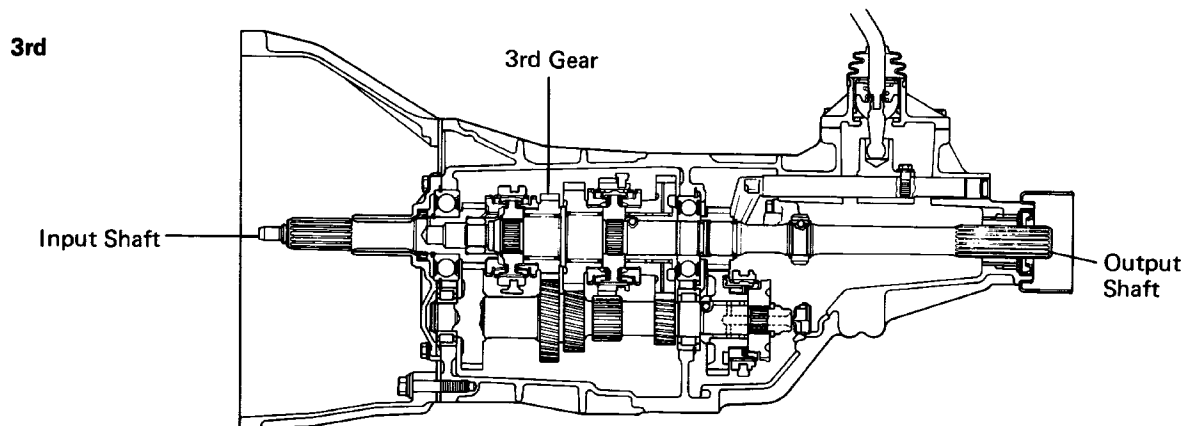
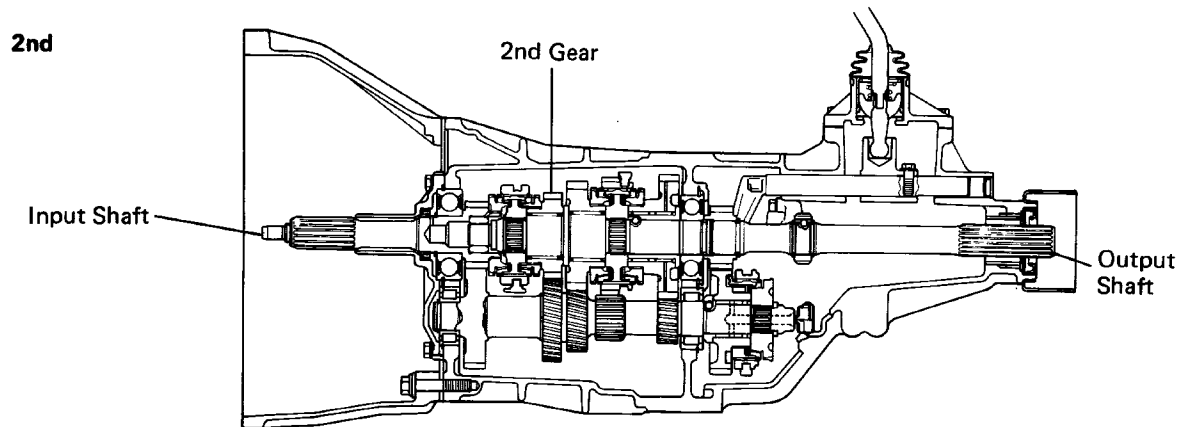
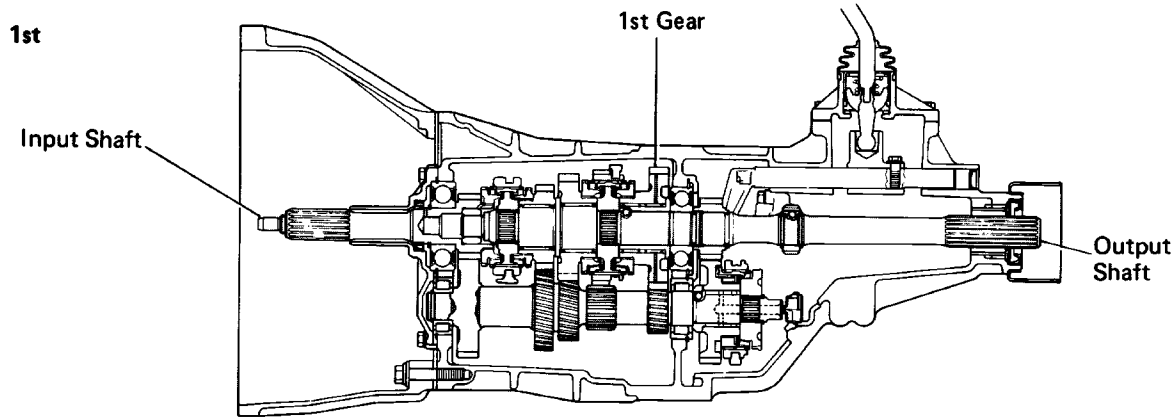


G58, R150 and R150F MANUAL TRANSMISSION

DESCRIPTION

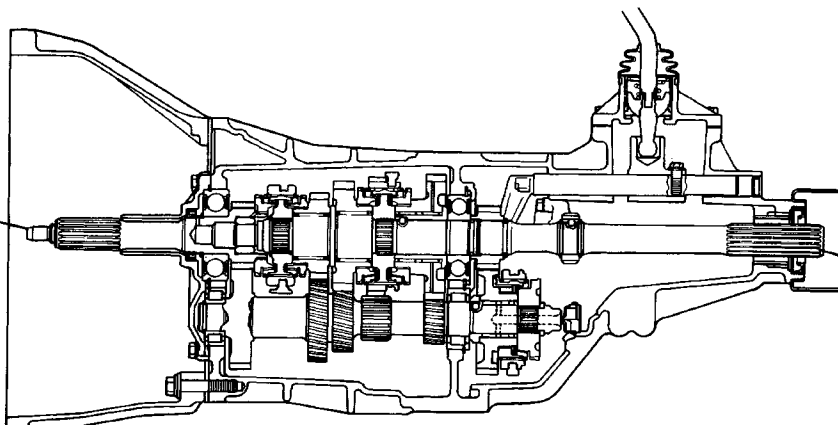
- Transmission types, G58, W55, W56, R150 and R1 50F are constant mesh synchronizers for forward gears and a sliding mesh reverse gear.
- The illustrations below show the engagements of transmission gears.



4th

Input Shaft

Output Shaft



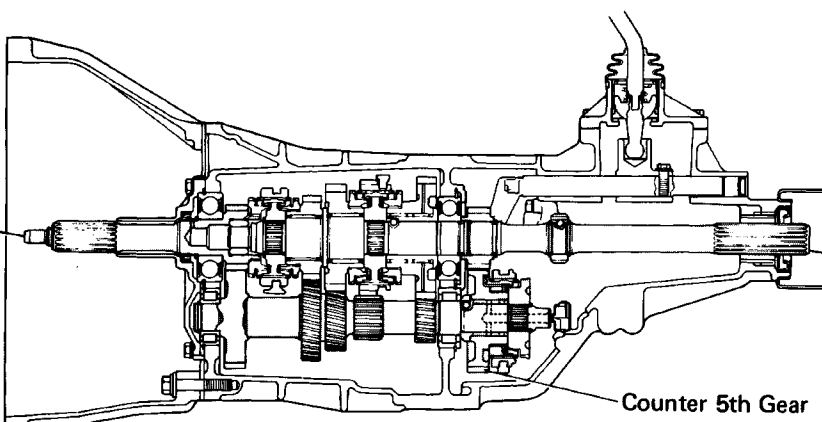
5th

(5-Speed Only)

Input Shaft

Output Shaft

Counter 5th Gear

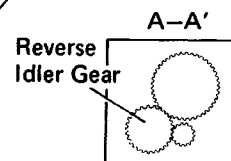


Rev.

Reverse Gear

Input Shaft

Output Shaft



- The above illustrations show the engagements of a 5-speed transmission.
- The above illustration shows a G type transmission. The configuration of each gear is slightly different to W and R type transmissions but the gear engagements are the same.

PRECAUTIONS

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

- Using a razor blade and gasket scraper, remove all the old packing (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.
- Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

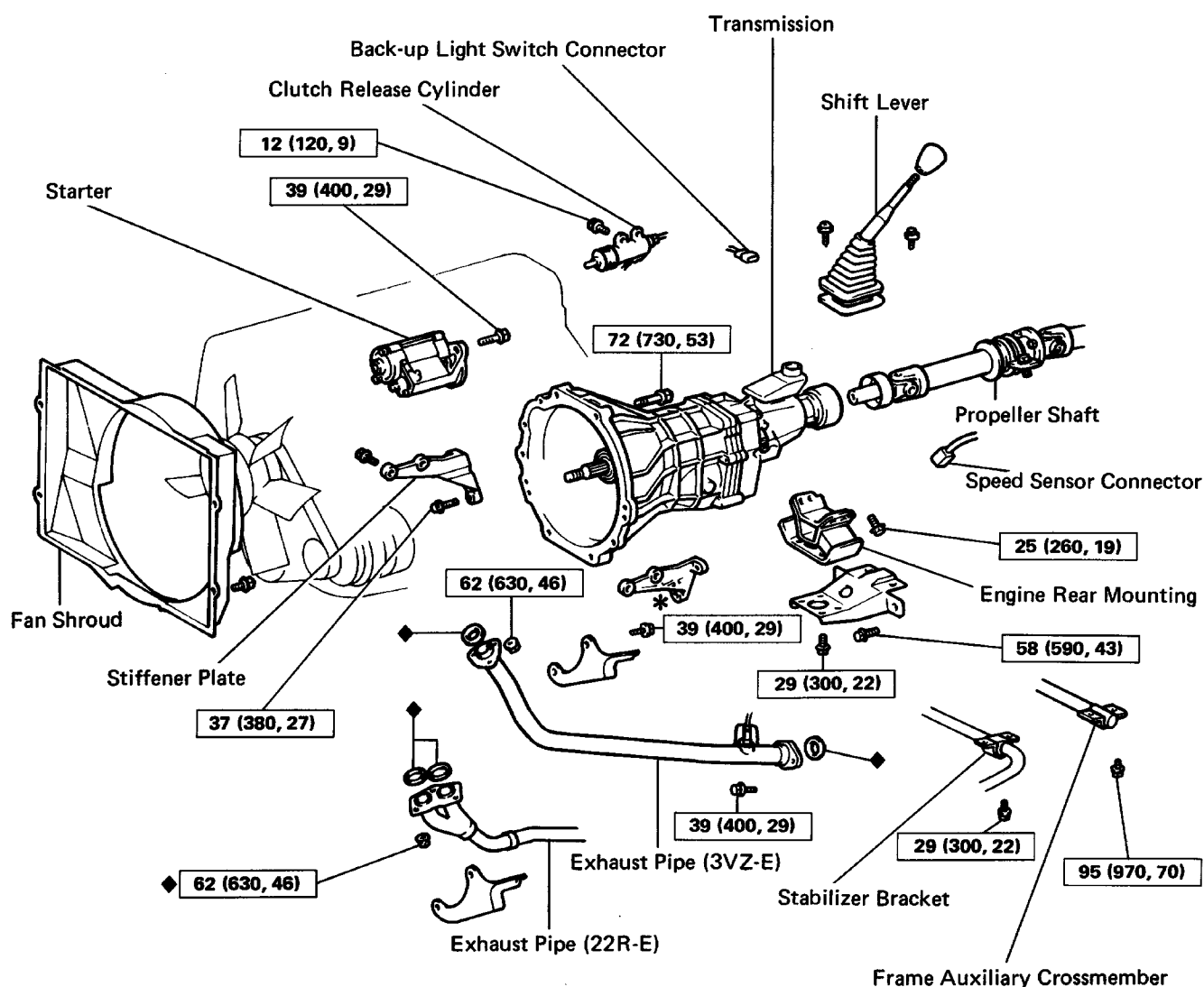
TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Hard to shift or will not shift	Splines on input shaft dirty or burred Transmission faulty	Repair as necessary Disassemble and inspect transmission	MT1-5 MT1-5
Transmission jumps out of gear	Transmission faulty	Disassemble and inspect transmission	MT1-5

REMOVAL AND INSTALLATION OF TRANSMISSION (2WD)

Remove and install the parts as shown

HINT: For the transmission with a transfer (4WD) refer to REMOVAL AND INSTALLATION OF TRANSMISSION WITH TRANSFER on Page [MT1-14](#).



* 3VZ-E engine

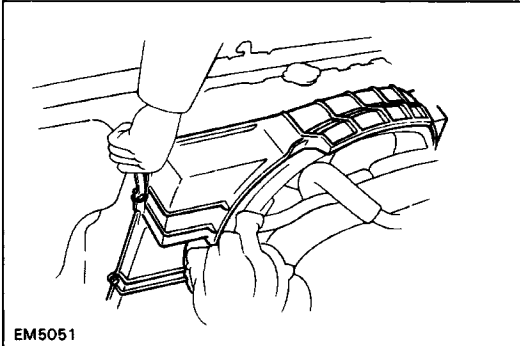
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

REMOVAL OF TRANSMISSION

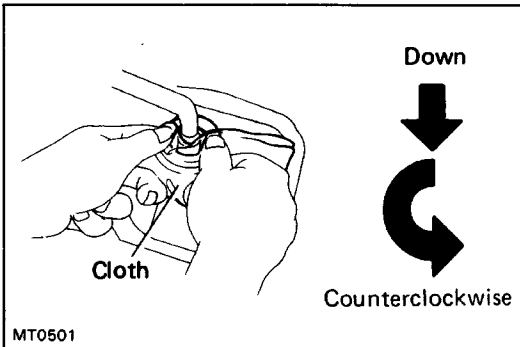
HINT: For the transmission with a transfer (4WD) refer to REMOVAL OF TRANSMISSION WITH TRANSFER on page MT1- 16.

1. DISCONNECT BATTERY CABLE FROM NEGATIVE TERMINAL



2. REMOVE FAN SHROUD SET BOLTS

Remove the four bolts.



3. REMOVE TRANSMISSION SHIFT LEVER FROM INSIDE OF VEHICLE

- (a) Remove the four screw and remove the shift lever boot retainer.
- (b) Pull up the shift lever boot.
- (c) Cover the shift lever cap with cloth.
- (d) Then, pressing down on the shift lever cap, rotate it counterclockwise to remove.
- (e) Remove the shift lever.

4. RAISE VEHICLE AND DRAIN TRANSMISSION OIL

NOTICE: Be sure the vehicle is securely supported.

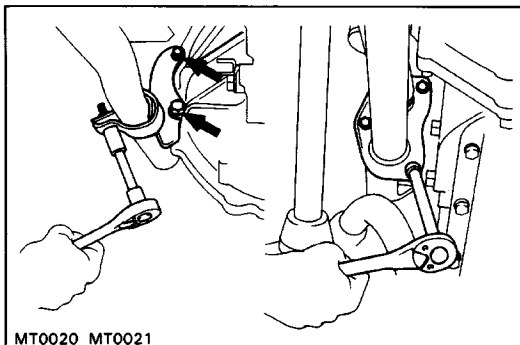
5. DISCONNECT PROPELLER SHAFT

(SEE [PR-5](#))

SST 09325-20010 (22R-E)

09325-40010 (3V Z-E)

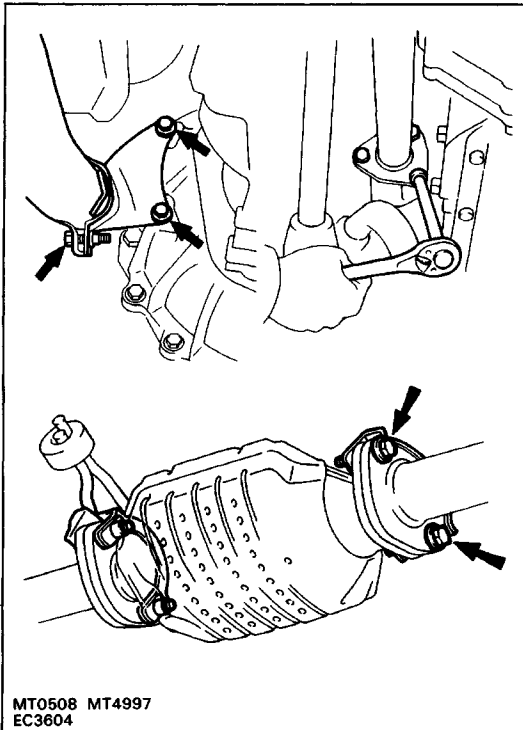
6. DISCONNECT SPEEDOMETER CABLE AND BACK-UP LIGHT SWITCH CONNECTOR



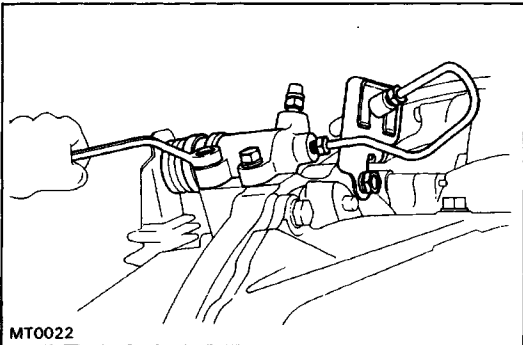
7.-1 (22R-E)

REMOVE EXHAUST PIPE CLAMP AND EXHAUST PIPE

- (a) Remove the exhaust pipe clamp from the bracket.
- (b) Remove the exhaust pipe from the manifold.
- (c) Remove the pipe clamp bracket from clutch housing.

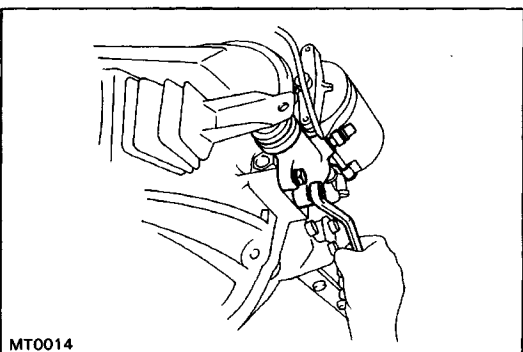
**7.-2 (3VZ-E)****REMOVE EXHAUST PIPE CLAMP AND EXHAUST PIPE**

- (a) Remove the exhaust pipe clamp from the bracket.
- (b) Remove the exhaust pipe bracket from the clutch housing.
- (c) Remove the exhaust pipe from the manifold.
- (d) Disconnect exhaust pipe from catalytic converter front side.

**8.-1 (22R-E)****REMOVE CLUTCH RELEASE CYLINDER, TUBE BRACKET AND STARTER LOWER MOUNTING BOLT**

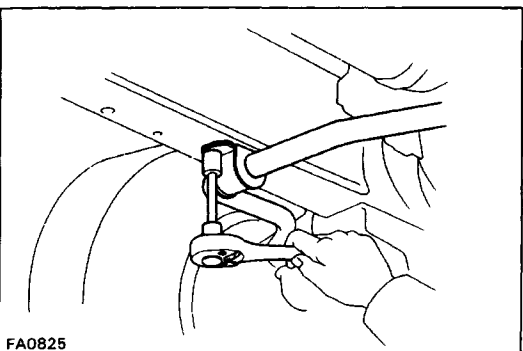
Lay the release cylinder and tube bracket alongside the engine.

HINT: Do not disconnect the clutch line.

**8.-2 (3VZ-E)****REMOVE CLUTCH RELEASE CYLINDER**

Lay the release cylinder alongside engine.

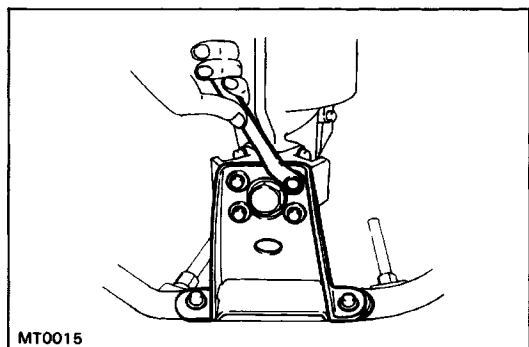
HINT: Do not disconnect the clutch line.

**9. REMOVE STABILIZER BRACKET SET BOLTS**

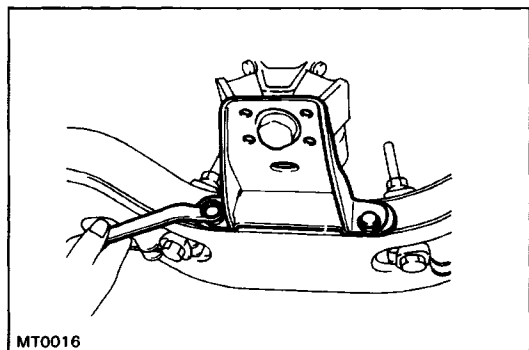
Remove the four bolts.

10. REMOVE FRAME AUXILIARY CROSSMEMBER

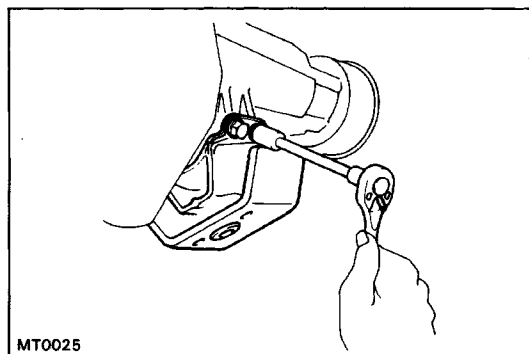
Remove the four bolts.

**11. REMOVE ENGINE REAR MOUNTING AND BRACKET**

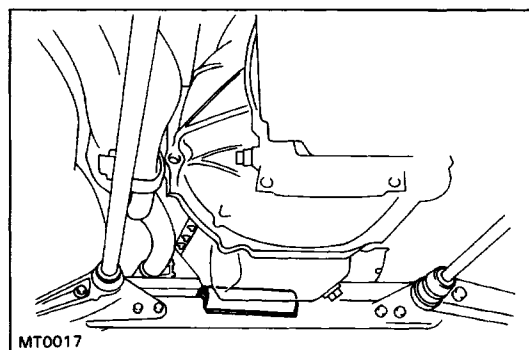
- (a) Remove the four bolts from the engine rear mounting.
- (b) Raise the transmission slightly by raising the engine with a jack.



- (c) Remove the four bolts from the support member and remove the mounting bracket.



- (d) Remove the engine rear mounting from the transmission.

**12. PLACE PIECE OF WOOD BETWEEN ENGINE OIL PAN AND FRONT CROSSMEMBER**

HINT: Tape a piece of wood or such about 20 mm (0.79 in.) thick on the front crossmember.

13. LOWER TRANSMISSION**14. REMOVE STARTER**

Lay the starter alongside the engine.

15. REMOVE STIFFENER PLATE BOLTS**16. REMOVE REMAINING TRANSMISSION BOLTS**

17. REMOVE TRANSMISSION

- (a) Draw out the transmission toward the rear.
- (b) Lower the transmission front and remove the transmission from the vehicle.

HINT: Be careful not to damage the extension housing dust deflector.

(3VZ-E/R 150 only)

- (a) Turn the transmission clockwise about 45 degrees.
- (b) Slide the transmission toward the rear.
- (c) Lower the transmission front and remove the transmission from the vehicle.

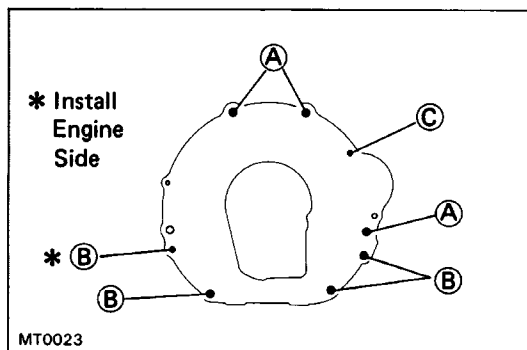
INSTALLATION OF TRANSMISSION

HINT: For the transmission with a transfer (4WD) refer to INSTALLATION OF TRANSMISSION WITH TRANSFER on page [MT1-20](#).

1. PLACE TRANSMISSION AT INSTALLATION POSITION

Insert the extension housing between the member and floor and then slide the transmission forward.

Align the input shaft spline with the clutch disc, and push the transmission fully into position.

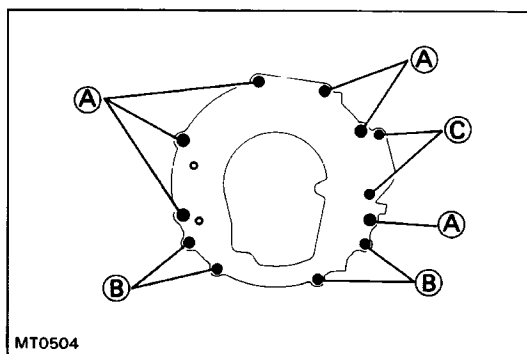


2.-1 (22R-E)

INSTALL TRANSMISSION BOLTS AND STIFFENER BOLTS AND STARTER

Torque:

- (A) Transmission mounting bolt
72 N-m (730 kgf-cm, 53 ft-lbf)
- (B) Stiffener plate bolt
37 N-m (380 kgf-cm, 27 ft-lbf)
- (C) Starter bolt 39 N-m (400 kgf-cm, 29 ft-lbf)

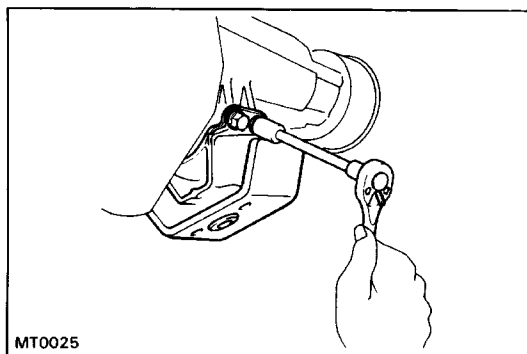


2.-2 (3VZ-E)

INSTALL TRANSMISSION BOLTS AND STIFFENER BOLTS

Torque:

- (A) Transmission mounting bolt
72 N-m (730 kgf-cm, 53 ft-lbf)
- (B) Stiffener plate bolt
37 N-m (380 kgf-cm, 27 ft-lbf)
- (C) Starter bolt 39 N-m (400 kgf-cm, 29 ft-lbf)

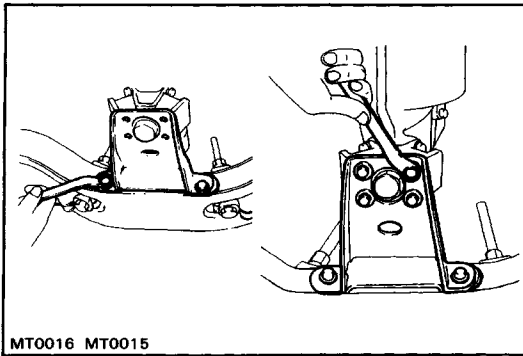


3. INSTALL ENGINE REAR MOUNTING AND BRACKET

- (a) Install the engine rear mounting. Torque the bolts.

Torque: 25 N - m (260 kgf-cm, 19 ft-lbf)

- (b) Raise the transmission slightly by raising the engine with a jack and a wooden block under the transmission.



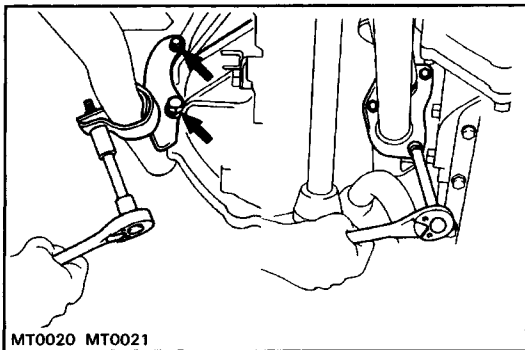
- (c) Install the engine rear mounting bracket to the support member. Torque the bolts.

Torque: 59 N – m (590 kgf – cm, 43 ft – lbf)

- (d) Lower the transmission and rest it on the extension housing.
(e) Install the bracket to the mounting. Torque the bolts.

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

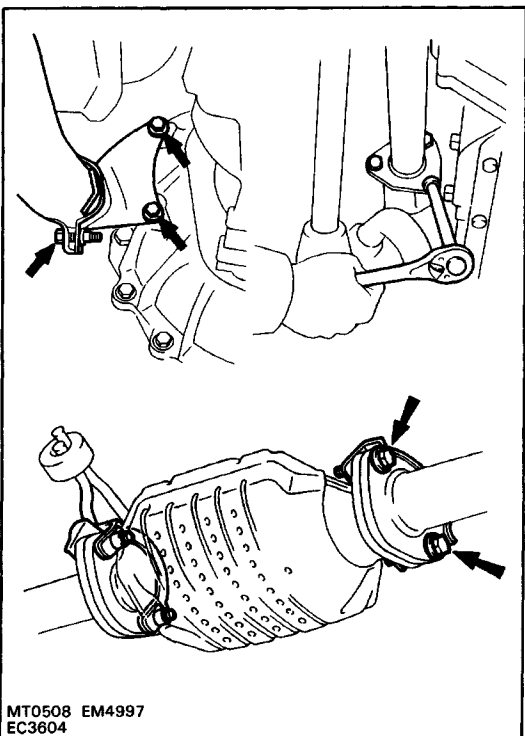
4. REMOVE PIECE OF WOOD FROM FRONT CROSSMEMBER



5.-1(22R-E)

INSTALL EXHAUST PIPE, BRACKET AND CLAMP

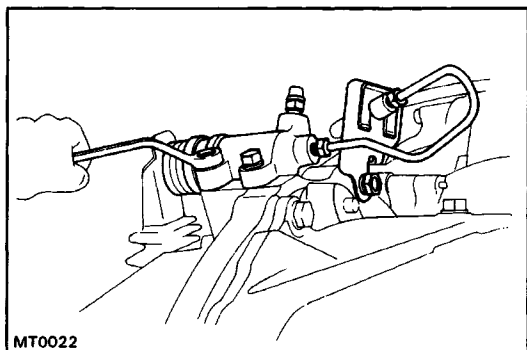
- (a) Install the exhaust pipe to the manifold.
Torque: 62 N – m (630 kgf – cm, 46 ft – lbf)
(b) Install the pipe bracket to the clutch housing.
Torque: Upper 19 N – m (195 kgf – cm, 14 ft– lbf)
Lower 69 N – m (700 kgf – cm, 51 ft – lbf)
(c) Install the exhaust pipe clamp.



5.-2 (3VZ-E)

INSTALL EXHAUST PIPE, BRACKET AND CLAMP

- (a) Install the exhaust pipe to the manifold.
Torque: 62 N – m (630 kgf – cm, 46 ft – lbf)
(b) Connect exhaust pipe to catalytic converter front side.
Torque: 39 N – m (400 kgf – cm, 29 ft – lbf)
(c) Install the pipe bracket to the clutch housing.
Torque: 39 N-m (400 kgf-cm, 29 ft-lbf)
(d) Install the exhaust pipe clamp.



6.-1 (22R-E)
INSTALL STARTER LOWER MOUNTING BOLT AND CLUTCH RELEASE CYLINDER AND BRACKET

Torque:

Starter

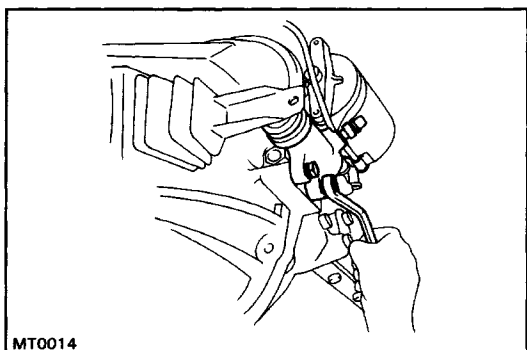
39 N-m (400 kgf-cm, 29 ft-lbf)

Tube Bracket

72 N-m (730 kgf-cm, 53 ft-lbf)

Clutch Release Cylinder

12 N-m (120 kgf-cm, 9 ft-lbf)

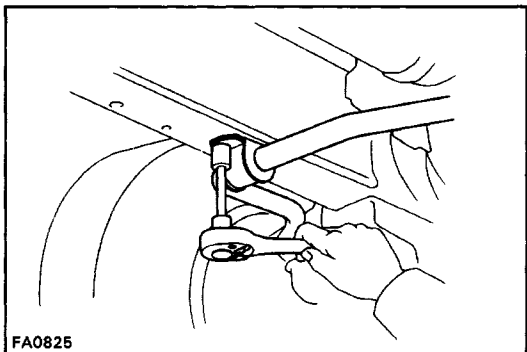


6.-2(3VZ-E)
INSTALL CLUTCH RELEASE CYLINDER

Torque:

Clutch Release Cylinder

12 N-m (120 kgf-cm, 9 ft-lbf)



7. INSTALL STABILIZER BRACKET SET BOLTS

Install and torque the four bolts.

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

8. INSTALL FRAME AUXILIARY CROSSMEMBER

Install and torque the four bolts.

Torque: 95 N-m (970 kgf-cm, 70 ft-lbf)

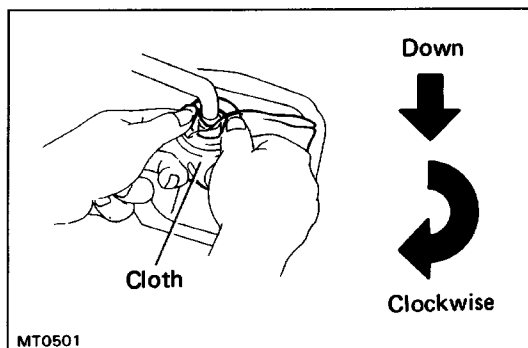
9. CONNECT SPEEDOMETER CABLE AND BACK-UP LIGHT SWITCH

10. CONNECT PROPELLER SHAFT

(See page [PR-15](#))

11. FILL TRANSMISSION WITH OIL

Transmissions Items	R 150	W55
Oil grade	API GL-4 or GL-5	API GL-4 or GL5
Viscosity	SEA 75W-90	SEA75W-90 or 80W-90
Transmission oil capacity	3.0 liters (3.2 US qts 2.6 Imp. qts)	2.4 liters (2.5 US qts 2.1 Imp. qts)

**12. LOWER VEHICLE****13. INSTALL SHIFT LEVER**

- (a) Apply MP grease to the shift lever.
- (b) Align the groove of the shift lever cap and the pin part of case cover.
- (c) Cover the shift lever cap with a cloth.
- (d) Then, pressing down on the shift lever cap, rotate it clockwise to install.
- (e) Install the shift lever boot and retainer with four screws.

14. INSTALL FAN SHROUD SET BOLTS

Install and torque the four bolts.

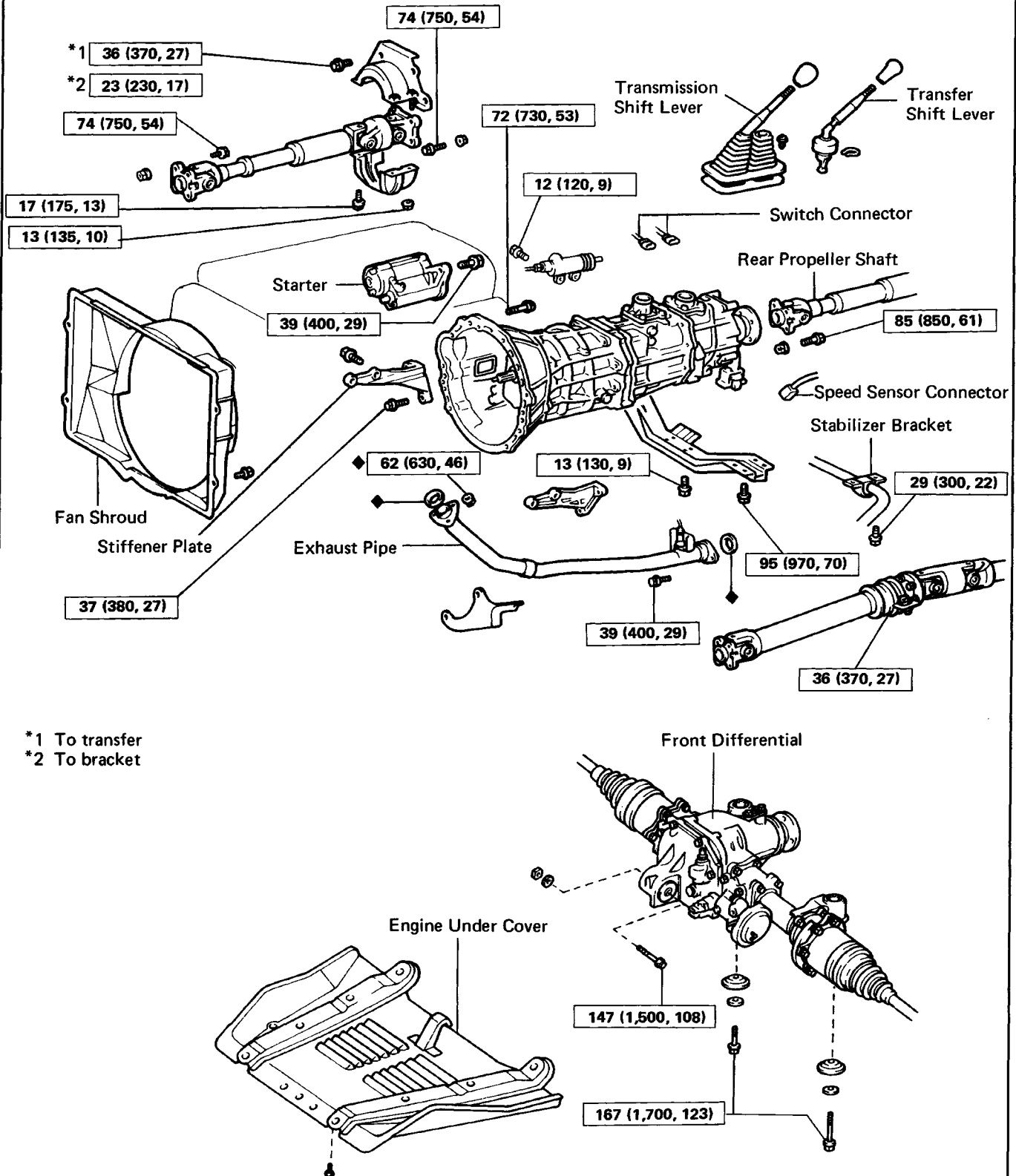
15. CONNECT BATTERY CABLE TO NEGATIVE TERMINAL**16. PERFORM ROAD TEST**

Check for abnormal noise and smooth operation.

REMOVAL AND INSTALLATION OF TRANSMISSION WITH TRANSFER (Cont'd)

Remove and install the parts as shown.

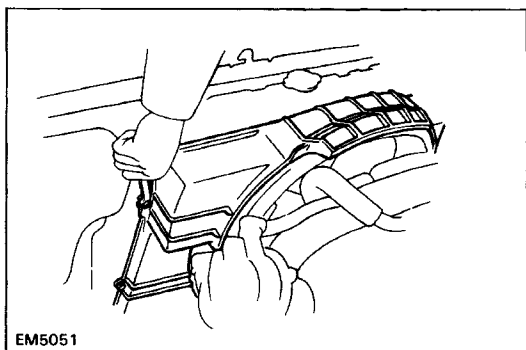
[3VZ-E] R150F Transmission and Planetary Gear Type Transfer



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

◆ Non-reusable part

Q00641
TF0641

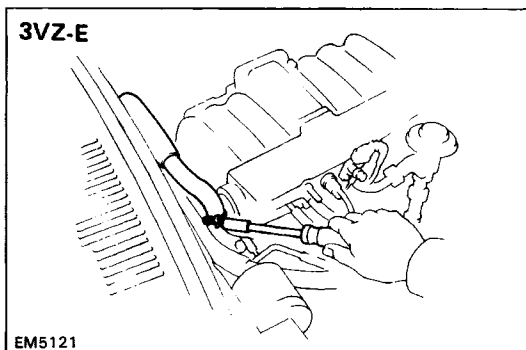


REMOVAL OF TRANSMISSION WITH TRANSFER

1. DISCONNECT BATTERY CABLE FROM NEGATIVE TERMINAL

2. REMOVE FAN SHROUD SET BOLTS

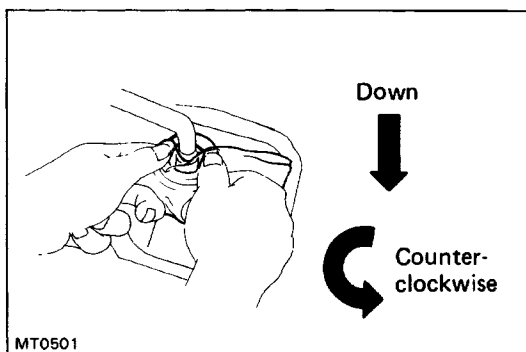
Remove the four bolts.



3. (3 VZ-E)

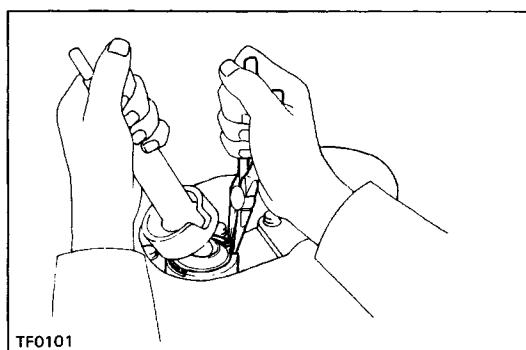
REMOVE HEATER HOSE CLAMP

- (a) Loosen clamp bolt.
- (b) Move the clamp upside.



4. REMOVE TRANSMISSION SHIFT LEVER FROM INSIDE OF VEHICLE

- (a) Remove the four screws and remove the shift lever boot retainer.
- (b) Pull up the shift lever boot.
- (c) Cover the shift lever cap with cloth.
- (d) Then, pressing down on the shift lever cap, rotate it counterclockwise to remove.
- (e) Remove the shift lever.

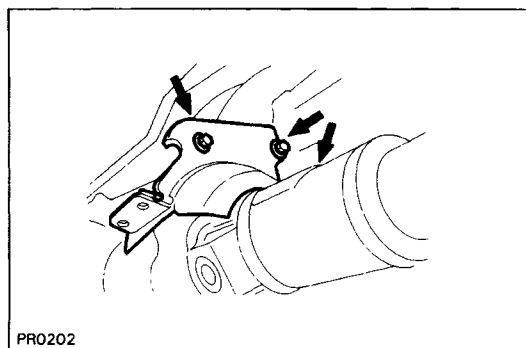


5. REMOVE TRANSFER SHIFT LEVER FROM INSIDE OF VEHICLE

Using pliers, remove the snap ring and pull out the shift lever from the transfer.

