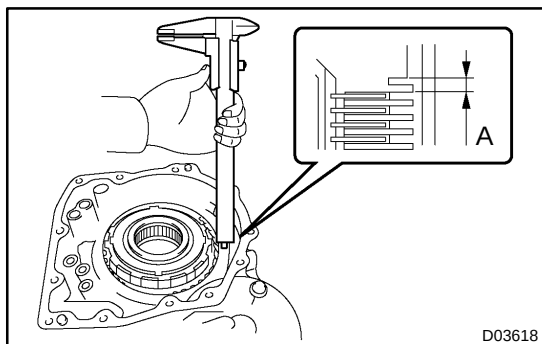
HINT:

If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs. Before assembling new discs, soak them in ATF for at least 15 minutes.



11. INSTALL 1ST & REVERSE BRAKE

(a) Install the 5 plates and 5 discs.



(b) Using vernier calipers, measure the distance between the disc surface and the contact surface of the 2nd brake cylinder and transaxle case.(Dimension A)

(c) Select an appropriate flange so that the piston stroke will meet the specified value.

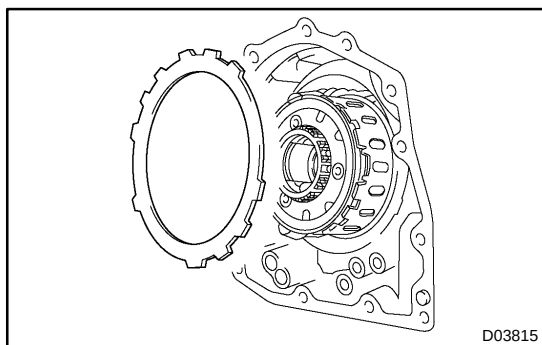
Piston stroke: 1.02 - 1.21 mm (0.0402 - 0.0476 in.)

HINT:

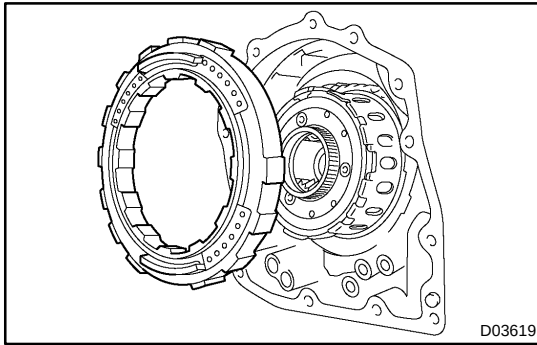
Piston stroke = Dimension A - Flange thickness

Flange thickness: mm (in.)

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



(d) Install the flange.

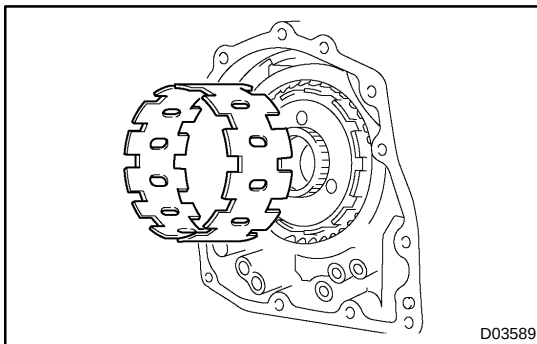


12. INSTALL 2ND BRAKE CYLINDER ASSEMBLY, ONE-WAY CLUTCH NO. 1 AND REAR PLANETARY SUN GEAR ASSEMBLY

- (a) Install the 2nd brake cylinder assembly to the transaxle case.
- (b) Install the snap ring and measure the inside diameter.
Inside diameter: More than 167 mm (6.57 in.)

NOTICE:

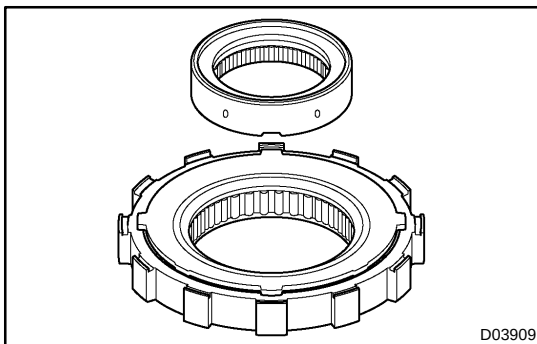
- Because the taper snap ring has the positioning direction, check it when installing.
- When the diameter does not satisfy the specified value, replace the snap ring with new one.



- (c) Install the one-way clutch outer sleeve to the 2nd brake cylinder assembly.

NOTICE:

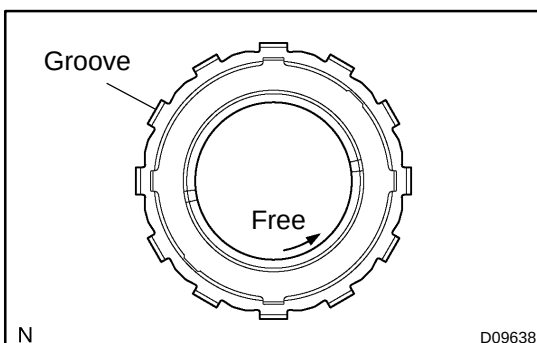
Check the positioning direction of the outer sleeve.



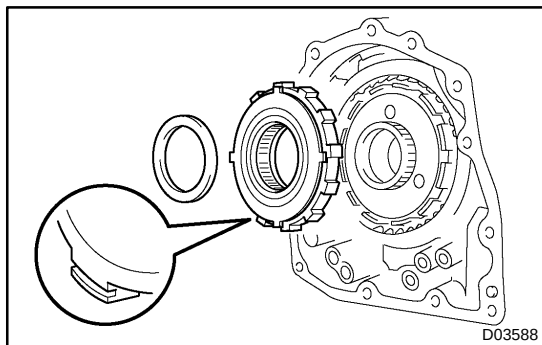
- (d) Install the inner race to the one-way clutch.

NOTICE:

Check the direction of the inner race.



- (e) Check the rotating direction of one-way clutch for the lock or free operation, as shown in illustration.



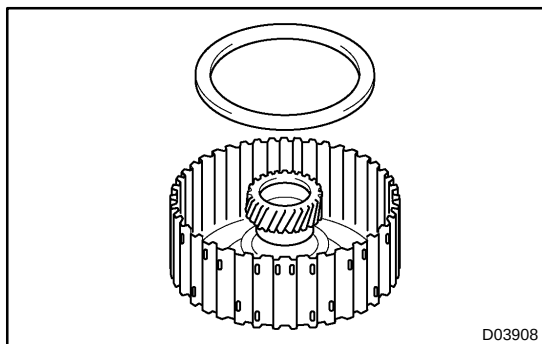
- (f) Install the one-way clutch No. 1 and bearing to the one-way clutch outer race sleeve.

Bearing diameter: mm (in.)

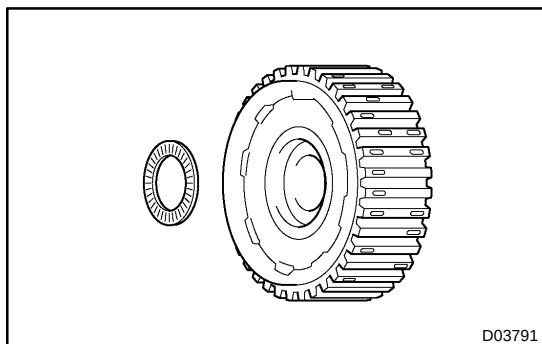
	Inside	Outside
Bearing	53.6 (2.110)	69.6 (2.740)

NOTICE:

Install the thrust bearing properly so that the black race will be visible.



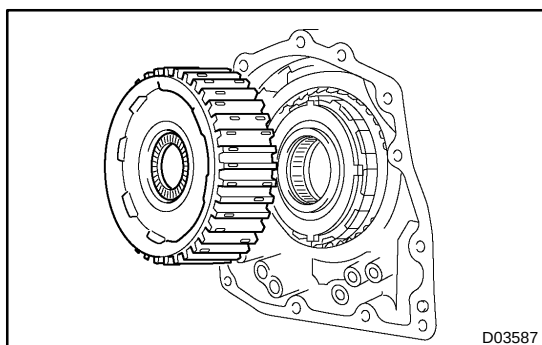
- (g) Coat the thrust washer No. 1 with petroleum jelly install it onto the rear planetary sun gear.



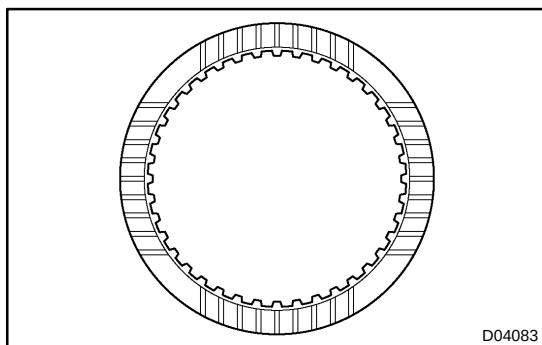
- (h) Coat the bearing with petroleum jelly and install it onto the rear planetary sun gear.

Bearing diameter: mm (in.)

	Inside	Outside
Bearing	33.7 (1.327)	48.2 (1.898)



- (i) Install the rear planetary sun gear assembly to the rear planetary gear.

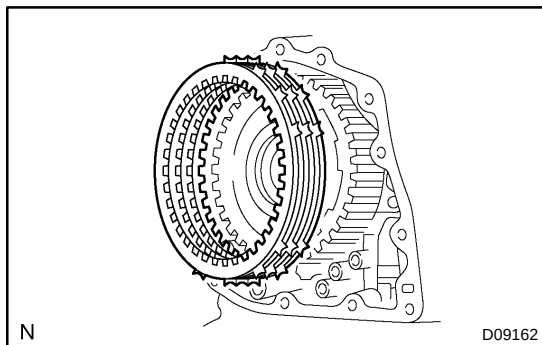


13. INSPECT DISC AND FLANGE OF 2ND BRAKE

Check to see if the sliding surface of the disc, plate and flange are worn or burnt. If necessary, replace them.

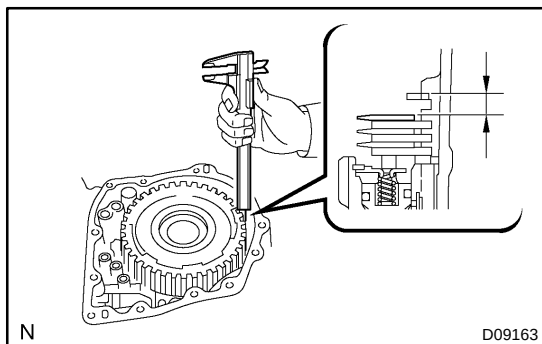
HINT:

If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs. Before assembling new discs, soak them in ATF for at least 15 minutes.



14. INSTALL 2ND BRAKE

- Install the 3 discs and 3 plates to the transaxle case.
- Temporarily install the snap ring.



- Using vernier calipers, measure the distance between the disk surface and snap ring surface.
- Select an appropriate flange so that the piston stroke will meet the specified value.

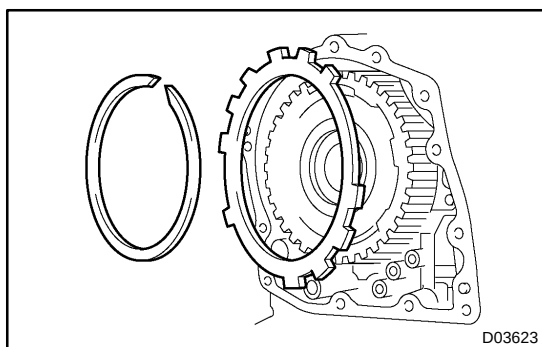
Piston stroke: 0.62 - 0.91 mm (0.0244 - 0.0358 in.)

HINT:

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

Flange thickness: mm (in.)

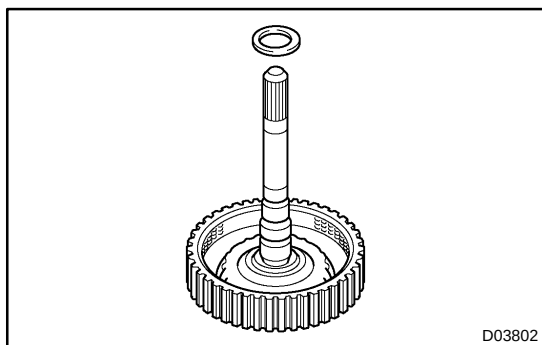
Mark	Thickness	Mark	Thickness
1	3.0 (0.118)	5	3.4 (0.134)
2	3.1 (0.122)	6	3.5 (0.138)
3	3.2 (0.126)	7	3.6 (0.142)
4	3.3 (0.130)	-	-



- Temporarily remove the snap ring, attach the selected flange and restore the snap ring.

NOTICE:

Secure the snap ring so that its end gap is visible through the groove of the transaxle case.

