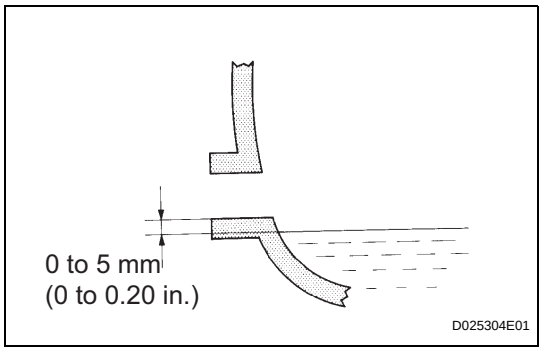
MANUAL TRANSAXLE SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below to help determine the cause of the problem. The numbers in the column of "Suspected Area" indicate likely causes of the problem in descending order. Therefore, check the area in this order. Repair or replace parts as necessary.

Manual transaxle system (MTM)

Symptom	Suspected area	See page
Noise	1. Oil (Level low)	MX-2
	2. Oil (Wrong)	MX-2
	3. Gear (Worn or damaged)	MX-21
	4. Bearing (Worn or damaged)	MX-21
Oil leakage	1. Oil (Level too high)	MX-2
	2. Gasket (Damaged)	-
	3. Oil seal (Worn or damaged)	MX-95
	4. O-Ring (Worn or damaged)	-
Hard to shift or will not shift	1. Control cable/control shift side (Faulty)	MX-7
	2. Control cable/control select side (Faulty)	MX-8
	3. Synchornizer ring (Worn or damaged)	MX-62
	4. Synchornizer ring (Worn or damaged)	MX-74
	5. Shift key spring (Damaged)	MX-37
Jumps out of gear	1. Locking ball spring (Damaged)	-
	2. Shift fork (Worn)	MX-37
	3. Gear (Worn or damaged)	MX-34
	4. Bearing (Worn or damaged)	MX-21



MANUAL TRANSAXLE OIL

ON-VEHICLE INSPECTION

1. INSPECT TRANSAXLE OIL

(a) Park the vehicle on the level ground.

(b) Remove the transmission filler plug and gasket.

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

NOTICE:

- **An excessively large or small amount of oil may cause problems.**
- **After changing the oil, drive the vehicle and check the oil level.**

HINT:

Insert your finger in to the filler plug hole. You should be able to just touch the surface of the oil if the oil is at the correct level.

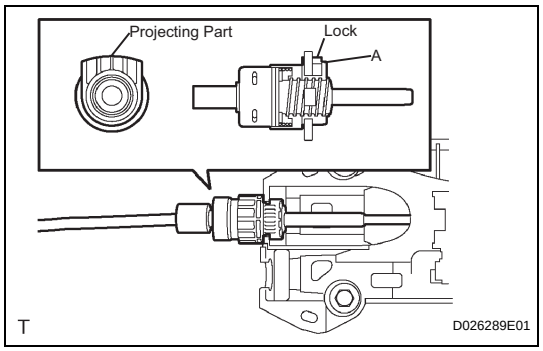
(d) Check for oil leakage when the oil level is low.

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

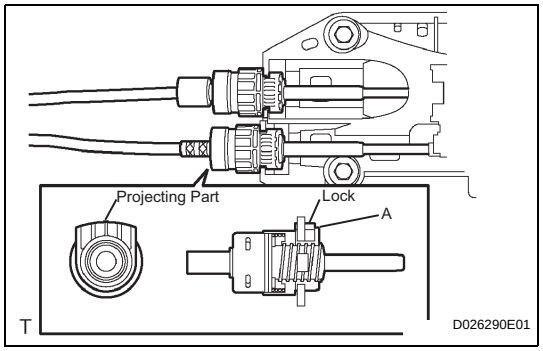
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)

INSTALLATION

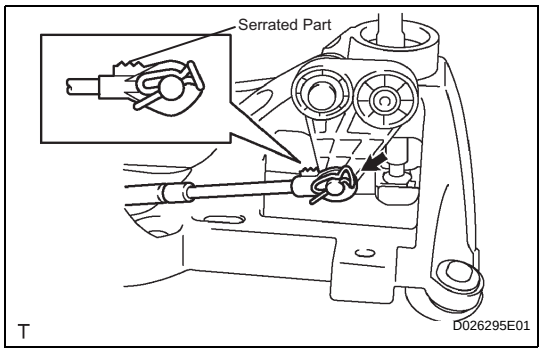
1. **INSTALL FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Install the shift lever assembly with the 4 bolts.
   Torque: 12 N*m (122 kgf*cm, 9 ft.*lbf)



2. **CONNECT FLOOR SHIFT CABLE TRANSMISSION CONTROL SHIFT**
   (a) Connect the shift cable to the shift lever retainer.
   NOTICE:
   - **The projecting part of the cable outer should face upward when the shift cable is connected.**
   - **After installation, make sure that the cable outer lock is projecting from A as shown in the illustration.**
   (b) Install the top end of the shift cable to the shift lever assembly.



3. **CONNECT FLOOR SHIFT CABLE TRANSMISSION CONTROL SELECT**
   (a) Connect the select cable to the shift lever retainer.
   NOTICE:
   - **The projecting part of the cable outer should face upward when the shift cable is connected.**
   - **After installation, make sure that the cable outer lock is projecting from A as shown in the illustration.**



   (b) Connect the top end of the select cable to the shift lever assembly and install the clip.
   NOTICE:
   - **The serrated part of the select cable point should face upward when the select cable point is connected.**
   - **The clip should be installed in the direction as shown in the illustration.**

4. **INSTALL CONSOLE BOX ASSEMBLY REAR**
   HINT:
   (See page IP-14)

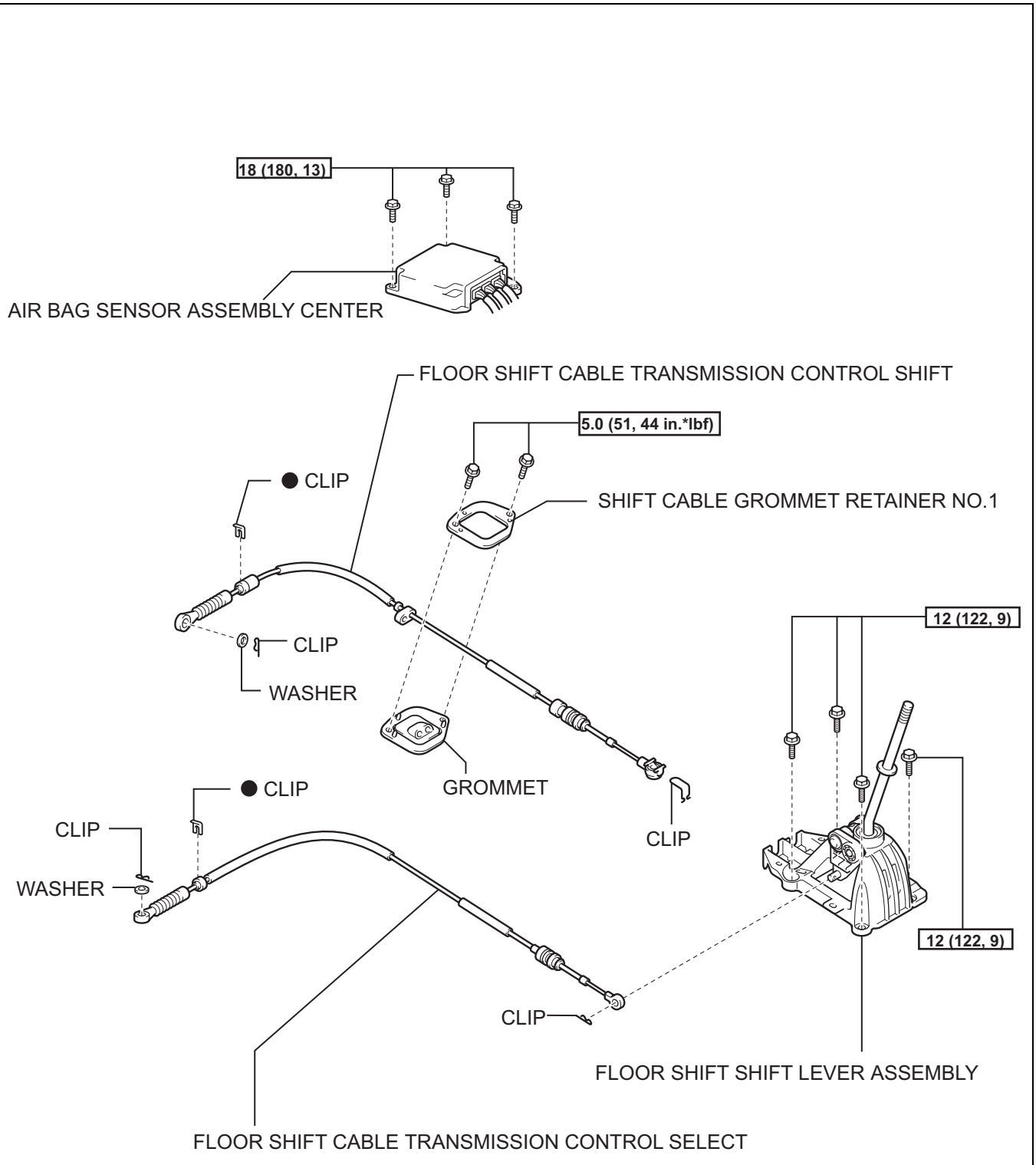
5. **INSTALL CONSOLE UPPER REAR PANEL SUB-ASSEMBLY**
   HINT:
   (See page IP-14)

6. **INSTALL CONSOLE PANEL SUB-ASSEMBLY UPPER**
   HINT:
   (See page IP-14)

7. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY**

FLOOR SHIFT LEVER ASSEMBLY

COMPONENTS



N*m (kgf*cm, ft.*lbf): Specified torque ● Non-reusable part

P

C109713E01

REMOVAL

HINT:
COMPONENTS: Instrument panel /meter (See page IP-2).

1. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY**
2. **REMOVE CONSOLE PANEL SUB-ASSEMBLY UPPER**
   HINT:
   (See page IP-6)
3. **REMOVE CONSOLE UPPER REAR PANEL SUB-ASSEMBLY**
   HINT:
   (See page IP-6)
4. **REMOVE CONSOLE BOX ASSEMBLY REAR**
   HINT:
   (See page IP-6)
5. **DISCONNECT FLOOR SHIFT CABLE TRANSMISSION CONTROL SELECT**
   (a) Remove the clip and separate the top of the select cable from the shift lever assembly.
   (b) Turn the lock and separate the select cable from the shift lever retainer.
6. **DISCONNECT FLOOR SHIFT CABLE TRANSMISSION CONTROL SHIFT**
   (a) Separate the top of the sift cable from the shift lever assembly.
   (b) Turn the lock and separate the sift cable from the shift lever retainer.
7. **REMOVE FLOOR SHIFT SHIFT LEVER ASSEMBLY**
   (a) Remove the 4 bolts and shift lever assembly.

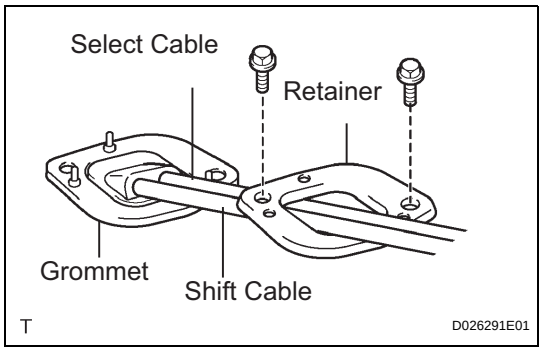
MX

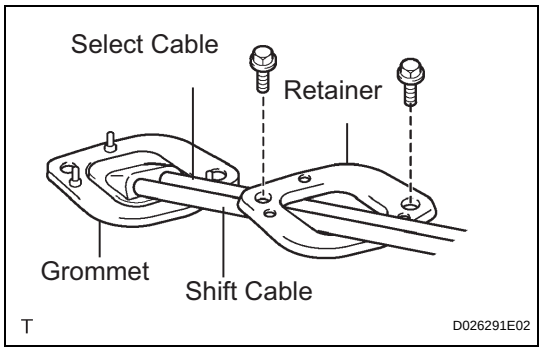
FLOOR SHIFT CABLE TRANSMISSION CONTROL SHIFT

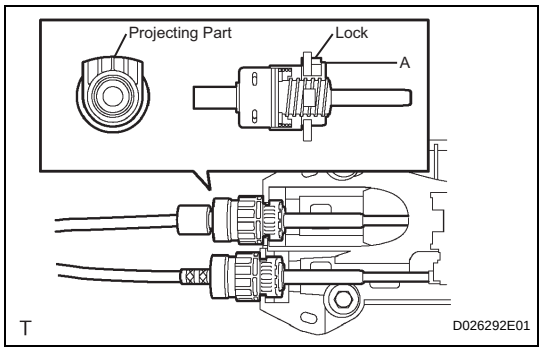
REMOVAL

HINT:
COMPONENTS (1): Floor shift lever assembly (See page MX-3)
COMPONENTS (2): Air conditioning radiator assembly (See page AC-164)

1. **REMOVE INSTRUMENT PANEL SAFETY PAD SUB-ASSEMBLY W/PASSENGER AIR BAG ASSEMBLY**
   HINT:
   (See page IP-6)
2. **REMOVE AIR CONDITIONING RADIATOR ASSEMBLY**
   HINT:
   (See page AC-165)
3. **REMOVE AIR BAG SENSOR ASSEMBLY CENTER**
   HINT:
   (See page RS-300)
4. **REMOVE FLOOR SHIFT CABLE TRANSMISSION CONTROL SHIFT**
   (a) Remove the clip and washer and separate the top of the shift cable from the transaxle.
   (b) Remove the clip and shift cable from the control cable bracket.
   (c) Turn the lock and separate the shift cable from the shift lever retainer.
   (d) Remove the clip and separate the top of the shift cable from the shift lever assembly.
   (e) Remove the 2 retainer set bolts from the floor.
   (f) Separate the retainer from the grommet.
   (g) Disconnect the select cable from the grommet.
   (h) Remove the shift cable through the floor hole and retainer.







INSTALLATION

1. **INSTALL FLOOR SHIFT CABLE TRANSMISSION CONTROL SHIFT**
   (a) Thread the shift cable through the floor hole and retainer.
   (b) Connect the select cable to the grommet.
   (c) Install the retainer to the grommet.
   NOTICE:
   Fit the 3 projections of the grommet into the 3 holes of the retainer.
   (d) Install the 2 retainer set bolts.
   Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)
   (e) Connect the shift cable to the shift lever retainer.
   NOTICE:
   - **The projecting part of the cable outer should face upward when the shift cable is connected.**
   - **After installation, make sure that the cable outer lock is projecting from A as shown in the illustration.**
   (f) Install the top end of the shift cable to the shift lever assembly.
   (g) Connect the shift cable to the control cable bracket and install a new clip.
   (h) Connect the shift cable to the transaxle and install the washer and clip.

2. **INSTALL AIR BAG SENSOR ASSEMBLY CENTER**
   HINT:
   (See page RS-301)

3. **REMOVE AIR CONDITIONING RADIATOR ASSEMBLY**
   HINT:
   (See page AC-166)

4. **REMOVE INSTRUMENT PANEL SAFETY PAD SUB-ASSEMBLY W/PASSENGER AIR BAG ASSEMBLY**
   HINT:
   (See page IP-14)

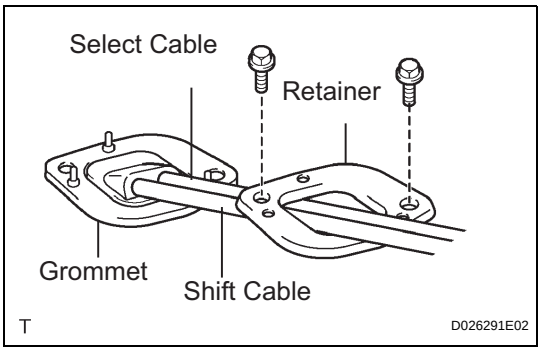
MX

FLOOR SHIFT CABLE TRANSMISSION CONTROL SELECT

REMOVAL

HINT:
COMPONENTS (1): Floor shift lever assembly (See page MX-3)
COMPONENTS (2): Air conditioning radiator assembly (See page AC-164)

1. **REMOVE INSTRUMENT PANEL SAFETY PAD SUB-ASSEMBLY W/PASSENGER AIR BAG ASSEMBLY**
   HINT:
   (See page IP-6)
2. **REMOVE AIR CONDITIONING RADIATOR ASSEMBLY**
   HINT:
   (See page AC-165)
3. **REMOVE AIR BAG SENSOR ASSEMBLY CENTER**
   HINT:
   (See page RS-300)
4. **REMOVE FLOOR SHIFT CABLE TRANSMISSION CONTROL SELECT**
   (a) Remove the clip and washer and separate the top of the select cable from the transaxle.
   (b) Remove the clip and select cable from the control cable bracket.
   (c) Turn the lock and separate the select cable from the shift lever retainer.
   (d) Remove the clip and separate the top of the select cable from the shift lever assembly.
   (e) Remove the 2 retainer set bolts from the floor.
   (f) Separate the retainer from the grommet.
   (g) Disconnect the select cable from the grommet.
   (h) Remove the select cable through the floor hole and retainer.



INSTALLATION

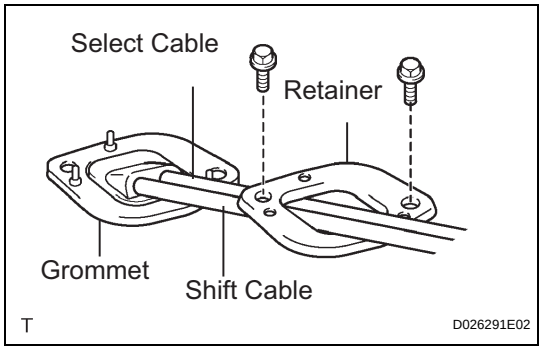
1. INSTALL FLOOR SHIFT CABLE TRANSMISSION CONTROL SELECT

(a) Thread the select cable through the floor hole and retainer.

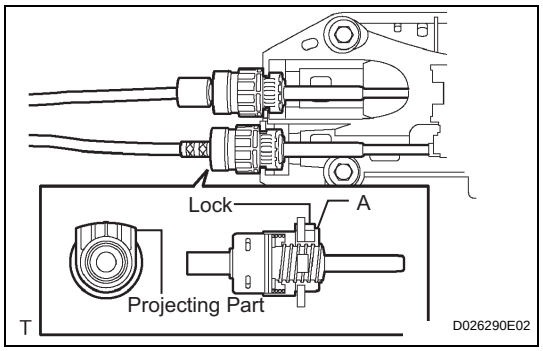
(b) Connect the select cable to the grommet.

(c) Install the retainer to the grommet.
NOTICE:
Fit the 3 projections of the grommet into the 3 holes of the retainer.

(d) Install the 2 retainer set bolts.
Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)



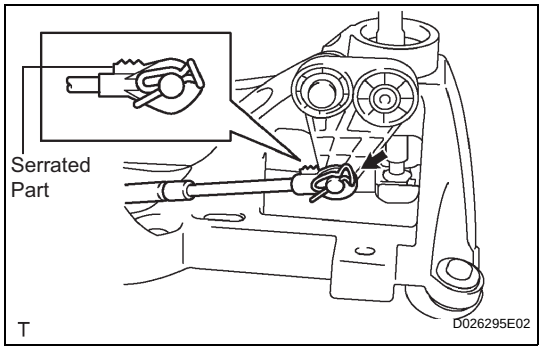
(e) Connect the select cable to the shift lever retainer.
NOTICE:
- **The projecting part of the cable outer should face upward when the select cable is connected.**
- **After installation, make sure that the cable outer lock is projecting from A as shown in the illustration.**



(f) Connect the top end of the select cable to the shift lever assembly and install the clip.
NOTICE:
- **The serrated part of the select cable point should face upward when the select cable point is connected.**
- **The clip should be installed in the direction as shown in the illustration.**

(g) Connect the select cable to the control cable bracket and install a new clip.

(h) Connect the select cable to the transaxle and install the washer and clip.



2. INSTALL AIR BAG SENSOR ASSEMBLY CENTER
HINT:
(See page RS-301)

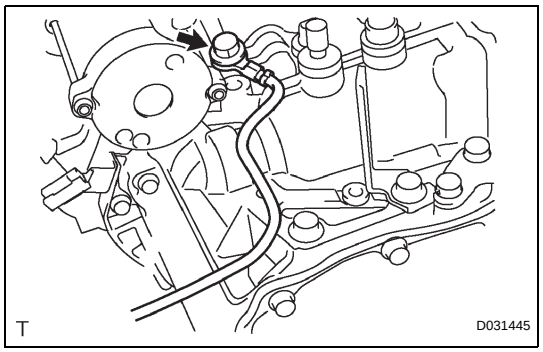
3. INSTALL AIR CONDITIONING RADIATOR ASSEMBLY
HINT:
(See page AC-166)

4. INSTALL INSTRUMENT PANEL SAFETY PAD SUB-ASSEMBLY W/PASSENGER AIR BAG ASSEMBLY
HINT:
(See page IP-14)

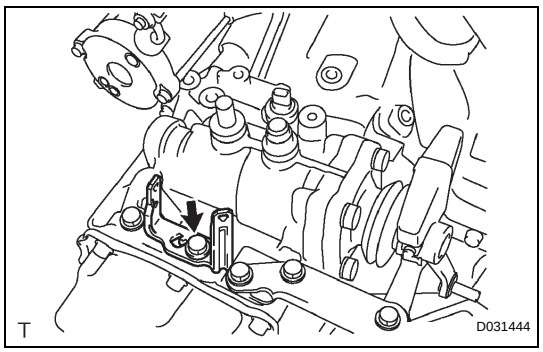
REMOVAL

HINT:
COMPONENTS: Partial engine assembly (See page EM-53).

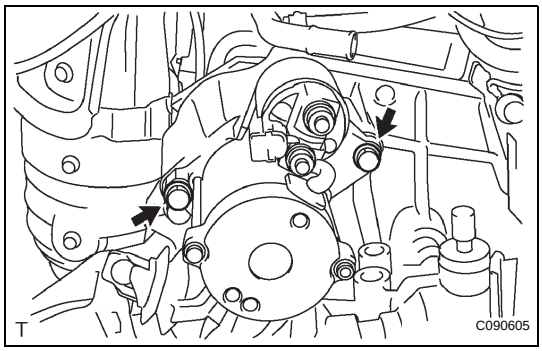
1. **REMOVE ENGINE ASSEMBLY WITH TRANSAXLE**
   HINT:
   (See page EM-61)
2. **REMOVE FRONT DRIVE SHAFT ASSEMBLY RH**
   HINT:
   (See page DS-4)
3. **REMOVE FRONT DRIVE SHAFT ASSEMBLY LH**
   HINT:
   (See page DS-4)
4. **REMOVE CLUTCH ACCUMULATOR ASSEMBLY**
   HINT:
   (See page CL-15)
5. **REMOVE CLUTCH RELEASE CYLINDER ASSEMBLY**
   HINT:
   (See pageCL-12)
6. **DISCONNECT WIRE HARNESS**
   (a) Disconnect the wire harness clamp.
   (b) Disconnect the back-up lamp switch connector, speedometer sensor connector and starter connector.



7. **REMOVE ENGINE WIRE NO.3**
   (a) Remove the bolt and disconnect the engine wire No.3.

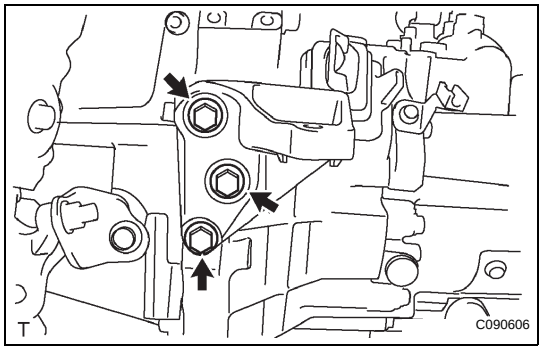


8. **REMOVE WIRE HARNESS CLAMP**
   (a) Remove the bolt and wire harness clamp.



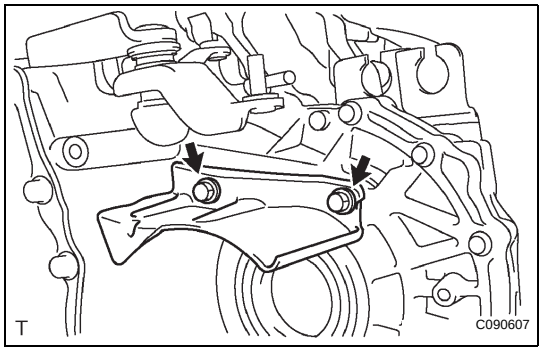
9. REMOVE STARTER ASSEMBLY

(a) Remove the 2 bolts and starter assembly.



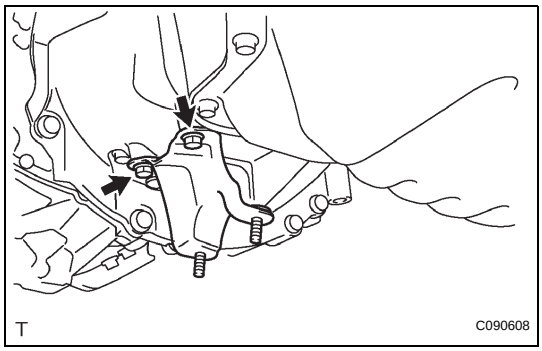
10. REMOVE ENGINE MOUNTING BRACKET FR

(a) Remove the 3 bolts and engine mounting bracket FR.



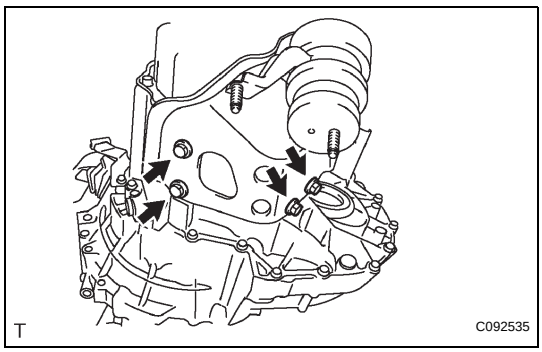
11. REMOVE MANUAL TRANSMISSION CASE PROTECTOR

(a) Remove the 2 bolts and manual transmission case protector.



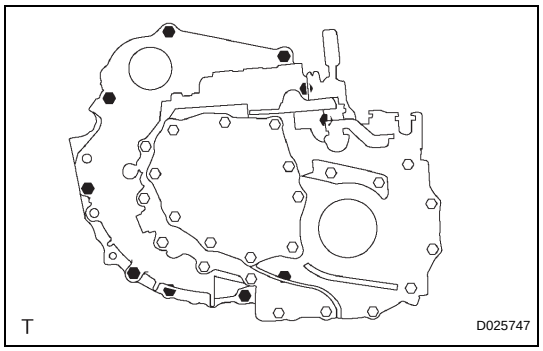
12. REMOVE EXHAUST PIPE SUPPORT BRACKET NO.1

(a) Remove the 2 bolts and exhaust pipe support bracket No.1.



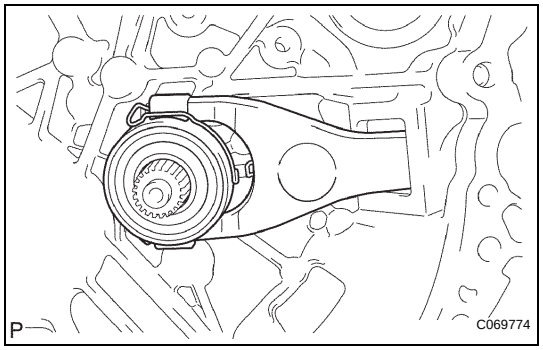
13. REMOVE ENGINE MOUNTING INSULATOR LH

(a) Remove the 4 bolts and engine mounting insulator LH.



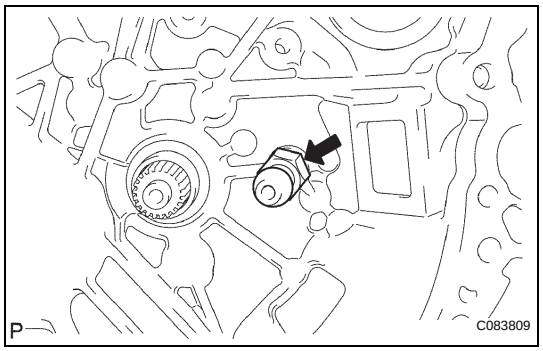
14. REMOVE MANUAL TRANSAXLE ASSEMBLY
(a) Remove the 10 bolts.
(b) Separate and remove the transaxle from the engine.

DISASSEMBLY



1. REMOVE CLUTCH RELEASE FORK SUB-ASSEMBLY
(a) Remove the clutch release fork sub-assembly together with the clutch release bearing assembly from the manual transaxle case.

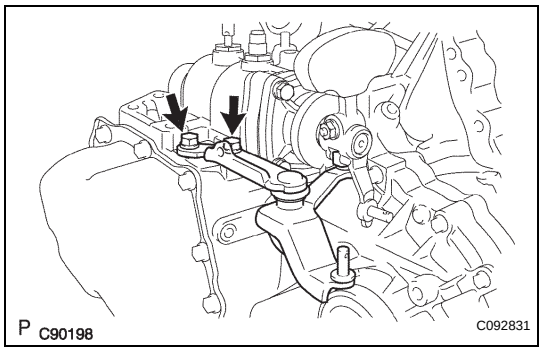
2. REMOVE CLUTCH RELEASE BEARING ASSEMBLY
(a) Remove the clutch release bearing assembly and release bearing hub clip from the clutch release fork sub-assembly.



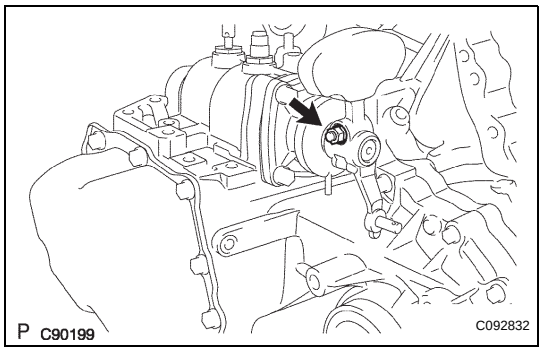
3. REMOVE RELEASE FORK SUPPORT
(a) Remove the release fork support from the manual transaxle case.

4. REMOVE CLUTCH RELEASE FORK BOOT
(a) Remove the clutch release fork boot from the manual transaxle case.

5. REMOVE SPEEDOMETER DRIVEN (MTM) GEAR SUB-ASSEMBLY
(a) Remove the bolt and speedometer driven (MTM) gear sub-assembly.
(b) Remove the MTM speedometer shaft sleeve clip, and remove the speedometer driven gear from the speedometer sensor.

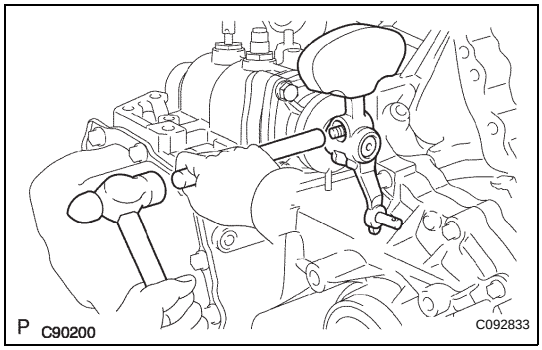


6. REMOVE SELECTING BELL CRANK ASSEMBLY
(a) Remove the 2 bolts and selecting bell crank assembly from the manual transmission case.



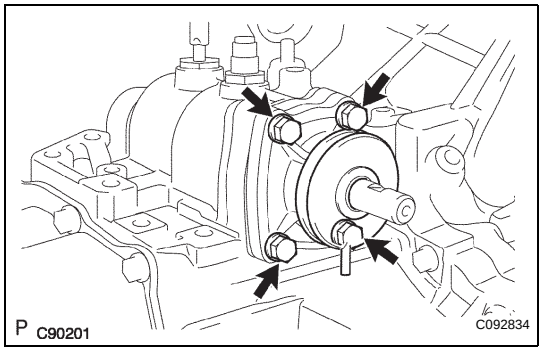
7. REMOVE CONTROL SHIFT LEVER

(a) Remove the nut and spring washer.



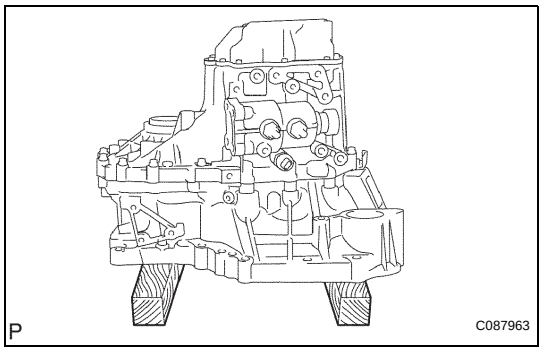
(b) Using a brass bar and hammer, remove the shift outer lever lever lock pin.

(c) Remove the control shift lever.



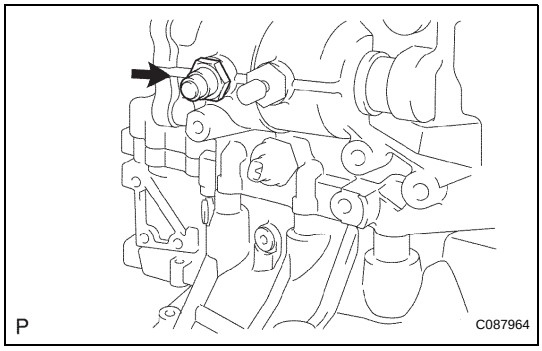
8. REMOVE CONTROL SHAFT COVER

(a) Remove the 4 bolts and control shaft cover from the manual transmission case.



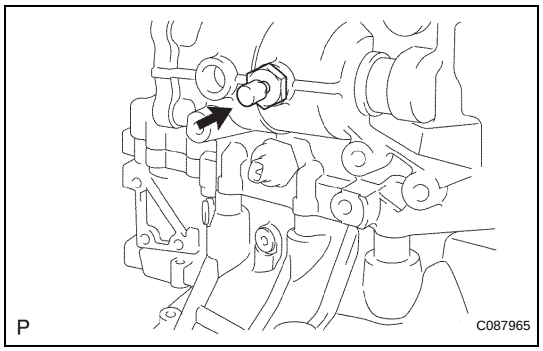
9. FIX MANUAL TRANSAXLE ASSEMBLY

(a) Place the manual transaxle assembly on wooden blocks.



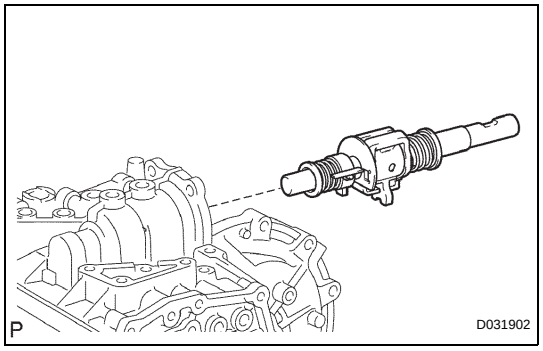
10. REMOVE LOCK BALL ASSEMBLY NO.1

(a) Remove the lock ball assembly No.1 from the manual transmission case.



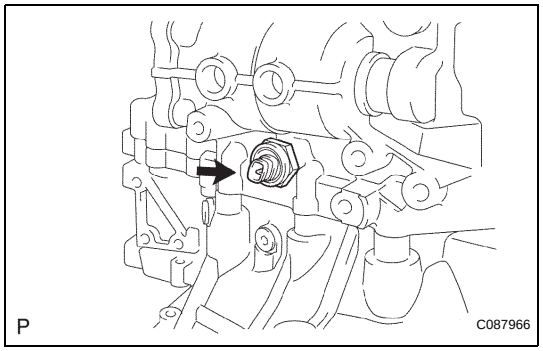
11. REMOVE MANUAL TRANSMISSION BREATHER PLUG

(a) Remove the manual transmission breather plug and gasket.



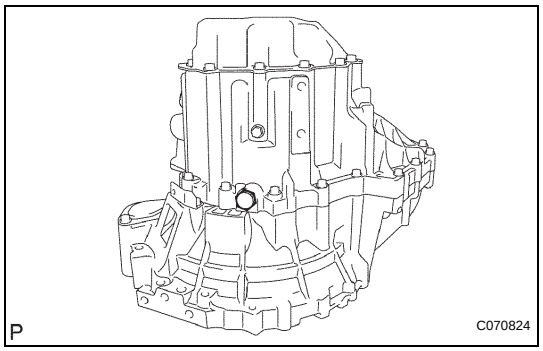
12. REMOVE SHIFT AND SELECT LEVER SHAFT ASSEMBLY

(a) Remove the shift and select lever shaft assembly from the manual transmission case.



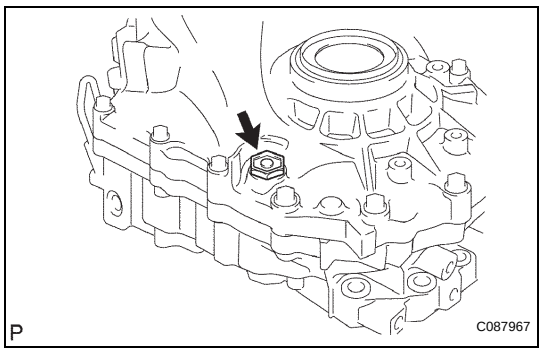
13. REMOVE BACK UP LIGHT SWITCH ASSEMBLY

(a) Remove the back up lamp switch assembly and gasket from the manual transmission case.



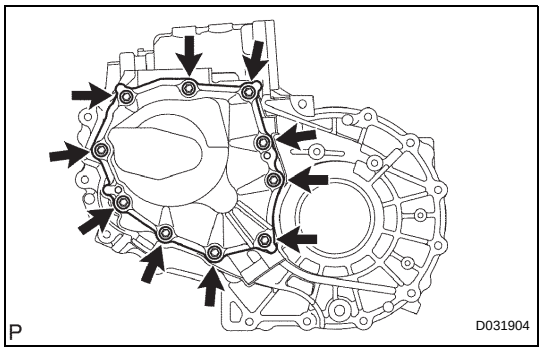
14. REMOVE MANUAL TRANSMISSION FILLER PLUG

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



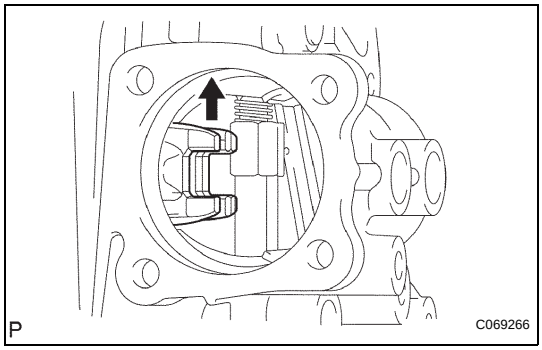
15. REMOVE DRAIN (MTM) PLUG SUB-ASSEMBLY

(a) Remove the drain (MTM) plug sub-assembly and gasket from the manual transmission case.



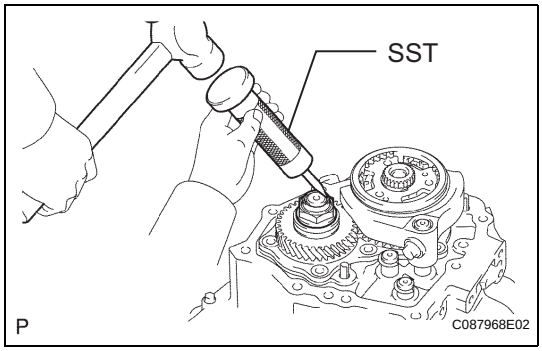
16. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

(a) Remove the 10 bolts and manual transmission case cover from the manual transmission case.

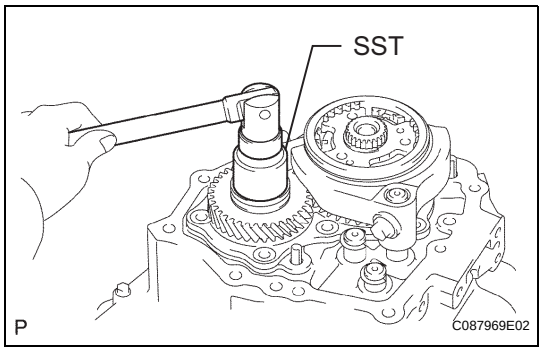


17. REMOVE MANUAL TRANSMISSION OUTPUT SHAFT REAR SET NUT

(a) Double mesh the gears. (Engage 1st and 2nd gears simultaneously.)

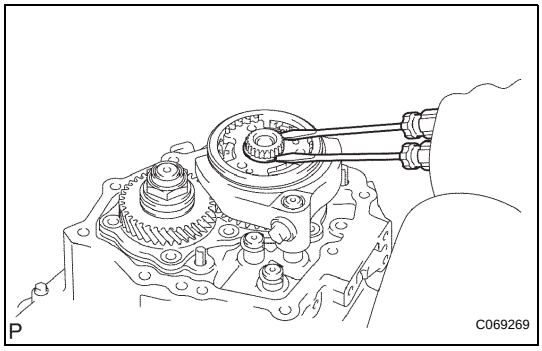


(b) Using SST and a hammer, unstake the manual transmission output shaft rear set nut.
SST 09930-00010



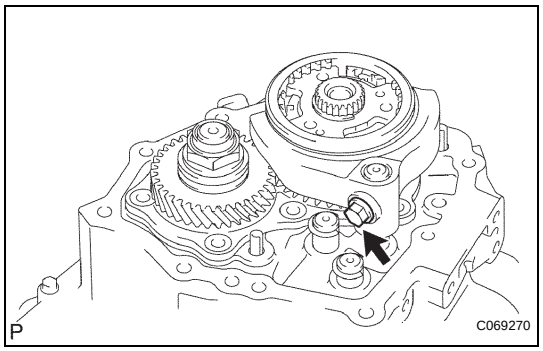
(c) Using SST, remove the manual transmission output shaft rear set nut from the output shaft.
SST 09229-55010

(d) Disengage the gears.

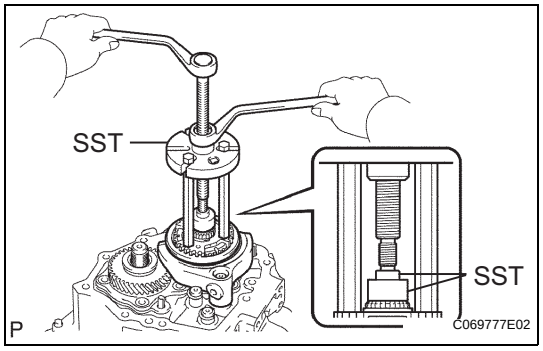


18. REMOVE TRANSMISSION CLUTCH HUB NO.3

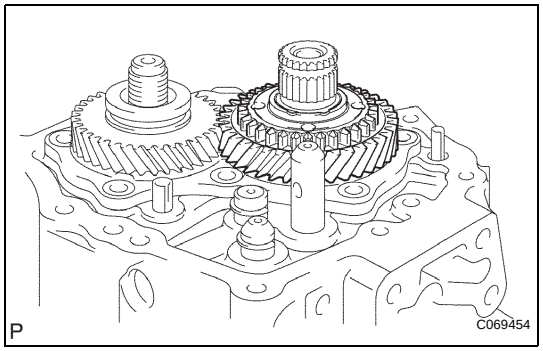
(a) Using 2 screwdrivers and a hammer, remove the transmission clutch hub No.3 shaft snap ring from the input shaft.
HINT:
Cover with a shop rag to keep the snap ring from flying.



