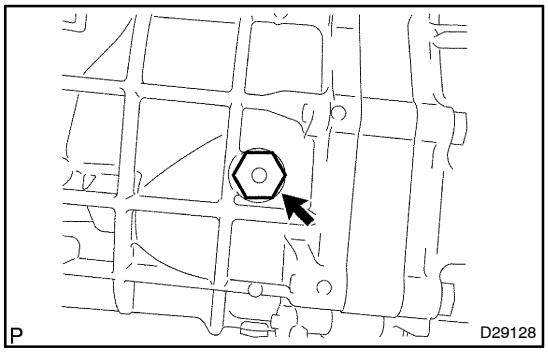
MANUAL TRANSMISSION ASSY (G52)

410BA–01

OVERHAUL

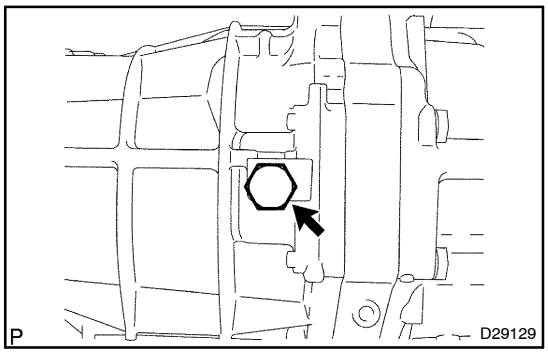
HINT:

COMPONENTS: See page 41–1



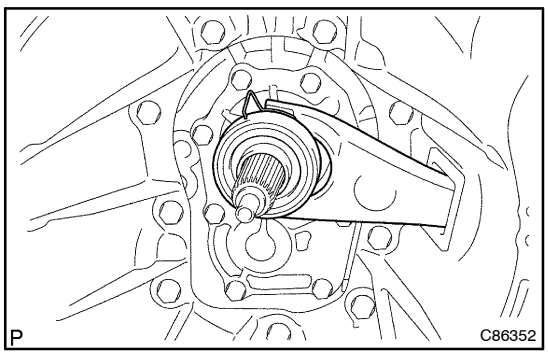
1. REMOVE MANUAL TRANSMISSION FILLER PLUG

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



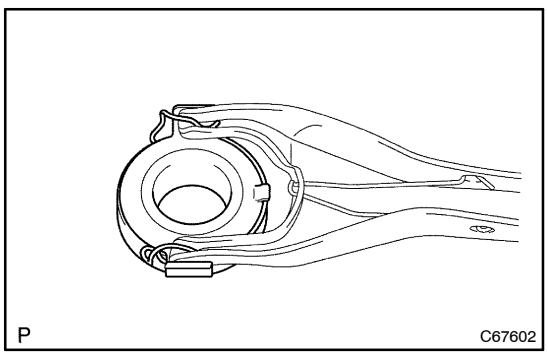
2. REMOVE DRAIN (MTM) PLUG SUB–ASSY

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



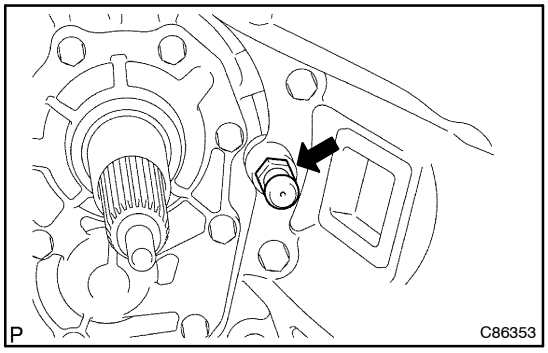
3. REMOVE CLUTCH RELEASE FORK SUB–ASSY

(a) Remove the clutch release fork sub–assy and the clutch release bearing assy from the manual transmission case.



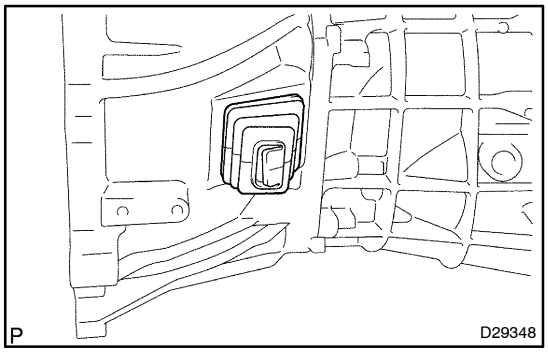
4. REMOVE CLUTCH RELEASE BEARING ASSY

(a) Remove the release bearing hub clip and the clutch release bearing assy from the clutch release fork sub–assy.



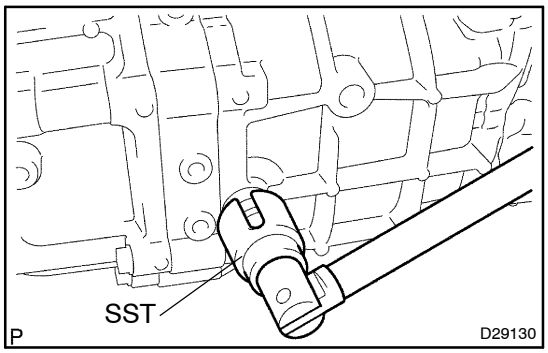
5. REMOVE RELEASE FORK SUPPORT

(a) Remove the release fork support from the manual transmission case.



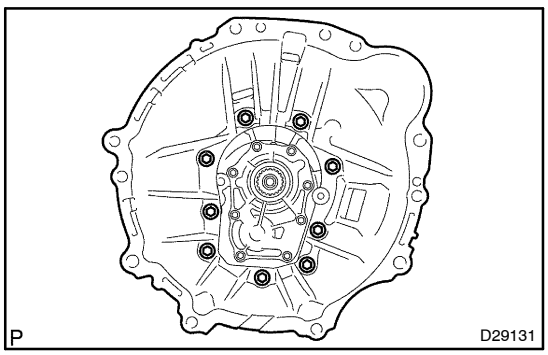
6. REMOVE CLUTCH RELEASE FORK BOOT

(a) Remove the clutch release fork boot from the manual transmission case.



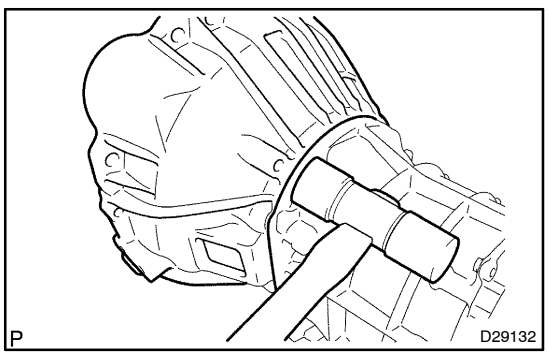
7. REMOVE BACK UP LAMP SWITCH ASSY

(a) Using SST, remove the back–up lamp switch assy and the gasket from the manual transmission case.
SST 09817–16011

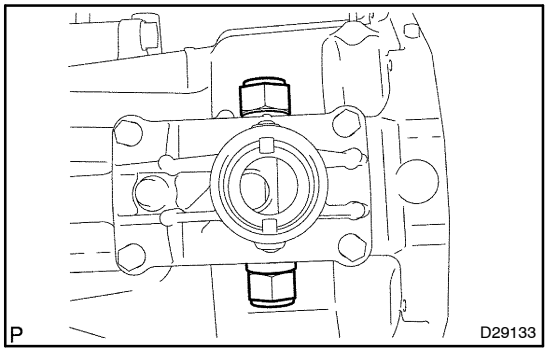


8. REMOVE CLUTCH HOUSING

(a) Remove the 9 bolts.

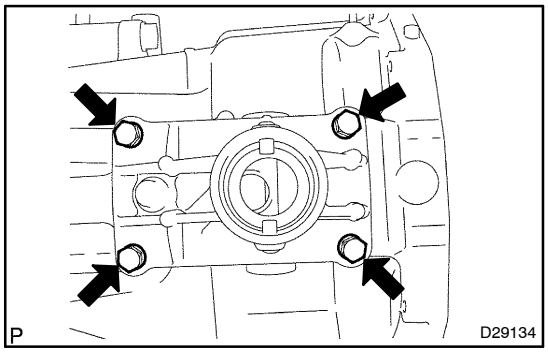


(b) Tap on the circumference of the clutch housing with a plastic hammer to remove the clutch housing from the transmission case.



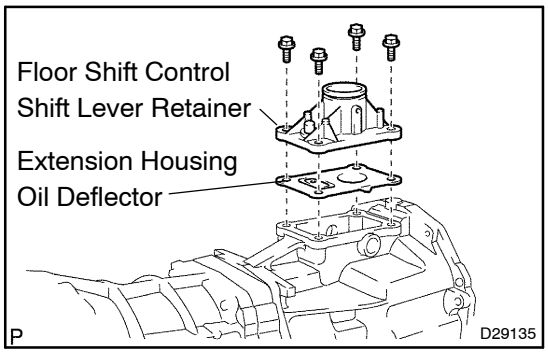
9. REMOVE REVERSE RESTRICT PIN ASSY

(a) Remove the 2 reverse restrict pins.

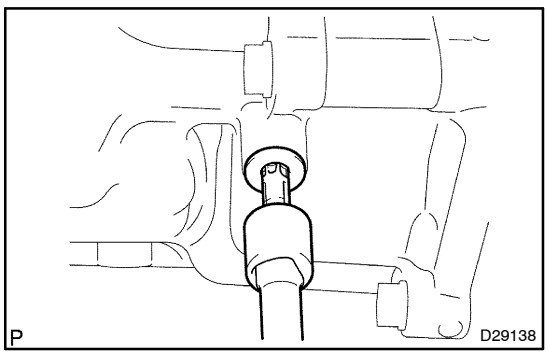


10. REMOVE FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB–ASSY

(a) Remove the 4 bolts from the transfer adapter.

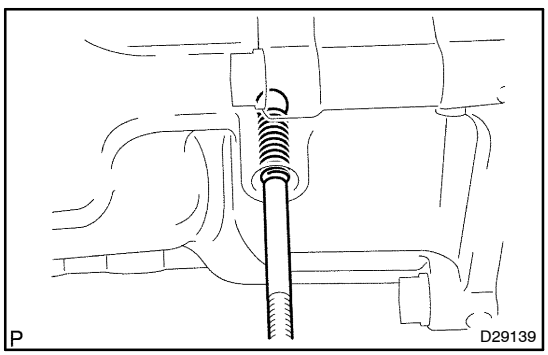


(b) Remove the floor shift control shift lever retainer and the extension housing oil deflector from the transfer adapter.

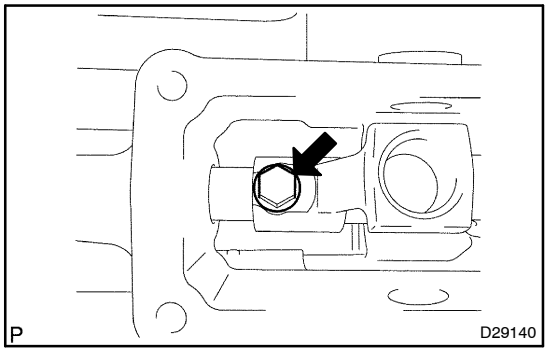


11. REMOVE SHAFT DETENT BALL

(a) Using torx socket wrench T40, remove the shift detent ball spring seats No.1 from the transfer adapter.

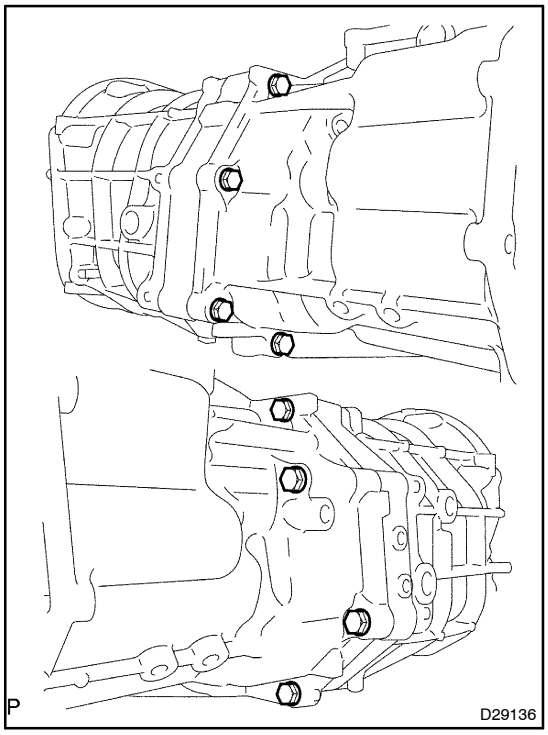


(b) Using a magnetic finger, remove the shaft detent ball and the shift detent ball low side compression spring from the transfer adapter.

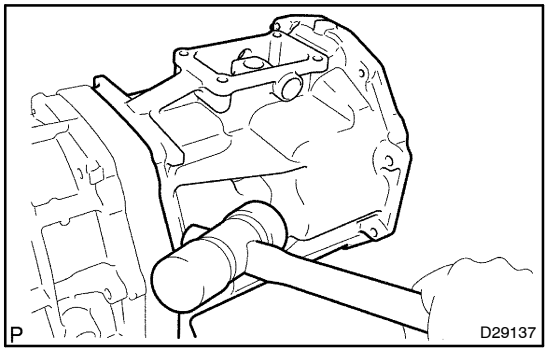


12. REMOVE TRANSFER ADAPTER

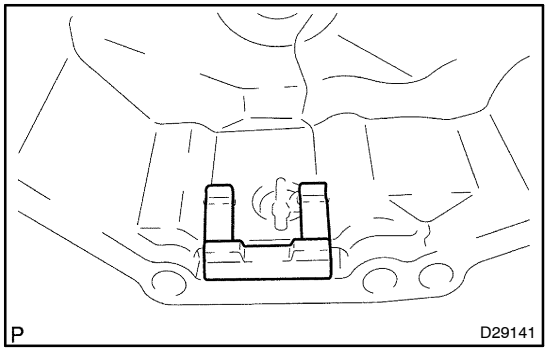
(a) Remove the shift lever housing bolt from the transfer adapter.



(b) Remove the 8 bolts.

