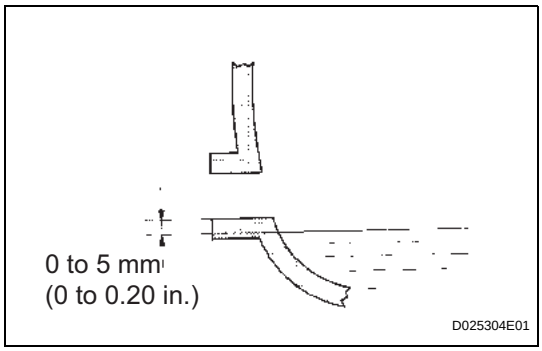
MANUAL TRANSMISSION SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problems. The numbers indicate the ranked order of probability of each of the possible causes. Check each part in the order suggested. If necessary, replace the applicable parts.

Symptom	Suspected area	See page
Abnormal noise	1. Oil level (Low)	MT-2
	2. Oil (Wrong)	MT-2
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-
Oil leakage	1. Oil level (High)	MT-2
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	-
	4. O-Ring (Worn or damaged	-
Hard shifting or will not shift	1. Synchronizer ring (Worn or damaged)	-
	2. Shift key spring (Damaged)	-
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	-
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-



MT

MANUAL TRANSMISSION OIL

ON-VEHICLE INSPECTION

1. INSPECT TRANSMISSION OIL

(a) Park the vehicle in a level place.

(b) Remove the transmission filler plug and gasket.

(c) Check that the oil surface is within 5 mm (0.20 in.) of the lowest point of the transmission filler plug opening.

NOTICE:

- **Problems may occur when the oil level is too high or low.**
- **After replacing the oil, drive the vehicle and check the oil level again.**

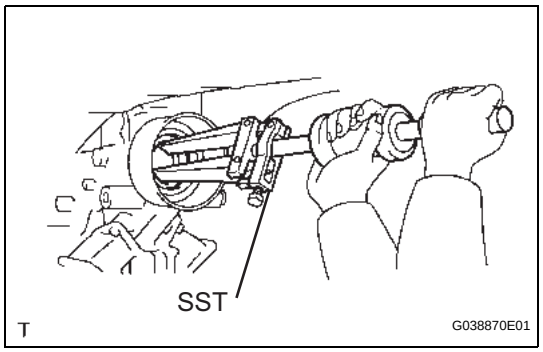
(d) Check for oil leakage when the oil level is low.

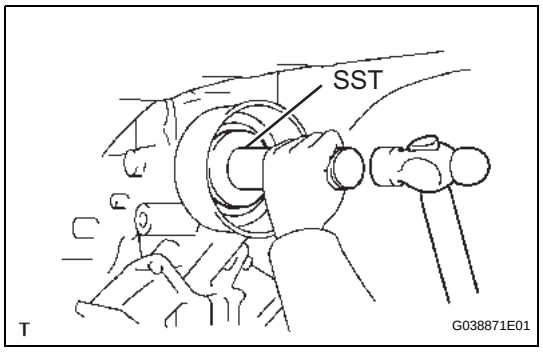
(e) Install the transmission filler plug and a new gasket.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL

REMOVAL

1. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-8)**
2. **REMOVE PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-3)**
3. **REMOVE MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL**
   (a) Using SST, remove the oil seal.
   SST 09308-00010
   NOTICE:
   Do not damage the oil-seal-fitted surface of the extension housing.





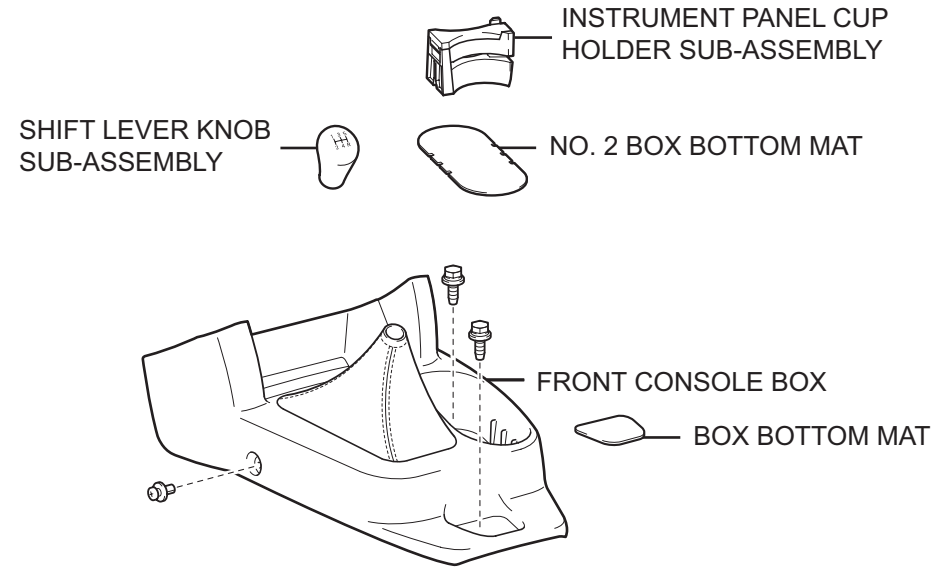
INSTALLATION

1. **INSTALL MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL**
   (a) Using SST and a hammer, tap in the new oil seal to the extension housing.
   SST 09223-00010
   Drive in depth:
   -0.5 to 0.5 mm (-0.020 to 0.020 in.)
   NOTICE:
   Be careful not to damage the oil seal rip
   (b) Coat the lip of a new oil seal with MP grease.
2. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-13)**
3. **INSTALL PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-6)**
4. **CHECK FOR MANUAL TRANSMISSION OIL LEAKAGE**

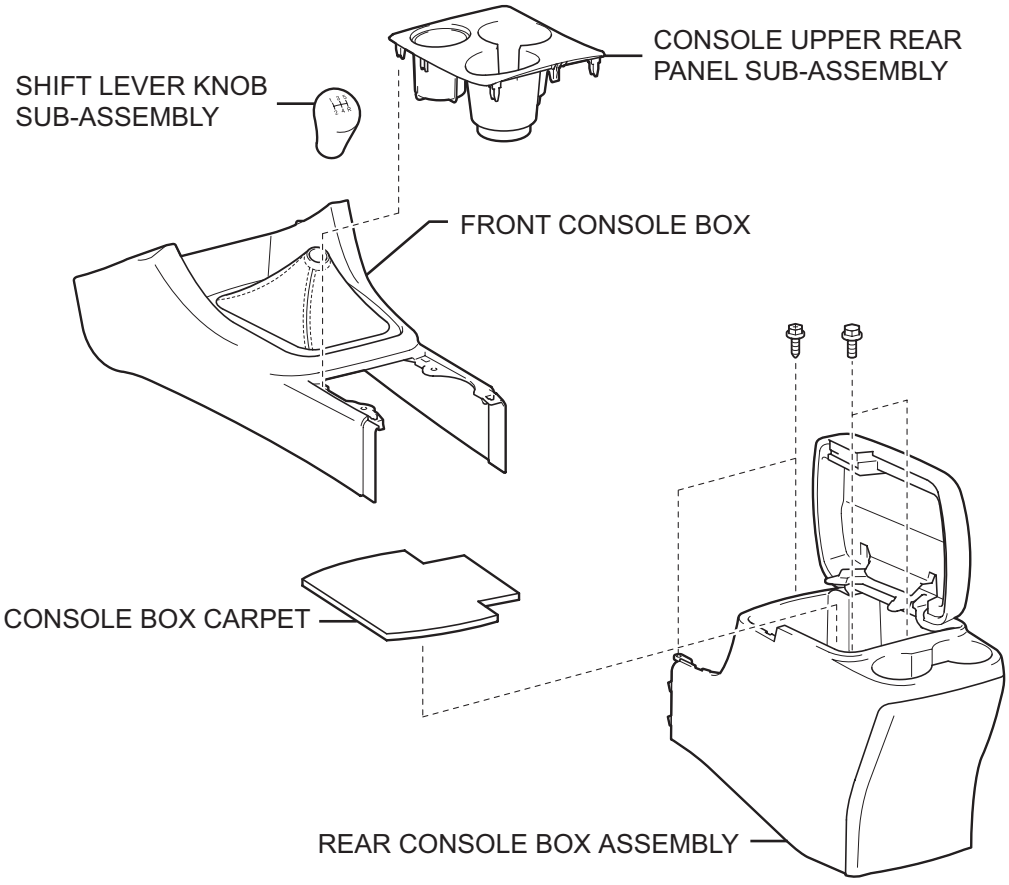
MANUAL TRANSMISSION ASSEMBLY

COMPONENTS

BENCH SEAT:



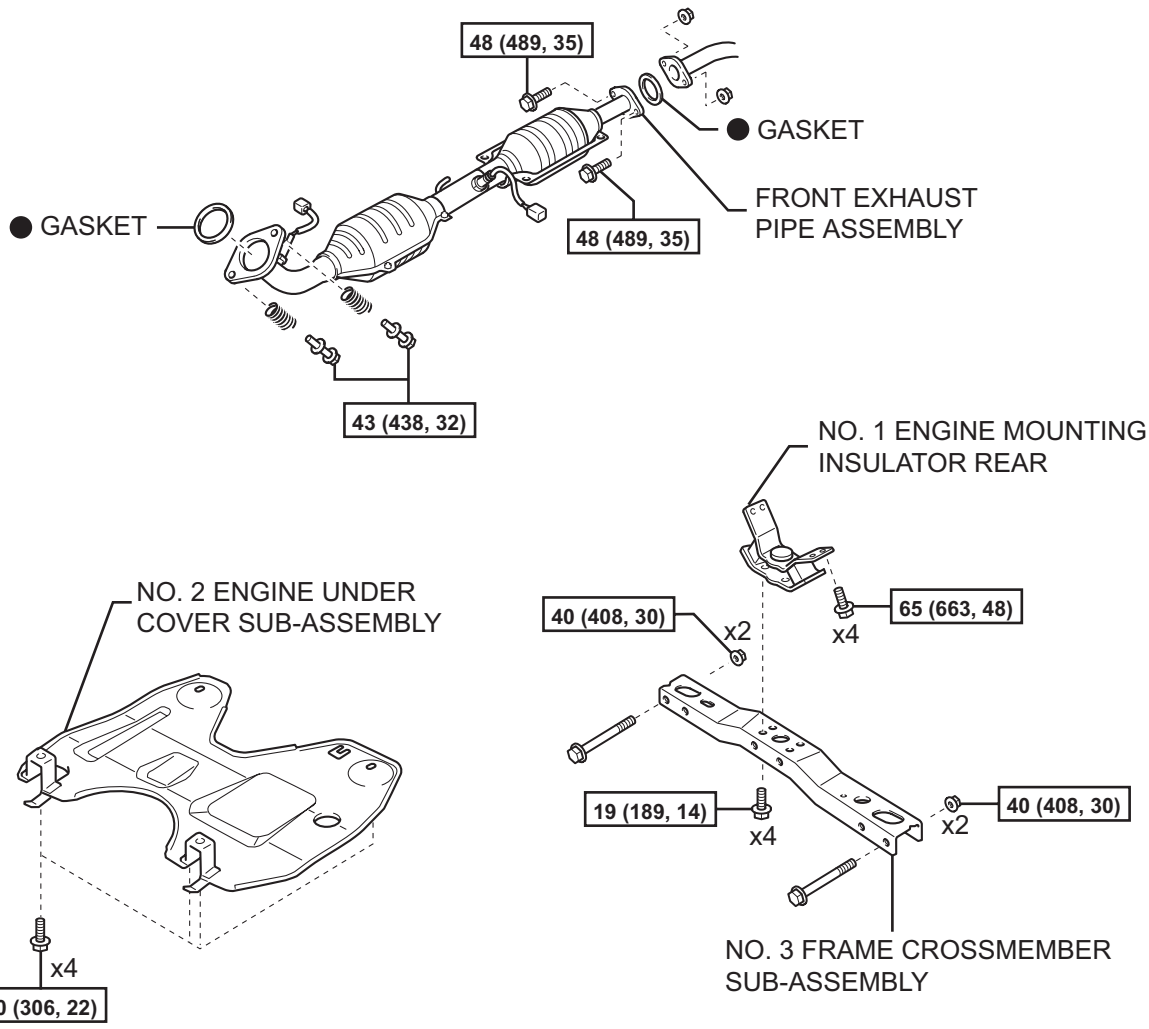
SEPARATE SEAT:



P

C114133E04

MT



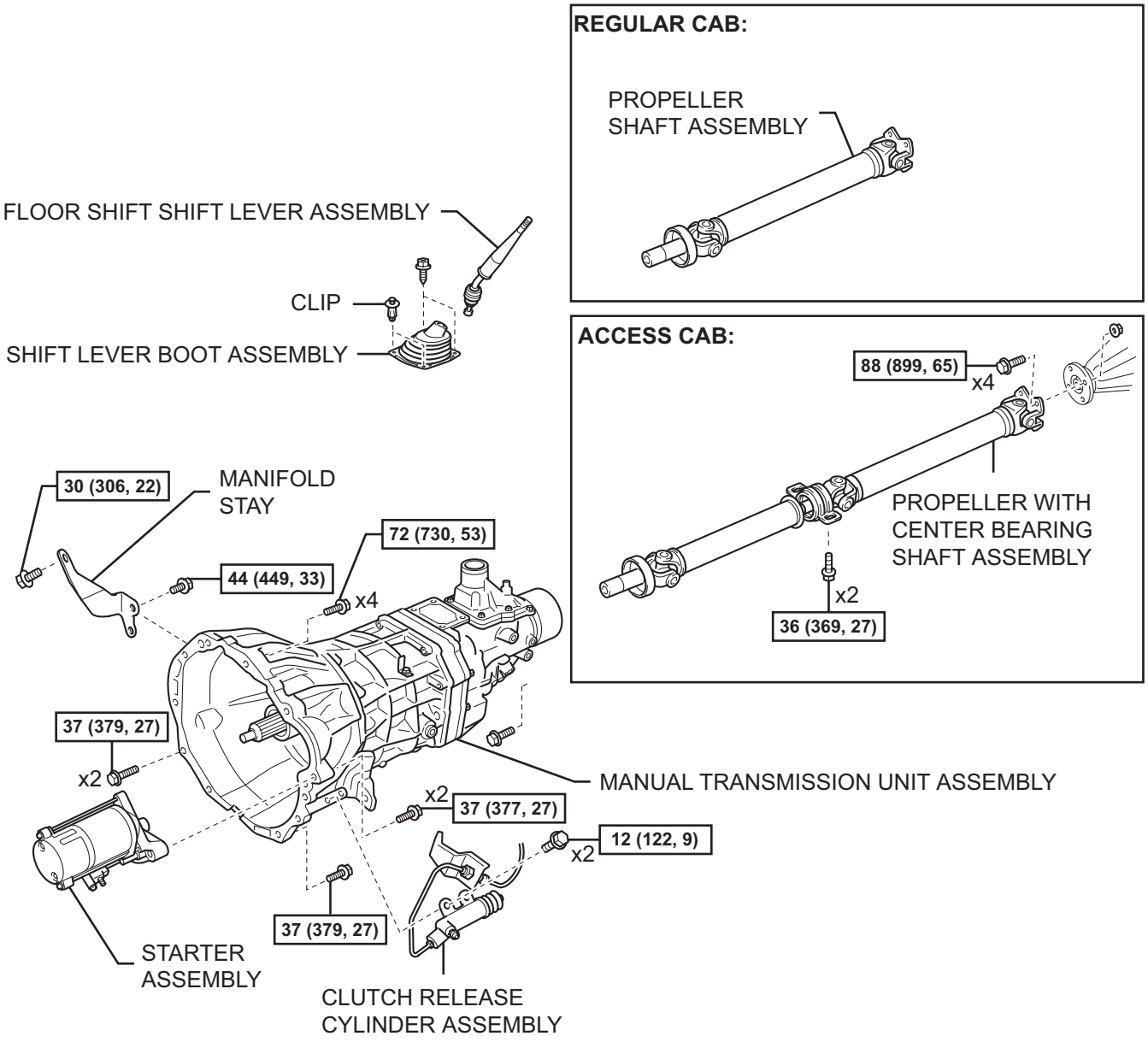
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

Y

C114080E04

MT



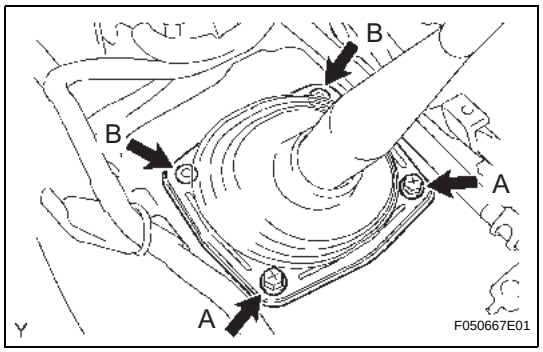
N*m (kgf*cm, ft*lbf) :Specified torque

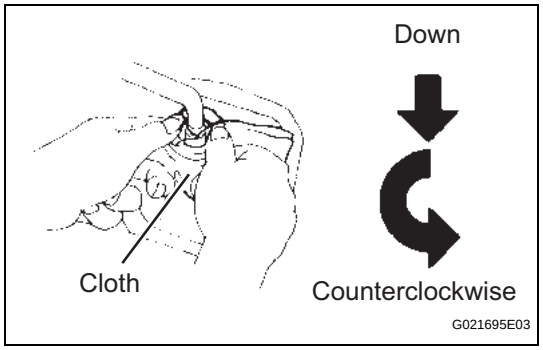
Y

C114078E02

REMOVAL

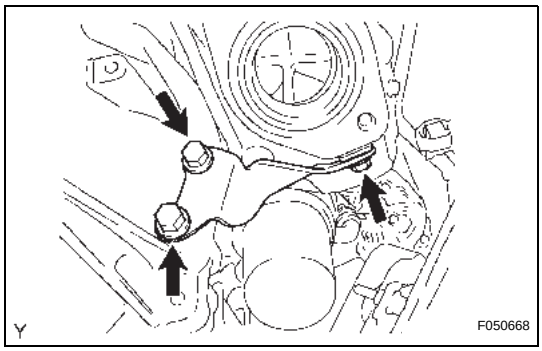
1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-9)**
3. **REMOVE REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-10)**
4. **REMOVE FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-11)**
5. **REMOVE FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-11)**
6. **REMOVE SHIFT LEVER BOOT ASSEMBLY**
   (a) Remove the 2 screws A, 2 clips B and floor shift lever assembly.





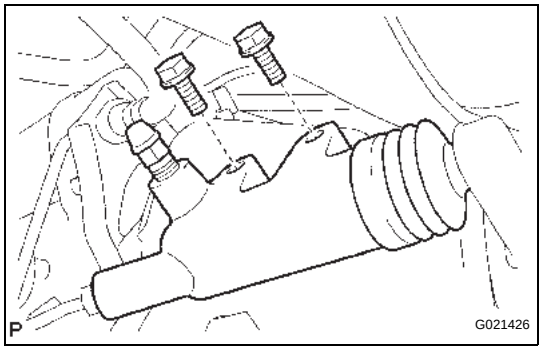
7. **REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Cover the shift lever cap with a cloth.
   (b) While pressing down on the shift lever, turn it counterclockwise to remove.
   (c) Pull out the shift lever.
8. **REMOVE NO. 2 ENGINE UNDER COVER SUB-ASSEMBLY**
   (a) Remove the 4 bolts and engine under cover No. 2.
9. **DRAIN MANUAL TRANSMISSION OIL**
   Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)
10. **REMOVE FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**
11. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-8)**
12. **REMOVE PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-3)**
13. **REMOVE STARTER ASSEMBLY (See page ST-5)**

MT



14. REMOVE MANIFOLD STAY

(a) Remove the 3 bolts and manifold stay.

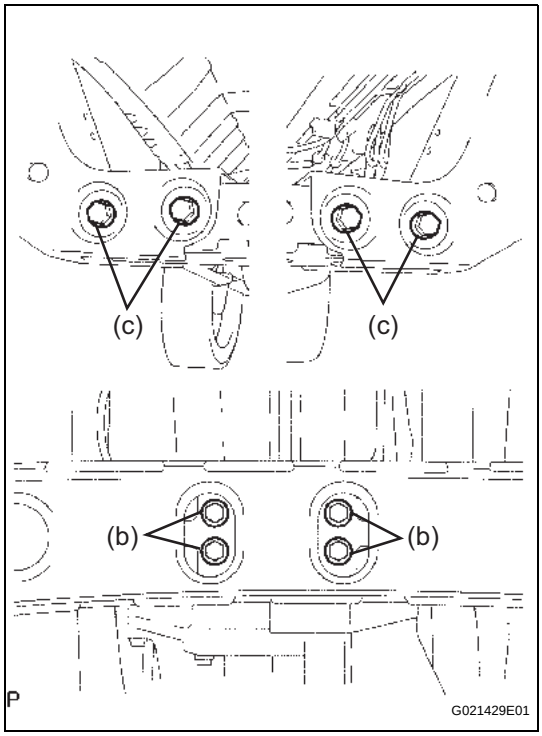


15. SEPARATE CLUTCH RELEASE CYLINDER ASSEMBLY

(a) Remove the 2 bolts and separate the clutch release cylinder assembly.

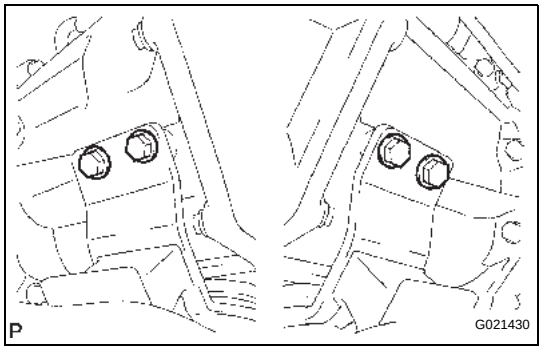
16. REMOVE NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY

(a) Support the transmission rear side with a transmission jack.



(b) Remove the 4 bolts from the engine rear mounting.

(c) Remove the 4 bolts, nuts and flame crossmember sub-assembly No. 3.



17. REMOVE NO. 1 ENGINE MOUNTING INSULATOR REAR

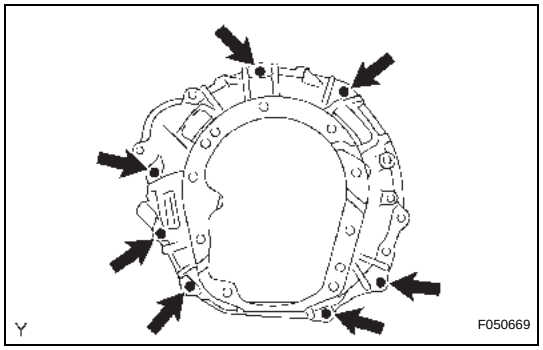
(a) Remove the 4 bolts and engine mounting insulator rear No. 1.

18. DISCONNECT WIRE HARNESS

(a) Tilt the transmission assembly downward.
NOTICE:
Make sure that the cooling fan does not come in contact with the fan shroud.

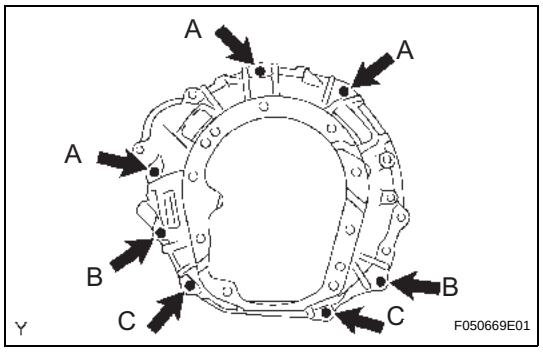
(b) Disconnect the back-up lamp switch connector.

(c) Disconnect the speed sensor connector.
(d) Disconnect the wire harness clamp from the transmission assembly.



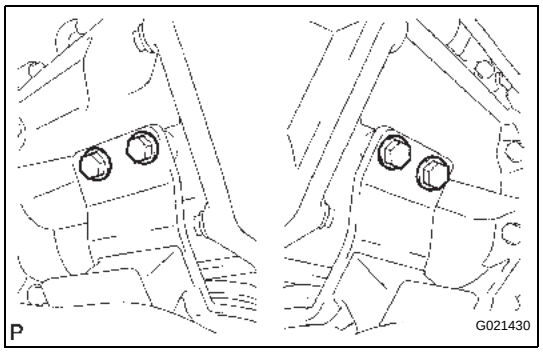
19. REMOVE MANUAL TRANSMISSION UNIT ASSEMBLY
(a) Remove the 7 bolts and remove the transmission assembly.

INSTALLATION

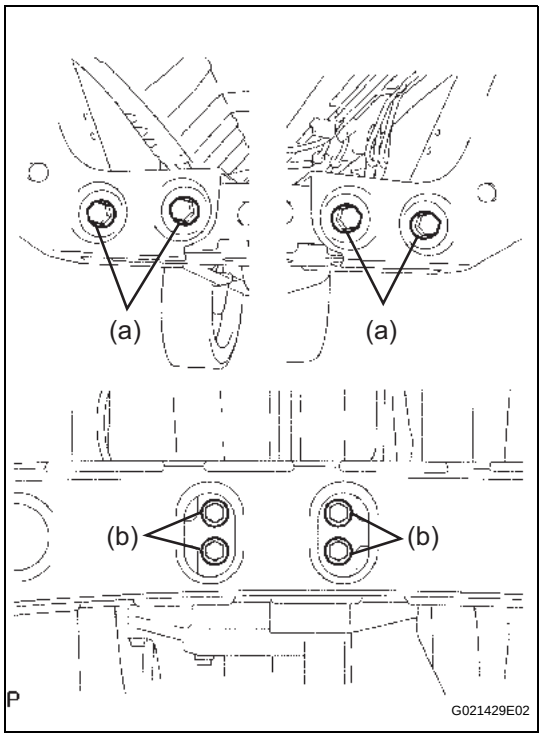


1. INSTALL MANUAL TRANSMISSION UNIT ASSEMBLY
(a) Align the input shaft with the clutch disc and install the transmission unit assembly onto the engine.
(b) Install the 7 bolts.
Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
37 N*m (379 kgf*cm, 27 ft.*lbf) for bolt B and C
HINT:
Install bolt B from the direction of the front of the vehicle.

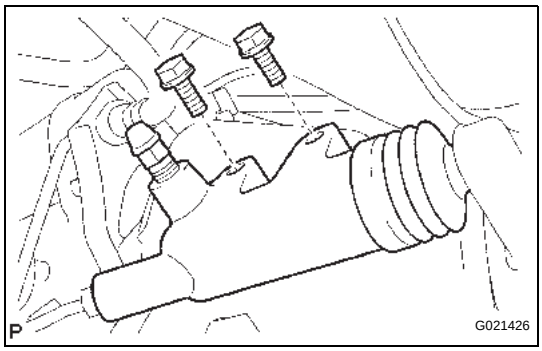
2. CONNECT WIRE HARNESS
(a) Connect the wire harness clamp to the transmission assembly.
(b) Connect the back-up lamp switch connector.
(c) Connect the speed sensor connector.



3. INSTALL NO. 1 ENGINE MOUNTING INSULATOR REAR
(a) Install the engine mount insulator rear No. 1 onto the transmission assembly with 4 bolts.
Torque: 65 N*m (663 kgf*cm, 48 ft.*lbf)

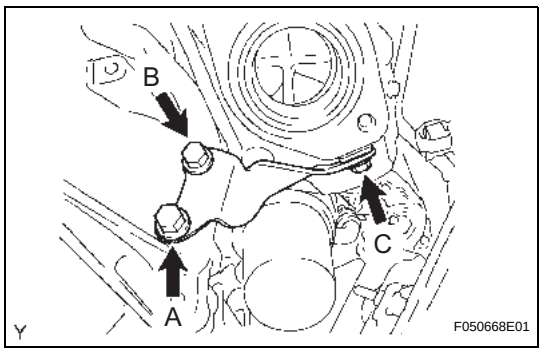


4. **INSTALL NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY**
   (a) Install the frame crossmember sub-assembly No. 3 with the 8 bolts and nuts.
   Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
   (b) Install the 4 bolts onto the engine mounting insulator rear No. 1.
   Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)



5. **INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY**
   (a) Install the clutch release cylinder assembly with the 2 bolts.
   Torque: 12 N*m (120 kgf*cm, 9 ft.*lbf)

6. **INSTALL STARTER ASSEMBLY (See page ST-10)**



7. **INSTALL MANIFOLD STAY**
   (a) Install the manifold stay with the 3 bolts.
   Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
   44 N*m (449 kgf*cm, 33 ft.*lbf) for bolt B
   30 N*m (306 kgf*cm, 22 ft.*lbf) for bolt C

8. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-13)**

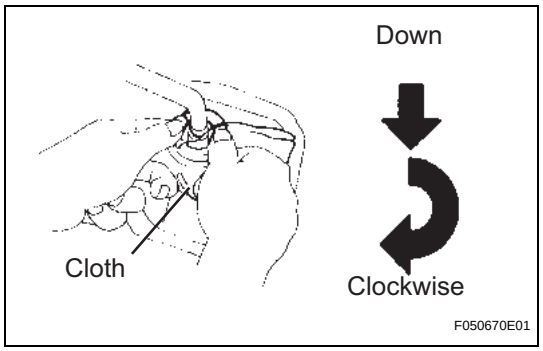
9. **INSTALL PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-6)**

10. **INSTALL FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**

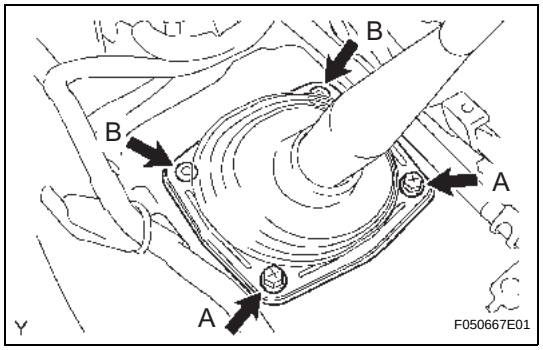
11. **ADD MANUAL TRANSMISSION OIL**

12. **ADJUST MANUAL TRANSMISSION OIL (See page MT-2)**

13. **INSTALL NO. 2 ENGINE UNDER COVER SUB-ASSEMBLY**
   (a) Install the engine under cover No. 2 with the 4 bolts.
   Torque: 30 N*m (306 kgf*cm, 22 ft.*lbf)



14. **INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY**
    (a) Cover the shift lever cap with a cloth.
    (b) While pressing down on the shift lever cap, turn it clockwise to install.
    NOTICE:
    Apply MP grease to the tip of the shift lever.

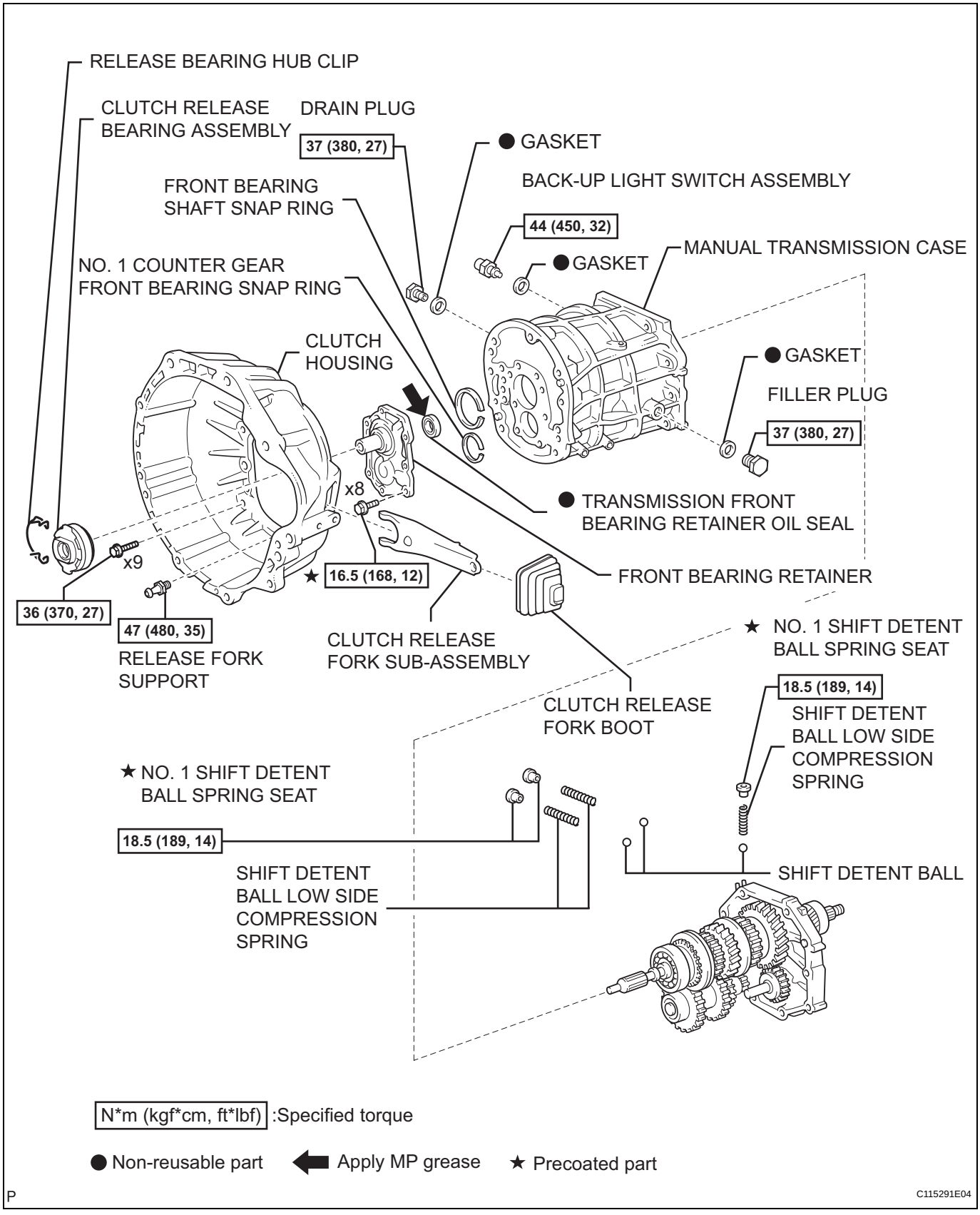


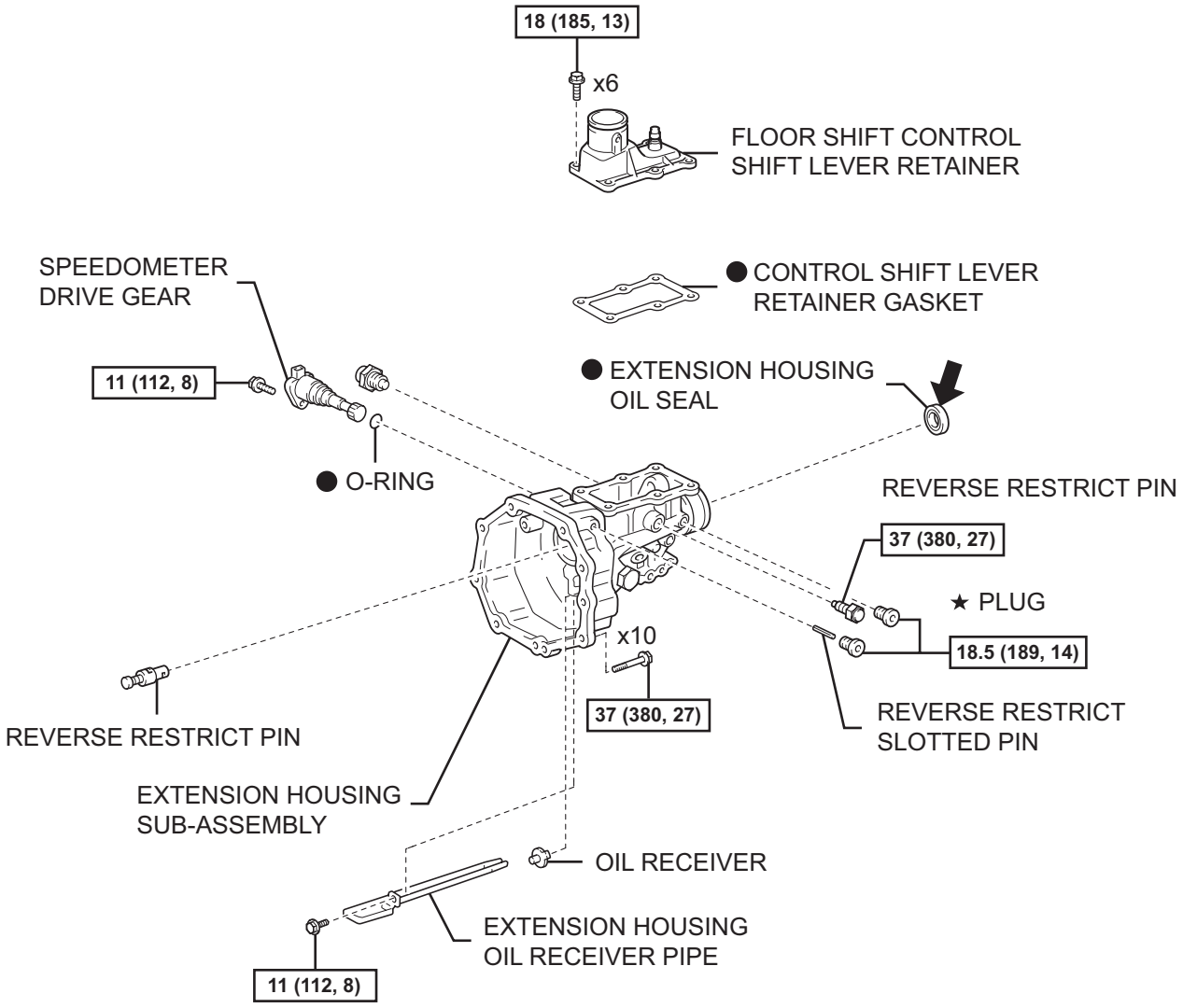
15. **INSTALL SHIFT LEVER BOOT ASSEMBLY**
    (a) Install the shift lever boot assembly with the 2 screws A and 2 clips B.
16. **INSTALL FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-22)**
17. **INSTALL FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-23)**
18. **INSTALL REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-24)**
19. **INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-25)**
20. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
    Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
21. **CHECK FOR MANUAL TRANSMISSION OIL LEAKAGE**

MT

MANUAL TRANSMISSION UNIT

COMPONENTS





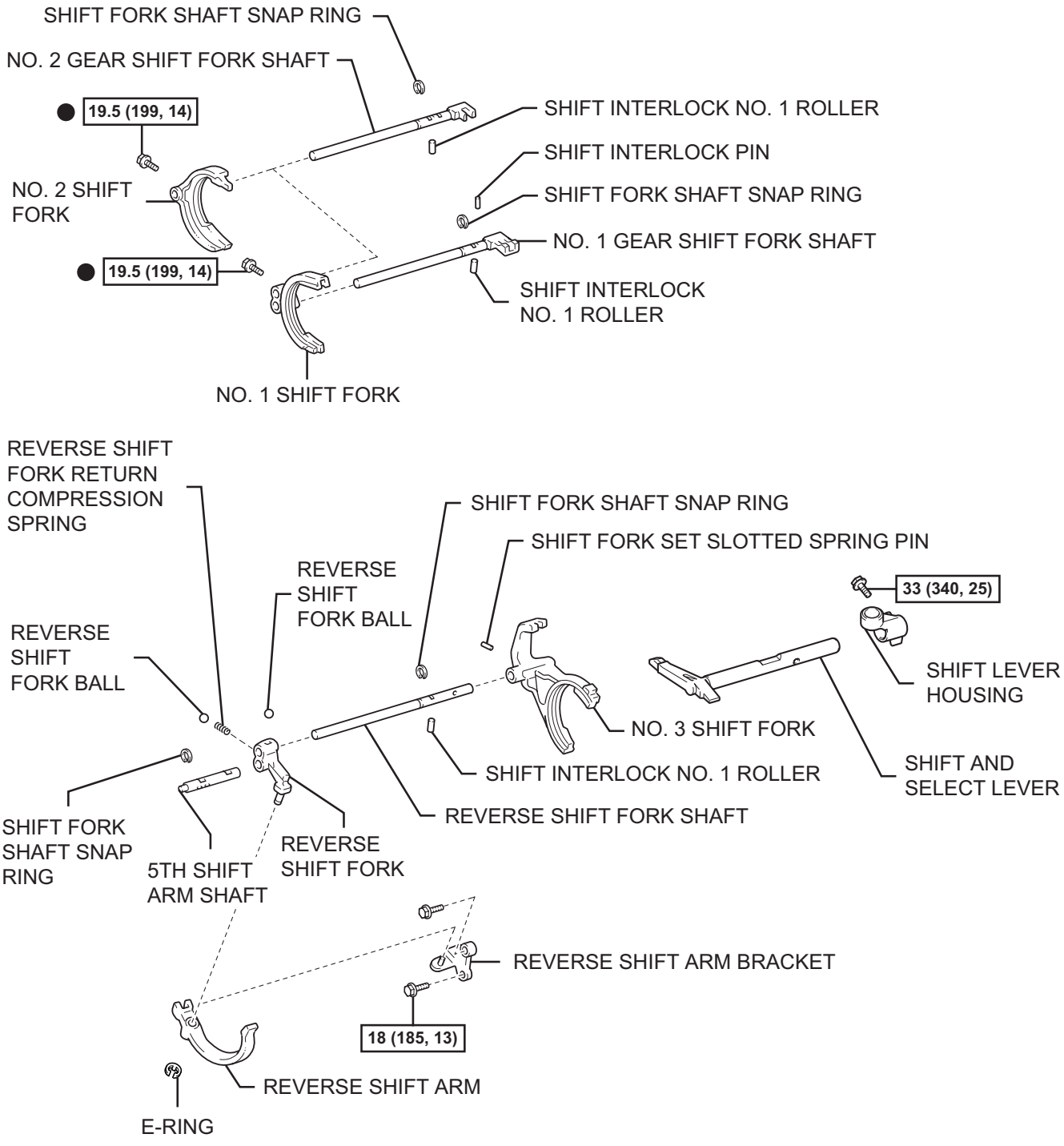
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part ★ Precoated part ⬅ Apply MP grease

P

C115292E02

MT

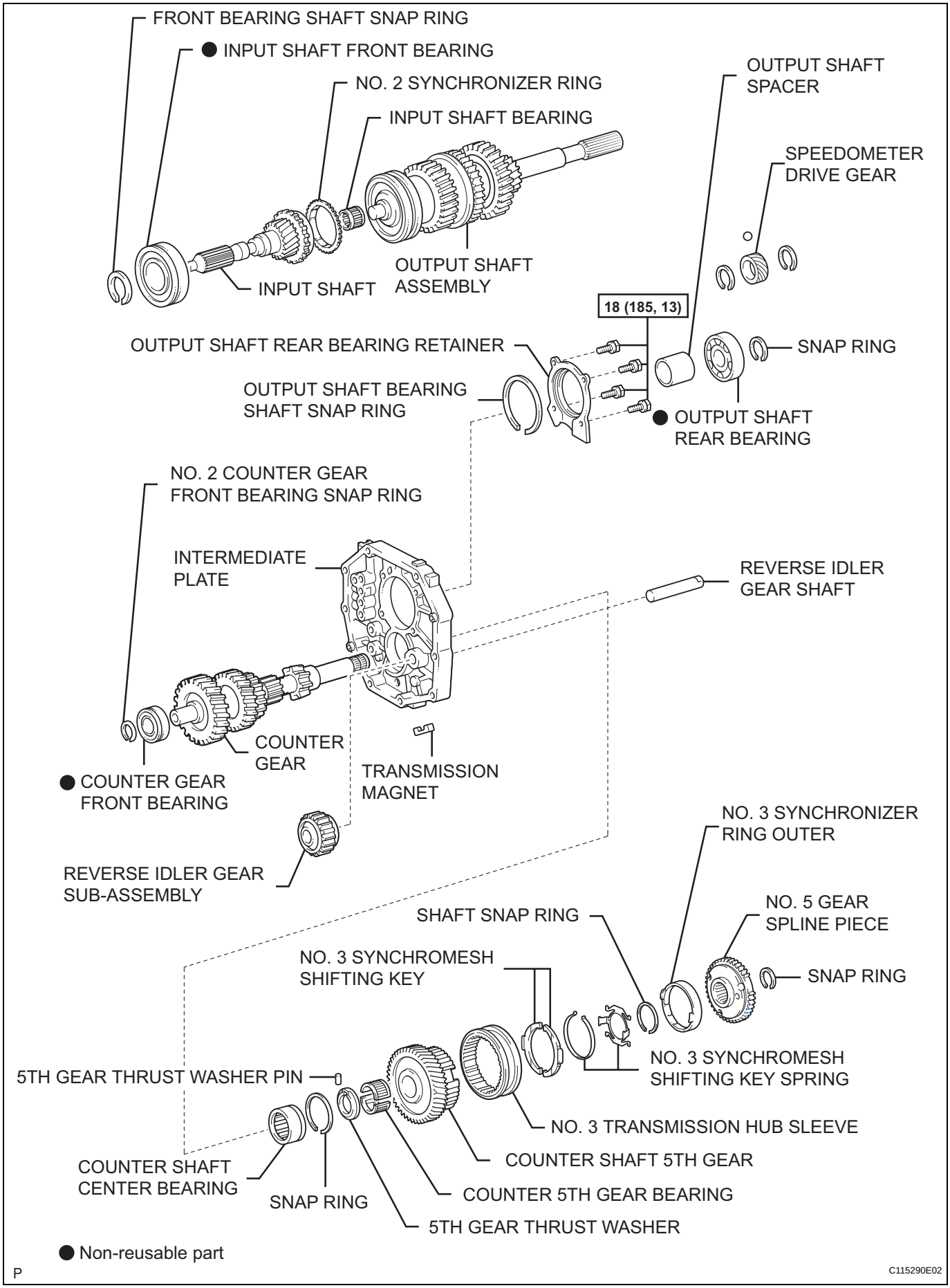


N*m (kgf*cm, ft.*lbf) : Specified torque

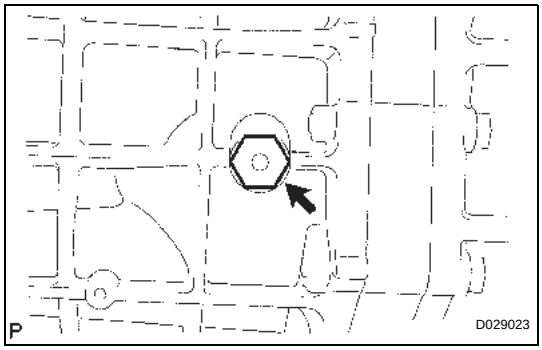
● Non-reusable part

P

C115289E02

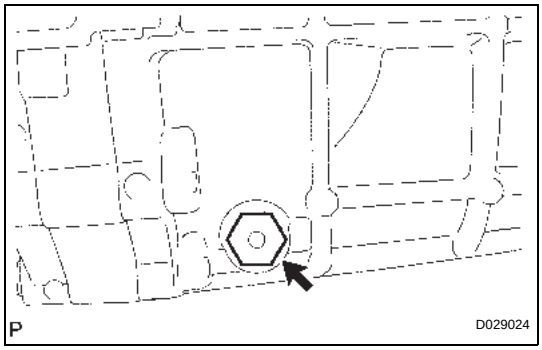

FRONT BEARING SHAFT SNAP RING
● INPUT SHAFT FRONT BEARING
NO. 2 SYNCHRONIZER RING
INPUT SHAFT BEARING
OUTPUT SHAFT SPACER
SPEEDOMETER DRIVE GEAR
INPUT SHAFT
OUTPUT SHAFT ASSEMBLY
18 (185, 13)
OUTPUT SHAFT REAR BEARING RETAINER
SNAP RING
OUTPUT SHAFT BEARING SHAFT SNAP RING
● OUTPUT SHAFT REAR BEARING
NO. 2 COUNTER GEAR FRONT BEARING SNAP RING
INTERMEDIATE PLATE
REVERSE IDLER GEAR SHAFT
COUNTER GEAR
● COUNTER GEAR FRONT BEARING
TRANSMISSION MAGNET
NO. 3 SYNCHRONIZER RING OUTER
REVERSE IDLER GEAR SUB-ASSEMBLY
SHAFT SNAP RING
NO. 5 GEAR SPLINE PIECE
NO. 3 SYNCHROMESH SHIFTING KEY
SNAP RING
NO. 3 SYNCHROMESH SHIFTING KEY SPRING
5TH GEAR THRUST WASHER PIN
NO. 3 TRANSMISSION HUB SLEEVE
COUNTER SHAFT 5TH GEAR
COUNTER SHAFT CENTER BEARING
COUNTER 5TH GEAR BEARING
SNAP RING
5TH GEAR THRUST WASHER
● Non-reusable part
P
C115290E02

DISASSEMBLY



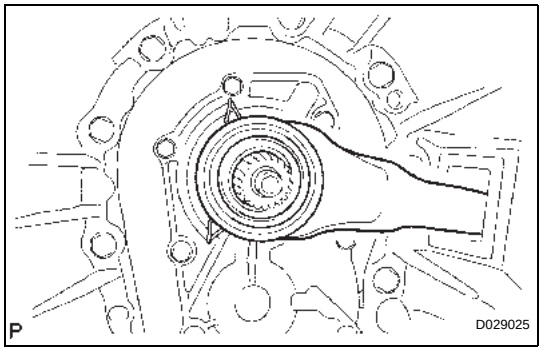
1. REMOVE MANUAL TRANSMISSION FILLER PLUG

(a) Remove the transmission filler plug and gasket from the transmission case.



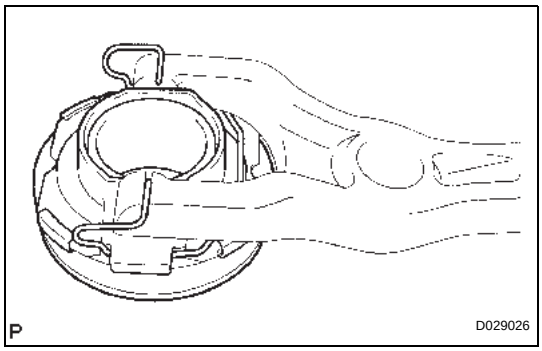
2. REMOVE DRAIN PLUG SUB-ASSEMBLY

(a) Remove the transmission drain plug and gasket from the transmission case.



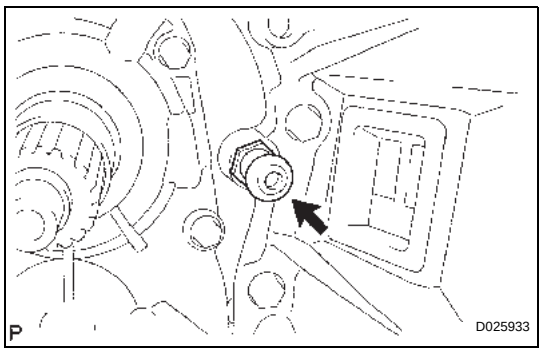
3. REMOVE CLUTCH RELEASE FORK SUB-ASSEMBLY

(a) Remove the clutch release fork and clutch release bearing from the clutch housing.



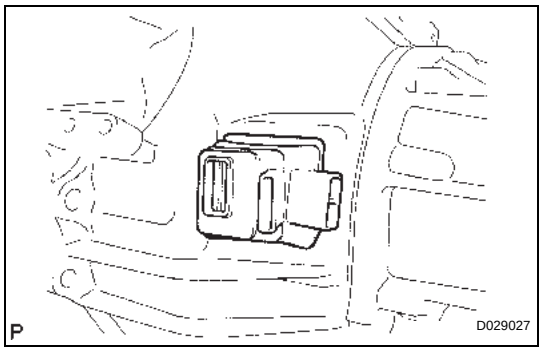
4. REMOVE CLUTCH RELEASE BEARING ASSEMBLY

(a) Remove the release bearing hub clip, and then remove the clutch release bearing from the clutch release fork.



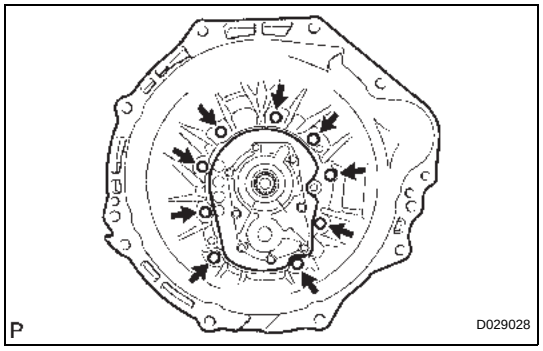
5. REMOVE RELEASE FORK SUPPORT

(a) Remove the release fork support from the clutch housing.



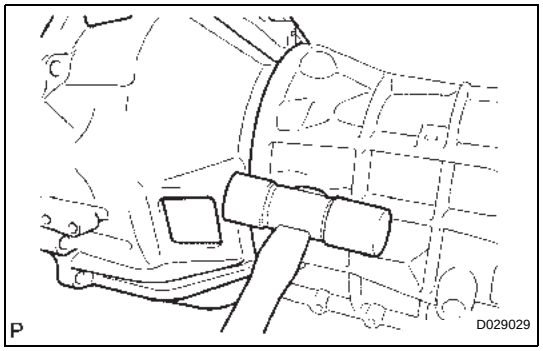
6. REMOVE CLUTCH RELEASE FORK BOOT

(a) Remove the clutch release fork boot from the clutch housing.

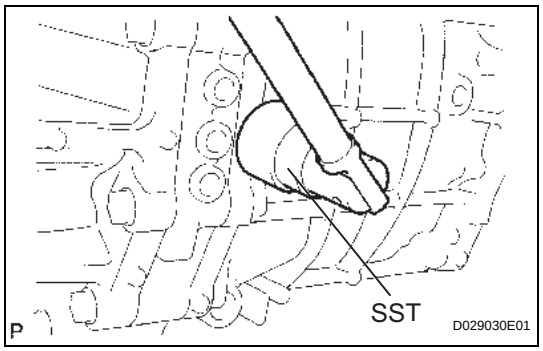


7. REMOVE CLUTCH HOUSING

(a) Remove the 9 bolts.



(b) Using a plastic hammer, remove the clutch housing from the transmission case.



8. REMOVE BACK-UP LIGHT SWITCH ASSEMBLY

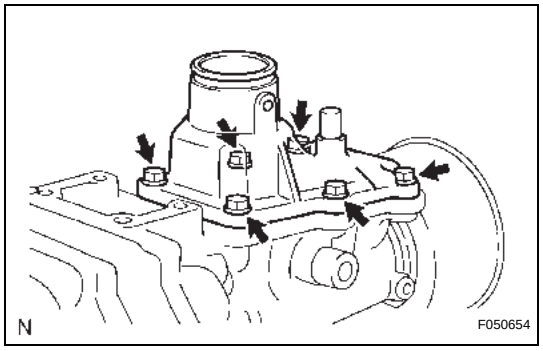
(a) Using SST, remove the back-up light switch assembly and the gasket from the transmission case.

SST 09817-16011

9. REMOVE SPEEDOMETER SENSOR

(a) Remove the bolt and speedometer sensor from the extension housing.

(b) Remove the O-ring from the speedometer sensor.

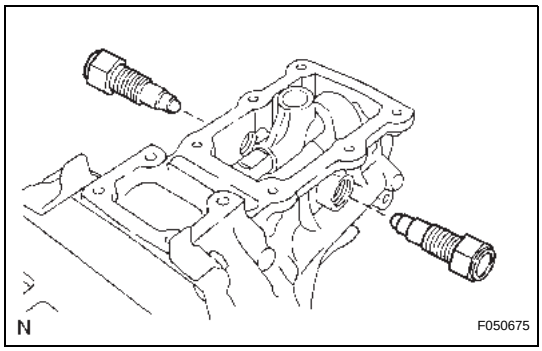


10. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Remove the 6 bolts.

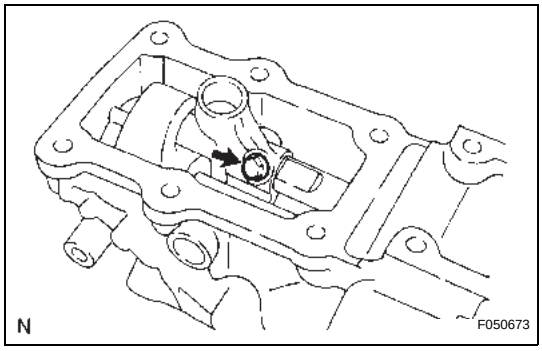
(b) Remove the floor shift control shift lever retainer gasket from the extension housing.

(c) Remove the control shift lever retainer gasket from the extension housing.



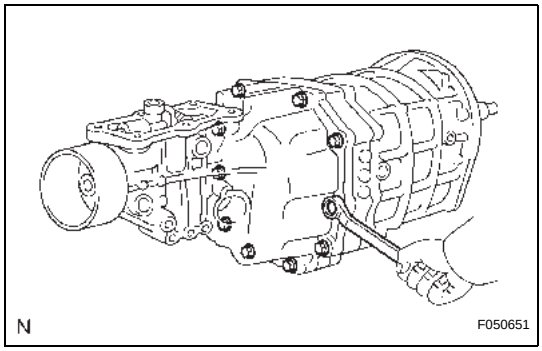
11. REMOVE REVERSE RESTRICT PIN

(a) Remove the 2 reverse restrict pins from the extension housing or transfer adapter.



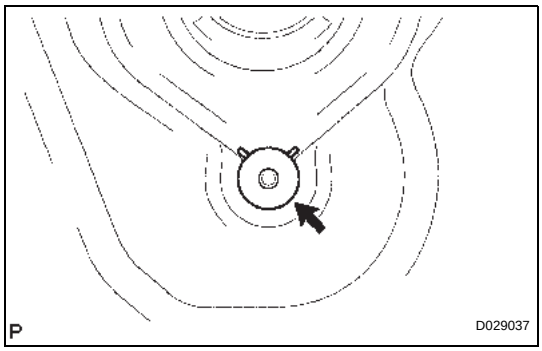
12. REMOVE EXTENSION HOUSING SUB-ASSEMBLY

(a) Remove the shift lever housing set bolt from the shift lever housing.



(b) Remove the 10 bolts.

(c) Using a plastic hammer, remove the extension housing, shift lever housing and shift and select lever.



13. REMOVE OIL RECEIVER

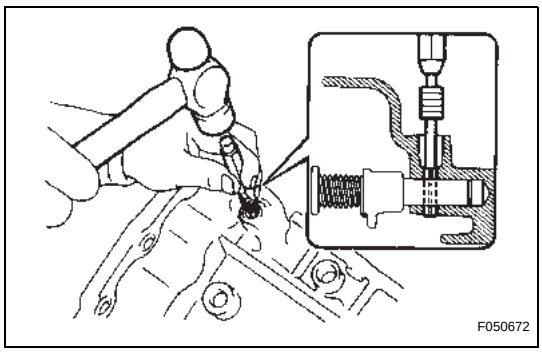
(a) Remove the oil receiver from the extension housing.

14. REMOVE EXTENSION HOUSING OIL RECEIVER PIPE

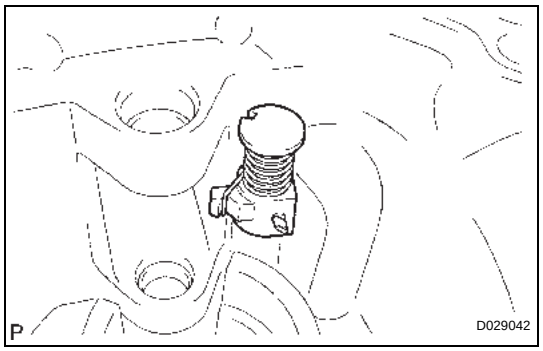
(a) Remove the bolt and oil receiver pipe from the extension housing.

15. REMOVE REVERSE RESTRICT PIN ASSEMBLY

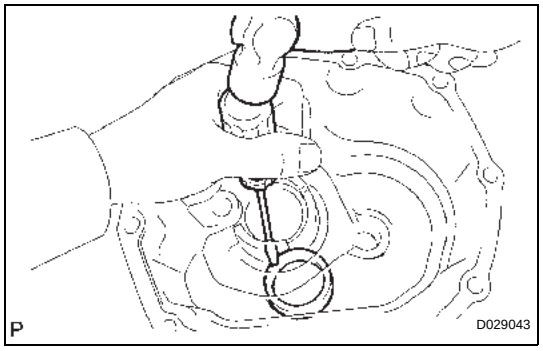
(a) Using a "Torx" socket wrench T40, remove the reverse restrict pin plug from the transfer adapter.



(b) Using a pin punch (5 mm) and a hammer, remove the reverse restrict pin slotted from the transfer adapter or extension housing.

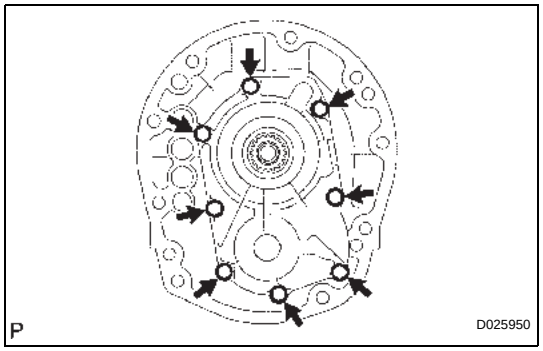


(c) Remove the reverse restrict pin from the transfer adapter or extension housing.



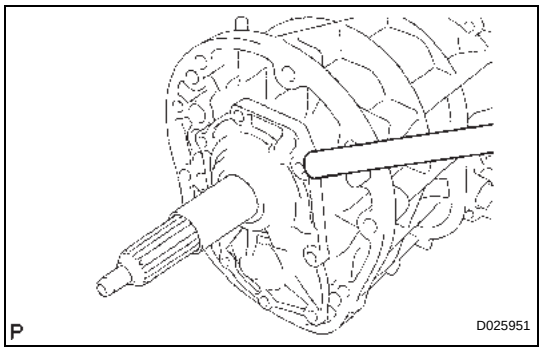
16. REMOVE MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL

(a) Using a screwdriver, remove the extension housing oil seal from the extension housing.

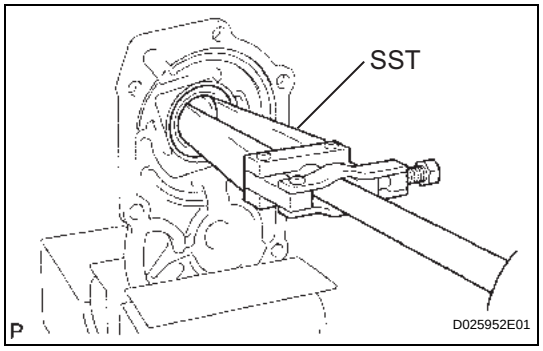


17. REMOVE FRONT BEARING RETAINER

(a) Remove the 8 bolts.



(b) Using a brass bar and a hammer, remove the front bearing retainer from the transmission case.

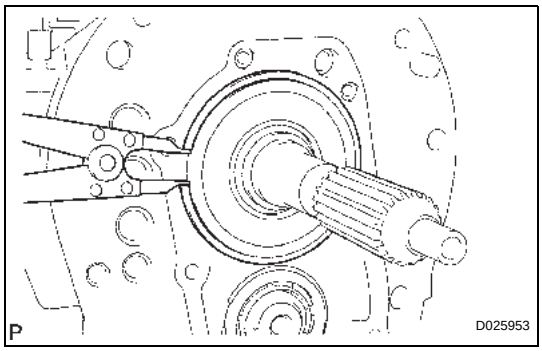


18. REMOVE TRANSMISSION FRONT BEARING RETAINER OIL SEAL

(a) Fix the front bearing retainer in a vise, between aluminum plate.

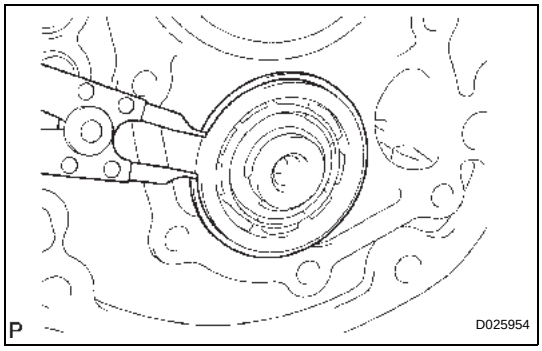
(b) Using SST, remove the transmission front bearing retainer oil seal.

SST 09308-00010



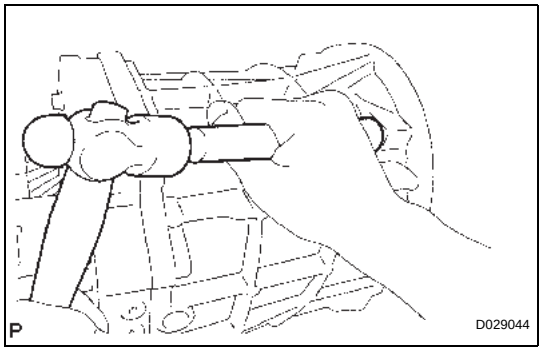
19. REMOVE FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring expander, remove the front bearing shaft snap ring from the transmission case.



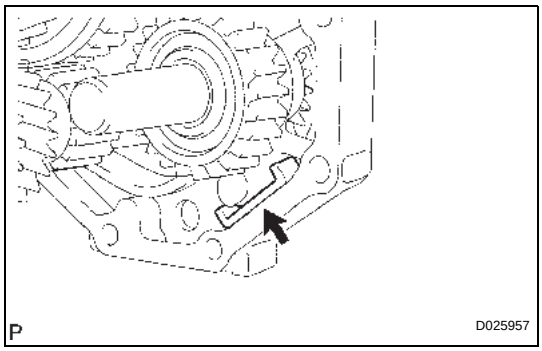
20. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, remove the counter gear front bearing snap ring No. 1 from the transmission case.



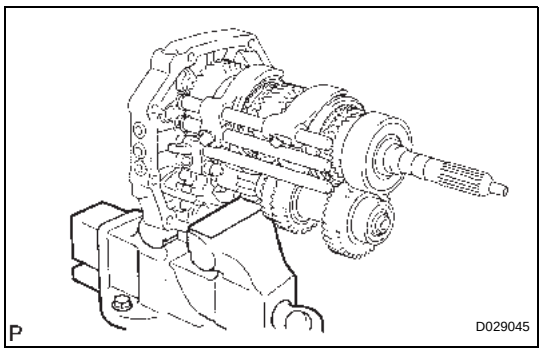
21. REMOVE MANUAL TRANSMISSION CASE

(a) Using a brass bar and a hammer, remove the transmission case from the intermediate plate.



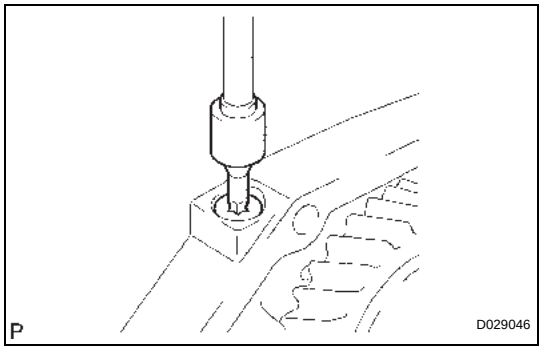
22. REMOVE TRANSMISSION MAGNET

(a) Remove the transmission magnet from the intermediate plate.



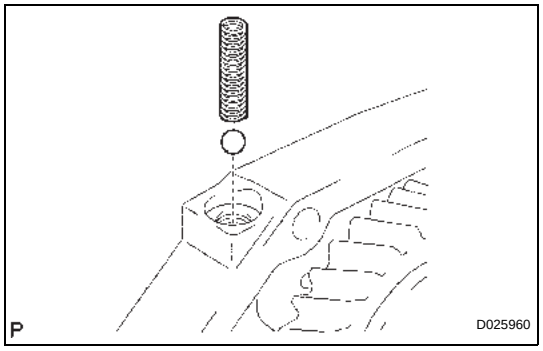
23. FIX INTERMEDIATE PLATE

(a) Fix the intermediate plate in a vice between aluminum plates.

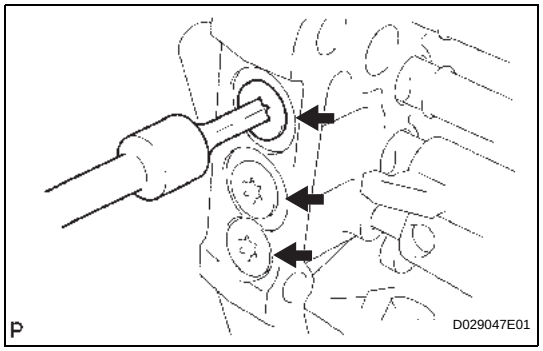


24. REMOVE NO. 1 SHIFT DETENT BALL SPRING SEAT

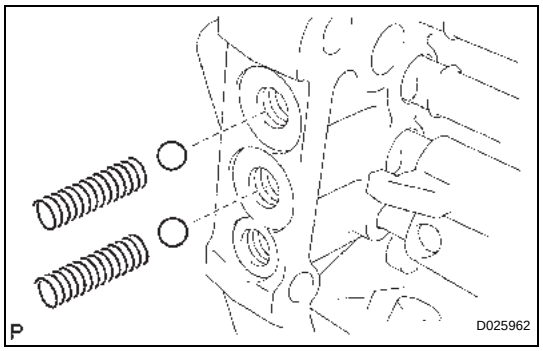
(a) Using a "Torx" socket wrench T40, remove the shift detent ball spring seat No. 1 from the intermediate plate.



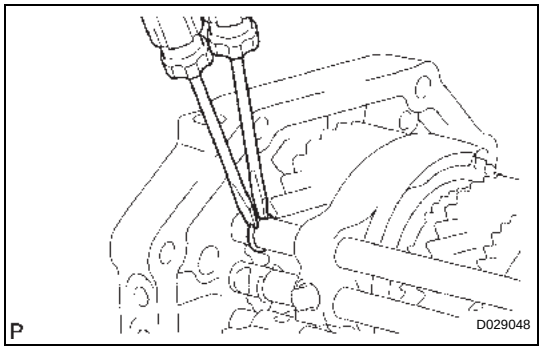
(b) Using a magnetic finger, remove the shift detent ball low side compression spring and the shift detent ball from the intermediate plate.



(c) Using a "Torx" socket wrench T40, remove the 3 shift detent ball spring seats No. 1 from the intermediate plate.



(d) Using a magnetic finger, remove the 2 shift detent ball low side compression springs and the 2 shift detent balls from the intermediate plate.

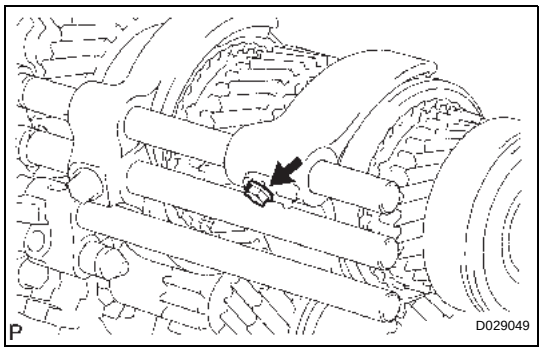


25. REMOVE NO. 2 GEAR SHIFT FORK SHAFT

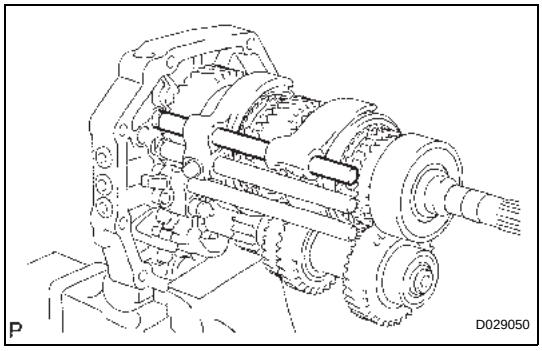
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No. 2.

NOTICE:

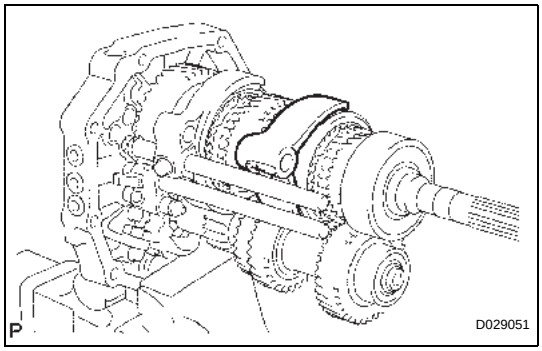
Use a shop rag to prevent the snap ring from flying off.



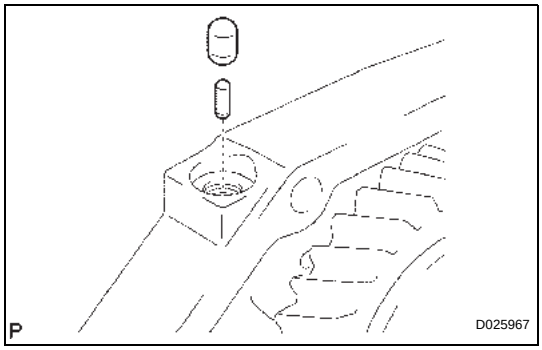
(b) Remove the shift fork set bolt from the gear shift fork No. 2.



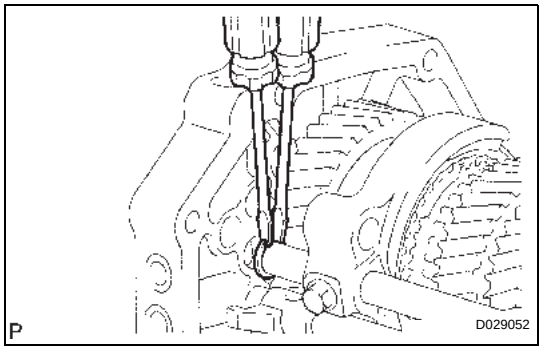
(c) Remove the gear shift fork shaft No. 2 from the intermediate plate.



(d) Remove the gear shift fork No. 2 from the transmission hub sleeve No. 2.



(e) Using a magnetic finger, remove the shift interlock No. 1 roller and the shift interlock pin (ball) from the intermediate plate.

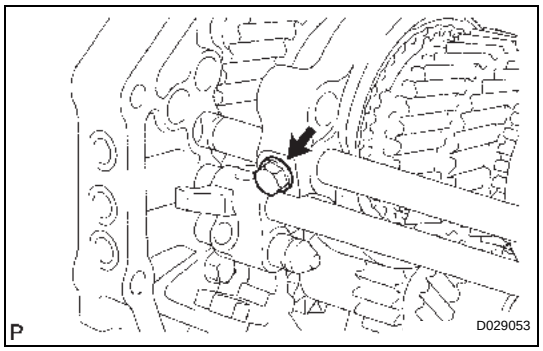


26. REMOVE NO. 1 GEAR SHIFT FORK SHAFT

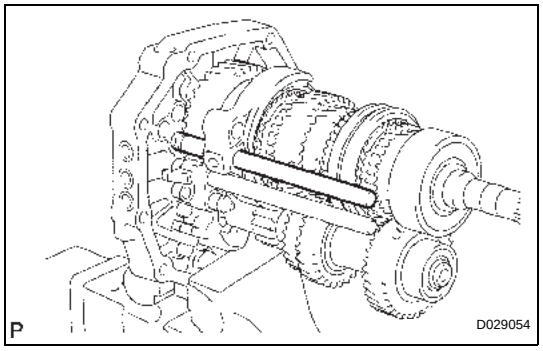
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No. 1.

NOTICE:

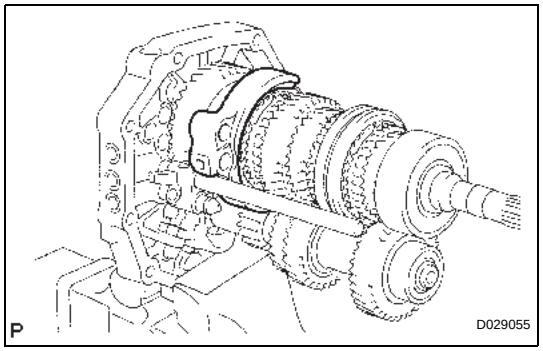
Use a shop rag to prevent the snap ring from flying off.



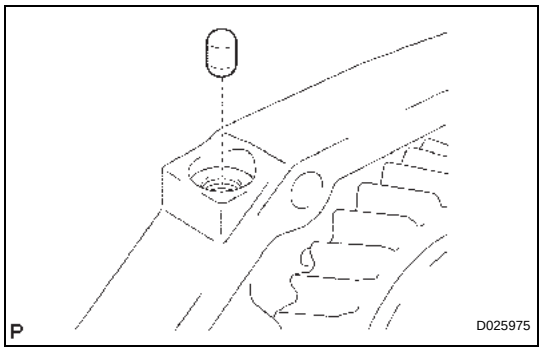
(b) Remove the shift fork set bolt from the gear shift fork No. 1.



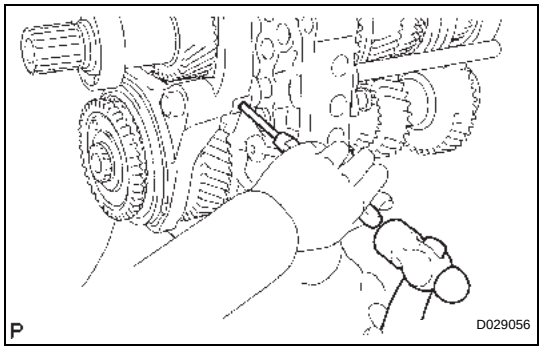
(c) Remove the gear shift fork shaft No. 1 from the intermediate plate.



(d) Remove the gear shift fork No. 1 from the reverse gear.

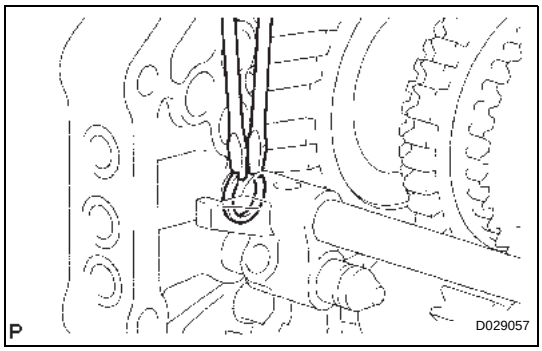


(e) Using a magnetic finger, remove the shift interlock No. 1 roller from the intermediate plate.

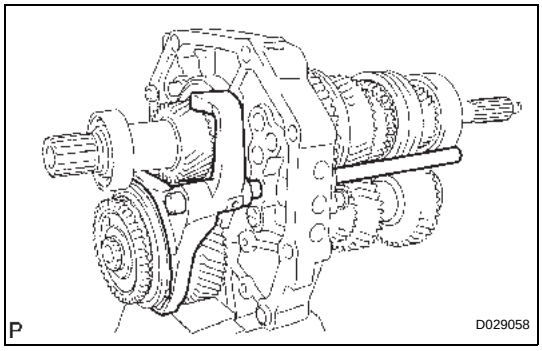


27. REMOVE REVERSE SHIFT FORK SHAFT

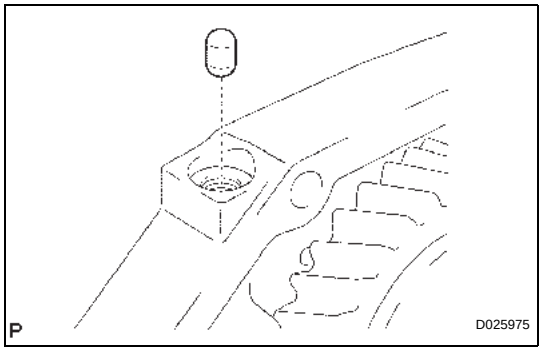
(a) Using a pin punch (5 mm) and a hammer, remove the shift fork set slotted spring pin from the gear shift fork No. 3.



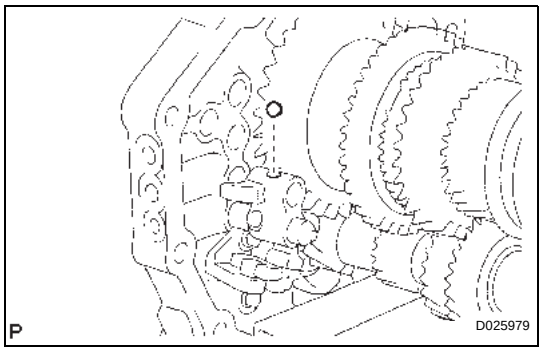
(b) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the reverse shift fork shaft.
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



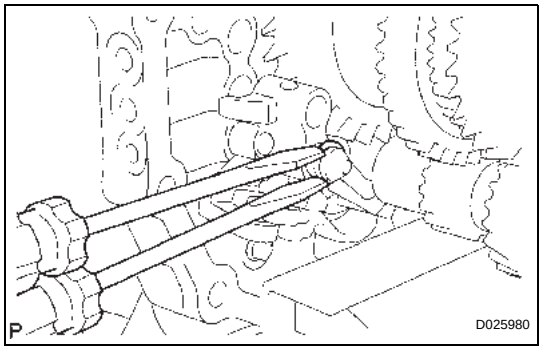
(c) Remove the gear shift fork No. 3 and reverse shift fork shaft from the intermediate plate.



(d) Using a magnetic finger, remove the shift interlock No. 1 roller from the intermediate plate.

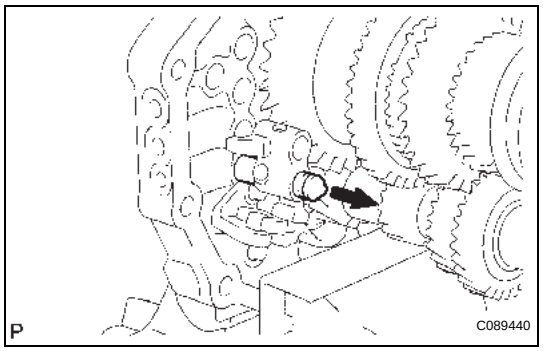


(e) Using a magnetic finger, remove the reverse shift fork ball from the reverse shift fork.

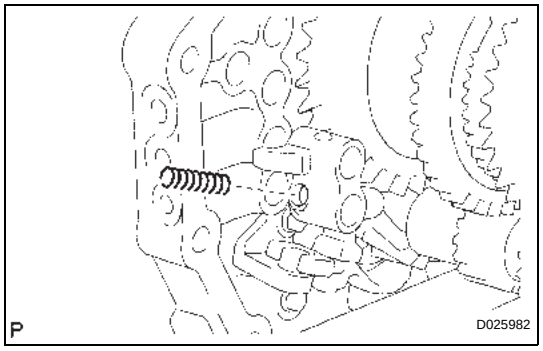


28. REMOVE 5TH SHIFT ARM SHAFT

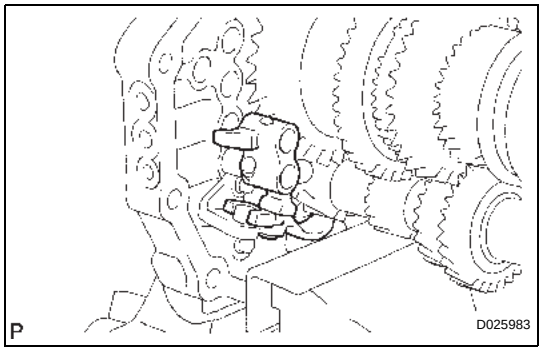
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the 5th shift arm shaft.
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



(b) Remove the 5th shift arm shaft from the intermediate plate.
NOTICE:
Cover the hole with a shop rag to prevent the reverse shift fork ball from popping out.

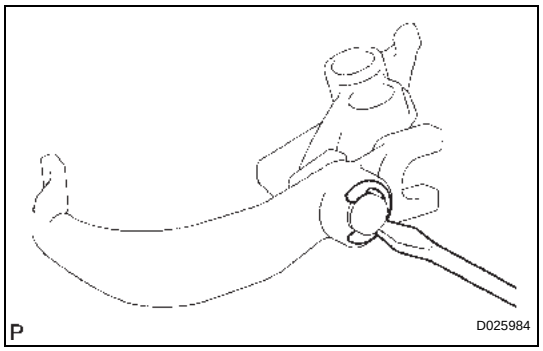


(c) Using a magnetic finger, remove the reverse shift fork return compression spring from the reverse shift fork.

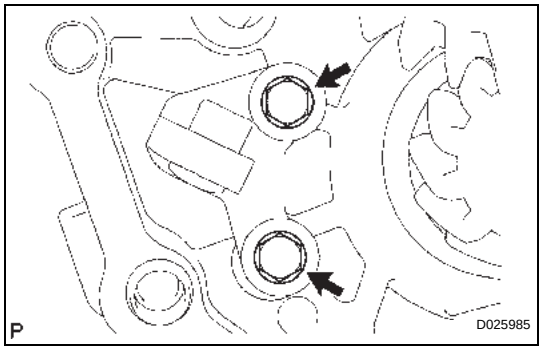


29. REMOVE REVERSE SHIFT FORK

(a) Remove the reverse shift fork together with the reverse shift arm from the intermediate plate.

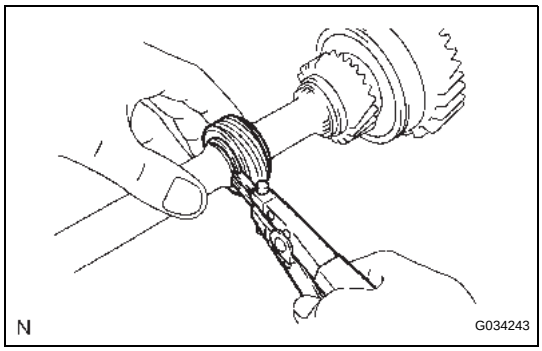


(b) Using a screwdriver, remove the reverse shift arm end shaft ring and the reverse shift fork from the reverse shift arm.



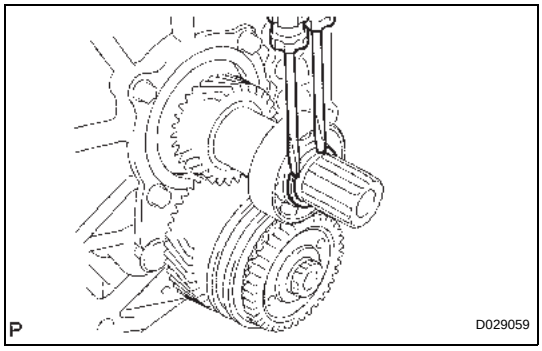
30. REMOVE REVERSE SHIFT ARM BRACKET

(a) Remove the 2 bolts and reverse shift arm bracket from the intermediate plate.



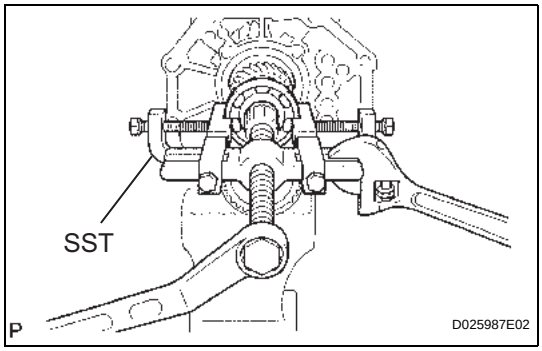
31. REMOVE SPEEDOMETER DRIVE GEAR

(a) Using snap ring pliers, remove the snap ring.
(b) Remove the speedometer driver gear and ball.
(c) Using a magnetic finger, remove the steel ball.
(d) Using snap ring pliers, remove the snap ring.



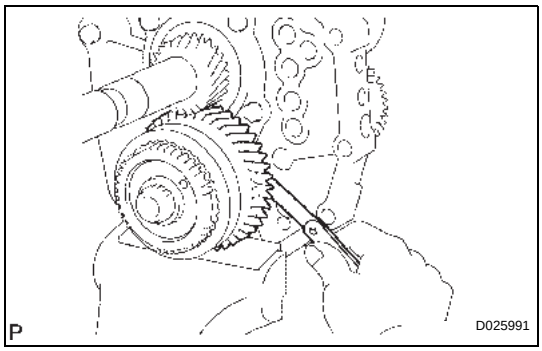
32. REMOVE OUTPUT SHAFT BEARING SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, remove the output shaft bearing shaft snap ring from the output shaft.



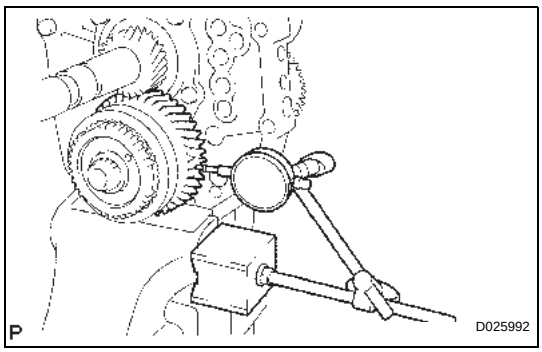
33. REMOVE OUTPUT SHAFT REAR BEARING

(a) Using SST, remove the output shaft rear bearing and output shaft spacer from the output shaft.
SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04051, 09957-04010, 09958-04011)



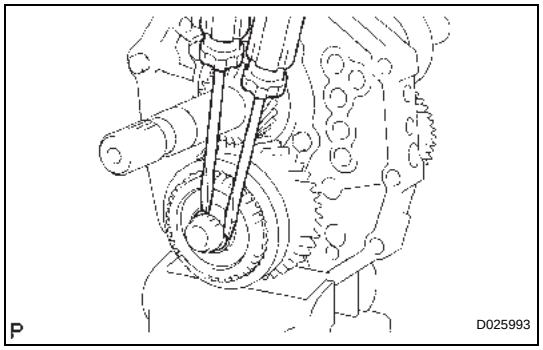
34. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the counter shaft 5th gear thrust clearance.
Standard clearance:
0.10 to 0.35 mm (0.0039 to 0.0138 in.)



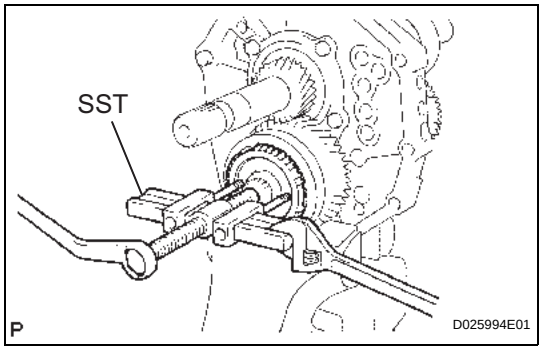
35. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the counter shaft 5th gear.
Standard clearance:
0.015 to 0.068 mm (0.0059 to 0.0027 in.)
If the clearance is not within the specified values, replace the counter 5th gear bearing with a new one.



36. REMOVE COUNTER GEAR REAR SHAFT SNAP RING

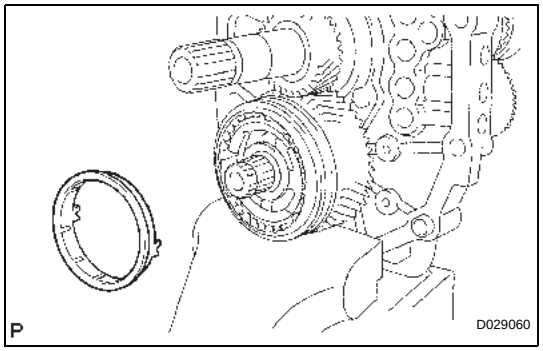
(a) Using 2 screwdrivers and a hammer, remove the counter gear rear shaft snap ring from the counter gear.



37. REMOVE NO. 5 GEAR SPLINE PIECE

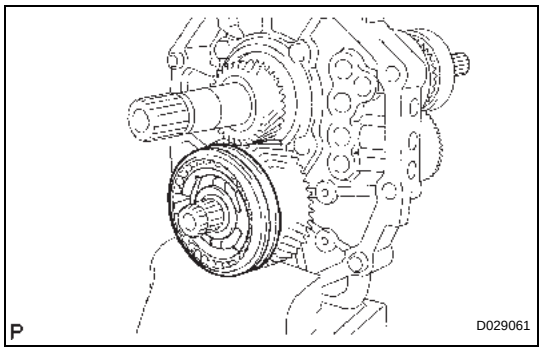
(a) Using SST, remove the gear spline piece No. 5 from the counter gear.

SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021, 09957-04010)



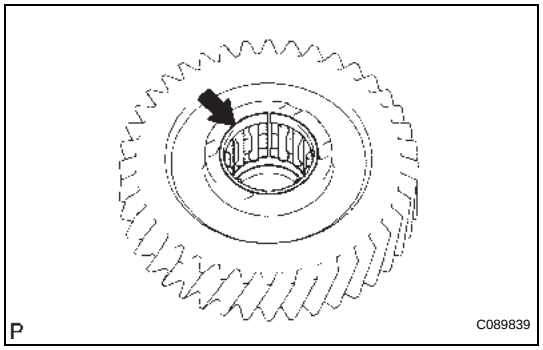
38. REMOVE NO. 3 SYNCHRONIZER RING OUTER

(a) Remove the synchronizer ring outer No. 3 from the counter gear.



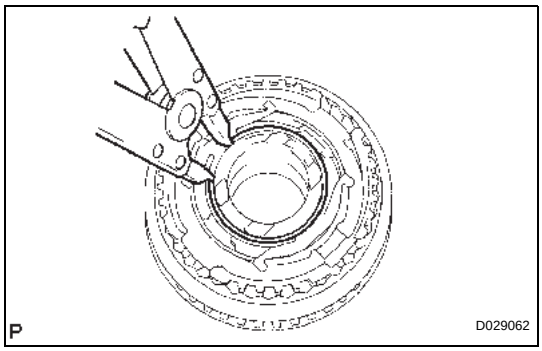
39. REMOVE COUNTER SHAFT 5TH GEAR

(a) Remove the counter shaft 5th gear and transmission hub sleeve No. 3 assembly from the counter gear.



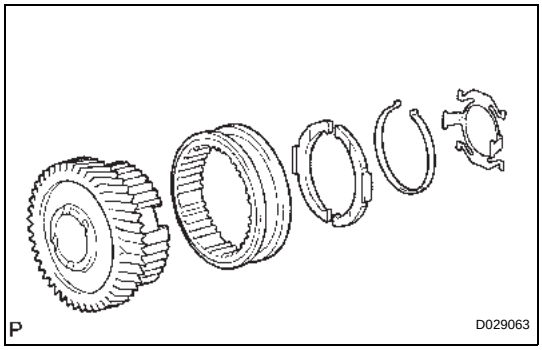
40. REMOVE COUNTER 5TH GEAR BEARING

(a) Remove the counter 5th gear bearing from the counter 5th gear.

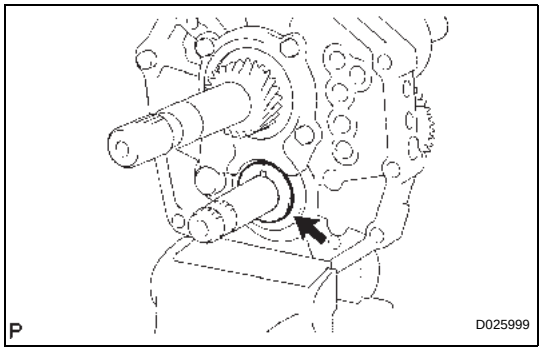


41. REMOVE NO. 3 TRANSMISSION HUB SLEEVE

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

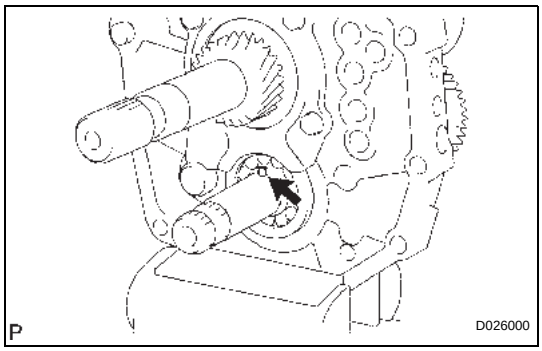


(b) Remove the transmission hub sleeve No. 3, 2 synchromesh shifting keys No. 3 and 2 synchromesh shifting key springs No. 3 from the counter shaft 5th gear.



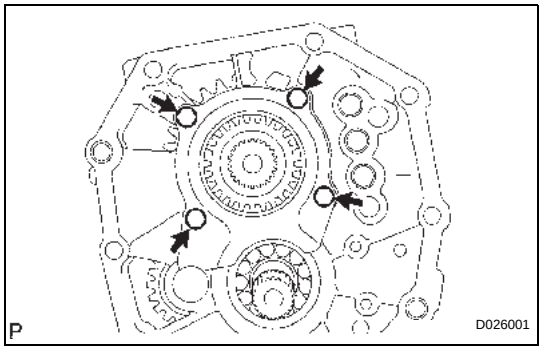
42. REMOVE 5TH GEAR THRUST WASHER

(a) Remove the 5th gear thrust washer from the counter gear.



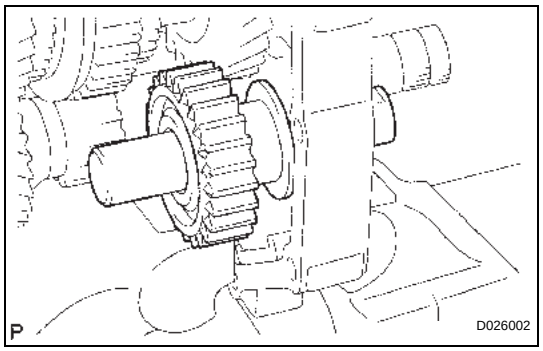
43. REMOVE 5TH GEAR THRUST WASHER PIN

(a) Remove the 5th gear thrust washer pin from the counter gear.



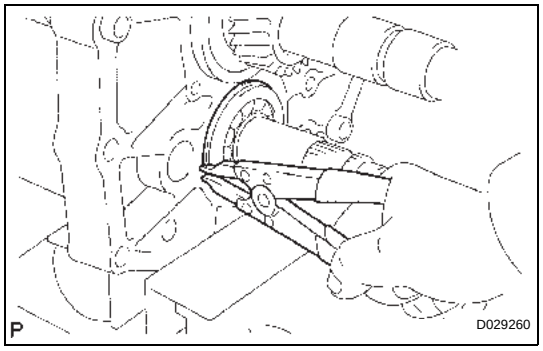
44. REMOVE OUTPUT SHAFT REAR BEARING RETAINER

(a) Remove the 4 bolts and output shaft rear bearing retainer from the intermediate plate.



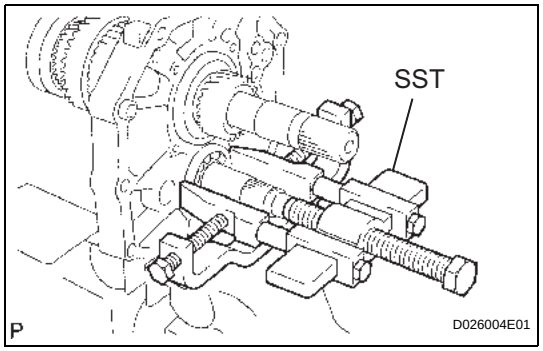
45. REMOVE REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Pull out the reverse idler gear shaft to the rear side and remove the reverse idler gear from the intermediate plate.



46. REMOVE COUNTER SHAFT CENTER BEARING

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

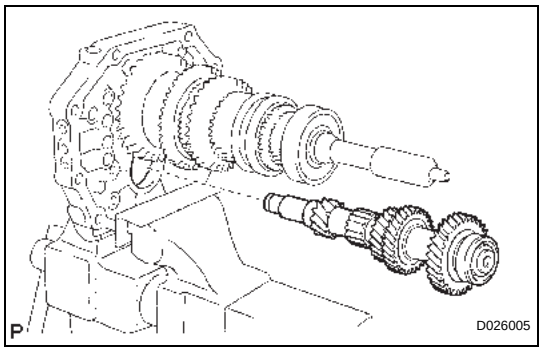


(b) Using SST, remove the counter shaft center bearing from the intermediate plate.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04011, 09957-04010, 09958-04011)

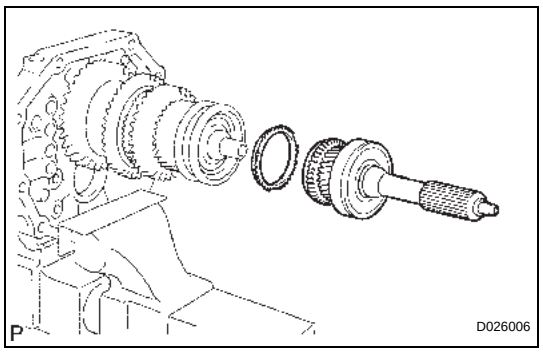
HINT:

Remove the bearing while tapping the tip of the counter gear so that the counter gear assembly is not pushed forward into the side wall of the output shaft gear.



47. REMOVE COUNTER GEAR

(a) Remove the counter gear assembly from the intermediate plate.

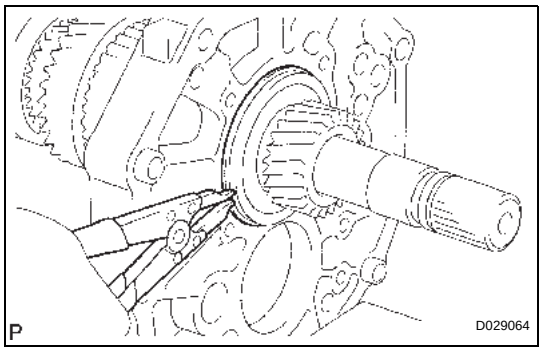


48. REMOVE INPUT SHAFT ASSEMBLY

(a) Remove the input shaft assembly and synchronizer ring No. 2 from the output shaft.

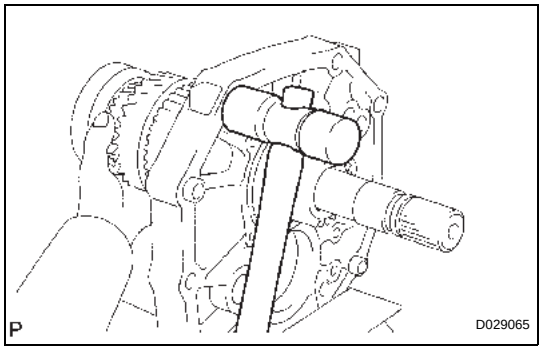
NOTICE:

Do not drop the input shaft bearing and synchronizer ring No. 2.



49. REMOVE OUTPUT SHAFT BEARING SHAFT SNAP RING

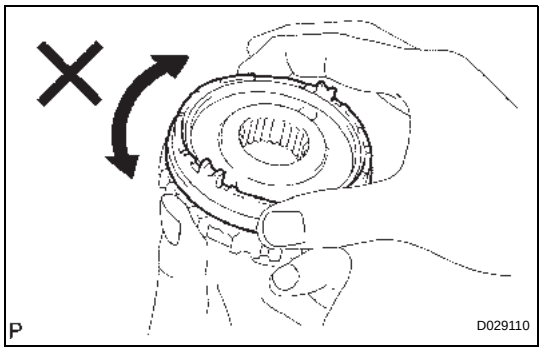
(a) Using a snap ring expander, remove the output shaft bearing shaft snap ring from the output shaft.



50. REMOVE OUTPUT SHAFT ASSEMBLY

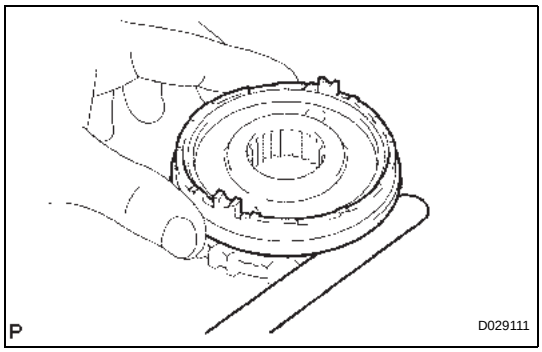
(a) Using a plastic hammer, remove the output shaft assembly by tapping the intermediate plate.

INSPECTION

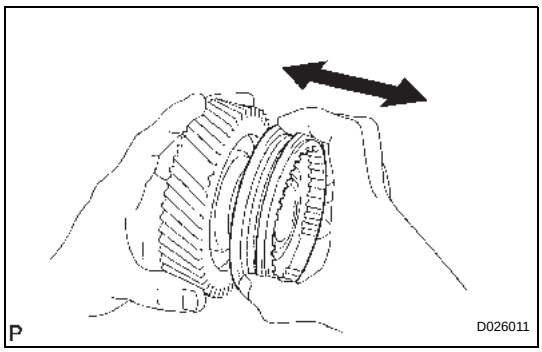


1. INSPECT NO. 3 SYNCHRONIZER RING OUTER

(a) Apply gear oil to the cone part of gear spline piece No. 5, and check that it does not turn in both directions while pushing the synchronizer ring outer No. 3 to the gear spline piece No. 5.
If it turns, replace the synchronizer ring.



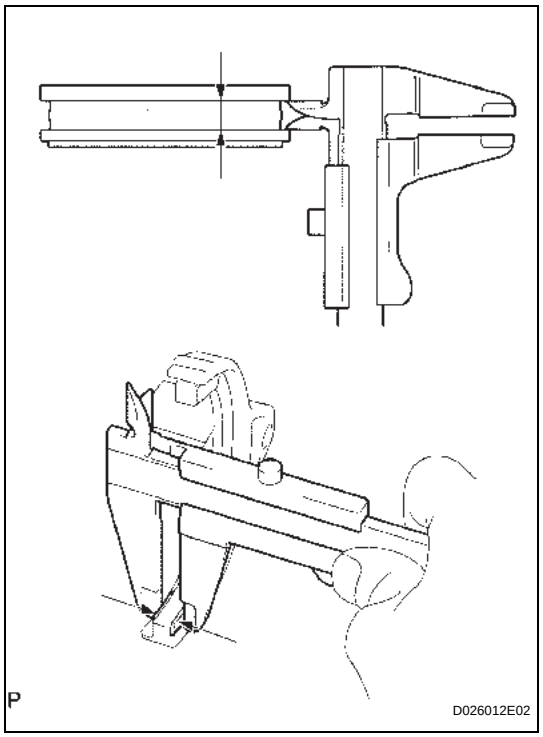
(b) Measure the clearance between the synchronizer ring outer No. 3 and gear spline piece No. 5 while pushing the synchronizer ring outer No. 3 to the cone part of the gear spline piece No. 5.
Standard clearance:
0.68 to 1.32 mm (0.0267 to 0.0610 in.)
If the clearance is not within the specified values, replace synchronizer ring outer No. 3 with a new one.



2. INSPECT NO. 3 TRANSMISSION HUB SLEEVE

(a) Check that the counter shaft 5th gear and transmission hub sleeve No. 3 slide smoothly each other.

(b) Check the tip of the spline gear of the transmission hub sleeve No. 3 for wear.
If there are any detects, replace the transmission hub sleeve No. 3.

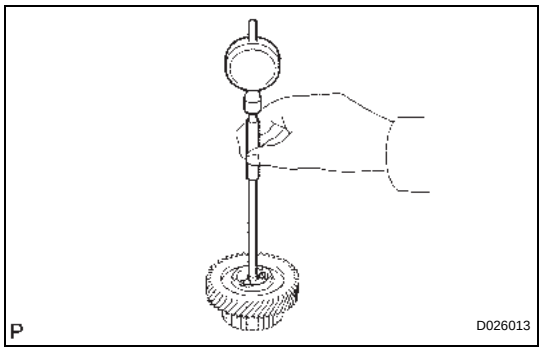


(c) Using vernier calipers, measure the transmission hub sleeve No. 3 groove and the thickness of the claw part of the shift fork No. 3 to calculate the clearance.

Standard clearance:

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

If the clearance is not within the specified values, replace the transmission hub sleeve No. 3 and shift fork No. 3 with new ones.



3. INSPECT COUNTERSHAFT 5TH GEAR

(a) Using a cylinder gauge, measure the inner diameter of the counter 5th gear.

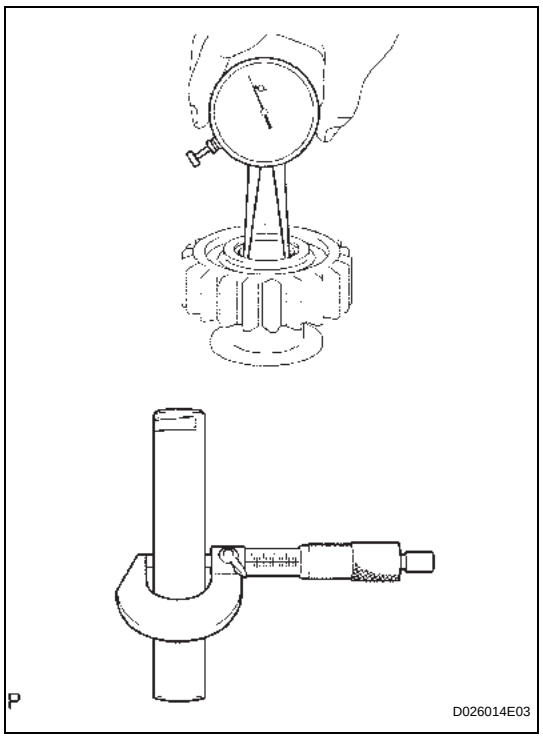
Standard diameter:

38.015 to 38.040 mm (1.4967 to 1.4976 in.)

Maximum diameter:

38.040 mm (1.4976 in.)

If the diameter greater than the maximum, replace the counter shaft 5th gear with a new one.



4. INSPECT REVERSE IDLER GEAR SUB-ASSY

(a) Using a caliper gauge, measure the inner diameter of the reverse idler gear.

Standard diameter:

24.040 to 24.061 mm (0.9465 to 0.9473 in.)

Maximum diameter:

24.061 mm (0.9473 in.)

If the clearance is greater than the maximum, replace the reverse idler gear with a new one.

(b) Using a micrometer, measure the outer diameter of the sliding part of the reverse idler gear on the reverse idler gear shaft.

Standard diameter:

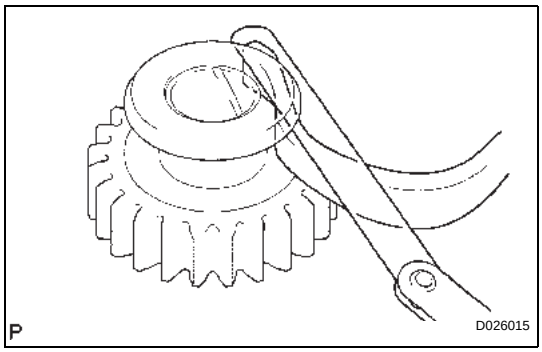
23.979 to 24.000 mm (0.9441 to 0.9449 in.)

Minimum diameter:

23.979 mm (0.9441 in.)

If the diameter is outside the specification, replace the reverse idler gear shaft with a new one.

(c) Subtract the reverse idler gear shaft inside diameter measurement from the reverse idler gear diameter clearance.
Standard clearance:
0.040 to 0.082 mm (0.0016 to 0.0032 in.)
If the clearance is not as specified, replace the reverse idler gear or reverse idler gear shaft.



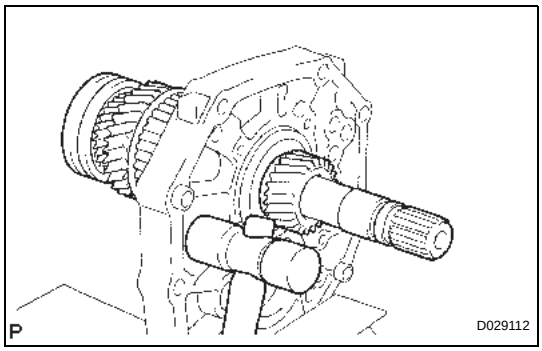
(d) Using a feeler gauge, measure the thrust clearance of the shoe part between the reverse idler gear and the reverse shift arm.
Standard clearance:
0.05 to 0.35 mm (0.0020 to 0.0138 in.)
If the clearance is outside the specification, replace the idler gear and reverse shift arm with new ones.

REASSEMBLY

1. INSTALL OUTPUT SHAFT ASSEMBLY

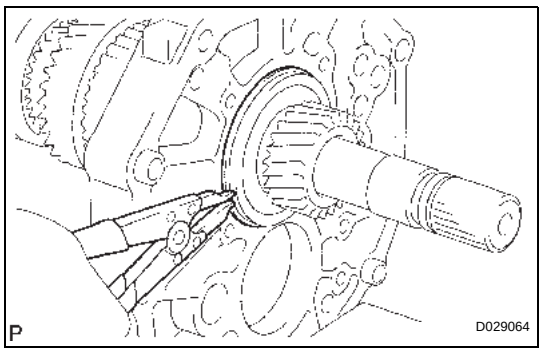
(a) Apply gear oil to the sliding part of the output assembly.

(b) Using a plastic hammer, install the output shaft assembly by tapping the intermediate plate.



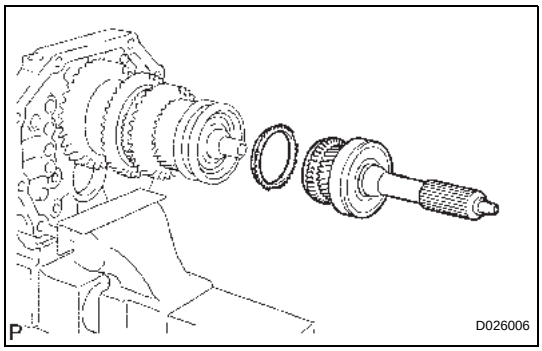
2. INSTALL OUTPUT SHAFT BEARING SHAFT SNAP RING

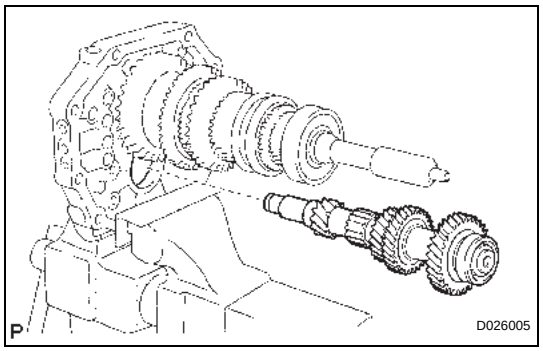
(a) Using a snap ring expander, install the output shaft bearing shaft snap ring onto the output shaft.



3. INSTALL INPUT SHAFT ASSEMBLY

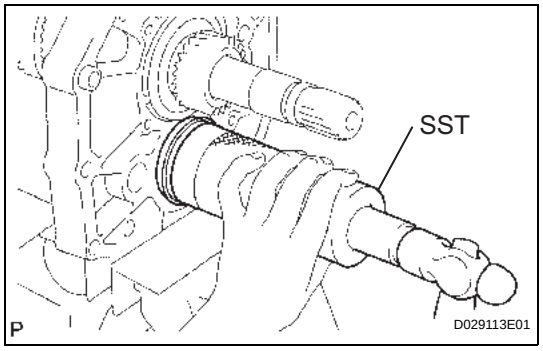
(a) Apply gear oil to the input shaft assembly and synchronizer ring No. 2, and install them onto the output shaft.
NOTICE:
- **Install the synchronizer ring No. 2 so that its groove fits into the synchromesh shifting key No. 2.**
- **Check that the input shaft assembly rotates smoothly.**





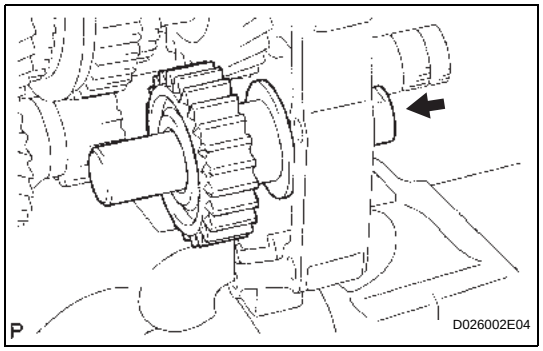
4. INSTALL COUNTER GEAR

(a) Provisionally install the counter gear assembly onto the intermediate plate.



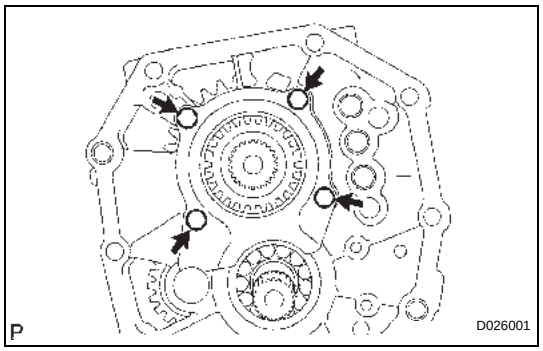
5. INSTALL COUNTER SHAFT CENTER BEARING

(a) Using SST and a hammer, install the new counter shaft center bearing onto the intermediate plate.
SST 09316-60011 (09316-00011)
HINT:
Remove the bearing while tapping the tip of the counter gear so that the counter gear assembly is not pushed forward into the side wall of the output shaft gear.



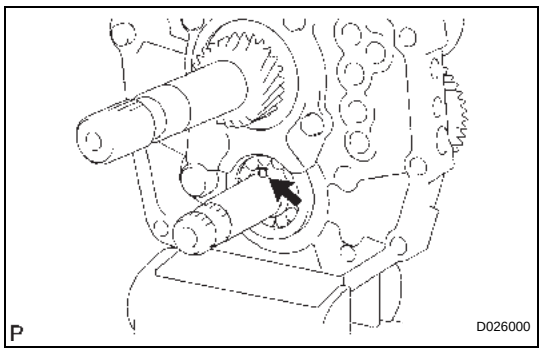
6. INSTALL REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Apply gear oil to each sliding part of the reverse idler gear and the reverse idler gear shaft, and install them onto the intermediate plate.
NOTICE:
Orient the groove side of the reverse idler shaft to the rear side and install it from the rear side.



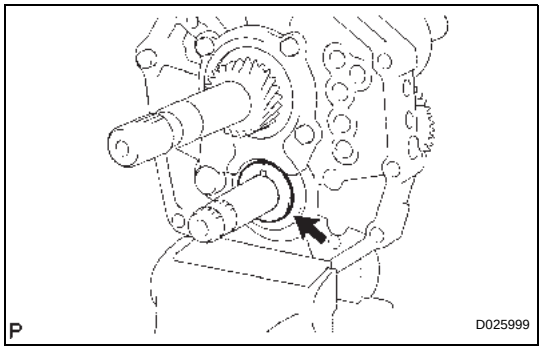
7. INSTALL OUTPUT SHAFT REAR BEARING RETAINER

(a) Install the output shaft rear bearing retainer into the groove of the reverse idler gear shaft with the 4 bolts.
Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)



8. INSTALL 5TH GEAR THRUST WASHER PIN

(a) Apply MP grease to the 5th gear thrust washer pin, and install it onto the counter gear.

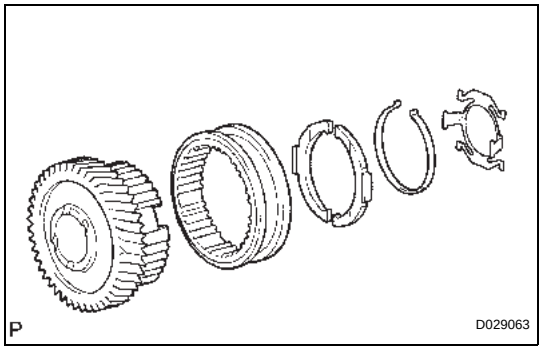


9. INSTALL 5TH GEAR THRUST WASHER

(a) Apply gear oil to the 5th gear thrust washer, and install it onto the counter gear.

NOTICE:

Install the thrust washer so that its chamfer side faces to the front side.



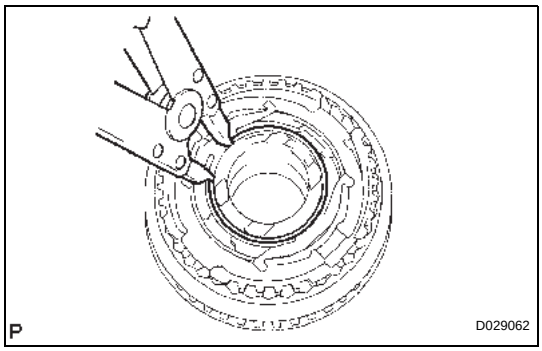
10. INSTALL NO. 3 TRANSMISSION HUB SLEEVE

(a) Apply gear oil to the sliding part of transmission hub sleeve No. 3, and install it onto the counter shaft 5th gear.

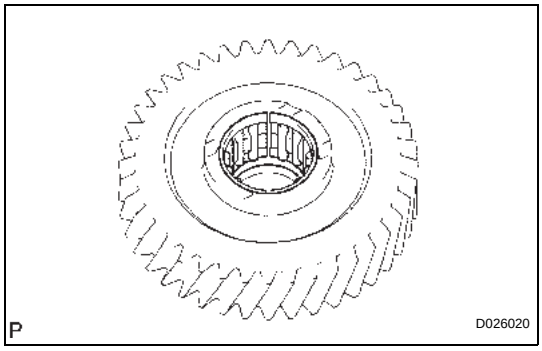
NOTICE:

Make sure that the transmission hub sleeve No. 3 and counter 5th gear are oriented in the correct direction.

(b) Install the 2 synchromesh shifting keys No. 3 and the 2 synchromesh shifting key springs onto the counter shaft 5th gear.

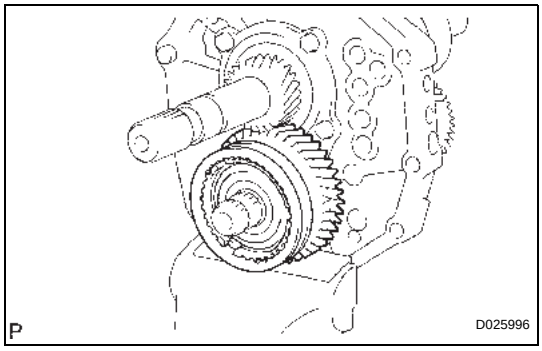


(c) Using a snap ring expander, install the bearing shaft snap ring onto the counter 5th gear.



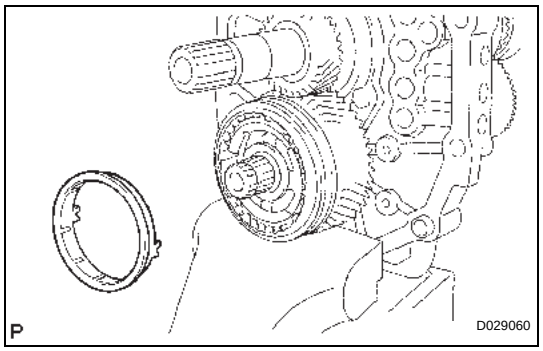
11. INSTALL COUNTER 5TH GEAR BEARING

(a) Apply gear oil to the counter 5th gear bearing and install it onto the counter 5th gear.



12. INSTALL COUNTER SHAFT 5TH GEAR

(a) Apply gear oil to the counter 5th gear and transmission hub sleeve No. 3 assembly, and install them onto the counter gear.

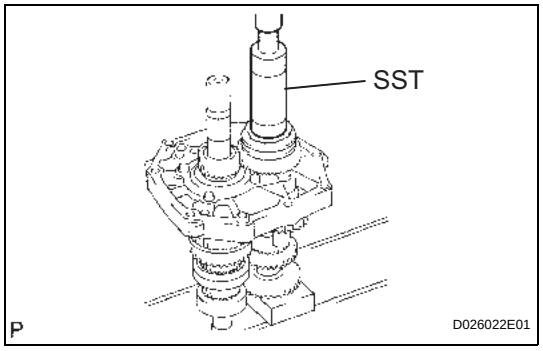


13. INSTALL NO. 3 SYNCHRONIZER RING OUTER

(a) Apply gear oil to the synchronizer ring outer No. 3, and install it onto the counter gear.

NOTICE:

Install the synchronizer ring outer No. 3 so that its groove fits into the synchromesh shifting key No. 3.



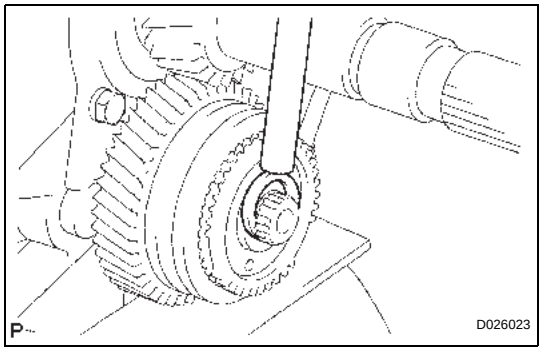
14. INSTALL NO. 5 GEAR SPLINE PIECE

(a) Using SST and a press, install the gear spline piece No. 5 onto the counter gear.

SST 09316-60011 (09316-00011)

NOTICE:

Check that the gear rotates smoothly.



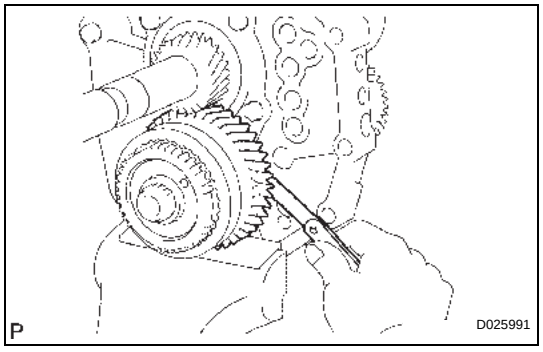
15. INSTALL COUNTER GEAR REAR SHAFT SNAP RING

(a) Select the counter gear rear shaft snap ring so that the thrust gap between gear spline piece No. 5 and counter gear rear shaft snap ring is within the specified values, and using a brass bar and a hammer, install it onto the counter gear.

Standard clearance:

0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.80 to 2.85 (0.1102 to 0.1122)
B	2.85 to 2.90 (0.1122 to 0.1141)
C	2.90 to 2.95 (0.1141 to 0.1160)
D	2.95 to 3.00 (0.1160 to 0.1181)
E	3.00 to 3.05 (0.1181 to 0.1200)
F	3.05 to 3.10 (0.1200 to 0.1220)
G	3.10 to 3.15 (0.1220 to 0.1240)

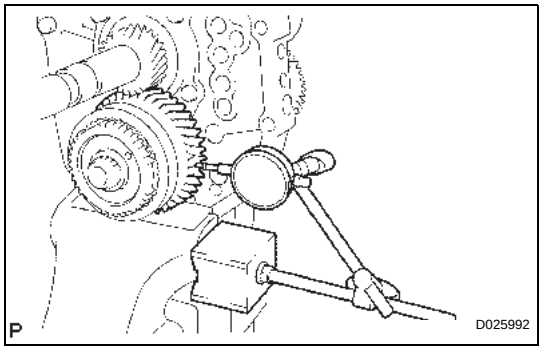


16. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, check the thrust clearance of the counter 5th gear.

Standard clearance:

0.10 to 0.35 mm (0.0039 to 0.0138 in.)



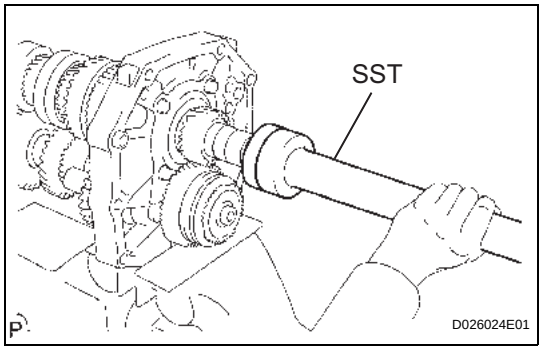
17. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, check the counter 5th gear radial clearance.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

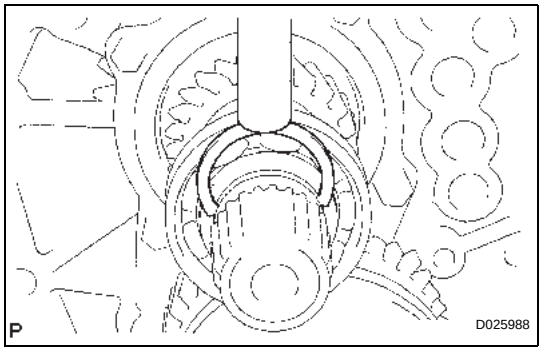
If the clearance is out of specification the counter 5th gear bearing.



18. INSTALL OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, install the new spacer and output shaft rear bearing onto the output shaft.

SST 09309-35010



19. INSTALL OUTPUT SHAFT BEARING SHAFT SNAP RING

(a) Select an output shaft bearing shaft snap ring so the thrust gap between the snap ring and the bearing is within the specified values. Use a brass bar and hammer to install it onto the output shaft.

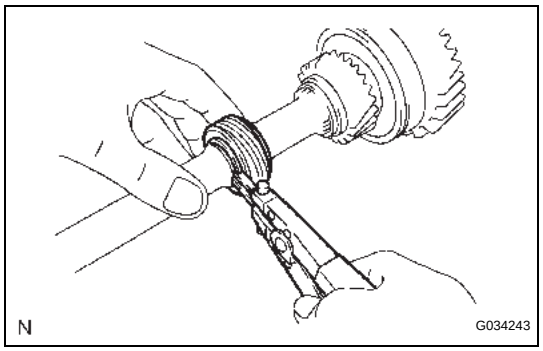
Standard clearance:

0.1 mm (0.0039 in.) or less

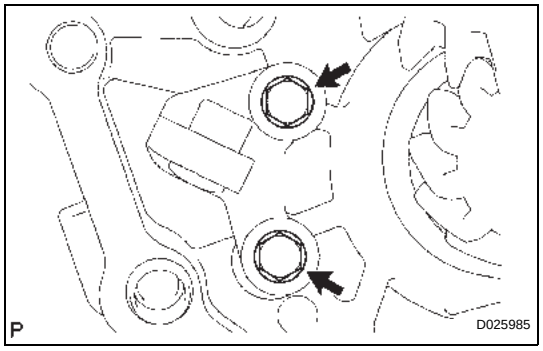
Mark	Thickness mm (in.)
A	2.65 to 2.70 (0.1043 to 0.1063)
B	2.70 to 2.75 (0.1063 to 0.1083)
C	2.75 to 2.80 (0.1083 to 0.1102)
D	2.80 to 2.85 (0.1102 to 0.1122)
E	2.85 to 2.90 (0.1122 to 0.1141)
F	2.90 to 2.95 (0.1141 to 0.1160)
G	2.95 to 3.00 (0.1160 to 0.1181)
H	3.00 to 3.05 (0.1181 to 0.1200)
J	3.05 to 3.10 (0.1200 to 0.1220)
K	3.10 to 3.15 (0.1220 to 0.1240)
L	3.15 to 3.20 (0.1240 to 0.1260)
M	3.20 to 3.25 (0.1260 to 0.1280)
N	3.25 to 3.30 (0.1280 to 0.1299)
P	3.30 to 3.35 (0.1299 to 0.1319)
Q	3.35 to 3.40 (0.1319 to 0.1339)
R	3.40 to 3.45 (0.1339 to 0.1358)
S	3.45 to 3.50 (0.1358 to 0.1378)

20. INSTALL SPEEDOMETER DRIVE GEAR

(a) Install output shaft spacer.

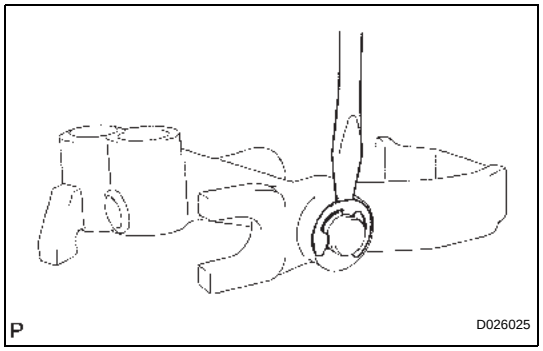


(b) Using snap ring pliers, install the snap ring.
(c) Install the ball and drive gear.
(d) Using snap ring pliers, install the snap ring.



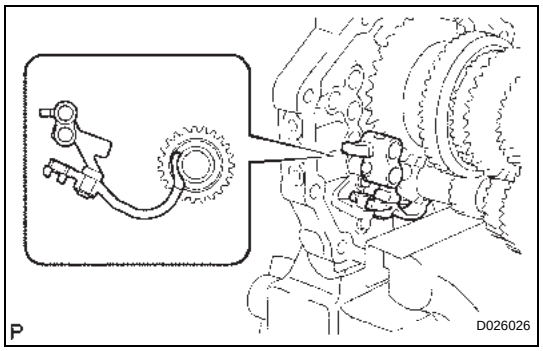
21. INSTALL REVERSE SHIFT ARM BRACKET

(a) Install the reverse shift arm bracket onto the intermediate plate with the 2 bolts.
Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)

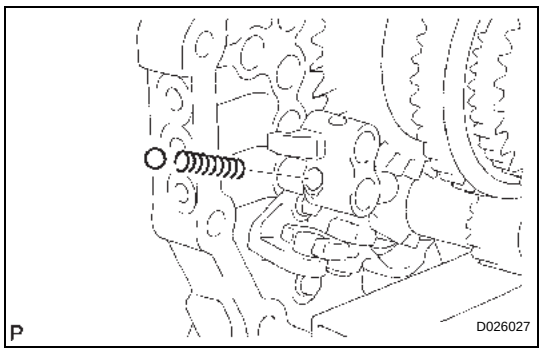


22. INSTALL REVERSE SHIFT FORK

(a) Install the reverse shift arm onto the reverse shift fork. Using a screwdriver and a hammer, install the new reverse shift arm end shaft ring.

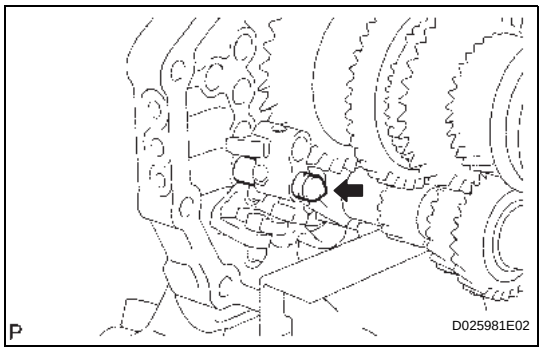


(b) Install the tip of the reverse shift arm onto the reverse idler gear. Align the cut end of the reverse shift arm with the reverse shift arm bracket pin, and install them.

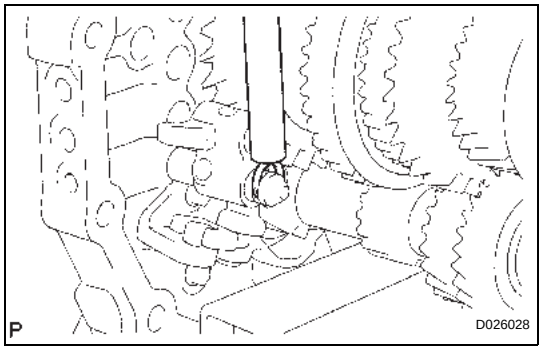


23. INSTALL 5TH SHIFT ARM SHAFT

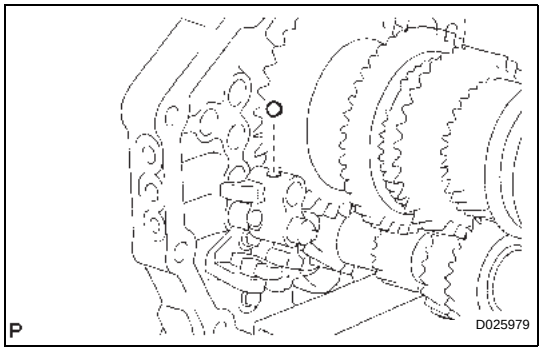
(a) Install the reverse shift fork return compression spring and the reverse shift fork ball into the reverse shift fork.



(b) Apply gear oil to the sliding part of the 5th shift arm shaft.
(c) Using a screwdriver, install the 5th shift arm shaft by pushing the reverse shift fork ball gently.

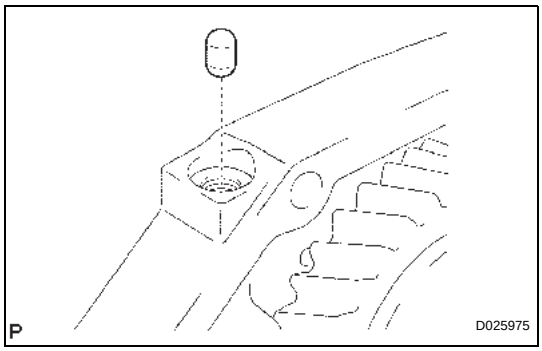


(d) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the 5th shift arm shaft.

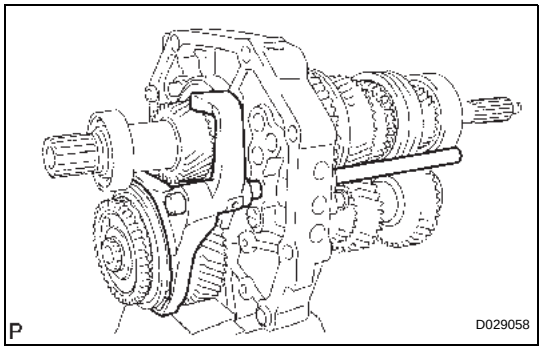


24. INSTALL REVERSE SHIFT FORK SHAFT

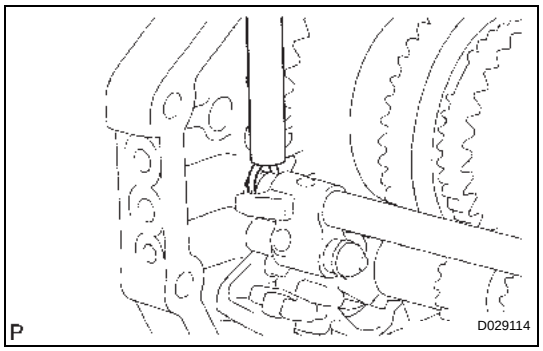
(a) Install the reverse shift fork ball into the reverse shift fork.



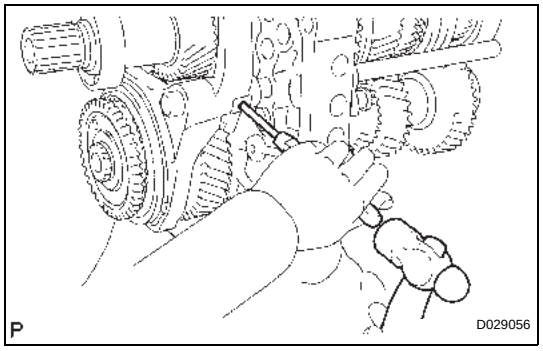
(b) Install the shift interlock No. 1 roller onto the intermediate plate.



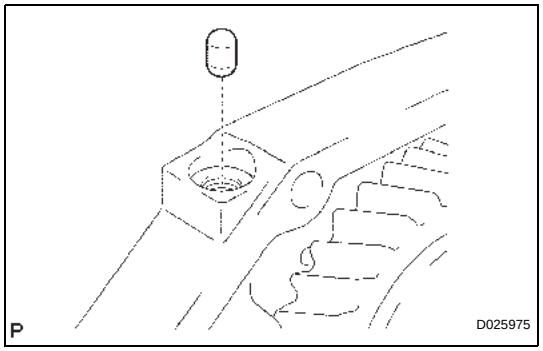
(c) Install the shift fork No. 3 onto the transmission hub sleeve No. 3 and the reverse shift fork shaft onto the intermediate plate from the front side.



(d) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the reverse shift fork shaft.

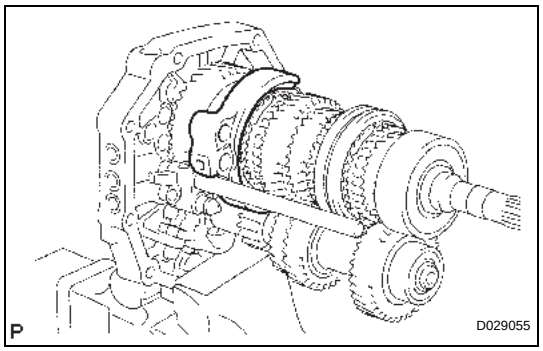


(e) Using a pin punch (5 mm) and a hammer, install the shift fork set slotted spring pin into the gear shift fork No. 3.

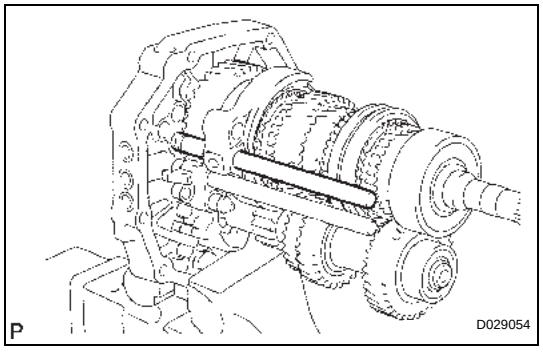


25. INSTALL NO. 1 GEAR SHIFT FORK SHAFT

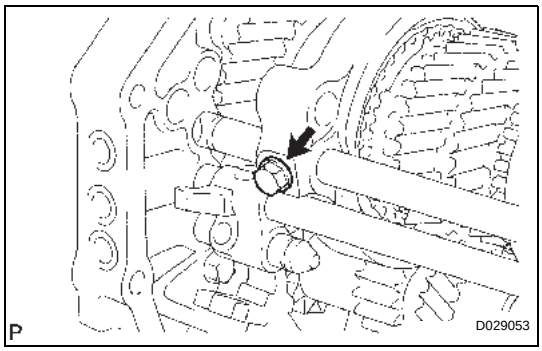
(a) Install the shift interlock No. 1 roller onto the intermediate plate.



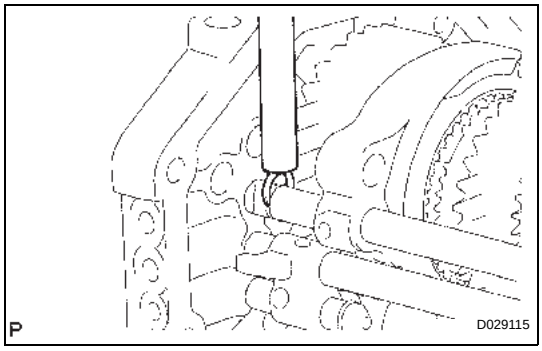
(b) Install the gear shift fork No. 1 onto the reverse gear.



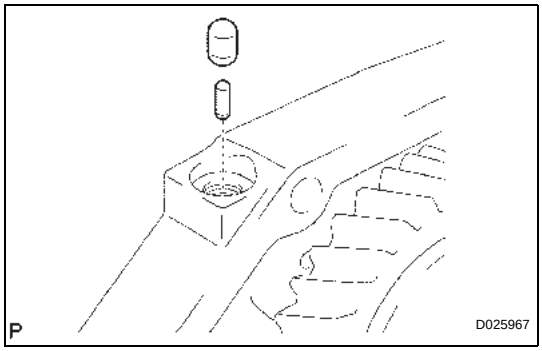
(c) Install the gear shift fork shaft No. 1 onto the intermediate plate from the rear side.



(d) Install the new shift fork set bolt onto the gear shift fork No. 1.
Torque: 19.5 N*m (199 kgf*cm, 14 ft.*lbf)

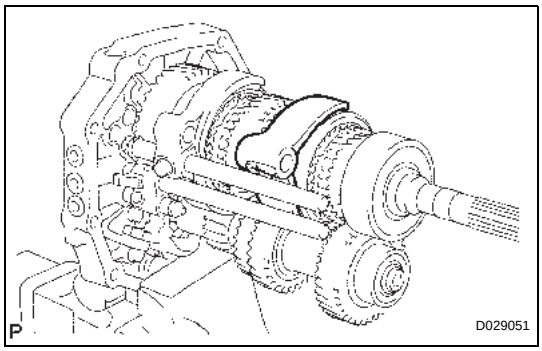


(e) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the gear shift fork shaft No. 1.

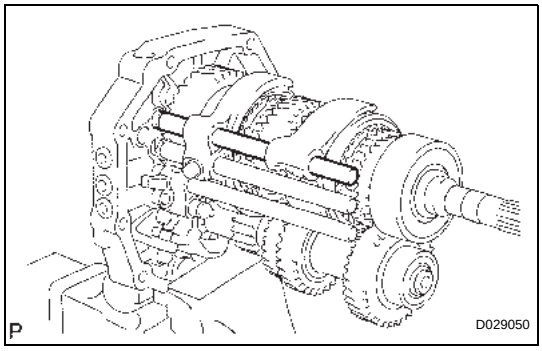


26. INSTALL NO. 2 GEAR SHIFT FORK SHAFT

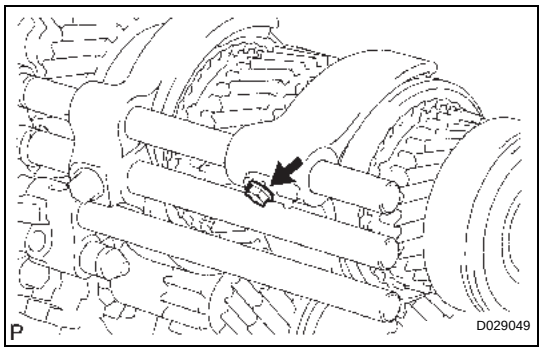
(a) Install the shift interlock pin (ball) and shift interlock No. 1 roller into the intermediate plate.



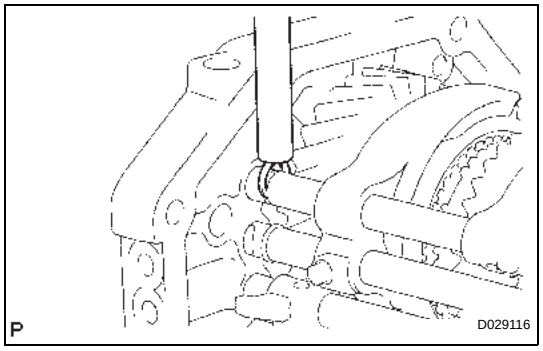
(b) Install the gear shift fork No. 2 onto the transmission hub sleeve No. 2.



(c) Apply gear oil to the gear shift fork shaft No. 2, and install it onto the intermediate plate from the rear side.

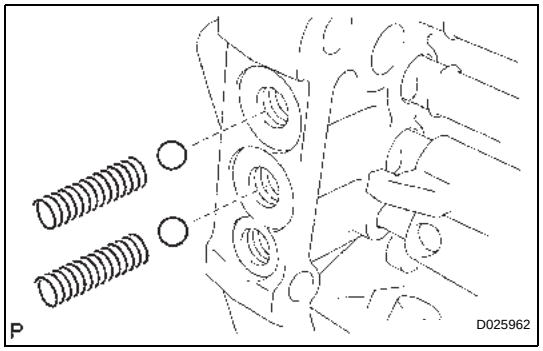


(d) Install the new shift fork set bolt onto the gear shift fork No. 2.
Torque: 19.5 N*m (199 kgf*cm, 14 ft.*lbf)

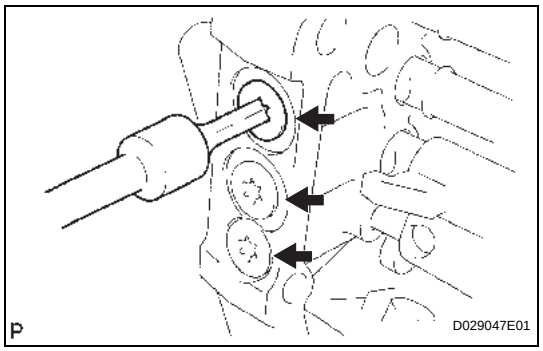


(e) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the gear shift fork shaft No. 2.

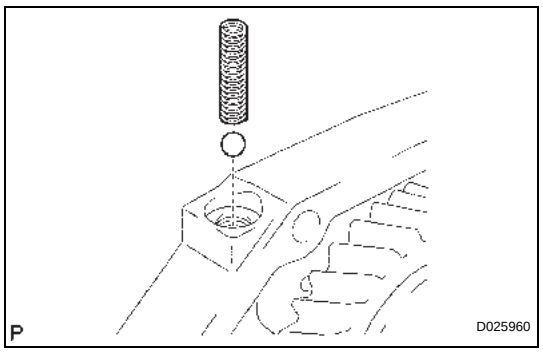
27. INSTALL NO. 1 SHIFT DETENT BALL SPRING SEAT



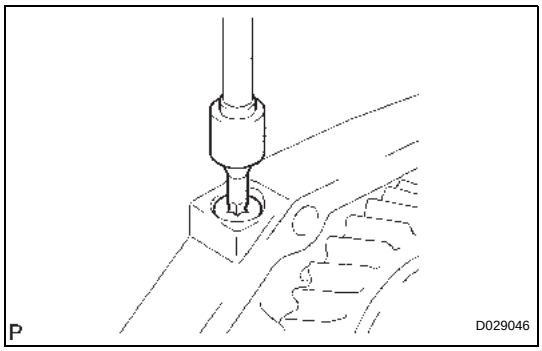
(a) Install the 2 shift detent ball low side compression springs and 2 shift detent balls into the intermediate plate.



(b) Using a "Torx" socket wrench T40, install the 3 shift detent ball spring seats No. 1 onto the intermediate plate.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)

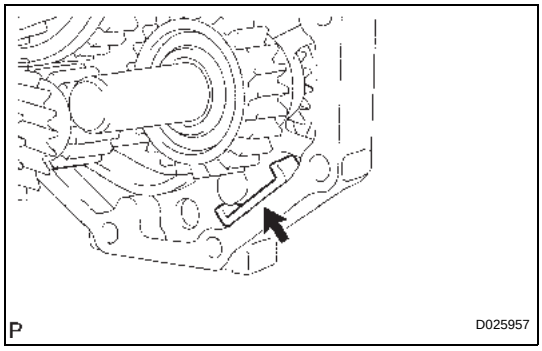


(c) Install the shift detent ball and the shift detent ball low side compression spring into the intermediate plate.



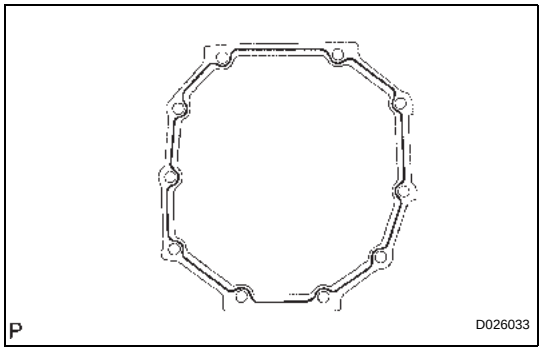
(d) Using a "Torx" socket wrench T40, install the shift detent ball spring seat No. 1 onto the intermediate plate.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)

MT



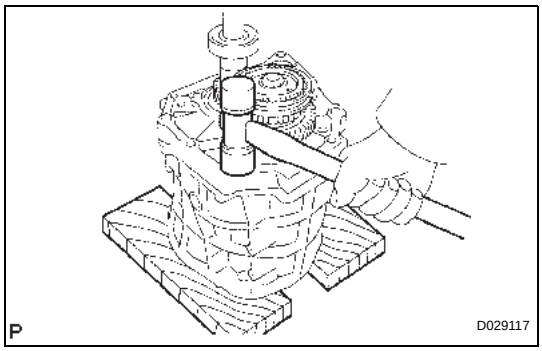
28. INSTALL TRANSMISSION MAGNET

(a) Clean the transmission magnet, and install it onto the intermediate plate.

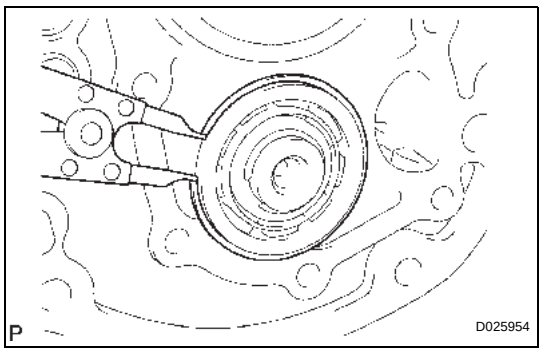


29. INSTALL MANUAL TRANSMISSION CASE

(a) Apply seal packing to the manual transmission case as shown in the illustration.
Seal packing:
Part No.08826-00090, THREE BOND 1281 or equivalent.

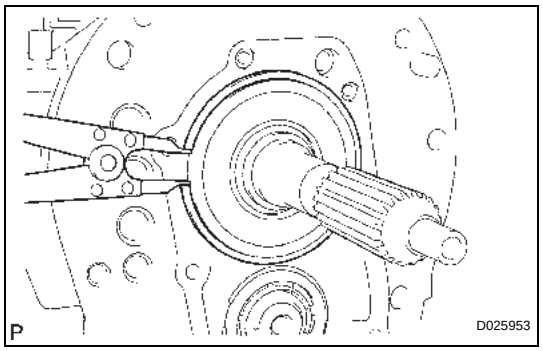


(b) Using a plastic hammer, tap the manual transmission case to attach it to the intermediate plate.



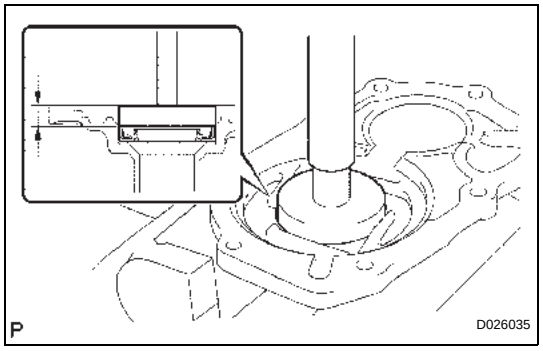
30. INSTALL NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, install the counter gear front bearing snap ring No. 1 onto the transmission case.



31. INSTALL FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring expander, install the front bearing shaft snap ring onto the transmission case.



32. INSTALL TRANSMISSION FRONT BEARING RETAINER OIL SEAL

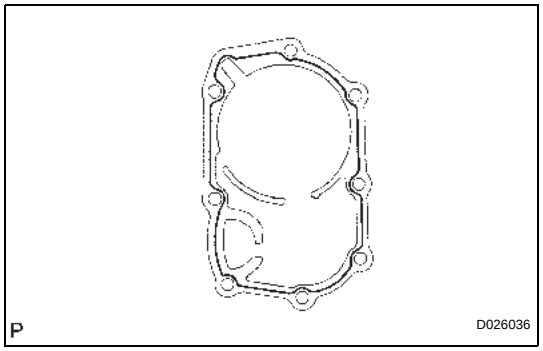
(a) Using SST and a hammer, install the new transmission front bearing retainer oil seal onto the transmission front bearing retainer.

SST 09950-60010 (09951-00300, 09951-00520, 09952-06010), 09950-70010 (09951-07100)

Drive in depth:

11.2 to 12.2 mm (0.4409 to 0.4803 in.)

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

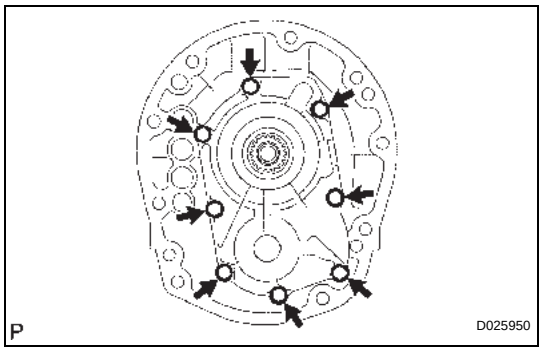


33. INSTALL FRONT BEARING RETAINER

(a) Apply seal packing to the bearing retainer front as shown in the illustration.

Seal packing:

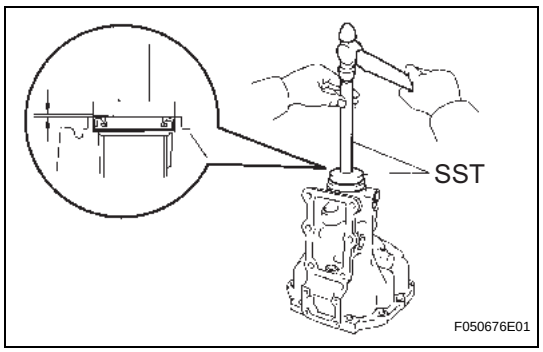
Part No.08826-00090, THREE BOND 1281 or equivalent.



(b) Install the front bearing retainer onto the transmission case with the 8 bolts.

Torque: 16.5 N*m (168 kgf*cm, 12 ft.*lbf)

(c) Check that the input shaft and output shaft rotate smoothly.



34. INSTALL MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL

(a) Using SST and a hammer, install the new extension housing oil seal onto the extension housing.

SST 09710-30050, 09950-70010 (09951-07100)

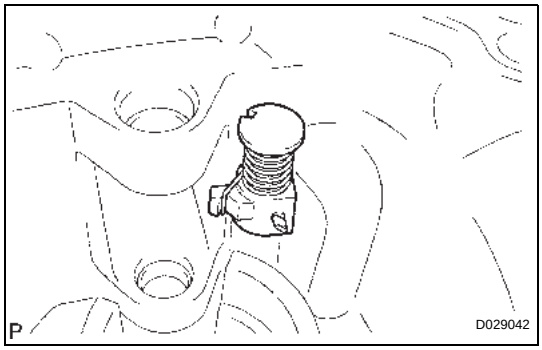
Drive in depth:

-0.5 to 0.5 mm (-0.020 to 0.020 in.)

NOTICE:

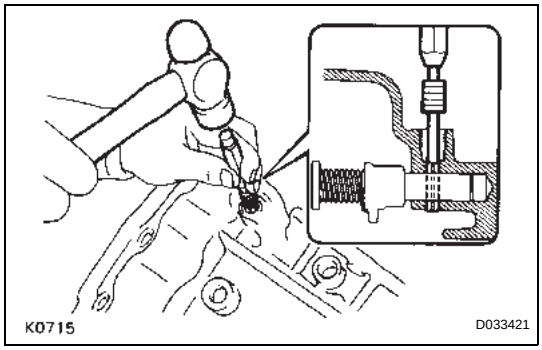
Be careful not to damage the oil seal lip.

(b) Lightly apply MP grease to the tip of the oil seal.



35. INSTALL REVERSE RESTRICT PIN ASSEMBLY

(a) Install the reverse restrict pin into the extension housing.

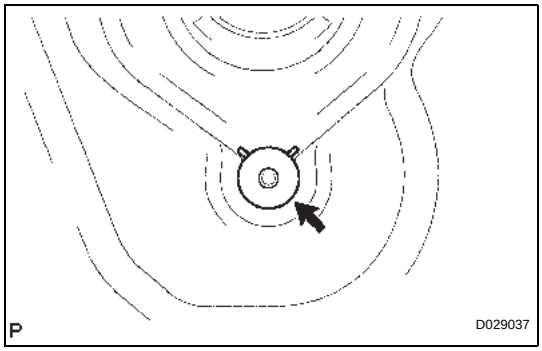


(b) Using a pin punch (5 mm) and a hammer, install the reverse restrict slotted pin into the extension housing.

(c) Using a "Torx" socket wrench T40, install the reverse restrict pin plug onto the extension housing.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)

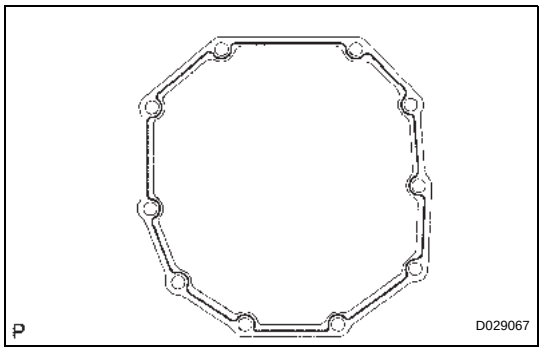
36. INSTALL EXTENSION HOUSING OIL RECEIVER PIPE

(a) Install the oil receiver pipe with the bolt.



37. INSTALL OIL RECEIVER

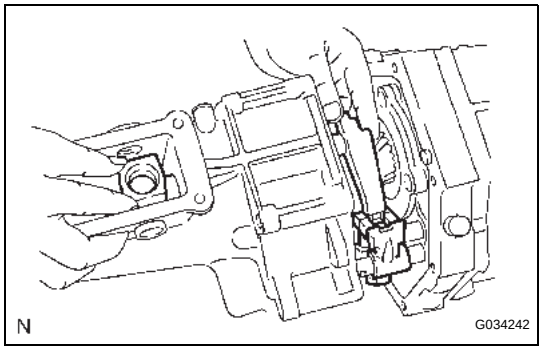
(a) Install the oil receiver onto the extension housing.



38. INSTALL EXTENSION HOUSING SUB-ASSEMBLY

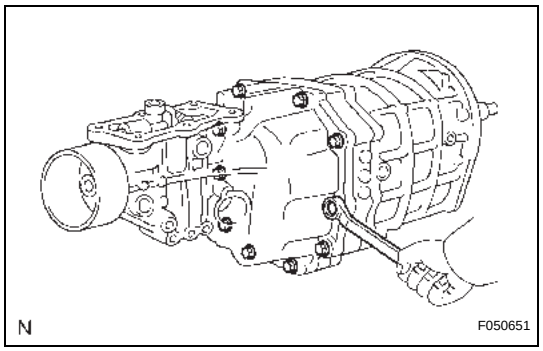
(a) Apply seal packing to the extension housing as shown in the illustration.
Seal packing:
Part No. 08826-00090, THREE BOND 1218 or equivalent

(b) Insert the shift and select lever to the extension housing.

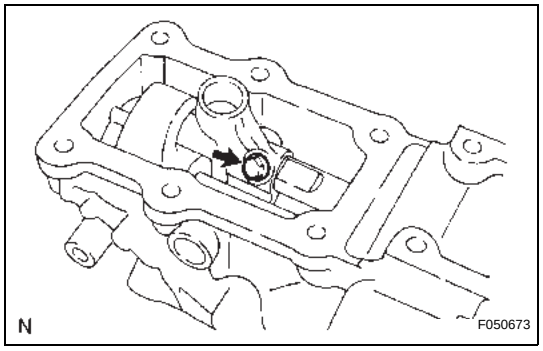


(c) Connect the shift and select lever to the fork shaft and put in the shift lever housing.

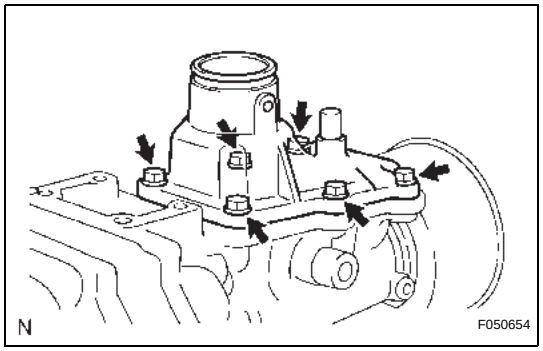
(d) Align shift and select lever to the extension housing installation hole and push in the extension housing.



(e) Install the extension housing, onto the transmission case with the 10 bolts.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

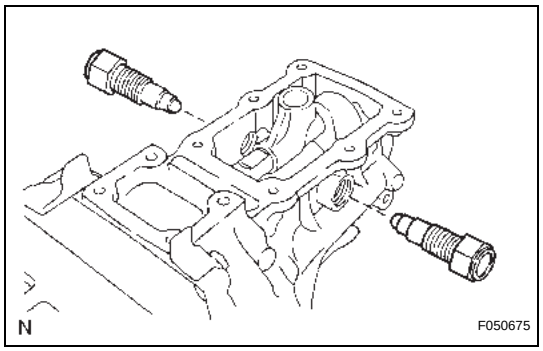


(f) Install the shift lever housing set bolt.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



39. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Install the floor shift control shift lever retainer and the extension housing oil deflector onto the transfer adapter with the 6 bolts.
Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)

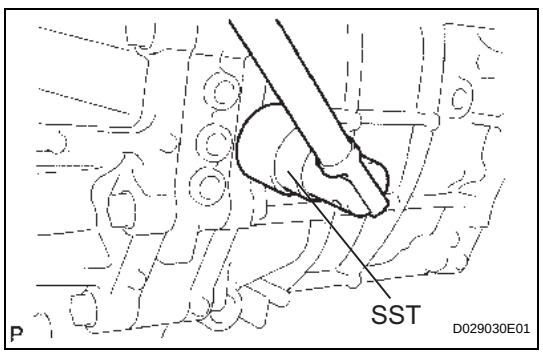


40. INSTALL REVERSE RESTRICT PIN ASSEMBLY

(a) Install the 2 reverse restrict pins into the extension housing or transfer adapter.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

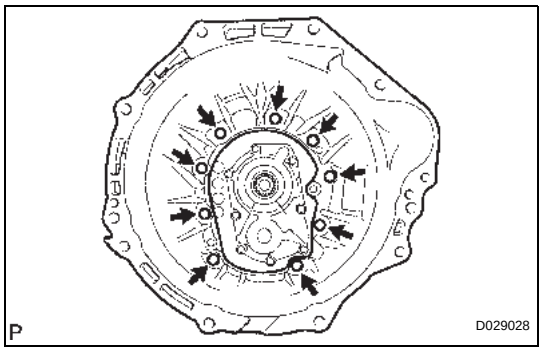
41. INSTALL SPEEDOMETER SENSOR

(a) Install a new O-ring onto the speedometer sensor.
(b) Install the speedometer sensor with the bolt.
Torque: 11.5 N*m (117 kgf*cm, 8 ft.*lbf)



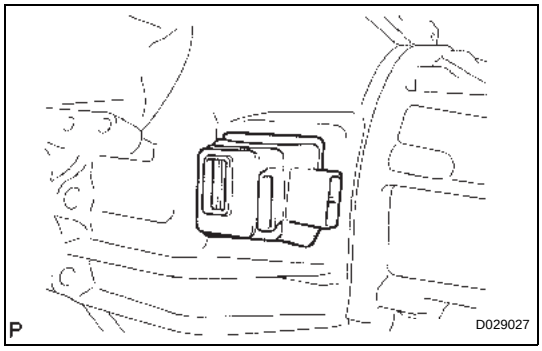
42. INSTALL BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, install the back-up light switch assembly and the gasket onto the transmission case.
SST 09817-16011
Torque: 44 N*m (450 kgf*cm, 32 ft.*lbf)



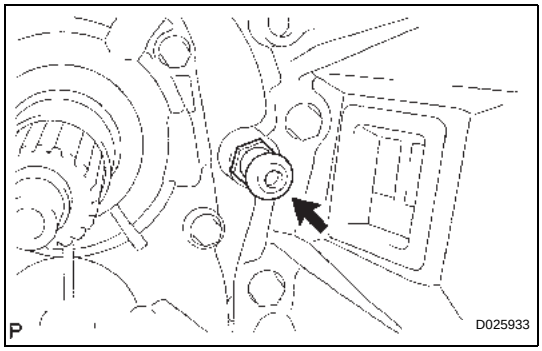
43. INSTALL CLUTCH HOUSING

(a) Install the clutch housing onto the transmission case with the 9 bolts.
Torque: 36 N*m (370 kgf*cm, 27 ft.*lbf)



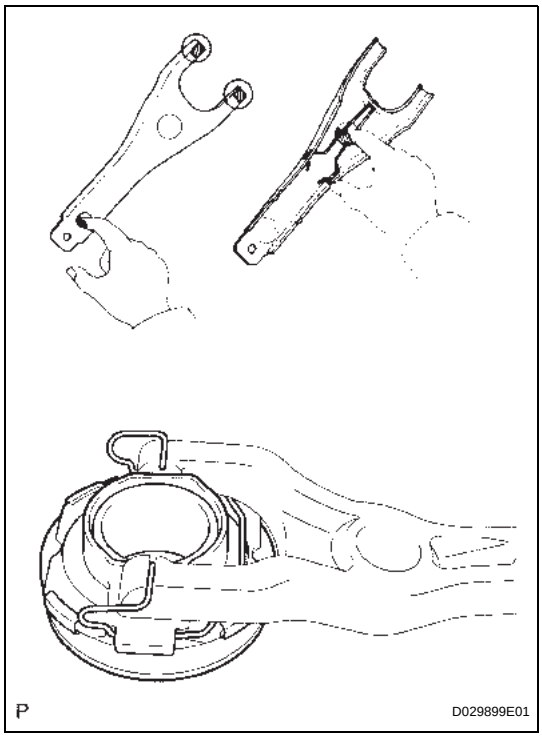
44. INSTALL CLUTCH RELEASE FORK BOOT

(a) Install the clutch release fork boot onto the clutch housing.



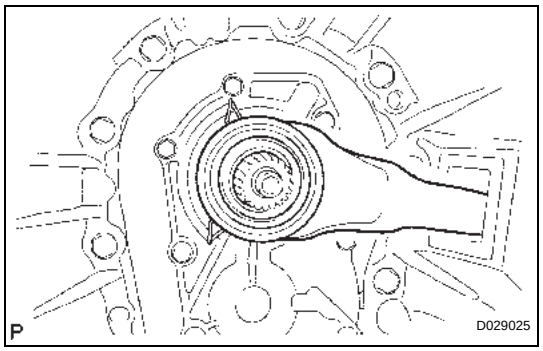
45. INSTALL RELEASE FORK SUPPORT

(a) Install the clutch release fork support onto the clutch housing.
Torque: 47 N*m (480 kgf*cm, 35 ft.*lbf)



46. INSTALL CLUTCH RELEASE BEARING ASSEMBLY

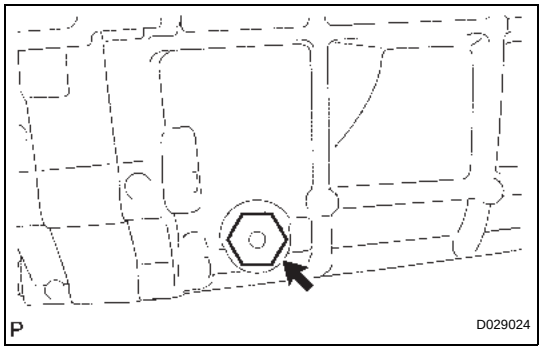
(a) Apply clutch release hub grease to the clutch release bearing, and install it onto the clutch release fork.



47. INSTALL CLUTCH RELEASE FORK SUB-ASSEMBLY

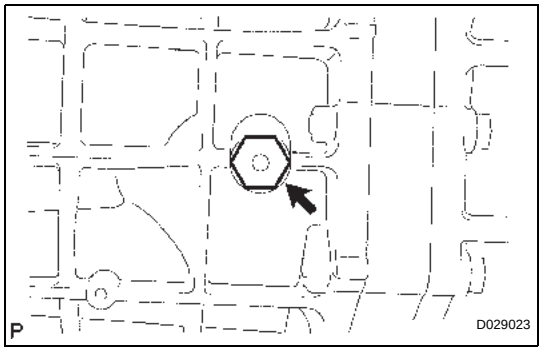
(a) Install the clutch release fork.

(b) Apply the clutch spline grease to the spline of the input shaft.



48. INSTALL DRAIN PLUG SUB-ASSEMBLY

(a) Install the drain plug onto the transmission case through a new gasket.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

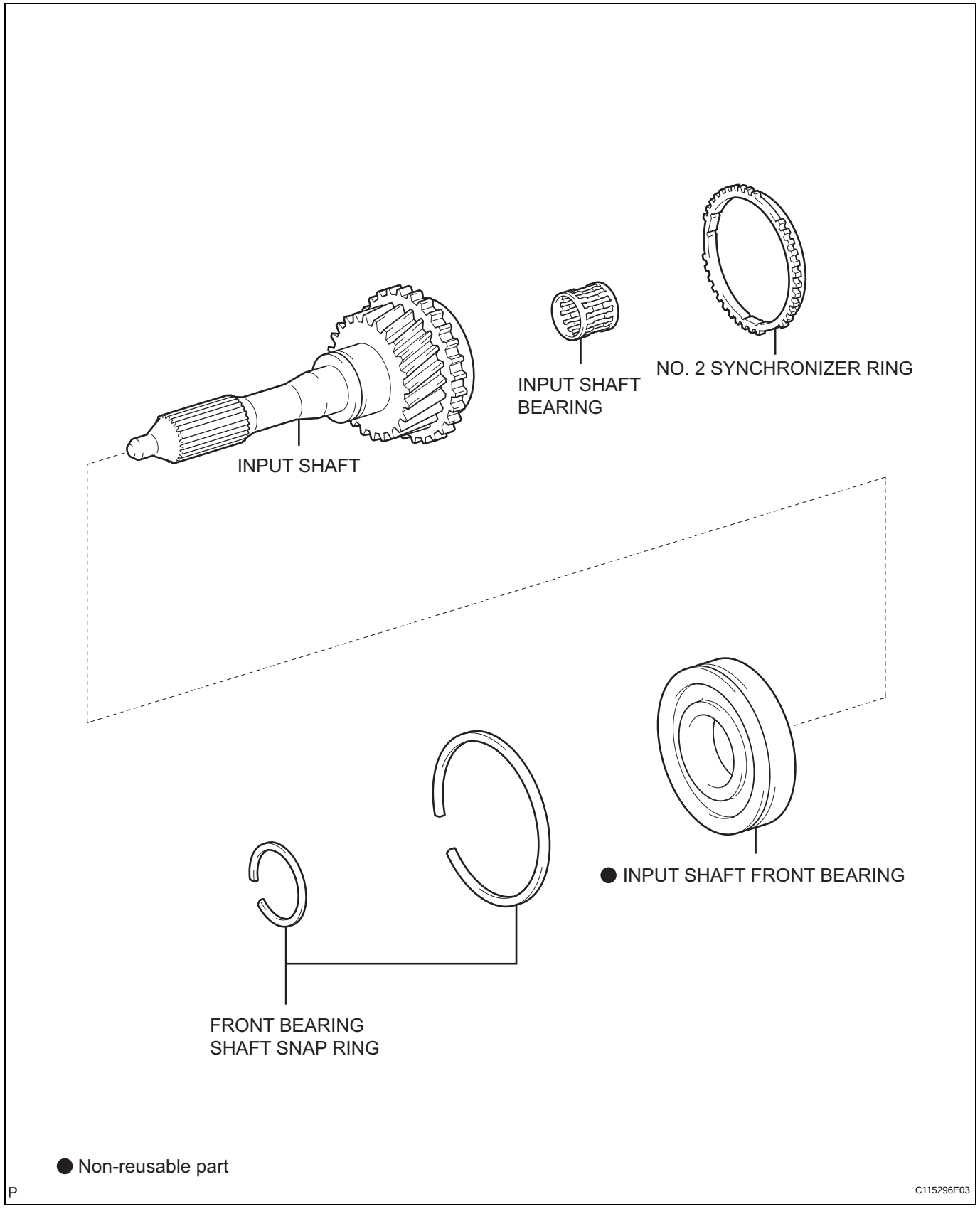


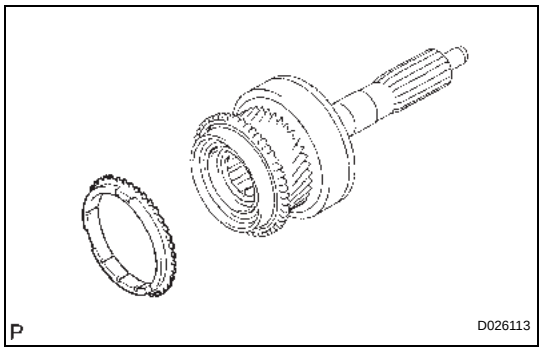
49. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the filler plug onto the transmission case through a new gasket.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

INPUT SHAFT

COMPONENTS

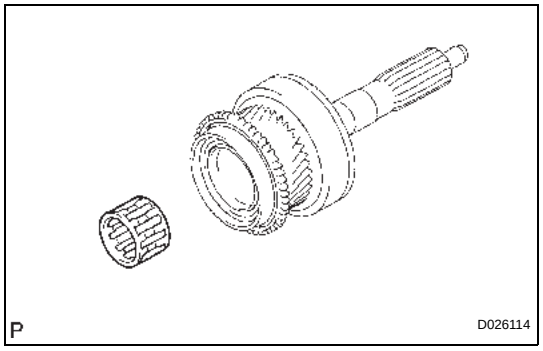




DISASSEMBLY

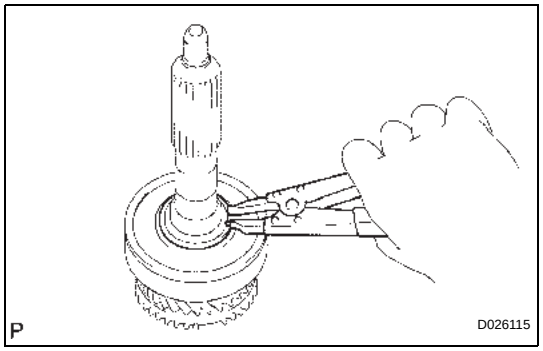
1. REMOVE NO. 2 SYNCHRONIZER RING

(a) Remove synchronizer ring No. 2 from the input shaft.



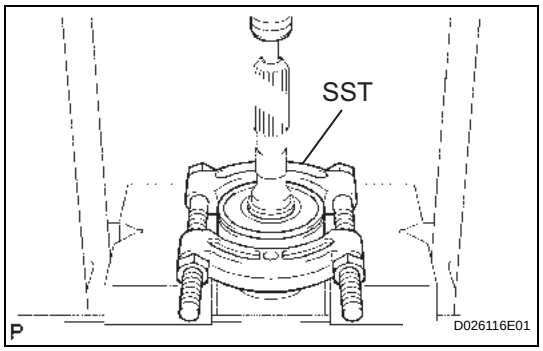
2. REMOVE INPUT SHAFT BEARING

(a) Remove the input shaft bearing from the input shaft.



3. REMOVE FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring expander, remove the front bearing shaft snap ring from the input shaft.



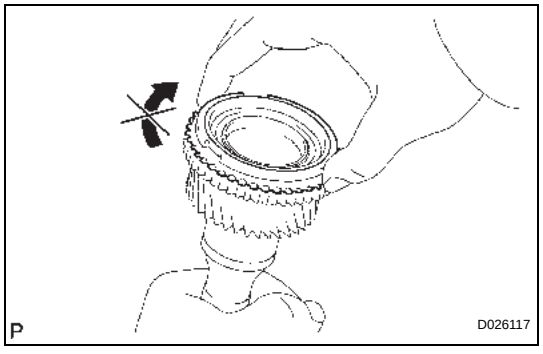
4. REMOVE INPUT SHAFT FRONT BEARING

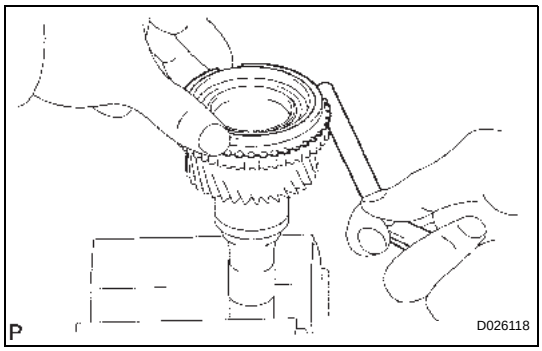
(a) Using SST and a press, remove the input shaft front bearing FR from the input shaft.
SST 09950-00020

INSPECTION

1. INSPECT NO. 2 SYNCHRONIZER RING

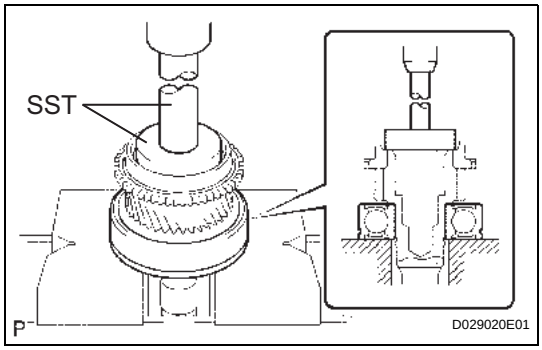
(a) Apply gear oil to the cone of the input shaft, and check that it does not turn in the both directions while pushing the synchronizer ring No. 2.





(b) Check the clearance between the synchronizer ring No. 2 and input shaft while pushing the synchronizer ring No. 2 to the cone of the input shaft.
Standard clearance:
0.70 to 1.70 mm (0.0276 to 0.0669 in.)
If the clearance is not within the specified values, replace synchronizer ring No. 2 with a new one.

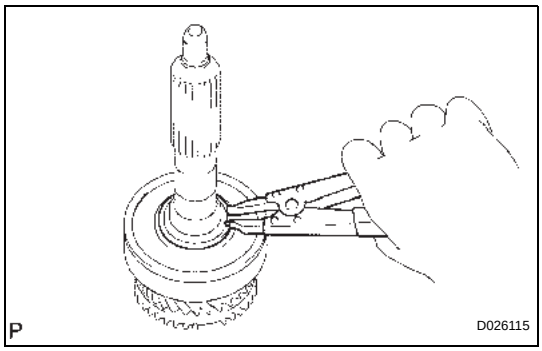
MT



REASSEMBLY

1. INSTALL INPUT SHAFT FRONT BEARING

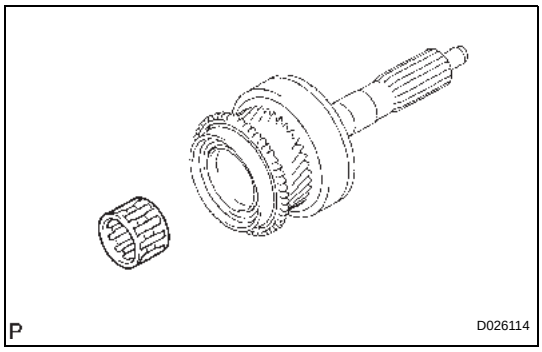
(a) Using SST and a press, install a new input shaft front bearing FR onto the input shaft.
SST 09950-60010 (09951-00570), 09950-70010 (09951-07100)
NOTICE:
Install the input shaft front bearing with the snap ring groove facing to the front.



2. INSTALL FRONT BEARING SHAFT SNAP RING

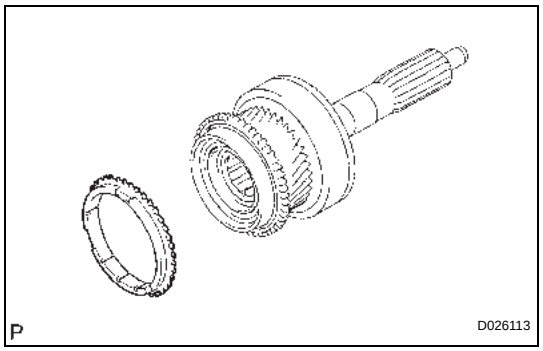
(a) Select the correct input shaft front bearing snap ring so that the clearance between the input shaft and input shaft front bearing is within the specified values.
Standard clearance:
0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.10 to 2.15 (0.0827 to 0.0846)
B	2.15 to 2.20 (0.0846 to 0.0866)
C	2.20 to 2.25 (0.0866 to 0.0886)
D	2.25 to 2.30 (0.0886 to 0.0906)
E	2.30 to 2.35 (0.0906 to 0.0925)
F	2.35 to 2.40 (0.0925 to 0.0945)
G	2.40 to 2.45 (0.0945 to 0.0965)



3. INSTALL INPUT SHAFT BEARING

(a) Apply gear oil to the input shaft bearing and install it onto the input shaft.

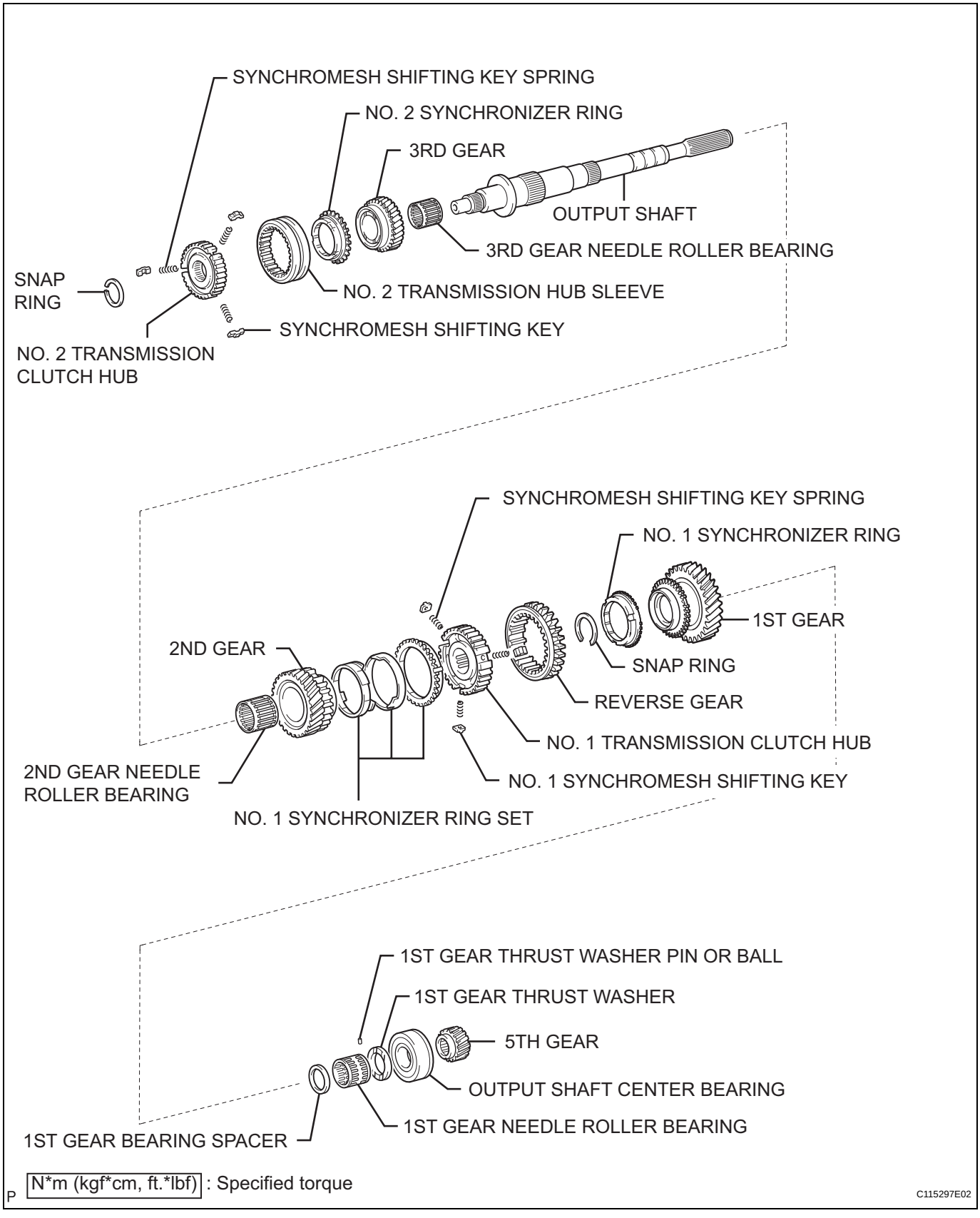


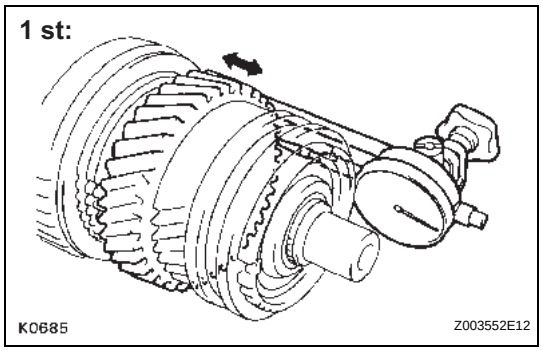
4. INSTALL NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to synchronizer ring No. 2, and install it onto the input shaft.

OUTPUT SHAFT

COMPONENTS





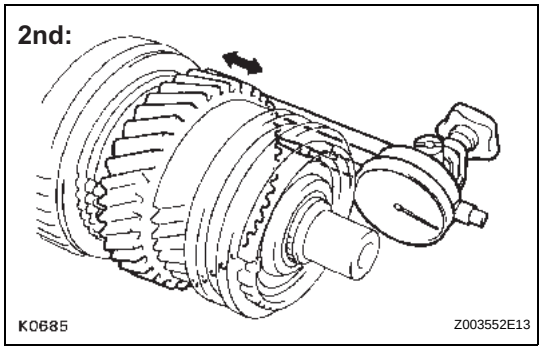
DISASSEMBLY

1. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator measure the thrust clearance of the 1st gear.

Standard clearance:

0.20 to 0.45 mm(0.0079 to 0.0177 in.)

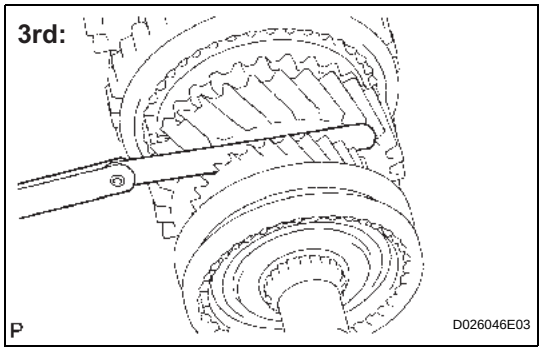


2. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator measure the thrust clearance of the 2nd gear.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)

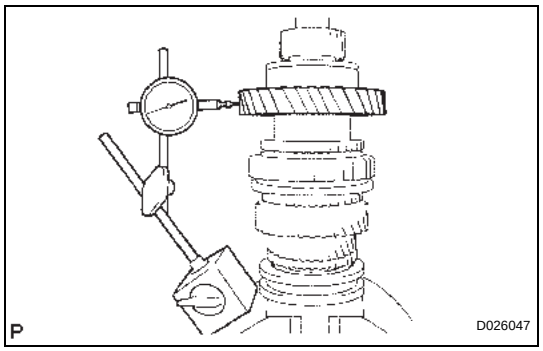


3. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the thrust clearance of the 3rd gear.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)



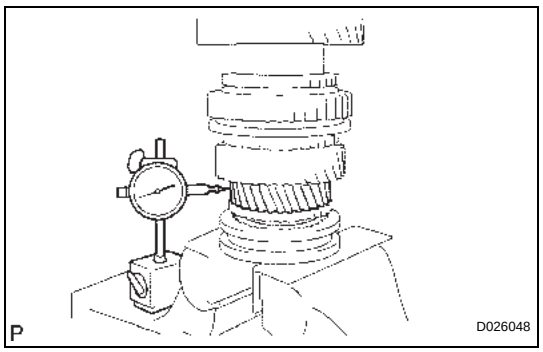
4. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the 1st gear.

Standard clearance:

0.020 to 0.073 mm (0.0008 to 0.0029 in.)

If the clearance is not within the specified values, replace the 1st gear needle roller bearing with a new one.



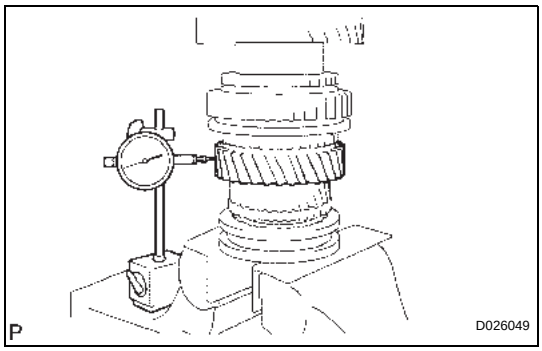
5. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the 2nd gear.

Standard clearance:

0.015 to 0.068mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 2nd gear needle roller bearing with a new one.



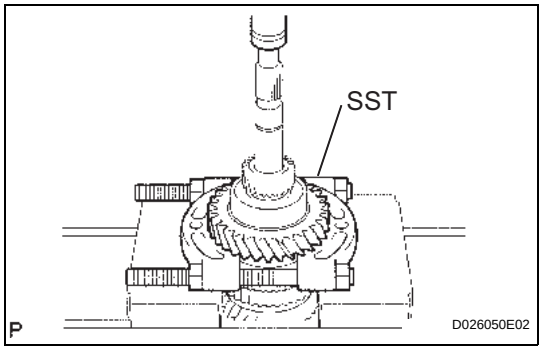
6. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the 3rd gear.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

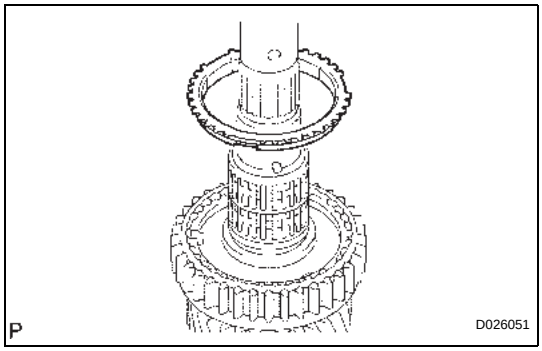
If the clearance is not within the specified values, replace the 3rd gear needle roller bearing with a new one.



7. REMOVE 1ST GEAR

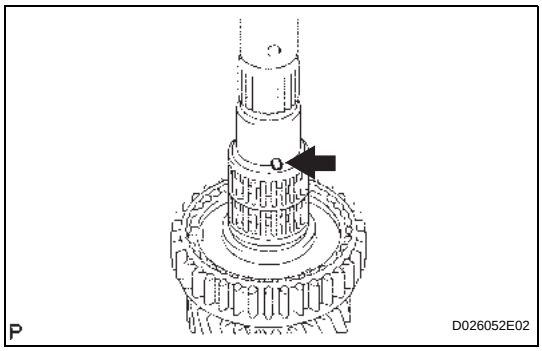
(a) Using SST and a press, remove the 5th gear, output shaft center bearing, 1st gear thrust washer and 1st gear from the output shaft.

SST 09950-00020



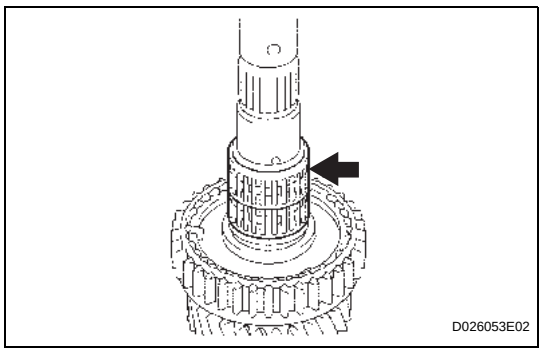
8. REMOVE NO. 1 SYNCHRONIZER RING

(a) Remove synchronizer ring No. 1 (for the 1st gear) from the output shaft.



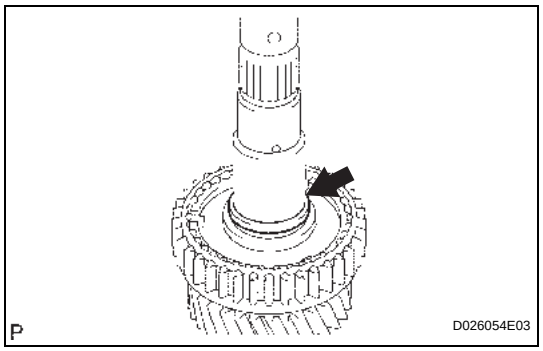
9. REMOVE 1ST GEAR THRUST WASHER PIN OR BALL

(a) Remove the 1st gear thrust washer pin from the output shaft.



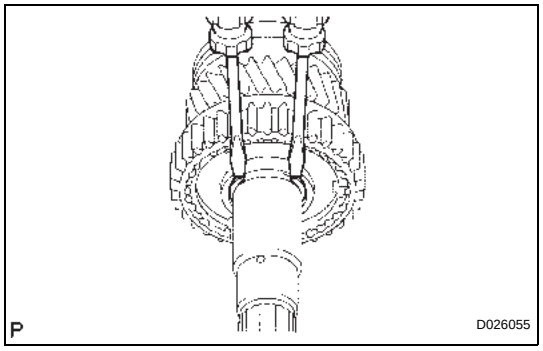
10. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

(a) Remove the 1st gear needle roller bearing from the output shaft.