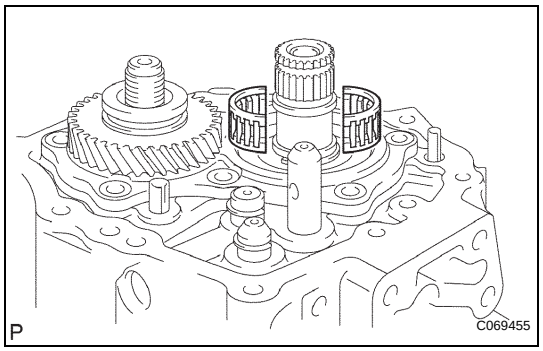
(b) Remove the shift fork set bolt from the gear shift fork No.3.



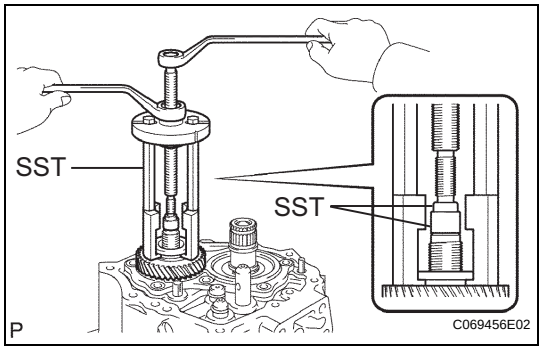
(c) Using SST, remove the transmission clutch hub No.3 and gear shift fork No.3 from the input shaft.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010), 09950-50013 (09957-04010), 09950-60010 (09951-00280)



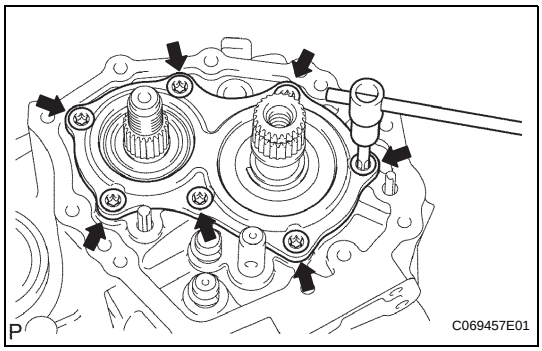
19. REMOVE 5TH GEAR
(a) Remove the 5th gear from the input shaft.



20. REMOVE 5TH GEAR NEEDLE ROLLER BEARING
(a) Remove the 5th gear needle roller bearing from the input shaft.

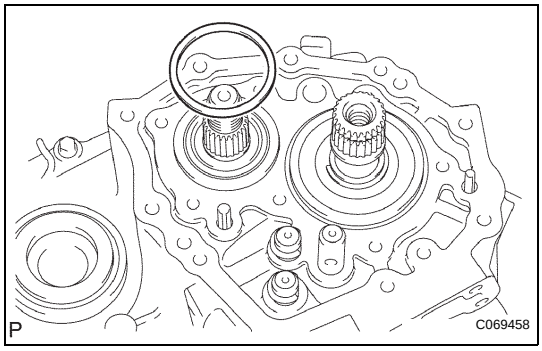


21. REMOVE 5TH DRIVEN GEAR
(a) Using SST, remove the 5th driven gear from the output shaft.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09957-04010), 09950-60010 (09951-00180, 09955-03011), 09950-50013



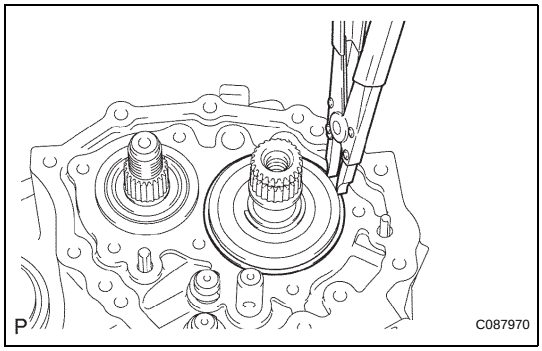
22. REMOVE BEARING RETAINER REAR (MTM)

(a) Using a "torx" socket wrench (T45), remove the 7 "torx" screws and bearing retainer rear (MTM) from the manual transmission case.



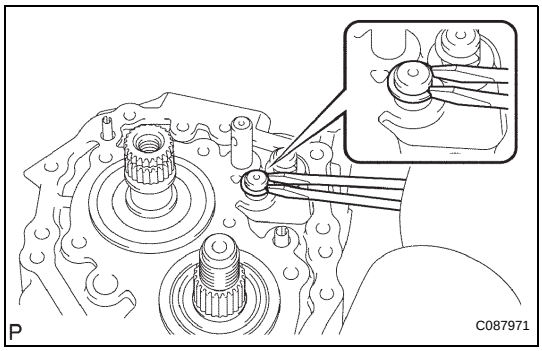
23. REMOVE OUTPUT SHAFT REAR BEARING SHIM

(a) Remove the output shaft rear bearing shim from the output shaft.



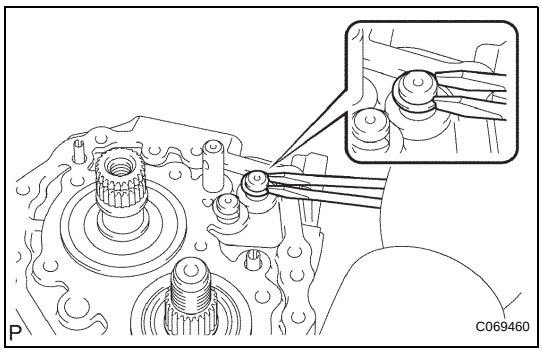
24. REMOVE INPUT SHAFT REAR BEARING SHAFT SNAP RING

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

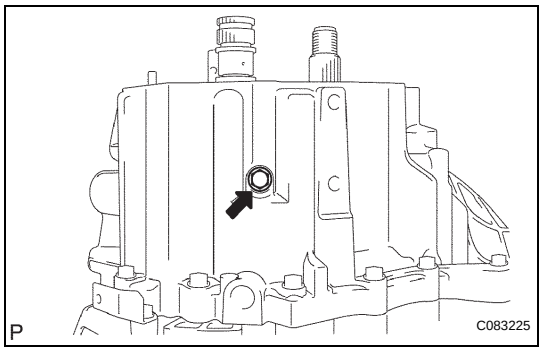


25. REMOVE SHIFT FORK SHAFT SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft shaft snap ring from the gear shift fork shaft No.1.
HINT:
Cover with a shop rag to keep the snap ring from flying.



(b) Using 2 screwdrivers and a hammer, remove the shift fork shaft shaft snap ring from the gear shift fork shaft No.2.
HINT:
Cover with a shop rag to keep the snap ring from flying.

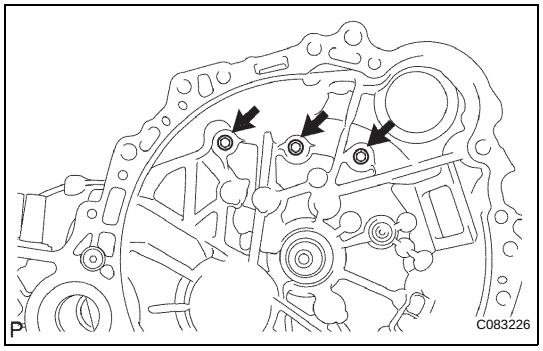


26. REMOVE REVERSE IDLER GEAR SHAFT BOLT

(a) Remove the reverse idler gear shaft bolt and gasket.

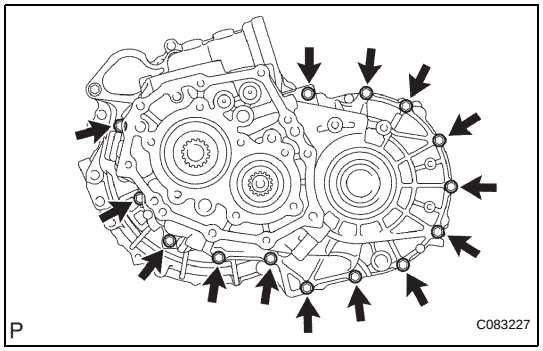
27. REMOVE CLUTCH TUBE BRACKET NO.1

(a) Remove the bolt and clutch tube bracket.



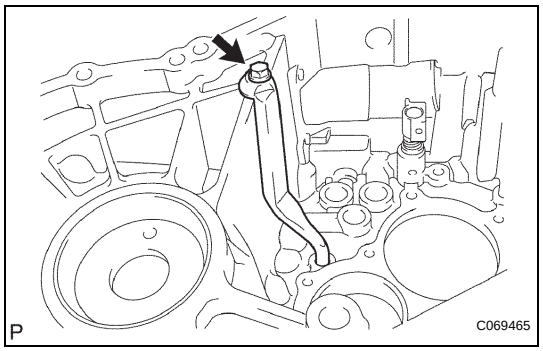
28. REMOVE MANUAL TRANSMISSION CASE

(a) Remove the 3 bolts from the manual transaxle case side.



(b) Remove the 14 bolts from the manual transmission case side.

(c) Tapping with a plastic hammer, remove the manual transmission case.

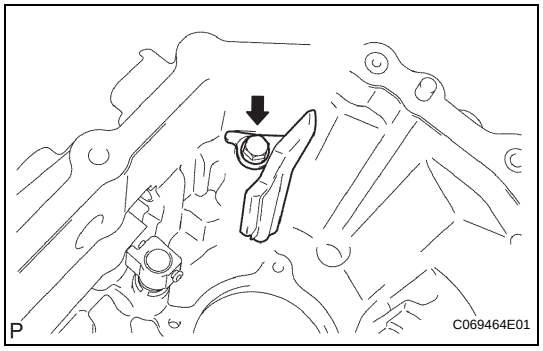


29. REMOVE OIL RECEIVER PIPE NO.2 (MTM)

(a) Remove the bolt and oil receiver pipe No.2 (MTM) from the manual transmission case.

NOTICE:

Do not damage the pipe.

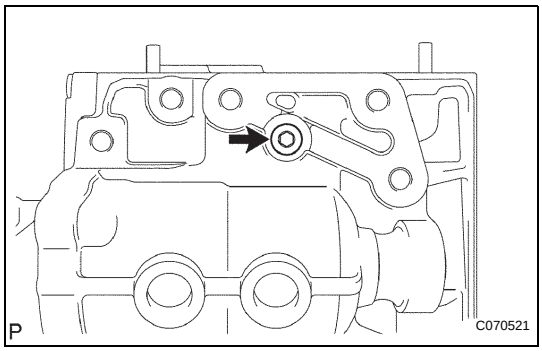


30. REMOVE OIL RECEIVER PIPE NO.1 (MTM)

(a) Remove the bolt and oil receiver pipe No.1 (MTM) from the manual transmission case.

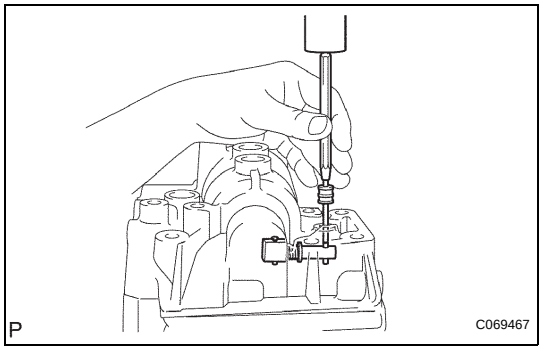
NOTICE:

Do not damage the pipe.

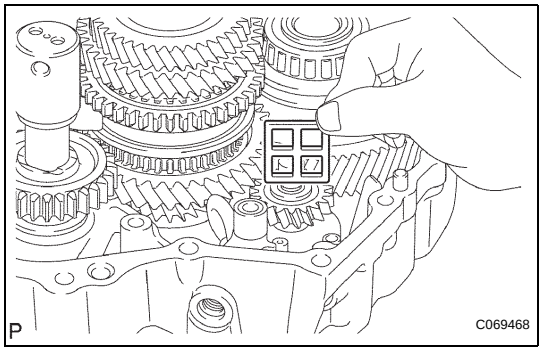


31. REMOVE REVERSE RESTRICT PIN ASSEMBLY

(a) Using a hexagon wrench (6 mm), remove the reverse restrict pin plug from the manual transmission case.

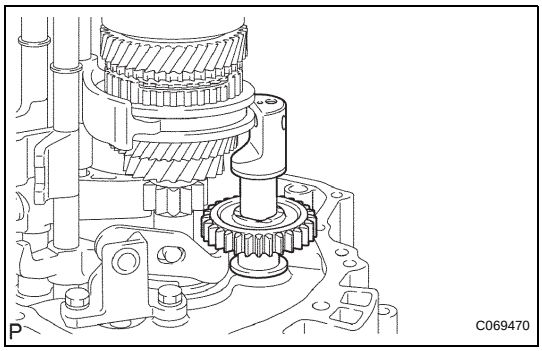


(b) Using a pin punch (ϕ 5 mm), remove the slotted pin and reverse restrict pin assembly.



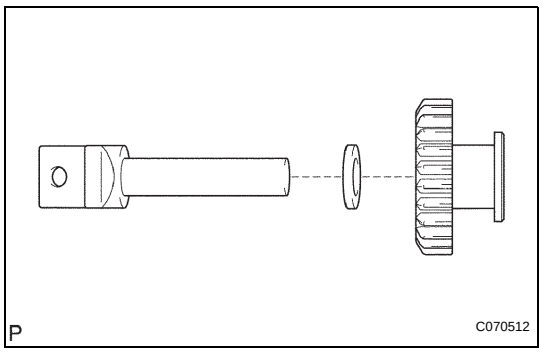
32. REMOVE TRANSMISSION MAGNET

(a) Remove the transmission magnet from the manual transaxle case.

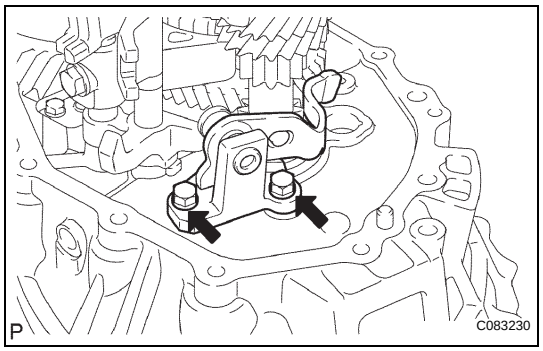


33. REMOVE REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Remove the reverse idler gear sub-assembly from the manual transaxle case.

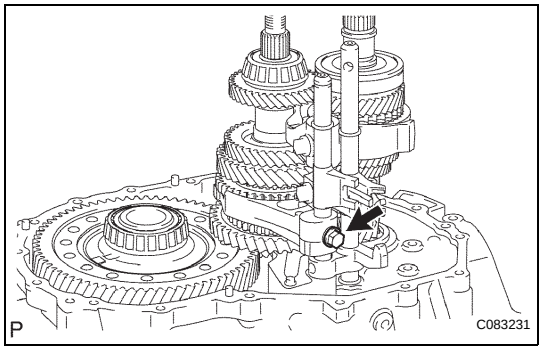


(b) Remove the reverse gear and reverse idler thrust washer from the reverse idler gear shaft.



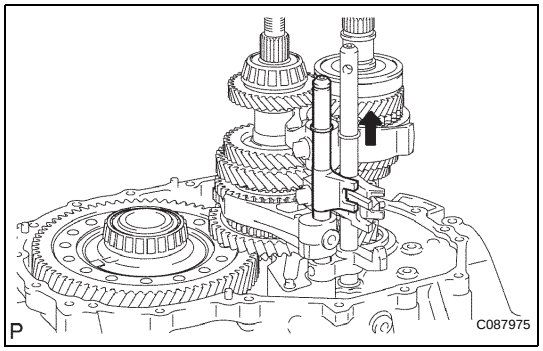
34. REMOVE REVERSE SHIFT ARM BRACKET ASSEMBLY

(a) Remove the 2 bolts and reverse shift arm bracket assembly from the manual transaxle case.

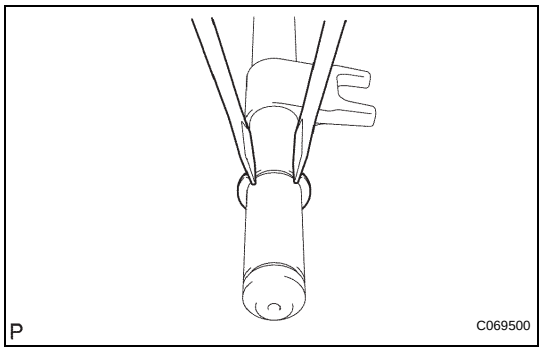


35. REMOVE GEAR SHIFT FORK SHAFT NO.1

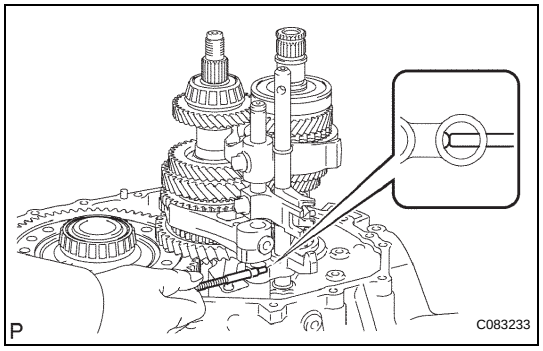
(a) Remove the shift fork set bolt from the gear shift fork No.1.



(b) Pull out the gear shift fork shaft No.1 while the gear shift fork shaft No.3 is pulled up.

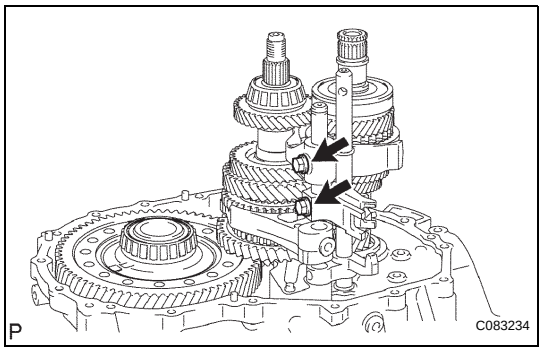


(c) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the gear shift fork shaft No.1.
NOTICE:
Cover with a shop rag to keep the snap ring from flying.



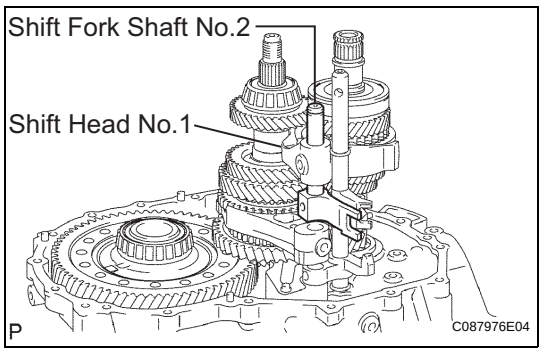
36. REMOVE REVERSE SHIFT FORK ROLLER

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

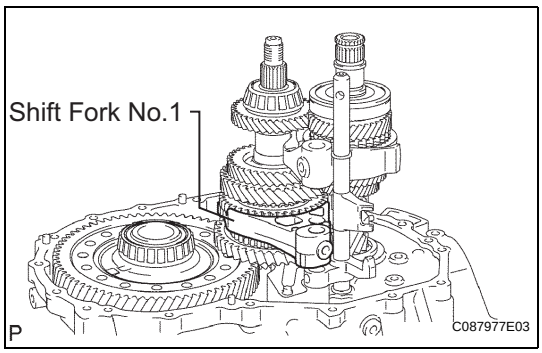


37. REMOVE GEAR SHIFT FORK SHAFT NO.2

(a) Remove the shift fork set bolt and shift head set bolt from the gear shift fork No.2 and gear shift head No.1.

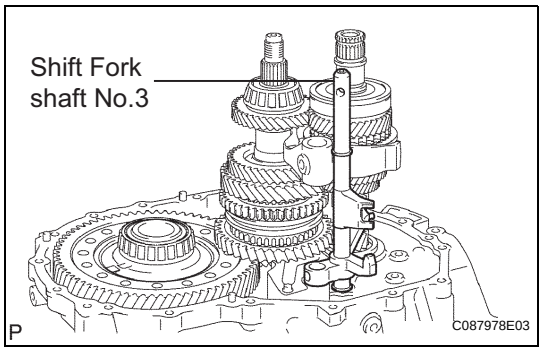


(b) Remove the gear shift fork shaft No.2 and gear shift head No.1 from the manual transaxle case.



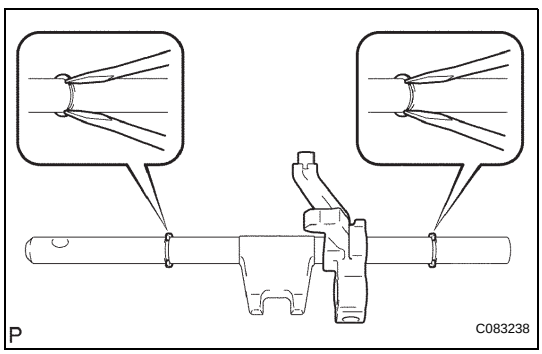
38. REMOVE GEAR SHIFT FORK NO.1

(a) Remove the gear shift fork No.1.



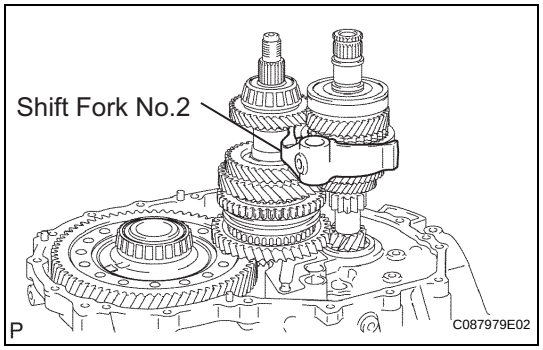
39. REMOVE GEAR SHIFT FORK SHAFT NO.3

(a) Remove the gear shift fork shaft No.3 from the manual transaxle case.



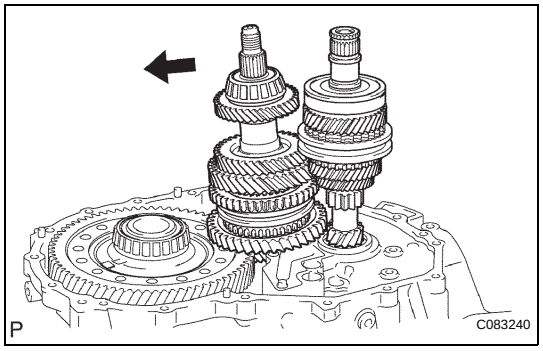
(b) Using 2 screwdrivers and a hammer, remove the 2 shift fork shaft snap rings from the gear shift fork shaft No. 3.

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



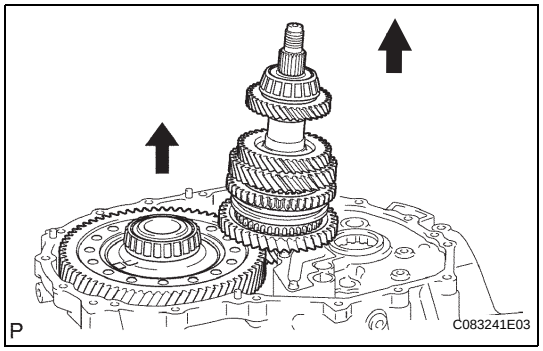
40. REMOVE GEAR SHIFT FORK NO.2

(a) Remove the gear shift fork No.2 from the input shaft assembly.



41. REMOVE INPUT SHAFT ASSEMBLY

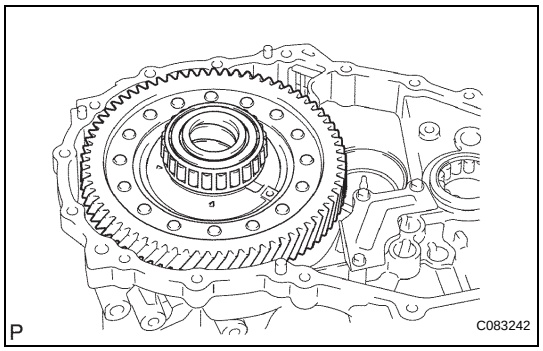
(a) Tilt the output shaft, then remove the input shaft from the manual transaxle case.



42. REMOVE OUTPUT SHAFT ASSEMBLY

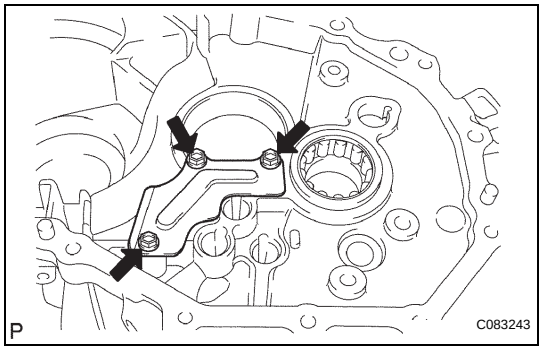
(a) Lift the differential case assembly up with the output shaft assembly leaned.

(b) Remove the output shaft assembly from the manual transaxle case.



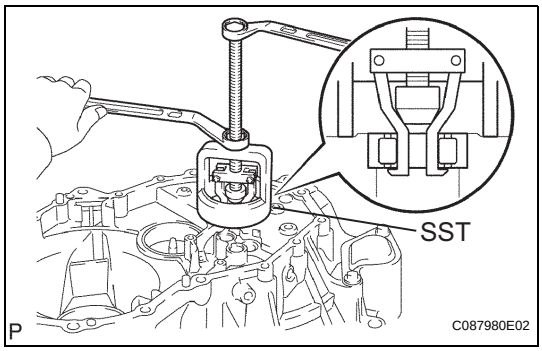
43. REMOVE DIFFERENTIAL CASE ASSEMBLY

(a) Remove the differential case assembly from the manual transaxle case.



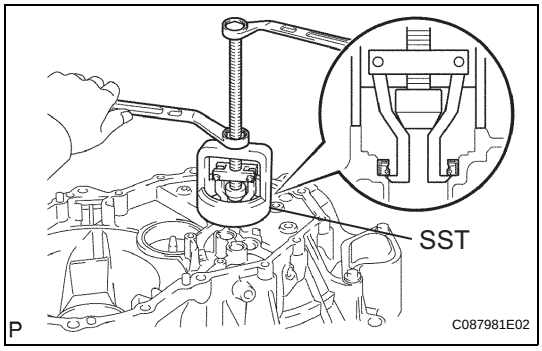
44. REMOVE MANUAL TRANSAXLE CASE RECEIVER

(a) Remove the 3 bolts and manual transaxle case receiver from the manual transaxle case.



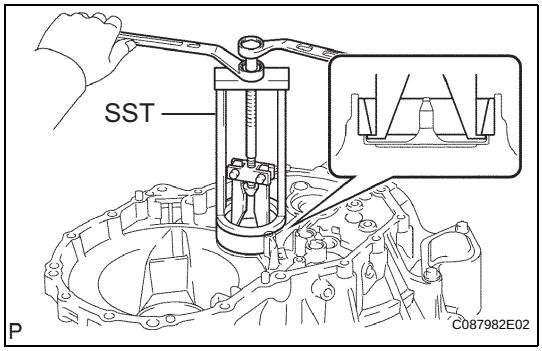
45. REMOVE INPUT SHAFT FRONT BEARING

(a) Using SST, remove the input shaft front bearing (outer race) from the manual transaxle case.
SST 09612-65014 (09612-01040, 09612-01050)



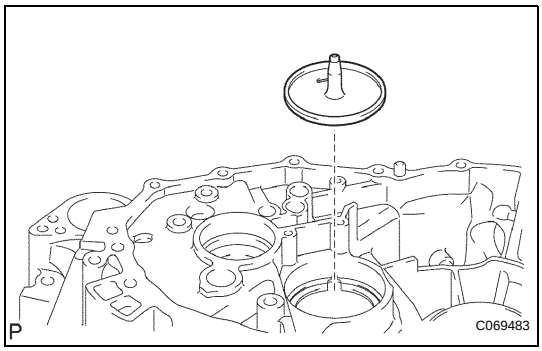
46. REMOVE FRONT TRANSAXLE CASE OIL SEAL

(a) Using SST, remove the manual transaxle case oil seal from the manual transaxle case.
SST 09612-65014 (09612-01040, 09612-01050)



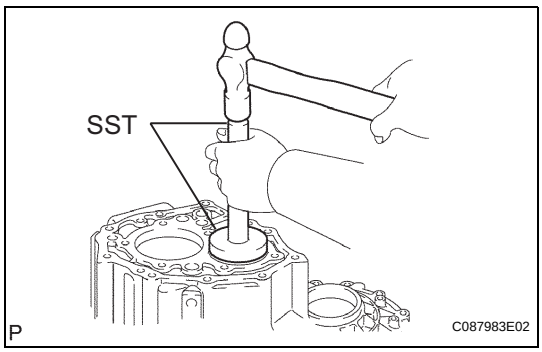
47. REMOVE OUTPUT SHAFT FRONT BEARING

(a) Using SST, remove the output shaft front bearing (outer race) from the manual transaxle case.
SST 09387-00041 (09387-02020, 09387-02010)



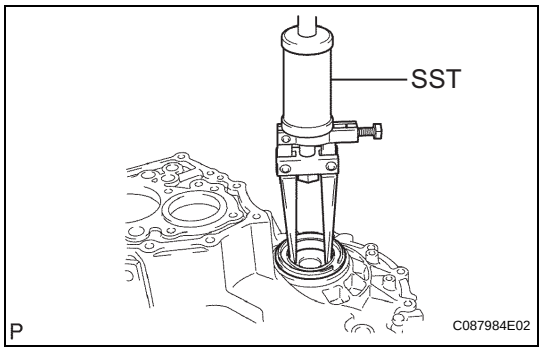
48. REMOVE OUTPUT SHAFT (MTM) COVER

(a) Remove the output shaft (MTM) cover from the manual transaxle case.



49. REMOVE OUTPUT SHAFT REAR BEARING

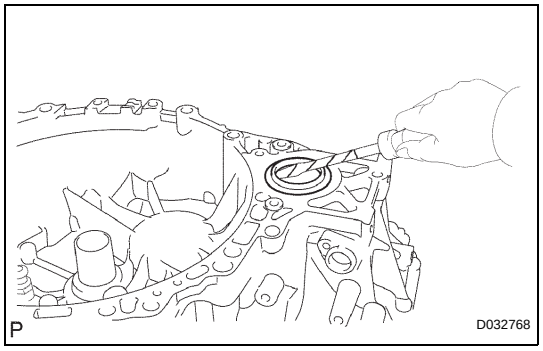
(a) Using SST, remove the output shaft rear bearing from the manual transmission case (outer race).
SST 09950-60010 (09951-00680), 09950-70010 (09951-07100)



50. REMOVE TRANSMISSION CASE OIL SEAL

(a) Using SST, remove the transmission case oil seal from the manual transmission case.

SST 09308-00010

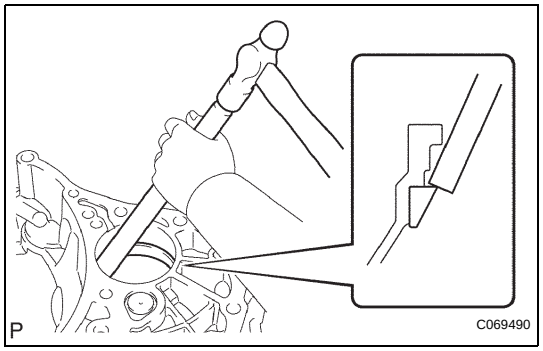


51. REMOVE FRONT TRANSAXLE CASE COVER OIL SEAL

(a) Using a screwdriver, remove the front transaxle case cover oil seal.

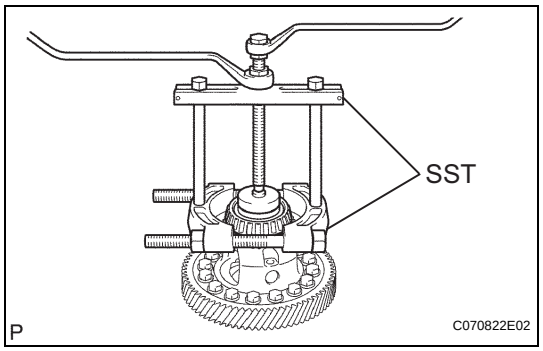
HINT:

Tape the screwdriver tip before use to avoid damage.



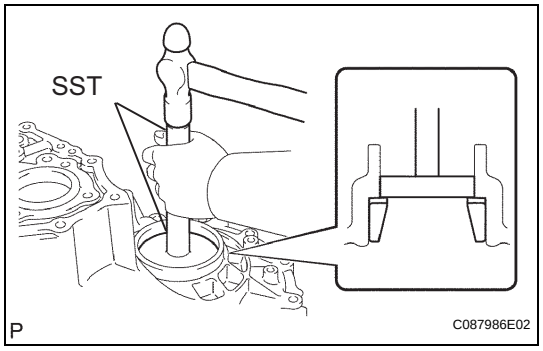
52. REMOVE FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

(a) Using a brass bar and a hammer, remove the FR differential case front tapered roller bearing (outer race) from the manual transaxle case.



(b) Using SST, remove the front differential case front tapered roller bearing from the front differential case.

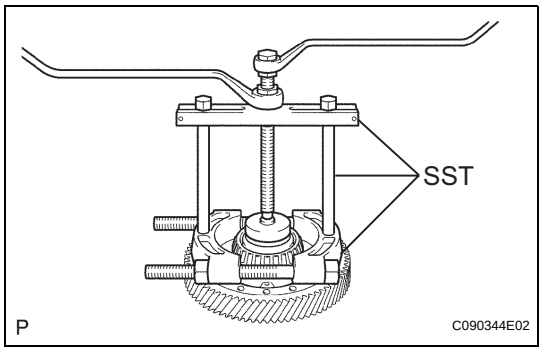
SST 09950-00020, 09950-00030, 09950-40011 (09957-04010), 09950-60010 (09951-00560)



53. REMOVE FR DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

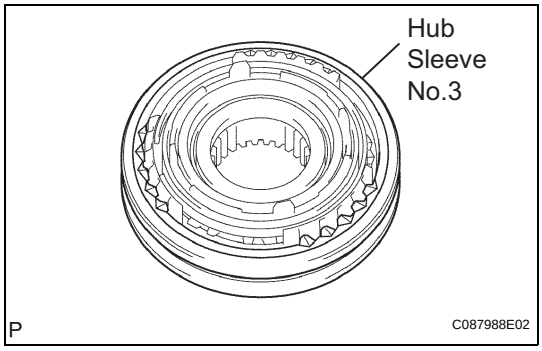
(a) Using SST and a hammer, remove the FR differential case rear tapered roller bearing (outer race) and FR differential case rear shim from the manual transmission case.

SST 09950-60020 (09951-00790), 09950-70010 (09951-07100)



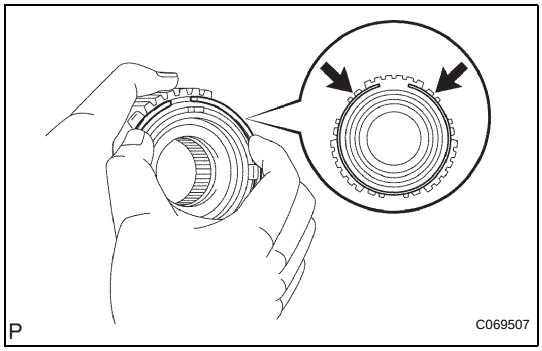
(b) Using SST, remove the FR differential case rear tapered roller bearing (inner race) from the front differential case.

SST 09950-60020, 09950-00030, 09950-40011 (09957-04010), 09950-60010 (09951-00490)



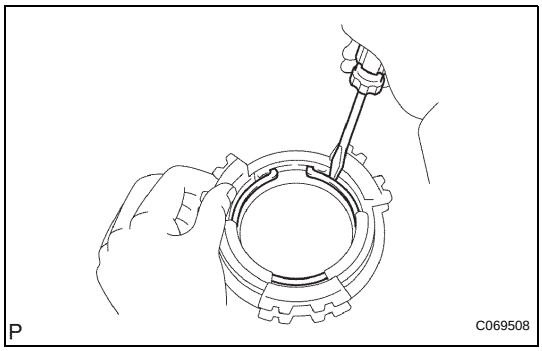
54. REMOVE TRANSMISSION HUB SLEEVE NO.3

(a) Remove the transmission hub sleeve No.3 from the transmission clutch hub No.3.



55. REMOVE SYNCHROMESH SHIFTING KEY SPRING NO.3

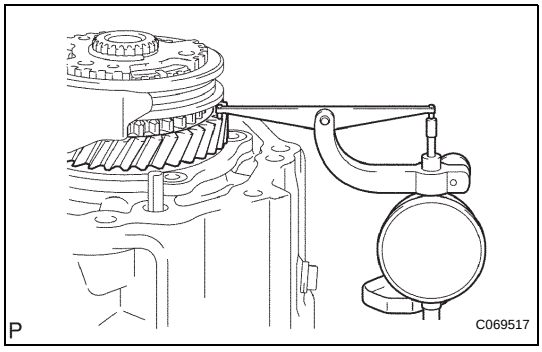
(a) Remove the 2 synchromesh shifting key springs No.3 from the transmission clutch hub No.3 while pushing on the synchromesh shifting key spring No.3.



56. REMOVE SYNCHRONIZER PULL RING

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

(b) Remove the synchronizer pull ring, synchronizer outer ring No.5, synchronizer inner ring No.5 and synchronizer ring middle No.5 from the synchronizer ring inner No.5.



INSPECTION

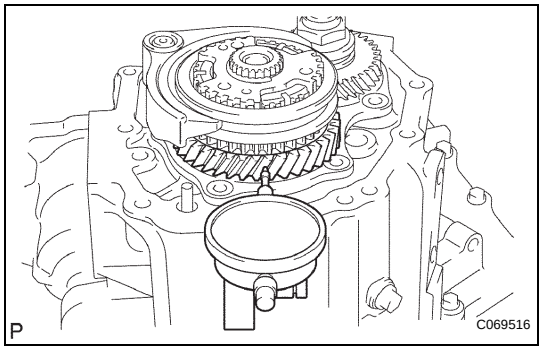
1. INSPECT 5TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, inspect the 5th gear thrust clearance.

Standard clearance:

0.10 to 0.65 mm (0.0039 to 0.0256 in.)

If clearance is out of specification, replace the transmission clutch hub No.3, 5th gear or input shaft rear radial ball bearing.



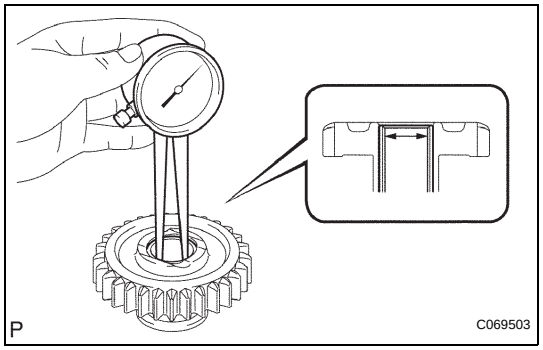
2. INSPECT 5TH GEAR RADIAL CLEARANCE

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

Standard clearance:

0.009 to 0.050 mm (0.0004 to 0.0020 in.)

If clearance is out of specification, replace the 5th gear, 5th gear needle roller bearing or input shaft.



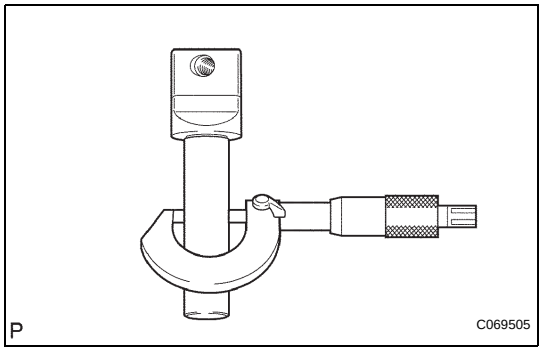
3. INSPECT REVERSE IDLER GEAR SUB-ASSEMBLY

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

Inside diameter: mm (in.)

Standard inside diameter	Maximum inside diameter
20.056 to 20.074 (0.7896 to 0.7903)	20.074 (0.7903)

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

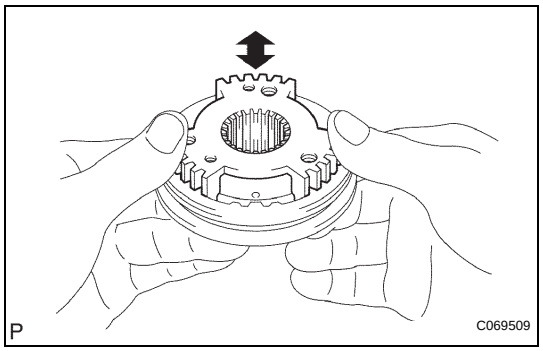


(b) Using a micrometer, measure the outside diameter of the reverse idler gear shaft.

Outside diameter: mm (in.)

Standard outside diameter	Minimum outside diameter
19.984 to 20.000 (0.7868 to 0.7874)	19.984 (0.7868)

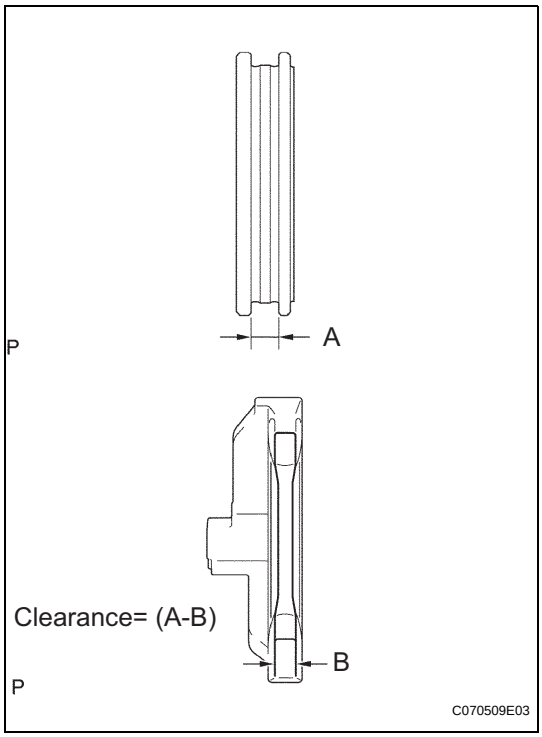
If the outside diameter is less than the minimum, replace the reverse idler gear shaft.



4. INSPECT TRANSMISSION CLUTCH HUB NO.3

(a) Inspect the sliding condition between the transmission clutch hub No.3 and the transmission hub sleeve No.3.

(b) Inspect the tip of the spline gear on the transmission hub sleeve No.3 for wear.



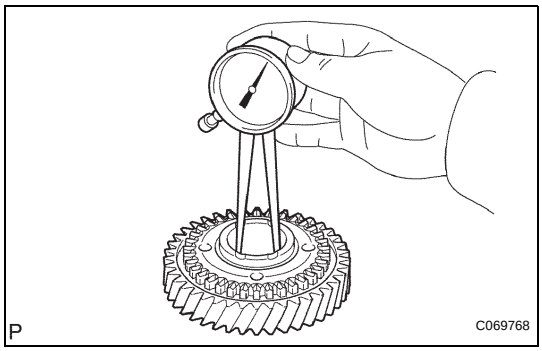
5. INSPECT TRANSMISSION HUB SLEEVE NO.3

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

Standard clearance:

0.15 to 0.35 mm (0.0059 to 0.0138 in.) {A - B}

If clearance is out of specification, replace the transmission hub sleeve No.3 and gear shift fork No.3 with new ones.