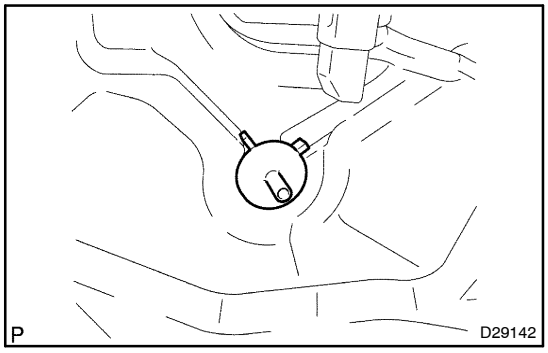


(c) Using a plastic hammer, remove the transfer adapter from the manual transmission case.



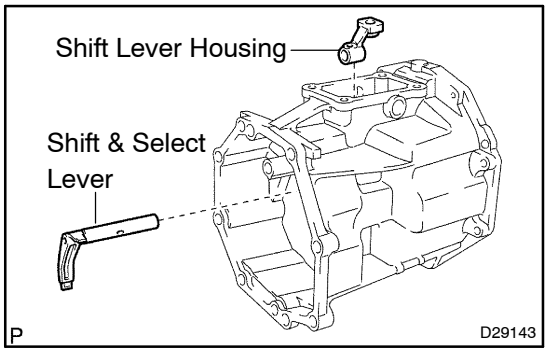
13. REMOVE TRANSMISSION MAGNET

(a) Remove the transmission magnet from the transfer adapter.



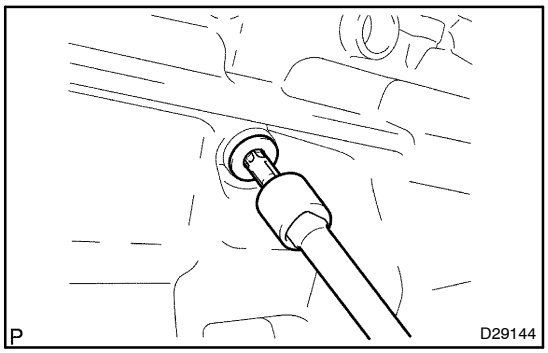
14. REMOVE TRANSFER OIL RECEIVER PIPE

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



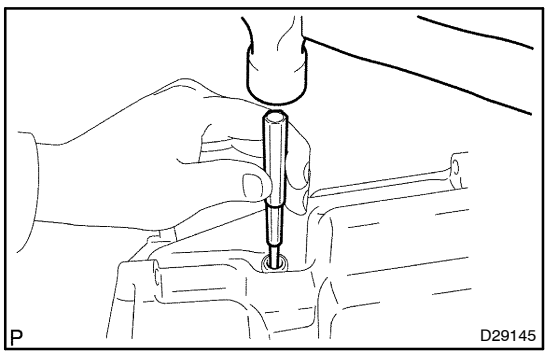
15. REMOVE SHIFT & SELECT LEVER

(a) Remove the shift & serect lever and the shift lever housing from the transfer adapter.

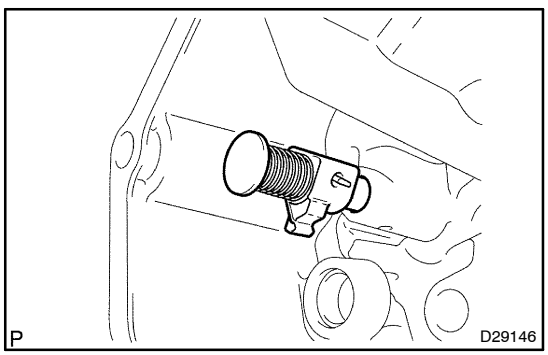


16. REMOVE REVERSE RESTRICT PIN NO.1

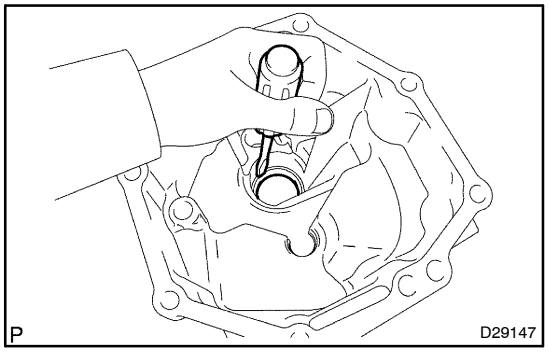
(a) Using torx socket wrench T40, remove the transfer adapter W/head straight screw plug from the transfer adapter.



(b) Using a pin punch and a hammer, drive out the reverse restrict pin slotted spring pin from the transfer adapter.

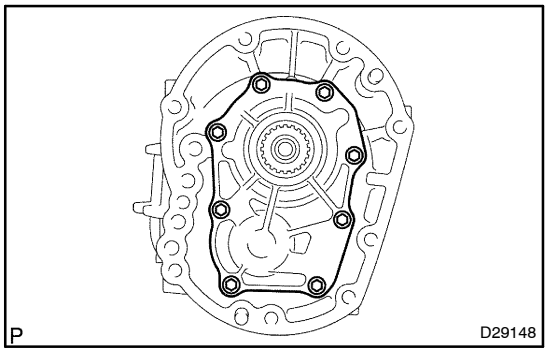


(c) Remove the reverse restrict pin No.1 from the transfer adapter.



17. REMOVE TRANSFER ADAPTER OIL SEAL

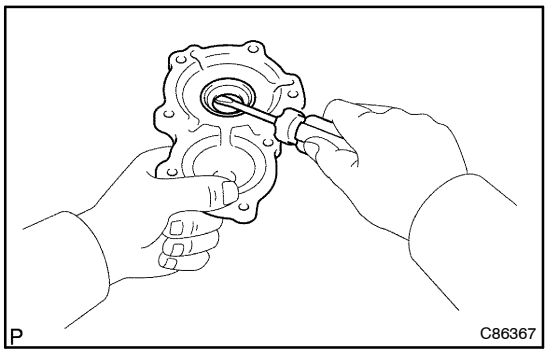
(a) Using a screwdriver, remove the transfer adapter oil seal from the transfer adapter.



18. REMOVE BEARING RETAINER FRONT (MTM)

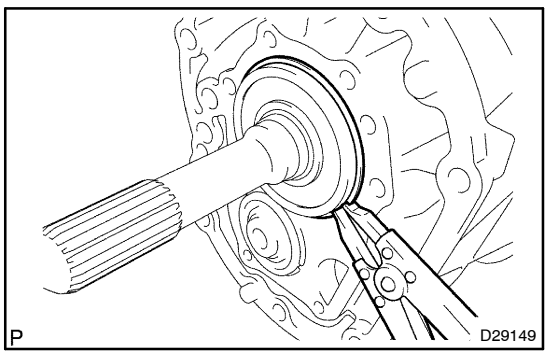
(a) Remove the 8 bolts.

(b) Remove the bearing retainer front and the transmission front bearing retainer gasket from the manual transmission case.



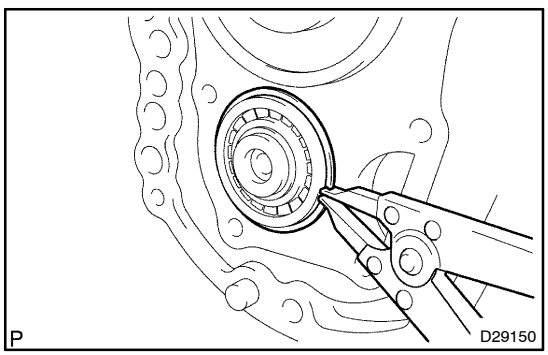
19. REMOVE TRANSMISSION FRONT BEARING RETAINER OIL SEAL

(a) Using a screwdriver, remove the transmission front bearing retainer oil seal from the bearing retainer front.



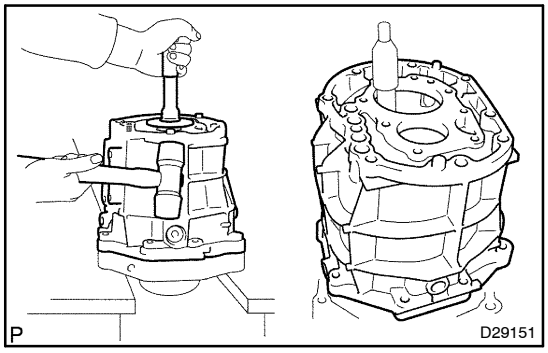
20. REMOVE FRONT BEARING SHAFT SNAP RING

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



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

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

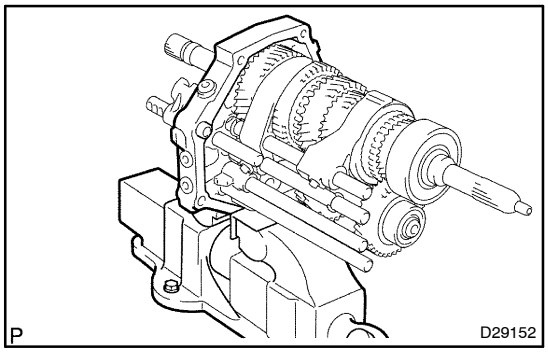


22. REMOVE MANUAL TRANSMISSION CASE

(a) Stand the manual transmission assy as shown.

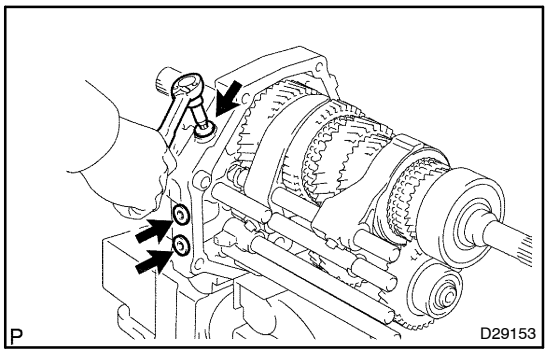
(b) Using a plastic hammer, carefully tap off the manual transmission case.

(c) Remove the manual transmission case from the intermediate plate as shown.



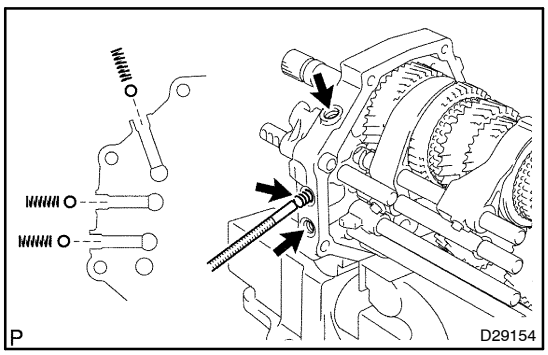
23. FIX INTERMEDIATE PLATE

(a) Fix the intermediate plate in a vise.

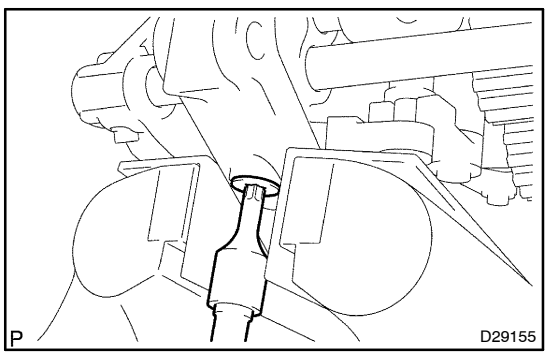


24. REMOVE SHAFT DETENT BALL

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

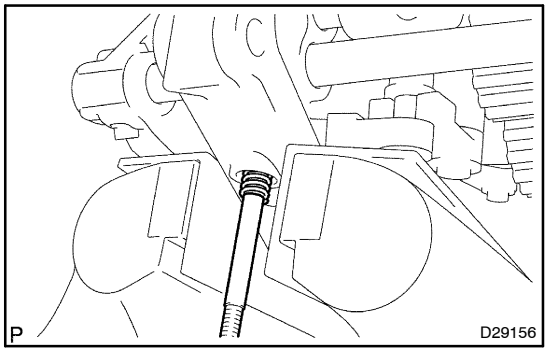


(b) Using a magnetic finger, remove the 3 shift detent ball low side compression springs and the 3 shaft detent balls from the intermediate plate.

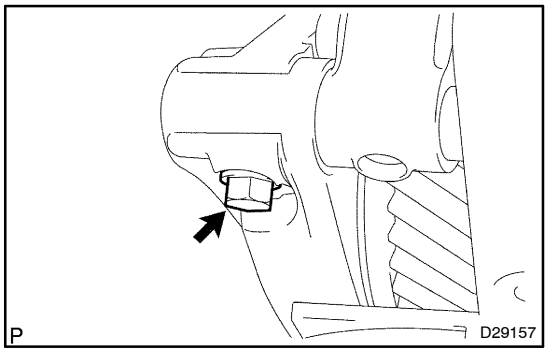


25. REMOVE SHIFT DETENT BALL NO.2

(a) Using torx socket wrench T40, remove the shift detent ball spring seat No.2 from the intermediate plate.

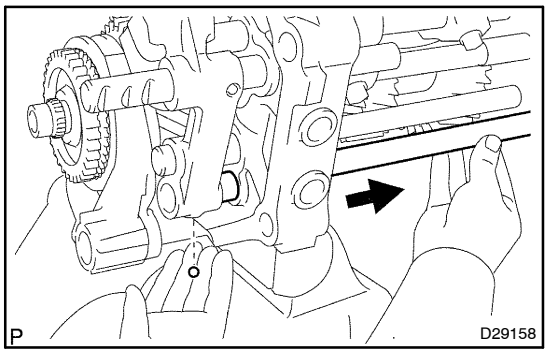


(b) Using a magnetic finger, remove the shift detent ball compression spring and the shift detent ball No.2 from the intermediate plate.

