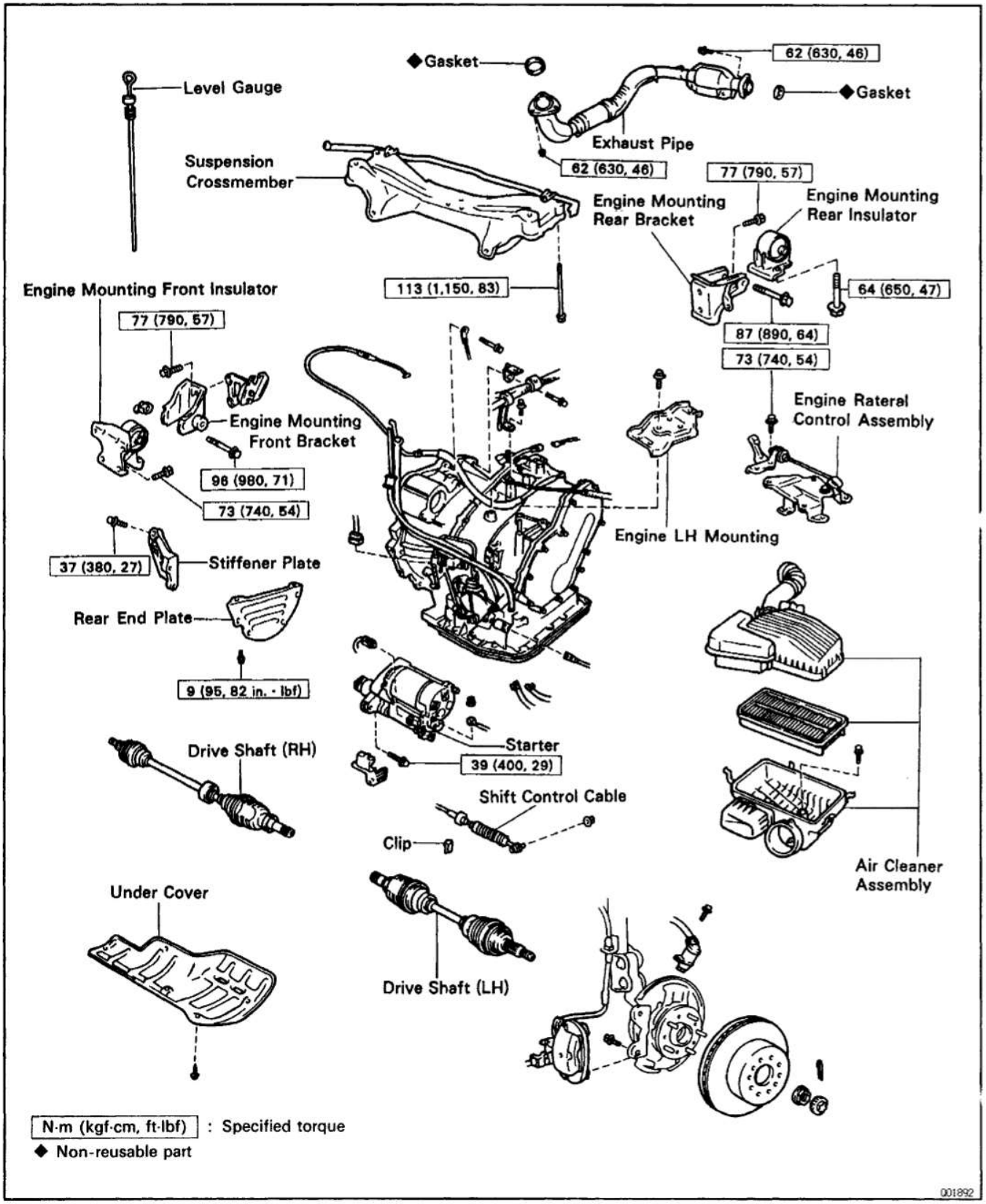
ASSEMBLY REMOVAL AND INSTALLATION

AX07E–01

Remove and install the parts as shown below.

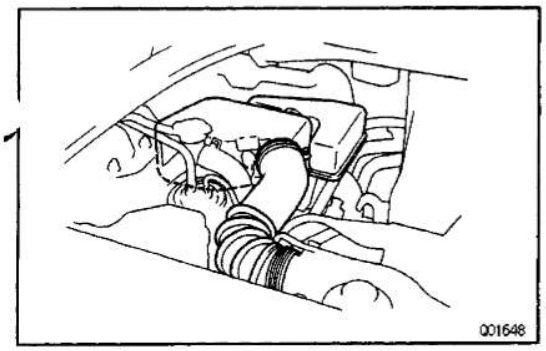


AX07F–01

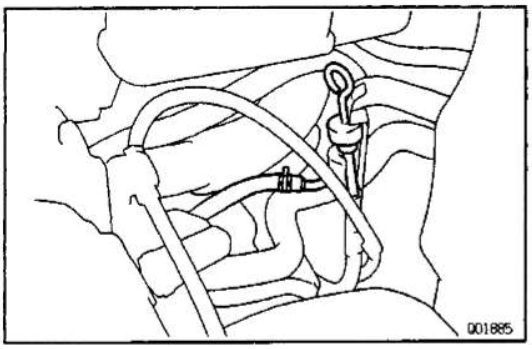
TRANSAXLE REMOVAL

1. REMOVE NEGATIVE BATTERY CABLE

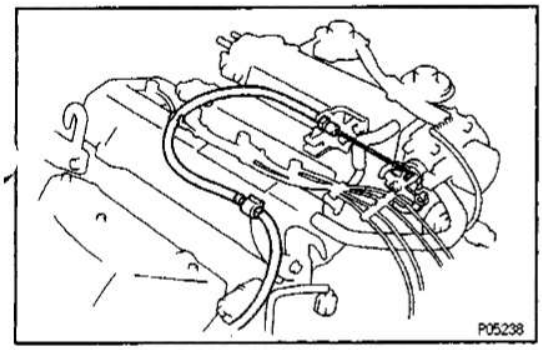
2. REMOVE AIR CLEANER CASE ASSEMBLY WITH AIR HOSE



3. REMOVE LEVEL GAUGE AND DISCONNECT BRE–ATHER HOSE



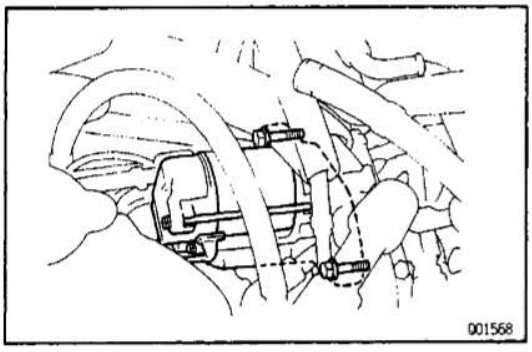
4. REMOVE THROTTLE CABLE



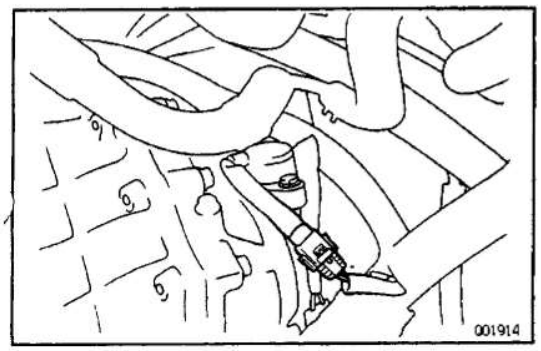
5. REMOVE STARTER

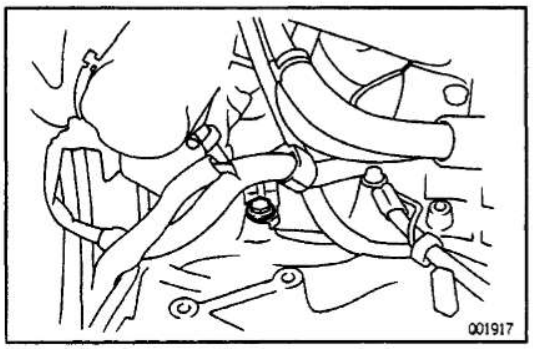
(a) Disconnect the connector and wire from the starter.

(b) Remove the two bolts and starter.

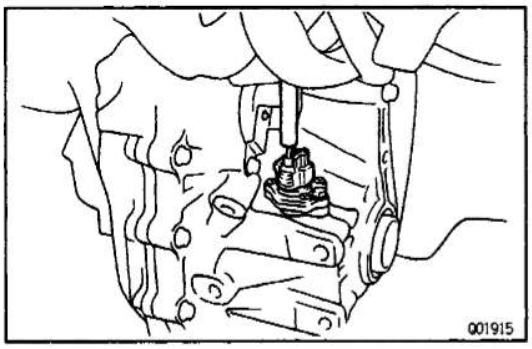


6. DISCONNECT NO.1 VEHICLE SPEED PULSE GEN–ERATOR CONNECTOR

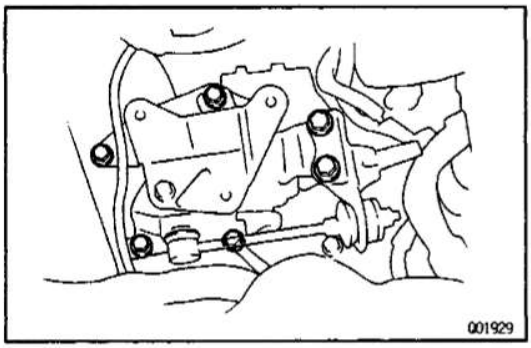




7. REMOVE WIRE HARNESS CLAMP

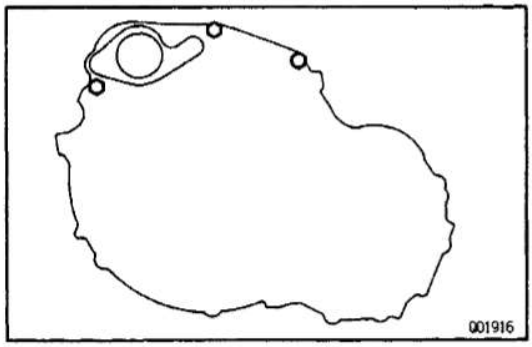


8. DISCONNECT NO.2 VEHICLE SPEED PULSE GEN–ERATOR CONNECTOR



9. REMOVE ENGINE RATERAL CONTROL ASSEMBLY

Remove six bolts and the rateral control assembly.



10. REMOVE TRANSAXLE MOUNTING BOLTS OF TRANSAXLE CASE UPPER SIDE

Remove three bolts from the transaxle case upper side.

11. REMOVE REAR WHEELS

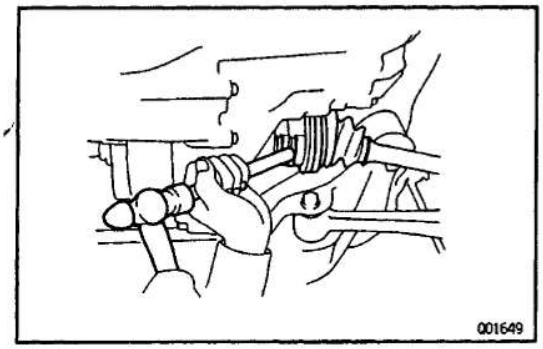
12. RAISE VEHICLE

NOTICE: Be sure the vehicle is securely supported.

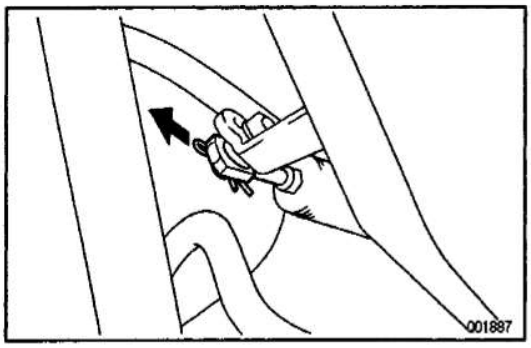
13. REMOVE UNDERCOVER

Remove the five bolts and under cover.

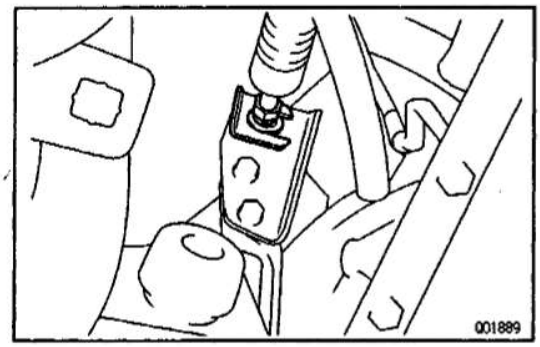
14. DRAIN TRANSAXLE OIL



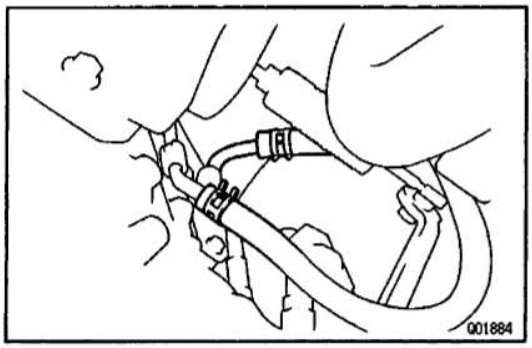
15. REMOVE DRIVE SHAFT
(See page SA–55)



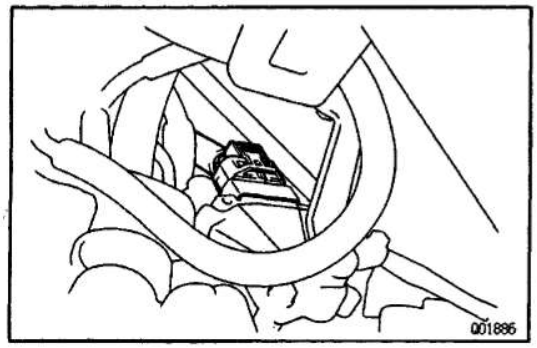
16. DISCONNECT SHIFT CONTROL CABLE
(a) Remove the clip and washer.



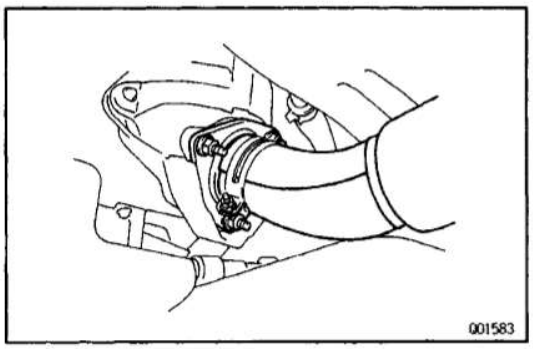
(b) Remove the retainer from the cable.



17. REMOVE TWO OIL COOLER TUBES

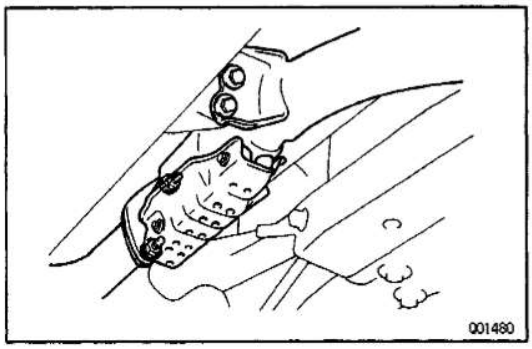


18. DISCONNECT PARK NEUTRAL SWITCH CONNEC–TOR



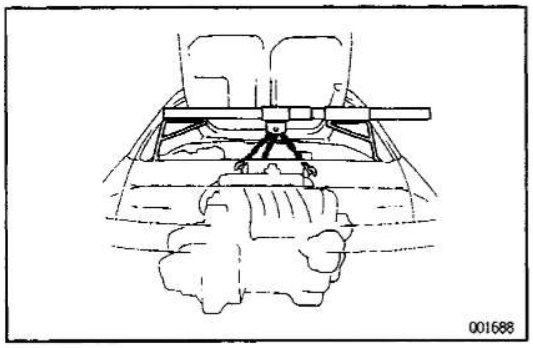
19. REMOVE EXHAUST PIPE

(a) Remove the three nuts.

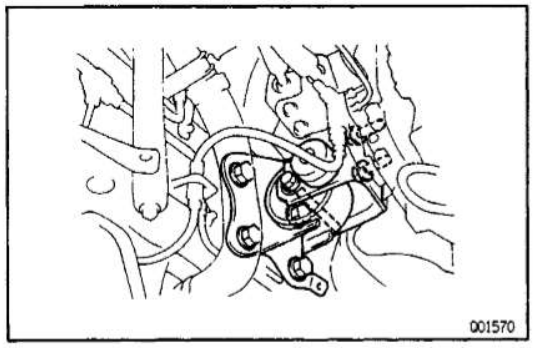


(b) Remove the four bolts.

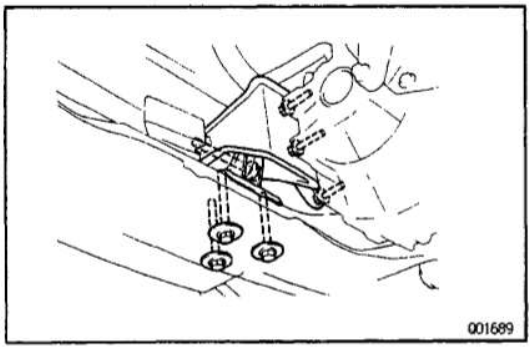
(c) Remove exhaust pipe and two gaskets.



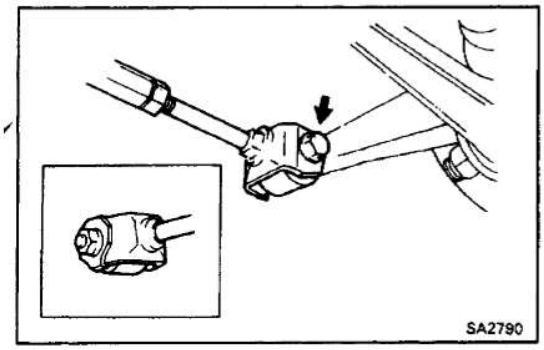
20. INSTALL ENGINE SUPPORT FIXTURE



21. REMOVE ENGINE FRONT MOUTING

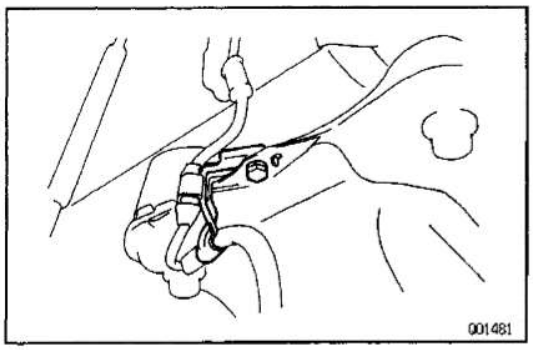


22. REMOVE ENGINE REAR MOUNTING

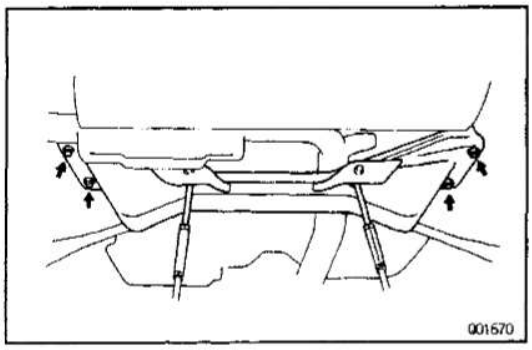


23. REMOVE SUSPENSION CROSSMEMBER

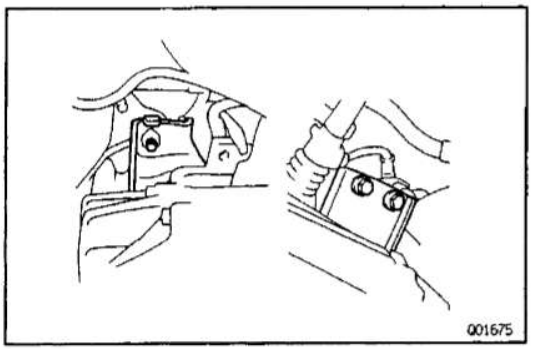
(a) Remove the bolt, nut and suspension arm from rear axle hub.



(b) Remove the bolt and disconnect the speed sensor bracket from the rear suspension crossmember–.



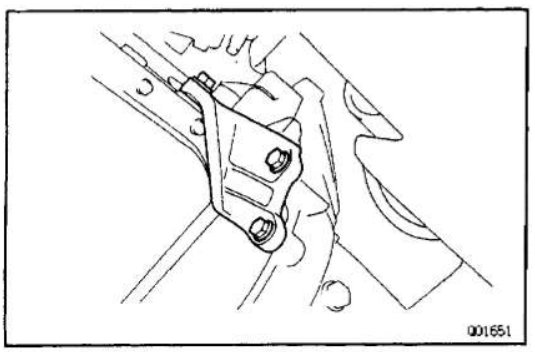
(c) Remove the four bolts and suspension crossmember.



24. REMOVE ENGINE LH MOUNTING SET BOLTS

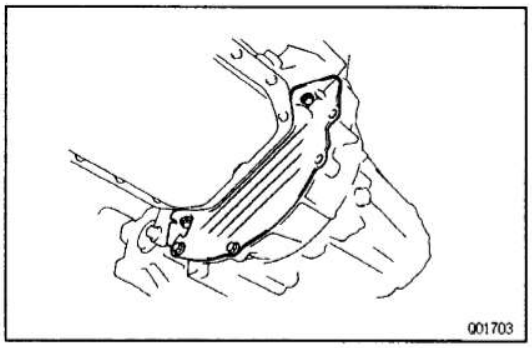
(a) Raise the transaxle and engine slightly with a jack and wooden block in between.

(b) Remove the three bolts.



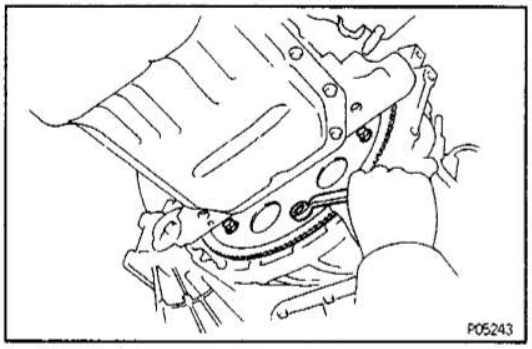
25. REMOVE STIFFENER PLATE

Remove the three bolts and stiffener plate.



26. REMOVE REAR END PLATE

Remove the four bolts and rear end plate.



27. REMOVE TORQUE CONVERTER MOUNTING BOLT

Remove the six bolts by turning the crankshaft.

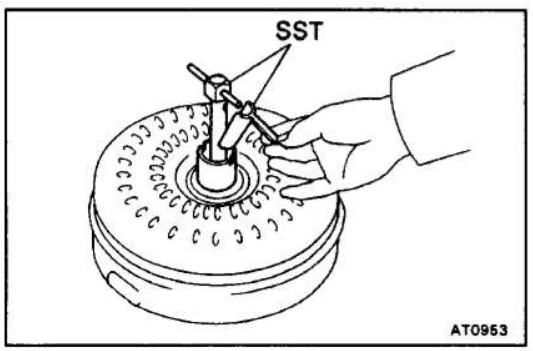
28. REMOVE TRANSAXLE

(a) Remove the transaxle mounting bolts from the engine.
(b) Lower the engine left side and remove the transaxle from the engine.

TORQUE CONVERTER CLEANING

AX07G–01

If the transmission is contaminated, the torque converter and transmission cooler should be thoroughly flushed with ATF.

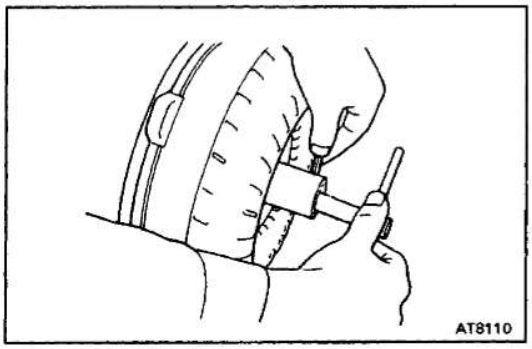


AX07M–01

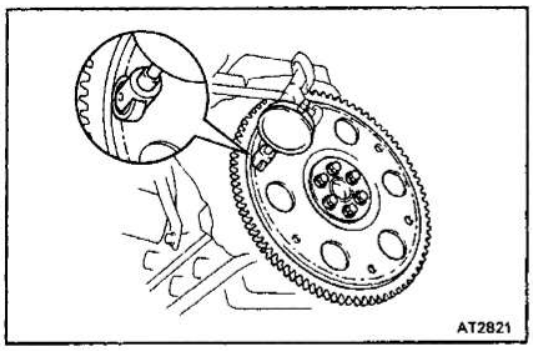
TORQUE CONVERTER AND DRIVE PLATE INSPECTION

1. INSPECT ONE–WAY CLUTCH

(a) Install SST in the inner race of the one–way clutch.
SST 09350–32014 (09351–32010)
(b) Install SST so that it fits in the notch of the converter hub and outer race of the one–way clutch.
SST 09350–32014 (09351–32020)



(c) With the torque converter standing on its side, the clutch should lock when turned counterclockwise, and should rotate freely and smoothly clockwise. If necessary, clean the converter and retest the clutch. Replace the converter if the clutch still fails the test.

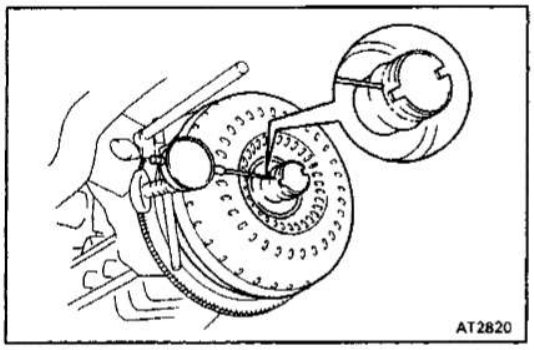


2. MEASURE DRIVE PLATE RUNOUT AND INSPECT RING GEAR

Set up a dial indicator and measure the drive plate runout.

If runout exceeds 0.20 mm (0.0079 in.) or if the ring gear is damaged, replace the drive plate. If installing a new drive plate, note the orientation of the spacers and tighten the bolts.

Torque: 88 N–m (900 kgf–cm, 65 ft–lbf)



3. MEASURE TORQUE CONVERTER SLEEVE RUNOUT

(a) Temporarily mount the torque converter to the drive plate. Set up a dial indicator.

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

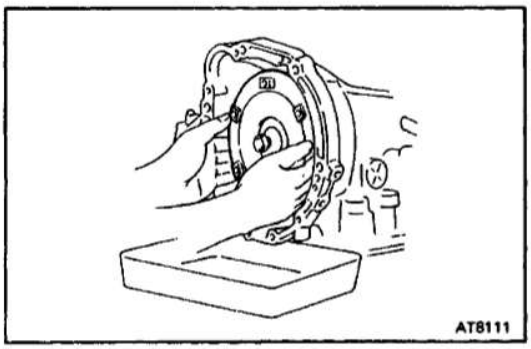
If runout exceeds 0.30 mm (0.0118 in.) try to correct it by reorienting the installation of the converter. If excessive runout cannot by corrected, replace the torque converter.

HINT: Mark the position of the converter to ensure correct installation.

(b) Remove the torque converter from the drive plate.

AX07J–01

TRANSAXLE INSTALLATION

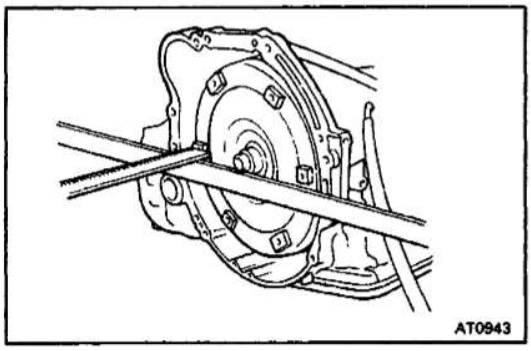


1. INSTALL TORQUE CONVERTER IN TRANSAXLE

If the torque converter has been drained and washed, refill with new ATF.

Fluid type:

ATF DEXRON®II

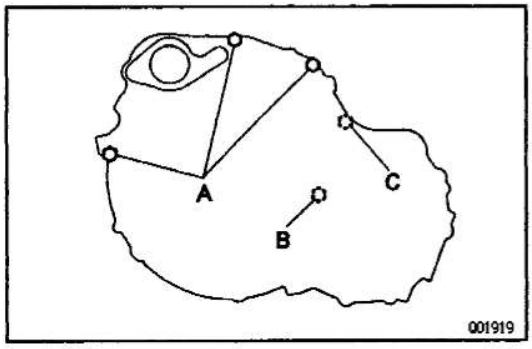


2. CHECK TORQUE CONVERTER INSTALLATION

Using calipers and a straight edge, measure from the installed surface to the front surface of the transaxie housing.

Correct distance:

More than 23.0 mm (0.906 in.)



3. ALIGN TRANSAXLE AT INSTALLATION POSITION

(a) Align the two knock pins on the block with the con–verter housing.

(b) Temporarily install one bolt.

4. INSTALL TRANSAXLE HOUSING MOUNTING BOLTS

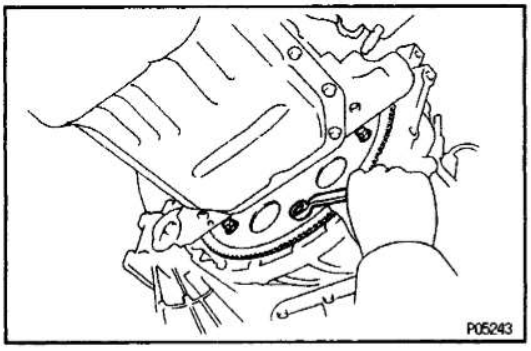
Install the transaxle housing mounting bolts.

Torque:

A bolt 64 N–m (650 kgf–cm, 47 ft–lbf)

B bolt 46 N–m (470 kgf–cm, 34 ft–lbf)

C bolt 25 N–m (250 kgf–cm, 18 ft–lbf)

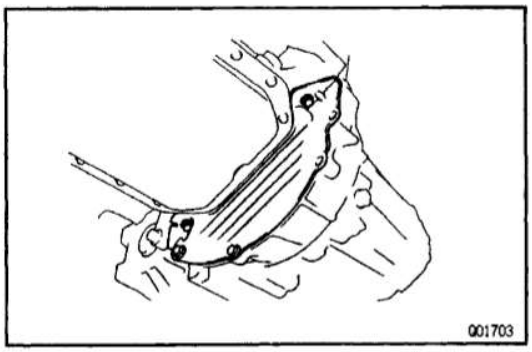


5. INSTALL TORQUE CONVERTER MOUNTING BOLTS

(a) First, install the gray bolt. Then install five black bolts while turning the crankshaft to gain across.

(b) Tighten the bolts evenly.

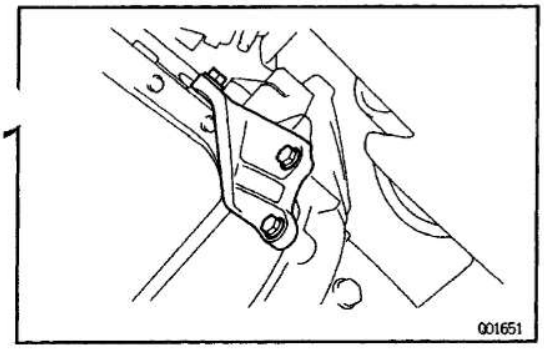
Torque: 27 N–m (280 kgf–cm, 20 ft–lbf)



6. INSTALL REAR END PLATE

Install the rear end plate and torque the four bolts.

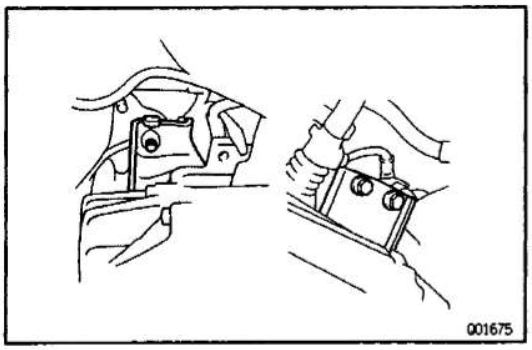
Torque: 9 N–m (95 kgf–cm, 82 in.–lbf)



7. INSTALL STIFFENER PLATE

Install the stiffener plate with three bolts.

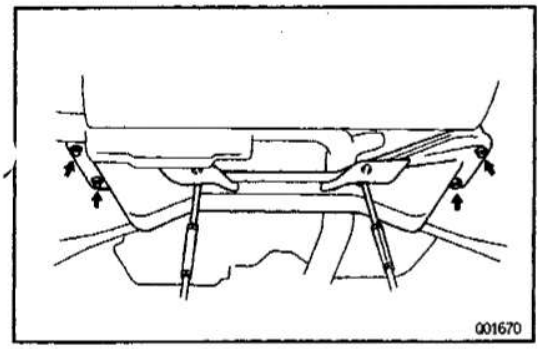
Torque: 37 N–m (380 kgf–cm, 27 ft–lbf)



8. INSTALL ENGINE LH MOUNTING SET BOLTS

Raise the engine left side and install the three set bolts.

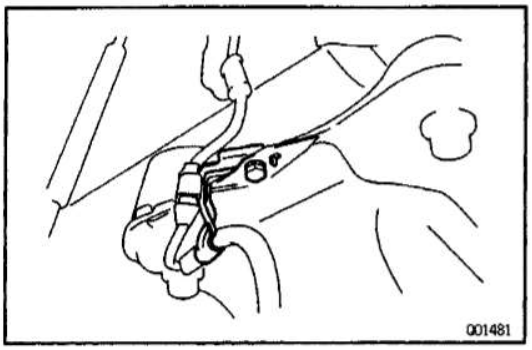
Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)



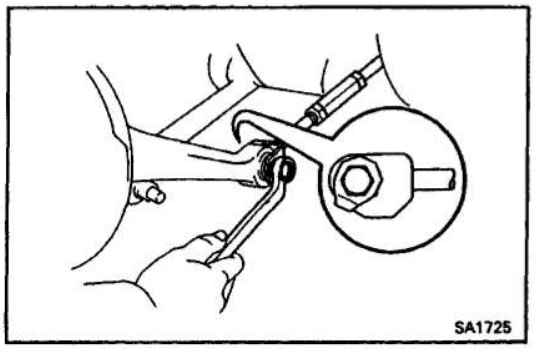
9. INSTALL SUSPENSION CROSSMEMBER

(a) Install the suspension crossmember in place, then install and tighten the four bolts.

Torque: 113 N–m (1,15o kgf–cm, 83 ft–lbf)

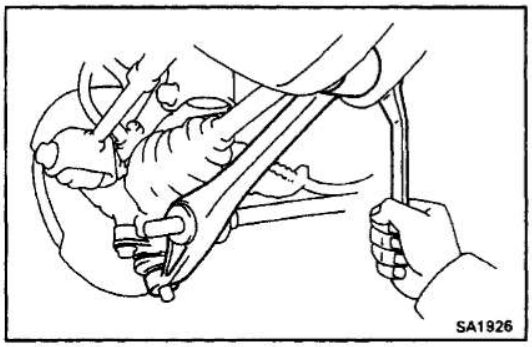


(b) Install the speed sensor bracket to suspension cro–ssmember.



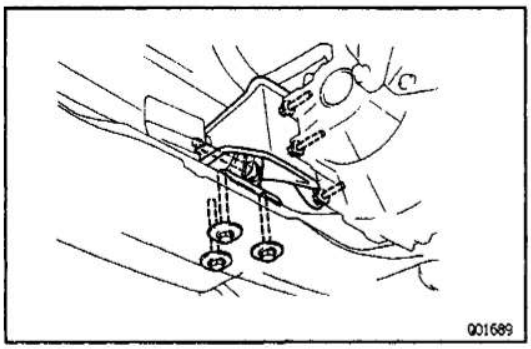
(c) Install the suspension arm with bolt and nut to rear axle hub.

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



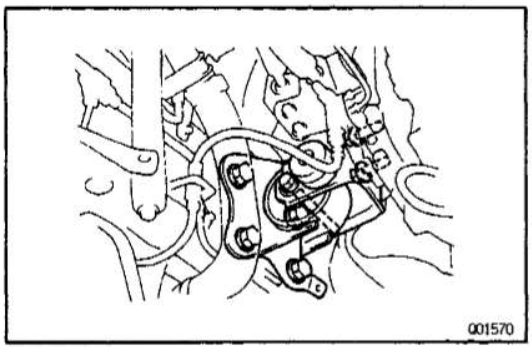
(d) Install the lower arm with bolt to suspension cross–member.

Torque: 132 N–m (1,350 kgf–cm, 98 ft–lbf)



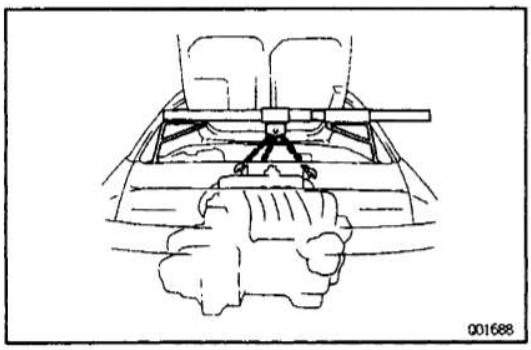
10. INSTALL ENGINE REAR MOUNTING

Transaxle side
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)
Crossmember side
Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)
Through bolt
Torque: 87 N–m (890 kgf–cm, 64 ft–lbf)

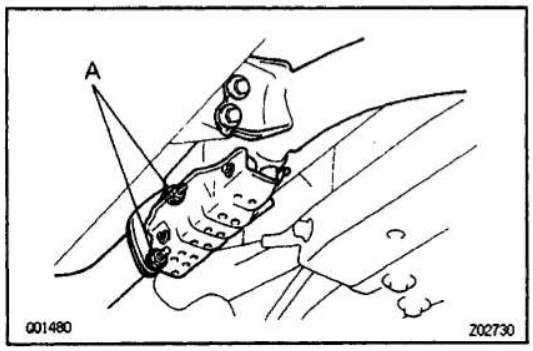


11. INSTALL ENGINE FRONT MOUNTING

Transaxle side
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)
Body side
Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)
Through bolt
Torque: 96 N–m (980 kgf–cm, 71 ft–lbf)

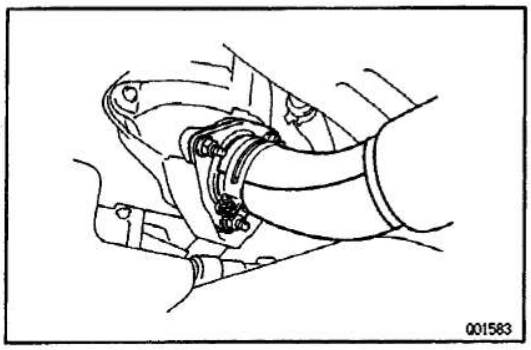


12. REMOVE ENGINE SUPPORT FIXTURE

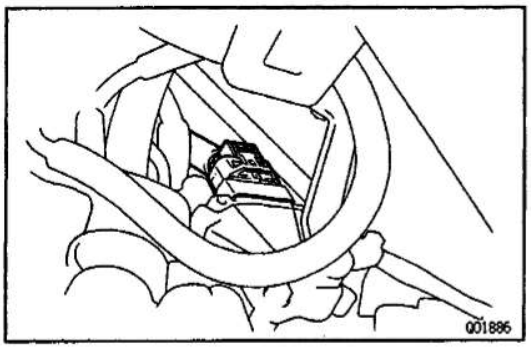


13. INSTALL EXHAUST PIPE

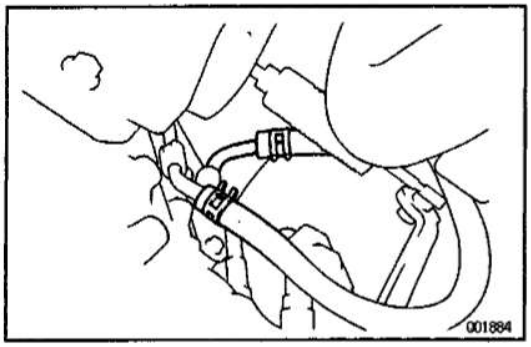
(a) Install the two new gaskets and exhaust pipe.
(b) Install the four bolts.
(c) Torque the “A” bolts.
Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)



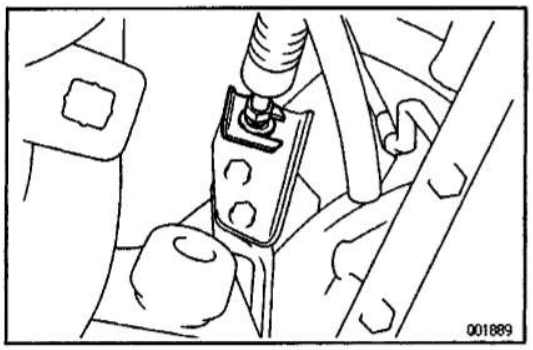
(d) Install and torque the three nuts
Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)



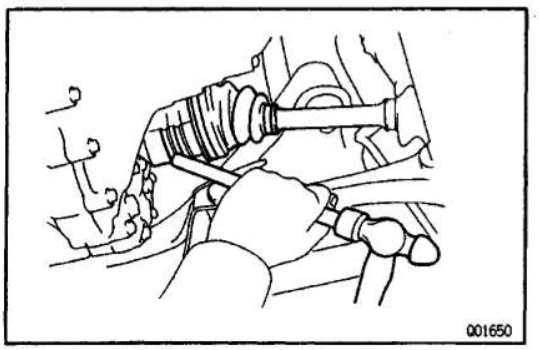
14. CONNECT PARK NEUTRAL SWITCH CONNECTOR



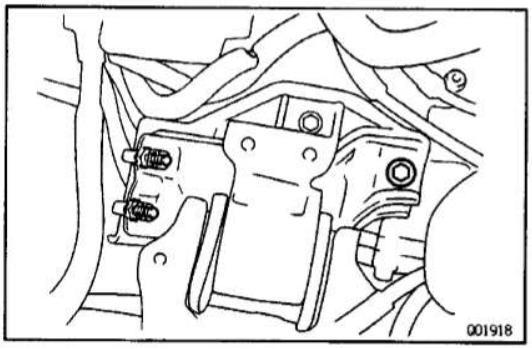
15. INSTALL TWO OIL COOLER TUBES



16. CONNECT SHIFT CONTROL CABLE
(a) Install the retainer to the cable.
(b) Connect the cable to the likage with the washer and clip.

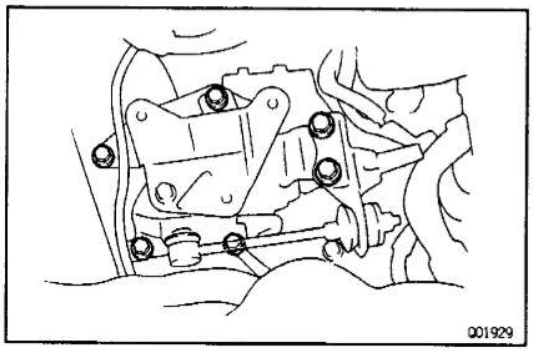


17. INSTALL DRIVE SHAFT
(See page SA–64)
18. INSTALL UNDER COVER
Install the under cover and five bolts.
19. INSTALL REAR WHEELS AND LOWER VEHICLE

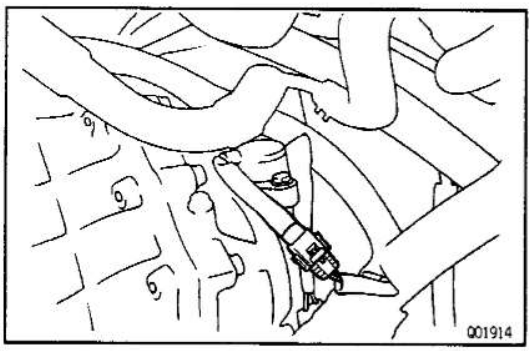


20. INSTALL ENGINE RATERAL CONTROL ASSEMBLY

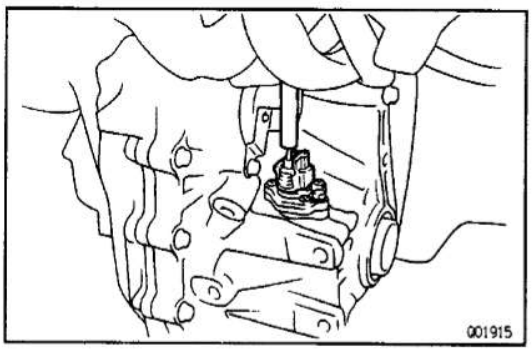
(a) Install three bolts to the engine LH mounting.



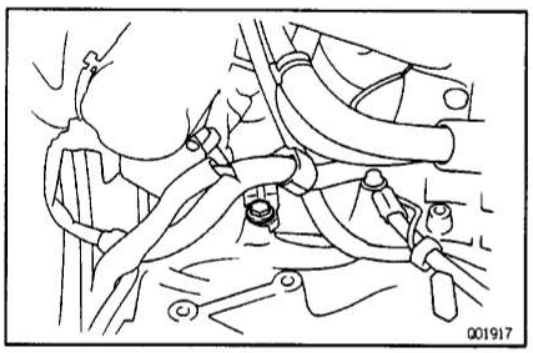
(b) Install the engine rateral control assembly with six bolts.



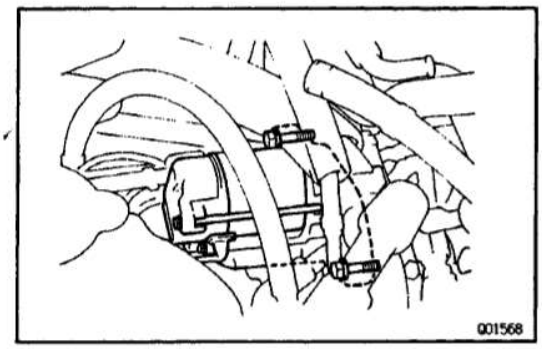
21. CONNECT NO.1 VEHICLE SPEED PULSE GENERA–TOR CONNECTOR



22. CONNECT NO.2 VEHICLE SPEED PULSE GENERA–TOR CONNECTOR



23. INSTALL WIRE HARNESS CLAMP



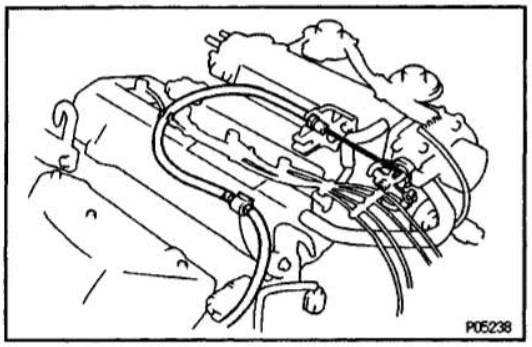
24. INSTALL STARTER

(a) Install the starter.

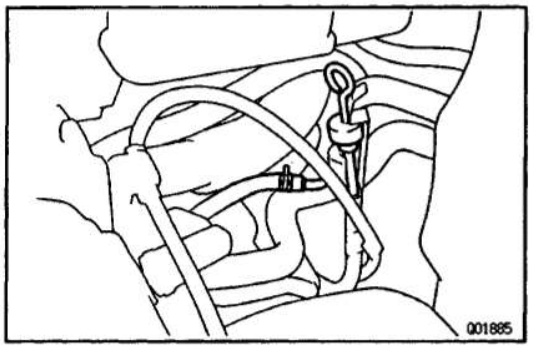
(b) Install and torque the two bolts.

Torque: 39 N–m (400 kgf¿rm, 29 ft–lbf)

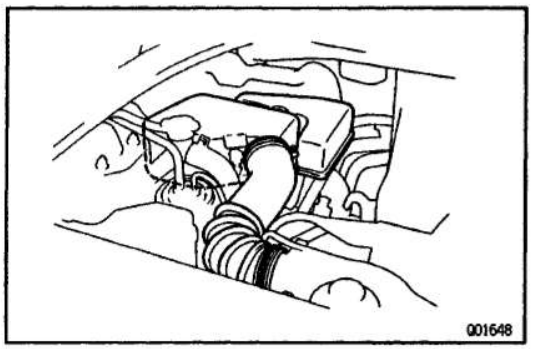
(c) Connect the connector and wire to the starter.



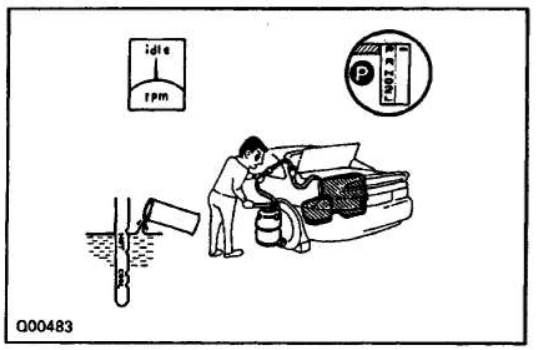
25. INSTALL THROTTLE CABLE



26. INSTALL LEVEL GAUGE AND CONNECT BREATHER HOSE



27. INSTALL AIR CLEANER CASE ASSEMBLY WITH AIR HOSE



28. INSTALL NEGATIVE BATTERY CABLE

29. INSPECT REAR WHEEL ALIGNMENT

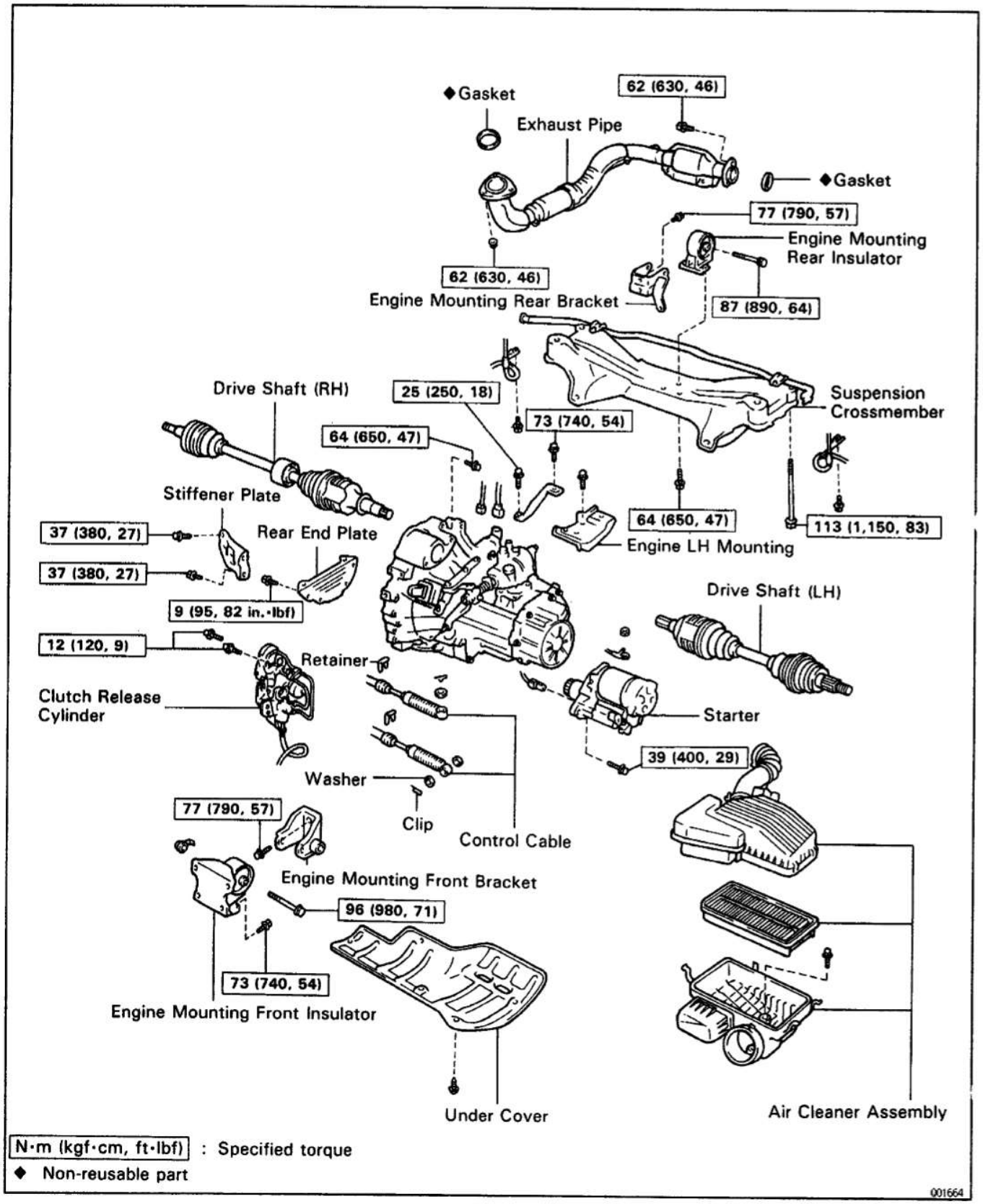
(See page SA–6)

30. FILL TRANSAXLE WITH ATF

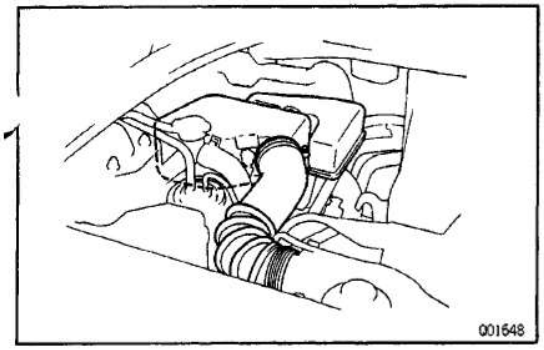
(See page AX–14)

ASSEMBLY REMOVAL AND INSTALLATION

Removal and installation the parts as shown below.

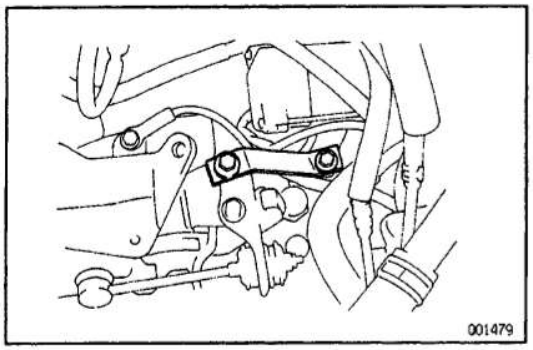


TRANSAXLE REMOVAL



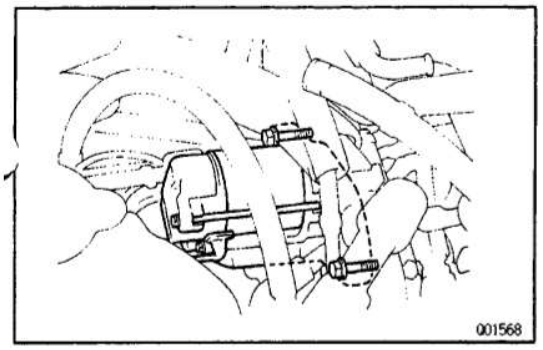
1. REMOVE NEGATIVE BATTERY CABLE

2. REMOVE AIR CLEANER HOUSING ASSEMBLY WITH AIR HOSE



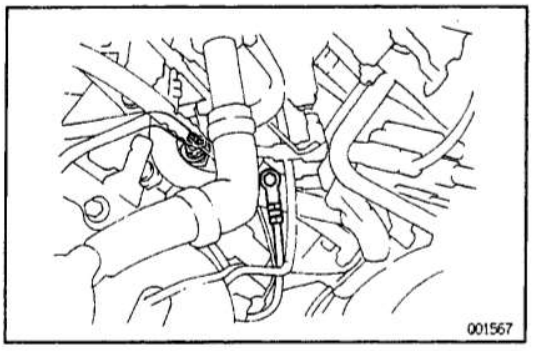
3. REMOVE LH ENGINE MOUNTING STAY

Remove the two bolts and mounting stay.

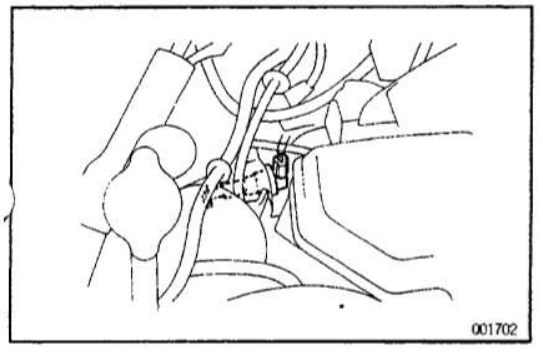


4. REMOVE STARTER

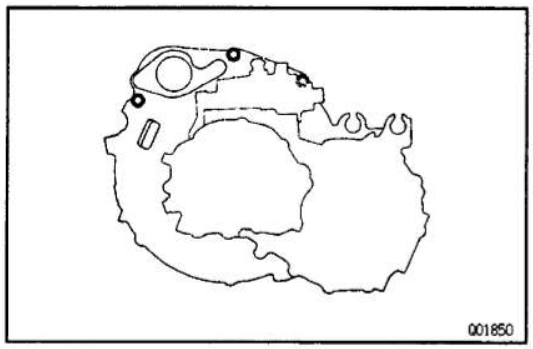
(a) Disconnect the connector and wire from the starter.
(b) Remove the two bolts and starter.



5. DISCONNECT BACK – UP LIGHT SWITCH CONNECTOR AND EARTH CABLE



6. DISCONNECT SPEED SENSOR CONNECTOR



7. REMOVE TRANSAXLE MOUNTING THREE BOLTS OF TRANSAXLE CASE UPPER SIDE

8. REMOVE REAR WHEELS

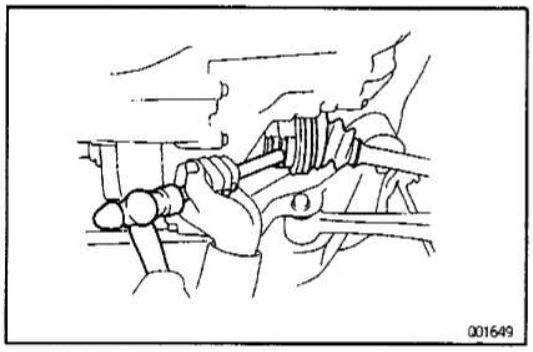
9. RAISE VEHICLE

NOTICE: Be sure the vehicle is securely supported.

10. REMOVE UNDER COVER

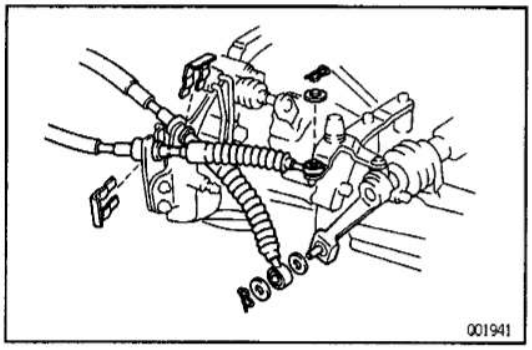
Remove the five bolts and under cover.

11. DRAIN TRANSAXLE OIL



12. REMOVE DRIVE SHAFT

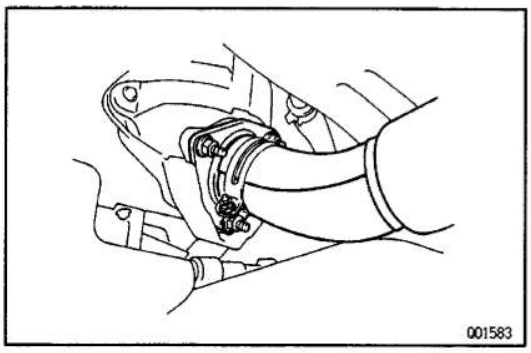
(See page SA–54)



13. DISCONNECT CONTROL CABLES

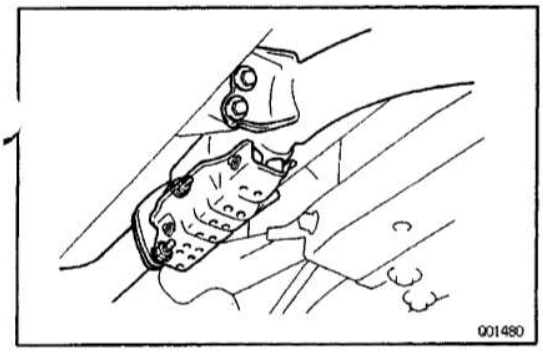
(a) Remove the clips and washers.

(b) Remove the retainer from the cables.

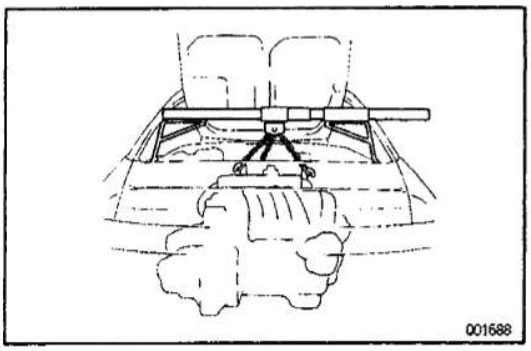


14. REMOVE EXHAUST PIPE

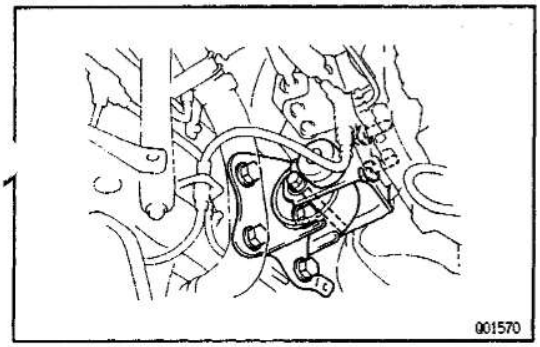
(a) Remove the three nuts.



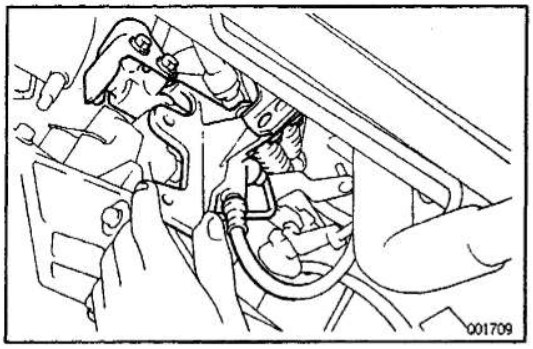
(b) Remove the four bolts.
(c) Remove exhaust pipe and two gaskets.



15. INSTALL ENGINE SUPPORT FIXTURE

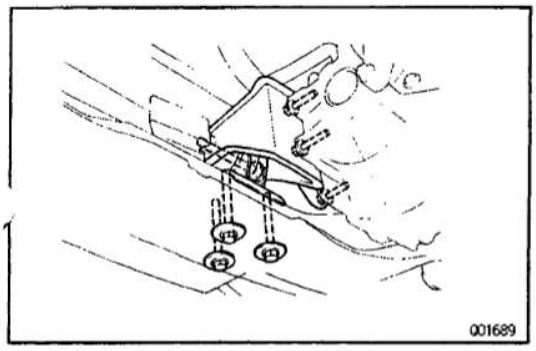


16. REMOVE ENGINE FRONT MOUNTING

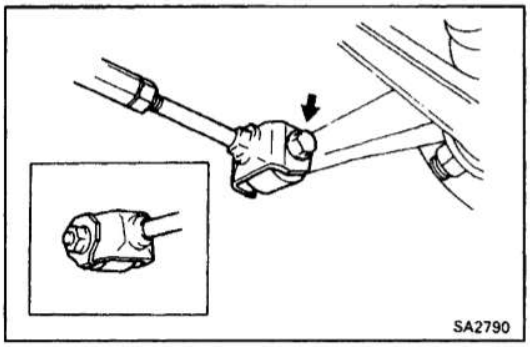


17. REMOVE CLUTCH RELEASE CYLINDER

Remove the two bolts and clutch release cylinder.

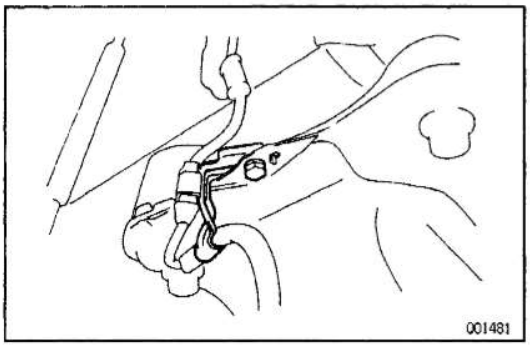


18. REMOVE ENGINE REAR MOUNTING

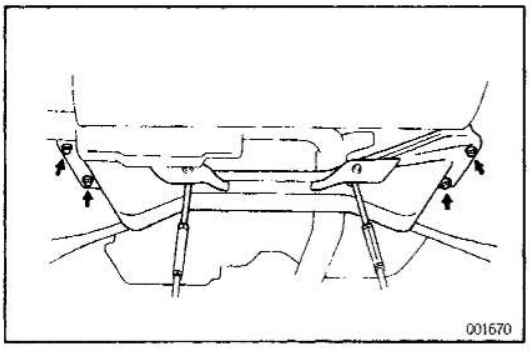


19. REMOVE SUSPENSION CROSSMEMBER

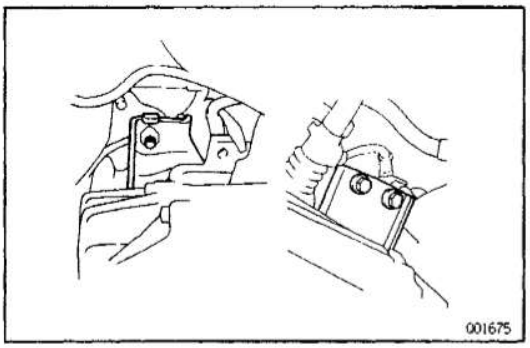
(a) Remove the bolt, nut and suspension arm from rear axle hub.



(b) Remove the bolt and disconnect the speed sensor bracket from the rear suspension crossmember.



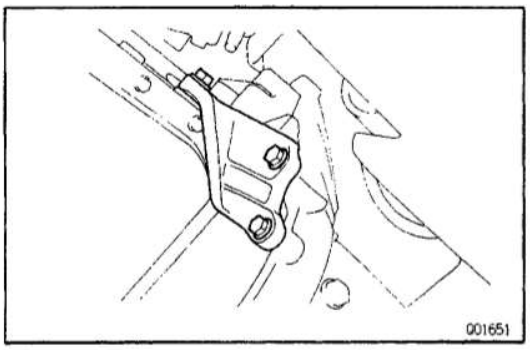
(c) Remove the four bolts and suspension crossmember.



20. REMOVE ENGINE LH MOUNTING SET BOLTS

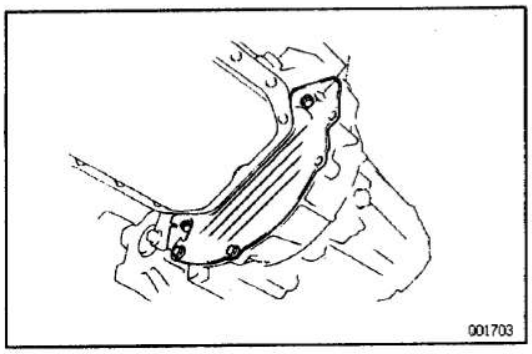
(a) Raise the transaxle and engine slightly with a jack and wooden block in between.

(b) Remove the three bolts.



21. REMOVE STIFFENER PLATE

Remove the three bolts and stiffener plate.

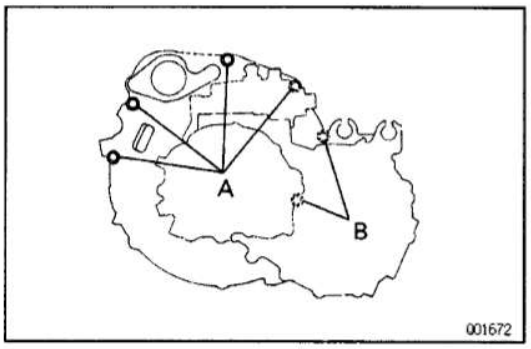


22. REMOVE REAR END PLATE

Remove the four bolts and rear end plate.

23. REMOVE TRANSAXLE

(a) Remove the transaxle mounting bolts from the engine.
(b) Lower the engine left side and remove the transaxle from the engine.



TRANSAXLE INSTALLATION

MX04M – 01

(See page MX1–8)

1. INSTALL TRANSAXLE TO ENGINE

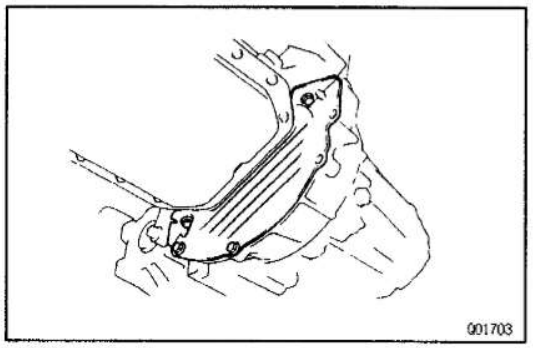
Align the input shaft spline with the clutch disc and install the transaxle to the engine.

Bolt A

Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)

Bolt B

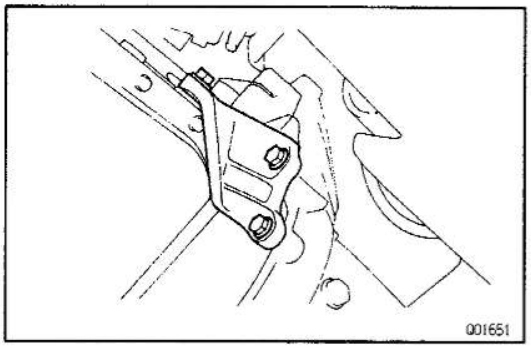
Torque: 46 N–m (470 kgf–cm, 34 ft–lbf)



2. INSTALL REAR END PLATE

Install the rear end plate and torque the four bolts.

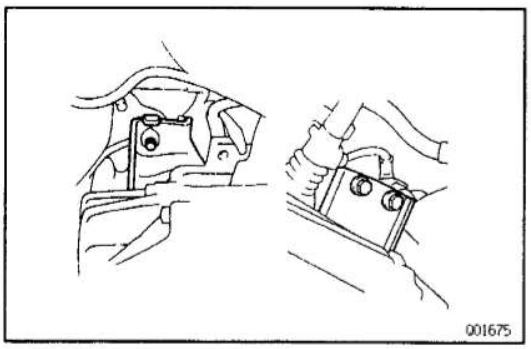
Torque: 9 N–m (95 kgf–cm, 82 in.–lbf)



3. REMOVE STIFFENER PLATE

Install the stiffener plate with three bolts.

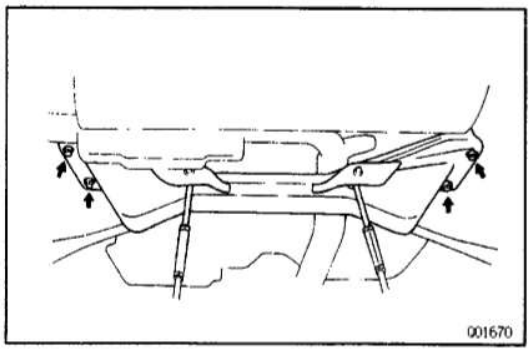
Torque: 37 N–m (380 kgf–cm, 27 ft–lbf)



4. INSTALL ENGINE LH MOUNTING SET BOLTS

Raise the engine left side and install the three set bolts.

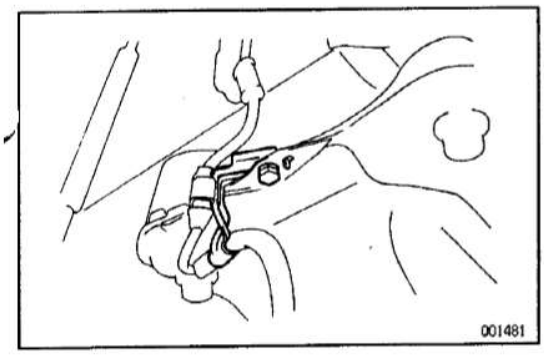
Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)



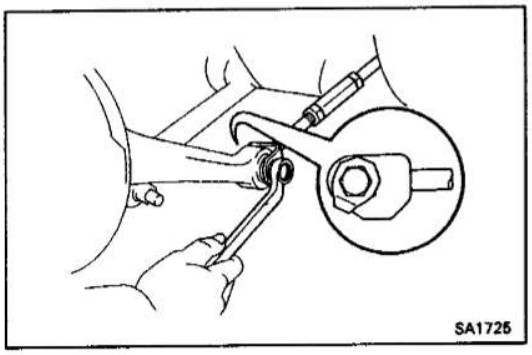
5. INSTALL SUSPENSION CROSSMEMBER

(a) Install the suspension crossmember in place, then install and tighten the four– bolts.

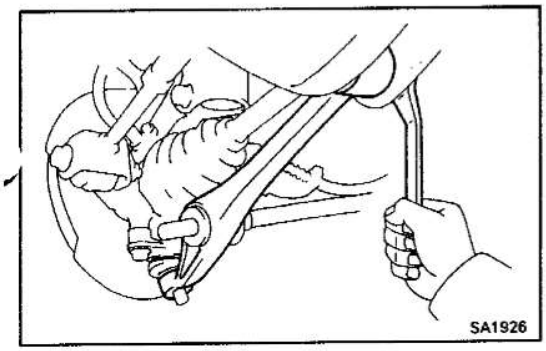
Torque: 113 N–m (1,150 kgf–cm, 83 ft–lbf)



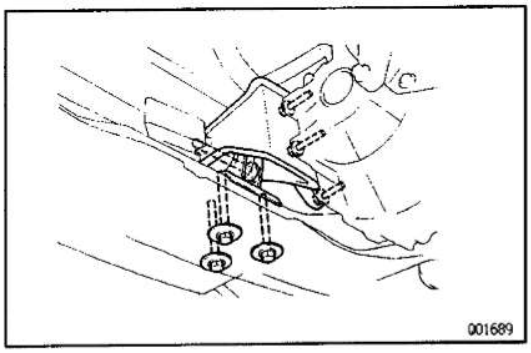
(b) Install the speed sensor bracket to suspension crossmember.



(c) Install the suspension arm with bolt and nut to rear axle hub.
Torque; 103 N–m (1,050 kgf–cm, 76 ft–lbf)

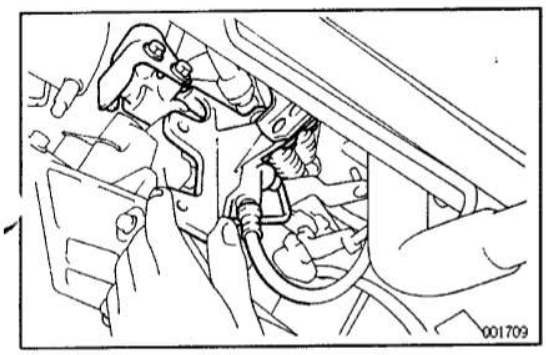


(d) Install the lower arm with bolt to suspension cross–member.
Torque: 132 N–m (1,350 kgf–cm, 98 ft–lbf)



6. INSTALL ENGINE REAR MOUNTING

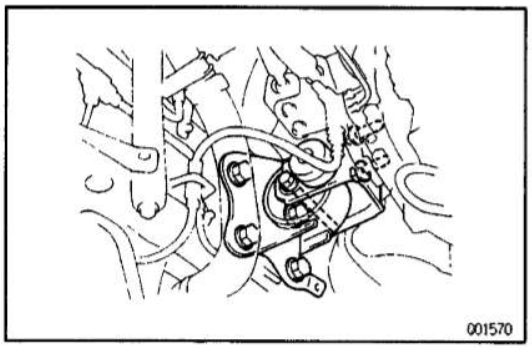
Transaxle side
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)
Crossmember side
Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)
Through bolt
Torque: 87 N–m (890 kgf–cm, 64 ft–lbf)



7. INSTALL CLUTCH RELEASE CYLINDER

Place the release cylinder and torque the two bolts.

Torque: 12 N–m (120 kgf–cm, 9 ft–lbf)



8. INSTALL ENGINE FRONT MOUNTING

Transaxle side

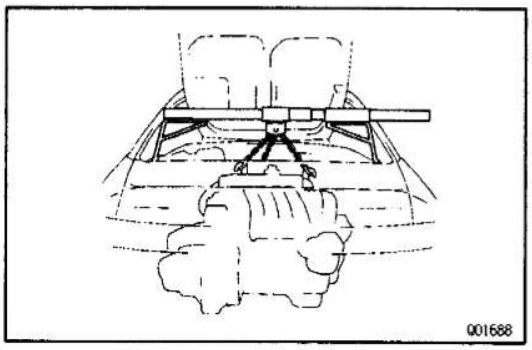
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)

Body side

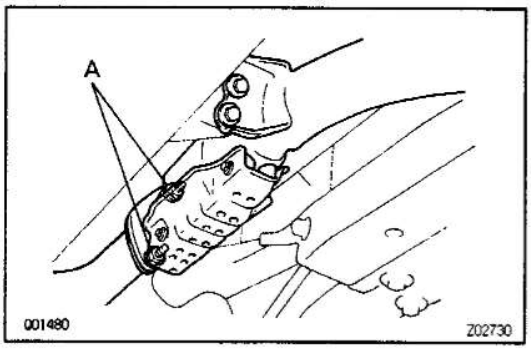
Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)

Through bolt

Torque: 96 N–m (980 kgf–cm, 71 ft–lbf)



9. REMOVE ENGINE SUPPORT FIXTURE



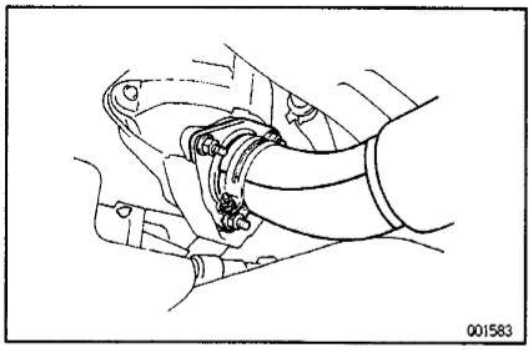
10. INSTALL EXHAUST PIPE

(a) Install the two new gaskets and exhaust pipe.

(b) Install the four bolts.

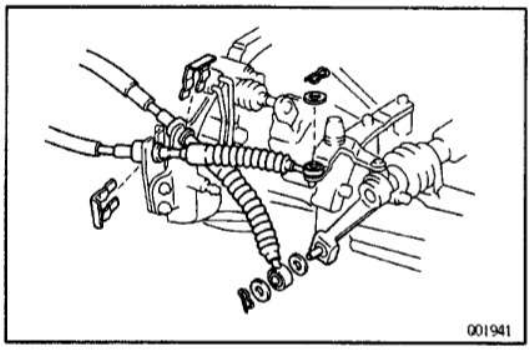
(c) Torque the “A” bolts.

Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)



(d) Install and torque the three nuts.

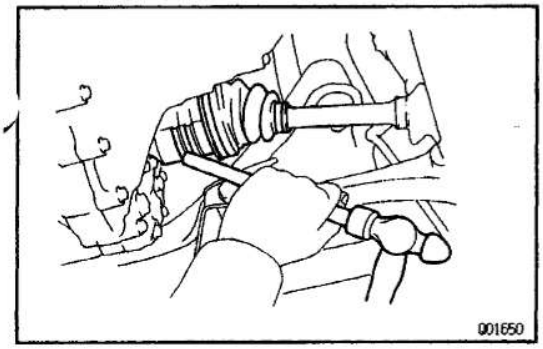
Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)



11. CONNECT CONTROL CABLES

(a) Install the retainer to the cables.

(b) Connect the cables to the linkage with the washers and clips.

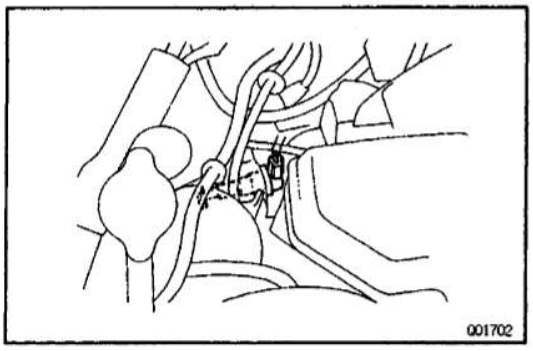


12. INSTALL DRIVE SHAFT
(See page SA–54)

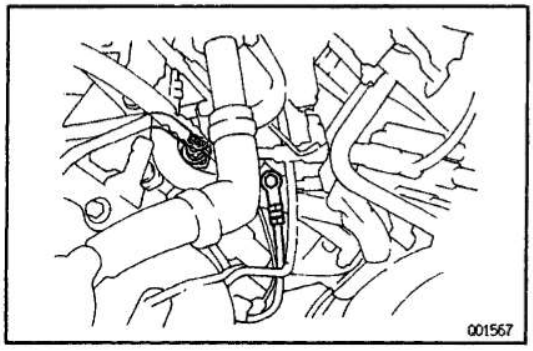
13. FILL TRANSAXLE WITH GEAR OIL
Oil:
Gear oil super (08885–02106) or equivalent
Recommended oil
oil grade:
API GL–3, GL–4 or GL–5
Viscosity:
SAE 75 W–90
Above –18° C
(0°F) SAE 90
Below –18° C (0° F) SAE 75 W
Capacity:
2.6 Litters (2.7 US qts, 2.3 Imp.qts)

14. INSTALL UNDER COVER
Install the under cover and five bolts.

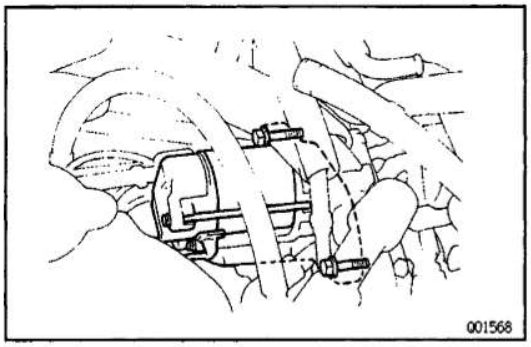
15. INSTALL REAR WHEELS AND LOWER VEHICLE



18. CONNECT SPEED SENSOR CONNECTOR



17. CONNECT BACK – UP LIGHT SWITCH CONNECTOR AND EARTH CABLE



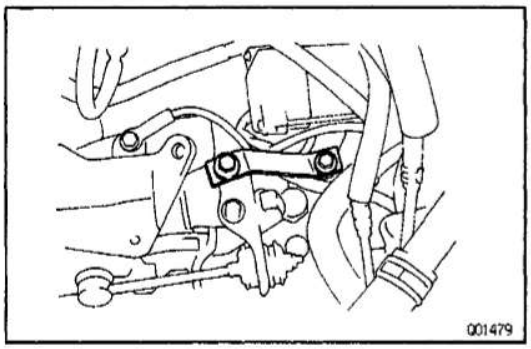
18. INSTALL STARTER

(a) Install the starter.

(b) Install and torque the two bolts.

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

(c) Connect the connector and wire to the starter.



19. INSTALL LH ENGINE MOUNTING STAY

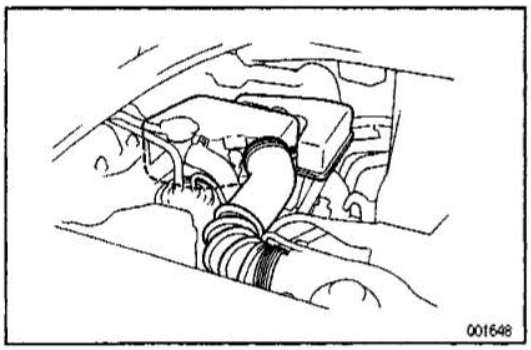
Install the mounting stay with two bolts.

Body side

Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)

Transaxle side

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



20. INSTALL AIR CLEANER HOUSING ASSEMBLY WITH AIR HOSE

21. INSTALL NEGATIVE BATTERY CABLE

22. INSPECT REAR WHEEL ALIGNMENT

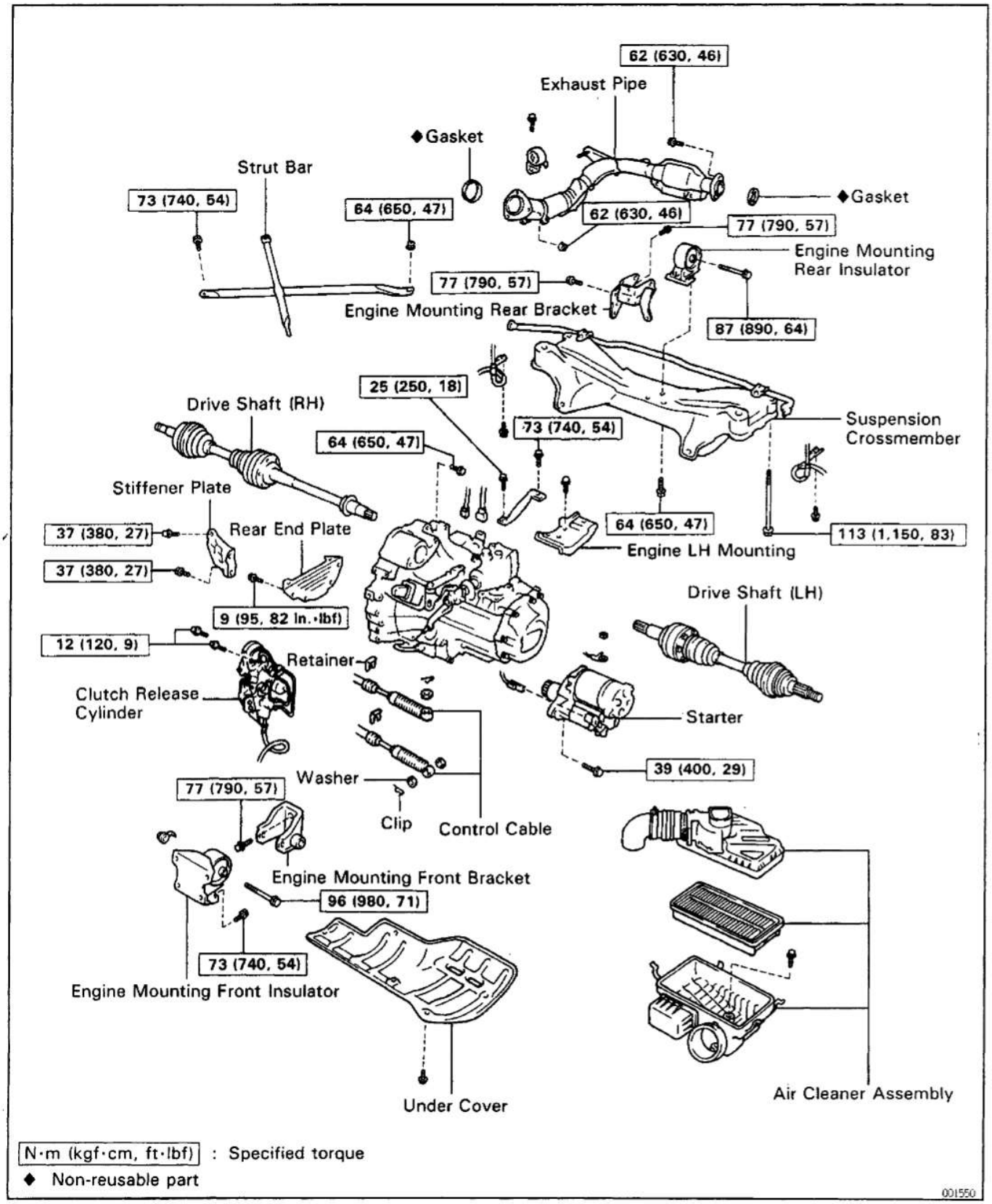
(See page SA–7)

23. PERFORM ROAD TEST

Check for abnormal noise and smooth shifting.

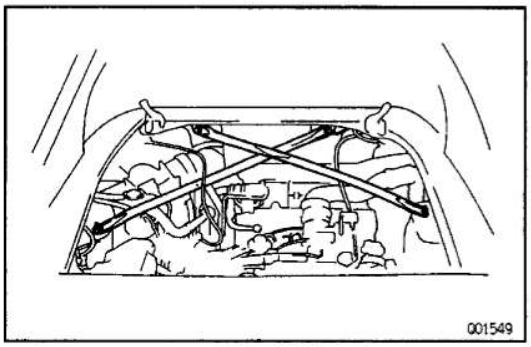
ASSEMBLY REMOVAL AND INSTALLATION

Removal and installation the parts as shown below.



MX04U-01

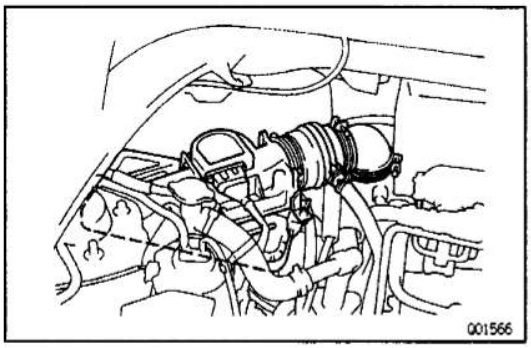
TRANSAXLE REMOVAL



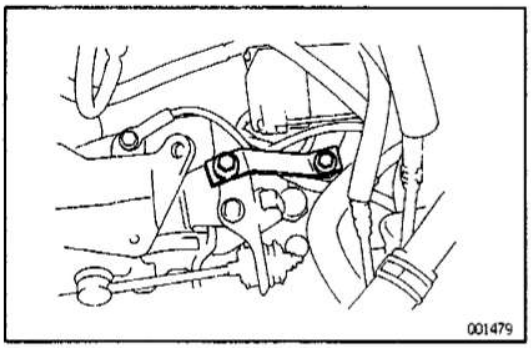
1. REMOVE NEGATIVE BATTERY CABLE

2. REMOVE STRUT BAR

Remove the two bolts, two nuts and strut bar.

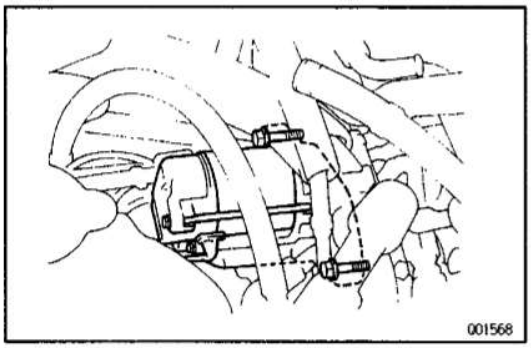


3. REMOVE AIR CLEANER HOUSING ASSEMBLY WITH AIR HOSE



4. REMOVE LH ENGINE MOUNTING STAY

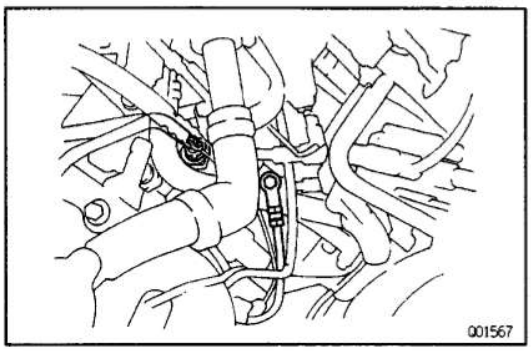
Remove the two bolts and mounting stay.



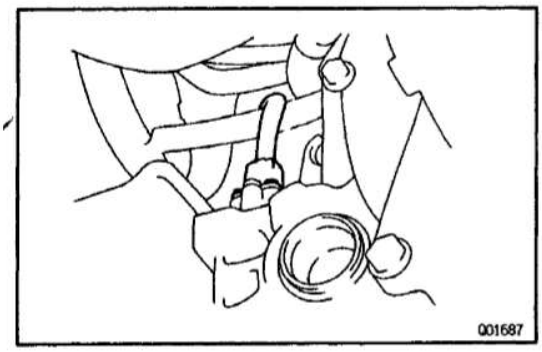
5. REMOVE STARTER

(a) Disconnect the connector and wire from the starter.

(b) Remove the two bolts and starter.

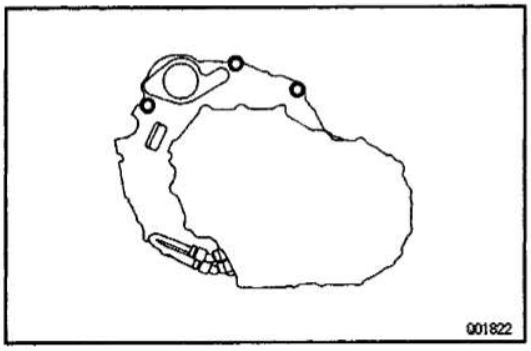


6. DISCONNECT BACK–UP LIGHT SWITCH CONNECTOR AND EARTH CABLE



7. DISCONNECT VEHICLE SPEED PULSE GENERATOR CONNECTOR

8. REMOVE TRANSAXLE MOUNTING THREE BOLTS OF TRANSAXLE CASE UPPER SIDE ,



9. REMOVE REAR WHEELS

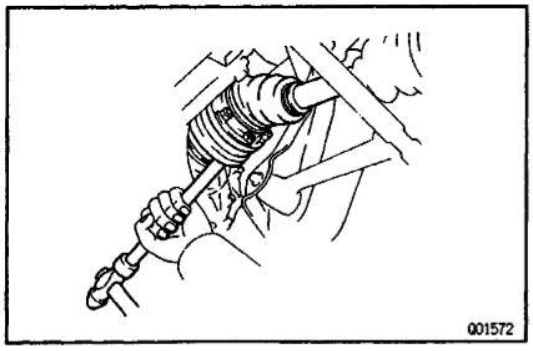
10. RAISE VEHICLE

NOTICE: Be sure the vehicle is securely supported.

11. REMOVE UNDERCOVER

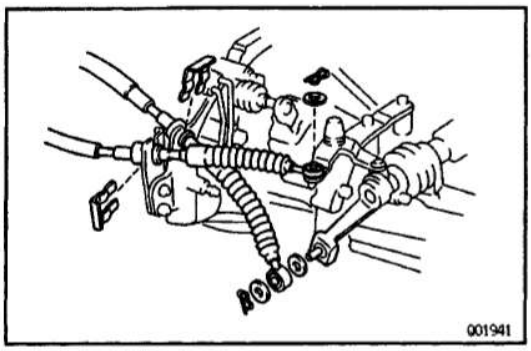
Remove the five bolts and under cover.

12. DRAIN TRANSAXLE OIL



13. REMOVE DRIVE SHAFT

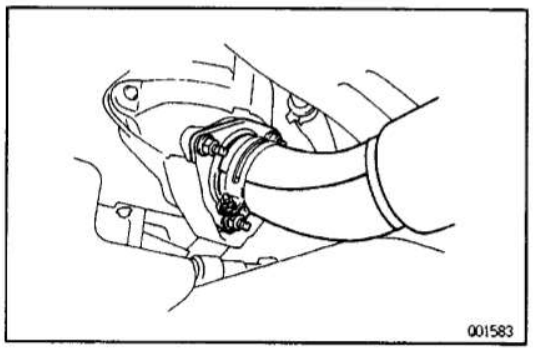
(See page SA–70)



14. DISCONNECT CONTROL CABLES

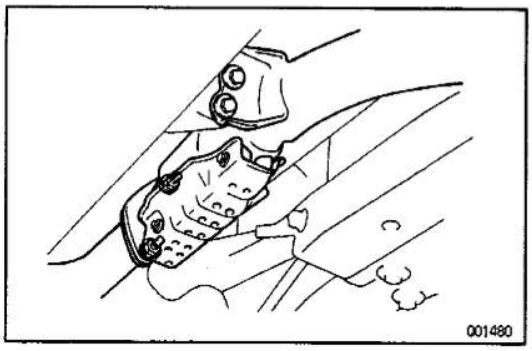
(a) Remove the clips and washers.

(b) Remove the retainer from the cables.

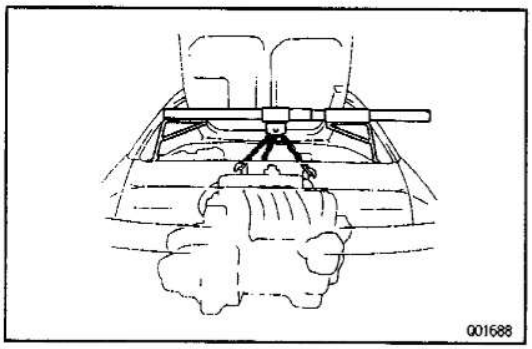


15. REMOVE FRONT EXHAUST PIPE

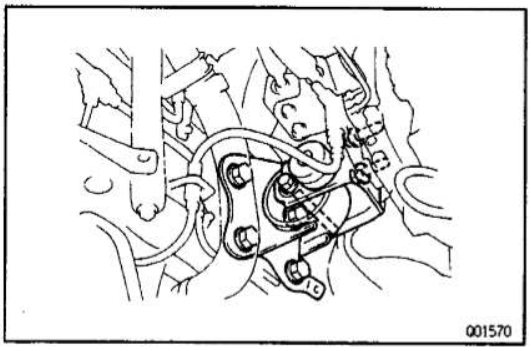
(a) Remove the three nuts.



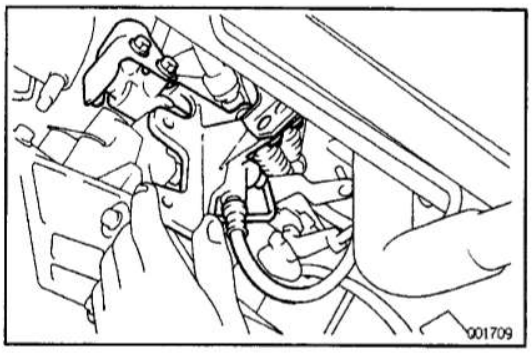
(b) Remove the foot bolts.
(c) Remove the front exhaust pipe and two gaskets.



16. INSTALL ENGINE SUPPORT FIXTURE

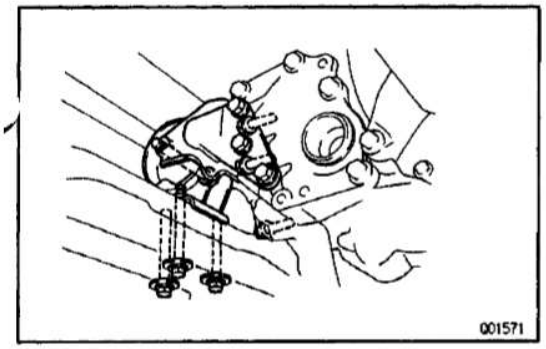


17. REMOVE ENGINE FRONT MOUNTING

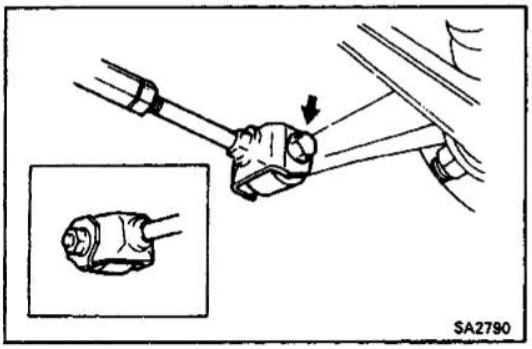


18. REMOVE CLUTCH RELEASE CYLINDER

Remove the two bolts and clutch release cylinder.

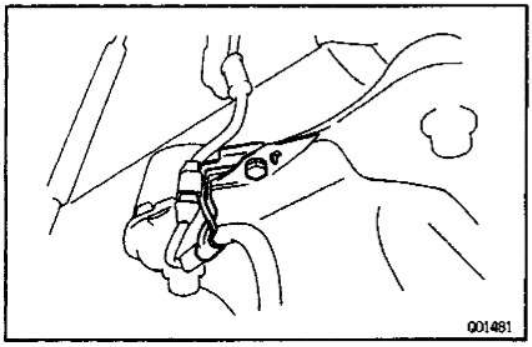


19. REMOVE ENGINE REAR MOUNTING

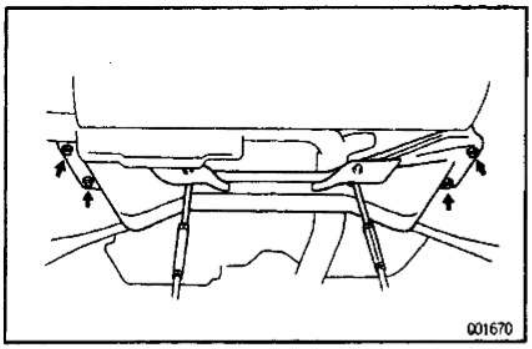


20. REMOVE SUSPENSION CROSSMEMBER

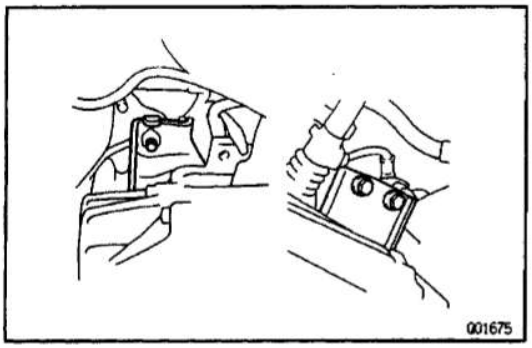
(a) Remove the bolt, nut and suspension arm from rear axle hub.



