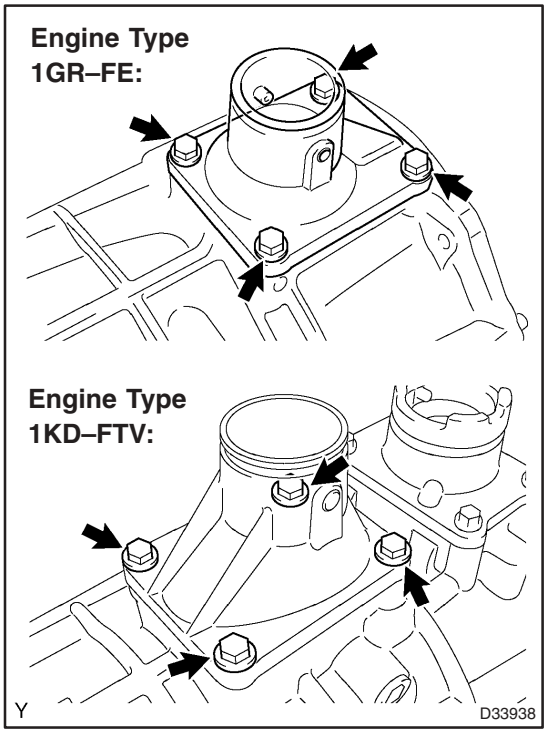
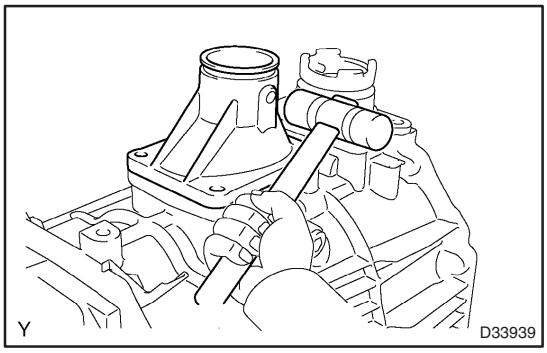
OVERHAUL

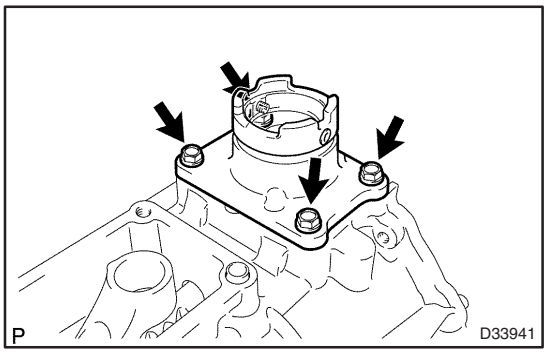


1. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB–ASSY

(a) Remove the 4 bolts from the floor shift control shift lever retainer sub–assy.

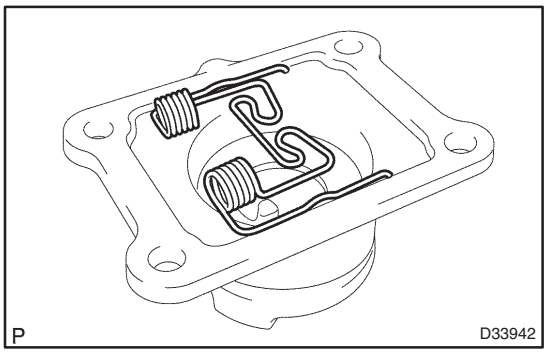


(b) Using a plastic hammer, remove the floor shift control shift lever retainer sub–assy.

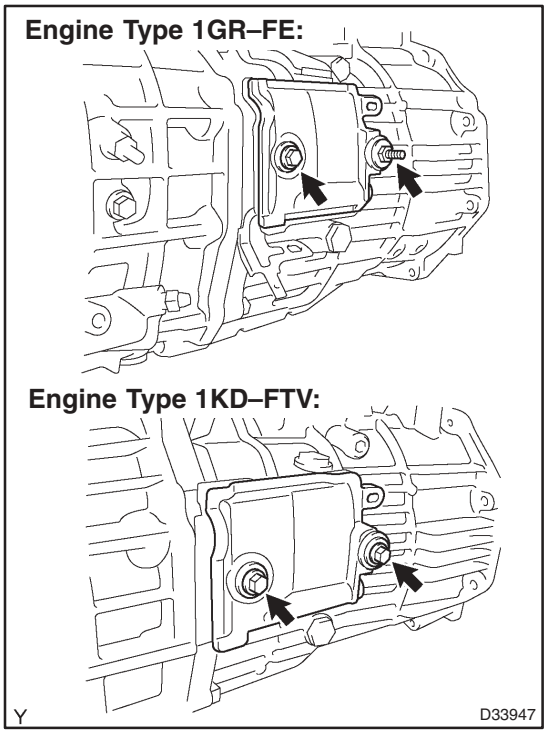


2. REMOVE TRANSFER CONTROL SHIFT LEVER RETAINER SUB–ASSY (1KD–FTV ENGINE TYPE)

(a) Remove the 4 bolts and the transfer control shift lever retainer sub–assy.

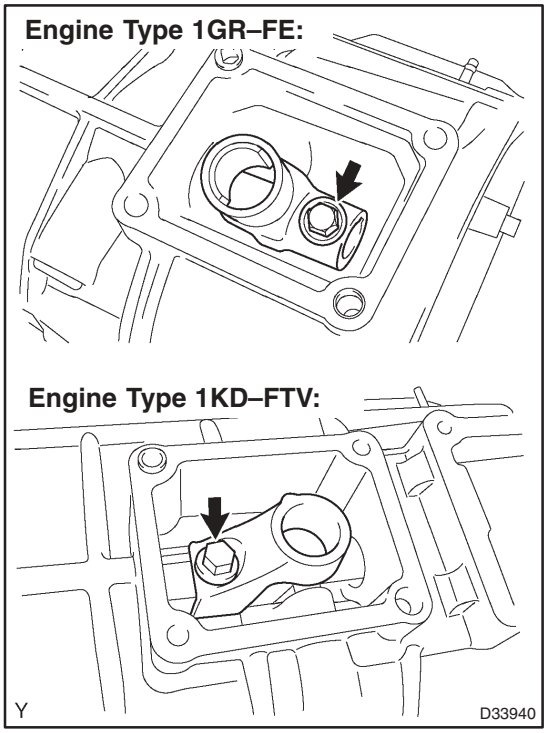


(b) w/o Transfer actuator:
Remove the select return spring.



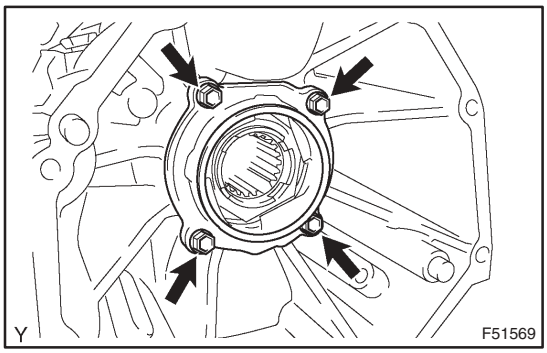
3. REMOVE TRANSMISSION COVER SUB–ASSY

(a) Remove the 2 bolts and transmission cover sub–assy.



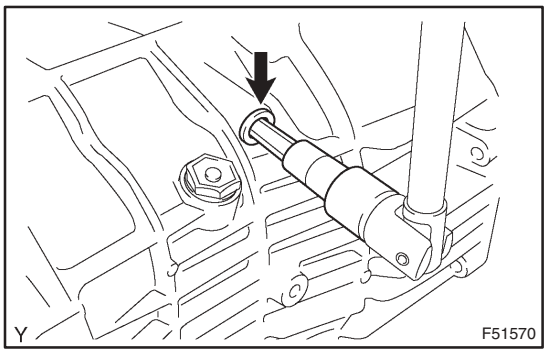
4. SEPARATE SHIFT LEVER HOUSING

(a) Remove the bolt and separate the shift lever housing.



5. REMOVE TRANSMISSION COVER SUB–ASSY

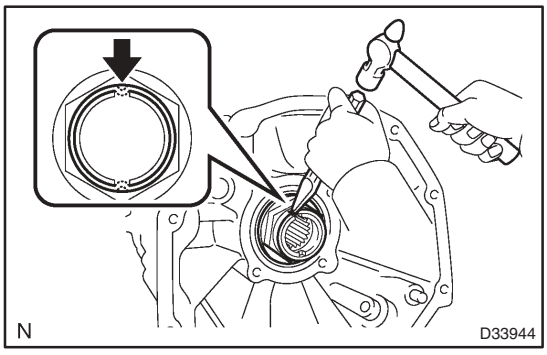
(a) Remove the 4 bolts and transmission case cover.



6. REMOVE SHIFT DETENT BALL PLUG

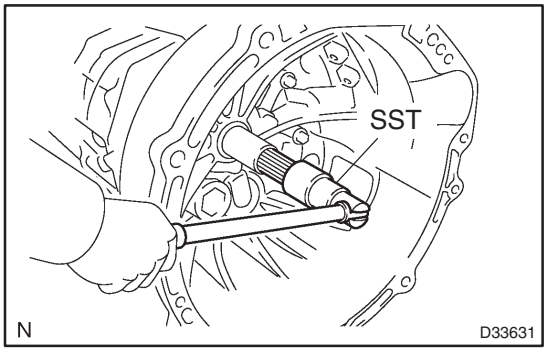
(a) Using a socket hexagon wrench (10 mm), remove the shift detent ball plug from the transmission rear case.

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



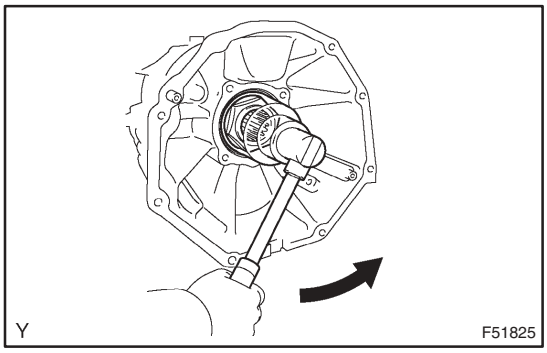
7. REMOVE OUTPUT SHAFT ADJUST NUT

(a) Using a chisel and a hammer, loosen the staked part of the output shaft adjust nut.
SST 09556–16030



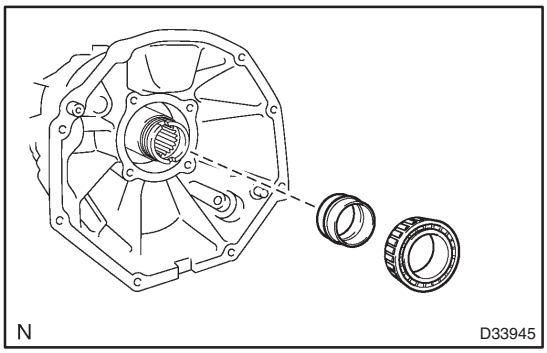
(b) Place the gearshift into 5th gear, and using SST, fix the input shaft.
SST 09556–16030

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

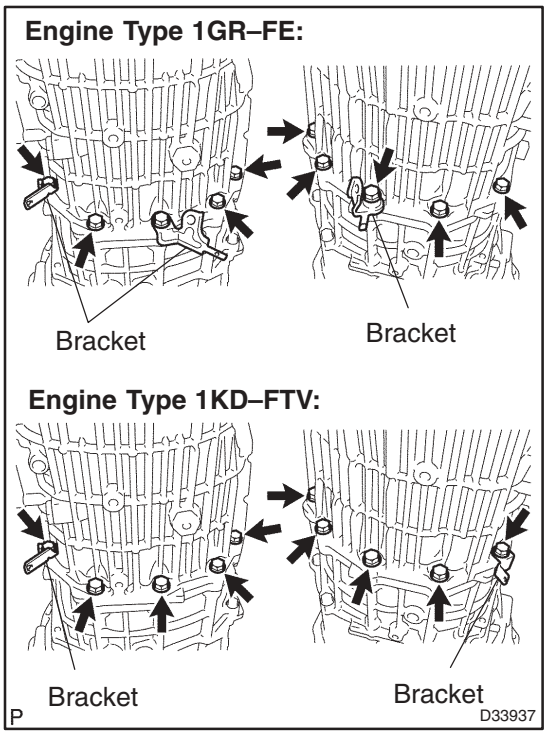


(d) Using a socket wrench (60 mm), remove the output shaft adjust nut from the transmission rear case.