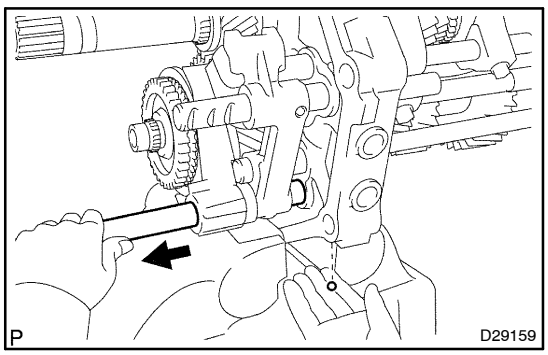


26. REMOVE GEAR SHIFT FORK SHAFT NO.4

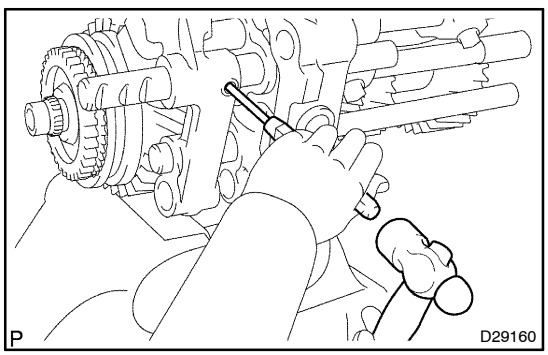
(a) Remove the shift fork bolt from the gear shift fork No.3.



(b) Remove the or ball pin shift inter lock from the reverse shift head.

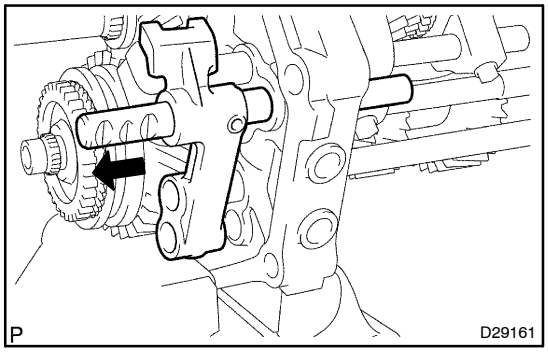


(c) Remove the gear shift fork shaft No.4, the or ball pin shift inter lock and the gear shift fork No.3 from the intermediate plate.

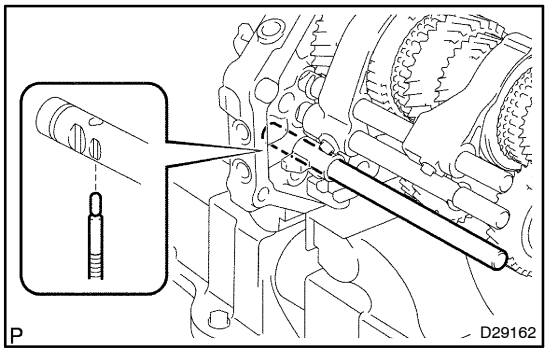


27. REMOVE GEAR SHIFT FORK SHAFT NO.5

(a) Using a pin punch and a hammer, drive out the shift fork set slotted spring pin from the reverse shift head.

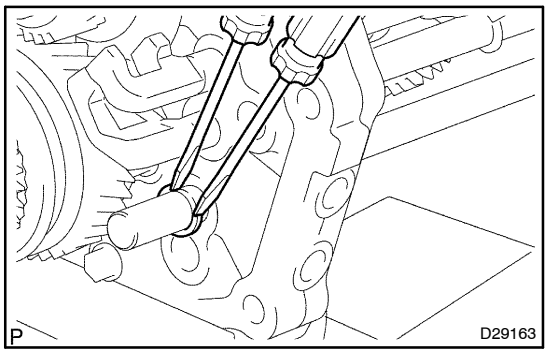


(b) Remove the reverse shift head and the gear shift fork shaft No.5 from the intermediate plate.



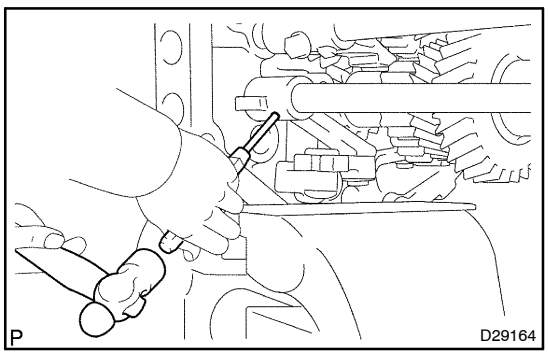
28. REMOVE SHIFT INTER LOCK PIN NO.2

(a) Using a magnetic finger, remove the shift inter lock pin No.2 from the reverse shift fork shaft.

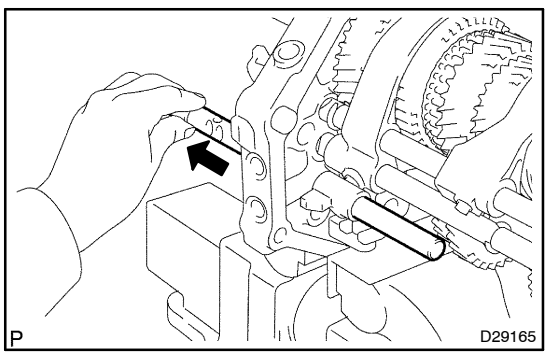


29. REMOVE REVERSE SHIFT FORK SHAFT

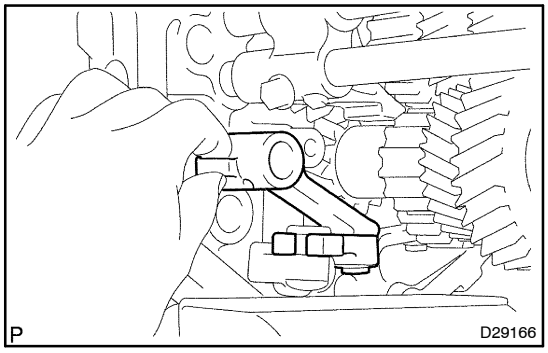
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the reverse shift fork shaft.



(b) Using a pin punch and a hammer, drive out the shift lever shaft set slotted spring pin from the reverse shift fork.

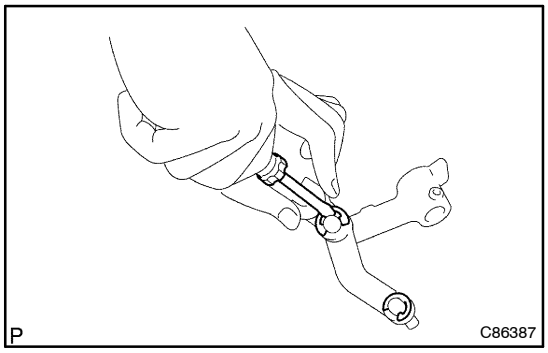


(c) Remove the reverse shift fork shaft from the intermediate plate.



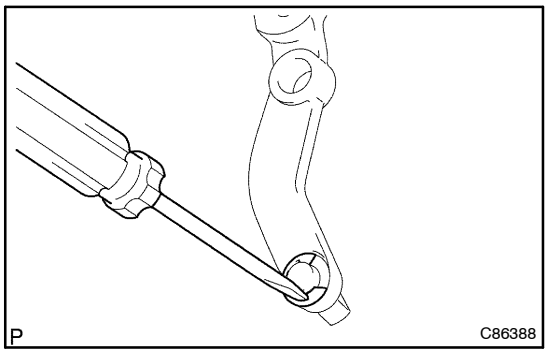
30. REMOVE REVERSE SHIFT ARM

(a) Remove the reverse shift arm assy from the reverse shift arm bracket.



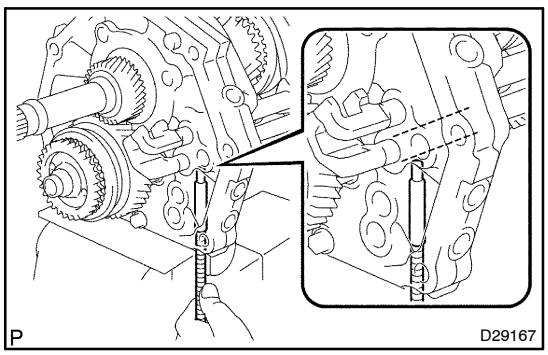
(b) Using a screwdriver, remove the reverse shift arm E–ring.

(c) Remove the reverse shift fork from the reverse shift arm.



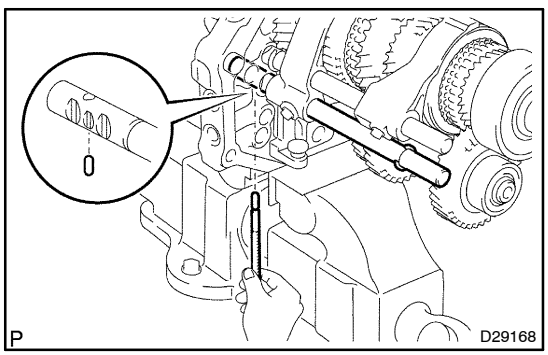
(d) Using a screwdriver, remove the shift arm shoe shaft snap ring.

(e) Remove the shift arm shoe from the reverse shift arm.



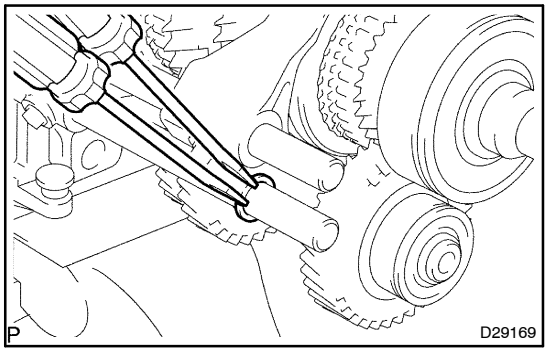
31. REMOVE OR BALL PIN SHIFT INTER LOCK

(a) Using a magnetic finger, remove the or ball pin shift inter lock from the intermediate plate.



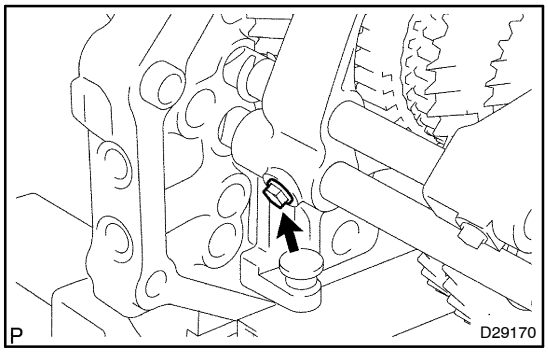
32. REMOVE SHIFT INTER LOCK PIN NO.2

(a) Using a magnetic finger, remove the shift inter lock pin No.2 from the gear shift fork shaft No.1.

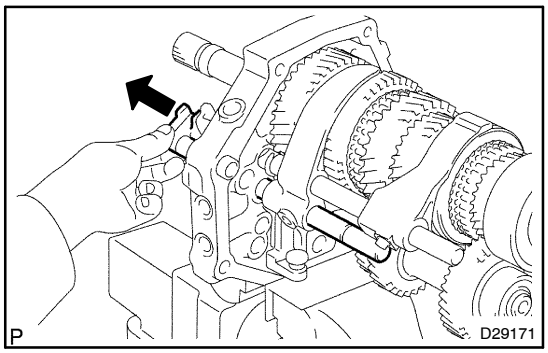


33. REMOVE GEAR SHIFT FORK SHAFT NO.1

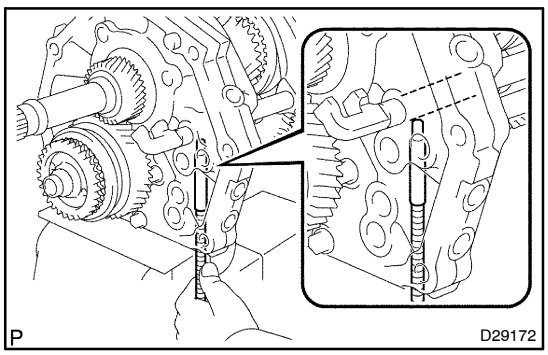
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No.1.



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

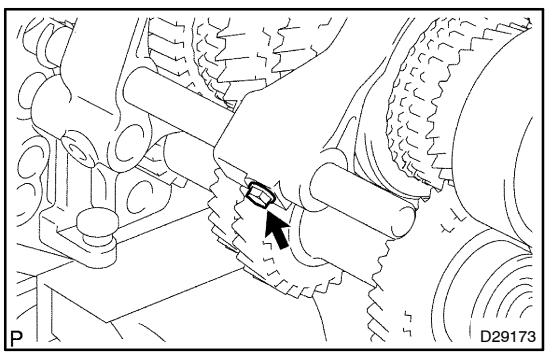


(c) Remove the gear shift fork shaft No.1 from the intermediate plate.



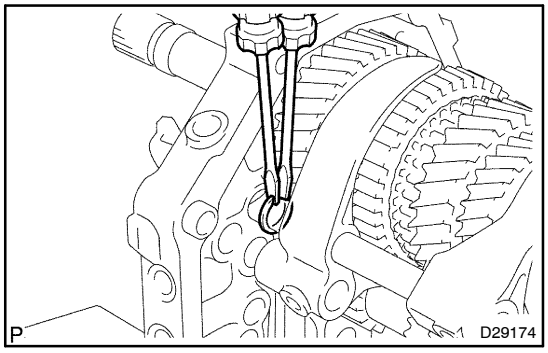
34. REMOVE OR BALL PIN SHIFT INTER LOCK

(a) Using a magnetic finger, remove shift inter lock pin No.1 from the intermediate plate.

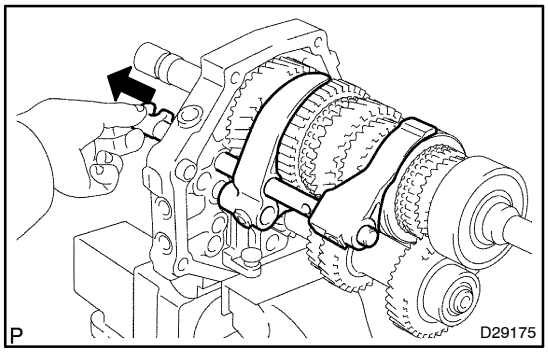


35. REMOVE GEAR SHIFT FORK SHAFT NO.2

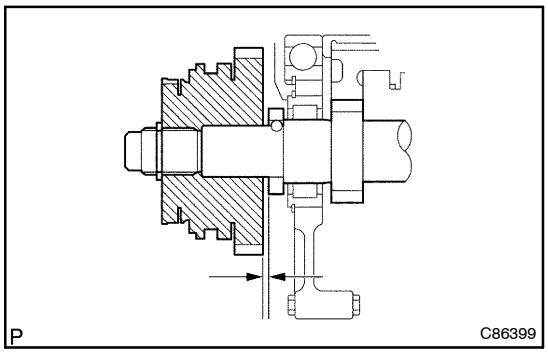
(a) Remove the shift fork bolt from the gear shift fork No.2.