(b) Remove the bolt and disconnect the speed sensor= bracket from the rear suspension crossmember



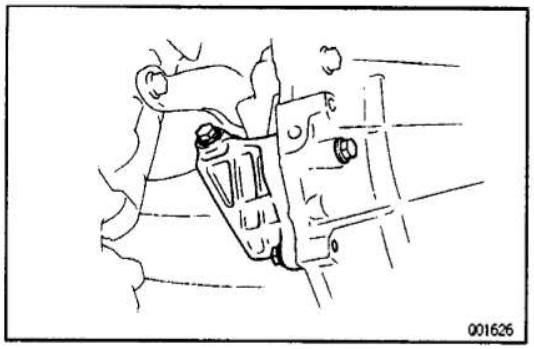
(c) Remove the four bolts and suspension crossmember



21. REMOVE ENGINE LH MOUNTING SET BOLTS

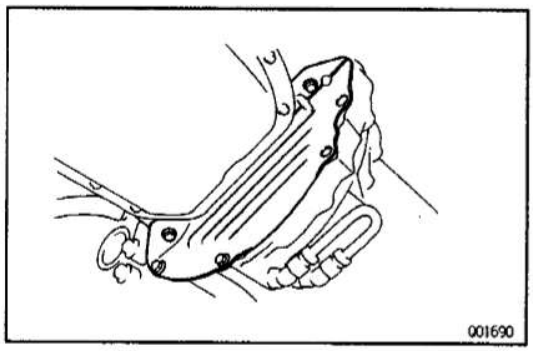
(a) Raise the transaxle and engine slightly with a jack and wooden block in between.

(b) Remove the three bolts.



22. REMOVE STIFFENER PLATE

Remove the three bolts and stiffener plate.



23. REMOVE REAR END PLATE

Remove the four bolts and rear end plate.

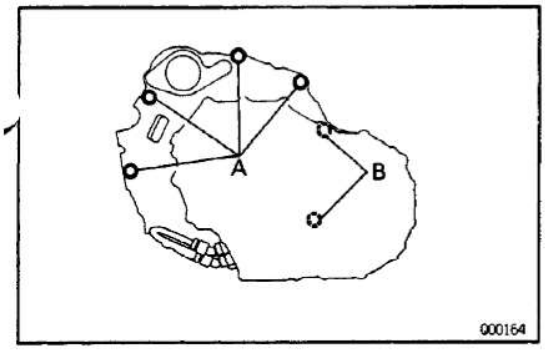
24. REMOVE TRANSAXLE

(a) Remove the transaxle mounting bolts from the engine.
(b) Lower the engine left side and remove the transaxle from the engine.

TRANSAXLE INSTALLATION

MX04V–01

(See page MX2–9)



1. INSTALL TRANSAXLE TO ENGINE

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

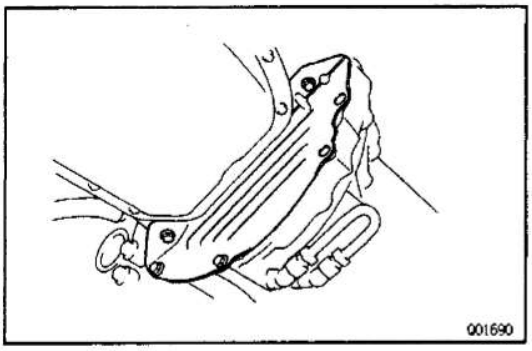
(b) Torque the bolts.

Bolt A

Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)

Bolt B

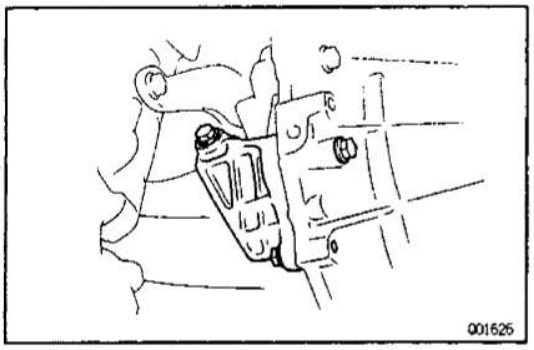
Torque: 46 N–m (470 kgf–cm, 34 ft–lbf)



2. INSTALL REAR END PLATE

Install the rear end plate and torque the four bolts.

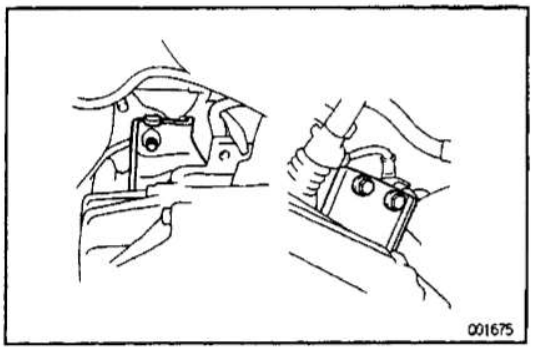
Torque: 9 N–m (95 kgf–cm, 82 in.–M)



3. REMOVE STIFFENER PLATE

Install the stiffener plate with three bolts.

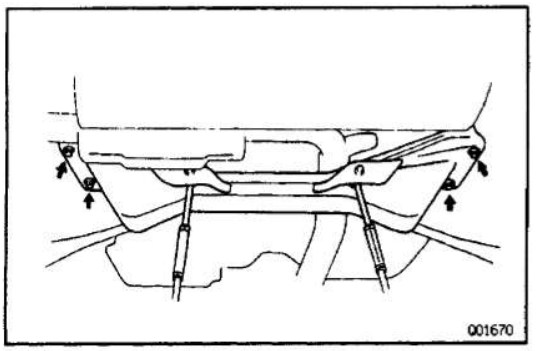
Torque: 37 N–m (380 kgf–cm, 27 ft–lbf)



4. INSTALL ENGINE LH MOUNTING SET BOLTS

Raise the engine left side and install the three set bolts.

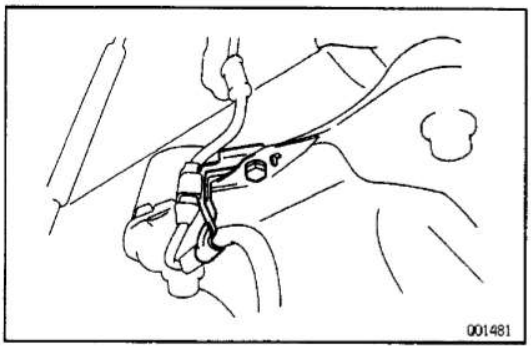
Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)



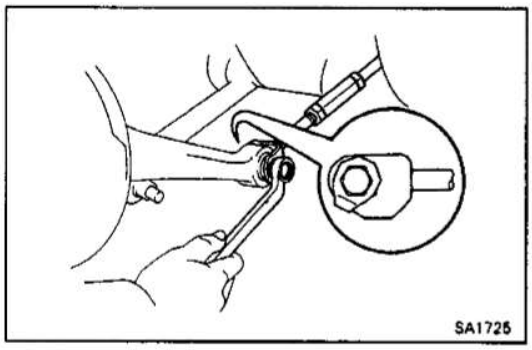
5. INSTALL SUSPENSION CROSSMEMBER

(a) Install the suspension crossmember in place, then install and tighten the four bolts.

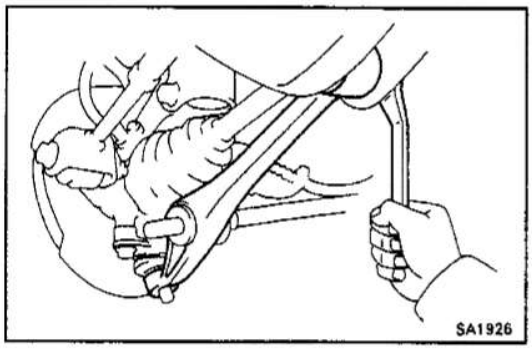
Torque: 113 N–m (1,150 kgf–cm, 83 ft–lbf)



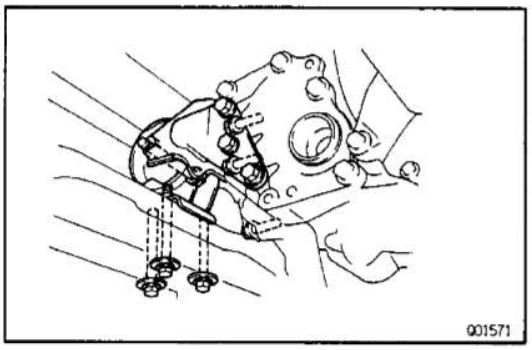
(b) Install the speed sensor bracket to suspension cro–ssmember.



(c) Install the suspension arm with bolt and nut to rear axle hub.
Torque: 103 N–m (1,050 kgf–cm, 76 ft–lbf)



(d) Install the lower arm with bolt to suspension cross–member.
Torque: 132 N–m (1,350 kgf–cm, 98 ft–lbf)

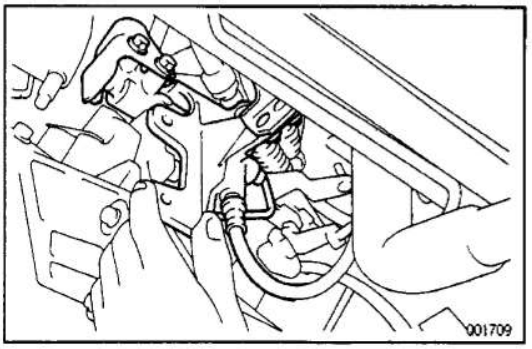


6. INSTALL ENGINE REAR MOUNTING

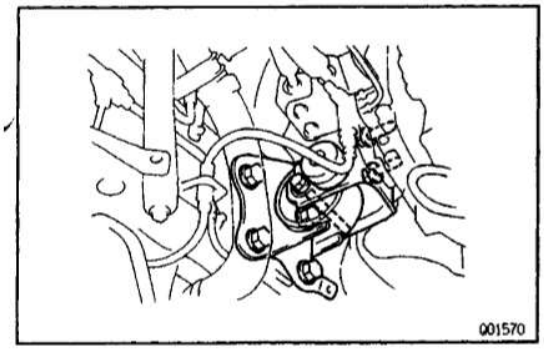
Transaxle side
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)

Crossmember side
Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)

Through bolt
Torque: 87 N–m (890 kgf–cm, 64 ft–lbf)



7. INSTALL CLUTCH RELEASE CYLINDER
Place the release cylinder and torque the two bolts.
Torque: 12 N–m (120 kgf–cm, 9 ft–lbf)



8. INSTALL ENGINE FRONT MOUNTING

Transaxle side

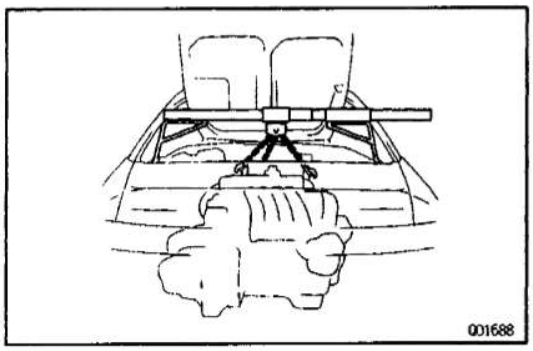
Torque: 77 N–m (790 kgf–cm, 57 ft–lbf)

Body side

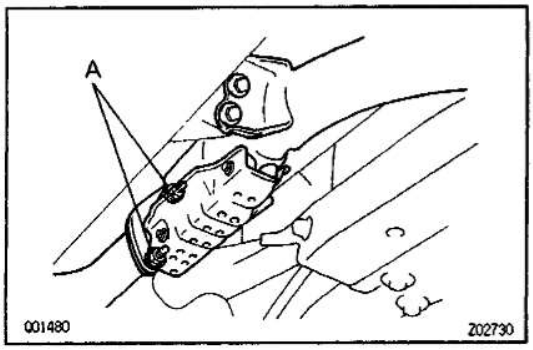
Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)

Through bolt

Torque: 96 N–m (980 kgf–cm, 71 ft–lbf)



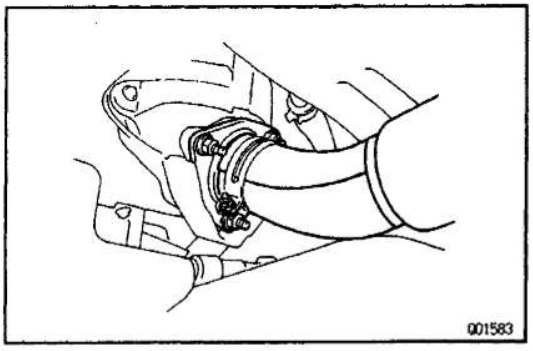
9. REMOVE ENGINE SUPPORT FIXTURE



10. INSTALL FRONT EXHAUST PIPE

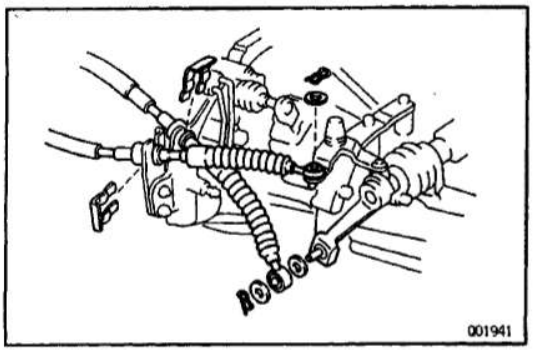
(a) Install the two new gaskets and front exhaust pipe.
(b) Install the four bolts.
(c) Torque the “A” bolts.

Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)



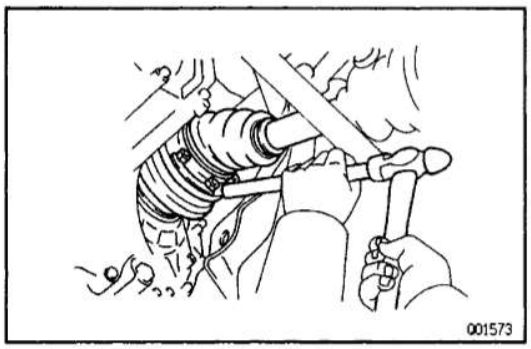
(d) Install and torque the three nuts.

Torque: 62 N–m (630 kgf–cm, 46 ft–lbf)



11. CONNECT CONTROL CABLES

(a) install the retainer to the cables.
(b) Connect the cables to the linkage with the washers and clips.

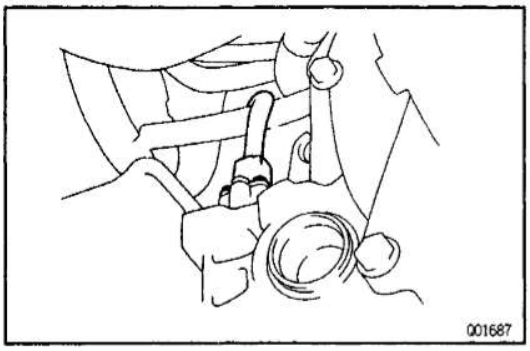


12. INSTALL DRIVE SHAFT
(See page SA–70)

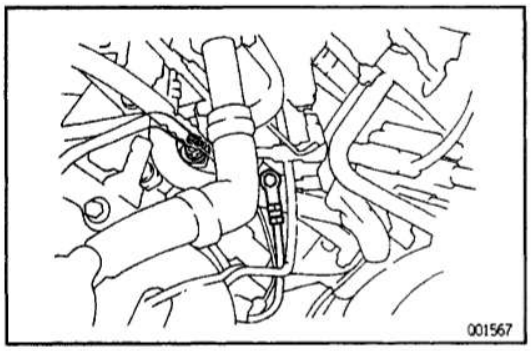
13. FILL TRANSAXLE WITH GEAR OIL
Oil:
Gear oil super (08885–02106) or equivalent
Recommended oil
Oil grade:
API GL–3, GL–4 or GL–5
Viscosity:
SAE 75W–90 or 80W–90
Above–18° C (0° F) SAE 90
Below–18° C (0° F) SAE 80W
Standard Type
Capacity: 4.2 liters (4.4 US qts, 3.7 Imp.qts)
Viscous Coupling LSD Type
Capacity: 3.9 Liters (4.1 US qts, 3.4 Imp. qts)

14. INSTALL UNDER COVER
Install the under cover and five bolts.

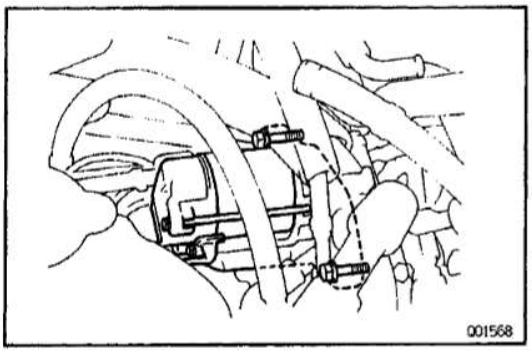
15. INSTALL REAR WHEELS AND LOWER VEHICLE



16. CONNECT VEHICLE SPEED PULSE GENERATOR CONNECTOR



17. CONNECT BACK–UP LIGHT SWITCH CONNEC–TOR AND EARTH CABLE



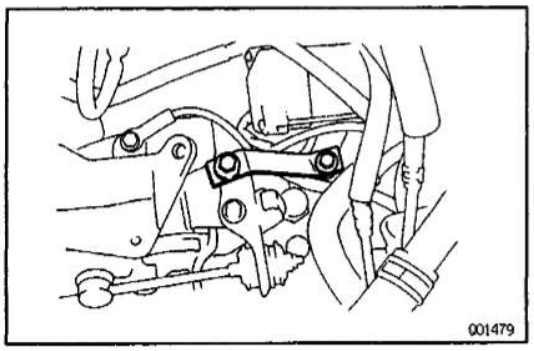
18. INSTALL STARTER

(a) Install the starter.

(b) Install and torque the two bolts.

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

(c) Connect the connector and wire to the starter.



19. INSTALL LH ENGINE MOUNTING STAY

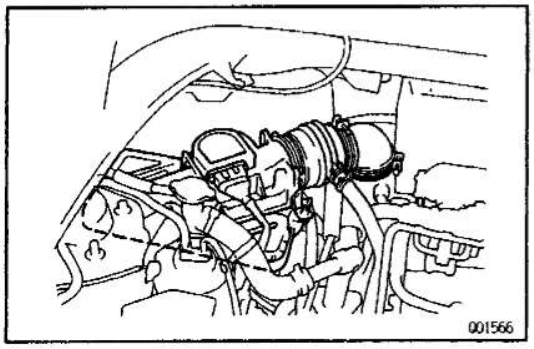
Install the mounting stay with two bolts.

Body side

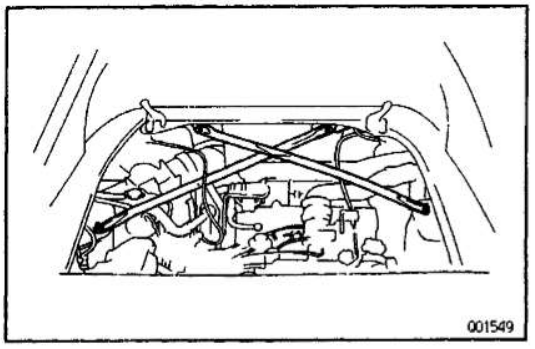
Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)

Transaxle side

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



20. INSTALL AIR CLEANER HOUSING ASSEMBLY:: WITH AIR HOSE



21. INSTALL STRUT BAR

Install the strut bar with two bolts and two nuts.

Bolt

Torque: 73 N–m (740 kgf–cm, 54 ft–lbf)

Nut

Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)

22. INSTALL NEGATIVE BATTERY CABLE

23. INSPECT REAR WHEEL ALIGNMENT

(See page SA–7)

24. PERFORM ROAD TEST

Check for abnormal noise and smooth shifting.

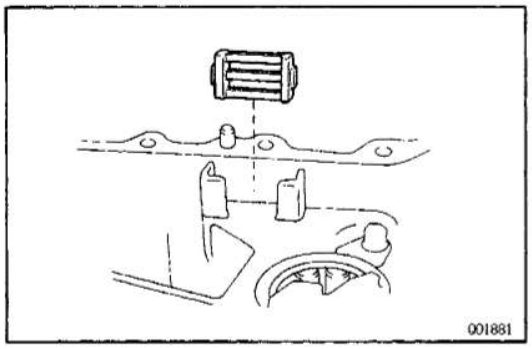
COMPONENT PARTS INSTALLATION

COMPONENT PARTS INSTALLATION

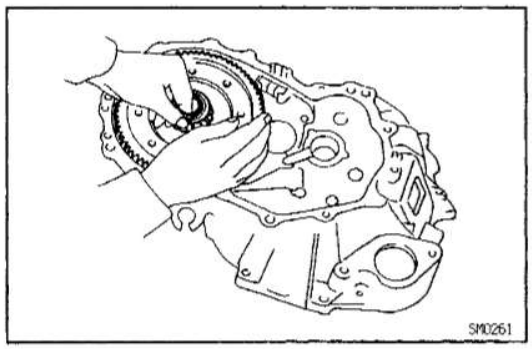
(See page MX1–19 and MX1–20)

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

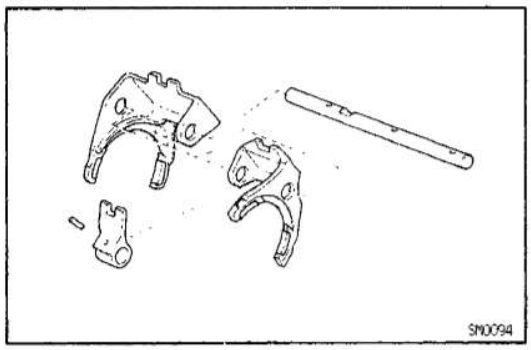
1. INSPECT DIFFERENTIAL SIDE BEARING PRELOAD
(See step 4 on page MX1–54)



2. INSTALL MAGNET TO TRANSAXLE CASE

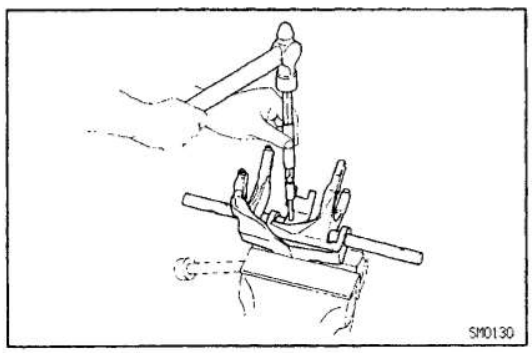


3. INSTALL DIFFERENTIAL CASE ASSEMBLY

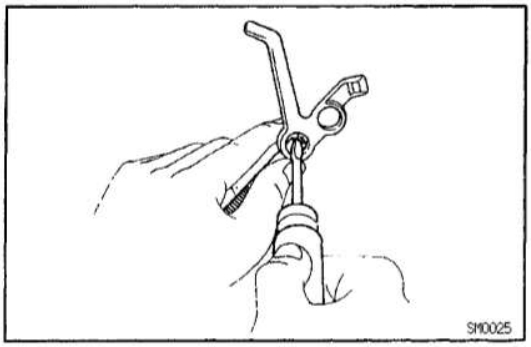


4. ASSEMBLE NO.1 SHIFT FRONT SHAFT, NO.1 SHIFT HEAD, NO.1 AND NO.2 SHIFT FORKS

(a) Assemble the No.1 shift fork shaft, No.1 shift head, No.1 and No.2 shift forks.

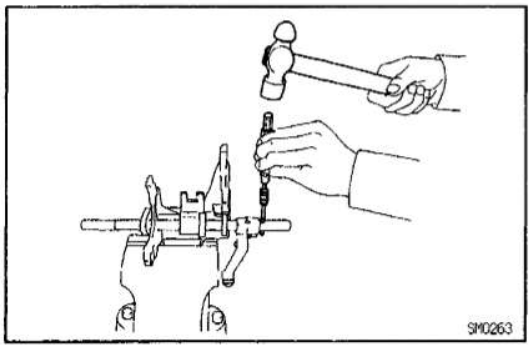


(b) Mount the shift forks to the vise.
(c) Using a pin punch and hammer, drive in the slotted spring pin to the No.1 fork shaft as shown in the figure.

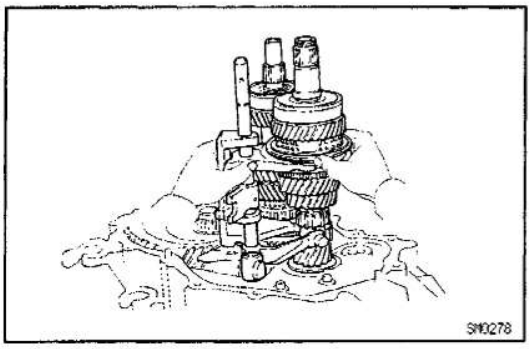


(d) Coat the interlock pin with MP grease.
(e) Using a screwdriver, install the interlock pin into the reverse shift fork hole.
(f) Install the reverse shift fork to the No.1 shift fork shaft.

HINT: When installing the reverse shift fork with interlock pin to the No.1 shift fork shaft, make sure the interlock pin does not drop out.

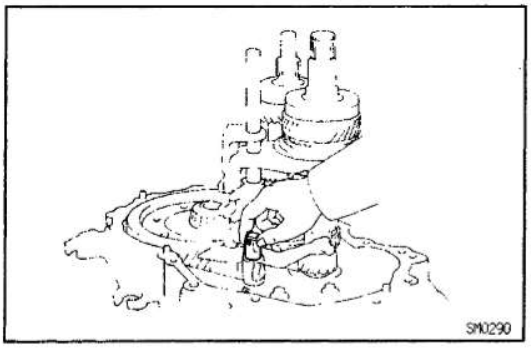


(g) Using a pin punch and hammer, drive in the slotted spring pin to the No.1 fork shaft.



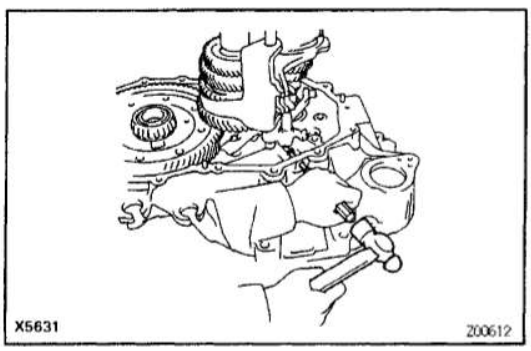
5. INSTALL NO.1 SHIFT FORK SHAFT, NO.1 SHIFT HEAD, NO.1, NO.2 SHIFT FORKS, REVERSE SHIFT FORK WITH INTERLOCK PIN, INPUT AND OUTPUT SHAFT ASSEMBLY

Install the input and output shaft assembly together with the No.1 fork shaft, shift head and shift forks with the interlock pin to the transaxle case.

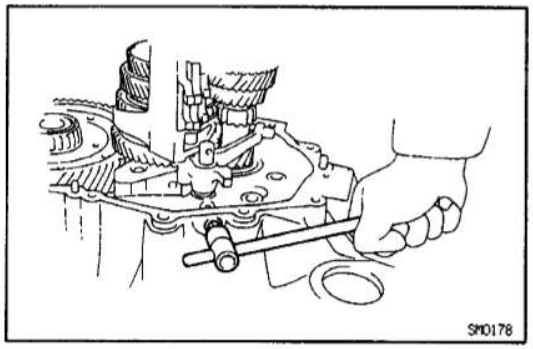


6. INSTALL NO.2 FORK SHAFT

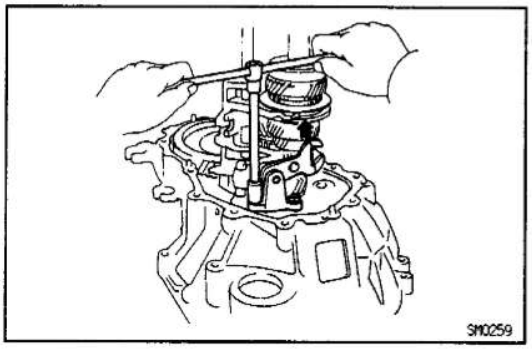
(a) Install the No.2 fork shaft to the transaxle case through the reverse shift fork.



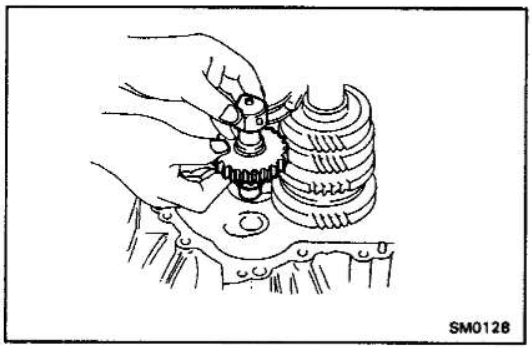
(b) Using a pin punch and hammer, drive in the slotted spring pin.



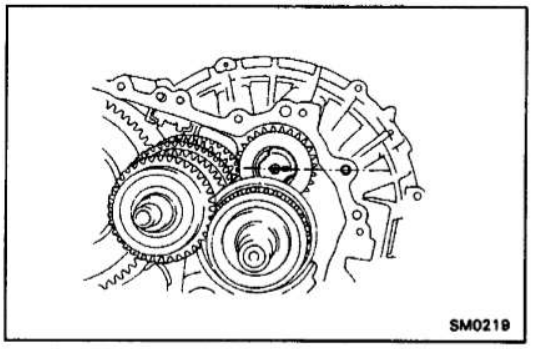
(c) Apply sealant to the plug threads.
Sealant:
Part No.08833–00080, THREE BOND 7344, LOCTITE 242 or equivalent
(d) Using a hexagon wrench (6 mm), install the straight screw plug.
Torque: 13 N–m (130 kgf–cm, 9 ft–lbf)



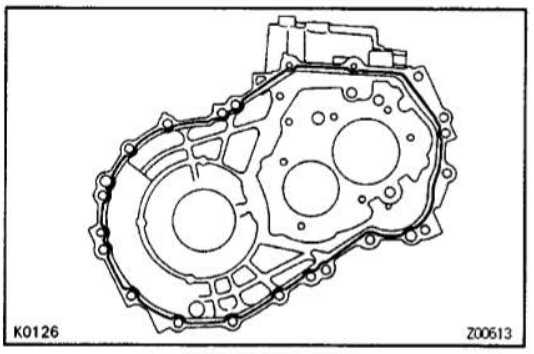
7. INSTALL REVERSE SHIFT ARM
(a) Put the reverse shift fork pivot into the reverse shift arm and install the reverse shift arm to the transaxle case.
(b) Shift the reverse shift arm into the reverse.
(c) Install and torque the two bolts.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)
(d) Shift the reverse shift arm to the neutral position.



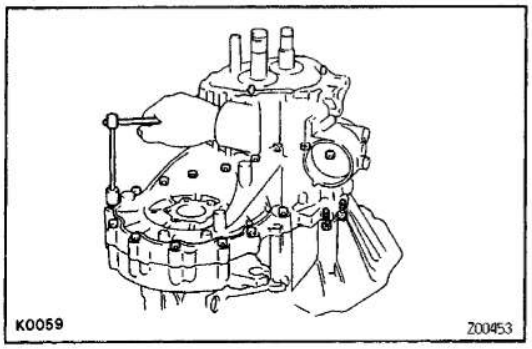
8. INSTALL REVERSE IDLER GEAR AND SHAFT
(a) Install the washer and reverse idler gear to the shaft.



(b) Install the reverse idler gear and shaft as shown.

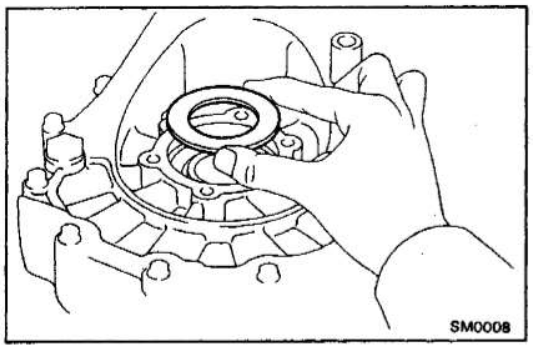


9. INSTALL TRANSMISSION CASE
(a) Remove the any packing material and be careful not to drop oil on the contacting surface of the transaxle case or transmission case.
(b) Apply seal packing to the transmission case as shown.
Seal packing:
Part No. 08833 – 00090, THREE BOND 1281 or equivalent



(c) Install and torque the seventeen bolts.

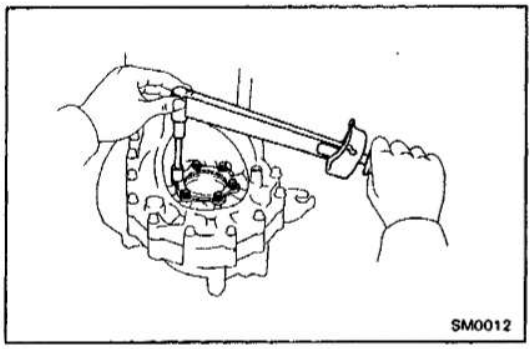
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



10. INSTALL SHIM AND SIDE SEARING RETAINER WITH O–RING

(a) Install a new O–ring on the retainer.

(b) Install the shim and retainer.



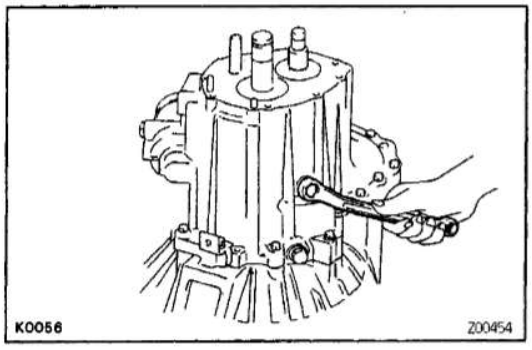
(c) Apply sealant to the bolt threads.

Sealant:

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

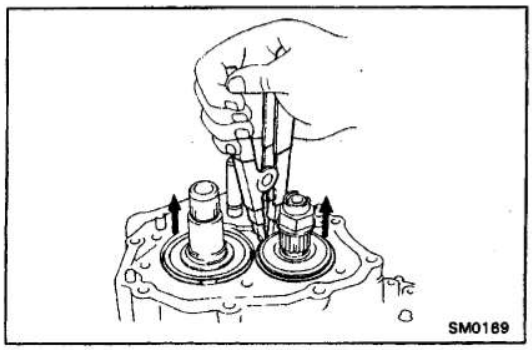
(d) Install and torque the six bolts.

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



11. INSTALL AND TORQUE REVERSE IDLER GEAR SHAFT LOCK BOLT

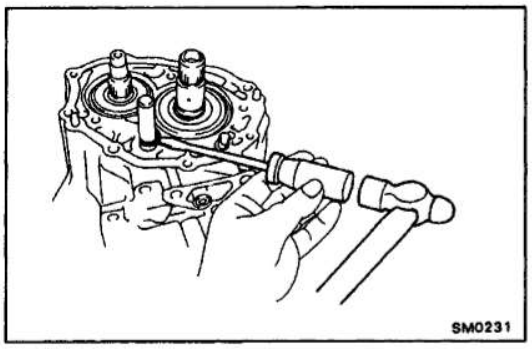
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



12. INSTALL BEARING SNAP RINGS

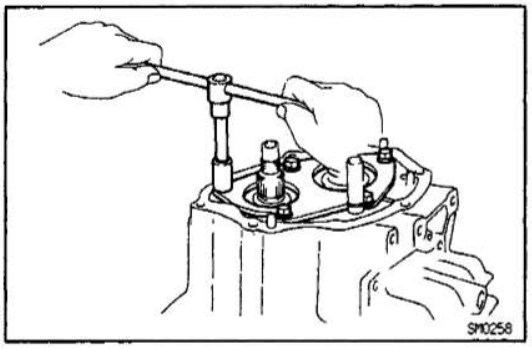
Using a snap ring expander, install the two snap rings.

HINT: If it is difficult to install the snap ring, pull up the shafts.



13. INSTALL NO.1 FORK SHAFT SNAP RING

Using a screwdriver and hammer, tap in the snap ring.



14. INSTALL REAR BEARING RETAINER

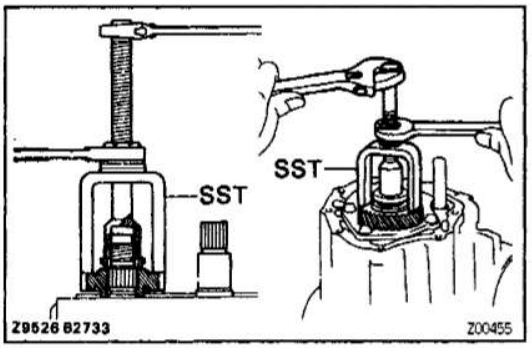
(a) Apply sealant to the bolt threads.

Sealant:

Part No. 08833 – 00070, THREE BOND 1324 or equivalent

(b) Install and torque the five bolts.

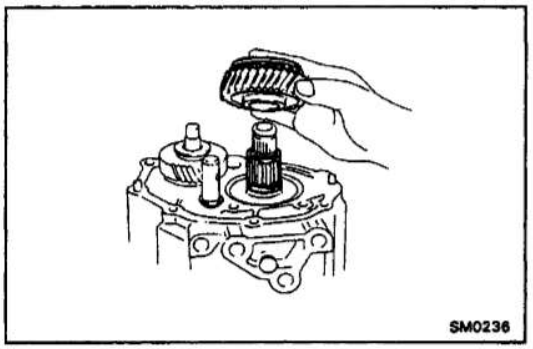
Torque: 42 N–m (430 kgf–cm, 31 ft–lbf)



15. INSTALL FIFTH DRIVEN GEAR

Using SST, install the 5th driven gear.

SST 09309–12020

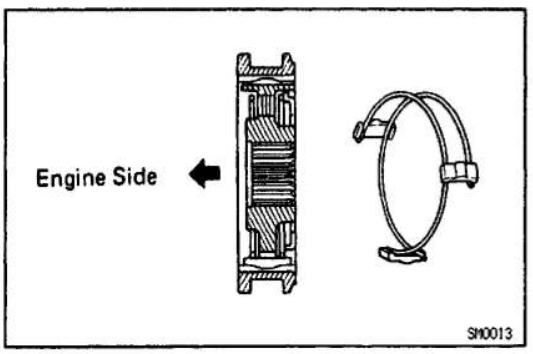


16. INSTALL SPACER, NEEDLE ROLLER BEARINGS, FIFTH GEAR AND SYNCHRONIZER RING

(a) Install the spacer.

(b) Apply gear oil to the needle roller bearings.

(c) Install the 5th gear with the needle roller bearings and synchronizer ring.

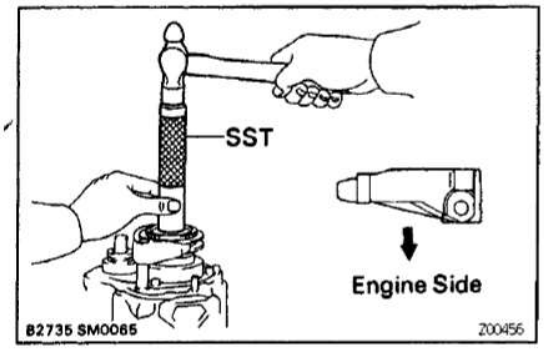


17. INSTALL NO.3 CLUTCH HUB INTO HUB SLEEVE

(a) Install the clutch hub and three shifting keys to the hub sleeve.

(b) Install the two shifting key springs under the shifting keys.

NOTICE: Install the key springs positioned so that their end gaps are not in line.



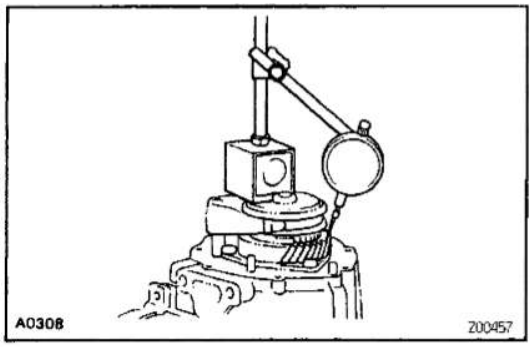
18. INSTALL NO. 3 HUB SLEEVE ASSEMBLY WITH SHIFT FORK

(a) Support the tip of the input shaft with a spacer or such to raise the transaxle assembly.

(b) Using SST and a hammer, drive in the No.3 hub sleeve with shift fork.
SST 09612–22011

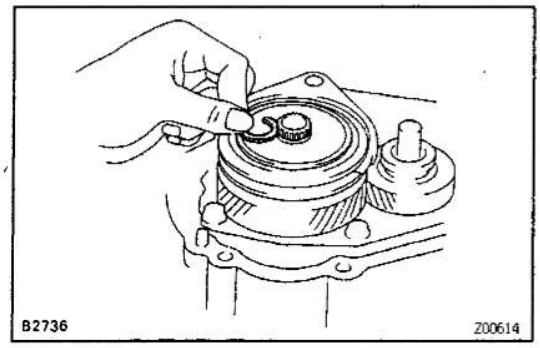
NOTICE: Align the synchronizer ring slots with the shifting keys.

(c) Install and torque the bolt to the No.3 shift fork.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)



19. INSPECT FIFTH GEAR THRUST CLEARANCE

Using a dial indicator, measure the thrust clearance.
Standard clearance:
0.20–0.40 mm (0.0089–0.0157 in.)

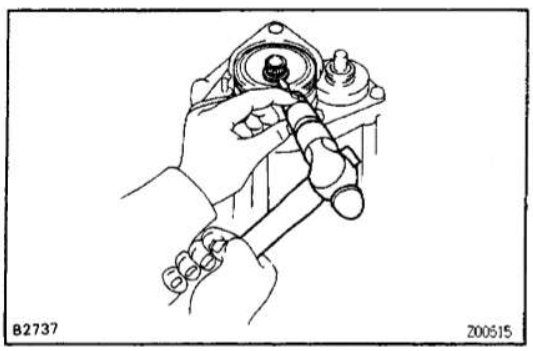


20. INSTALL SHIFTING KEY RETAINER AND SNAP RING

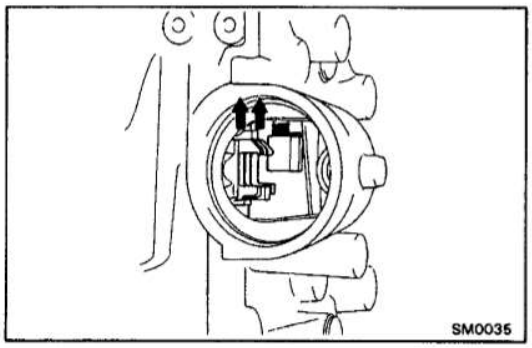
(a) Install the retainer.

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

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
13	2.20–2.25 (0.0866–0.0885)	21	2.60–2.65 (0.1024–0.1043)
14	2.25–2.30 (0.0885–0.0906)	22	2.65–2.70 (0.1043–0.1063)
15	2.30–2.35 (0.0906–0.0925)	23	2.70–2.75 (0.1063–0.1083)
16	2.35–2.40 (0.0925–0.0945)	24	2.75–2.80 (0.1083–0.1102)
17	2.40–2.45 (0.0945–0.0965)	25	2.80–2.85 (0.1102–0.1122)
18	2.45–2.50 (0.0965–0.0984)	26	2.85–2.90 (0.1122–0.1142)
19	2.50–2.55 (0.0984–0.1004)	27	2.90–2.95 (0.1142–0.1161)
20	2.55–2.60 (0.1004–0.1024)		

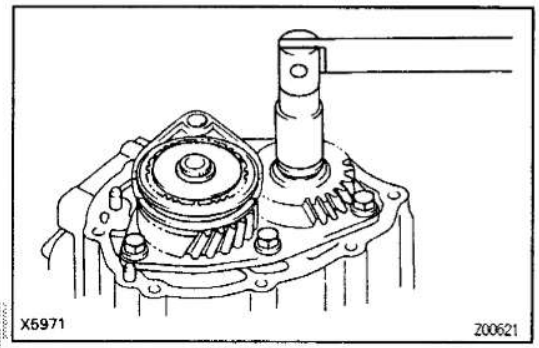


(c) Using a screwdriver and hammer, tap in the snap ring.

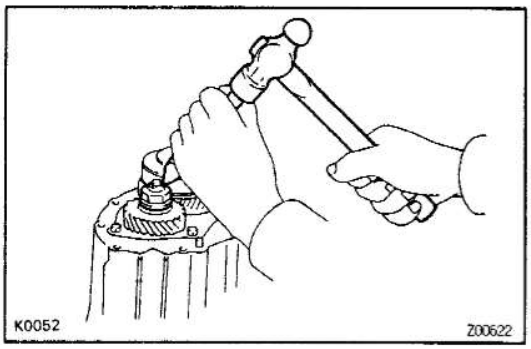


21. INSTALL OUTPUT SHAFT LOCK NUT

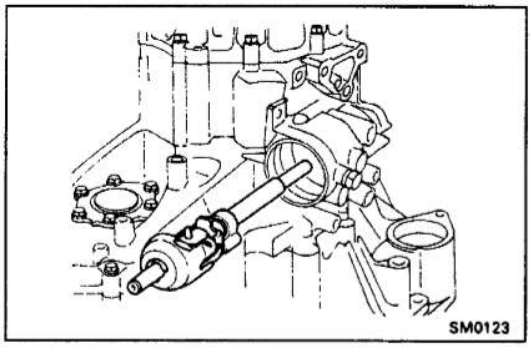
(a) Engage the gear double meshing.



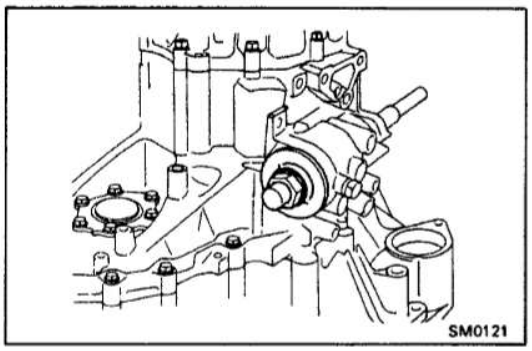
(b) Install and torque the new lock nut.
Torque: 123 N–m (1,250 kgf–cm, 90 ft–lbf)
HINT: The lock nut has LH threads.



(c) Stake the lock nut.
(d) Disengage the gear double meshing.



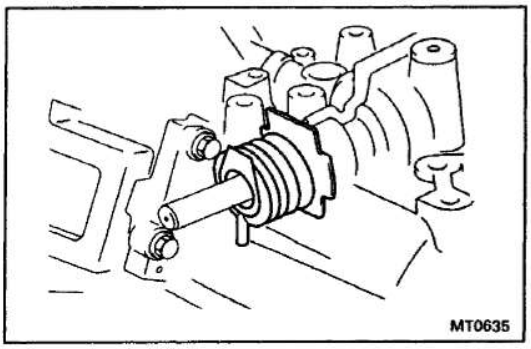
22. INSTALL SHIFT AND SELECT LEVER SHAFT ASSEMBLY



23. INSTALL CONTROL SHAFT COVER

(a) Install a new O–ring and control shaft cover.
(b) Install and torque the control shaft cover.

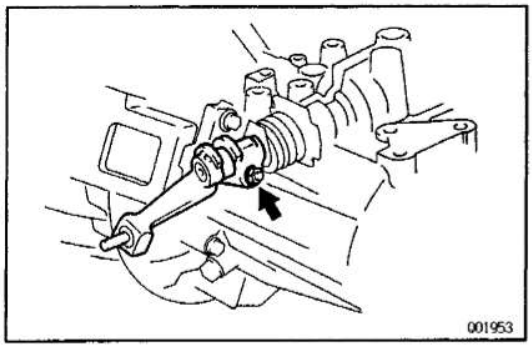
Torque: 33 N–m (335 kgf–cm, 24 ft–lbf)



24. INSTALL SHIFT LEVER

(a) Install the boot to the control shaft oil seal.

HINT: Make sure to install the boot in the correct direction. Position the air bleed of the boot downward.

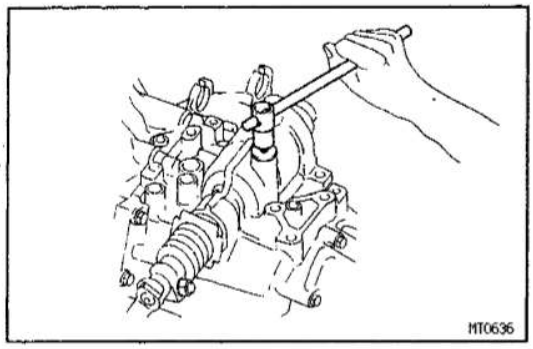


(b) Fit the pin's groove into the shaft's notch and tap on with a hammer.

(c) Install and torque the nut.

Torque: 12 N–m (120 kgf–cm, 9 ft–lbf)

(d) Install the boot to the shift lever.



25. INSTALL NO.2 LOCK BALL ASSEMBLY

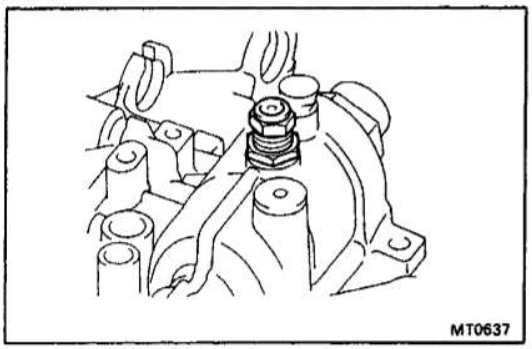
(a) Apply sealant to the lock ball assembly threads.

Sealant:

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

(b) Using a hexagon wrench (6 mm), install and torque the plug.

Torque: 23 N–m (230 kgf–cm, 17 ft–lbf)



26. INSTALL AND ADJUST NO.1 LOCK BALL ASSEMBLY

(a) Fully loosen the lock nut.

(b) Fully screw in the lock ball.

(c) Loosen the lock ball to where the play at the shift outer lever tip is 0.1 –0.5 mm (0.004–0.020in.).

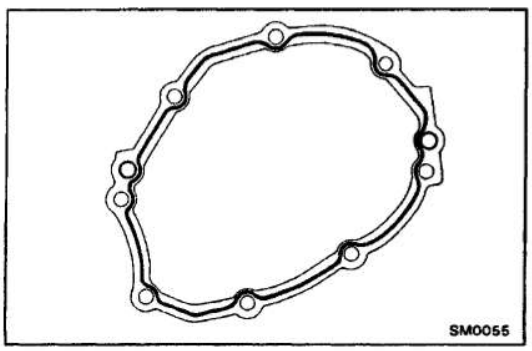
(d) Hold the lock ball and tighten the lock nut.

Torque: 37 N–m (375 kgf–cm, 27 ft–lbf)

(e) Check the shift outer lever tip play.

Lever tip play:

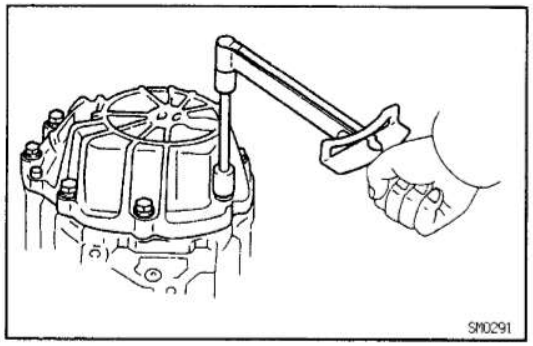
0.1–0.5 mm (0.004–0.020 in.)



27. INSTALL TRANSMISSION CASE COVER

(a) Remove the any packing material an be careful not to drop oil on the contacting surface of the transmission case or transmission case cover.

(b) Apply seal packing to the transmission case cover as shown.



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

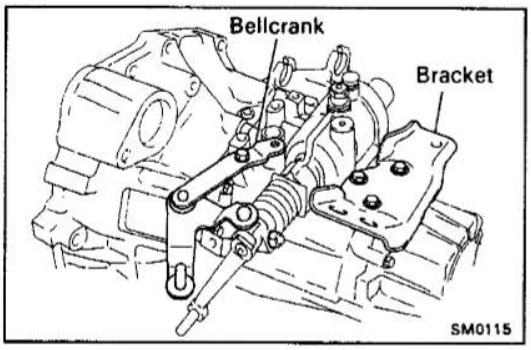
(c) Install the transmission case cover.

(d) Apply sealant to the bolt threads.

Sealant:
Part No.08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(e) Install and torque the eight bolts.

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



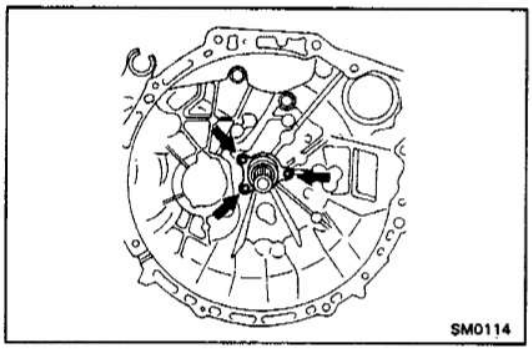
28. INSTALL ENGINE MOUNT BRACKET AND SELECTING BELLCRANK

(a) Install the engine mount bracket and torque the three bolts.

Torque: 52 N–m (530 kgf–cm, 38 ft–lbf)

(b) Install the selecting bellcrank with bolt.

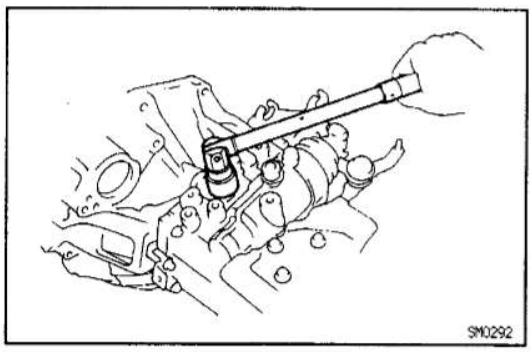
Torque: 20 N–m (200 kgf–cm, 14 ft–lbf)



29. INSTALL RELEASE BEARING RETAINER

Install the release bearing retainer and torque the three bolts.

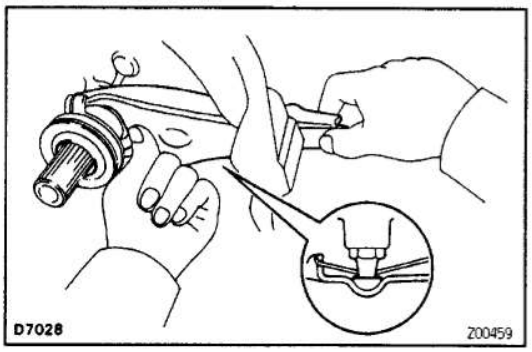
Torque: 7.4 N–m (75 kgf–cm, 65 ft–lbf)



30. INSTALL BACK–UP LIGHT SWITCH

Torque: 44 N–m (450 kgf–cm, 33 ft–lbf)

31. INSTALL VEHICLE SPEED PULSE GENERATOR

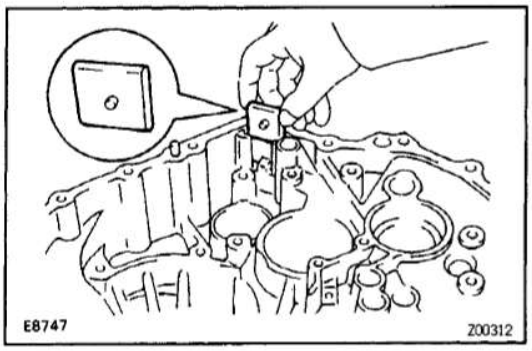


32. INSTALL RELEASE FORK AND BEARING

(a) Apply molybdenum disulphide lithium base grease to the following parts:

- **Release bearing hub inside groove**
- **Input shaft spline**
- **Release fork contact surface**

(b) Apply MP grease to the front surface of the release bearing.



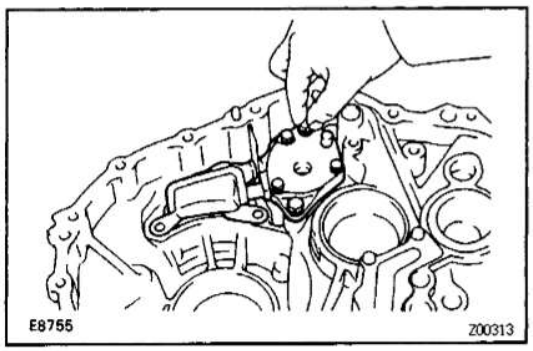
COMPONENT PARTS INSTALLATION

BASIC SUBASSEMBLY REASSEMBLY

(See pages MX2–20 to MX2–22)

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSTALL MAGNET TO TRANSAXLE CASE

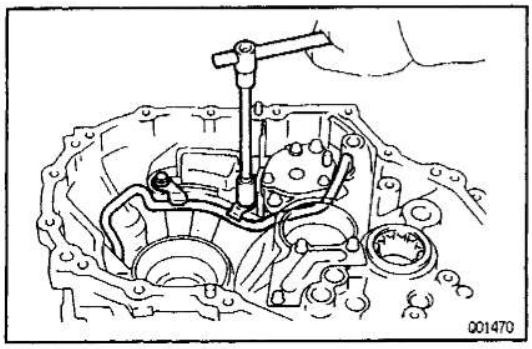


2. INSTALL OIL PUMP ASSEMBLY AND OIL PIPE

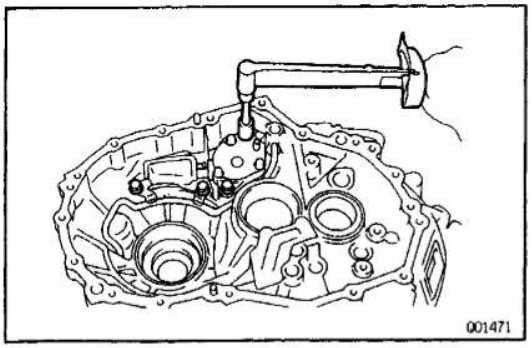
(a) Install the oil pump assembly.

(b) Install the two bolts.

HINT: Be careful not to drop the oil pump gasket.

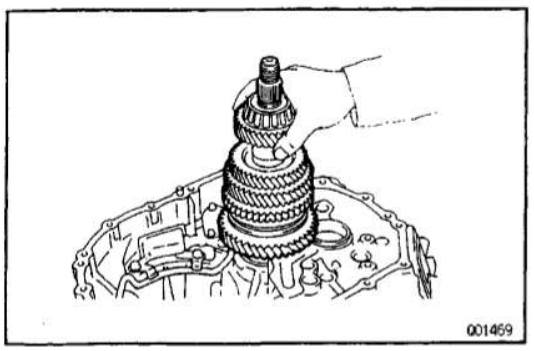


(c) Install the oil pipe and two bolts.



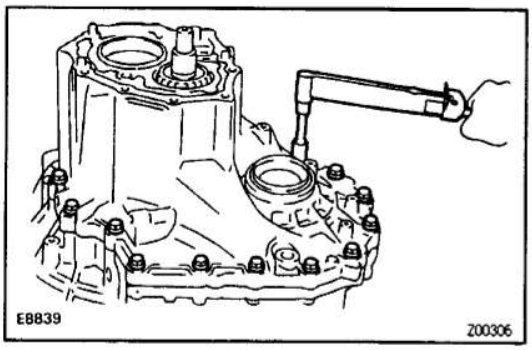
(d) Torque the four bolts.

Torque: 17 N–m (175 kgf–cm, 13 ft–lbf)

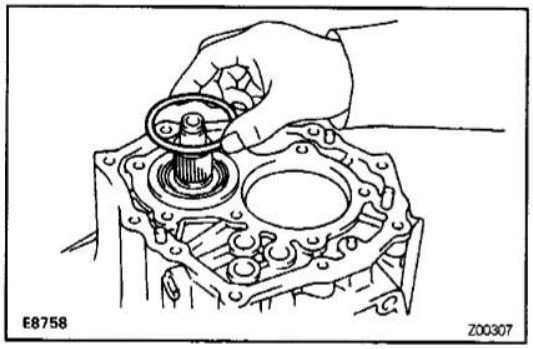


3. ADJUST OUTPUT SHAFT PRELOAD

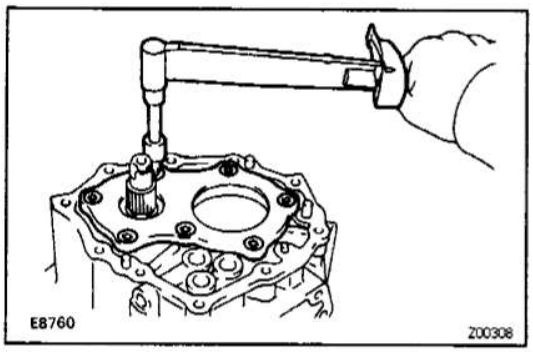
(a) Install the output shaft assembly.



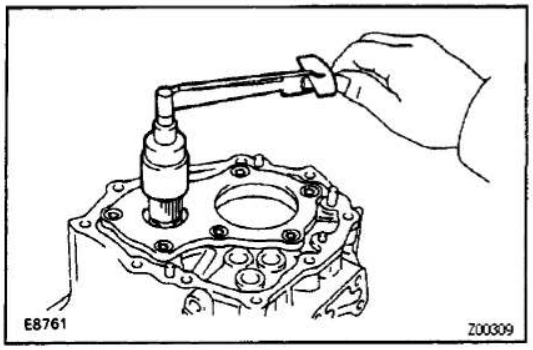
(b) Install the transmission case.
HINT: If necessary, tap on the case with a plastic hammer.
(c) Install and torque the seventeen bolts.
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)
(d) Install the output shaft rear taper roller bearing outer race.



(e) Install the adjust shim.
HINT: When re–using the output shaft bearing, first install a shim of the same thickness as before. If installing a new tapered roller bearing, first select and install a shim of lesser thickness than before.



(f) Install the bearing retainer.
(g) Using a torx wrench, install and torque the seven bolts.
Torx wrench T45 09042–00050
Torque: 42 N–m (430 kgf–cm, 31 ft–lbf)
(h) Install a new lock nut to the output shaft.
(i) Turn the output shaft right and left two or three times to allow the bearings to settle.



(j) Using a small torque wrench, measure the preload.

Preload (at starting):

New bearing

0.8–1.6 N–m (8–16 kgf–cm, 6.9–13.9 in.–M)

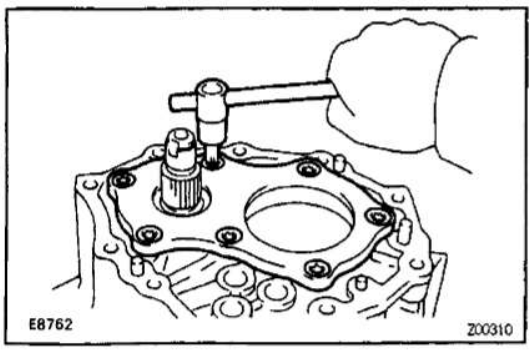
Reused bearing

0.6–1.0 N–m (5–10 kgf–cm, 4.3–8.7 in.–lbf)

If the preload is not within specification, select the thrust washers.

HINT: The preload will change about 0.4–0.5 N–m (4–5 kgf–cm, 3.5–4.3 in.lbf) with each shim thickness.

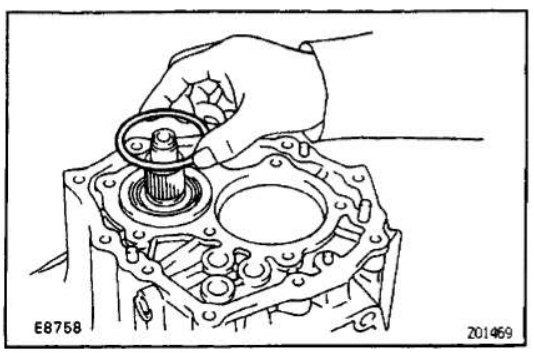
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
0	1.30 (0.0512)	D	1.95 (0.0768)
1	1.35 (0.0531)	E	2.00 (0.0787)
2	1.40 (0.0551	F	2.05 (0.0807)
3	1.45 (0.0571)	G	2.10 (0.0827)
4	1.50 (0.0591)	H	2.15 (0.0846)
5	1.55 (0.0610)	J	2.20 (0.0866)
6	1.60 (0.0630)	K	2.25 (0.0886)
7	1.65 (0.0650)	L	2.30 (0.0906)
8	1.70 (0.0669)	M	2.35 (0.0925)
9	1.75 (0.0689)	N	2.40 (0.0945)
A	1.80 (0.0709)	P	2.45 (0.0965)
B	1.85 (0.0728)	Q	2.50 (0.0984)
C	1.90 (0.0748)		



(k) Remove the lock nut.

(l) Using a torx wrench, remove the seven torx screws and rear bearing retainer.

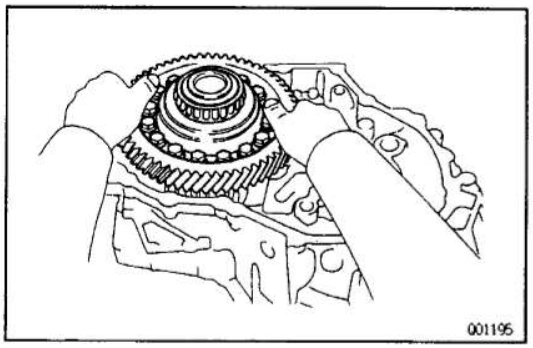
Torx wrench T45 09042–00050



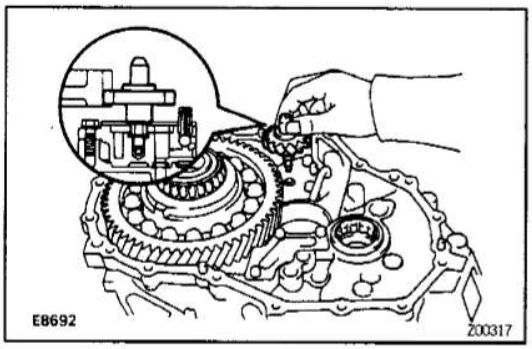
(m) Remove the shim.

(n) Remove the seventeen bolts and transmission case.

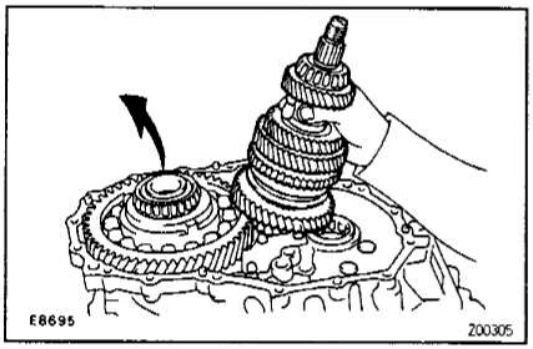
(o) Remove the output shaft assembly.



4. INSTALL DIFFERENTIAL CASE ASSEMBLY

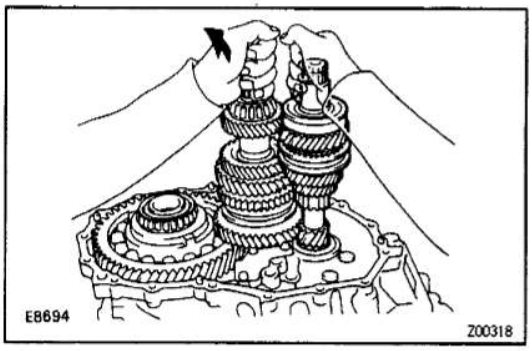


5. INSTALL OIL PUMP DRIVE GEAR

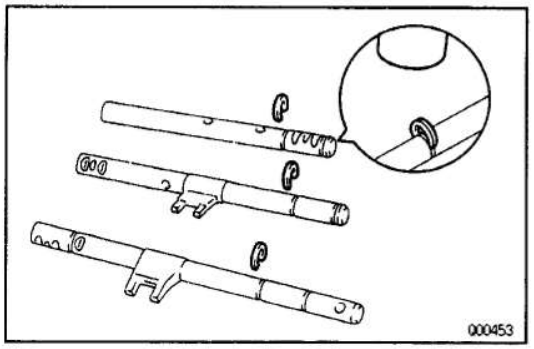


6. INSTALL OUTPUT SHAFT ASSEMBLY

(a) Lift up the differential case, install the output shaft assembly.

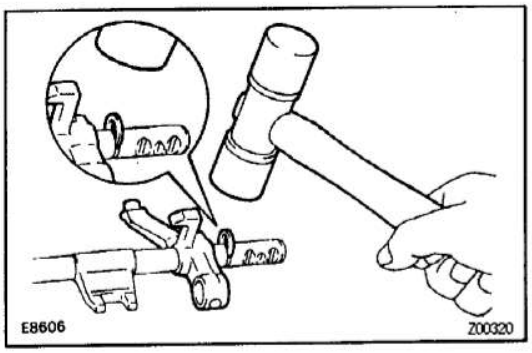


(b) Leaning the output shaft to the differential side, install the input shaft assembly.

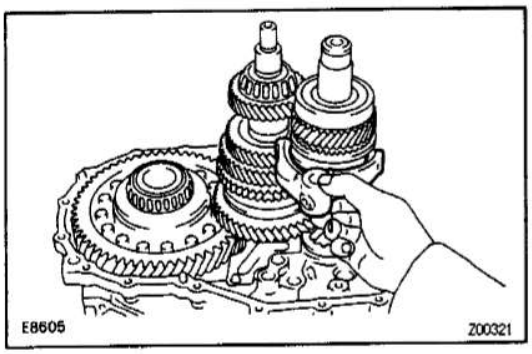


7. INSTALL SNAP RINGS

(a) Using a plastic hammer, install the snap rings to the No.1, No.2 and No.3 shift fork shafts.

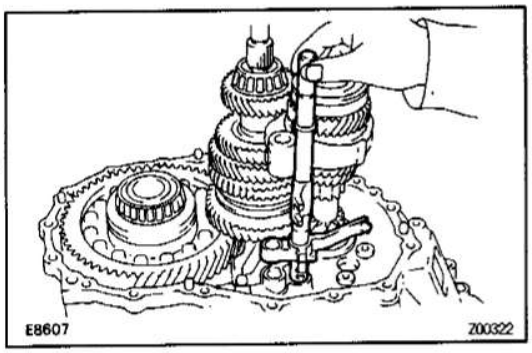


(b) Using a plastic hammer, the reverse shift fork and snap ring to the No.3 shift fork shaft.

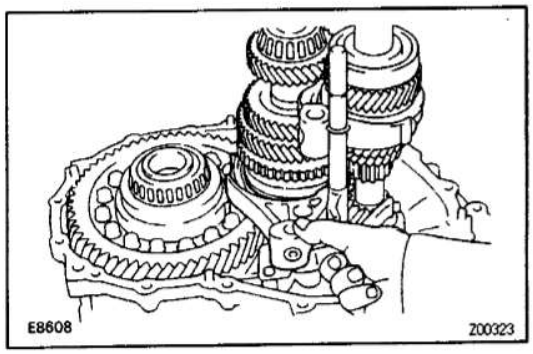


8. INSTALL N0.2 SHIFT FORK AND N0.3 SHIFT FORK SHAFT WITH REVERSE SHIFT FORK

(a) Install the No.2 shift fork to the No.2 hub sleeve.

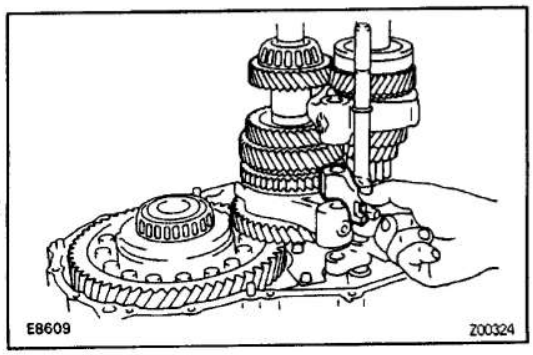


(b) Install the No.3 shift fork shaft with reverse shift fork.

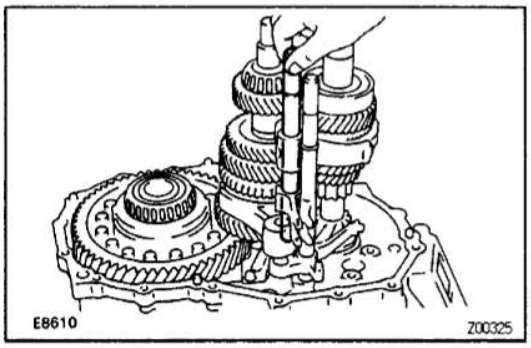


9. INSTALL N0.1 SHIFT FORK, SHIFT HEAD AND N0.2 SHIFT FORK SHAFT

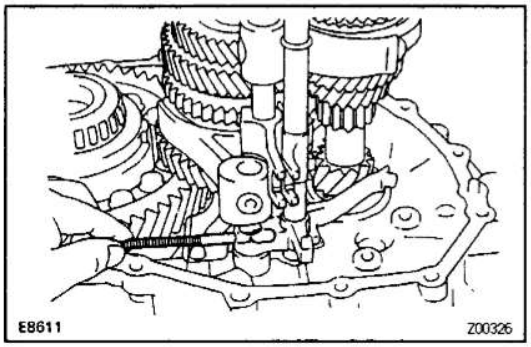
(a) Install the No. 1 shift fork to the No. 1 hub sleeve.



(b) Put shift head onto the No.1 shift fork.

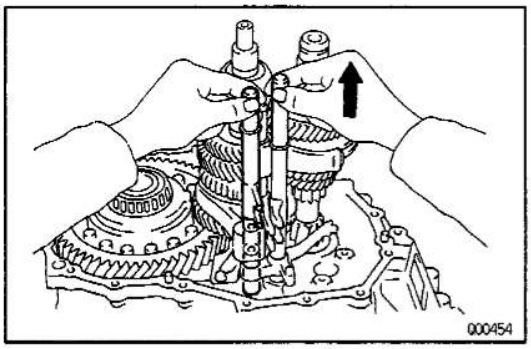


(c) Install the No.2 shift fork shaft to the transaxle case, through the shift head and No.1 shift fork.



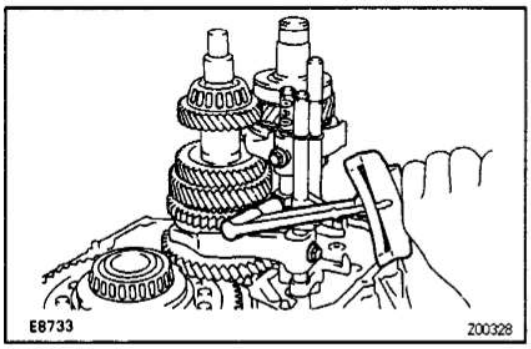
10. INSTALL INTERLOCK ROLLER

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



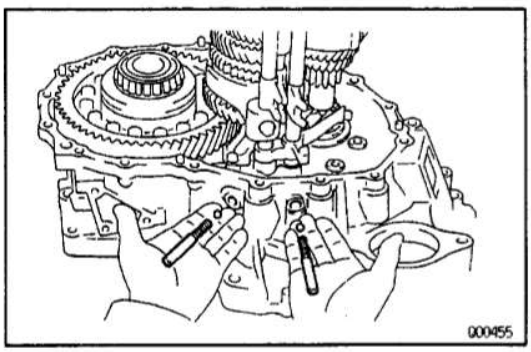
11. INSTALL NO.1 SHIFT FORK SHAFT

Install the No.1 shift fork shaft to the case, through the No.1 shift fork and reverse shift fork.
HINT: When it is difficult to the fork shaft through the reverse shift fork, pull up the No.3 shift fork shaft.



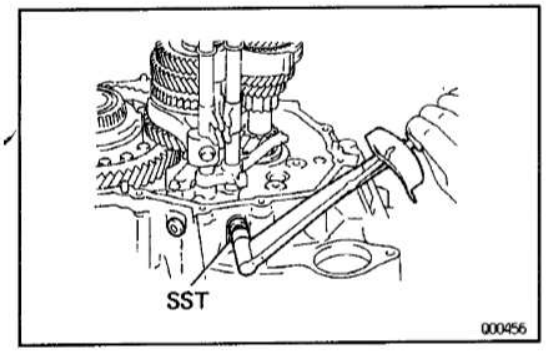
12. INSTALL SET BOLTS

Install and torque the three set bolts.
Torque: 24 N–m (240 kgf–cm, 17 ft–lbf)

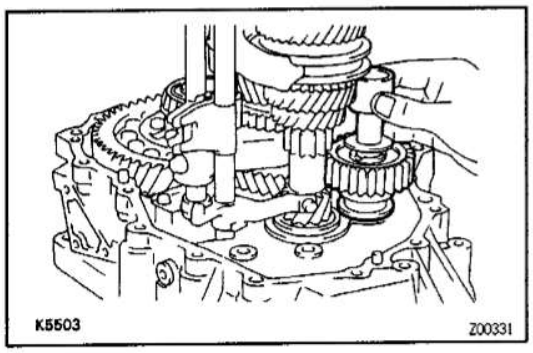


13. INSTALL TWO LOCKING BALLS, SPRINGS, SEATS AND PLUGS

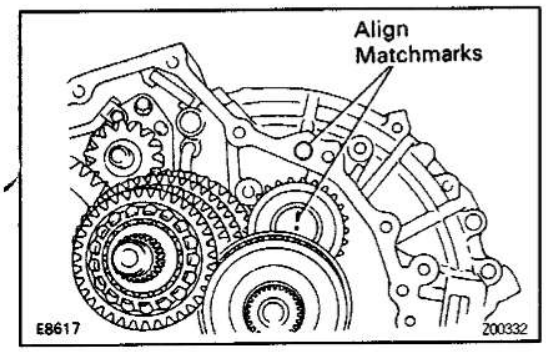
(a) Install the two locking balls, springs and seats.



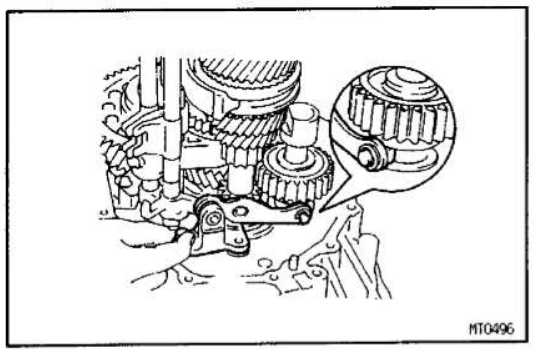
(b) Apply sealant to the two plugs.
Sealant:
Part No.08833–00080, THREE BOND 1344, LOC–TITE 242 or equivalent
(c) Using a hexagon wrench (6 mm), install and torque two plugs.
Torque: 25 N–m (250 kgf–cm, 18 ft–lbf)



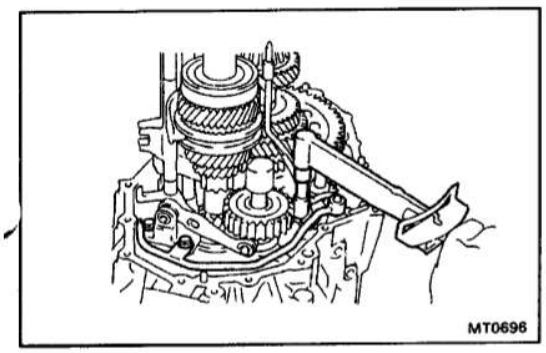
14. INSTALL REVERSE IDLER GEAR AND SHAFT
(a) Install the reverse idler gear shaft and thrust washer to the shaft.
(b) Install the reverse idler gear shaft into the case hole.



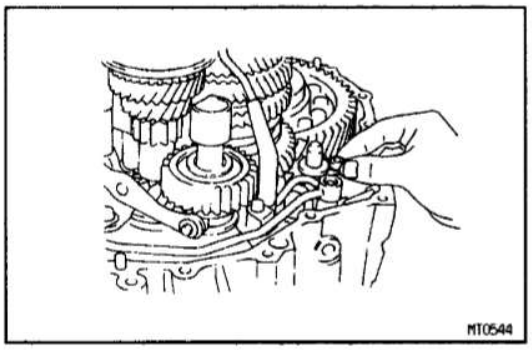
(c) Align matchmarks as shown.



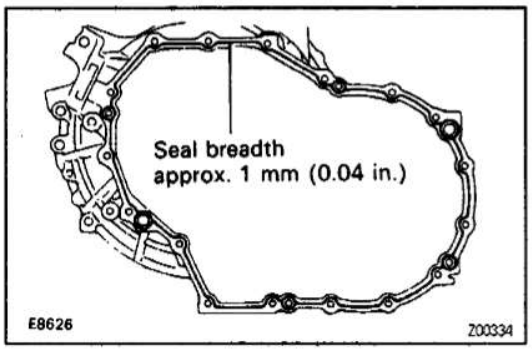
15. INSTALL REVERSE SHIFT ARM BRACKET AND NO.2 OIL PIPE
(a) Put the reverse shift fork pivot into the reverse shift arm install the reverse shift arm bracket to the tra–nsaxle case.
(b) Install the bolt.



(c) Install the No.2 oil pipe and two bolts.
(d) Torque the reverse shift arm and oil pump bolts.
Torque: 17 N–m (175 kgf–cm, 13 ft–lbf)



(e) Install a new gasket to the No.2 oil pipe.



16. INSTALL TRANSMISSION CASE

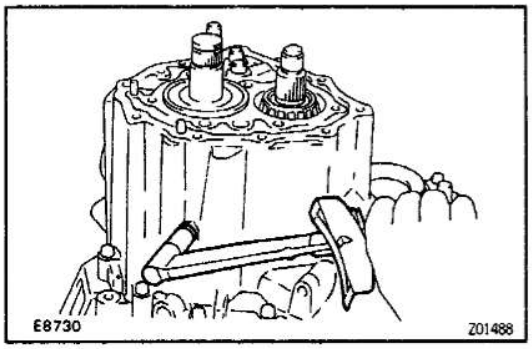
(a) Remove the any packing material and be careful not to drop oil on the contacting surfaces of the trans–mission case or transaxle case.

(b) Apply seal packing to the transmission case as shown in the figure.

Seal packing:

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

HINT: Install the transmission case as shown as the seal packing is applied.



(c) Install and torque the fourteen bolts to the transmis–sion case side.

Torque: 28 N–m (300 kgf–cm, 22 ft–lbf)

(d) Install and torque the three bolts to the transaxle case side.

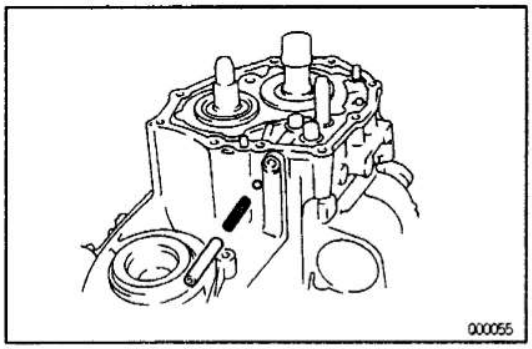
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)

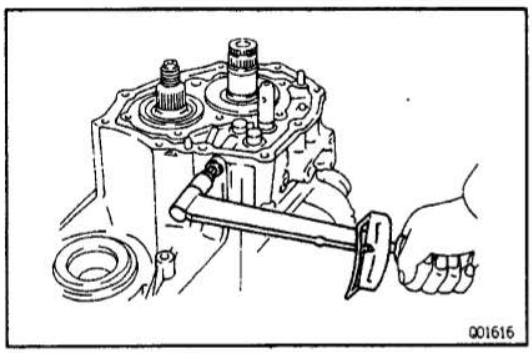
17. INSTALL AND TORQUE REVERSE IDLER GEAR SHAFT RETAINING BOLT

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)

18. INSTALL LOCKING BALL, SPRING, SEAT AND PLUG

(a) Install the locking ball, spring and seat.





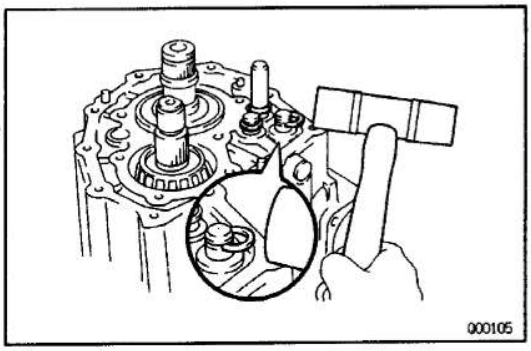
(b) Apply sealant to the plug.

Sealant:

Part No. 08833–00080, THREE BOND 7344, LOC–TITE 242 or equivalent

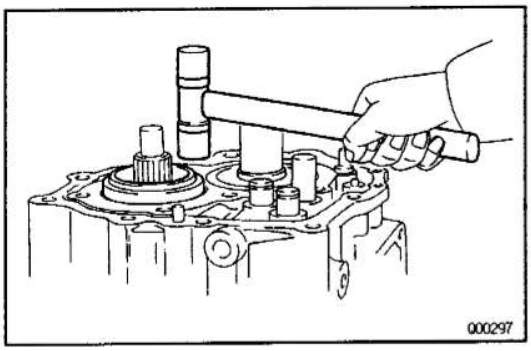
(c), Using a hexagon wrench (6 mm), install and torque the plug.

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



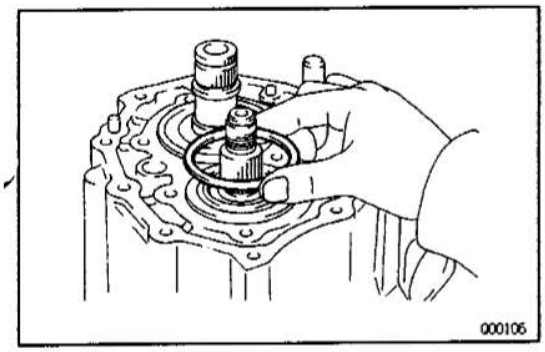
19. INSTALL SNAP RINGS

Using a plastic hammer, install the three snap rings.



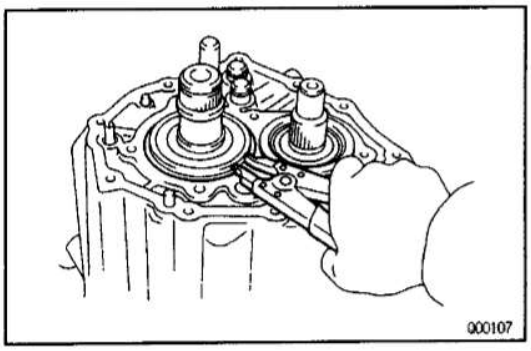
20. INSTALL OUTPUT SHAFT REAR TAPER ROLLER BEARING OUTER RACE

Using a plastic hammer, tap in the outer race.



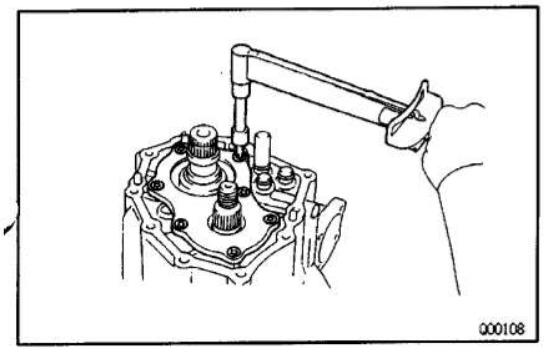
21. INSTALL SHIM

HINT: Install the previously selected.



22. INSTALL SNAP RING

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



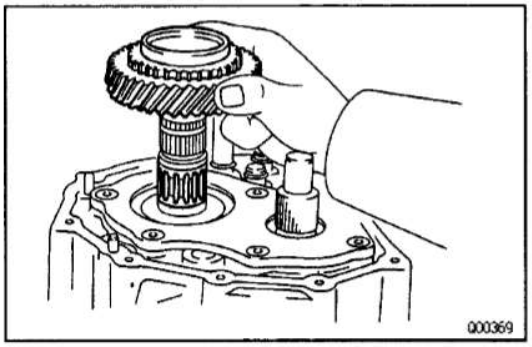
23. INSTALL REAR BEARING RETAINER

(a) Clean the threads of the torx screws.

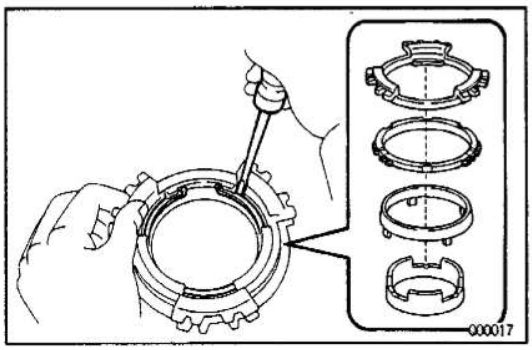
(b) Using a torx wrench, install and torque the seven torx screws.

Torx wrench T45 09042–00050

Torque: 42 N–m (430 kgf–cm, 31 ft–lbf)

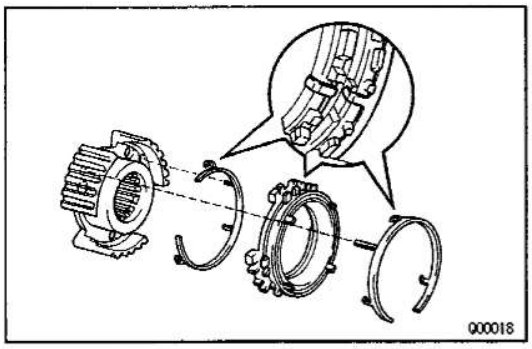


24. INSTALL NEEDLE ROLLER BEARING AND FIFTH GEAR

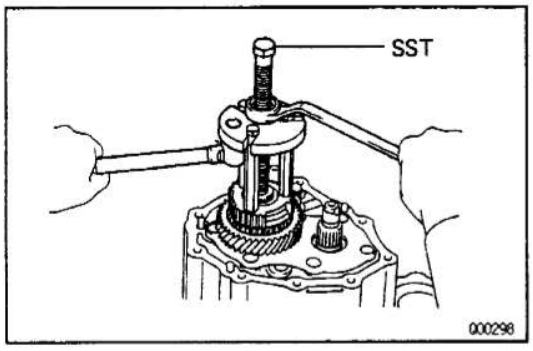


25. INSTALL N0.5 SYNCHRONIZER RINGS WITH KEY SPRING TO N0.3 CLUTCH HUB

(a) Assemble the No.5 synchronizer rings.
(b) Using a screwdriver, install the snap ring.
HINT: Wrap vinyl tape on the screwdriver to prevent damaging the synchronizer ring.

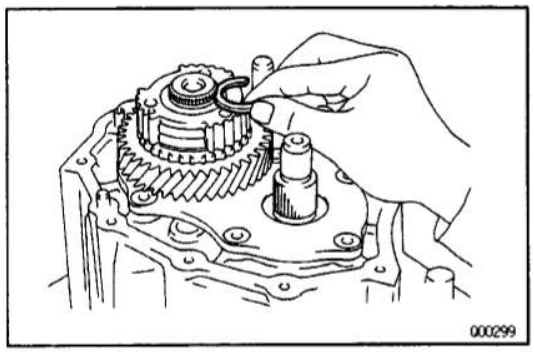


(c) Install the No.5 synchronizer rings with key springs to the No.3 clutch hub.
HINT: Align the holes of the clutch hub with key spring.



26. INSTALL No.3 CLUTCH HUB

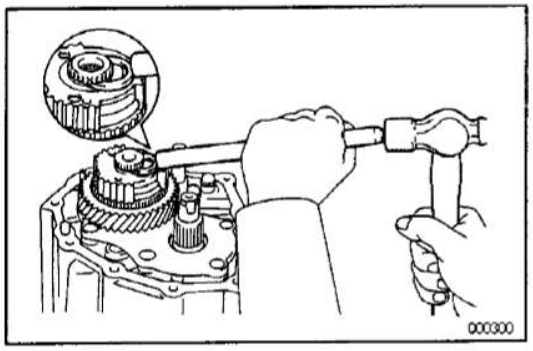
Using SST, install the No.3 clutch hub with synchro–nizer ring and key spring.
SST 09310–17010 (09310–07010, 09310–07020, 09310–07030)



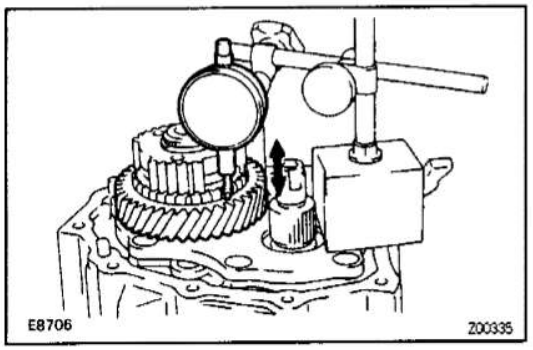
27. INSTALL SNAP RING

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

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
Q	2.25 (0.0886)	V	2.50 (0.0984)
R	2.30 (0.0906)	W	2.55 (0.1004)
S	2.35 (0.0925)	X	2.60 (0.1024) 2.65 (0.1043)
T	2.40 (0.0945)	Y	
U	2.45 (0.0965)		



(b) Using a brass bar and hammer, install the snap ring.

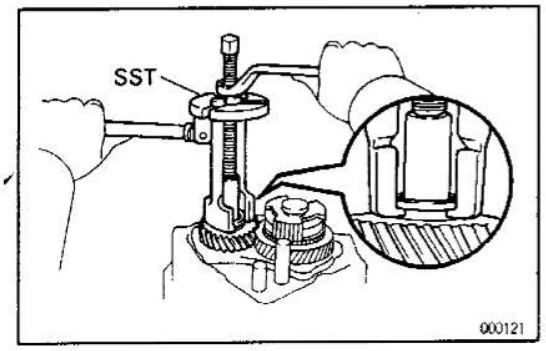


28. INSPECT FIFTH GEAR THRUST CLEARANCE

Using a dial indicator measure the 5th gear thrust clearance.

Standard clearance:

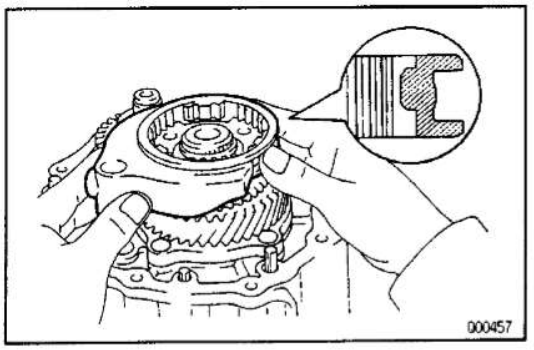
0.10–0.57 mm (0.0039–0.0224 in.)



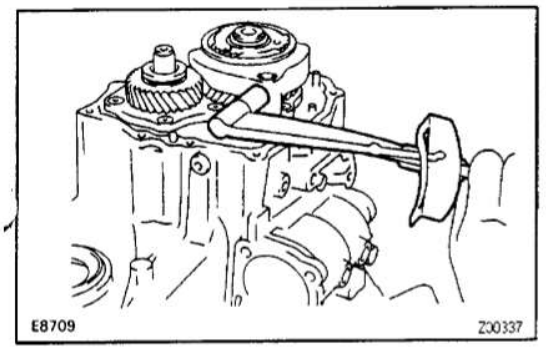
29. INSTALL FIFTH DRIVEN GEAR

Using SST, install the 5th driven gear.

SST 09310–17010 (09310–07010, 09310–07020, 09310–07040, 09310–07050)



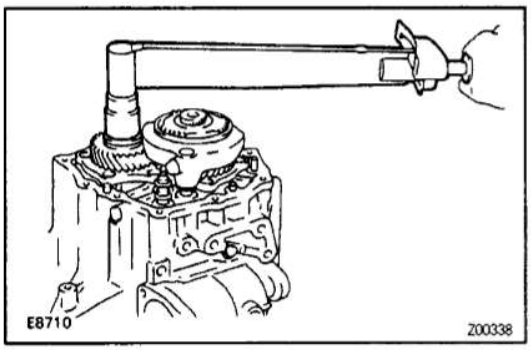
30. INSTALL NO. 3 HUB SLEEVE WITH N0.3 SHIFT FORK



31. INSTALL SET BOLT

Install and torque the set bolt.

Torque: 24 N–m (240 kgf–cm, 17 ft–lbf)



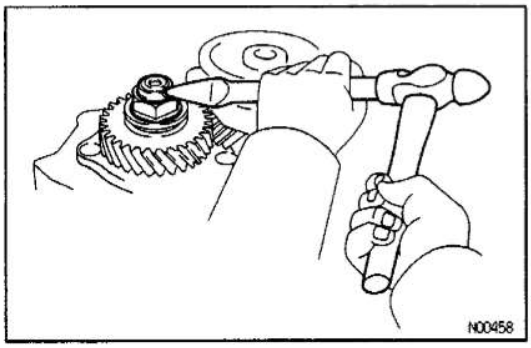
32. INSTALL LOCK NUT

(a) Engage the gear double meshing.

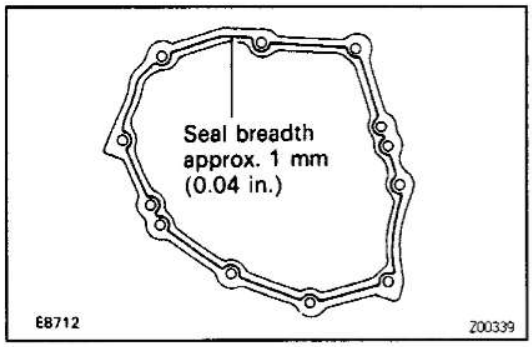
(b) Install and torque the lock nut.

Torque: 123 N–m (1,250 kgf–cm, 90 ft–lbf)

(c) Disengage the gear double meshing.



(d) Stake the lock nut.



33. INSTALL TRANSMISSION CASE COVER

(a) Remove the any packing material and be careful not to drop oil on the contacting surfaces of the transmission case cover.

(b) Apply seal packing to the transmission case as shown in the figure.

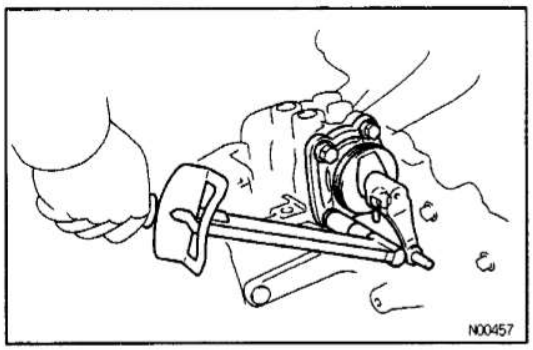
Seal packing:

Part No. 08826–00080, THREE BOND 1281 or equivalent

HINT: Install the transmission case cover as soon as the seal packing is applied.

(c) Install and torque the ten bolts.

Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



34. INSTALL SHIFT AND SELECT LEVER SHAFT ASSEMBLY

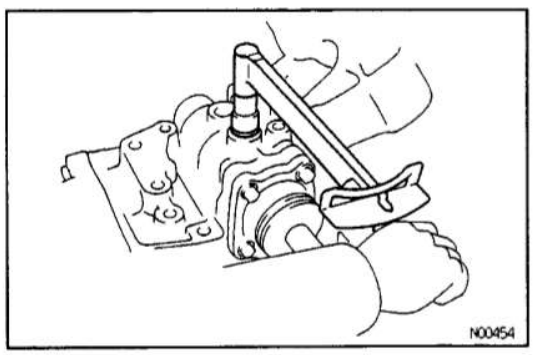
(a) Place a new gasket in position on the control shaft cover.

(b) Install the control shaft cover.

(c) Apply sealant to the bolt threads.

Sealant:

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

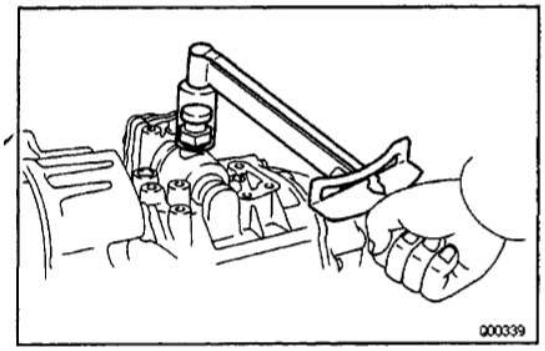


(d) Install and torque the four bolts.