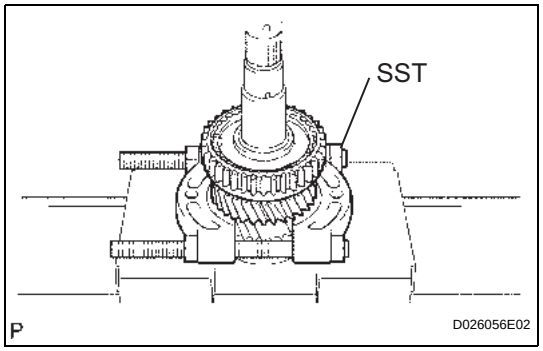
11. REMOVE 1ST GEAR BEARING SPACER

(a) Remove the 1st gear bearing spacer from the output shaft.



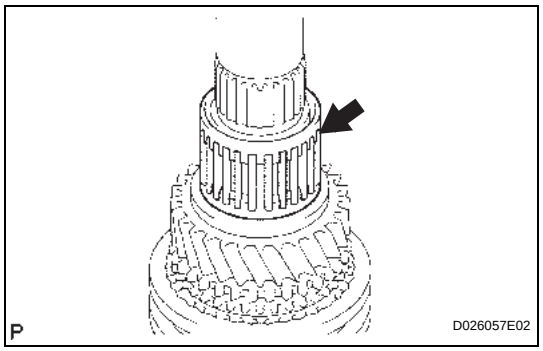
12. REMOVE BEARING SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, remove the bearing shaft snap ring from the output shaft.
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



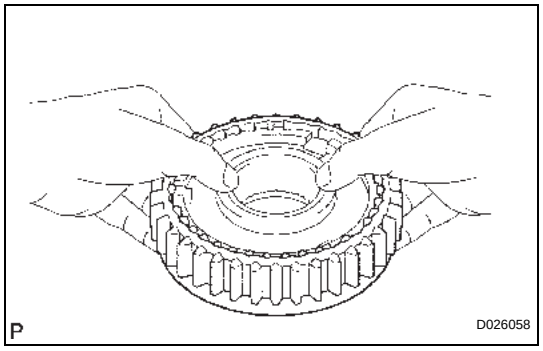
13. REMOVE 2ND GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 1, reverse gear, synchronizer ring No. 1 and 2nd gear from the output shaft.
SST 09950-00020



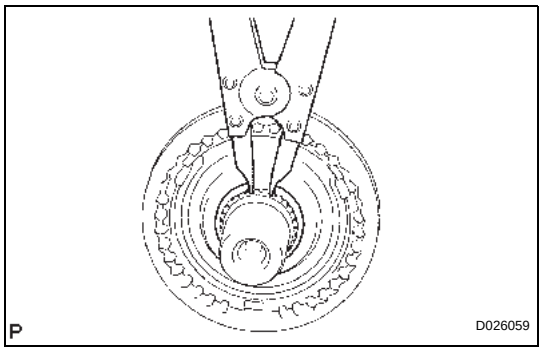
14. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

(a) Remove the 2nd gear needle roller bearing from the output shaft.



15. REMOVE REVERSE GEAR

(a) Remove the reverse gear, 3 synchromesh shifting keys No. 1 and 3 synchromesh shifting key springs. Use a shop rag to prevent the shifting key and the shifting spring from popping out.

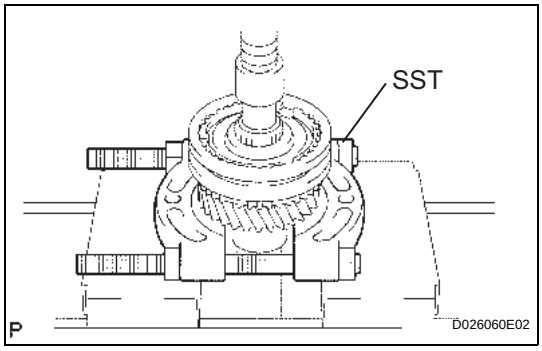


16. REMOVE CLUTCH HUB SET SHAFT SNAP RING

(a) Using snap ring pliers, remove the clutch hub set shaft snap ring from the output shaft.

NOTICE:

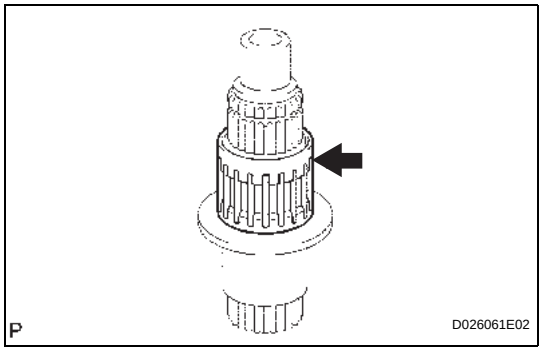
Do not damage the sliding surface of the bearing.



17. REMOVE 3RD GEAR

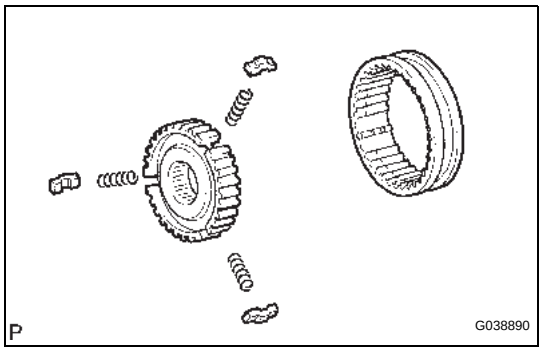
(a) Using SST and a press, remove the clutch hub No. 2 with the hub sleeve No. 2, synchronizer ring No. 2 and 3rd gear from the output shaft.

SST 09950-00020



18. REMOVE 3RD GEAR NEEDLE ROLLER BEARING

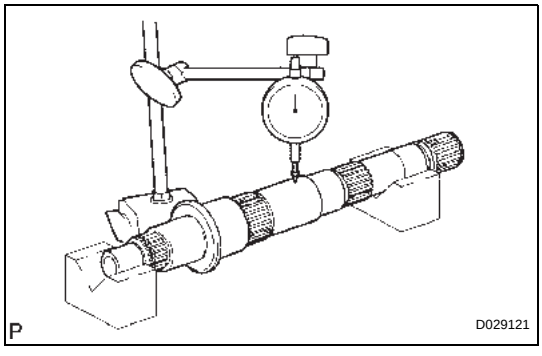
(a) Remove the 3rd gear needle roller bearing from the output shaft.



19. REMOVE NO. 2 TRANSMISSION HUB SLEEVE

(a) Remove the transmission hub sleeve No. 2, 3 synchromesh shifting key springs and 3 synchromesh shifting keys No. 2 from the transmission clutch hub No. 2.

INSPECTION



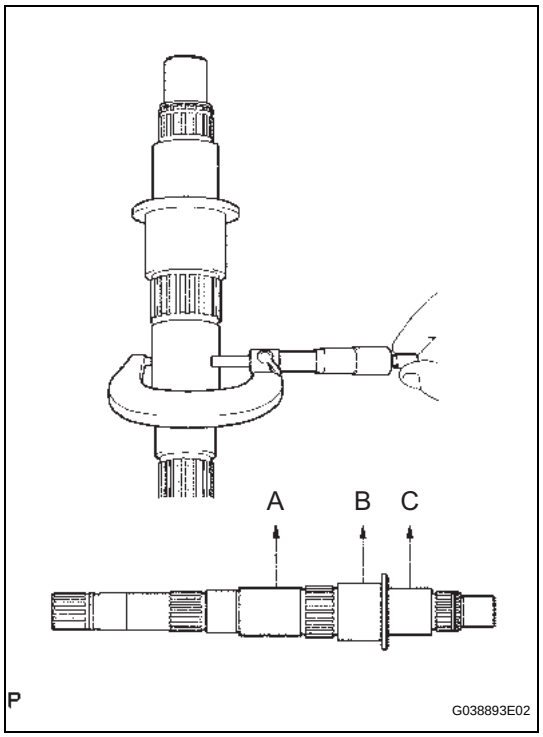
1. INSPECT OUTPUT SHAFT

(a) Using a dial indicator, measure the circle runout of the output shaft.

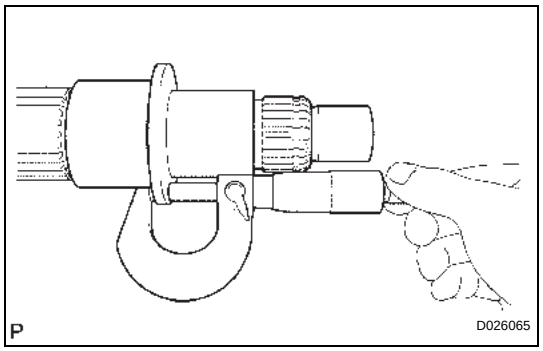
Maximum circle runout:

0.03 mm (0.0012 in.)

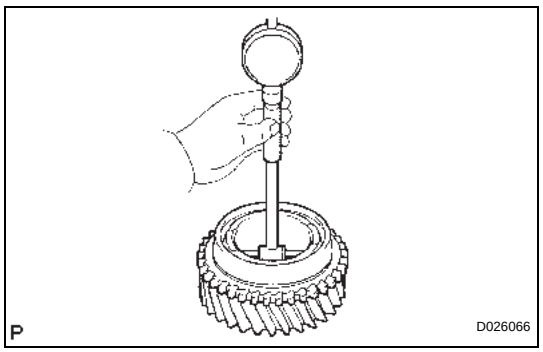
If the circle runout is greater than the maximum, replace the output shaft with a new one.



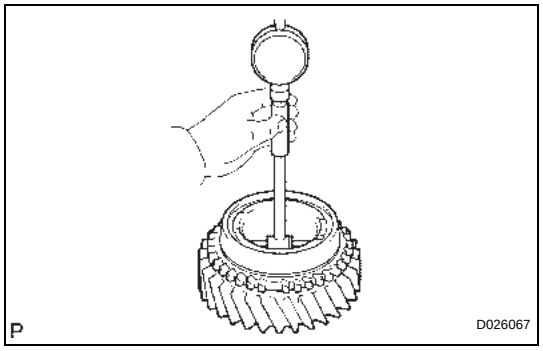
(b) Using a micrometer, measure the outer diameter of the output shaft at A, B and C.
Standard diameter:
38.979 to 38.995 mm (1.5334 to 1.5352 in.) for A
46.984 to 47.000 mm (1.8498 to 1.8504 in.) for B
37.984 to 38.000 mm (1.4954 to 1.4961 in.) for C
Minimum diameter:
38.979 mm (1.5334 in.) for A
46.984 mm (1.8498 in.) for B
37.984 mm (1.4954 in.) for C
If the outer diameter is less than the minimum, replace the output shaft with a new one.



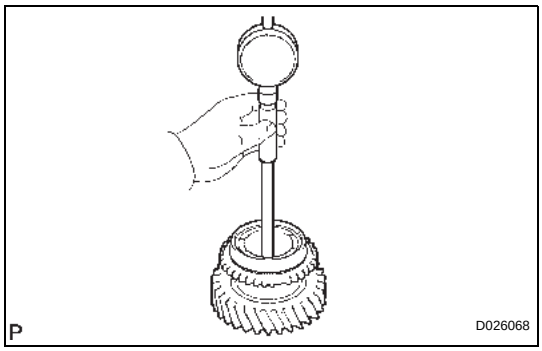
(c) Using a micrometer, measure the thickness of the output shaft flange as shown in the illustration.
Standard thickness:
4.8 to 5.2 mm (0.1890 to 0.2047 in.)
If the thickness is not within the specified values, replace the output shaft.



2. INSPECT 3RD GEAR
(a) Using a cylinder gauge, measure the inner diameter of the 3rd gear.
Standard diameter:
44.015 to 44.040 mm (1.7329 to 1.7339 in.)
Maximum diameter:
44.040 mm (1.7339 in.)
If the inner diameter is greater than the maximum, replace the 3rd gear with a new one.



3. INSPECT 2ND GEAR
(a) Using a cylinder gauge, measure the inner diameter of the 2nd gear.
Standard diameter:
53.015 to 53.040 mm (2.0872 to 2.0881 in.)
Maximum diameter:
53.040 mm(2.0881 in.)
If the inner diameter is greater than the maximum, replace the 2nd gear with a new one.

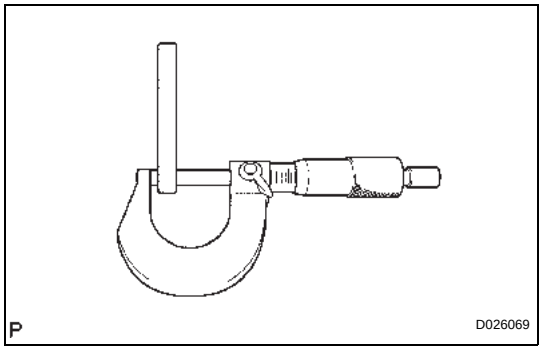


4. INSPECT 1ST GEAR

(a) Using a cylinder gauge, measure the inner diameter of the 1st gear.

Standard diameter:
46.015 to 46.040 mm (1.812 to 1.8126 in.)
Maximum diameter:
46.040 mm (1.8126 in.)

If the inner diameter is greater than the maximum, replace the 1st gear with a new one.

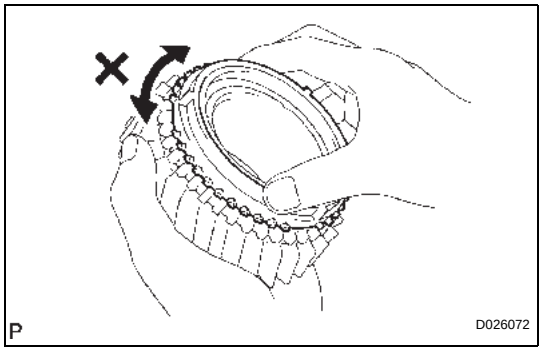


5. INSPECT 1ST GEAR THRUST WASHER

(a) Using a micrometer, measure the thickness of the 1st gear thrust washer.

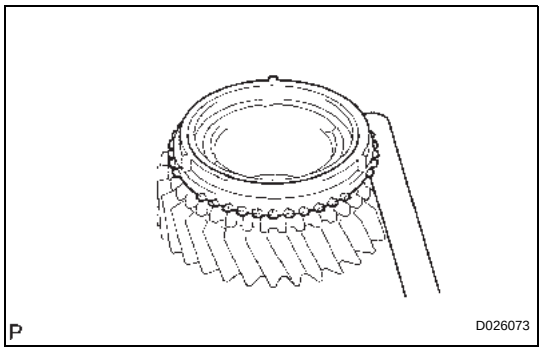
Standard thickness:
5.95 to 6.05 mm (0.2346 to 0.2382 in.)
Minimum thickness:
5.96 mm (0.2346 in.)

If the thickness is out of specification, replace the 1st gear thrust washer.



6. INSPECT NO. 1 SYNCHRONIZER RING

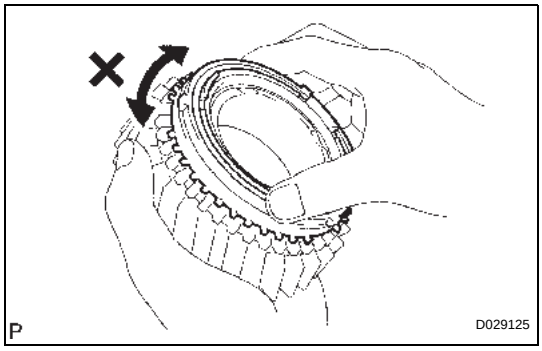
(a) Apply gear oil to the cone of the 1st gear, and check that it does not turn in both directions while pushing the synchronizer ring No. 1 (for the 1st gear).
If it turns, replace the synchronizer ring No. 1.



(b) Measure the clearance between the synchronizer ring No. 1 and the 1st gear while pushing the synchronizer ring No. 1 to the cone of the 1st gear.

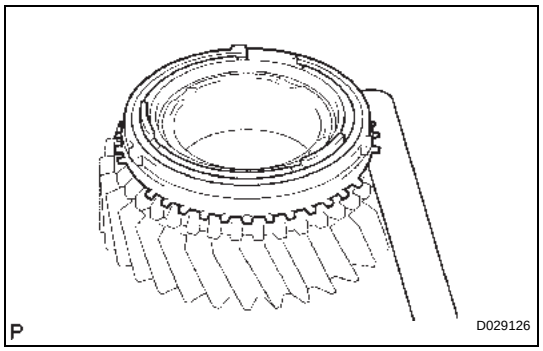
Standard clearance:
0.75 to 1.65 mm (0.0295 to 0.0649 in.)

If the clearance is not within the specified values, replace the synchronizer ring No. 1 with a new one.



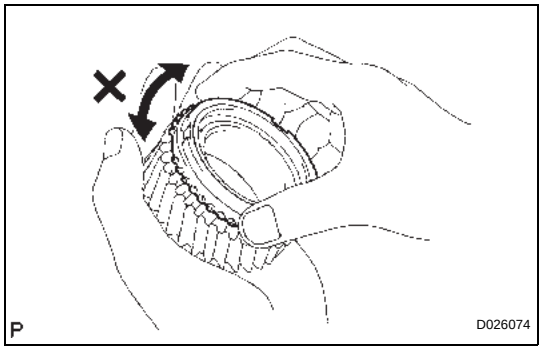
7. INSPECT NO. 1 SYNCHRONIZER RING SET

(a) Apply gear oil to the cone of the 2nd gear, and check that it does not turn in both directions while pushing the synchronizer ring set No. 1 (for the 2nd synchronizer ring).
If it turns, replace the synchronizer ring set No. 1.



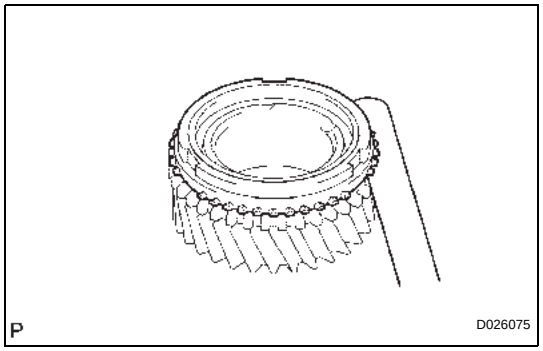
(b) Measure the clearance between the synchronizer ring set No. 1 (for the 2nd synchronizer ring) and 2nd gear while pushing the synchronizer ring set No. 1 to the cone of the 2nd gear.
Standard clearance:
0.65 to 1.75 mm (0.0256 to 0.0689 in.)
If the clearance is not within the specified values, replace the synchronizer ring set No. 1 (for the 2nd synchronizer ring) with a new one.

MT

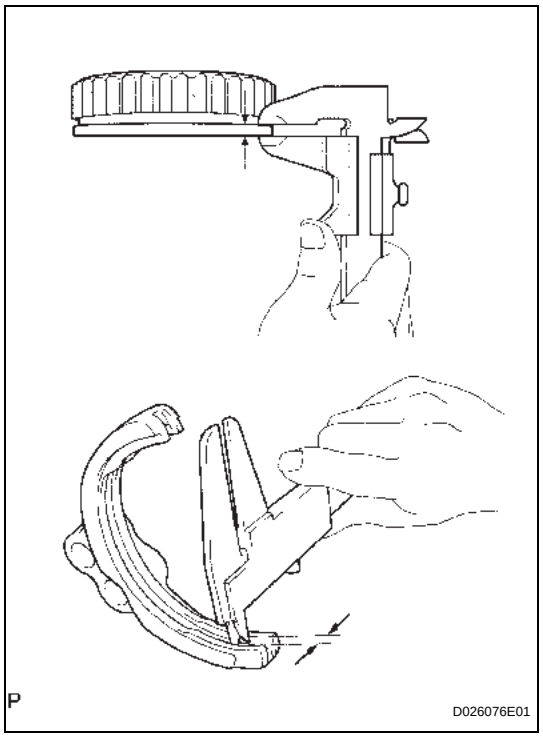


8. INSPECT NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to the cone of the 3rd gear, and check that it does not turn in both directions while pushing the synchronizer ring No. 2 (for the 3rd synchronizer ring).
If it turns, replace the synchronizer ring No. 2.

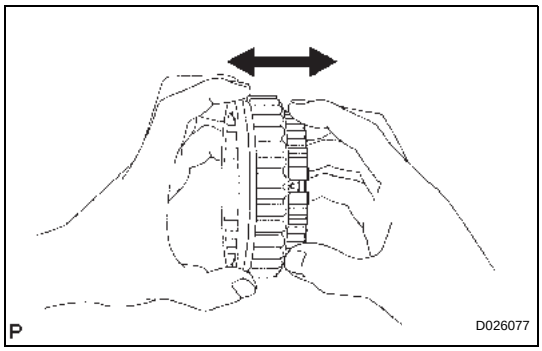


(b) Check the clearance between the synchronizer ring No. 2 (for the 3rd synchronizer ring) and 3rd gear while pushing the synchronizer ring No. 2 (for the 2nd synchronizer ring) to the cone of the 3rd gear.
Standard clearance:
0.75 to 1.65 mm (0.0295 to 0.0650 in.)
If the clearance is not within the specified values, replace the synchronizer ring No. 2 (for the 3rd synchronizer ring) with a new one.



9. INSPECT REVERSE GEAR

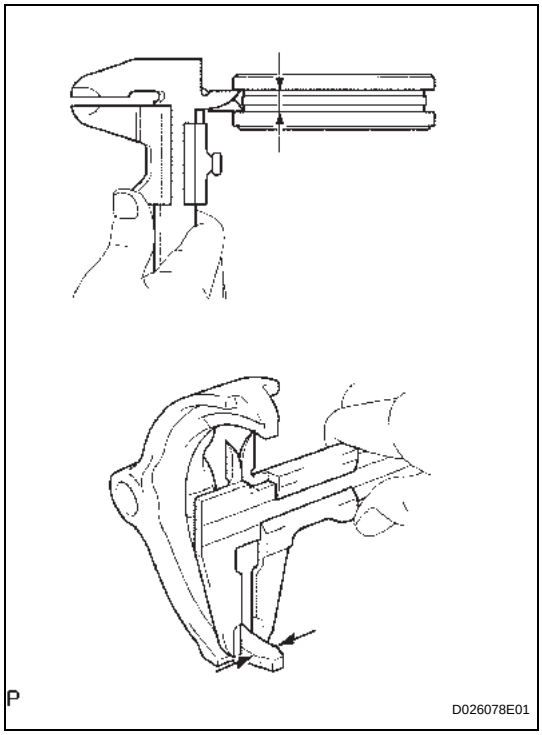
(a) Using vernier calipers, measure the reverse gear groove and the thickness of the gear shift fork claw No. 1 clearance.
Standard clearance:
0.15 to 0.41 mm (0.0060 to 0.0161 in.)
If the clearance is not within the specified values, replace the reverse gear and the shift fork No. 1 with new ones.



10. INSPECT NO. 1 TRANSMISSION CLUTCH HUB

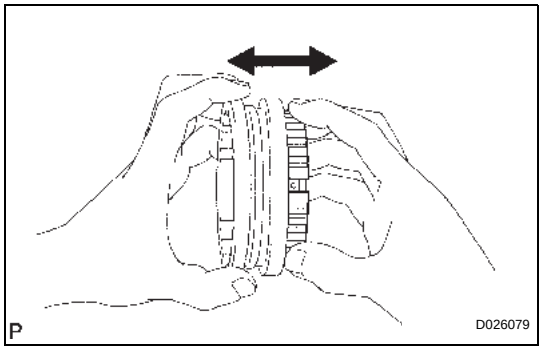
(a) Check that the transmission clutch hub No. 1 and reverse gear slide smoothly each other.

(b) Check the tip of the spline gear sleeve of the reverse gear for wear.
If there are any defects, replace the transmission clutch hub No. 1.



11. INSPECT NO. 2 TRANSMISSION HUB SLEEVE

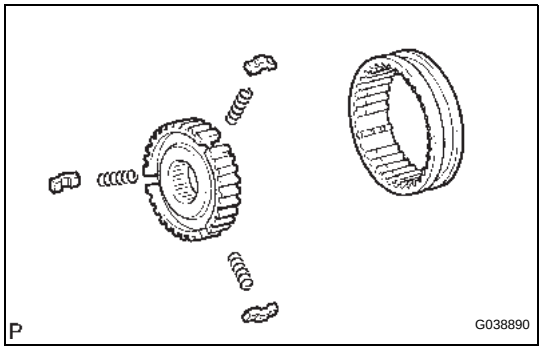
(a) Using vernier calipers, measure the clearance between the transmission hub No. 2 groove and claw of the gear shift fork No. 2.
Standard clearance:
0.15 to 0.35 mm (0.0059 to 0.0138 in.)
If the clearance is not within the specified values, replace the No. 2 transmission hub sleeve No. 2 and the shift fork No. 2 with the new ones.



12. INSPECT NO. 2 TRANSMISSION CLUTCH HUB

(a) Check the sliding condition between the transmission clutch hub No. 2 and the transmission hub sleeve No. 2.

(b) Check the tip of the spline gear of the sleeve of the reverse gear for wear.

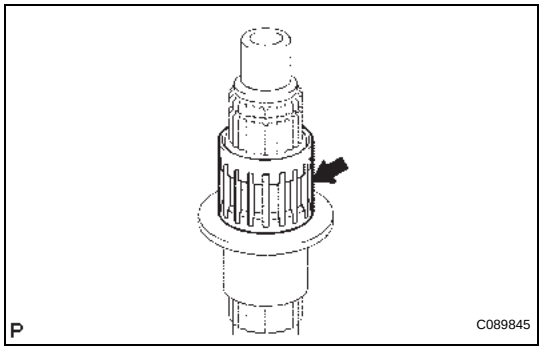


REASSEMBLY

1. INSTALL NO. 2 TRANSMISSION HUB SLEEVE

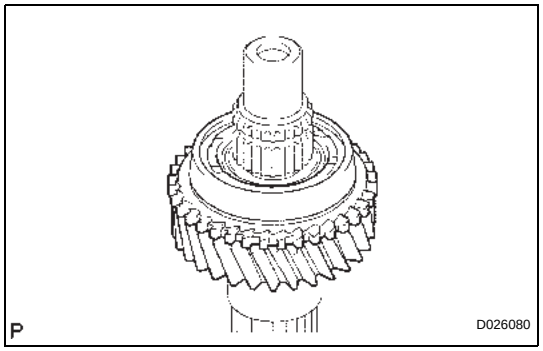
(a) Install the 3 synchromesh shifting key springs No. 2 and the 3 synchro-mesh shifting key No. 2 to the transmission clutch hub No. 2.
NOTICE:
Make sure that the transmission hub sleeve No. 2 and transmission clutch hub No. 2 are oriented in the correct direction.

(b) Apply gear oil to the sliding part of the transmission hub sleeve No. 2, and install it onto the transmission clutch hub No. 2.



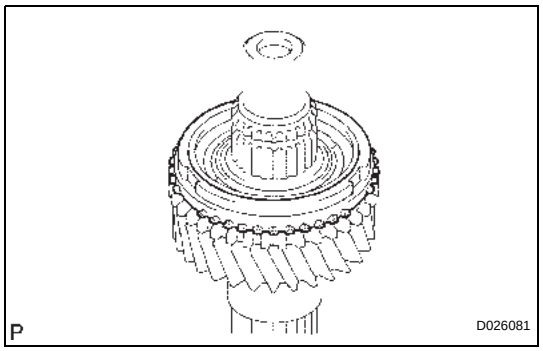
2. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

(a) Apply gear oil to the 3rd gear needle roller bearing, and install it onto the output shaft.



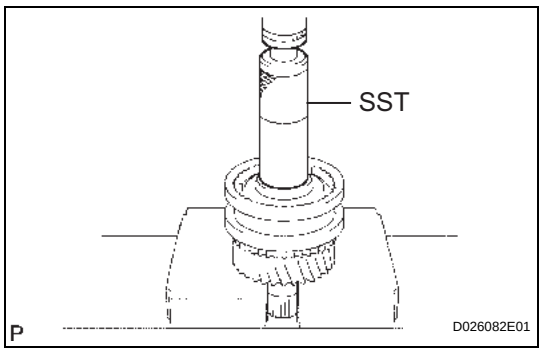
3. INSTALL 3RD GEAR

(a) Apply gear oil to the 3rd gear, and install it onto the output shaft.



4. INSTALL NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to the synchronizer ring No. 2, and install it onto the 3rd gear.



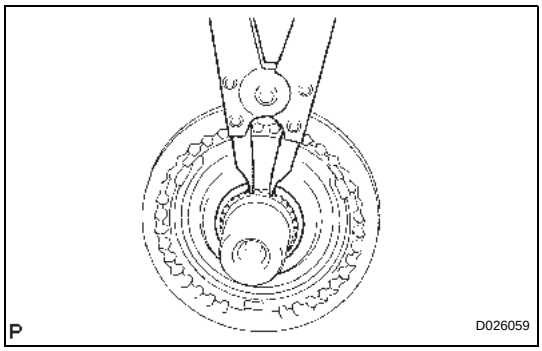
5. INSTALL NO. 2 TRANSMISSION CLUTCH HUB

(a) Using SST, install the transmission clutch hub No. 2 onto the output shaft.

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NOTICE:

- **Install it with the synchronizer ring key No. 2 groove aligned with the shifting key position.**
- **Make sure that the 3rd gear rotates smoothly.**

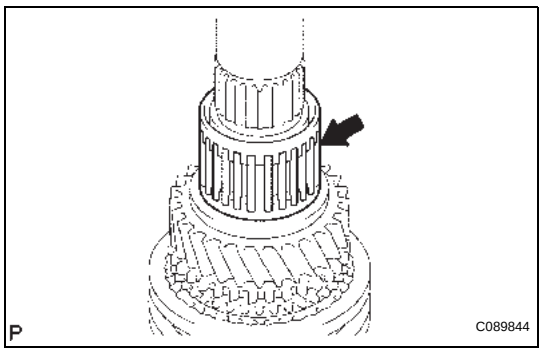


(b) Select the correct clutch hub shaft snap ring so that the clearance between the transmission clutch hub No. 2 and shaft snap ring thrust is within the specified values. Then install it onto the output shaft.

Standard clearance:
0.1 mm or less

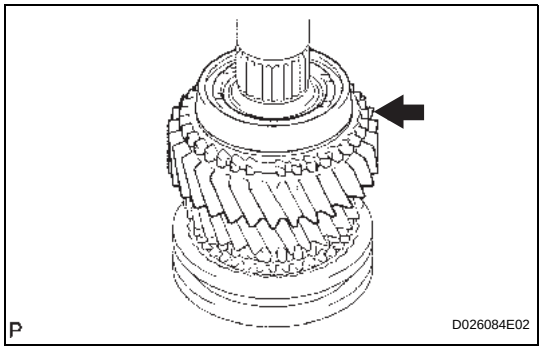
NOTICE:
Do not damage the sliding surface of the bearing.

Mark	Thickness mm (in.)
A	1.80 to 1.85 (0.0709 to 0.0728)
B	1.85 to 1.90 (0.0728 to 0.0748)
C	1.90 to 1.95 (0.0748 to 0.0768)
D	1.95 to 2.00 (0.0768 to 0.0787)
E	2.00 to 2.05 (0.0787 to 0.0807)
F	2.05 to 2.10 (0.0807 to 0.0827)
G	2.10 to 2.15 (0.0827 to 0.0846)



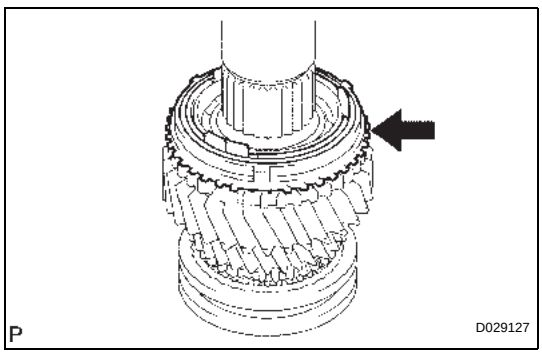
6. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

(a) Apply gear oil to the 2nd gear needle roller bearing, and install it onto the output shaft.



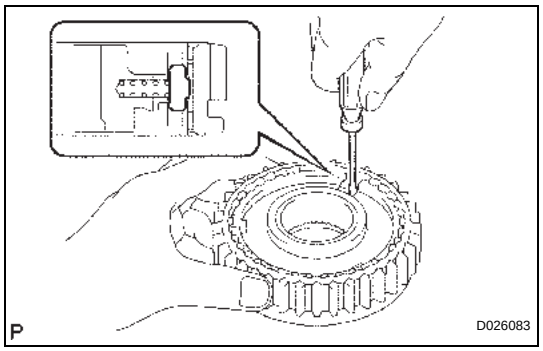
7. INSTALL 2ND GEAR

(a) Apply gear oil to the 2nd gear, and install it onto the output shaft.



8. INSTALL NO. 1 SYNCHRONIZER RING SET

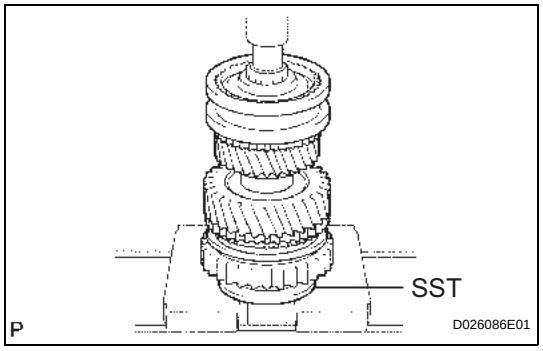
(a) Apply gear oil to the synchronizer ring set No. 1, and install it onto the 2nd gear.



9. INSTALL REVERSE GEAR

(a) Using a screwdriver, install the 3 synchromesh shifting key springs and 3 synchromesh shifting key No.1 onto the transmission clutch hub No. 1.

(b) Apply gear oil to the revers gear, and install it onto the transmission clutch hub No. 1



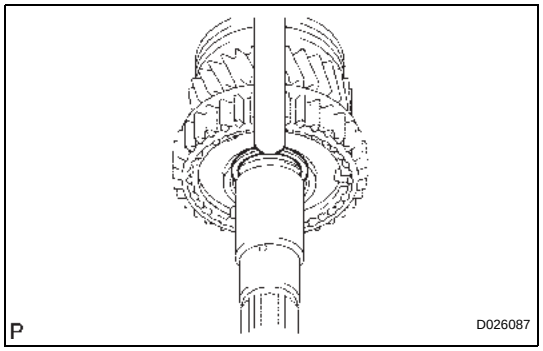
10. INSTALL NO. 1 TRANSMISSION CLUTCH HUB

(a) Using SST and a press, install transmission clutch hub No. 1 onto the output shaft.

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NOTICE:

- **Perform installation making sure that the synchronizer ring key No. 1 groove and synchro-mesh shifting key No. 1 are in place.**
- **Make sure that the 1st gear rotates smoothly.**



(b) Select the correct bearing shaft snap ring so that the clearance between the transmission clutch hub No. 1 and bearing shaft snap ring is within the specified values. Then install it onto the output shaft.

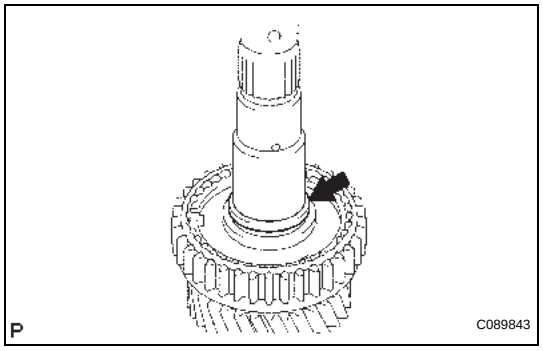
Standard clearance:

0.1mm (0.039 in.) or less

NOTICE:

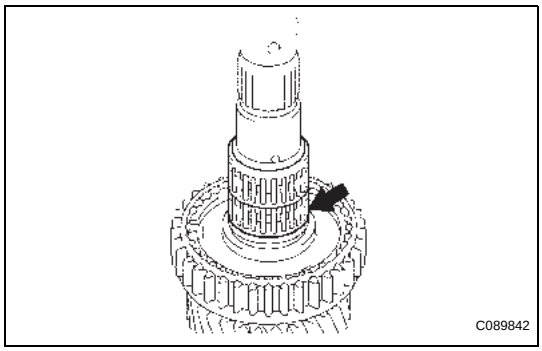
Do not damage the sliding surface of the bearing.

Mark	Thickness mm (in.)
A	2.30 to 2.35 (0.0906 to 0.0925)
B	2.35 to 2.40 (0.0925 to 0.0945)
C	2.40 to 2.45 (0.0945 to 0.0965)
D	2.45 to 2.50 (0.0965 to 0.0984)
E	2.50 to 2.55 (0.0984 to 0.1004)
F	2.55 to 2.60 (0.1004 to 0.1024)
G	2.60 to 2.65 (0.1024 to 0.1043)



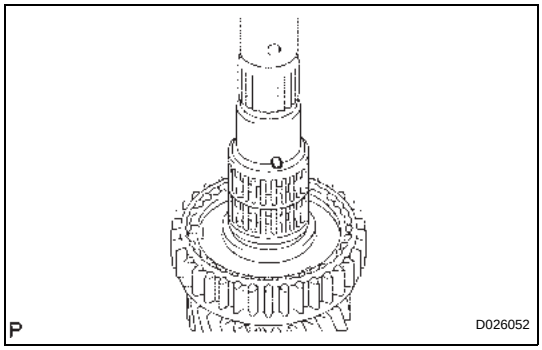
11. INSTALL 1ST GEAR BEARING SPACER

(a) Apply gear oil to the 1st gear bearing spacer, and install it onto the output shaft.



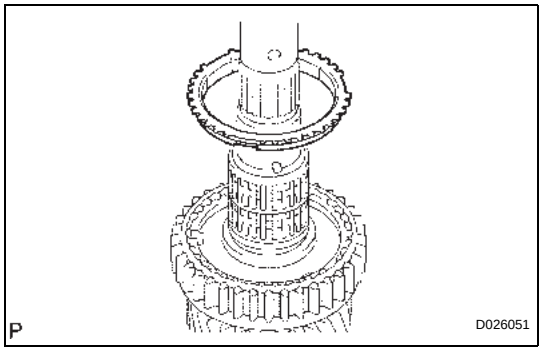
12. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

(a) Apply gear oil to the 1st gear needle roller bearing, and install it onto the output shaft.



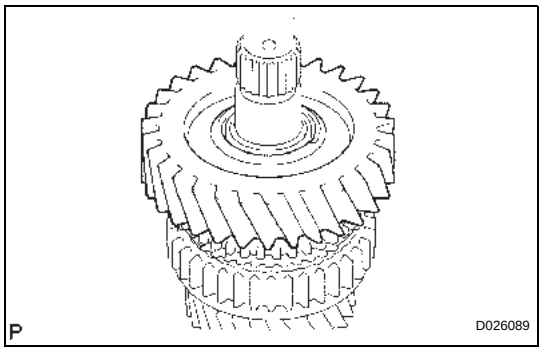
13. INSTALL 1ST GEAR THRUST WASHER PIN OR BALL

(a) Install the 1st gear thrust washer pin onto the output shaft.



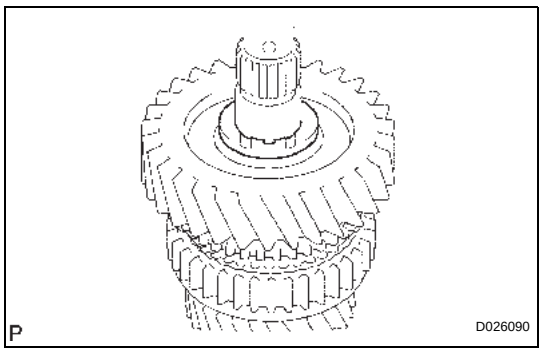
14. INSTALL NO. 1 SYNCHRONIZER RING

(a) Apply gear oil to the synchronizer ring No. 1, and install it onto the output shaft.



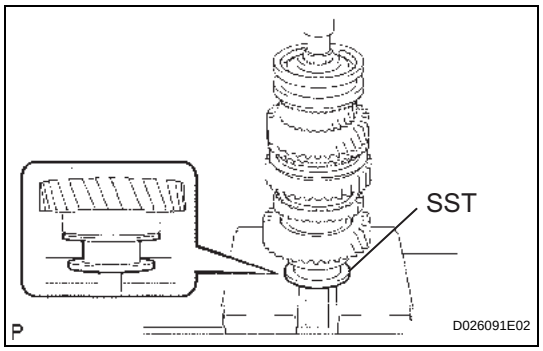
15. INSTALL 1ST GEAR

(a) Apply gear oil to the 1st gear, and install it onto the output shaft.



16. INSTALL 1ST GEAR THRUST WASHER

(a) Apply gear oil to the 1st gear thrust washer, and install it onto the output shaft.



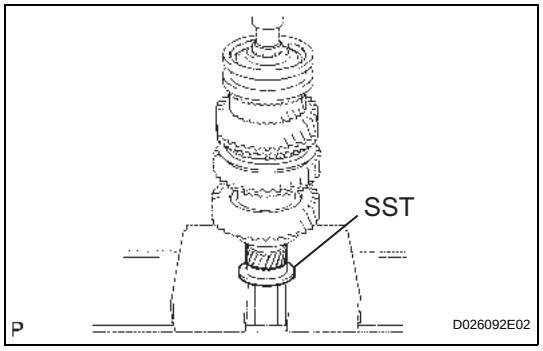
17. INSTALL OUTPUT SHAFT CENTER BEARING

(a) Using SST and a press, install a new output shaft center bearing onto the output shaft.

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NOTICE:

Install it with the snap ring groove of the bearing facing to the rear side.



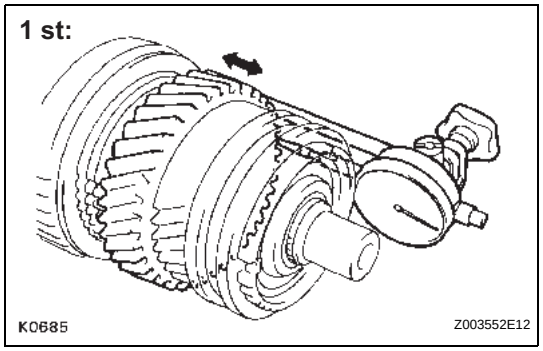
18. INSTALL 5TH GEAR

(a) Using SST and a press, install the 5th gear onto the output shaft.

SST 09316-60011 (09316-00031)

NOTICE:

- **Check that the 5th gear is fitted into the spline of the output shaft before installing.**
- **Face the convex part of the gear to the front side.**

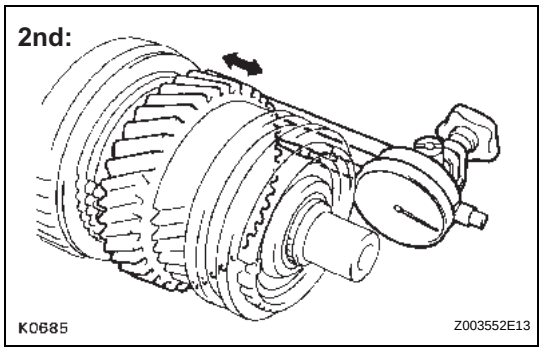


19. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.20 to 0.45 mm (0.0079 to 0.0177 in.)

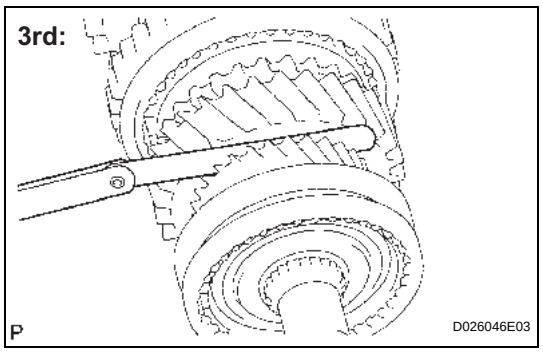


20. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)

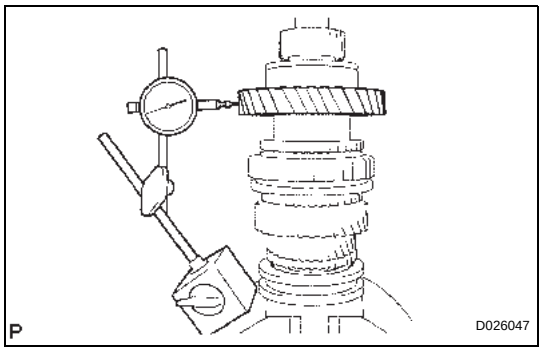


21. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)



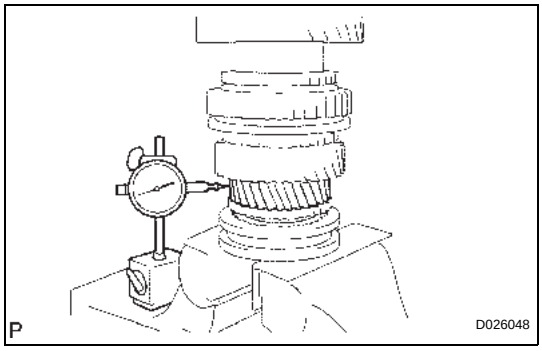
22. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.020 to 0.073 mm (0.0008 to 0.0029 in)

If the clearance is not within the specified values, replace the 1st gear needle roller bearing with a new one.



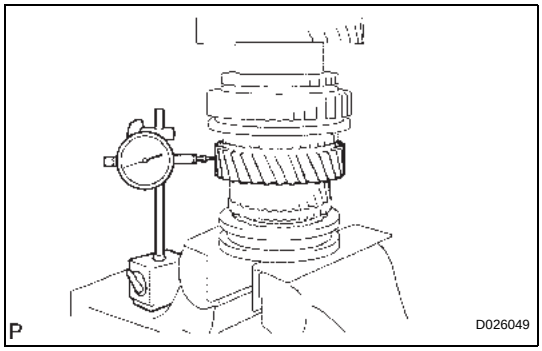
23. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 2nd gear needle roller bearing with a new one.



24. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

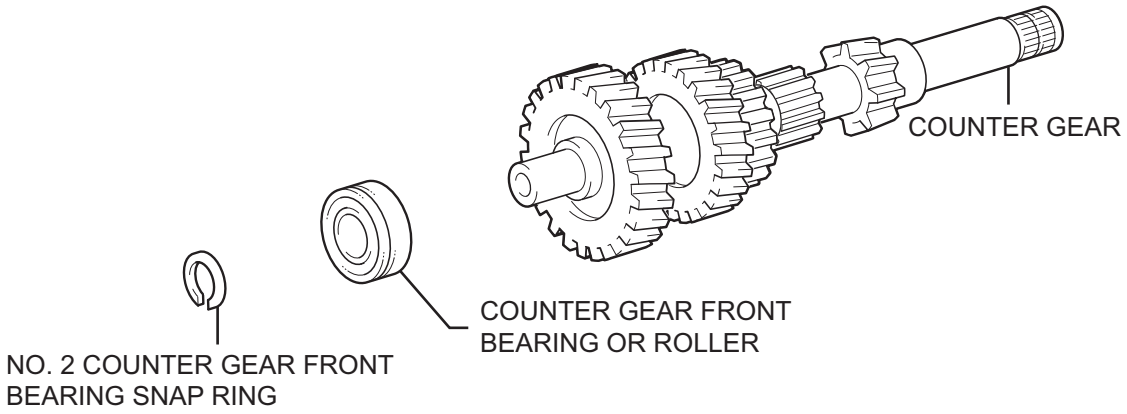
Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 3rd gear needle roller bearing with a new one.

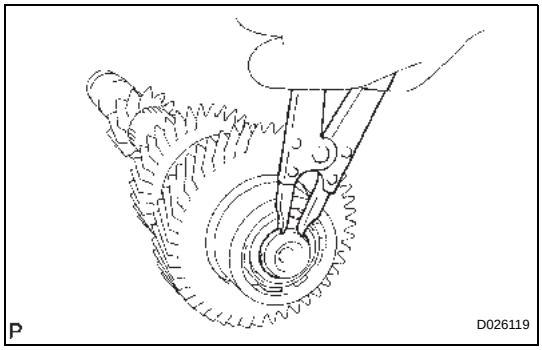
COUNTER GEAR AND REVERSE IDLER GEAR

COMPONENTS



P

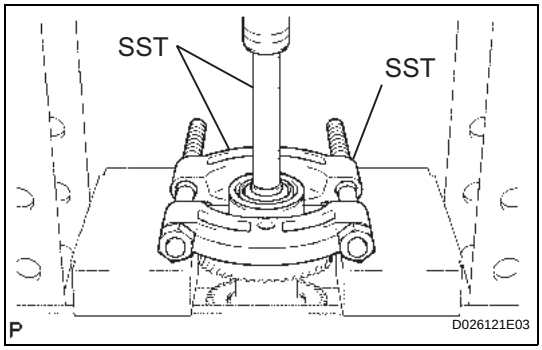
C115299E03



DISASSEMBLY

1. REMOVE NO. 2 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, remove the No. 2 counter gear front bearing snap ring from the counter gear.



2. REMOVE COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, remove the counter gear front bearing from the counter gear.

SST 09950-00020, 09950-60010 (09951-00220), 09950-70010 (09951-07100)

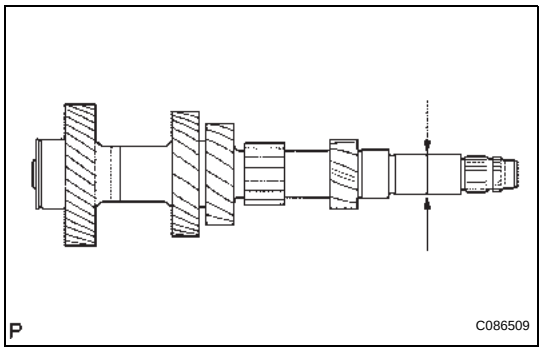
INSPECTION

1. INSPECT COUNTER GEAR

(a) Using a micrometer, measure the outer diameter of the counter gear as shown in the diagram.

Standard diameter:
29.984 to 30.000 mm(1.1805 to 1.1811 in.)
Minimum diameter:
29.984 mm (1.1805 in.)

If the outer diameter is less than the minimum, replace the counter gear with a new one.



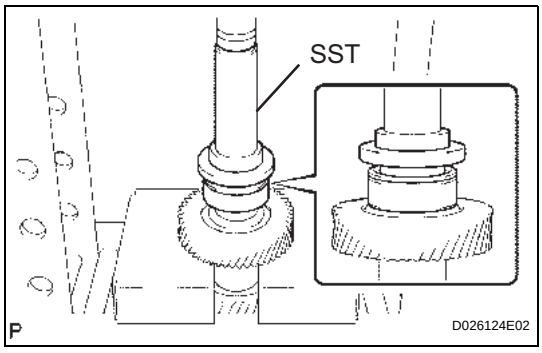
REASSEMBLY

1. INSTALL COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, install the counter gear front bearing onto the counter gear.

SST 09515-10010

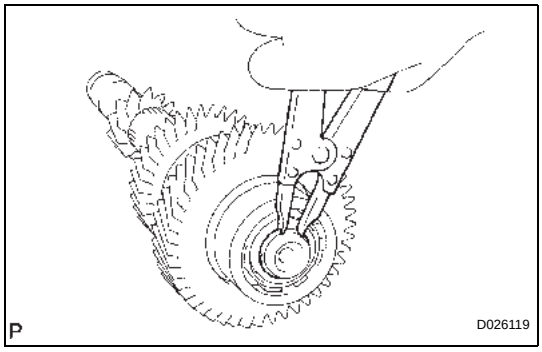
Install it so that the snap ring groove of the bearing faces to the front side.



2. INSTALL NO. 2 COUNTER GEAR FRONT BEARING SNAP RING

(a) Select the correct counter gear front bearing No. 2 snap ring so that the clearance between the counter gear and No. 2 counter gear front bearing snap ring No. 2 is within the specified values. Using a brass bar and a hammer, install it onto the counter gear.

Standard clearance:
0.1 mm (0.0039 in.) or less



Mark	Thickness mm (in.)
A	2.05 to 2.10 (0.0807 to 0.0827)

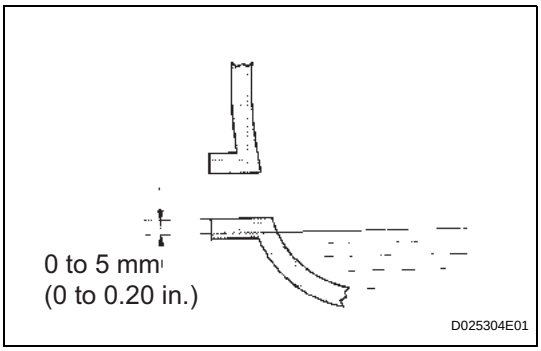
Mark	Thickness mm (in.)
B	2.10 to 2.15 (0.0827 to 0.0846)
C	2.15 to 2.20 (0.0846 to 0.0866)
D	2.20 to 2.25 (0.0866 to 0.0886)
E	2.25 to 2.30 (0.0886 to 0.0906)
F	2.30 to 2.35 (0.0906 to 0.0925)

MANUAL TRANSMISSION SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problems. The numbers indicate the ranked order of probability of each of the possible causes. Check each part in the order suggested. If necessary, replace the applicable parts.

Symptom	Suspected area	See page
Abnormal noise	1. Oil level (Low)	MT-2
	2. Oil (Wrong)	MT-2
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-
Oil leakage	1. Oil level (High)	MT-2
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	-
	4. O-ing (Worn or damaged)	-
Hard shifting or will not shift	1. Synchronizer ring (Worn or damaged)	-
	2. Shift key spring (Damaged)	-
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	-
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-



MT

MANUAL TRANSMISSION OIL

ON-VEHICLE INSPECTION

1. INSPECT TRANSMISSION OIL

(a) Park the vehicle in a level place.

(b) Remove the transmission filler plug and gasket.

(c) Check that the oil surface is within 5 mm (0.20 in.) of the lowest point of the transmission filler plug opening.

NOTICE:

- **Problems may occur when the oil level is too high or low.**
- **After replacing the oil, drive the vehicle and check the oil level again.**

(d) Check for oil leakage when the oil level is low.

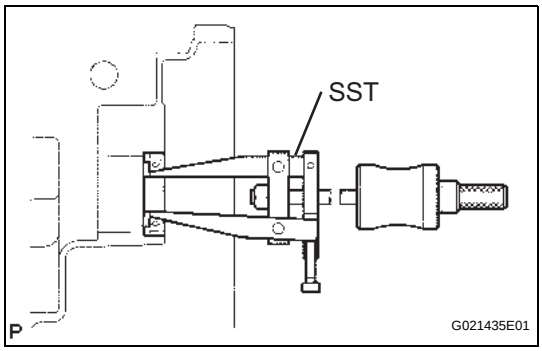
(e) Install the transmission filler plug and a new gasket.

Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

TRANSFER ADAPTOR OIL SEAL

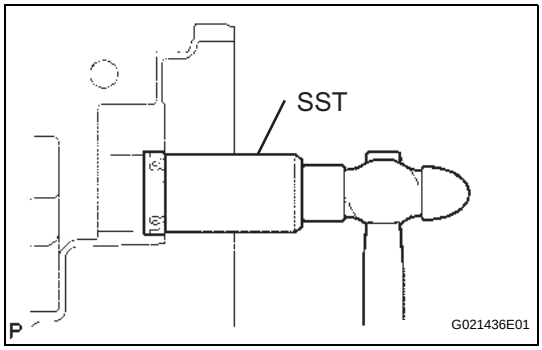
REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
2. REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-9)
3. REMOVE REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-10)
4. REMOVE FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-11)
5. REMOVE FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-11)
6. REMOVE SHIFT LEVER BOOT ASSEMBLY (See page MT-9)
7. REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY (See page MT-9)
8. REMOVE NO. 2 ENGINE UNDER COVER SUB-ASSEMBLY (See page MT-9)
9. DRAIN MANUAL TRANSMISSION OIL (See page MT-9)
10. REMOVE FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)
11. REMOVE FRONT PROPELLER SHAFT ASSEMBLY
12. REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab)
13. REMOVE PROPELLER SHAFT ASSEMBLY (for Regular Cab)
14. REMOVE MANIFOLD STAY (See page MT-9)
15. REMOVE STARTER ASSEMBLY (See page ST-5)
16. REMOVE CLUTCH RELEASE CYLINDER ASSEMBLY (See page MT-10)
17. REMOVE NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY (See page MT-10)
18. REMOVE NO. 1 ENGINE MOUNTING INSULATOR REAR (See page MT-10)
19. DISCONNECT WIRE HARNESS (See page MT-11)
20. REMOVE MANUAL TRANSMISSION WITH TRANSFER (See page MT-11)
21. REMOVE TRANSFER ASSEMBLY (See page TF-14)



22. **REMOVE TRANSFER ADAPTER OIL SEAL**
    (a) Using SST, remove the transfer adapter oil seal.
    SST 09308-00010
    NOTICE:
    Do not damage the oil seal fitted surface of the transfer adapter.

MT



INSTALLATION

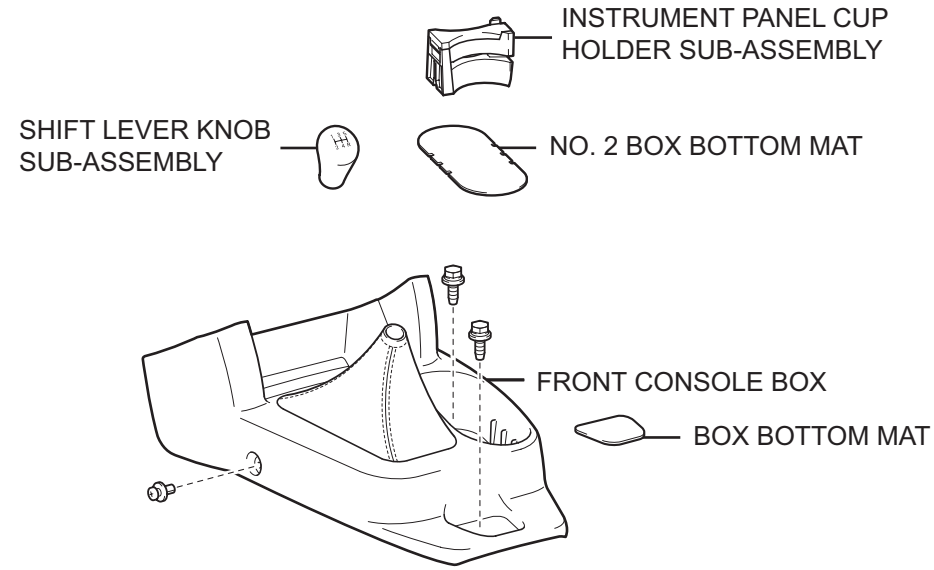
1. **INSTALL TRANSFER ADAPTER OIL SEAL**
    (a) Using SST and a hammer, tap in a new oil seal.
    SST 09223-00010
    Drive in depth:
    45.4 to 46.4 mm (1.787 to 1.827 in.)
    NOTICE:
    Be careful not to damage the oil seal.
    (b) Coat the lip of the oil seal with MP grease.
2. **INSTALL TRANSFER ASSEMBLY (See page TF-38)**
3. **INSTALL MANUAL TRANSMISSION WITH TRANSFER (See page MT-11)**
4. **CONNECT WIRE HARNESS (See page MT-11)**
5. **INSTALL NO. 1 ENGINE MOUNTING INSULATOR REAR (See page MT-11)**
6. **INSTALL NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY (See page MT-12)**
7. **INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY (See page MT-12)**
8. **INSTALL STARTER ASSEMBLY (See page ST-10)**
9. **INSTALL MANIFOLD STAY (See page MT-12)**
10. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab)**
11. **INSTALL PROPELLER SHAFT ASSEMBLY (for Regular Cab)**
12. **INSTALL FRONT PROPELLER SHAFT ASSEMBLY**
13. **INSTALL FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**
14. **ADD MANUAL TRANSMISSION OIL**
15. **ADJUST MANUAL TRANSMISSION OIL (See page MT-2)**
16. **INSTALL NO.2 ENGINE UNDER COVER SUB-ASSEMBLY (See page MT-13)**
17. **INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY (See page MT-13)**

18. **INSTALL SHIFT LEVER BOOT ASSEMBLY (See page MT-13)**
19. **INSTALL FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-22)**
20. **INSTALL FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-23)**
21. **INSTALL REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-24)**
22. **INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-25)**
23. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
    Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
24. **CHECK FOR MANUAL TRANSMISSION OIL LEAKAGE**

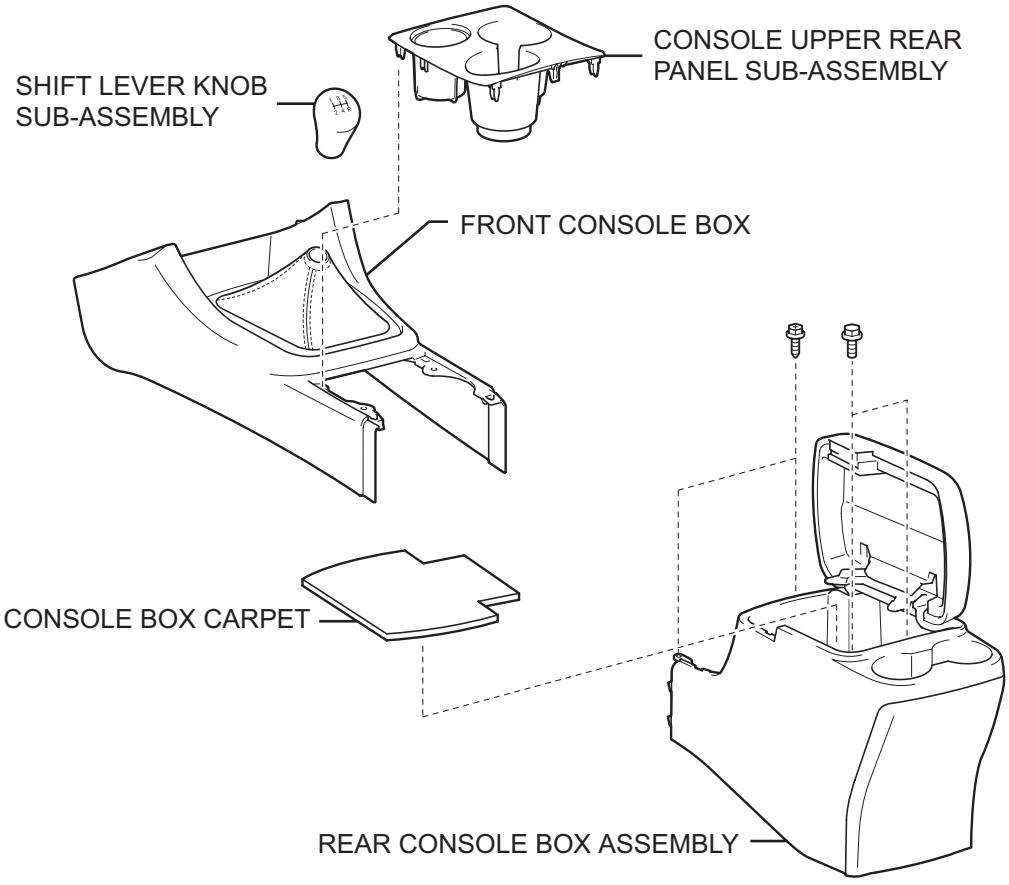
MANUAL TRANSMISSION ASSEMBLY

COMPONENTS

BENCH SEAT:



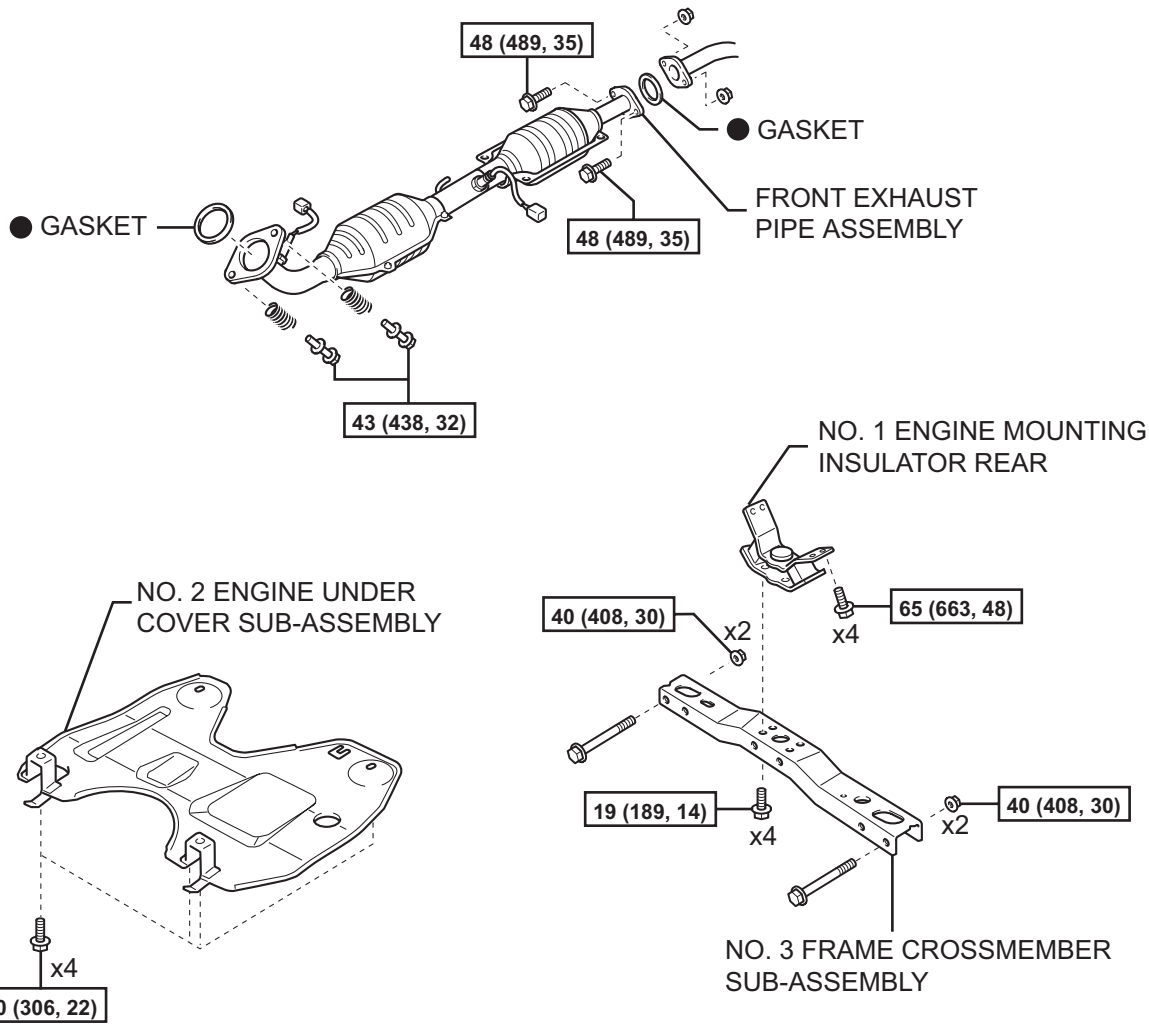
SEPARATE SEAT:



P

C114133E04

MT



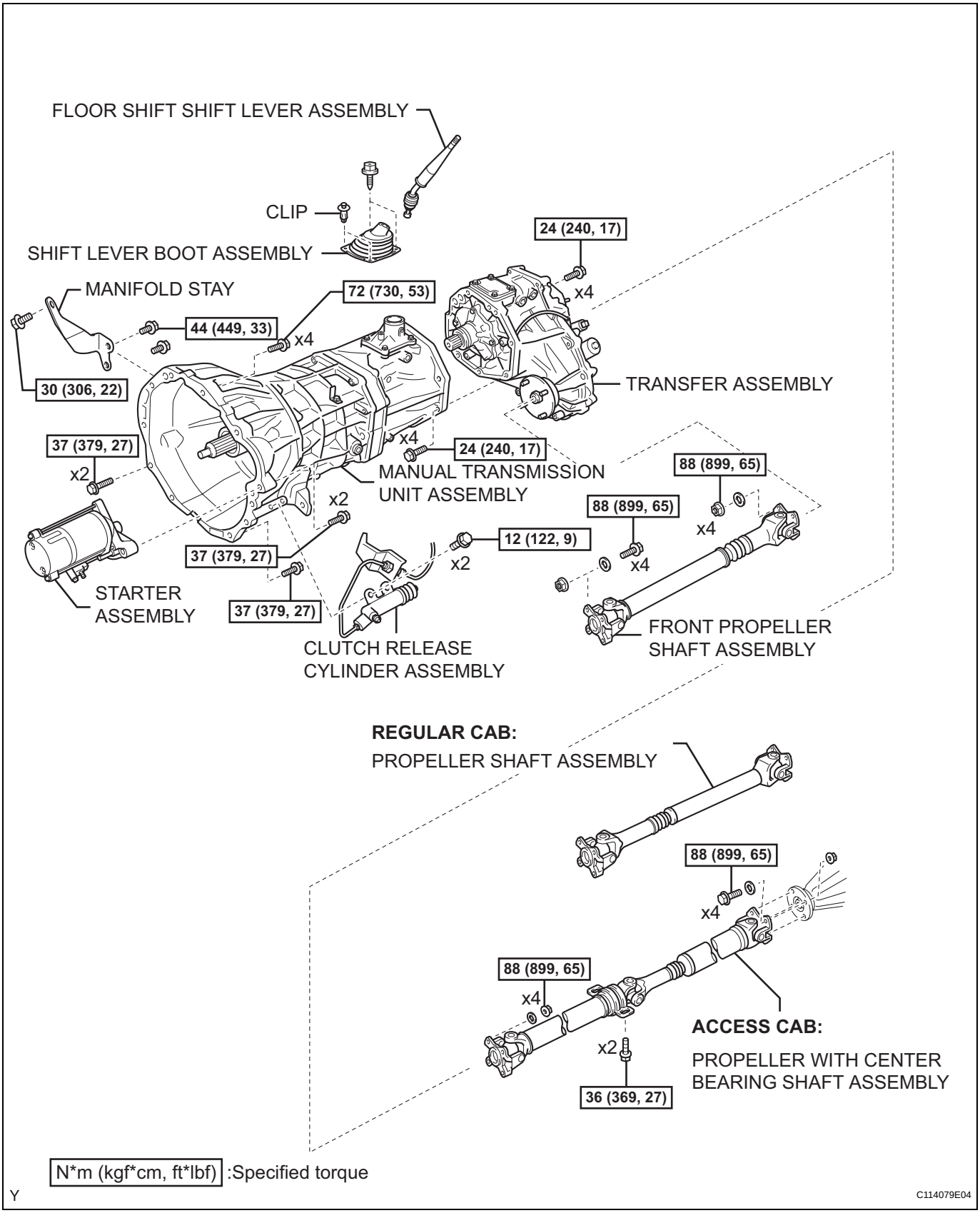
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

Y

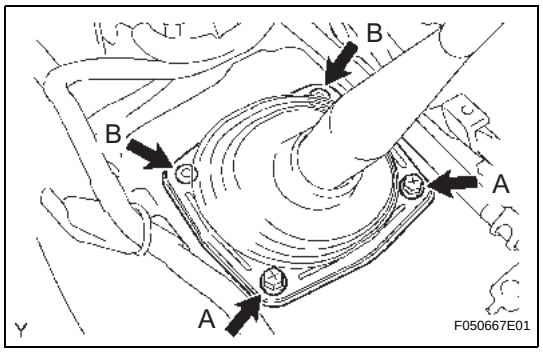
C114080E04

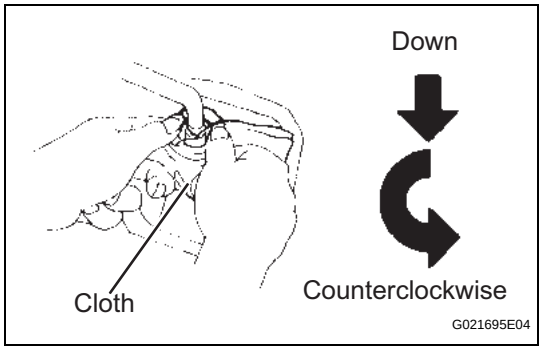
MT


FLOOR SHIFT SHIFT LEVER ASSEMBLY
CLIP
SHIFT LEVER BOOT ASSEMBLY
MANIFOLD STAY
72 (730, 53)
x4
44 (449, 33)
30 (306, 22)
24 (240, 17)
x4
TRANSFER ASSEMBLY
37 (379, 27)
x2
x4
24 (240, 17)
MANUAL TRANSMISSION UNIT ASSEMBLY
x2
88 (899, 65)
88 (899, 65)
x4
x4
12 (122, 9)
x2
37 (379, 27)
37 (379, 27)
STARTER ASSEMBLY
CLUTCH RELEASE CYLINDER ASSEMBLY
FRONT PROPELLER SHAFT ASSEMBLY
REGULAR CAB:
PROPELLER SHAFT ASSEMBLY
88 (899, 65)
x4
88 (899, 65)
x4
ACCESS CAB:
PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY
x2
36 (369, 27)
N*m (kgf*cm, ft*lbf) :Specified torque
Y
C114079E04

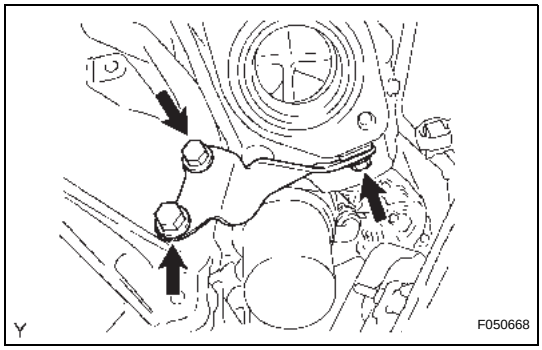
REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-9)**
3. **REMOVE REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-10)**
4. **REMOVE FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-11)**
5. **REMOVE FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-11)**
6. **REMOVE SHIFT LEVER BOOT ASSEMBLY**
   (a) Remove the 2 screws A, 2 clips B and floor shift lever assembly.





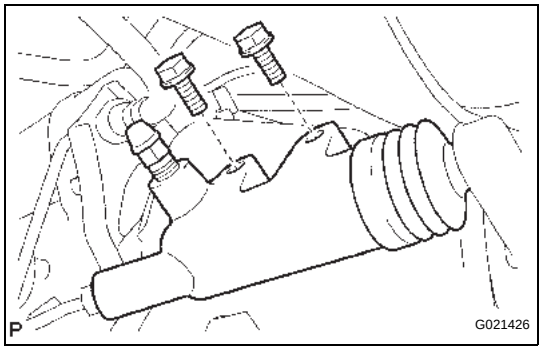
7. **REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Cover the shift lever cap with a cloth.
   (b) While pressing down on the shift lever cap, turn it counterclockwise to remove.
   (c) Pull out the shift lever.
8. **REMOVE NO. 2 ENGINE UNDER COVER SUB-ASSEMBLY**
   (a) Remove the 4 bolts and engine under cover No. 2.
9. **DRAIN MANUAL TRANSMISSION OIL**
   Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)
10. **REMOVE FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**
11. **REMOVE FRONT PROPELLER SHAFT ASSEMBLY (See page PR-16)**
12. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-27)**
13. **REMOVE PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-22)**
14. **REMOVE STARTER ASSEMBLY (See page ST-5)**



15. REMOVE MANIFOLD STAY

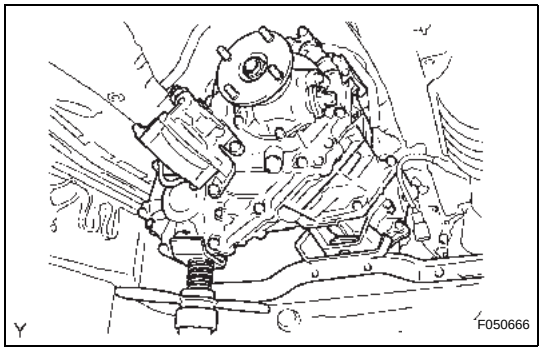
(a) Remove the 3 bolts and manifold stay.

MT



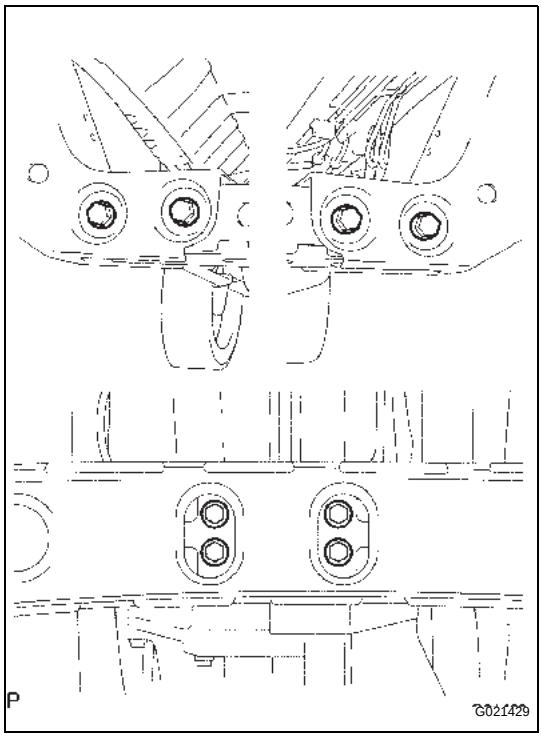
16. SEPARATE CLUTCH RELEASE CYLINDER ASSEMBLY

(a) Remove the 2 bolts and separate the clutch release cylinder assembly.



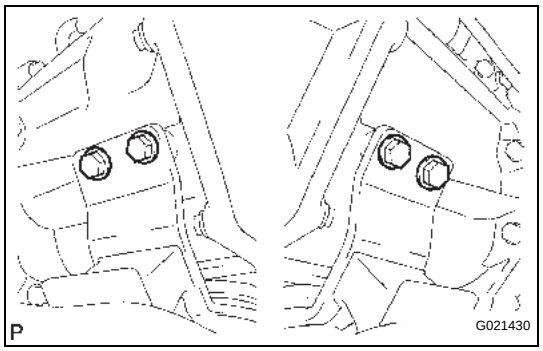
17. REMOVE NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY

(a) Support the transfer with a support stand.



(b) Remove the 4 bolts from the engine rear mounting.

(c) Remove the 4 bolts, nuts and frame crossmember sub- assembly No. 3.

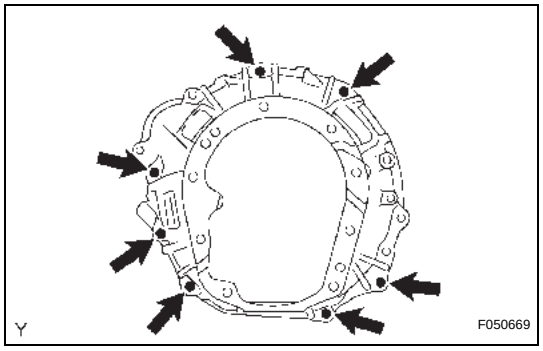


18. REMOVE NO. 1 ENGINE MOUNTING INSULATOR REAR

(a) Remove the 4 bolts and engine mounting insulator rear No. 1.
(b) Using a transmission jack, support the transmission unit assembly.
(c) Remove the support stand from the rear side of the transfer.

19. DISCONNECT WIRE HARNESS

(a) Tilt the transmission assembly downward.
NOTICE:
Make sure that the cooling fan does not come in contact with the fan shroud.
(b) Disconnect the back-up lamp switch connector.
(c) Disconnect the speed sensor connector.
(d) Disconnect the 2 transfer indicator switch connectors.
(e) Disconnect the transfer shift actuator motor connector.
(f) Disconnect the wire harness clamp from the transmission w/ transfer assembly.



20. REMOVE MANUAL TRANSMISSION WITH TRANSFER

(a) Remove the 7 bolts and remove the transmission assembly.

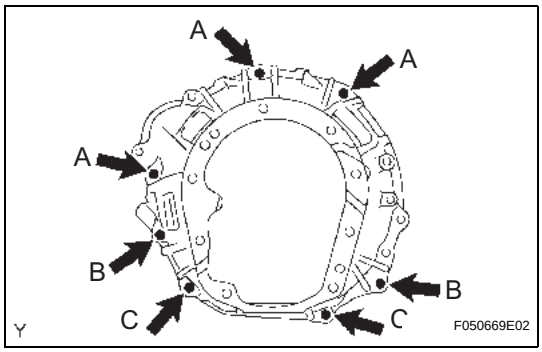
21. REMOVE TRANSFER ASSEMBLY (See page TF-14)

MT

MT

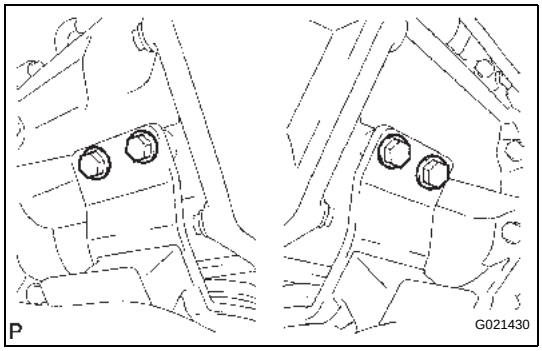
INSTALLATION

1. **INSTALL TRANSFER ASSEMBLY (See page TF-38)**

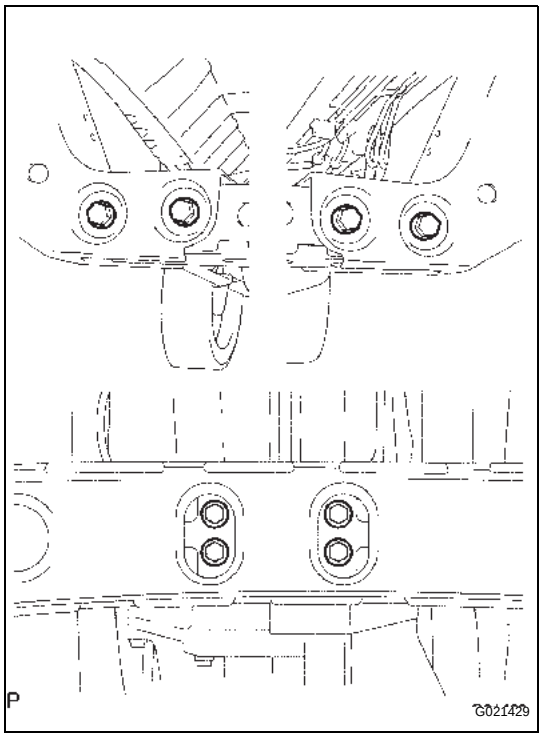


2. **INSTALL MANUAL TRANSMISSION WITH TRANSFER**
   (a) Align the input shaft with the clutch disc and install the transmission unit assembly onto the engine.
   (b) Install the 7 bolts.
   Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
   37 N*m (379 kgf*cm, 27 ft.*lbf) for bolt B and C
   HINT:
   Install bolt B from the front of the vehicle direction.

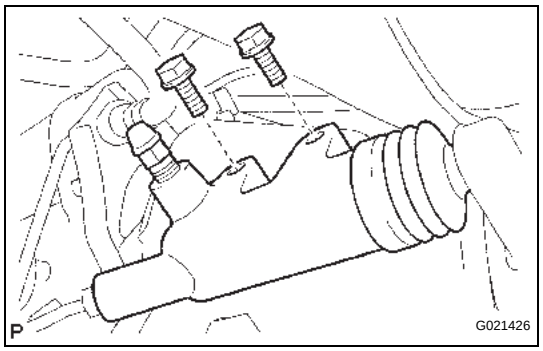
3. **CONNECT WIRE HARNESS**
   (a) Connect the wire harness clamp to the transmission w/ transfer assembly.
   (b) Connect the back-up lamp switch connector.
   (c) Connect the speed sensor connector.
   (d) Connect the 2 transfer indicator switch connectors.
   (e) Connect the transfer shift actuator motor connector.



4. **INSTALL NO. 1 ENGINE MOUNTING INSULATOR REAR**
   (a) Install the engine mount insulator rear No. 1 with 4 bolts onto the transmission assembly.
   Torque: 65 N*m (663 kgf*cm, 48 ft.*lbf)

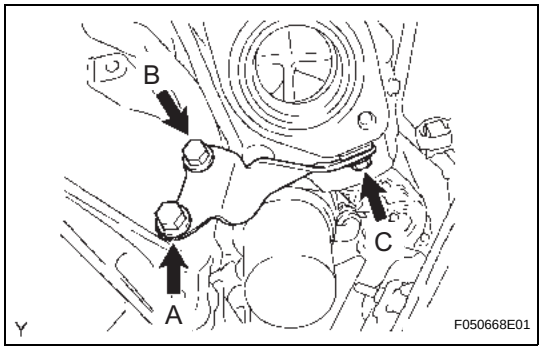


5. **INSTALL NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY**
   (a) Install the frame crossmember sub-assembly No. 3 with the 8 bolts and nuts.
   Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
   (b) Install the 4 bolts onto the engine mounting insulator rear No. 1.
   Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)



6. **INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY**
   (a) Install the clutch release cylinder assembly with the 2 bolts.
   Torque: 12 N*m (122 kgf*cm, 9 ft.*lbf)

7. **INSTALL STARTER ASSEMBLY (See page ST-10)**



8. **INSTALL MANIFOLD STAY**
   (a) Install the manifold stay with the 3 bolts.
   Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
   44 N*m (449 kgf*cm, 33 ft.*lbf) for bolt B
   30 N*m (306 kgf*cm, 22 ft.*lbf) for bolt C

9. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-32)**

10. **INSTALL PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-25)**

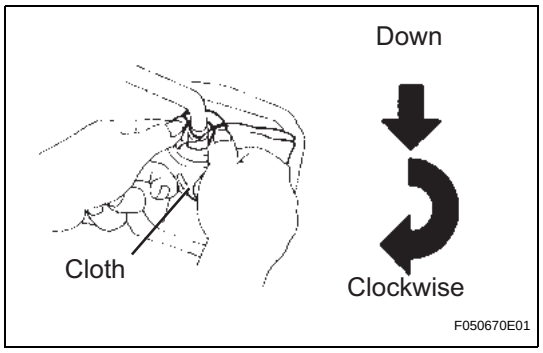
11. **INSTALL FRONT PROPELLER SHAFT ASSEMBLY (See page PR-19)**

12. **INSTALL FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**

13. **ADD MANUAL TRANSMISSION OIL**

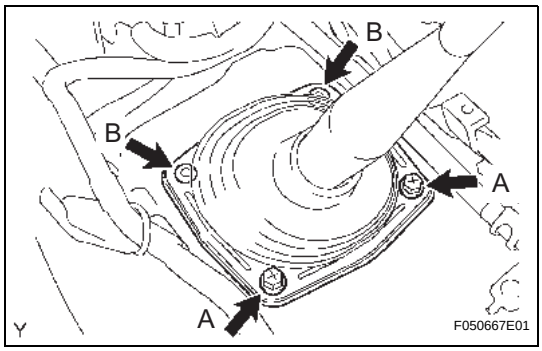
14. **ADJUST MANUAL TRANSMISSION OIL (See page MT-2)**

15. **INSTALL NO. 2 ENGINE UNDER COVER SUB-ASSEMBLY**
   (a) Install the engine under cover No. 2 with the 4 bolts.
   Torque: 30 N*m (306 kgf*cm, 22 ft.*lbf)



16. **INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Cover the shift lever cap with a cloth.
   (b) While pressing down on the shift lever, turn it clockwise to install.
   HINT:
   Apply MP grease to the tip of the shift lever.

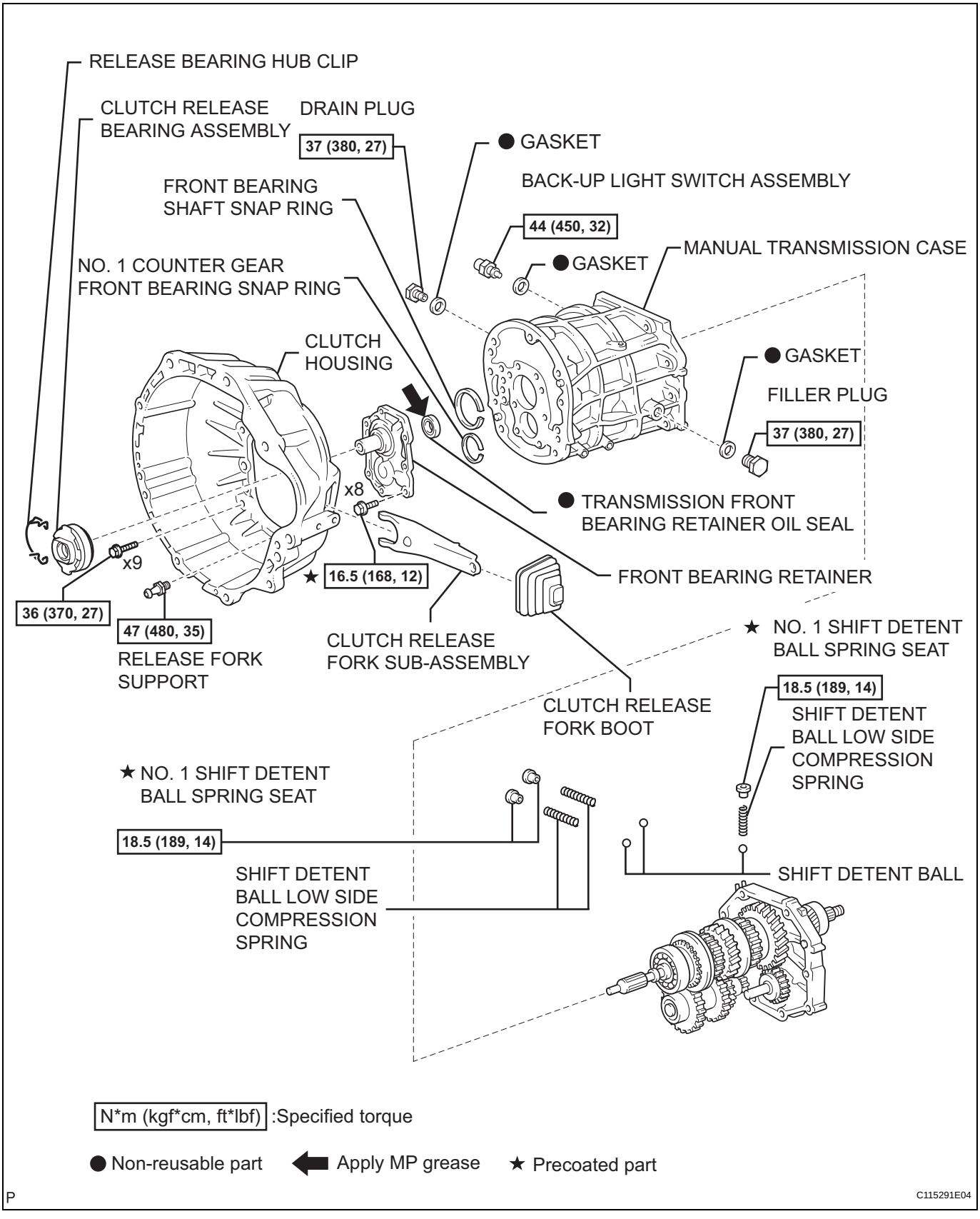
MT

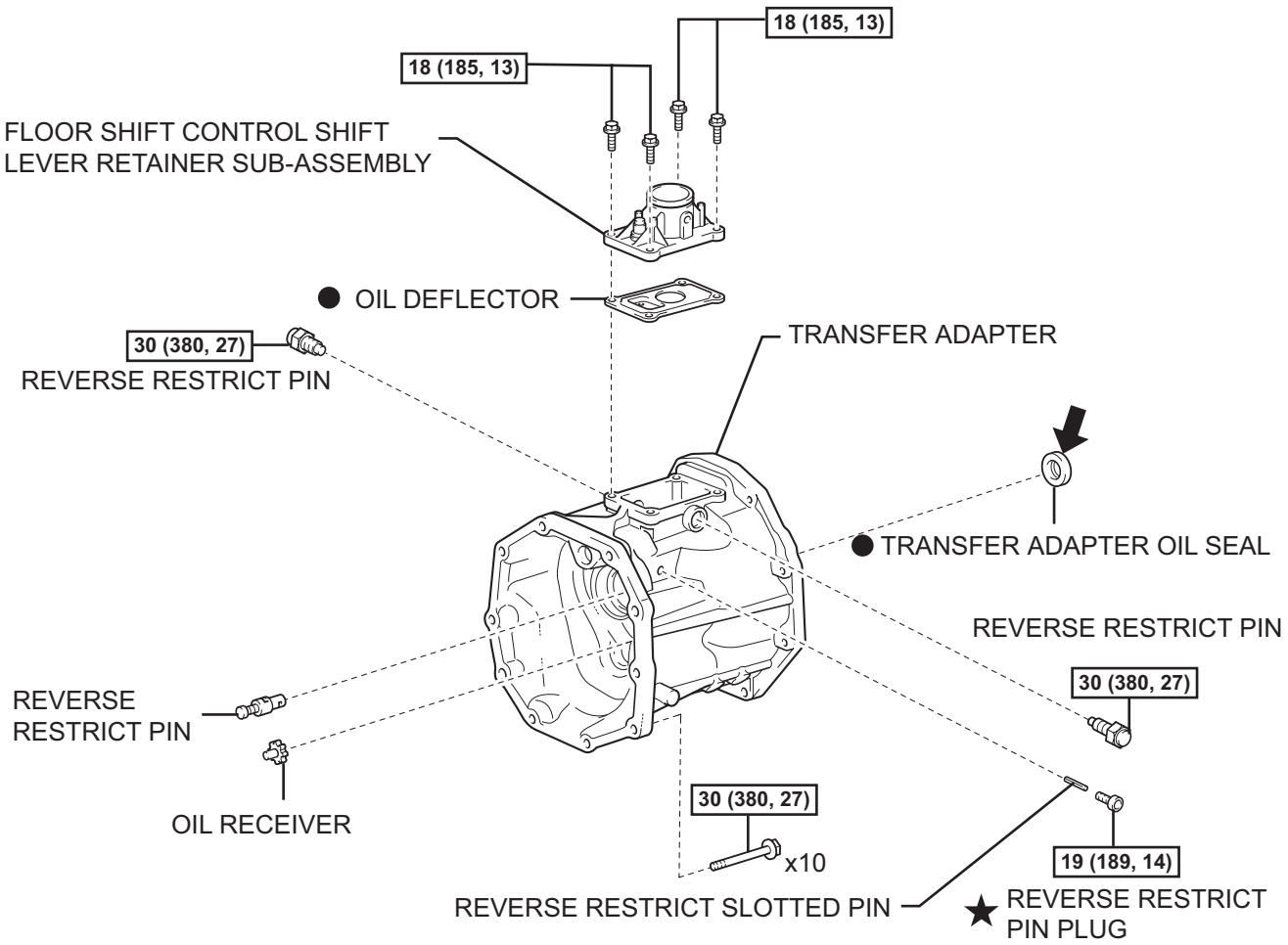


17. **INSTALL SHIFT LEVER BOOT ASSEMBLY**
    (a) Install the shift lever boot assembly with the 2 screws A and 2 clips B.
18. **INSTALL FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-22)**
19. **INSTALL FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-23)**
20. **INSTALL REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-24)**
21. **INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-25)**
22. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
    Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
23. **CHECK FOR MANUAL TRANSMISSION OIL LEAKAGE**

MANUAL TRANSMISSION UNIT

COMPONENTS





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

● Non-reusable part

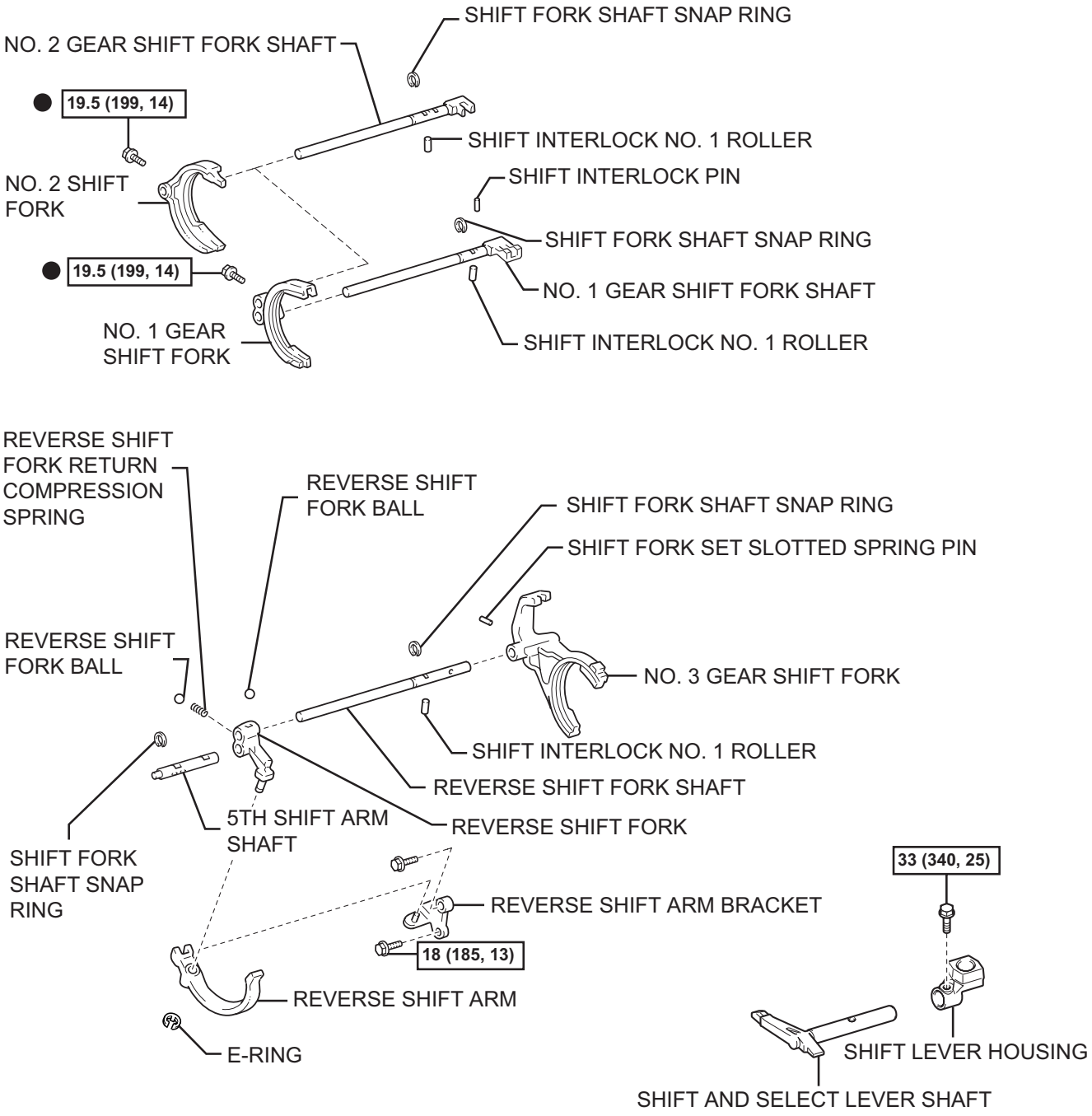
★ Precoated part

⬅ Apply MP grease

P

C115293E02

MT

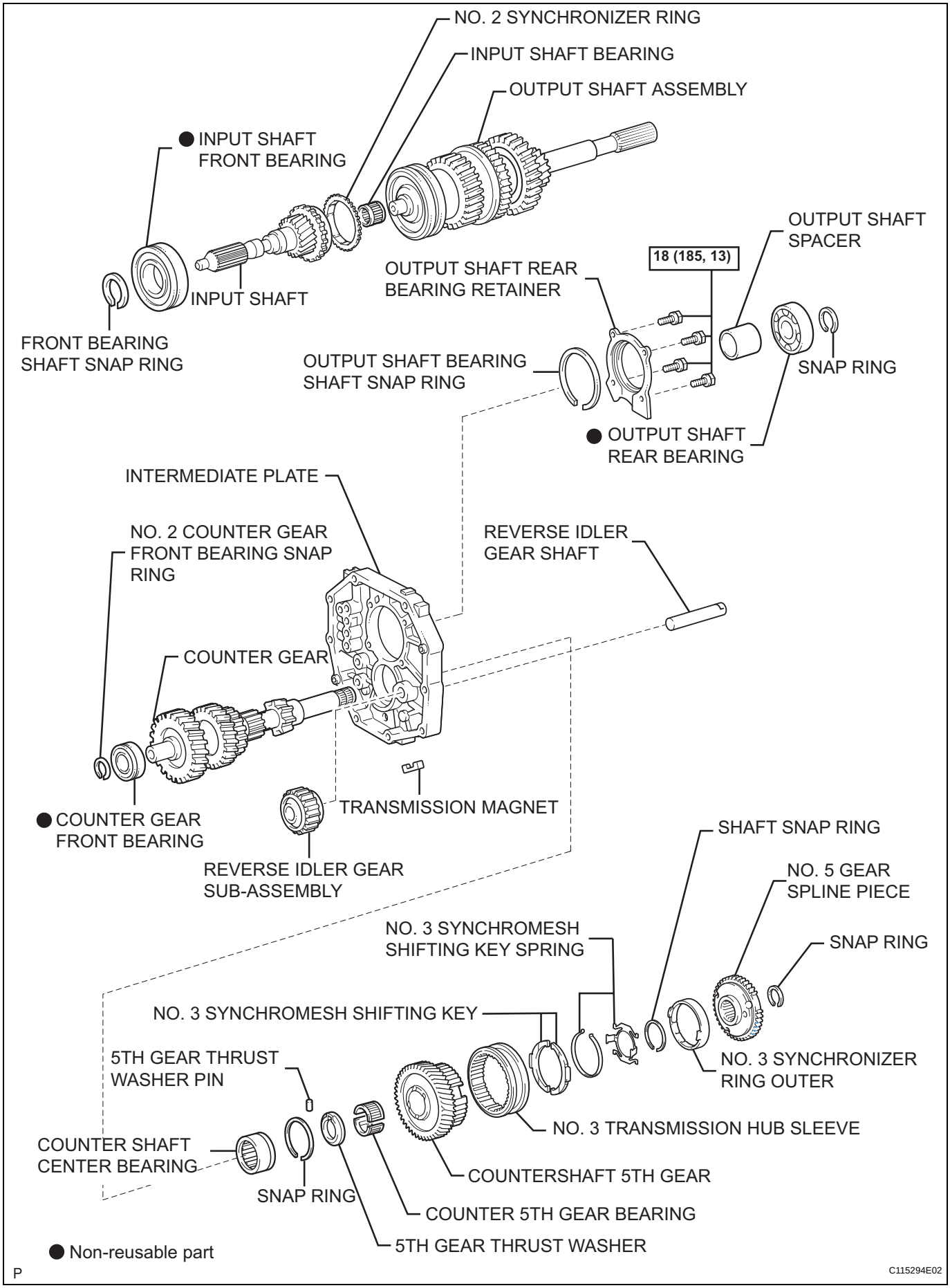


N*m (kgf*cm, ft.*lbf) : Specified torque

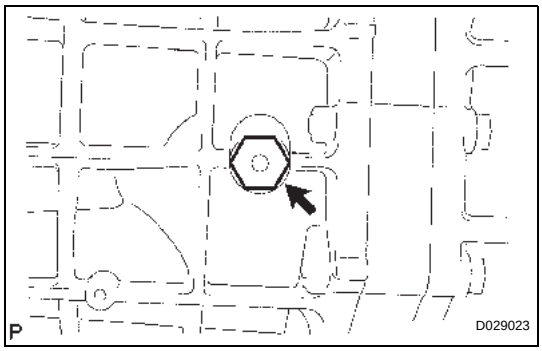
● Non-reusable part

P

C115295E02

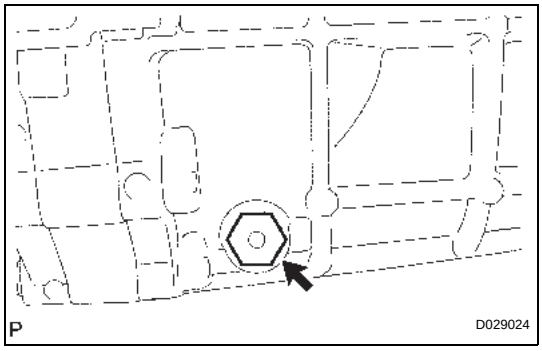

NO. 2 SYNCHRONIZER RING
INPUT SHAFT BEARING
OUTPUT SHAFT ASSEMBLY
● INPUT SHAFT FRONT BEARING
INPUT SHAFT
FRONT BEARING SHAFT SNAP RING
OUTPUT SHAFT REAR BEARING RETAINER
18 (185, 13)
OUTPUT SHAFT SPACER
OUTPUT SHAFT BEARING SHAFT SNAP RING
SNAP RING
● OUTPUT SHAFT REAR BEARING
INTERMEDIATE PLATE
NO. 2 COUNTER GEAR FRONT BEARING SNAP RING
REVERSE IDLER GEAR SHAFT
COUNTER GEAR
● COUNTER GEAR FRONT BEARING
TRANSMISSION MAGNET
REVERSE IDLER GEAR SUB-ASSEMBLY
SHAFT SNAP RING
NO. 5 GEAR SPLINE PIECE
NO. 3 SYNCHROMESH SHIFTING KEY SPRING
SNAP RING
NO. 3 SYNCHROMESH SHIFTING KEY
5TH GEAR THRUST WASHER PIN
NO. 3 SYNCHRONIZER RING OUTER
NO. 3 TRANSMISSION HUB SLEEVE
COUNTER SHAFT CENTER BEARING
COUNTERSHAFT 5TH GEAR
SNAP RING
COUNTER 5TH GEAR BEARING
5TH GEAR THRUST WASHER
● Non-reusable part
P
C115294E02

DISASSEMBLY



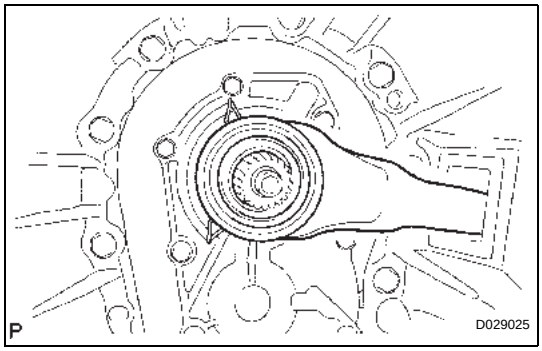
1. REMOVE MANUAL TRANSMISSION FILLER PLUG

(a) Remove the transmission filler plug and gasket from the transmission case.



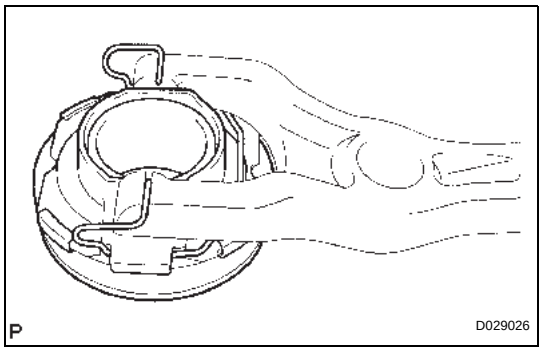
2. REMOVE DRAIN PLUG SUB-ASSEMBLY

(a) Remove the transmission drain plug and gasket from the transmission case.



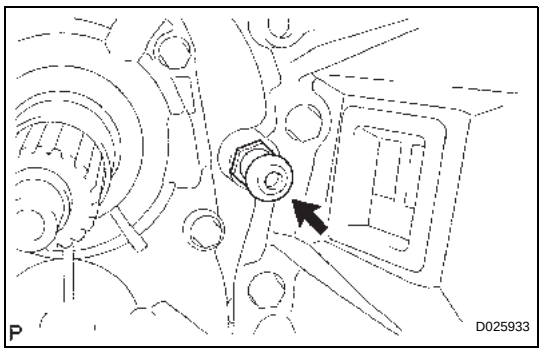
3. REMOVE CLUTCH RELEASE FORK SUB-ASSEMBLY

(a) Remove the clutch release fork and clutch release bearing from the clutch housing.



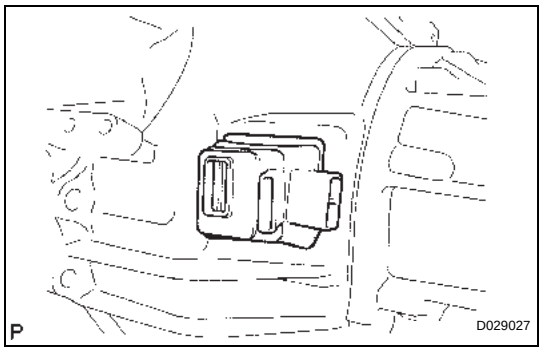
4. REMOVE CLUTCH RELEASE BEARING ASSEMBLY

(a) Remove the release bearing hub clip, and then remove the clutch release bearing from the clutch release fork.



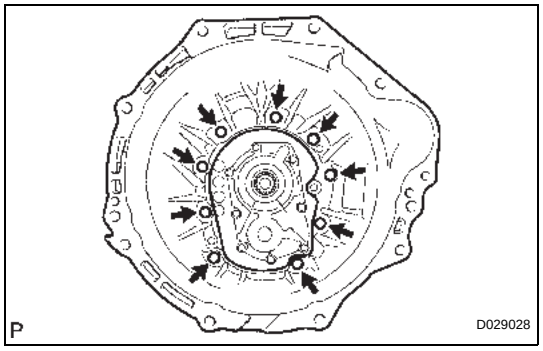
5. REMOVE RELEASE FORK SUPPORT

(a) Remove the release fork support from the clutch housing.



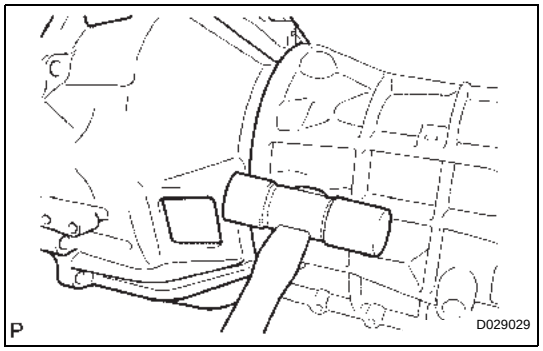
6. REMOVE CLUTCH RELEASE FORK BOOT

(a) Remove the clutch release fork boot from the clutch housing.

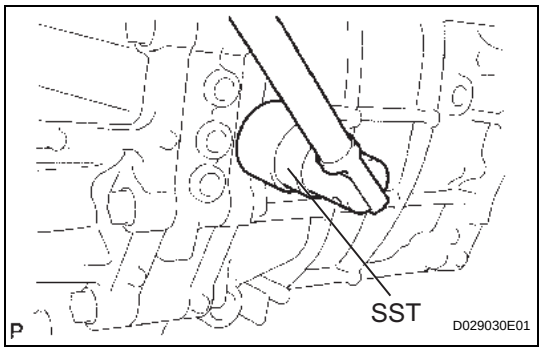


7. REMOVE CLUTCH HOUSING

(a) Remove the 9 bolts.

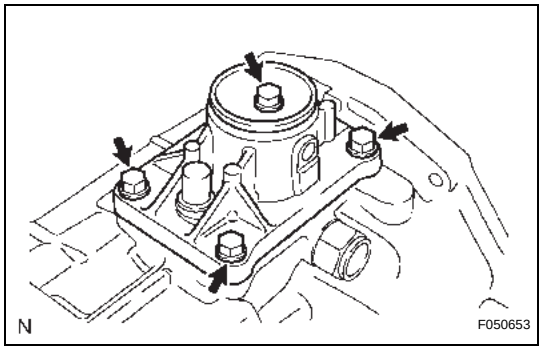


(b) Using a plastic hammer, remove the clutch housing from the transmission case.



8. REMOVE BACK-UP LIGHT SWITCH ASSEMBLY

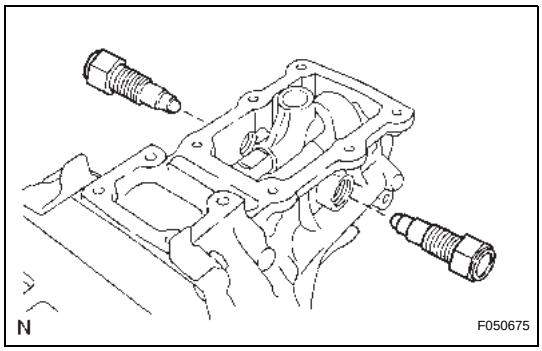
(a) Using SST, remove the back-up light switch assembly and the gasket from the transmission case.
SST 09817-16011



9. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

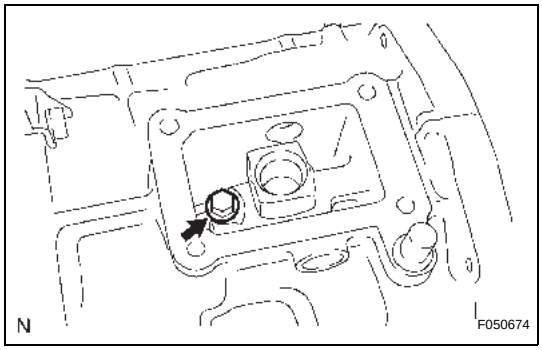
(a) Remove the 4 bolts.
(b) Remove the floor shift control shift lever retainer from the transfer adapter.
(c) Remove the oil deflector from the transfer adapter.

MT



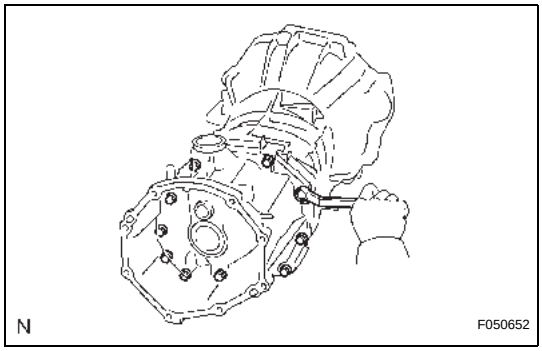
10. REMOVE REVERSE RESTRICT PIN

(a) Remove the 2 reverse restrict pins from the extension housing or transfer adapter.



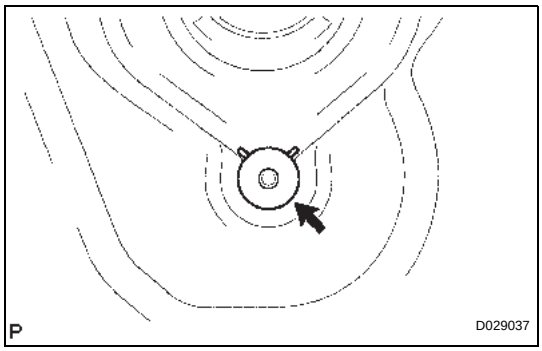
11. REMOVE TRANSFER ADAPTER

(a) Remove the shift lever housing set bolt.



(b) Remove the 10 bolts.

(c) Using a plastic hammer, remove the adapter, shift lever housing and shift and select lever from the transmission case.

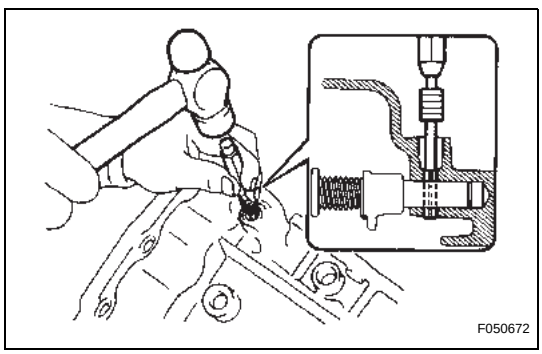


12. REMOVE OIL RECEIVER

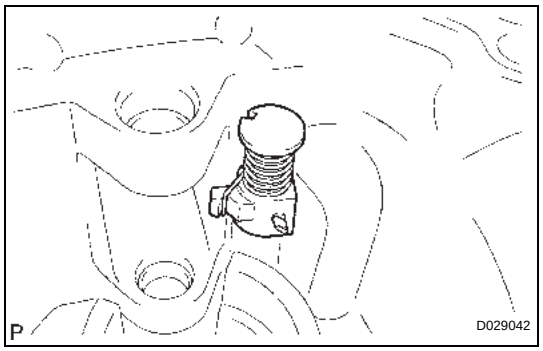
(a) Remove the oil receiver from the transfer adapter.

13. REMOVE REVERSE RESTRICT PIN ASSEMBLY

(a) Using a "Torx" socket wrench T40, remove the reverse restrict pin plug from the transfer adapter.



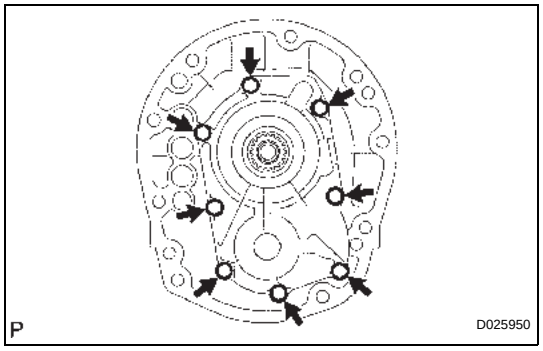
(b) Using a pin punch (5 mm) and a hammer, remove the reverse restrict pin slotted from the transfer adapter or extension housing.



(c) Remove the reverse restrict pin from the transfer adapter or extension housing.

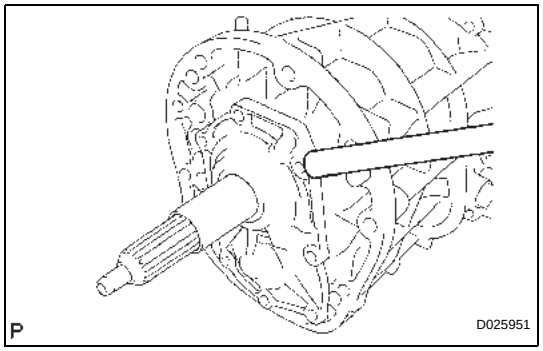
14. REMOVE TRANSFER ADAPTER OIL SEAL

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

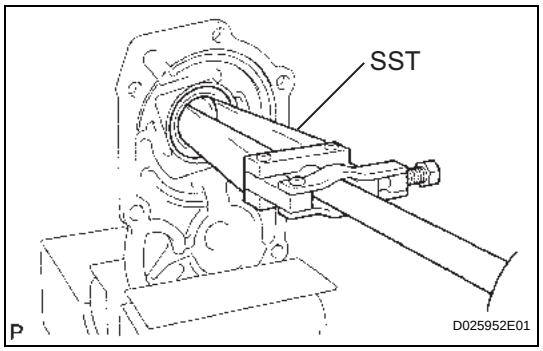


15. REMOVE FRONT BEARING RETAINER

(a) Remove the 8 bolts.



(b) Using a brass bar and a hammer, remove the front bearing retainer from the transmission case.

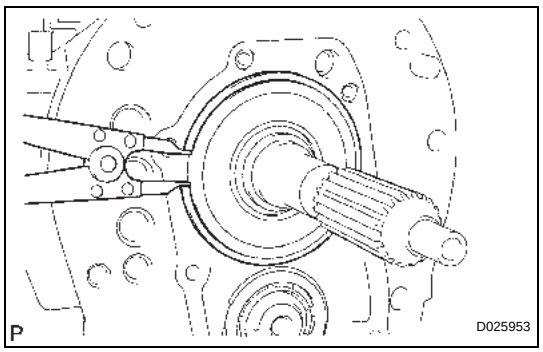


16. REMOVE TRANSMISSION FRONT BEARING RETAINER OIL SEAL

(a) Fix the front bearing retainer in a vise, between aluminum plate.

(b) Using SST, remove the transmission front bearing retainer oil seal.

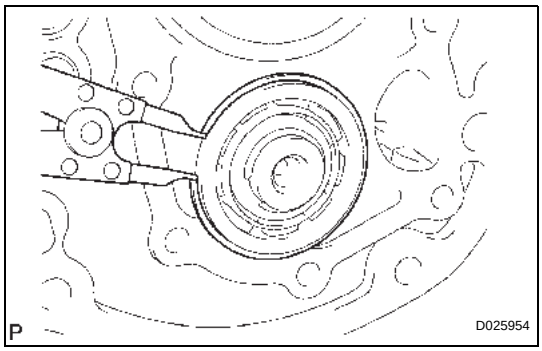
SST 09308-00010



17. REMOVE FRONT BEARING SHAFT SNAP RING

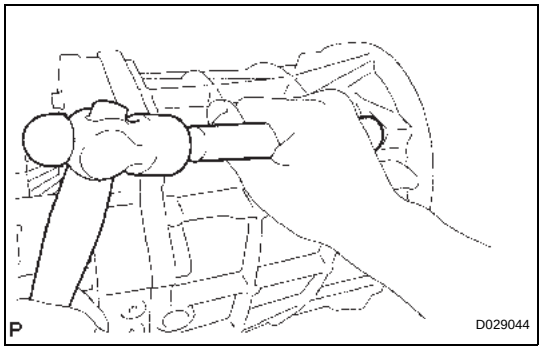
(a) Using a snap ring expander, remove the front bearing shaft snap ring from the transmission case.

MT



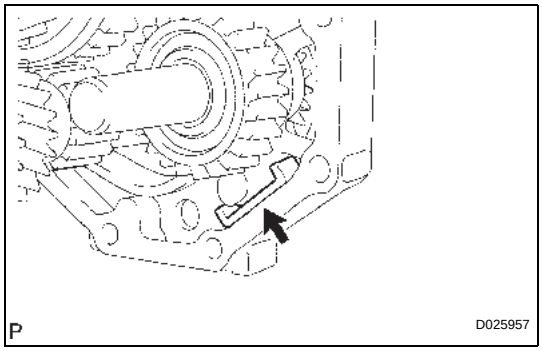
18. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, remove the counter gear front bearing snap ring No. 1 from the transmission case.



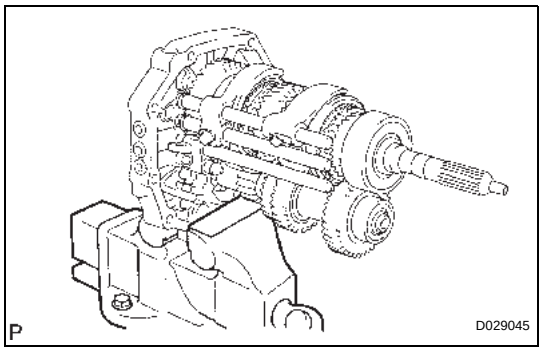
19. REMOVE MANUAL TRANSMISSION CASE

(a) Using a brass bar and a hammer, remove the transmission case from the intermediate plate.



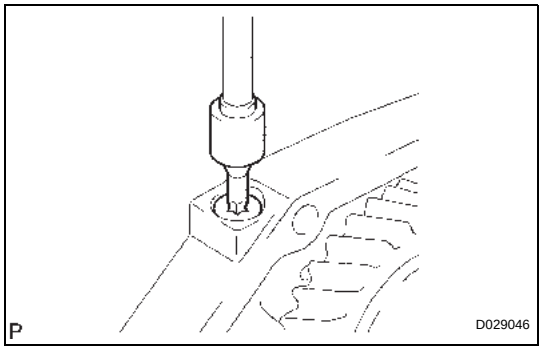
20. REMOVE TRANSMISSION MAGNET

(a) Remove the transmission magnet from the intermediate plate.



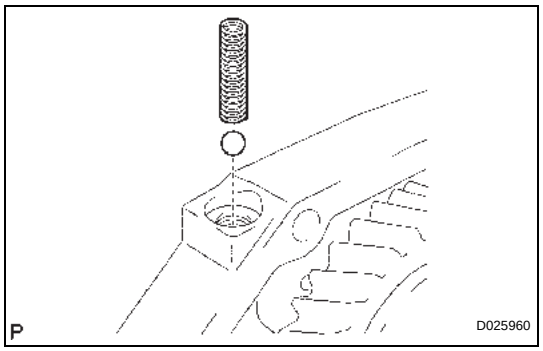
21. FIX INTERMEDIATE PLATE

(a) Fix the intermediate plate in a vice between aluminum plates.

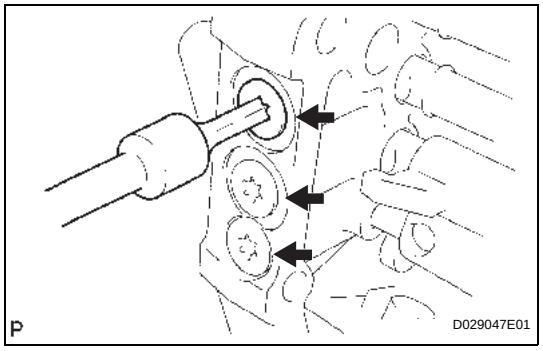


22. REMOVE NO. 1 SHIFT DETENT BALL SPRING SEAT

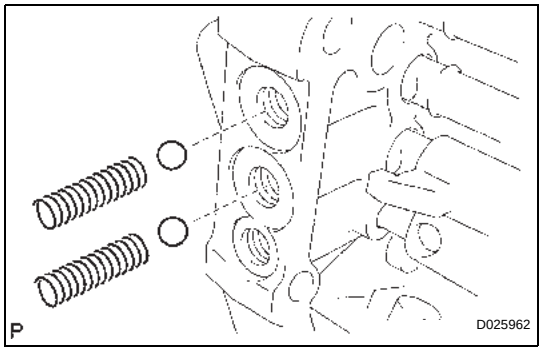
(a) Using a "Torx" socket wrench T40, remove the shift detent ball spring seat No. 1 from the intermediate plate.



(b) Using a magnetic finger, remove the shift detent ball low side compression spring and the shift detent ball from the intermediate plate.

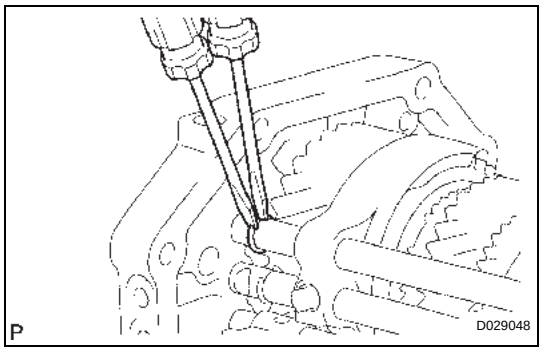


(c) Using a "Torx" socket wrench T40, remove the 3 shift detent ball spring seats No. 1 from the intermediate plate.



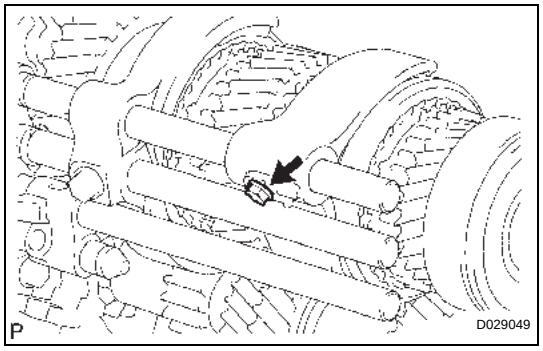
(d) Using a magnetic finger, remove the 2 shift detent ball low side compression springs and the 2 shift detent balls from the intermediate plate.

23. REMOVE NO. 2 GEAR SHIFT FORK SHAFT

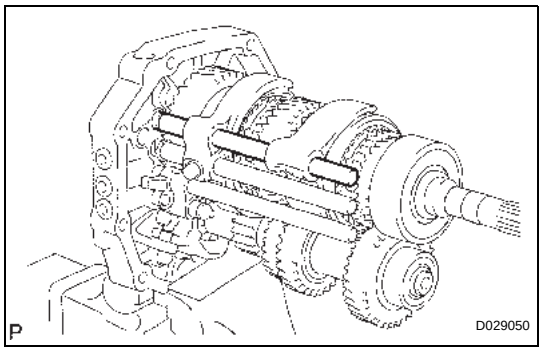


(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No. 2.

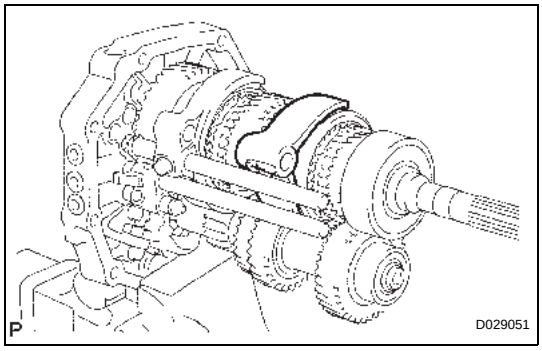
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



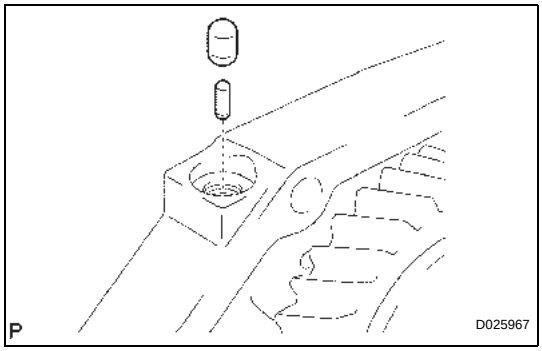
(b) Remove the shift fork set bolt from the gear shift fork No. 2.



(c) Remove the gear shift fork shaft No. 2 from the intermediate plate.

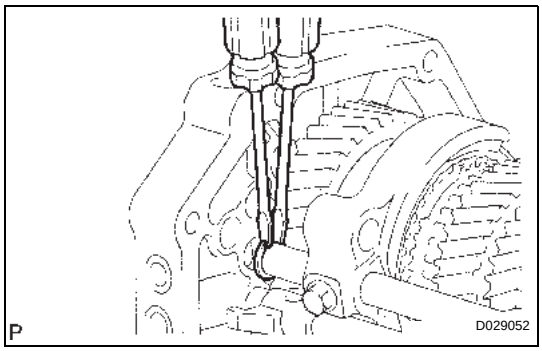


(d) Remove the gear shift fork No. 2 from the transmission hub sleeve No. 2.



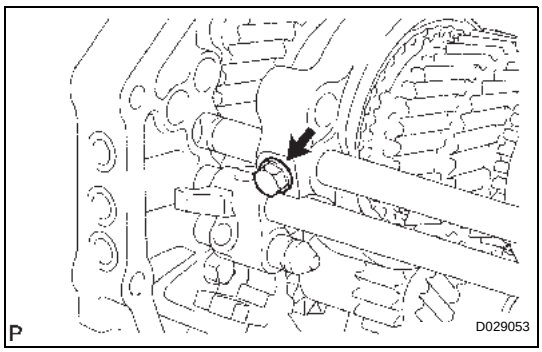
(e) Using a magnetic finger, remove the shift interlock No. 1 roller and the shift interlock pin (ball) from the intermediate plate.

24. REMOVE NO. 1 GEAR SHIFT FORK SHAFT

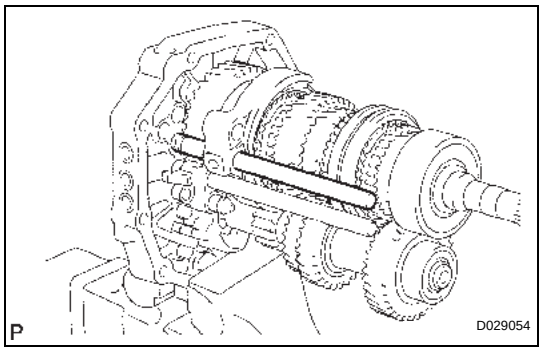


(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No. 1.

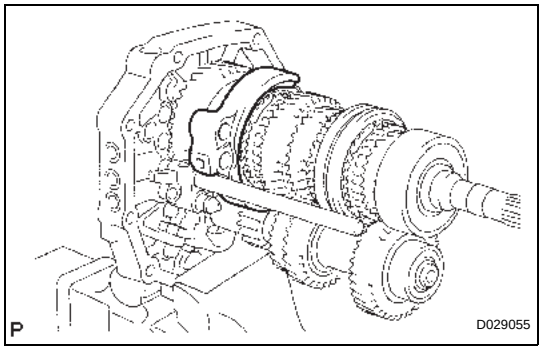
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



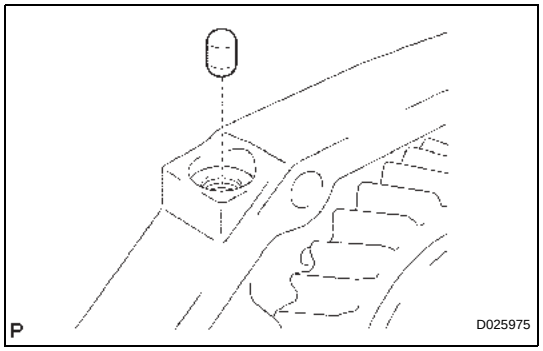
(b) Remove the shift fork set bolt from the gear shift fork No. 1.



(c) Remove the gear shift fork shaft No. 1 from the intermediate plate.

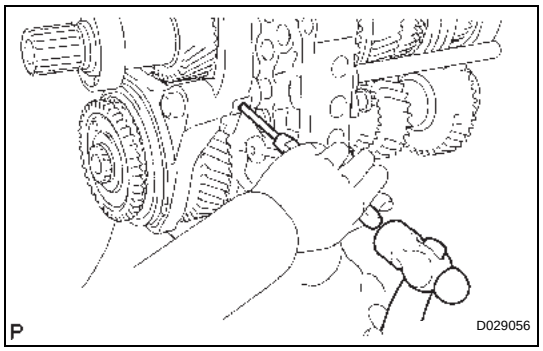


(d) Remove the gear shift fork No. 1 from the reverse gear.

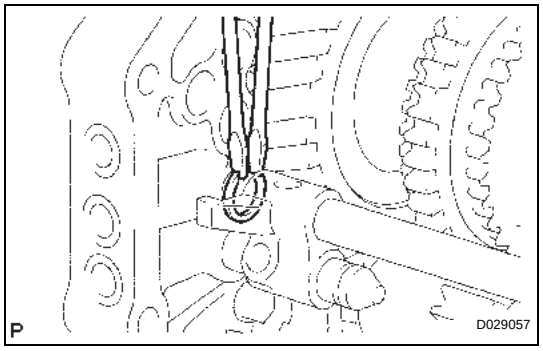


(e) Using a magnetic finger, remove the shift interlock No. 1 roller from the intermediate plate.

25. REMOVE REVERSE SHIFT FORK SHAFT

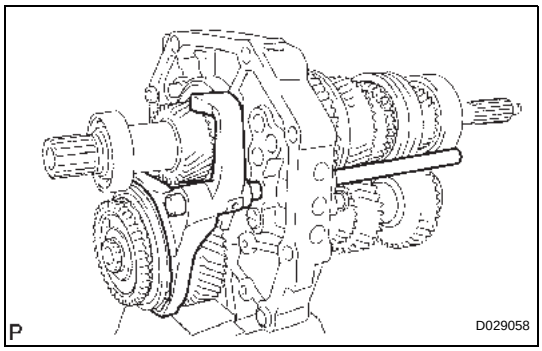


(a) Using a pin punch (5 mm) and a hammer, remove the shift fork set slotted spring pin from the gear shift fork No. 3.

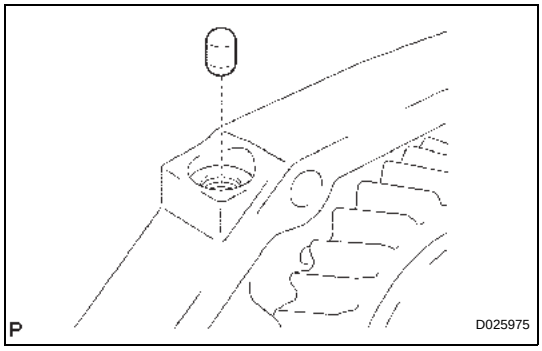


(b) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the reverse shift fork shaft.

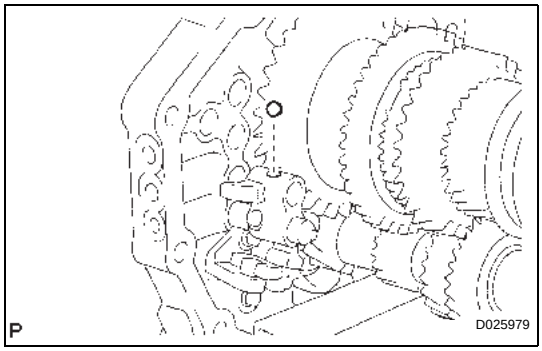
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



(c) Remove the gear shift fork No. 3 and reverse shift fork shaft from the intermediate plate.

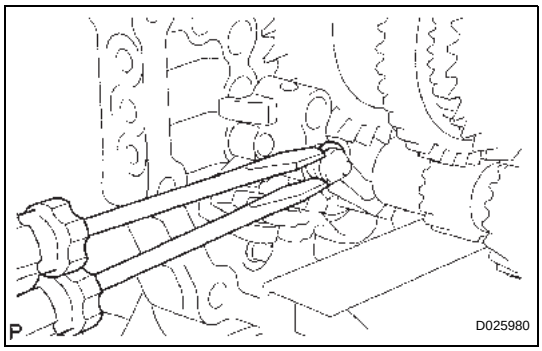


(d) Using a magnetic finger, remove the shift interlock No. 1 roller from the intermediate plate.

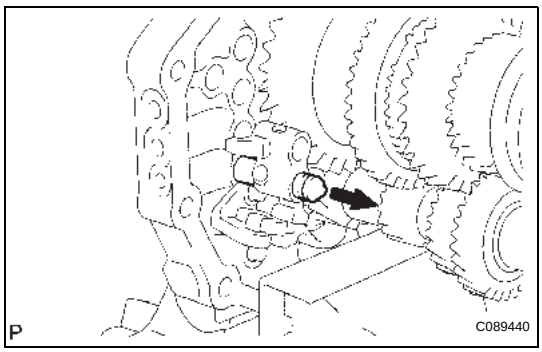


(e) Using a magnetic finger, remove the reverse shift fork ball from the reverse shift fork.

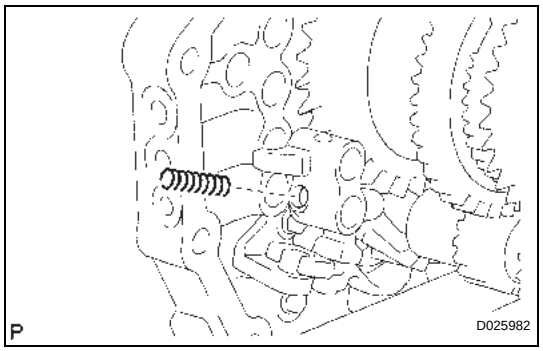
26. REMOVE 5TH SHIFT ARM SHAFT



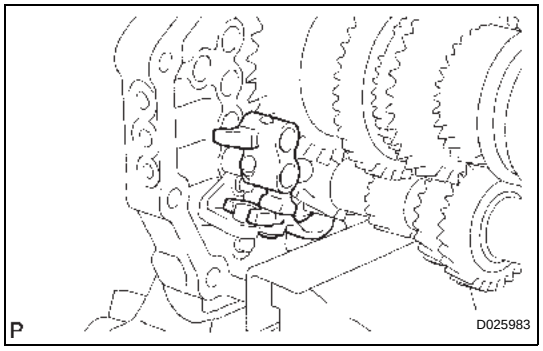
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the 5th shift arm shaft.
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



(b) Remove the 5th shift arm shaft from the intermediate plate.
NOTICE:
Cover the hole with a shop rag to prevent the reverse shift fork ball from popping out.

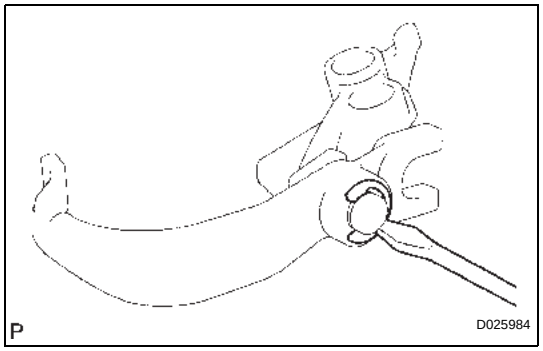


(c) Using a magnetic finger, remove the reverse shift fork return compression spring from the reverse shift fork.

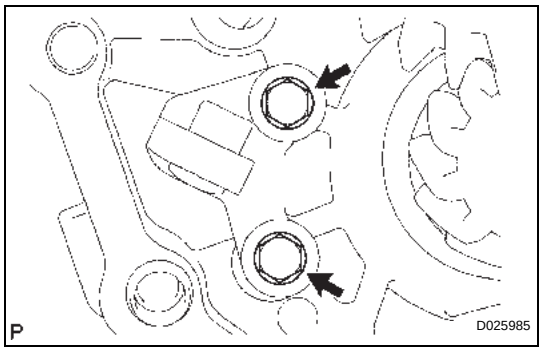


27. REMOVE REVERSE SHIFT FORK

(a) Remove the reverse shift fork together with the reverse shift arm from the intermediate plate.

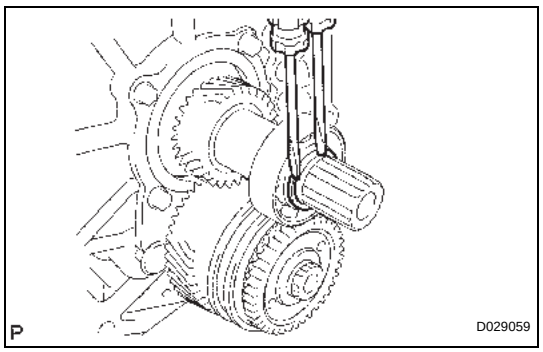


(b) Using a screwdriver, remove the reverse shift arm end shaft ring and the reverse shift fork from the reverse shift arm.



28. REMOVE REVERSE SHIFT ARM BRACKET

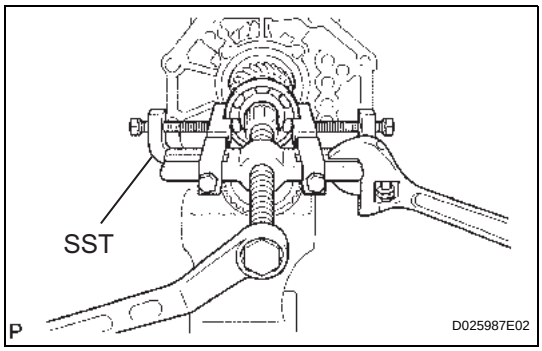
(a) Remove the 2 bolts and reverse shift arm bracket from the intermediate plate.



29. REMOVE OUTPUT SHAFT BEARING SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, remove the output shaft bearing shaft snap ring from the output shaft.

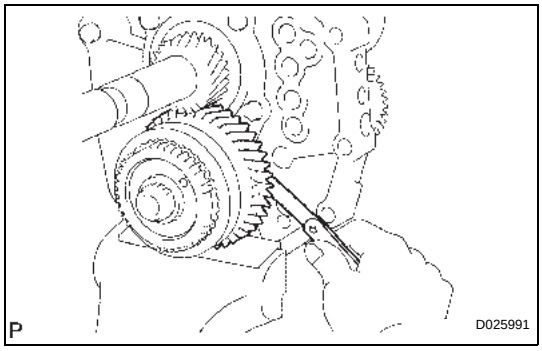
MT



30. REMOVE OUTPUT SHAFT REAR BEARING

(a) Using SST, remove the output shaft rear bearing and output shaft spacer from the output shaft.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04051, 09957-04010, 09958-04011)

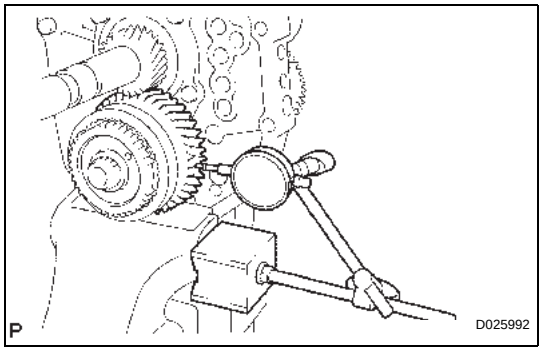


31. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the counter shaft 5th gear thrust clearance.

Standard clearance:

0.10 to 0.35 mm (0.0039 to 0.0138 in.)



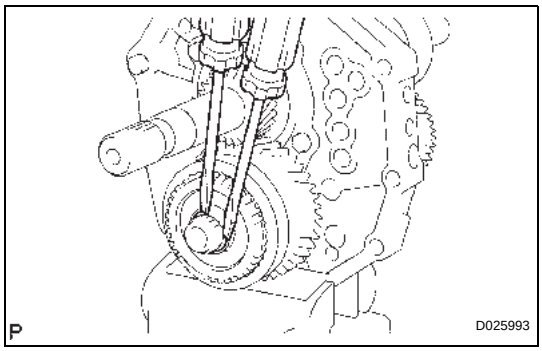
32. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the counter shaft 5th gear.

Standard clearance:

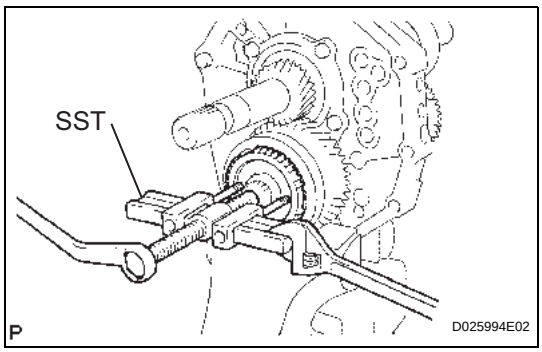
0.015 to 0.068 mm (0.0059 to 0.0027 in.)

If the clearance is not within the specified values, replace the counter 5th gear bearing with a new one.



33. REMOVE COUNTER GEAR REAR SHAFT SNAP RING

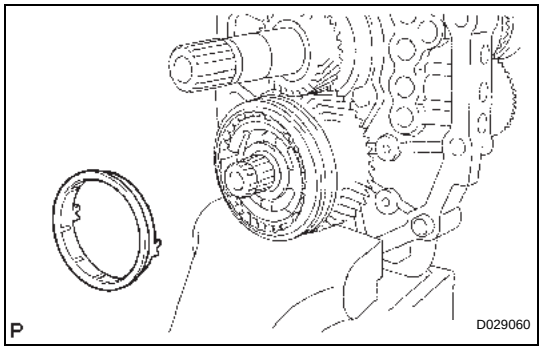
(a) Using 2 screwdrivers and a hammer, remove the counter gear rear shaft snap ring from the counter gear.



34. REMOVE NO. 5 GEAR SPLINE PIECE

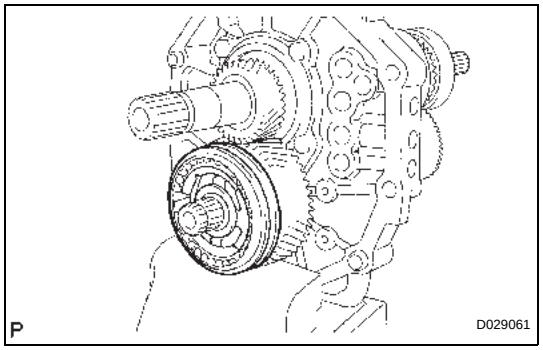
(a) Using SST, remove the gear spline piece No. 5 from the counter gear.

SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021, 09957-04010)



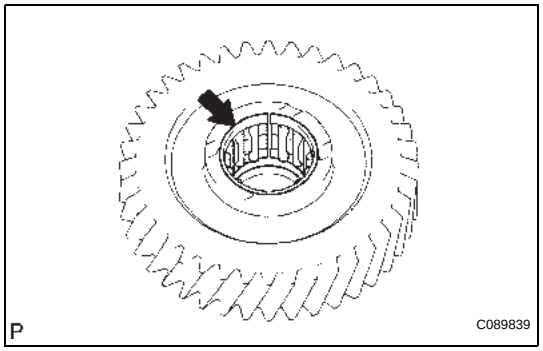
35. REMOVE NO. 3 SYNCHRONIZER RING OUTER

(a) Remove the synchronizer ring outer No. 3 from the counter gear.



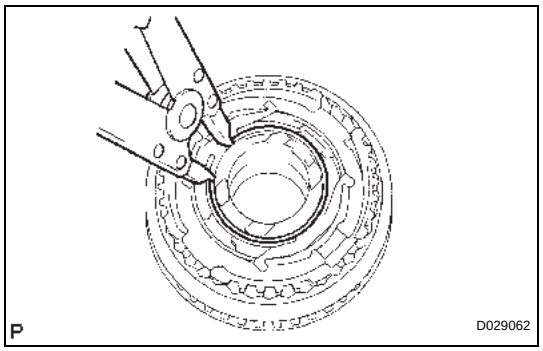
36. REMOVE COUNTER SHAFT 5TH GEAR

(a) Remove the counter shaft 5th gear and transmission hub sleeve No. 3 assembly from the counter gear.



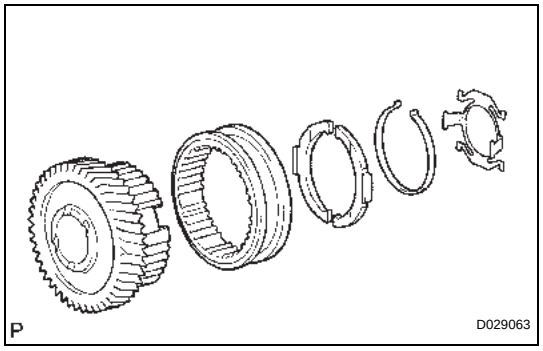
37. REMOVE COUNTER 5TH GEAR BEARING

(a) Remove the counter 5th gear bearing from the counter 5th gear.

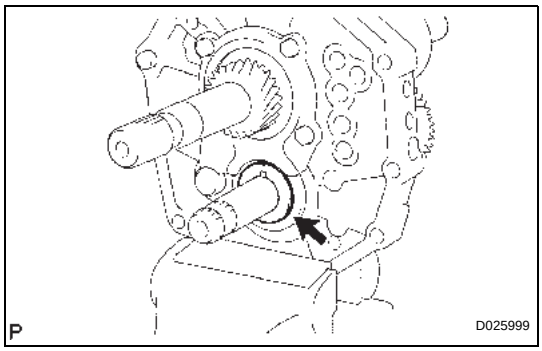


38. REMOVE NO. 3 TRANSMISSION HUB SLEEVE

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

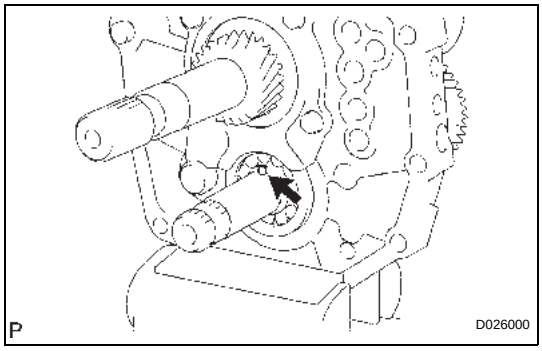


(b) Remove the transmission hub sleeve No. 3, 2 synchromesh shifting keys No. 3 and 2 synchromesh shifting key springs No. 3 from the counter shaft 5th gear.



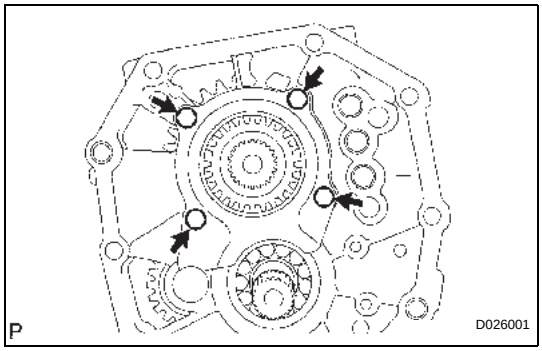
39. REMOVE 5TH GEAR THRUST WASHER

(a) Remove the 5th gear thrust washer from the counter gear.



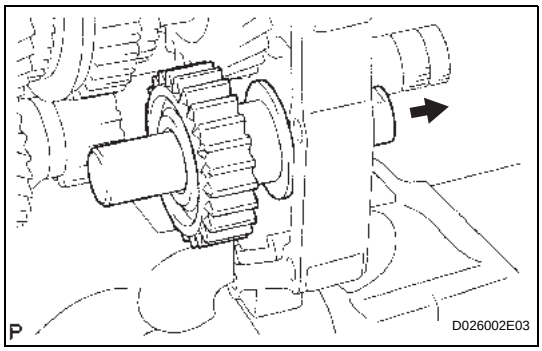
40. REMOVE 5TH GEAR THRUST WASHER PIN

(a) Remove the 5th gear thrust washer pin from the counter gear.



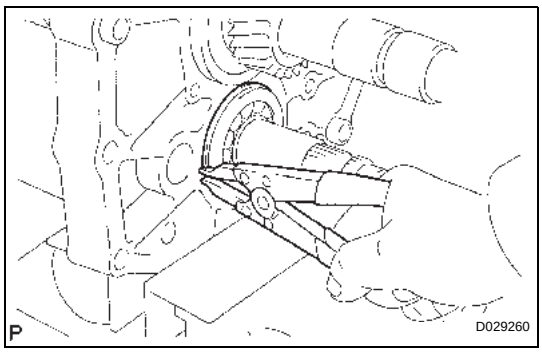
41. REMOVE OUTPUT SHAFT REAR BEARING RETAINER

(a) Remove the 4 bolts and output shaft rear bearing retainer from the intermediate plate.



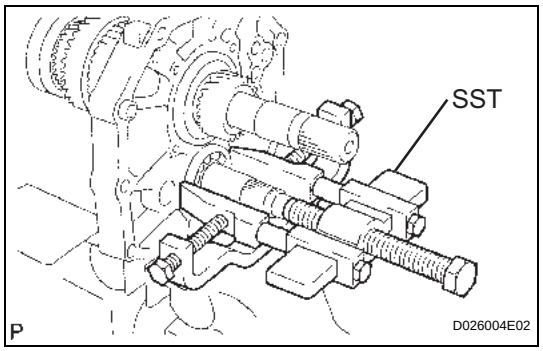
42. REMOVE REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Pull out the reverse idler gear shaft to the rear side and remove the reverse idler gear from the intermediate plate.



43. REMOVE COUNTER SHAFT CENTER BEARING

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

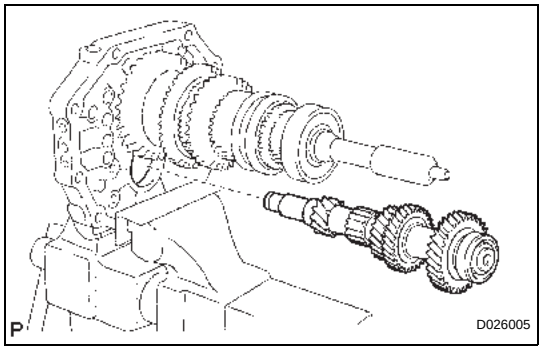


(b) Using SST, remove the counter shaft center bearing from the intermediate plate.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04011, 09957-04010, 09958-04011)

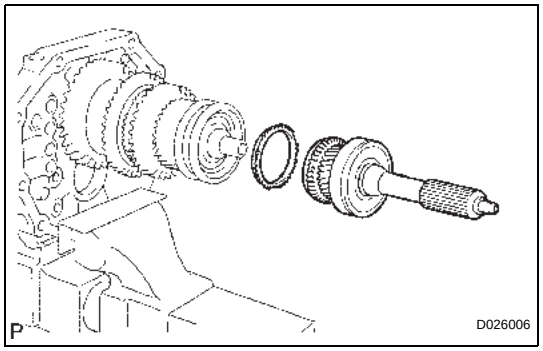
HINT:

Remove the bearing while tapping the tip of the counter gear so that the counter gear assembly is not pushed forward into the side wall of the output shaft gear.



44. REMOVE COUNTER GEAR

(a) Remove the counter gear assembly from the intermediate plate.

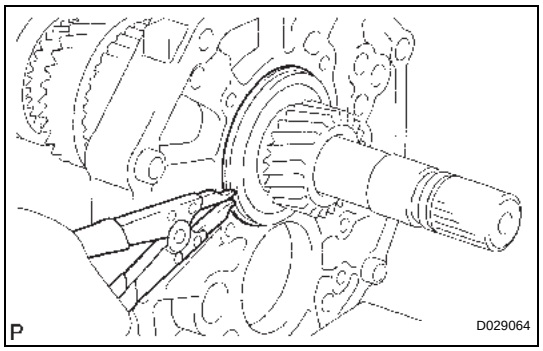


45. REMOVE INPUT SHAFT ASSEMBLY

(a) Remove the input shaft assembly and synchronizer ring No. 2 from the output shaft.

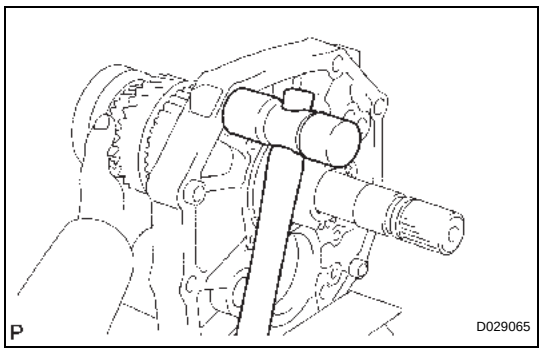
NOTICE:

Do not drop the input shaft bearing and synchronizer ring No. 2.



46. REMOVE OUTPUT SHAFT BEARING SHAFT SNAP RING

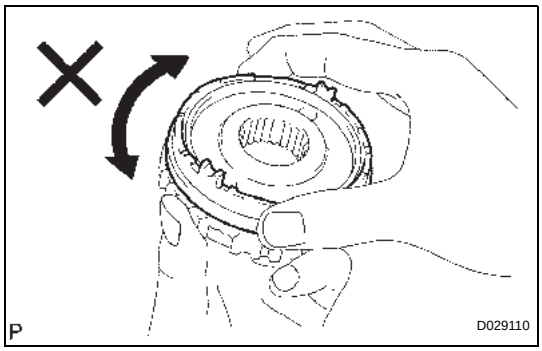
(a) Using a snap ring expander, remove the output shaft bearing shaft snap ring from the output shaft.



47. REMOVE OUTPUT SHAFT ASSEMBLY

(a) Using a plastic hammer, remove the output shaft assembly by tapping the intermediate plate.

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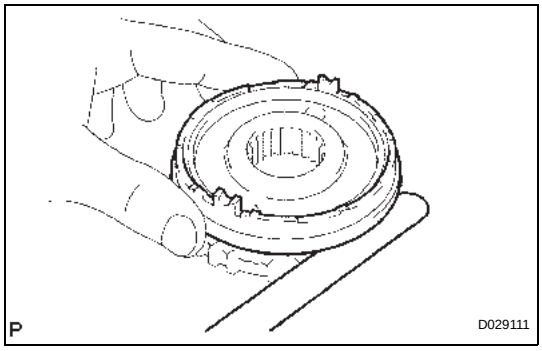


INSPECTION

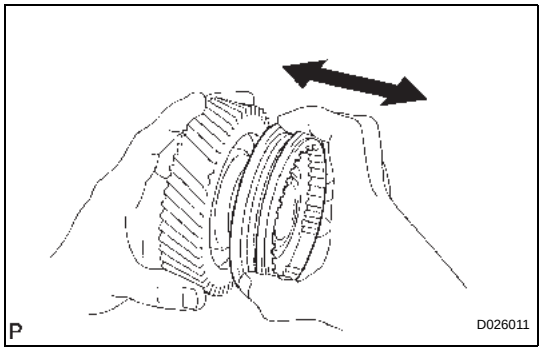
1. INSPECT NO. 3 SYNCHRONIZER RING OUTER

(a) Apply gear oil to the cone part of gear spline piece No. 5, and check that it does not turn in both directions while pushing the synchronizer ring outer No. 3 to the gear spline piece No. 5.
If it turns, replace the synchronizer ring.

MT



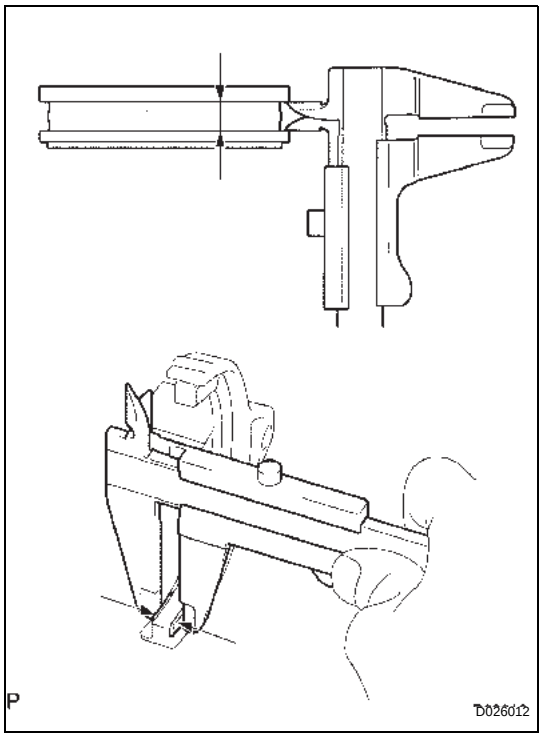
(b) Measure the clearance between the synchronizer ring outer No. 3 and gear spline piece No. 5 while pushing the synchronizer ring outer No. 3 to the cone part of the gear spline piece No. 5.
Standard clearance:
0.68 to 1.32 mm (0.0267 to 0.0610 in.)
If the clearance is not within the specified values, replace synchronizer ring outer No. 3 with a new one.



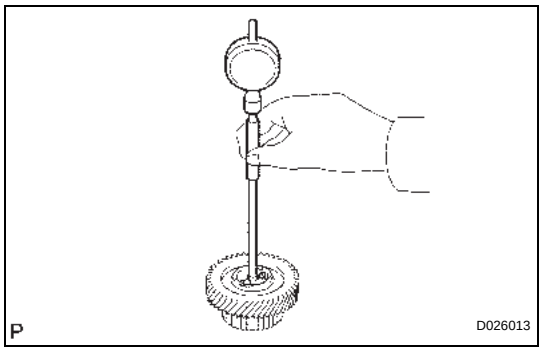
2. INSPECT NO. 3 TRANSMISSION HUB SLEEVE

(a) Check that the counter shaft 5th gear and transmission hub sleeve No. 3 slide smoothly each other.

(b) Check the tip of the spline gear of the transmission hub sleeve No. 3 for wear.
If there are any detects, replace the transmission hub sleeve No. 3.



(c) Using vernier calipers, measure the transmission hub sleeve No. 3 groove and the thickness of the claw part of the shift fork No. 3 to calculate the clearance.
Standard clearance:
0.26 to 0.84 mm (0.0102 to 0.0331 in.)
If the clearance is not within the specified values, replace the transmission hub sleeve No. 3 and shift fork No. 3 with new ones.



3. INSPECT COUNTERSHAFT 5TH GEAR

(a) Using a cylinder gauge, measure the inner diameter of the counter 5th gear.

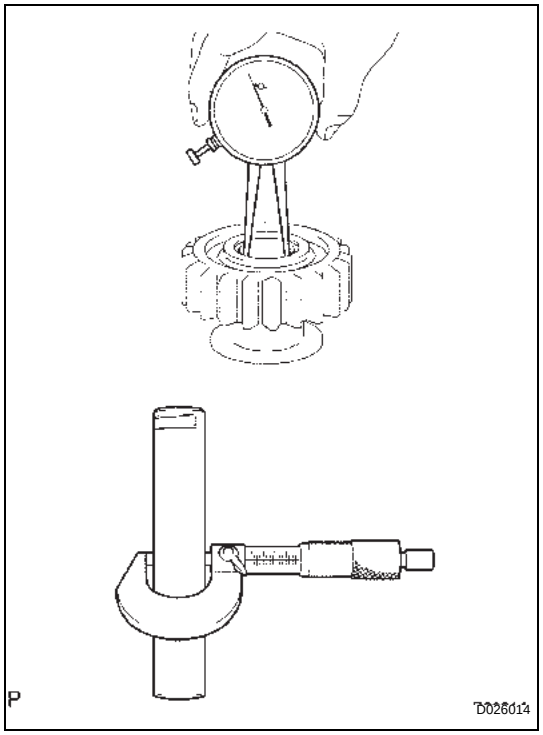
Standard diameter:

38.015 to 38.040 mm (1.4967 to 1.4976 in.)

Maximum diameter:

38.040 mm (1.4976 in.)

If the diameter greater than the maximum, replace the counter shaft 5th gear with a new one.



4. INSPECT REVERSE IDLER GEAR SUB-ASSY

(a) Using a caliper gauge, measure the inner diameter of the reverse idler gear.

Standard diameter:

24.040 to 24.061 mm (0.9465 to 0.9473 in.)

Maximum diameter:

24.061 mm (0.9473 in.)

If the clearance is greater than the maximum, replace the reverse idler gear with a new one.

(b) Using a micrometer, measure the outer diameter of the sliding part of the reverse idler gear on the reverse idler gear shaft.

Standard diameter:

23.979 to 24.000 mm (0.9441 to 0.9449 in.)

Minimum diameter:

23.979 mm (0.9441 in.)

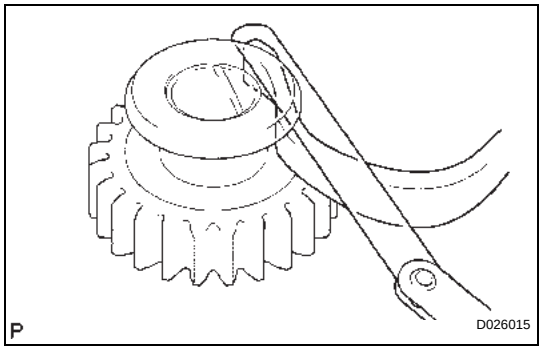
If the diameter is outside the specification, replace the reverse idler gear shaft with a new one.

(c) Subtract the reverse idler gear shaft inside diameter measurement from the reverse idler gear diameter clearance.

Standard clearance:

0.040 to 0.082 mm (0.0016 to 0.0032 in.)

If the clearance is not as specified, replace the reverse idler gear or reverse idler gear shaft.



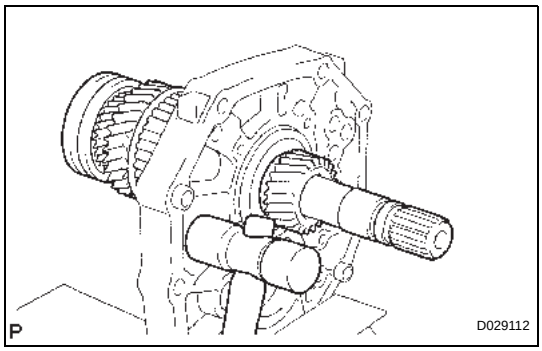
(d) Using a feeler gauge, measure the thrust clearance of the shoe part between the reverse idler gear and the reverse shift arm.

Standard clearance:

0.05 to 0.35 mm (0.0020 to 0.0138 in.)

If the clearance is outside the specification, replace the idler gear and reverse shift arm with new ones.

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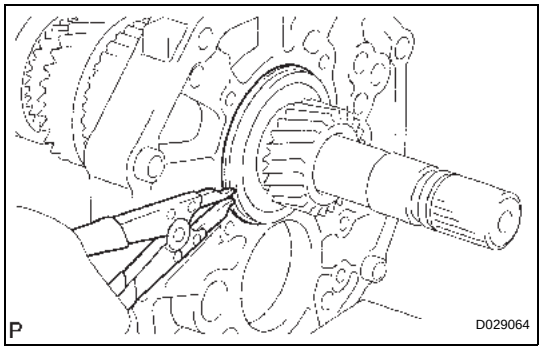


REASSEMBLY

1. INSTALL OUTPUT SHAFT ASSEMBLY

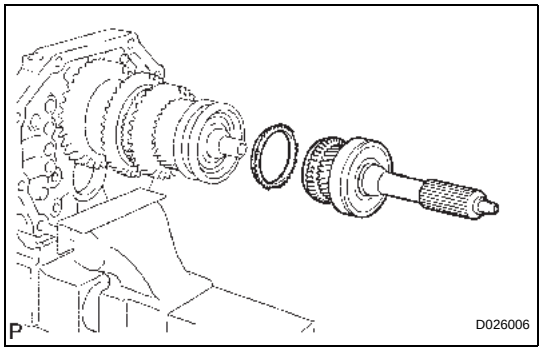
(a) Apply gear oil to the sliding part of the output assembly.

(b) Using a plastic hammer, install the output shaft assembly by tapping the intermediate plate.



2. INSTALL OUTPUT SHAFT BEARING SHAFT SNAP RING

(a) Using a snap ring expander, install the output shaft bearing shaft snap ring onto the output shaft.

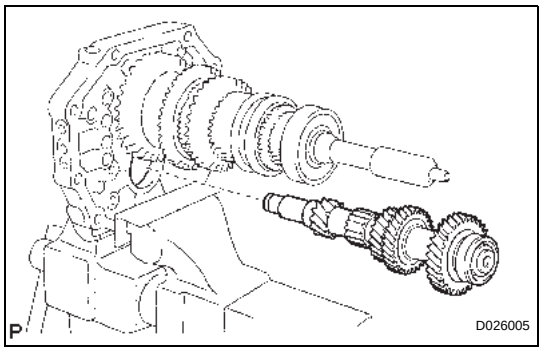


3. INSTALL INPUT SHAFT ASSEMBLY

(a) Apply gear oil to the input shaft assembly and synchronizer ring No. 2, and install them onto the output shaft.

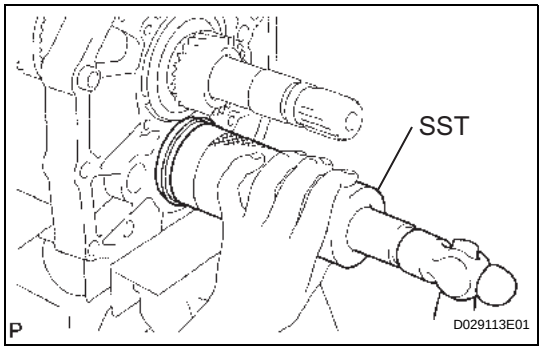
NOTICE:

- **Install the synchronizer ring No. 2 so that its groove fits into the synchromesh shifting key No. 2.**
- **Check that the input shaft assembly rotates smoothly.**



4. INSTALL COUNTER GEAR

(a) Provisionally install the counter gear assembly onto the intermediate plate.



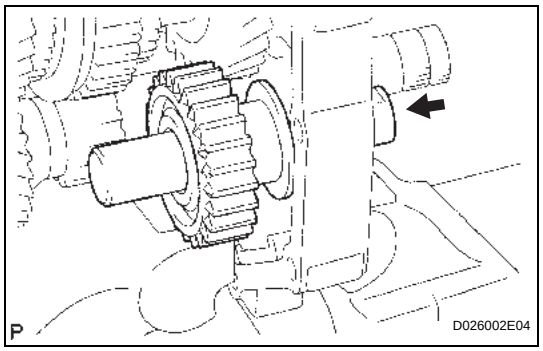
5. INSTALL COUNTER SHAFT CENTER BEARING

(a) Using SST and a hammer, install the new counter shaft center bearing onto the intermediate plate.

SST 09316-60011 (09316-00011)

HINT:

Remove the bearing while tapping the tip of the counter gear so that the counter gear assembly is not pushed forward into the side wall of the output shaft gear.

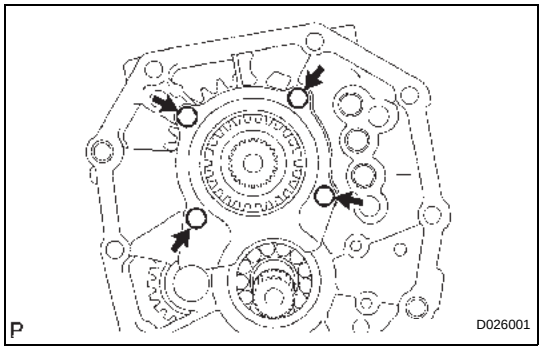


6. INSTALL REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Apply gear oil to each sliding part of the reverse idler gear and the reverse idler gear shaft, and install them onto the intermediate plate.

NOTICE:

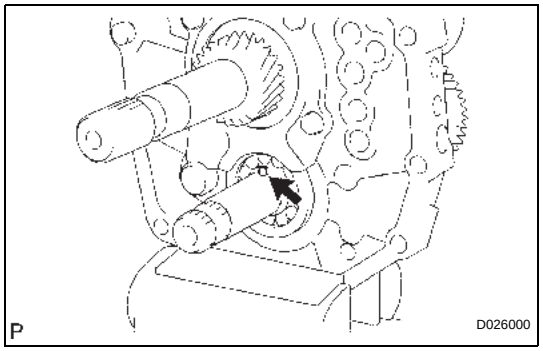
Orient the groove side of the reverse idler shaft to the rear side and install it from the rear side.



7. INSTALL OUTPUT SHAFT REAR BEARING RETAINER

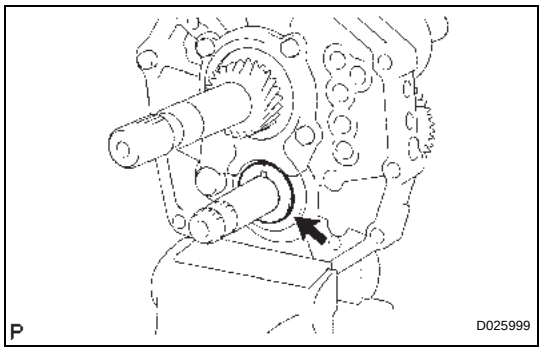
(a) Install the output shaft rear bearing retainer into the groove of the reverse idler gear shaft with the 4 bolts.

Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)



8. INSTALL 5TH GEAR THRUST WASHER PIN

(a) Apply MP grease to the 5th gear thrust washer pin, and install it onto the counter gear.

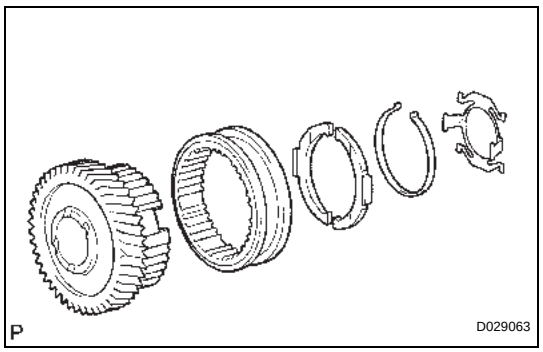


9. INSTALL 5TH GEAR THRUST WASHER

(a) Apply gear oil to the 5th gear thrust washer, and install it onto the counter gear.

NOTICE:

Install the thrust washer so that its chamfer side faces to the front side.



10. INSTALL NO. 3 TRANSMISSION HUB SLEEVE

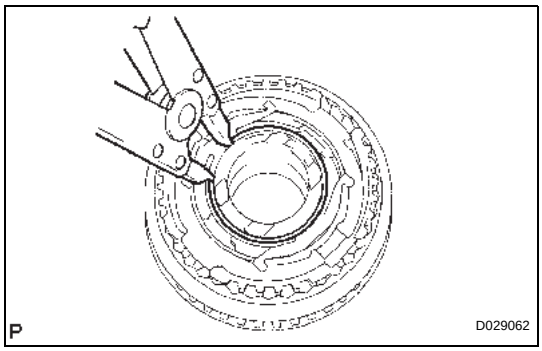
(a) Apply gear oil to the sliding part of transmission hub sleeve No. 3, and install it onto the counter shaft 5th gear.

NOTICE:

Make sure that the transmission hub sleeve No. 3 and counter 5th gear are oriented in the correct direction.

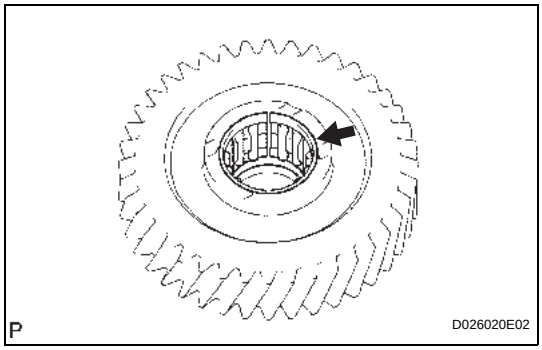
(b) Install the 2 synchromesh shifting keys No. 3 and the 2 synchromesh shifting key springs onto the counter shaft 5th gear.

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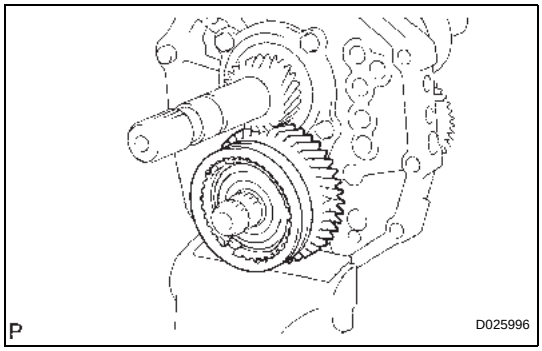
(c) Using a snap ring expander, install the bearing shaft snap ring onto the counter 5th gear.

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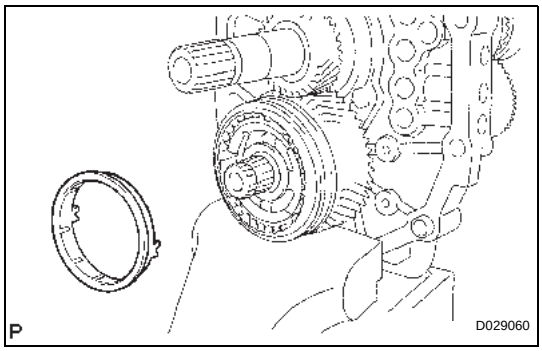
11. INSTALL COUNTER 5TH GEAR BEARING

(a) Apply gear oil to the counter 5th gear bearing and install it onto the counter 5th gear.



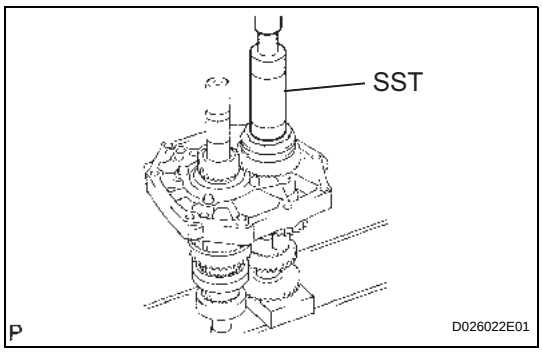
12. INSTALL COUNTER SHAFT 5TH GEAR

(a) Apply gear oil to the counter 5th gear and transmission hub sleeve No. 3 assembly, and install them onto the counter gear.



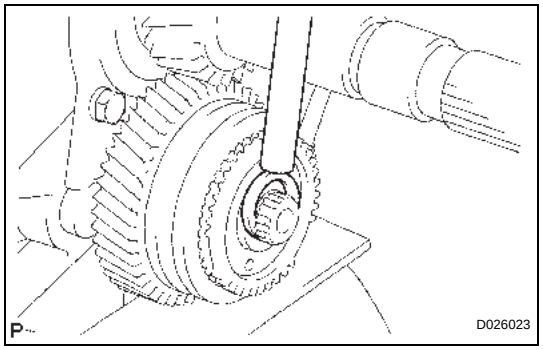
13. INSTALL NO. 3 SYNCHRONIZER RING OUTER

(a) Apply gear oil to the synchronizer ring outer No. 3, and install it onto the counter gear.
NOTICE:
Install the synchronizer ring outer No. 3 so that its groove fits into the synchromesh shifting key No. 3.



14. INSTALL NO. 5 GEAR SPLINE PIECE

(a) Using SST and a press, install the gear spline piece No. 5 onto the counter gear.
SST 09316-60011 (09316-00011)
NOTICE:
Check that the gear rotates smoothly.



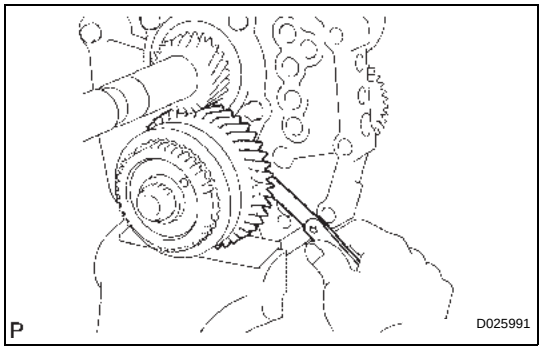
15. INSTALL COUNTER GEAR REAR SHAFT SNAP RING

(a) Select the counter gear rear shaft snap ring so that the thrust gap between gear spline piece No. 5 and counter gear rear shaft snap ring is within the specified values, and using a brass bar and a hammer, install it onto the counter gear.

Standard clearance:

0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.80 to 2.85 (0.1102 to 0.1122)
B	2.85 to 2.90 (0.1122 to 0.1141)
C	2.90 to 2.95 (0.1141 to 0.1160)
D	2.95 to 3.00 (0.1160 to 0.1181)
E	3.00 to 3.05 (0.1181 to 0.1200)
F	3.05 to 3.10 (0.1200 to 0.1220)
G	3.10 to 3.15 (0.1220 to 0.1240)

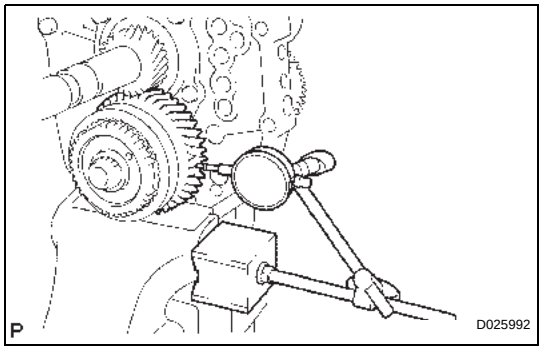


16. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, check the thrust clearance of the counter 5th gear.

Standard clearance:

0.10 to 0.35 mm (0.0039 to 0.0138 in.)



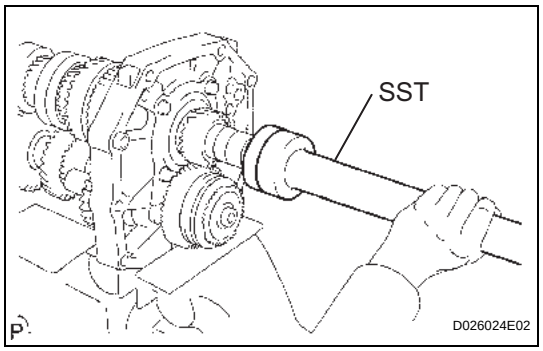
17. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, check the counter 5th gear radial clearance.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is out of specification the counter 5th gear bearing.

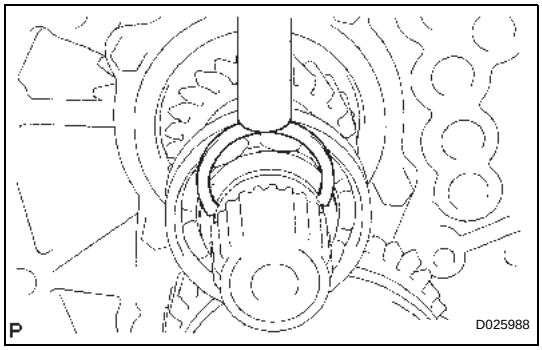


18. INSTALL OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, install the new spacer and output shaft rear bearing onto the output shaft.

SST 09309-35010

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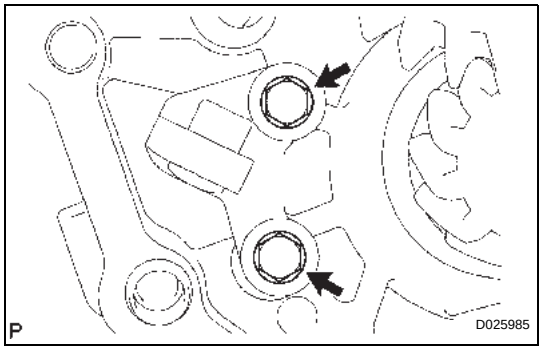


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19. INSTALL OUTPUT SHAFT BEARING SHAFT SNAP RING

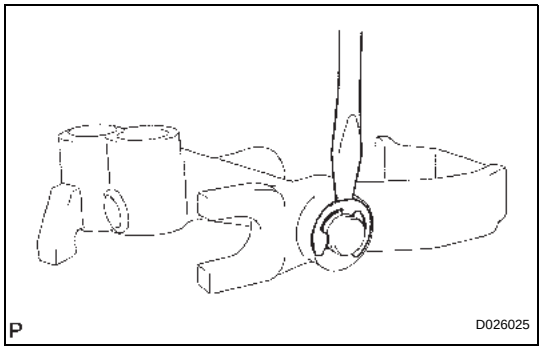
(a) Select an output shaft bearing shaft snap ring so the thrust gap between the snap ring and the bearing is within the specified values. Use a brass bar and hammer to install it onto the output shaft.
Standard clearance:
0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.65 to 2.70 (0.1043 to 0.1063)
B	2.70 to 2.75 (0.1063 to 0.1083)
C	2.75 to 2.80 (0.1083 to 0.1102)
D	2.80 to 2.85 (0.1102 to 0.1122)
E	2.85 to 2.90 (0.1122 to 0.1141)
F	2.90 to 2.95 (0.1141 to 0.1160)
G	2.95 to 3.00 (0.1160 to 0.1181)
H	3.00 to 3.05 (0.1181 to 0.1200)
J	3.05 to 3.10 (0.1200 to 0.1220)
K	3.10 to 3.15 (0.1220 to 0.1240)
L	3.15 to 3.20 (0.1240 to 0.1260)
M	3.20 to 3.25 (0.1260 to 0.1280)
N	3.25 to 3.30 (0.1280 to 0.1299)
P	3.30 to 3.35 (0.1299 to 0.1319)
Q	3.35 to 3.40 (0.1319 to 0.1339)
R	3.40 to 3.45 (0.1339 to 0.1358)
S	3.45 to 3.50 (0.1358 to 0.1378)



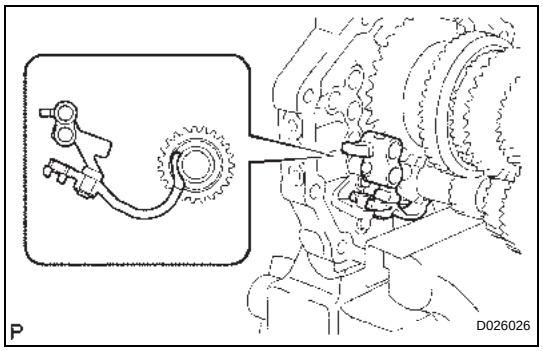
20. INSTALL REVERSE SHIFT ARM BRACKET

(a) Install the reverse shift arm bracket onto the intermediate plate with the 2 bolts.
Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)

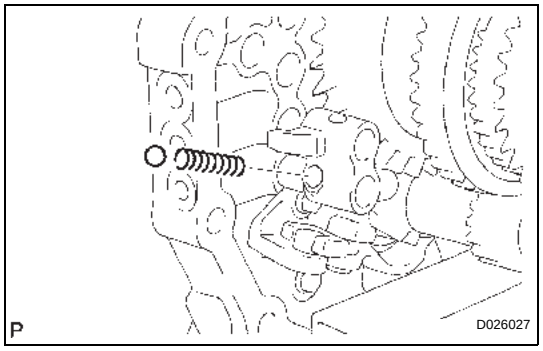


21. INSTALL REVERSE SHIFT FORK

(a) Install the reverse shift arm onto the reverse shift fork. Using a screwdriver and a hammer, install the new reverse shift arm end shaft ring.

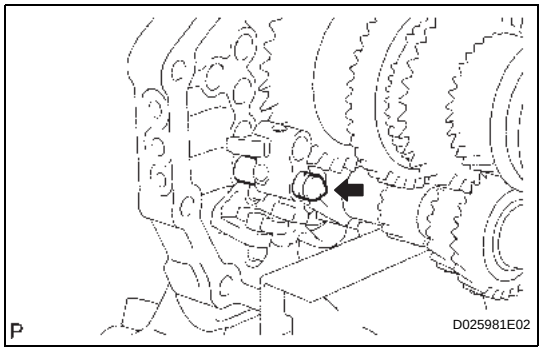


(b) Install the tip of the reverse shift arm onto the reverse idler gear. Align the cut end of the reverse shift arm with the reverse shift arm bracket pin, and install them.



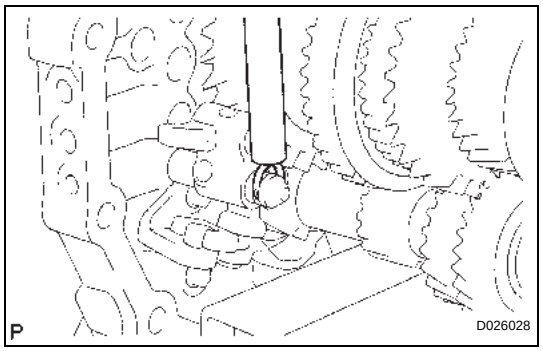
22. INSTALL 5TH SHIFT ARM SHAFT

(a) Install the reverse shift fork return compression spring and the reverse shift fork ball into the reverse shift fork.

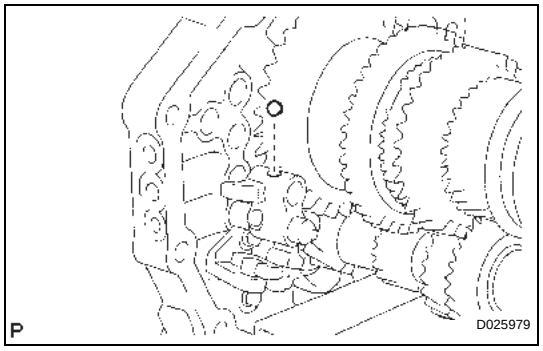


(b) Apply gear oil to the sliding part of the 5th shift arm shaft.

(c) Using a screwdriver, install the 5th shift arm shaft by pushing the reverse shift fork ball gently.

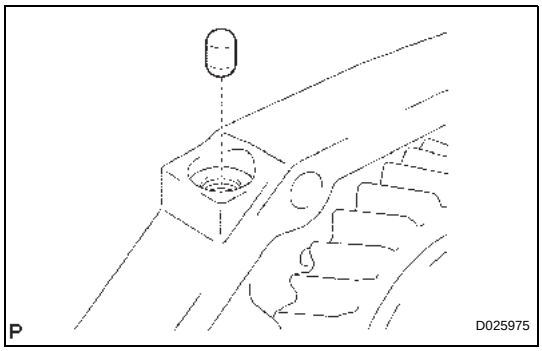


(d) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the 5th shift arm shaft.



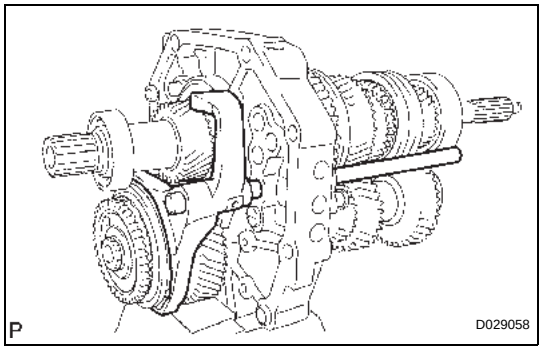
23. INSTALL REVERSE SHIFT FORK SHAFT

(a) Install the reverse shift fork ball into the reverse shift fork.

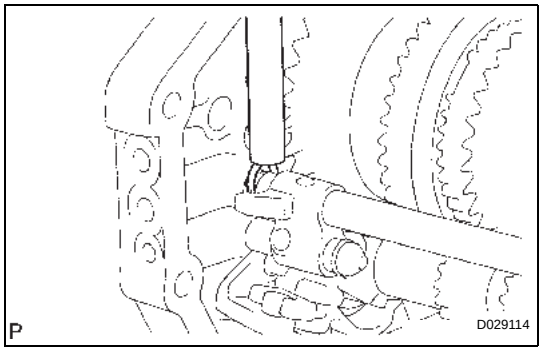


(b) Install the shift interlock No. 1 roller onto the intermediate plate.

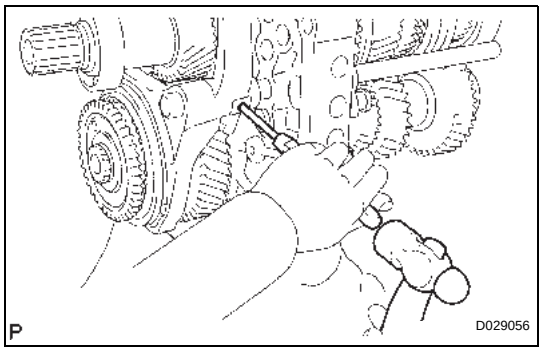
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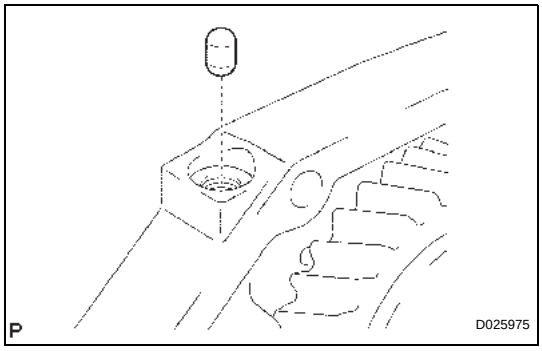
(c) Install the shift fork No. 3 onto the transmission hub sleeve No. 3 and the reverse shift fork shaft onto the intermediate plate from the front side.



(d) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the reverse shift fork shaft.

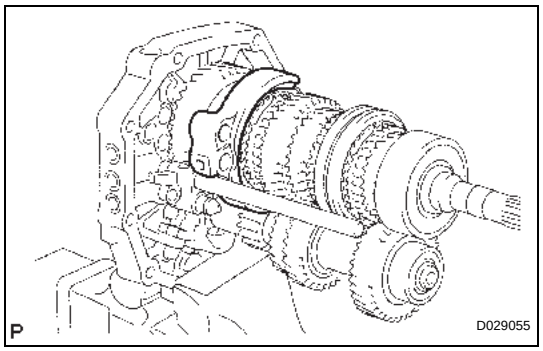


(e) Using a pin punch (5 mm) and a hammer, install the shift fork set slotted spring pin into the gear shift fork No. 3.

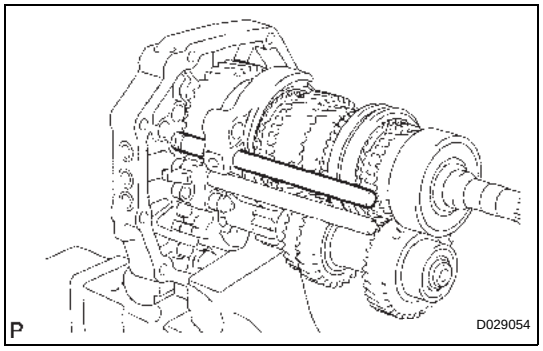


24. INSTALL NO. 1 GEAR SHIFT FORK SHAFT

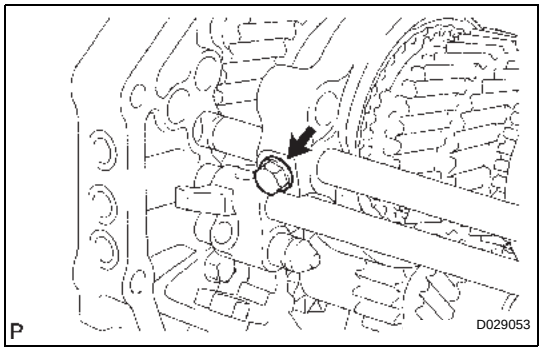
(a) Install the shift interlock No. 1 roller onto the intermediate plate.