6. INSPECT 5TH GEAR

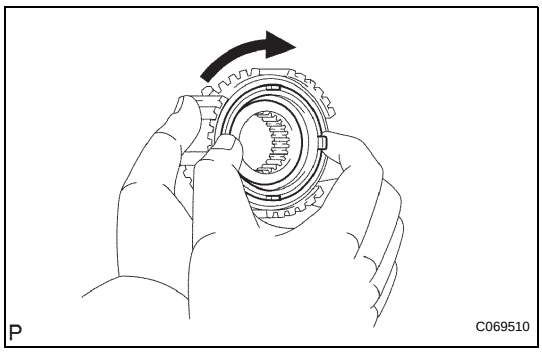
(a) Using a caliper gauge, measure the inside diameter of the 5th gear.

Inside diameter:

mm (in.)

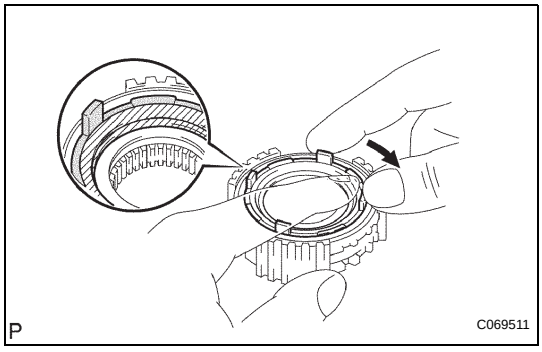
Standard inside diameter	Maximum inside diameter
34.981 to 34.997 (1.3772 to 1.3778)	34.997 (1.3778)

If the inside diameter exceeds the maximum, replace the 5th gear.

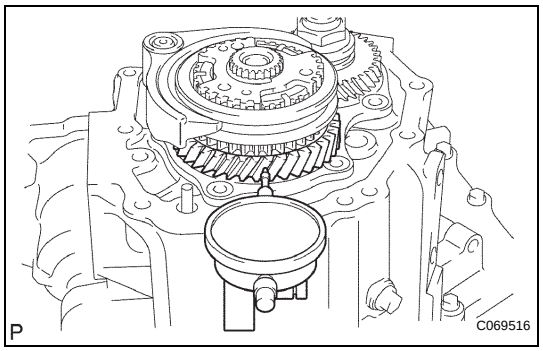


7. INSPECT SYNCHRONIZER RING MIDDLE NO.5

(a) Check that the synchronizer ring middle No.5 rotates smoothly.



(b) Check that the synchronizer ring middle No.5 does not rotate while being pushed against the clutch hub No.3.



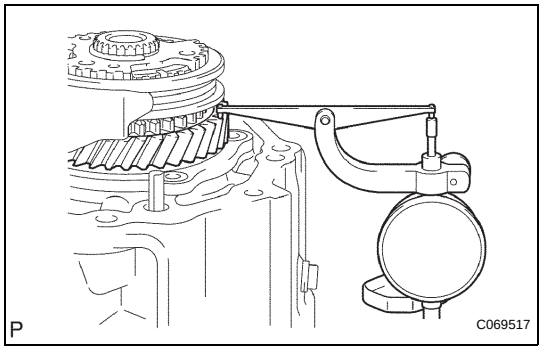
8. INSPECT 5TH GEAR RADIAL CLEARANCE

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

Standard clearance:

0.009 to 0.050 mm (0.0004 to 0.0020 in.)

If clearance is out of specification, replace the 5th gear, 5th gear needle roller bearing or input shaft.



9. INSPECT 5TH GEAR THRUST CLEARANCE

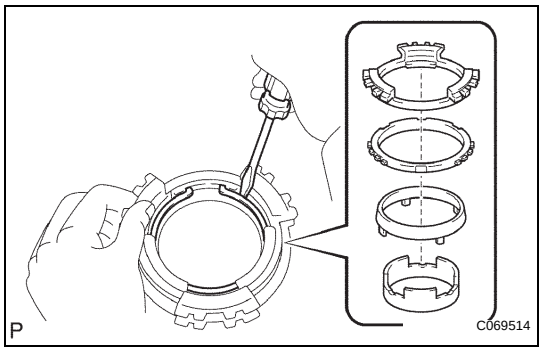
(a) Using a dial indicator, inspect the 5th gear thrust clearance.

Standard clearance:

0.10 to 0.65 mm (0.0039 to 0.0260 in.)

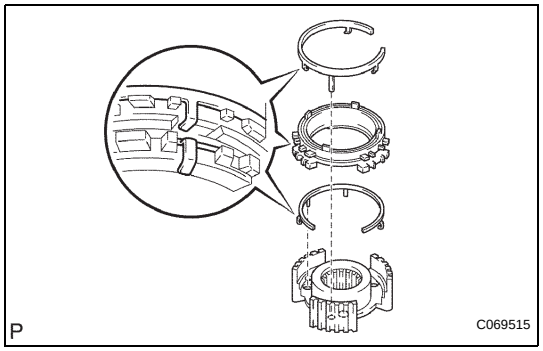
If clearance is out of specification, replace the transmission clutch hub No.3, 5th gear or input shaft rear radial ball bearing.

REASSEMBLY



1. INSTALL SYNCHRONIZER PULL RING

(a) Install the synchronizer middle ring No.5, synchronizer ring outer No.5 and synchronizer pull ring to the synchronizer ring inner No.5. Using a screwdriver, fix them with the snap ring.



2. INSTALL SYNCHROMESH SHIFTING KEY SPRING NO.3

(a) Install the synchromesh shifting key spring No.3 to the transmission clutch hub No.3.

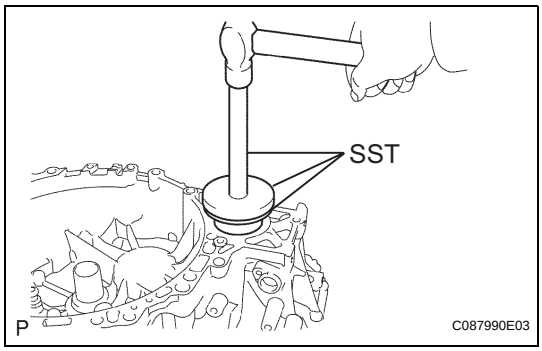
NOTICE:

Align the projection of the shifting key spring with the hole of the clutch hub No.3 and install.

(b) Install the synchronizer ring set and synchromesh shifting key spring No.3 to the transmission clutch hub No.3.

NOTICE:

- **Engage the shifting key spring claw to the center of the teeth of the synchronizer ring.**
- **Align the projection of the shifting key spring with the hole of the clutch hub No.3 and install.**



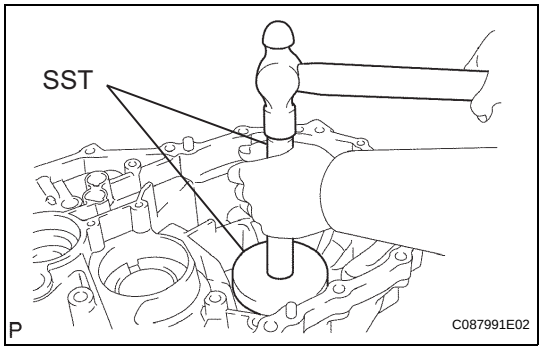
3. INSTALL FRONT TRANSAXLE CASE COVER OIL SEAL

(a) Using SST and a hammer, install the front transaxle case cover new oil seal.

SST 09316-20011, 09950-60020 (09951-00910), 09950-70010 (09951-07150)

Oil seal driven in depth:
- 0.5 to 0.5 mm (- 0.020 to 0.020 in.)

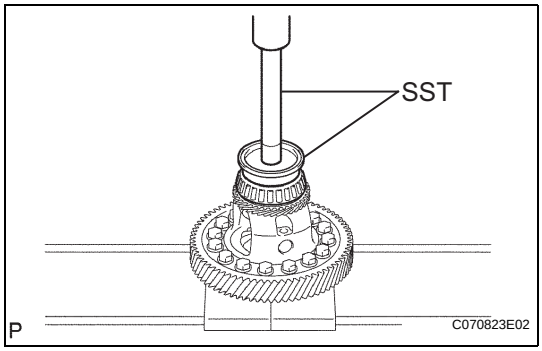
(b) Coat the front transaxle case cover oil seal lip with MP grease.



4. INSTALL FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

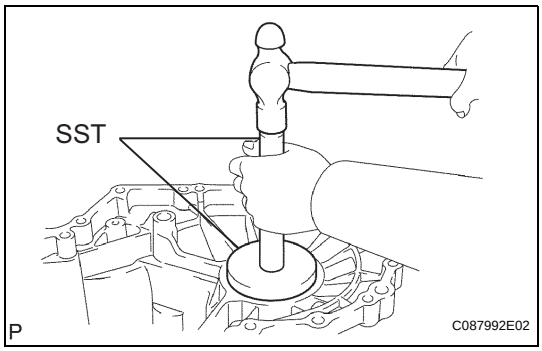
(a) Using SST and a hammer, install the FR differential case front tapered roller bearing (outer race) to the front transaxle case.

SST 09950-60020 (09951-00910), 09950-70010 (09951-07100)



(b) Using SST and a press, install the FR differential case front tapered roller bearing (inner race) to the front differential case.

SST 09950-70010 (09951-07100, 09951-07150), 09608-10010

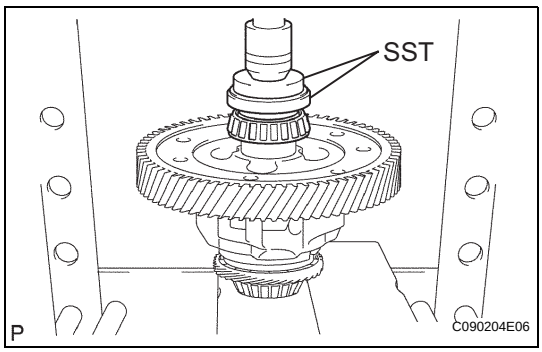


5. INSTALL FR DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

(a) Install the front differential case shim rear.

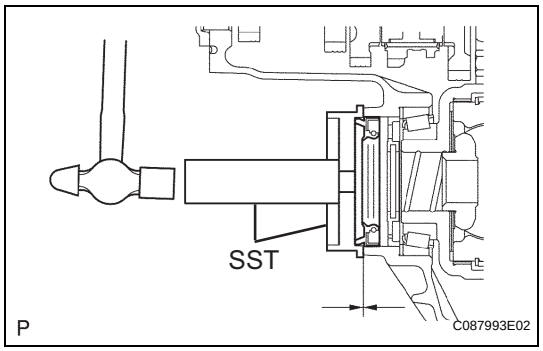
(b) Using SST and a hammer, install the FR differential case rear tapered roller bearing (outer race).

SST 09950-60020 (09951-00890), 09950-70010 (09951-07100)



(c) Using SST, install the FR differential case rear tapered roller bearing (inner race).

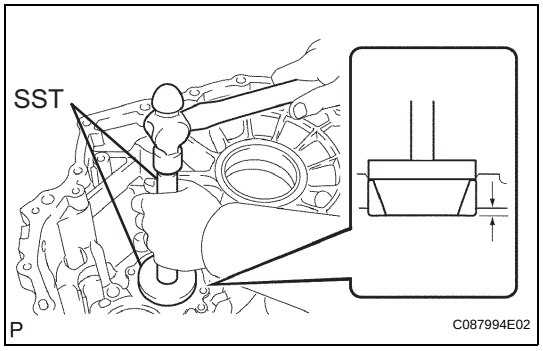
SST 09631-12090, 09950-60010 (09951-00600), 09950-70010 (09951-07100)



6. INSTALL TRANSMISSION CASE OIL SEAL

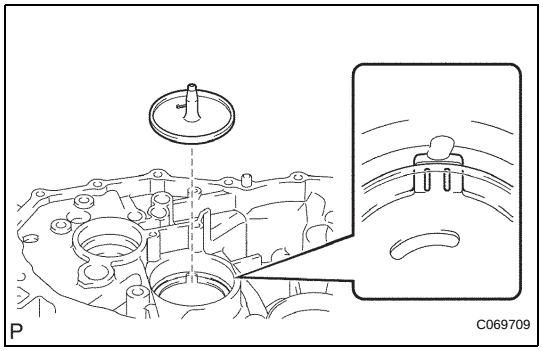
(a) Using SST and a hammer, install the transmission case new oil seal to the manual transmission case.
SST 09608-32010, 09950-70010 (09951-07150)
Oil seal driven in depth:
3.5 +- 0.5 mm (0.138 +- 0.020 in.)

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



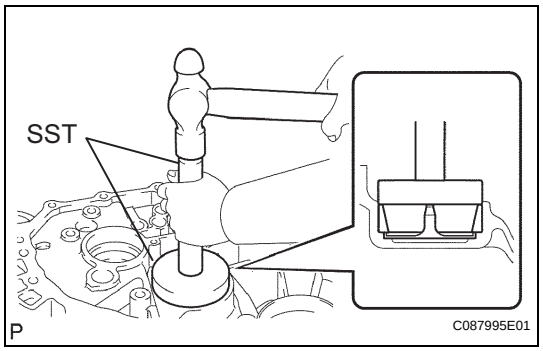
7. INSTALL OUTPUT SHAFT REAR BEARING

(a) Using SST and a hammer, install the output shaft rear bearing (outer race) to the manual transmission case.
SST 09950-60020 (09951-00680), 09950-70010 (09951-07100)
Clearance:
3.8 to 4.4 mm (0.150 to 0.173 in.)



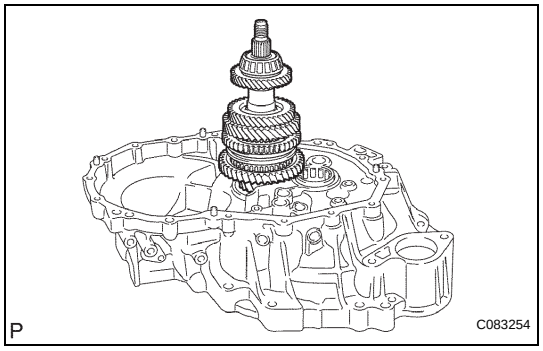
8. INSTALL OUTPUT SHAFT (MTM) COVER

(a) Coat the output shaft (MTM) cover with MP grease, and install it to the manual transaxle case.
NOTICE:
Align the projection of the output shaft with the transmission groove and install.



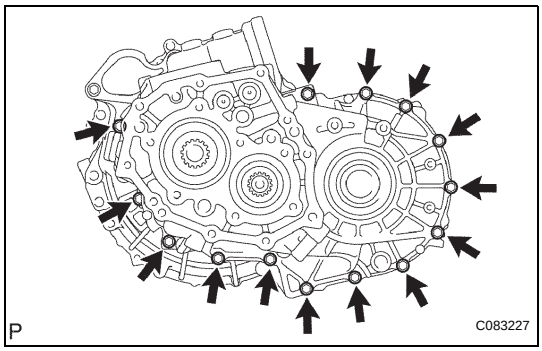
9. INSTALL OUTPUT SHAFT FRONT BEARING

(a) Using SST and a hammer, install the output shaft front bearing (outer race).
SST 09950-60020 (09951-00730), 09950-70010 (09951-07100)

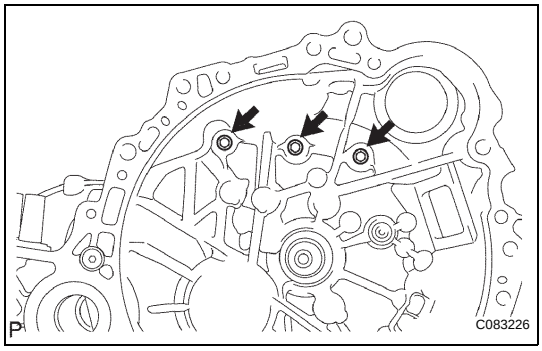


10. ADJUST OUTPUT SHAFT BEARING PRELOAD

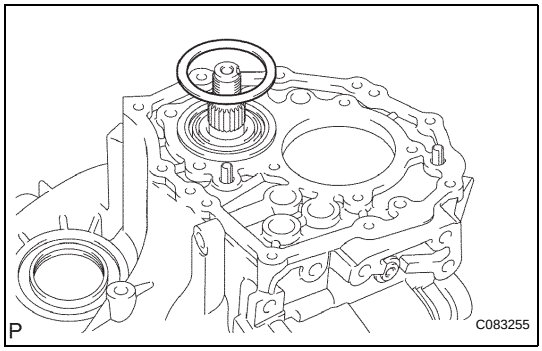
(a) Install the output shaft to the manual transaxle case.



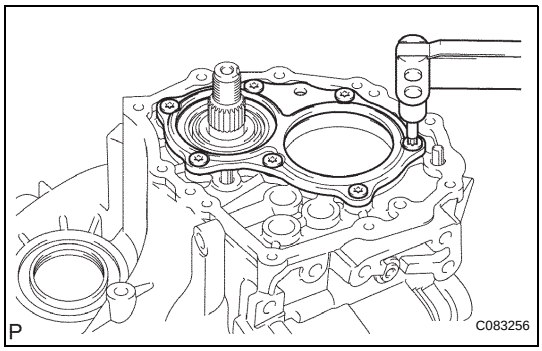
(b) Install the transmission case to the manual transaxle case with the 14 bolts.
Torque: 29 N*m (296 kgf*cm, 21 in.*lbf)



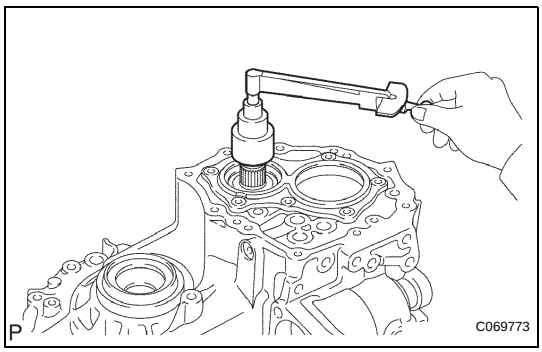
(c) Install the 3 bolts on the manual transaxle side.
Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)



(d) Install the output shaft rear bearing case shim to the output shaft.



(e) Using a torx) socket wrench (T45), install the bearing retainer rear with the 7 screws to the manual transmission case.
Torque: 43 N*m (438 kgf*cm, 32 in.*lbf)



(f) Turn the output shaft in both directions to make sure that it starts to turn smoothly.
(g) Using a socket wrench and torque wrench, inspect the preload.
Preload: N*m (kgf*cm, in.*lbf)

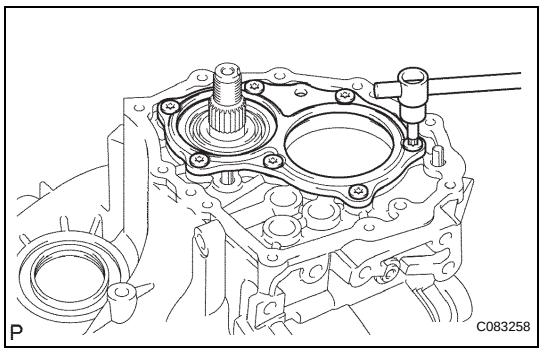
Bearing	Torque
New	0.8 to 1.6 (8.16 to 16.32, 7.1 to 14.2)
Used	0.5 to 1.0 (5.10 to 10.20, 4.4 to 8.9)

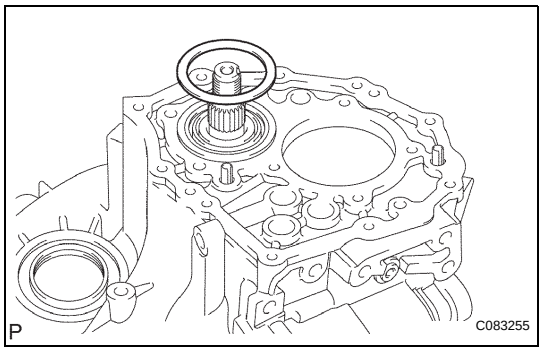
(h) If preload is out of specification, select a proper output shaft rear bearing shim and adjust it.
HINT:
The preload of all the output shaft rear bearing shim varies in torque from about 0.04 to 0.06 N*m.
Shim:
mm (in.)

Part No.	Thickness: mm (in.)	Mark
90564-59001	1.30 (0.0512)	0
90564-59002	1.35 (0.0531)	1
90564-59003	1.40 (0.0551)	2
90564-59004	1.45 (0.0571)	3
90564-59005	1.50 (0.0591)	4
90564-59006	1.55 (0.0610)	5
90564-59007	1.60 (0.0630)	6
90564-59008	1.65 (0.0650)	7
90564-59009	1.70 (0.0669)	8
90564-59010	1.75 (0.0689)	9
90564-59011	1.80 (0.0709)	A
90564-59012	1.85 (0.0728)	B
90564-59013	1.90 (0.0748)	C
90564-59014	1.95 (0.0768)	D
90564-59015	2.00 (0.0787)	E
90564-59016	2.05 (0.0807)	F
90564-59017	2.10 (0.0827)	G
90564-59018	2.15 (0.0846)	H
90564-59019	2.20 (0.0866)	J
90564-59020	2.25 (0.0886)	K
90564-59021	2.30 (0.0906)	L
90564-59022	2.35 (0.0925)	M
90564-59023	2.40 (0.0945)	N
90564-59024	2.45 (0.0965)	P
90564-59025	2.50 (0.0984)	Q

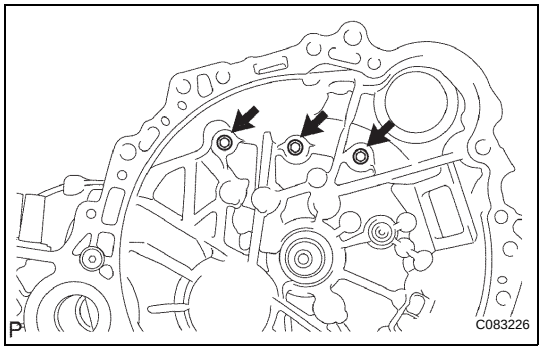
(i) Remove the output shaft rear set nut from the output shaft.

(j) Using a "torx" socket wrench (T45), remove the 7 screws and bearing retainer rear from the manual transmission case.

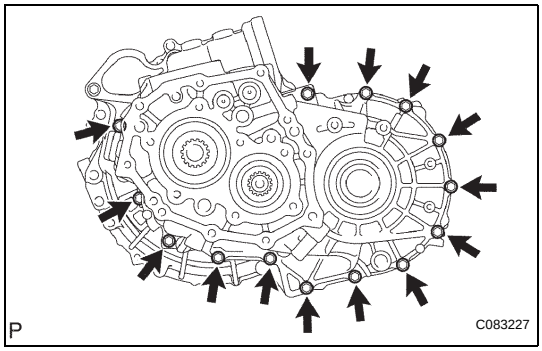




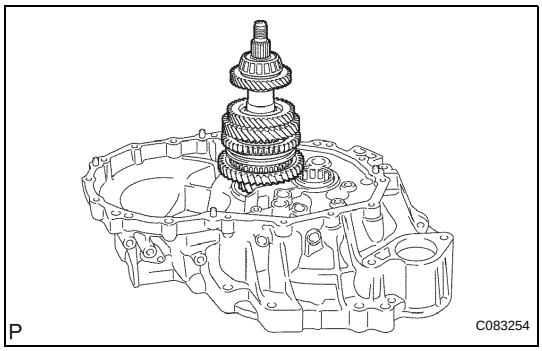
(k) Remove the output shaft rear bearing shim from the output shaft.



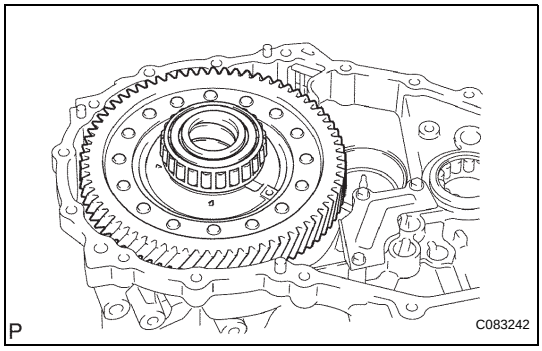
(l) Remove the 3 bolts.



(m) Remove the 14 bolts and manual transmission case from the manual transaxle case.

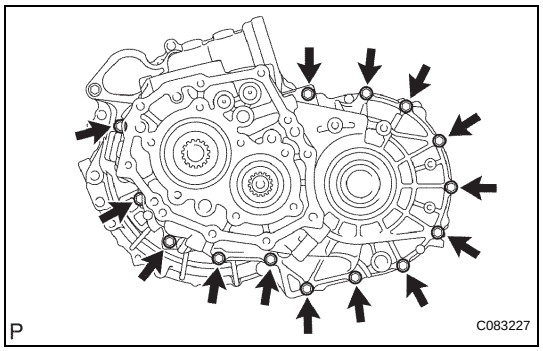


(n) Remove the output shaft assembly from the front manual transaxle case.

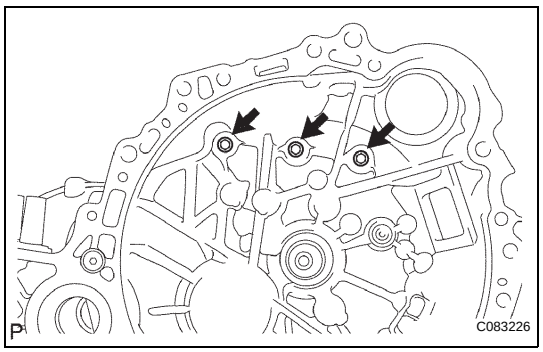


11. ADJUST TAPERED ROLLER BEARING PRELOAD

(a) Install the differential case assembly to the manual transaxle case.

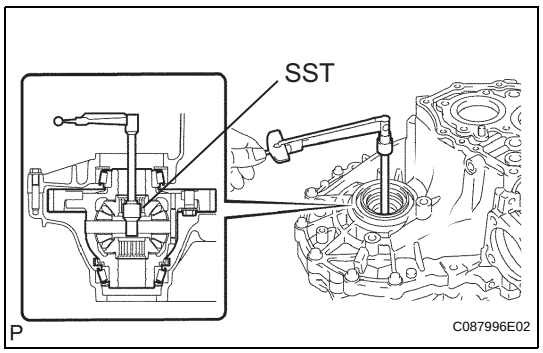


(b) Install the 14 bolts and manual transmission case to the manual transaxle case.
Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)



(c) Install the 3 bolts on the front manual transaxle case side.
Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)

(d) Turn the differential case in both directions to make sure that it starts to turn smoothly.



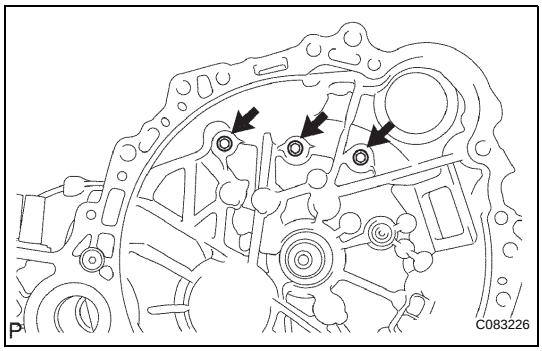
(e) Using SST and a torque wrench, inspect preload.
SST 09564-32011
Preload: N*m (kgf*cm, in.*lbf)

Bearing	Torque
New	0.8 to 1.6 (8.16 to 16.32, 7.1 to 14.2)
Used	0.5 to 1.0 (5.10 to 10.2, 4.4 to 8.9)

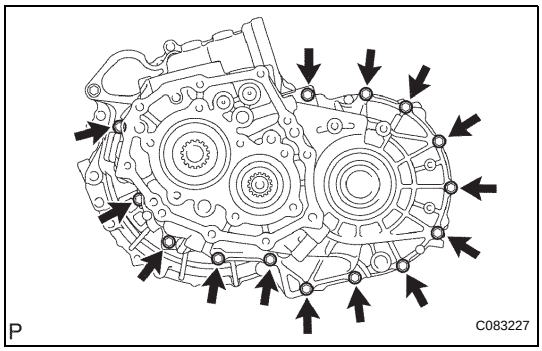
If preload is out of specification, select a proper front differential case rear shim and adjust it.
HINT:
The preload of all the front differential case rear shims varie in torque from about 0.04 to 0.06 N·m.
Shim:
mm (in.)

Part No.	Thickness: mm (in.)	Mark
90564-56055	2.00 (0.0787)	0
90564-56056	2.05 (0.0807)	1
90564-56057	2.10 (0.0827)	2
90564-56058	2.15 (0.0846)	3
90564-56059	2.20 (0.0866)	4
90564-56060	2.25 (0.0886)	5
90564-56061	2.30 (0.0906)	6
90564-56062	2.35 (0.0925)	7
90564-56063	2.40 (0.0945)	8
90564-56064	2.45 (0.0965)	9
90564-56065	2.50 (0.0984)	A
90564-56066	2.55 (0.1004)	B
90564-56067	2.60 (0.1024)	C
90564-56068	2.65 (0.1043)	D
90564-56069	2.70 (0.1063)	E

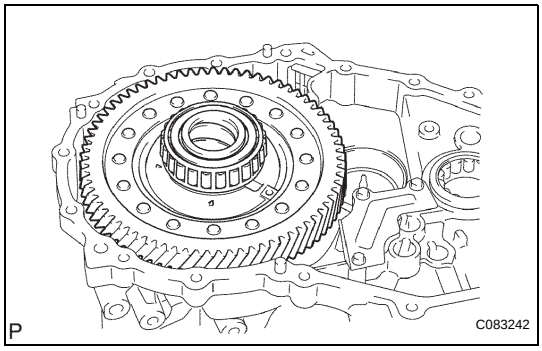
Part No.	Thickness: mm (in.)	Mark
90564-56070	2.75 (0.1083)	F
90564-56071	2.80 (0.1102)	G
90564-56072	2.85 (0.1122)	H



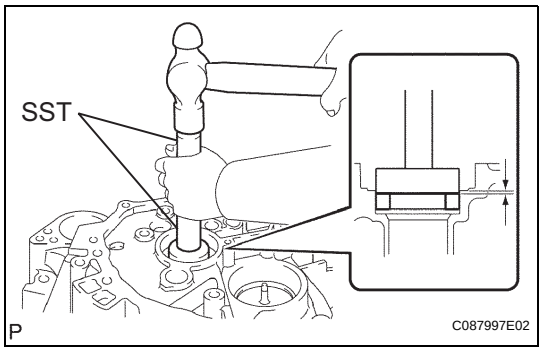
(f) Remove the 3 bolts.



(g) Remove the 14 bolts and manual transmission case from the manual transaxle case.



(h) Remove the differential case assembly from the manual transaxle case.



12. INSTALL FRONT TRANSAXLE CASE OIL SEAL

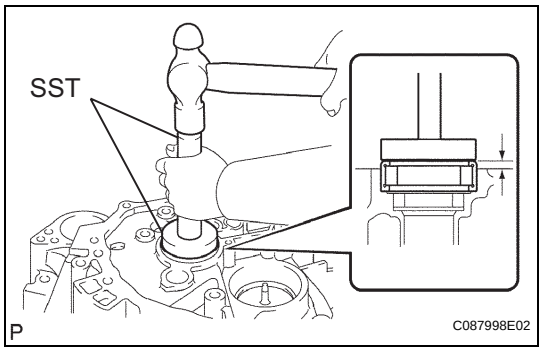
(a) Using SST and a hammer, install the front transaxle case new oil seal No.1 to the manual transaxle case.

SST 09950-60010 (09951-00420), 09950-70010 (09951-07150)

(b) Coat the lip of the front transaxle case oil seal No.1 with MP grease.

Clearance:

1 to 2 mm (0.0394 to 0.0787 in.)



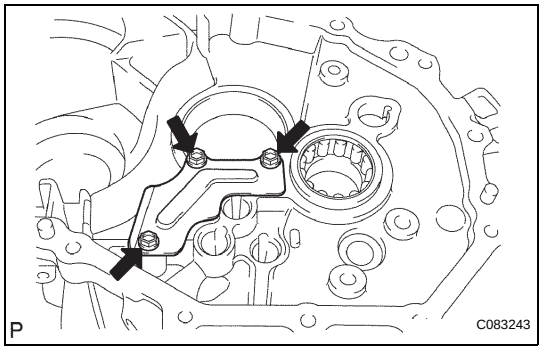
13. INSTALL INPUT SHAFT FRONT BEARING

(a) Coat the input shaft front bearing with gear oil, and install it to the manual transaxle case.

SST 09950-60010 (09951-00570), 09950-70010 (09951-07150)

Clearance:

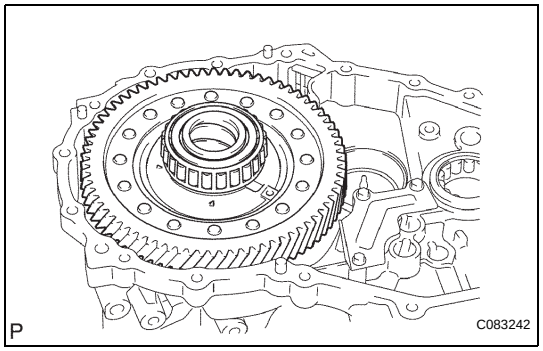
4.28 to 4.60 mm (0.1685 to 0.1811 in.)



14. REMOVE MANUAL TRANSAXLE CASE RECEIVER

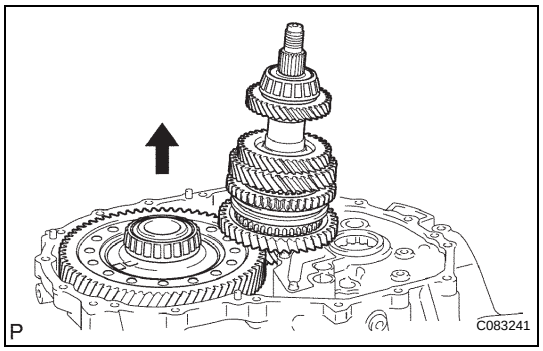
(a) Install the 3 bolts and manual transaxle case receiver to the manual transaxle case.

Torque: 7.0 N*m (71 kgf*cm, 62 in.*lbf)



15. INSTALL DIFFERENTIAL CASE ASSEMBLY

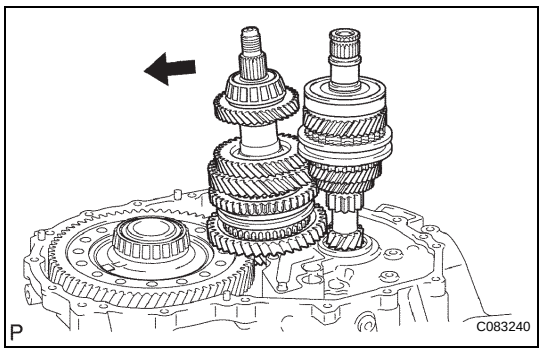
(a) Coat the differential case tapered roller bearing with gear oil, and install the differential case assembly to the manual transaxle case.



16. INSTALL OUTPUT SHAFT ASSEMBLY

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

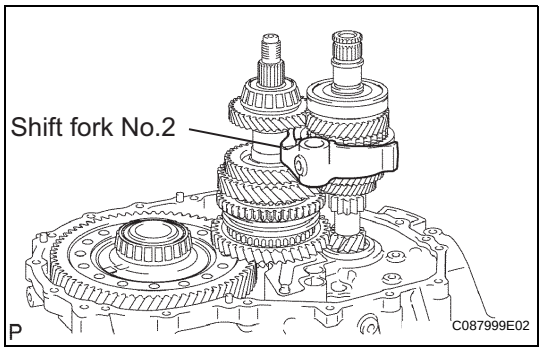
(b) Lift the differential case assembly up with the output shaft assembly leaned, and install it to the manual transaxle case.



17. INSTALL INPUT SHAFT ASSEMBLY

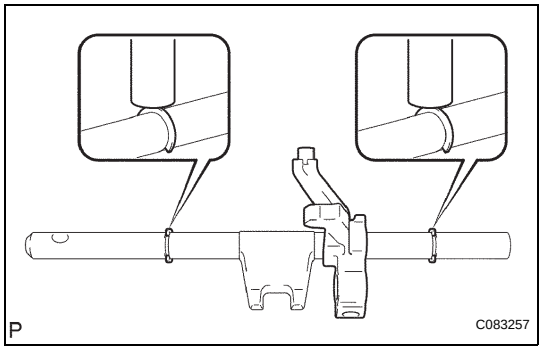
(a) Apply gear oil to each sliding part of the input shaft assembly.

(b) Install the input shaft assembly to the manual transaxle case while tilting the output shaft assembly.



18. INSTALL GEAR SHIFT FORK NO.2

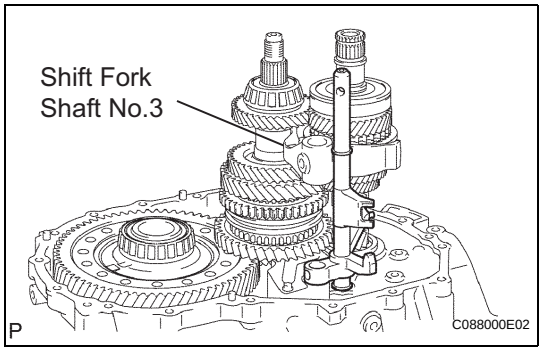
(a) Coat the gear shift fork No.2 with gear oil, and install it to the input shaft assembly.



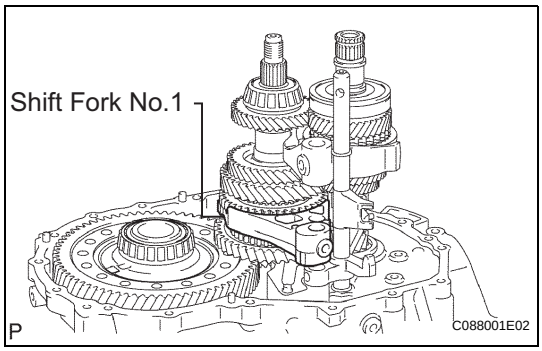
19. INSTALL GEAR SHIFT FORK NO.3

(a) Install the gear shift fork No.3 to the gear shift fork shaft No.3.

(b) Using a brass bar and hammer, install the 2 shift fork shaft snap rings to the gear shift fork shaft.

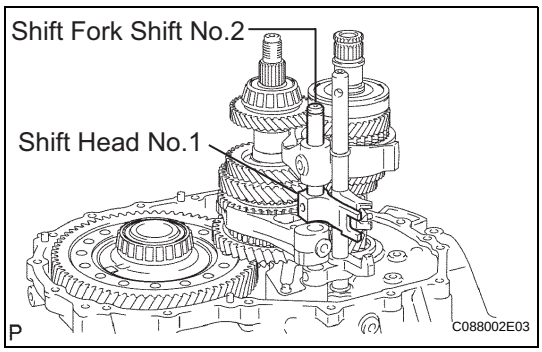


(c) Apply gear oil to each sliding part of the gear shift fork shaft No.3, and install it to the manual transaxle case.



20. INSTALL GEAR SHIFT FORK NO.1

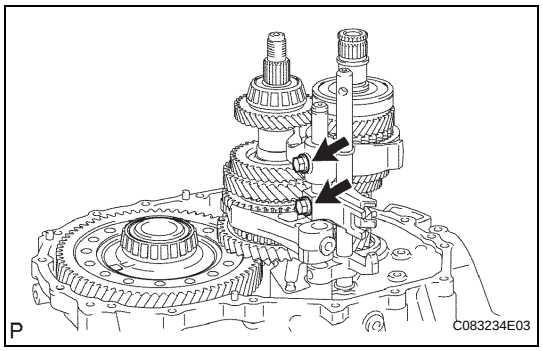
(a) Apply gear oil to each sliding part of the gear shift fork No.1, and install it to the output shaft assembly.



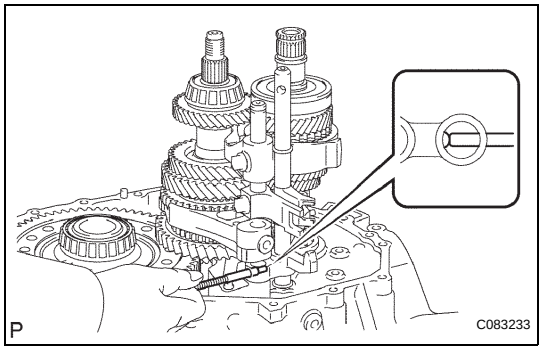
21. INSTALL GEAR SHIFT FORK SHAFT NO.2

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

(b) Apply gear oil to each sliding part of the gear shift fork shaft No.2, and install it to the manual transaxle case.

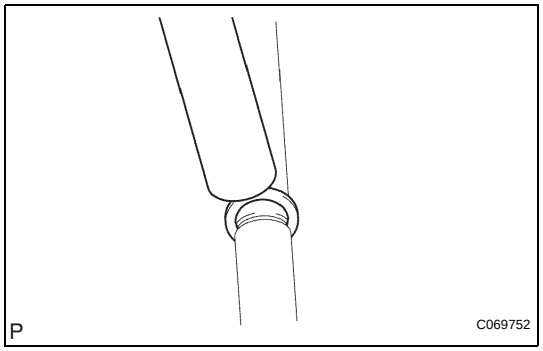


(c) Install the shift fork set bolt and shift head set bolt to the gear shift head No.1.
Torque: 24 N*m (245 kgf*cm, 18 ft.*lbf)



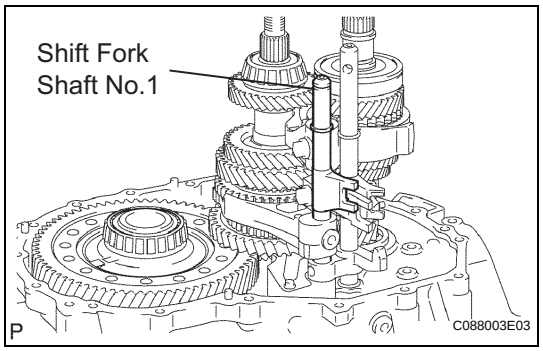
22. INSTALL REVERSE SHIFT FORK ROLLER

(a) Using a magnetic finger, install the reverse shift fork roller to the reverse shift fork.

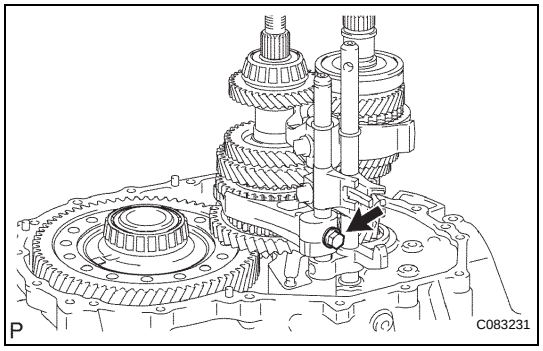


23. INSTALL GEAR SHIFT FORK SHAFT NO.1

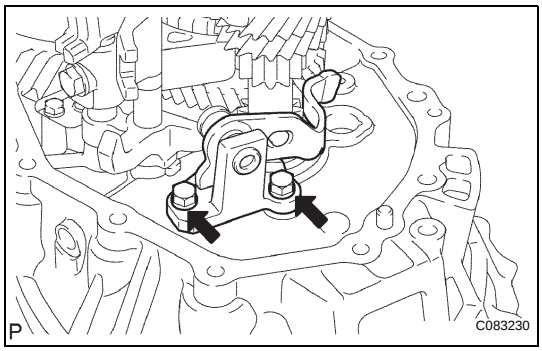
(a) Using a brass bar and hammer, install the shift fork shaft snap ring to the shift fork shaft No.1.



(b) Install the gear shift fork shaft No.1 to the manual transaxle case.