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



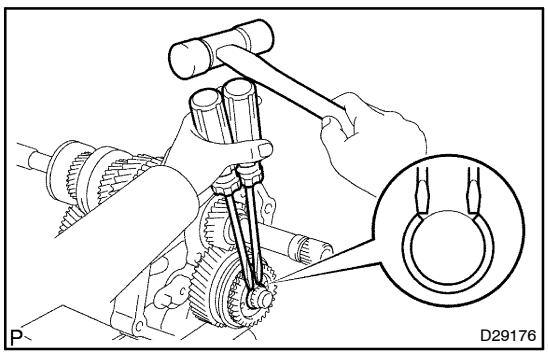
(c) Remove the gear shift fork shaft No.2 assy, the gear shift fork No.1 and the gear shift fork No.2 from the intermediate plate.



36. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

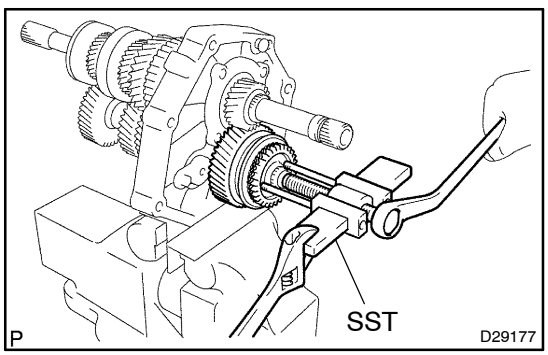
(a) Using a feeler gauge, measure the counter shaft 5th gear thrust clearance.

Standard clearance:
0.10 – 0.30 mm (0.0039 – 0.0118 in.)
Maximum clearance: 0.30 mm (0.0118 in.)



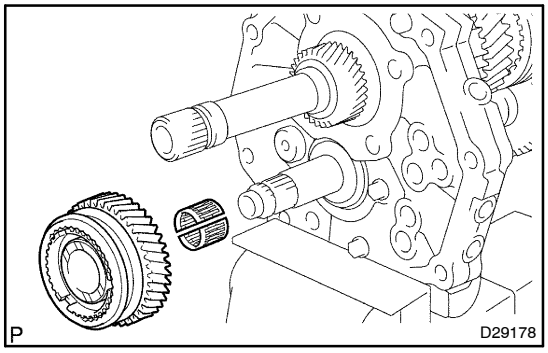
37. REMOVE COUNTER SHAFT 5TH GEAR ASSY

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

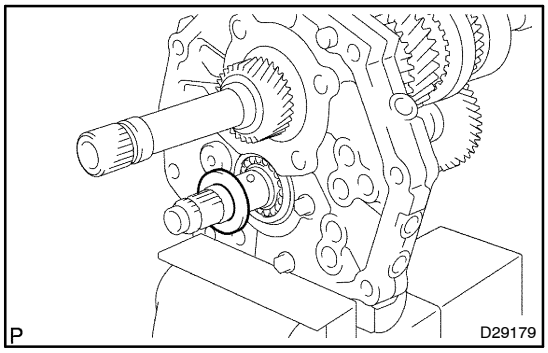


(b) Using SST, remove the gear spline piece No.5 and the synchronizer ring No.3 from the counter gear.

SST 09950–50013 (09951–05010, 09952–05010, 09953–05010, 09954–05021)

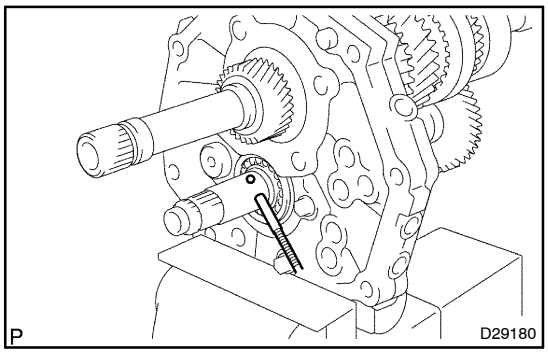


(c) Remove the counter shaft 5th gear assy and the counter 5th gear bearing from the counter gear.

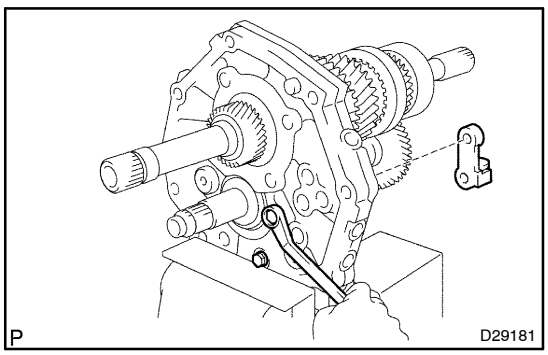


38. REMOVE 4TH GEAR WASHER

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

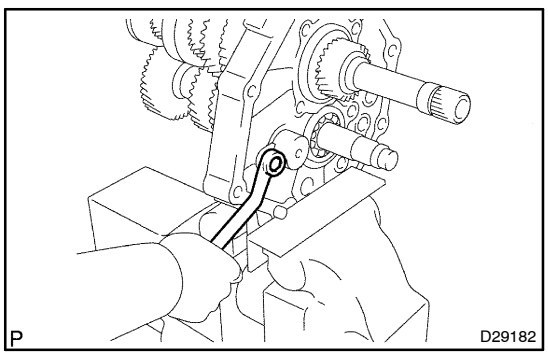


(b) Using a magnetic finger, remove the 5th gear bearing inner race lock ball from the counter gear.



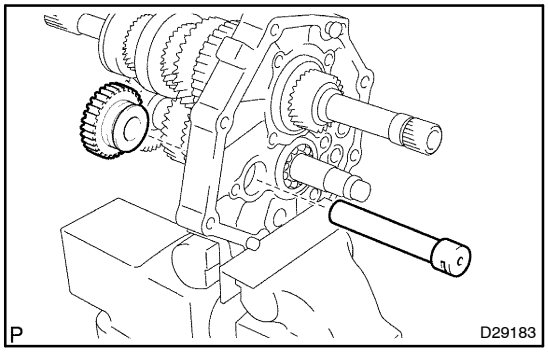
39. REMOVE REVERSE SHIFT ARM BRACKET

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

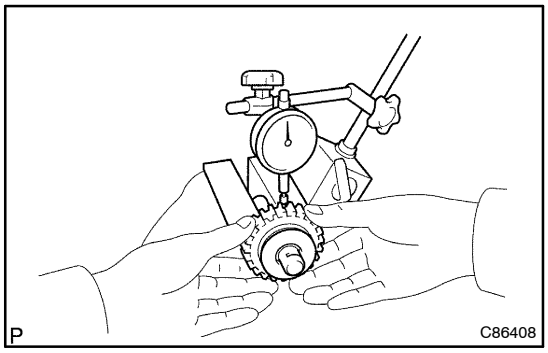


40. REMOVE REVERSE IDLER GEAR SUB–ASSY

(a) Remove the bolt and the reverse idler gear shaft stopper from the intermediate plate.



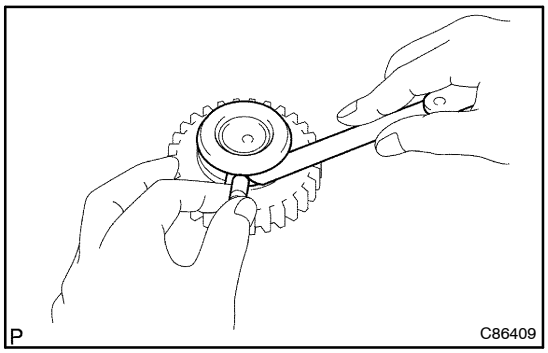
(b) Remove the reverse idler gear shaft and the reverse idler gear sub–assy from the intermediate plate.



41. INSPECT REVERSE IDLER GEAR RADIAL CLEARANCE

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

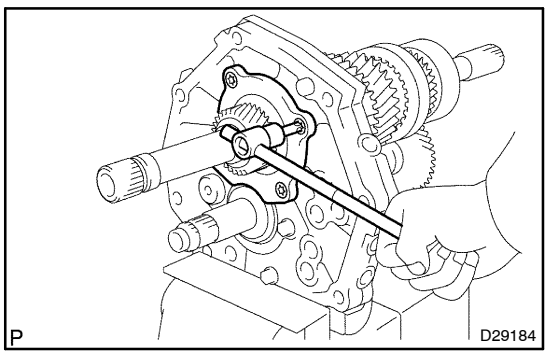
Standard clearance:
0.04 – 0.08 mm (0.0016 – 0.0031 in.)
Maximum clearance: 0.08 mm (0.0031 in.)



42. INSPECT REVERSE IDLER GEAR SUB–ASSY

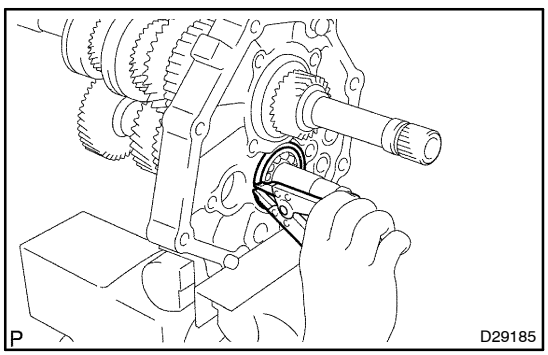
(a) Using a feeler gauge, measure the clearance between the reverse idler gear and the shift arm shoe.

Standard clearance:
0.05 – 0.28 mm (0.0020 – 0.0110 in.)
Maximum clearance: 0.28 mm (0.0110 in.)



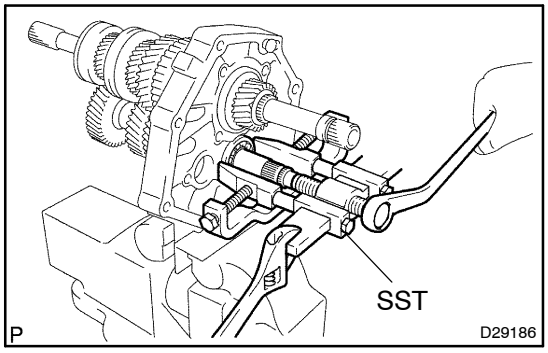
43. REMOVE OUTPUT SHAFT REAR BEARING (MTM) RETAINER

(a) Using a torx socket wrench T40, remove the 4 screws and the output shaft rear bearing retainer from the intermediate plate.

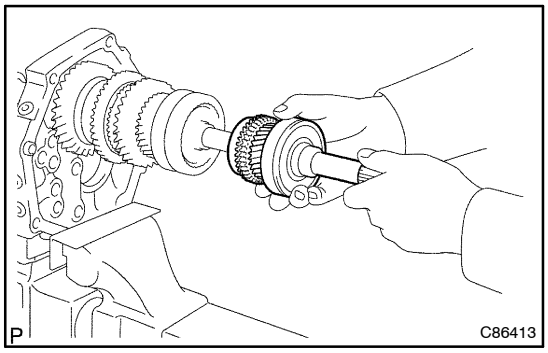


44. REMOVE COUNTER GEAR ASSY

(a) Using a snap ring pliers, remove the counter shaft center bearing snap ring from the counter shaft center bearing.

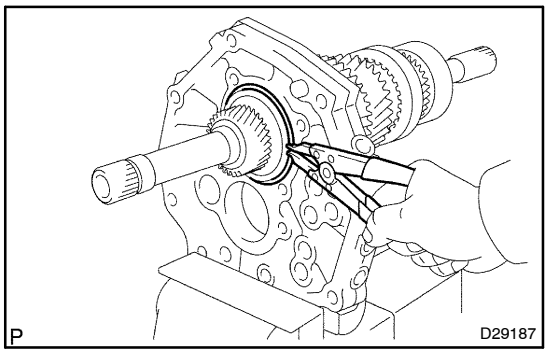


(b) Using SST, remove the counter shaft center bearing and the counter gear assy from the intermediate plate.
SST 09950–40011 (09951–04010, 09952–04010, 09953–04010, 09954–04010, 09955–04011, 09958–04011)



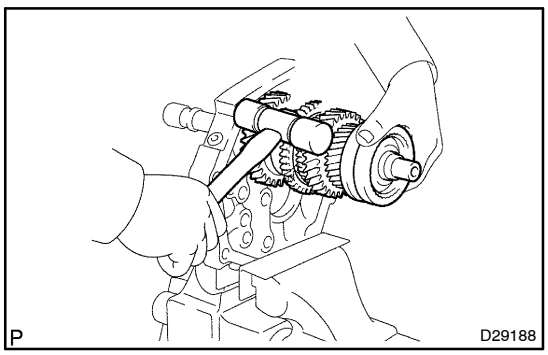
45. REMOVE INPUT SHAFT ASSY

(a) Remove the input shaft assy with the 13 input shaft bearings and the synchronizer ring No.1 from the output shaft.

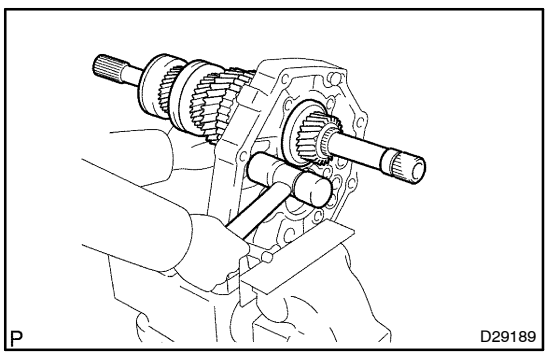


46. REMOVE OUTPUT SHAFT ASSY

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

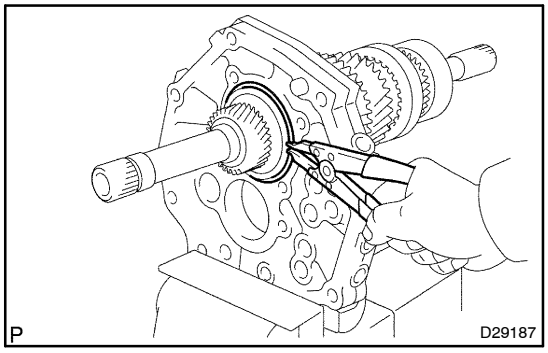


(b) Remove the output shaft assy from the intermediate plate by pulling on the output shaft assy and tapping on the intermediate plate with a plastic hammer.