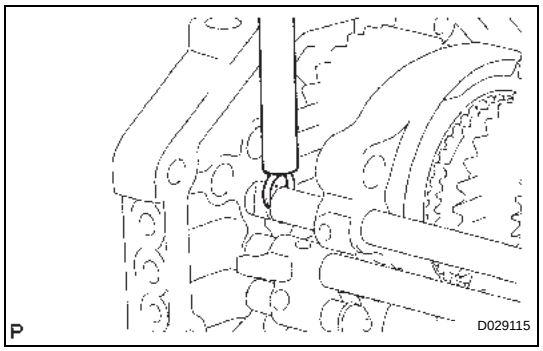
(b) Install the gear shift fork No. 1 onto the reverse gear.



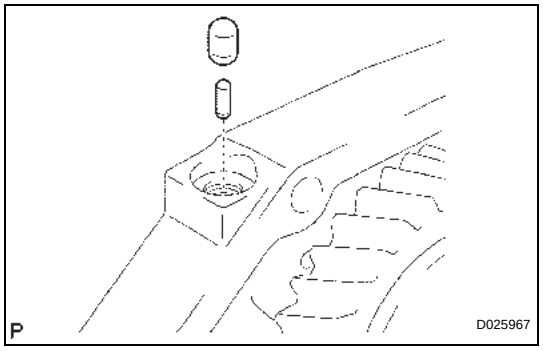
(c) Install the gear shift fork shaft No. 1 onto the intermediate plate from the rear side.



(d) Install the new shift fork set bolt onto the gear shift fork No. 1.
Torque: 19.5 N*m (199 kgf*cm, 14 ft.*lbf)

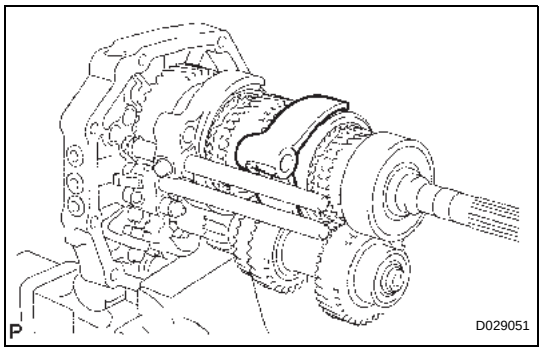


(e) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the gear shift fork shaft No. 1.

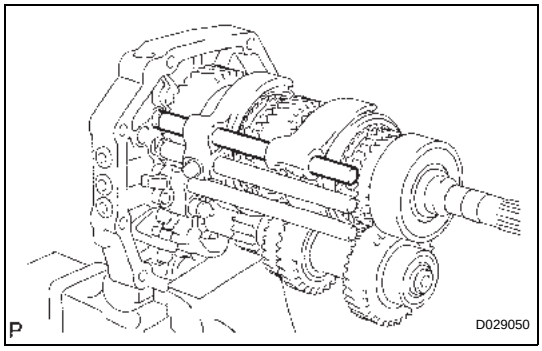


25. INSTALL NO. 2 GEAR SHIFT FORK SHAFT

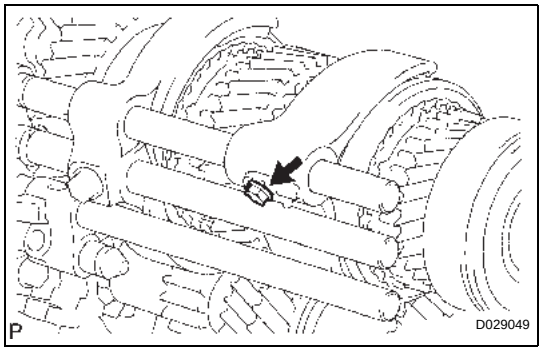
(a) Install the shift interlock pin (ball) and shift interlock No. 1 roller into the intermediate plate.



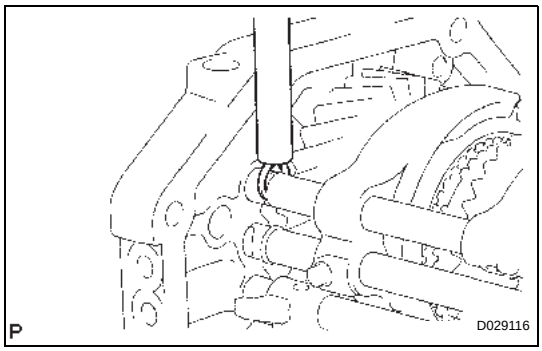
(b) Install the gear shift fork No. 2 onto the transmission hub sleeve No. 2.



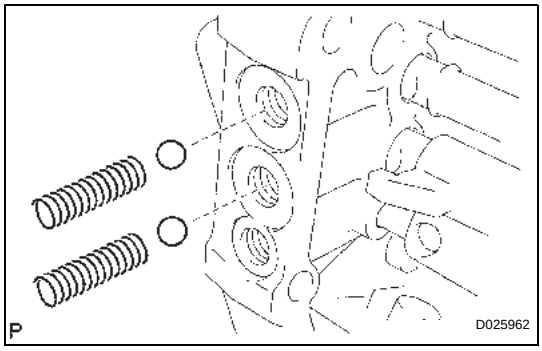
(c) Apply gear oil to the gear shift fork shaft No. 2, and install it onto the intermediate plate from the rear side.



(d) Install the new shift fork set bolt onto the gear shift fork No. 2.
Torque: 19.5 N*m (199 kgf*cm, 14 ft.*lbf)

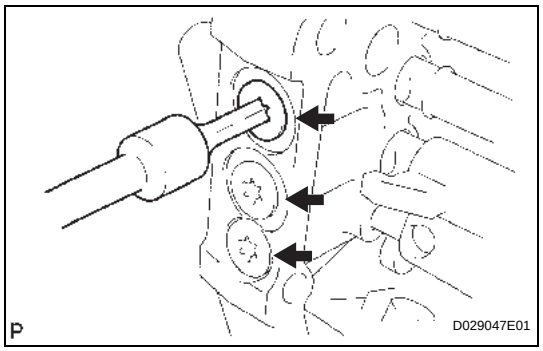


(e) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the gear shift fork shaft No. 2.

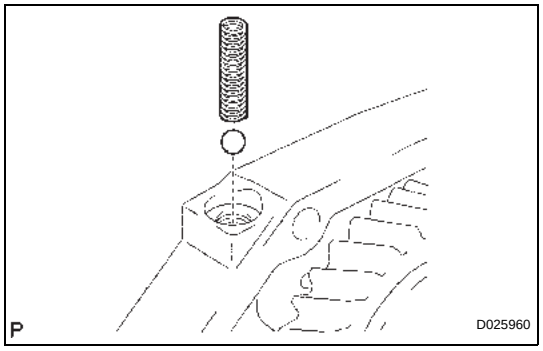


26. INSTALL NO. 1 SHIFT DETENT BALL SPRING SEAT

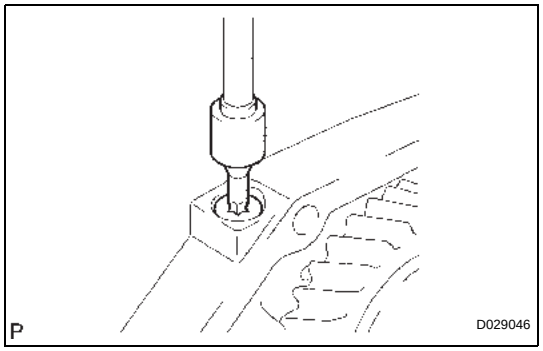
(a) Install the 2 shift detent ball low side compression springs and 2 shift detent balls into the intermediate plate.



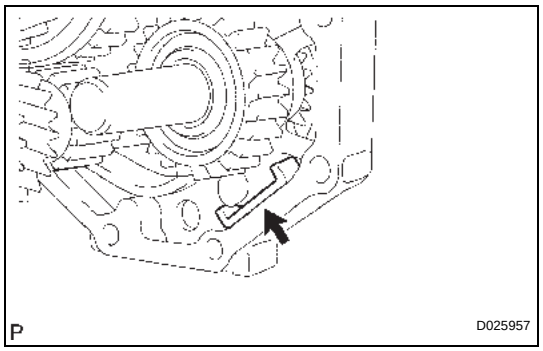
(b) Using a "Torx" socket wrench T40, install the 3 shift detent ball spring seats No. 1 onto the intermediate plate.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)



(c) Install the shift detent ball and the shift detent ball low side compression spring into the intermediate plate.

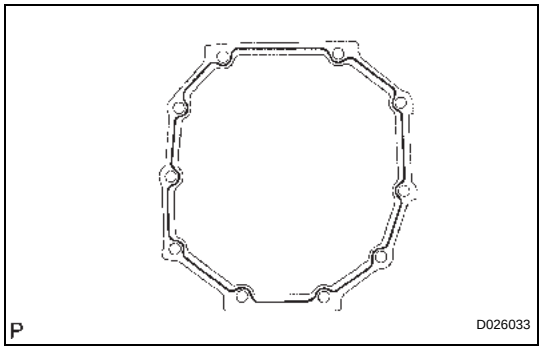


(d) Using a "Torx" socket wrench T40, install the shift detent ball spring seat No. 1 onto the intermediate plate.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)



27. INSTALL TRANSMISSION MAGNET

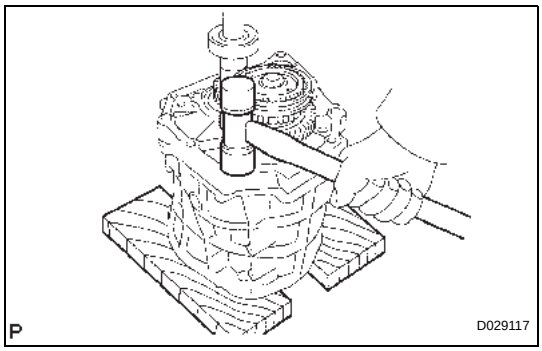
(a) Clean the transmission magnet, and install it onto the intermediate plate.



28. INSTALL MANUAL TRANSMISSION CASE

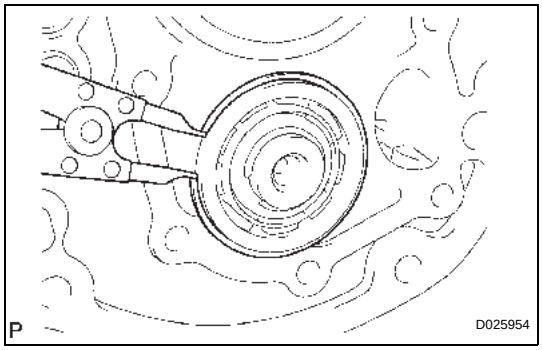
(a) Apply seal packing to the manual transmission case as shown in the illustration.
Seal packing:
Part No.08826-00090, THREE BOND 1281 or equivalent.

MT



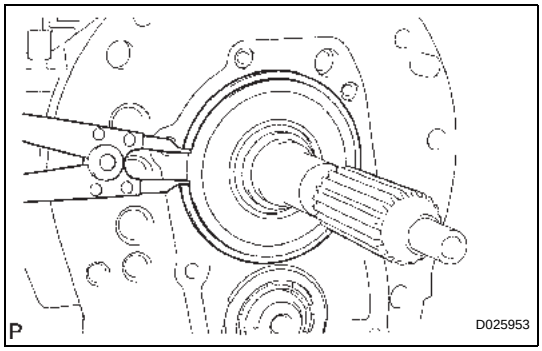
(b) Using a plastic hammer, tap the manual transmission case to attach it to the intermediate plate.

MT



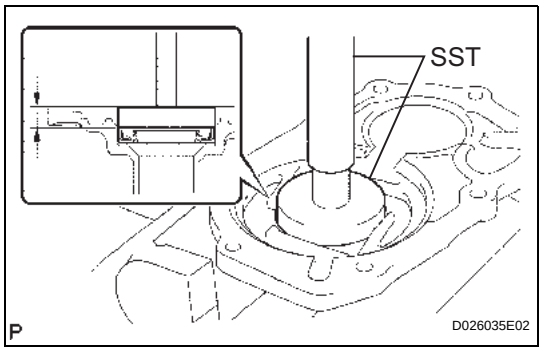
29. INSTALL NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, install the counter gear front bearing snap ring No. 1 onto the transmission case.



30. INSTALL FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring expander, install the front bearing shaft snap ring onto the transmission case.



31. INSTALL TRANSMISSION FRONT BEARING RETAINER OIL SEAL

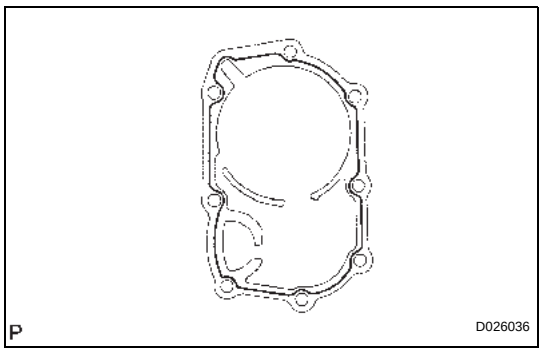
(a) Using SST and a hammer, install the new transmission front bearing retainer oil seal onto the transmission front bearing retainer.

SST 09950-60010 (09951-00300, 09951-00520, 09952-06010), 09950-70010 (09951-07100)

Drive in depth:

11.2 to 12.2 mm (0.4409 to 0.4803 in.)

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

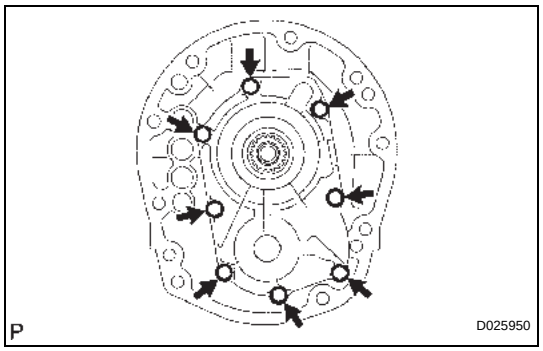


32. INSTALL FRONT BEARING RETAINER

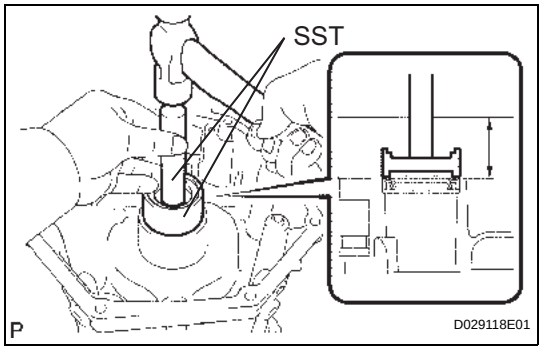
(a) Apply seal packing to the bearing retainer front as shown in the illustration.

Seal packing:

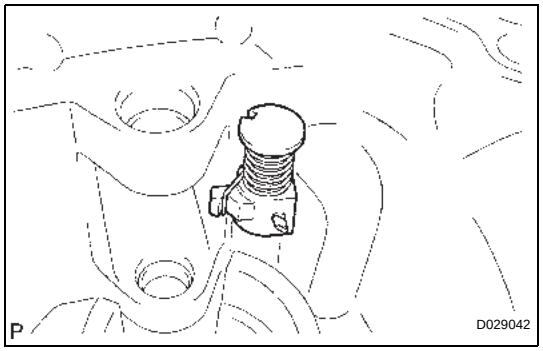
Part No.08826-00090, THREE BOND 1281 or equivalent.



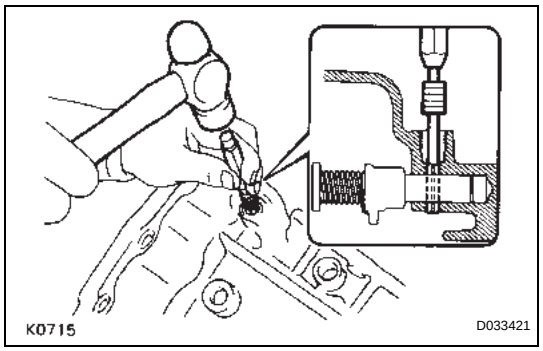
(b) Install the front bearing retainer onto the transmission case with the 8 bolts.
Torque: 16.5 N*m (168 kgf*cm, 12 ft.*lbf)
(c) Check that the input shaft and output shaft rotate smoothly.



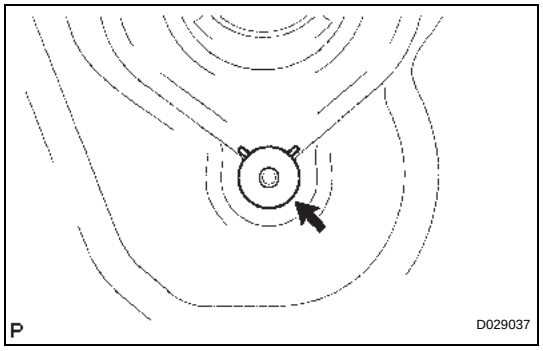
33. INSTALL TRANSFER ADAPTER OIL SEAL
(a) Using SST and a hammer, install the new transfer adapter oil seal onto the transfer adapter.
SST 09710-30050, 09950-70010 (09951-07100)
Drive in depth:
45.4 to 46.4 mm (1.7874 to 1.8268 in.)
(b) Lightly apply MP grease to the tip of the oil seal.
NOTICE:
Be careful not to damage the oil seal lip.



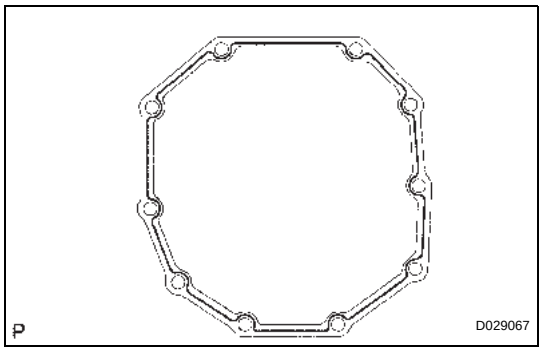
34. INSTALL REVERSE RESTRICT PIN ASSEMBLY
(a) Install the reverse restrict pin into the transfer adapter.



(b) Using a pin punch (5 mm) and a hammer, install the reverse restrict slotted pin into the transfer adapter.
(c) Using a "Torx" socket wrench T40, install the reverse restrict pin plug onto the transfer adapter.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)



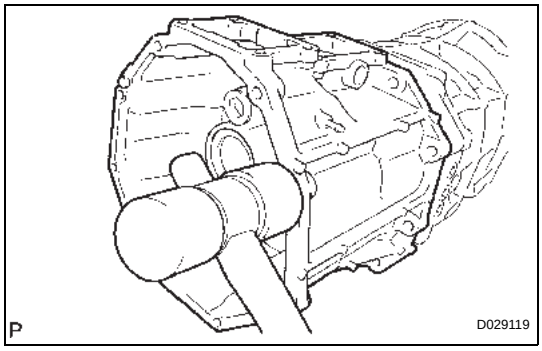
35. INSTALL OIL RECEIVER
(a) Install the oil receiver onto the transfer adapter.



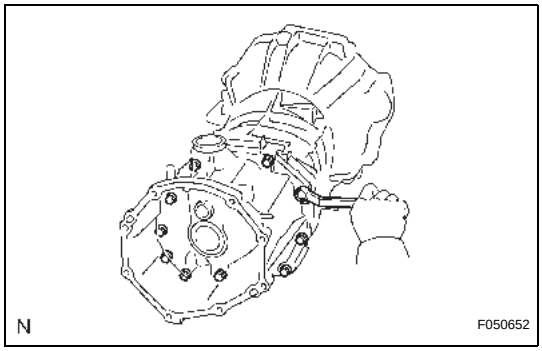
36. INSTALL TRANSFER ADAPTER

(a) Apply seal packing to the transfer adapter as shown in the illustration.
Seal packing:
Part No.08826-00090, THREE BOND 1281 or equivalent.

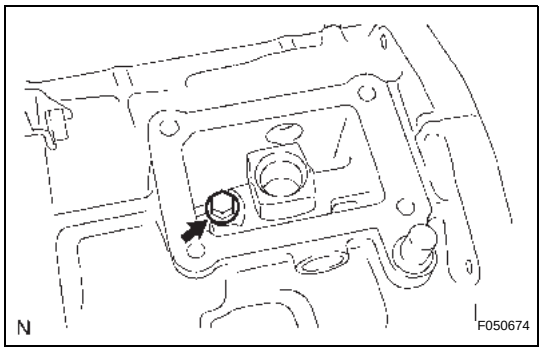
MT



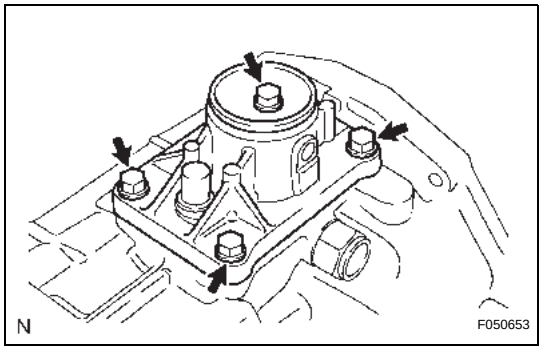
(b) Using a plastic hammer, tap the transfer adapter to attach it to the transmission case.



(c) Install the transfer adapter, onto the transmission case with the 10 bolts.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

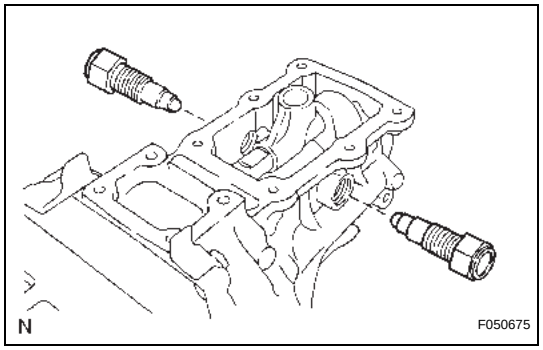


(d) Install the shift lever housing set bolt.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



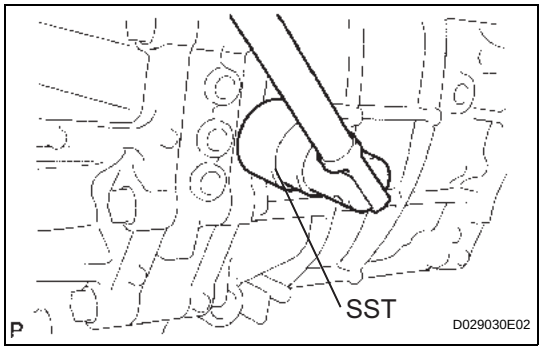
37. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Install the control shift lever retainer and transfer oil deflector onto the transfer adapter with the 4 bolts.
Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)



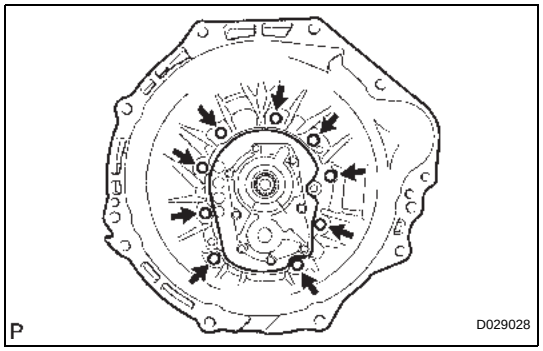
38. INSTALL REVERSE RESTRICT PIN ASSEMBLY

(a) Install the 2 reverse restrict pins into the extension housing or transfer adapter.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)



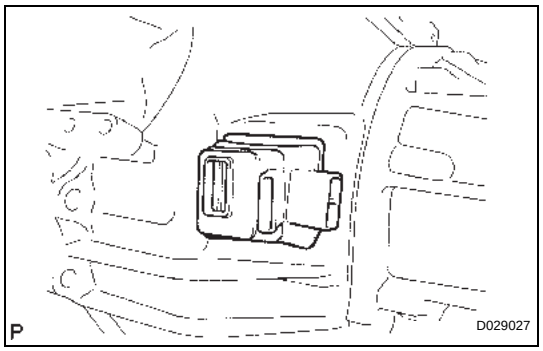
39. INSTALL BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, install the back-up light switch assembly and the gasket onto the transmission case.
SST 09817-16011
Torque: 44 N*m (450 kgf*cm, 32 ft.*lbf)



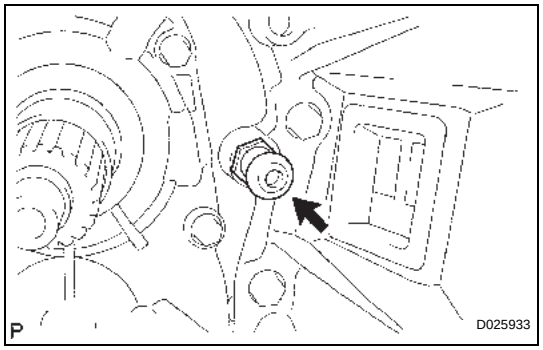
40. INSTALL CLUTCH HOUSING

(a) Install the clutch housing onto the transmission case with the 9 bolts.
Torque: 36 N*m (370 kgf*cm, 27 ft.*lbf)



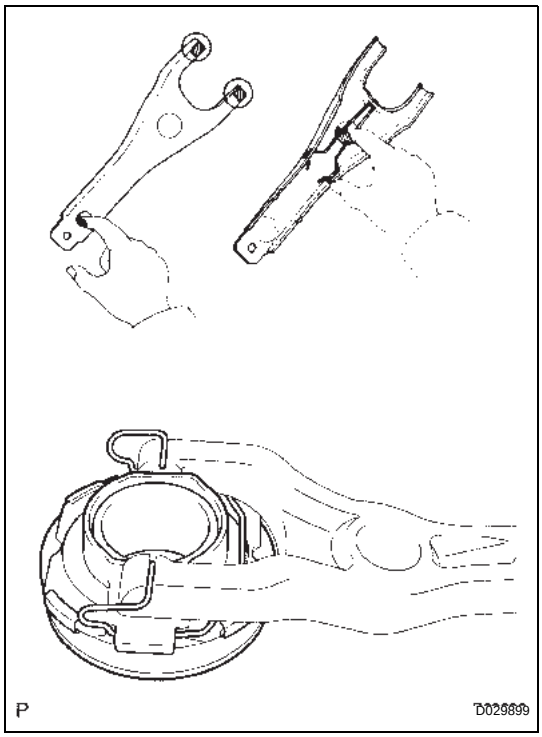
41. INSTALL CLUTCH RELEASE FORK BOOT

(a) Install the clutch release fork boot onto the clutch housing.



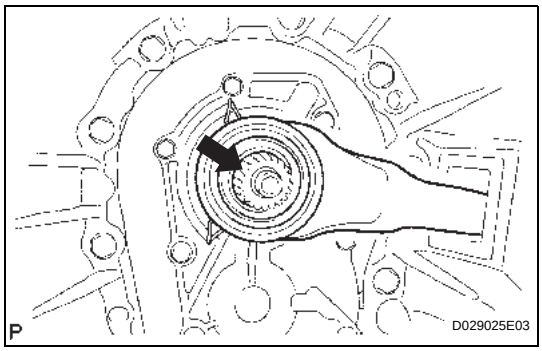
42. INSTALL RELEASE FORK SUPPORT

(a) Install the clutch release fork support onto the clutch housing.
Torque: 47 N*m (480 kgf*cm, 35 ft.*lbf)



43. INSTALL CLUTCH RELEASE BEARING ASSEMBLY

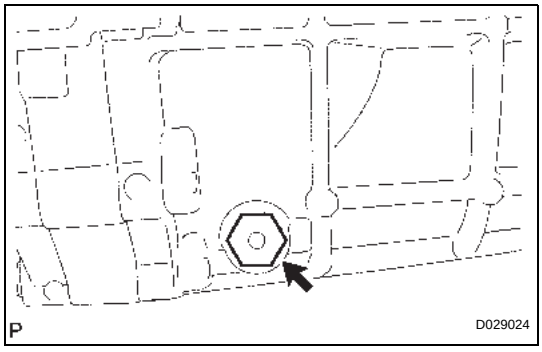
(a) Apply clutch release hub grease to the clutch release bearing, and install it onto the clutch release fork.



44. INSTALL CLUTCH RELEASE FORK SUB-ASSEMBLY

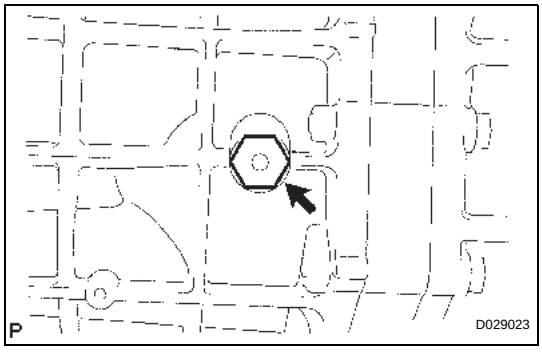
(a) Install the clutch release fork.

(b) Apply the clutch spline grease to the spline of the input shaft.



45. INSTALL DRAIN PLUG SUB-ASSEMBLY

(a) Install the drain plug onto the transmission case through a new gasket.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

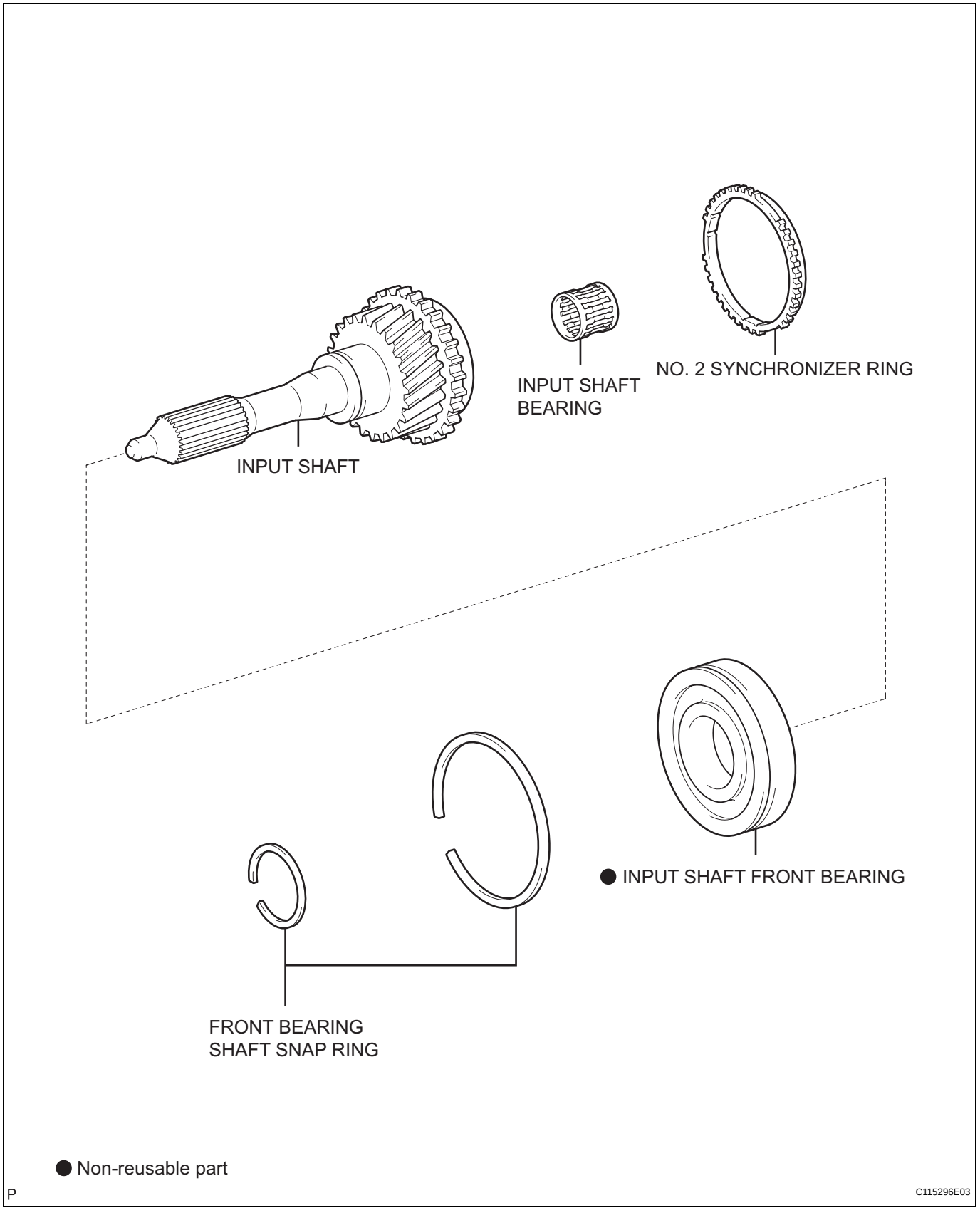


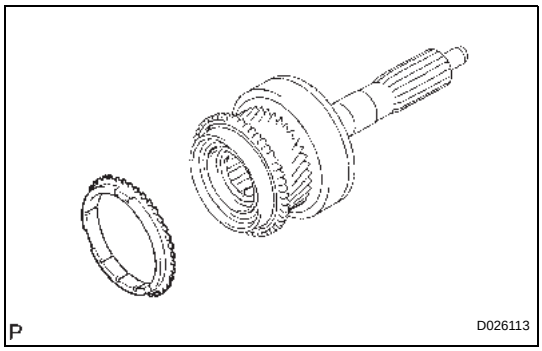
46. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the filler plug onto the transmission case through a new gasket.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

INPUT SHAFT

COMPONENTS

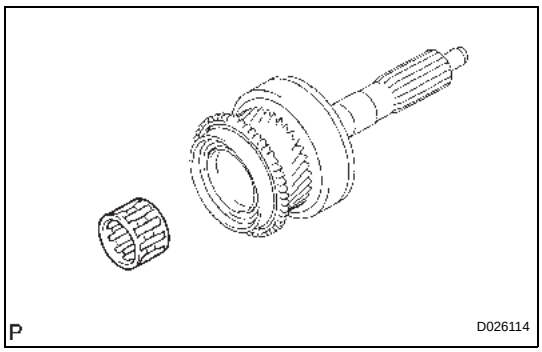




DISASSEMBLY

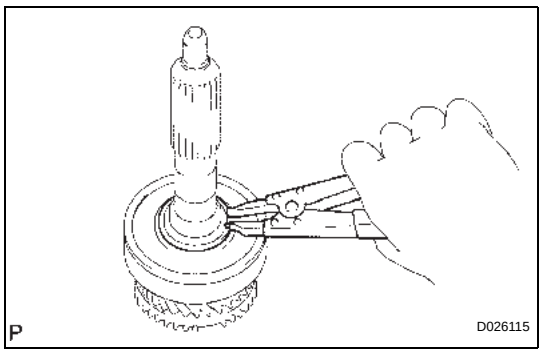
1. REMOVE NO. 2 SYNCHRONIZER RING

(a) Remove synchronizer ring No. 2 from the input shaft.



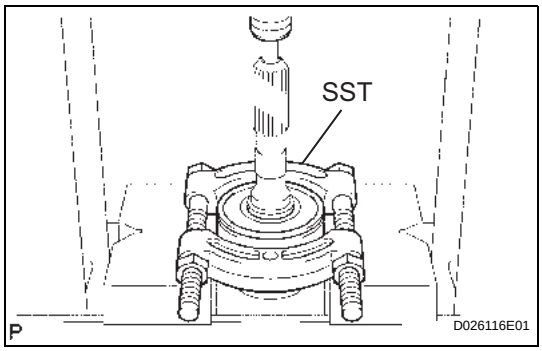
2. REMOVE INPUT SHAFT BEARING

(a) Remove the input shaft bearing from the input shaft.



3. REMOVE FRONT BEARING SHAFT SNAP RING

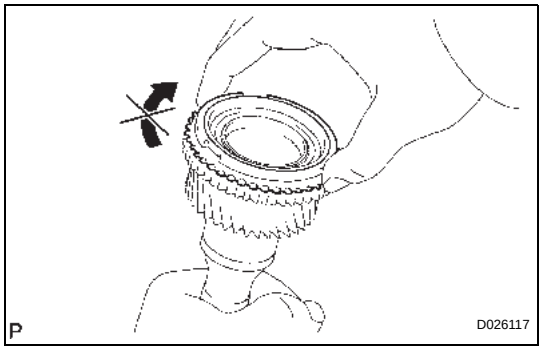
(a) Using a snap ring expander, remove the front bearing shaft snap ring from the input shaft.



4. REMOVE INPUT SHAFT FRONT BEARING

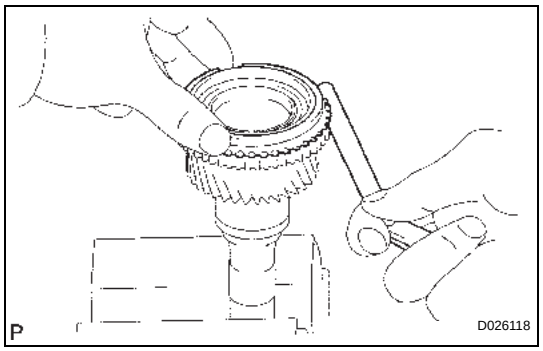
(a) Using SST and a press, remove the input shaft front bearing FR from the input shaft.
SST 09950-00020

INSPECTION



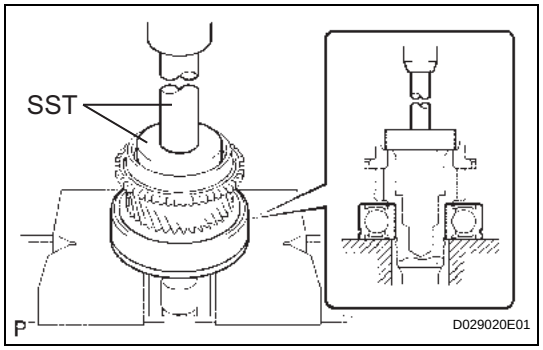
1. INSPECT NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to the cone of the input shaft, and check that it does not turn in the both directions while pushing the synchronizer ring No. 2.



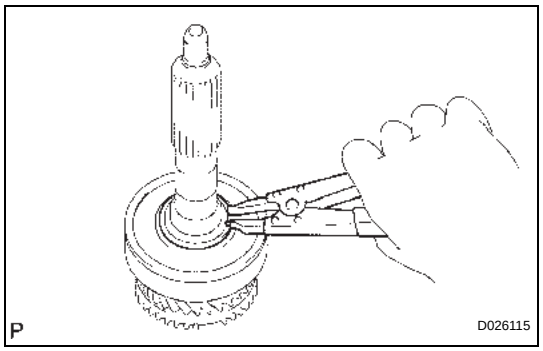
(b) Check the clearance between the synchronizer ring No. 2 and input shaft while pushing the synchronizer ring No. 2 to the cone of the input shaft.
Standard clearance:
0.70 to 1.70 mm (0.0276 to 0.0669 in.)
If the clearance is not within the specified values, replace synchronizer ring No. 2 with a new one.

REASSEMBLY



1. INSTALL INPUT SHAFT FRONT BEARING

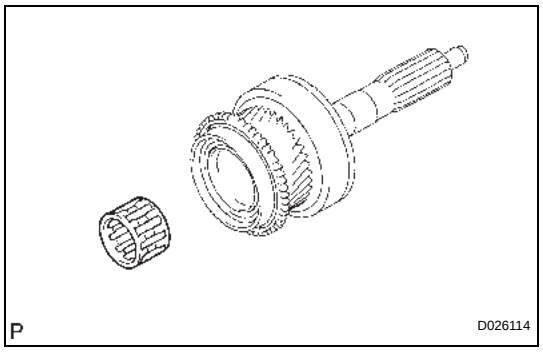
(a) Using SST and a press, install a new input shaft front bearing FR onto the input shaft.
SST 09950-60010 (09951-00570), 09950-70010 (09951-07100)
NOTICE:
Install the input shaft front bearing with the snap ring groove facing to the front.



2. INSTALL FRONT BEARING SHAFT SNAP RING

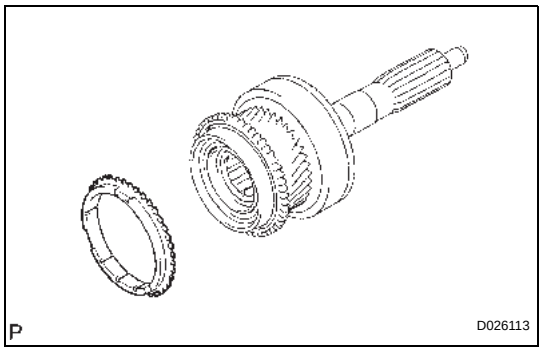
(a) Select the correct input shaft front bearing snap ring so that the clearance between the input shaft and input shaft front bearing is within the specified values.
Standard clearance:
0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.10 to 2.15 (0.0827 to 0.0846)
B	2.15 to 2.20 (0.0846 to 0.0866)
C	2.20 to 2.25 (0.0866 to 0.0886)
D	2.25 to 2.30 (0.0886 to 0.0906)
E	2.30 to 2.35 (0.0906 to 0.0925)
F	2.35 to 2.40 (0.0925 to 0.0945)
G	2.40 to 2.45 (0.0945 to 0.0965)



3. INSTALL INPUT SHAFT BEARING

(a) Apply gear oil to the input shaft bearing and install it onto the input shaft.

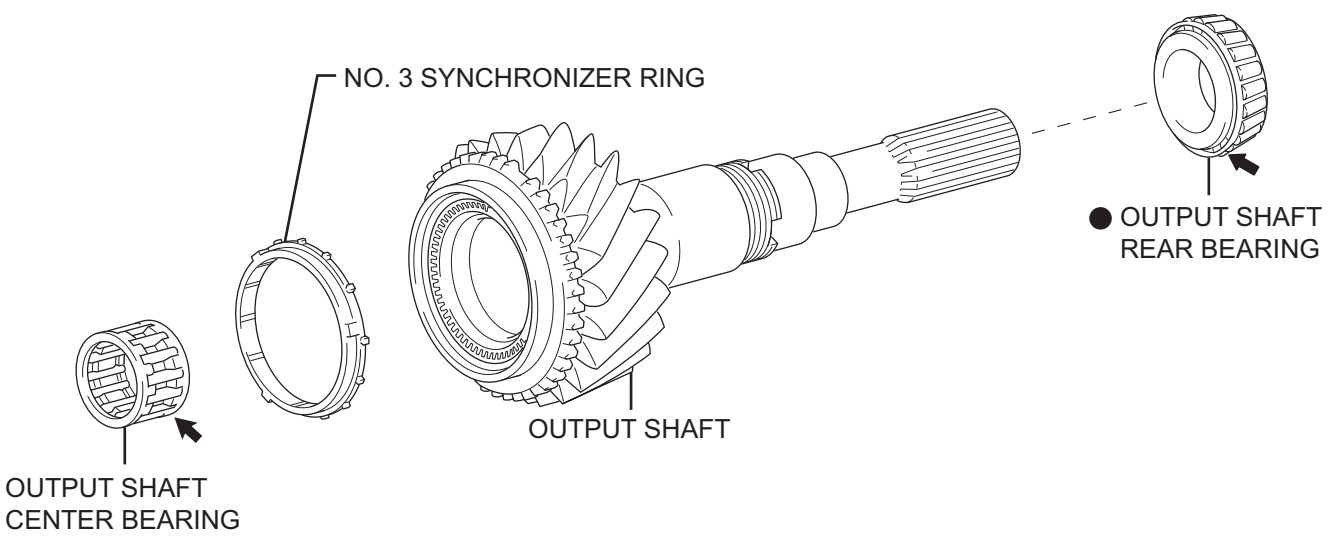


4. INSTALL NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to synchronizer ring No. 2, and install it onto the input shaft.

OUTPUT SHAFT

COMPONENTS



● Non-reusable part

⬅ Apply MP grease

Y

C114067E02

MT

MT

DISASSEMBLY

1. REMOVE NO. 3 SYNCHRONIZER RING

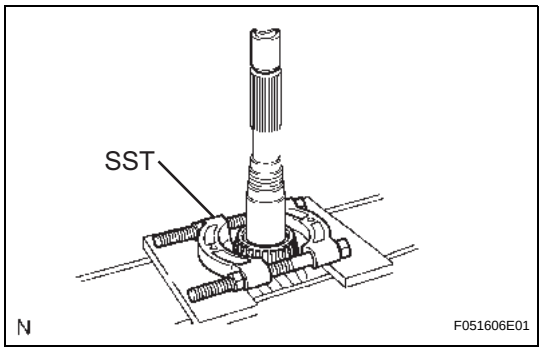
(a) Remove synchronizer ring No. 3 from the output shaft.

2. REMOVE OUTPUT SHAFT CENTER BEARING

(a) Remove the output shaft center bearing from the output shaft.

3. REMOVE OUTPUT SHAFT REAR BEARING

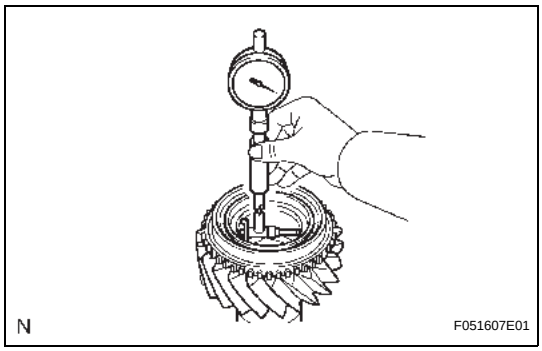
(a) Using SST and a press, remove the output shaft bearing.
SST 09950-00020



INSPECTION

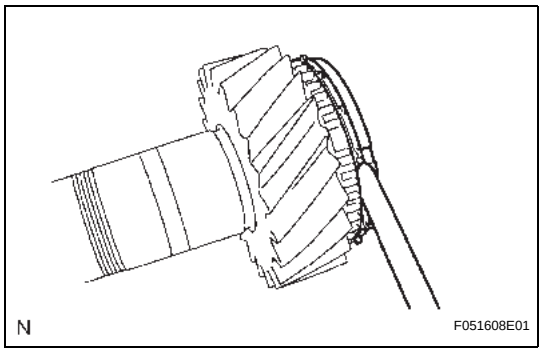
1. INSPECT OUTPUT SHAFT

(a) Using a cylinder gauge, measure the inside diameter of the output shaft.
Standard inside diameter:
45.009 to 45.025 mm (1.7720 to 1.7726 in.)
Maximum inside diameter:
45.025 mm (1.7726 in.)
If the diameter exceeds the maximum, replace the output shaft.

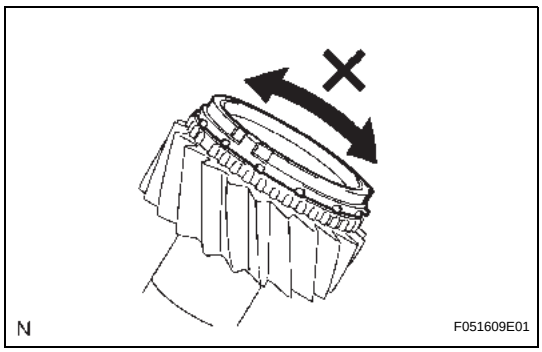


2. INSPECT NO. 3 SYNCHRONIZER RING

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and gear spline.
Standard clearance:
0.70 to 1.50 mm (0.0276 to 0.0591 in.)
Minimum clearance:
0.70 mm (0.0276 in.)
If the clearance is less than the minimum, replace the synchronizer ring.

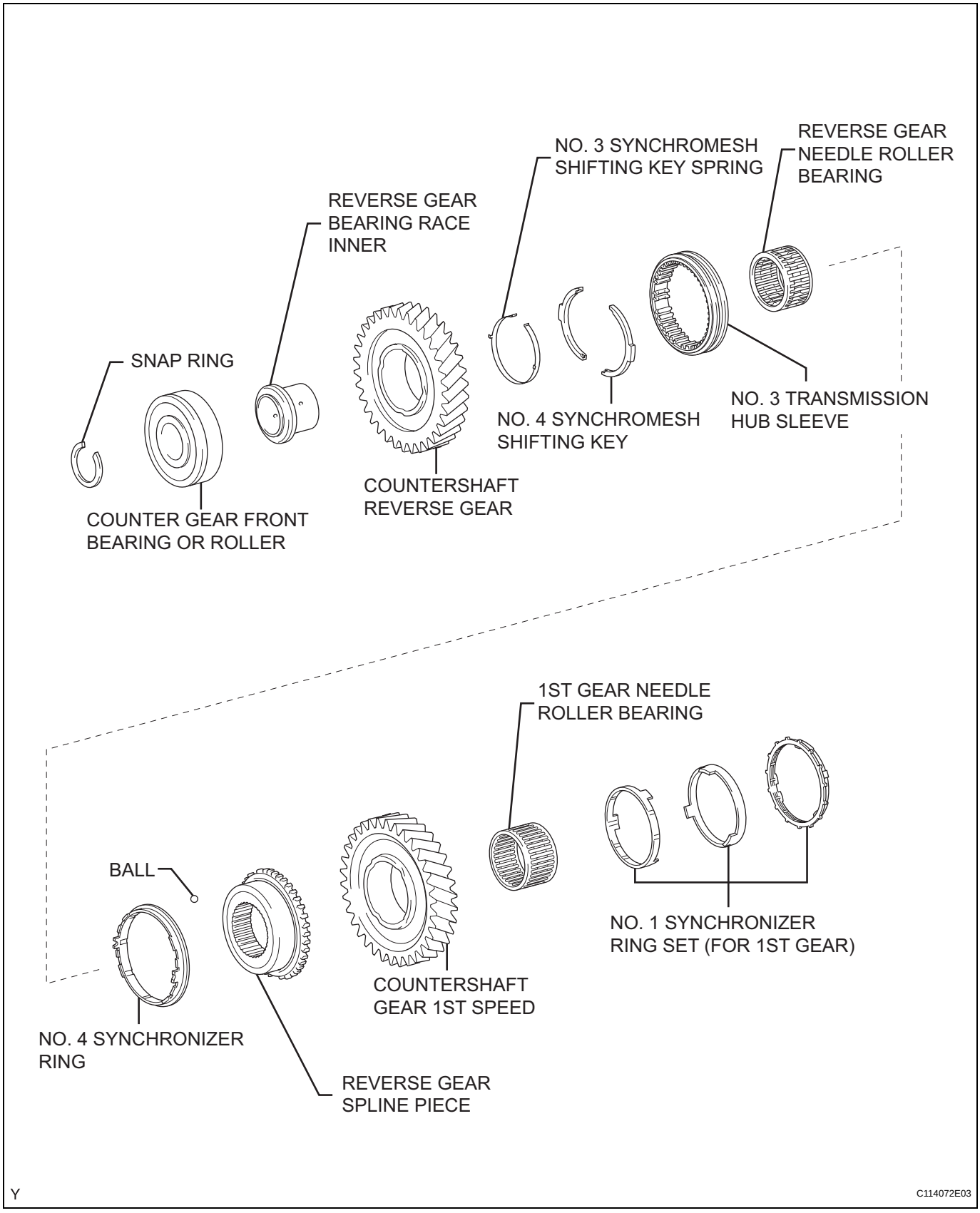


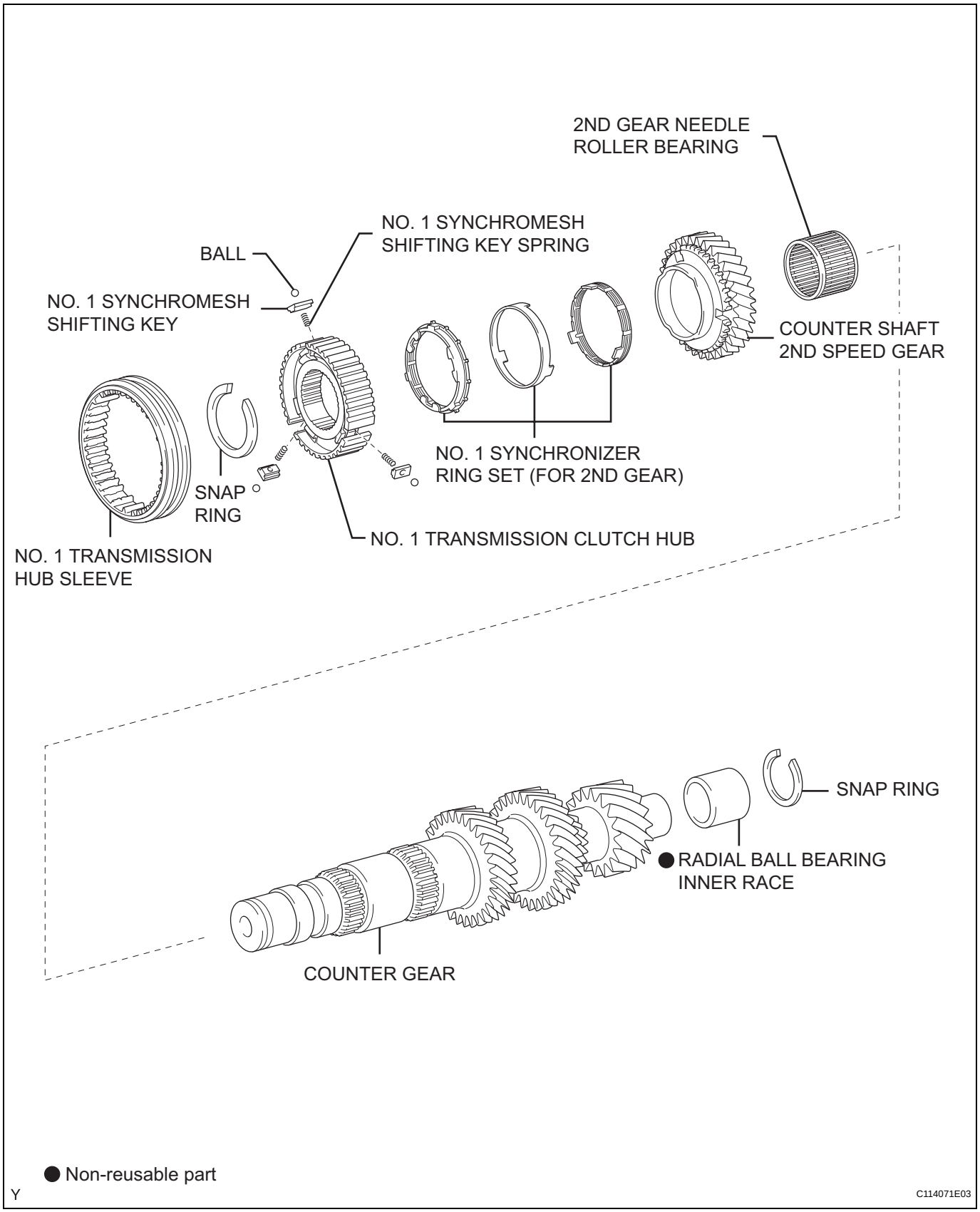
(b) Coat the output shaft and synchronizer ring cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks.



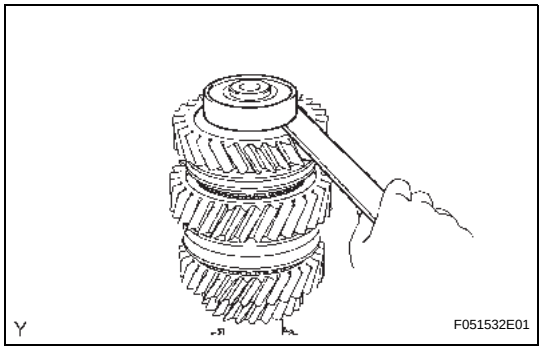
COUNTER GEAR AND REVERSE IDLER GEAR

COMPONENTS




2ND GEAR NEEDLE ROLLER BEARING
NO. 1 SYNCHROMESH SHIFTING KEY SPRING
BALL
NO. 1 SYNCHROMESH SHIFTING KEY
COUNTER SHAFT 2ND SPEED GEAR
NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)
SNAP RING
NO. 1 TRANSMISSION CLUTCH HUB
NO. 1 TRANSMISSION HUB SLEEVE
SNAP RING
● RADIAL BALL BEARING INNER RACE
COUNTER GEAR
● Non-reusable part
Y
C114071E03

MT



DISASSEMBLY

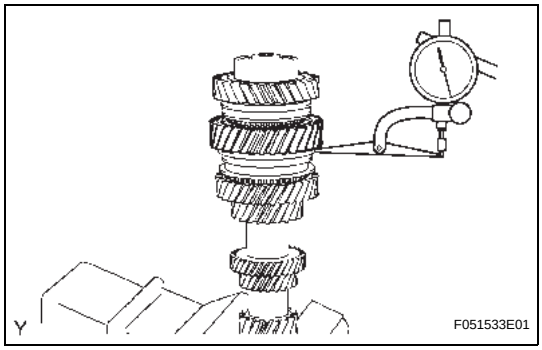
1. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



MT

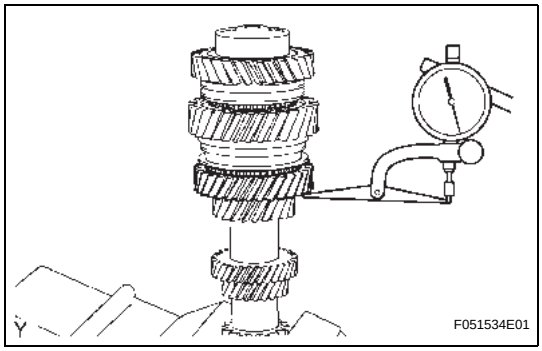
2. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



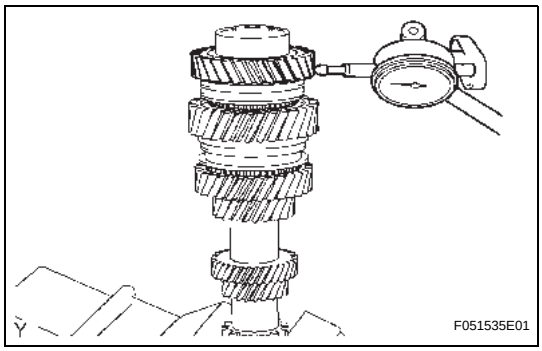
3. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



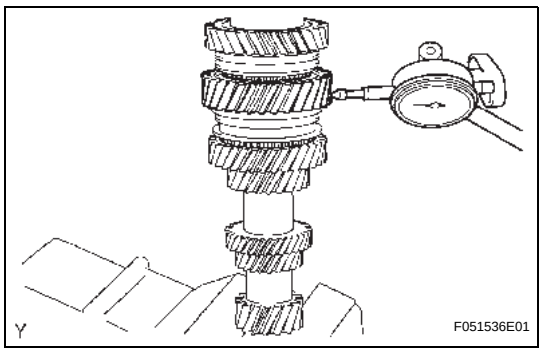
4. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



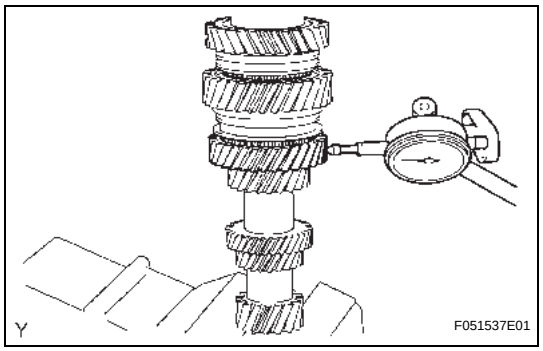
5. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.



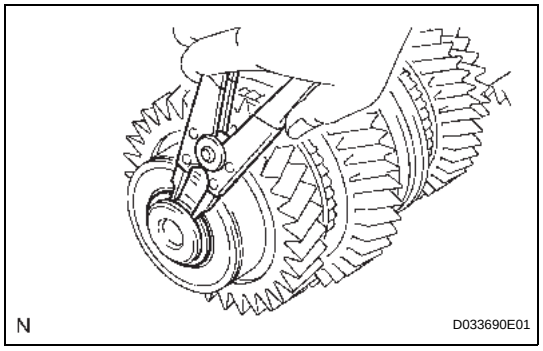
6. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

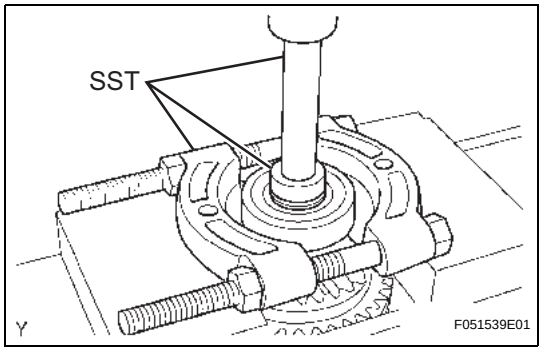
0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.



7. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

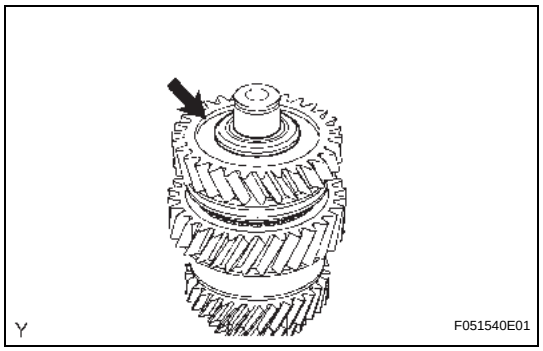
(a) Using a snap ring expander, remove the snap ring from the counter gear.



8. REMOVE COUNTER GEAR FRONT BEARING OR ROLLER

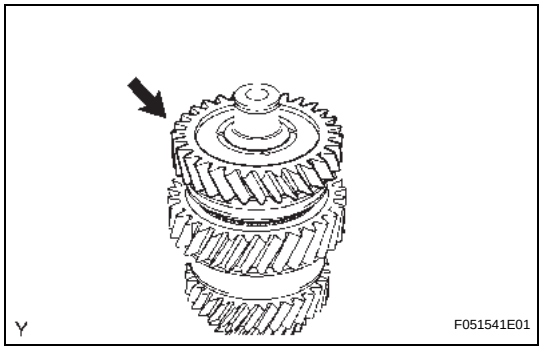
(a) Using SST and a press, remove the counter gear front bearing or roller from the counter gear.

SST 09950-00020, 09950-70010 (09951-07100), 09950-60010 (09951-00320)



9. REMOVE REVERSE GEAR BEARING RACE INNER

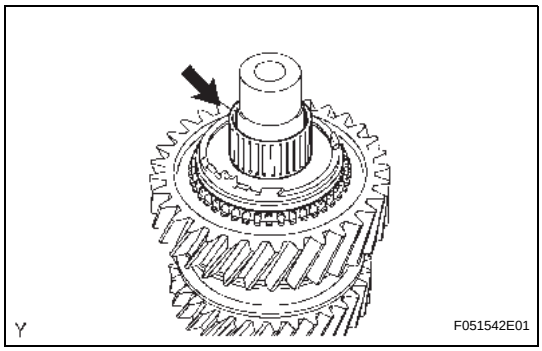
(a) Remove the reverse gear bearing race inner from the counter gear.



10. REMOVE COUNTERSHAFT REVERSE GEAR

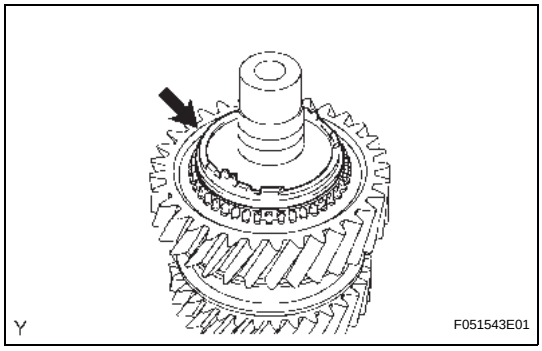
(a) Remove the countershaft reverse gear from the counter gear.

(b) Remove the hub sleeve, 2 shifting keys and key spring from the countershaft reverse gear.



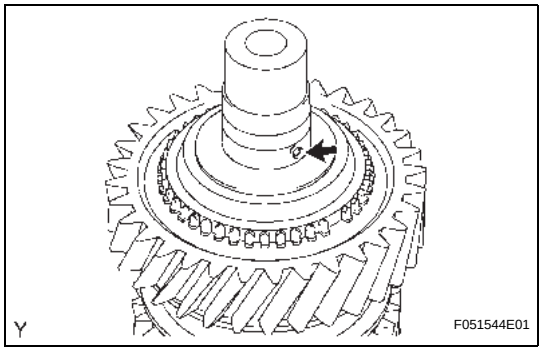
11. REMOVE REVERSE GEAR NEEDLE ROLLER BEARING

(a) Remove the reverse gear needle roller bearing from the counter gear.



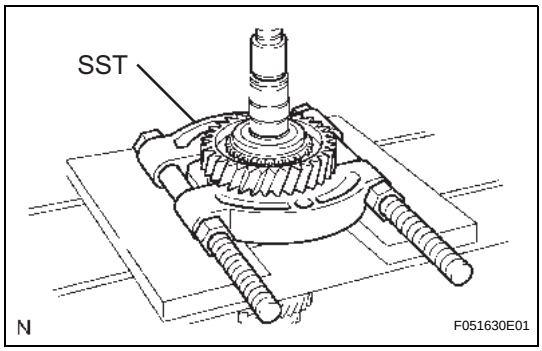
12. REMOVE NO. 4 SYNCHRONIZER RING

(a) Remove the synchronizer ring No. 4 from the counter gear.



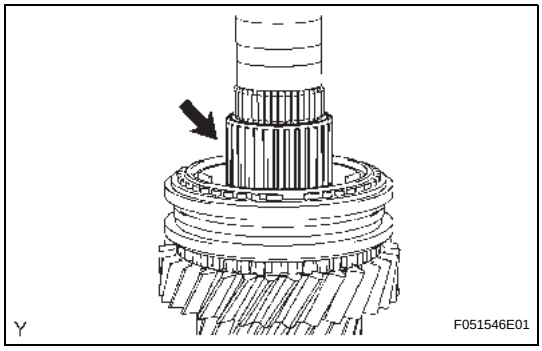
13. REMOVE BALL

(a) Remove the ball from the counter gear.



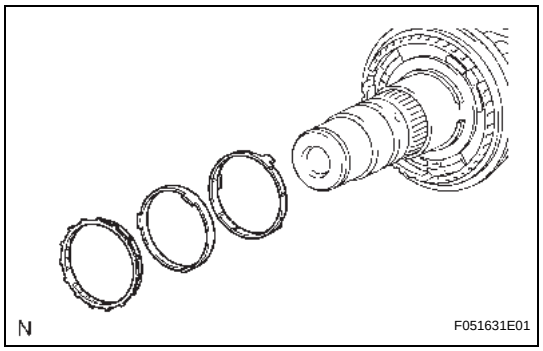
14. REMOVE COUNTERSHAFT GEAR 1ST SPEED

(a) Using a press, remove the countershaft gear 1st speed together with reverse gear spline piece from the counter gear.
SST 09950-00020



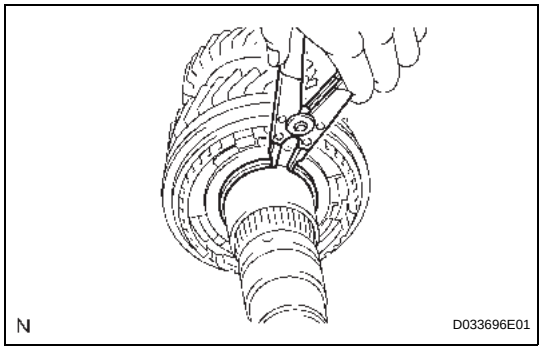
15. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

(a) Remove the 1st gear needle roller bearing from the counter gear.



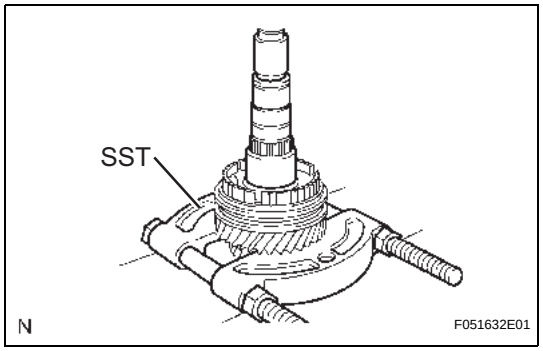
16. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

(a) Remove the synchronizer ring set No. 1 from the counter gear.



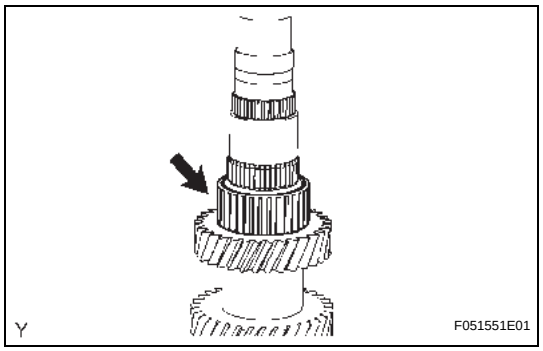
17. REMOVE CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the counter gear.



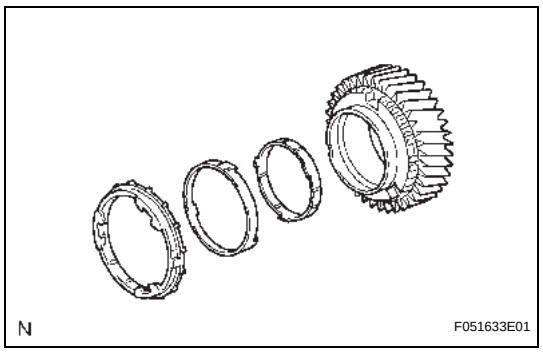
18. REMOVE COUNTER SHAFT 2ND SPEED GEAR

(a) Using a press, remove the counter shaft 2nd speed gear together with transmission clutch hub No. 1 from the counter gear.
SST 09950-00020



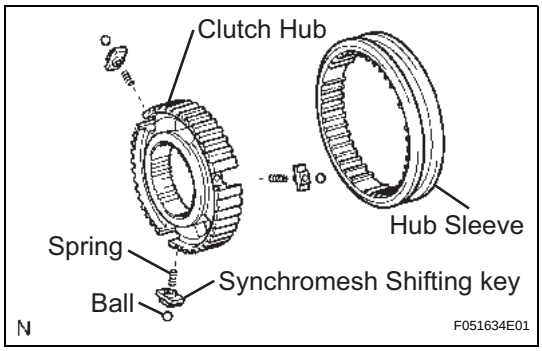
19. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

(a) Remove the 2nd needle roller bearing from the counter gear.



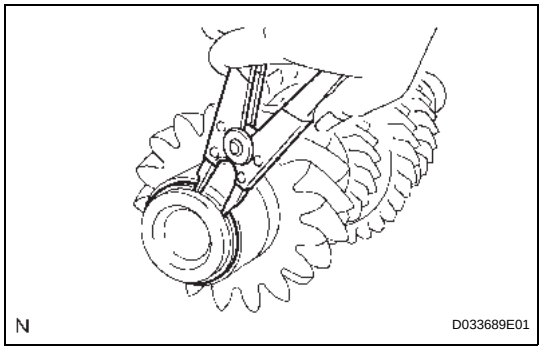
20. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Remove the synchronizer ring set No. 1 from the 2nd gear.



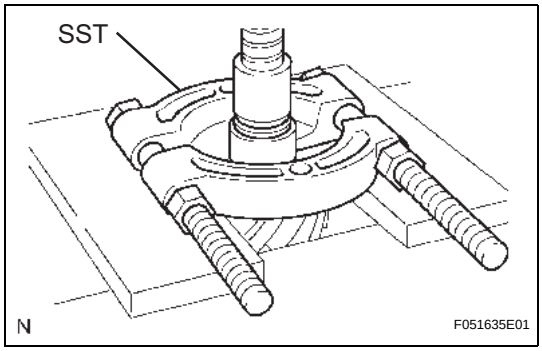
21. REMOVE NO. 1 TRANSMISSION CLUTCH HUB

(a) Remove the hub sleeve, 3 synchromesh shifting keys, 3 balls and 3 springs from the clutch hub.
HINT:
Use a shop rag to prevent the ball and spring from flying off.



22. REMOVE SNAP RING COUNTER GEAR REAR BEARING

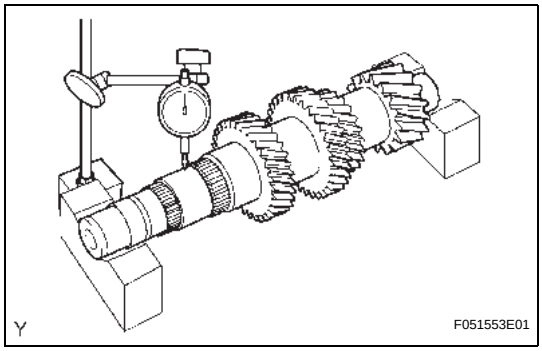
(a) Using a snap ring expander, remove the snap ring from the counter gear.



23. REMOVE RADIAL BALL BEARING INNER RACE

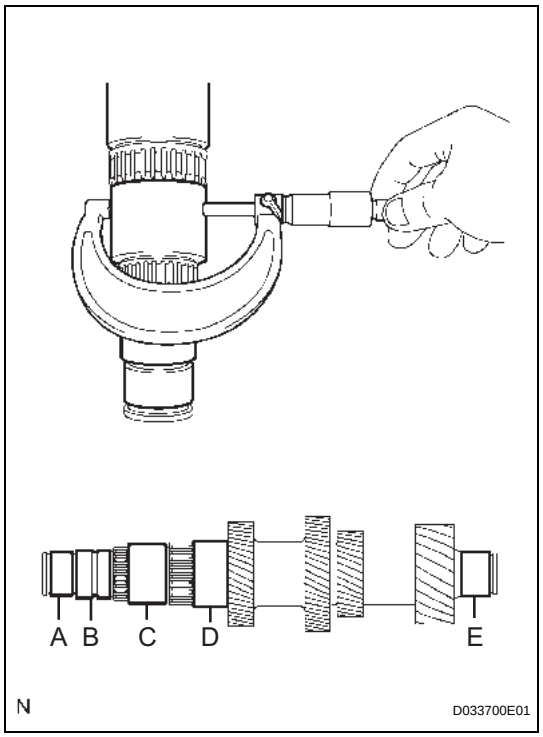
(a) Using SST and a press, remove the needle roller bearing inner race.
SST 09950-00020

INSPECTION



1. INSPECT COUNTER GEAR

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout:
0.03 mm (0.0012 in.)
If the runout exceeds the maximum, replace the counter gear.



(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

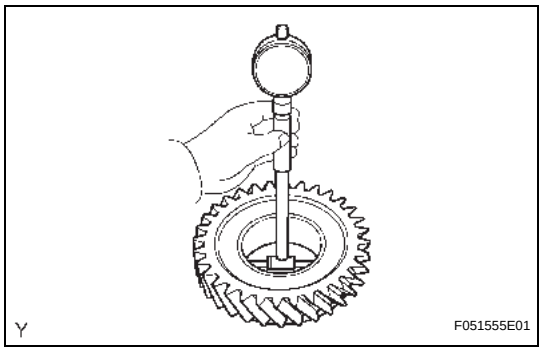
Standard

Part	Outer diameter mm (in.)
A	34.002 to 34.015 (1.3387 to 1.3392)
B	36.985 to 37.000 (1.4561 to 1.4567)
C	47.985 to 48.000 (1.8892 to 1.8898)
D	53.985 to 54.000 (2.1254 to 2.1260)
E	34.002 to 34.015 (1.3387 to 1.3392)

Minimum

Part	Outer diameter mm (in.)
A	34.002 (1.3387)
B	36.985 (1.4561)
C	47.985 (1.8892)
D	53.985 (2.1254)
E	34.002 (1.3387)

If the diameter is less than the minimum, replace the counter gear shaft.

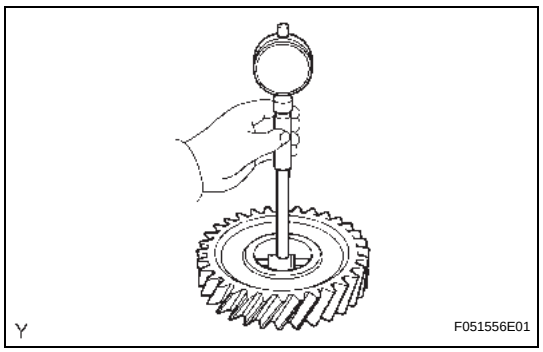


2. INSPECT COUNTERSHAFT REVERSE GEAR

(a) Using cylinder gauge, measure the inside diameter of the reverse gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the reverse gear.

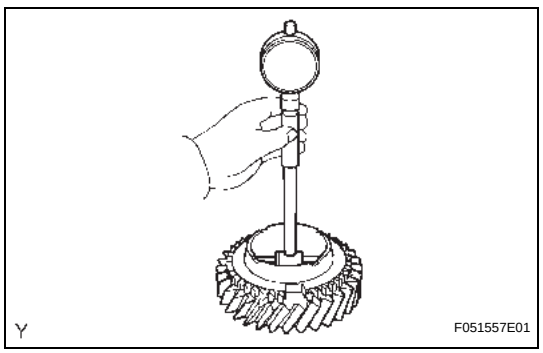


3. INSPECT COUNTERSHAFT GEAR 1ST SPEED

(a) Using cylinder gauge, measure the inside diameter of the 1st gear.

Standard inside diameter:
54.015 to 54.040 mm (2.1266 to 2.1276 in.)
Maximum inside diameter:
54.040 mm (2.1276 in.)

If the inside diameter exceeds the maximum, replace the 1st gear.

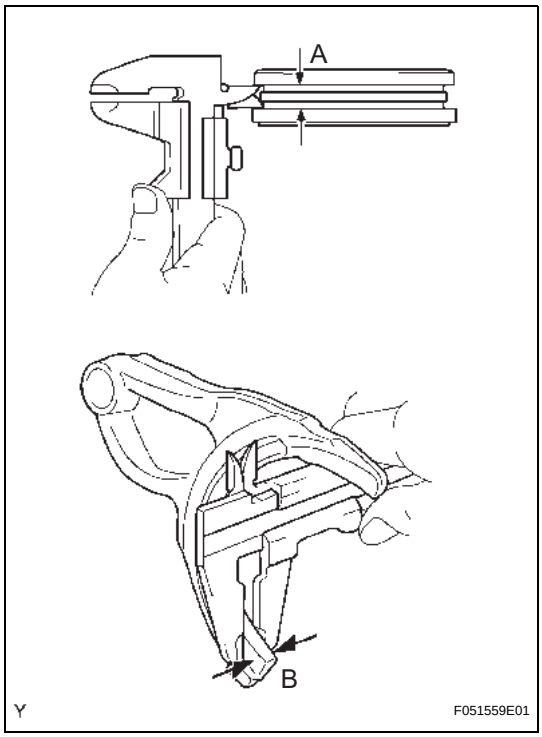


4. INSPECT COUNTER SHAFT 2ND SPEED GEAR

(a) Using cylinder gauge, measure the inside diameter of the 2nd gear.

Standard inside diameter:
60.015 to 60.040 mm (2.3628 to 2.3638 in.)
Maximum inside diameter:
60.040 mm (2.3638 in.)

If the inside diameter exceeds the maximum, replace the 2nd gear.



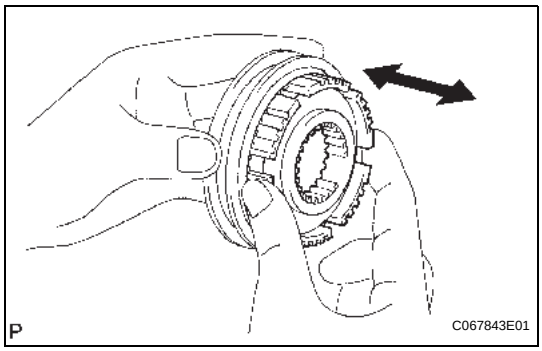
5. INSPECT NO. 3 TRANSMISSION HUB SLEEVE

(a) Using vernier calipers, measure the width of the transmission hub sleeve No. 3 groove (A) and the thickness of the claw part on the gear shift fork No. 4 (B), and calculate the clearance.

Standard clearance (A - B):

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

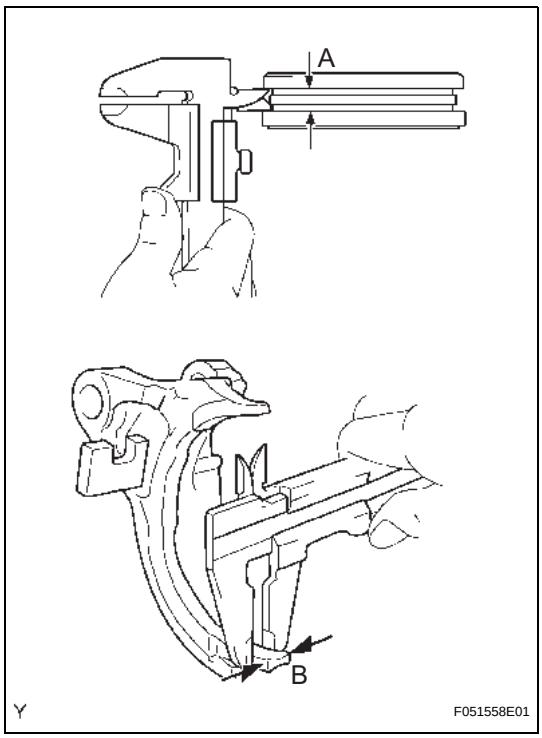
If the clearance is outside the specification, replace the transmission hub sleeve No. 3 and gear shift fork No. 4.



6. INSPECT NO. 1 TRANSMISSION HUB SLEEVE

(a) Check the sliding condition between the transmission hub No. 1 and transmission hub sleeve No. 1.

(b) Check that the spline gear teeth of the transmission hub sleeve No. 1 are not worn.

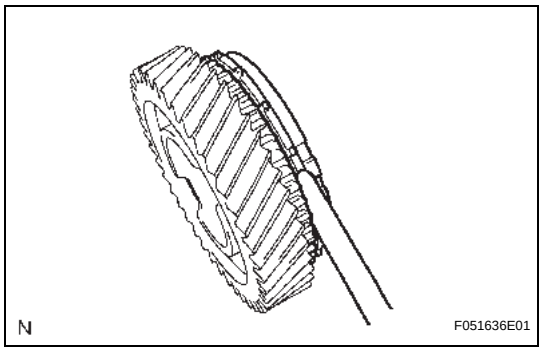


(c) Using vernier calipers, measure the width of the transmission hub sleeve No. 1 groove (A) and the thickness of the claw part on the gear shift fork No. 1 (B), and calculate the clearance.

Standard clearance (A - B):

0.15 to 0.35 mm (0.0059 to 0.0138 in.)

If the clearance is outside the specification, replace the transmission hub sleeve No. 1 and gear shift fork No. 1.

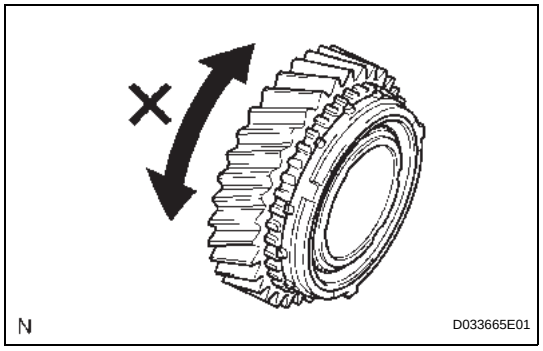


7. INSPECT NO. 4 SYNCHRONIZER RING

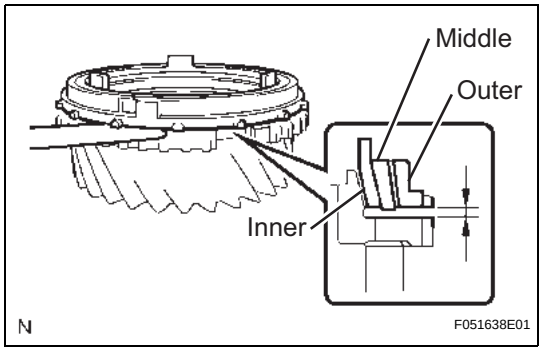
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and reverse gear.

Standard clearance:
0.70 to 1.30 mm (0.0276 to 0.0512 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the reverse gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the reverse gear cone. Check that the ring locks.

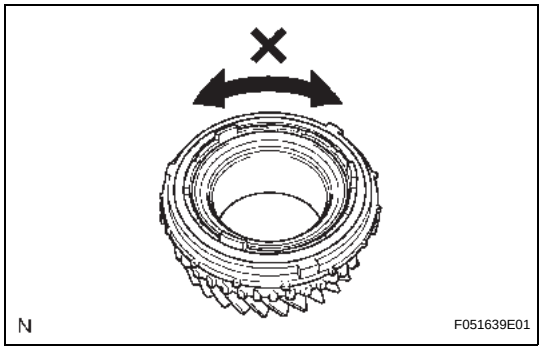


8. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

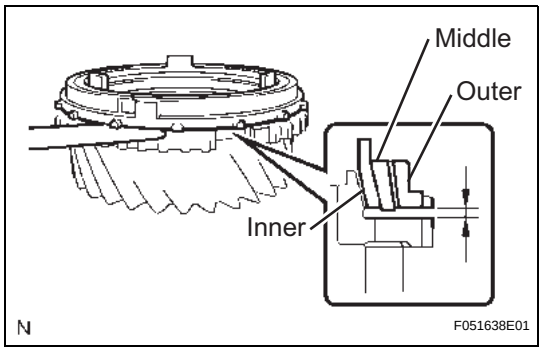
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 1st gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 1st gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 1st gear cone. Check that the ring locks.

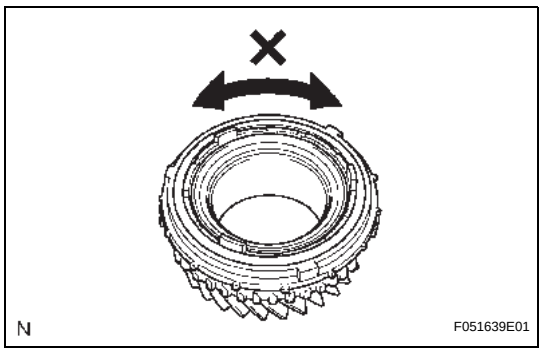


9. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 2nd gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



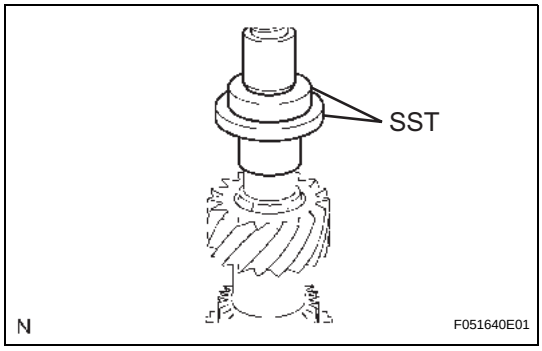
(b) Coat the 2nd gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 2nd gear cone. Check that the ring locks.

REASSEMBLY

1. INSTALL RADIAL BALL BEARING INNER RACE

(a) Using SST and a press, install a new needle roller bearing inner race.

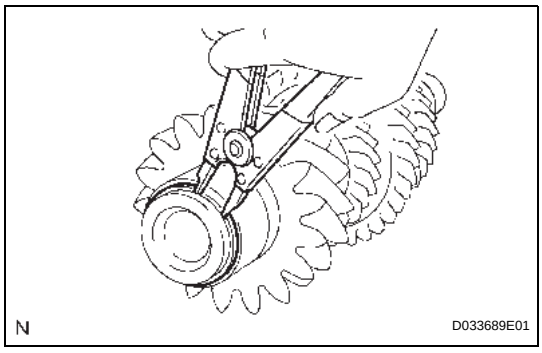
SST 09950-60010 (09951-00540)



2. INSTALL SNAP RING COUNTER GEAR REAR BEARING

(a) Select a snap ring that will allow minimum axial play.

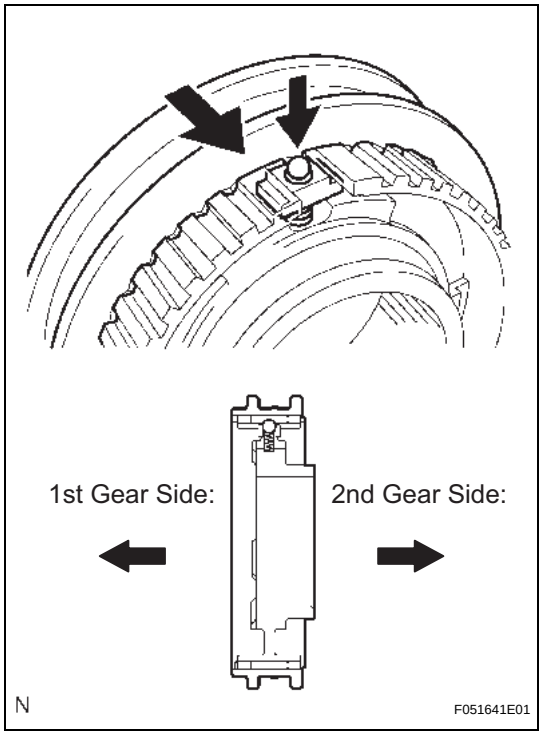
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness



Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C

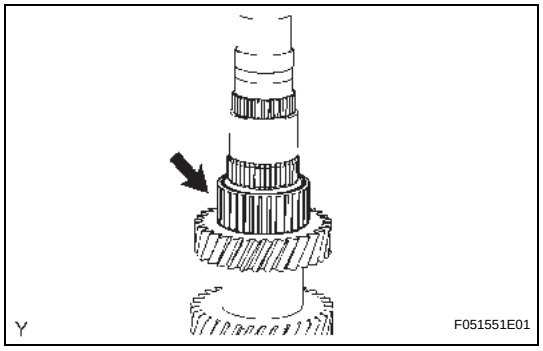
Part No.	Thickness: mm (in.)	Mark
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
90520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



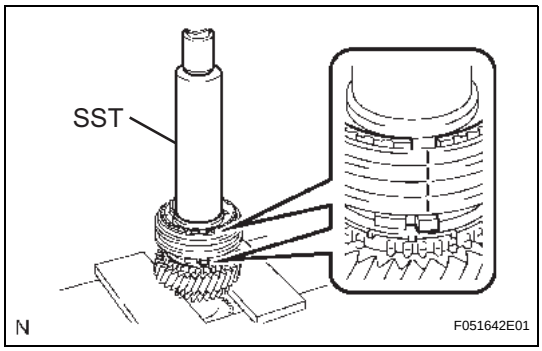
3. INSTALL NO. 1 TRANSMISSION CLUTCH HUB

(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.
NOTICE:
Take care to prevent the ball from flying off.



4. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

(a) Coat the 2nd gear needle roller bearing with gear oil, then install it onto the counter gear.



5. INSTALL COUNTER SHAFT 2ND SPEED GEAR

(a) Coat the countershaft 2nd speed gear with gear oil, then install it onto the counter gear.

(b) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.

(c) Using SST and a press, install the transmission clutch hub No. 1 onto the counter gear.

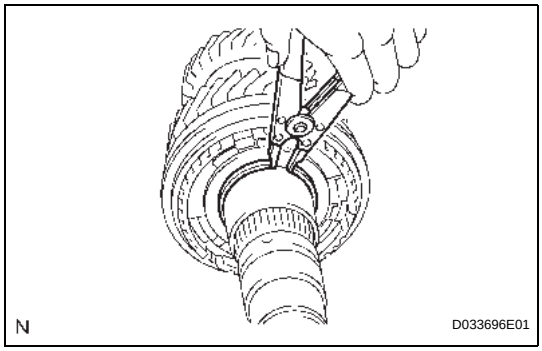
SST 09308-14010

HINT:

Align the convex portion of the synchronizer ring with the groove of the clutch hub.

(d) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.

MT



6. INSTALL CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.

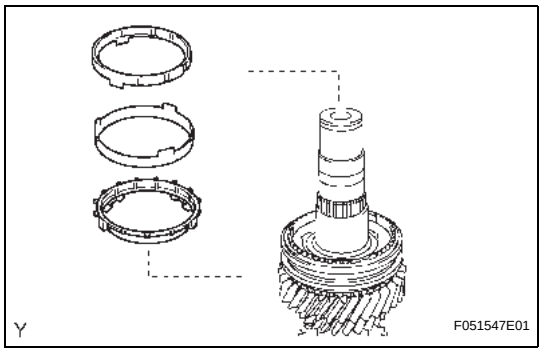
Standard clearance:

0.1 mm (0.004 in.) or less

Snap ring thickness

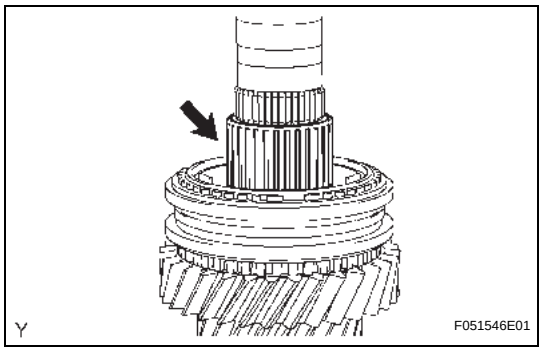
Part No.	Thickness: mm (in.)	Mark
90520-45013	2.28 to 2.33 (0.0898 to 0.0917)	A
90520-45014	2.33 to 2.38 (0.0917 to 0.0937)	B
90520-45015	2.38 to 2.43 (0.0937 to 0.0957)	C
90520-45016	2.43 to 2.48 (0.0957 to 0.0976)	D
90520-45017	2.48 to 2.53 (0.0976 to 0.0996)	E
90520-45018	2.53 to 2.58 (0.0996 to 0.1016)	F
90520-45019	2.58 to 2.63 (0.1016 to 0.1035)	G

(b) Using a snap ring expander, install the snap ring onto the counter gear.



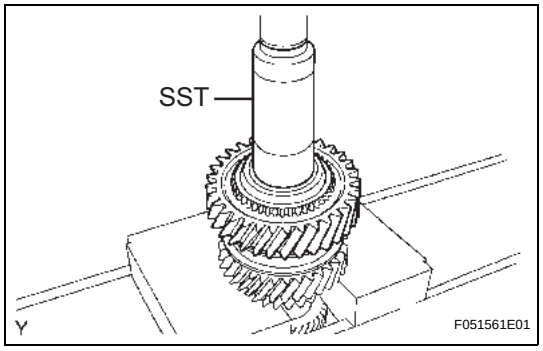
7. INSTALL NO. 1 SYNCHRONIZER RING SET

(a) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.



8. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

(a) Coat the 1st gear needle roller bearing with gear oil, then install it onto the counter gear.

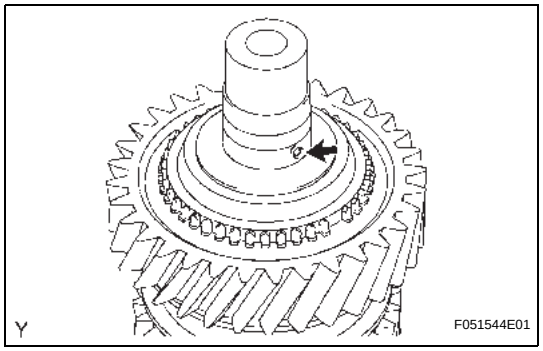


9. INSTALL COUNTERSHAFT GEAR 1ST SPEED

(a) Coat the countershaft gear 1st speed with gear oil, and install it onto the counter gear.

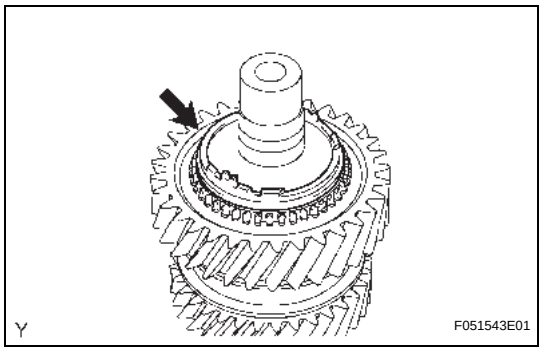
(b) Using SST and a press, install the reverse gear spline piece.

SST 09309-37010



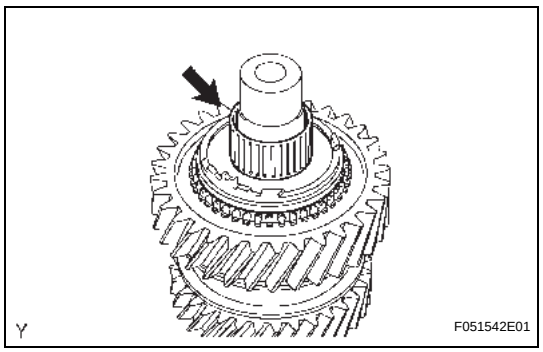
10. INSTALL BALL

(a) Install the ball into the counter gear.



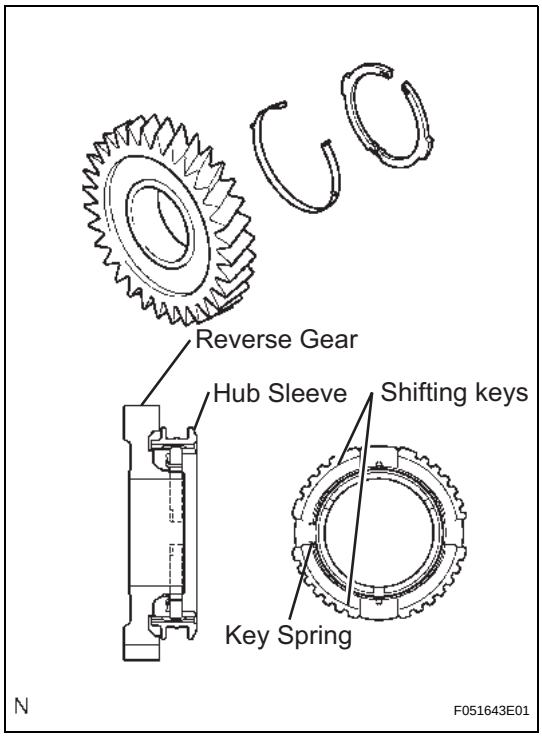
11. INSTALL NO. 4 SYNCHRONIZER RING

(a) Coat the synchronizer ring No. 4 with gear oil, and install it onto the counter gear.



12. INSTALL REVERSE GEAR NEEDLE ROLLER BEARING

(a) Coat the reverse gear needle roller bearing with gear oil, and install it onto the counter gear.

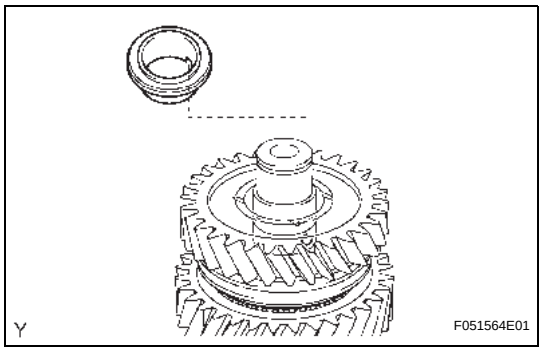


13. INSTALL COUNTERSHAFT REVERSE GEAR

(a) Install the key spring and 2 shifting keys onto the reverse gear.
HINT:
- Install the shifting key with its groove on the reverse gear side.
- Install the key spring with its claw on the reverse gear side.
- Refer to the illustration when installing the key spring.

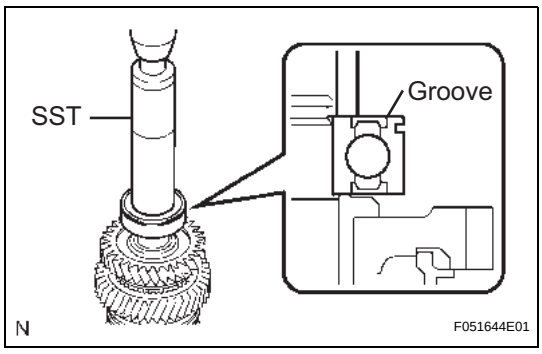
(b) Install the hub sleeve onto the reverse gear.

(c) Coat the countershaft reverse gear with gear oil, then install it onto the counter gear.



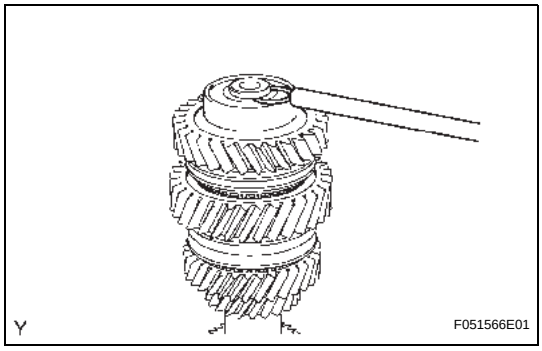
14. INSTALL REVERSE GEAR BEARING RACE INNER

(a) Align the groove of the reverse gear bearing race inner with the ball, and install them.



15. INSTALL COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, install counter gear front bearing or roller onto the counter gear.
SST 09608-06041
HINT:
Make sure that the groove of the bearing faces the correct direction as shown in the illustration.



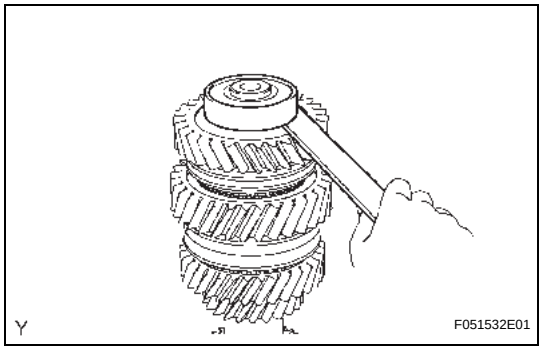
16. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A

Part No.	Thickness: mm (in.)	Mark
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
0520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



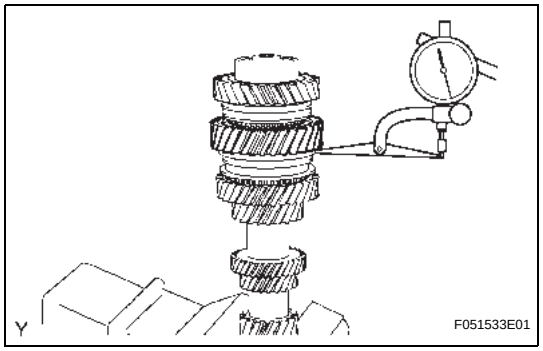
17. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



18. INSPECT 1ST GEAR THRUST CLEARANCE

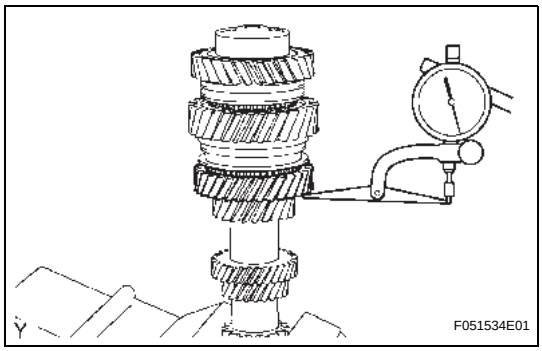
(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.

MT



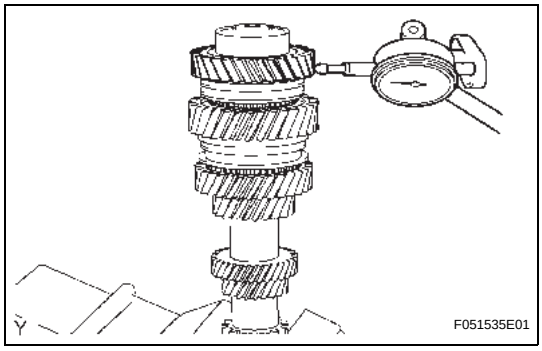
19. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



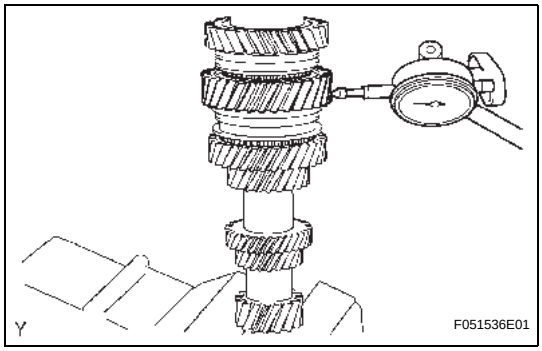
20. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



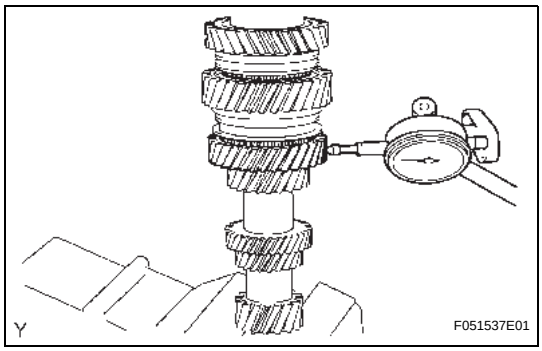
21. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.



22. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

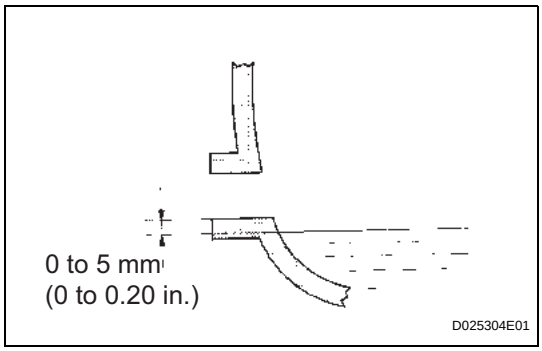
If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.

MANUAL TRANSMISSION SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problems. The numbers indicate the ranked order of probability of each of the possible causes. Check each part in the order suggested. If necessary, replace the applicable parts.

Symptom	Suspected area	See page
Abnormal noise	1. Oil level (Low)	MT-2
	2. Oil (Wrong)	MT-2
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-
Oil leakage	1. Oil level (High)	MT-2
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	-
	4. O-Ring (Worn or damaged)	-
Hard shifting or will not shift	1. Synchronizer ring (Worn or damaged)	-
	2. Shift key spring (Damaged)	-
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	-
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-



MANUAL TRANSMISSION OIL

ON-VEHICLE INSPECTION

1. INSPECT TRANSMISSION OIL

(a) Park the vehicle in a level place.

(b) Remove the transmission filler plug and gasket.

(c) Check that the oil surface is within 5 mm (0.20 in.) of the lowest point of the transmission filler plug opening.

NOTICE:

- **Problems may occur when the oil level is too high or low.**
- **After replacing the oil, drive the vehicle and check the oil level again.**

(d) Check for oil leakage when the oil level is low.

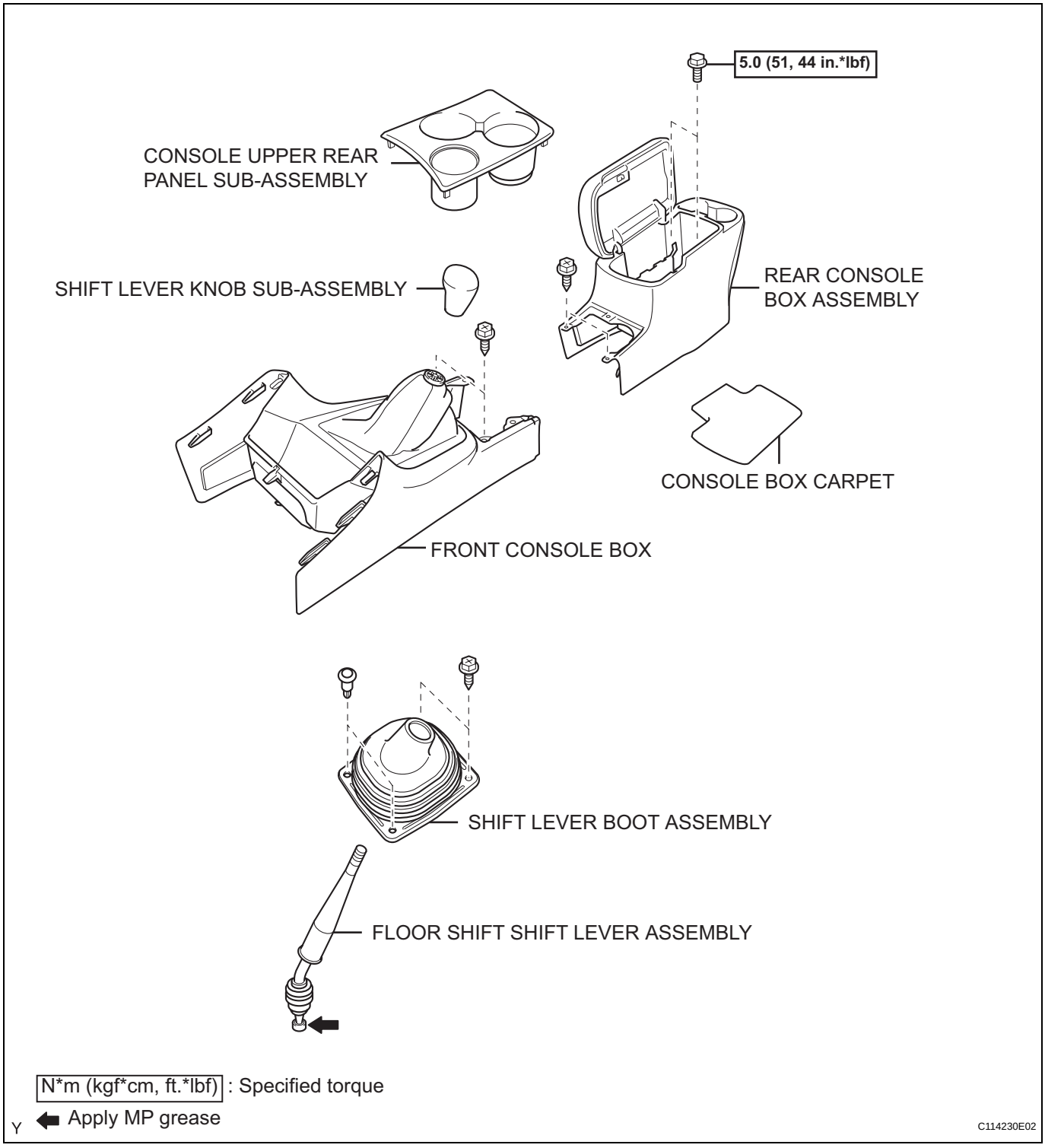
(e) Install the transmission filler plug and a new gasket.

Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

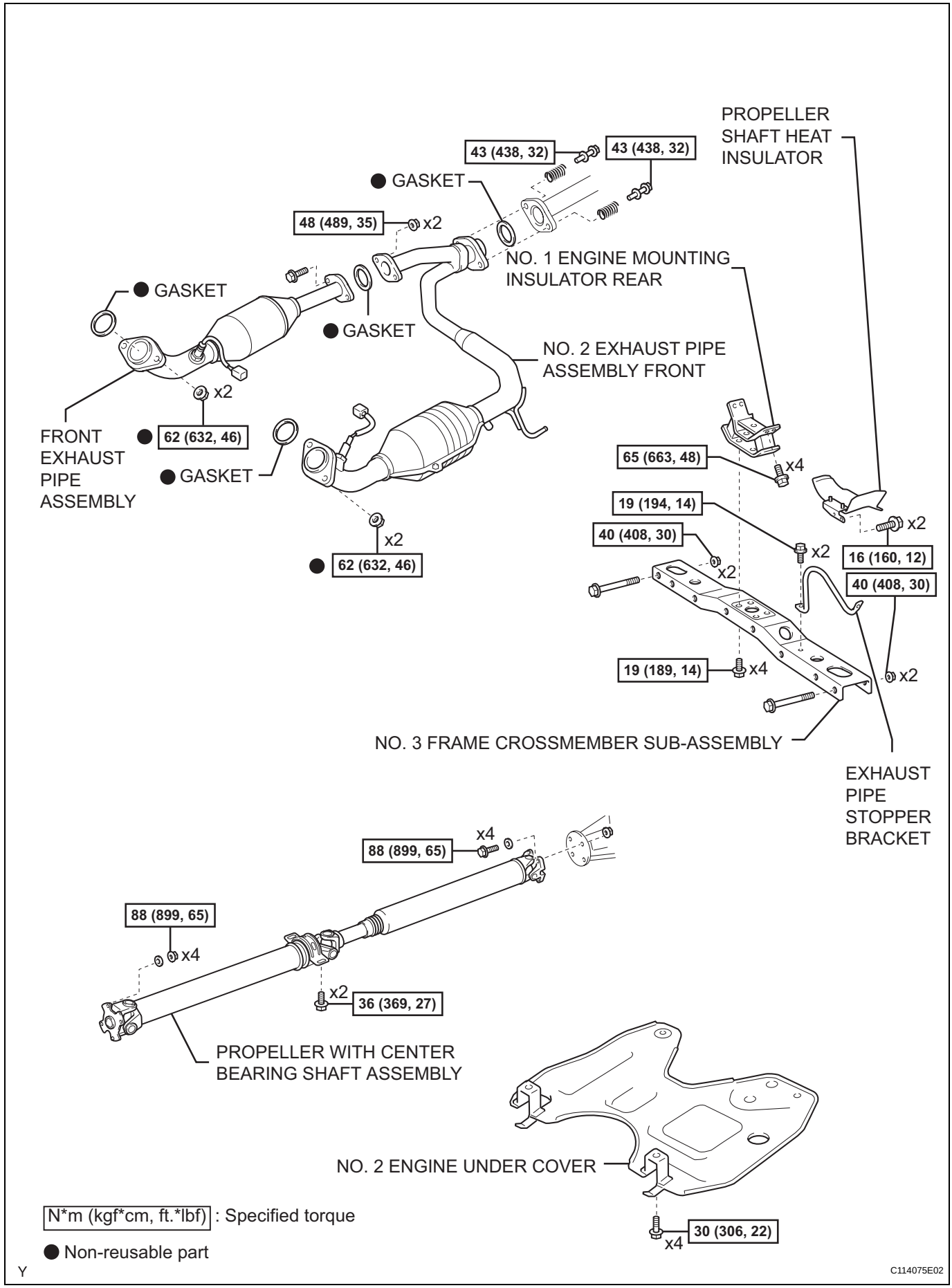
MT

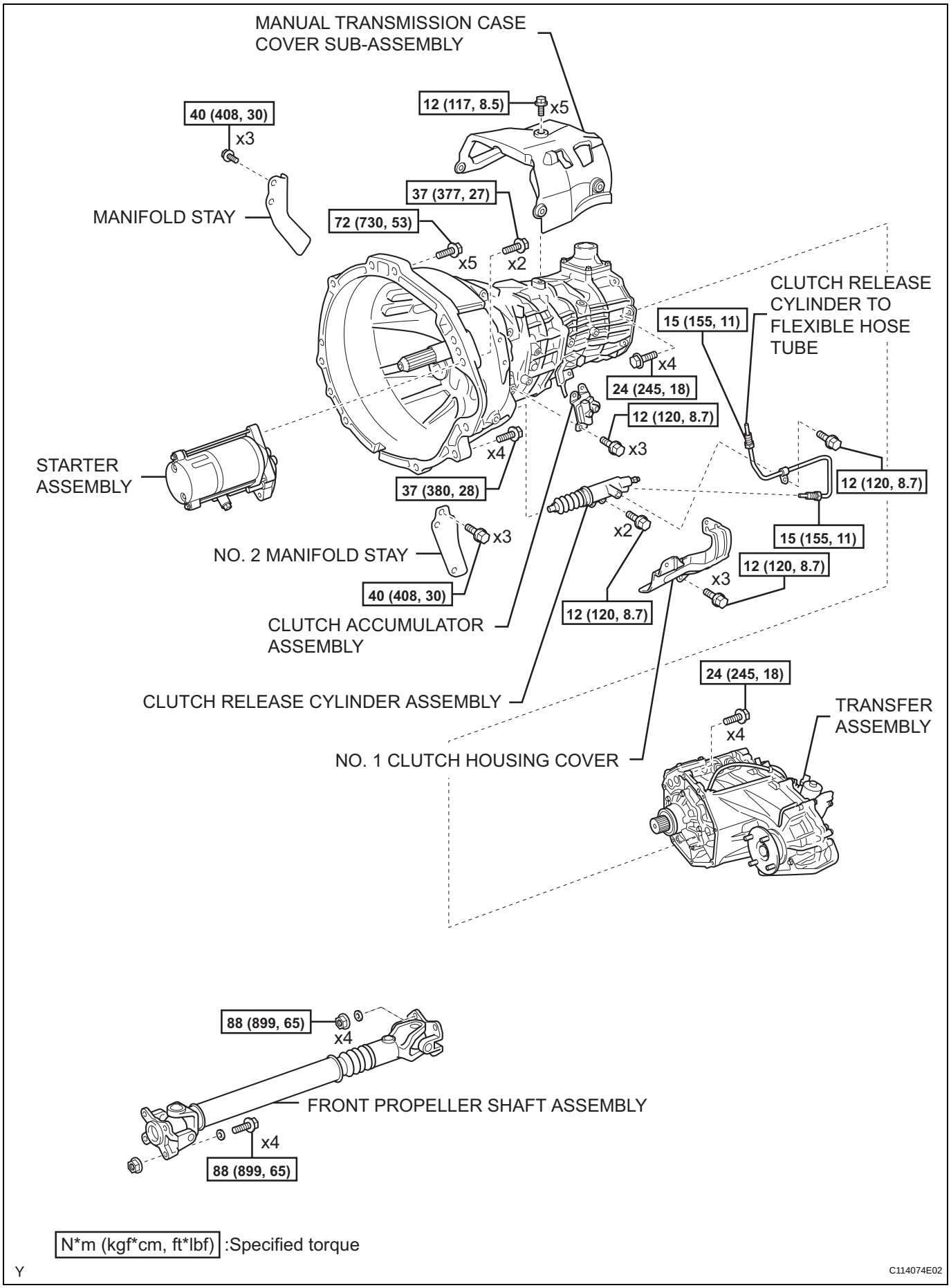
MANUAL TRANSMISSION ASSEMBLY

COMPONENTS



MT

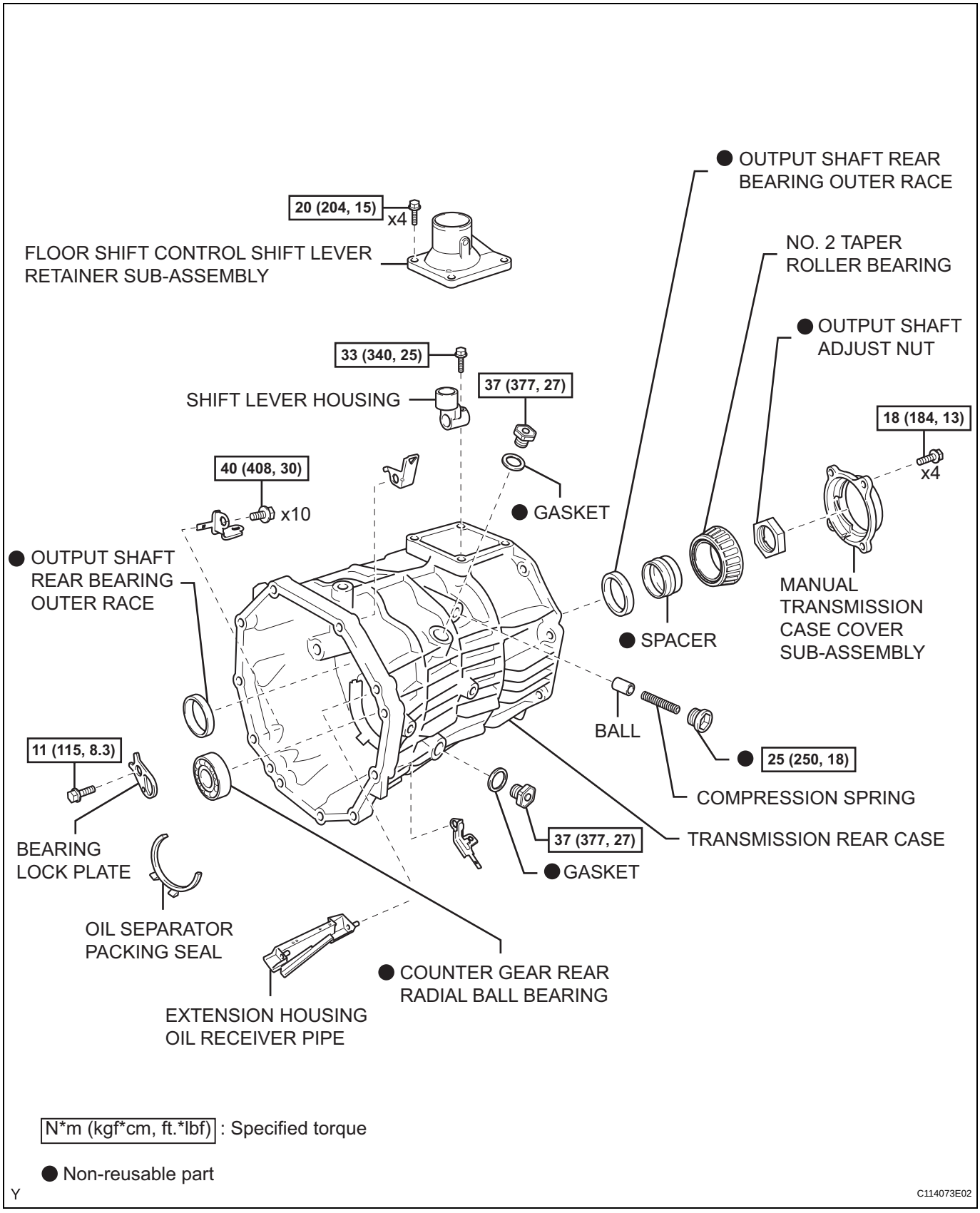

PROPELLER SHAFT HEAT INSULATOR
43 (438, 32)
43 (438, 32)
GASKET
48 (489, 35)
x2
NO. 1 ENGINE MOUNTING INSULATOR REAR
GASKET
GASKET
NO. 2 EXHAUST PIPE ASSEMBLY FRONT
x2
FRONT EXHAUST PIPE ASSEMBLY
62 (632, 46)
GASKET
65 (663, 48)
x4
19 (194, 14)
x2
40 (408, 30)
x2
16 (160, 12)
40 (408, 30)
x2
x2
62 (632, 46)
19 (189, 14)
x4
x2
NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY
EXHAUST PIPE STOPPER BRACKET
x4
88 (899, 65)
88 (899, 65)
x4
x2
36 (369, 27)
PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY
NO. 2 ENGINE UNDER COVER
30 (306, 22)
x4
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Y
C114075E02


MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY
12 (117, 8.5)
x5
40 (408, 30)
x3
MANIFOLD STAY
37 (377, 27)
72 (730, 53)
x5
x2
CLUTCH RELEASE CYLINDER TO FLEXIBLE HOSE TUBE
15 (155, 11)
x4
24 (245, 18)
12 (120, 8.7)
x3
STARTER ASSEMBLY
x4
37 (380, 28)
12 (120, 8.7)
x3
NO. 2 MANIFOLD STAY
x2
15 (155, 11)
12 (120, 8.7)
40 (408, 30)
x3
12 (120, 8.7)
CLUTCH ACCUMULATOR ASSEMBLY
CLUTCH RELEASE CYLINDER ASSEMBLY
24 (245, 18)
x4
TRANSFER ASSEMBLY
NO. 1 CLUTCH HOUSING COVER
88 (899, 65)
x4
FRONT PROPELLER SHAFT ASSEMBLY
x4
88 (899, 65)
N*m (kgf*cm, ft*lbf) :Specified torque
Y
C114074E02

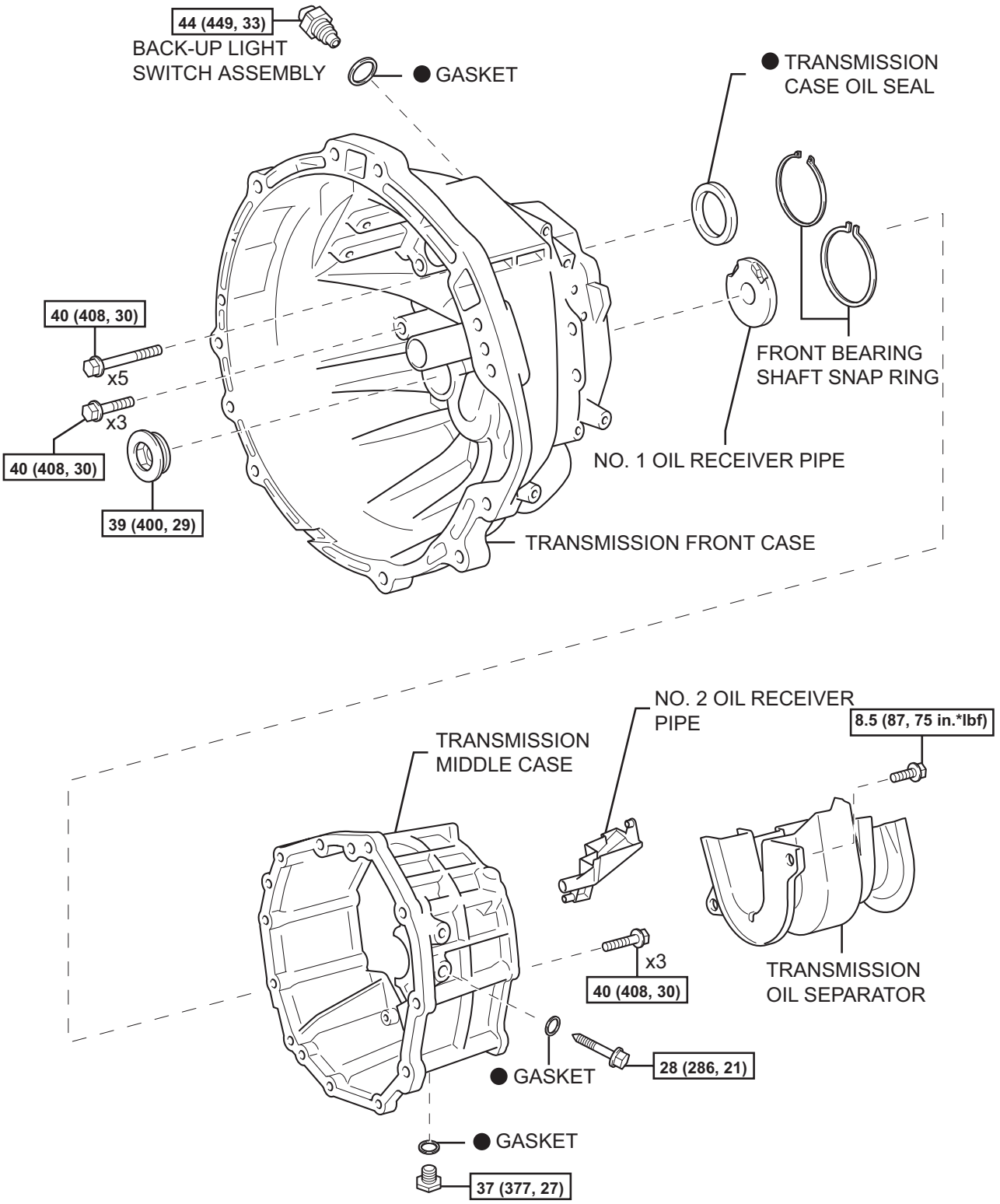
MT

MANUAL TRANSMISSION UNIT

COMPONENTS



MT

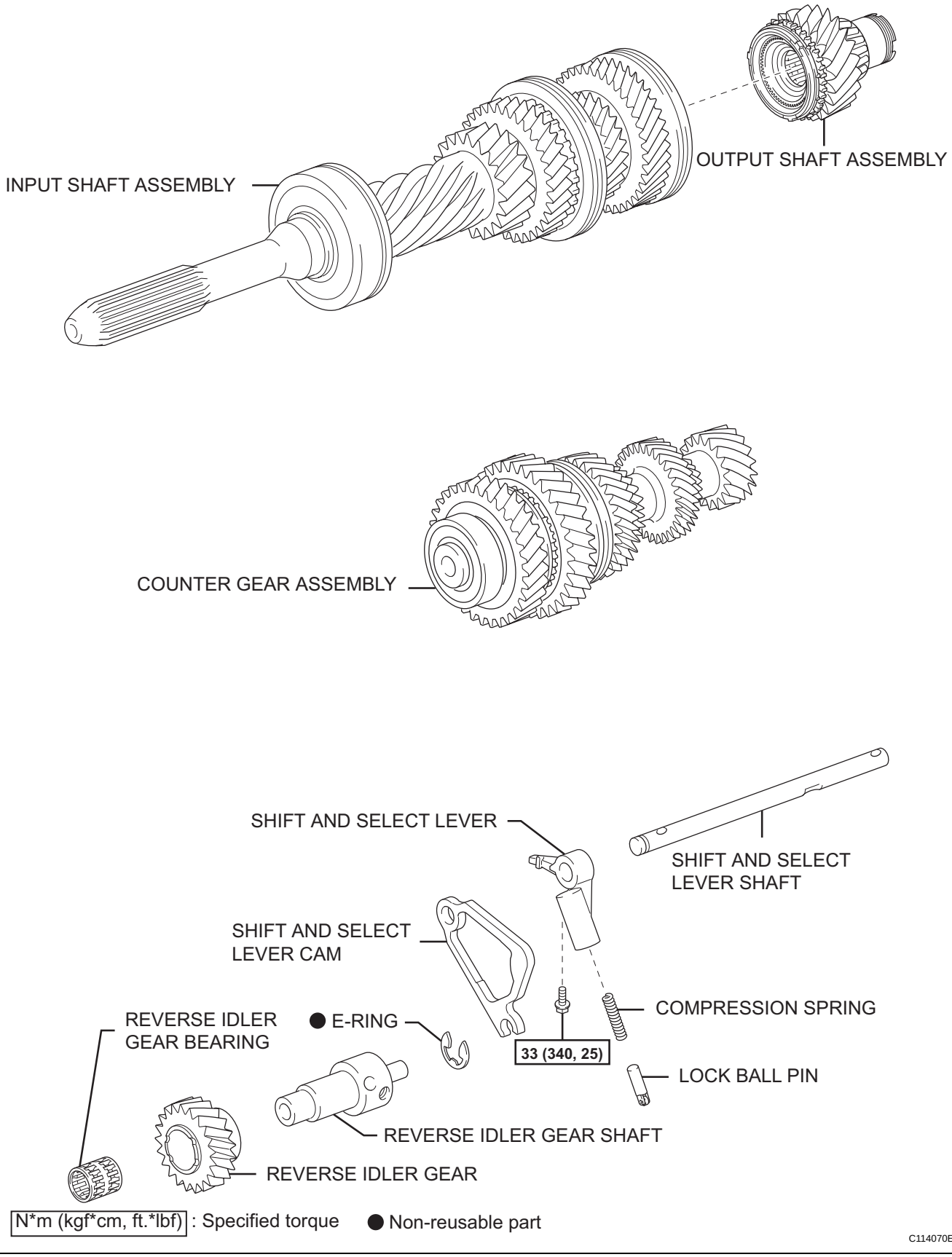


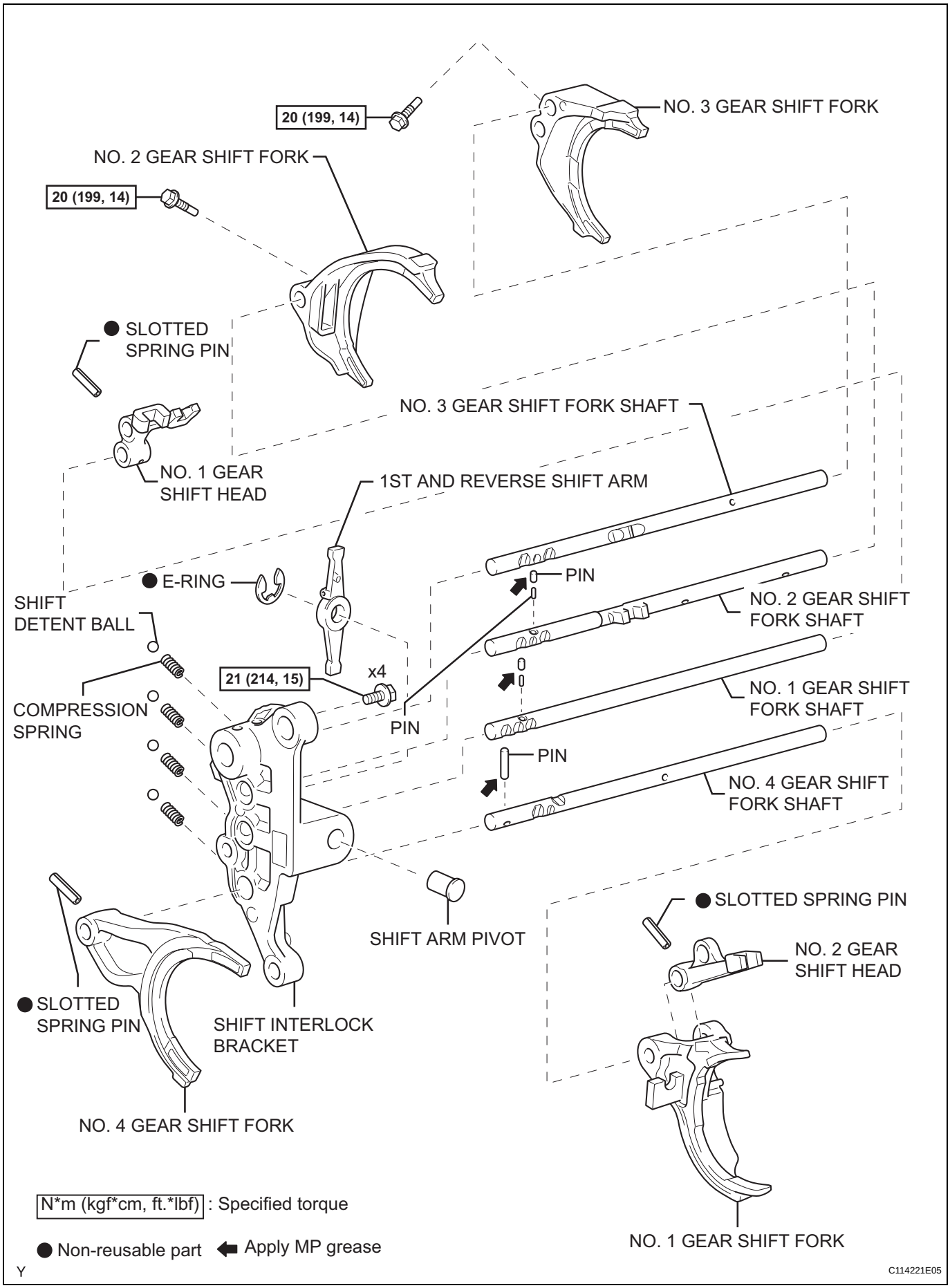
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

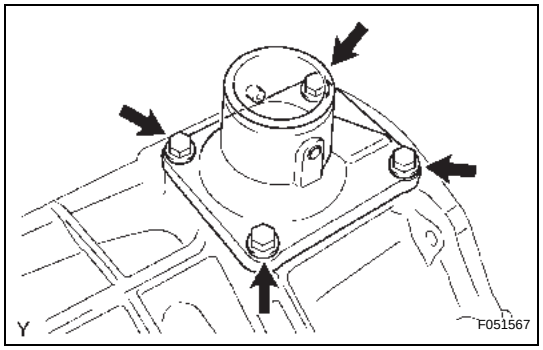
Y

C114219E04


INPUT SHAFT ASSEMBLY
OUTPUT SHAFT ASSEMBLY
COUNTER GEAR ASSEMBLY
SHIFT AND SELECT LEVER
SHIFT AND SELECT LEVER SHAFT
SHIFT AND SELECT LEVER CAM
COMPRESSION SPRING
REVERSE IDLER GEAR BEARING
E-RING
33 (340, 25)
LOCK BALL PIN
REVERSE IDLER GEAR SHAFT
REVERSE IDLER GEAR
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Y
C114070E02

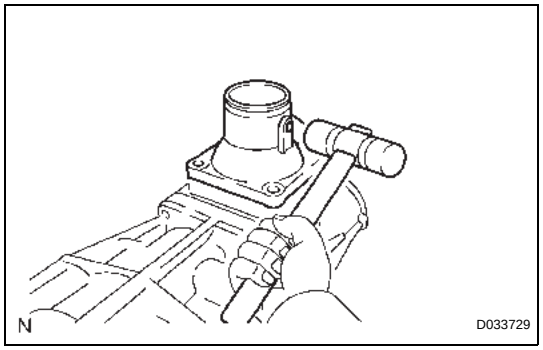

20 (199, 14)
NO. 3 GEAR SHIFT FORK
NO. 2 GEAR SHIFT FORK
20 (199, 14)
● SLOTTED SPRING PIN
NO. 3 GEAR SHIFT FORK SHAFT
NO. 1 GEAR SHIFT HEAD
1ST AND REVERSE SHIFT ARM
● E-RING
PIN
SHIFT DETENT BALL
NO. 2 GEAR SHIFT FORK SHAFT
21 (214, 15)
x4
COMPRESSION SPRING
PIN
NO. 1 GEAR SHIFT FORK SHAFT
PIN
NO. 4 GEAR SHIFT FORK SHAFT
● SLOTTED SPRING PIN
SHIFT ARM PIVOT
NO. 2 GEAR SHIFT HEAD
● SLOTTED SPRING PIN
SHIFT INTERLOCK BRACKET
NO. 4 GEAR SHIFT FORK
NO. 1 GEAR SHIFT FORK
N*m (kgf*cm, ft.*lbf) : Specified torque
● Non-reusable part
Apply MP grease
Y
C114221E05

DISASSEMBLY

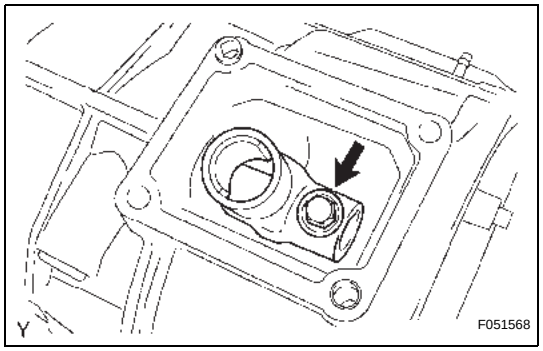


1. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Remove the 4 bolts, then remove the floor shift control shift lever retainer.

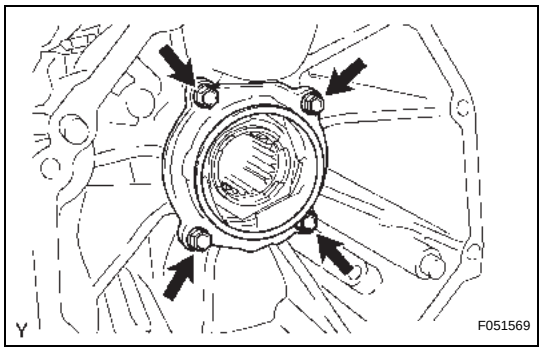


(b) Using a plastic hammer, remove the floor shift control shift lever retainer.



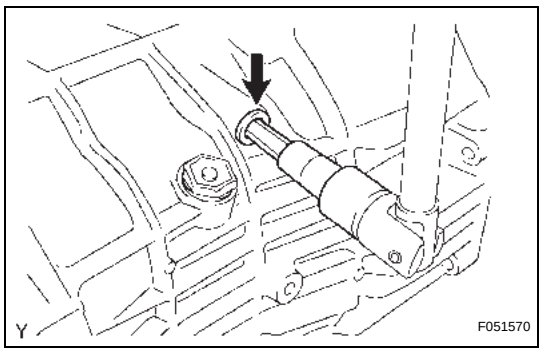
2. REMOVE SHIFT LEVER HOUSING

(a) Remove the bolt, then separate the shift lever housing.



3. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

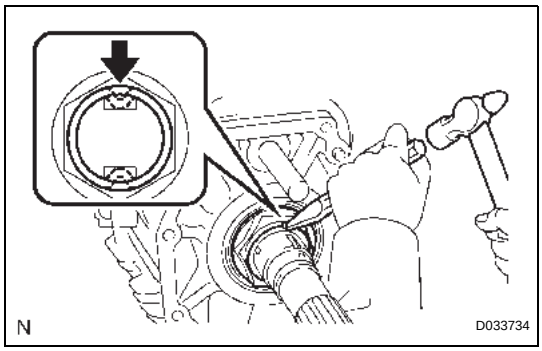
(a) Remove the 4 bolts, then remove the transmission case cover.



4. REMOVE SHIFT DETENT BALL PLUG

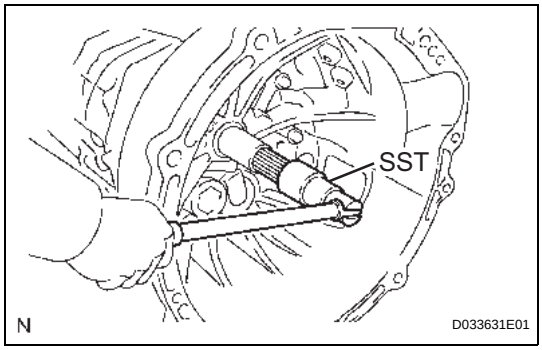
(a) Using a socket hexagon wrench (10 mm), remove the shift detent ball plug from the transmission rear case.

(b) Remove the ball and compression spring from the transmission rear case.



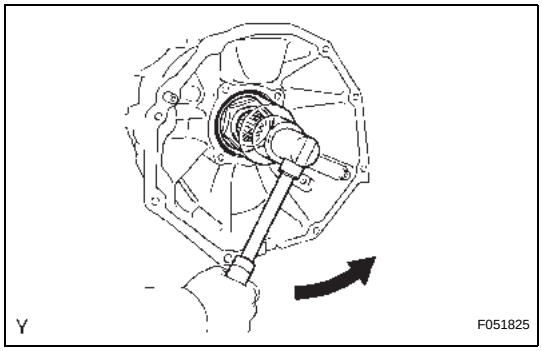
5. REMOVE OUTPUT SHAFT ADJUST NUT

(a) Using a chisel and hammer, unstake the nut.



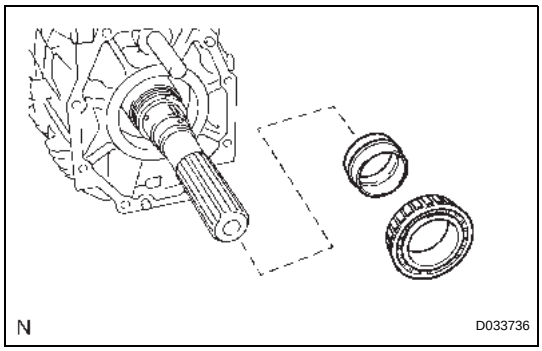
(b) Place the gearshift into 5th gear, and then fix the input shaft using SST.
SST 09556-16030

(c) Using a belt and wooden block, fasten the transmission to the workbench.

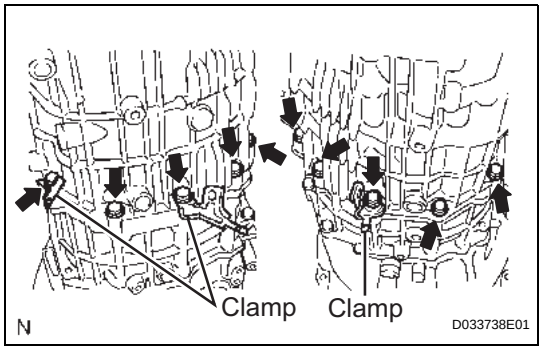


(d) Using a socket wrench (60 mm), remove the nut from the transmission rear case.

(e) Remove the belt and wooden block from the transmission.

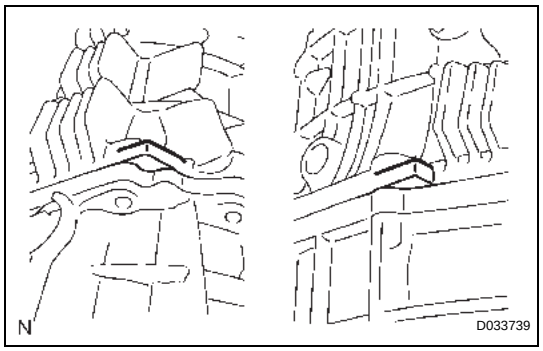


(f) Remove the taper roller bearing No. 2 and spacer.

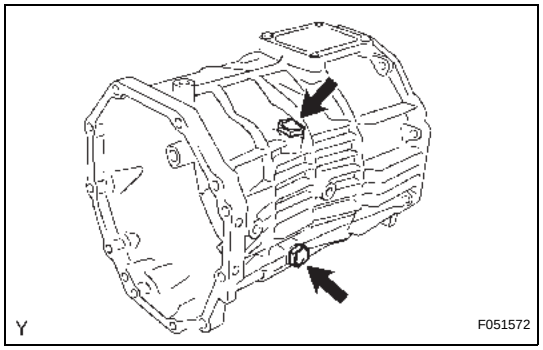


6. REMOVE TRANSMISSION REAR CASE

(a) Remove the 10 bolts and 3 clamps.

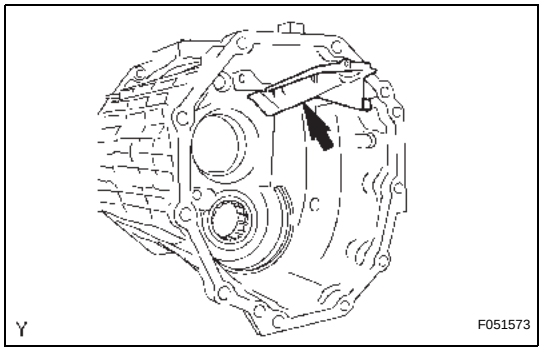


(b) Using a plastic hammer, carefully tap out the rear case.



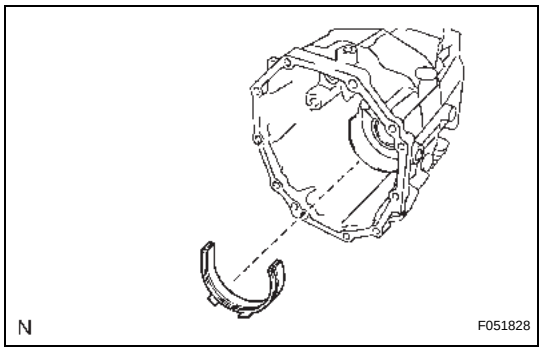
7. REMOVE MANUAL TRANSMISSION FILLER PLUG

(a) Remove the 2 transmission filler plugs and 2 gaskets from the transmission rear case.



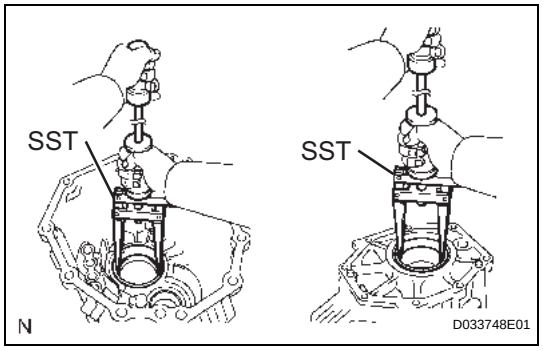
8. REMOVE EXTENSION HOUSING OIL RECEIVER PIPE

(a) Remove the extension housing oil receiver pipe from the transmission rear case.



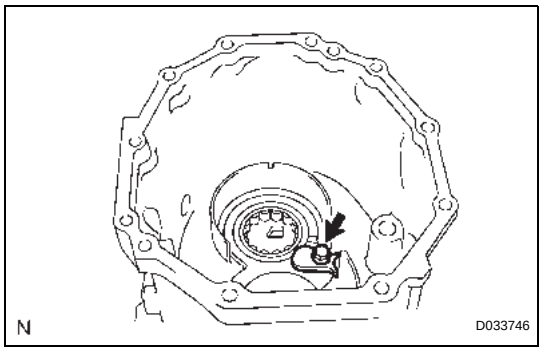
9. REMOVE OIL SEPARATOR PACKING SEAL

(a) Remove the oil separator packing seal from the transmission rear case.



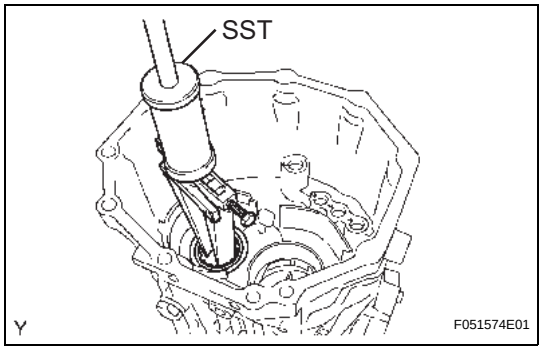
10. REMOVE OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST, remove the 2 bearing outer races.
SST 09308-00010

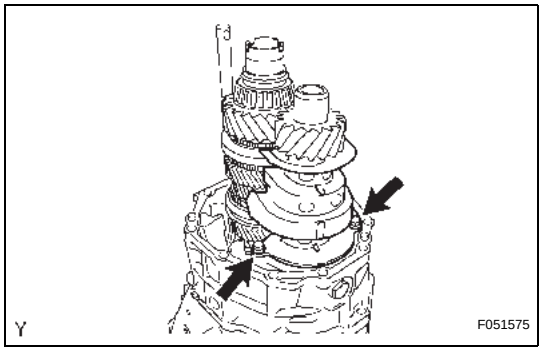


11. REMOVE COUNTER GEAR REAR RADIAL BALL BEARING

(a) Remove the bolt, then remove the bearing lock plate.

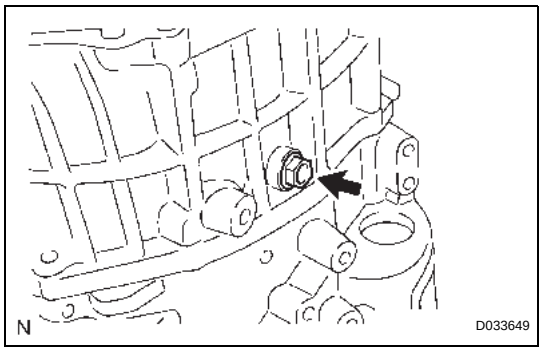


(b) Using SST, remove the counter gear rear radial ball bearing from the transmission rear case.
SST 09308-00010



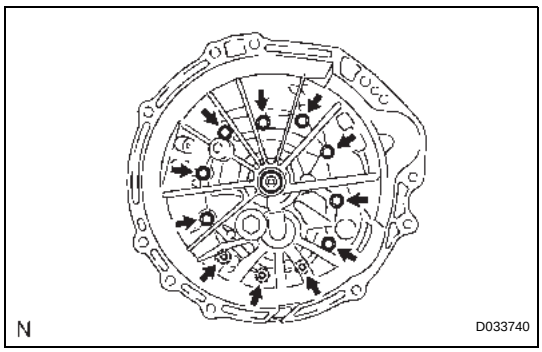
12. REMOVE TRANSMISSION OIL SEPARATOR

(a) Remove the 2 bolts, then remove the oil separator.



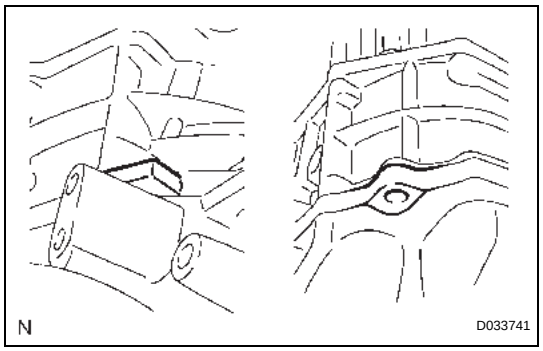
13. REMOVE REVERSE IDLER GEAR SHAFT BOLT

(a) Remove the reverse idler gear shaft bolt from the transmission middle case.

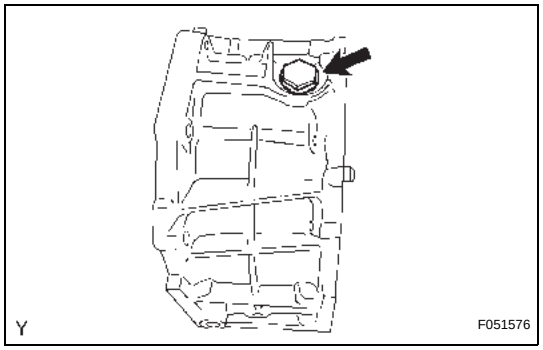


14. REMOVE TRANSMISSION MIDDLE CASE

(a) Remove the 11 bolts, then remove the transmission middle case.

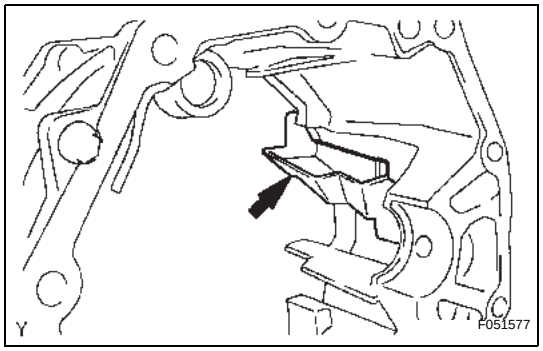


(b) Using a plastic hammer, carefully tap out the middle case.



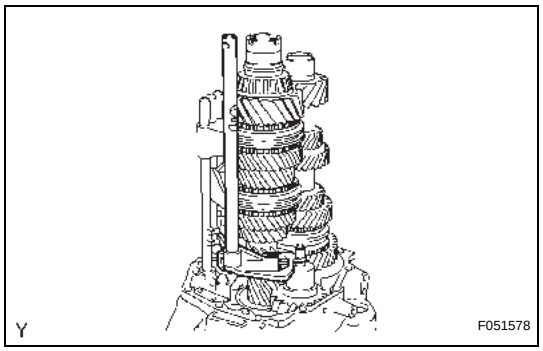
15. REMOVE DRAIN PLUG SUB-ASSEMBLY

(a) Remove the drain plug and gasket from the transmission middle case.



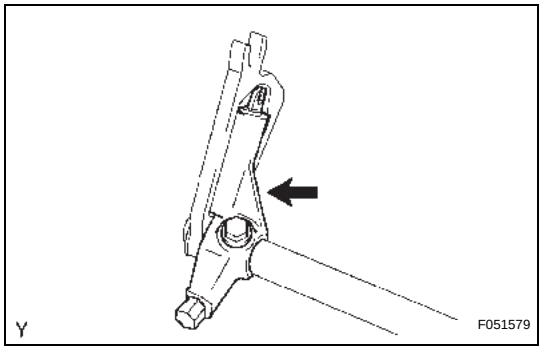
16. REMOVE NO. 2 OIL RECEIVER PIPE

(a) Remove the oil receiver pipe No. 2 from the transmission middle case.



17. REMOVE SHIFT AND SELECT LEVER SHAFT

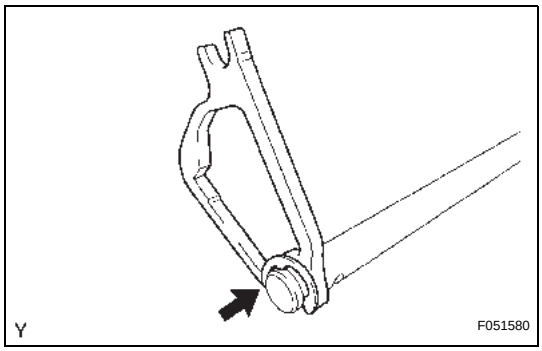
(a) Remove the shift and select lever shaft from the reverse gear shaft.



18. REMOVE SHIFT AND SELECT LEVER

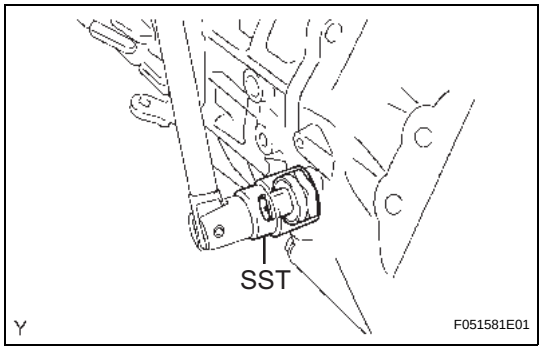
(a) Remove the bolt, then remove the shift and select lever.

(b) Remove the lock ball pin and spring from the shift and select lever.



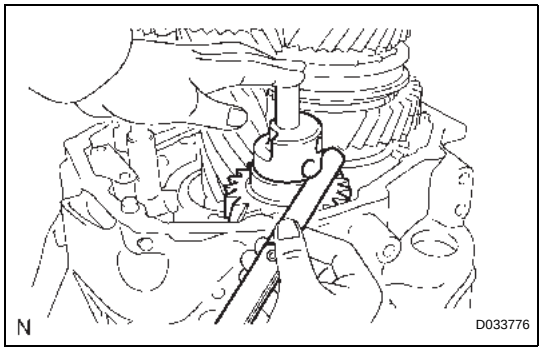
19. REMOVE SHIFT AND SELECT LEVER CAM

(a) Using a screwdriver, remove the E ring and the shift and select lever cam from the shift and select lever shaft.



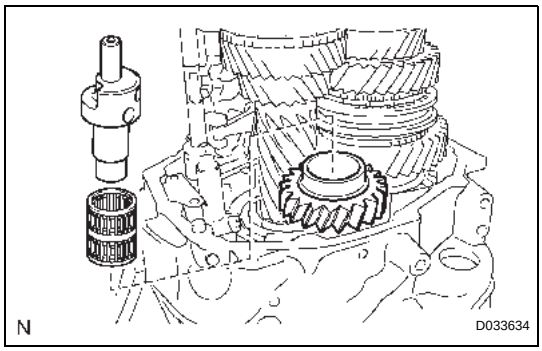
20. REMOVE BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, remove the back-up light switch and gasket.
SST 09817-16011



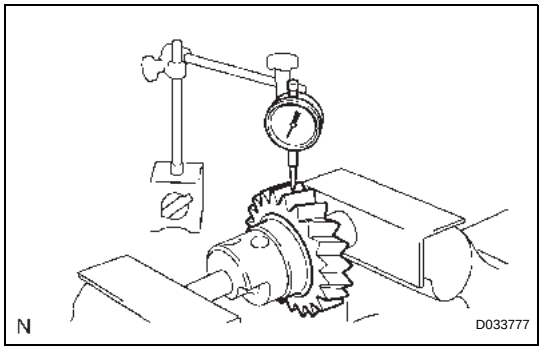
21. INSPECT REVERSE IDLER GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the thrust clearance.
Standard clearance:
0.10 to 0.55 mm (0.0039 to 0.0217 in.)
Maximum clearance:
0.55 to (0.0217 in.)
If the clearance is exceeds the maximum, replace the reverse idler gear shaft.



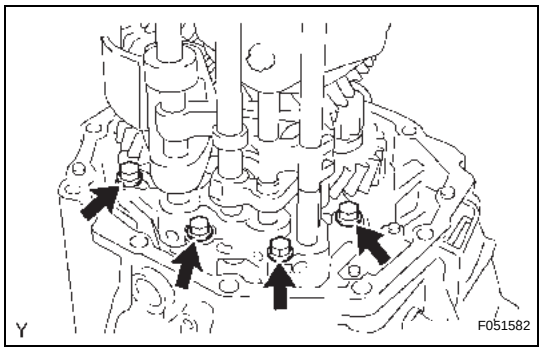
22. REMOVE REVERSE IDLER GEAR

(a) Remove the reverse idle gear shaft, needle roller bearing and reverse idler gear.



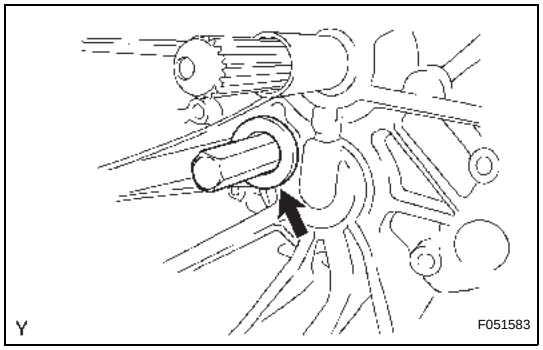
23. INSPECT REVERSE IDLER GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance.
Standard clearance:
0.015 to 0.050 mm (0.0006 to 0.0020 in.)
Maximum clearance:
0.050 mm (0.0020 in.)
If the clearance exceeds the maximum, replace the needle roller bearing.

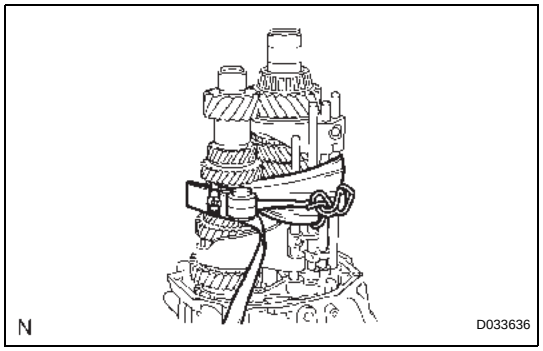


24. REMOVE TRANSMISSION FRONT CASE

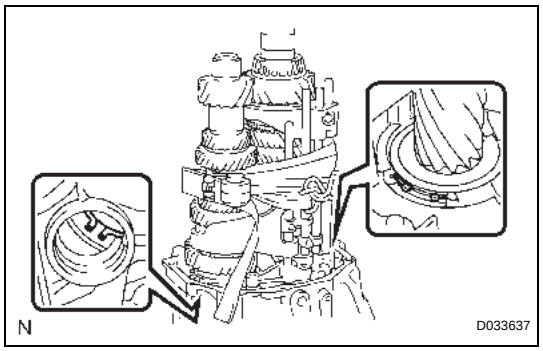
(a) Remove the 4 bolts from the interlock bracket.



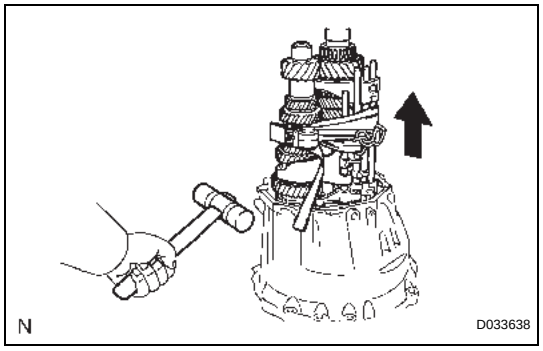
(b) Using a hexagon wrench (24 mm), remove the plug.



(c) Tie the input shaft, counter gear and control assembly with a rope or string.



(d) Expand the 2 snap rings, and lift up the output shaft, input shaft, counter gear and control assembly.

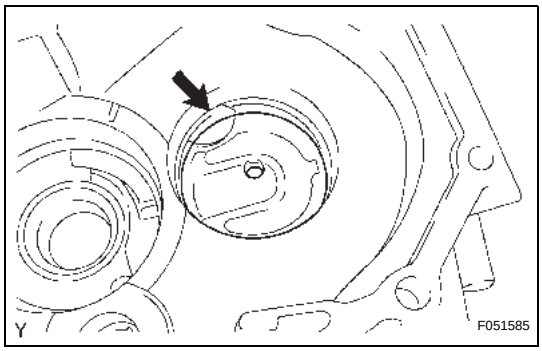


(e) Remove the output shaft, input shaft, counter gear shaft and control assembly while gently tapping the clutch housing with a plastic hammer.

NOTICE:

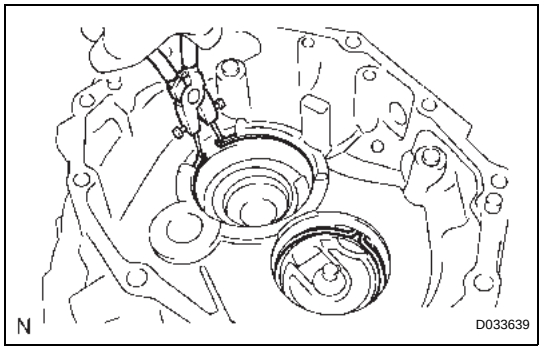
Take care not to subject the output shaft, input shaft, counter gear shaft and control assembly to any impact. This could cause the ball and spring to come out.

(f) Separate the output shaft, input shaft, counter gear shaft and control assembly.



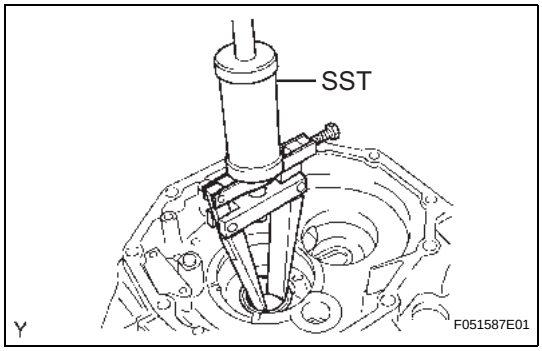
25. REMOVE NO. 1 OIL RECEIVER PIPE

(a) Remove the oil receiver pipe No. 1 from the transmission front case.



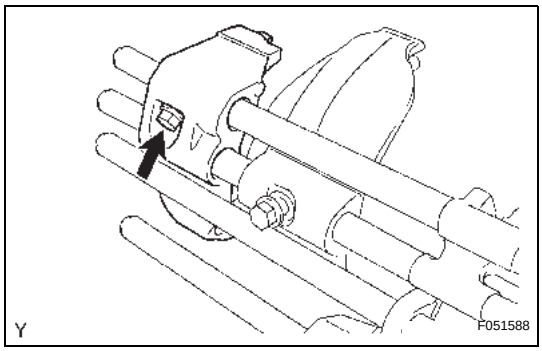
26. REMOVE FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring plier, remove the 2 snap rings.



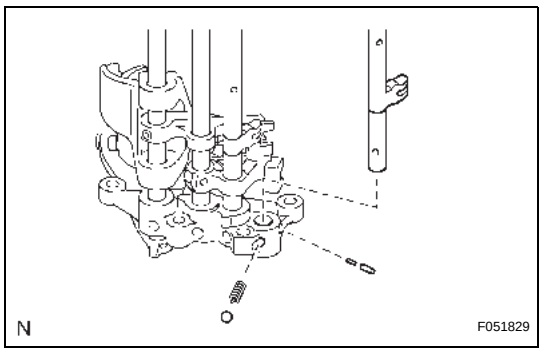
27. REMOVE TRANSMISSION CASE OIL SEAL

(a) Using SST, remove the transmission case oil seal from the transmission front case.
SST 09308-00010



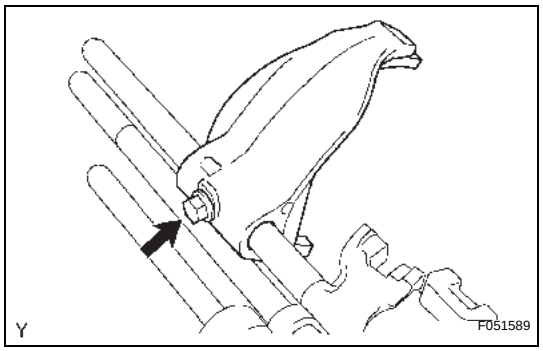
28. REMOVE NO. 3 GEAR SHIFT FORK

(a) Remove the bolt, then remove the gear shift fork No. 3.



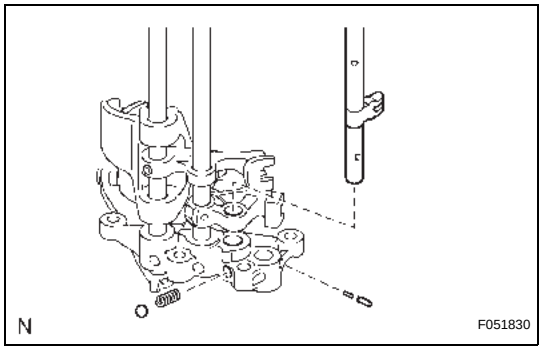
29. REMOVE NO. 3 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 3, boll, spring, interlock pin No. 2 and interlock pin No. 3.



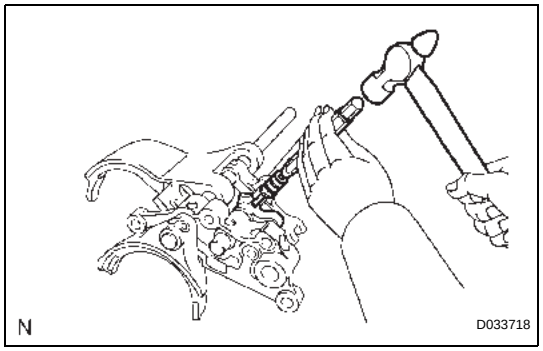
30. REMOVE NO. 2 GEAR SHIFT FORK

(a) Remove the bolt, then remove the gear shift fork No. 2.



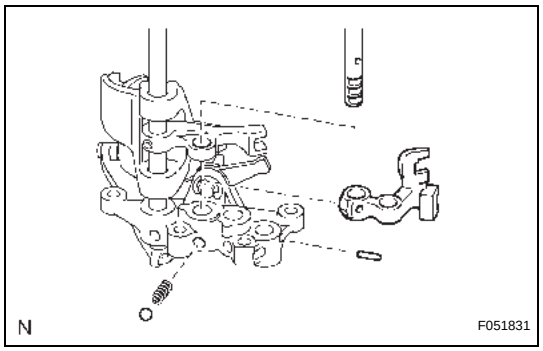
31. REMOVE NO. 2 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 2, ball, spring, interlock pin No. 2 and interlock pin No. 3.



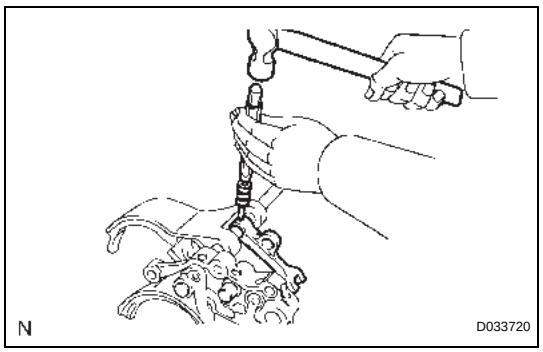
32. REMOVE NO. 1 GEAR SHIFT HEAD

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



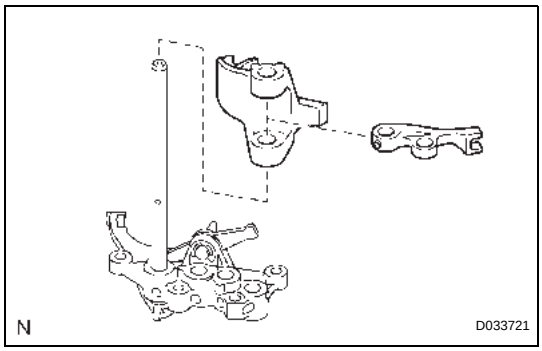
33. REMOVE NO. 1 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 1, ball, spring, shift head No. 1 and interlock pin No. 1.

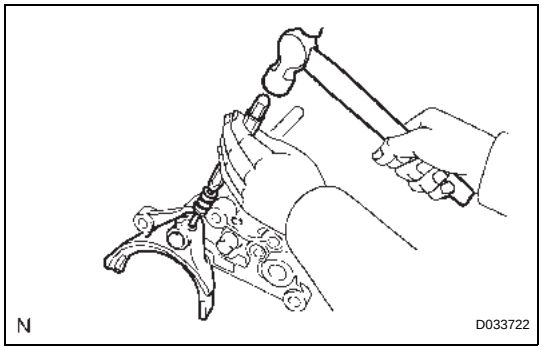


34. REMOVE NO. 1 GEAR SHIFT FORK

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



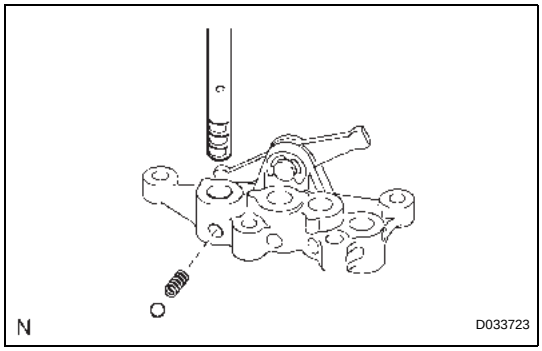
(b) Remove the shift head No. 2 and shift fork No. 1.



35. REMOVE NO. 4 GEAR SHIFT FORK

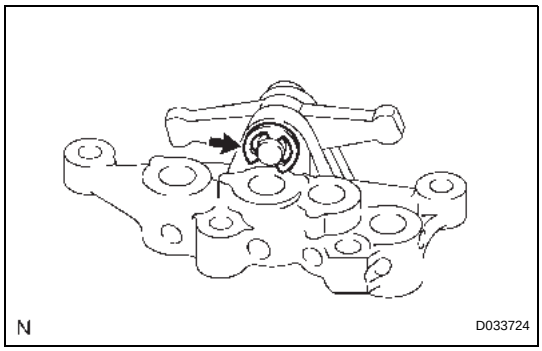
(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.

(b) Remove the shift fork No. 4.



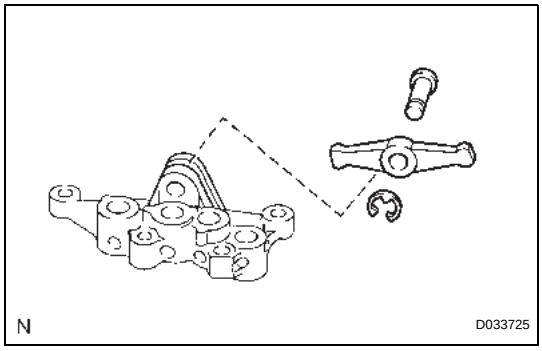
36. REMOVE NO. 4 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 4, ball and spring.



37. REMOVE 1ST AND REVERSE SHIFT ARM

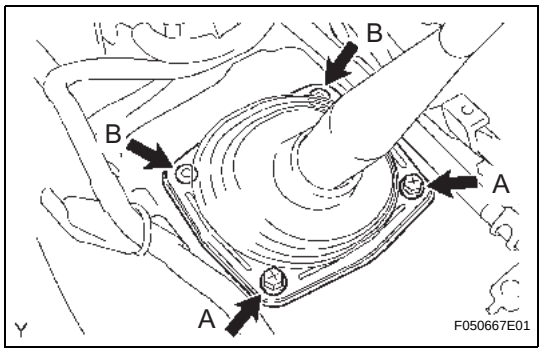
(a) Using a screwdriver, remove the E-ring.

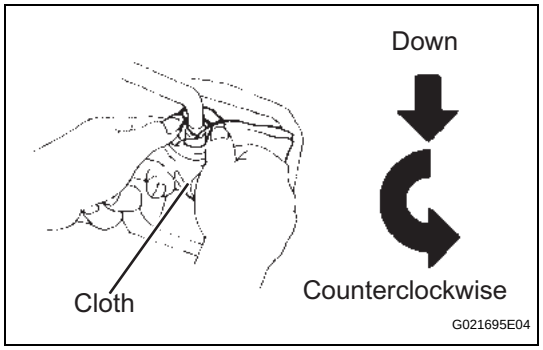


(b) Remove the shift arm pivot and shift arm.

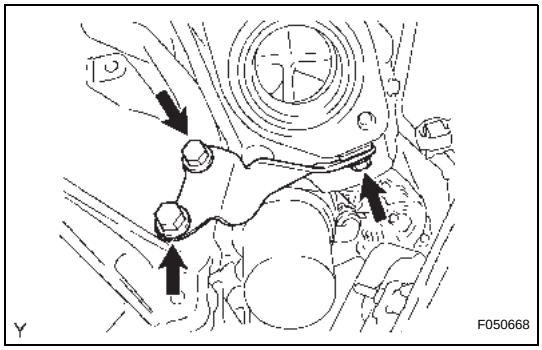
REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-9)**
3. **REMOVE REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-10)**
4. **REMOVE FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-11)**
5. **REMOVE FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-11)**
6. **REMOVE SHIFT LEVER BOOT ASSEMBLY**
   (a) Remove the 2 screws A, 2 clips B and floor shift lever assembly.





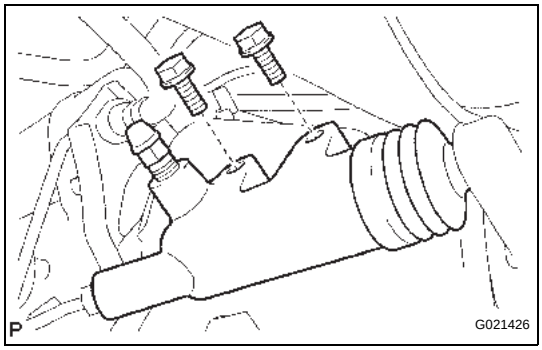
7. **REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Cover the shift lever cap with a cloth.
   (b) While pressing down on the shift lever cap, turn it counterclockwise to remove.
   (c) Pull out the shift lever.
8. **REMOVE NO. 2 ENGINE UNDER COVER SUB-ASSEMBLY**
   (a) Remove the 4 bolts and engine under cover No. 2.
9. **DRAIN MANUAL TRANSMISSION OIL**
   Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)
10. **REMOVE FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**
11. **REMOVE FRONT PROPELLER SHAFT ASSEMBLY (See page PR-16)**
12. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-27)**
13. **REMOVE PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-22)**
14. **REMOVE STARTER ASSEMBLY (See page ST-5)**



15. REMOVE MANIFOLD STAY

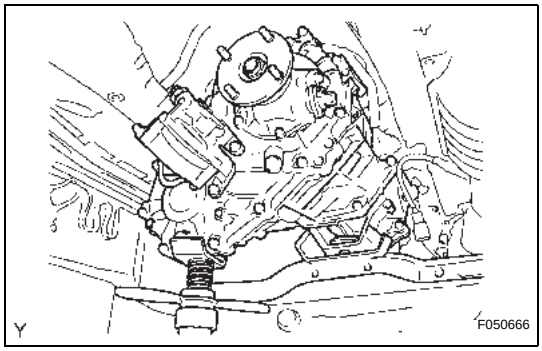
(a) Remove the 3 bolts and manifold stay.

MT



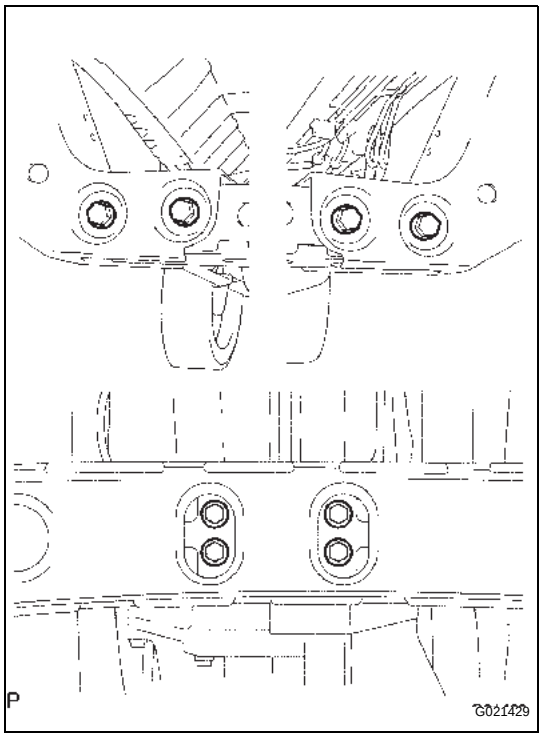
16. SEPARATE CLUTCH RELEASE CYLINDER ASSEMBLY

(a) Remove the 2 bolts and separate the clutch release cylinder assembly.



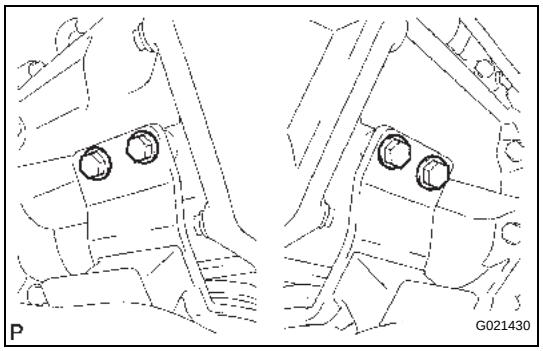
17. REMOVE NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY

(a) Support the transfer with a support stand.



(b) Remove the 4 bolts from the engine rear mounting.

(c) Remove the 4 bolts, nuts and frame crossmember sub- assembly No. 3.

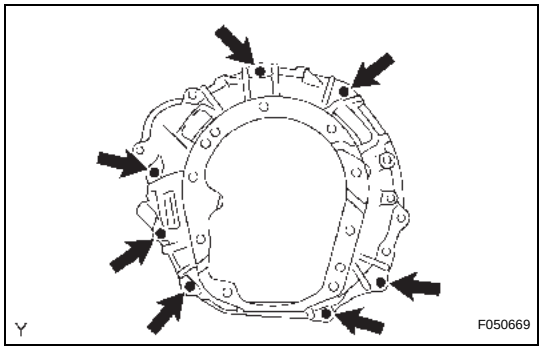


18. REMOVE NO. 1 ENGINE MOUNTING INSULATOR REAR

(a) Remove the 4 bolts and engine mounting insulator rear No. 1.
(b) Using a transmission jack, support the transmission unit assembly.
(c) Remove the support stand from the rear side of the transfer.

19. DISCONNECT WIRE HARNESS

(a) Tilt the transmission assembly downward.
NOTICE:
Make sure that the cooling fan does not come in contact with the fan shroud.
(b) Disconnect the back-up lamp switch connector.
(c) Disconnect the speed sensor connector.
(d) Disconnect the 2 transfer indicator switch connectors.
(e) Disconnect the transfer shift actuator motor connector.
(f) Disconnect the wire harness clamp from the transmission w/ transfer assembly.



20. REMOVE MANUAL TRANSMISSION WITH TRANSFER

(a) Remove the 7 bolts and remove the transmission assembly.

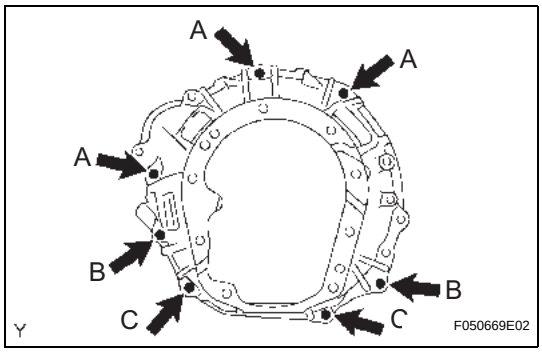
21. REMOVE TRANSFER ASSEMBLY (See page TF-14)

MT

MT

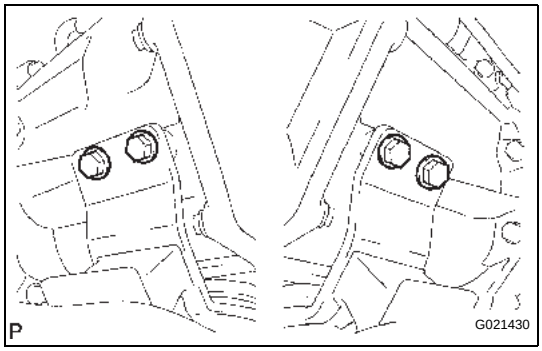
INSTALLATION

1. **INSTALL TRANSFER ASSEMBLY (See page TF-38)**

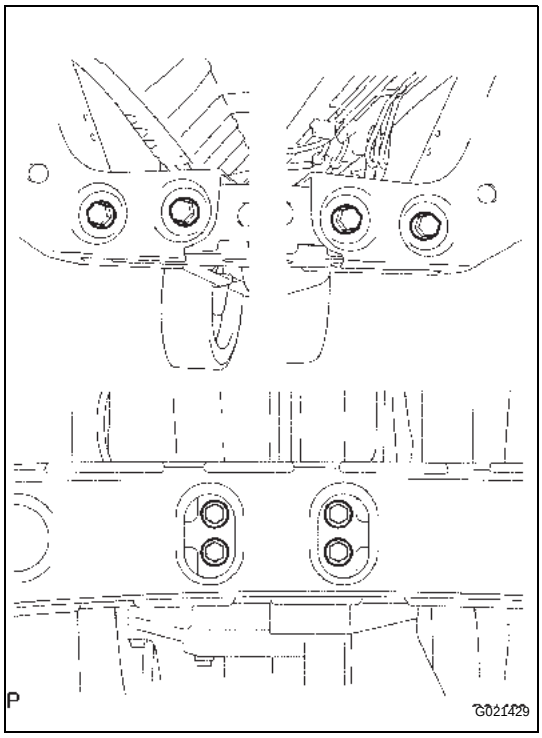


2. **INSTALL MANUAL TRANSMISSION WITH TRANSFER**
   (a) Align the input shaft with the clutch disc and install the transmission unit assembly onto the engine.
   (b) Install the 7 bolts.
   Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
   37 N*m (379 kgf*cm, 27 ft.*lbf) for bolt B and C
   HINT:
   Install bolt B from the front of the vehicle direction.

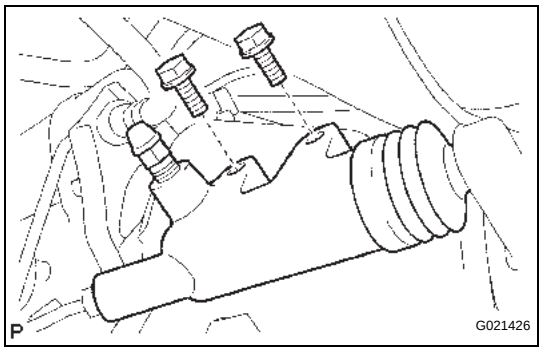
3. **CONNECT WIRE HARNESS**
   (a) Connect the wire harness clamp to the transmission w/ transfer assembly.
   (b) Connect the back-up lamp switch connector.
   (c) Connect the speed sensor connector.
   (d) Connect the 2 transfer indicator switch connectors.
   (e) Connect the transfer shift actuator motor connector.



4. **INSTALL NO. 1 ENGINE MOUNTING INSULATOR REAR**
   (a) Install the engine mount insulator rear No. 1 with 4 bolts onto the transmission assembly.
   Torque: 65 N*m (663 kgf*cm, 48 ft.*lbf)

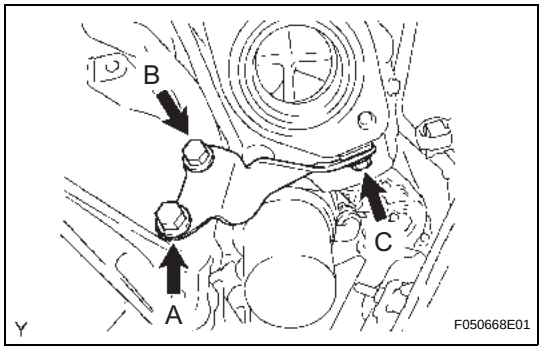


5. **INSTALL NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY**
   (a) Install the frame crossmember sub-assembly No. 3 with the 8 bolts and nuts.
   Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
   (b) Install the 4 bolts onto the engine mounting insulator rear No. 1.
   Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)



6. **INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY**
   (a) Install the clutch release cylinder assembly with the 2 bolts.
   Torque: 12 N*m (122 kgf*cm, 9 ft.*lbf)

7. **INSTALL STARTER ASSEMBLY (See page ST-10)**



8. **INSTALL MANIFOLD STAY**
   (a) Install the manifold stay with the 3 bolts.
   Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
   44 N*m (449 kgf*cm, 33 ft.*lbf) for bolt B
   30 N*m (306 kgf*cm, 22 ft.*lbf) for bolt C

9. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (for Access Cab) (See page PR-32)**

10. **INSTALL PROPELLER SHAFT ASSEMBLY (for Regular Cab) (See page PR-25)**

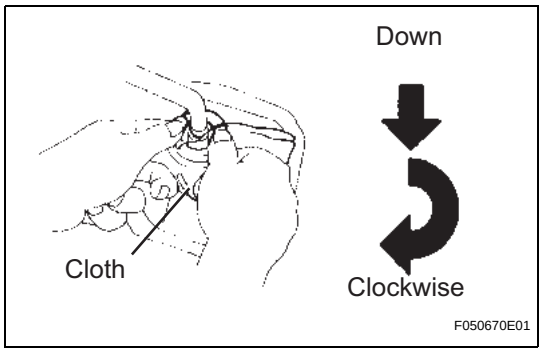
11. **INSTALL FRONT PROPELLER SHAFT ASSEMBLY (See page PR-19)**

12. **INSTALL FRONT EXHAUST PIPE ASSEMBLY (See page EX-2)**

13. **ADD MANUAL TRANSMISSION OIL**

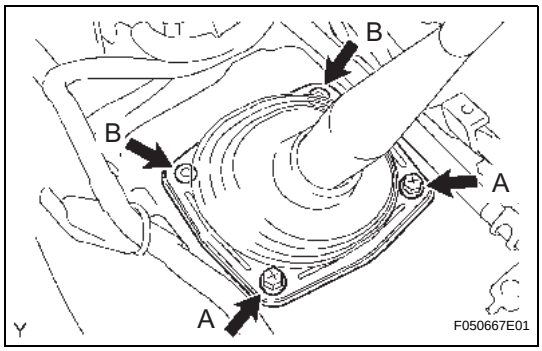
14. **ADJUST MANUAL TRANSMISSION OIL (See page MT-2)**

15. **INSTALL NO. 2 ENGINE UNDER COVER SUB-ASSEMBLY**
   (a) Install the engine under cover No. 2 with the 4 bolts.
   Torque: 30 N*m (306 kgf*cm, 22 ft.*lbf)



16. **INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Cover the shift lever cap with a cloth.
   (b) While pressing down on the shift lever, turn it clockwise to install.
   HINT:
   Apply MP grease to the tip of the shift lever.