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



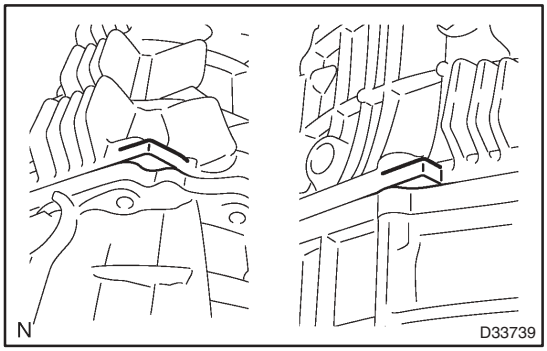
(f) Remove the taper roller bearing No.2 and spacer.



8. REMOVE TRANSMISSION REAR CASE

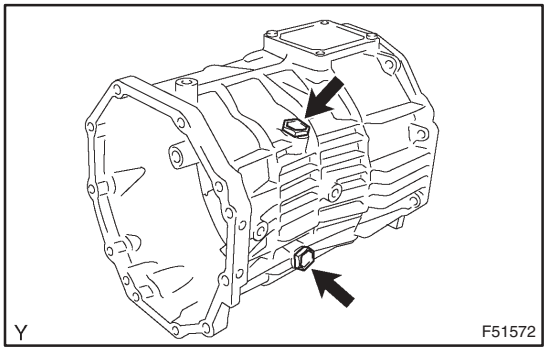
(a) Engine type 1GR–FE:
Remove the 10 bolts and 3 brackets.

(b) Engine type 1KD–FTV:
Remove the 10 bolts and 2 brackets.



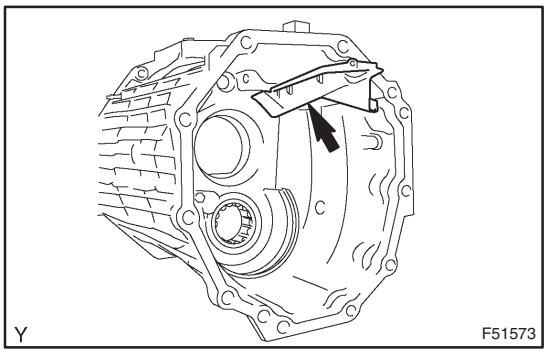
(c) Gently tap the protrusion of the transmission rear case with a plastic hammer to remove it.

NOTICE:
Be careful not to damage the transmission rear case.



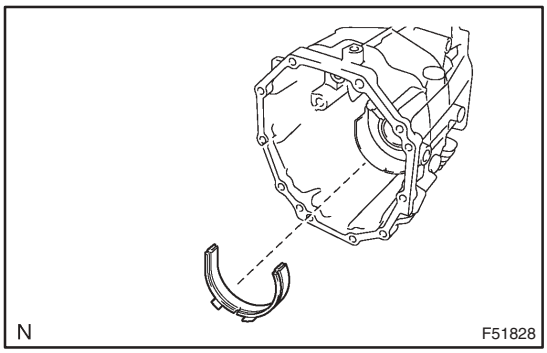
9. REMOVE MANUAL TRANSMISSION FILLER PLUG

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



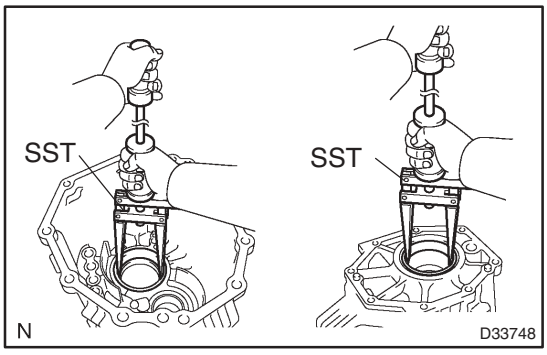
10. REMOVE OIL RECEIVER PIPE

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



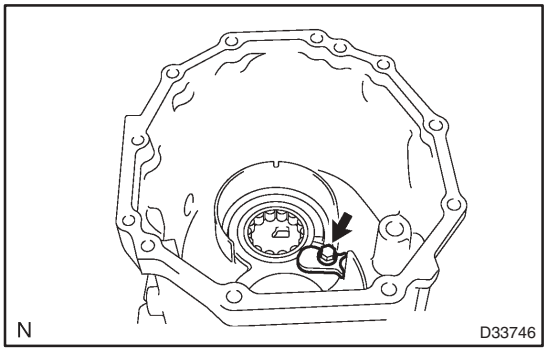
11. REMOVE OIL SEPARATOR PACKING SEAL

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



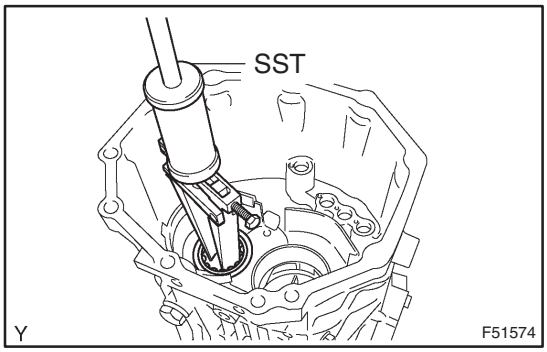
12. REMOVE OUTPUT SHAFT REAR BEARING OUTER RACE

(a) Using SST, remove the 2 output shaft rear bearing outer races.
SST 09308–00010

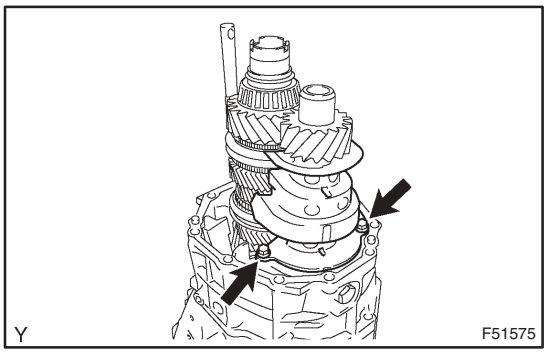


13. REMOVE COUNTER GEAR REAR BEARING

(a) Remove the bolt and bearing lock plate.

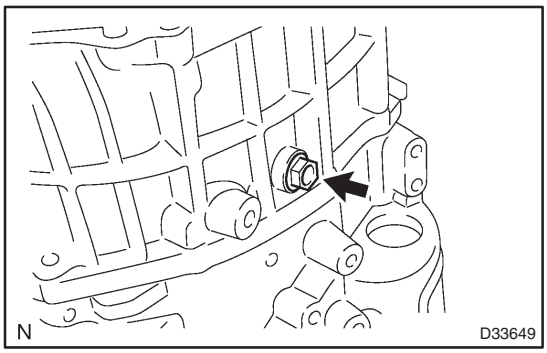


(b) Using SST, remove the counter gear rear bearing from the transmission rear case.
SST 09308–00010



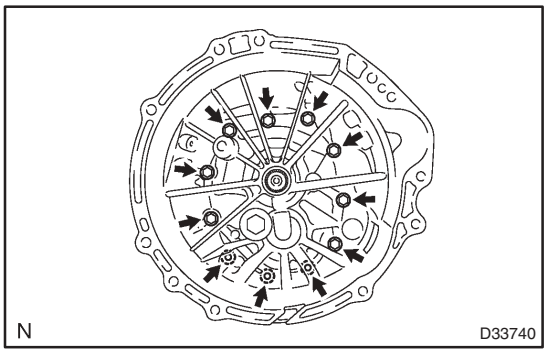
14. REMOVE TRANSMISSION OIL (MTM) SEPARATOR

(a) Remove the 2 bolts and transmission oil (MTM) separator.



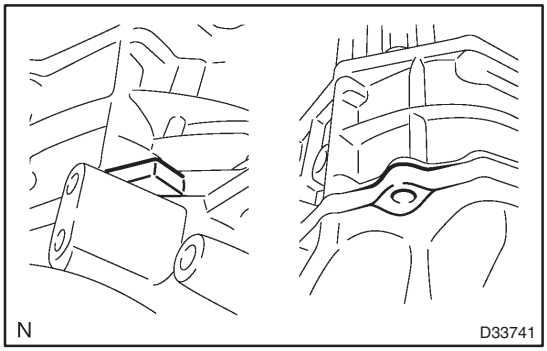
15. REMOVE REVERSE IDLER GEAR SHAFT BOLT

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



16. REMOVE TRANSMISSION MIDDLE CASE

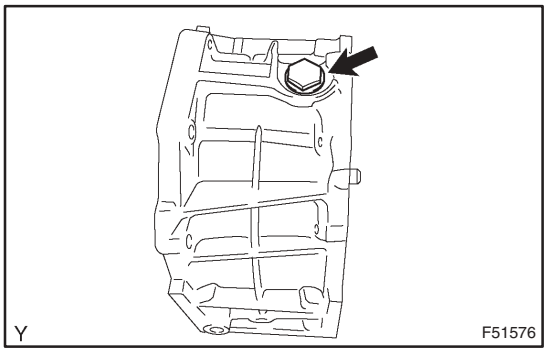
(a) Remove the 11 bolts from the transmission middle case.



(b) Gently tap the protrusion of the transmission middle case with a plastic hammer to remove it.

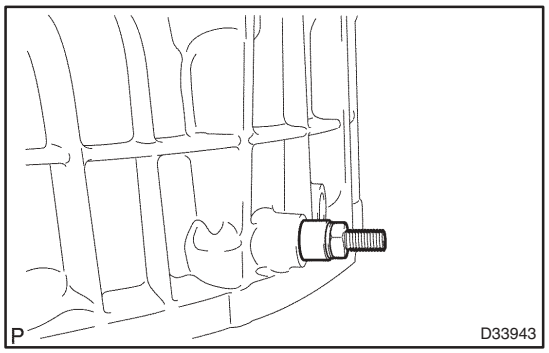
NOTICE:

Be careful not to damage the transmission middle case.