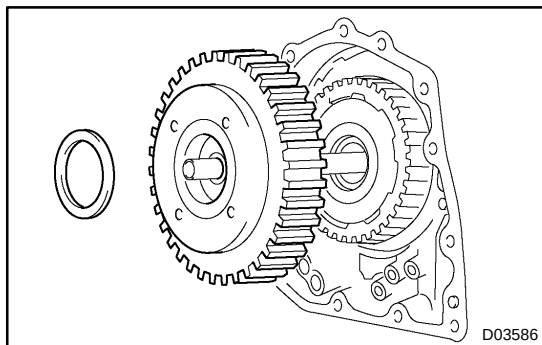


15. INSTALL DIRECT CLUTCH ASSEMBLY

- Install the bearing race to the direct clutch.

Bearing race diameter: mm (in.)

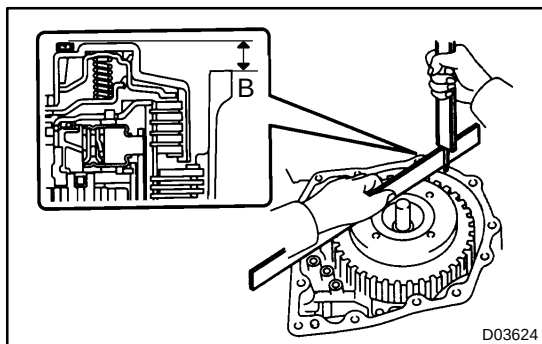
	Inside	Outside
Bearing race	30.3 (1.193)	46.0 (1.811)



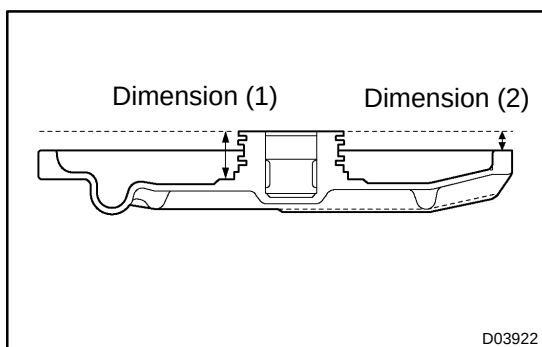
- (b) Install direct clutch assembly and thrust bearing to the rear planetary sun gear assembly.

NOTICE:

The disk in the direct clutch should completely mate with the hub attached outside the rear planetary sun gear. Otherwise, the rear cover can not be installed.



- (c) Clean the connected part of the transaxle case and rear cover.
- (d) As shown in the illustration, place a straight edge on the direct clutch drum and measure the distance between the transaxle case and the straight edge using vernier calipers. (Dimension B)



- (e) Measure the 2 places of the rear cover as shown in the illustration and calculate a dimension C using the following formula.

HINT:

Dimension C = Dimension (1) - Dimension (2)

- (f) Calculate the end play value using the following formula. Select a thrust bearing which satisfies the end play value and install it.

End play: 0.198 - 0.936 mm (0.00800 - 0.03685 in.)

NOTICE:

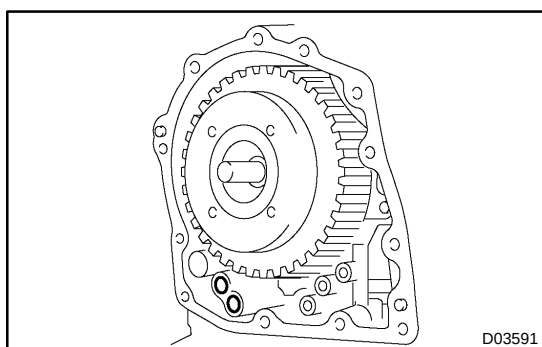
Make sure that the black race side is facing the rear cover.

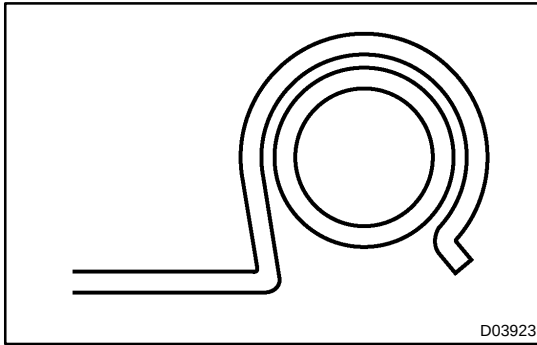
HINT:

End play = Dimension C - Dimension B

Bearing thickness and diameter: mm (in.)

Thickness	Inside	Outside
3.55 (0.1397)	53.6 (2.110)	69.6 (2.740)
3.85 (0.1515)	53.6 (2.110)	70.18 (2.763)

**16. INSTALL 2 NEW APPLY GASKETS**

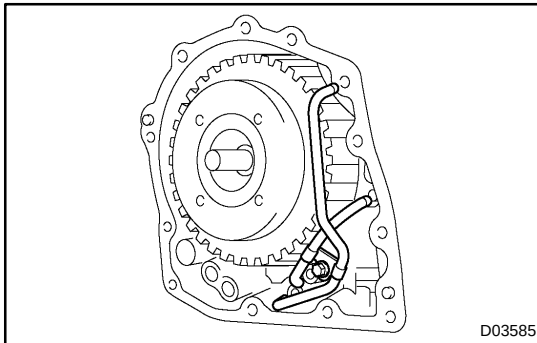


17. INSTALL APPLY PIPE

- (a) Install the clamp to the apply pipe.

NOTICE:

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

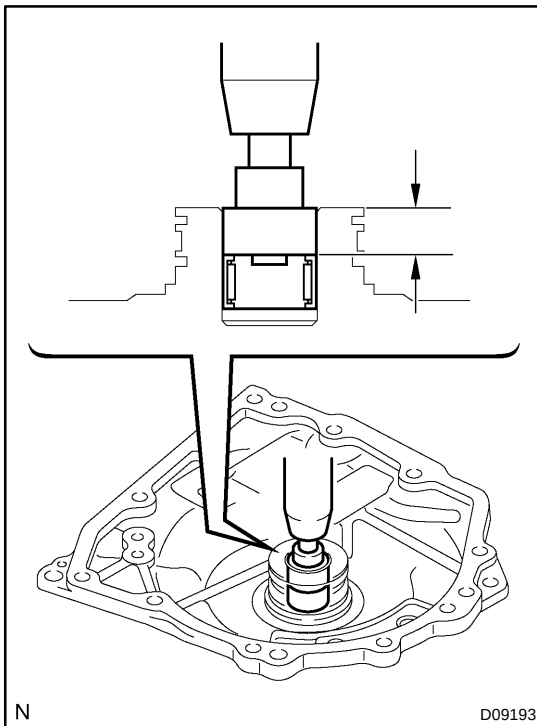


- (b) Install the 2 apply pipe and a bolt to the transaxle case.

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

NOTICE:

Each pipe is securely inserted until it reaches the stopper.



18. INSTALL TRANSAXLE REAR COVER

- (a) Using SST and a press, install the bearing.

SST 09950-60010 (09951-00230, 09951-00350)

Press fit depth: 12.05 - 12.75 mm (0.4744 - 0.5020 in.)

NOTICE:

- Face the inscribed mark side of the bearing race up.
- Repeat the press fit until the specified value is obtained.

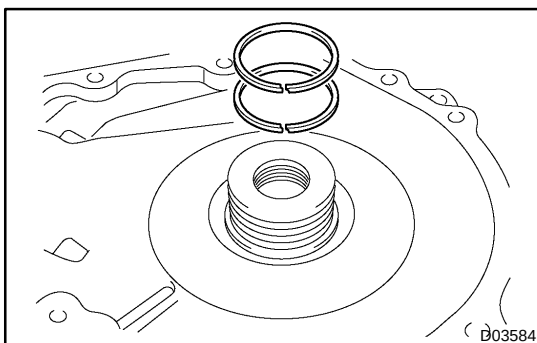
- (b) Apply liquid sealer to the 2 screws.

Sealant:

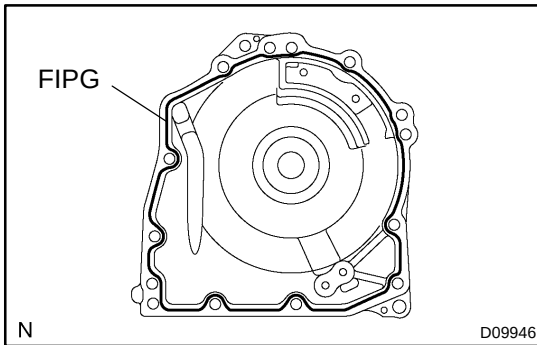
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent.

- (c) Install the transaxle rear cover plate with the 2 screws.

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)



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

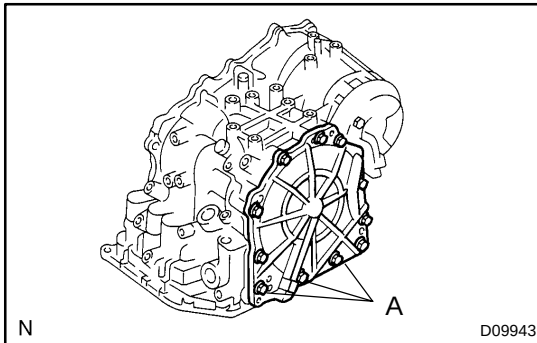


- (e) Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle rear cover or the transaxle case.
- (f) Apply FIPG to the rear cover.

FIPG:

Part No. 08826-00090, THREE BOND 1281 or equivalent.

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



- (h) Apply liquid sealer to the "A" bolt threads.

Sealant:

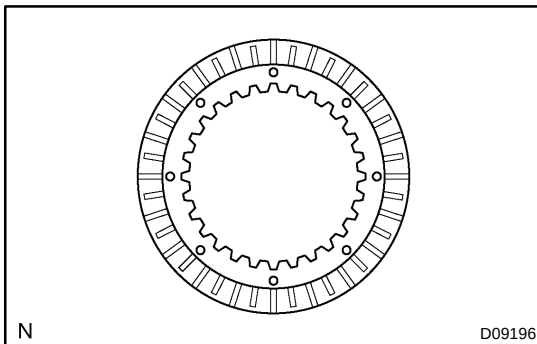
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent.

- (i) Install the 11 bolts.

Torque:

Bolt A: 18.6 N·m (190 kgf·cm, 14 ft·lbf)

Other bolt: 24.5 N·m (250 kgf·cm, 18 ft·lbf)

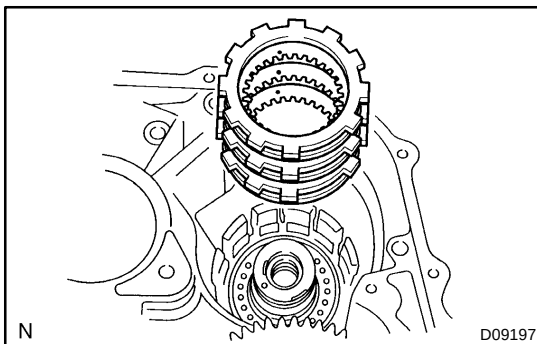


19. INSPECT DISC AND FLANGE OF U/D BRAKE

Check to see if the sliding surface of the disc, plate and flange are worn or burnt. if necessary, replace them.

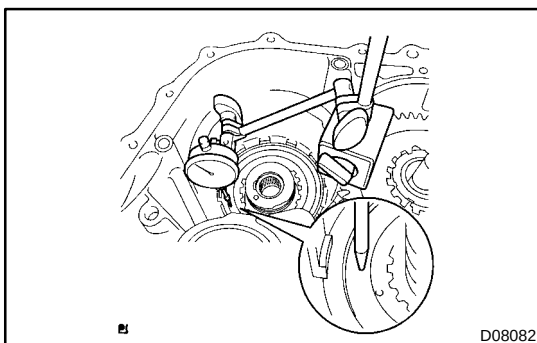
HINT:

If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs. Before assembling new discs, soak them in ATF for at least 15 minutes.



20. INSTALL U/D BRAKE

- (a) Install the 3 discs and 3 plates to the transaxle case.
- (b) Using a screwdriver, install the snap ring.



- (c) Using a dial indicator, measure the U/D brake piston stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Piston stroke: 1.81 - 2.20 mm (0.0713 - 0.0866 in.)

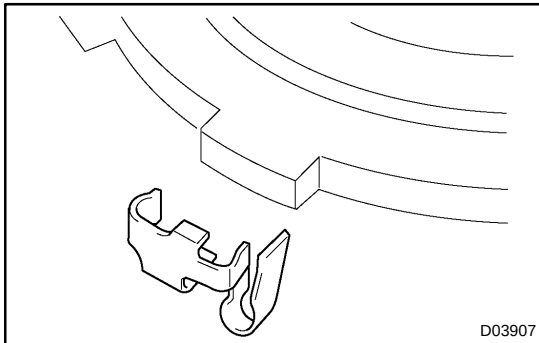
HINT:

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

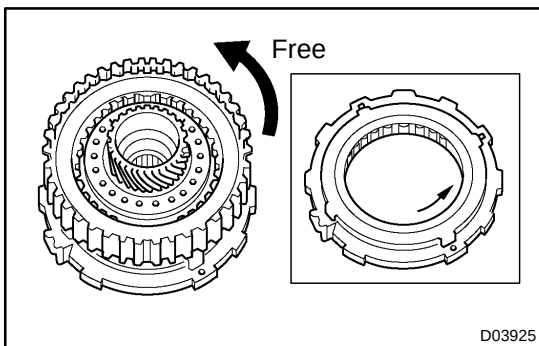
Flange thickness: mm (in.)