6. RAISE VEHICLE AND DRAIN TRANSMISSION AND TRANSFER OIL

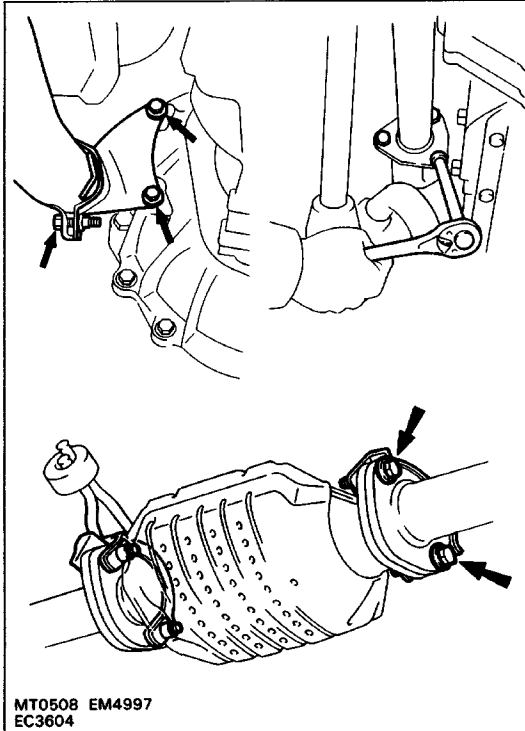
NOTICE: Be sure the vehicle is securely supported.



7. (R 150F, G58)

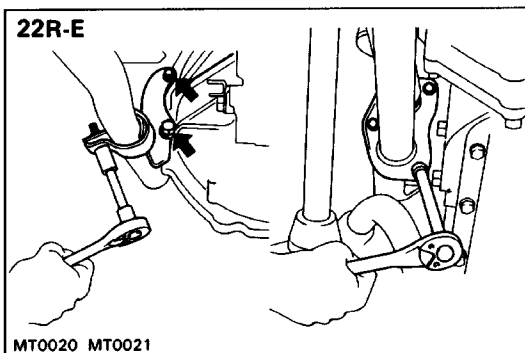
REMOVE PROPELLER SHAFT DUST COVER SUBASSEMBLY

Remove the three bolts and cover.

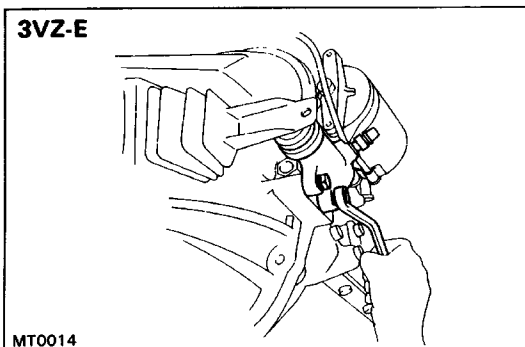
8. DISCONNECT PROPELLER SHAFT(See page [PR-5](#))**9. DISCONNECT SPEEDOMETER CABLE, BACK-UP LIGHT SWITCH CONNECTOR AND TRANSFER INDICATOR SWITCH CONNECTOR****10.-1(3VZ-E)****REMOVE EXHAUST PIPE, BRACKET AND CLAMP**

- (a) Remove exhaust pipe clamp.
- (b) Remove exhaust pipe bracket from clutch housing.
- (c) Remove exhaust pipe from exhaust manifold.

- (d) Disconnect exhaust pipe from catalytic converter front side.

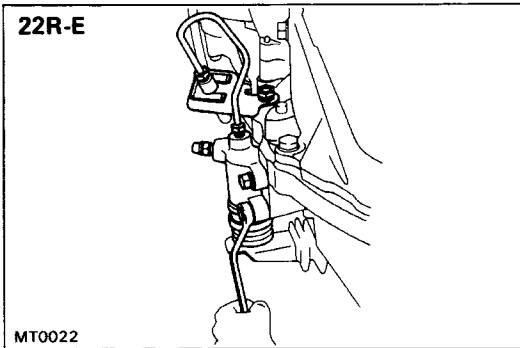
**10.-2 (22R-E)****REMOVE EXHAUST PIPE CLAMP AND EXHAUST PIPE**

- (a) Remove exhaust pipe clamp.
- (b) Remove exhaust pipe from exhaust manifold.

**11.-1 (3VZ-E)****REMOVE CLUTCH RELEASE CYLINDER**

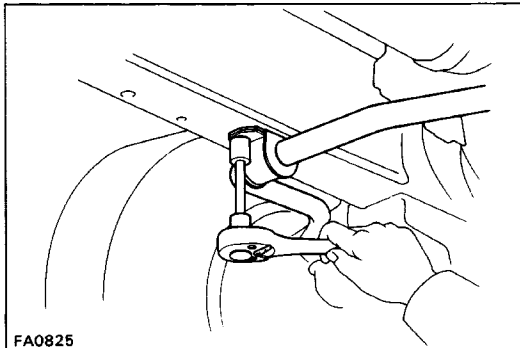
Lay the release cylinder alongside the engine.

HINT: Do not disconnect the clutch line.

**11.-2 (22R-E)****REMOVE CLUTCH RELEASE CYLINDER, TUBE BRACKET**

Remove the mounting bolts and lay the cylinder alongside the engine.

HINT: Do not disconnect the clutch line.

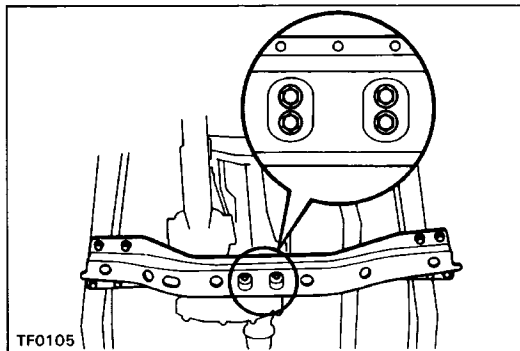
**12. (3VZ-E)****REMOVE THE FRONT DIFFERENTIAL SET BOLTS**

(a) Remove the three bolts.

(b) Support the front differential.

13. REMOVE THE STABILIZER BRACKET SET BOLTS

Remove four bolts.

**14. REMOVE NO.2 FRAME CROSSMEMBER FROM SIDE FRAME**

(a) Remove the four bolts from the engine rear mounting.

(b) Raise the transmission slightly with a jack.

(c) Remove the eight bolts from the side frame and remove the No.2 frame crossmember.

15. (22R-E)**PLACE PIECE OF WOOD BETWEEN ENGINE OIL PAN AND FRONT AXLE****16. LOW TRANSMISSION WITH TRANSFER****17. REMOVE STARTER**

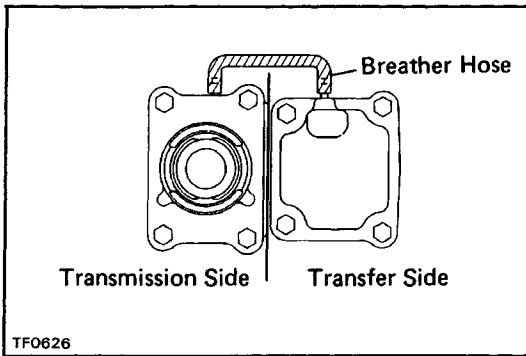
(a) Remove the two bolts.

(b) Lay the starter alongside the engine.

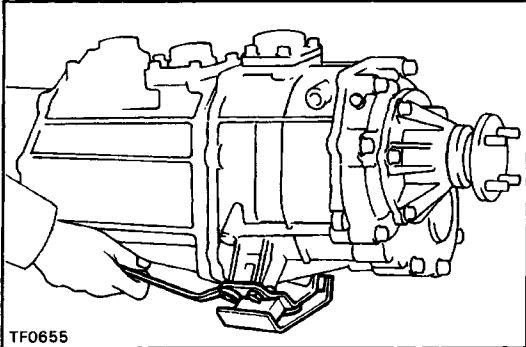
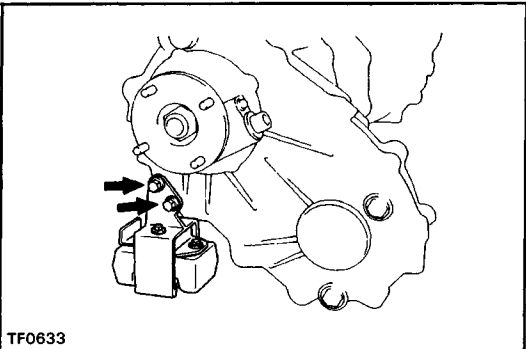
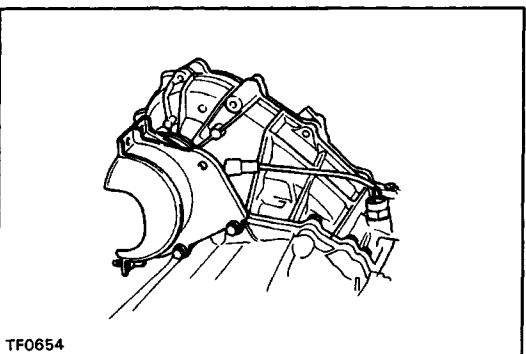
18. REMOVE EXHAUST PIPE BRACKET AND STIFFENER PLATE BOLTS**19. REMOVE REMAINING TRANSMISSION BOLTS****20. REMOVE TRANSMISSION WITH TRANSFER**

(a) Draw out the transmission with the transfer toward the rear.

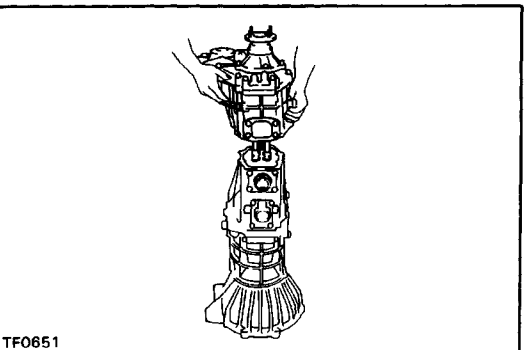
(b) Lower the transmission with the transfer front and remove it from the vehicle.

**21. (22R-E/G58)****REMOVE BREATHER HOSE**

Disconnect the breather hose from transfer upper cover and transmission control retainer.

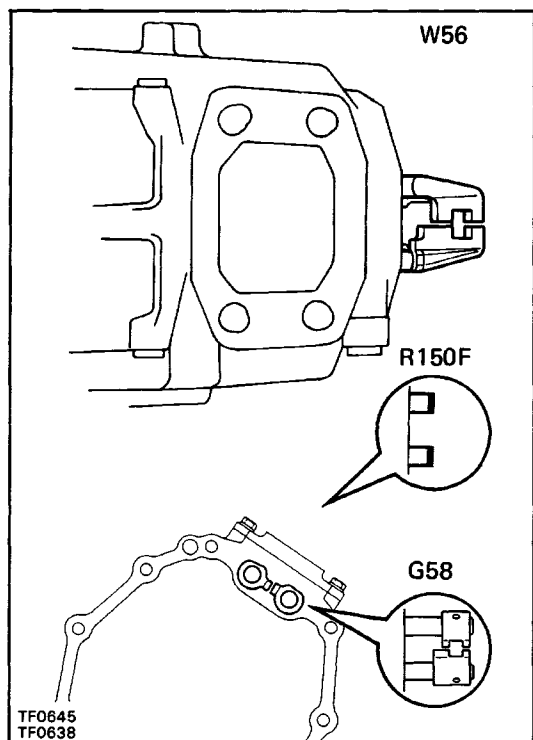
**22. REMOVE ENGINE REAR MOUNTING****23. (Regular Cab w/ Planetary Gear Type Transfer)****REMOVE DYNAMIC DAMPER****24. REMOVE PROPELLER SHAFT UPPER DUST COVER AND****TRANSFER FROM TRANSMISSION**

- (a) Remove the dust cover bolt from the bracket.
- (b) Remove the transfer adaptor rear mounting bolts.



- (c) Pull the transfer straight up and remove it from the transmission.

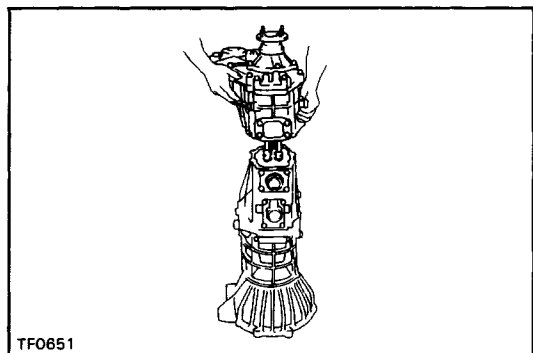
HINT: Take care not to damage the adaptor rear oil seal with the transfer input gear spline.



INSTALLATION OF TRANSMISSION WITH TRANSFER

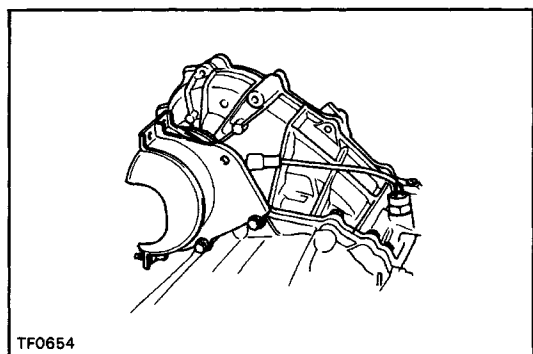
1. INSTALL TRANSFER AND PROPELLER SHAFT UPPER DUST COVER TO TRANSMISSION WITH NEW GASKET

- (a) Shift the two shift fork shafts to the high-four position.



- (b) Apply MP grease to the adaptor oil seal.
 (c) Place a new gasket to the transfer adaptor.
 (d) Install the transfer to the transmission.

HINT: Take care not to damage the oil seal by the input gear spline when installing the transfer.



- (e) Install and torque the bolts with the propeller shaft upper dust cover.

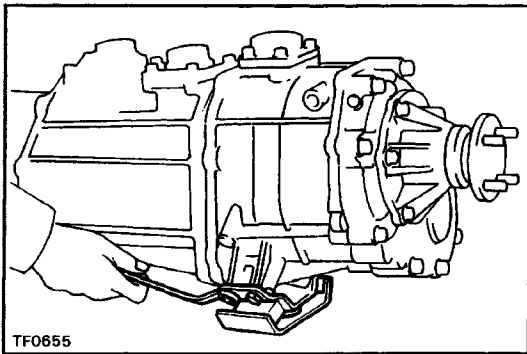
Torque:

W56	39 N-m (400 kgf-cm, 29 ft-lbf)
R150F, G58	37 N-m (380 kgf-cm, 27 ft-lbf)

- (f) Install the dust cover bolt to the bracket.

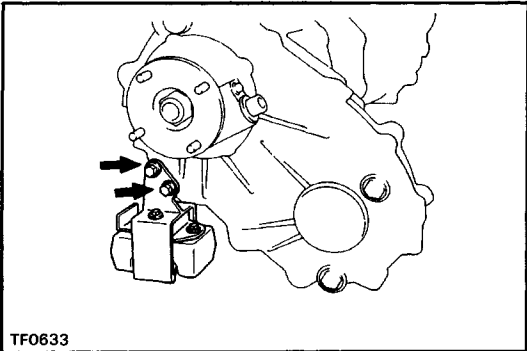
Torque:

R150F, G58	23 N-m (230 kgf -cm, 17 ft-lbf)
W56	39 N-m (400 kgf-cm, 29 ft-lbf)



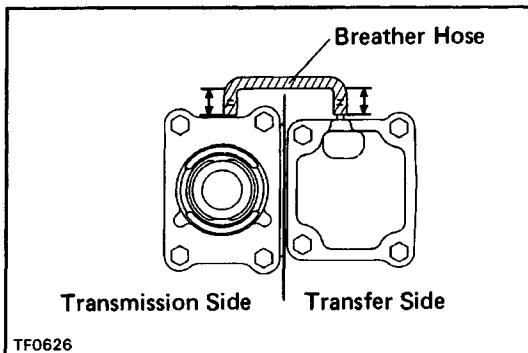
2. INSTALL ENGINE REAR MOUNTING

Torque: 25 N-m (260 kgf-cm, 19 ft-lbf)



3. (Regular Cab w/ Planetary Gear Type Transfer) INSTALL DYNAMIC DAMPER

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



4. (22R-E/G 58)

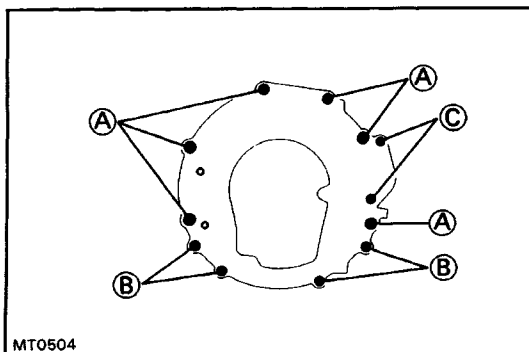
INSTALL BREATHER HOSE

Connect the breather hose for transfer upper cover and transmission control retainer as shown.

Hose depth: 13 mm (0.51 in.)

5. PLACE TRANSMISSION WITH TRANSFER AT INSTALLATION POSITION

- Support the transmission with a jack.
- Align the input shaft spline with the clutch disc, and push the transmission with the transfer fully into position.

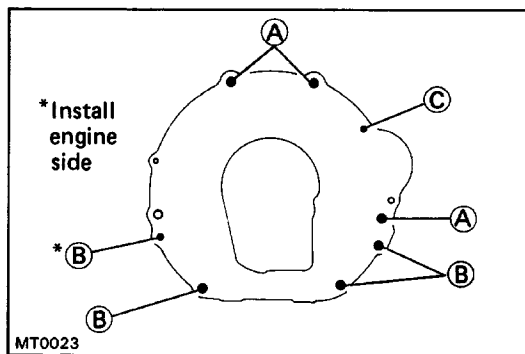
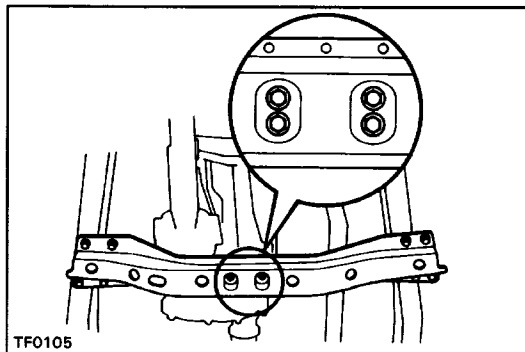


6.-1 (3VZ-E)

INSTALL TRANSMISSION BOLTS, STIFFENER BOLTS AND STARTER

Torque:

- Transmission bolt
72 N-m (730 kgf-cm, 53 ft-lbf)
- Stiffener plate bolt
37 N-m (380 kgf-cm, 27 ft-lbf)
- Starter bolt
39 N-m (400 kgf-cm, 29 ft-lbf)

**6.-2(22R-E)****INSTALL TRANSMISSION BOLTS AND STIFFENER BOLTS****Torque:****(A) Transmission bolt****72 N-m (730 kgf-cm, 53 ft-lbf)****(B) Stiffener plate bolt****37 N-m (380 kgf-cm, 27 ft-lbf)****(C) Starter bolt****39 N-m (400 kgf-cm, 29 ft-lbf)****7. INSTALL NO.2 FRAME CROSSMEMBER**

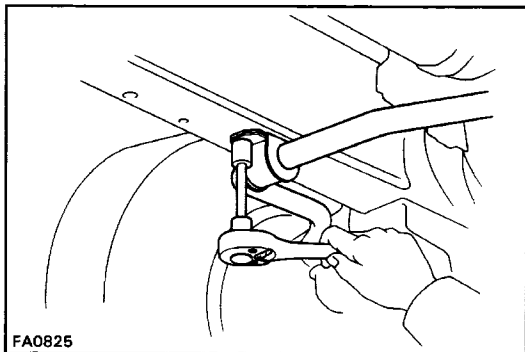
(a) Raise the transmission slightly with a jack.

(b) Install the No.2 frame crossmember to the side frame with the bolts. Torque the bolts.

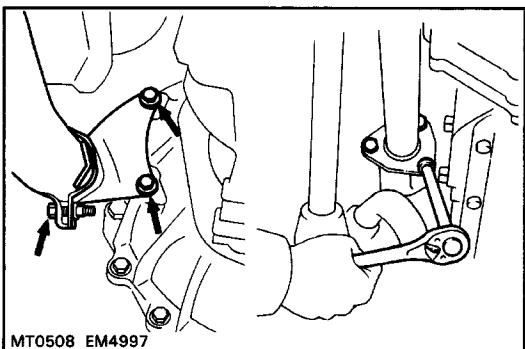
Torque: 95 N-m (970 kgf-cm, 70 ft-lbf)

(c) Lower the transmission and transfer.

(d) Install the four mounting bolts to the engine rear mounting. Torque the bolts.

Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)**8. INSTALL STABILIZER BRACKET SET BOLTS****Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)****9.(22R-E)****REMOVE PIECE OF WOOD FROM FRONT AXLE****10. (3VZ-E)****INSTALL THE FRONT DIFFERENTIAL ASSEMBLY**

Install and torque the three bolts.

Torque:**Differential carrier cover to frame****147 N-m (1500 kgf-cm, 108 ft-lbf)****Others****167 N-m (1700 kgf-cm, 123 ft-lbf)****11.-1(3VZ-E)****INSTALL EXHAUST PIPE, BRACKET AND CLAMP**

(a) Install exhaust pipe to the manifold.

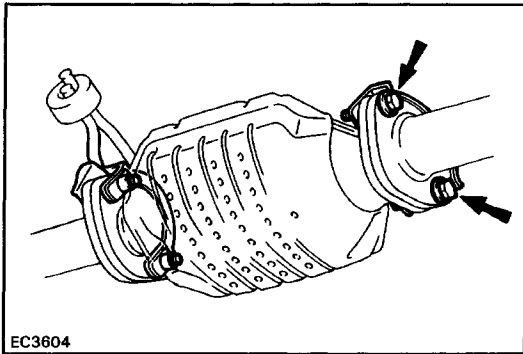
Torque: 62 N-m (630 kgf-cm, 46 ft-lbf)

(b) Install exhaust pipe bracket to the clutch housing.

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

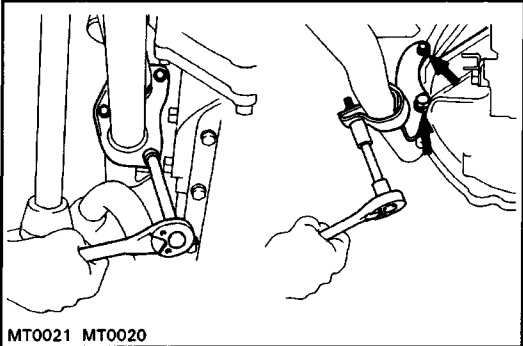
(c) Install exhaust pipe clamp.

Torque: 19 N-m (195 kgf-cm, 14 ft-lbf)



- (d) Connect the exhaust pipe to the catalytic converter front side, and torque the bolts.

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



11.-2(22R-E)

INSTALL EXHAUST PIPE, BRACKET AND CLAMP

- (a) Install the exhaust pipe to the manifold.

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

- (b) Install the pipe bracket to the clutch housing.

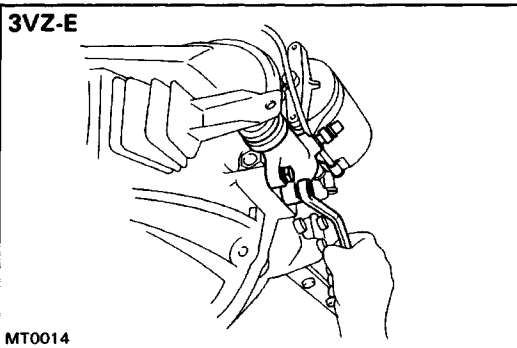
Torque the bolts.

Torque: Upper 19 N-m (195 kgf-cm, 14 ft-lbf)

Lower 69 N · m (700 kgf-cm, 51 ft-lbf)

- (c) Install the exhaust pipe clamp.

Torque: 19 N · m 1195 kgf-cm, 14 ft-lbf)

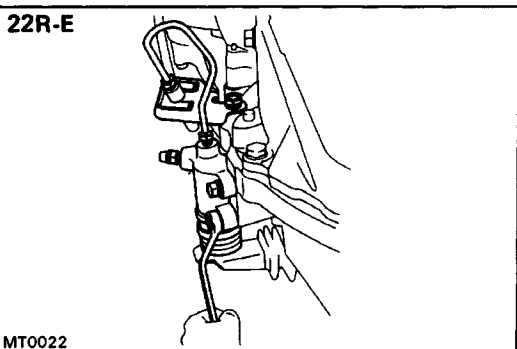


12.-1(3VZ-E)

INSTALL CLUTCH RELEASE CYLINDER

Install clutch release cylinder and torque the two bolts.

Torque: 12 N · m (120 kgf-cm, 9 ft-lbf)



12.-2(22R-E)

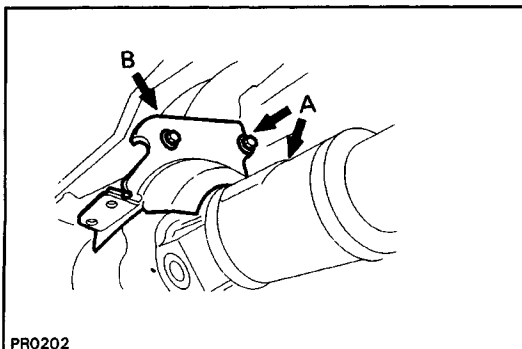
INSTALL STARTER MOUNTING BOLTS, CLUTCH RELEASE CYLINDER AND TUBE BRACKET

- (a) Install tube bracket and torque the starter lower mounting bolt and nut.

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

- (b) Install clutch release cylinder and torque the two bolts.

Torque: 12 N · m (120 kgf-cm, 9 ft-lbf)



13.(R150F, G58)

INSTALL PROPELLER SHAFT DUST COVER SUBASSEMBLY

- (a) Install the cover.

- (b) Install and torque the three bolts.

Torque:

A-bolt 36 N · m (370 kgf-cm, 27 ft-lbf)

B-bolt 23 N · m (230 kgf-cm, 17 ft-lbf)

14. CONNECT SPEEDOMETER CABLE, BACK-UP LIGHT SWITCH CONNECTOR AND TRANSFER INDICATOR SWITCH CONNECTOR

15. CONNECT PROPELLER SHAFT

(See page [PR-15](#))

16. FILL TRANSMISSION AND TRANSFER WITH OIL

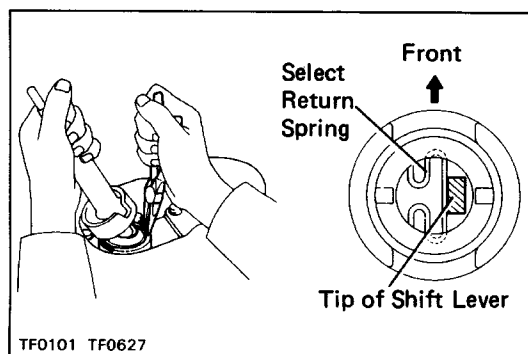
(Transmission oil)

TIM (Engine) Items	R150F (3VZ-E)	G58 (22R-E)	W56 (22R-E)
Oil grade	API GL-4 or GL-5	API GL-4 or GL-5	API GL-4 or GL-5
Viscosity	SAE 75W-90	SAE 75W-90	SAE 75W-90 or 80W-90
Oil capacity	3.0 liters (3.2 US qts.) (2.6 Imp. qts.)	3.9 liters (4.1 US qts.) (3.4 Imp. qts.)	3.0 liters (3.2 US qts.) (2.6 Imp. qts.)

(Transfer oil)

TIM (Engine) Items	R 150F (3VZ-E)	G58 (22R-E)	W56 (22R-E)
Oil grade	API GL-4 or GL-5	API GL-4 or GL-5	API GL-4 or GL-5
Viscosity	SAE 75W-90	SAE 75W-90	SAE 75W-90
Oil capacity	1.1 liters (1.2 US qts.) (1.0 Imp. qts.)	1.1 liters (1.2 US qts.) (1.0 Imp. qts.)	1.6 liters (1.7 US qts.) (1.4 Imp. qts.)

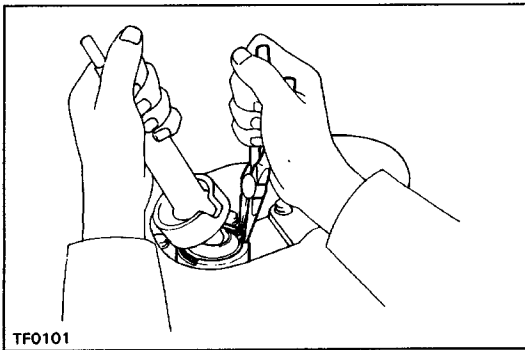
17. LOWER VEHICLE



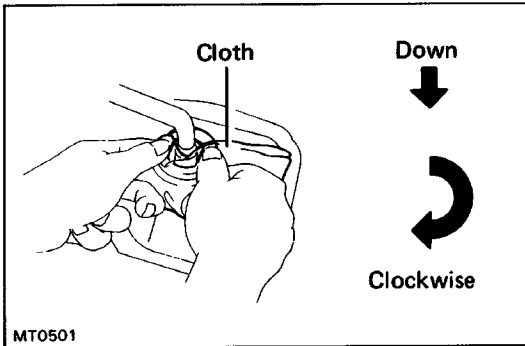
18.-1(R 150F, G58)

INSTALL TRANSFER SHIFT LEVER

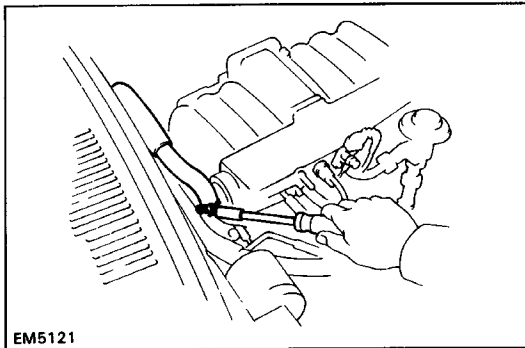
- Apply MP grease to the transfer shift lever.
- Install the shift lever as shown.
- Using pliers, install snap ring.

**18.–2(W56)****INSTALL TRANSFER SHIFT LEVER**

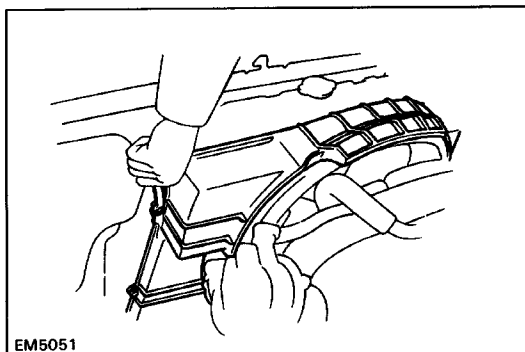
- (a) Apply MP grease to the transfer shift lever.
- (b) Using pliers, install the shift lever and snap ring.

**19. INSTALL TRANSMISSION SHIFT LEVER**

- (a) Apply MP grease to the transmission shift lever.
- (b) Align the groove of the shift lever cap and the pin part of the case cover.
- (c) Cover the shift lever cap with a cloth.
- (d) Then, pressing down on the shift lever cap, rotate it clockwise to install.

**20. (3VZ-E)****INSTALL HEATER HOSE CLAMP,**

- (a) Move the clamp to correct position.
- (b) Torque the clamp bolt.

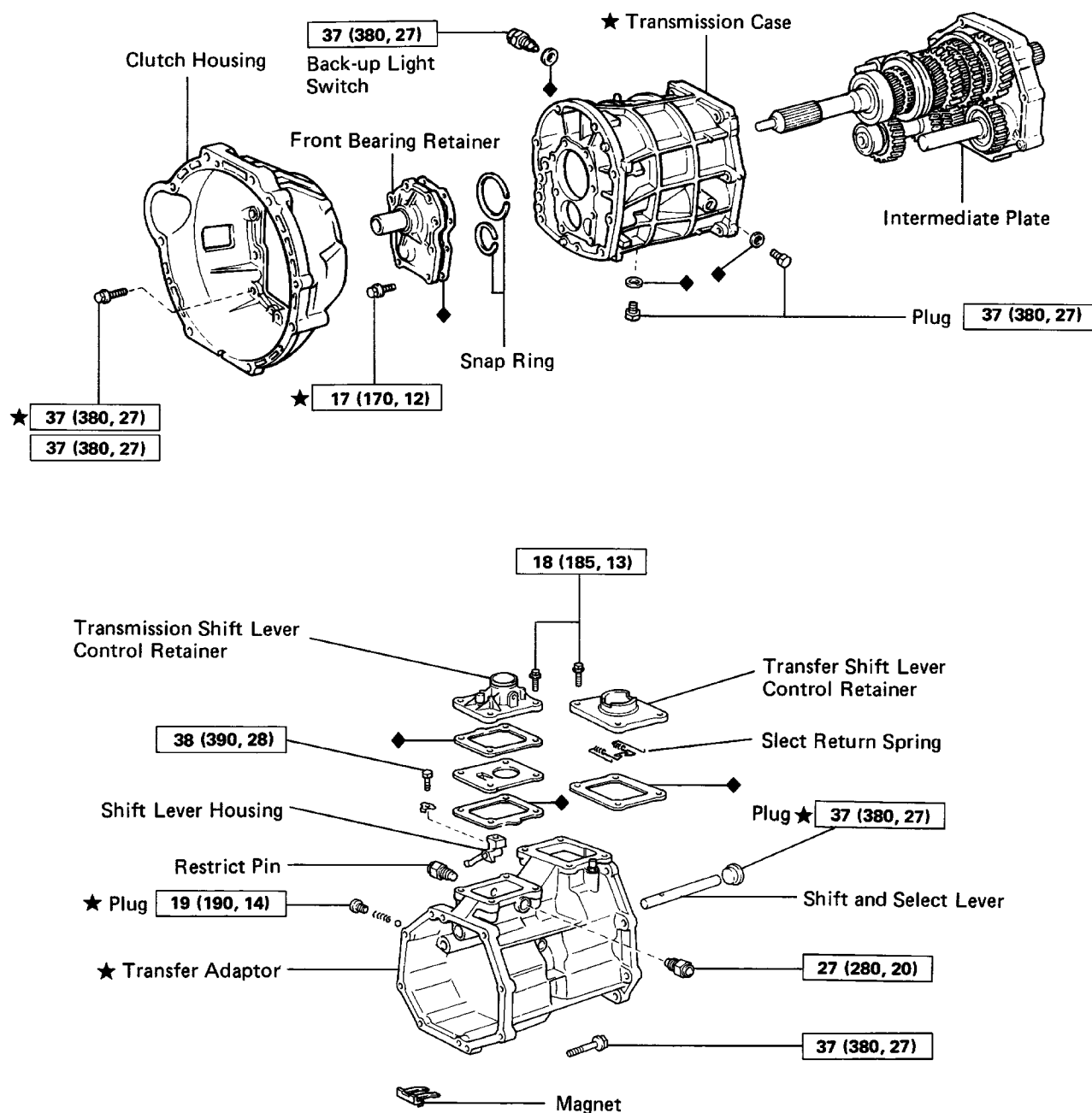
**21. INSTALL FAN SHROUD SET BOLTS**

Install and torque the four bolts.

22. CONNECT BATTERY CABLE TO NEGATIVE TERMINAL**23. PERFORM ROAD TEST**

Check for abnormal noise and smooth operation.

DISASSEMBLY OF TRANSMISSION (G58 TRANSMISSION) Components



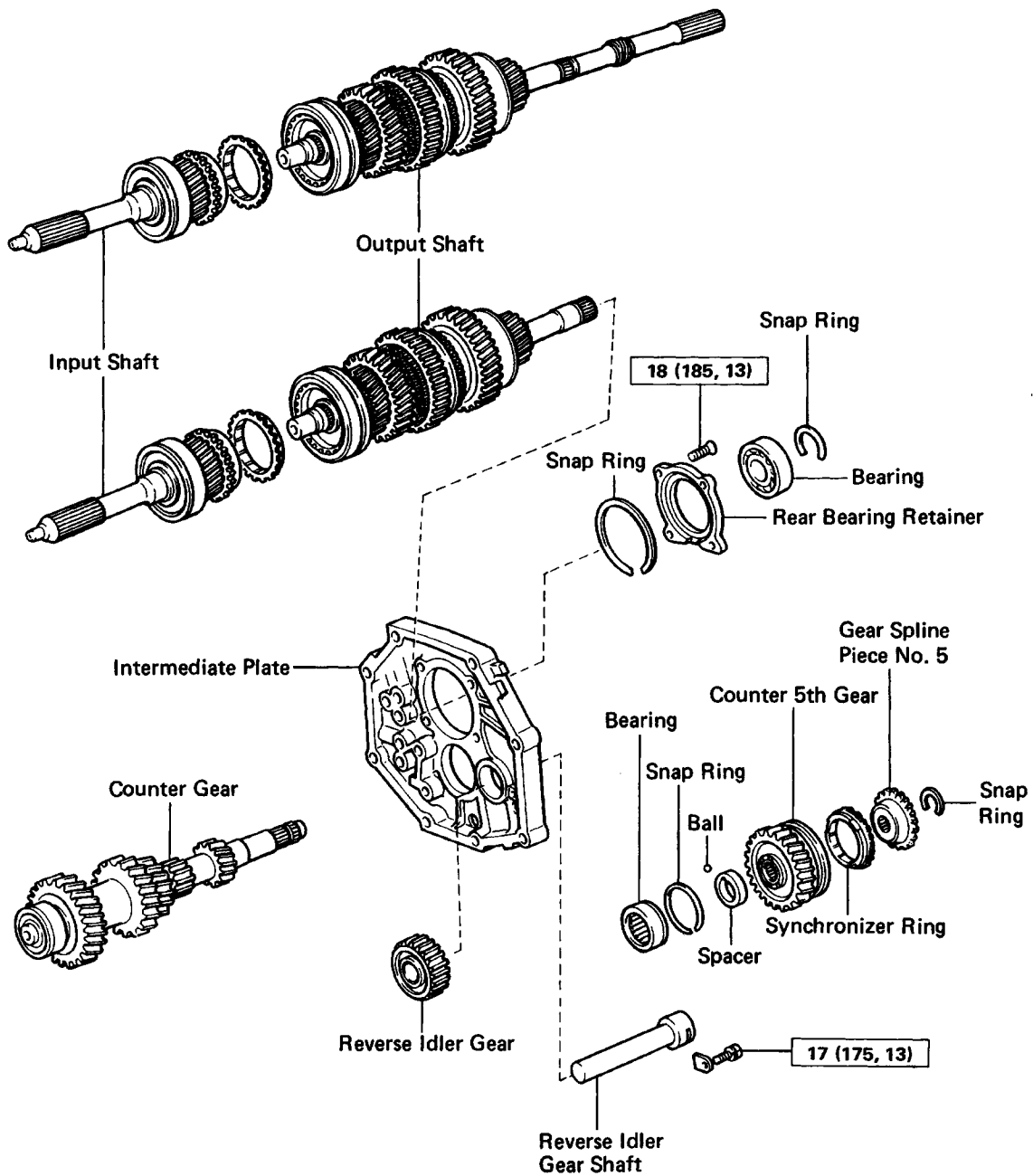
N·m (kgf·cm, ft·lbf) : Specified torque

- ◆ Non-reusable part
- ★ Precoated part

Components (Cont'd)

2WD

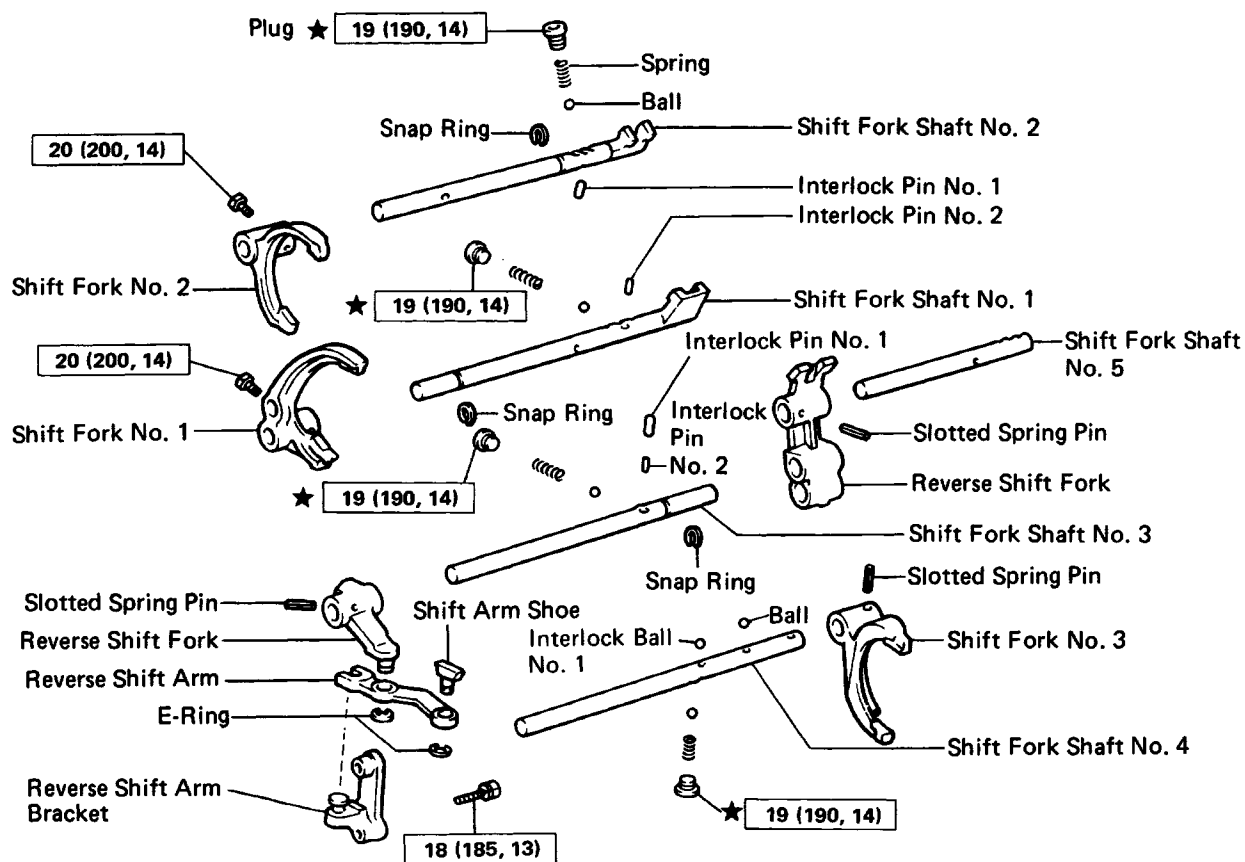
4WD



GM0325

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

Components (Cont'd)



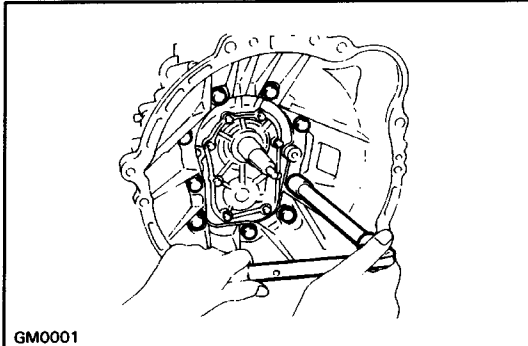
[N·m (kgf·cm, ft·lbf)] : Specified torque

★ Precoated part

Disassembly of Transmission

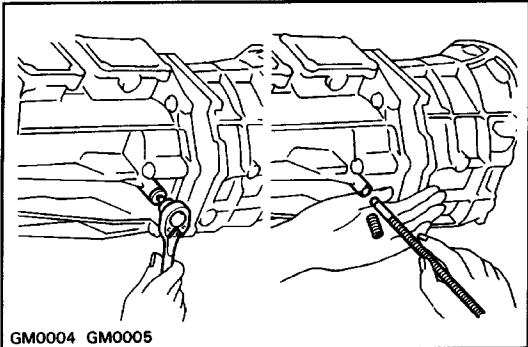
(See pages MT1–26 to 28)

1. REMOVE RELEASE FORK AND BEARING
2. REMOVE BACK-UP LIGHT SWITCH



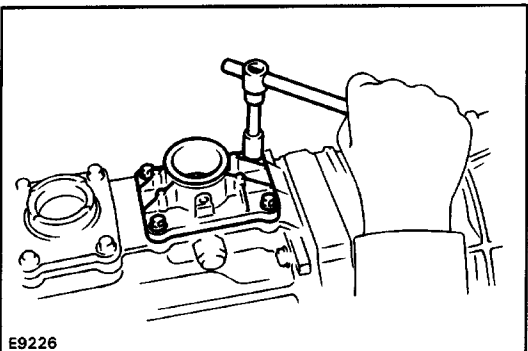
3. REMOVE CLUTCH HOUSING FROM TRANSMISSION CASE

Remove the nine bolts and clutch housing.