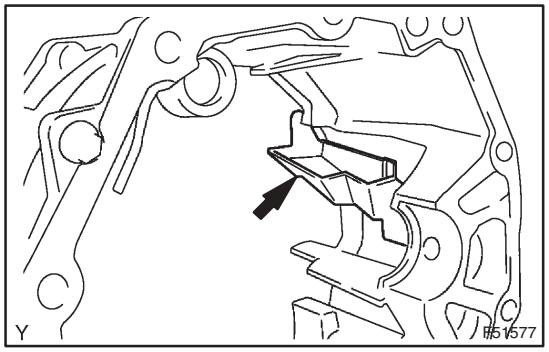
17. REMOVE DRAIN (MTM) PLUG SUB–ASSY

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



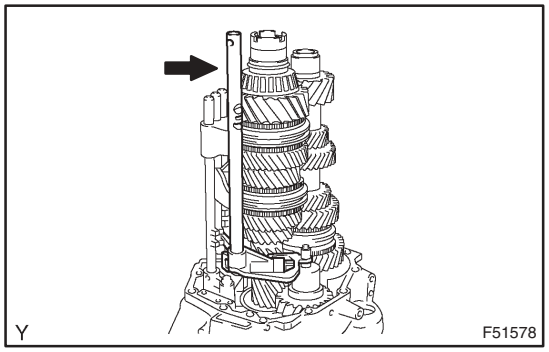
18. REMOVE COLLAR (1GR–FE ENGINE TYPE)

(a) Remove the bolt and collar from the transmission middle case.



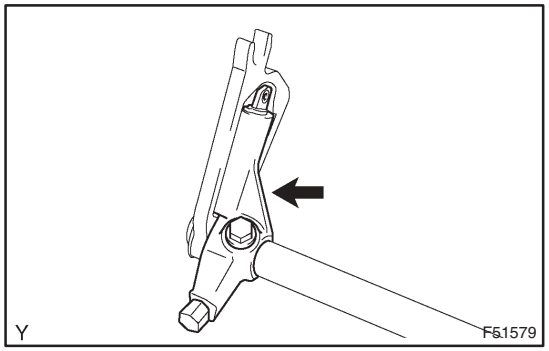
19. REMOVE OIL RECEIVER PIPE NO.2 (MTM)

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



20. REMOVE SHIFT & SELECT LEVER SHAFT

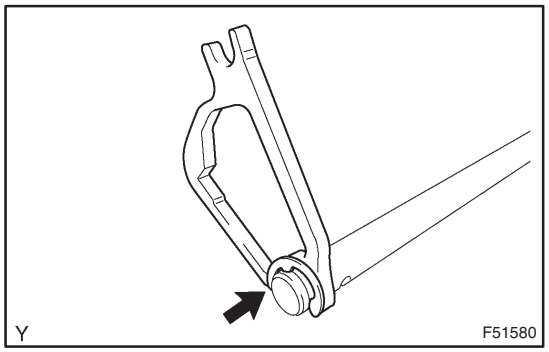
(a) Remove the shift & select lever shaft from the reverse idler gear shaft.



21. REMOVE SHIFT & SELECT LEVER

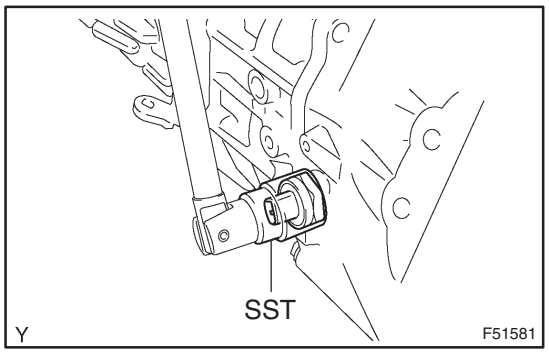
(a) Remove the bolt and shift & select lever.

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



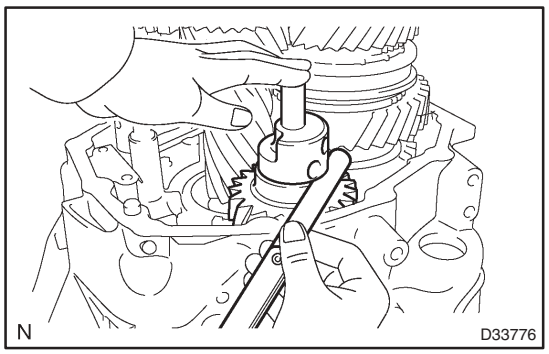
22. REMOVE SHIFT & SELECT LEVER CAM

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



23. REMOVE BACK UP LAMP SWITCH ASSY

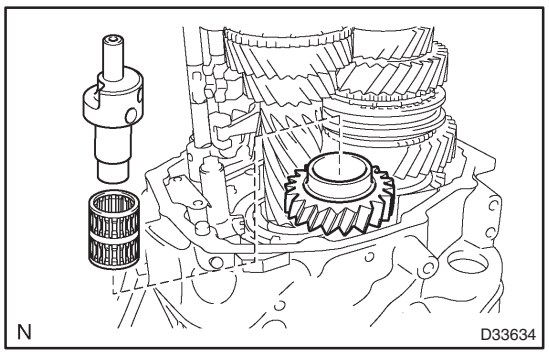
(a) Using SST, remove the back up lamp switch and gasket.
SST 09817–16011



24. INSPECT REVERSE IDLER GEAR THRUST CLEARANCE

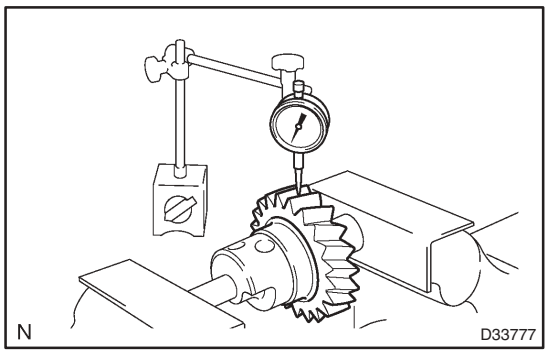
(a) Using a feeler gauge, measure the thrust clearance.
Standard clearance:
0.10 to 0.55 mm (0.0039 to 0.0217 in.)
Maximum clearance:
0.55 to (0.0217 in.)

If the clearance exceeds the maximum, replace the reverse idler gear shaft.



25. REMOVE REVERSE IDLER GEAR

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

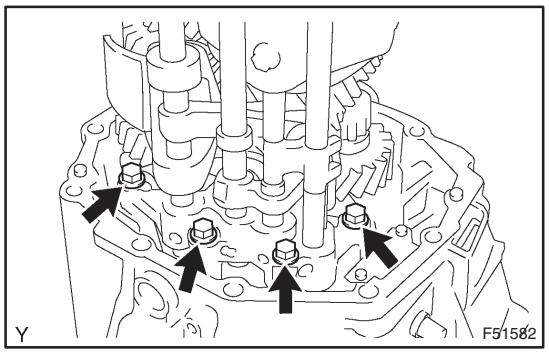


26. INSPECT REVERSE IDLER GEAR RADIAL CLEARANCE

(a) Temporarily install the reverse idler gear shaft and reverse idler gear.

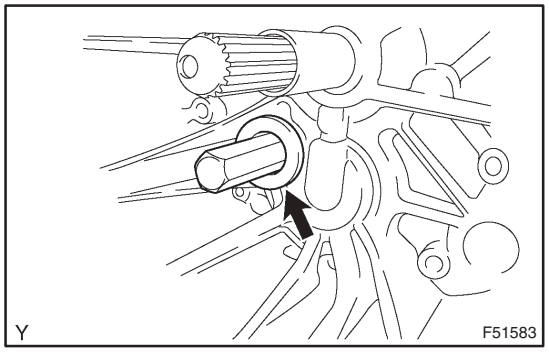
(b) Using a dial indicator, measure the radial clearance.
Standard clearance:
0.015 to 0.050 mm (0.0006 to 0.0020 in.)
Maximum clearance:
0.050 mm (0.0020 in.)

If the clearance exceeds the maximum, replace the reverse idler gear bearing.

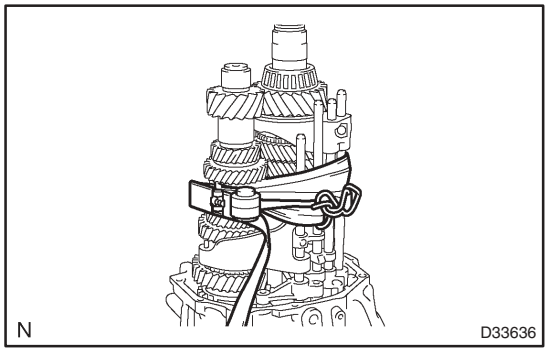


27. REMOVE TRANSMISSION FRONT CASE

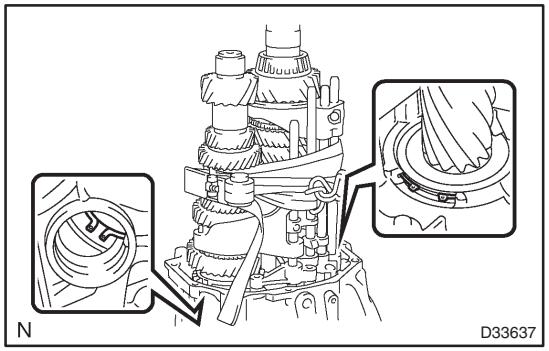
(a) Remove the 4 bolts from the shift inter lock bracket.



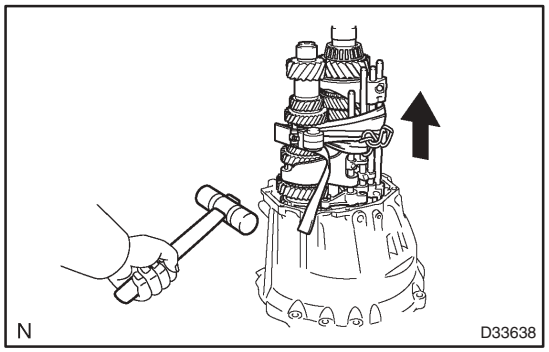
(b) Using a hexagon wrench (24 mm), remove the plug.



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



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

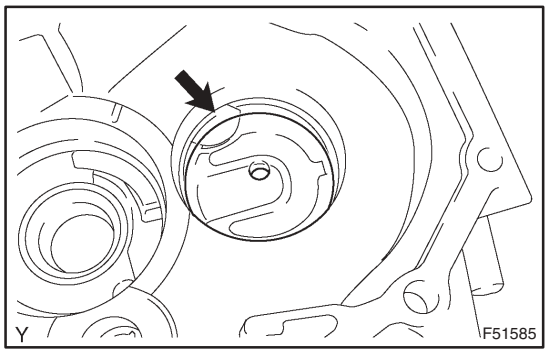


(e) Remove the output shaft, input shaft, counter gear shaft and control sub–assy while gently tapping the transmission front case with a plastic hammer.

NOTICE:

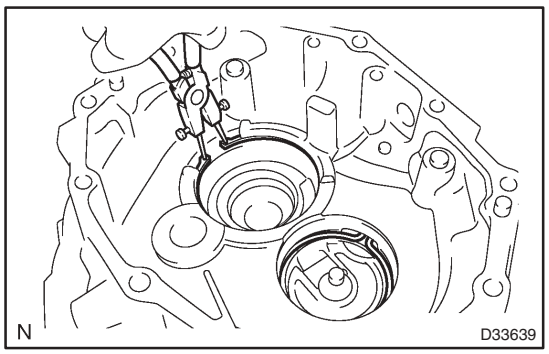
Take care not to shock the output shaft, input shaft, counter gear shaft and control sub–assy. This could cause the ball and spring to come out.

(f) Separate the output shaft, input shaft, counter gear shaft and control sub–assy.