Mark	Thickness	Mark	Thickness
1	3.0 (0.118)	3	3.4 (0.134)
2	3.2 (0.126)	-	-

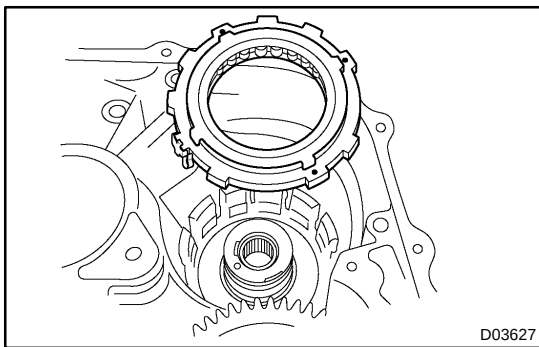
- (d) Temporarily remove the snap ring and attach the flange. Restore the snap ring.

**21. INSTALL ONE-WAY CLUTCH NO. 2**

- (a) Install the outer race retainer to the one-way clutch No. 2.



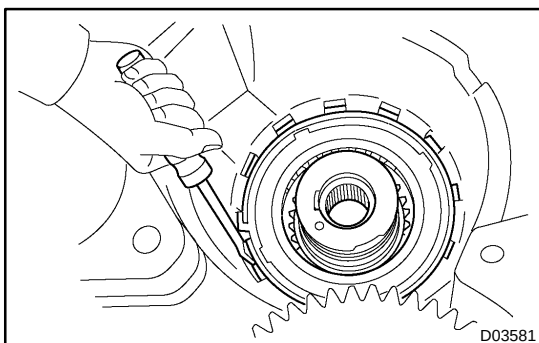
- (b) Install the U/D clutch assembly to the one-way clutch. Rotate the U/D clutch assembly to check the rotating direction for the lock or free operation.

**22. INSTALL ONE-WAY CLUTCH NO. 2**

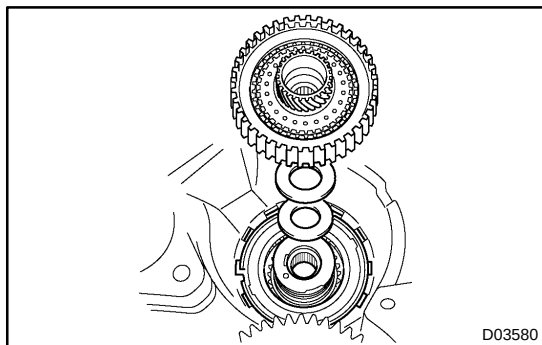
- (a) Install the one-way clutch No. 2 to the transaxle case.

NOTICE:

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



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



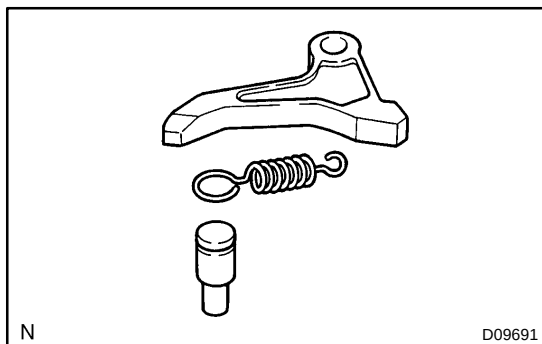
23. INSTALL U/D CLUTCH ASSEMBLY

- (a) Coat the bearing and bearing race with petroleum jelly and install it onto the U/D clutch.

Race diameter: mm (in.)

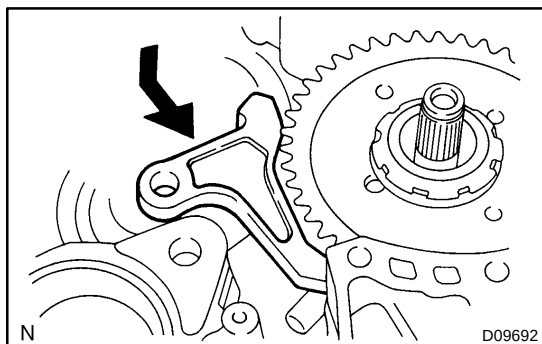
	Inside	Outside
Bearing	37.73 (1.4854)	58.0 (2.283)
Race	29.9 (1.177)	55.5 (2.185)

- (b) Install the U/D clutch assembly to the transaxle case.

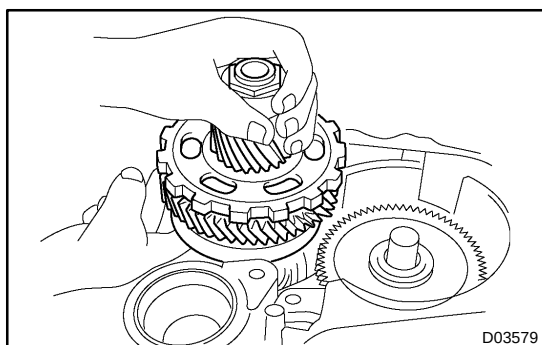


24. INSTALL U/D PLANETARY GEAR ASSEMBLY AND DIFFERENTIAL ASSEMBLY

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



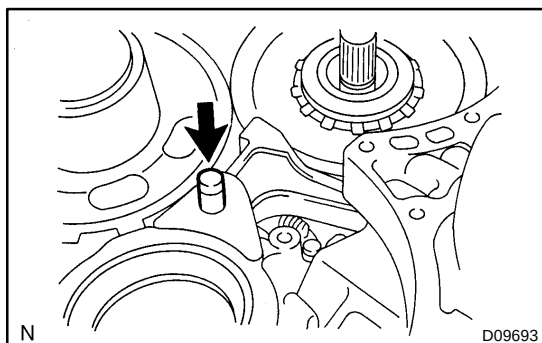
- (b) Temporarily install the parking lock pawl, shaft and spring to the transaxle case as shown in the illustration.



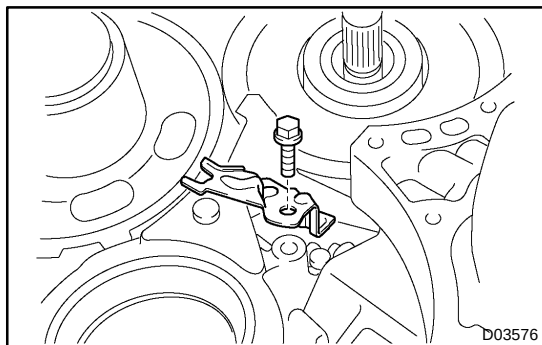
- (c) Install the U/D planetary gear assembly to the transaxle case.

NOTICE:

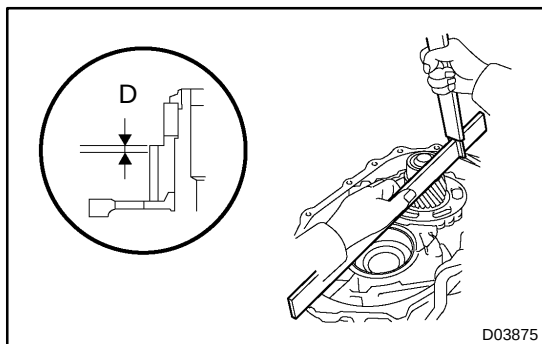
Engage all the discs of U/D clutch and hub spline of the U/D planetary gear assembly firmly and assemble them securely.



- (d) Install the parking lock pawl shaft.



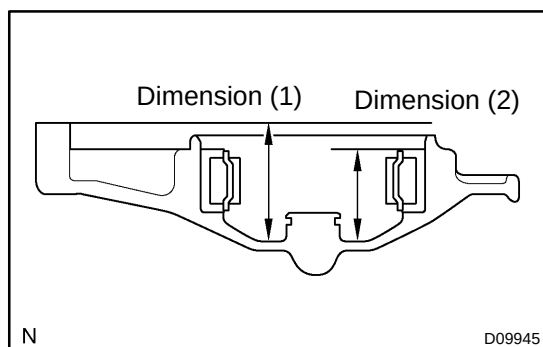
- (e) Install the pawl shaft with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 7 ft·lbf)



- (f) Using a straight edge and vernier calipers as shown in the illustration, measure the gap between the top of the differential drive pinion in the U/D planetary gear and contact surface of the transaxle case and housing. (Dimension D)

NOTICE:

Note down the dimension D as it is necessary for the following process.



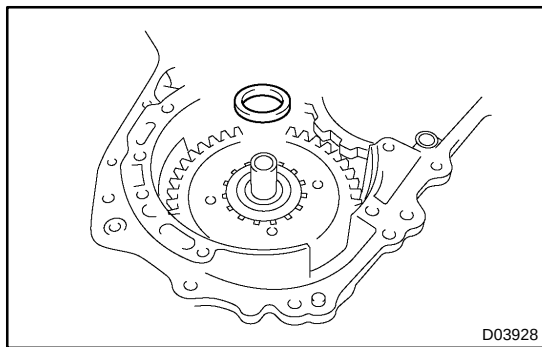
- (g) As shown in the illustration, measure the 2 places of the transaxle housing. Calculate the dimension E using the formula.

NOTICE:

Note down the dimension E as it is necessary for the following process.

HINT:

Dimension E = Dimension (1) - Dimension (2)

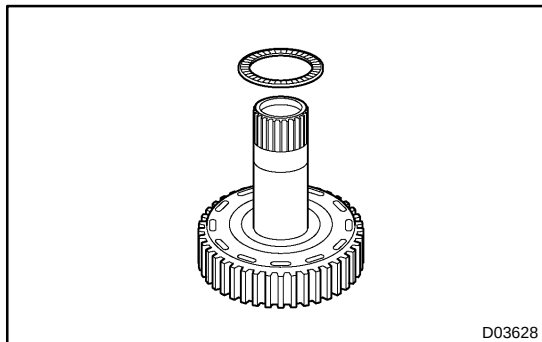


25. INSTALL MULTIPLE DISC CLUTCH HUB

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

Bearing race diameter: mm (in.)

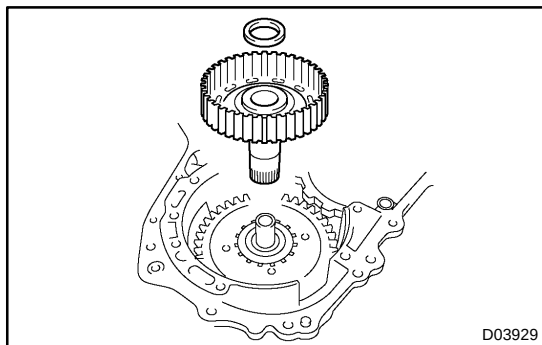
	Inside	Outside
Bearing race	34.5 (1.358)	48.5 (1.909)



- (b) Coat the thrust bearing and race with petroleum jelly and install them onto the multiple disc clutch hub.

Thrust bearing and race diameter: mm (in.)

	Inside	Outside
Bearing	36.3 (1.429)	52.2 (2.055)

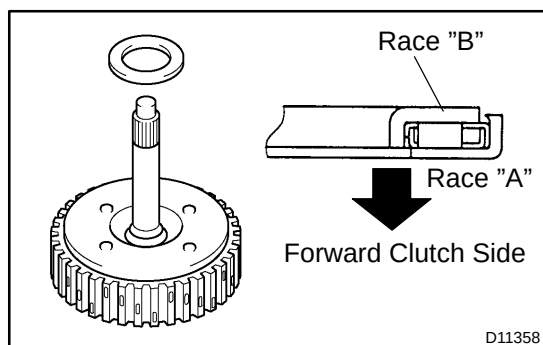


(c) Install the bearing to the multiple clutch hub.

Bearing diameter: mm (in.)

	Inside	Outside
Bearing	23.5 (0.925)	44.0 (1.732)

(d) Install the forward clutch hub to the transaxle case.



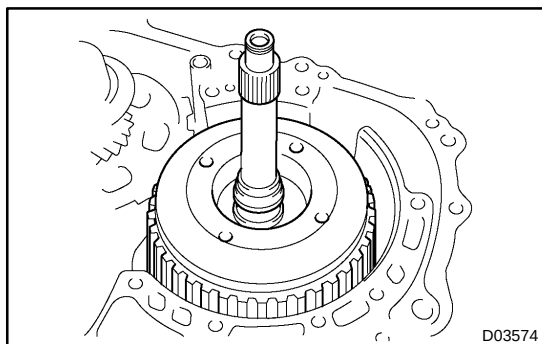
(e) Install the thrust bearing to the forward clutch.

Bearing diameter: mm (in.)

	Inside	Outside
Bearing	33.85 (1.3327)	52.2 (2.055)

NOTICE:

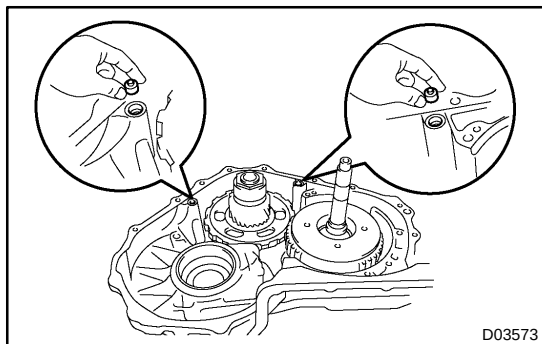
Install the thrust bearing properly so that the race "B" will be visible.