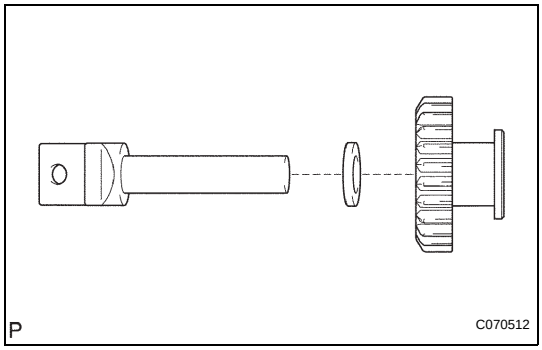


(c) Install the shift fork set bolt to the gear shift fork No.1.
Torque: 24 N*m (245 kgf*cm, 18 ft.*lbf)



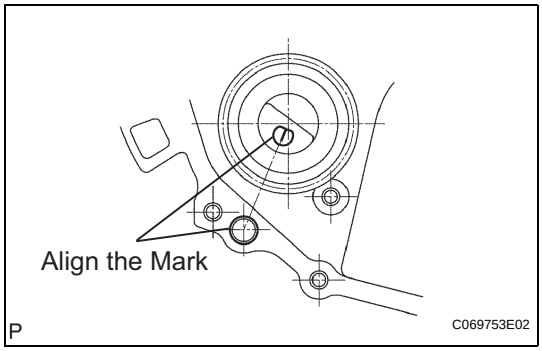
24. INSTALL REVERSE SHIFT ARM BRACKET ASSEMBLY

(a) Install the 2 bolts and reverse shift arm bracket assembly to the manual transaxle case.
Torque: 17 N*m (173 kgf*cm, 13 ft.*lbf)

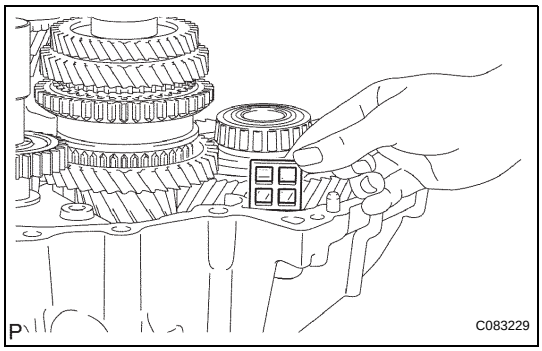


25. INSTALL REVERSE IDLER GEAR SUB-ASSEMBLY

(a) Coat the reverse idler gear and reverse idler thrust washer with MP grease, and install them to the reverse idler gear shaft.

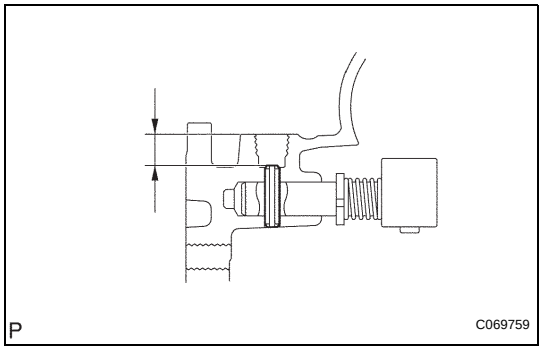


(b) Install the reverse idler gear to the manual transaxle case.
HINT:
Align the mark of the reverse idler gear shaft with the hole of the bolt.



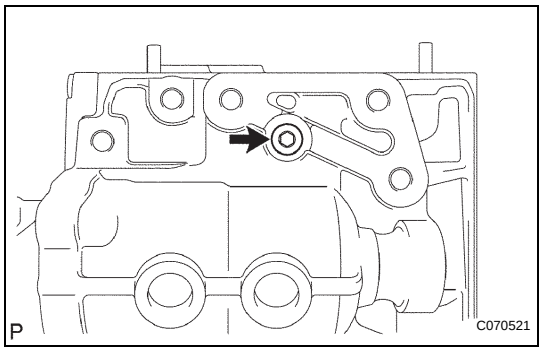
26. INSTALL TRANSMISSION MAGNET

(a) Clean the transmission magnet, and install it to the manual transaxle case.

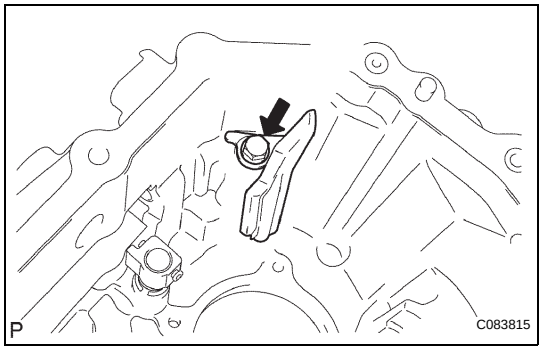


27. INSTALL REVERSE RESTRICT PIN ASSEMBLY

(a) Using a pin punch (ϕ5mm), install the reverse restrict pin and reverse restrict pin assembly.
Clearance:
12.5 to 13.5 mm (0.492 to 0.531 in.)

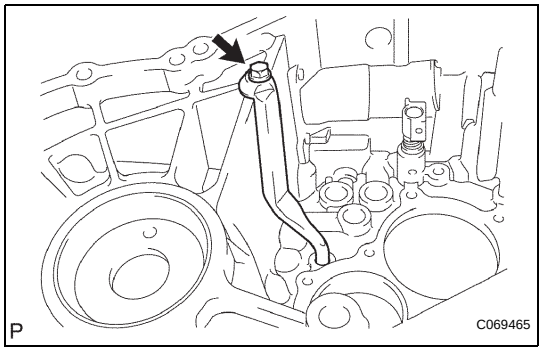


(b) Coat the reverse restrict pin plug with adhesive 1324, and using a hexagon wrench (6 mm), install the manual transmission case.
Torque: 13 N*m (133 kgf*cm, 9.6 ft.*lbf)



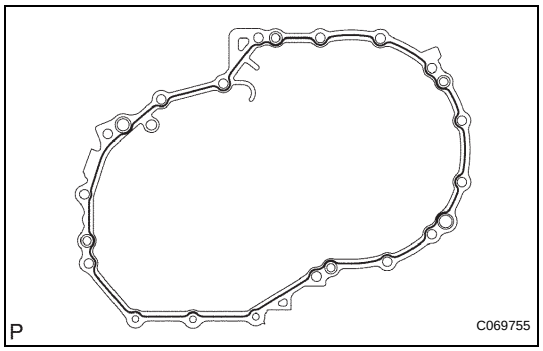
28. INSTALL OIL RECEIVER PIPE NO.1 (MTM)

(a) Install the bolt and oil receiver pipe No.1 (MTM) to the manual transmission case.
Torque: 17 N*m (173 kgf*cm, 13 ft.*lbf)
HINT:
Tighten the oil receiver pipe No.1 with the bolt.
NOTICE:
Do not damage the pipe.



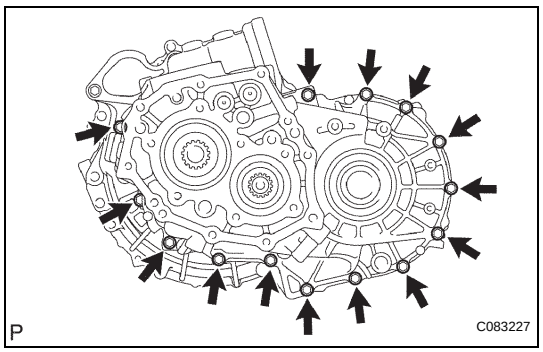
29. INSTALL OIL RECEIVER PIPE NO.2 (MTM)

(a) Install the bolt and oil receiver pipe No.2 (MTM) to the manual transmission case.
Torque: 17 N*m (173 kgf*cm, 13 ft.*lbf)
NOTICE:
Do not damage the pipe.

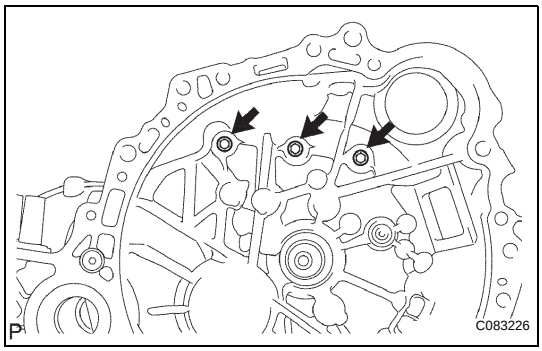


30. INSTALL MANUAL TRANSMISSION CASE

(a) Apply an unbroken bead of FIPG, as shown in the illustration, to the manual transmission case.
HINT:
Install within 10 minutes after applying FIPG.



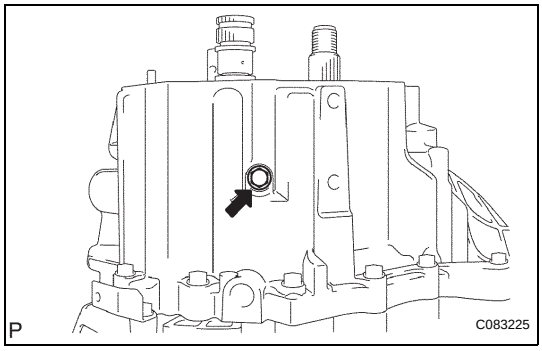
(b) Install the manual transmission case with the 14 bolts to the manual transaxle case.
Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)



(c) Install the 3 bolts on the manual transaxle case side.
Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)

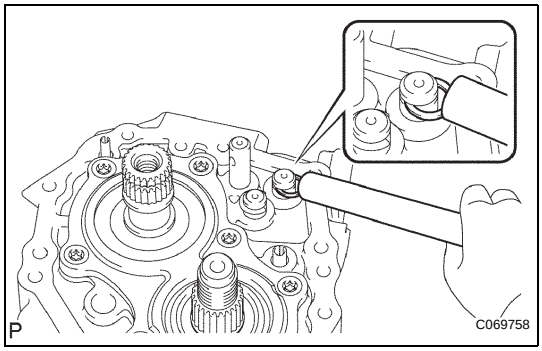
31. INSTALL CLUTCH TUBE BRACKET NO.1

(a) Install the clutch tube bracket with the bolt.
Torque: 17 N*m (173 kgf*cm, 13 ft.*lbf)



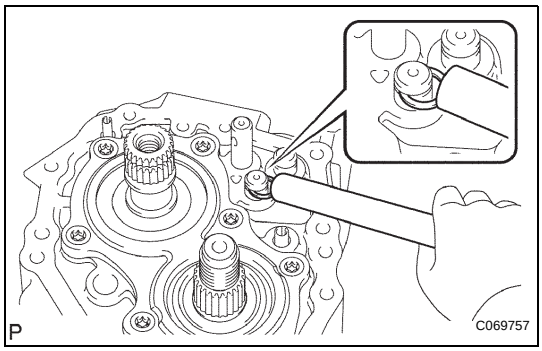
32. INSTALL REVERSE IDLER GEAR SHAFT BOLT

(a) Coat the bolt with sealant, and install a new gasket to the manual transmission case with the bolt.
Torque: 30 N*m (306 kgf*cm, 22 ft.*lbf)
Sealant:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

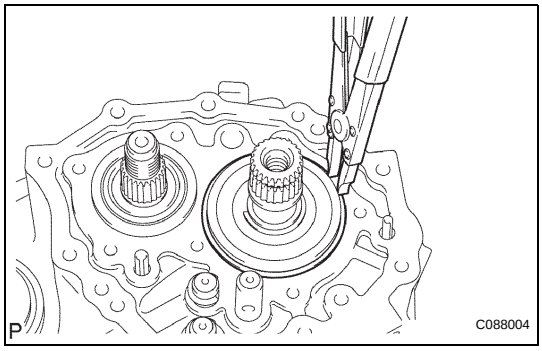


33. INSTALL SHIFT FORK SHAFT SHAFT SNAP RING

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

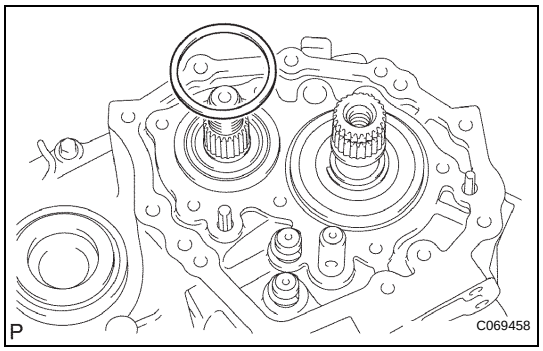


(b) Using a brass bar and hammer, install the shift fork shaft snap ring to the gear shift fork shaft No.2.



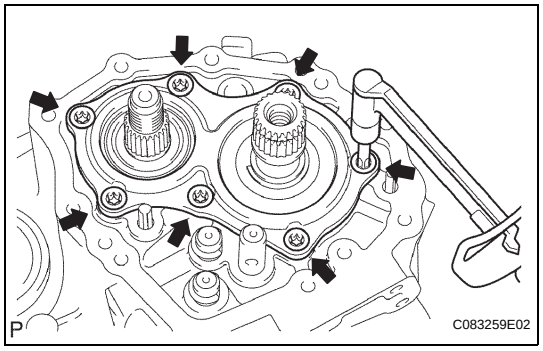
34. INSTALL INPUT SHAFT REAR BEARING SHAFT SNAP RING

(a) Using a snap ring expander, install the input shaft rear bearing shaft snap ring.



35. INSTALL OUTPUT SHAFT REAR BEARING SHIM

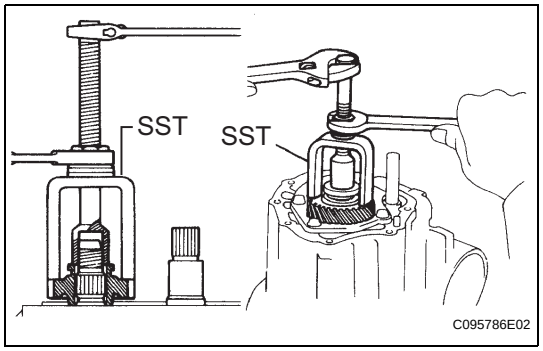
(a) Install the output shaft rear bearing shim to the output shaft.



36. INSTALL BEARING RETAINER REAR (MTM)

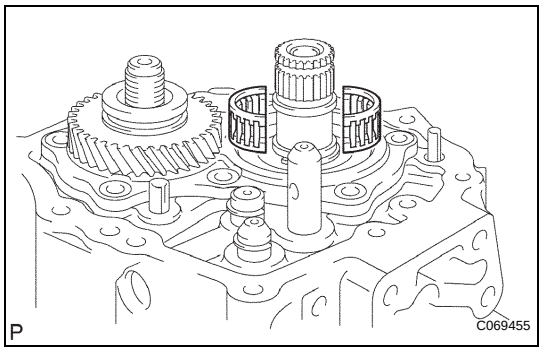
(a) Coat the bearing retainer rear (MTM) with sealant, and install it with a torx wrench (T45).

(b) Install a new output rear set nut to the output shaft.
Torque: 43 N*m (438 kgf*cm, 32 ft.*lbf)



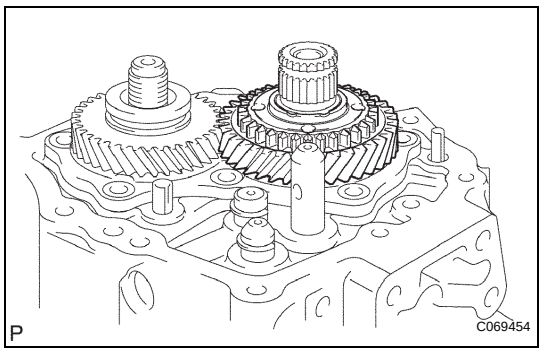
37. INSTALL 5TH DRIVEN GEAR

(a) Using SST, install the 5th driven gear to the output shaft.
SST 09309-12020



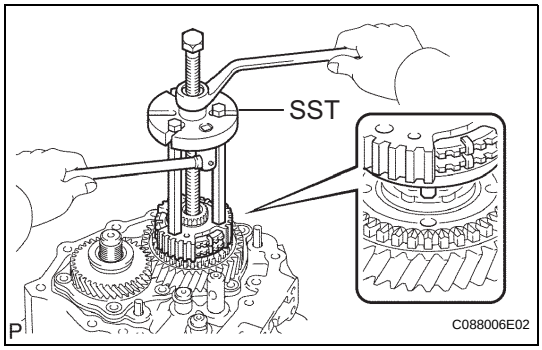
38. INSTALL 5TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 5th gear needle roller bearing with gear oil, and install it to the input shaft.



39. INSTALL 5TH GEAR

(a) Coat the 5th gear with gear oil, and install it to the input shaft.



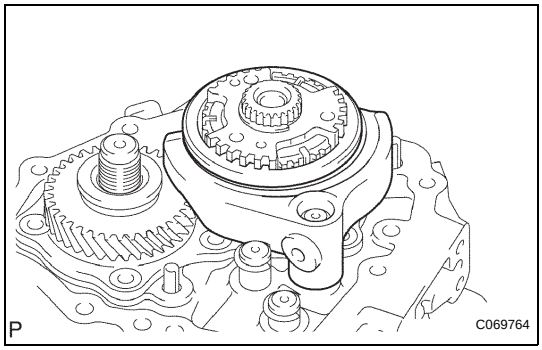
40. INSTALL TRANSMISSION CLUTCH HUB NO.3

(a) Using SST, install the transmission clutch hub No.3 to the input shaft.

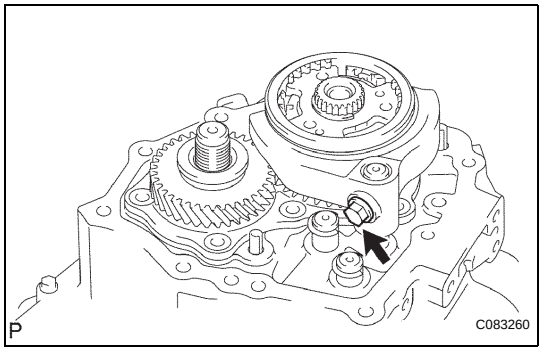
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010)

NOTICE:

Align the projection of the synchronizer ring with the hole of the 5th gear and install.



(b) Install the transmission hub sleeve No.3 and gear shift fork No.3 to the transmission clutch hub No.3.

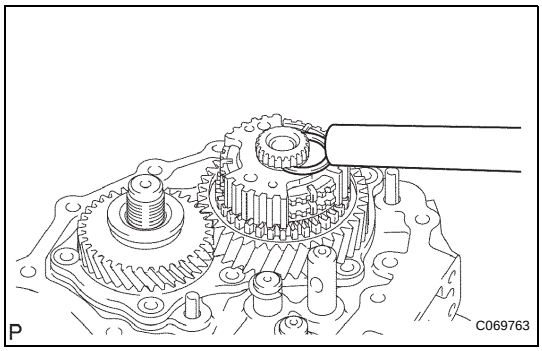


(c) Coat the shift fork set bolt with sealant, and install it to the gear shift fork No. 3.

Sealant:

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

Torque: 24 N*m (245 kgf*cm, 18 ft.*lbf)



(d) Select a snap ring that will allow minimum axial play. Using a brass bar and a hammer, install the shaft snap ring.

Clearance:

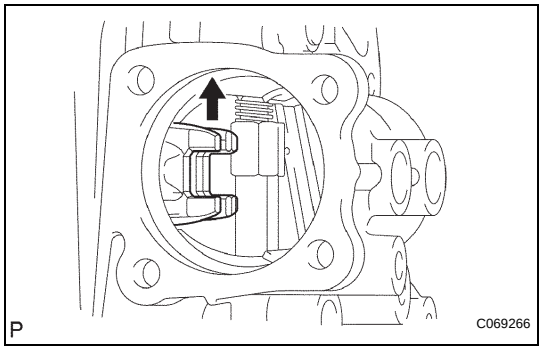
0.1 mm or less

Snap ring:

mm (in.)

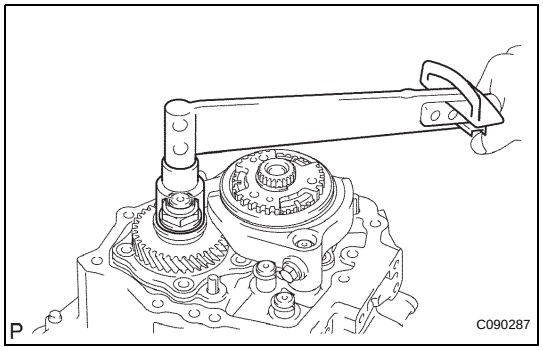
Part No.	Thickness: mm (in.)	Mark
90520-27061	1.75 to 1.80 (0.0689 to 0.0709)	a
90520-27062	1.80 to 1.85 (0.0709 to 0.0728)	b
90520-27063	1.85 to 1.90 (0.0728 to 0.0748)	c
90520-27064	1.90 to 1.95 (0.0748 to 0.0768)	d
90520-27065	1.95 to 2.00 (0.0768 to 0.0787)	e
90520-27066	2.00 to 2.05 (0.0787 to 0.0807)	f
90520-27067	2.05 to 2.10 (0.0807 to 0.0827)	g

Part No.	Thickness: mm (in.)	Mark
90520-27068	2.10 to 2.15 (0.0827 to 0.0846)	h
90520-27069	2.15 to 2.20 (0.0846 to 0.0866)	j

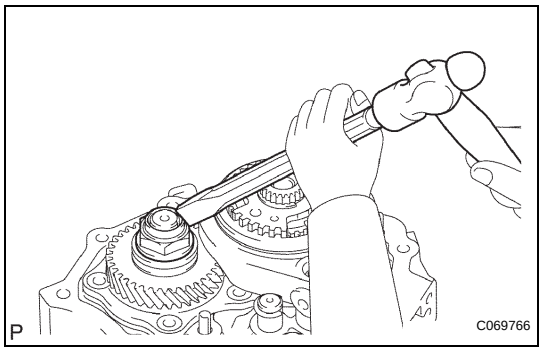


41. INSTALL MANUAL TRANSMISSION OUTPUT SHAFT REAR SET NUT

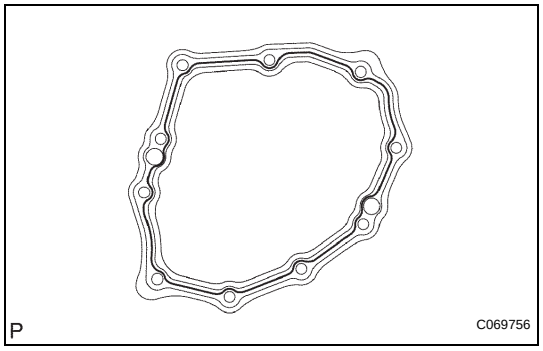
(a) Double mesh the gears. (Engage 1st and 2nd gears simultaneously.)



(b) Install a new manual transmission output shaft rear set nut.
Torque: 123 N*m (1,254 kgf*cm, 91 ft.*lbf)

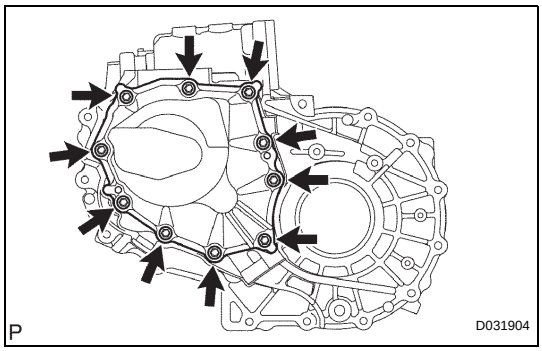


(c) Using a chisel and a hammer, stake the manual transmission output shaft rear set nut.
(d) Disengage the gears.

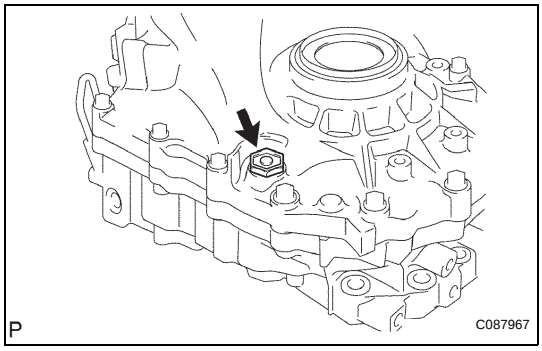


42. INSTALL MANUAL TRANSMISSION CASE COVER SUB-ASSEMBLY

(a) Apply FIPG to the transaxle case cover sub-assembly, as shown in the installation.
FIPG:
Part No. 08826-00090, THREE BOND 1281
NOTICE:
Install the part within 10 minutes after applying the packing material (FIPG).

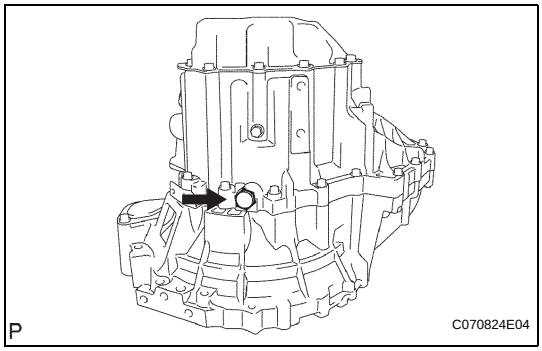


(b) Install the transmission case cover sub-assembly with the 10 bolts to the manual transaxle case.



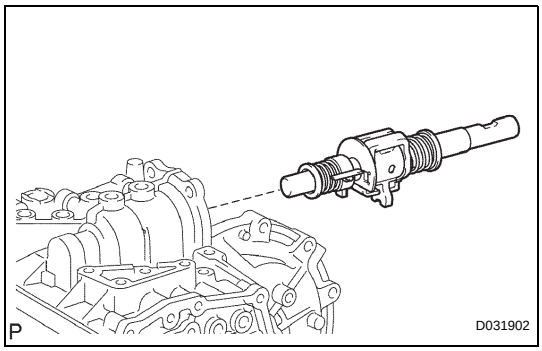
43. INSTALL DRAIN (MTM) PLUG SUB-ASSEMBLY

(a) Install the drain plug sub-assembly with a new gasket to the manual transmission case.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)



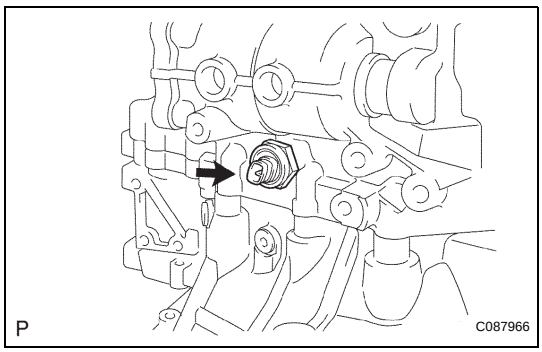
44. INSTALL MANUAL TRANSMISSION FILLER PLUG

(a) Install the manual transmission filler plug with a new gasket to the oil seal.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)



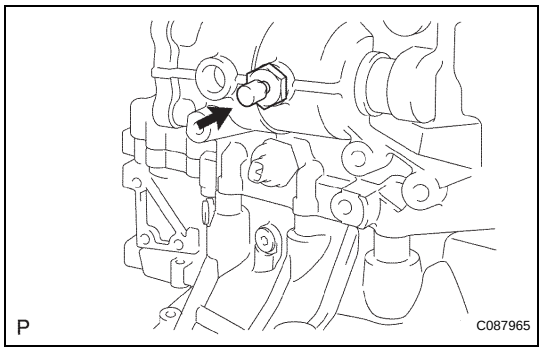
45. INSTALL SHIFT AND SELECT LEVER SHAFT ASSEMBLY

(a) Coat the shift & select lever shaft assembly with gear oil, and install it to the manual transmission case.



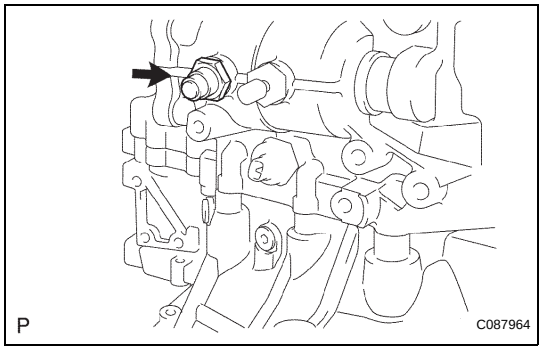
46. INSTALL BACK UP LIGHT SWITCH ASSEMBLY

(a) Install the back up light switch assembly to the manual transmission case.
Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)



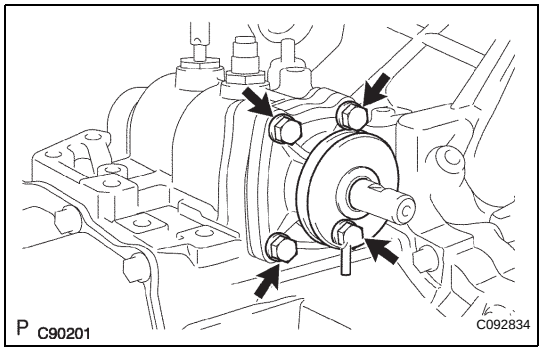
47. INSTALL MANUAL TRANSMISSION BREATHER PLUG

(a) Install a new gasket with the manual transmission breather plug to the manual transmission case.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)



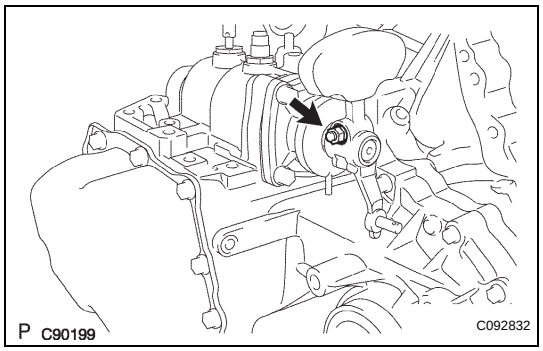
48. INSTALL LOCK BALL ASSEMBLY NO.1

(a) Install the lock ball assembly No.1 to the manual transmission case.
Torque: 29 N*m (296 kgf*cm, 21 ft.*lbf)



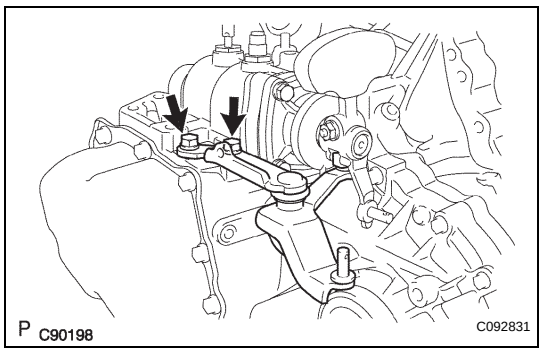
49. INSTALL CONTROL SHAFT COVER

(a) Coat the 4 bolts with sealant, and install a new gasket and the control shaft cover with the bolts.
Sealant:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)



50. INSTALL CONTROL SHIFT LEVER

(a) Install the control shift lever with the shift outer lever lever lock pin to the shift & select lever shaft.
(b) Install the spring washer with the nut.
Torque: 6.4 N*m (65 kgf*cm, 57 in.*lbf)



51. INSTALL SELECTING BELL CRANK ASSEMBLY

(a) Coat the 2 bolts with sealant, and install the selecting bell crank assembly to the manual transmission case with the bolts.
Sealant:
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)

52. INSTALL SPEEDOMETER DRIVEN (MTM) GEAR SUB-ASSEMBLY

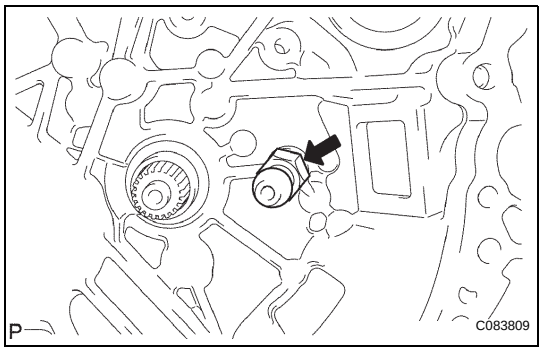
(a) Install the speedometer driven gear to the speedometer sensor.

(b) Install the MTM speedometer shaft sleeve clip to the speedometer driven (MTM) gear sub-assembly.

(c) Install the speedometer driven (MTM) gear sub-assembly to the transmission case with the bolt.
Torque: 5.5 N*m (56 kgf*cm, 48 in.*lbf)

53. INSTALL CLUTCH RELEASE FORK BOOT

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



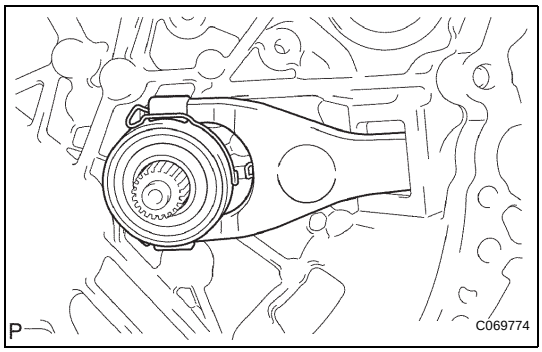
54. INSTALL RELEASE FORK SUPPORT

(a) Using a deep socket wrench, install the release fork support to the manual transaxle case.
Torque: 47 N*m (480 kgf*cm, 36 ft.*lbf)

55. INSTALL CLUTCH RELEASE BEARING ASSEMBLY

(a) Coat the clutch release bearing assembly with release hub grease, and install it to the clutch release fork sub-assembly.
Sealant:
Part No. 08887-01806, RELEASE HUB GREASE or equivalent

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



56. INSTALL CLUTCH RELEASE FORK SUB-ASSEMBLY

(a) Install the clutch release fork sub - assembly to the input shaft.

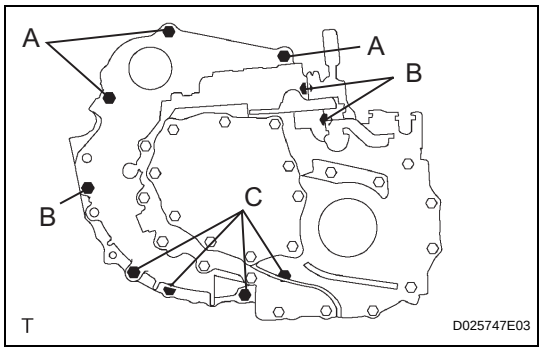
INSTALLATION

1. INSTALL MANUAL TRANSAXLE ASSEMBLY

(a) Align the input shaft with the clutch disc and install the transaxle to the engine.

(b) Install the 10 bolts.

Torque: Bolt A
64 N*m (635 kgf*cm, 47 ft.*lbf)
Bolt B
46 N*m (470 kgf*cm, 34 ft.*lbf)
Bolt C
44 N*m (449 kgf*cm, 32 ft.*lbf)

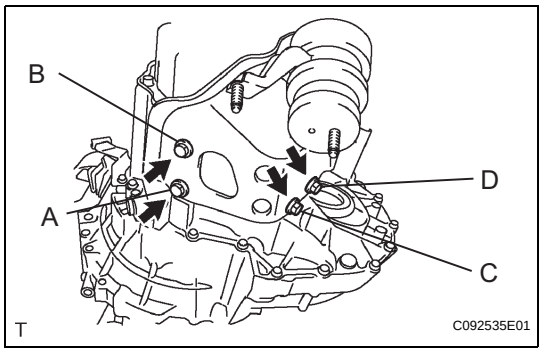


2. INSTALL ENGINE MOUNTING INSULATOR LH

(a) Install the engine mounting insulator LH with the 4 bolts.

Torque: 64 N*m (653 kgf*cm, 47 ft.*lbf)

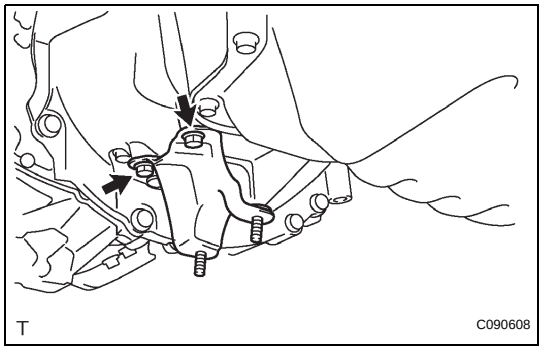
HINT:
Tighten them in order: A, B, C and D.



3. INSTALL EXHAUST PIPE SUPPORT BRACKET NO.1

(a) Install the exhaust pipe support bracket No.1 with the 2 bolts.

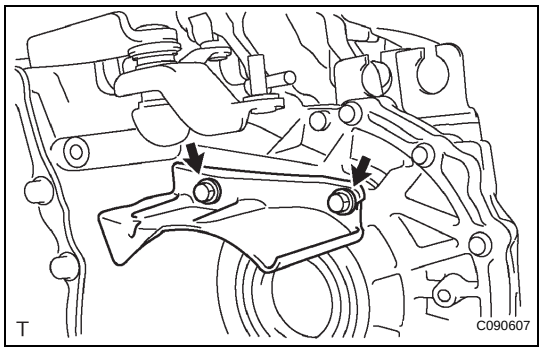
Torque: 19 N*m (194 kgf*cm, 14 ft.*lbf)

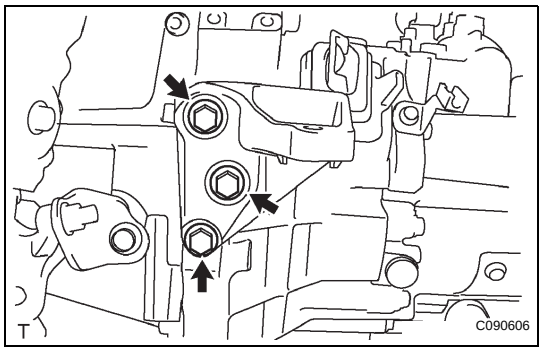


4. INSTALL MANUAL TRANSMISSION CASE PROTECTOR

(a) Install the manual transmission case protector with the 2 bolts.

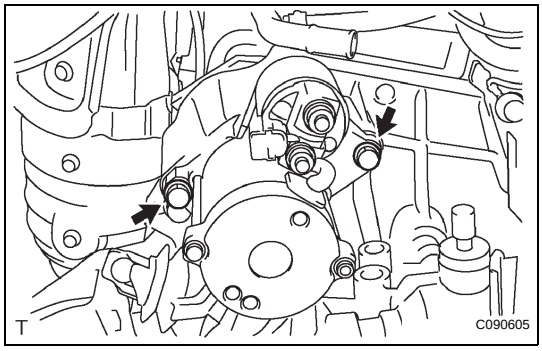
Torque: 18 N*m (184 kgf*cm, 13 ft.*lbf)





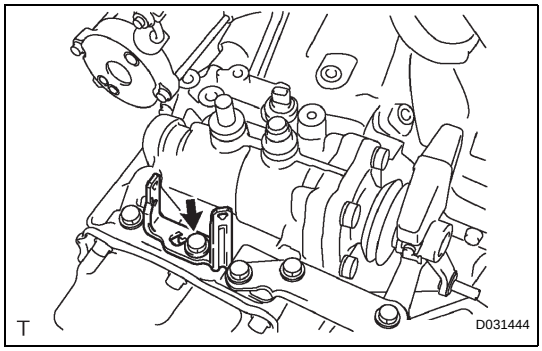
5. INSTALL ENGINE MOUNTING BRACKET FR

(a) Install the engine mounting bracket FR with the 3 bolts.
Torque: 64 N*m (653 kgf*cm, 47 ft.*lbf)



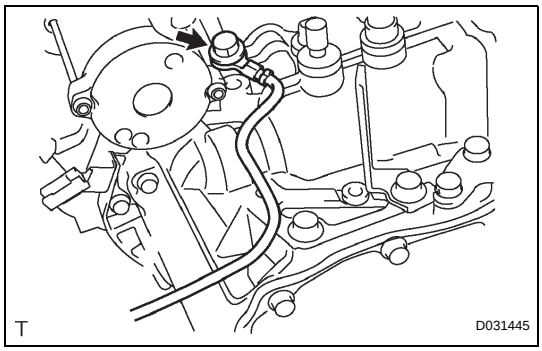
6. INSTALL STARTER ASSEMBLY

(a) Install the starter assembly with the 2 bolts.
Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)



7. INSTALL WIRE HARNESS CLAMP

(a) Install the wire harness clamp with the bolt.
Torque: 8.4 N*m (86 kgf*cm, 74 in.*lbf)



8. INSTALL ENGINE WIRE NO.3

(a) Connect the engine wire No. 3 with the bolt.
Torque: 12 N*m (120 kgf*cm, 9 ft.*lbf)

9. CONNECT WIRE HARNESS

(a) Install the wire harness clamp.
(b) Connect the back-up light switch connector, speedometer sensor connector and starter connector.