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

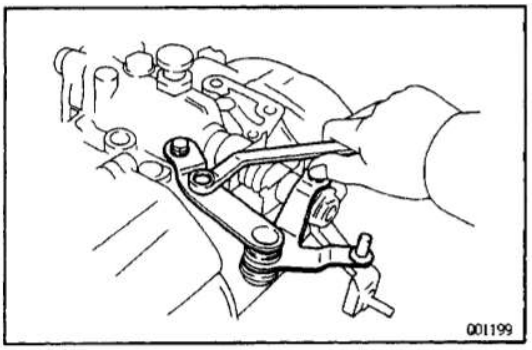
35. INSTALL AND TORQUE LOCK BOLT

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



36. INSTALL BREATHER PLUG

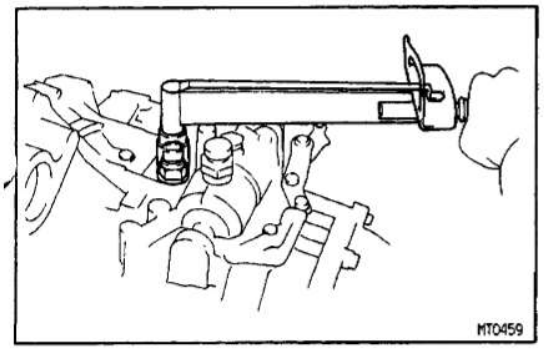
Torque: 49 N–m (500 kgf–cm, 36 ft–lbf)



37. INSTALL SELECTING BELLCRANK ASSEMBLY

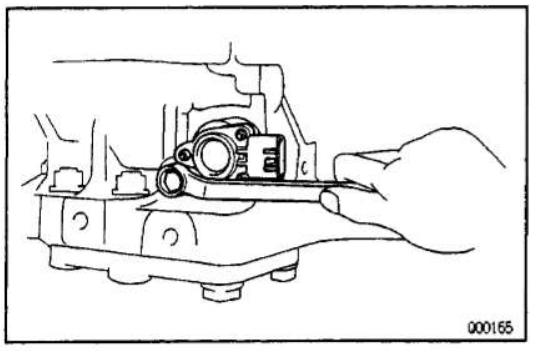
Install the selecting bellcrank assembly with two bolts.

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



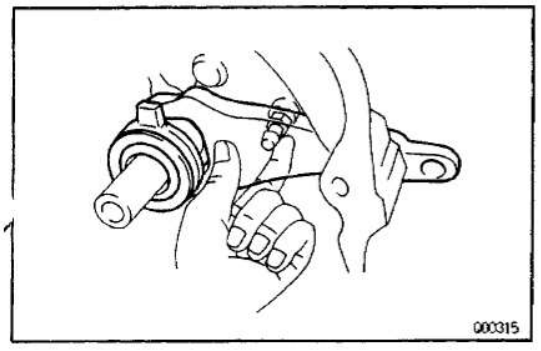
38. INSTALL BACK–UP LIGHT SWITCH

Torque: 40 N–m (410 kgf–crn. 30 ft–lbf)



39. INSTALL VEHICLE SPEED PULSE GENERATOR

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



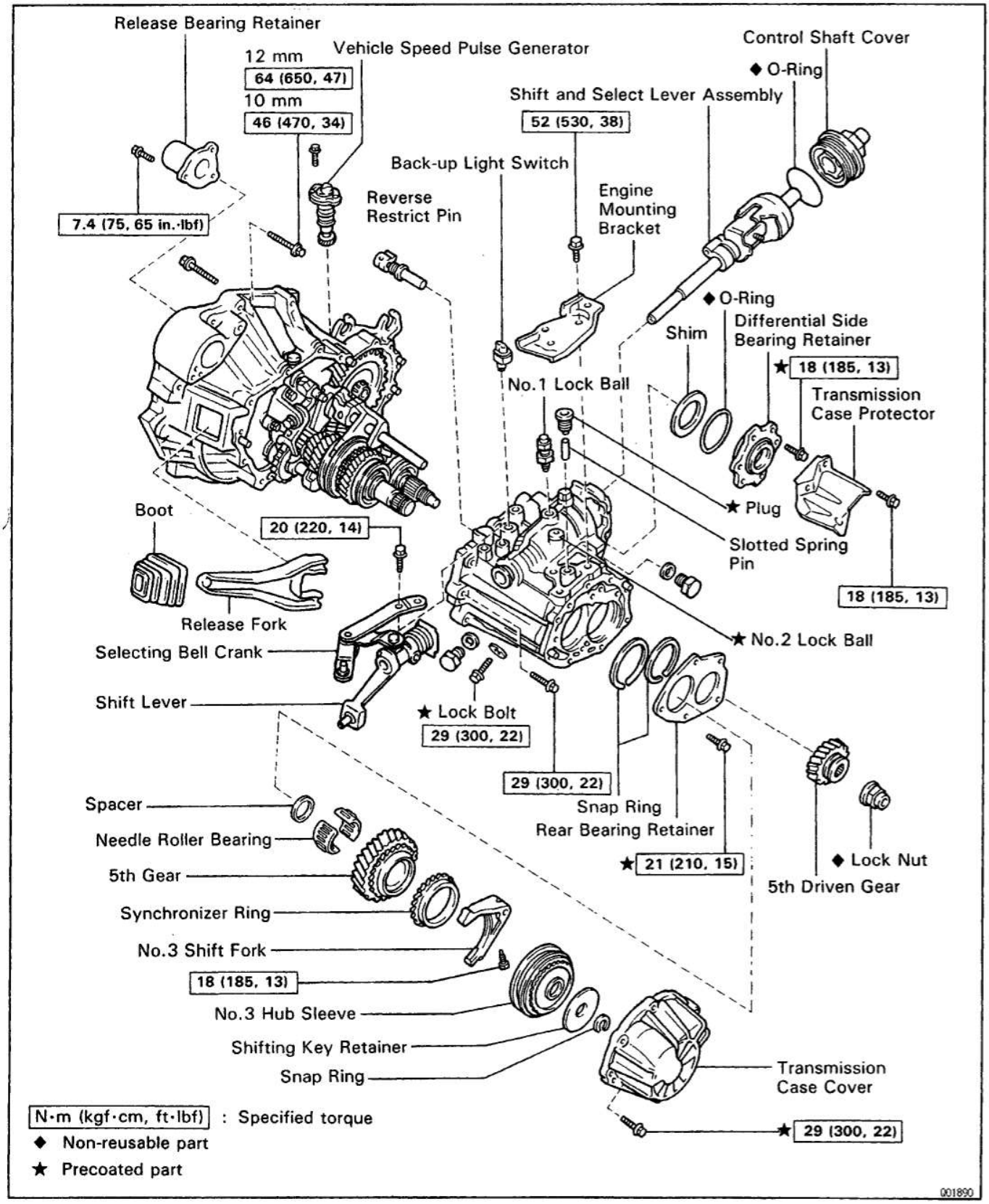
40. INSTALL RELEASE FORK AND BEARING

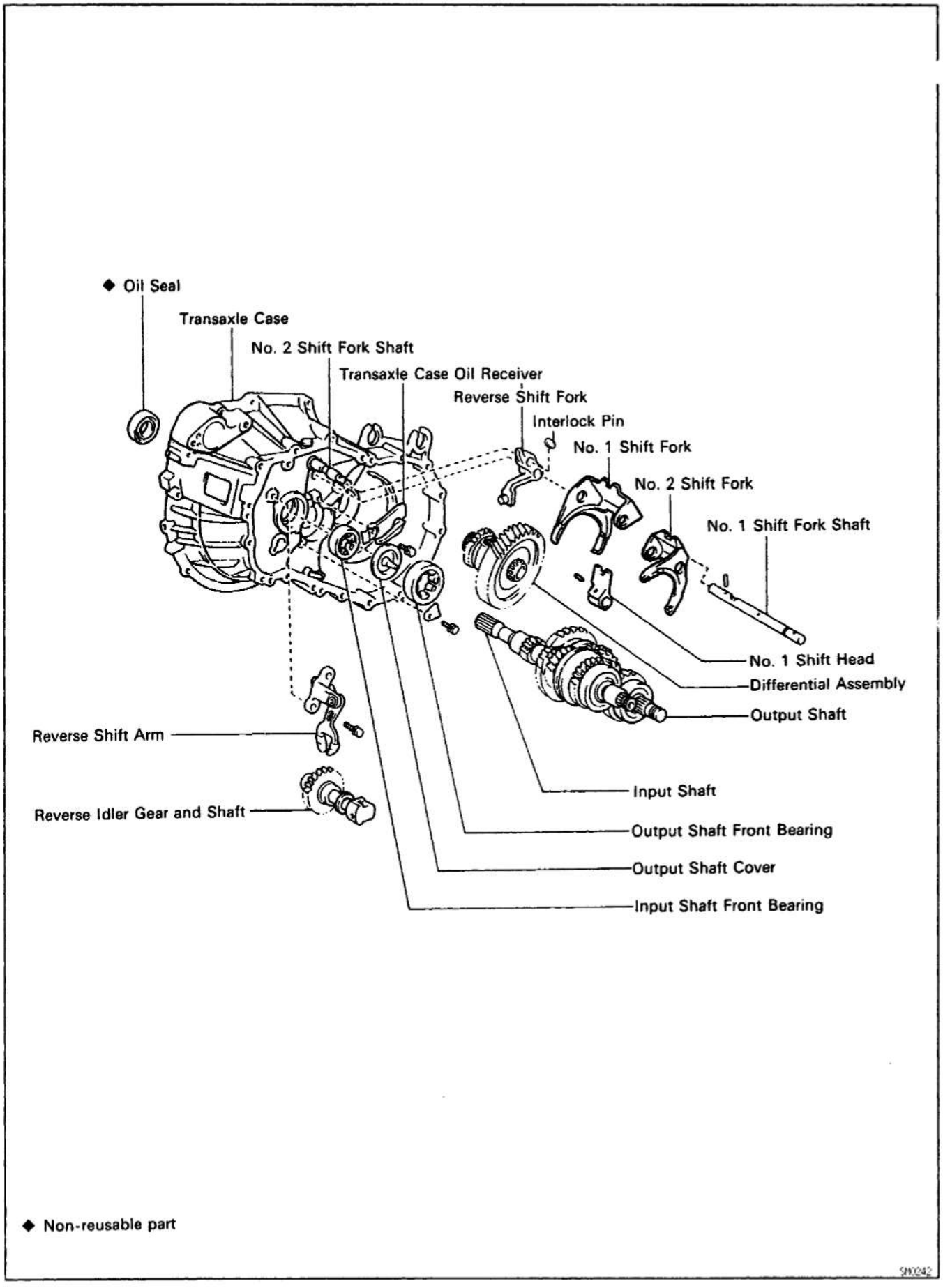
Apply molybdenum disulphide lithium base grease to the following parts:

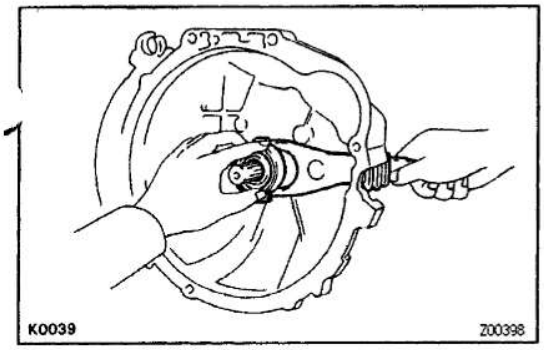
- Input shaft spline
- Release fork contact surface

COMPONENT PARTS REMOVAL

COMPONENTS



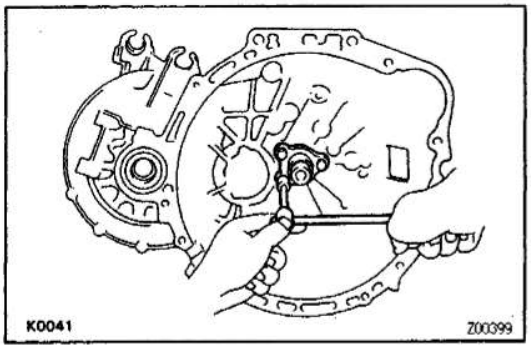

◆ Oil Seal
Transaxle Case
No. 2 Shift Fork Shaft
Transaxle Case Oil Receiver
Reverse Shift Fork
Interlock Pin
No. 1 Shift Fork
No. 2 Shift Fork
No. 1 Shift Fork Shaft
No. 1 Shift Head
Differential Assembly
Output Shaft
Reverse Shift Arm
Reverse Idler Gear and Shaft
Input Shaft
Output Shaft Front Bearing
Output Shaft Cover
Input Shaft Front Bearing
◆ Non-reusable part
SNX042



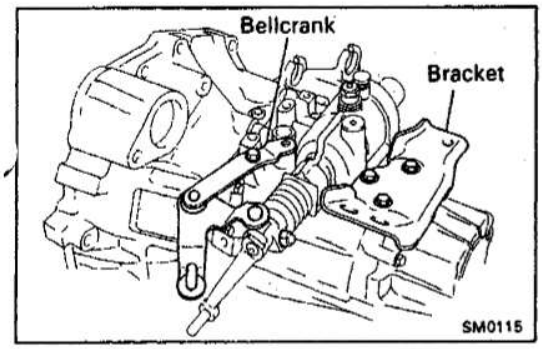
BASIC SUBASSEMBLY SEPARATION MX04N-01

(See page MX1–19 and MX1–20)

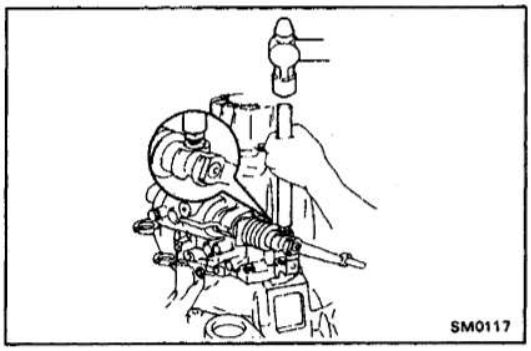
1. REMOVE RELEASE FORK, BEARING BACK – UP LIGHT SWITCH AND VEHICLE SPEED PULSE GENERATOR



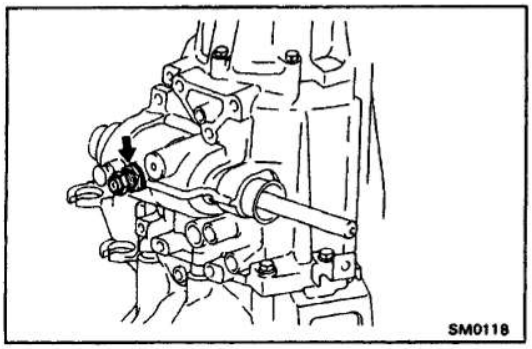
2. REMOVE RELEASE BEARING RETAINER



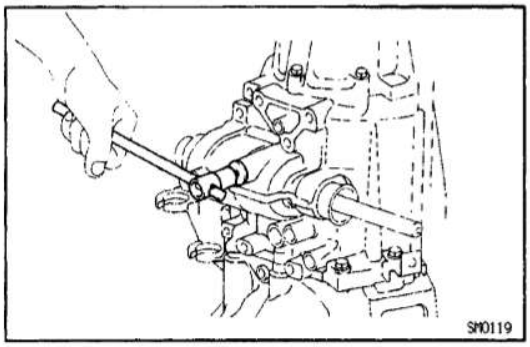
3. REMOVE SELECTING BELLCRANK AND ENGINE MOUNT BRACKET



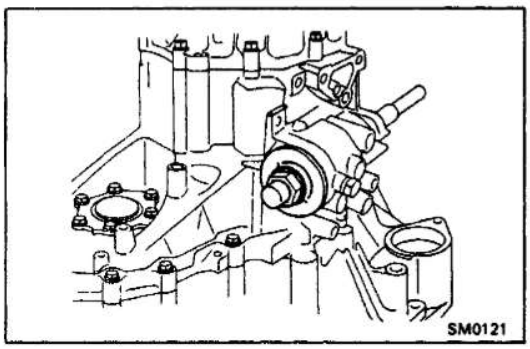
4. REMOVE SHIFT LEVER
   (a) Loosen the lock nut as far as the tip of the lock pin.
   (b) Using a brass bar and hammer, tap out the lock pin.
   (c) Pull out the shift lever with dust boot from shift and select lever shaft.



5. REMOVE NO.1 AND NO.2 LOCK BALL ASSEMBLIES
   (a) Loosen the lock nut and remove the No. 1 lock ball.



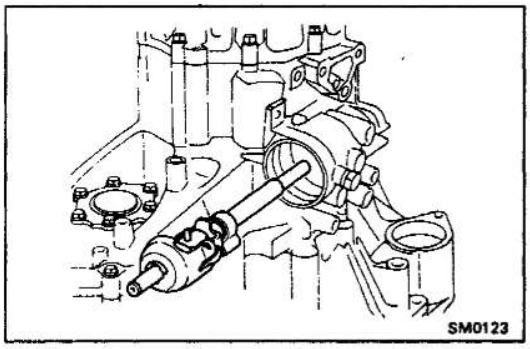
(b) Using a hexagon wrench (6 mm), remove the No.2 lock ball.



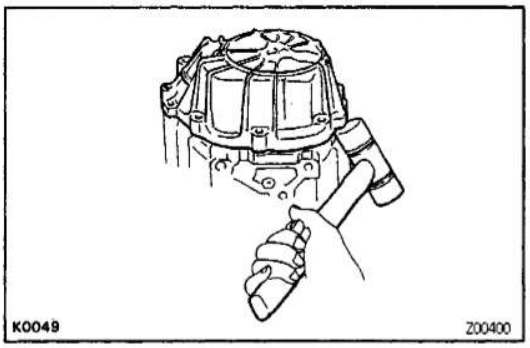
6. REMOVE SHIFT AND SELECT LEVER SHAFT AS–SEMBLY

(a) Remove the control shaft cover.

(b) Remove the O–ring from control shaft cover.



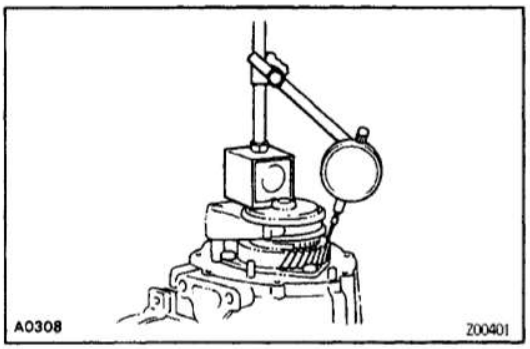
(c) Pull out the shift and select lever shaft assembly.



7. REMOVE TRANSMISSION CASE COVER

(a) Remove the eight bolts.

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



8. INSPECT FIFTH GEAR THRUST CLEARANCE

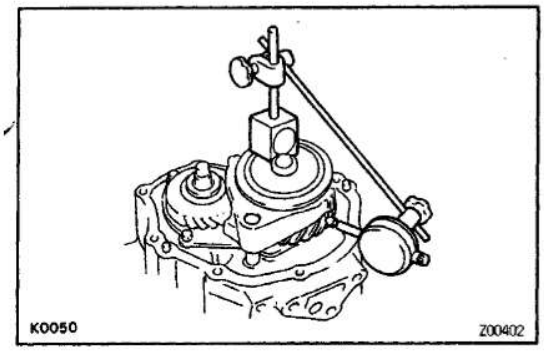
Using a dial indicator, measure the thrust clearance.

Standard clearance:

0.20–0.40 mm (0.0079–0.0157 in.)

Maximum clearance:

0.45 mm (0.0177 in.)



9. INSPECT FIFTH GEAR OIL CLEARANCE

Using a dial indicator, measure the oil clearance.

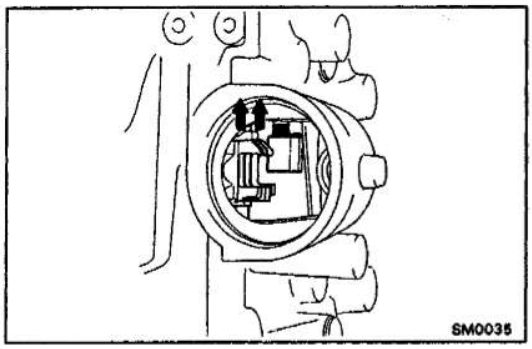
Standard clearance:

0.009–0–050 mm (0.0004–0.0020 in.)

Maximum clearance:

0.07 mm (0.0028 in.)

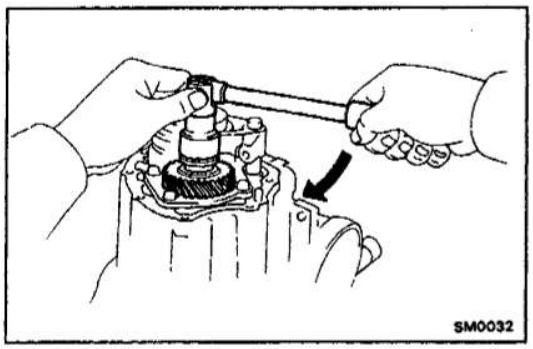
If the clearance exceeds the maximum, replace the gear, needle roller bearing or input shaft.



10. REMOVE OUTPUT SHAFT LOCK NUT

(a) Unstake the nut.

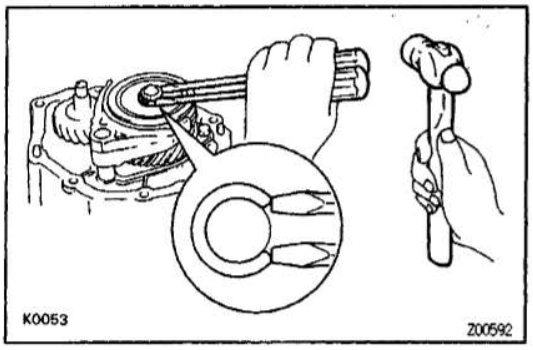
(b) Engage the gear double meshing.



(e) Remove the lock nut clockwise and remove it.

HINT: The lock nut has LH threads.

(d) Disengage the gear double meshing.

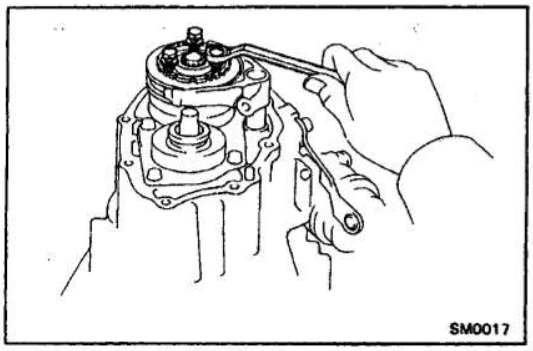


11. REMOVE NO.3 HUB SLEEVE ASSEMBLY AND NO.3 SHIFT FORK

(a) Using two screwdrivers and a hammer, tap out the snap ring.

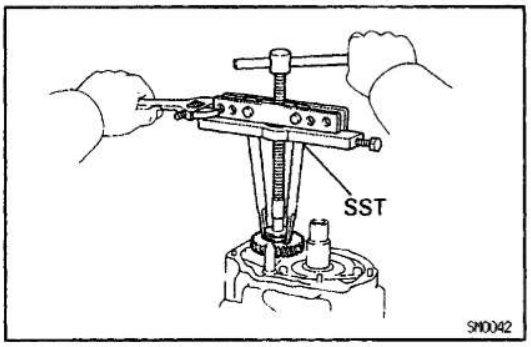
(b) Remove the shifting key retainer.

(c) Remove the bolt from the No.3 shift fork.



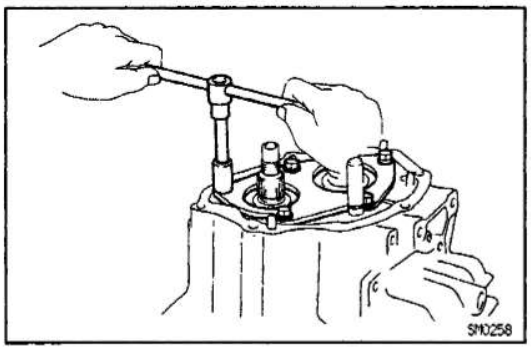
(d) Using– the three case cover set bolts, tighten the three bolts a little at a time and remove the No.3 hub sleeve assembly and shift fork.

12. REMOVE FIFTH GEAR, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS AND SPACER

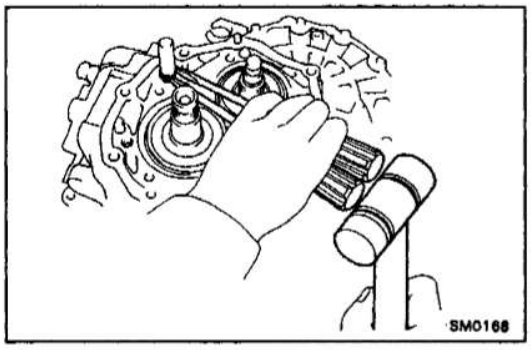


13. REMOVE FIFTH DRIVEN GEAR

Using SST, remove the 5th driven gear.
SST 09950–20017

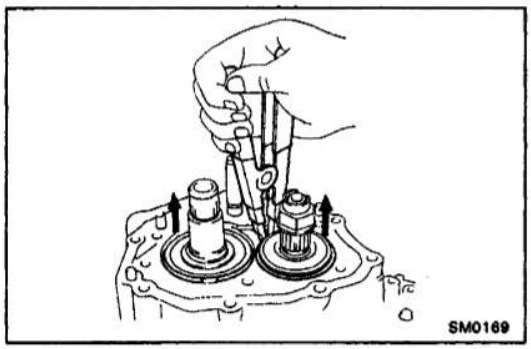


14. REMOVE REAR BEARING RETAINER



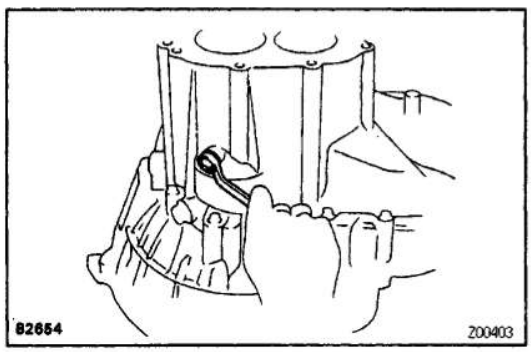
15. REMOVE SNAP RING FROM NO. 1 SHIFT FORK SHAFT

Using two screwdrivers and a hammer, tap out the snap ring.

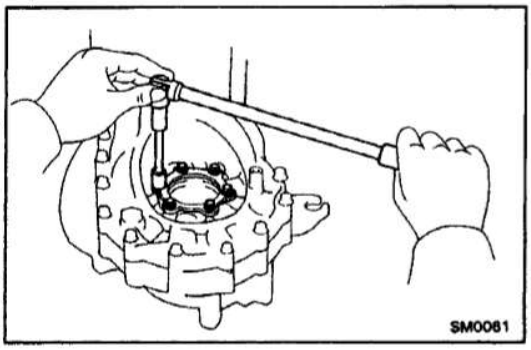


16. REMOVE BEARING SNAP RINGS

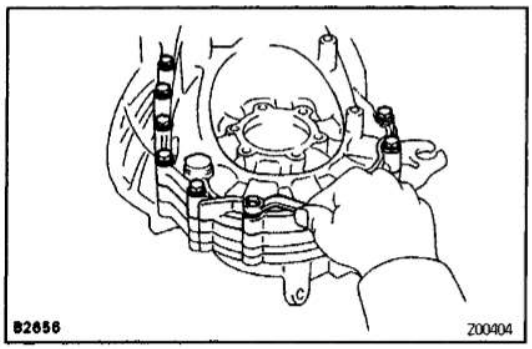
Using a snap ring expander, remove the two snap rings.
HINT: If it is difficult to remove the snap rings, pull up the shafts.



17. REMOVE REVERSE IDLER GEAR SHAFT LOCK BOLT

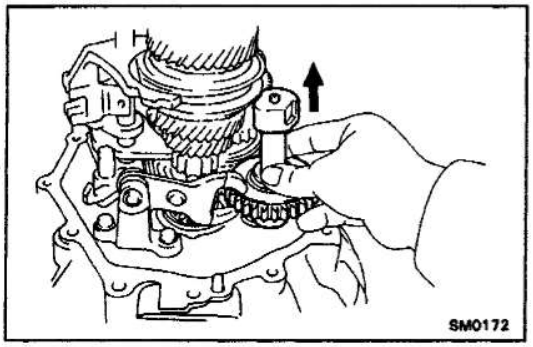


18. REMOVE DIFFERENTIAL SIDE BEARING RETAINER AND SHIM



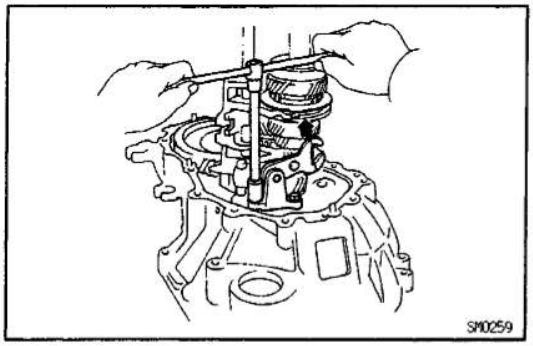
19. REMOVE TRANSMISSION CASE

(a) Remove the seventeen bolts.
(b) Using a plastic hammer, tap off the transmission case.



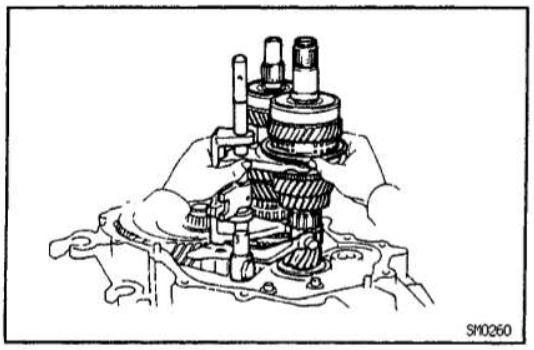
20. REMOVE REVERSE IDLER GEAR AND SHAFT

(a) Pull out the shaft.
(b) Remove the idler gear and thrust washer.



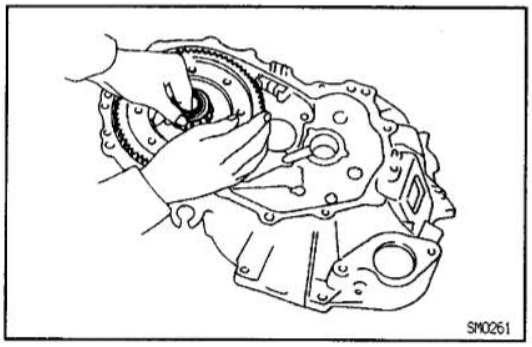
21. REMOVE REVERSE SHIFT ARM

(a) Shift the fork shaft into reverse.
(b) Remove the two bolts and pull off the reverse shift arm.

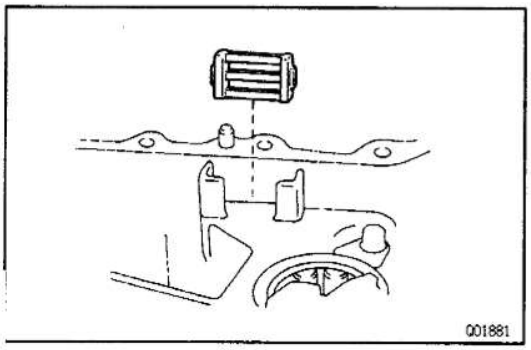


22. REMOVE NO.1 SHIFT FORK SHAFT, NO.1 SHIFT HEAD, NO.1 AND NO.2 SHIFT FORKS, REVERSE SHIFT FORK WITH INTERLOCK PIN, INPUT AND OUTPUT SHAFTS ASSEMBLY

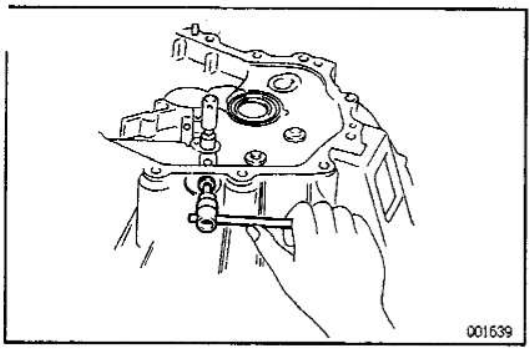
Remove the input shaft assembly and output shaft assembly together with the No. 1 fork shaft, shift head and shift forks with the interlock pin from the trans–axle case.



23. REMOVE DIFFERENTIAL CASE ASSEMBLY

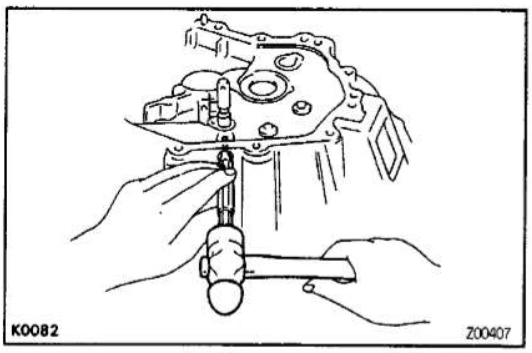


24. REMOVE MAGNET FROM TRANSAXLE CASE

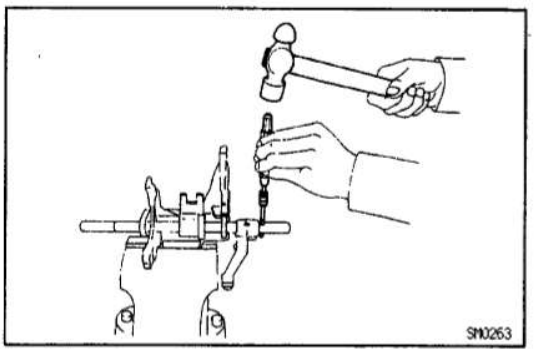


25. REMOVE NO.2 FORK SHAFT

(a) Using a hexagon wrench (6 mm), remove the straight screw plug.

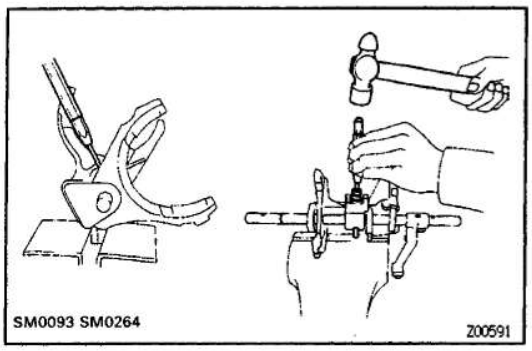


(b) Using a pin punch and hammer, drive out the slotted spring pin.
(c) Pull out the shaft.

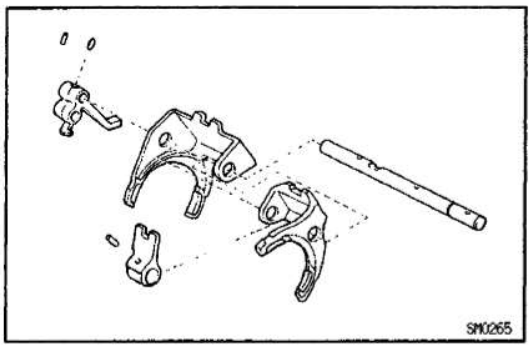


26. SEPARATE NO.1 FORK SHAFT, NO.1 SHIFT HEAD, NO.1, NO.2 SHIFT FORKS AND REVERSE SHIFT FORK

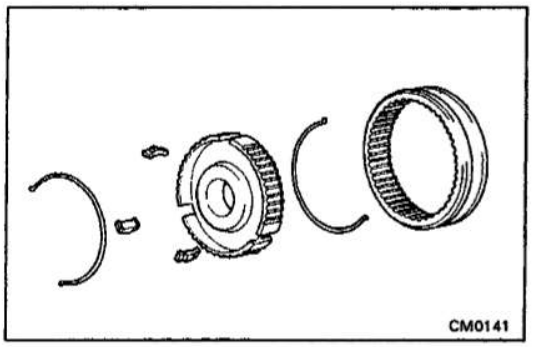
(a) Mount the shift forks to the vise.
(b) Using a pin punch and hammer, drive out the slotted spring pin from the No.1 fork shaft.



(c) Using a pin punch and hammer, drive out the slotted spring pin from the No.1 fork shaft as shown in the figure.

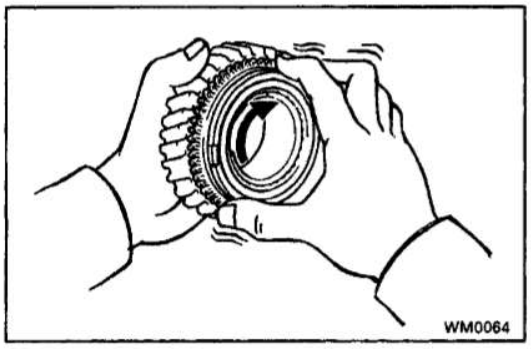


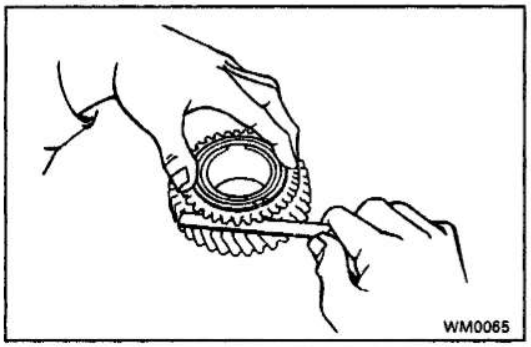
(d) Separate the No.1 shift fork shaft, No.1 shift head, No.1, No.2 shift forks and reverse shift fork.



27. REMOVE NO.3 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO–3 CLUTCH HUB

Using a screwdriver, remove the three shifting keys and two springs from the No.3 clutch hub.





COMPONENT PARTS INSPECTION

MX04P–01

1. INSPECT SYNCHRONIZER RING OF FIFTH GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE:

- **Wash off completely the fine lapping compound after rubbing.**
- **Check again the braking effect of the synchronizer ring.**

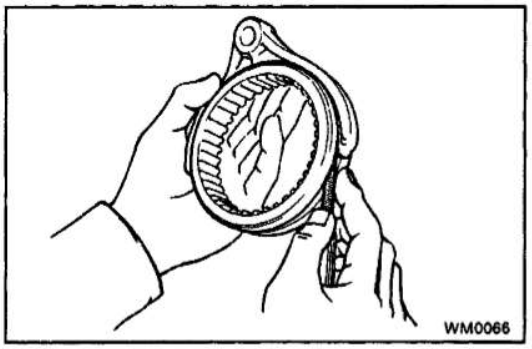
(c) Using a feeler gauge, measure the clearance between the synchronizer ring back and the gear spline end.

Minimum clearance:

0.6 mm (0.024 in.)

If the clearance is less than the minimum, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.



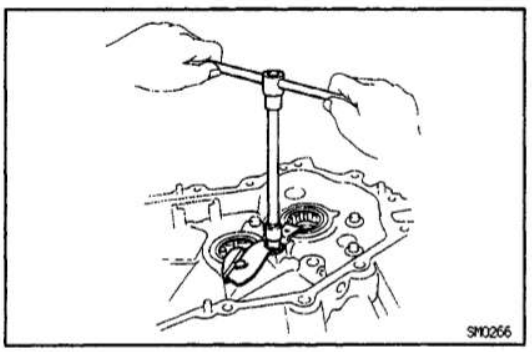
2. INSPECT CLEARANCE OF N4.3 SHIFT FORK AND NO.3 HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance:

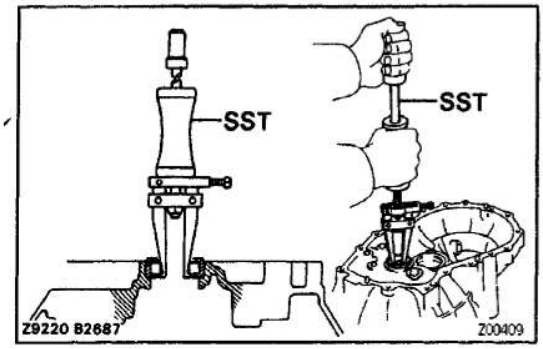
1.0 mm (0.039 in.)

If the clearance exceeds the maximum, replace the shift fork or hub sleeve.

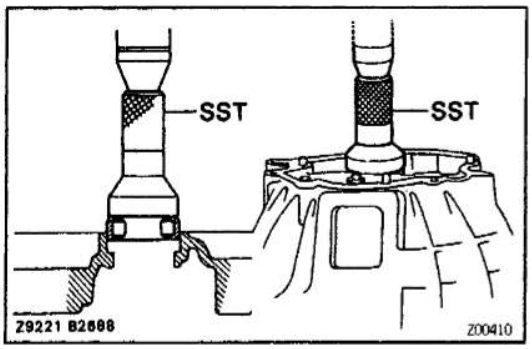


3. IF NECESSARY, REPLACE INPUT SHAFT FRONT BEARING

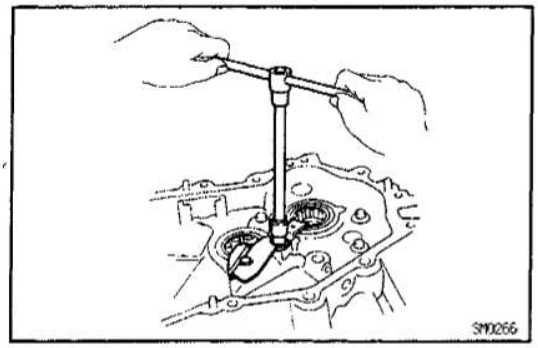
(a) Remove the bolt and transaxle case receiver.



(b) Using SST; pull out the bearing.
SST 09308–00010

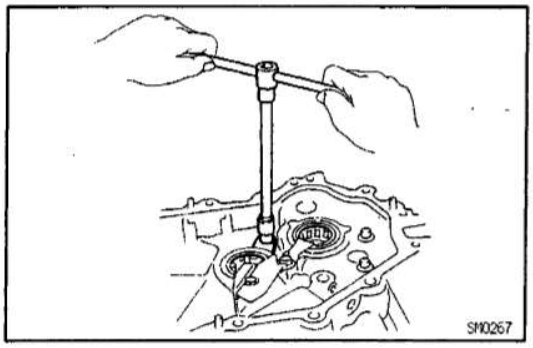


(c) Using SST, press in a new bearing.
SST 09310–35010



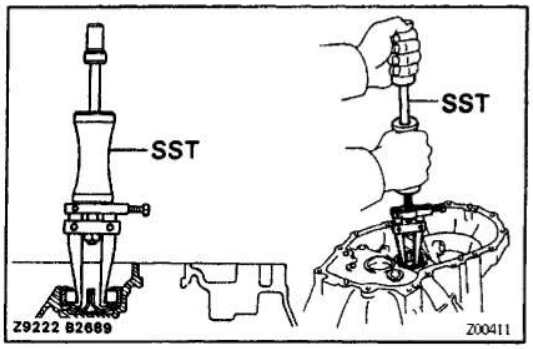
(d) Install the transaxle case receiver and torque the bolt.

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

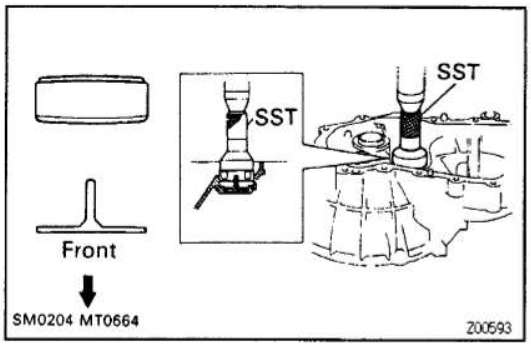


4. IF NECESSARY. REPLACE OUTPUT SHAFT FRONT BEARING

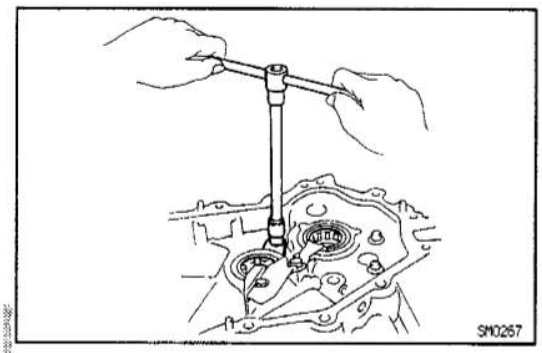
(a) Remove the bolt and bearing lock plate.



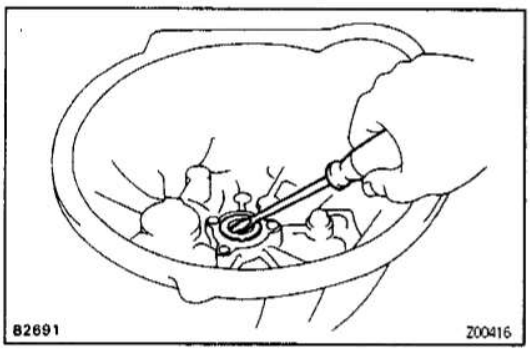
(b) Using SST, pull out the bearing.
SST 09308–00010



(c) Using SST, press in a new bearing.
SST 09310–35010

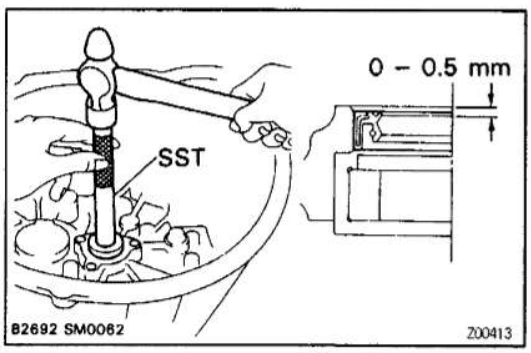


(d) Install the bearing lock plate and torque the bolt.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)



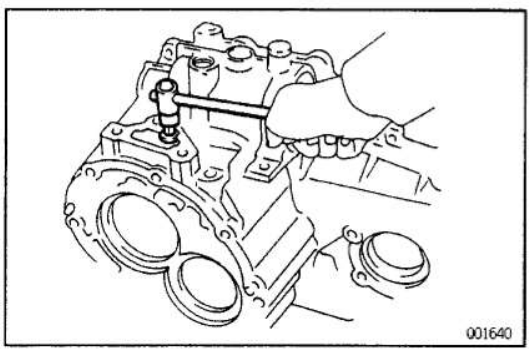
5. IF NECESSARY, REPLACE INPUT SHAFT FRONT OIL SEAL

(a) Using a screwdriver, pry out the oil seal.



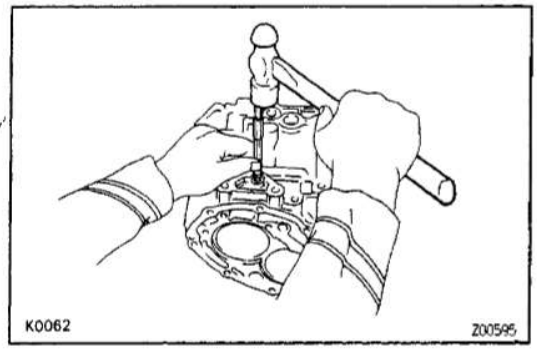
(b) Using SST, drive in a new oil seal.
SST 09608–20012 (09608–00080, 09608–03020)
Drive in depth:
0–0.5 mm (0–0.012 in.)

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

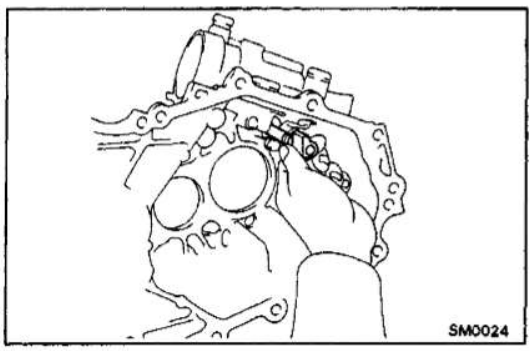


6. IF NECESSARY, REPLACE REVERSE RESTRICT PIN

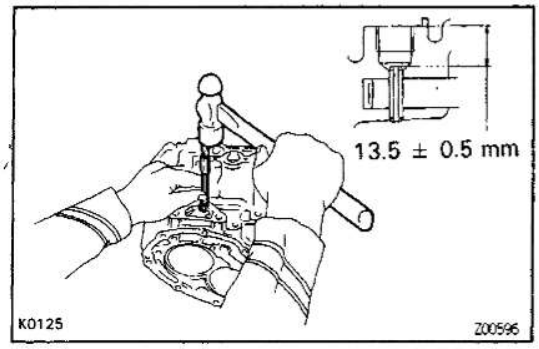
(a) Using a hexagon wrench (6 mm), remove the straight screw plug.



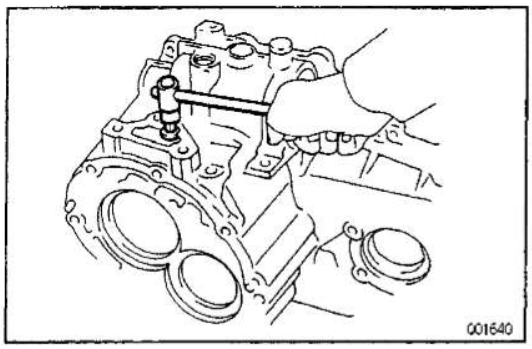
(b) Using a pin punch and hammer, drive out the slotted spring pin.



(c) Replace the reverse restrict pin.



(d) Using a pin punch and hammer, drive in the slotted spring pin.



(e) Apply sealant to the plug threads.

Sealant:

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

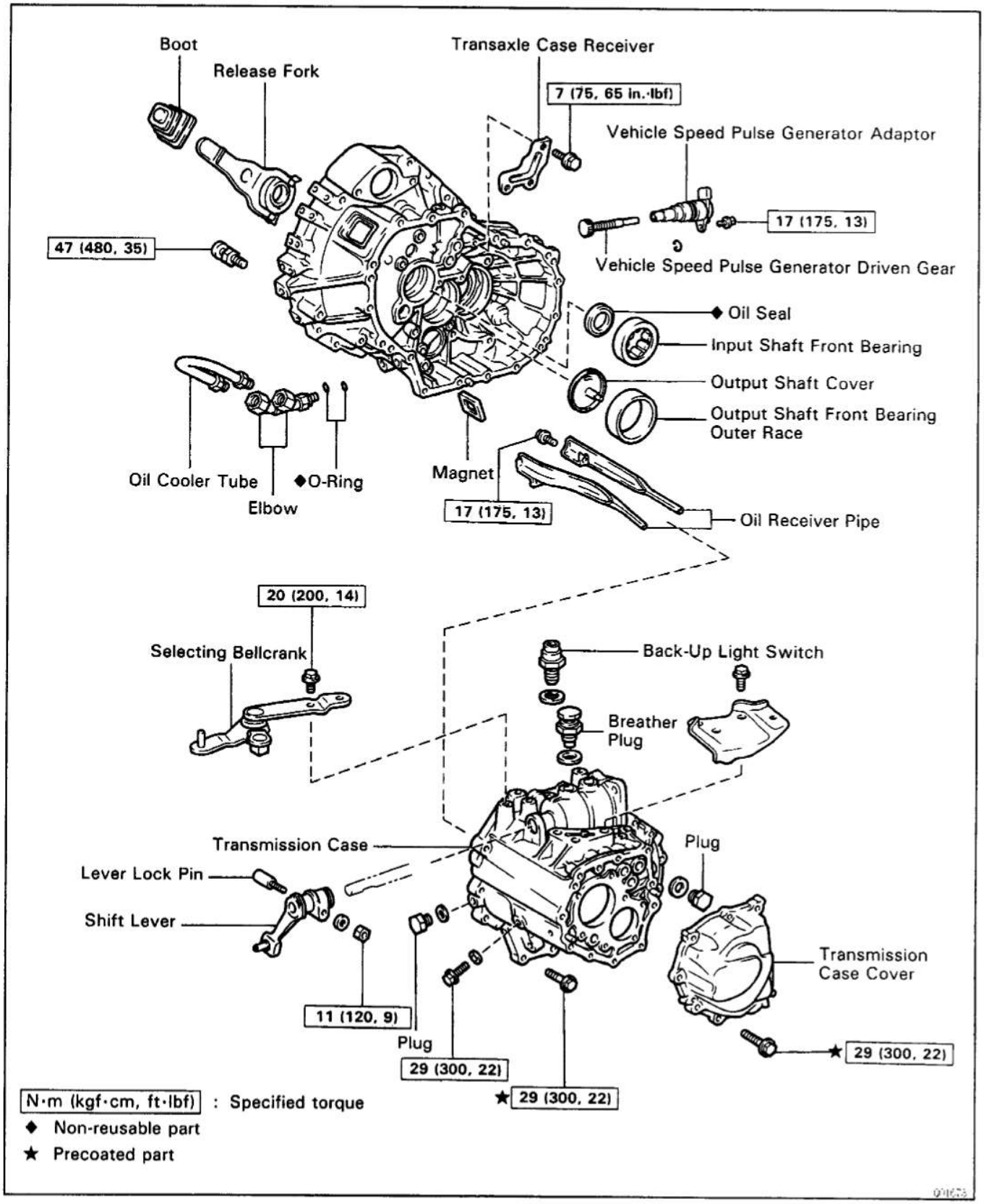
(f) Using a hexagon wrench (6 mm), install and torque the straight screw plug.

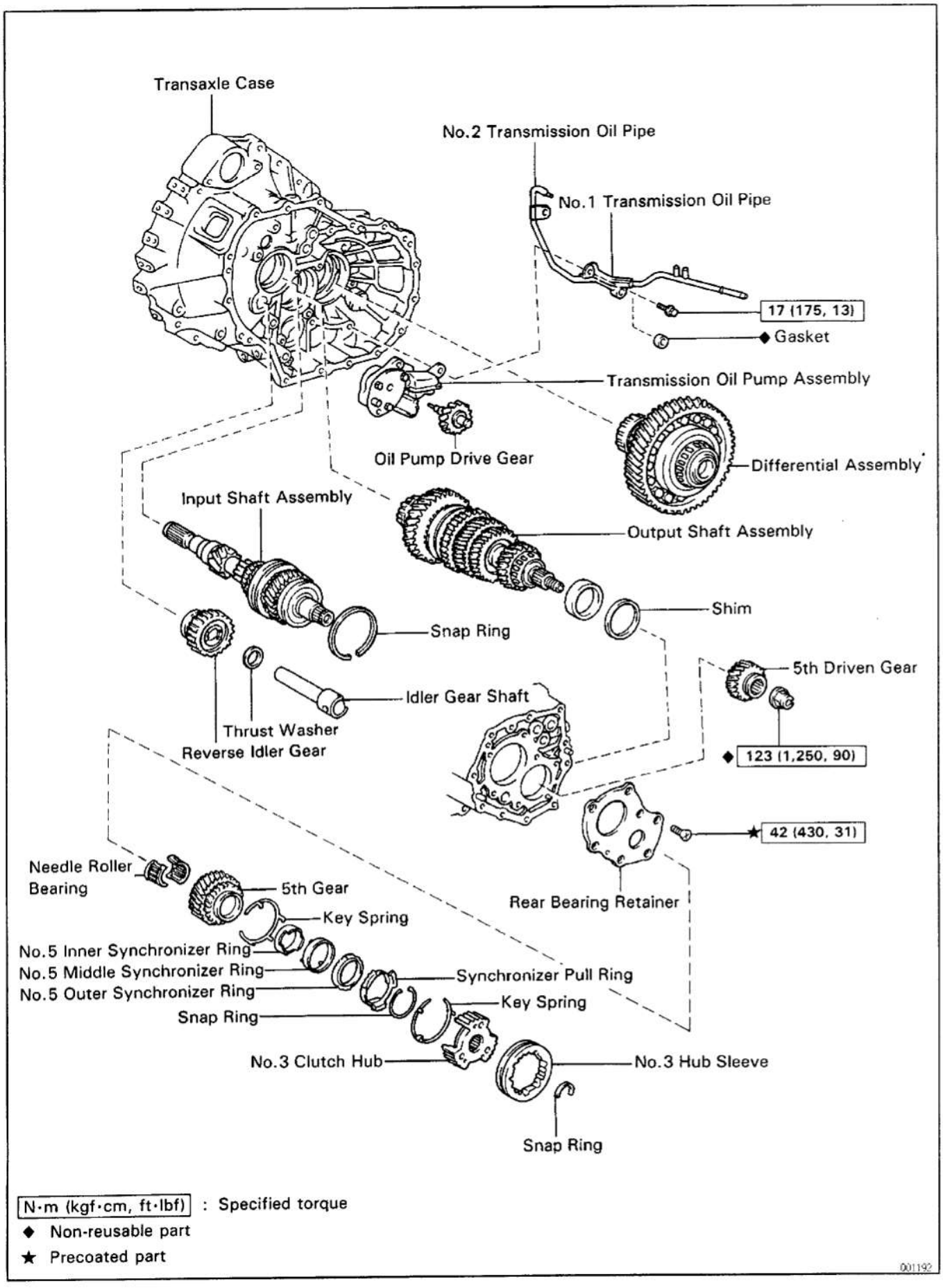
Torque: 13 N–m (130 kgf–cm, 9 ft–lbf)

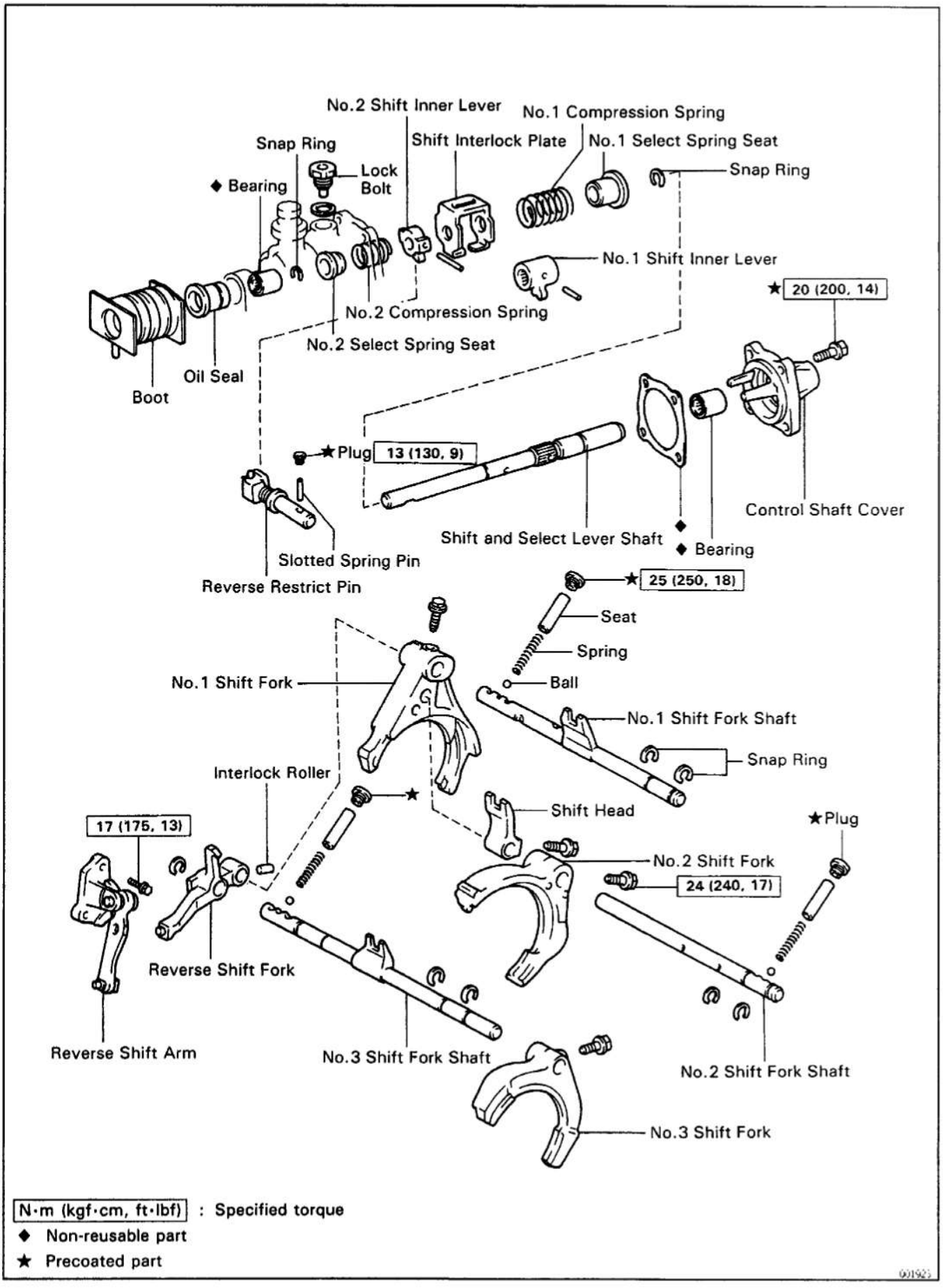
COMPONENT PARTS REMOVAL

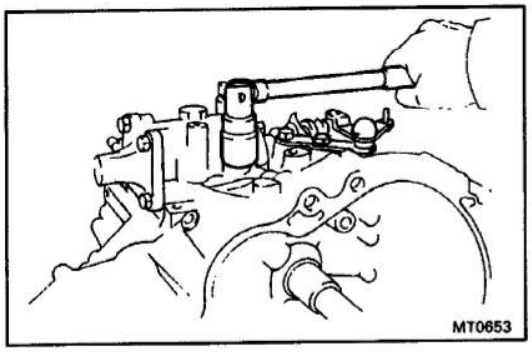
MK014–02

COMPONENTS




Transaxle Case
No.2 Transmission Oil Pipe
No.1 Transmission Oil Pipe
17 (175, 13)
◆ Gasket
Transmission Oil Pump Assembly
Oil Pump Drive Gear
Differential Assembly
Input Shaft Assembly
Output Shaft Assembly
Shim
Snap Ring
5th Driven Gear
Idler Gear Shaft
Thrust Washer
Reverse Idler Gear
◆ 123 (1,250, 90)
★ 42 (430, 31)
Needle Roller Bearing
5th Gear
Key Spring
Rear Bearing Retainer
No.5 Inner Synchronizer Ring
No.5 Middle Synchronizer Ring
No.5 Outer Synchronizer Ring
Synchronizer Pull Ring
Key Spring
Snap Ring
No.3 Clutch Hub
No.3 Hub Sleeve
Snap Ring
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part
001192


No.2 Shift Inner Lever
No.1 Compression Spring
Snap Ring
Shift Interlock Plate
No.1 Select Spring Seat
Lock Bolt
◆ Bearing
Snap Ring
No.1 Shift Inner Lever
★ 20 (200, 14)
No.2 Compression Spring
No.2 Select Spring Seat
Oil Seal
Boot
★ Plug
13 (130, 9)
Control Shaft Cover
Shift and Select Lever Shaft
◆ Bearing
Slotted Spring Pin
Reverse Restrict Pin
★ 25 (250, 18)
Seat
Spring
No.1 Shift Fork
Ball
No.1 Shift Fork Shaft
Snap Ring
Interlock Roller
Shift Head
★ Plug
17 (175, 13)
No.2 Shift Fork
24 (240, 17)
Reverse Shift Fork
Reverse Shift Arm
No.3 Shift Fork Shaft
No.2 Shift Fork Shaft
No.3 Shift Fork
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part



BASIC SUBASSEMBLY SEPARATION

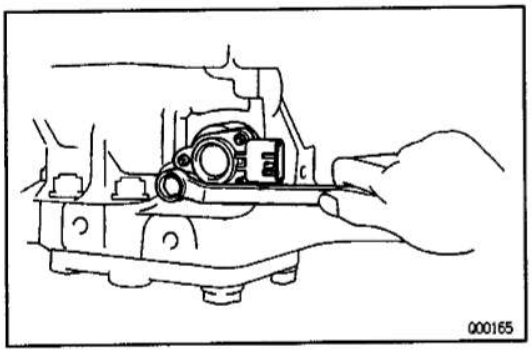
MX04W–01

(See pages MX2–20 to MX2–22)

1. REMOVE RELEASE FORK AND BEARING

2. REMOVE BACK–UP LIGHT SWITCH

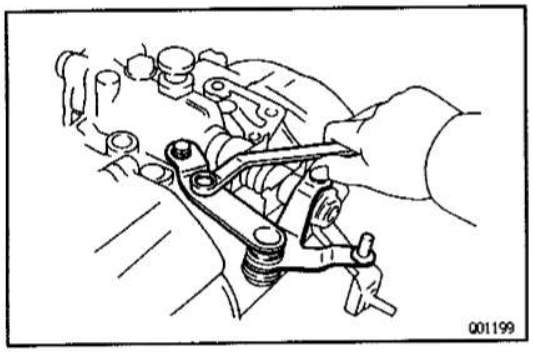
Remove the back–up light switch.



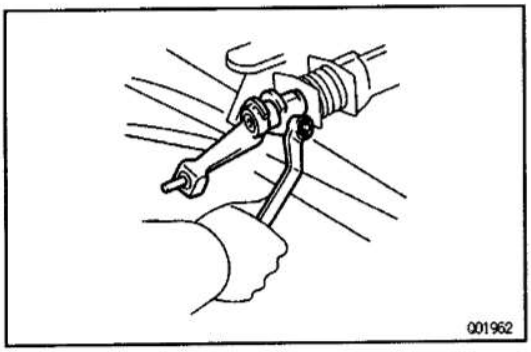
3. REMOVE VEHICLE SPEED PULSE GENERATOR

(a) Remove the set bolt and lock plate.

(b) Remove the vehicle speed pulse generator.

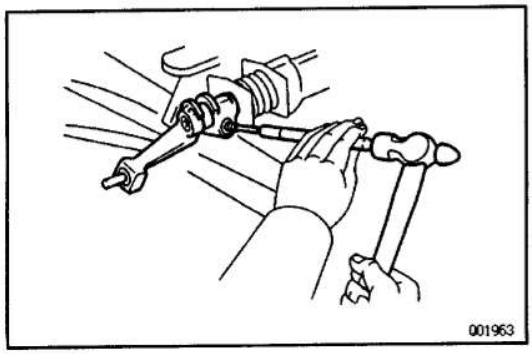


4. REMOVE SELECTING BELLCRANK ASSEMBLY

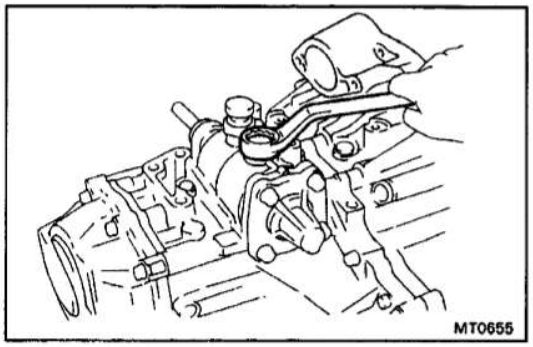


5. REMOVE SHIFT LEVER

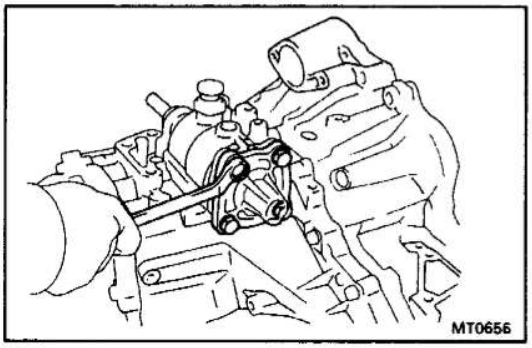
(a) Remove the shift lever set nut.



(b) Using a pin punch and hammer, tap out the lock pin.

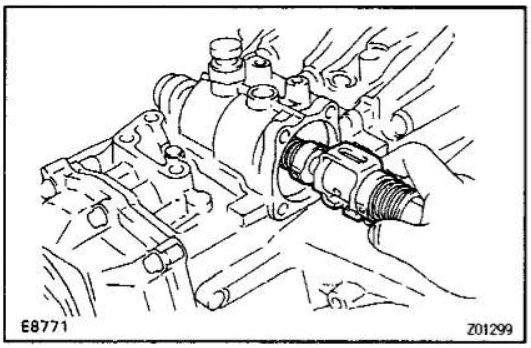


6. REMOVE LOCK BOLT

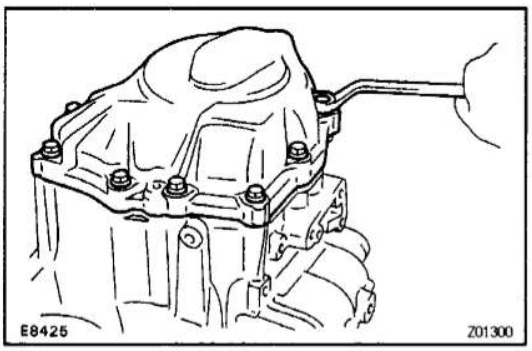


7. REMOVE CONTROL SHAFT COVER

Remove the four bolts holding the control shaft cover.

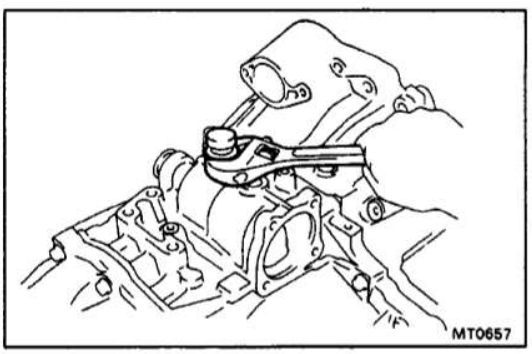


8. REMOVE SHIFT AND SELECT LEVER SHAFT ASSEMBLY

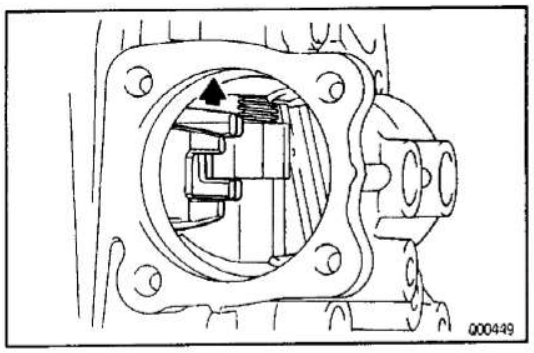


9. REMOVE TRANSMISSION CASE COVER

Remove the ten bolts and case cover.



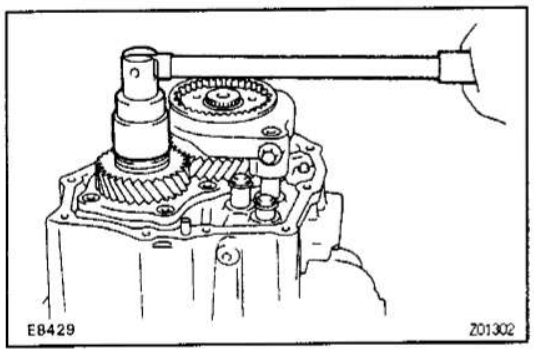
10. REMOVE BREATHER PLUG WITH GASKET



11. REMOVE LOCK NUT

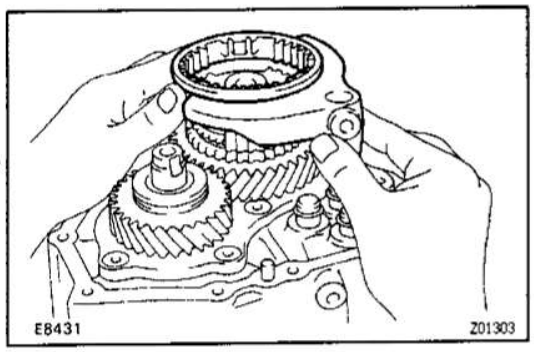
(a) Unstake the lock nut.

(b) Engage the gear double meshing.



(c) Remove the lock nut.

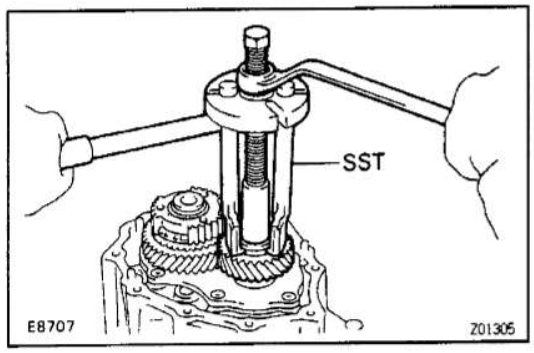
(d) Disengage the gear double meshing.



12. REMOVE NO. 3 HUB SLEEVE AND NO. 3 SHIFT FORK

(a) Remove the No.3 shift fork set bolt.

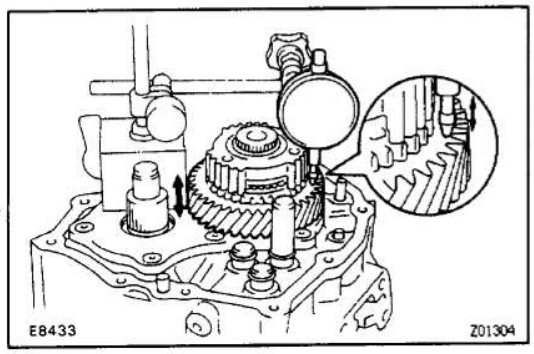
(b) Remove the No.3 hub sleeve and No.3 shift fork.



13. REMOVE FIFTH DRIVEN GEAR

Using SST, remove the 5th driven gear.

SST 09310–17010 (09310–07010, 09310–07020, 09310–07040, 09310–07050)



14. MEASURE FIFTH GEAR THRUST CLEARANCE AND OIL CLEARANCE

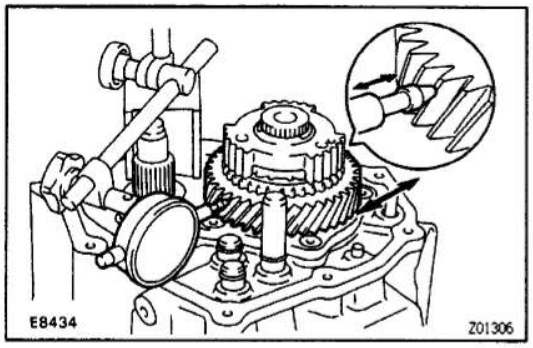
(a) Using a dial indicator, measure the thrust clearance.

Standard clearance:

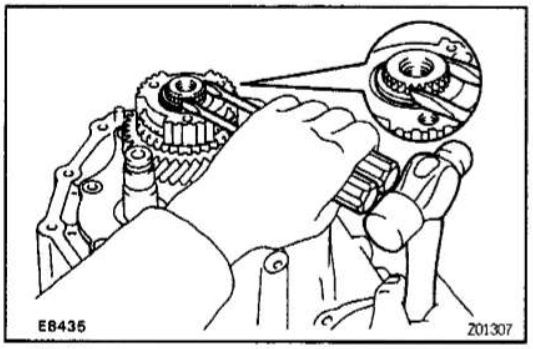
0.10–0.57 mm (0.0039–0.0224 in.)

Maximum clearance:

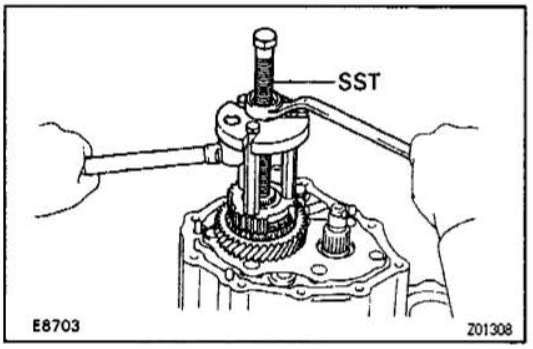
0.65 mm (0.0256 in.)



(b) Using a dial indicator, measure the oil clearance.
Standard clearance:
0.009–0.050 m m (0.0004–0.0020 in.)
Maximum clearance:
0.070 mm (0.0028 in.)

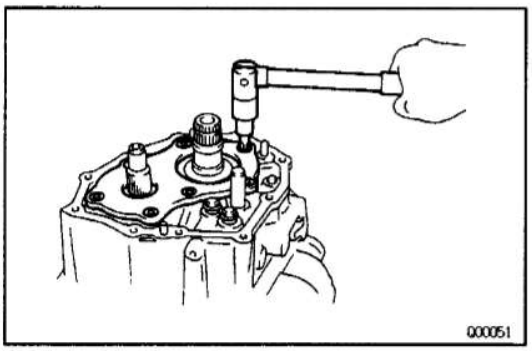


15. REMOVE NO.3 CLUTCH HUB AND FIFTH GEAR
(a) Using two screwdrivers and a hammer, tap out the snap ring.

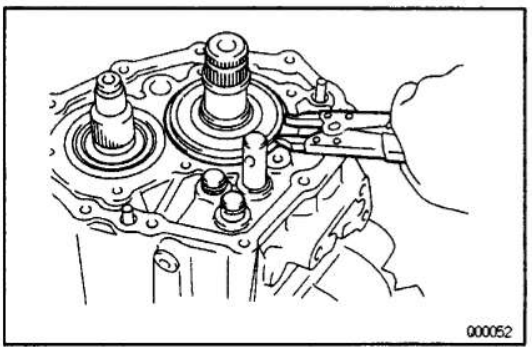


(b) Using SST, remove the No.3 clutch hub with synch–ronizer ring and 5th gear.
SST 09310–17010 (09310–07010, 09310–07020, 09310–07030, 09310–07050)

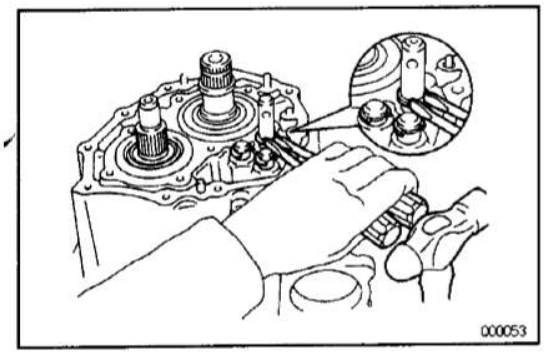
16. REMOVE NEEDLE ROLLER BEARING AND SPACER



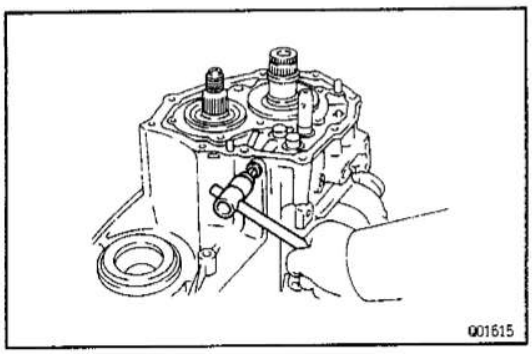
17. REMOVE REAR BEARING RETAINER
(a) Using a torx socket wrench, remove the seven torx screws and bearing retainer.
Torx wrench T45 09042–00050
(b) Remove the adjust shim.



18. REMOVE SNAP RING
(a) Using a snap ring expander, remove the snap ring.

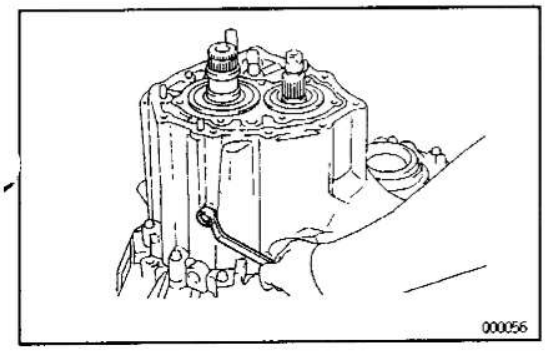


(b) Using two screwdrivers and a hammer, remove the three snap rings.

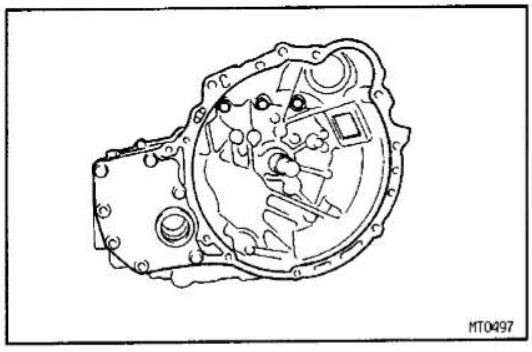


19. REMOVE PLUG, SEAT, SPRING AND LOCKING BALL

(a) Using a hexagon wrench (6 mm), remove the plug.
(b) Using a magnetic finger, remove the seat, spring and locking ball.

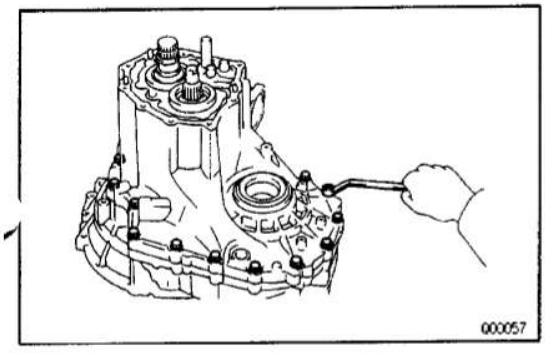


20. REMOVE REVERSE IDLER GEAR SHAFT RETAINING BOLT

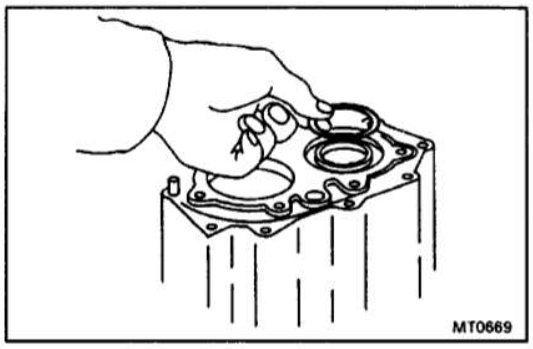


21. REMOVE TRANSMISSION CASE

(a) Remove the three bolts from transaxle case side.

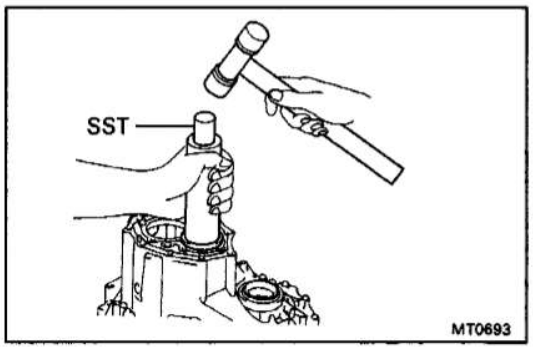


(b) Remove the fourteen bolts from the transmission case side and tap off the case with a plastic hammer.

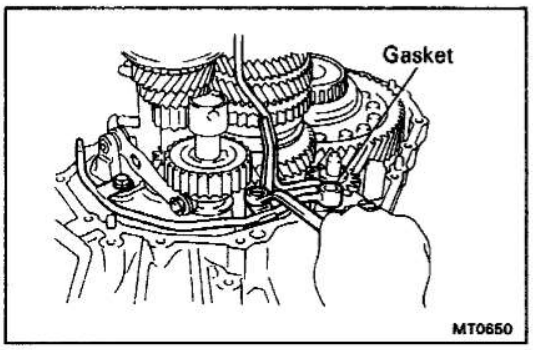


22. REMOVE OUTPUT SHAFT REAR TAPERED ROLLER BEARING OUTER RACE

(a) Remove the shim.

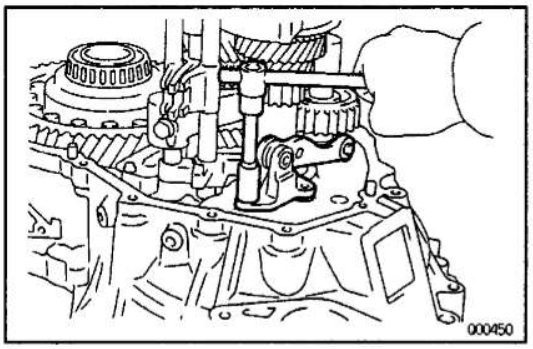


(b) Using SST and a hammer, remove the output shaft rear tapered roller bearing outer race.
SST 09316–60010 (09316–00010)



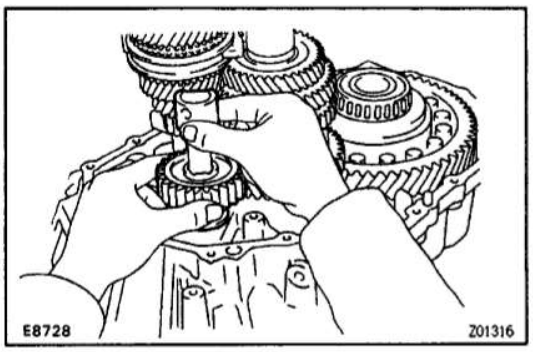
23. REMOVE NO.2 OIL PIPE

(a) Remove the gasket.
(b) Remove the two bolts and oil pipe.



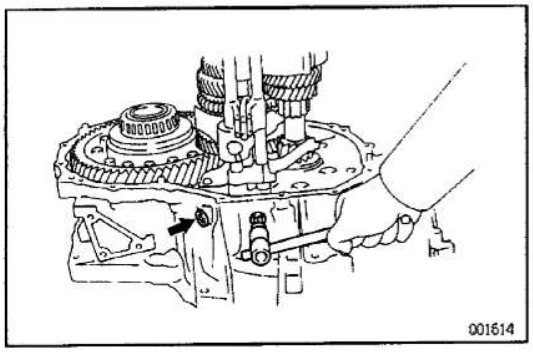
24. REMOVE REVERSE SHIFT ARM BRACKET

Remove the bolt and pull off the bracket.



25. REMOVE REVERSE IDLER GEAR AND SHAFT

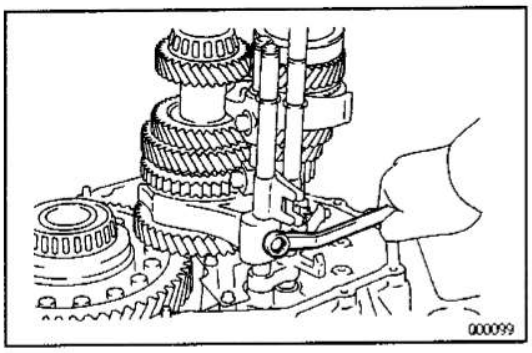
Pull out the shaft, remove the reverse idler gear.



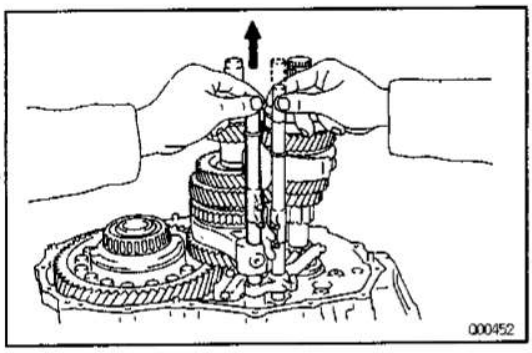
26. REMOVE STRAIGHT SCREW PLUGS, LOCKING BALLS AND SPRINGS

(a) Using a hexagon wrench (6 mm), remove the two plugs.

(b) Using a magnetic finger, remove the two spring seats, springs and balls.

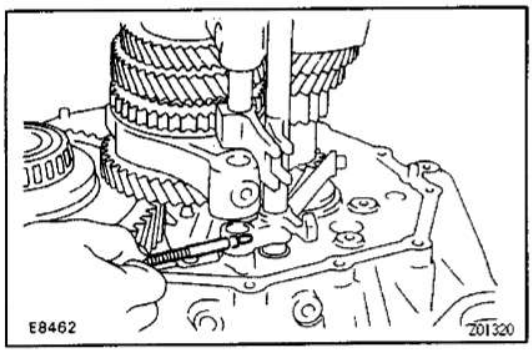


27. REMOVE THREE SET BOLTS



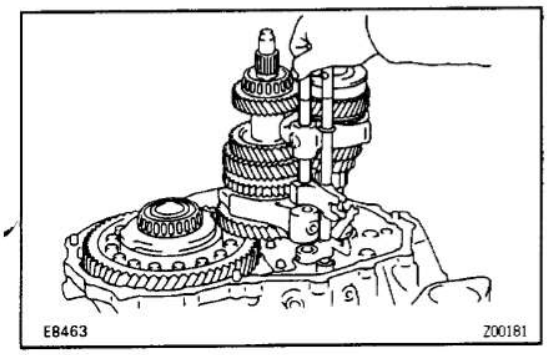
28. REMOVE No.1 SHIFT FORK SHAFT

Pull up No.3 shift fork shaft, remove the No.1 shift fork shaft.



29. REMOVE INTERLOCK ROLLER

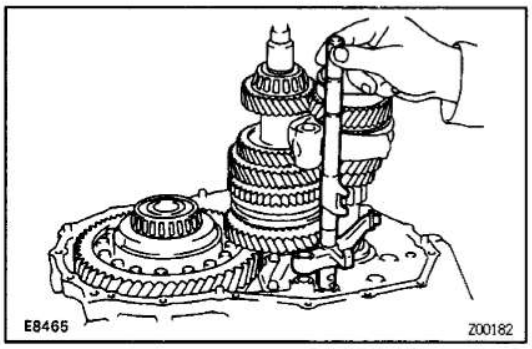
Using a magnetic finger, remove the interlock roller from the reverse shift fork.



30. REMOVE NO.2 SHIFT FORK SHAFT, SHIFT HEAD AND NO.1 SHIFT FORK

(a) Pull out the No.2 shift fork shaft.

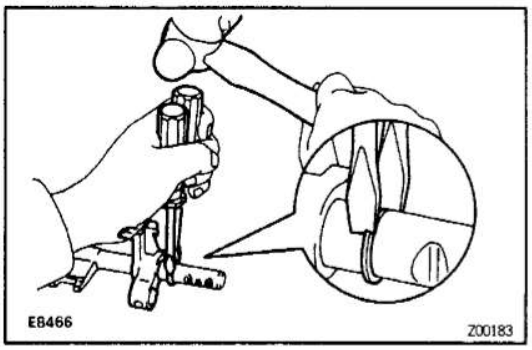
(b) Remove the shift head and No.1 shift fork.



31. REMOVE NO.3 SHIFT FORK SHAFT WITH REVERSE SHIFT FORK AND NO.2 SHIFT FORK

(a) Pull out the No.3 shift fork shaft with reverse shift fork.

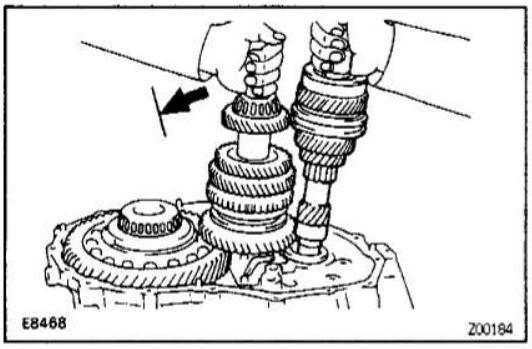
(b) Remove the No.2 shift fork.



32. REMOVE SNAP RINGS

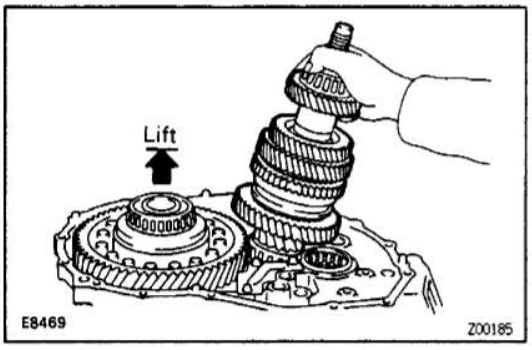
(a) Using two screwdrivers and a hammer, remove the snap ring and reverse shift fork from the No.3 shift fork shaft.

(b) Using two screwdrivers and a hammer, remove the snap rings from the No.1, No.2 and No.3 shift fork shafts.

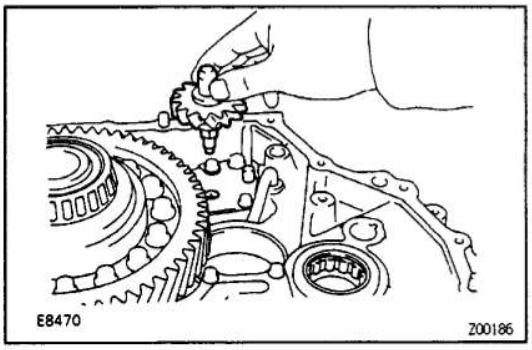


33. REMOVE INPUT AND OUTPUT SHAFT ASSEMBLY

(a) Leaning the output shaft to the differential side, remove the input shaft assembly.

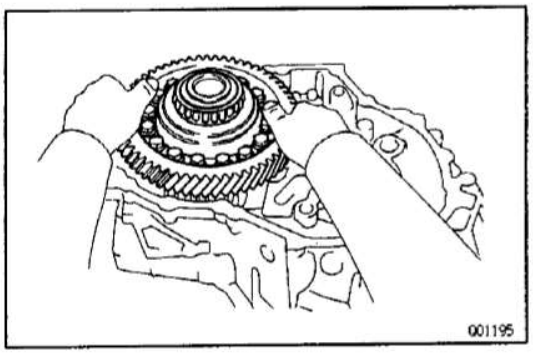


(b) Lift up the differential case assembly, remove the output shaft.

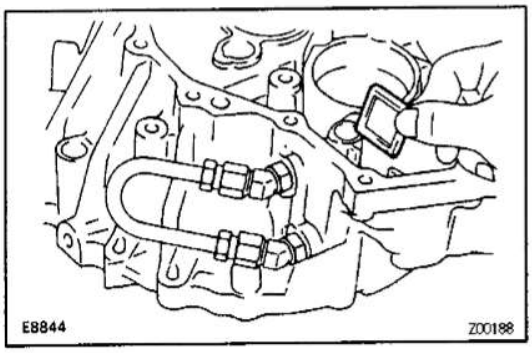


34. REMOVE DIFFERENTIAL ASSEMBLY

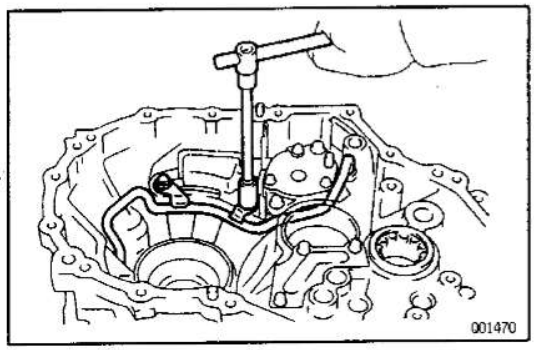
(a) Remove the oil pump drive gear.



(b) Remove the differential case assembly.

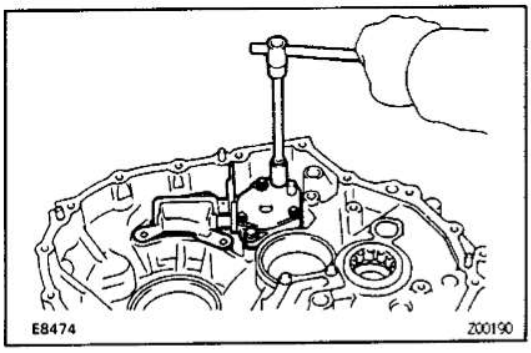


35. REMOVE MAGNET FROM TRANSAXLE CASE

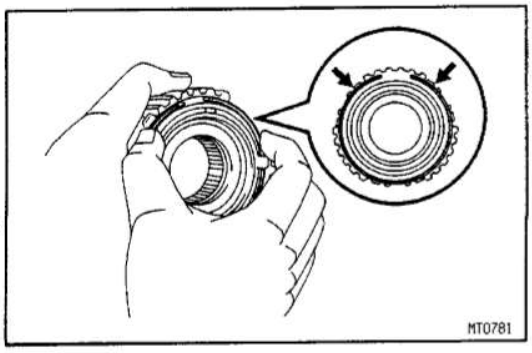


36. REMOVE OIL PUMP ASSEMBLY

(a) Remove the two bolts and oil pipe.

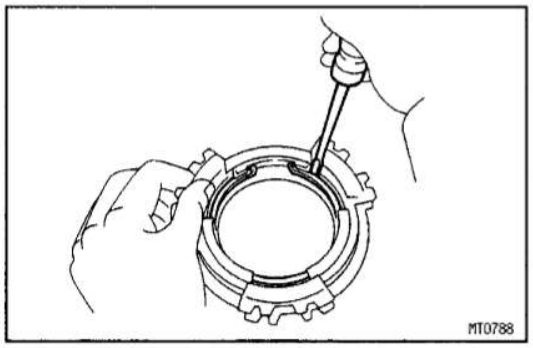


(b) Remove the two bolts and oil pump.

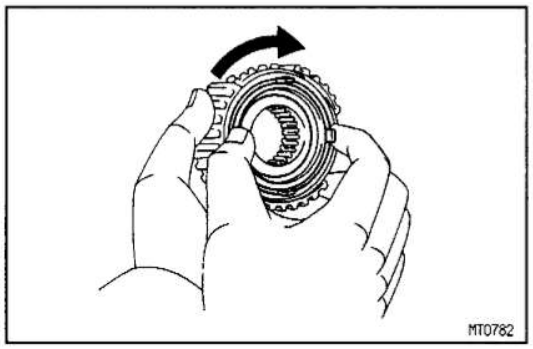


37. REMOVE NO.5 SYNCHRONIZER RING WITH KEY SPRING FROM NO.3 CLUTCH HUB

(a) Remove the No.5 synchronizer ring with key spring from No.3 clutch hub.



(b) Using a screwdriver, remove the snap ring.
HINT: Wrap vinyl tape on the screwdriver to prevent damaging the synchronizer ring.
(c) Remove the synchronizer rings.

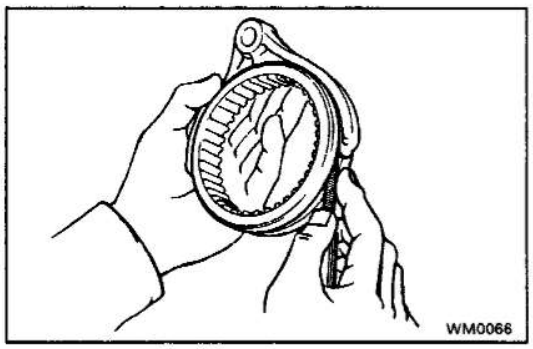


COMPONENT PARTS INSPECTION

MX04X–01

1. INSPECT NO.5 SYNCHRONIZER RINGS

(a) Check for wear or damage.
(b) Check the braking effect of the synchronizer ring.
Turn the middle No.5 synchronizer ring in one direction while pushing it to the outer No.5 synchronizer ring and check that the ring is locked.
If the braking effect is insufficient, replace the synchronizer ring.

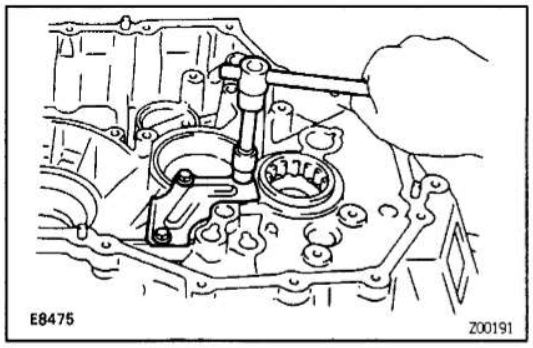


2. MEASURE CLEARANCE OF SHIFT FORKS AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

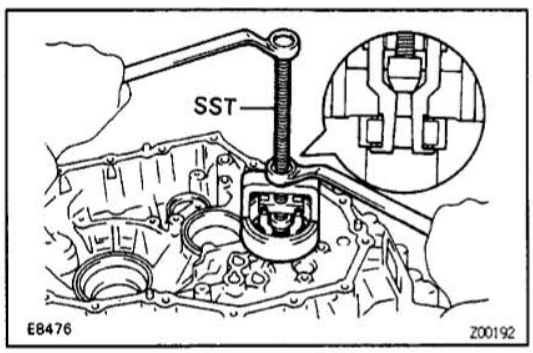
Maximum clearance:
1.0 mm (0.039 in.)

If the clearance exceeds the limit, replace the shift fork or hub sleeve.

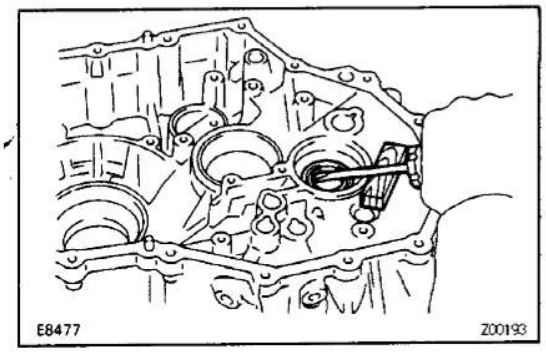


3. IF NECESSARY, REPLACE INPUT SHAFT BEARING AND OIL SEAL

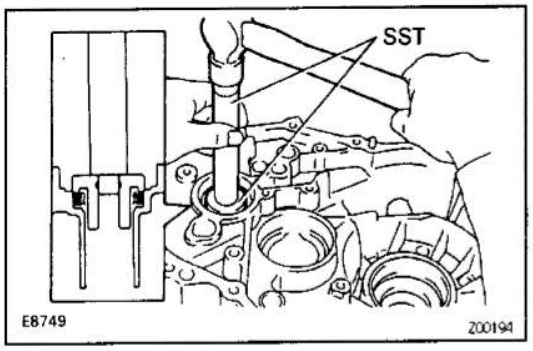
(a) Remove the three bolts and transaxle case receiver.