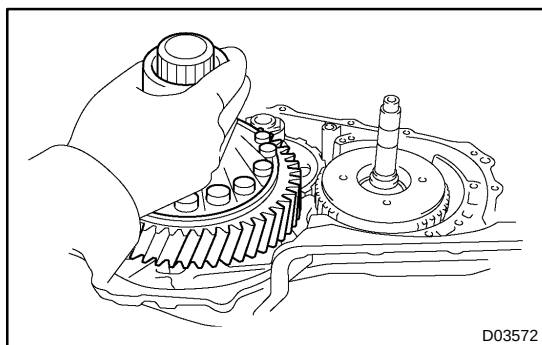
(f) Install the forward clutch to the multiple clutch hub.

NOTICE:

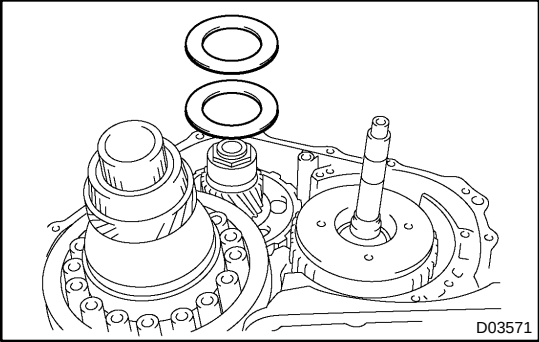
Align the splines of all discs in the forward clutch with those of multiple clutch hub to assemble them securely.



26. INSTALL 2 NEW APPLY GASKET



27. INSTALL DIFFERENTIAL ASSEMBLY



28. INSTALL TRANSAXLE HOUSING

- (a) Calculate the end play value using the following formula and values of Dimension D and E that were measured when installing cylindrical roller bearing and U/D planetary gear. Select an appropriate U/D planetary gear thrust bearing race No.2 which satisfies the specified end play value, and install it.

End play: 0.498 - 0.993 mm (0.01961 - 0.03909 in.)

HINT:

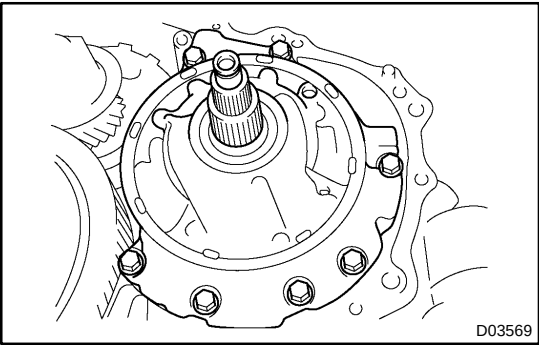
End play = Dimension E - Dimension D - thrust bearing thickness 3.28 mm (0.1291 in.) - U/D gear thrust bearing race No.2 thickness

Race thickness: mm (in.)

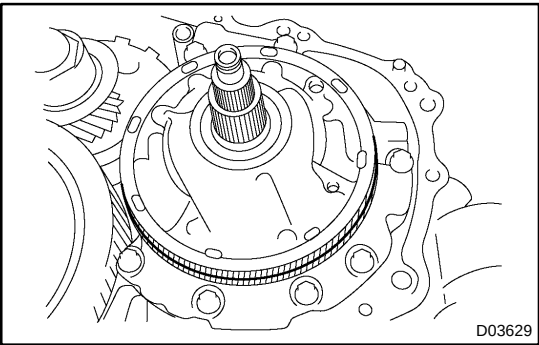
E - D	Thickness
Less than 7.64 (0.3008)	3.5 (0.138)
7.64 (0.3008) or more	3.8 (0.150)

Bearing and bearing race diameter: mm (in.)

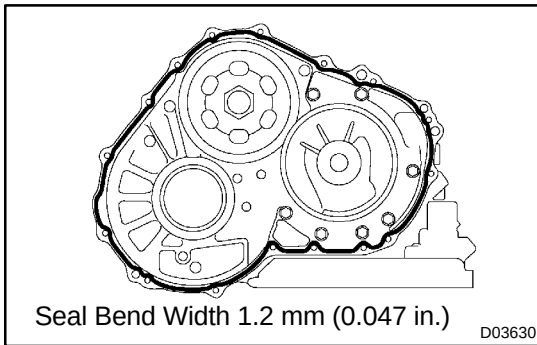
	Inside	Outside
Bearing	57.2 (2.252)	84.96 (3.3449)
Bearing race	56.4 (2.220)	83.0 (3.268)



- (b) Install the oil pump and 7 bolts to the transaxle case
Torque: 22 N·m (226 kgf·cm, 16 ft·lbf)



- (c) Coat on O-ring of oil pump with ATF.

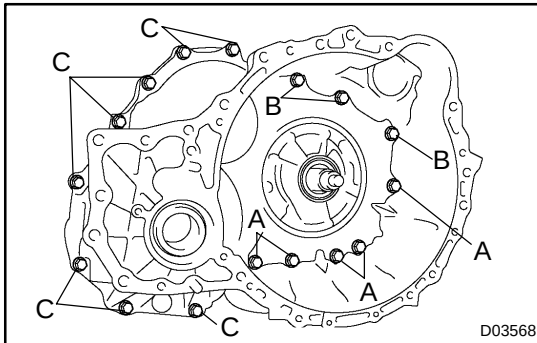


- (d) Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle case or transaxle housing.

- (e) Apply FIPG to the transaxle case.

FIPG:

Part No. 08826-00090, THREE BOND 1281 or equivalent



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

Torque:

Bolt A: 22 N·m (226 kgf·cm, 16 ft·lbf)

Bolt B and C: 29 N·m (300 kgf·cm, 22 ft·lbf)

HINT:

Apply seal packing or equivalent to the bolt A.

Seal packing:

THREE BOND 2403 or equivalent

Bolt length:

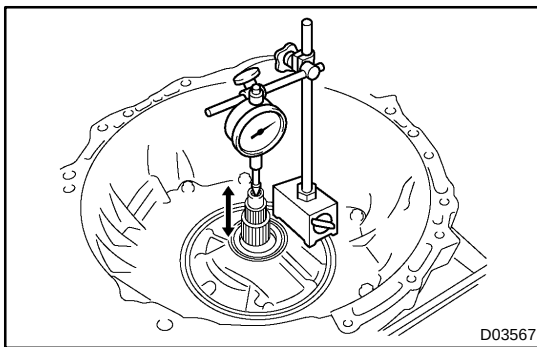
Bolt A: 50 mm (1.969 in.)

Bolt B: 50 mm (1.969 in.)

Bolt C: 42 mm (1.654 in.)

NOTICE:

Because the bolt A is a seal bolt, apply the seal packing to new bolts and tighten them within 10 minutes after application.



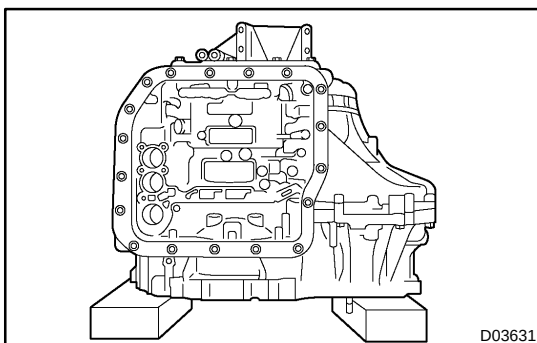
29. INSPECT INPUT SHAFT END PLAY

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

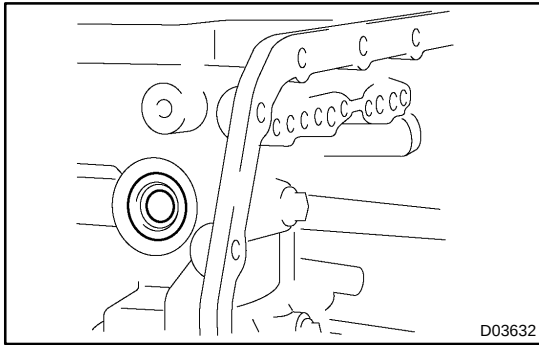
End play: 0.26 - 1.25 mm (0.0103 - 0.0492 in.)

30. CHECK DIFFERENTIAL PRELOAD

(See page [AX-107](#))

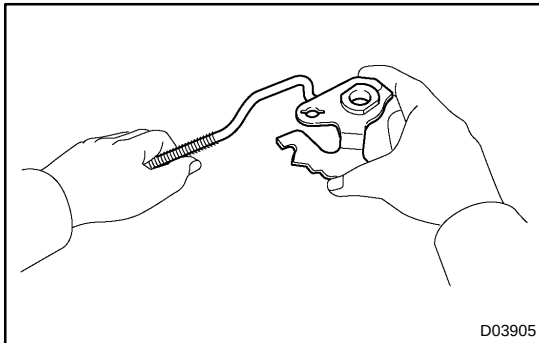


31. PLACE TRANSAXLE HOUSING

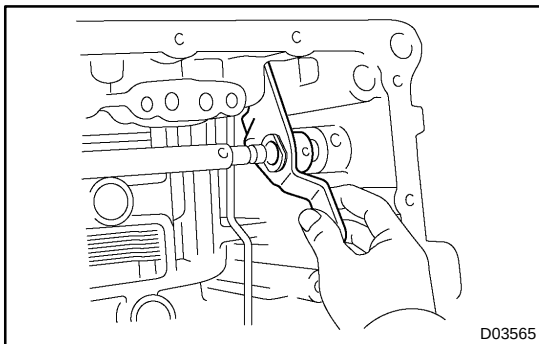


32. INSTALL MANUAL VALVE LEVER SHAFT

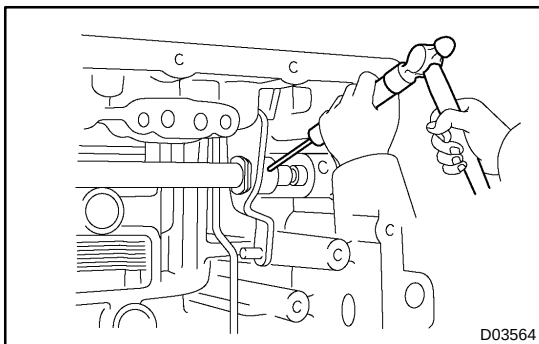
- (a) Coat new oil seal with ATF.
- (b) Install the oil seal to the transaxle case.



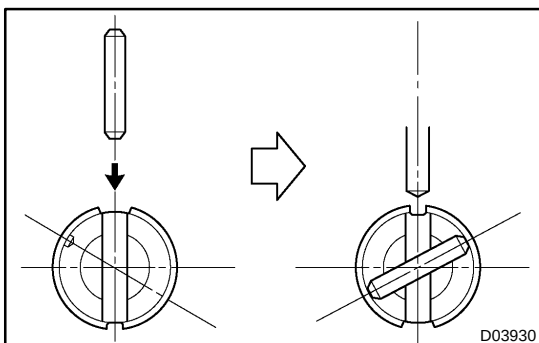
- (c) Install the parking lock rod to the manual valve lever.



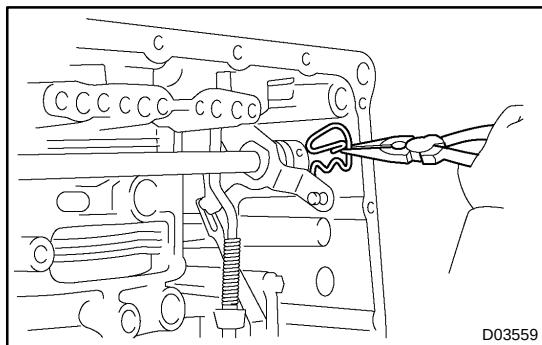
- (d) Install a new spacer and manual valve lever shaft to the transaxle case.



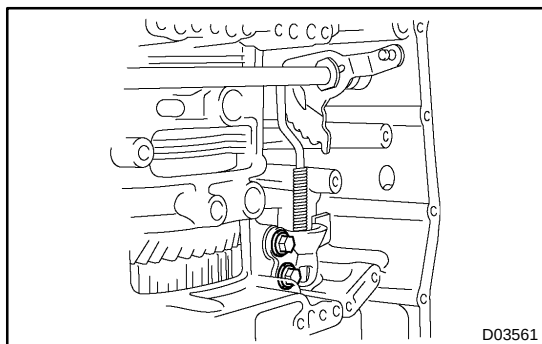
- (e) Using a pin punch and a hammer, drive in a new pin.