47. INSTALL OUTPUT SHAFT ASSY

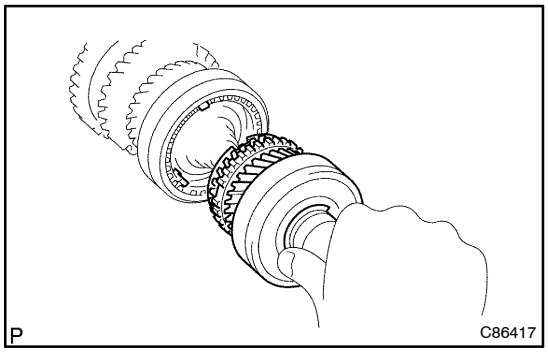
(a) Install the output shaft assy into the intermediate plate by pushing on the output shaft assy and tapping on the intermediate plate with a plastic hammer.



(b) Using a snap ring pliers, install the output shaft bearing shaft snap ring to the output shaft bearing RR.

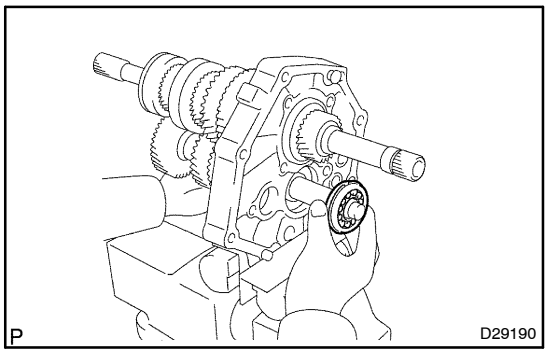
HINT:

Be sure the output shaft bearing shaft snap ring is flush with the intermediate plate surface.



48. INSTALL INPUT SHAFT ASSY

(a) Coat the input shaft assy and the synchronizer ring No.1 with gear oil, and install them to the output shaft.

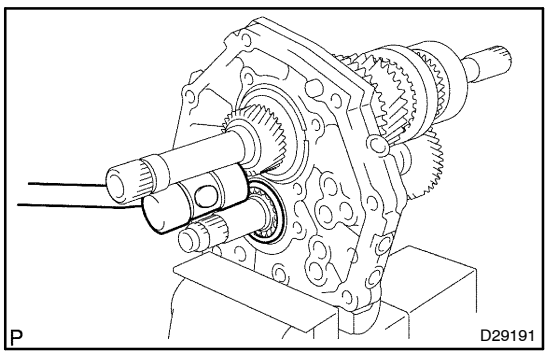


49. INSTALL COUNTER GEAR ASSY

(a) Temporarily install the counter gear assy and a new counter shaft center bearing to the intermediate plate.

NOTICE:

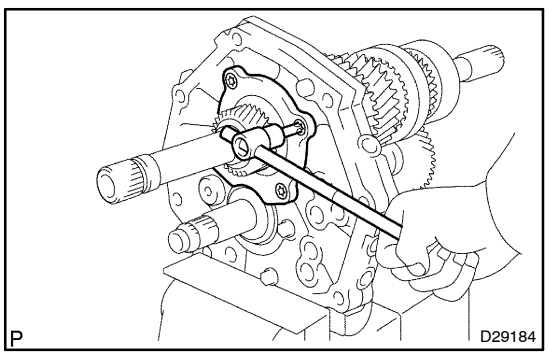
Install the new counter shaft center bearing as the snap ring faces on the rear side.



(b) Using a plastic hammer, install the counter shaft center bearing to the intermediate plate by tapping the outer race of the counter shaft center bearing.

HINT:

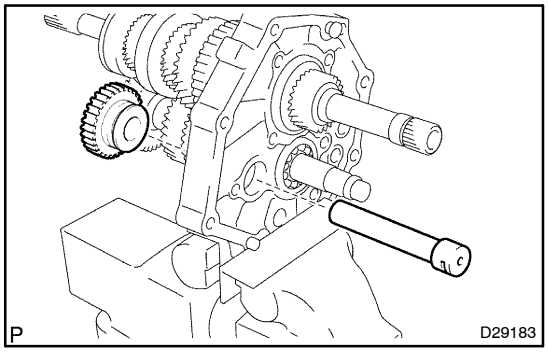
Hold the front side of the counter gear by hand.



50. INSTALL OUTPUT SHAFT REAR BEARING (MTM) RETAINER

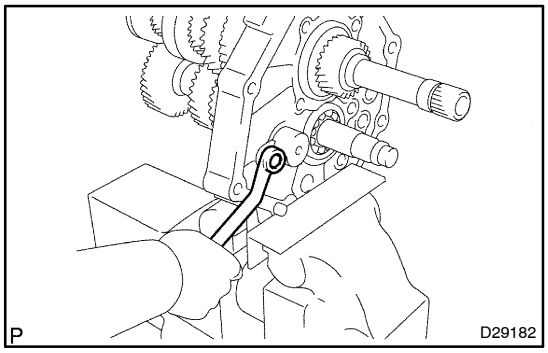
(a) Using a torx socket wrench T40, install the 4 screws and the output shaft rear bearing retainer to the intermediate palate.

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

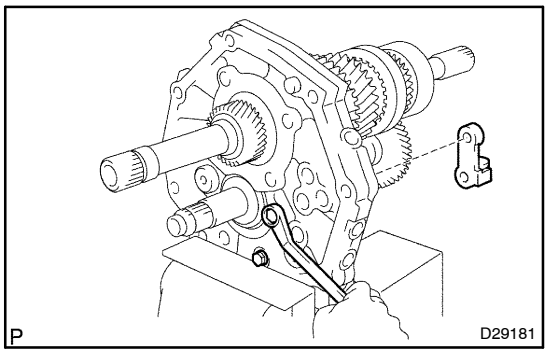


51. INSTALL REVERSE IDLER GEAR SUB–ASSY

(a) Install the reverse idler gear shaft and the reverse idler gear sub–assy to the intermediate plate.

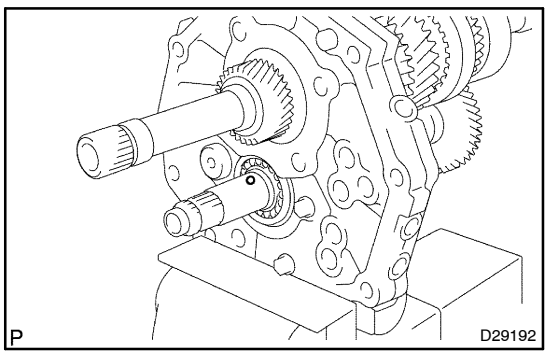


(b) Install the bolt and the reverse idler gear shaft stopper to the intermediate plate.
Torque: 17 N·m (175 kgf·cm, 13 ft·lbf)

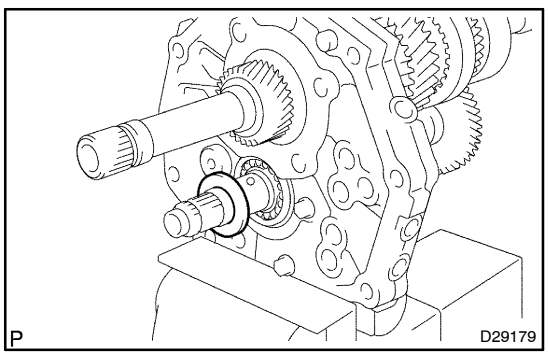


52. INSTALL REVERSE SHIFT ARM BRACKET

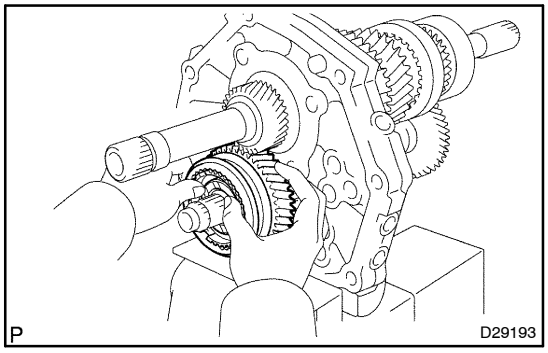
(a) Install the 2 bolts and the reverse shift arm bracket to the intermediate plate.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



53. INSTALL 5TH GEAR BEARING INNER RACE LOCK BALL

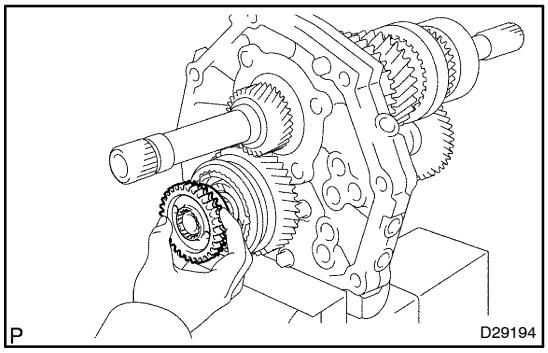


54. INSTALL 4TH GEAR WASHER

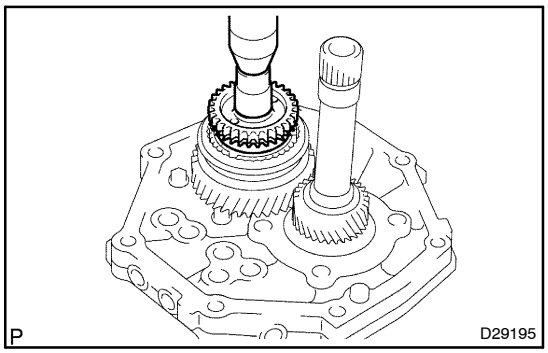


55. INSTALL COUNTER SHAFT 5TH GEAR ASSY

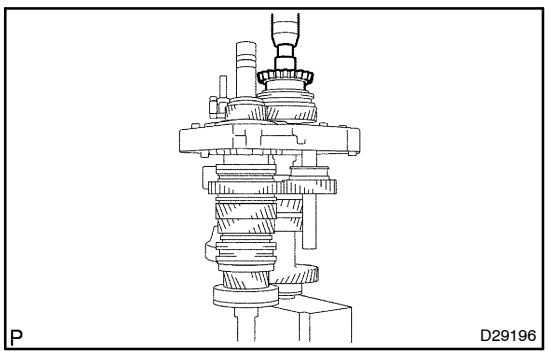
(a) Install the counter shaft 5th gear assy to the counter gear.



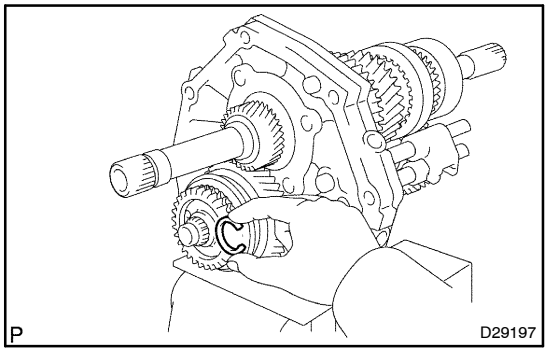
(b) Temporarily install the synchronizer ring No. 3 on the gear spline piece No.5.



(c) Dismount the intermediate plate from the vise.
(d) Stand the manual transmission as shown.



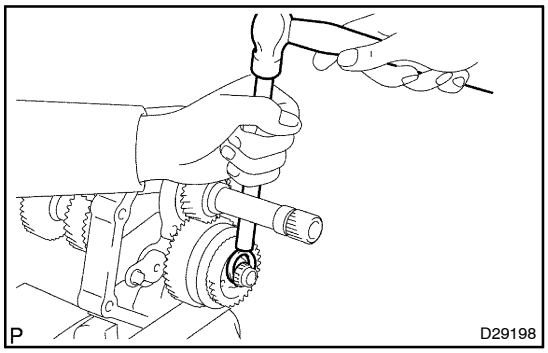
(e) Using a press and 22 mm socket wrench, install the gear spline piece No.5 with the synchronizer ring No.3 slots aligned with the shifting keys.
(f) Mount the intermediate plate to the vise.



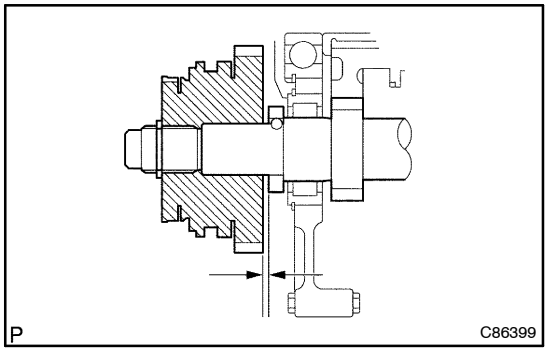
(g) Select a counter gear rear shaft snap ring that will allow minimum axial play.

Counter gear rear shaft snap ring thickness: mm (in.)

Mark	Thickness
A	2.80 – 2.85 (0.110 – 0.112)
B	2.85 – 2.90 (0.112 – 0.114)
C	2.90 – 2.95 (0.114 – 0.116)
D	2.95 – 3.00 (0.116 – 0.118)
E	3.00 – 3.05 (0.118 – 0.120)
F	3.05 – 3.10 (0.120 – 0.122)
G	3.10 – 3.15 (0.122 – 0.124)



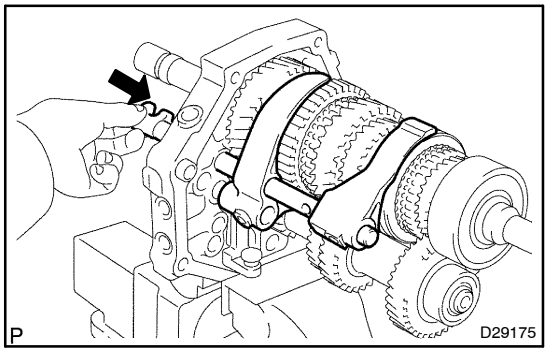
(h) Using a brass bar and a hammer, install the counter gear rear shaft snap ring to the counter gear.