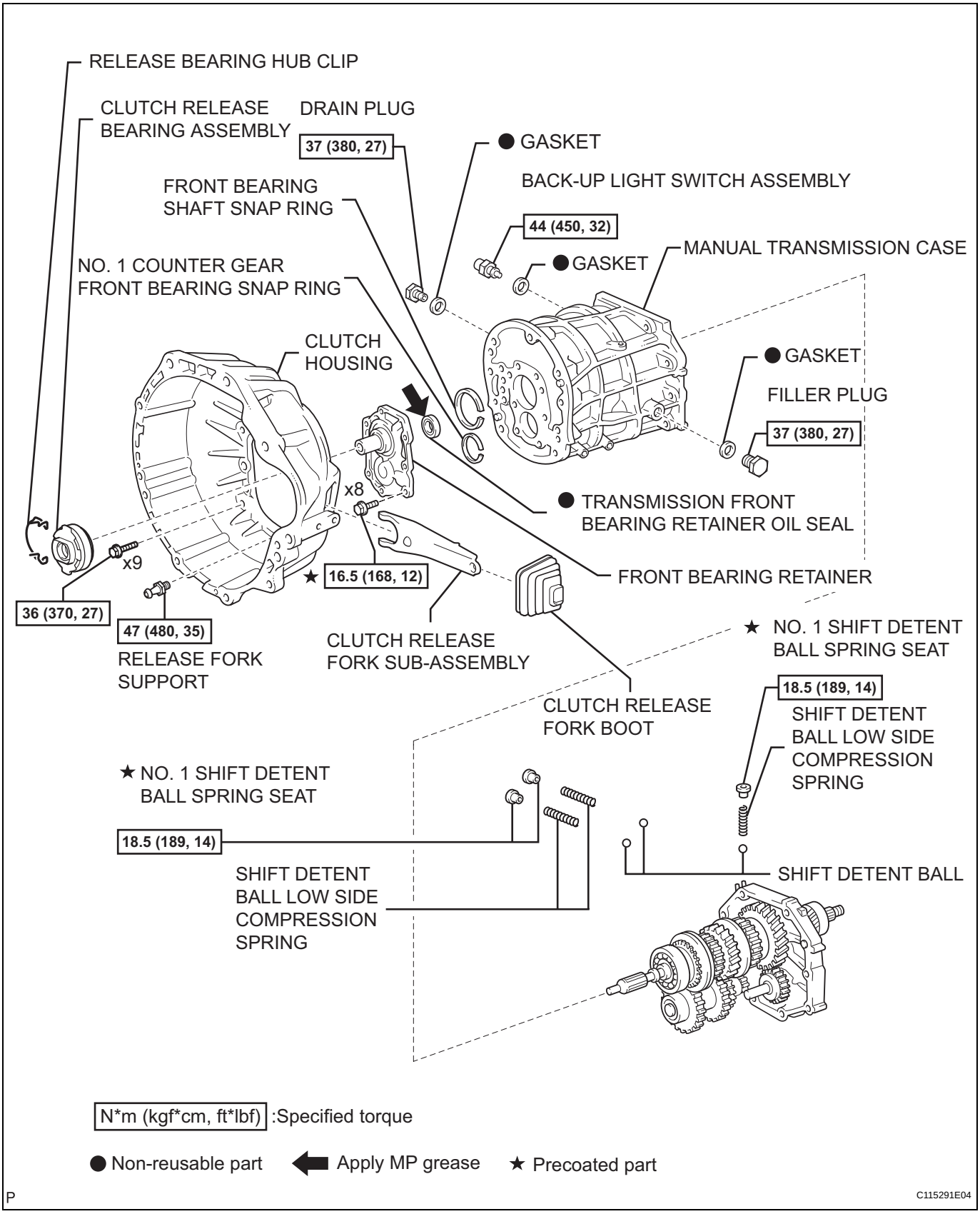
MT

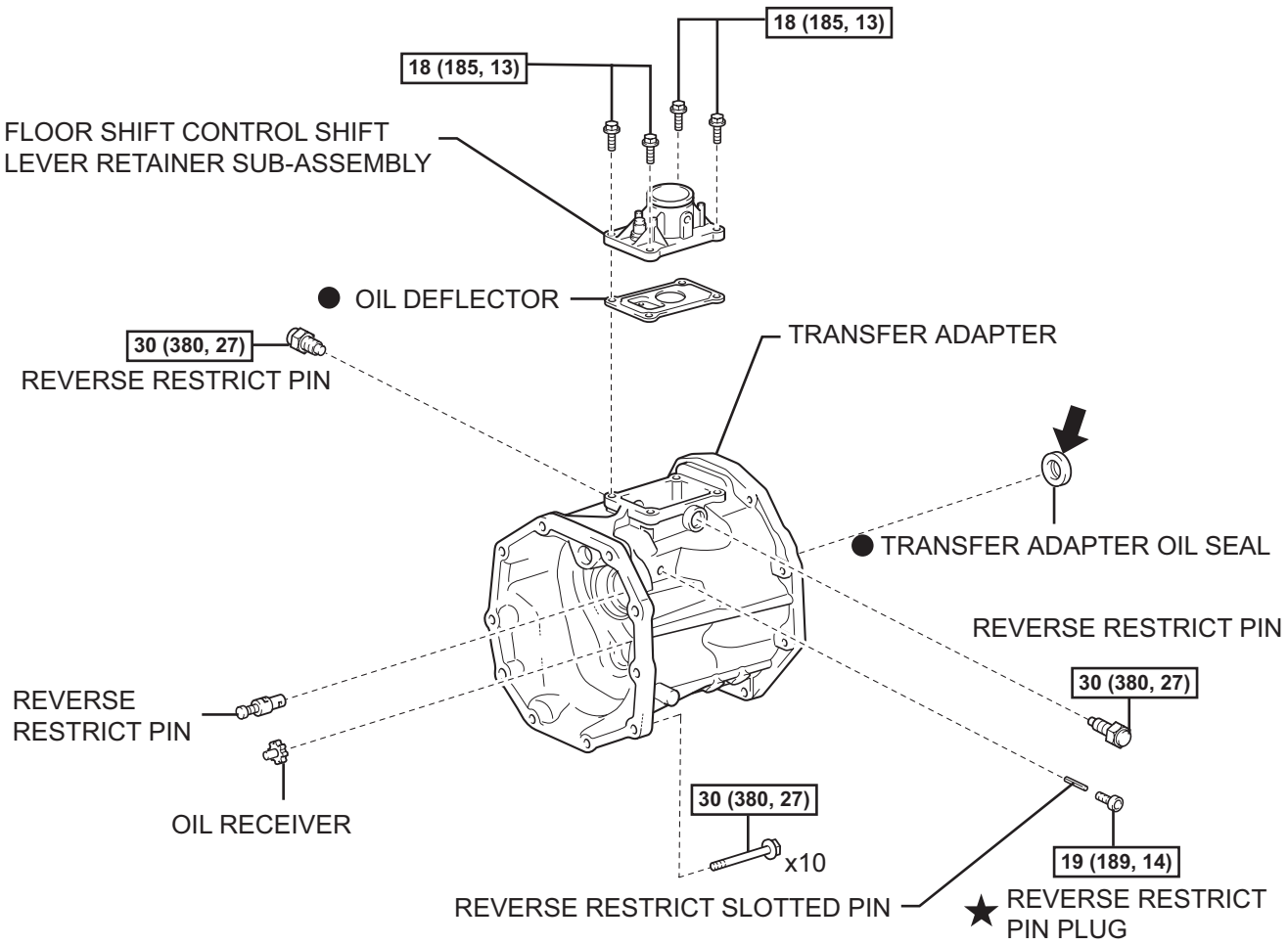


17. **INSTALL SHIFT LEVER BOOT ASSEMBLY**
    (a) Install the shift lever boot assembly with the 2 screws A and 2 clips B.
18. **INSTALL FRONT CONSOLE BOX (for Bench Seat Type) (See page IP-22)**
19. **INSTALL FRONT CONSOLE BOX (for Separate Seat Type) (See page IP-23)**
20. **INSTALL REAR CONSOLE BOX ASSEMBLY (for Separate Seat Type) (See page IP-24)**
21. **INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (for Separate Seat Type) (See page IP-25)**
22. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
    Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
23. **CHECK FOR MANUAL TRANSMISSION OIL LEAKAGE**

MANUAL TRANSMISSION UNIT

COMPONENTS





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

● Non-reusable part

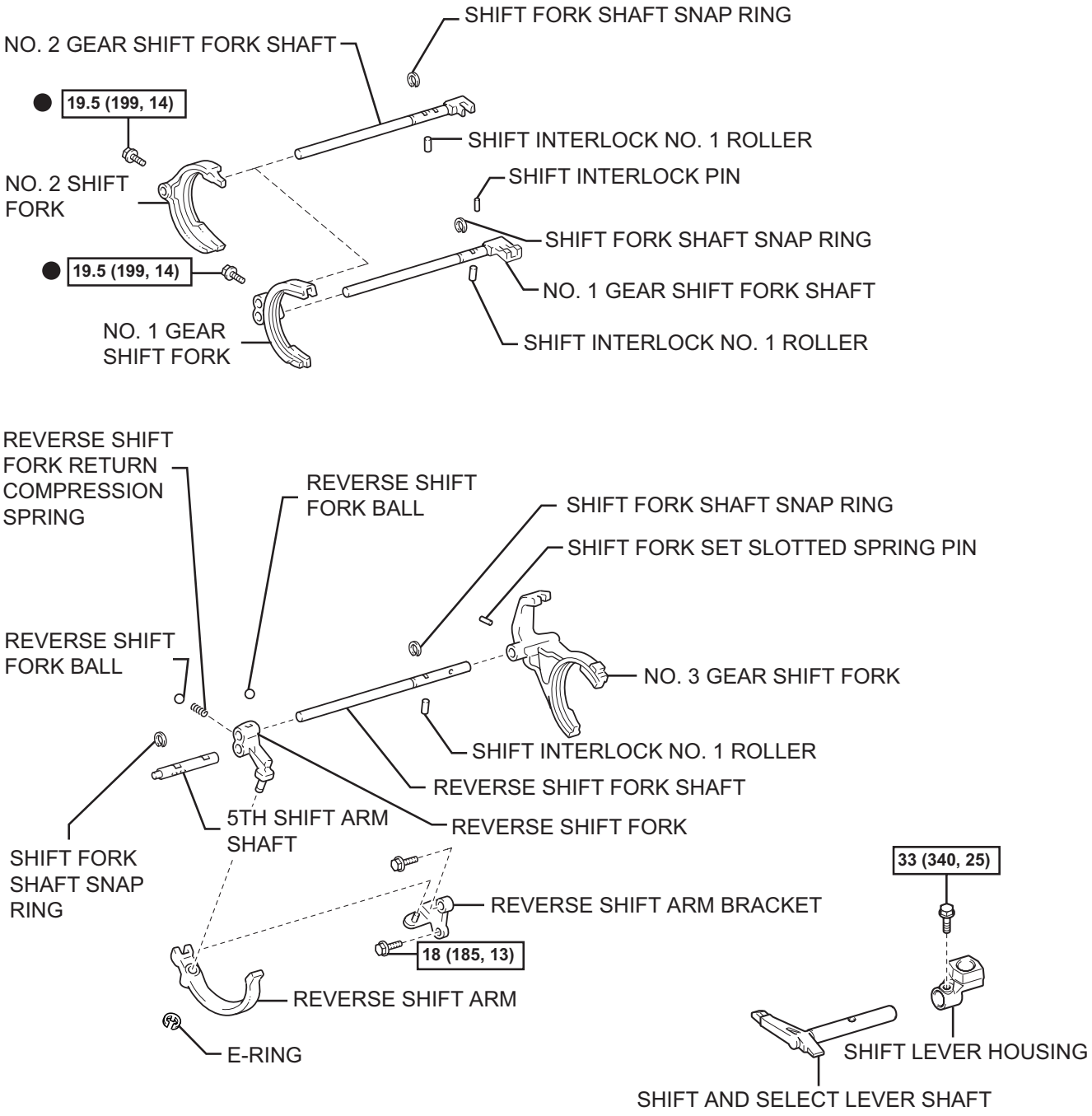
★ Precoated part

⬅ Apply MP grease

P

C115293E02

MT

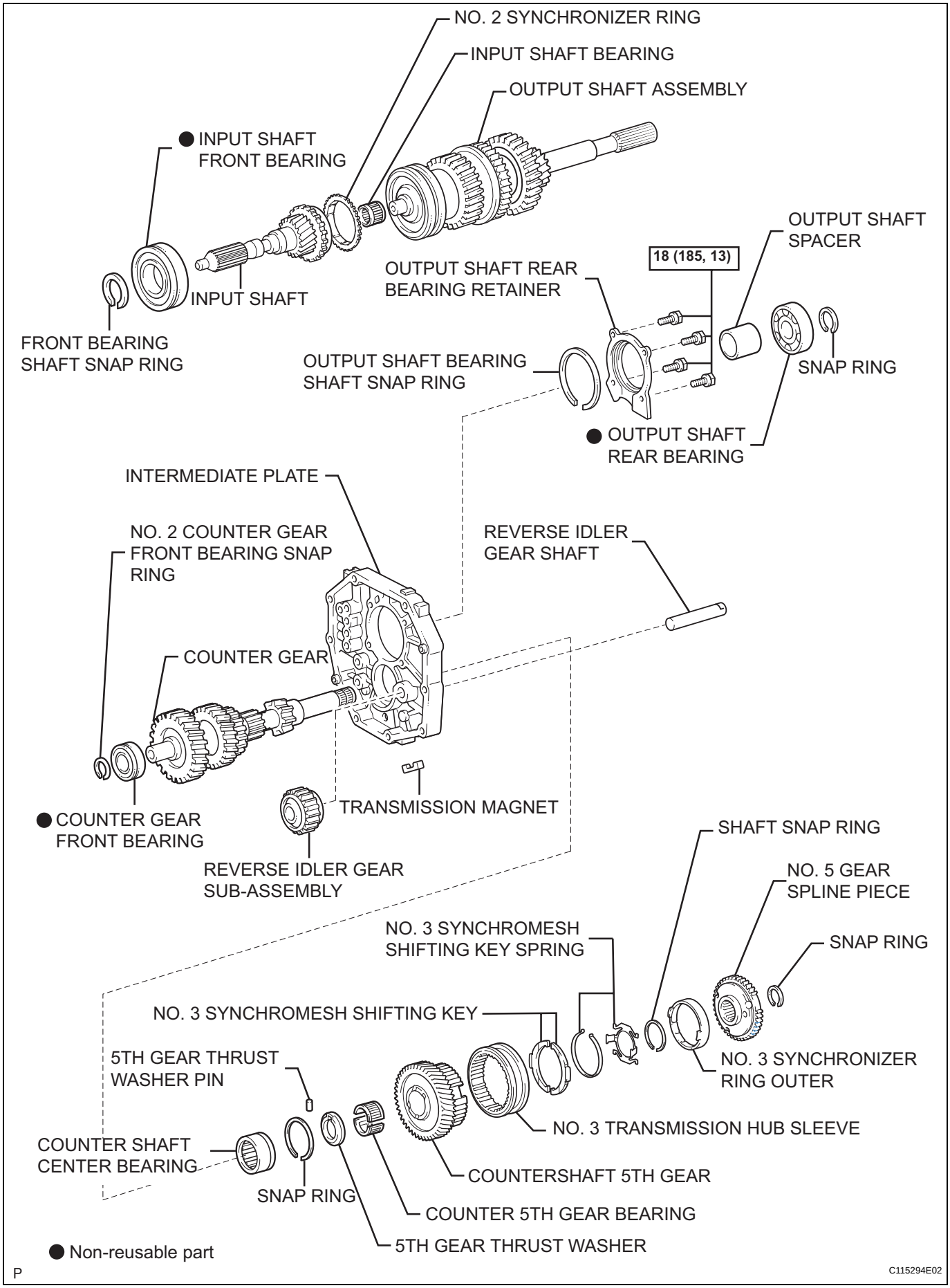


N*m (kgf*cm, ft.*lbf) : Specified torque

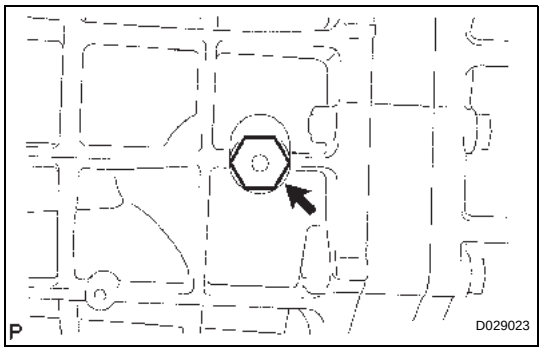
● Non-reusable part

P

C115295E02

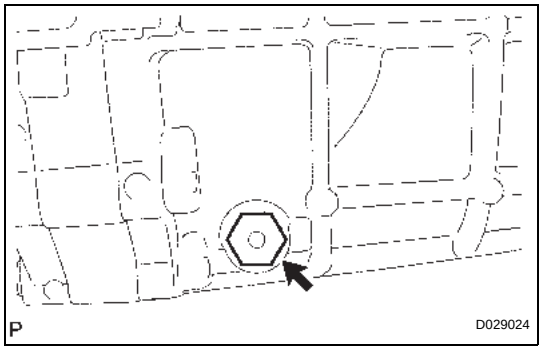

NO. 2 SYNCHRONIZER RING
INPUT SHAFT BEARING
OUTPUT SHAFT ASSEMBLY
● INPUT SHAFT FRONT BEARING
INPUT SHAFT
FRONT BEARING SHAFT SNAP RING
OUTPUT SHAFT REAR BEARING RETAINER
18 (185, 13)
OUTPUT SHAFT SPACER
OUTPUT SHAFT BEARING SHAFT SNAP RING
SNAP RING
● OUTPUT SHAFT REAR BEARING
INTERMEDIATE PLATE
NO. 2 COUNTER GEAR FRONT BEARING SNAP RING
REVERSE IDLER GEAR SHAFT
COUNTER GEAR
● COUNTER GEAR FRONT BEARING
TRANSMISSION MAGNET
REVERSE IDLER GEAR SUB-ASSEMBLY
SHAFT SNAP RING
NO. 5 GEAR SPLINE PIECE
NO. 3 SYNCHROMESH SHIFTING KEY SPRING
SNAP RING
NO. 3 SYNCHROMESH SHIFTING KEY
5TH GEAR THRUST WASHER PIN
NO. 3 SYNCHRONIZER RING OUTER
NO. 3 TRANSMISSION HUB SLEEVE
COUNTER SHAFT CENTER BEARING
COUNTERSHAFT 5TH GEAR
SNAP RING
COUNTER 5TH GEAR BEARING
5TH GEAR THRUST WASHER
● Non-reusable part
P
C115294E02

DISASSEMBLY



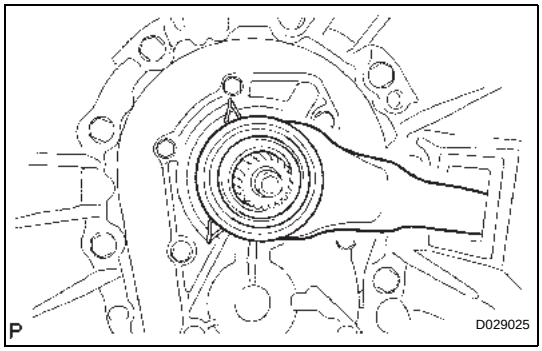
1. REMOVE MANUAL TRANSMISSION FILLER PLUG

(a) Remove the transmission filler plug and gasket from the transmission case.



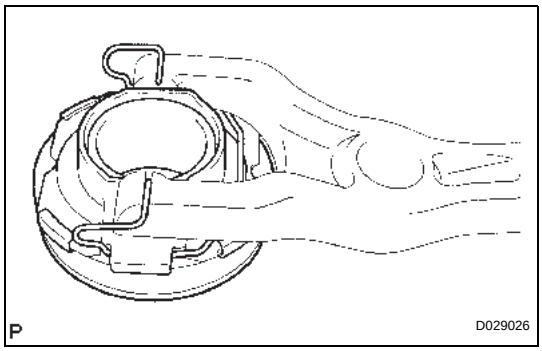
2. REMOVE DRAIN PLUG SUB-ASSEMBLY

(a) Remove the transmission drain plug and gasket from the transmission case.



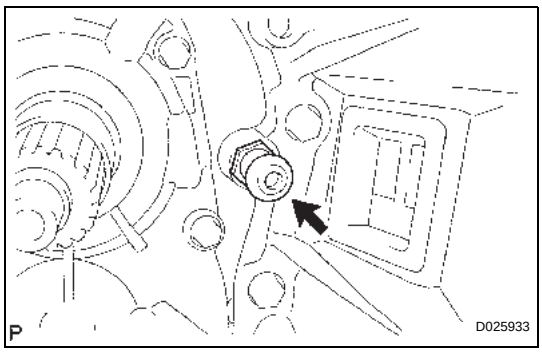
3. REMOVE CLUTCH RELEASE FORK SUB-ASSEMBLY

(a) Remove the clutch release fork and clutch release bearing from the clutch housing.



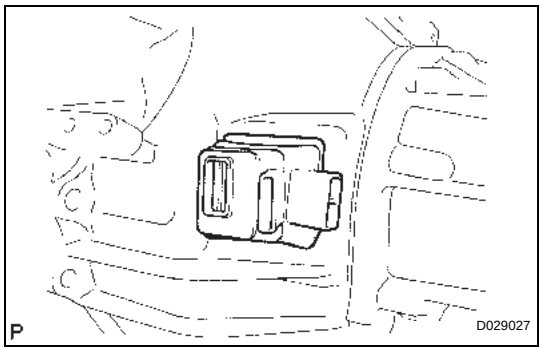
4. REMOVE CLUTCH RELEASE BEARING ASSEMBLY

(a) Remove the release bearing hub clip, and then remove the clutch release bearing from the clutch release fork.



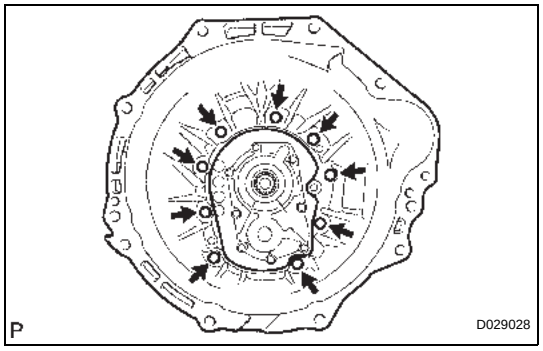
5. REMOVE RELEASE FORK SUPPORT

(a) Remove the release fork support from the clutch housing.



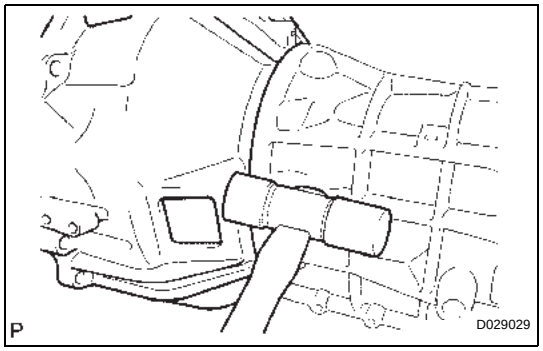
6. REMOVE CLUTCH RELEASE FORK BOOT

(a) Remove the clutch release fork boot from the clutch housing.

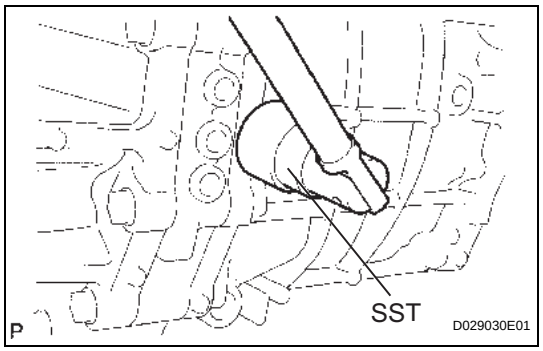


7. REMOVE CLUTCH HOUSING

(a) Remove the 9 bolts.

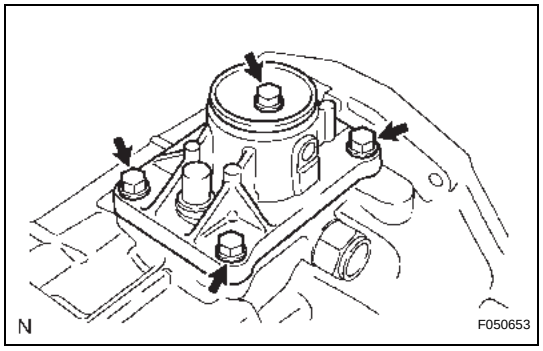


(b) Using a plastic hammer, remove the clutch housing from the transmission case.



8. REMOVE BACK-UP LIGHT SWITCH ASSEMBLY

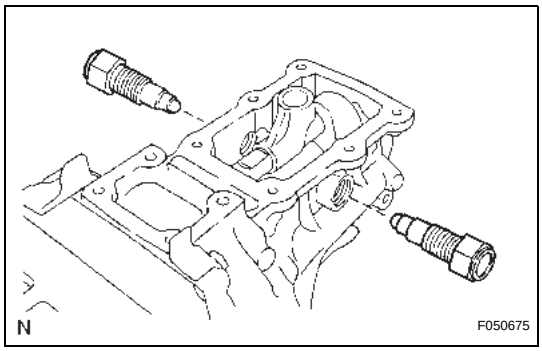
(a) Using SST, remove the back-up light switch assembly and the gasket from the transmission case.
SST 09817-16011



9. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

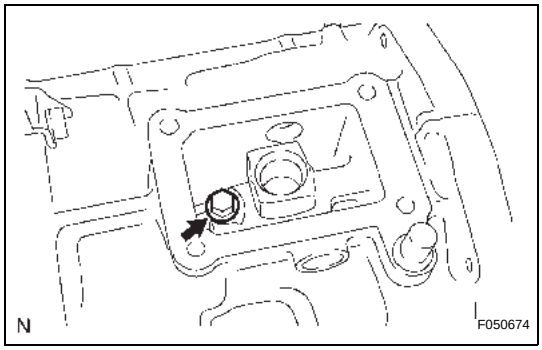
(a) Remove the 4 bolts.
(b) Remove the floor shift control shift lever retainer from the transfer adapter.
(c) Remove the oil deflector from the transfer adapter.

MT



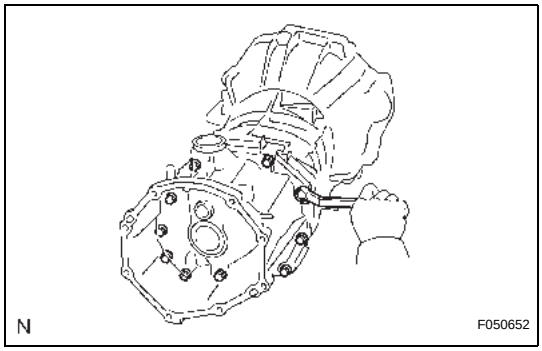
10. REMOVE REVERSE RESTRICT PIN

(a) Remove the 2 reverse restrict pins from the extension housing or transfer adapter.



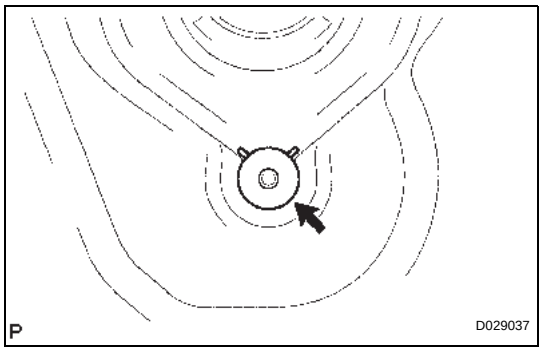
11. REMOVE TRANSFER ADAPTER

(a) Remove the shift lever housing set bolt.



(b) Remove the 10 bolts.

(c) Using a plastic hammer, remove the adapter, shift lever housing and shift and select lever from the transmission case.

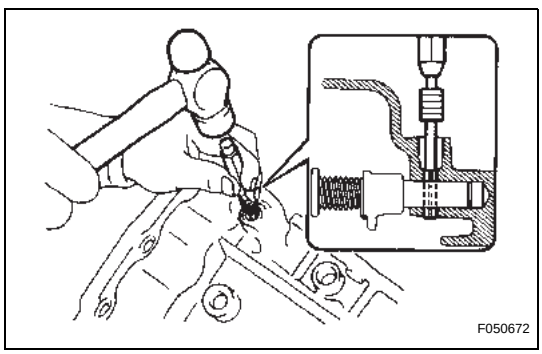


12. REMOVE OIL RECEIVER

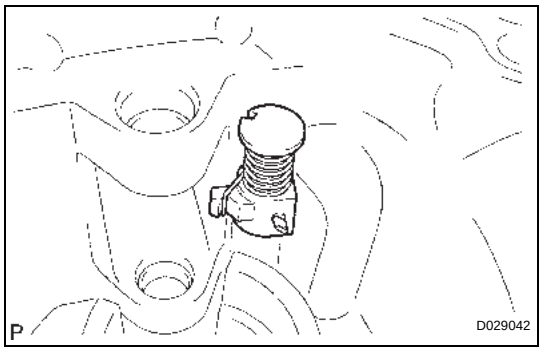
(a) Remove the oil receiver from the transfer adapter.

13. REMOVE REVERSE RESTRICT PIN ASSEMBLY

(a) Using a "Torx" socket wrench T40, remove the reverse restrict pin plug from the transfer adapter.



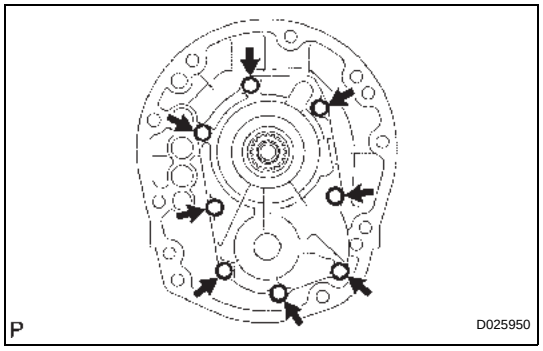
(b) Using a pin punch (5 mm) and a hammer, remove the reverse restrict pin slotted from the transfer adapter or extension housing.



(c) Remove the reverse restrict pin from the transfer adapter or extension housing.

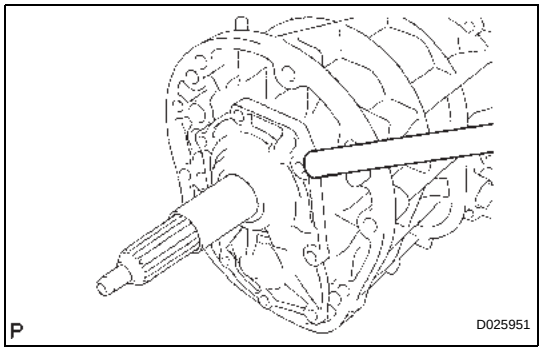
14. REMOVE TRANSFER ADAPTER OIL SEAL

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

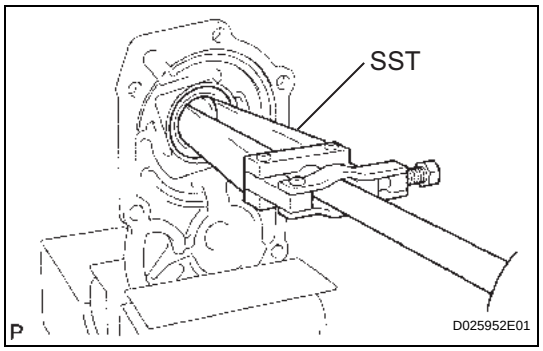


15. REMOVE FRONT BEARING RETAINER

(a) Remove the 8 bolts.



(b) Using a brass bar and a hammer, remove the front bearing retainer from the transmission case.

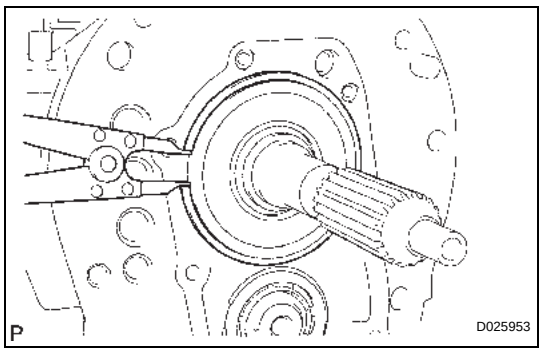


16. REMOVE TRANSMISSION FRONT BEARING RETAINER OIL SEAL

(a) Fix the front bearing retainer in a vise, between aluminum plate.

(b) Using SST, remove the transmission front bearing retainer oil seal.

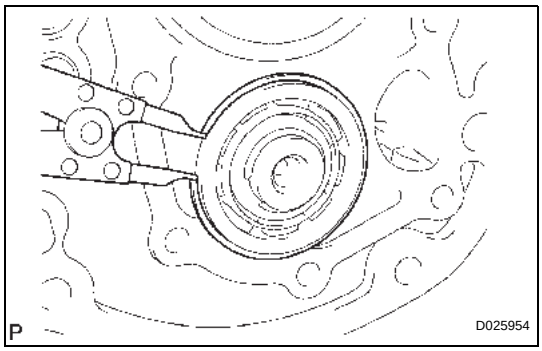
SST 09308-00010



17. REMOVE FRONT BEARING SHAFT SNAP RING

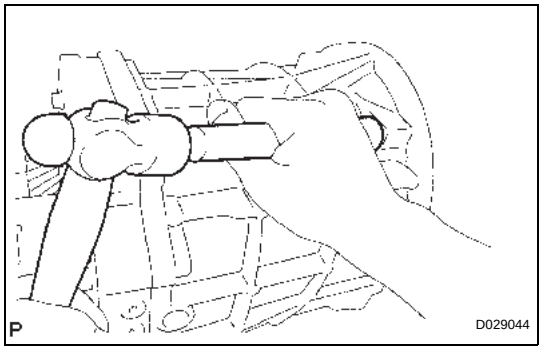
(a) Using a snap ring expander, remove the front bearing shaft snap ring from the transmission case.

MT



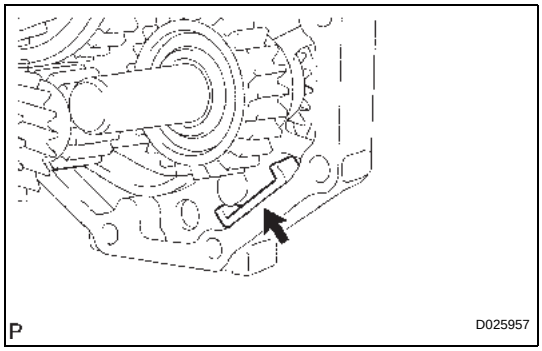
18. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, remove the counter gear front bearing snap ring No. 1 from the transmission case.



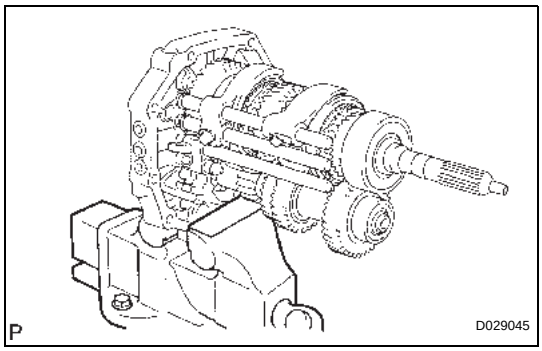
19. REMOVE MANUAL TRANSMISSION CASE

(a) Using a brass bar and a hammer, remove the transmission case from the intermediate plate.



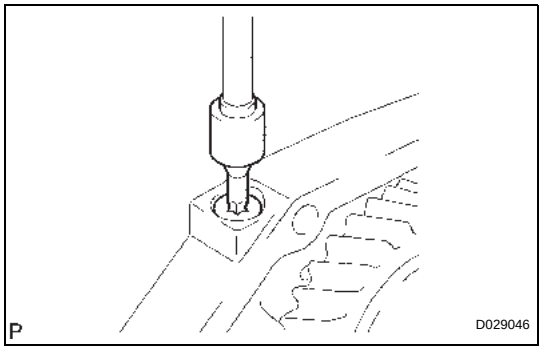
20. REMOVE TRANSMISSION MAGNET

(a) Remove the transmission magnet from the intermediate plate.



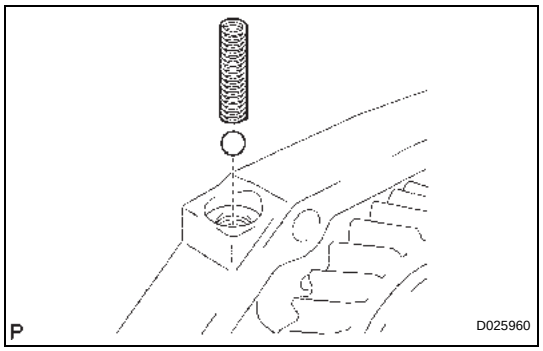
21. FIX INTERMEDIATE PLATE

(a) Fix the intermediate plate in a vice between aluminum plates.

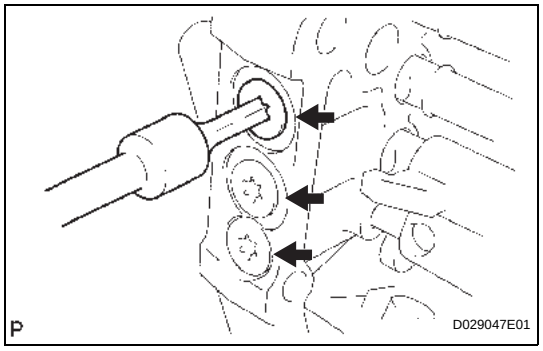


22. REMOVE NO. 1 SHIFT DETENT BALL SPRING SEAT

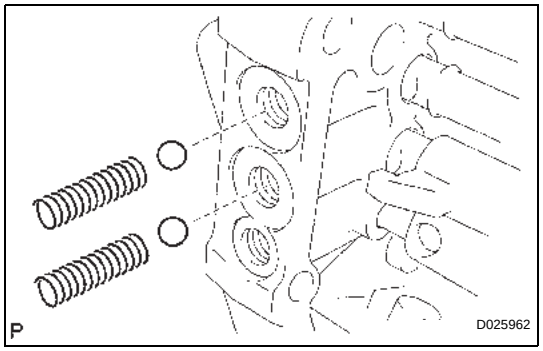
(a) Using a "Torx" socket wrench T40, remove the shift detent ball spring seat No. 1 from the intermediate plate.



(b) Using a magnetic finger, remove the shift detent ball low side compression spring and the shift detent ball from the intermediate plate.

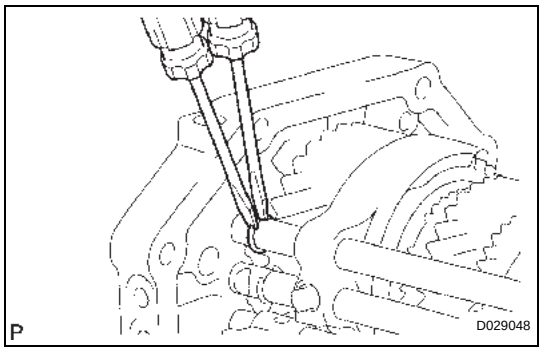


(c) Using a "Torx" socket wrench T40, remove the 3 shift detent ball spring seats No. 1 from the intermediate plate.



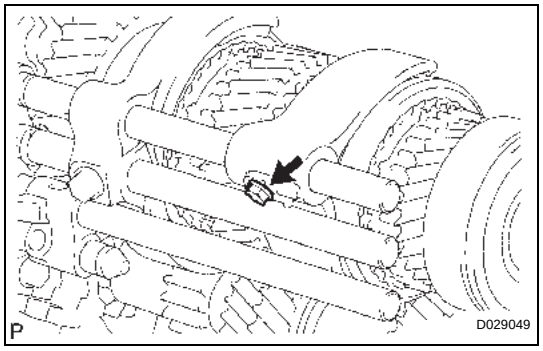
(d) Using a magnetic finger, remove the 2 shift detent ball low side compression springs and the 2 shift detent balls from the intermediate plate.

23. REMOVE NO. 2 GEAR SHIFT FORK SHAFT

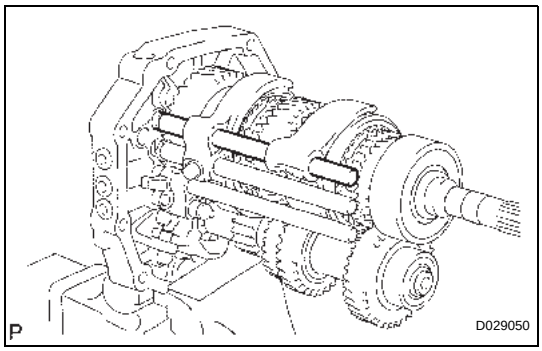


(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No. 2.

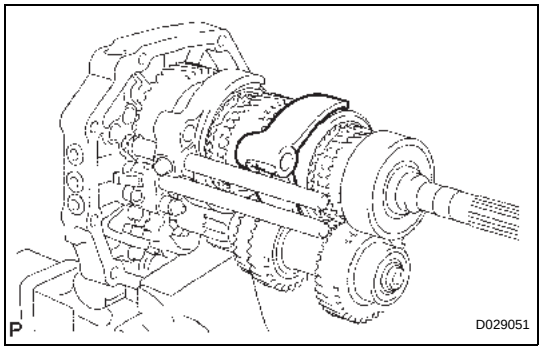
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



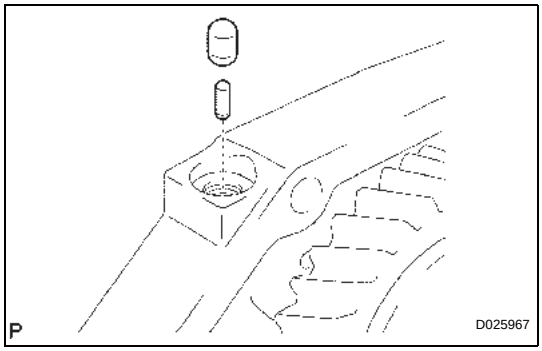
(b) Remove the shift fork set bolt from the gear shift fork No. 2.



(c) Remove the gear shift fork shaft No. 2 from the intermediate plate.

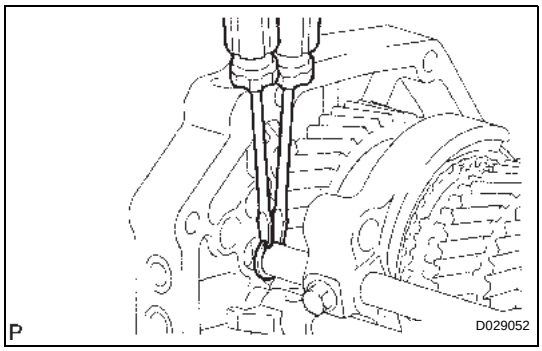


(d) Remove the gear shift fork No. 2 from the transmission hub sleeve No. 2.



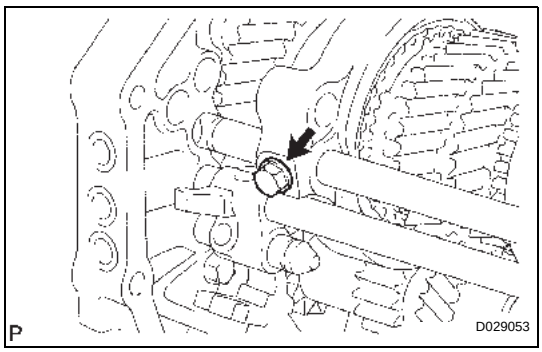
(e) Using a magnetic finger, remove the shift interlock No. 1 roller and the shift interlock pin (ball) from the intermediate plate.

24. REMOVE NO. 1 GEAR SHIFT FORK SHAFT

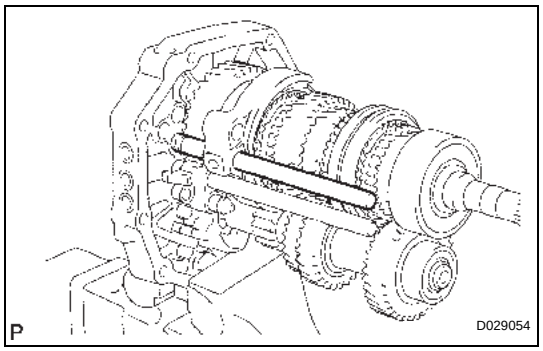


(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No. 1.

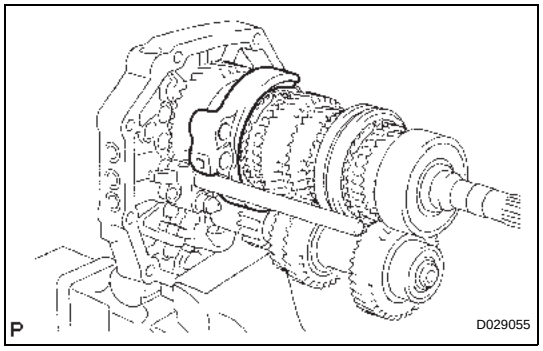
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



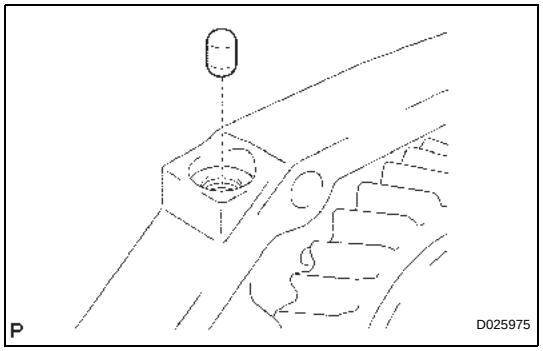
(b) Remove the shift fork set bolt from the gear shift fork No. 1.



(c) Remove the gear shift fork shaft No. 1 from the intermediate plate.

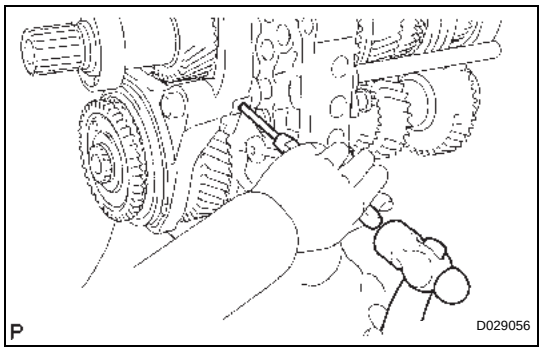


(d) Remove the gear shift fork No. 1 from the reverse gear.

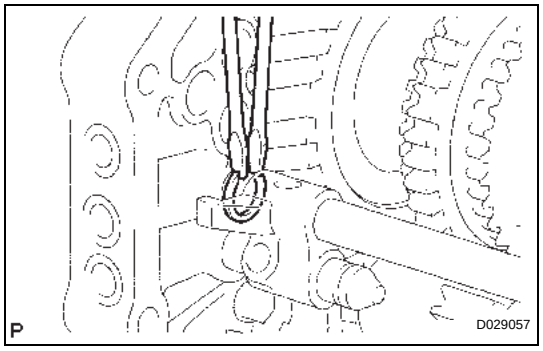


(e) Using a magnetic finger, remove the shift interlock No. 1 roller from the intermediate plate.

25. REMOVE REVERSE SHIFT FORK SHAFT

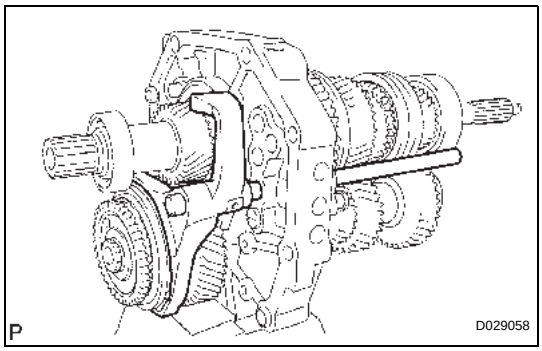


(a) Using a pin punch (5 mm) and a hammer, remove the shift fork set slotted spring pin from the gear shift fork No. 3.

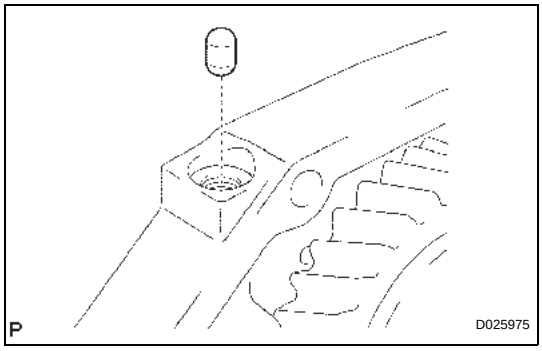


(b) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the reverse shift fork shaft.

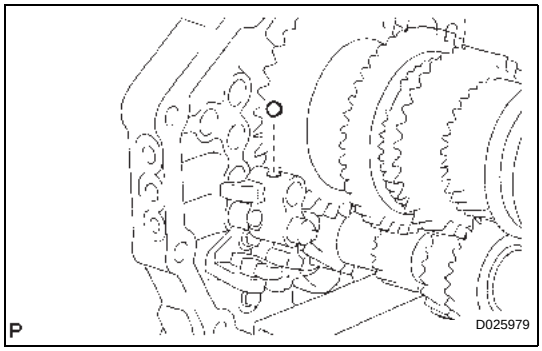
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



(c) Remove the gear shift fork No. 3 and reverse shift fork shaft from the intermediate plate.

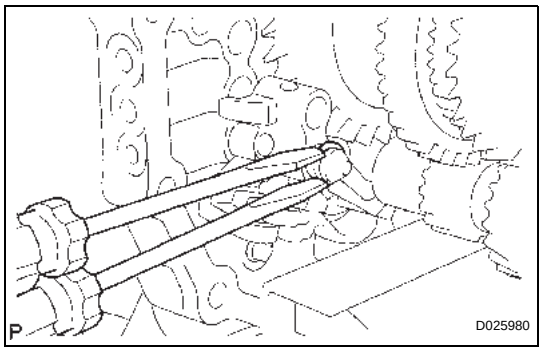


(d) Using a magnetic finger, remove the shift interlock No. 1 roller from the intermediate plate.

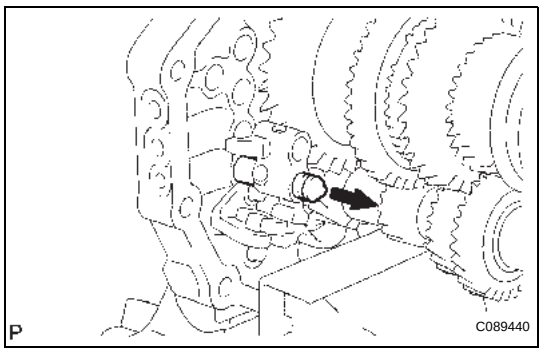


(e) Using a magnetic finger, remove the reverse shift fork ball from the reverse shift fork.

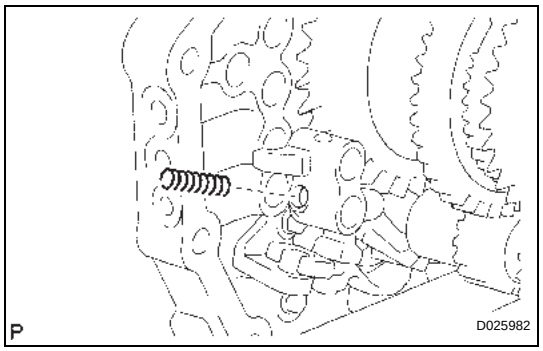
26. REMOVE 5TH SHIFT ARM SHAFT



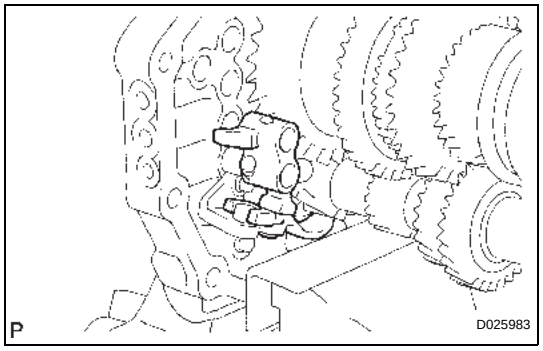
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the 5th shift arm shaft.
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



(b) Remove the 5th shift arm shaft from the intermediate plate.
NOTICE:
Cover the hole with a shop rag to prevent the reverse shift fork ball from popping out.

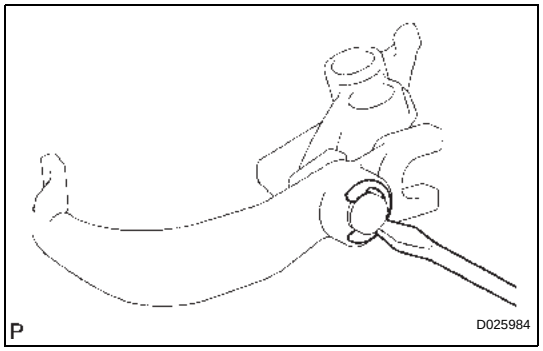


(c) Using a magnetic finger, remove the reverse shift fork return compression spring from the reverse shift fork.

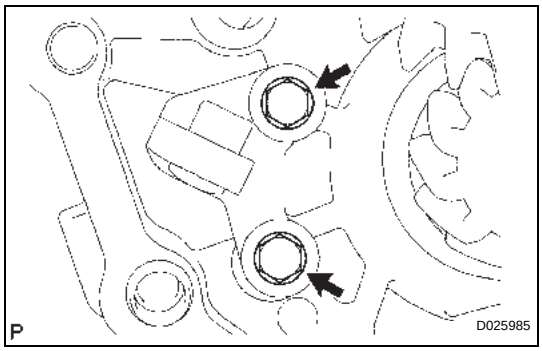


27. REMOVE REVERSE SHIFT FORK

(a) Remove the reverse shift fork together with the reverse shift arm from the intermediate plate.

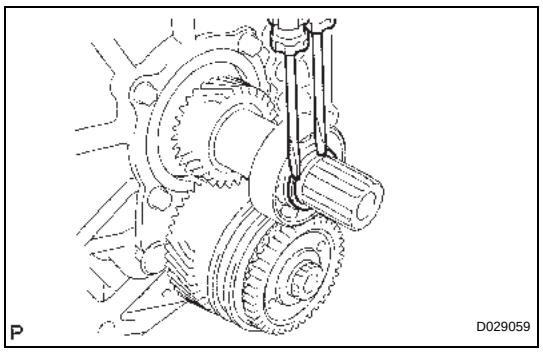


(b) Using a screwdriver, remove the reverse shift arm end shaft ring and the reverse shift fork from the reverse shift arm.



28. REMOVE REVERSE SHIFT ARM BRACKET

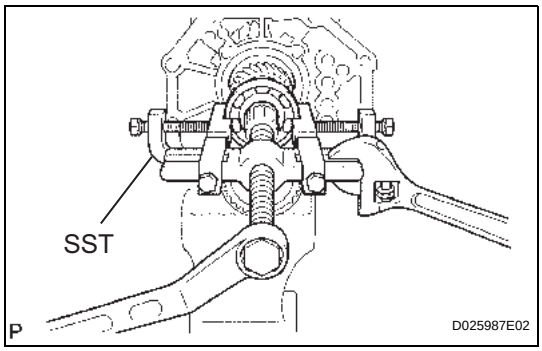
(a) Remove the 2 bolts and reverse shift arm bracket from the intermediate plate.



29. REMOVE OUTPUT SHAFT BEARING SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, remove the output shaft bearing shaft snap ring from the output shaft.

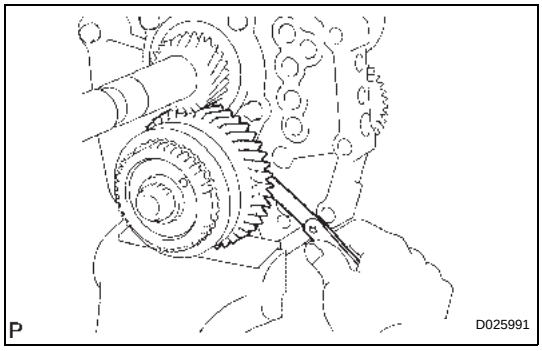
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30. REMOVE OUTPUT SHAFT REAR BEARING

(a) Using SST, remove the output shaft rear bearing and output shaft spacer from the output shaft.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04051, 09957-04010, 09958-04011)

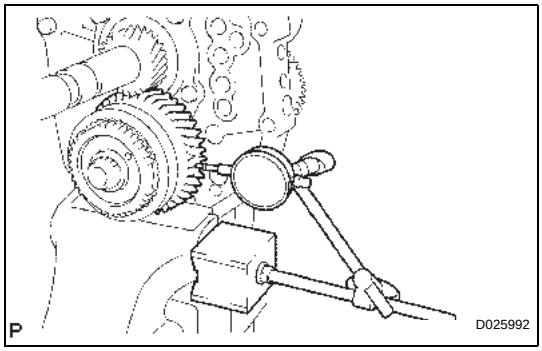


31. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the counter shaft 5th gear thrust clearance.

Standard clearance:

0.10 to 0.35 mm (0.0039 to 0.0138 in.)



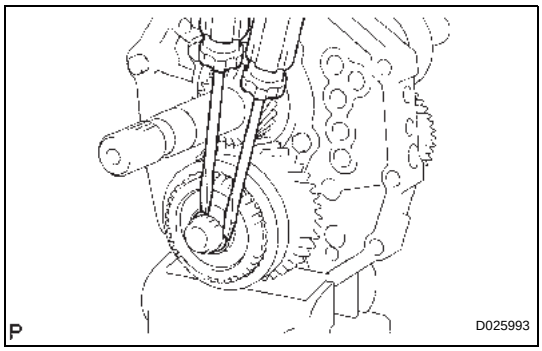
32. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the counter shaft 5th gear.

Standard clearance:

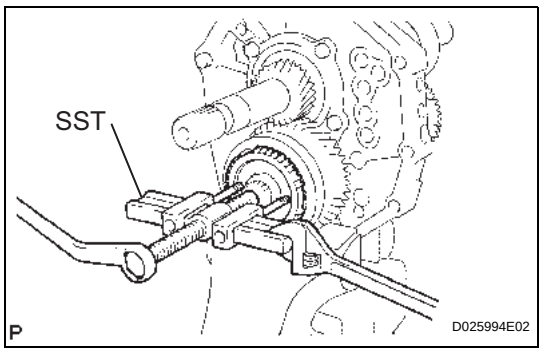
0.015 to 0.068 mm (0.0059 to 0.0027 in.)

If the clearance is not within the specified values, replace the counter 5th gear bearing with a new one.



33. REMOVE COUNTER GEAR REAR SHAFT SNAP RING

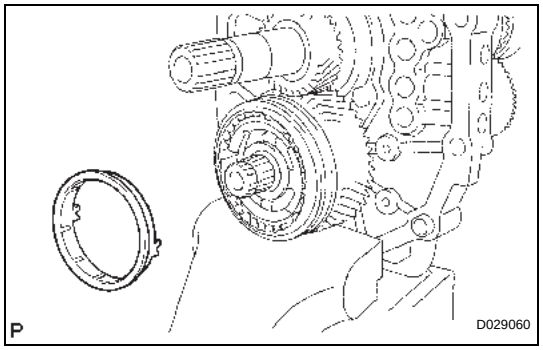
(a) Using 2 screwdrivers and a hammer, remove the counter gear rear shaft snap ring from the counter gear.



34. REMOVE NO. 5 GEAR SPLINE PIECE

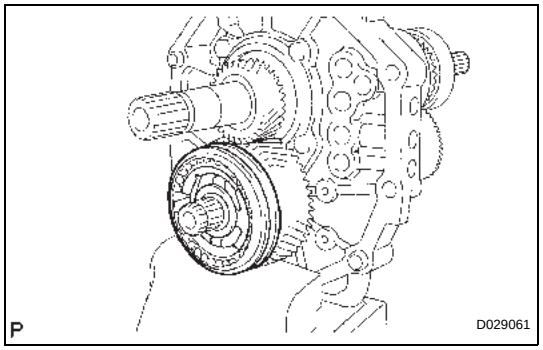
(a) Using SST, remove the gear spline piece No. 5 from the counter gear.

SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021, 09957-04010)



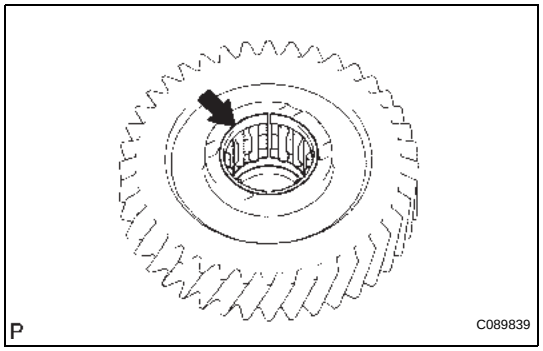
35. REMOVE NO. 3 SYNCHRONIZER RING OUTER

(a) Remove the synchronizer ring outer No. 3 from the counter gear.



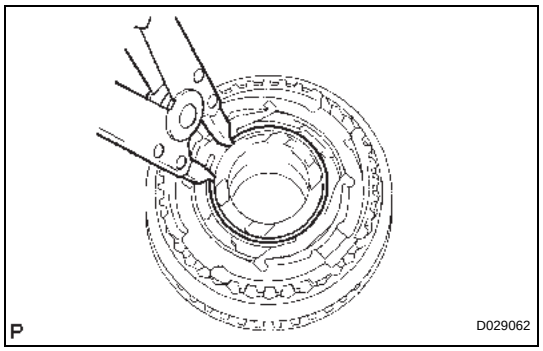
36. REMOVE COUNTER SHAFT 5TH GEAR

(a) Remove the counter shaft 5th gear and transmission hub sleeve No. 3 assembly from the counter gear.



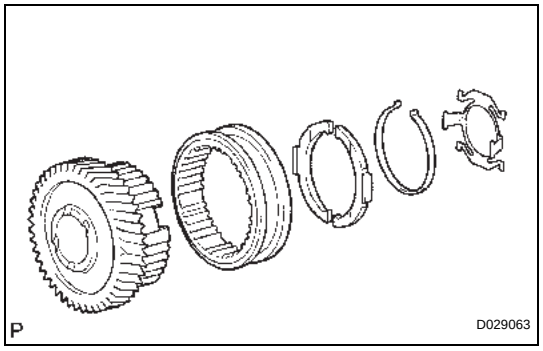
37. REMOVE COUNTER 5TH GEAR BEARING

(a) Remove the counter 5th gear bearing from the counter 5th gear.

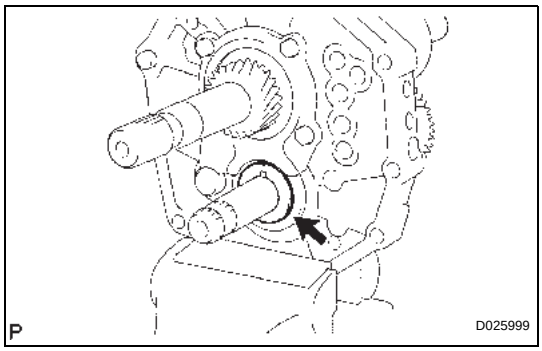


38. REMOVE NO. 3 TRANSMISSION HUB SLEEVE

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

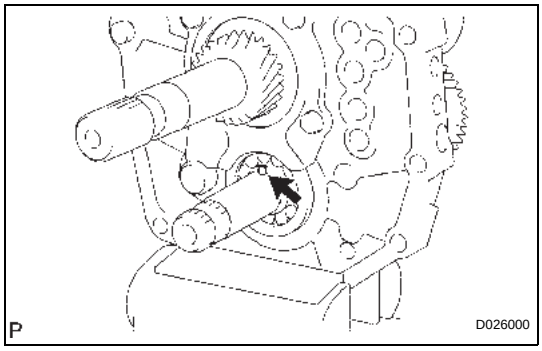


(b) Remove the transmission hub sleeve No. 3, 2 synchromesh shifting keys No. 3 and 2 synchromesh shifting key springs No. 3 from the counter shaft 5th gear.



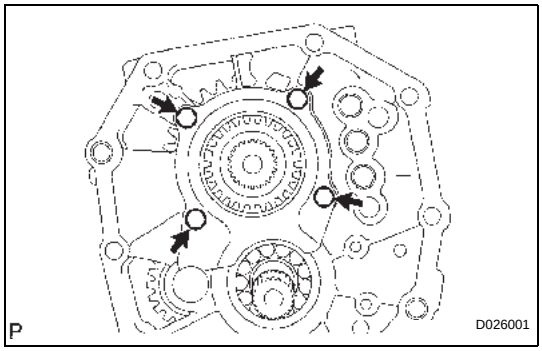
39. REMOVE 5TH GEAR THRUST WASHER

(a) Remove the 5th gear thrust washer from the counter gear.



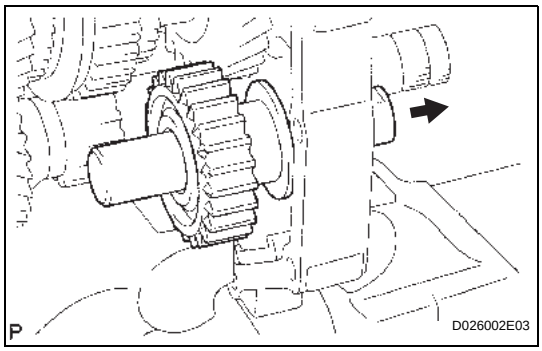
40. REMOVE 5TH GEAR THRUST WASHER PIN

(a) Remove the 5th gear thrust washer pin from the counter gear.



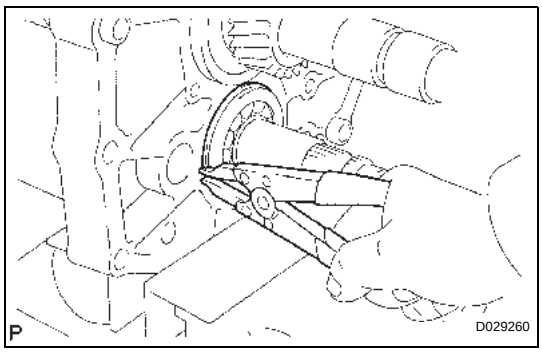
41. REMOVE OUTPUT SHAFT REAR BEARING RETAINER

(a) Remove the 4 bolts and output shaft rear bearing retainer from the intermediate plate.



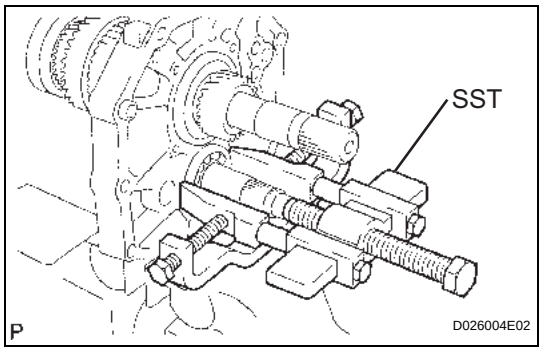
42. REMOVE REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Pull out the reverse idler gear shaft to the rear side and remove the reverse idler gear from the intermediate plate.



43. REMOVE COUNTER SHAFT CENTER BEARING

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

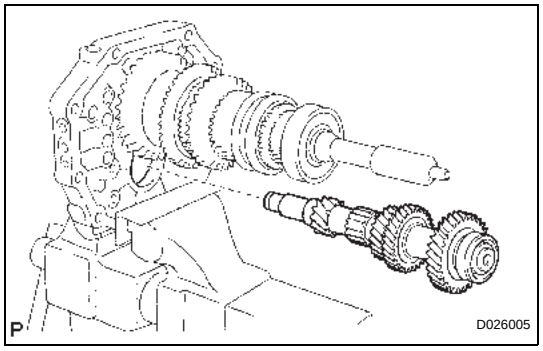


(b) Using SST, remove the counter shaft center bearing from the intermediate plate.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04011, 09957-04010, 09958-04011)

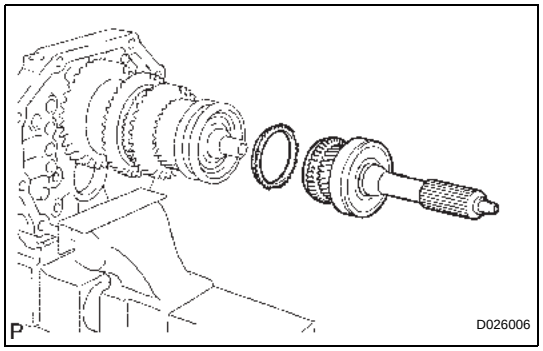
HINT:

Remove the bearing while tapping the tip of the counter gear so that the counter gear assembly is not pushed forward into the side wall of the output shaft gear.



44. REMOVE COUNTER GEAR

(a) Remove the counter gear assembly from the intermediate plate.

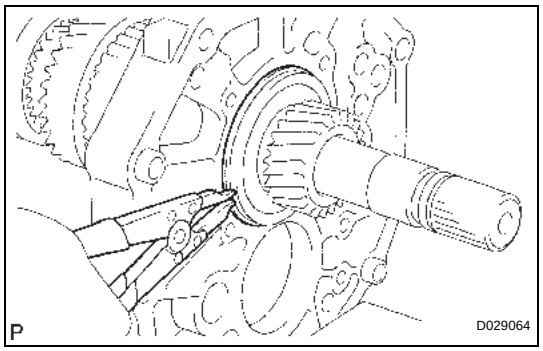


45. REMOVE INPUT SHAFT ASSEMBLY

(a) Remove the input shaft assembly and synchronizer ring No. 2 from the output shaft.

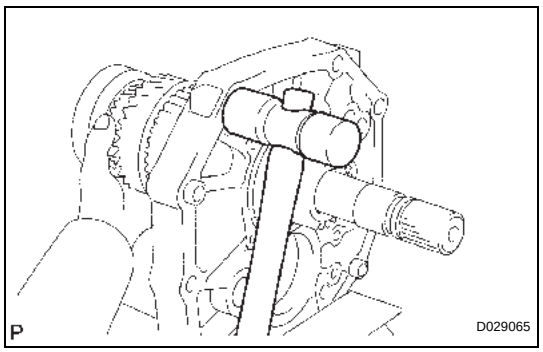
NOTICE:

Do not drop the input shaft bearing and synchronizer ring No. 2.



46. REMOVE OUTPUT SHAFT BEARING SHAFT SNAP RING

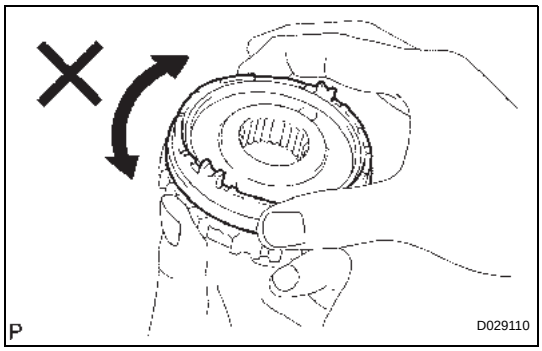
(a) Using a snap ring expander, remove the output shaft bearing shaft snap ring from the output shaft.



47. REMOVE OUTPUT SHAFT ASSEMBLY

(a) Using a plastic hammer, remove the output shaft assembly by tapping the intermediate plate.

MT

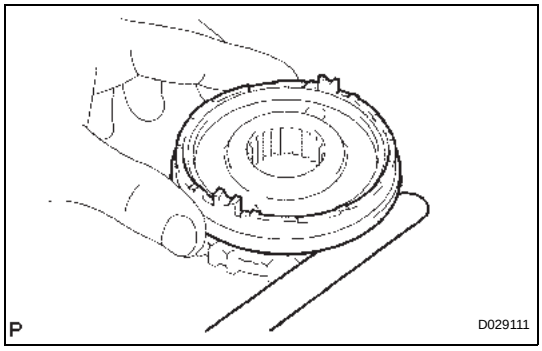


INSPECTION

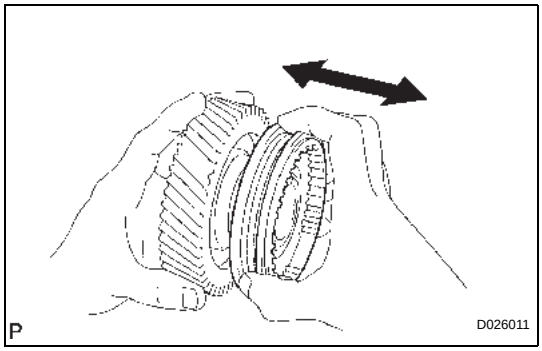
1. INSPECT NO. 3 SYNCHRONIZER RING OUTER

(a) Apply gear oil to the cone part of gear spline piece No. 5, and check that it does not turn in both directions while pushing the synchronizer ring outer No. 3 to the gear spline piece No. 5.
If it turns, replace the synchronizer ring.

MT



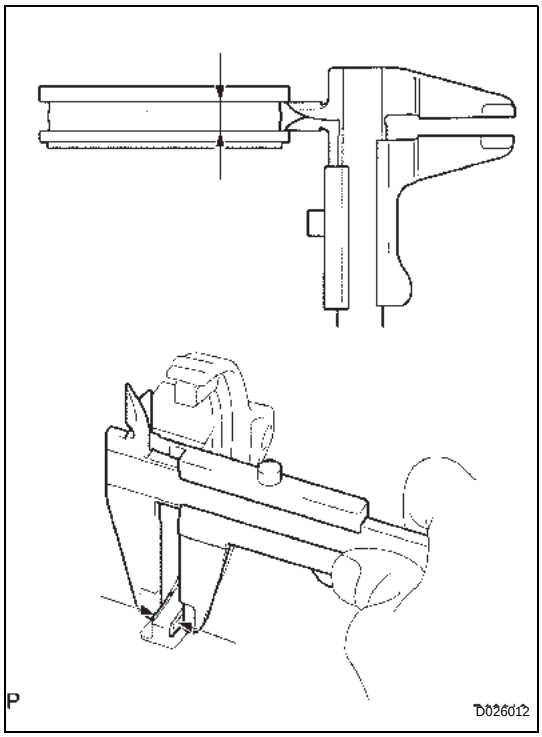
(b) Measure the clearance between the synchronizer ring outer No. 3 and gear spline piece No. 5 while pushing the synchronizer ring outer No. 3 to the cone part of the gear spline piece No. 5.
Standard clearance:
0.68 to 1.32 mm (0.0267 to 0.0610 in.)
If the clearance is not within the specified values, replace synchronizer ring outer No. 3 with a new one.



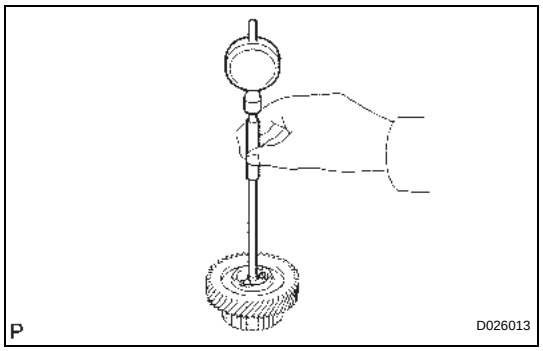
2. INSPECT NO. 3 TRANSMISSION HUB SLEEVE

(a) Check that the counter shaft 5th gear and transmission hub sleeve No. 3 slide smoothly each other.

(b) Check the tip of the spline gear of the transmission hub sleeve No. 3 for wear.
If there are any detects, replace the transmission hub sleeve No. 3.



(c) Using vernier calipers, measure the transmission hub sleeve No. 3 groove and the thickness of the claw part of the shift fork No. 3 to calculate the clearance.
Standard clearance:
0.26 to 0.84 mm (0.0102 to 0.0331 in.)
If the clearance is not within the specified values, replace the transmission hub sleeve No. 3 and shift fork No. 3 with new ones.



3. INSPECT COUNTERSHAFT 5TH GEAR

(a) Using a cylinder gauge, measure the inner diameter of the counter 5th gear.

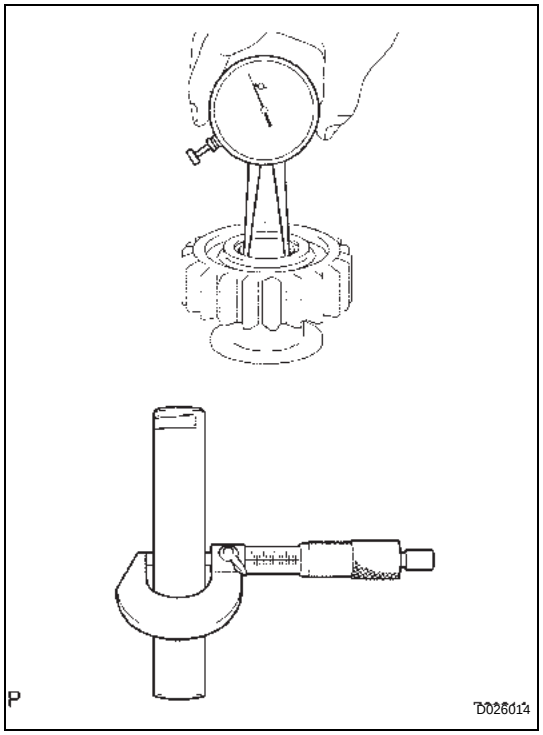
Standard diameter:

38.015 to 38.040 mm (1.4967 to 1.4976 in.)

Maximum diameter:

38.040 mm (1.4976 in.)

If the diameter greater than the maximum, replace the counter shaft 5th gear with a new one.



4. INSPECT REVERSE IDLER GEAR SUB-ASSY

(a) Using a caliper gauge, measure the inner diameter of the reverse idler gear.

Standard diameter:

24.040 to 24.061 mm (0.9465 to 0.9473 in.)

Maximum diameter:

24.061 mm (0.9473 in.)

If the clearance is greater than the maximum, replace the reverse idler gear with a new one.

(b) Using a micrometer, measure the outer diameter of the sliding part of the reverse idler gear on the reverse idler gear shaft.

Standard diameter:

23.979 to 24.000 mm (0.9441 to 0.9449 in.)

Minimum diameter:

23.979 mm (0.9441 in.)

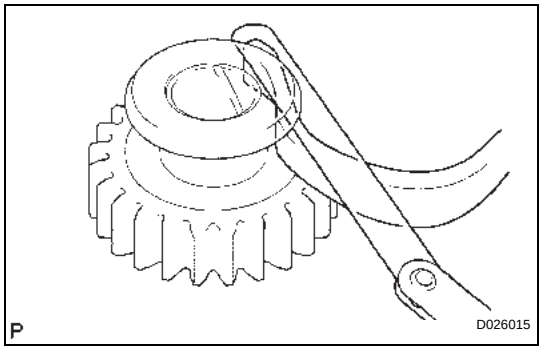
If the diameter is outside the specification, replace the reverse idler gear shaft with a new one.

(c) Subtract the reverse idler gear shaft inside diameter measurement from the reverse idler gear diameter clearance.

Standard clearance:

0.040 to 0.082 mm (0.0016 to 0.0032 in.)

If the clearance is not as specified, replace the reverse idler gear or reverse idler gear shaft.



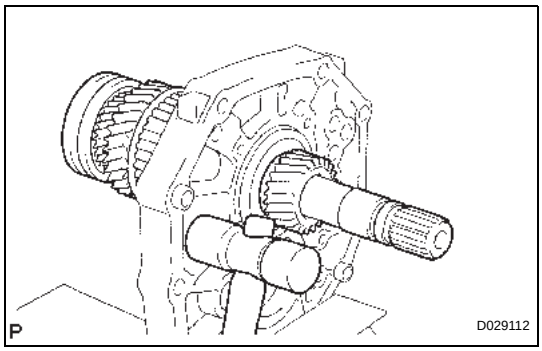
(d) Using a feeler gauge, measure the thrust clearance of the shoe part between the reverse idler gear and the reverse shift arm.

Standard clearance:

0.05 to 0.35 mm (0.0020 to 0.0138 in.)

If the clearance is outside the specification, replace the idler gear and reverse shift arm with new ones.

MT

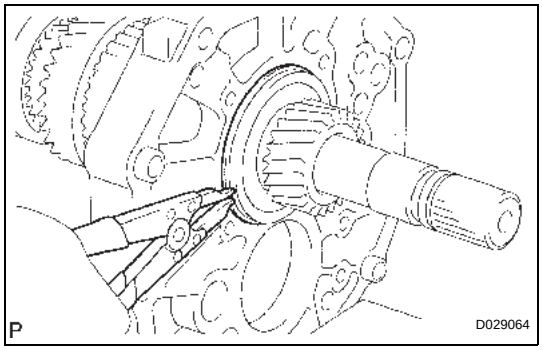


REASSEMBLY

1. INSTALL OUTPUT SHAFT ASSEMBLY

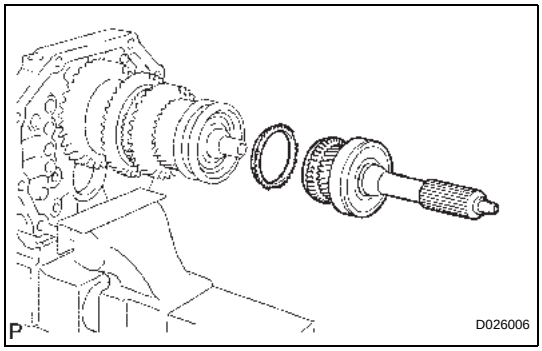
(a) Apply gear oil to the sliding part of the output assembly.

(b) Using a plastic hammer, install the output shaft assembly by tapping the intermediate plate.



2. INSTALL OUTPUT SHAFT BEARING SHAFT SNAP RING

(a) Using a snap ring expander, install the output shaft bearing shaft snap ring onto the output shaft.

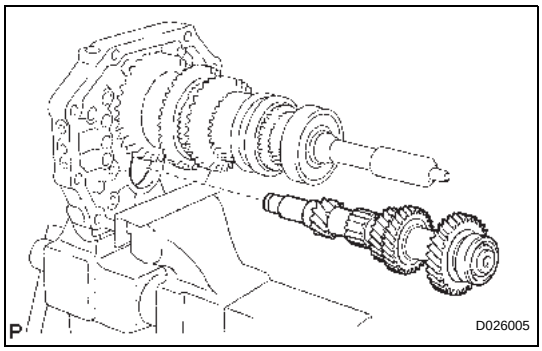


3. INSTALL INPUT SHAFT ASSEMBLY

(a) Apply gear oil to the input shaft assembly and synchronizer ring No. 2, and install them onto the output shaft.

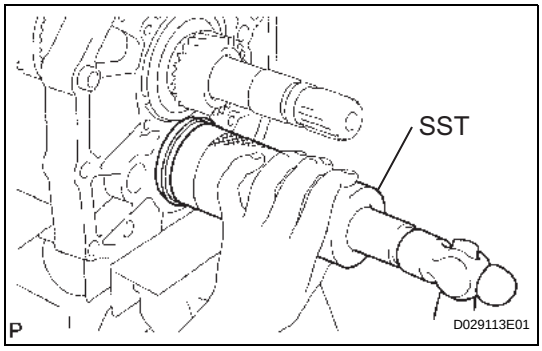
NOTICE:

- **Install the synchronizer ring No. 2 so that its groove fits into the synchromesh shifting key No. 2.**
- **Check that the input shaft assembly rotates smoothly.**



4. INSTALL COUNTER GEAR

(a) Provisionally install the counter gear assembly onto the intermediate plate.



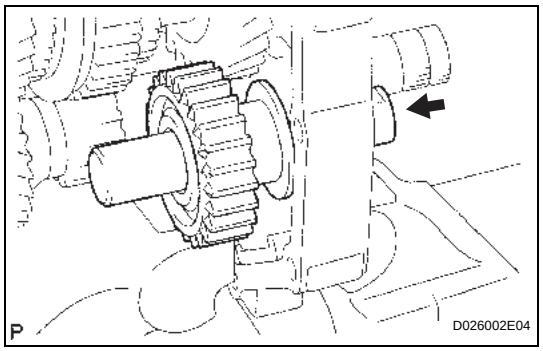
5. INSTALL COUNTER SHAFT CENTER BEARING

(a) Using SST and a hammer, install the new counter shaft center bearing onto the intermediate plate.

SST 09316-60011 (09316-00011)

HINT:

Remove the bearing while tapping the tip of the counter gear so that the counter gear assembly is not pushed forward into the side wall of the output shaft gear.

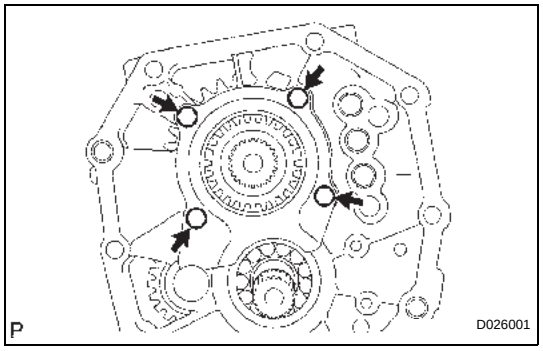


6. INSTALL REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Apply gear oil to each sliding part of the reverse idler gear and the reverse idler gear shaft, and install them onto the intermediate plate.

NOTICE:

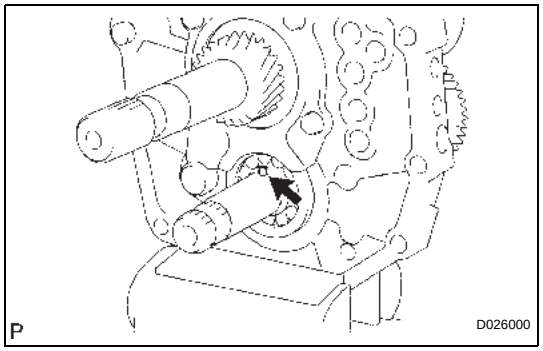
Orient the groove side of the reverse idler shaft to the rear side and install it from the rear side.



7. INSTALL OUTPUT SHAFT REAR BEARING RETAINER

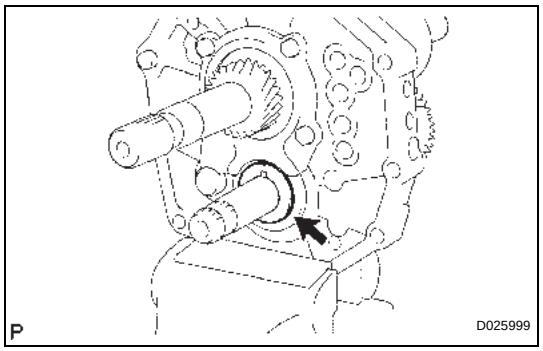
(a) Install the output shaft rear bearing retainer into the groove of the reverse idler gear shaft with the 4 bolts.

Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)



8. INSTALL 5TH GEAR THRUST WASHER PIN

(a) Apply MP grease to the 5th gear thrust washer pin, and install it onto the counter gear.

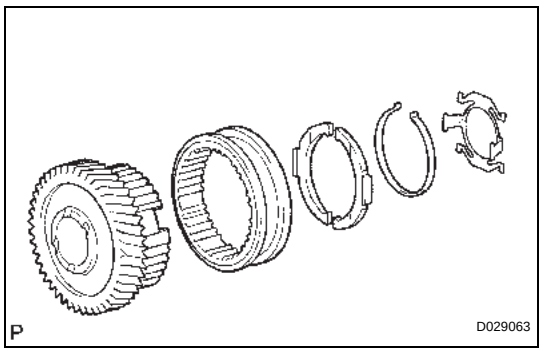


9. INSTALL 5TH GEAR THRUST WASHER

(a) Apply gear oil to the 5th gear thrust washer, and install it onto the counter gear.

NOTICE:

Install the thrust washer so that its chamfer side faces to the front side.



10. INSTALL NO. 3 TRANSMISSION HUB SLEEVE

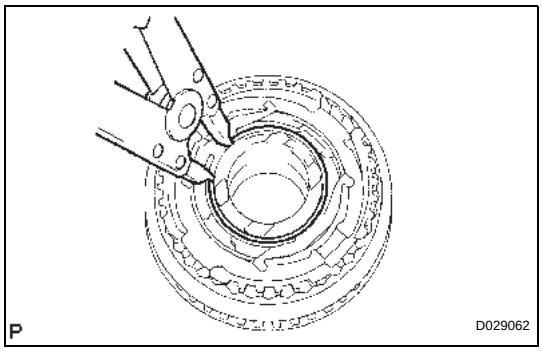
(a) Apply gear oil to the sliding part of transmission hub sleeve No. 3, and install it onto the counter shaft 5th gear.

NOTICE:

Make sure that the transmission hub sleeve No. 3 and counter 5th gear are oriented in the correct direction.

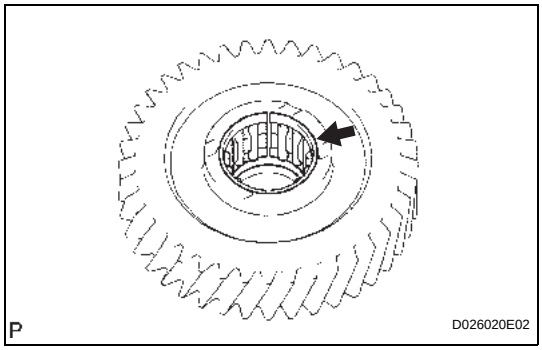
(b) Install the 2 synchromesh shifting keys No. 3 and the 2 synchromesh shifting key springs onto the counter shaft 5th gear.

MT



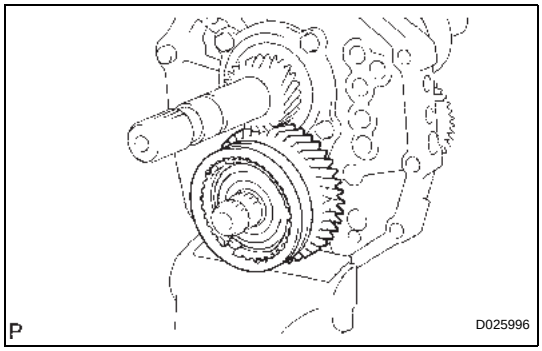
(c) Using a snap ring expander, install the bearing shaft snap ring onto the counter 5th gear.

MT



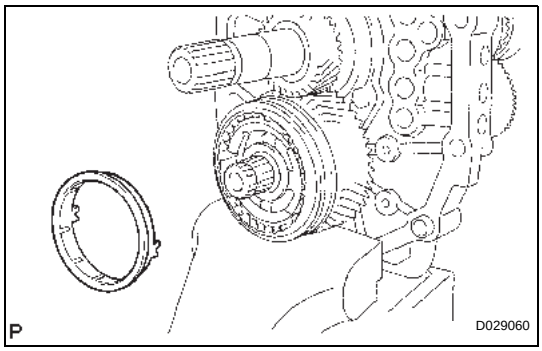
11. INSTALL COUNTER 5TH GEAR BEARING

(a) Apply gear oil to the counter 5th gear bearing and install it onto the counter 5th gear.



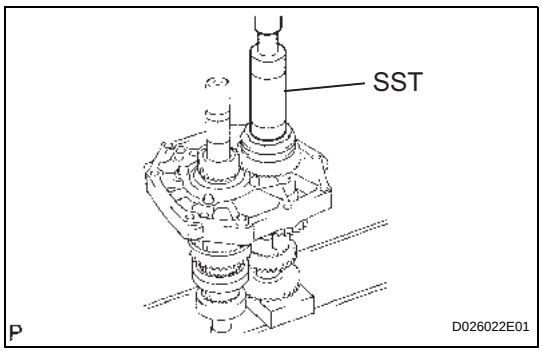
12. INSTALL COUNTER SHAFT 5TH GEAR

(a) Apply gear oil to the counter 5th gear and transmission hub sleeve No. 3 assembly, and install them onto the counter gear.



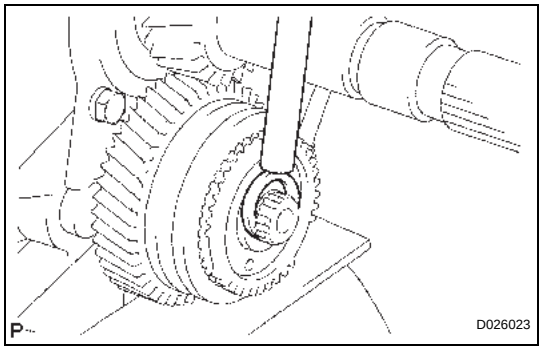
13. INSTALL NO. 3 SYNCHRONIZER RING OUTER

(a) Apply gear oil to the synchronizer ring outer No. 3, and install it onto the counter gear.
NOTICE:
Install the synchronizer ring outer No. 3 so that its groove fits into the synchromesh shifting key No. 3.



14. INSTALL NO. 5 GEAR SPLINE PIECE

(a) Using SST and a press, install the gear spline piece No. 5 onto the counter gear.
SST 09316-60011 (09316-00011)
NOTICE:
Check that the gear rotates smoothly.



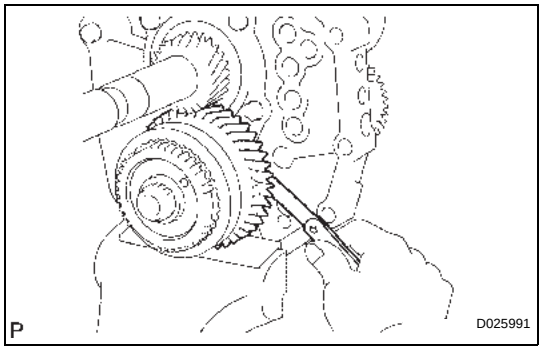
15. INSTALL COUNTER GEAR REAR SHAFT SNAP RING

(a) Select the counter gear rear shaft snap ring so that the thrust gap between gear spline piece No. 5 and counter gear rear shaft snap ring is within the specified values, and using a brass bar and a hammer, install it onto the counter gear.

Standard clearance:

0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.80 to 2.85 (0.1102 to 0.1122)
B	2.85 to 2.90 (0.1122 to 0.1141)
C	2.90 to 2.95 (0.1141 to 0.1160)
D	2.95 to 3.00 (0.1160 to 0.1181)
E	3.00 to 3.05 (0.1181 to 0.1200)
F	3.05 to 3.10 (0.1200 to 0.1220)
G	3.10 to 3.15 (0.1220 to 0.1240)

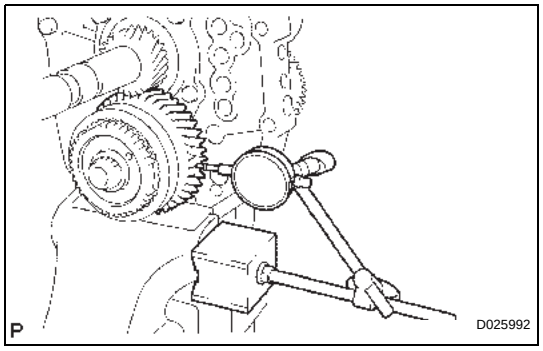


16. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, check the thrust clearance of the counter 5th gear.

Standard clearance:

0.10 to 0.35 mm (0.0039 to 0.0138 in.)



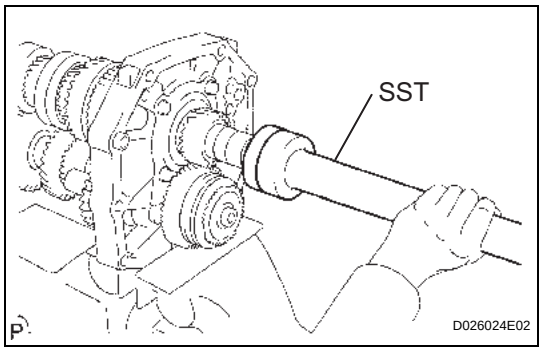
17. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, check the counter 5th gear radial clearance.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is out of specification the counter 5th gear bearing.

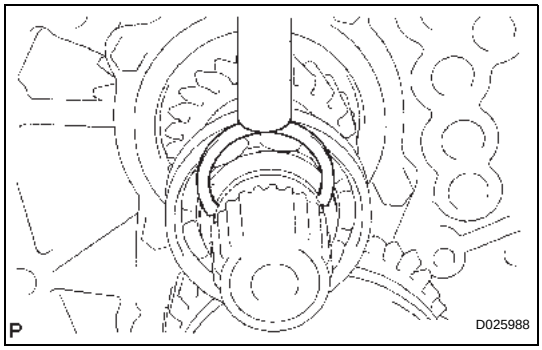


18. INSTALL OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, install the new spacer and output shaft rear bearing onto the output shaft.

SST 09309-35010

MT

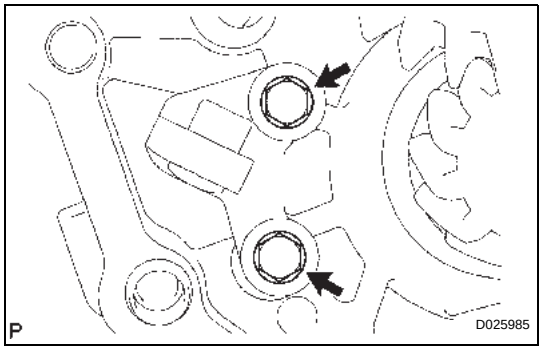


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19. INSTALL OUTPUT SHAFT BEARING SHAFT SNAP RING

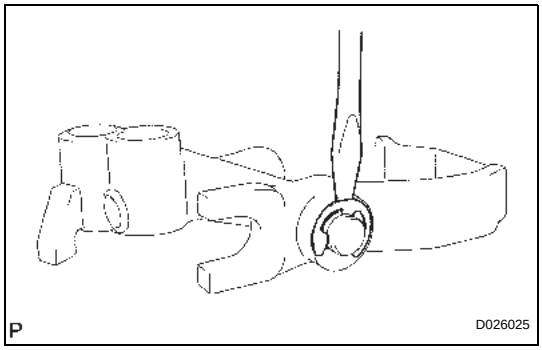
(a) Select an output shaft bearing shaft snap ring so the thrust gap between the snap ring and the bearing is within the specified values. Use a brass bar and hammer to install it onto the output shaft.
Standard clearance:
0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.65 to 2.70 (0.1043 to 0.1063)
B	2.70 to 2.75 (0.1063 to 0.1083)
C	2.75 to 2.80 (0.1083 to 0.1102)
D	2.80 to 2.85 (0.1102 to 0.1122)
E	2.85 to 2.90 (0.1122 to 0.1141)
F	2.90 to 2.95 (0.1141 to 0.1160)
G	2.95 to 3.00 (0.1160 to 0.1181)
H	3.00 to 3.05 (0.1181 to 0.1200)
J	3.05 to 3.10 (0.1200 to 0.1220)
K	3.10 to 3.15 (0.1220 to 0.1240)
L	3.15 to 3.20 (0.1240 to 0.1260)
M	3.20 to 3.25 (0.1260 to 0.1280)
N	3.25 to 3.30 (0.1280 to 0.1299)
P	3.30 to 3.35 (0.1299 to 0.1319)
Q	3.35 to 3.40 (0.1319 to 0.1339)
R	3.40 to 3.45 (0.1339 to 0.1358)
S	3.45 to 3.50 (0.1358 to 0.1378)



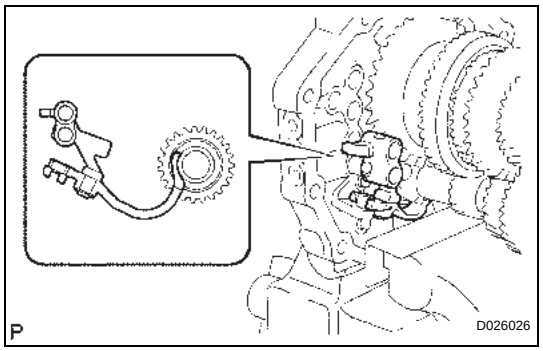
20. INSTALL REVERSE SHIFT ARM BRACKET

(a) Install the reverse shift arm bracket onto the intermediate plate with the 2 bolts.
Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)

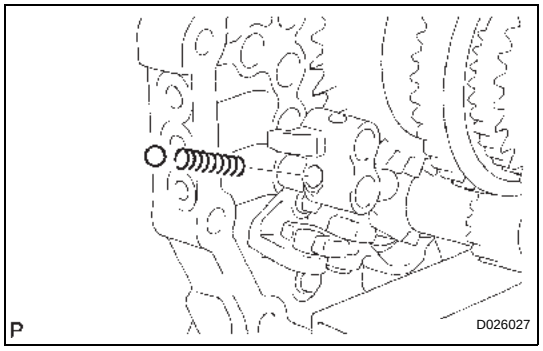


21. INSTALL REVERSE SHIFT FORK

(a) Install the reverse shift arm onto the reverse shift fork. Using a screwdriver and a hammer, install the new reverse shift arm end shaft ring.

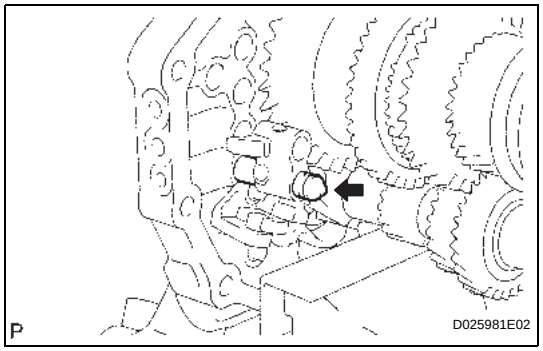


(b) Install the tip of the reverse shift arm onto the reverse idler gear. Align the cut end of the reverse shift arm with the reverse shift arm bracket pin, and install them.



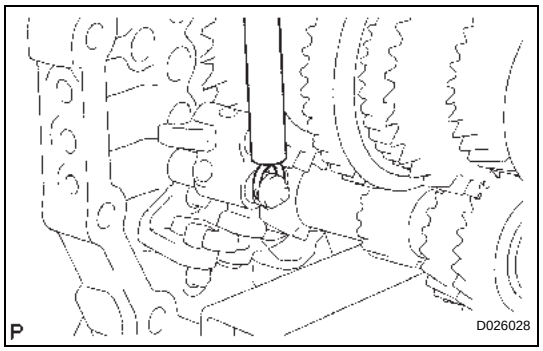
22. INSTALL 5TH SHIFT ARM SHAFT

(a) Install the reverse shift fork return compression spring and the reverse shift fork ball into the reverse shift fork.

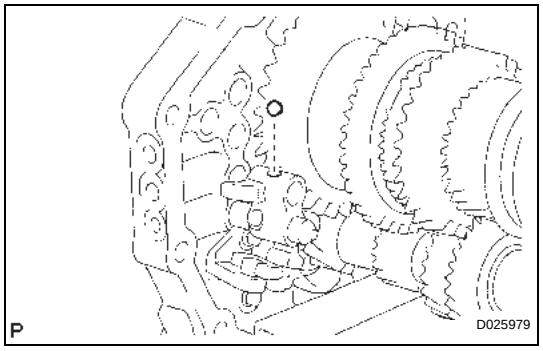


(b) Apply gear oil to the sliding part of the 5th shift arm shaft.

(c) Using a screwdriver, install the 5th shift arm shaft by pushing the reverse shift fork ball gently.

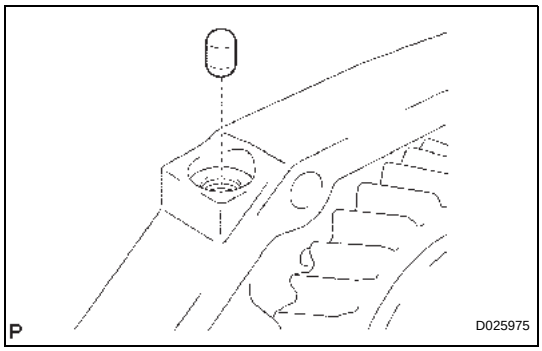


(d) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the 5th shift arm shaft.



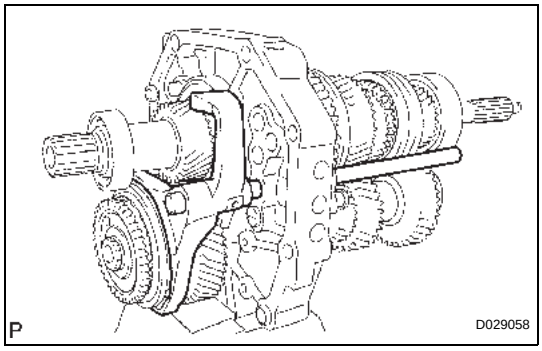
23. INSTALL REVERSE SHIFT FORK SHAFT

(a) Install the reverse shift fork ball into the reverse shift fork.

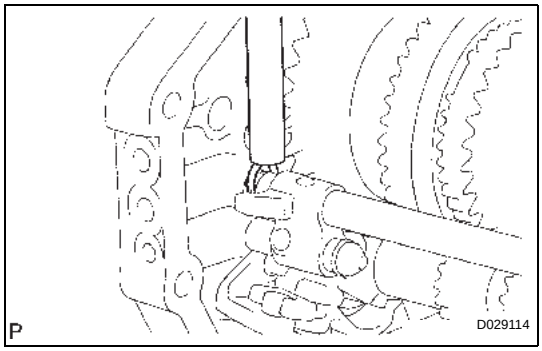


(b) Install the shift interlock No. 1 roller onto the intermediate plate.

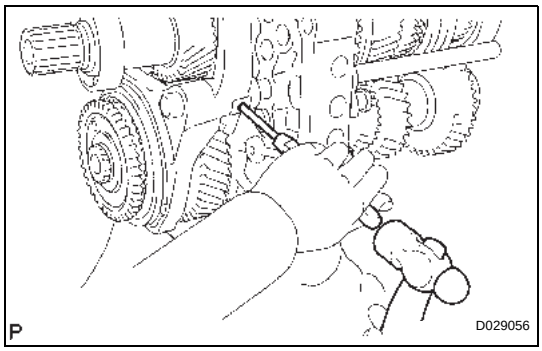
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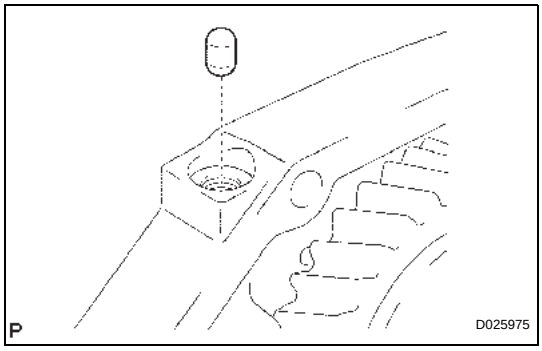
(c) Install the shift fork No. 3 onto the transmission hub sleeve No. 3 and the reverse shift fork shaft onto the intermediate plate from the front side.



(d) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the reverse shift fork shaft.

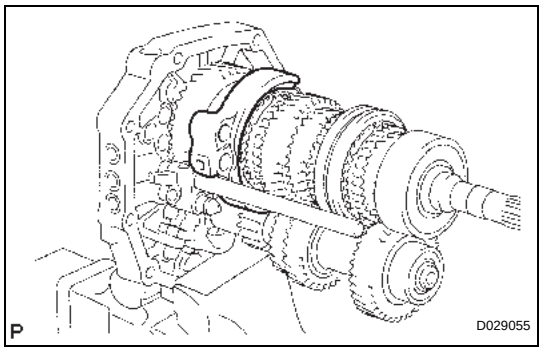


(e) Using a pin punch (5 mm) and a hammer, install the shift fork set slotted spring pin into the gear shift fork No. 3.

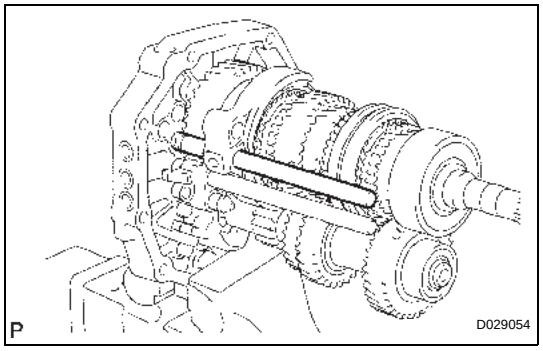


24. INSTALL NO. 1 GEAR SHIFT FORK SHAFT

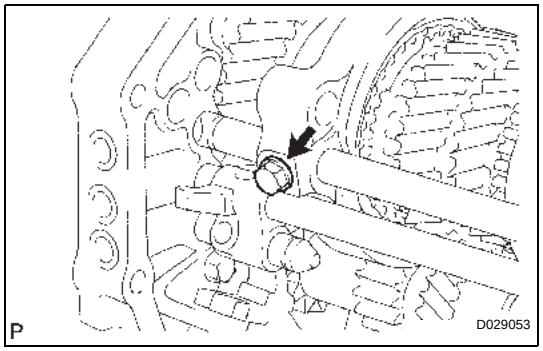
(a) Install the shift interlock No. 1 roller onto the intermediate plate.



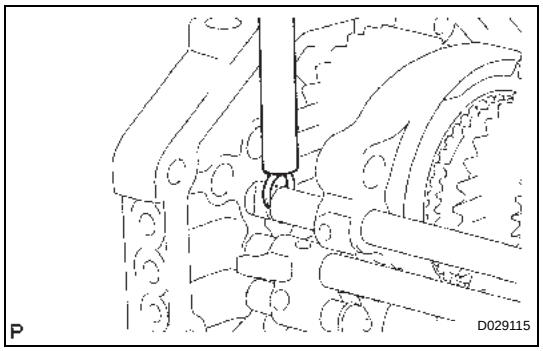
(b) Install the gear shift fork No. 1 onto the reverse gear.



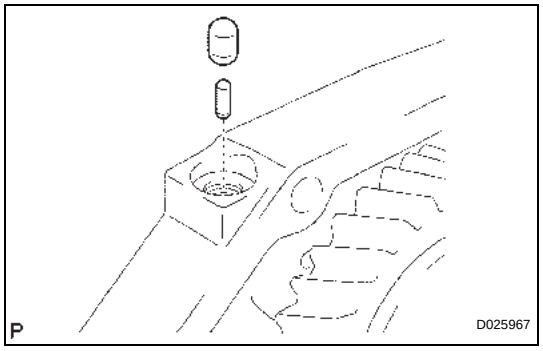
(c) Install the gear shift fork shaft No. 1 onto the intermediate plate from the rear side.



(d) Install the new shift fork set bolt onto the gear shift fork No. 1.
Torque: 19.5 N*m (199 kgf*cm, 14 ft.*lbf)

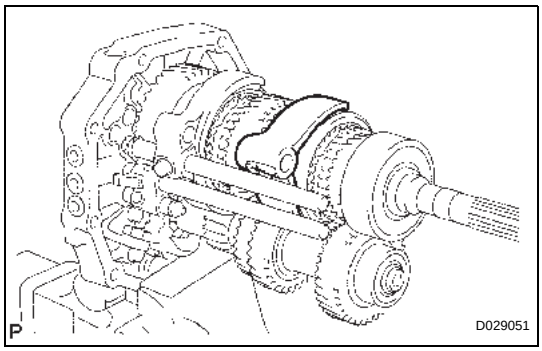


(e) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the gear shift fork shaft No. 1.

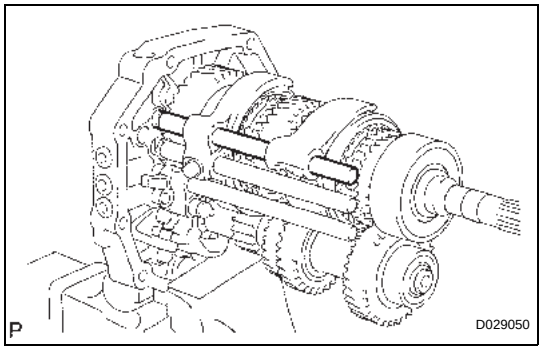


25. INSTALL NO. 2 GEAR SHIFT FORK SHAFT

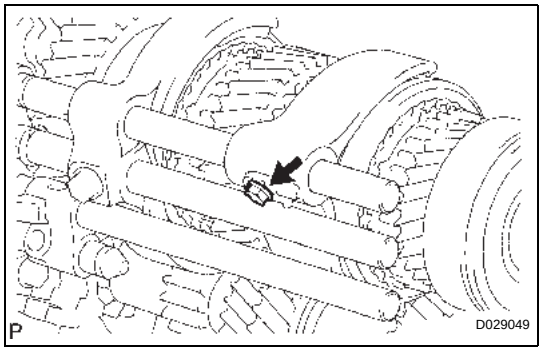
(a) Install the shift interlock pin (ball) and shift interlock No. 1 roller into the intermediate plate.



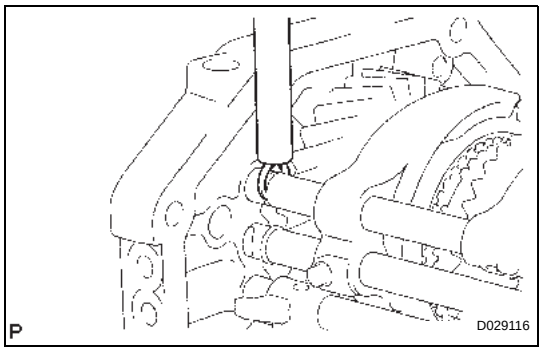
(b) Install the gear shift fork No. 2 onto the transmission hub sleeve No. 2.



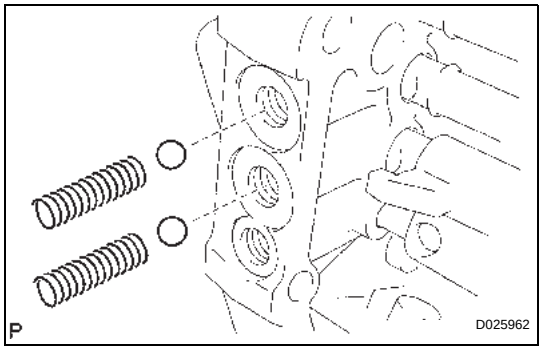
(c) Apply gear oil to the gear shift fork shaft No. 2, and install it onto the intermediate plate from the rear side.



(d) Install the new shift fork set bolt onto the gear shift fork No. 2.
Torque: 19.5 N*m (199 kgf*cm, 14 ft.*lbf)

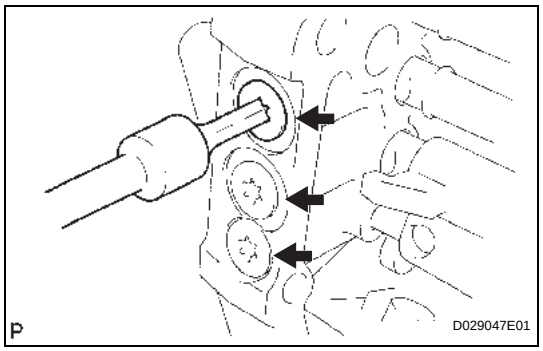


(e) Using a brass bar and a hammer, install the shift fork shaft snap ring onto the gear shift fork shaft No. 2.

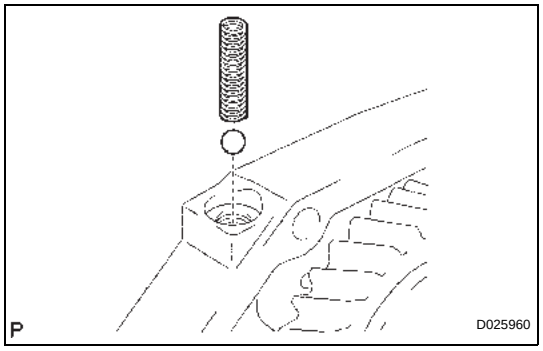


26. INSTALL NO. 1 SHIFT DETENT BALL SPRING SEAT

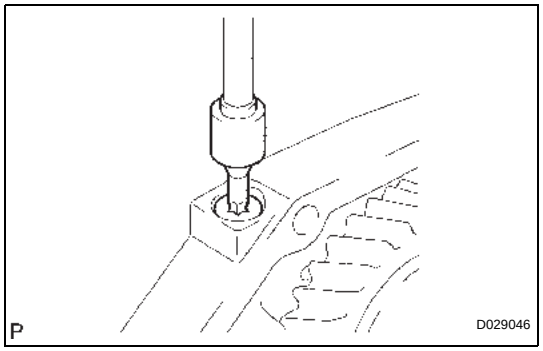
(a) Install the 2 shift detent ball low side compression springs and 2 shift detent balls into the intermediate plate.



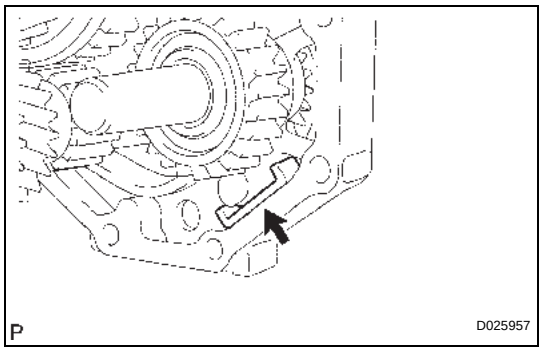
(b) Using a "Torx" socket wrench T40, install the 3 shift detent ball spring seats No. 1 onto the intermediate plate.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)



(c) Install the shift detent ball and the shift detent ball low side compression spring into the intermediate plate.

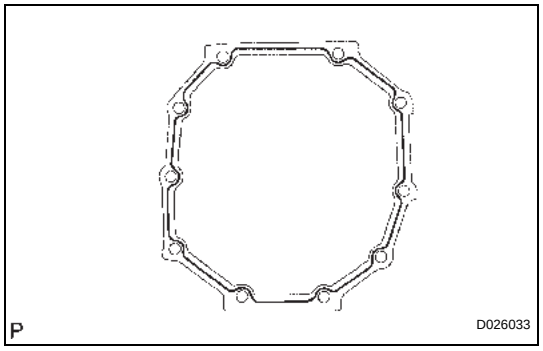


(d) Using a "Torx" socket wrench T40, install the shift detent ball spring seat No. 1 onto the intermediate plate.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)



27. INSTALL TRANSMISSION MAGNET

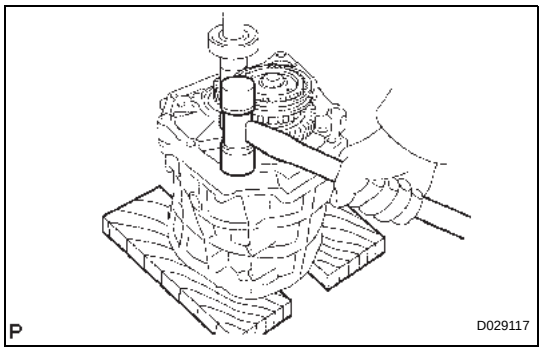
(a) Clean the transmission magnet, and install it onto the intermediate plate.



28. INSTALL MANUAL TRANSMISSION CASE

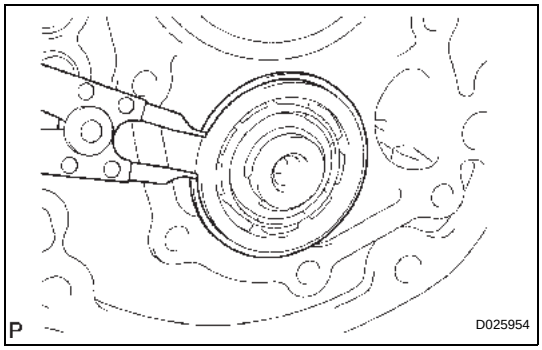
(a) Apply seal packing to the manual transmission case as shown in the illustration.
Seal packing:
Part No.08826-00090, THREE BOND 1281 or equivalent.

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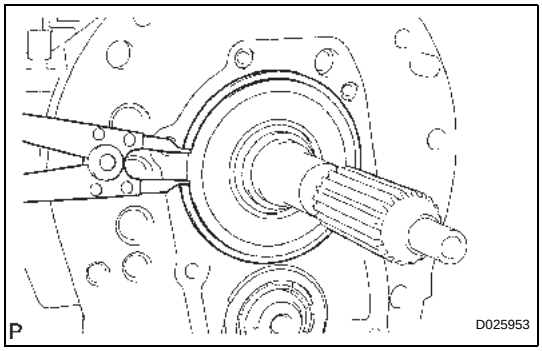
(b) Using a plastic hammer, tap the manual transmission case to attach it to the intermediate plate.

MT



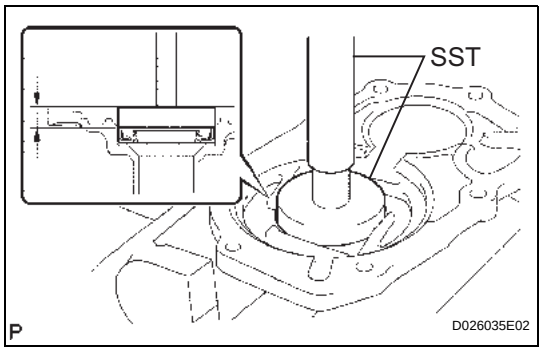
29. INSTALL NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, install the counter gear front bearing snap ring No. 1 onto the transmission case.



30. INSTALL FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring expander, install the front bearing shaft snap ring onto the transmission case.



31. INSTALL TRANSMISSION FRONT BEARING RETAINER OIL SEAL

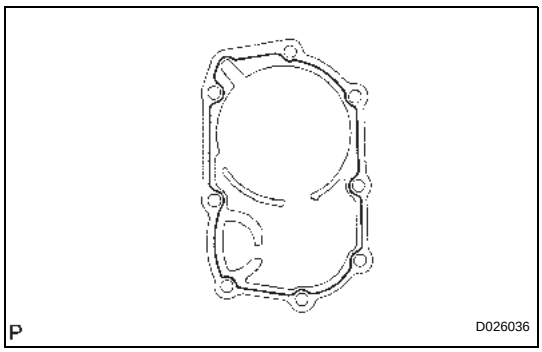
(a) Using SST and a hammer, install the new transmission front bearing retainer oil seal onto the transmission front bearing retainer.

SST 09950-60010 (09951-00300, 09951-00520, 09952-06010), 09950-70010 (09951-07100)

Drive in depth:

11.2 to 12.2 mm (0.4409 to 0.4803 in.)

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

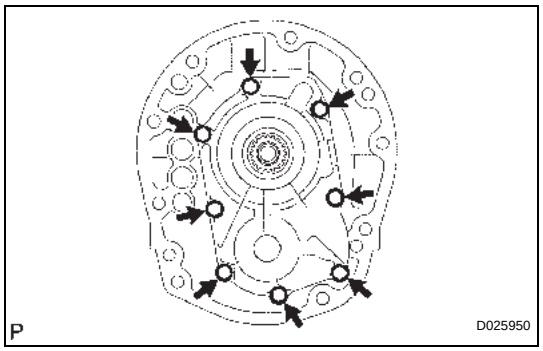


32. INSTALL FRONT BEARING RETAINER

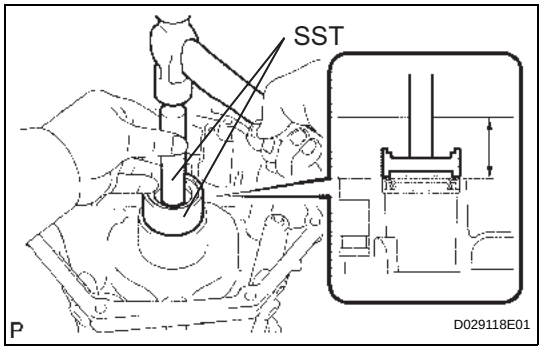
(a) Apply seal packing to the bearing retainer front as shown in the illustration.

Seal packing:

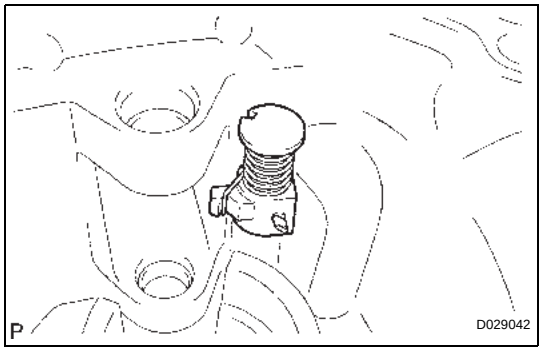
Part No.08826-00090, THREE BOND 1281 or equivalent.



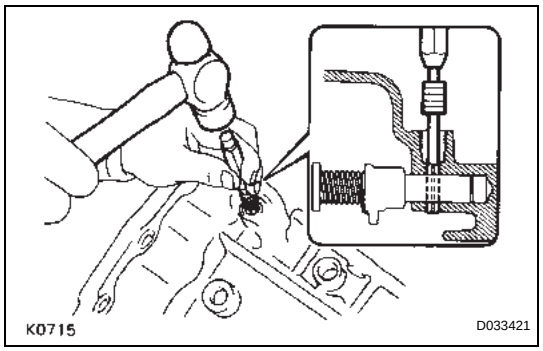
(b) Install the front bearing retainer onto the transmission case with the 8 bolts.
Torque: 16.5 N*m (168 kgf*cm, 12 ft.*lbf)
(c) Check that the input shaft and output shaft rotate smoothly.



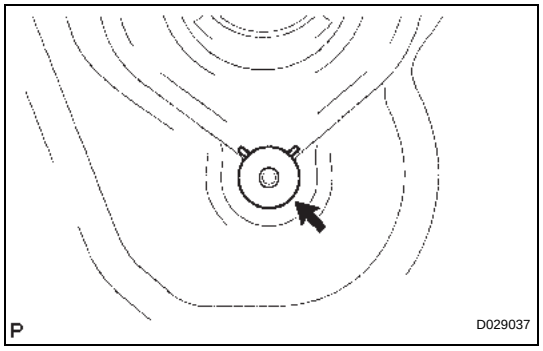
33. INSTALL TRANSFER ADAPTER OIL SEAL
(a) Using SST and a hammer, install the new transfer adapter oil seal onto the transfer adapter.
SST 09710-30050, 09950-70010 (09951-07100)
Drive in depth:
45.4 to 46.4 mm (1.7874 to 1.8268 in.)
(b) Lightly apply MP grease to the tip of the oil seal.
NOTICE:
Be careful not to damage the oil seal lip.



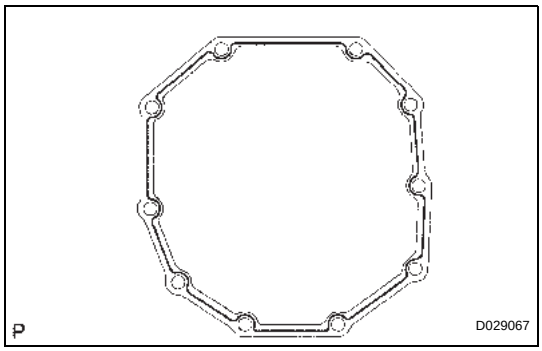
34. INSTALL REVERSE RESTRICT PIN ASSEMBLY
(a) Install the reverse restrict pin into the transfer adapter.



(b) Using a pin punch (5 mm) and a hammer, install the reverse restrict slotted pin into the transfer adapter.
(c) Using a "Torx" socket wrench T40, install the reverse restrict pin plug onto the transfer adapter.
Torque: 18.5 N*m (189 kgf*cm, 14 ft.*lbf)



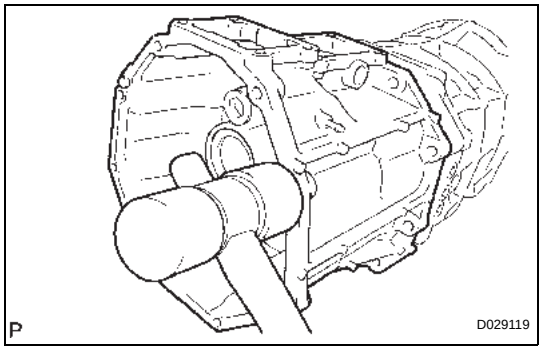
35. INSTALL OIL RECEIVER
(a) Install the oil receiver onto the transfer adapter.



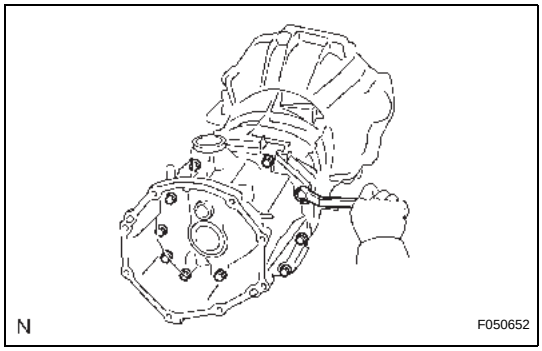
36. INSTALL TRANSFER ADAPTER

(a) Apply seal packing to the transfer adapter as shown in the illustration.
Seal packing:
Part No.08826-00090, THREE BOND 1281 or equivalent.

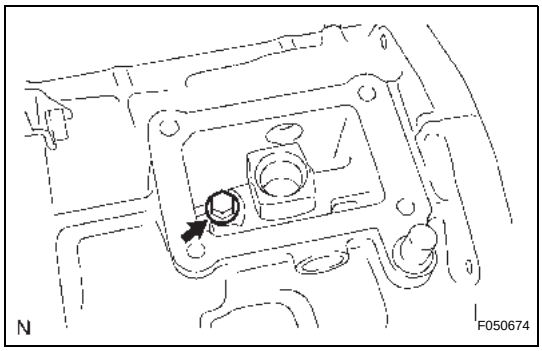
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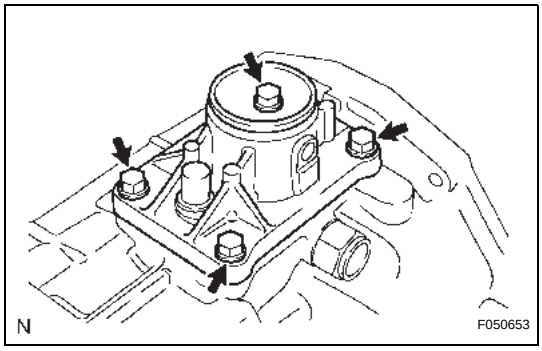
(b) Using a plastic hammer, tap the transfer adapter to attach it to the transmission case.



(c) Install the transfer adapter, onto the transmission case with the 10 bolts.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

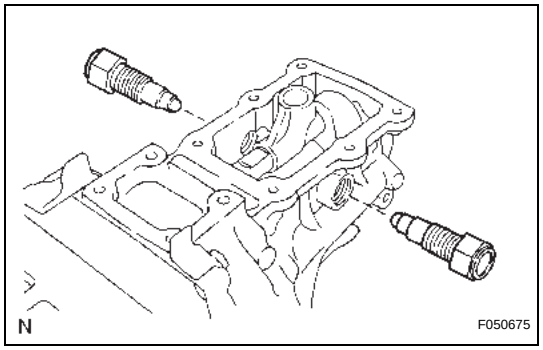


(d) Install the shift lever housing set bolt.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



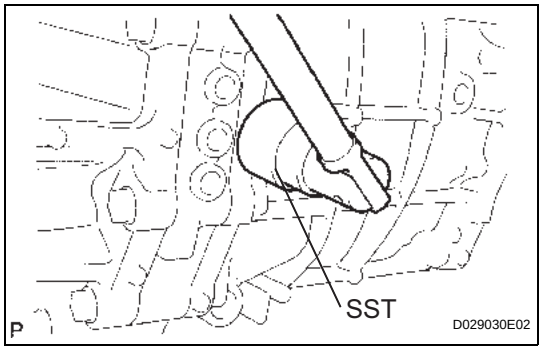
37. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Install the control shift lever retainer and transfer oil deflector onto the transfer adapter with the 4 bolts.
Torque: 18 N*m (185 kgf*cm, 13 ft.*lbf)



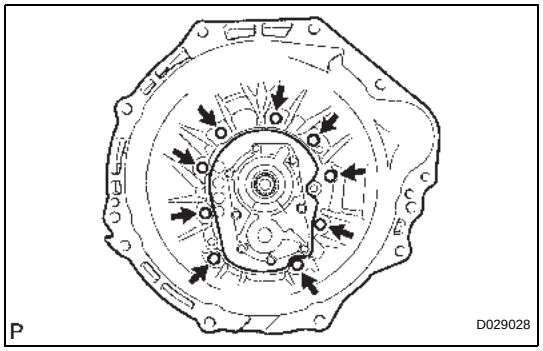
38. INSTALL REVERSE RESTRICT PIN ASSEMBLY

(a) Install the 2 reverse restrict pins into the extension housing or transfer adapter.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)



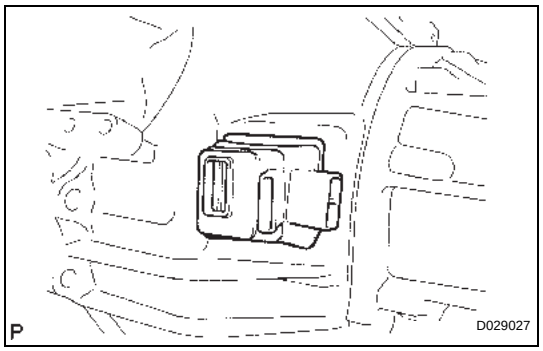
39. INSTALL BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, install the back-up light switch assembly and the gasket onto the transmission case.
SST 09817-16011
Torque: 44 N*m (450 kgf*cm, 32 ft.*lbf)



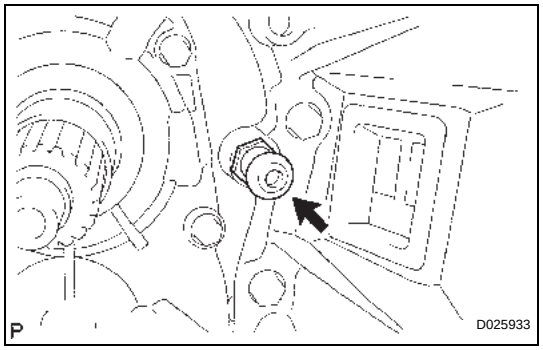
40. INSTALL CLUTCH HOUSING

(a) Install the clutch housing onto the transmission case with the 9 bolts.
Torque: 36 N*m (370 kgf*cm, 27 ft.*lbf)



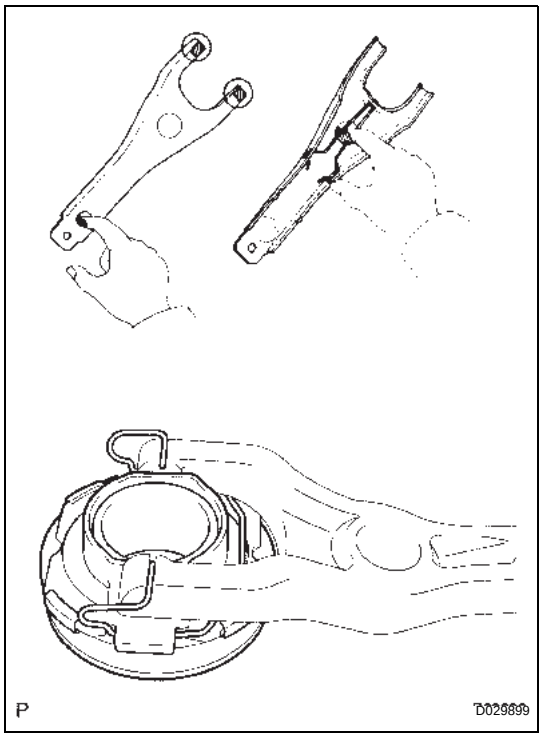
41. INSTALL CLUTCH RELEASE FORK BOOT

(a) Install the clutch release fork boot onto the clutch housing.



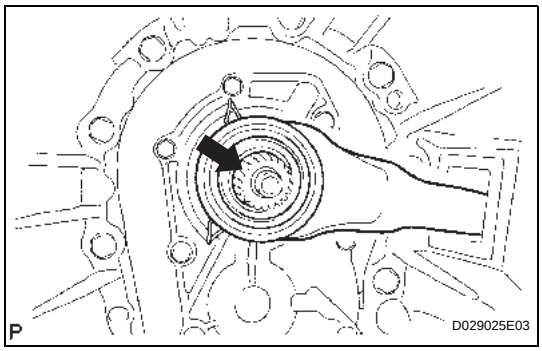
42. INSTALL RELEASE FORK SUPPORT

(a) Install the clutch release fork support onto the clutch housing.
Torque: 47 N*m (480 kgf*cm, 35 ft.*lbf)



43. INSTALL CLUTCH RELEASE BEARING ASSEMBLY

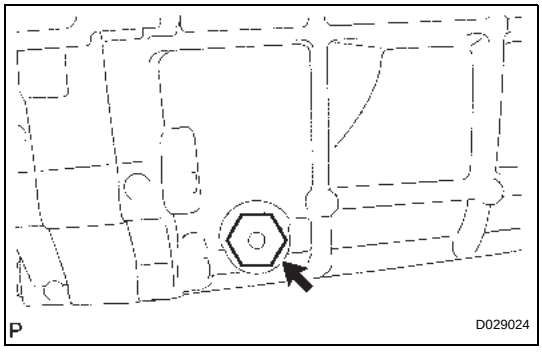
(a) Apply clutch release hub grease to the clutch release bearing, and install it onto the clutch release fork.



44. INSTALL CLUTCH RELEASE FORK SUB-ASSEMBLY

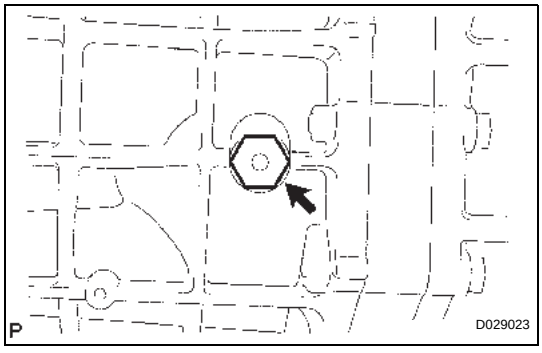
(a) Install the clutch release fork.

(b) Apply the clutch spline grease to the spline of the input shaft.



45. INSTALL DRAIN PLUG SUB-ASSEMBLY

(a) Install the drain plug onto the transmission case through a new gasket.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

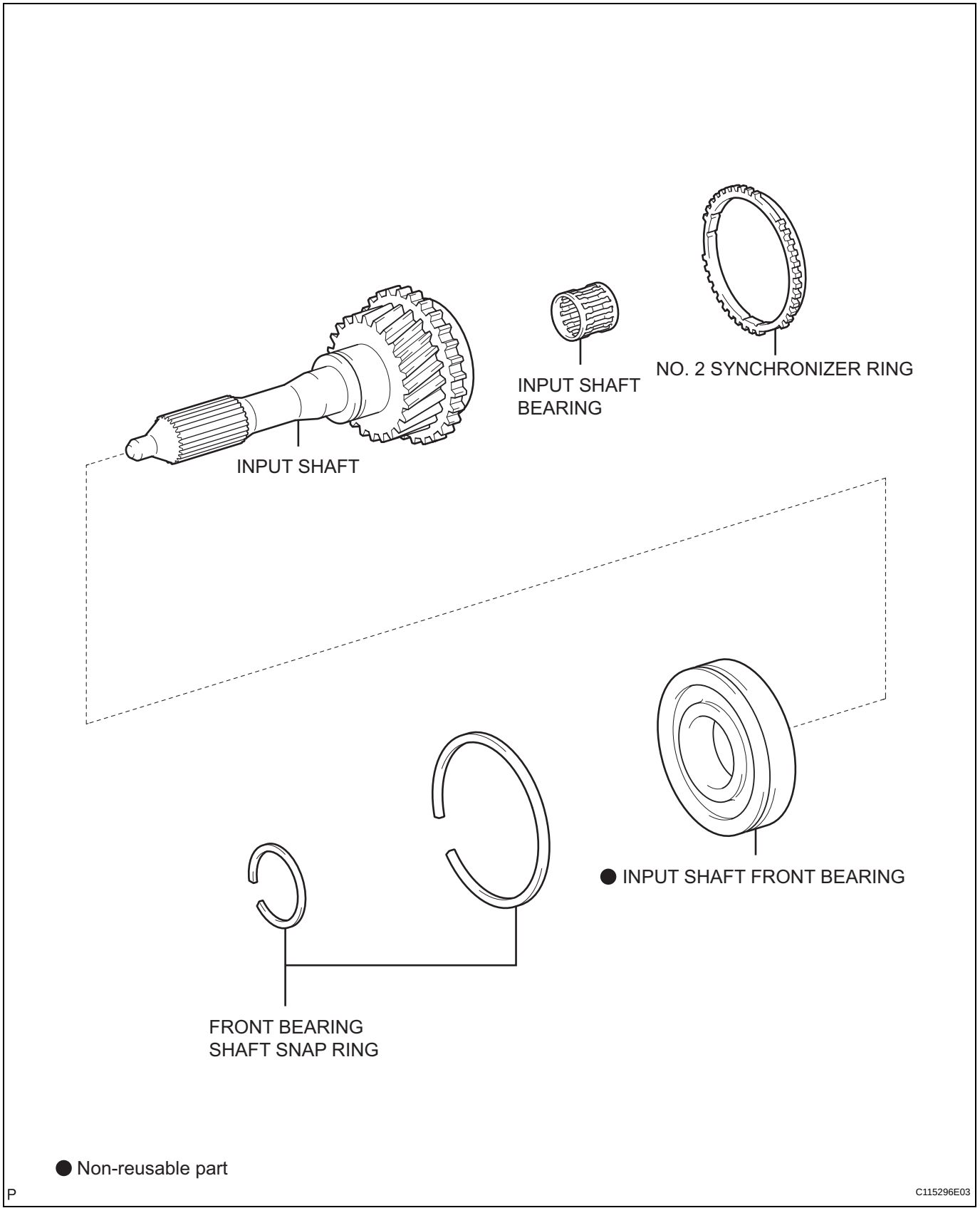


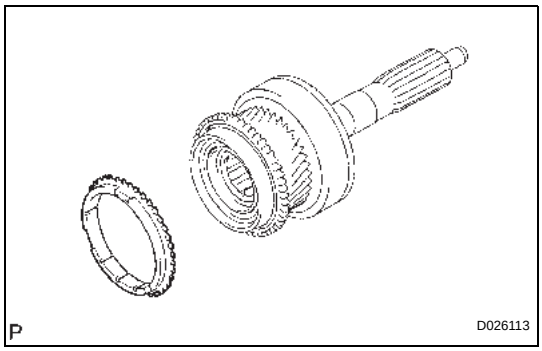
46. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the filler plug onto the transmission case through a new gasket.
Torque: 37 N*m (380 kgf*cm, 27 ft.*lbf)

INPUT SHAFT

COMPONENTS

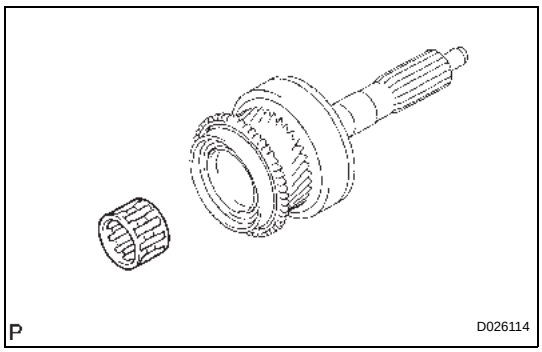




DISASSEMBLY

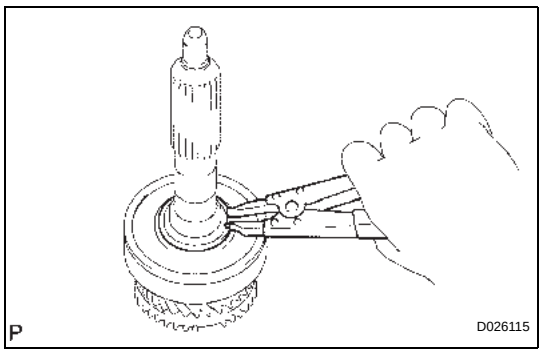
1. REMOVE NO. 2 SYNCHRONIZER RING

(a) Remove synchronizer ring No. 2 from the input shaft.



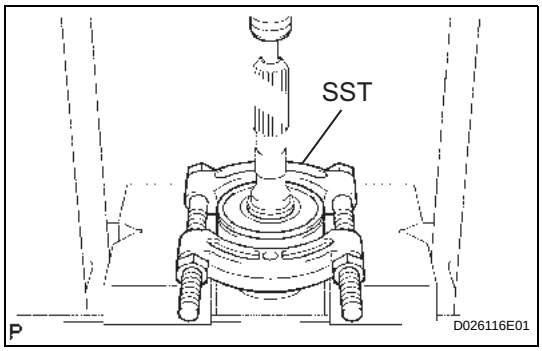
2. REMOVE INPUT SHAFT BEARING

(a) Remove the input shaft bearing from the input shaft.



3. REMOVE FRONT BEARING SHAFT SNAP RING

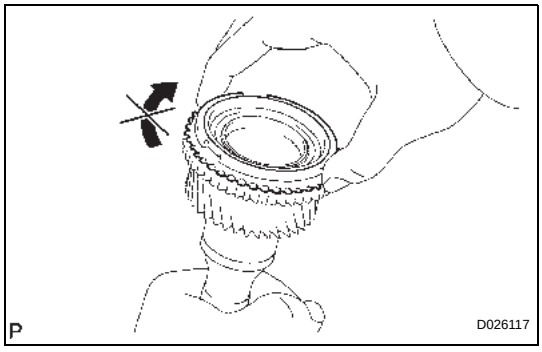
(a) Using a snap ring expander, remove the front bearing shaft snap ring from the input shaft.



4. REMOVE INPUT SHAFT FRONT BEARING

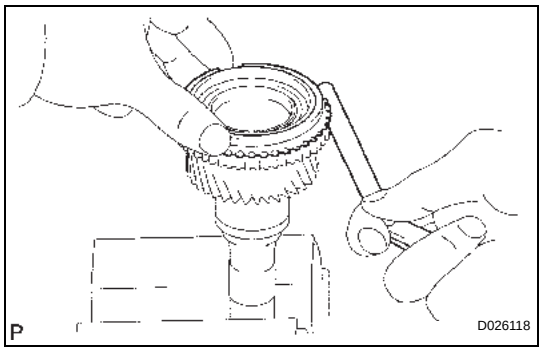
(a) Using SST and a press, remove the input shaft front bearing FR from the input shaft.
SST 09950-00020

INSPECTION



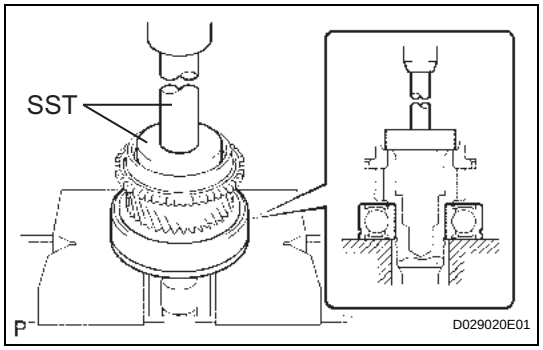
1. INSPECT NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to the cone of the input shaft, and check that it does not turn in the both directions while pushing the synchronizer ring No. 2.



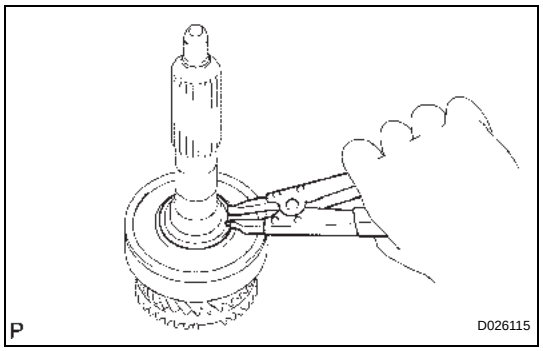
(b) Check the clearance between the synchronizer ring No. 2 and input shaft while pushing the synchronizer ring No. 2 to the cone of the input shaft.
Standard clearance:
0.70 to 1.70 mm (0.0276 to 0.0669 in.)
If the clearance is not within the specified values, replace synchronizer ring No. 2 with a new one.

REASSEMBLY



1. INSTALL INPUT SHAFT FRONT BEARING

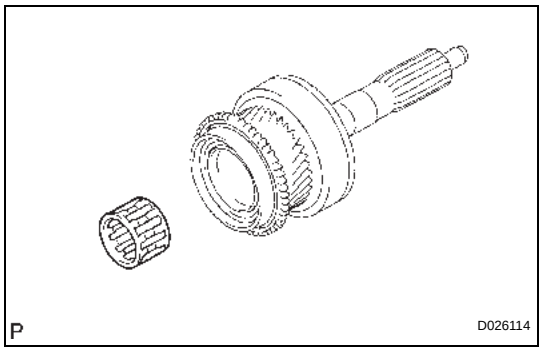
(a) Using SST and a press, install a new input shaft front bearing FR onto the input shaft.
SST 09950-60010 (09951-00570), 09950-70010 (09951-07100)
NOTICE:
Install the input shaft front bearing with the snap ring groove facing to the front.



2. INSTALL FRONT BEARING SHAFT SNAP RING

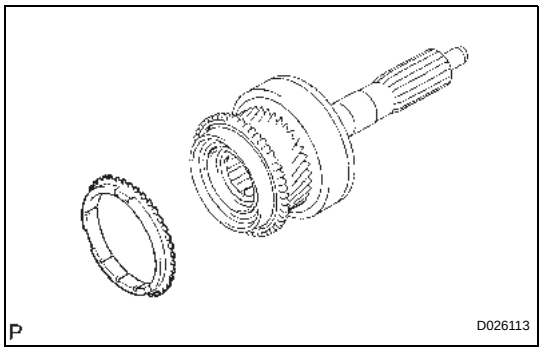
(a) Select the correct input shaft front bearing snap ring so that the clearance between the input shaft and input shaft front bearing is within the specified values.
Standard clearance:
0.1 mm (0.0039 in.) or less

Mark	Thickness mm (in.)
A	2.10 to 2.15 (0.0827 to 0.0846)
B	2.15 to 2.20 (0.0846 to 0.0866)
C	2.20 to 2.25 (0.0866 to 0.0886)
D	2.25 to 2.30 (0.0886 to 0.0906)
E	2.30 to 2.35 (0.0906 to 0.0925)
F	2.35 to 2.40 (0.0925 to 0.0945)
G	2.40 to 2.45 (0.0945 to 0.0965)



3. INSTALL INPUT SHAFT BEARING

(a) Apply gear oil to the input shaft bearing and install it onto the input shaft.

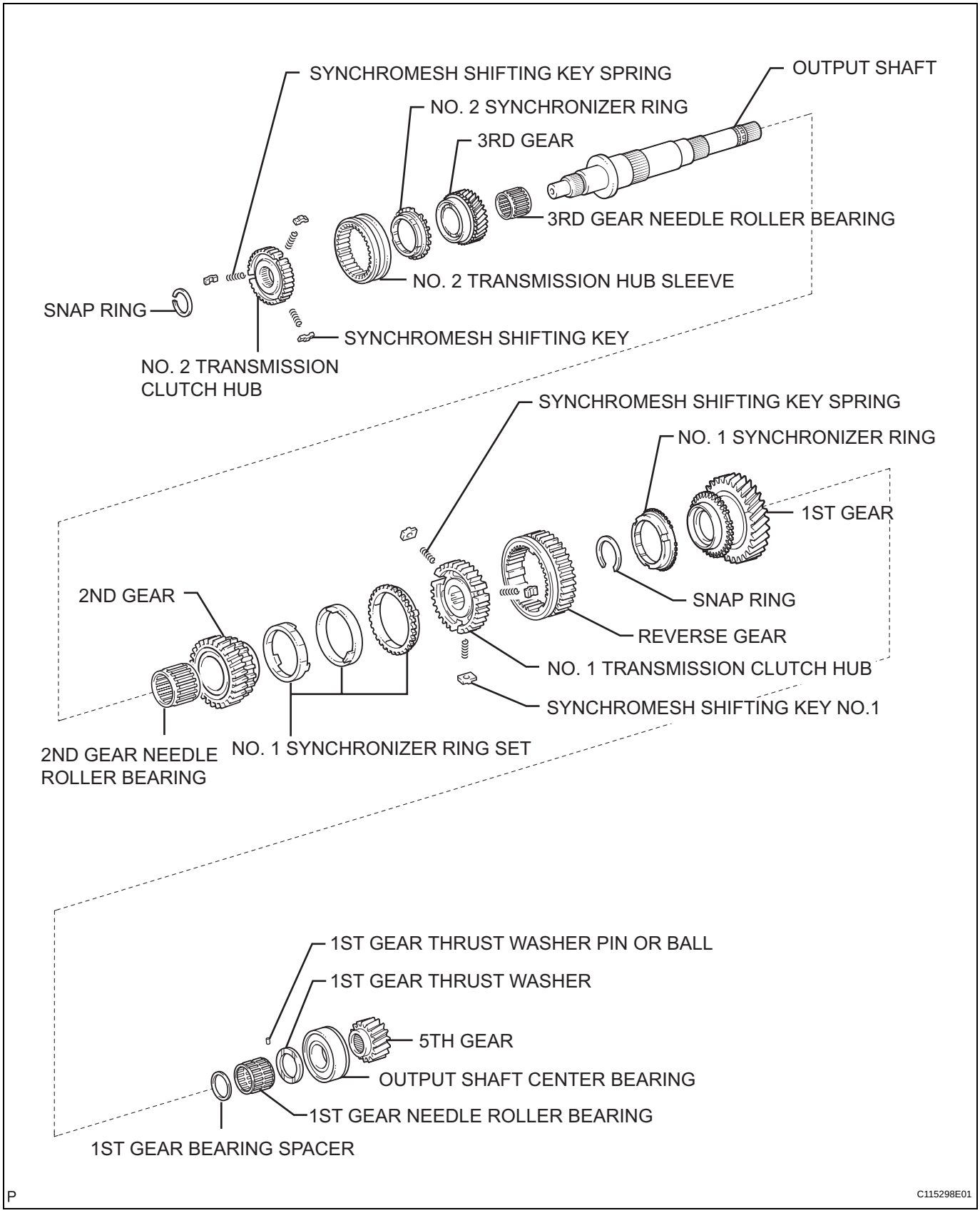


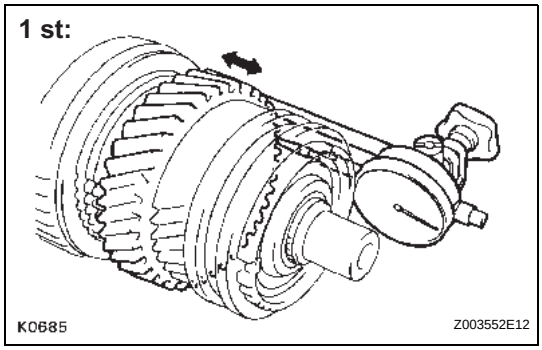
4. INSTALL NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to synchronizer ring No. 2, and install it onto the input shaft.

OUTPUT SHAFT

COMPONENTS





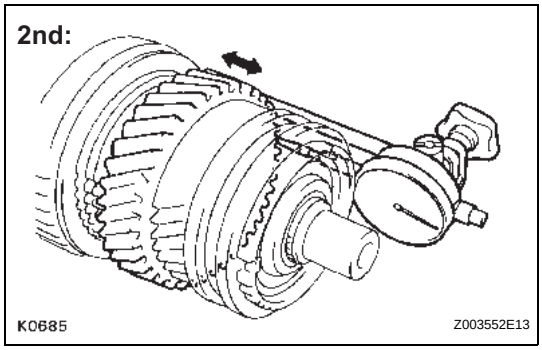
DISASSEMBLY

1. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator measure the thrust clearance of the 1st gear.

Standard clearance:

0.20 to 0.45 mm(0.0079 to 0.0177 in.)

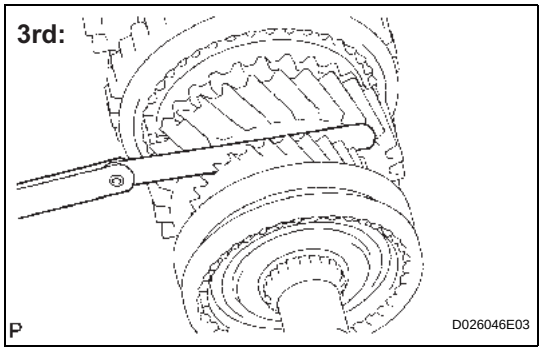


2. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator measure the thrust clearance of the 2nd gear.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)

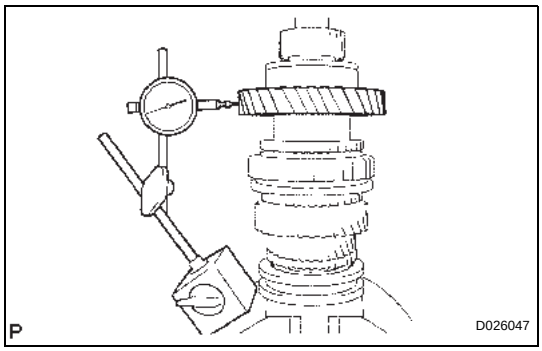


3. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the thrust clearance of the 3rd gear.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)



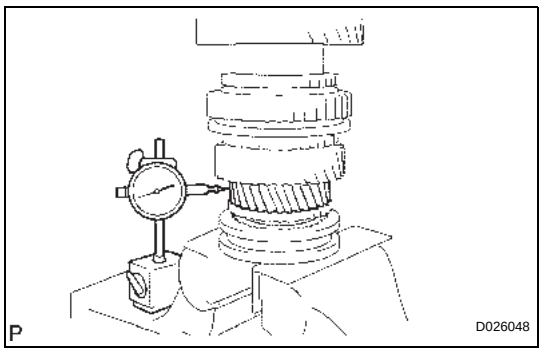
4. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the 1st gear.

Standard clearance:

0.020 to 0.073 mm (0.0008 to 0.0029 in.)

If the clearance is not within the specified values, replace the 1st gear needle roller bearing with a new one.



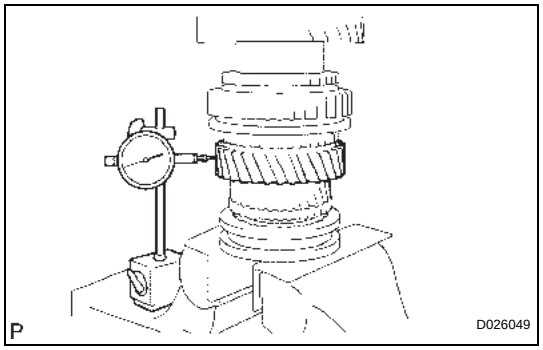
5. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the 2nd gear.

Standard clearance:

0.015 to 0.068mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 2nd gear needle roller bearing with a new one.



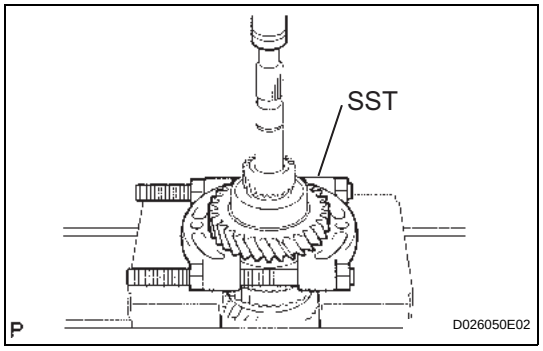
6. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance of the 3rd gear.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

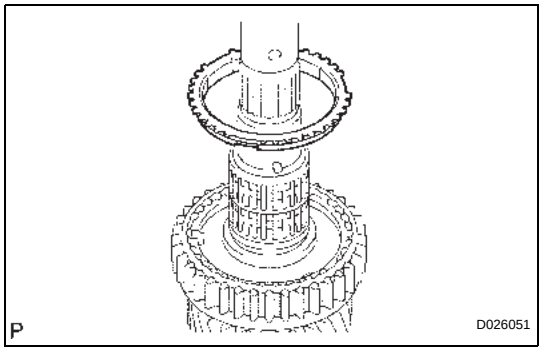
If the clearance is not within the specified values, replace the 3rd gear needle roller bearing with a new one.



7. REMOVE 1ST GEAR

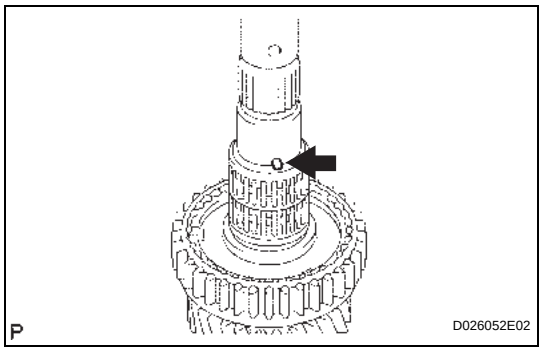
(a) Using SST and a press, remove the 5th gear, output shaft center bearing, 1st gear thrust washer and 1st gear from the output shaft.

SST 09950-00020



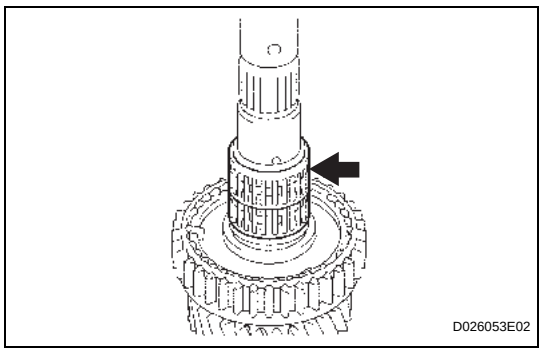
8. REMOVE NO. 1 SYNCHRONIZER RING

(a) Remove synchronizer ring No. 1 (for the 1st gear) from the output shaft.



9. REMOVE 1ST GEAR THRUST WASHER PIN OR BALL

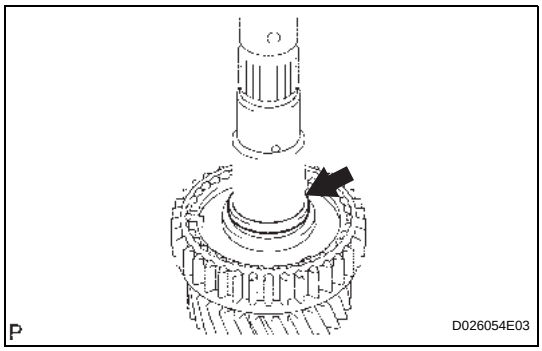
(a) Remove the 1st gear thrust washer pin from the output shaft.



10. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

(a) Remove the 1st gear needle roller bearing from the output shaft.

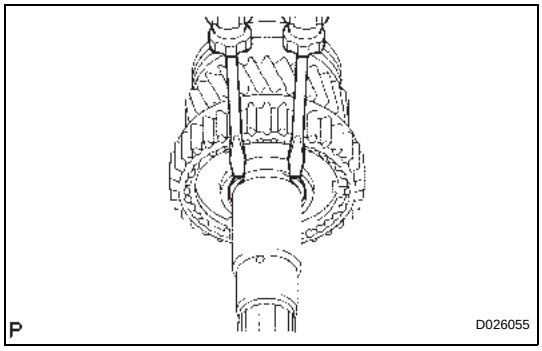
MT



11. REMOVE 1ST GEAR BEARING SPACER

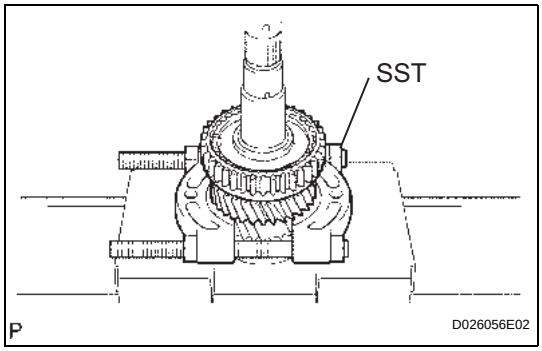
(a) Remove the 1st gear bearing spacer from the output shaft.

MT



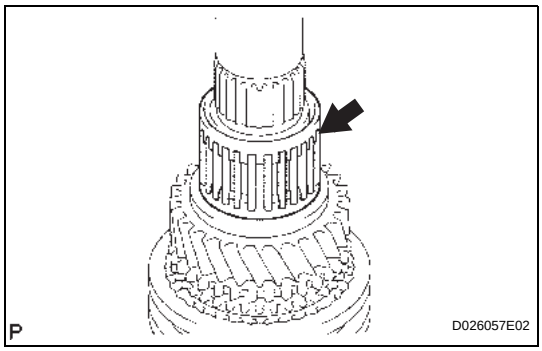
12. REMOVE BEARING SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, remove the bearing shaft snap ring from the output shaft.
NOTICE:
Use a shop rag to prevent the snap ring from flying off.



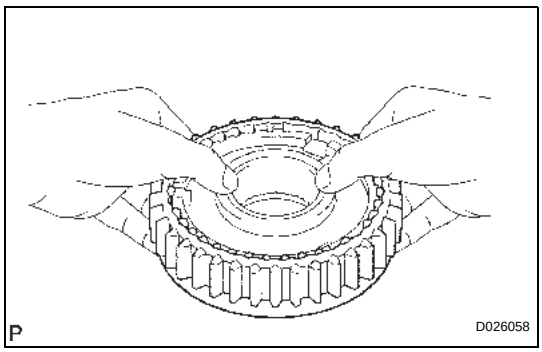
13. REMOVE 2ND GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 1, reverse gear, synchronizer ring No. 1 and 2nd gear from the output shaft.
SST 09950-00020



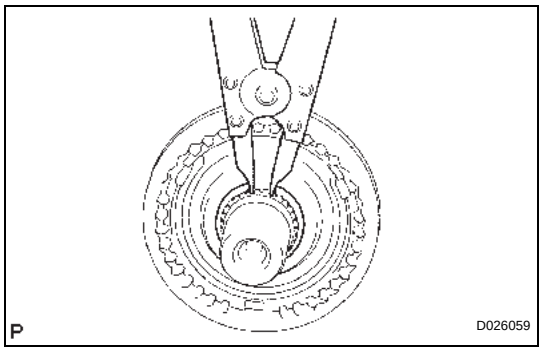
14. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

(a) Remove the 2nd gear needle roller bearing from the output shaft.



15. REMOVE REVERSE GEAR

(a) Remove the reverse gear, 3 synchromesh shifting keys No. 1 and 3 synchromesh shifting key springs. Use a shop rag to prevent the shifting key and the shifting spring from popping out.

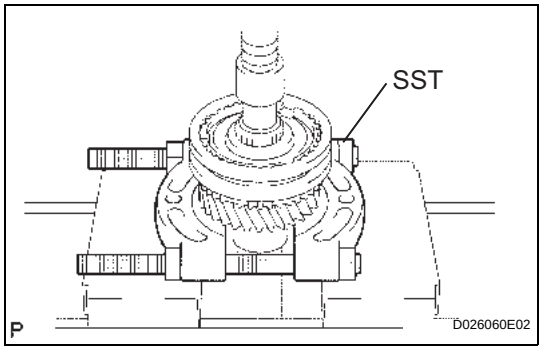


16. REMOVE CLUTCH HUB SET SHAFT SNAP RING

(a) Using snap ring pliers, remove the clutch hub set shaft snap ring from the output shaft.

NOTICE:

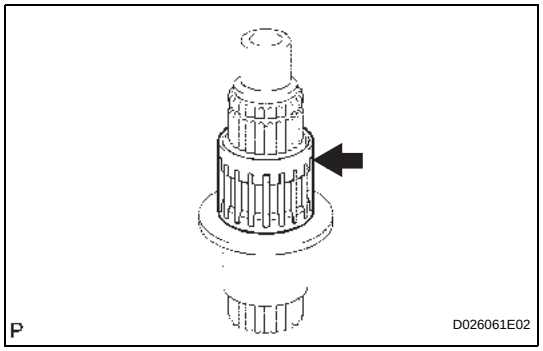
Do not damage the sliding surface of the bearing.



17. REMOVE 3RD GEAR

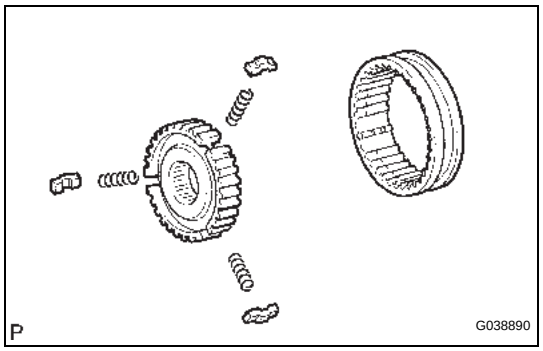
(a) Using SST and a press, remove the clutch hub No. 2 with the hub sleeve No. 2, synchronizer ring No. 2 and 3rd gear from the output shaft.

SST 09950-00020



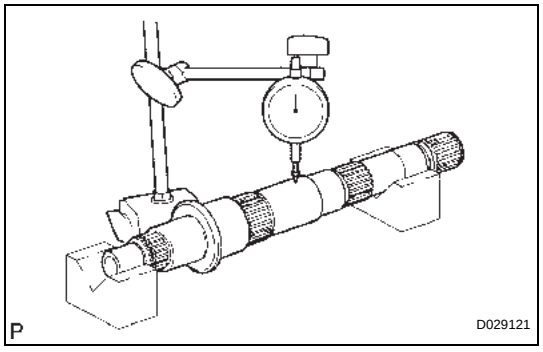
18. REMOVE 3RD GEAR NEEDLE ROLLER BEARING

(a) Remove the 3rd gear needle roller bearing from the output shaft.



19. REMOVE NO. 2 TRANSMISSION HUB SLEEVE

(a) Remove the transmission hub sleeve No. 2, 3 synchromesh shifting key springs and 3 synchromesh shifting keys No. 2 from the transmission clutch hub No. 2.



INSPECTION

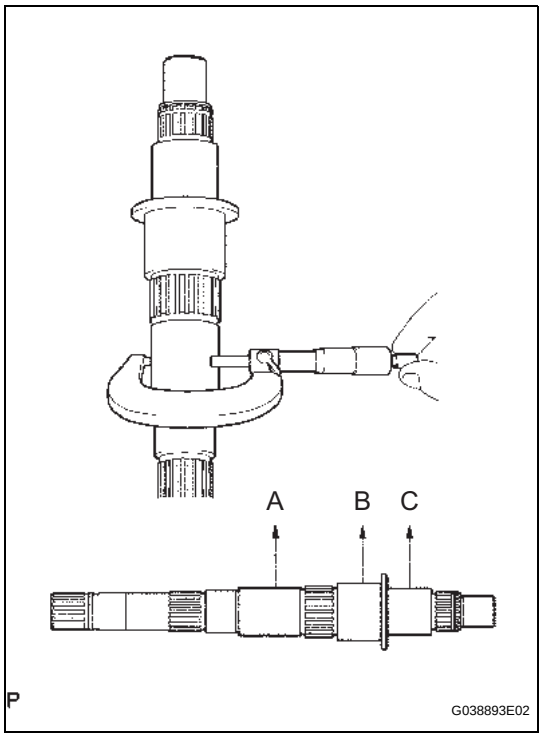
1. INSPECT OUTPUT SHAFT

(a) Using a dial indicator, measure the circle runout of the output shaft.

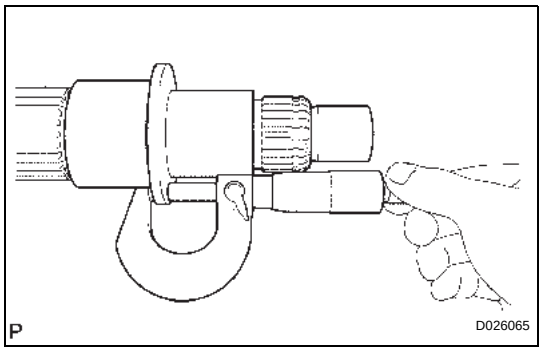
Maximum circle runout:

0.03 mm (0.0012 in.)

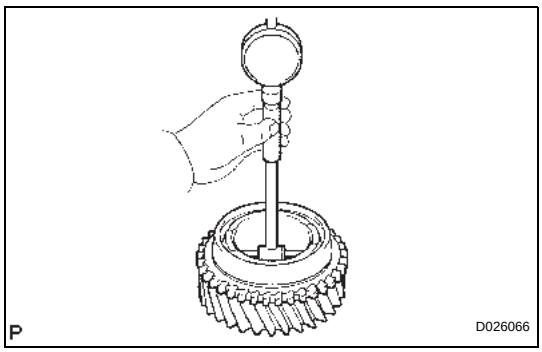
If the circle runout is greater than the maximum, replace the output shaft with a new one.



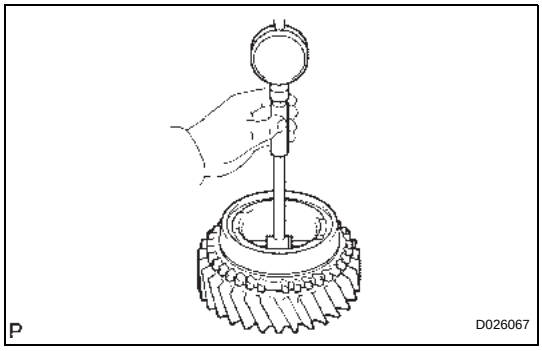
(b) Using a micrometer, measure the outer diameter of the output shaft at A, B and C.
Standard diameter:
38.979 to 38.995 mm (1.5334 to 1.5352 in.) for A
46.984 to 47.000 mm (1.8498 to 1.8504 in.) for B
37.984 to 38.000 mm (1.4954 to 1.4961 in.) for C
Minimum diameter:
38.979 mm (1.5334 in.) for A
46.984 mm (1.8498 in.) for B
37.984 mm (1.4954 in.) for C
If the outer diameter is less than the minimum, replace the output shaft with a new one.



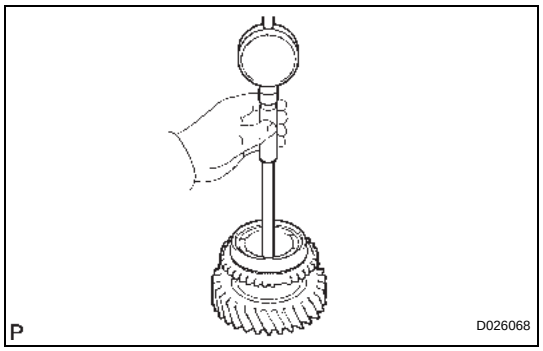
(c) Using a micrometer, measure the thickness of the output shaft flange as shown in the illustration.
Standard thickness:
4.8 to 5.2 mm (0.1890 to 0.2047 in.)
If the thickness is not within the specified values, replace the output shaft.



2. INSPECT 3RD GEAR
(a) Using a cylinder gauge, measure the inner diameter of the 3rd gear.
Standard diameter:
44.015 to 44.040 mm (1.7329 to 1.7339 in.)
Maximum diameter:
44.040 mm (1.7339 in.)
If the inner diameter is greater than the maximum, replace the 3rd gear with a new one.

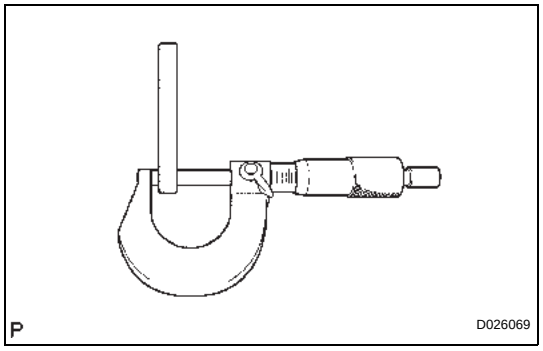


3. INSPECT 2ND GEAR
(a) Using a cylinder gauge, measure the inner diameter of the 2nd gear.
Standard diameter:
53.015 to 53.040 mm (2.0872 to 2.0881 in.)
Maximum diameter:
53.040 mm(2.0881 in.)
If the inner diameter is greater than the maximum, replace the 2nd gear with a new one.



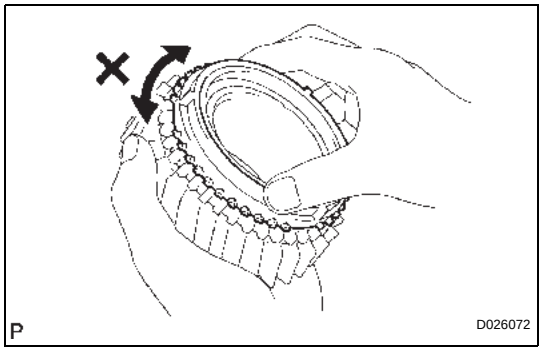
4. INSPECT 1ST GEAR

(a) Using a cylinder gauge, measure the inner diameter of the 1st gear.
Standard diameter:
46.015 to 46.040 mm (1.812 to 1.8126 in.)
Maximum diameter:
46.040 mm (1.8126 in.)
If the inner diameter is greater than the maximum, replace the 1st gear with a new one.



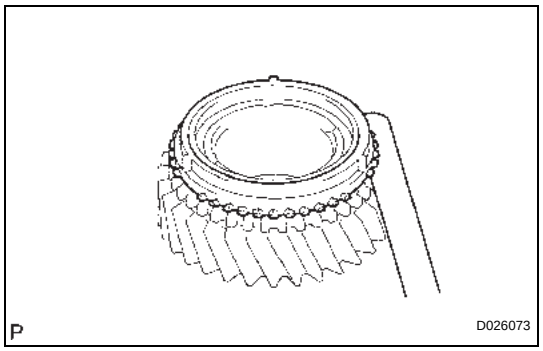
5. INSPECT 1ST GEAR THRUST WASHER

(a) Using a micrometer, measure the thickness of the 1st gear thrust washer.
Standard thickness:
5.95 to 6.05 mm (0.2346 to 0.2382 in.)
Minimum thickness:
5.96 mm (0.2346 in.)
If the thickness is out of specification, replace the 1st gear thrust washer.

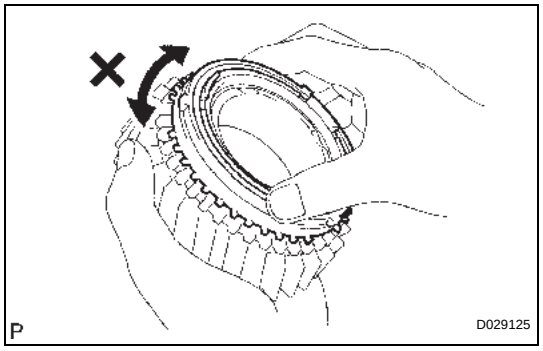


6. INSPECT NO. 1 SYNCHRONIZER RING

(a) Apply gear oil to the cone of the 1st gear, and check that it does not turn in both directions while pushing the synchronizer ring No. 1 (for the 1st gear).
If it turns, replace the synchronizer ring No. 1.



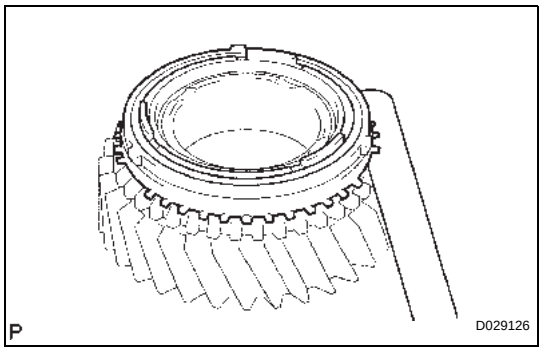
(b) Measure the clearance between the synchronizer ring No. 1 and the 1st gear while pushing the synchronizer ring No. 1 to the cone of the 1st gear.
Standard clearance:
0.75 to 1.65 mm (0.0295 to 0.0649 in.)
If the clearance is not within the specified values, replace the synchronizer ring No. 1 with a new one.



7. INSPECT NO. 1 SYNCHRONIZER RING SET

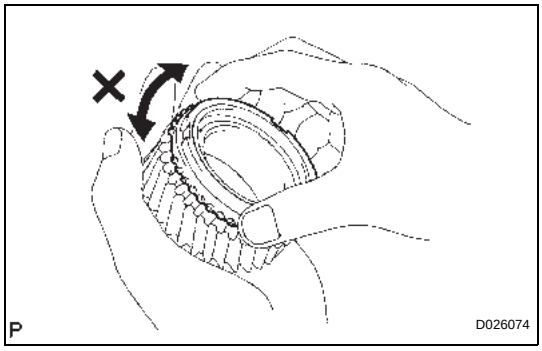
(a) Apply gear oil to the cone of the 2nd gear, and check that it does not turn in both directions while pushing the synchronizer ring set No. 1 (for the 2nd synchronizer ring).
If it turns, replace the synchronizer ring set No. 1.

MT



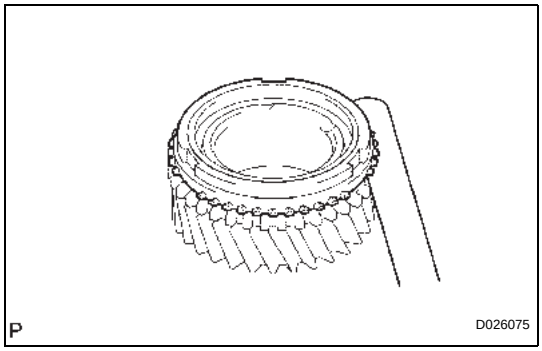
(b) Measure the clearance between the synchronizer ring set No. 1 (for the 2nd synchronizer ring) and 2nd gear while pushing the synchronizer ring set No. 1 to the cone of the 2nd gear.
Standard clearance:
0.65 to 1.75 mm (0.0256 to 0.0689 in.)
If the clearance is not within the specified values, replace the synchronizer ring set No. 1 (for the 2nd synchronizer ring) with a new one.

MT

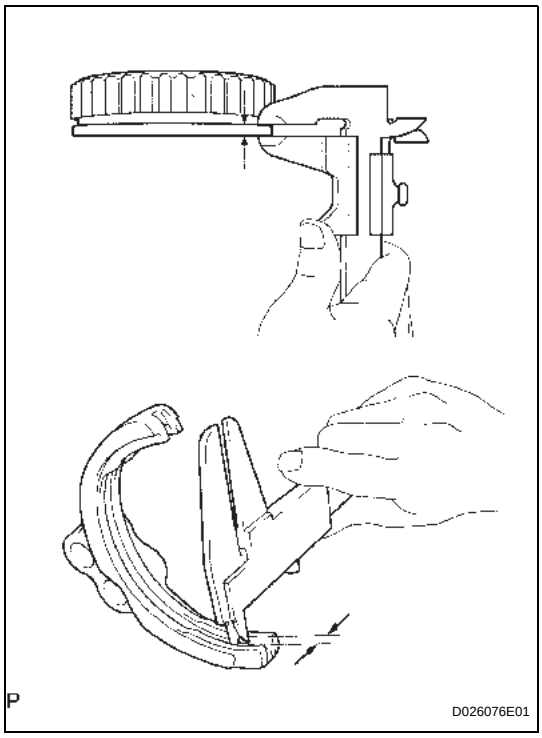


8. INSPECT NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to the cone of the 3rd gear, and check that it does not turn in both directions while pushing the synchronizer ring No. 2 (for the 3rd synchronizer ring).
If it turns, replace the synchronizer ring No. 2.

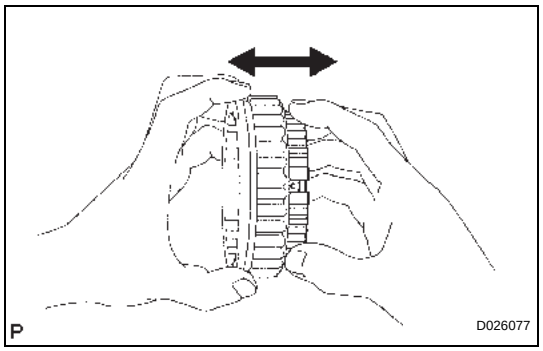


(b) Check the clearance between the synchronizer ring No. 2 (for the 3rd synchronizer ring) and 3rd gear while pushing the synchronizer ring No. 2 (for the 2nd synchronizer ring) to the cone of the 3rd gear.
Standard clearance:
0.75 to 1.65 mm (0.0295 to 0.0650 in.)
If the clearance is not within the specified values, replace the synchronizer ring No. 2 (for the 3rd synchronizer ring) with a new one.



9. INSPECT REVERSE GEAR

(a) Using vernier calipers, measure the reverse gear groove and the thickness of the gear shift fork claw No. 1 clearance.
Standard clearance:
0.15 to 0.41 mm (0.0060 to 0.0161 in.)
If the clearance is not within the specified values, replace the reverse gear and the shift fork No. 1 with new ones.

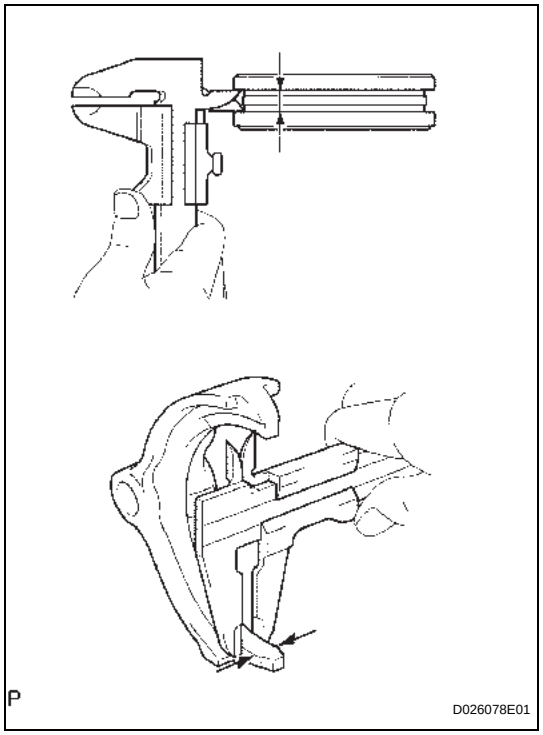


10. INSPECT NO. 1 TRANSMISSION CLUTCH HUB

(a) Check that the transmission clutch hub No. 1 and reverse gear slide smoothly each other.

(b) Check the tip of the spline gear sleeve of the reverse gear for wear.

If there are any defects, replace the transmission clutch hub No. 1.



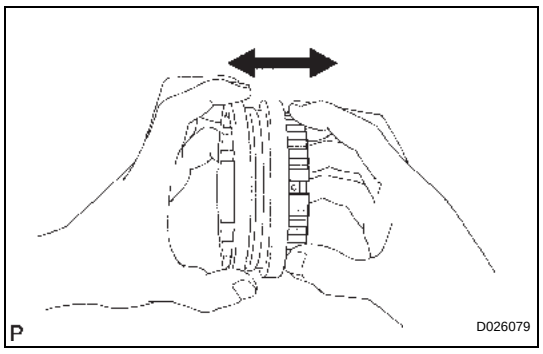
11. INSPECT NO. 2 TRANSMISSION HUB SLEEVE

(a) Using vernier calipers, measure the clearance between the transmission hub No. 2 groove and claw of the gear shift fork No. 2.

Standard clearance:

0.15 to 0.35 mm (0.0059 to 0.0138 in.)

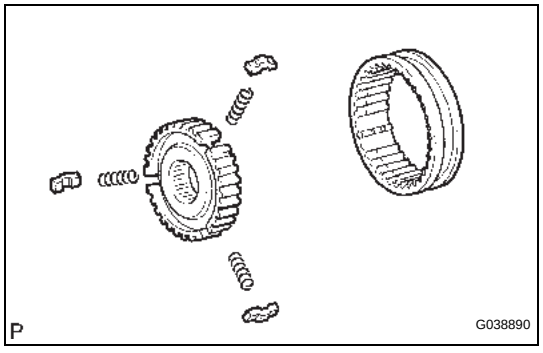
If the clearance is not within the specified values, replace the No. 2 transmission hub sleeve No. 2 and the shift fork No. 2 with the new ones.



12. INSPECT NO. 2 TRANSMISSION CLUTCH HUB

(a) Check the sliding condition between the transmission clutch hub No. 2 and the transmission hub sleeve No. 2.

(b) Check the tip of the spline gear of the sleeve of the reverse gear for wear.



REASSEMBLY

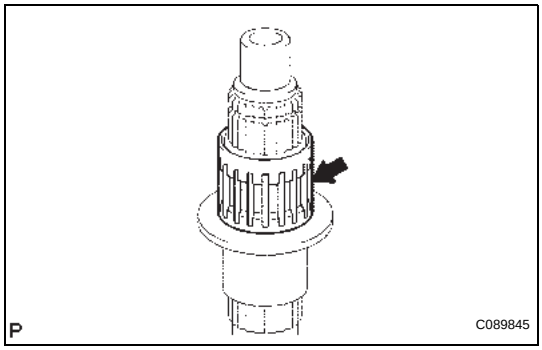
1. INSTALL NO. 2 TRANSMISSION HUB SLEEVE

(a) Install the 3 synchromesh shifting key springs No. 2 and the 3 synchro-mesh shifting key No. 2 to the transmission clutch hub No. 2.

NOTICE:

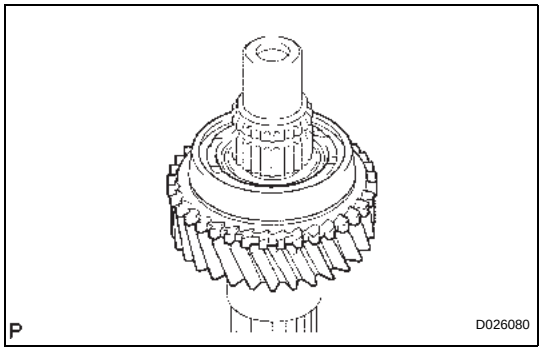
Make sure that the transmission hub sleeve No. 2 and transmission clutch hub No. 2 are oriented in the correct direction.

(b) Apply gear oil to the sliding part of the transmission hub sleeve No. 2, and install it onto the transmission clutch hub No. 2.



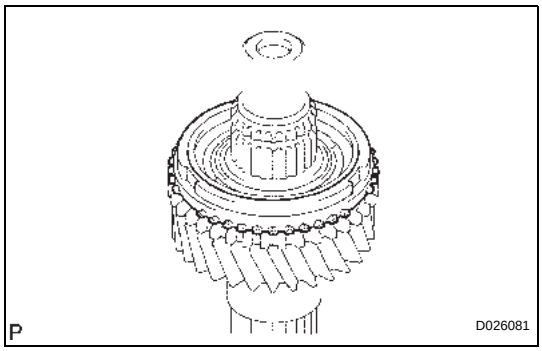
2. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

(a) Apply gear oil to the 3rd gear needle roller bearing, and install it onto the output shaft.



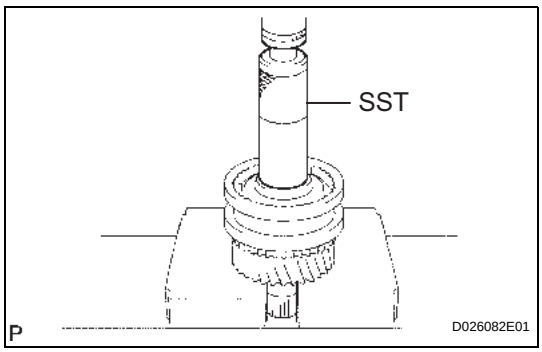
3. INSTALL 3RD GEAR

(a) Apply gear oil to the 3rd gear, and install it onto the output shaft.



4. INSTALL NO. 2 SYNCHRONIZER RING

(a) Apply gear oil to the synchronizer ring No. 2, and install it onto the 3rd gear.



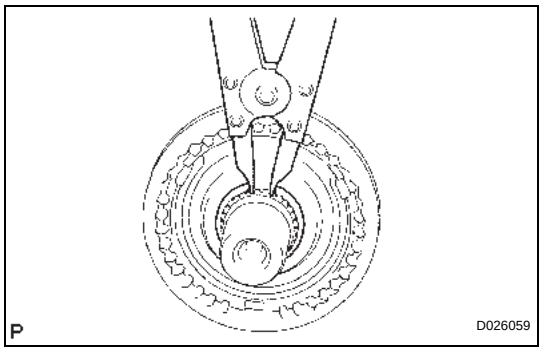
5. INSTALL NO. 2 TRANSMISSION CLUTCH HUB

(a) Using SST, install the transmission clutch hub No. 2 onto the output shaft.

SST 09608-06041

NOTICE:

- **Install it with the synchronizer ring key No. 2 groove aligned with the shifting key position.**
- **Make sure that the 3rd gear rotates smoothly.**

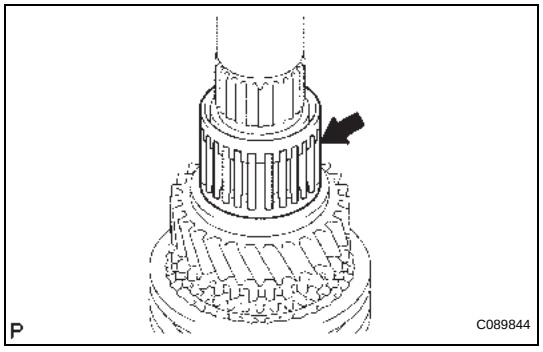


(b) Select the correct clutch hub shaft snap ring so that the clearance between the transmission clutch hub No. 2 and shaft snap ring thrust is within the specified values. Then install it onto the output shaft.

Standard clearance:
0.1 mm or less

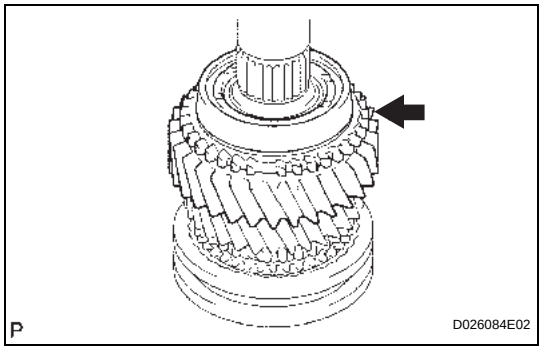
NOTICE:
Do not damage the sliding surface of the bearing.

Mark	Thickness mm (in.)
A	1.80 to 1.85 (0.0709 to 0.0728)
B	1.85 to 1.90 (0.0728 to 0.0748)
C	1.90 to 1.95 (0.0748 to 0.0768)
D	1.95 to 2.00 (0.0768 to 0.0787)
E	2.00 to 2.05 (0.0787 to 0.0807)
F	2.05 to 2.10 (0.0807 to 0.0827)
G	2.10 to 2.15 (0.0827 to 0.0846)



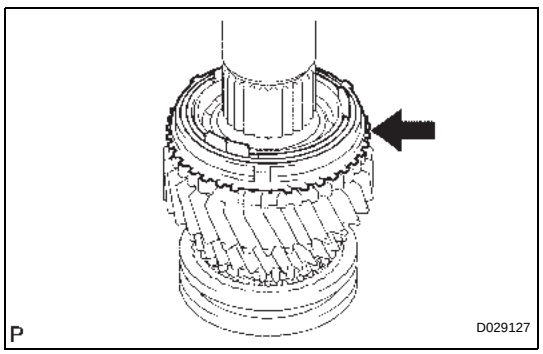
6. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

(a) Apply gear oil to the 2nd gear needle roller bearing, and install it onto the output shaft.



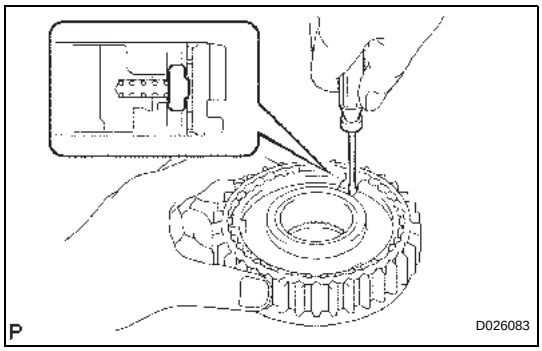
7. INSTALL 2ND GEAR

(a) Apply gear oil to the 2nd gear, and install it onto the output shaft.



8. INSTALL NO. 1 SYNCHRONIZER RING SET

(a) Apply gear oil to the synchronizer ring set No. 1, and install it onto the 2nd gear.

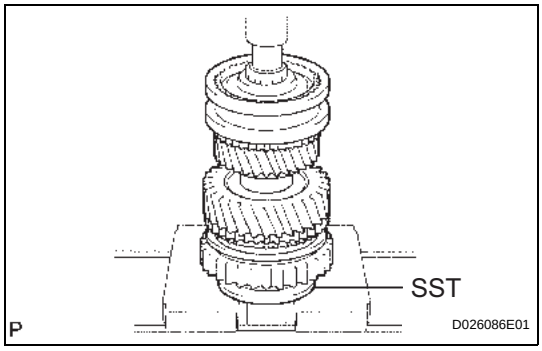


9. INSTALL REVERSE GEAR

(a) Using a screwdriver, install the 3 synchromesh shifting key springs and 3 synchromesh shifting key No.1 onto the transmission clutch hub No. 1.

(b) Apply gear oil to the revers gear, and install it onto the transmission clutch hub No. 1

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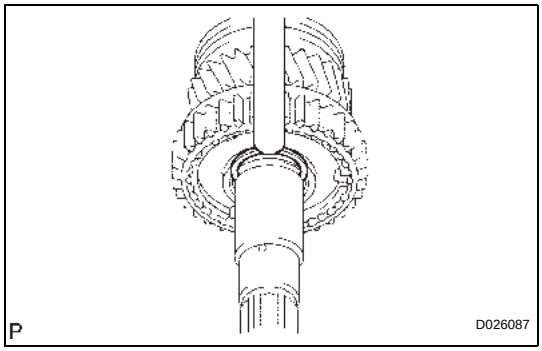
10. INSTALL NO. 1 TRANSMISSION CLUTCH HUB

(a) Using SST and a press, install transmission clutch hub No. 1 onto the output shaft.

SST 09316-60011 (09316-00041)

NOTICE:

- **Perform installation making sure that the synchronizer ring key No. 1 groove and synchro-mesh shifting key No. 1 are in place.**
- **Make sure that the 1st gear rotates smoothly.**



(b) Select the correct bearing shaft snap ring so that the clearance between the transmission clutch hub No. 1 and bearing shaft snap ring is within the specified values. Then install it onto the output shaft.

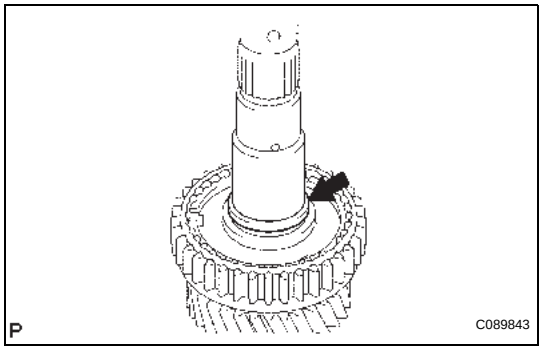
Standard clearance:

0.1mm (0.039 in.) or less

NOTICE:

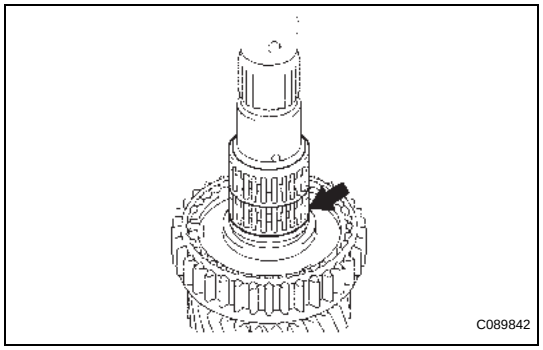
Do not damage the sliding surface of the bearing.

Mark	Thickness mm (in.)
A	2.30 to 2.35 (0.0906 to 0.0925)
B	2.35 to 2.40 (0.0925 to 0.0945)
C	2.40 to 2.45 (0.0945 to 0.0965)
D	2.45 to 2.50 (0.0965 to 0.0984)
E	2.50 to 2.55 (0.0984 to 0.1004)
F	2.55 to 2.60 (0.1004 to 0.1024)
G	2.60 to 2.65 (0.1024 to 0.1043)



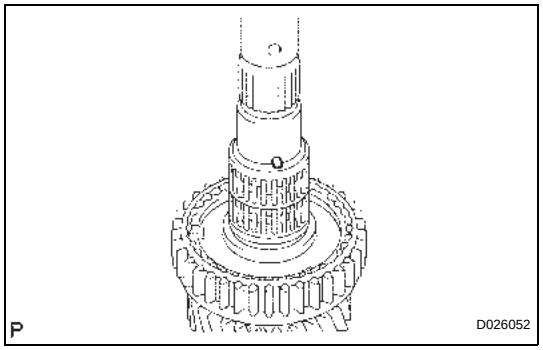
11. INSTALL 1ST GEAR BEARING SPACER

(a) Apply gear oil to the 1st gear bearing spacer, and install it onto the output shaft.



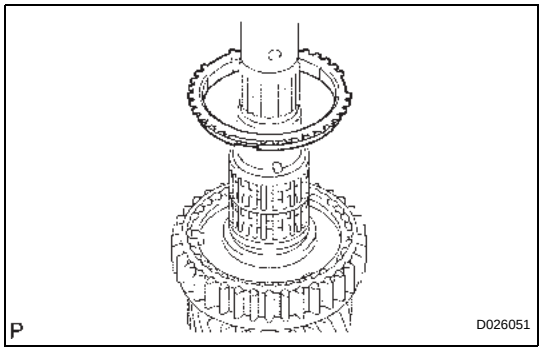
12. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

(a) Apply gear oil to the 1st gear needle roller bearing, and install it onto the output shaft.



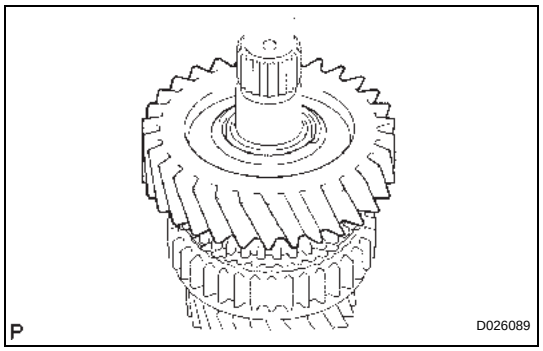
13. INSTALL 1ST GEAR THRUST WASHER PIN OR BALL

(a) Install the 1st gear thrust washer pin onto the output shaft.



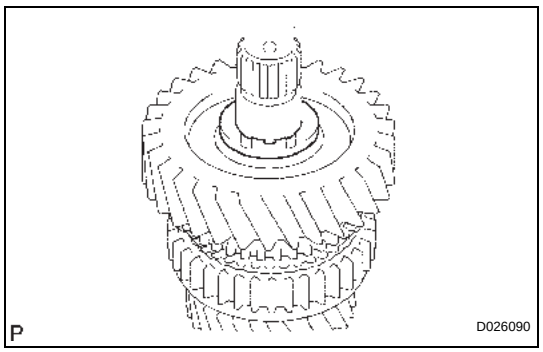
14. INSTALL NO. 1 SYNCHRONIZER RING

(a) Apply gear oil to the synchronizer ring No. 1, and install it onto the output shaft.