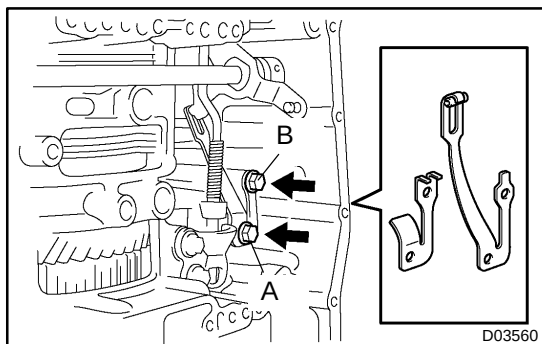
- (f) Turn the spacer and the lever shaft to align the small hole for locating the staking position in the spacer with the staking position mark on the lever shaft.
- (g) Using a pin punch, stake the spacer through the small hole.
- (h) Check that the spacer does not turn.



- (i) Using needle-nose pliers, install the return spring.



- (j) Install the parking lock pawl bracket with the 2 bolts.
Torque: 20 N·m (205 kgf·cm, 15 ft·lbf)
Bolt length: 25 mm (0.984 in.)



- (k) Install the manual detent spring with the 2 bolts.

NOTICE:

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

Torque:

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

Bolt B: 10 N·m (102 kgf·cm, 7 ft·lbf)

Bolt length:

Bolt A: 27 mm (1.063 in.)

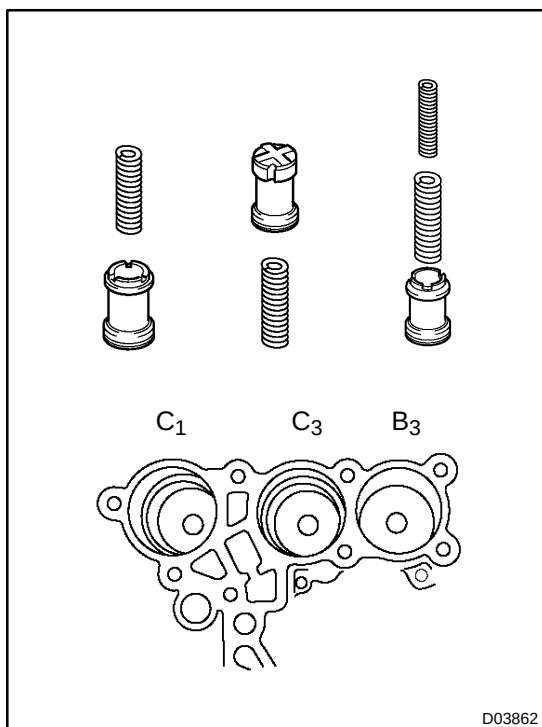
Bolt B: 16 mm (0.630 in.)

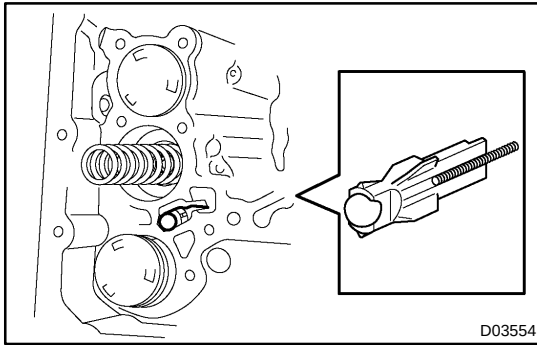
33. INSTALL ACCUMULATOR PISTON AND SPRING

- (a) Coat new 4 O-rings with ATF and install them to the pistons.
 (b) Coat the 4 springs and 3 accumulator pistons with ATF, install them to the holes.

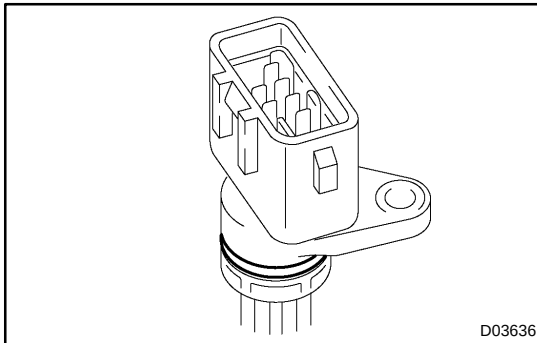
Accumulator spring:

Spring		Free length	Color
		Outer diameter mm (in.)	
B ₃	Inner	60.24 (2.3716) / 15.9 (0.626)	Green
	Outer	72.61 (2.8587) / 16.7 (0.657)	Blue
C ₃		90.49 (3.5626) / 19.2 (0.756)	White
C ₁		81.53 (3.2098) / 18.5 (0.728)	Pink



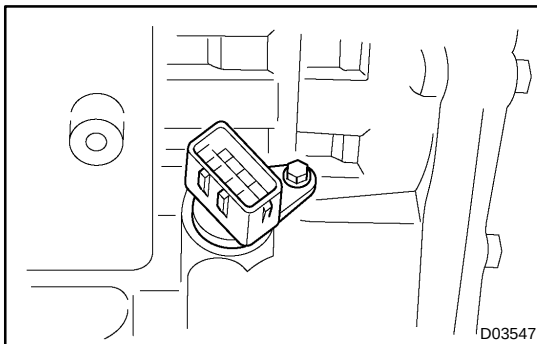


34. INSTALL CHECK BALL BODY AND SPRING

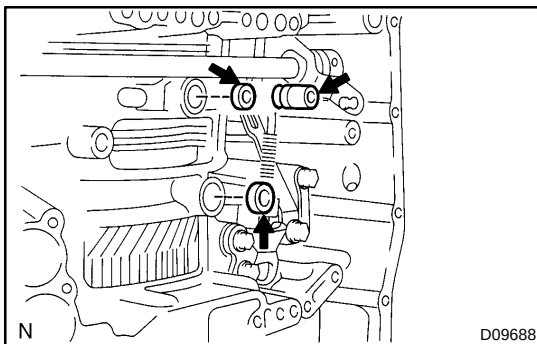


35. INSTALL TRANSAXLE SOLENOID WIRE

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

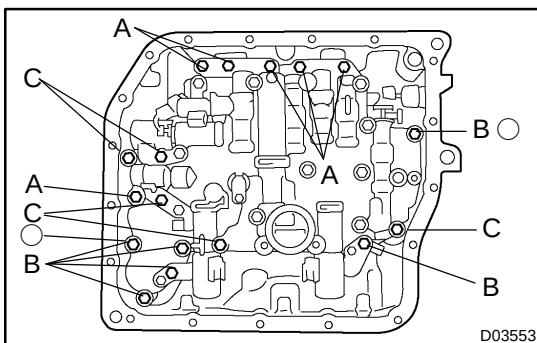


- (b) Install the solenoid wire retaining bolt
Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)



36. INSTALL APPLY GASKET

- (a) Coat 3 apply gaskets with ATF and install them to the transaxle case.



37. INSTALL VALVE BODY ASSEMBLY

- (a) Align the groove of the manual valve with the pin of lever.
(b) Install the 17 bolts.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)

NOTICE:

- Push the valve body against the accumulator piston spring and the check ball body to install it.
- Tighten those bolts marked by ○ in the illustration first temporarily because they are positioning bolts.

Each bolt length is indicated below.

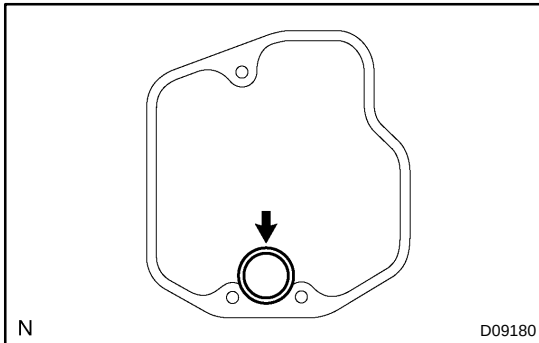
HINT:

Bolt length:

Bolt A: 25 mm (0.984 in.)

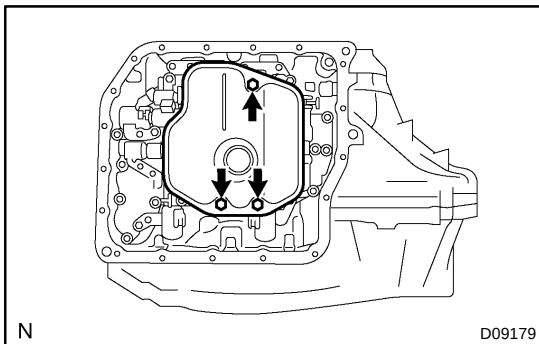
Bolt B: 41 mm (1.614 in.)

Bolt C: 45 mm (1.771 in.)



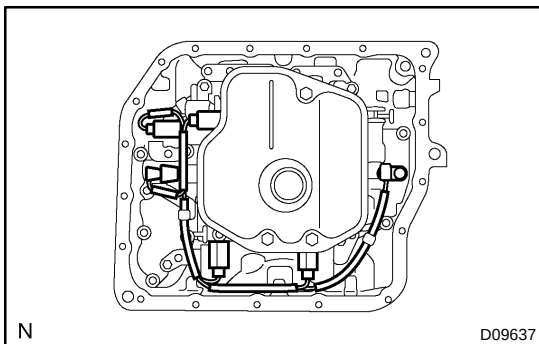
38. INSTALL OIL STRAINER

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



- (b) Install the oil strainer and 3 bolts to the valve body.

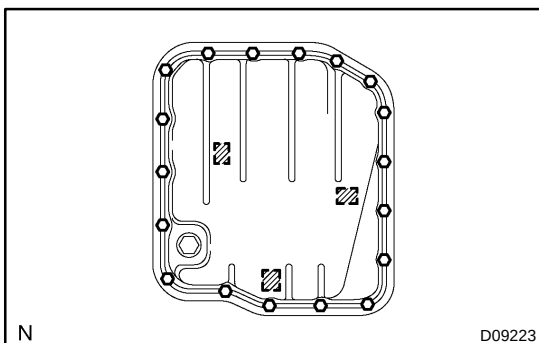
Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)



- (c) Connect the 5 solenoid connectors.

- (d) Install the ATF temperature sensor, clamp and bolt.

Torque: 6.6 N·m (67 kgf·cm, 58 in·lbf)



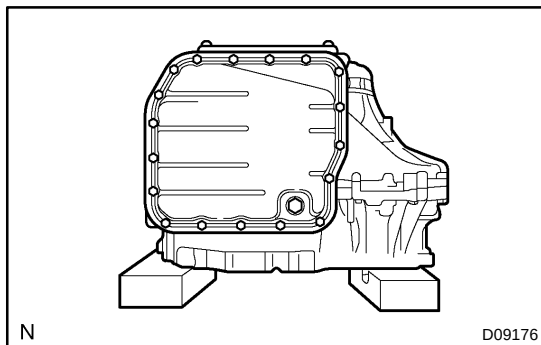
39. INSTALL OIL PAN

- (a) Install the 3 magnets in the oil pan.

- (b) Apply seal packing or equivalent to new 18 bolts.

Seal packing:

THREE BOND 2430 or equivalent

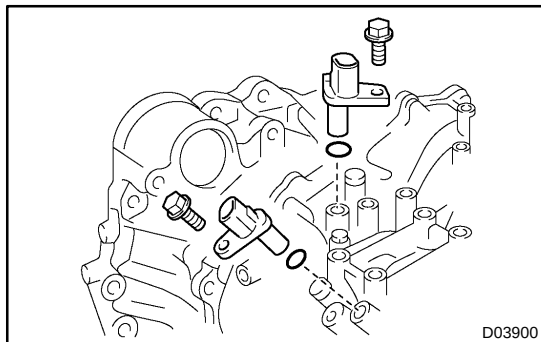


- (c) Install a new gasket, oil pan and 18 bolts to the transaxle case.

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

NOTICE:

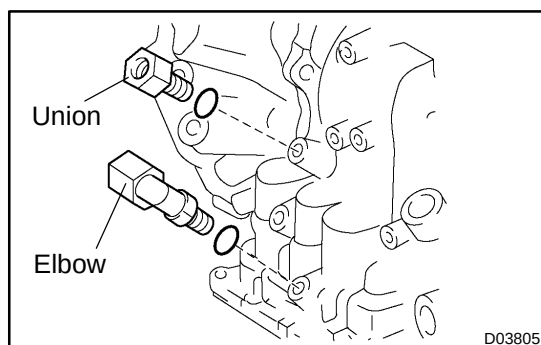
Because the bolts should be seal bolts, apply seal packing to new bolts and tighten them within 10 minutes after application.



40. INSTALL SPEED SENSOR

- (a) Coat 2 new O-rings with ATF, install it to the 2 sensors.
(b) Install the 2 sensors with the 2 bolts to the transaxle case.

Torque: 11.3 N·m (115 kgf·cm, 8 in·lbf)



41. INSTALL UNION AND ELBOW

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

Torque:

Union: 25 Nm (254 kgf·cm, 18 ft·lbf)

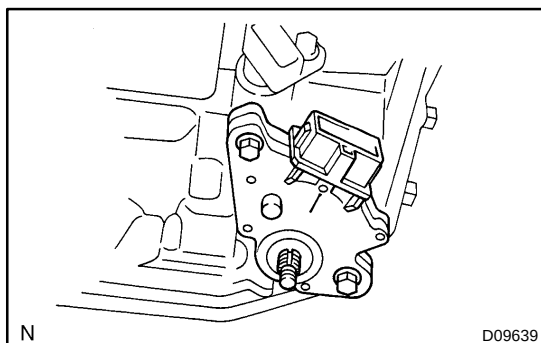
Elbow: 27 Nm (276 kgf·cm, 20 ft·lbf)



42. INSTALL TRANSAXLE CASE PLUG NO. 1

- (a) Coat a new O-ring with ATF, install it to the transaxle case plug No.1.
(b) Install the transaxle case plug No.1 to the transaxle case.