56. INSPECT COUNTER SHAFT 5TH GEAR THRUST CLEARANCE

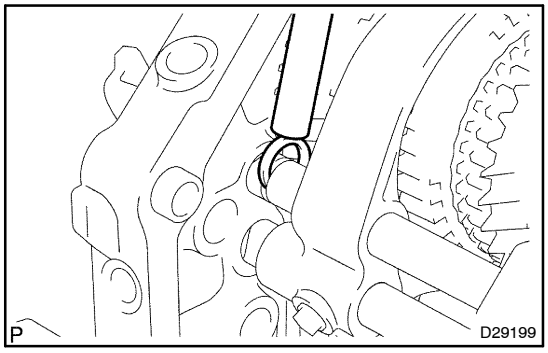
(a) Using a feeler gauge, measure the counter shaft 5th gear thrust clearance.

Standard clearance:
0.10 – 0.30 mm (0.0039 – 0.0118 in.)
Maximum clearance: 0.30 mm (0.0118 in.)

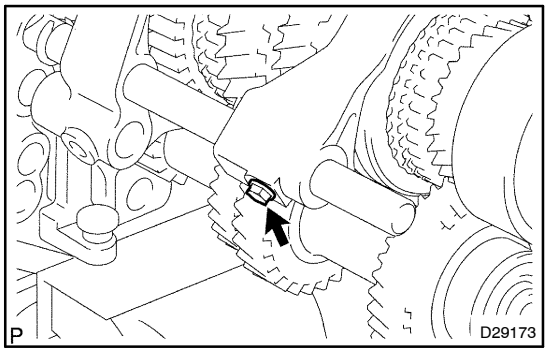


57. INSTALL GEAR SHIFT FORK SHAFT NO.2

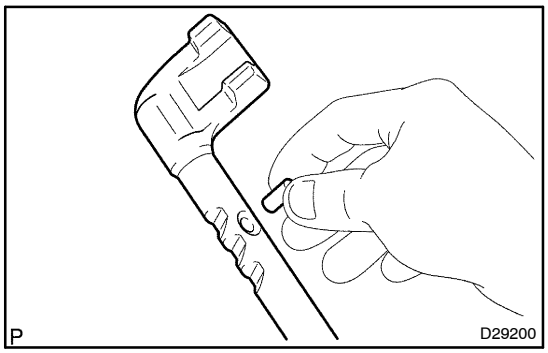
(a) Install the gear shift fork shaft No.2 through the gear shift fork No.2, the gear shift fork No.1 and the intermediate plate.



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

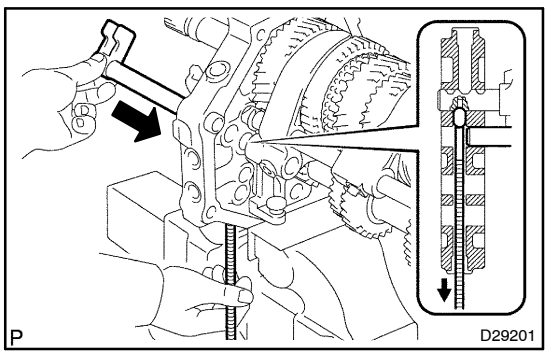


(c) Install the shift fork bolt to the gear shift fork No.2.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)



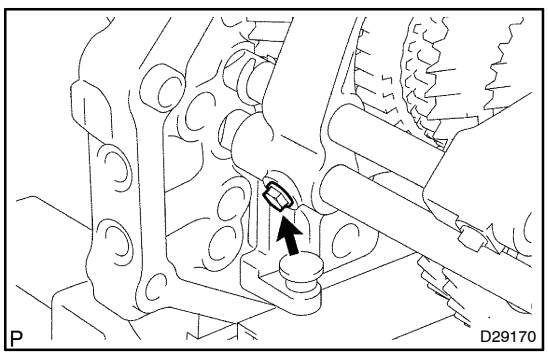
58. INSTALL SHIFT INTER LOCK PIN NO.2

(a) Coat the shift inter lock pin No.2 with MP grease, and install it into the gear shift fork shaft No.1.

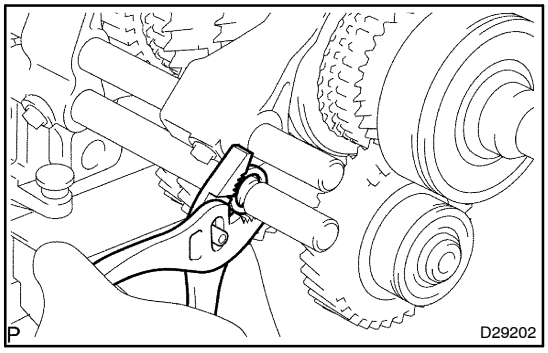


59. INSTALL GEAR SHIFT FORK SHAFT NO.1

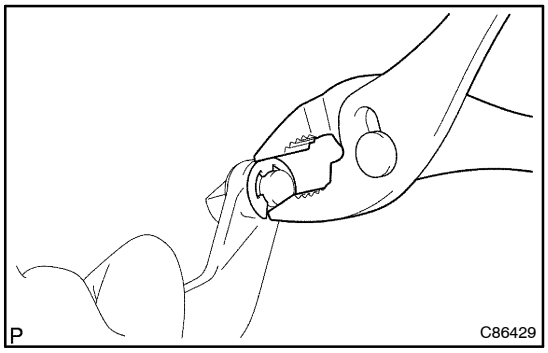
(a) Coat the shift inter lock pin No.1 with MP grease.
(b) Using a magnetic finger, install the shift inter lock pin No.1 to the intermediate plate.
(c) Install the gear shift fork shaft No.1 through the gear shift fork No.2 and the intermediate plate.



(d) Install the shift fork bolt to the gear shift fork No.1.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

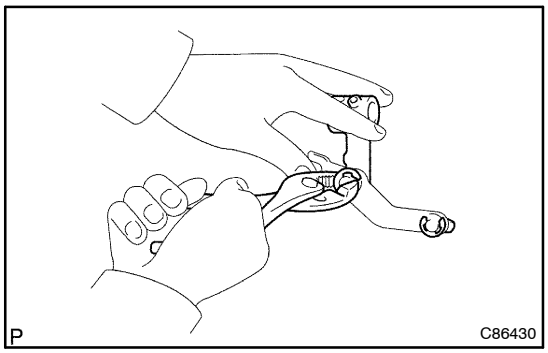


(e) Install the shift fork shaft snap ring to the gear shift fork shaft No.1.

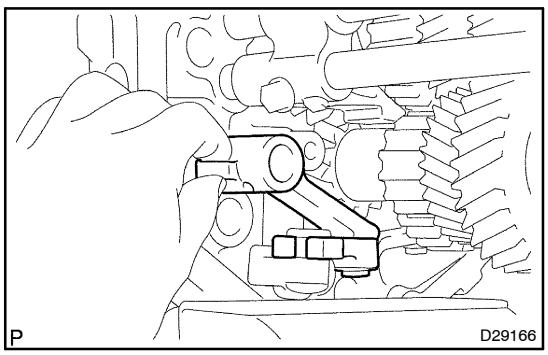


60. INSTALL REVERSE SHIFT ARM

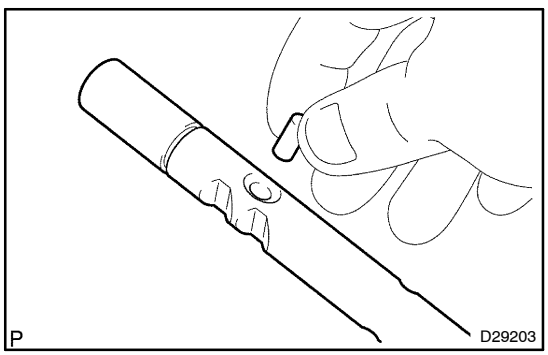
(a) Install the shift arm shoe shaft snap ring and the shift arm shoe to the reverse shift arm.



(b) Install the reverse shift arm E–ring and the reverse shift fork to the reverse shift arm.

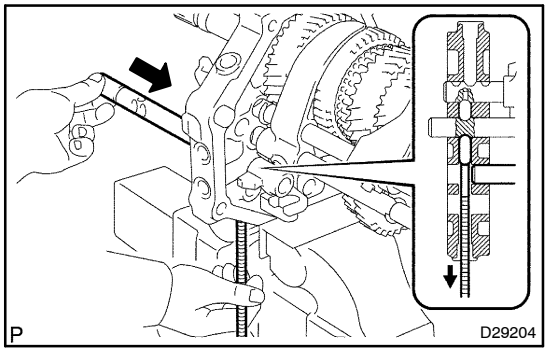


(c) Install the reverse shift arm to the reverse shift arm bracket.



61. INSTALL SHIFT INTER LOCK PIN NO.2

(a) Coat the shift inter lock pin No.2 with MP grease, and install it into the reverse shift fork shaft.

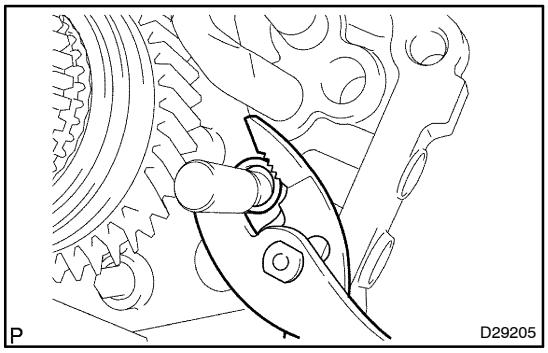


62. INSTALL REVERSE SHIFT FORK SHAFT

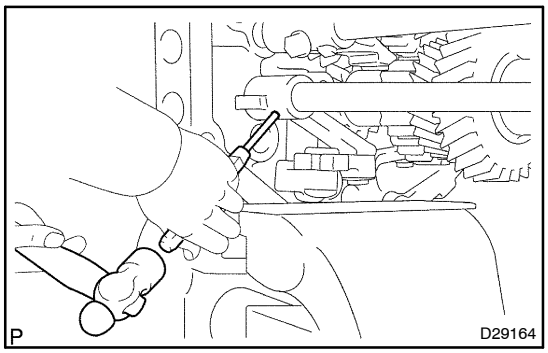
(a) Coat the or ball pin shift inter lock with MP grease.

(b) Using a magnetic finger, install the or ball pin shift inter lock to the intermediate plate.

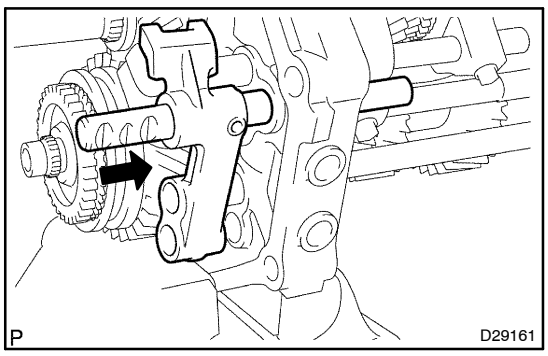
(c) Install the reverse shift fork shaft through the reverse shift fork and the intermediate plate.



(d) Install the shift fork shaft snap ring to the reverse shift fork shaft.

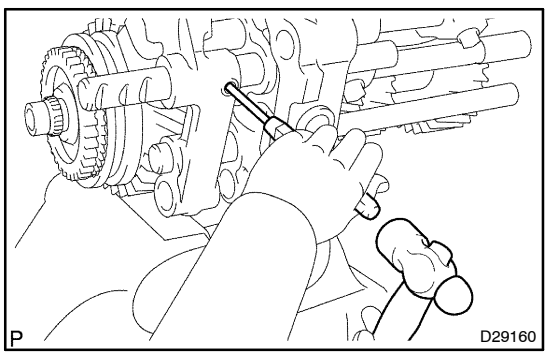


(e) Using a pin punch and a hammer, drive in the shift lever shaft set slotted spring pin to the reverse shift fork.

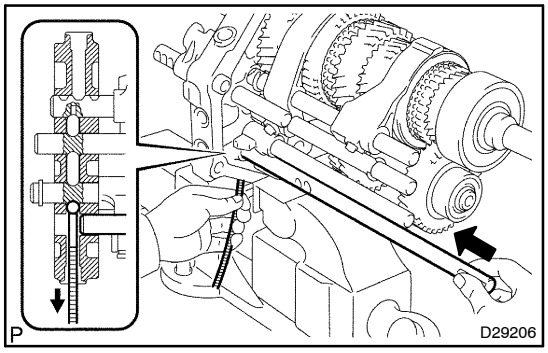


63. INSTALL GEAR SHIFT FORK SHAFT NO.5

(a) Install the reverse shift head and the gear shift fork shaft No.5.



(b) Using a pin punch and a hammer, drive in the shift lever shaft set slotted spring pin to the reverse shift head.

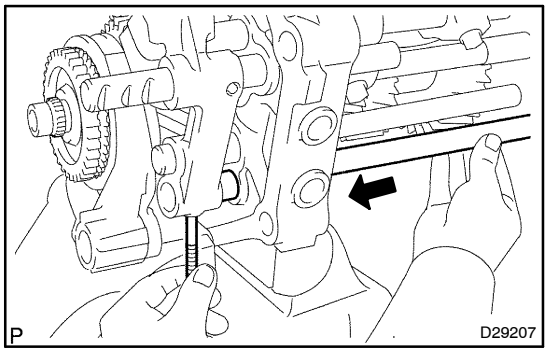


64. INSTALL GEAR SHIFT FORK SHAFT NO.4

(a) Coat the or ball pin shift inter lock with MP grease.

(b) Using a magnetic finger, install the or ball pin shift inter lock to the reverse shift head.

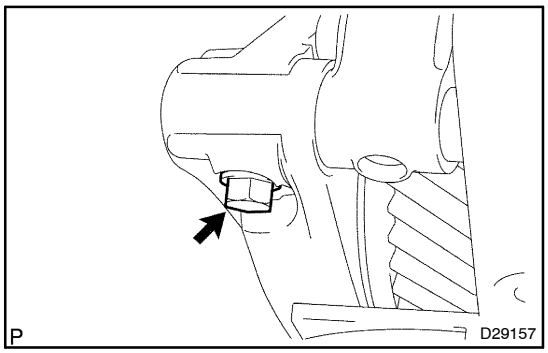
(c) Install the gear shift fork shaft No.4 through the reverse shift head.