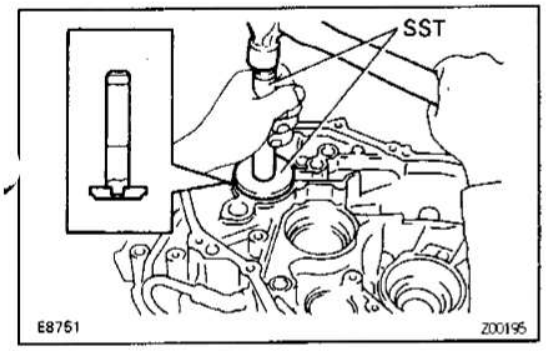
(b) Using SST, pull out the bearing.
SST 09612–65014



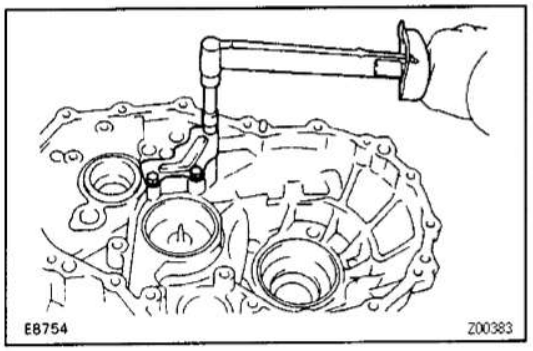
(c) Using a screwdriver, remove the oil seal.



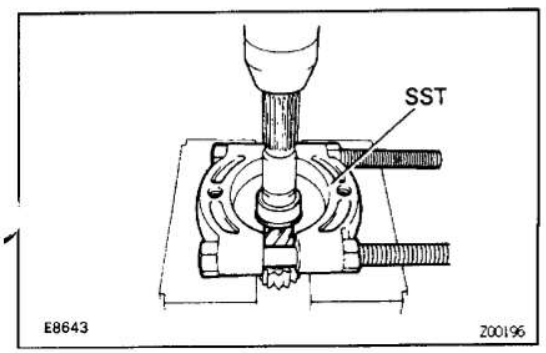
(d) Using SST, drive in a new oil seal.
SST 09608–12010 (09608–00020, 09608–00080)
(e) Coat the lip of seal with MP grease.



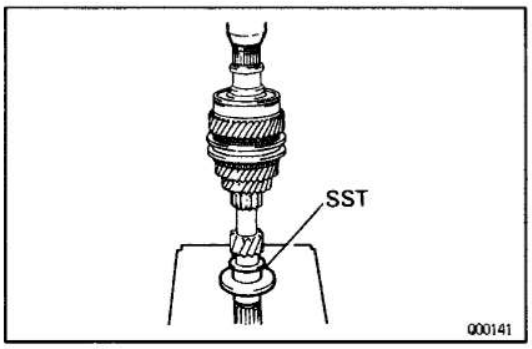
(f) Using SST, drive in a new bearing.
SST 09608–12010 (09608–00020, 09608–00060)



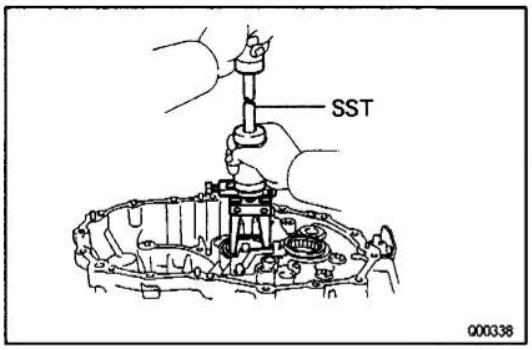
(g) Install the transaxle case receiver.
(h) Install and torque the three bolts.
Torque: 7.4 N–m (75 kgf–cm, 65 in.–lbf)



(i) Using SST and a press, remove the inner race.
SST 09950–00020



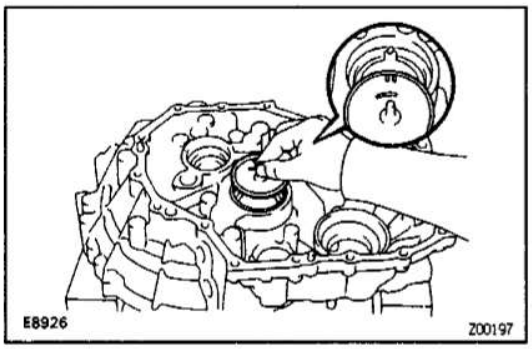
(j) Using SST and a press, install a new input shaft front bearing inner race.
SST 09316–60010 (09316–00020)



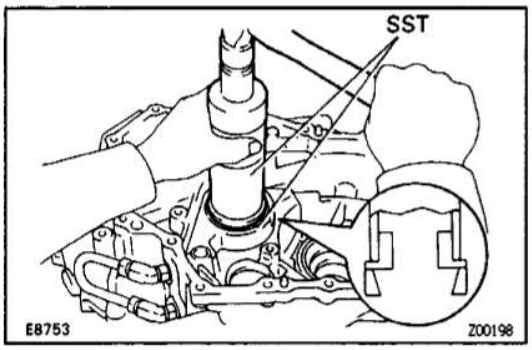
4. IF NECESSARY, REPLACE OUTPUT SHAFT FRONT BEARING AND OUTPUT SHAFT FRONT COVER

(a) Using SST, pull out the output shaft front bearing outer race.
SST 09308–00010

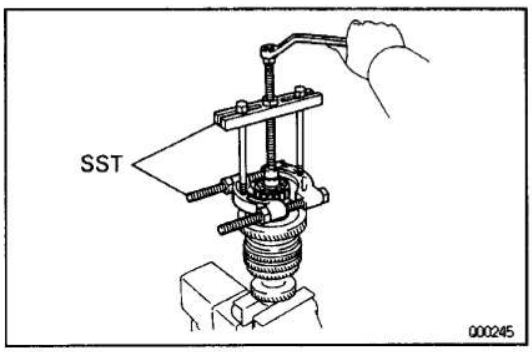
(b) Remove the output shaft front cover.



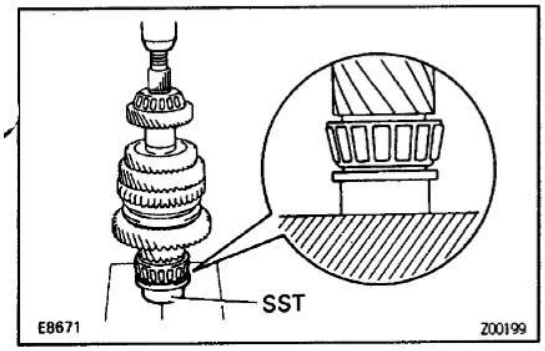
(c) Install a new output shaft front cover.
HINT: install the output shaft front cover projection into the case side groove.



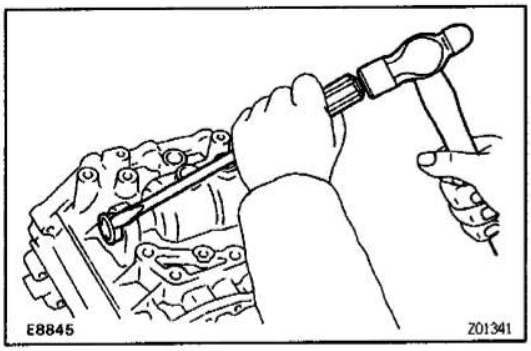
(d) Using SST and a hammer, drive in a new output shaft front bearing outer race.
SST 09316–60010 (09316–00010, 09316–00020)



(e) Using SST and a socket wrench, remove the output shaft front bearing.
SST 09950–00020, 09950–00030

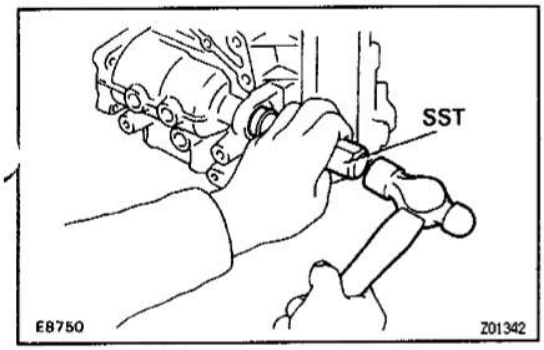


(f) Using SST and a press, install a new output shaft front bearing.
SST 09316–60010 (09316–00070)



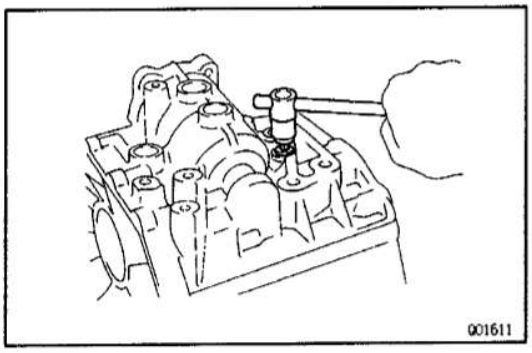
5. IF NECESSARY, REPLACE SHIFT CONTROL SHAFT OIL SEAL

(a) Using a screwdriver and hammer, remove the oil seal.



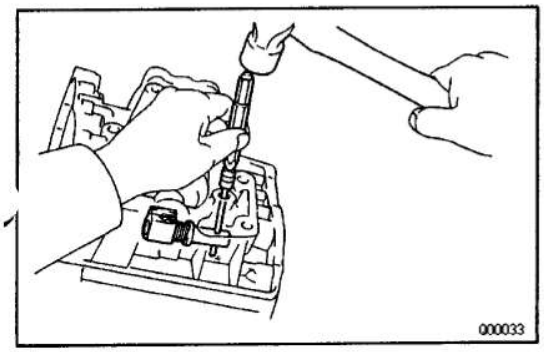
(b) Using SST, drive in the new oil seal until it touches the bottom.
SST 09517–36010

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

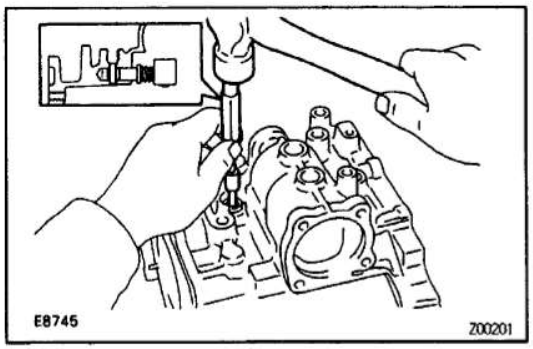


6. IF NECESSARY, REPLACE REVERSE RESTRICT PIN

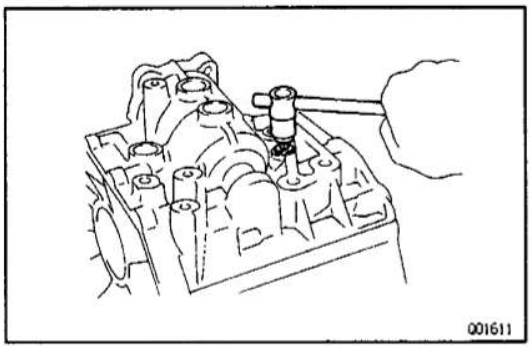
(a) Using a hexagon wrench (6 mm), remove the screw plug.



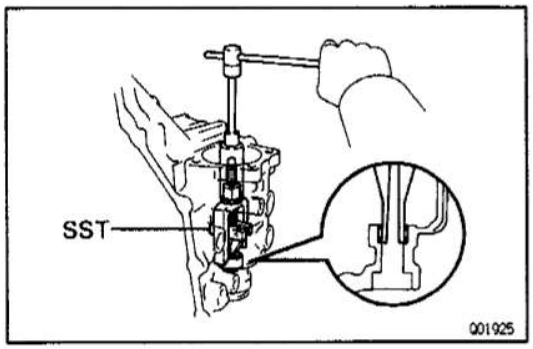
(b) Using a pin punch and hammer, drive out the slotted spring pin.



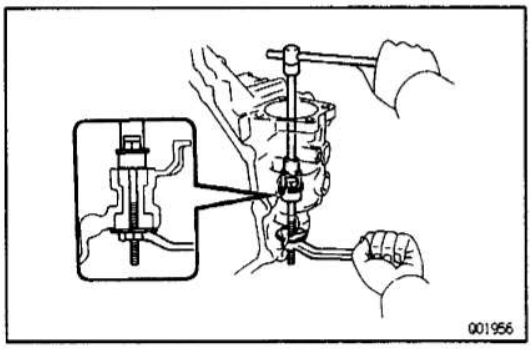
(c) Replace the reverse restrict pin.
(d) Using a pin punch, drive in the slotted spring pin.



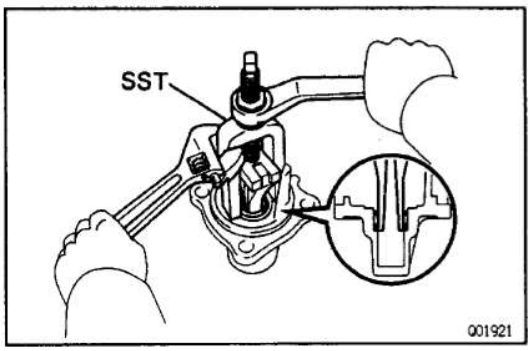
(e) Apply sealant to the screw plug threads.
Sealant:
Part No. 08833–00080, THREE BOND 1344, LOC–TITE 242 or equivalent
(f) Using a hexagon wrench (6 mm), install the screw plug.



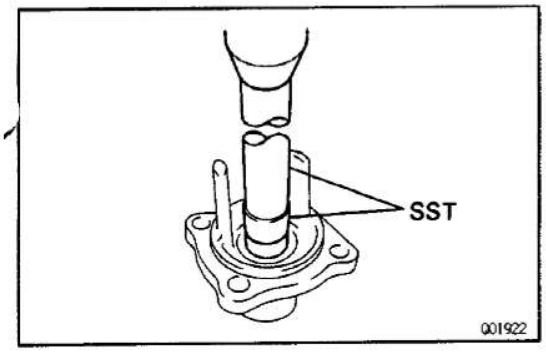
7. IF NECESSARY, REPLACE CONTROL SHAFT FRONT BEARING
(a) Using SST, remove the needle roller bearing from the transmission case.
SST 09319–60020



(b) Using a suitable bolt, nut and two washers, install a new needle roller bearing to the transmission case.



8. IF NECESSARY, REPLACE CONTROL SHAFT REAR BEARING
(a) Using SST, remove the needle roller bearing from the control shaft cover.
SST 09319–60020



(b) Using SST and a press, press in a new needle roller bearing to the control shaft cover.
SST 09620–30010 (09631–00020),
09630–24013 (09620–24010)

AUTOMATIC TRANSAXLE

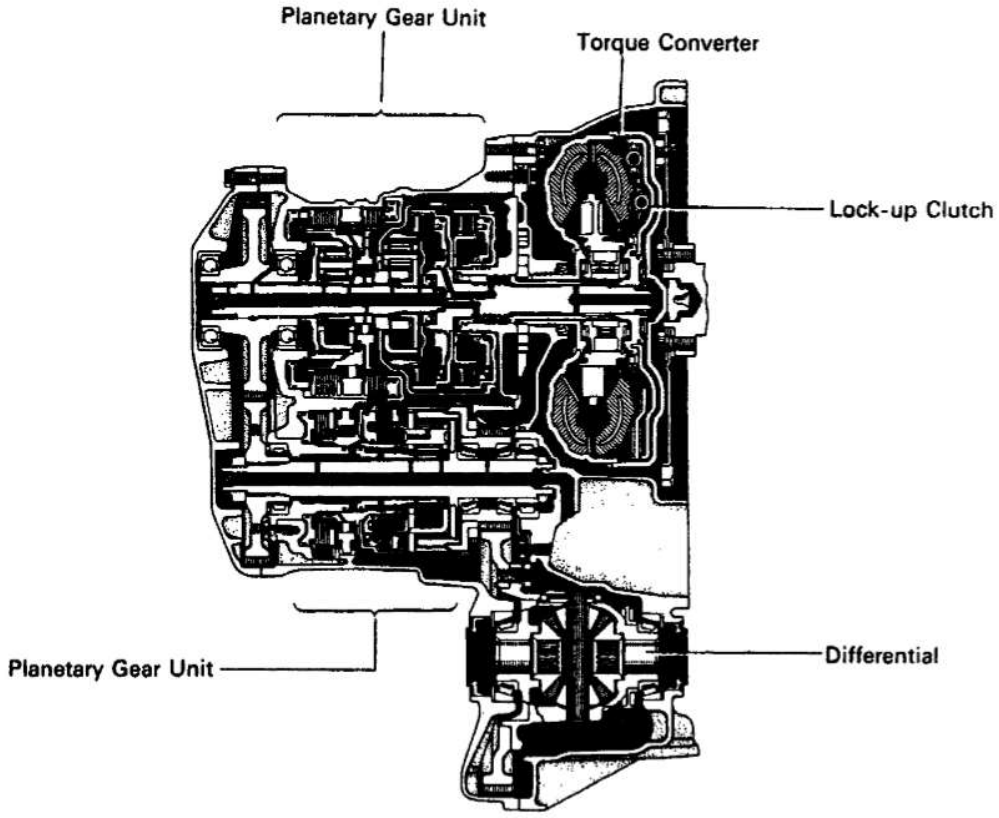
DESCRIPTION

AX000–01

GENERAL DESCRIPTION

The A241 E automatic transaxle is a 4–speed transaxle with a lock–up mechanism developed exclusively for use with a transversely–mounted engine.
The A241 E automatic transaxle is an Electronically Controlled Transmission (hereafter called ECT).
The automatic transaxle is mainly composed of the torque converter with lock–up clutch, 4–speed planetary gear unit, the hydraulic control system and the electronic control system.
To minimize the possibility of incorrect operation of the automatic transaxle, a shift lock mechanism has also been added.

Sectional View



A241E

AT5715

Type of Transaxle				A241E
Type of Engine				5E-FE
Torque Converter	Stall Torque Ratio			2.1 : 1
	Lock–Up Mechanism			Equipped
Gear Ratio	1st Gear			3.643
	2nd Gear			2.008
	3rd Gear			1.296
	O/D Gear			0.892
	Reverse Gear			2.977
Number of Discs and Plates (Disc/Plate)	C_1	Forward Clutch		4/4
	C_2	Direct Clutch		3/3
	C_3	Underdrive Clutch		3/5
	B_2	2nd Brake		3/3
	B_3	1st & Reverse Brake		6/5
	B_4	Underdrive Brake		3/3
2nd Coast Brake (B_1) Band Width mm (in.)				25 (0.984)
ATF	Type			ATF DEXRON® II
	Capacity liter (US qts, Imp. qts)		Total	8.0 (8.5, 7.0)
			Drain & Refill	3.3 (3.5, 2.9)

V00985

MANUAL TRANSAXLE

DESCRIPTION

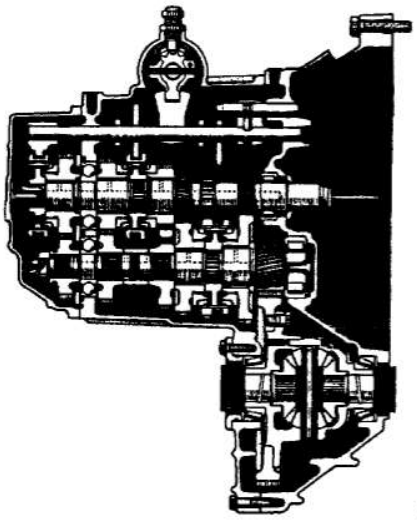
PRECAUTIONS

When working with FIPG material, you must be observe the following.

- **Using a razor blade and gasket scraper, remove all the old sealant (FIPG) material from the gasket surfaces.**
- **Thoroughly clean all components to remove all the loose material.**
- **Clean both sealing surfaces with a non–residue solvent.**
- **Apply the sealant in approx. 1 mm (0.04 in.) bead along the sealing surface.**
- **Parts must be assembled within 10 minutes of application. Otherwise, the sealant (FIPG) material must be removed and reapplied.**

DESCRIPTION

- Transaxle type S54 is constant mesh synchronizers for forward gears, and a sliding mesh reverse gear.
- The input shaft is composed of the 1st and 2nd speed gears and the reverse drive gear, and the output shaft is composed of the drive gear (for use with the ring gear).



CD0007

Type of Transaxle		S54
Type of Engine		5S–FE
Gear Ratio	1st 2nd 3rd 4th 5th Reverse	3.285 1.960 1.322 1.028 0.820 3.153
Differential Gear Ratio		4.176
Oil Capacity		2.6 liters (2.7 US qts, 2.3 Imp. qts)
Oil Viscosity		SAE 75W–90
Oil Grade		API GL–3, GL–4 or GL–5

202643

E153 MANUAL TRANSAXLE

DESCRIPTION

MX01G–01

PRECAUTIONS

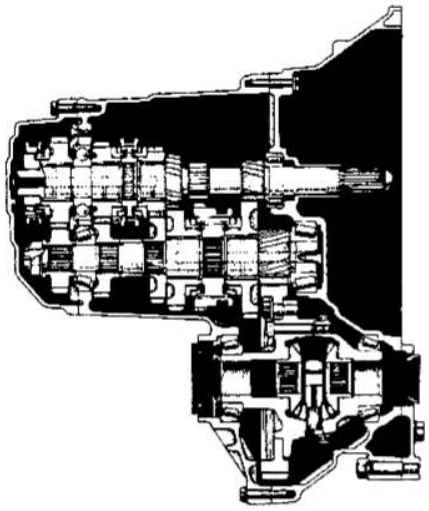
When working with FIPG materials, you must be observe the following.

- **Using a razor blade and gasket scraper, remove all the old sealant (FIPG) material from the gasket surfaces.**
- **Thoroughly clean all components to remove all the loose material.**
- **Clean both sealing surfaces with a non–residue solvent.**
- **Apply the seal packing in approx. 1 mm (0.04 in.) bead along the sealing surface.**
- **Part must be assembled within 10 minutes of application. Otherwise, the sealant (FIPG) material must be removed and reapplied.**

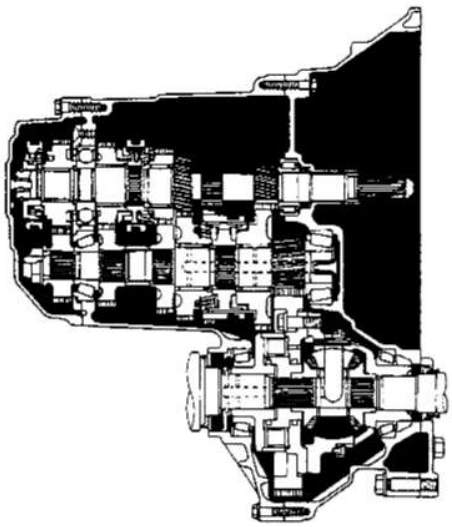
MX01R–02

DESCRIPTION

- **The gear and shaft layout is the same as the E153 manual transaxle.**
- **A triple–cone type synchromesh mechanism is used in the second gear and a double–cone type synchromesh mechanism is used in the third gear to improve the shift feeling char–acteristics. This helps to reduce the shifting effort, provide smoothly shifting.**
- **A reverse synchromesh mechanism is used to suppress gear engagement noise in reverse gear shifting while providing smoothly shifting.**



MT0718



Q01419

(w/Viscous Coupling LSD)

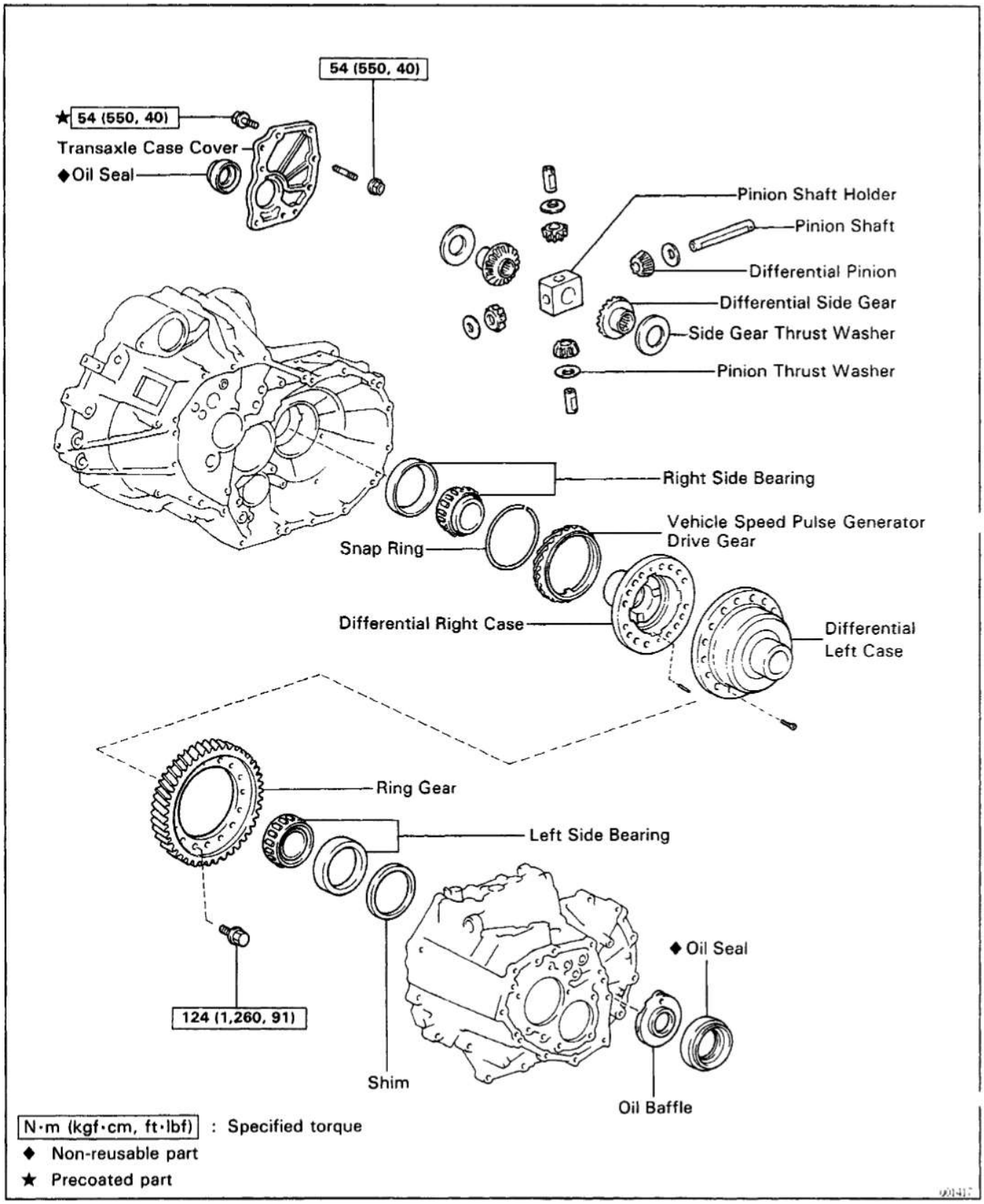
Type of Transaxle		E1–53
Type of Engine		3S–GTE
Gear Ratio	1 st 2nd 3rd 4th 5th Reverse	3.230 1.913 1.258 0.918 0.731 3.545
Differential Gear Ratio		4.285
Oil Capacity	Standard	4.2 liters (4.4 US qts, 3.6 Imp. qts)
	Viscous Coupling LSD	3.9 liters (4.1 US qts, 3.4 Imp. qts)
Oil Viscosity		SAE 75W–90 or 80W–90
Oil Grade		API GL–3, GL–4 or GL–5

Z02500

DIFFERENTIAL CASE (Viscous Coupling LSD Type)

MX01K–03

COMPONENTS

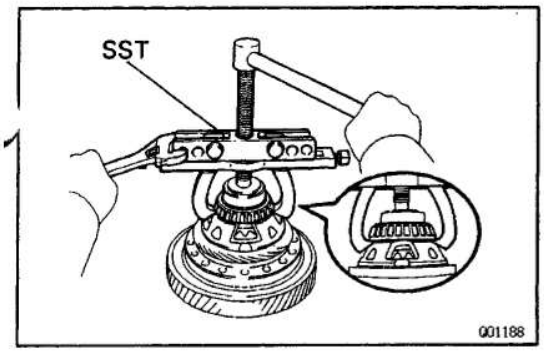


DIFFERENTIAL CASE DISASSEMBLY

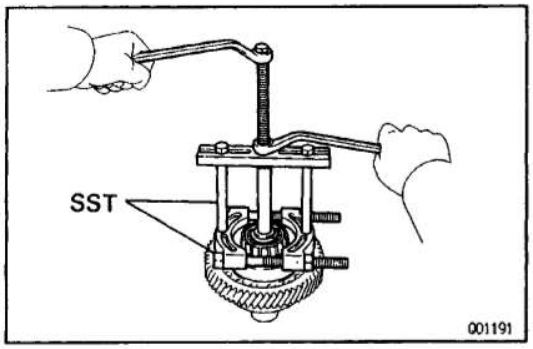
MX050-01

1. REMOVE SIDE BEARING

(a) Using SST, remove the RH side bearing.
SST 09950–20017

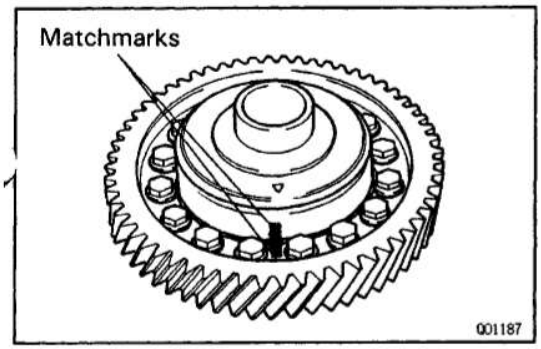


(b) Using SST, remove the LH side bearing.
SST 09950–00020, 09950–00030

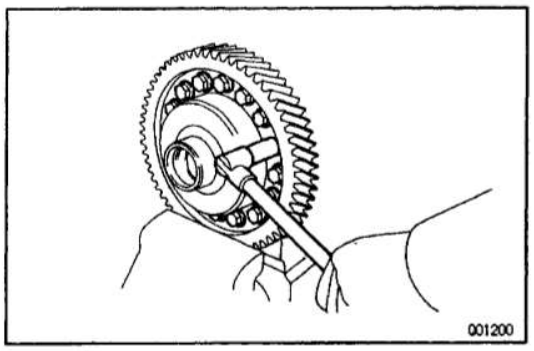


2. REMOVE RING GEAR

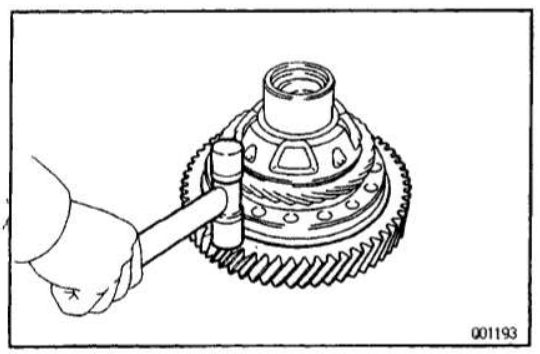
(a) Place the matchmarks on both the differential case and ring gear.

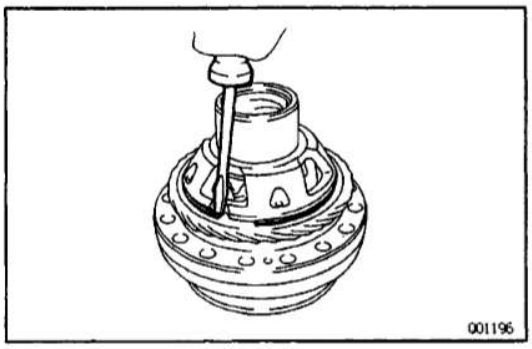


(b) Remove the sixteen bolts.



(c) Using a plastic hammer, tap out the ring gear.

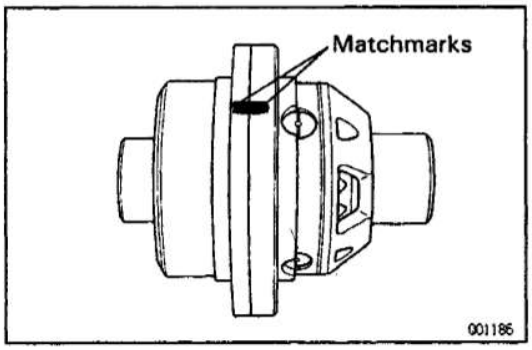




3. REMOVE VEHICLE SPEED PULSE GENERATOR DRIVE GEAR

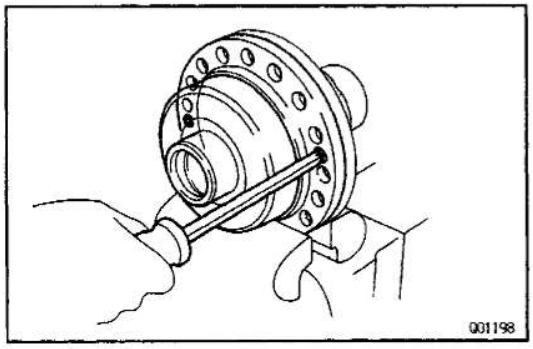
(a) Using a screwdriver, remove the snap ring.

(b) Remove the vehicle speed pulse generator drive gear.

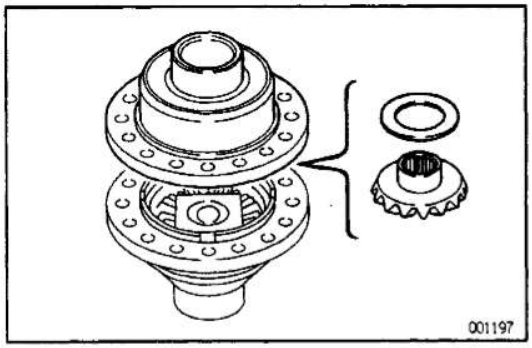


4. DISASSEMBLE DIFFERENTIAL CASE

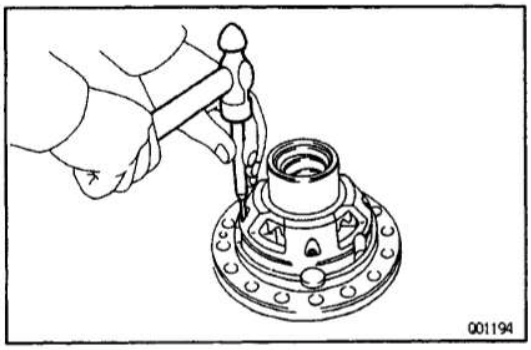
(a) Place the matchmarks on the differential right and left case.



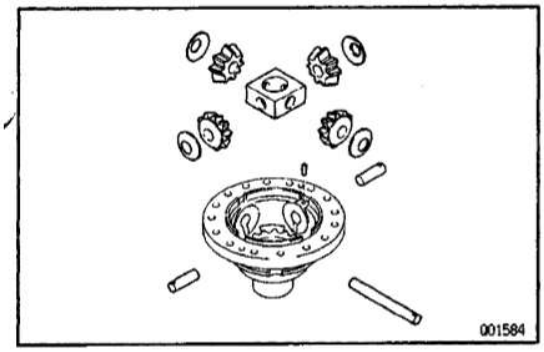
(b) Remove the two screws.



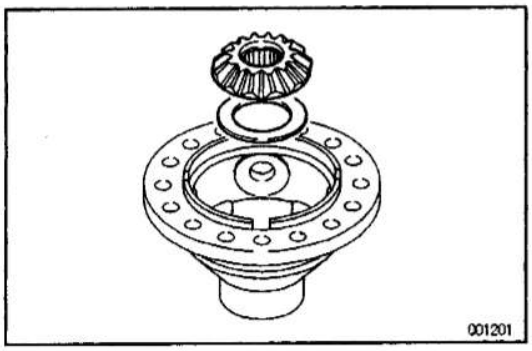
(c) Disassemble the differential case, side gear and thrust washer.



(d) Using a pin punch, drive out the three slotted spring pin.

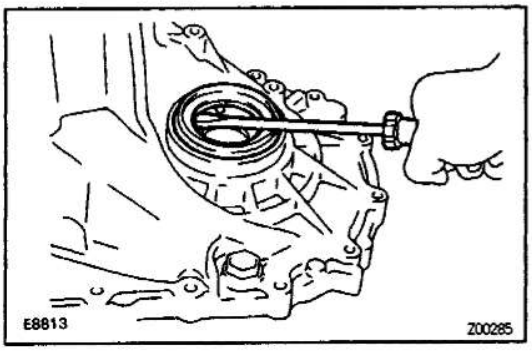


(e) Remove the three pinion shafts, four pinion gears, four pinion washer s and shaft holder.

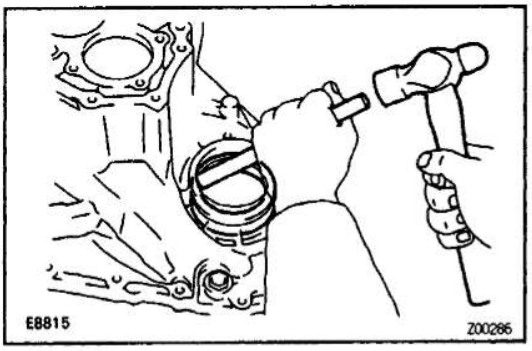


(f) Remove the side gear and thrust washer from the differential right case.

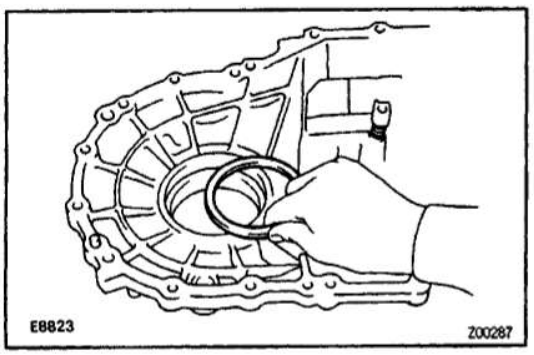
5. (Transmission Case Side)
IF NECESSARY, REPLACE OIL SEAL AND TAPER ROLLER BERING OUTER RACE



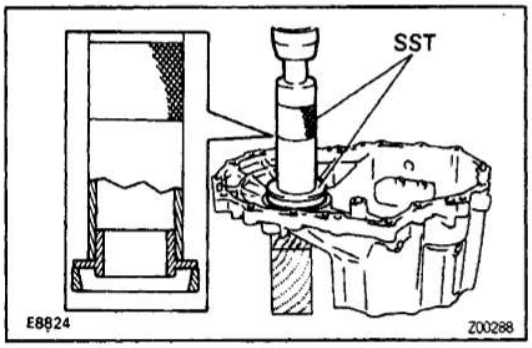
(a) Using a screwdriver, remove the oil seal.
(b) Remove the transmission oil baffle.



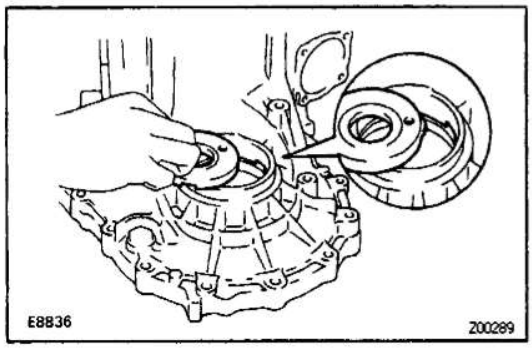
(c) Using a brass bar and hammer, drive out the bearing outer race lightly and evenly.
(d) Remove the shim.



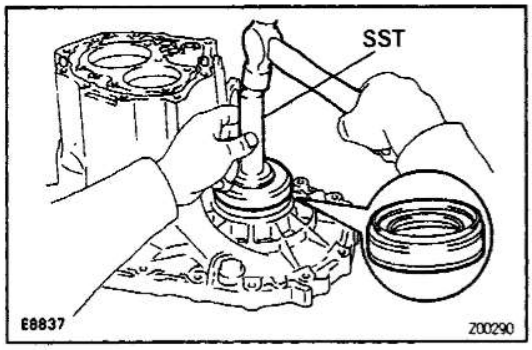
(e) Install the shim.
(See page MX2–72)
HINT: First select and install a shim of lesser thickness than before.



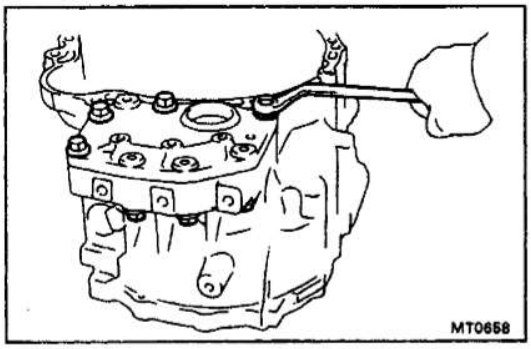
(f) Using SST and a press, install the taper roller bearing outer race.
SST 09316–60010 (09316–00010, 09316–00040)



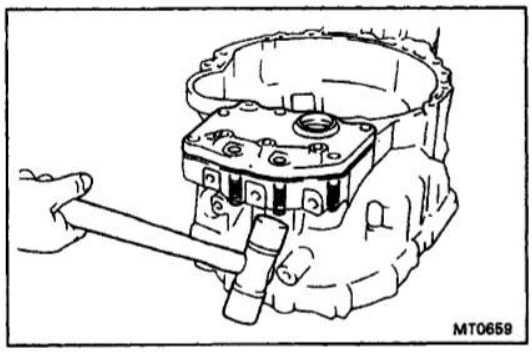
(g) Install the transmission oil baffle.
HINT: Install the transmission oil baffle prohection into the case side cutout.



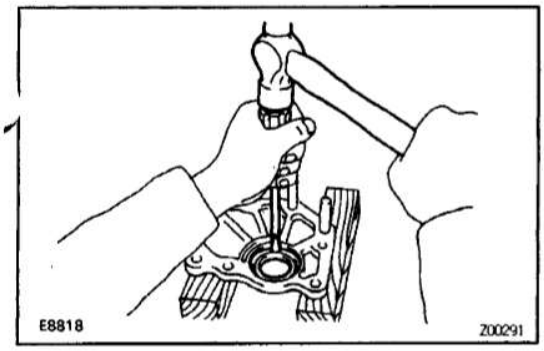
(h) Using SST and a hammer, drive in a new oil seal.
SST 09223–15010
(i) Coat the lip of oil seal with MP grease.



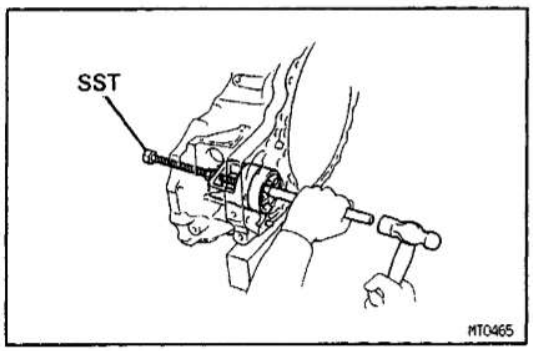
6. (Transaxle Cse Side)
IF NECESSARY, REPLACE OIL SEAL AND TAPE ROLLER BEARING OUTER RACE
(a) Remove the four bolts and three nuts.



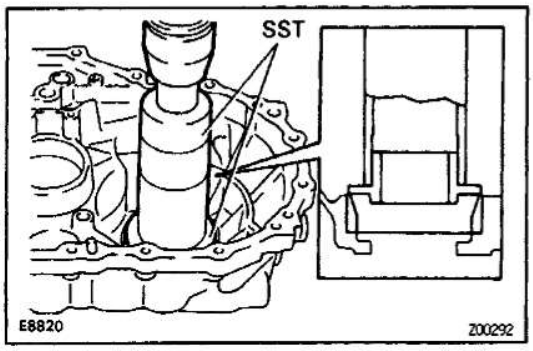
(b) Using a plastic hammer, tap the stud bolts and remove the transaxle case cover.



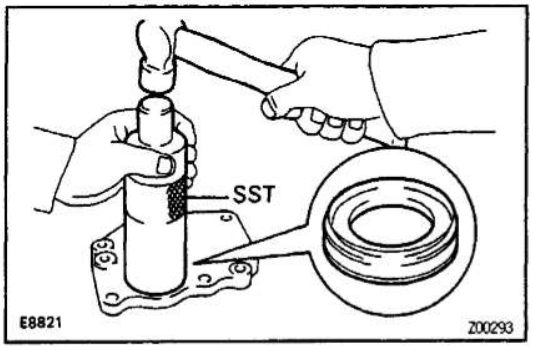
(c) Using a screwdriver and hammer, drive out the oil seal.



(d) Using SST, brass bar and hammer, remove the taper roller bearing outer race.
SST 09612–65014

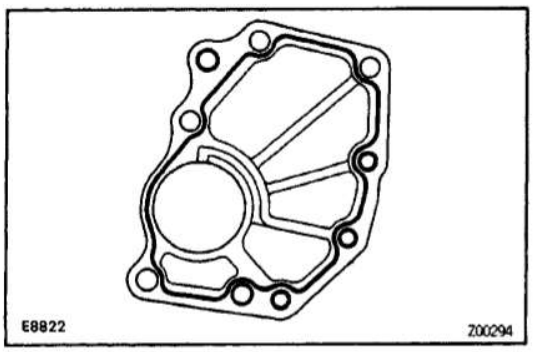


(e) Using SST and a hammer, install the taper roller bea–ring.
SST 09316–60010 (09316–00010, 09316–00040)



(f) Using SST and a hammer, drive in a new oil seal.
SST 09316–60010 (09316–00010)

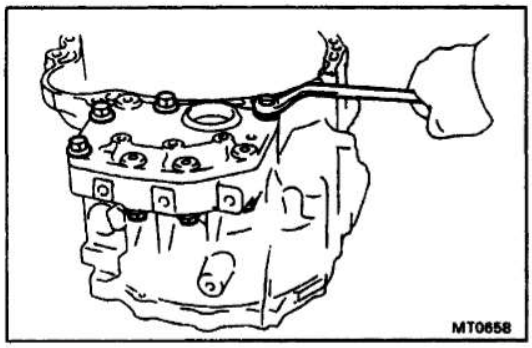
(g) Coat the lip of oil seal with MP grease.



(h) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transaxle case or case cover.

(i) Apply seal packing to the transaxle case cover as shown in the figure.
Seal packing: Part No. 08826–00090, THREE BOND 1281 or equivalent

HINT: Install the transaxle case cover as shown as the seal packing is applied.



(j) Apply sealant to the bolt threads.

Sealant:

Part No.08833–00080. THREE BOND 1344, LOC–TITE 242 or equivalent

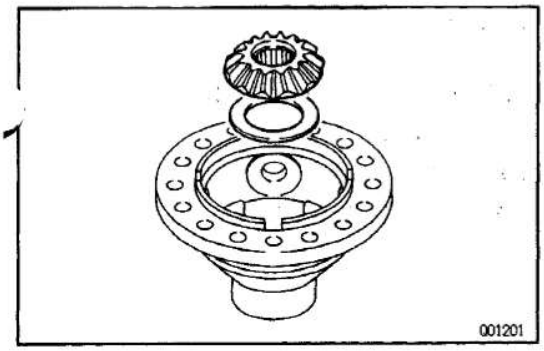
(k) Install and torque the four bolts and three nut.

Torque: 54 N–m (550 kgf.cm, 40 ft.lbf)

MX051–01

DIFFERENTIAL CASE ASSEMBLY

(See page MX2–72).

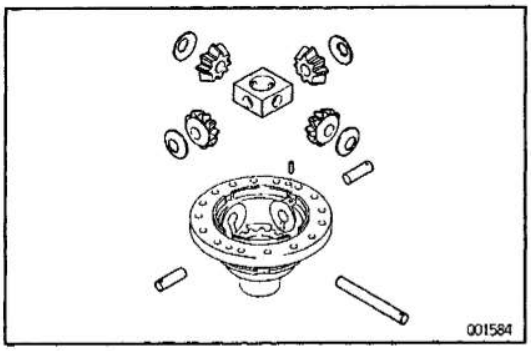


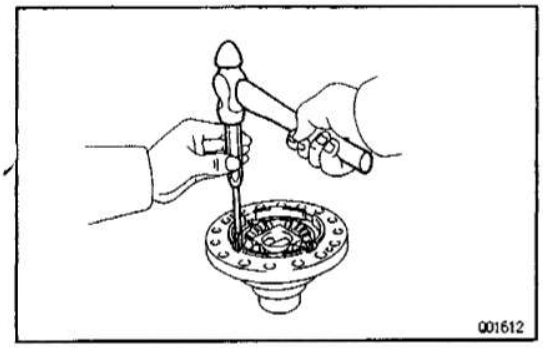
1. ASSEMBLE DIFFERENTIAL CASE

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

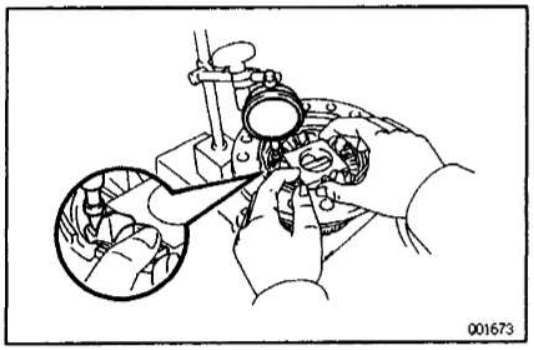
(a) Install the thrust washer and differential side gear to the differential right case.

(b) Install the three pinion shafts, four pinions, four pinion washers and shaft holder.





(c) Using a pin punch, drive in the three slotted spring pin to the differential right case.



(d) Using a dial indicator, measure the backlash of one pinion gear while holding the No.2 differential case.

Standard backlash:

0.05–0.20 mm (0.0020–0.0079 in.)

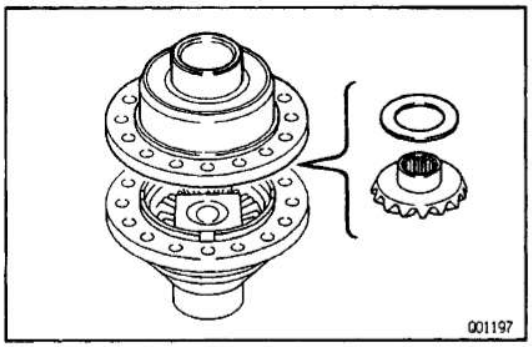
HINT: Push the pinion gear of the left side of the differential case.

(e) Install the side gear, pinion shafts and shaft holder with four pinions to the right side of the differential case.

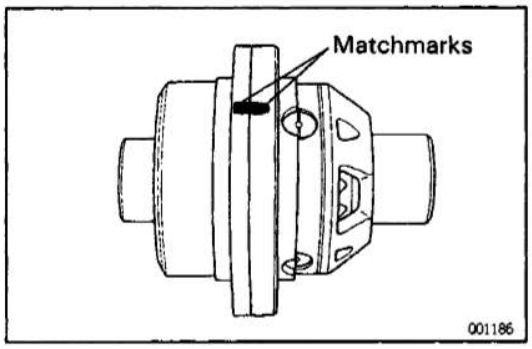
And check the side gear backlash.

(f) Referring to the table below, select the thrust washer which will ensure that the backlash is within specifi–cation. Try to select a washer of the same size.

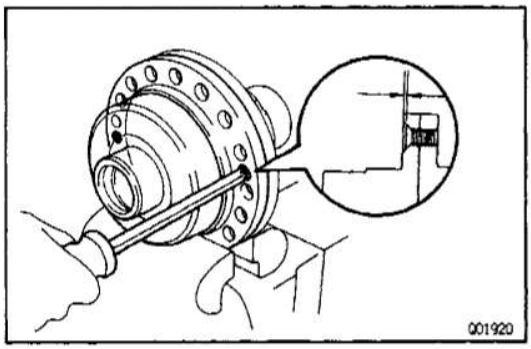
Thickness mm (in.)	Thickness mm (in.)
0.80 (0.0315)	1.20 (0.0472)
0.90 (0.0354)	1.30 (0.0512)
1.00 (0.0394)	1.40 (0.0551)
1.10 (0.0433)	



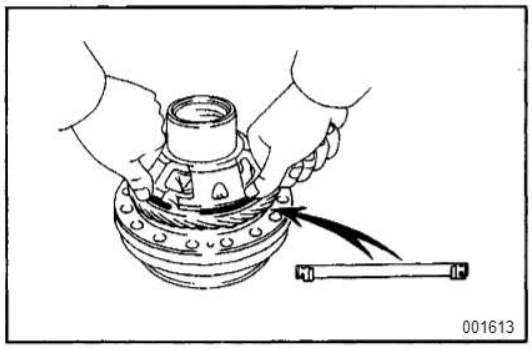
(g) Assemble the differential case, side gear and thrust washer.



(h) Align the matchmarks on the differential cases.

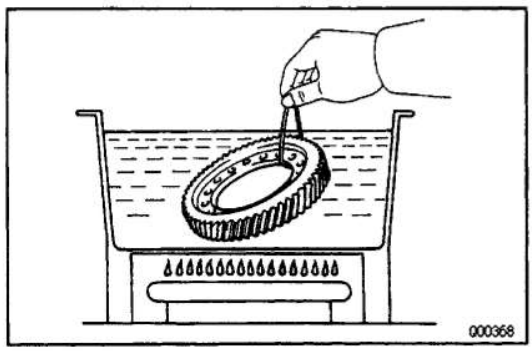


(i) Install and tighten the two screws.



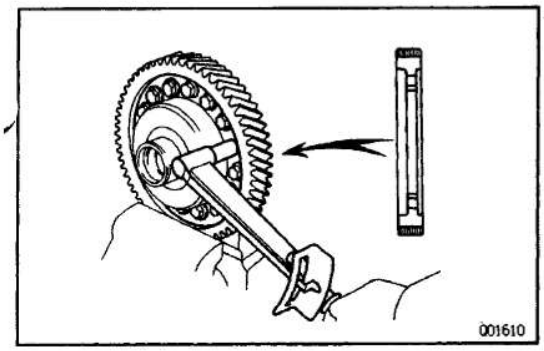
2. INSTALL VEHICLE SPEED PULSE GENERATOR DRIVE GEAR

(a) Install the vehicle speed pulse generator drive gear to the differential right case.
(b) install the snap ring.



3. INSTALL RING GEAR

(a) Clean the contact surface of the differential case and the threads of the ring gear and differential case.
(b) Heat the ring gear in boiling water.
(c) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differ–ential case.



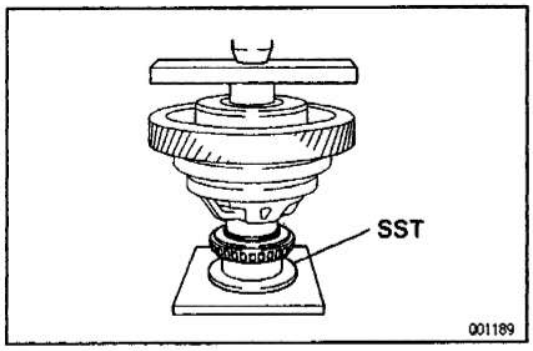
HINT: Align the matchmarks on the differential left case and contact the ring gear.

(d) Temporarily install the sixteen bolts.

NOTICE: The ring gear set bolts should not be tightened until the ring gear has cooled sufficiently.

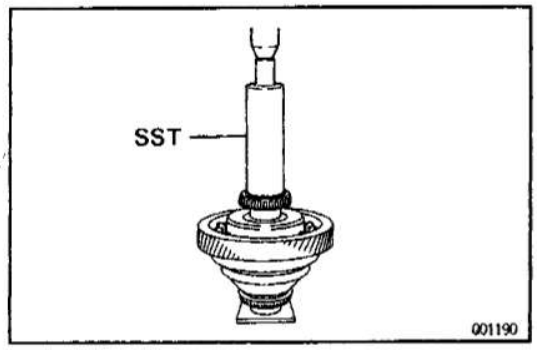
(e) After the ring gear has cooled sufficiently, torque the ring gear set bolts.

Torque: 124 N–m (1,260 kgf–cm, 91 ft–lbf)



4. INSTALL SIDE BEARING

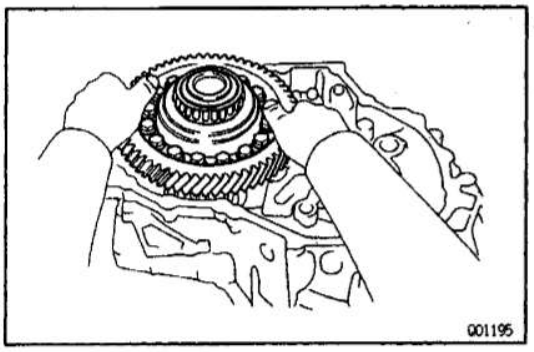
(a) Using SST and a press, install the RH side bearing.
SST 09316–20011



(b) Using SST and a press, install the LH side bearing.
SST 09316–60010 (09316–00010)

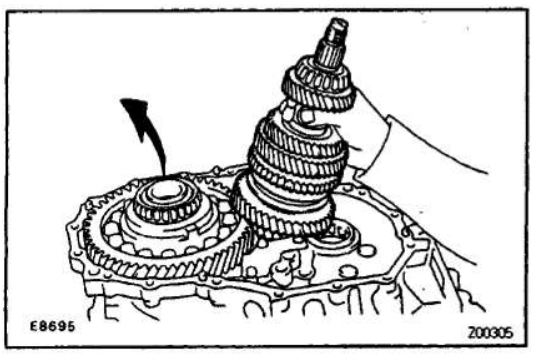
5. ADJUST OUTPUT SHAFT ASSEMBLY PRELOAD

(See page MX2–85 to MX2–87)



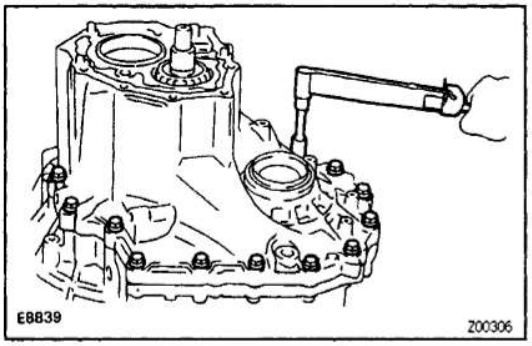
6. INSTALL DIFFERENTIAL CASE ASSEMBLY

Install the differential case assembly to the transaxle case.



7. INSTALL OUTPUT SHAFT ASSEMBLY

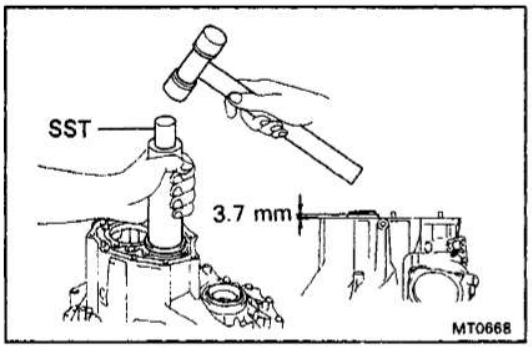
Lift up the differential case, install the input shaft assembly.



8. INSTALL TRANSMISSION CASE

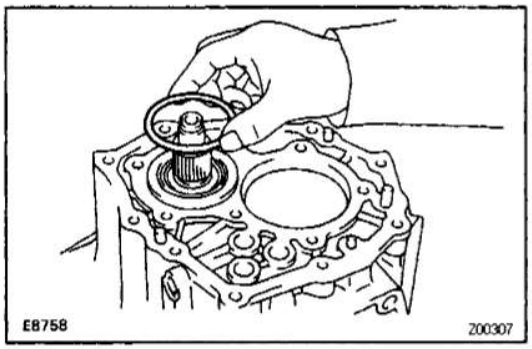
(a) Install the transmission case.
HINT: If necessary, tap on the case with a plastic hammer.

(b) Install and torque the seventeen bolts.
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)



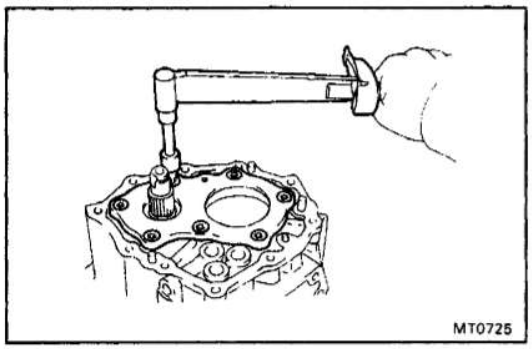
9. INSTALL OUTPUT SHAFT REAR TAPERED ROLLER BEARING OUTER RACE

Using SST and a hammer, install the output shaft rear tapered roller bearing outer race.
SST 09316–60010 (09316–00010)



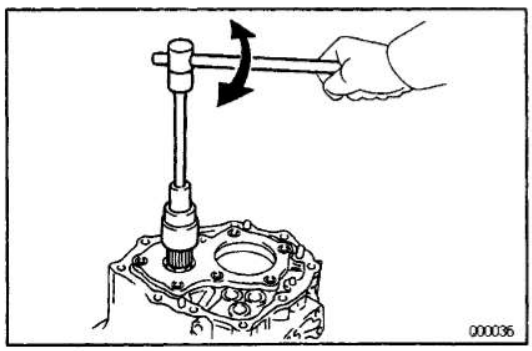
10. INSTALL SHIM

(See page MX2–85 to MX2–87)
HINT: Install the previously selected shim.



11. INSTALL REAR BEARING RETAINER

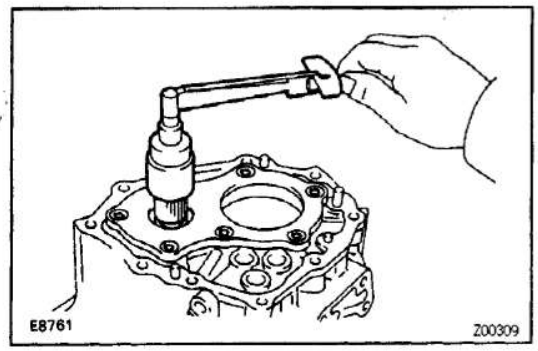
Using a torx wrench, install and torque the seven torx screws.
Torx wrench T45 09042–00050
Torque: 42.N.m (430 kgf–cm, 31 ft–lbf)



12. ADJUST DIFFERENTIAL CASE SIDE BEARING PRELOAD

(a) Install the new lock nut to the output shaft.

(b) Turn the output shaft right and left two or three times to allow the bearings to settle.



(c) Using a small torque wrench, measure the preload.

Preload (at starting):

New bearing (Add output shaft preload)

0.2–0.4 N–m (2.0–4.1 kgf–cm, 1.7–3.6 in.–lbf)

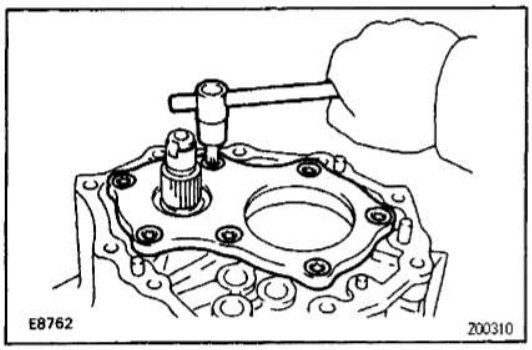
Reused bearing (Add output shaft preload)

0.1–0.2 N–m (1.3–2.5 kgf–cm, 1.1–2.2 in.–lbf)

If the preload is not within specification, select the thrust washers.

HINT: The total preload will change about 0.1–0.2 N–m (1–2 kgf–cm, 0.9–1.7 ft–lbf) with each shire thickness.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
0	2.00 (0.0787)	9	2.45 (0.0965)
1	2.05 (0.0807)	A	2.50 (0.0984)
2	2.10 (0.0827)	B	2.55 (0.1004)
3	2.15 (0.0846)	C	2.60 (0.1024)
4	2.20 (0.0866)	D	2.65 (0.1043)
5	2.25 (0.0886)	E	2.70 (0.1063)
6	2.30 (0.0906)	F	2.75 (0.1083)
7	2.35 (0.0925)	G	2.80 (0.1102)
8	2.40 (0.0945)	H	2.85 (0–1122)

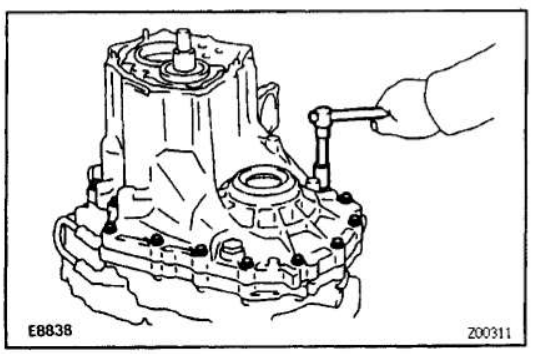


13. REMOVE REAR BEARING RETAINER

Using torx wrench, remove the seven torx screws and rear bearing retainer.

Torx wrench T45 09042–00050

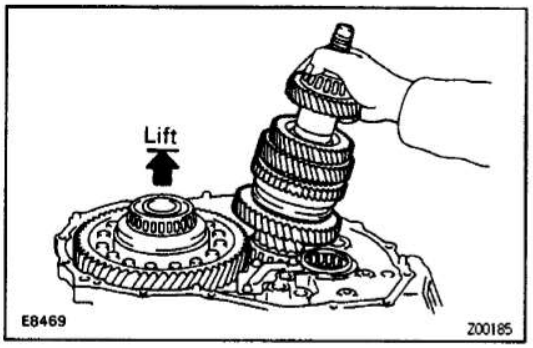
14. REMOVE SHIM



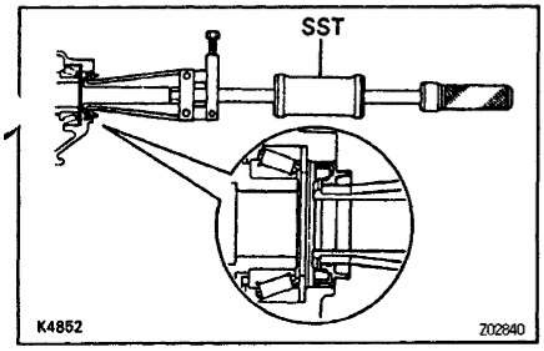
15. REMOVE TRANSMISSION CASE

(a) Remove the seventeen bolts.

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



16. REMOVE OUTPUT SHAFT ASSEMBLY
17. REMOVE DIFFERENTIAL CASE ASSEMBLY



DIFFERENTIAL OIL SEAL

AX07C–01

DIFFERENTIAL OIL SEAL REMOVAL

1. DRAIN TRANSAXLE FLUID

Remove the drain plug and drain the fluid into a suitable container.

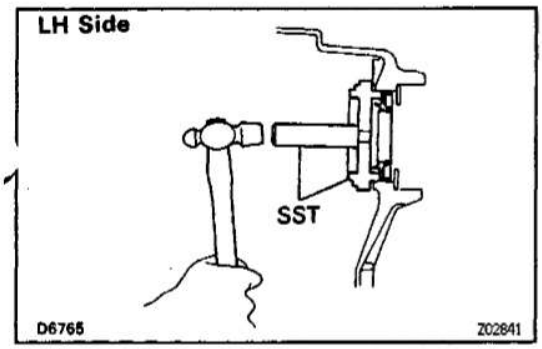
2. REMOVE ENGINE UNDER COVER

3. REMOVE LH AND RH DRIVE SHAFTS

(See page SA–55)

4. REMOVE LH AND RH SIDE OIL SEALS

Using SST, drive out the both side oil seals.
SST 09308–00010

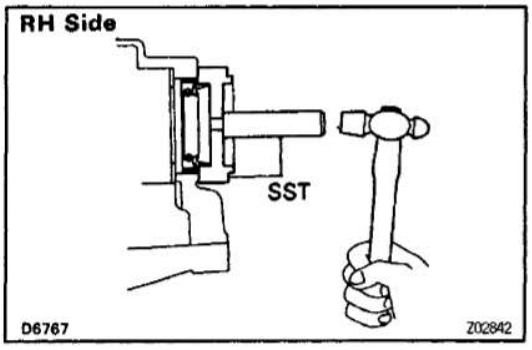


DIFFERENTIAL OIL SEAL INSTALLATION

1. INSTALL LH SIDE OIL SEAL

(a) Using SST, drive in a new oil seal.
SST 09350–32014 (09351–32111, 09351–32130)
Oil seal drive in depth:
5.2 ± 0.5 mm (0.205 ± 0.020 in.)

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



2. INSTALL RH SIDE OIL SEAL

(a) Using SST, drive in a new oil sea) until SST makes contact with the case surface.
SST 09350–32014 (09351–32150, 09351–32130)
Oil seal drive in depth:
0 ± 0.5 mm (0.020 in.)

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

3. INSTALL LH AND RH DRIVE SHAFT

(See page SA–64)

4. FILL TRANSAXLE WITH ATF

(See page AX–14)

NOTICE: Do not overfill.
Fluid type:
ATF DEXRON®II

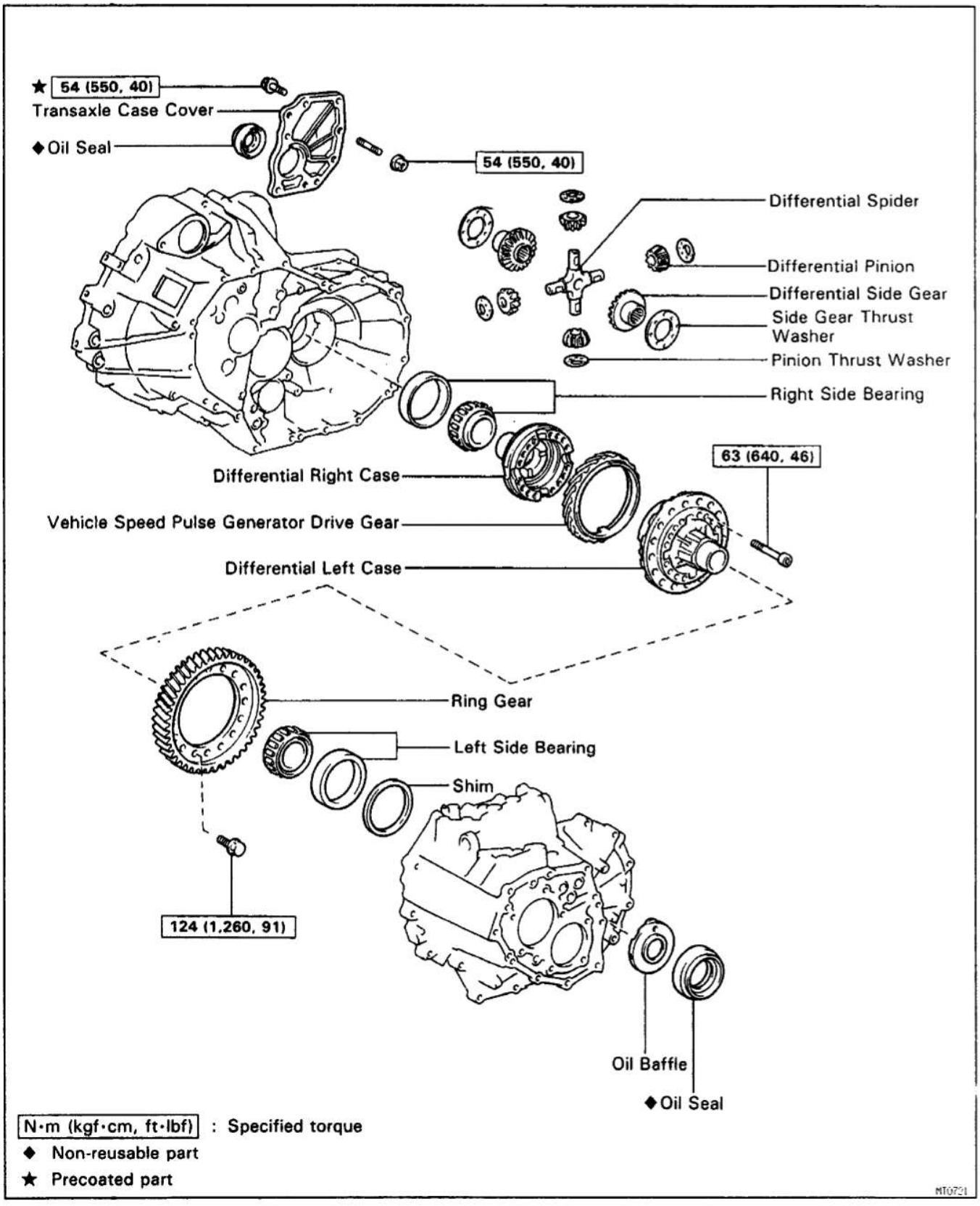
5. CHECK FLUID LEVEL

6. INSTALL ENGINE UNDER COVER

DIFFERENTIAL CASE (Standard Type)

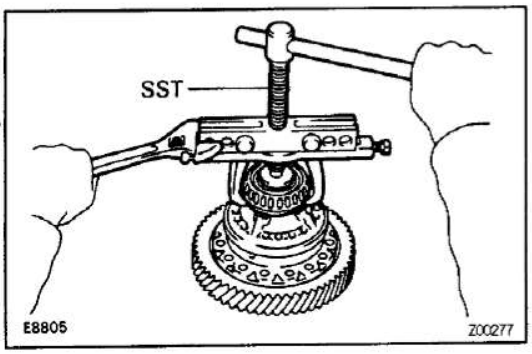
MX01K–02

COMPONENTS



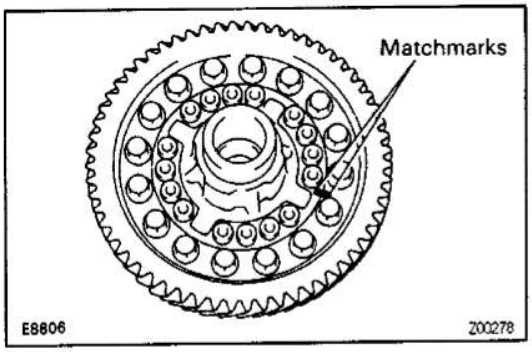
DIFFERENTIAL CASE DISASSEMBLY

MX01L-02



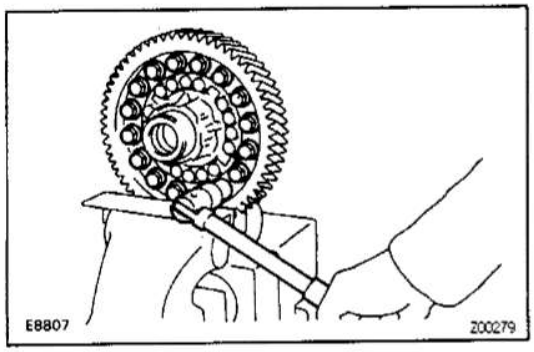
1. REMOVE SIDE BEARING

Using SST, remove the two side bearing.
SST 09950–20017

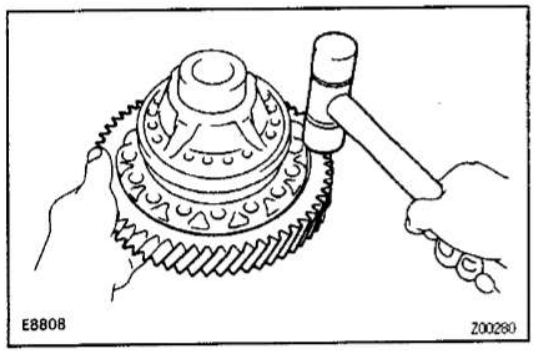


2. REMOVE RING GEAR

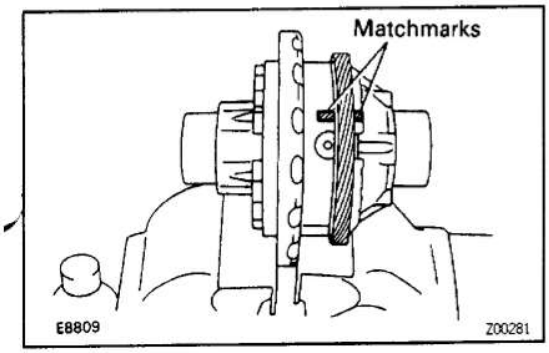
(a) Place the matchmarks on both the differential case and ring gear.



(b) Remove the sixteen bolts.

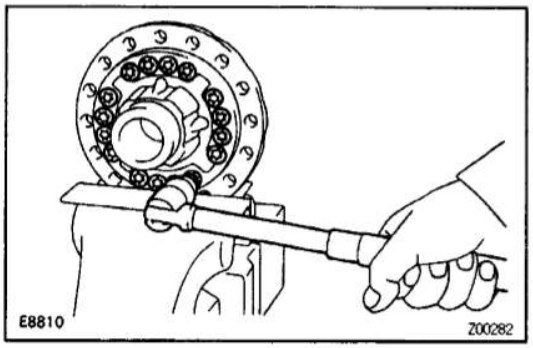


(c) Using a plastic hammer, tap out the ring gear.

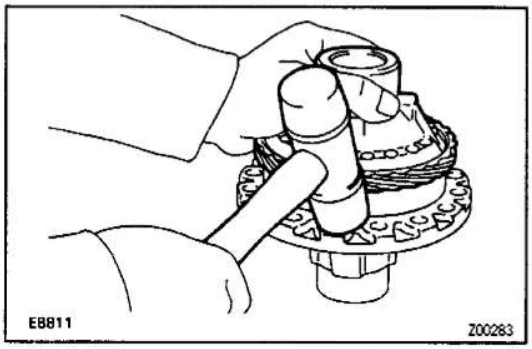


3. DISASSEMBLE DIFFERENTIAL CASE

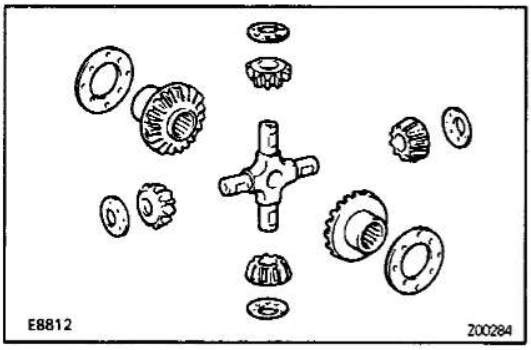
(a) Place the matchmarks on the differential right and left case.



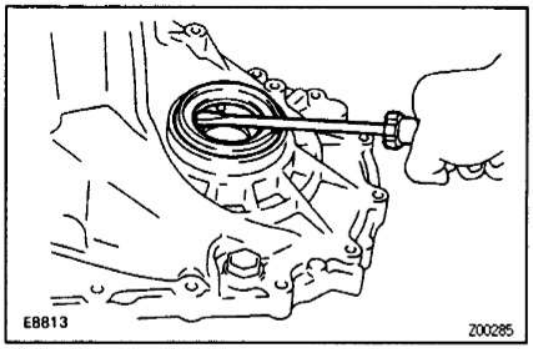
(b) Using a torx wrench, remove the sixteen torx screws.
Torx wrench: T50 09042–00040



(c) Using a plastic hammer, tap out the differential left case.
(d) Remove the vehicle speed pulse generator drive gear from the differential right case.

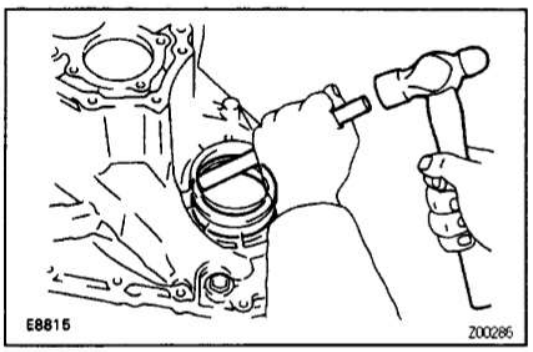


(e) Remove the two differential side gears, two side gear thrust washers, differential pinions and four pinion washers from the differential left case.

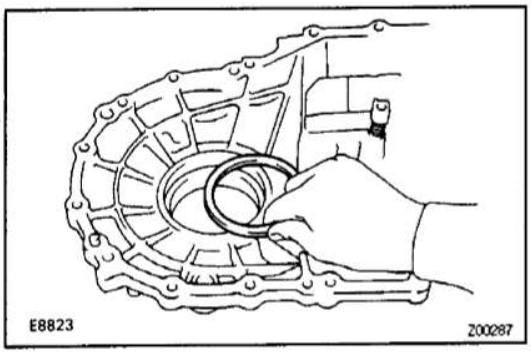


4. (TRANSMISSION CASE SIDE)
IF NECESSARY, REPLACE OIL SEAL AND TAPER ROLLER BEARING OUTER RACE

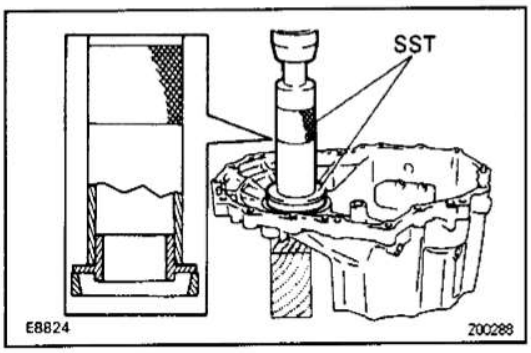
(a) Using screwdriver, remove the oil seal.
(b) Remove the transmission oil baffle.



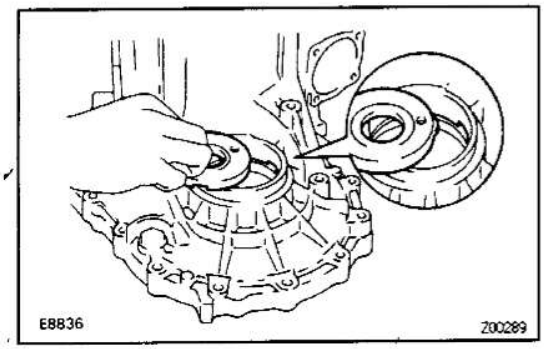
(c) Using a brass bar and hammer, drive out the bearing outer race lightly and evenly.
(d) Remove the shim.



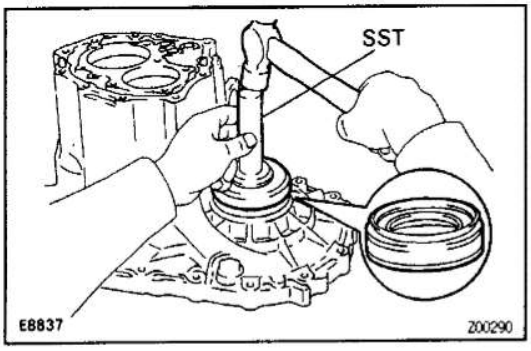
(e) Install the shim.
(See page MX2–60)
HINT: First select and install a shim of leaser thick–ness than before.



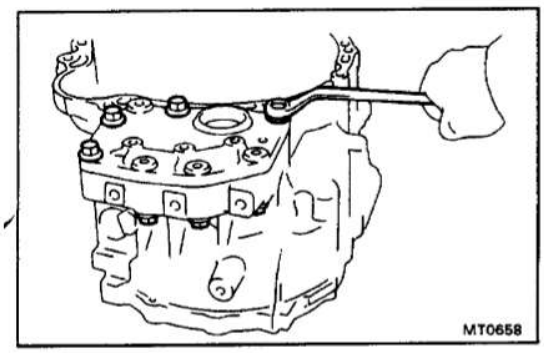
(f) Using SST and a press, install the taper roller bearing outer race.
SST 09316–60010 (09316–00010, 09316–00040)



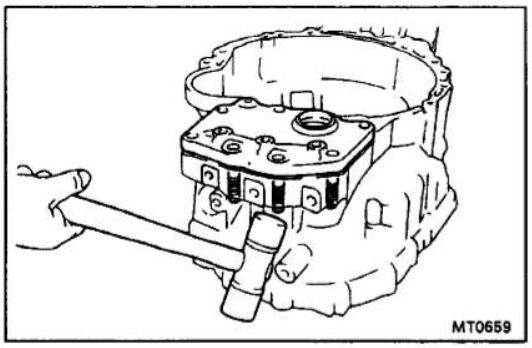
(g) Install the transmission oil baffle.
HINT: Install the transmission oil baffle projection into the case side cutout.



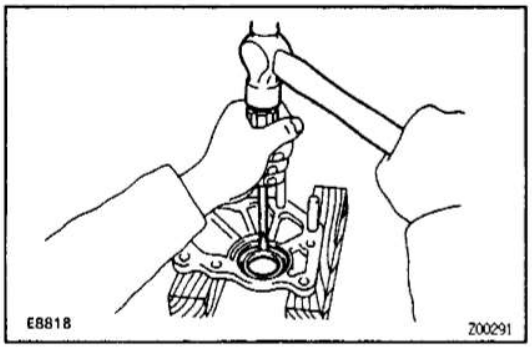
(h) Using SST and a hammer, drive in a new oil seal.
SST 09223–15010
(i) Coat the lip of oil seal with MP grease.



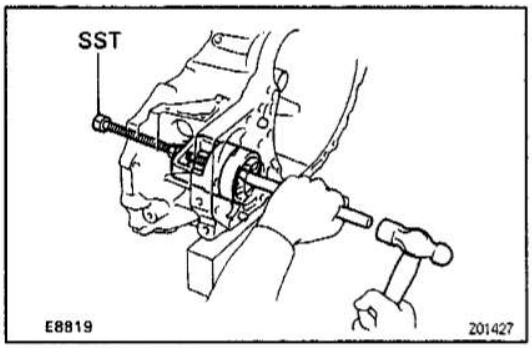
5. (TRANSAXLE CASE SIDE)
IF NECESSARY, REPLACE OIL SEAL AND TAPER ROLLER BEARING OUTER RACE
(a) Remove the four bolts and three nuts.



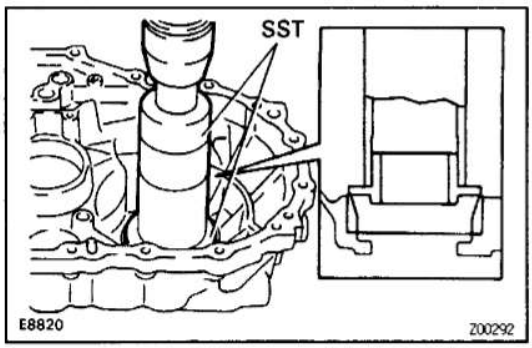
(b) Using a plastic hammer, tap the stud bolt and remove the transaxle case cover.



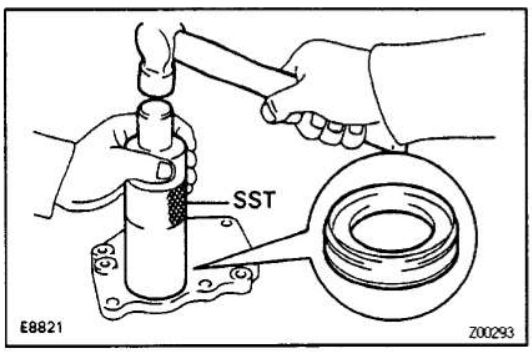
(c) Using a screwdriver and hammer, drive out the oil seal.



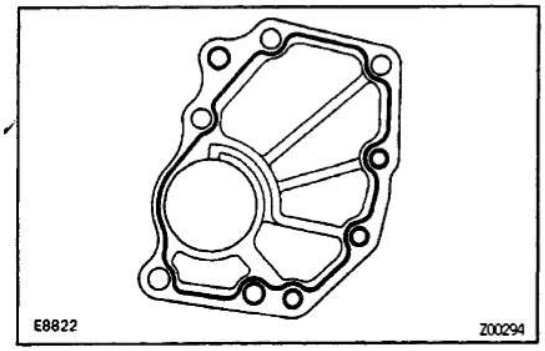
(d) Using a SST, brass bar and hammer, remove the taper roller bearing outer race.
SST 09612–65014



(e) Using SST and a press, install the taper roller bearing.
SST 09316–60010 (09316–00010, 09316–00040)



(f) Using SST and a hammer, drive in a new oil seal.
SST 09316–60010 (09316–00010)
(g) Coat the lip of oil seal with MP grease.



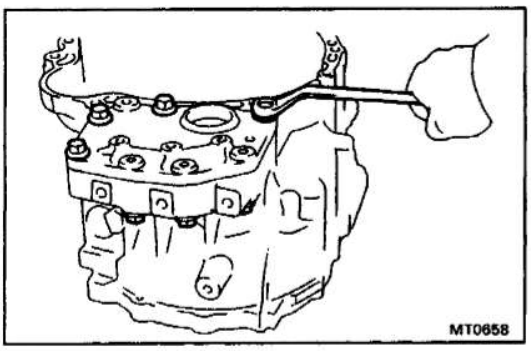
(h) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transaxle case or case cover.

(i) Apply seal packing to the transaxle case cover as shown.

Seal packing:

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

HINT: Install the transaxle case cover as shown as the seal packing is applied.



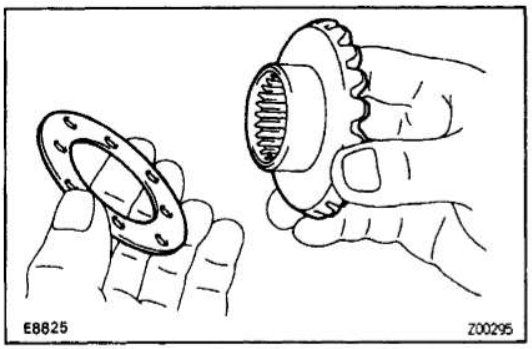
(j) Apply sealant to the bolt thread s.

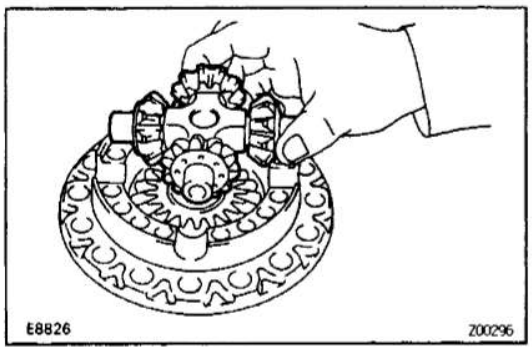
Sealant:

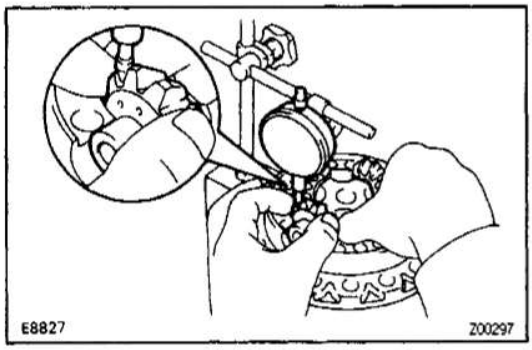
Part No.08833–00080, THREE BOND 1344, LOC–TITE 242 or equivalent

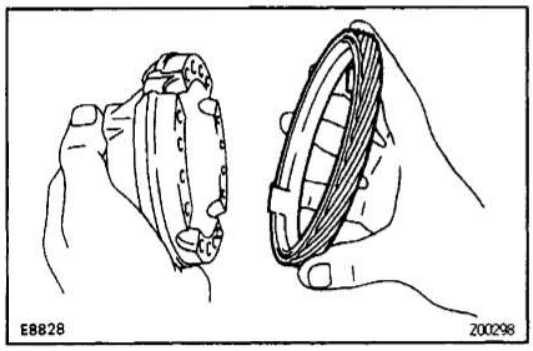
(k) Install and torque the four bolts and three nut.

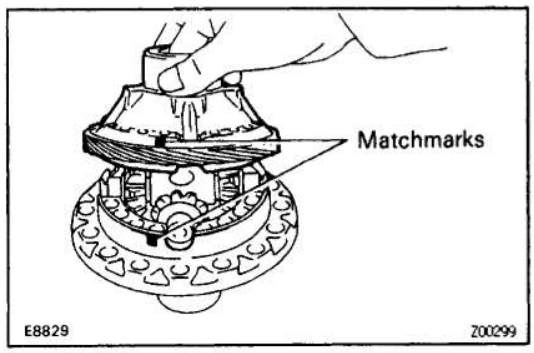
Torque: 54 N–m (550 kgf–cm. 40 ft–lbf)











DIFFERENTIAL CASE ASSEMBLY

MX021–02

(See page MX2–60)

1. ASSEMBLE DIFFERENTIAL CASE

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

(a) Install the thrust washer to the side gear.

(b) Install the four pinions and thrust washers to the spider.

(c) Install the side gear and spider with four pinions to the differential left case.

(d) Using a dial indicator, measure the backlash of one pinion gear while holding the No.2 differential case.

Standard backlash:

0.05–0.20 mm (0.0020–0.0079 in.)

HINT: Push the pinion gear and spider with four pinions to the right side a of the left side of the differential case.

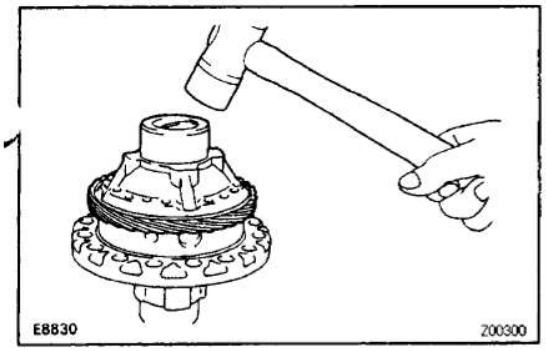
(e) Install the side gear and spider with four pinions to the right side of the differential case. Check the side gear backlash.

(f) Referring to the table below, Select the thrust washer which will ensure that the backlash is within specifi–cation. Try to select a washer of the same size.

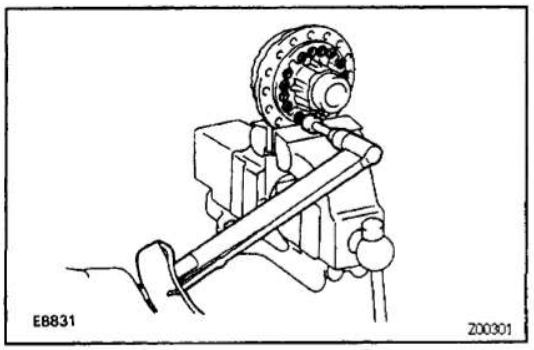
Thickness mm (in.)	Thickness mm (in.)
0.80 (0.0315)	1.20 (0.0472)
0.90 (0.0354)	1.30 (0.0512)
1.00 (0.0394)	1.40 (0.0551)
1.10 (0.0433)	

(g) Install the vehicle speed pulse generator drive gear.

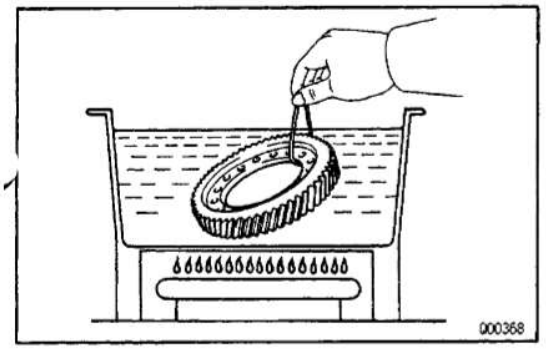
(h) Align the matchmarks on the differential cases.



(i) Using a plastic hammer, carefully tap the differential case to install it.

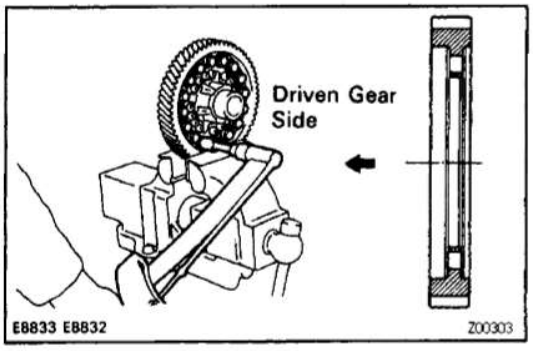


(j) Using a torx wrench, install and torque the sixteen torx screws.
Tom wrench T50 09042–00040
Torque: 63N.m (640 kgf–cm, 46 ft–lbf)



2. INSTALL RING GEAR

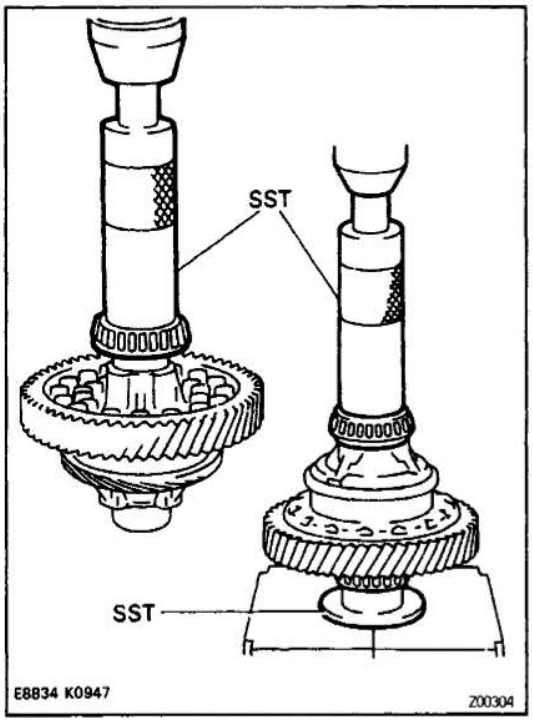
(a) Clean the contact surface of the differential case and the threads of the ring gear and differential case.
(b) Hear the ring gear in boiling water.
(c) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differ–ential case.



HINT: Align the matchmarks on the differential left case and contact the ring gear.

(d) Temporarily install the sixteen bolts.
NOTICE: The ring gear set bolts should not be tightened until the ring gear has cooled sufficiently.

(e) After the ring gear has cooled sufficiently, torque the ring gear set bolts.
Torque: 124 N–m (1.260 kgf–cm, 91 ft–lbf)



3. INSTALL SIDE BEARING

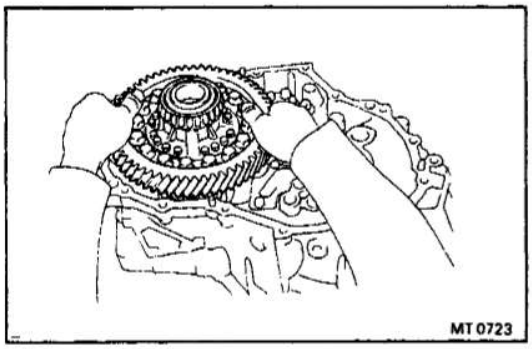
Using SST and a press, install the side bearings onto the differential case.

SST 09316–20011, 09316–60010 (09316–00010)

HINT: Press the bearing on the ring side first.

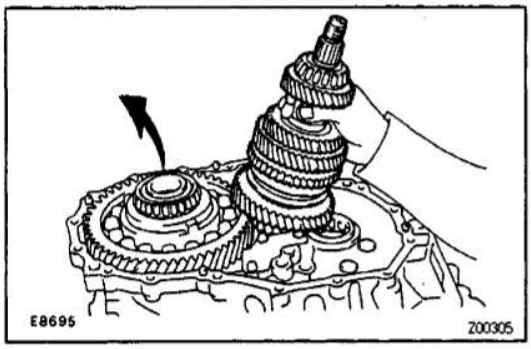
4. ADJUST OUTPUT SHAFT ASSEMBLY PRELOAD

(See pages MX2–85 to MX2–87)



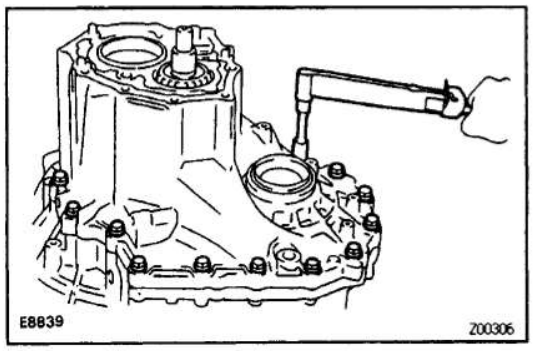
5. INSTALL DIFFERENTIAL CASE ASSEMBLY

Install the differential case assembly to the transaxle case.



6. INSTALL OUTPUT SHAFT ASSEMBLY

Lift up the differential case, install the output shaft assembly.



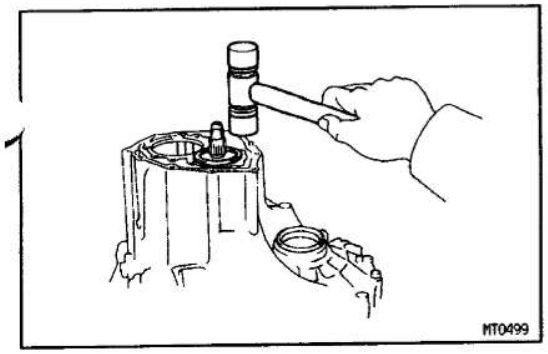
7. INSTALL TRANSMISSION CASE

(a) Install the transmission case.

HINT: If necessary, tap on the case with a plastic hammer.

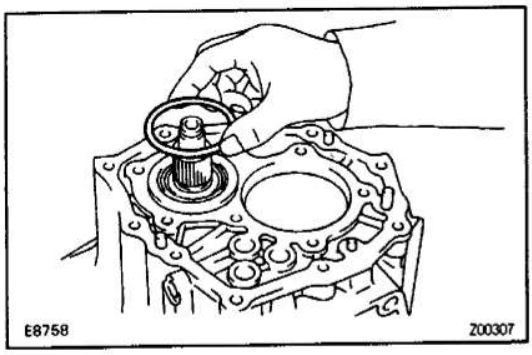
(b) Install and torque the seventeen bolts.