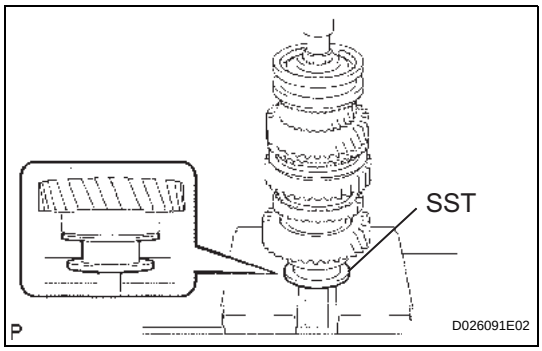
15. INSTALL 1ST GEAR

(a) Apply gear oil to the 1st gear, and install it onto the output shaft.



16. INSTALL 1ST GEAR THRUST WASHER

(a) Apply gear oil to the 1st gear thrust washer, and install it onto the output shaft.



17. INSTALL OUTPUT SHAFT CENTER BEARING

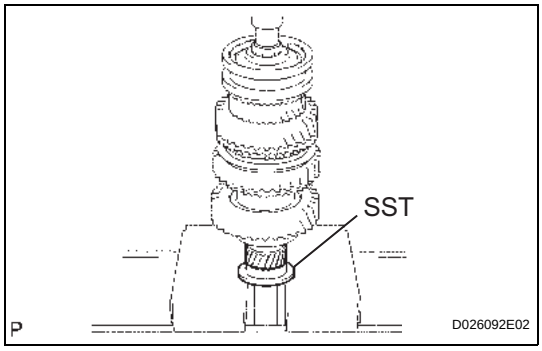
(a) Using SST and a press, install a new output shaft center bearing onto the output shaft.

SST 09316-60011 (09316-00031)

NOTICE:

Install it with the snap ring groove of the bearing facing to the rear side.

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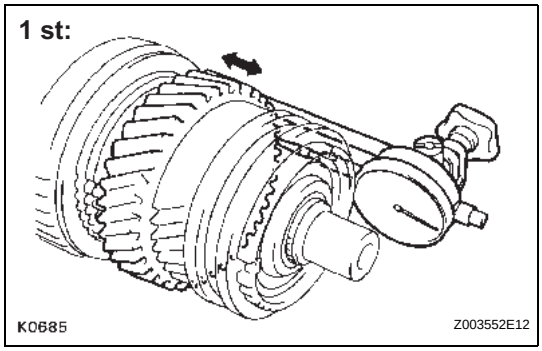
18. INSTALL 5TH GEAR

(a) Using SST and a press, install the 5th gear onto the output shaft.

SST 09316-60011 (09316-00031)

NOTICE:

- **Check that the 5th gear is fitted into the spline of the output shaft before installing.**
- **Face the convex part of the gear to the front side.**

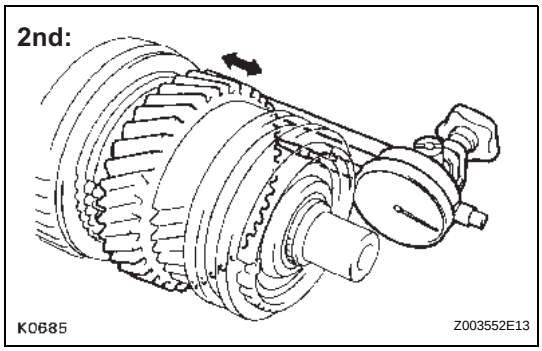


19. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.20 to 0.45 mm (0.0079 to 0.0177 in.)

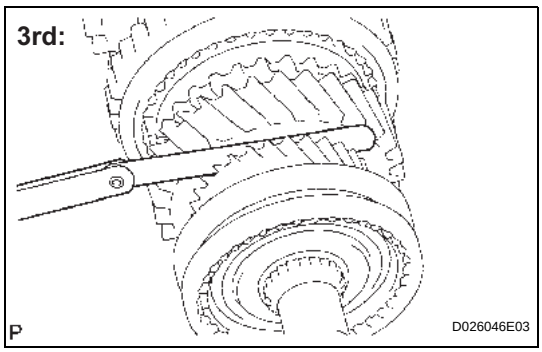


20. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)

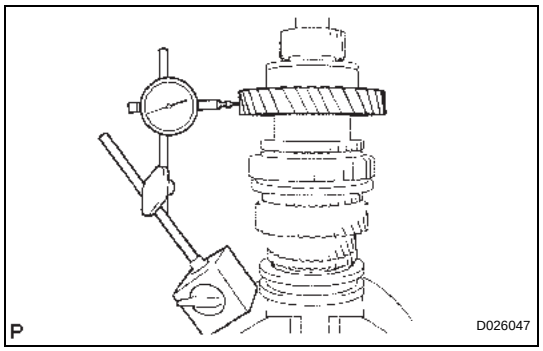


21. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)



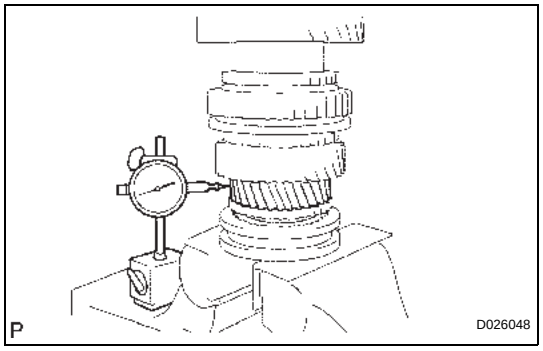
22. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.020 to 0.073 mm (0.0008 to 0.0029 in)

If the clearance is not within the specified values, replace the 1st gear needle roller bearing with a new one.



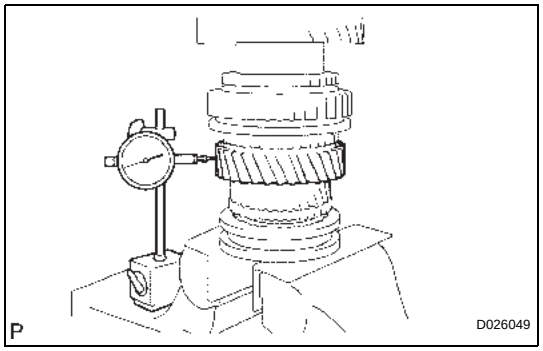
23. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 2nd gear needle roller bearing with a new one.



24. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

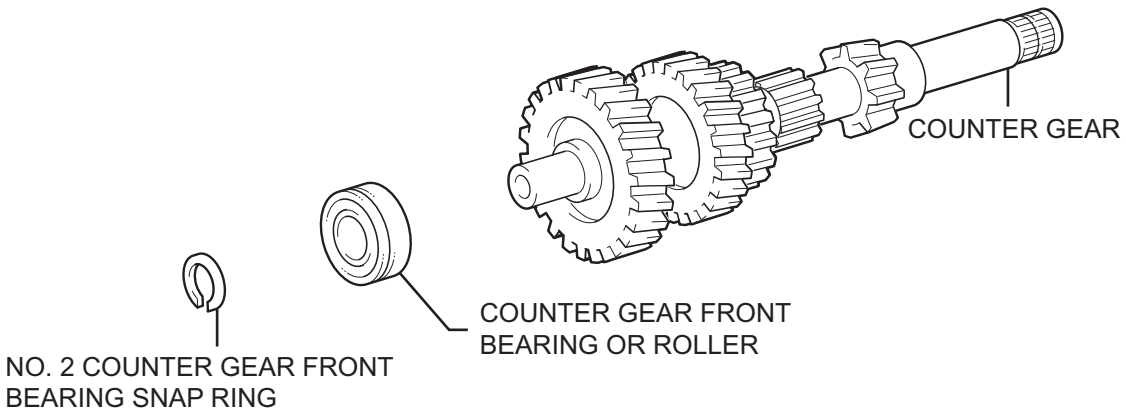
Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 3rd gear needle roller bearing with a new one.

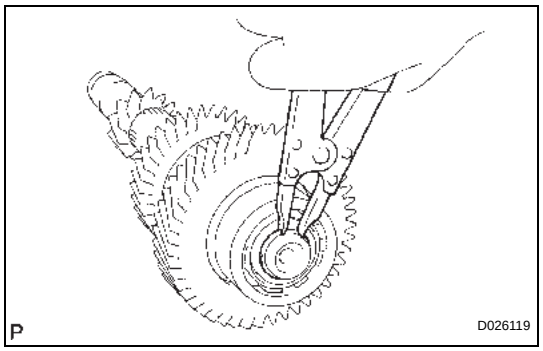
COUNTER GEAR AND REVERSE IDLER GEAR

COMPONENTS



P

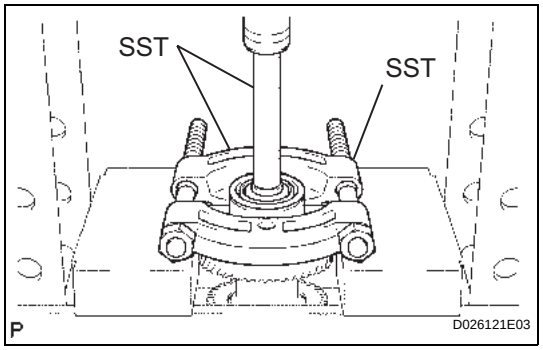
C115299E03



DISASSEMBLY

1. REMOVE NO. 2 COUNTER GEAR FRONT BEARING SNAP RING

(a) Using a snap ring expander, remove the No. 2 counter gear front bearing snap ring from the counter gear.

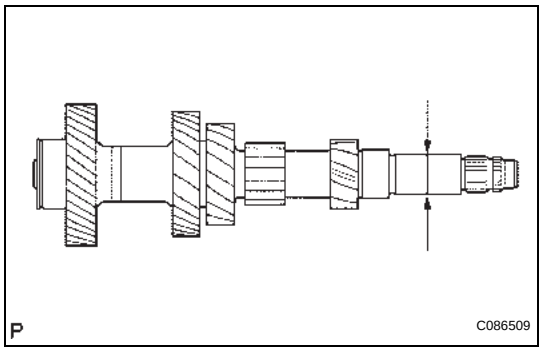


2. REMOVE COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, remove the counter gear front bearing from the counter gear.

SST 09950-00020, 09950-60010 (09951-00220), 09950-70010 (09951-07100)

INSPECTION



1. INSPECT COUNTER GEAR

(a) Using a micrometer, measure the outer diameter of the counter gear as shown in the diagram.

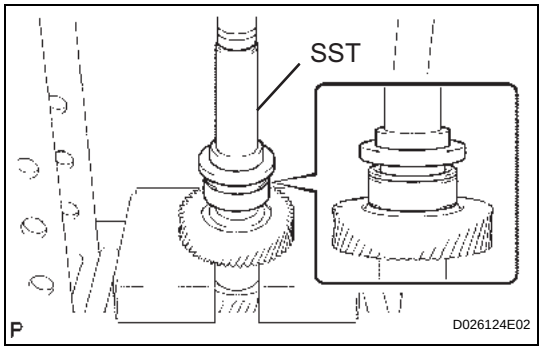
Standard diameter:
29.984 to 30.000 mm(1.1805 to 1.1811 in.)
Minimum diameter:
29.984 mm (1.1805 in.)
If the outer diameter is less than the minimum, replace the counter gear with a new one.

REASSEMBLY

1. INSTALL COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, install the counter gear front bearing onto the counter gear.

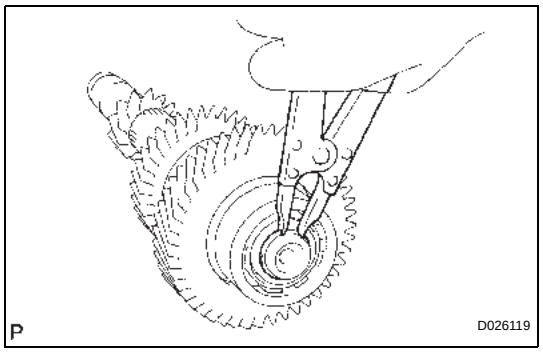
SST 09515-10010
Install it so that the snap ring groove of the bearing faces to the front side.



2. INSTALL NO. 2 COUNTER GEAR FRONT BEARING SNAP RING

(a) Select the correct counter gear front bearing No. 2 snap ring so that the clearance between the counter gear and No. 2 counter gear front bearing snap ring No. 2 is within the specified values. Using a brass bar and a hammer, install it onto the counter gear.

Standard clearance:
0.1 mm (0.0039 in.) or less



Mark	Thickness mm (in.)
A	2.05 to 2.10 (0.0807 to 0.0827)

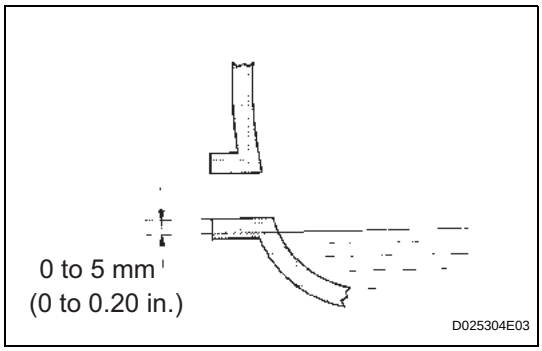
Mark	Thickness mm (in.)
B	2.10 to 2.15 (0.0827 to 0.0846)
C	2.15 to 2.20 (0.0846 to 0.0866)
D	2.20 to 2.25 (0.0866 to 0.0886)
E	2.25 to 2.30 (0.0886 to 0.0906)
F	2.30 to 2.35 (0.0906 to 0.0925)

MANUAL TRANSMISSION SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problems. The numbers indicate the ranked order of probability of each of the possible causes. Check each part in the order suggested. If necessary, replace the applicable parts.

Symptom	Suspected area	See page
Abnormal noise	1. Oil level (Low)	MT-2
	2. Oil (Wrong)	MT-2
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-
Oil leakage	1. Oil level (High)	MT-2
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	-
	4. O-ing (Worn or damaged)	-
Hard shifting or will not shift	1. Synchronizer ring (Worn or damaged)	-
	2. Shift key spring (Damaged)	-
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	-
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-



MANUAL TRANSMISSION OIL

ON-VEHICLE INSPECTION

1. INSPECT TRANSMISSION OIL

(a) Park the vehicle in a level place.

(b) Remove the transmission filler plug and gasket.

(c) Check that the oil surface is within 5 mm (0.20 in.) of the lowest point of the transmission filler plug opening.

NOTICE:

- **Problems may occur when the oil level is too high or low.**
- **After replacing the oil, drive the vehicle and check the oil level again.**

(d) Check for oil leakage when the oil level is low.

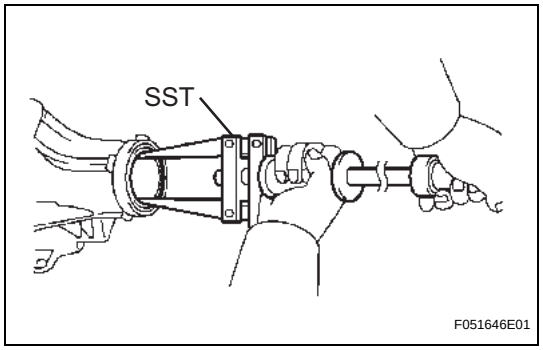
(e) Install the transmission filler plug and a new gasket.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

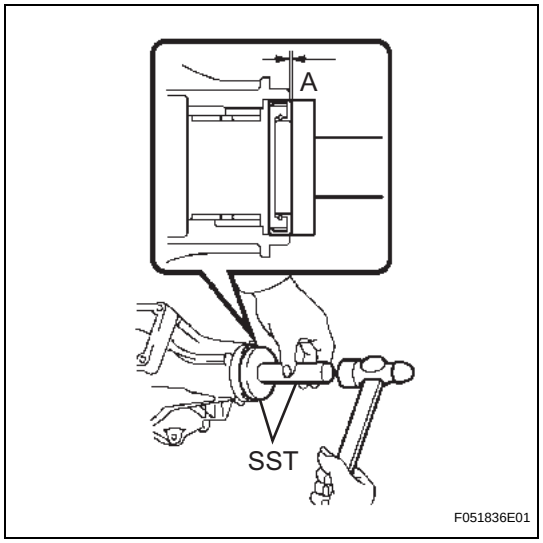
MT

MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL

REMOVAL

1. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-8)**
2. **REMOVE EXTENSION HOUSING DUST DEFLECTOR**
   (a) Using a plastic hammer, remove the extension housing dust deflector.
3. **REMOVE MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL**
   (a) Using SST, remove the transmission extension housing oil seal.
   SST 09308-00010



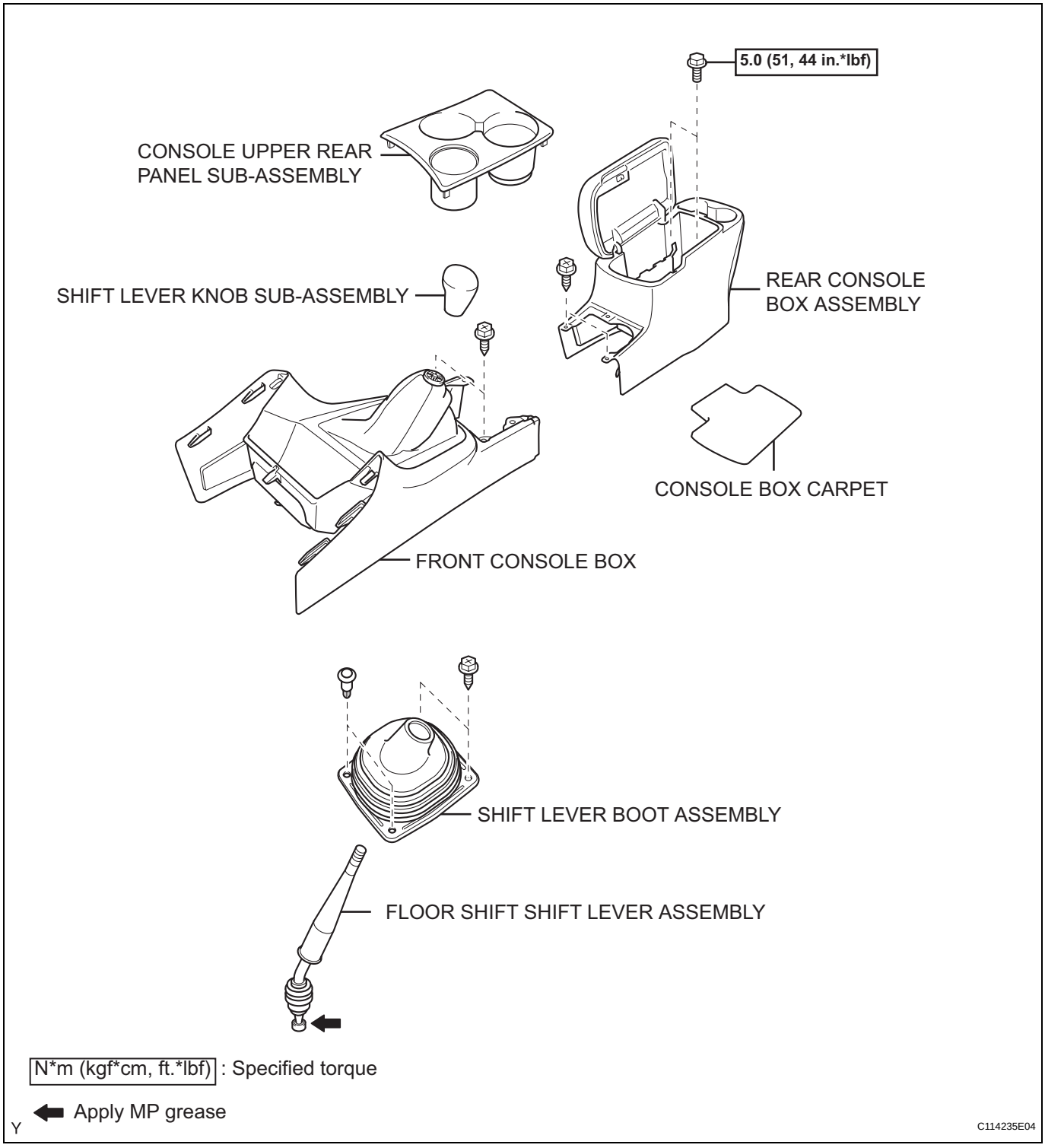


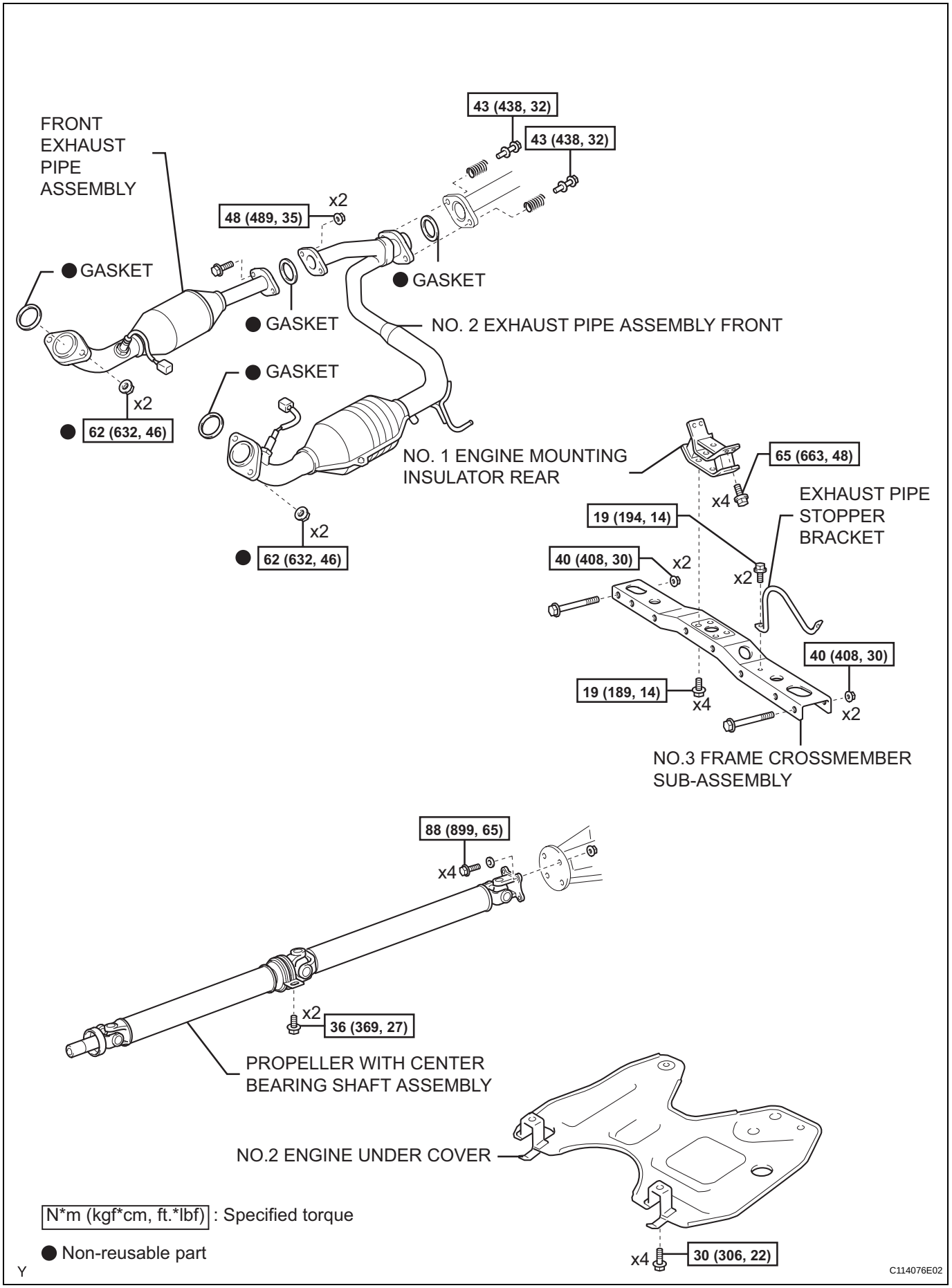
INSTALLATION

1. **INSTALL MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL**
   (a) Using SST and hammer, tap a new oil seal into the extension housing in accordance with the dimension specified in the illustration.
   SST 09950-60020 (09951-00640), 09950-70010 (09951-07100)
   Dimension A:
   -0.5 to 0.5 mm (-0.197 to 0.197 in.)
   (b) Apply gear oil to the lip of the oil seal.
2. **INSTALL EXTENSION HOUSING DUST DEFLECTOR**
   (a) Using a plastic hammer, install the extension housing dust deflector.
3. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-13)**
4. **INSPECT MANUAL TRANSMISSION OIL**

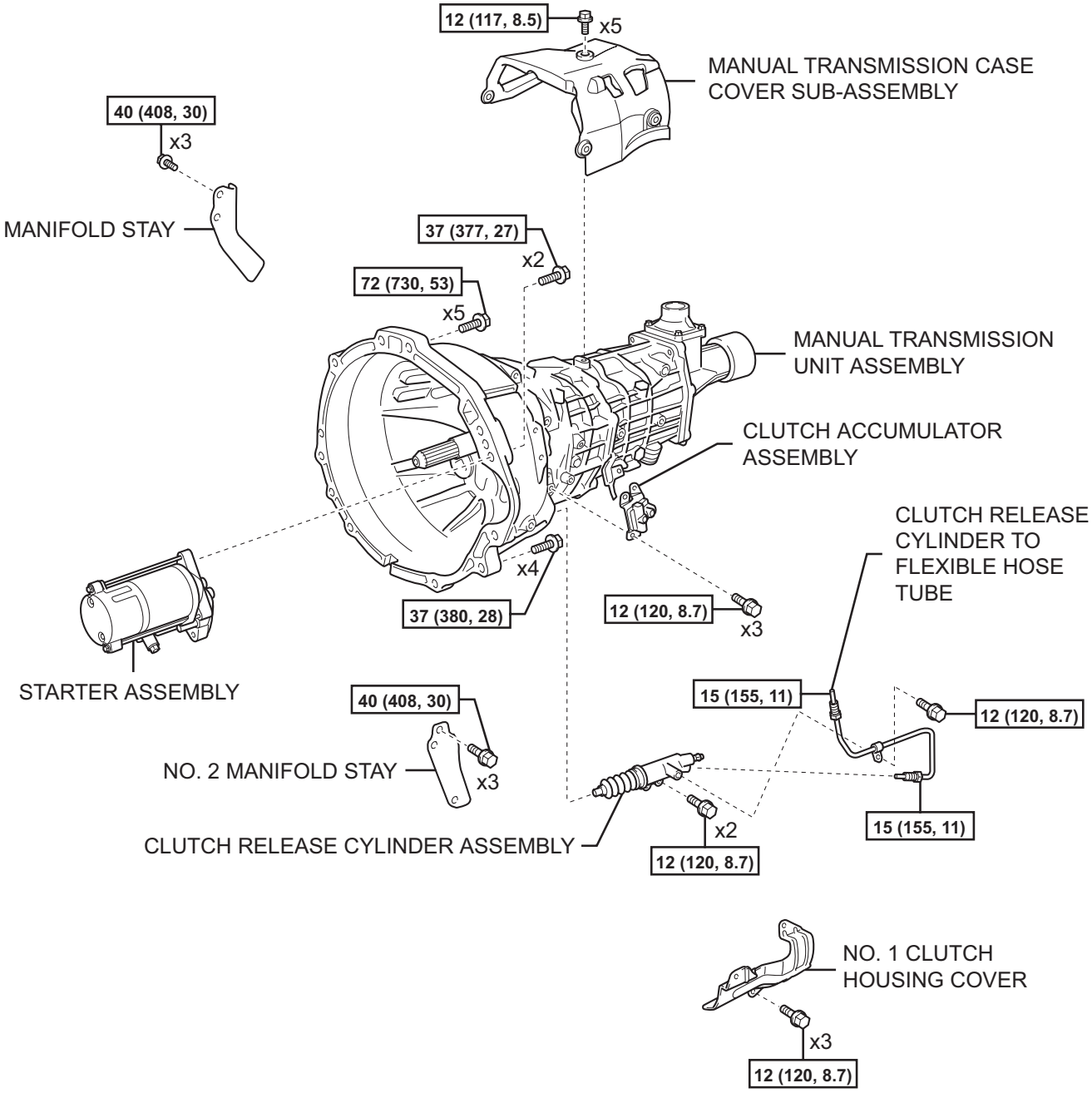
MANUAL TRANSMISSION ASSEMBLY

COMPONENTS




FRONT EXHAUST PIPE ASSEMBLY
43 (438, 32)
43 (438, 32)
48 (489, 35)
x2
GASKET
GASKET
GASKET
GASKET
NO. 2 EXHAUST PIPE ASSEMBLY FRONT
x2
62 (632, 46)
x2
62 (632, 46)
NO. 1 ENGINE MOUNTING INSULATOR REAR
65 (663, 48)
x4
EXHAUST PIPE STOPPER BRACKET
19 (194, 14)
40 (408, 30)
x2
x2
40 (408, 30)
19 (189, 14)
x4
x2
NO.3 FRAME CROSSMEMBER SUB-ASSEMBLY
88 (899, 65)
x4
x2
36 (369, 27)
PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY
NO.2 ENGINE UNDER COVER
x4
30 (306, 22)
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Y
C114076E02

MT



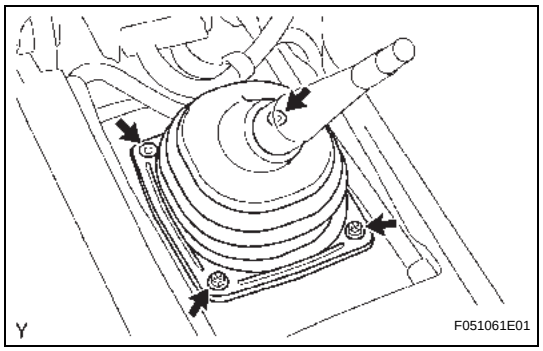
N*m (kgf*cm, ft*lbf) :Specified torque

Y

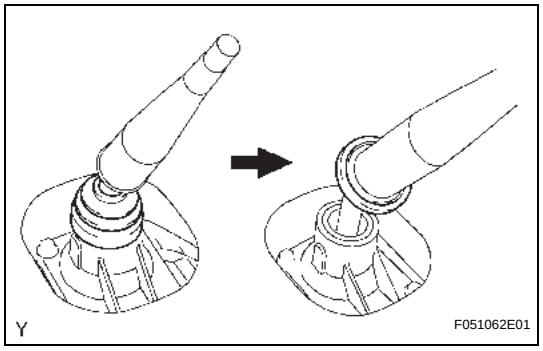
C114077E02

REMOVAL

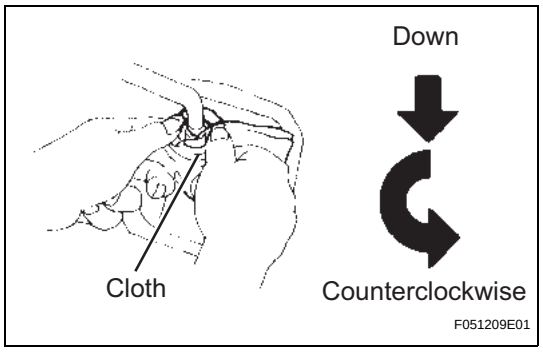
1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (See page IP-9)**
3. **REMOVE REAR CONSOLE BOX ASSEMBLY (See page IP-10)**
4. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY**
5. **REMOVE FRONT CONSOLE BOX (See page IP-11)**
6. **REMOVE SHIFT LEVER BOOT ASSEMBLY**
   (a) Remove the 2 screws and 2 clips, then remove the shift lever boot.



7. **REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Separate the shift lever cap boot from the manual transmission.

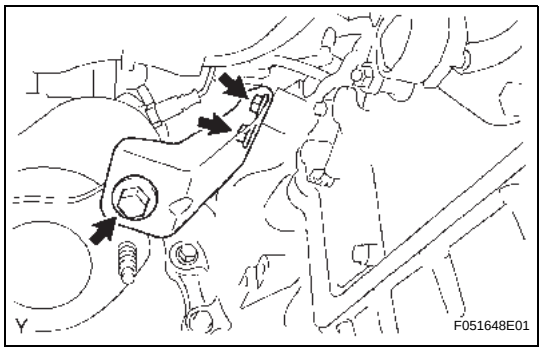


   (b) Cover the shift lever cap with a cloth.
   (c) Pressing down on the shift lever cap, turn it counterclockwise to remove the shift lever.
   (d) Pull out the shift lever.



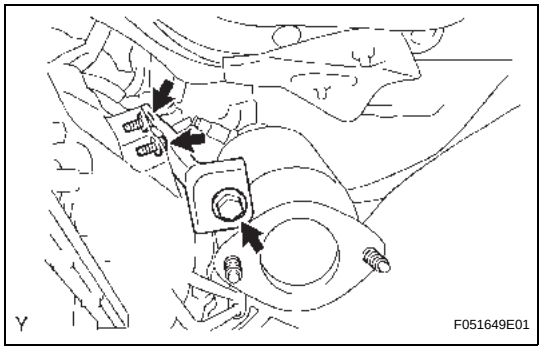
8. **REMOVE NO. 2 ENGINE UNDER COVER**
9. **DRAIN MANUAL TRANSMISSION OIL**
   (a) Remove the drain plug, gasket and then drain the manual transmission oil.
   (b) Install a new gasket and the drain plug.
   Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)
10. **REMOVE EXHAUST PIPE (See page EX-3)**
11. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-8)**

MT



12. REMOVE NO. 2 MANIFOLD STAY

(a) Remove the 3 bolts and manifold stay No. 2.



13. REMOVE MANIFOLD STAY

(a) Remove the 3 bolts and manifold stay.

14. REMOVE STARTER ASSEMBLY (See page ST-5)

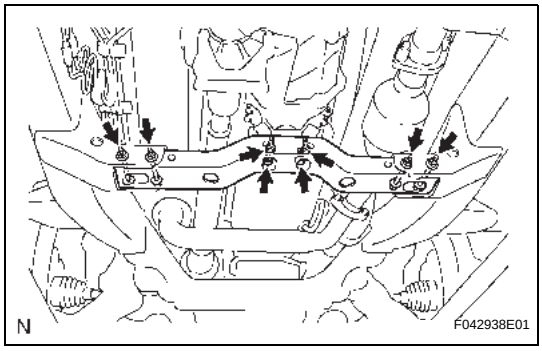
15. REMOVE NO. 1 CLUTCH HOUSING COVER (See page CL-21)

16. REMOVE CLUTCH RELEASE CYLINDER ASSEMBLY (See page CL-21)

17. REMOVE CLUTCH ACCUMULATOR ASSEMBLY (See page CL-26)

18. SUPPORT MANUAL TRANSMISSION UNIT ASSEMBLY

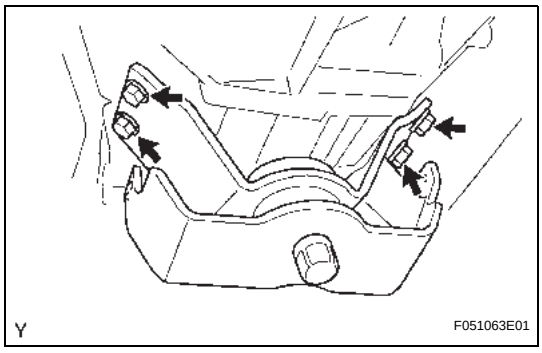
(a) Support the manual transmission with a transmission jack.



19. REMOVE NO.3 FRAME CROSSMEMBER SUB-ASSEMBLY

(a) Remove the 4 bolts on the frame crossmember sub-assembly No. 3.

(b) Remove the 4 nuts, 4 bolts and frame crossmember sub-assembly No. 3.



20. REMOVE NO. 1 ENGINE MOUNTING INSULATOR REAR

(a) Remove the 4 bolts and the engine mounting insulator rear No. 1.

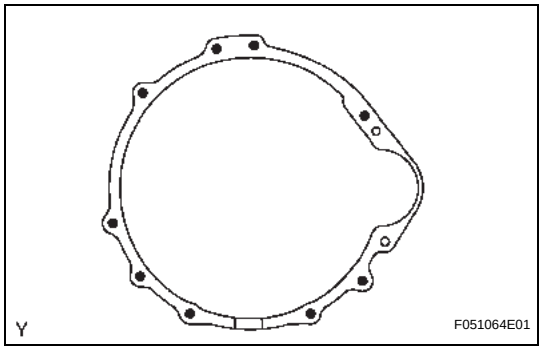
21. DISCONNECT CONNECTOR

(a) Tilt down the transmission.

(b) Disconnect the speedometer sensor connector.

(c) Disconnect the back up lamp switch connector.

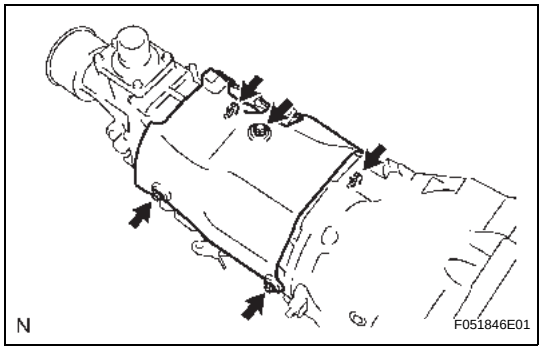
22. DISCONNECT WIRE HARNESS



23. REMOVE MANUAL TRANSMISSION UNIT ASSEMBLY

(a) Remove the 9 bolts.

(b) Separate and remove the manual transmission.

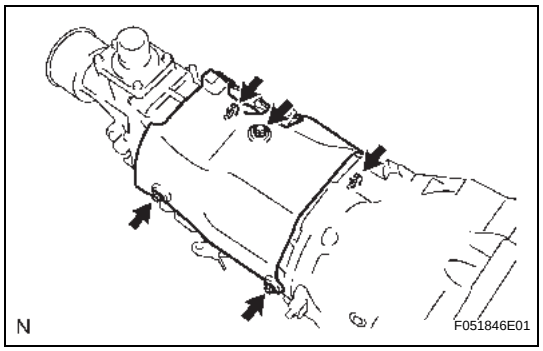


24. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

(a) Remove the 5 bolts and manual transmission case cover.

MT

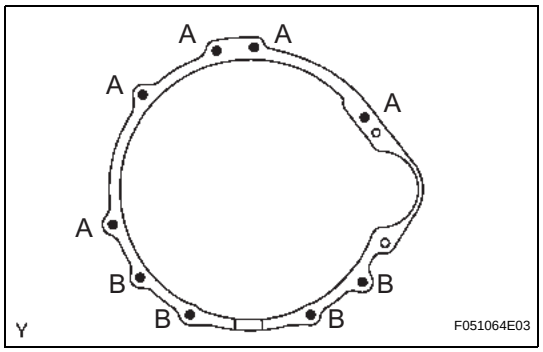
INSTALLATION



1. INSTALL MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

(a) Install the manual transmission case cover with the 5 bolts.

Torque: 12 N*m (117 kgf*cm, 8.5 ft.*lbf)

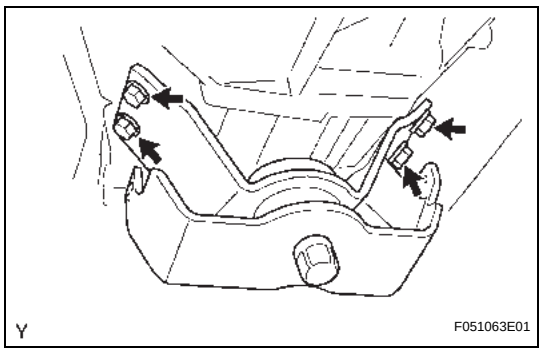


2. INSTALL MANUAL TRANSMISSION UNIT ASSEMBLY

(a) Install the manual transmission with the 9 bolts.

Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
37 N*m (380 kgf*cm, 28 ft.*lbf) for bolt B

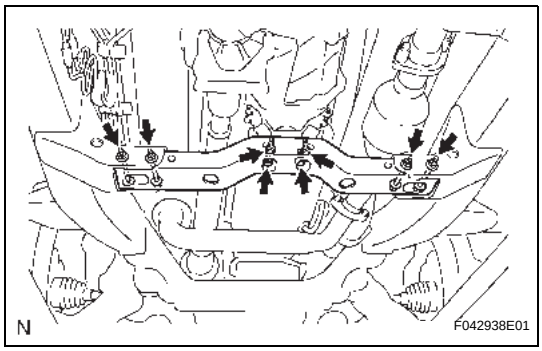
3. CONNECT WIRE HARNESS



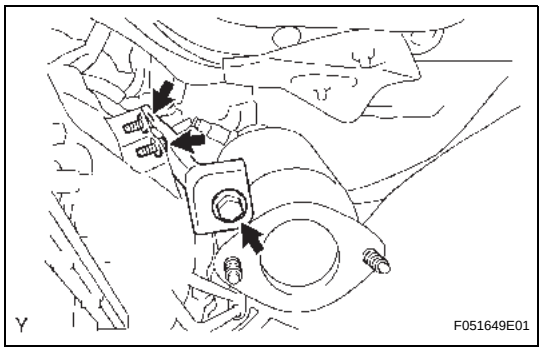
4. INSTALL NO. 1 ENGINE MOUNTING INSULATOR REAR

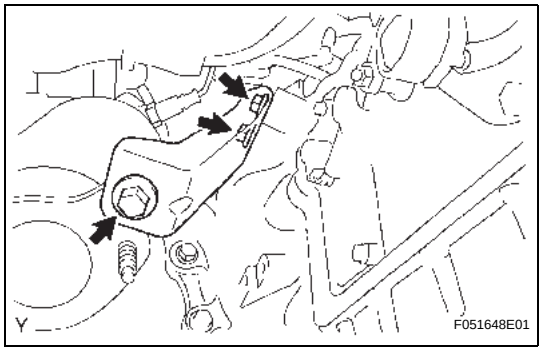
(a) Install the engine mounting insulator rear No. 1 with the 4 bolts.

Torque: 65 N*m (663 kgf*cm, 48 ft.*lbf)

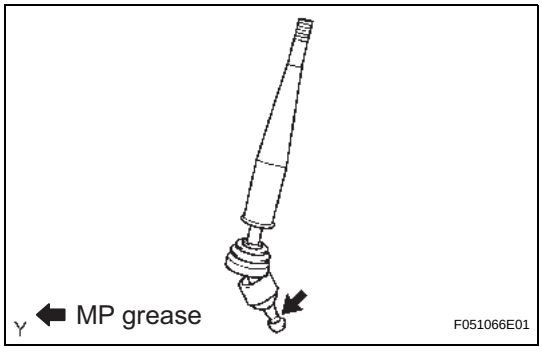


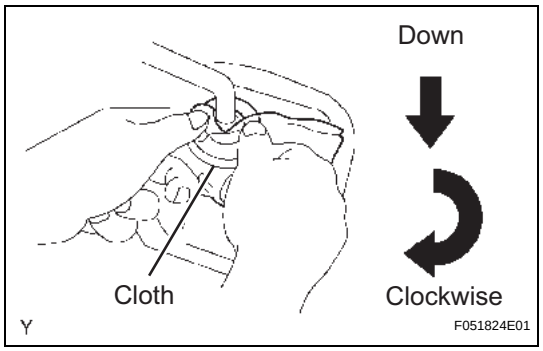
5. **INSTALL NO.3 FRAME CROSSMEMBER SUB-ASSEMBLY**
   (a) Install the frame crossmember sub-assembly No. 3 with the 4 bolts and 4 nuts.
   Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
   (b) Install the frame crossmember sub-assembly No. 3 with the 4 bolts.
   Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)
6. **INSTALL CLUTCH ACCUMULATOR ASSEMBLY (See page CL-26)**
7. **INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY (See page CL-22)**
8. **INSTALL NO. 1 CLUTCH HOUSING COVER (See page CL-22)**
9. **INSTALL STARTER ASSEMBLY (See page ST-11)**
10. **INSTALL MANIFOLD STAY**
    (a) Install the manifold stay with the 3 bolts.
    Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)





11. **INSTALL NO. 2 MANIFOLD STAY**
    (a) Install the manifold stay No. 2 with the 3 bolts.
    Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
12. **INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-13)**
13. **INSTALL EXHAUST PIPE (See page EX-3)**
14. **ADD MANUAL TRANSMISSION OIL**
15. **ADJUST MANUAL TRANSMISSION OIL (See page MT-2)**
16. **INSTALL NO.2 ENGINE UNDER COVER**
17. **INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY**
    (a) Apply MP grease to the tip of the shift lever.





(b) Cover the shift lever cap with a cloth.
(c) Pressing down on the shift lever cap, turn it clockwise to install the shift lever.

18. INSTALL SHIFT LEVER BOOT ASSEMBLY
(a) Install the shift lever boot with the 2 screws and 2 clips.

19. INSTALL FRONT CONSOLE BOX (See page IP-23)

20. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY

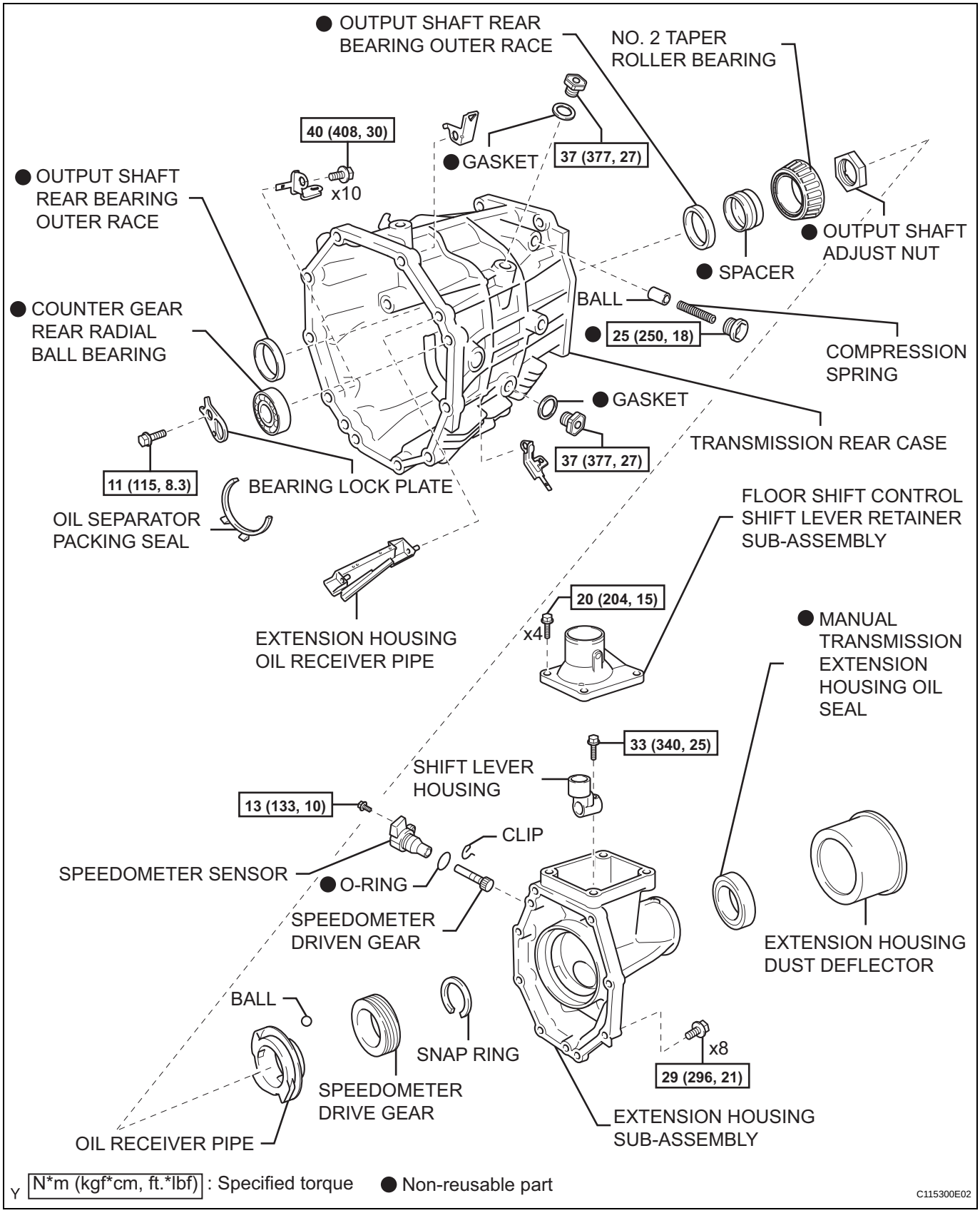
21. INSTALL REAR CONSOLE BOX ASSEMBLY (See page IP-24)

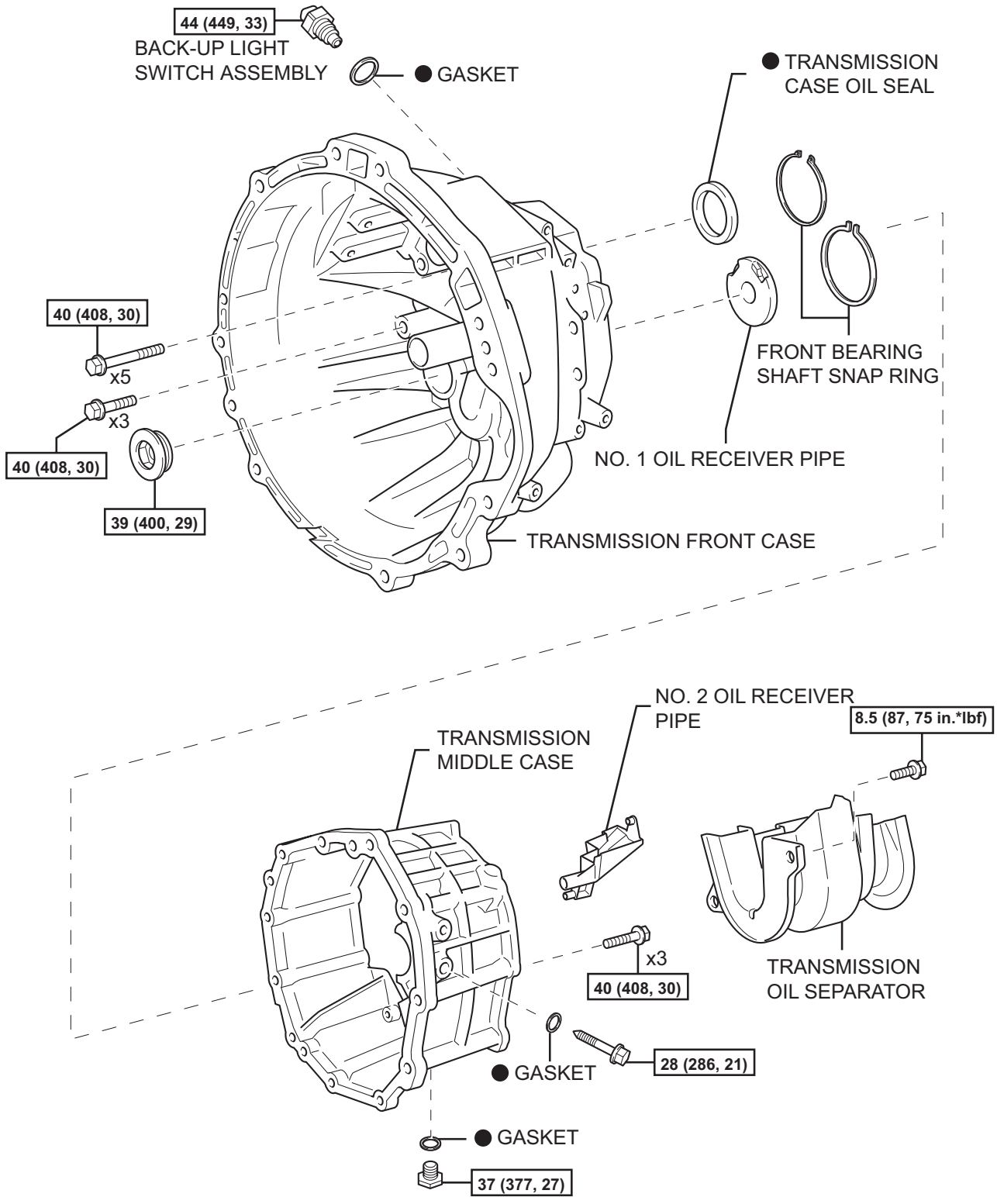
22. INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (See page IP-25)

23. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL
Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)

MANUAL TRANSMISSION UNIT

COMPONENTS





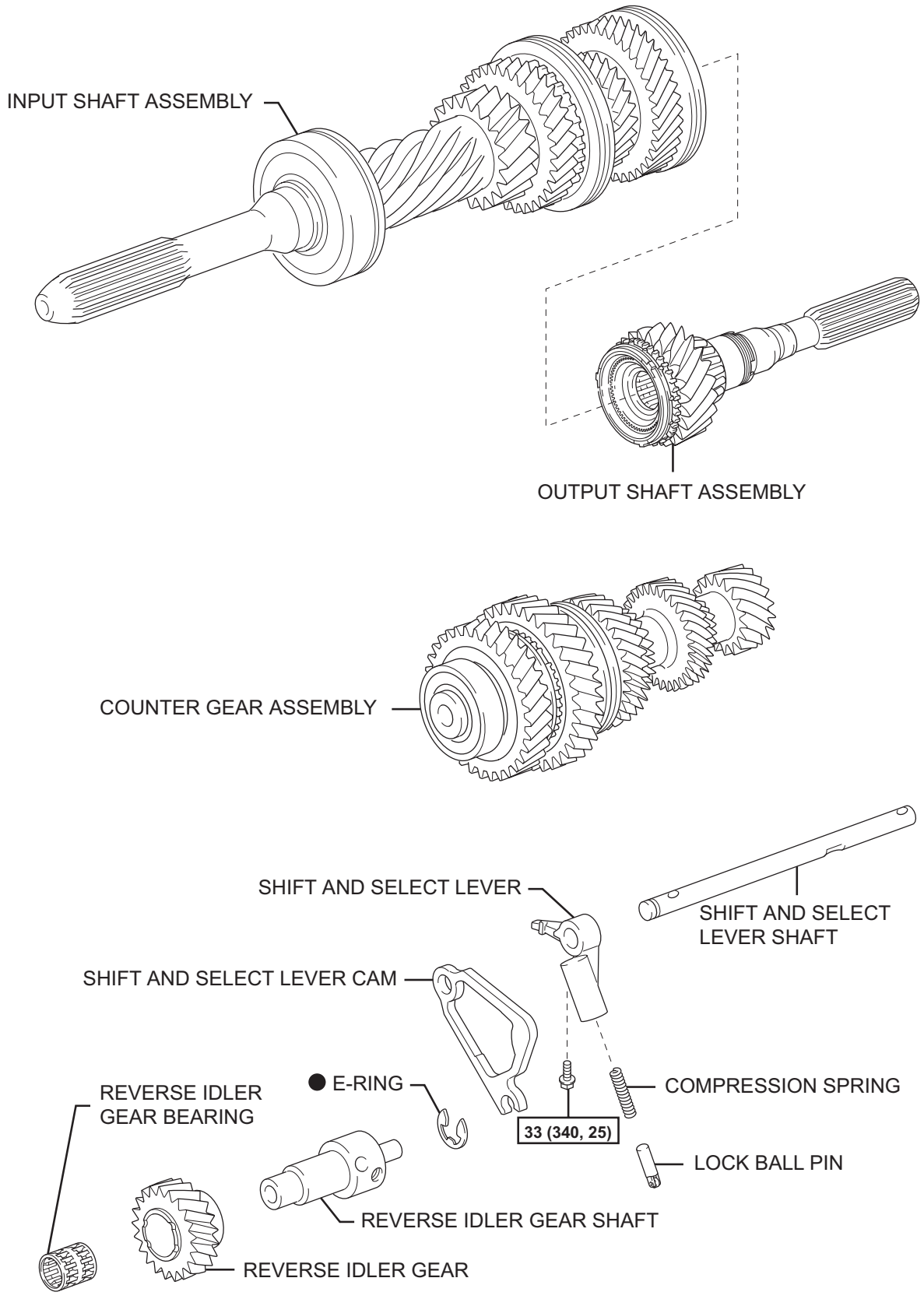
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

Y

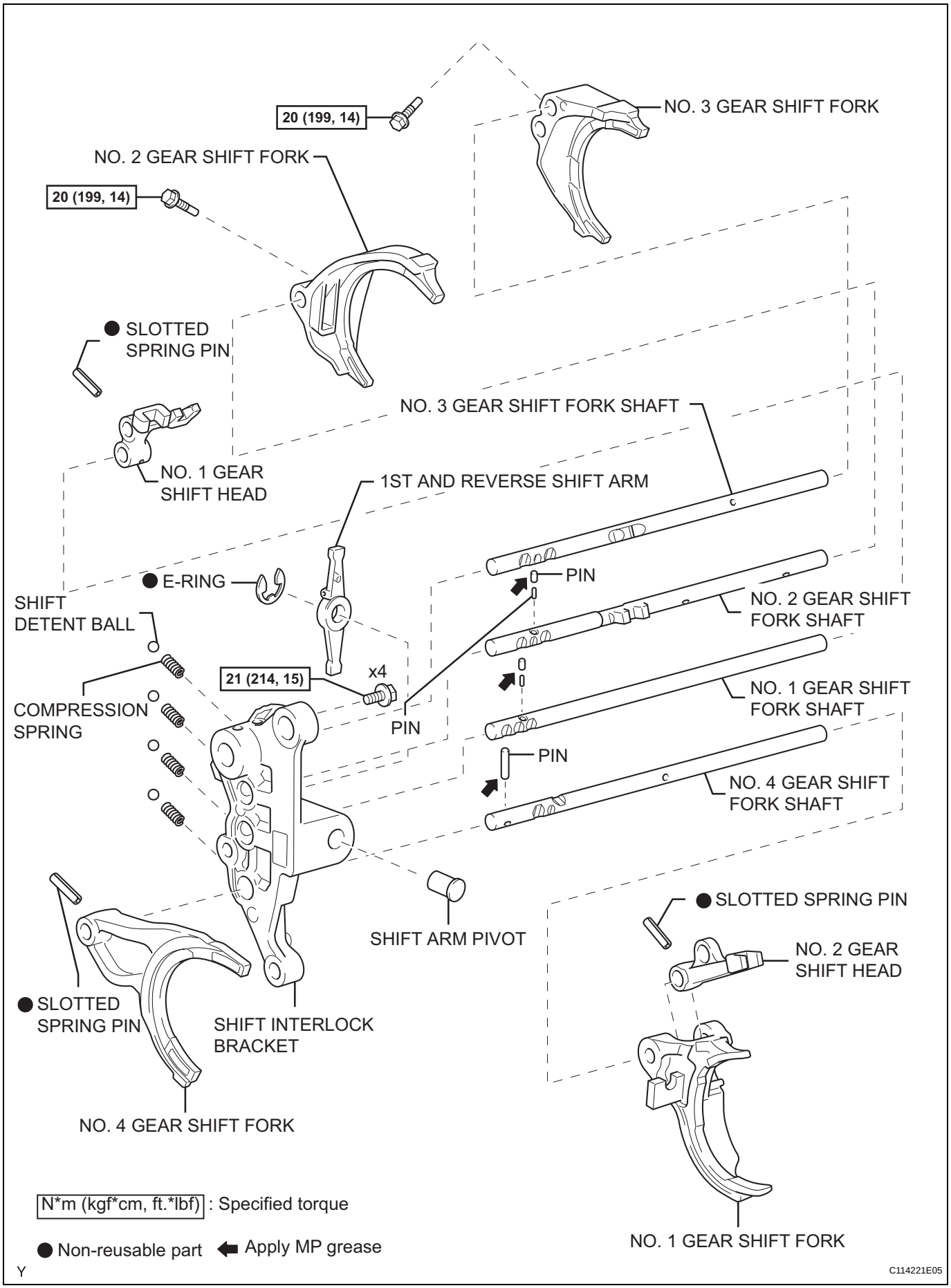
C114219E04

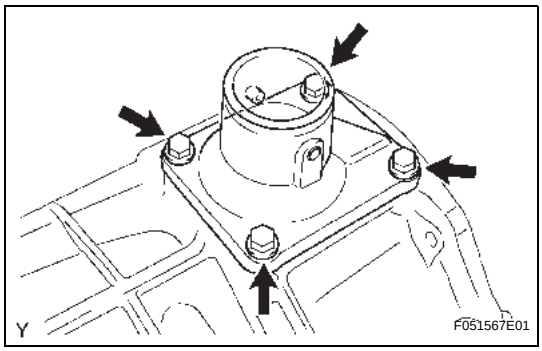
MT



Y N*m (kgf*cm, ft.*lbf) : Specified torque ● Non-reusable part

C114069E02

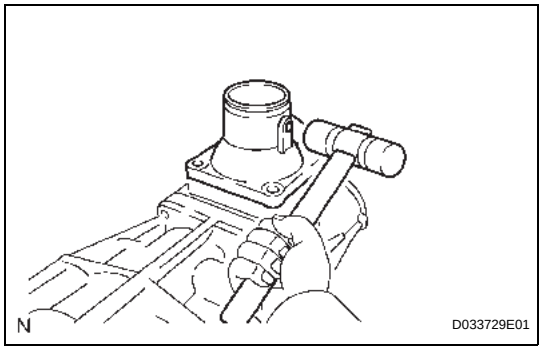

20 (199, 14)
NO. 3 GEAR SHIFT FORK
NO. 2 GEAR SHIFT FORK
20 (199, 14)
● SLOTTED SPRING PIN
NO. 3 GEAR SHIFT FORK SHAFT
NO. 1 GEAR SHIFT HEAD
1ST AND REVERSE SHIFT ARM
● E-RING
PIN
SHIFT DETENT BALL
NO. 2 GEAR SHIFT FORK SHAFT
21 (214, 15)
x4
COMPRESSION SPRING
PIN
NO. 1 GEAR SHIFT FORK SHAFT
PIN
NO. 4 GEAR SHIFT FORK SHAFT
● SLOTTED SPRING PIN
SHIFT ARM PIVOT
NO. 2 GEAR SHIFT HEAD
● SLOTTED SPRING PIN
SHIFT INTERLOCK BRACKET
NO. 4 GEAR SHIFT FORK
NO. 1 GEAR SHIFT FORK
N*m (kgf*cm, ft.*lbf) : Specified torque
● Non-reusable part
Apply MP grease
Y
C114221E05



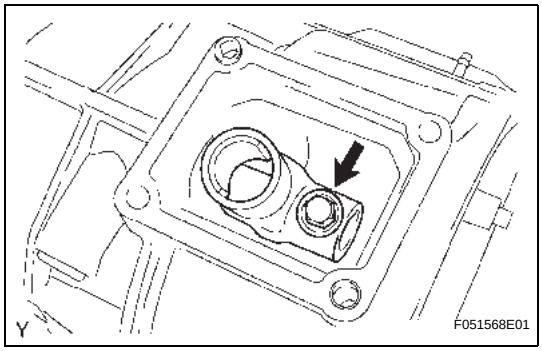
DISASSEMBLY

1. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Remove the 4 bolts, then remove the floor shift control shift lever retainer.

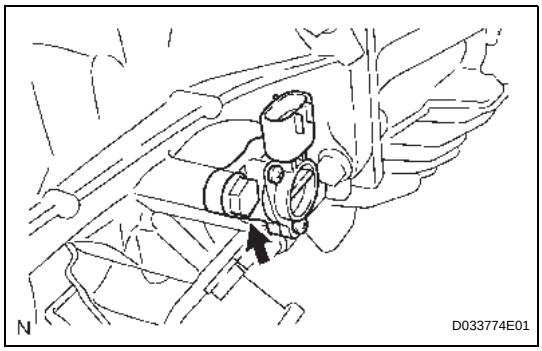


(b) Using a plastic hammer, remove the floor shift control shift lever retainer.



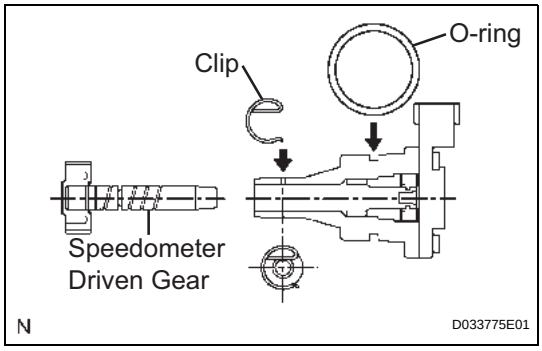
2. REMOVE SHIFT LEVER HOUSING

(a) Remove the bolt, then separate the shift lever housing.

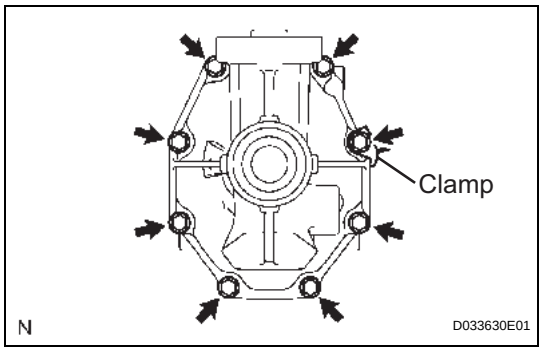


3. REMOVE SPEEDOMETER SENSOR

(a) Remove the bolt and speedometer sensor.

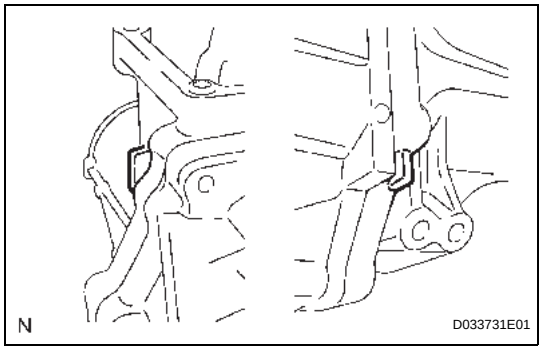


(b) Remove the clip from the speedometer sensor.
(c) Remove the driven gear from the speedometer sensor.
(d) Remove the O-ring from the speedometer sensor.
(e) Check the speedometer driven gear teeth.
If the driven gear is damaged, replace it.



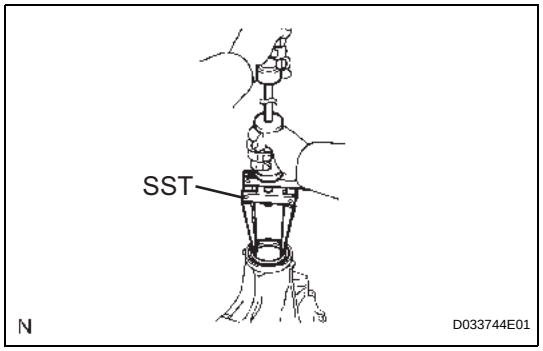
4. REMOVE EXTENSION HOUSING SUB-ASSEMBLY

(a) Remove the 8 bolts and clamp, then remove the extension housing sub-assembly.



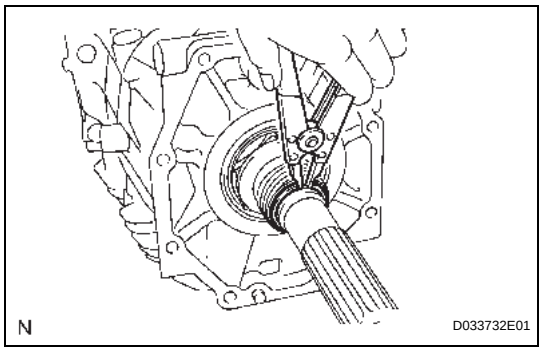
(b) Using a plastic hammer, carefully tap out the extension housing.

(c) Remove the shift lever housing.



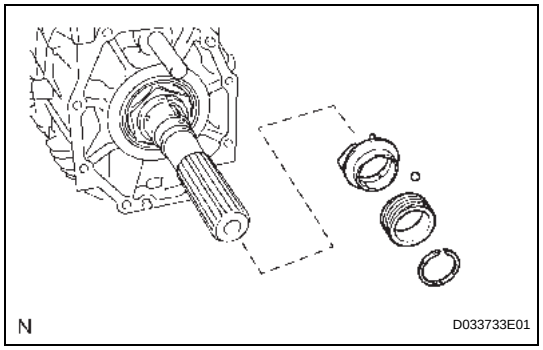
5. REMOVE MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL

(a) Using SST, remove the extension housing oil seal.
SST 09308-00010

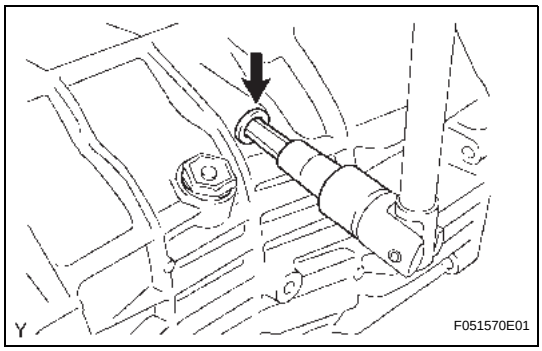


6. REMOVE SPEEDOMETER DRIVE GEAR

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



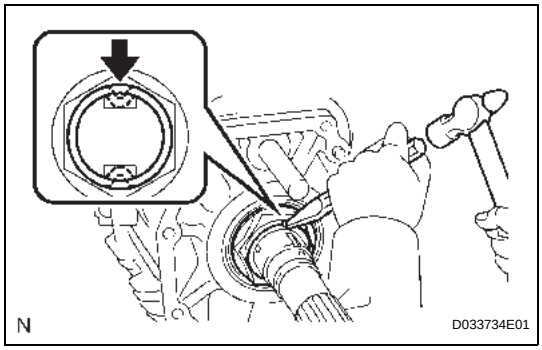
(b) Remove the speedometer drive gear, ball and oil receiver pipe.



7. REMOVE SHIFT DETENT BALL PLUG

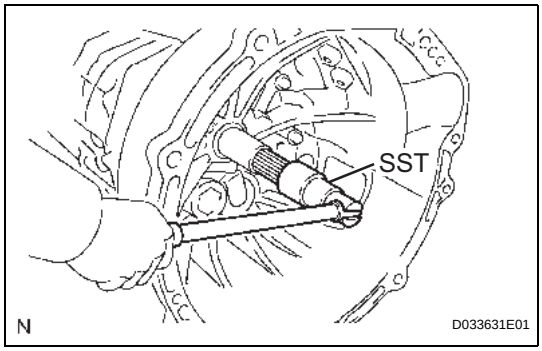
(a) Using a socket hexagon wrench (10 mm), remove the shift detent ball plug from the transmission rear case.

(b) Remove the ball and compression spring from the transmission rear case.



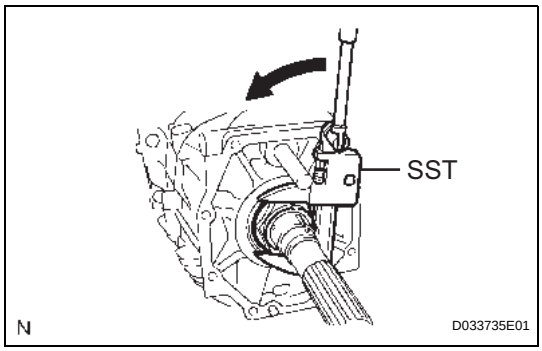
8. REMOVE OUTPUT SHAFT ADJUST NUT

(a) Using a chisel and hammer, unstake the nut.



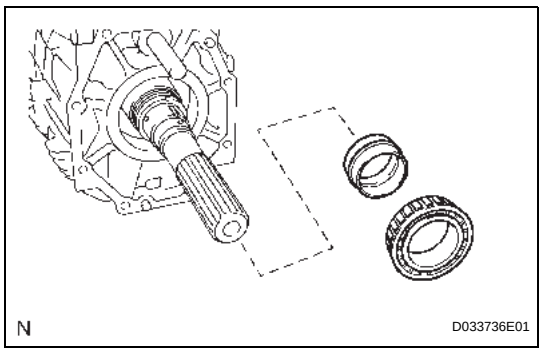
(b) Place the gearshift into 5th gear, and then fix the input shaft using SST.
SST 09556-16030

(c) Using a belt and wooden block, fasten the transmission to the workbench.

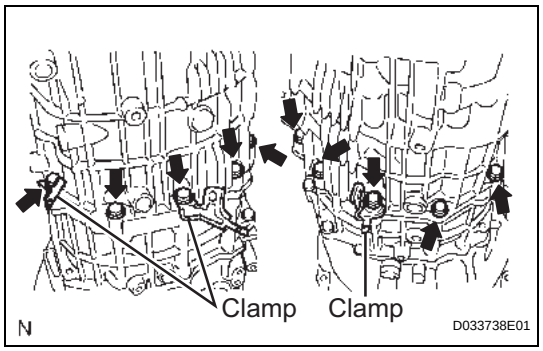


(d) Using SST, remove the nut from the output shaft.
SST 09922-10010

(e) Remove the belt and wooden block from the transmission.

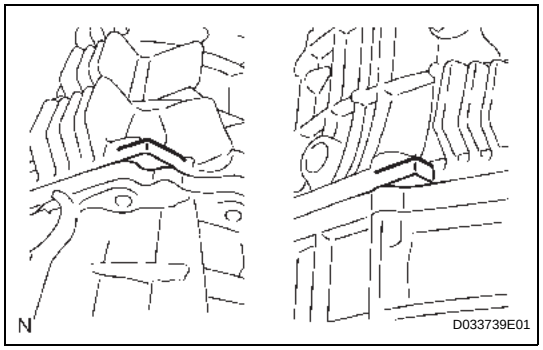


(f) Remove the taper roller bearing No. 2 and spacer.

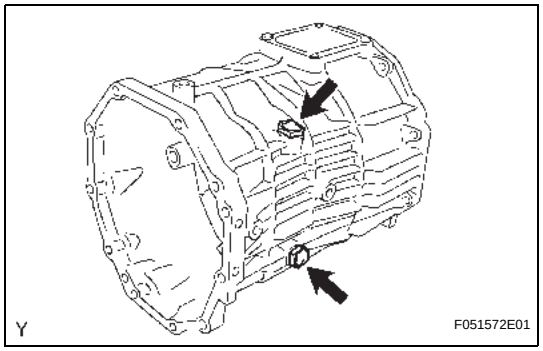


9. REMOVE TRANSMISSION REAR CASE

(a) Remove the 10 bolts and 3 clamps.

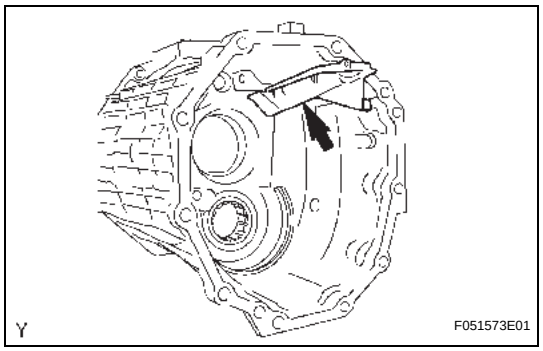


(b) Using a plastic hammer, carefully tap out the rear case.



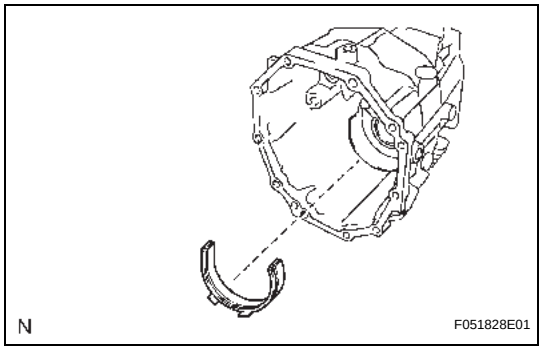
10. REMOVE MANUAL TRANSMISSION FILLER PLUG

(a) Remove the 2 transmission filler plugs and 2 gaskets from the transmission rear case.



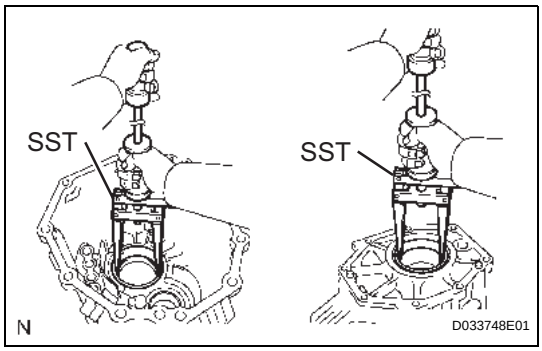
11. REMOVE EXTENSION HOUSING OIL RECEIVER PIPE

(a) Remove the extension housing oil receiver pipe from the transmission rear case.



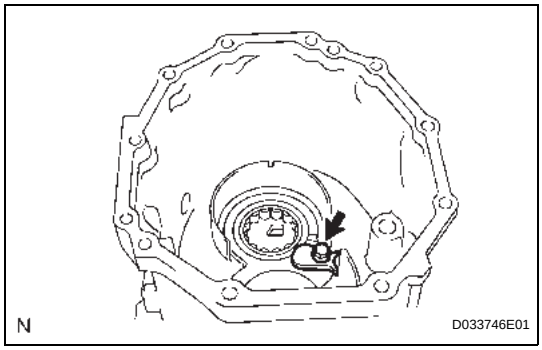
12. REMOVE OIL SEPARATOR PACKING SEAL

(a) Remove the oil separator packing seal from the transmission rear case.



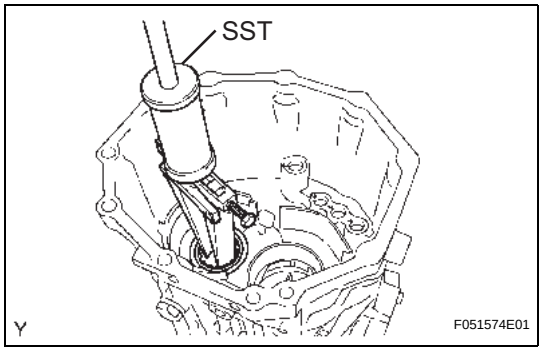
13. REMOVE OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST, remove the 2 bearing outer races.
SST 09308-00010

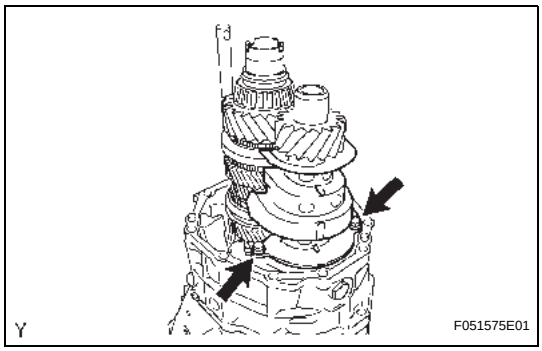


14. REMOVE COUNTER GEAR REAR RADIAL BALL BEARING

(a) Remove the bolt, then remove the bearing lock plate.

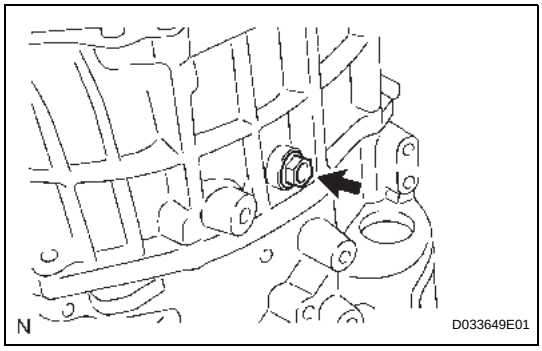


(b) Using SST, remove the counter gear rear radial ball bearing from the transmission rear case.
SST 09308-00010



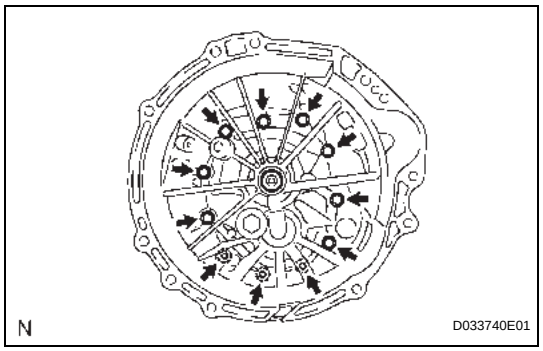
15. REMOVE TRANSMISSION OIL SEPARATOR

(a) Remove the 2 bolts, then remove the oil separator.



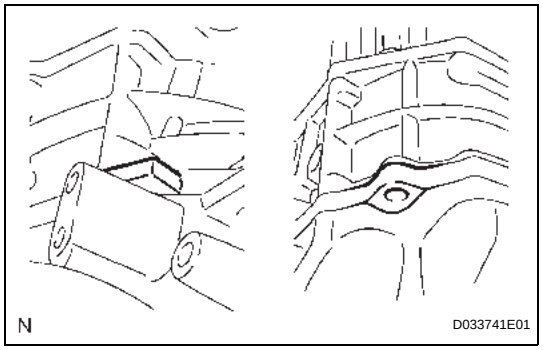
16. REMOVE REVERSE IDLER GEAR SHAFT BOLT

(a) Remove the reverse idler gear shaft bolt from the transmission middle case.

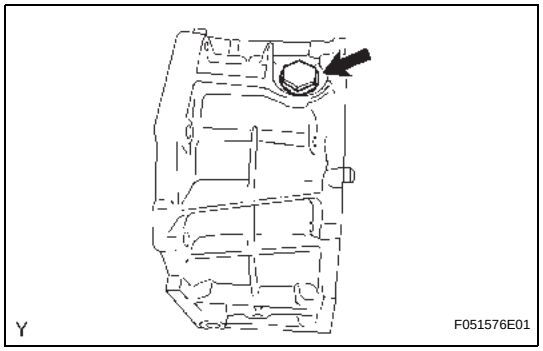


17. REMOVE TRANSMISSION MIDDLE CASE

(a) Remove the 11 bolts, then remove the transmission middle case.

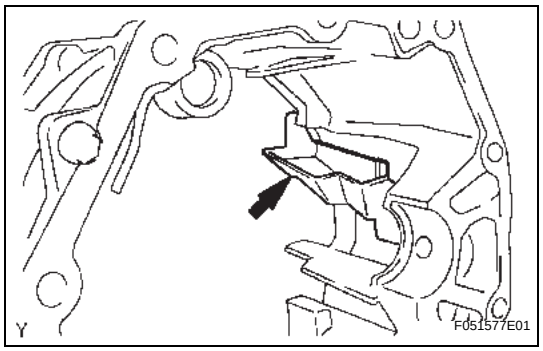


(b) Using a plastic hammer, carefully tap out the middle case.



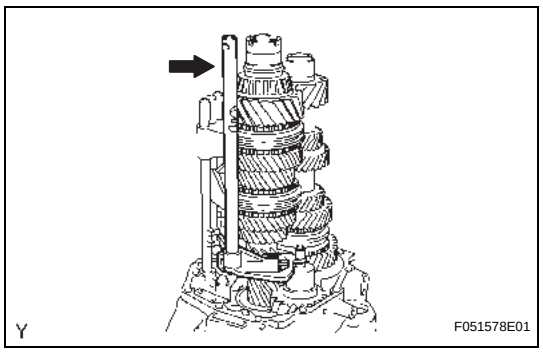
18. REMOVE DRAIN PLUG SUB-ASSEMBLY

(a) Remove the drain plug and gasket from the transmission middle case.



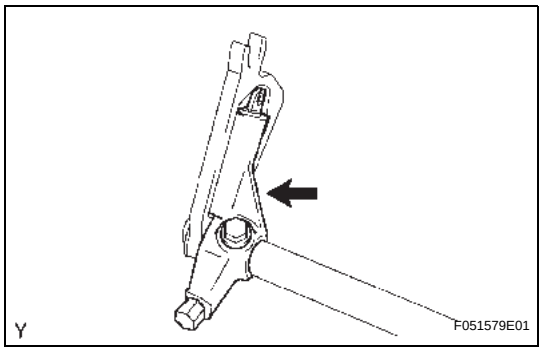
19. REMOVE NO. 2 OIL RECEIVER PIPE

(a) Remove the oil receiver pipe No. 2 from the transmission middle case.



20. REMOVE SHIFT AND SELECT LEVER SHAFT

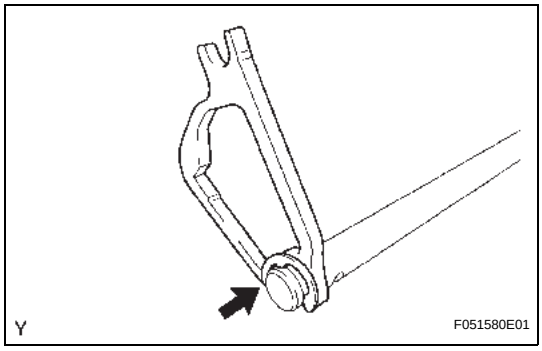
(a) Remove the shift and select lever shaft from the reverse gear shaft.



21. REMOVE SHIFT AND SELECT LEVER

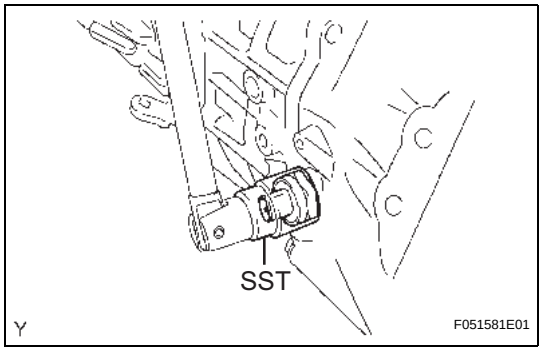
(a) Remove the bolt, then remove the shift and select lever.

(b) Remove the lock ball pin and spring from the shift and select lever.



22. REMOVE SHIFT AND SELECT LEVER CAM

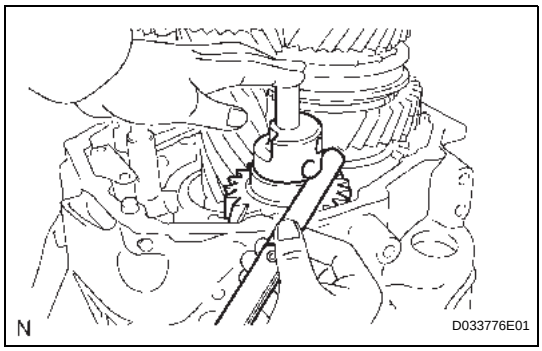
(a) Using a screwdriver, remove the E ring and the shift and select lever cam from the shift and select lever shaft.



23. REMOVE BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, remove the back-up light switch and gasket.

SST 09817-16011

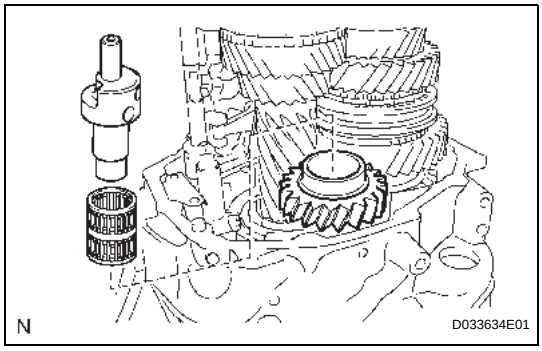


24. INSPECT REVERSE IDLER GEAR THRUST CLEARANCE

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

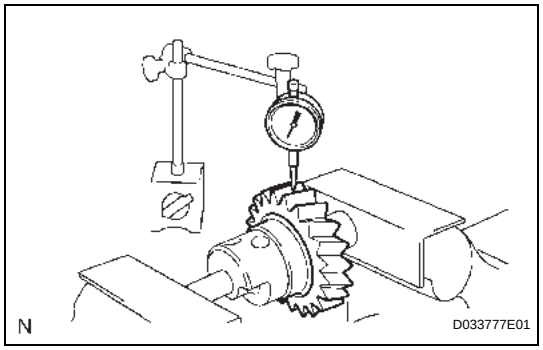
Standard clearance:
0.10 to 0.55 mm (0.0039 to 0.0217 in.)
Maximum clearance:
0.55 to (0.0217 in.)

If the clearance is exceeds the maximum, replace the reverse idler gear shaft.



25. REMOVE REVERSE IDLER GEAR

(a) Remove the reverse idle gear shaft, needle roller bearing and reverse idler gear.

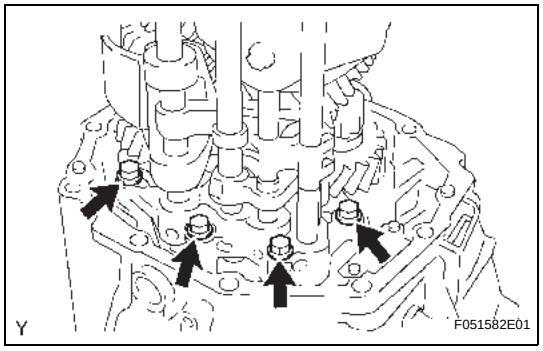


26. INSPECT REVERSE IDLER GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance.

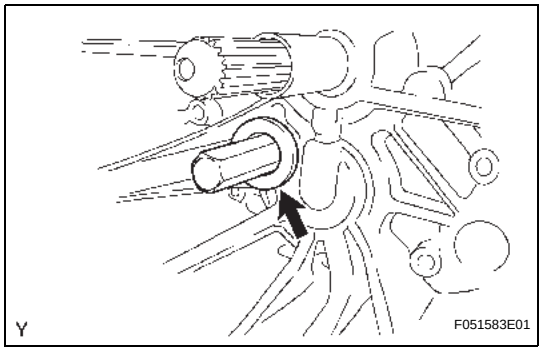
Standard clearance:
0.015 to 0.050 mm (0.0006 to 0.0020 in.)
Maximum clearance:
0.050 mm (0.0020 in.)

If the clearance exceeds the maximum, replace the needle roller bearing.

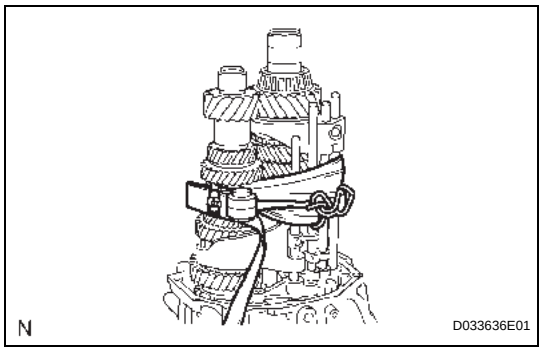


27. REMOVE TRANSMISSION FRONT CASE

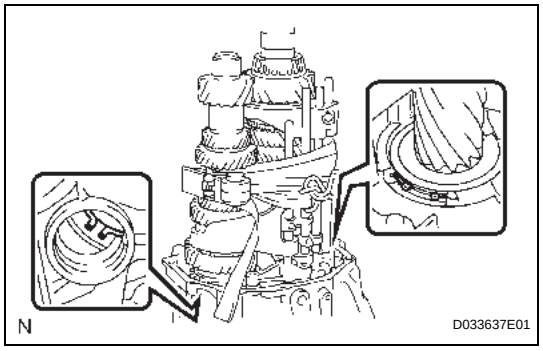
(a) Remove the 4 bolts from the interlock bracket.



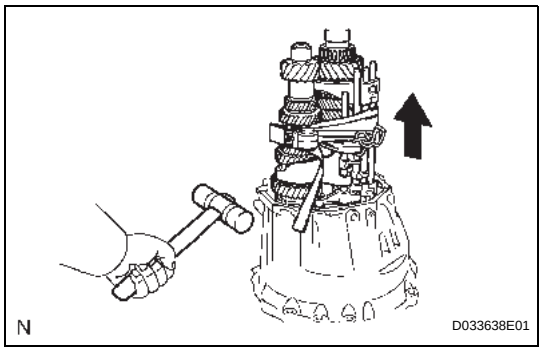
(b) Using a hexagon wrench (24 mm), remove the plug.



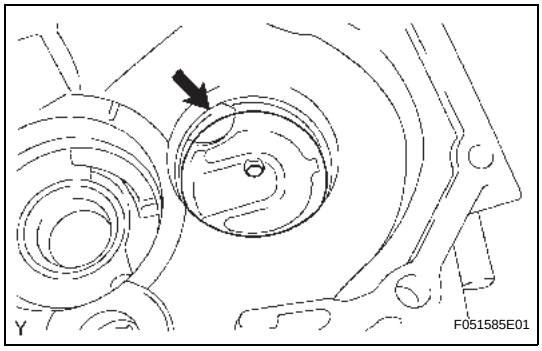
(c) Tie the input shaft, counter gear and control assembly with a rope or string.



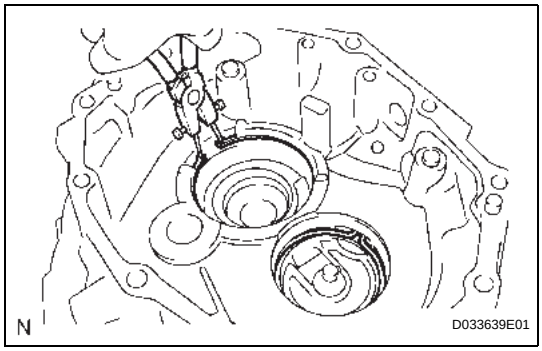
(d) Expand the 2 snap rings, and lift up the output shaft, input shaft, counter gear and control assembly.



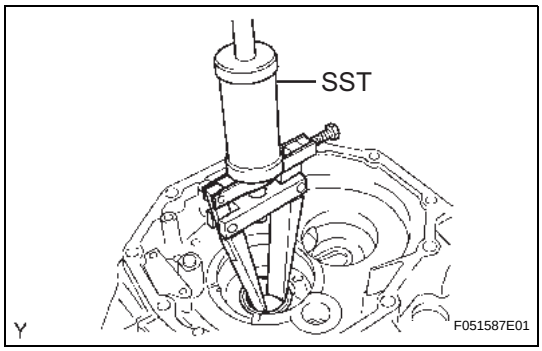
(e) Remove the output shaft, input shaft, counter gear shaft and control assembly while gently tapping the clutch housing with a plastic hammer.
NOTICE:
Take care not to subject the output shaft, input shaft, counter gear shaft and control assembly to any impact. This could cause the ball and spring to come out.
(f) Separate the output shaft, input shaft, counter gear shaft and control assembly.



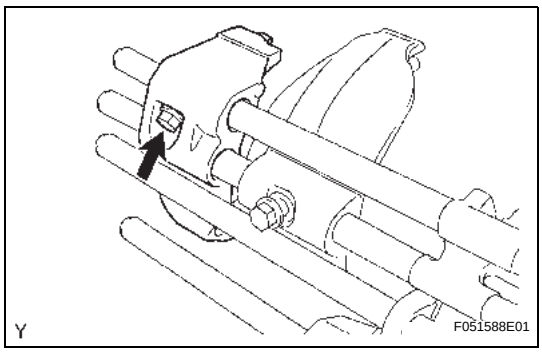
28. REMOVE NO. 1 OIL RECEIVER PIPE
(a) Remove the oil receiver pipe No. 1 from the transmission front case.



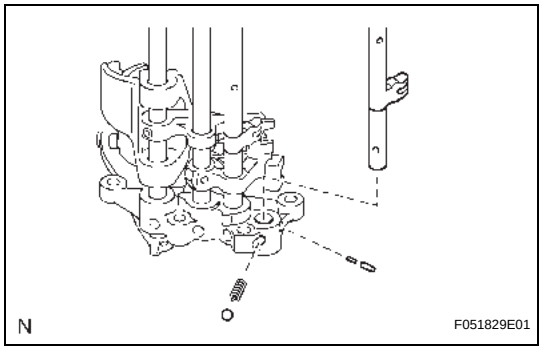
29. REMOVE FRONT BEARING SHAFT SNAP RING
(a) Using a snap ring plier, remove the 2 snap rings.



30. REMOVE TRANSMISSION CASE OIL SEAL
(a) Using SST, remove the transmission case oil seal from the transmission front case.
SST 09308-00010

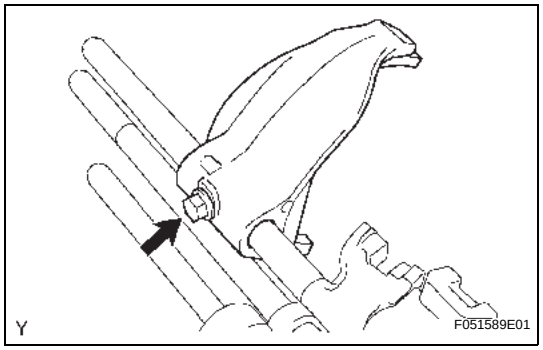


31. REMOVE NO. 3 GEAR SHIFT FORK
(a) Remove the bolt, then remove the gear shift fork No. 3.



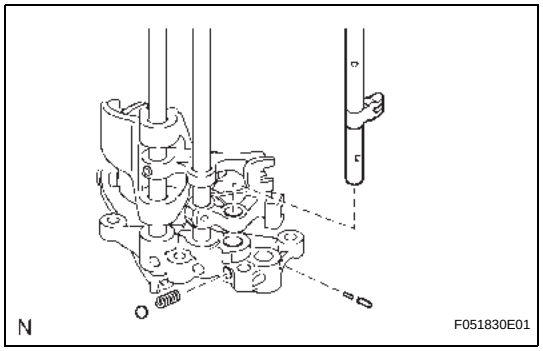
32. REMOVE NO. 3 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 3, boll, spring, interlock pin No. 2 and interlock pin No. 3.



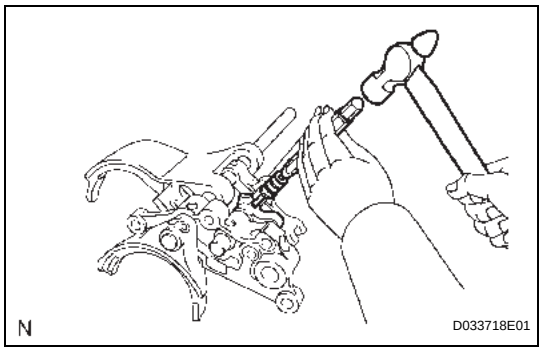
33. REMOVE NO. 2 GEAR SHIFT FORK

(a) Remove the bolt, then remove the gear shift fork No. 2.



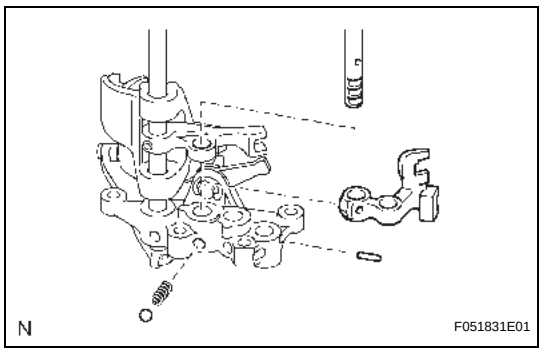
34. REMOVE NO. 2 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 2, ball, spring, interlock pin No. 2 and interlock pin No. 3.



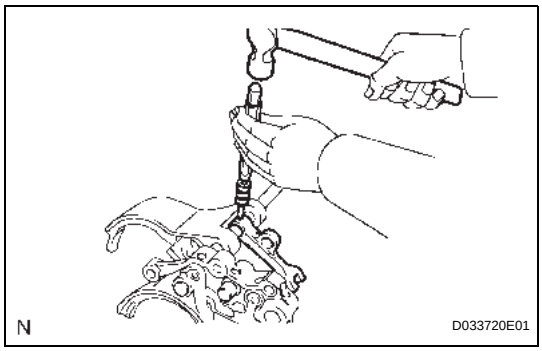
35. REMOVE NO. 1 GEAR SHIFT HEAD

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



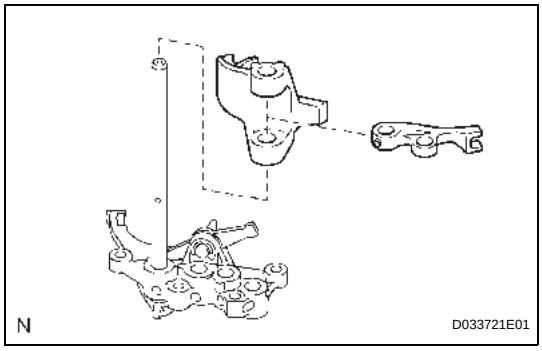
36. REMOVE NO. 1 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 1, ball, spring, shift head No. 1 and interlock pin No. 1.

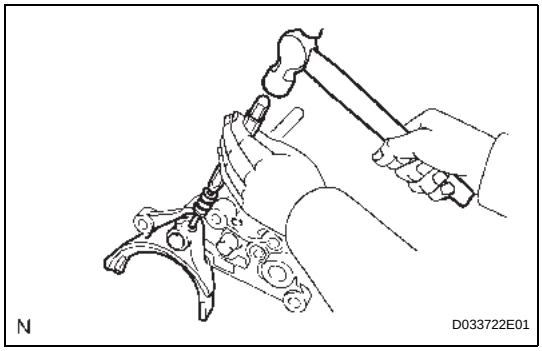


37. REMOVE NO. 1 GEAR SHIFT FORK

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



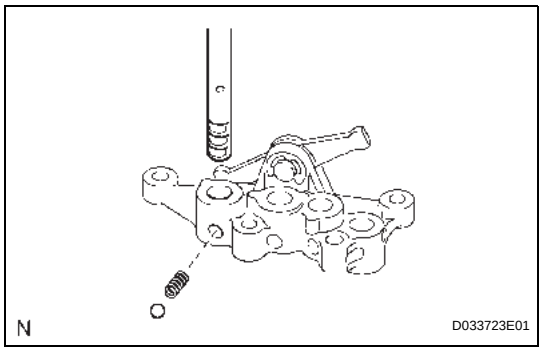
(b) Remove the shift head No. 2 and shift fork No. 1.



38. REMOVE NO. 4 GEAR SHIFT FORK

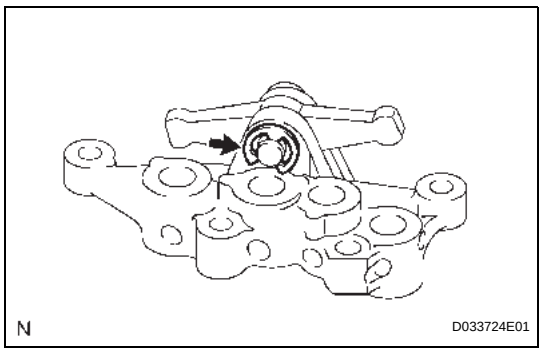
(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.

(b) Remove the shift fork No. 4.



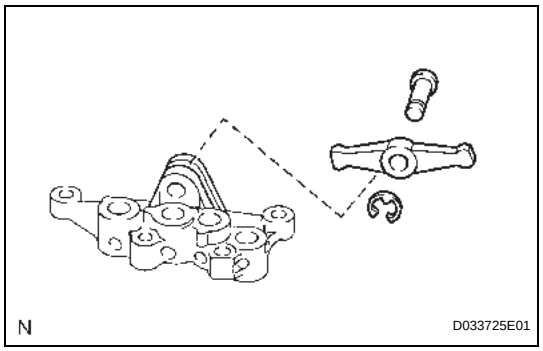
39. REMOVE NO. 4 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 4, ball and spring.



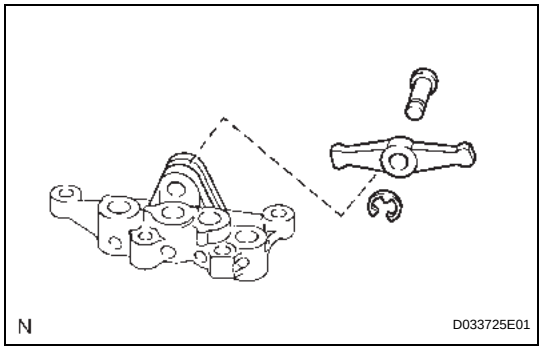
40. REMOVE 1ST AND REVERSE SHIFT ARM

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



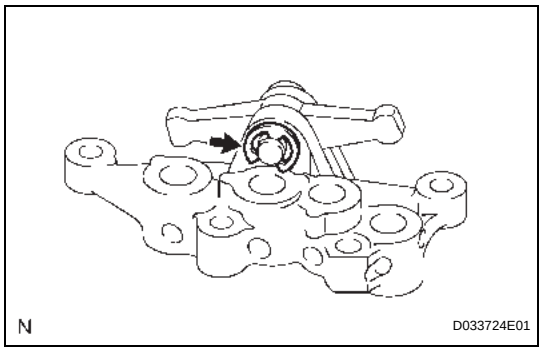
(b) Remove the shift arm pivot and shift arm.

REASSEMBLY

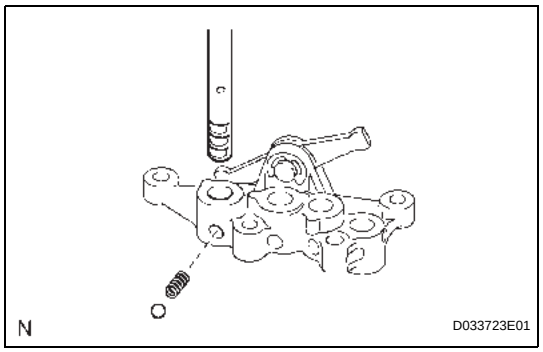


1. INSTALL 1ST AND REVERSE SHIFT ARM

(a) Install the shift arm and shift arm pivot onto the interlock bracket.



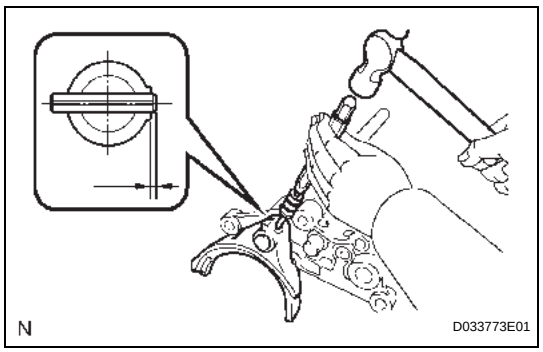
(b) Install a new E-ring onto the shift arm pivot.



2. INSTALL NO. 4 GEAR SHIFT FORK SHAFT

(a) Install the spring and ball onto the interlock bracket.

(b) Install the shift fork shaft No. 4.



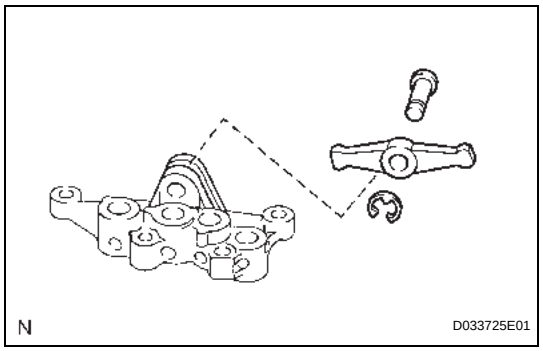
3. INSTALL NO. 4 GEAR SHIFT FORK

(a) Install the shift fork No. 4 onto the shift fork shaft No. 4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft fork No. 4 and shift fork shaft No. 4.

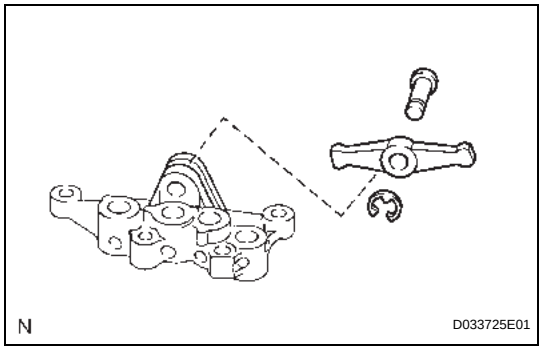
Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



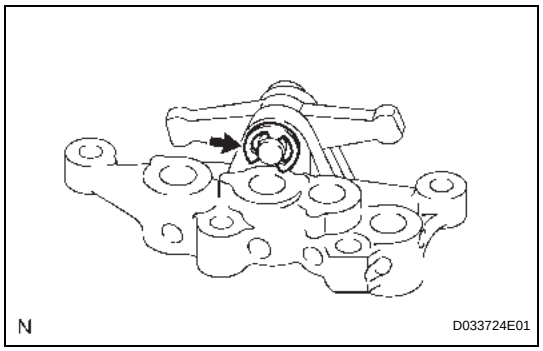
(b) Remove the shift arm pivot and shift arm.

REASSEMBLY

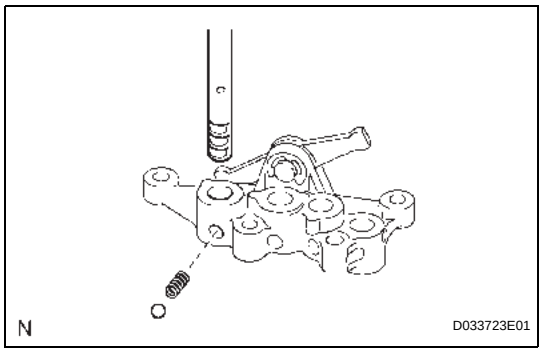


1. INSTALL 1ST AND REVERSE SHIFT ARM

(a) Install the shift arm and shift arm pivot onto the interlock bracket.



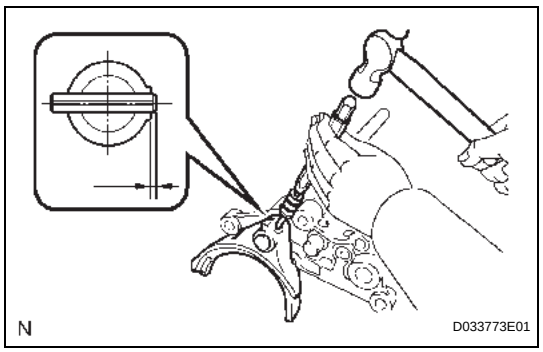
(b) Install a new E-ring onto the shift arm pivot.



2. INSTALL NO. 4 GEAR SHIFT FORK SHAFT

(a) Install the spring and ball onto the interlock bracket.

(b) Install the shift fork shaft No. 4.



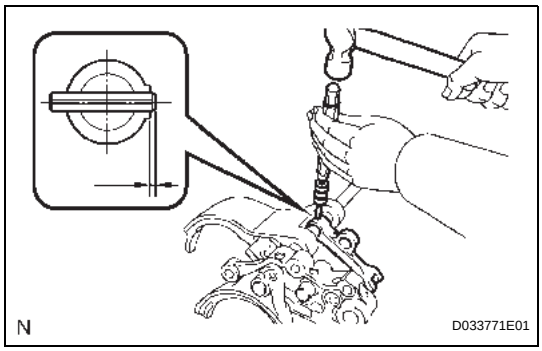
3. INSTALL NO. 4 GEAR SHIFT FORK

(a) Install the shift fork No. 4 onto the shift fork shaft No. 4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft fork No. 4 and shift fork shaft No. 4.

Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



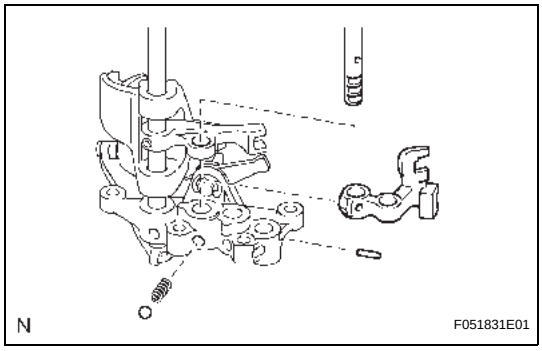
4. INSTALL NO. 1 GEAR SHIFT FORK

(a) Install the shift fork No. 1 and shift head No. 2 onto the shift fork shaft No. 4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft head No. 2 and shift fork shaft No. 4.

Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



MT

5. INSTALL NO. 1 GEAR SHIFT FORK SHAFT

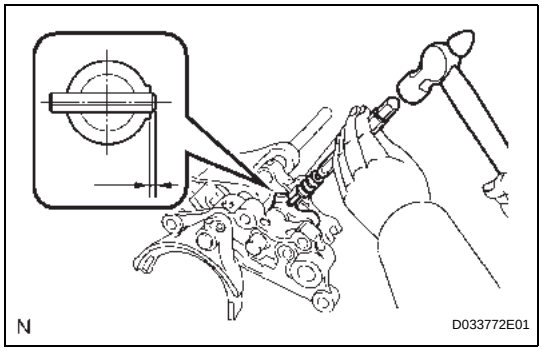
(a) Apply MP grease to the interlock pin No. 1 and install it onto the interlock bracket.

(b) Install the spring and ball onto the interlock bracket.

(c) Install the shift fork shaft No. 1 onto the interlock bracket.

HINT:

Place the shift fork shaft No. 4 in the neutral position.



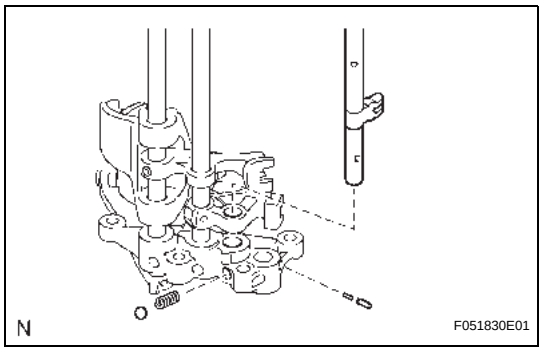
6. INSTALL NO. 1 GEAR SHIFT HEAD

(a) Install the shift head No. 1 into the shift fork shaft No. 1.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft head No. 1 and shift fork shaft No. 1.

Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



7. INSTALL NO. 2 GEAR SHIFT FORK SHAFT

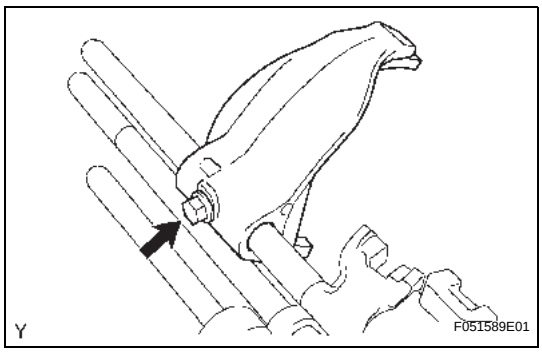
(a) Apply MP grease to the interlock pins No. 2 and No. 3, then install them onto the interlock bracket.

(b) Install the spring and ball the interlock bracket.

(c) Install the shift fork shaft No. 2 onto the interlock bracket.

HINT:

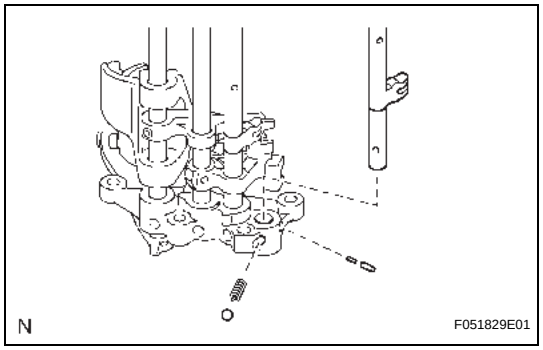
Place the shift fork shafts No. 3 and No. 4 in the neutral position.



8. INSTALL NO. 2 GEAR SHIFT FORK

(a) Install the shift fork No. 2 with the bolt.

Torque: 20 N*m (199 kgf*cm, 14 ft.*lbf)



9. INSTALL NO. 3 GEAR SHIFT FORK SHAFT

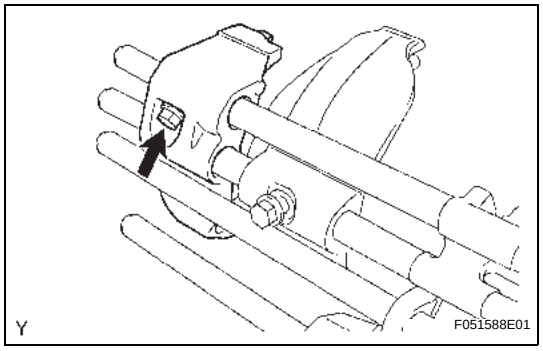
(a) Apply MP grease to the interlock pins No. 2 and No. 3, then install them onto the interlock bracket.

(b) Install the spring and ball onto the interlock bracket.

(c) Install the shift fork shaft No. 3 onto the interlock bracket.

HINT:

Place the shift fork shafts No. 2, No. 1 and No. 4 in the neutral position.

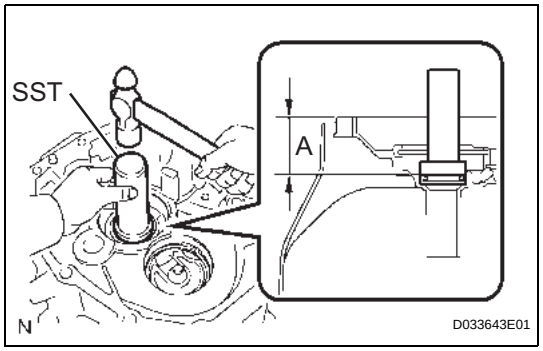


10. INSTALL NO. 3 GEAR SHIFT FORK

(a) Install the shift fork No. 3 with the bolt.

Torque: 20 N*m (199 kgf*cm, 14 ft.*lbf)

MT



11. INSTALL TRANSMISSION CASE OIL SEAL

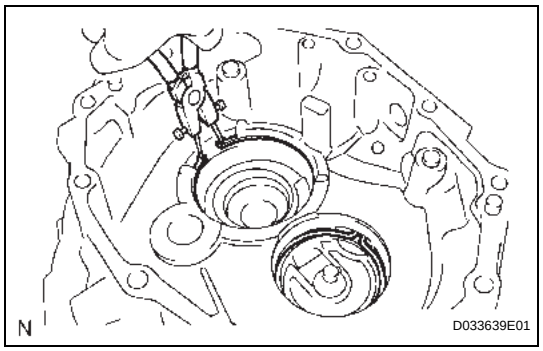
(a) Using SST and a hammer, tap a new oil seal into the front case in accordance with the dimension specified in the illustration.

SST 09950-70010 (09951-07100), 09950-60010 (09951-00470)

Dimension A:

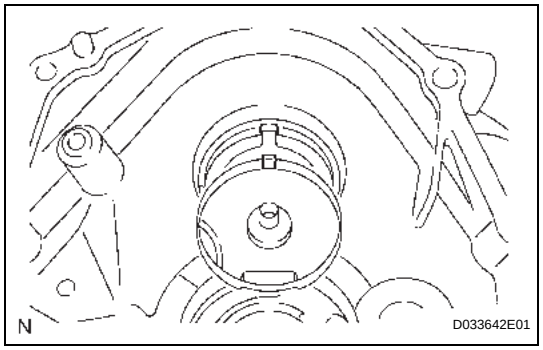
60.0 to 60.8 mm (2.362 to 2.394 in.)

(b) Apply gear oil to the lip of the oil seal.



12. INSTALL FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring plier, install the 2 snap rings.

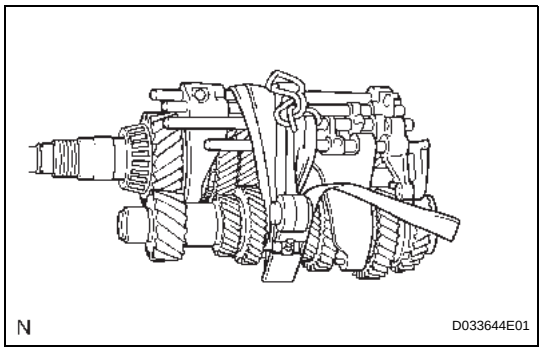


13. INSTALL NO. 1 OIL RECEIVER PIPE

(a) Install the oil receiver pipe No. 1 onto the transmission front case.

HINT:

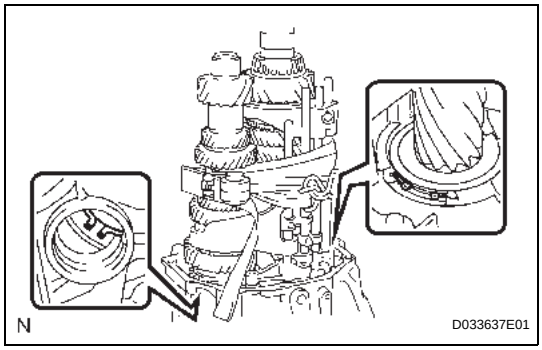
Align the convex portion of the oil receiver pipe with the cutout of the front case and install the oil receiver pipe onto the clutch housing.



14. INSTALL TRANSMISSION FRONT CASE

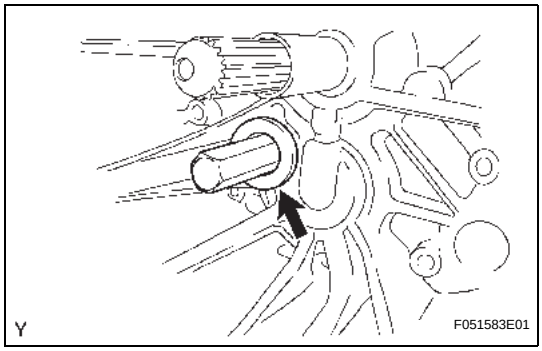
(a) Apply gear oil to all sliding and rotating parts.

(b) Provisionally install the output shaft, input shaft, counter gear shaft and control assembly, and tie them with a rope or string.

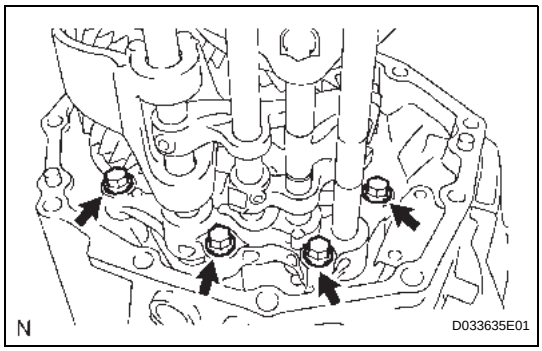


(c) Using a snap ring expander, extend the 2 snap rings and install the output shaft, input shaft, counter gear shaft and control assembly.
HINT:
Make sure that the snap ring is fitted into the grooves of the input shaft and front bearing of the counter gear shaft.

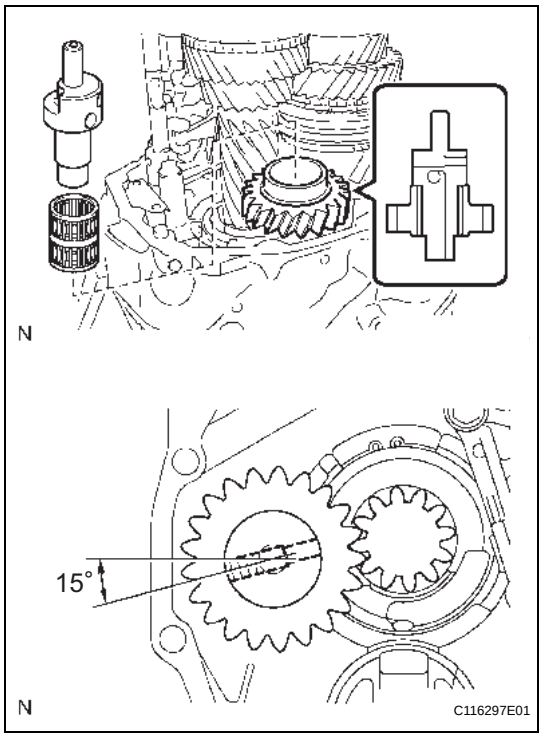
(d) Untie the output shaft, input shaft, counter gear shaft and control assembly.



(e) Using a hexagonal wrench (24 mm), install the plug onto the front case.
Torque: 39 N*m (400 kgf*cm, 29 ft.*lbf)

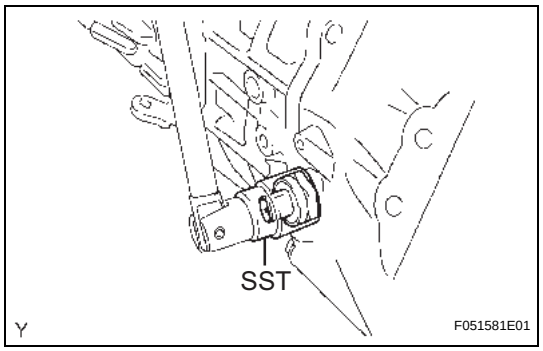


(f) Install the 4 bolts onto the interlock bracket.
Torque: 21 N*m (214 kgf*cm, 15 ft.*lbf)



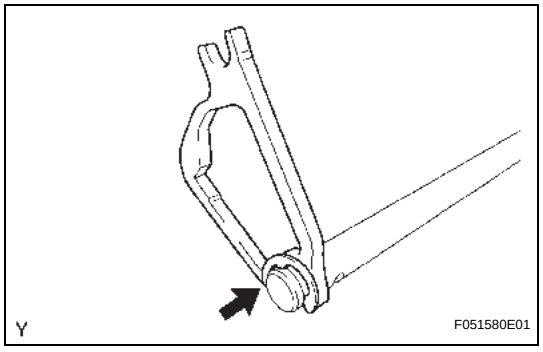
15. INSTALL REVERSE IDLER GEAR

(a) Install the reverse idler gear, reverse idler gear bearing and reverse idler gear shaft.
HINT:
Make sure that the reverse idler gear faces the correct direction as shown in the illustration.
NOTICE:
Make sure that the tapped hole portion of the reverse idler shaft is in the position shown in the illustration.



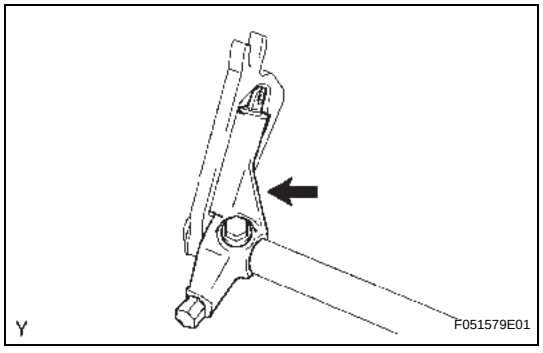
16. INSTALL BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, install the back-up light switch with a new gasket onto the transmission front case.
SST 09817-16011
Torque: 44 N*m (449 kgf*cm, 33 ft.*lbf)



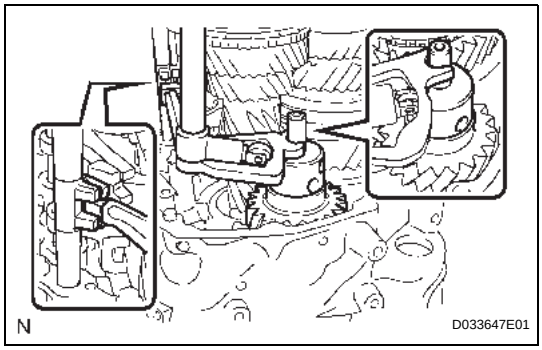
17. INSTALL SHIFT AND SELECT LEVER CAM

(a) Install the shift and select lever cam onto the shaft and install a new E-ring.



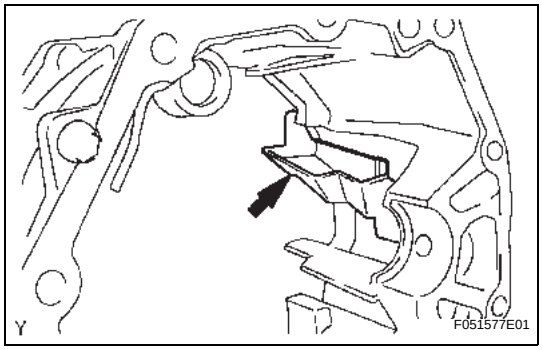
18. INSTALL SHIFT AND SELECT LEVER

(a) Install the lock ball pin and spring onto the shift and select lever.
(b) Install the shift and select lever onto the shift and select lever cam and shaft.
(c) Install the bolt onto the shift and select lever.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



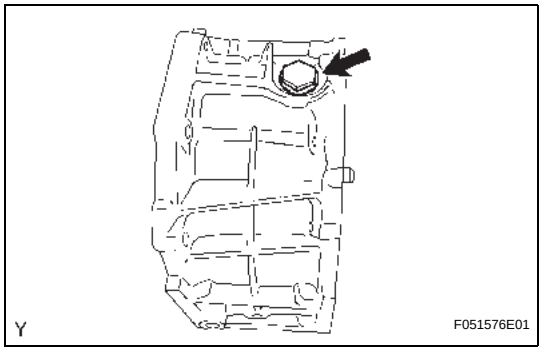
19. INSTALL SHIFT AND SELECT LEVER SHAFT

(a) Align the groove of the shift and select cam with the reverse idler shaft, and the claw with the groove of the control assembly, and install them.



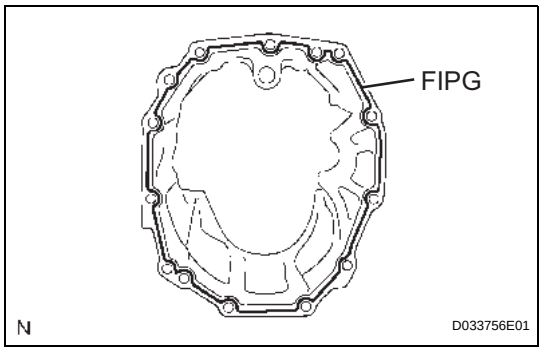
20. INSTALL NO. 2 OIL RECEIVER PIPE

(a) Install the oil receiver pipe No. 2 into the transmission middle case.



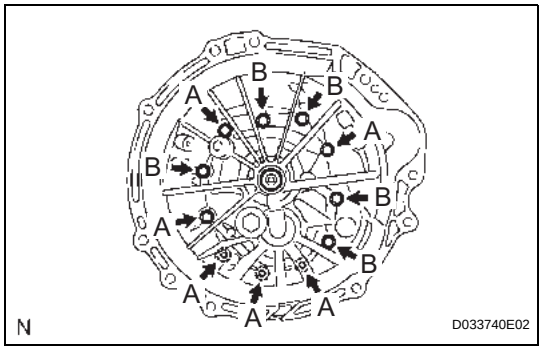
21. INSTALL DRAIN PLUG SUB-ASSEMBLY

(a) Install the drain plug with a new gasket onto the transmission middle case.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

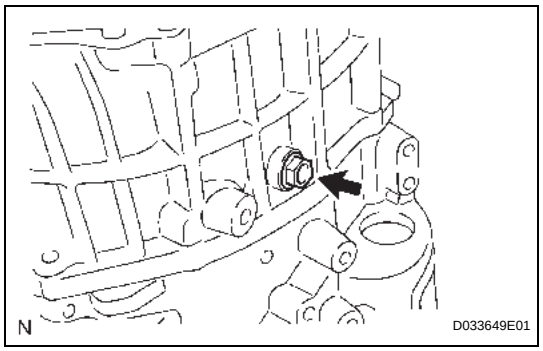


22. INSTALL TRANSMISSION MIDDLE CASE

(a) Apply FIPG to the transmission middle case, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

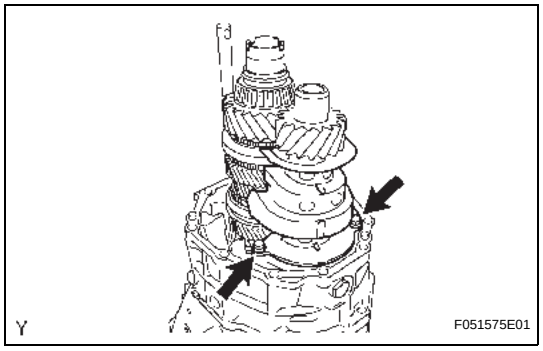


(b) Install the transmission middle case with the 11 bolts onto the transmission front case.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
Bolt length:
Bolt A:
40 mm (1.57 in.)
Bolt B:
80 mm (3.15 in.)



23. INSTALL REVERSE IDLER GEAR SHAFT BOLT

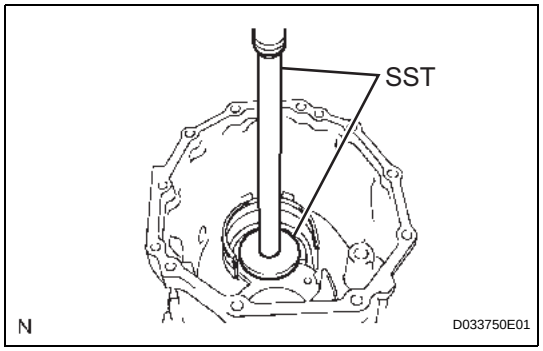
(a) Install a new gasket and the reverse idler gear shaft bolt onto the reverse idler gear shaft.
Torque: 28 N*m (286 kgf*cm, 21 ft.*lbf)



24. INSTALL TRANSMISSION OIL SEPARATOR

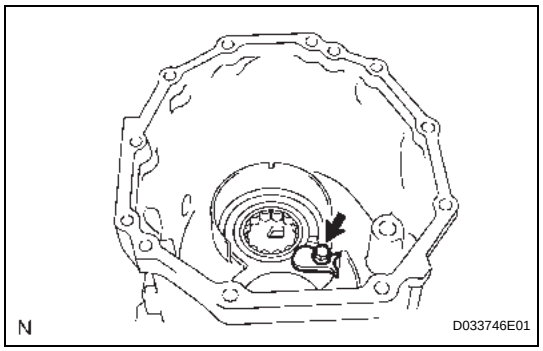
(a) Install the transmission oil separator with the 2 bolts.
Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)

MT

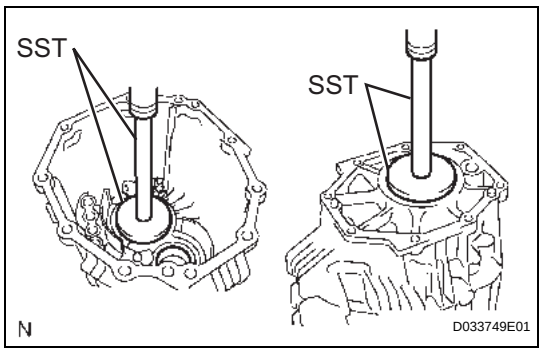


25. INSTALL COUNTER GEAR REAR RADIAL BALL BEARING

(a) Coat a new counter gear rear radial ball bearing with gear oil, and using SST and a press, install it into the transmission rear case.
SST 09950-70010 (09951-07360), 09950-60010 (09951-00650)

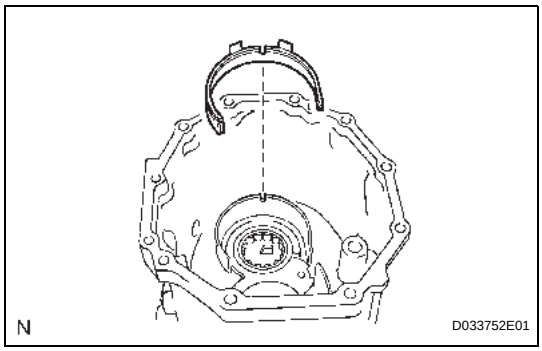


(b) Install the bearing lock plate with the bolt.
Torque: 11 N*m (115 kgf*cm, 8.3 ft.*lbf)



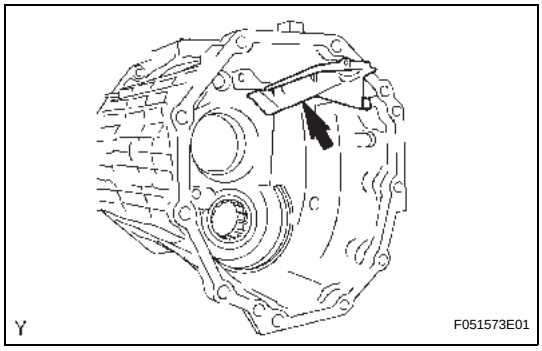
26. INSTALL OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST and a press, press in 2 new bearing outer races.
SST 09950-70010 (09951-07100, 09951-07360), 09950-60020 (09951-00790)



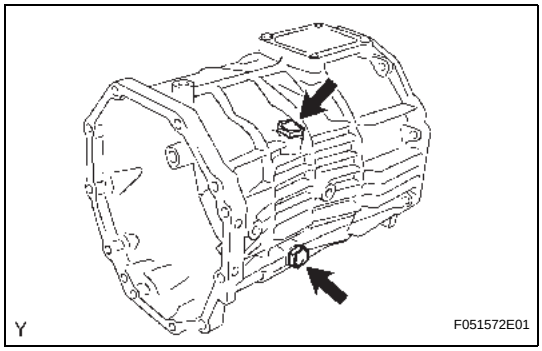
27. INSTALL OIL SEPARATOR PACKING SEAL

(a) Install the oil separator packing seal onto the transmission rear case.
HINT:
Insert the protruding part of the oil separator packing seal into the groove on the transmission rear case.



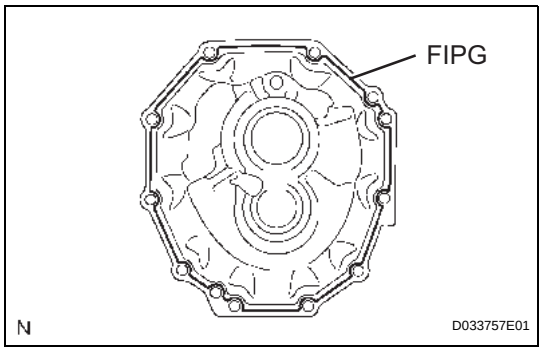
28. INSTALL EXTENSION HOUSING OIL RECEIVER PIPE

(a) Install the extension housing oil receiver pipe onto the transmission rear case.



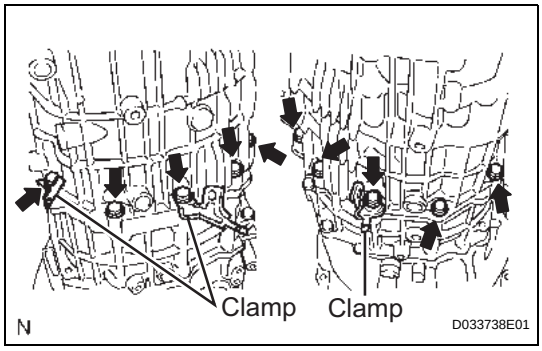
29. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the 2 transmission filler plugs with 2 new gaskets onto the transmission rear case.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

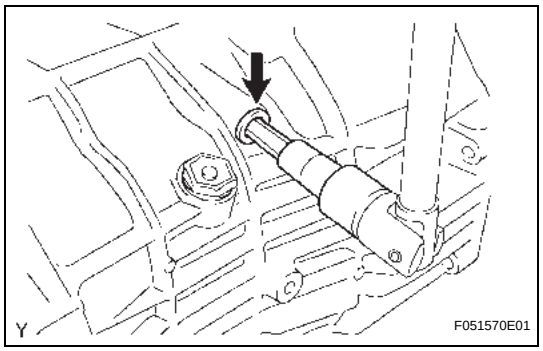


30. INSTALL TRANSMISSION REAR CASE

(a) Apply FIPG to the transmission rear case, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.



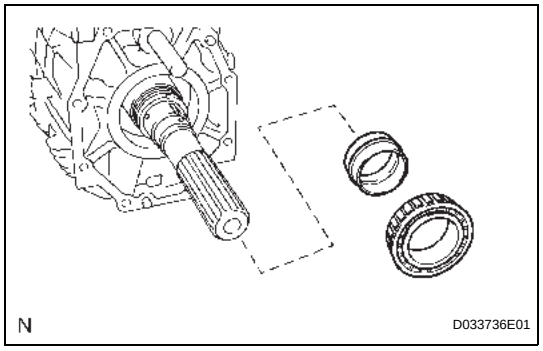
(b) Install the transmission rear case with the 10 bolts and 3 brackets onto the transmission middle case.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)



31. INSTALL SHIFT DETENT BALL PLUG

(a) Install the ball and compression spring onto the transmission rear case.

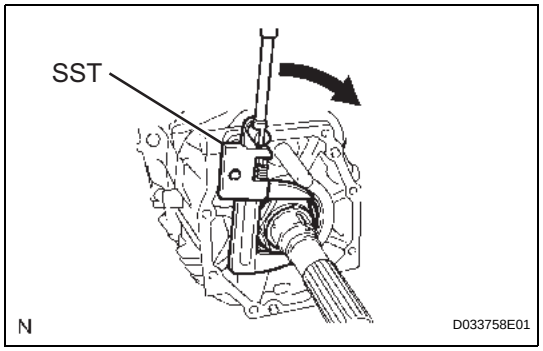
(b) Install a new shift detent ball plug, and install it onto the transmission rear case.
Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)



32. INSTALL OUTPUT SHAFT ADJUST NUT

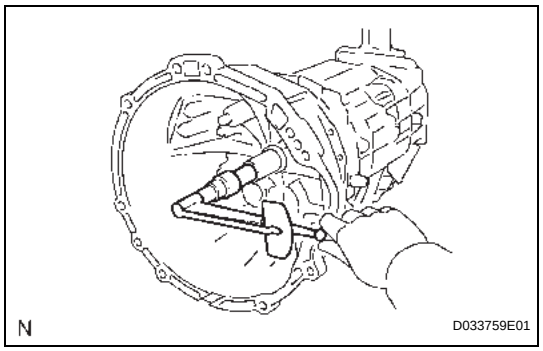
(a) Using a belt and wooden block, fasten the transmission to the workbench.

(b) Install a new spacer and output shaft taper roller bearing No. 2.



(c) Using SST, provisionally tighten a new nut until there is no slack in the output shaft.
SST 09922-10010
HINT:
No preload should be applied to the nut.

(d) Fit the bearing into the output shaft by turning the output shaft 15 times.



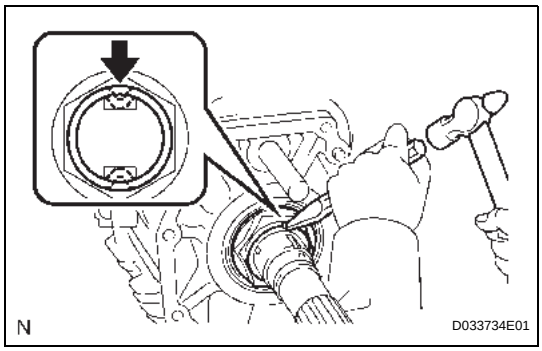
(e) Place the gearshift into 5th gear and check the initial torque of the input shaft.

(f) Using SST, tighten the nut.
SST 09922-10010

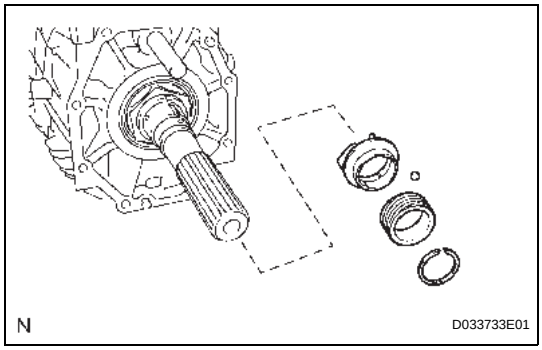
(g) Place the gearshift into 5th gear and check the initial torque of the input shaft.

(h) Confirm that the difference between (d) and (f) is within the specified values.
Preload (at starting):
0.45 to 1.35 N*m
(4.59 to 13.77 kgf*cm, 3.98 to 11.95 in.*lbf)
If the result is not as specified, tighten and adjust the output shaft adjusting nut.
NOTICE:
If the output shaft adjusting nut is loose or removed due to a large preload, always replace the spacer with a new one.

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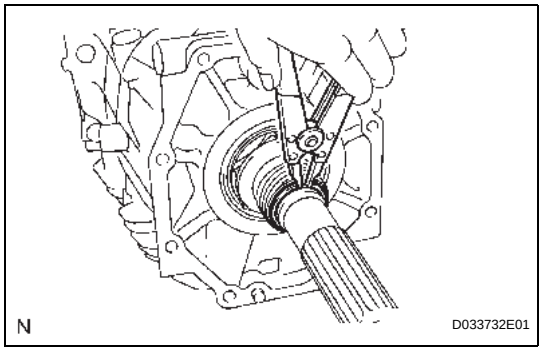


(i) Using a chisel and hammer, caulk the output shaft adjust nut.

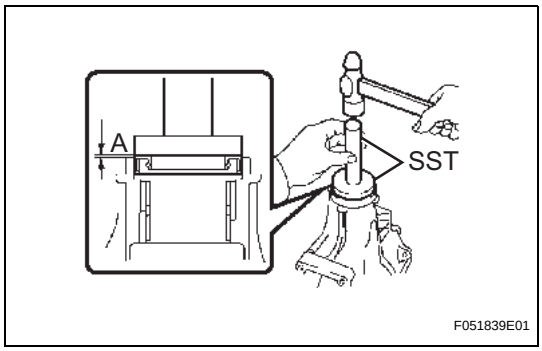


33. INSTALL SPEEDOMETER DRIVE GEAR

(a) Install the oil receiver pipe, ball and speedometer drive gear.



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



34. INSTALL MANUAL TRANSMISSION EXTENSION HOUSING OIL SEAL

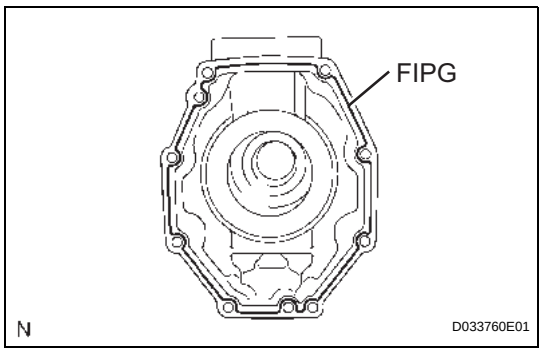
(a) Using SST and a hammer, tap a new oil seal into the extension housing in accordance with the dimension specified in the illustration.

SST 09950-60020 (09951-00640), 09950-70010 (09951-07100)

Dimension A:

-0.5 to 0.5 mm (-0.197 to 0.197 in.)

(b) Apply gear oil to the lip of the oil seal.



35. INSTALL EXTENSION HOUSING SUB-ASSEMBLY

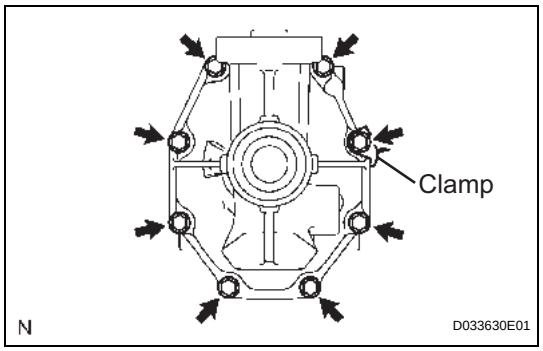
(a) Apply FIPG to the extension housing, as shown in the illustration.

FIPG:

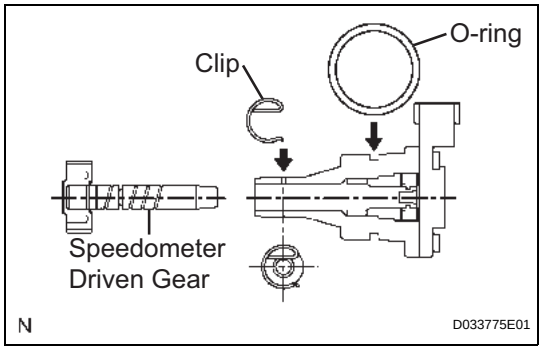
Part No. 08826-00090, THREE BOND 1281 or equivalent

NOTICE:

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



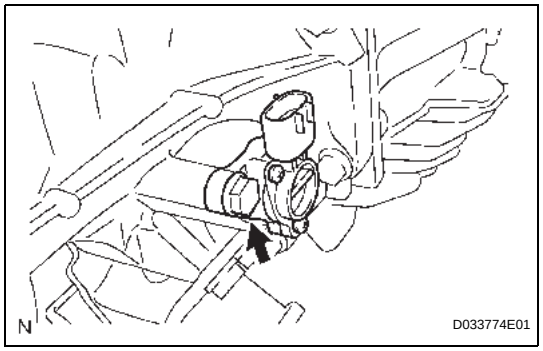
(b) Install the extension housing with the 8 bolts.
Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)



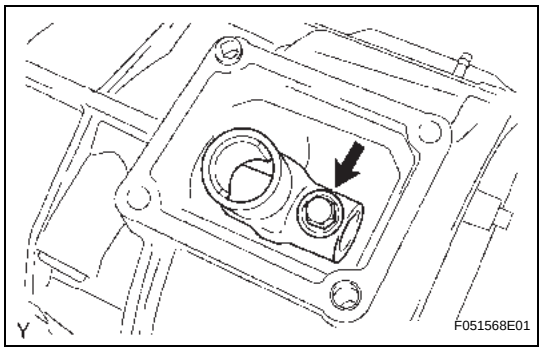
36. INSTALL SPEEDOMETER SENSOR

(a) Install a new O-ring onto the speedometer sensor.

(b) Install the speedometer driven gear into the speedometer sensor with the clip.
NOTICE:
Be sure to install the clip in the direction shown in the illustration.

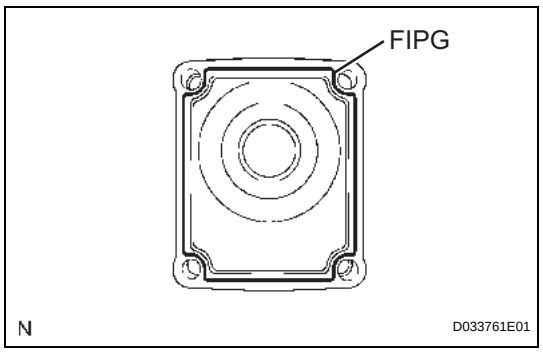


(c) Install the speedometer driven gear with the bolt.
Torque: 13 N*m (133 kgf*cm, 10 ft.*lbf)



37. INSTALL SHIFT LEVER HOUSING

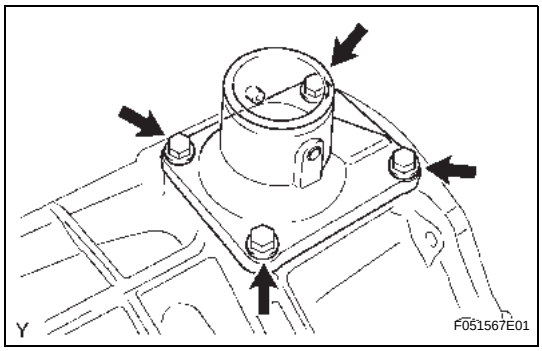
(a) Install the shift lever housing with the bolt.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



38. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Apply FIPG to the floor shift control shift lever retainer, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

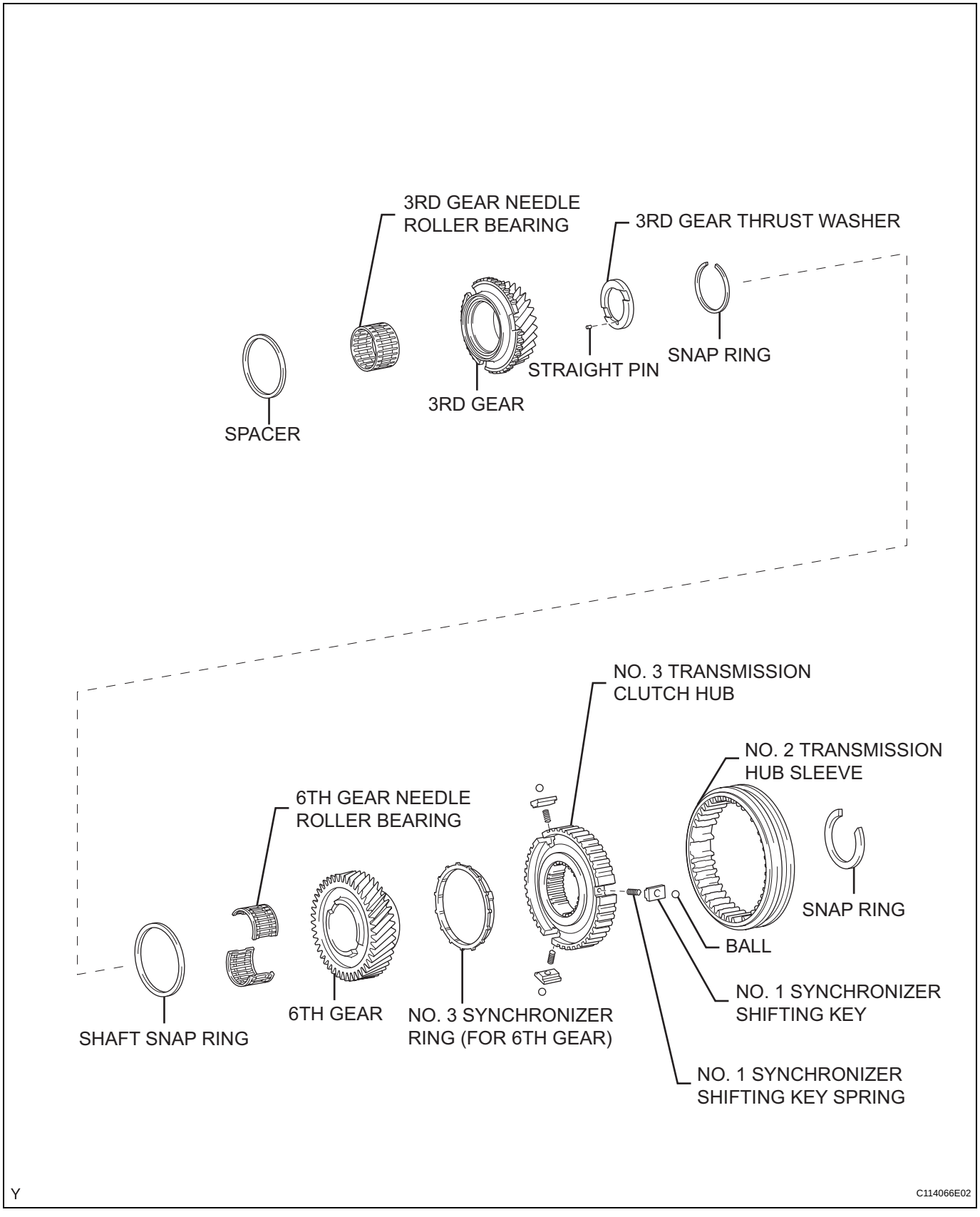
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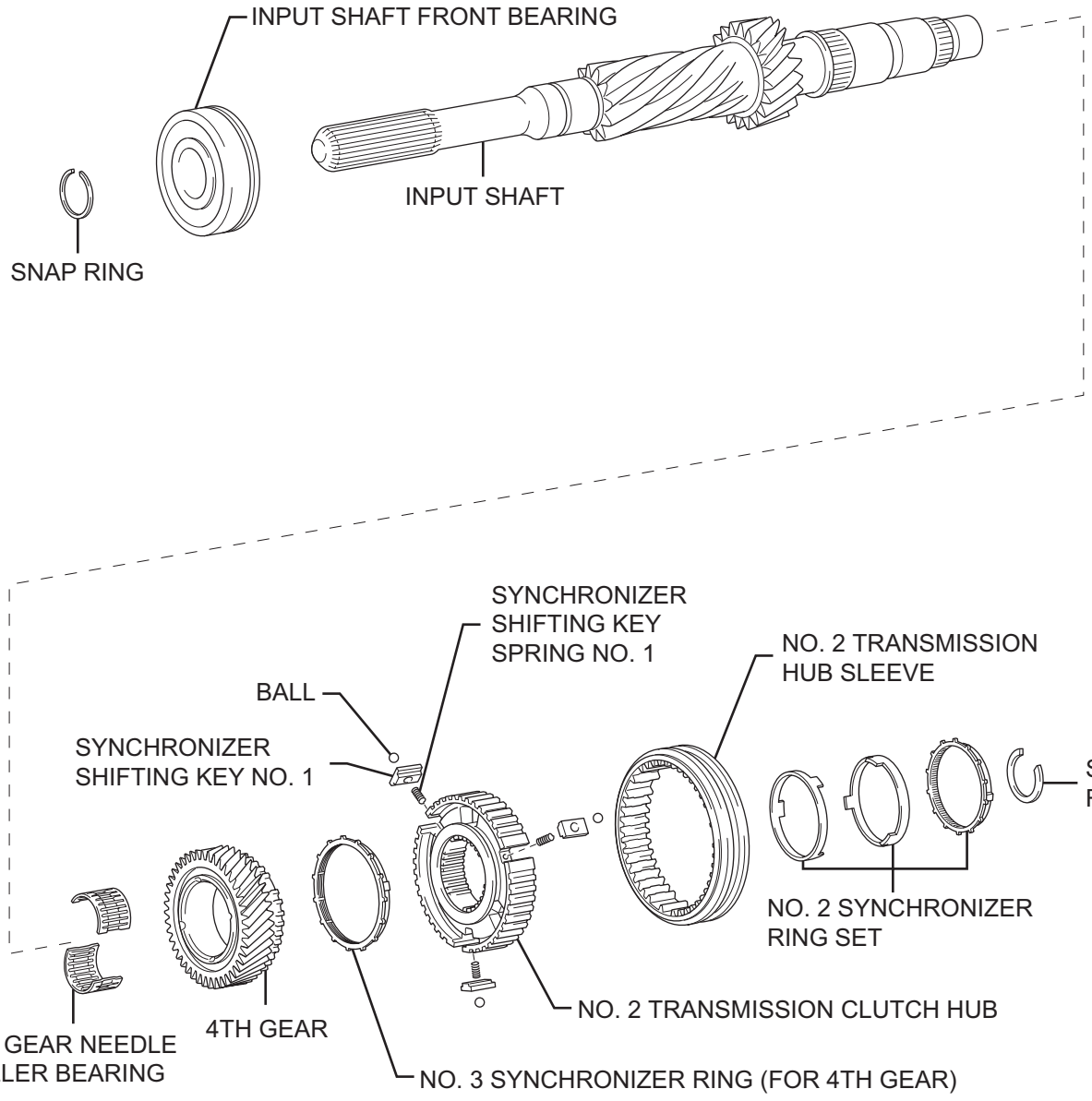
(b) Install the floor shift control shift lever retainer with the 4 bolts.
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)

INPUT SHAFT

COMPONENTS

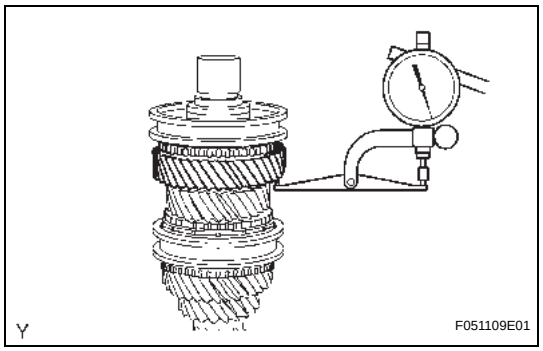


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DISASSEMBLY

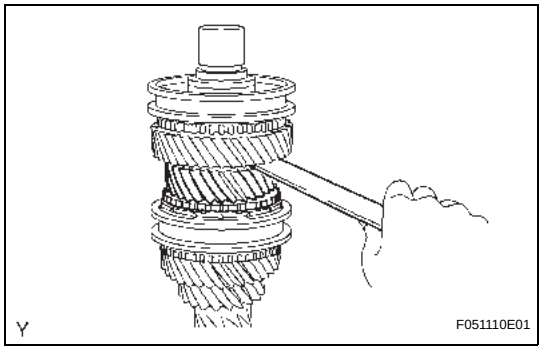
1. INSPECT 6TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 6th gear thrust clearance.

Standard clearance:

0.20 to 0.49 mm (0.0079 to 0.0193 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



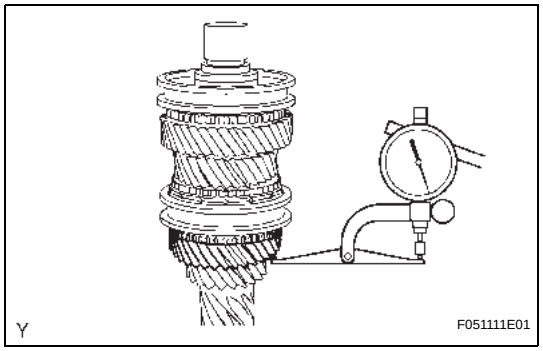
2. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.09 to 0.52 mm (0.0035 to 0.0205 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 2.



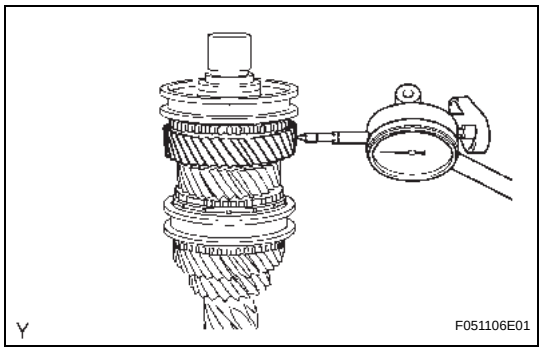
3. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 4th gear thrust clearance.

Standard clearance:

0.12 to 0.38 mm (0.0047 to 0.0150 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



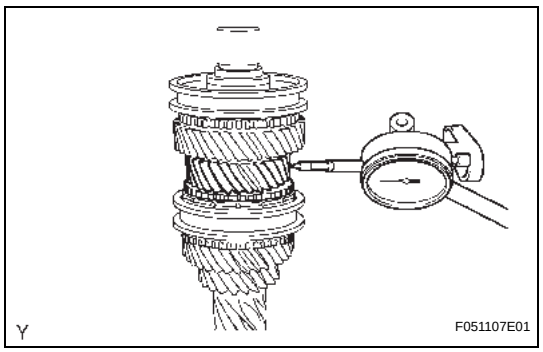
4. INSPECT 6TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 6th gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



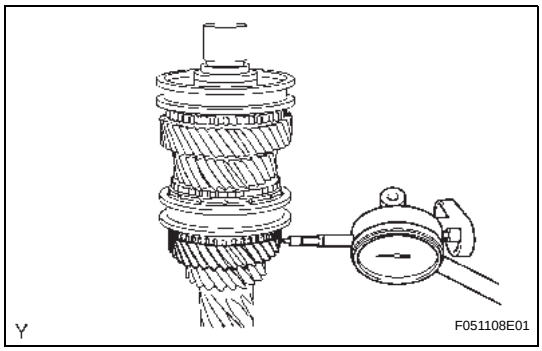
5. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



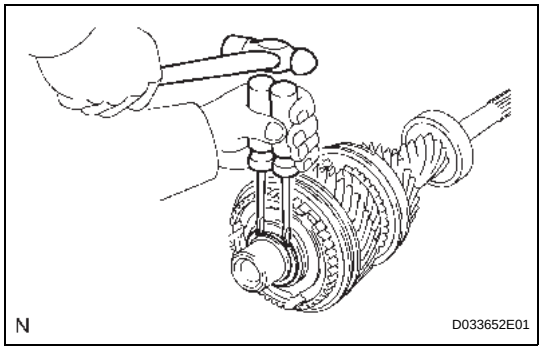
6. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.

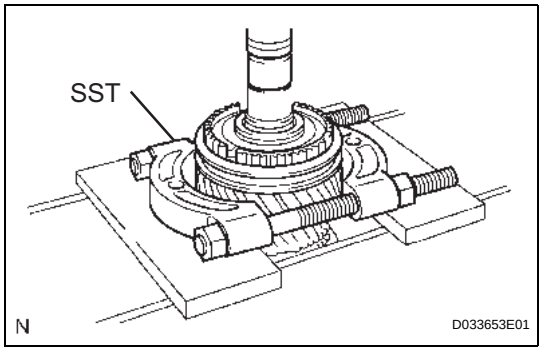


7. REMOVE TRANSMISSION CLUTCH HUB NO.3 SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.

HINT:

Use a shop rag to prevent the snap ring from flying off.



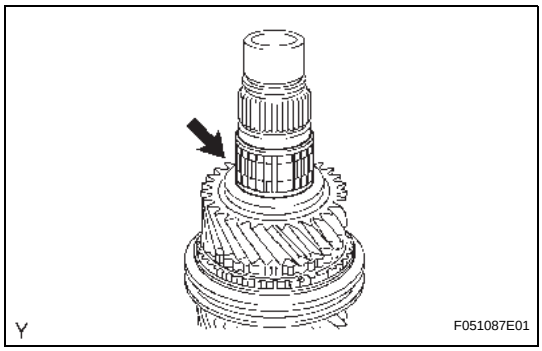
8. REMOVE 6TH GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 3, hub sleeve, synchronizer ring and 6th gear from the input shaft.

SST 09950-00020, 09950-70010 (09951-07200), 09950-60010 (09951-00300)

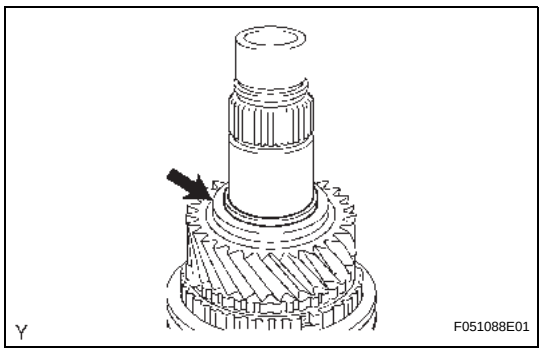
NOTICE:

- **Do not tighten SST excessively.**
- **Support the input shaft by hand so that it does not fall off.**



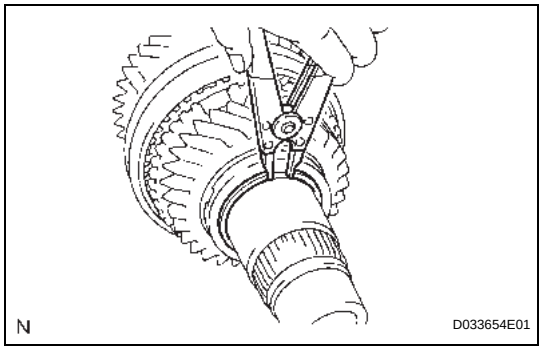
9. REMOVE 6TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 6th gear needle roller bearing from the input shaft.



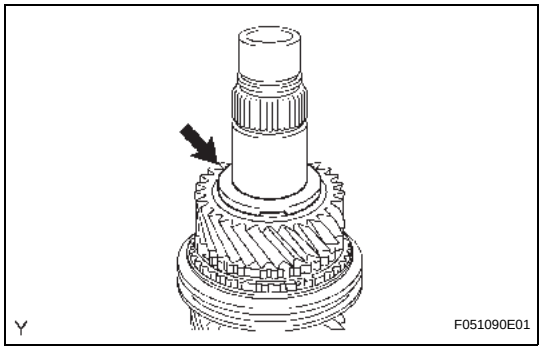
10. REMOVE SHAFT SNAP RING

(a) Remove the shaft snap ring from the input shaft.



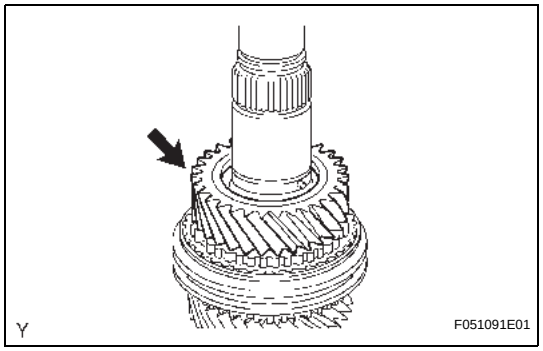
11. REMOVE GEAR THRUST WASHER SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the input shaft.



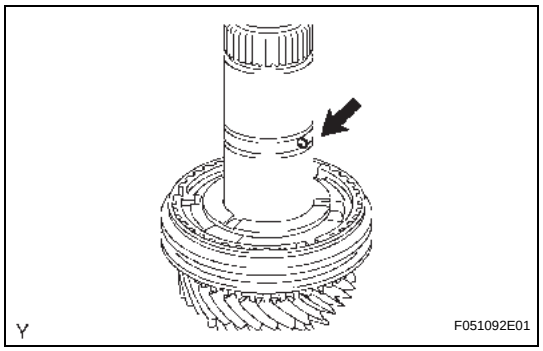
12. REMOVE 3RD GEAR THRUST WASHER

(a) Remove the 3rd gear thrust washer from the input shaft.



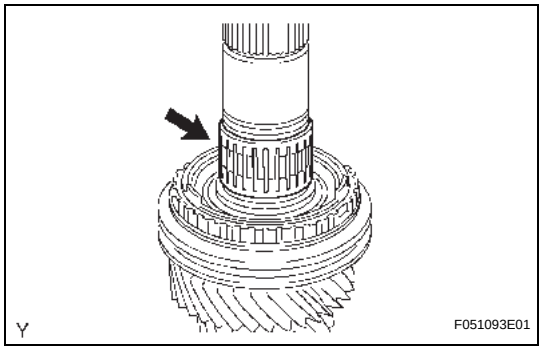
13. REMOVE 3RD GEAR

(a) Remove the 3rd gear from the input shaft.



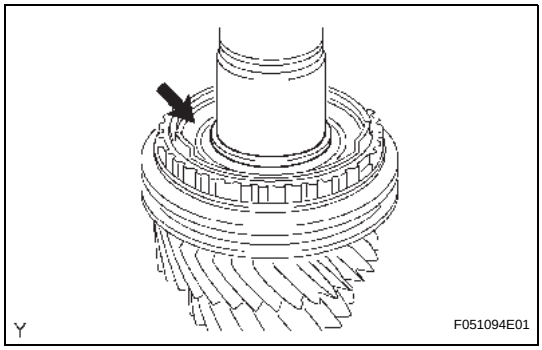
14. REMOVE STRAIGHT PIN

(a) Remove the straight pin from the input shaft.



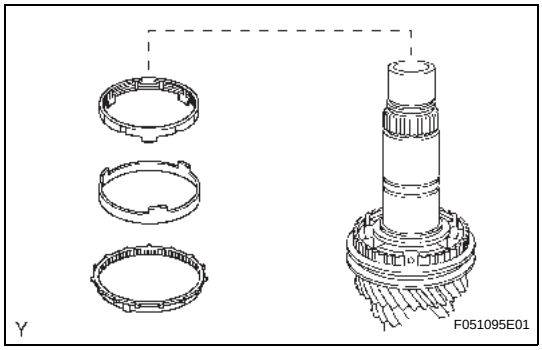
15. REMOVE 3RD GEAR NEEDLE ROLLER BEARING

(a) Remove the 3rd gear needle roller bearing from the input shaft.



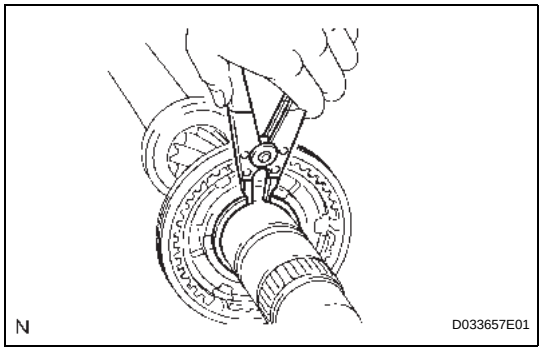
16. REMOVE SPACER

(a) Remove the spacer from the input shaft.



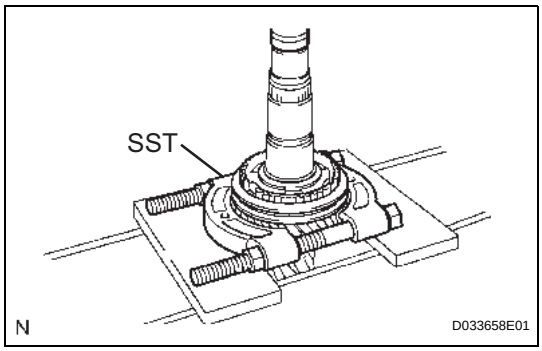
17. REMOVE NO. 2 SYNCHRONIZER RING SET

(a) Remove the synchronizer ring set No. 2 from the input shaft.



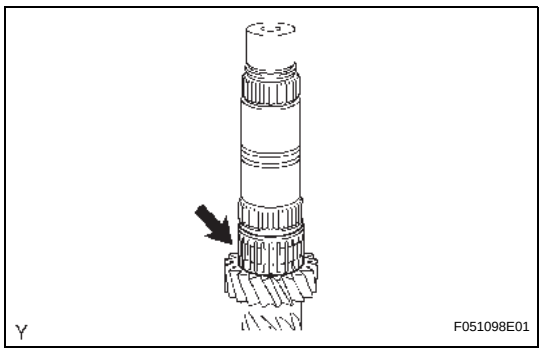
18. REMOVE CLUTCH HUB NO.2 SETTING SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the input shaft.



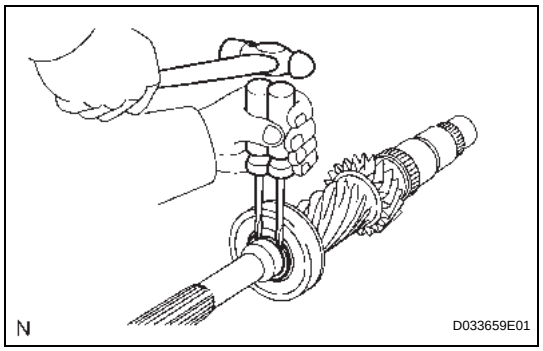
19. REMOVE 4TH GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 2, hub sleeve, synchronizer ring and 4th gear from the input shaft.
SST 09950-00020
NOTICE:
Support the input shaft by hand so that it does not fall off.



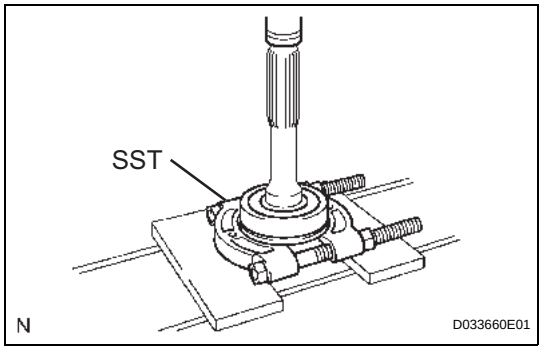
20. REMOVE 4TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 4th gear needle roller bearing from the input shaft.



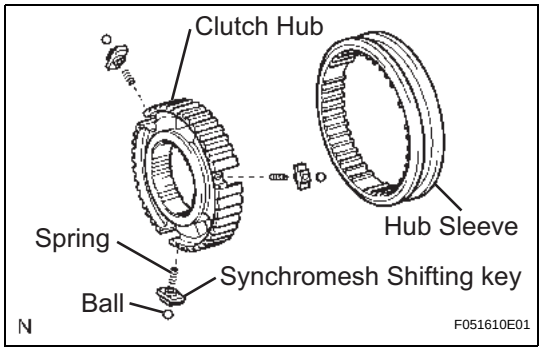
21. REMOVE INPUT SHAFT FRONT BEARING SNAP RING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.
HINT:
Use a shop rag to prevent the snap ring from flying off.



22. REMOVE INPUT SHAFT FRONT BEARING

(a) Using SST and a press, remove the input shaft front bearing from the input shaft.
SST 09950-00020
NOTICE:
Support the input shaft by hand so that it does not fall off.

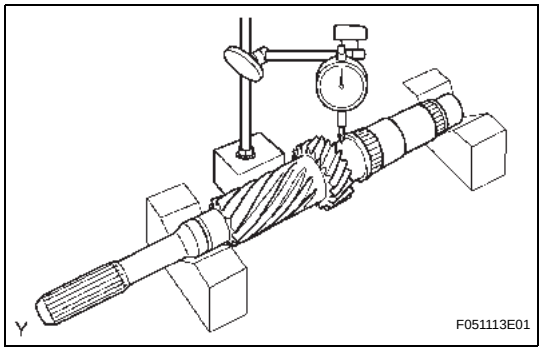


23. REMOVE NO. 2 TRANSMISSION CLUTCH HUB

(a) Remove the clutch hub, 3 synchromesh shifting keys, 3 balls and 3 springs from the hub sleeve.
HINT:
Use a shop rag to prevent the ball and spring from flying off.

24. REMOVE NO. 3 TRANSMISSION CLUTCH HUB

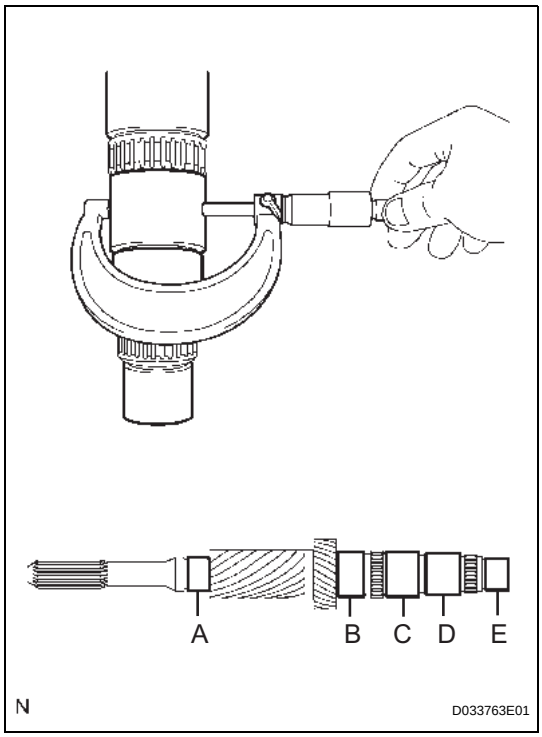
(a) Perform the same procedures as for clutch hub No. 2.



INSPECTION

1. INSPECT INPUT SHAFT

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout:
0.03 mm (0.0012 in.)
If the runout exceeds the maximum, replace the input shaft.



(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

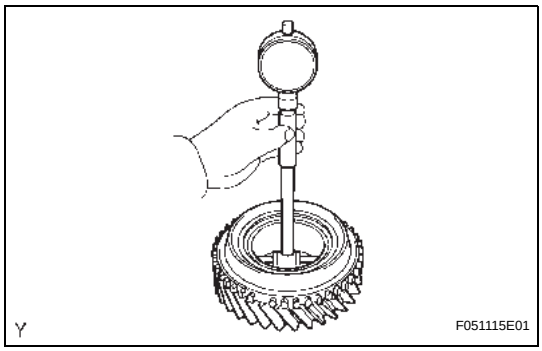
Standard

Part	Outer diameter mm (in.)
A	34.002 to 34.015 (1.3387 to 1.3392)
B	44.985 to 45.000 (1.7711 to 1.7717)
C	44.985 to 45.000 (1.7711 to 1.7717)
D	41.985 to 42.000 (1.6530 to 1.6535)
E	32.967 to 32.980 (1.2979 to 1.2984)

Minimum

Part	Outer diameter mm (in.)
A	34.002 (1.3387)
B	44.985 (1.7711)
C	44.985 (1.7711)
D	41.985 (1.6530)
E	32.967 (1.2979)

If the outer diameter is less than the minimum, replace the input shaft.

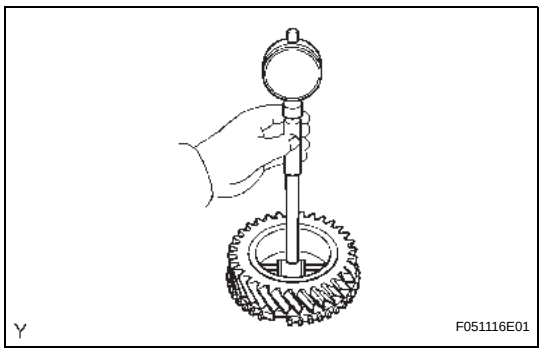


2. INSPECT 6TH GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 6th gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the 4th gear.

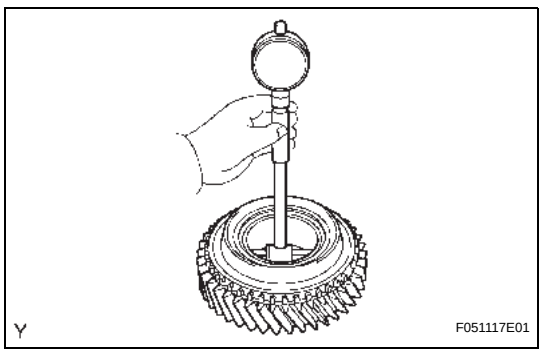


3. INSPECT 3RD GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 3rd gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the 3rd gear.

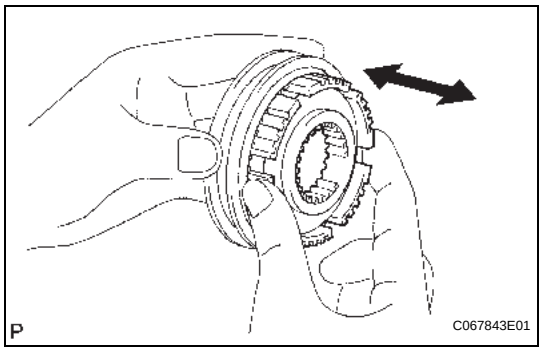


4. INSPECT 4TH GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 4th gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

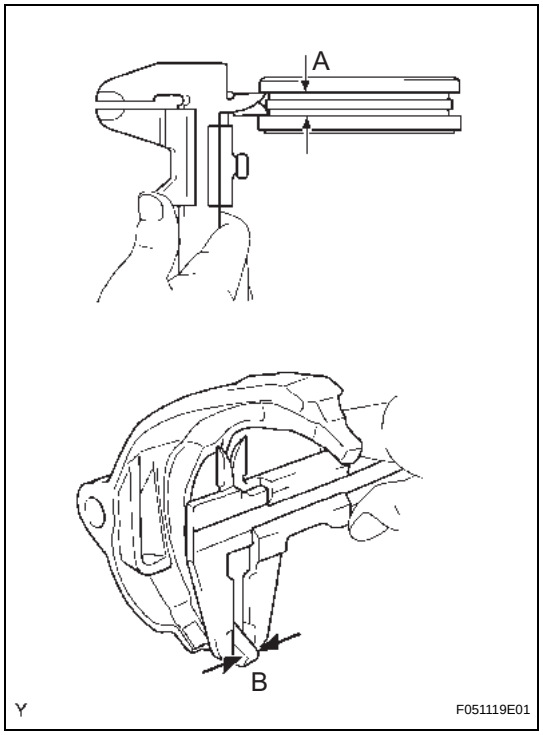
If the inside diameter exceeds the maximum, replace the 4th gear.



5. INSPECT NO. 2 TRANSMISSION HUB SLEEVE

(a) Check the sliding condition between the transmission hub No. 2 and transmission hub sleeve No. 2.

(b) Check that the spline gear teeth of the transmission hub sleeve No. 2 are not worn.



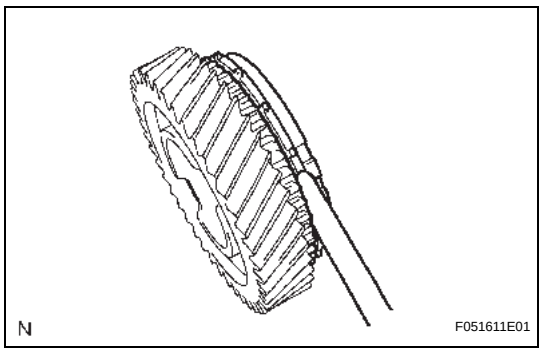
(c) Using vernier calipers, measure the width of the transmission hub sleeve No. 2 groove (A) and the thickness of the claw part on the gear shift forks No. 2 or No. 3 (B), and calculate the clearance.

Standard clearance:

(A - B);

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

If the clearance is outside the specification, replace the transmission hub sleeve No. 2 and gear shift fork.



6. INSPECT NO. 3 SYNCHRONIZER RING (FOR 6TH GEAR)

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and the 6th gear.

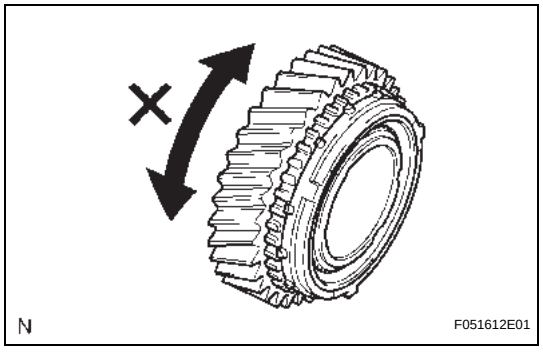
Standard clearance:

0.70 to 1.50 mm (0.0276 to 0.0591 in.)

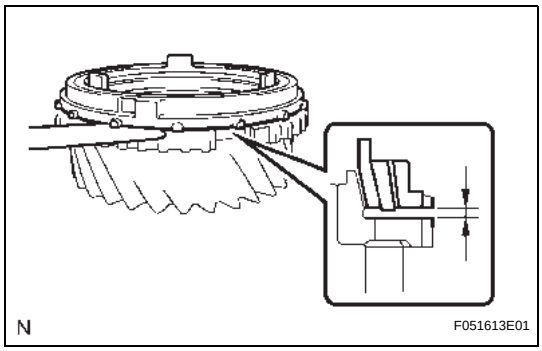
Minimum clearance:

0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 6th gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 6th gear cone. Check that the ring locks.

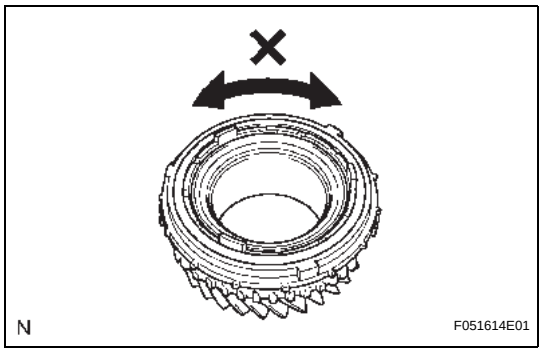


7. INSPECT NO. 2 SYNCHRONIZER RING SET

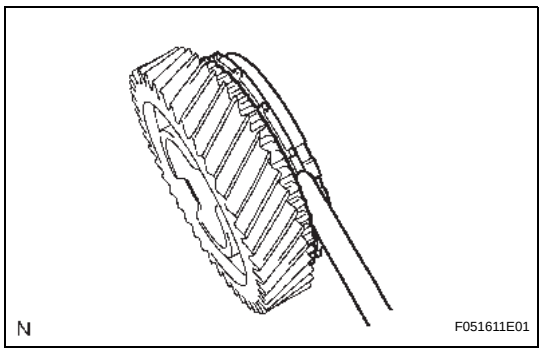
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and the 3rd gear.

Standard clearance:
Inner:
1.20 to 2.20 mm (0.0472 to 0.0866 in.)
Middle:
0.60 to 1.80 mm (0.0236 to 0.0709 in.)
Outer:
0.80 to 1.80 mm (0.0315 to 0.0709 in.)
Minimum clearance:
Inner:
1.20 mm (0.0472 in.)
Middle:
0.60 mm (0.0236 in.)
Outer:
0.80 mm (0.0315 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 3rd gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 3rd gear cone. Check that the ring locks.

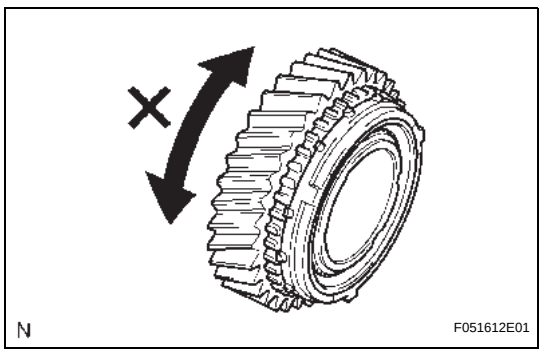


8. INSPECT NO. 3 SYNCHRONIZER RING (FOR 4TH GEAR)

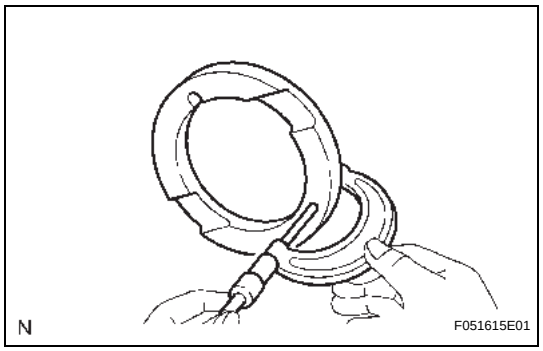
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 4th gear.

Standard clearance:
0.70 to 1.50 mm (0.0276 to 0.0591 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 4th gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 4th gear cone. Check that the ring locks.



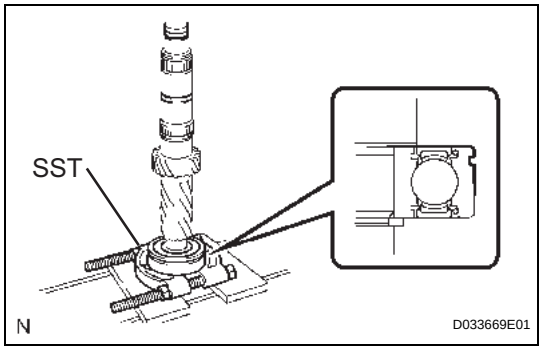
9. INSPECT 3RD GEAR THRUST WASHER

(a) Using a micrometer, measure the thrust washer thickness.

Standard thickness:
7.12 to 7.18 mm (0.2803 to 0.2827 in.)
Minimum thickness:
7.12 mm (0.2803 in.)

If the thickness is less than the minimum, replace the thrust washer.

REASSEMBLY



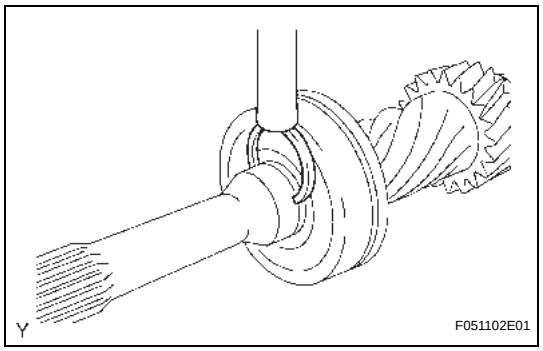
1. INSTALL INPUT SHAFT FRONT BEARING

(a) Using SST and a press, install the input shaft front bearing onto the input shaft.

SST 09950-00020

HINT:

Make sure that the groove of the bearing faces the correct direction as shown in the illustration.



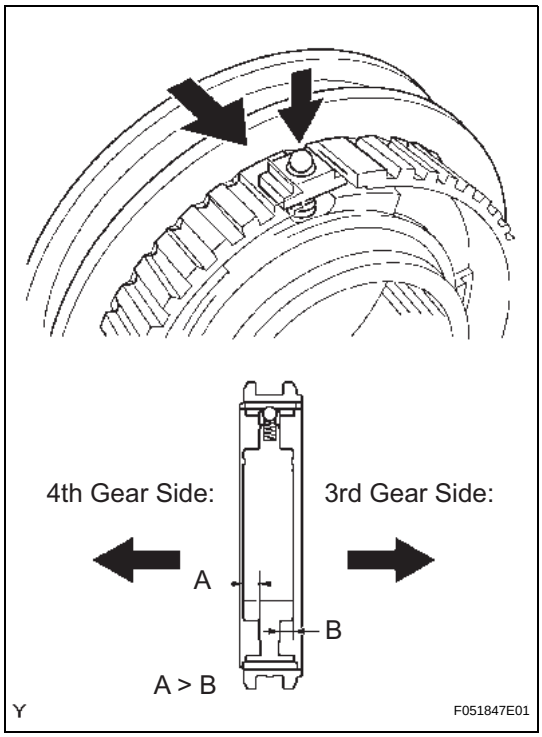
2. INSTALL INPUT SHAFT FRONT BEARING SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-31026	2.65 to 2.70 (0.1043 to 0.1063)	A
90520-31027	2.70 to 2.75 (0.1063 to 0.1083)	B
90520-31028	2.75 to 2.80 (0.1083 to 0.1102)	C
90520-31029	2.80 to 2.85 (0.1102 to 0.1122)	D
90520-31030	2.85 to 2.90 (0.1122 to 0.1142)	E
90520-31031	2.90 to 2.95 (0.1142 to 0.1161)	F

(b) Using a brass bar and hammer, install the snap ring onto the input shaft.



3. INSTALL NO. 2 TRANSMISSION CLUTCH HUB

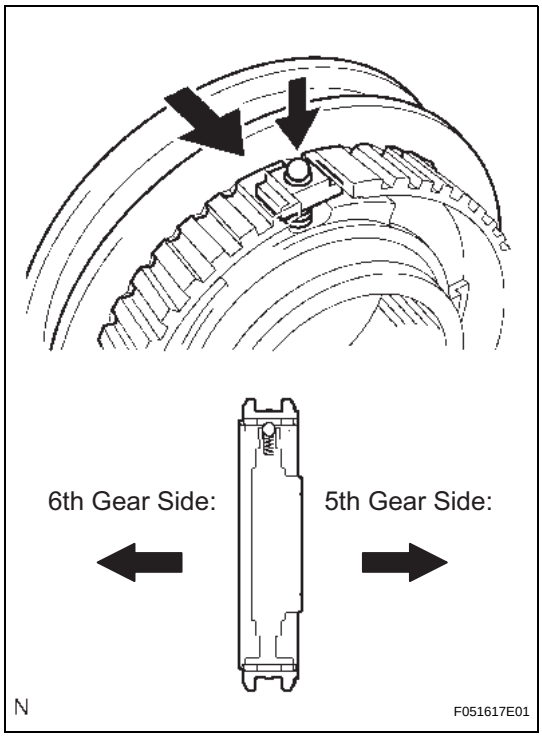
(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub No. 2.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.

NOTICE:

Take care to prevent the ball from flying off.

HINT:

Make sure that the clutch hub No. 2 faces the correct direction as shown in the illustration.



4. INSTALL NO. 3 TRANSMISSION CLUTCH HUB

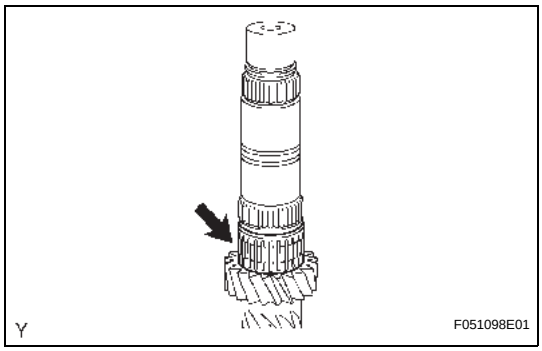
(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub No. 3.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.

NOTICE:

Take care to prevent the ball from flying off.

HINT:

Make sure that the clutch hub No. 3 faces the correct direction as shown in the illustration.

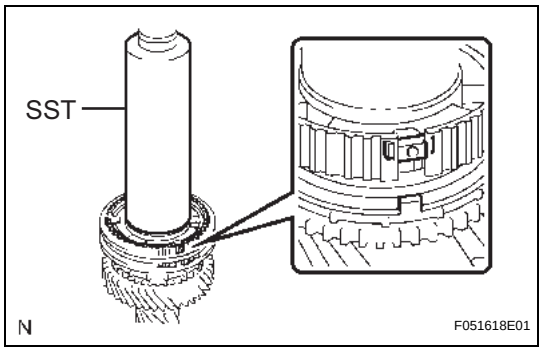


5. INSTALL 4TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 4th gear needle roller bearing with gear oil, then install it onto the input shaft.

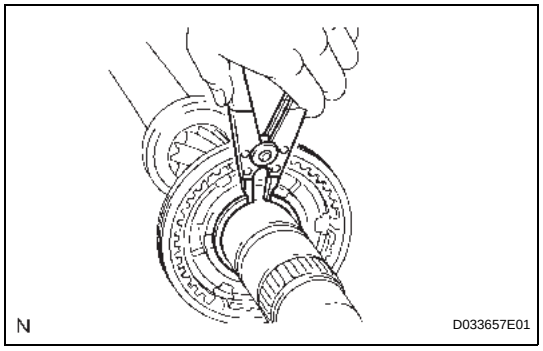
6. INSTALL 4TH GEAR

(a) Coat the 4th gear and synchronizer ring No. 3 with gear oil, then install them onto the input shaft.