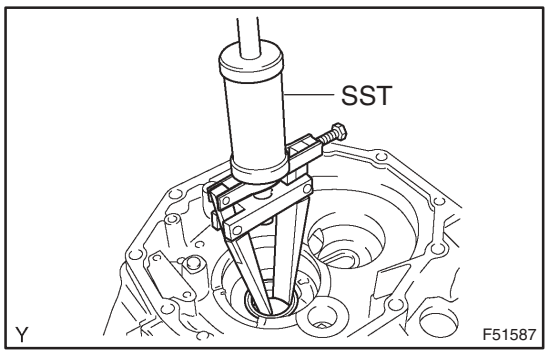
28. REMOVE OIL RECEIVER PIPE NO.1 (MTM)

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



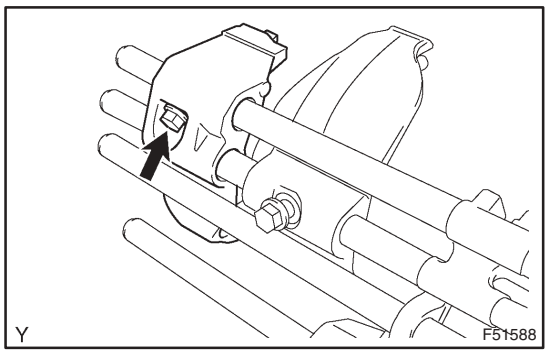
29. REMOVE FRONT BEARING SHAFT SNAP RING

(a) Using snap ring pliers, remove the 2 front bearing shaft snap rings.



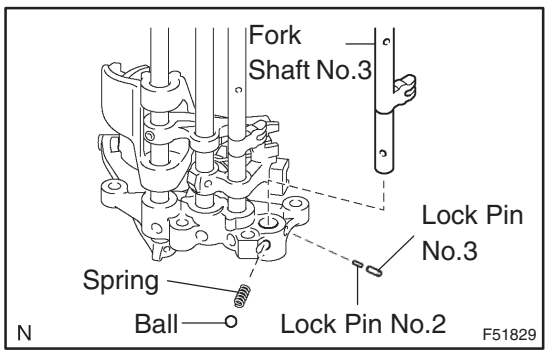
30. REMOVE TRANSMISSION CASE OIL SEAL

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



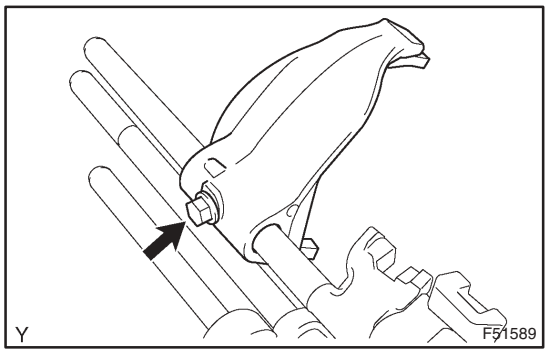
31. REMOVE GEAR SHIFT FORK NO.3

(a) Remove the bolt and gear shift fork No.3.



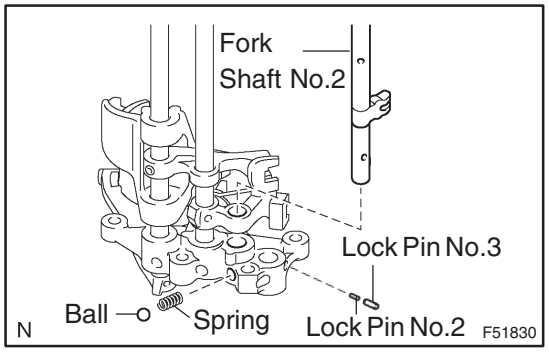
32. REMOVE GEAR SHIFT FORK SHAFT NO.3

(a) Remove the gear shift fork shaft No.3, shift detent ball, compression spring, shift inter lock pin No.2 and shift inter lock pin No.3.



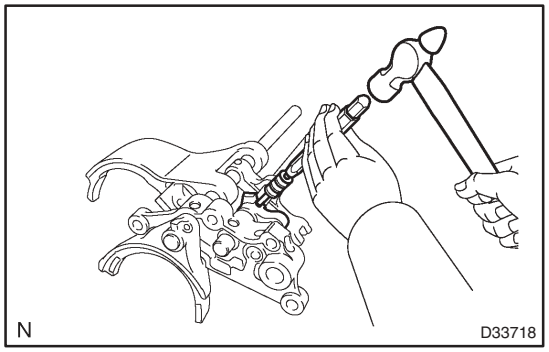
33. REMOVE GEAR SHIFT FORK NO.2

(a) Remove the bolt and gear shift fork No.2.



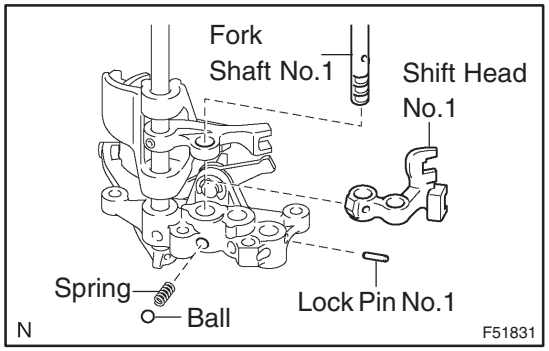
34. REMOVE GEAR SHIFT FORK SHAFT NO.2

(a) Remove the gear shift fork shaft No.2, shift detent ball, compression spring, shift inter lock pin No.2 and shift inter lock pin No.3.



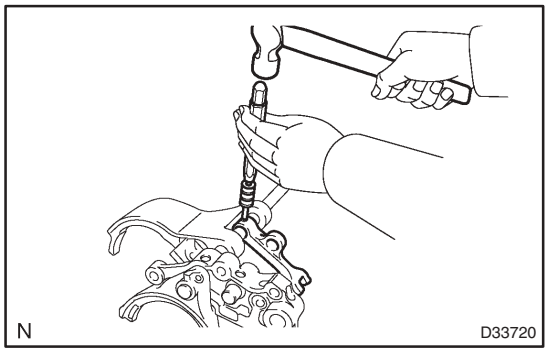
35. REMOVE GEAR SHIFT HEAD NO.1

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



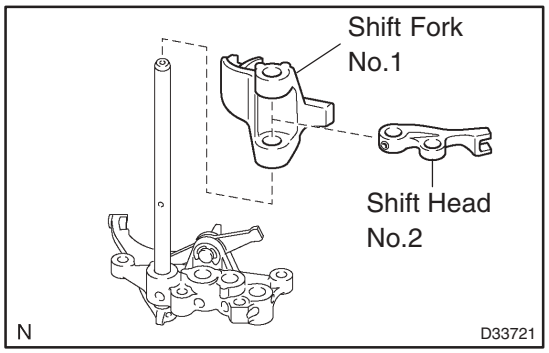
36. REMOVE GEAR SHIFT FORK SHAFT NO.1

(a) Remove the gear shift fork shaft No.1, shift detent ball, compression spring, gear shift head No.1 and shift inter lock pin No.1.

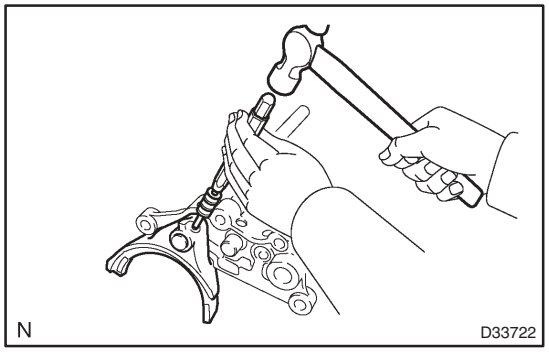


37. REMOVE GEAR SHIFT FORK NO.1

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



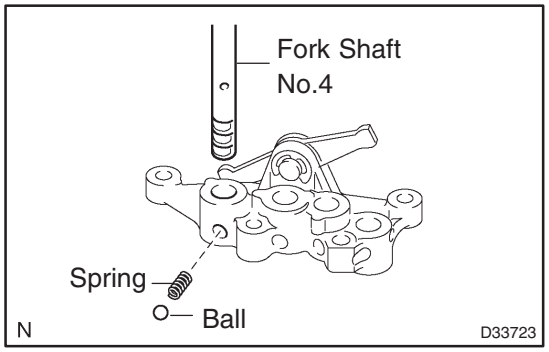
(b) Remove the gear shift head No.2 and gear shift fork No.1.



38. REMOVE GEAR SHIFT FORK NO.4

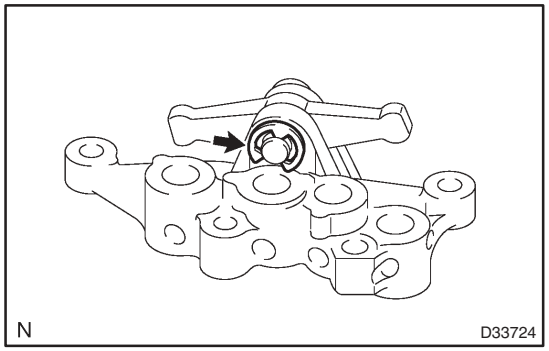
(a) Using a pin punch (5 mm (0.20 in.)) and a hammer, tap out the slotted spring pin.

(b) Remove the gear shift fork No.4.



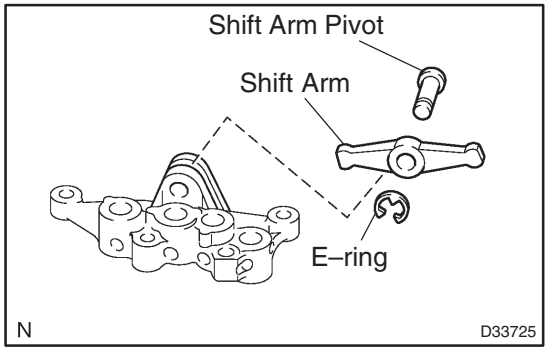
39. REMOVE GEAR SHIFT FORK SHAFT NO.4

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

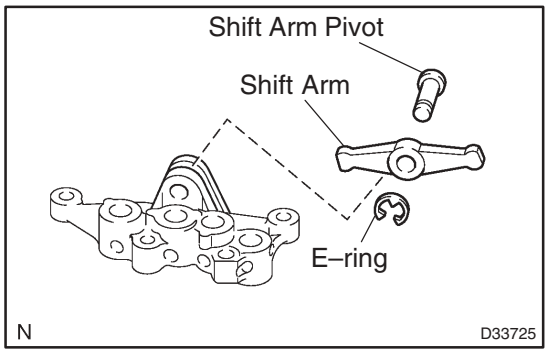


40. REMOVE SHIFT ARM

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

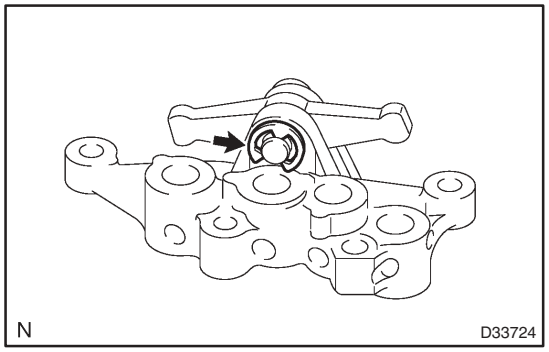


(b) Remove the shift arm pivot and shift arm.