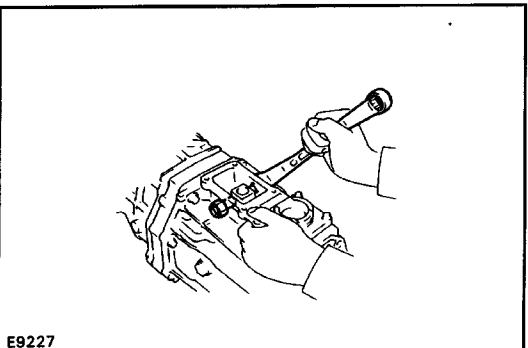
4. REMOVE STRAIGHT SCREW PLUG, SPRING AND BALL

- (a) Using a torx socket wrench, remove the screw plug from the transfer adaptor.
(Torx socket wrench T40 09042–00020)
- (b) Using a magnetic finger, remove the spring and ball.

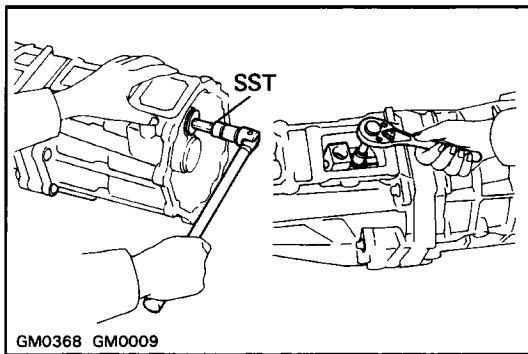


5. REMOVE SHIFT LEVER CONTROL RETAINER

- (a) Remove the four bolts and transmission shift lever control retainer.
- (b) Remove the four bolts, transfer shift lever control retainer and select return spring.

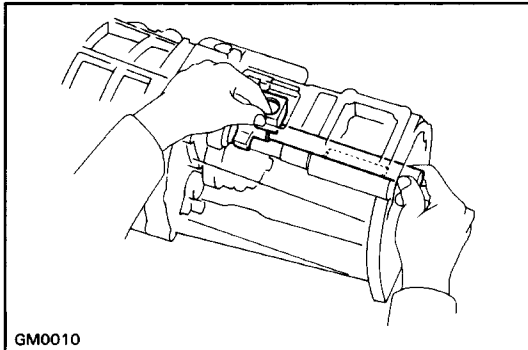


6. REMOVE RESTRICT PINS

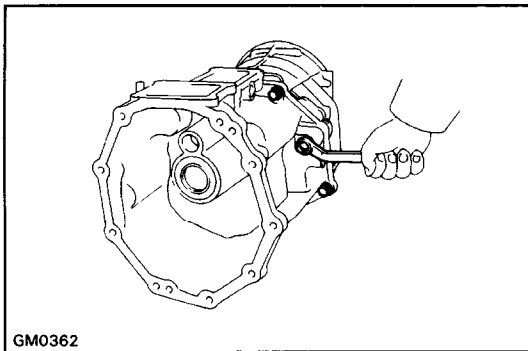


7. REMOVE TRANSFER ADAPTOR

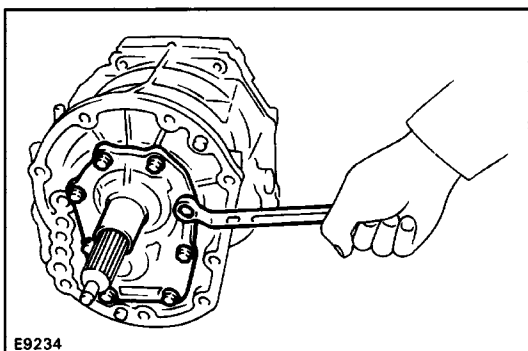
- (a) Using SST, remove the plug from the transfer adaptor.
SST 09923-00010
- (b) Remove the shift lever housing set bolt.



- (c) Remove the shift lever shaft and housing.

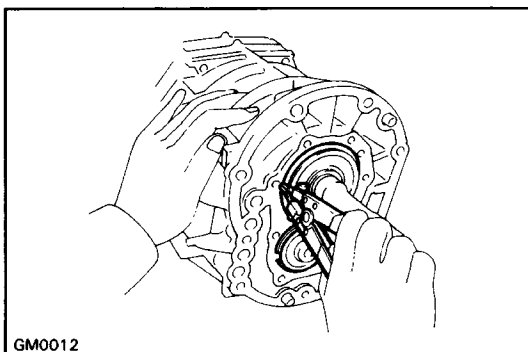


- (d) Remove the eight bolts.
- (e) Using a plastic hammer, carefully tap off the transfer adaptor.



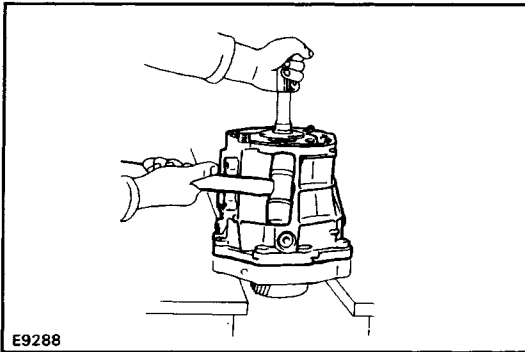
8. REMOVE FRONT BEARING RETAINER

Remove the eight bolts, and remove front bearing retainer and gasket.



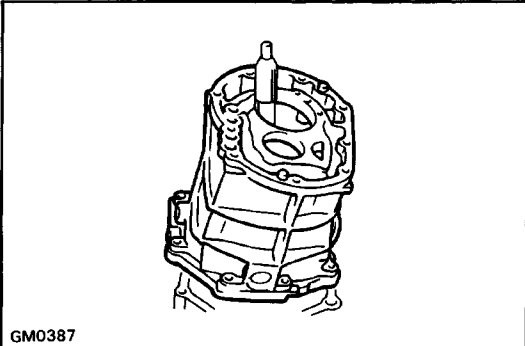
9. REMOVE TWO BEARING SNAP RINGS

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

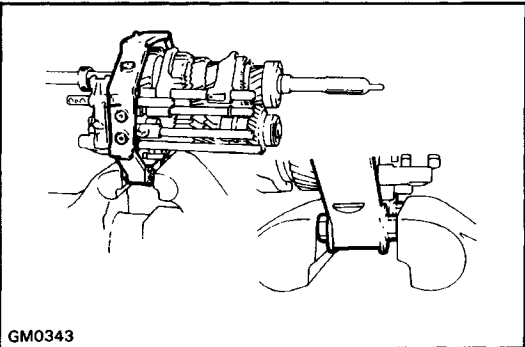


10. SEPARATE INTERMEDIATE PLATE FROM TRANSMISSION CASE

- (a) Stand the transmission as shown.
- (b) Using a plastic hammer, carefully tap off the transmission case.



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

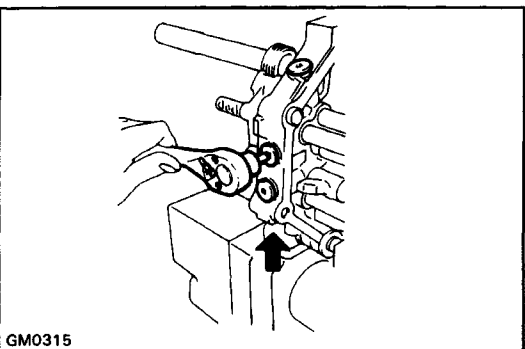


11. MOUNT INTERMEDIATE PLATE IN VISE

- (a) Use two clutch housing bolts, plate washers and suitable nuts as shown.

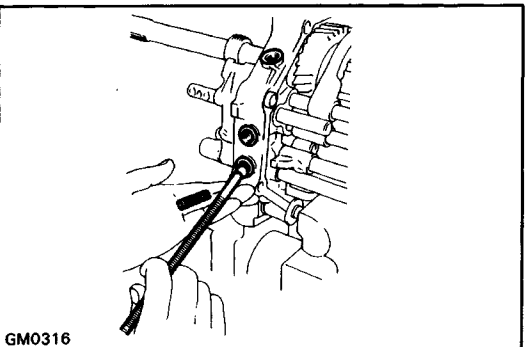
NOTICE: Install the plate washers in reverse of normal. Increase or decrease plate washers so that the bolt tip and front tip surface of the nut are aligned.

- (b) Mount the intermediate plate in a vise.

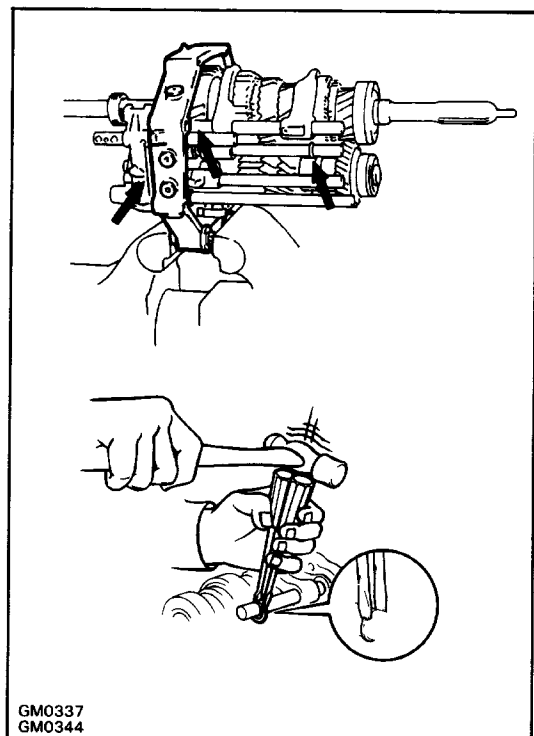


12. REMOVE STRAIGHT SCREW PLUGS, LOCKING BALLS AND SPRINGS

- (a) Using a torx socket wrench, remove the four plugs.
(Torx socket wrench T40 09042-00020)

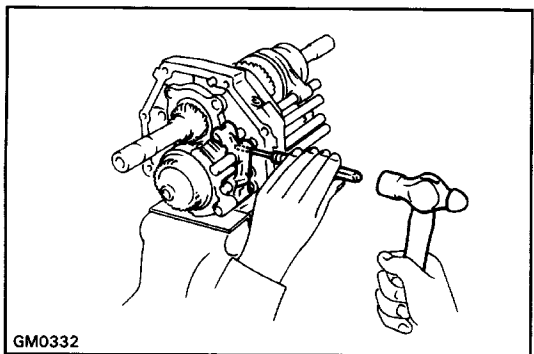


- (b) Using a magnetic finger, remove the springs and balls.



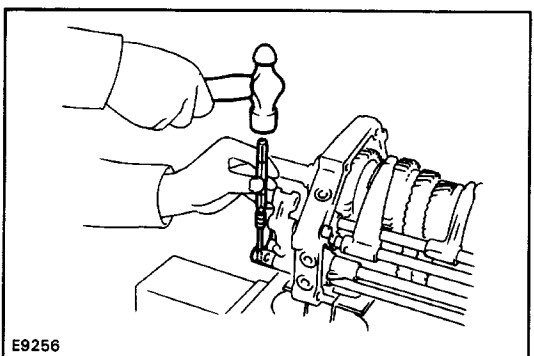
13. REMOVE SHIFT FORK SHAFT SNAP RINGS

Using two screwdrivers and a hammer drive out the three snap rings.



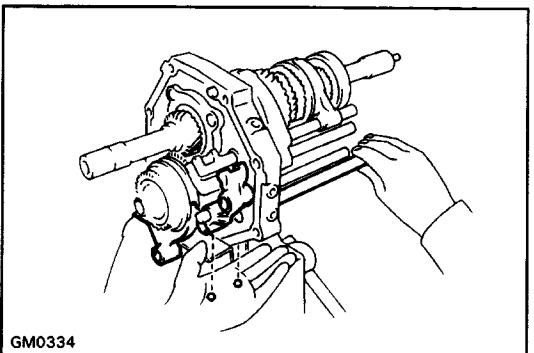
14. REMOVE SHIFT FORK SHAFT NO.5

- (a) Using a pin punch and hammer, drive out the slotted spring pin.
- (b) Remove the shift fork shaft No.5.

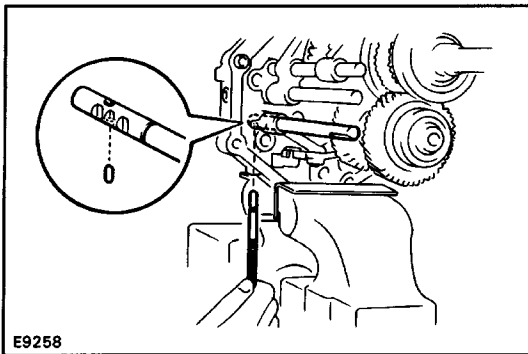


15. REMOVE SHIFT FORK NO.3, SHIFT FORK SHAFT NO.4 AND REVERSE SHIFT HEAD

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

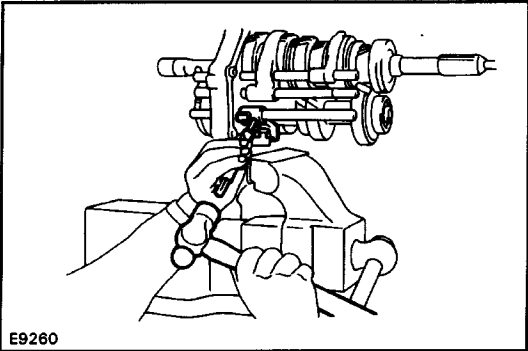


- (b) Remove the shift fork No.3, shift fork shaft No.4, reverse shift head and two balls.

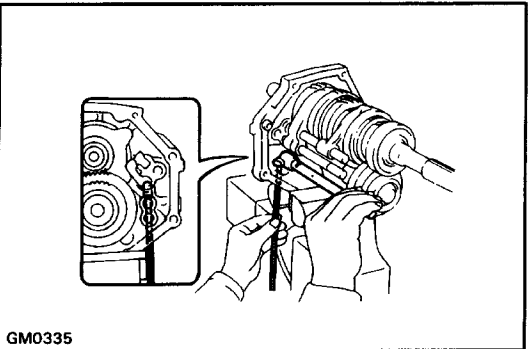


16. REMOVE REVERSE SHIFT ARM, REVERSE SHIFT FORK AND SHIFT FORK SHAFT NO-3

(a) Using a magnetic finger–, remove the interlock pin from shift fork shaft No.3.

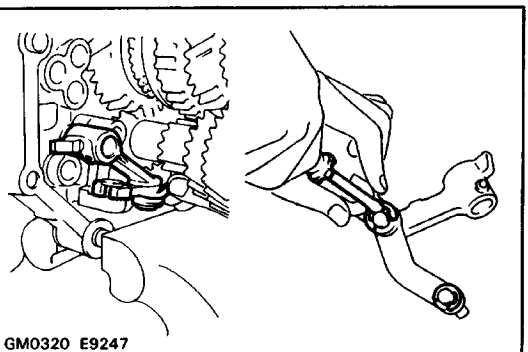


(b) Using a pin punch and hammer, drive out the slotted spring pin.



(c) Remove the shift fork shaft No.3.

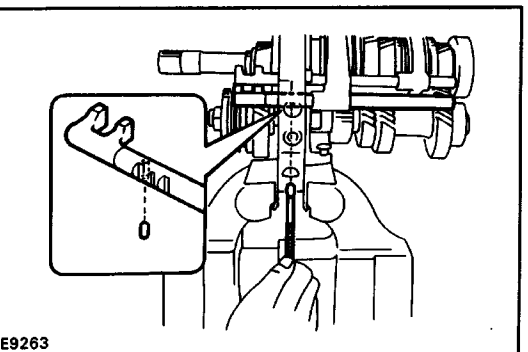
(d) Remove the interlock pin No. 1.



(e) Remove the reverse shift arm and fork.

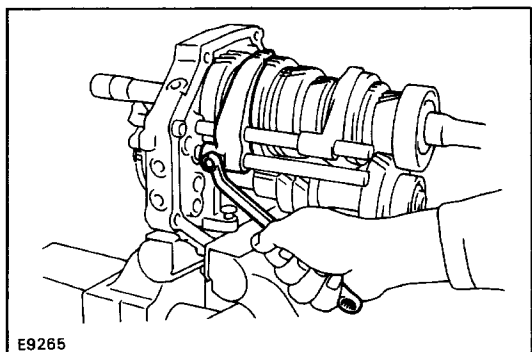
(f) Using a screwdriver, remove the two E-rings.

(g) Separate the shift arm, fork and shoe.

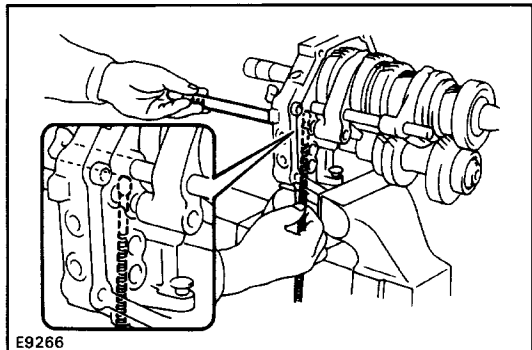


17. REMOVE SHIFT FORK SHAFT NO.1, NO.2 AND SHIFT FORK NO. 1, NO.2

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

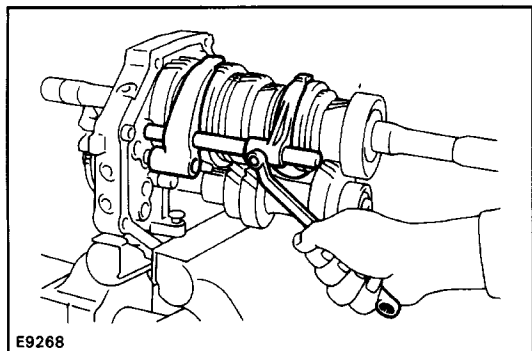


(b) Remove the shift fork No. 1 set bolt.



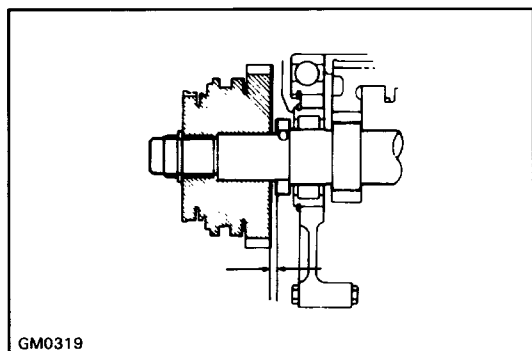
(c) Remove the shift fork shaft No. 1.

(d) Remove the interlock pin No. 1.



(e) Remove the shift fork No. 2 set bolt.

(f) Remove the shift fork No.1, No.2 and shift fork shaft No.2.

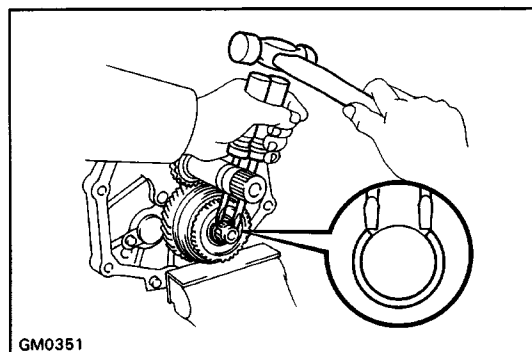


18. INSPECT COUNTER FIFTH GEAR THRUST CLEARANCE

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

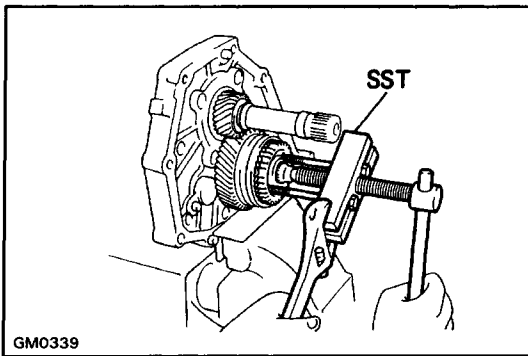
Standard clearance: 0.10 – 0.30 mm
(0.0039 – 0.0118 in.)

Maximum clearance: 0.30 mm (0.0118 in.)



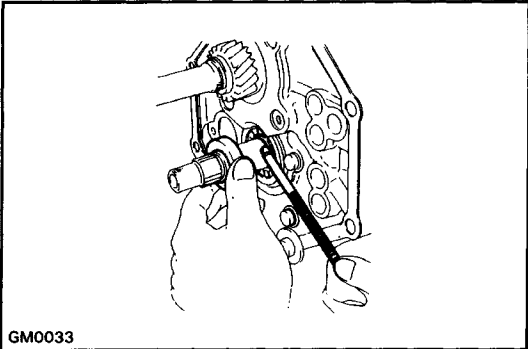
19. REMOVE GEAR SPLINE PIECE NO.5, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS AND COUNTER FIFTH GEAR WITH HUB SLEEVE NO.3

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



(b) Using SST, remove the gear spline piece No. 5.
SST 09213-60017 (09213-00020, 09213-00030, 09213-00060)

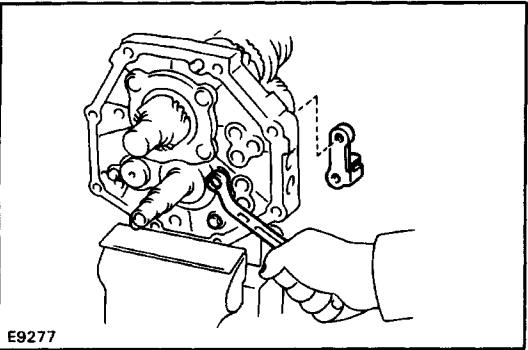
(c) Remove the synchronizer ring, needle roller bearing and counter 5th gear.



20. REMOVE SPACER AND BALL

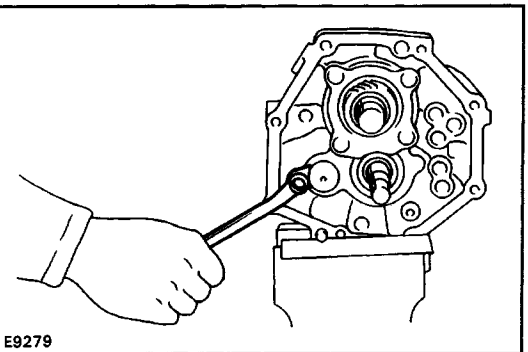
(a) Remove the spacer.

(b) Using a magnetic finger, remove the ball.



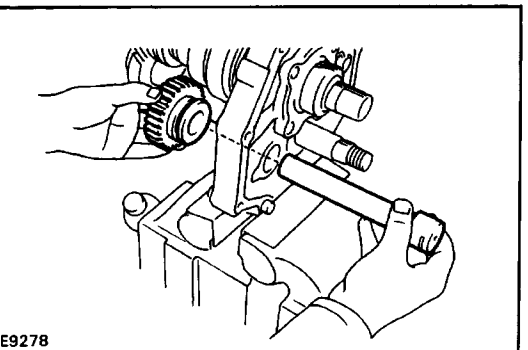
21. REMOVE REVERSE SHIFT ARM BRACKET

Remove the two bolts and reverse shift arm bracket.

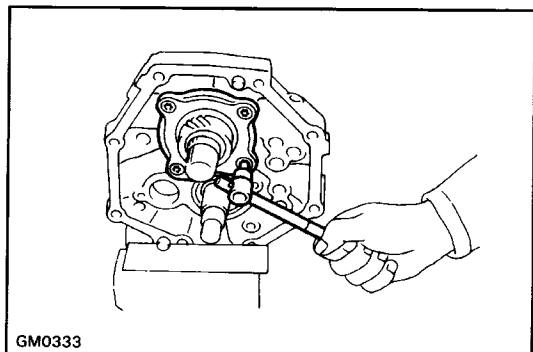


22. REMOVE REVERSE IDLER GEAR AND SHAFT

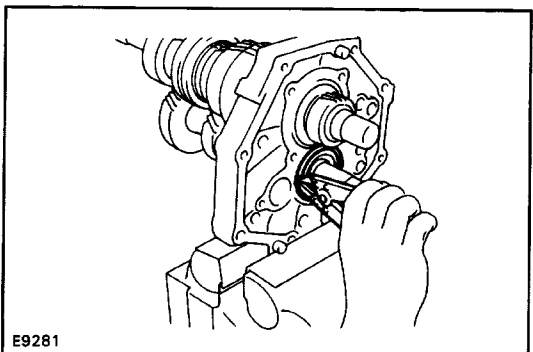
(a) Remove the reverse idler gear shaft stopper set bolt and stopper.



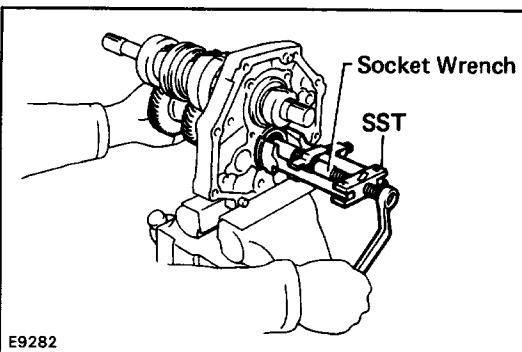
(b) Remove the reverse idler gear and shaft.

**23. REMOVE REAR BEARING RETAINER**

Using a torx socket wrench, remove the four bolts.
(Torx socket wrench T40 09042-00020)

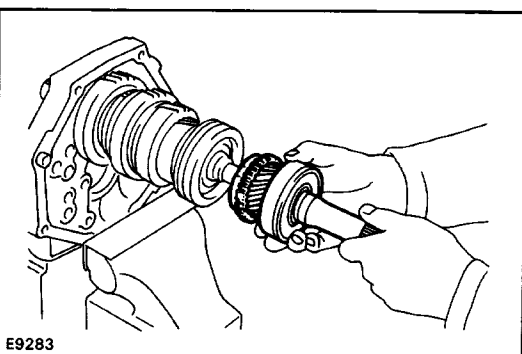
**24. REMOVE COUNTER GEAR**

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

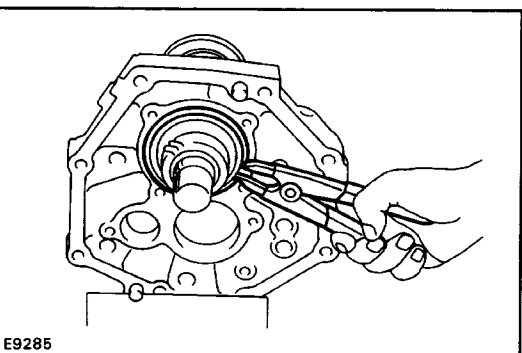


(b) Using SST and 12 mm socket wrench, remove the counter gear rear bearing.
SST 09602-35011

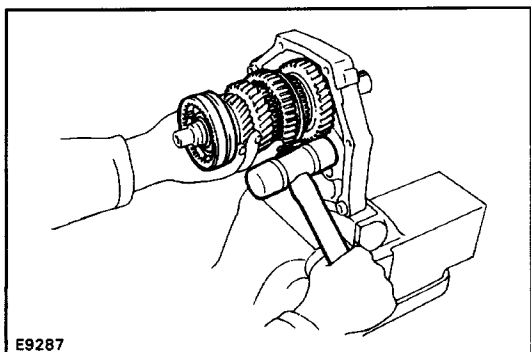
(c) Remove the counter gear.

**25. REMOVE INPUT SHAFT**

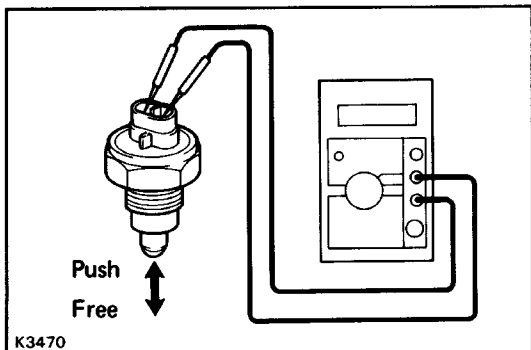
Remove the input shaft with 13 needle roller bearings and synchronizer ring from output shaft.

**26. REMOVE OUTPUT SHAFT**

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



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



27. INSPECT BACK-UP LIGHT SWITCH

Check that there is continuity between terminals as shown.

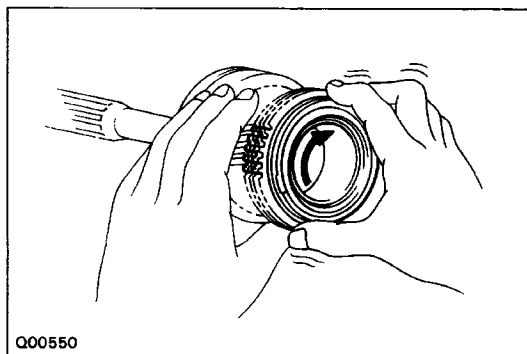
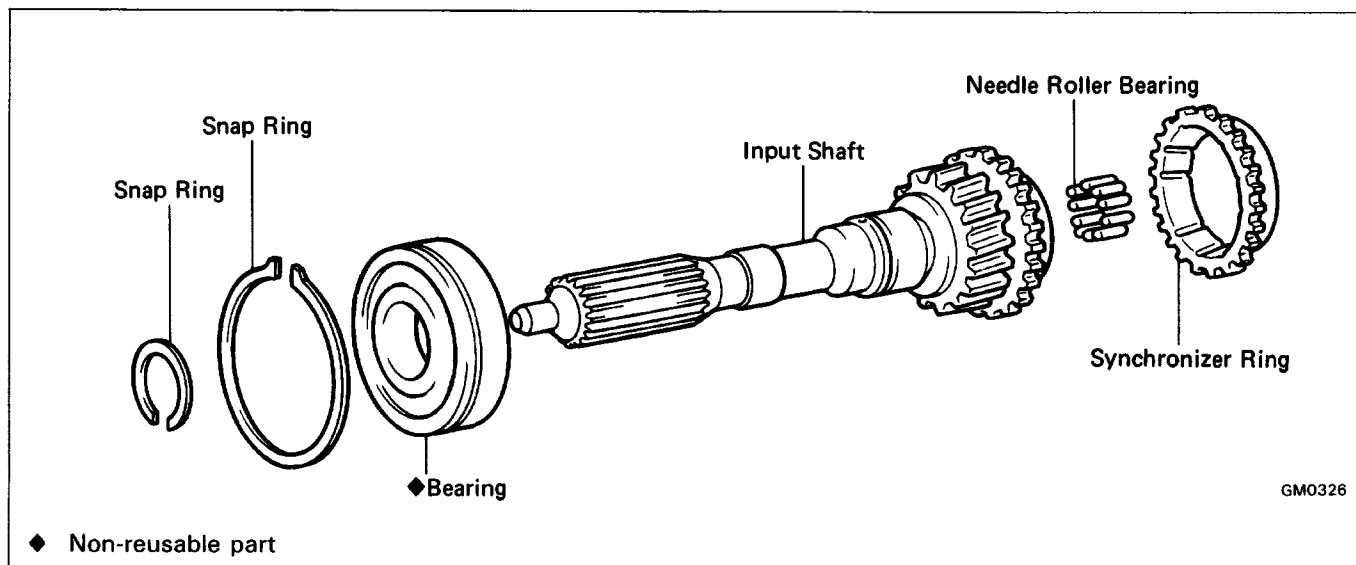
Switch Position	Specified
Push	Continuity
Free	No continuity

If operation is not as specified, replace switch.

COMPONENT PARTS

Input Shaft Assembly

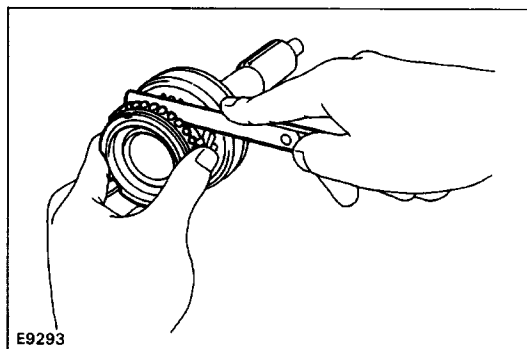
COMPONENTS



INSPECTION OF INPUT SHAFT ASSEMBLY

INSPECT SYNCHRONIZER RING

(a) Turn the ring and push it into check braking action.

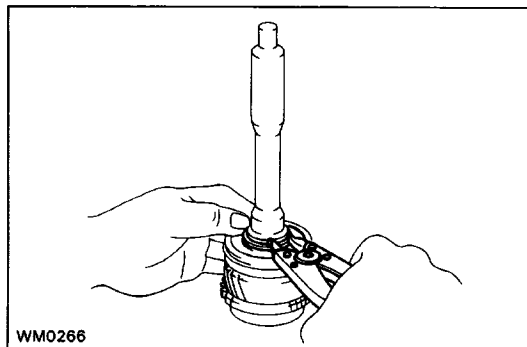


(b) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Standard clearance: 1.0 – 2.0 mm
(0.040 – 0.079 in.)

Minimum clearance: 0.8 mm (0.031 in.)

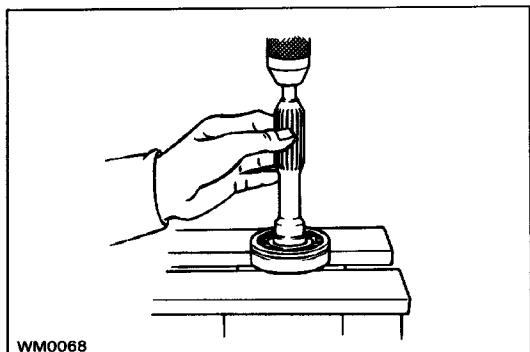
If the clearance is less than the minimum, replace the synchronizer ring.



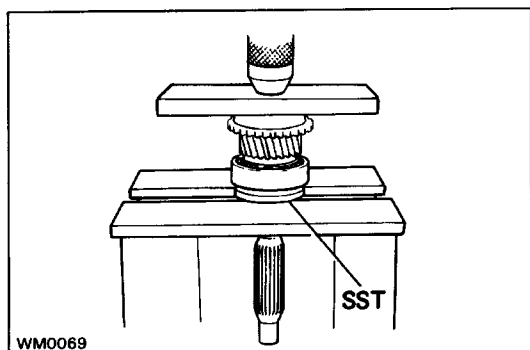
REPLACEMENT OF BEARING

IF NECESSARY, REPLACE INPUT SHAFT BEARING

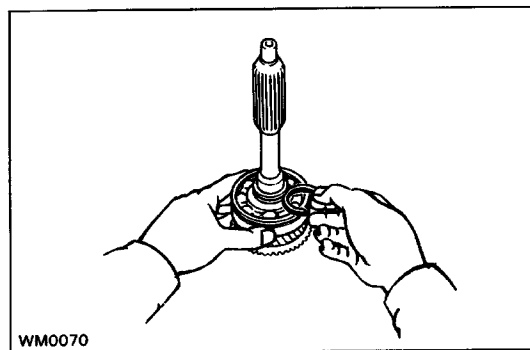
(a) Using a snap ring expander, remove the snap ring.



(b) Using a press, remove the bearing.

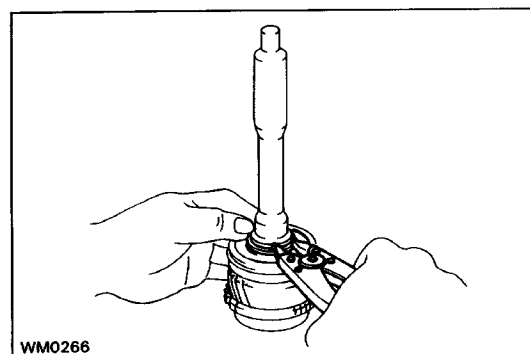


(c) Using SST and a press, install a new bearing.
SST 09506-35010



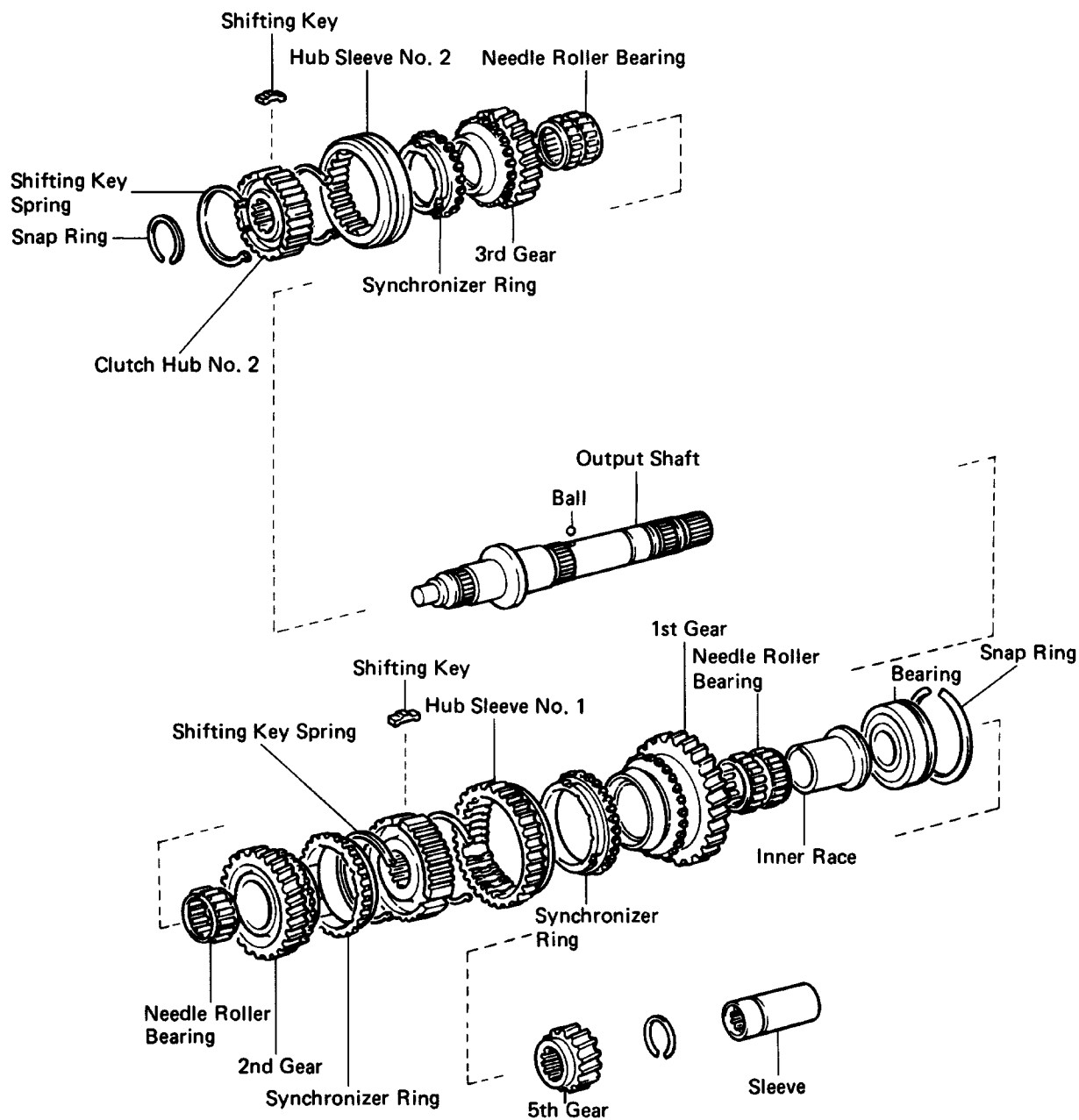
(d) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)
0	2.05 – 2.10 (0.0807 – 0.0827)
1	2.10 – 2.15 (0.0827 – 0.0846)
2	2.15 – 2.20 (0.0846 – 0.0866)
3	2.20 – 2.25 (0.0866 – 0.0886)
4	2.25 – 2.30 (0.0886 – 0.0906)
5	2.30 – 2.35 (0.0906 – 0.0925)

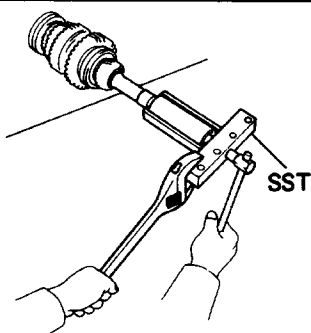


(e) Using a snap ring expander, install the snap ring.