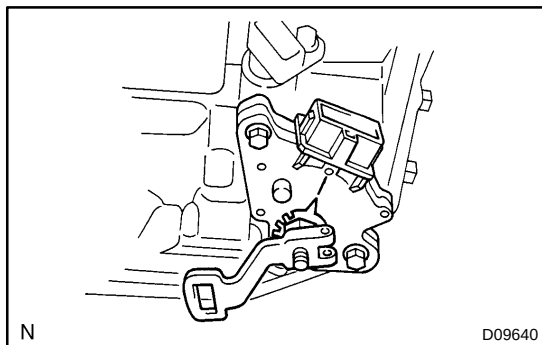
Torque: 7.4 N·m (75 kgf·cm, 65 in·lbf)



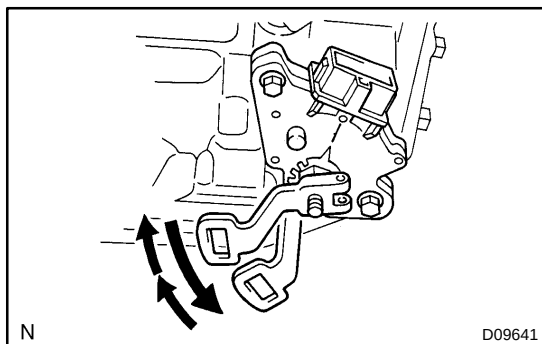
43. INSTALL PARK/NEUTRAL POSITION SWITCH

- (a) Install the park/neutral position switch onto the manual valve lever shaft and temporarily install the 2 adjusting bolts.
(b) Install a new nut stopper and nut.

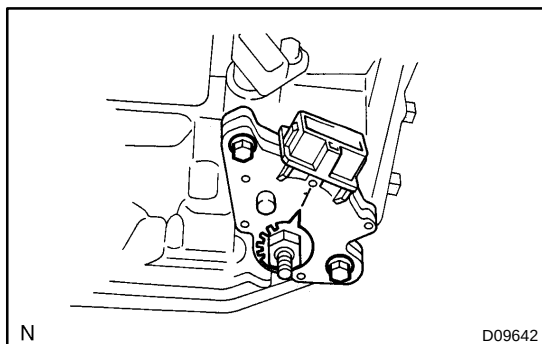
Torque: 6.9 N·m (70 kgf·cm, 61 in·lbf)



- (c) Temporarily install control shaft lever.

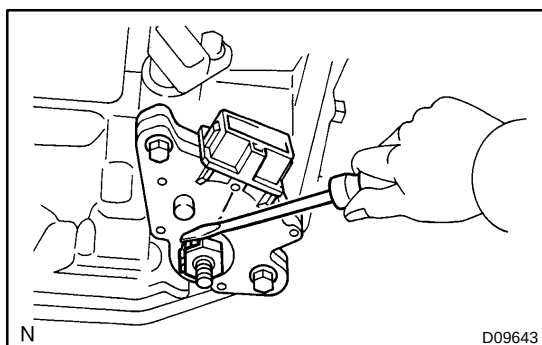


- (d) Turn the lever counterclockwise until it stops, then turn it clockwise 2 notches.
(e) Remove the control shaft lever.

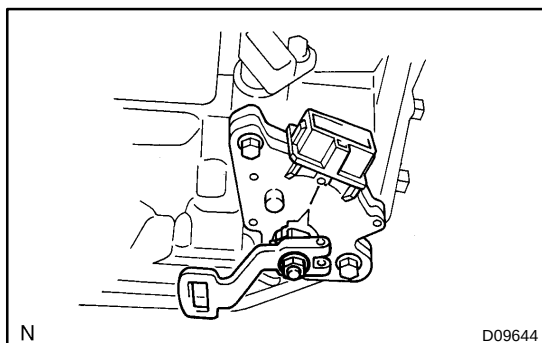


- (f) Align the groove with neutral basic line.
(g) Tighten the 2 bolts.

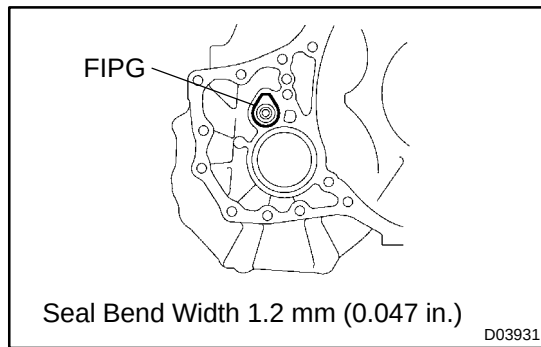
Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)



- (h) Using a screwdriver, stake the nut with the nut stopper.



- (i) Install the control shaft lever, washer and nut.
Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)

**44. INSTALL TRANSFER ASSEMBLY**

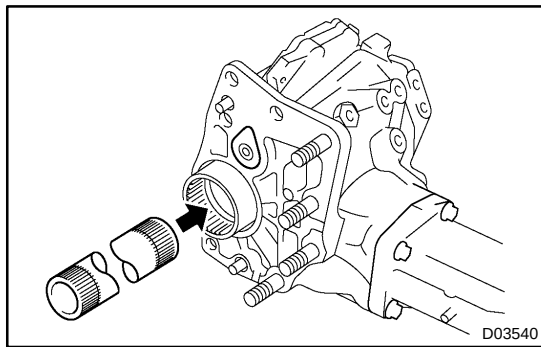
- (a) Remove any FIPG material and be careful not to get oil on the contacting surfaces of the transaxle case or transfer assembly.
- (b) Coat new gasket with petroleum jelly and install it to the transfer assembly.
- (c) As shown in the illustration, apply FIPG to the transfer assembly.

FIPG:

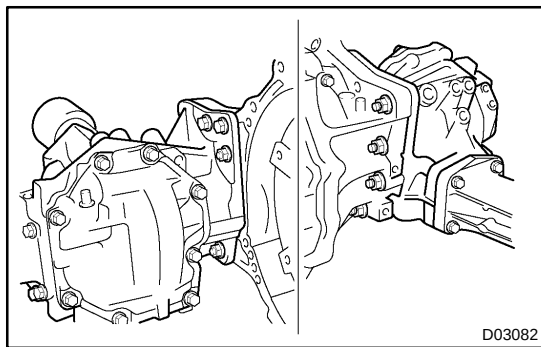
Part No. 08826-00090, THREE BOND 1281 or equivalent

NOTICE:

Do not apply FIPG to the part where it is not specified.



- (d) Install the intermediate shaft to the transfer assembly.

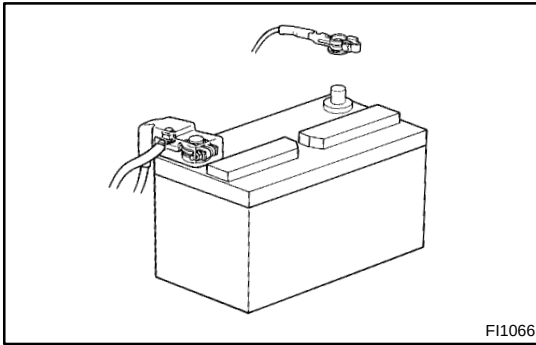


- (e) Install the transfer assembly, 2 bolts and 6 nuts to the transaxle case.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

NOTICE:

- Push the transfer straight up and install it to the transaxle.
- Pull up the transfer case by inserting your fingers into the hole on both sides may cause damage to the oil seal lip. Be careful not to damage it.



REPAIR INSTRUCTIONS

GENERAL INFORMATION

IN048-01

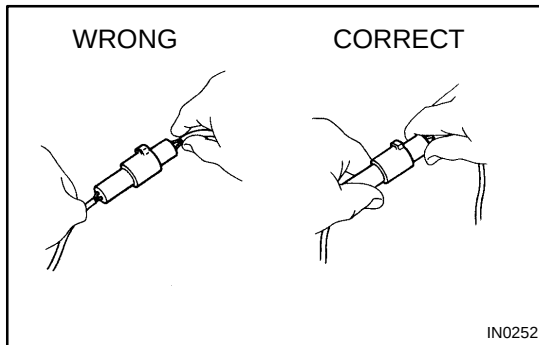
BASIC REPAIR HINT

- (a) Use fender, seat and floor covers to keep the vehicle clean and prevent damage.
- (b) During disassembly, keep parts in the appropriate order to facilitate reassembly.
- (c) Observe the following operations:
 - (1) Before performing electrical work, disconnect the negative (-) terminal cable from the battery.
 - (2) If it is necessary to disconnect the battery for inspection or repair, always disconnect the negative (-) terminal cable which is grounded to the vehicle body.
 - (3) To prevent damage to the battery terminal, loosen the cable nut and raise the cable straight up without twisting or prying it.
 - (4) Clean the battery terminals and cable ends with a clean shop rag. Do not scrape them with a file or other abrasive objects.
 - (5) Install the cable ends to the battery terminals with the nut loose, and tighten the nut after installation. Do not use a hammer to tap the cable ends onto the terminals.
 - (6) Be sure the cover for the positive (+) terminal is properly in place.
- (d) Check hose and wiring connectors to make sure that they are secure and correct.
- (e) Non-reusable parts
 - (1) Always replace cotter pins, gaskets, O-rings and oil seals etc. with new ones.
 - (2) Non-reusable parts are indicated in the component illustrations by the " " symbol.
- (f) Precoated parts

Precoated parts are bolts and nuts, etc. that are coated with a seal lock adhesive at the factory.

 - (1) If a precoated part is retightened, or loosened or caused to move in any way, it must be precoated with the specified adhesive.
 - (2) When reusing precoated parts, clean off the old adhesive and dry with compressed air. Then apply the specified seal lock adhesive to the bolt, nut or threads.
 - (3) Precoated parts are indicated in the component illustrations by the "○" symbol.
- (g) When necessary, use a sealer on gaskets to prevent leaks.

- (h) Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.
- (i) Use of special service tools (SST) and special service materials (SSM) may be required, depending on the nature of the repair. Be sure to use SST and SSM where specified and follow the proper work procedure. A list of SST and SSM can be found in the preparation of AT section.



- (j) To pull apart electrical connectors, pull the connector itself, not the wires.

AUTOMATIC TRANSAXLE

SERVICE DATA

SS0YR-02

Oil pump		
Body clearance	STD	0.10 - 0.17 mm (0.0039 - 0.0067 in.)
	Max.	0.17 mm (0.0067 in.)
Tip clearance	STD	0.07 - 0.15 mm (0.0028 - 0.0059 in.)
	Max.	0.15 mm (0.0059 in.)
Side clearance	STD	0.02 - 0.05 mm (0.0008 - 0.0020 in.)
	Max.	0.05 mm (0.0020 in.)
Pump body bushing inside diameter	STD	38.12 - 38.13 mm (1.5008 - 1.5012 in.)
	Max.	38.18 mm (1.5031 in.)
Stator shaft bushing inside diameter	STD	21.50 - 21.52 mm (0.8465 - 0.8472 in.)
	Max.	21.57 mm (0.8492 in.)
Direct clutch		
Piston stroke		0.61 - 0.83 mm (0.0240 - 0.0327 in.)
Piston return spring free length		22.58 mm (0.8890 in.)
Flange thickness	Mark	
	1	3.0 mm (0.118 in.)
	2	3.1 mm (0.122 in.)
	3	3.2 mm (0.126 in.)
	4	3.3 mm (0.130 in.)
	5	3.4 mm (0.134 in.)
	6	3.5 mm (0.138 in.)
Forward clutch		
Piston stroke		1.41 - 1.75 mm (0.0555 - 0.0689 in.)
Piston return spring free length		28.23 mm (1.1114 in.)
Multiple disc clutch hub bushing inside diameter	STD	23.03 - 23.04 mm (0.9067 - 0.9071 in.)
	Max.	23.09 mm (0.9091 in.)
Flange thickness	Mark	
	1	3.00 mm (0.1181 in.)
	2	3.15 mm (0.1240 in.)
	3	3.30 mm (0.1299 in.)
	4	3.45 mm (0.1358 in.)
	5	3.60 mm (0.1417 in.)
2nd brake		
Piston stroke		0.62 - 0.91 mm (0.0244 - 0.0358 in.)
Piston return spring free length		16.61 mm (0.6539 in.)
Flange thickness	Mark	
	1	3.0 mm (0.118 in.)
	2	3.1 mm (0.122 in.)
	3	3.2 mm (0.126 in.)
	4	3.3 mm (0.130 in.)
	5	3.4 mm (0.134 in.)
	6	3.5 mm (0.138 in.)
	7	3.6 mm (0.142 in.)
Input shaft		
End play		0.26 - 1.25 mm (0.0103 - 0.0492 in.)
U/D clutch		
Piston stroke		1.51 - 1.90 mm (0.0594 - 0.0748 in.)