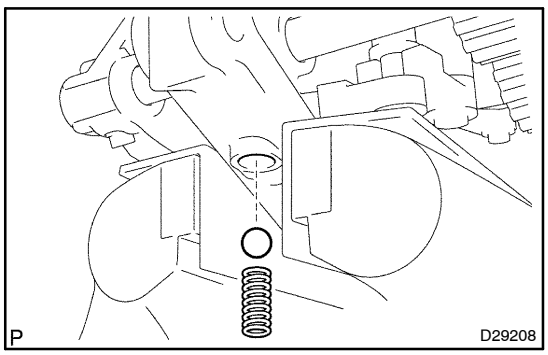
(d) Coat the or ball pin shift inter lock with MP grease.

(e) Using a magnetic finger, install the or ball pin shift inter lock to the intermediate plate.

(f) Install the gear shift fork shaft No.4 through the gear shift fork No.3 and the intermediate plate.



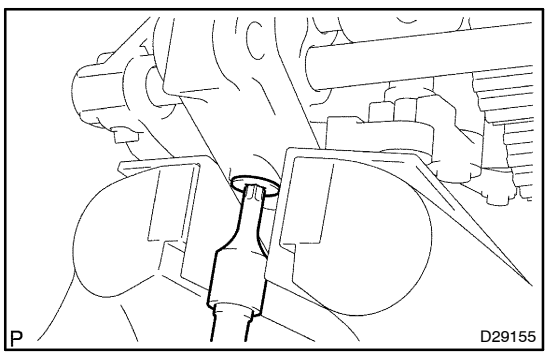
(g) Install the shift fork bolt to the gear shift fork No.3.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)



65. INSTALL SHIFT DETENT BALL NO.2

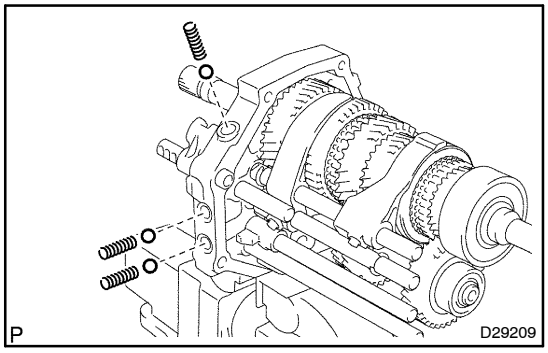
(a) Coat the shift detent ball No.2 with MP grease.

(b) Install the shift detent ball No.2 and the shift detent ball compression spring to the intermediate plate.



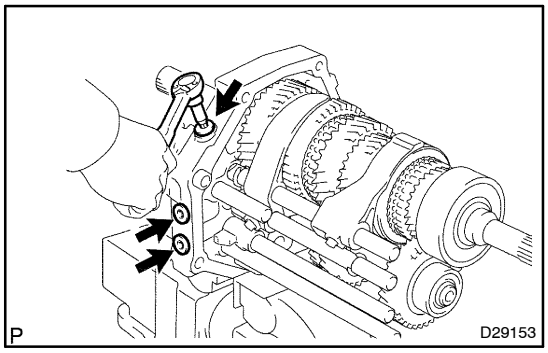
(c) Coat the shift detent ball spring seat No.2 with sealant.
Sealant:
Part No. 08833–00080, THREE BOND 1344, LOCITITE 242 or equivalent

(d) Using a torx socket wrench T40, install the shift detent ball spring seat No.2 to the intermediate plate.
Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)



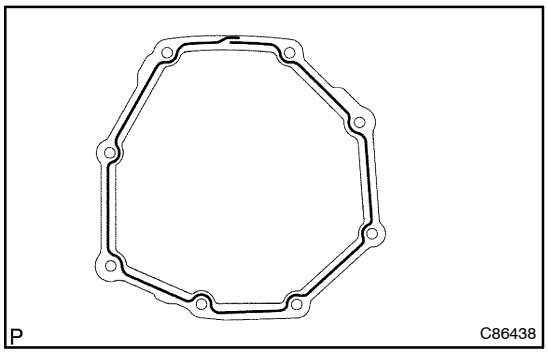
66. INSTALL SHAFT DETENT BALL

(a) Coat the 3 shaft detent balls with MP grease, and install them and the 3 shift detent ball low side compression springs to the intermediate plate.



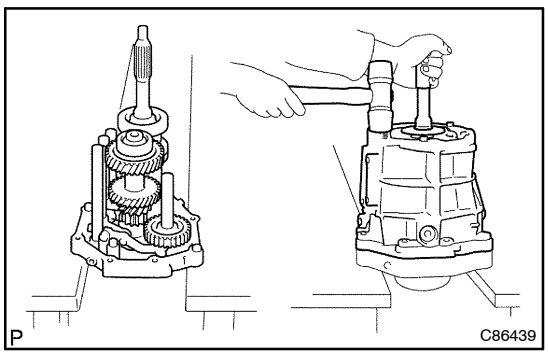
(b) Coat the 3 shift detent ball spring seat No. 1s with sealant.
Sealant:
Part No. 08833–00080, THREE BOND 1344, LOCITITE 242 or equivalent

(c) Using a torx socket wrench T40, install the 3 shift detent ball spring seat No.1s to the intermediate plate.
Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)



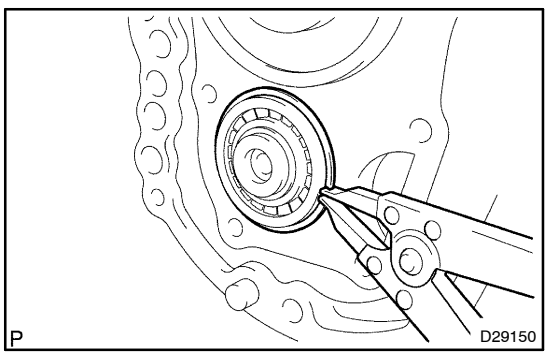
67. INSTALL MANUAL TRANSMISSION CASE

(a) Apply seal packing to the manual transmission case as shown in the illustration.
Sealant:
Part No. 08833–00090, THREE BOND 1281, LOCITITE 242 or equivalent



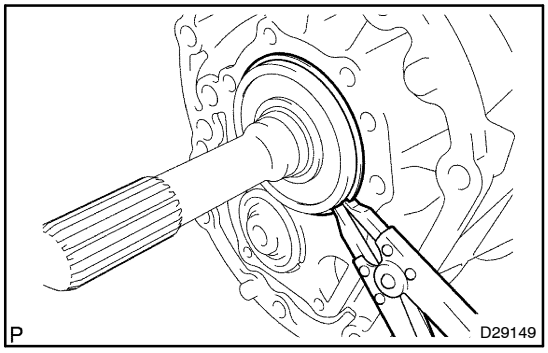
(b) Stand the intermediate plate as shown in the illustration.

(c) Using a plastic hammer, install the manual transmission case to the intermediate plate as shown in the illustration.



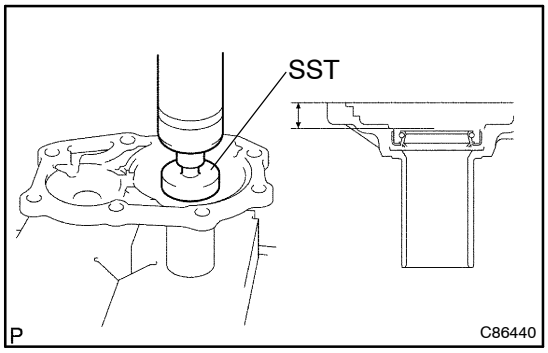
68. INSTALL COUNTER GEAR FRONT BEARING SNAP RING NO.1

(a) Using a snap ring pliers, install the counter gear front bearing snap ring No.1 to the counter gear front bearing.



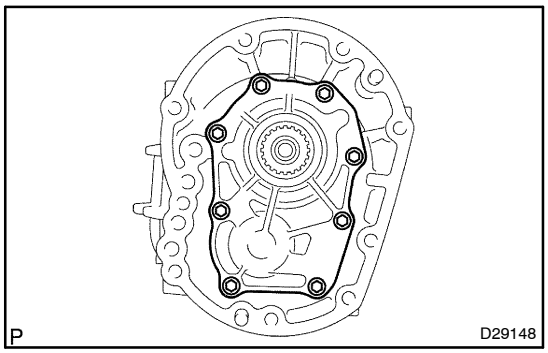
69. INSTALL FRONT BEARING SHAFT SNAP RING

(a) Using a snap ring pliers, install the front bearing shaft snap ring to the input shaft shim.



70. INSTALL TRANSMISSION FRONT BEARING RETAINER OIL SEAL

(a) Using SST, press in a new transmission front bearing retainer oil seal to the front bearing retainer.
SST 09950–60010 (09952–06010, 09951–00440)
Oil seal depth: 12.2 – 13.2 mm (0.480 – 0.520 in.)
Transmission case installation surface

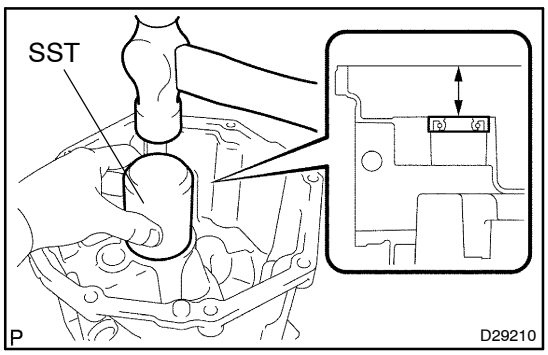


71. INSTALL BEARING RETAINER FRONT (MTM)

(a) Install the bearing retainer front with a new transmission front bearing retainer gasket to the manual transmission case.

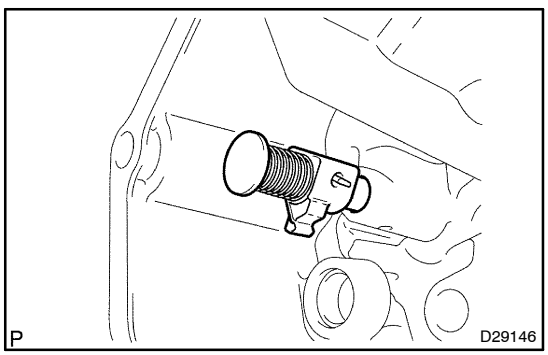
(b) Apply sealant to the bolt threads.
Sealant:
Part No. 08833–00080, THREE BOND 1344, LOCITITE 242 or equivalent

(c) Install the 8 bolts to the manual transmission case.
Torque: 17 N·m (175 kgf·cm, 12 ft·lbf)



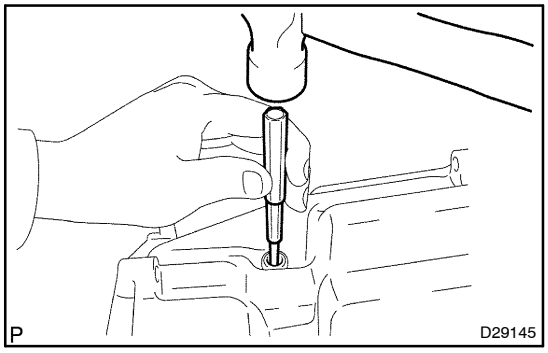
72. INSTALL TRANSFER ADAPTER OIL SEAL

(a) Using SST, drive in a new transfer adapter oil seal to the transfer adapter.
SST 09223–00010
Oil seal depth: 45 – 46 mm (1.772 – 1.811 in.)

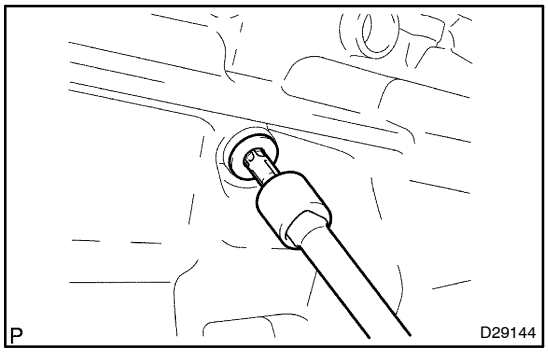


73. INSTALL REVERSE RESTRICT PIN NO.1

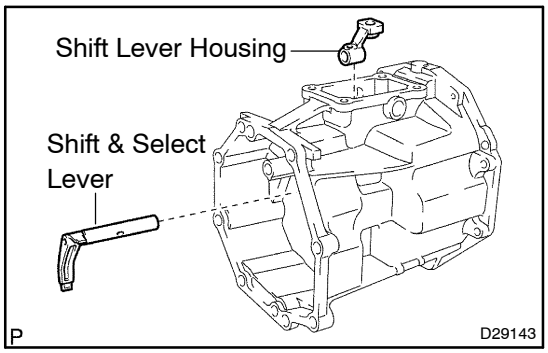
(a) Install the reverse restrict pin No.1 to the transfer adapter.



(b) Using a pin punch and a hammer, drive in the reverse restrict pin slotted spring pin to the transfer adapter.

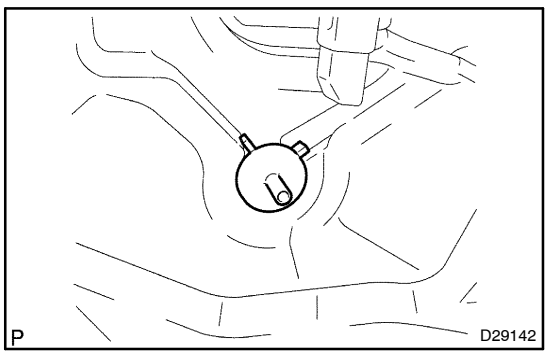


(c) Using a torx socket wrench T40, install the transfer adapter W/head straight screw plug to the transfer adapter.
Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)



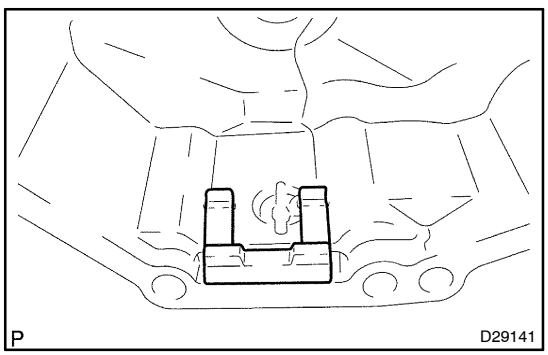
74. INSTALL SHIFT & SELECT LEVER

(a) Install the shift & select lever and the shift lever housing to the transfer adapter.