Output Shaft Assembly COMPONENTS



GM0322



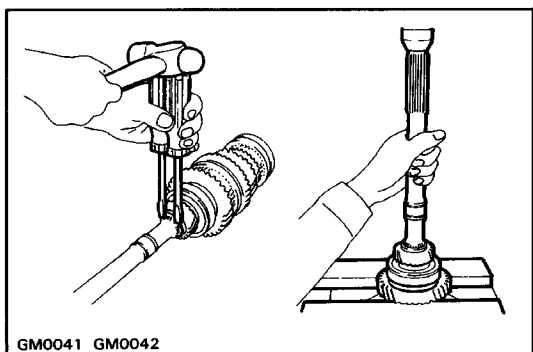
GM0039

DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. REMOVE SLEEVE FROM OUTPUT SHAFT

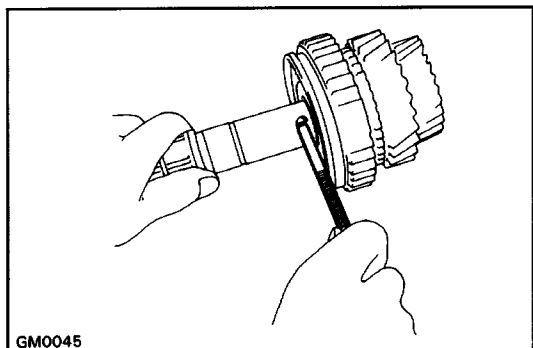
Using SST, remove the sleeve from the output shaft.

SST 09950-20017



2. REMOVE FIFTH GEAR, REAR BEARING, FIRST GEAR, INNER RACE AND NEEDLE ROLLER BEARING

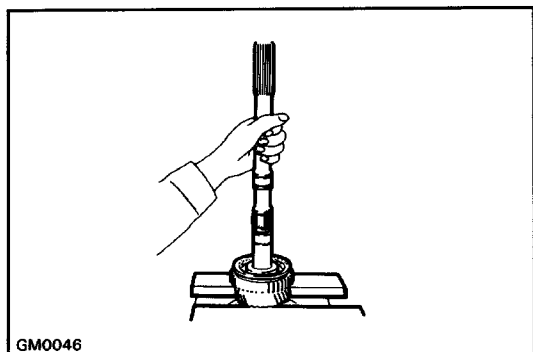
- (a) Using two screwdrivers and a hammer, tap out the snap ring.
- (b) Using a press, remove the 5th gear, rear bearing, 1st gear and inner race.
- (c) Remove the needle roller bearing.



3. REMOVE SYNCHRONIZER RING

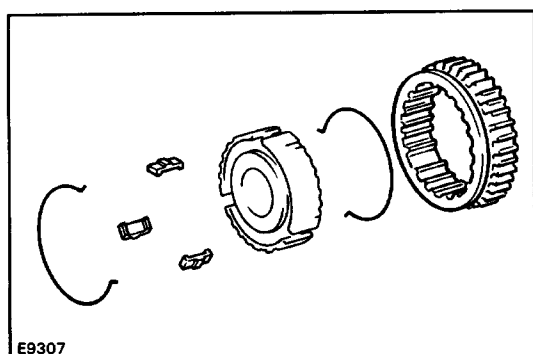
4. REMOVE LOCKING BALL

Using a magnetic finger, remove the locking ball.



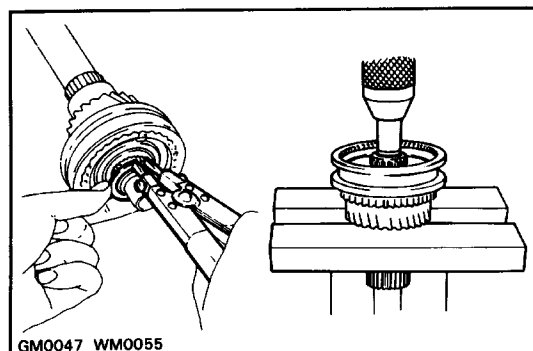
5. REMOVE HUB SLEEVE NO. 1 ASSEMBLY, SYNCHRONIZER RING, SECOND GEAR AND NEEDLE ROLLER BEARING

- (a) Using a press, remove hub sleeve No.1, the synchronizer ring and 2nd gear.
- (b) Remove the needle roller bearing.



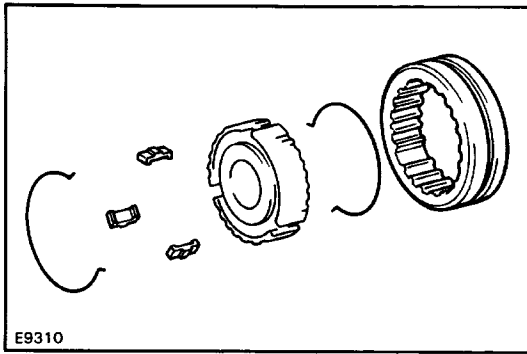
6. REMOVE HUB SLEEVE NO. 1, SHIFTING KEYS AND SPRINGS FROM CLUTCH HUB NO. 1

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



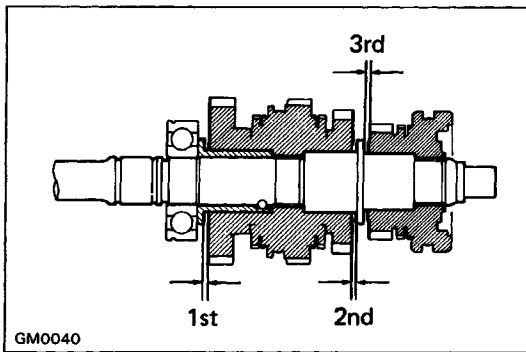
7. REMOVE HUB SLEEVE NO.2 ASSEMBLY, SYNCHRONIZER RING, THIRD GEAR AND NEEDLE ROLLER BEARING

- (a) Using a snap ring expander, remove the snap ring.
- (b) Using a press, remove the hub sleeve No.2, the synchronizer ring and 3rd gear.
- (c) Remove the needle roller bearing.



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

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



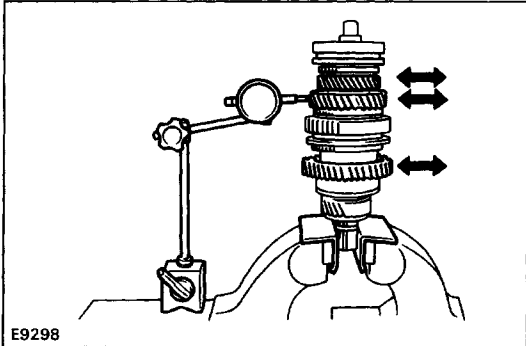
INSPECTION OF OUTPUT SHAFT ASSEMBLY

1. INSPECT EACH GEAR THRUST CLEARANCE

Using a feeler gauge, measure the thrust clearance of each gear.

Standard clearance: 0.10 – 0.25 mm
(0.0039 – 0.0098 in.)

Maximum clearance: 0.25 mm (0.0098 in.)



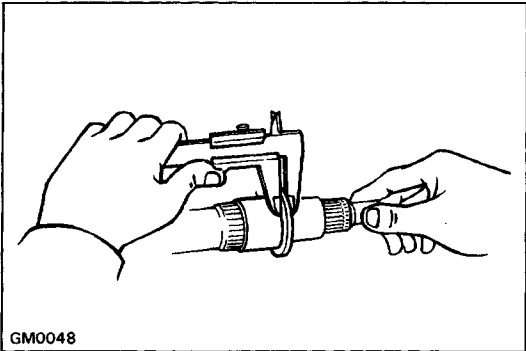
2. INSPECT EACH GEAR OIL CLEARANCE

Using a dial indicator, measure the each gear oil clearance.

Standard clearance: 0.009 – 0.032 mm
(0.0004 – 0.0013 in.)

Maximum clearance: 0.032 mm (0.0013 in.)

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

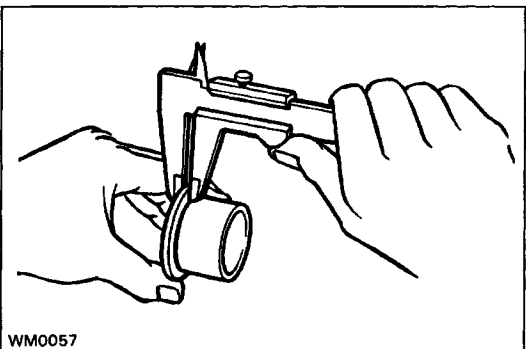


3. INSPECT OUTPUT SHAFT AND INNER RACE

- (a) Using calipers, measure the output shaft flange thickness.

Minimum thickness: 4.80 mm (0.1890 in.)

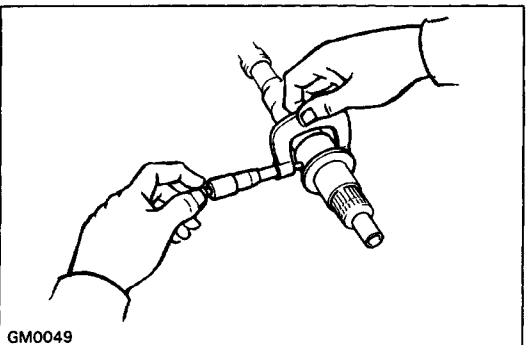
If the thickness exceeds the minimum, replace the output shaft.



- (b) Using calipers, measure the inner race flange thickness.

Minimum thickness: 3.99 mm (0.1571 in.)

If the thickness exceeds the minimum, replace the inner race.



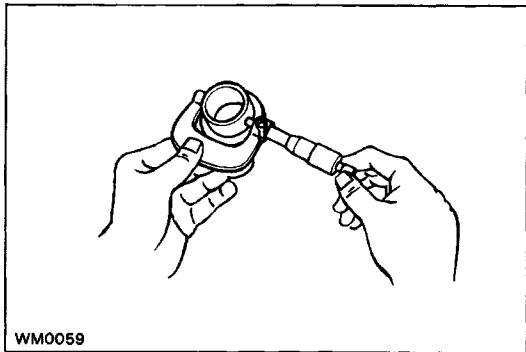
- (c) Using a micrometer, measure the outer diameter of the output shaft journal.

Minimum diameter:

2nd gear 37.984 mm (1.4954 in.)

3rd gear 34.984 mm (1.3773 in.)

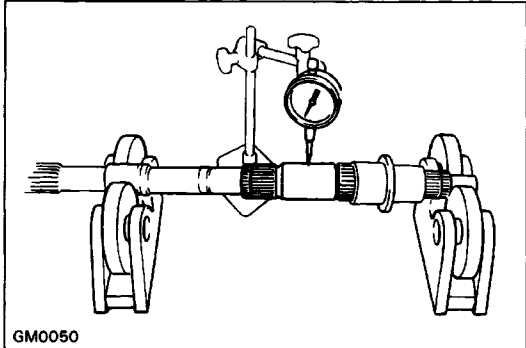
If the outer diameter exceeds the minimum, replace the output shaft.



(d) Using a micrometer, measure the outer diameter of the inner race.

Minimum diameter: 38.985 mm (1.5348 in.)

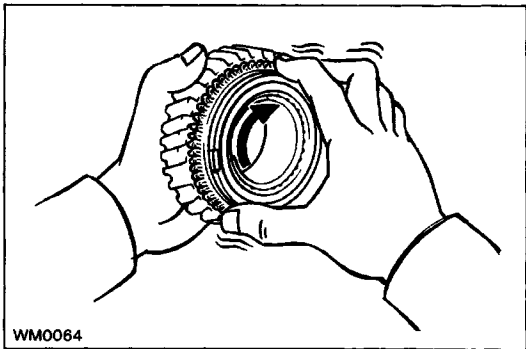
If the outer diameter exceeds the minimum, replace the inner race.



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

Maximum runout: 0.05 mm (0.0020 in.)

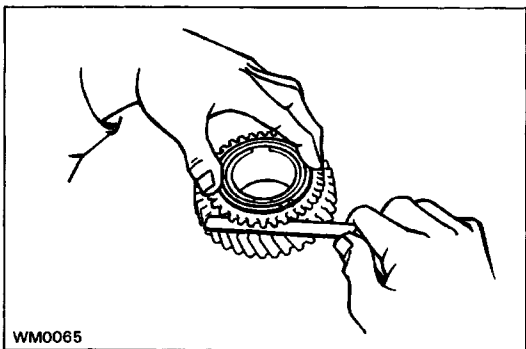
If the runout exceeds the maximum, replace the output shaft.



4. INSPECT SYNCHRONIZER RINGS

(a) Check for wear or damage.

(b) Turn the ring and push it in to check the braking action.



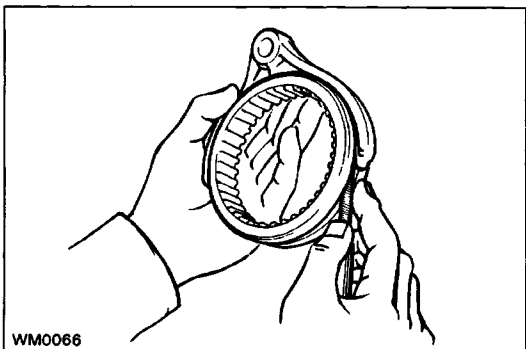
(c) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Standard clearance: 1.0 – 2.0 mm

(0.039 – 0.079 in.)

Minimum clearance: 0.8 mm (0.031 in.)

If the clearance exceeds the minimum, replace the synchronizer ring.

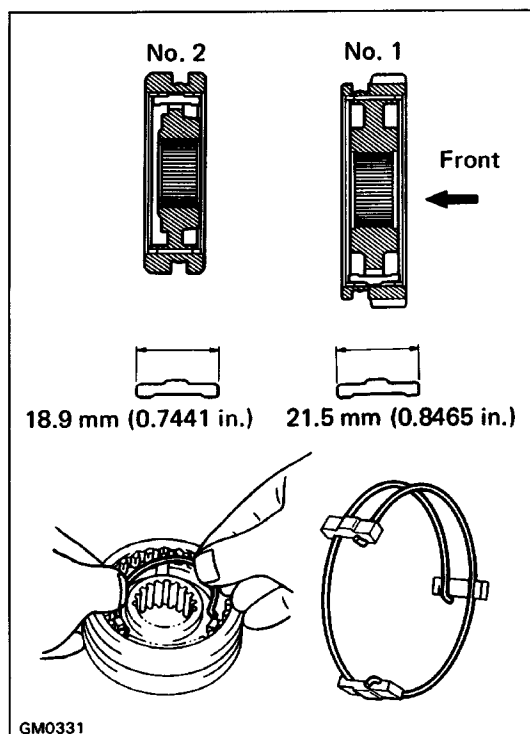


5. INSPECT CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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.



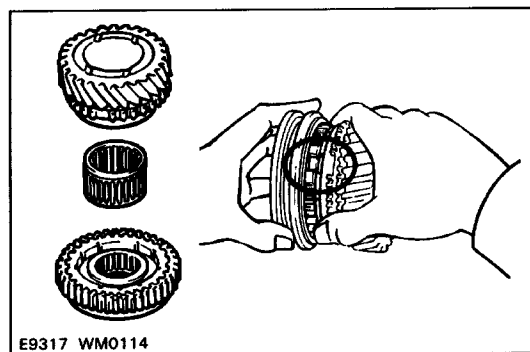
ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. INSTALL CLUTCH HUB NO.1 AND NO.2 INTO HUB SLEEVE

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

- Install the clutch hub and shifting keys to the hub sleeve.
- Install the shifting key springs under the shifting keys.

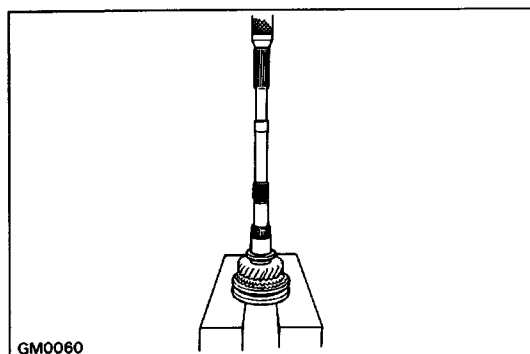
NOTICE: Install the key springs positioned so that their end gaps are not in line.



2. INSTALL THIRD GEAR AND HUB SLEEVE NO.2 ON OUTPUT SHAFT

- Apply gear oil to the shaft and needle roller bearing.
- Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- Install the needle roller bearing in the 3rd gear.

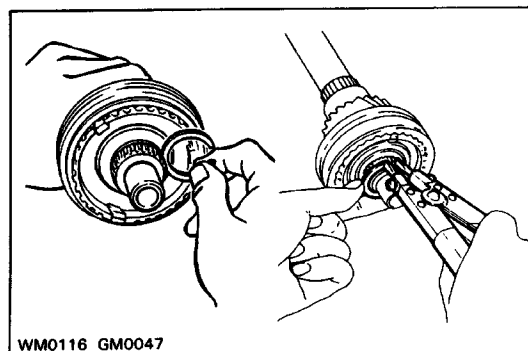
- Using a press, install the 3rd gear and hub sleeve No. 2.

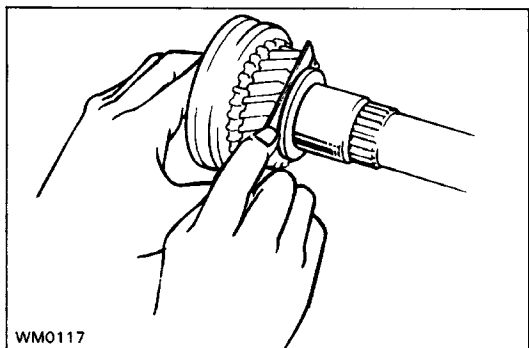


3. INSTALL SNAP RING

Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness mm (in.)
C-1	1.75 – 1.80 (0.0689 – 0.0709)
D	1.80 – 1.85 (0.0709 – 0.0728)
D-1	1.85 – 1.90 (0.0728 – 0.0748)
E	1.90 – 1.95 (0.0748 – 0.0768)
E-1	1.95 – 2.00 (0.0768 – 0.0787)
F	2.00 – 2.05 (0.0787 – 0.0807)
F-1	2.05 – 2.10 (0.0807 – 0.0827)





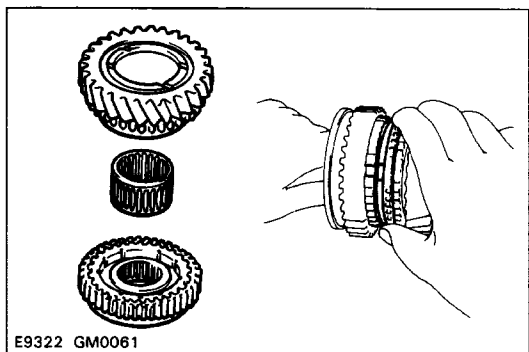
WM0117

4. 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.)

Maximum clearance: 0.25 mm (0.0098 in.)

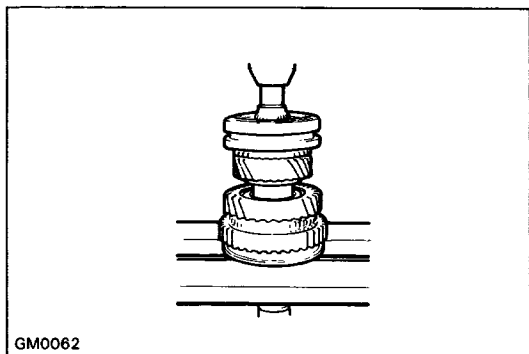


E9322 GM0061

5. INSTALL SECOND GEAR AND HUB SLEEVE NO. 1

- (a) Apply gear oil to the shaft and needle roller bearing.
- (b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- (c) Install the needle roller bearing in the 2nd gear.

- (d) Using a press, install the 2nd gear and hub sleeve No. 1.



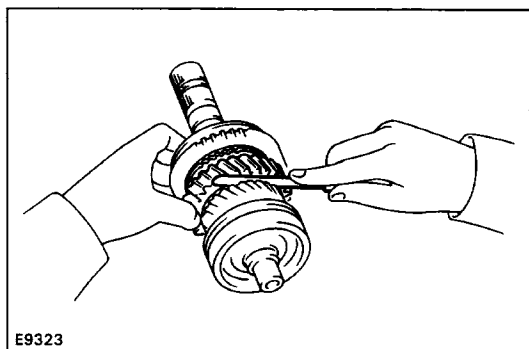
GM0062

6. INSPECT SECOND GEAR THRUST CLEARANCE

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

Standard clearance: 0.10 – 0.25 mm
(0.0039 – 0.0098 in.)

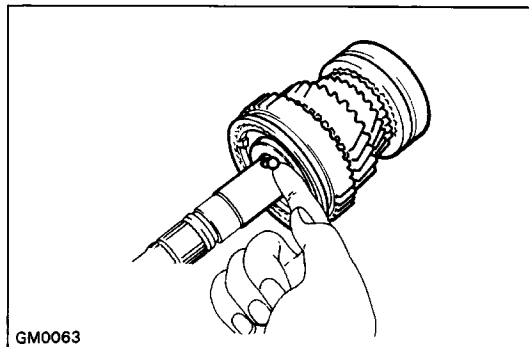
Maximum clearance: 0.25 mm (0.0098 in.)



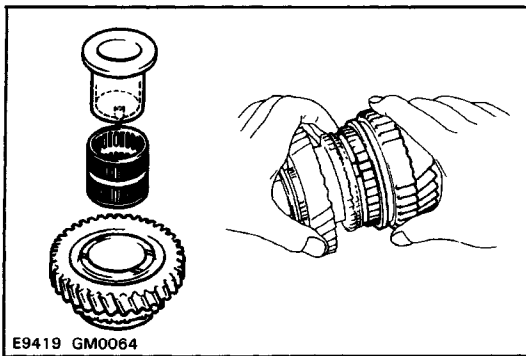
E9323

7. INSTALL LOCKING BALL AND FIRST GEAR ASSEMBLY

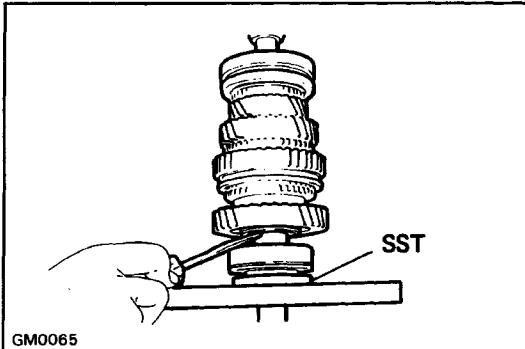
- (a) Install the locking ball in the shaft.



GM0063



- (b) Apply gear oil to the needle roller bearing.
- (c) Assemble the 1st gear, synchronizer ring, needle roller bearing and bearing inner race.
- (d) Install the assembly on the output shaft with the synchronizer ring slots aligned with shifting keys.
- (e) Turn the inner race to align it with the locking ball.

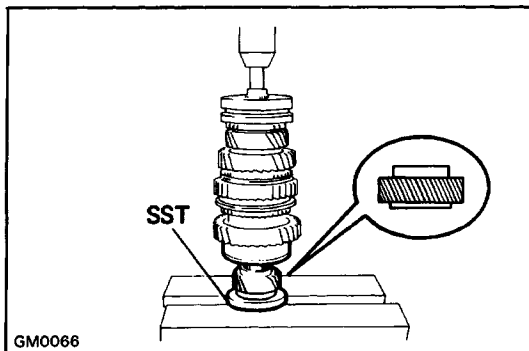


8. INSTALL OUTPUT SHAFT REAR BEARING

Using SST and a press, install the bearing on the output shaft with outer race snap ring groove toward the rear.

HINT: Hold the 1st gear inner race to prevent it from falling.

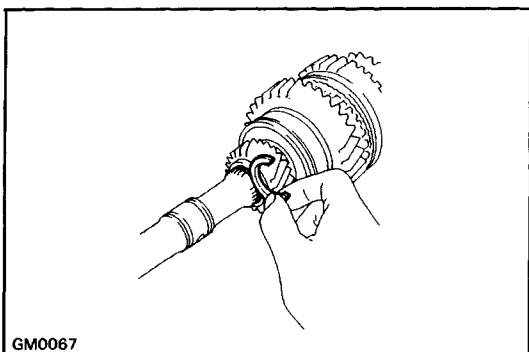
SST 09 506-3 5010



9. INSTALL FIFTH GEAR

Using SST and a press, install the 5th gear.

SST 09506-35010

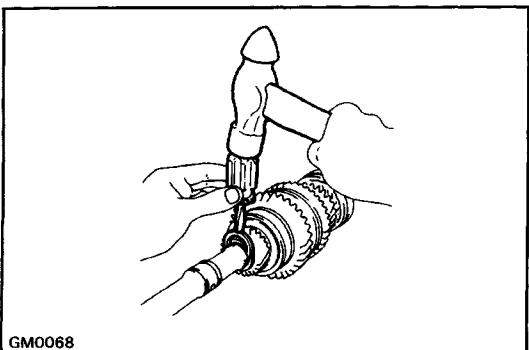


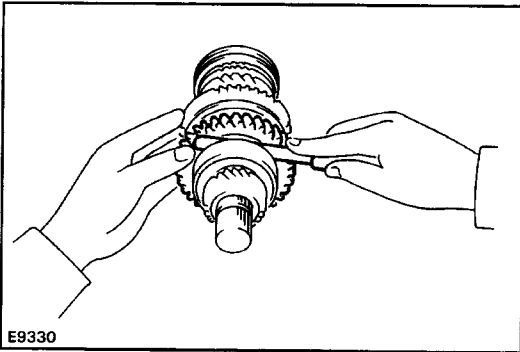
10. INSTALL SNAP RING

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

Mark	Thickness mm (in.)
A	2.67 – 2.72 (0.1051 – 0.1071)
B	2.73 – 2.78 (0.1075 – 0.1094)
C	2.79 – 2.84 (0.1098 – 0.1118)
D	2.85 – 2.90 (0.1122 – 0.1142)
E	2.91 – 2.96 (0.1146 – 0.1165)
F	2.97 – 3.02 (0.1169 – 0.1189)
G	3.03 – 3.08 (0.1193 – 0.1213)
H	3.09 – 3.14 (0.1217 – 0.1236)
J	3.15 – 3.20 (0.1240 – 0.1260)
K	3.21 – 3.26 (0.1264 – 0.1283)
L	3.27 – 3.32 (0.1287 – 0.1307)

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

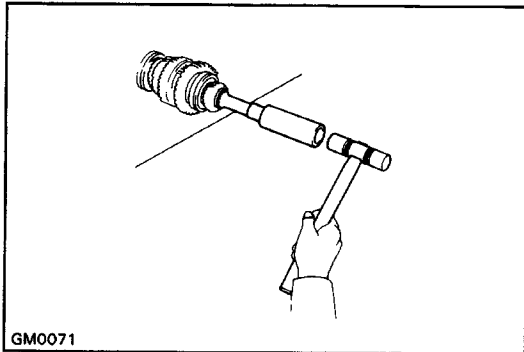


**11. MEASURE FIRST GEAR THRUST CLEARANCE**

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

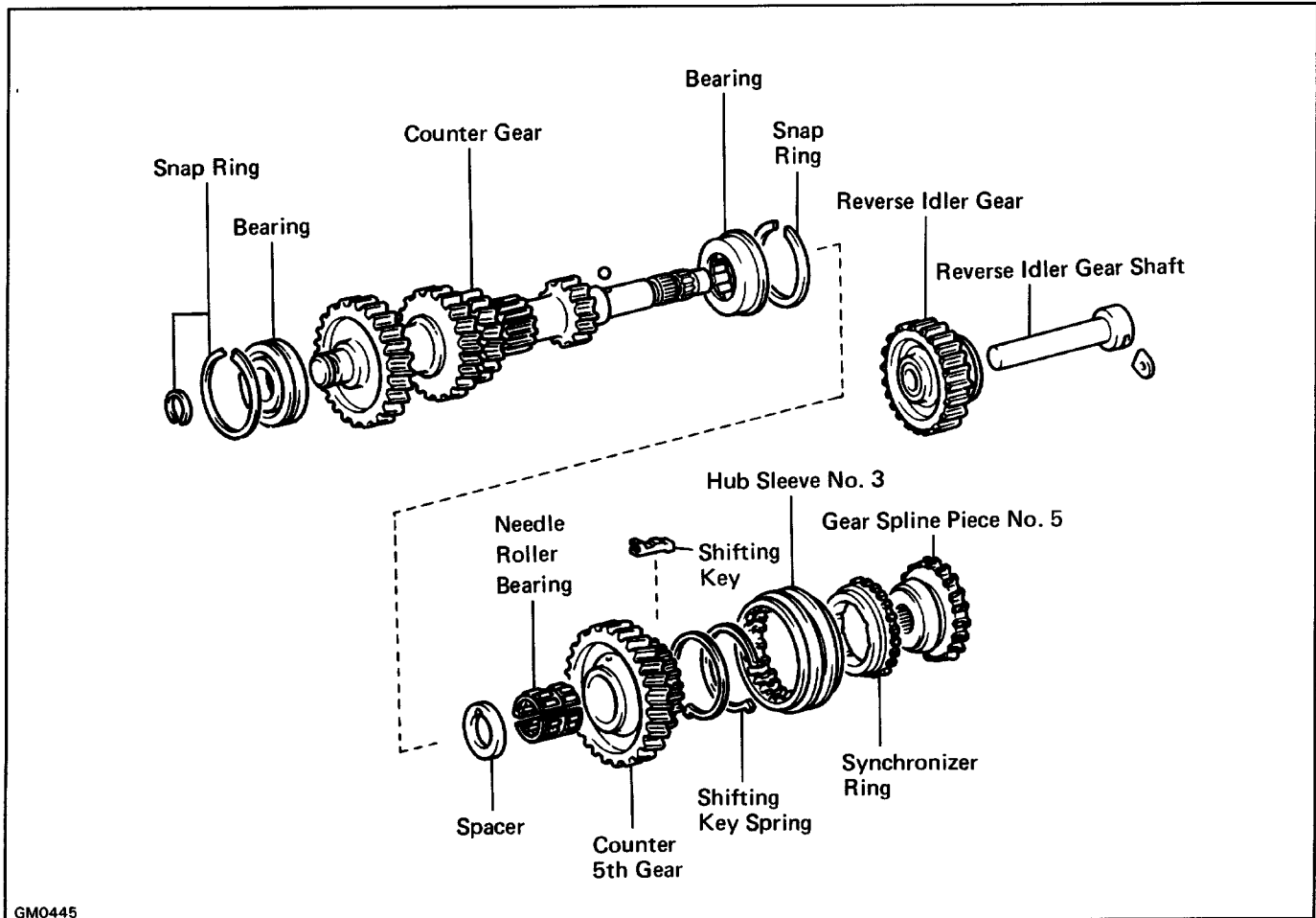
Standard clearance: 0.10 – 0.25 mm
(0.0039 – 0.0098 in.)

Maximum clearance: 0.25 mm (0.0098 in.)

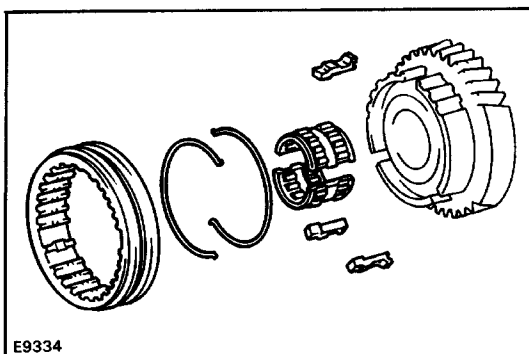
**12. INSTALL SLEEVE TO OUTPUT SHAFT**

Using a plastic hammer, tap the sleeve onto the output shaft.

Counter Gear Assembly and Reverse Idler Gear COMPONENT



GM0445



E9334

DISASSEMBLY OF COUNTER GEAR ASSEMBLY REMOVE HUB SLEEVE NO.3 SHIFTING KEYS AND SPRINGS

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

INSPECTION OF COUNTER GEAR ASSEMBLY

1. INSPECT COUNTER FIFTH GEAR OIL CLEARANCE

(a) Install the spacer, needle roller bearing and counter 5th gear to counter gear.

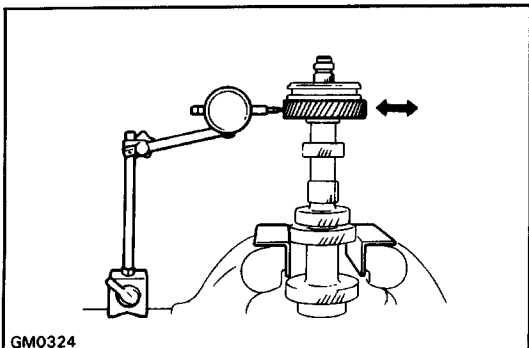
(b) Using a dial indicator, measure the counter 5th gear oil clearance.

Standard clearance: 0.009 – 0.032 mm

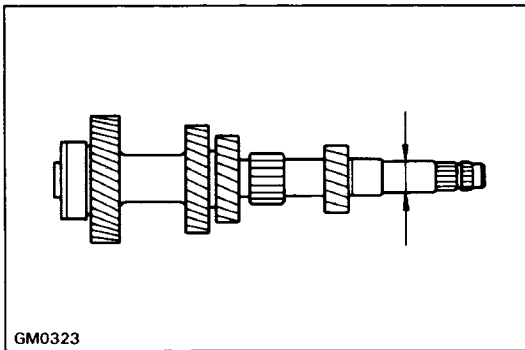
(0.0004 – 0.0013 in.)

Maximum clearance: 0.032 mm 10.0013 in.)

If the clearance exceeds the maximum, gear, needle roller bearing or counter gear assembly.



GM0324



2. INSPECT COUNTER GEAR

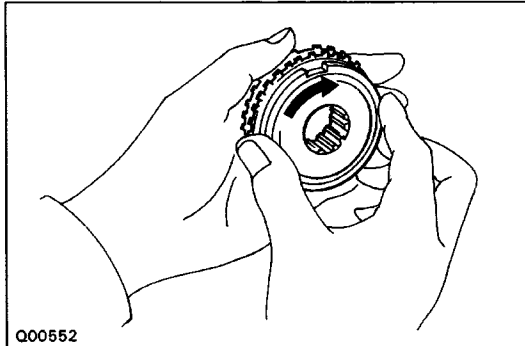
Using a micrometer, measure the outer diameter of needle roller bearing race.

Standard clearance: 25.98 – 26.00 mm

(1.0228 – 1.0236 in.)

Maximum clearance: 25.86 mm (1.0181 in.)

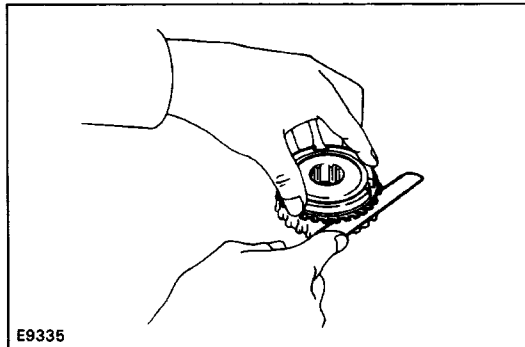
If the outer diameter exceeds the maximum, replace the counter gear.



3. INSPECT SYNCHRONIZER RING

(a) Check for wear or damage.

(b) Turn the ring and push it in to check the braking action.



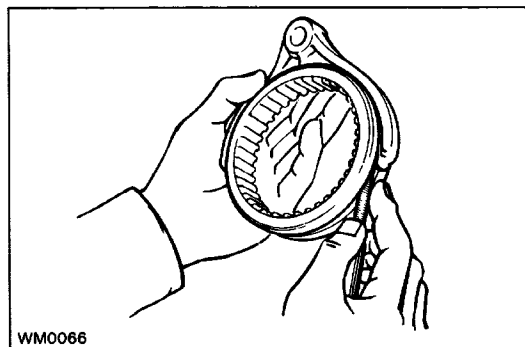
(c) Measure the clearance between the synchronizer ring back and the spline end.

Standard clearance: 1.0 – 2.0 mm

(0.039 – 0.079 in.)

Minimum clearance: 0.8 mm (0.031 in.)

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

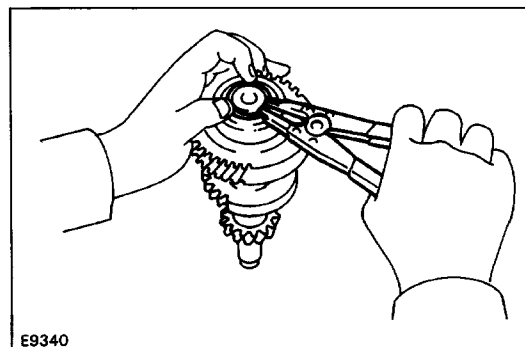


4. MEASURE CLEARANCE OF SHIFT FORK AND HUB SLEEVE

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

Maximum clearance: 1.0 mm (0.039 in.)

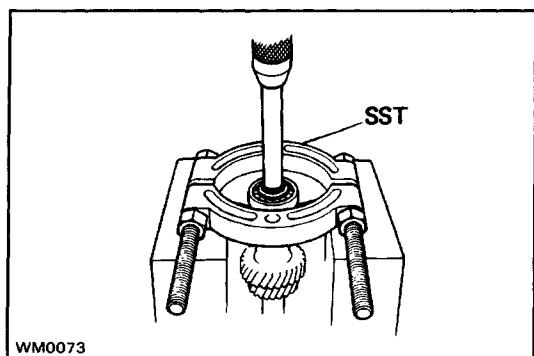
If the clearance exceeds the maximum, replace the shift fork or hub sleeve.



REPLACEMENT OF BEARING

IF NECESSARY, REPLACE COUNTER GEAR FRONT BEARING

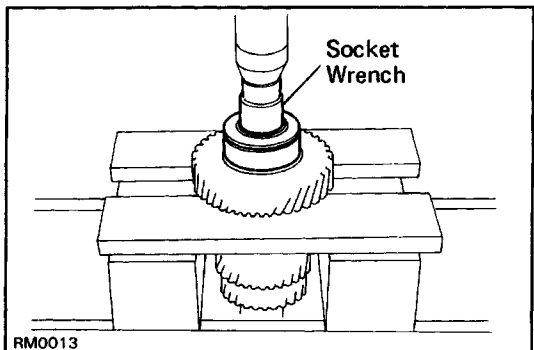
(a) Using a snap ring expander, remove the snap ring.



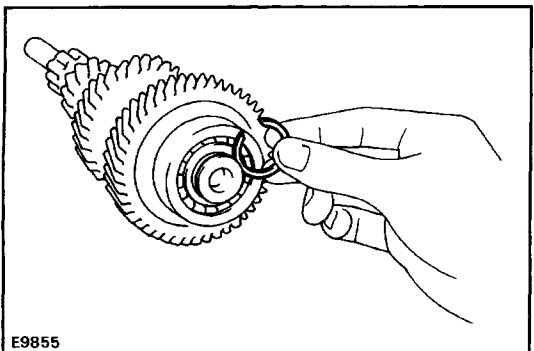
(b) Using SST and a press, remove the bearing.

SST 09950-00020

(c) Replace the side race.

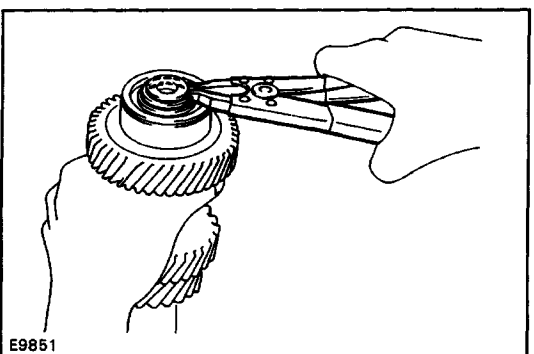


(d) Using a socket wrench and press, install the bearing, side race and inner race.

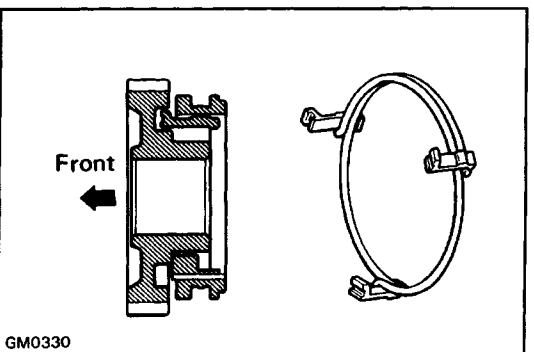


(e) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)
1	2.05 – 2.10 (0.0807 – 0.0827)
2	2.10 – 2.15 (0.0827 – 0.0846)
3	2.15 – 2.20 (0.0846 – 0.0866)
4	2.20 – 2.25 (0.0866 – 0.0886)
5	2.25 – 2.30 (0.0886 – 0.0906)
6	2.30 – 2.35 (0.0906 – 0.0925)



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



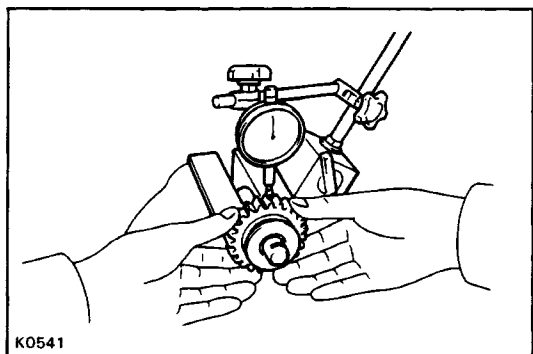
ASSEMBLY OF COUNTER GEAR ASSEMBLY

INSTALL HUB SLEEVE NO.3, SHIFTING KEYS AND SPRINGS

(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.



INSPECTION OF REVERSE IDLER GEAR

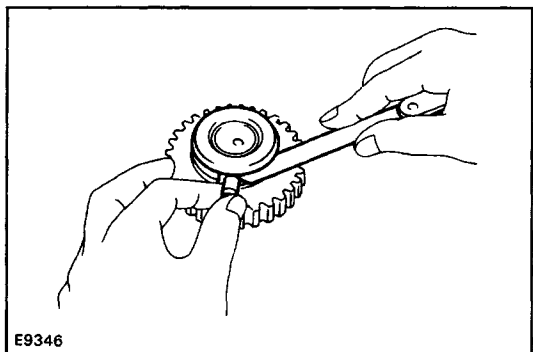
1. INSPECT REVERSE IDLER GEAR OIL CLEARANCE

Using a dial indicator measure reverse idler gear oil clearance .

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

Maximum clearance: 0.13 mm (0.0051 in.)

If the clearance exceeds the maximum, replace the gear or shaft.