U140F AX (RM772U)

SERVICE SPECIFICATIONS - AUTOMATIC TRANSAXLE

U/D clutch drum bushing inside diameter	STD Max.	37.06 - 37.08 mm (1.4591 - 1.4598 in.) 37.13 mm (1.4618 in.)		
Piston return spring free length		17.14 mm (0.6748 in.)		
Flange thickness	Mark			
	1	3.0 mm (0.118 in.)		
	2	3.2 mm (0.126 in.)		
	3	3.4 mm (0.134 in.)		
U/D brake				
Piston stroke		1.81 - 2.20 mm (0.0713 - 0.0866 in.)		
Piston return spring free length		14.04 mm (0.5528 in.)		
Flange thickness	Mark			
	1	3.0 mm (0.118 in.)		
	2	3.2 mm (0.126 in.)		
	3	3.4 mm (0.134 in.)		
1st & reverse brake				
Piston stroke		1.02 - 1.21 mm (0.0402 - 0.0476 in.)		
Piston return spring free length		15.51 mm (0.6106 in.)		
Flange thickness	Mark			
	1	1.8 mm (0.071 in.)		
	2	1.9 mm (0.075 in.)		
	3	2.0 mm (0.079 in.)		
	4	2.1 mm (0.083 in.)		
	5	2.2 mm (0.087 in.)		
	6	2.3 mm (0.091 in.)		
	7	2.4 mm (0.094 in.)		
	8	2.5 mm (0.098 in.)		
Valve body spring				
Spring (Color)		Free length	Coil outer diameter	Total No. of coils
Upper valve body				
Lock-up relay valve (None)		29.27 mm (1.1524 in.)	9.7 mm (0.382 in.)	10.50
Lock -up control valve (None)		23.98 mm (0.9441 in.)	5.4 mm (0.213 in.)	14.94
Secondary regulator valve (Blue)		58.35 mm (2.2972 in.)	8.7 mm (0.343 in.)	20.58
C-2 lock valve (Yellow)		33.65 mm (1.3248 in.)	7.4 mm (0.291 in.)	11.82
Solenoid modulator valve (Red)		62.40 mm (2.4567 in.)	9.8 mm (0.386 in.)	22.31
B-3 orifice control valve (Gray)		62.65 mm (2.4665 in.)	7.8 mm (0.307 in.)	19.60
B-1 lock valve (White)		37.40 mm (1.4724 in.)	9.8 mm (0.386 in.)	8.84
Clutch apply control valve (Purple)		40.25 mm (1.5846 in.)	9.0 mm (0.354 in.)	13.00
C-2 exhaust check valve (Orange)		40.27 mm (1.5854 in.)	7.4 mm (0.291 in.)	17.10

Lower valve body			
3-4 shift valve (None)	29.25 mm (1.1516 in.)	9.7 mm (0.382 in.)	10.5
B-1 control valve (Green)	48.55 mm (1.9114 in.)	9.8 mm (0.386 in.)	13.43
B-2 control valve (Pink)	57.05 mm (2.2461 in.)	9.8 mm (0.386 in.)	15.34
Primary regulator valve (Orange)	57.55 mm (2.2657 in.)	19.9 mm (0.783 in.)	7.87
C-2 control valve (Brown)	34.20 mm (1.3465 in.)	9.9 mm (0.390 in.)	8.79

Valve body key			
Key	Height	Width	Thickness
Upper valve body			
Lock-up relay valve	10.0 mm (0.394 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
Lock-up control valve	10.0 mm (0.394 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
Secondary regulator valve	8.0 mm (0.315 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
C-2 lock valve	10.0 mm (0.394 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
Solenoid modulator valve	8.0 mm (0.315 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
B-3 orifice control valve	18.5 mm (0.728 in.)	-	2.3 mm (0.091 in.)
B-1 lock valve	8.0 mm (0.315 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
C-2 exhaust check valve	8.0 mm (0.315 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
3-way check valve	8.0 mm (0.315 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
Lower valve body			
3-4 shift valve	25.5 mm (1.004 in.)	-	2.3 mm (0.091 in.)
B-1 control valve	14.5 mm (0.571 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
B-2 control valve	14.5 mm (0.571 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)
C-2 control valve	14.5 mm (0.571 in.)	5.0 mm (0.197 in.)	3.2 mm (0.126 in.)

Accumulator			
Spring		Free length/Outer diameter	Color
B ₃	Inner	60.24 mm (2.3716 in.) / 15.9 mm (0.626 in.)	Green
	Outer	72.61 mm (2.8587 in.) / 16.7 mm (0.626 in.)	Blue
C ₃		90.49 mm (3.5626 in.) / 19.2 mm (0.756 in.)	White
C ₁		81.53 mm (3.2098 in.) / 18.5 mm (0.728 in.)	Pink
C ₂	Inner	47.58 mm (1.8732 in.) / 11.2 mm (0.441 in.)	Brown
	Outer	47.61 mm (1.8744 in.) / 12.0 mm (0.472 in.)	Brown
B ₁	Inner	43.88 mm (1.7276 in.) / 11.0 mm (0.433 in.)	Purple
	Outer	45.12 mm (1.7764 in.) / 11.8 mm (0.465 in.)	White

Transfer	
Drive pinion preload (at starting) (For use with SST)	
New bearing	1.0 - 1.5 N·m (10 - 15 kgf·cm, 8.7 - 13.0 in.·lbf)
Reused bearing	0.9 - 1.4 N·m (9 - 14 kgf·cm, 7.8 - 12.4 in.·lbf)
Drive pinion total preload (at starting) (For use with SST)	
(Drive pinion preload plus)	
New bearing	0.2 - 0.4 N·m (2 - 4 kgf·cm, 1.7 - 3.5 in.·lbf)
Reused bearing	0.1 - 0.3 N·m (1 - 3 kgf·cm, 0.9 - 2.6 in.·lbf)
Ring gear backlash	0.10 - 0.15 mm (0.0039 - 0.0059 in.)

SERVICE SPECIFICATIONS - AUTOMATIC TRANSAXLE

Ring gear runout		0.1 mm (0.004 in.)
Center differential control coupling runout		0.07 mm (0.0028 in.)
Backlash adjust washer thickness	Mark	
	AA	2.07 mm (0.0815 in.)
	AB	2.10 mm (0.0827 in.)
	AC	2.13 mm (0.0839 in.)
	BA	2.16 mm (0.0850 in.)
	BB	2.19 mm (0.0862 in.)
	BC	2.22 mm (0.0874 in.)
	CA	2.25 mm (0.0886 in.)
	CB	2.28 mm (0.0898 in.)
	CC	2.31 mm (0.0909 in.)
	DA	2.34 mm (0.0921 in.)
	DB	2.37 mm (0.0933 in.)
	DC	2.40 mm (0.0945 in.)
	EA	2.43 mm (0.0957 in.)
	EB	2.46 mm (0.0969 in.)
	EC	2.49 mm (0.0980 in.)
	FA	2.52 mm (0.0992 in.)
	FB	2.55 mm (0.1004 in.)
	FC	2.58 mm (0.1016 in.)
	GA	2.61 mm (0.1028 in.)
	GB	2.64 mm (0.1039 in.)
	GC	2.67 mm (0.1051 in.)
	HA	2.70 mm (0.1063 in.)
	HB	2.73 mm (0.1075 in.)
	HC	2.76 mm (0.1087 in.)
	JA	2.79 mm (0.1098 in.)
	JB	2.82 mm (0.1110 in.)
	JC	2.85 mm (0.1122 in.)
	KA	2.88 mm (0.1134 in.)
	KB	2.91 mm (0.1146 in.)
	KC	2.94 mm (0.1157 in.)
	LA	2.97 mm (0.1169 in.)
	LB	3.00 mm (0.1181 in.)

Tooth contact adjust washer thickness	Mark	
	AA	1.20 mm (0.0472 in.)
	AB	1.21 mm (0.0476 in.)
	AC	1.22 mm (0.0480 in.)
	BA	1.23 mm (0.0484 in.)
	BB	1.24 mm (0.0488 in.)
	BC	1.25 mm (0.0492 in.)
	CA	1.26 mm (0.0496 in.)
	CB	1.27 mm (0.0500 in.)
	CC	1.28 mm (0.0504 in.)
	DA	1.29 mm (0.0508 in.)
	DB	1.30 mm (0.0512 in.)
	DC	1.31 mm (0.0516 in.)
	EA	1.32 mm (0.0520 in.)
	EB	1.33 mm (0.0524 in.)
	EC	1.34 mm (0.0528 in.)
	FA	1.35 mm (0.0531 in.)
	FB	1.36 mm (0.0535 in.)
	FC	1.37 mm (0.0539 in.)
	GA	1.38 mm (0.0543 in.)
	GB	1.39 mm (0.0547 in.)
	GC	1.40 mm (0.0551 in.)
	HA	1.41 mm (0.0555 in.)
	HB	1.42 mm (0.0559 in.)
	HC	1.43 mm (0.0563 in.)
	JA	1.44 mm (0.0567 in.)
	JB	1.45 mm (0.0571 in.)
	JC	1.46 mm (0.0575 in.)
	KA	1.47 mm (0.0579 in.)
	KB	1.48 mm (0.0583 in.)
	KC	1.49 mm (0.0587 in.)
	LA	1.50 mm (0.0591 in.)
	LB	1.51 mm (0.0594 in.)
	LC	1.52 mm (0.0598 in.)
	MA	1.53 mm (0.0602 in.)
	MB	1.54 mm (0.0606 in.)
	MC	1.55 mm (0.0610 in.)
	NA	1.56 mm (0.0614 in.)
	NB	1.57 mm (0.0618 in.)
	NC	1.58 mm (0.0622 in.)
	PA	1.59 mm (0.0626 in.)
	PB	1.60 mm (0.0630 in.)
	PC	1.61 mm (0.0634 in.)
	QA	1.62 mm (0.0638 in.)
	QB	1.63 mm (0.0642 in.)
	QC	1.64 mm (0.0646 in.)
	RA	1.65 mm (0.0650 in.)

SERVICE SPECIFICATIONS - AUTOMATIC TRANSAXLE

Preload adjust washer thickness	Mark	
	AA	1.47 mm (0.0579 in.)
	AB	1.50 mm (0.0591 in.)
	AC	1.53 mm (0.0602 in.)
	BA	1.56 mm (0.0614 in.)
	BB	1.59 mm (0.0626 in.)
	BC	1.62 mm (0.0638 in.)
	CA	1.65 mm (0.0650 in.)
	CB	1.68 mm (0.0661 in.)
	CC	1.71 mm (0.0673 in.)
	DA	1.74 mm (0.0685 in.)
	DB	1.77 mm (0.0697 in.)
	DC	1.80 mm (0.0709 in.)
	EA	1.83 mm (0.0720 in.)
	EB	1.86 mm (0.0732 in.)
	EC	1.89 mm (0.0744 in.)
	FA	1.92 mm (0.0756 in.)
	FB	1.95 mm (0.0768 in.)
	FC	1.98 mm (0.0780 in.)
	GA	2.01 mm (0.0791 in.)
	GB	2.04 mm (0.0803 in.)
	GC	2.07 mm (0.0815 in.)
	HA	2.10 mm (0.0827 in.)
	HB	2.13 mm (0.0839 in.)
	HC	2.16 mm (0.0850 in.)
	JA	2.19 mm (0.0862 in.)
	JB	2.22 mm (0.0874 in.)
	JC	2.25 mm (0.0886 in.)
	KA	2.28 mm (0.0898 in.)
	KB	2.31 mm (0.0909 in.)
	KC	2.34 mm (0.0921 in.)
	LA	2.37 mm (0.0933 in.)
	LB	2.40 mm (0.0945 in.)
	LC	2.43 mm (0.0957 in.)
	MA	2.46 mm (0.0969 in.)
	MB	2.49 mm (0.0980 in.)
	MC	2.52 mm (0.0992 in.)
	NA	2.55 mm (0.1004 in.)
	NB	2.58 mm (0.1016 in.)
Differential case		
Front differential side gear backlash		0.05 - 0.20 mm (0.0020 - 0.0079 in.)
Front differential side gear thrust washer thickness	Mark	
	A	0.95 mm (0.0374 in.)
	B	1.00 mm (0.0394 in.)
	C	1.05 mm (0.0413 in.)
	D	1.10 mm (0.0433 in.)
	E	1.15 mm (0.0453 in.)
	F	1.20 mm (0.0472 in.)
	G	1.25 mm (0.0492 in.)
	H	1.30 mm (0.0511 in.)
	J	1.35 mm (0.0531 in.)
	K	1.40 mm (0.0551 in.)
Center differential side gear backlash		0.05 - 0.20 mm (0.0020 - 0.0079 in.)