(b) Using SST and a press, install the clutch hub No. 2 onto the input shaft.
SST 09308-14010
HINT:
Align the convex portion of the synchronizer ring with the groove of the clutch hub.

(c) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.

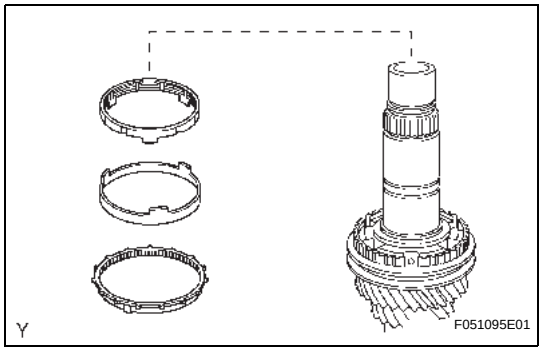


7. INSTALL CLUTCH HUB NO.2 SETTING SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

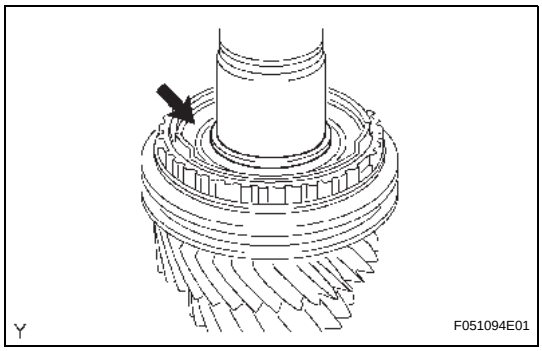
Part No.	Thickness: mm (in.)	Mark
90520-42012	1.77 to 1.82 (0.0697 to 0.0717)	A
90520-42013	1.82 to 1.87 (0.0717 to 0.0736)	B
90520-42014	1.87 to 1.92 (0.0736 to 0.0756)	C
90520-42015	1.92 to 1.97 (0.0756 to 0.0776)	D
90520-42016	1.97 to 2.02 (0.0776 to 0.0795)	E
90520-42017	2.02 to 2.07 (0.0795 to 0.0815)	F
90520-42018	2.07 to 2.12 (0.0815 to 0.0835)	G

(b) Using a snap ring expander, install the snap ring onto the input shaft.



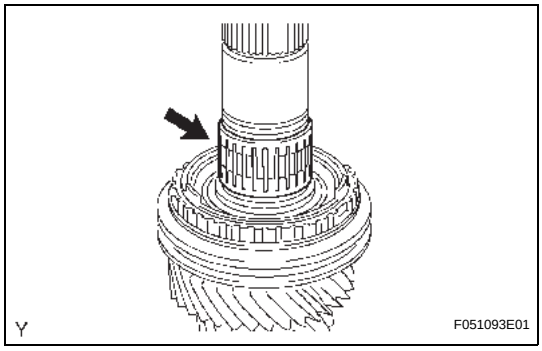
8. INSTALL NO. 2 SYNCHRONIZER RING SET

(a) Coat the synchronizer ring set No. 2 with gear oil, then install it onto the input shaft.



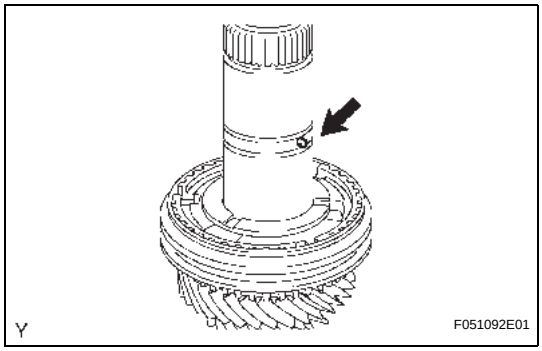
9. INSTALL SPACER

(a) Coat the spacer with gear oil, and install it onto the input shaft.



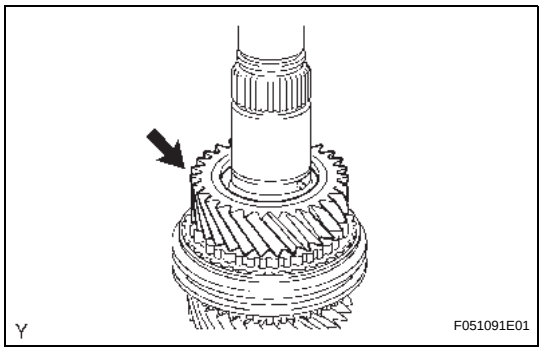
10. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

(a) Coat the 3rd gear needle roller bearing with gear oil, and install it onto the input shaft.



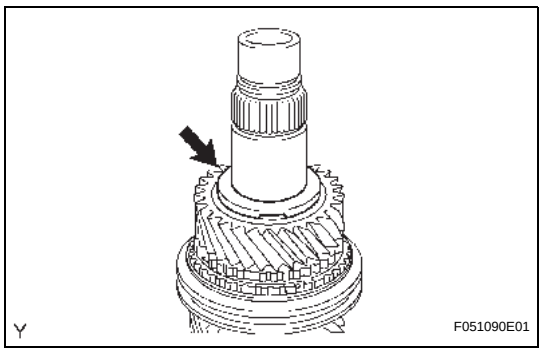
11. INSTALL STRAIGHT PIN

(a) Install the straight pin onto the input shaft.



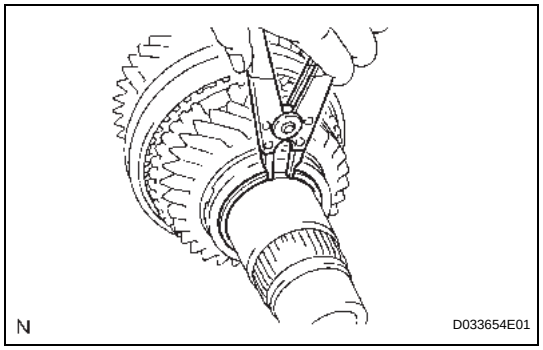
12. INSTALL 3RD GEAR

(a) Coat the 3rd gear with gear oil, and install it onto the input shaft.



13. INSTALL 3RD GEAR THRUST WASHER

(a) Coat the 3rd gear thrust washer with gear oil, and install it onto the input shaft.
HINT:
Align the straight pin with the groove of the gear thrust washer and install it.



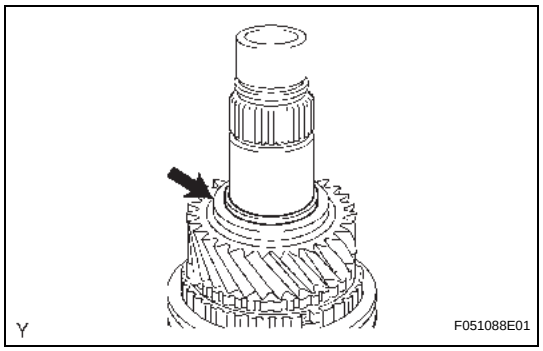
14. INSTALL GEAR THRUST WASHER SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

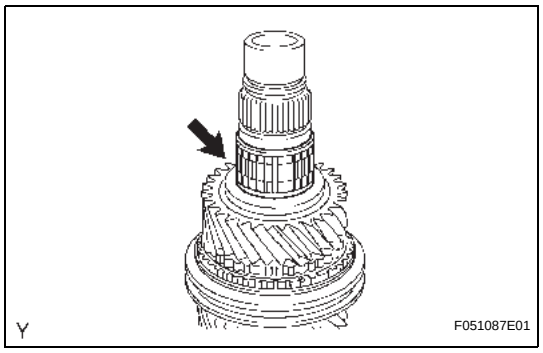
Part No.	Thickness: mm (in.)	Mark
90520-39026	2.07 to 2.12 (0.0815 to 0.0835)	A
90520-39027	2.12 to 2.17 (0.0835 to 0.0854)	B
90520-39028	2.17 to 2.22 (0.0854 to 0.0874)	C
90520-39029	2.22 to 2.27 (0.0874 to 0.0894)	D
90520-39030	2.27 to 2.32 (0.0894 to 0.0913)	E
90520-39031	2.32 to 2.37 (0.0913 to 0.0933)	F

(b) Using a snap ring expander, install the snap ring onto the input shaft.



15. INSTALL SHAFT SNAP RING

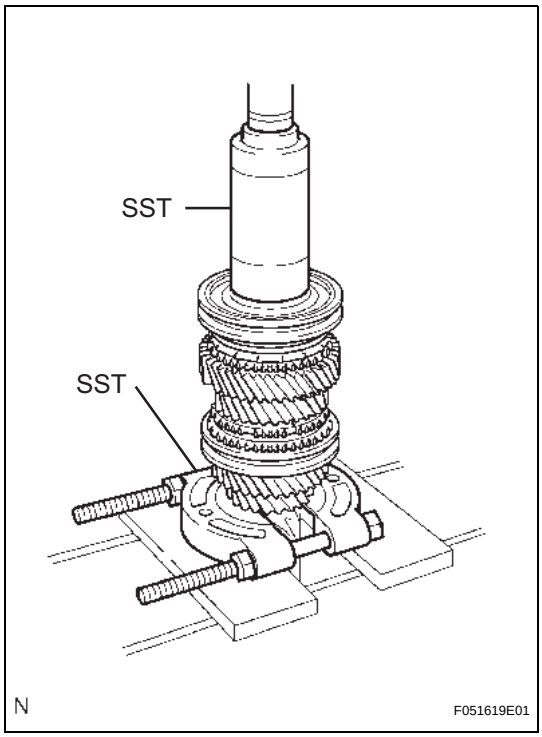
(a) Coat the shaft snap ring with gear oil, and install it onto the input shaft.



16. INSTALL 6TH GEAR NEEDLE ROLLER BEARING

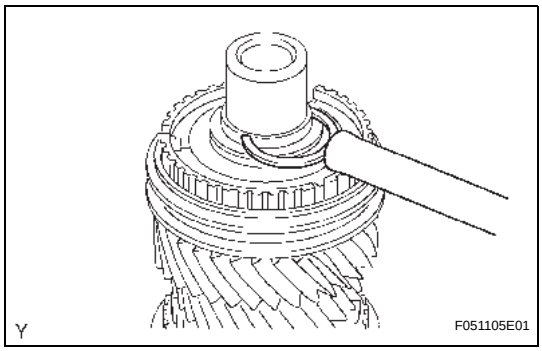
(a) Coat the 6th gear needle roller bearing with gear oil, and install it onto the input shaft.

MT



17. INSTALL 6TH GEAR

(a) Install the 6th gear onto the input shaft.
(b) Install the synchronizer ring onto the input shaft.
(c) Using SST and a press, install the clutch hub onto the input shaft.
SST 09309-37010, 09950-00020
(d) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.



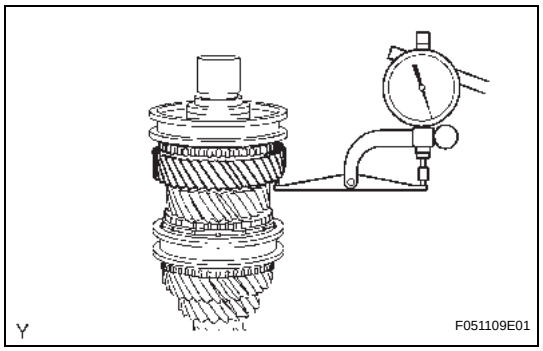
18. INSTALL TRANSMISSION CLUTCH HUB NO.3 SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-33022	2.10 to 2.15 (0.0827 to 0.0847)	A
90520-33023	2.15 to 2.20 (0.0847 to 0.0866)	B
90520-33024	2.20 to 2.25 (0.0866 to 0.0886)	C
90520-33025	2.25 to 2.30 (0.0886 to 0.0906)	D
90520-33026	2.30 to 2.35 (0.0906 to 0.0925)	E
90520-33027	2.35 to 2.40 (0.0925 to 0.0945)	F
90520-33028	2.40 to 2.45 (0.0945 to 0.0965)	G

(b) Using a brass bar and a hammer, install the snap ring onto the input shaft.

MT



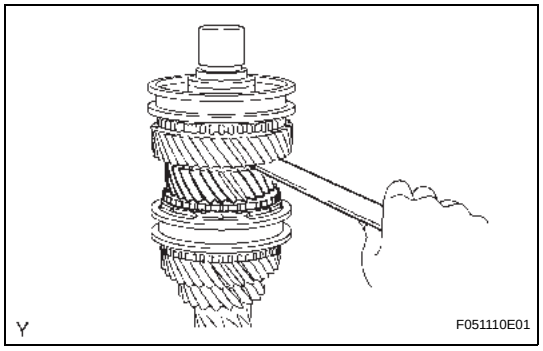
19. INSPECT 6TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 6th gear thrust clearance.

Standard clearance:

0.20 to 0.49 mm (0.0079 to 0.0193 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



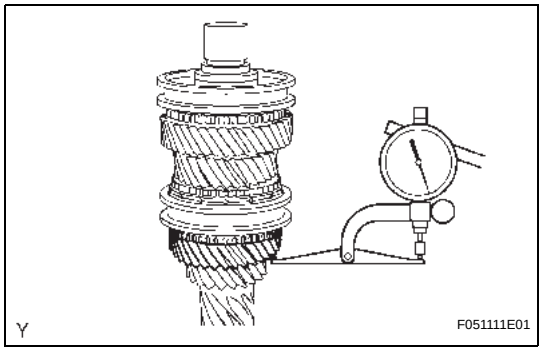
20. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.09 to 0.52 mm (0.0035 to 0.0205 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 2.



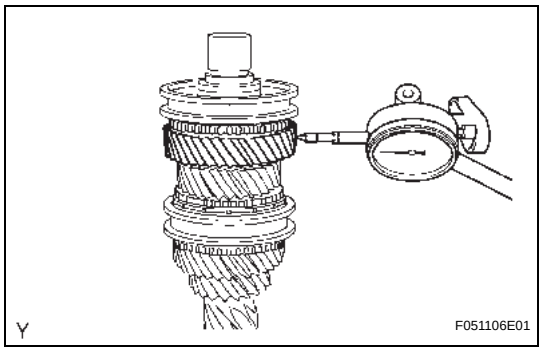
21. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 4th gear thrust clearance.

Standard clearance:

0.12 to 0.38 mm (0.0047 to 0.0150 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



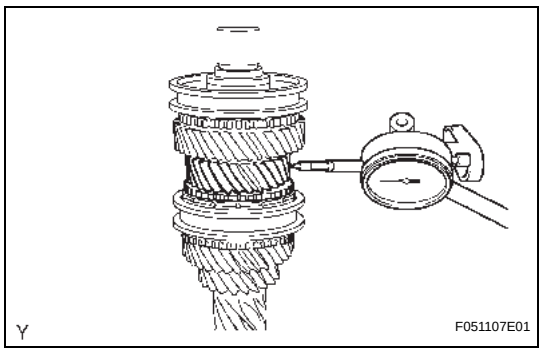
22. INSPECT 6TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 6th gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



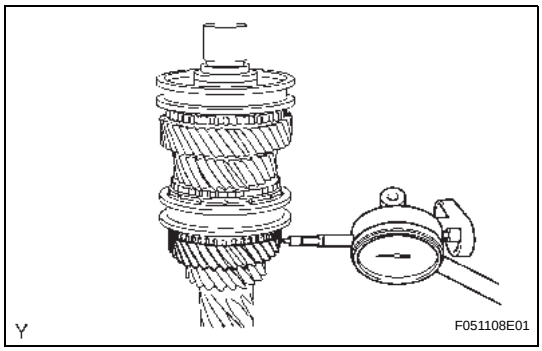
23. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



24. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

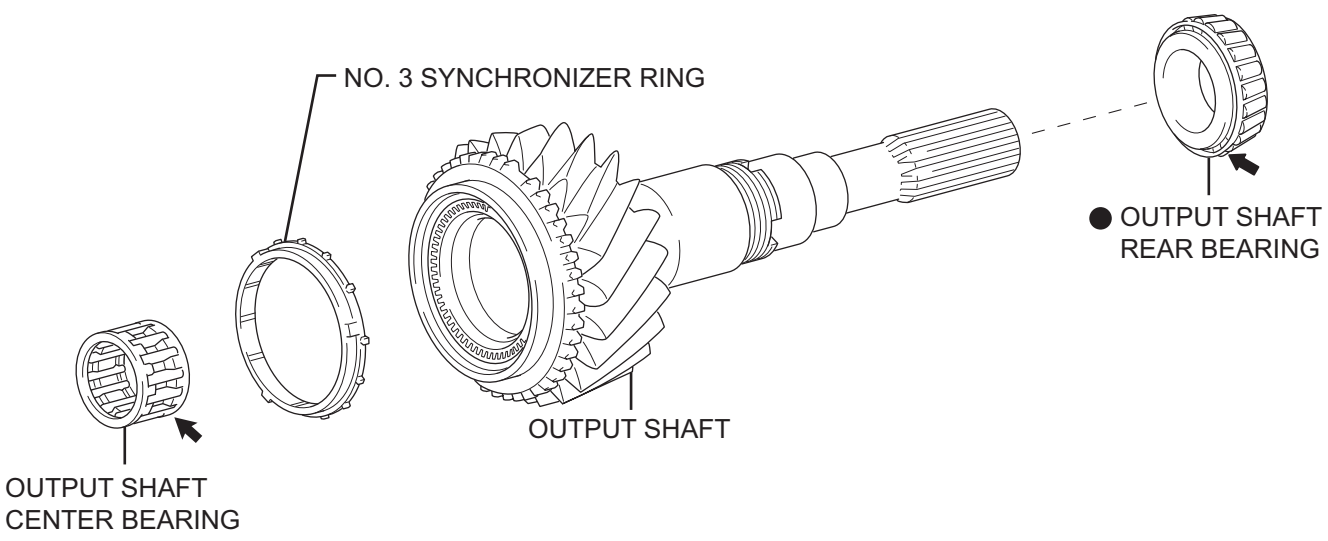
Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.

OUTPUT SHAFT

COMPONENTS



● Non-reusable part

⬅ Apply MP grease

Y

C114067E02

MT

MT

DISASSEMBLY

1. REMOVE NO. 3 SYNCHRONIZER RING

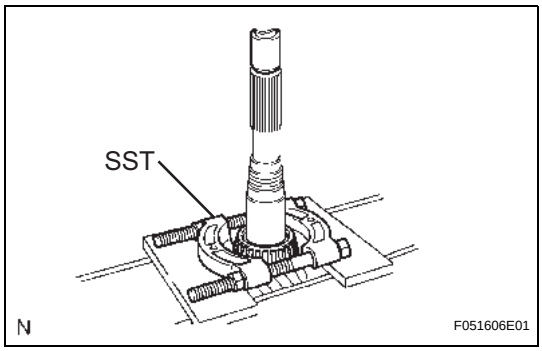
(a) Remove synchronizer ring No. 3 from the output shaft.

2. REMOVE OUTPUT SHAFT CENTER BEARING

(a) Remove the output shaft center bearing from the output shaft.

3. REMOVE OUTPUT SHAFT REAR BEARING

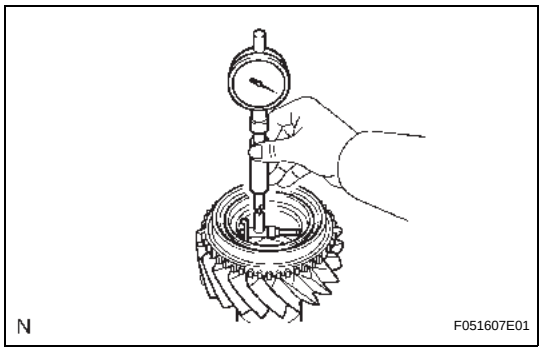
(a) Using SST and a press, remove the output shaft bearing.
SST 09950-00020



INSPECTION

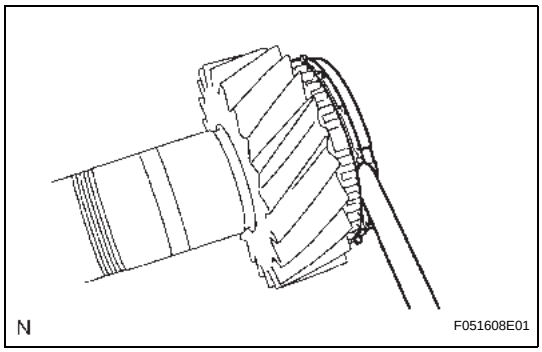
1. INSPECT OUTPUT SHAFT

(a) Using a cylinder gauge, measure the inside diameter of the output shaft.
Standard inside diameter:
45.009 to 45.025 mm (1.7720 to 1.7726 in.)
Maximum inside diameter:
45.025 mm (1.7726 in.)
If the diameter exceeds the maximum, replace the output shaft.

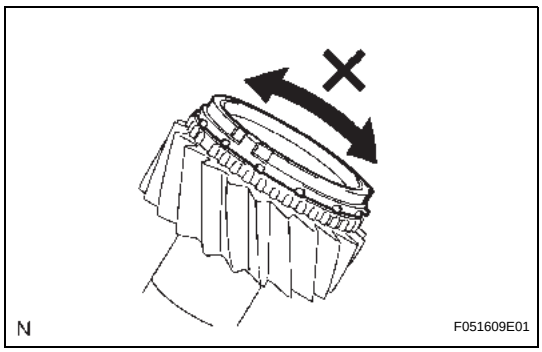


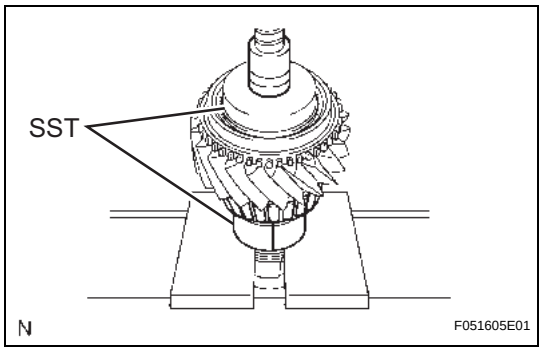
2. INSPECT NO. 3 SYNCHRONIZER RING

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and gear spline.
Standard clearance:
0.70 to 1.50 mm (0.0276 to 0.0591 in.)
Minimum clearance:
0.70 mm (0.0276 in.)
If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the output shaft and synchronizer ring cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks.





REASSEMBLY

1. INSTALL OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, install a new output shaft bearing onto the output shaft.

SST 09710-20011 (09710-06061), 09950-60010 (09951-00650)

(b) Apply a light coat of grease to the bearing.

2. INSTALL OUTPUT SHAFT CENTER BEARING

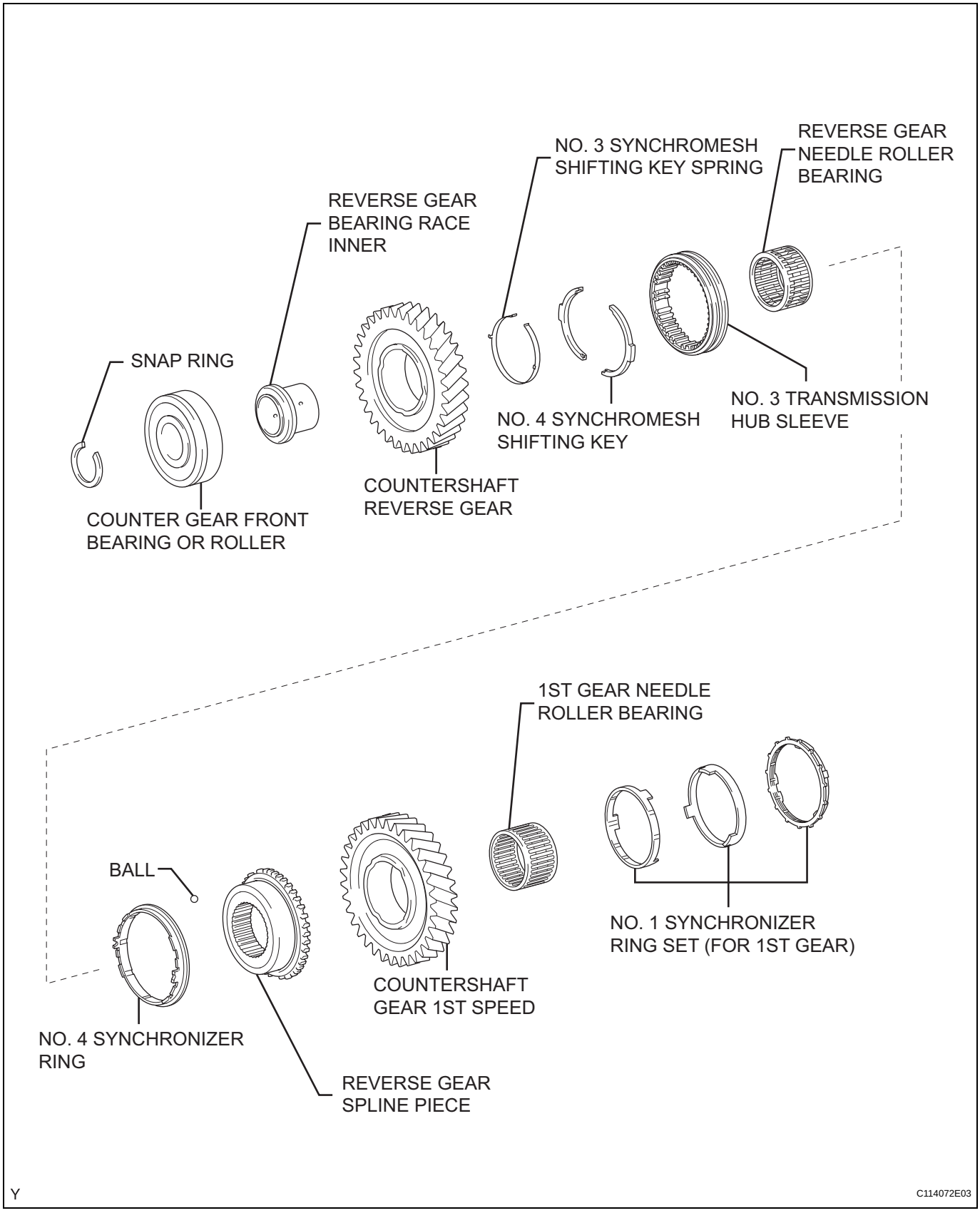
(a) Apply gear grease to the output shaft center bearing to the output shaft, and install it onto the output shaft.

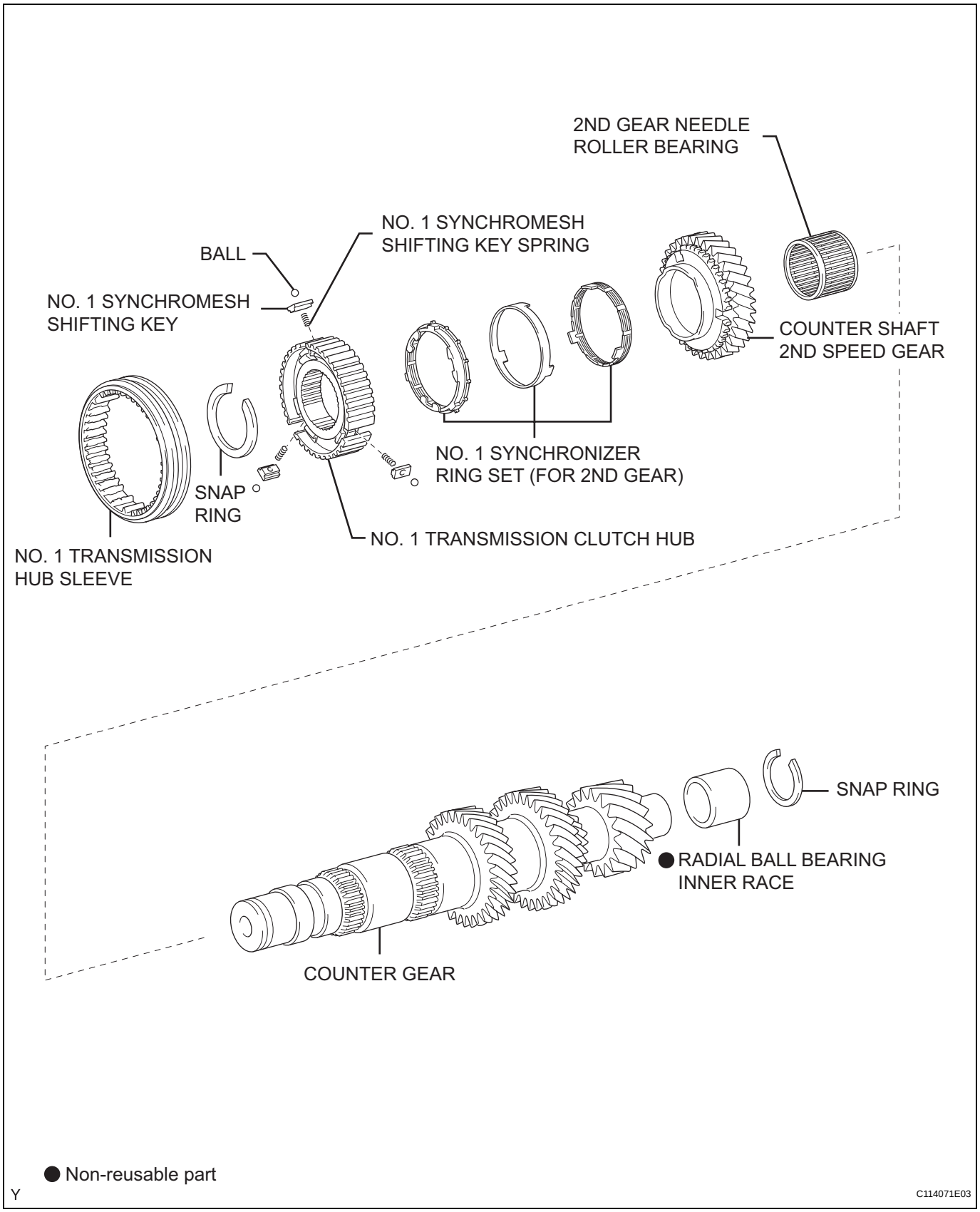
3. INSTALL NO. 3 SYNCHRONIZER RING

(a) Apply gear oil to synchronizer ring No. 3, and install it onto the output shaft.

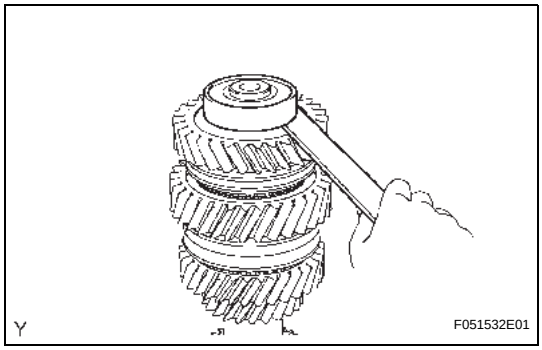
COUNTER GEAR AND REVERSE IDLER GEAR

COMPONENTS




2ND GEAR NEEDLE ROLLER BEARING
NO. 1 SYNCHROMESH SHIFTING KEY SPRING
BALL
NO. 1 SYNCHROMESH SHIFTING KEY
COUNTER SHAFT 2ND SPEED GEAR
NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)
SNAP RING
NO. 1 TRANSMISSION CLUTCH HUB
NO. 1 TRANSMISSION HUB SLEEVE
SNAP RING
● RADIAL BALL BEARING INNER RACE
COUNTER GEAR
● Non-reusable part
Y
C114071E03

MT



DISASSEMBLY

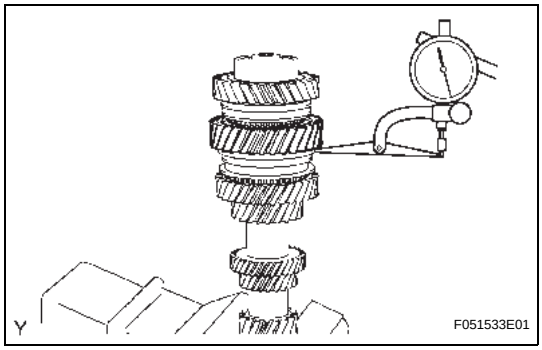
1. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



MT

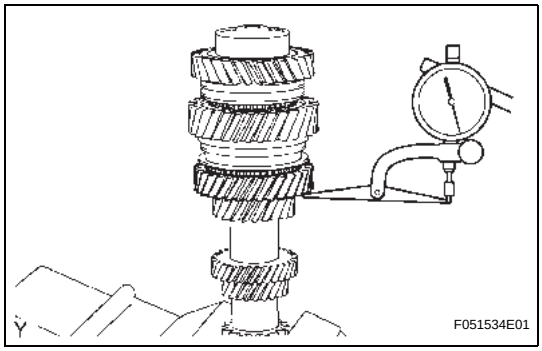
2. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



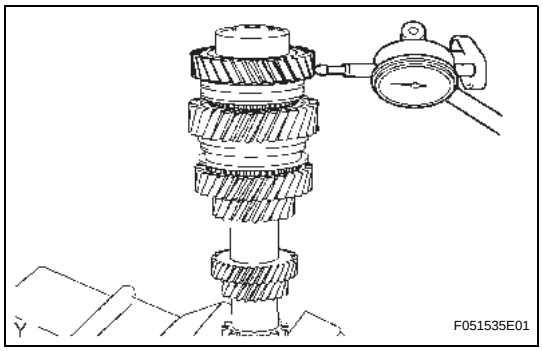
3. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



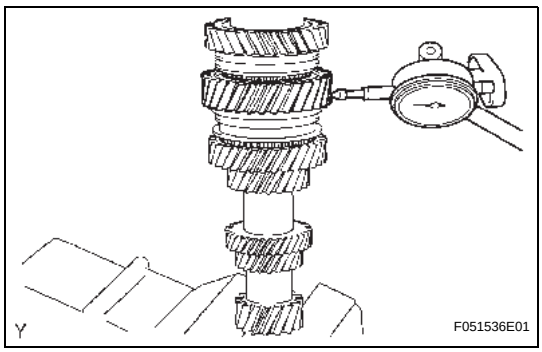
4. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



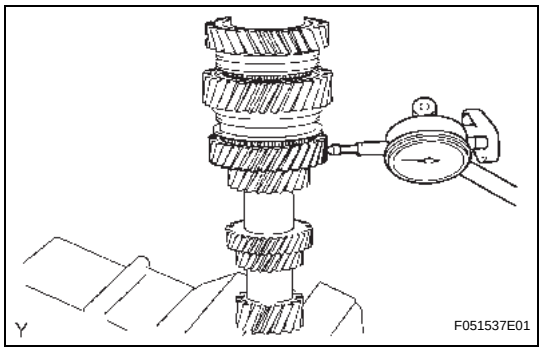
5. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.



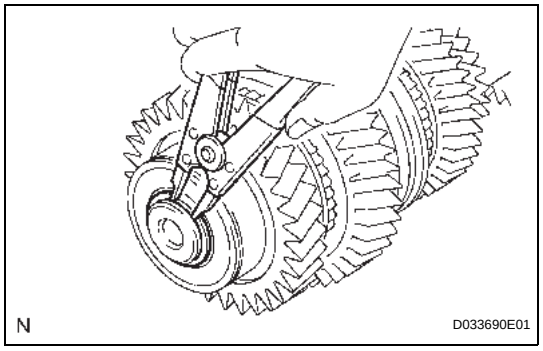
6. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

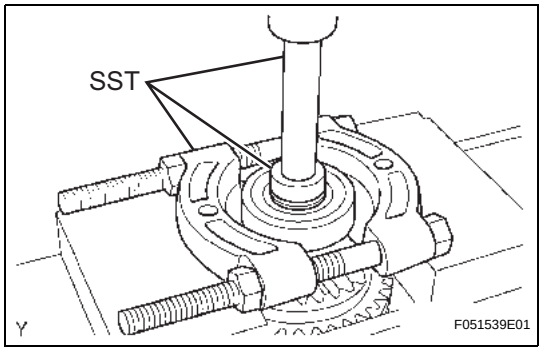
0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.



7. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

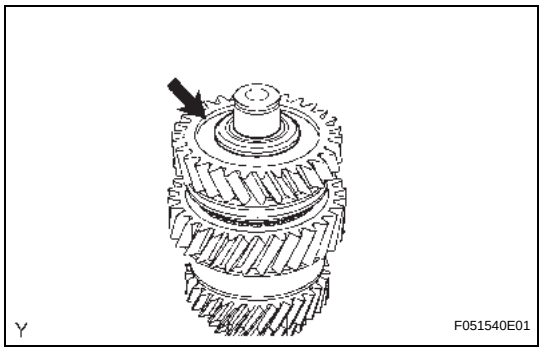
(a) Using a snap ring expander, remove the snap ring from the counter gear.



8. REMOVE COUNTER GEAR FRONT BEARING OR ROLLER

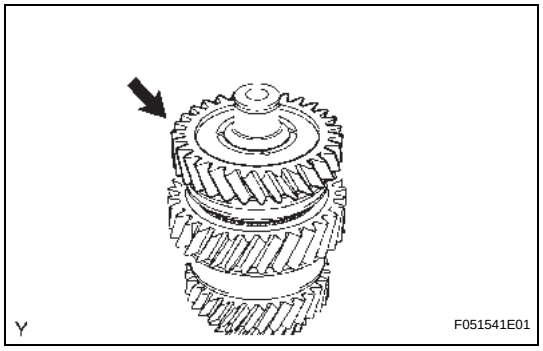
(a) Using SST and a press, remove the counter gear front bearing or roller from the counter gear.

SST 09950-00020, 09950-70010 (09951-07100), 09950-60010 (09951-00320)



9. REMOVE REVERSE GEAR BEARING RACE INNER

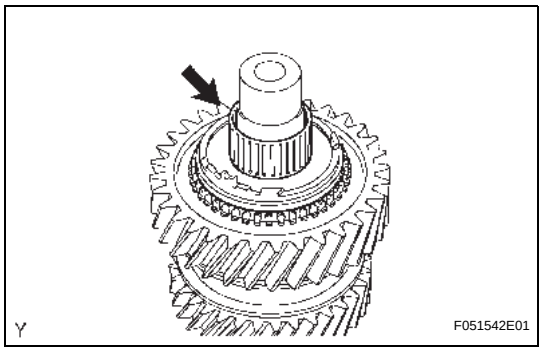
(a) Remove the reverse gear bearing race inner from the counter gear.



10. REMOVE COUNTERSHAFT REVERSE GEAR

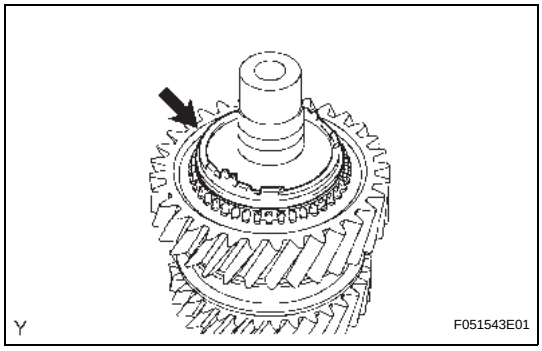
(a) Remove the countershaft reverse gear from the counter gear.

(b) Remove the hub sleeve, 2 shifting keys and key spring from the countershaft reverse gear.



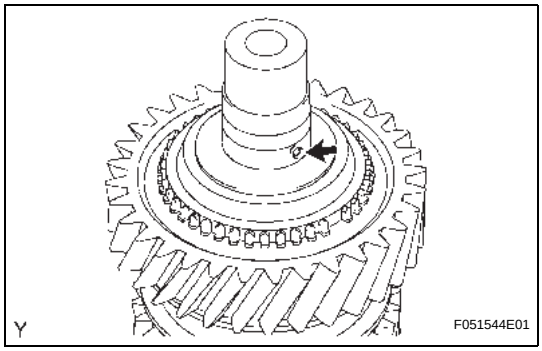
11. REMOVE REVERSE GEAR NEEDLE ROLLER BEARING

(a) Remove the reverse gear needle roller bearing from the counter gear.



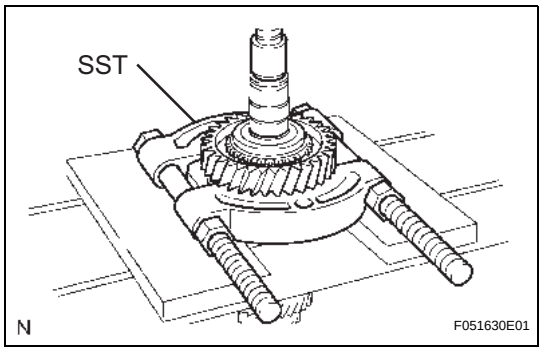
12. REMOVE NO. 4 SYNCHRONIZER RING

(a) Remove the synchronizer ring No. 4 from the counter gear.



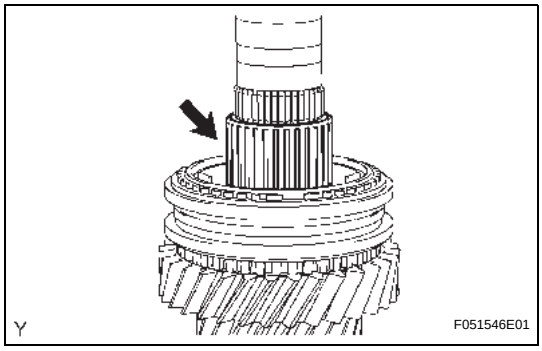
13. REMOVE BALL

(a) Remove the ball from the counter gear.



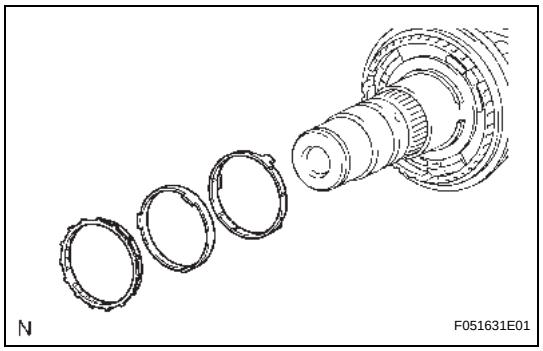
14. REMOVE COUNTERSHAFT GEAR 1ST SPEED

(a) Using a press, remove the countershaft gear 1st speed together with reverse gear spline piece from the counter gear.
SST 09950-00020



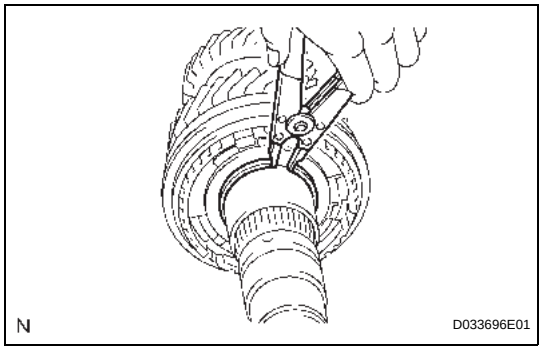
15. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

(a) Remove the 1st gear needle roller bearing from the counter gear.



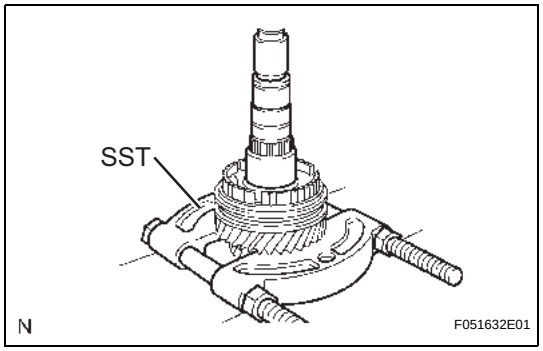
16. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

(a) Remove the synchronizer ring set No. 1 from the counter gear.



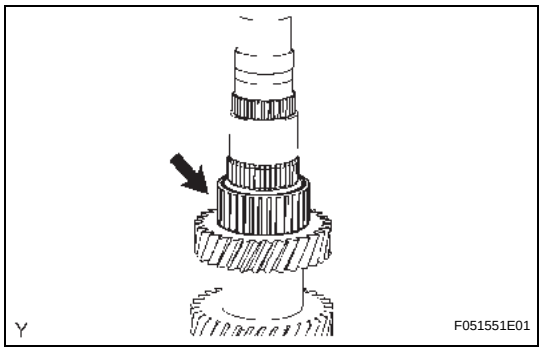
17. REMOVE CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the counter gear.



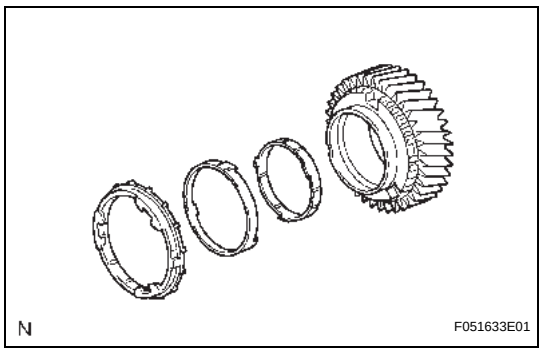
18. REMOVE COUNTER SHAFT 2ND SPEED GEAR

(a) Using a press, remove the counter shaft 2nd speed gear together with transmission clutch hub No. 1 from the counter gear.
SST 09950-00020



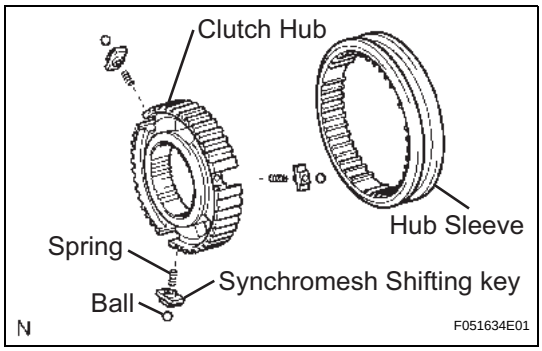
19. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

(a) Remove the 2nd needle roller bearing from the counter gear.



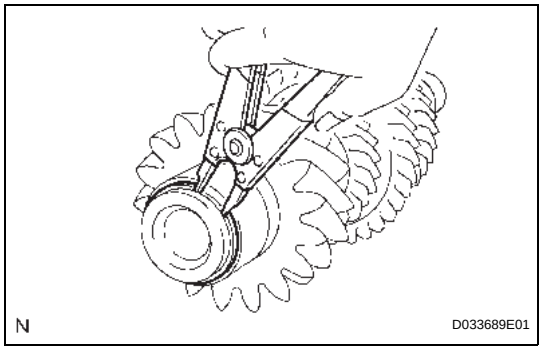
20. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Remove the synchronizer ring set No. 1 from the 2nd gear.



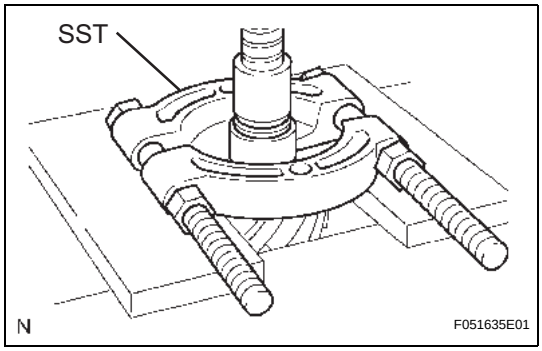
21. REMOVE NO. 1 TRANSMISSION CLUTCH HUB

(a) Remove the hub sleeve, 3 synchromesh shifting keys, 3 balls and 3 springs from the clutch hub.
HINT:
Use a shop rag to prevent the ball and spring from flying off.



22. REMOVE SNAP RING COUNTER GEAR REAR BEARING

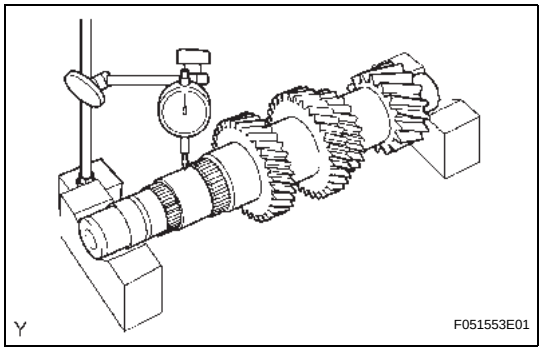
(a) Using a snap ring expander, remove the snap ring from the counter gear.



23. REMOVE RADIAL BALL BEARING INNER RACE

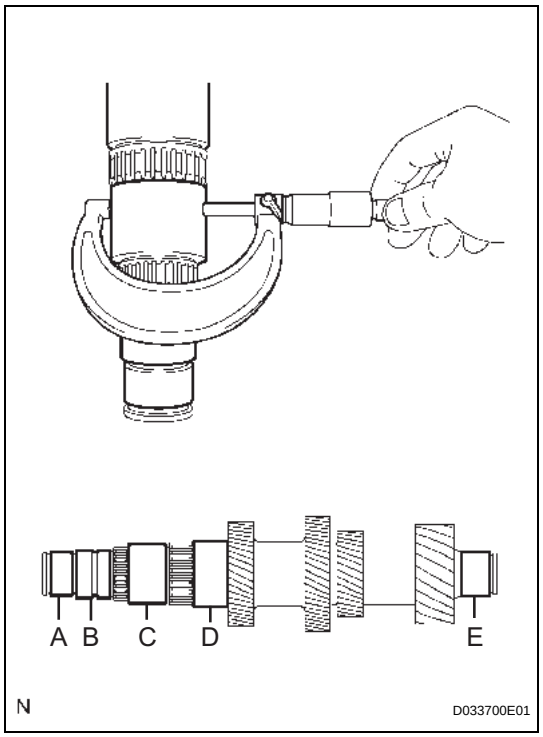
(a) Using SST and a press, remove the needle roller bearing inner race.
SST 09950-00020

INSPECTION



1. INSPECT COUNTER GEAR

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout:
0.03 mm (0.0012 in.)
If the runout exceeds the maximum, replace the counter gear.



(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

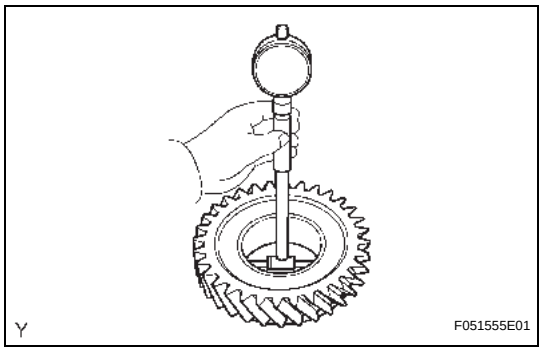
Standard

Part	Outer diameter mm (in.)
A	34.002 to 34.015 (1.3387 to 1.3392)
B	36.985 to 37.000 (1.4561 to 1.4567)
C	47.985 to 48.000 (1.8892 to 1.8898)
D	53.985 to 54.000 (2.1254 to 2.1260)
E	34.002 to 34.015 (1.3387 to 1.3392)

Minimum

Part	Outer diameter mm (in.)
A	34.002 (1.3387)
B	36.985 (1.4561)
C	47.985 (1.8892)
D	53.985 (2.1254)
E	34.002 (1.3387)

If the diameter is less than the minimum, replace the counter gear shaft.

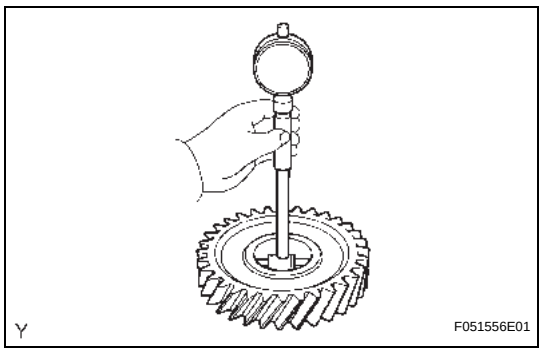


2. INSPECT COUNTERSHAFT REVERSE GEAR

(a) Using cylinder gauge, measure the inside diameter of the reverse gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the reverse gear.

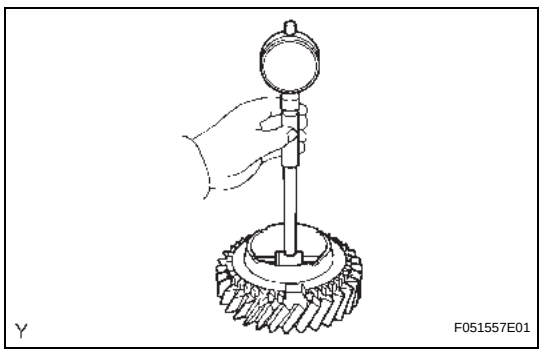


3. INSPECT COUNTERSHAFT GEAR 1ST SPEED

(a) Using cylinder gauge, measure the inside diameter of the 1st gear.

Standard inside diameter:
54.015 to 54.040 mm (2.1266 to 2.1276 in.)
Maximum inside diameter:
54.040 mm (2.1276 in.)

If the inside diameter exceeds the maximum, replace the 1st gear.

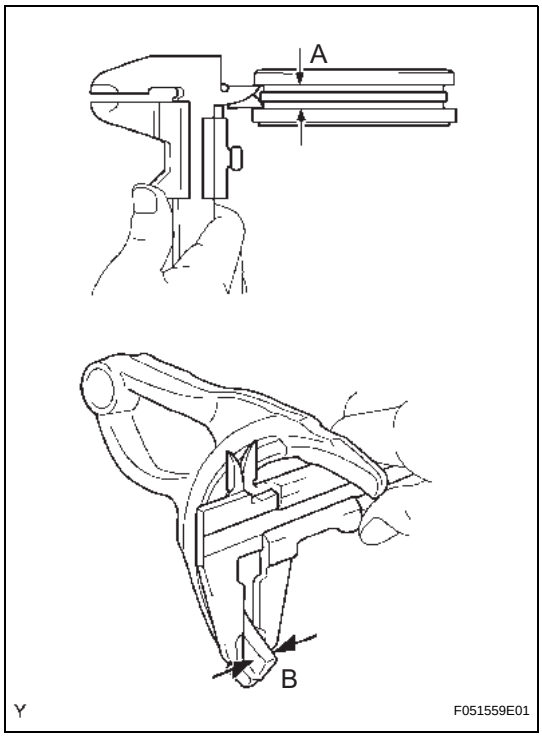


4. INSPECT COUNTER SHAFT 2ND SPEED GEAR

(a) Using cylinder gauge, measure the inside diameter of the 2nd gear.

Standard inside diameter:
60.015 to 60.040 mm (2.3628 to 2.3638 in.)
Maximum inside diameter:
60.040 mm (2.3638 in.)

If the inside diameter exceeds the maximum, replace the 2nd gear.



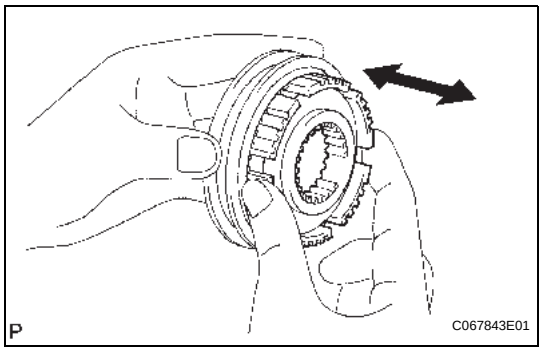
5. INSPECT NO. 3 TRANSMISSION HUB SLEEVE

(a) Using vernier calipers, measure the width of the transmission hub sleeve No. 3 groove (A) and the thickness of the claw part on the gear shift fork No. 4 (B), and calculate the clearance.

Standard clearance (A - B):

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

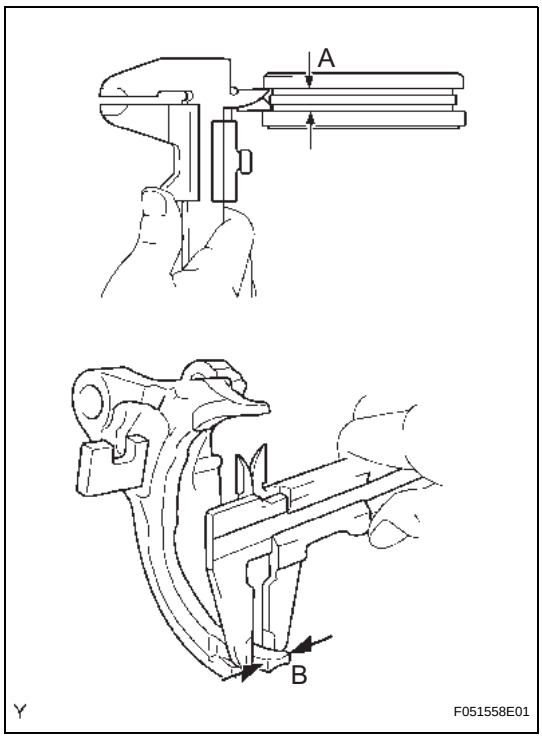
If the clearance is outside the specification, replace the transmission hub sleeve No. 3 and gear shift fork No. 4.



6. INSPECT NO. 1 TRANSMISSION HUB SLEEVE

(a) Check the sliding condition between the transmission hub No. 1 and transmission hub sleeve No. 1.

(b) Check that the spline gear teeth of the transmission hub sleeve No. 1 are not worn.

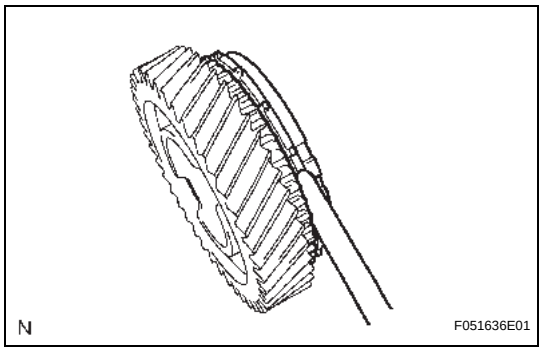


(c) Using vernier calipers, measure the width of the transmission hub sleeve No. 1 groove (A) and the thickness of the claw part on the gear shift fork No. 1 (B), and calculate the clearance.

Standard clearance (A - B):

0.15 to 0.35 mm (0.0059 to 0.0138 in.)

If the clearance is outside the specification, replace the transmission hub sleeve No. 1 and gear shift fork No. 1.

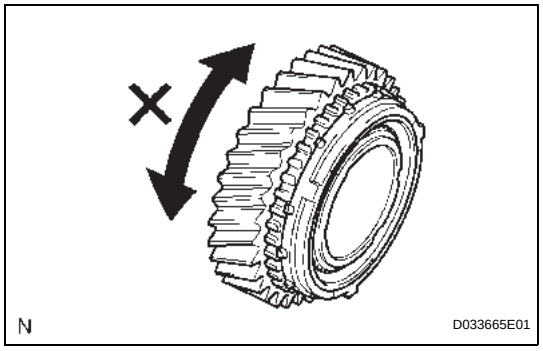


7. INSPECT NO. 4 SYNCHRONIZER RING

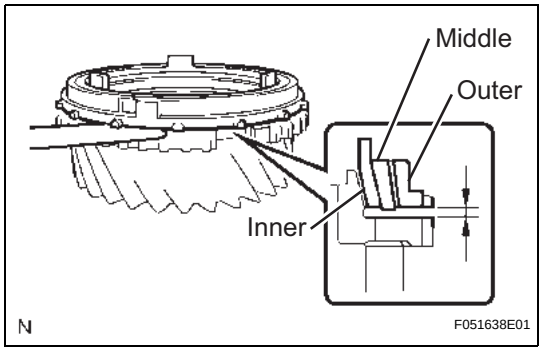
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and reverse gear.

Standard clearance:
0.70 to 1.30 mm (0.0276 to 0.0512 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the reverse gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the reverse gear cone. Check that the ring locks.

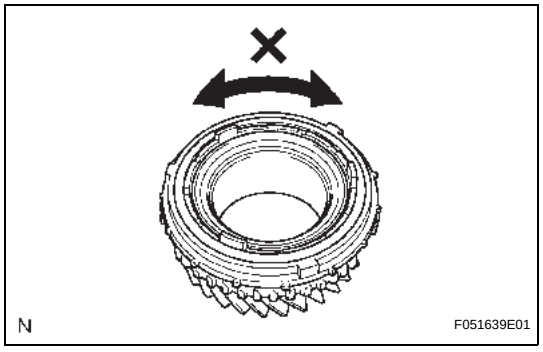


8. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

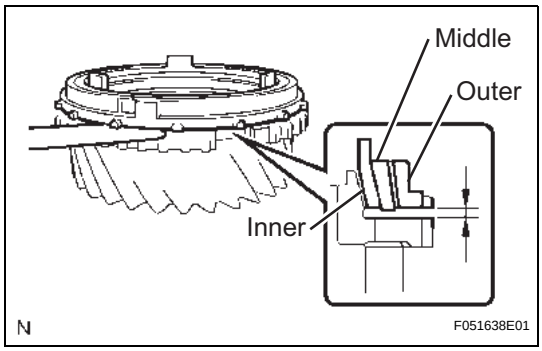
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 1st gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 1st gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 1st gear cone. Check that the ring locks.

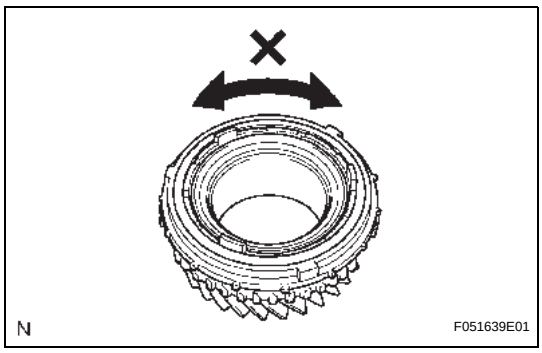


9. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 2nd gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



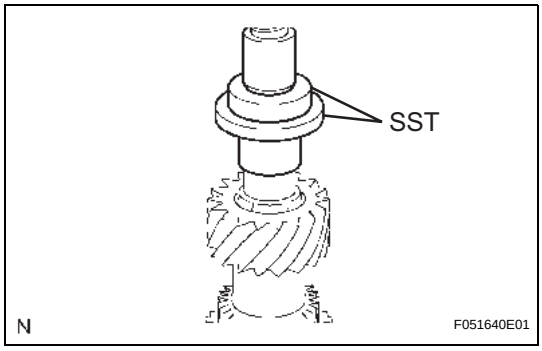
(b) Coat the 2nd gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 2nd gear cone. Check that the ring locks.

REASSEMBLY

1. INSTALL RADIAL BALL BEARING INNER RACE

(a) Using SST and a press, install a new needle roller bearing inner race.

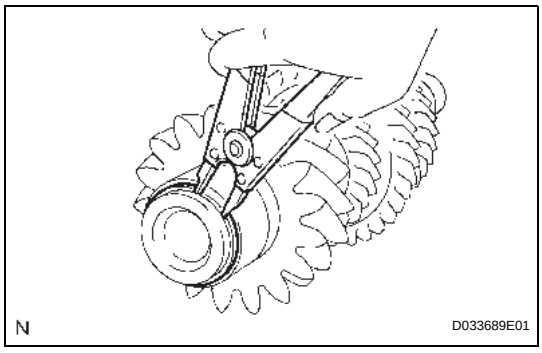
SST 09950-60010 (09951-00540)



2. INSTALL SNAP RING COUNTER GEAR REAR BEARING

(a) Select a snap ring that will allow minimum axial play.

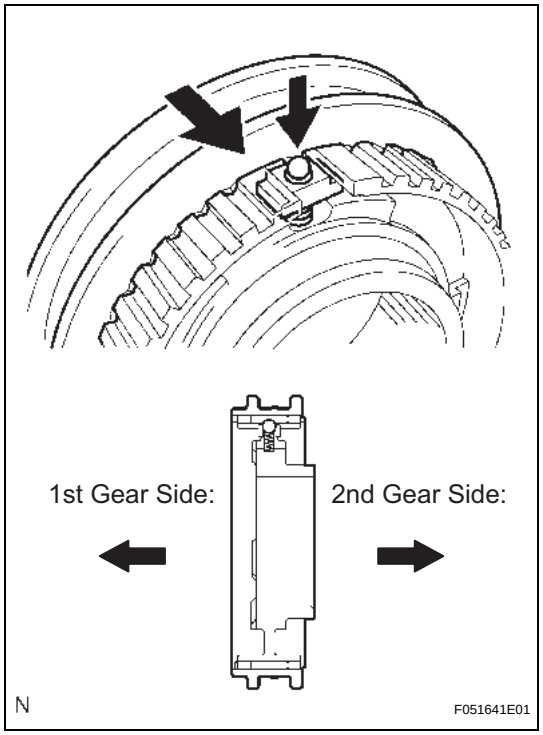
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness



Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C

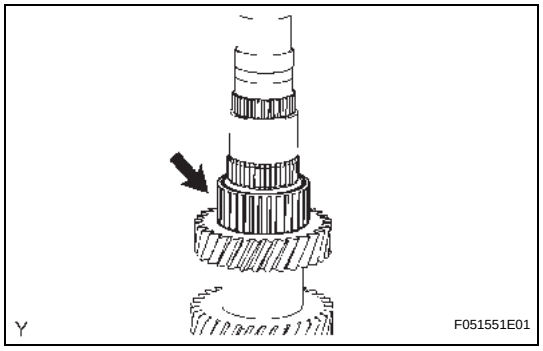
Part No.	Thickness: mm (in.)	Mark
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
90520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



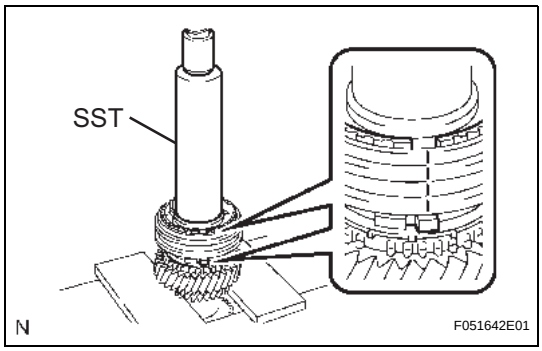
3. INSTALL NO. 1 TRANSMISSION CLUTCH HUB

(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.
NOTICE:
Take care to prevent the ball from flying off.



4. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

(a) Coat the 2nd gear needle roller bearing with gear oil, then install it onto the counter gear.



5. INSTALL COUNTER SHAFT 2ND SPEED GEAR

(a) Coat the countershaft 2nd speed gear with gear oil, then install it onto the counter gear.

(b) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.

(c) Using SST and a press, install the transmission clutch hub No. 1 onto the counter gear.

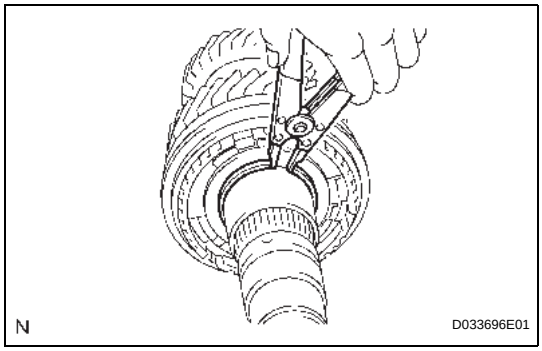
SST 09308-14010

HINT:

Align the convex portion of the synchronizer ring with the groove of the clutch hub.

(d) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.

MT



6. INSTALL CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.

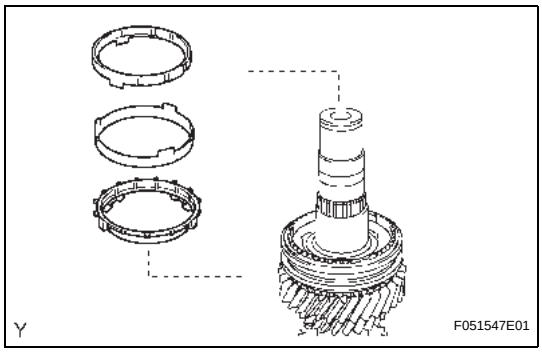
Standard clearance:

0.1 mm (0.004 in.) or less

Snap ring thickness

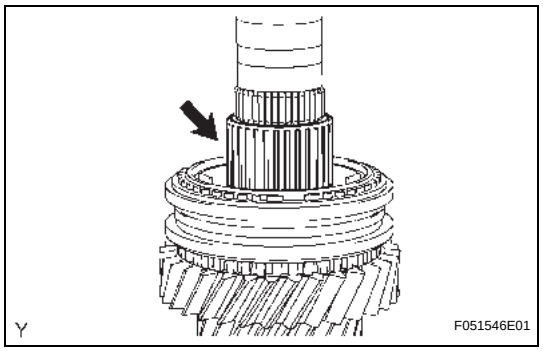
Part No.	Thickness: mm (in.)	Mark
90520-45013	2.28 to 2.33 (0.0898 to 0.0917)	A
90520-45014	2.33 to 2.38 (0.0917 to 0.0937)	B
90520-45015	2.38 to 2.43 (0.0937 to 0.0957)	C
90520-45016	2.43 to 2.48 (0.0957 to 0.0976)	D
90520-45017	2.48 to 2.53 (0.0976 to 0.0996)	E
90520-45018	2.53 to 2.58 (0.0996 to 0.1016)	F
90520-45019	2.58 to 2.63 (0.1016 to 0.1035)	G

(b) Using a snap ring expander, install the snap ring onto the counter gear.



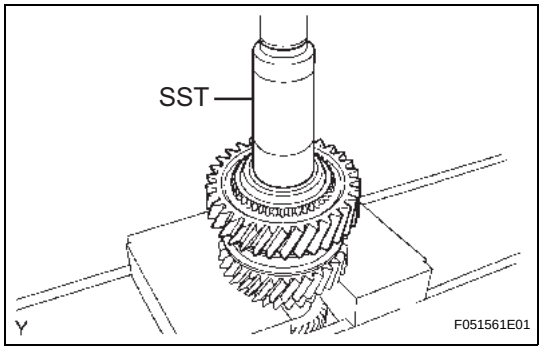
7. INSTALL NO. 1 SYNCHRONIZER RING SET

(a) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.



8. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

(a) Coat the 1st gear needle roller bearing with gear oil, then install it onto the counter gear.

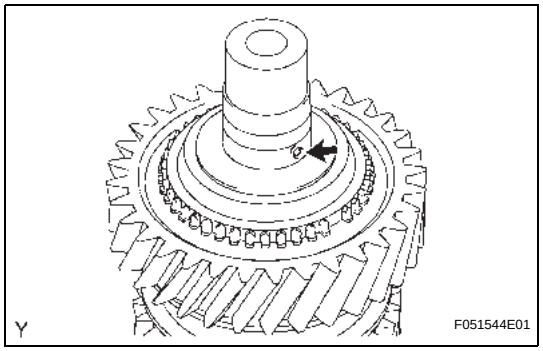


9. INSTALL COUNTERSHAFT GEAR 1ST SPEED

(a) Coat the countershaft gear 1st speed with gear oil, and install it onto the counter gear.

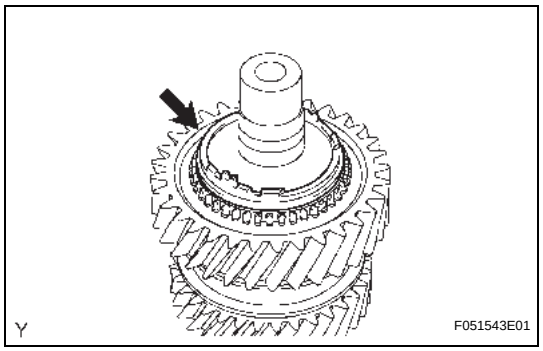
(b) Using SST and a press, install the reverse gear spline piece.

SST 09309-37010



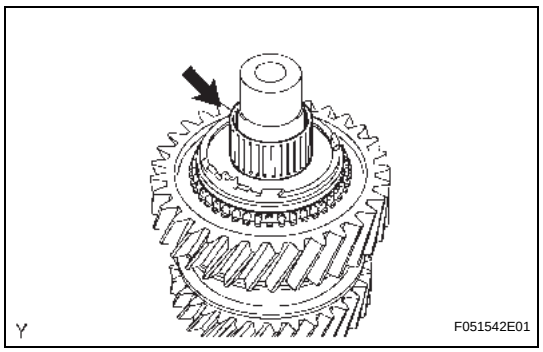
10. INSTALL BALL

(a) Install the ball into the counter gear.



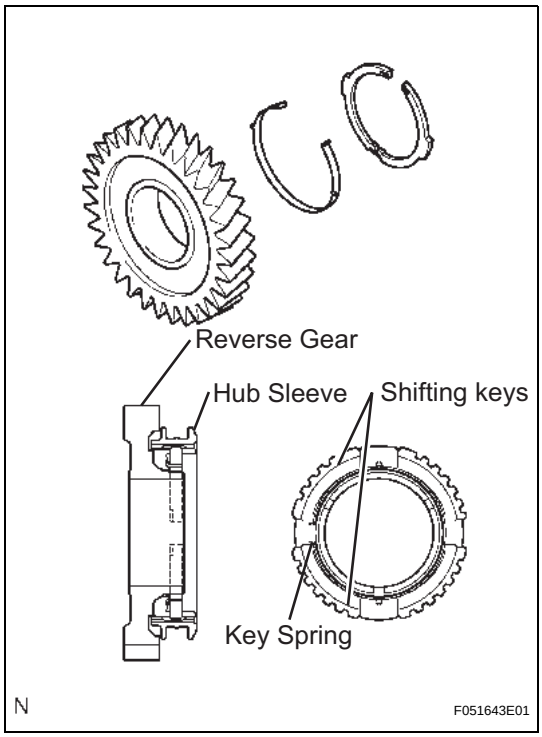
11. INSTALL NO. 4 SYNCHRONIZER RING

(a) Coat the synchronizer ring No. 4 with gear oil, and install it onto the counter gear.



12. INSTALL REVERSE GEAR NEEDLE ROLLER BEARING

(a) Coat the reverse gear needle roller bearing with gear oil, and install it onto the counter gear.

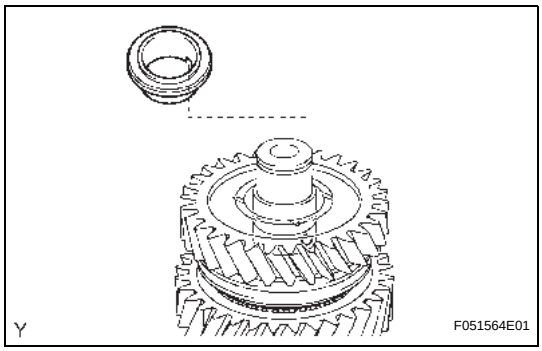


13. INSTALL COUNTERSHAFT REVERSE GEAR

(a) Install the key spring and 2 shifting keys onto the reverse gear.
HINT:
- Install the shifting key with its groove on the reverse gear side.
- Install the key spring with its claw on the reverse gear side.
- Refer to the illustration when installing the key spring.

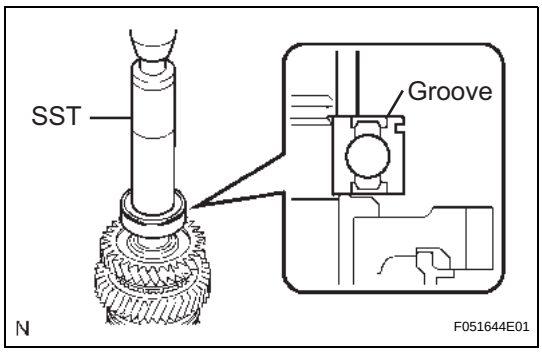
(b) Install the hub sleeve onto the reverse gear.

(c) Coat the countershaft reverse gear with gear oil, then install it onto the counter gear.



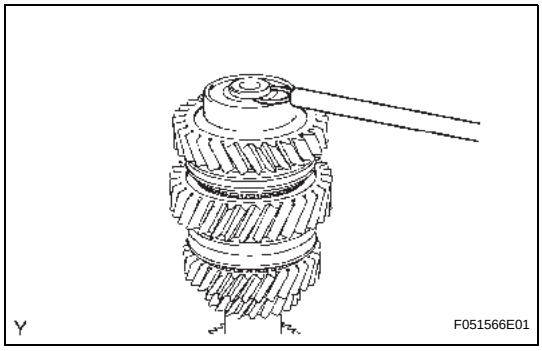
14. INSTALL REVERSE GEAR BEARING RACE INNER

(a) Align the groove of the reverse gear bearing race inner with the ball, and install them.



15. INSTALL COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, install counter gear front bearing or roller onto the counter gear.
SST 09608-06041
HINT:
Make sure that the groove of the bearing faces the correct direction as shown in the illustration.



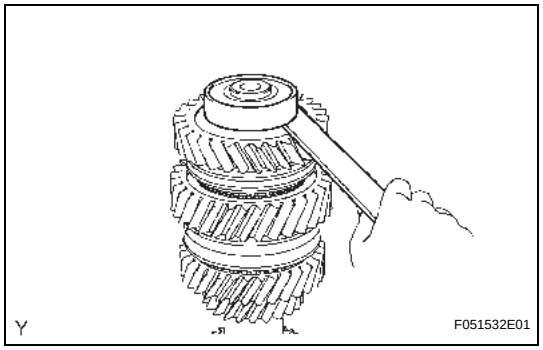
16. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A

Part No.	Thickness: mm (in.)	Mark
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
0520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



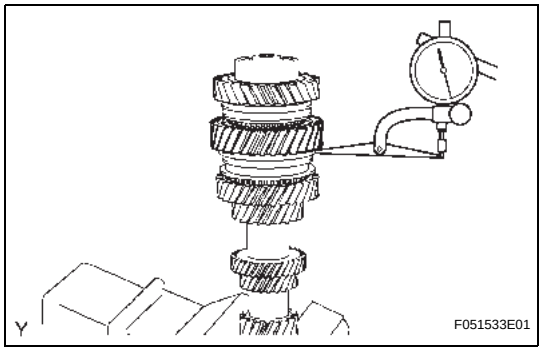
17. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



18. INSPECT 1ST GEAR THRUST CLEARANCE

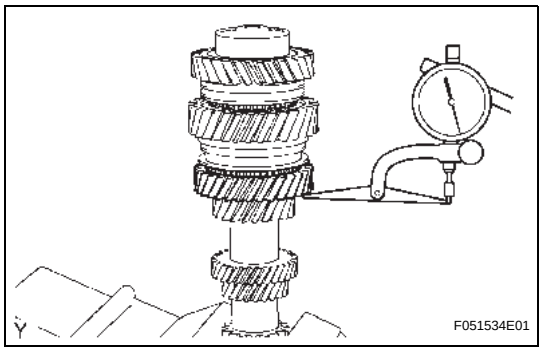
(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.

MT



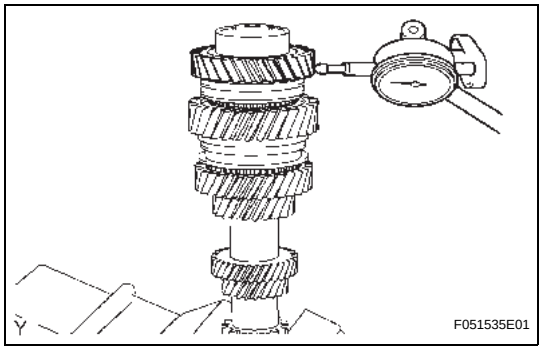
19. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



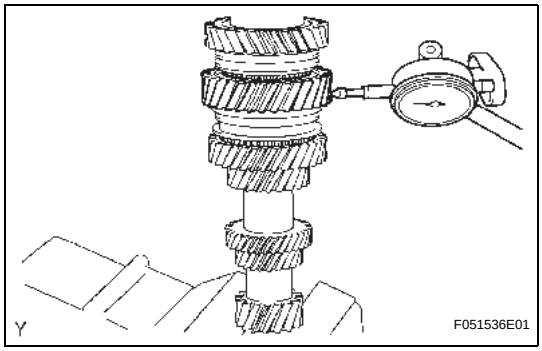
20. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



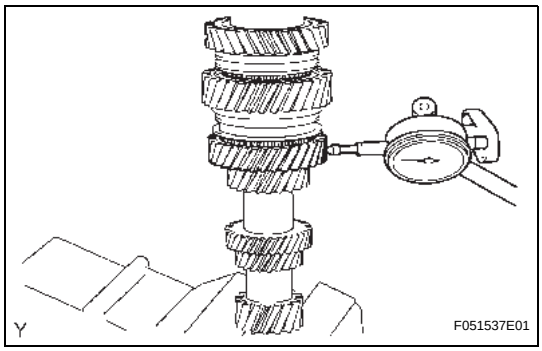
21. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.



22. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

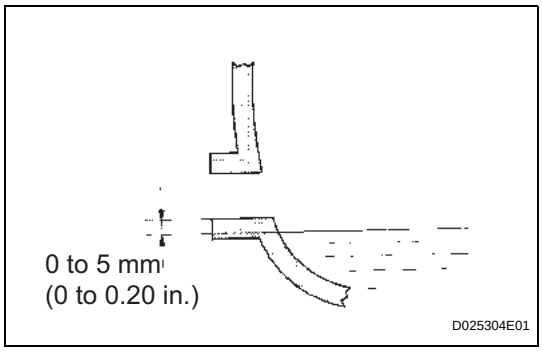
If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.

MANUAL TRANSMISSION SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problems. The numbers indicate the ranked order of probability of each of the possible causes. Check each part in the order suggested. If necessary, replace the applicable parts.

Symptom	Suspected area	See page
Abnormal noise	1. Oil level (Low)	MT-2
	2. Oil (Wrong)	MT-2
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-
Oil leakage	1. Oil level (High)	MT-2
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	-
	4. O-Ring (Worn or damaged)	-
Hard shifting or will not shift	1. Synchronizer ring (Worn or damaged)	-
	2. Shift key spring (Damaged)	-
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	-
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-



MANUAL TRANSMISSION OIL

ON-VEHICLE INSPECTION

1. INSPECT TRANSMISSION OIL

(a) Park the vehicle in a level place.

(b) Remove the transmission filler plug and gasket.

(c) Check that the oil surface is within 5 mm (0.20 in.) of the lowest point of the transmission filler plug opening.

NOTICE:

- **Problems may occur when the oil level is too high or low.**
- **After replacing the oil, drive the vehicle and check the oil level again.**

(d) Check for oil leakage when the oil level is low.

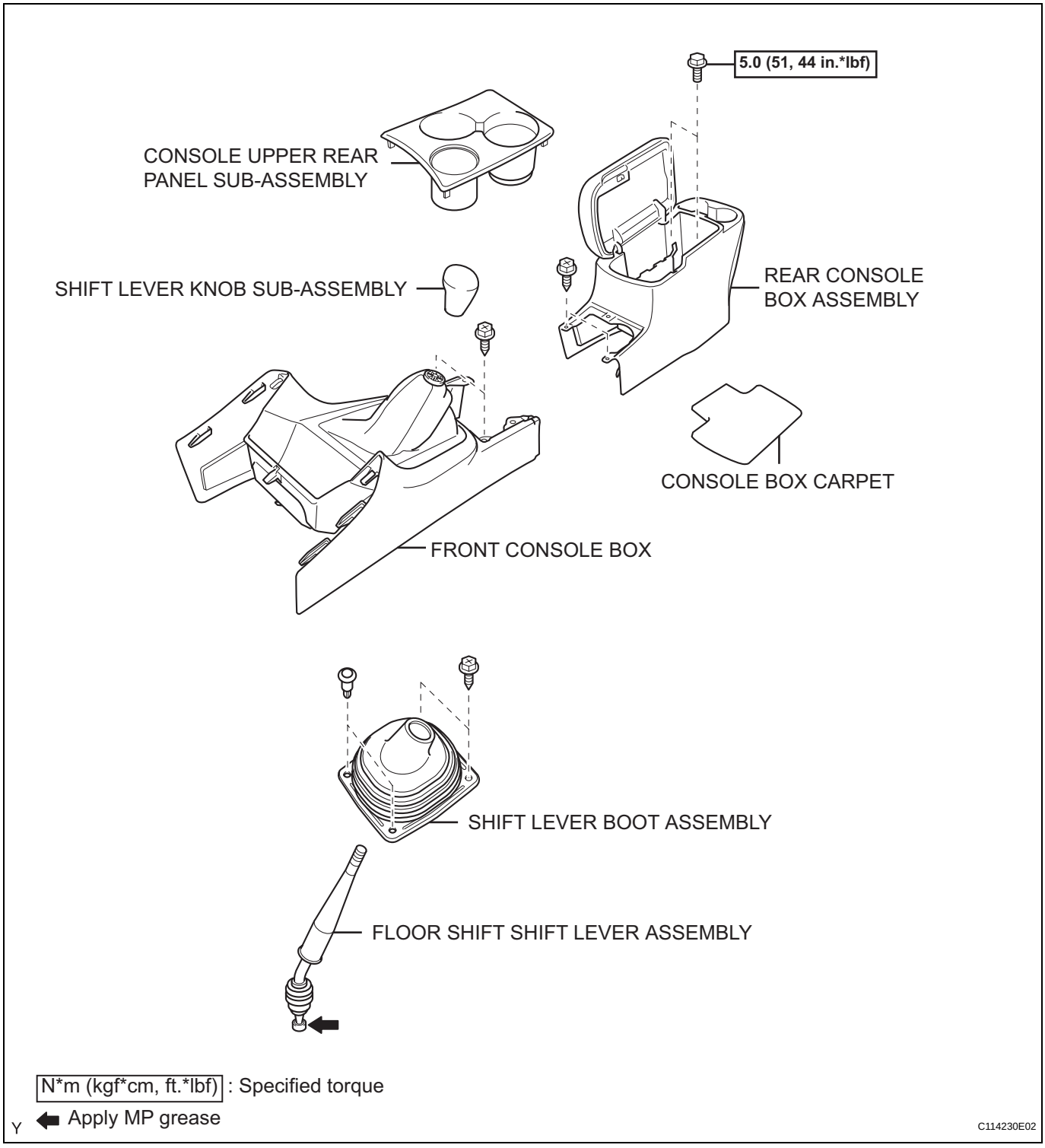
(e) Install the transmission filler plug and a new gasket.

Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

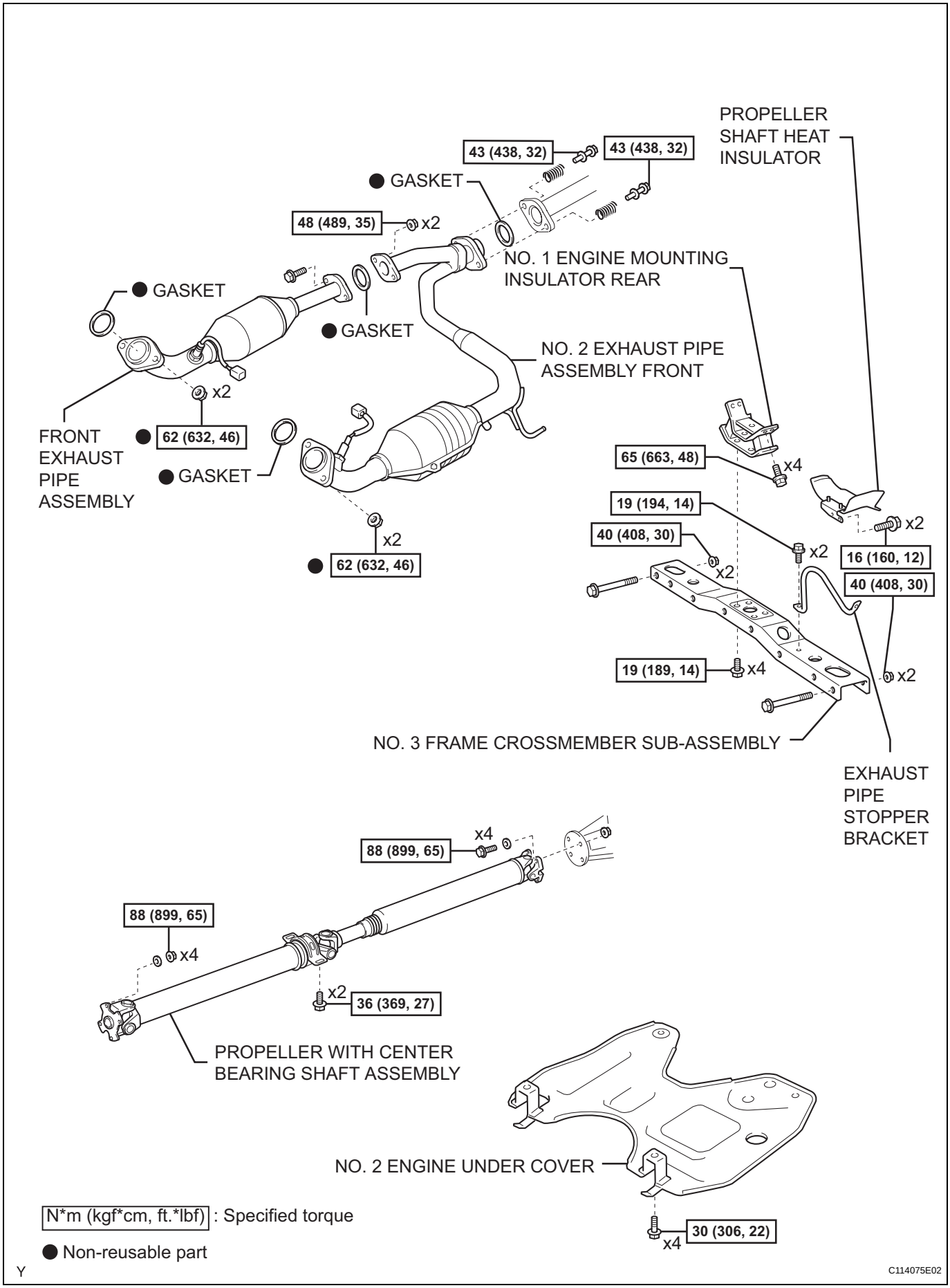
MT

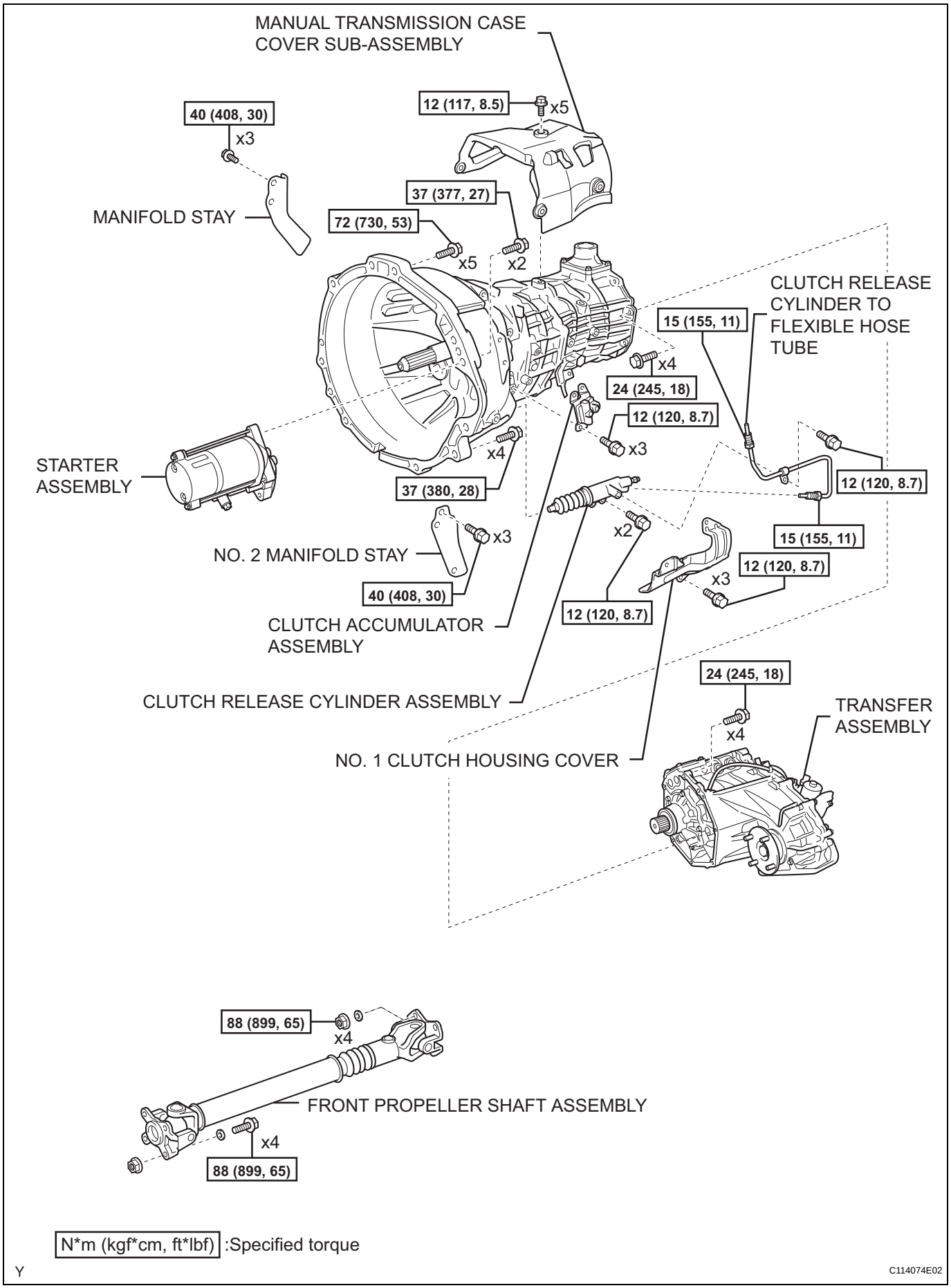
MANUAL TRANSMISSION ASSEMBLY

COMPONENTS



MT


PROPELLER SHAFT HEAT INSULATOR
43 (438, 32)
43 (438, 32)
GASKET
48 (489, 35)
x2
NO. 1 ENGINE MOUNTING INSULATOR REAR
GASKET
GASKET
NO. 2 EXHAUST PIPE ASSEMBLY FRONT
x2
FRONT EXHAUST PIPE ASSEMBLY
62 (632, 46)
GASKET
65 (663, 48)
x4
19 (194, 14)
x2
40 (408, 30)
x2
16 (160, 12)
40 (408, 30)
x2
x2
62 (632, 46)
19 (189, 14)
x4
x2
NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY
EXHAUST PIPE STOPPER BRACKET
x4
88 (899, 65)
88 (899, 65)
x4
x2
36 (369, 27)
PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY
NO. 2 ENGINE UNDER COVER
30 (306, 22)
x4
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Y
C114075E02

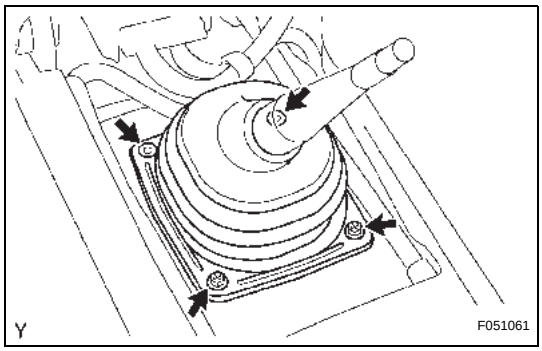

MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY
12 (117, 8.5)
x5
40 (408, 30)
x3
MANIFOLD STAY
37 (377, 27)
72 (730, 53)
x5
x2
CLUTCH RELEASE CYLINDER TO FLEXIBLE HOSE TUBE
15 (155, 11)
x4
24 (245, 18)
12 (120, 8.7)
x3
STARTER ASSEMBLY
x4
37 (380, 28)
12 (120, 8.7)
x3
NO. 2 MANIFOLD STAY
x2
15 (155, 11)
12 (120, 8.7)
40 (408, 30)
x3
12 (120, 8.7)
CLUTCH ACCUMULATOR ASSEMBLY
CLUTCH RELEASE CYLINDER ASSEMBLY
24 (245, 18)
x4
TRANSFER ASSEMBLY
NO. 1 CLUTCH HOUSING COVER
88 (899, 65)
x4
FRONT PROPELLER SHAFT ASSEMBLY
x4
88 (899, 65)
N*m (kgf*cm, ft*lbf) :Specified torque
Y
C114074E02

MT

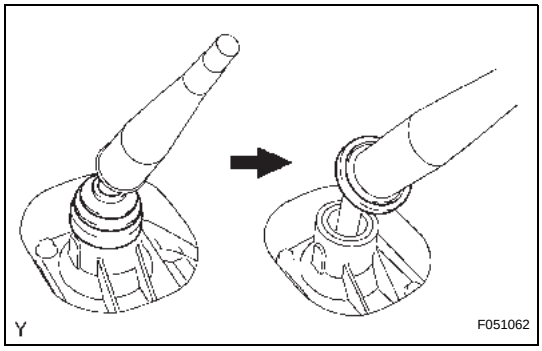
MT

REMOVAL

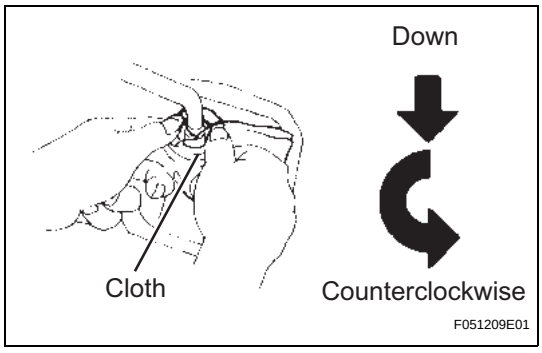
1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (See page IP-9)**
3. **REMOVE REAR CONSOLE BOX ASSEMBLY (See page IP-10)**
4. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY**
5. **REMOVE FRONT CONSOLE BOX (See page IP-11)**
6. **REMOVE SHIFT LEVER BOOT ASSEMBLY**
   (a) Remove the 2 screws and 2 clips, then remove the shift lever boot.



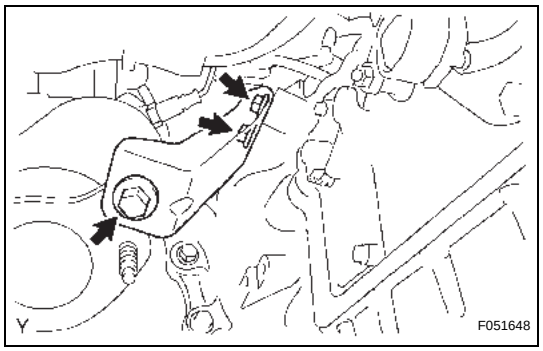
7. **REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Separate the shift lever cap boot from the manual transmission.



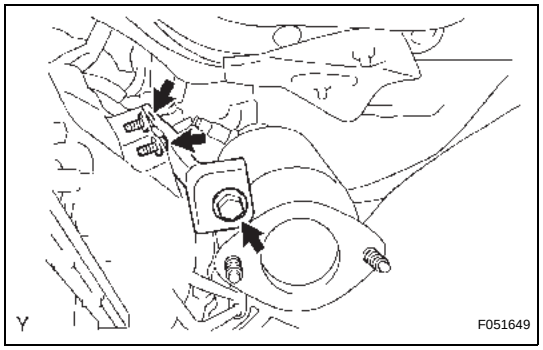
   (b) Cover the shift lever cap with a cloth.
   (c) Pressing down on the shift lever cap, turn it counterclockwise to remove the shift lever.
   (d) Pull out the shift lever.



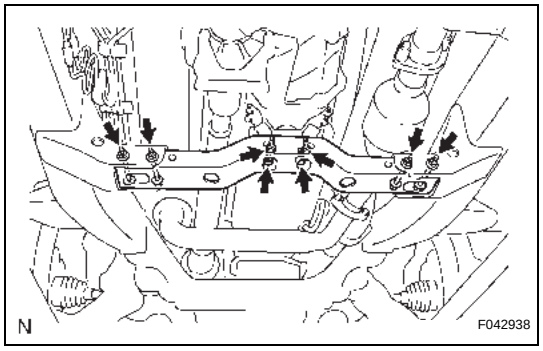
8. **REMOVE NO. 2 ENGINE UNDER COVER**
9. **DRAIN MANUAL TRANSMISSION OIL**
   (a) Remove the drain plug, gasket and then drain the manual transmission oil.
   (b) Install a new gasket and drain plug.
   Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)
10. **REMOVE EXHAUST PIPE ASSEMBLY (See page EX-3)**
11. **REMOVE FRONT PROPELLER SHAFT ASSEMBLY (See page PR-16)**
12. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-27)**



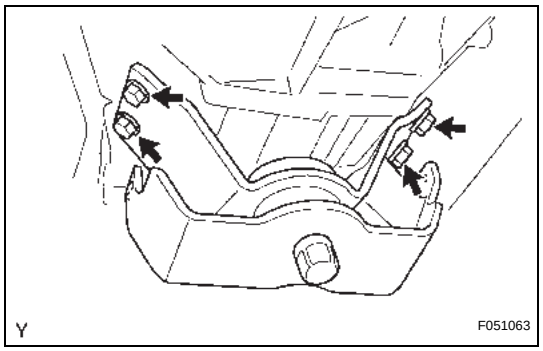
13. **REMOVE NO. 2 MANIFOLD STAY**
    (a) Remove the 3 bolts and manifold stay No. 2.



14. **REMOVE MANIFOLD STAY**
    (a) Remove the 3 bolts and manifold stay.
15. **REMOVE STARTER ASSEMBLY (See page ST-13)**
16. **REMOVE NO. 1 CLUTCH HOUSING COVER (See page CL-24)**
17. **REMOVE CLUTCH RELEASE CYLINDER ASSEMBLY (See page CL-24)**
18. **REMOVE CLUTCH ACCUMULATOR ASSEMBLY (See page CL-28)**
19. **SUPPORT MANUAL TRANSMISSION WITH TRANSFER**
    (a) Support the manual transmission with a transmission jack.

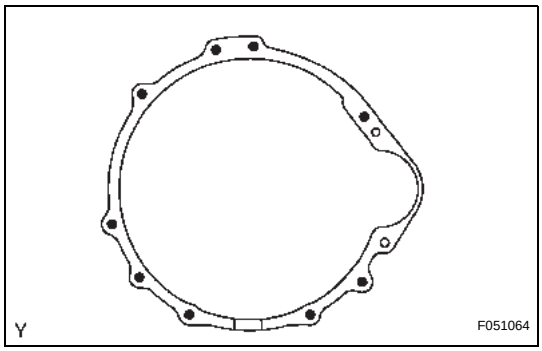


20. **REMOVE NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY**
    (a) Remove the 4 bolts on the frame crossmember sub-assembly No. 3.
    (b) Remove the 4 nuts, 4 bolts and frame crossmember sub-assembly No. 3.



21. **REMOVE NO. 1 ENGINE MOUNTING INSULATOR REAR**
    (a) Remove the 4 bolts and engine mounting insulator rear from the manual transmission.
22. **DISCONNECT CONNECTOR**
    (a) Tilt down the transmission.
    (b) Disconnect the transfer shift actuator connector.
    (c) Disconnect the transfer indicator switch No. 1 connector.
    (d) Disconnect the transfer indicator switch No. 2 connector.
    (e) Disconnect the speedometer sensor connector.
    (f) Disconnect the back up lamp switch connector.
23. **DISCONNECT WIRE HARNESS**

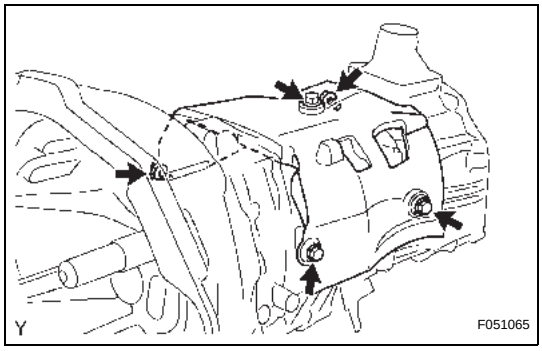
MT



24. REMOVE MANUAL TRANSMISSION WITH TRANSFER

(a) Remove the 9 bolts.

(b) Separate and remove the manual transmission.



25. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

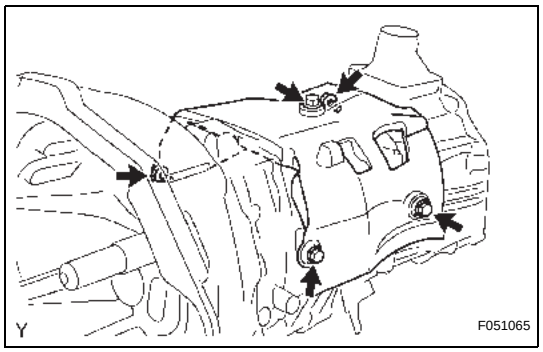
(a) Remove the 5 bolts and manual transmission case cover.

26. REMOVE TRANSFER ASSEMBLY (See page TF-14)

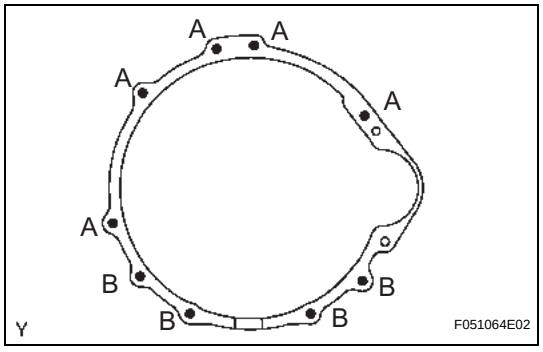
MT

INSTALLATION

1. **INSTALL TRANSFER ASSEMBLY (See page TF-38)**

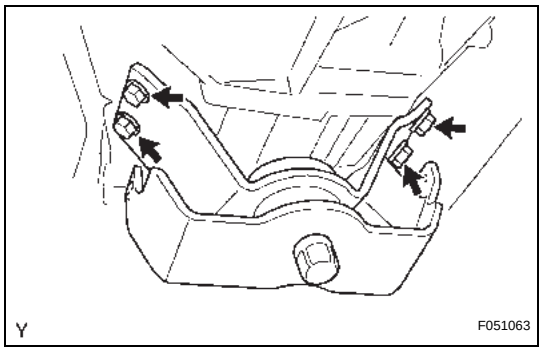


2. **INSTALL MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY**
   (a) Install the manual transmission case cover with the 5 bolts.
   Torque: 12 N*m (117 kgf*cm, 8.5 ft.*lbf)

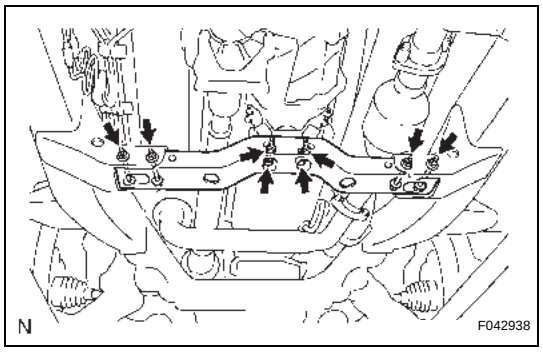


3. **INSTALL MANUAL TRANSMISSION WITH TRANSFER**
   (a) Install the manual transmission with transfer with the 9 bolts.
   Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
   37 N*m (380 kgf*cm, 28 ft.*lbf) for bolt B

4. **CONNECT WIRE HARNESS**



5. **INSTALL NO. 1 ENGINE MOUNTING INSULATOR REAR**
   (a) Install the engine mounting insulator rear No. 1 with the 4 bolts.
   Torque: 65 N*m (663 kgf*cm, 48 ft.*lbf)



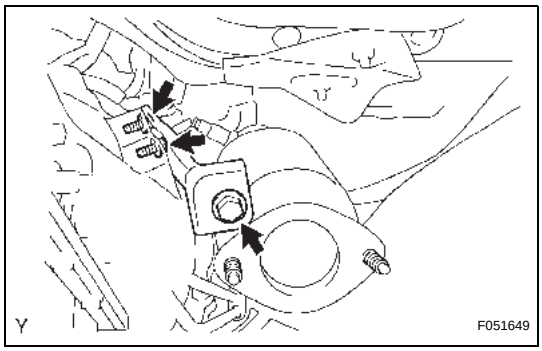
6. **INSTALL NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY**
   (a) Install the frame crossmember sub-assembly No. 3 with the 4 bolts and 4 nuts.
   Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
   (b) Install the frame crossmember sub-assembly No. 3 with the 4 bolts.
   Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)

7. **INSTALL CLUTCH ACCUMULATOR ASSEMBLY (See page CL-28)**

8. **INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY (See page CL-25)**

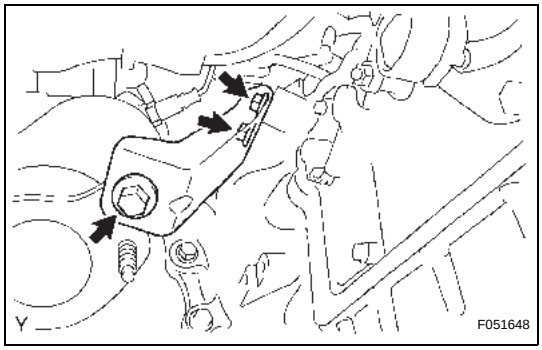
9. **INSTALL NO. 1 CLUTCH HOUSING COVER (See page CL-25)**

10. **INSTALL STARTER ASSEMBLY (See page ST-19)**



11. INSTALL MANIFOLD STAY

(a) Install the manifold stay with the 3 bolts.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)



12. INSTALL NO. 2 MANIFOLD STAY

(a) Install the manifold stay No. 2 with the 3 bolts.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)

13. INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-32)

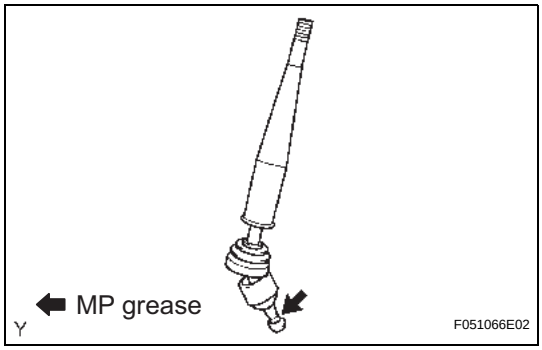
14. INSTALL FRONT PROPELLER SHAFT ASSEMBLY (See page PR-19)

15. INSTALL EXHAUST PIPE ASSEMBLY (See page EX-3)

16. ADD MANUAL TRANSMISSION OIL

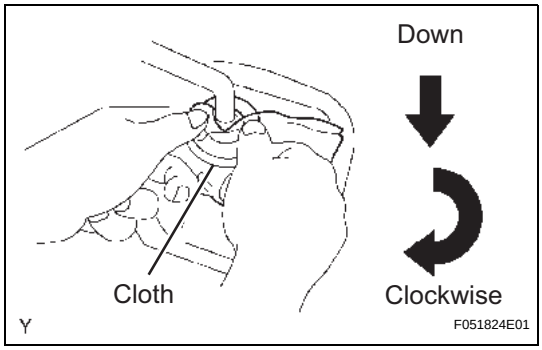
17. ADJUST MANUAL TRANSMISSION OIL (See page MT-2)

18. INSTALL NO. 2 ENGINE UNDER COVER



19. INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY

(a) Apply MP grease to the tip of the shift lever.



(b) Cover the shift lever cap with a cloth.
(c) Pressing down on the shift lever cap, turn it clockwise to install the shift lever.

20. INSTALL SHIFT LEVER BOOT ASSEMBLY

(a) Install the shift lever boot with the 2 screws and 2 clips.

21. INSTALL FRONT CONSOLE BOX (See page IP-23)

22. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY

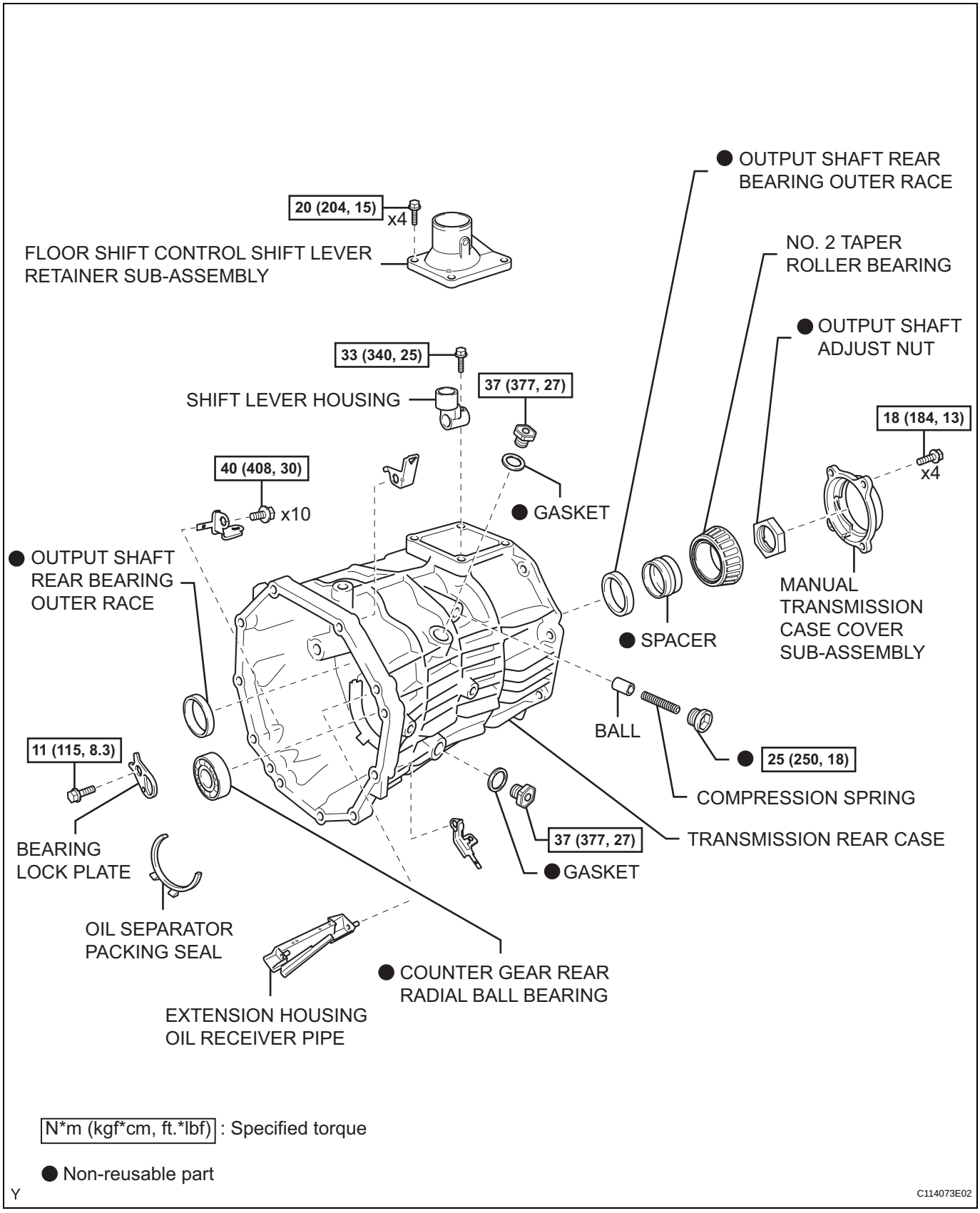
23. INSTALL REAR CONSOLE BOX ASSEMBLY (See page IP-24)

24. INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (See page IP-25)

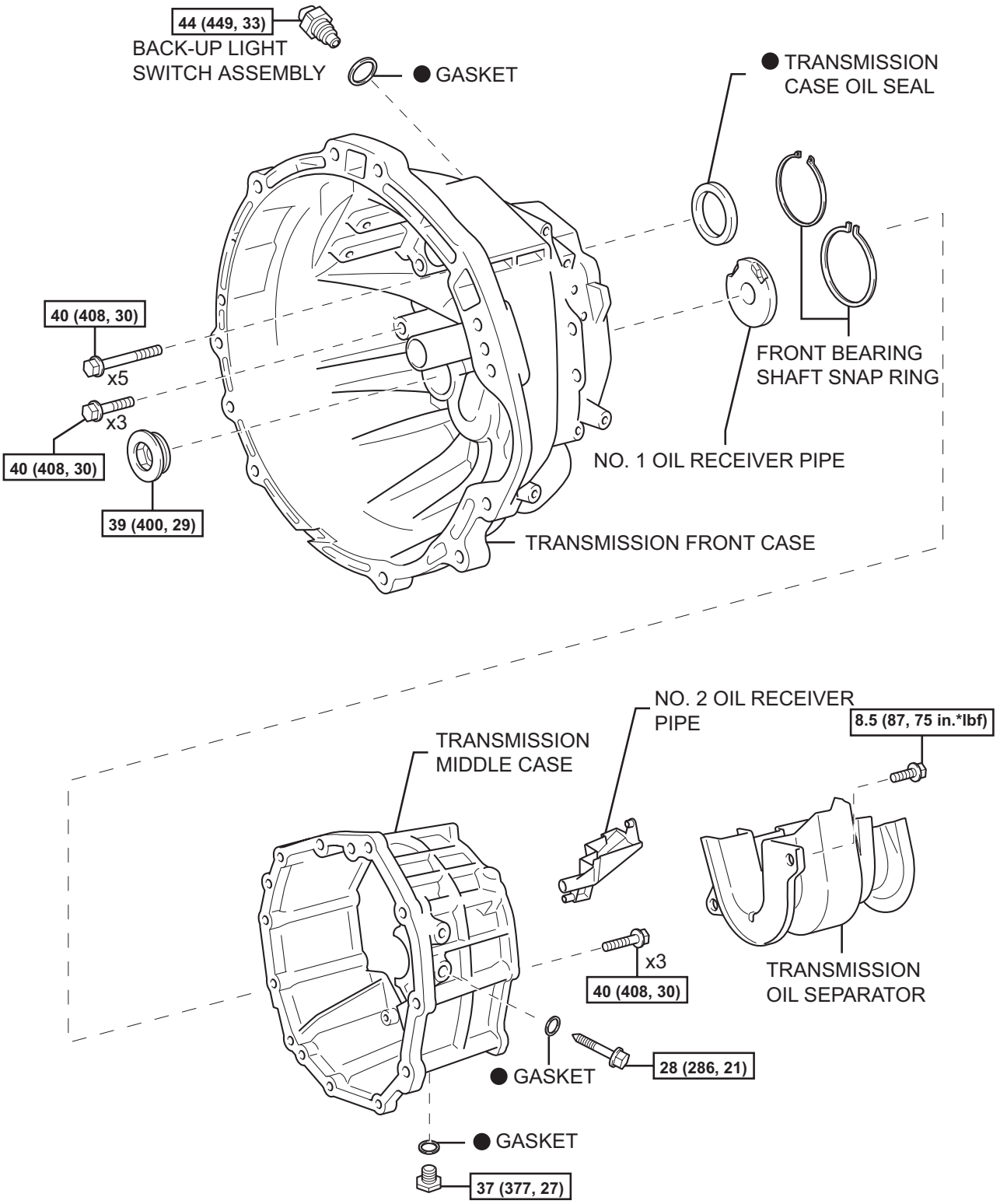
25. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL
Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)

MANUAL TRANSMISSION UNIT

COMPONENTS



MT

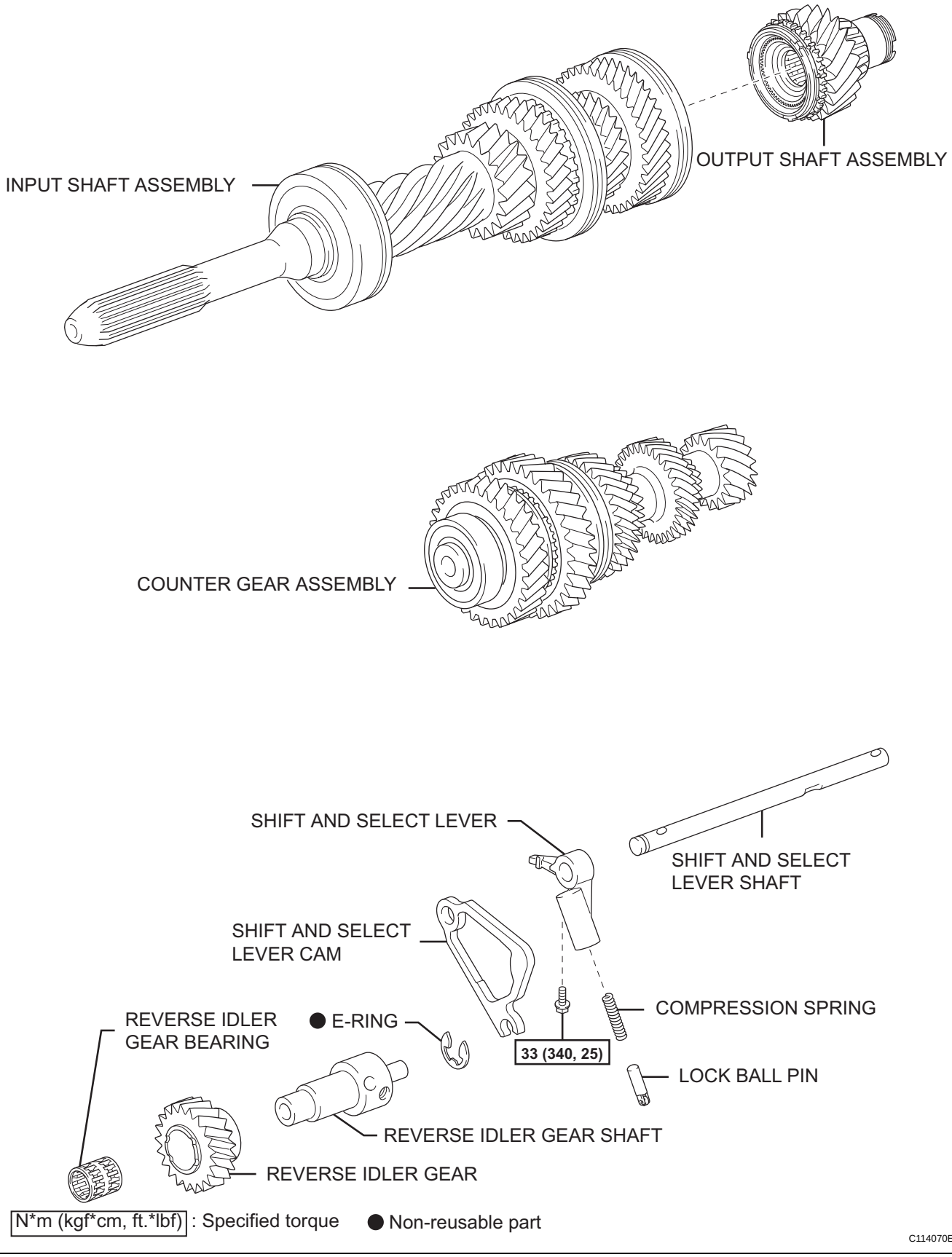


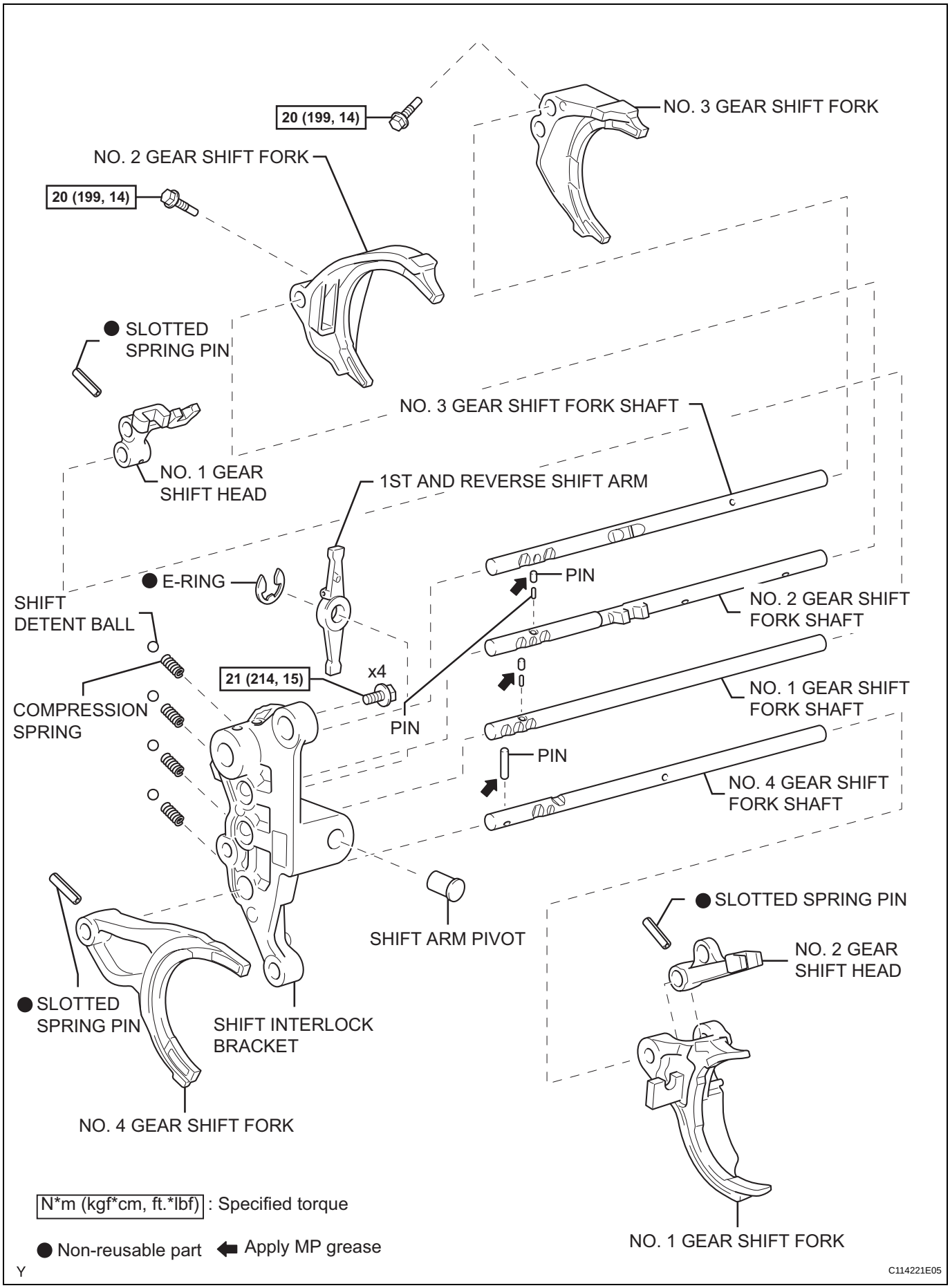
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

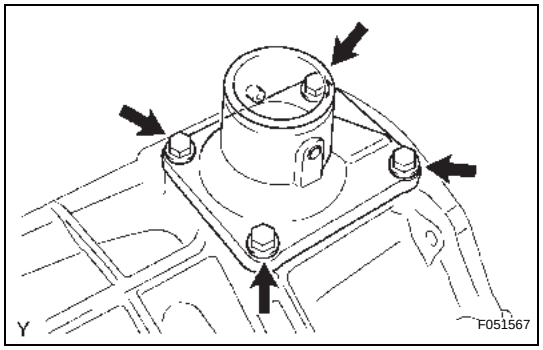
Y

C114219E04


INPUT SHAFT ASSEMBLY
OUTPUT SHAFT ASSEMBLY
COUNTER GEAR ASSEMBLY
SHIFT AND SELECT LEVER
SHIFT AND SELECT LEVER SHAFT
SHIFT AND SELECT LEVER CAM
COMPRESSION SPRING
REVERSE IDLER GEAR BEARING
E-RING
33 (340, 25)
LOCK BALL PIN
REVERSE IDLER GEAR SHAFT
REVERSE IDLER GEAR
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Y
C114070E02

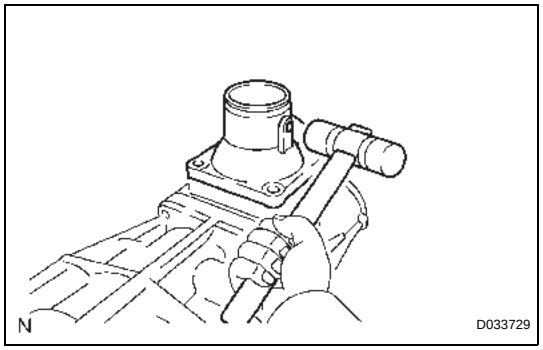

20 (199, 14)
NO. 3 GEAR SHIFT FORK
NO. 2 GEAR SHIFT FORK
20 (199, 14)
● SLOTTED SPRING PIN
NO. 3 GEAR SHIFT FORK SHAFT
NO. 1 GEAR SHIFT HEAD
1ST AND REVERSE SHIFT ARM
● E-RING
PIN
SHIFT DETENT BALL
NO. 2 GEAR SHIFT FORK SHAFT
21 (214, 15)
x4
COMPRESSION SPRING
PIN
NO. 1 GEAR SHIFT FORK SHAFT
PIN
NO. 4 GEAR SHIFT FORK SHAFT
● SLOTTED SPRING PIN
SHIFT ARM PIVOT
NO. 2 GEAR SHIFT HEAD
● SLOTTED SPRING PIN
SHIFT INTERLOCK BRACKET
NO. 4 GEAR SHIFT FORK
NO. 1 GEAR SHIFT FORK
N*m (kgf*cm, ft.*lbf) : Specified torque
● Non-reusable part
Apply MP grease
Y
C114221E05

DISASSEMBLY

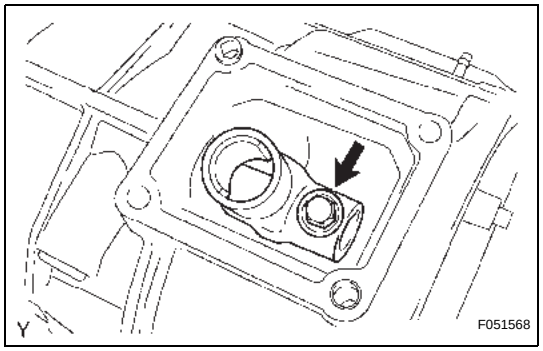


1. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Remove the 4 bolts, then remove the floor shift control shift lever retainer.

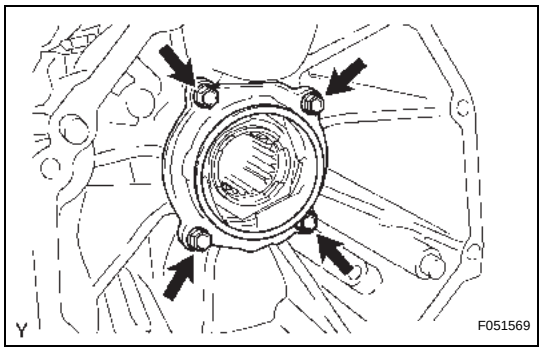


(b) Using a plastic hammer, remove the floor shift control shift lever retainer.



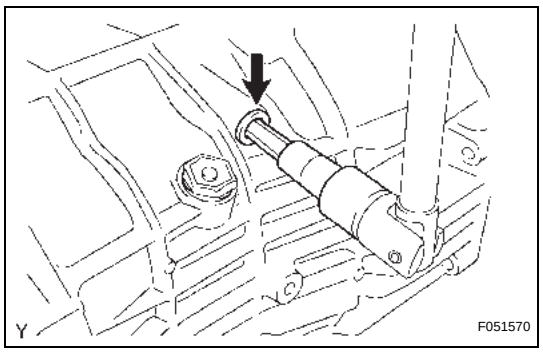
2. REMOVE SHIFT LEVER HOUSING

(a) Remove the bolt, then separate the shift lever housing.



3. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

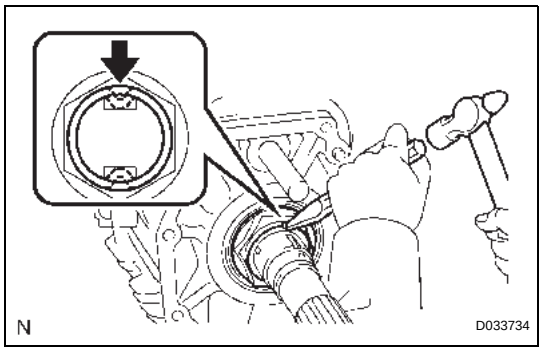
(a) Remove the 4 bolts, then remove the transmission case cover.



4. REMOVE SHIFT DETENT BALL PLUG

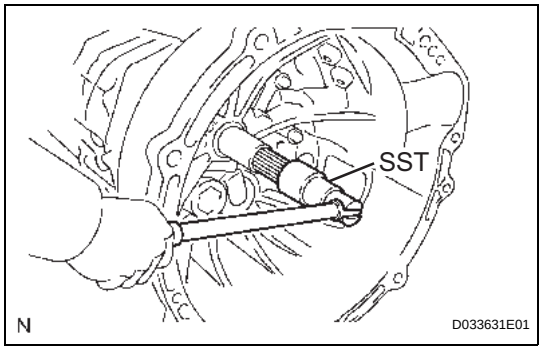
(a) Using a socket hexagon wrench (10 mm), remove the shift detent ball plug from the transmission rear case.

(b) Remove the ball and compression spring from the transmission rear case.



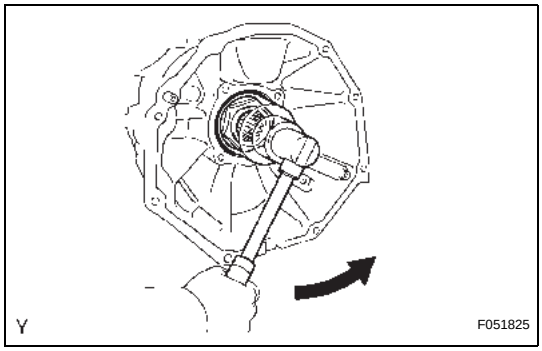
5. REMOVE OUTPUT SHAFT ADJUST NUT

(a) Using a chisel and hammer, unstake the nut.



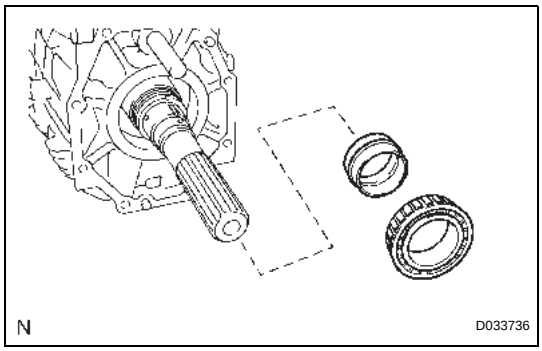
(b) Place the gearshift into 5th gear, and then fix the input shaft using SST.
SST 09556-16030

(c) Using a belt and wooden block, fasten the transmission to the workbench.

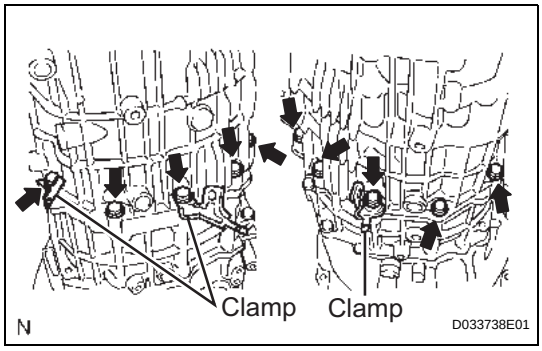


(d) Using a socket wrench (60 mm), remove the nut from the transmission rear case.

(e) Remove the belt and wooden block from the transmission.

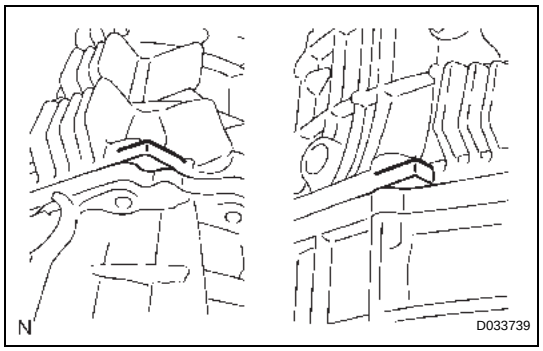


(f) Remove the taper roller bearing No. 2 and spacer.

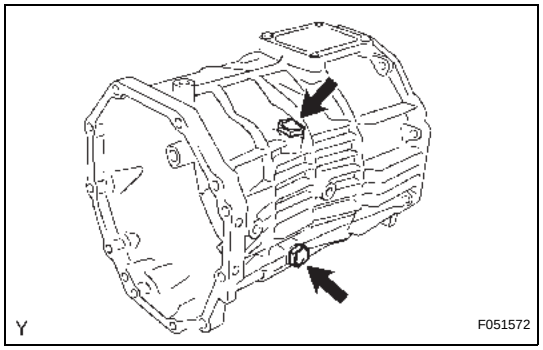


6. REMOVE TRANSMISSION REAR CASE

(a) Remove the 10 bolts and 3 clamps.

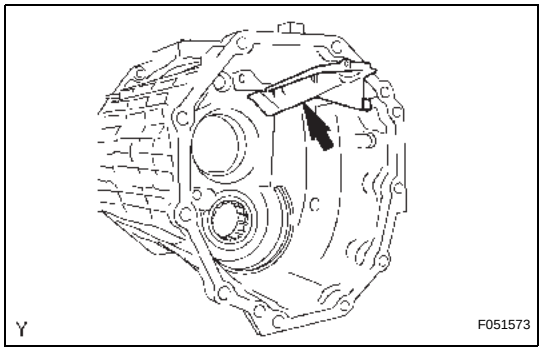


(b) Using a plastic hammer, carefully tap out the rear case.



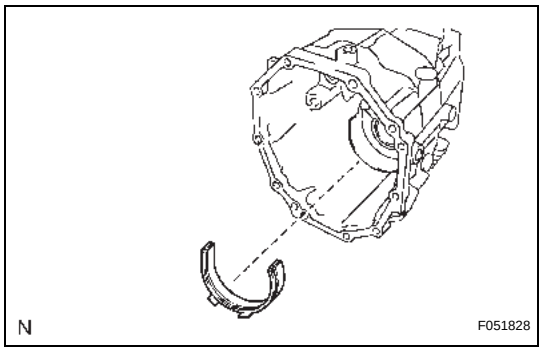
7. REMOVE MANUAL TRANSMISSION FILLER PLUG

(a) Remove the 2 transmission filler plugs and 2 gaskets from the transmission rear case.



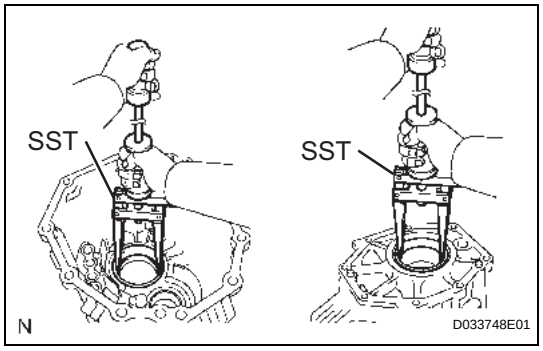
8. REMOVE EXTENSION HOUSING OIL RECEIVER PIPE

(a) Remove the extension housing oil receiver pipe from the transmission rear case.



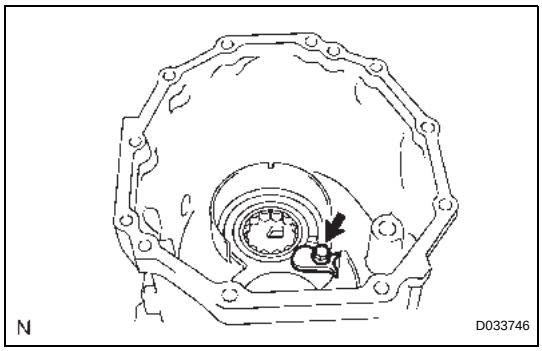
9. REMOVE OIL SEPARATOR PACKING SEAL

(a) Remove the oil separator packing seal from the transmission rear case.



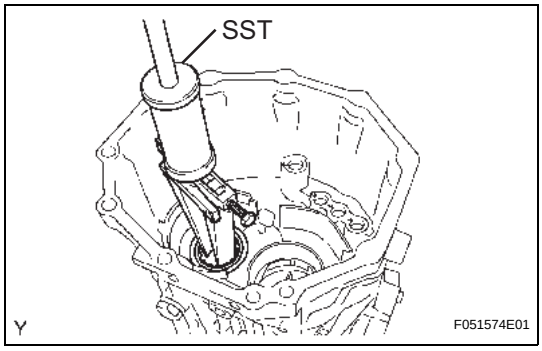
10. REMOVE OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST, remove the 2 bearing outer races.
SST 09308-00010

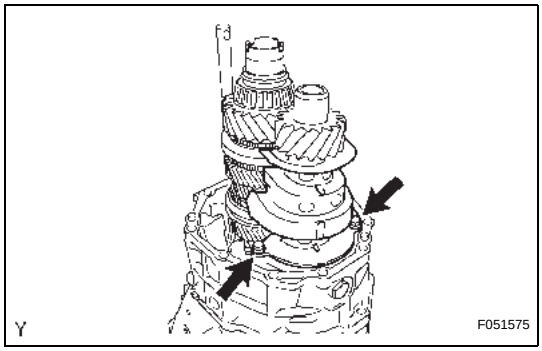


11. REMOVE COUNTER GEAR REAR RADIAL BALL BEARING

(a) Remove the bolt, then remove the bearing lock plate.

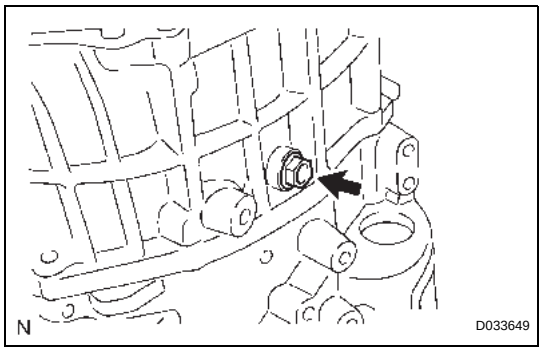


(b) Using SST, remove the counter gear rear radial ball bearing from the transmission rear case.
SST 09308-00010



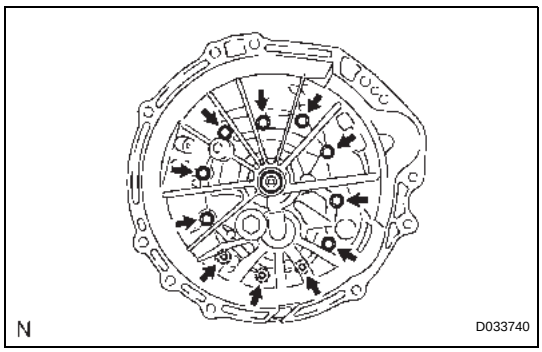
12. REMOVE TRANSMISSION OIL SEPARATOR

(a) Remove the 2 bolts, then remove the oil separator.



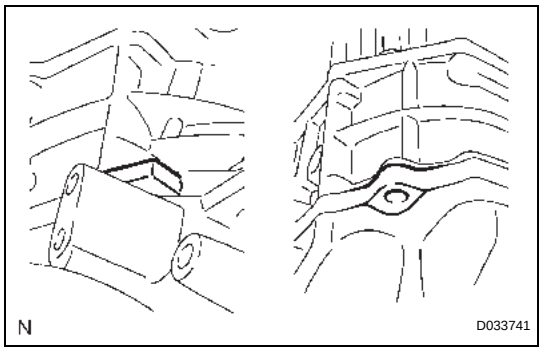
13. REMOVE REVERSE IDLER GEAR SHAFT BOLT

(a) Remove the reverse idler gear shaft bolt from the transmission middle case.

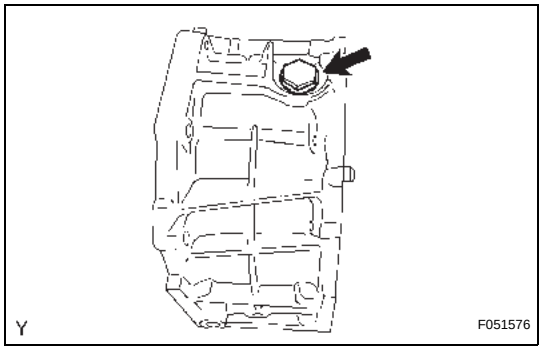


14. REMOVE TRANSMISSION MIDDLE CASE

(a) Remove the 11 bolts, then remove the transmission middle case.

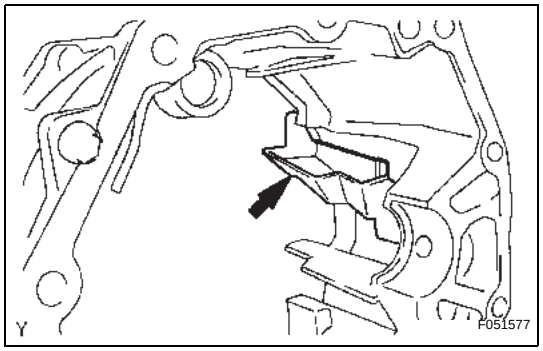


(b) Using a plastic hammer, carefully tap out the middle case.



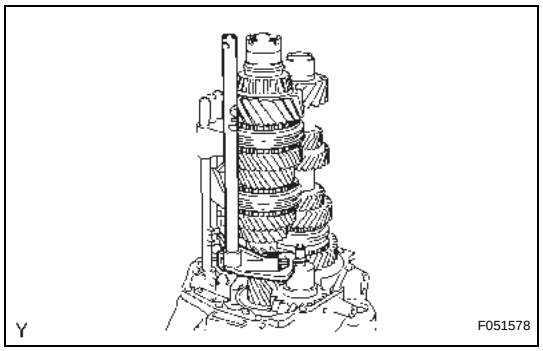
15. REMOVE DRAIN PLUG SUB-ASSEMBLY

(a) Remove the drain plug and gasket from the transmission middle case.



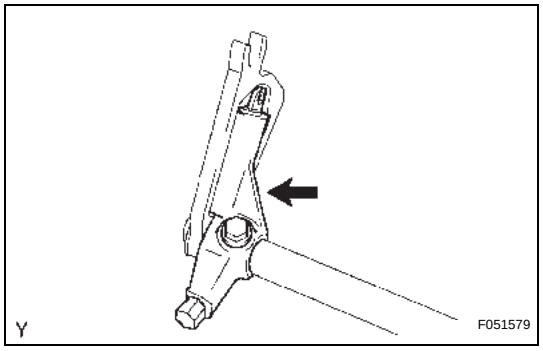
16. REMOVE NO. 2 OIL RECEIVER PIPE

(a) Remove the oil receiver pipe No. 2 from the transmission middle case.



17. REMOVE SHIFT AND SELECT LEVER SHAFT

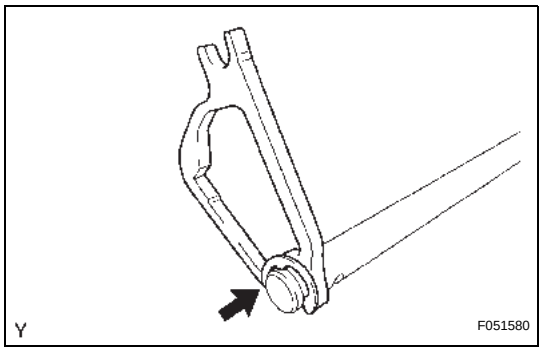
(a) Remove the shift and select lever shaft from the reverse gear shaft.



18. REMOVE SHIFT AND SELECT LEVER

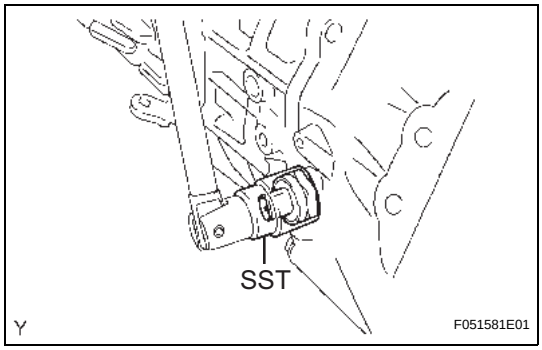
(a) Remove the bolt, then remove the shift and select lever.

(b) Remove the lock ball pin and spring from the shift and select lever.



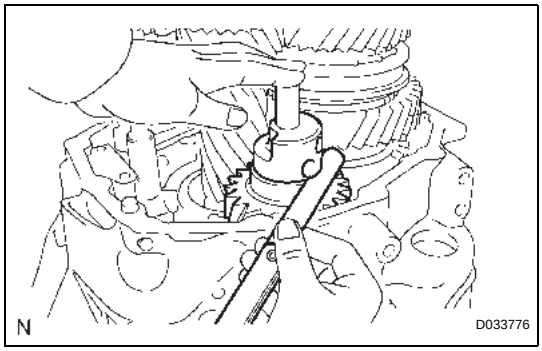
19. REMOVE SHIFT AND SELECT LEVER CAM

(a) Using a screwdriver, remove the E ring and the shift and select lever cam from the shift and select lever shaft.



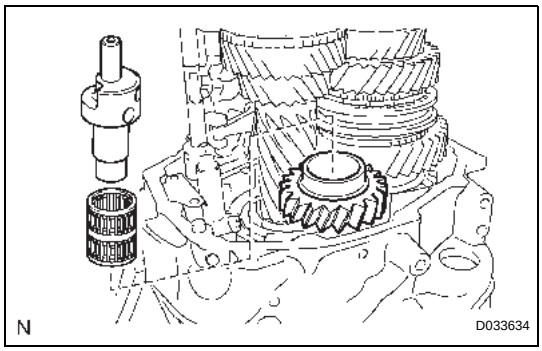
20. REMOVE BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, remove the back-up light switch and gasket.
SST 09817-16011



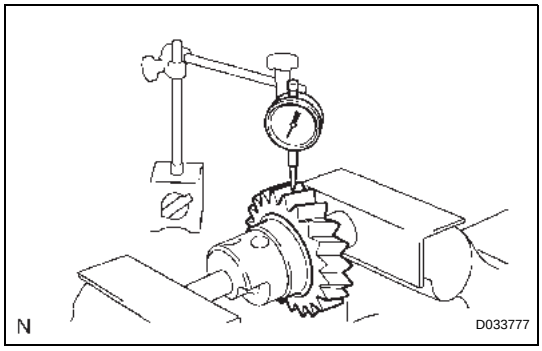
21. INSPECT REVERSE IDLER GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the thrust clearance.
Standard clearance:
0.10 to 0.55 mm (0.0039 to 0.0217 in.)
Maximum clearance:
0.55 to (0.0217 in.)
If the clearance is exceeds the maximum, replace the reverse idler gear shaft.



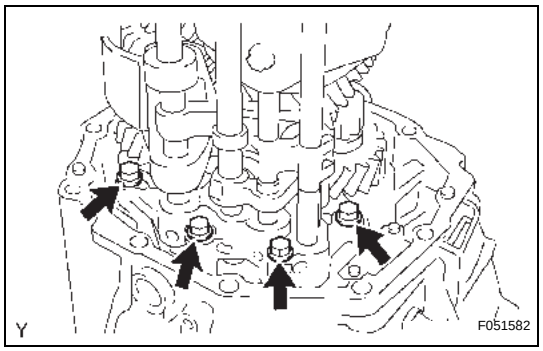
22. REMOVE REVERSE IDLER GEAR

(a) Remove the reverse idle gear shaft, needle roller bearing and reverse idler gear.



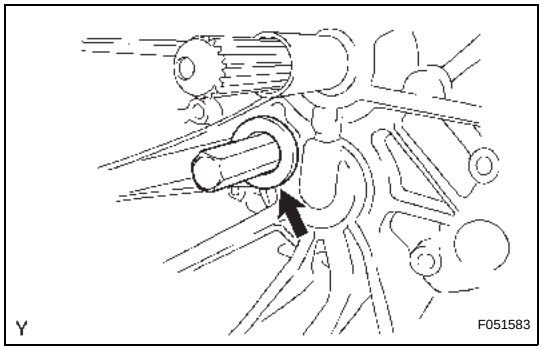
23. INSPECT REVERSE IDLER GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance.
Standard clearance:
0.015 to 0.050 mm (0.0006 to 0.0020 in.)
Maximum clearance:
0.050 mm (0.0020 in.)
If the clearance exceeds the maximum, replace the needle roller bearing.

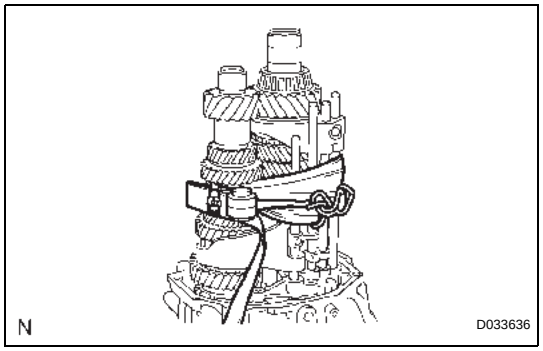


24. REMOVE TRANSMISSION FRONT CASE

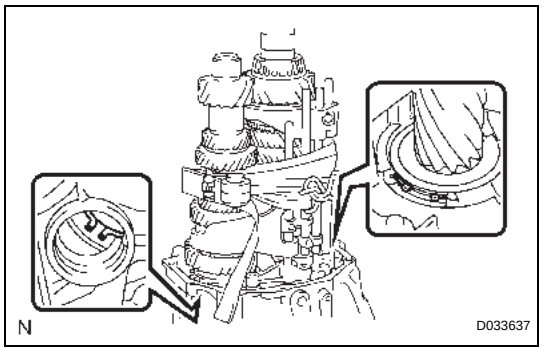
(a) Remove the 4 bolts from the interlock bracket.



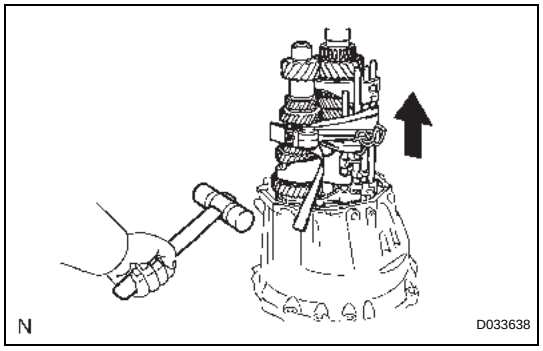
(b) Using a hexagon wrench (24 mm), remove the plug.



(c) Tie the input shaft, counter gear and control assembly with a rope or string.



(d) Expand the 2 snap rings, and lift up the output shaft, input shaft, counter gear and control assembly.

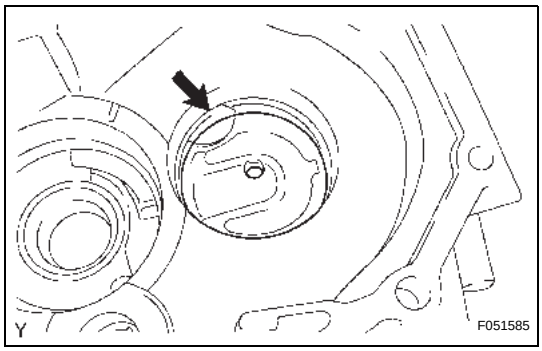


(e) Remove the output shaft, input shaft, counter gear shaft and control assembly while gently tapping the clutch housing with a plastic hammer.

NOTICE:

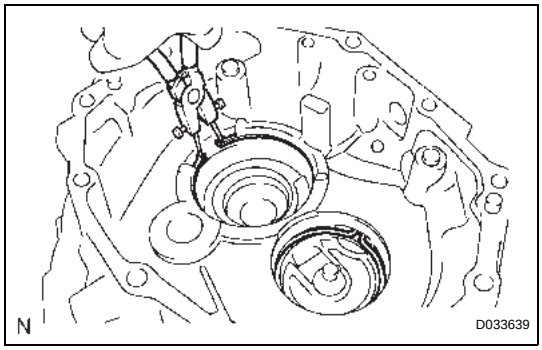
Take care not to subject the output shaft, input shaft, counter gear shaft and control assembly to any impact. This could cause the ball and spring to come out.

(f) Separate the output shaft, input shaft, counter gear shaft and control assembly.



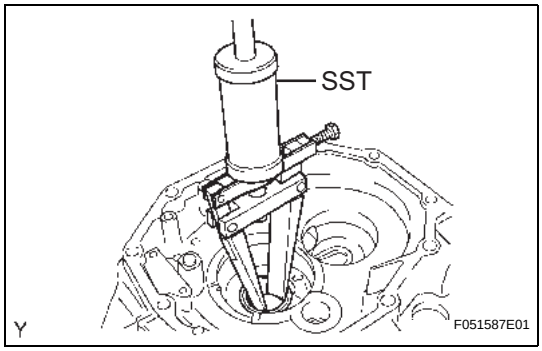
25. REMOVE NO. 1 OIL RECEIVER PIPE

(a) Remove the oil receiver pipe No. 1 from the transmission front case.



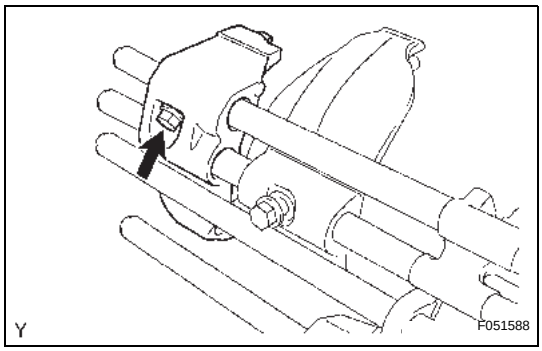
26. REMOVE FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring plier, remove the 2 snap rings.



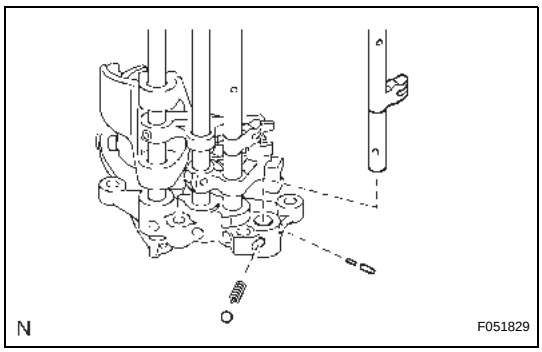
27. REMOVE TRANSMISSION CASE OIL SEAL

(a) Using SST, remove the transmission case oil seal from the transmission front case.
SST 09308-00010



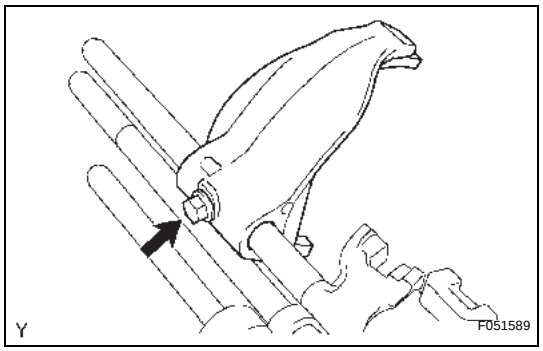
28. REMOVE NO. 3 GEAR SHIFT FORK

(a) Remove the bolt, then remove the gear shift fork No. 3.



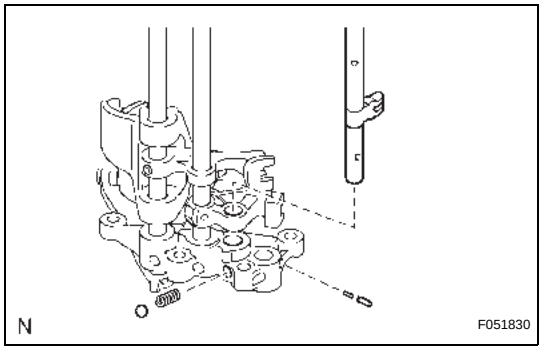
29. REMOVE NO. 3 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 3, boll, spring, interlock pin No. 2 and interlock pin No. 3.



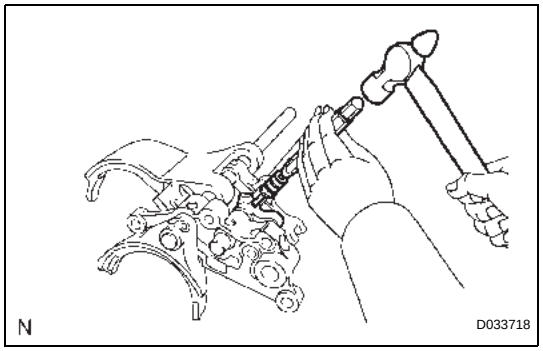
30. REMOVE NO. 2 GEAR SHIFT FORK

(a) Remove the bolt, then remove the gear shift fork No. 2.



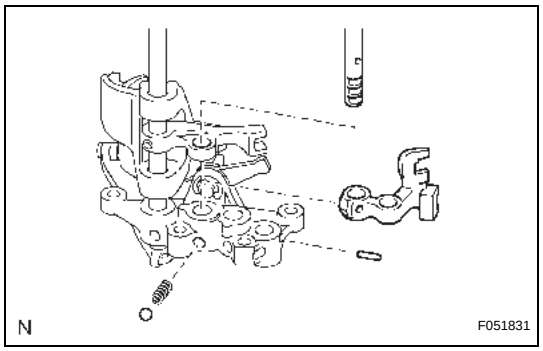
31. REMOVE NO. 2 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 2, ball, spring, interlock pin No. 2 and interlock pin No. 3.



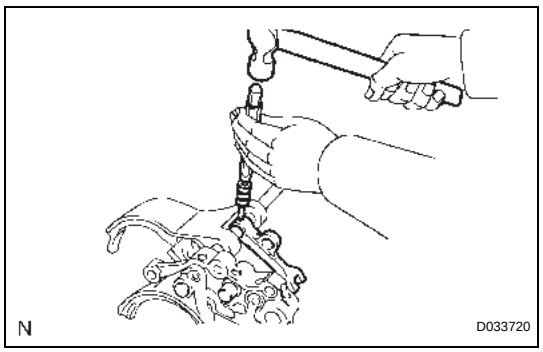
32. REMOVE NO. 1 GEAR SHIFT HEAD

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



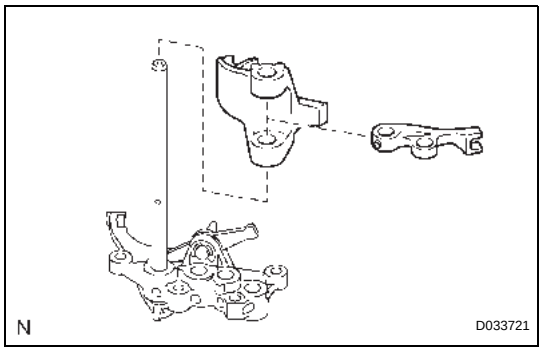
33. REMOVE NO. 1 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 1, ball, spring, shift head No. 1 and interlock pin No. 1.

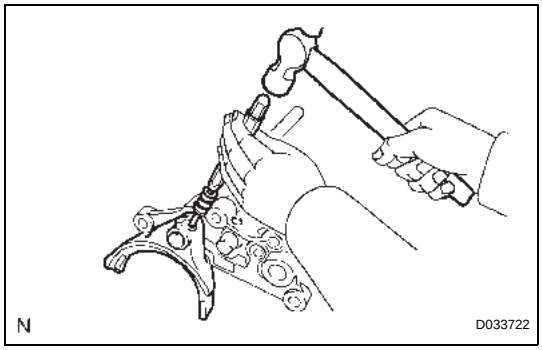


34. REMOVE NO. 1 GEAR SHIFT FORK

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



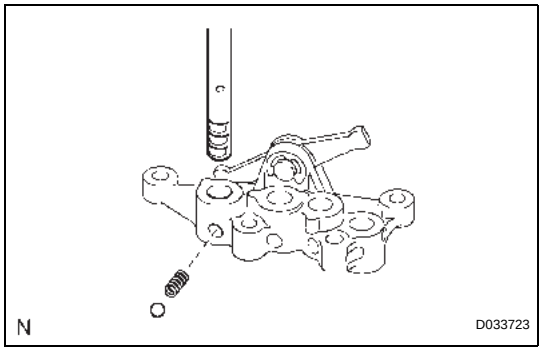
(b) Remove the shift head No. 2 and shift fork No. 1.



35. REMOVE NO. 4 GEAR SHIFT FORK

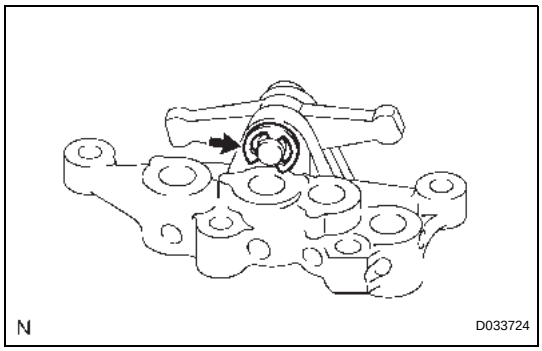
(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.

(b) Remove the shift fork No. 4.



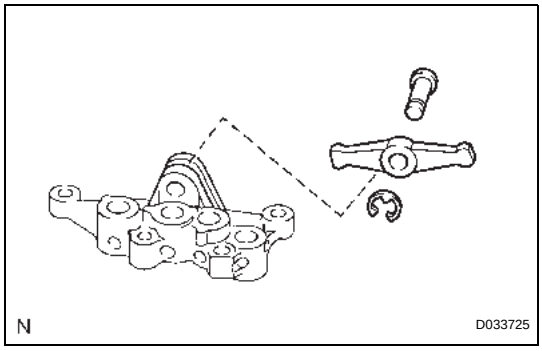
36. REMOVE NO. 4 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 4, ball and spring.

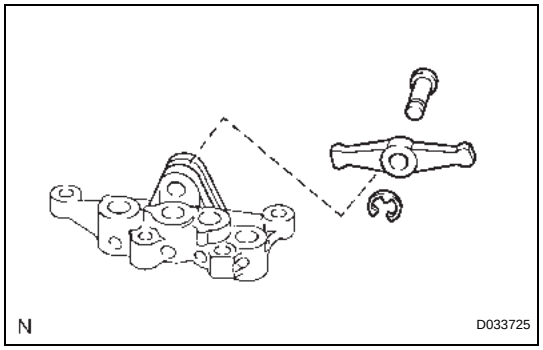


37. REMOVE 1ST AND REVERSE SHIFT ARM

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



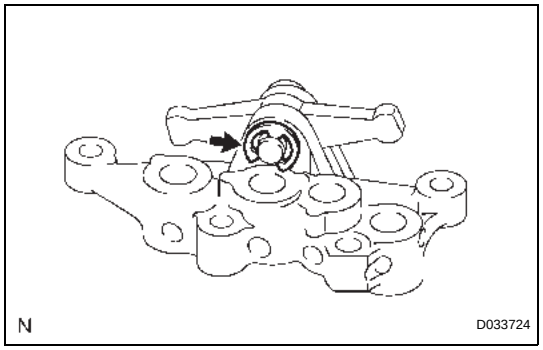
(b) Remove the shift arm pivot and shift arm.



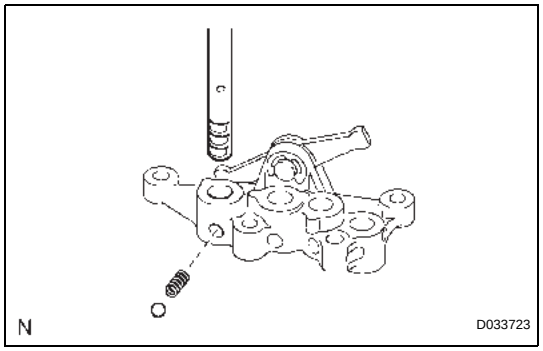
REASSEMBLY

1. INSTALL 1ST AND REVERSE SHIFT ARM

(a) Install the shift arm and shift arm pivot onto the interlock bracket.



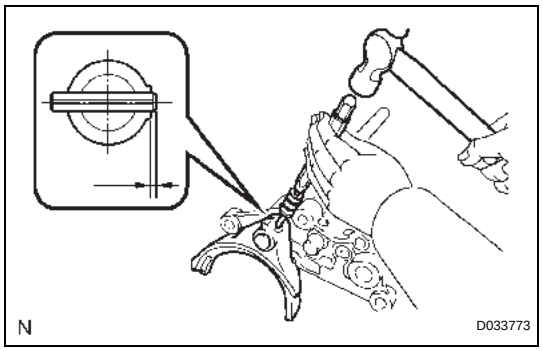
(b) Install a new E-ring onto the shift arm pivot.



2. INSTALL NO. 4 GEAR SHIFT SHAFT

(a) Install the spring and ball onto the interlock bracket.

(b) Install the shift fork shaft No. 4.



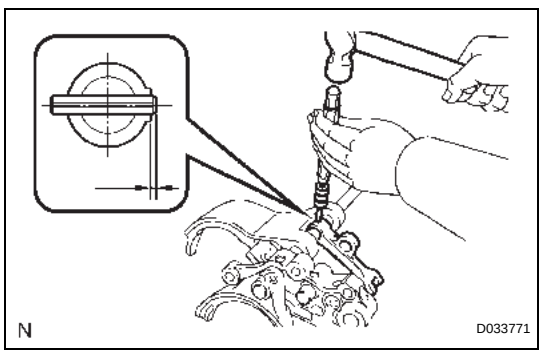
3. INSTALL NO. 4 GEAR SHIFT FORK

(a) Install the shift fork No. 4 onto the shift fork shaft No. 4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft fork No. 4 and shift fork shaft No. 4.

Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



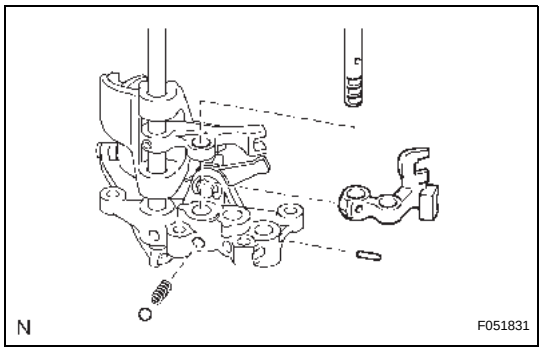
4. INSTALL NO. 1 GEAR SHIFT FORK

(a) Install the shift fork No. 1 and shift head No. 2 onto the shift fork shaft No. 4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft head No. 2 and shift fork shaft No. 4.

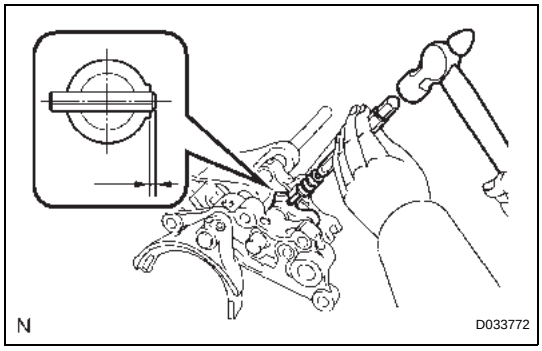
Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



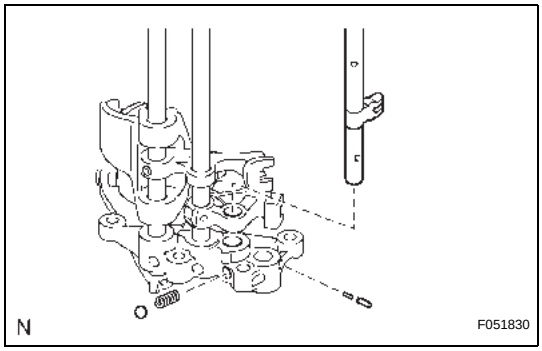
5. INSTALL NO. 1 GEAR SHIFT FORK SHAFT

(a) Apply MP grease to the interlock pin No. 1 and install it onto the interlock bracket.
(b) Install the spring and ball onto the interlock bracket.
(c) Install the shift fork shaft No. 1 onto the interlock bracket.
HINT:
Place the shift fork shaft No. 4 in the neutral position.



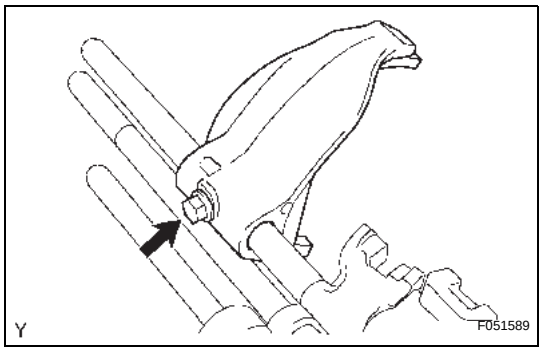
6. INSTALL NO. 1 GEAR SHIFT HEAD

(a) Install the shift head No. 1 into the shift fork shaft No. 1.
(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft head No. 1 and shift fork shaft No. 1.
Drive in depth:
0 to 0.5 mm (0 to 0.050 in.)



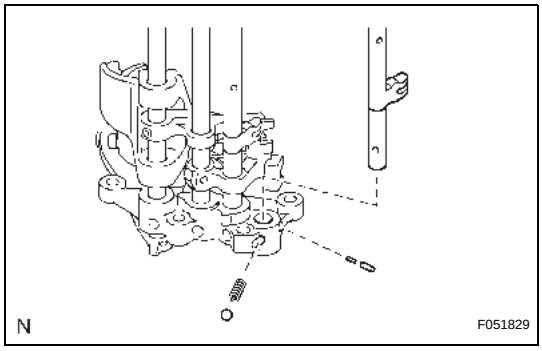
7. INSTALL NO. 2 GEAR SHIFT FORK SHAFT

(a) Apply MP grease to the interlock pins No. 2 and No. 3, then install them onto the interlock bracket.
(b) Install the spring and ball the interlock bracket.
(c) Install the shift fork shaft No. 2 onto the interlock bracket.
HINT:
Place the shift fork shafts No. 3 and No. 4 in the neutral position.



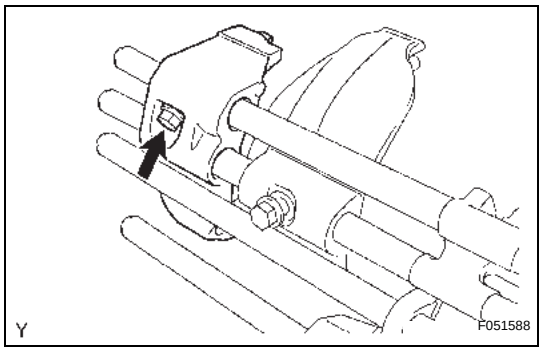
8. INSTALL NO. 2 GEAR SHIFT FORK

(a) Install the shift fork No. 2 with the bolt.
Torque: 20 N*m (199 kgf*cm, 14 ft.*lbf)



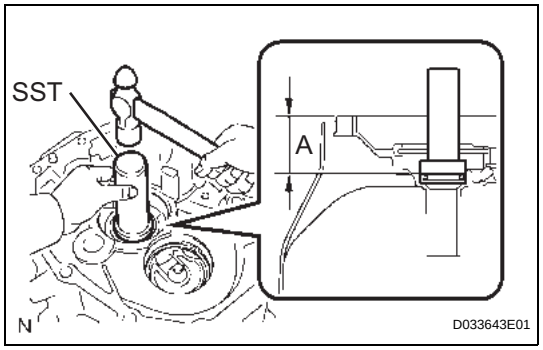
9. INSTALL NO. 3 GEAR SHIFT FORK SHAFT

(a) Apply MP grease to the interlock pins No. 2 and No. 3, then install them onto the interlock bracket.
(b) Install the spring and ball onto the interlock bracket.
(c) Install the shift fork shaft No. 3 onto the interlock bracket.
HINT:
Place the shift fork shafts No. 2, No. 1 and No. 4 in the neutral position.



10. INSTALL NO. 3 GEAR SHIFT FORK

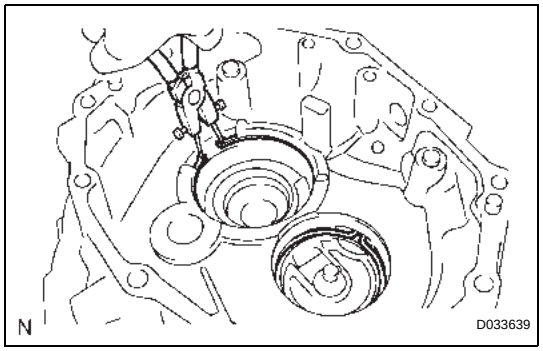
(a) Install the shift fork No. 3 with the bolt.
Torque: 20 N*m (199 kgf*cm, 14 ft.*lbf)



11. INSTALL TRANSMISSION CASE OIL SEAL

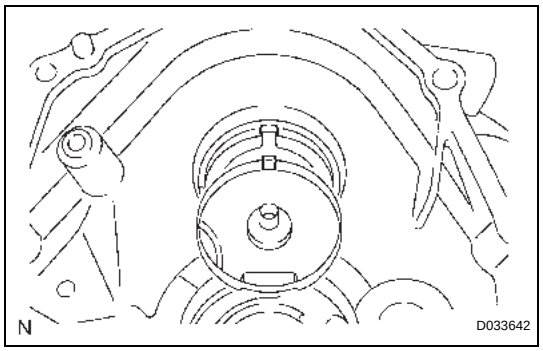
(a) Using SST and a hammer, tap a new oil seal into the front case in accordance with the dimension specified in the illustration.
SST 09950-70010 (09951-07100), 09950-60010 (09951-00470)
Dimension A:
60.0 to 60.8 mm (2.362 to 2.394 in.)

(b) Apply gear oil to the lip of the oil seal.



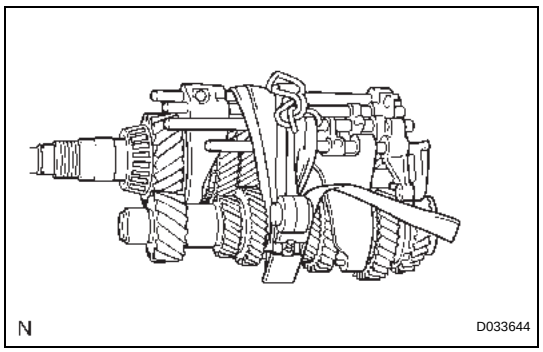
12. INSTALL FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring plier, install the 2 snap rings.



13. INSTALL NO. 1 OIL RECEIVER PIPE

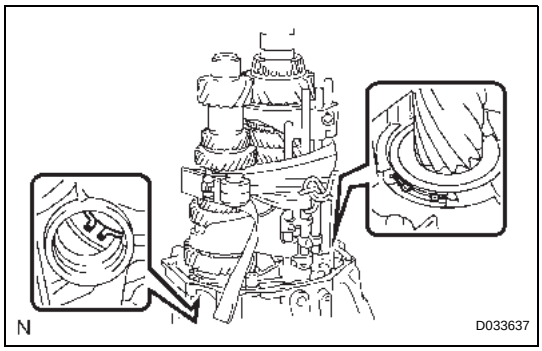
(a) Install the oil receiver pipe No. 1 onto the transmission front case.
HINT:
Align the convex portion of the oil receiver pipe with the cutout of the front case and install the oil receiver pipe onto the clutch housing.



14. INSTALL TRANSMISSION FRONT CASE

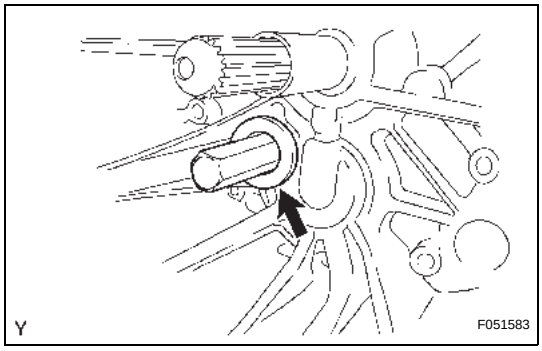
(a) Apply gear oil to all sliding and rotating parts.
(b) Provisionally install the output shaft, input shaft, counter gear shaft and control assembly, and tie them with a rope or string.

MT

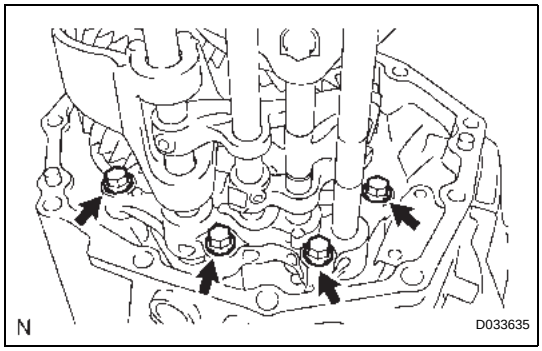


(c) Using a snap ring expander, extend the 2 snap rings and install the output shaft, input shaft, counter gear shaft and control assembly.
HINT:
Make sure that the snap ring is fitted into the grooves of the input shaft and front bearing of the counter gear shaft.

(d) Untie the output shaft, input shaft, counter gear shaft and control assembly.



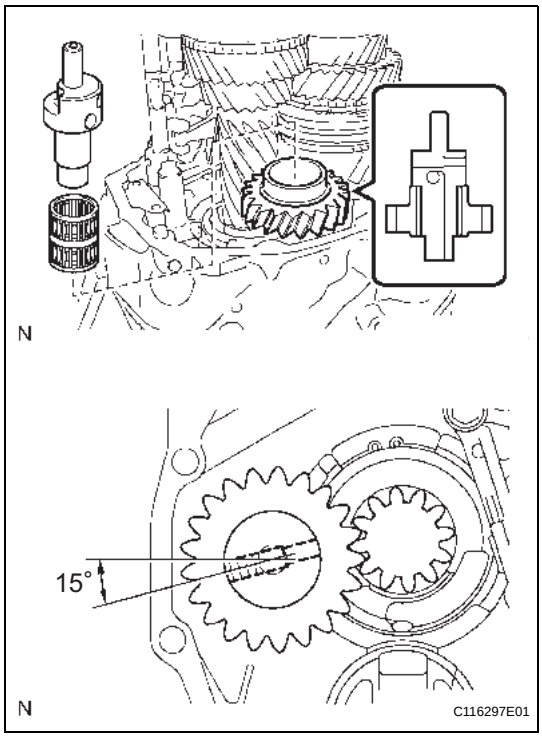
(e) Using a hexagonal wrench (24 mm), install the plug onto the front case.
Torque: 39 N*m (400 kgf*cm, 29 ft.*lbf)

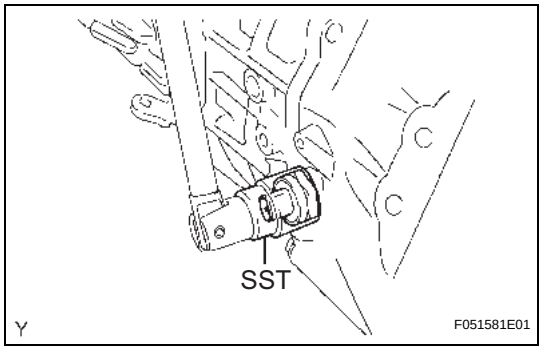


(f) Install the 4 bolts onto the interlock bracket.
Torque: 21 N*m (214 kgf*cm, 15 ft.*lbf)

15. INSTALL REVERSE IDLER GEAR

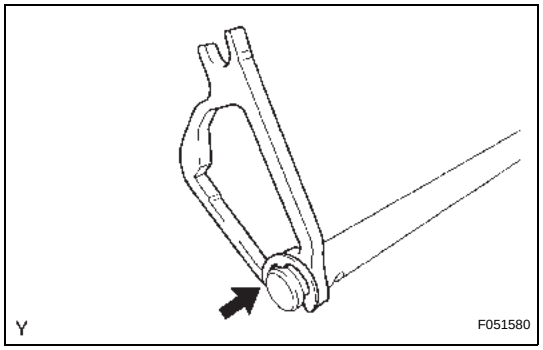
(a) Install the reverse idler gear, reverse idler gear bearing and reverse idler gear shaft.
HINT:
Make sure that the reverse idler gear faces the correct direction as shown in the illustration.
NOTICE:
Make sure that the tapped hole portion of the reverse idler shaft is in the position shown in the illustration.





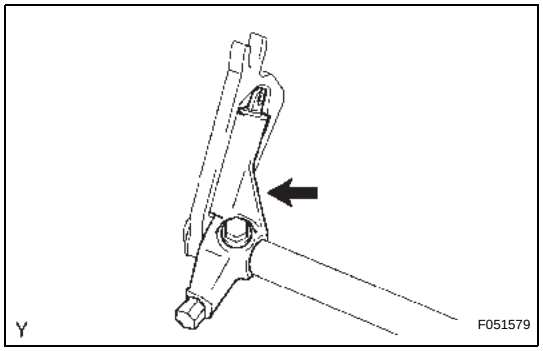
16. INSTALL BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, install the back-up light switch with a new gasket onto the transmission front case.
SST 09817-16011
Torque: 44 N*m (449 kgf*cm, 33 ft.*lbf)



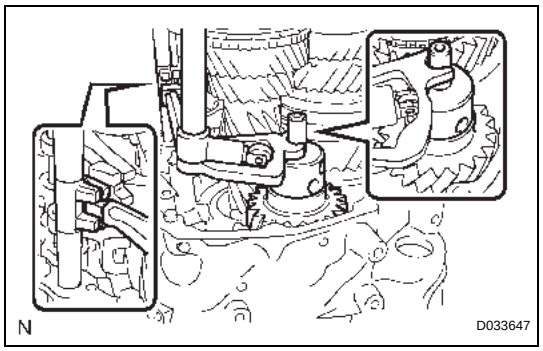
17. INSTALL SHIFT AND SELECT LEVER CAM

(a) Install the shift and select lever cam onto the shaft and install a new E-ring.



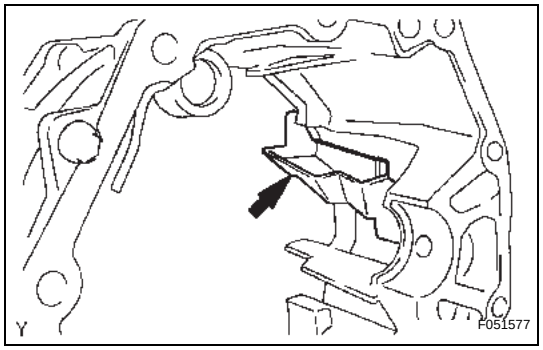
18. INSTALL SHIFT AND SELECT LEVER

(a) Install the lock ball pin and spring onto the shift and select lever.
(b) Install the shift and select lever onto the shift and select lever cam and shaft.
(c) Install the bolt onto the shift and select lever.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



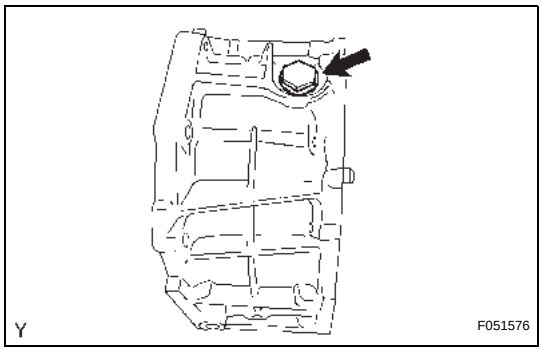
19. INSTALL SHIFT AND SELECT LEVER SHAFT

(a) Align the groove of the shift and select cam with the reverse idler shaft, and the claw with the groove of the control assembly, and install them.



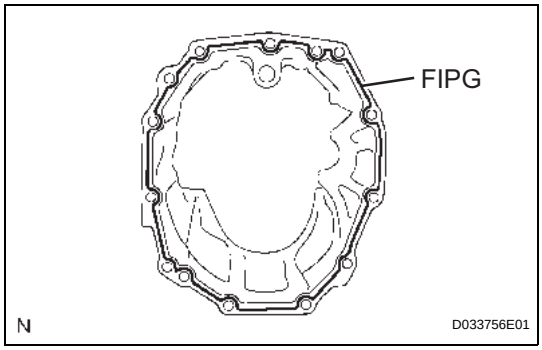
20. INSTALL NO. 2 OIL RECEIVER PIPE

(a) Install the oil receiver pipe No. 2 into the transmission middle case.



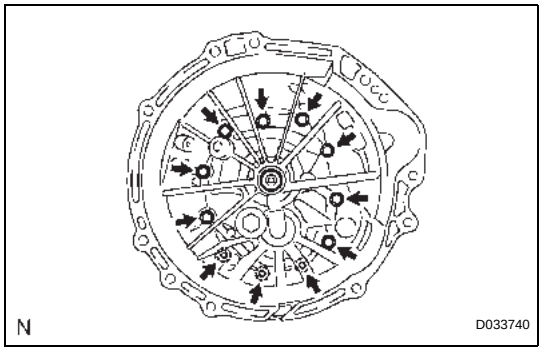
21. INSTALL DRAIN PLUG SUB-ASSEMBLY

(a) Install the drain plug with a new gasket onto the transmission middle case.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

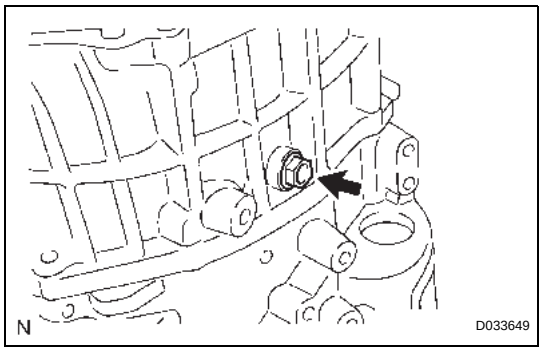


22. INSTALL TRANSMISSION MIDDLE CASE

(a) Apply FIPG to the transmission middle case, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

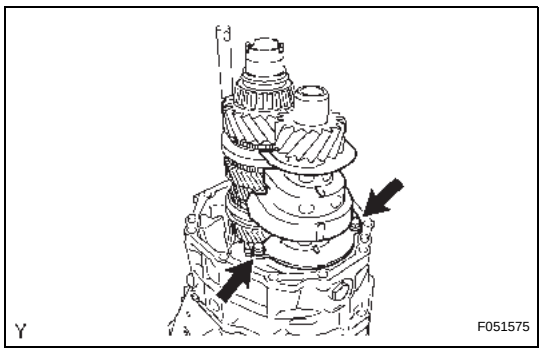


(b) Install the transmission middle case with the 11 bolts onto the transmission front case.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
Bolt length:
Bolt A: 40 mm (1.57 in.)
Bolt B: 80 mm (3.15 in.)



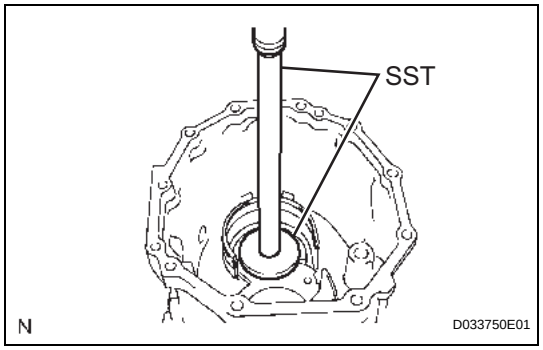
23. INSTALL REVERSE IDLER GEAR SHAFT BOLT

(a) Install a new gasket and the reverse idler gear shaft bolt onto the reverse idler gear shaft.
Torque: 28 N*m (286 kgf*cm, 21 ft.*lbf)



24. INSTALL TRANSMISSION OIL SEPARATOR

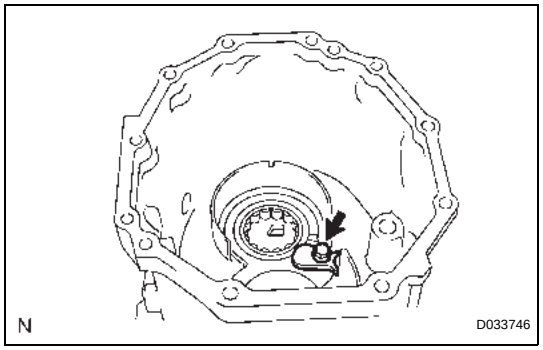
(a) Install the transmission oil separator with the 2 bolts.
Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)



25. INSTALL COUNTER GEAR REAR RADIAL BALL BEARING

(a) Coat a new counter gear rear radial ball bearing with gear oil, and using SST and a press, install it into the transmission rear case.

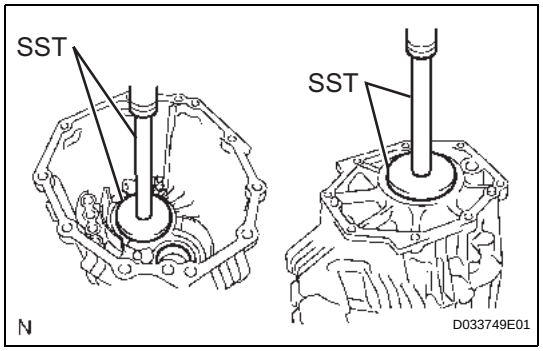
SST 09950-70010 (09951-07360), 09950-60010 (09951-00650)



(b) Install the bearing lock plate with the bolt.

Torque: 11 N*m (115 kgf*cm, 8.3 ft.*lbf)

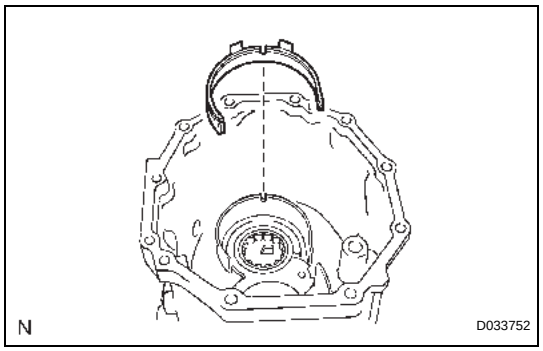
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26. INSTALL OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST and a press, press in 2 new bearing outer races.

SST 09950-70010 (09951-07100, 09951-07360), 09950-60020 (09951-00790)

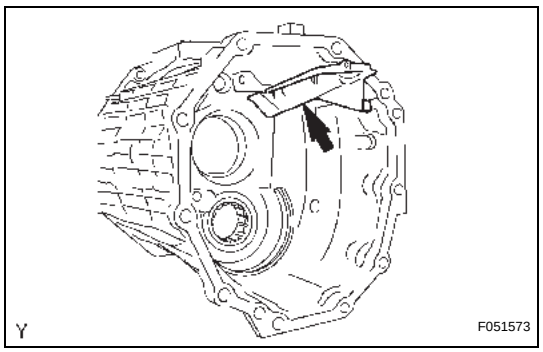


27. INSTALL OIL SEPARATOR PACKING SEAL

(a) Install the oil separator packing seal onto the transmission rear case.

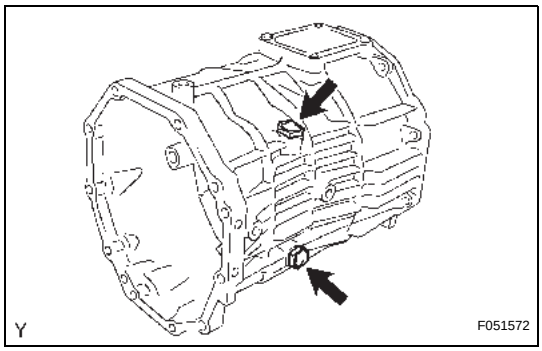
HINT:

Insert the protruding part of the oil separator packing seal into the groove on the transmission rear case.



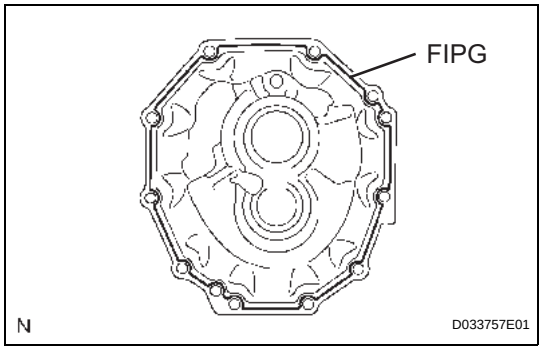
28. INSTALL EXTENSION HOUSING OIL RECEIVER PIPE

(a) Install the extension housing oil receiver pipe onto the transmission rear case.