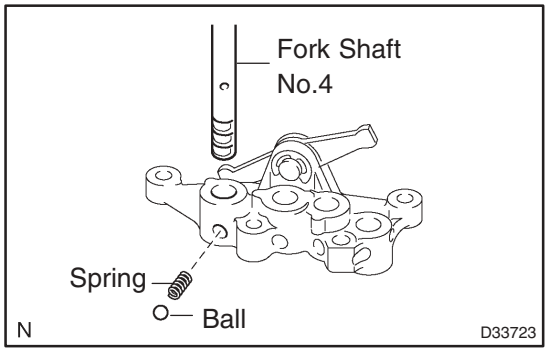


41. INSTALL SHIFT ARM

(a) Install the shift arm and shift arm pivot to the inter lock bracket.



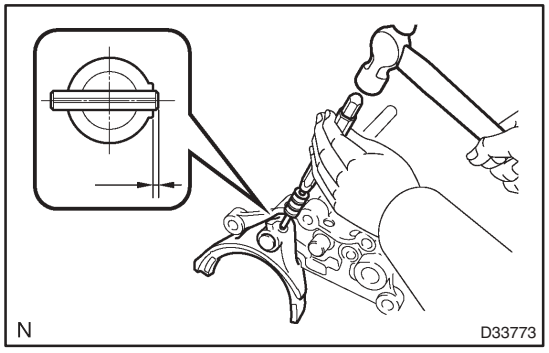
(b) Install a new E–ring to the shift arm pivot.



42. INSTALL GEAR SHIFT FORK SHAFT NO.4

(a) Install the compression spring and shift detent ball to the shift inter lock bracket.

(b) Install the gear shift fork shaft No.4.

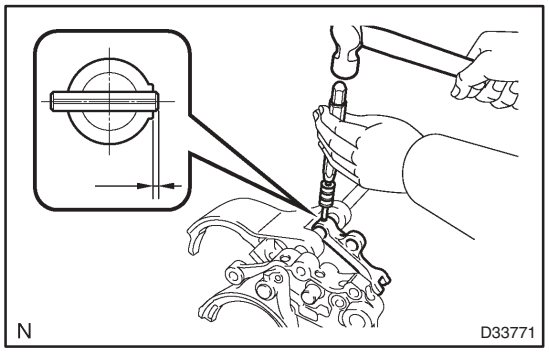


43. INSTALL GEAR SHIFT FORK NO.4

(a) Install the gear shift fork No.4 to the gear shift fork shaft No.4.

(b) Using a pin punch (5 mm (0.20 in.)) and a hammer, tap in a new slotted spring pin to the gear shift fork No.4 and gear shift fork shaft No.4.

Drive in depth: 0 to 0.5 mm (0 to 0.020 in.)

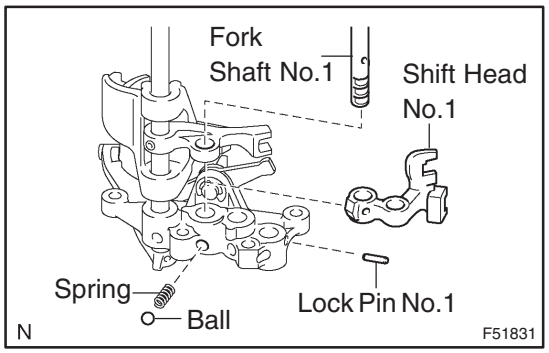


44. INSTALL GEAR SHIFT FORK NO.1

(a) Install the gear shift fork No.1 and gear shift head No.2 to the gear shift fork shaft No.4.

(b) Using a pin punch (5 mm (0.20 in.)) and hammer, tap in a new slotted spring pin to the gear shift head No.2 and gear shift fork shaft No.4.

Drive in depth: 0 to 0.5 mm (0 to 0.020 in.)



45. INSTALL GEAR SHIFT FORK SHAFT NO.1

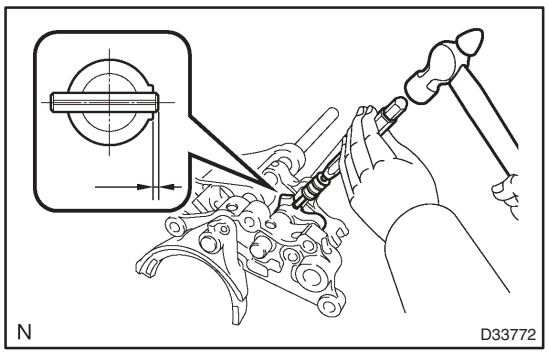
(a) Apply MP grease to the shift inter lock pin No.1, and install it to the shift inter lock bracket.

(b) Install the compression spring and shift detent ball to the shift inter lock bracket.

(c) Install the gear shift fork shaft No.1 to the shift inter lock bracket.

HINT:

Place the shift fork shaft No.4 in the neutral position.

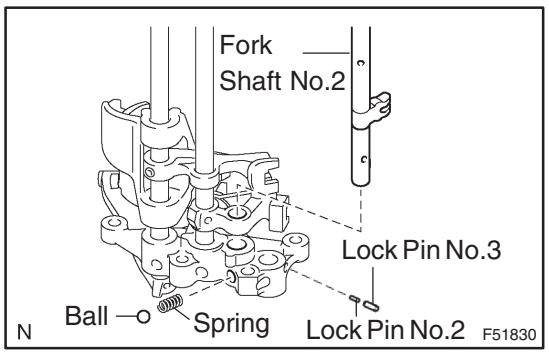


46. INSTALL GEAR SHIFT HEAD NO.1

(a) Install the gear shift head No.1 to the gear shift fork shaft No.1.

(b) Using a pin punch (5 mm (0.20 in.)) and a hammer, tap in a new slotted spring pin to the gear shift head No.1 and gear shift fork shaft No.1.

Drive in depth: 0 to 0.5 mm (0 to 0.020 in.)



47. INSTALL GEAR SHIFT FORK SHAFT NO.2

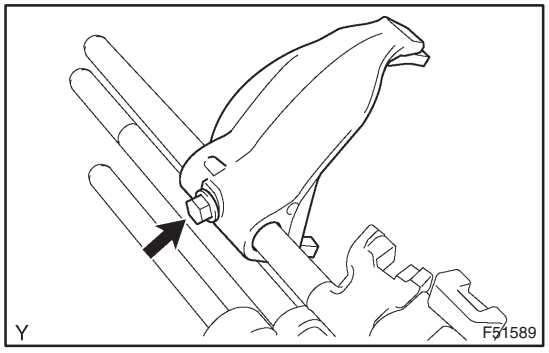
(a) Apply MP grease to the shift inter lock pin No.2 and No.3, and install them to the shift inter lock bracket.

(b) Install the compression spring and shift detent ball to the shift inter lock bracket.

(c) Install the gear shift fork shaft No.2 to the shift inter lock bracket.

HINT:

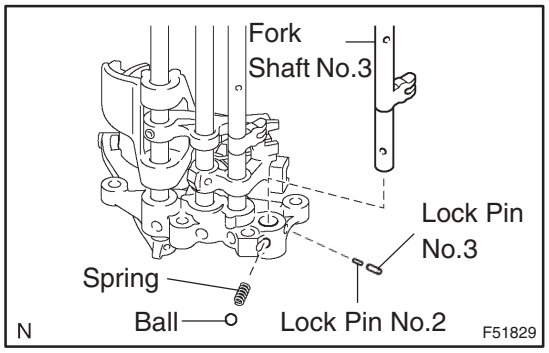
Place the shift fork shaft No.1 and No.4 in the neutral position.



48. INSTALL GEAR SHIFT FORK NO.2

(a) Install the gear shift fork No.2 with the bolt.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)



49. INSTALL GEAR SHIFT FORK SHAFT NO.3

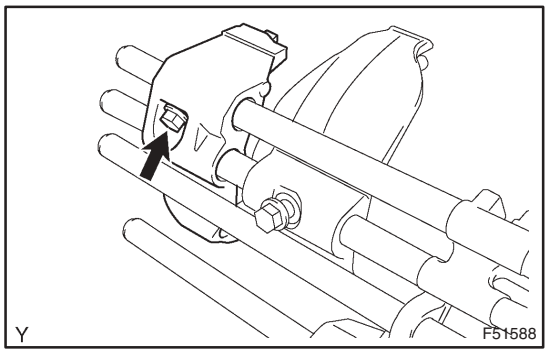
(a) Apply MP grease to the shift inter lock pin No.2 and No.3, and install them to the shift inter lock bracket.

(b) Install the compression spring and shift detent ball to the shift inter lock bracket.

(c) Install the gear shift fork shaft No.3 to the shift inter lock bracket.

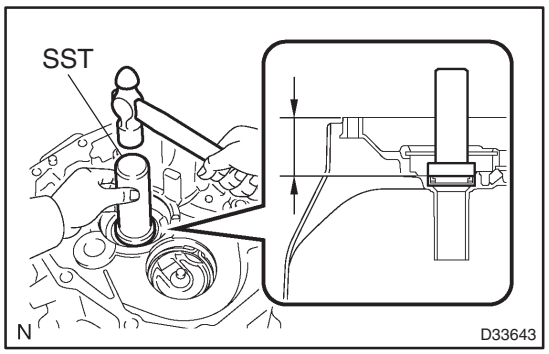
HINT:

Place the shift fork shaft No.2, No.1 and No.4 in the neutral position.



50. INSTALL GEAR SHIFT FORK NO.3

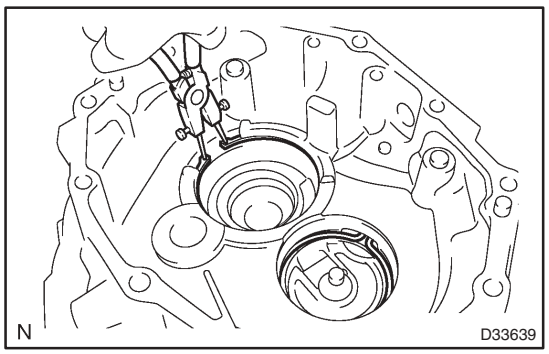
(a) Install the gear shift fork No.3 with the bolt.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)



51. INSTALL TRANSMISSION CASE OIL SEAL

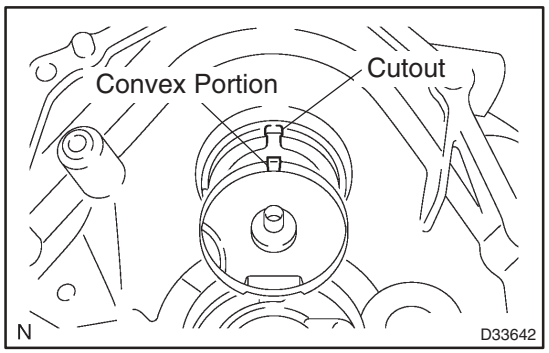
(a) Using SST and a hammer, install a new transmission case oil seal to the transmission front case.
SST 09950–70010 (09951–07100), 09950–60010 (09951–00470)
Drive in depth: 60.0 to 60.8 mm (2.362 to 2.394 in.)

(b) Coat the lip of the oil seal with gear oil.



52. INSTALL FRONT BEARING SHAFT SNAP RING

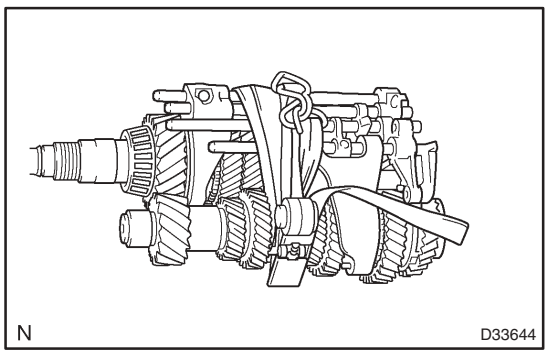
(a) Using snap ring pliers, install the 2 front bearing shaft snap rings.