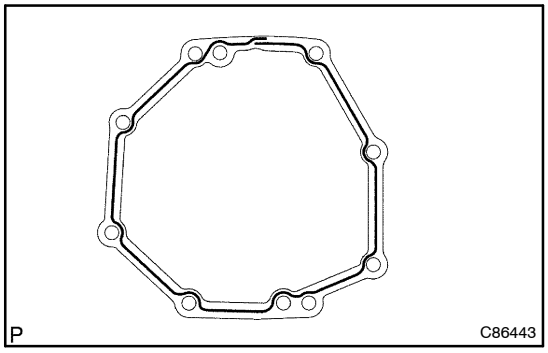
75. INSTALL TRANSFER OIL RECEIVER PIPE

(a) Install the transfer oil receiver pipe to the transfer adapter.



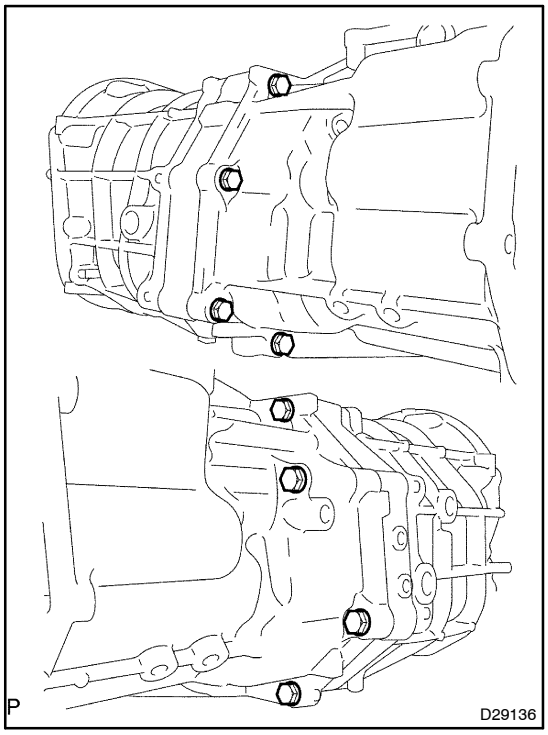
76. INSTALL TRANSMISSION MAGNET

(a) Install the transmission magnet to the transfer adapter.

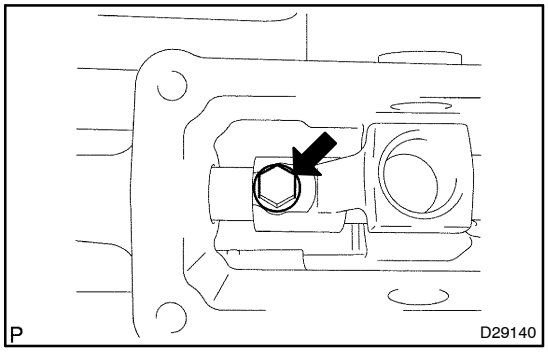


77. INSTALL TRANSFER ADAPTER

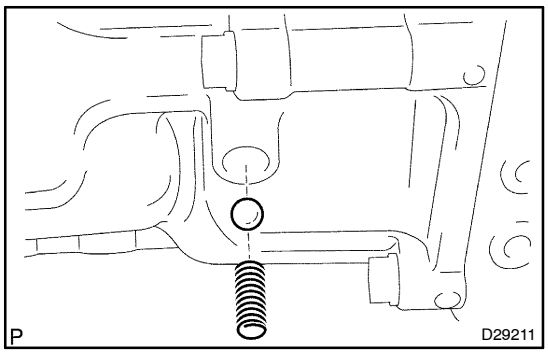
(a) Apply seal packing to the transfer adapter as shown in the illustration.
Seal Packing:
Part No. 08826–00090, THREE BOND 1281, LOCITITE 242 or equivalent



(b) Install the 8 bolts and the transfer adapter to the manual transmission case.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)
Blot length:
Bolt A: 13 mm (0.51 in.)
Bolt B: 8 mm (0.32 in.)

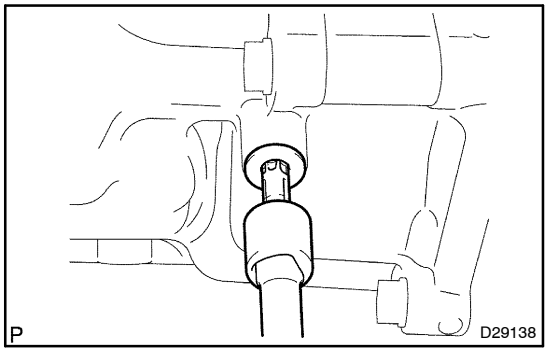


(c) Install the shift rever housing bolt to the shift rever housing.
Torque: 38 N·m (390 kgf·cm, 28 ft·lbf)

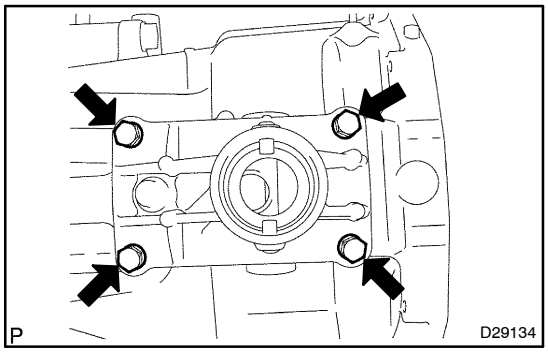


78. INSTALL SHAFT DETENT BALL

(a) Coat the shaft detent ball with MP grease, and install them and the shift detent ball low side compression spring to the transfer adapter.

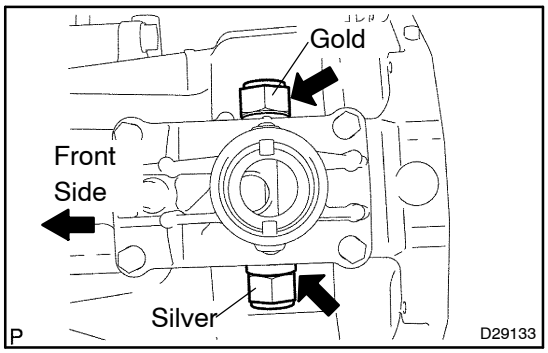


(b) Using a torx socket wrench T40, install the shift detent ball spring seat No.1 to the transfer adapter.
Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)



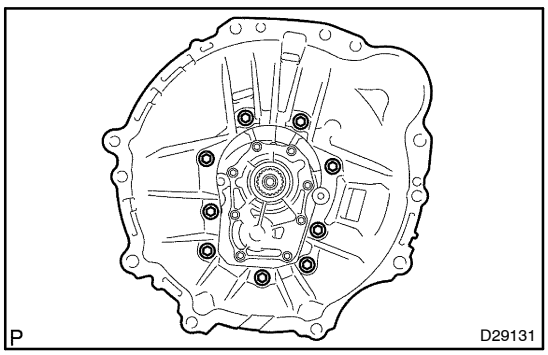
79. INSTALL FLOOR SHIFT CONTROL SHIFT LEVER RETAINER SUB–ASSY

(a) Install the 4 bolts, the floor shift control shift lever retainer and the extension housing oil deflector to the transfer adapter.
Torque: 18 N·m (185 kgf·cm,13 ft·lbf)



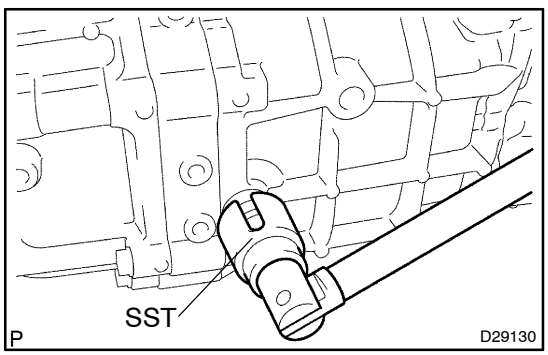
80. INSTALL REVERSE RESTRICT PIN ASSY

(a) Install the 2 reverse restrict pin assys to the transfer adapter.
Torque: 28 N·m (290 kgf·cm,21 ft·lbf)



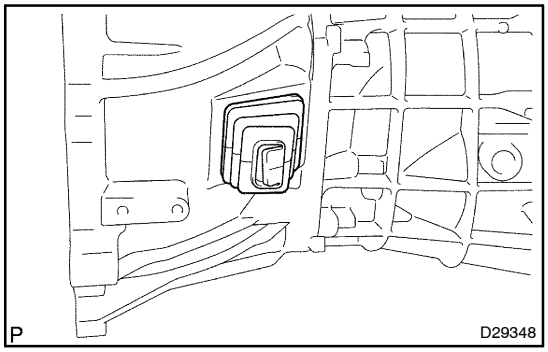
81. INSTALL CLUTCH HOUSING

(a) Install the clutch housing.
(b) Apply liquid sealer to the ”A” bolt threads.
Sealant:
Part No. 08833–00080, THREE BOND 1344, LOCITITE 242 or equivalent
(c) Install the 9 bolts to the clutch housing.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)



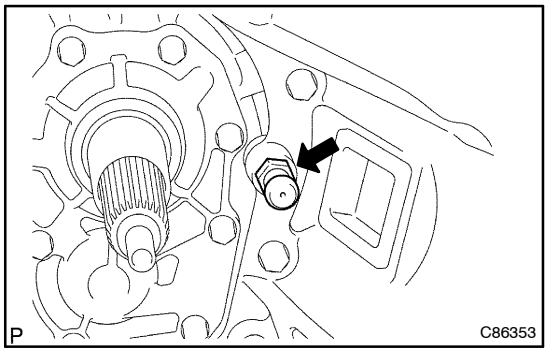
82. INSTALL BACK UP LAMP SWITCH ASSY

(a) Using SST, install the back–up lamp switch assy to the manual transmission case.
SST 09817–16011
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)



83. INSTALL CLUTCH RELEASE FORK BOOT

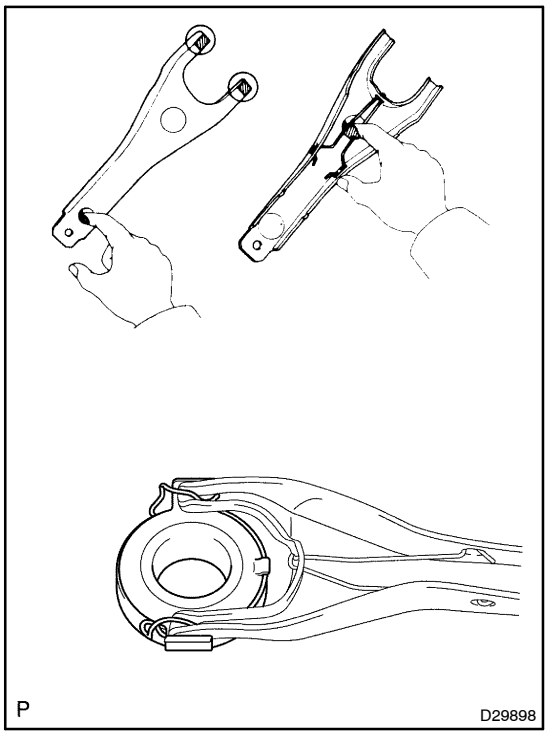
(a) Install the clutch release fork boot to the manual transmission case.



84. INSTALL RELEASE FORK SUPPORT

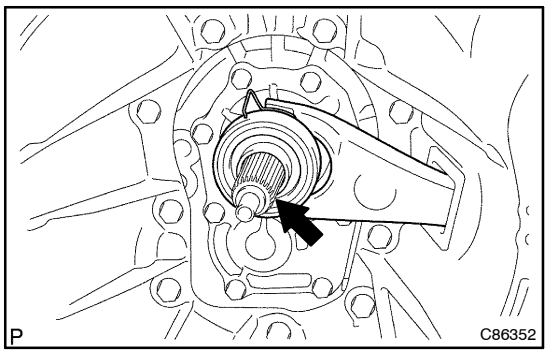
(a) Install the release fork support to the manual transmission case.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)



85. INSTALL CLUTCH RELEASE BEARING ASSY

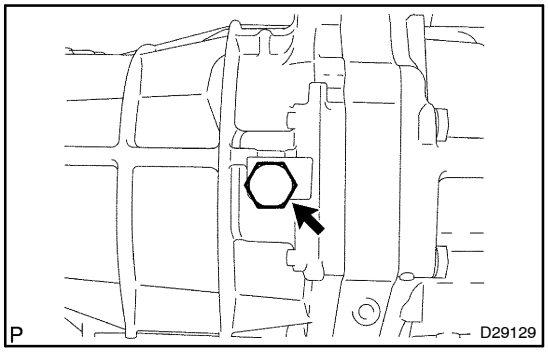
(a) Coat the clutch release bearing assy with release hub grease, and install it to the clutch release fork sub–assy.



86. INSTALL CLUTCH RELEASE FORK SUB–ASSY

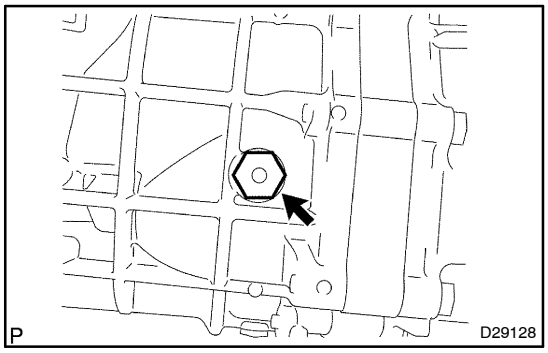
(a) Install the clutch release fork sub–assy to the input shaft.

(b) Apply molybdenum disulphide lithium base grease to the input shaft spline.



87. INSTALL DRAIN (MTM) PLUG SUB–ASSY

(a) Install the drain plug with a new drain gasket to the manual transmission case.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)



88. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the manual transmission filler plug with a new manual transmission filler plug gasket to the manual transmission case.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)