Torque: 29 N–m (300 kgf–cm 22 ft–lbf)



8. INSTALL OUTPUT SHAFT REAR TAPER ROLLER BEARING OUTER RACE

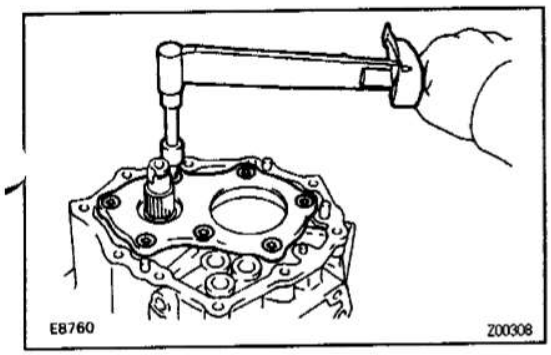
Using a plastic hammer, drive in the outer race.



9. INSTALL SHIM

(See pages MX2–85 to MX2–87)

HINT: install the previously selected shim.

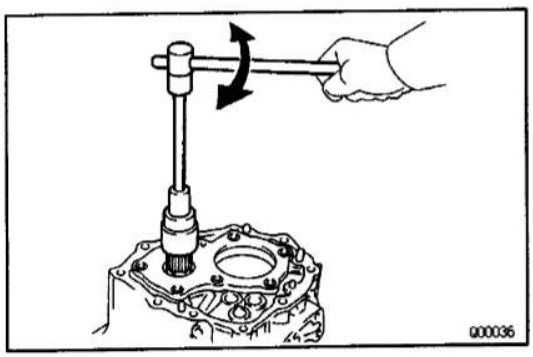


10. INSTALL REAR BEARING RETAINER

Using a torx wrench, install and torque the seven torx screws.

Torx wrench T45 09042–00050

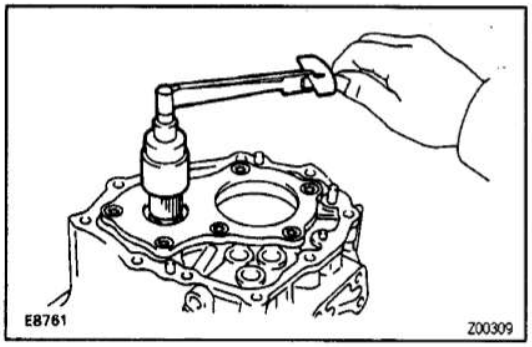
Torque: 42 N–m (430 kgf–cm, 31 ft–lbf)



11. ADJUST DIFFERENTIAL CASE SIDE BEARING PRELOAD

(a) Install the new lock nut to the output shaft.

(b) Turn the output shaft right and left two or three times to allow the bearings to settle.



(c) Using a small torque wrench, measure the preload.

Preload (at starting):

New bearing (Add output shaft preload)

0.2–0.4 N–m (2.0–4.1 kgf–cm, 1.7–3.6 in.¿lbf)

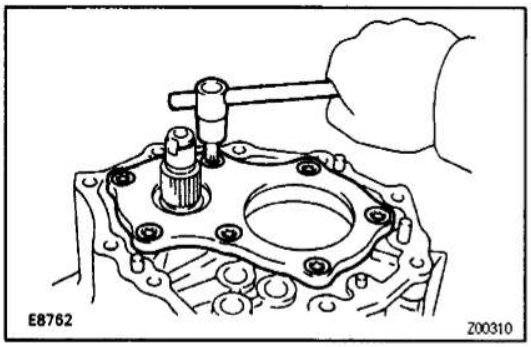
Reused bearing (Add output¿shaft preload)

0.1–0.2 N–m (1.3–2.5 kgf–cm, 1.1–2.2 in.–lbf)

If the preload is not within specification, select the thrust washers.

HINT: The total preload will change about 0.1–0.2 N–m (1–2 kgf–cm, 0.9–1.7 ft–lbf) with each shim thickness.

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

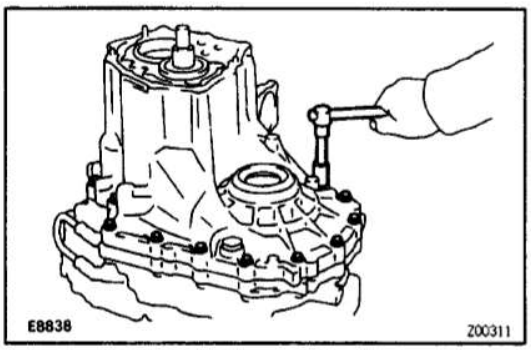


12. REMOVE REAR BEARING RETAINER

Using torx wrench, remove the seven torx screws and rear bearing retainer.

Torx wrench T45 09042–00050

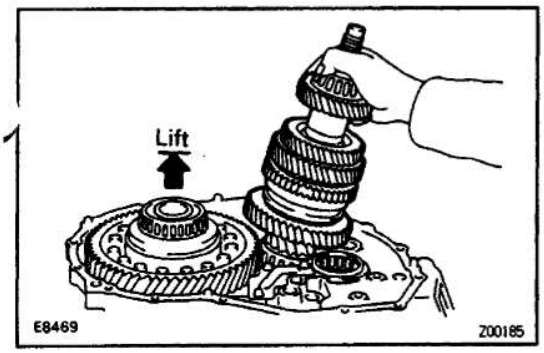
13. REMOVE SHIM



14. REMOVE TRANSMISSION CASE

(a) Remove the seventeen bolts.

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

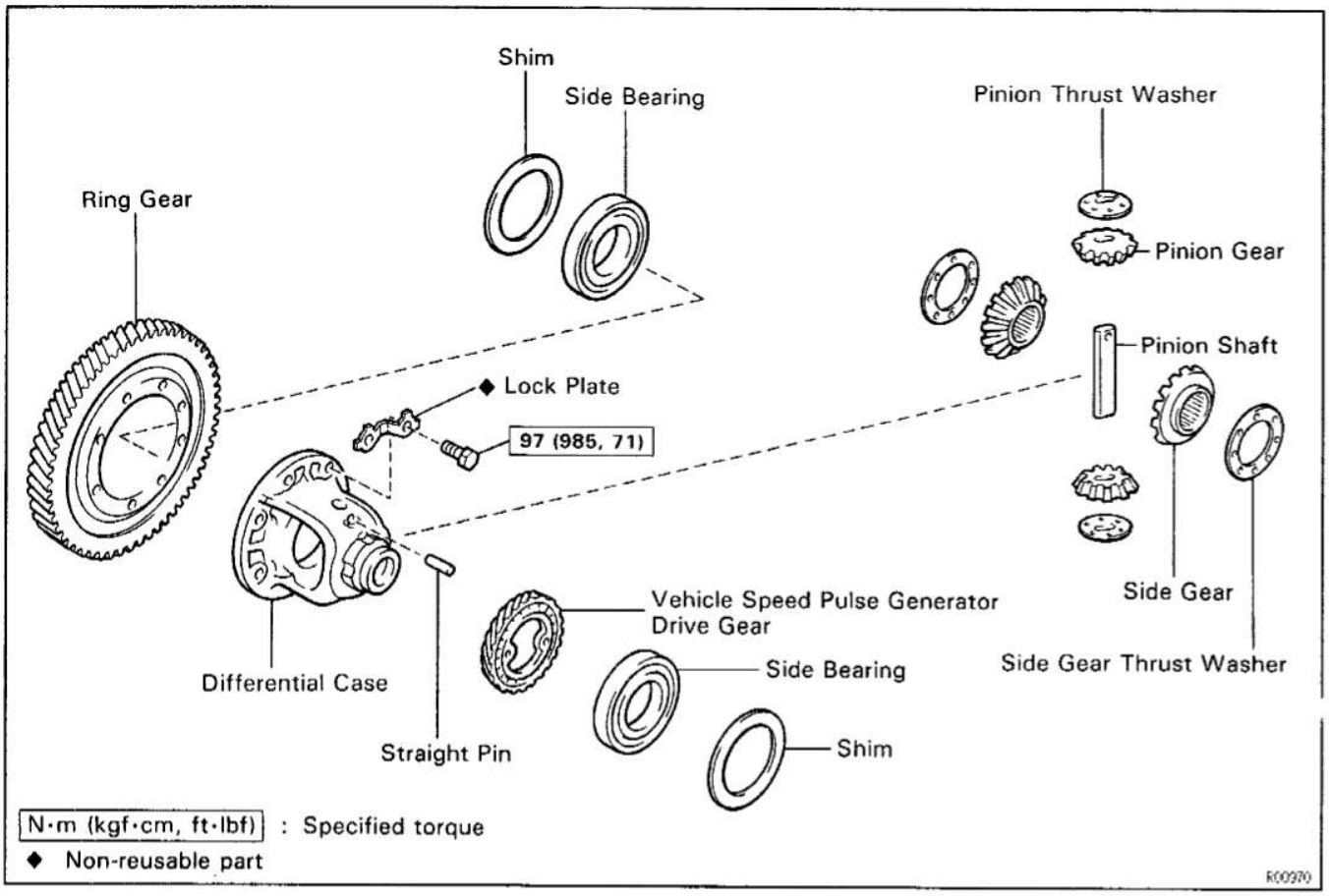


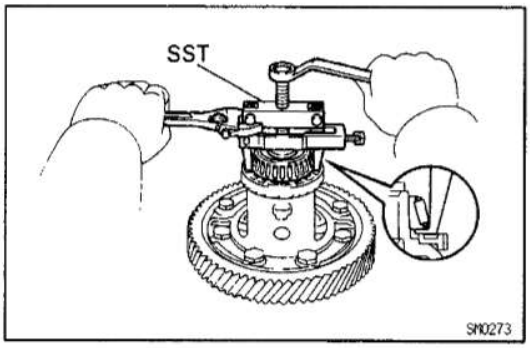
15. REMOVE OUTPUT SHAFT ASSEMBLY
16. REMOVE DIFFERENTIAL CASE ASSEMBLY

DIFFERENTIAL CASE

MX02U–01

COMPONENTS





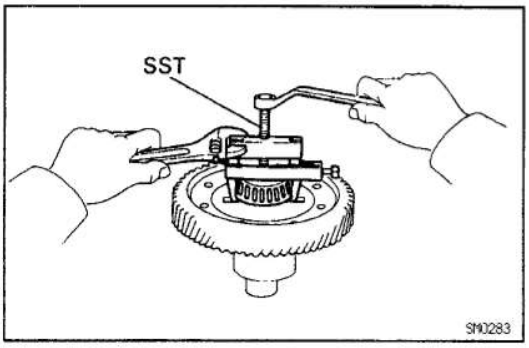
DIFFERENTIAL CASE DISASSEMBLY

MX03A–02

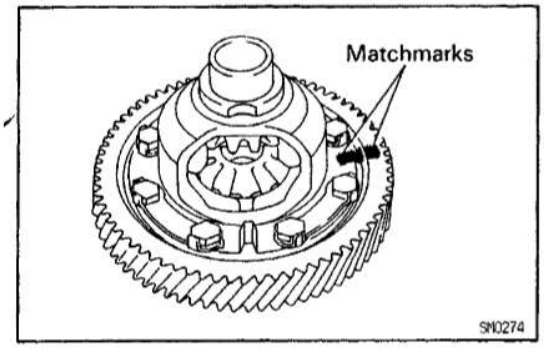
1. REMOVE SIDE BEARING FROM DIFFERENTIAL CASE

(a) Using SST, remove the bearing from drive gear side of the case.
SST 09502 –10012

(b) Remove the vehicle speed pulse generator drive gear.

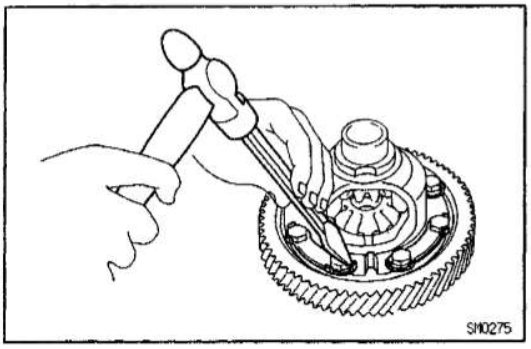


(c) Using SST, remove the bearing from ring gear side of the case.
SST 09502–10012

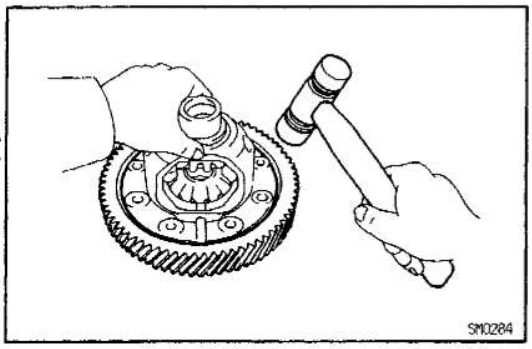


2. REMOVE RING GEAR

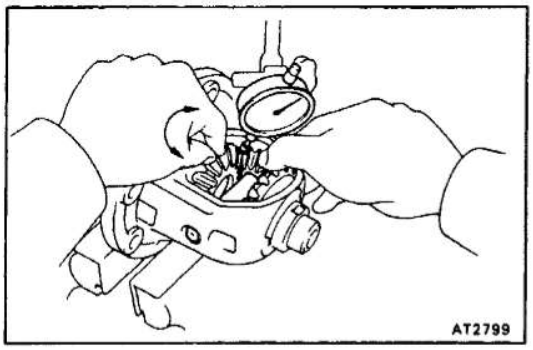
(a) Place matchmarks on the ring gear and the case.



(b) Using a chisel and hammer, unstake the lock plates.
(c) Remove the eight bolts and four lock plates.



(d) Using a copper hammer, tap on the ring gear to remove it from the case.



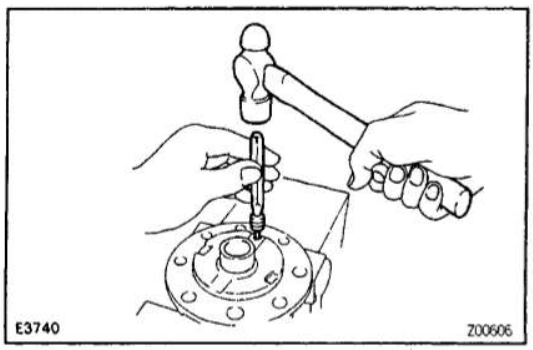
3. INSPECT SIDE GEAR BACKLASH

Using a dial indicator, measure the backlash of one side gear while holding one pinion toward the case.

Standard backlash:

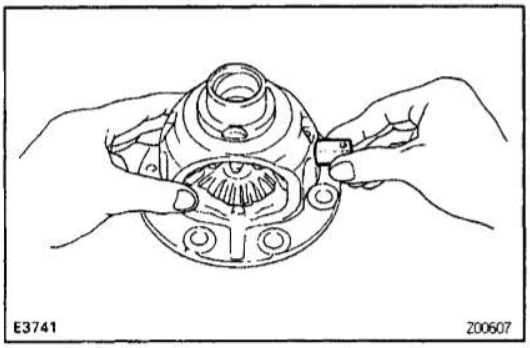
0.05–0.20 m m (0.0020–0.0079 in.)

If the backlash does not meet specification, install the; correct thrust washer to the side gears.

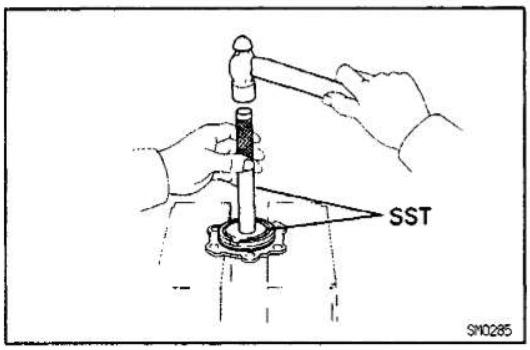


4. DISASSEMBLY DIFFERENTIAL CASE

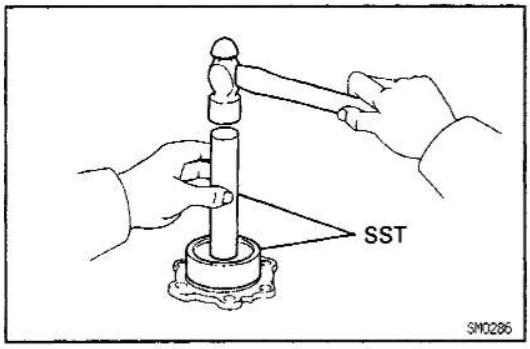
(a) Using a pin punch and hammer, drive out the straight pin.



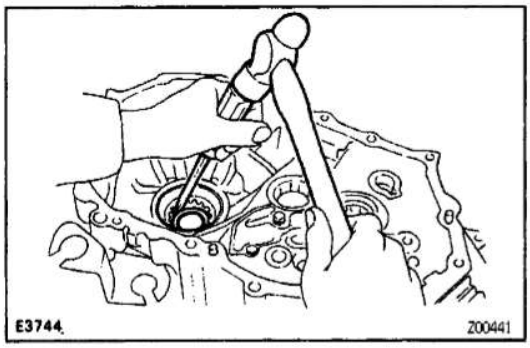
(b) Remove the pinion shaft from the case.
(c) Remove the two pinions and two side gears with the four thrust washers from each gear.



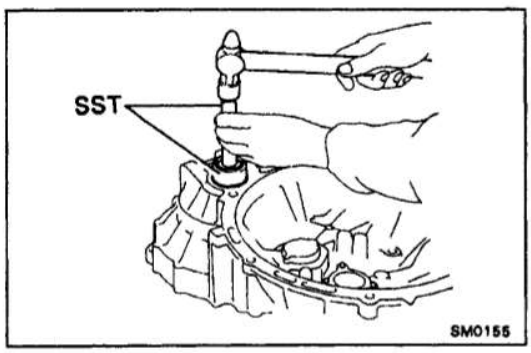
5. (TRANSMISSION CASE SIDE)
IF NECESSARY, REPLACE DIFFERENTIAL SIDE BEARING RETAINER OIL SEAL
(a) Using SST and a hammer, drive out the oil seal from the retainer.
SST 09608–20012 (09608–03020, 09608–03060)



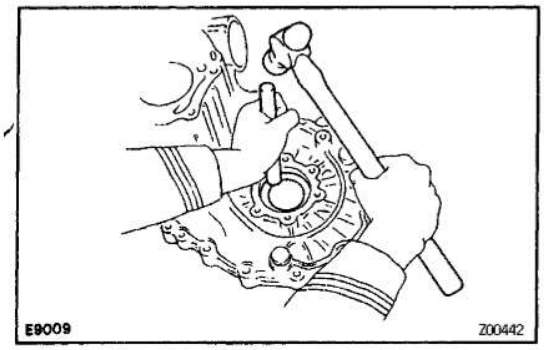
(b) Using SST and a hammer, drive in a new oil seal until its surface is flush with the case surface.
SST 09350–32014 (09351 –32130, 09351 –32150)
(c) Coat the lip of the oil seal with MP grease.



6. (TRANSAXLE CASE SIDE)
IF NECESSARY, REPLACE SIDE OIL SEAL
(a) Using a screwdriver and hammer, drive out the oil seal.

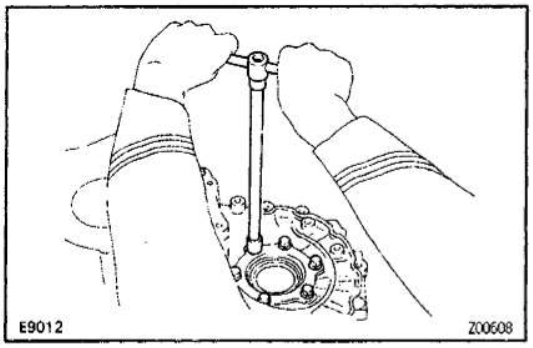


(b) Using SST and a hammer, drive in a new oil seal until its surface is flush with the case surface.
SST 09350–32014 (09351 –32130, 09351 –32150)
(c) Coat the lip of oil seal with MP grease.



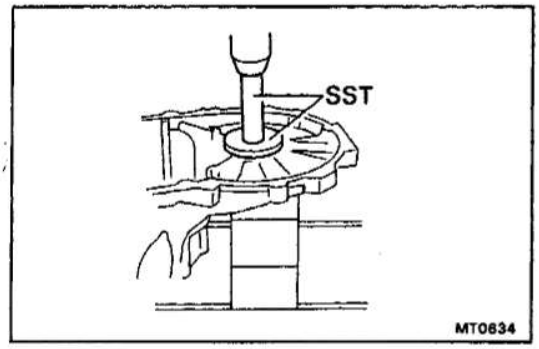
7. (TRANSMISSION CASE SIDE)
IF NECESSARY, REPLACE SIDE BEARING OUTER RACE

(a) Using a brass bar and hammer, drive out the bearing outer race.

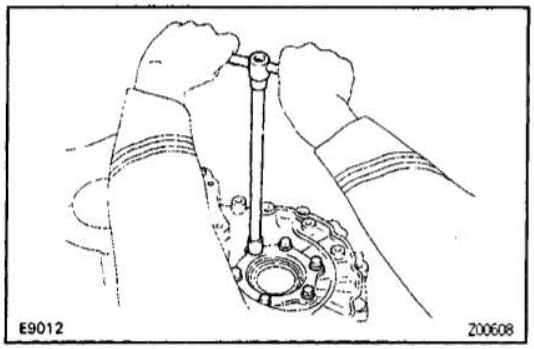


(b) Install the bearing retainer without an 0– ring.
(c) Install and torque the bearing retainer bolts.

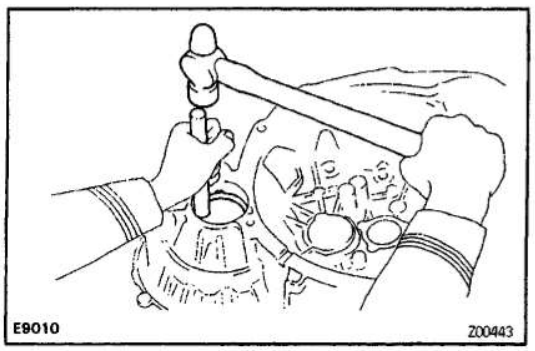
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)



(d) Place the thinnest shim into the case.
(See table on page MX1–50)
(e) Using SST and a press, install a new bearing outer race.
SST 09608–20012 (09608–03020, 09608–03060)

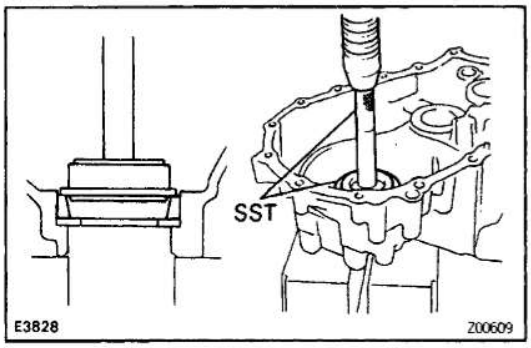


(f) Remove the retainer bolts.
(g) Remove the bearing retainer and shim.

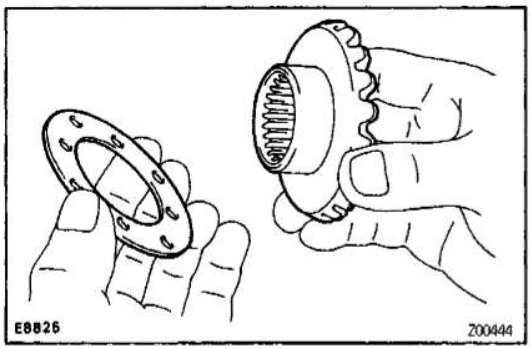


8. (TRANSAXLE CASE SIDE)
IF NECESSARY, REPLACE SIDE BEARING OUTER RACE

(a) Using a brass bar and hammer, drive out the bearing outer race and shim.



(b) Place the shim into the case.
(c) Using SST and a press, install a new bearing outer race.
SST 09608–20012 (09608–03020, 09608–03060)



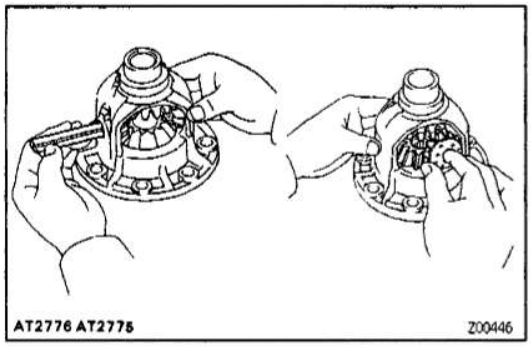
MX038–02

DIFFERENTIAL CASE ASSEMBLY (See page MX1–48)

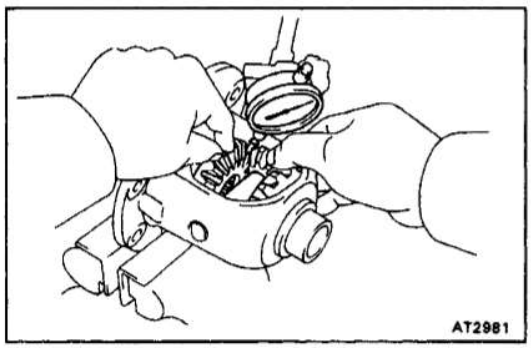
1. ASSEMBLY DIFFERENTIAL CASE

(a) Install the correct thrust washers and side gears.
Referring to the table below, select thrust washers which will ensure that the backlash is within specification. Try to select washers of the same size for both sides.
Standard backlash:
0.05–0.20 mm (0.0020–0.0079 in.)

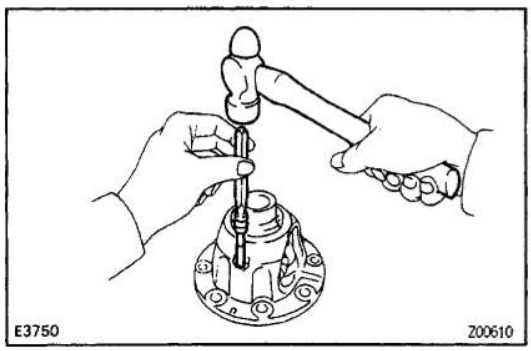
Thickness mm (in.)	Thickness mm (in.)
0.95 (0.0374)	1.10 (0.0433)
1.00 (0.0394)	1.15 (0.0453)
1.05 (0.0413)	1.20 (0.0472)



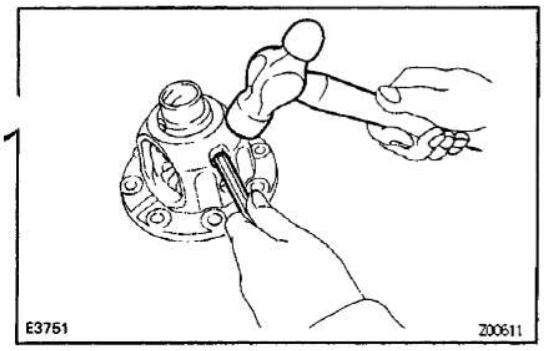
Install the thrust washers and side gears in the differential case.
(b) Install the pinion shaft.



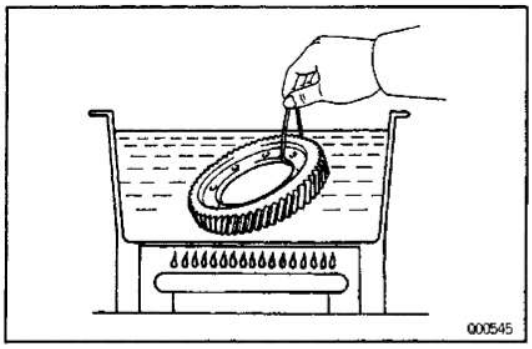
(c) Inspect the side gear backlash.
Measure the side gear backlash while holding one pinion gear toward the case.
Standard backlash:
0.05–0.20 mm (0.0020–0.0079 in.)
If the backlash is not within specification, install a thrust washer of different thickness.



(d) Using a pin punch and hammer, drive in the straight pin through the case and hole in the pinion shaft.



(e) Stake the differential case.

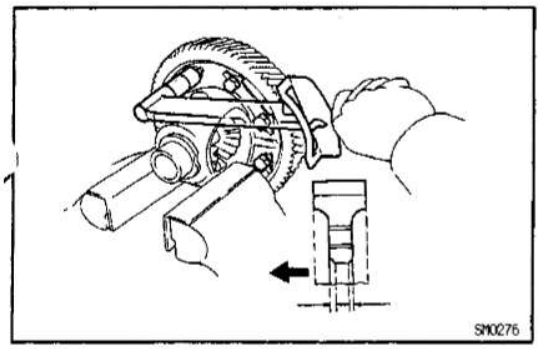


2. INSTALL RING GEAR ON DIFFERENTIAL CASE

(a) Clean the contact surface of the differential case and the threads of the ring gear and differential case.

(b) Heat the ring gear in boiling water.

(c) After moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.



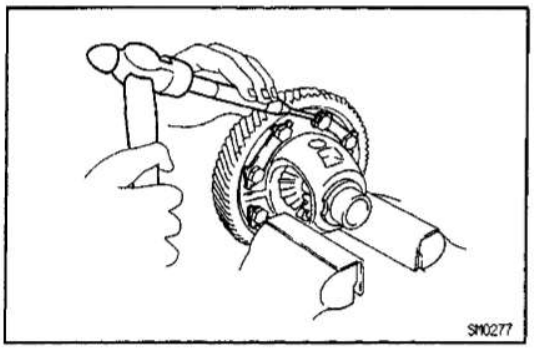
HINT: Align the matchmarks on the differential case and contact the ring gear.

(d) Temporarily install the eight bolts and four lock plates.

NOTICE: The ring gear set bolts should not be tightened until the ring gear has cooled sufficiently.

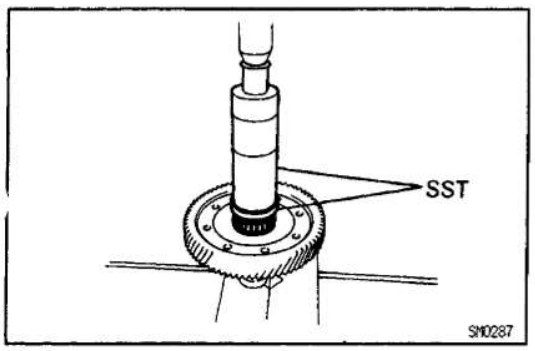
(e) After the ring gear has cooled sufficiently, torque the ring gear set bolts.

Torque: 90 N–m (920 kgf–cm, 67 ft–lbf)



(f) Using a pin punch and hammer, stake the lock plates.

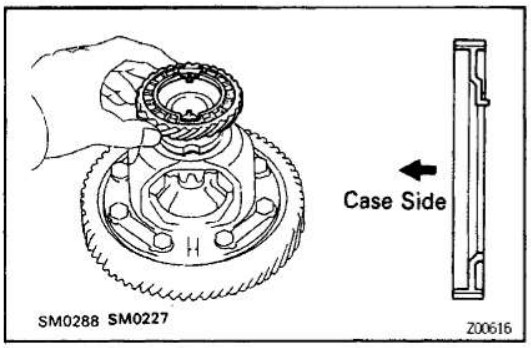
HINT: Stake one claw flush with the flat surface of the bolt. For the claw contacting the protruding portion of the bolt, stake only the half on the tighten side.



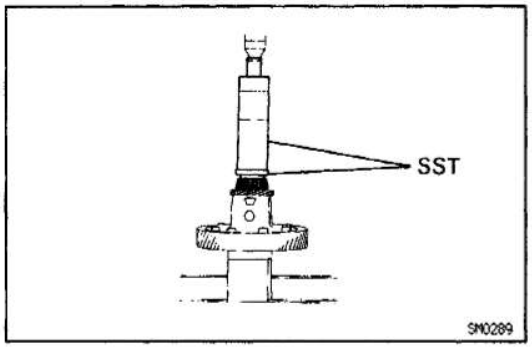
3. INSTALL SIDE BEARING TO DIFFERENTIAL CASE

(a) Using SST and a press, install the side bearing to the transmission case side.

SST 09316–60010 (09316–00010)
09350–32014 (09351 –32120)

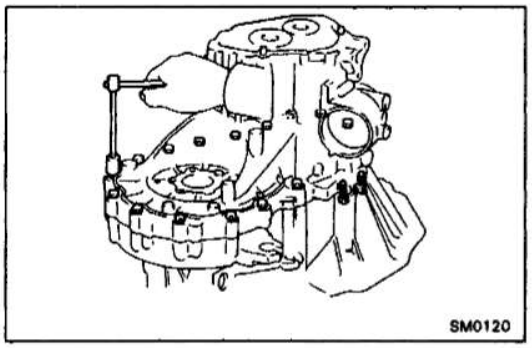


(b) install the vehicle speed pulse generator drive gear to the transaxle case side.



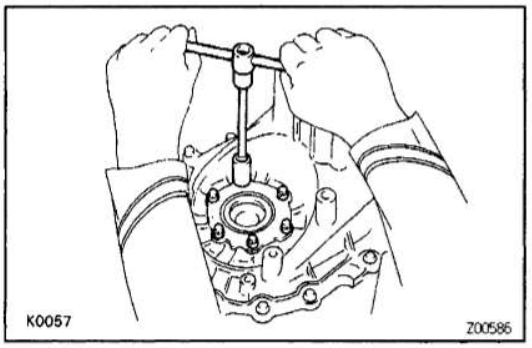
(c) Using SST and a press, install the side bearing to the transaxle case side.
SST 09316–60010 (09613–00010)
09350–32014 (09351 –32120)

NOTICE: Install the black cage bearing on the speedometer drive gear side.

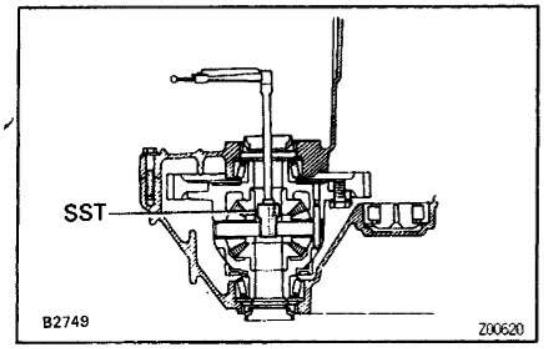


4. ADJUST DIFFERENTIAL CASE SIDE BEARING PRELOAD

(a) Install the differential to the transaxle case.
(b) Install the transmission case.
(e) Install and torque the case bolts.
Torque: 29 N–m (300 kgf–cm, 22 ft–lbf)

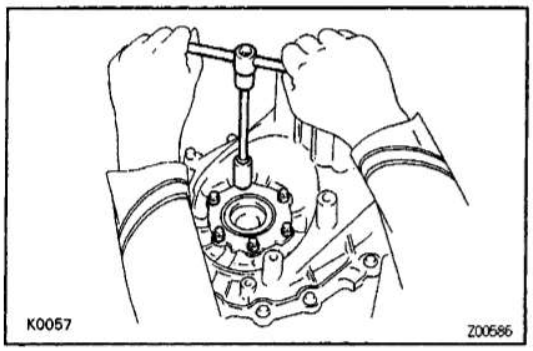


(d) Install the shim into the transmission case.
(e) Install the bearing retainer without an O–ring.
(f) Install and torque the retainer bolts.
Torque: 18 N–m (185 kgf–cm, 13 ft–lbf)

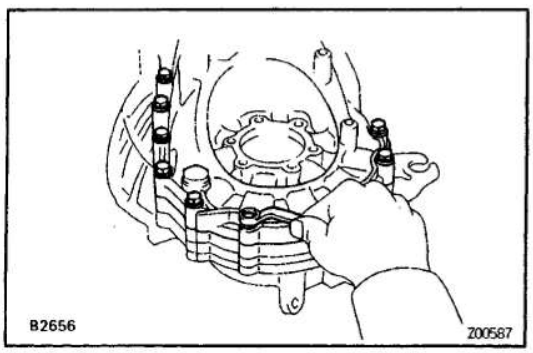


(g) Using SST and torque meter, measure the preload.
SST 09564–32011
Preload (at starting):
0.8–1.6 N–m (8–16 kgf–cm, 6.9–13.9 in.–lbf)
If the preload is not within specification, remove the transmission case side bearing retainer.
Select another shim.
HINT: The preload will change about 0.3–0.4 N–m (3–4 kgf–cm, 2.6–3.5 in.–lbf) with each shim thickness.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
1	1.90 (0.0748)	11	2.40 (0.0945)
2	1.95 (0.0768)	12	2.45 (0.0965)
3	2.00 (0.0787)	13	2.50 (0.0984)
4	2.05 (0.0807)	14	2.55 (0.1004)
5	2.10 (0.0827)	15	2.60 (0.1024)
6	2.15 (0.0846)	16	2.65 (0.1043)
7	2.20 (0.0866)	17	2.70 (0.1063)
8	2.25 (0.0886)	18	2.75 (0.1083)
9	2.30 (0.0906)	19	2.80 (0.1102)
10	2.35 (0.0925)		



(h) Remove the retainer bolts.
(i) Remove the bearing retainer and shim.

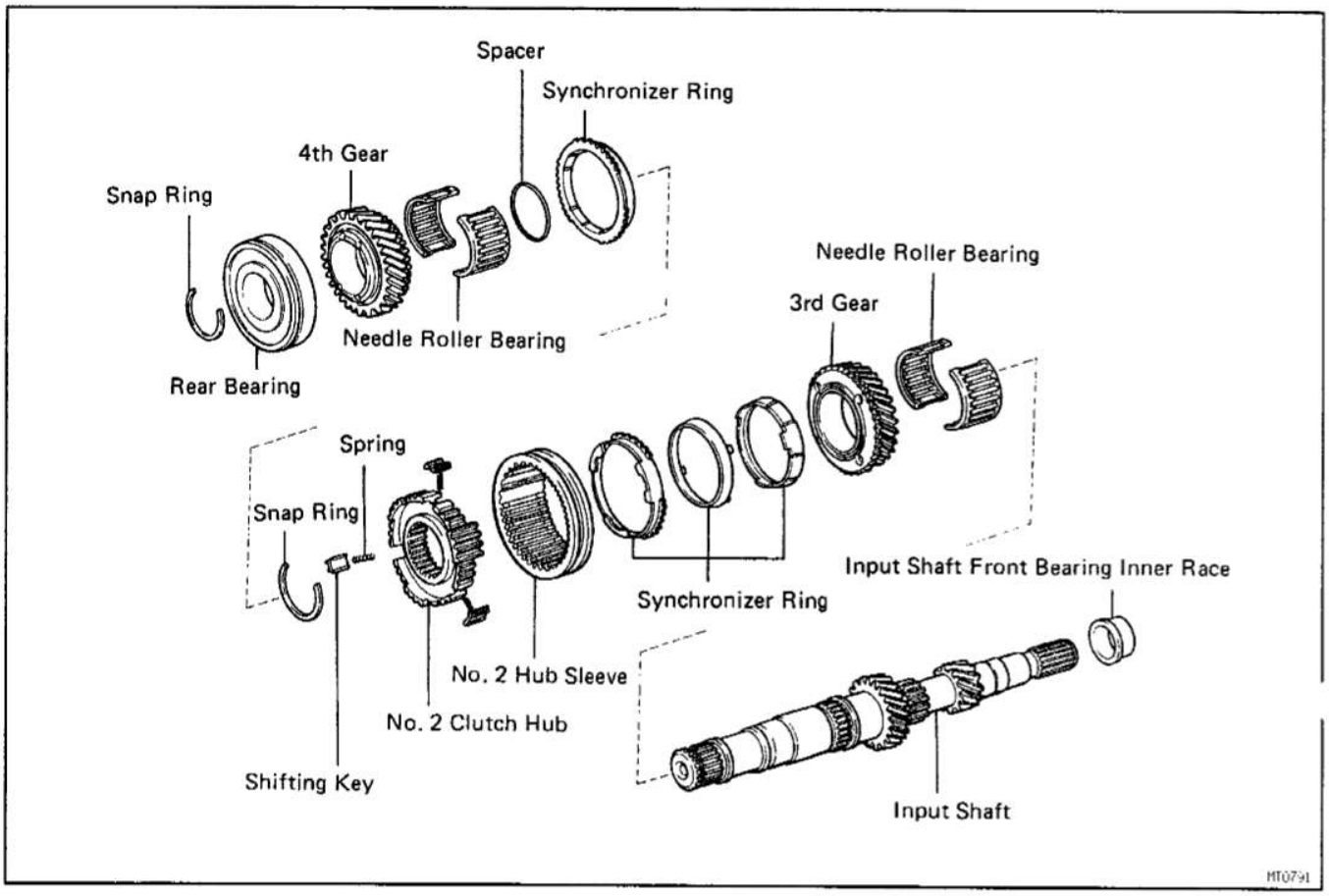


(j) Remove the case bolts.
(k) Remove the transmission case.

INPUT SHAFT

COMPONENTS

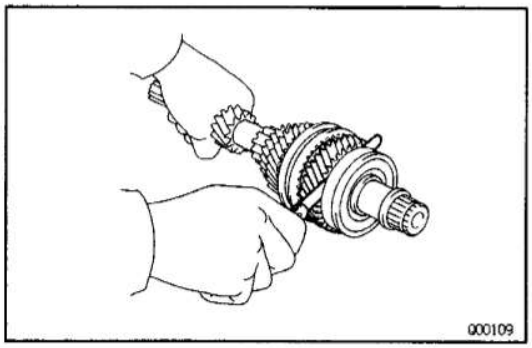
MX016-01



MX017-01

INPUT SHAFT DISASSEMBLY

1. MEASURE THIRD AND FOURTH GEAR THRUST CLEARANCE



Using a feeler gauge, measure the thrust clearance.

Standard clearance:

3rd gear

0.10–0.45 mm (0.0039–0.0177 in.)

4th gear

0.10–0.55 mm (0.0039–0.0217 in.)

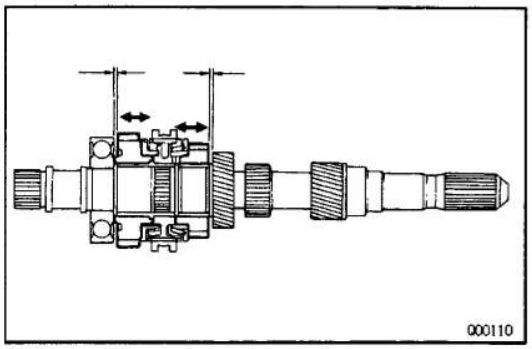
Maximum clearance:

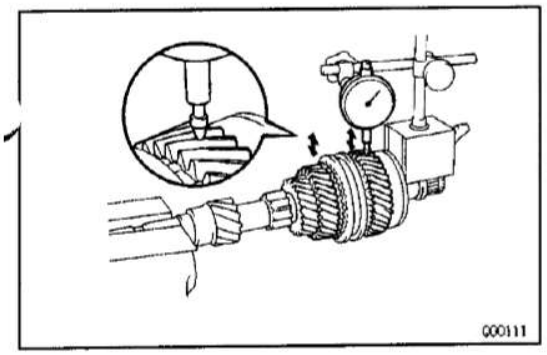
3rd gear

0.50 mm (0.0197 in.)

4th gear

0.60 mm (0.0236 in.)





2. CHECK OIL CLEARANCE OF THIRD AND FORTH GEAR

Using dial indicator, measure the oil clearance between the gear and shaft.

Standard clearance:

3rd gear

0.009–0.053 mm (0.0004–0.0021 in.)

4th gear

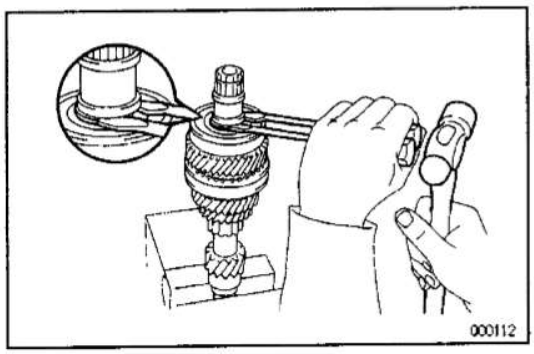
0.009–0.051 mm (0.0004–0.0020 in.)

Maximum clearance:

3rd and 4th gear

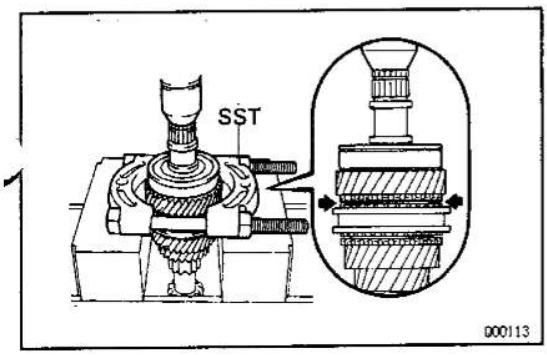
0.070 mm (0.0028 in.)

If clearance exceeds the limit, replace the gear, needle roller bearing or shaft.



3. REMOVE SNAP RING

Using two screwdriver and a hammer–, tap out the snap ring.

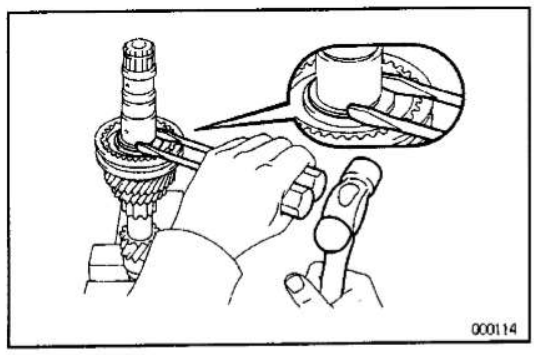


4. REMOVE RADIAL BALL BEARING AND FOURTH GEAR

Using SST and a press, remove the radial bearing.

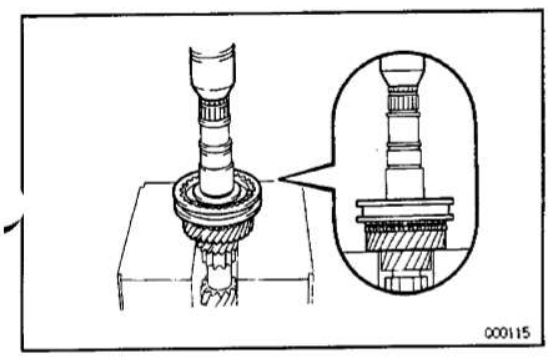
SST 09950–00020

5. REMOVE NEEDLE ROLLER BEARINGS, SPACER AND SYNCHRONIZER RING



6. REMOVE SNAP RING

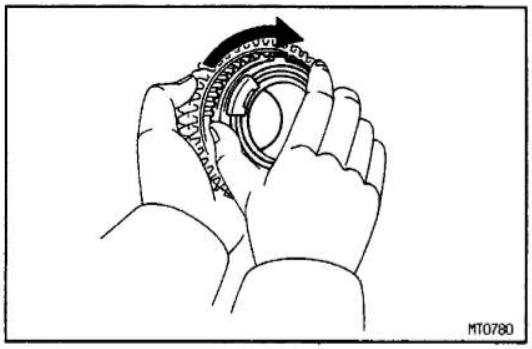
Using two screwdrivers and a hammer, tap out the snap ring.

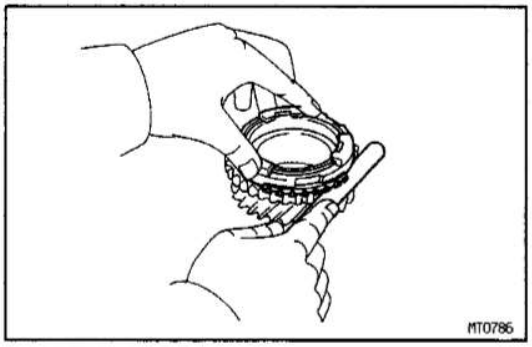


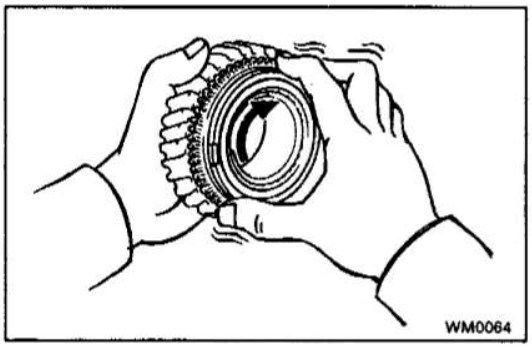
7. REMOVE NO.2 CLUTCH HUB ASSEMBLY, SYNCHRONIZER RING AND THIRD GEAR

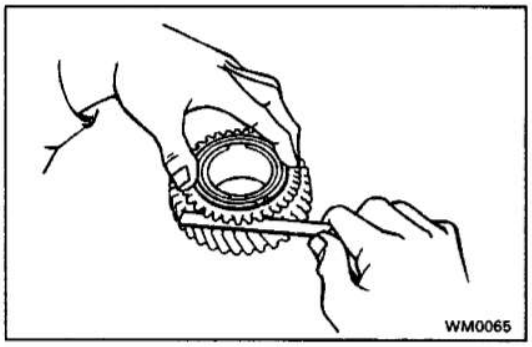
Using a press, remove No.2 hub sleeve, 3rd gear, synchronizer ring and needle roller bearings.

8. REMOVE NEEDLE ROLLER BEARING









INPUT SHAFT COMPONENT PARTS INSPECTION

MX019-01

1. INSPECT SYNCHRONIZER RING FOR THIRD GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, replace the syn–chronizer ring.

(c) Measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance:

0.7 mm (0.028 in.)

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

2. INSPECT SYNCHRONIZER RING FOR FOURTH GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE:

- **Wash off completely the fine lapping compound after rubbing.**
- **Check again the braking effect of the synchronizer ring.**

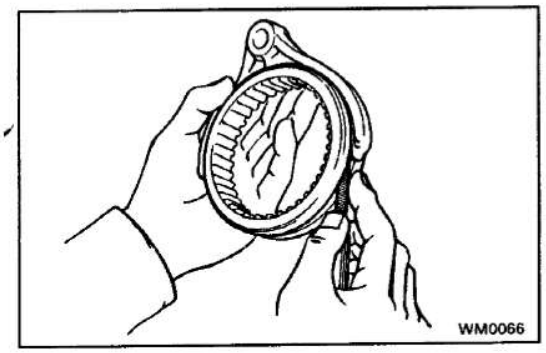
(c) Measure the clearance between the synchronizer ring back and spline end.

Minimum clearance:

0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely, the fine lapping com–pound after rubbing.



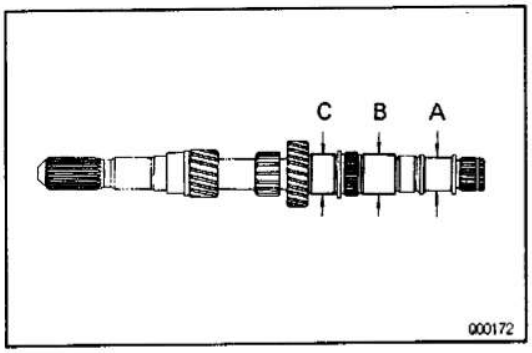
3. MEASURE CLEARANCE OF NO.2 SHIFT FORK AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance:

1.0 mm (0.039 in.)

If the clearance exceeds the limit, replace the shift fork or hub sleeve.



4. INSPECT INPUT SHAFT

(a) Check the input shaft for wear or damage.

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

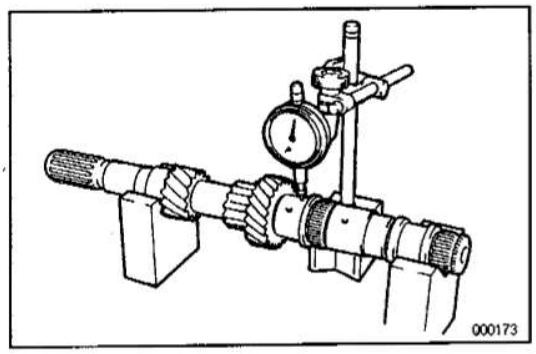
Minimum outer diameter:

Part A

27.950 mm (1.1004 in.)

Part B and C

35.950 mm (1.4154 in.)



(c) Using a dial indicator, check the shaft runout.

Maximum runout:

0.05 mm (0.0020 in.)

MX019–01

INPUT SHAFT ASSEMBLY

(See page MX2–38)

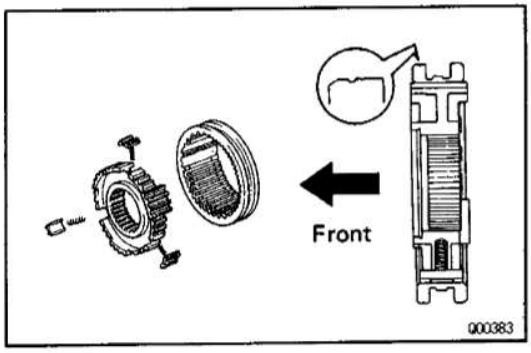
HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSTALL NO.2 CLUTCH HUB INTO HUB SLEEVE

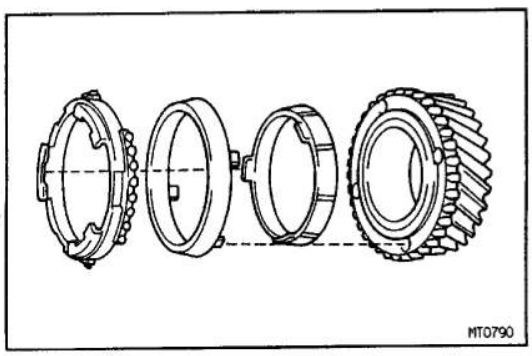
(a) Install the three springs and shifting keys to the clutch hub.

(b) Install the hub sleeve to the clutch hub.

HINT: Direct identification groove of the hub sleeve to front of the transmission.



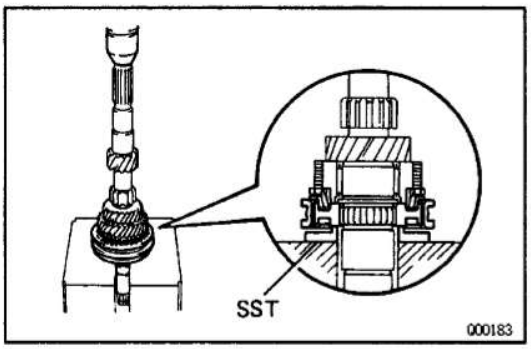
2. INSTALL NEEDLE ROLLER BEARING, THIRD GEAR, SYNCHRONIZER RINGS AND NO.2 HUB SLEEVE ASSEMBLY TO INPUT SHAFT



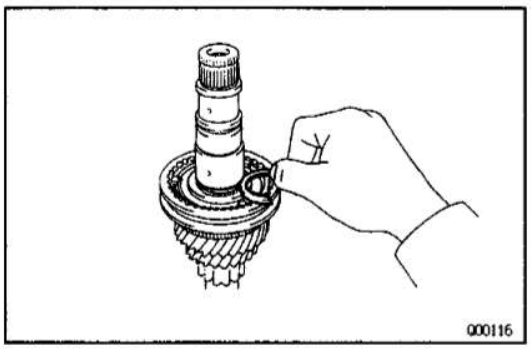
(a) Apply MP grease to the needle roller bearing.

(b) Assembly the needle roller bearings into the 3rd gear.

(c) Place the synchronizer rings on the gear and align the ring slots with the shifting keys.



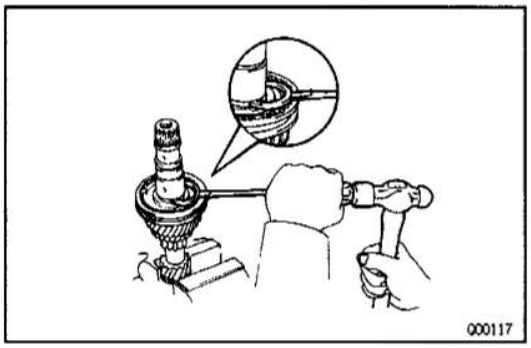
(d) Using SST and a press, install the 3rd gear and No.2 hub sleeve.
SST 09506–35010



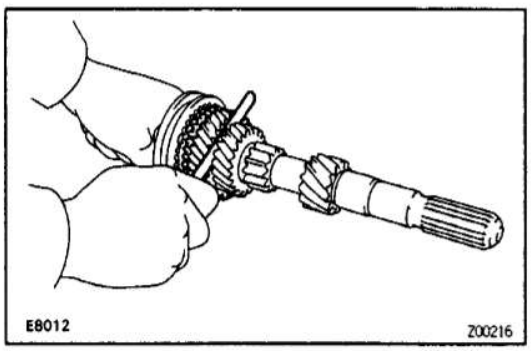
3. INSTALL SNAP RING

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

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
H	2.30 (0.0906)	M	2.50 (0.0984)
J	2.35 (0.0925)	N	2.55 (0.1004)
K	2.40 (0.0945)	P	2.60 (0.1024)
L	2.45 (0.0965)		



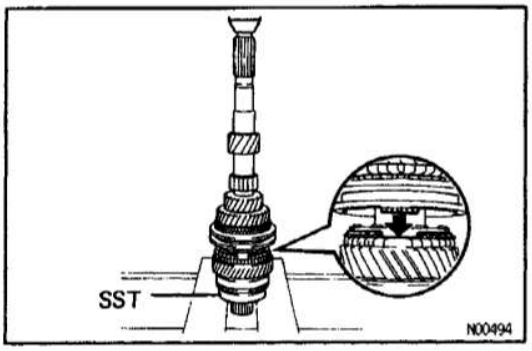
(b) Using a screwdriver and hammer, tap in the snap ring.



4. MEASURE THIRD GEAR THRUST CLEARANCE

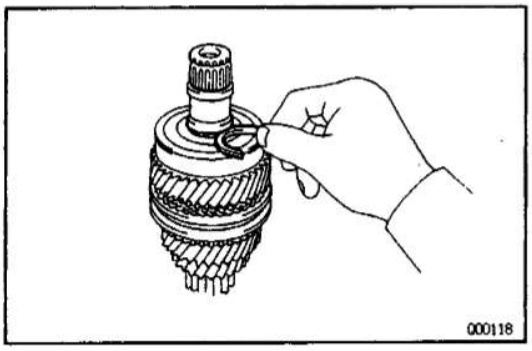
Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance:
0.10–0.45 mm (0.0039–0.0177 in.)



5. INSTALL SPACER, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS, FOURTH GEAR AND RADIAL BALL BEARING

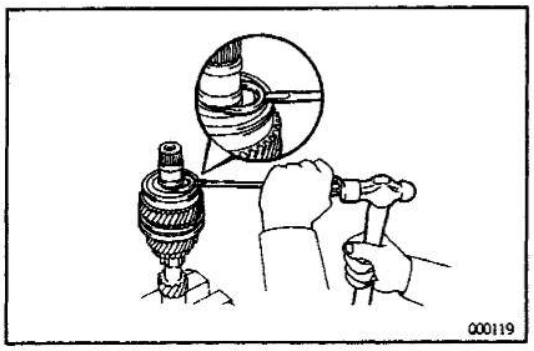
(a) Install the spacer.
(b) Apply MP grease to the needle roller bearings.
(c) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
(d) Install the 4th gear.
(e) Using SST and a press, install the radial ball bearing.
SST 09506–35010



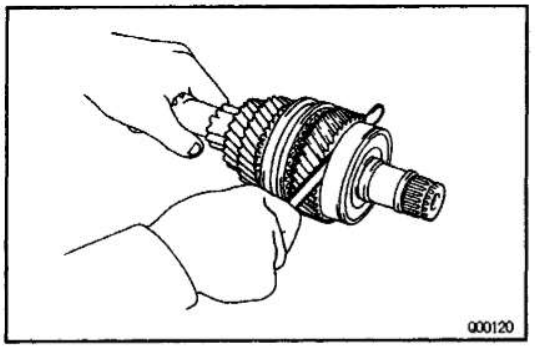
6. INSTALL SNAP RING

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

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
1	2.35 (0.0925)	5	2.55 (0.1004)
2	2.40 (0.0945)	6	2.60 (0.1024)
3	2.45 (0.0965)	7	2.65 (0.1043)
4	2.50 (0.0984)	8	2.70 (0.1063)



(b) Using a screwdriver and hammer, tap in the snap ring.



7. MEASURE FOURTH GEAR THRUST CLEARANCE

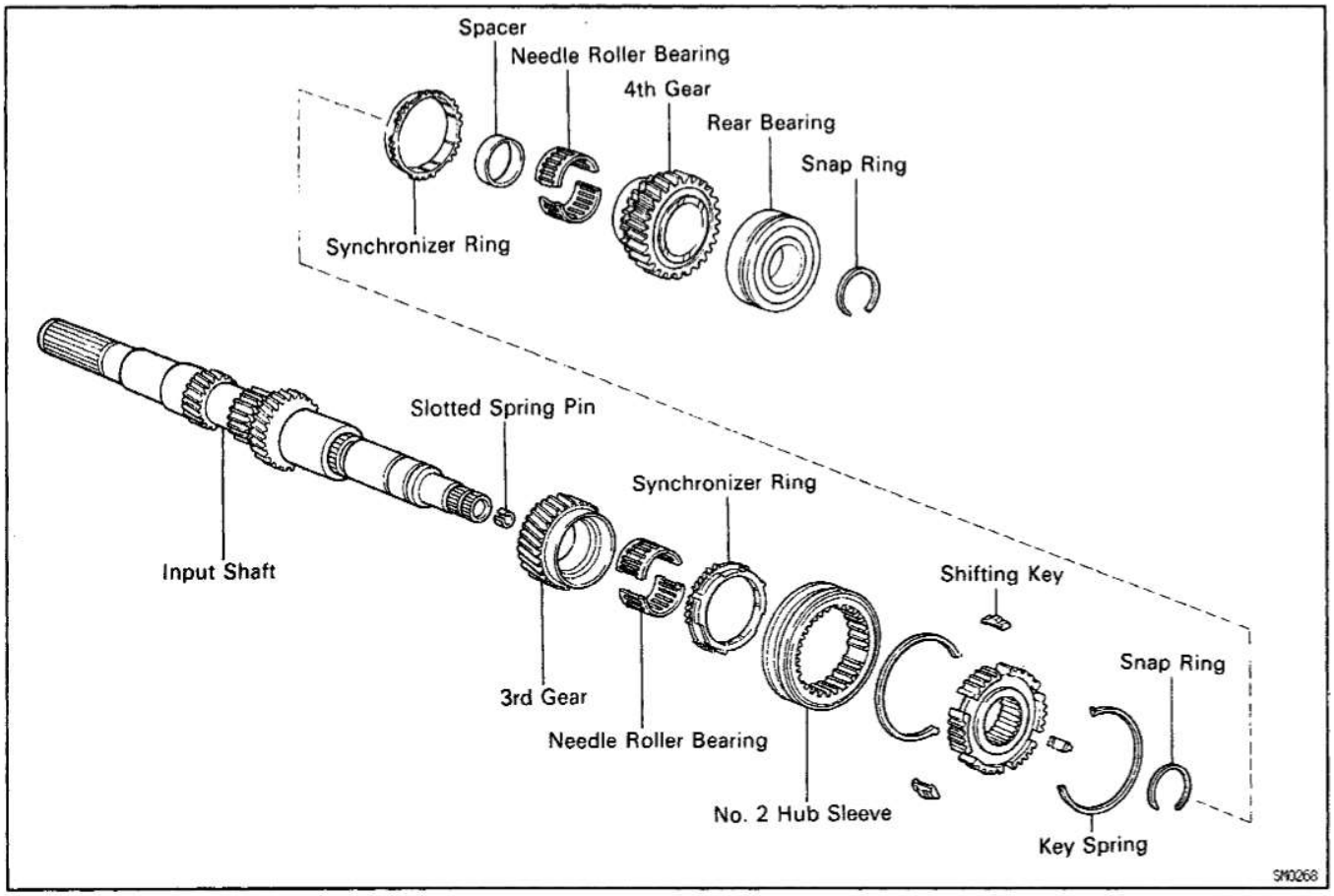
Using a feeler gauge, measure the 4th gear thrust clearance.

Standard clearance:
0.10–0.55 mm (0.0039–0.0217 in.)

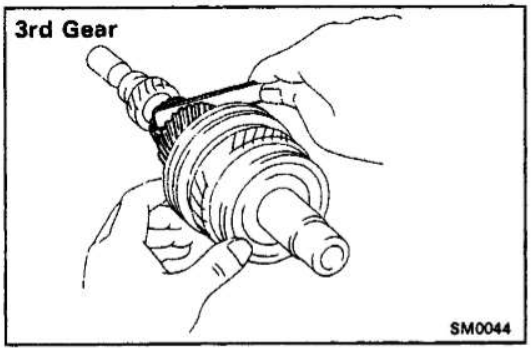
INPUT SHAFT

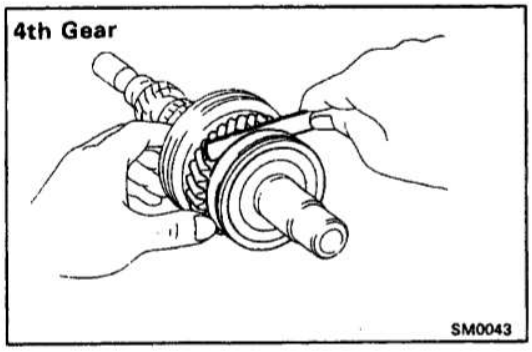
COMPONENTS

MX02H–01



MX034–01





INPUT SHAFT DISASSEMBLY

1. INSPECT THIRD AND FOURTH GEAR THRUST CLEARANCE

Using a feeler gauge, measure the clearance.

Standard clearance:

3rd gear

0.10–0.25 mm (0.0039–0.0098 in.)

4th gear

0.20–0.45 mm (0.0079–0.0177 in.)

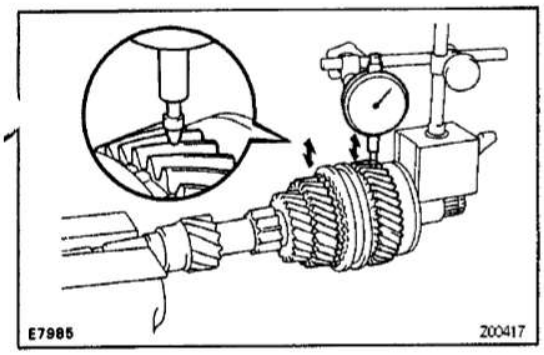
Maximum clearance:

3rd gear

0.30 mm (0.0118 in.)

4th gear

0.50 mm (0.0197 in.)



2. INSPECT THIRD AND FOURTH GEAR OIL CLEARANCE

Using dial indicator, measure the oil clearance between the gear and shaft.

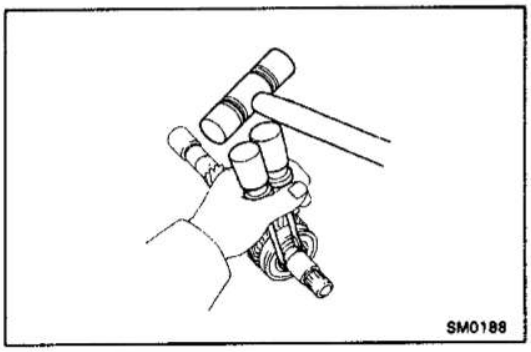
Standard clearance:

0.009–0–053 mm (0.0004–0.0021 in.)

Maximum clearance:

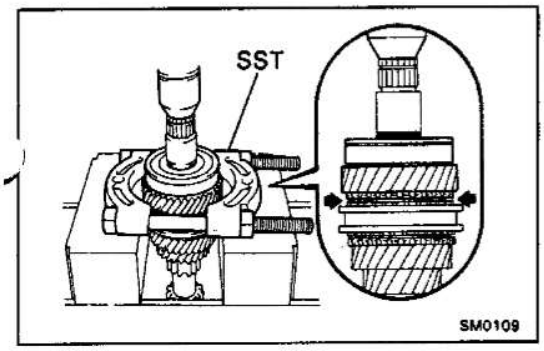
0.070 mm (0.0028 in.)

If the clearance exceeds the maximum, replace the gear, needle roller bearing or shaft.



3. REMOVE SNAP RING

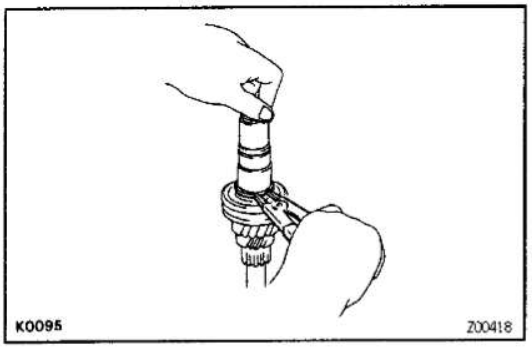
Using two screwdrivers and a hammer, tap out the snap ring.



4. REMOVE REAR BEARING, FOURTH GEAR, NEEDLE ROLLER BEARINGS, SPACER AND SYNCHRONIZER RING FROM INPUT SHAFT

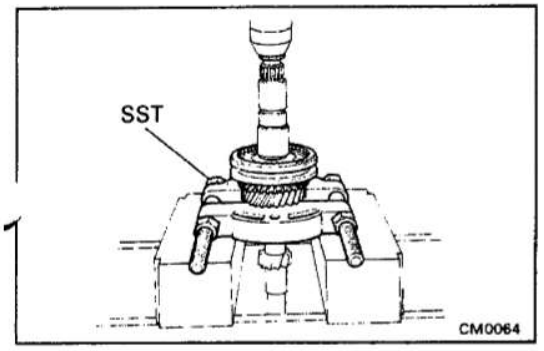
(a) Using SST and a press, remove the 4th gear and rear bearing.
SST 09950–00020

(b) Remove the needle roller bearings, spacer and synchronizer ring.



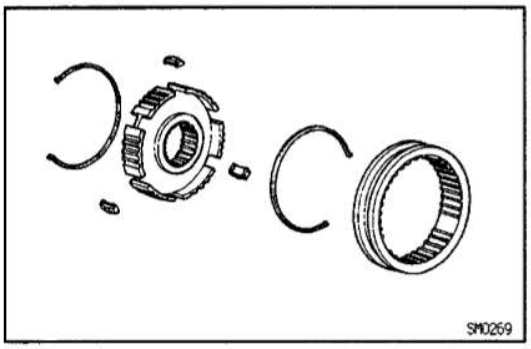
5. REMOVE SNAP RING

Using a snap ring expander, remove the snap ring.



6. REMOVE NO.2 HUB SLEEVE ASSEMBLY, THIRD GEAR SYNCHRONIZER RING AND NEEDLE ROLLER BEARINGS

Using SST and a press, remove the No.2 hub sleeve, 3rd gear, synchronizer ring and needle roller bearings.
SST 09950–00020



7. REMOVE NO.2 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO.2 CLUTCH HUB

Using a screwdriver, remove the three shifting keys and two springs from the No.2 clutch hub.

INPUT SHAFT COMPONENTS INSPECTION

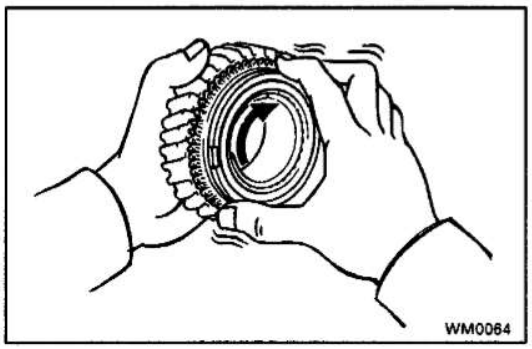
1. INSPECT SYNCHRONIZER RINGS

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.



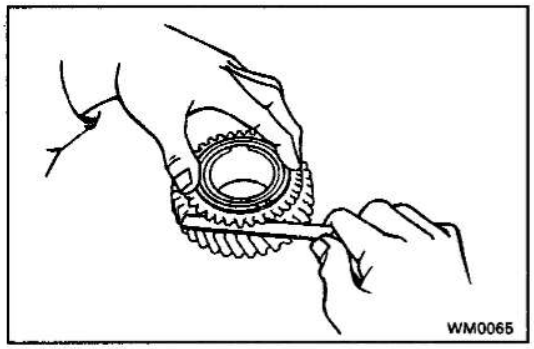
NOTICE:

- **Wash off completely the fine lapping compound after rubbing.**
- **Check again the braking effect of the synchronizer** ring.

(e) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

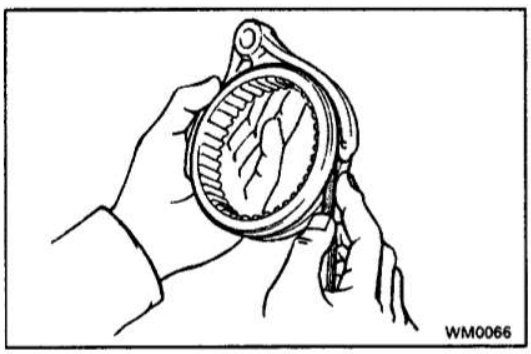
Minimum clearance:

0.6 mm (0.024 in.)



If the clearance is less than the minimum, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.



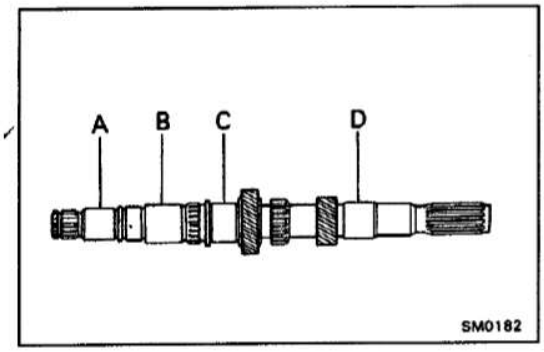
2. INSPECT CLEARANCE OF NO.2 SHIFT FORK AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance:

1.0 mm (0.039 in.)

If the clearance exceeds the maximum, replace shift fork or hub sleeve.



3. INSPECT INPUT SHAFT

(a) Check the input shaft for wear or damage.

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

Minimum outer– diameter:

Part A

26.970 mm (1.0618 in.)

Part B

32.470 mm (1.2783 in.)

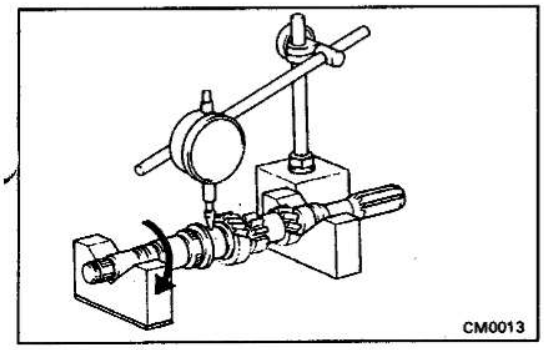
Part C

33.090 mm (1.3028 in.)

Part D

29.970 mm (1.1799 in.)

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



(c) Using a dial indicator, check the shaft runout.

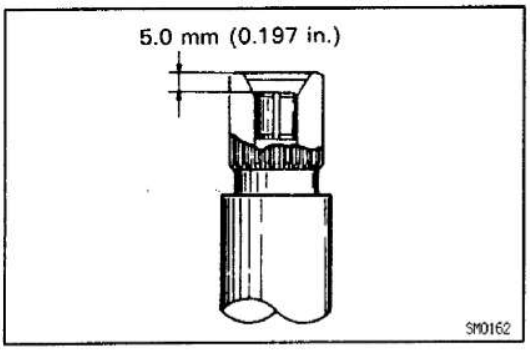
Maximum runout:

0.05 mm (0.0020 in.)

If the outer diameter exceeds the minimum, replace the input shaft.

MX033–01

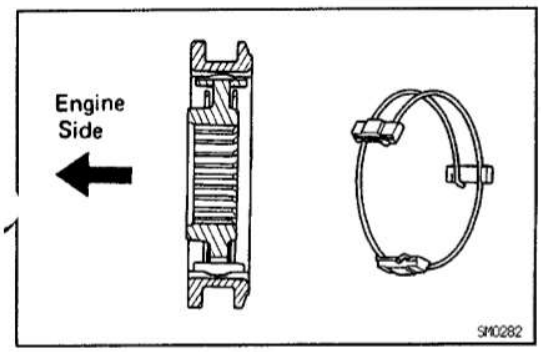
INPUT SHAFT ASSEMBLY (See page MX1–32)



HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. IF INPUT SHAFT WAS REPLACED, DRIVE IN SLOTTED SPRING PIN

If the input shaft was replaced, drive the slotted spring pin in the input shaft to a depth of 5.0 mm (0.197 in.).

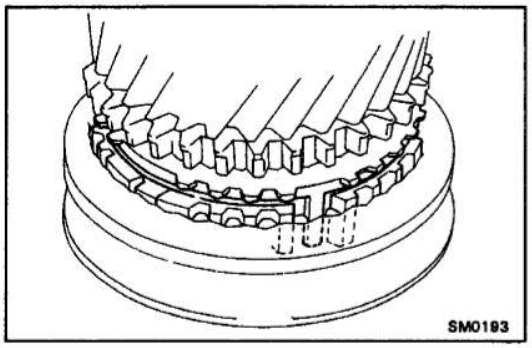


2. INSTALL NO.2 CLUTCH HUB INTO HUB SLEEVE

(a) Install the clutch hub and shifting keys to the hub sleeve.

(b) Install the shifting key springs under the shifting keys.

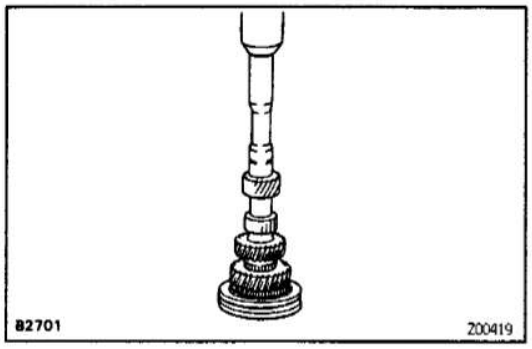
NOTICE: Install the key springs positioned so that their end gaps are not line.



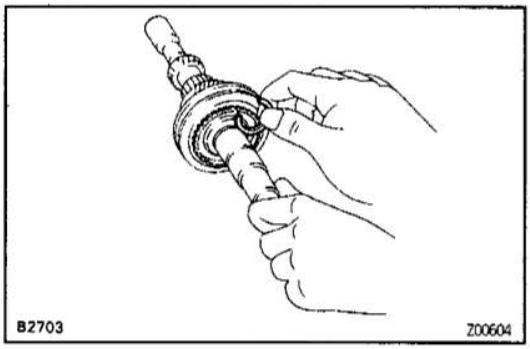
3. INSTALL THIRD GEAR, NEEDLE ROLLER BEARINGS, SYNCHRONIZER RING AND NO. 2 HUB SLEEVE ASSEMBLY TO INPUT SHAFT

(a) Apply gear oil to the needle roller bearings.

(b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.



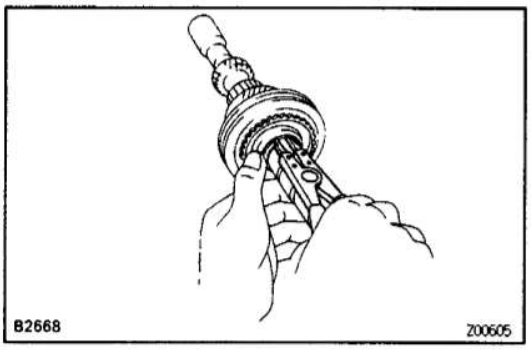
(c) Using a press, install the 3rd gear and No.2 hub sleeve.



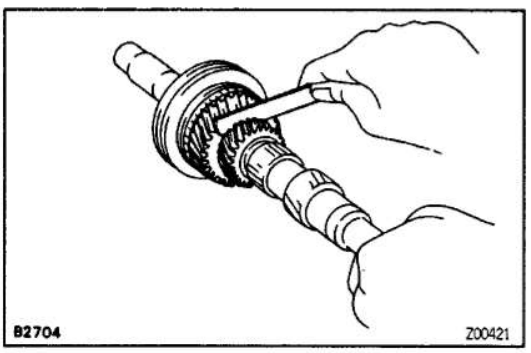
4. INSTALL SNAP RING

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

Mark	Thickness mm (in.)
1	1.95–2.00 (0.0768–0.0787)
2	2.00–2.05 (0.0787–0.0807)
3	2.05–2.10 (0.0807–0.0827)
4	2.10–2.15 (0.0827–0.0846)
5	2.15 – 2.20 (0.0846 – 0.0866)
6	2.20–2.25 (0.0866–0.0886)



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

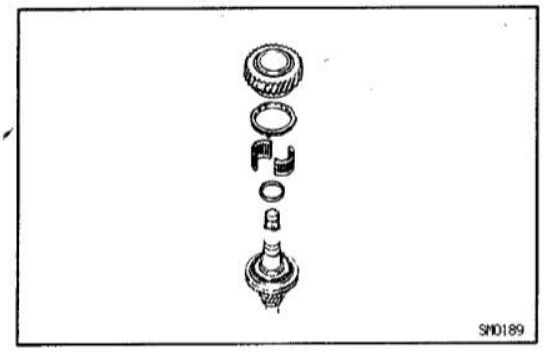


5. INSPECT THIRD GEAR THRUST CLEARANCE

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

Standard clearance:

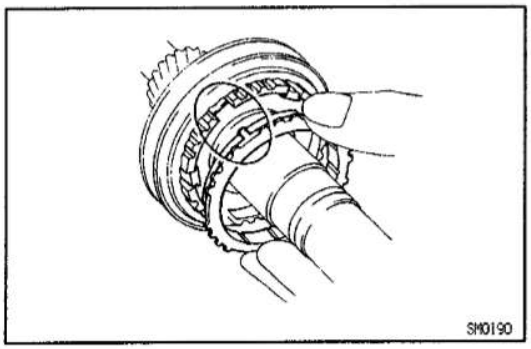
0.10–0.25 mm (0.0039–0.0098 in.)



6. INSTALL SYNCHRONIZER RING. NEEDLE ROLLER BEARINGS, SPACER, FOURTH GEAR AND REAR BALL BEARING

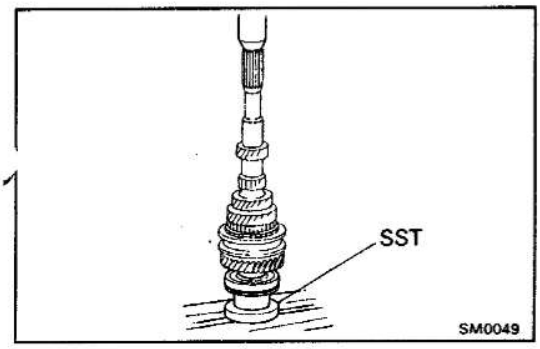
(a) Apply gear oil to the needle roller bearings.

(b) Install the spacer and needle roller bearings.



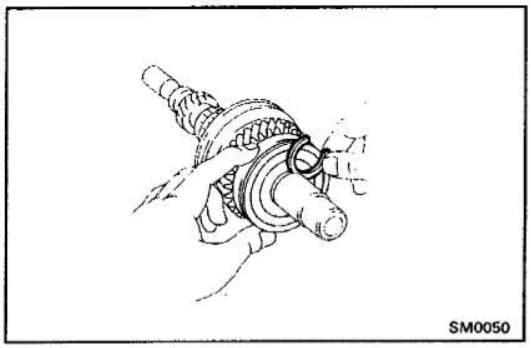
(c) Place the synchronizer ring on the gear.

HINT: Align the ring slots with the shifting keys, and the ring projections with the hub slots.



(d) Using SST and a press, install the rear ball bearing.

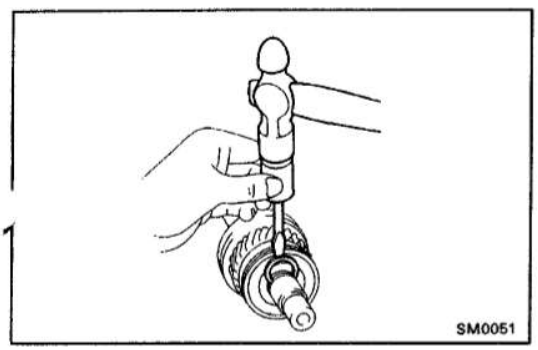
SST 09608–12010 (09608–00070)



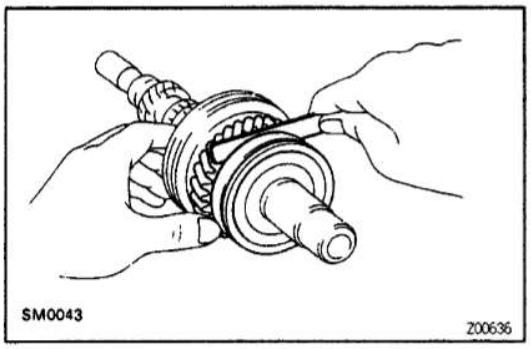
7. INSTALL SNAP RING

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

Mark	Thickness mm (in.)
A	2.15–2.20 (0.0846–0.0866)
B	2.20–2.25 (0.0866–0.0886)
C	2.25–2.30 (0.0886–0.0906)
D	2.30–2.35 (0.0906–0.0925)
E	2.35–2.40 (0.0925–0.0945)



(b) Using a screwdriver and hammer, tap in the snap ring.



8. INSPECT FOURTH GEAR THRUST CLEARANCE

Using a feeler gauge, measure 4th gear thrust clear–ance.

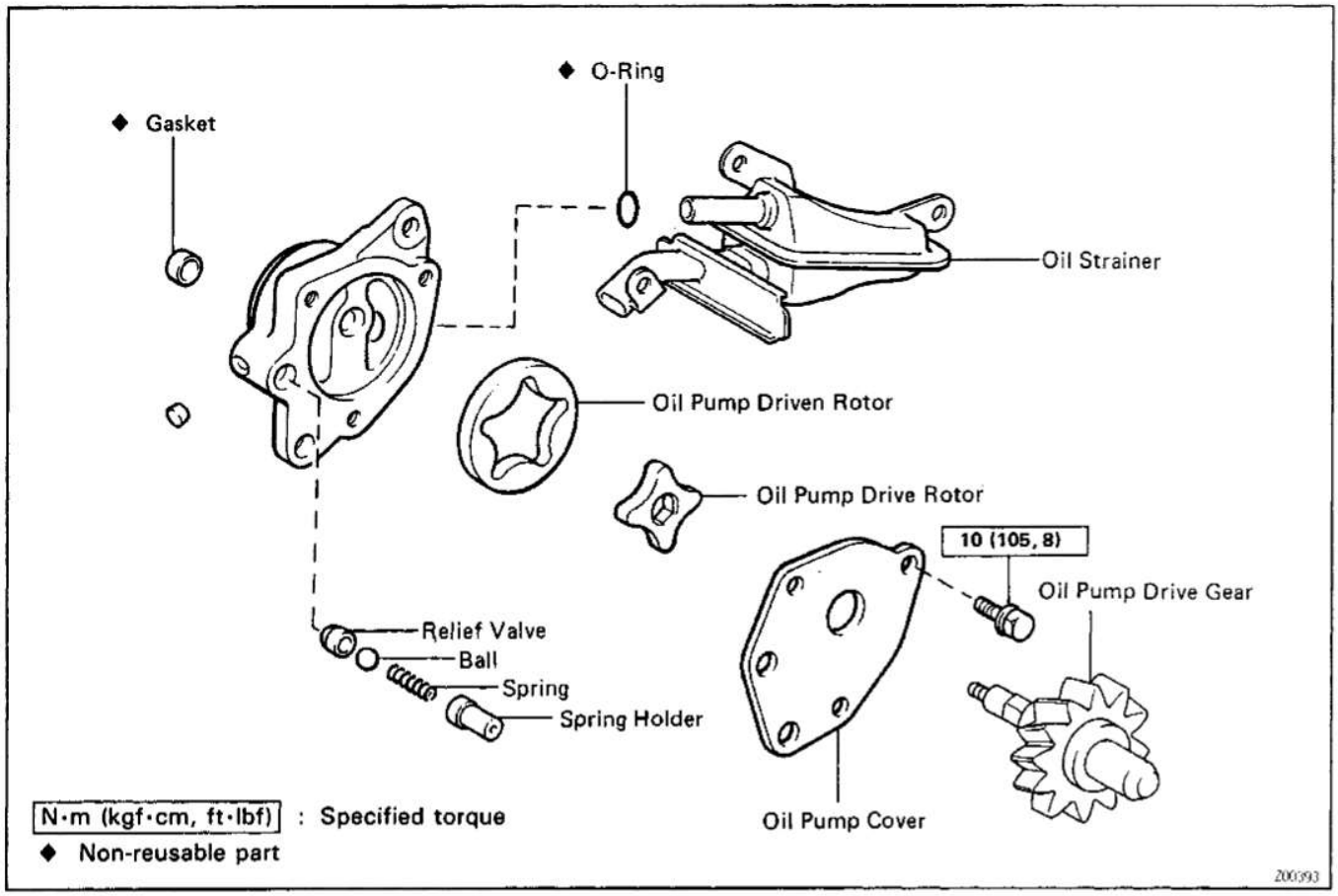
Standard clearance:

0.20–0.45 m m (0.0078–0.0177 in.)

OIL PUMP

MX01E-01

COMPONENTS

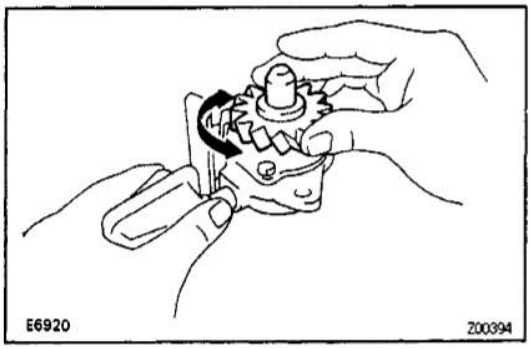


MX01F-01

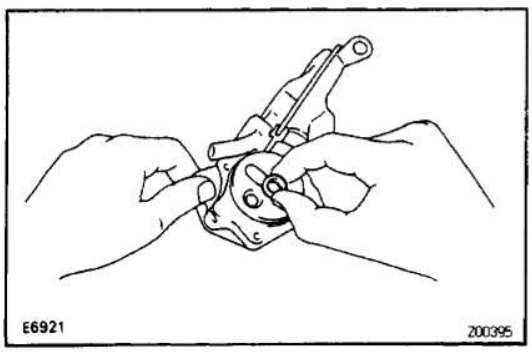
OIL PUMP DISASSEMBLY

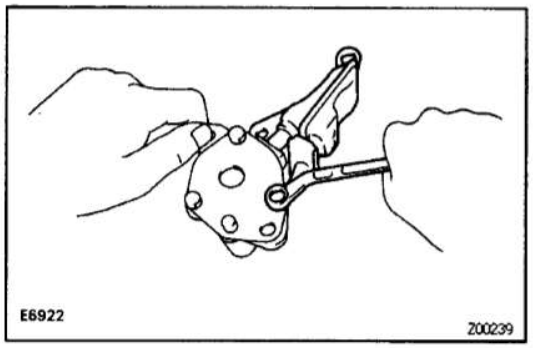
1. CHECK OPERATION OF OIL PUMP

Install the oil pump drive gear to the drive rotor, check that the drive rotor turns smoothly.

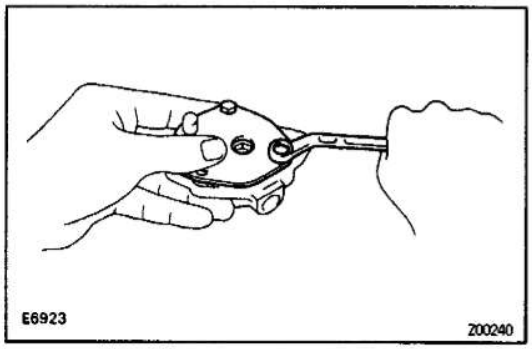


2. REMOVE GASKET FROM OIL PUMP CASE



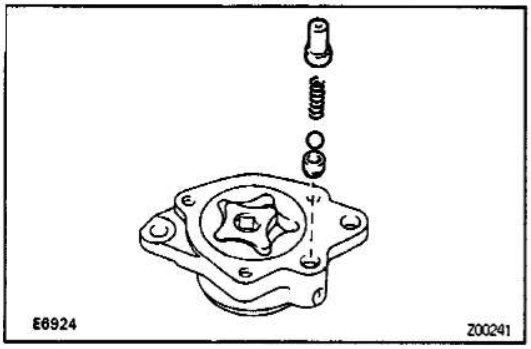


3. REMOVE BOLT AND OIL STRAINER

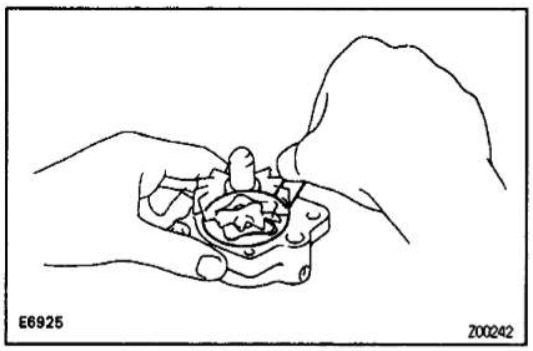


4. REMOVE OIL PUMP COVER

(a) Hold the pump cover, remove the two bolts and a cover.

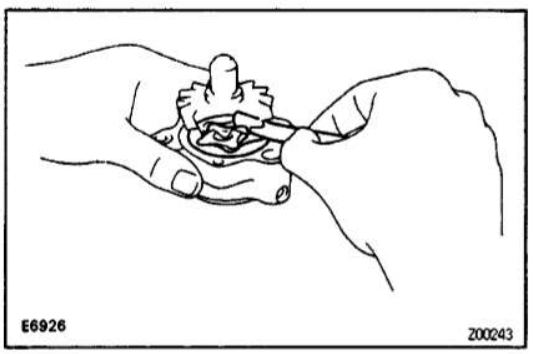


(b) Remove the spring holder, spring, ball and relief valve seat.



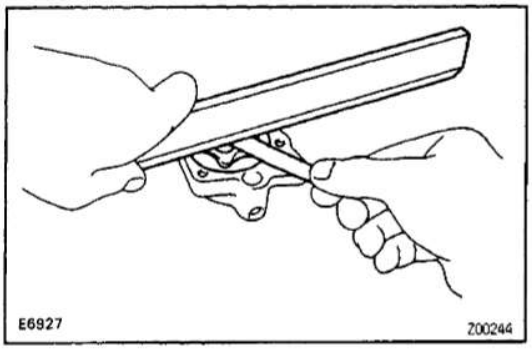
5. CHECK ROTOR BODY CLEARANCE

(a) Install the oil pump drive gear to the drive rotor.
(b) Using a feeler gauge, measure the body clearance between the drive rotor and oil pump case.
Standard clearance:
0.10–0.16 mm (0.0039–0.0063 in.)
Maximum clearance:
0.30 mm (0.0118 in.)



6. CHECK ROTOR TIP CLEARANCE

(a) Install the oil pump drive gear to the drive rotor.
(b) Using a feeler gauge, measure the tip clearance between the drive and driven rotors.
Standard clearance:
0.08–0.15 mm (0.0031–0.0058 in.)
Maximum clearance:
0.30 mm (0.0118 in.)



7.CHECK SIDE CLEARANCE

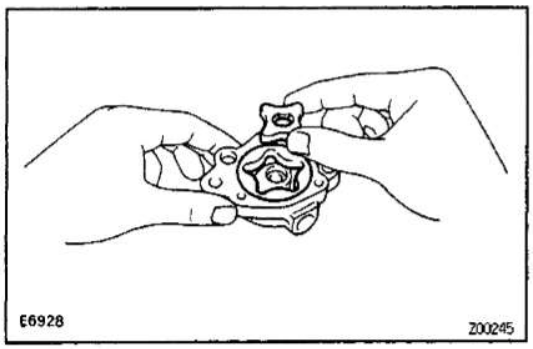
Using a precision straight edge and feeler gauge, measure the side clearance of both rotors.

Standard clearance:

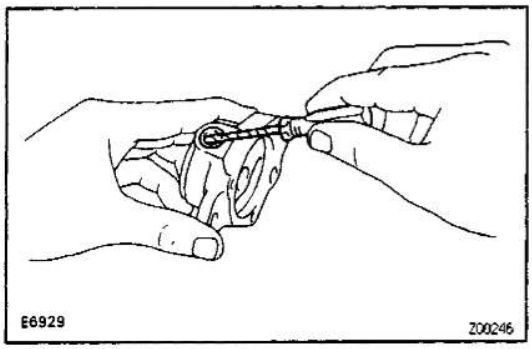
0.03–0.08 mm (0.0012–0.0031 in.)

Maximum clearance:

0.15 mm (0.0059 in.)

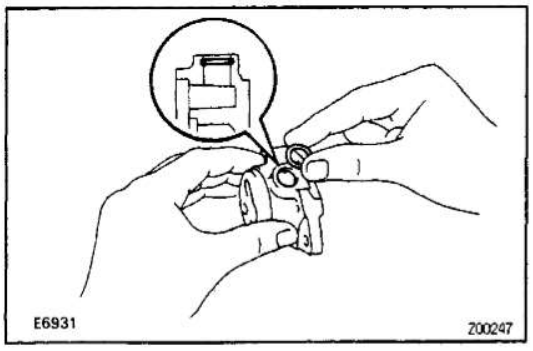


8. REMOVE OIL PUMP DRIVE ROTOR AND DRIVEN ROTOR



9. IF NECESSARY, REPLACE O–RING

(a) Using a screwdriver, remove the 0–ring.



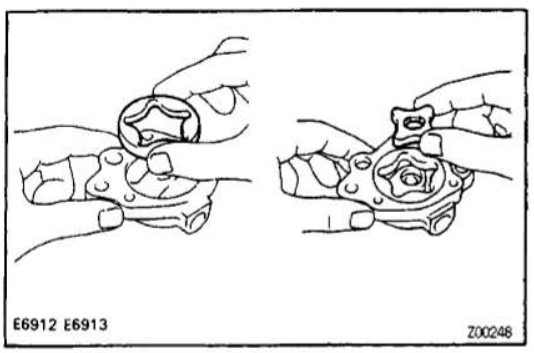
(b) Apply gear oil to the 0–ring.

(c) Install the O–ring.

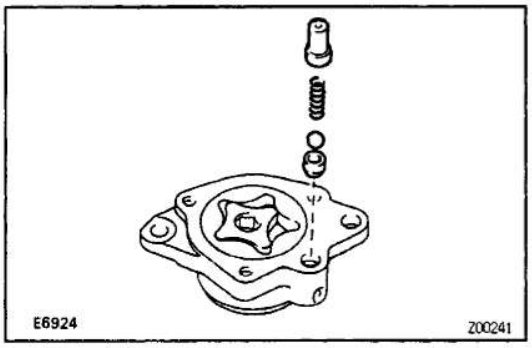
OIL PUMP ASSEMBLY

MXG1G–01

(See page MX2–51)

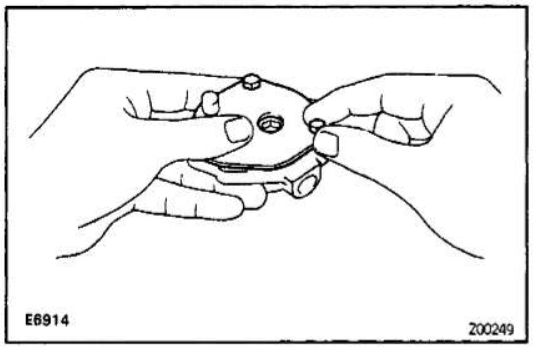


1. INSTALL DRIVEN ROTOR AND DRIVE ROTOR

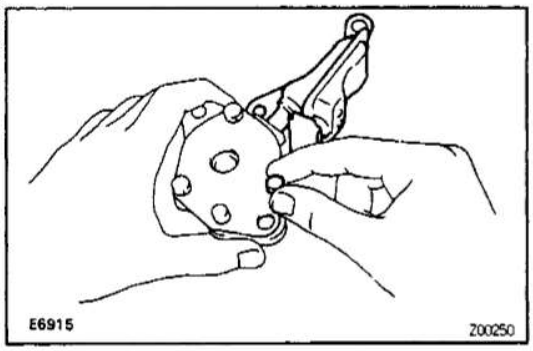


2. INSTALL OIL PUMP COVER

(a) Install the relief valve, ball, spring and spring holder to the oil pump case.

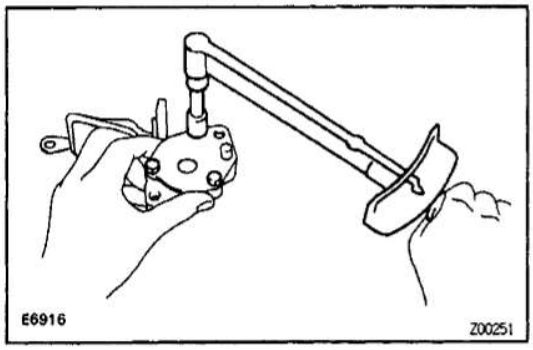


(b) Hold the oil pump cover, temporarily install the two bolts.