53. INSTALL OIL RECEIVER PIPE NO.1 (MTM)

(a) Install the oil receiver pipe No.1 to the transmission front case.

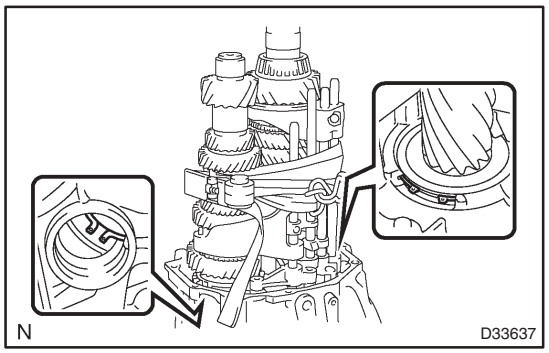
HINT:
Align the convex portion of the oil receiver pipe No.1 with the cutout of the transmission front case and install them.



54. INSTALL TRANSMISSION FRONT CASE

(a) Apply gear oil to the sliding surfaces and gear teeth.

(b) Temporarily install the output shaft, input shaft, counter gear shaft and control sub–assy, and tie them with a rope or string.

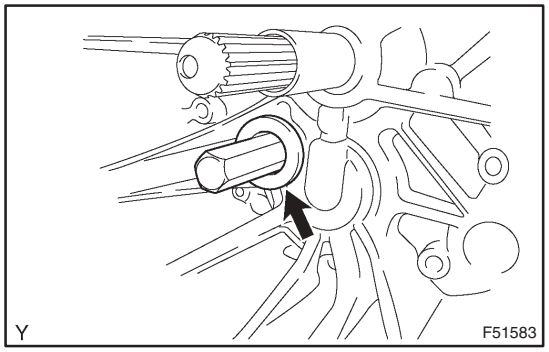


(c) Using a snap ring expander, expand the 2 front bearing shaft snap rings and install the output shaft, input shaft, counter gear shaft and control sub–assy.

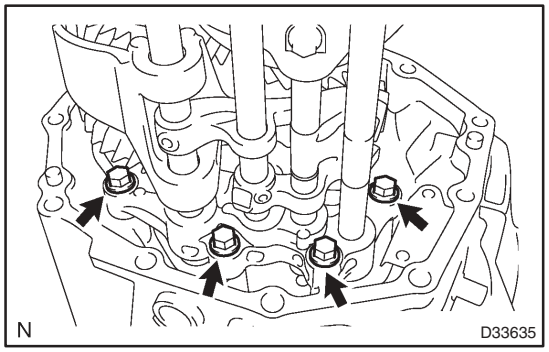
HINT:

Make sure that the snap rings are fitted into the grooves of the input shaft and front bearing of the counter gear shaft.

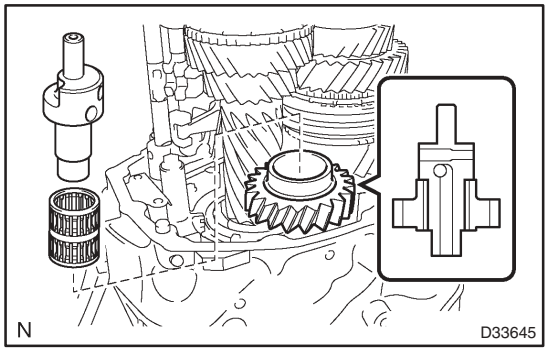
(d) Undo the output shaft, input shaft, counter gear shaft and control sub–assy.



(e) Using a hexagon wrench (24 mm), install the plug to the transmission front case.
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)



(f) Install the 4 bolts to the shift inter lock bracket.
Torque: 21 N·m (214 kgf·cm, 15 ft·lbf)

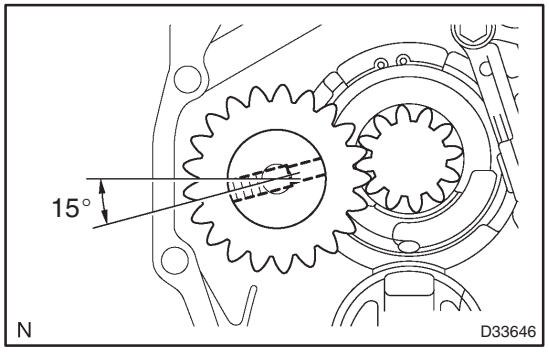


55. INSTALL REVERSE IDLER GEAR

(a) Install the reverse idler gear, reverse idler gear bearing and reverse idler gear shaft.

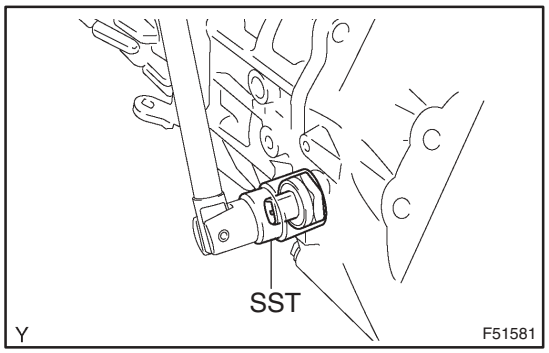
HINT:

Make sure that the reverse idler gear faces in the direction shown in the illustration.



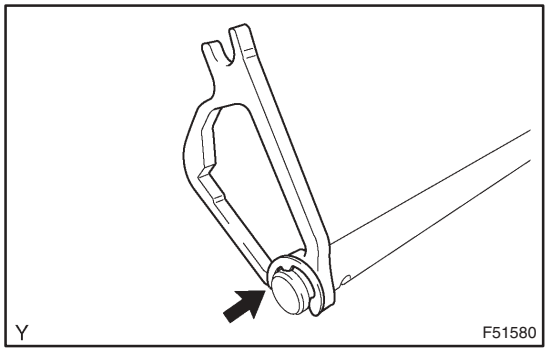
NOTICE:

Make sure that the screw hole of the reverse idler shaft is positioned as shown in the illustration.



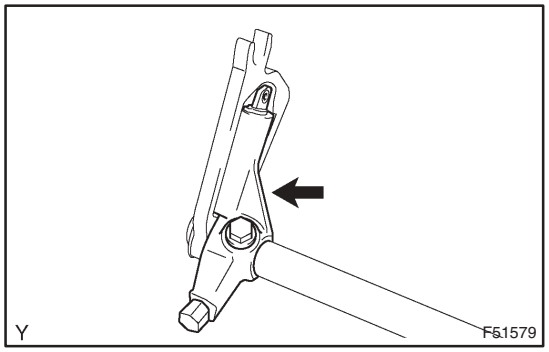
56. INSTALL BACK UP LAMP SWITCH ASSY

(a) Using SST, install the back up lamp switch with a new gasket to the transmission front case.
SST 09817–16011
Torque: 44 N·m (449 kgf·cm, 33 ft·lbf)



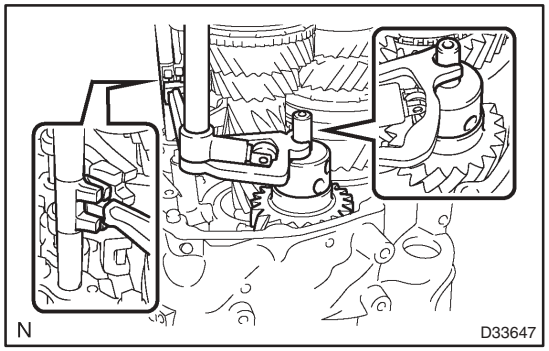
57. INSTALL SHIFT & SELECT LEVER CAM

(a) Install the shift & select lever cam to the shift & select lever shaft and install a new E–ring.



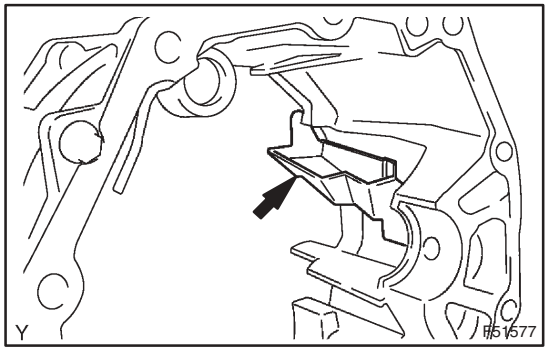
58. INSTALL SHIFT & SELECT LEVER SHAFT

(a) Install the compression spring and lock ball pin to the shift & select lever.
(b) Install the shift & select lever with the bolt.
Torque: 33 N·m (340 kgf·cm, 25 ft·lbf)



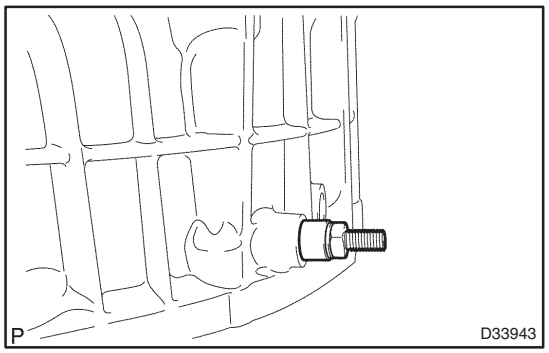
59. INSTALL SHIFT & SELECT LEVER

(a) Align the groove of the shift & select cam with the reverse idler gear shaft, and the claw with the groove of the control sub–assy and install them.



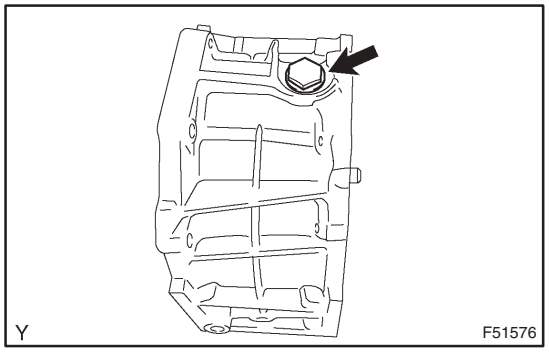
60. INSTALL OIL RECEIVER PIPE NO.2 (MTM)

(a) Install the oil receiver pipe No.2 to the transmission middle case.



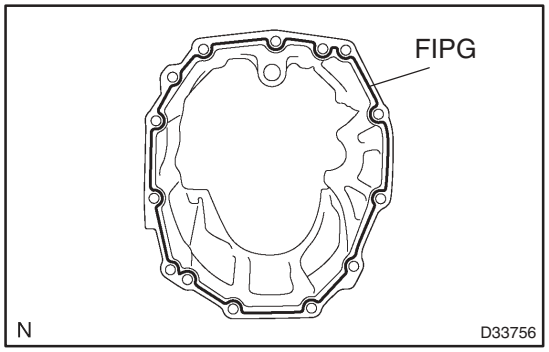
61. INSTALL COLLAR (1GR–FE ENGINE TYPE)

(a) Install the bolt and collar to the transmission middle case.
Torque: 12 N·m (120 kgf·cm, 8.4 ft·lbf)



62. INSTALL DRAIN (MTM) PLUG SUB–ASSY

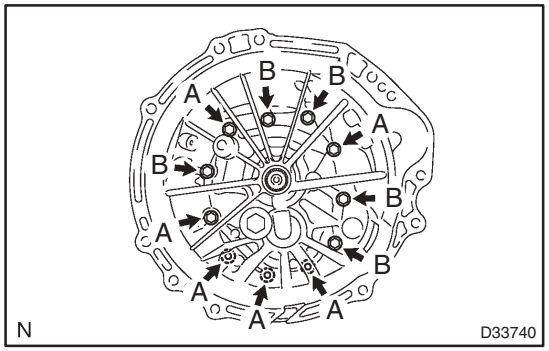
(a) Install drain plug with a new gasket to the transmission middle case.
Torque: 37 N·m (377 kgf·cm, 27 ft·lbf)



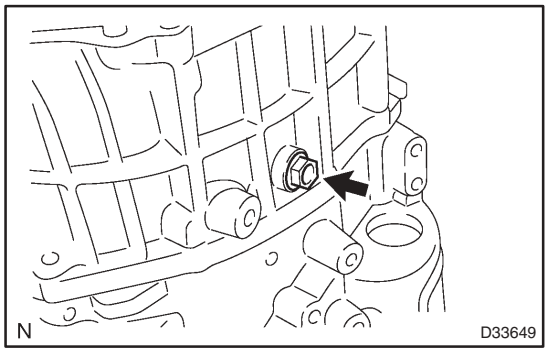
63. INSTALL TRANSMISSION MIDDLE CASE

(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.