2. INSPECT CLEARANCE OF REVERSE IDLER GEAR AND SHIFT ARM SHOE

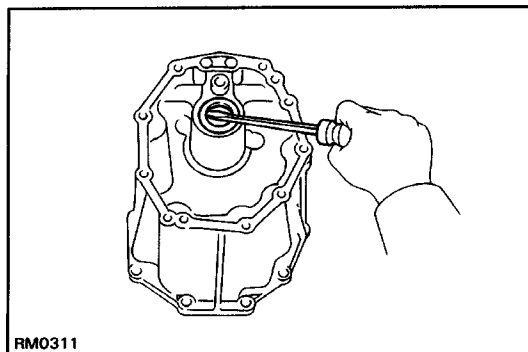
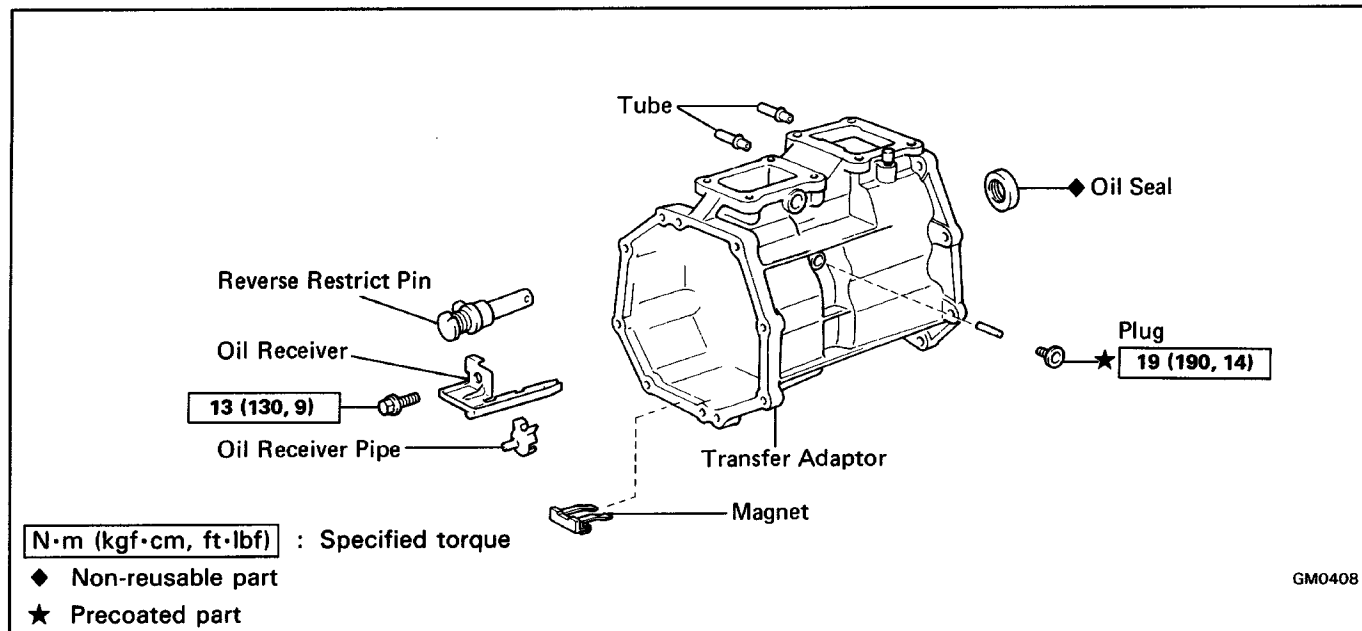
Using a feeler gauge, measure the clearance between the reverse idler gear and shift arm shoe.

Standard clearance: 0.05 – 0.27 mm
(0.0020 – 0.106 in.)

Maximum clearance: 0.5 mm (0.197 in.)

If the clearance exceeds the maximum, replace the gear or shift arm shoe.

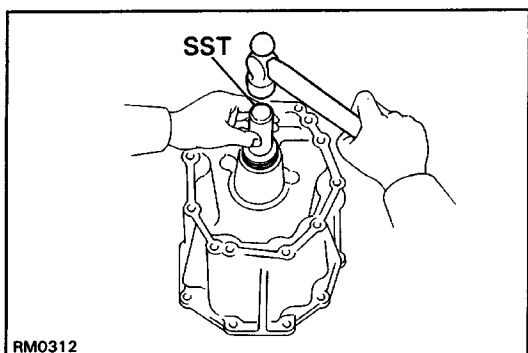
Transfer Adaptor COMPONENTS



REPLACEMENT OF OIL SEAL

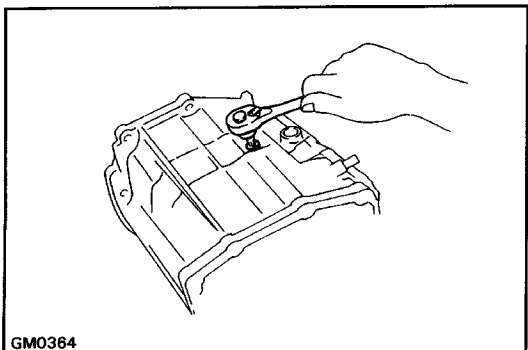
IF NECESSARY, REPLACE TRANSFER ADAPTOR OIL SEAL

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



(b) Using SST and a hammer, drive in new oil seal.

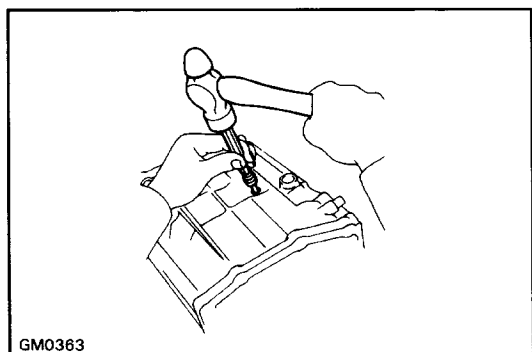
SST 09325-12010



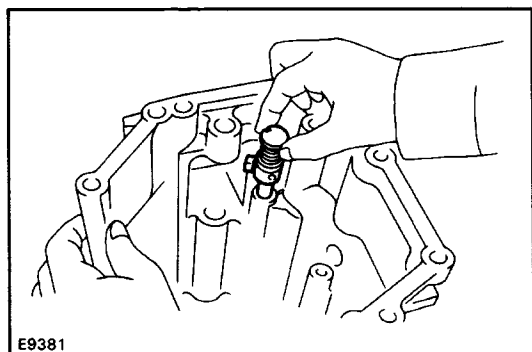
INSPECTION AND REPLACEMENT OF REVERSE RESTRICT PIN

1. REMOVE THE REVERSE RESTRICT PIN

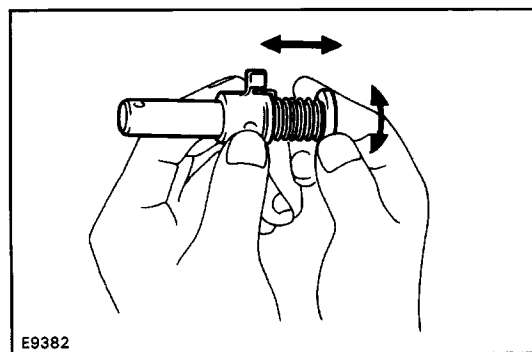
(a) Using a torx socket wrench remove the screw plug.
(Torx socket wrench T40 09042-00020)



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

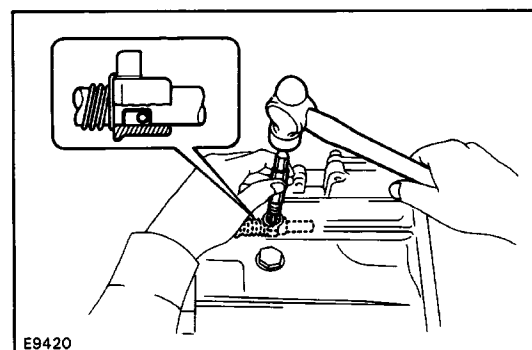


(c) Remove the reverse restrict pin.



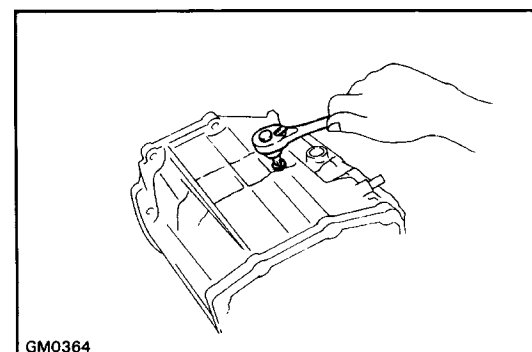
2. INSPECTION OF REVERSE RESTRICT PIN

Turn and push the reverse restrict pin by hand while applying force in axial direction.



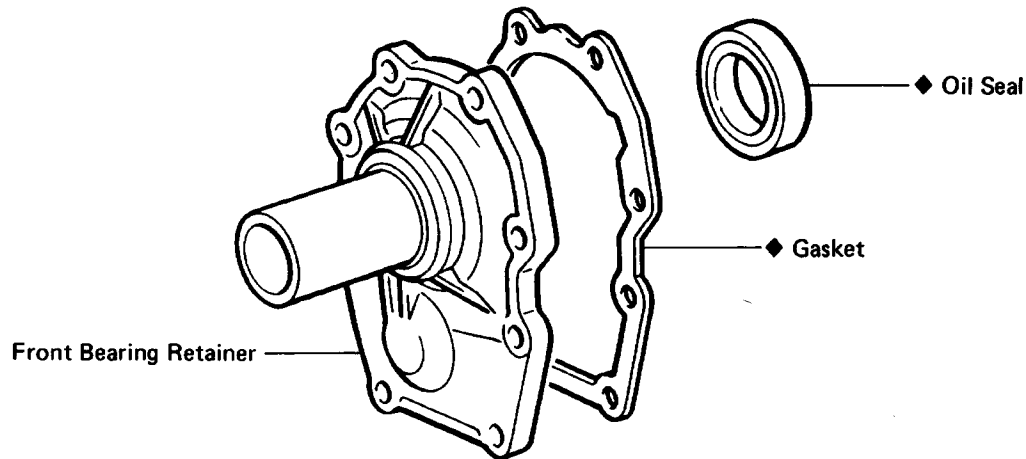
3. INSTALL THE REVERSE RESTRICT PIN

- (a) Install the reverse restrict pin to the extension housing or transfer adaptor.
- (b) Using a pin punch and hammer, drive in the slotted spring pin as shown.



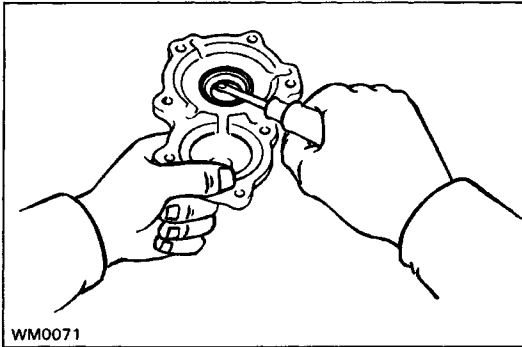
- (c) Apply liquid sealer to the plug threads.
Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
- (d) Using a torx socket wrench, install and torque the screw plug.
(Torx socket wrench T40 09042-00020)
Torque: 19 N – m (190 kgf –cm, 14 ft – lbf)

Front Bearing Retainer COMPONENTS



GM0329

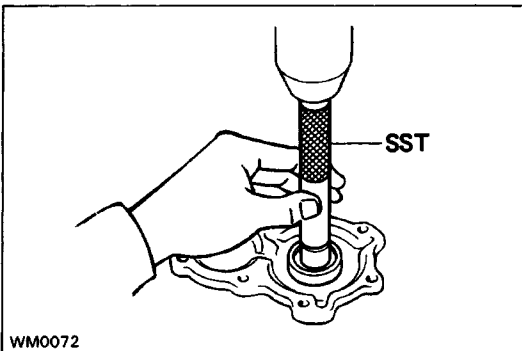
◆ Non-reusable part



WM0071

REPLACEMENT OF OIL SEAL IF NECESSARY, REPLACE FRONT BEARING RETAINER OIL SEAL

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



WM0072

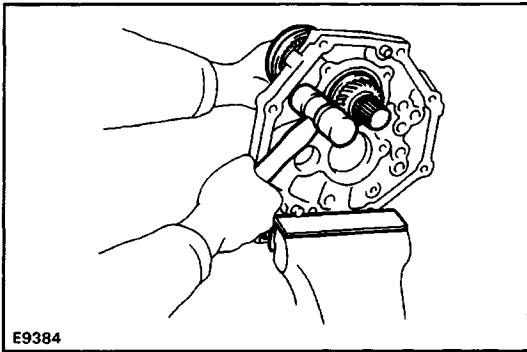
(b) Using SST and a press, install a new oil seal.

SST 09223-50010

Oil seal depth: 12.2 – 13.2 mm (0.480 – 0.520 in.)

Transmission case installation surface

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



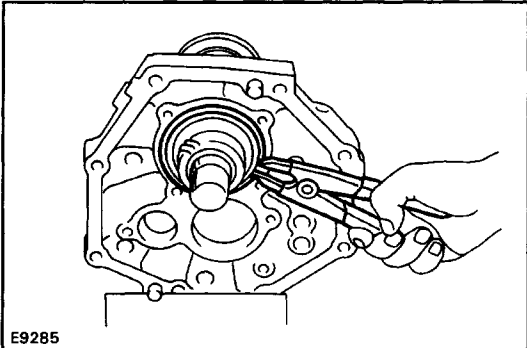
ASSEMBLY OF TRANSMISSION

(See pages [MT1-26](#) to [28](#))

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

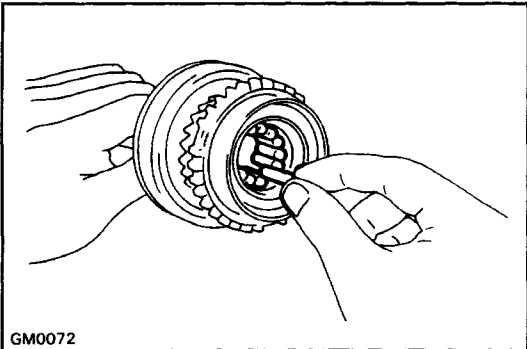
1. INSTALL OUTPUT SHAFT TO INTERMEDIATE PLATE

- (a) Install the output shaft into the intermediate plate by pushing on the output shaft and tapping on the intermediate plate.



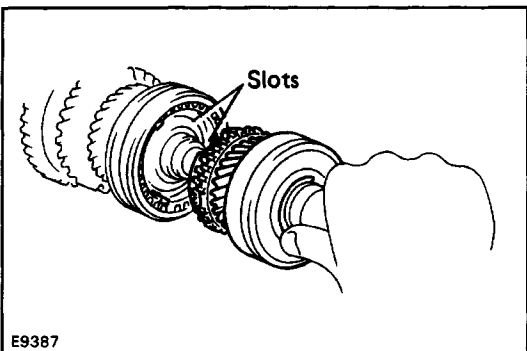
- (b) Using a snap ring expander, install the output shaft center bearing snap ring.

HINT: Be sure the snap ring is flush with the intermediate plate surface.

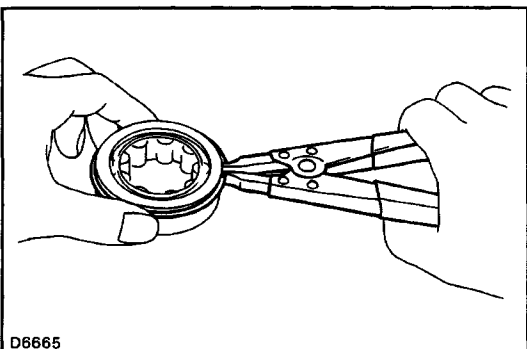


2. INSTALL INPUT SHAFT TO OUTPUT SHAFT

- (a) Apply MP grease to the 13-needle roller bearing and install them into the input shaft.

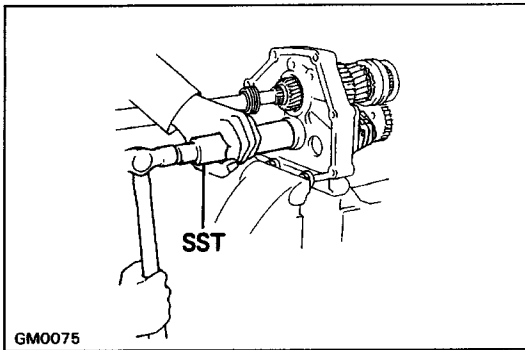


- (b) Install the input shaft to the output shaft with the synchronizer ring slots aligned with the shifting keys.



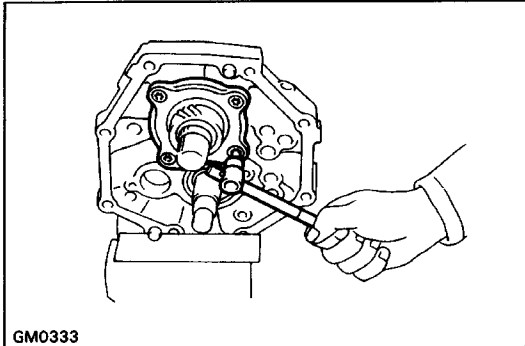
3. INSTALL COUNTER GEAR TO INTERMEDIATE PLATE

- (a) Using a snap ring expander, install snap ring to counter gear rear bearing.



- (b) Install the counter gear into the intermediate plate while holding the counter gear and install the counter break bearing with SST.

SST 09316-60010

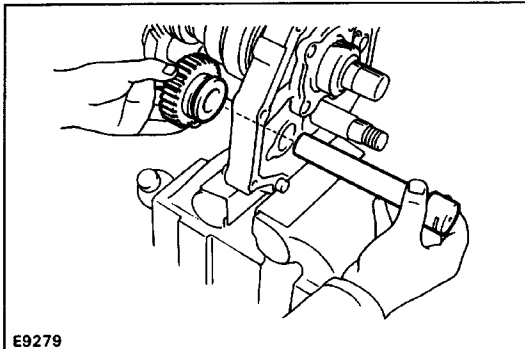


4. INSTALL REAR BEARING RETAINER

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

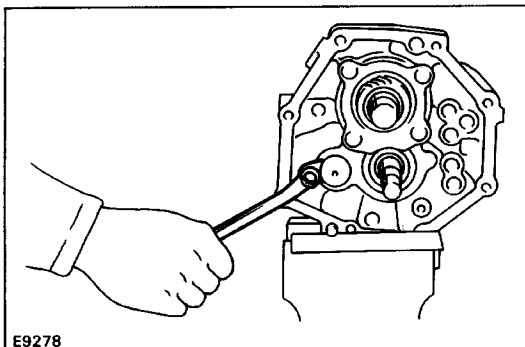
(Torx socket wrench T40 09042-00020)

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



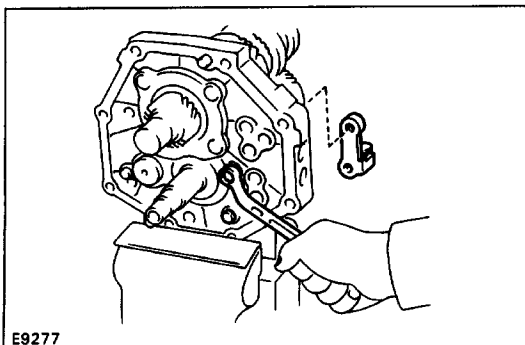
5. INSTALL REVERSE IDLER GEAR AND SHAFT

- (a) Install reverse idler gear and shaft.



- (b) Install the shaft stopper and torque the bolt.

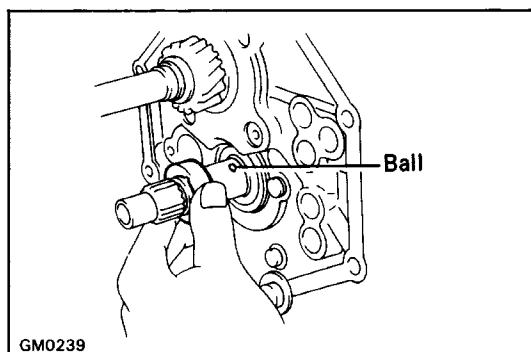
Torque: 17 N-m (175 kgf-cm, 13 ft-lbf)



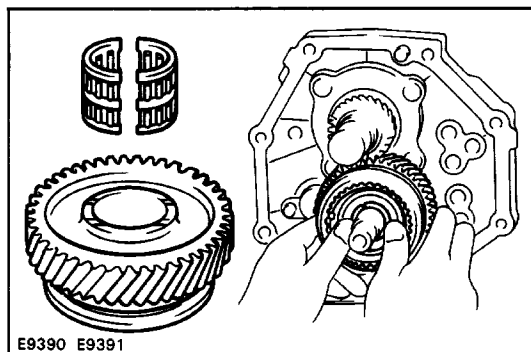
6. INSTALL REVERSE SHIFT ARM BRACKET

Install the reverse shift arm bracket and torque the two bolts.

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

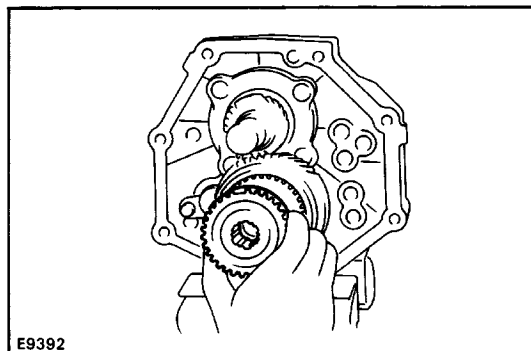


7. INSTALL BALL AND SPACER



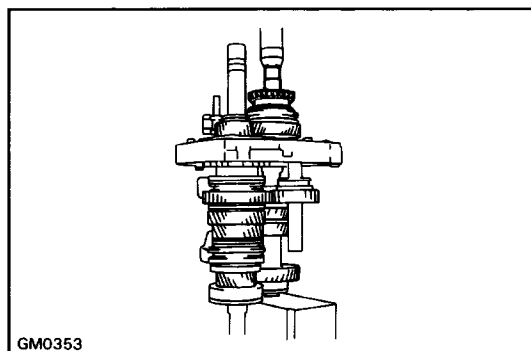
8. INSTALL COUNTER FIFTH GEAR WITH HUB SLEEVE NO.3 ASSEMBLY AND NEEDLE ROLLER BEARINGS

- (a) Apply gear oil to the needle roller bearings.
- (b) Install the counter 5th gear with hub sleeve No.3 and needle roller bearings.

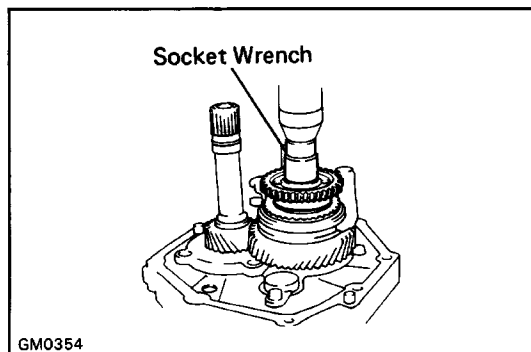


9. INSTALL SYNCHRONIZER RING AND GEAR SPLINE PIECE NO.5

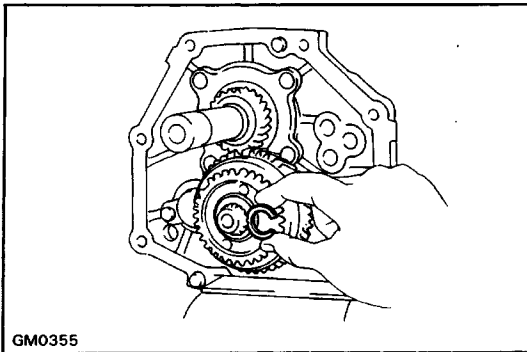
- (a) Install the synchronizer ring on gear spline piece No. 5.



- (b) Dismount the intermediate plate from the vise.
- (c) Stand the transmission as shown.



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

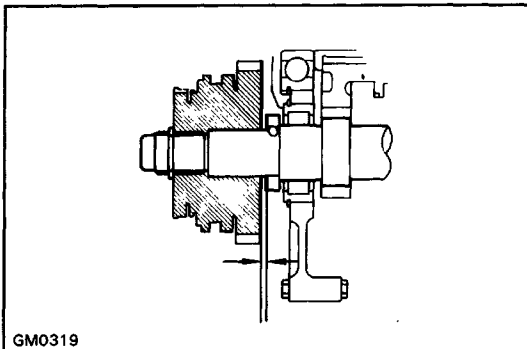
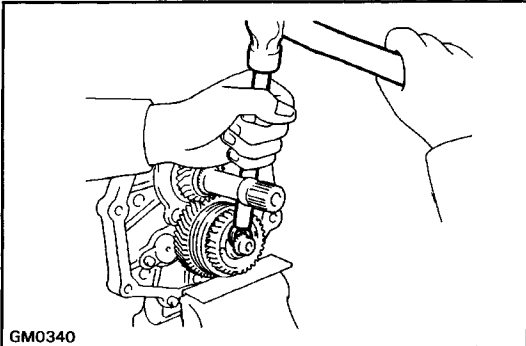


10. INSTALL SNAP RING

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

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

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

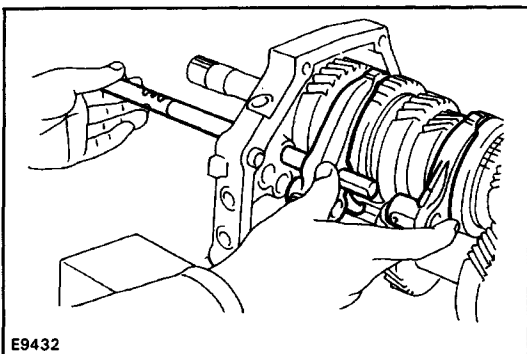


11. MEASURE COUNTER FIFTH GEAR THRUST CLEARANCE

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

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

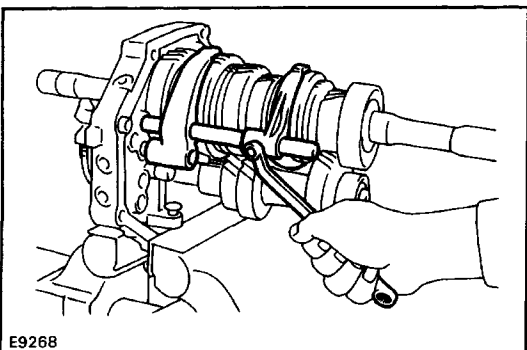
Maximum clearance: 0.30 mm (0.0118 in.)



12. INSTALL SHIFT FORK SHAFT NO.2 AND SHIFT FORK NO.2

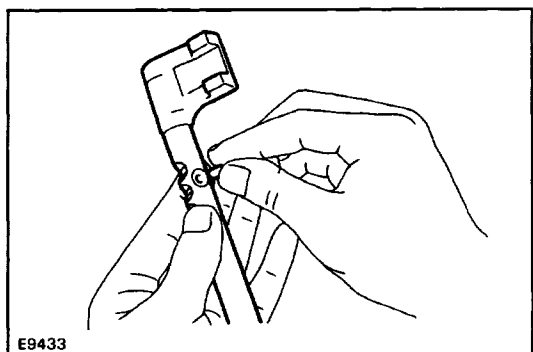
(a) Install the shift fork No. 1 and No. 2.

(b) Install the shift fork shaft No.2 through the intermediate plate and shift forks.



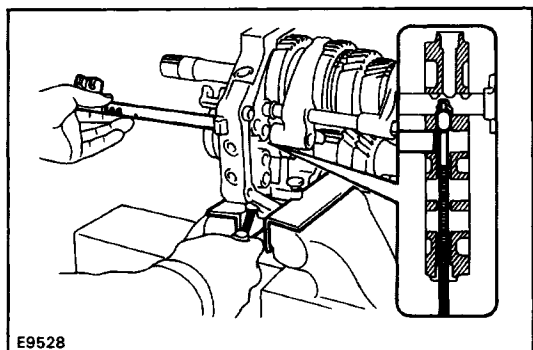
(c) Install the shift fork No.2 set bolt and torque the bolt.

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

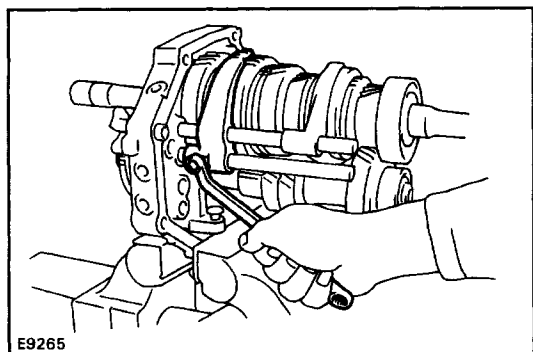


13. INSTALL SHIFT FORK SHAFT NO. 1 AND SHIFT FORK NO. 1

- (a) Apply MP grease to the interlock pin No. 2 and install them into the shift fork shaft No. 1.

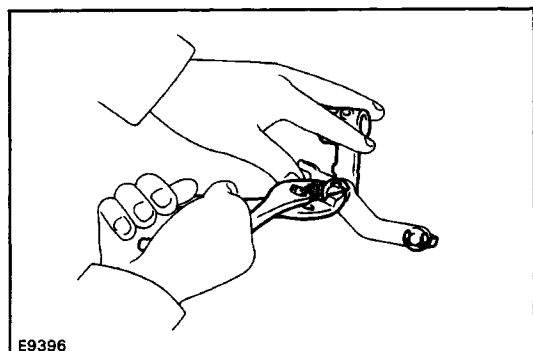


- (b) Using a magnetic finger, install the interlock pin No-1 to intermediate plate.
 (c) Install shift fork shaft No. 1 through the intermediate plate and shift fork No. 1.



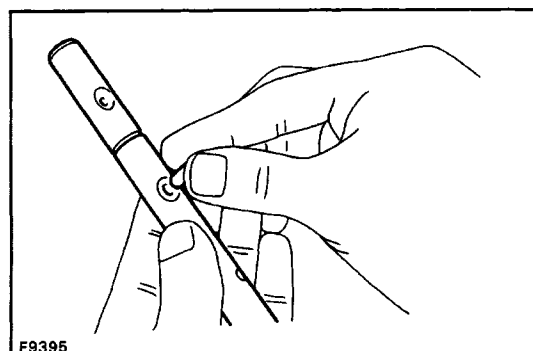
- (d) Install the shift fork No. 1 set bolt and torque the bolt.

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

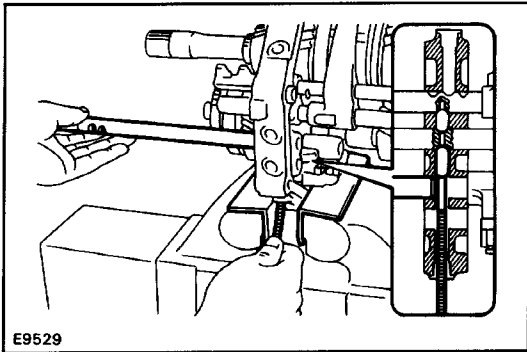


14. INSTALL SHIFT FORK SHAFT NO.3 AND REVERSE SHIFT FORK

- (a) Install the shift arm shoe, shift fork and two E-rings to reverse shift arm.
 (b) Install the reverse shift arm to reverse shift arm bracket.

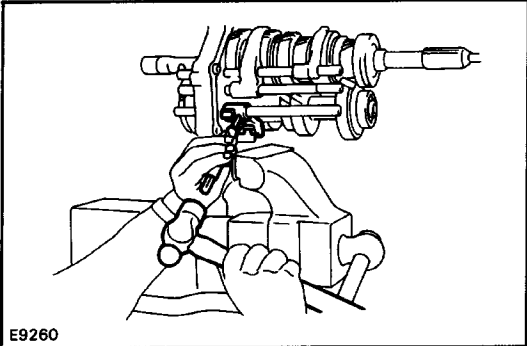


- (c) Apply MP grease to the interlock pin No. 2 and install them into the shift fork shaft No.3.

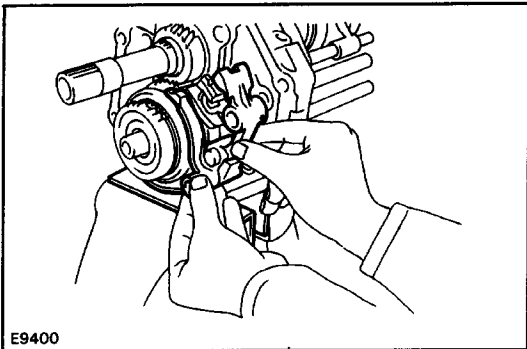


(d) Using a magnetic finger, install the interlock pin No. 1 to the intermediate plate.

(e) Install the shift fork shaft No.3 through the intermediate and reverse shift fork.



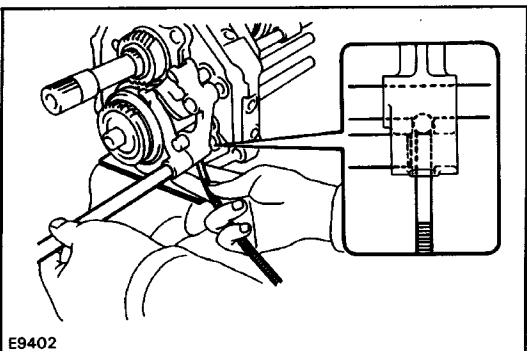
(f) Using a pin punch and hammer, drive in the slotted spring pin.



15. INSTALL REVERSE SHIFT HEAD, FIFTH SHIFT FORK, SHIFT FORK SHAFT NO.4 AND NO.5

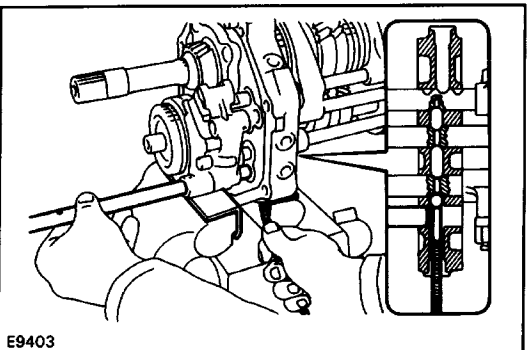
(a) Install the reverse shift head to shift fork shaft No.3.

(b) Install the shift fork No.3.



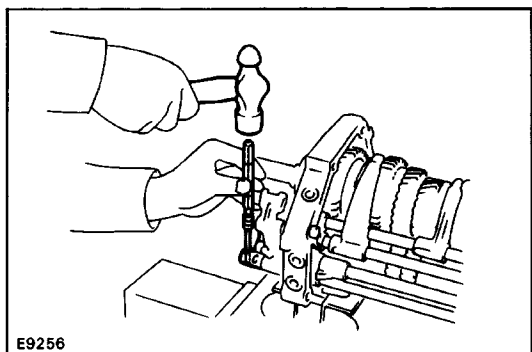
Using a magnetic finger, install the ball to reverse shift head.

(d) Install the shift fork shaft No.4 as shown.

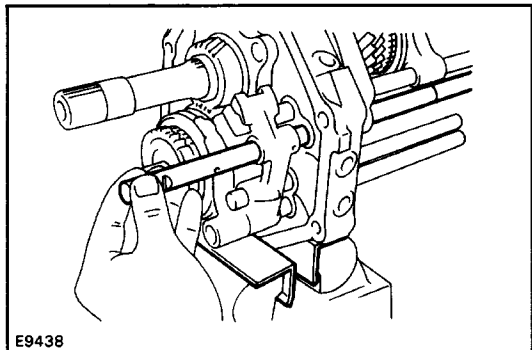


(e) Using a magnetic finger, install the interlock ball No.1 to intermediate plate.

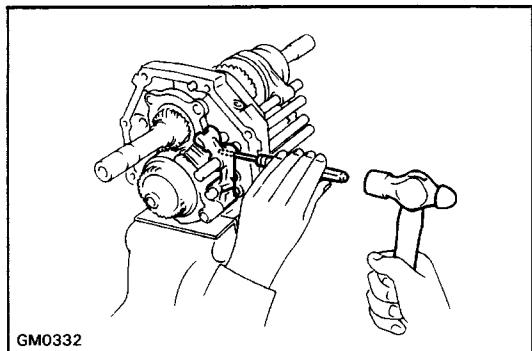
(f) Install the shift fork shaft No.4 through the intermediate plate.



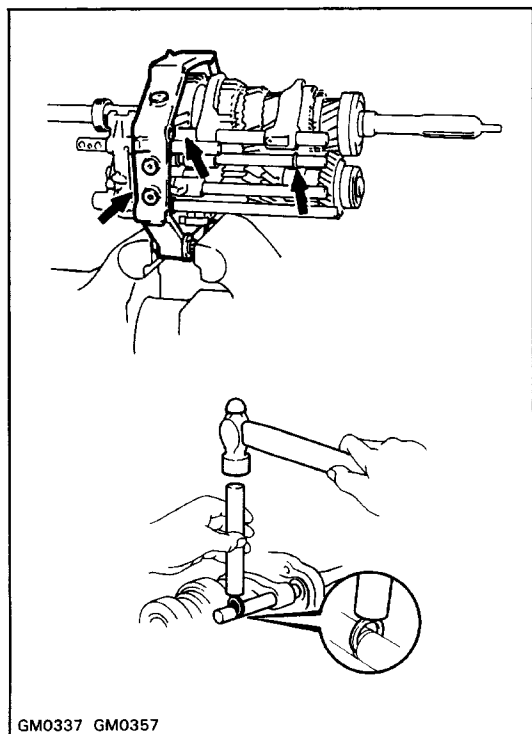
(g) Using a pin punch and hammer, drive in the slotted spring pin to the shift fork R1o.3.



(h) Install the shift fork shaft No.5 through the reverse shift head and intermediate plate.

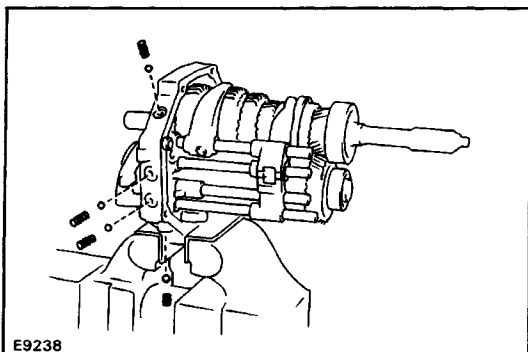


(i) Using a pin punch and hammer, drive in the slotted spring pin to the reverse shift head.



16. INSTALL SHIFT FORK SHAFT SNAP RINGS

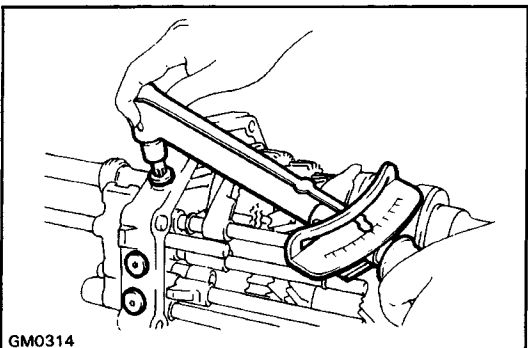
Using a brass bar and hammer tap in the three snap rings.



17. INSTALL LOCKING BALLS, SPRINGS AND SCREW PLUGS

- (a) Install the four locking balls and four springs.

HINT: Install the short spring into the bottom of the intermediate plate.



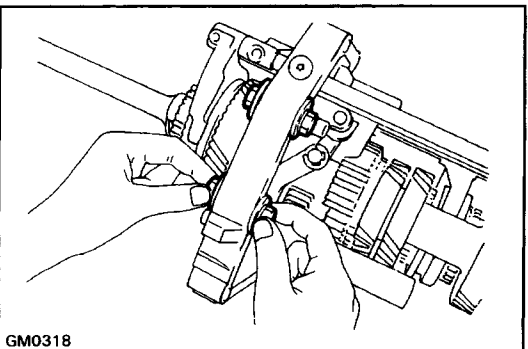
- (b) Apply liquid sealer to the plug threads.

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

- (c) Install the screw plugs and torque the screw plugs with a torx socket wrench.

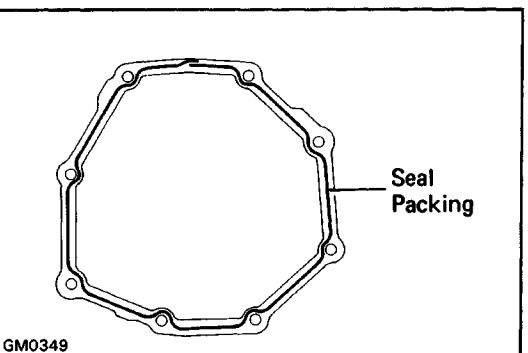
(Torx socket wrench T40 09042-00020)

Torque: 19 N – m (190 kgf – cm, 14 ft – lbf)



18. DISMOUNT INTERMEDIATE PLATE FROM VISE

- (a) Dismount the intermediate plate from the vise.
(b) Remove the bolts, nuts and plate washers.



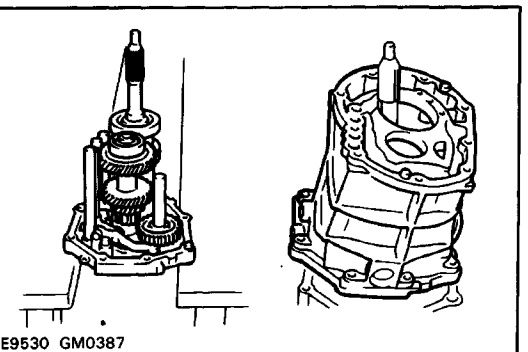
19. INSTALL TRANSMISSION CASE

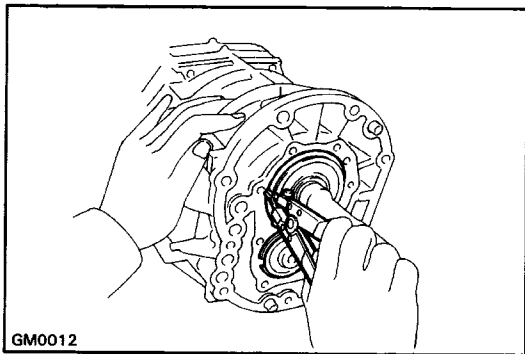
- (a) Remove the any packing material and be careful not to drop oil on the contacting surfaces of the transmission case or intermediate plate.
(b) Apply seal packing to the transmission case as shown.