3. INSTALL OIL STRAINER

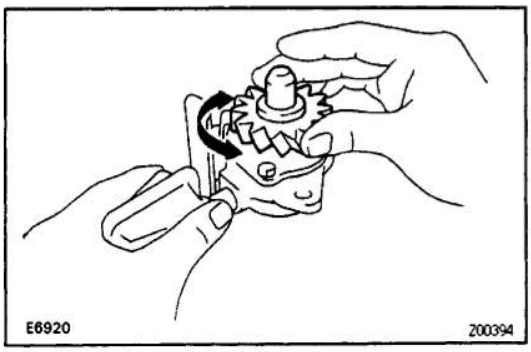
Install the oil strainer to the oil pump case, temporarily install the bolt.



4. TORQUE OIL PUMP COVER BOLTS

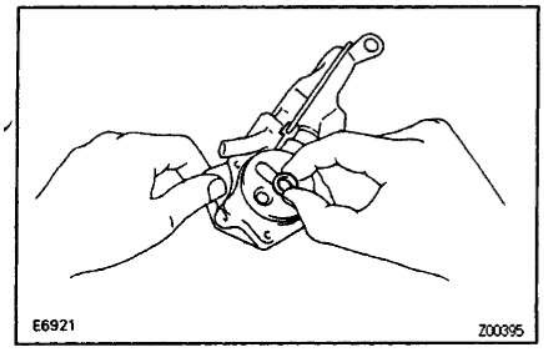
Torque the three bolts evenly.

Torque: 10 N–m (105 kgf–cm, 8 ft–lbf)



5. CHECK OPERATION OF OIL PUMP

Install the oil pump drive gear to the drive rotor, check that the drive rotor turns smoothly.

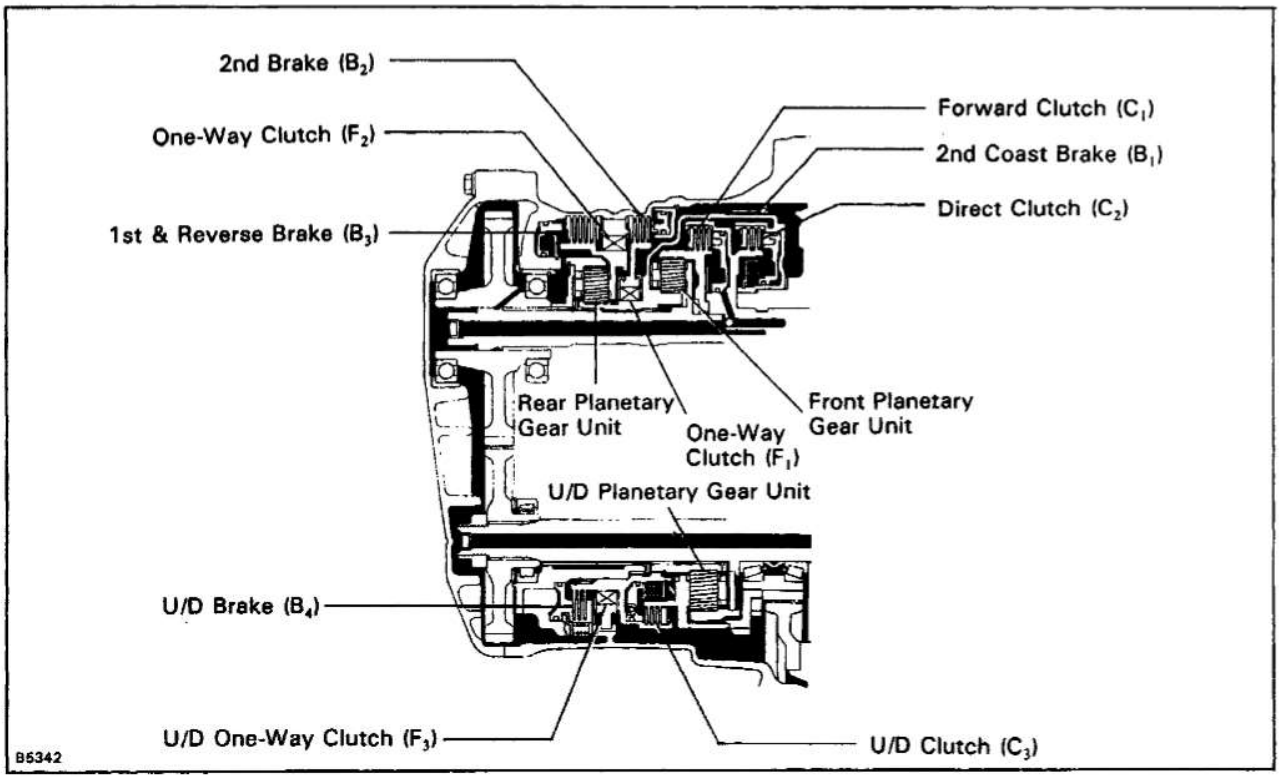


6. INSTALL GASKET

Install a new gasket to the oil pump case.

OPERATION

AX06H - 01



O ... Operating

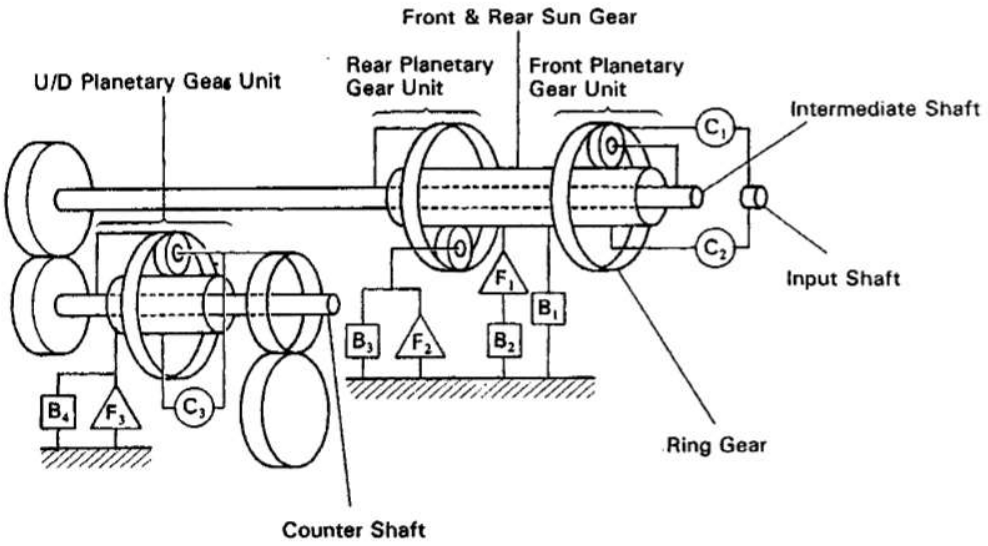
Shift fever position	Gear position	C_1	C_2	C_3	B_1	B_2	B_3	B_4	F_1	F_2	F_3
P	Parking							O			
R	Reverse		O				O	O			
N	Neutral							O			
D	1st	O						O		O	O
	2nd	O				O		O	O		O
	3rd	O	O			O		O			O
	OD	O	O	O		O					
2	1st	O						O		O	O
	2nd	O			O	O		O	O		O
L	1st	O					O	O		O	O
	* 2nd	O			O	O		O	O		O

* Down-shift only in L range, 2nd gear – no up-shift.

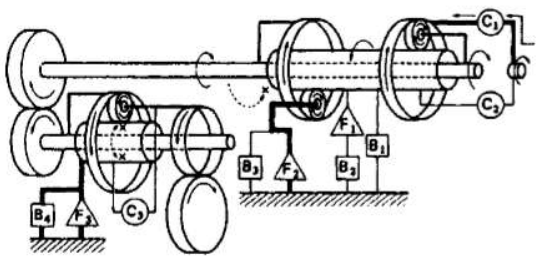
W0654

1. FUNCTION OF COMPONENTS

Component		Function
C_1	Forward Clutch	Connects input shaft and front planetary ring gear.
C_2	Direct Clutch	Connects input shaft and front & rear planetary sun gear.
C_3	U/D Clutch	Connects underdrive sun gear and underdrive planetary carrier.
B_1	2nd Coast Brake	Prevents front & rear planetary sun gear from turning either clockwise or counterclockwise.
B_2	2nd Brake	Prevents outer race of F_1 from turning either clockwise or counterclockwise thus preventing the front & rear planetary sun gear from turning counterclockwise.
B_3	1st & Reverse Brake	Prevents rear planetary carrier from turning either clockwise or counterclockwise.
B_4	U/D Brake	Prevents underdrive sun gear from turning either clockwise or counterclockwise.
F_1	No. 1 One–Way Clutch	When B_2 is operating, this clutch prevents the front & rear planetary sun gear from turning counterclockwise.
F_2	No.2 One–Way Clutch	Prevents rear planetary carrier from turning counterclockwise.
F_3	U/D One–Way Clutch	Prevents underdrive planetary sun gear from turning clockwise.
Planetary Gears		These gears change the route through which driving force is transmitted in accordance with the operation of each clutch and brake in order to increase or reduce the input and output speed.

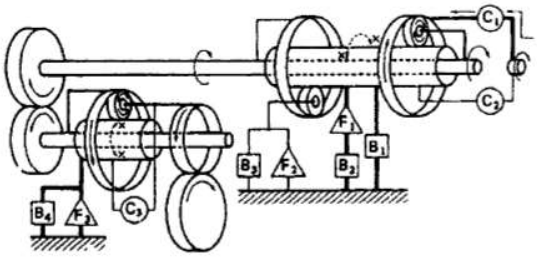


D or 2 Range 1st Gear



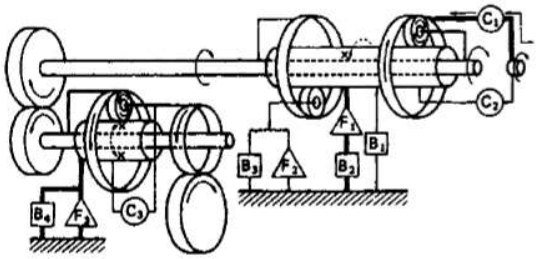
AT3216

2 Range 2nd Gear



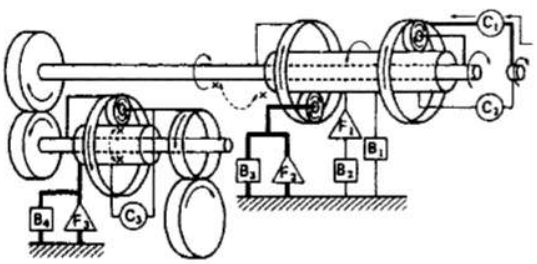
AT3220

D Range 2nd Gear



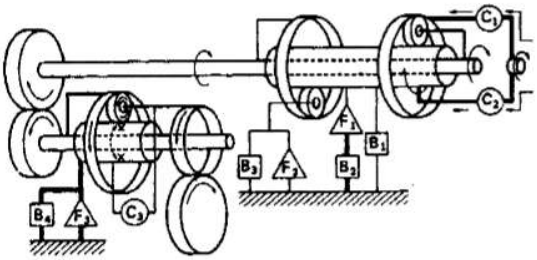
AT3217

L Range 1st Gear



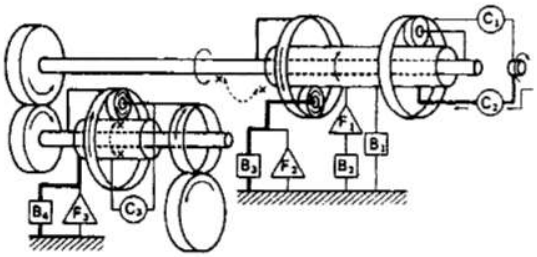
AT3221

D Range 3rd Gear



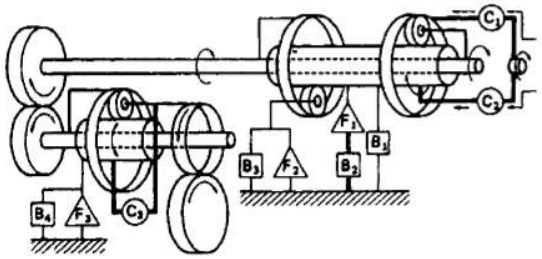
AT3218

R Range Reverse Gear



AT3222

D Range O/D



AT3219

2. Hydraulic Control System

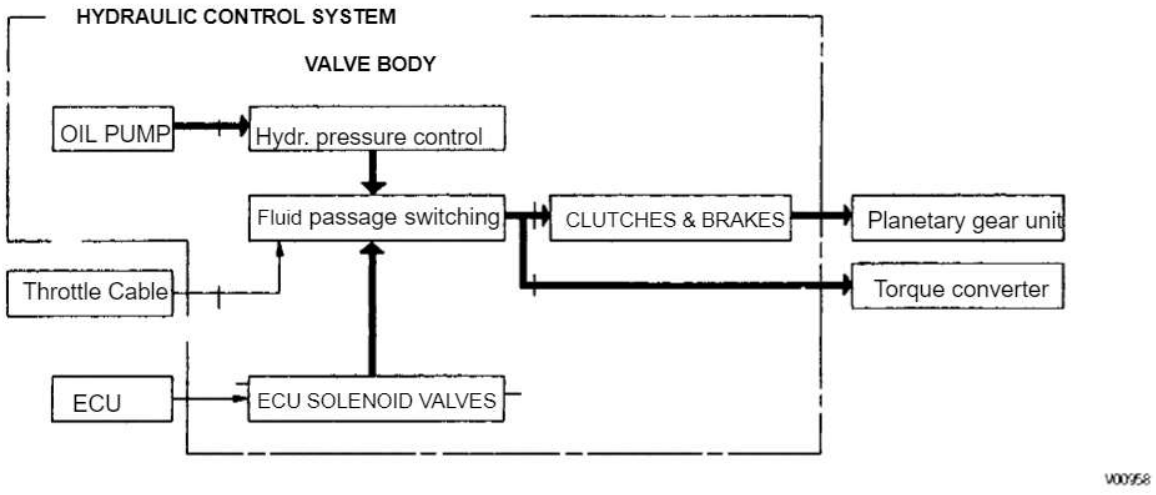
The hydraulic control system is composed of the oil pump, the valve body, the solenoid valves, the accumulators, the clutches and brakes as well as the fluid passages which connect all of these components.

Based on the hydraulic pressure created by the oil pump, the hydraulic control system governs the hydraulic pressure acting on the torque converter,clutches and brakes in accordance with the vehicle driving conditions.

There are three solenoid valves on the valve body.

The No. 1 and No.2 solenoid valves are turned on and off by signals from the PCMT to operate the shift valves and change the gear shift position.

The transaxle converter clutch switch valve is operated by signals from the PCMT to engage or disengage the lock–up clutch of the torque converter.



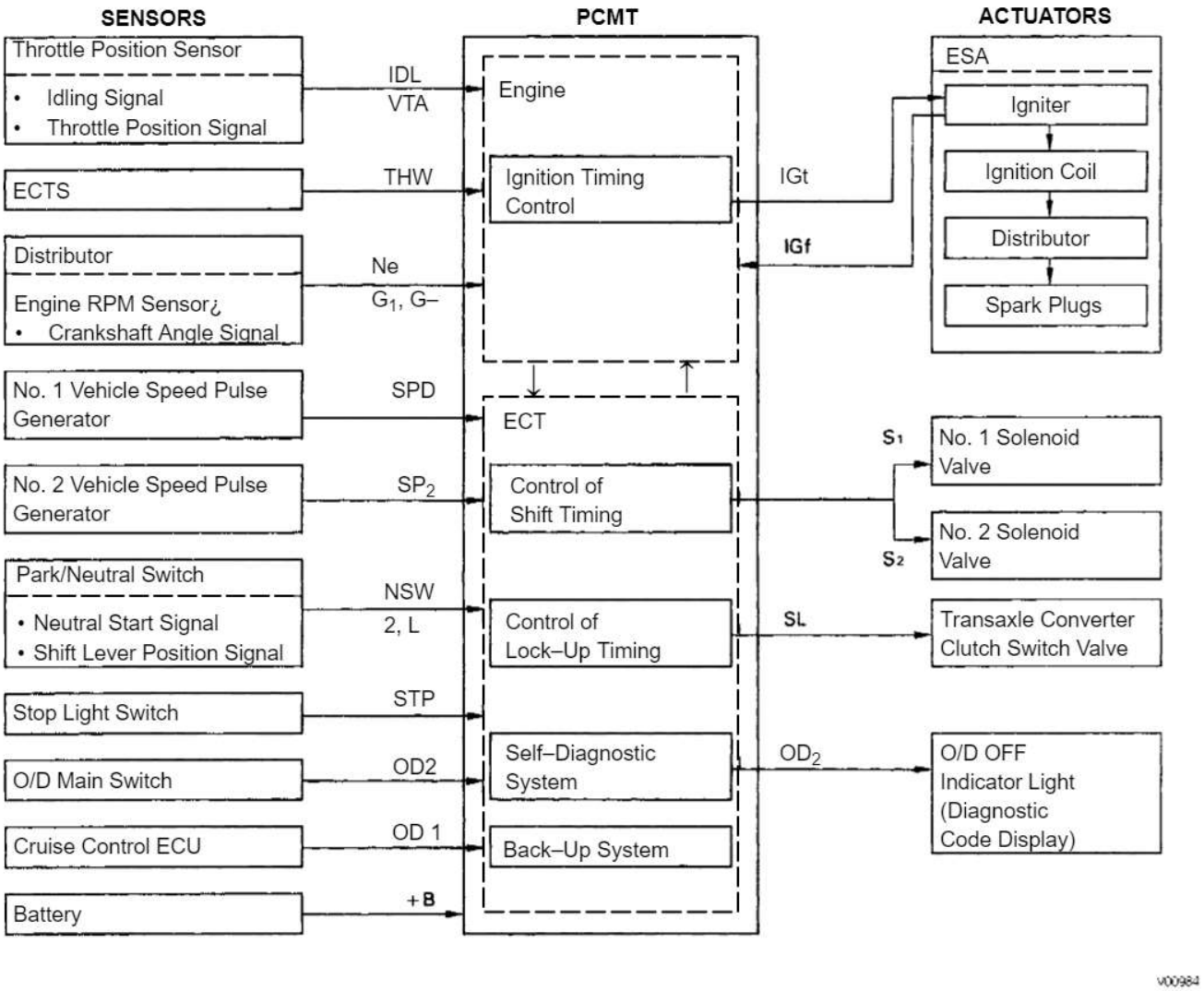
3. Electronic Control System

The electronic control system for controlling the shift timing and the operation of the lock–up clutch is composed of the following three parts:

(a) Sensors: These sense the vehicle speed and throttle position and send this data to the PCMT in the form of electronic signals.

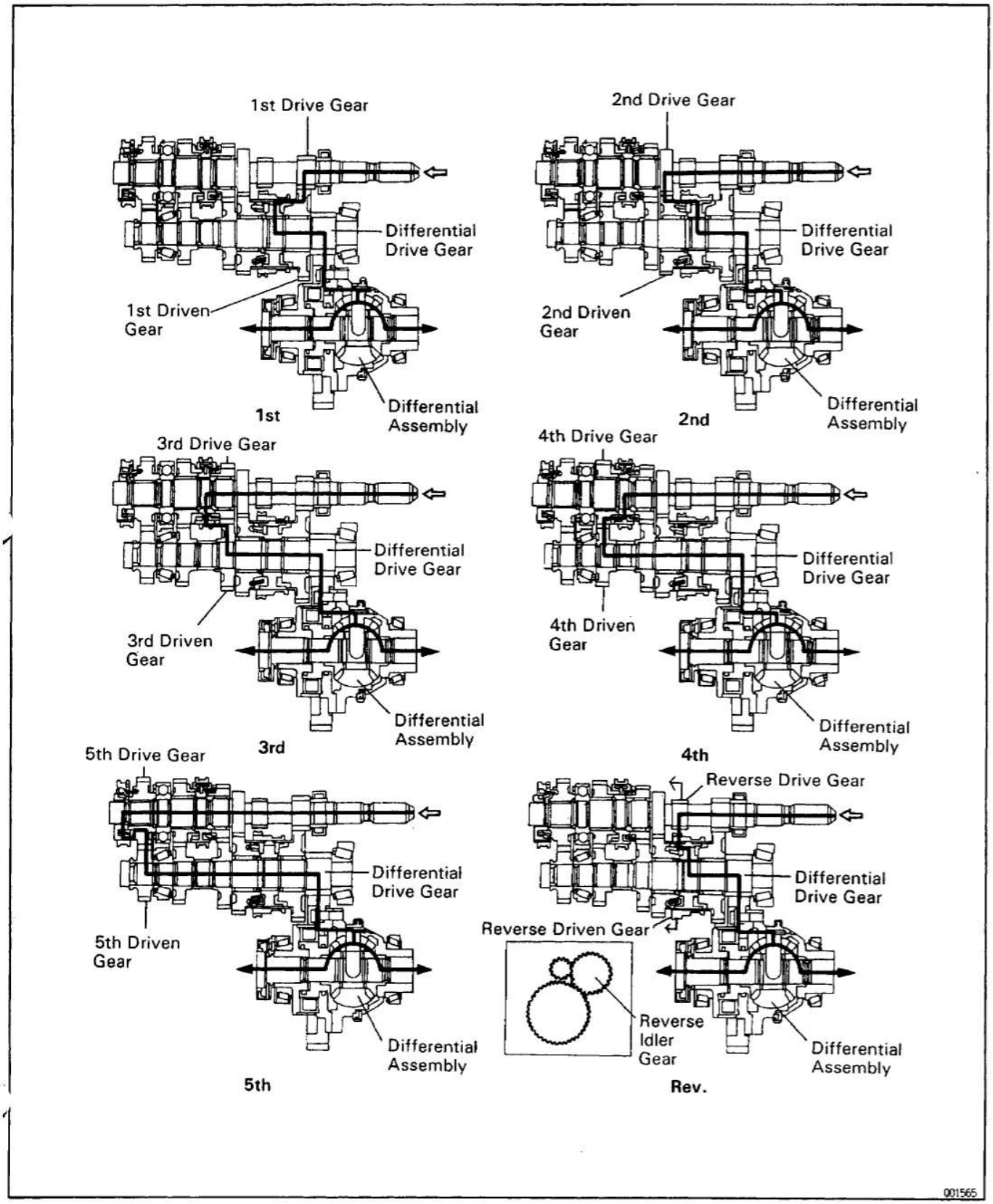
(b) PCMT: This determines the shift and lock–up timing based upon the signals from the sensors.

(c) Actuators: Solenoid valves divert hydraulic pressure from one circuit of the hydraulic control unit to another, thus controlling shifting and lock–up timing.



OPERATION

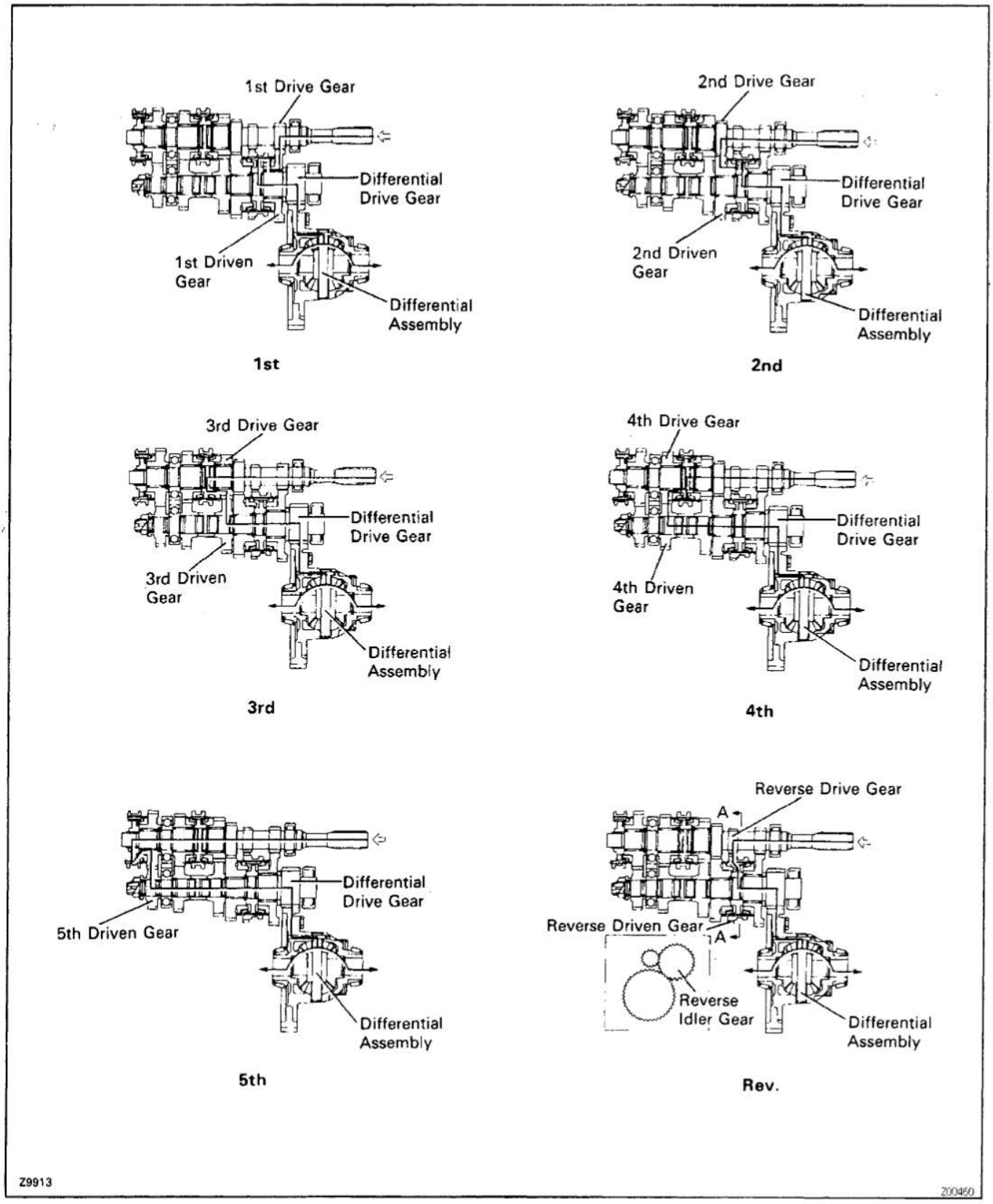
- The illustrations below show the engagements of transaxle gears.



OPERATION

- The illustration below show the engagements of transaxle gears.

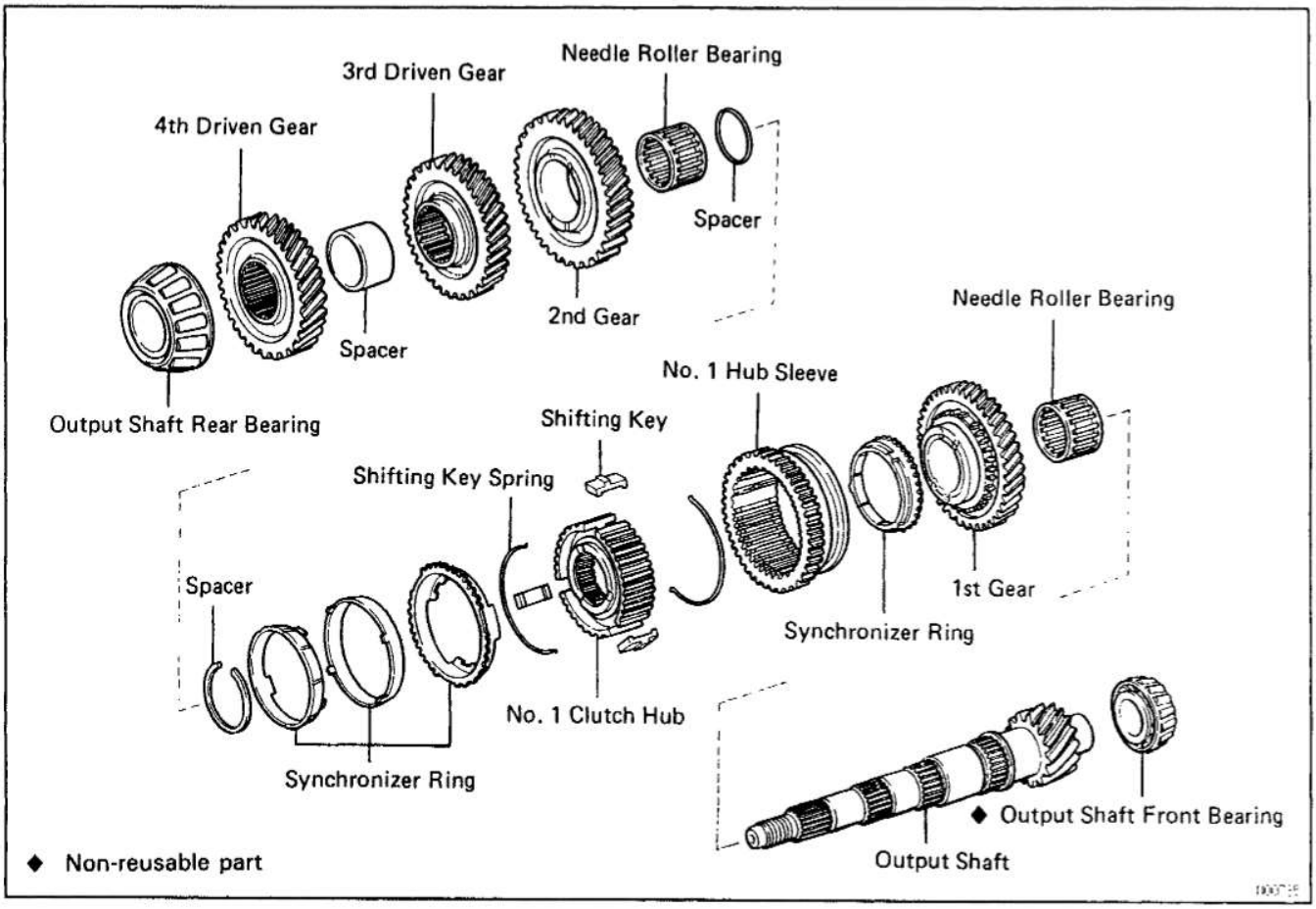
MX024–01

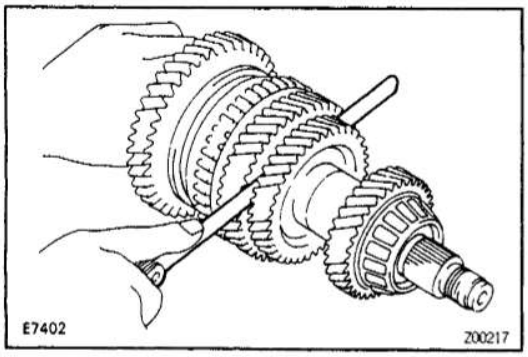


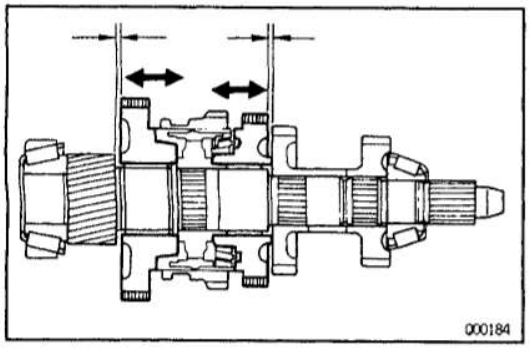
OUTPUT SHAFT

MX01A-01

COMPONENTS







OUTPUT SHAFT DISASSEMBLY

MX01B-01

1. MEASURE FIRST AND SECOND GEAR THRUST CLEARANCE

Using a feeler gauge, measure the thrust clearance.

Standard clearance:

1st gear

0.10–0.35 mm (0.0039–0.0138 in.)

2nd gear

0.10–0.45 mm (0.0039–0.0177 in.)

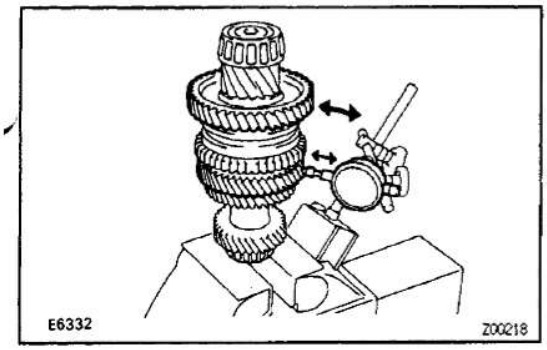
Maximum clearance:

1st gear

0.40 mm (0.0157 in.)

2 nd gear

0.50 mm (0.0197 in)



2. CHECK OIL CLEARANCE OF FIRST AND SECOND GEAR

Using a dial indicator, measure the oil clearance between the gear and shaft.

Standard clearance:

1 st gear

0.009–0.051 mm (0.0004–0.0020 in.)

2nd gear

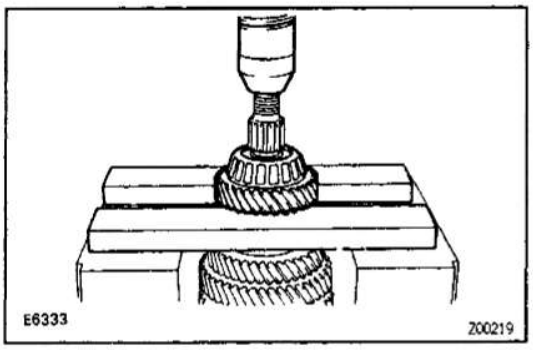
0.009–0.053 mm (0.0004–0.0021 in.)

Maximum clearance:

1 st and 2nd gear

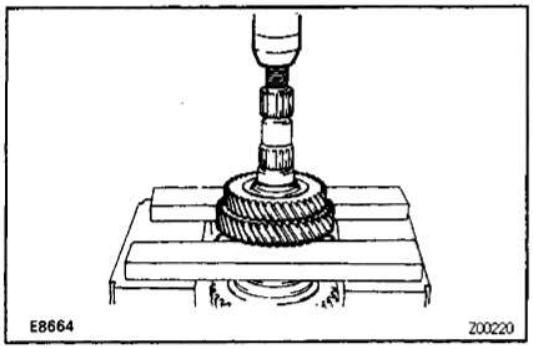
0.070 mm (0.0028 in.)

If the clearance exceeds the limit, replace the gear, needle roller bearing or shaft.



3. REMOVE OUTPUT SHAFT REAR BEARING, FOURTH DRIVEN GEAR AND SPACER

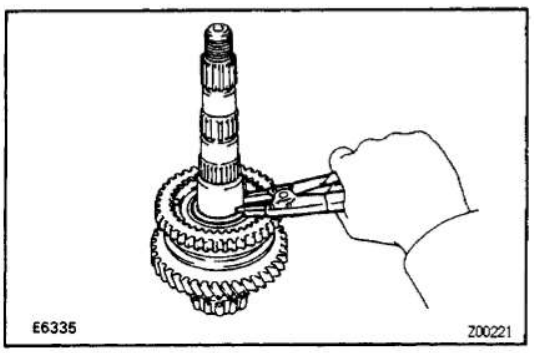
(a) Using a press, remove the bearing and 4th driven gear.
(b) Remove the spacer.



4. REMOVE THIRD DRIVEN GEAR AND SECOND GEAR

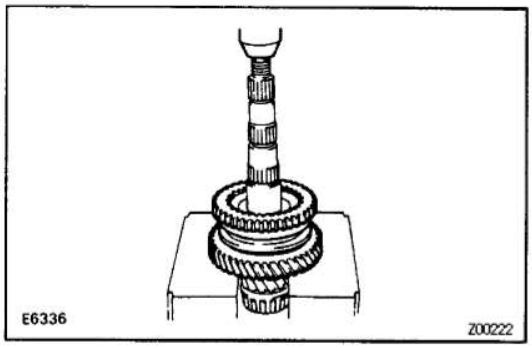
Using a press, remove the 3rd driven gear and 2nd gear.

5. REMOVE NEEDLE ROLLER BEARING SPACER AND SYNCHRONIZER RINGS



6. REMOVE SNAP RING

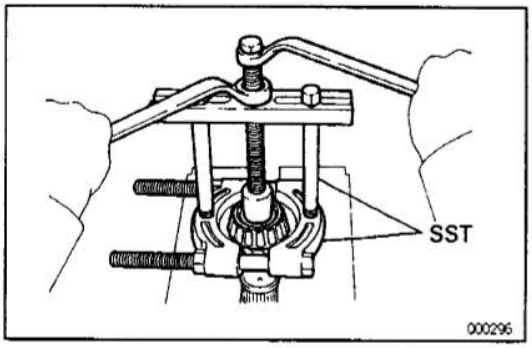
Using a snap ring expander, remove the snap ring.



7. REMOVE NO. 1 HUB SLEEVE ASSEMBLY AND FIRST GEAR

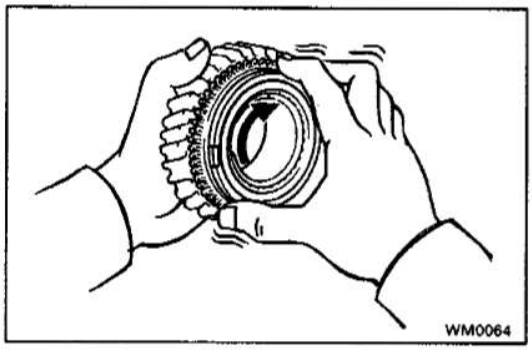
Using a press, remove the NO.1 hub sleeve and 1st gear.

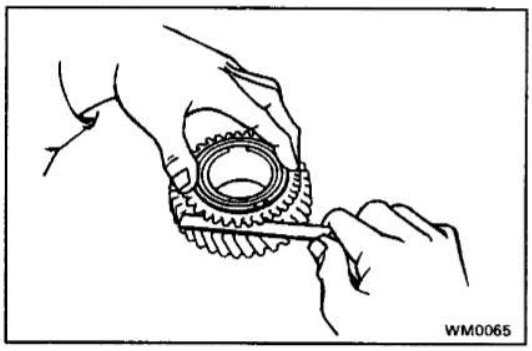
8. REMOVE SYNCHRONIZER RING AND NEEDLE ROLLER BEARINGS



9. REMOVE OUTPUT SHAFT FRONT BEARING

Using SST, remove the output shaft front bearing.
SST 09950–00020, 09950–00030





OUTPUT SHAFT COMPONENT PARTS INSPECTION

MX01C–01

1. INSPECT SYNCHRONIZER RING FOR FIRST GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE:

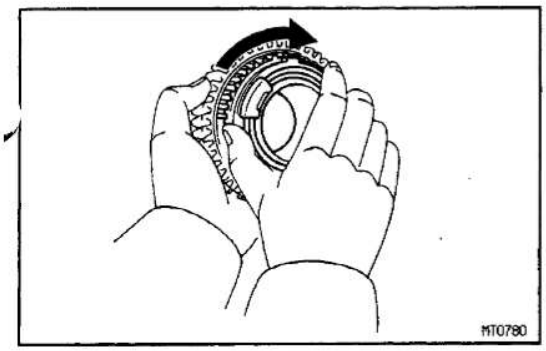
- **Wash off completely the fine lapping compound after rubbing.**
- **Check again the braking effect of the synchronizer ring.**

(c) Measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance:
0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.

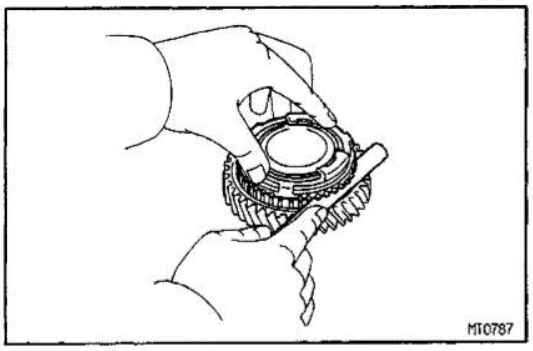


2. INSPECT SYNCHRONIZER RING FOR SECOND GEAR

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, replace the synchromize ring.

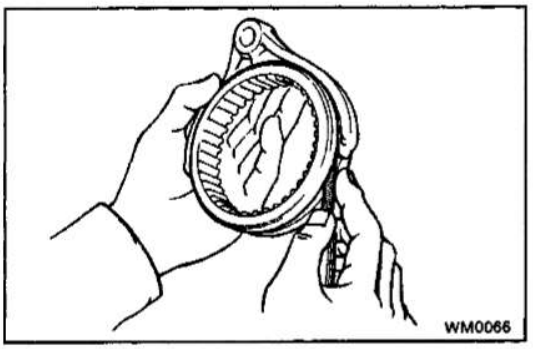


(c) Measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance:

0.7 mm (0.028 in.)

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



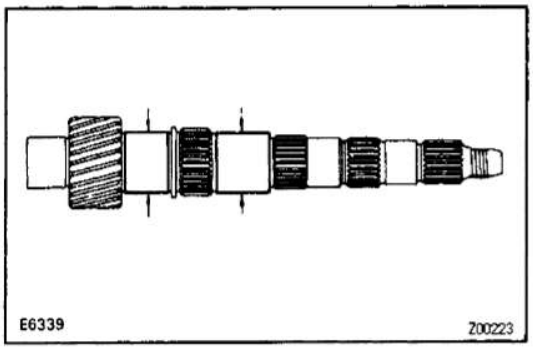
3. MEASURE CLEARANCE OF NO.1 SHIFT FORK AND: HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance:

1.0 mm (0.039 in.)

If the clearance exceeds the limit, replace the shift fork or hub sleeve.



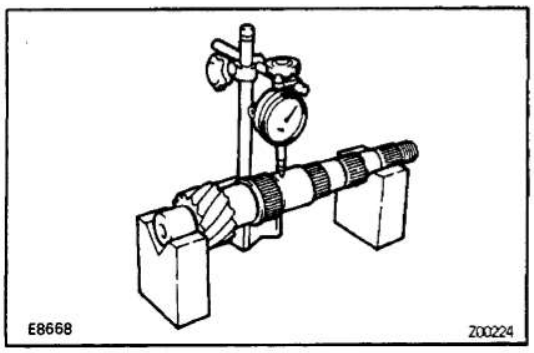
4. INSPECT OUTPUT SHAFT

(a) Check the output shaft for wear or damage.

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

Minimum outer diameter:

38.950 mm (1.5335 in.)



(c) Using a dial indicator, check the shaft runout.

Maximum runout:

0.06 mm (0.0024 in.)

MX01D-01

OUTPUT SHAFT ASSEMBLY

(See page MX2–44)

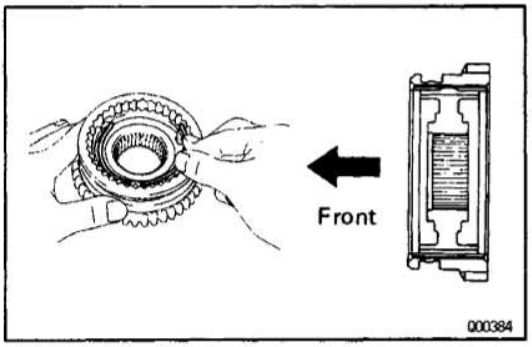
HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSPECT N0.1 CLUTCH HUB INTO HUB SLEEVE

(a) Install the clutch hub and shifting keys to the hub sleeve.

(b) Install the shifting key springs under the shifting keys.

NOTICE: Install the key springs positioned so that their end not in line.

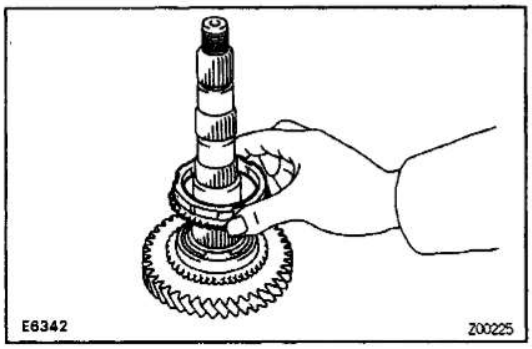


2. INSTALL NEEDLE ROLLER BEARING, FIRST GEAR, SYNCHRONIZER RING AND N0.1 HUB SLEEVE TO OUTPUT SHAFT

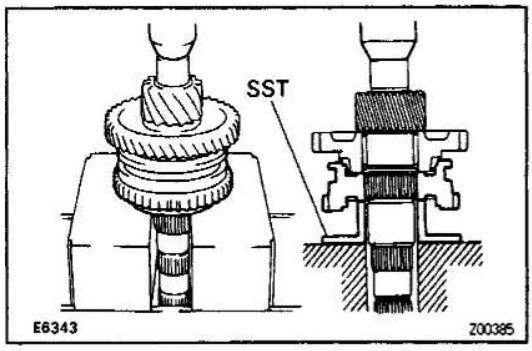
(a) Apply MP grease to the needle roller bearings.

(b) Install the 1st gear.

(c) Place the synchronizer ring (for 1st gear) on the gear and align the ring slots with the shifting keys.



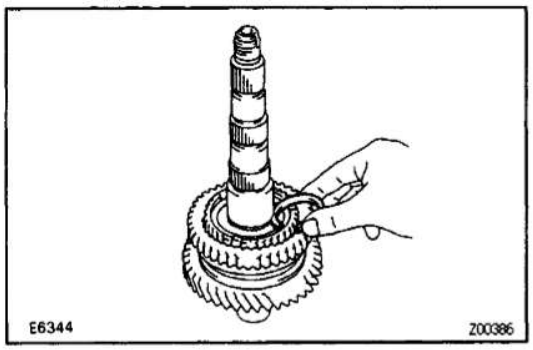
(d) Using SST and a press, install the 1 st gear and No. 1 hub sleeve.
SST 09316–60010 (09316–00040)



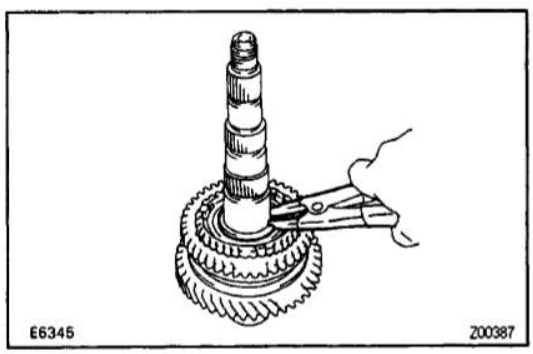
3. INSTALL SNAP RING

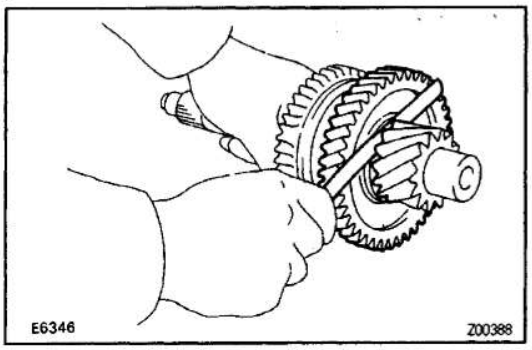
(a) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	2.8.0 (0.1102)	E	3.00 (0.1181)
B	2.85 (0.1122)	F	3.05 (0.1201)
C	2.90 (0.1142)	G	3.10 (0.1220)
D	2.95 (0.1161)		



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



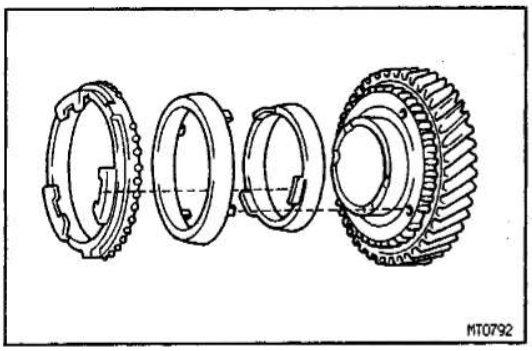


4. MEASURE FIRST GEAR THRUST CLEARANCE

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

Standard clearance:

0.10–0.35 mm (0.0039–0.0138 in.)



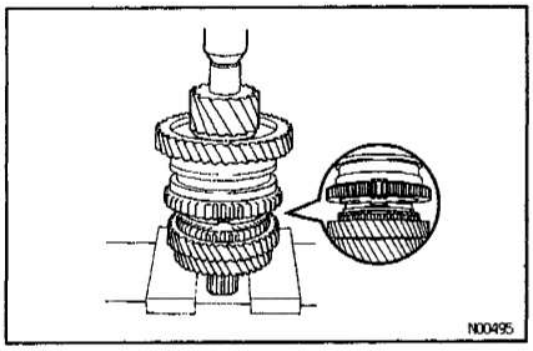
5. INSTALL SPACER, NEEDLE ROLLER BEARING, SYNCHRONIZER RINGS, SECOND GEAR AND THIRD DRIVEN GEAR

(a) Install the spacer.

(b) Apply MP grease to the needle roller bearing.

(c) Place the synchronizer rings (for 2nd gear) on the gear.

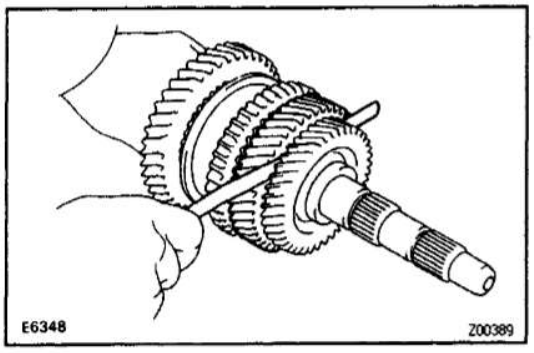
NOTICE: Do not install the synchronizer ring for 1st gear.



(d) Install the 2nd gear.

(e) Using a press, install the 3rd driven gear.

NOTICE: Align the clutch hub grooves with the project–thins on the synchronizer ring.

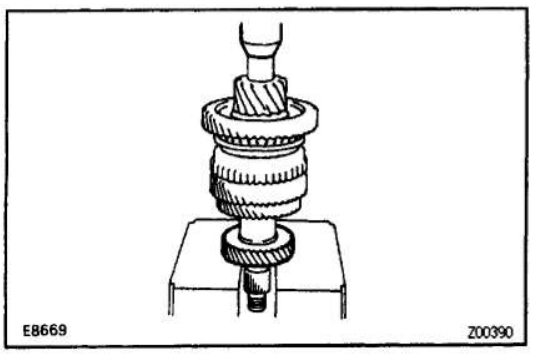


6. MEASURE SECOND GEAR THRUST CLEARANCE

Using a feeler gauge, measure the 2nd gear thrust clearance.

Standard clearance:

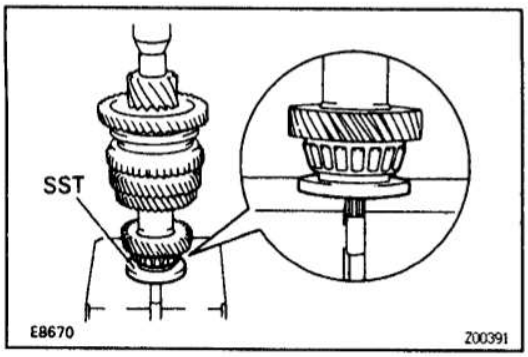
0.10–0.45 mm (0.0039–0.0177 in.)



7. INSTALL SPACER AND FOURTH DRIVEN GEAR

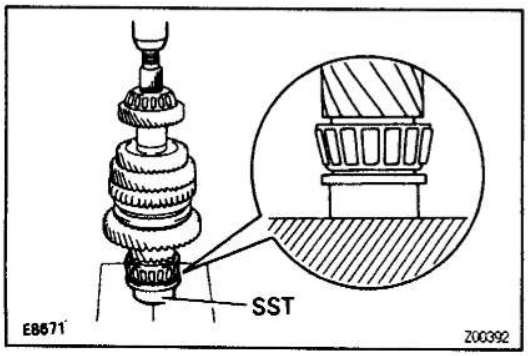
(a) Install the spacer.

(b) Using a press, install the 4th driven gear.



8. INSTALL OUTPUT SHAFT REAR BEARING

Using SST and a press, install the bearing.
SST 09506–30012



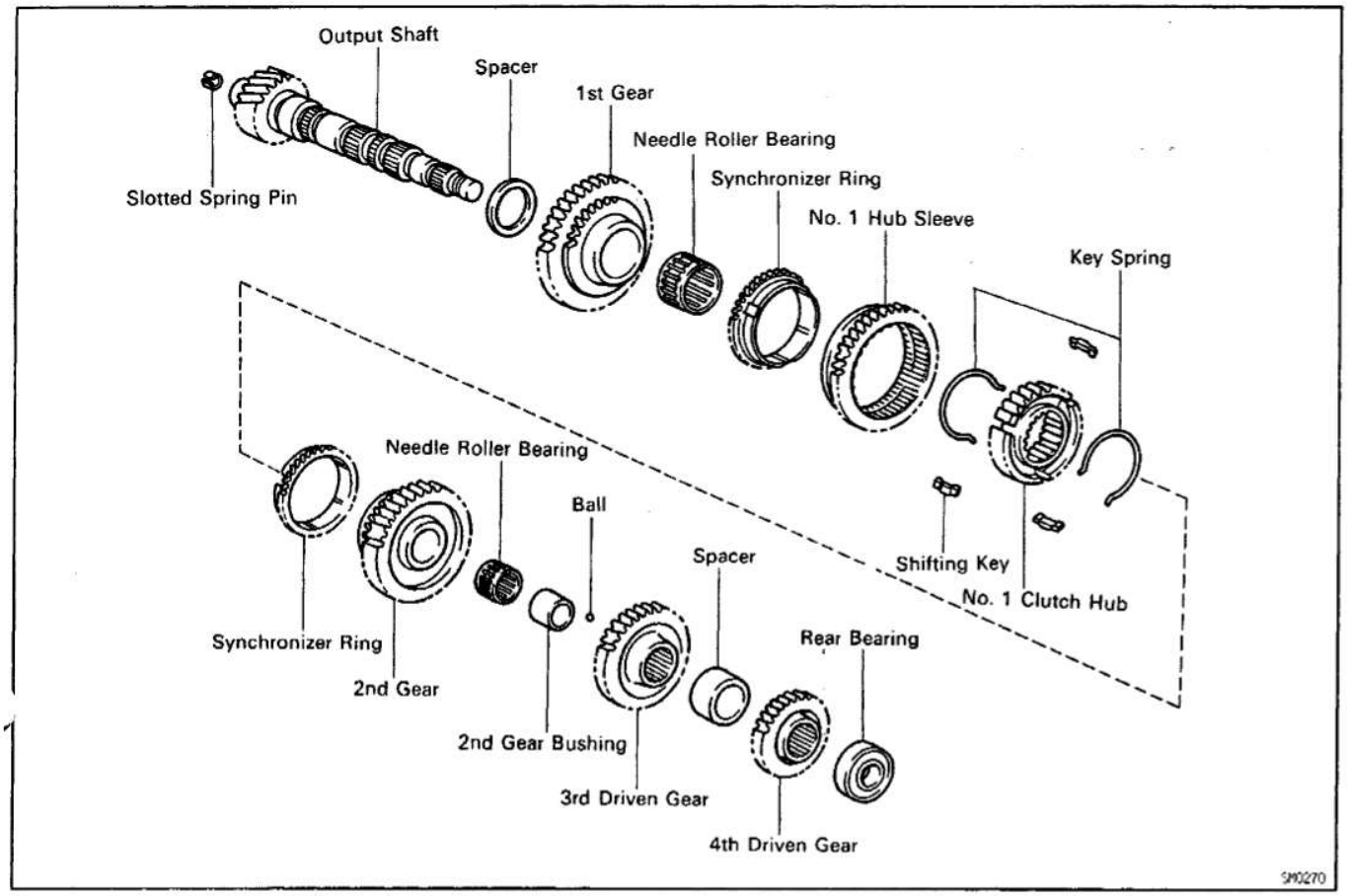
9. INSTALL OUTPUT SHAFT FRONT BEARING

Using SST and a press, install the output shaft front new bearing.
SST 09316–60010 (09316–00070)

OUTPUT SHAFT

COMPONENTS

MX02M–01



MX037–01

OUTPUT SHAFT DISASSEMBLY

1. INSPECT FIRST AND SECOND GEAR THRUST CLEARANCE

Using a feeler gauge, measure the thrust clearance.

Standard clearance:

1st gear

0.10–0.29 mm (0.0039–0.0114 in.)

2nd gear

0.20–0.44 mm (0.0079–0.0173 in.)

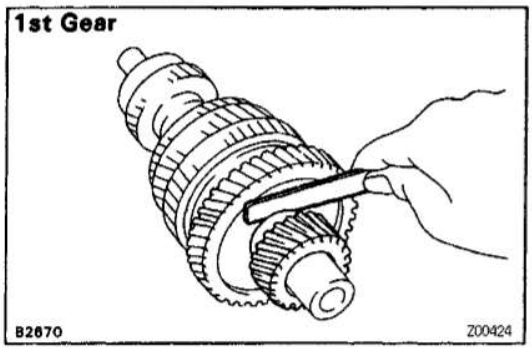
Maximum clearance:

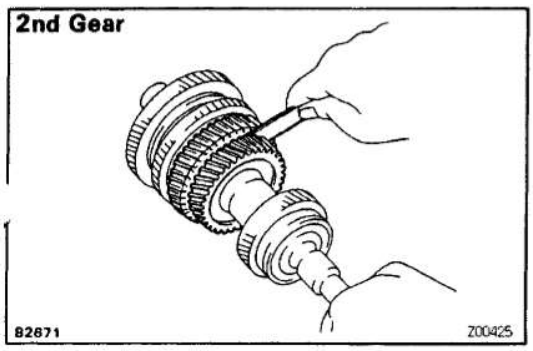
1st gear

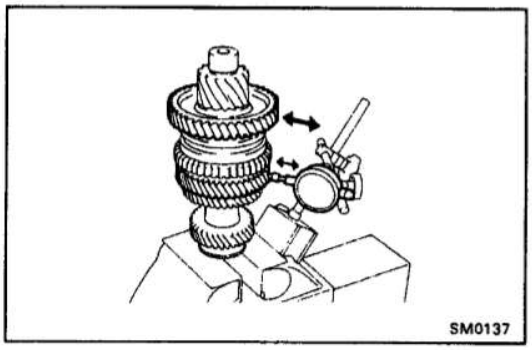
0.35 mm (0.0138 in.)

2nd gear

0.50 mm (0.0197 in.)







2. INSPECT FIRST AND SECOND GEAR OIL CLEAR–ANCE

Using dial indicator, measure the oil clearance be–tween the gear and shaft.

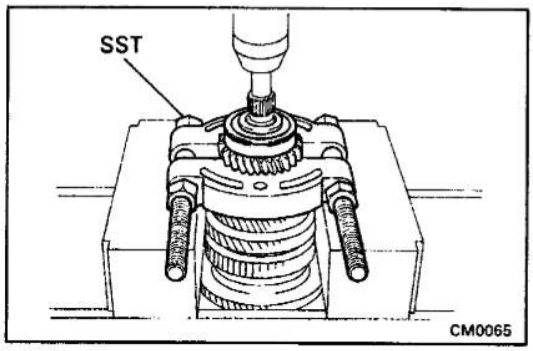
Standard clearance:

0.009–0.053 mm (0.0004–0.0021 in.)

Maximum clearance:

0.070 mm (0.0028 in.)

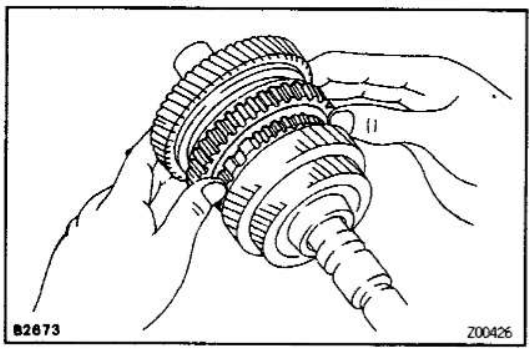
If the clearance exceeds the maximum, replace the gear, needle roller bearing or shaft.



3. REMOVE REAR BALL BEARING, FOURTH DRIVEN GEAR AND OUTPUT GEAR SPACER

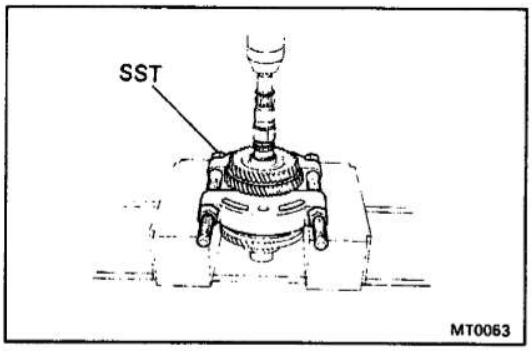
(a) Using SST and a press, remove the rear ball bearing and 4th driven gear.
SST 09950–00020

(b) Remove the output gear spacer and ball.



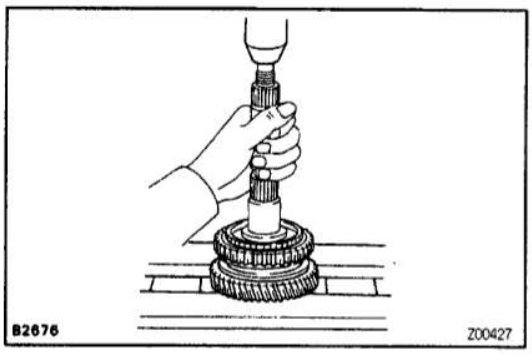
4. REMOVE THIRD DRIVEN GEAR, SECOND GEAR, NEEDLE ROLLER BEARING AND SYNCHRONIZER RING

(a) Shift the No. 1 hub sleeve into the 1st gear.



(b) Using SST and a press, remove the 3rd driven gear and 2nd gear.
SST 09950–00020

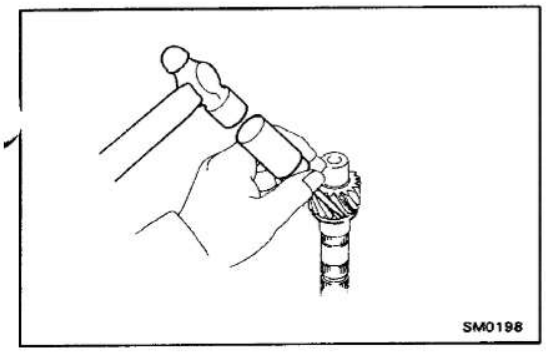
(c) Remove the needle roller bearing and synchronizer ring.



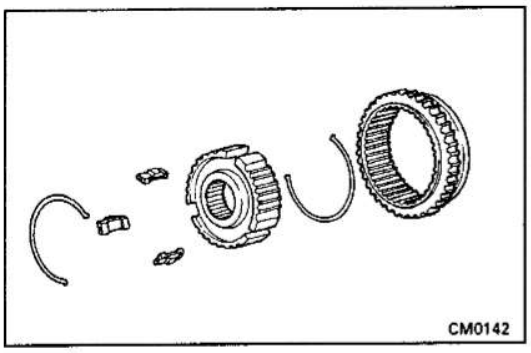
5. REMOVE NO. 1 HUB SLEEVE ASSEMBLY, FIRST GEAR, SYNCHRONIZER RING, NEEDLE ROLLER BEARING, THRUST WASHER AND LOCKING BALL

(a) Using a press, remove the No.1 hub sleeve, 1st gear and synchronizer ring.

(b) Remove the needle roller bearing and locking ball.

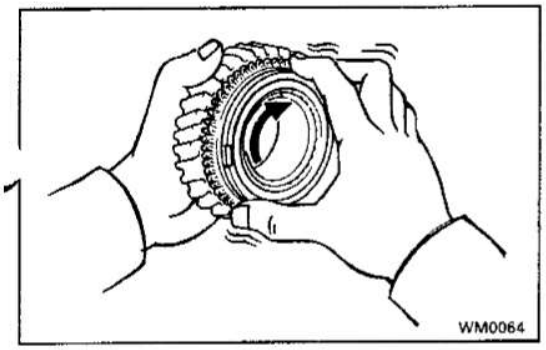


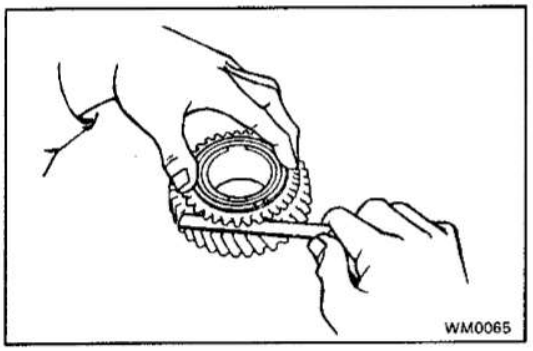
(c) Using a screwdriver and hammer, drive out the thrust washer.



6. REMOVE NO.1 HUB SLEEVE, SHIFTING KEYS AND SPRINGS FROM NO.1 CLUTCH HUB

Using a screwdriver, remove the three shifting keys and spring from the No.1 clutch hub.





OUTPUT SHAFT COMPONENT PARTS INSPECTION

MX02P-01

1. INSPECT SYNCHRONIZER RINGS

(a) Check for wear or damage.

(b) Check the braking effect of the synchronizer ring.

Turn the synchronizer ring in one direction while pushing it to the gear cone and check that the ring is locked.

If the braking effect is insufficient, lightly rub the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE:

- **Wash off completely the fine lapping compound after rubbing.**
- **Check again the braking effect of the synchronizer ring.**

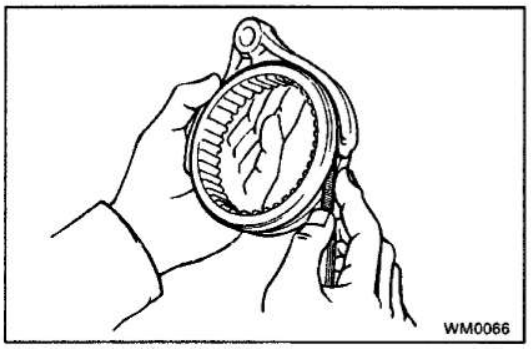
(c) Using a feeler gauge, measure the clearance between the synchronizer ring back and the gear spline end.

Minimum clearance:

0.6 mm (0.024 in.)

If the clearance is less than the minimum, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Wash off completely the fine lapping compound after rubbing.



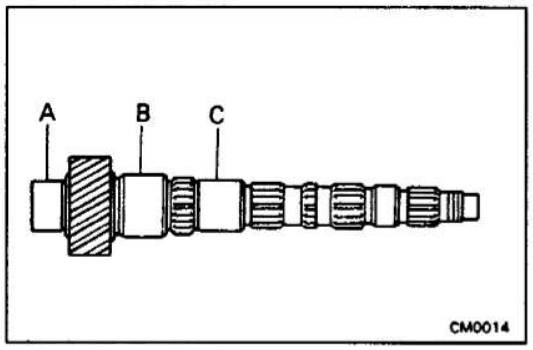
2. INSPECT CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance:

1.0 mm (0.039 in.)

If the clearance exceeds the maximum, replace the shift fork or hub sleeve.



3. INSPECT OUTPUT SHAFT

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

Minimum outer diameter:

Part A

31.970 mm (1.2587 in.)

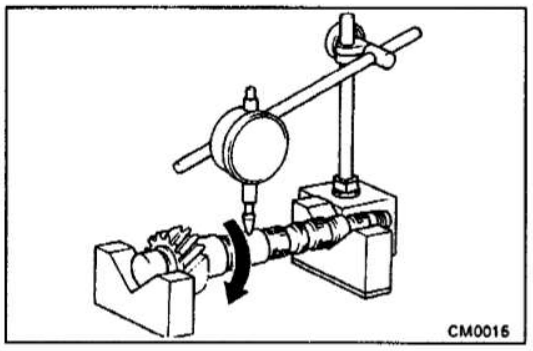
Part B

37.970 mm (1.4849 in.)

Part C

31.990 mm (1.2594 in.)

If the outer diameter is less than the minimum, replace the output shaft.

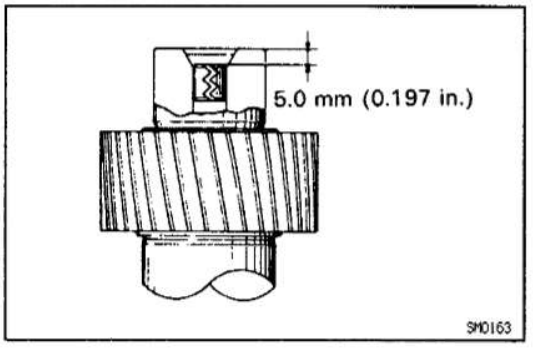


(b) Using a dial indicator, check the shaft runout.

Maximum runout:

0.05 mm (0.0020 in.)

If the runout exceeds the maximum, replace the output shaft.



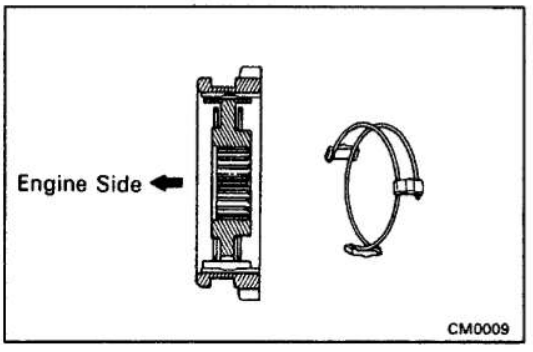
MX020–01

OUTPUT SHAFT ASSEMBLY

(See page MX1–39)

1. IF OUTPUT SHAFT WAS REPLACED, DRIVE IN SLOTTED SPRING PIN

If the output shaft was replaced, drive the slotted spring pin in the output shaft to a depth of 5.0 mm (0.197 in.).

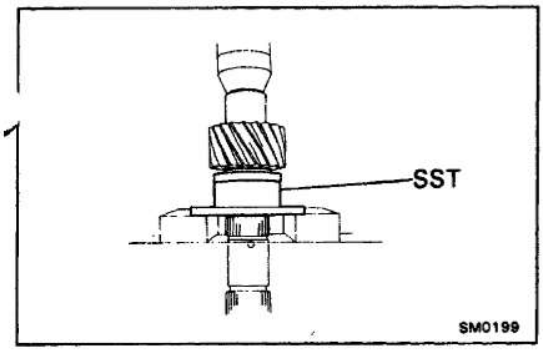


2. INSTALL NO.1 CLUTCH HUB INTO SLEEVE

(a) Install the clutch hub and shifting keys to the hub sleeve.

(b) Install the shifting key springs under the shifting keys.

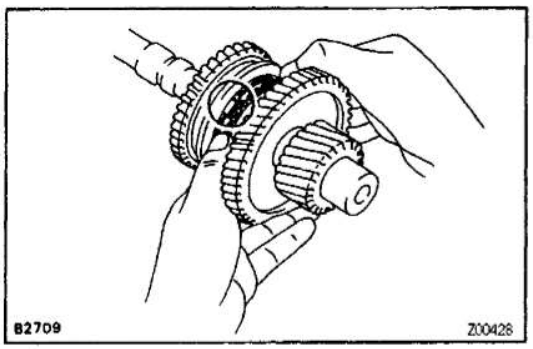
NOTICE: Install the key springs positioned so that their end gaps are not in line.



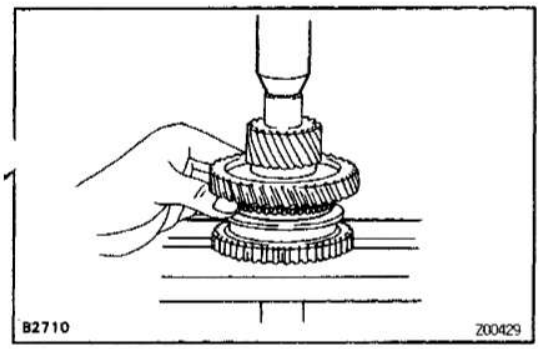
3. INSTALL THRUST WASHER, FIRST GEAR, NEEDLE ROLLER BEARING, SYNCHRONIZER RING AND NO. 1 HUB SLEEVE TO OUTPUT SHAFT

(a) Using SST and a press, install the thrust washer.
SST 09316–60010 (09316–00040)

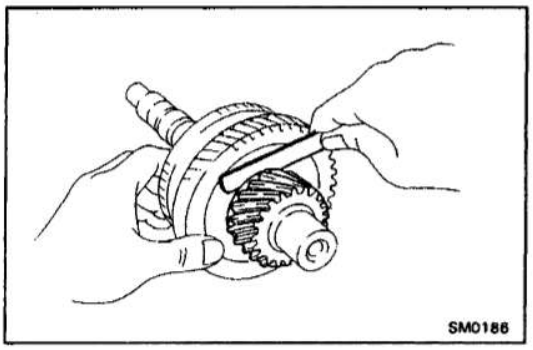
(b) Apply gear oil to the needle roller bearing.



(c) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.



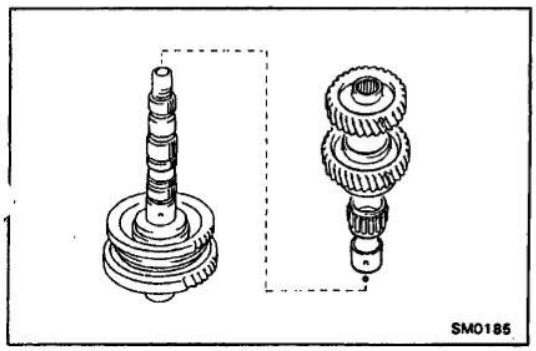
(d) Using a press, install the 1st gear and No. 1 hub sleeve.



4. INSPECT FIRST GEAR THRUST CLEARANCE

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

Standard clearance:
0.10–0.29 mm (0.0039–0.0114 in.)

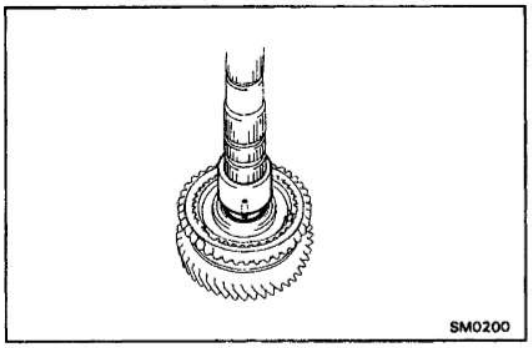


5. INSTALL SYNCHRONIZER RING, SECOND GEAR, NEEDLE ROLLER BEARING AND THIRD DRIVEN GEAR

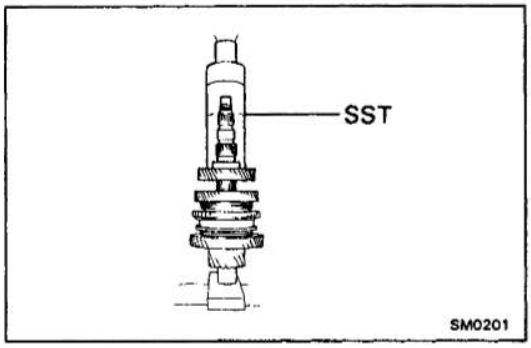
(a) Place the synchronizer ring on the gear and align the ring slots with shifting keys.

(b) Apply gear oil to the needle roller bearing.

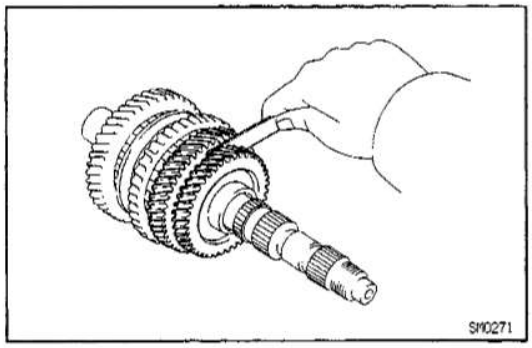
(c) Install the ball.



(d) Fit the 2nd gear bushing groove securely over the ball when installing the 2nd gear bushing on the shaft.
(e) Install the 2nd gear.



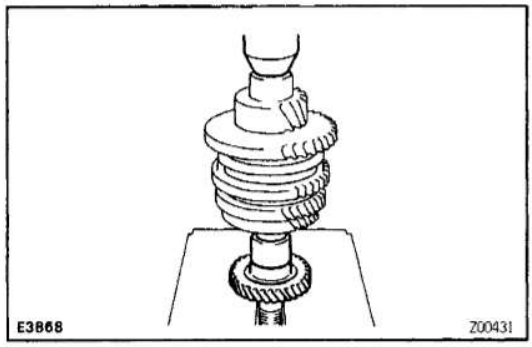
(f) Using SST and a press, install the 3rd driven gear.
SST 09316 – 60010 (09316 – 00010)



6. INSPECT SECOND GEAR THRUST CLEARANCE

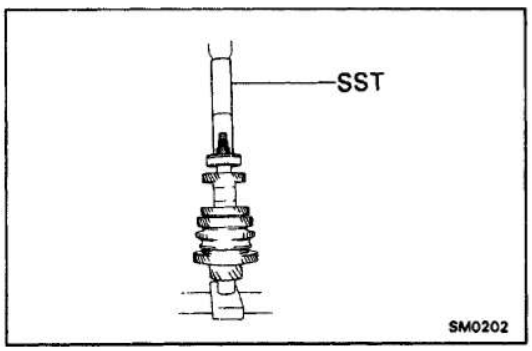
Using a feeler gauge, measure the 2nd gear thrust clearance.

Standard clearance:
0.20–0.44 mm (0.0079–0.0173 in.)



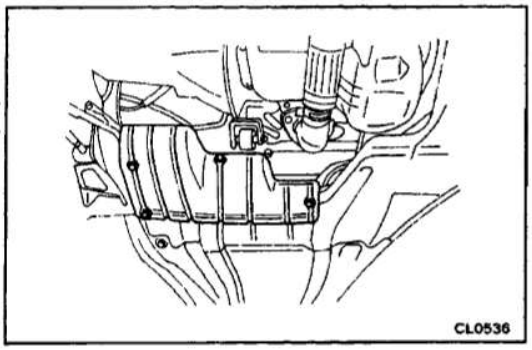
7. INSTALL OUTPUT GEAR SPACER, FOURTH DRIVEN GEAR AND RADIAL BALL BEARING

(a) Install the outer gear spacer.
(b) Using a press, install the 4th driven gear and bearing.



8. INSTALL REAR BEARING

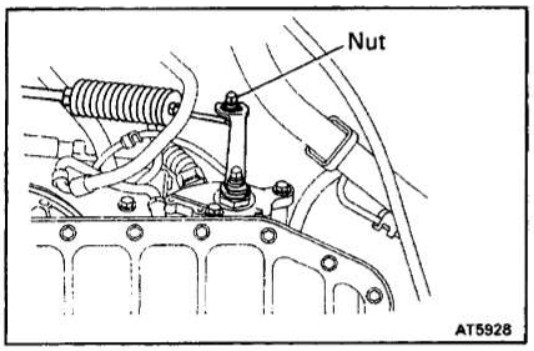
Using SST and a press, install the rear bearing.
SST 09612–22011



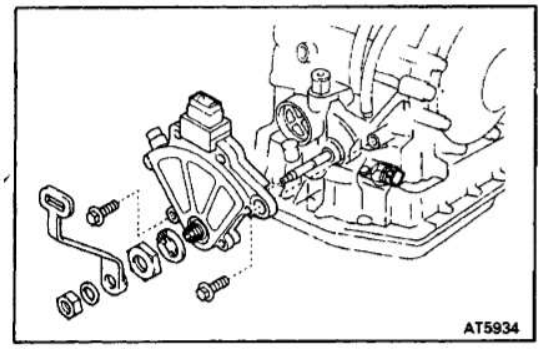
PARK NEUTRAL SWITCH (PNS) AX07A-01

PARK NEUTRAL SWITCH REMOVAL

7. REMOVE NO.7 ENGINE UNDER COVER



2. DISCONNECT SHIFT CABLE FROM MANUAL SHIFT LOVER



3. REMOVE PARK NEUTRAL SWITCH

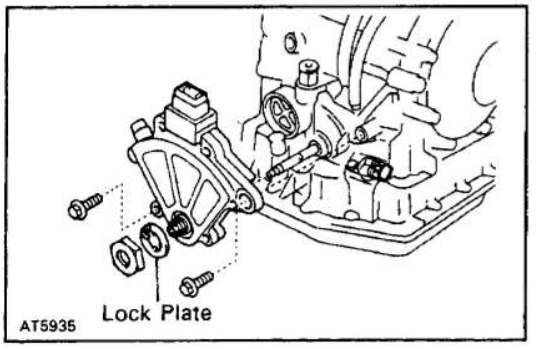
(a) Remove the manual shift lever.
(b) Pry off the lock plate and remove the manual valve shaft nut.
(c) Remove the two bolts and pull out the PARK NEUTRAL switch.

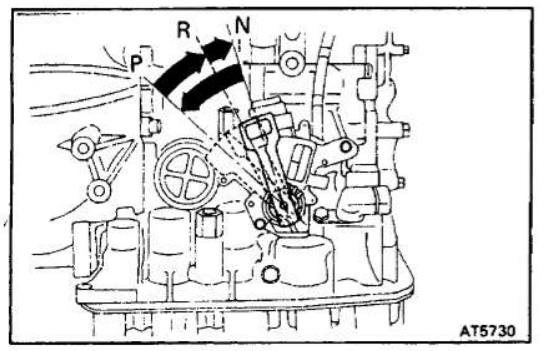
AX07I-01

PARK NEUTRAL SWITCH INSTALLATION

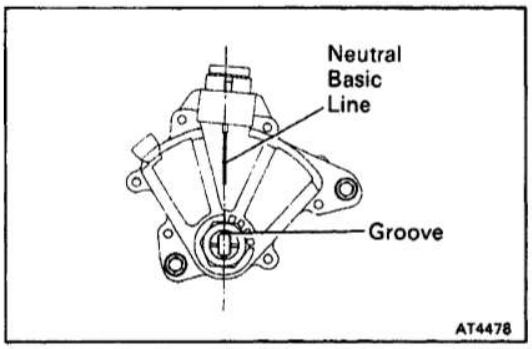
1. INSTALL PARK NEUTRAL SWITCH

(a) Install the PARK NEUTRAL switch to the manual valve shaft.
(b) Install the new lock plate and tighten the nut.
(c) Stake the nut with lock plate.

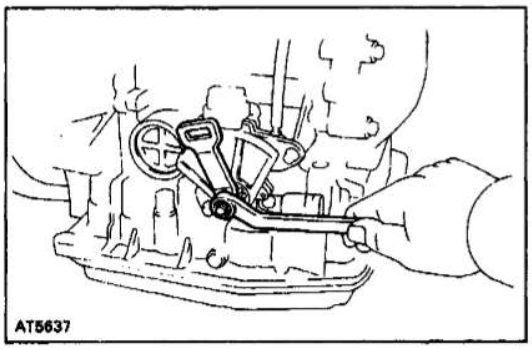




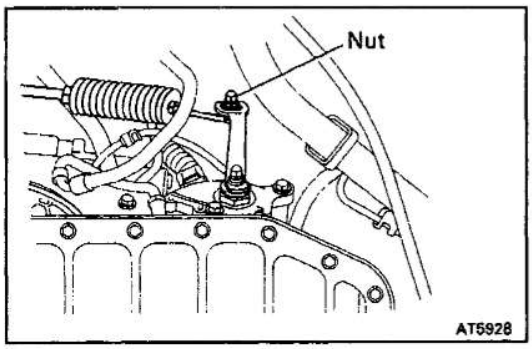
(d) Temporarily install the manual shift lever.
(e) Turn the lever counterclockwise until it stops, then turn it clockwise two notches.
(f) Remove the manual shift lever.



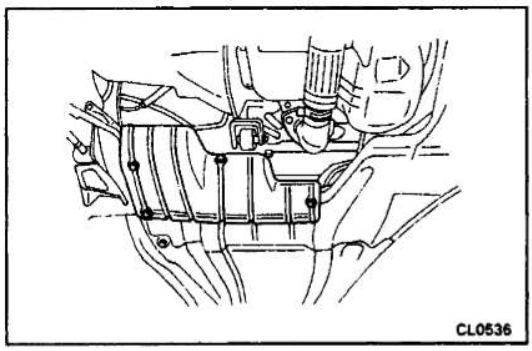
(g) Adjust the PARK NEUTRAL switch.
(See page AX–16)
HINT: Align the groove and neutral basic line.
(h) Install and tighten the two bolts.
Torque: 5.4 N–m (55 kgf–cm, 48 in.–lbf)



2. INSTALL MANUAL SHIFT LEVER



3. CONNECT SHIFT CABLE TO MANUAL SHIFT LEVER

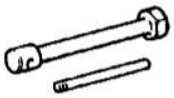
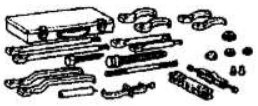


4. INSTALL NO.1 ENGINE UNDER COVER

PREPARATION

SST (SPECIAL SERVICE TOOLS)

AX06J–01

	09308–00010 Oil Seal Puller	Remove side gear shaft oil seal.
	09350–32014 TOYOTA Automatic Transmission Tool Set	
	(09351–32010) One–way Clutch Test Tool	
	(09351–32020) Stator Stopper	
	(09351–32111) Side Bearing Race Replacer	
	(09351–32130) Handle	
	(09351–32150) Oil seal Replacer	
	09628–62011 Ball Joint Puller	
	09643–18020 Diagnosis Check Wire	
	09950–20017 Universal Puller	
	09992–00094 Automatic Transmission Oil Pressure Gauge Set	Line pressure

AX06K–01

EQUIPMENT

Straight edge	Check torque converter installation.
Vernier calipers	Check torque converter installation.
Dial indicator or dial indicator with magnetic base	Measure drive plate runout.
Torque wrench	

AX06L–01

LUBRICANT

Item	Capacity	Classification
Automatic transaxle fluid (w/o Differential oil) Dry fill Drain and refill	 8.0 liters (8.5 US qts, 7.0 Imp.qts) 3.3 liters (3.5 US qts, 2.9 Imp.qts)	ATF DEXRON* II

AX06M–01

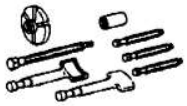
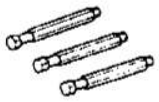
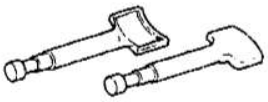
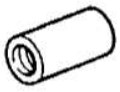
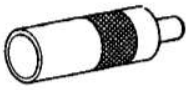
SSM (SPECIAL SERVICE MATERIALS)

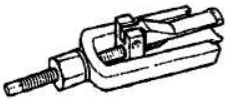
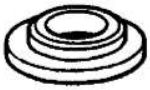
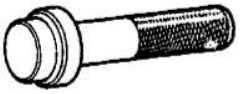
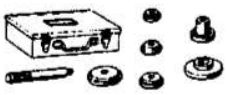
08833–00070 Adhesive 1324, THREE BOND 1324 or equivalent	Torque converter mounting bolt

PREPARATION

SST(SPECIAL SERVICE TOOLS)

MX018–02

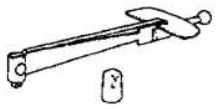
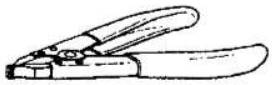
	09223–15010 Crankshaft Rear Oil Seal Replacer	Differential case oil seal
	09308–00010 Oil Seal Puller	
	09310–17010 Transaxle Gear Remover & Replacer	
	(09310–07010) Plate	
	(09310–07020) Center Bolt	
	(09310–07030) Set Bolt	
	(09310–07040) Claw	
	(09310–07050) Adaptor	
	09316–20011 Transfer Bearing Replacer	Input shaft bearing Side bearing
	09316–60010 Transmission & Transfer Bearing	No.1 hub sleeve Replacer Differential case taper roller bearing outer race Transaxle case cover oil seal
	(09316–00010) Replacer Pipe	
	(09316 00020, Replace “A”	
	(09316–00040) Replacer “C”	

 (09316–00070) Replace "F"	
 09319–60020 Output Shaft Needle Roller Bearing Remover	Control shaft cover bearing
 09508–30012 Differential Drive Pinion Rear Bearing Corrie Replacer	Output shaft rear bearing
 09506–35010 Differential Drive Pinion Rear Bearing Replacer	No.2 hub sleeve Side bearing Input shaft bearing
 09517–36010 Rear Axle Shaft Oil Seal Replacer	Shift control shaft oil seal
 09608–12010 Front Hub & Drive Pinion Bearing Replacer Set	Input shaft oil seal
 (09608–00020) Remover & Replacer Handle	
 (09608–00060) Drive Pinion Front Bearing Cup Replacer	
 (09608–00080) Replacer	
 09612–65014 Steering Worm Bearing Puller	Input shaft bearing Differential taper roller bearing outer race
 09620–30010 Steering Gear Box Replacer Set	Control shaft cover bearing
 09631–00020) Handle	
 09630–24013 Steering Rack Oil Seal Tool Set	Control shaft cover bearing
 (09620–24010) Valve Cup Oil Seal Remover	

	09950–00020 Bearing Remover	
	09950–00030 Bearing Remover Attachment	
	09950–20017 Universal Puller	

MX01T–02

RECOMMENDED TOOLS

	09025–00010 Small Torque Wrench	Differential preload
	09031–00030 Pin Punch	
	09042–00050 Torx socket t45	
	09905–00012 Snap Ring No. 1 Expander	

MX01U–01

EQUIPMENT

Dial indicator with magneticbase	
Feeler gauge	
Micrometer	
Straight edge	
Torque wrench	

MX01S–02

LUBRICANT

Item	Capacity	Classification
Standard Type Manual transaxle oil (w/Differential oil)	4.2 liters (4.4 US qts, 3.7 Imp. qts)	API GL–3, GL–4 or GL–5 SAE 75W–90 or 80W–90
Viscous Coupling LSD Type Manual transaxle oil (w/Differential oil)	3.9 liters (4.1 US qts, 3.4 Imp. qts)	AN GL–3, GL–4 or GL–5 SAE 75W–90 or 80W–90

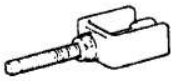
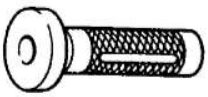
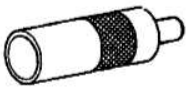
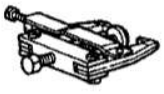
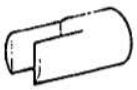
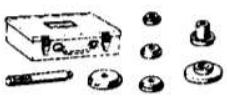
MX01V–02

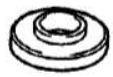
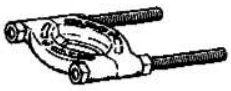
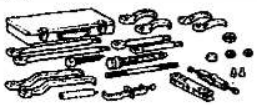
SSM(SPECIAL SERVICE MATERIALS)

08826–00090 Seal Packing 1281, Three bond 1281 or equivalent	Transaxle case x Case cover Transmission case x Transaxle case Transmission case x Case cover
08833–00080 Adhesive 1344, THREE BOND 1344, LOCTITE 242 or equivalent	Transaxle case cover bolt Straight screw plug Control shaft cover bolt

PREPARATION

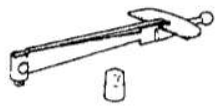
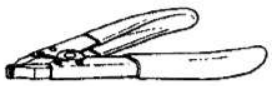
SST (SPECIAL SERVICE TOOLS)

	09308–00010 Oil Seal Puller	
	09309–12020 5th Driven Gear Replacer	
	09310–35010 Countershaft Bearing Replacer	Output shaft front bearing
	09316–60010 Transmission & Transfer Bearing Replacer	
	(09316–00010) Replacer Pipe	
	(09316–00040) Replacer “C”	
	09350–32014 TOYOTA Automatic Transmission Tool Set	
	(09351–32120) Overdrive Bearing Replacer	Differential side bearing
	(09351–32130) Handle	
	(09351–32150) oil Seal Replacer	Differential side bearing Oil seal (Transaxle case side)
	09502–10012 Differential Preload Puller	
	09564–32011 Differential Preload Adaptor	
	09608–12010 Front Hub & Drive Pinion Bearing Replacer Set	

	(09608–00070) Drive Pinion Rear Bearing Cone Replacer	Input shaft rear bearing 4th drive gear and rear bearing
	09608–20012 Front Hub & Drive Pinion Bearing Tool Set	
	(09608–00080) Replacer	Input shaft front oil seal
	(09608–03020) Handle	
	(09608–03060) Replacer	Differential taper roller bearing outer race (Transaxle case side)
	09612–22011 Tilt Handle Bearing Replacer	
	09950–00020 Bearing Remover	
	09950–20017 Universal Puller	

RECOMMENDED TOOLS

MX036–01

	09025–00010 small Torque Wrench	Differential preload
	09031–00030 Pin Punch	
	09905–00012 Snap Ring No. 1 Expander	

EQUIPMENT

MX027–01

Dial indicator	
Torque wrench	
Feeler gauge	

LUBRICANT

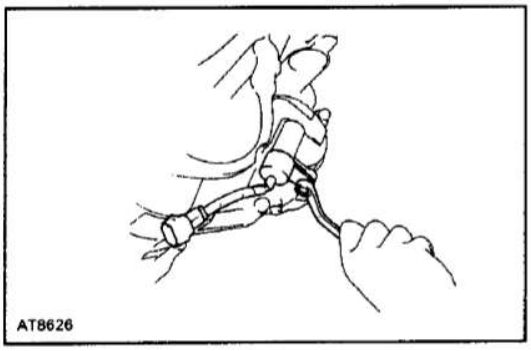
MX028–01

Item	Capacity	Classification
Manual transaxle oil	2.6 liters (2.7 US qts, 2.3 Imp.qts)	API GL–3, 4 or 5 SAE 75W–90

SSM (SPECIAL SERVICE MATERIALS)

MX029–01

08826–00090	Seal Packing 1281, Three bond 1281 or equivalent	Transmission case x Transaxle case Transmission case x Case cover
08833–00080	Adhesive 1344, THREE BOND 1344, LOCTITE 242 or equivalent	Straight screw plug Control shaft cover bolt



SENSOR ROTOR

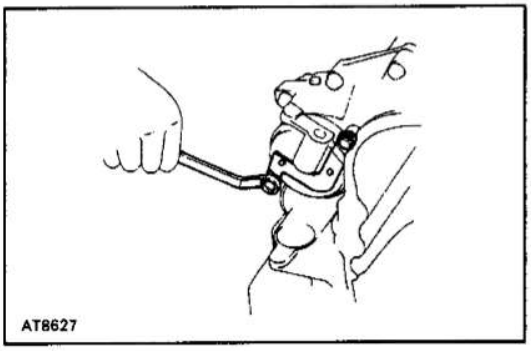
AX078–01

SENSOR ROTOR REMOVAL

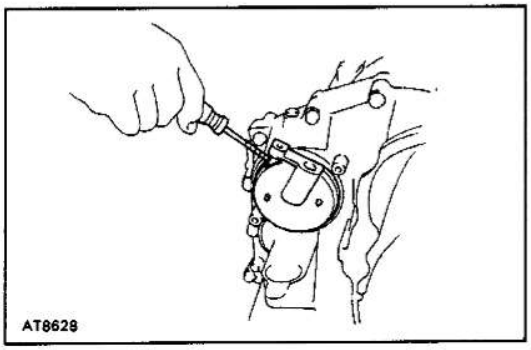
REMOVE SPEED SENSOR AND SENSOR ROTOR

(a) Remove the retaining plate and pull out the speed sensor.

(b) Remove the O–ring from speed sensor.

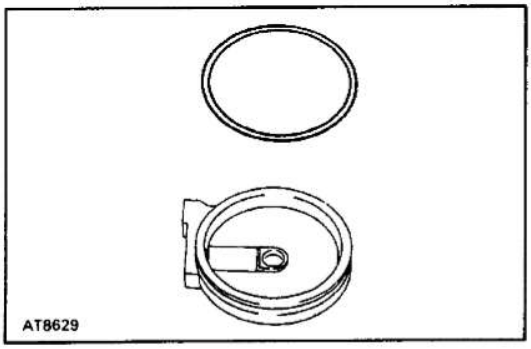


(c) Remove the two bolts and sensor cover bracket.

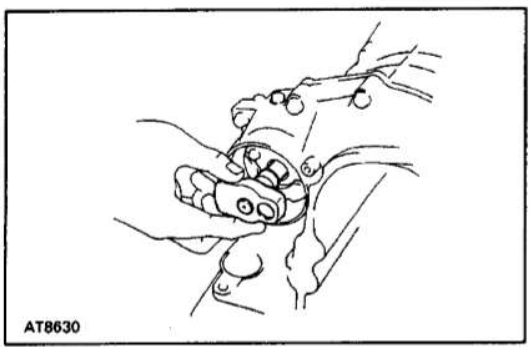


(d) Using a screwdriver, remove the sensor cover.

HINT: Tape the screwdriver tip before use so as not to damage the cover or transaxle.



(e) Remove the O–ring from the sensor cover.

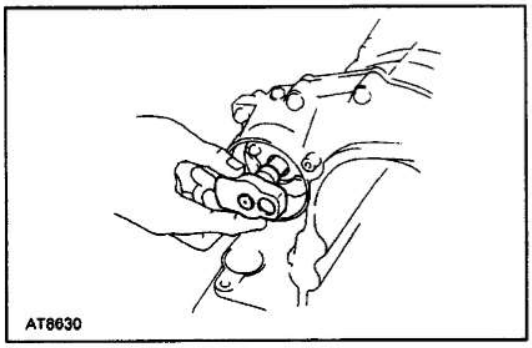


(f) Remove the sensor rotor.

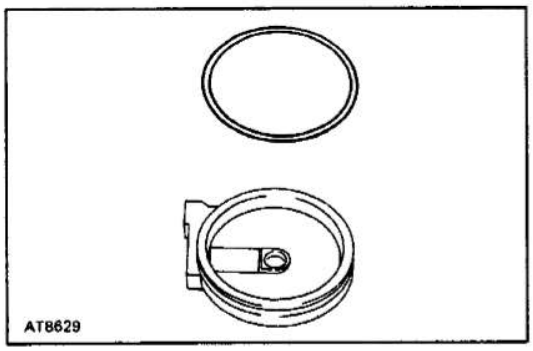
AX078-01

SENSOR ROTOR INSTALLATION

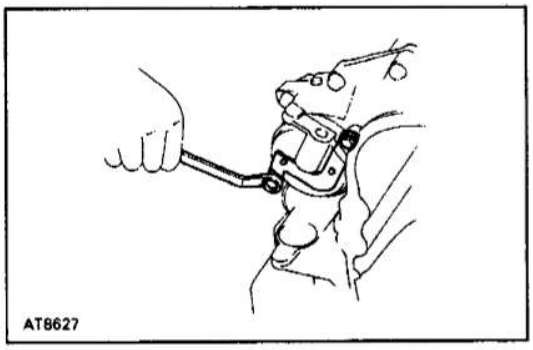
INSTALL SPEED SENSOR AND SENSOR ROTOR



(a) Install the sensor rotor.

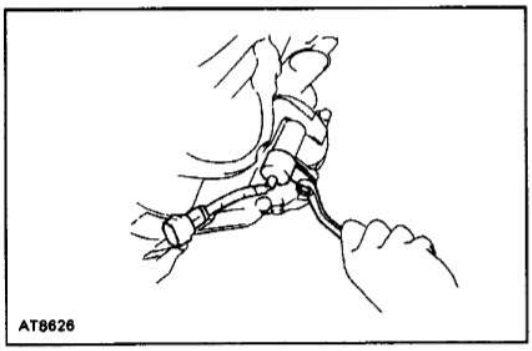


(b) Install a new O–ring to the sensor cover.



(c) Install the sensor cover to the transmission and then install the sensor cover bracket with the two bolts.

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



(d) Coat a new O–ring with ATF and install it to the speed sensor.
(e) Install the speed sensor and retaining plate.

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

SERVICE SPECIFICATIONS

SERVICE DATA

MX00Z–02

Input shaft 3rd and 4th gear journal diameter	
Limit	35.950 mm (1.4154 in.)
Input shaft 5th gear journal diameter	
Limit	27.950 mm (1.1004 in.)
Input shaft runout	
Limit	0.05 mm (0.0020 in.)
Output shaft 1 st and 2nd gear journal diameter	
Limit	38.950 mm (1.5335 in.)
Output shaft runout	
Limit	0.06 mm (0.0024 in.)
Gear thrust clearance 1 st	
STD	0.10 – 0.35 mm (0.0039 – 0.0138 in.)
Limit	0.40 mm (0.0157 in.)
Gear thrust clearance 2nd	
STD	0.10 – 0.45 mm (0.0039 – 0.0177 in.)
Limit	0.50 mm (0.0197 in.)
Gear thrust clearance 3rd	
STD	0.10 – 0.45 mm (0.0039 – 0.0177 in.)
Limit	0.50 mm (0.0197 in.)
Gear thrust clearance 4th	
STD	0.10 – 0.55 mm (0.0039 – 0.0217 in.)
Limit	0.60 mm (0.0236 in.)
Gear thrust clearance 5th	
STD	0.10 – 0.57 mm (0.0039 – 0.0224 in.)
Limit	0.65 mm (0.0256 in.)
Gear oil clearance 1 st	
STD	0.009 – 0.051 mm (0.0004 – 0.0020 in.)
Limit	0.070 mm (0.0028 in.)
Gear oil clearance 2nd	
STD	0.009 – 0.053 mm (0.0004 – 0.0021 in.)
Limit	0.070 mm (0.0028 in.)
Gear oil clearance 3rd	
STD	0.009 – 0.053 mm (0.0004 – 0.0021 in.)
Limit	0.070 mm (0.0028 in.)
Gear oil clearance 4th	
STD	0.009 – 0.051 mm (0.0004 – 0.0020 in.)
Limit	0.070 mm (0.0028 in.)
Gear oil clearance 5th	
STD	0.009 – 0.050 mm (0.0004 – 0.0020 in.)
Limit	0.070 mm (0.0028 in.)
Shift fork to hub sleeve clearance	
Limit	1.0 mm (0.039 in.)
Synchronizer ring to gear clearance 1 st, 4th and 5th	
Limit	0.6 mm (0.024 in.)
Synchronizer ring to gear clearance 2nd and 3rd	
Limit	0.7 mm (0.028 in.)