10. INSTALL CLUTCH RELEASE CYLINDER ASSEMBLY

HINT:
(See page CL-13)

11. INSTALL CLUTCH ACCUMULATOR ASSEMBLY

HINT:
(See page CL-16)

12. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

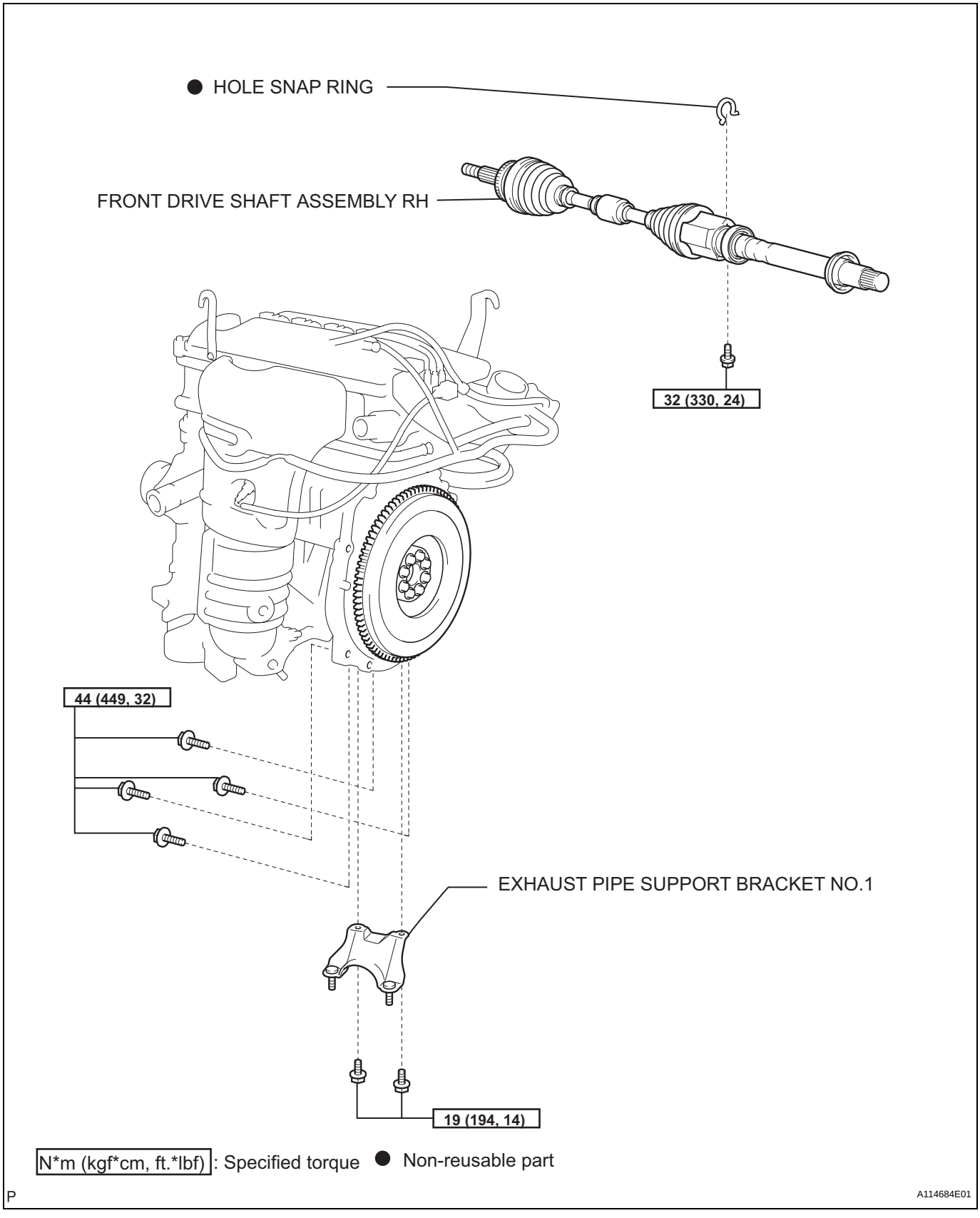
HINT:
(See page DS-14)

13. **INSTALL FRONT DRIVE SHAFT ASSEMBLY RH**
HINT:
(See page DS-14)

14. **INSTALL ENGINE ASSEMBLY WITH TRANSAXLE**
HINT:
(See page EM-69)

MANUAL TRANSAXLE ASSEMBLY

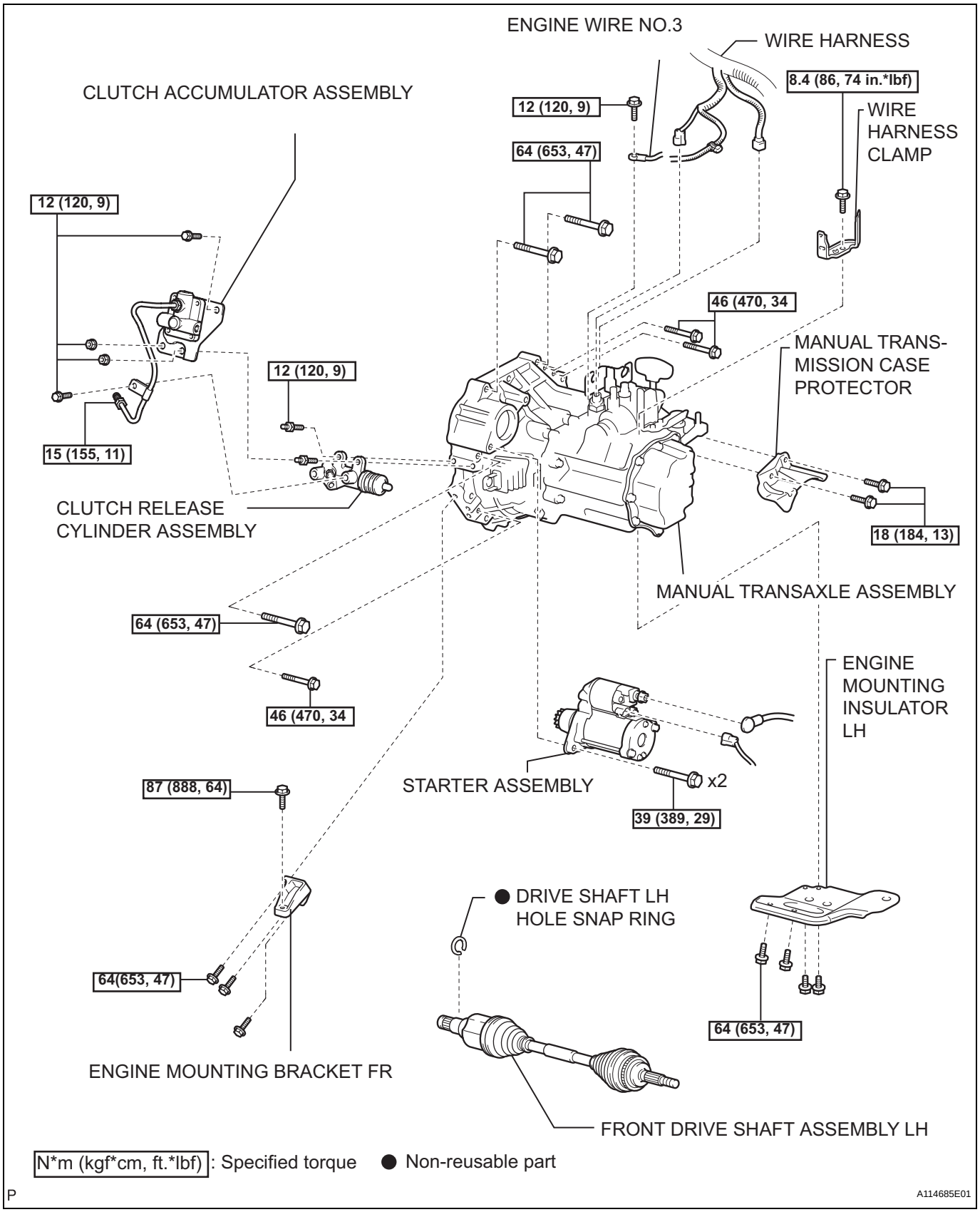
COMPONENTS



N*m (kgf*cm, ft.*lbf): Specified torque ● Non-reusable part

P

A114684E01

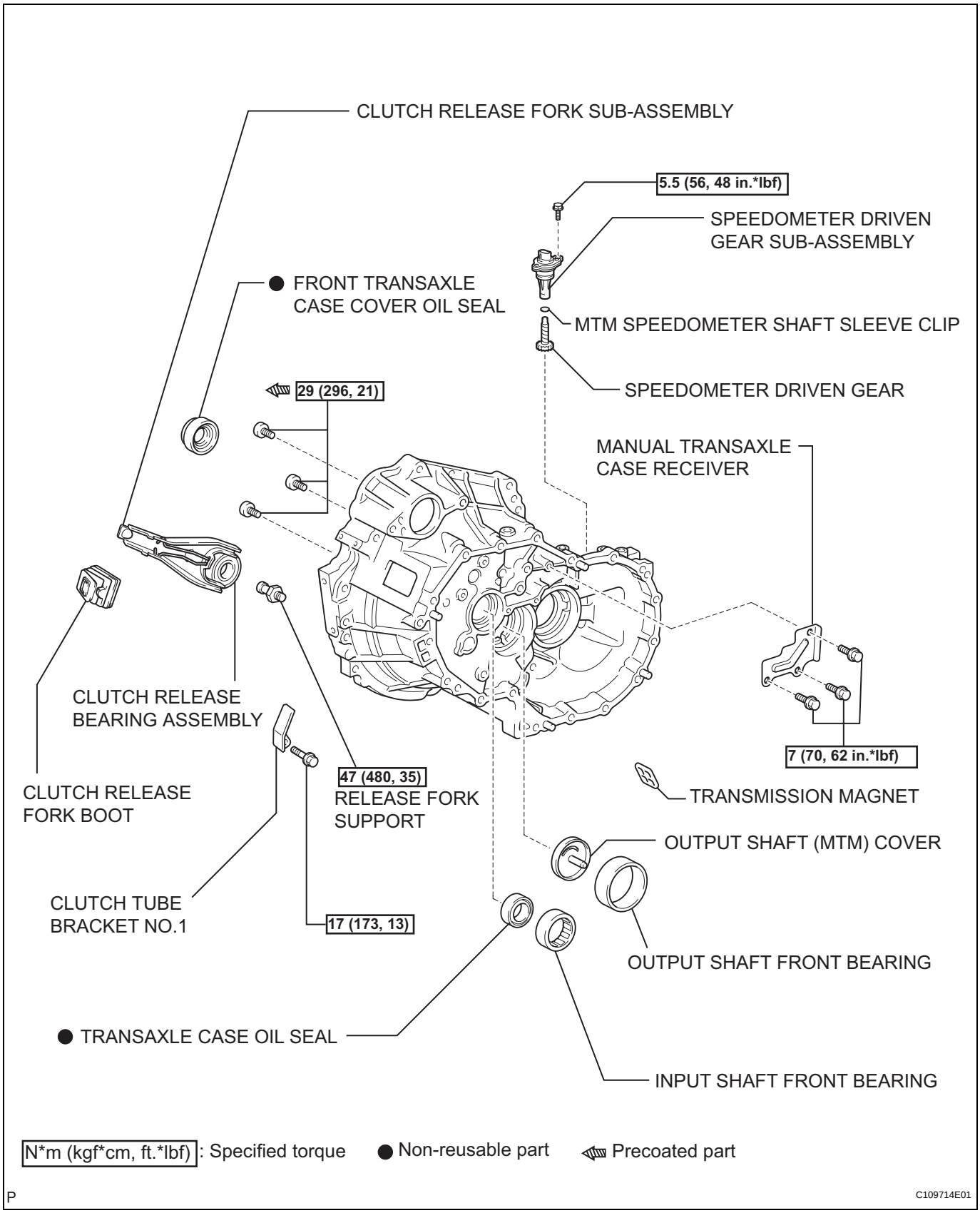


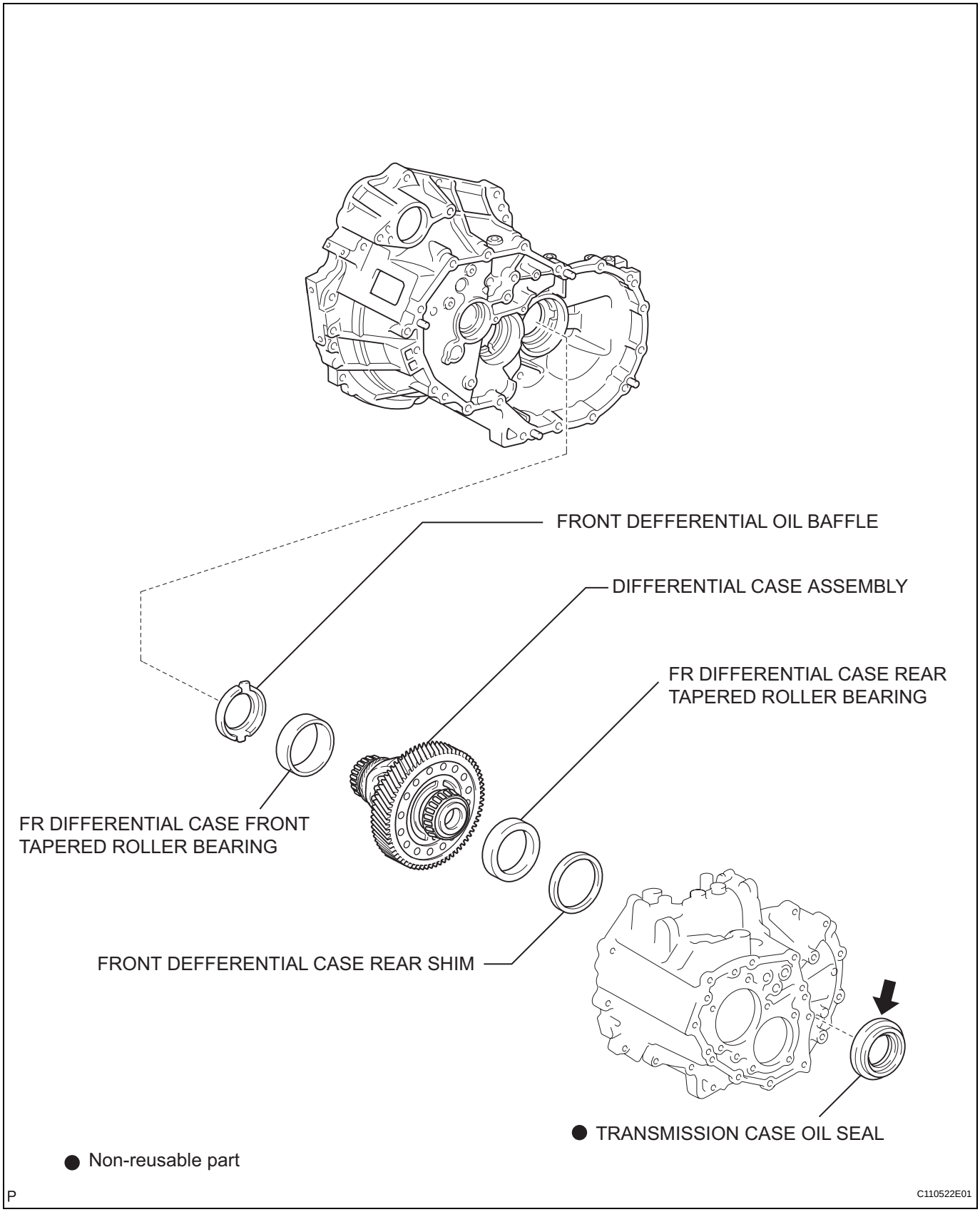
N*m (kgf*cm, ft.*lbf): Specified torque ● Non-reusable part

P

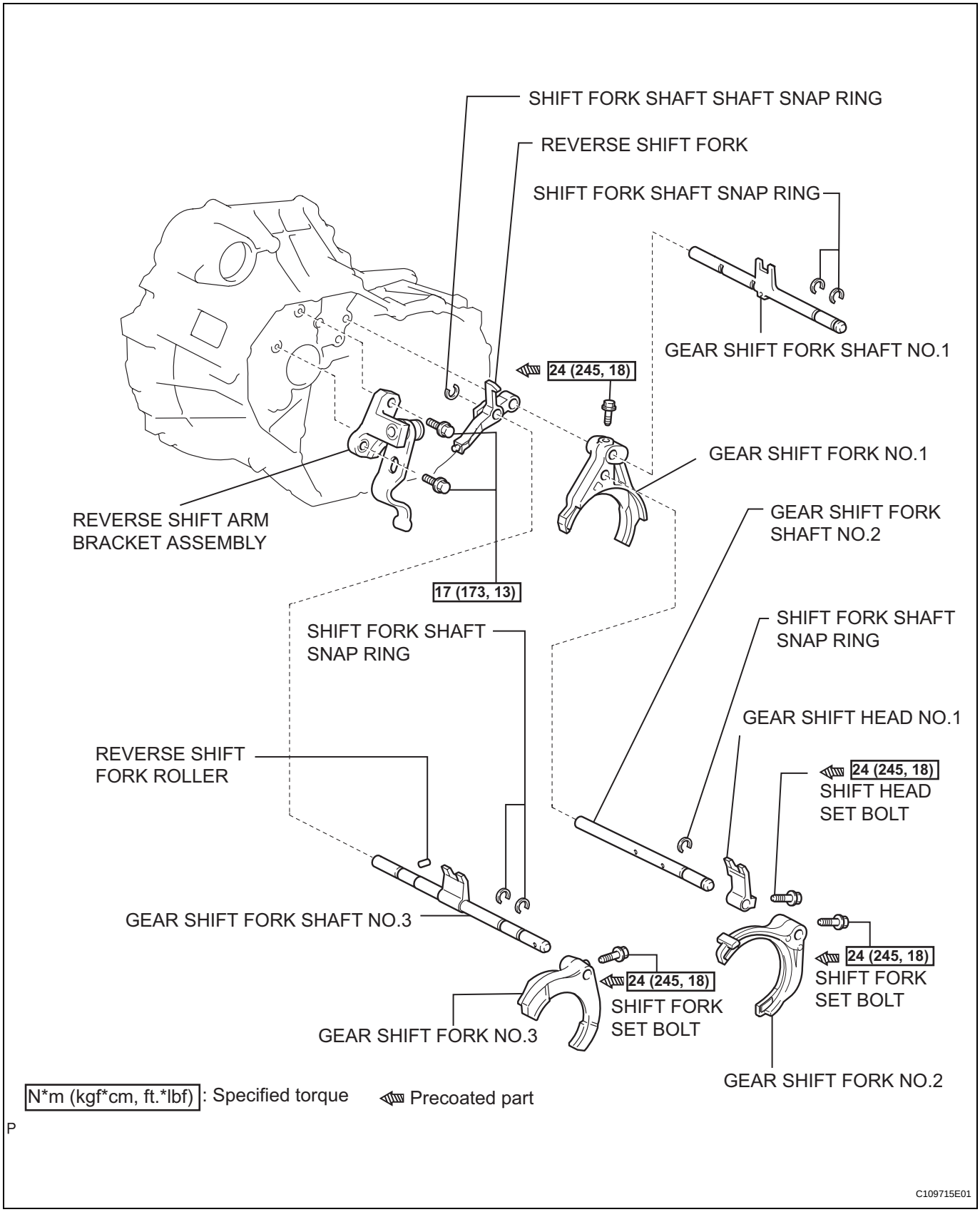
A114685E01

MX

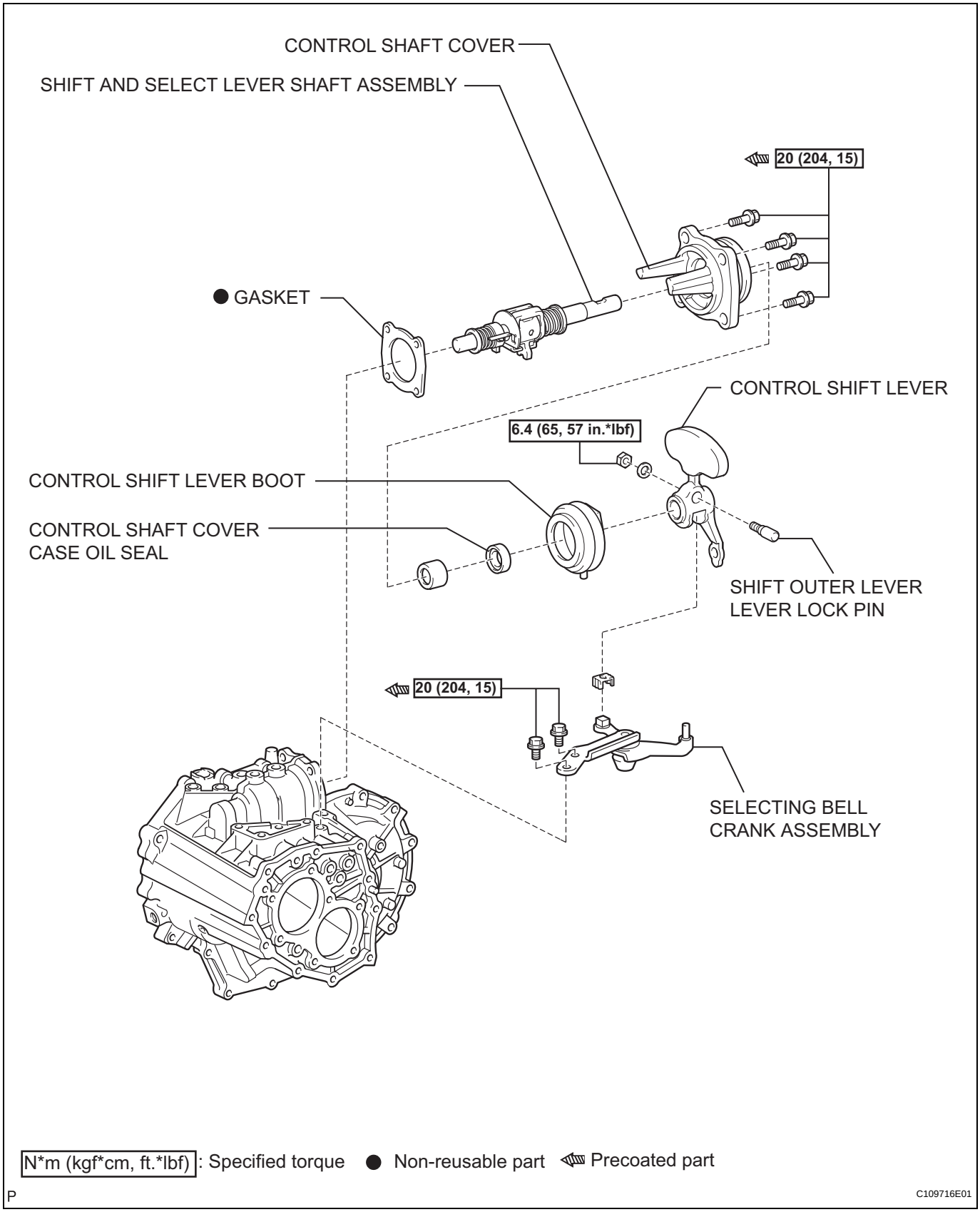

CLUTCH RELEASE FORK SUB-ASSEMBLY
5.5 (56, 48 in.*lbf)
SPEEDOMETER DRIVEN GEAR SUB-ASSEMBLY
● FRONT TRANSAXLE CASE COVER OIL SEAL
MTM SPEEDOMETER SHAFT SLEEVE CLIP
29 (296, 21)
SPEEDOMETER DRIVEN GEAR
MANUAL TRANSAXLE CASE RECEIVER
CLUTCH RELEASE BEARING ASSEMBLY
CLUTCH RELEASE FORK BOOT
47 (480, 35)
RELEASE FORK SUPPORT
7 (70, 62 in.*lbf)
TRANSMISSION MAGNET
OUTPUT SHAFT (MTM) COVER
CLUTCH TUBE BRACKET NO.1
17 (173, 13)
OUTPUT SHAFT FRONT BEARING
● TRANSAXLE CASE OIL SEAL
INPUT SHAFT FRONT BEARING
N*m (kgf*cm, ft.*lbf): Specified torque
● Non-reusable part
Precoated part
P
C109714E01


FRONT DEFFERENTIAL OIL BAFFLE
DIFFERENTIAL CASE ASSEMBLY
FR DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING
FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING
FRONT DEFFERENTIAL CASE REAR SHIM
● TRANSMISSION CASE OIL SEAL
● Non-reusable part
P
C110522E01

MX


SHIFT FORK SHAFT SHAFT SNAP RING
REVERSE SHIFT FORK
SHIFT FORK SHAFT SNAP RING
GEAR SHIFT FORK SHAFT NO.1
24 (245, 18)
GEAR SHIFT FORK NO.1
REVERSE SHIFT ARM BRACKET ASSEMBLY
GEAR SHIFT FORK SHAFT NO.2
17 (173, 13)
SHIFT FORK SHAFT SNAP RING
SHIFT FORK SHAFT SNAP RING
GEAR SHIFT HEAD NO.1
REVERSE SHIFT FORK ROLLER
24 (245, 18)
SHIFT HEAD SET BOLT
GEAR SHIFT FORK SHAFT NO.3
24 (245, 18)
SHIFT FORK SET BOLT
24 (245, 18)
SHIFT FORK SET BOLT
GEAR SHIFT FORK NO.3
GEAR SHIFT FORK NO.2
N*m (kgf*cm, ft.*lbf): Specified torque
Precoated part
C109715E01

P

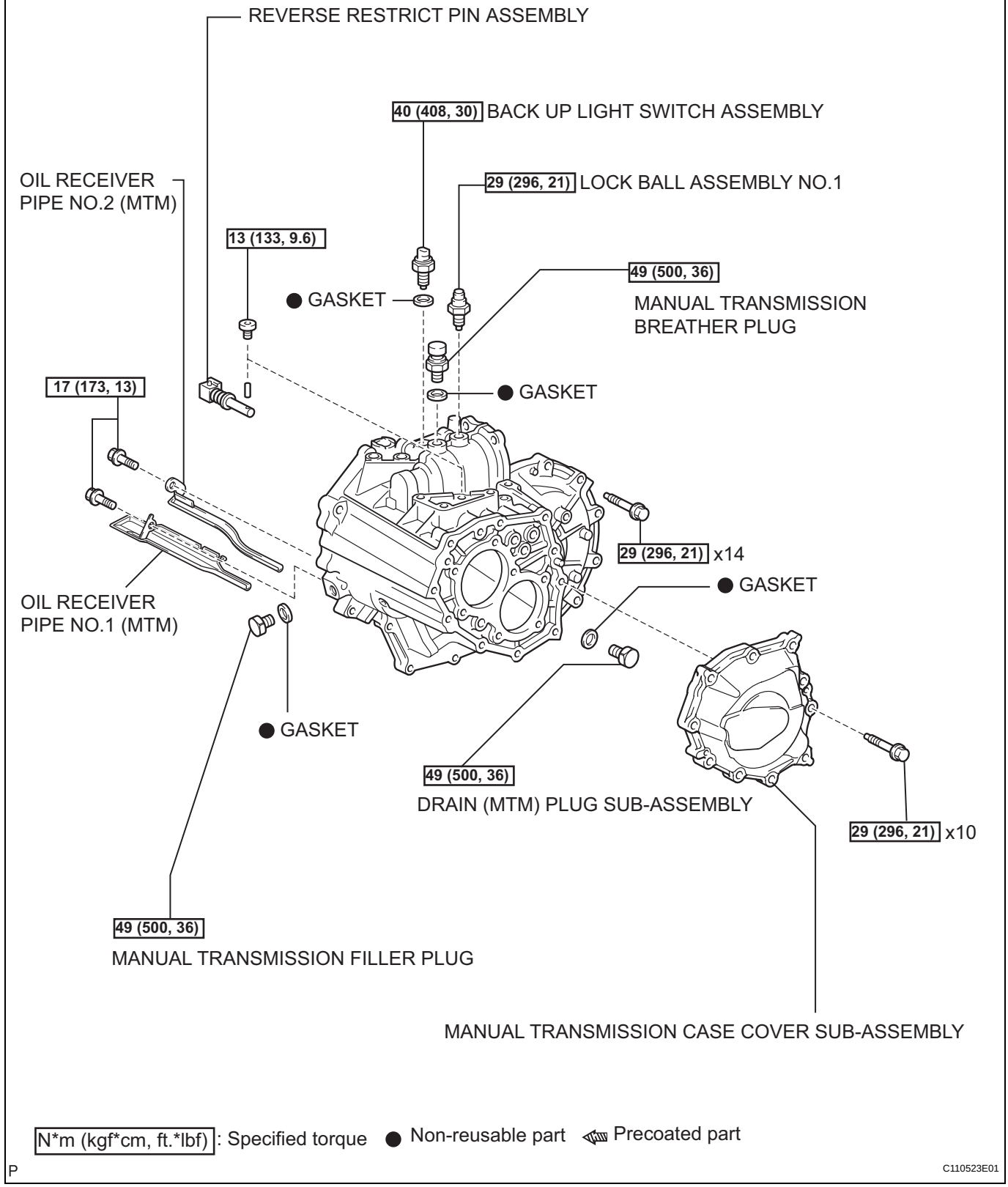


N*m (kgf*cm, ft.*lbf): Specified torque ● Non-reusable part Precoated part

P

C109716E01

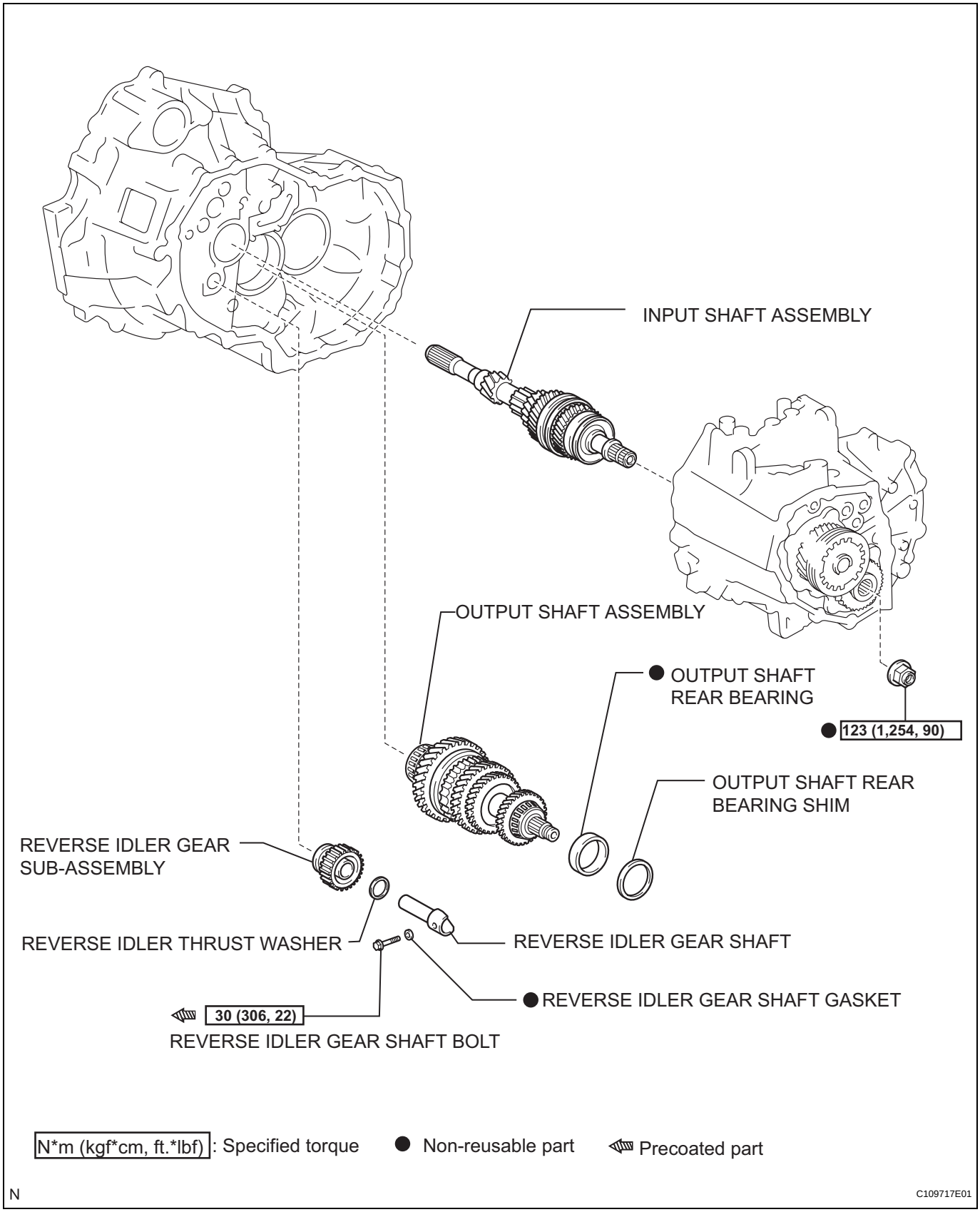
MX



N*m (kgf*cm, ft.*lbf): Specified torque ● Non-reusable part ⇦ Precoated part

P

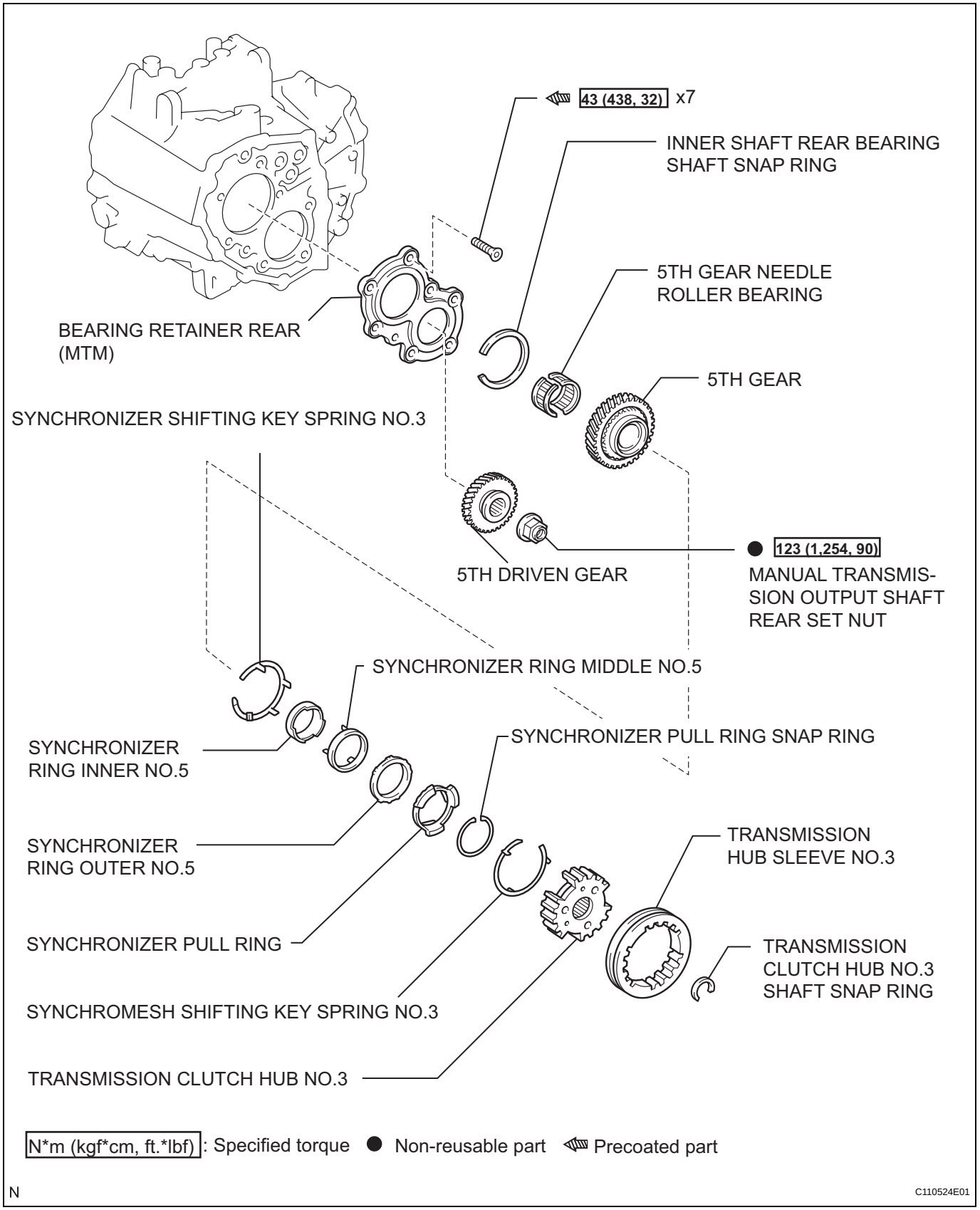
C110523E01



N

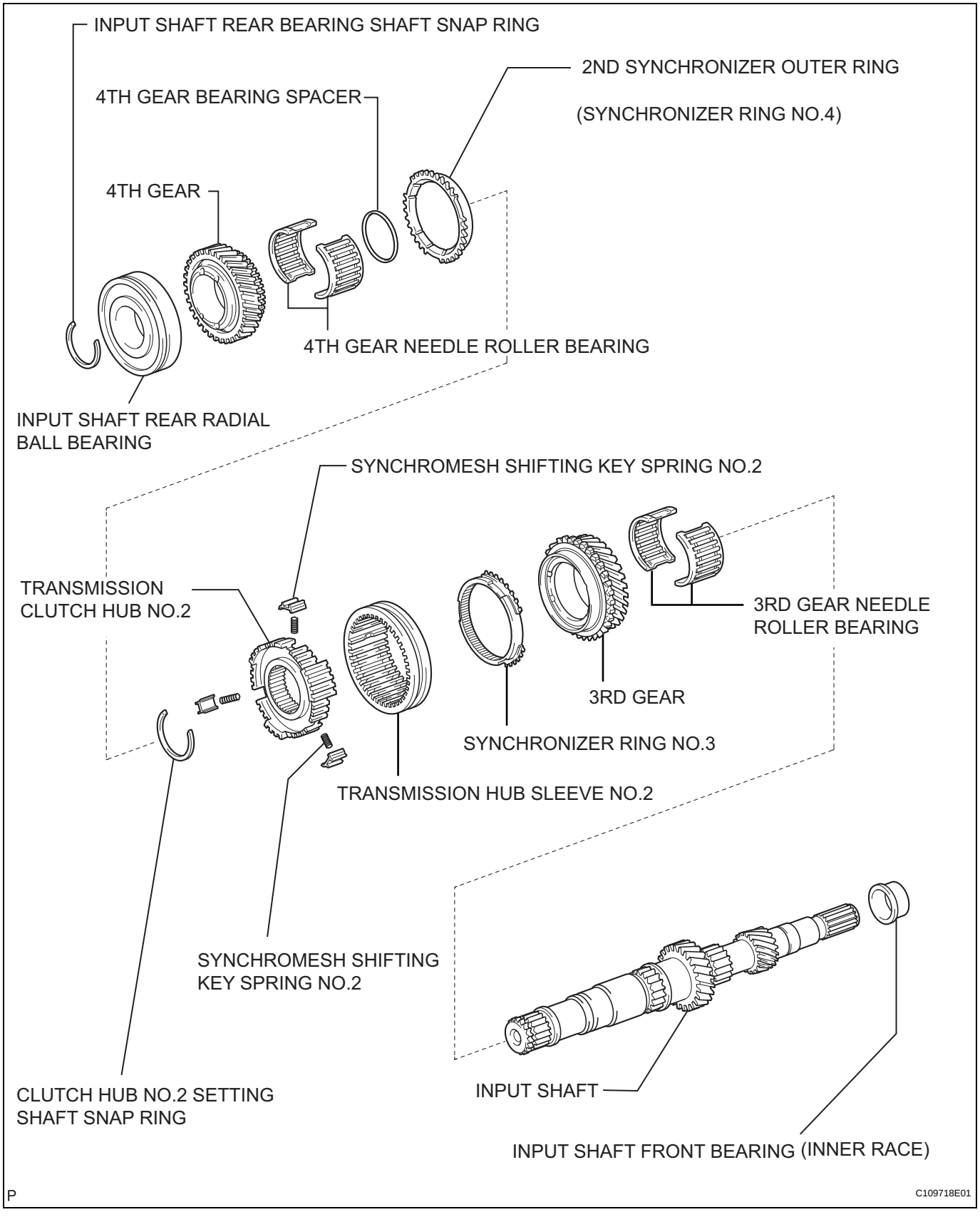
C109717E01

MX

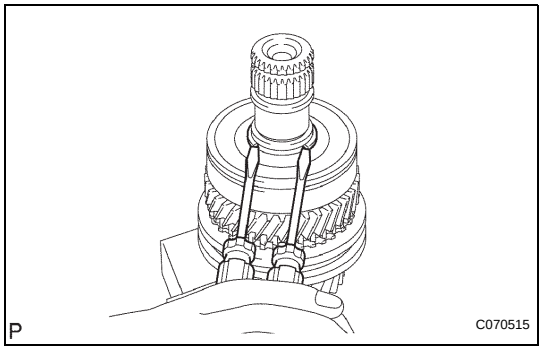

43 (438, 32) x7
INNER SHAFT REAR BEARING SHAFT SNAP RING
5TH GEAR NEEDLE ROLLER BEARING
BEARING RETAINER REAR (MTM)
5TH GEAR
SYNCHRONIZER SHIFTING KEY SPRING NO.3
5TH DRIVEN GEAR
● 123 (1,254, 90)
MANUAL TRANSMISSION OUTPUT SHAFT REAR SET NUT
SYNCHRONIZER RING MIDDLE NO.5
SYNCHRONIZER PULL RING SNAP RING
SYNCHRONIZER RING INNER NO.5
SYNCHRONIZER RING OUTER NO.5
TRANSMISSION HUB SLEEVE NO.3
SYNCHRONIZER PULL RING
TRANSMISSION CLUTCH HUB NO.3 SHAFT SNAP RING
SYNCHROMESH SHIFTING KEY SPRING NO.3
TRANSMISSION CLUTCH HUB NO.3
N*m (kgf*cm, ft.*lbf): Specified torque ● Non-reusable part Precoated part
N
C110524E01

INPUT SHAFT

COMPONENTS



DISASSEMBLY

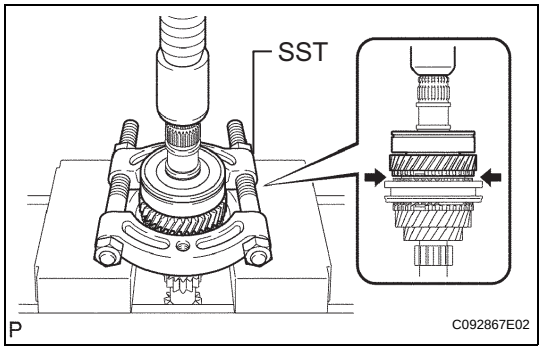


1. REMOVE 4TH GEAR

(a) Hold the input shaft assembly in a vise with soft jaws.

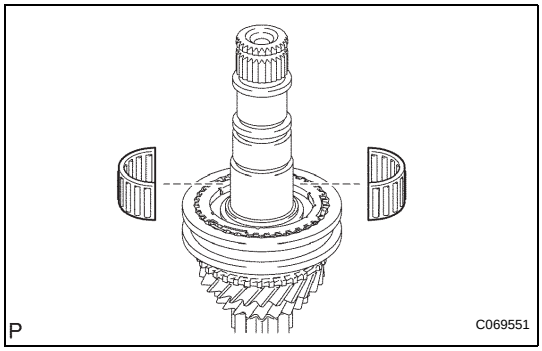
(b) Using 2 screwdrivers and a hammer, remove the input shaft rear bearing shaft snap ring from the input shaft.

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



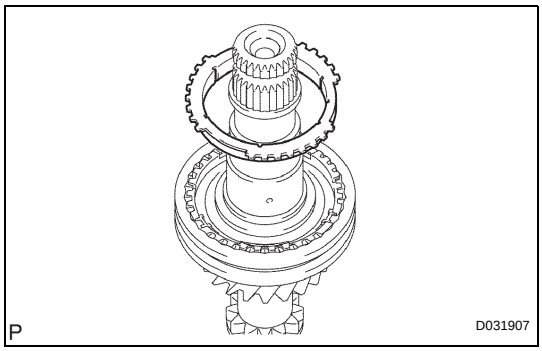
(c) Using SST and a press, remove the input shaft rear bearing and 4th gear.

SST 09950-00020
NOTICE:
Do not overtighten the SST.



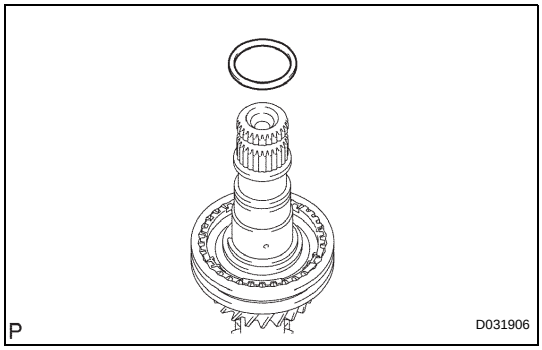
2. REMOVE 4TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 4th gear needle roller bearing from the input shaft.



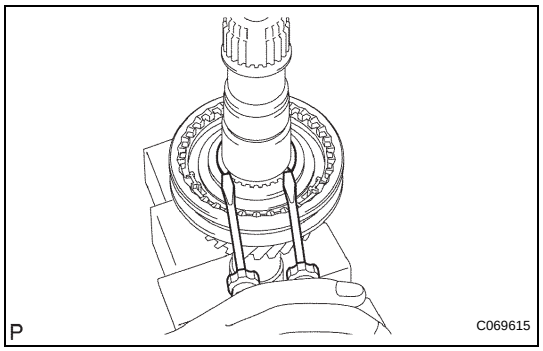
3. REMOVE 2ND SYNCHRONIZER OUTER RING

(a) Remove the 2nd synchronizer outer ring (synchronizer ring No.4) from the transmission clutch hub No.2.



4. REMOVE 4TH GEAR BEARING SPACER

(a) Remove the 4th gear bearing spacer from the transmission clutch hub No.2.

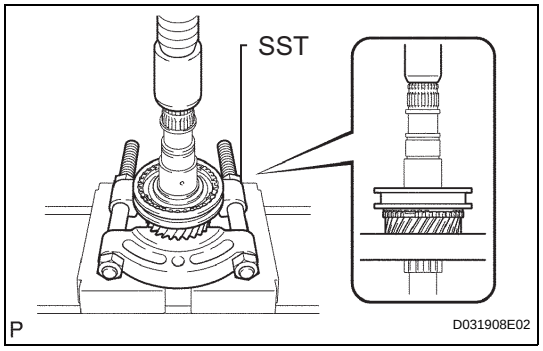


5. REMOVE 3RD GEAR

(a) Using 2 screwdrivers and a hammer, remove the clutch hub No.2 setting shaft snap ring from the input shaft.