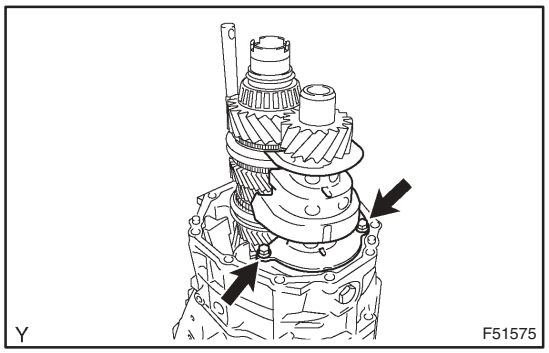


(b) Install the transmission middle case with the 11 bolts to the transmission front case.
Torque: 40 N·m (408 kgf·cm, 30 ft·lbf)
Bolt length:
Bolt A: 40 mm (1.57 in.)
Bolt B: 80 mm (3.15 in.)



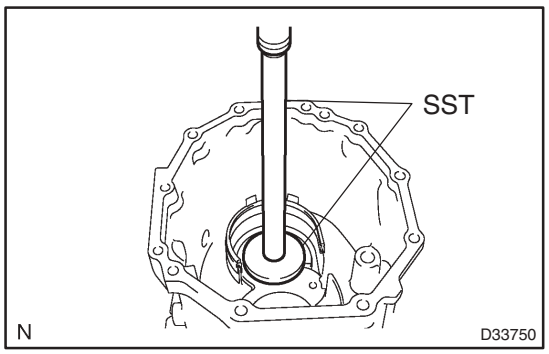
64. INSTALL REVERSE IDLER GEAR SHAFT BOLT

(a) Install a new gasket and the reverse idler gear shaft bolt to the reverse idler gear shaft.
Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)



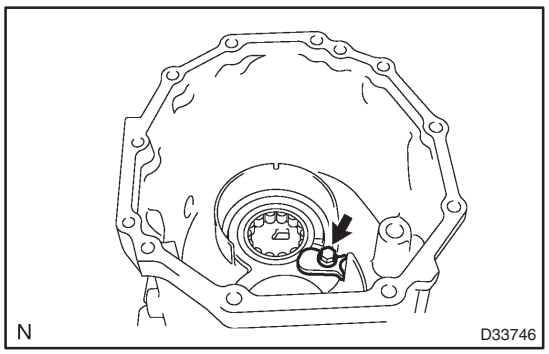
65. INSTALL TRANSMISSION OIL (MTM) SEPARATOR

(a) Install the transmission oil separator with the 2 bolts.
Torque: 8.5 N·m (87 kgf·cm, 75 in.·lbf)

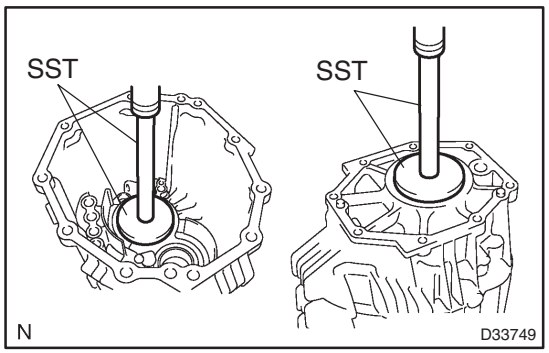


66. INSTALL COUNTER GEAR REAR BEARING

(a) Coat a new counter gear rear bearing with gear oil, and using SST and a press, install it to the transmission rear case.
SST 09950–70010 (09951–07360), 09950–60010 (09951–00650)

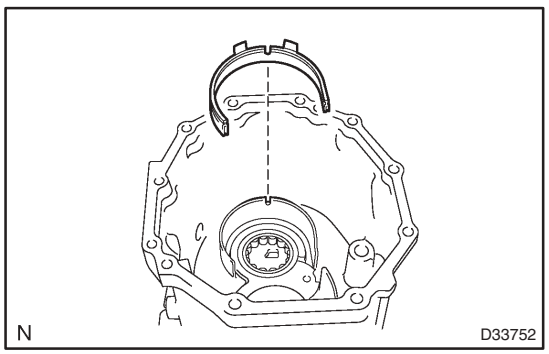


(b) Install the bearing lock plate with the bolt.
Torque: 11 N·m (115 kgf·cm, 8.3 ft·lbf)



67. INSTALL OUTPUT SHAFT REAR BEARING OUTER RACE

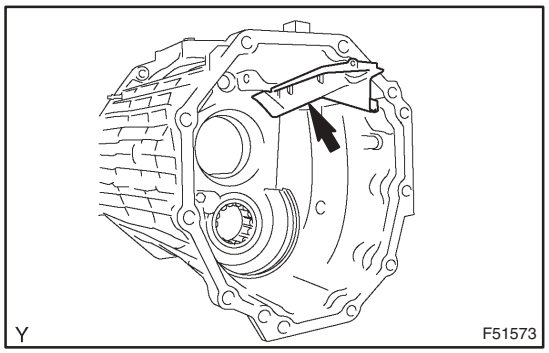
(a) Using SST and a press, press in 2 new output shaft rear bearing outer races.
SST 09950–70010 (09951–07100, 09951–07360), 09950–60020 (09951–00790), 09951–00850



68. INSTALL OIL SEPARATOR PACKING SEAL

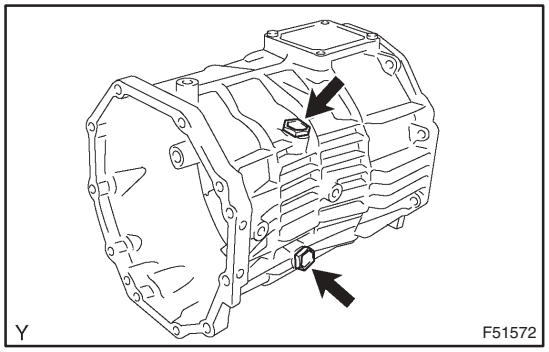
(a) Install a new oil separator packing seal to the transmission rear case.

HINT:
Make sure that the protruding part on the oil separator packing seal is fitted into the notch on the transmission rear case.



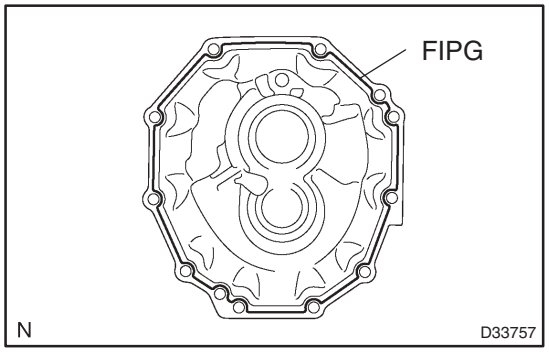
69. INSTALL OIL RECEIVER PIPE

(a) Install the oil receiver pipe to the transmission rear case.



70. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the 2 transmission filler plugs with 2 new gaskets to the transmission rear case.
Torque: 37 N·m (377 kgf·cm, 27 ft·lbf)



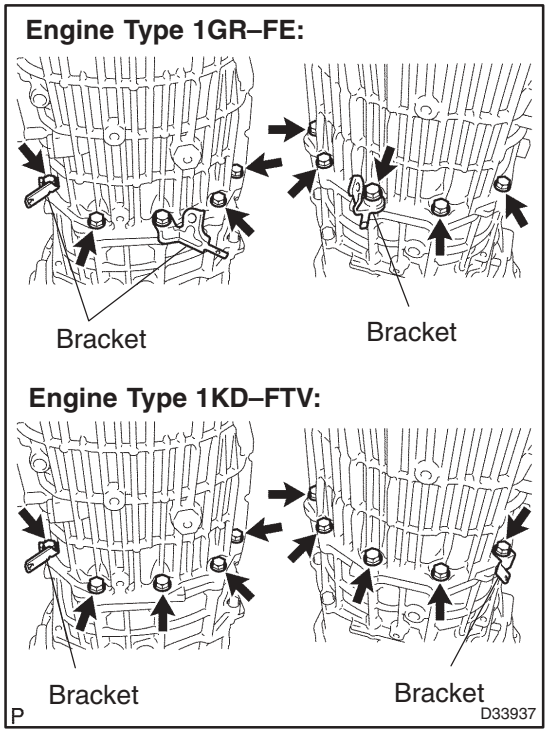
71. INSTALL TRANSMISSION REAR CASE

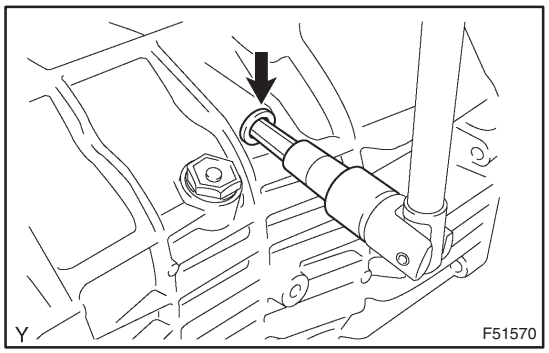
(a) Apply FIPG to the transmission rear case, as shown in the illustration.
FIPG:
Part No. 08826–00090, THREE BOND 1281 or equivalent

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

(b) Engine type 1GR–FE:
Install the transmission rear case with the 10 bolts and 3 brackets to the transmission middle case.
Torque: 40 N·m (408 kgf·cm, 30 ft·lbf)

(c) Engine type 1KD–FTV:
Install the transmission rear case with the 10 bolts and 2 brackets to the transmission middle case.
Torque: 40 N·m (408 kgf·cm, 30 ft·lbf)



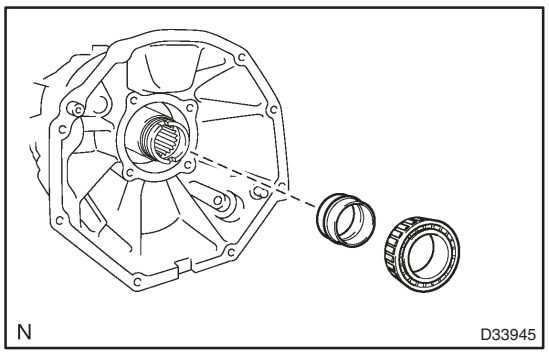


72. INSTALL SHIFT DETENT BALL PLUG

(a) Install the ball and compression spring to the transmission rear case.