Input shaft snap ring thickness		
No.2 clutch hub	Mark H	2.30 mm (0.0906 in.)
No.2 clutch hub	Mark J	2.35 mm (0.0925 in.)
No.2 clutch hub	Mark K	2.40 mm (0.0945 in.)
No.2 clutch hub	Mark L	2.45 mm (0.0965 in.)
No.2 clutch hub	Mark M	2.50 mm (0.0984 in.)
No.2 clutch hub	Mark N	2.55 mm (0.1004 in.)
No.2 clutch hub	Mark P	2.60 mm (0.1024 in.)
No.3 clutch hub	Mark Cl	2.25 mm (0.0886 in.)
No.3 clutch hub	Mark R	2.30 mm (0.0906 in.)
No.3 clutch hub	Mark S	2.35 mm (0.0925 in.)
No.3 clutch hub	Mark T	2.40 mm (0.0945 in.)
No.3 clutch hub	Mark U	2.45 mm (0.0965 in.)
No.3 clutch hub	Mark V	2.50 mm (0.0984 in.)
No.3 clutch hub	Mark W	2.55 mm (0.1004 in.)
No.3 clutch hub	Mark X	2.60 mm (0.1024 in.)
No.3 clutch hub	Mark *	2.65 mm (0.1043 in.)
Ball bearing	Mark 1	2.35 mm (0.0925 in.)
Ball bearing	Mark 2	2.40 mm (0.0945 in.)
Ball bearing	Mark 3	2.45 mm (0.0965 in.)
Ball bearing	Mark 4	2.50 mm (0.0984 in.)
Ball bearing	Mark 5	2.55 mm (0.1004 in.)
Ball bearing	Mark 6	2.60 mm (0.1024 in.)
Ball bearing	Mark 7	2.65 mm (0.1043 in.)
Ball bearing	Mark 8	2.70 mm (0.1063 in.)
Output shaft snap ring thickness		
No.1 clutch hub	Mark A	2.80 mm (0.1102 in.)
No.1 clutch hub	Mark6	2.85 mm (0.1122 in.)
No.1 clutch hub	Mark C	2.90 mm (0.1142 in.)
No. 1 clutch hub	Mark D	2.95 mm (0.1161 in.)
No.1 clutch hub	Mark E	3.00 mm (0.1181 in.)
No.1 clutch hub	Mark F	3.05 mm (0.1201 in.)
No.1 clutch hub	Mark G	3.10 mm (0.1220 in.)
Oil pump body clearance		
	STD	0.10 – 0.16 mm (0.0039 – 0.0063 in.)
	Limit	0.30 mm (0.0118 in.)
Oil pump tip clearance		
	STD	0.08 – 0.15 mm (0.0031 – 0.0059 in.)
	Limit	0.30 mm (0.0118 in.)
Oil pump side clearance		
	STD	0.03 – 0.08 mm (0.0012 – 0.0031 in.)
	Limit	0.15 mm (0.0059 in.)
Control shaft cover oil seal drive in depth		0 – 1.0 mm (0 – 0.039 in.)

Differential pinion to side gear backlash	0.05 – 0.20 mm (0.0020 – 0.0079 in.)
Differential side gear thrust washer thickness	
None Mark	0.80 mm (0.0315 in.)
None Mark	0.90 mm (0.0354 in.)
None Mark	1.00 mm (0.0394 in.)
None Mark	1.10 mm (0.0433 in.)
None Mark	1.20 mm (0.0472 in.)
None Mark	1.30 mm (0.0512 in.)
None Mark	1.40 mm (0.0551 in.)
Differential case side bearing preload (at starting)	
New bearing (add output shaft preload)	0.2 – 0.4 N·m (2.0 – 4.1 kgf·cm, 1.7 – 3.6 in.·lbf)
Reused bearing (add output shaft preload)	0.1 – 0.2 N·m (1.3 – 2.5 kgf·cm, 1.1 – 2.2 in.·lbf)
Differential side bearing adjusting shim thickness	
Mark 0	2.00 mm (0.0787 in.)
Mark 1	2.05 mm (0.0807 in.)
Mark 2	2.10 mm (0.0827 in.)
Mark 3	2.15 mm (0.0846 in.)
Mark 4	2.20 mm (0.0866 in.)
Mark 5	2.25 mm (0.0886 in.)
Mark 6	2.30 mm (0.0906 in.)
Mark 7	2.35 mm (0.0925 in.)
Mark 8	2.40 mm (0.0945 in.)
Mark 9	2.45 mm (0.0965 in.)
Mark A	2.50 mm (0.0984 in.)
Mark B	2.55 mm (0.1004 in.)
Mark C	2.60 mm (0.1024 in.)
Mark D	2.65 mm (0.1043 in.)
Mark E	2.70 mm (0.1063 in.)
Mark F	2.75 mm (0.1083 in.)
Mark G	2.80 mm (0.1102 in.)
Mark H	2.85 mm (0.1122 in.)
Output shaft bearing preload (at starting)	
New bearing	0.8 – 1.6 N·m (8 – 16 kgf·cm, 6.9 – 13.9 in.·lbf)
Reused bearing	0.5 – 1.0 N·m (5 – 10 kgf·cm, 4.3 – 8.7 in.·lbf)

Output shaft rear bearing adjusting shim thickness	
Mark 0	1.30 mm (0.0512 in.)
Mark 1	1.35 mm (0.0531 in.)
Mark 2	1.40 mm (0.0551 in.)
Mark 3	1.45 mm (0.0571 in.)
Mark 4	1.50 mm (0.0591 in.)
Mark 5	1.55 mm (0.0610 in.)
Mark 6	1.60 mm (0.0630 in.)
Mark 7	1.65 mm (0.0650 in.)
Mark 8	1.70 mm (0.0669 in.)
Mark 9	1.75 mm (0.0689 in.)
Mark A	1.80 mm (0.0709 in.)
Mark B	1.85 mm (0.0728 in.)
Mark C	1.90 mm (0.0748 in.)
Mark D	1.95 mm (0.0768 in.)
Mark E	2.00 mm (0.0787 in.)
Mark F	2.05 mm (0.0807 in.)
Mark G	2.10 mm (0.0827 in.)
Mark H	2.15 mm (0.0846 in.)
Mark J	2.20 mm (0.0866 in.)
Mark K	2.25 mm (0.0886 in.)
Mark L	2.30 mm (0.0906 in.)
Mark M	2.35 mm (0.0925 in.)
Mark N	2.40 mm (0.0945 in.)
Mark P	2.45 mm (0.0965 in.)
Mark 0	2.50 mm (0.0984 in.)

TORQUE SPECIFICATIONS

MX010-03

Part tightened	N–m	kgf–cm	ft–lbf
Transaxle x Engine			
12 mm bolt	64	650	47
10 mm bolt	46	470	34
Rear end plate set bolt	9	95	82 in.·lbf
Stiffener plate x Engine	37	380	27
Stiffener plate x Transaxle	37	380	27
Engine LH mounting set bolt	64	650	47
Suspension crossmember x Body	113	1,150	83
Suspension arm x Rear axle hub	103	1,050	76
Lower arm x Suspension crossmember	132	1,350	98
Engine rear mounting x Transaxle	77	790	57
Engine rear mounting x Crossmember	64	650	47
Engine rear mounting through bolt	87	890	64
Clutch release cylinder x Transaxle	12	120	9
Engine front mounting x Transaxle	77	790	57
Engine front mounting x Body	73	740	54
Engine front mounting through bolt	96	980	71
Front exhaust pipe x Tail Pipe	62	630	46
Front exhaust pipe x Exhaust manifold	62	630	46
Transaxle x Starter	39	400	29
LH engine mounting stay x Body	73	740	54
LH engine mounting stay x Transaxle	25	250	18
Strut bar x Body (Bolt)	73	740	54
Strut bar x Body (Nut)	64	650	47
Transaxle x Transaxle case receiver	7.4	75	65 in.·lbf
Oil pump x Cover	10	105	8
Transaxle case x Transaxle case cover	54	550	40
Differential ring gear x Differential case	124	1,260	91
Transaxle case x Oil pump	17	175	13
Transaxle case x Transmission case	29	300	22
Reverse idler gear shaft retaining bolt	29	300	22
Transmission case x Rear bearing retainer	42	430	31
5th driven gear lock nut	123	1,250	90
Transmission case x Transmission case cover	29	300	22
Shift and select lever shaft assembly x Transmission case	20	200	14
Shift lever lock bolt	49	500	36
Breather plug	49	500	36
Selecting bellcrank assembly x Transmission case	20	200	14
Back–up light switch	40	410	30
Vehicle speed pulse generator set bolt	7.4	75	65 in.·lbf
Shift fork set bolt	24	240	17
Screw plug	25	250	18
Reverse shift arm bracket x Transaxle case	17	175	13
No.2 oil pipe x Transaxle case	17	175	13

SERVICE SPECIFICATIONS

SERVICE DATA

AX07M–01

Line pressure					
Engine idling	D range	373 – 422 kPa	3.8 – 4.3 kgf/cm²	54 – 61 psi
	R range	637 – 794 kPa	6.5 – 8.1 kgf/cm²	92 – 115 psi
At Stall (Throttle valve fully opened)	D range	716 – 863 kPa	7.3 – 8.8 kgf/cm²	104 – 125 psi
	R range	1,334 – 1,579 kPa	13.6 – 16.1 kgf/cm²	193 – 229 psi
Engine stall revolution		2,650 ± 150 rpm		
Time lag N range→ D range		Less than 1.2 seconds		
N range→ R range		Less than 1.5 seconds		
Engine idling speed (A/C OFF)	N range	700 ±150 rpm		
Throttle cable adjustment				
Throttle valve fully opened		Between boot end face and inner cable stopper		
		0 – 1 mm	0 – 0.04 in.	
Torque converter sleeve runout	Limit	0.30 mm	0.0118 in.	
Torque converter installation distance		26.0 mm	1.024 in.	
Drive plate runout	Limit	0.20 mm	0.0079 in.	

Shift point km/h (mph)		Throttle valve fully open [ ]Fully closed							
		1–2	2–3	3 →O/D	[3–O/DI	[O/D–31	O/D–3	3–2	2 → 1
	D range	53 – 59 (33 – 37)	98 – 109 (61 – 68)	131 – 143 (81 – 89)	44 – 50 (27 – 31)	18 – 23 (11 – 14)	125 – 137 (78 – 85)	93 – 104 (58 – 65)	42 – 48 (26 – 30)
	2 range	53 – 59 (33 – 37)	–	–	–	–	–	–	42 – 49 (26 – 30)
	L range	–	–	–	–	–	–	–	47 – 53 (29 – 33)

Lock–up point km/h (mph)		Throttle valve opening 596	
		Lock–up ON	Lock–up OFF
		O/D	O/D
	D range	64 – 71 (40 – 44)	59 – 65 (37 – 40)

V01061

AX07N – 01

TORQUE SPECIFICATIONS

Part tightened		N–m	kgf–cm	ft–lbf
Engine mount bracket x Transmission case		52	530	38
Oil pan drain plug		17	175	13
Transaxle x Engine	12 mm bolt	64	650	47
	10 mm bolt	46	470	34
Rear end plate set bolt		9	95	82 in.·lbf
Stiffener plate x Engine		37	380	27
Stiffener plate x Transaxle		37	380	27
Engine LH mounting set bolt		64	650	47
Suspension crossmember x Body		113	1,150	83
Suspension arm x Rear axle hub		103	1,050	76
Lower arm x Suspension crossmember		132	1,350	98
Engine rear mounting x Transaxle		77	790	57
Engine rear mounting x Crossmember		64	650	47
Engine rear mounting through bolt		87	890	64
Engine front mounting x Transaxle		77	790	57
Engine front mounting x Transaxle		77	790	57
Engine front mounting x Body		73	740	54
Engine front mounting through bolt		96	980	71
Front exhaust pipe x Tail pipe		62	630	46
Front exhaust pipe x Exhaust manifold		62	630	46
Transaxle x Starter		39	400	29
LH engine mounting x Body		73	740	54
LH engine mounting stay x Transaxle		25	250	18
PARK NEUTRAL switch x Transaxle case		5.4	55	48 in.·lbf
Valve body x Transaxle case		10	100	7
Manual detent spring x Valve body		10	100	7
Kick–down pressure switch x Valve body		6.4	65	48 in.·lbf
Oil tube bracket x Valve body		10	100	7
Apply tube bracket x Valve body		10	100	7
Vehicle speed pulse generator retaining plate		5.4	55	48 in.·lbf
Sensor cover bracket		5.4	55	48 in.·lbf
Oil pan x Transaxle case		4.9	50	43 in.·lbf
Torque converter x Drive plate		27	280	20
Drive plate x Crankshaft		88	900	65

SERVICE SPECIFICATIONS

SERVICE DATA

MX030–02

Input shaft roller bearing journal diameter	
Limit	29.970 mm (1.1799 in.)
Input shaft 3rd gear journal diameter	
Limit	33.090 mm (1.3028 in.)
Input shaft 4th gear journal diameter	
Limit	32.470 mm (1.2783 in.)
Input shaft 5th gear journal diameter	
Limit	26.970 mm (1.0618 in.)
Input shaft runout	
Limit	0.05 mm (0.0020 in.)
Output shaft roller bearing journal diameter	
Limit	31.970 mm (1.2587 in.)
Output shaft 1st gear journal diameter	
Limit	37.970 mm (1.4949 in.)
Output shaft 2nd gear journal diameter	
Limit	31.990 mm (1.2594 in.)
Output shaft runout	
Limit	0.05 mm (0.0020 in.)
Gear thrust clearance 1st	
STD	0.10–0.29 mm (0.0039–0.0114 in.)
Limit	0.35 mm (0.0138 in.)
Gear thrust clearance 2nd	
STD	0.20–0.44 mm (0.0079–0.0173 in.)
Limit	0.50 mm (0.0197 in.)
Gear thrust clearance 3rd	
STD	0.10–0.25 mm (0.0039–0.0098 in.)
Limit	0.30 mm (0.0118 in.)
Gear thrust clearance 4th	
STD	0.20–0.45 mm (0.0079–0.0177 in.)
Limit	0.50 mm (0.0197 in.)
Gear thrust clearance 5th	
STD	0.20–0.40 mm (0.079–0.0157 in.)
Limit	0.45 mm (0.0177 in.)
Gear oil clearance 1st,2nd,3rd and 4th	
STD	0.009–0.053 mm (0.0004–0.0021 in.)
Limit	0.070 mm (0.0028 in.)
Gear oil clearance 5th	
STD	0.009–0.050 mm (0.0004–0.0020 in.)
Limit	0.070 mm (0.0028 in.)
Shift fork to hub sleeve clearance	
Limit	1.0 mm (0.039 in.)
Synchronizer ring to gear clearance	
Limit	0.6 mm (0.024 in.)

Input shaft snap ring thickness		
No.2 clutch hub	Mark 1	1.95–2.00 mm (0.0768–0.0787 in.)
No.2 clutch hub	Mark 2	2.00–2.05 mm (0.0787–0.0807 in.)
No.2 clutch hub	Mark 3	2.05–2.10 mm (0.0807–0.0827 in.)
No.2 clutch hub	Mark 4	2.10–2.15 mm (0.0827–0.0846 in.)
No.2 clutch hub	Mark 5	2.15–2.20 mm (0.0846–0.0866 in.)
No.2 clutch hub	Mark 6	2.20–2.25 mm (0.0866–0.0886 in.)
No.3 clutch hub	Mark 13	2.20–2.25 mm (0.0866–0.0886 in.)
No.3 clutch hub	Mark 14	2.25–2.30 mm (0.0886–0.0906 in.)
No.3 clutch hub	Mark 15	2.30–2.35 mm (0.0906–0.0925 in.)
No.3 clutch hub	Mark 16	2.35–2.40 mm (0.0925–0.0945 in.)
No.3 clutch hub	Mark 17	2.40–2.45 mm (0.0945–0.0965 in.)
No.3 clutch hub	Mark 18	2.45–2.50 mm (0.0965–0.0984 in.)
No.3 clutch hub	Mark 19	2.50–2.55 mm (0.0984–0.1004 in.)
No.3 clutch hub	Mark 20	2.55–2.60 mm (0.1004–0.1024 in.)
No.3 clutch hub	Mark 21	2.60–2.65 mm (0.1024–0.1043 in.)
No.3 clutch hub	Mark 22	2.65–2.70 mm (0.1043–0.1063 in.)
No.3 clutch hub	Mark 23	2.70–2.75 mm (0.1063–0.1083 in.)
No.3 clutch hub	Mark 24	2.75–2.80 mm (0.1083–0.1102 in.)
No.3 clutch hub	Mark 25	2.80–2.85 mm (0.1102–0.1122 in.)
No.3 clutch hub	Mark 26	2.85–2.90 mm (0.1122–0.1142 in.)
No.3 clutch hub	Mark 27	2.90–2.95 mm (0.1142–0.1161 in.)
Ball bearing	Mark A	2.15–2.20 mm (0.0846–0.0866 in.)
Ball bearing	Mark B	2.20–2.25 mm (0.0866–0.0886 in.)
Ball bearing	Mark C	2.25–2.30 mm (0.0886–0.0906 in.)
Ball bearing	Mark D	2.30–2.35 mm (0.0906–0.0925 in.)
Ball bearing	Mark E	2.35–2.40 mm (0.0925–0.0945 in.)
Differential side bearing adjusting shim thickness		
	Mark 1	1.90 mm (0.0748 in.)
	Mark 2	1.95 mm (0.0768 in.)
	Mark 3	2.00 mm (0.0787 in.)
	Mark 4	2.05 mm (0.0807 in.)
	Mark 5	2.10 mm (0.0827 in.)
	Mark 6	2.15 mm (0.0846 in.)
	Mark 7	2.20 mm (0.0866 in.)
	Mark 8	2.25 mm (0.0886 in.)
	Mark 9	2.30 mm (0.0906 in.)
	Mark 10	2.35 mm (0.0925 in.)
	Mark 11	2.40 mm (0.0945 in.)
	Mark 12	2.45 mm (0.0965 in.)
	Mark 13	2.50 mm (0.0984 in.)
	Mark 14	2.55 mm (0.1004 in.)
	Mark 15	2.60 mm (0.1024 in.)
	Mark 16	2.65 mm (0.1043 in.)
	Mark 17	2.70 mm (0.1063 in.)
	Mark 18	2.75 mm (0.1083 in.)
	Mark 19	2.80 mm (0.1102 in.)
Differential case side bearing preload (at starting)		0.8–1.6 N·m (8–16 kgf·cm, 6.9–13.9 in.·lbf)

Differential pinion to side gear backlash	**0.05–0.20 mm (0.002–0.0079 in.)**
Differential side gear thrust washer thickness	
None Mark	**0.95 mm (0.0374 in.)**
None Mark	**1.00 mm (0.0394 in.)**
None Mark	**1.05 mm (0.0413 in.)**
None Mark	**1.10 mm (0.0433 in.)**
None Mark	**1.15 mm (0.0453 in.)**
None Mark	**1.20 mm (0.0472 in.)**
Input shaft front oil seal drive in depth	**0–0.5 mm (0–0.012 in.)**
Shift outer lever tip play	**0.1–0.5 mm (0.004–0.020 in.)**

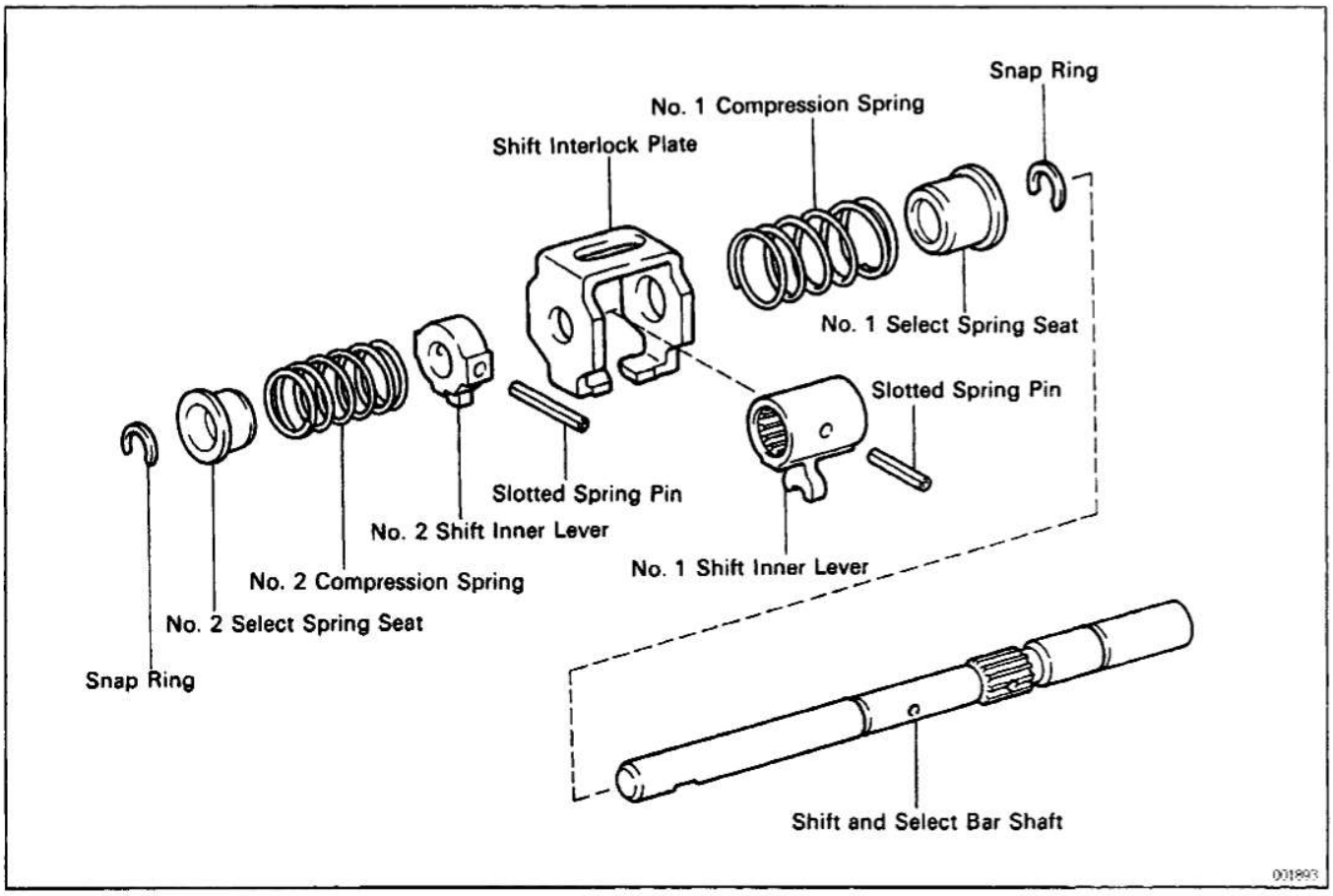
MX031–02

TORQUE SPECIFICATIONS

Part tightened	N·m	kgf·cm	ft·lbf
Transmission case x Transaxle case	29	300	22
Transmission case x Case cover	29	300	22
Transmission case protector x Transmission case	18	185	13
Rear bearing retainer x Transmission case	42	430	31
Output shaft front bearing lock plate x Transaxle case	18	185	13
Transaxle case receiver x Transaxle case	7.4	75	65in.·lbf
5th driven gear lock nut	123	1,250	90
Reverse idler shaft lock bolt	29	300	22
Control shaft cover	37	375	27
Reverse shift arm bracket x Transaxle case	18	185	13
No.3 shift fork x Shift fork shaft	18	185	13
No.1 lock ball assembly lock nut	37	375	27
No.2 lock ball assembly	23	230	17
Differential ring gear x Differential case	90	920	67
Engine mount bracket x Transmission case	52	530	38
Filler plug	49	500	36
Drain plug	49	500	36
Back–up light switch	44	450	33
Side bearing retainer x Transmission case	18	185	13
Clutch release bearing retainer x Transaxle case	7.4	75	65 in.·lbf
Straight screw plug (Shift fork shaft)	13	130	9
Straight screw plug (Reverse restrict pin)	13	130	9
Transaxle x Engine			
12 mm bolt	64	650	47
10 mm bolt	46	470	34
Rear end plate set bolt	9	95	82 in.·lbf
Stiffener plate x Engine	37	380	27
Stiffener plate x Transaxle	37	380	27
Engine LH mounting set bolt	64	650	47
Suspension crossmember x Body	113	1,150	83
Suspension arm x Rear axle hub	103	1,050	76
Lower arm x Suspension crossmember	132	1,350	98
Engine rear mounting x Transaxle	77	790	57
Engine rear mounting x Crossmember	64	650	47
Engine rear mounting through bolt	87	890	64
Engine front mounting x Transaxle	77	790	57
Clutch release cylinder x Transaxle	12	120	9
Engine front mounting x Transaxle	77	790	57
Engine front mounting x Body	73	740	54
Engine front mounting through bolt	96	980	71
Front exhaust pipe x Tail pipe	62	630	46
Front exhaust pipe x Exhaust manifold	62	630	46
Transaxle x Starter	39	400	29
LH engine mounting x Body	73	740	54
LH engine mounting stay x Transaxle	25	250	18

SHIFT AND SELECT LEVER SHAFT

COMPONENTS

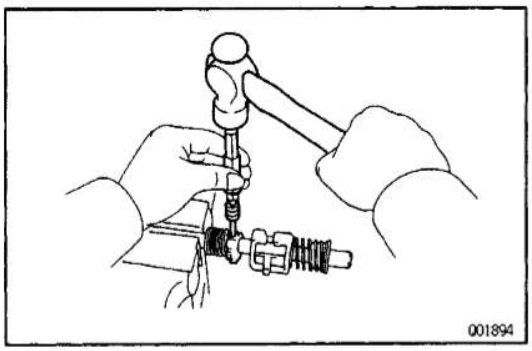


MX04Y - 01

SHIFT AND SELECT LEVER SHAFT DISASSEMBLY

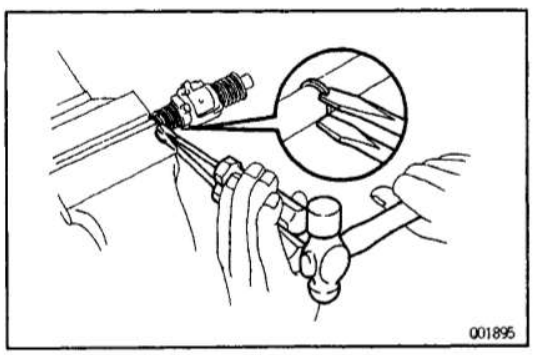
1. REMOVE N0.2 SHIFT INNER LEVER

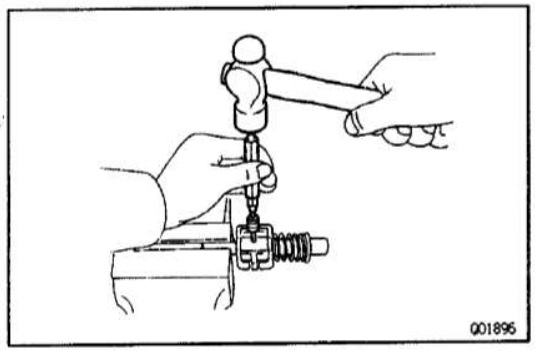
(a) Using a pin punch and hammer, drive out the slotted spring pin.



(b) Using two screwdrivers and a hammer, remove the snap ring.

(c) Remove the No.2 select spring seat, No.2 compres–sion spring and No.2 shift inner levee.

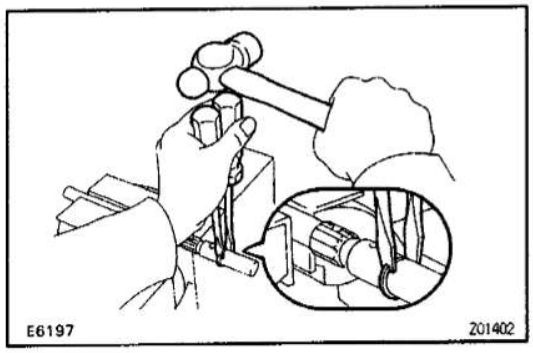




2. REMOVE SHIFT INTERLOCK PLATE AND NO. 1 SHIFT INNER LEVER

(a) Using a pin 'punch and hammer, drive out the slotted spring pin.

(b) Remove the shift interlock plate, No. shift inner lever, No.1 compression spring and No. select spring seat.



3. REMOVE SNAP RING

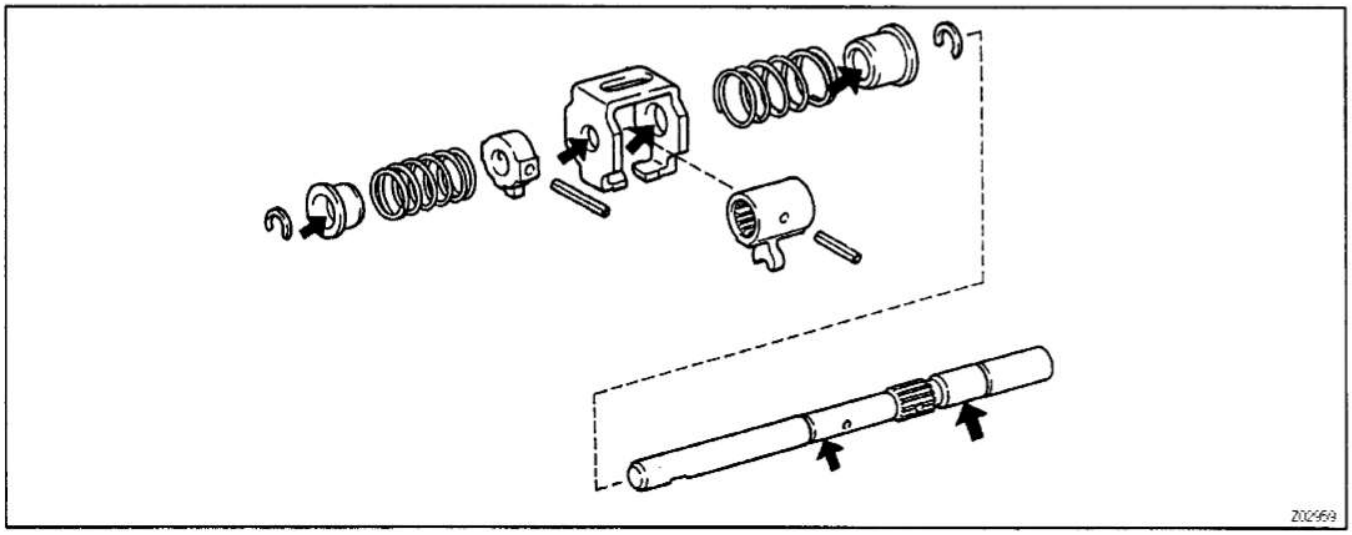
Using two screwdrivers and a hammer, remove the snap ring.

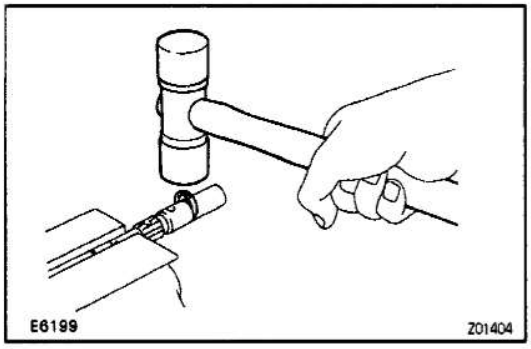
MX04Z-01

SHIFT AND SELECT LEVER SHAFT ASSEMBLY

(See page MX2–56)

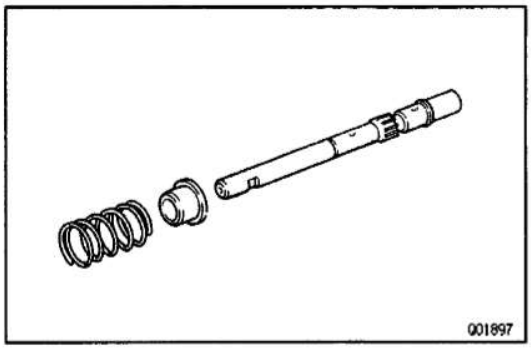
1. APPLY MP GREASE TO PARTS, AS SHOWN





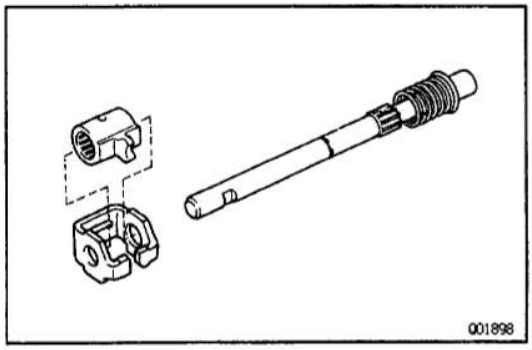
2. INSTALL SNAP RING

Using a plastic hammer, install the snap ring.

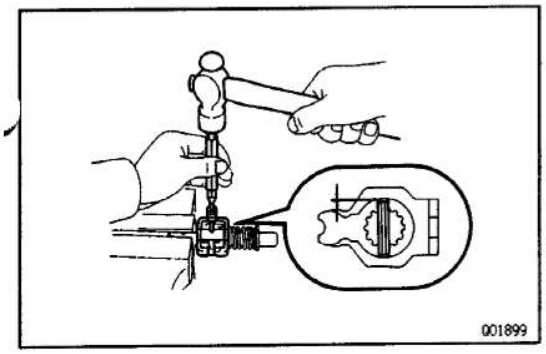


3. INSTALL SHIFT INTERLOCK PLATE AND NO. 1 SHIFT INNER LEVER

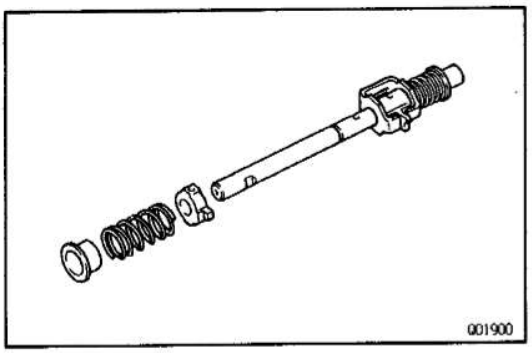
(a) Install the No.1 select spring seat and No.1 compression spring.



(b) Install the shift interlock plate and No.1 shift inner lever.

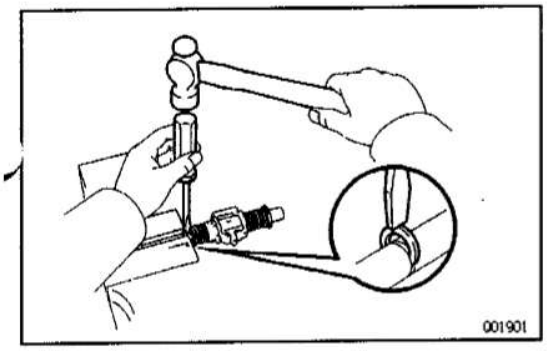


(c) Using a pin punch and hammer, drive in the slotted spring pin.
(d) Check that the shift interlock plate turn smoothly.

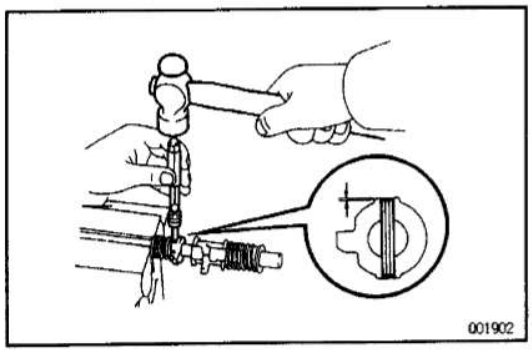


4. INSTALL NO.2 SHIFT INNER LEVER

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



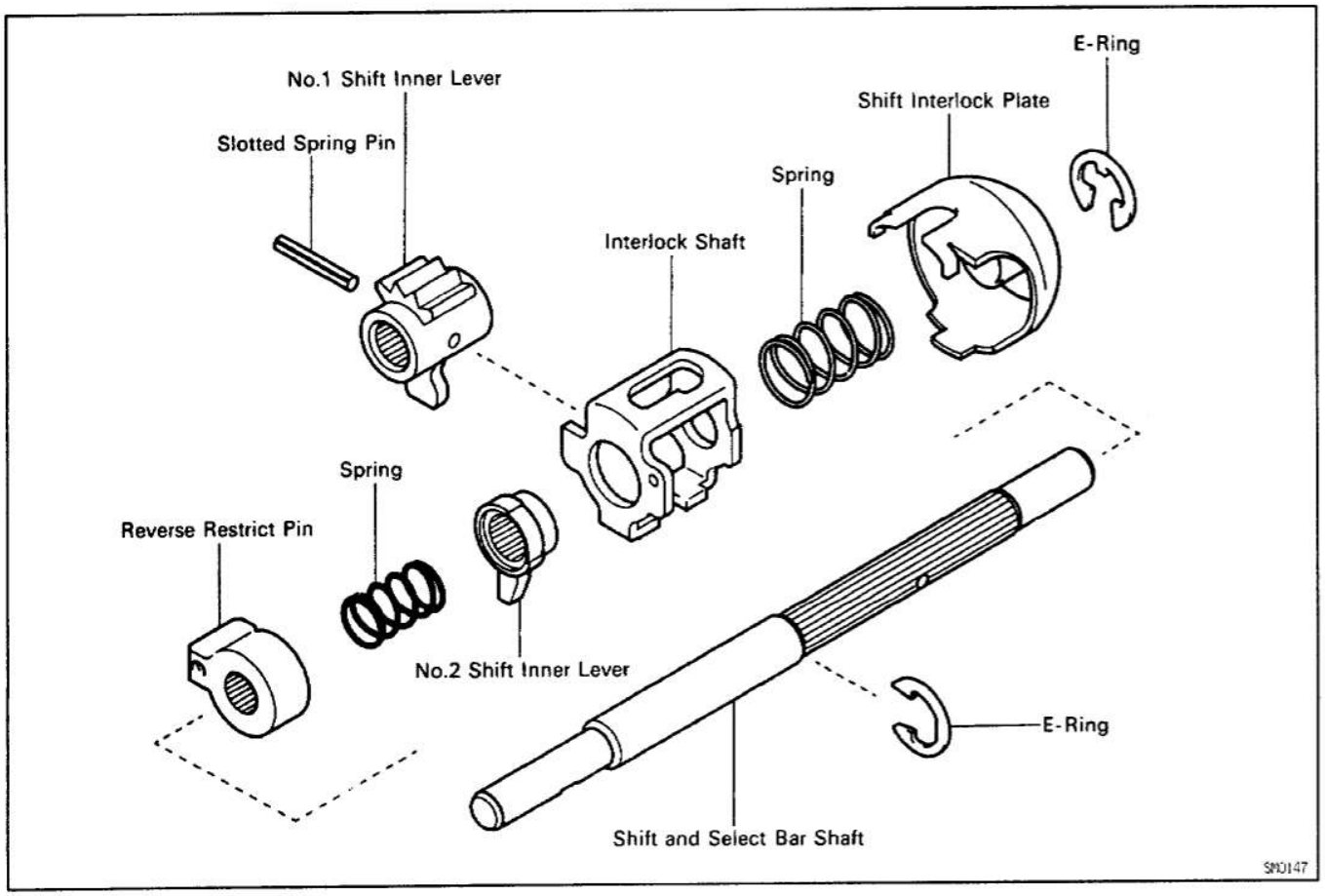
(b) Using a screwdriver and hammer, install the snap ring.



(c) Using a pin punch and hammer, drive in the slotted spring pin.
(d) Check that the No.2 select spring seat slides smoothly.

SHIFT AND SELECT LEVER SHAFT

COMPONENTS

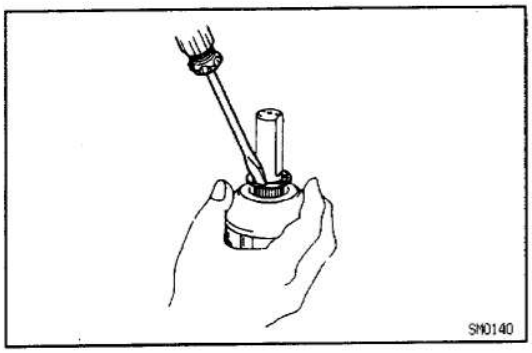


MX04Q–01

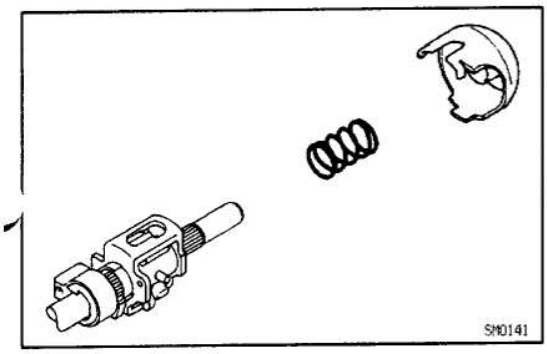
SHIFT AND SELECT LEVER SHAFT DISASSEMBLY

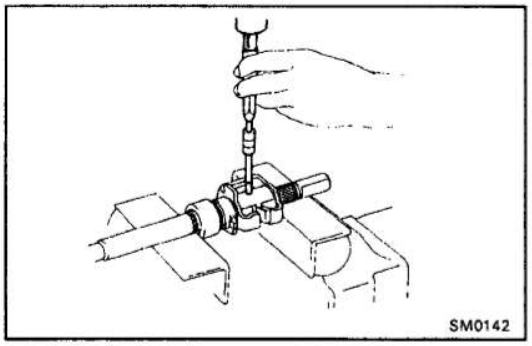
1. REMOVE SHIFT INTERLOCK PLATE

(a) Remove the E–ring.



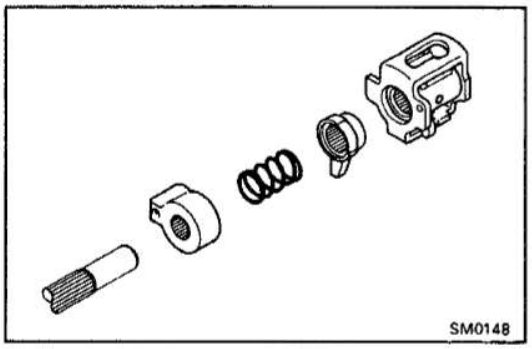
(b) Remove the interlock plate and spring.



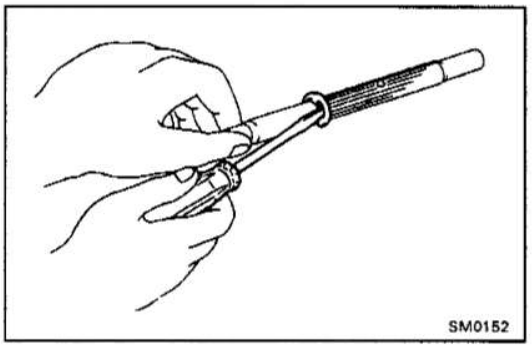


2. REMOVE INTERLOCK SHAFT, NO.1 SHIFT INNER LEVER, NO.2 SHIFT INNER LEVER, SPRING AND REVERSE RESTRICT PIN

(a) Using a pin punch and hammer, drive out the slotted spring pin.



(b) Remove the interlock shaft, No.1 shift inner lever, No. 2 shift inner lever, spring and reverse restrict pin.

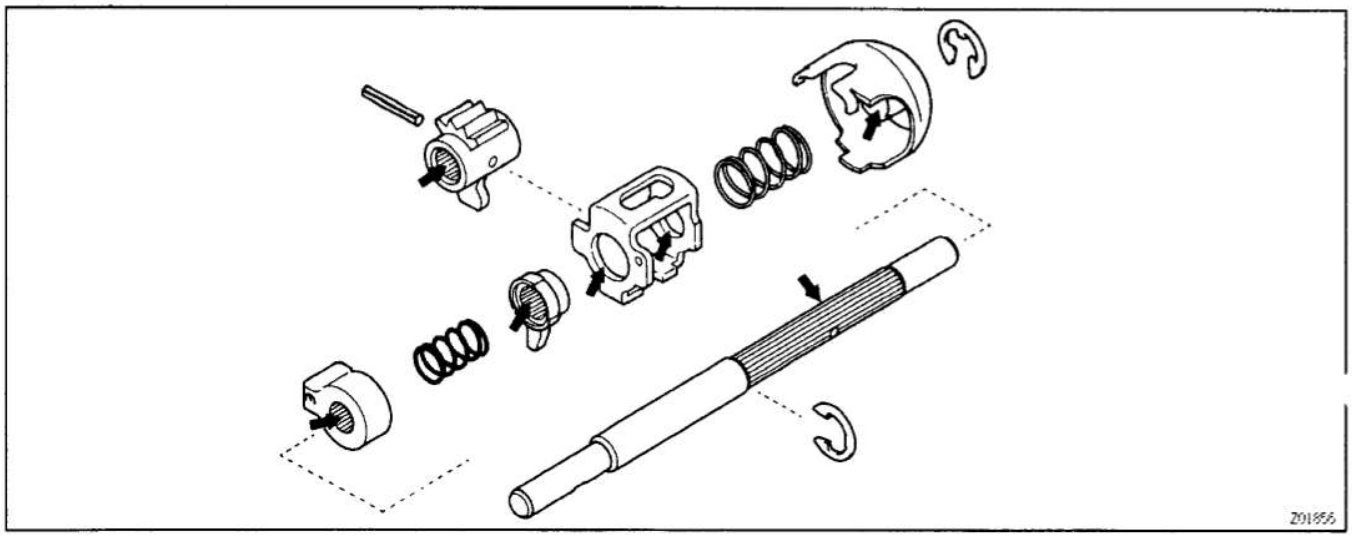


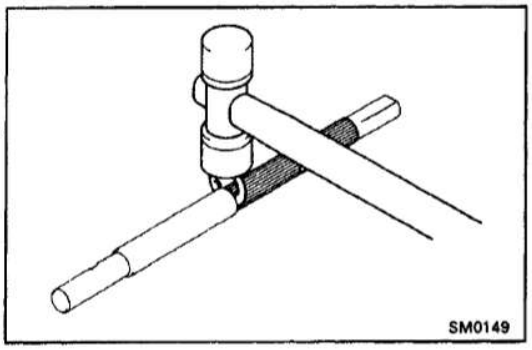
3. REMOVE E– RING

SHIFT AND SELECT LEVER SHAFT ASSEMBLY MXD4R–01

(See page MX1–45)

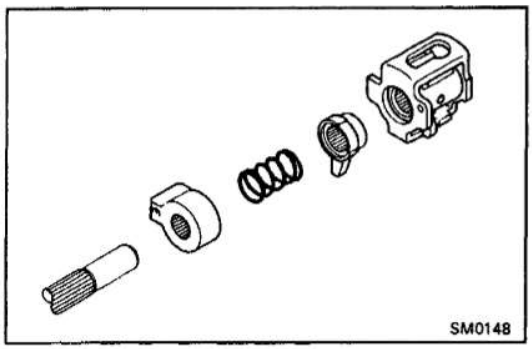
1. APPLY MP GREASE TO PARTS. AS SHOWN





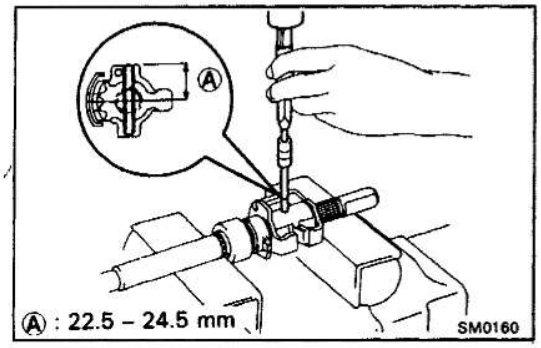
2. INSTALL E–RING

Using a plastic hammer, install the E–ring.

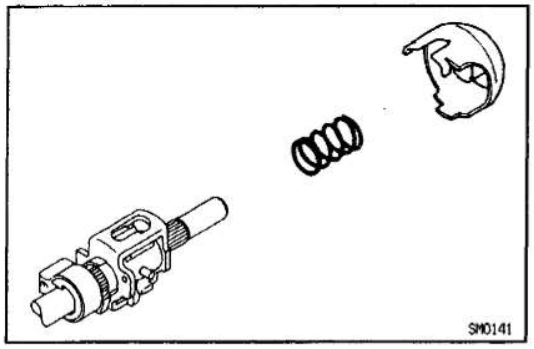


3. INSTALL REVERSE RESTRICT PIN, SPRING, NO.2 SHIFT INNER LEVER, NO.1 SHIFT INNER LEVER AND INTERLOCK SHAFT

(a) Install the reverse restrict pin, spring, No.2 shift inner lever, No.1 shift inner lever and interlock plate.

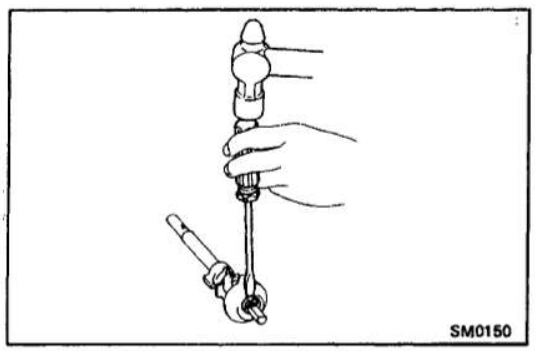


(b) Using a pin punch and hammer, drive in the slotted spring pin.



4. INSTALL SHIFT INTERLOCK PLATE

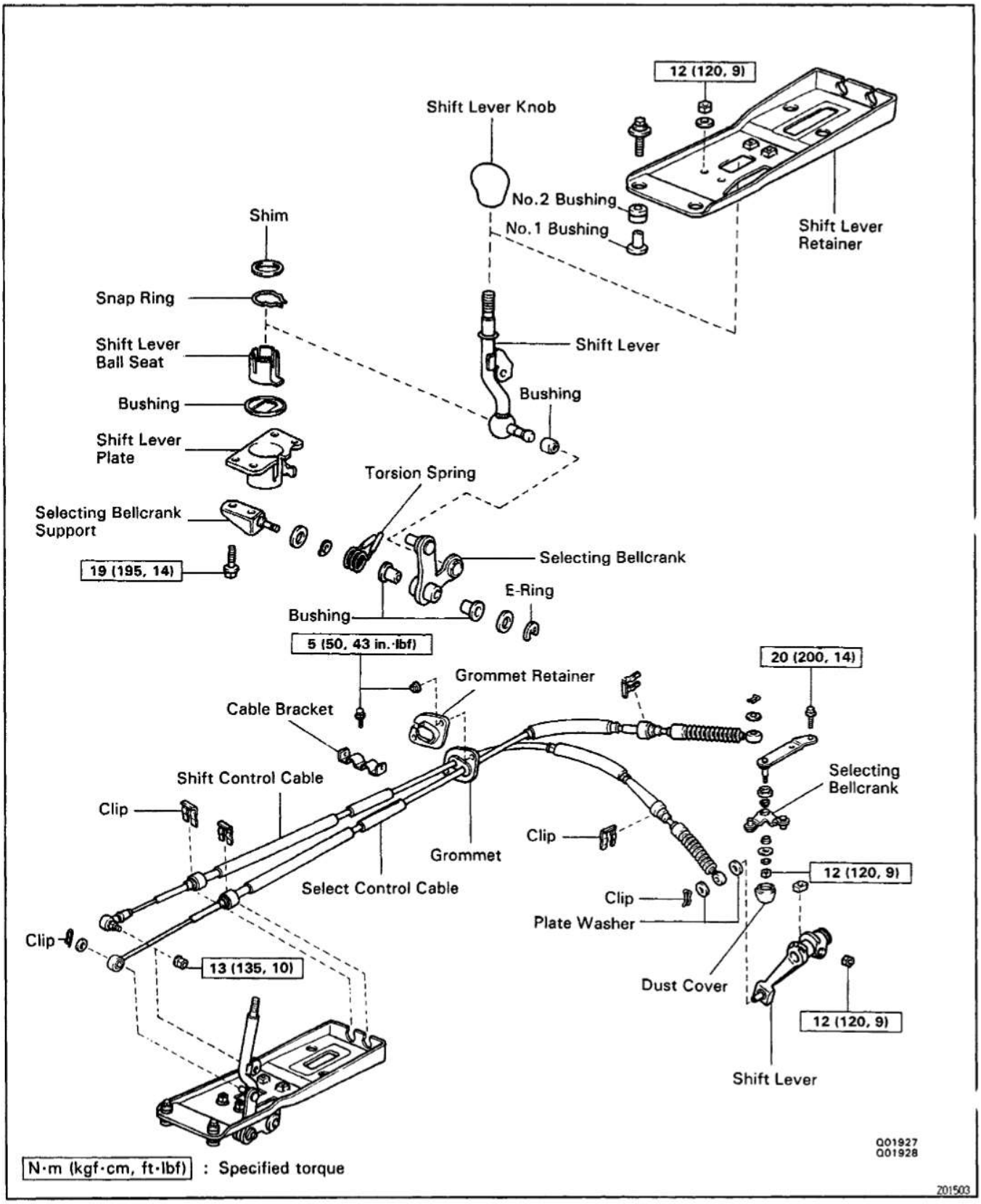
(a) install the spring and interlock plate.



(b) Using a screwdriver and hammer, install the E–ring.

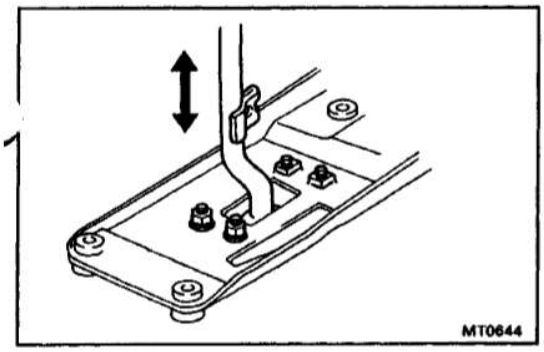
SHIFT LEVER AND CONTROL CABLE

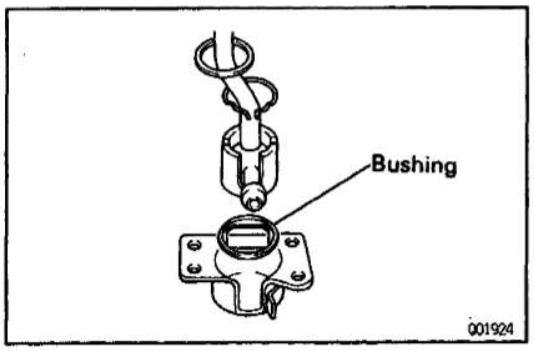
COMPONENTS



MX062-01

INSPECTION OF SHIFT LEVER



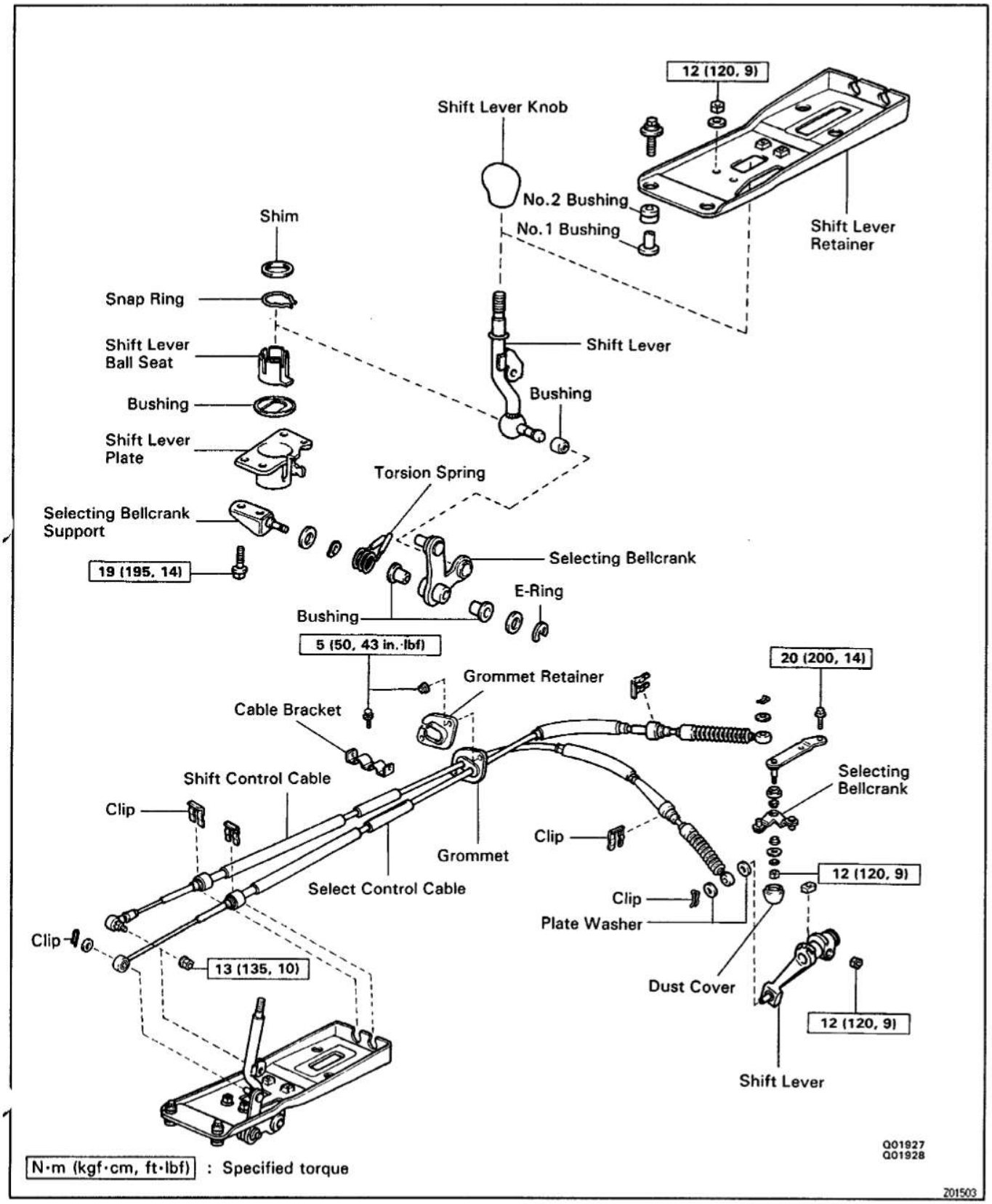


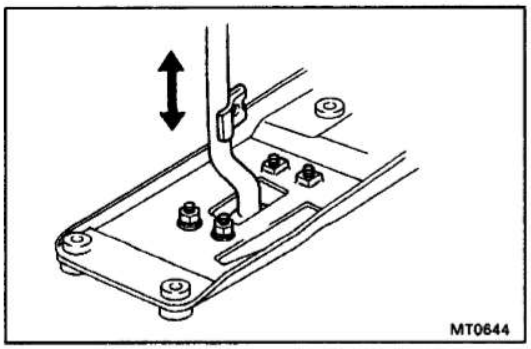
INSPECT SHIFT LEVER PLAY

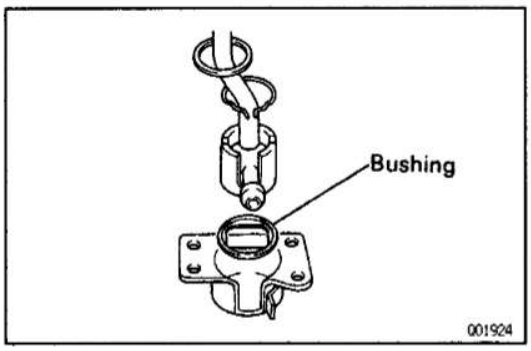
Check that there is no vertical play in the shift lever.
If there is any play, replace bushing.

SHIFT LEVER AND CONTROL CABLE

COMPONENTS







MX03G - 02

INSPECTION OF SHIFT LEVER

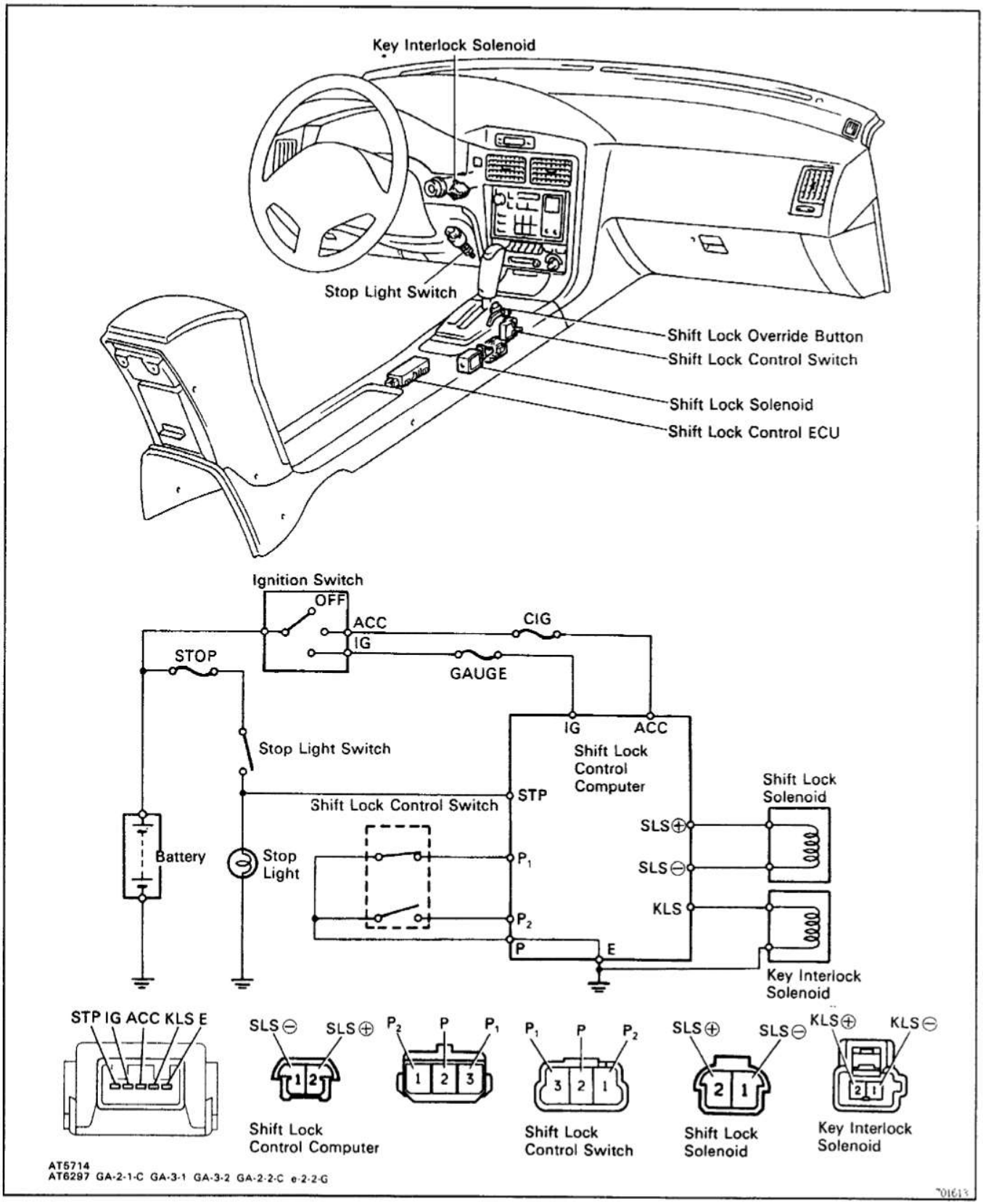
INSPECT SHIFT LEVER PLAY

Check that there is no vertical play in the shift lever.
If there is any play, replace bushing.

SHIFT LOCK SYSTEM

AX07K–01

COMPONENT AND CIRCUIT



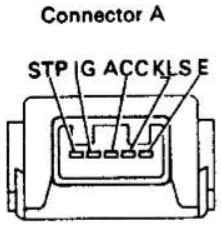
AT5714
AT6297 GA-2-1-C GA-3-1 GA-3-2 GA-2-2-C e-2-2-G

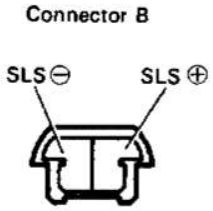
AX07L–01

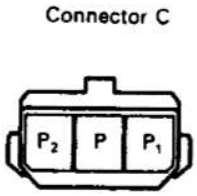
ELECTRIC CONTROL COMPONENTS INSPECTION

1. INSPECT SHIFT LOCK CONTROL ECU

Do not disconnect the ECU connector.
Measure the voltage and continuity between terminals.



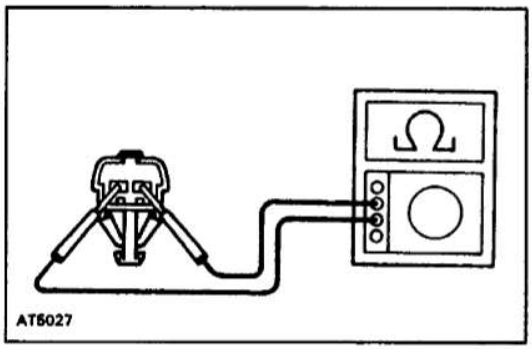




AT6297 GA-2-1-1-C GA-3-1

Connector	Terminal	Measured Item	Measuring Condition	Specified Value
A	ACC – E	Voltage	Ignition switch ACC position	10 – 14 V
	IG – E	Voltage	Ignition switch ON position	10 – 14 V
	KLS – E	Voltage	(1) Ignition switch ACC position and "P" range	0 V
			(2)Ignition switch ACC position and other than "P" range	7.5 – 11.5 V
			(3) (2) and approx–after one second	6 – 9 V
	E – Ground	Continuity	Ail conditions	Continuity
	STP – E	Voltage	Release brake pedal	0 V
			Depress brake pedal	10 – 14V
B	SLS⊖ – E	Continuity	All conditions	Continuity
	SLS⊕ – E	Voltage	(1) Ignition switch ON position and "P" range	0 V
			(2) (1) and depress brake pedal	8.5 – 13.5 V
			(3) (2) and release brake pedal or (2) and shift to range other than "P" range	0 V
C	P_2 – E	Voltage	(1) Ignition switch ACC position and "P" range	0 – 13.5 V
			(2) (1) and push the shift lever knob, or Ignition . switch ACC position and shift to range other than "P" range.	0 V
	P – E	Continuity	All conditions	Continuity
	P_1 – E	Voltage	Ignition switch 4N position, "P" range and brake pedal depressed.	0 V
			Ignition switch ON position brake pedal depressed and shift to range other than "P" range	9 – 13.5 V

V00951



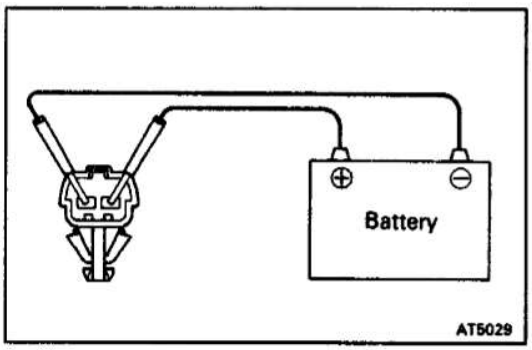
2. INSPECT SHIFT LOCK SOLENOID

(a) Disconnect the solenoid connector.

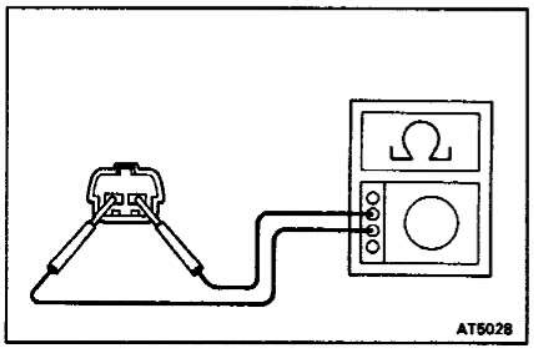
(b) Using an ohmmeter, measure the resistance between terminals.

Standard resistance:

21–27 Ω



(c) Apply battery voltage between terminals. Check that an operation noise can be heard from the solenoid.



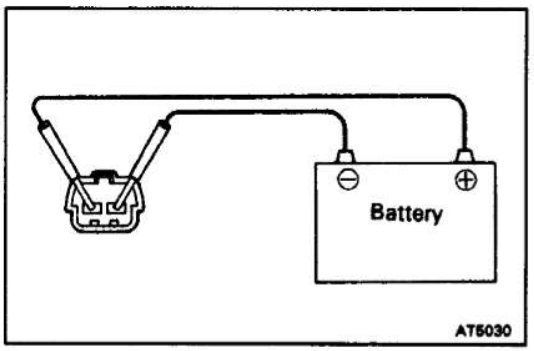
3. INSPECT KEY INTERLOCK SOLENOID

(a) Disconnect the solenoid connector.

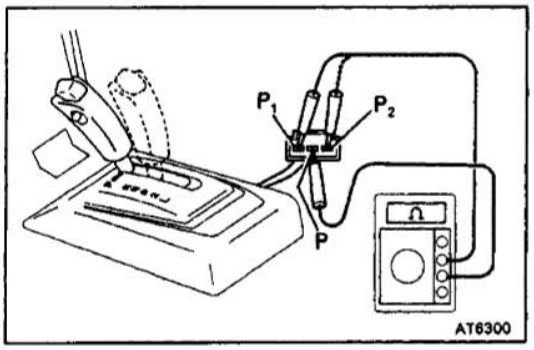
(b) Using an ohmmeter, measure the resistance between terminals.

Standard resistance:

12.5–16.5Ω



(c) Apply the battery voltage between terminals. Check that an operation noise can be heard from the sole–noid.



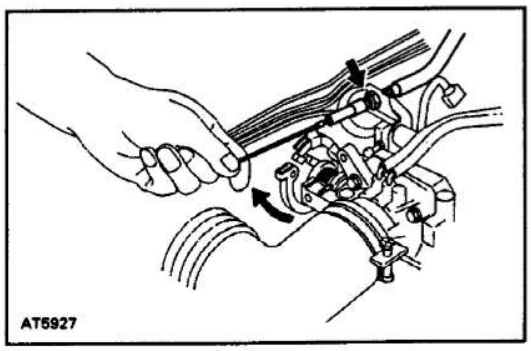
4. INSPECT SHIFT LOCK CONTROL SWITCH

Check whether there is continuity between each terminals.

O–O: Continuity

Shift Position \ Terminal	P	P_1	> N
P range (Release button is not pushed)	O—O		
P Range (Release button is pushed)	O—O		
	O		O
R, N, O, 2, L range	O		O

V00994



THROTTLE CABLE

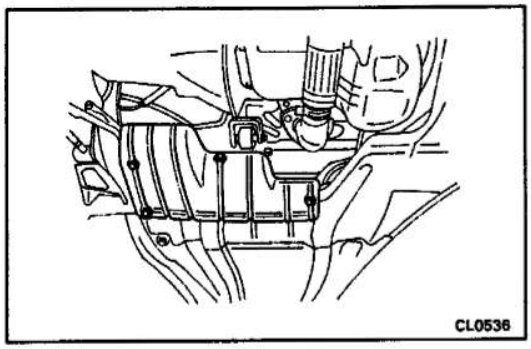
AX076–01

THROTTLE CABLE REMOVAL

1. DISCONNECT THROTTLE CABLE FROM ENGINE

Disconnect the cable from the throttle linkage.

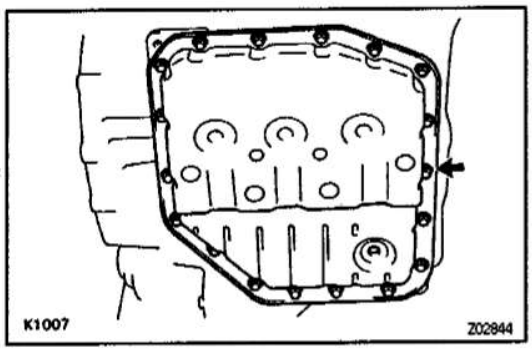
2. DRAIN TRANSAXLE FLUID



3. REMOVE NO.1 ENGINE UNDER COVER

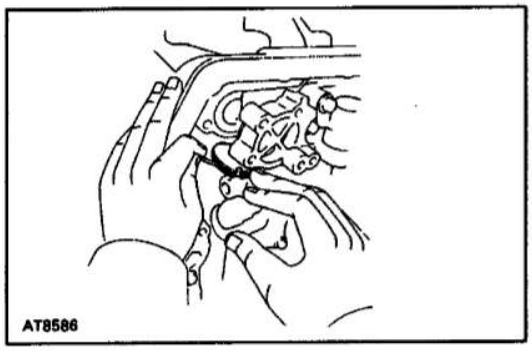
4. REMOVE PARK/NEUTRAL SWITCH

(See page AX–57)



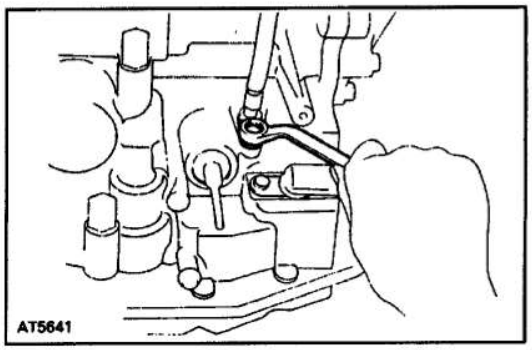
5. REMOVE OIL PAN AND GASKET

NOTICE: Some fluid will remain in the oil pan. Remove oil pan bolts, and carefully remove oil pan assembly. Discard the gasket.



6. DISCONNECT THROTTLE CABLE FROM VALVE BODY

Disconnect the throttle cable from the cam.

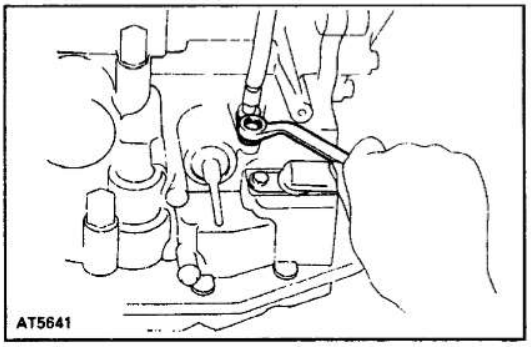


7. REMOVE THROTTLE CABLE

(a) Remove the retaining bolt and plate.

(b) Pull out the cable from the transaxle case.

AX077–01



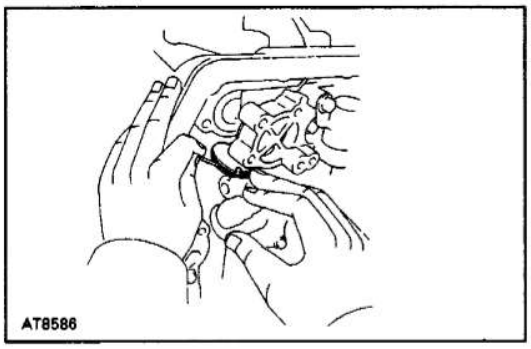
THROTTLE CABLE INSTALLATION

1. INSTALL CABLE INTO TRANSMISSION CASE

(a) Push the cable throttle the hole on the case, being careful not to damage the O–ring. Check for full seating.

NOTICE: In subsequent work, do not roll the case over the cable to avoid breaking the cable fitting.

(b) Install the retaining plate and bolt.



2. CONNECT THROTTLE CABLE TO VALVE BODY

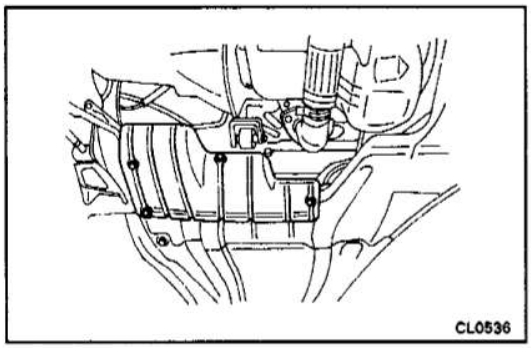
Connect the throttle cable to the cam.

3. INSTALL OIL PAN AND OIL PAN DRAIN PLUG

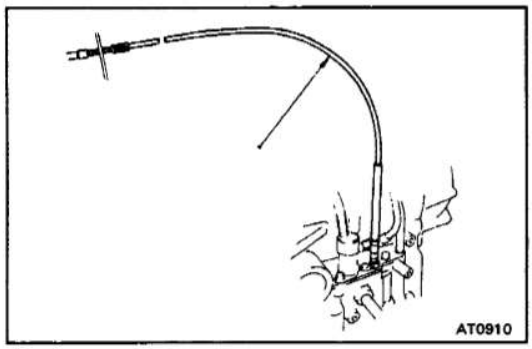
(See page AX–52)

4. INSTALL AND ADJUST PARK/NEUTRAL SWITCH

(See page AX–15)



5. INSTALL NO.1 ENGINE UNDER COVER



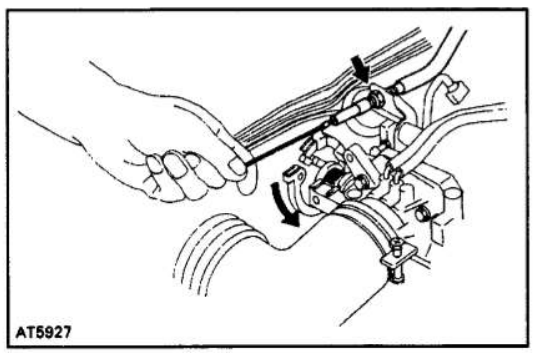
6. IF THROTTLE CABLE IS NEW, STAKE STOPPER OR PAINT MARK ON INNER CABLE

HINT:New cable do not have a cable stopper staked.

(a) Bend the cable so there is a radius of about 200 mm (7.87 in.).

(b) Pull the inner cable lightly until a slight resistance is felt, and hold it.

(c) Stake the stopper, 0.8–1.5 mm (0.031–0.059 in.) from the end of outer cable.



7. CONNECT THROTTLE CABLE TO ENGINE

8. ADJUST THROTTLE CABLE

(See page AX–15)

9. FILL TRANSAXLE WITH ATF

(See page AX–14)

NOTICE: Do not overfill.

Fluid type:

ATF DEXRON®II

10. CHECK FLUID LEVEL

TROUBLESHOOTING

You will find the troubles easier using the table well shown below. In this table, each number shows the priority of causes in troubles. Check each part in order. If necessary, replace these parts.

See Page / Parts Name / Trouble	-	MX2–2	-	MX2–20	MX2–20	MX2–20	MX2–98	MX2–20	MX2–20	MX2–20	MX2–20	MX2–38,44	MX2–38,44			
	Oil (Level low)	Oil (Wrong)	Oil (Level too high)	Gasket (Damaged)	Oil seal (Worn or damaged)	O–Ring (Worn or damaged)	Control cable (Faulty)	Locking ball spring (Damaged)	Shift fork (Worn)	Gear (Worn or damaged)	Bearing (Worn or damaged)	Synchronizer ring (Worn or damaged)	Shifting key spring (Damaged)			
Noise	1	2								3	3					
Oil leakage			1	2	2	3										
Hard to shift or will not shift							1					2	3			
Jumps out of gear								1	2	3	3					

W0310

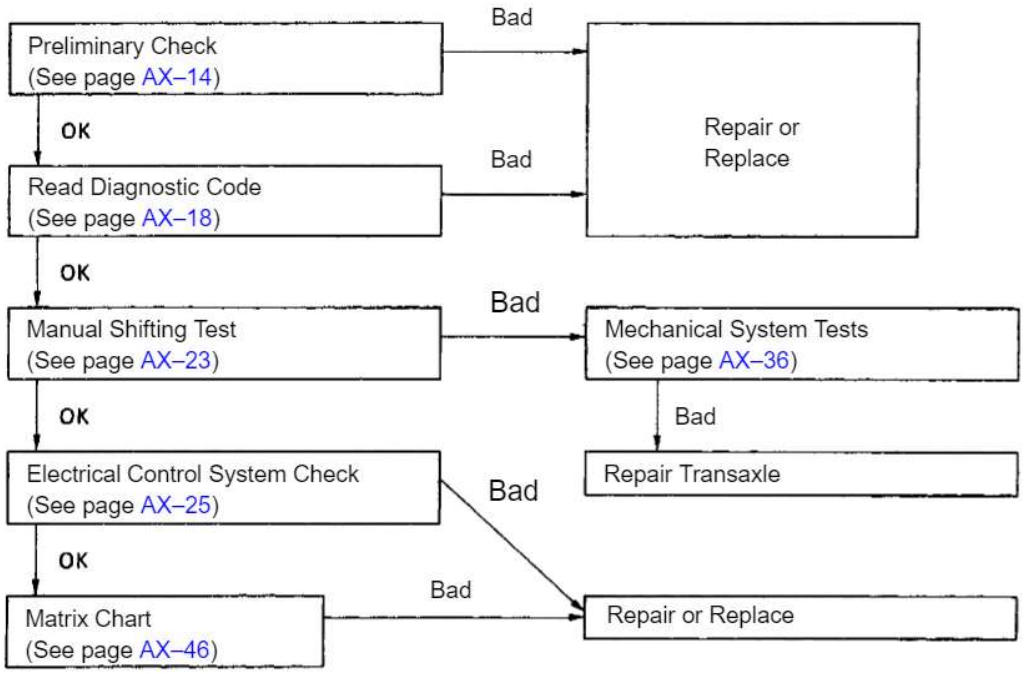
TROUBLESHOOTING

Trouble occurring in the ECT can stern from one of three sources: the engine, the ECT electronic control unit or the transmission itself. Before troubleshooting, determine in which these three sources the problem lies, and begin troubleshooting with the simplest operation, gradually working up in order or difficulty.

BASIC TROUBLESHOOTING

AX06P–01

Before troubleshooting and ECT, first determine whether the problem is electrical or mechanical. To do this, just refer to the basic troubleshooting flow–chart provided below.
If the cause is already known, using the basic troubleshooting chart below along with the general troubleshooting chart on the following page should speed the procedure.



V01003

GENERAL TROUBLESHOOTING

AX060Q - 01

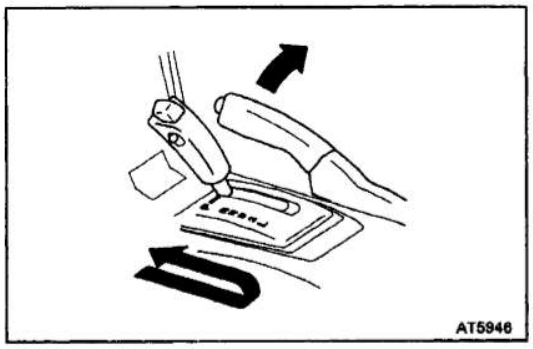
NOTICE: Refer to A241 E Automatic Transaxle Repair Manual (Pub. No. RM291 U) when * mark appears in the column for page numbers.

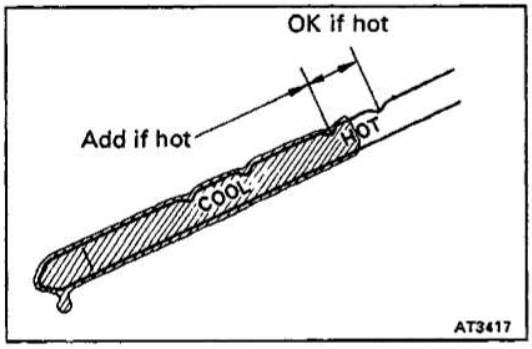
Problem	Possible cause	Remedy	Page
Fluid discolored or smells burnt	Fluid contaminated Torque converter faulty Transaxle faulty	Replace fluid Replace torque converter Disassemble and inspect transaxle	AX–14 AX–66 ★
Vehicle does not move in any forward range or reverse	Shift cable out of adjustment Valve body or primary regulator faulty Parking lock pawl faulty Torque converter faulty Converter drive plate broken Oil strainer intake screen blocked Transaxle faulty	Adjust shift cable Inspect valve body Inspect parking lock pawl Replace torque converter Replace drive plate Clean screen Disassemble and inspect transaxle	AX–15 ★ ★ AX–66 AX–66 ★ ★
Shift lever position incorrect	Shift cable out of adjustment Manual valve and lever faulty Transaxle faulty	Adjust shift cable Inspect valve body Disassemble and inspect transaxle	AX–15 ★ ★
Harsh engagement into any drive range	Throttle cable out of adjustment Valve body or primary regulator faulty Accumulator pistons faulty Transaxle faulty	Adjust throttle cable Inspect valve body inspect accumulator pistons Disassemble and inspect transaxle	AX–15 ★ ★
Delayed 1–2, 2–3 or 3–O/D up–shift, or down–shifts from O/D–3 or 3–2 and shift back to O/D or 3	Electronic control faulty Valve body faulty Solenoid valve faulty Throttle cable out of adjustment	Inspect electronic control Inspect valve body Inspect solenoid valve Adjust throttle cable	AX–25 ★ AX–33 AX–15
Slips on 1–2, 2–3 or 3–O/D up–shift, or slips or shudders on acceleration	Shift cable out of adjustment Throttle cable out of adjustment Valve body faulty Solenoid valve faulty Transaxle faulty	Adjust shift cable Adjust throttle cable Inspect valve body Inspect solenoid valve Disassemble and inspect transaxle	AX–15 AX–15 ★ AX–33 ★
Drag, binding or tie–up on 1–2, 2–3, or 3–O/D up–shift	Shift cable out of adjustment Valve body faulty Transaxle faulty	Adjust shift cable Inspect valve body Disassemble and inspect transaxle	AX–15 ★ ★

NOTICE: Refer to A241 E Automatic Transaxle Repair Manual (Pub. No. RM291 U) when * mark appears in the column for page numbers.

Problem	Possible cause	Remedy	Page
No lock–up in 2nd, 3rd or O/D	Electronic control faulty Valve body faulty Solenoid valve faulty Transaxle faulty	Inspect electronic control Inspect valve body Inspect solenoid valve Disassemble and inspect transaxle	AX–25 ★ AX–33 ★
Harsh down–shift	Throttle cable out of adjustment Throttle cable and cam faulty Accumulator pistons, faulty Valve body faulty Transaxle faulty	Adjust throttle cable Inspect throttle cable and cam Inspect accumulator pistons Inspect valve body Disassemble and inspect transaxle	AX–15 ★ ★ ★ ★
No down–shift when coasting	Valve body faulty Solenoid valve faulty Electronic control faulty	Inspect valve body Inspect solenoid valve Inspect electronic control	★ AX–33 AX–25
Down–shift occurs too quickly or too late while coasting	Throttle cable faulty Valve body faulty Transaxle faulty Solenoid valve faulty Electronic control faulty	Inspect throttle cable Inspect valve body Disassemble and inspect transaxle Inspect solenoid valve Inspect electronic control	AX–15 ★ ★ AX–33 AX–25
No O/D–3, 3–2 or 2–1 kick–down	Solenoid valve faulty Electronic control faulty Valve body faulty Throttle cable out of adjustment	Inspect solenoid valve Inspect electronic control Inspect valve body Adjust throttle cable	AX–33 AX–25 ★ AX–15
No engine braking in 2 or L range	Solenoid valve faulty Electronic control faulty Valve body faulty Transaxle faulty	Inspect solenoid valve Inspect electronic control Inspect valve body Disassemble and inspect transaxle	AX–33 AX–25 ★ ★
Vehicle does not hold in P range	Shift cable out of adjustment Parking lock pawl and spring faulty	Adjust shift cable Inspect cam and spring	AX–15 ★

W00987


AT5946



AT3417

AX06R–01

PRELIMINARY CHECK

1. CHECK TRANSAXLE FLUID LEVEL

HINT: The vehicle must have been driven so that the engine and transaxle. are at normal operating tem–perature. (fluid temperature: 70–80°C or 158–176°F)

(a) Park the vehicle on a level surface, set the parking brake.

(b) With the engine idling and the brake pedal depressed, shift the shift lever into each gear from the P range to L range smoothly and return to P range.
HINT: Depress the brake pedal.

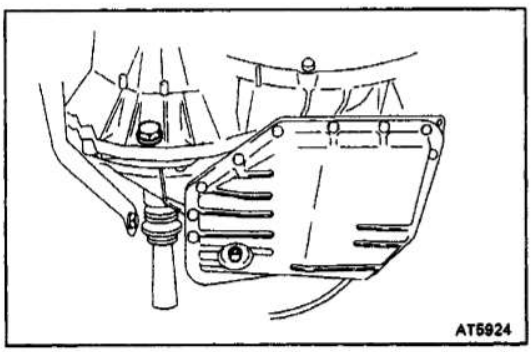
(c) Pull out the transaxle dipstick and wipe it clean.

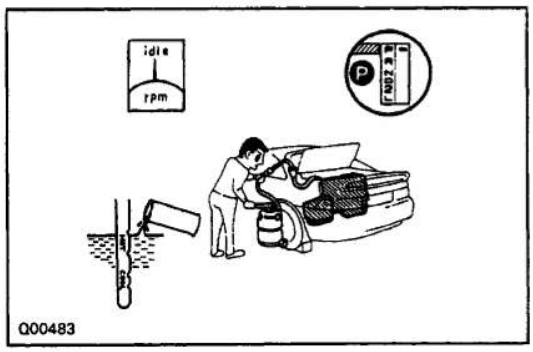
(d) Push it back fully into the tube.

(e) Pull it out and check that the fluid level is in the HOT range.
If the level is at the low side of the hot range, add fluid.
Fluid type:
ATF DEXRON®II
NOTICE: Do not overfill.

2. CHECK FLUID CONDITION

If the fluid smells burnt or is black, replace it.


AT5924



Q00483

3. REPLACE ATF

NOTICE: Do not overfill.

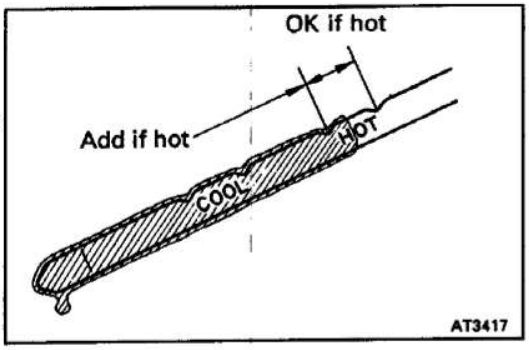
(a) Remove the drain plug, gasket and drain the fluid.

(b) Install a new gasket and the drain plug securely.

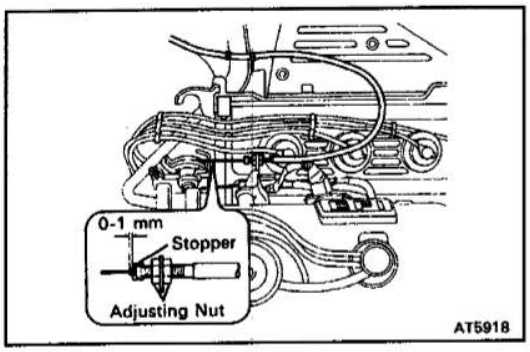
(c) Add new fluid through the filler tube.
Fluid:
ATF DEXRON®II
Capacity:
8.0 liters (8.5 US qts, 7.0 Imp.qts)
Drain and refill:
3.3 liters (3.5 US qts, 2.9 Imp.qts)

(d) Start the engine and shift the selector into all posi–tions from P through L and then shift into P.

(e) With the engine idling, check the fluid level. Add fluid up to the COOL level on the dipstick.

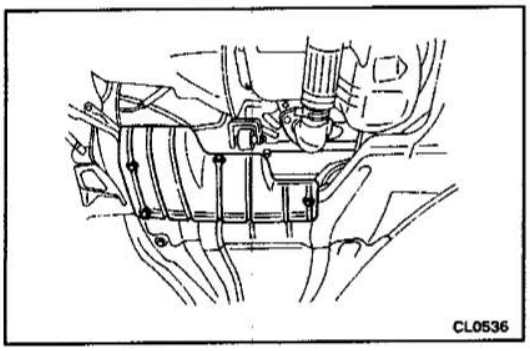


(f) Check the fluid level with the normal fluid temperature (158–176°F or 70–80°C) and add as necessary.
NOTICE: Do not overfill.



4. INSPECT AND ADJUST THROTTLE CABLE

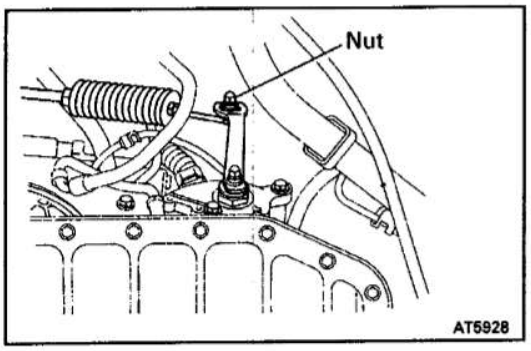
(a) Check that the throttle valve is fully closed.
(b) Check that the inner cable is not slack.
(c) Measure the distance between the outer cable end and stopper on the cable.
Standard boot and cable stopper distance:
0–1 mm (0–0.04 in.)
If the distance is not standard, adjust the cable by the adjusting nuts.



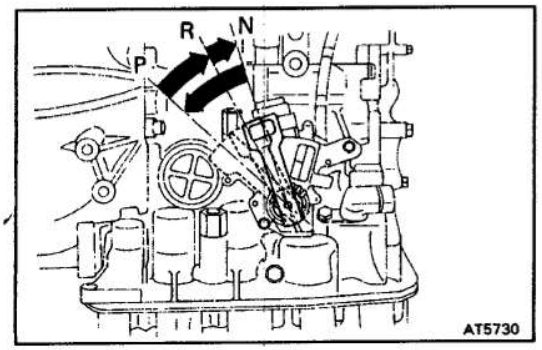
5. INSPECT AND ADJUST SHIFT CABLE

When shifting the shift lever from the N position to other positions, check that the lever can be shifted smoothly and accurately to each position and that the position indicator correctly indicates the position.
If the indicator is not aligned with the correct position, carry out the following adjustment procedure.

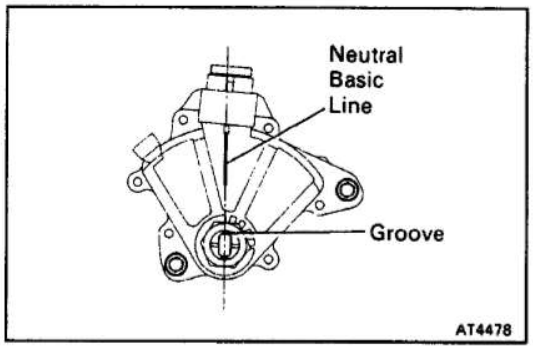
(a) Remove the No.1 engine under cover.



(b) Loosen the swivel nut on manual shift lever.



(c) Push the manual shift lever fully toward–the right side of the vehicle.
(d) Return the lever two notches to NEUTRAL position.
(e) Set the shift lever to N.
(f) While holding the lever lightly toward the R range side, tighten the swivel nut.
(g) Install the No.1 engine under cover.



6. ADJUST PARK/NEUTRAL SWITCH

If the engine will start with the shift selector in any range other than N or P range, adjustment is required.

(a) Loosen the park/neutral switch bolts and set the shift selector to the N range.

(b) Align the groove and neutral basic line.

(c) Hold in position and tighten the bolts.

Torque:

5.4 N–m (55 kgf–cm, 48 in.–M)

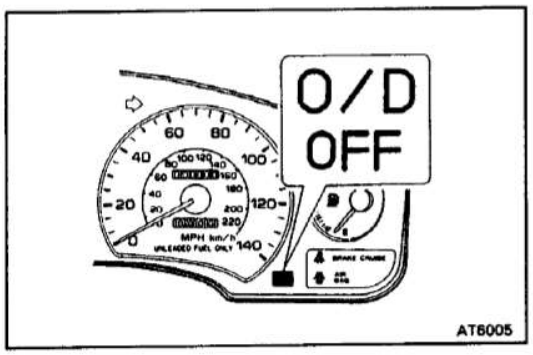
7. INSPECT IDLE SPEED (N RANGE)

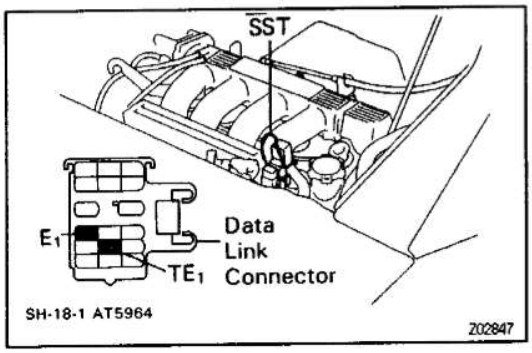
Idle speed:

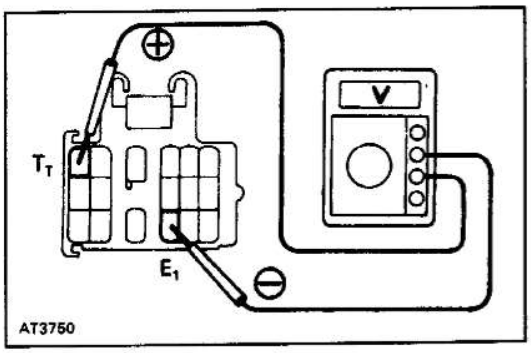
800 rpm

AX065-01

DIAGNOSIS SYSTEM







DESCRIPTION

1. A self–diagnosis function is built into the electrical control system. Warning is indicated by the overdrive OFF indicator light.
   HINT: Warning and diagnostic codes can be read only when the overdrive switch is ON. If OFF, the overdrive OFF light is lit continuously and will not blink.

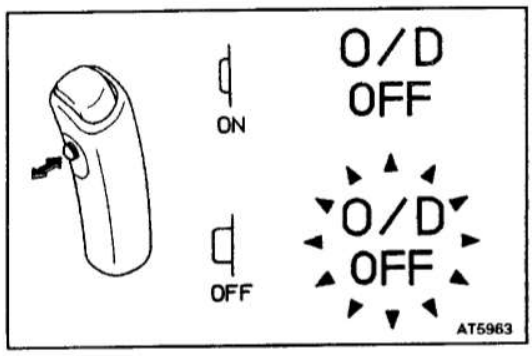
(a) If a malfunction occurs within the speed sensors (No. 1 or 2) or solenoids (No. 1 or 2), the overdrive OFF light will blink to warn the driver.
However, there will be no warning of a malfunction with lock–up solenoid.

(b) The diagnostic code can be read by the number of blinks of the overdrive OFF indicator light when ter–minals TE, and E, are connected. (See page AX–25)

(c) The throttle position sensor or brake signal are not indicated, but inspection can be made by checking the voltage at terminal TT of the data link connector.

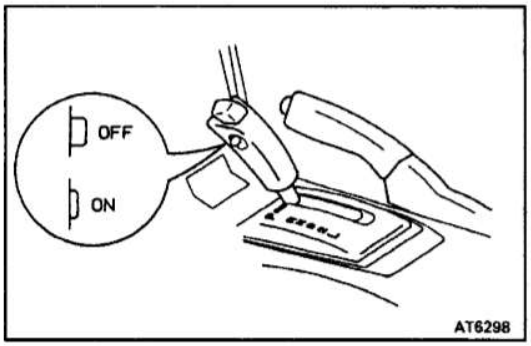
(d) The signals to each gear can be checked by measuring the voltage at terminal TT of the data link connector while driving.

2. The diagnostic code (trouble code) is retained in memory by the PCMT and due to back–up voltage, is not canceled out when the engine is turned off. Con–sequently, after repair, it is necessary to turn the ignition switch off and remove the EFI fuse (1 5A) or disconnect the PCMT connector to cancel out the diagnostic (trouble) code. (See page AX–19)
   HINT:
   - Low battery voltage will cause faulty operation of the diagnosis system. Therefore, always check the battery first.
   - Use a voltmeter and ohmmeter that have an im–pedance of at least 10 kΩ/V.



CHECK “O/D OFF” INDICATOR LIGHT

1. Turn the ignition switch ON.
2. The “O/D OFF” light will come on when the O/D switch is placed at OFF.
3. When the O/D switch is set to ON, the “O/D OFF” light should go out.
   If the “O/D OFF” light flashes when the O/D switch is set to ON, the electronic control system is faulty.