Center differential side gear thrust washer No.1 thickness	Mark	
	MA	0.80 mm (0.0315 in.)
	MB	0.85 mm (0.0335 in.)
	MC	0.90 mm (0.0354 in.)
	MD	0.95 mm (0.0374 in.)
	ME	1.00 mm (0.0394 in.)
	MF	1.05 mm (0.0413 in.)
	MG	1.10 mm (0.0433 in.)
	MH	1.15 mm (0.0453 in.)
	MJ	1.20 mm (0.0472 in.)
	MK	1.25 mm (0.0492 in.)
	MM	1.30 mm (0.0512 in.)
	MN	1.35 mm (0.0531 in.)
	ML	1.40 mm (0.0551 in.)
Center differential side gear thrust clearance	STD	0.16 - 0.25 mm (0.006 - 0.010 in.)
Center differential side gear thrust washer No.2 thickness	Mark	
	0	0.80 mm (0.0315 in.)
	1	0.85 mm (0.0335 in.)
	2	0.90 mm (0.0354 in.)
	3	0.95 mm (0.0374 in.)
	4	1.00 mm (0.0394 in.)
	5	1.05 mm (0.0413 in.)
	6	1.10 mm (0.0433 in.)
	7	1.15 mm (0.0453 in.)
	8	1.20 mm (0.0472 in.)
	9	1.25 mm (0.0492 in.)
	A	1.30 mm (0.0512 in.)
	B	1.35 mm (0.0531 in.)
	C	1.40 mm (0.0551 in.)
Preload (turning torque at 60 rpm)		
New bearing		0.20 - 0.69 N·m (2 - 7 kgf·cm, 1.8 - 6.1 in.-lbf)
Reused bearing		0.10 - 0.35 N·m (1 - 4 kgf·cm, 0.9 - 3.1 in.-lbf)
Plate washer thickness	Mark	
	0	2.00 mm (0.0787 in.)
	1	2.05 mm (0.0807 in.)
	2	2.10 mm (0.0827 in.)
	3	2.15 mm (0.0846 in.)
	4	2.20 mm (0.0866 in.)
	5	2.25 mm (0.0886 in.)
	6	2.30 mm (0.0906 in.)
	7	2.35 mm (0.0925 in.)
	8	2.40 mm (0.0945 in.)
	9	2.45 mm (0.0965 in.)
	A	2.50 mm (0.0984 in.)
	B	2.55 mm (0.1004 in.)
	C	2.60 mm (0.1024 in.)
	D	2.65 mm (0.1043 in.)
	E	2.70 mm (0.1063 in.)
	F	2.75 mm (0.1083 in.)
	G	2.80 mm (0.1102 in.)
	H	2.85 mm (0.1122 in.)

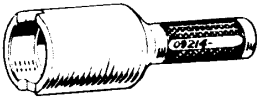
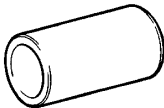
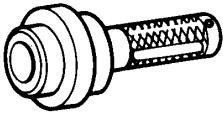
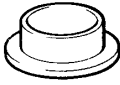
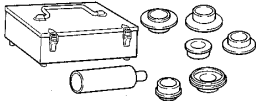
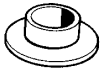
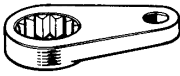
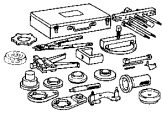
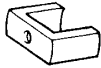
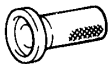
SPECIFIED TORQUE FOR STANDARD BOLTS

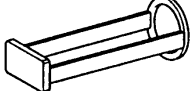
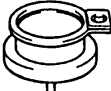
Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N·m	kgf·cm	ft·lbf	N·m	kgf·cm	ft·lbf
4T	6	1	5	55	48 in.·lbf	6	60	52 in.·lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	-	-	-
5T	6	1	6.5	65	56 in.·lbf	7.5	75	65 in.·lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	-	-	-
6T	6	1	8	80	69 in.·lbf	9	90	78 in.·lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	-	-	-
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	-	-	-
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

AUTOMATIC TRANSAXLE

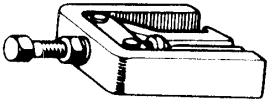
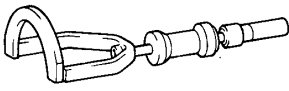
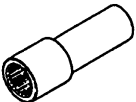
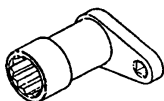
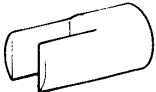
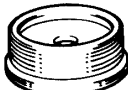
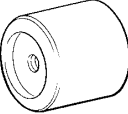
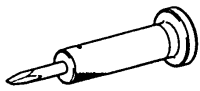
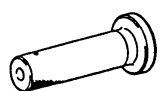
SST (Special Service Tools)

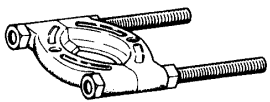
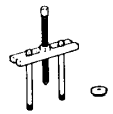
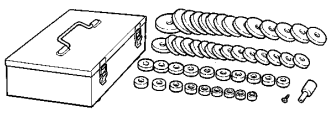
PP3BG-01

	09214-7601 1	Crankshaft Pulley Replacer	
	09223-00010	Cover & Seal Replacer	
	09223-15020	Oil Seal & Bearing Replacer	
	09223-4601 1	Crankshaft Front Oil Seal Replacer	
	09308-00010	Oil Seal Puller	
	09316-2001 1	Transfer Bearing Replacer	
	09316-6001 1	Transmission & Transfer Bearing Replacer	
	(09316-00041)	Replacer "C"	
	09326-2001 1	Output Shaft Bearing Lock Nut Wrench	
	09350-32014	TOYOTA Automatic Transmission Tool Set	
	(09351-32070)	No.2 Piston Spring Compressor	
	(09351-32140)	Oil Seal Replacer	

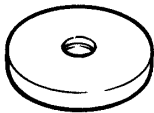
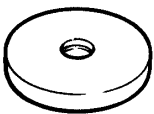
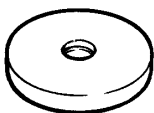
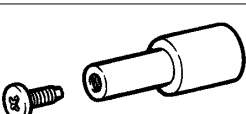
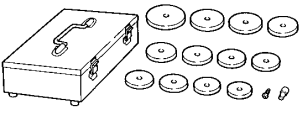
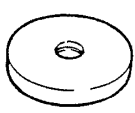
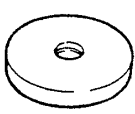
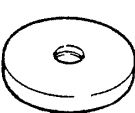
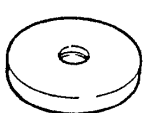
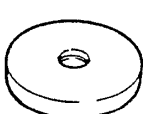
	(09351-321 11) Side Bearing Race Replacer	
	09387-00010 Transfer Oil Seal Replacer	
	09387-00020 Direct Clutch Wrench	
	09387-00030 Counter Drive Gear Holding Tool	
	09387-00040 Bearing Puller Assembly	
	(09387-01010) Claw No.1	
	(09387-01020) Claw No.2	
	(09387-01030) Pin	
	(09387-01040) Bearing Puller Body	
	09387-00050 Under Drive Gear Puller	
	09387-00060 Second Brake Wrench	
	09387-00070 First & Reverse Brake Wrench	
	09387-00080 Counter Drive Gear Nut Wrench	

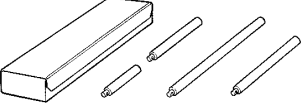
PREPARATION - AUTOMATIC TRANSAXLE

	09387-00090 Senter Differential Sentering Tool	
	09506-35010 Differential Drive Pinion Rear Bearing Replacer	
	09514-3501 1 Rear Wheel Bearing Puller	
	09520-10021 Drive Shaft Remover & Replacer	
	09556-16030 Differential Drive Pinion Holding Tool 28	
	09564-16020 Drive Pinion Lock Nut Wrench	
	09564-3201 1 Differential Preload Adaptor	
	09608-10010 Steering Knuckle Oil Seal Replacer	
	09608-32010 Steering Knuckle Oil Seal Replacer	
	09649-17010 Steering Knuckle Tool	
	09930-00010 Drive Shaft Nut Chisel	
	(09931-00010) Handle	
	(09931-00020) Nut Chisel	

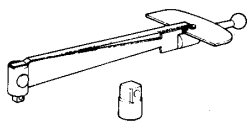
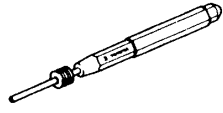
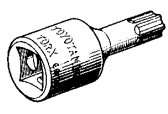
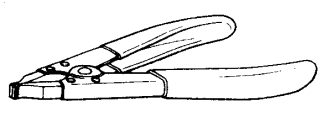
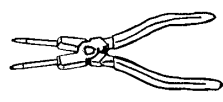
	09950-00020 Bearing Remover	
	09950-00030 Bearing Remover Attachment	
	09950-60010 Replacer Set	
	(09951-00230) Replacer 23	
	(09951-00320) Replacer 32	
	(09951-00340) Replacer 34	
	(09951-00350) Replacer 35	
	(09951-00360) Replacer 36	
	(09951-00370) Replacer 37	
	(09951-00380) Replacer 38	
	(09951-00400) Replacer 40	
	(09951-00420) Replacer 42	
	(09951-00450) Replacer 45	

PREPARATION - AUTOMATIC TRANSAXLE

	(09951-00540) Replacer 54	
	(09951-00590) Replacer 59	
	(09951-00600) Replacer 60	
	(09951-00610) Replacer 61	
	(09951-00620) Replacer 62	
	(09951-00640) Replacer 64	
	(09952-06010) Adapter	
	09950-60020 Replacer Set No.2	
	(09951-00710) Replacer 71	
	(09951-00730) Replacer 73	
	(09951-00790) Replacer 79	
	(09951-00810) Replacer 81	
	(09951-00890) Replacer 89	

	09950-70010 Handle Set	
	(09951-07100) Handle 100	
	(09951-07150) Handle 150	
	(09951-07200) Handle 200	

RECOMMENDED TOOLS

	09025-00010 Torque Wrench (30 kgf-cm)	
	09031-00030 Pin Punch .	
	09031-00040 Pin Punch .	
	09042-00010 Torx Socket T30 .	
	09905-00012 Snap Ring No.1 Expander .	
	09905-00013 Snap Ring Pliers .	

EQUIPMENT

Dial indicator with magnetic base	
Feeler gauge	
Plastic hammer	
Plastigage	
Straight edge	
Seal packing 2403, THREE BOND 2403 or equivalent	
Seal packing 2430, THREE BOND 2430 or equivalent	
Torque wrench	
Vernier calipers	

LUBRICANT

Item	Capacity	Classification
Automatic transaxle fluid		
Dry fill	8.3 liters (8.8 US qts, 7.3 Imp. qts)	ATF TYPE T-IV
Drain and refill	3.9 liters (4.1 US qts, 3.4 Imp. qts)	
Transfer oil	0.9 liters (0.95 US qts, 0.71 Imp. qts)	APL GL-5 SAE 90

SSM (Special Service Materials)

08826-00090	Seal Packing 1281, THREE BOND 1281 or equivalent (FIPG)	
08833-00080	Adhesive 1344 THREE BOND 1344 LOCTITE 242 or equivalent	

TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
Apply pipe clamp x Transaxle housing		9.8	100	7
Apply pipe clamp x Transaxle case		5.4	55	48 in.·lbf
Transaxle rear cover x Transaxle case	Bolt A	18.6	190	14
	Other bolt	24.5	250	18
Parking pawl shaft clamp x Transaxle case		9.8	100	7
Oil pump x Transaxle case		22	226	16
Transaxle housing x Transaxle case	Bolt A	22	225	16
	Bolt B and C	29	300	22
Parking bracket x Transaxle case		20	205	15
Detent spring x Valve body assembly	Bolt A	20	205	15
	Bolt B	10	102	7
Valve body x Transaxle case		11	110	8
Oil strainer x Valve body		11	110	8
Transaxle solenoid wire x Transaxle case		5.4	55	48 in.·lbf
ATF temperature sensor clamp x Valve body		6.6	67	58 in.·lbf
Oil pan x Transaxle case		7.6	77	67 in.·lbf
Counter gear speed sensor x Transaxle case		11.3	115	8
Input turbin speed sensor x Transaxle case		11.3	115	8
Union		25	254	18
Elbow		27	276	20
Transaxle case plug No. 1		7.4	75	65 in.·lbf
Park/neutral start switch	Bolt:	5.4	55	48 in.·lbf
	Nut:	6.9	70	61 in.·lbf
Control shaft lever		13	133	10
Transfer x Transaxle		69	700	51
Counter drive gear lock nut		280	2855	207
Oil pump body x Stator Shaft		9.8	100	7
U/D output shaft lock nut		280	2,855	207
Valve body assembly x Shift solenoid valve	Bolt A	11	110	8
	Bolt B	6.6	67	58 in.·lbf
Retainer x Upper valve body		11	110	8
Upper valve body x Lower valve body		11	110	8
Upper valve body x Cover	Bolt A	11	110	8
	Bolt B	11	110	8
	Bolt C	6.6	67	58 in.·lbf
	Bolt D	6.6	67	58 in.·lbf
Differential ring gear x Differential case		95	970	70
Center differential control coupling x Ring gear		77.5	791	57
Bearing retainer RH x Transfer case		28	286	21
Drive pinion lock nut		295 (333)	3,010 (3,400)	218 (246)
Oil deflector x No.1 Case cover		6.5	66	58 in.·lbf
No.1 Case cover x Transfer case		19.6	200	14
Extension housing x Transfer case		25.5	260	19