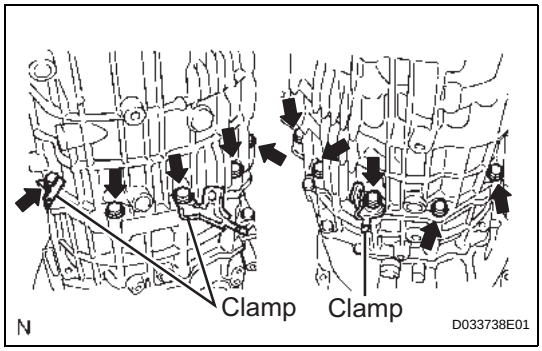
29. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the 2 transmission filler plugs with 2 new gaskets onto the transmission rear case.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

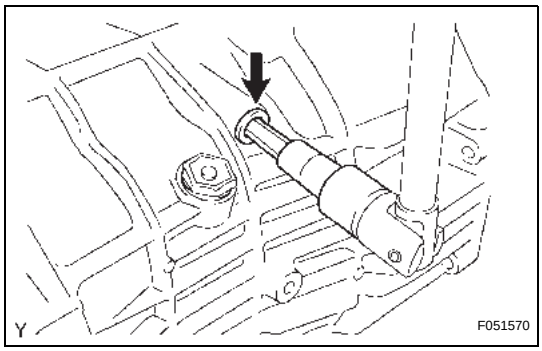


30. INSTALL TRANSMISSION REAR CASE

(a) Apply FIPG to the transmission rear case, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

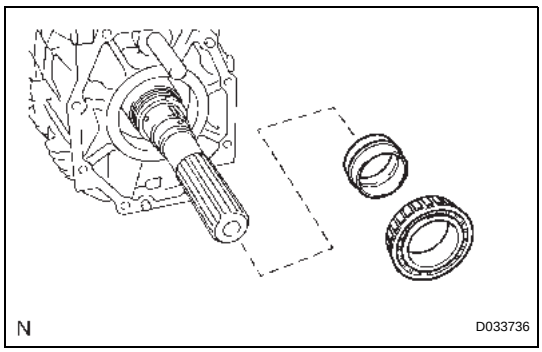


(b) Install the transmission rear case with the 10 bolts and 3 brackets onto the transmission middle case.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)



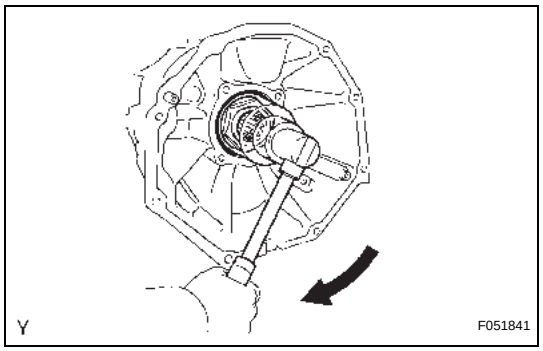
31. INSTALL SHIFT DETENT BALL PLUG

(a) Install the ball and compression spring onto the transmission rear case.
(b) Install a new shift detent ball plug, and install it onto the transmission rear case.
Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)

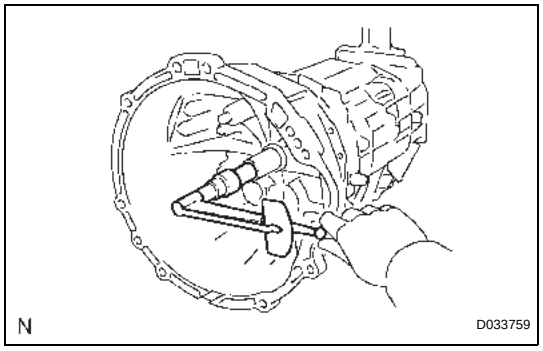


32. INSTALL OUTPUT SHAFT ADJUST NUT

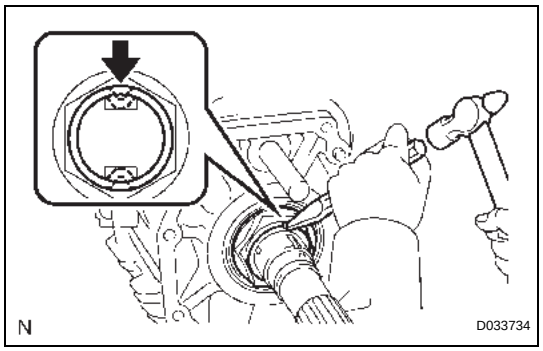
(a) Using a belt and wooden block, fasten the transmission to the workbench.
(b) Install a new spacer and output shaft taper roller bearing No. 2.



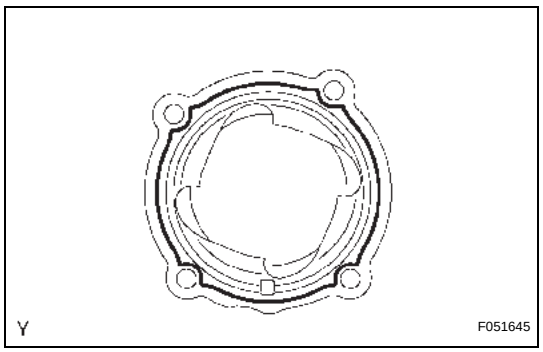
(c) Using a socket wrench (60 mm), provisionally tighten a new nut until there is no slack in the output shaft.
HINT:
No preload should be applied to the nut.
(d) Fit the bearing into the output shaft by turning the output shaft 15 times.



(e) Place the gearshift into 5th gear and check the initial torque of the input shaft.
(f) Using a socket wrench (60 mm), tighten the nut.
(g) Place the gearshift into 5th gear and check the initial torque of the input shaft.
(h) Confirm that the difference between (f) and (i) is within the specified values.
Preload (at starting):
0.45 to 1.35 N*m (4.59 to 13.77 kgf*cm, 3.98 to 11.95 in.*lbf)
If the result is not as specified, tighten and adjust the output shaft adjusting nut.
NOTICE:
If the output shaft adjusting nut is loose or removed due to a large preload, always replace the spacer with a new one.

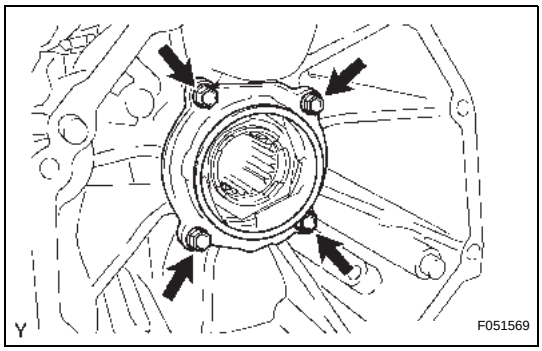


(i) Using a chisel and hammer, caulk the output shaft adjust nut.

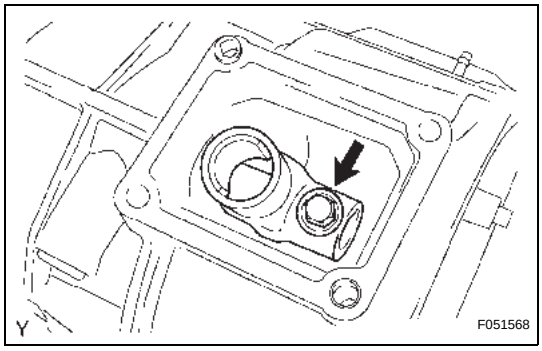


33. INSTALL MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY
(a) Apply FIPG to the transmission case cover, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

MT

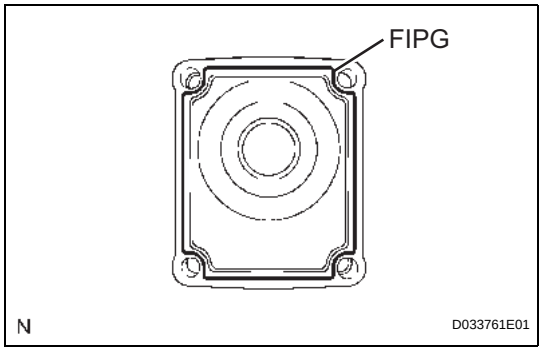


(b) Install the transmission case cover with the 4 bolts.
Torque: 18 N*m (184 kgf*cm, 13 ft.*lbf)



34. INSTALL SHIFT LEVER HOUSING

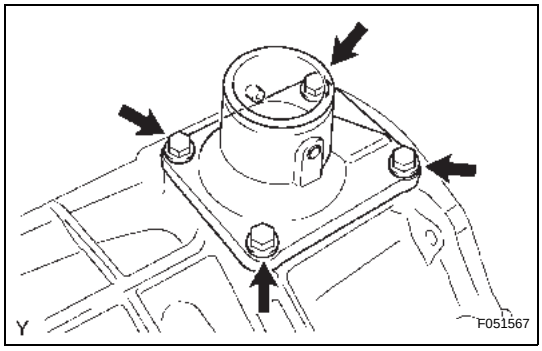
(a) Install the shift lever housing with the bolt.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



35. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

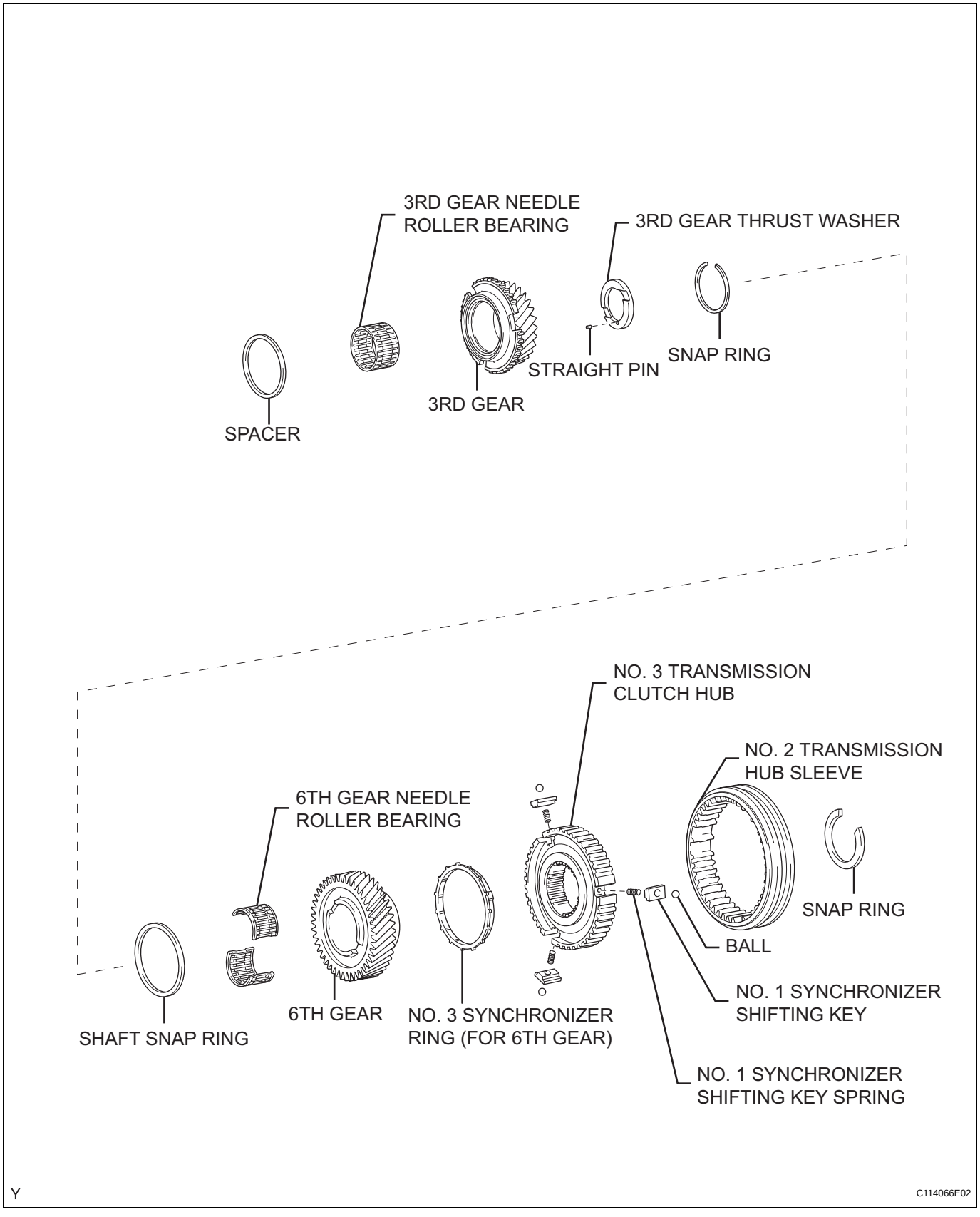
(a) Apply FIPG to the floor shift control shift lever retainer, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

(b) Install the floor shift control shift lever retainer with the 4 bolts.
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)



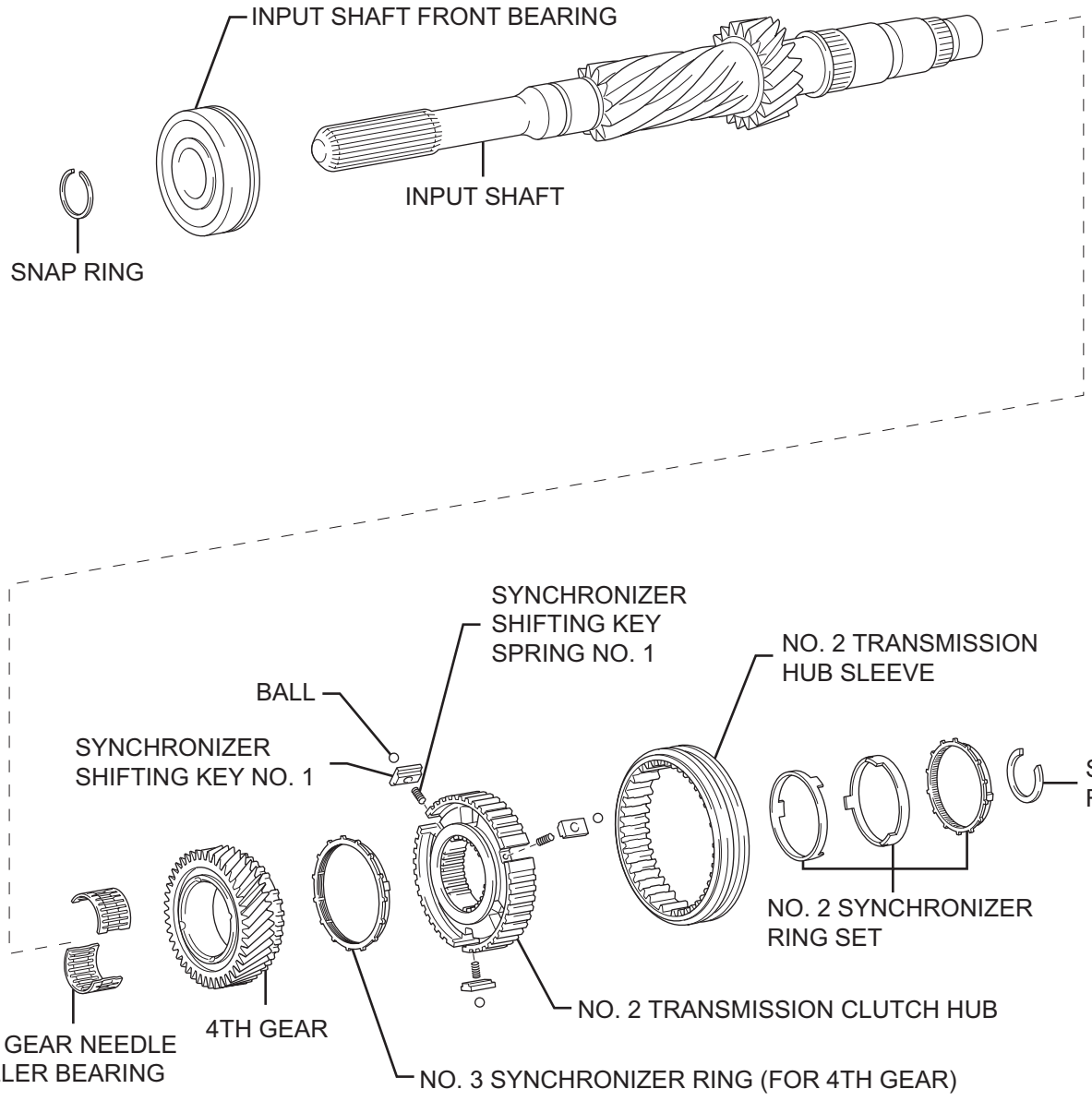
INPUT SHAFT

COMPONENTS



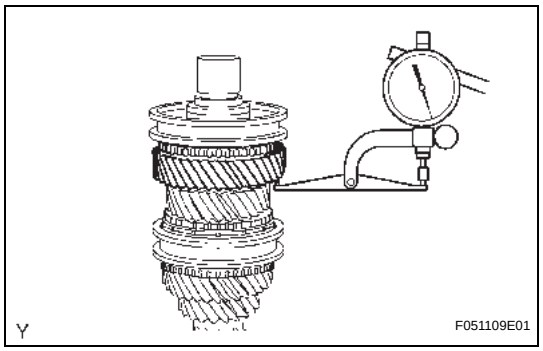
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DISASSEMBLY

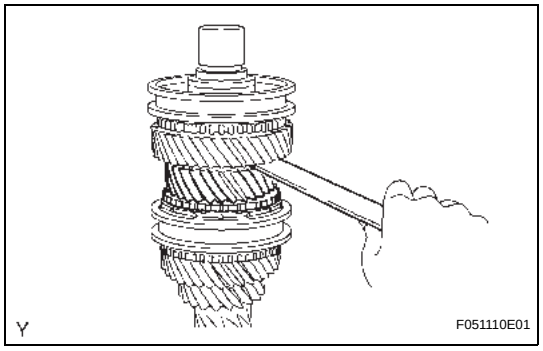
1. INSPECT 6TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 6th gear thrust clearance.

Standard clearance:

0.20 to 0.49 mm (0.0079 to 0.0193 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



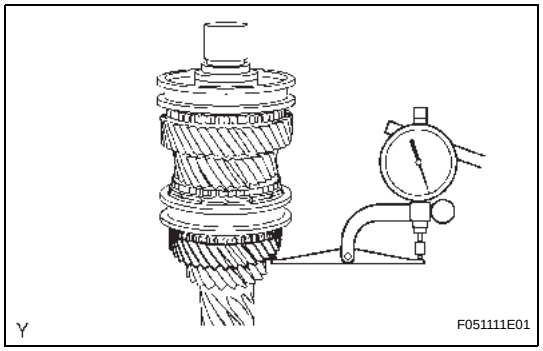
2. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.09 to 0.52 mm (0.0035 to 0.0205 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 2.



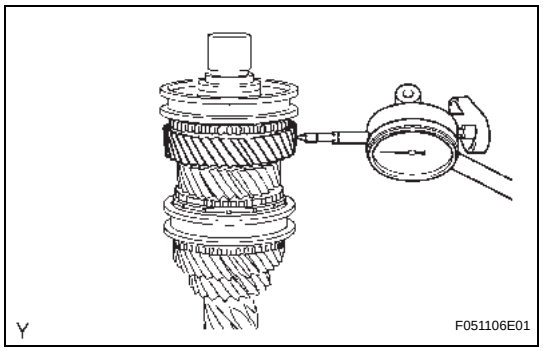
3. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 4th gear thrust clearance.

Standard clearance:

0.12 to 0.38 mm (0.0047 to 0.0150 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



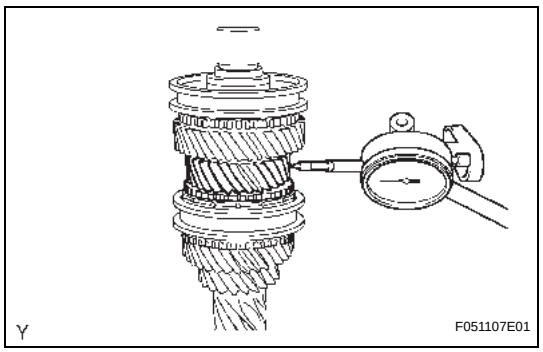
4. INSPECT 6TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 6th gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



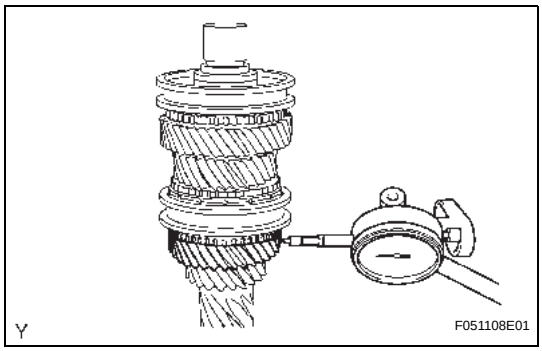
5. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



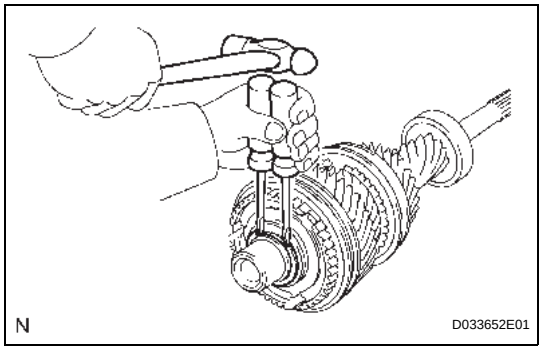
6. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.

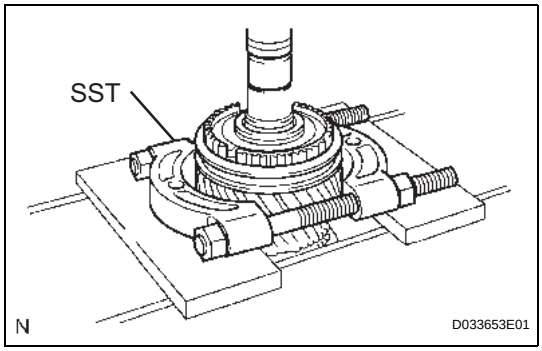


7. REMOVE TRANSMISSION CLUTCH HUB NO.3 SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.

HINT:

Use a shop rag to prevent the snap ring from flying off.



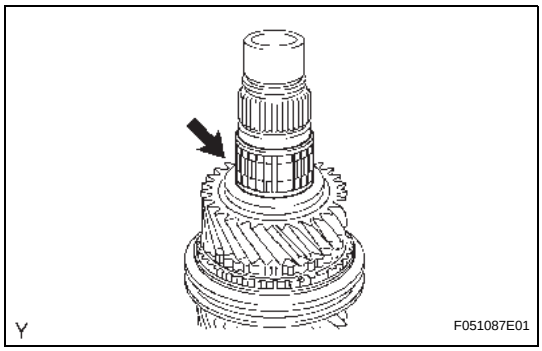
8. REMOVE 6TH GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 3, hub sleeve, synchronizer ring and 6th gear from the input shaft.

SST 09950-00020, 09950-70010 (09951-07200), 09950-60010 (09951-00300)

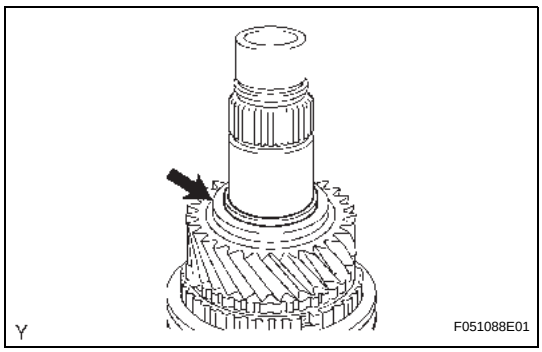
NOTICE:

- **Do not tighten SST excessively.**
- **Support the input shaft by hand so that it does not fall off.**



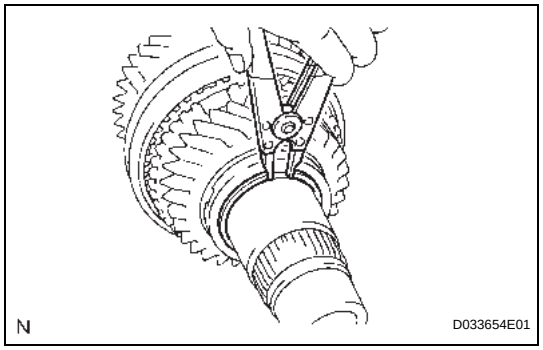
9. REMOVE 6TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 6th gear needle roller bearing from the input shaft.



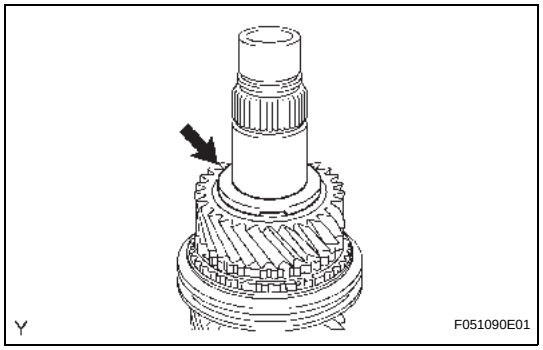
10. REMOVE SHAFT SNAP RING

(a) Remove the shaft snap ring from the input shaft.



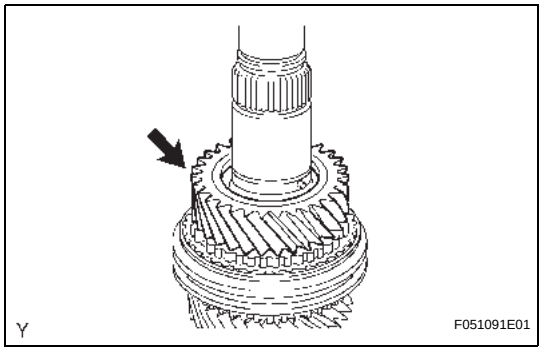
11. REMOVE GEAR THRUST WASHER SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the input shaft.



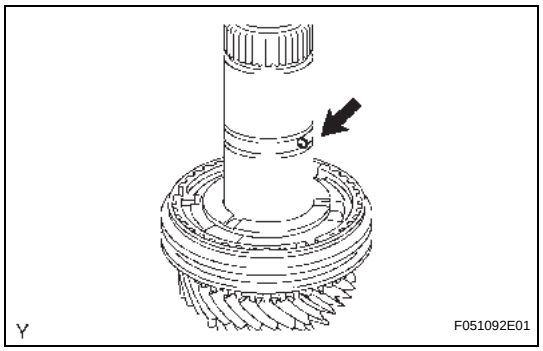
12. REMOVE 3RD GEAR THRUST WASHER

(a) Remove the 3rd gear thrust washer from the input shaft.



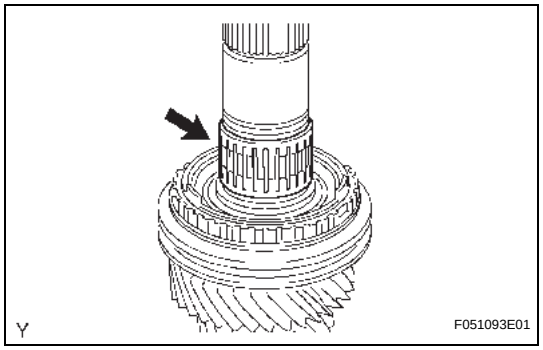
13. REMOVE 3RD GEAR

(a) Remove the 3rd gear from the input shaft.



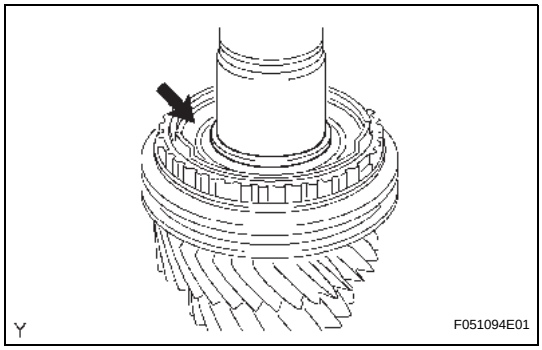
14. REMOVE STRAIGHT PIN

(a) Remove the straight pin from the input shaft.



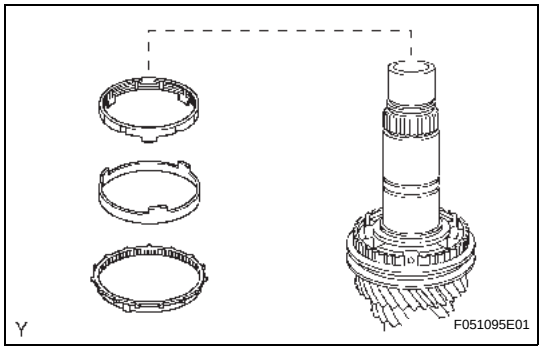
15. REMOVE 3RD GEAR NEEDLE ROLLER BEARING

(a) Remove the 3rd gear needle roller bearing from the input shaft.



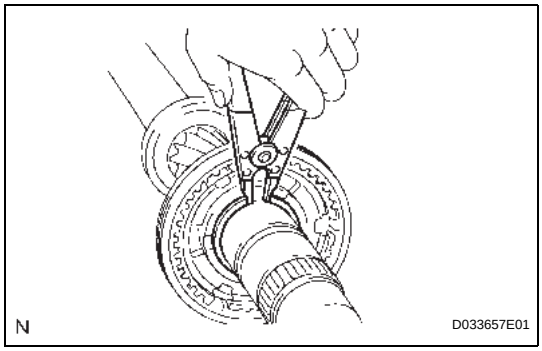
16. REMOVE SPACER

(a) Remove the spacer from the input shaft.



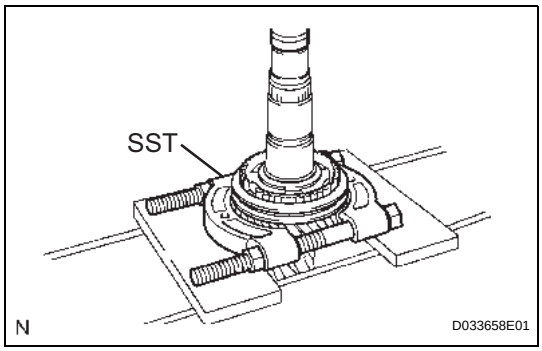
17. REMOVE NO. 2 SYNCHRONIZER RING SET

(a) Remove the synchronizer ring set No. 2 from the input shaft.



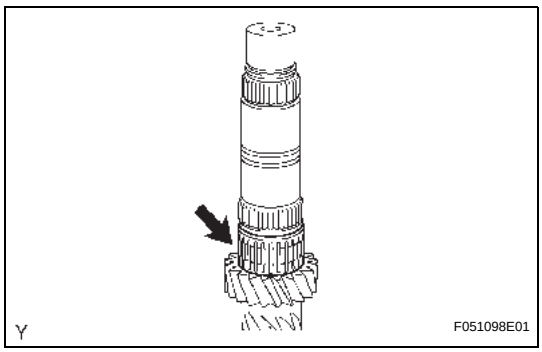
18. REMOVE CLUTCH HUB NO.2 SETTING SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the input shaft.



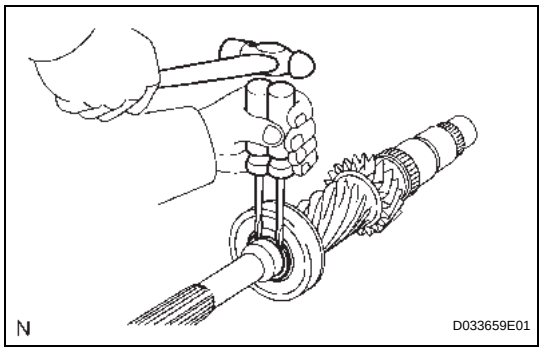
19. REMOVE 4TH GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 2, hub sleeve, synchronizer ring and 4th gear from the input shaft.
SST 09950-00020
NOTICE:
Support the input shaft by hand so that it does not fall off.



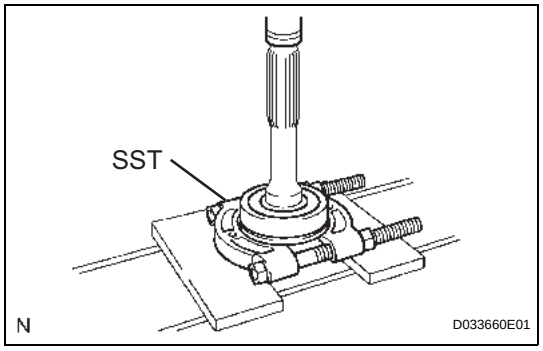
20. REMOVE 4TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 4th gear needle roller bearing from the input shaft.



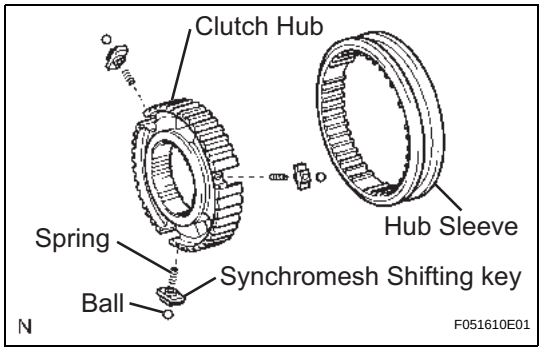
21. REMOVE INPUT SHAFT FRONT BEARING SNAP RING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.
HINT:
Use a shop rag to prevent the snap ring from flying off.



22. REMOVE INPUT SHAFT FRONT BEARING

(a) Using SST and a press, remove the input shaft front bearing from the input shaft.
SST 09950-00020
NOTICE:
Support the input shaft by hand so that it does not fall off.

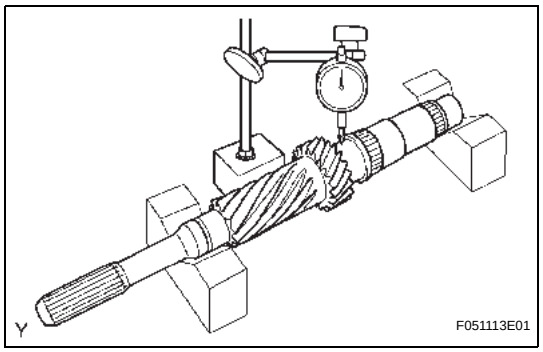


23. REMOVE NO. 2 TRANSMISSION CLUTCH HUB

(a) Remove the clutch hub, 3 synchromesh shifting keys, 3 balls and 3 springs from the hub sleeve.
HINT:
Use a shop rag to prevent the ball and spring from flying off.

24. REMOVE NO. 3 TRANSMISSION CLUTCH HUB

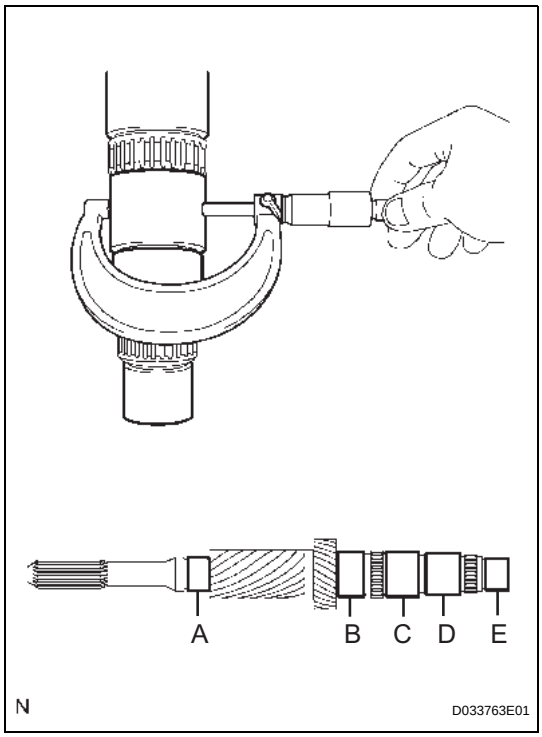
(a) Perform the same procedures as for clutch hub No. 2.



INSPECTION

1. INSPECT INPUT SHAFT

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout:
0.03 mm (0.0012 in.)
If the runout exceeds the maximum, replace the input shaft.



(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

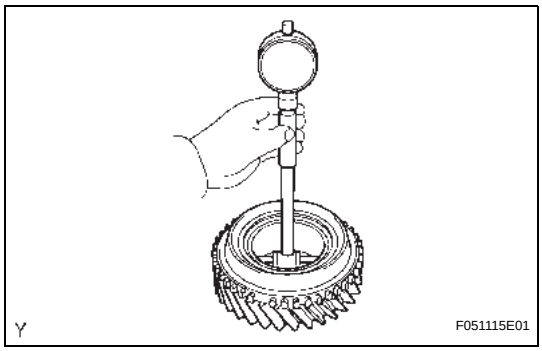
Standard

Part	Outer diameter mm (in.)
A	34.002 to 34.015 (1.3387 to 1.3392)
B	44.985 to 45.000 (1.7711 to 1.7717)
C	44.985 to 45.000 (1.7711 to 1.7717)
D	41.985 to 42.000 (1.6530 to 1.6535)
E	32.967 to 32.980 (1.2979 to 1.2984)

Minimum

Part	Outer diameter mm (in.)
A	34.002 (1.3387)
B	44.985 (1.7711)
C	44.985 (1.7711)
D	41.985 (1.6530)
E	32.967 (1.2979)

If the outer diameter is less than the minimum, replace the input shaft.

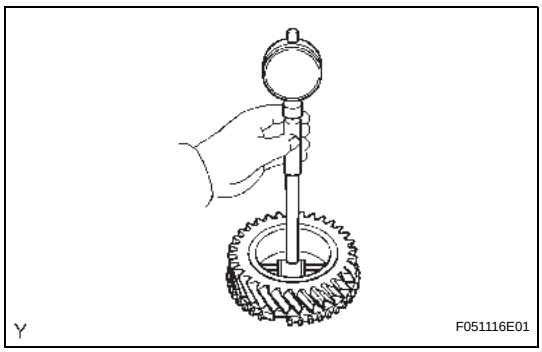


2. INSPECT 6TH GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 6th gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the 4th gear.

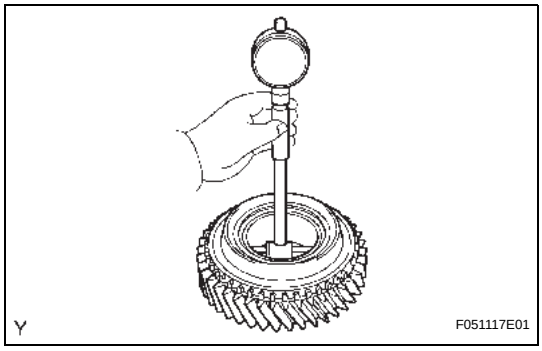


3. INSPECT 3RD GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 3rd gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the 3rd gear.

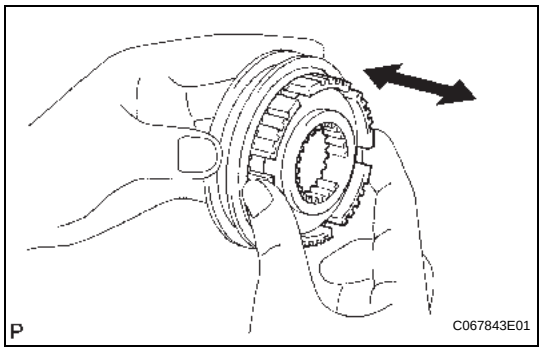


4. INSPECT 4TH GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 4th gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

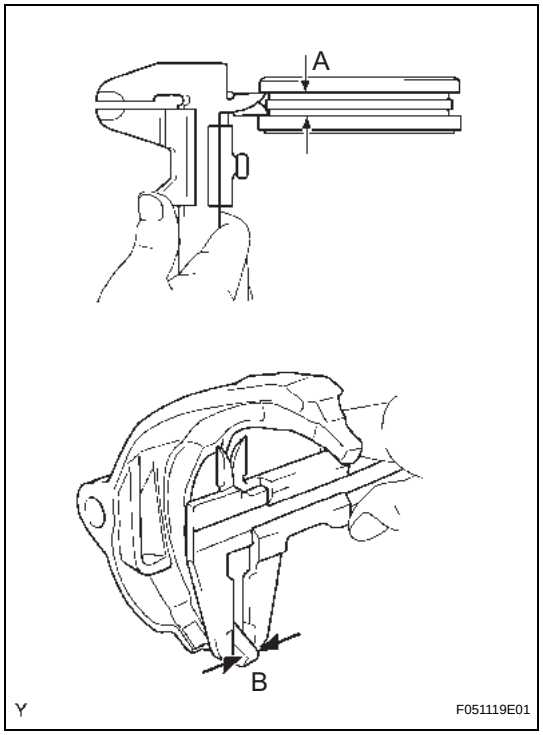
If the inside diameter exceeds the maximum, replace the 4th gear.



5. INSPECT NO. 2 TRANSMISSION HUB SLEEVE

(a) Check the sliding condition between the transmission hub No. 2 and transmission hub sleeve No. 2.

(b) Check that the spline gear teeth of the transmission hub sleeve No. 2 are not worn.



(c) Using vernier calipers, measure the width of the transmission hub sleeve No. 2 groove (A) and the thickness of the claw part on the gear shift forks No. 2 or No. 3 (B), and calculate the clearance.

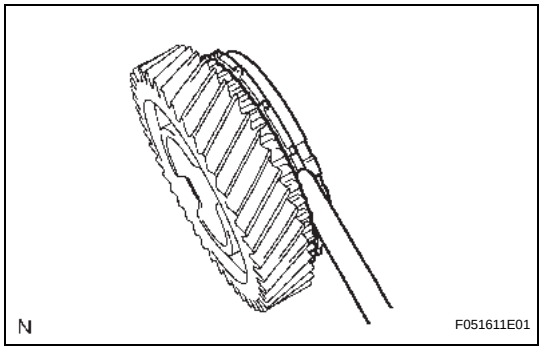
Standard clearance:

(A - B);

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

If the clearance is outside the specification, replace the transmission hub sleeve No. 2 and gear shift fork.

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6. INSPECT NO. 3 SYNCHRONIZER RING (FOR 6TH GEAR)

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and the 6th gear.

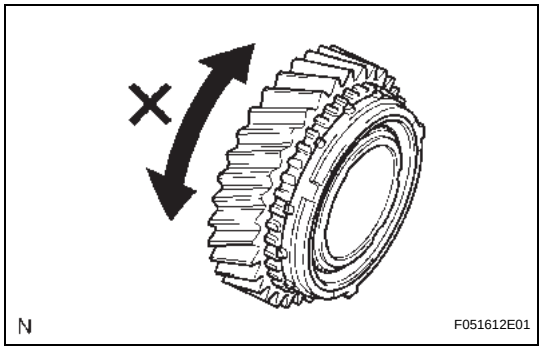
Standard clearance:

0.70 to 1.50 mm (0.0276 to 0.0591 in.)

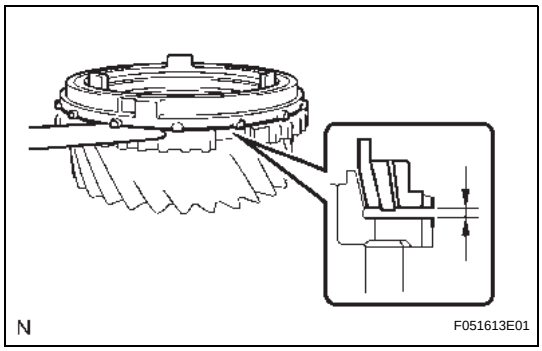
Minimum clearance:

0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 6th gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 6th gear cone. Check that the ring locks.

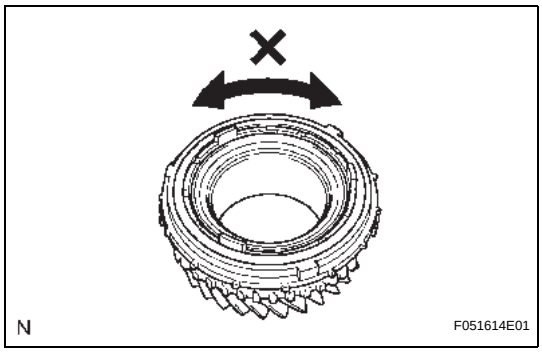


7. INSPECT NO. 2 SYNCHRONIZER RING SET

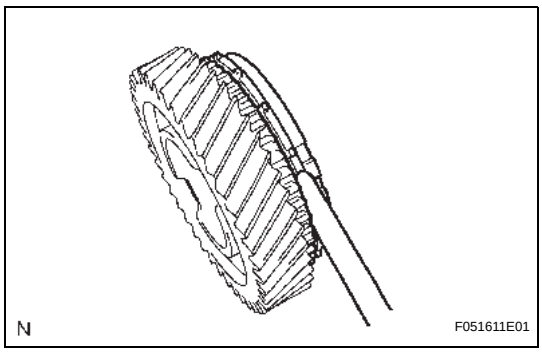
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and the 3rd gear.

Standard clearance:
Inner:
1.20 to 2.20 mm (0.0472 to 0.0866 in.)
Middle:
0.60 to 1.80 mm (0.0236 to 0.0709 in.)
Outer:
0.80 to 1.80 mm (0.0315 to 0.0709 in.)
Minimum clearance:
Inner:
1.20 mm (0.0472 in.)
Middle:
0.60 mm (0.0236 in.)
Outer:
0.80 mm (0.0315 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 3rd gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 3rd gear cone. Check that the ring locks.

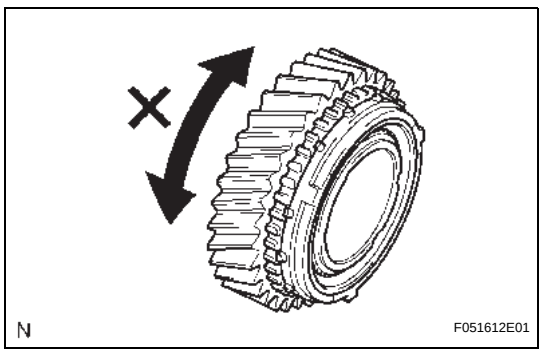


8. INSPECT NO. 3 SYNCHRONIZER RING (FOR 4TH GEAR)

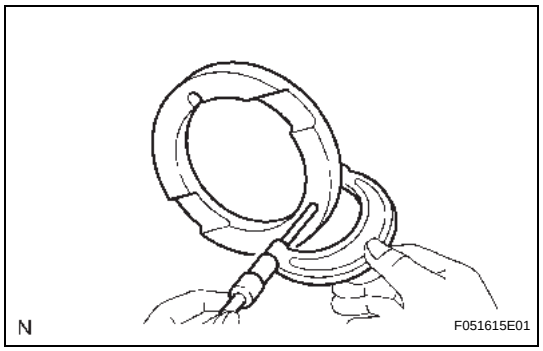
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 4th gear.

Standard clearance:
0.70 to 1.50 mm (0.0276 to 0.0591 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 4th gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 4th gear cone. Check that the ring locks.



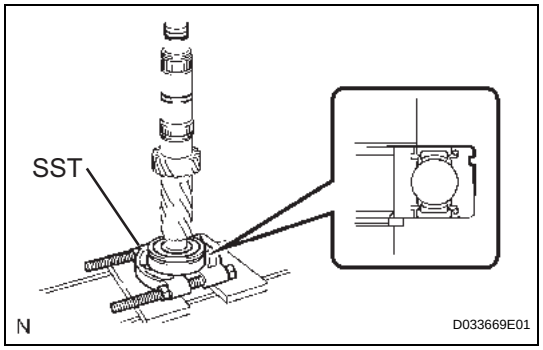
9. INSPECT 3RD GEAR THRUST WASHER

(a) Using a micrometer, measure the thrust washer thickness.

Standard thickness:
7.12 to 7.18 mm (0.2803 to 0.2827 in.)
Minimum thickness:
7.12 mm (0.2803 in.)

If the thickness is less than the minimum, replace the thrust washer.

REASSEMBLY



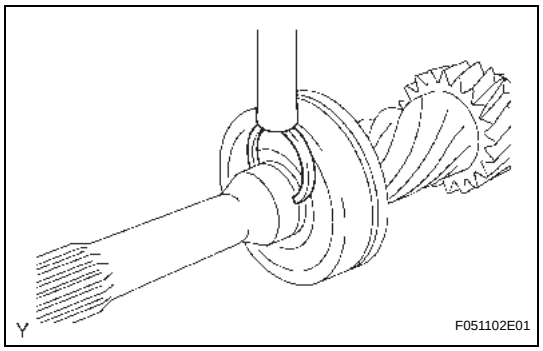
1. INSTALL INPUT SHAFT FRONT BEARING

(a) Using SST and a press, install the input shaft front bearing onto the input shaft.

SST 09950-00020

HINT:

Make sure that the groove of the bearing faces the correct direction as shown in the illustration.



2. INSTALL INPUT SHAFT FRONT BEARING SNAP RING

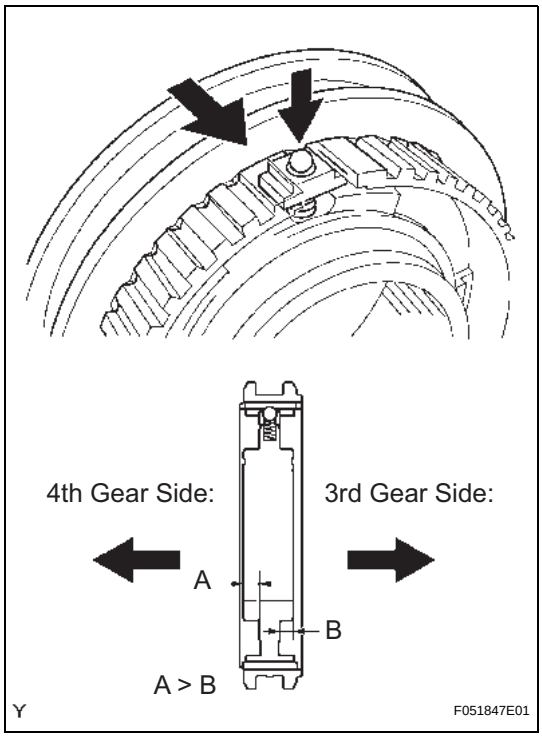
(a) Select a snap ring that will allow minimum axial play.

Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-31026	2.65 to 2.70 (0.1043 to 0.1063)	A
90520-31027	2.70 to 2.75 (0.1063 to 0.1083)	B
90520-31028	2.75 to 2.80 (0.1083 to 0.1102)	C
90520-31029	2.80 to 2.85 (0.1102 to 0.1122)	D
90520-31030	2.85 to 2.90 (0.1122 to 0.1142)	E
90520-31031	2.90 to 2.95 (0.1142 to 0.1161)	F

(b) Using a brass bar and hammer, install the snap ring onto the input shaft.

MT



3. INSTALL NO. 2 TRANSMISSION CLUTCH HUB

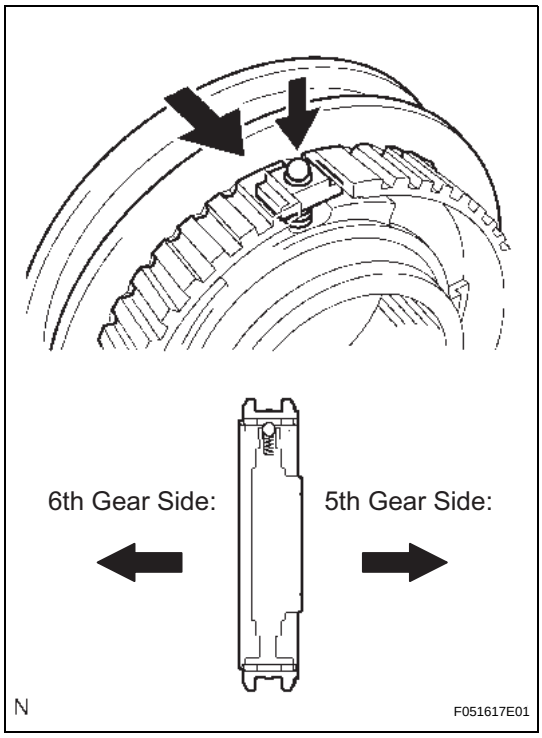
(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub No. 2.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.

NOTICE:

Take care to prevent the ball from flying off.

HINT:

Make sure that the clutch hub No. 2 faces the correct direction as shown in the illustration.



4. INSTALL NO. 3 TRANSMISSION CLUTCH HUB

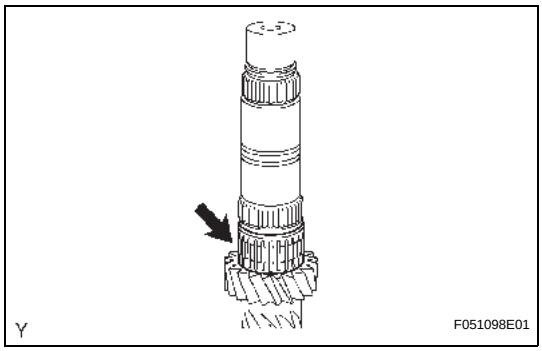
(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub No. 3.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.

NOTICE:

Take care to prevent the ball from flying off.

HINT:

Make sure that the clutch hub No. 3 faces the correct direction as shown in the illustration.



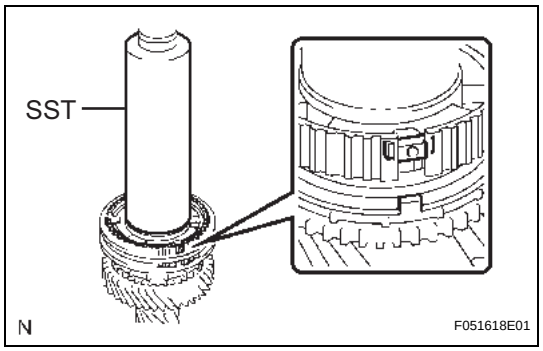
5. INSTALL 4TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 4th gear needle roller bearing with gear oil, then install it onto the input shaft.

6. INSTALL 4TH GEAR

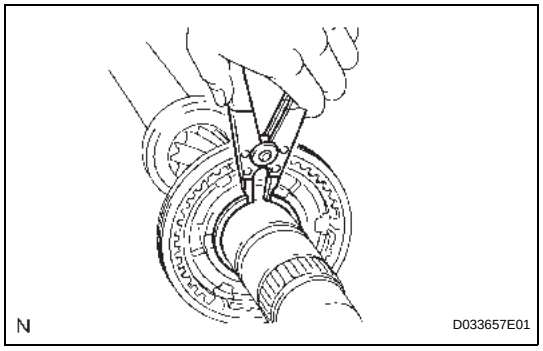
(a) Coat the 4th gear and synchronizer ring No. 3 with gear oil, then install them onto the input shaft.

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(b) Using SST and a press, install the clutch hub No. 2 onto the input shaft.
SST 09308-14010
HINT:
Align the convex portion of the synchronizer ring with the groove of the clutch hub.

(c) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.

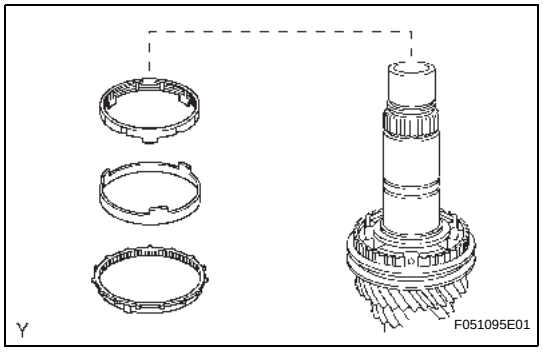


7. INSTALL CLUTCH HUB NO.2 SETTING SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-42012	1.77 to 1.82 (0.0697 to 0.0717)	A
90520-42013	1.82 to 1.87 (0.0717 to 0.0736)	B
90520-42014	1.87 to 1.92 (0.0736 to 0.0756)	C
90520-42015	1.92 to 1.97 (0.0756 to 0.0776)	D
90520-42016	1.97 to 2.02 (0.0776 to 0.0795)	E
90520-42017	2.02 to 2.07 (0.0795 to 0.0815)	F
90520-42018	2.07 to 2.12 (0.0815 to 0.0835)	G

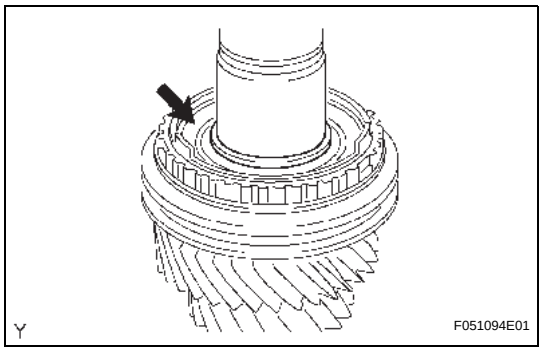
(b) Using a snap ring expander, install the snap ring onto the input shaft.



8. INSTALL NO. 2 SYNCHRONIZER RING SET

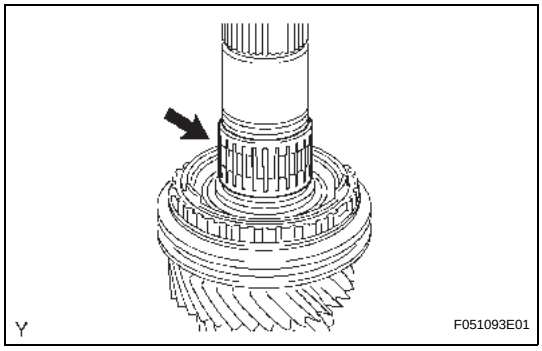
(a) Coat the synchronizer ring set No. 2 with gear oil, then install it onto the input shaft.

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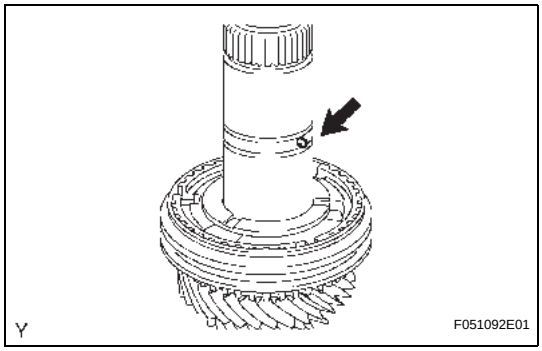
9. INSTALL SPACER

(a) Coat the spacer with gear oil, and install it onto the input shaft.



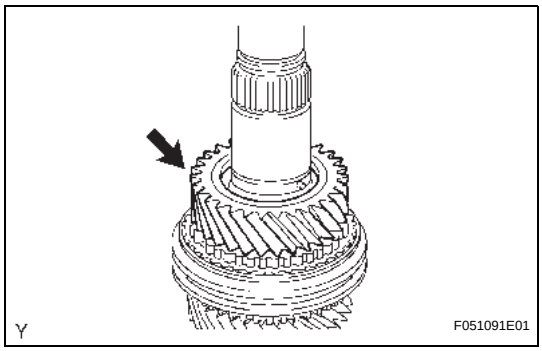
10. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

(a) Coat the 3rd gear needle roller bearing with gear oil, and install it onto the input shaft.



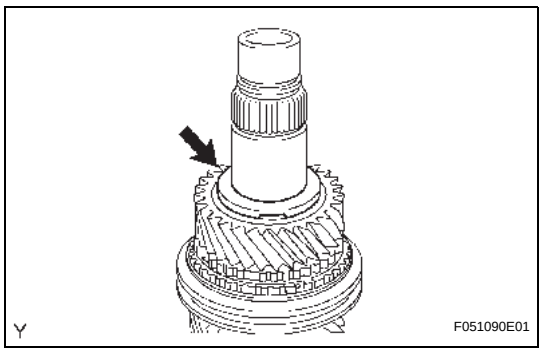
11. INSTALL STRAIGHT PIN

(a) Install the straight pin onto the input shaft.



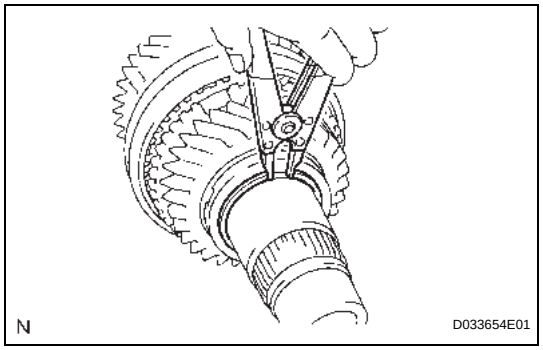
12. INSTALL 3RD GEAR

(a) Coat the 3rd gear with gear oil, and install it onto the input shaft.



13. INSTALL 3RD GEAR THRUST WASHER

(a) Coat the 3rd gear thrust washer with gear oil, and install it onto the input shaft.
HINT:
Align the straight pin with the groove of the gear thrust washer and install it.



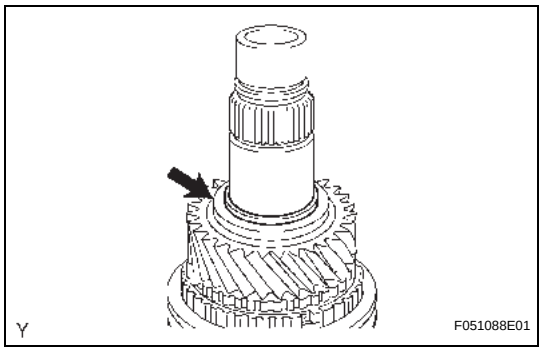
14. INSTALL GEAR THRUST WASHER SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

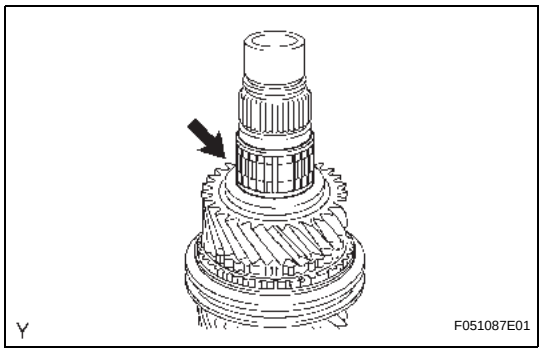
Part No.	Thickness: mm (in.)	Mark
90520-39026	2.07 to 2.12 (0.0815 to 0.0835)	A
90520-39027	2.12 to 2.17 (0.0835 to 0.0854)	B
90520-39028	2.17 to 2.22 (0.0854 to 0.0874)	C
90520-39029	2.22 to 2.27 (0.0874 to 0.0894)	D
90520-39030	2.27 to 2.32 (0.0894 to 0.0913)	E
90520-39031	2.32 to 2.37 (0.0913 to 0.0933)	F

(b) Using a snap ring expander, install the snap ring onto the input shaft.



15. INSTALL SHAFT SNAP RING

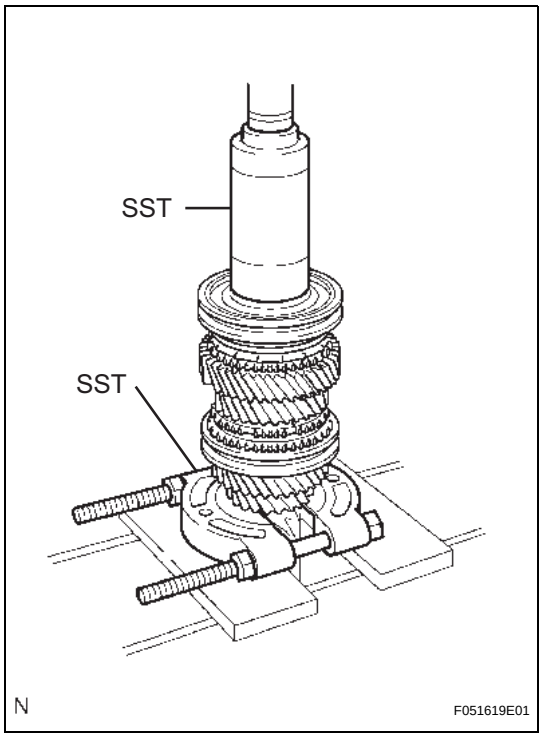
(a) Coat the shaft snap ring with gear oil, and install it onto the input shaft.



16. INSTALL 6TH GEAR NEEDLE ROLLER BEARING

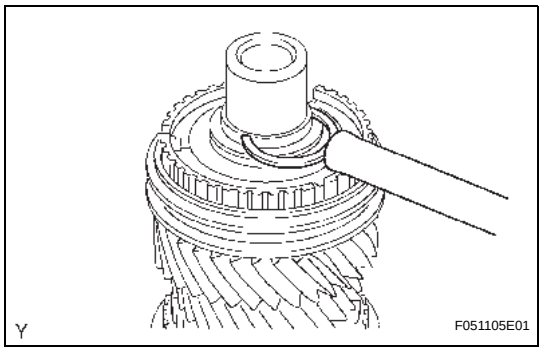
(a) Coat the 6th gear needle roller bearing with gear oil, and install it onto the input shaft.

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17. INSTALL 6TH GEAR

(a) Install the 6th gear onto the input shaft.
(b) Install the synchronizer ring onto the input shaft.
(c) Using SST and a press, install the clutch hub onto the input shaft.
SST 09309-37010, 09950-00020
(d) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.



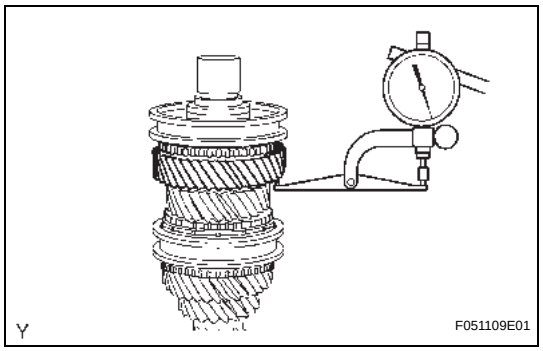
18. INSTALL TRANSMISSION CLUTCH HUB NO.3 SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-33022	2.10 to 2.15 (0.0827 to 0.0847)	A
90520-33023	2.15 to 2.20 (0.0847 to 0.0866)	B
90520-33024	2.20 to 2.25 (0.0866 to 0.0886)	C
90520-33025	2.25 to 2.30 (0.0886 to 0.0906)	D
90520-33026	2.30 to 2.35 (0.0906 to 0.0925)	E
90520-33027	2.35 to 2.40 (0.0925 to 0.0945)	F
90520-33028	2.40 to 2.45 (0.0945 to 0.0965)	G

(b) Using a brass bar and a hammer, install the snap ring onto the input shaft.

MT



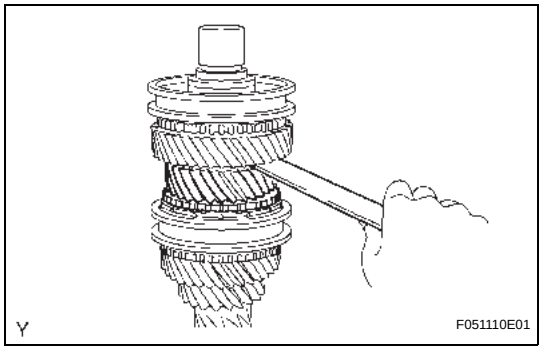
19. INSPECT 6TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 6th gear thrust clearance.

Standard clearance:

0.20 to 0.49 mm (0.0079 to 0.0193 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



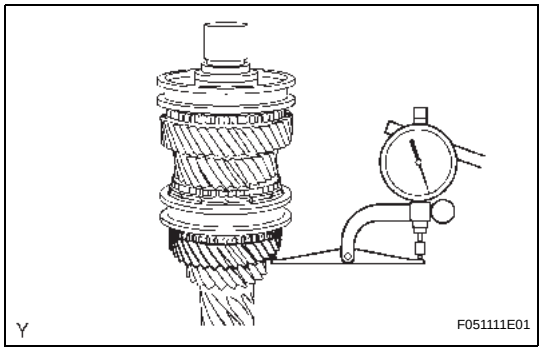
20. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.09 to 0.52 mm (0.0035 to 0.0205 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 2.



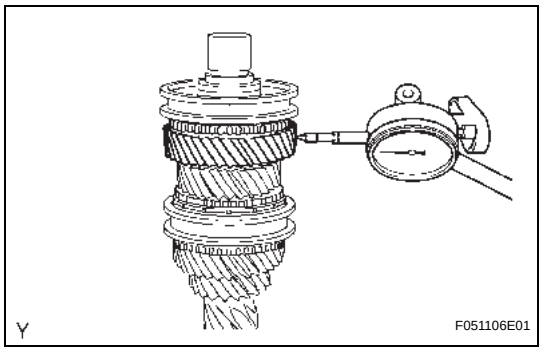
21. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 4th gear thrust clearance.

Standard clearance:

0.12 to 0.38 mm (0.0047 to 0.0150 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



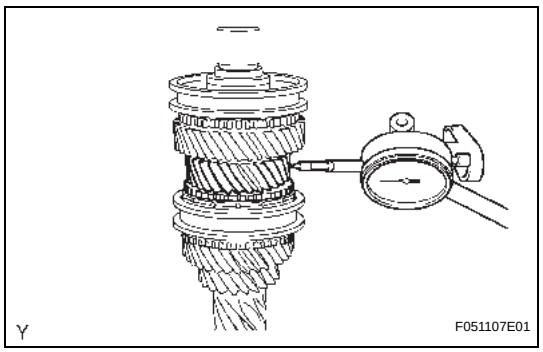
22. INSPECT 6TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 6th gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



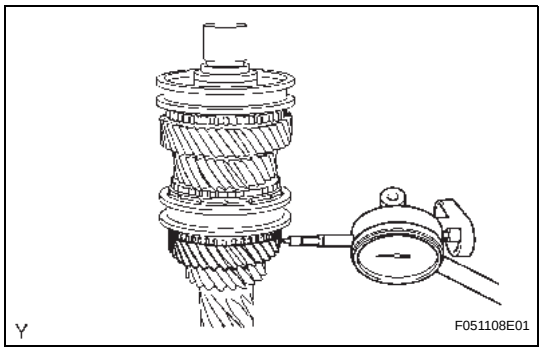
23. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



24. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

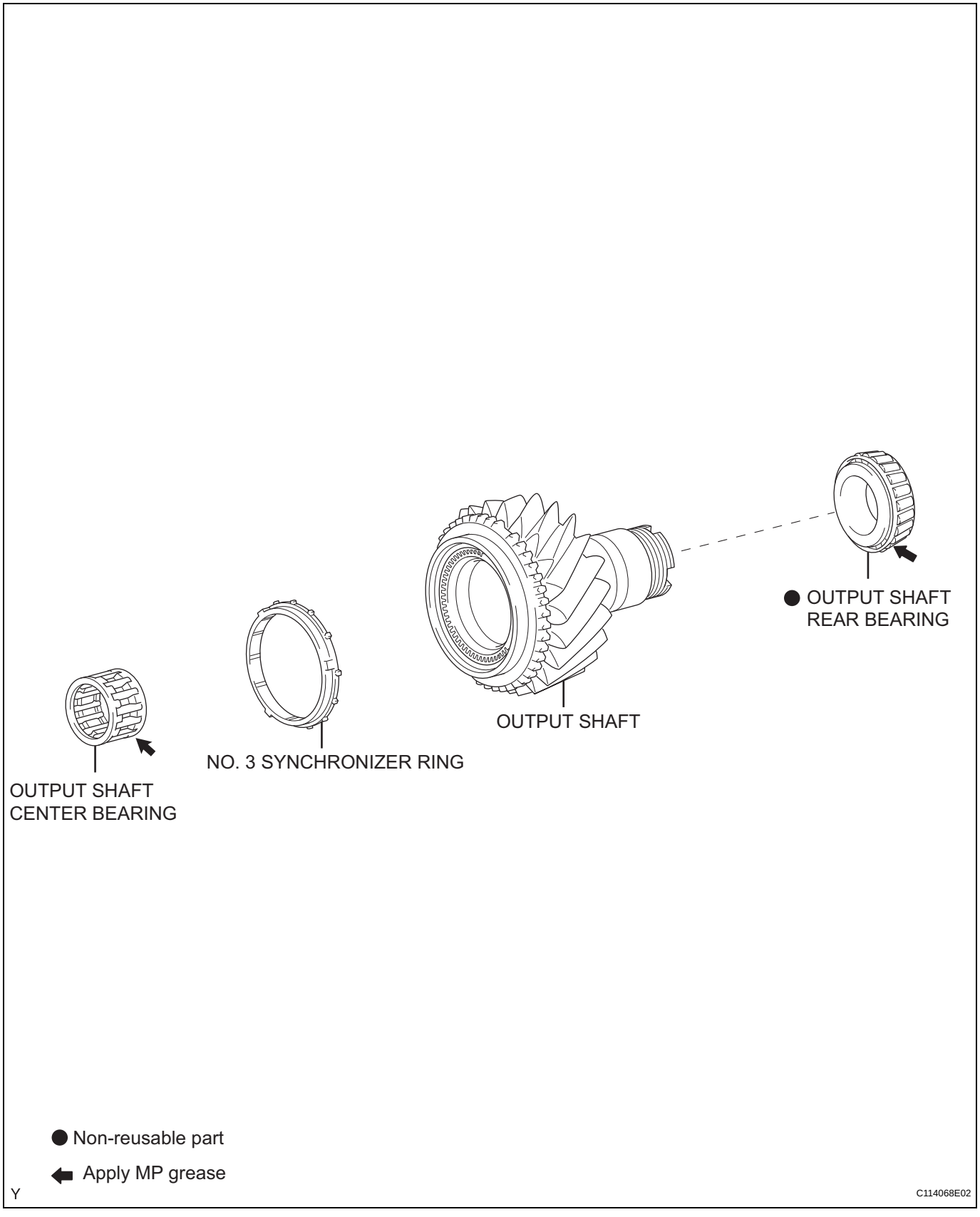
Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.

OUTPUT SHAFT

COMPONENTS



MT

DISASSEMBLY

1. REMOVE NO. 3 SYNCHRONIZER RING

(a) Remove synchronizer ring No. 3 from the output shaft.

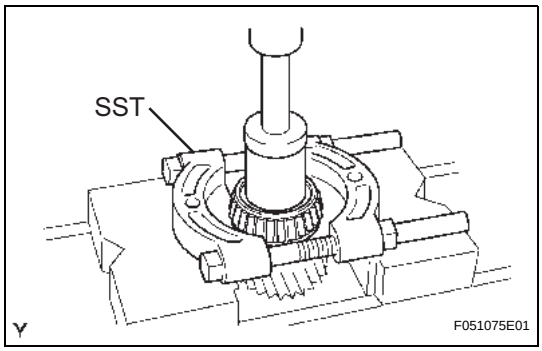
2. REMOVE OUTPUT SHAFT CENTER BEARING

(a) Remove the output shaft center bearing from the output shaft.

3. REMOVE OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, remove the output shaft rear bearing from the output shaft.

SST 09950-00020, 09950-70010 (09951-07100), 09950-60010 (09951-00510)



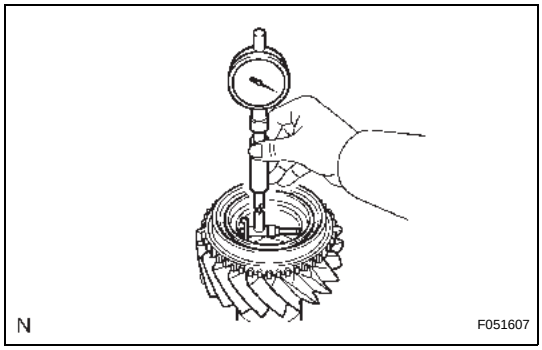
INSPECTION

1. INSPECT OUTPUT SHAFT

(a) Using a cylinder gauge, measure the inside diameter of the output shaft.

Standard inside diameter:
45.009 to 45.025 mm (1.7720 to 1.7726 in.)
Maximum inside diameter:
45.025 mm (1.7726 in.)

If the diameter exceeds the maximum, replace the output shaft.

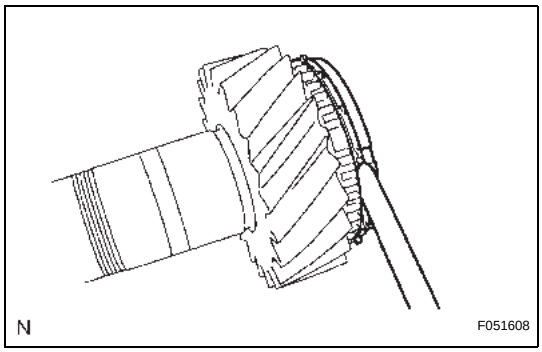


2. INSPECT NO. 3 SYNCHRONIZER RING

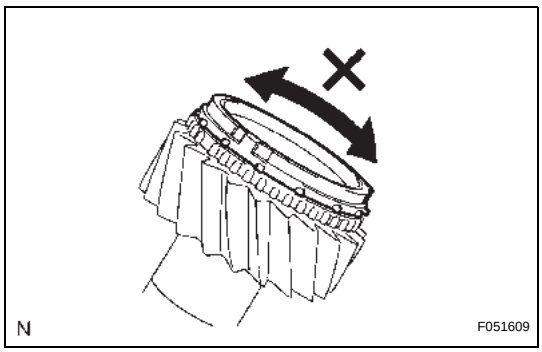
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and gear spline.

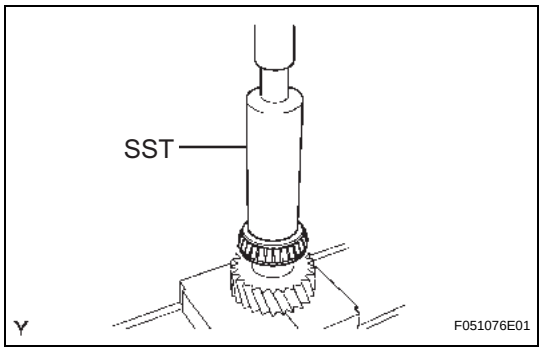
Standard clearance:
0.70 to 1.50 mm (0.0276 to 0.0591 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the output shaft and synchronizer ring cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks.





REASSEMBLY

1. INSTALL OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, install a new output shaft rear bearing onto the output shaft.
SST 09316-60011 (09316-00011)

(b) Apply a light coat of grease to the bearing.

2. INSTALL OUTPUT SHAFT CENTER BEARING

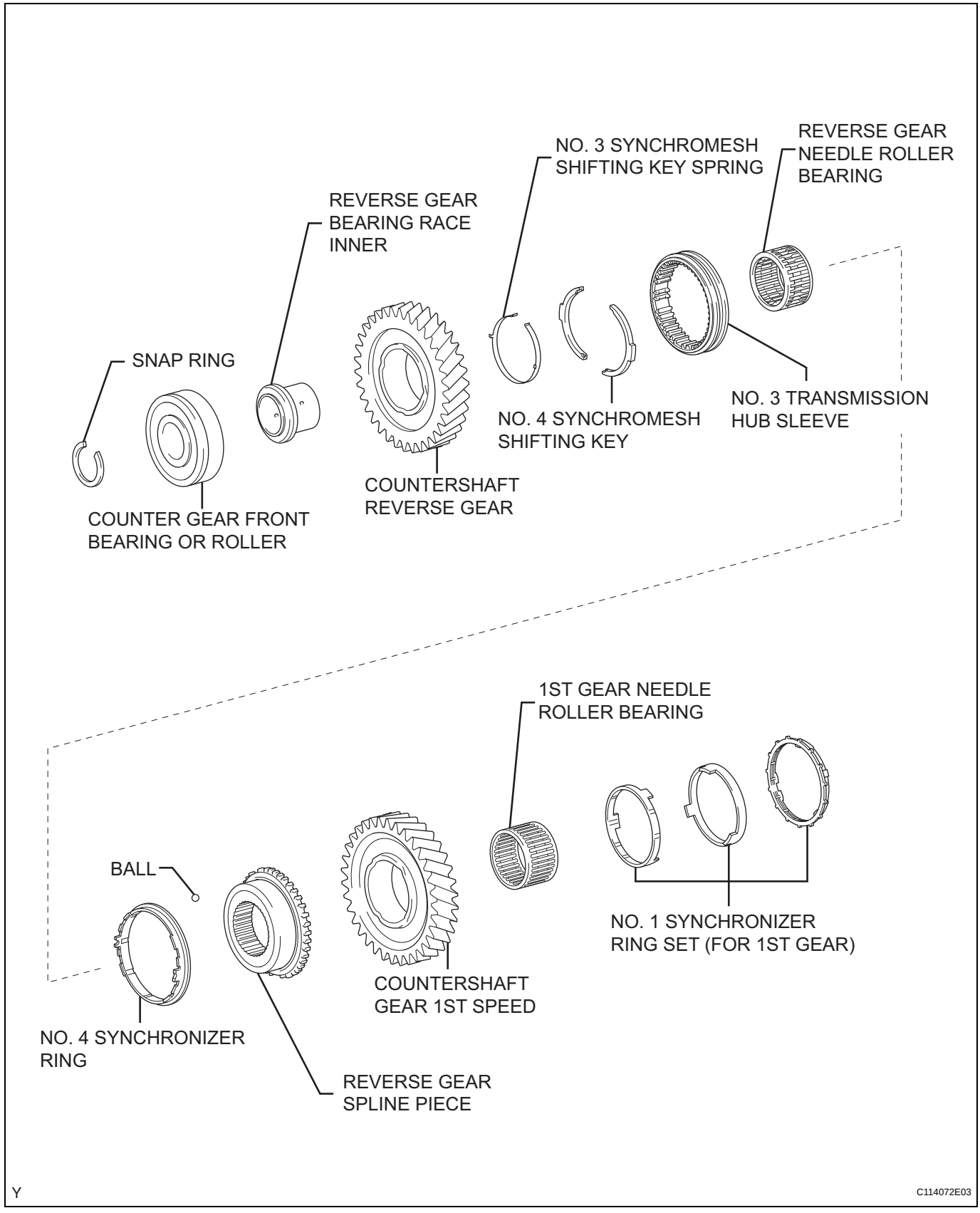
(a) Apply gear grease to the output shaft center bearing to the output shaft, and install it onto the output shaft.

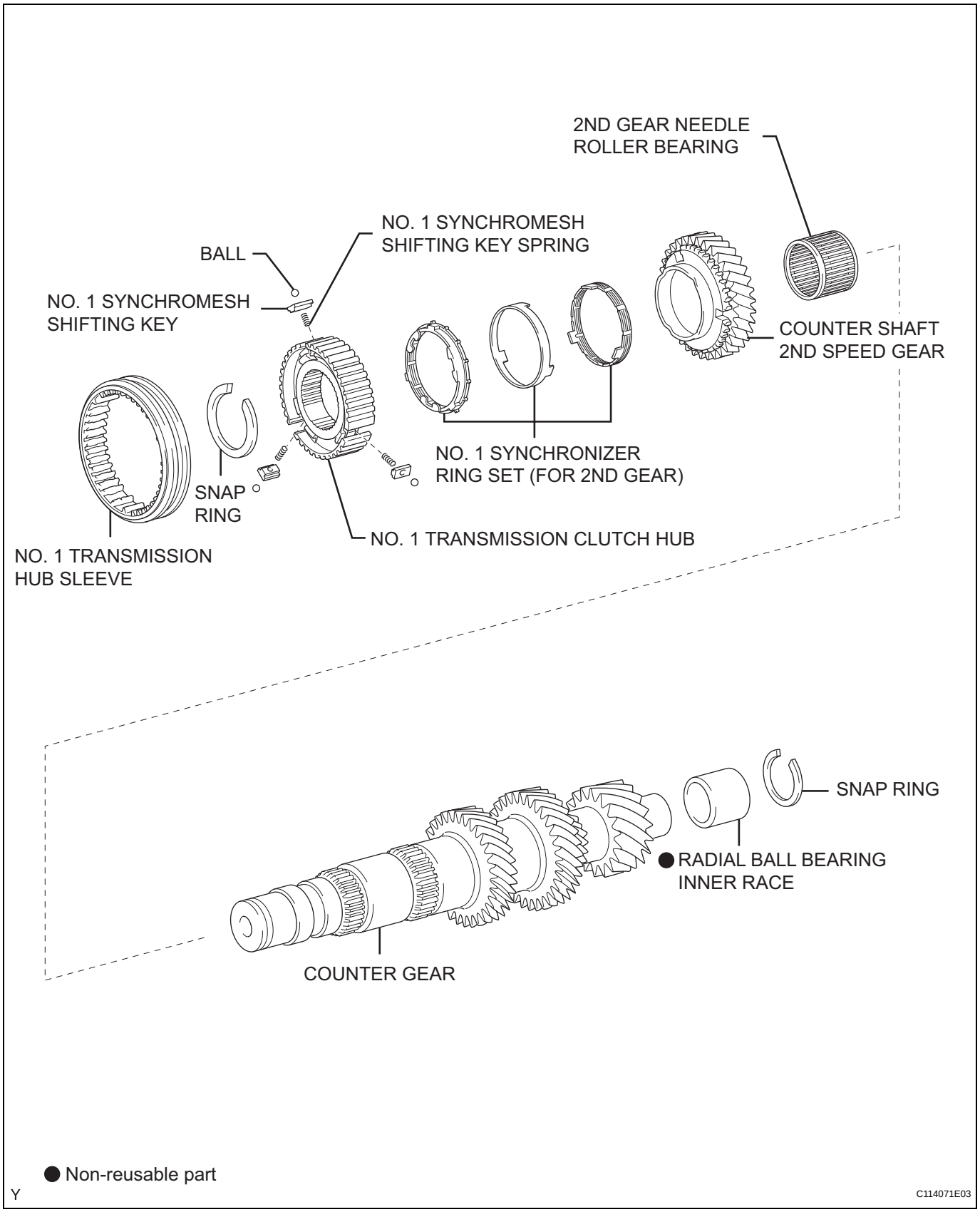
3. INSTALL NO. 3 SYNCHRONIZER RING

(a) Apply gear oil to synchronizer ring No. 3, and install it onto the output shaft.

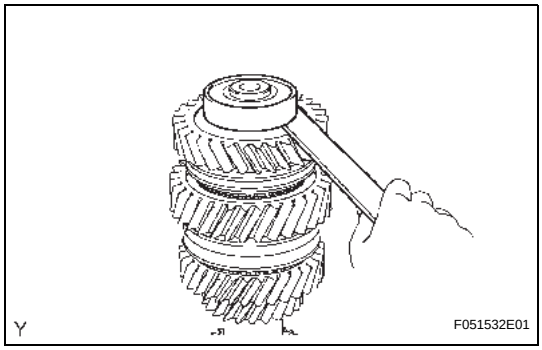
COUNTER GEAR AND REVERSE IDLER GEAR

COMPONENTS




2ND GEAR NEEDLE ROLLER BEARING
NO. 1 SYNCHROMESH SHIFTING KEY SPRING
BALL
NO. 1 SYNCHROMESH SHIFTING KEY
COUNTER SHAFT 2ND SPEED GEAR
NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)
SNAP RING
NO. 1 TRANSMISSION CLUTCH HUB
NO. 1 TRANSMISSION HUB SLEEVE
SNAP RING
● RADIAL BALL BEARING INNER RACE
COUNTER GEAR
● Non-reusable part
Y
C114071E03

MT



DISASSEMBLY

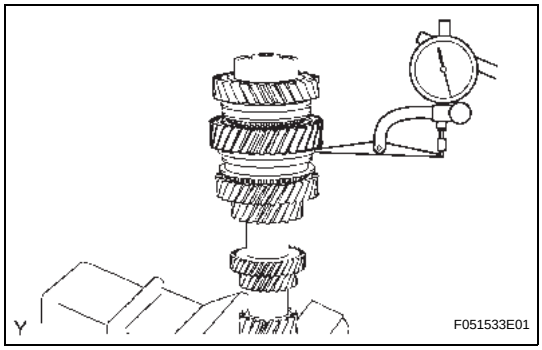
1. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



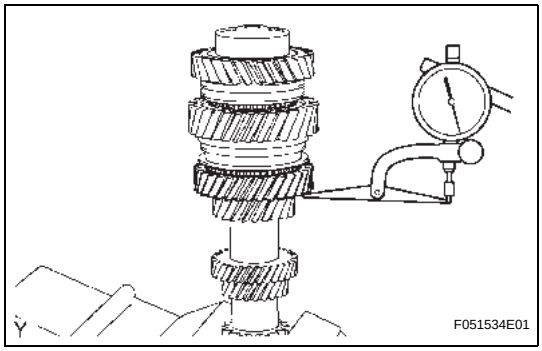
2. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



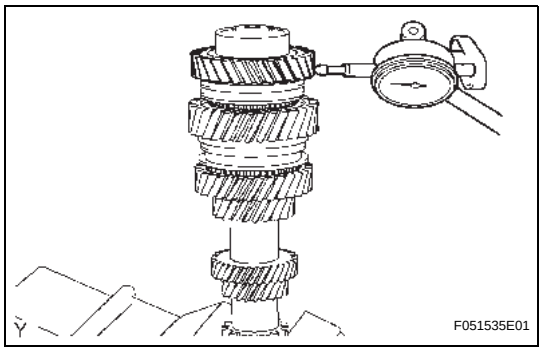
3. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



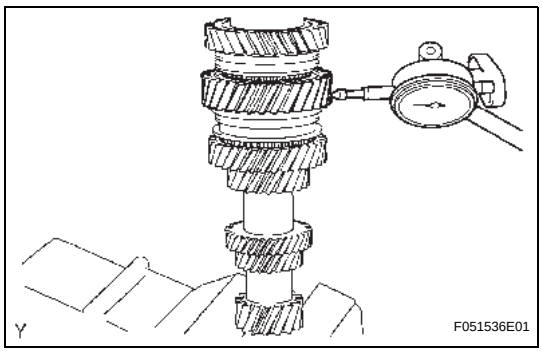
4. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



5. INSPECT 1ST GEAR RADIAL CLEARANCE

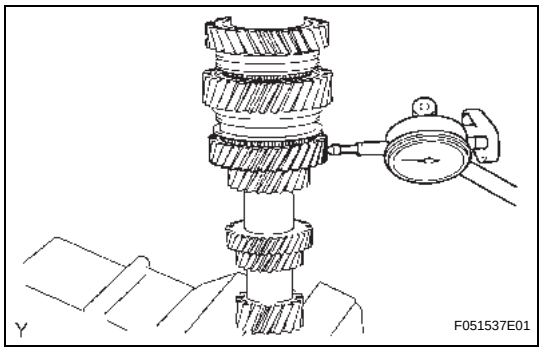
(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.

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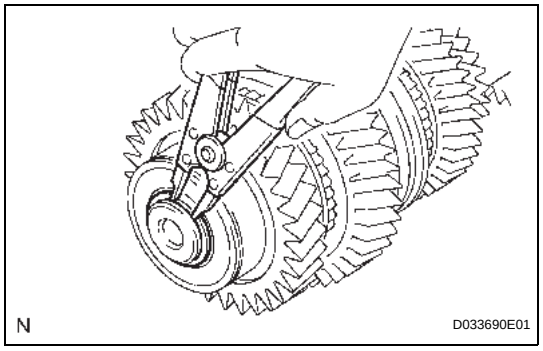
6. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

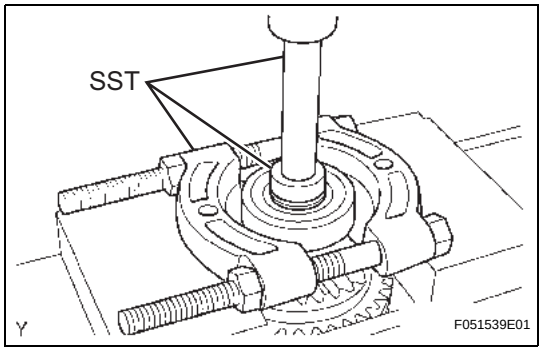
0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.



7. REMOVE COUNTER GEAR FRONT BEARING SNAP RING NO.1

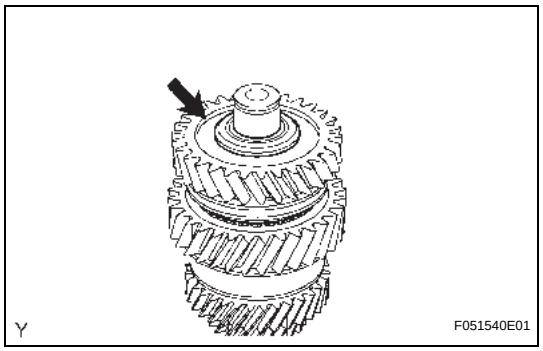
(a) Using a snap ring expander, remove the snap ring from the counter gear.



8. REMOVE COUNTER GEAR FRONT BEARING OR ROLLER

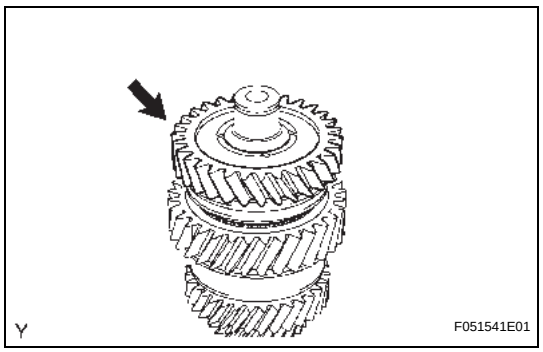
(a) Using SST and a press, remove the counter gear front bearing or roller from the counter gear.

SST 09950-00020, 09950-70010 (09951-07100), 09950-60010 (09951-00320)



9. REMOVE REVERSE GEAR BEARING RACE INNER

(a) Remove the reverse gear bearing race inner from the counter gear.

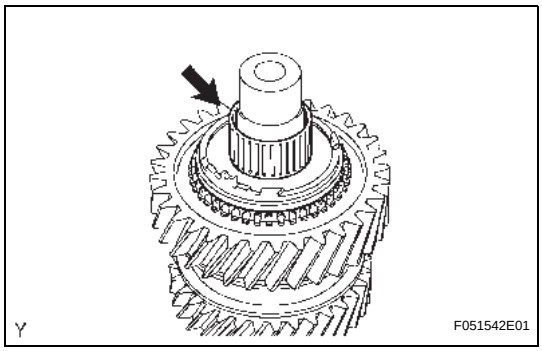


10. REMOVE COUNTERSHAFT REVERSE GEAR

(a) Remove the countershaft reverse gear from the counter gear.

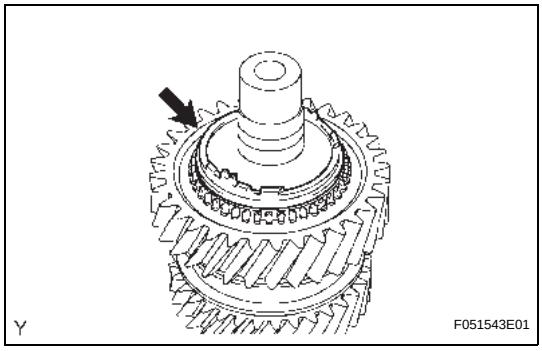
(b) Remove the hub sleeve, 2 shifting keys and key spring from the countershaft reverse gear.

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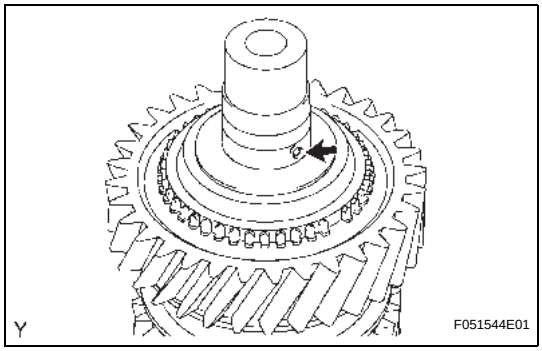
11. REMOVE REVERSE GEAR NEEDLE ROLLER BEARING

(a) Remove the reverse gear needle roller bearing from the counter gear.



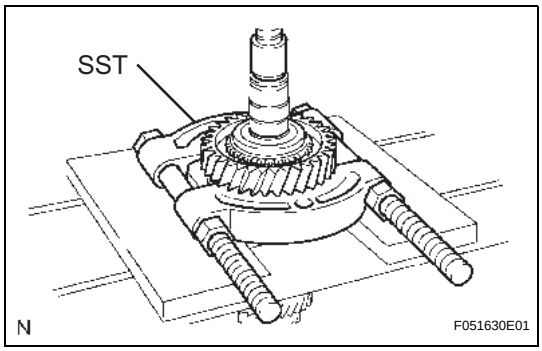
12. REMOVE NO. 4 SYNCHRONIZER RING

(a) Remove the synchronizer ring No. 4 from the counter gear.



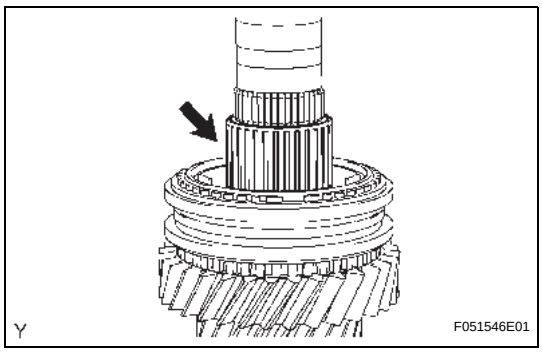
13. REMOVE BALL

(a) Remove the ball from the counter gear.



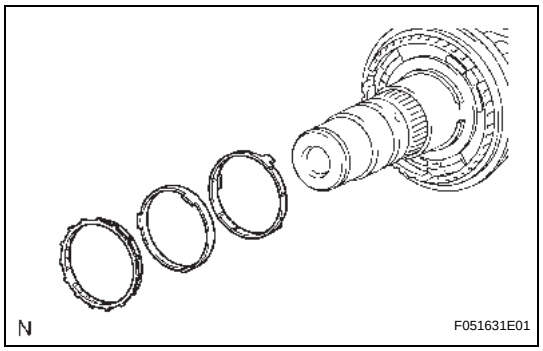
14. REMOVE COUNTERSHAFT GEAR 1ST SPEED

(a) Using a press, remove the countershaft gear 1st speed together with reverse gear spline piece from the counter gear.
SST 09950-00020



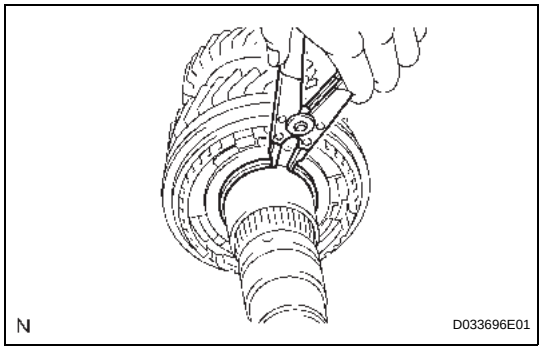
15. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

(a) Remove the 1st gear needle roller bearing from the counter gear.



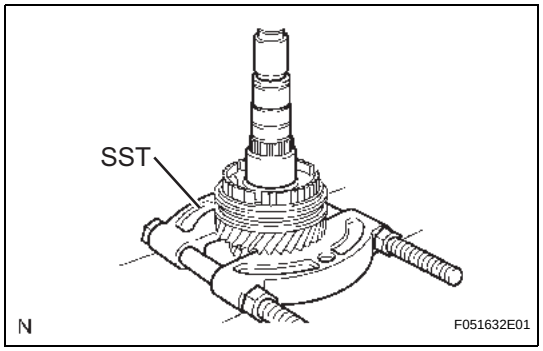
16. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

(a) Remove the synchronizer ring set No. 1 from the counter gear.



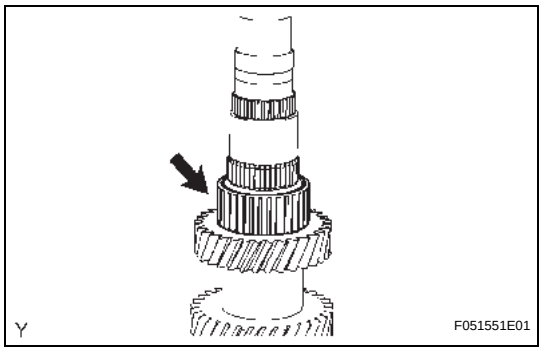
17. REMOVE CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the counter gear.



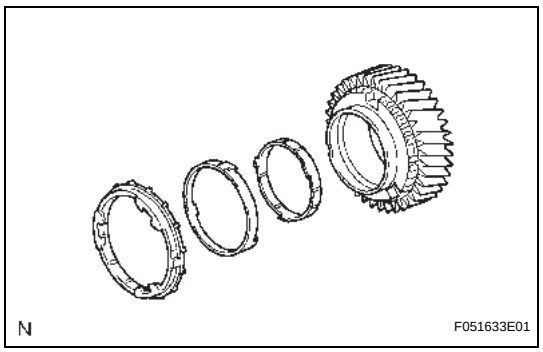
18. REMOVE COUNTER SHAFT 2ND SPEED GEAR

(a) Using a press, remove the counter shaft 2nd speed gear together with transmission clutch hub No. 1 from the counter gear.
SST 09950-00020



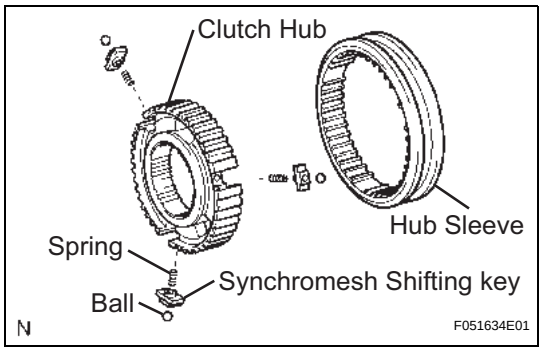
19. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

(a) Remove the 2nd needle roller bearing from the counter gear.



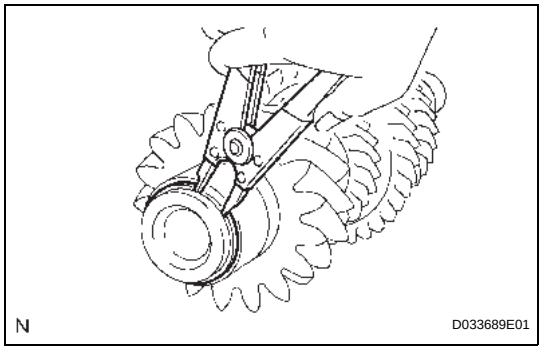
20. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Remove the synchronizer ring set No. 1 from the 2nd gear.



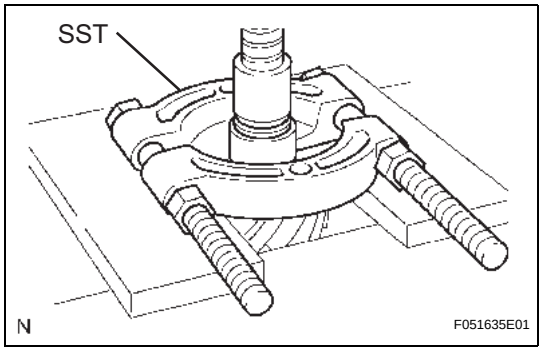
21. REMOVE NO. 1 TRANSMISSION CLUTCH HUB

(a) Remove the hub sleeve, 3 synchromesh shifting keys, 3 balls and 3 springs from the clutch hub.
HINT:
Use a shop rag to prevent the ball and spring from flying off.



22. REMOVE SNAP RING COUNTER GEAR REAR BEARING

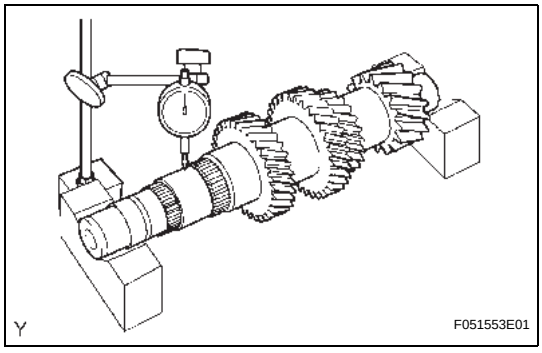
(a) Using a snap ring expander, remove the snap ring from the counter gear.



23. REMOVE RADIAL BALL BEARING INNER RACE

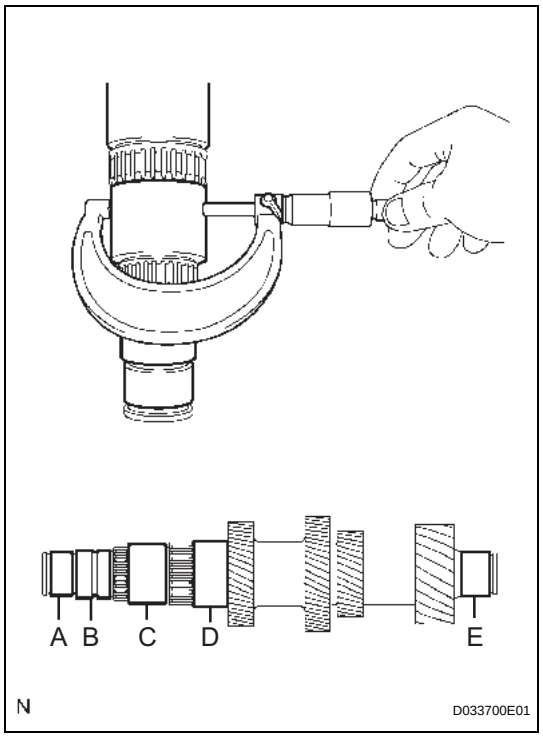
(a) Using SST and a press, remove the needle roller bearing inner race.
SST 09950-00020

INSPECTION



1. INSPECT COUNTER GEAR

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout:
0.03 mm (0.0012 in.)
If the runout exceeds the maximum, replace the counter gear.



(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

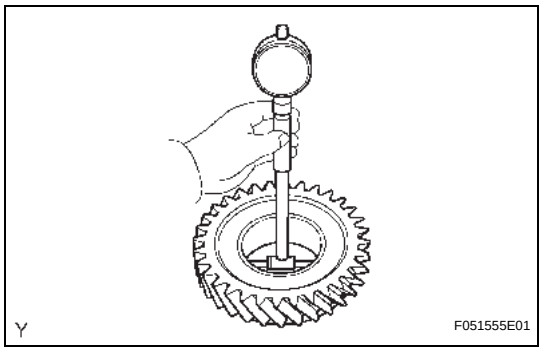
Standard

Part	Outer diameter mm (in.)
A	34.002 to 34.015 (1.3387 to 1.3392)
B	36.985 to 37.000 (1.4561 to 1.4567)
C	47.985 to 48.000 (1.8892 to 1.8898)
D	53.985 to 54.000 (2.1254 to 2.1260)
E	34.002 to 34.015 (1.3387 to 1.3392)

Minimum

Part	Outer diameter mm (in.)
A	34.002 (1.3387)
B	36.985 (1.4561)
C	47.985 (1.8892)
D	53.985 (2.1254)
E	34.002 (1.3387)

If the diameter is less than the minimum, replace the counter gear shaft.

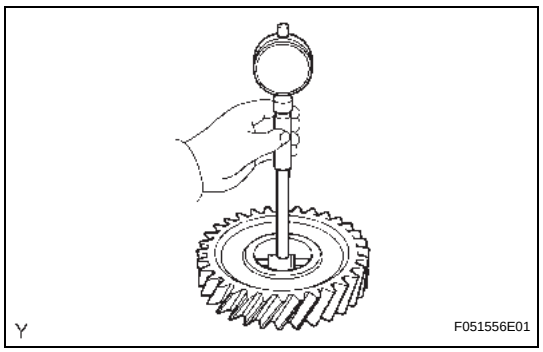


2. INSPECT COUNTERSHAFT REVERSE GEAR

(a) Using cylinder gauge, measure the inside diameter of the reverse gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the reverse gear.

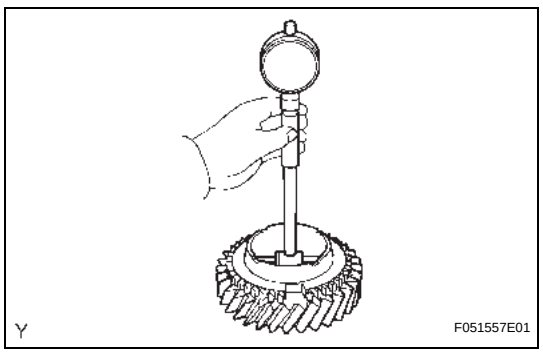


3. INSPECT COUNTERSHAFT GEAR 1ST SPEED

(a) Using cylinder gauge, measure the inside diameter of the 1st gear.

Standard inside diameter:
54.015 to 54.040 mm (2.1266 to 2.1276 in.)
Maximum inside diameter:
54.040 mm (2.1276 in.)

If the inside diameter exceeds the maximum, replace the 1st gear.



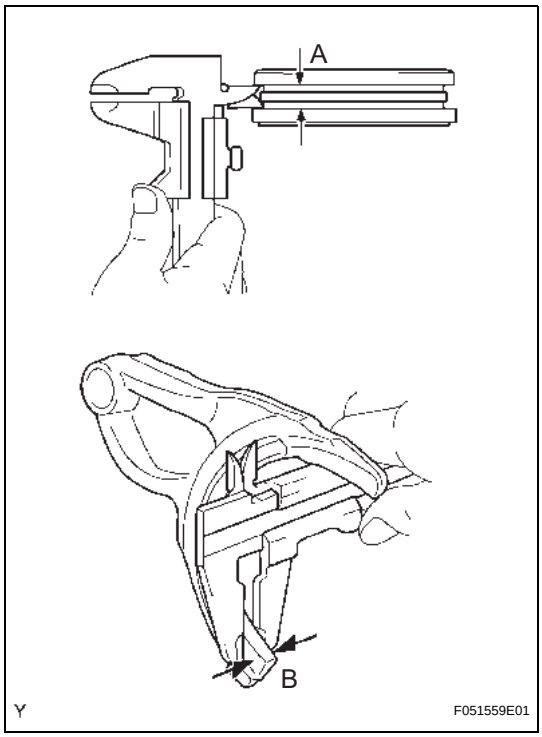
4. INSPECT COUNTER SHAFT 2ND SPEED GEAR

(a) Using cylinder gauge, measure the inside diameter of the 2nd gear.

Standard inside diameter:
60.015 to 60.040 mm (2.3628 to 2.3638 in.)
Maximum inside diameter:
60.040 mm (2.3638 in.)

If the inside diameter exceeds the maximum, replace the 2nd gear.

MT



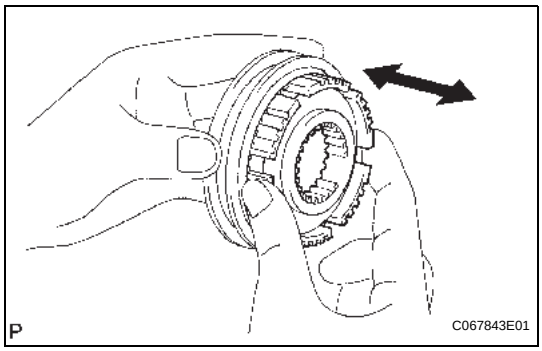
5. INSPECT NO. 3 TRANSMISSION HUB SLEEVE

(a) Using vernier calipers, measure the width of the transmission hub sleeve No. 3 groove (A) and the thickness of the claw part on the gear shift fork No. 4 (B), and calculate the clearance.

Standard clearance (A - B):

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

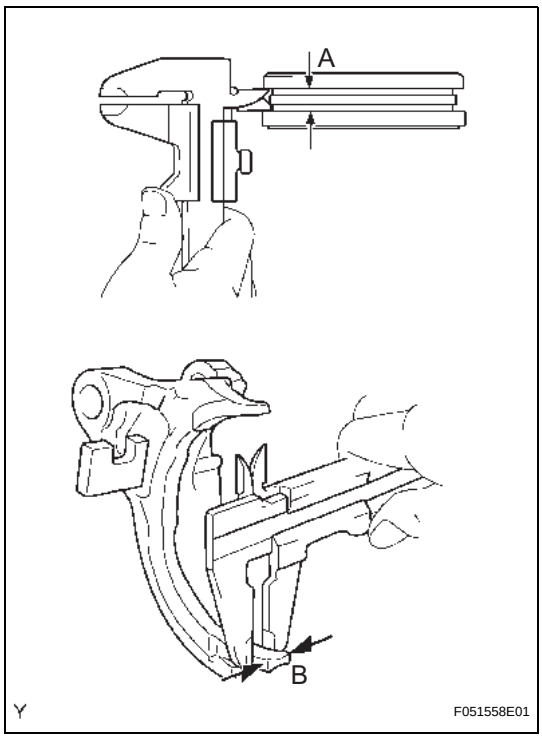
If the clearance is outside the specification, replace the transmission hub sleeve No. 3 and gear shift fork No. 4.



6. INSPECT NO. 1 TRANSMISSION HUB SLEEVE

(a) Check the sliding condition between the transmission hub No. 1 and transmission hub sleeve No. 1.

(b) Check that the spline gear teeth of the transmission hub sleeve No. 1 are not worn.

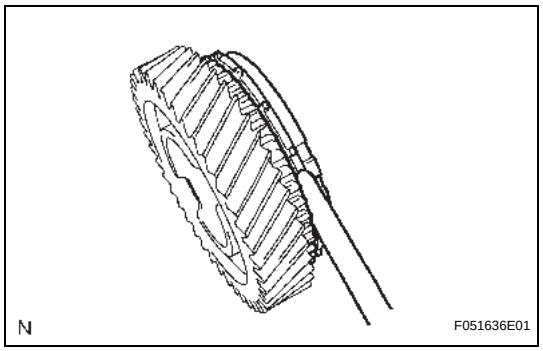


(c) Using vernier calipers, measure the width of the transmission hub sleeve No. 1 groove (A) and the thickness of the claw part on the gear shift fork No. 1 (B), and calculate the clearance.

Standard clearance (A - B):

0.15 to 0.35 mm (0.0059 to 0.0138 in.)

If the clearance is outside the specification, replace the transmission hub sleeve No. 1 and gear shift fork No. 1.

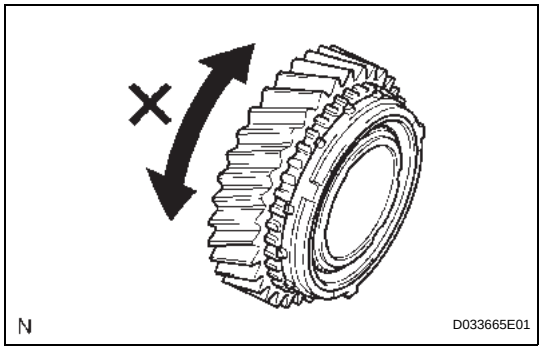


7. INSPECT NO. 4 SYNCHRONIZER RING

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and reverse gear.

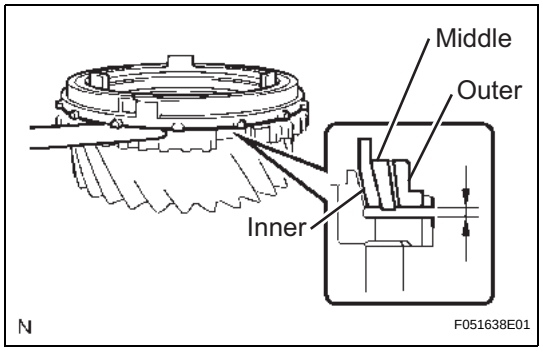
Standard clearance:
0.70 to 1.30 mm (0.0276 to 0.0512 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the reverse gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the reverse gear cone. Check that the ring locks.

MT

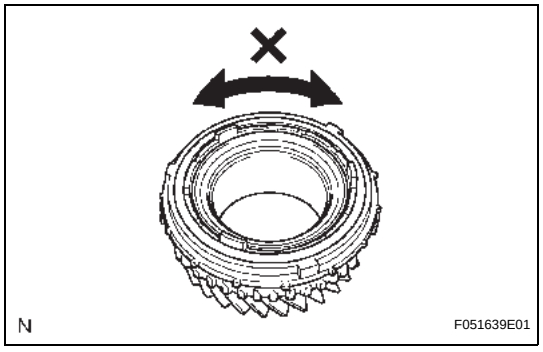


8. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

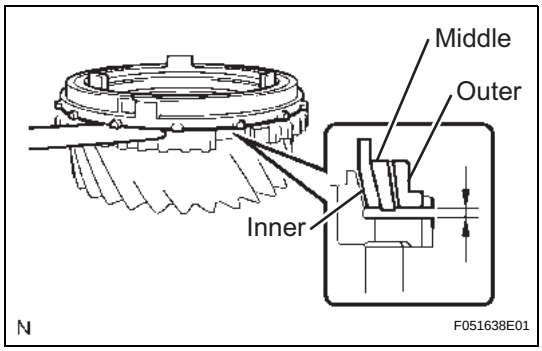
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 1st gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 1st gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 1st gear cone. Check that the ring locks.

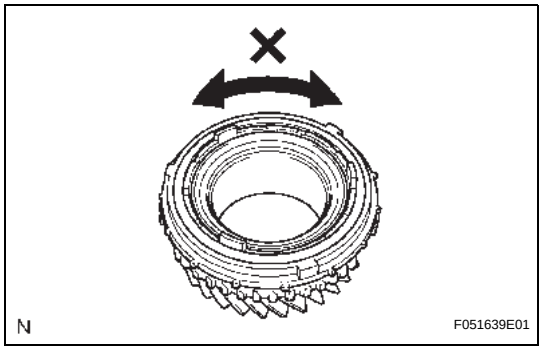


9. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 2nd gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



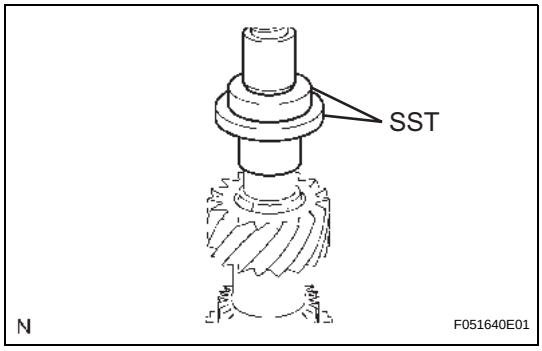
(b) Coat the 2nd gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 2nd gear cone. Check that the ring locks.

REASSEMBLY

1. INSTALL RADIAL BALL BEARING INNER RACE

(a) Using SST and a press, install a new needle roller bearing inner race.

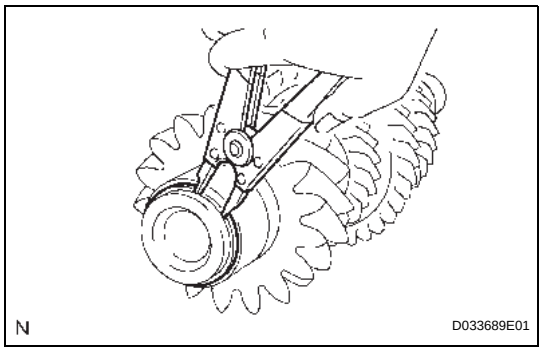
SST 09950-60010 (09951-00540)



2. INSTALL SNAP RING COUNTER GEAR REAR BEARING

(a) Select a snap ring that will allow minimum axial play.

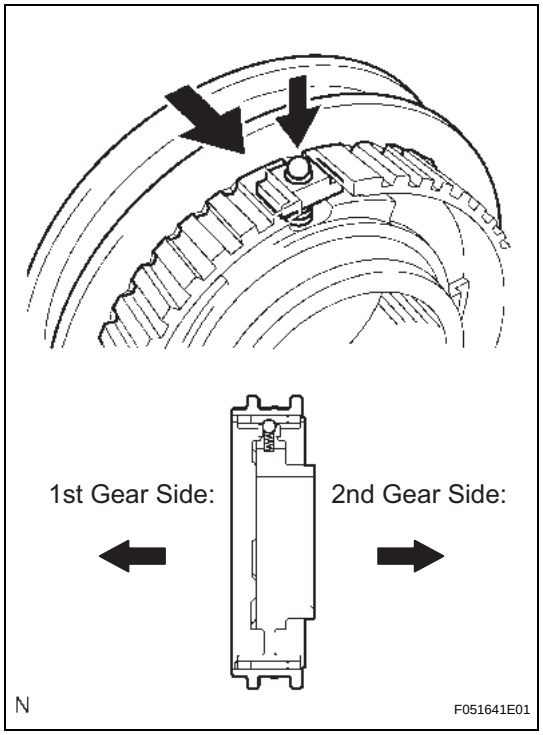
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness



Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C

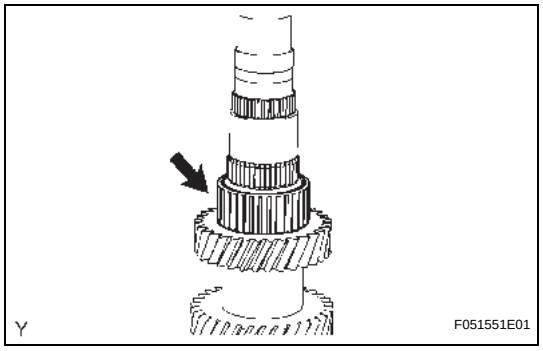
Part No.	Thickness: mm (in.)	Mark
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
90520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



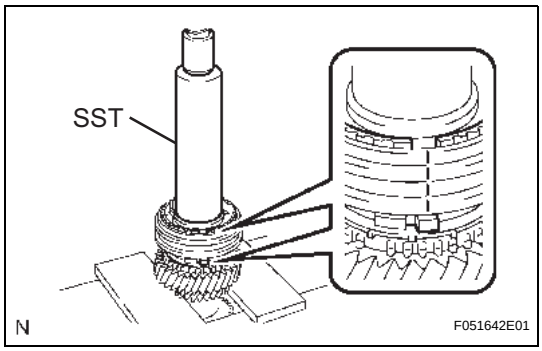
3. INSTALL NO. 1 TRANSMISSION CLUTCH HUB

(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.
NOTICE:
Take care to prevent the ball from flying off.



4. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

(a) Coat the 2nd gear needle roller bearing with gear oil, then install it onto the counter gear.



5. INSTALL COUNTER SHAFT 2ND SPEED GEAR

(a) Coat the countershaft 2nd speed gear with gear oil, then install it onto the counter gear.

(b) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.

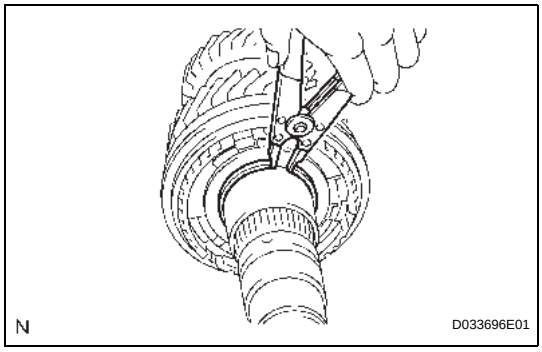
(c) Using SST and a press, install the transmission clutch hub No. 1 onto the counter gear.

SST 09308-14010

HINT:

Align the convex portion of the synchronizer ring with the groove of the clutch hub.

(d) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.



6. INSTALL CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.

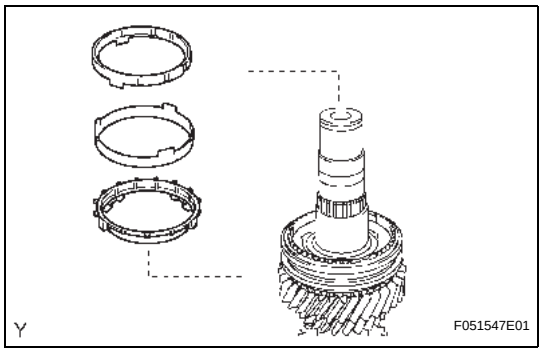
Standard clearance:

0.1 mm (0.004 in.) or less

Snap ring thickness

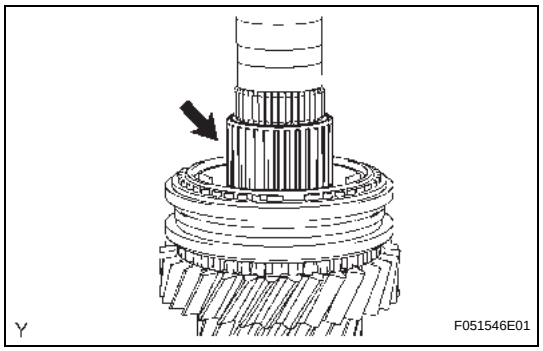
Part No.	Thickness: mm (in.)	Mark
90520-45013	2.28 to 2.33 (0.0898 to 0.0917)	A
90520-45014	2.33 to 2.38 (0.0917 to 0.0937)	B
90520-45015	2.38 to 2.43 (0.0937 to 0.0957)	C
90520-45016	2.43 to 2.48 (0.0957 to 0.0976)	D
90520-45017	2.48 to 2.53 (0.0976 to 0.0996)	E
90520-45018	2.53 to 2.58 (0.0996 to 0.1016)	F
90520-45019	2.58 to 2.63 (0.1016 to 0.1035)	G

(b) Using a snap ring expander, install the snap ring onto the counter gear.



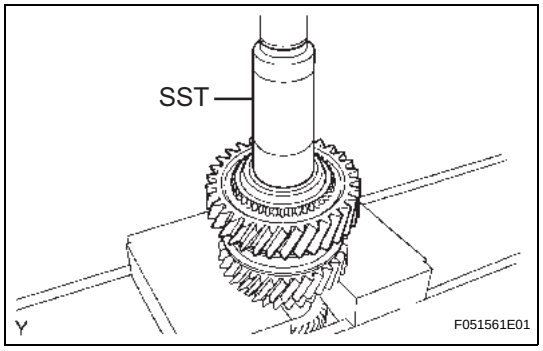
7. INSTALL NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

(a) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.



8. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

(a) Coat the 1st gear needle roller bearing with gear oil, then install it onto the counter gear.

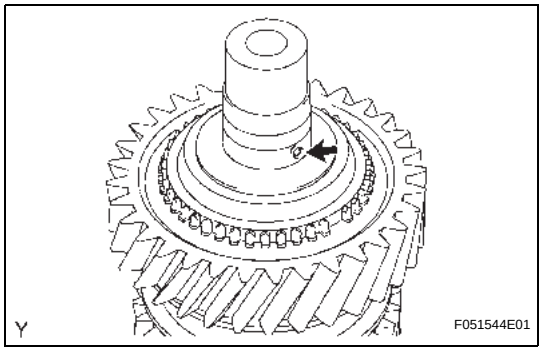


9. INSTALL COUNTERSHAFT GEAR 1ST SPEED

(a) Coat the countershaft gear 1st speed with gear oil, and install it onto the counter gear.

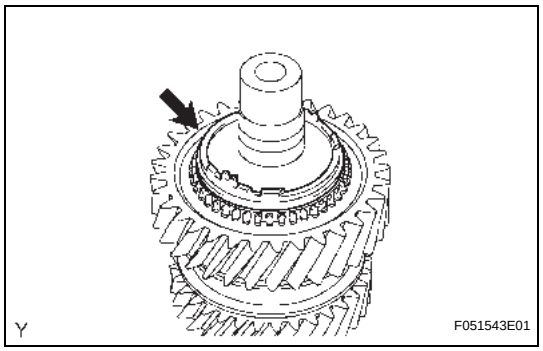
(b) Using SST and a press, install the reverse gear spline piece.

SST 09309-37010



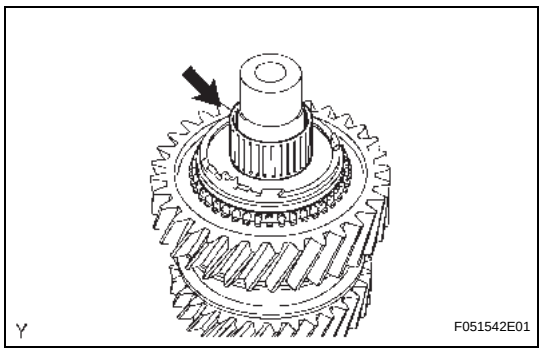
10. INSTALL BALL

(a) Install the ball into the counter gear.



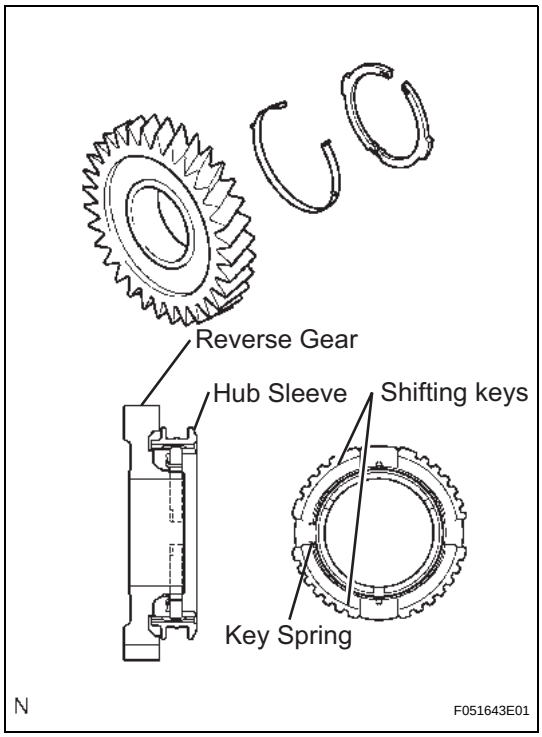
11. INSTALL NO. 4 SYNCHRONIZER RING

(a) Coat the synchronizer ring No. 4 with gear oil, and install it onto the counter gear.



12. INSTALL REVERSE GEAR NEEDLE ROLLER BEARING

(a) Coat the reverse gear needle roller bearing with gear oil, and install it onto the counter gear.

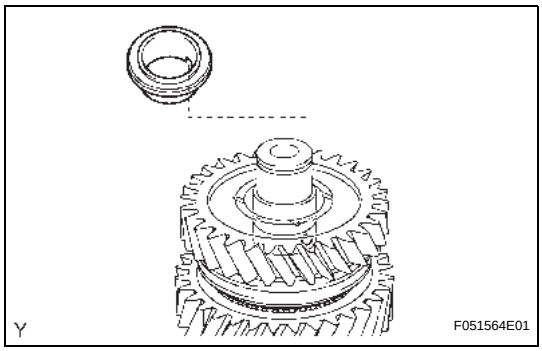


13. INSTALL COUNTERSHAFT REVERSE GEAR

(a) Install the key spring and 2 shifting keys onto the reverse gear.
HINT:
- Install the shifting key with its groove on the reverse gear side.
- Install the key spring with its claw on the reverse gear side.
- Refer to the illustration when installing the key spring.

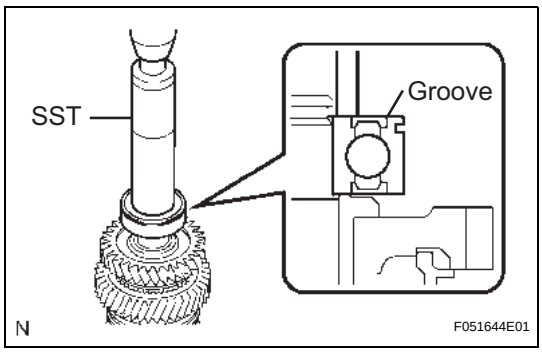
(b) Install the hub sleeve onto the reverse gear.

(c) Coat the countershaft reverse gear with gear oil, then install it onto the counter gear.



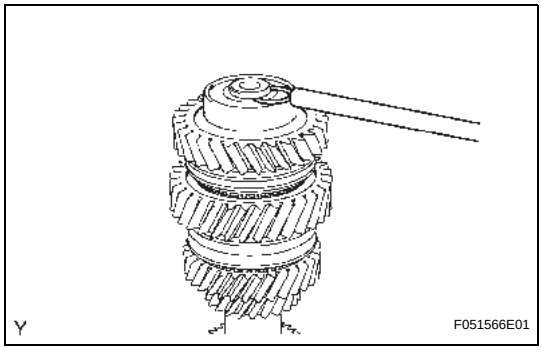
14. INSTALL REVERSE GEAR BEARING RACE INNER

(a) Align the groove of the reverse gear bearing race inner with the ball, and install them.



15. INSTALL COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, install counter gear front bearing or roller onto the counter gear.
SST 09608-06041
HINT:
Make sure that the groove of the bearing faces the correct direction as shown in the illustration.



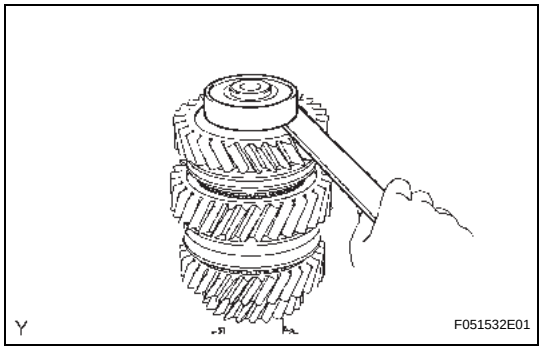
16. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A

Part No.	Thickness: mm (in.)	Mark
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
0520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



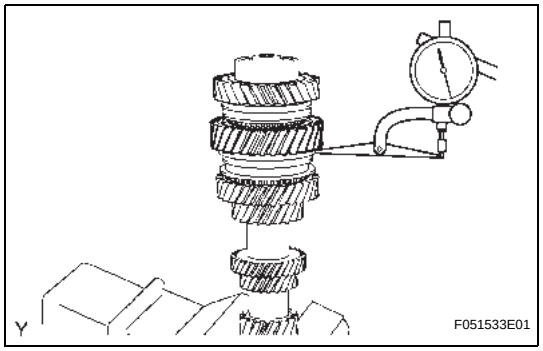
17. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



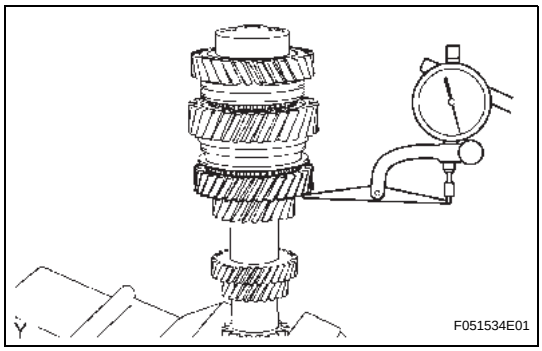
18. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



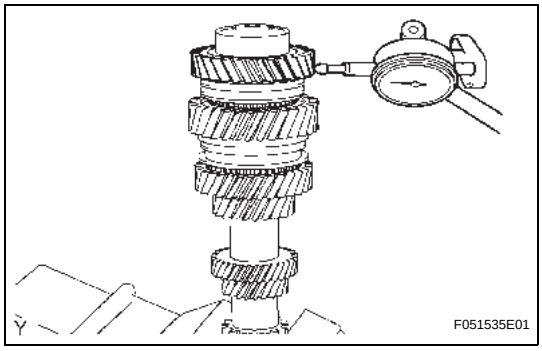
19. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



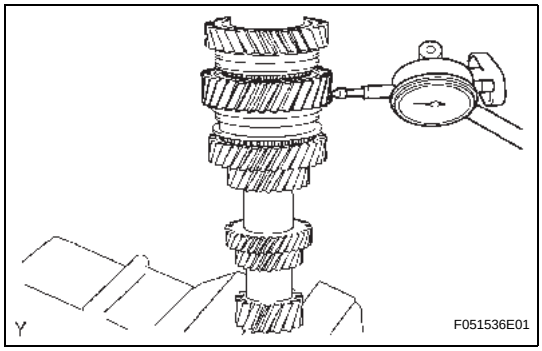
20. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



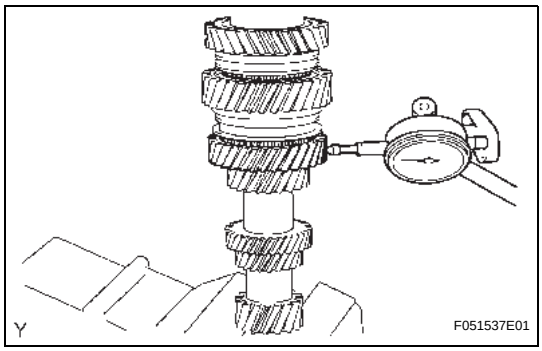
21. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.



22. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.

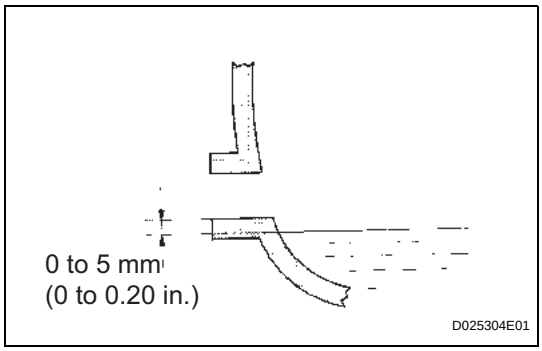
MT

MANUAL TRANSMISSION SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problems. The numbers indicate the ranked order of probability of each of the possible causes. Check each part in the order suggested. If necessary, replace the applicable parts.

Symptom	Suspected area	See page
Abnormal noise	1. Oil level (Low)	MT-2
	2. Oil (Wrong)	MT-2
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-
Oil leakage	1. Oil level (High)	MT-2
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	-
	4. O-Ring (Worn or damaged)	-
Hard shifting or will not shift	1. Synchronizer ring (Worn or damaged)	-
	2. Shift key spring (Damaged)	-
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	-
	3. Gears (Worn or damaged)	-
	4. Bearings (Worn or damaged)	-



MANUAL TRANSMISSION OIL

ON-VEHICLE INSPECTION

1. INSPECT TRANSMISSION OIL

(a) Park the vehicle in a level place.

(b) Remove the transmission filler plug and gasket.

(c) Check that the oil surface is within 5 mm (0.20 in.) of the lowest point of the transmission filler plug opening.

NOTICE:

- **Problems may occur when the oil level is too high or low.**
- **After replacing the oil, drive the vehicle and check the oil level again.**

(d) Check for oil leakage when the oil level is low.

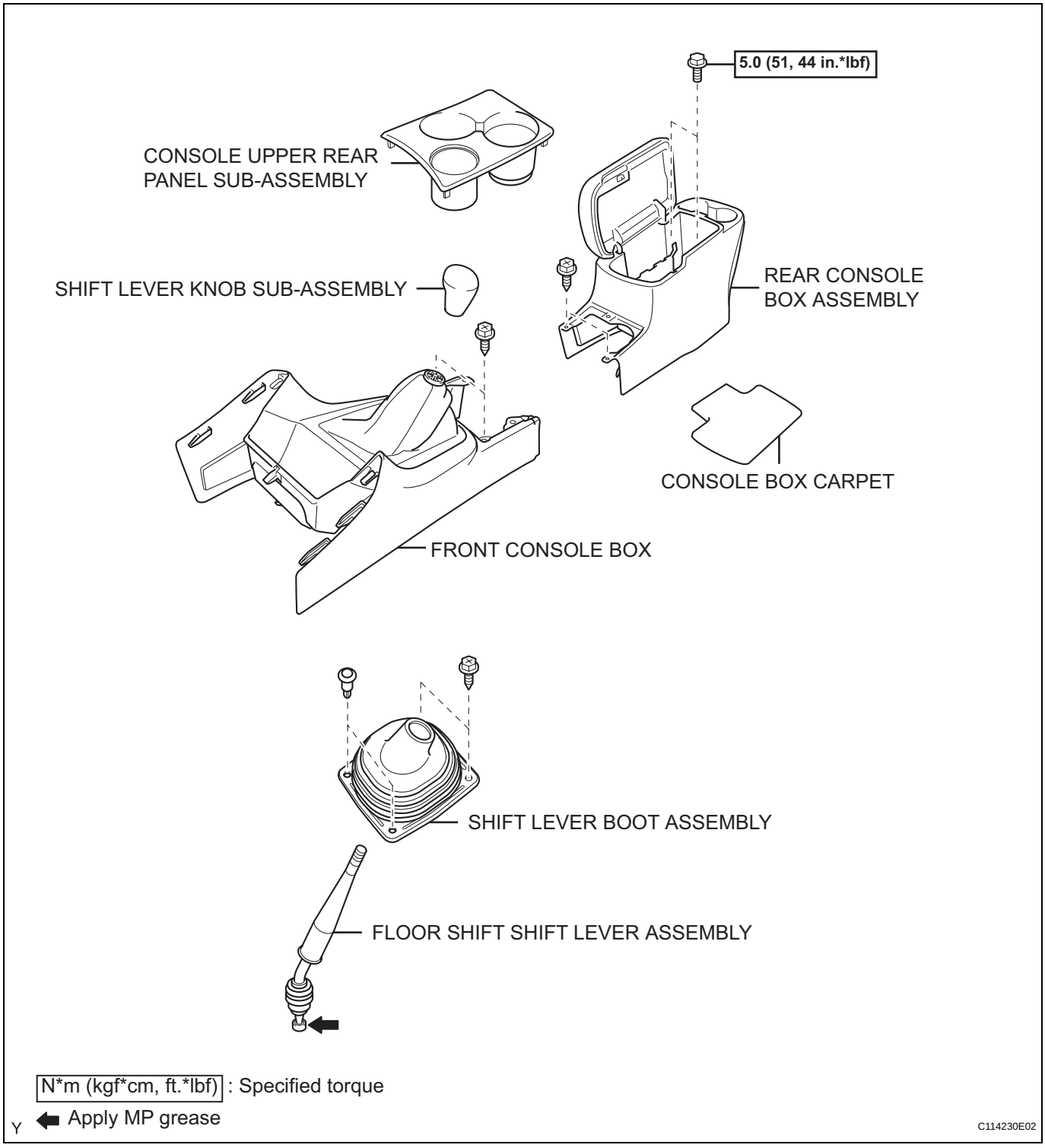
(e) Install the transmission filler plug and a new gasket.

Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

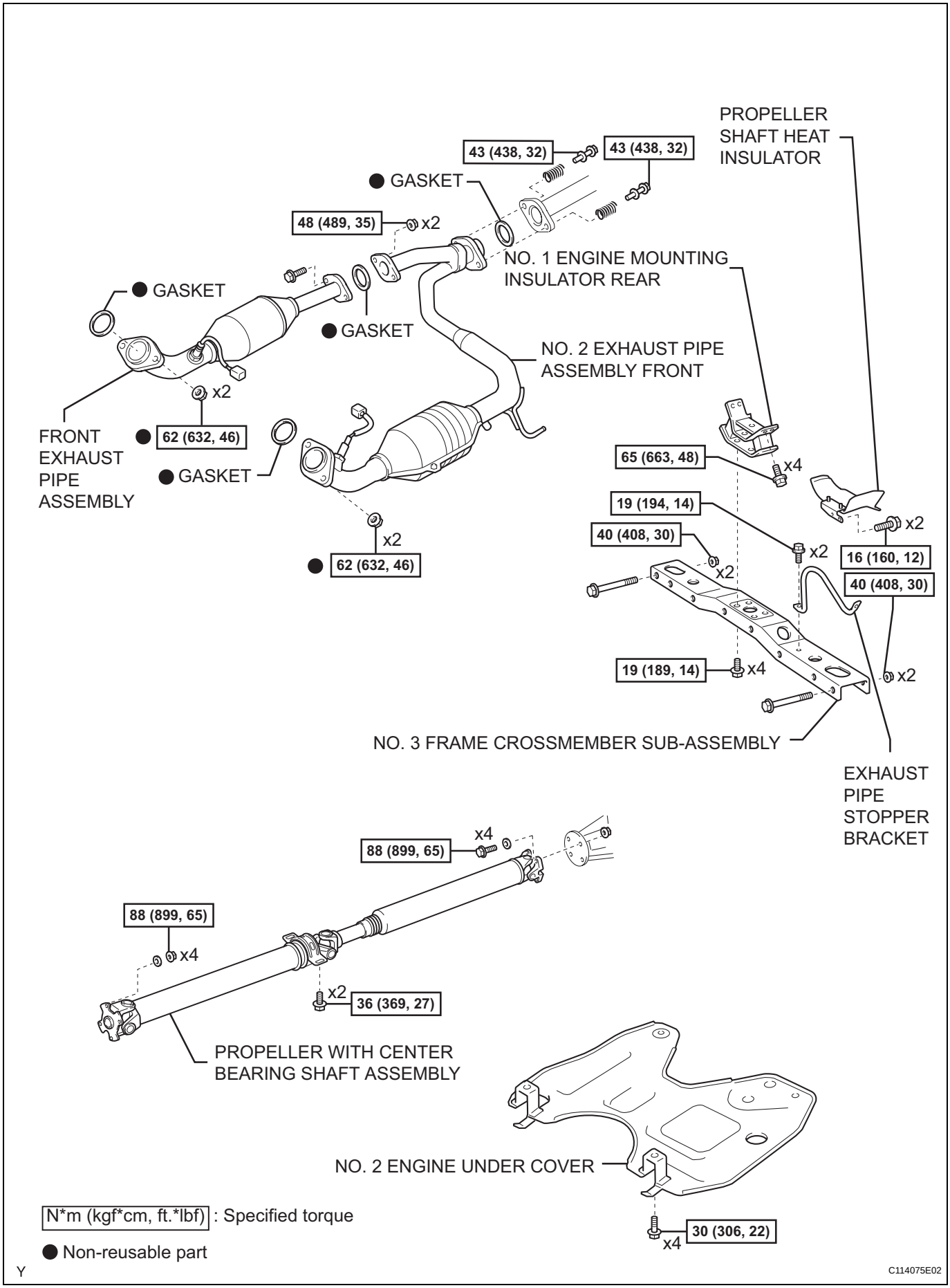
MT

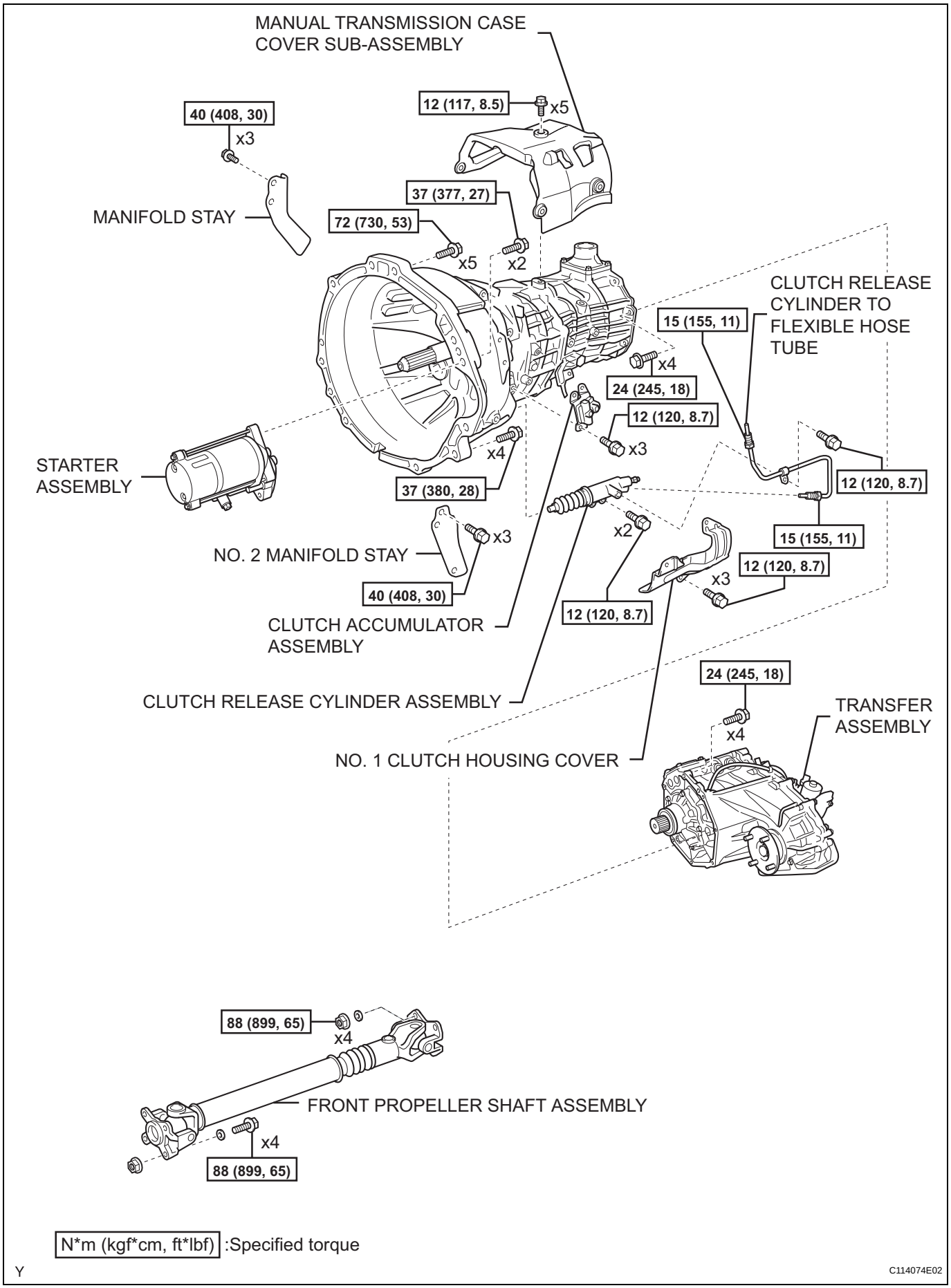
MANUAL TRANSMISSION ASSEMBLY

COMPONENTS



MT


PROPELLER SHAFT HEAT INSULATOR
43 (438, 32)
43 (438, 32)
GASKET
48 (489, 35)
x2
NO. 1 ENGINE MOUNTING INSULATOR REAR
GASKET
GASKET
NO. 2 EXHAUST PIPE ASSEMBLY FRONT
x2
FRONT EXHAUST PIPE ASSEMBLY
62 (632, 46)
GASKET
65 (663, 48)
x4
19 (194, 14)
x2
40 (408, 30)
x2
16 (160, 12)
40 (408, 30)
x2
x2
62 (632, 46)
19 (189, 14)
x4
x2
NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY
EXHAUST PIPE STOPPER BRACKET
x4
88 (899, 65)
88 (899, 65)
x4
x2
36 (369, 27)
PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY
NO. 2 ENGINE UNDER COVER
30 (306, 22)
x4
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Y
C114075E02

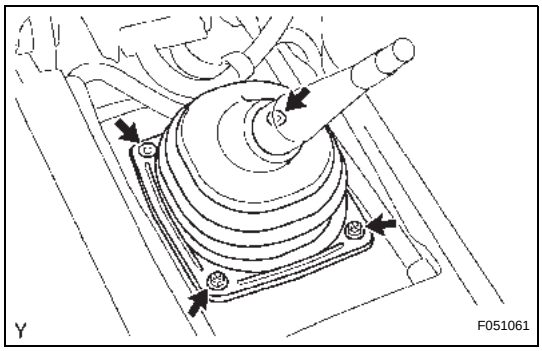

MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY
12 (117, 8.5)
x5
40 (408, 30)
x3
MANIFOLD STAY
37 (377, 27)
72 (730, 53)
x5
x2
CLUTCH RELEASE CYLINDER TO FLEXIBLE HOSE TUBE
15 (155, 11)
x4
24 (245, 18)
12 (120, 8.7)
x3
STARTER ASSEMBLY
x4
37 (380, 28)
12 (120, 8.7)
x3
NO. 2 MANIFOLD STAY
x2
15 (155, 11)
12 (120, 8.7)
40 (408, 30)
x3
12 (120, 8.7)
CLUTCH ACCUMULATOR ASSEMBLY
CLUTCH RELEASE CYLINDER ASSEMBLY
24 (245, 18)
x4
TRANSFER ASSEMBLY
NO. 1 CLUTCH HOUSING COVER
88 (899, 65)
x4
FRONT PROPELLER SHAFT ASSEMBLY
x4
88 (899, 65)
N*m (kgf*cm, ft*lbf) :Specified torque
Y
C114074E02

MT

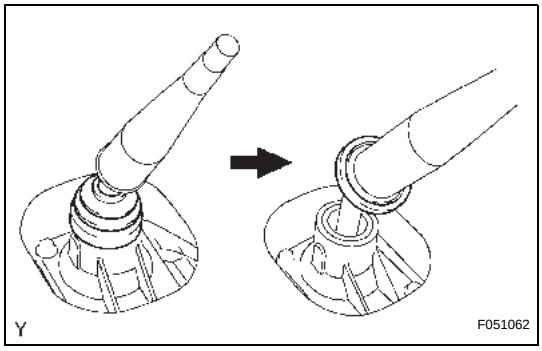
MT

REMOVAL

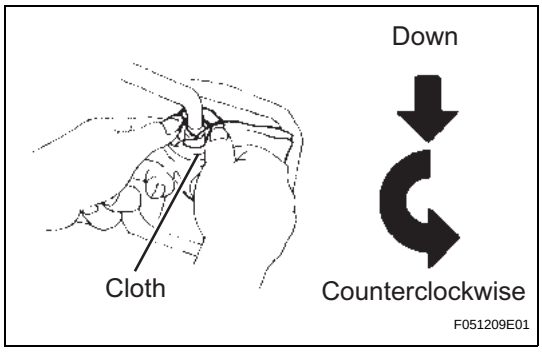
1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
2. **REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (See page IP-9)**
3. **REMOVE REAR CONSOLE BOX ASSEMBLY (See page IP-10)**
4. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY**
5. **REMOVE FRONT CONSOLE BOX (See page IP-11)**
6. **REMOVE SHIFT LEVER BOOT ASSEMBLY**
   (a) Remove the 2 screws and 2 clips, then remove the shift lever boot.



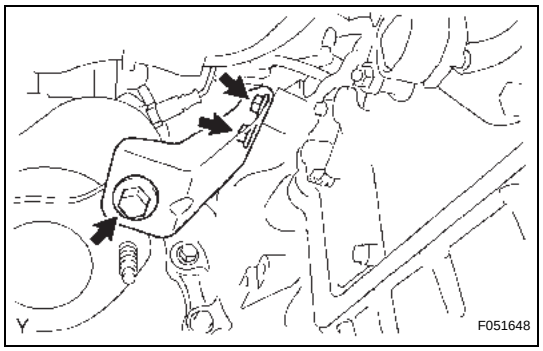
7. **REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Separate the shift lever cap boot from the manual transmission.



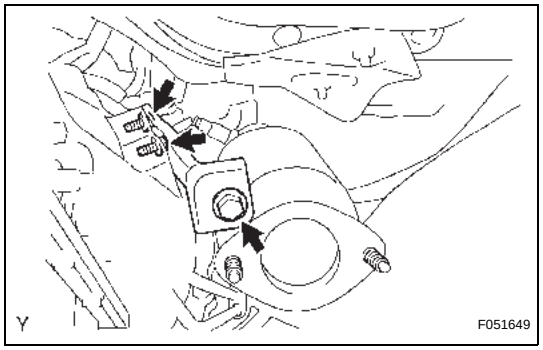
   (b) Cover the shift lever cap with a cloth.
   (c) Pressing down on the shift lever cap, turn it counterclockwise to remove the shift lever.
   (d) Pull out the shift lever.



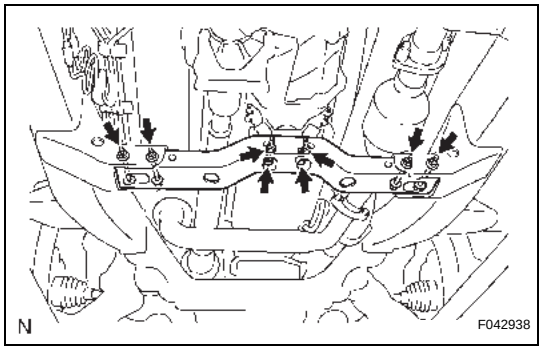
8. **REMOVE NO. 2 ENGINE UNDER COVER**
9. **DRAIN MANUAL TRANSMISSION OIL**
   (a) Remove the drain plug, gasket and then drain the manual transmission oil.
   (b) Install a new gasket and drain plug.
   Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)
10. **REMOVE EXHAUST PIPE ASSEMBLY (See page EX-3)**
11. **REMOVE FRONT PROPELLER SHAFT ASSEMBLY (See page PR-16)**
12. **REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-27)**



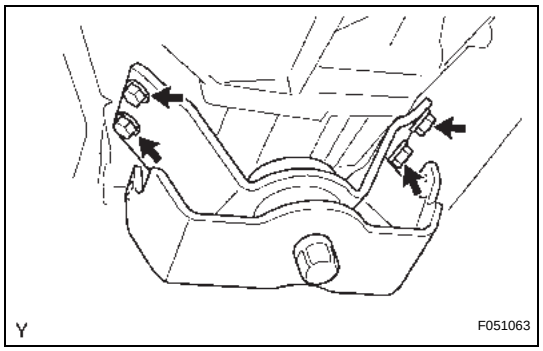
13. **REMOVE NO. 2 MANIFOLD STAY**
    (a) Remove the 3 bolts and manifold stay No. 2.



14. **REMOVE MANIFOLD STAY**
    (a) Remove the 3 bolts and manifold stay.
15. **REMOVE STARTER ASSEMBLY (See page ST-13)**
16. **REMOVE NO. 1 CLUTCH HOUSING COVER (See page CL-24)**
17. **REMOVE CLUTCH RELEASE CYLINDER ASSEMBLY (See page CL-24)**
18. **REMOVE CLUTCH ACCUMULATOR ASSEMBLY (See page CL-28)**
19. **SUPPORT MANUAL TRANSMISSION WITH TRANSFER**
    (a) Support the manual transmission with a transmission jack.

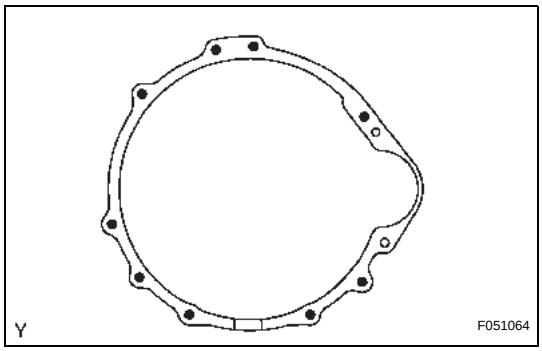


20. **REMOVE NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY**
    (a) Remove the 4 bolts on the frame crossmember sub-assembly No. 3.
    (b) Remove the 4 nuts, 4 bolts and frame crossmember sub-assembly No. 3.



21. **REMOVE NO. 1 ENGINE MOUNTING INSULATOR REAR**
    (a) Remove the 4 bolts and engine mounting insulator rear from the manual transmission.
22. **DISCONNECT CONNECTOR**
    (a) Tilt down the transmission.
    (b) Disconnect the transfer shift actuator connector.
    (c) Disconnect the transfer indicator switch No. 1 connector.
    (d) Disconnect the transfer indicator switch No. 2 connector.
    (e) Disconnect the speedometer sensor connector.
    (f) Disconnect the back up lamp switch connector.
23. **DISCONNECT WIRE HARNESS**

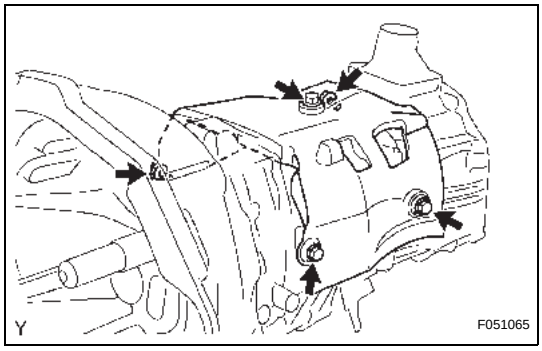
MT



24. REMOVE MANUAL TRANSMISSION WITH TRANSFER

(a) Remove the 9 bolts.

(b) Separate and remove the manual transmission.



25. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

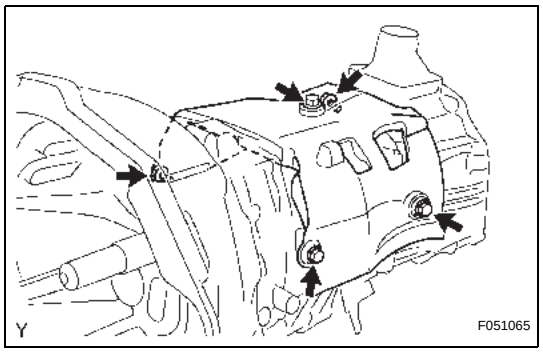
(a) Remove the 5 bolts and manual transmission case cover.

26. REMOVE TRANSFER ASSEMBLY (See page TF-14)

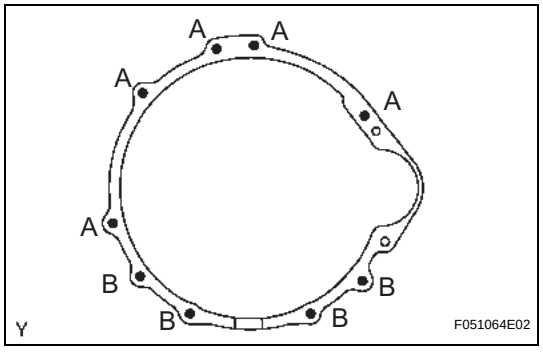
MT

INSTALLATION

1. **INSTALL TRANSFER ASSEMBLY (See page TF-38)**

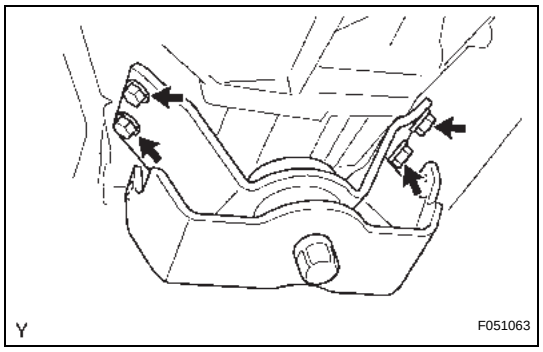


2. **INSTALL MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY**
   (a) Install the manual transmission case cover with the 5 bolts.
   Torque: 12 N*m (117 kgf*cm, 8.5 ft.*lbf)

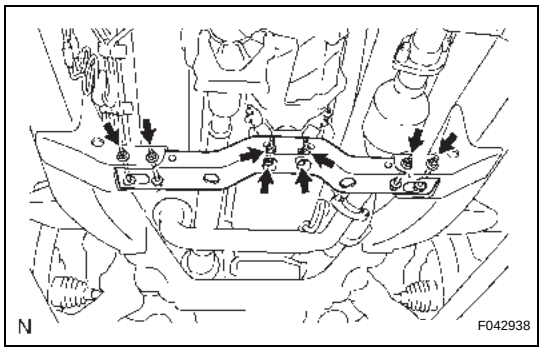


3. **INSTALL MANUAL TRANSMISSION WITH TRANSFER**
   (a) Install the manual transmission with transfer with the 9 bolts.
   Torque: 72 N*m (730 kgf*cm, 53 ft.*lbf) for bolt A
   37 N*m (380 kgf*cm, 28 ft.*lbf) for bolt B

4. **CONNECT WIRE HARNESS**



5. **INSTALL NO. 1 ENGINE MOUNTING INSULATOR REAR**
   (a) Install the engine mounting insulator rear No. 1 with the 4 bolts.
   Torque: 65 N*m (663 kgf*cm, 48 ft.*lbf)



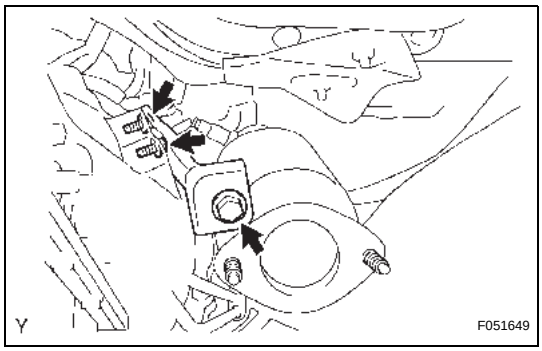
6. **INSTALL NO. 3 FRAME CROSSMEMBER SUB-ASSEMBLY**
   (a) Install the frame crossmember sub-assembly No. 3 with the 4 bolts and 4 nuts.
   Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
   (b) Install the frame crossmember sub-assembly No. 3 with the 4 bolts.
   Torque: 19 N*m (189 kgf*cm, 14 ft.*lbf)

7. **INSTALL CLUTCH ACCUMULATOR ASSEMBLY (See page CL-28)**

8. **INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY (See page CL-25)**

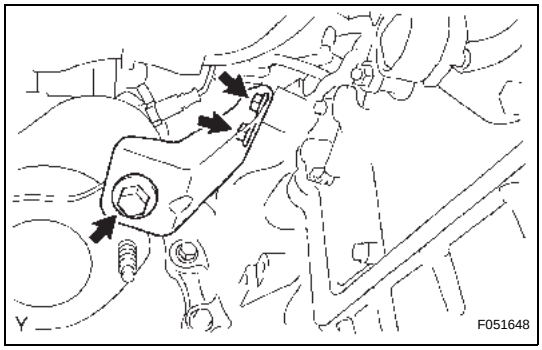
9. **INSTALL NO. 1 CLUTCH HOUSING COVER (See page CL-25)**

10. **INSTALL STARTER ASSEMBLY (See page ST-19)**



11. INSTALL MANIFOLD STAY

(a) Install the manifold stay with the 3 bolts.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)



12. INSTALL NO. 2 MANIFOLD STAY

(a) Install the manifold stay No. 2 with the 3 bolts.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)

13. INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY (See page PR-32)

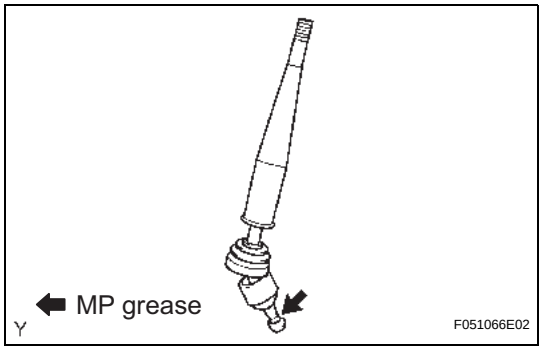
14. INSTALL FRONT PROPELLER SHAFT ASSEMBLY (See page PR-19)

15. INSTALL EXHAUST PIPE ASSEMBLY (See page EX-3)

16. ADD MANUAL TRANSMISSION OIL

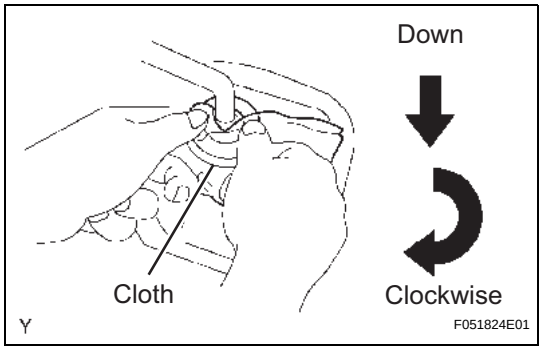
17. ADJUST MANUAL TRANSMISSION OIL (See page MT-2)

18. INSTALL NO. 2 ENGINE UNDER COVER



19. INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY

(a) Apply MP grease to the tip of the shift lever.



(b) Cover the shift lever cap with a cloth.
(c) Pressing down on the shift lever cap, turn it clockwise to install the shift lever.

20. INSTALL SHIFT LEVER BOOT ASSEMBLY

(a) Install the shift lever boot with the 2 screws and 2 clips.

21. INSTALL FRONT CONSOLE BOX (See page IP-23)

22. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY

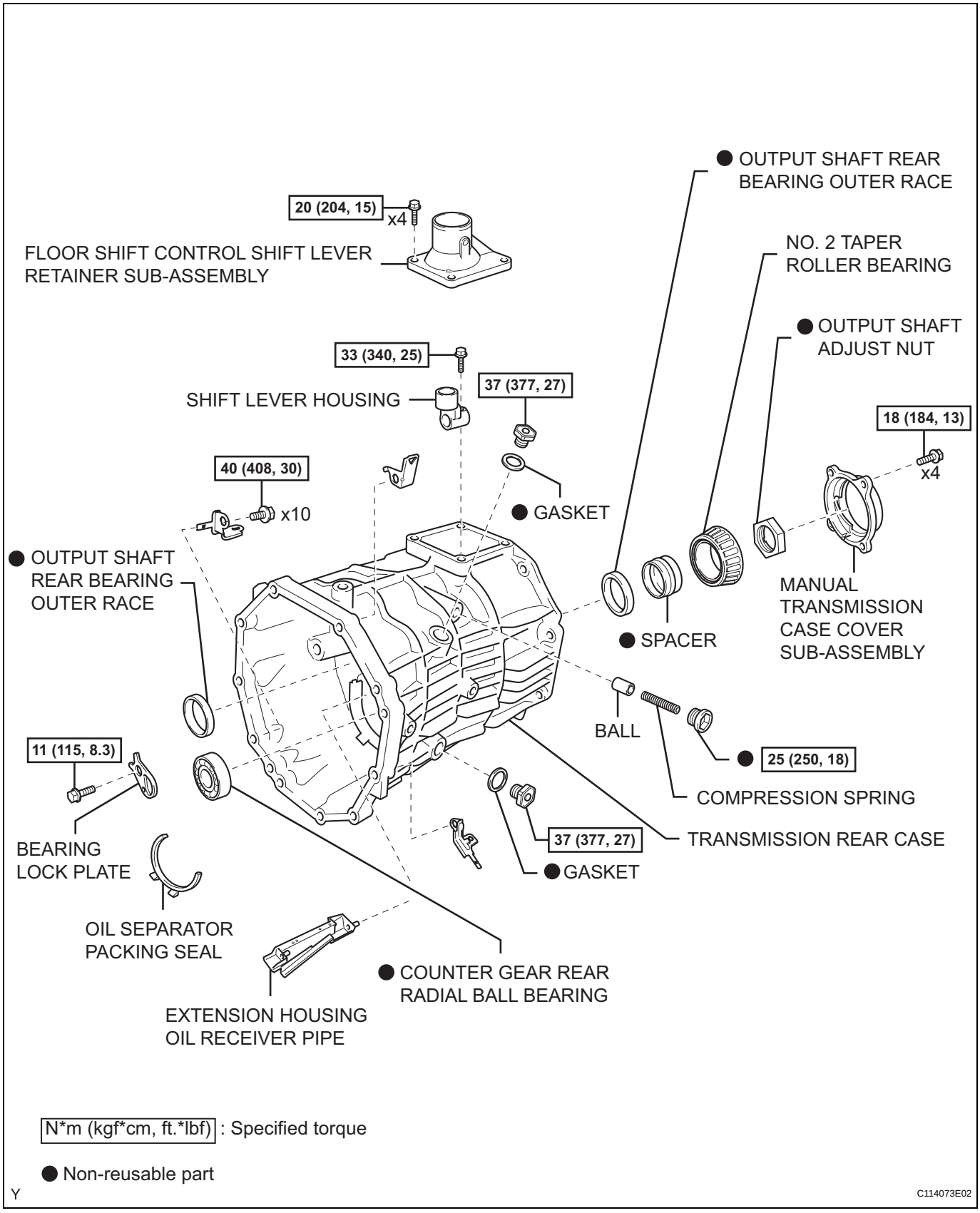
23. INSTALL REAR CONSOLE BOX ASSEMBLY (See page IP-24)

24. INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY (See page IP-25)

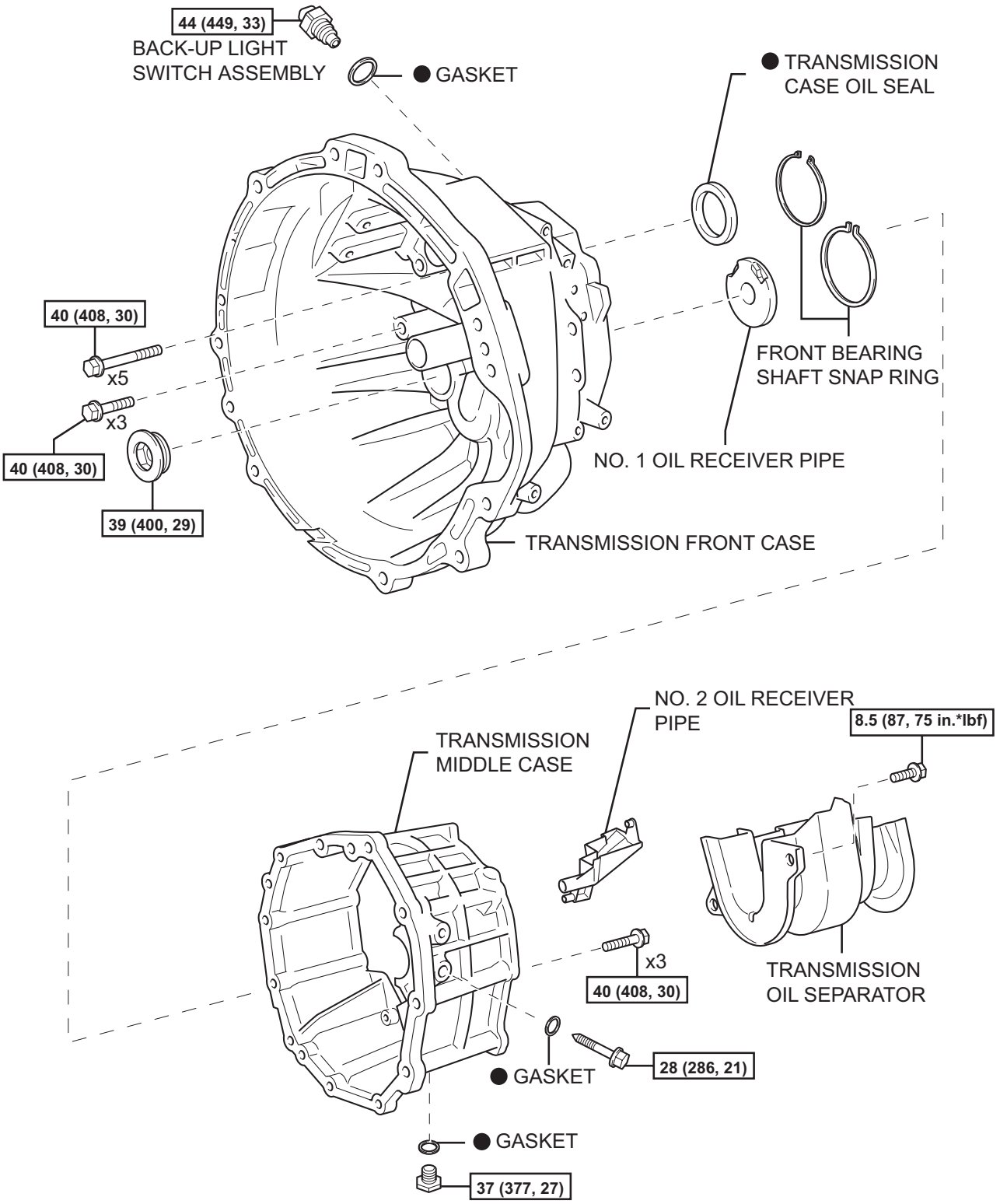
25. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL
Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)

MANUAL TRANSMISSION UNIT

COMPONENTS



MT

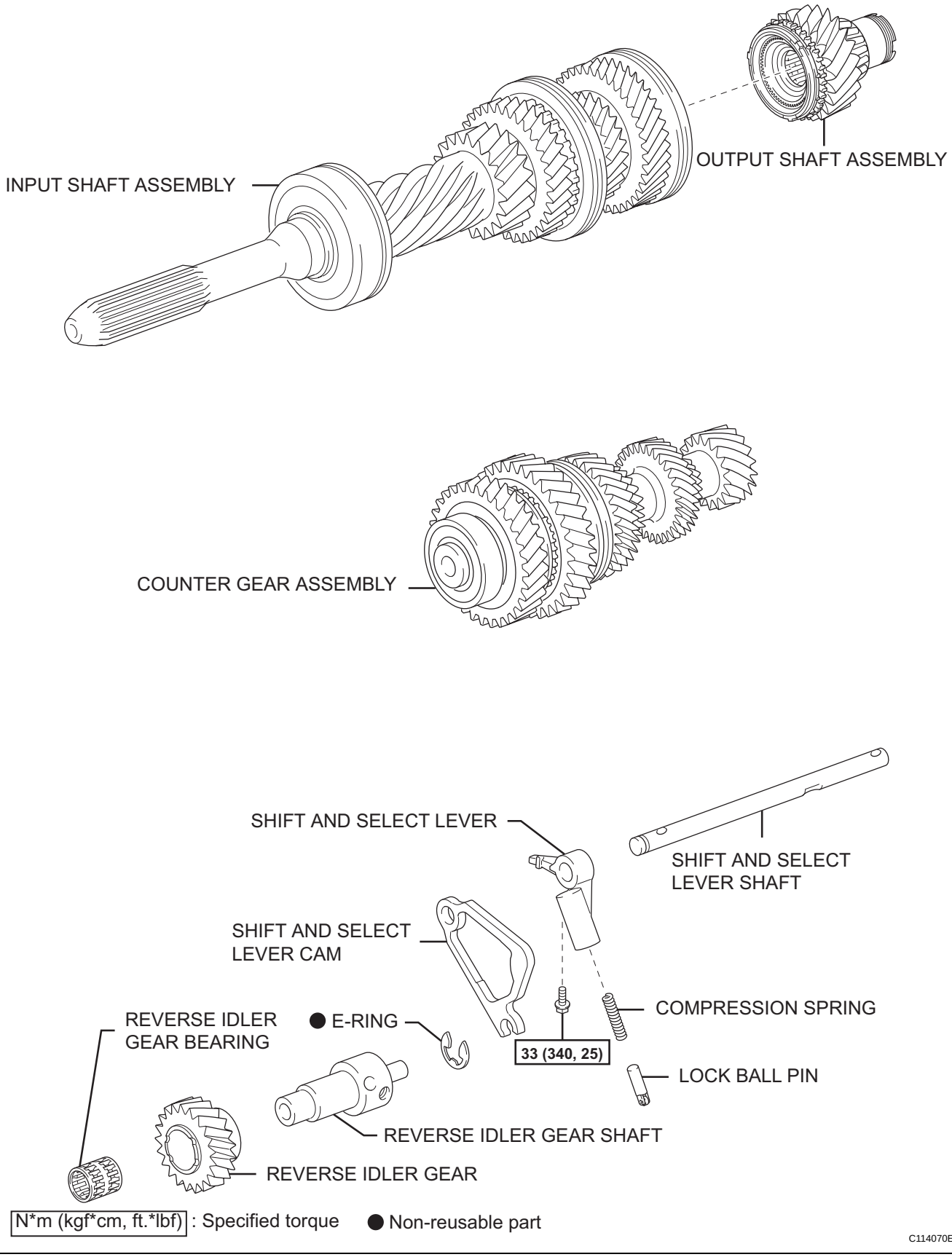


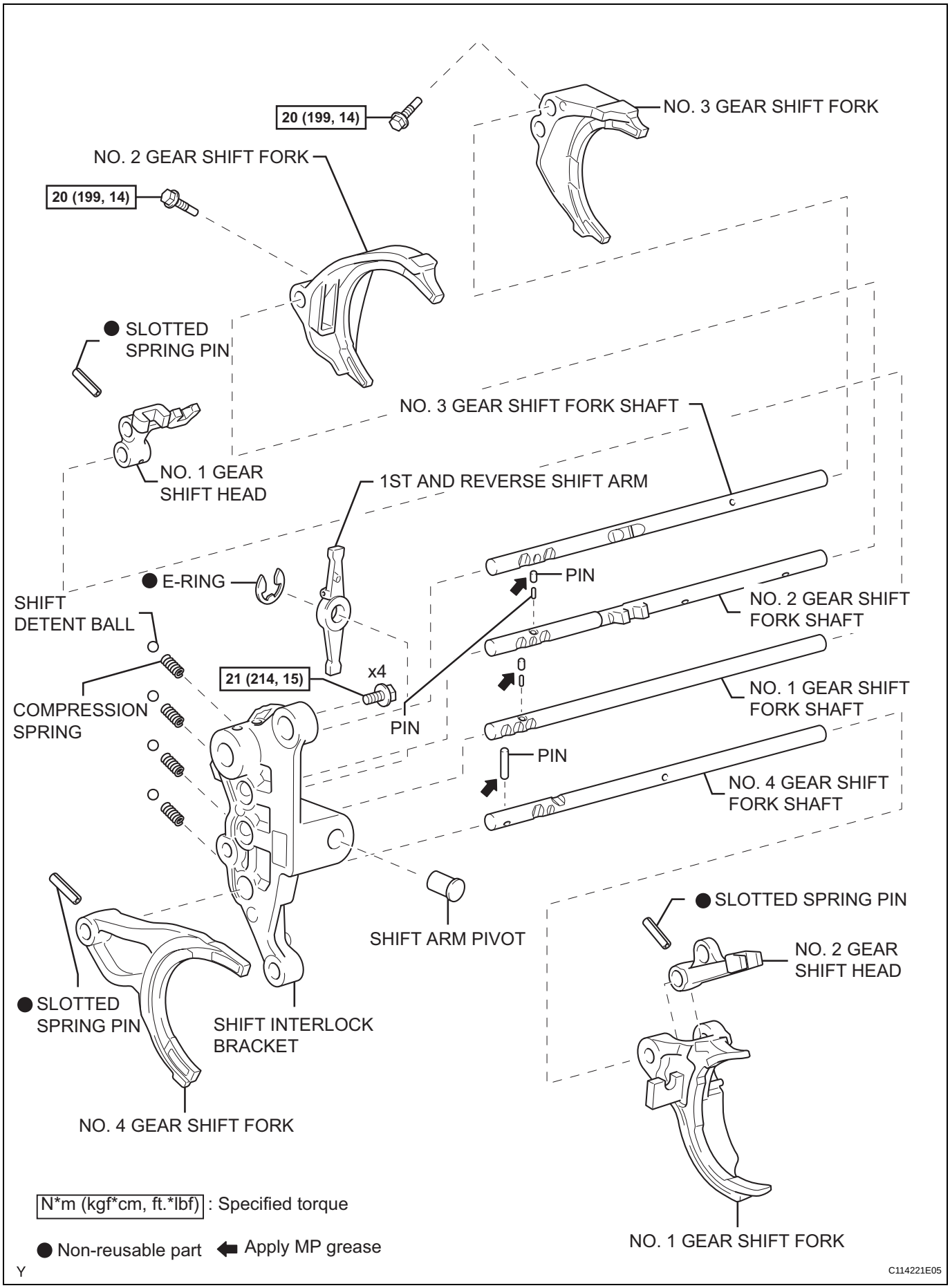
N*m (kgf*cm, ft.*lbf) : Specified torque

● Non-reusable part

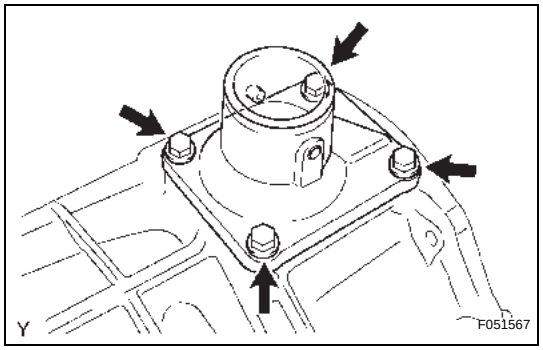
Y

C114219E04


INPUT SHAFT ASSEMBLY
OUTPUT SHAFT ASSEMBLY
COUNTER GEAR ASSEMBLY
SHIFT AND SELECT LEVER
SHIFT AND SELECT LEVER SHAFT
SHIFT AND SELECT LEVER CAM
COMPRESSION SPRING
REVERSE IDLER GEAR BEARING
E-RING
33 (340, 25)
LOCK BALL PIN
REVERSE IDLER GEAR SHAFT
REVERSE IDLER GEAR
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
Y
C114070E02

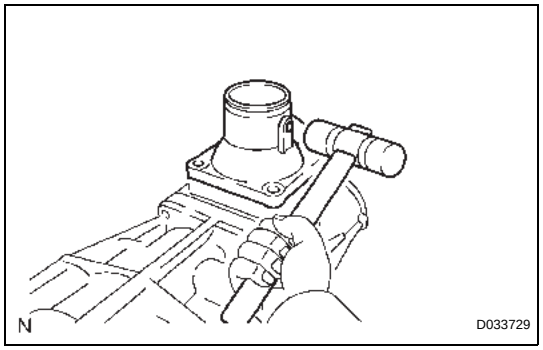

20 (199, 14)
NO. 3 GEAR SHIFT FORK
NO. 2 GEAR SHIFT FORK
20 (199, 14)
● SLOTTED SPRING PIN
NO. 3 GEAR SHIFT FORK SHAFT
NO. 1 GEAR SHIFT HEAD
1ST AND REVERSE SHIFT ARM
● E-RING
PIN
SHIFT DETENT BALL
NO. 2 GEAR SHIFT FORK SHAFT
21 (214, 15)
x4
COMPRESSION SPRING
PIN
NO. 1 GEAR SHIFT FORK SHAFT
PIN
NO. 4 GEAR SHIFT FORK SHAFT
● SLOTTED SPRING PIN
SHIFT ARM PIVOT
NO. 2 GEAR SHIFT HEAD
● SLOTTED SPRING PIN
SHIFT INTERLOCK BRACKET
NO. 4 GEAR SHIFT FORK
NO. 1 GEAR SHIFT FORK
N*m (kgf*cm, ft.*lbf) : Specified torque
● Non-reusable part
Apply MP grease
Y
C114221E05

DISASSEMBLY

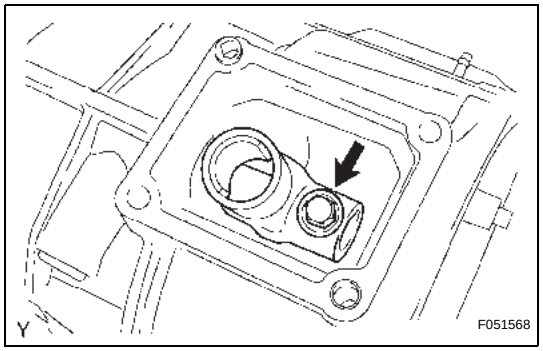


1. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

(a) Remove the 4 bolts, then remove the floor shift control shift lever retainer.

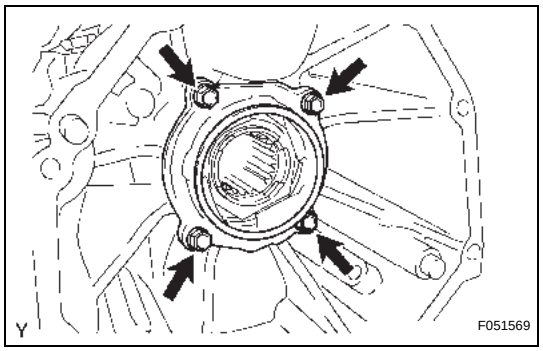


(b) Using a plastic hammer, remove the floor shift control shift lever retainer.



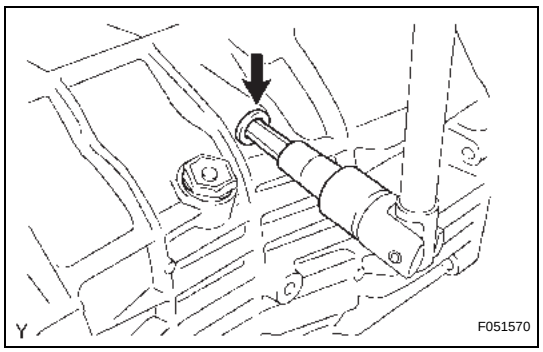
2. REMOVE SHIFT LEVER HOUSING

(a) Remove the bolt, then separate the shift lever housing.



3. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

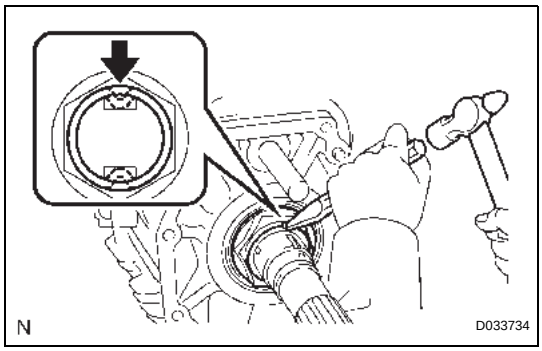
(a) Remove the 4 bolts, then remove the transmission case cover.



4. REMOVE SHIFT DETENT BALL PLUG

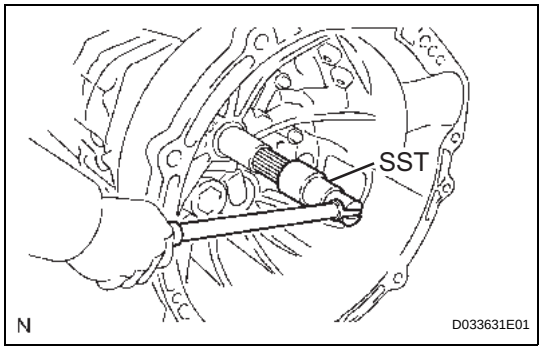
(a) Using a socket hexagon wrench (10 mm), remove the shift detent ball plug from the transmission rear case.

(b) Remove the ball and compression spring from the transmission rear case.



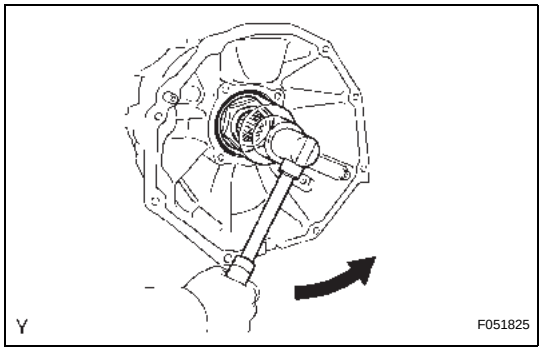
5. REMOVE OUTPUT SHAFT ADJUST NUT

(a) Using a chisel and hammer, unstake the nut.



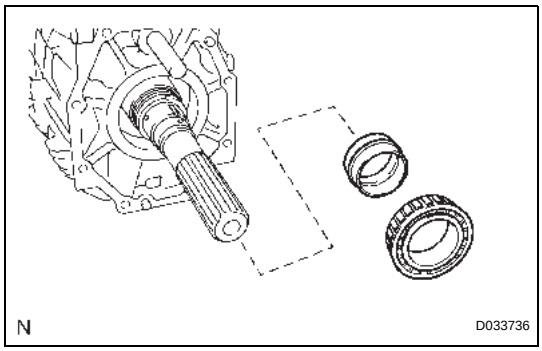
(b) Place the gearshift into 5th gear, and then fix the input shaft using SST.
SST 09556-16030

(c) Using a belt and wooden block, fasten the transmission to the workbench.

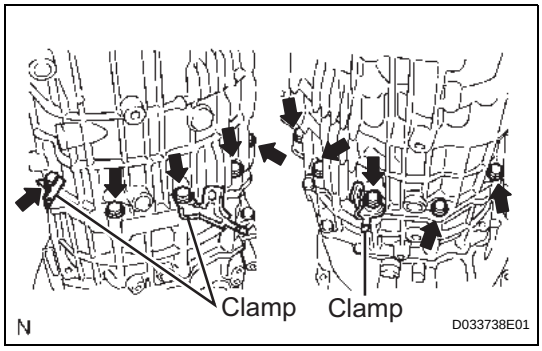


(d) Using a socket wrench (60 mm), remove the nut from the transmission rear case.

(e) Remove the belt and wooden block from the transmission.

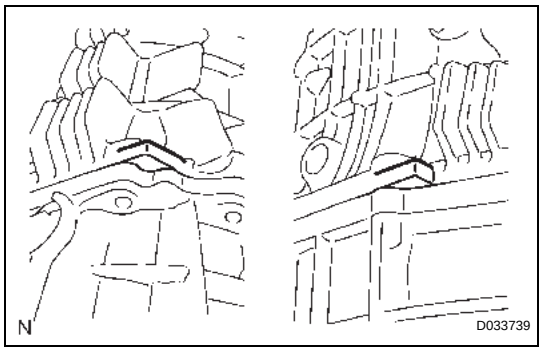


(f) Remove the taper roller bearing No. 2 and spacer.

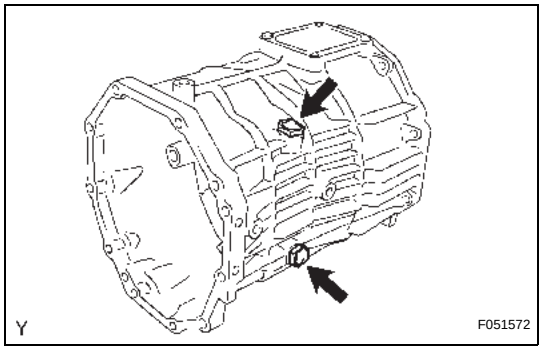


6. REMOVE TRANSMISSION REAR CASE

(a) Remove the 10 bolts and 3 clamps.

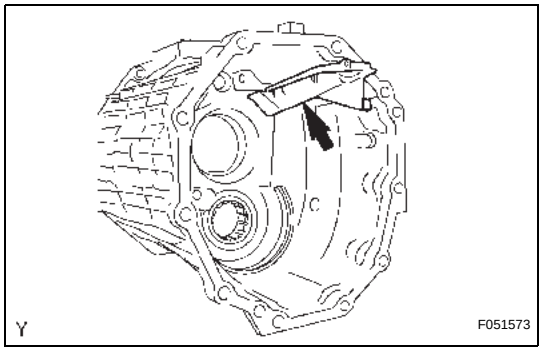


(b) Using a plastic hammer, carefully tap out the rear case.



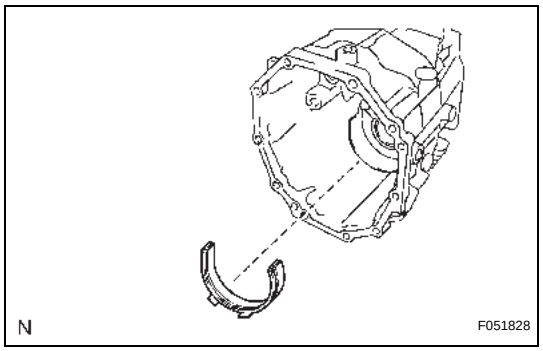
7. REMOVE MANUAL TRANSMISSION FILLER PLUG

(a) Remove the 2 transmission filler plugs and 2 gaskets from the transmission rear case.



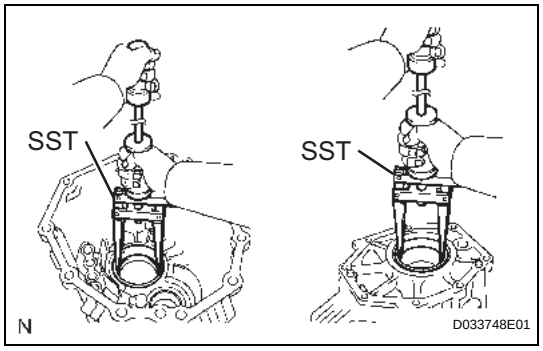
8. REMOVE EXTENSION HOUSING OIL RECEIVER PIPE

(a) Remove the extension housing oil receiver pipe from the transmission rear case.



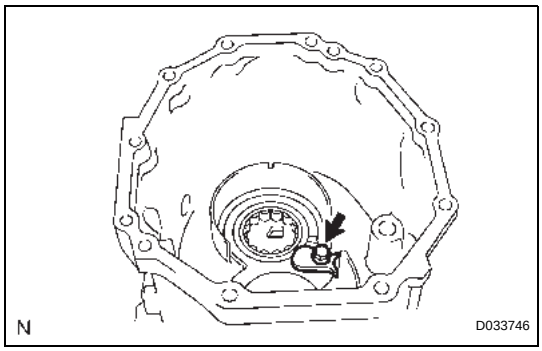
9. REMOVE OIL SEPARATOR PACKING SEAL

(a) Remove the oil separator packing seal from the transmission rear case.