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

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

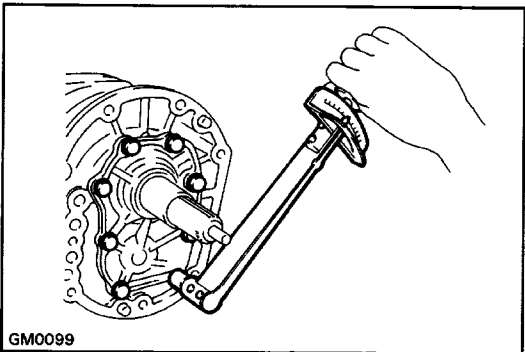
- (c) Stand the intermediate plate as shown.
(d) Install the transmission case to the intermediate plate as shown.





20. INSTALL FRONT BEARING RETAINER

- (a) Using a snap ring expander, install the two snap rings to input shaft bearing and counter gear front bearing.



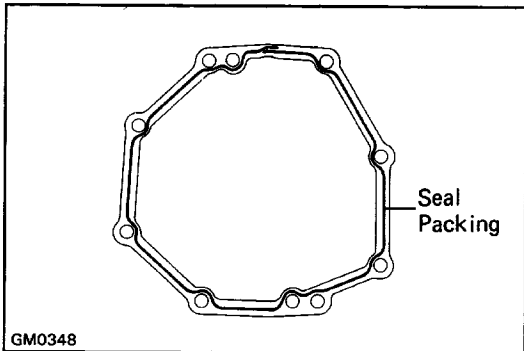
- (b) Install the bearing retainer with a new gasket.

- (c) Apply liquid sealer to the bolt threads.

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

- (d) Install and torque the bolts.

Torque: 17 N – m (170kgf – cm, 12ft – lbf)



21. INSTALL TRANSFER ADAPTOR, SHIFT LEVER SHAFT AND SHIFT LEVER HOUSING

- (a) Remove the any packing material and be careful not to drop oil on the contacting surfaces of the transfer adaptor or intermediate plate.

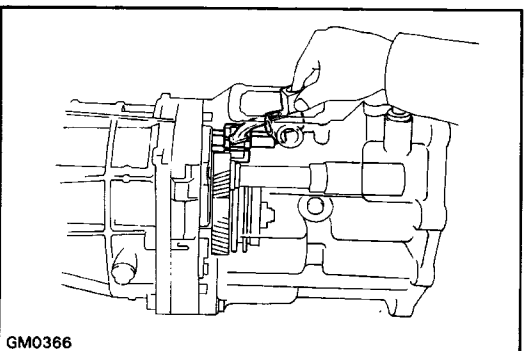
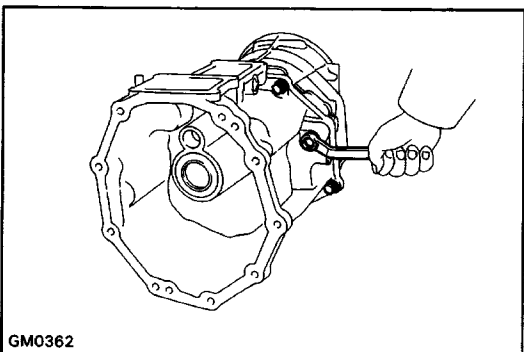
- (b) Apply seal packing to the transfer adaptor as shown.

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

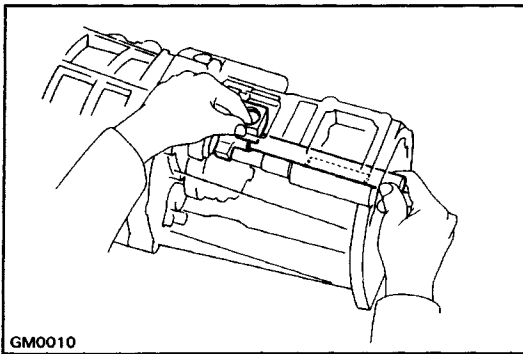
HINT: Install the transfer adaptor as soon as the seal packing is applied.

- (c) Install and torque the transfer adaptor with the eight bolts.

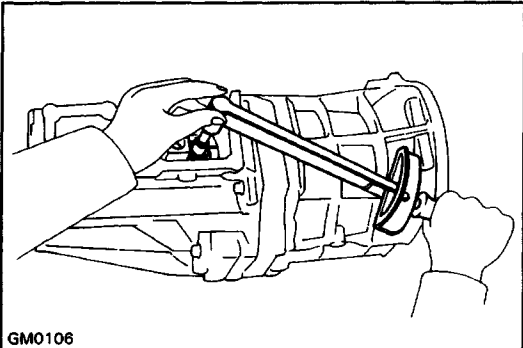
Torque: 37 N-m (380 kgf-cm, 27 ft-lbf)



- (d) Install the shift lever housing to the transfer adaptor and connect the fork shafts.

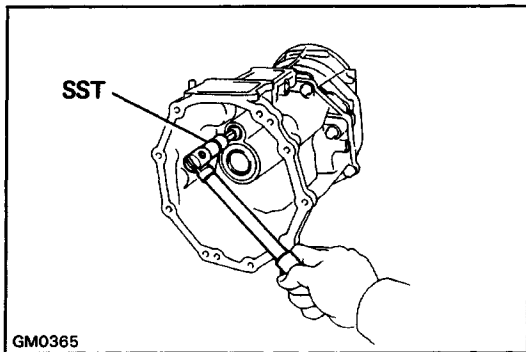


- (e) Install the shift lever shaft to the transfer adaptor and shift lever housing.



- (f) Install and torque the shift lever housing bolt.

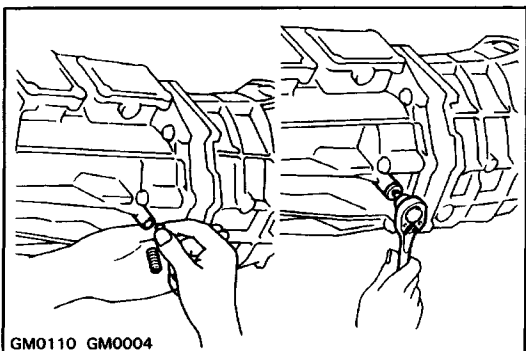
Torque: 38 N-m (390 kgf-cm, 28 ft-lbf)



- (g) Using SST, install and torque the plug.

SST 09923-00010

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



22. INSTALL LOCKING BALL, SPRING AND SCREW PLUG

- (a) Apply liquid sealer to the plug threads.

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

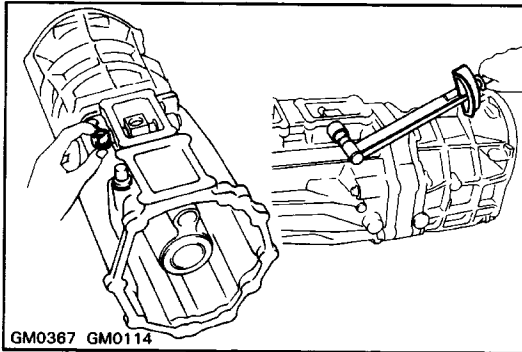
- (b) Install the locking ball, spring and plug, and torque the plug.

(Torx socket wrench T40 09042-00020)

Torque: 19 N - m (190 kgf - cm, 14 ft - lbf)

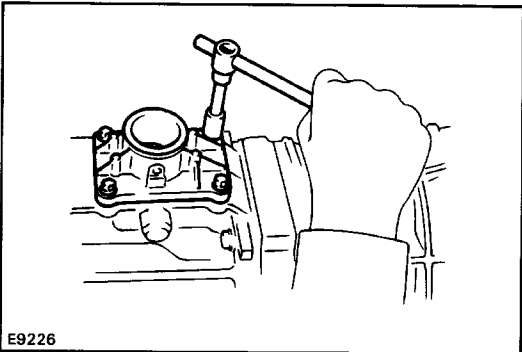
23. AFTER INSTALLING TRANSFER ADAPTOR CHECK FOLLOWING ITEMS

- (a) Check to see that the input and output shafts rotate smoothly.
- (b) Check to see that shifting can be made smoothly to all positions.

**24. INSTALL RESTRICT PINS**

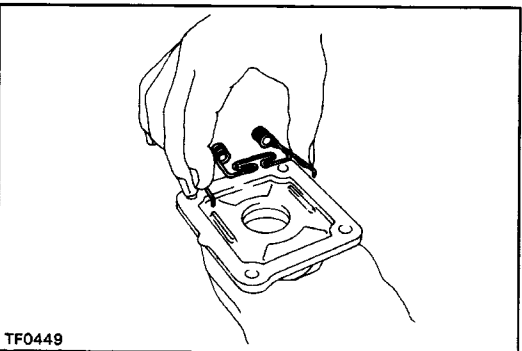
- (a) Install the black pin on the reverse gear/5th gear side.
- (b) Install another pin and torque the pins.

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

**25. INSTALL TRANSMISSION SHIFT LEVER CONTROL RETAINER**

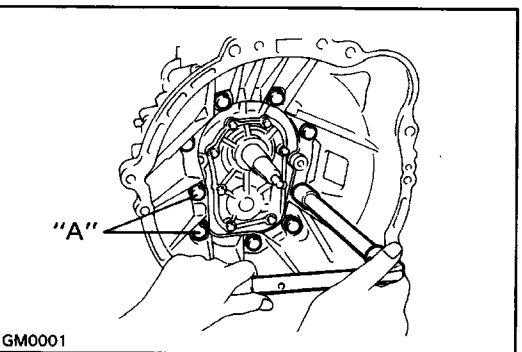
- (a) Install shift lever control retainer and new gasket.
- (b) Install four bolts and torque the bolts.

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

**26. INSTALL TRANSFER SHIFT LEVER CONTROL RETAINER**

- (a) Install the select return spring from the retainer.
- (b) Install shift lever control retainer and new gasket.
- (c) Install four bolts and torque the bolts.

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

**27. INSTALL CLUTCH HOUSING**

- (a) Install clutch housing.
- (b) Apply liquid sealer to the "A" bolt threads.

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

- (c) Install nine bolts and torque the bolts.

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

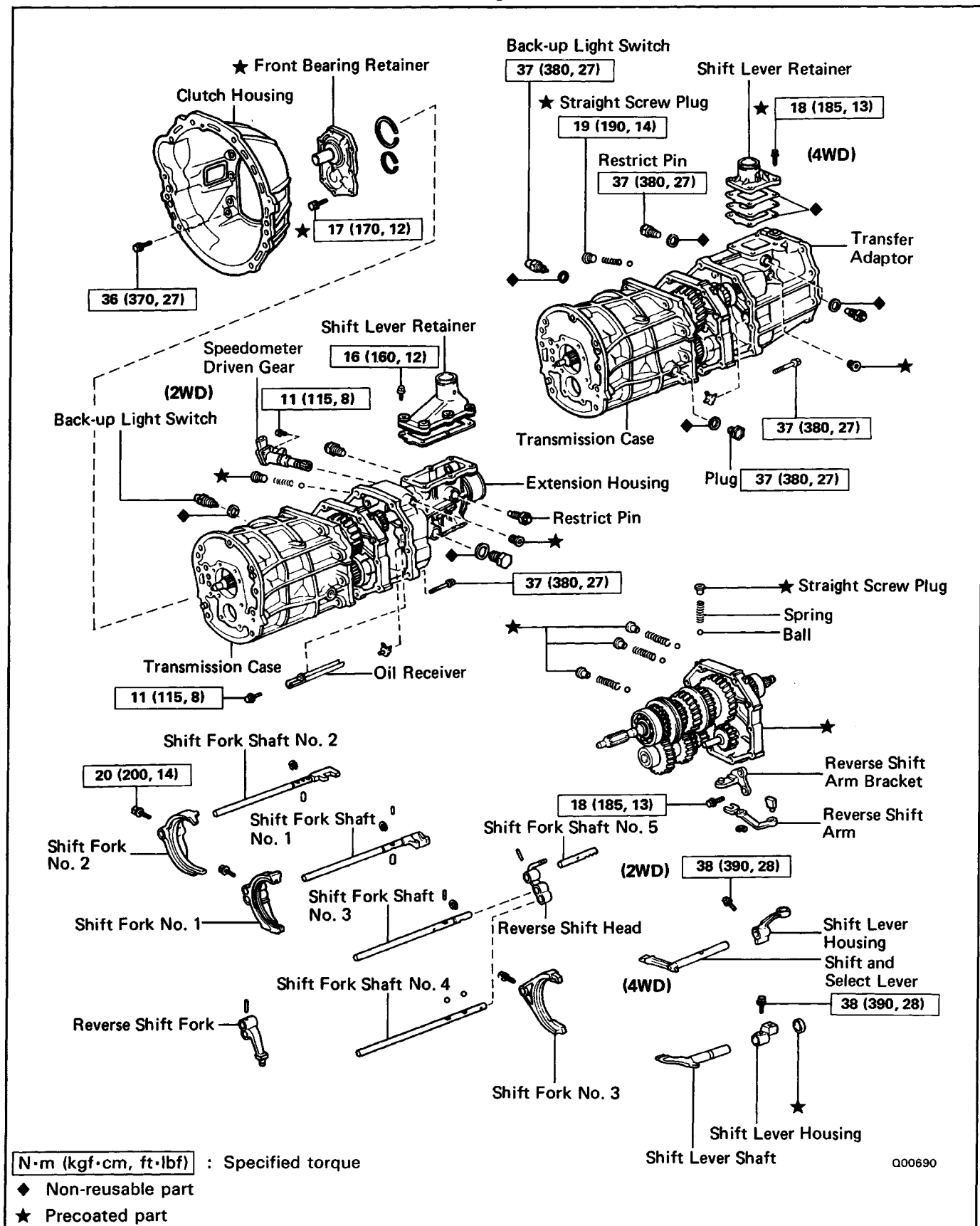
28. INSTALL BACK-UP LIGHT SWITCH

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

29. INSTALL RELEASE FORK AND BEARING

(See page [CL-14](#))

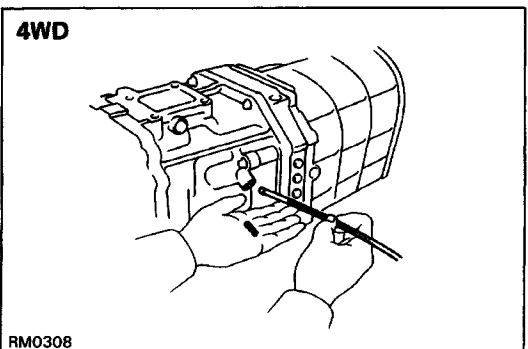
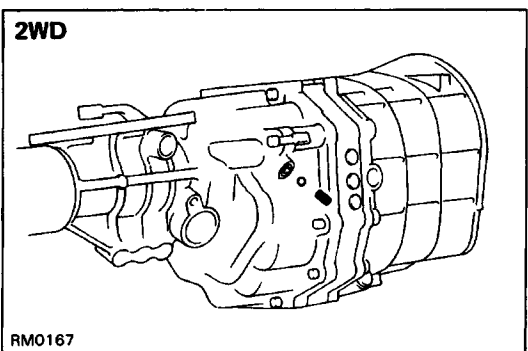
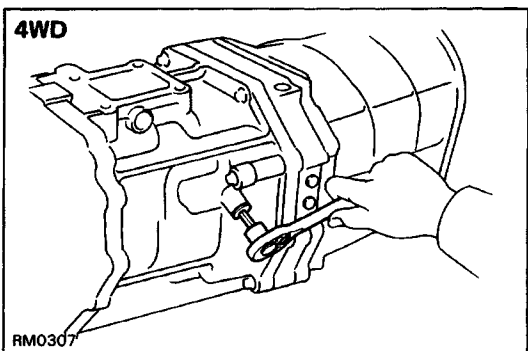
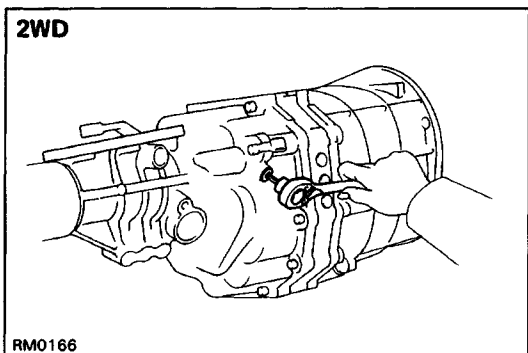
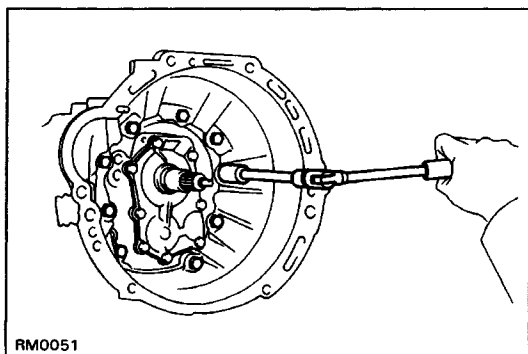
DISASSEMBLY OF TRANSMISSION (R150 AND R 150F TRANSMISSIONS) Components



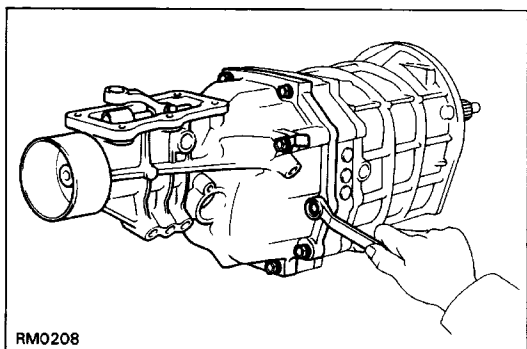
Disassembly of Transmission

(See pages MT1–67, 68)

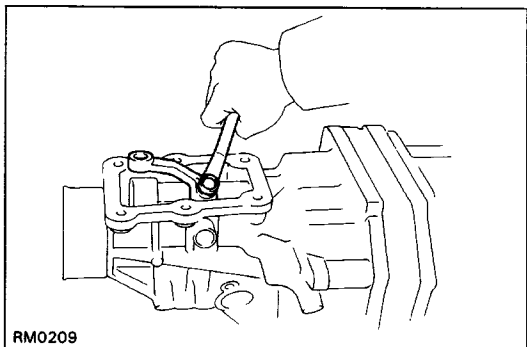
1. REMOVE RELEASE FORK AND BEARING
2. REMOVE BACK-UP LIGHT SWITCH, SPEEDOMETER DRIVEN GEAR (2WD). SHIFT LEVER RETAINER AND RESTRICT PINS
3. REMOVE CLUTCH HOUSING FROM TRANSMISSION CASE
4. REMOVE STRAIGHT SCREW PLUG, SPRING AND BALL
 - (a) Using a torx socket wrench, remove the screw plug from the extension housing or transfer adaptor.
(Torx socket wrench T40 09042–00020)



(b) Using a magnetic finger, remove the spring and ball.

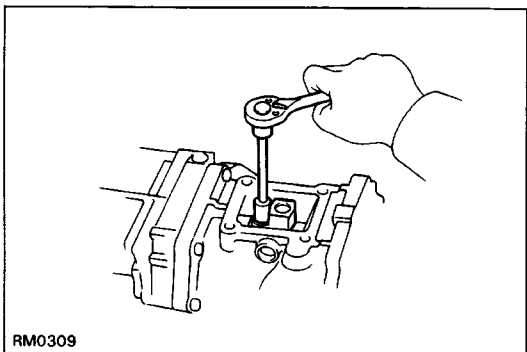
**5.-1 (2WD)****REMOVE EXTENSION HOUSING**

(a) Remove the ten bolts.

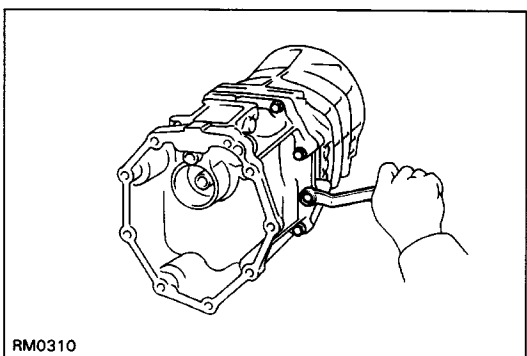


(b) Remove the shift lever housing set bolt.

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

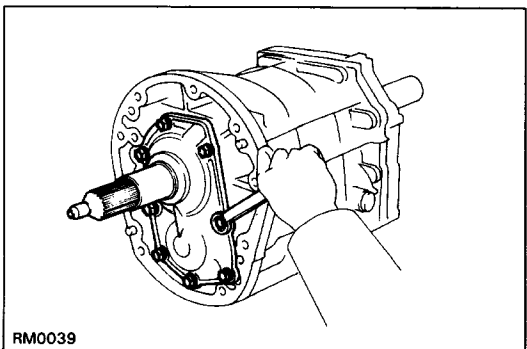
**5.-2 (4WD)****REMOVE TRANSFER ADAPTOR**

(a) Remove the shift lever housing set bolt.



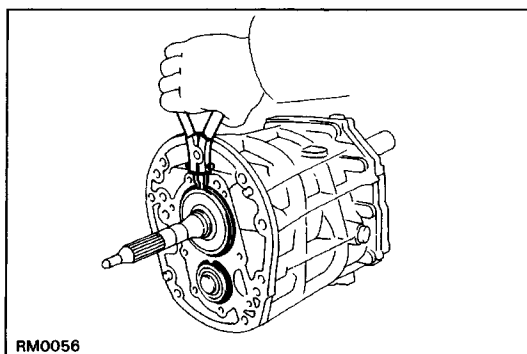
(b) Remove the ten bolts.

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

**6. REMOVE FRONT BEARING RETAINER**

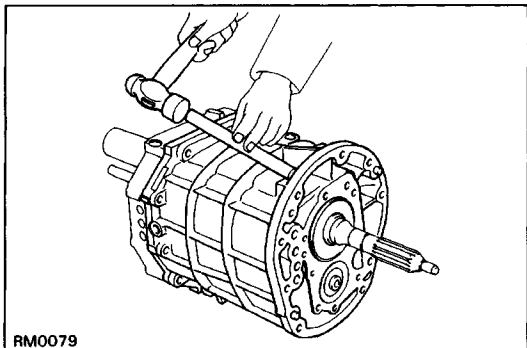
(a) Remove the eight bolts.

(b) Using a plastic hammer, tap the front bearing retainer.



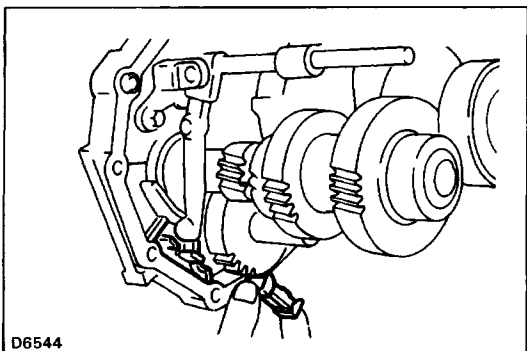
7. REMOVE BEARING SNAP RINGS

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

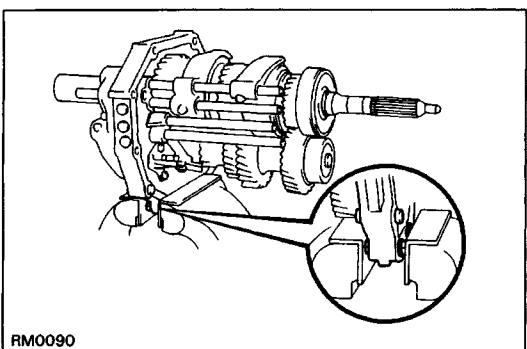


8. SEPARATE INTERMEDIATE PLATE FROM TRANSMISSION CASE

- (a) Using a brass bar and hammer, carefully tap off the transmission case.
- (b) Remove the transmission case from the intermediate plate.



9. REMOVE MAGNET FROM INTERMEDIATE PLATE

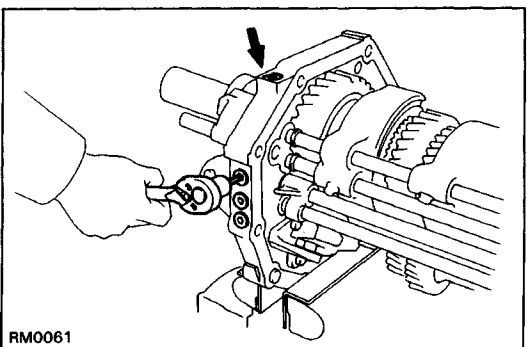


10. MOUNT INTERMEDIATE PLATE IN VISE

- (a) Use two clutch housing bolts, plate washers and suitable nuts as shown.

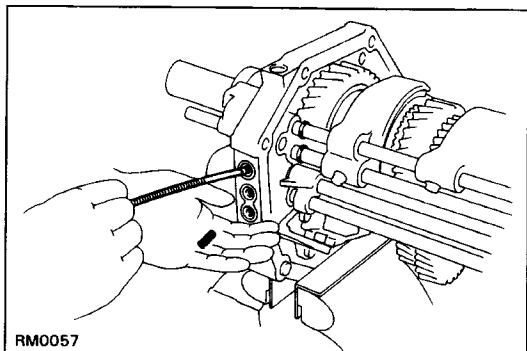
NOTICE: Install the plate washers in reverse of normal. Increase or decrease plate washers so that the bolt tip and front tip surface of the nut are aligned.

- (b) Mount the intermediate plate in a vise.

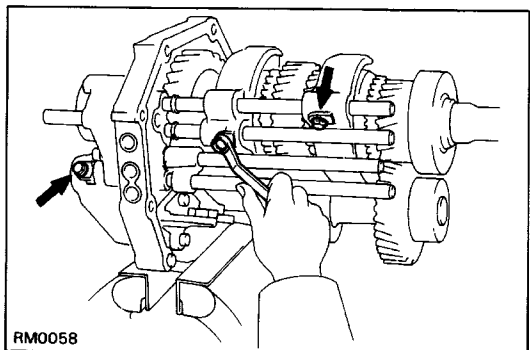


11. REMOVE STRAIGHT SCREW PLUGS, LOCKING BALLS AND SPRINGS

- (a) Using a torx socket wrench, remove the four plugs.
(Torx socket wrench T40 09042-00020)

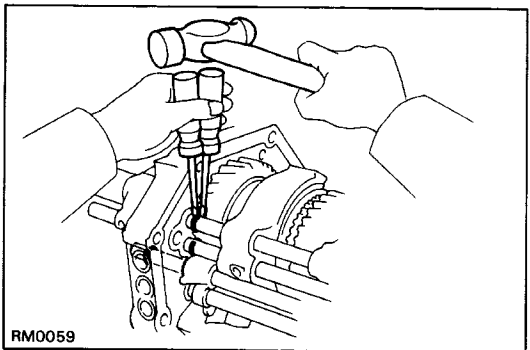


- (b) Using a magnetic finger, remove the four springs and balls.



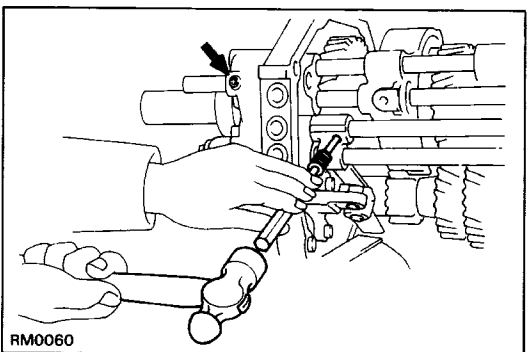
12. REMOVE SHIFT FORK SET BOLTS

Remove the three bolts.



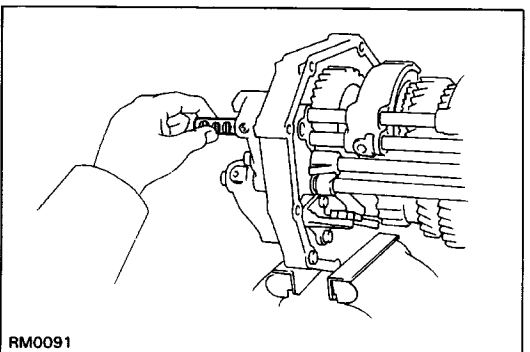
13. REMOVE SNAP RINGS

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



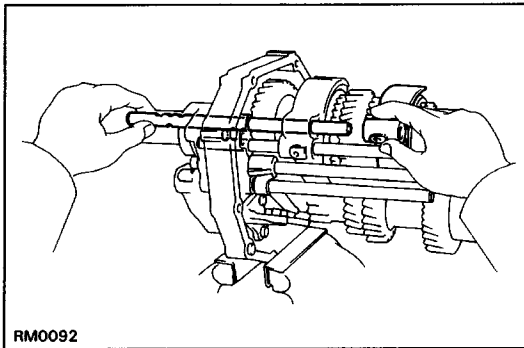
14. REMOVE SLOTTED SPRING PINS

Using a pin punch and hammer, drive out the two pins.



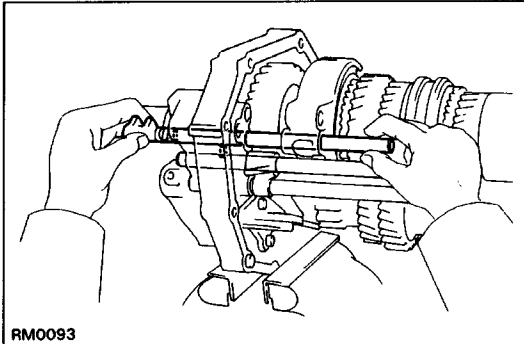
15. REMOVE SHIFT FORK SHAFT NO.5

Pull out the shift fork shaft No.5 from the intermediate plate.



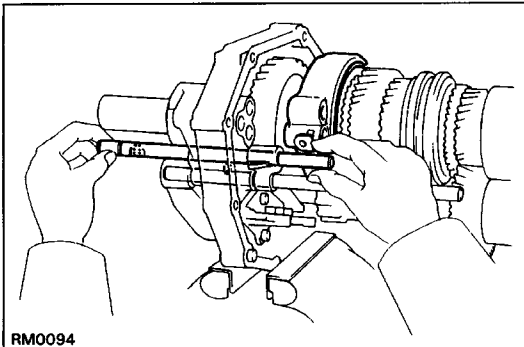
16. REMOVE SHIFT FORK SHAFT NO.2 AND SHIFT FORK

- (a) Pull out the shift fork shaft No. 2 from the intermediate plate.
- (b) Remove the shift fork No.2.
- (c) Using a magnetic finger, remove the interlock pin from the intermediate plate.



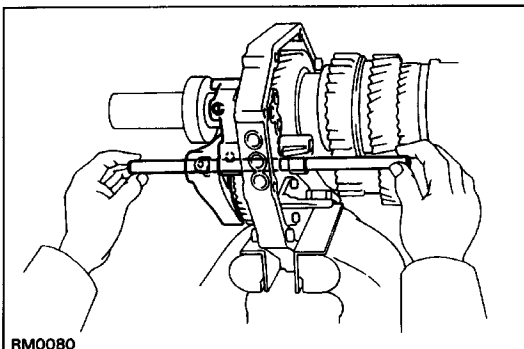
17. REMOVE SHIFT FORK SHAFT NO. 1

- (a) Pull out the shift fork shaft No. 1 from the intermediate plate.
- (b) Using a magnetic finger, remove the interlock pins from the shaft hole and intermediate plate.



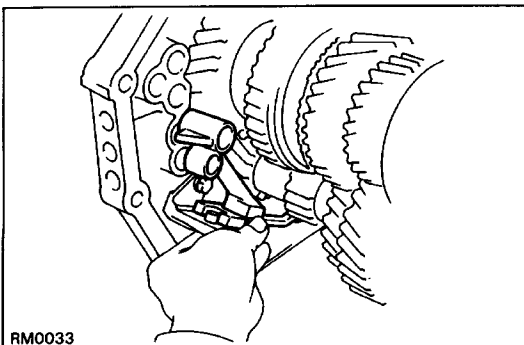
18. REMOVE SHIFT FORK SHAFT NO.3 AND SHIFT FORK NO. 1

- (a) Pull out the shift fork shaft No.3 from the intermediate plate.
- (b) Remove the shift fork No. 1.
- (c) Using a magnetic finger, remove the interlock pin and locking ball from the shaft hole and intermediate plate.

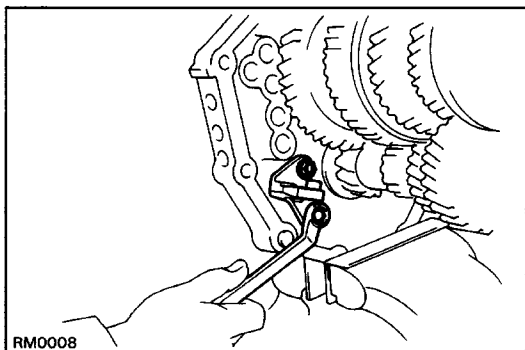


19. REMOVE SHIFT FORK SHAFT NO.4, SHIFT FORK NO.3 AND REVERSE SHIFT HEAD

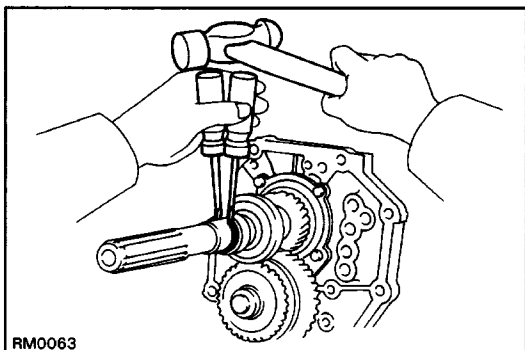
- (a) Pull out the shift fork shaft No.4 from the intermediate plate.
- (b) Remove the reverse shift head and locking ball.
- (c) Remove the shift fork No.3.



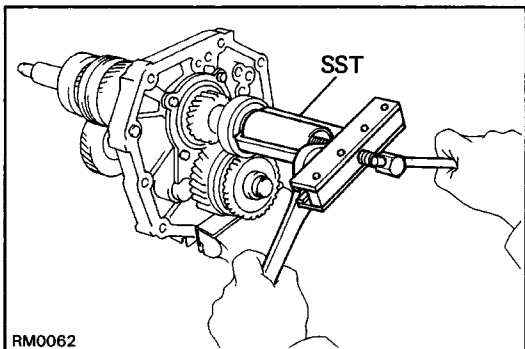
20. REMOVE REVERSE SHIFT ARM FROM REVERSE SHIFT ARM BRACKET

**21. REMOVE REVERSE SHIFT ARM BRACKET**

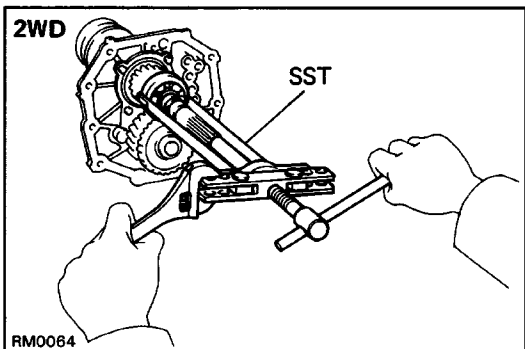
Remove the two bolts and the reverse shift arm bracket.

**22.-1 (2WD)****REMOVE SPEEDOMETER DRIVE GEAR**

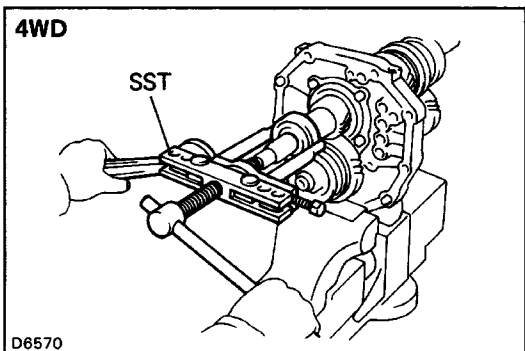
- (a) Using two screwdrivers and a hammer, tap out the rear snap ring.
- (b) Remove the speedometer drive gear and ball.
- (c) Using two screwdrivers and a hammer, tap out the front snap ring.

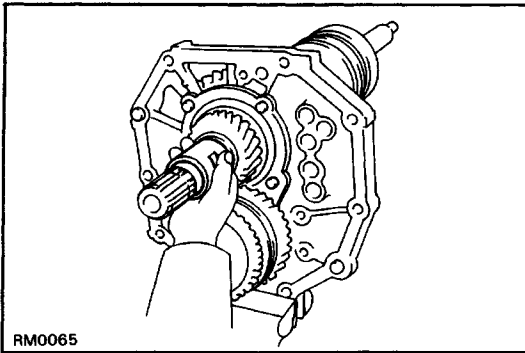
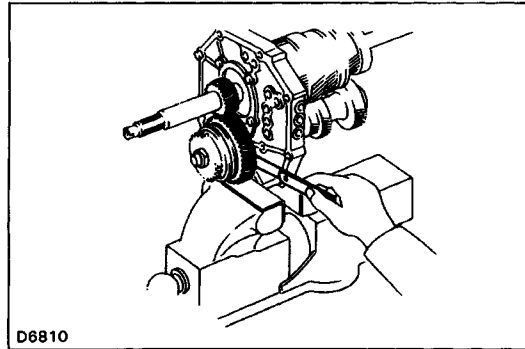
**22.-2 (4WD)****REMOVE SLEEVE FROM OUTPUT SHAFT**

Using SST, remove the sleeve from the output shaft.
SST 09213-36020

**23. REMOVE OUTPUT SHAFT REAR BEARING**

- (a) Using two screwdrivers and a hammer, tap out the snap ring.
- (b) Using SST, remove the rear bearing.
SST 09950-20017



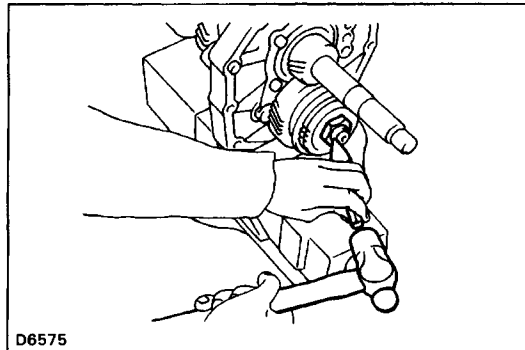
**24. REMOVE SPACER****25. MEASURE COUNTER FIFTH GEAR THRUST CLEARANCE**

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

Standard clearance: 0.10 – 0.35 mm

(0.0039 – 0.0138 in.)

Maximum clearance: 0.40 mm (0.0157 in.)

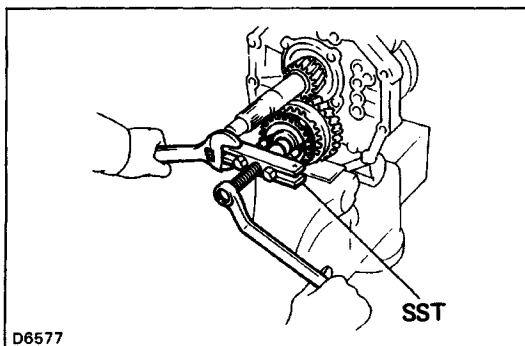
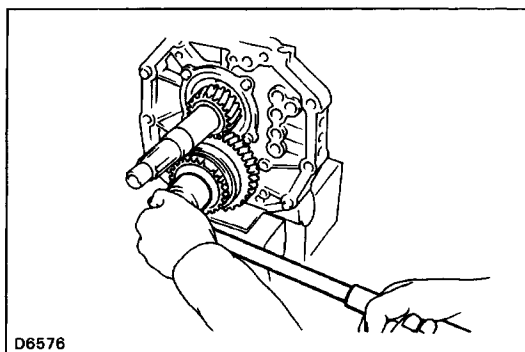
**26. REMOVE GEAR SPLINE PIECE NO.5, SYNCHRONIZER RING, NEEDLE ROLLER BEARING AND COUNTER FIFTH GEAR WITH HUB SLEEVE NO.3**

(a) Engage the gear double meshing.

(b) Using a hammer and chisel, loosen the staked part of the nut.

(c) Remove the lock nut.

(d) Disengage the gear double meshing.



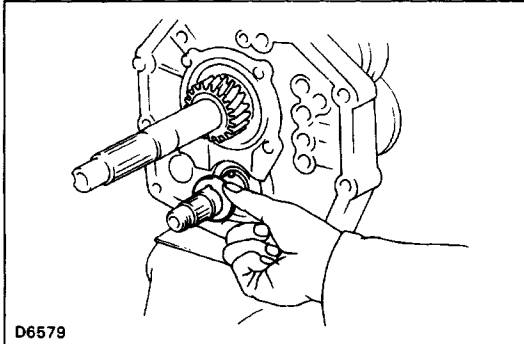
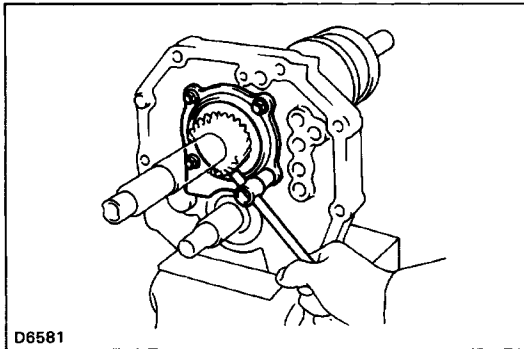
(e) Using SST, remove the gear spline piece No. 5.

SST 09213-31021

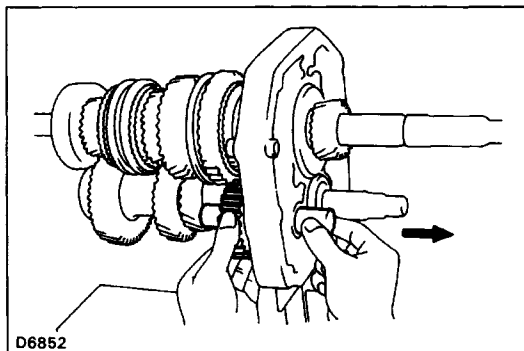
(f) Remove the counter 5th gear with hub sleeve No-3.

27. REMOVE THE SHIFTING KEYS AND SPRINGS FROM FIFTH GEAR AND HUB SLEEVE NO.3

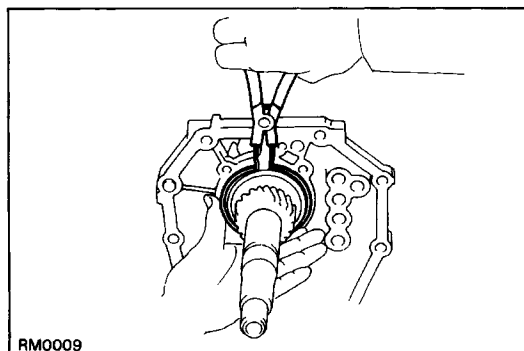
Using a screwdriver, remove the three shifting keys and two rings.^{sp}

**28. REMOVE THRUST WASHER AND BALL****29. REMOVE REAR BEARING RETAINER**

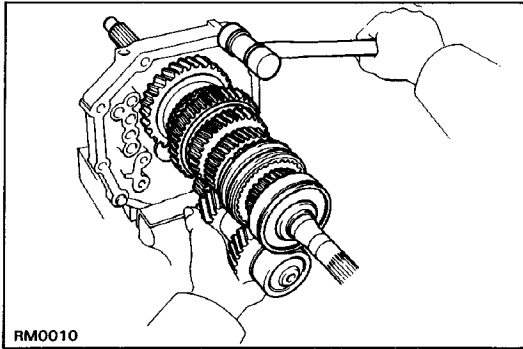
Remove the four bolts and rear bearing retainer.