NOTICE:

Use a shop rag to keep the snap ring from flying.

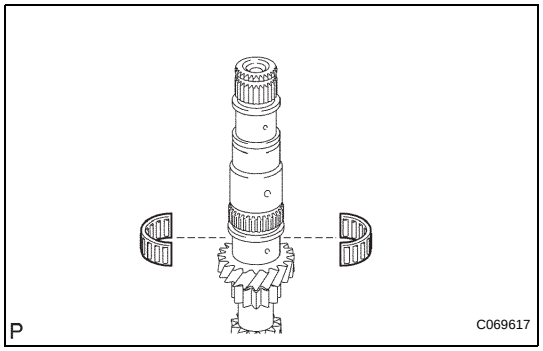


(b) Using SST and a press, remove the transmission clutch hub No.2 and 3rd gear from the input shaft.

SST 09950-00020

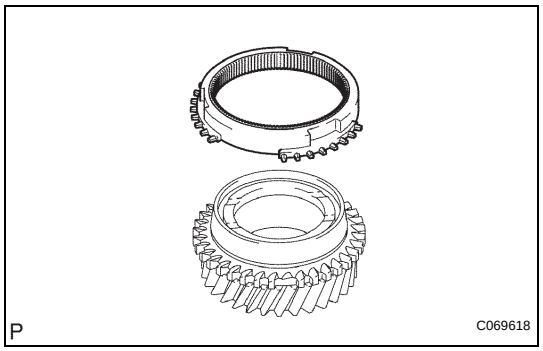
NOTICE:

Do not overtighten the SST.



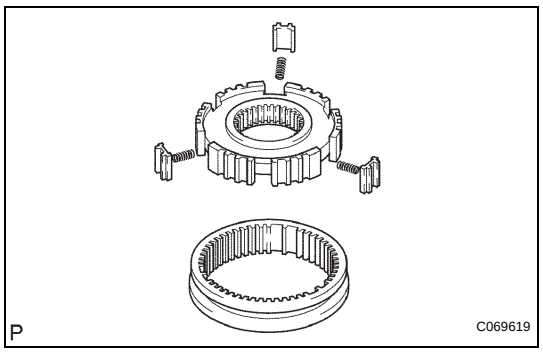
6. REMOVE 3RD GEAR NEEDLE ROLLER BEARING

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



7. REMOVE SYNCHRONIZER RING NO.3

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

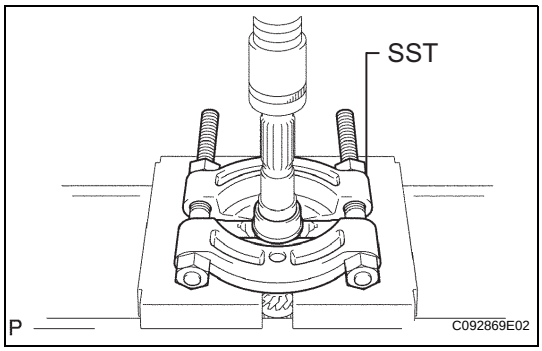


8. REMOVE TRANSMISSION HUB SLEEVE NO.2

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

NOTICE:

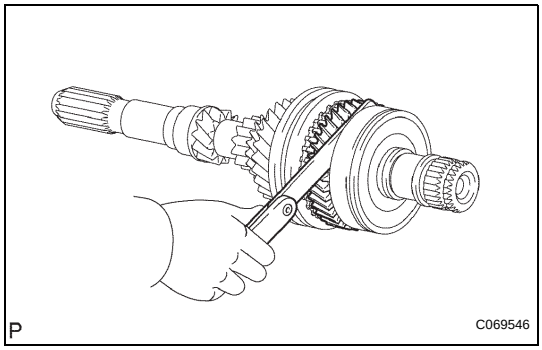
Cover with a shop rag to keep the shifting key and shifting key spring from flying.



9. REMOVE INPUT SHAFT FRONT BEARING

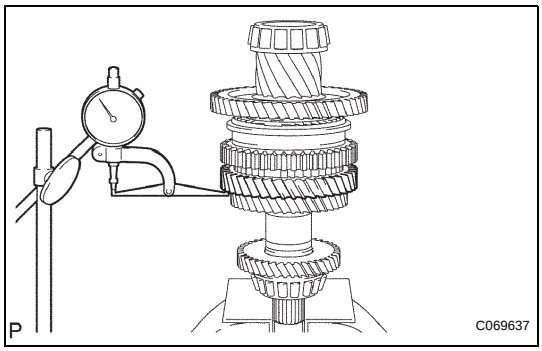
(a) Using SST and a press, remove the input shaft bearing front (inner race) from the input shaft.
SST 09950-00020
NOTICE:
Do not overtighten the SST.

INSPECTION



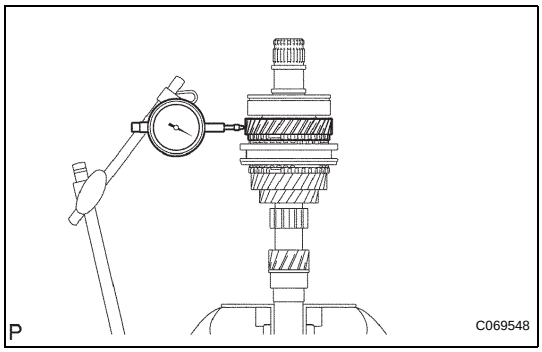
1. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 4th gear thrust clearance.
Standard clearance:
0.10 to 0.57 mm (0.0039 to 0.0224 in.)
If clearance is out of specification, replace the transmission clutch hub No.2, 4th gear or input shaft rear radial ball bearing.



2. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 3rd gear thrust clearance.
Standard clearance:
0.10 to 0.35 mm (0.0039 to 0.0138 in.)
If clearance is out of specification, replace the transmission clutch hub No.2, 3rd gear or input shaft.

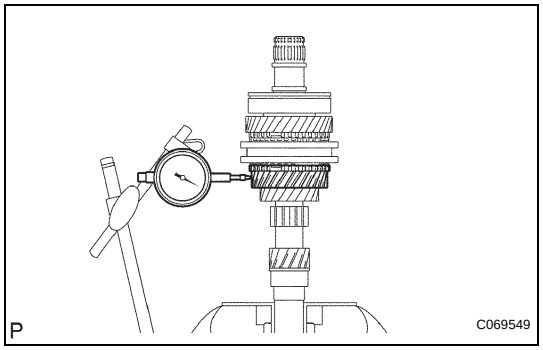


3. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.
Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 4th gear, needle roller bearing or input shaft.



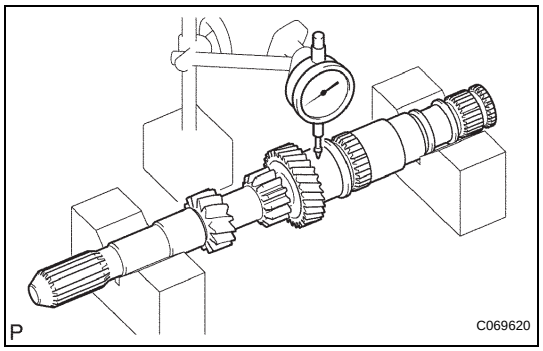
4. INSPECT 3RD GEAR RADIAL CLEARANCE

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

Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 3rd gear, needle roller bearing or input shaft.

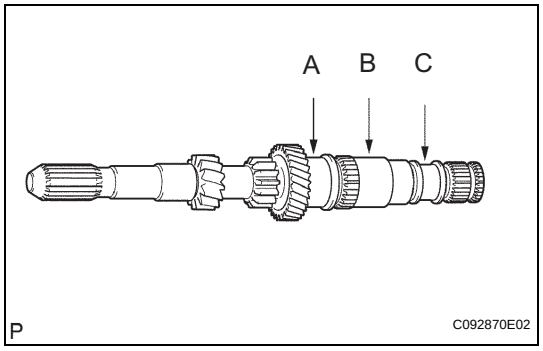


5. INSPECT INPUT SHAFT

(a) Using a V-block and dial indicator, inspect the shaft for run out.

Maximum run out:
0.03 mm (0.0012 in.)

If run out exceeds the maximum, replace the input shaft.

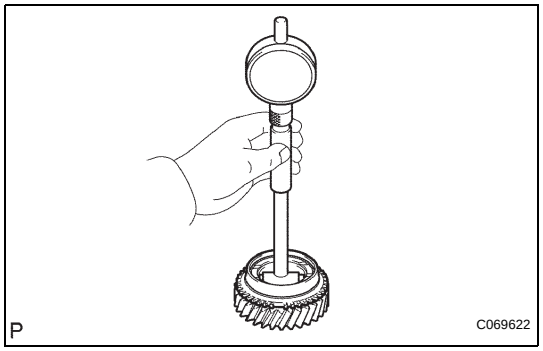


(b) Using a micrometer, measure the outside diameter of the input shaft journal surface.

Outside diameter:
mm (in.)

	Standard outside diameter	Minimum outside diameter
A	35.984 to 36.000 (1.4167 to 1.4173)	35.984 (1.4167)
B	35.984 to 36.000 (1.4167 to 1.4173)	35.984 (1.4167)
C	27.957 to 27.972 (1.1007 to 1.1013)	27.957 (1.1007)

If the outside diameter is less than the minimum, replace the input shaft.



6. INSPECT 4TH GEAR

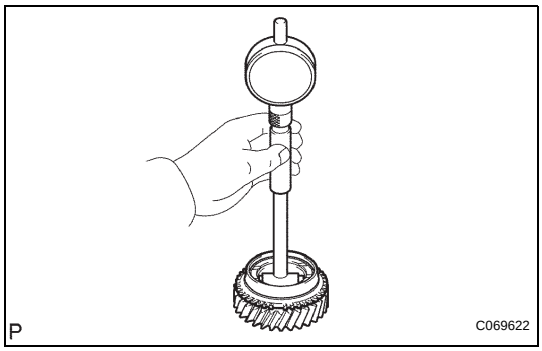
(a) Using a cylinder gauge, measure the inside diameter of the 4th gear.

Inside diameter:
mm (in.)

Standard inside diameter	Maximum inside diameter
42.009 to 42.025 (1.6539 to 1.6545)	42.025 (1.6545)

If the inside diameter exceeds the maximum, replace the 4th gear.

MX



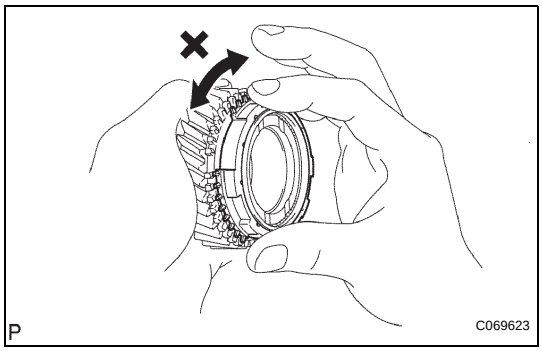
7. INSPECT 3RD GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 3rd gear.

Inside diameter:
mm (in.)

Standard inside diameter	Maximum inside diameter
43.009 to 43.025 (1.6933 to 1.6939)	43.025 (1.6939)

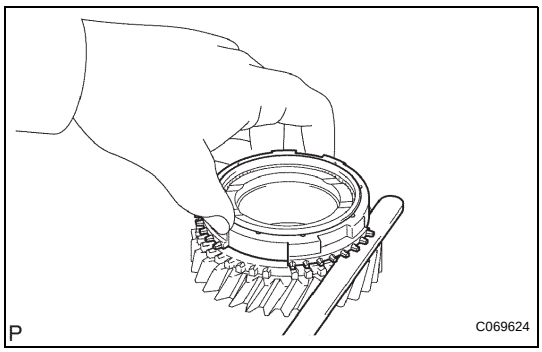
If the inside diameter exceeds the maximum, replace the 3rd gear.



8. INSPECT 2ND SYNCHRONIZER OUTER RING

(a) Coat the 4th gear cone with gear oil. Turn the 2nd synchronizer outer ring (synchronizer ring No.4) in one direction while pushing it against the 4th gear cone. Check that the ring locks.

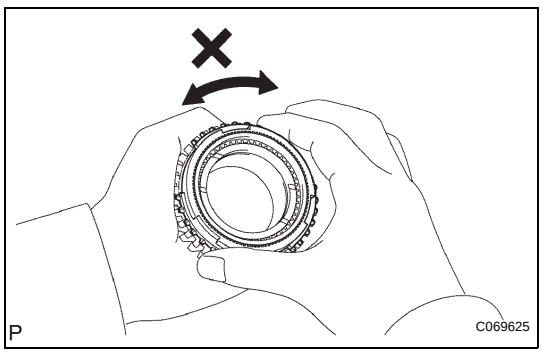
If the 2rd synchronizer outer ring does not lock, replace the ring or the 4th gear.



(b) Using a feeler gauge, measure the clearance between the synchronizer outer ring (synchronizer ring No.4) back and 4th gear spline end.

Standard clearance:
0.75 to 1.65 mm (0.0295 to 0.0650 in.)

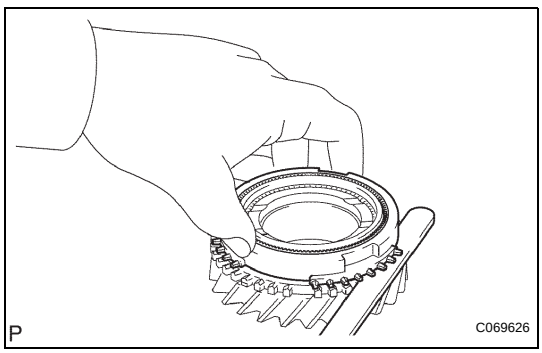
If clearance is out of specification, replace the synchronizer ring.



9. INSPECT SYNCHRONIZER RING NO.3

(a) Coat the 3rd gear cone with gear oil. Turn the synchronizer outer ring in one direction while pushing it against the 3rd gear cone. Check that the ring locks.

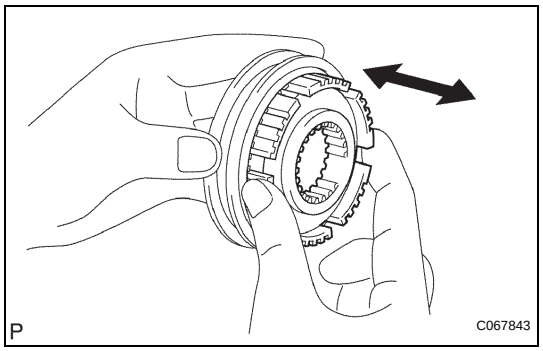
If the synchronizer outer ring does not lock, replace the ring or the 3rd gear.



(b) Using a feeler gauge, measure the clearance between the synchronizer ring No.3 back and 3rd gear spline end.

Standard clearance:
0.65 to 1.75 mm (0.0256 to 0.0689 in.)

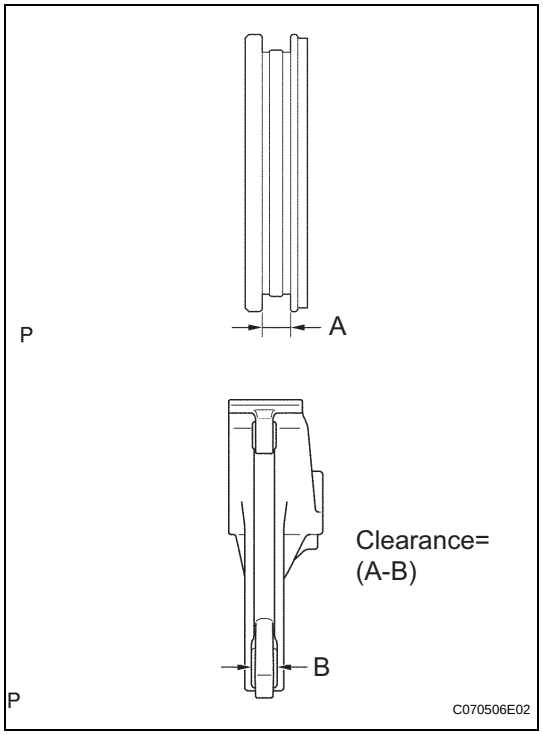
If clearance is out of specification, replace the synchronizer ring No.3.



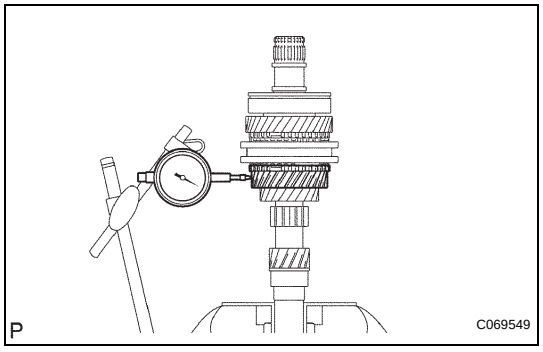
10. INSPECT TRANSMISSION HUB SLEEVE NO.2

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

(b) Inspect the tip of the spline gear on the transmission hub sleeve No.2 for wear.
If any defects are found, replace the transmission hub sleeve or the transmission clutch hub.



(c) Using vernier calipers, measure the width of the transmission hub sleeve No.3 groove and the thickness of the claw part on the gear shift fork No.1, and calculate the clearance.
Standard clearance:
0.11 to 0.69 mm (0.0043 to 0.0272 in.) {A - B}
If clearance is out of specification, replace the transmission hub sleeve No.2 and gear shift fork No.2 with new ones.

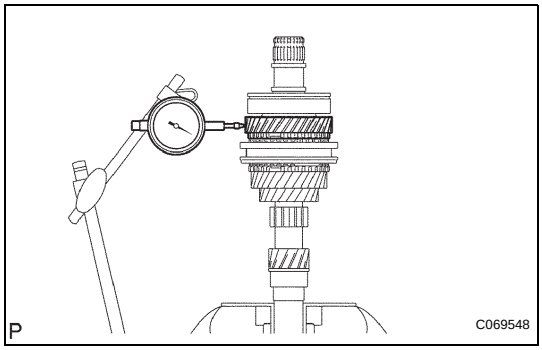


11. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.
Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 3rd gear, needle roller bearing or input shaft.



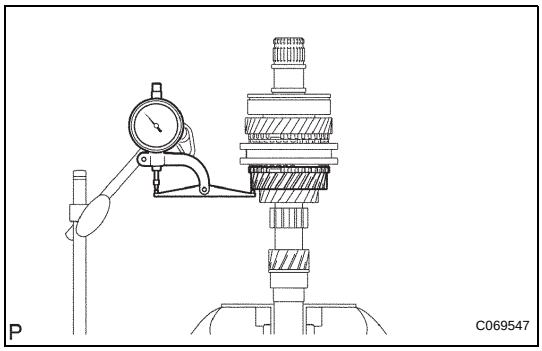
12. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 4th gear, needle roller bearing or input shaft.

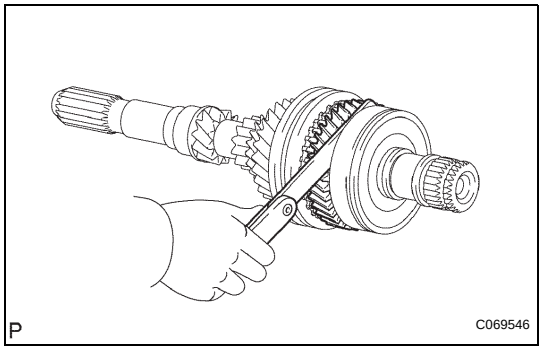


13. INSPECT 3RD GEAR THRUST CLEARANCE

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

Standard clearance:
0.10 to 0.35 mm (0.0039 to 0.0138 in.)

If clearance is out of specification, replace the transmission clutch hub No.2, 3rd gear or input shaft.

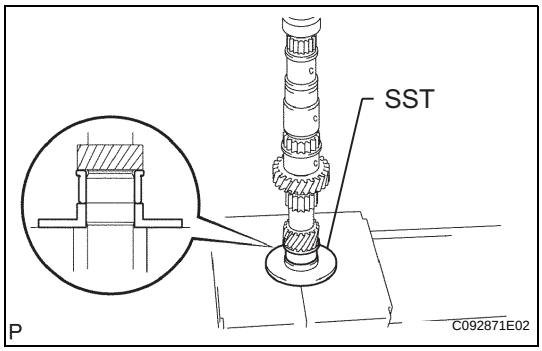


14. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 4th gear thrust clearance.

Standard clearance:
0.10 to 0.57 mm (0.0039 to 0.0224 in.)

If clearance is out of specification, replace the transmission clutch hub No.2, 4th gear or input shaft rear radial ball bearing.

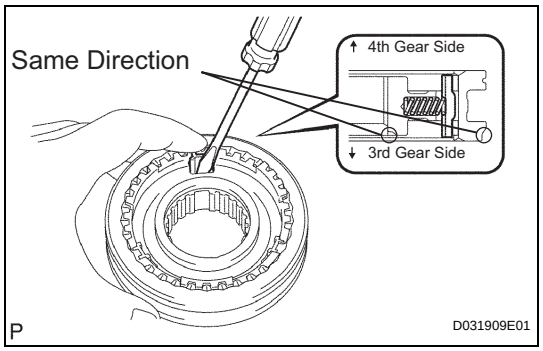


REASSEMBLY

1. INSTALL INPUT SHAFT FRONT BEARING

(a) Using SST and a press, install the input shaft front bearing (inner race).

SST 09608-00071



2. INSTALL TRANSMISSION HUB SLEEVE NO.2

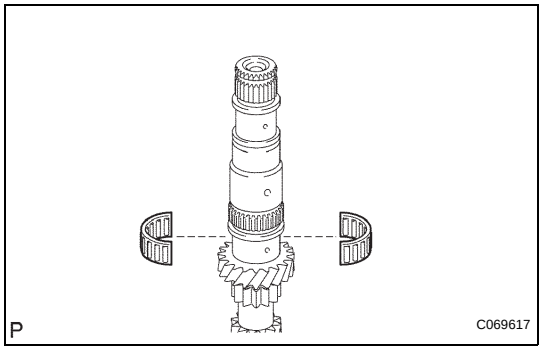
(a) Coat the transmission hub sleeve No.2 with gear oil.

(b) Install the 3 synchromesh key springs with the transmission hub sleeve No.2.

NOTICE:

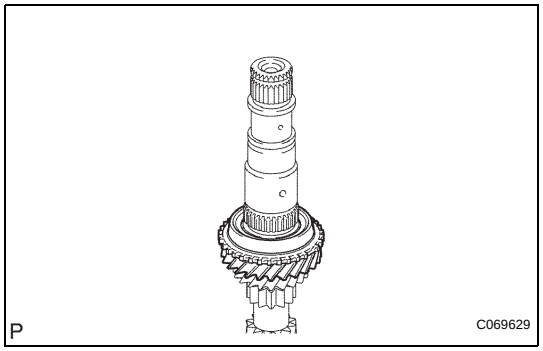
Install the transmission clutch hub sleeve No.2 and the transmission clutch hub No.2 in the correct direction.

(c) Using a screwdriver, install the synchromesh shifting key to the input shaft.



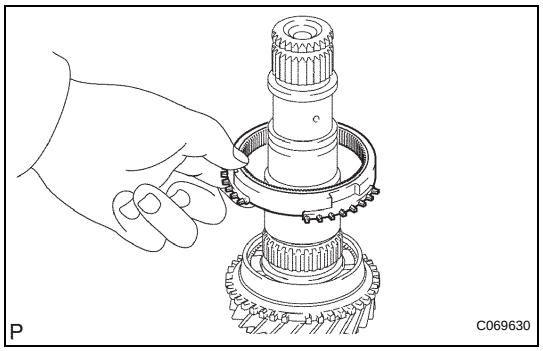
3. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

(a) Coat the 3rd gear bearing with gear oil, and install it to the input shaft.



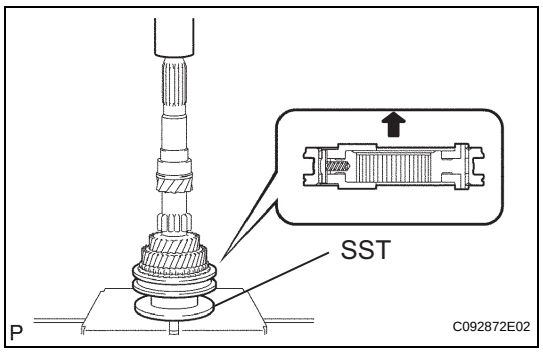
4. INSTALL 3RD GEAR

(a) Coat the 3rd gear with gear oil, and install it to the input shaft.



5. INSTALL SYNCHRONIZER RING NO.3

(a) Coat the synchronizer ring No.3 with gear oil, and install it to the 3rd gear.



6. INSTALL TRANSMISSION CLUTCH HUB NO.2

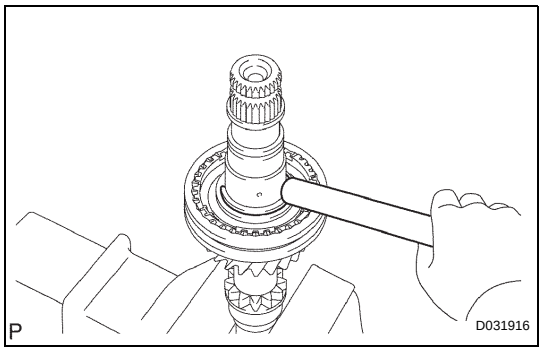
(a) Using SST and a press, install the transmission clutch hub No.2 to the input shaft.

SST 09316-60011 (09316-00041)

NOTICE:

- **Align the claw of the clutch hub No.2 with the notch of the synchronizer ring No.3 and install them.**
- **Make sure that the 3rd gear can rotate.**

MX



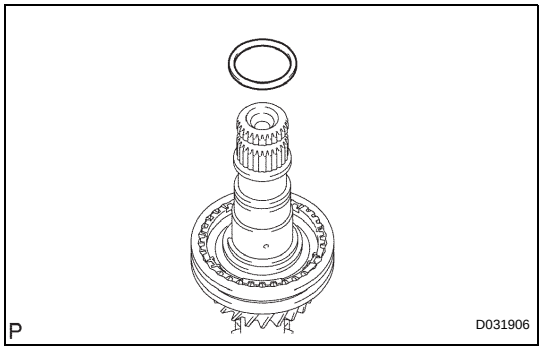
(b) Select a snap ring so that clearance between the transmission clutch hub No.2 and the clutch hub No.2 shaft snap ring will be within specification. Using a brass bar and a hammer, install the snap ring.

Standard clearance:

0.1 mm or less (0.0039 in. or less)

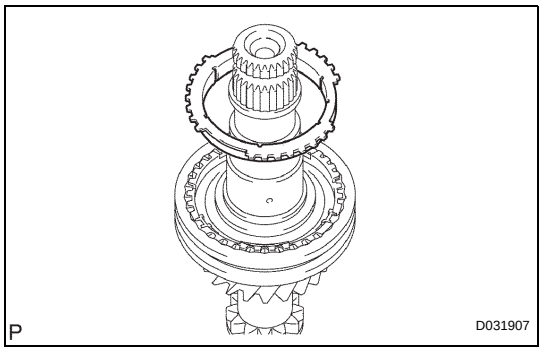
Snap ring thickness

Part No.	Thickness: mm (in.)	Mark
90520-34003	2.30 to 2.35 (0.0906 to 0.0925)	H
90520-34004	2.35 to 2.40 (0.0925 to 0.0945)	J
90520-34005	2.40 to 2.45 (0.0945 to 0.0965)	K
90520-34006	2.45 to 2.50 (0.0965 to 0.0984)	L
90520-34007	2.50 to 2.55 (0.0984 to 0.1004)	M
90520-34008	2.55 to 2.60 (0.1004 to 0.1024)	N
90520-34009	2.60 to 2.65 (0.1024 to 0.1043)	P



7. INSTALL 4TH GEAR BEARING SPACER

(a) Coat the 4th gear bearing spacer with gear oil, and install it to the input shaft.

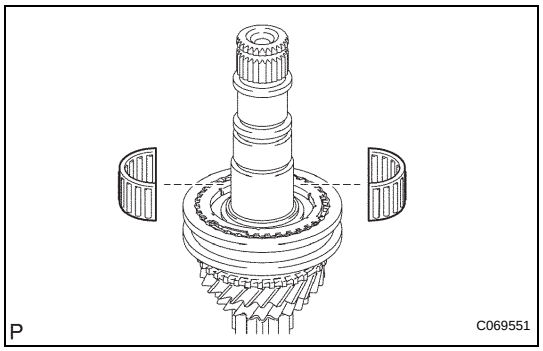


8. INSTALL 2ND SYNCHRONIZER OUTER RING

(a) Coat the 2nd synchronizer outer ring (synchronizer ring No.4) with gear oil, and install it to the transmission clutch hub No.2.

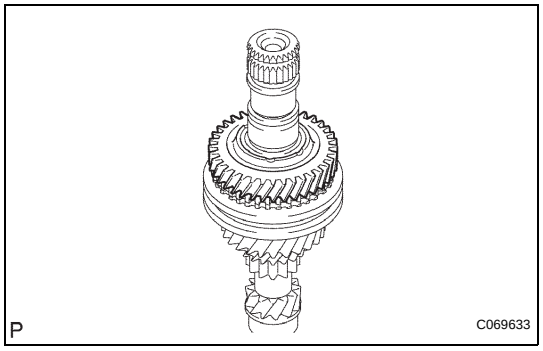
NOTICE:

Align the claw of the clutch hub No.2 with the notch of the 2nd synchronizer outer ring (synchronizer ring No.4) and install.



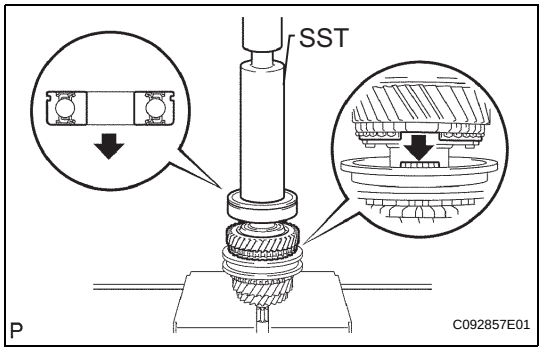
9. INSTALL 4TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 4th gear needle roller bearing with gear oil, and install it to the input shaft.



10. INSTALL 4TH GEAR

(a) Coat the 4th gear with gear oil, and install it to the input shaft.



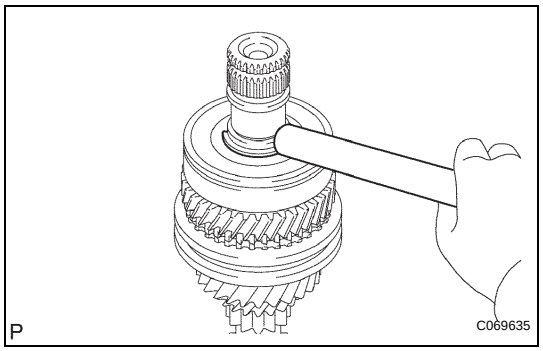
11. INSTALL INPUT SHAFT REAR RADIAL BALL BEARING

(a) Using SST and a press, install the input shaft rear radial ball bearing to the input shaft.

NOTICE:

- **Install the bearing with its groove facing reward.**
- **Make sure that the 3rd gear rotates.**

SST 09608-06041



(b) Select a snap ring so that the clearance between the Input shaft radial ball rear bearing and the input shaft rear bearing snap ring will be within specification. Using a brass bar and a hammer, install the snap ring.

Standard clearance:

0.1 mm or less

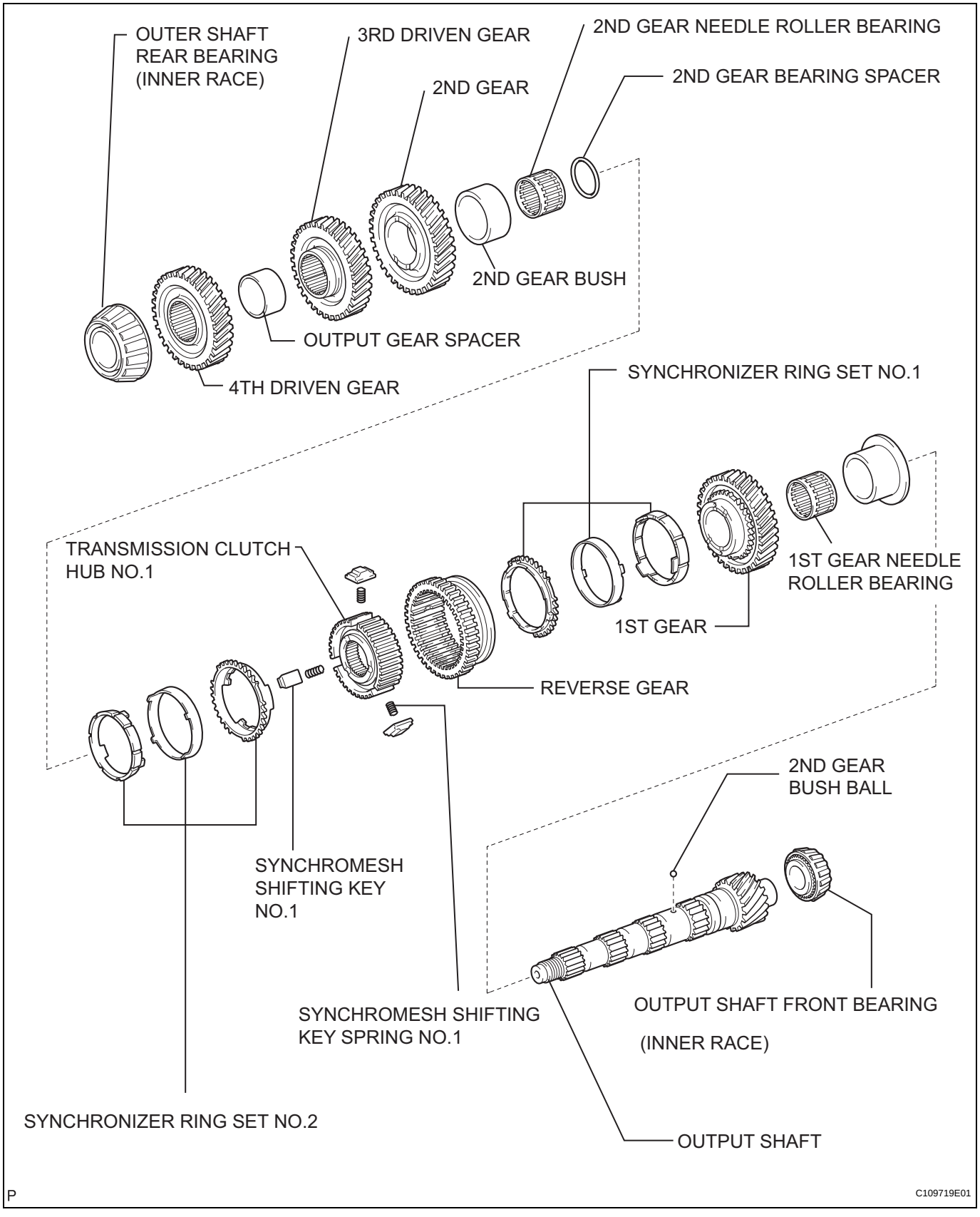
Snap ring

Part No.	thickness: mm (in.)	Mark
90520-30008	2.35 to 2.40 (0.0925 to 0.0945)	1
90520-30009	2.40 to 2.45 (0.0945 to 0.0965)	2
90520-30010	2.45 to 2.50 (0.0965 to 0.0984)	3
90520-30011	2.50 to 2.55 (0.0984 to 0.1004)	4
90520-30012	2.55 to 2.60 (0.1004 to 0.1024)	5
90520-30013	2.60 to 2.65 (0.1024 to 0.1043)	6

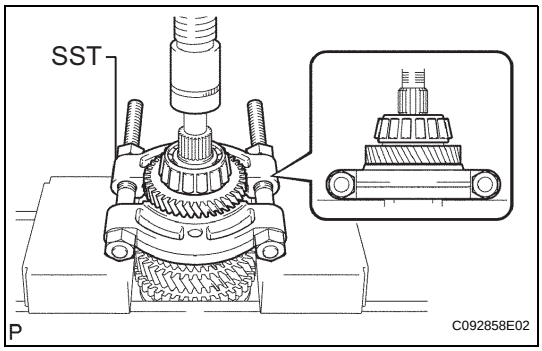
Part No.	thickness: mm (in.)	Mark
90520-30021	2.65 to 2.70 (0.1043 to 0.1063)	7
90520-30022	2.70 to 2.75 (0.1063 to 0.1083)	8

OUTPUT SHAFT

COMPONENTS

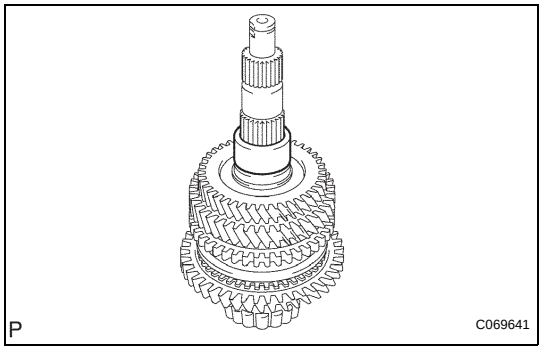


DISASSEMBLY



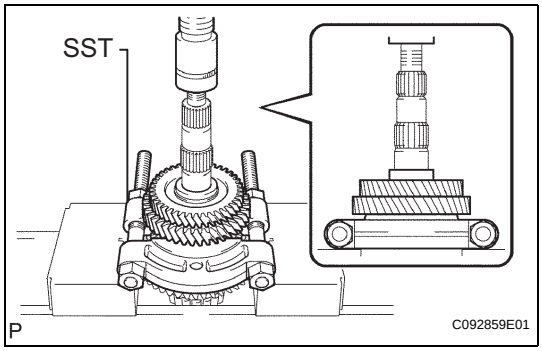
1. REMOVE 4TH DRIVEN GEAR

(a) Using SST and a press, remove the output shaft rear bearing (inner race) and 4th driven gear.
SST 09950-00020



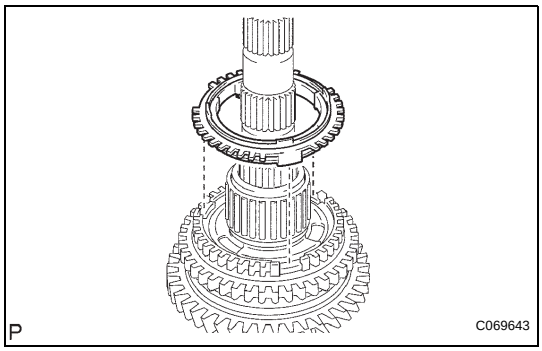
2. REMOVE OUTPUT GEAR SPACER

(a) Remove the output gear spacer from the output shaft.



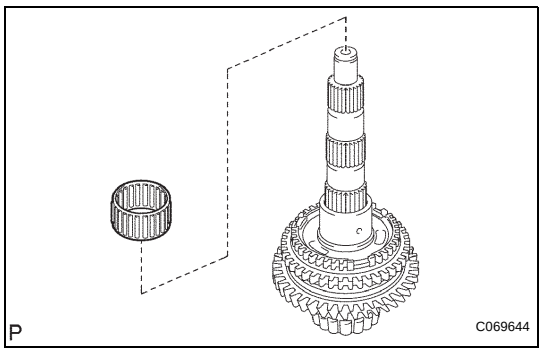
3. REMOVE 2ND GEAR

(a) Using SST and a press, remove the 3rd driven gear and 2nd gear from the output shaft.
SST 09950-00020



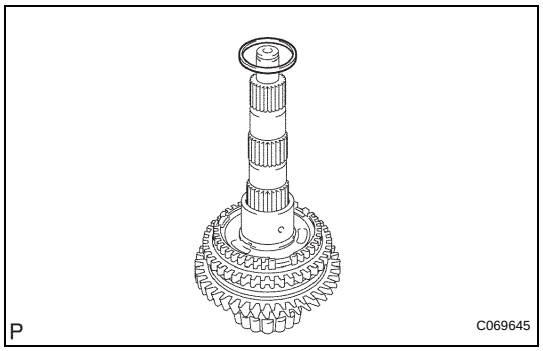
4. REMOVE SYNCHRONIZER RING SET NO.2

(a) Remove the synchronizer ring set No.2 from the transmission clutch hub No.1.



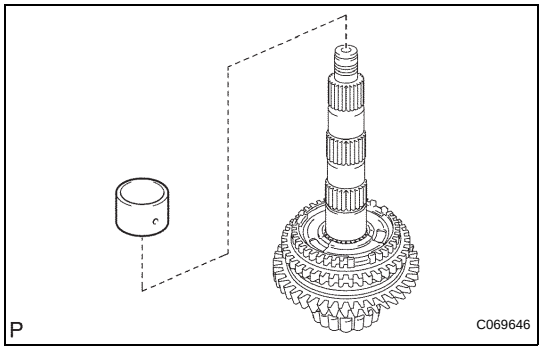
5. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

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



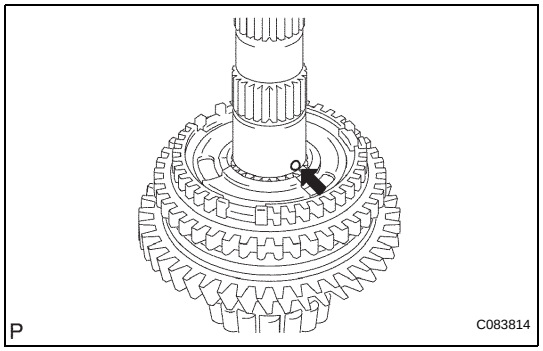
6. REMOVE 2ND GEAR BEARING SPACER

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



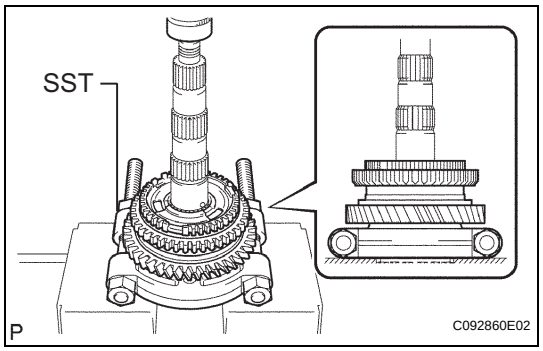
7. REMOVE 2ND GEAR BUSH

(a) Remove the 2nd gear bush from the output shaft.



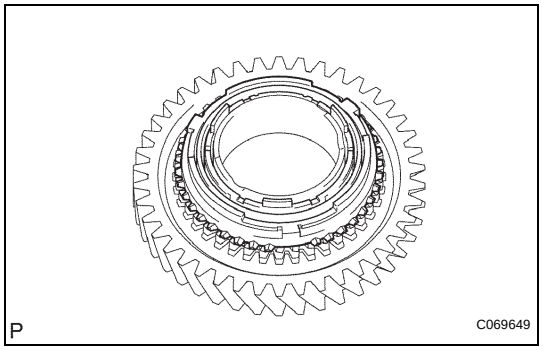
8. REMOVE 2ND GEAR BUSH BALL

(a) Using a magnetic finger, remove the 2nd gear bush ball from the output shaft.