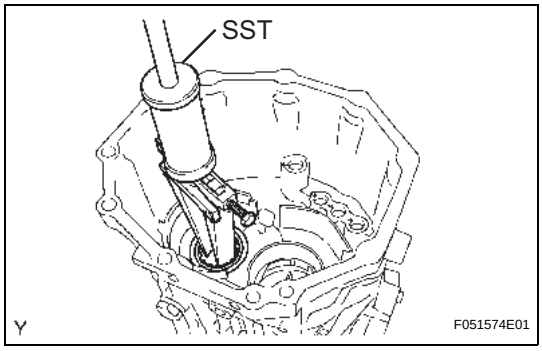
10. REMOVE OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST, remove the 2 bearing outer races.
SST 09308-00010

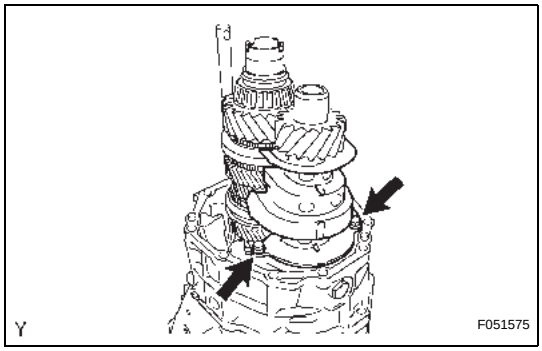


11. REMOVE COUNTER GEAR REAR RADIAL BALL BEARING

(a) Remove the bolt, then remove the bearing lock plate.

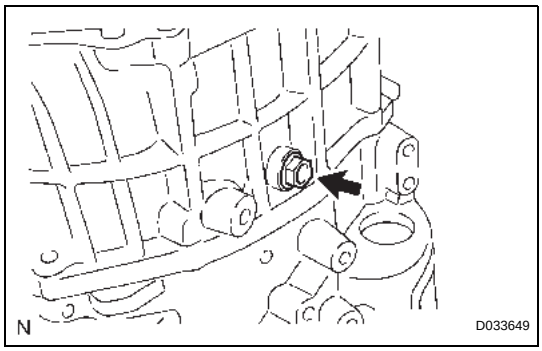


(b) Using SST, remove the counter gear rear radial ball bearing from the transmission rear case.
SST 09308-00010



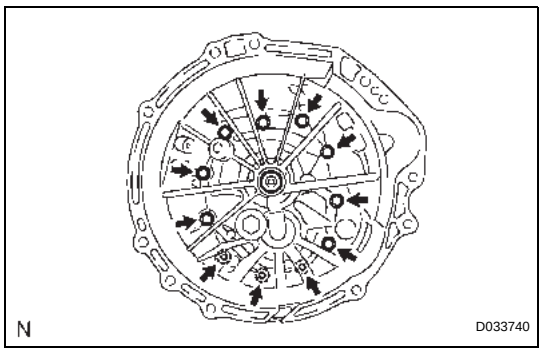
12. REMOVE TRANSMISSION OIL SEPARATOR

(a) Remove the 2 bolts, then remove the oil separator.



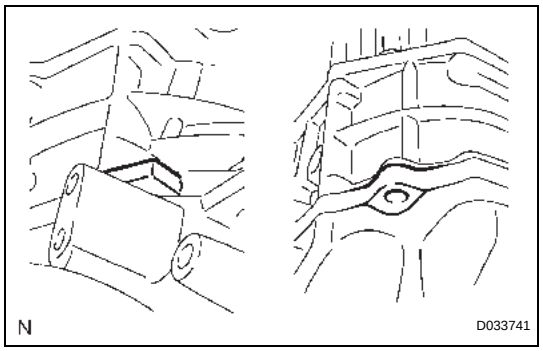
13. REMOVE REVERSE IDLER GEAR SHAFT BOLT

(a) Remove the reverse idler gear shaft bolt from the transmission middle case.

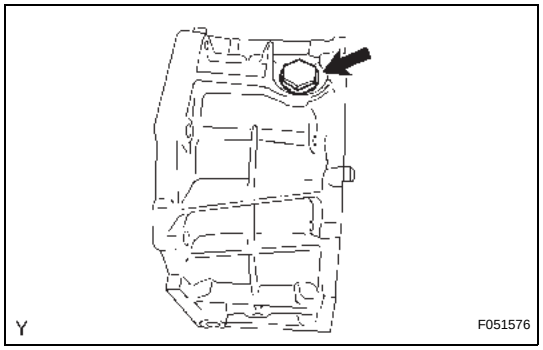


14. REMOVE TRANSMISSION MIDDLE CASE

(a) Remove the 11 bolts, then remove the transmission middle case.

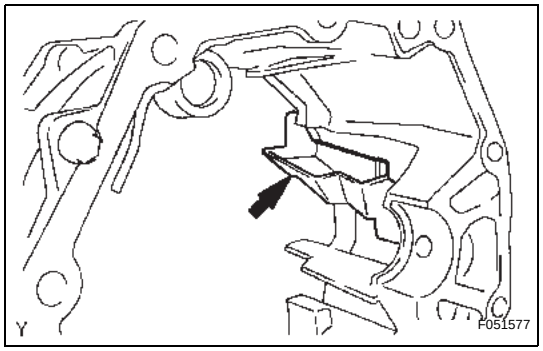


(b) Using a plastic hammer, carefully tap out the middle case.



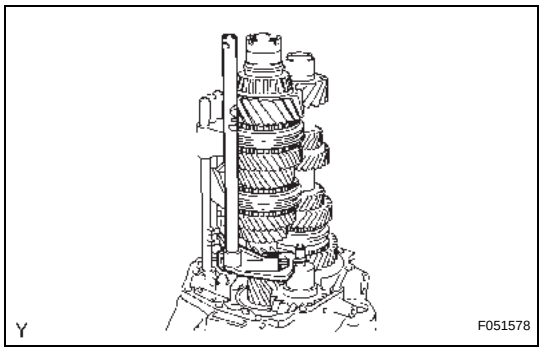
15. REMOVE DRAIN PLUG SUB-ASSEMBLY

(a) Remove the drain plug and gasket from the transmission middle case.



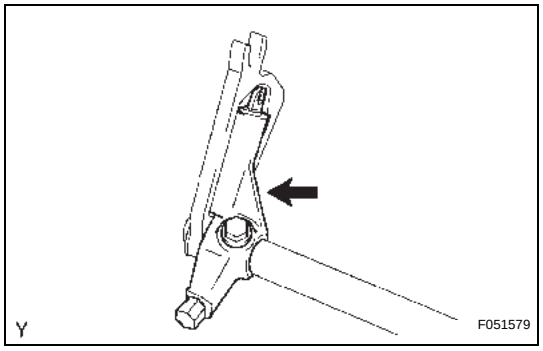
16. REMOVE NO. 2 OIL RECEIVER PIPE

(a) Remove the oil receiver pipe No. 2 from the transmission middle case.



17. REMOVE SHIFT AND SELECT LEVER SHAFT

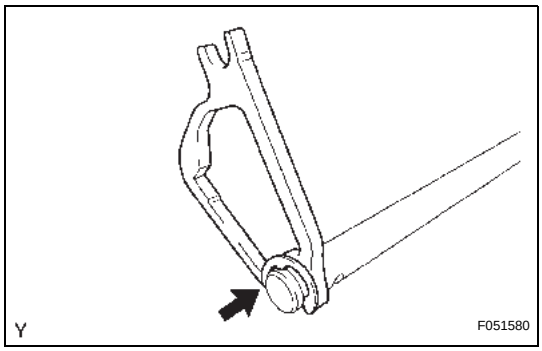
(a) Remove the shift and select lever shaft from the reverse gear shaft.



18. REMOVE SHIFT AND SELECT LEVER

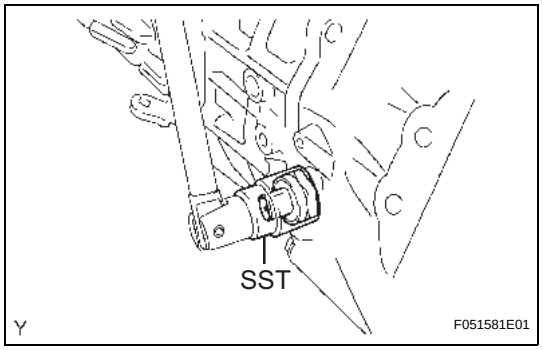
(a) Remove the bolt, then remove the shift and select lever.

(b) Remove the lock ball pin and spring from the shift and select lever.



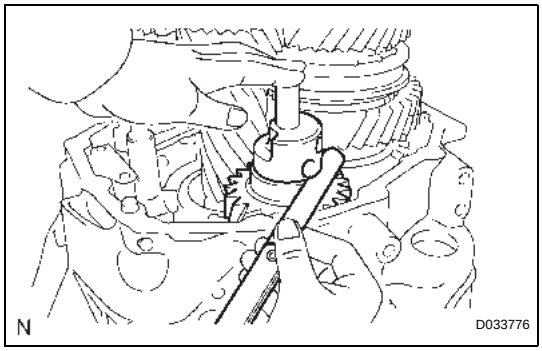
19. REMOVE SHIFT AND SELECT LEVER CAM

(a) Using a screwdriver, remove the E ring and the shift and select lever cam from the shift and select lever shaft.



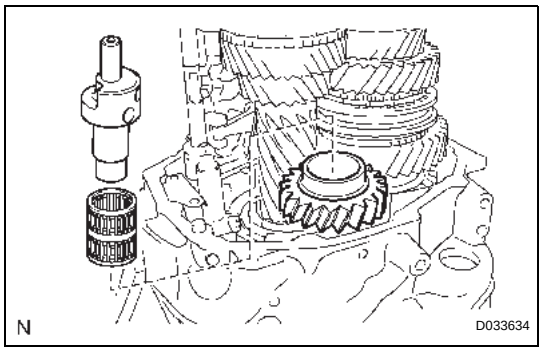
20. REMOVE BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, remove the back-up light switch and gasket.
SST 09817-16011



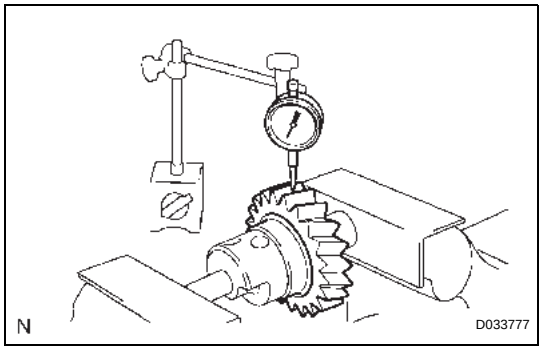
21. INSPECT REVERSE IDLER GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the thrust clearance.
Standard clearance:
0.10 to 0.55 mm (0.0039 to 0.0217 in.)
Maximum clearance:
0.55 to (0.0217 in.)
If the clearance is exceeds the maximum, replace the reverse idler gear shaft.



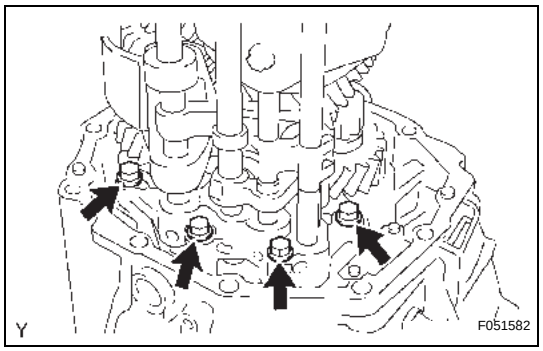
22. REMOVE REVERSE IDLER GEAR

(a) Remove the reverse idle gear shaft, needle roller bearing and reverse idler gear.



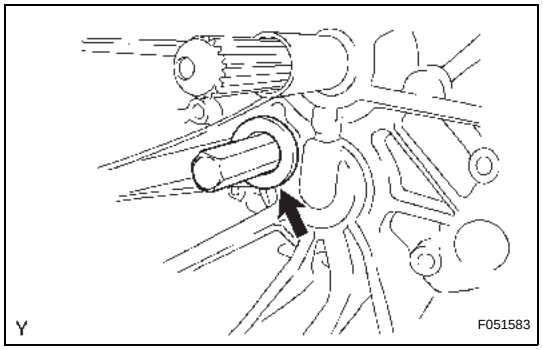
23. INSPECT REVERSE IDLER GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance.
Standard clearance:
0.015 to 0.050 mm (0.0006 to 0.0020 in.)
Maximum clearance:
0.050 mm (0.0020 in.)
If the clearance exceeds the maximum, replace the needle roller bearing.

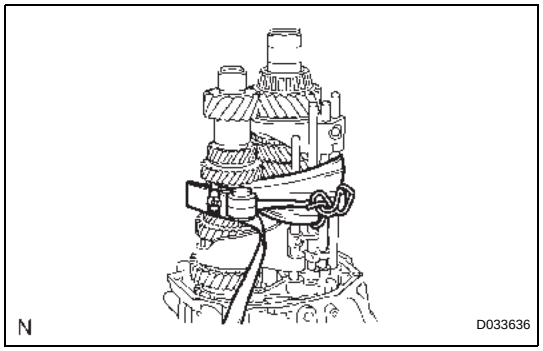


24. REMOVE TRANSMISSION FRONT CASE

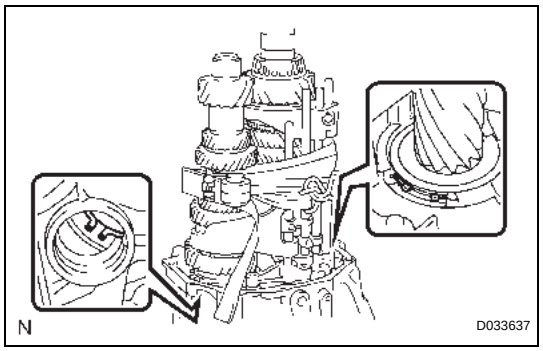
(a) Remove the 4 bolts from the interlock bracket.



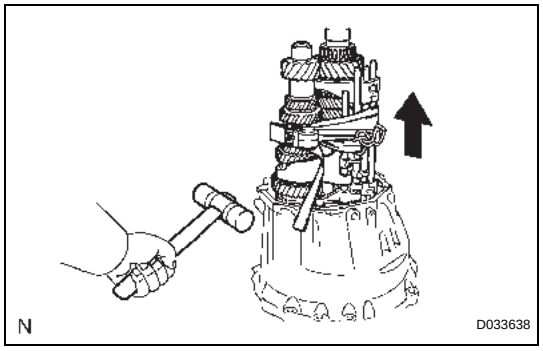
(b) Using a hexagon wrench (24 mm), remove the plug.



(c) Tie the input shaft, counter gear and control assembly with a rope or string.



(d) Expand the 2 snap rings, and lift up the output shaft, input shaft, counter gear and control assembly.

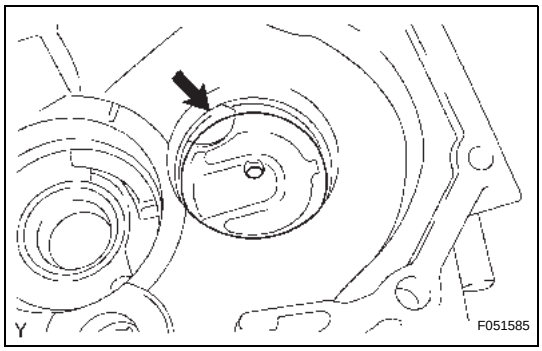


(e) Remove the output shaft, input shaft, counter gear shaft and control assembly while gently tapping the clutch housing with a plastic hammer.

NOTICE:

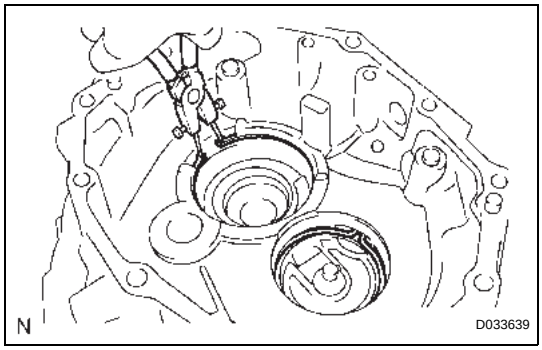
Take care not to subject the output shaft, input shaft, counter gear shaft and control assembly to any impact. This could cause the ball and spring to come out.

(f) Separate the output shaft, input shaft, counter gear shaft and control assembly.



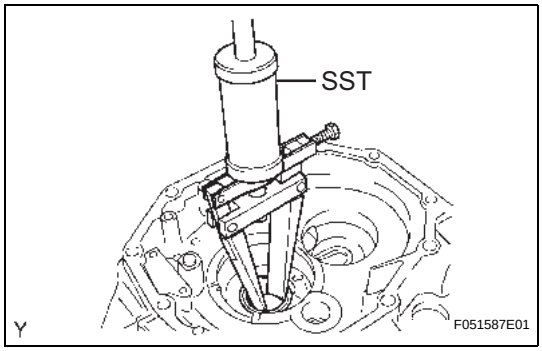
25. REMOVE NO. 1 OIL RECEIVER PIPE

(a) Remove the oil receiver pipe No. 1 from the transmission front case.



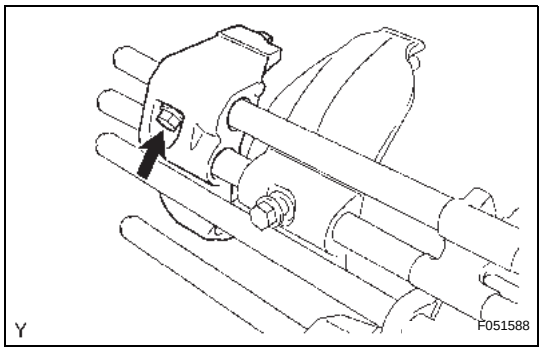
26. REMOVE FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring plier, remove the 2 snap rings.



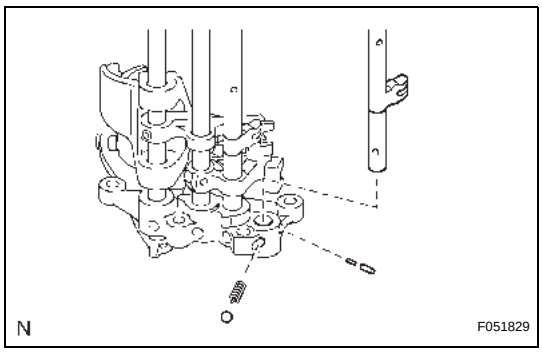
27. REMOVE TRANSMISSION CASE OIL SEAL

(a) Using SST, remove the transmission case oil seal from the transmission front case.
SST 09308-00010



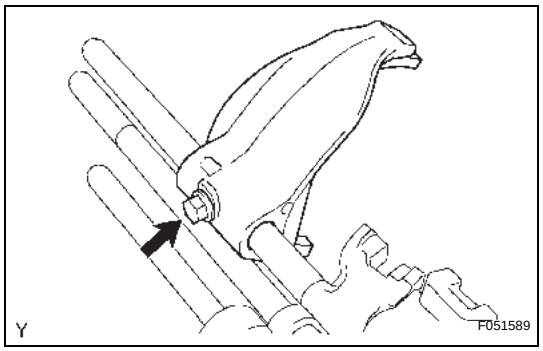
28. REMOVE NO. 3 GEAR SHIFT FORK

(a) Remove the bolt, then remove the gear shift fork No. 3.



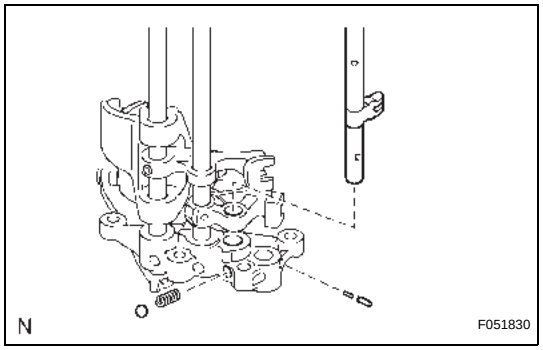
29. REMOVE NO. 3 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 3, boll, spring, interlock pin No. 2 and interlock pin No. 3.



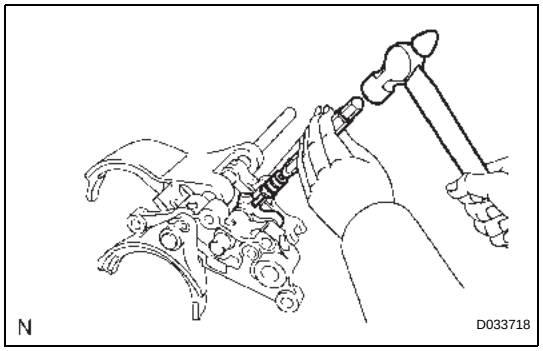
30. REMOVE NO. 2 GEAR SHIFT FORK

(a) Remove the bolt, then remove the gear shift fork No. 2.



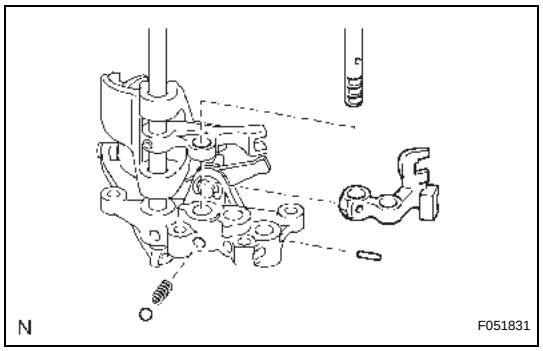
31. REMOVE NO. 2 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 2, ball, spring, interlock pin No. 2 and interlock pin No. 3.



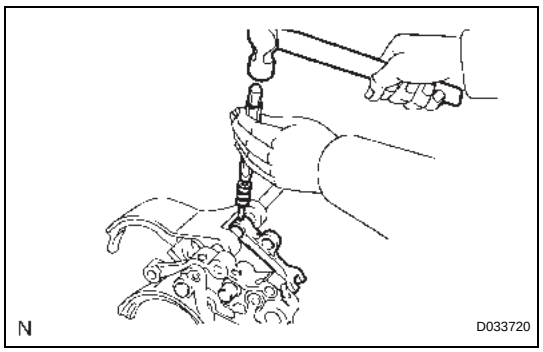
32. REMOVE NO. 1 GEAR SHIFT HEAD

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



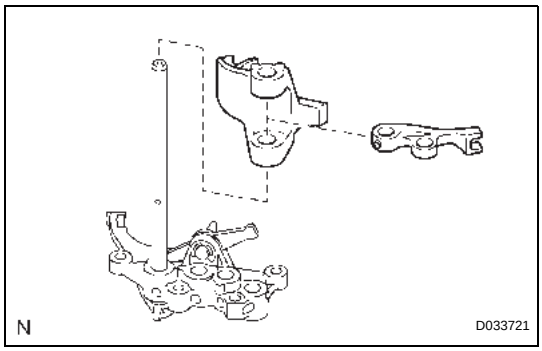
33. REMOVE NO. 1 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 1, ball, spring, shift head No. 1 and interlock pin No. 1.

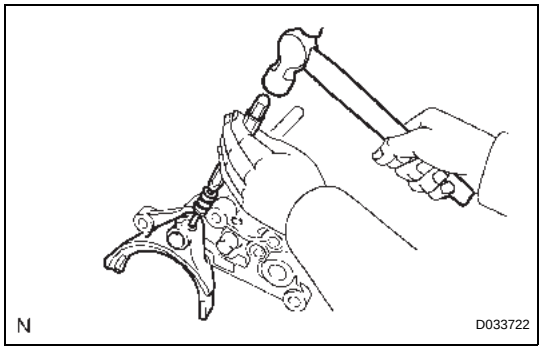


34. REMOVE NO. 1 GEAR SHIFT FORK

(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.



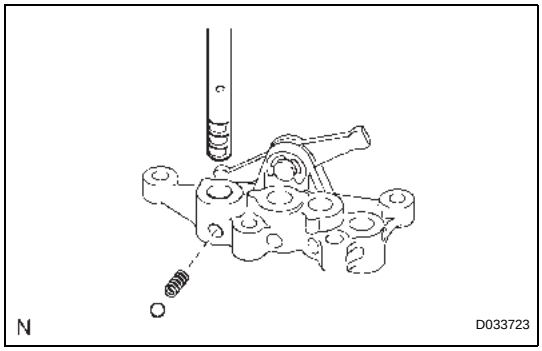
(b) Remove the shift head No. 2 and shift fork No. 1.



35. REMOVE NO. 4 GEAR SHIFT FORK

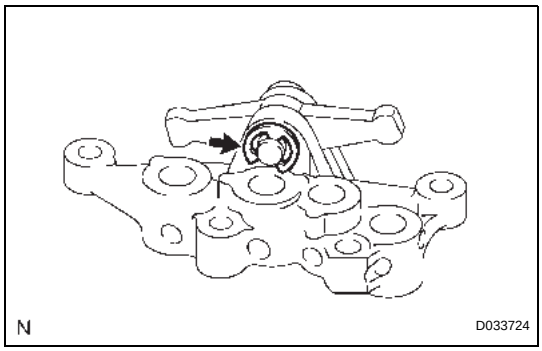
(a) Using a pin punch (5 mm (0.20 in.)) and hammer, tap out the slotted pin.

(b) Remove the shift fork No. 4.



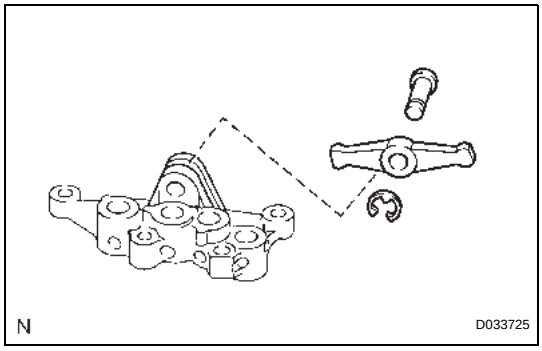
36. REMOVE NO. 4 GEAR SHIFT FORK SHAFT

(a) Remove the shift fork shaft No. 4, ball and spring.

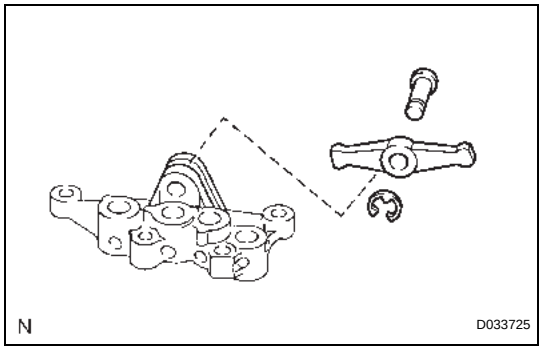


37. REMOVE 1ST AND REVERSE SHIFT ARM

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



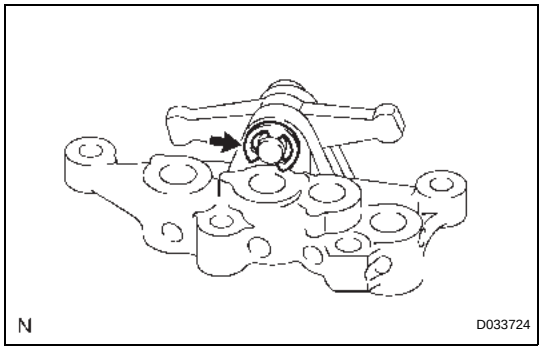
(b) Remove the shift arm pivot and shift arm.



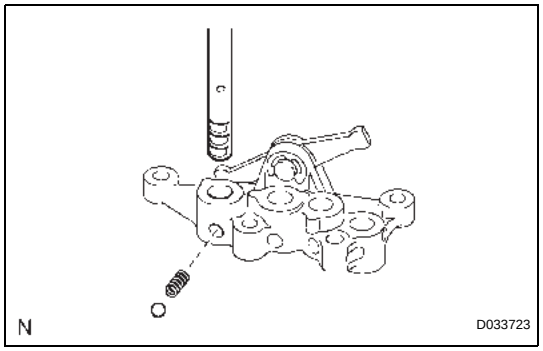
REASSEMBLY

1. INSTALL 1ST AND REVERSE SHIFT ARM

(a) Install the shift arm and shift arm pivot onto the interlock bracket.



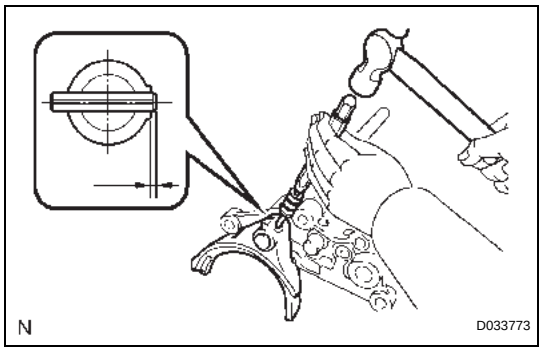
(b) Install a new E-ring onto the shift arm pivot.



2. INSTALL NO. 4 GEAR SHIFT SHAFT

(a) Install the spring and ball onto the interlock bracket.

(b) Install the shift fork shaft No. 4.



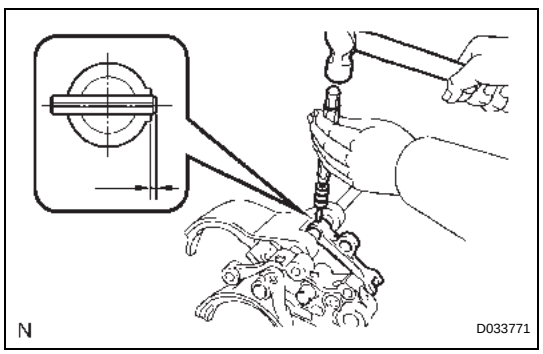
3. INSTALL NO. 4 GEAR SHIFT FORK

(a) Install the shift fork No. 4 onto the shift fork shaft No. 4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft fork No. 4 and shift fork shaft No. 4.

Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



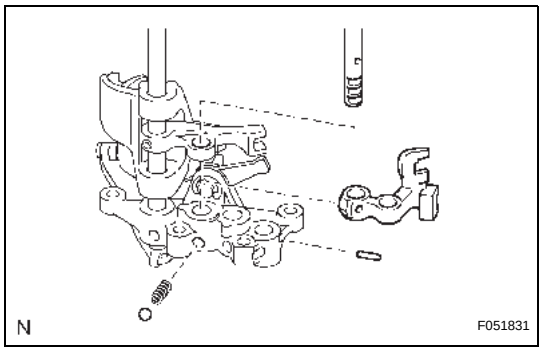
4. INSTALL NO. 1 GEAR SHIFT FORK

(a) Install the shift fork No. 1 and shift head No. 2 onto the shift fork shaft No. 4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft head No. 2 and shift fork shaft No. 4.

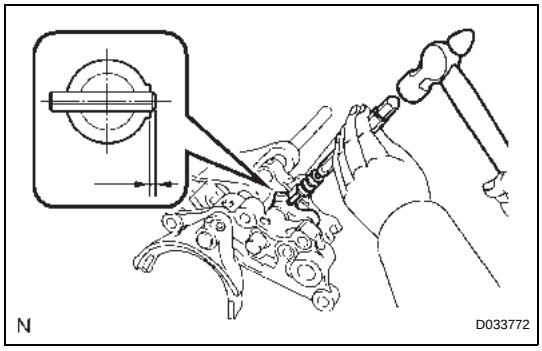
Drive in depth:

0 to 0.5 mm (0 to 0.050 in.)



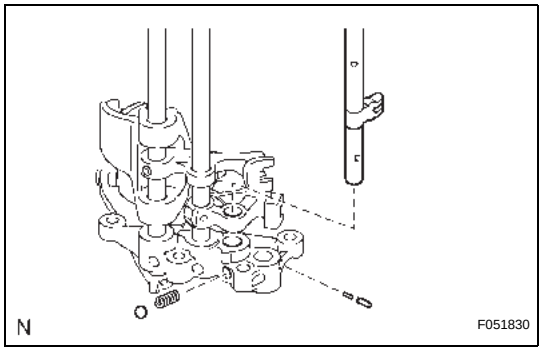
5. INSTALL NO. 1 GEAR SHIFT FORK SHAFT

(a) Apply MP grease to the interlock pin No. 1 and install it onto the interlock bracket.
(b) Install the spring and ball onto the interlock bracket.
(c) Install the shift fork shaft No. 1 onto the interlock bracket.
HINT:
Place the shift fork shaft No. 4 in the neutral position.



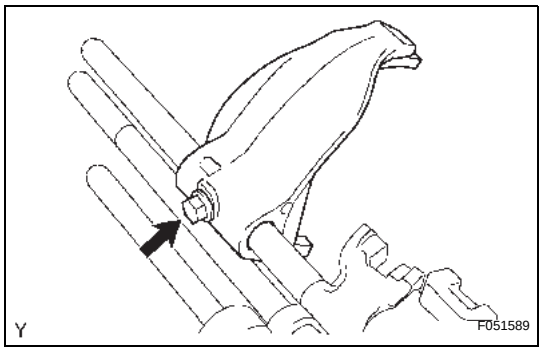
6. INSTALL NO. 1 GEAR SHIFT HEAD

(a) Install the shift head No. 1 into the shift fork shaft No. 1.
(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap the new slotted pin into the shaft head No. 1 and shift fork shaft No. 1.
Drive in depth:
0 to 0.5 mm (0 to 0.050 in.)



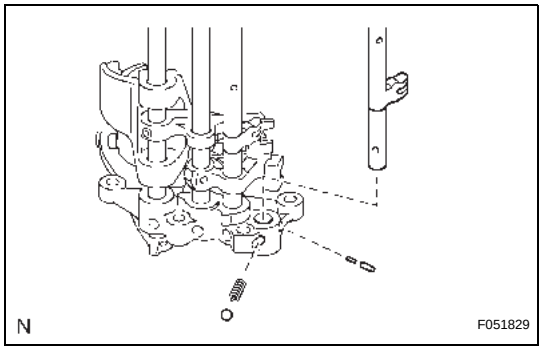
7. INSTALL NO. 2 GEAR SHIFT FORK SHAFT

(a) Apply MP grease to the interlock pins No. 2 and No. 3, then install them onto the interlock bracket.
(b) Install the spring and ball the interlock bracket.
(c) Install the shift fork shaft No. 2 onto the interlock bracket.
HINT:
Place the shift fork shafts No. 3 and No. 4 in the neutral position.



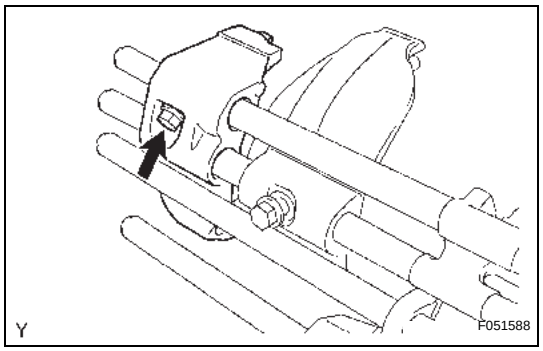
8. INSTALL NO. 2 GEAR SHIFT FORK

(a) Install the shift fork No. 2 with the bolt.
Torque: 20 N*m (199 kgf*cm, 14 ft.*lbf)



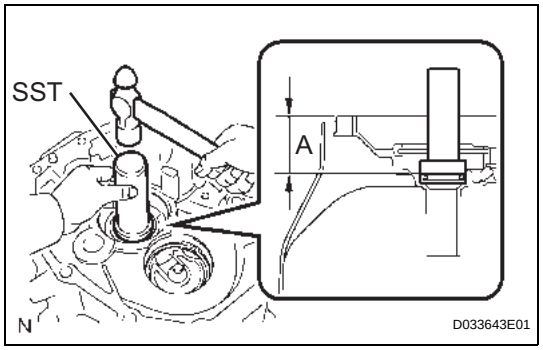
9. INSTALL NO. 3 GEAR SHIFT FORK SHAFT

(a) Apply MP grease to the interlock pins No. 2 and No. 3, then install them onto the interlock bracket.
(b) Install the spring and ball onto the interlock bracket.
(c) Install the shift fork shaft No. 3 onto the interlock bracket.
HINT:
Place the shift fork shafts No. 2, No. 1 and No. 4 in the neutral position.



10. INSTALL NO. 3 GEAR SHIFT FORK

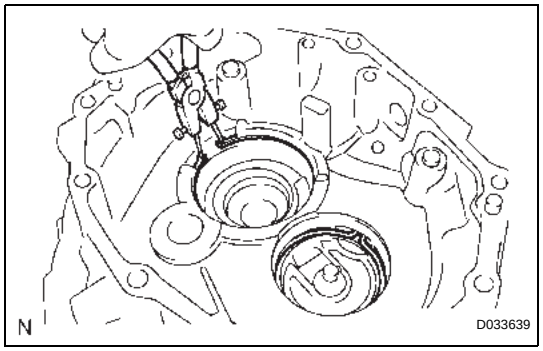
(a) Install the shift fork No. 3 with the bolt.
Torque: 20 N*m (199 kgf*cm, 14 ft.*lbf)



11. INSTALL TRANSMISSION CASE OIL SEAL

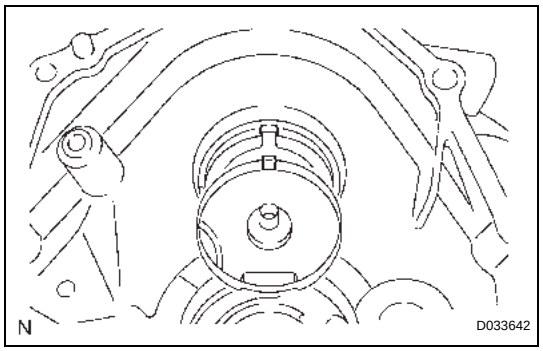
(a) Using SST and a hammer, tap a new oil seal into the front case in accordance with the dimension specified in the illustration.
SST 09950-70010 (09951-07100), 09950-60010 (09951-00470)
Dimension A:
60.0 to 60.8 mm (2.362 to 2.394 in.)

(b) Apply gear oil to the lip of the oil seal.



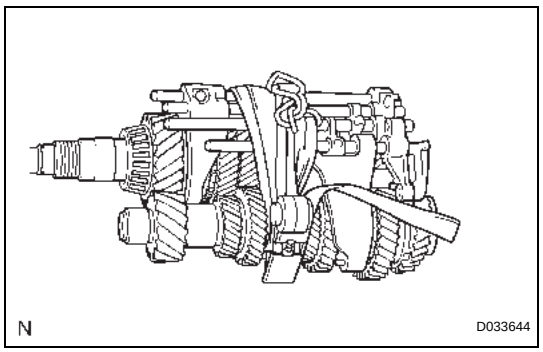
12. INSTALL FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring plier, install the 2 snap rings.



13. INSTALL NO. 1 OIL RECEIVER PIPE

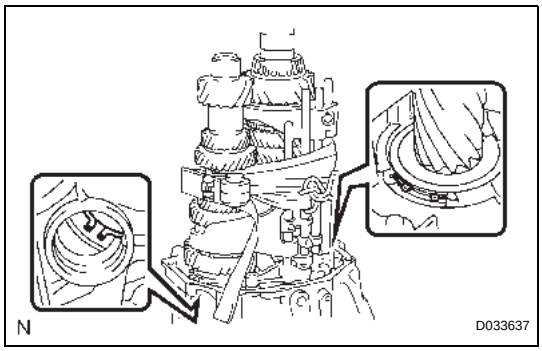
(a) Install the oil receiver pipe No. 1 onto the transmission front case.
HINT:
Align the convex portion of the oil receiver pipe with the cutout of the front case and install the oil receiver pipe onto the clutch housing.



14. INSTALL TRANSMISSION FRONT CASE

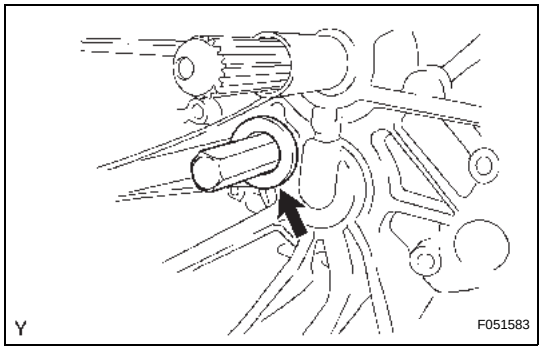
(a) Apply gear oil to all sliding and rotating parts.
(b) Provisionally install the output shaft, input shaft, counter gear shaft and control assembly, and tie them with a rope or string.

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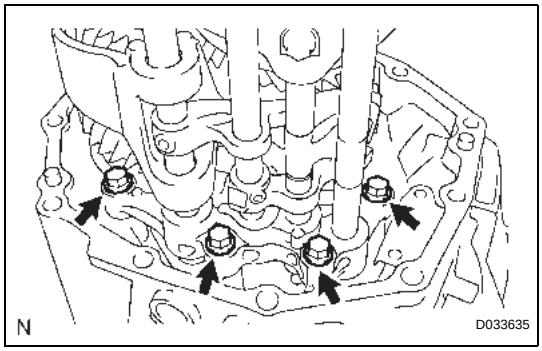


(c) Using a snap ring expander, extend the 2 snap rings and install the output shaft, input shaft, counter gear shaft and control assembly.
HINT:
Make sure that the snap ring is fitted into the grooves of the input shaft and front bearing of the counter gear shaft.

(d) Untie the output shaft, input shaft, counter gear shaft and control assembly.



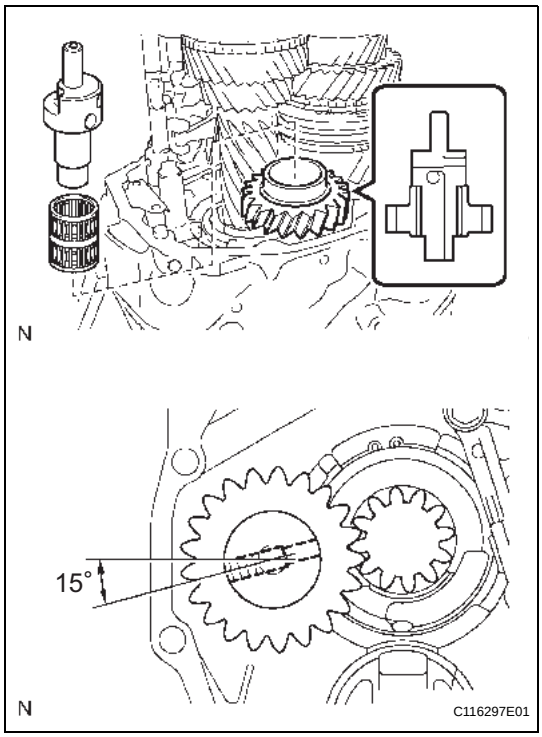
(e) Using a hexagonal wrench (24 mm), install the plug onto the front case.
Torque: 39 N*m (400 kgf*cm, 29 ft.*lbf)

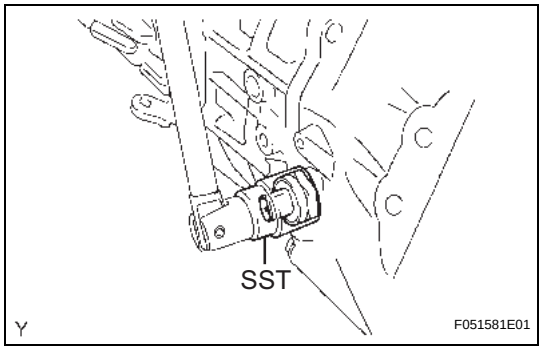


(f) Install the 4 bolts onto the interlock bracket.
Torque: 21 N*m (214 kgf*cm, 15 ft.*lbf)

15. INSTALL REVERSE IDLER GEAR

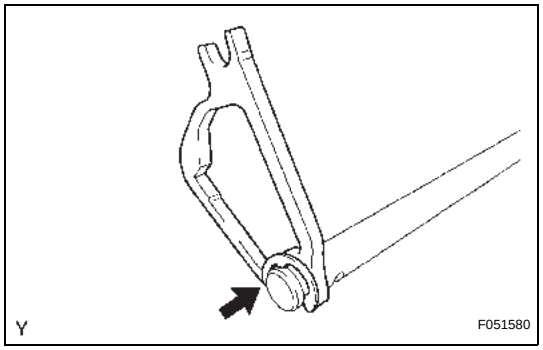
(a) Install the reverse idler gear, reverse idler gear bearing and reverse idler gear shaft.
HINT:
Make sure that the reverse idler gear faces the correct direction as shown in the illustration.
NOTICE:
Make sure that the tapped hole portion of the reverse idler shaft is in the position shown in the illustration.





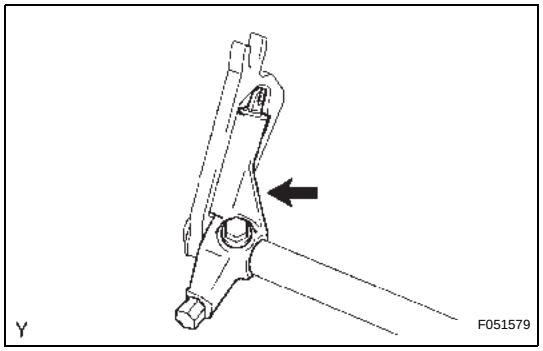
16. INSTALL BACK-UP LIGHT SWITCH ASSEMBLY

(a) Using SST, install the back-up light switch with a new gasket onto the transmission front case.
SST 09817-16011
Torque: 44 N*m (449 kgf*cm, 33 ft.*lbf)



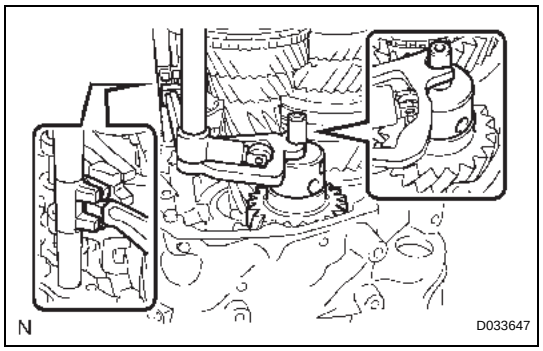
17. INSTALL SHIFT AND SELECT LEVER CAM

(a) Install the shift and select lever cam onto the shaft and install a new E-ring.



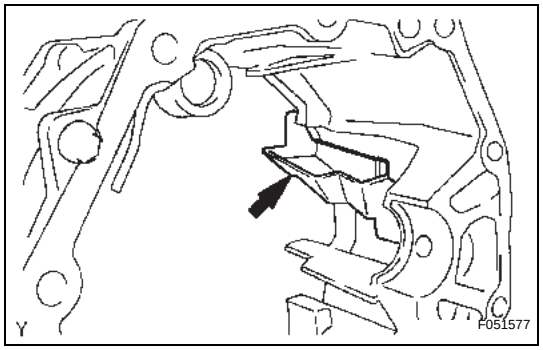
18. INSTALL SHIFT AND SELECT LEVER

(a) Install the lock ball pin and spring onto the shift and select lever.
(b) Install the shift and select lever onto the shift and select lever cam and shaft.
(c) Install the bolt onto the shift and select lever.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



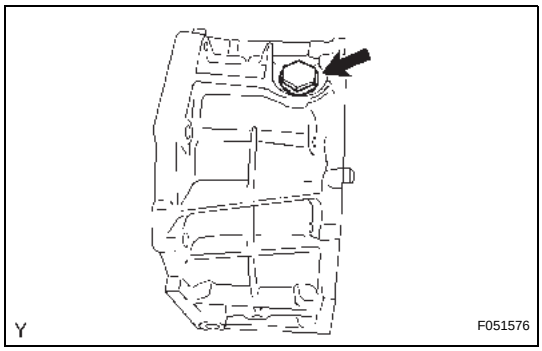
19. INSTALL SHIFT AND SELECT LEVER SHAFT

(a) Align the groove of the shift and select cam with the reverse idler shaft, and the claw with the groove of the control assembly, and install them.



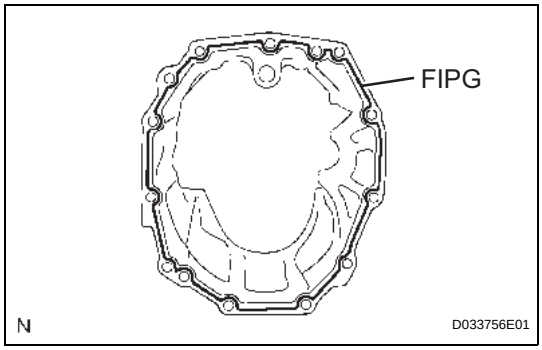
20. INSTALL NO. 2 OIL RECEIVER PIPE

(a) Install the oil receiver pipe No. 2 into the transmission middle case.



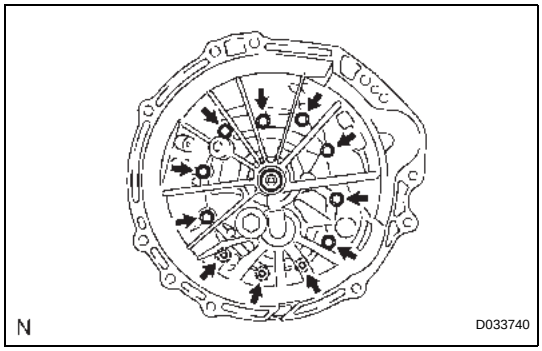
21. INSTALL DRAIN PLUG SUB-ASSEMBLY

(a) Install the drain plug with a new gasket onto the transmission middle case.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

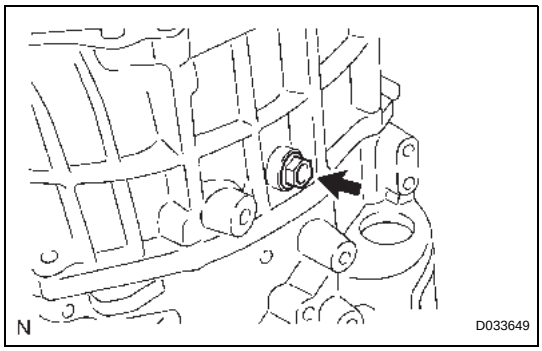


22. INSTALL TRANSMISSION MIDDLE CASE

(a) Apply FIPG to the transmission middle case, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

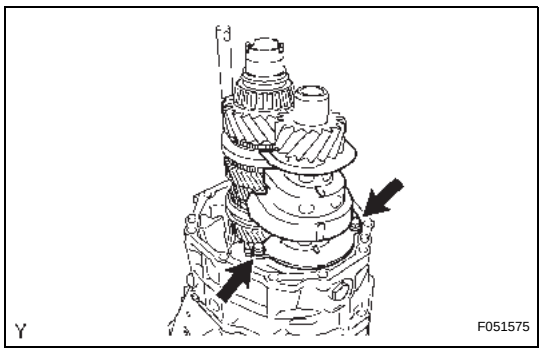


(b) Install the transmission middle case with the 11 bolts onto the transmission front case.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)
Bolt length:
Bolt A: 40 mm (1.57 in.)
Bolt B: 80 mm (3.15 in.)



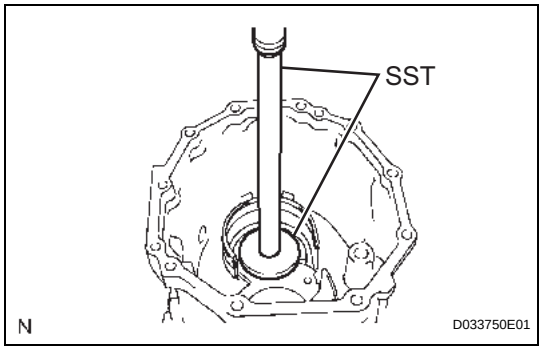
23. INSTALL REVERSE IDLER GEAR SHAFT BOLT

(a) Install a new gasket and the reverse idler gear shaft bolt onto the reverse idler gear shaft.
Torque: 28 N*m (286 kgf*cm, 21 ft.*lbf)



24. INSTALL TRANSMISSION OIL SEPARATOR

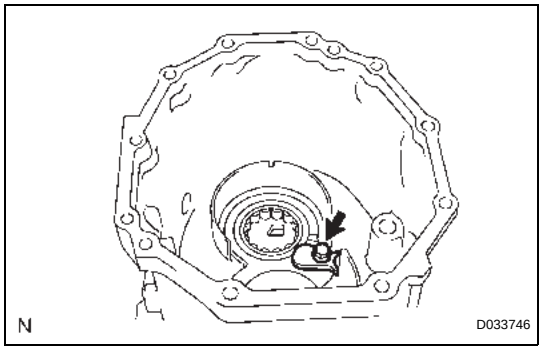
(a) Install the transmission oil separator with the 2 bolts.
Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)



25. INSTALL COUNTER GEAR REAR RADIAL BALL BEARING

(a) Coat a new counter gear rear radial ball bearing with gear oil, and using SST and a press, install it into the transmission rear case.

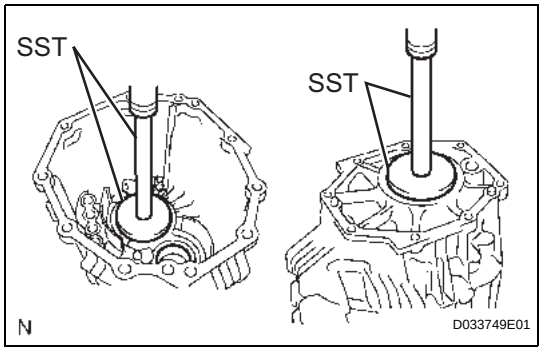
SST 09950-70010 (09951-07360), 09950-60010 (09951-00650)



(b) Install the bearing lock plate with the bolt.

Torque: 11 N*m (115 kgf*cm, 8.3 ft.*lbf)

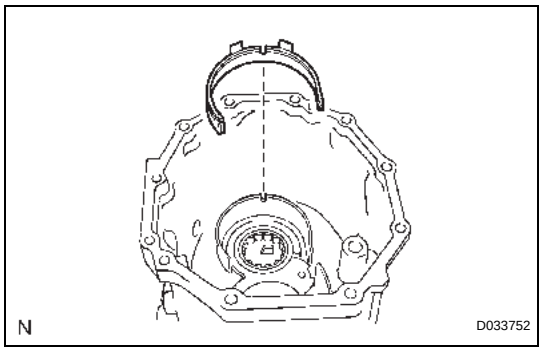
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26. INSTALL OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST and a press, press in 2 new bearing outer races.

SST 09950-70010 (09951-07100, 09951-07360), 09950-60020 (09951-00790)

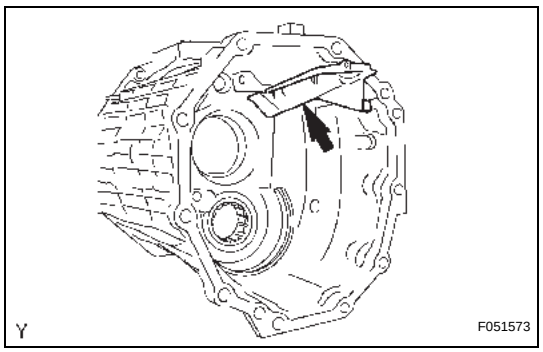


27. INSTALL OIL SEPARATOR PACKING SEAL

(a) Install the oil separator packing seal onto the transmission rear case.

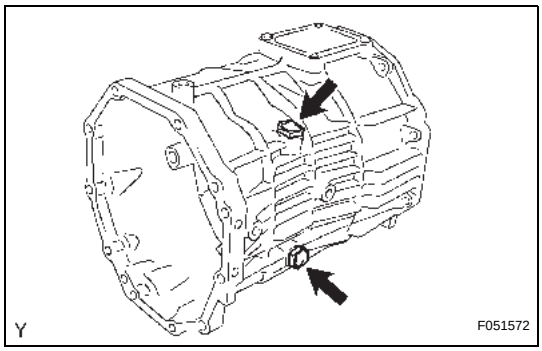
HINT:

Insert the protruding part of the oil separator packing seal into the groove on the transmission rear case.



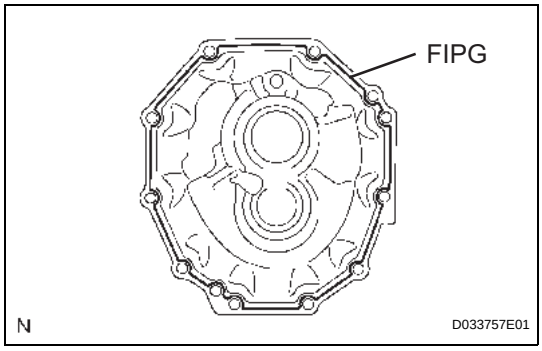
28. INSTALL EXTENSION HOUSING OIL RECEIVER PIPE

(a) Install the extension housing oil receiver pipe onto the transmission rear case.



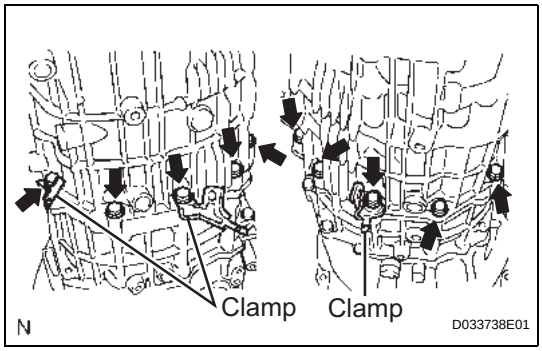
29. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the 2 transmission filler plugs with 2 new gaskets onto the transmission rear case.
Torque: 37 N*m (377 kgf*cm, 27 ft.*lbf)

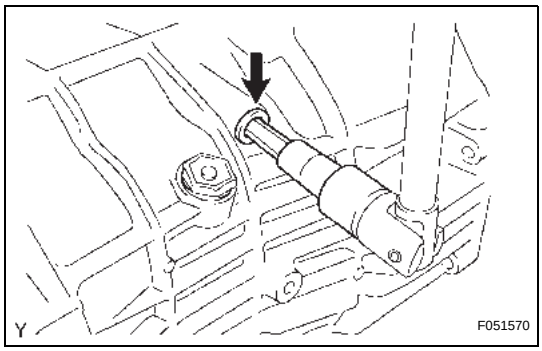


30. INSTALL TRANSMISSION REAR CASE

(a) Apply FIPG to the transmission rear case, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

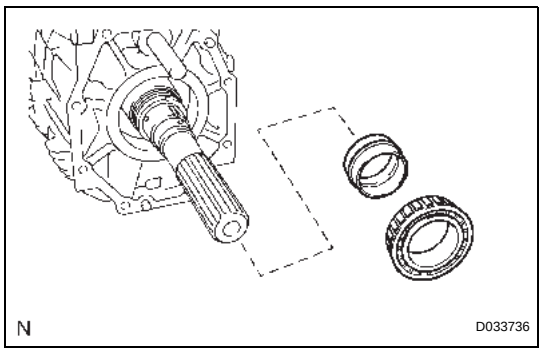


(b) Install the transmission rear case with the 10 bolts and 3 brackets onto the transmission middle case.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)



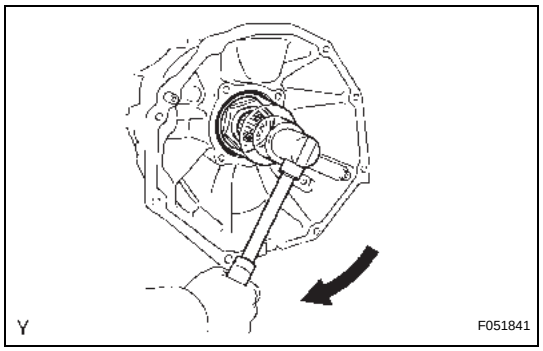
31. INSTALL SHIFT DETENT BALL PLUG

(a) Install the ball and compression spring onto the transmission rear case.
(b) Install a new shift detent ball plug, and install it onto the transmission rear case.
Torque: 25 N*m (250 kgf*cm, 18 ft.*lbf)

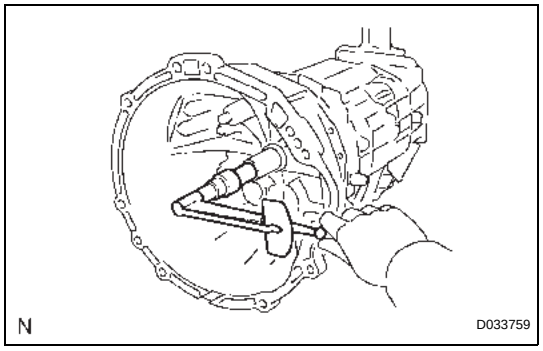


32. INSTALL OUTPUT SHAFT ADJUST NUT

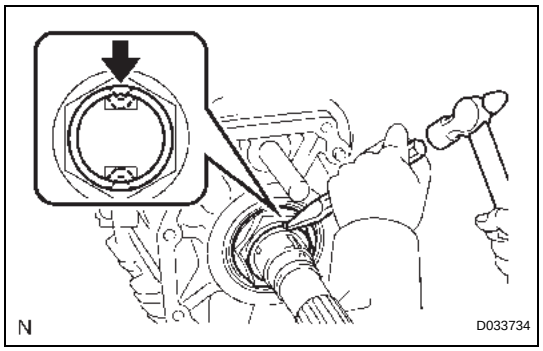
(a) Using a belt and wooden block, fasten the transmission to the workbench.
(b) Install a new spacer and output shaft taper roller bearing No. 2.



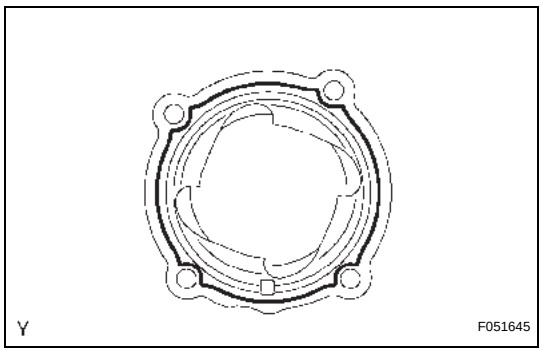
(c) Using a socket wrench (60 mm), provisionally tighten a new nut until there is no slack in the output shaft.
HINT:
No preload should be applied to the nut.
(d) Fit the bearing into the output shaft by turning the output shaft 15 times.



(e) Place the gearshift into 5th gear and check the initial torque of the input shaft.
(f) Using a socket wrench (60 mm), tighten the nut.
(g) Place the gearshift into 5th gear and check the initial torque of the input shaft.
(h) Confirm that the difference between (f) and (i) is within the specified values.
Preload (at starting):
0.45 to 1.35 N*m (4.59 to 13.77 kgf*cm, 3.98 to 11.95 in.*lbf)
If the result is not as specified, tighten and adjust the output shaft adjusting nut.
NOTICE:
If the output shaft adjusting nut is loose or removed due to a large preload, always replace the spacer with a new one.

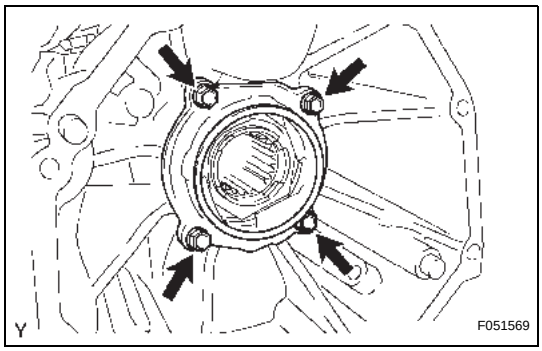


(i) Using a chisel and hammer, caulk the output shaft adjust nut.

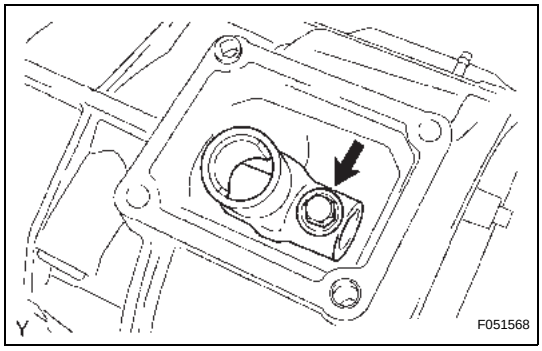


33. INSTALL MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY
(a) Apply FIPG to the transmission case cover, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

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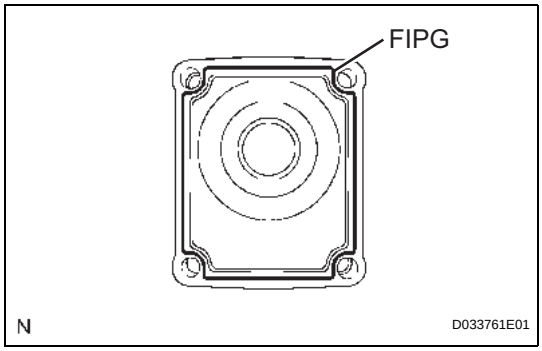


(b) Install the transmission case cover with the 4 bolts.
Torque: 18 N*m (184 kgf*cm, 13 ft.*lbf)



34. INSTALL SHIFT LEVER HOUSING

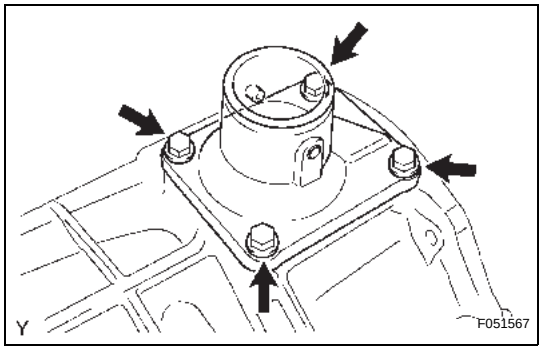
(a) Install the shift lever housing with the bolt.
Torque: 33 N*m (340 kgf*cm, 25 ft.*lbf)



35. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB-ASSEMBLY

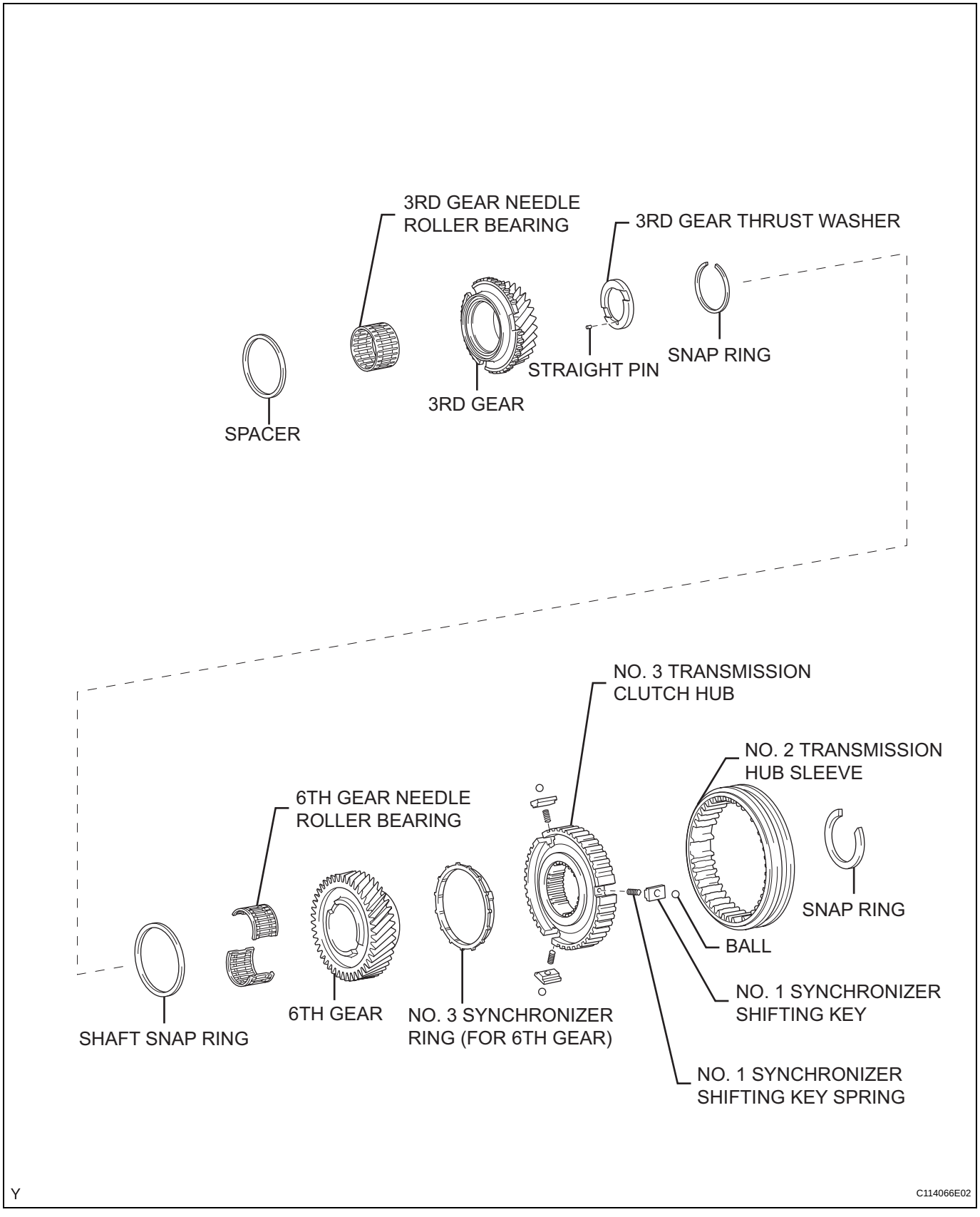
(a) Apply FIPG to the floor shift control shift lever retainer, as shown in the illustration.
FIPG:
Part No. 08826-00090, THREE BOND 1281 or equivalent
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

(b) Install the floor shift control shift lever retainer with the 4 bolts.
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)



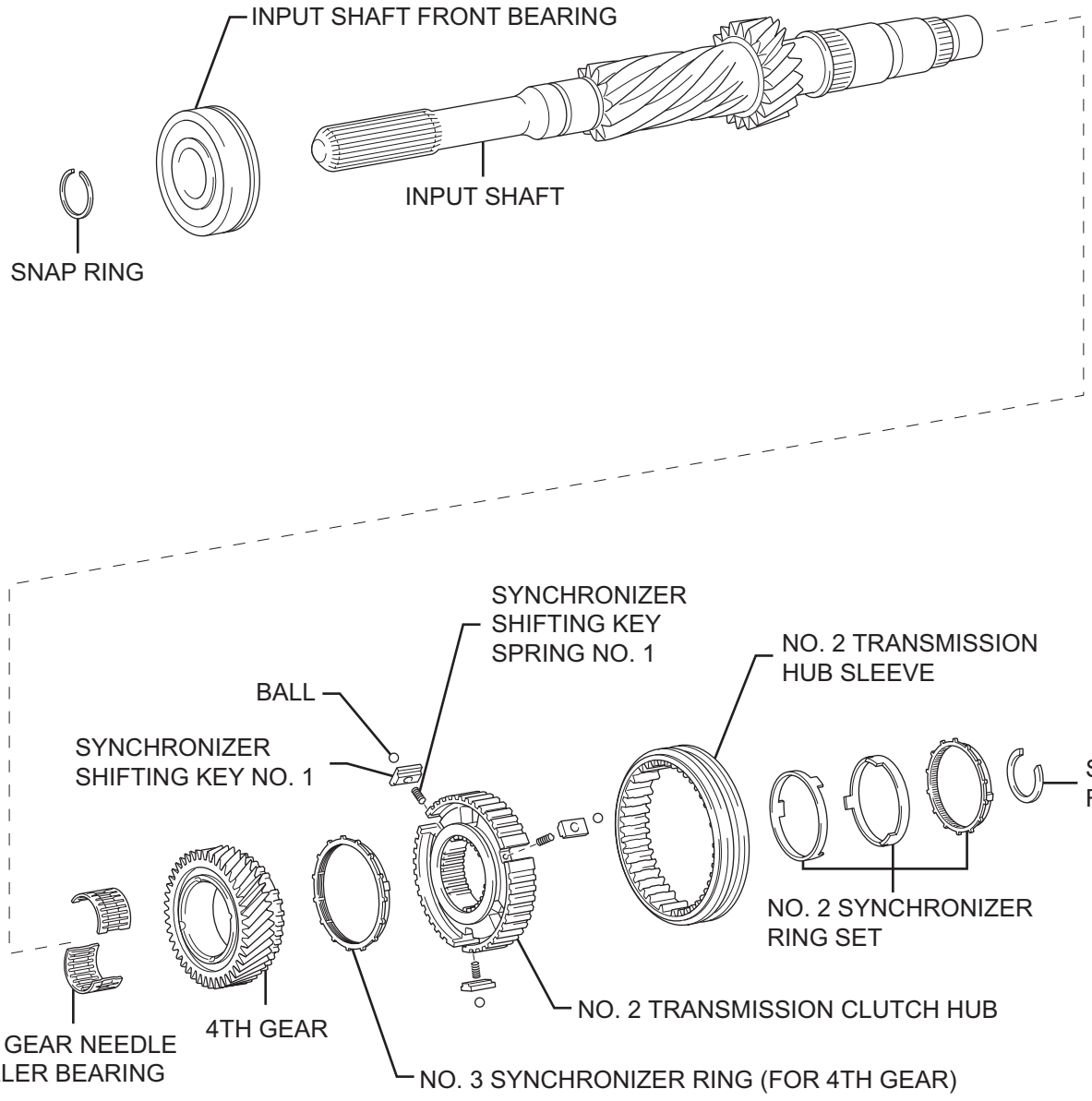
INPUT SHAFT

COMPONENTS



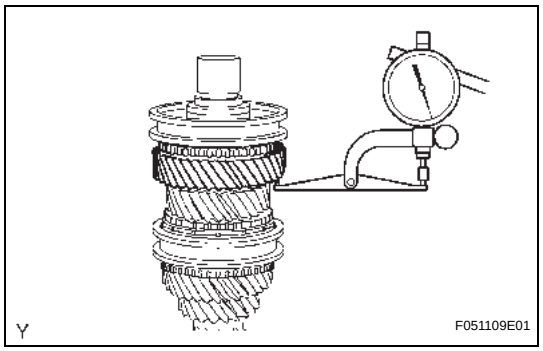
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DISASSEMBLY

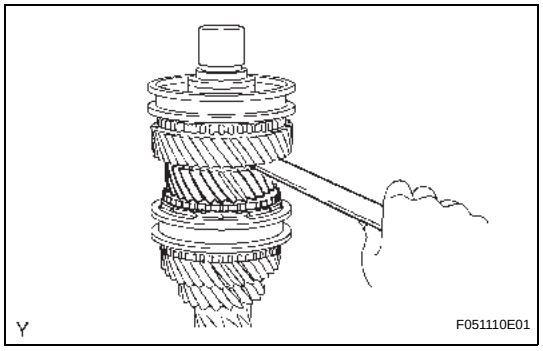
1. INSPECT 6TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 6th gear thrust clearance.

Standard clearance:

0.20 to 0.49 mm (0.0079 to 0.0193 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



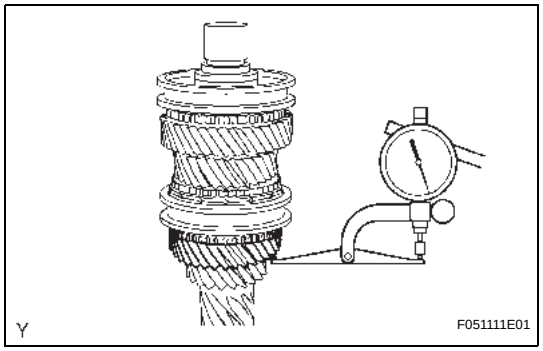
2. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.09 to 0.52 mm (0.0035 to 0.0205 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 2.



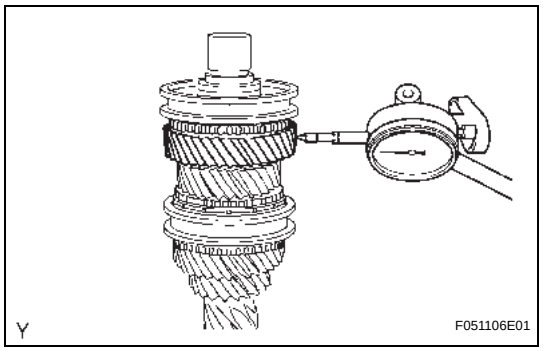
3. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 4th gear thrust clearance.

Standard clearance:

0.12 to 0.38 mm (0.0047 to 0.0150 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



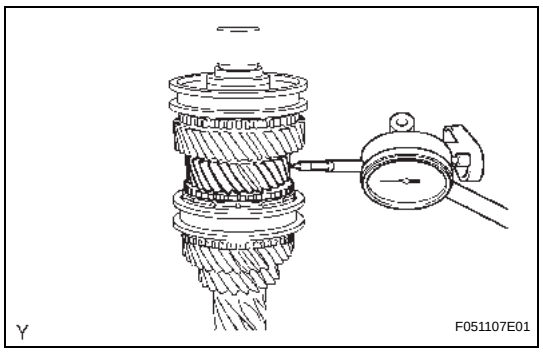
4. INSPECT 6TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 6th gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



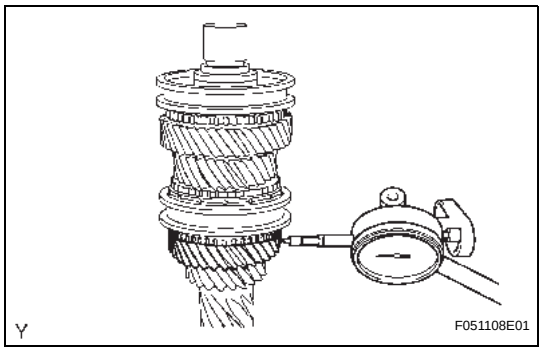
5. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



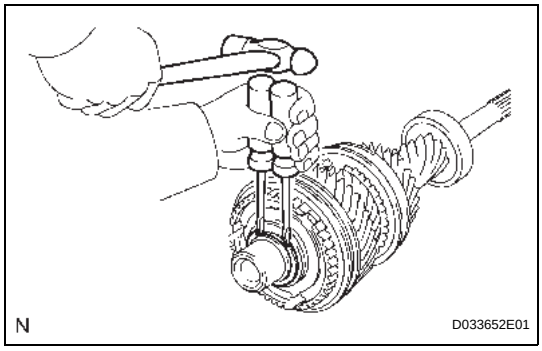
6. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.

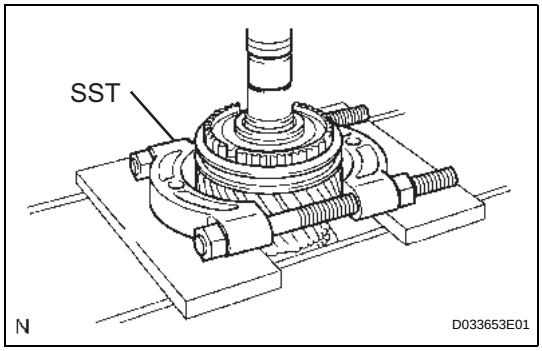


7. REMOVE TRANSMISSION CLUTCH HUB NO.3 SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.

HINT:

Use a shop rag to prevent the snap ring from flying off.



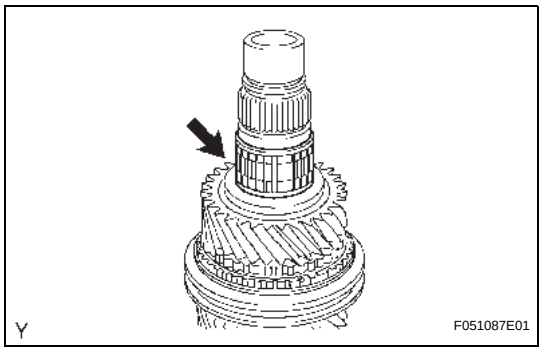
8. REMOVE 6TH GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 3, hub sleeve, synchronizer ring and 6th gear from the input shaft.

SST 09950-00020, 09950-70010 (09951-07200), 09950-60010 (09951-00300)

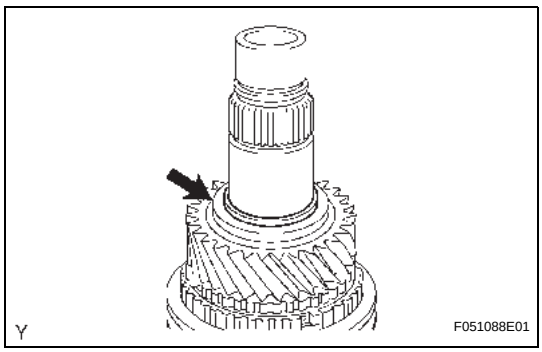
NOTICE:

- **Do not tighten SST excessively.**
- **Support the input shaft by hand so that it does not fall off.**



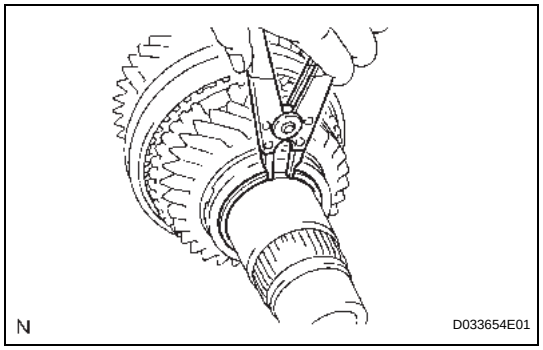
9. REMOVE 6TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 6th gear needle roller bearing from the input shaft.



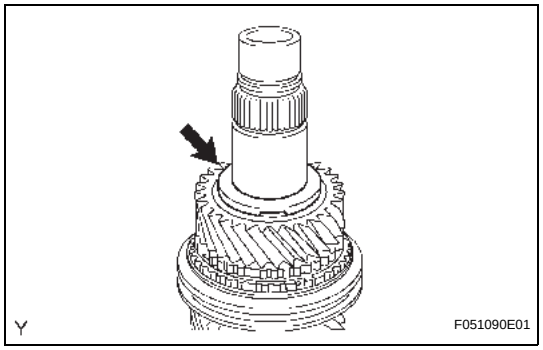
10. REMOVE SHAFT SNAP RING

(a) Remove the shaft snap ring from the input shaft.



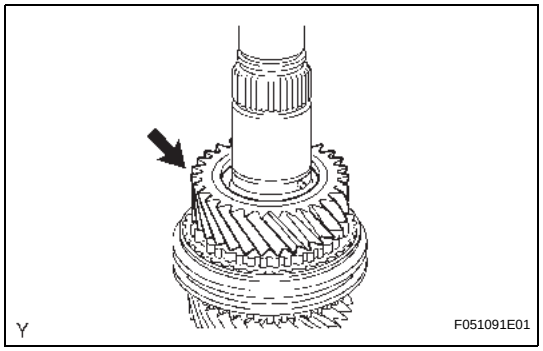
11. REMOVE GEAR THRUST WASHER SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the input shaft.



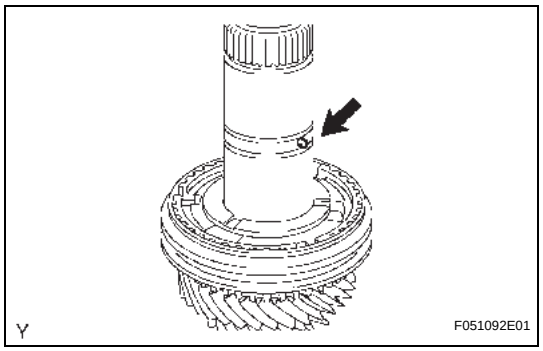
12. REMOVE 3RD GEAR THRUST WASHER

(a) Remove the 3rd gear thrust washer from the input shaft.



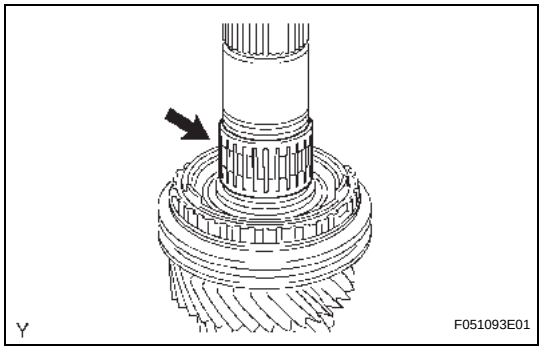
13. REMOVE 3RD GEAR

(a) Remove the 3rd gear from the input shaft.



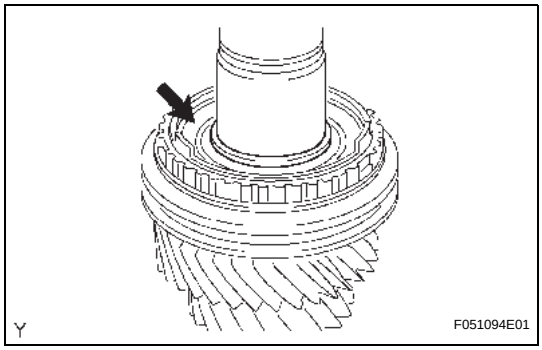
14. REMOVE STRAIGHT PIN

(a) Remove the straight pin from the input shaft.



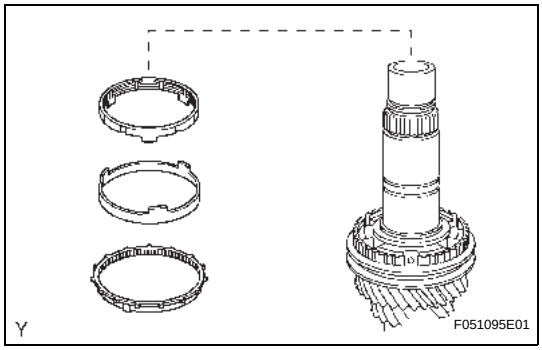
15. REMOVE 3RD GEAR NEEDLE ROLLER BEARING

(a) Remove the 3rd gear needle roller bearing from the input shaft.



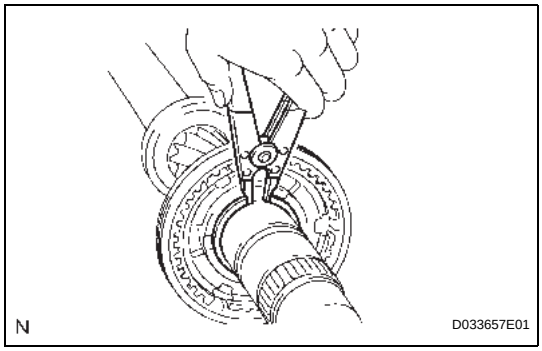
16. REMOVE SPACER

(a) Remove the spacer from the input shaft.



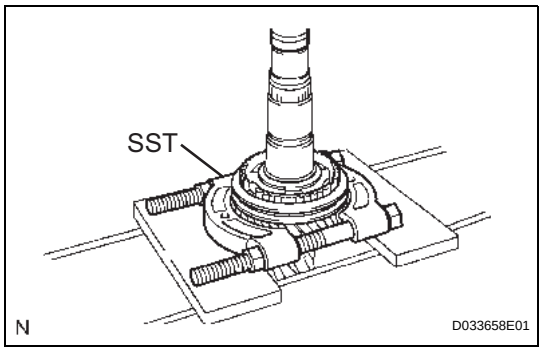
17. REMOVE NO. 2 SYNCHRONIZER RING SET

(a) Remove the synchronizer ring set No. 2 from the input shaft.



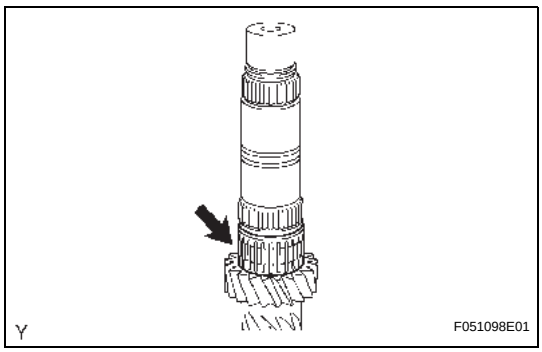
18. REMOVE CLUTCH HUB NO.2 SETTING SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the input shaft.



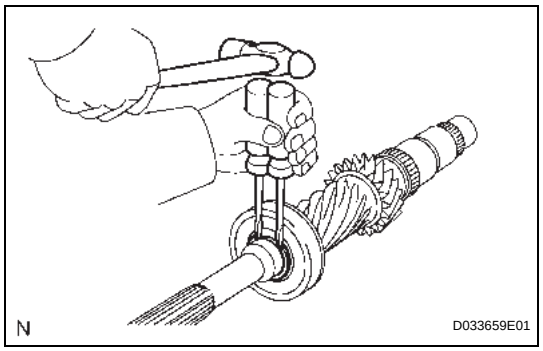
19. REMOVE 4TH GEAR

(a) Using SST and a press, remove the transmission clutch hub No. 2, hub sleeve, synchronizer ring and 4th gear from the input shaft.
SST 09950-00020
NOTICE:
Support the input shaft by hand so that it does not fall off.



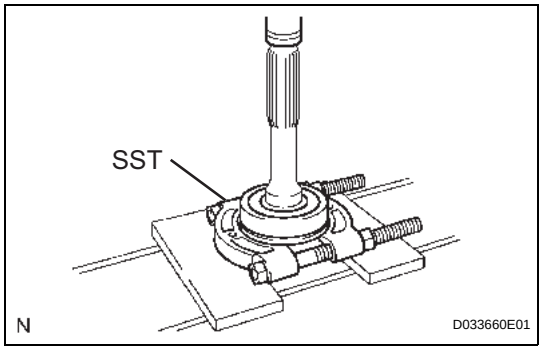
20. REMOVE 4TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 4th gear needle roller bearing from the input shaft.



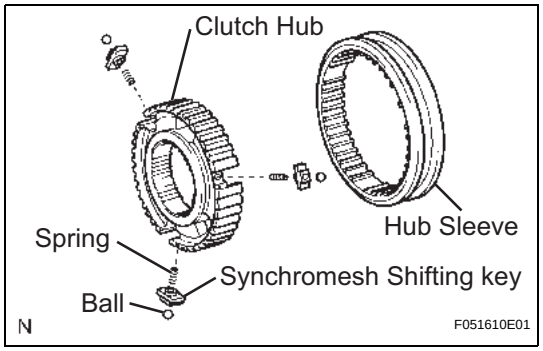
21. REMOVE INPUT SHAFT FRONT BEARING SNAP RING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.
HINT:
Use a shop rag to prevent the snap ring from flying off.



22. REMOVE INPUT SHAFT FRONT BEARING

(a) Using SST and a press, remove the input shaft front bearing from the input shaft.
SST 09950-00020
NOTICE:
Support the input shaft by hand so that it does not fall off.

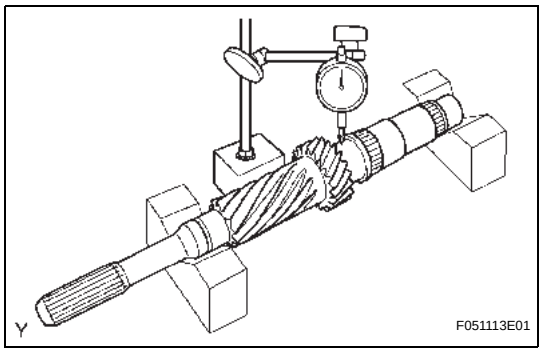


23. REMOVE NO. 2 TRANSMISSION CLUTCH HUB

(a) Remove the clutch hub, 3 synchromesh shifting keys, 3 balls and 3 springs from the hub sleeve.
HINT:
Use a shop rag to prevent the ball and spring from flying off.

24. REMOVE NO. 3 TRANSMISSION CLUTCH HUB

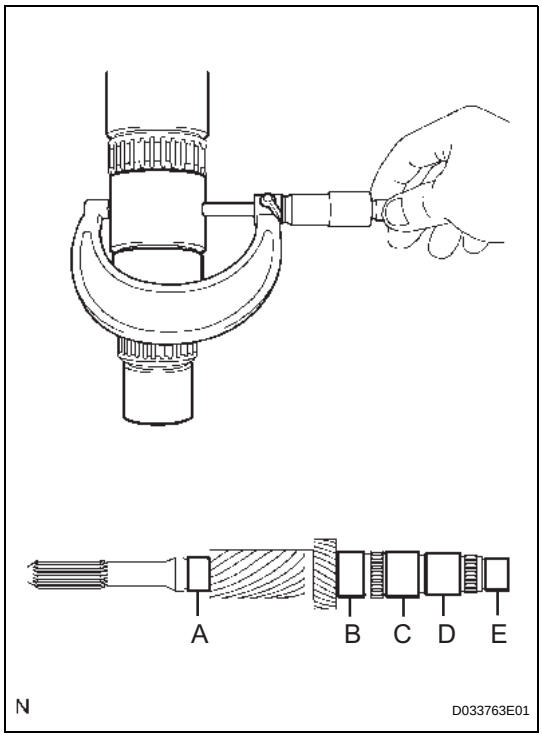
(a) Perform the same procedures as for clutch hub No. 2.



INSPECTION

1. INSPECT INPUT SHAFT

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout:
0.03 mm (0.0012 in.)
If the runout exceeds the maximum, replace the input shaft.



(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

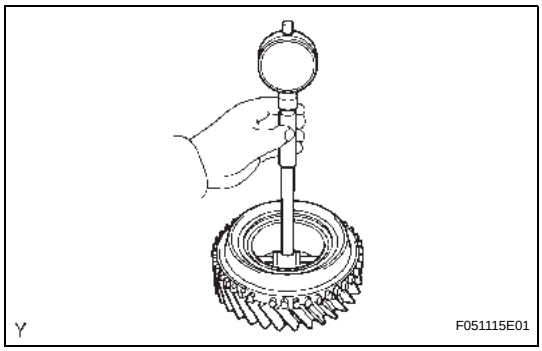
Standard

Part	Outer diameter mm (in.)
A	34.002 to 34.015 (1.3387 to 1.3392)
B	44.985 to 45.000 (1.7711 to 1.7717)
C	44.985 to 45.000 (1.7711 to 1.7717)
D	41.985 to 42.000 (1.6530 to 1.6535)
E	32.967 to 32.980 (1.2979 to 1.2984)

Minimum

Part	Outer diameter mm (in.)
A	34.002 (1.3387)
B	44.985 (1.7711)
C	44.985 (1.7711)
D	41.985 (1.6530)
E	32.967 (1.2979)

If the outer diameter is less than the minimum, replace the input shaft.

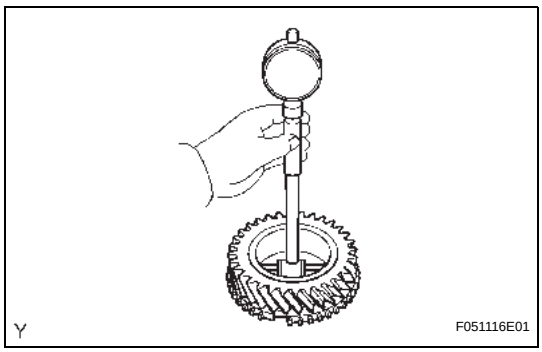


2. INSPECT 6TH GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 6th gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the 4th gear.

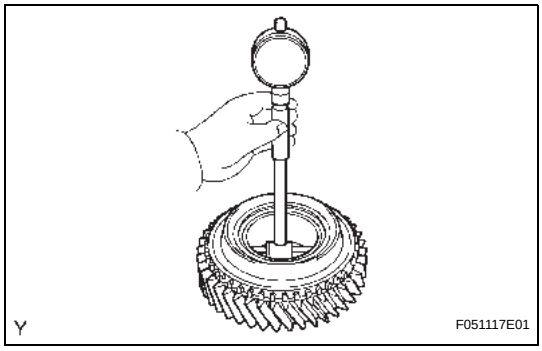


3. INSPECT 3RD GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 3rd gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the 3rd gear.

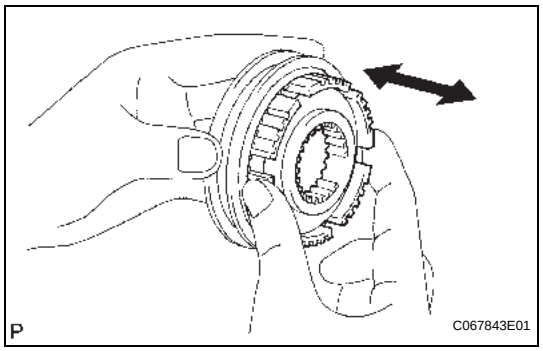


4. INSPECT 4TH GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 4th gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

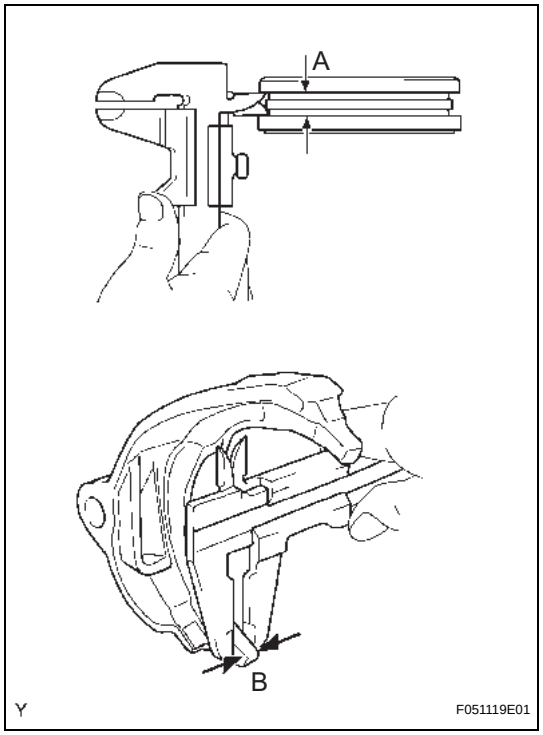
If the inside diameter exceeds the maximum, replace the 4th gear.



5. INSPECT NO. 2 TRANSMISSION HUB SLEEVE

(a) Check the sliding condition between the transmission hub No. 2 and transmission hub sleeve No. 2.

(b) Check that the spline gear teeth of the transmission hub sleeve No. 2 are not worn.



(c) Using vernier calipers, measure the width of the transmission hub sleeve No. 2 groove (A) and the thickness of the claw part on the gear shift forks No. 2 or No. 3 (B), and calculate the clearance.

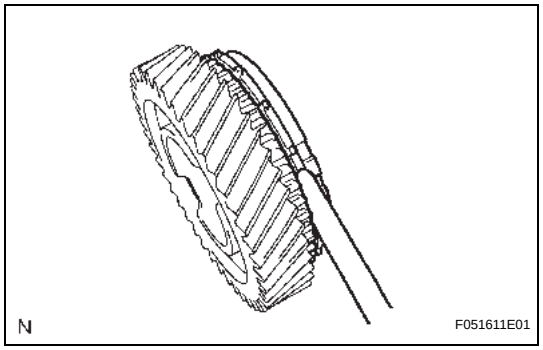
Standard clearance:

(A - B);

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

If the clearance is outside the specification, replace the transmission hub sleeve No. 2 and gear shift fork.

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6. INSPECT NO. 3 SYNCHRONIZER RING (FOR 6TH GEAR)

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and the 6th gear.

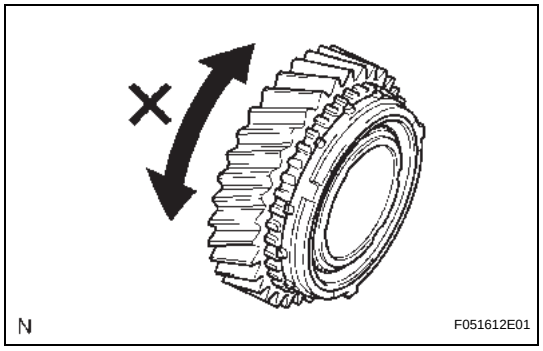
Standard clearance:

0.70 to 1.50 mm (0.0276 to 0.0591 in.)

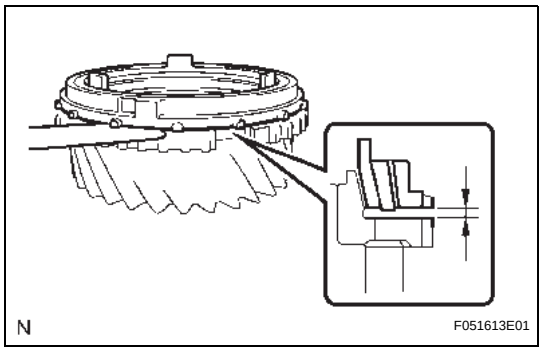
Minimum clearance:

0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 6th gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 6th gear cone. Check that the ring locks.

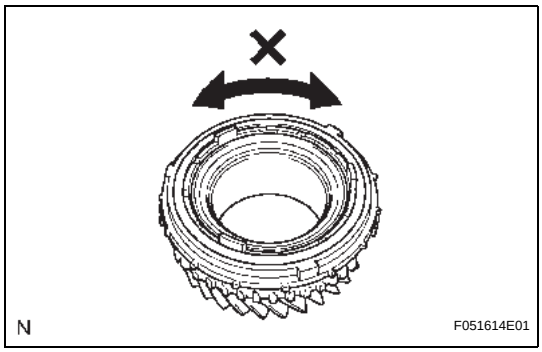


7. INSPECT NO. 2 SYNCHRONIZER RING SET

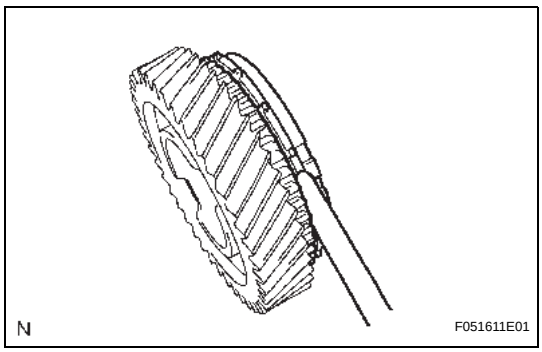
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and the 3rd gear.

Standard clearance:
Inner:
1.20 to 2.20 mm (0.0472 to 0.0866 in.)
Middle:
0.60 to 1.80 mm (0.0236 to 0.0709 in.)
Outer:
0.80 to 1.80 mm (0.0315 to 0.0709 in.)
Minimum clearance:
Inner:
1.20 mm (0.0472 in.)
Middle:
0.60 mm (0.0236 in.)
Outer:
0.80 mm (0.0315 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 3rd gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 3rd gear cone. Check that the ring locks.

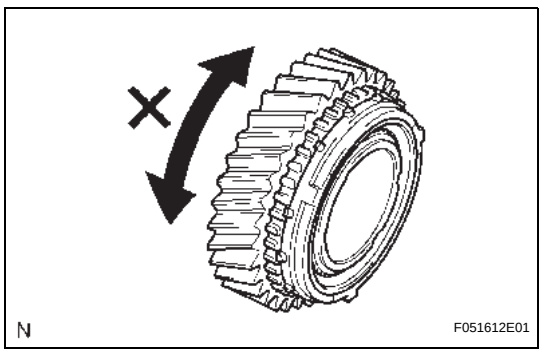


8. INSPECT NO. 3 SYNCHRONIZER RING (FOR 4TH GEAR)

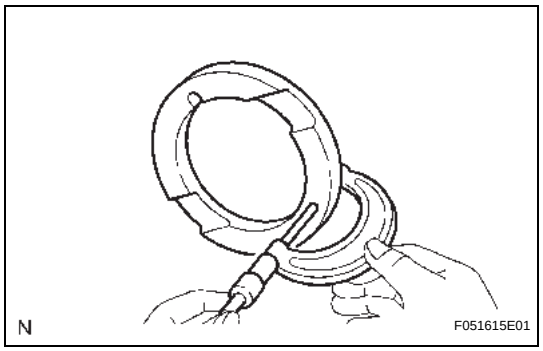
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 4th gear.

Standard clearance:
0.70 to 1.50 mm (0.0276 to 0.0591 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 4th gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 4th gear cone. Check that the ring locks.



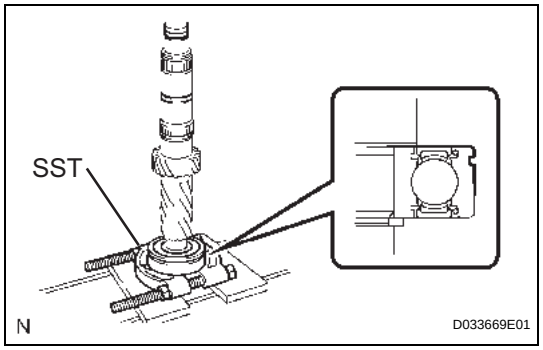
9. INSPECT 3RD GEAR THRUST WASHER

(a) Using a micrometer, measure the thrust washer thickness.

Standard thickness:
7.12 to 7.18 mm (0.2803 to 0.2827 in.)
Minimum thickness:
7.12 mm (0.2803 in.)

If the thickness is less than the minimum, replace the thrust washer.

REASSEMBLY



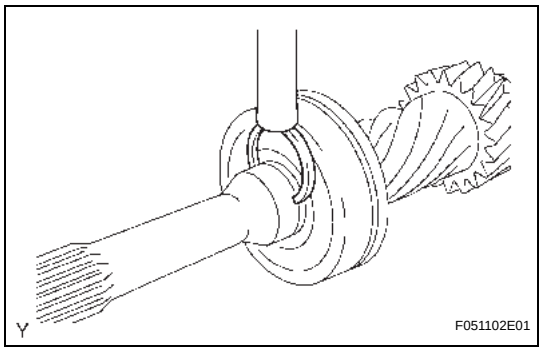
1. INSTALL INPUT SHAFT FRONT BEARING

(a) Using SST and a press, install the input shaft front bearing onto the input shaft.

SST 09950-00020

HINT:

Make sure that the groove of the bearing faces the correct direction as shown in the illustration.



2. INSTALL INPUT SHAFT FRONT BEARING SNAP RING

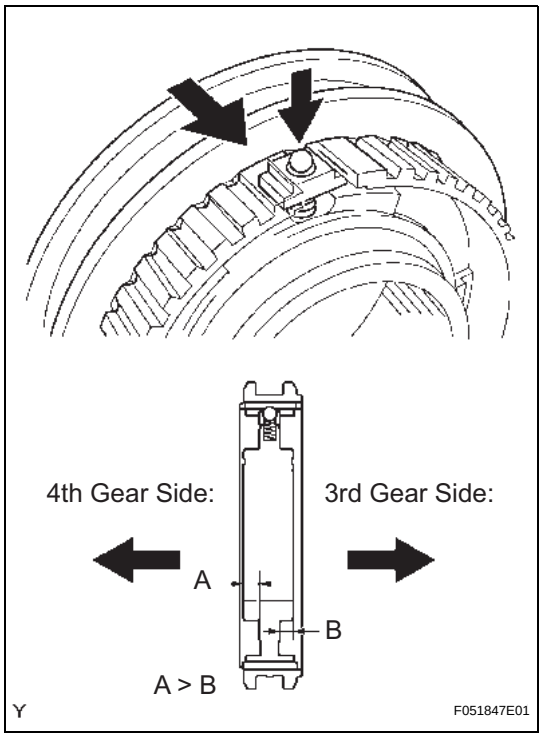
(a) Select a snap ring that will allow minimum axial play.

Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-31026	2.65 to 2.70 (0.1043 to 0.1063)	A
90520-31027	2.70 to 2.75 (0.1063 to 0.1083)	B
90520-31028	2.75 to 2.80 (0.1083 to 0.1102)	C
90520-31029	2.80 to 2.85 (0.1102 to 0.1122)	D
90520-31030	2.85 to 2.90 (0.1122 to 0.1142)	E
90520-31031	2.90 to 2.95 (0.1142 to 0.1161)	F

(b) Using a brass bar and hammer, install the snap ring onto the input shaft.

MT



3. INSTALL NO. 2 TRANSMISSION CLUTCH HUB

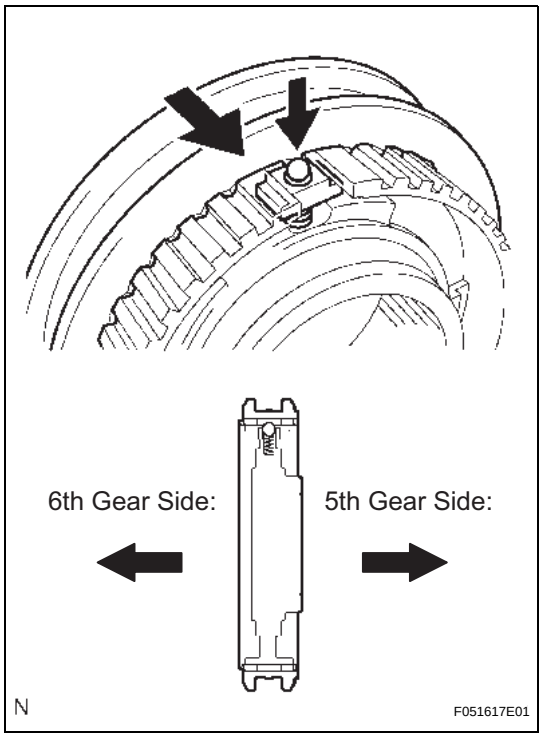
(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub No. 2.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.

NOTICE:

Take care to prevent the ball from flying off.

HINT:

Make sure that the clutch hub No. 2 faces the correct direction as shown in the illustration.



4. INSTALL NO. 3 TRANSMISSION CLUTCH HUB

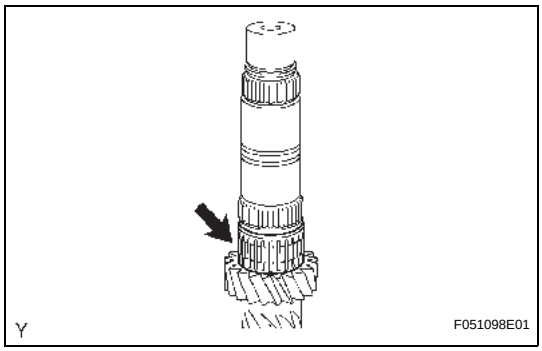
(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub No. 3.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.

NOTICE:

Take care to prevent the ball from flying off.

HINT:

Make sure that the clutch hub No. 3 faces the correct direction as shown in the illustration.



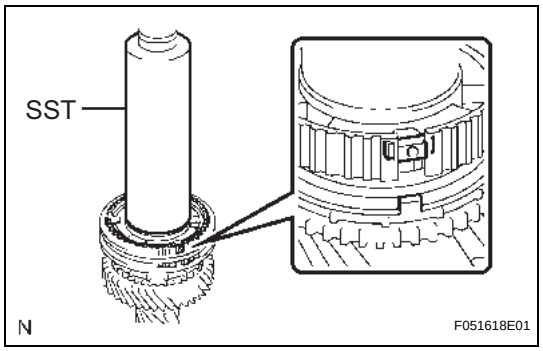
5. INSTALL 4TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 4th gear needle roller bearing with gear oil, then install it onto the input shaft.

6. INSTALL 4TH GEAR

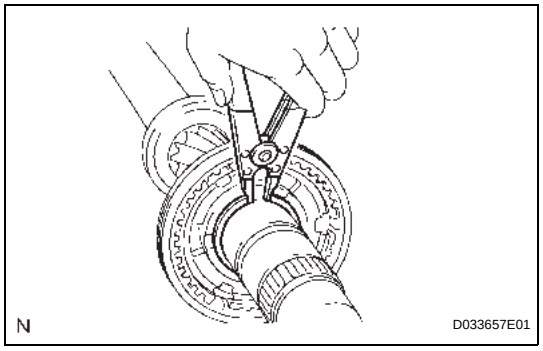
(a) Coat the 4th gear and synchronizer ring No. 3 with gear oil, then install them onto the input shaft.

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(b) Using SST and a press, install the clutch hub No. 2 onto the input shaft.
SST 09308-14010
HINT:
Align the convex portion of the synchronizer ring with the groove of the clutch hub.

(c) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.

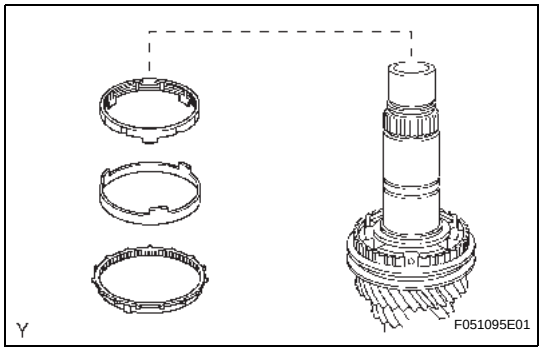


7. INSTALL CLUTCH HUB NO.2 SETTING SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-42012	1.77 to 1.82 (0.0697 to 0.0717)	A
90520-42013	1.82 to 1.87 (0.0717 to 0.0736)	B
90520-42014	1.87 to 1.92 (0.0736 to 0.0756)	C
90520-42015	1.92 to 1.97 (0.0756 to 0.0776)	D
90520-42016	1.97 to 2.02 (0.0776 to 0.0795)	E
90520-42017	2.02 to 2.07 (0.0795 to 0.0815)	F
90520-42018	2.07 to 2.12 (0.0815 to 0.0835)	G

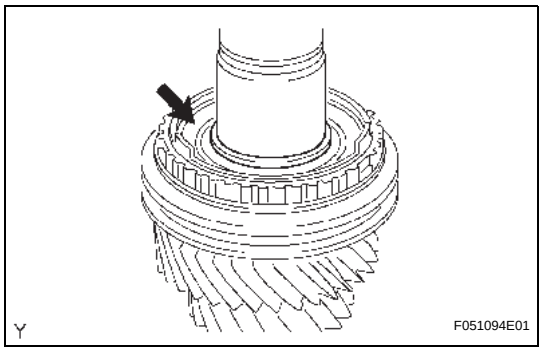
(b) Using a snap ring expander, install the snap ring onto the input shaft.



8. INSTALL NO. 2 SYNCHRONIZER RING SET

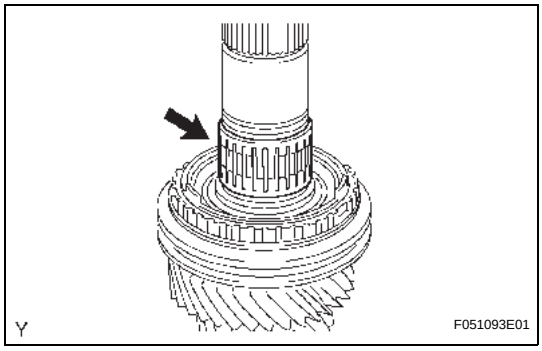
(a) Coat the synchronizer ring set No. 2 with gear oil, then install it onto the input shaft.

MT



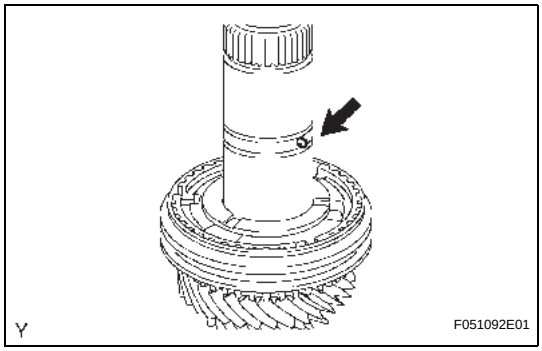
9. INSTALL SPACER

(a) Coat the spacer with gear oil, and install it onto the input shaft.



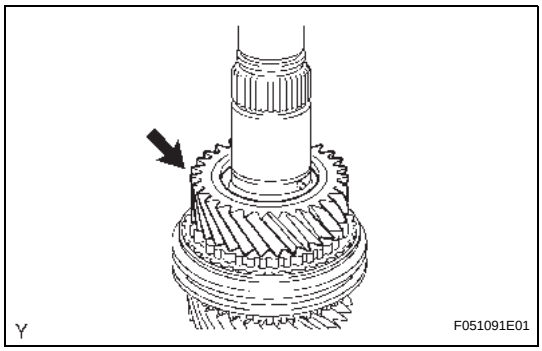
10. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

(a) Coat the 3rd gear needle roller bearing with gear oil, and install it onto the input shaft.



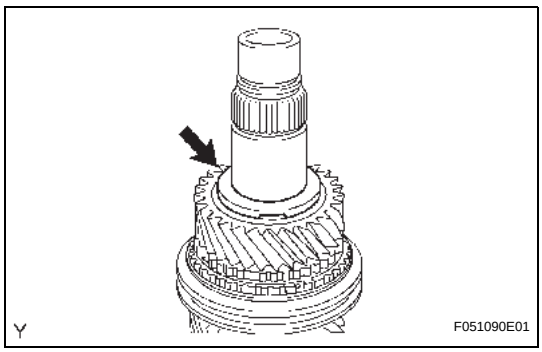
11. INSTALL STRAIGHT PIN

(a) Install the straight pin onto the input shaft.



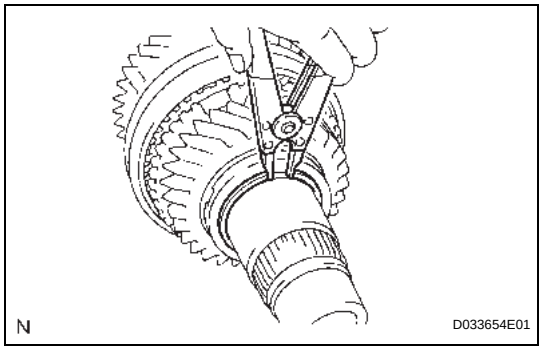
12. INSTALL 3RD GEAR

(a) Coat the 3rd gear with gear oil, and install it onto the input shaft.



13. INSTALL 3RD GEAR THRUST WASHER

(a) Coat the 3rd gear thrust washer with gear oil, and install it onto the input shaft.
HINT:
Align the straight pin with the groove of the gear thrust washer and install it.



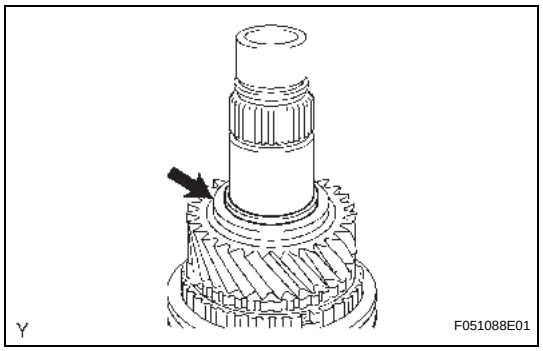
14. INSTALL GEAR THRUST WASHER SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

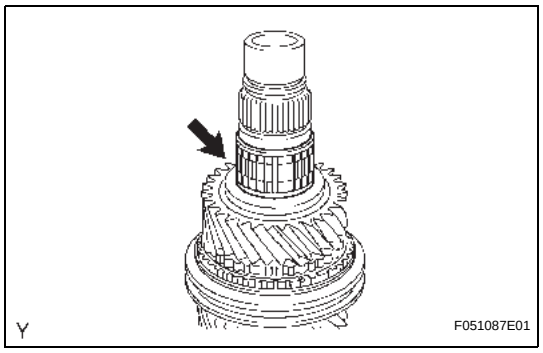
Part No.	Thickness: mm (in.)	Mark
90520-39026	2.07 to 2.12 (0.0815 to 0.0835)	A
90520-39027	2.12 to 2.17 (0.0835 to 0.0854)	B
90520-39028	2.17 to 2.22 (0.0854 to 0.0874)	C
90520-39029	2.22 to 2.27 (0.0874 to 0.0894)	D
90520-39030	2.27 to 2.32 (0.0894 to 0.0913)	E
90520-39031	2.32 to 2.37 (0.0913 to 0.0933)	F

(b) Using a snap ring expander, install the snap ring onto the input shaft.



15. INSTALL SHAFT SNAP RING

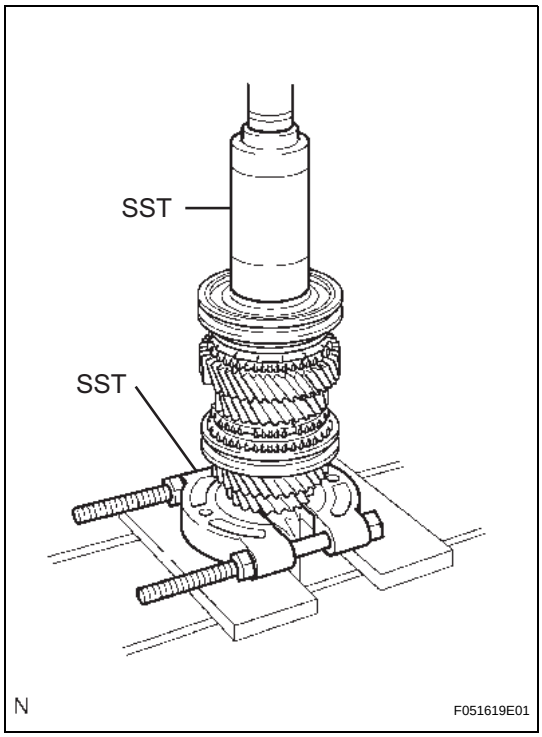
(a) Coat the shaft snap ring with gear oil, and install it onto the input shaft.



16. INSTALL 6TH GEAR NEEDLE ROLLER BEARING

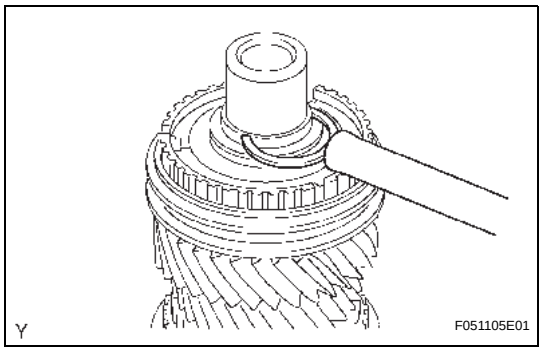
(a) Coat the 6th gear needle roller bearing with gear oil, and install it onto the input shaft.

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17. INSTALL 6TH GEAR

(a) Install the 6th gear onto the input shaft.
(b) Install the synchronizer ring onto the input shaft.
(c) Using SST and a press, install the clutch hub onto the input shaft.
SST 09309-37010, 09950-00020
(d) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.



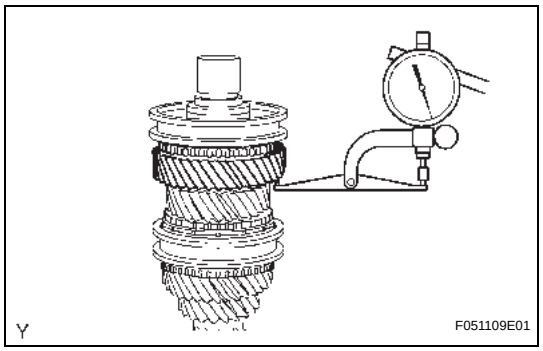
18. INSTALL TRANSMISSION CLUTCH HUB NO.3 SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-33022	2.10 to 2.15 (0.0827 to 0.0847)	A
90520-33023	2.15 to 2.20 (0.0847 to 0.0866)	B
90520-33024	2.20 to 2.25 (0.0866 to 0.0886)	C
90520-33025	2.25 to 2.30 (0.0886 to 0.0906)	D
90520-33026	2.30 to 2.35 (0.0906 to 0.0925)	E
90520-33027	2.35 to 2.40 (0.0925 to 0.0945)	F
90520-33028	2.40 to 2.45 (0.0945 to 0.0965)	G

(b) Using a brass bar and a hammer, install the snap ring onto the input shaft.

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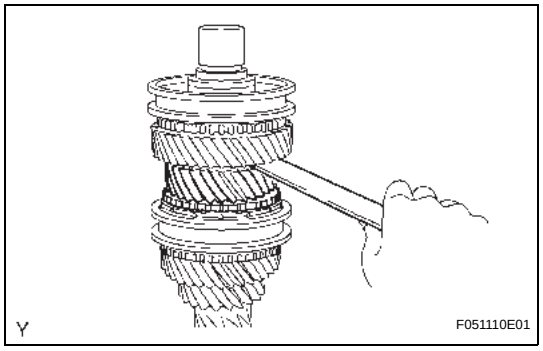
19. INSPECT 6TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 6th gear thrust clearance.

Standard clearance:

0.20 to 0.49 mm (0.0079 to 0.0193 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



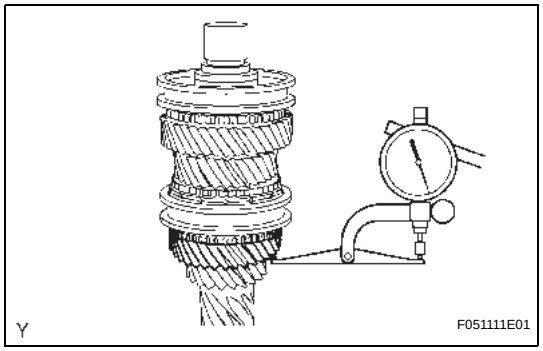
20. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:

0.09 to 0.52 mm (0.0035 to 0.0205 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 2.



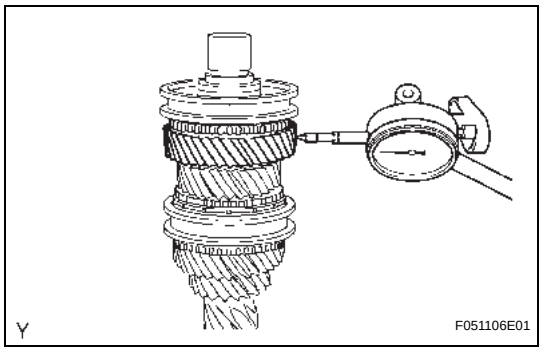
21. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 4th gear thrust clearance.

Standard clearance:

0.12 to 0.38 mm (0.0047 to 0.0150 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 3.



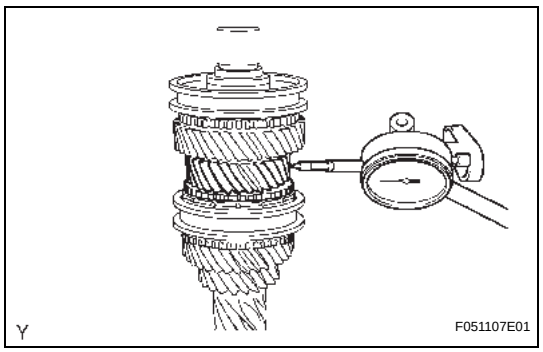
22. INSPECT 6TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 6th gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



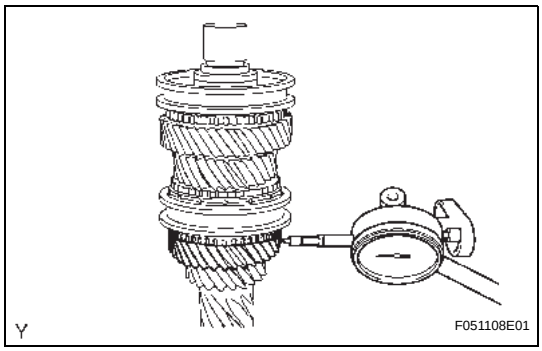
23. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.



24. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

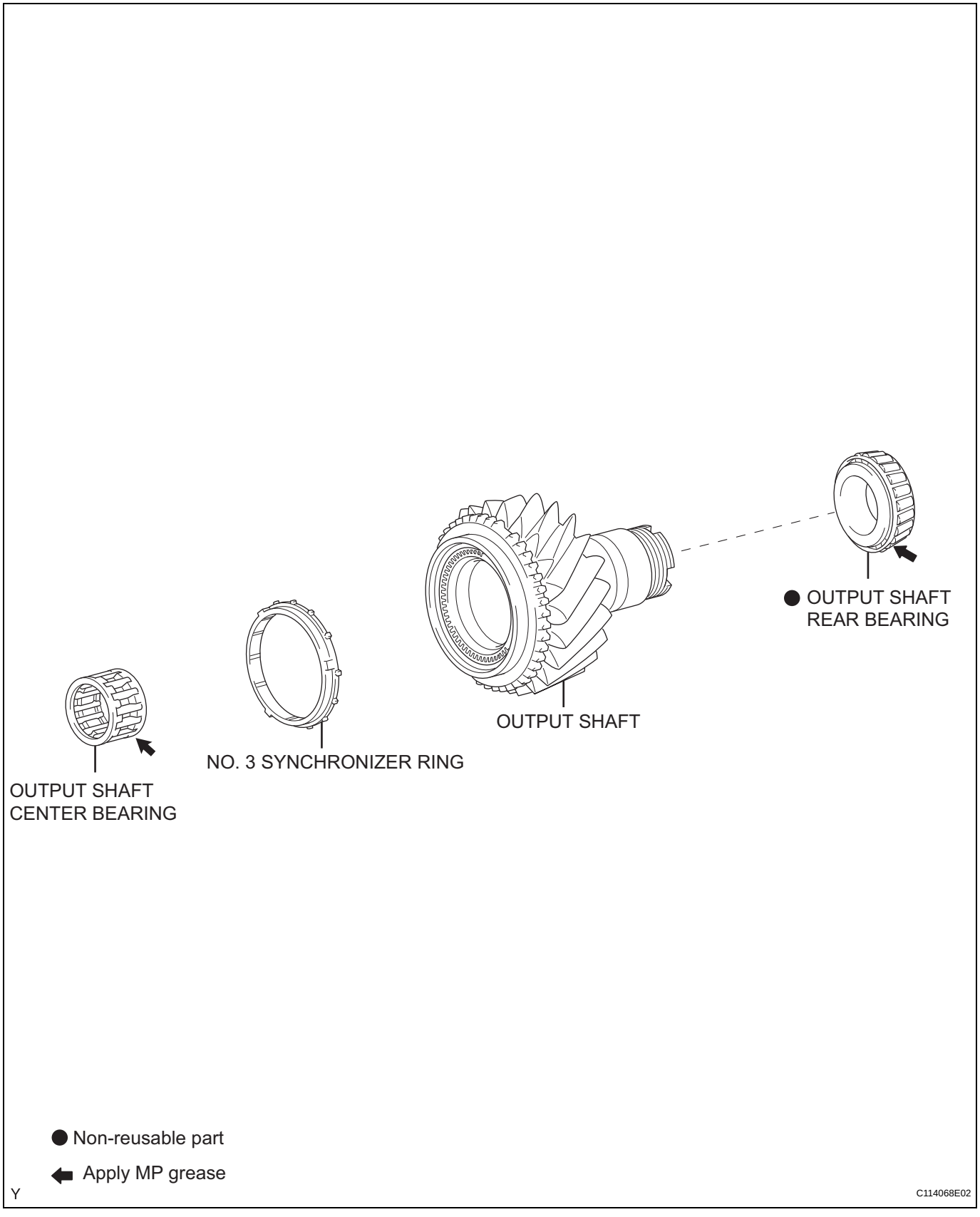
Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the defective gear, needle roller bearing or shaft.

OUTPUT SHAFT

COMPONENTS



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DISASSEMBLY

1. REMOVE NO. 3 SYNCHRONIZER RING

(a) Remove synchronizer ring No. 3 from the output shaft.

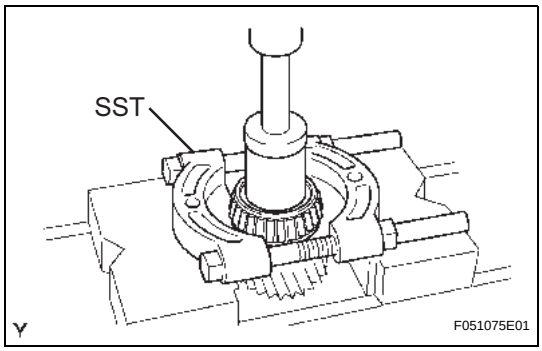
2. REMOVE OUTPUT SHAFT CENTER BEARING

(a) Remove the output shaft center bearing from the output shaft.

3. REMOVE OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, remove the output shaft rear bearing from the output shaft.

SST 09950-00020, 09950-70010 (09951-07100), 09950-60010 (09951-00510)



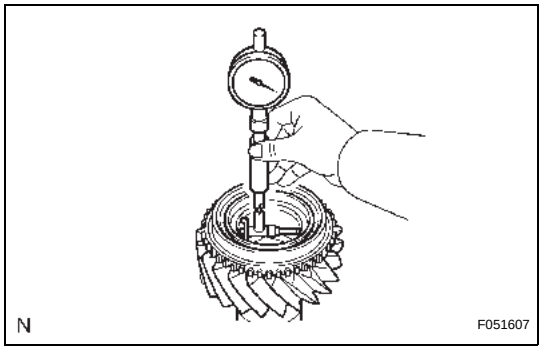
INSPECTION

1. INSPECT OUTPUT SHAFT

(a) Using a cylinder gauge, measure the inside diameter of the output shaft.

Standard inside diameter:
45.009 to 45.025 mm (1.7720 to 1.7726 in.)
Maximum inside diameter:
45.025 mm (1.7726 in.)

If the diameter exceeds the maximum, replace the output shaft.

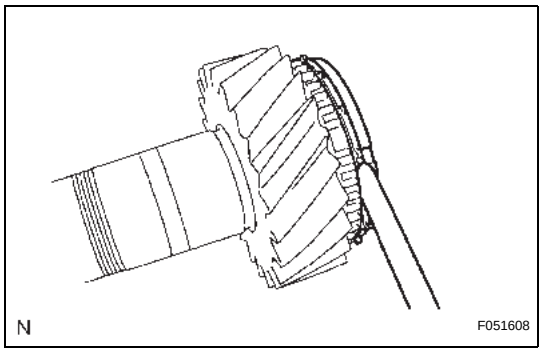


2. INSPECT NO. 3 SYNCHRONIZER RING

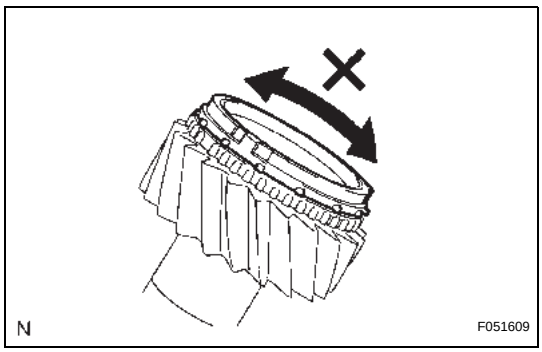
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and gear spline.

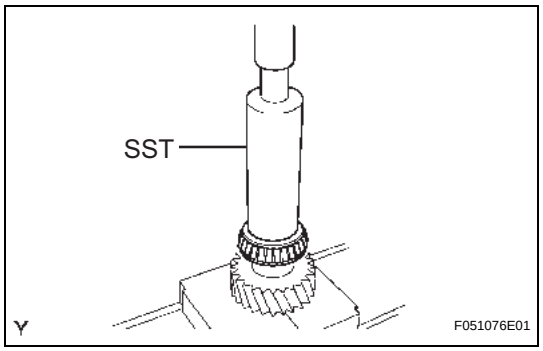
Standard clearance:
0.70 to 1.50 mm (0.0276 to 0.0591 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the output shaft and synchronizer ring cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks.





REASSEMBLY

1. INSTALL OUTPUT SHAFT REAR BEARING

(a) Using SST and a press, install a new output shaft rear bearing onto the output shaft.
SST 09316-60011 (09316-00011)

(b) Apply a light coat of grease to the bearing.

2. INSTALL OUTPUT SHAFT CENTER BEARING

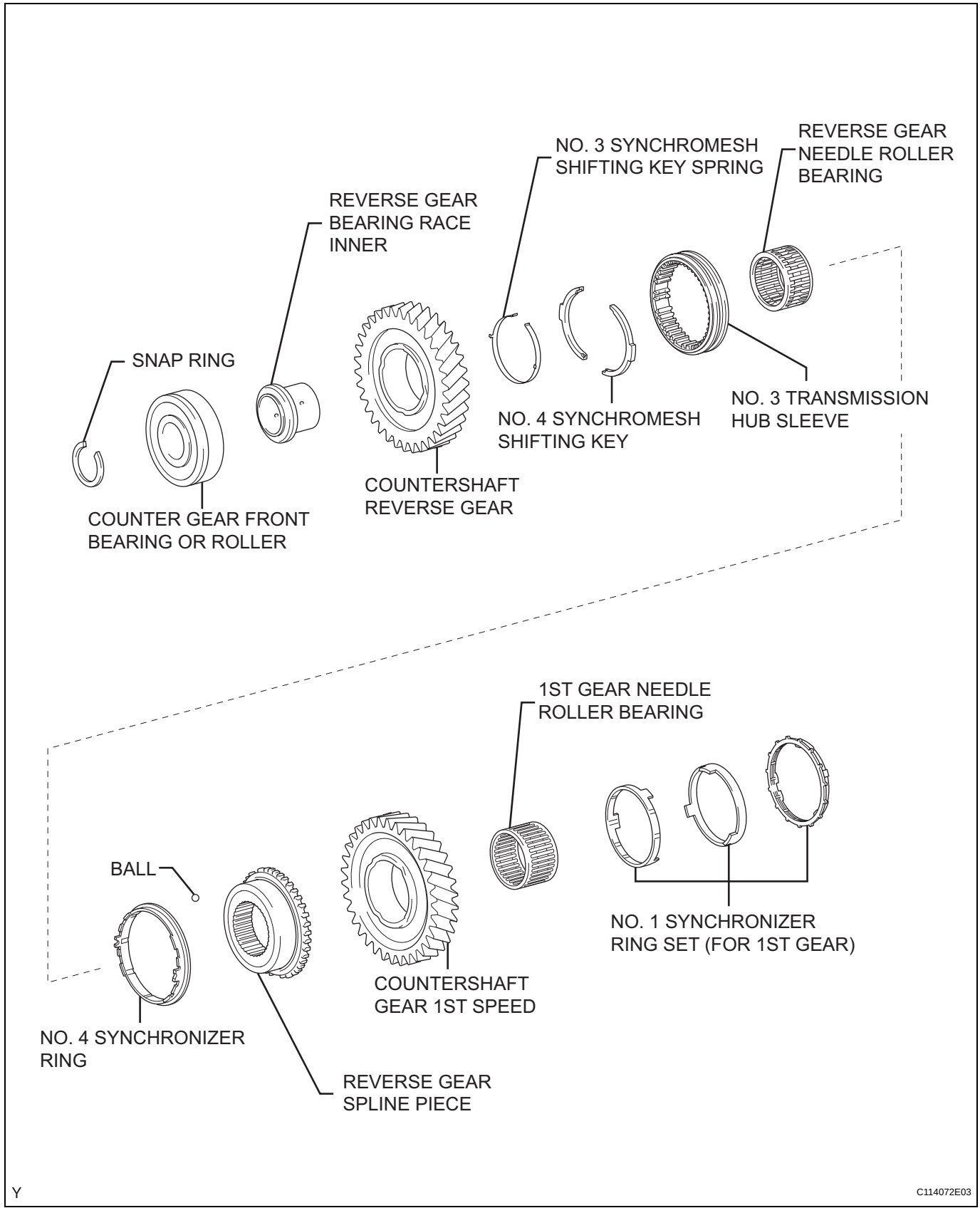
(a) Apply gear grease to the output shaft center bearing to the output shaft, and install it onto the output shaft.

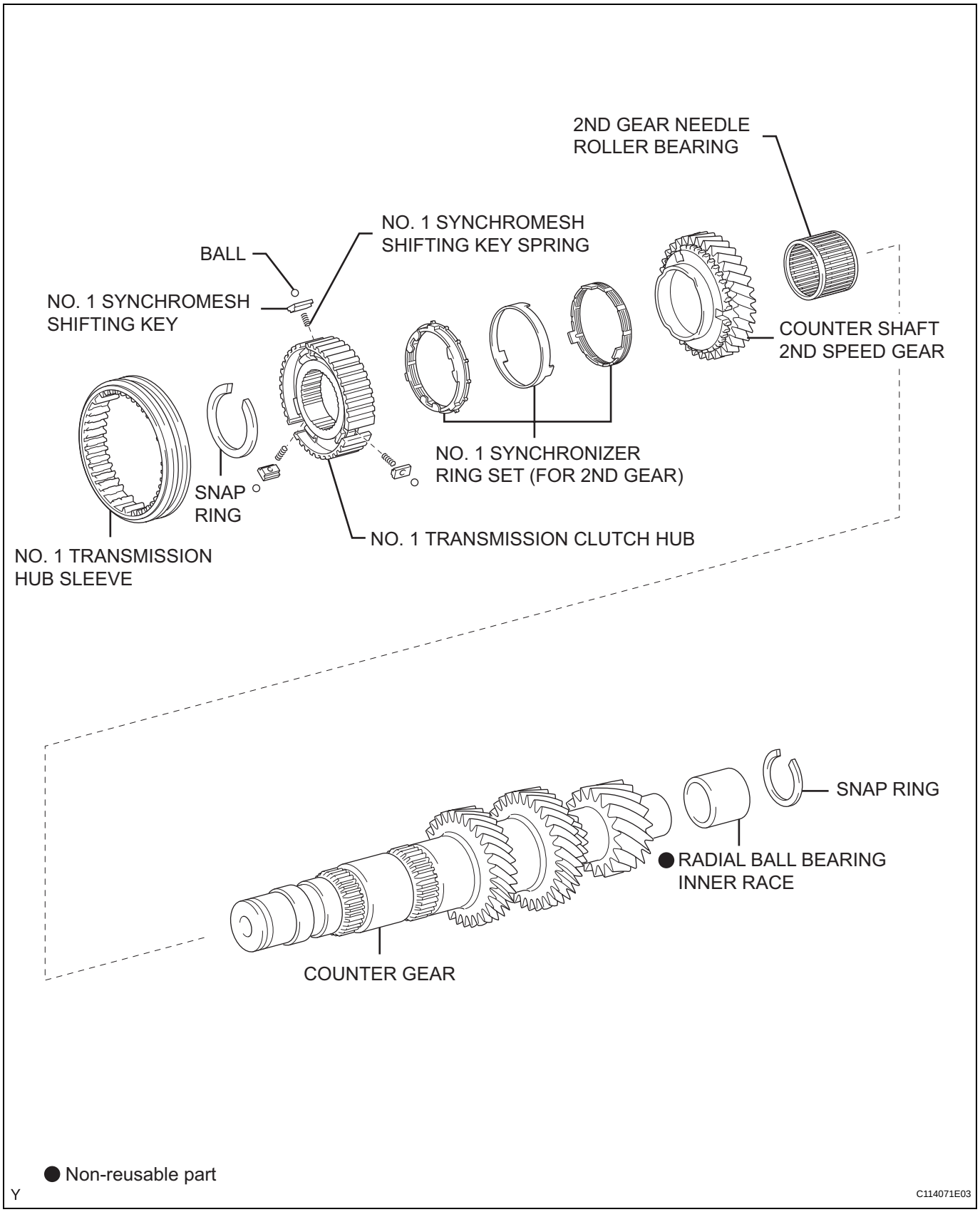
3. INSTALL NO. 3 SYNCHRONIZER RING

(a) Apply gear oil to synchronizer ring No. 3, and install it onto the output shaft.

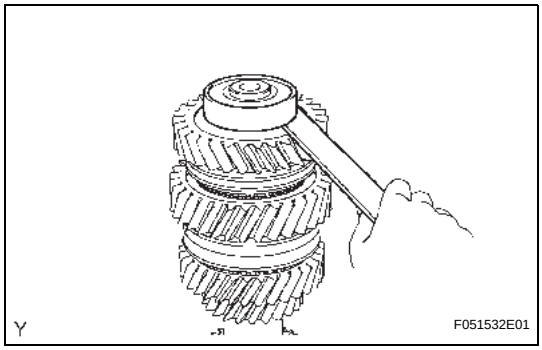
COUNTER GEAR AND REVERSE IDLER GEAR

COMPONENTS




2ND GEAR NEEDLE ROLLER BEARING
NO. 1 SYNCHROMESH SHIFTING KEY SPRING
BALL
NO. 1 SYNCHROMESH SHIFTING KEY
COUNTER SHAFT 2ND SPEED GEAR
NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)
SNAP RING
NO. 1 TRANSMISSION CLUTCH HUB
NO. 1 TRANSMISSION HUB SLEEVE
SNAP RING
● RADIAL BALL BEARING INNER RACE
COUNTER GEAR
● Non-reusable part
Y
C114071E03

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DISASSEMBLY

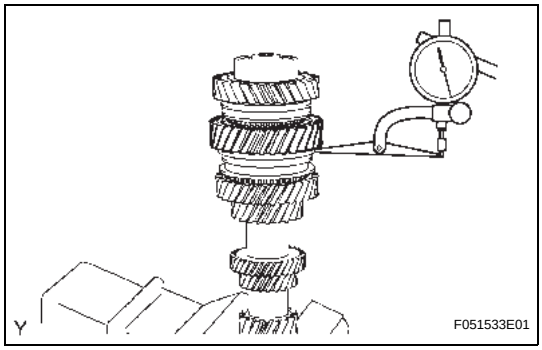
1. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



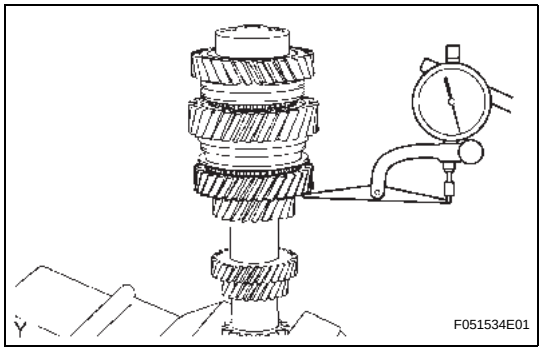
2. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



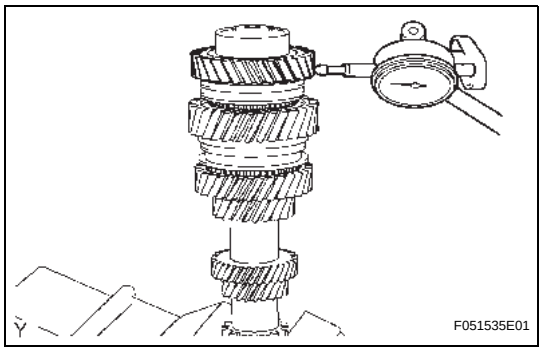
3. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



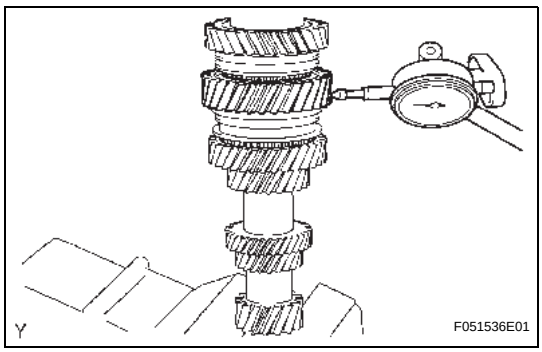
4. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



5. INSPECT 1ST GEAR RADIAL CLEARANCE

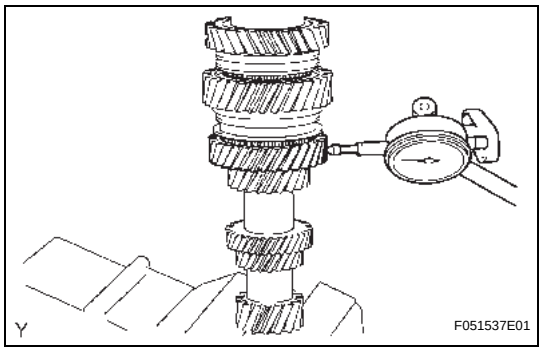
(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.

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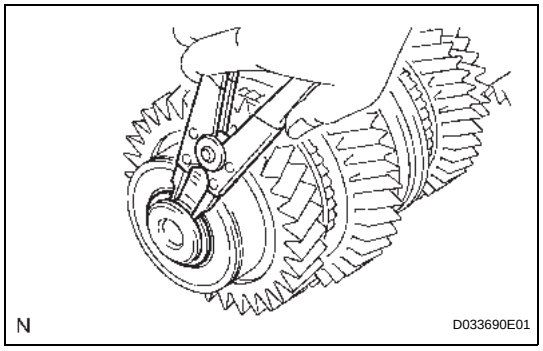
6. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

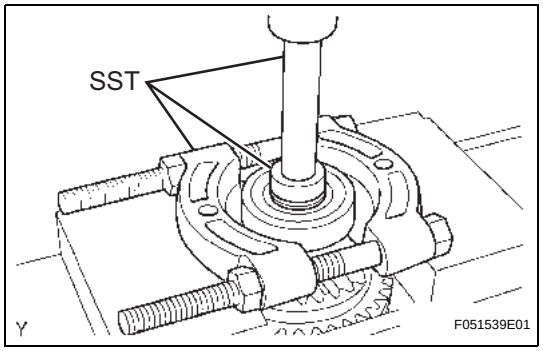
0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.



7. REMOVE COUNTER GEAR FRONT BEARING SNAP RING NO.1

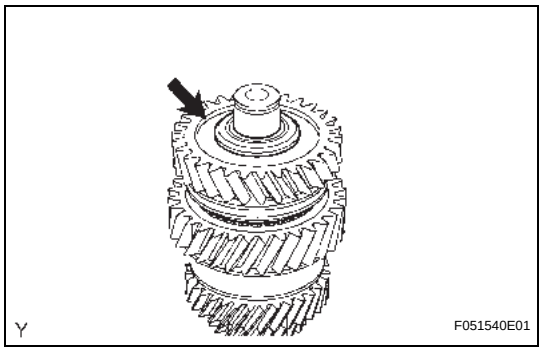
(a) Using a snap ring expander, remove the snap ring from the counter gear.



8. REMOVE COUNTER GEAR FRONT BEARING OR ROLLER

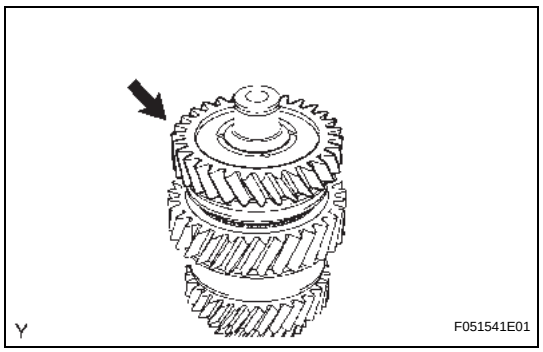
(a) Using SST and a press, remove the counter gear front bearing or roller from the counter gear.

SST 09950-00020, 09950-70010 (09951-07100), 09950-60010 (09951-00320)



9. REMOVE REVERSE GEAR BEARING RACE INNER

(a) Remove the reverse gear bearing race inner from the counter gear.

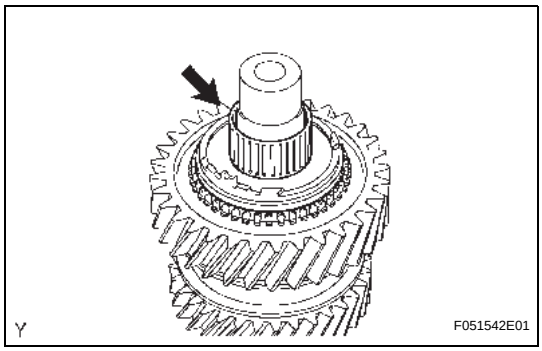


10. REMOVE COUNTERSHAFT REVERSE GEAR

(a) Remove the countershaft reverse gear from the counter gear.

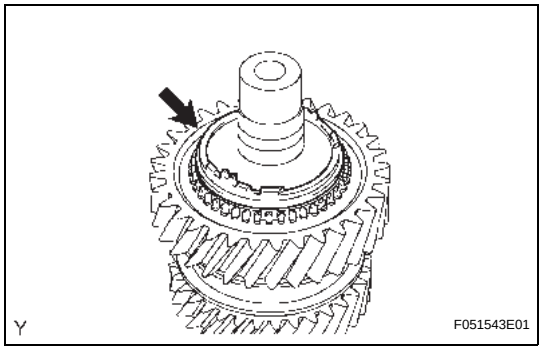
(b) Remove the hub sleeve, 2 shifting keys and key spring from the countershaft reverse gear.

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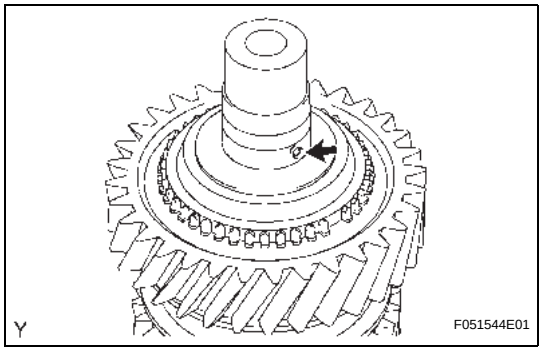
11. REMOVE REVERSE GEAR NEEDLE ROLLER BEARING

(a) Remove the reverse gear needle roller bearing from the counter gear.



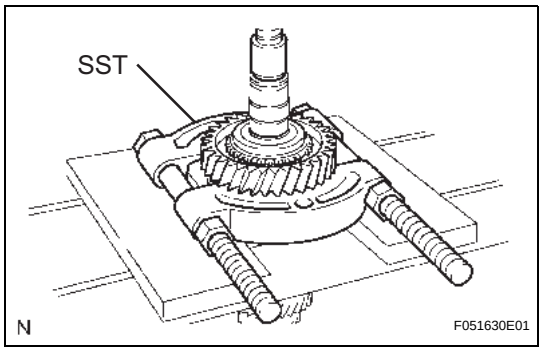
12. REMOVE NO. 4 SYNCHRONIZER RING

(a) Remove the synchronizer ring No. 4 from the counter gear.



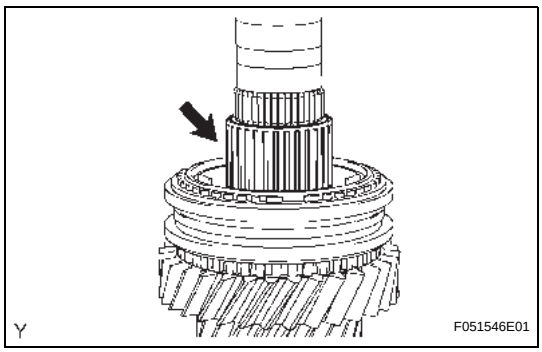
13. REMOVE BALL

(a) Remove the ball from the counter gear.



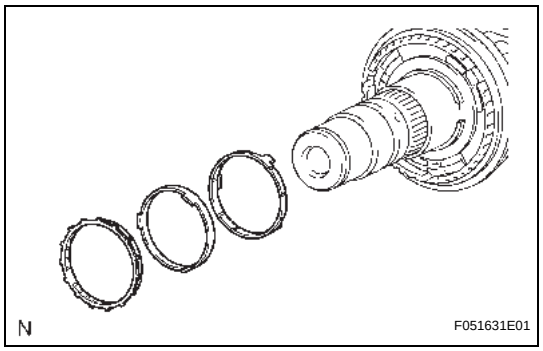
14. REMOVE COUNTERSHAFT GEAR 1ST SPEED

(a) Using a press, remove the countershaft gear 1st speed together with reverse gear spline piece from the counter gear.
SST 09950-00020



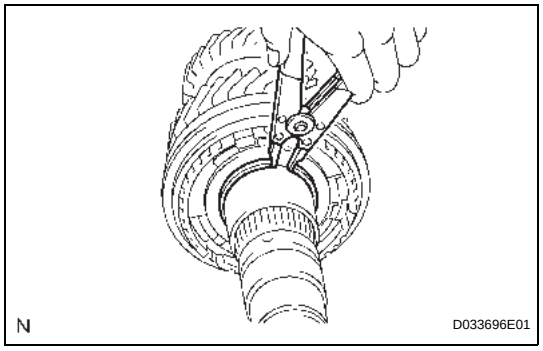
15. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

(a) Remove the 1st gear needle roller bearing from the counter gear.



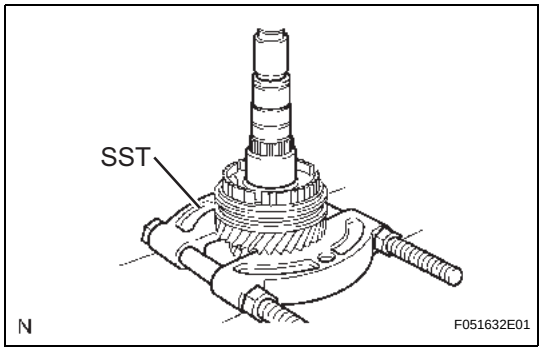
16. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

(a) Remove the synchronizer ring set No. 1 from the counter gear.



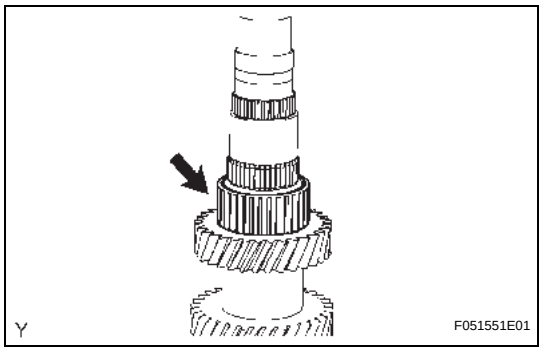
17. REMOVE CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Using a snap ring expander, remove the snap ring from the counter gear.



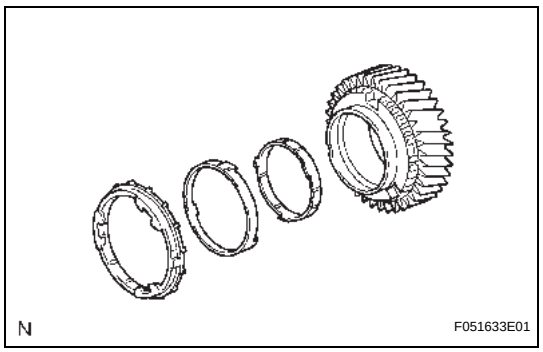
18. REMOVE COUNTER SHAFT 2ND SPEED GEAR

(a) Using a press, remove the counter shaft 2nd speed gear together with transmission clutch hub No. 1 from the counter gear.
SST 09950-00020



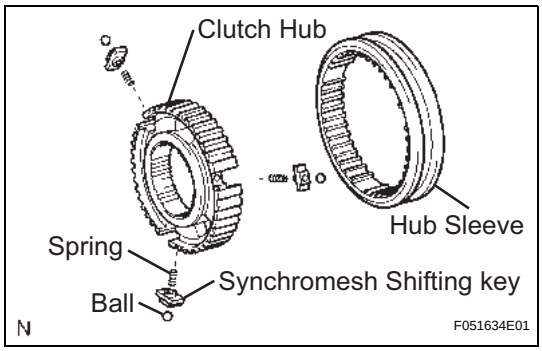
19. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

(a) Remove the 2nd needle roller bearing from the counter gear.



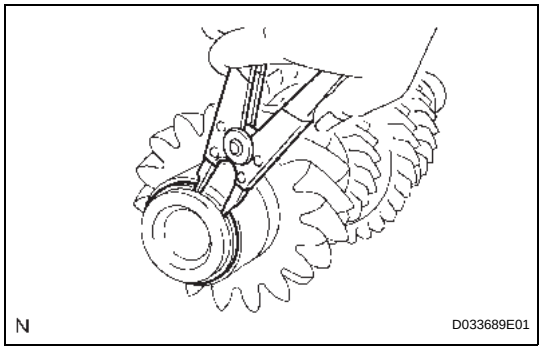
20. REMOVE NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Remove the synchronizer ring set No. 1 from the 2nd gear.



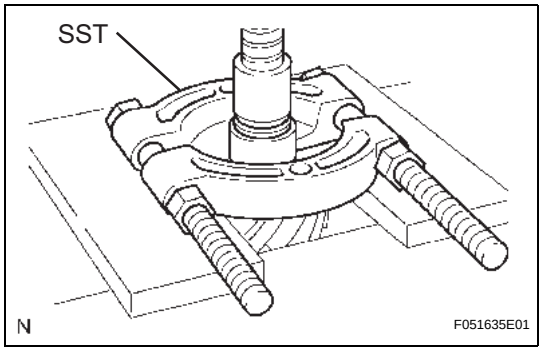
21. REMOVE NO. 1 TRANSMISSION CLUTCH HUB

(a) Remove the hub sleeve, 3 synchromesh shifting keys, 3 balls and 3 springs from the clutch hub.
HINT:
Use a shop rag to prevent the ball and spring from flying off.



22. REMOVE SNAP RING COUNTER GEAR REAR BEARING

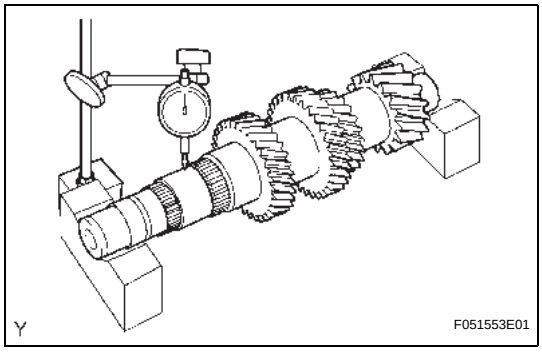
(a) Using a snap ring expander, remove the snap ring from the counter gear.



23. REMOVE RADIAL BALL BEARING INNER RACE

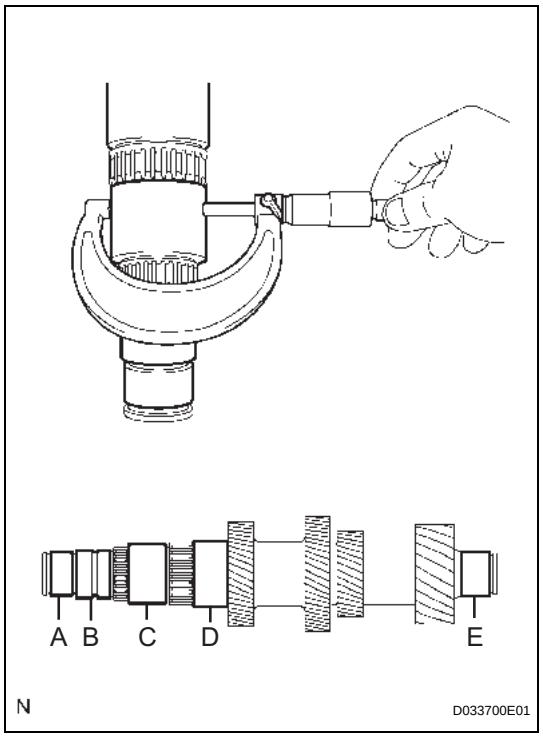
(a) Using SST and a press, remove the needle roller bearing inner race.
SST 09950-00020

INSPECTION



1. INSPECT COUNTER GEAR

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout:
0.03 mm (0.0012 in.)
If the runout exceeds the maximum, replace the counter gear.



(b) Using a micrometer, measure the outer diameter of the input shaft journal surface.

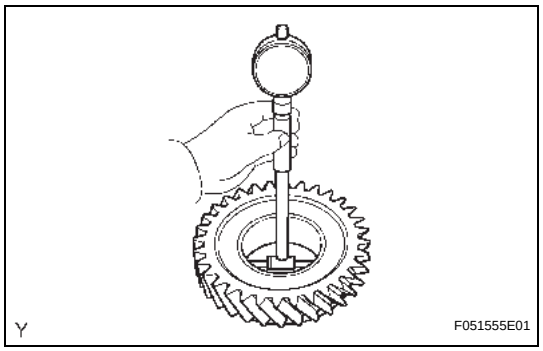
Standard

Part	Outer diameter mm (in.)
A	34.002 to 34.015 (1.3387 to 1.3392)
B	36.985 to 37.000 (1.4561 to 1.4567)
C	47.985 to 48.000 (1.8892 to 1.8898)
D	53.985 to 54.000 (2.1254 to 2.1260)
E	34.002 to 34.015 (1.3387 to 1.3392)

Minimum

Part	Outer diameter mm (in.)
A	34.002 (1.3387)
B	36.985 (1.4561)
C	47.985 (1.8892)
D	53.985 (2.1254)
E	34.002 (1.3387)

If the diameter is less than the minimum, replace the counter gear shaft.

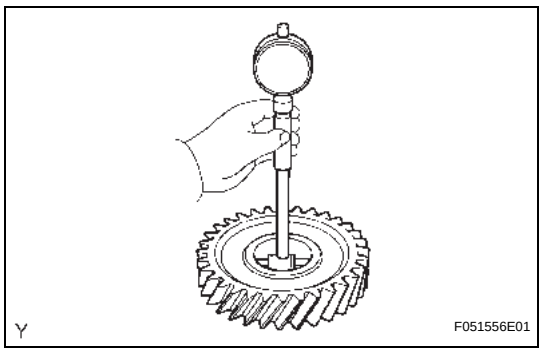


2. INSPECT COUNTERSHAFT REVERSE GEAR

(a) Using cylinder gauge, measure the inside diameter of the reverse gear.

Standard inside diameter:
51.015 to 51.040 mm (2.0085 to 2.0095 in.)
Maximum inside diameter:
51.040 mm (2.0095 in.)

If the inside diameter exceeds the maximum, replace the reverse gear.

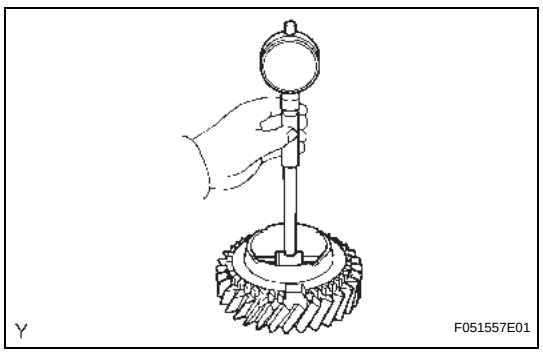


3. INSPECT COUNTERSHAFT GEAR 1ST SPEED

(a) Using cylinder gauge, measure the inside diameter of the 1st gear.

Standard inside diameter:
54.015 to 54.040 mm (2.1266 to 2.1276 in.)
Maximum inside diameter:
54.040 mm (2.1276 in.)

If the inside diameter exceeds the maximum, replace the 1st gear.



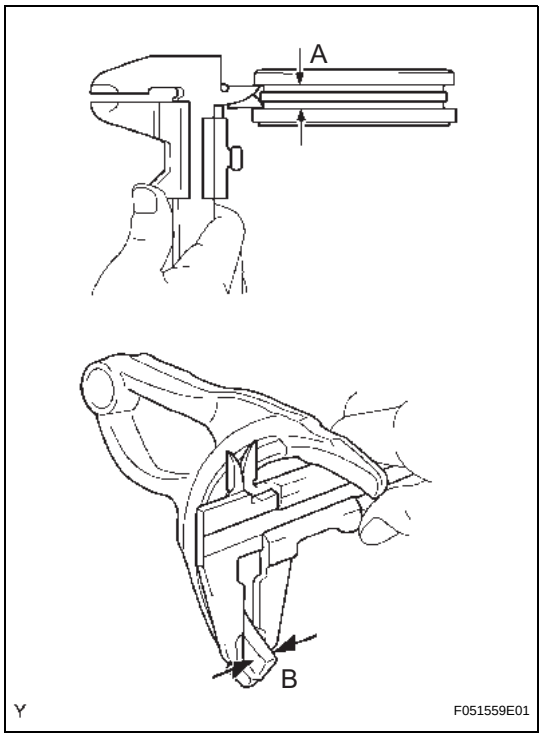
4. INSPECT COUNTER SHAFT 2ND SPEED GEAR

(a) Using cylinder gauge, measure the inside diameter of the 2nd gear.

Standard inside diameter:
60.015 to 60.040 mm (2.3628 to 2.3638 in.)
Maximum inside diameter:
60.040 mm (2.3638 in.)

If the inside diameter exceeds the maximum, replace the 2nd gear.

MT



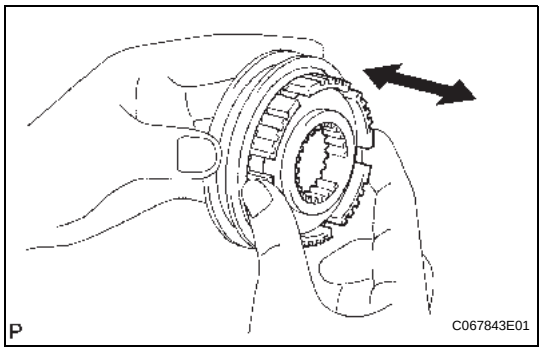
5. INSPECT NO. 3 TRANSMISSION HUB SLEEVE

(a) Using vernier calipers, measure the width of the transmission hub sleeve No. 3 groove (A) and the thickness of the claw part on the gear shift fork No. 4 (B), and calculate the clearance.

Standard clearance (A - B):

0.26 to 0.84 mm (0.0102 to 0.0331 in.)

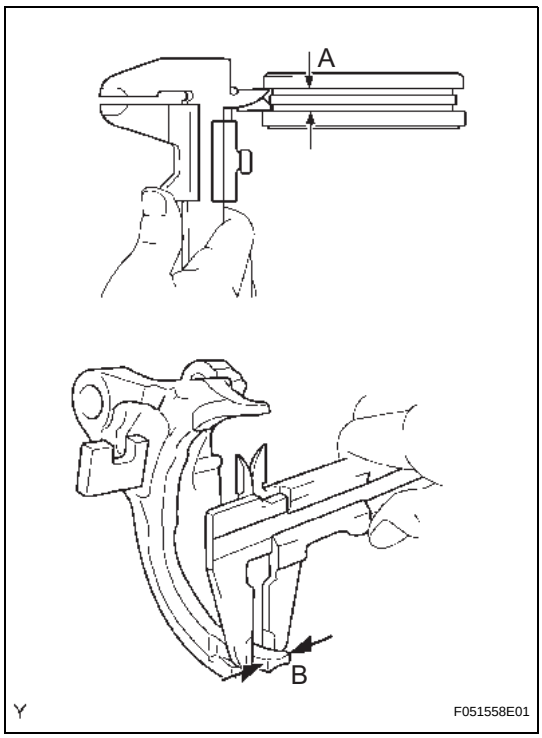
If the clearance is outside the specification, replace the transmission hub sleeve No. 3 and gear shift fork No. 4.



6. INSPECT NO. 1 TRANSMISSION HUB SLEEVE

(a) Check the sliding condition between the transmission hub No. 1 and transmission hub sleeve No. 1.

(b) Check that the spline gear teeth of the transmission hub sleeve No. 1 are not worn.

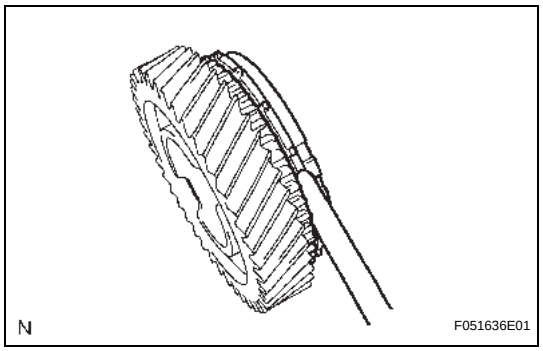


(c) Using vernier calipers, measure the width of the transmission hub sleeve No. 1 groove (A) and the thickness of the claw part on the gear shift fork No. 1 (B), and calculate the clearance.

Standard clearance (A - B):

0.15 to 0.35 mm (0.0059 to 0.0138 in.)

If the clearance is outside the specification, replace the transmission hub sleeve No. 1 and gear shift fork No. 1.

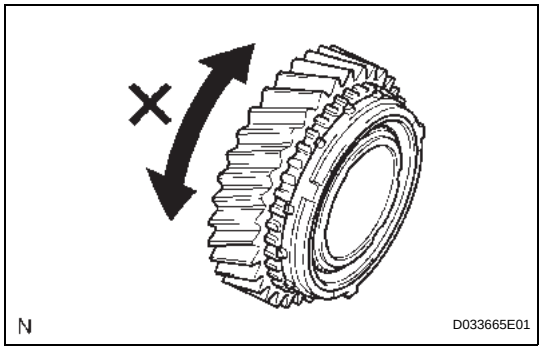


7. INSPECT NO. 4 SYNCHRONIZER RING

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and reverse gear.

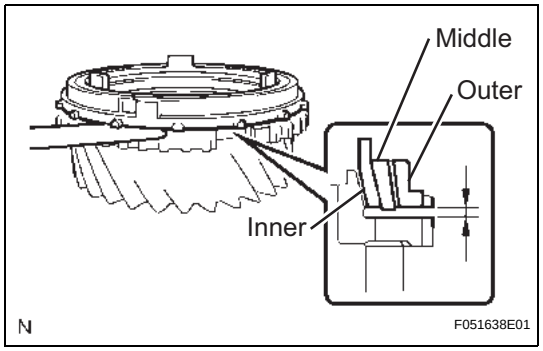
Standard clearance:
0.70 to 1.30 mm (0.0276 to 0.0512 in.)
Minimum clearance:
0.70 mm (0.0276 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the reverse gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the reverse gear cone. Check that the ring locks.

MT

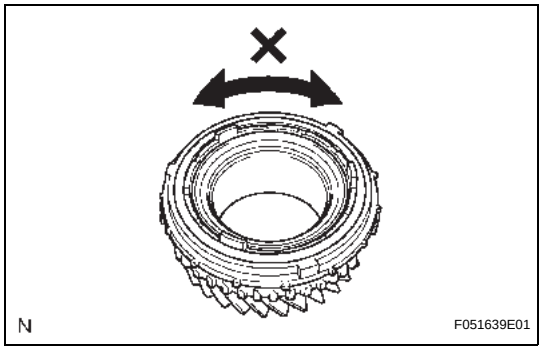


8. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

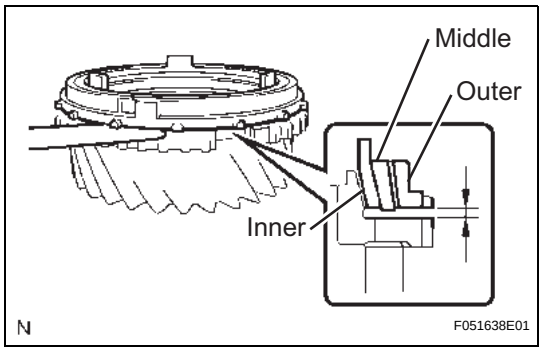
(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 1st gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



(b) Coat the 1st gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 1st gear cone. Check that the ring locks.

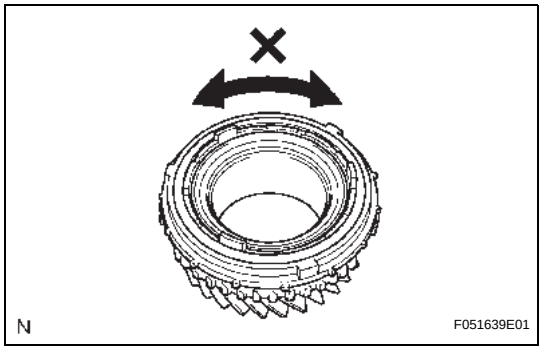


9. INSPECT NO. 1 SYNCHRONIZER RING SET (FOR 2ND GEAR)

(a) Using a feeler gauge, measure the clearance between the synchronizer ring and 2nd gear.

Standard clearance:
Inner:
1.48 to 2.12 mm (0.0583 to 0.0835 in.)
Middle:
0.68 to 1.92 mm (0.0268 to 0.0756 in.)
Outer:
0.88 to 1.72 mm (0.0346 to 0.0677 in.)
Minimum clearance:
Inner:
1.48 mm (0.0583 in.)
Middle:
0.68 mm (0.0268 in.)
Outer:
0.88 mm (0.0346 in.)

If the clearance is less than the minimum, replace the synchronizer ring.



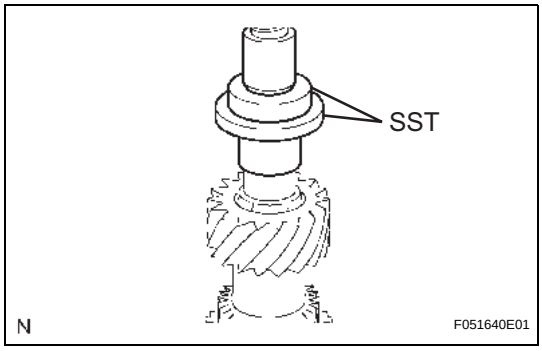
(b) Coat the 2nd gear cone with gear oil. Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the 2nd gear cone. Check that the ring locks.

REASSEMBLY

1. INSTALL RADIAL BALL BEARING INNER RACE

(a) Using SST and a press, install a new needle roller bearing inner race.

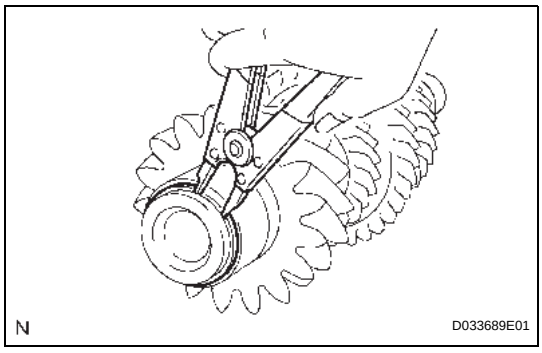
SST 09950-60010 (09951-00540)



2. INSTALL SNAP RING COUNTER GEAR REAR BEARING

(a) Select a snap ring that will allow minimum axial play.

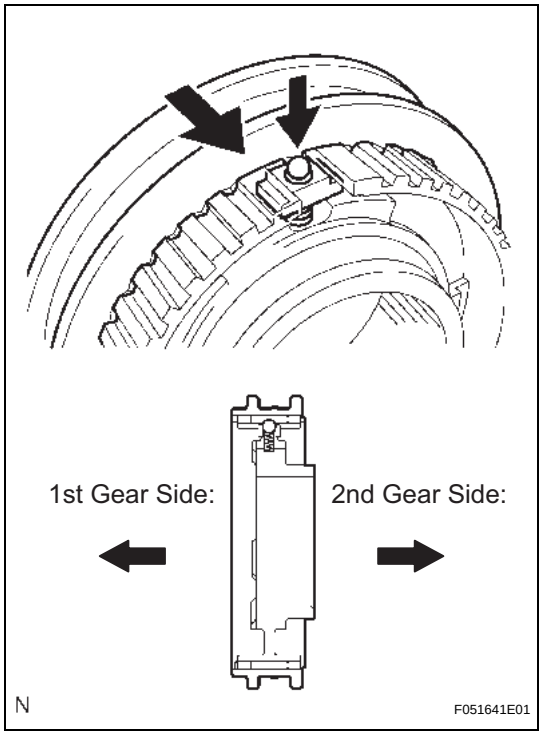
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness



Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C

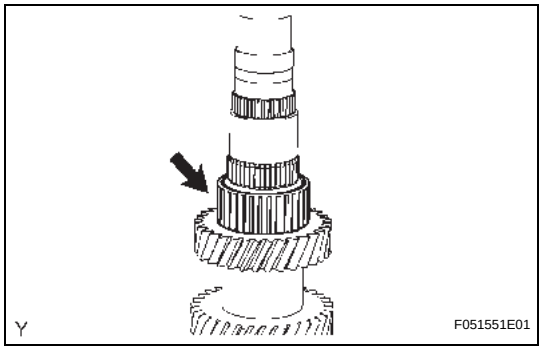
Part No.	Thickness: mm (in.)	Mark
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
90520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



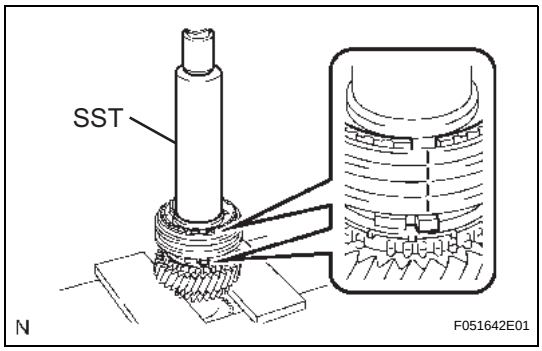
3. INSTALL NO. 1 TRANSMISSION CLUTCH HUB

(a) Apply a light coat of gear oil to the sleeve and hub.
(b) Install the clutch hub sleeve onto the clutch hub.
(c) Install the 3 shifting keys onto the clutch hub.
(d) Install the 3 shifting key springs onto the clutch hub.
(e) Place the ball in the hole of the shifting key, and install the hub sleeve while pushing in the ball.
NOTICE:
Take care to prevent the ball from flying off.



4. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

(a) Coat the 2nd gear needle roller bearing with gear oil, then install it onto the counter gear.



5. INSTALL COUNTER SHAFT 2ND SPEED GEAR

(a) Coat the countershaft 2nd speed gear with gear oil, then install it onto the counter gear.

(b) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.

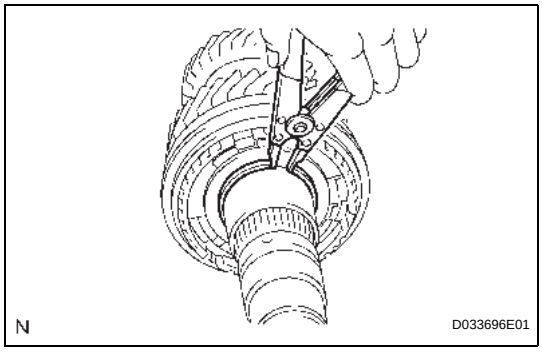
(c) Using SST and a press, install the transmission clutch hub No. 1 onto the counter gear.

SST 09308-14010

HINT:

Align the convex portion of the synchronizer ring with the groove of the clutch hub.

(d) Install the clutch hub and confirm that the gear and synchronizer ring move smoothly.



6. INSTALL CLUTCH HUB NO.1 SHAFT SNAP RING

(a) Select a snap ring that will allow minimum axial play.

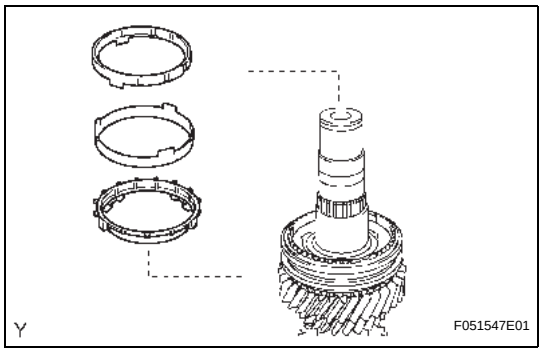
Standard clearance:

0.1 mm (0.004 in.) or less

Snap ring thickness

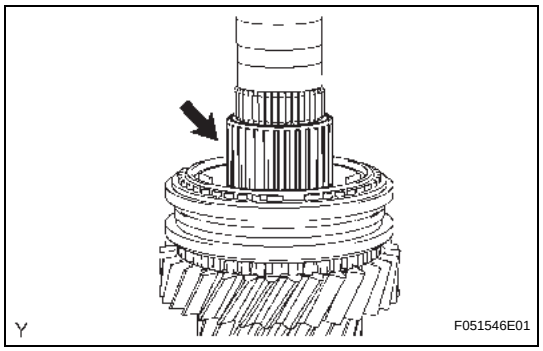
Part No.	Thickness: mm (in.)	Mark
90520-45013	2.28 to 2.33 (0.0898 to 0.0917)	A
90520-45014	2.33 to 2.38 (0.0917 to 0.0937)	B
90520-45015	2.38 to 2.43 (0.0937 to 0.0957)	C
90520-45016	2.43 to 2.48 (0.0957 to 0.0976)	D
90520-45017	2.48 to 2.53 (0.0976 to 0.0996)	E
90520-45018	2.53 to 2.58 (0.0996 to 0.1016)	F
90520-45019	2.58 to 2.63 (0.1016 to 0.1035)	G

(b) Using a snap ring expander, install the snap ring onto the counter gear.



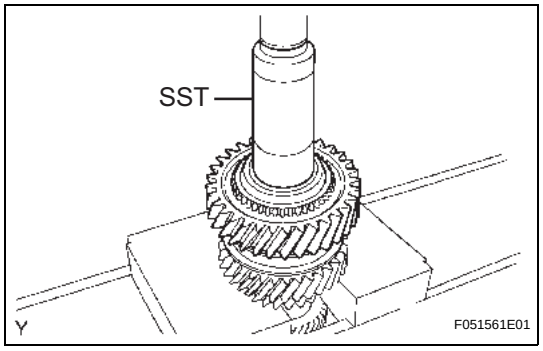
7. INSTALL NO. 1 SYNCHRONIZER RING SET (FOR 1ST GEAR)

(a) Coat the synchronizer ring set No. 1 with gear oil, then install it onto the counter gear.



8. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

(a) Coat the 1st gear needle roller bearing with gear oil, then install it onto the counter gear.

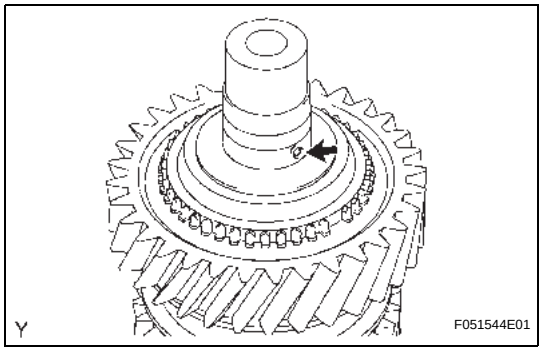


9. INSTALL COUNTERSHAFT GEAR 1ST SPEED

(a) Coat the countershaft gear 1st speed with gear oil, and install it onto the counter gear.

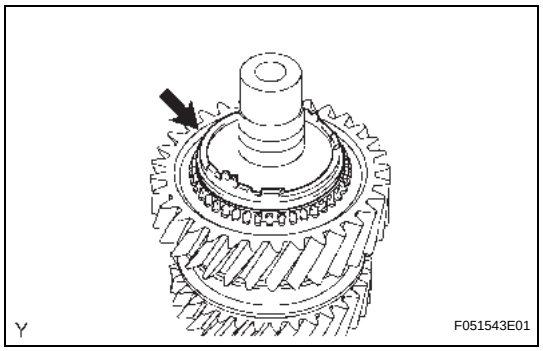
(b) Using SST and a press, install the reverse gear spline piece.

SST 09309-37010



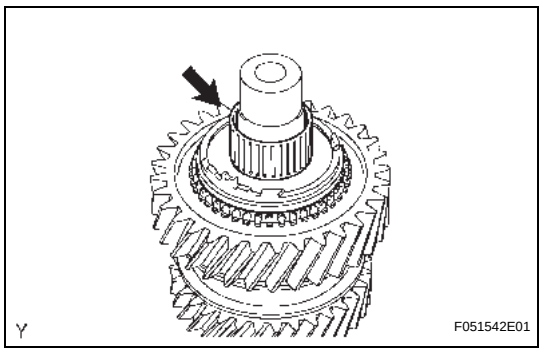
10. INSTALL BALL

(a) Install the ball into the counter gear.



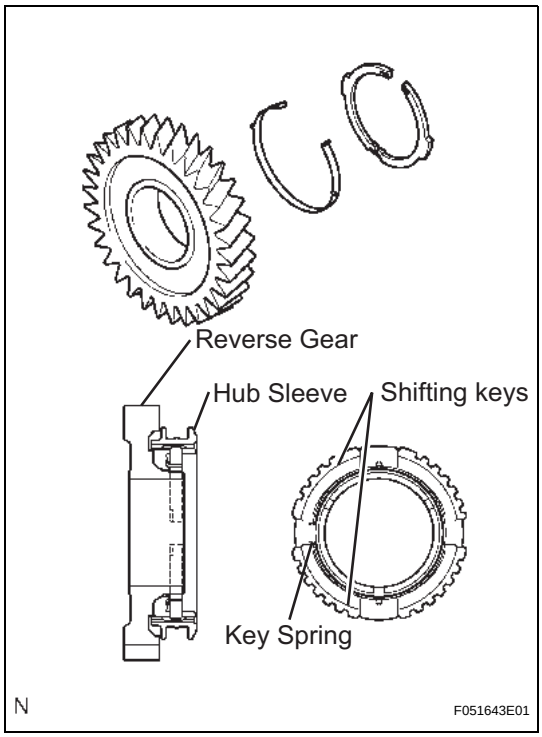
11. INSTALL NO. 4 SYNCHRONIZER RING

(a) Coat the synchronizer ring No. 4 with gear oil, and install it onto the counter gear.



12. INSTALL REVERSE GEAR NEEDLE ROLLER BEARING

(a) Coat the reverse gear needle roller bearing with gear oil, and install it onto the counter gear.

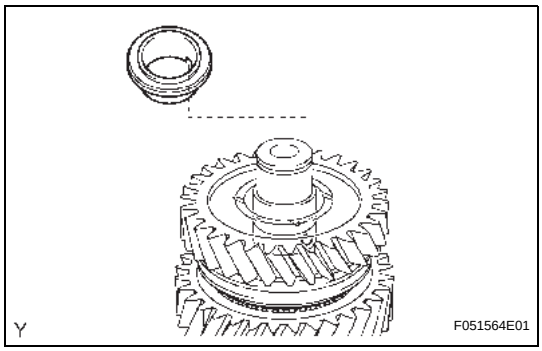


13. INSTALL COUNTERSHAFT REVERSE GEAR

(a) Install the key spring and 2 shifting keys onto the reverse gear.
HINT:
- Install the shifting key with its groove on the reverse gear side.
- Install the key spring with its claw on the reverse gear side.
- Refer to the illustration when installing the key spring.

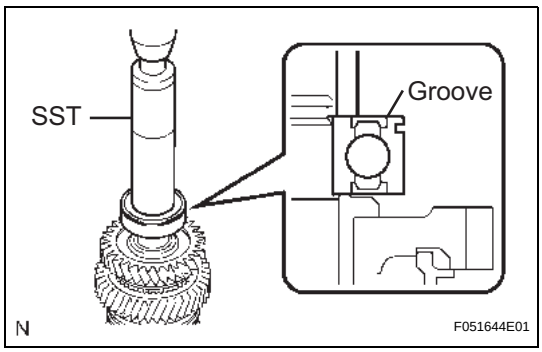
(b) Install the hub sleeve onto the reverse gear.

(c) Coat the countershaft reverse gear with gear oil, then install it onto the counter gear.



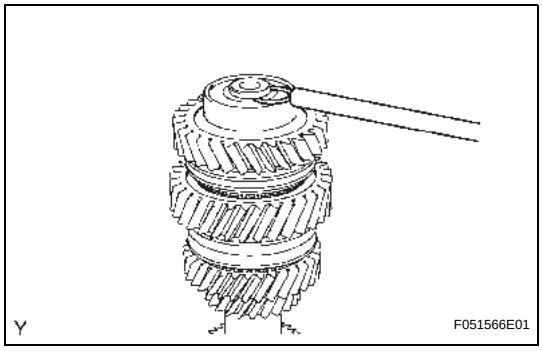
14. INSTALL REVERSE GEAR BEARING RACE INNER

(a) Align the groove of the reverse gear bearing race inner with the ball, and install them.



15. INSTALL COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using SST and a press, install counter gear front bearing or roller onto the counter gear.
SST 09608-06041
HINT:
Make sure that the groove of the bearing faces the correct direction as shown in the illustration.



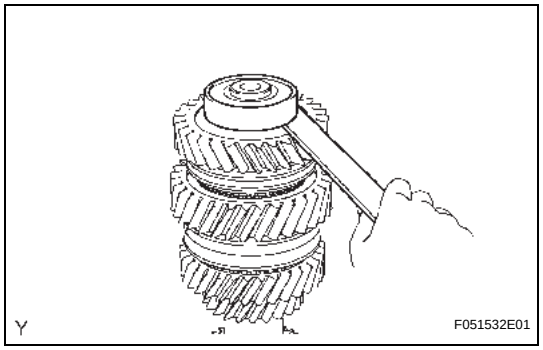
16. REMOVE NO. 1 COUNTER GEAR FRONT BEARING SNAP RING

(a) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-31015	2.35 to 2.40 (0.0925 to 0.0945)	A

Part No.	Thickness: mm (in.)	Mark
90520-31016	2.40 to 2.45 (0.0945 to 0.0965)	B
90520-31017	2.45 to 2.50 (0.0965 to 0.0984)	C
90520-31018	2.50 to 2.55 (0.0984 to 0.1004)	D
90520-31019	2.55 to 2.60 (0.1004 to 0.1024)	E
90520-31020	2.60 to 2.65 (0.1024 to 0.1043)	F
90520-31021	2.65 to 2.70 (0.1043 to 0.1063)	G
90520-31022	2.70 to 2.75 (0.1063 to 0.1083)	H
90520-31023	2.75 to 2.80 (0.1083 to 0.1102)	J
90520-31024	2.80 to 2.85 (0.1102 to 0.1122)	K
90520-31025	2.85 to 2.90 (0.1122 to 0.1142)	L
0520-31033	2.90 to 2.95 (0.1142 to 0.1161)	M

(b) Using a snap ring expander, install the snap ring onto the counter gear.



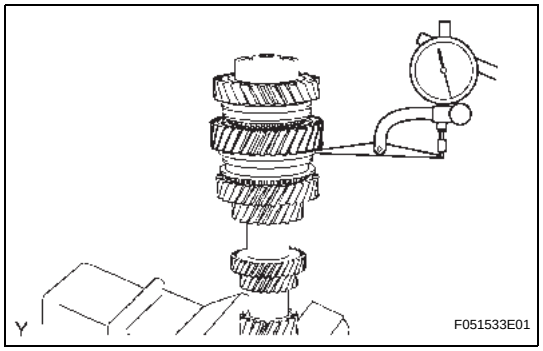
17. INSPECT REVERSE GEAR THRUST CLEARANCE

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

Standard clearance:

0.12 to 0.37 mm (0.0047 to 0.0146 in.)

If the clearance is outside the specification, replace the synchronizer ring No. 4.



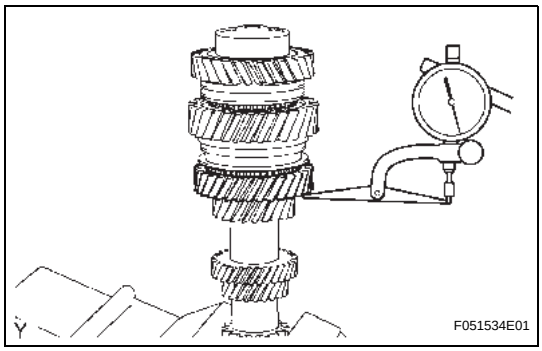
18. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



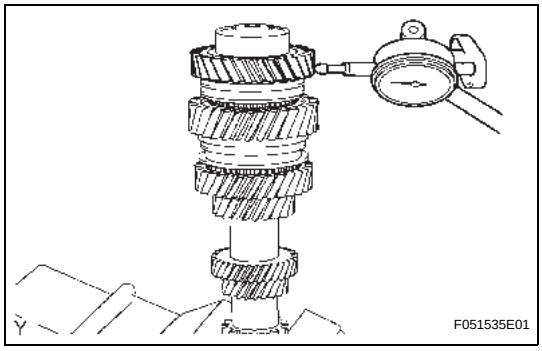
19. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 to 0.43 mm (0.0039 to 0.0169 in.)

If the clearance is outside the specification, replace the synchronizer ring set No. 1.



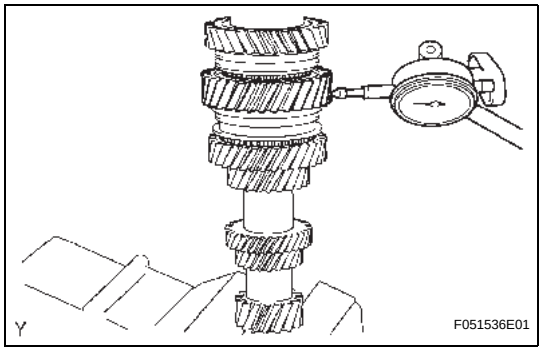
20. INSPECT REVERSE GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the reverse gear radial clearance.

Standard clearance:

0.015 to 0.065 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the reverse gear needle roller bearing or shaft.



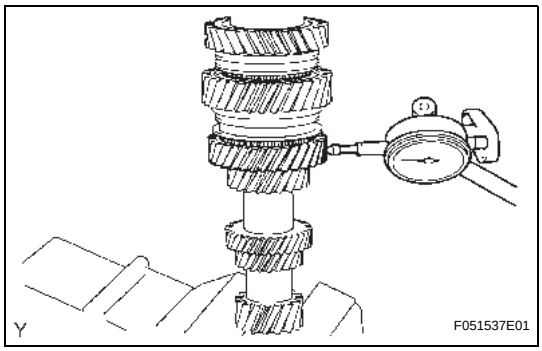
21. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 1st gear needle roller bearing or shaft.



22. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

0.015 to 0.067 mm (0.0006 to 0.0026 in.)

If the clearance is outside the specification, replace the 2nd gear needle roller bearing or shaft.

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