**30. REMOVE REVERSE IDLER GEAR AND SHAFT**

Pull out the shaft toward the rear.

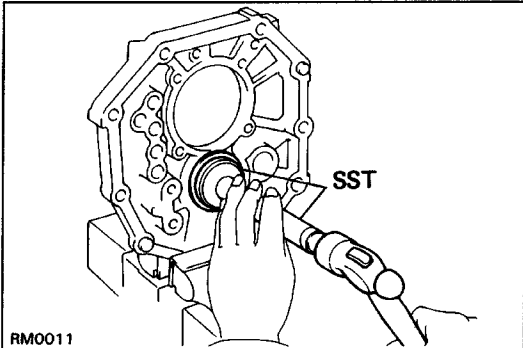
**31. REMOVE BEARING SNAP RING**

Using a snap ring expander, remove the snap ring.



32. REMOVE OUTPUT SHAFT, COUNTER GEAR AND INPUT SHAFT AS A UNIT FROM INTERMEDIATE PLATE

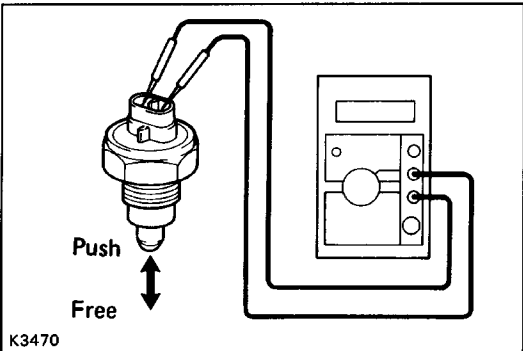
- Remove the output shaft, counter gear and input shaft as a unit from the intermediate plate by pulling on the counter gear and tapping on the intermediate plate with a plastic hammer.
- Remove the input shaft with the needle roller bearing from the output shaft.



33. REMOVE COUNTER REAR BEARING FROM INTERMEDIATE PLATE

Using SST and a hammer, remove the counter rear bearing.

SST 09608-12010 (09608-00020, 09608-00050)



34. INSPECT BACK-UP LIGHT SWITCH

Check that there is continuity between terminals.

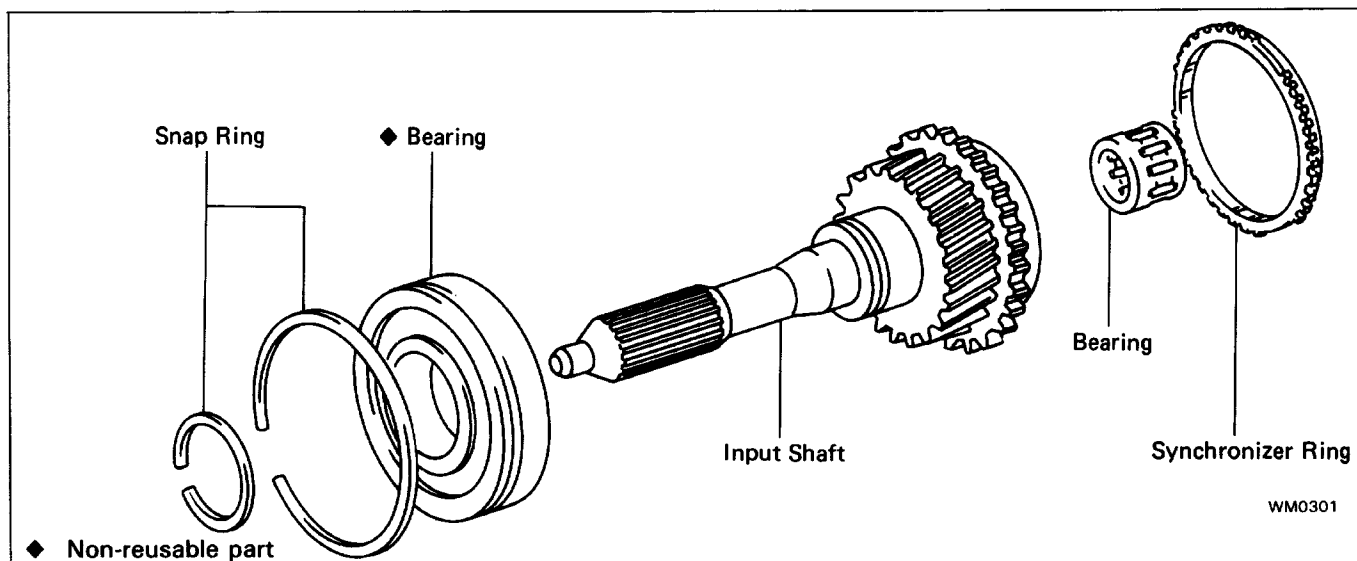
Switch Position	Specified
Push	Continuity
Free	No Continuity

If operation is not as specified replace switch.

COMPONENT PARTS

Input Shaft Assembly

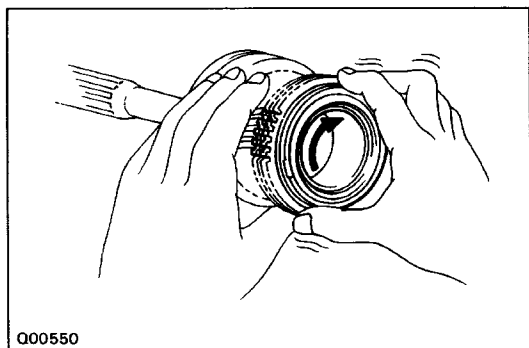
COMPONENTS



INSPECTION OF INPUT SHAFT

INSPECT SYNCHRONIZER RING

- (a) Turn the ring and push it in to check the breaking action.

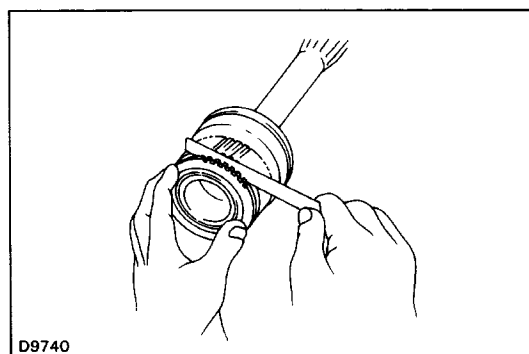


- (b) Using a feeler gauge, measure the clearance between the synchronizer ring back and the gear spline end.

Standard clearance: 0.8 – 1.6 mm
(0.031 – 0.063 in.)

Minimum clearance: 0.6 mm (0.024 in.)

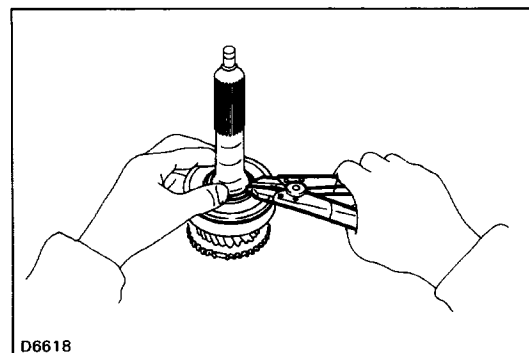
If the clearance is less than the minimum, replace the synchronizer ring.

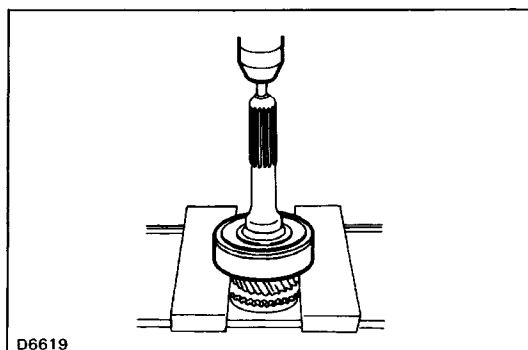


REPLACEMENT OF BEARING

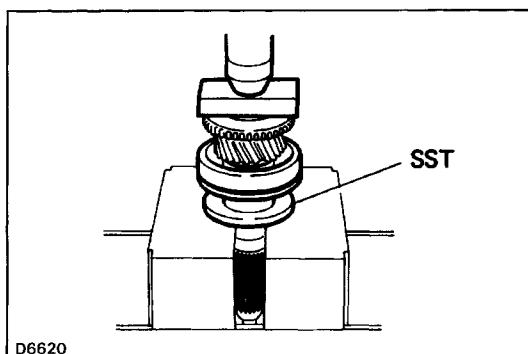
IF NECESSARY, REPLACE INPUT SHAFT BEARING

- (a) Using snap ring pliers, remove the snap ring.

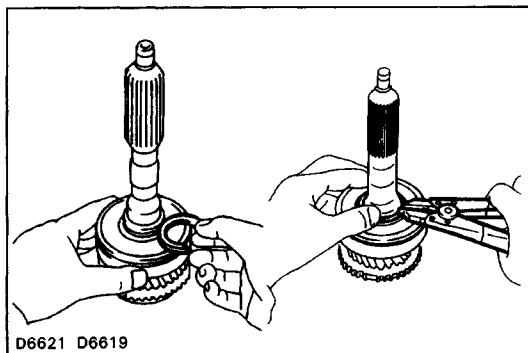




(b) Using a press, remove the bearing.



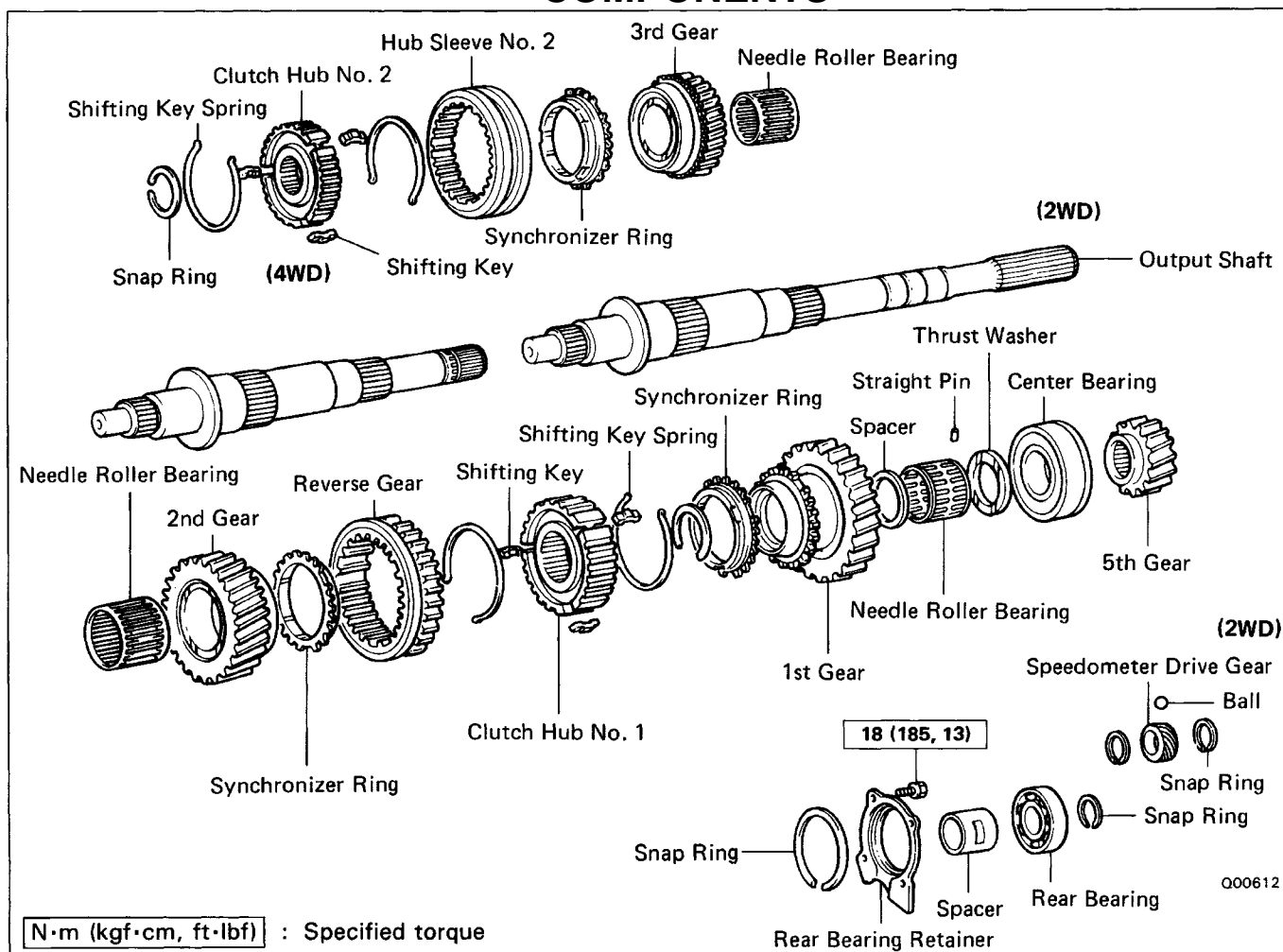
(c) Using SST and a press, install a new bearing.
SST 09506-35010



(d) Select a snap ring that will allow minimum axial play and install it on the shaft.

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

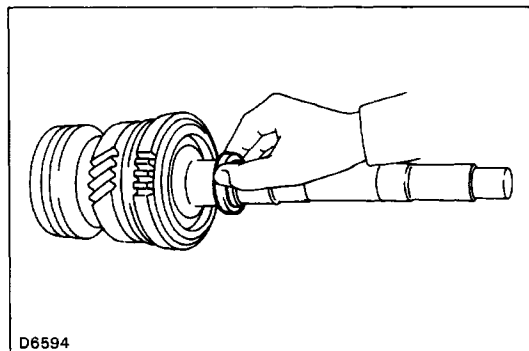
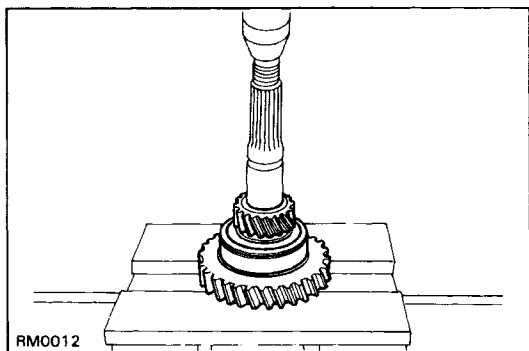
Output Shaft Assembly COMPONENTS

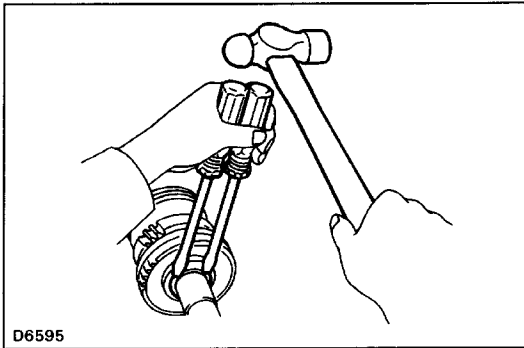


DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. REMOVE FIFTH GEAR, CENTER BEARING AND FIRST GEAR ASSEMBLY

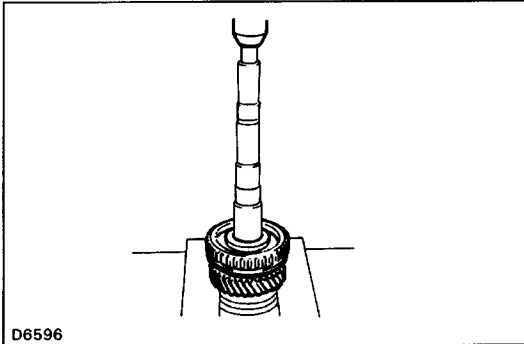
- Using a press, remove the 5th gear, center bearing, thrust washer and 1st gear.
- Remove the synchronizer ring.
- Remove the straight pin and needle roller bearing.
- Remove the spacer.





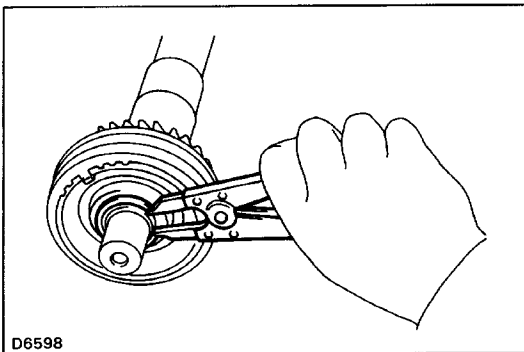
2. REMOVE HUB SLEEVE NO.1 ASSEMBLY AND SECOND GEAR ASSEMBLY

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



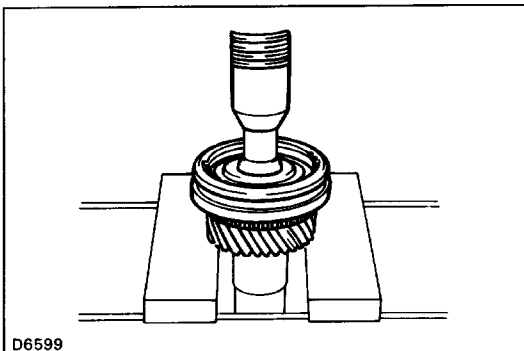
(b) Using a press, remove the hub sleeve No. 1, synchronizer ring and 2nd gear.

(c) Remove the needle roller bearing.



3. REMOVE HUB SLEEVE NO.2 ASSEMBLY AND THIRD GEAR ASSEMBLY

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



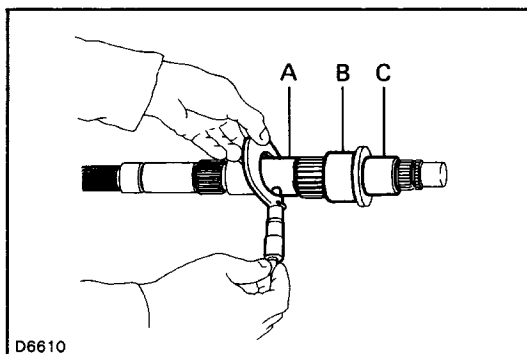
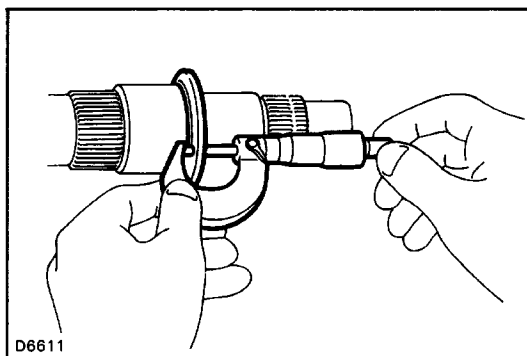
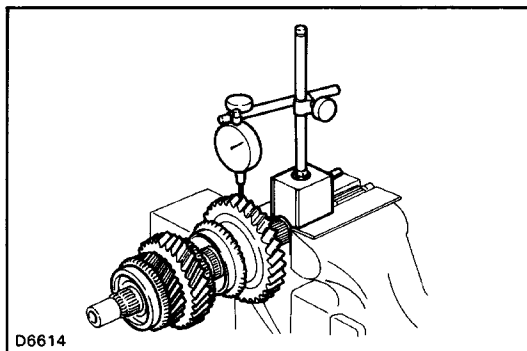
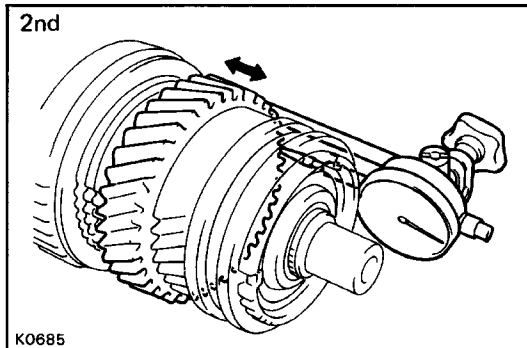
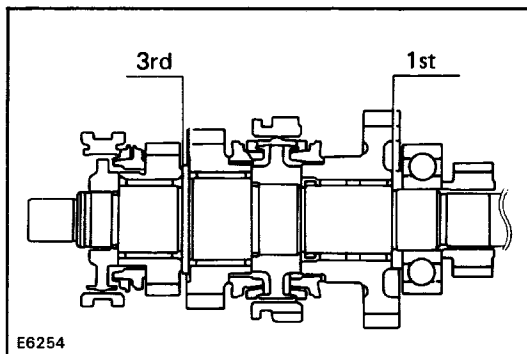
(b) Using a press, remove the hub sleeve No.2, synchronizer ring and 3rd gear.

(c) Remove the needle roller bearing.

4. REMOVE THE SHIFTING KEYS AND SPRINGS FROM HUB SLEEVE ASSEMBLY

Using screwdriver, remove the three shifting keys and two springs.

HINT: Hub sleeve No. 1 and hub sleeve No.2.



INSPECT OF OUTPUT SHAFT ASSEMBLY

1. INSPECT EACH GEAR THRUST CLEARANCE

- Using a feeler gauge, measure the thrust clearance of 1st gear and 3rd gear.
- Using a dial indicator, measure the thrust clearance of 2nd gear.

1st gear

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

Maximum clearance: 0.50 mm (0.0197 in.)

2nd and 3rd gears

Standard clearance: 0.10 – 0.25 mm
(0.0039 – 0.0098 in.)

Maximum clearance: 0.30 mm (0.0118 in.)

2. INSPECT EACH GEAR OIL CLEARANCE

Using a dial indicator, measure the oil clearance between the gear and shaft with the needle roller bearing installed.

1st gear

Standard clearance: 0.020 – 0.073 mm
(0.0008 – 0.0029 in.)

Maximum clearance: 0.16 mm (0.0063 in.)

2nd and 3rd gears

Standard clearance: 0.015 – 0.068 mm
(0.0006 – 0.0027 in.)

Maximum clearance: 0.16 mm (0.0063 in.)

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

3. INSPECT OUTPUT SHAFT

- Using a micrometer, measure the output shaft flange thickness.

Minimum thickness: 4.70 mm (0.1850 in.)

If the thickness exceeds the minimum, replace the output shaft.

- Using a micrometer, measure the outer diameter of the output shaft journal.

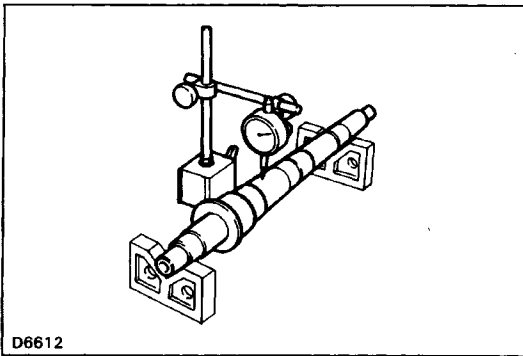
Minimum diameter:

(A) 1st gear 38.860 mm (1.5299 in.)

(B) 2nd gear 46.860 mm (1.8449 in.)

(C) 3rd gear 37.860 mm (1.4905 in.)

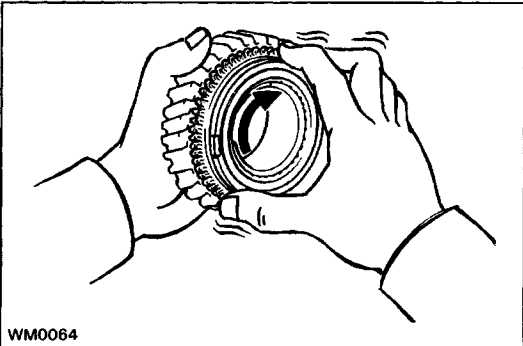
If the outer diameter exceeds the minimum, replace the output shaft.



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

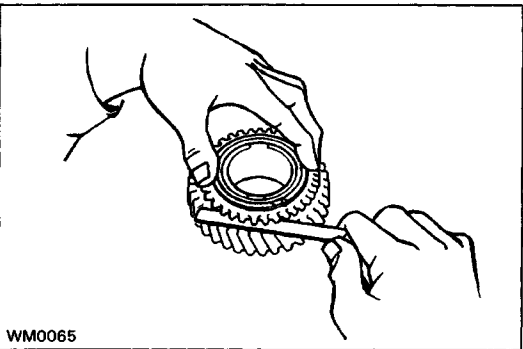
Maximum runout: 0.06 mm (0.0024 in.)

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



4. INSPECT SYNCHRONIZER RINGS

(a) Turn the ring and push it in to check the braking action.

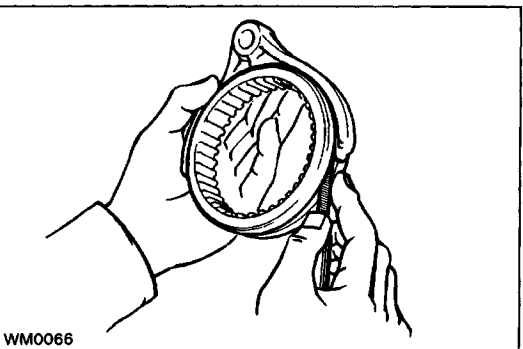


(b) Using a feeler gauge, measure the clearance between the synchronizer ring back and the gear spline end.

**Standard clearance: 0.8 – 1.6 mm
(0.031 – 0.063 in.)**

Minimum clearance: 0.6 mm (0.024 in.)

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

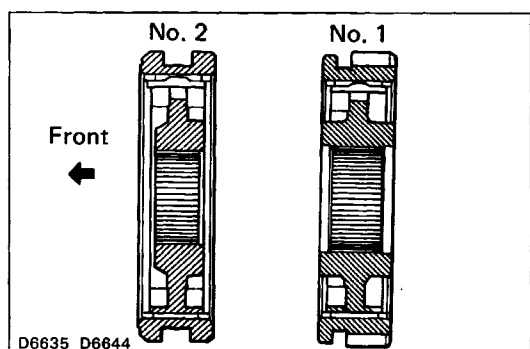


5. INSPECT CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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.

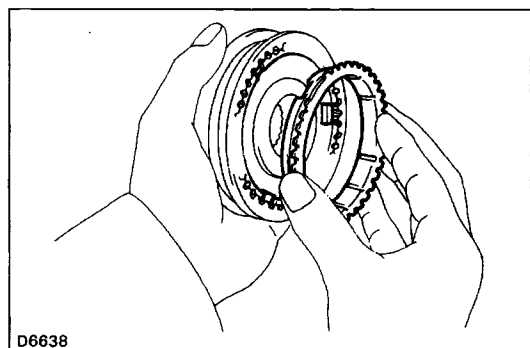


ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. INSERT CLUTCH HUB NO. 1 AND NO.2 INTO HUB SLEEVE

- Install the clutch hub and shifting keys to the hub sleeve.
- Install the shifting key springs under the shifting keys.

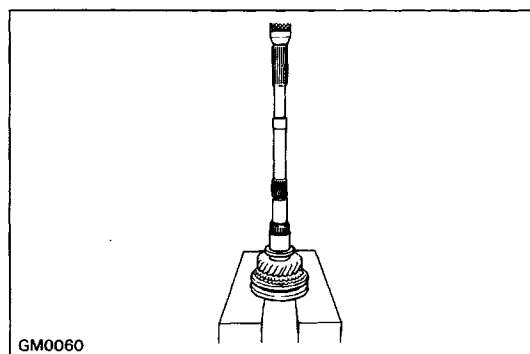
NOTICE: Install the key springs positioned so that their end gaps are not in 1 if.



2. INSTALL THIRD GEAR AND HUB SLEEVE NO.2 ON OUTPUT SHAFT

- Apply gear oil to the shaft and needle roller bearing.
- Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- Install the needle roller bearing in the 3rd gear.

- Using a press, install the 3rd gear and No.2 hub sleeve.

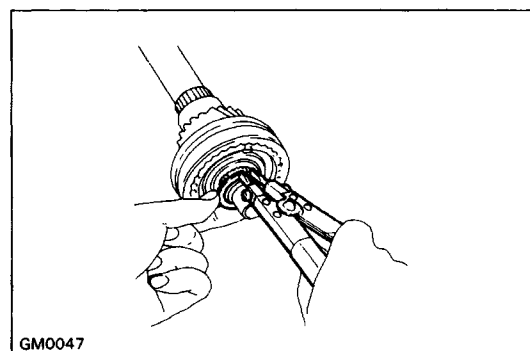
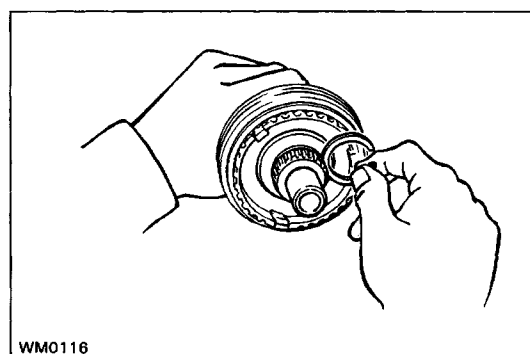


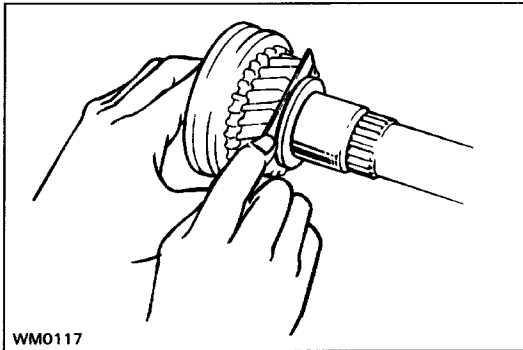
3. INSTALL SNAP RING

- Select a snap ring that will allow minimum axial play.

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

- Using snap ring pliers, install the snap ring.



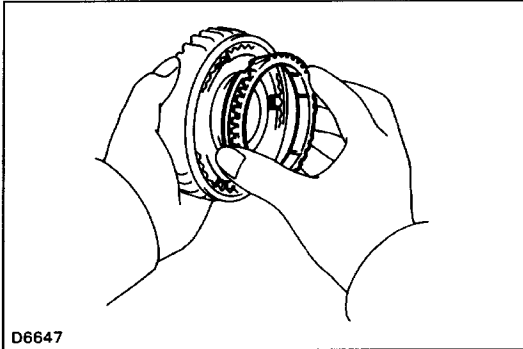


WM0117

4. 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.)

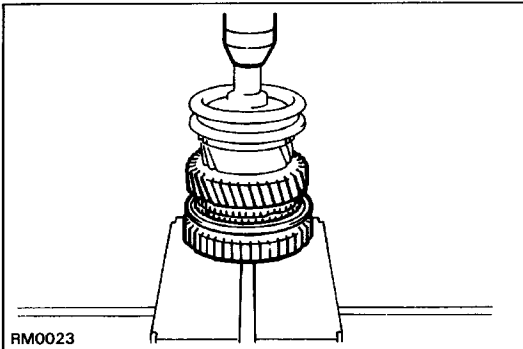


D6647

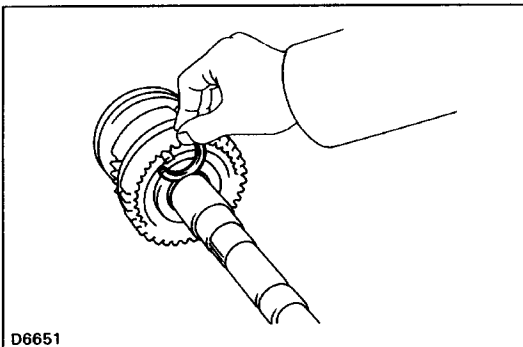
5. INSTALL SECOND GEAR AND HUB SLEEVE NO. 1

- (a) Apply gear oil to the shaft and needle roller bearing.
- (b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- (c) Install the needle roller bearing in the 2nd gear.

- (d) Using a press, install the 2nd gear and hub sleeve No. 1.



RM0023



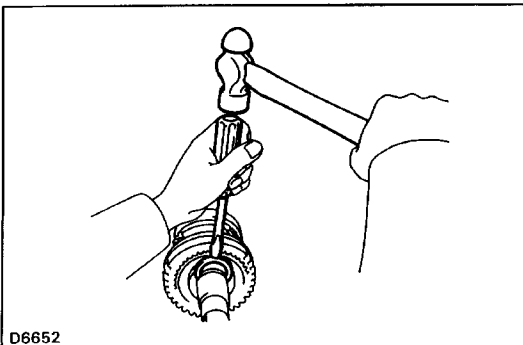
D6651

6. INSTALL SNAP RING

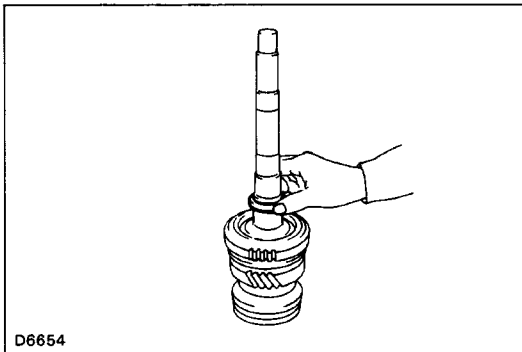
- (a) Select a snap ring that will allow minimum axial play.

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

- (b) Using a screwdriver and hammer, install the snap ring.

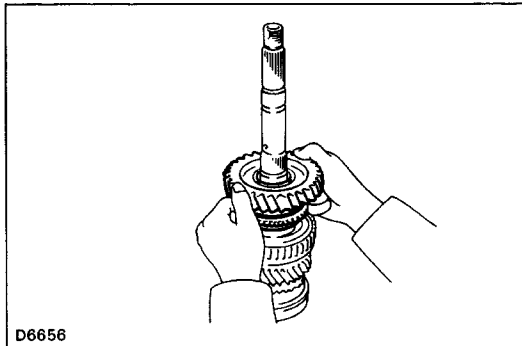


D6652



7. INSTALL SPACER AND FIRST GEAR ASSEMBLY

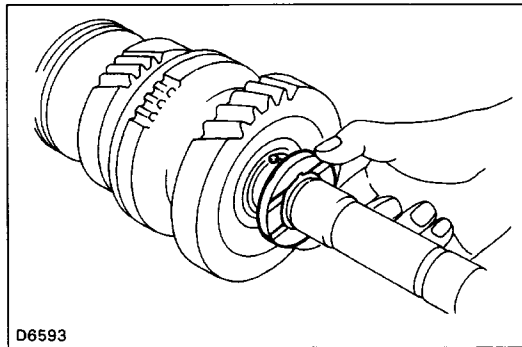
(a) Install the spacer on the output shaft.



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

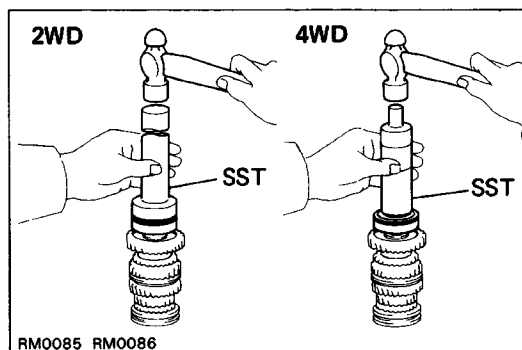
(c) Assemble the 1st gear, synchronizer ring and needle roller bearing.

(d) Install the assembly on the output shaft with the synchronizer ring slots aligned with the shifting keys.



8. INSTALL STRAIGHT PIN AND FIRST GEAR THRUST WASHER

Install the 1st gear thrust washer onto the output shaft with the straight pin aligned with the 1st gear thrust washer.



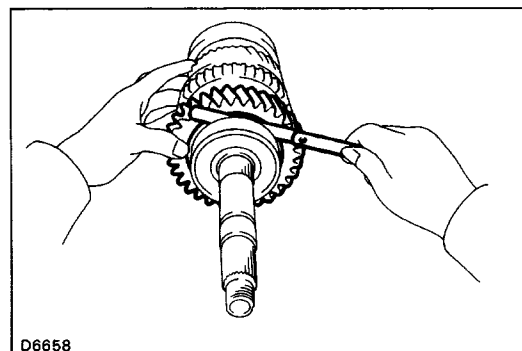
9. INSTALL OUTPUT SHAFT CENTER BEARING

Using SST and a hammer, drive in the bearing with the outer race snap ring groove toward the rear.

SST (2WD) 09309-35010

(4WD) 09316-60010

(09316-00010, 09316-00070)

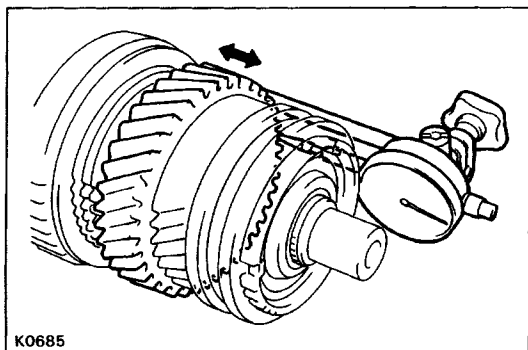


10. INSPECT FIRST GEAR THRUST CLEARANCE

Using a feeler gauge, measure the 1st clearance.

Standard clearance:

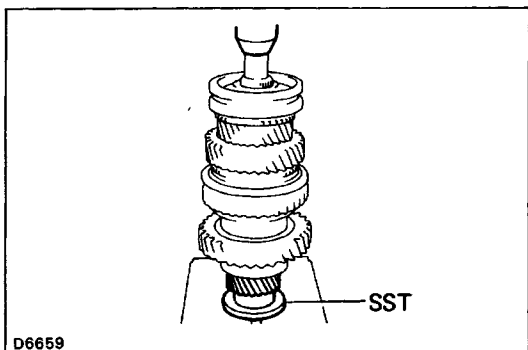
1st gear 0.10 – 0.45 mm (0.0039 – 0.0177 in.)

**11. INSPECT SECOND GEAR THRUST CLEARANCE**

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

Standard clearance:

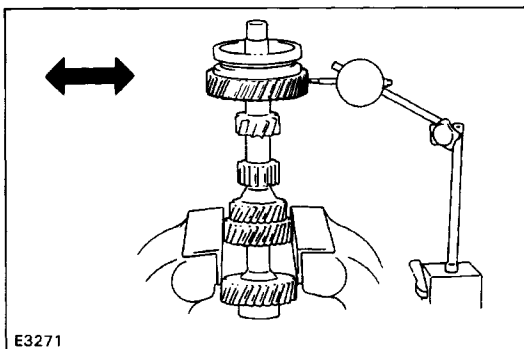
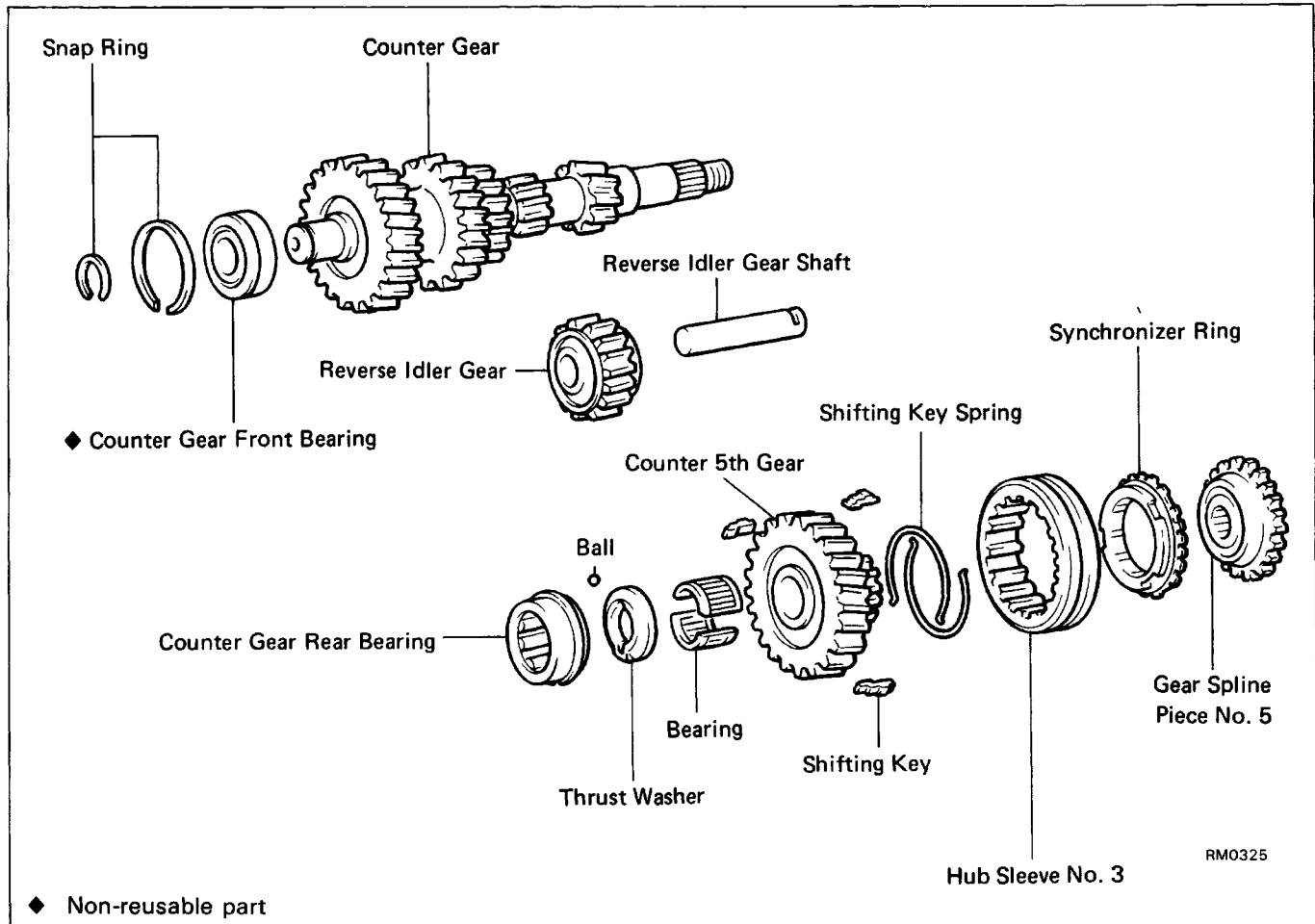
2nd gear 0.10 – 0.25 mm (0.0039 – 0.0098 in.)