(b) Install the shift detent ball plug to the transmission rear case.

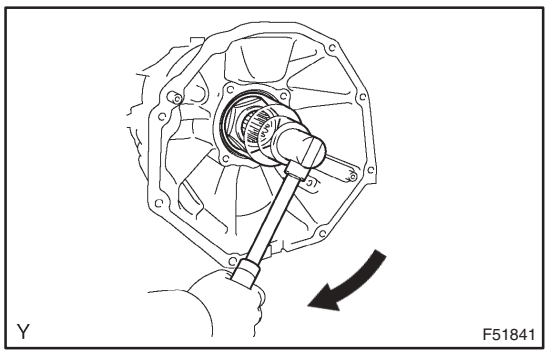
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)



73. INSTALL OUTPUT SHAFT ADJUST NUT

(a) Using a belt and wooden block, fasten the transmission to the work bench.

(b) Install a new spacer and the taper roller bearing No.2.

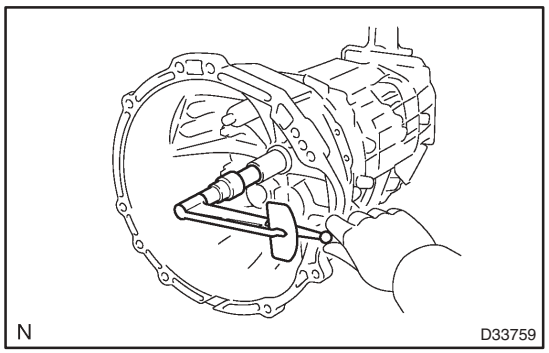


(c) Using a socket wrench (60 mm), temporarily tighten a new nut.

HINT:

Tighten the nut until immediately before preload is applied.

(d) Fit the bearing into the output shaft by turning the output shaft 15 times.



(e) Place the gearshift into 5th gear and measure the initial torque of the input shaft.

(f) Tighten the nut a little.

(g) Place the gearshift into 5th gear and measure the initial torque of the input shaft.

(h) Confirm that the difference between the values measured at (e) and (g) is within the specified values.

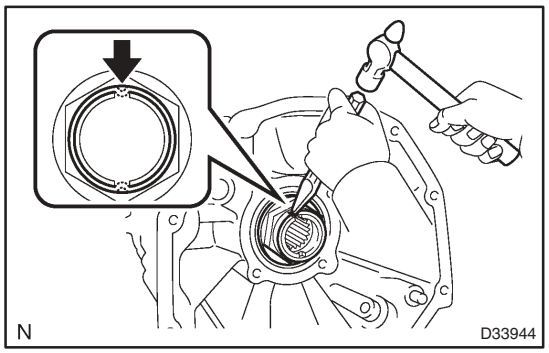
Preload (at starting):
0.45 to 1.35 N·m
(4.59 to 13.77 kgf·cm, 3.98 to 11.95 in.·lbf)

If the result is not as specified, tighten and adjust the output shaft adjust nut.

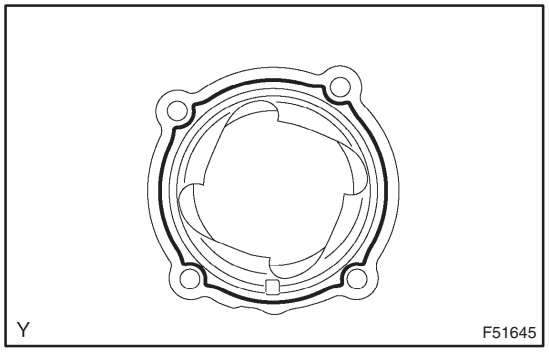
NOTICE:

Do not loosen or remove the output shaft adjust nut to adjust preload.

If the nut is loosened or removed, or if the preload exceeds the specified values, replace the spacer with a new one.



(i) Using a chisel and hammer, caulk the output shaft adjust nut.



74. INSTALL MANUAL TRANSMISSION CASE COVER

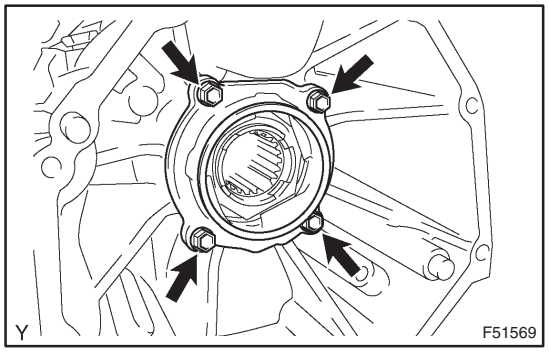
(a) Apply FIPG to the transmission case cover, as shown in the illustration.

FIPG:

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

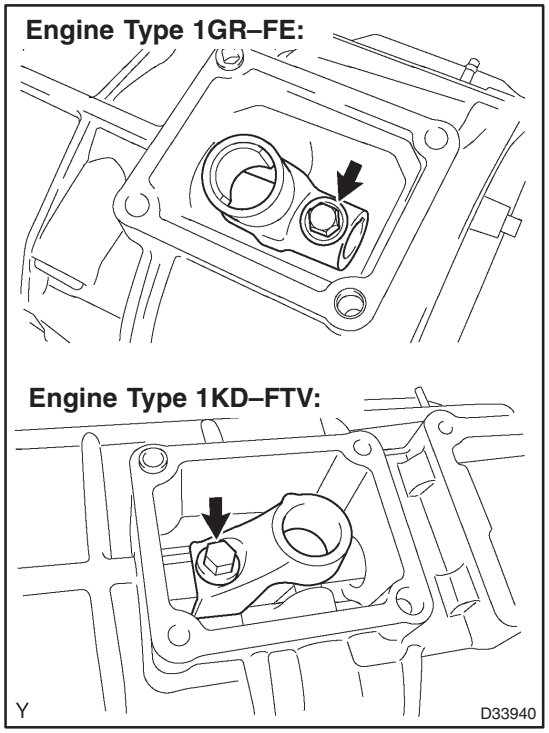
NOTICE:

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



(b) Install the transmission case cover with the 4 bolts.

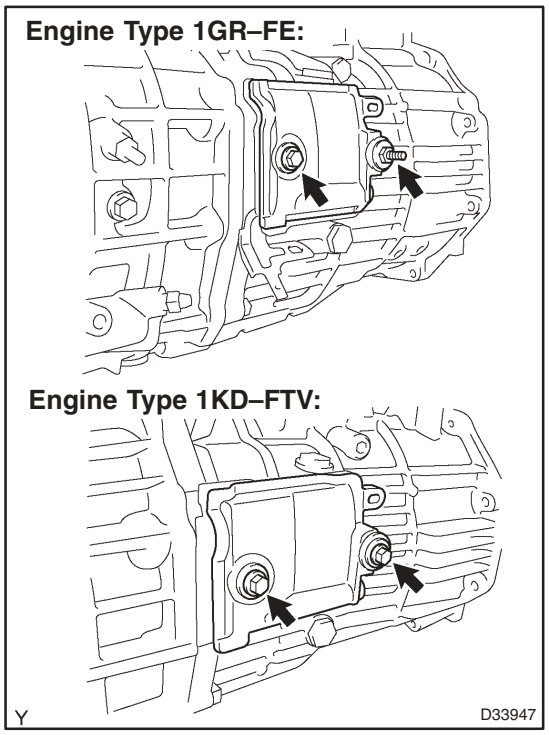
Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)



75. INSTALL SHIFT LEVER HOUSING

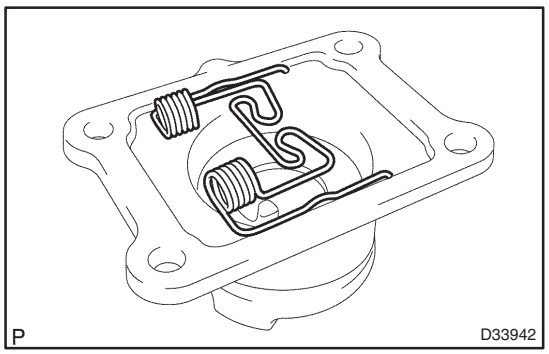
(a) Install the shift lever housing with the bolt.

Torque: 33 N·m (340 kgf·cm, 25 ft·lbf)



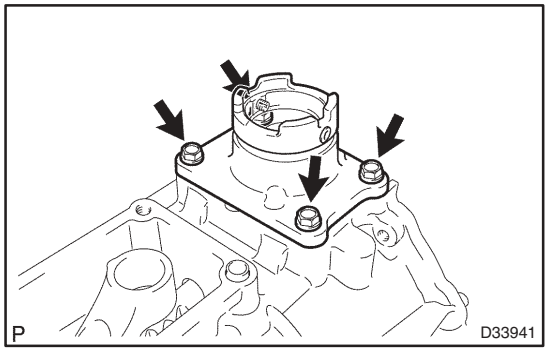
76. INSTALL TRANSMISSION COVER SUB–ASSY

(a) Install the transmission cover sub–assy with the 2 bolts.
Torque: 12 N·m (120 kgf·cm, 8.4 ft·lbf)

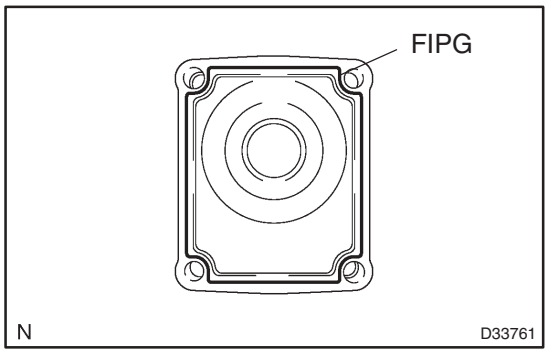


77. INSTALL TRANSFER CONTROL SHIFT LEVER RETAINER SUB–ASSY (1KD–FTV ENGINE TYPE)

(a) w/o Transfer actuator:
Install the select return spring.



(b) Install the transfer control shift lever retainer sub–assy with the 4 bolts.
Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)



78. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB–ASSY

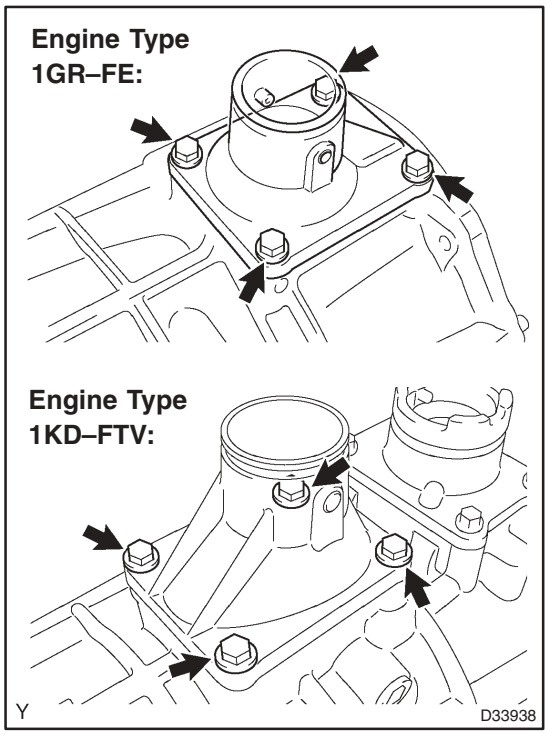
(a) Apply FIPG to the floor shift control shift lever retainer sub–assy, as shown in the illustration.

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 sub–assy with the 4 bolts.

Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)