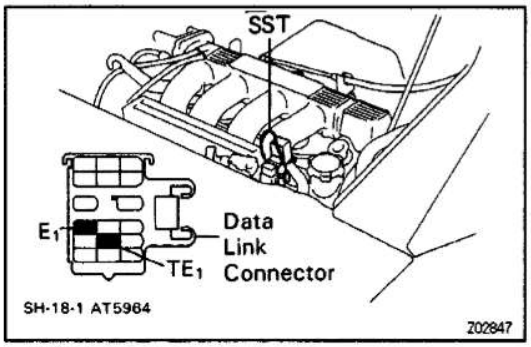


READ DIAGNOSTIC CODE

1. TURN IGNITION SWITCH AND O/D SWITCH TO ON

Do not start the engine.

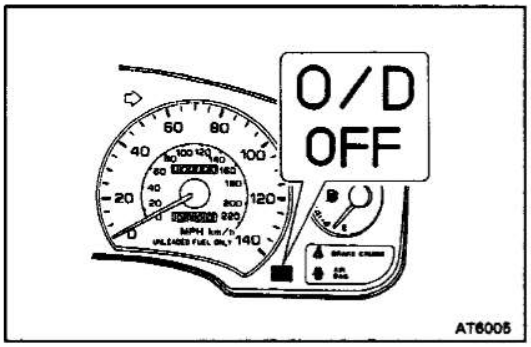
HINT: Warning and diagnostic codes can be read only when the overdrive switch is ON. If OFF, the overdrive OFF light will light continuously and will not blink.



2. CONNECT TE, AND E1 TERMINALS OF DATA LINK CONNECTOR

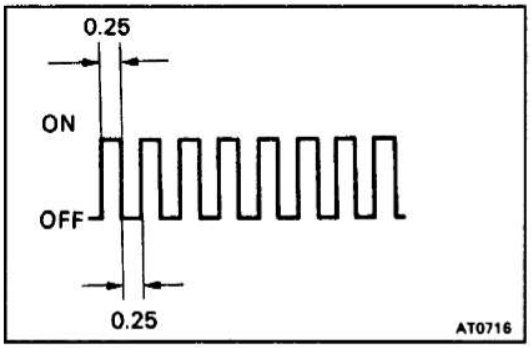
Using SST, connect terminals TE, and E1 of the datalink connector.

SST 09843–18020



3. READ DIAGNOSTIC CODE

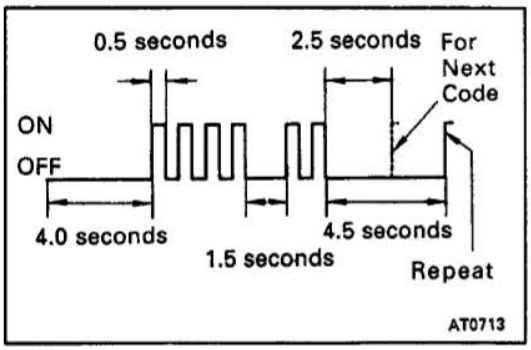
Read the diagnostic code as indicated by the number of times the O/D OFF light flashes.



(Diagnostic Code Indication)

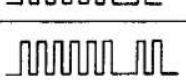
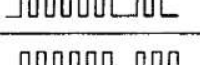
- If the system is operating normally, the light will flash 2 times par second.
- In the event of a malfunction, the light will flash 1 time par second. The number of blinks will equal the first number and, after 1.5 seconds pause, the second number of the two digit diagnostic code. If there are two or more codes, there will be a 2.5 seconds pause between each.

HINT: In the event of several trouble codes occurring simultaneously, indication will began from the smaller value and continue to the larger.



4. REMOVE SST

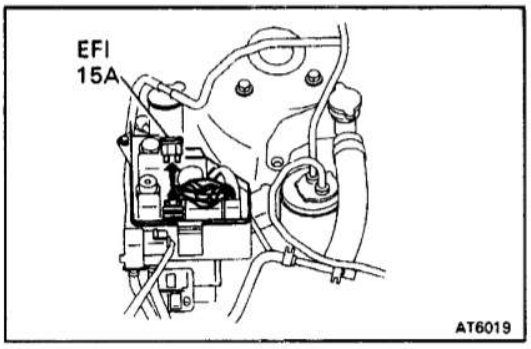
DIAGNOSTIC CODES

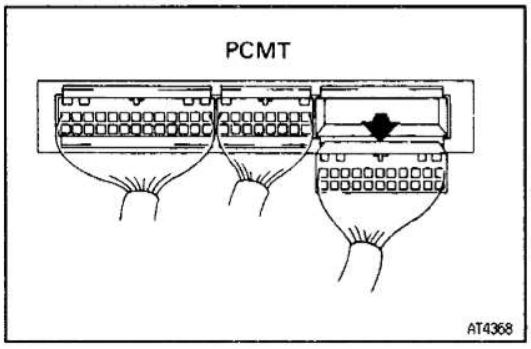
Code No.	Light Pattern	Diagnosis System
–		Normal
42		Defective No. 1 speed sensor (in combination meter)– severed wire harness or short circuit
61		Defective No. 2 speed sensor (in ATM)– severed wire harness or short circuit
62		Severed No. 1 solenoid or short circuit– severed wire harness or short circuit
63		Severed No.2 solenoid or short circuit– severed wire harness or short circuit
64		Severed lock–up solenoid or short circuit– severed wire harness or short circuit

AT2020

V00775

HINT: If codes 62, 63, or 64 appear, there is an electrical malfunction in the solenoid.
Causes due to mechanical failure, such as a stuck valve, will not appear.





CANCEL OUT DIAGNOSTIC CODE

1. After repair of the trouble area, the diagnostic code retained in memory by the PCMT must be canceled by removing the EFI fuse (1 5A) for 10 seconds or more, depending on ambient temperature (the lower the temperature, the longer the fuse must be left out) with the ignition switch OFF.
   HINT:
   Cancellation can be also done by removing the battery negative (–) terminal, but in this case other memory systems will be also canceled out.
   The diagnostic code can be also canceled out by disconnecting the PCMT connector.
   If the diagnostic code is not canceled out, it will be retained by the PCMT and appear along with a new code in event of future trouble.
2. After cancellation, perform a road test to confirm that a “normal code” is now read on the O/D OFF light.

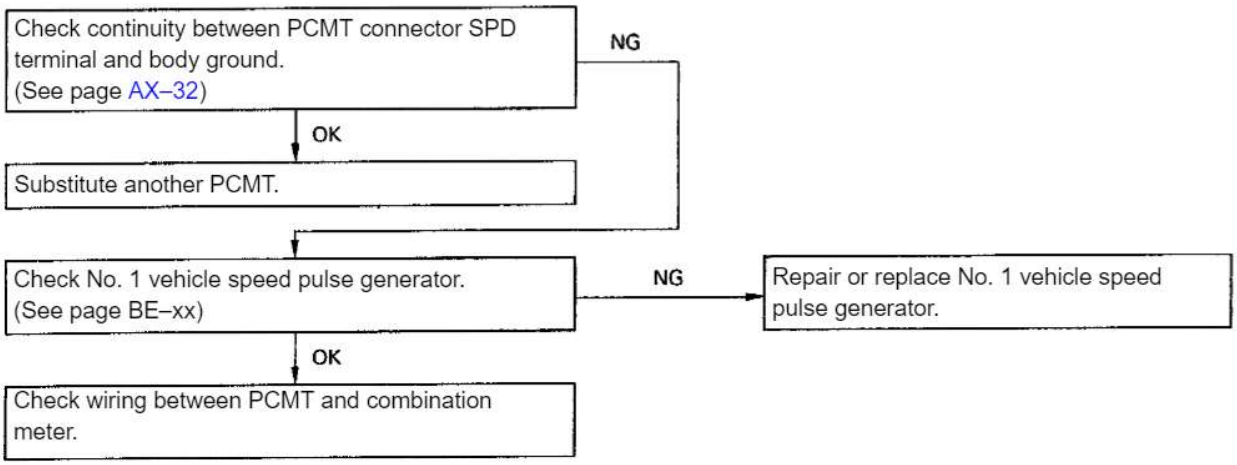
AX06T–01

TROUBLESHOOTING FLOW–CHART

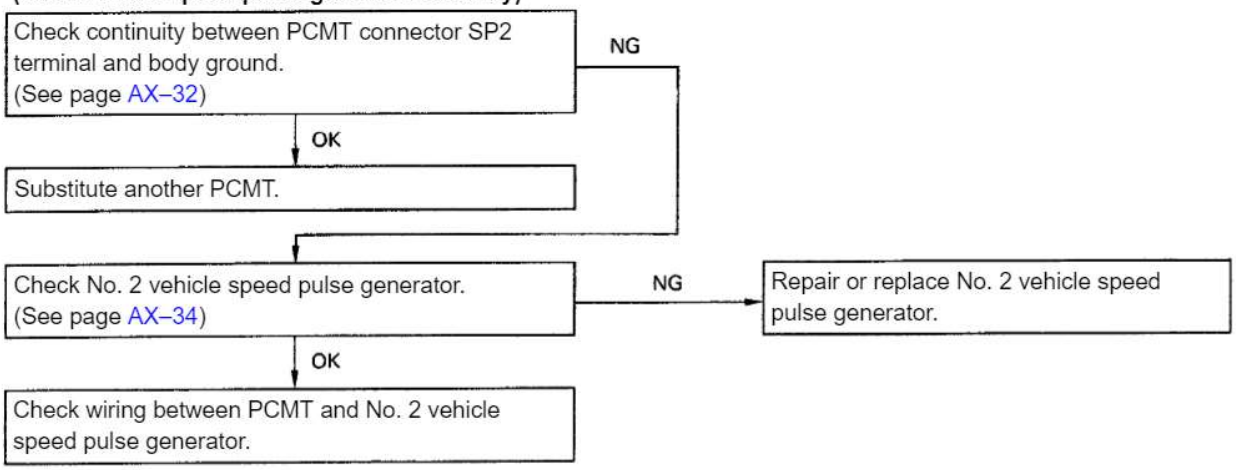
HINT:

- If diagnostic code Nos.42, 61, 62 or 63 are output, the overdrive OFF indicator light will begin to blink immediately to warn the driver. However, an impact or shock may cause the blinking to stop; but the code will still be retained in the PCMT memory until canceled out.
- There is no warning for diagnostic code No.64.
- In the event of a simultaneous malfunction of both No.1 and No.2 speed sensors, no diagnostic code will appear and the fail–safe system will not function. However, when driving in the D range, the transmission will not up–shift from first gear, regardless of the vehicle speed.

Diagnostic code 42
(No. 1 vehicle speed pulse generator circuitry)

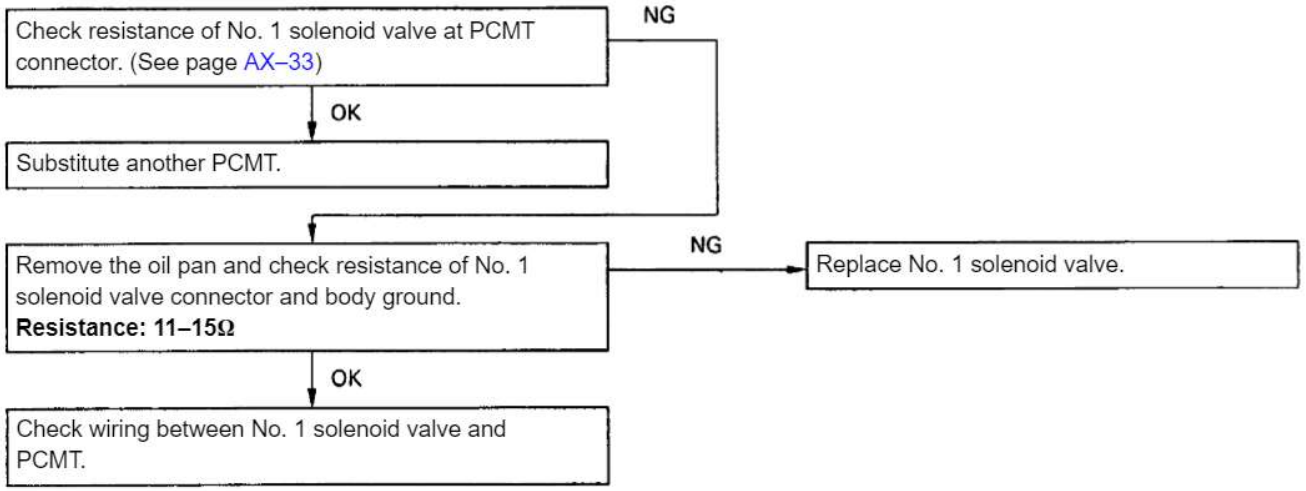


Diagnostic code 61
(No. 2 vehicle speed pulse generator circuitry)

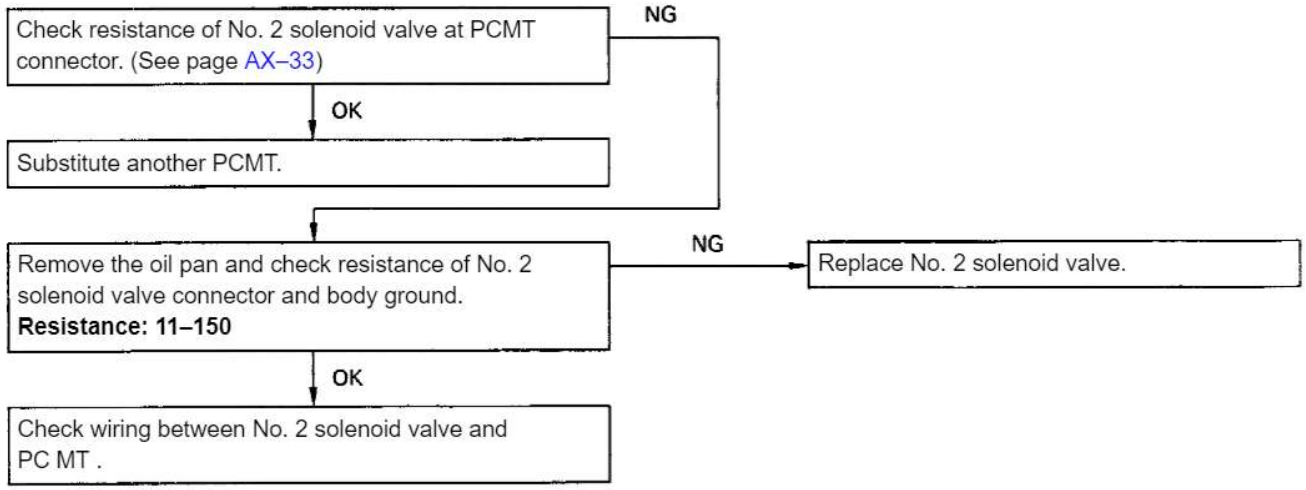


V01004

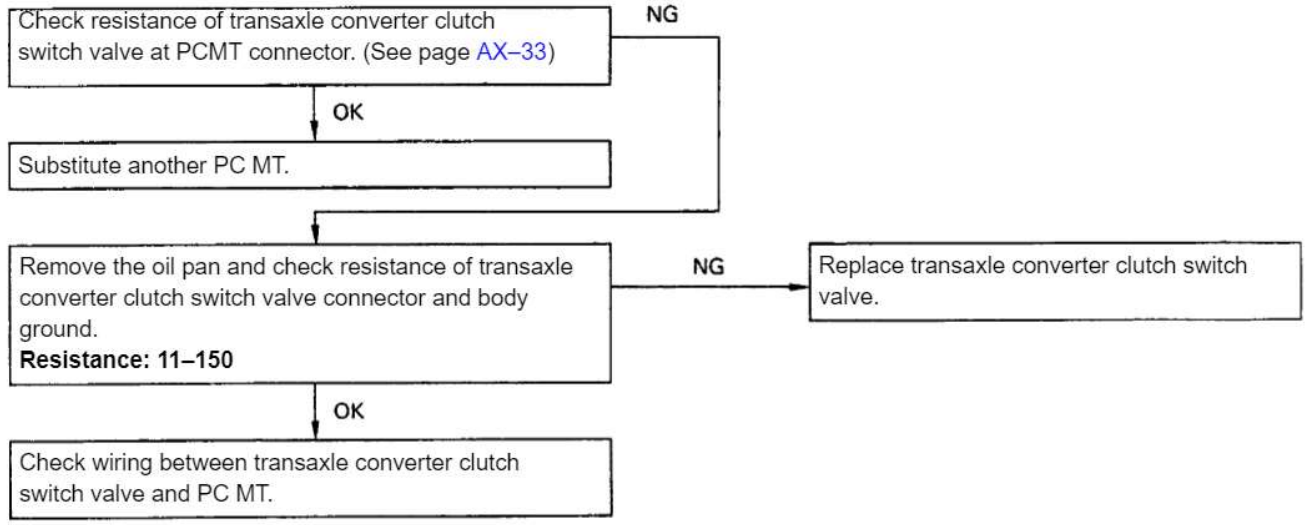
Diagnostic code 62 (No. 1 solenoid circuitry)



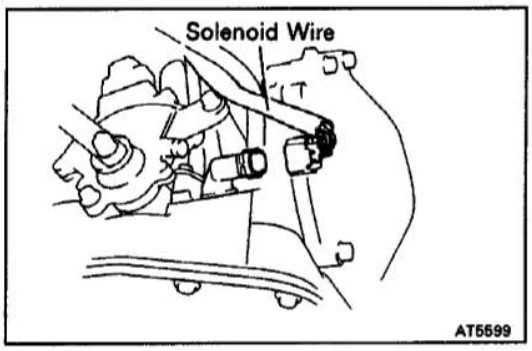
Diagnostic code 63 (No. 2 solenoid valve circuitry)



Diagnostic code 64
(Transaxle converter clutch switch valve circuitry)



V01005



AX06U – 01

MANUAL SHIFTING TEST

HINT: With this test, it can be determined whether the trouble lies within the electrical circuit or is a me–chanical problem in the transaxle.

1. DISCONNECT SOLENOID WIRE

2. INSPECT MANUAL DRIVING OPERATION

Check that the shift and gear positions correspond with the table on next page.

HINT: If the L, 2 and D range gear positions are difficult to distinguish, perform the following road test.

- While driving, shift through the L, 2 and D ranges.
  Check that the gear change corresponds to the shift position.
- If any abnormality is found in the above test, the problem lies in transaxle

3. CONNECT SOLENOID WIRE

4. CANCEL OUT DIAGNOSTIC CODE

(See page AX–20)

REFERENCE: Possible gear positions in accordance with solenoid operating conditions.

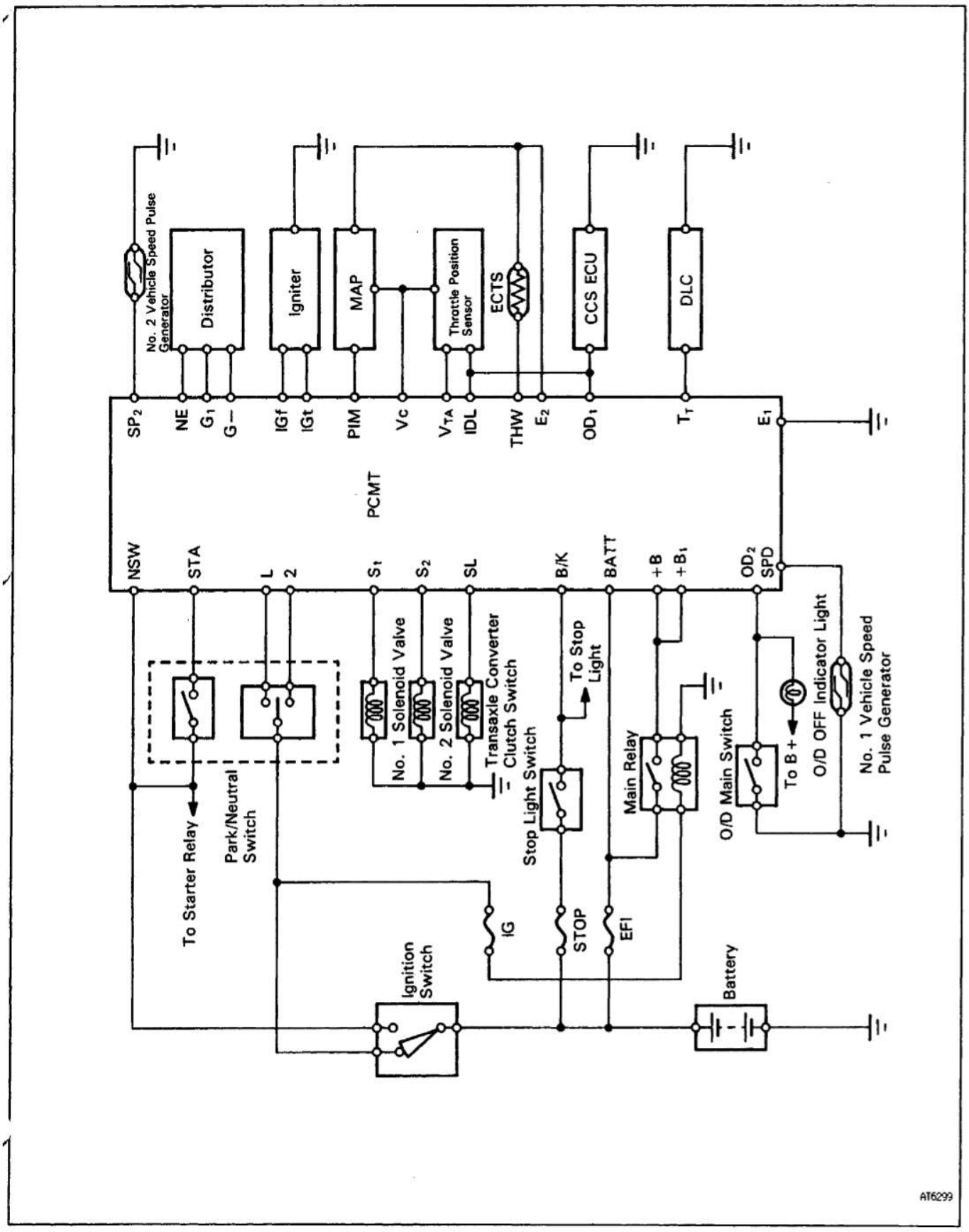
Range	NORMAL			No. 1 SOLENOID MALFUNCTIONING			No. 2 SOLENOID MALFUNCTIONING			BOTH SOLENOIDS MALFUNCTIONING		
	Solenoid Valve		Gear Position	Solenoid Valve		Gear Position	Solenoid Valve		Gear Position	Solenoid Valve		Gear Position
	No. 1	No. 2		No. 1	No. 2		No. 1	No. 2		No. 1	No. 2	
D range	**ON**	OFF	**1st**	**X**	**ON**	3rd	**ON**	**X**	**1st**	**X**	**X**	O/D
	ON	**ON**	2nd	**X**	**ON**	3rd	OFF	**X**	O/D	**X**	**X**	O/D
	OFF	**ON**	3rd	**X**	**ON**	3rd	OFF	**X**	O/D	**X**	**X**	O/D
	OFF	OFF	O/D	**X**	OFF	O/D	OFF	**X**	O/D	**X**	**X**	O/D
2 range	**ON**	OFF	**1st**	**X**	**ON**	3rd	**ON**	**X**	**1st**	**X**	**X**	3rd
	ON	**ON**	2nd	**X**	**ON**	3rd	OFF	**X**	3rd	**X**	**X**	3rd
	OFF	**ON**	3rd	**X**	**ON**	3rd	OFF	**X**	3rd	**X**	**X**	3rd
L range	**ON**	OFF	**1st**	**X**	OFF	**1st**	**ON**	**X**	**1st**	**X**	**X**	**1st**
	ON	**ON**	2nd	**X**	**ON**	2nd	**ON**	**X**	**1st**	**X**	**X**	**1st**

X: Malfunctions

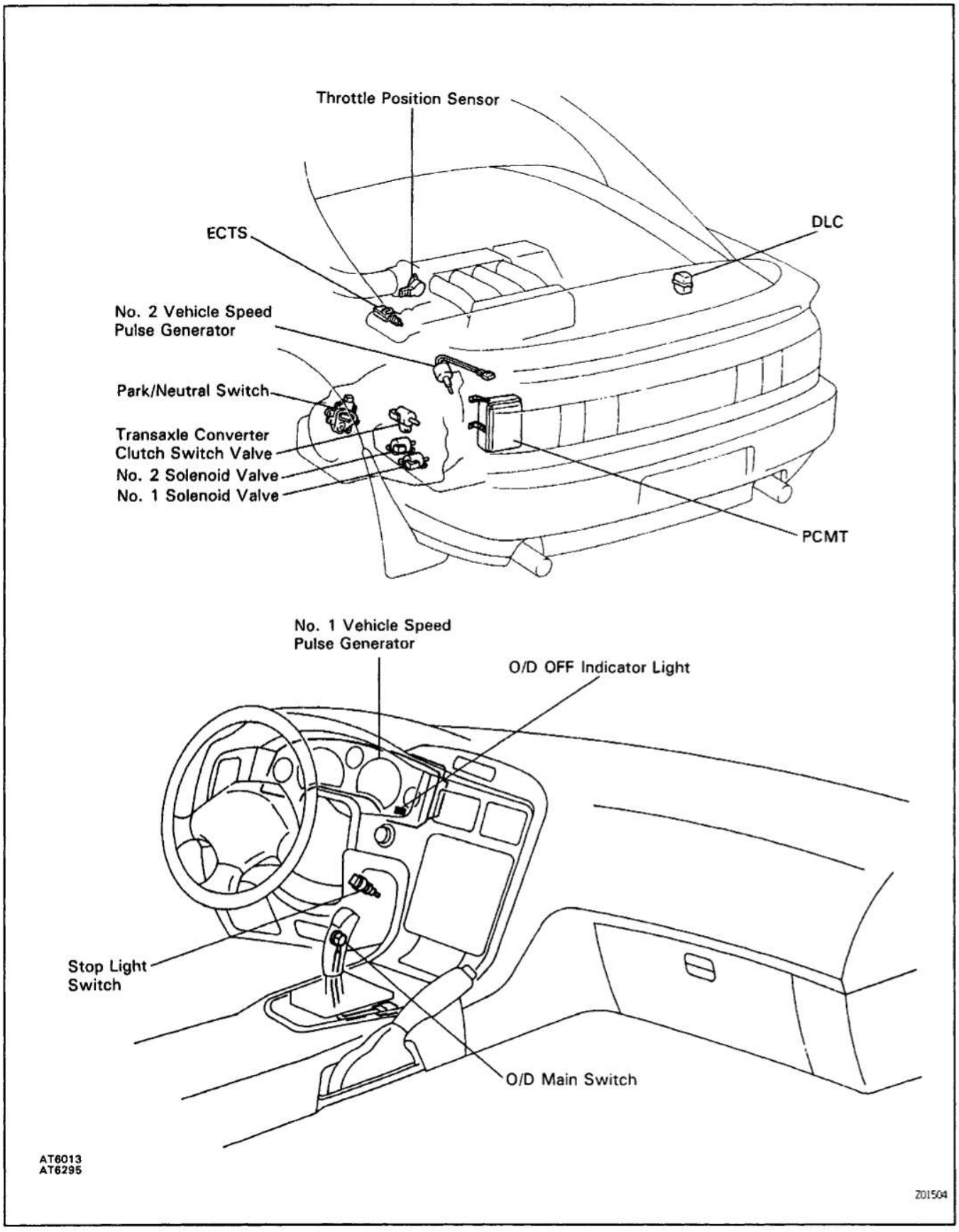
V00957

AX06V–01

ELECTRONIC CONTROL CIRCUIT

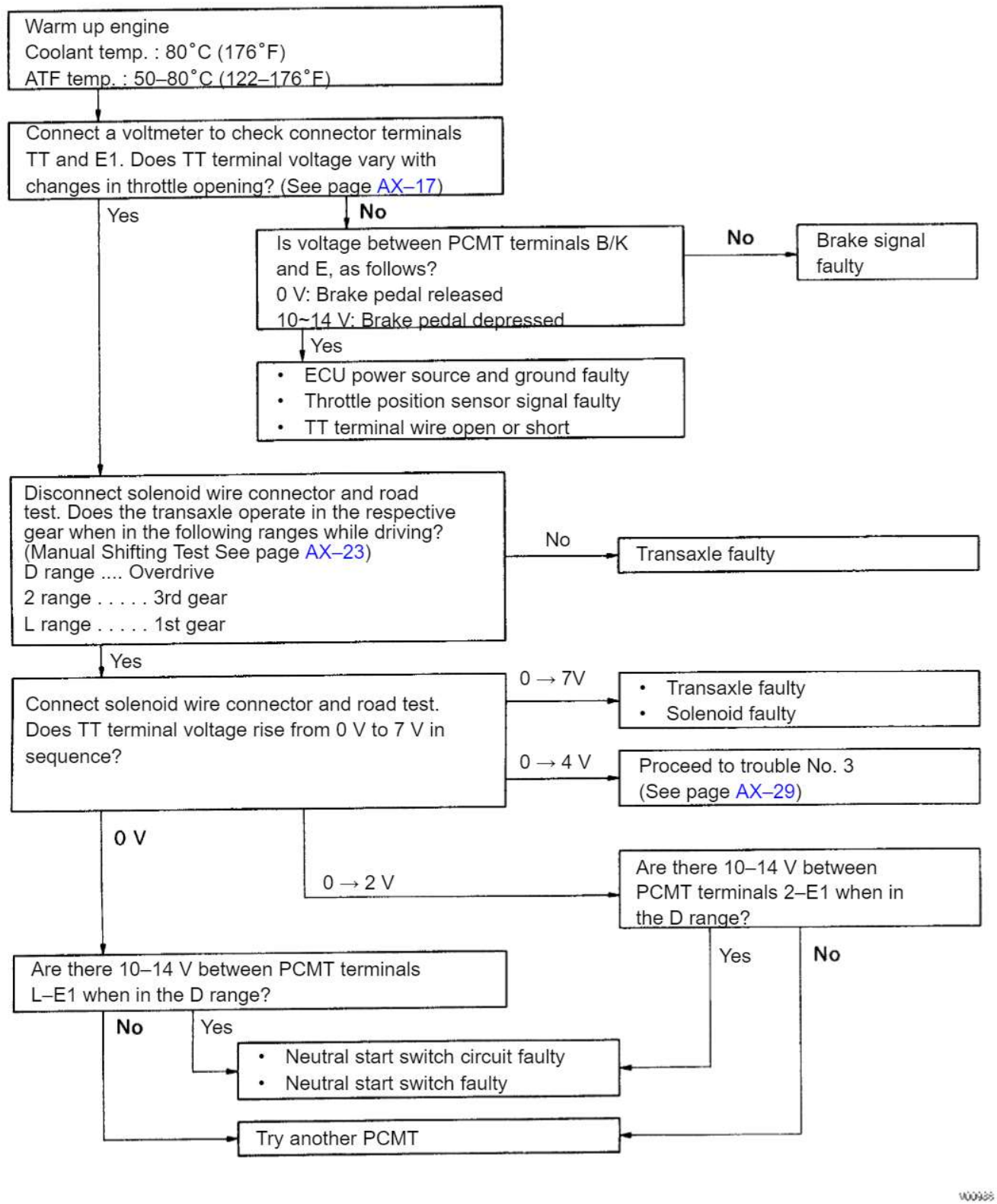


ELECTRONIC CONTROL COMPONENTS

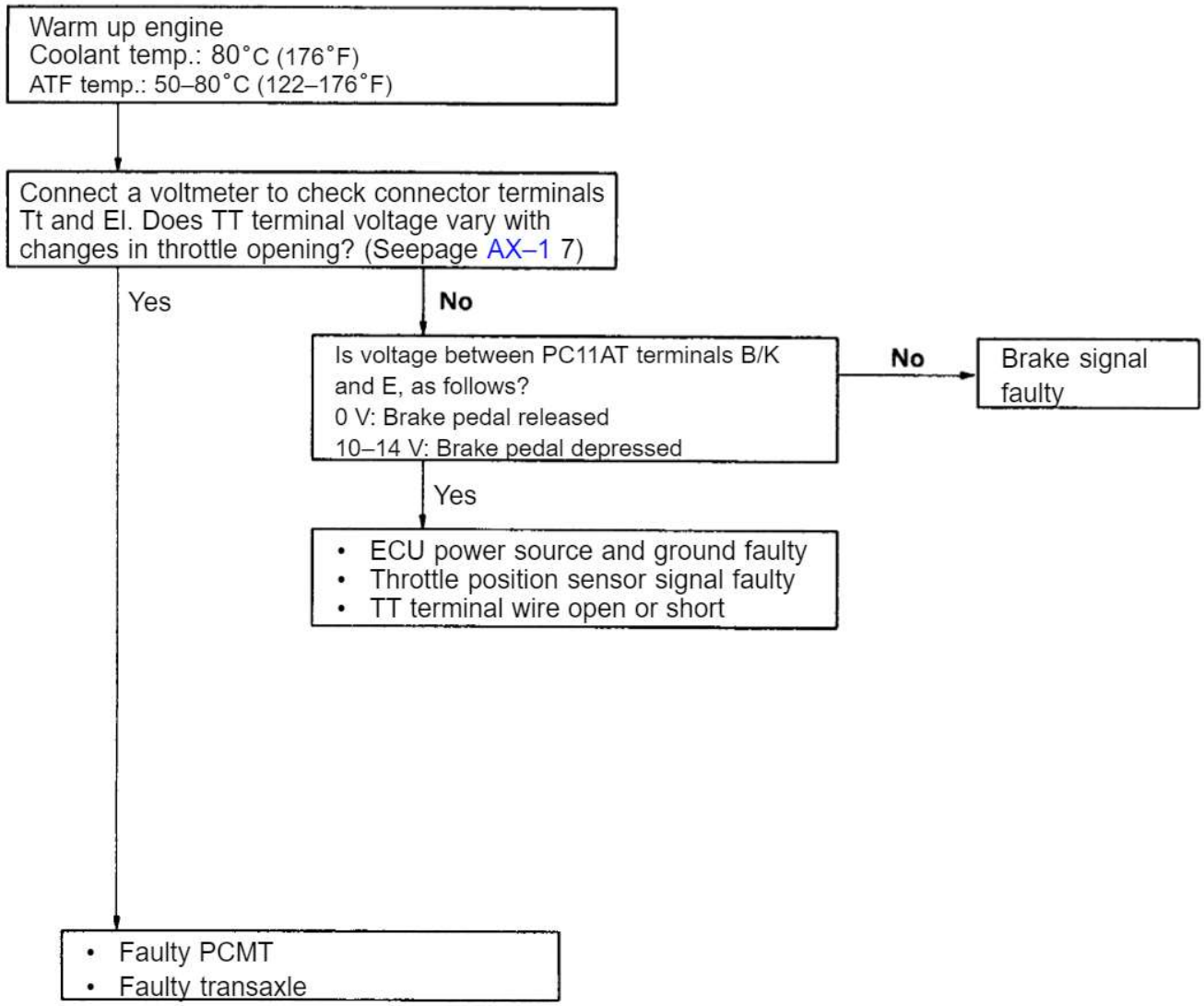


TROUBLESHOOTING FLOW–CHART

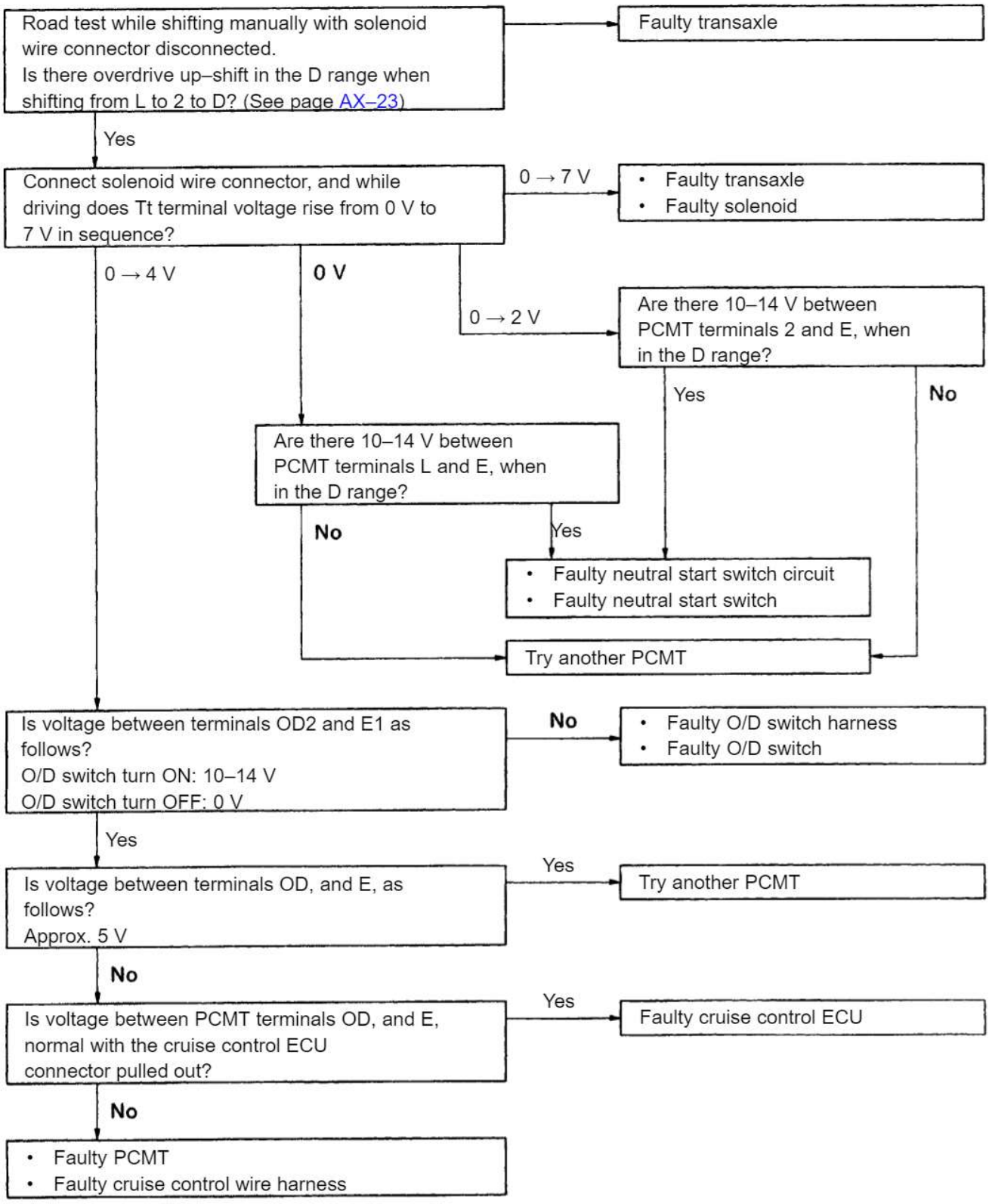
Trouble No. 1 **No shifting**



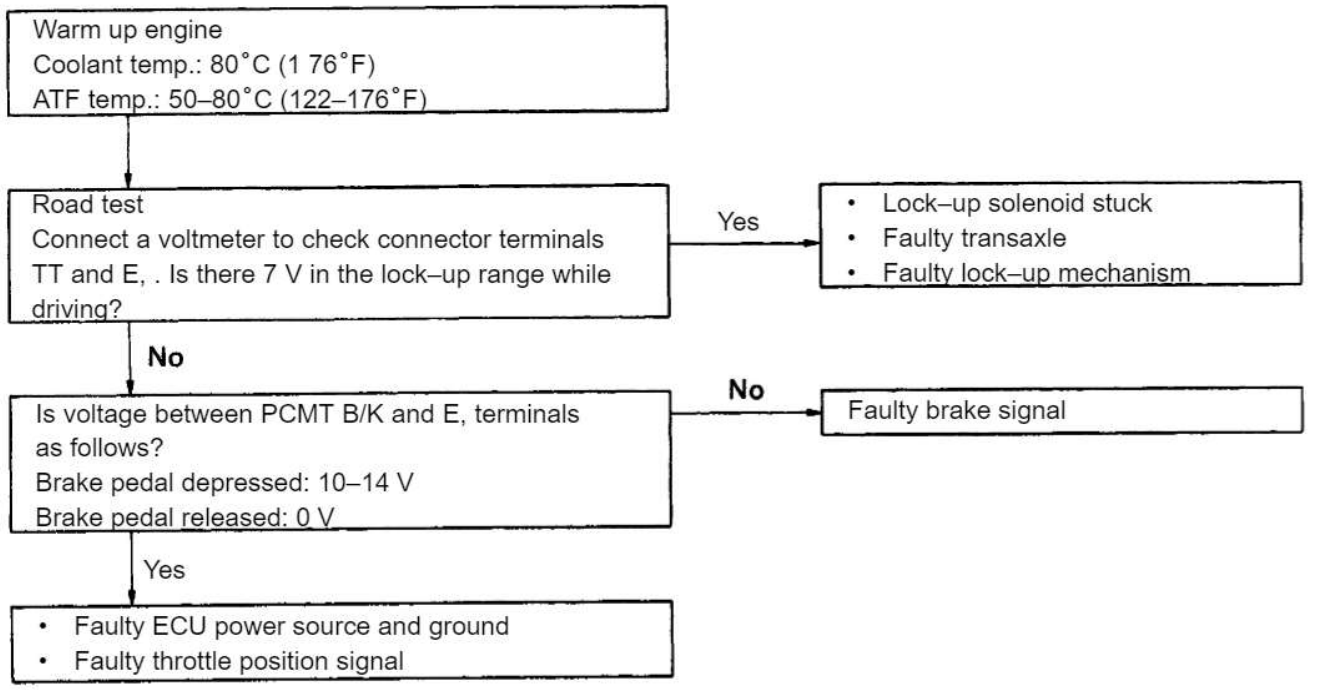
Trouble No. 2 Shift point too high or too low

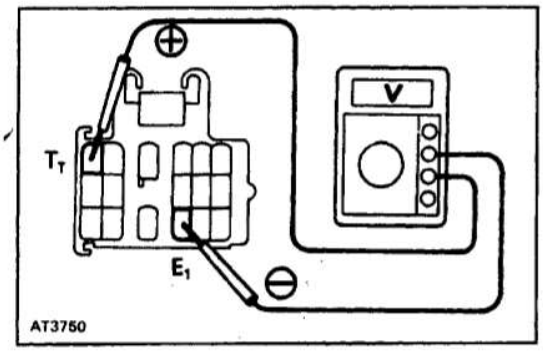


Trouble No. 3 **No up–shift to overdrive (After warm–up)**



Trouble No. 4 No lock–up (After warm–up)





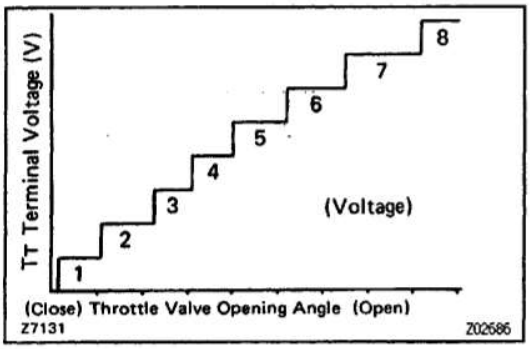
T_T TERMINAL VOLTAGE INSPECTION

AX06W–01

1. INSPECT THROTTLE POSITION SENSOR SIGNAL

(a) Turn the ignition switch to ON. Do not start the engine.

(b) Connect a voltmeter to check connector terminals TT and E1.

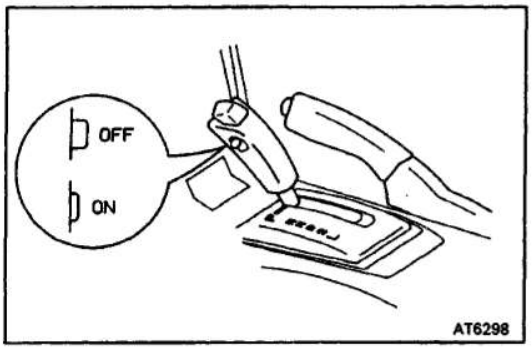


(c) While slowly depressing the accelerator pedal, check that TT terminal voltage rises in sequence.
If the voltage does not change in proportion to the throttle opening angle, there is a malfunction in the throttle position sensor or circuit.

2. INSPECT BRAKE SIGNAL

(a) Depress the accelerator pedal until the TT terminal indicates 8 V.

(b) Depress the brake pedal and check the voltage reading from the TT terminal.
Brake pedal depressed ..... 0 V
Brake pedal released ..... 8 V
If not as indicated, there is a malfunction in either the stop light switch or circuit.



3. INSPECT EACH UP–SHIFT POSITION

(a) Warm up the engine.
Coolant temperature:
80°C (176°F)

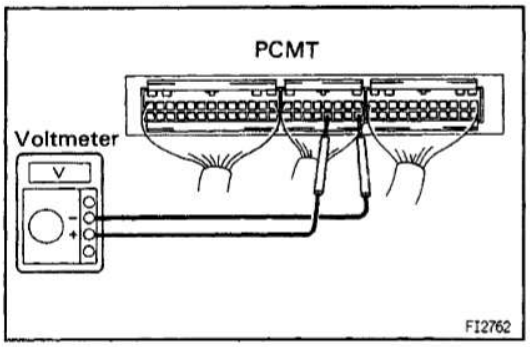
(b) Turn the O/D switch to “ON”.

(c) Place the pattern select switch in “Normal” and the shift lever into the D range.

(d) During a road test (about 10 km/h or 6 mph) check that voltage at the TT terminal is as indicated below for each up–shift position.
If the voltage rises from 0 V to 7 V in the sequence shown, the control system is okay.
The chart on the left shows the voltmeter reading and corresponding gears.
HINT: Determine the gear position by alight shock or change in engine rpm when shifting.

TT Terminal (V)	Gear position
	1st 2nd 3rd O/D O/D Lock u p

V00956

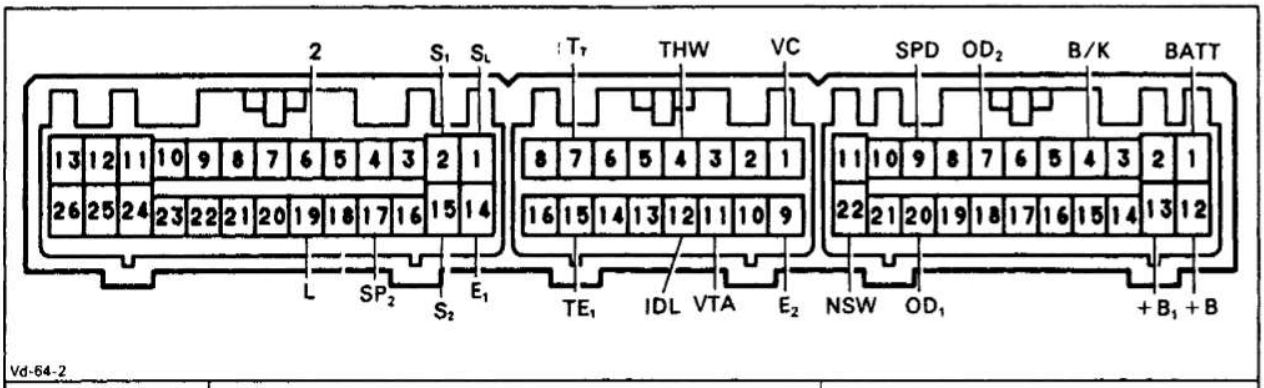


ELECTRONIC CONTROL COMPONENTS INSPECTION

1. INSPECT VOLTAGE OF PCMT

(a) Turn on the ignition switch.

(b) Measure the voltage at each terminal.

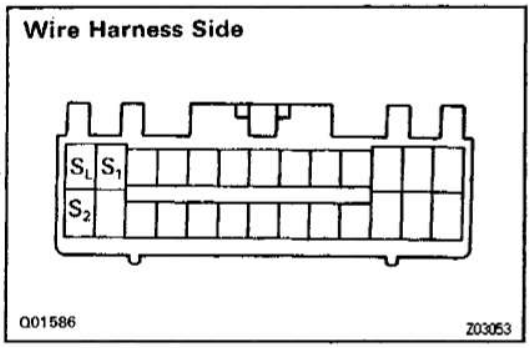


Terminal	Measuring condition		Voltage (V)
S_1 – E_1	Ignition switch turned ON		0 – 1.5
S_2, S_L – E_1	Ignition switch turned ON		0 – 1.5
STP – E_1	Brake pedal is depressed		7.5 – 14
	Brake pedal is released		0 – 1.5
THW – E_2	Coolant temp. 80°C (176°F)		0.2 – 1.0
IDL – E_2	Throttle valve fully closed		0 – 3
	Throttle valve open		9 – 14
VTA – E_2	Throttle valve fully closed		0.3 – 0.8
	Throttle valve open		3.2 – 4.9
VC – E_2	———		4.5 – 5.5
OD_1 – E_1	Ignition switch ON		9 – 14
OD_2 – E_1	O/D main switch turned ON	(O/D switch ON)	9 – 14
	O/D main switch turned OFF	(O/D switch OFF)	0 – 3
SPD – E_1	Cruise control main switch OFF	Standing still	0 – 2
		Vehicle moving	0.2 – 2 ↔ 4.5 – 5.5
SP_2 – E_1	Standing still		0 – 2
	Vehicle moving		0.2 – 2 ↔ 4.5 – 5.5

V00955

Terminal	Measuring condition	Voltage (v)
NSW – E_1	N range	0 – 3
	Except N range	9 – 14
2 – E_1	2 range	7.5 – 14
	Except 2 range	0 – 2
L – E_1	L range	7.5 – 14
	Except L range	0 – 2
+B (+B_1) – E_1	–	9 – 14
BATT – E_1	–	9 – 14

V00810



2. INSPECT SOLENOID

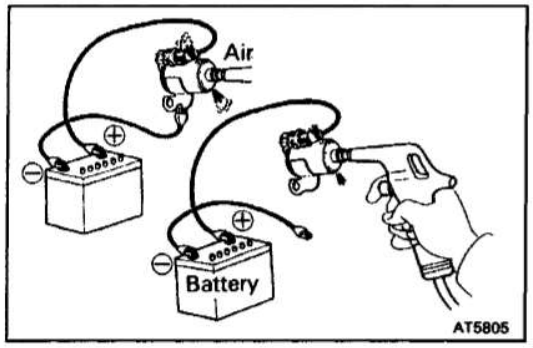
(a) Disconnect the connector from PCMT.

(b) Measure the resistance between S_1, S_2, $S_L$and ground.

Resistance:

11–150 Ω

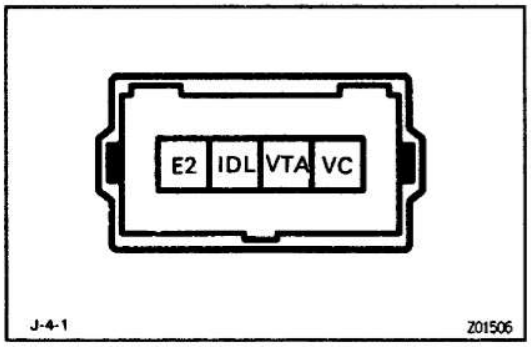
(c) Apply battery voltage to each terminal. Check that an operation noise can be heard from the solenoid.



3. CHECK SOLENOID SEALS

If there is foreign material in the solenoid valve, there will be no fluid control even with solenoid operation. Check No.1, No.2 solenoid and Transaxle converter clutch switch.

- Apply 490 kPa (5 kg/cm^2, 71 psi) of compressed air, check that the solenoid valves do not leak the air.
- When supply battery voltage to the solenoids, check that the solenoid valves open.

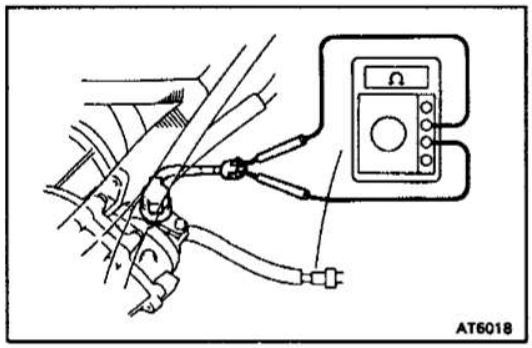


4. INSPECT THROTTLE POSITION SENSOR

Using an ohmmeter, check the resistance between terminals.

Terminal	Throttle valve condition	Resistance (kΩ)
IDL–E_2	Fully closed	0–0.1
	Open	Infinity
VC–E_2	–	3–7
VTA–E_2	Fully closed	0.2–0.8
	Fully open	3.3–10

V00812

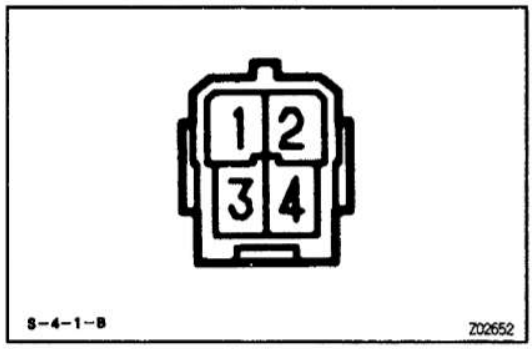


5. INSPECT NO.2 VEHICLE SPEED PULSE GENERATOR

(a) Jack up the front wheel on one side.
(b) Connect an ohmmeter between the terminals.
(c) Spin the wheel and check that the meter needle deflects from 0Ω to ∞ Ω.

6. INSPECT NO.1 VEHICLE SPEED PULSE GENERATOR

(See page BE–73)

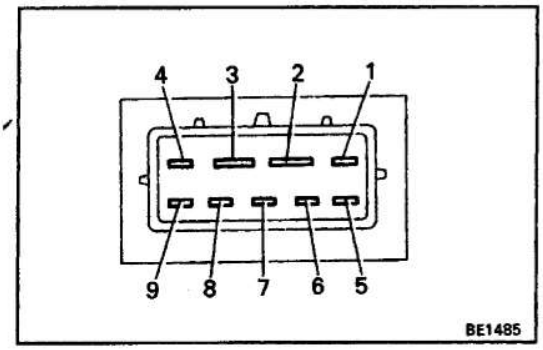


7. INSPECT O/D SWITCH

Using an ohmmeter, check the continuity of the terminals for each switch position.

SW position \ Terminal	1	3
ON		
OFF	o—o	

V00814



8. INSPECT PARK/NEUTRAL SWITCH

Check that there is continuity between terminals.

Range \ Terminal	2	3	6	1	5	7	8	9	4
P	○	○	○	○					
R			○		○				
N	○	○	○			○			
D			○				○		
2			○					○	
L			○						○

V00954

9. INSPECT ENGINE COOLANT TEMPERATURE SENSOR

(See page EG–305)

AX06Y-01

STALL TEST

The object of this test is to check the overall performance of the transaxle and engine by measuring the stall speeds in the D and R ranges.

NOTICE:

- Perform the test at normal operation fluid temperature (50–80°C or 122–176°F).
- Do not continuously run this test longer than 5 seconds.
- To ensure safety, conduct this test in a wide, clear, level area which provides good traction.
- The stall test should always be carried out in pairs. One should observe the condition of wheels or wheel stoppers outside the vehicle while the other is performing the test.

MEASURE STALL SPEED

(a) Chock the front and rear wheels.
(b) Connect a tachometer to the engine.
(c) Fully apply the parking brake.
(d) Keep your left foot pressed firmly on the brake pedal.
(e) Start the engine.
(f) Shift into the D range. Step all the way down on the accelerator pedal with your right foot.
Quickly read the stall speed at this time.
Stall speed:
2,650 ± 150 rpm
(g) Perform the same test in R range.

EVALUATION

(a) If the stall speed is the same for both ranges without the rear wheels rotating but lower than specified value:

- Engine output may be insufficient
- Stator one–way clutch is not operating properly

(b) If the stall speed in D range is higher than specified:

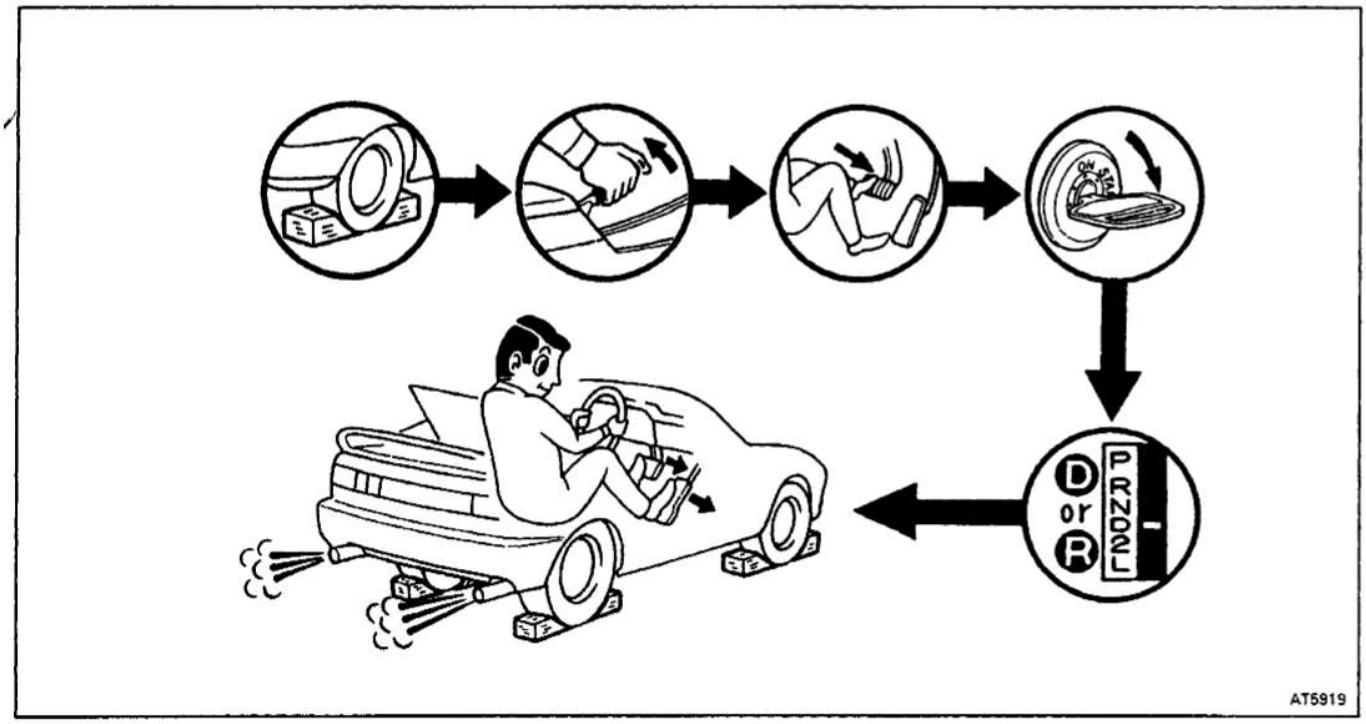
- Line pressure too low
- Forward clutch slipping
- No.2 one–way clutch not operating properly
- Underdrive one–way clutch not operating properly

(c) If the stall speed in R range is higher than specified:

- Line pressure too low
- Direct clutch slipping
- First and reverse brake slipping
- Underdrive brake slipping

(d) If the stall speed in both R and D ranges are higher than specified:

- Line pressure too low
- Improper fluid level
- Underdrive brake slipping


D
or
R
P R N D 2 L
AT5919

AX06Z–01

TIME LAG TEST

When the shift lever is shifted while the engine is idling, there will be a certain time lapse or lag before the shock can be felt. This is used for checking the condition of the underdrive clutch, forward clutch, direct clutch and first and reverse brake.

NOTICE:

- Perform the test at normal operating fluid temperature (50–80°C or 122–176°F).
- Be sure to allow one minute interval between tests.
- Make three measurements and take the average value.

MEASURE TIME LAG

(a) Fully apply the parking brake.

(b) Start the engine and check the idle speed.

Idle speed (N range):

700 ± 150 rpm

(c) Shift the shift lever from N to D position. Using a stop watch, measure the time it takes from shifting the lever until the shock is felt.

Time lag:

Less than 1.2 seconds

(d) In the same manner, measure the time lag for N to R.

Time lag:

Less than 1.5 seconds

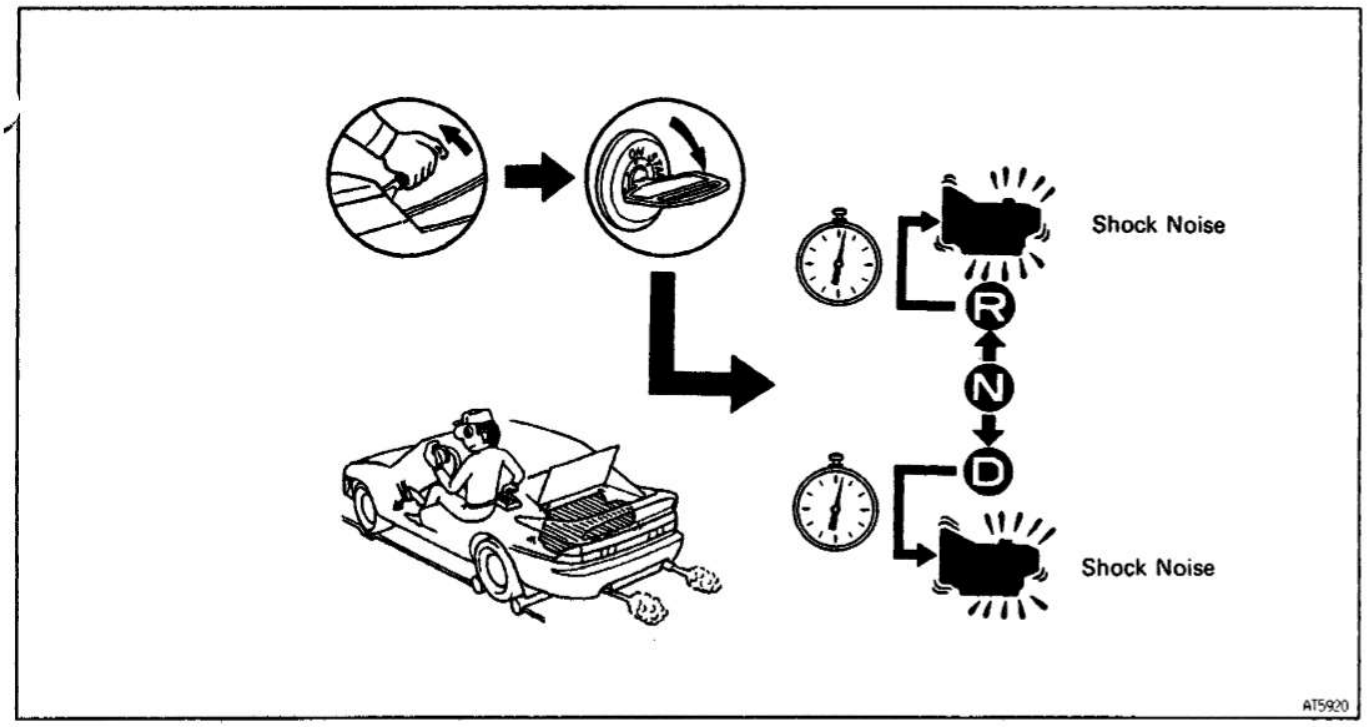
EVALUATION

(a) If N→D time lag is longer than specified:

- Line pressure too low
- Forward clutch worn
- No.2 and underdrive one–way clutch not operating properly

(b) If N→R time lag is longer than specified:

- Line pressure too low
- Direct clutch worn
- First and reverse brake worn
- Underdrive brake worn


Shock Noise
R
N
D
Shock Noise
AT5920

HYDRAULIC TEST

AX070–01

PREPARATION

(a) Warm up the transaxle fluid.
(b) Remove the transaxle case test plug and connect the hydraulic pressure gauge.
SST 09992–00094 (Oil pressure gauge)

CAUTION:

- **Perform the test at normal operating fluid temperature (50–$o°C or 122–176°F).**
- **The line pressure test should always be carried out in pairs. One should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.**

MEASURE LINE PRESSURE

(a) Fully apply the parking brake and chock the front wheels.
(b) Start the engine and check idling rpm.
(c) Step down strongly on the brake pedal with your left foot and shift into D range.
(d) Measure the line pressure when the engine is idling.
(e) Press the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.
(f) In the same manner, perform the test in R range.

Type	Line pressure kPa (kg/cm2, psi)			
	D range		R range	
	Idling	Stall	Idling	Stall
A241 E	373 – 422 (3.8 – 4.3, 54 – 61)	716 – 863 (7.3 – 8.8, 104 – 125)	637 – 794 (6.5 – 8.1, 92 – 115)	1,334 – 1,579 (13.6 – 16.1, 193 – 229)

V00953

If the measured pressures are not up to specified value, recheck the throttle cable adjustment and perform a retest.

EVALUATION

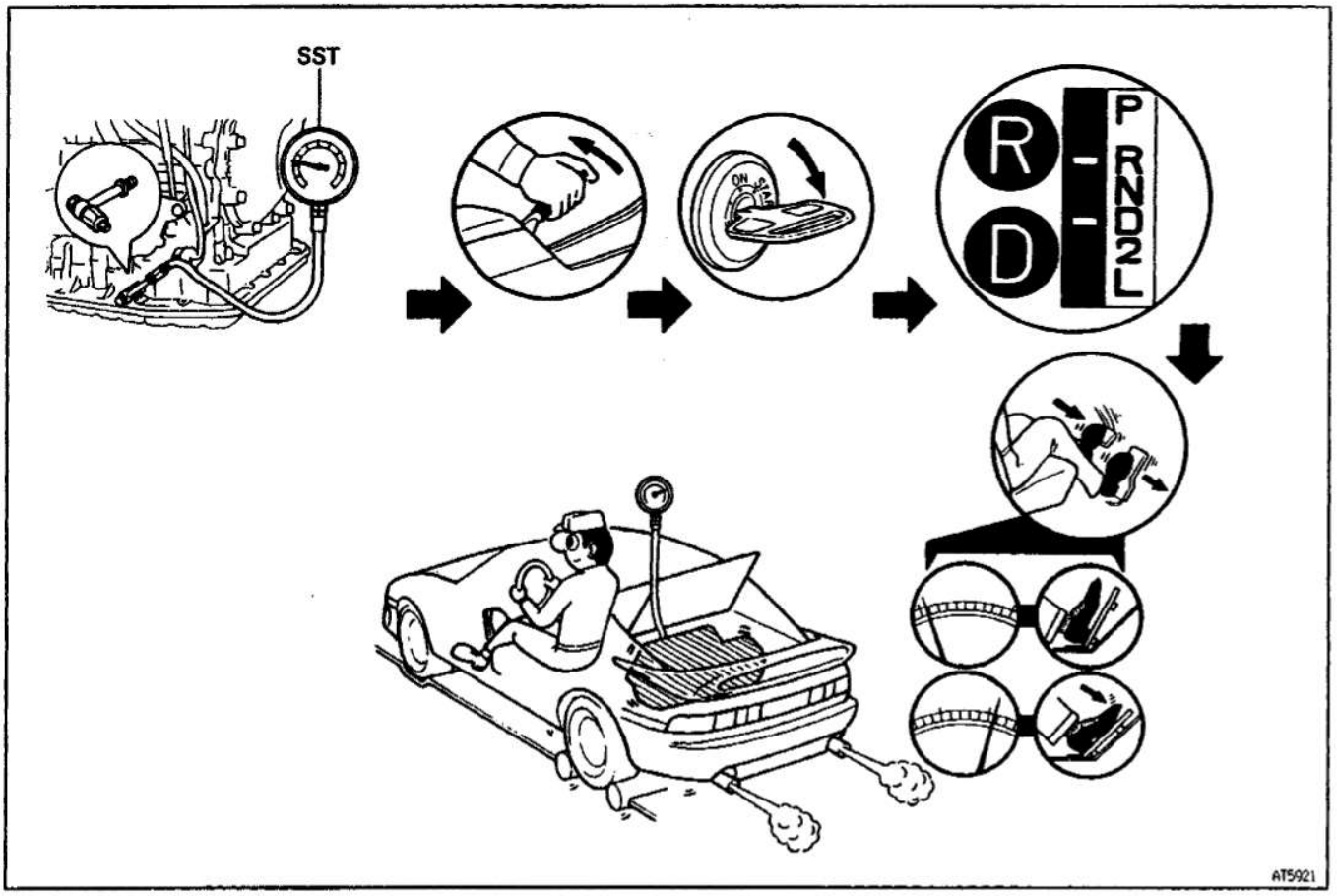
(a) If the measured values at all ranges are higher than specified:
- Throttle cable out of adjustment
- Throttle valve defective
- Regulator valve defective

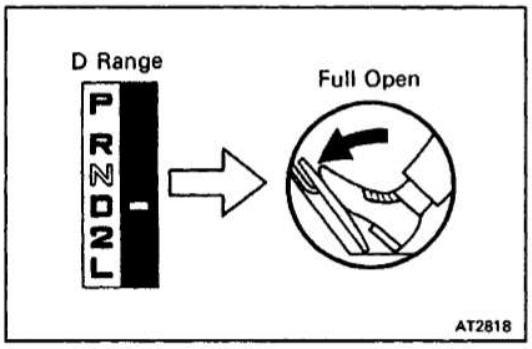
(b) If the measured values at all ranges are lower than specified:
- Throttle cable out of adjustment
- Throttle valve defective
- Regulator valve defective
- Oil pump defective
- Underdrive one–way clutch not operating properly

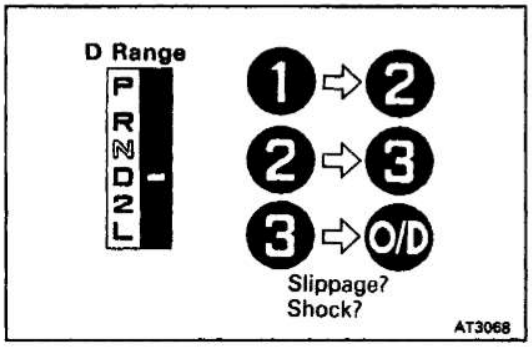
(c) If pressure is low in the D range only:
- D range circuit fluid leakage
- Forward clutch defective
- Underdrive one–way clutch not operating properly

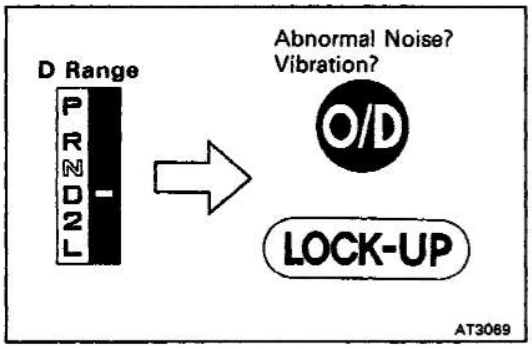
(d) If pressure is low in the R range only:
- R range circuit fluid leakage

- Direct clutch defective
- First and reverse brake defective
- Underdrive one–way clutch not operating properly









ROAD TEST

AX071–01

NOTICE: Perform the test at normal operating fluid temperature (50–80˚C or 122–176˚F).

1. D RANGE TEST IN NORM AND PWR PATTERN RANGES

Shift into the D range and hold the accelerator pedal constant at the full throttle valve opening position. Check the following:

(a) 1–2, 2–3 and 3–O/D up–shifts should take place, and shift points should conform to those shown in the automatic shift schedule. (See page AX–45).

HINT:

- There is no O/D up–shift and lock–up when the coolant temp. is below 53˚C (127˚F).
- When the coolant temp. is below 60˚C (140˚F), the shift point is lower than specified in the automatic shift schedule.

EVALUATION

(1) If there is no 1→2 up–shift:
- No.2 solenoid is stuck
- 1–2 shift valve is stuck

(2) If there is no 2→3 up–shift:
- No. 1 solenoid is stuck
- 2–3 shift valve is stuck

(3) If there is no 3→O/D up–shift:
- 3–4 shift valve is stuck

(4) If the shift point is defective:
- Throttle valve, 1–2 shift valve, 2–3 shift valve, 3–4 shift valve etc., are defective

(5) If the lock–up is defective:
- Lock–up solenoid is stuck
- Lock–up relay valve is stuck

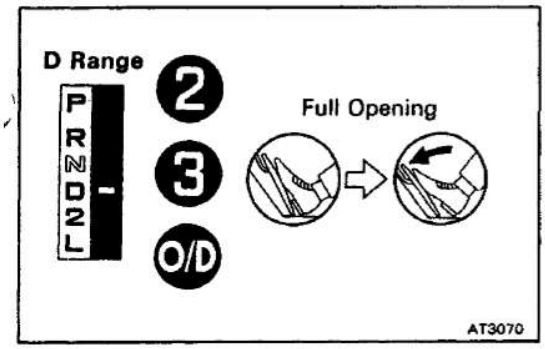
(b) In the same manner, check the shock and slip at the 1→2, 2→3 and 3→O/D up–shifts.

EVALUATION

If the shock is excessive:
- Line pressure is too high
- Accumulator is defective
- Check ball is defective

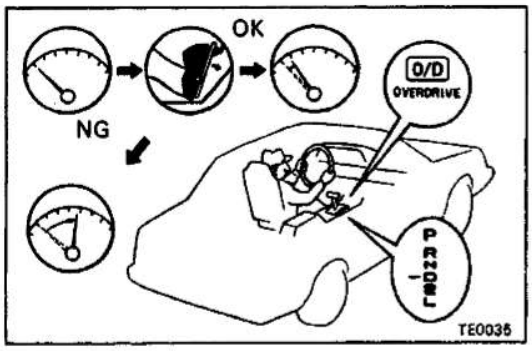
(c) Run at the D range lock–up or O/D gear and check for abnormal noise and vibraton.

HINT: The check for the cause of abnormal noise and vibration must be made with extreme care as it could also be due to loss of balance in the drive shaft, tire torque converter, etc.



(d) While running in the D range, 2nd, 3rd and O/D gears, check to see that the possible kick–down vehicle speed limits for 2–1, 3–2 and O/D–3 kick–downs conform to those indicated on the automatic shift schedule. (See page AX–45)

(e) Check for abnormal shock and slip at kick–down.

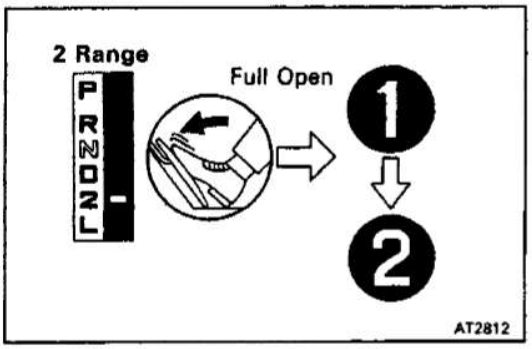


(f) Check for the lock–up mechanism.

(1) Drive in D range, O/D gear, at a steady speed (lock–up ON) of about 64–71 km/h (40–44 mph).

(2) Lightly depress the accelerator pedal and check that the engine rpm does not change abruptly.

If there is a big jump in engine rpm, there is no lock–up.



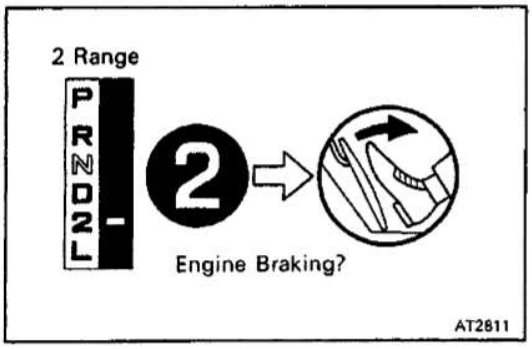
2. 2 RANGE TEST

Shift into the 2 range and, while driving with the accelerator pedal held constantly at the full throttle' valve opening position, push in one of the pattern selectors and check on the following points.

(a) Check to see that the 1–2 up–shift takes place and that the shift point conforms to it shown on the automatic shift schedule. (See page AX–45)

HINT:

- To prevent overrun, the transmission shifts up into 3rd gear at around 109 km/h (68 mph).
- In range 2, there will be no lock–up to 2nd gear.

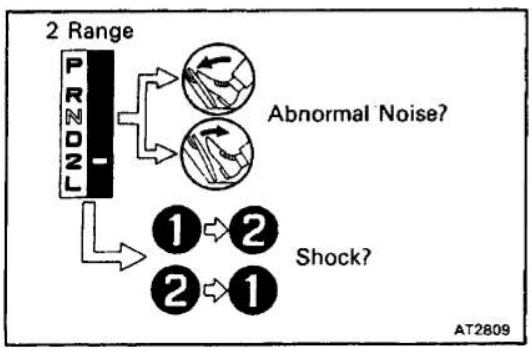


(b) While running in the 2 range and 2nd gear, release the accelerator pedal and check the engine braking effect.

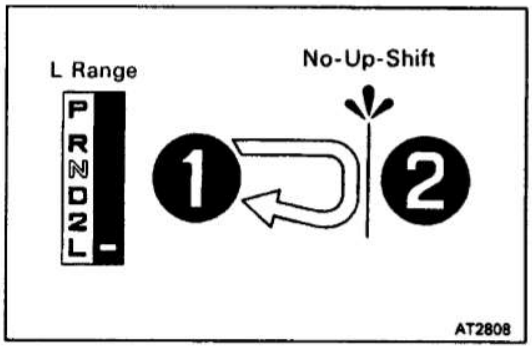
EVALUATION

If there is no engine braking effect:

- Second coast brake is defective

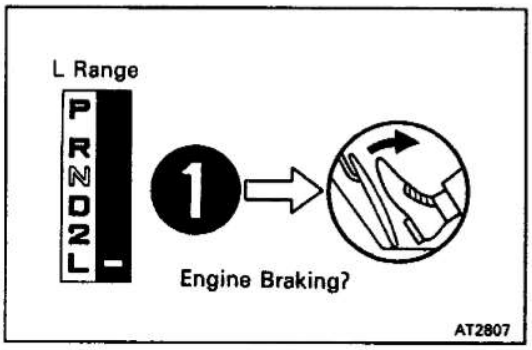


(c) Check for abnormal noise at acceleration and deceleration, and for shock at up–shift and down–shift.



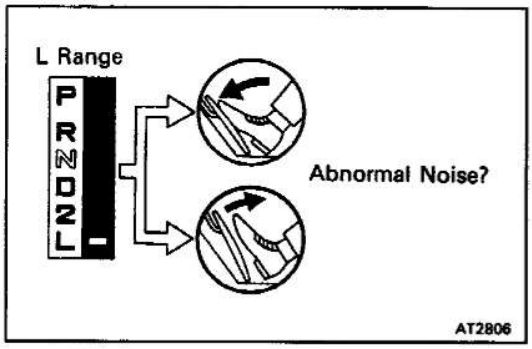
3. L RANGE TEST

(a) While running in the L range, check to see that there is no up–shift to 2nd gear.
HINT: To prevent overrun, the transmission up–shifts into 2nd gear at around 59 km/h (37 mph).

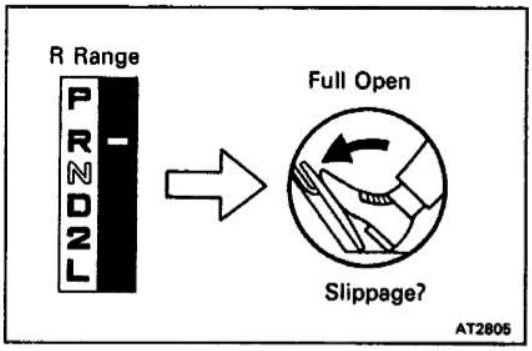


(b) While running in the L range, release the accelerator pedal and check the engine braking effect.
EVALUATION
If there is no engine braking effect:

- First and reverse brake is defective

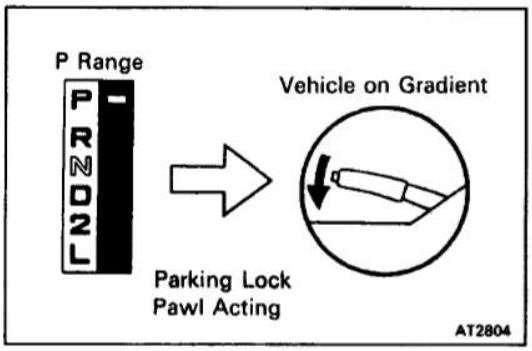


(c) Check for abnormal noise during acceleration and deceleration.



4. R RANGE TEST

Shift into R range and, while starting at full throttle, check for slipping.



5. P RANGE TEST

Stop the vehicle on a gradient (more than 5°) and after shifting into the P range, release the parking brake. Then check to see that the parking lock pawl holds the vehicle in place.

AX072–01

AUTOMATIC SHIFT SCHEDULE

	Throttle valve fully open [ ] Fully closed km/h (mph)							
	1→2	2→3	3→O/D	[3→O/D]	[O/D→31	O/D→3	3→2	2→1
D range	**53 – 59 (33 – 37)**	**98 – 109 (61 – 68)**	**131 – 143 (81 – 89)**	**44 – 50 (27 – 31)**	**18 – 23 (11 – 14)**	**125 – 137 (78 – 85)**	**93 – 104 (58 – 65)**	**42 – 48 (26 – 30)**
2 range	**53 – 59 (33 – 37)**	–	–	–	–	–	–	**42 – 49 (26 – 30)**
L range	–	–	–	–	–	–	–	**47 – 53 (29 – 33)**

	Throttle valve opening 5% km/h(mph)	
	Lock–up ON	Lock–OFF OFF
	O/D	O/D
D range	**64 — 71 (40 – 44)**	**59 — 65 (37 – 40)**

V01060

HINT:

(1) In the 2 and L ranges, all stages lock–up is OFF.

(2) In the following cases, the lock–up will be released regardless of the lock–up pattern.

- When the throttle is completely closed.
- When the brake switch is ON.

(3) Shift up to O/D will not occur when the engine coolant temp. is below 53˚C (127˚ F).

AX073–01

TROUBLE SHOOTING MATRIX CHART

You will find the troubles easier using the table will shown below. In this table, each number shows the priority of cause in troubles. Check each part in order, if necessary, replace these parts.

See Page / Parts Name / Trouble		AX–25	AX–66	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		Electrical control system check	Torque converter	Parking lock pawl	Manual valve	1–2 shift valve	2–3 shift valve	Forward clutch (C1)	Direct clutch (C2)	No. 2 one–way clutch (F2)	Front planetary gear	Rear planetary gear	1st and reverse bake (83)	U/0 one–way clutch (F3)	U/D clutch (C3)	U/D planetary gear	Second brake (B2)	2nd coast brake (B,)	U/D brake (Be)	No. 1 one–way clutch (F,)	3–4 shift valve	Accumulator control Valve	C, accumulator	Low coast modulator valve	B2 accumulator	2nd coast modulator valve	Throttle modulator valve
Does not move in any forward range								1	5	2			3				4	4									
Does not move in reverse range						3	4		5		2	2	7		6			1									
Does not move in any forward range or reverse range			7	1	2						5	5		3	3	6			4								
No–up shift	1st → 2nd	1				2											3			4							
	2nd →3rd	1					2		3																		
	3rd →O/D	1																	2		3						
No–down shift	O/D →3rd	1																			2						
	3rd → 2nd	1					2																				
	2nd →1st	1				2												3									
Shift point too high or too low		1																									
Up–shifts 3rd →O/D switch "OFF"		1																									
Up–shifts 3rd–O/D when E/G is cold		1																									
Harsh engagement	"N"→"R"								1				2									3					
	"N"→"D"							1															2				
	"N"→"L"																							1			
	1st →2nd ("D" range)												2												1		
	1st→1 2nd (2 range)																									1	
	1st →2nd →3rd																					1					2

Trouble \ Parts Name	See Page	AX–25	*	*	*	*	*	*	*	*	*	*	*	*	AX–66	*	AX–49	*	*	*	*	*	*	*
		Electrical control system check	Accumulator control valve	2nd coast bake (B1)	CZ accumulator	U/D clutch (C3)	U / D brake (B,)	U/ D planetary gear	B4 accumulator	C3 accumulator	2nd coast modulator valve	82 accumulator	1st and reverse brake	Lock–up relay valve	Torque converter	U / D one–way clutch (F3)	Oil strainer	Pressure relief valve	Direct clutch (C2)	Forward clutch (C,)	No. 2 one–way clutch (F2)	Second brake (B2)	No. 1 one–way clutch (F,)	Low coast modulator valve
Harsh engagement	1st →2nd–3rd–O/D		1																					
	2nd →3rd			1	2																			
	3rd →O/D					1	2	3	4															
	O/D →3rd								1	2														
	3rd →2nd								1	2	3	4	5											
No lock–up		1												2	3									
No lock–up OFF		1												2	3									
Slip or shudder	Forward & Reverse (After warm–up)					3									1	2								
	Forward & Reverse (Directly after E/G start)														1		3	2						
	"R" range					2							3						1					
	1st																			1	2			
	2nd				1																	2	3	
	2nd →3rd (up–shift)																		1					
	3rd																		1					
	O/D						1																	
No engine braking	1st → 3rd					1																		
	1st												2											1
	2nd			1							2													

V00966

Trouble \ Parts Name		Electrical control system check	2nd coast brake (B_2)	U/D clutch (C_3)	U/D brake (B_4)	U / D planetary gear	1st and reverse brake (B3)	Torque converter	Direct Clutch (C2)	Forward clutch (C_1)	Second brake (B_1)	1–2 shift valve	2–3 shift valve	3–4 shift valve
See Page		AX–25	*	*	*	*	*	AX–66	*	*	*	*	*	*
Large shook during lock–up		1						2						
E/G stalls when starting off and stopping		1						2						
No kick–down		1										2	3	4
Poor acceleration	All–ranges							1						
	O/D			1		2								
	Other than O/D				1	2								
	Other than 2nd		1								2			
	1st and 2nd								1					
	1st and "R"						1	a						
	"R"									1				

TROUBLESHOOTING

You will find the troubles easier using the table well shown below. In this table, each number shows the priority of causes in troubles. Check each part in order. If necessary, replace these parts.

See Page / Parts Name / Trouble	-	MX1–2	-	MX1–19	MX1–19	MX1–19	MX1–65	MX1–19	MX1–19	MX1–19	MX1–19	MX1–32,39	MX1–32,39			
	Oil (Level low)	Oil (Wrong)	Oil (Level too high)	Gasket (Damaged)	Oil seal (Worn or damaged)	–O–Ring (Worn or damaged)	Control cable (Faulty)	Locking ball spring (Damaged)	Shift fork (Worn)	Gear (Worn or damaged)	Bearing (Worn or damaged)	Synchronizer ring (Worn or damaged)	Shifting key spring (Damaged)			
Noise	1	2								3	3					
Oil leakage			1	2	2	3										
Hard to shift or will not shift							1					2	3			
Jumps out of gear								1	2	3	3					

V00310

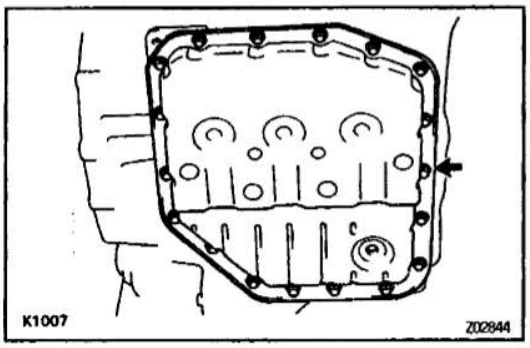
VALVE BODY

AX07P–01

VALVE BODY REMOVAL

1. CLEAN TRANSAXLE EXTERIOR

To help prevent contamination, clean the exterior of the transaxle.

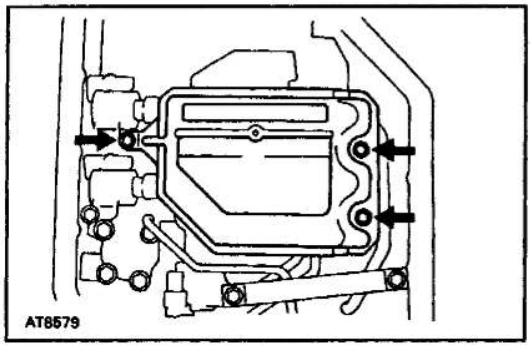


2. DRAIN TRANSAXLE FLUID

Remove the drain plug, gasket and drain the fluid into a suitable container.

3. REMOVE OIL PAN AND GASKET

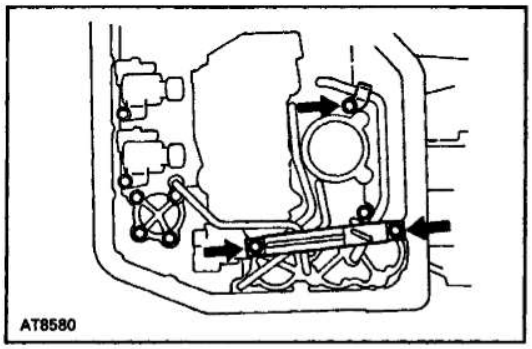
NOTICE: Some fluid will remain in the oil pan. Remove all pan bolts, and carefully remove the oil pan assembly. Discard the gasket.



4. REMOVE OIL STRAINER

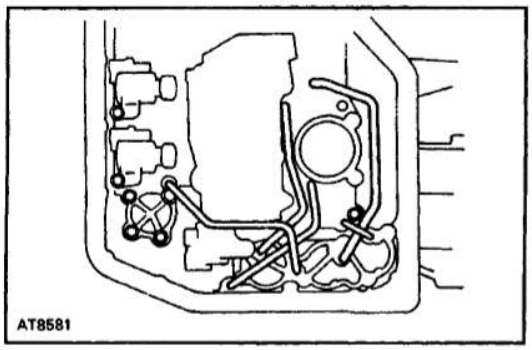
NOTICE: Be careful as some fluid will come out with the oil strainer.

Remove the. three bolts, oil strainer and gasket.



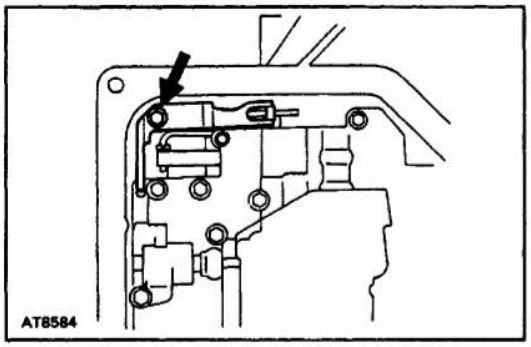
5. REMOVE APPLY OIL TUBE BRACKET AND OIL TUBE CLAMP

(a) Remove two bolts and apply tube bracket.
(b) Remove the bolt and oil tube clamp.

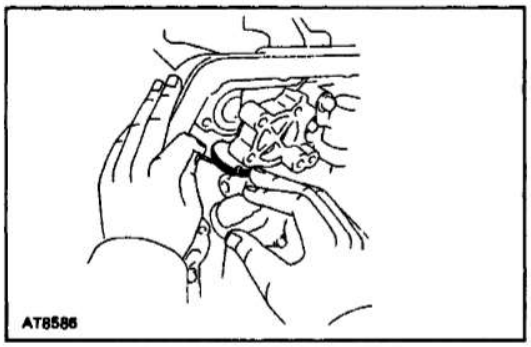


8. REMOVE OIL TUBES

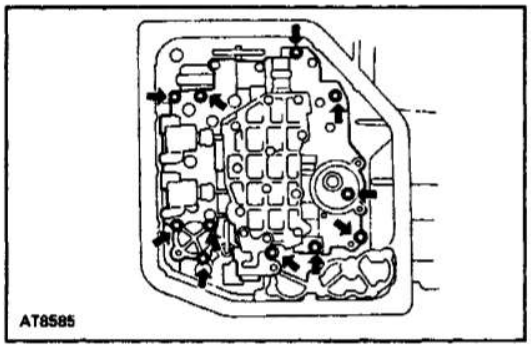
Pry up the both tube ends with a large screwdriver and remove the five tubes.



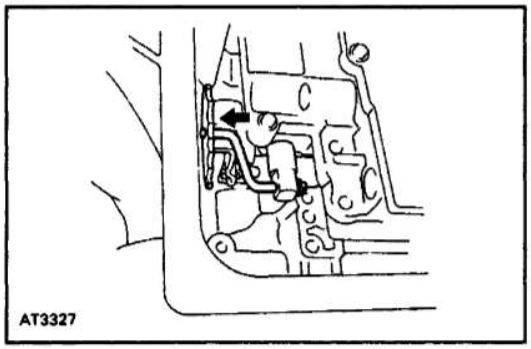
7. REMOVE MANUAL DETENT SPRING
8. DISCONNECT SOLENOID CONNECTOR



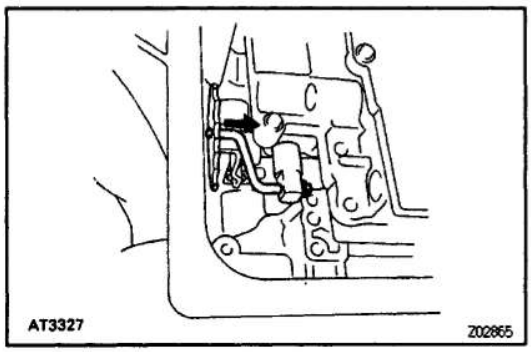
9. REMOVE VALVE BODY
(a) Disconnect the throttle cable.



(b) Remove twelve bolts and wire retainer.



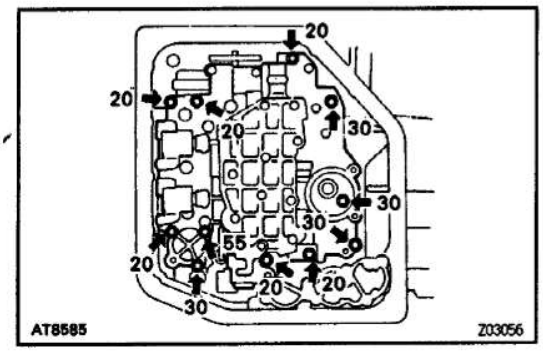
(c) Disconnect the manual valve connecting rod.
(d) Remove the valve body.



AX970–01

VALVE BODY INSTALLATION

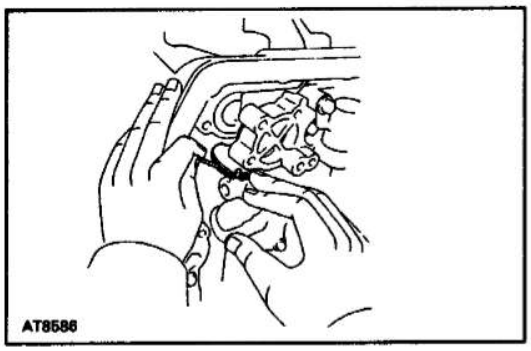
1. INSTALL VALVE BODY
(a) Connect the manual valve connecting rod.



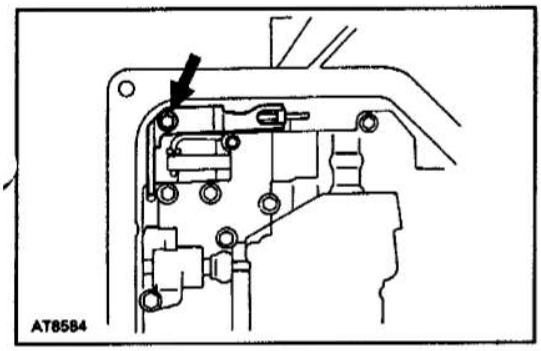
(b) Install the twelve bolts and wire retainer and hand tighten all bolts first. Then tighten them with a torque wrench.

HINT: Each bolt length (mm) is indicated in the figure.

Torque: 10 N–m (100 kgf–cm, 7 ft–lbf)



(c) Connect the throttle cable to the cam.



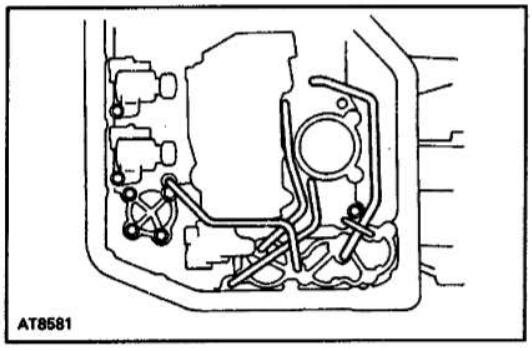
2. CONNECT SOLENOID CONNECTOR

3. INSTALL MANUAL DETENT SPRING

(a) Install and tighten 16 mm length bolt with a torque wrench.

Torque: 10 N–m (100 kgf–cm, 7 ft–lbf)

(b) Check that the manual valve lever is in contact with the center of the roller at the tip of the detent spring.



4. INSTALL OIL TUBES

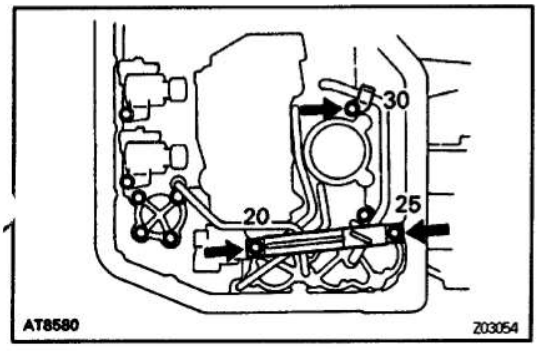
(a) Tap the five tubes with a plastic hammer to install them into the positions indicated in the figure.

NOTICE: Be careful not to bend or damage the tubes.

(b) Install and torque the oil tube clamp.

Torque: 10 N–m (100 kgf–cm, 7 ft–lbf)

HINT: Each bolt length (mm) is indicated in the figure.

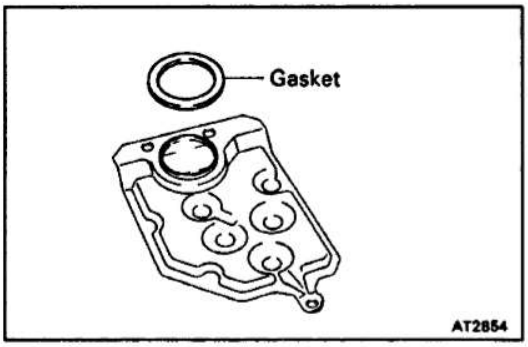


5. INSTALL OIL TUBE BRACKET AND OIL TUBE CLAMP

Install and torque the oil tube bracket.

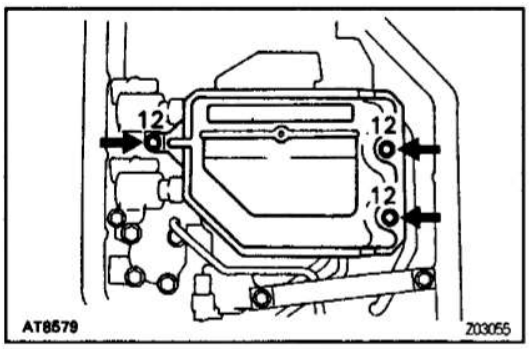
HINT: Each bolt length (mm) is indicated in the figure.

Torque: 10 N–m (100 kgf.cm, 7 ft–lbf)

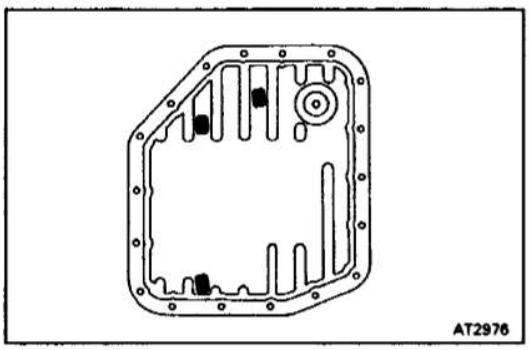


6. INSTALL OIL STRAINER

(a) Install a new gasket to the oil strainer.

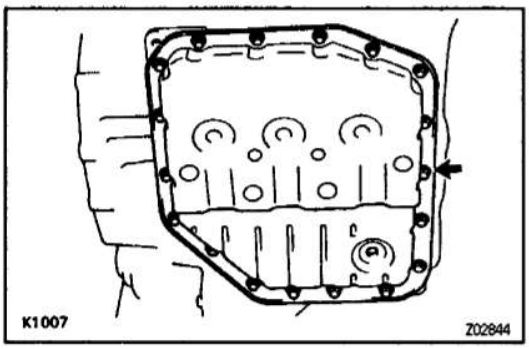


(b) Install the oil strainer and torque the three bolts.
HINT: Each bolt length (mm) is indicated in the illus–tration. .



7. INSTALL THREE MAGNETS IN OIL PAN

NOTICE: Make sure that the magnets do not interfere with the oil tubes.



8. INSTALL OIL PAN

(a) Install a new gasket to the oil pan and install the oil pan.
(b) Tighten the eighteen bolts.

Torque: 4.9 N–m (50 kgf–cm, 43 in.–lbf)

9. INSTALL OIL PAN DRAIN PLUG

Torque: 17 N–m (175 kgf–cm, 13 ft–lbf)

10. FILL TRANSAXLE WITH ATF

(See page AX–14)

NOTICE: Do not overfill.
Fluid type:
ATF DEXRON®II

11. CHECK FLUID LEVEL