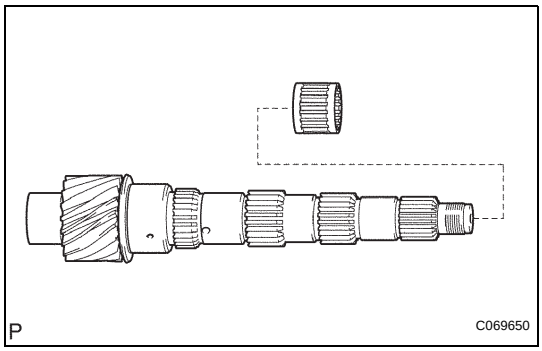
9. REMOVE 1ST GEAR

(a) Using SST and a press, remove the transmission clutch hub No.1 and 1st gear from the output shaft.
SST 09950-00020



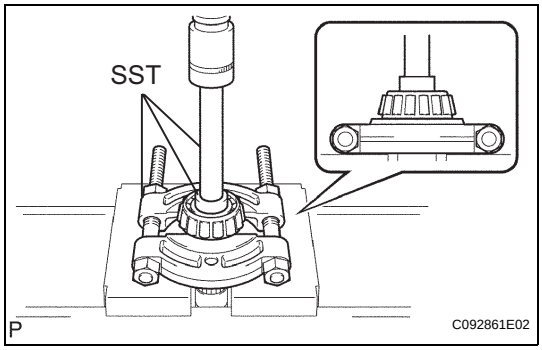
10. REMOVE SYNCHRONIZER RING SET NO.1

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



11. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

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



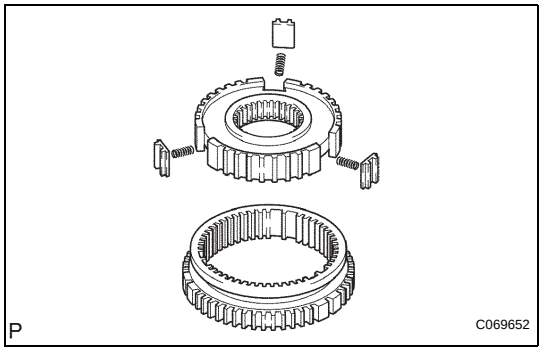
12. REMOVE OUTPUT SHAFT FRONT BEARING

(a) Using SST and a press, remove the output shaft front bearing (inner race) from the output shaft.

SST 09950-00020, 09950-60010 (09951-00320), 09950-70010 (09951-07150)

NOTICE:

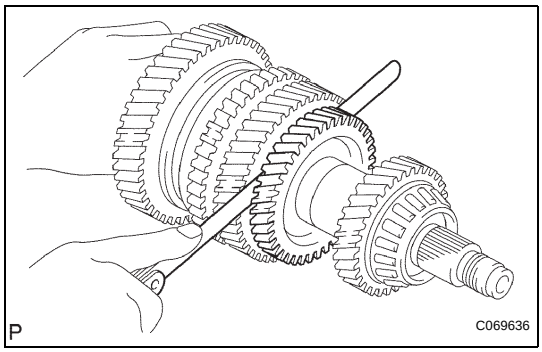
Do not overtighten the SST.



13. REMOVE REVERSE GEAR

(a) Remove the transmission clutch hub No.1, 3 synchromesh shifting keys No.1 and 3 synchromesh shifting key springs No.1 from the reverse gear.

INSPECTION



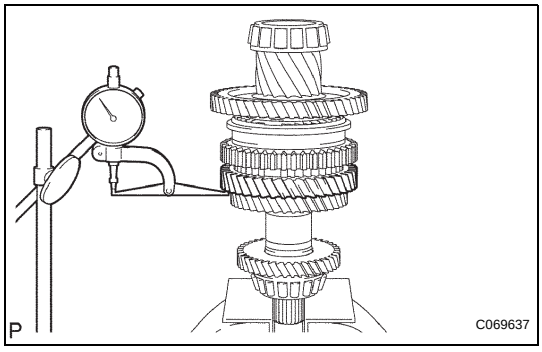
1. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 1st gear thrust clearance.

Standard clearance:

0.25 to 0.40 mm (0.0098 to 0.0157 in.)

If clearance is out of specification, replace the 1st gear thrust washer, 1st gear or transmission clutch hub No.1.



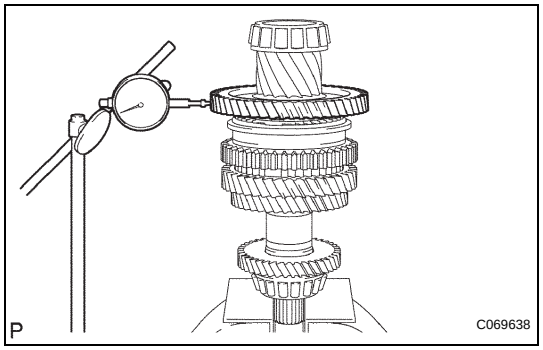
2. INSPECT 2ND GEAR THRUST CLEARANCE

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

Standard clearance:

0.10 to 0.35 mm (0.0039 to 0.0138 in.)

If clearance is out of specification, replace the transmission clutch hub No.1, 2nd gear or 3rd driven gear.



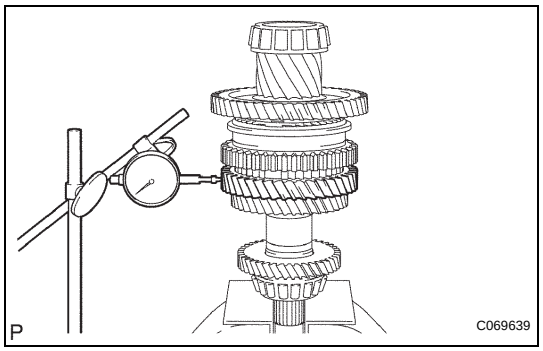
3. INSPECT 1ST GEAR RADIAL CLEARANCE

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

Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 1st gear and 1st gear needle roller bearing.



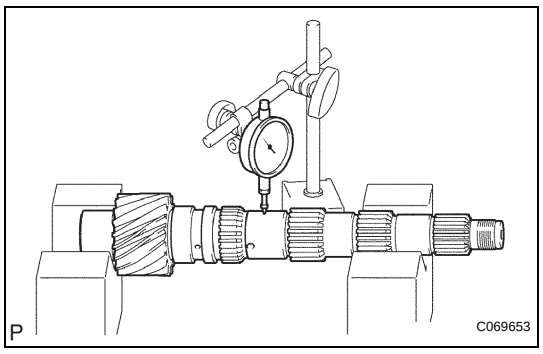
4. INSPECT 2ND GEAR RADIAL CLEARANCE

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

Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 2nd gear and 2nd gear needle roller bearing.

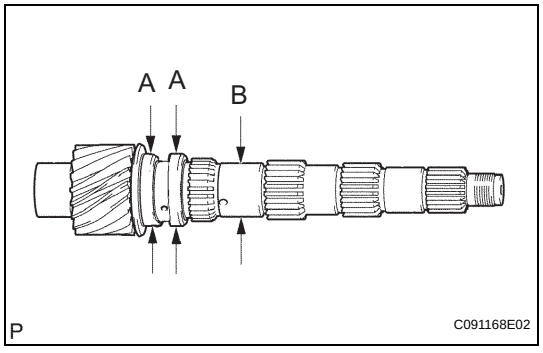


5. INSPECT OUTPUT SHAFT

(a) Using a V-block and a dial indicator, inspect the shaft for run out.

Maximum run out:
0.03 mm (0.0012 in.)

If run out exceeds the maximum, replace the input shaft.



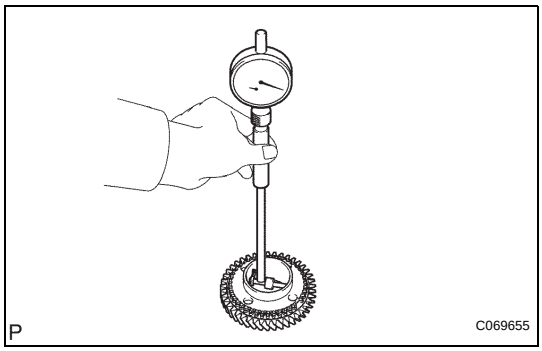
(b) Using a micrometer, measure the outside diameter of the output shaft journal surface.

Outside diameter:
mm (in.)

Part	Standard outside diameter	Minimum outside diameter
A	37.610 to 37.626 (1.4807 to 1.4813)	37.610 (1.4807)
B	34.502 to 34.512 (1.3583 to 1.3587)	34.502 (1.3583)

If the outside diameter is less than the minimum, replace the input shaft.

MX

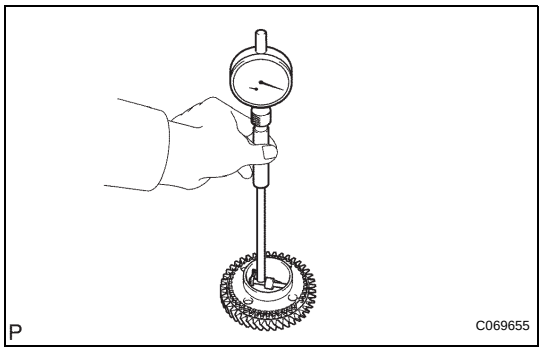


6. INSPECT 2ND GEAR

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

Standard inside diameter	Maximum inside diameter
50.009 to 50.025 (1.9689 to 1.9695)	50.025 (1.9695)

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

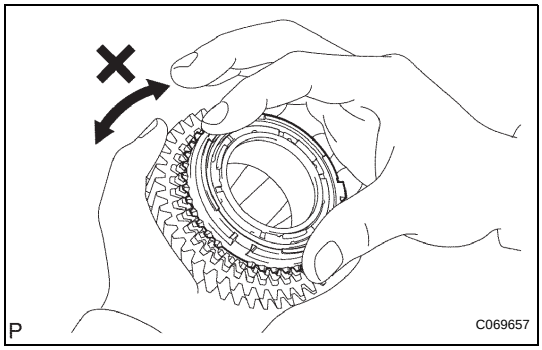


7. INSPECT 1ST GEAR

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

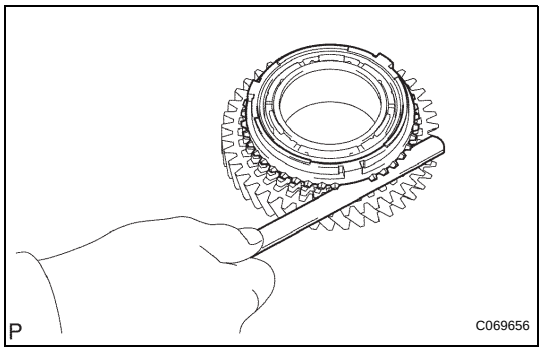
Standard inside diameter	Maximum inside diameter
51.009 to 51.025 (2.0082 to 2.0089)	51.025 (2.0089)

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

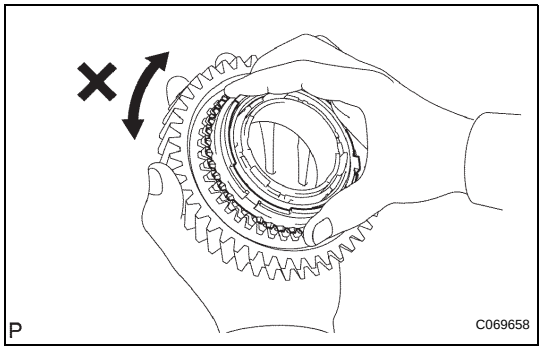


8. INSPECT SYNCHRONIZER RING SET NO.2

(a) Coat the 2nd gear cone with gear oil. Turn the synchronizer ring set No.2 in one direction while pushing it against the synchronizer ring No.2. Check that the ring locks.
If the synchronizer ring set No.2 does not lock, replace the ring or 2nd gear.

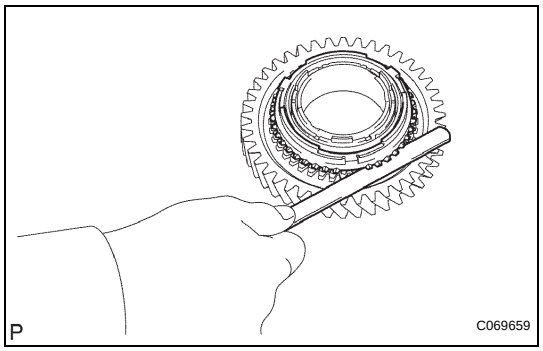


(b) Check the clearance between the synchronizer ring No.2 and 2nd gear while pushing the 2nd gear against the synchronizer ring No.2.
Standard clearance:
0.70 to 1.45 mm (0.0276 to 0.0571 in.)
If clearance is out of specification, replace the synchronizer ring set No.2 with a new one.

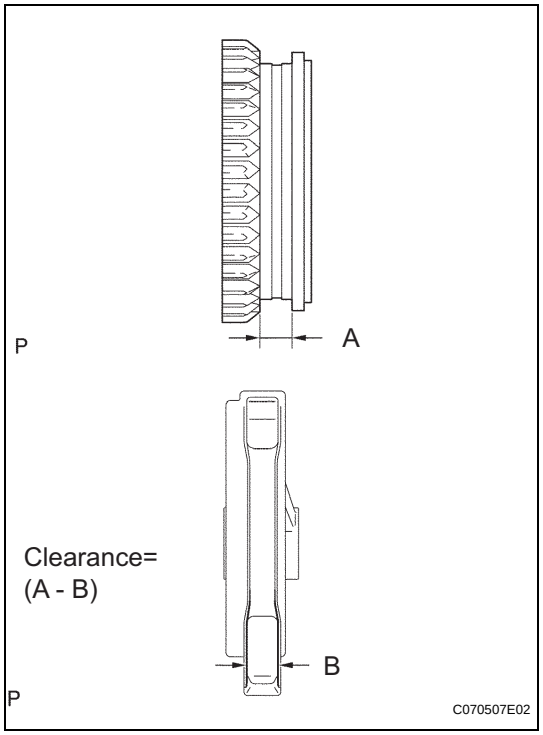


9. INSPECT SYNCHRONIZER RING SET NO.1

(a) Coat the 1st gear cone with gear oil. Turn the synchronizer ring set No.1 in one direction while pushing it against the 1st gear cone. Check that the ring locks.
If the synchronizer ring set No.1 does not lock, replace the synchronizer ring set No.1 with a new one.

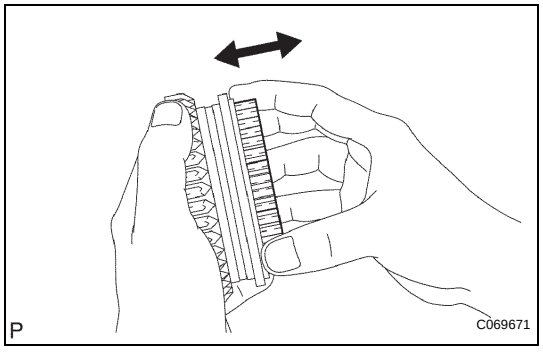


(b) Check the clearance between the synchronizer ring set No.1 and 1st gear while pushing the 1st gear against the cone of the synchronizer ring set No.1.
Standard clearance:
0.70 to 1.45 mm (0.0276 to 0.0571 in.)
If clearance is out of specification, replace the synchronizer ring set No.1 with a new one.



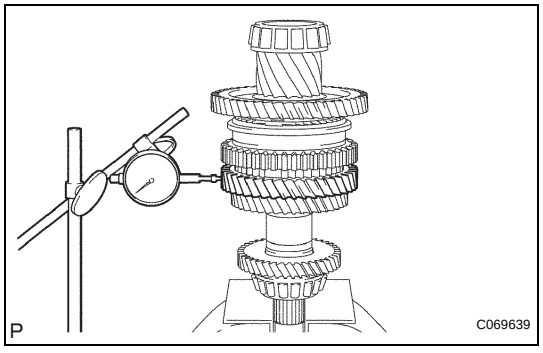
10. INSPECT REVERSE GEAR

(a) Using vernier calipers, measure the width of the reverse gear groove and thickness of the claw part on the gear shift fork No.1, and calculate the clearance.
Standard clearance:
0.15 to 0.35 mm (0.0059 to 0.0138 in.) {A - B}
If clearance is out of specification, replace the reverse gear and gear shift fork No.1 with new ones.



11. INSPECT TRANSMISSION CLUTCH HUB NO.1

(a) Check the sliding condition between the transmission clutch hub No.1 and the reverse gear.
(b) Check the tip of the spline gear on the sleeve of the reverse gear for wear.
If any defects are found, replace the transmission hub sleeve or the transmission clutch hub.

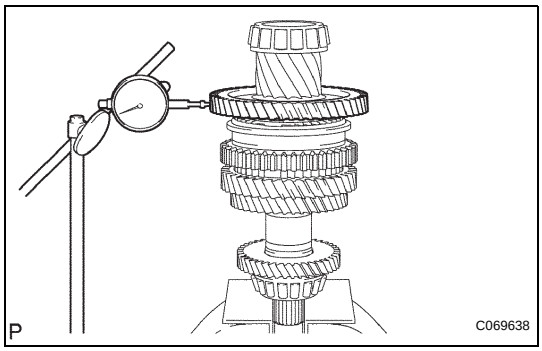


12. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.
Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 2nd gear and 2nd gear needle roller bearing.



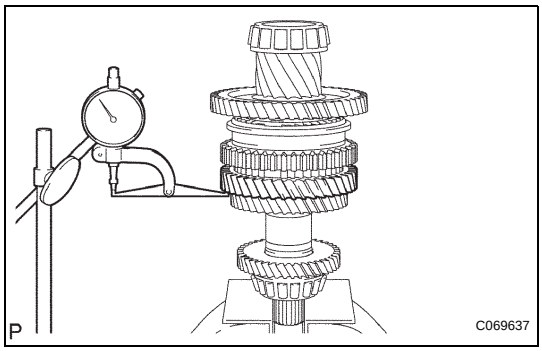
13. INSPECT 1ST GEAR RADIAL CLEARANCE

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

Standard clearance:
mm (in.)

Bearing	Standard clearance
KOYO made	0.009 to 0.053 (0.0004 to 0.0021)
NSK made	0.009 to 0.051 (0.0004 to 0.0020)

If clearance is out of specification, replace the 1st gear and 1st gear needle roller bearing.

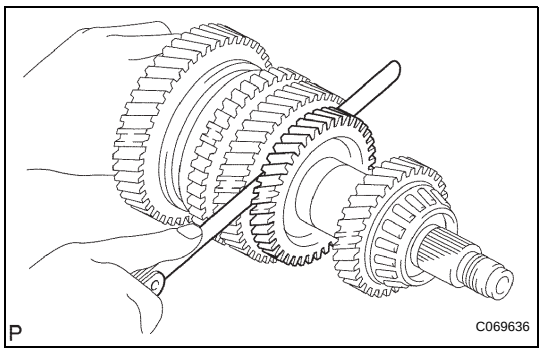


14. INSPECT 2ND GEAR THRUST CLEARANCE

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

Standard clearance:
0.10 to 0.35 mm (0.0039 to 0.0138 in.)

If clearance is out of specification, replace the transmission clutch hub No.1, 2nd gear or 3rd driven gear.

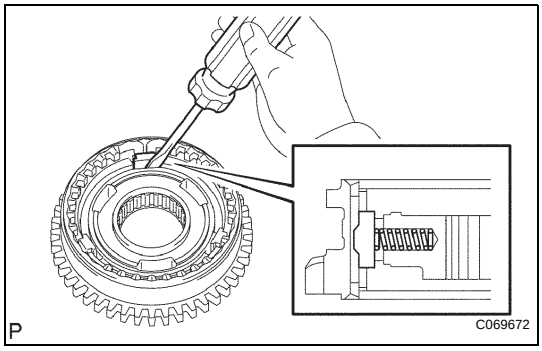


15. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 1st gear thrust clearance.

Standard clearance:
0.25 to 0.40 mm (0.0098 in. to 0.0157 in.)

If clearance is out of specification, replace the 1st gear thrust washer, 1st gear or transmission clutch hub No.1.



REASSEMBLY

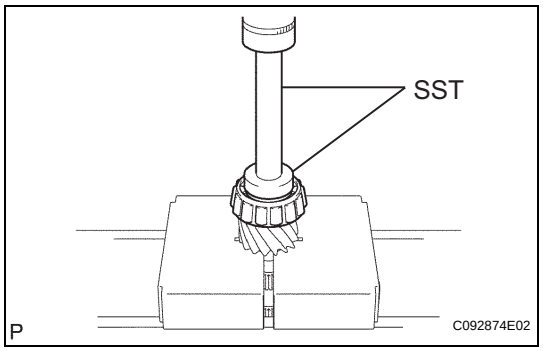
1. INSTALL REVERSE GEAR

(a) Coat the reverse gear with gear oil.

(b) Install the 3 synchromesh shifting key spring No.1 and transmission clutch hub No.1 to the reverse gear.

NOTICE:
Assemble the reverse gear and the transmission clutch hub No.1 in the correct direction.

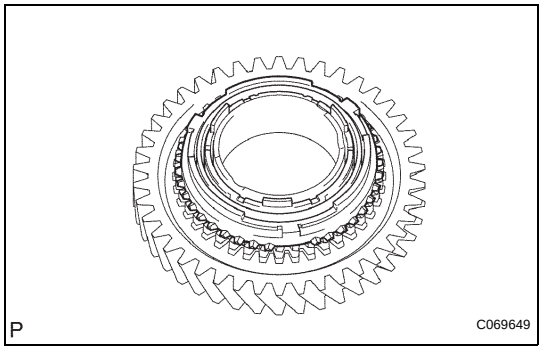
(c) Using a screwdriver, install the synchromesh sifting key No.1 to the reverse gear.



2. INSTALL OUTPUT SHAFT FRONT BEARING

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

SST 09950-60010 (09951-00430), 09950-70010 (09951-07150)

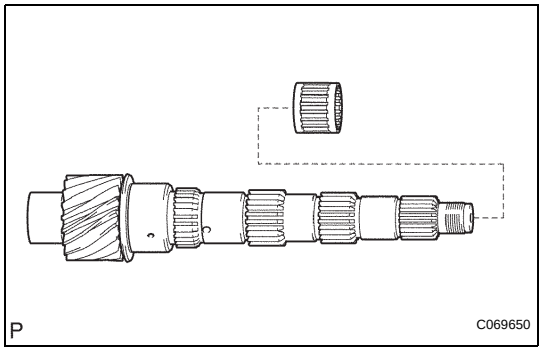


3. INSTALL SYNCHRONIZER RING SET NO.1

(a) Coat the synchronizer ring set No.1 with gear oil, and install it to the 1st gear.

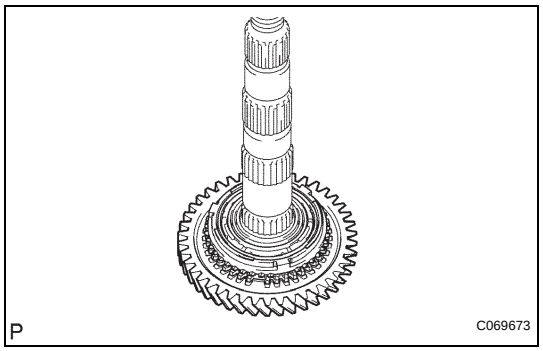
NOTICE:

Align the synchronizer ring set No.1 with the hole of the 1st gear and install.



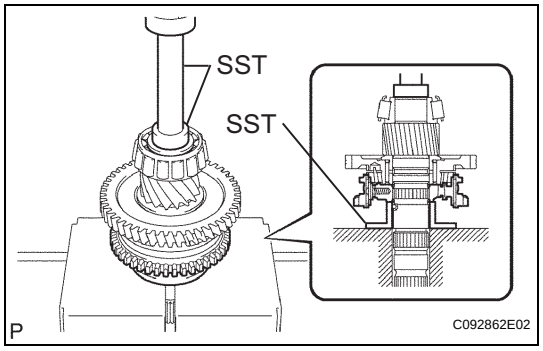
4. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

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



5. INSTALL 1ST GEAR

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



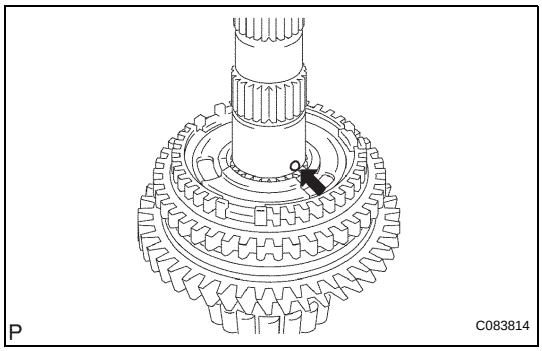
6. INSTALL TRANSMISSION CLUTCH HUB NO.1

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

SST 09316-60011 (09316-00031), 09950-60010 (09951-00320), 09950-70010 (09951-07100)

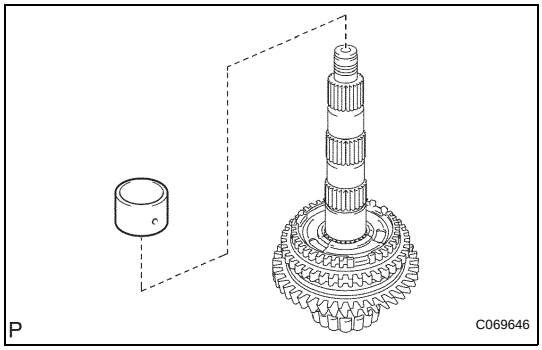
NOTICE:

- **Align the synchronizer ring No.1 with the synchromesh shifting key No.1 and install.**
- **Make sure that the 1st gear rotates.**



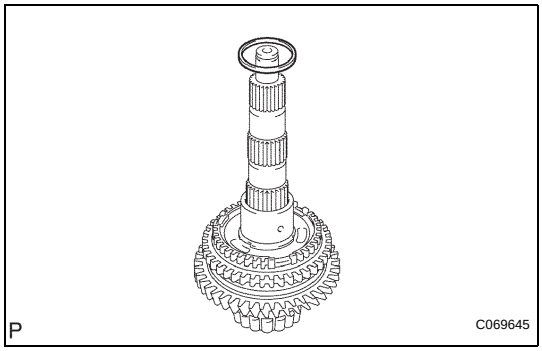
7. INSTALL 2ND GEAR BUSH BALL

(a) Coat the gear bush with MP grease, and install it to the output shaft.



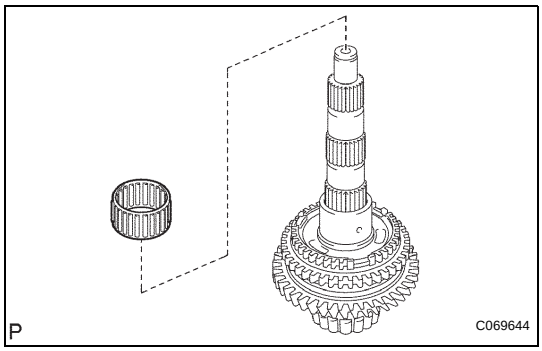
8. INSTALL 2ND GEAR BUSH

(a) Coat the 2nd gear bush with gear oil, and install it to the output shaft.



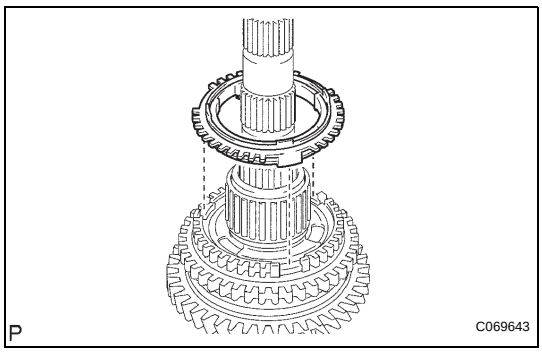
9. INSTALL 2ND GEAR BEARING SPACER

(a) Coat the 2nd gear bearing spacer with gear oil, and install it to the output shaft.



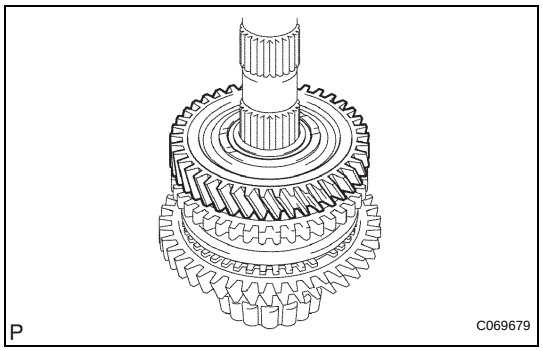
10. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

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



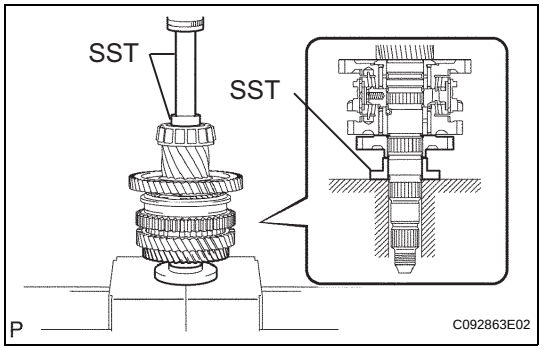
11. INSPECT SYNCHRONIZER RING SET NO.2

(a) Coat the synchronizer ring set No.2 with gear oil, and install it to the transmission clutch hub No.1.
NOTICE:
Align the key groove on the synchronizer ring set No.2 with the synchromesh shifting key No.1.



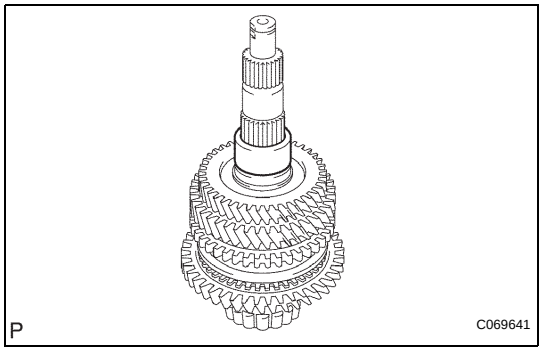
12. INSTALL 2ND GEAR

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



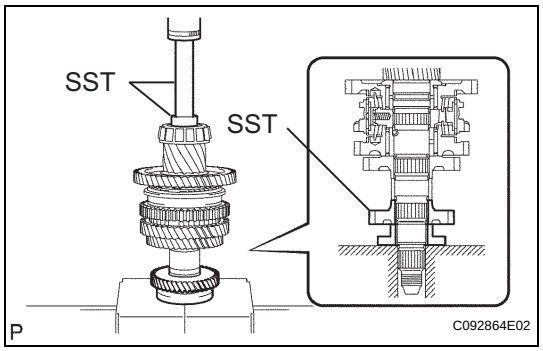
13. INSTALL 3RD DRIVEN GEAR

(a) Using SST and a press, install the 3rd driven gear to the output shaft.
C092863
SST 09608-00071, 09950-60010 (09951-00320), 09950-70010 (09951-07100)



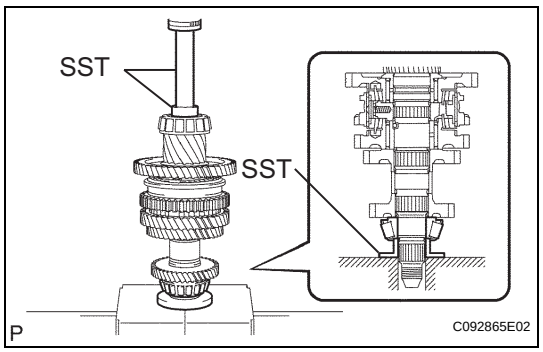
14. INSPECT OUTPUT GEAR SPACER

(a) Install the output gear spacer to the output shaft.



15. INSTALL 4TH DRIVEN GEAR

(a) Using SST and a press, install the 4th driven gear to the output shaft.
SST 09608-00071, 09950-60010 (09951-00320), 09950-70010 (09951-07100)



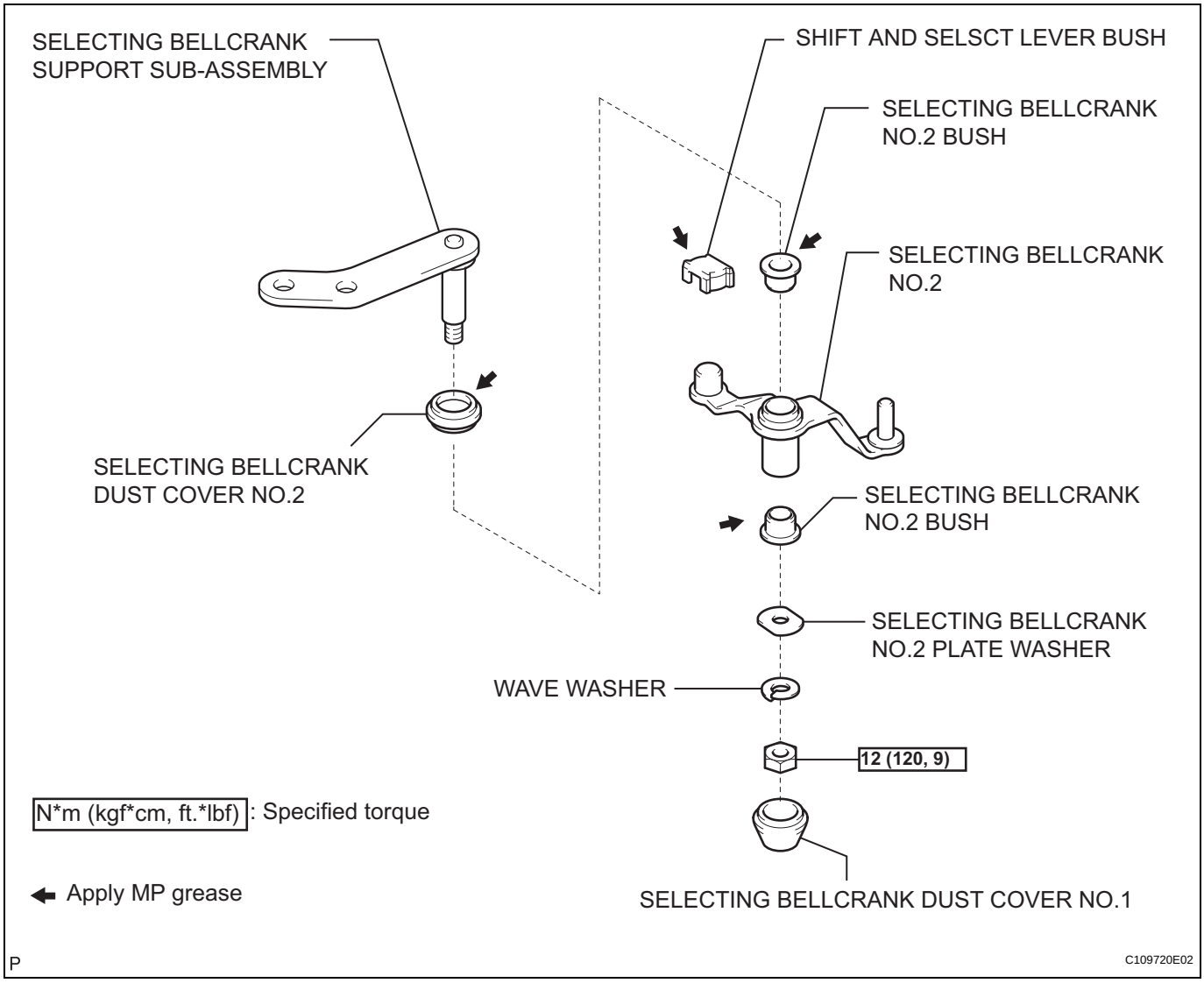
16. INSTALL OUTPUT SHAFT FRONT BEARING

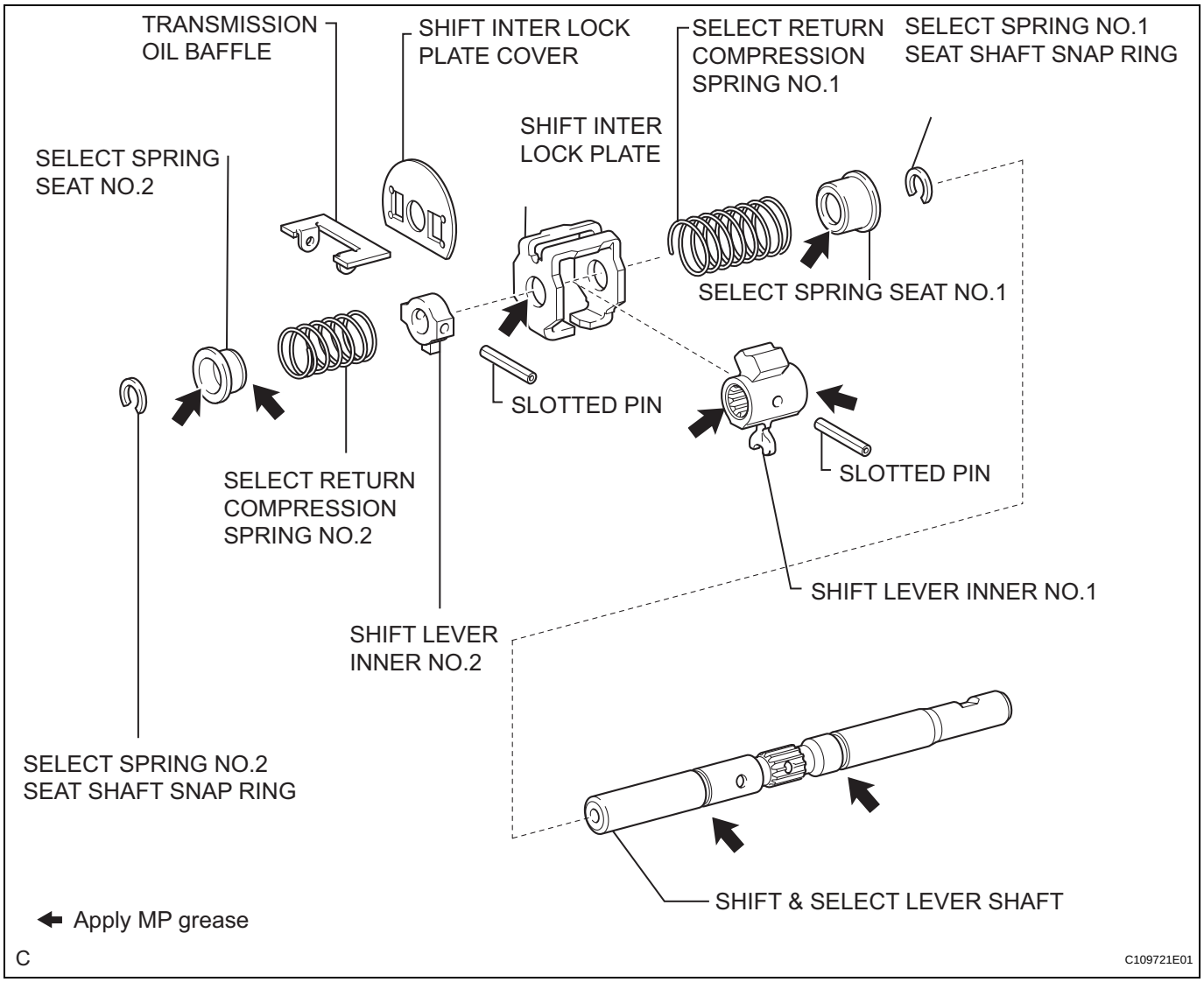
(a) Using SST and a press, install the output shaft front bearing (inner race) to the output shaft.
SST 09506-30012, 09950-60010 (09951-00320), 09950-70010 (09951-07100)

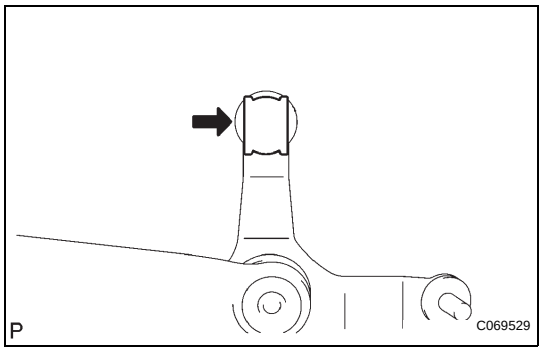
MX

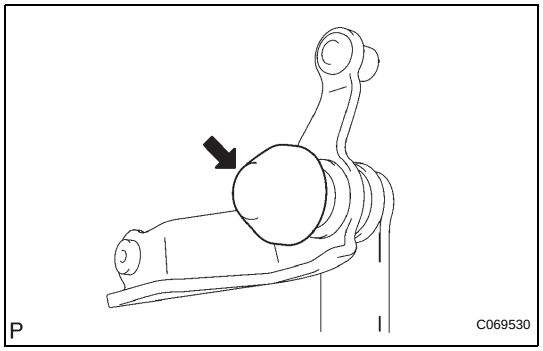
SHIFT AND SELECT LEVER SHAFT

COMPONENTS









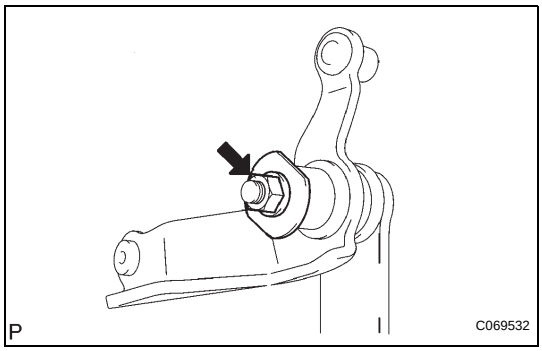
DISASSEMBLY

1. REMOVE CONTROL SHIFT LEVER BUSH

(a) Remove the control shift lever bush from the selecting bellcrank No.2.

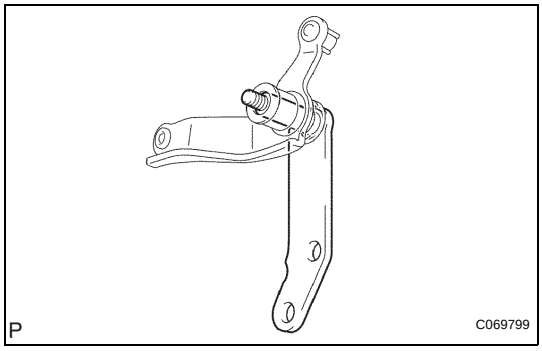
2. REMOVE SELECTING BELLCRANK DUST COVER NO.1

(a) Remove the selecting bellcrank dust cover No.1 from the selecting bellcrank No.2.

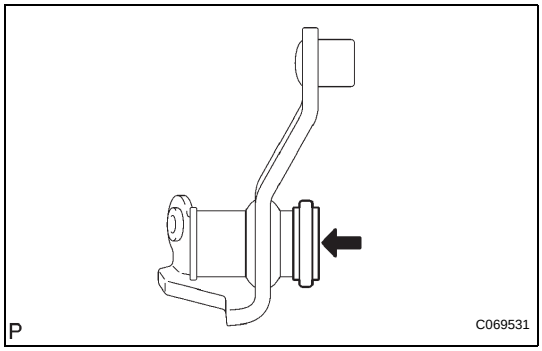


3. REMOVE SELECTING BELLCRANK SUPPORT SUB-ASSEMBLY

(a) Remove the nut, wave washer and selecting bellcrank No.2 plate washer from the selecting bellcrank No.2.

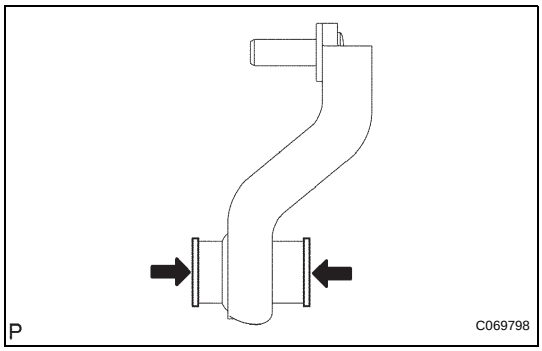


(b) Remove the selecting bellcrank support sub-assembly from the selecting bellcrank No.2.



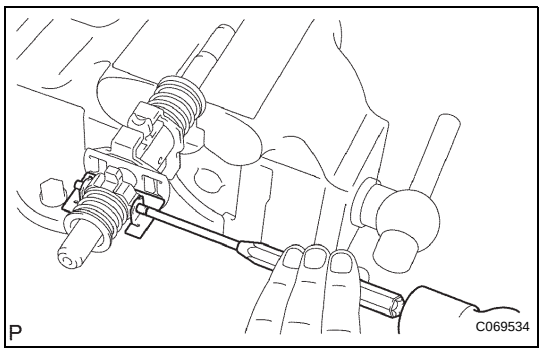
4. REMOVE SELECTING BELLCRANK DUST COVER NO.2

(a) Remove the selecting bellcrank dust cover No.2 from the selecting bellcrank No.2.



5. REMOVE SELECTING BELLCRANK NO.2 BUSH

(a) Remove the selecting bellcrank bush from the selecting bellcrank No.2.

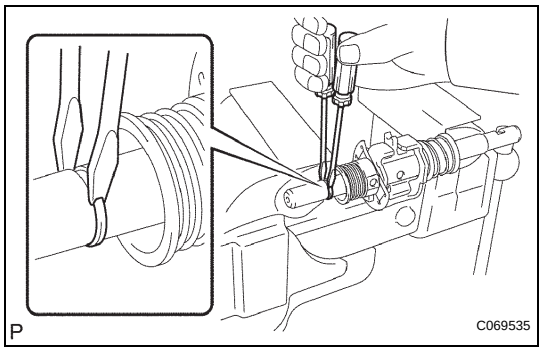


6. REMOVE SHIFT LEVER INNER NO.2

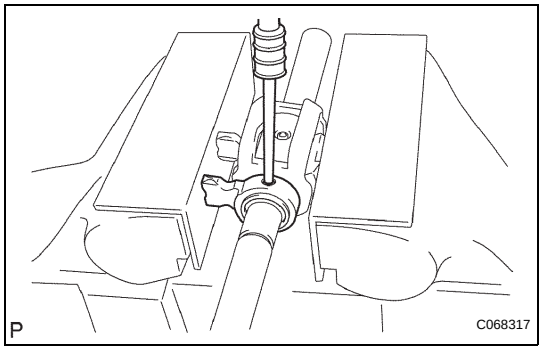
(a) Hold the shift & select lever in a vise with soft jaws.
NOTICE:
Do not damage the shift & select lever shaft.

(b) Using a pin punch (ϕ 5 mm), remove the shift inner lever slotted pin and the transmission oil baffle.
NOTICE:
Do not damage the shift & select lever shaft.

(c) Apply force to the select return compression spring No.1 and select return compression spring No.2 then hold it in a vise with soft jaws.

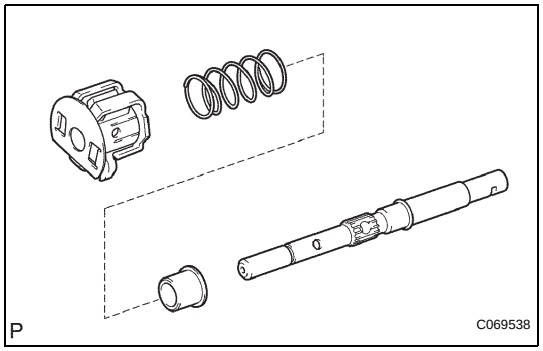


(d) Using 2 screwdrivers and a hammer, remove the select spring No.2 seat snap ring from the shift & select lever shaft.
NOTICE:
Do not damage the shift & select lever shaft.

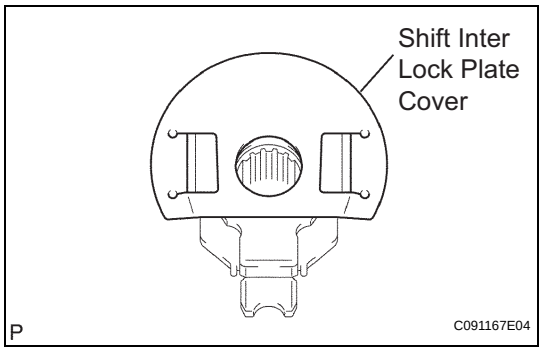


7. REMOVE SELECT SPRING SEAT NO.1

(a) Using a pin punch (ϕ 5 mm), remove the shift inner lever slotted pin from the shift & select lever shaft.

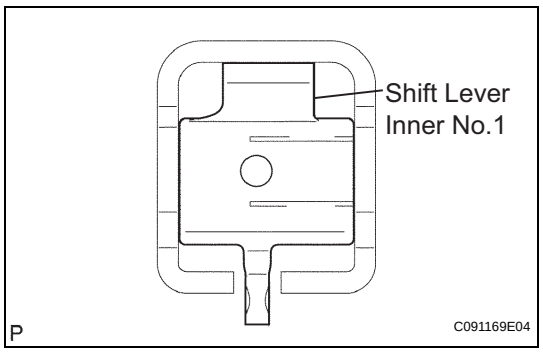


(b) Remove the shift lever assembly select return compression spring No.1 and select spring seat No.1 from the shift & select lever shaft.



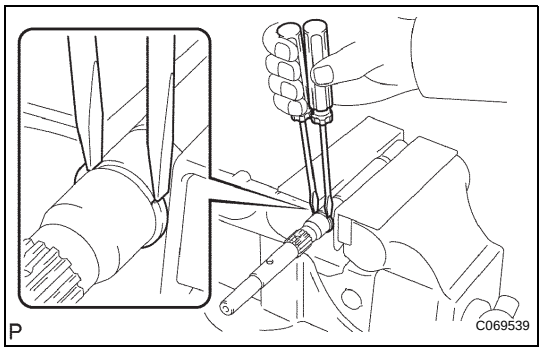
8. REMOVE SHIFT INTER LOCK PLATE COVER

(a) Remove the shift inter lock plate cover from the shift inter lock plate.



9. REMOVE SHIFT LEVER INNER NO.1

(a) Remove the shift lever inner No.1 from the shift inter lock plate.

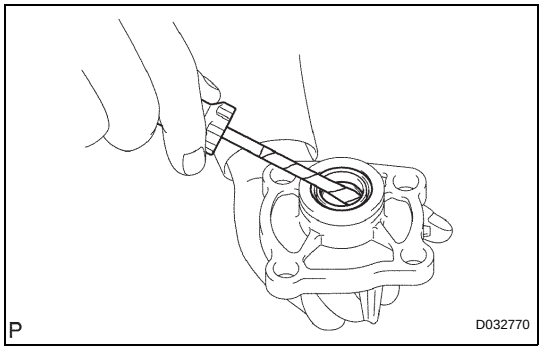


10. REMOVE SELECT SPRING NO.1 SEAT SHAFT SNAP RING

(a) Using 2 screwdrivers and a hammer, remove the select spring No.1 seat shaft snap ring.

NOTICE:

Do not damage the shaft.



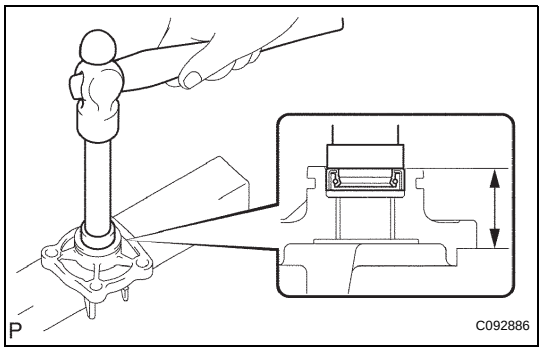
11. REMOVE CONTROL SHAFT COVER OIL SEAL

(a) Using a screwdriver, remove the control shaft cover oil seal from the control shaft cover.

HINT:

Tape the screwdriver tip before use to avoid damage.

REASSEMBLY



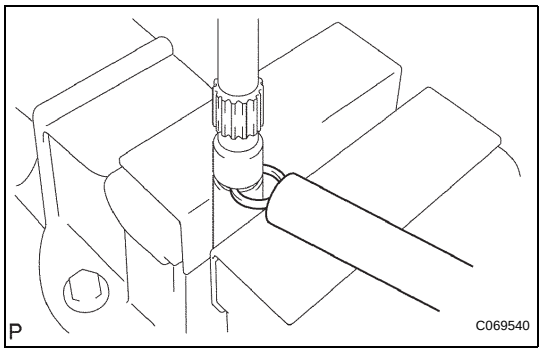
1. INSTALL CONTROL SHAFT COVER OIL SEAL

(a) Using SST and a hammer, install a new control shaft cover oil seal to the control shaft cover.

SST 09950-60010 (09951-00280), 09950-70010 (09951-07100)

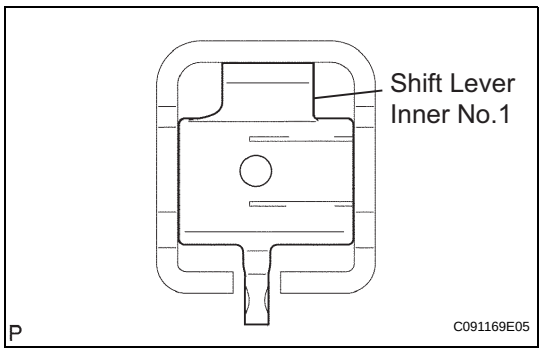
Oil seal drive in depth:

28.0 to 29.0 mm (1.1022 to 1.142 in.)



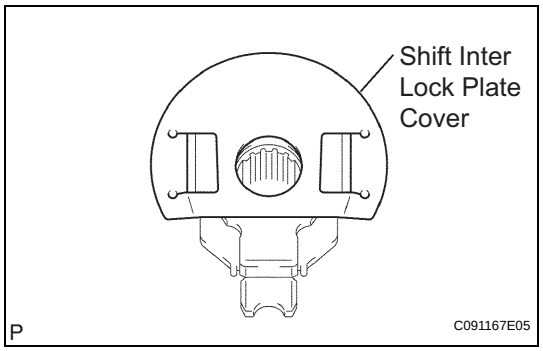
2. INSTALL SELECT SPRING NO.1 SEAT SHAFT SNAP RING

(a) Using a brass bar and a hammer, install the select spring No.1 seat shaft snap ring.



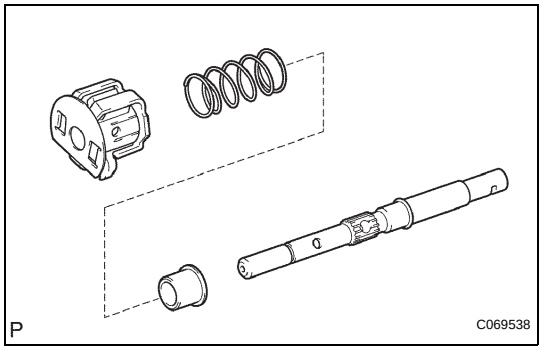
3. INSTALL SHIFT LEVER INNER NO.1

(a) Install the shift lever inner No.1 to the shift inter lock plate.



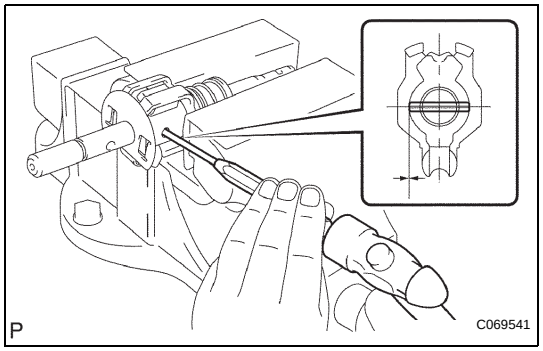
4. INSTALL SHIFT INTER LOCK PLATE COVER

(a) Install the shift inter lock plate cover to the shift inter lock plate.



5. INSTALL SELECT SPRING SEAT NO.1

(a) Install the select spring seat No.1, select return compression spring No.1 and shift lever inner assembly to the shift & select lever shaft.

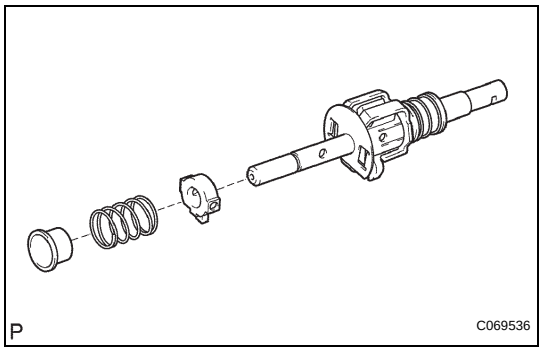


(b) Hold the shift & select lever in a vise with soft jaws.

(c) Using a pin punch (ϕ 5 mm), install the shift lever slotted pin to the shift & select lever shaft.

Clearance:

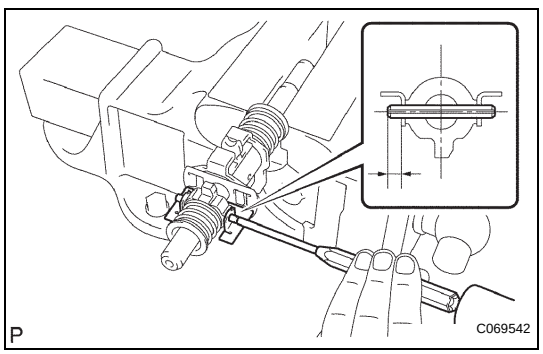
-0.5 to 0.5 mm (- 0.0197 to 0.0197 in.)



6. INSTALL SHIFT LEVER INNER NO.2

(a) Install the shift lever inner No.2, select return compression spring No.2 and select return spring seat No.2 to the shift & select lever shaft.

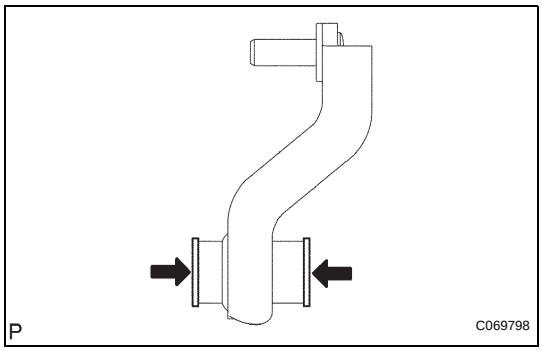
(b) Using a brass bar and a hammer, install the select seat snap ring to the shift & select lever shaft.



(c) Install the transmission oil baffle. Using a pin punch (ϕ5 mm) and a hammer, install the shift inner lever slotted pin to the shift & select lever shaft.

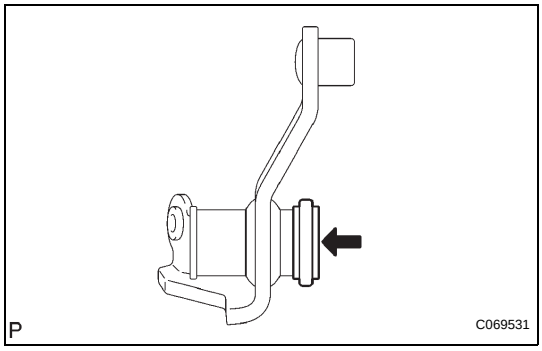
Clearance:

5.8 to 6.8 mm (0.228 to 0.268 in.)



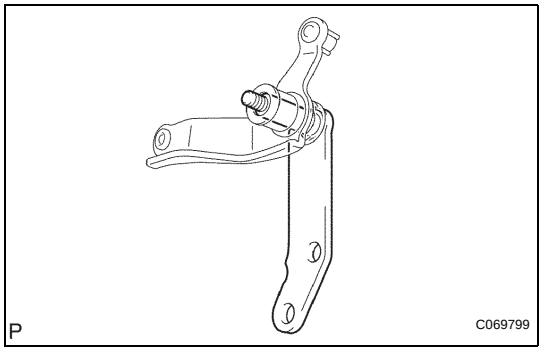
7. INSTALL SELECTING BELLCRANK NO.2 BUSH

(a) Coat the 2 selecting bellcrank No.2 bushes with MP grease, and install them to the selecting bellcrank No.2.



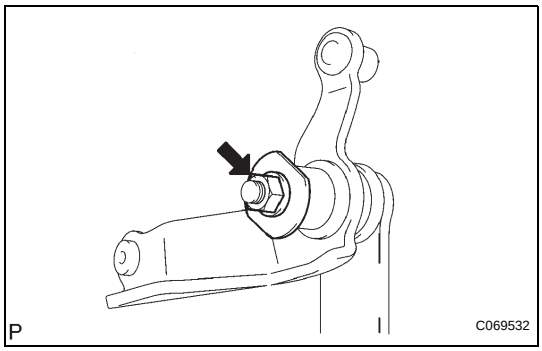
8. INSTALL SELECTING BELLCRANK DUST COVER NO.2

(a) Coat the selecting bellcrank dust cover No.2 with MP grease, and install it to the selecting bellcrank No.2.

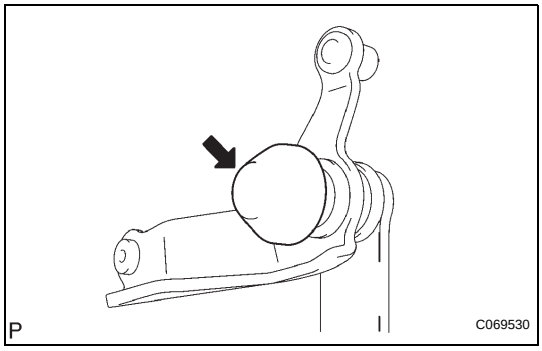


9. INSTALL SELECTING BELLCRANK SUPPORT SUB-ASSEMBLY

(a) Install the selecting bellcrank support sub-assembly to the selecting bellcrank No.2.

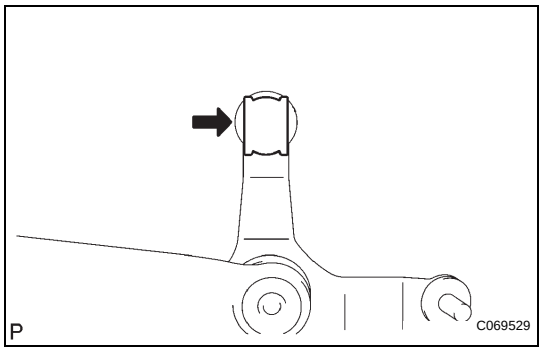


(b) Install the selecting bellcrank No.2 plate washer, washer and nut.
Torque: 12 N*m (122 kgf*cm, 9 ft.*lbf)



10. INSTALL SELECTING BELLCRANK DUST COVER NO.1

(a) Install the selecting bellcrank dust cover No.1 to the selecting bellcrank No.2.

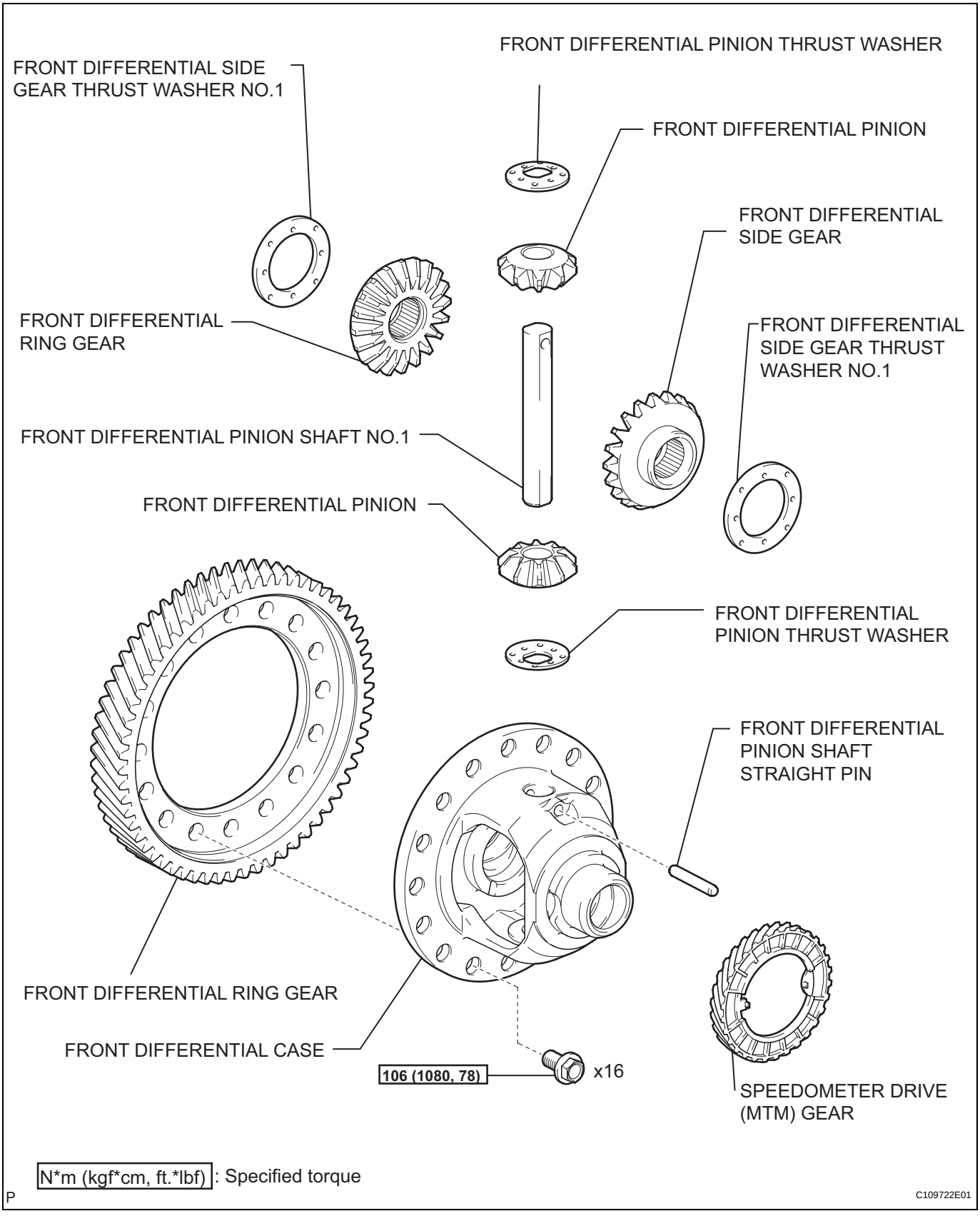


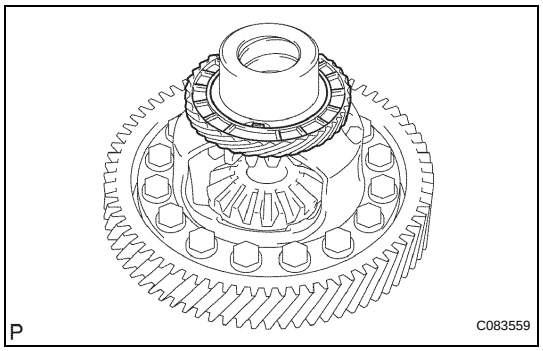
11. INSTALL CONTROL SHIFT LEVER BUSH

(a) Install the control shift lever bush to the selecting bellcrank No.2.

DIFFERENTIAL CASE

COMPONENTS

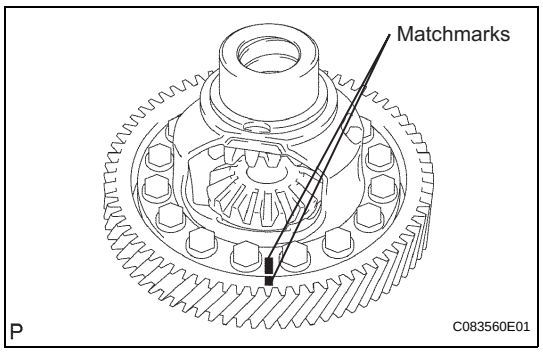




DISASSEMBLY

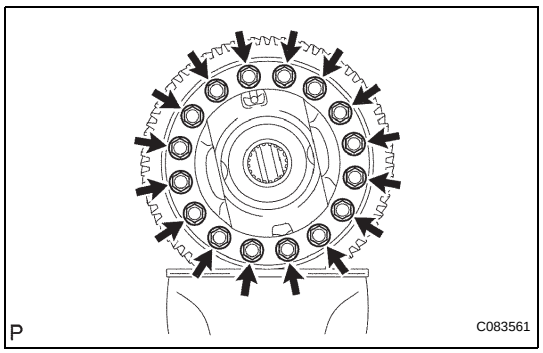
1. REMOVE SPEEDOMETER DRIVE (MTM) GEAR

(a) Remove the speedometer drive (MTM) gear from the front differential case assembly.

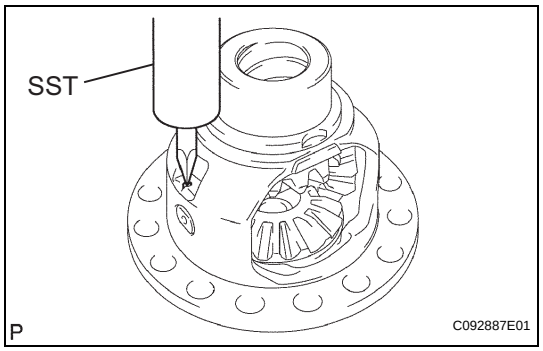


2. REMOVE FRONT DIFFERENTIAL RING GEAR

(a) Put matchmarks on the front differential ring gear and the front differential case.

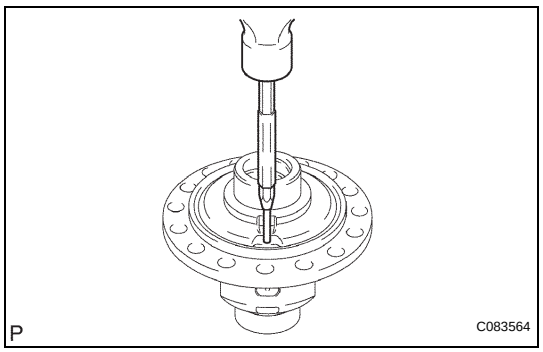


(b) Remove the 16 bolts. Using a plastic hammer, remove the front differential case.

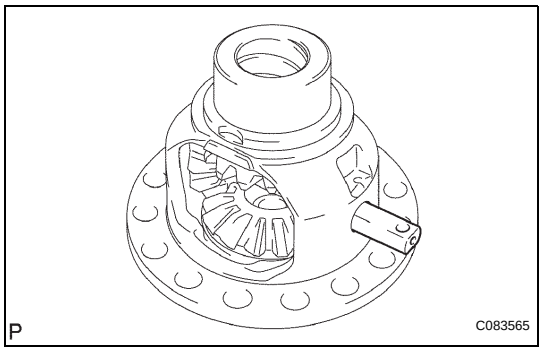


3. REMOVE FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

(a) Using SST and a hammer, unstake the staked part of the front differential case.
SST 09930-00010

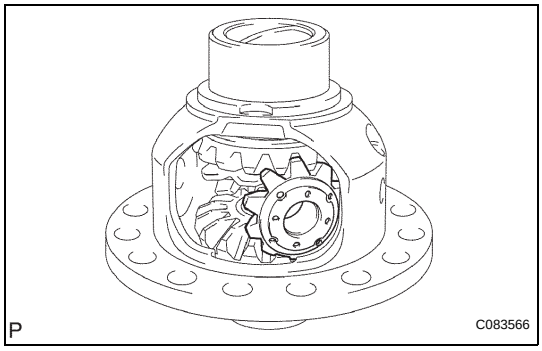


(b) Using a pin punch and a hammer, remove the front differential pinion shaft straight pin from the front differential case.



4. REMOVE FRONT DIFFERENTIAL PINION SHAFT NO.1

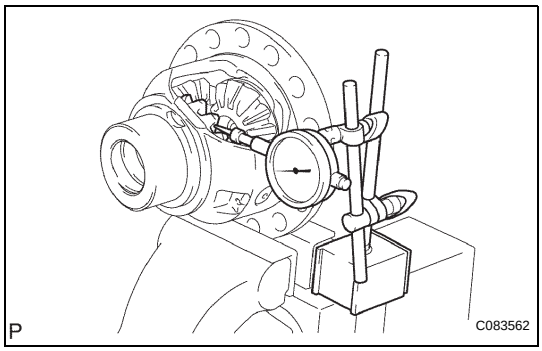
(a) Remove the front differential pinion shaft No.1 from the front differential case.



5. REMOVE FRONT DIFFERENTIAL SIDE GEAR

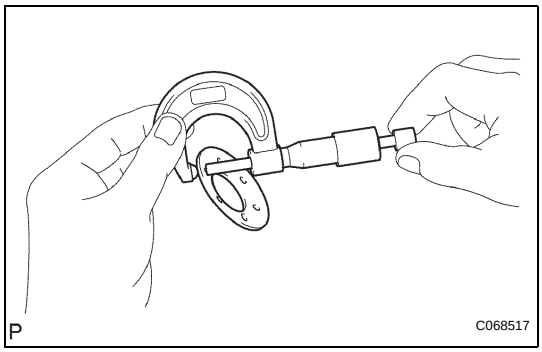
(a) Remove the 2 front differential pinions, 2 front differential pinion thrust washers, 2 front differential side gears and 2 front differential side gear thrust washers from the front differential case.
HINT:
Remove the 2 pinion thrust washers and side gear thrust washers while turning the front differential pinion.

INSPECTION



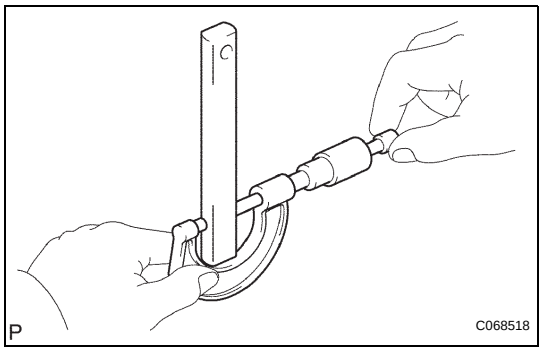
1. INSPECT FRONT DIFFERENTIAL SIDE GEAR BACKLASH

(a) Hold the front differential pinion to the front differential case side. Using a dial indicator, measure the front differential side gear backlash.
Standard backlash:
0.10 to 0.20 mm (0.0039 to 0.0079 in.)
If backlash is out of specification, install proper side gear thrust washers.



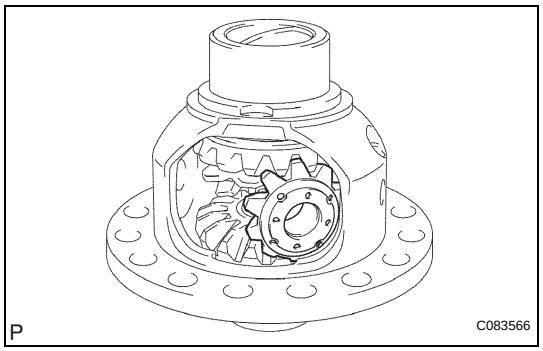
2. INSPECT FRONT DIFFERENTIAL PINION THRUST WASHER

(a) Using a micrometer, measure the thickness of the front differential pinion thrust washer.
Minimum thickness:
0.9 mm (0.035 in.)
If the thickness is less than the minimum, replace the front differential pinion thrust washer.



3. INSPECT FRONT DIFFERENTIAL PINION SHAFT NO.1

(a) Using a micrometer, measure the outside diameter of the front differential pinion shaft No.1.
Minimum diameter:
17.975 mm (0.70768 in.)
If the outer diameter is less than the minimum, replace the front differential pinion shaft No.1.



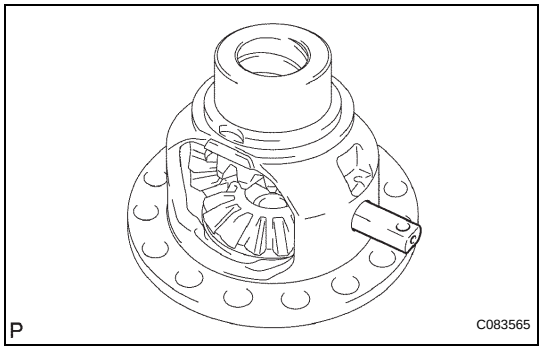
REASSEMBLY

1. INSTALL FRONT DIFFERENTIAL SIDE GEAR

(a) Coat the rotating surface of the front differential side gear with gear oil.

(b) Install the 2 front differential side gear thrust washers to the 2 front differential side gears.

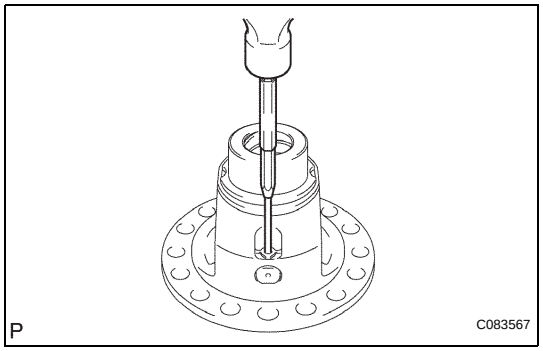
(c) Install the 2 front differential side gears, 2 front differential pinions and 2 front differential side gear thrust washers to the front differential case.
HINT:
Install the 2 front differential pinions with the front differential washers while turning the front differential pinion.



2. REMOVE FRONT DIFFERENTIAL PINION SHAFT NO.1

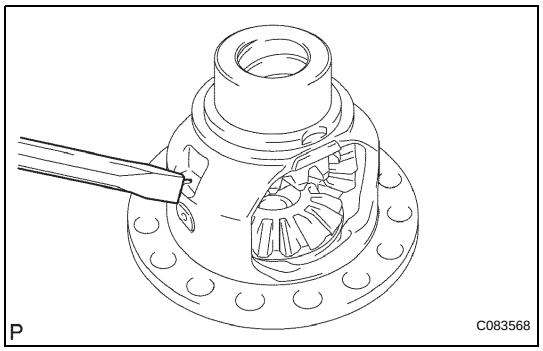
(a) Coat the rotating surface of the front differential pinion shaft No.1 with gear oil.

(b) Install the front differential pinion shaft No.1 to the front differential case so that the hole for the front differential pinion shaft straight pin is aligned with the hole in the front differential case.

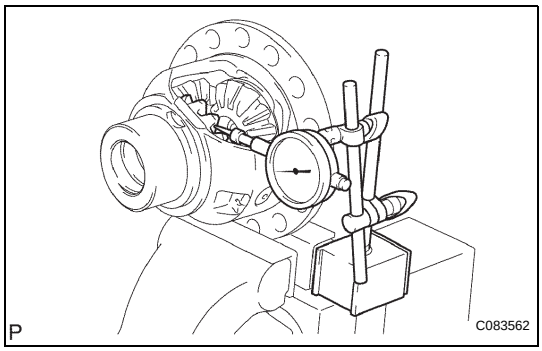


3. INSTALL FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

(a) Using a pin punch and a hammer, install the front differential pinion shaft straight pin to the front differential case.



(b) Using a chisel and hammer, stake the front differential case hole.

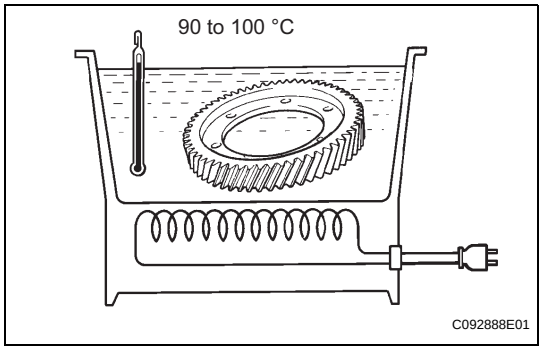


4. ADJUST FRONT DIFFERENTIAL SIDE GEAR BACKLASH

(a) Hold the front differential pinion to the front differential case side. Using a dial indicator, measure the front differential side gear backlash.
Standard backlash:
0.10 to 0.20 mm (0.0039 to 0.0079 in.)

(b) If backlash is out of specification, select another front differential side gear thrust washer and adjust it.
Thrust washer:
mm (in.)

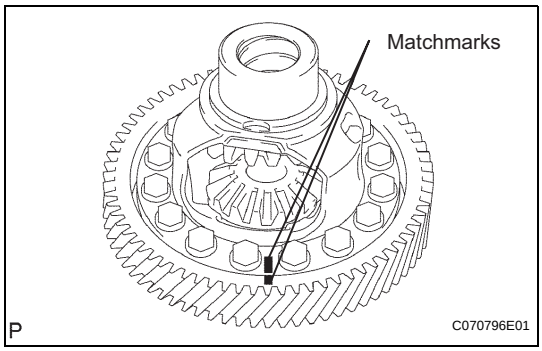
Part No.	Thickness: mm (in.)	Mark
41361-28230	1.00 (0.0394)	1
41361-28240	1.10 (0.0433)	2
41361-28250	1.20 (0.0472)	3
41361-28260	1.30 (0.0512)	4



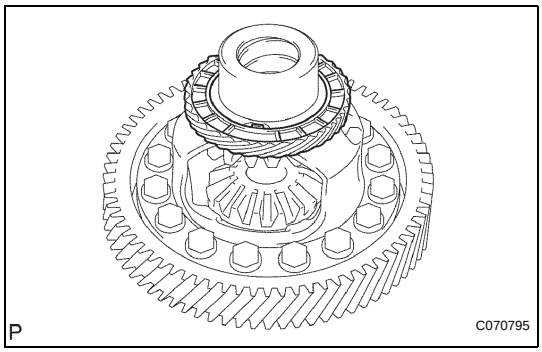
5. INSTALL FRONT DIFFERENTIAL RING GEAR

(a) Using a heater, heat the front differential ring gear to 90 to 100 °C (194.0 to 230.0 °F).

(b) Clean the contact surface for the differential case.



(c) Aligning the matchmarks, quickly install the front differential ring gear to the front differential case.
Torque: 106 N*m (1,081 kgf*cm, 78 ft.*lbf)



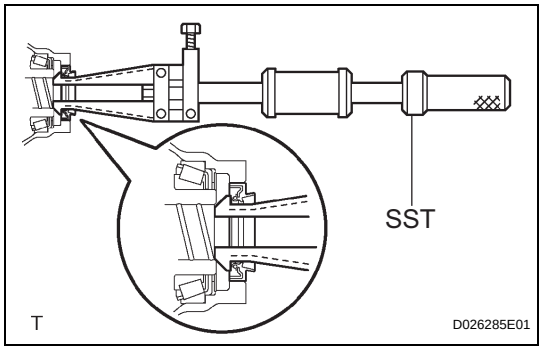
6. INSTALL SPEEDOMETER DRIVE (MTM) GEAR

(a) Install the speedometer drive (MTM) gear to the front differential case.

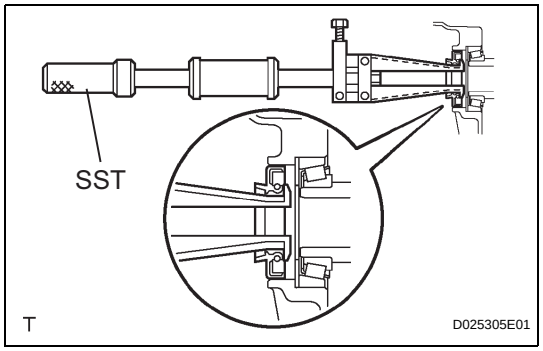
FRONT DIFFERENTIAL OIL SEAL

REMOVAL

1. **DRAIN MANUAL TRANSAXLE OIL**
   (a) Remove the filler plug and the gasket.
   (b) Remove the drain plug and gasket, and drain the manual transaxle oil.
   (c) Install a new gasket and the drain plug.
   Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)
2. **REMOVE FRONT WHEELS**
3. **REMOVE FRONT DRIVE SHAFT ASSEMBLY LH**
   HINT:
   (See page DS-4)
   SST 09520-01010, 09520-24010 (09520-32040)
4. **REMOVE FRONT DRIVE SHAFT ASSEMBLY RH**
   SST 09308-00010
   HINT:
   (See page DS-4)
5. **REMOVE FRONT TRANSAXLE CASE COVER OIL SEAL**
   (a) Using SST, remove the oil seal.
   SST 09308-00010

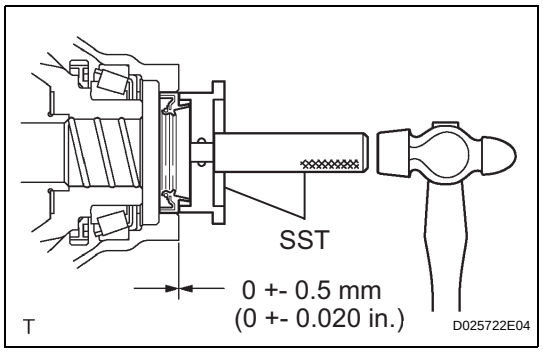


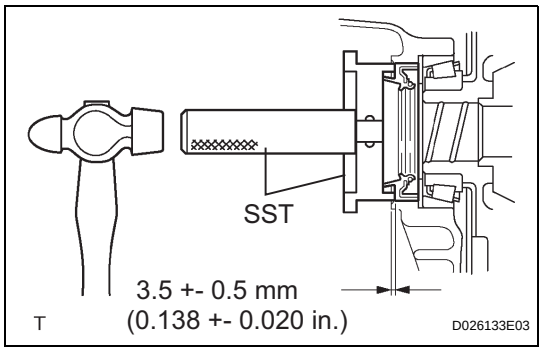
6. **REMOVE TRANSMISSION CASE OIL SEAL**
   (a) Using SST, remove the oil seal.
   SST 09308-00010



INSTALLATION

1. **INSTALL FRONT TRANSAXLE CASE COVER OIL SEAL**
   (a) Coat a new oil seal lip with MP grease.
   (b) Using SST and a hammer, install the oil seal.
   SST 09608-10010, 09950-70010 (09951-07200)
   Drive in depth:
   0 +- 0.5 mm (0 +- 0.020 in.)
   NOTICE:
   Be careful not to damage the oil seal lip.





2. INSTALL TRANSMISSION CASE OIL SEAL

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

(b) Using SST and a hammer, install the oil seal.

SST 09608-32010, 09950-70010 (09951-07200)

Drive in depth:

3.5 +- 0.5 mm (0.138 +- 0.020 in.)

NOTICE:

Be careful not to damage the oil seal lip.

3. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

HINT:

(See page DS-14)

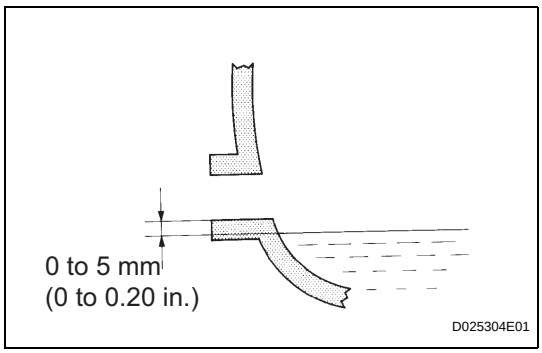
4. INSTALL FRONT DRIVE SHAFT ASSEMBLY RH

HINT:

(See page DS-14)

5. INSTALL FRONT WHEELS

Torque: 103 N*m (1,050 kgf*cm, 76 ft.*lbf)



6. ADD MANUAL TRANSAXLE OIL

(a) Add manual transaxle oil.

Oil grade:

API GL-4 or GL-5

Viscosity:

SAE 75W-90

Capacity:

2.5 liters (2.6 US qts, 2.2 lmp. qts)

7. INSPECT AND ADJUST MANUAL TRANSAXLE OIL LEVEL

HINT:

(See page MX-2)

8. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT:

(See page SP-9)

9. CHECK ABS SPEED SENSOR SIGNAL

HINT:

(See page BC-6)