**12. INSTALL FIFTH GEAR**

Using SST and a press, install the 5th gear.

SST 09316-60010 (09316-00030)

Counter Gear Assembly and Reverse Idler Gear COMPONENTS



INSPECTION OF COUNTER GEAR

1. INSPECT FIFTH GEAR OIL CLEARANCE

- Install the spacer, counter 5th gear and needle roller bearings.
- Using a dial indicator, measure the counter 5th gear oil clearance.

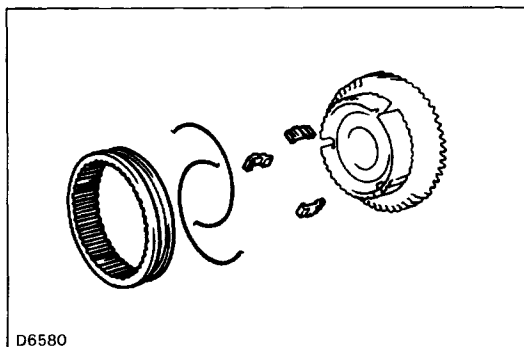
Standard clearance: 0.015 – 0.068 mm
(0.006 – 0.0027 in.)

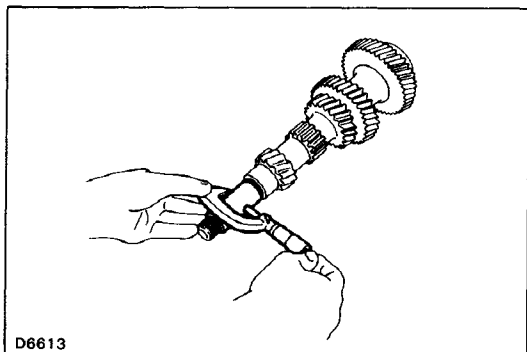
Maximum clearance: 0.16 mm (0.0063 in.)

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

2. REMOVE HUB SLEEVE NO.3, SHIFTING KEYS AND SPRINGS FROM COUNTER FIFTH GEAR.

Using a screwdriver, remove the three shifting keys and two springs from counter 5th gear.



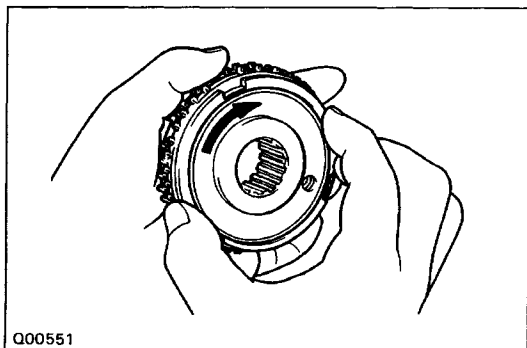


3. INSPECT COUNTER GEAR

Using a micrometer, measure the outer diameter of the counter gear journal.

Minimum diameter: 27.860 mm (1.0968 in.)

If the outer diameter exceeds the minimum, replace the counter gear.



4. INSPECT SYNCHRONIZER RINGS

- (a) Turn the ring and push it in to check the braking action.

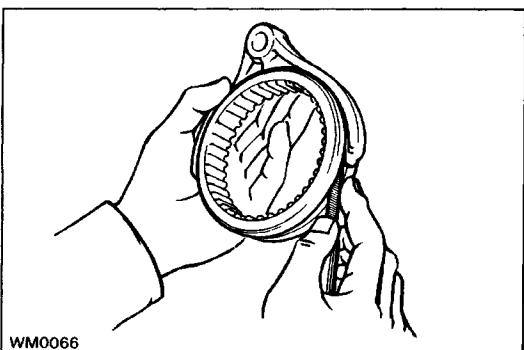
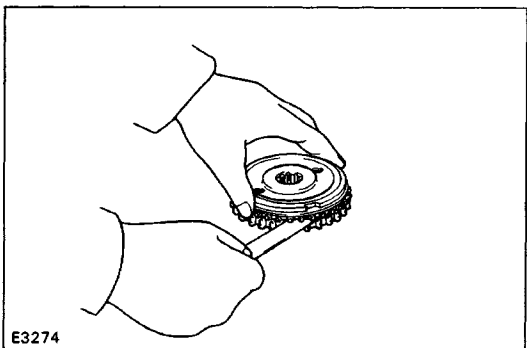
- (b) Using a feeler gauge, measure the clearance between the synchronizer ring back and the gear spline end.

Standard clearance: 0.8 – 1.6 mm

(0.031 – 0.063 in.)

Minimum clearance: 0.6 mm (0.024 in.)

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

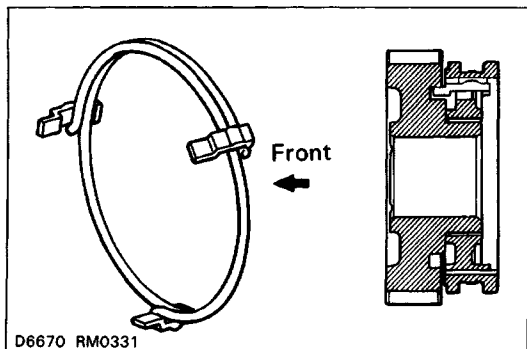


5. INSPECT CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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.

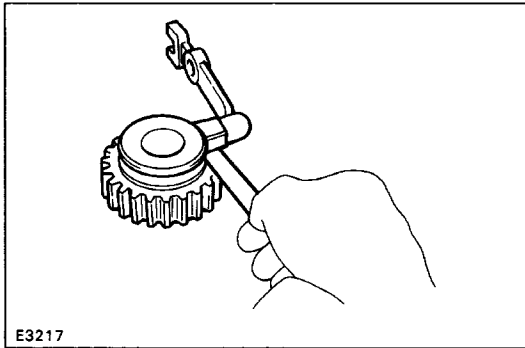


6. INSTALL HUB SLEEVE NO.3, SHIFTING KEYS AND SPRINGS TO COUNTER 5TH GEAR

- (a) Install the counter 5th gear 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.



INSPECTION OF REVERSE IDLER GEAR

1. INSPECT CLEARANCE OF REVERSE IDLER GEAR AND SHIFT ARM SHOE

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

Standard clearance: 0.05 – 0.25 mm

(0.0020 – 0.0098 in.)

Maximum clearance: 0.5 mm (0.0197 in.)

If the clearance exceeds the maximum, replace the shift arm shoe or reverse idler gear.

2. INSPECT REVERSE IDLER GEAR OIL CLEARANCE

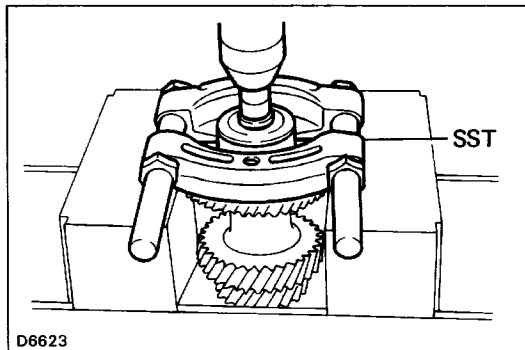
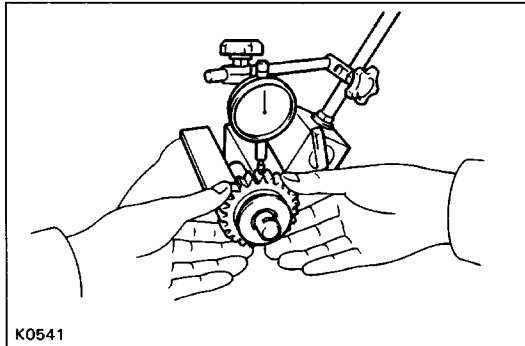
Using a dial indicator, measure the reverse idler gear oil clearance.

Standard clearance: 0.040 – 0.082 mm

(0.0016 – 0.0032 in.)

Maximum clearance: 0.13 mm (0.0051 in.)

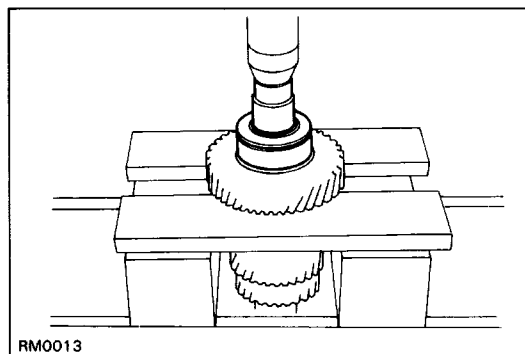
If the clearance exceeds the maximum, replace the reverse idler gear or reverse idler gear shaft.



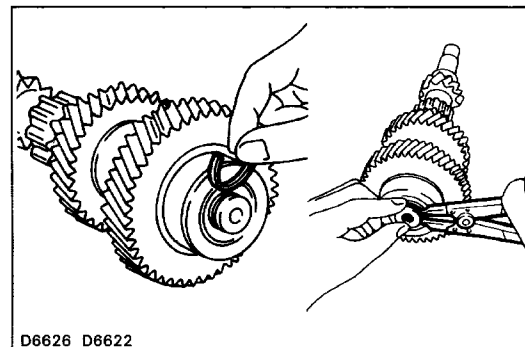
REPLACEMENT OF BEARING

IF NECESSARY, REPLACE COUNTER GEAR FRONT BEARING

- Using a snap ring expander, remove the snap ring.
- Using SST and a press, remove the bearing.
SST 09950-00020
- Replace the side race.



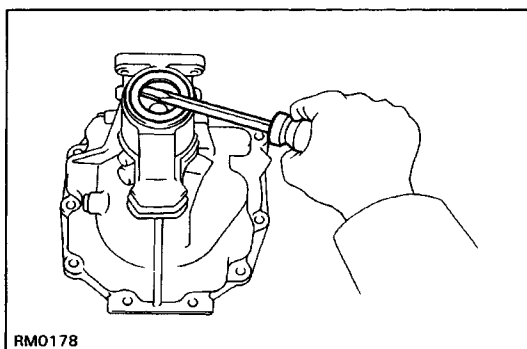
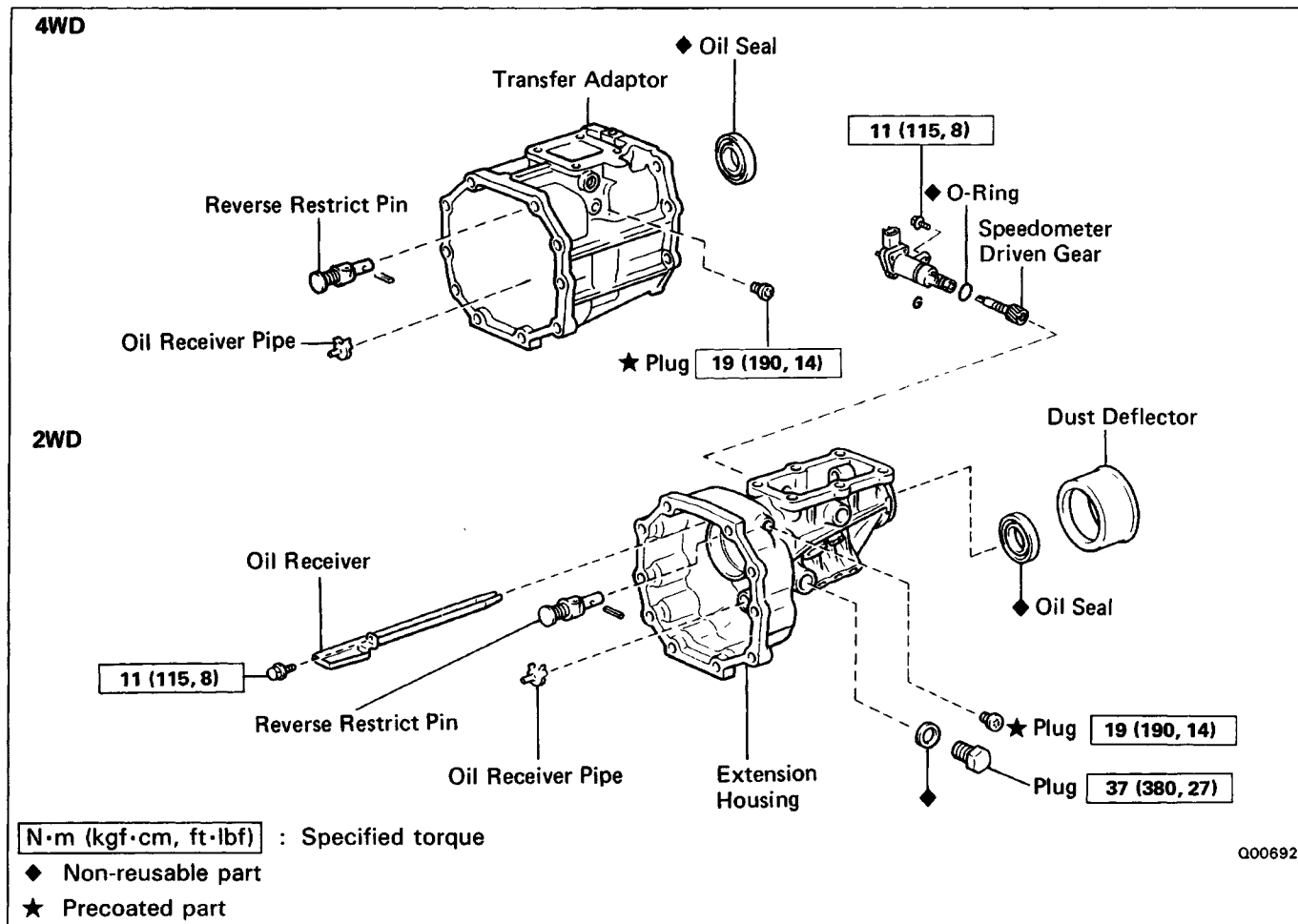
- Using a 24 mm socket wrench, press in the bearing and inner race.



- Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness mm (in.)
A	2.00 – 2.05 (0.0787 – 0.0807)
B	2.05 – 2.10 (0.0807 – 0.0827)
C	2.10 – 2.15 (0.0827 – 0.0846)
D	2.15 – 2.20 (0.0846 – 0.0866)
E	2.20 – 2.25 (0.0866 – 0.0886)

Extension Housing and Transfer Adaptor COMPONENTS



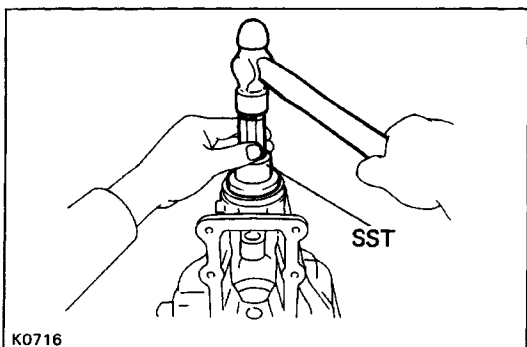
REPLACEMENT OF OIL SEAL

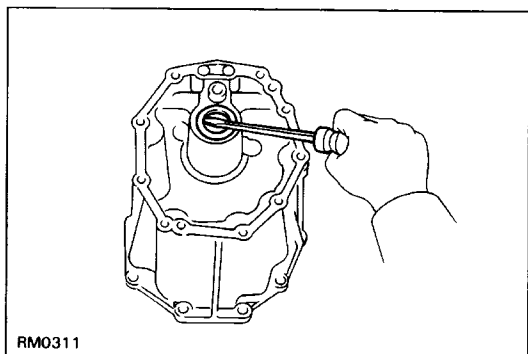
1. (2WD)

IF NECESSARY, REPLACE EXTENSION HOUSING OIL SEAL

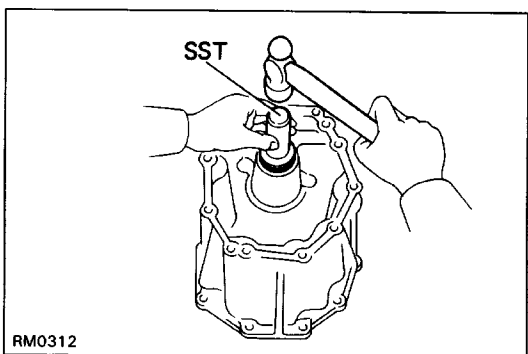
- Remove the dust deflector.
- Using a screwdriver, pry out the oil seal.

- Using SST and a hammer, drive in a new oil seal.
SST 0932 5-40010
- Install the dust deflector.

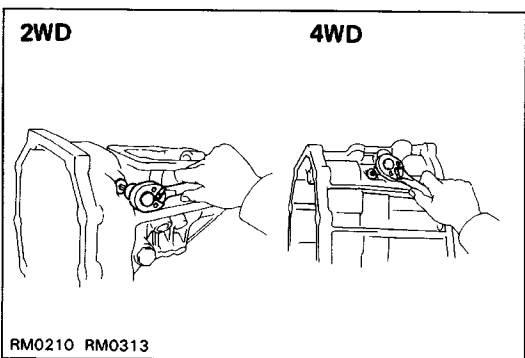


**2. (4WD)****IF NECESSARY, REPLACE TRANSFER ADAPTOR OIL SEAL**

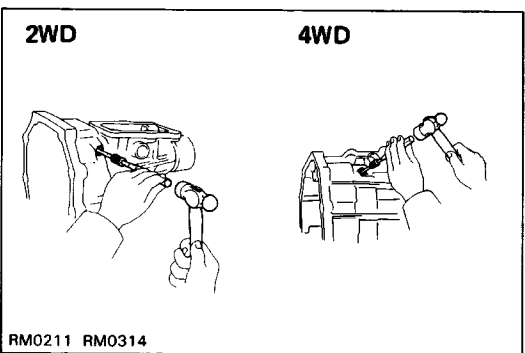
(a) Using a screwdriver, pry out the oil seal.



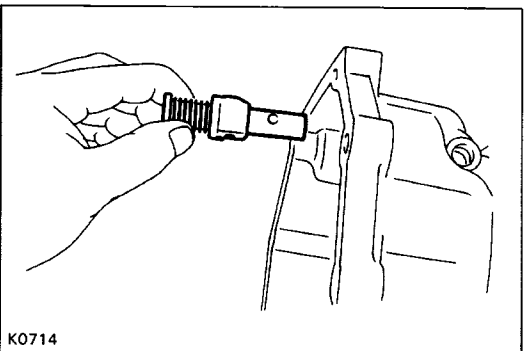
(b) Using SST and a hammer, drive in a new oil seal.
SST 09325-12010

**INSPECTION AND REPLACEMENT OF REVERSE RESTRICT PIN****1. REMOVE THE REVERSE RESTRICT PIN**

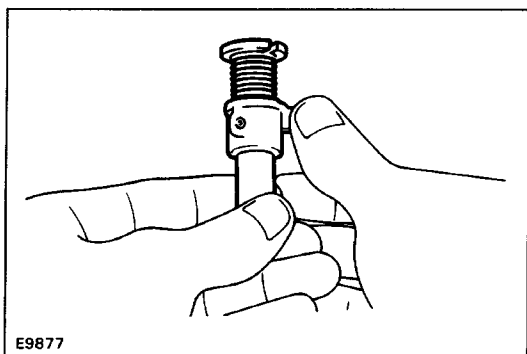
(a) Using a torx socket wrench, remove the screw plug.
(Torx socket wrench T40 09042-00020)



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

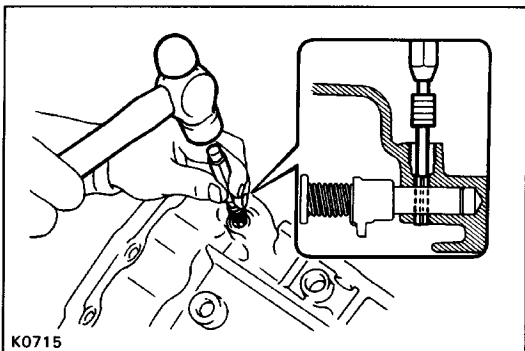


(c) Remove the reverse restrict pin.



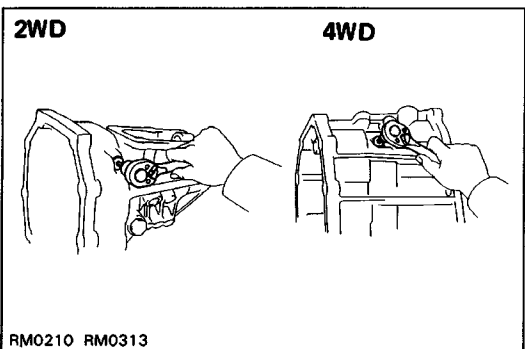
2. INSPECTION OF REVERSE RESTRICT PIN

Turn and push the reverse restrict pin by hand while applying force in axial direction.



3. INSTALL THE REVERSE RESTRICT PIN

- (a) Install the reverse restrict pin to the extension housing or transfer adaptor.
- (b) Using a pin punch and hammer, drive in the slotted spring pin as shown.



- (c) Apply liquid sealer to the plug threads.

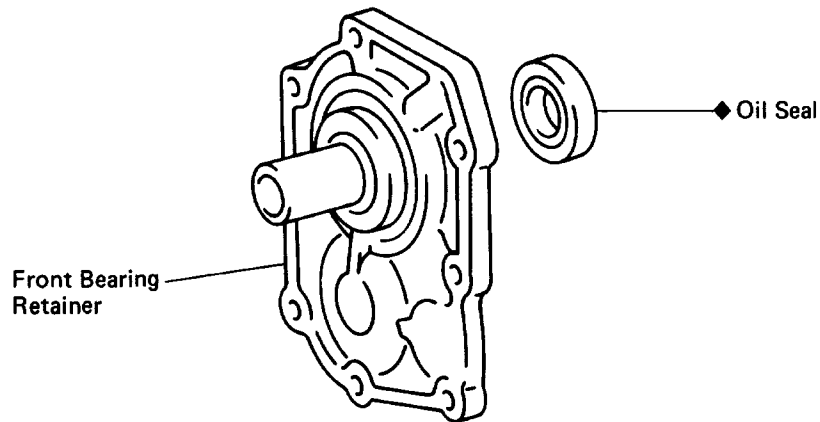
Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- (d) Using a torx socket wrench, install and torque the screw plug.

(Torx socket wrench T40 09042-00020)

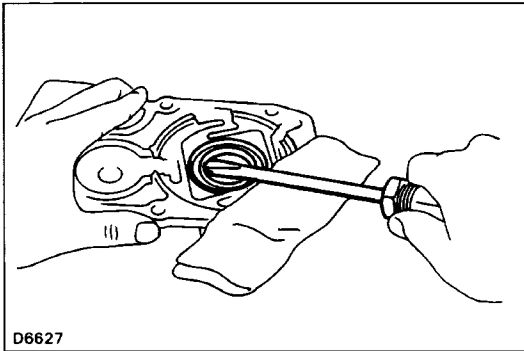
Torque: 19 N-m (190 kgf -cm, 14 ft -lbf)

Front Bearing Retainer COMPONENTS



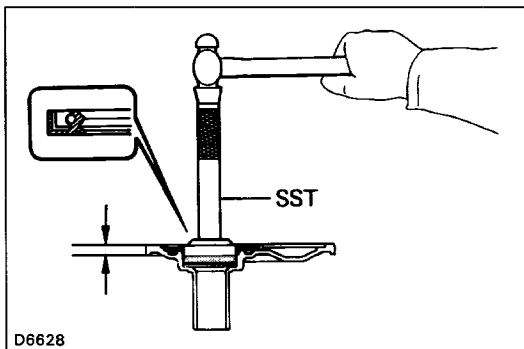
RM0322

◆ Non-reusable part



REPLACEMENT OF OIL SEAL IF NECESSARY, REPLACE FRONT BEARING RETAINER OIL SEAL

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



(b) Using SST and a hammer, drive in a new oil seal.
SST 09608-35014 (09608-06020, 09608-06090)

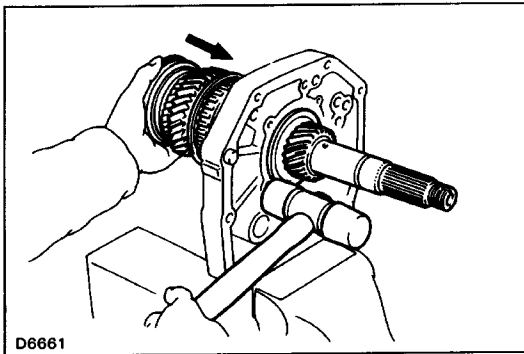
Drive in depth: 11.2 – 12.2 mm (0.441 – 0.480 in.)
Transmission case installation surface

ASSEMBLY OF TRANSMISSION

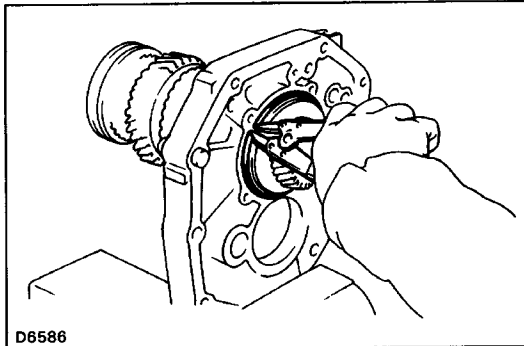
(See pages MT1-67, 68)

1. INSTALL OUTPUT SHAFT TO INTERMEDIATE PLATE

- (a) Install the output shaft into the intermediate plate by pushing on the output shaft and tapping on the intermediate plate.

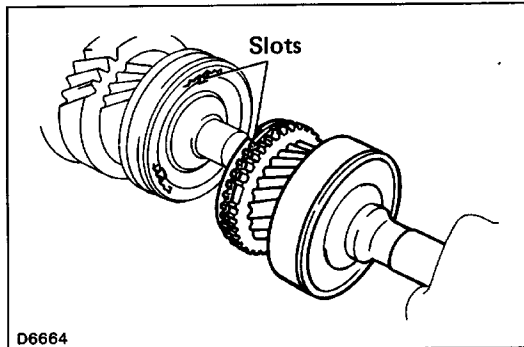


- (b) Using snap ring pliers, install the snap ring.



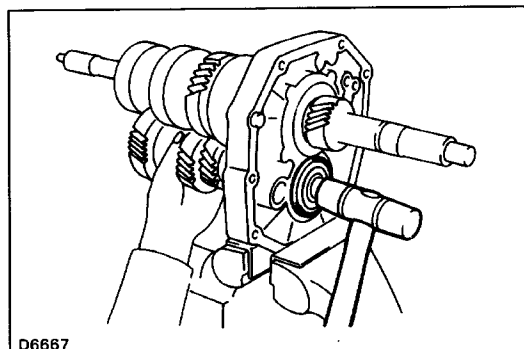
2. INSTALL INPUT SHAFT

- (a) Apply gear oil to the needle roller bearing and install it into the input shaft.
- (b) Install the input shaft to the output shaft with the synchronizer ring slots aligned with the shifting keys.



3. INSTALL COUNTER GEAR

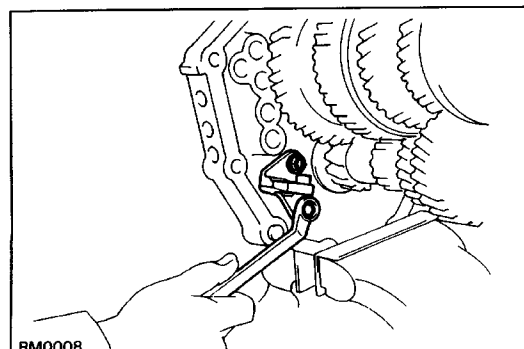
Install the counter gear into the intermediate plate while holding the counter gear, and install the counter rear bearing with a plastic hammer.

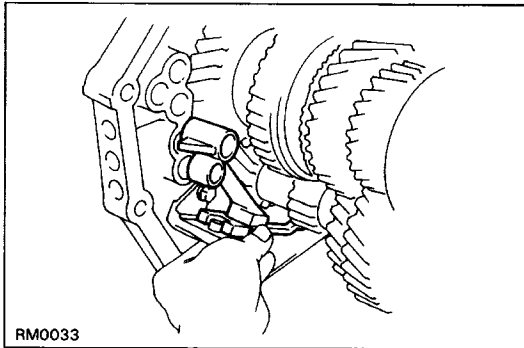


4. INSTALL REVERSE SHIFT ARM BRACKET

Install the reverse shift arm bracket and torque the bolts.

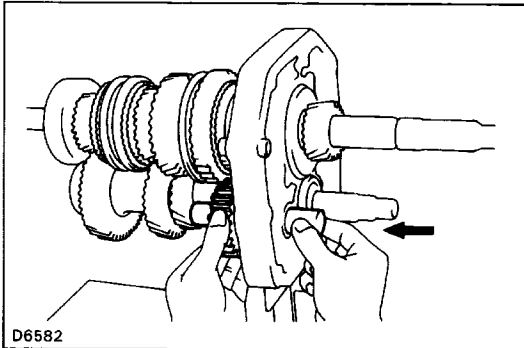
Torque: 18 N-m (185 kgf-cm, 13 ft-lbf)





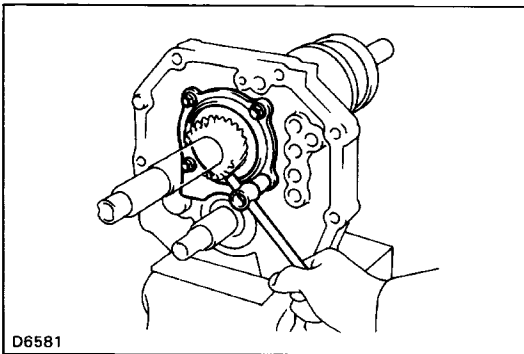
5. INSTALL REVERSE SHIFT ARM TO REVERSE SHIFT ARM BRACKET

Install the reverse shift arm to the pivot of the reverse shift arm bracket.



6. INSTALL REVERSE IDLER GEAR AND SHAFT

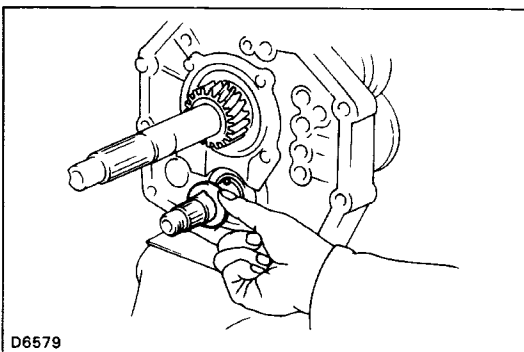
Align the reverse shift arm shoe to the reverse idler gear groove and insert the reverse idler gear shaft to the intermediate plate.



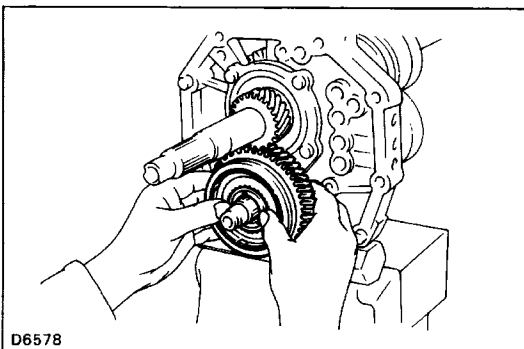
7. INSTALL REAR BEARING RETAINER

- (a) Align the rear bearing retainer to the reverse idler gear shaft groove.
- (b) Install and torque the bolts.

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

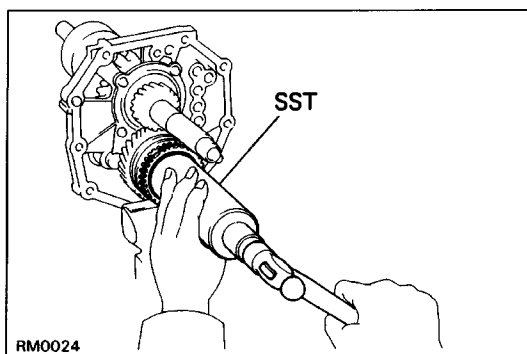


8. INSTALL BALL AND THRUST WASHER



9. INSTALL COUNTER FIFTH GEAR WITH NO.3 HUB SLEEVE ASSEMBLY AND NEEDLE ROLLER BEARINGS

- (a) Apply gear oil to the needle roller bearings.
- (b) Install the counter 5th gear with No.3 hub sleeve and needle roller bearings.

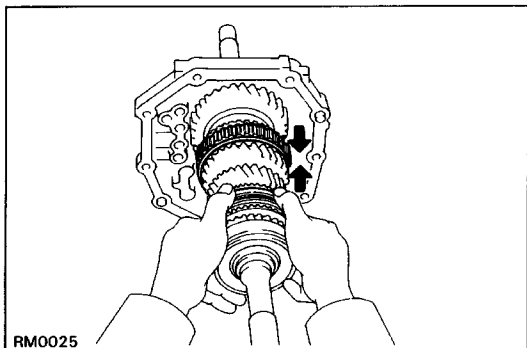


10. INSTALL SYNCHRONIZER RING AND GEAR SPLINE PIECE NO.5

- (a) Install the synchronizer ring on gear spline piece No. 5.
- (b) Using SST and a hammer, drive in gear spline piece No. 5 with the synchronizer ring slots aligned with the shifting keys.

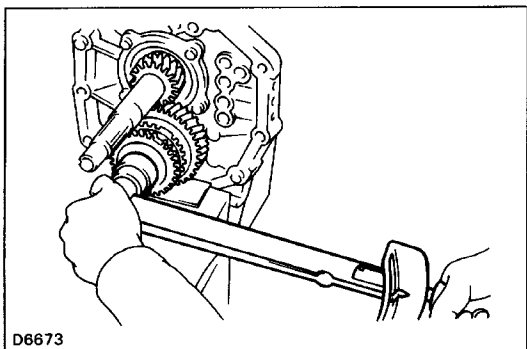
SST 09316-60010 (09316-00010)

HINT: When installing gear spline piece No.5, support the counter gear in front with a 3-5 lb hammer or equivalent.



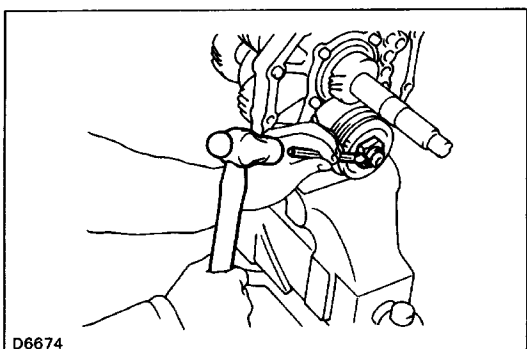
11. INSTALL LOCK NUT

- (a) Engage the gear double meshing.

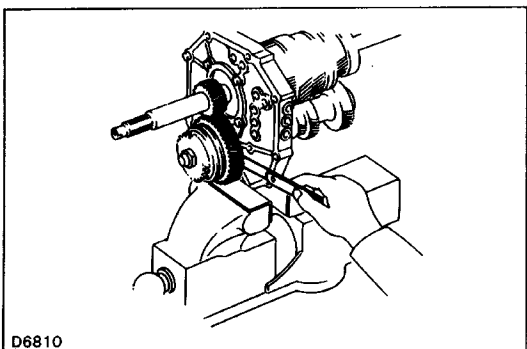


- (b) Install and torque the lock nut.

Torque: 127 N-m (1, 300 kgf-cm, 94 ft-lbf)



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

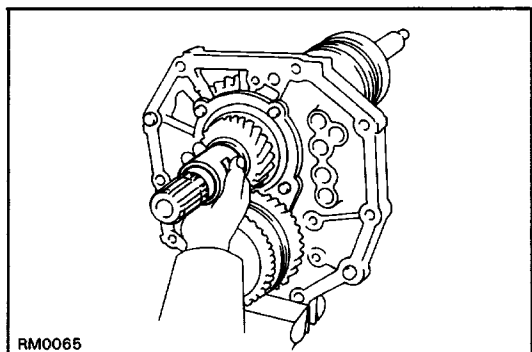


12. INSPECT COUNTER FIFTH GEAR THRUST CLEARANCE

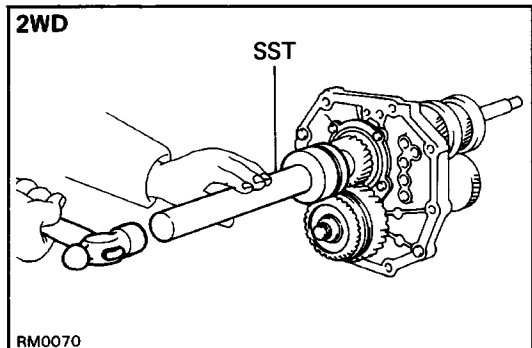
Using a feeler gauge, measure the counter 5th gear thrust clearance.

Standard clearance: 0.10 – 0.35 mm

(0.0039 – 0.0138 in.)



13. INSTALL SPACER



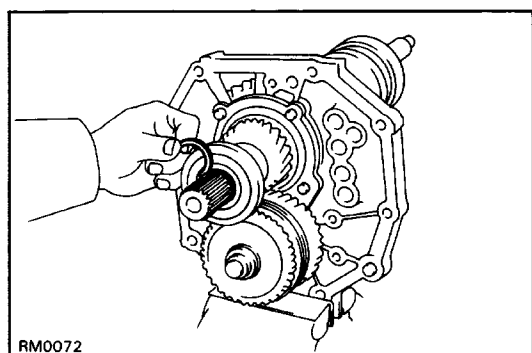
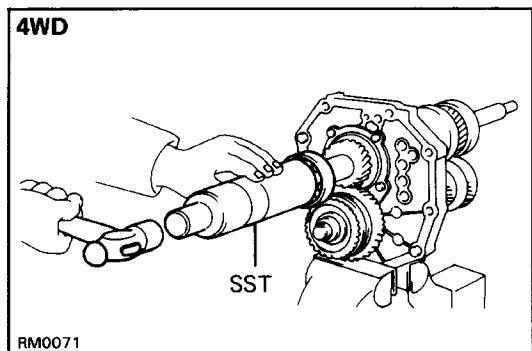
14. INSTALL OUTPUT SHAFT REAR BEARING

Using SST and a hammer, drive in the rear bearing.

SST (2WD) 09309-35010

(4WD) 09316-60010

(09316-00010, 09316-00070)

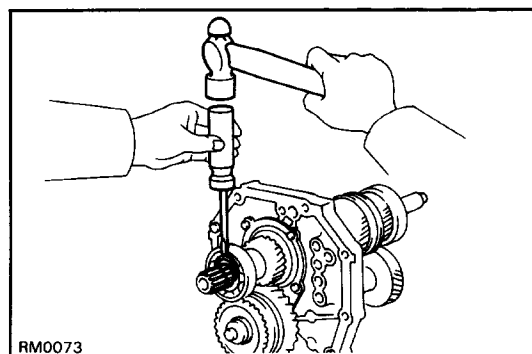


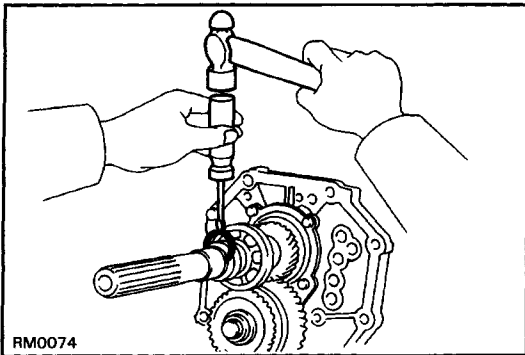
15. INSTALL SNAP RING

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

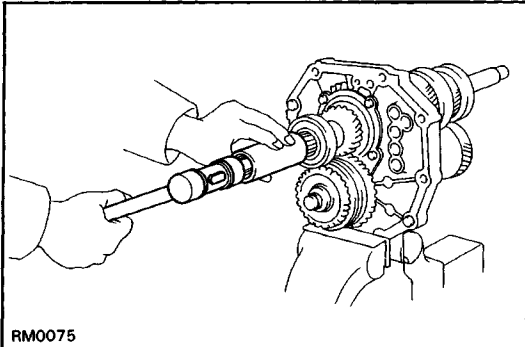
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	2.65 – 2.70 (0.1043 – 0.1063)	K	3.10 – 3.15 (0.1220 – 0.1240)
B	2.70 – 2.75 (0.1063 – 0.1083)	L	3.15 – 3.20 (0.1240 – 0.1260)
C	2.75 – 2.80 (0.1083 – 0.1102)	M	3.20 – 3.25 (0.1260 – 0.1280)
D	2.80 – 2.85 (0.1102 – 0.1122)	N	3.25 – 3.30 (0.1280 – 0.1299)
E	2.85 – 2.90 (0.1122 – 0.1142)	P	3.30 – 3.35 (0.1299 – 0.1319)
F	2.90 – 2.95 (0.1142 – 0.1161)	Q	3.35 – 3.40 (0.1319 – 0.1339)
G	2.95 – 3.00 (0.1161 – 0.1181)	R	3.40 – 3.45 (0.1339 – 0.1358)
H	3.00 – 3.05 (0.1181 – 0.1201)	S	3.45 – 3.50 (0.1358 – 0.1378)
J	3.05 – 3.10 (0.1201 – 0.1220)		

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

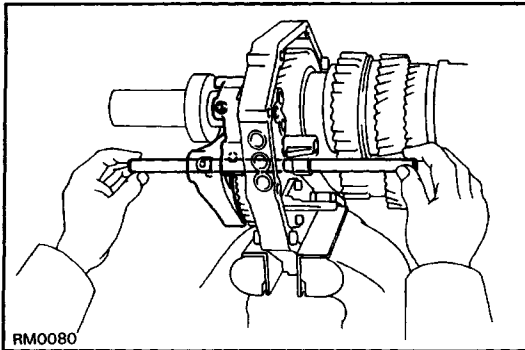


**16.-1(2WD)****INSTALL SPEEDOMETER DRIVE GEAR**

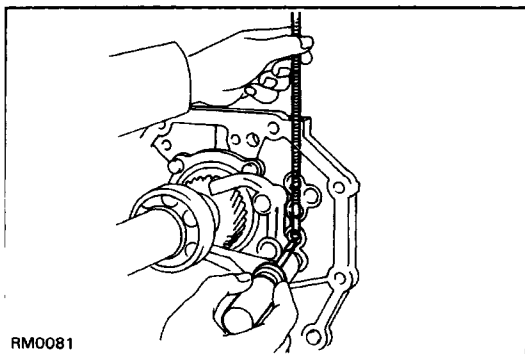
- (a) Using a screwdriver and hammer, install the front snap ring.
- (b) Install the ball and drive gear.
- (c) Using a screwdriver and hammer, install the rear snap ring.

**16.-2(4WD)****INSTALL SLEEVE TO OUTPUT SHAFT**

Using a plastic hammer, drive in the sleeve onto the output shaft.

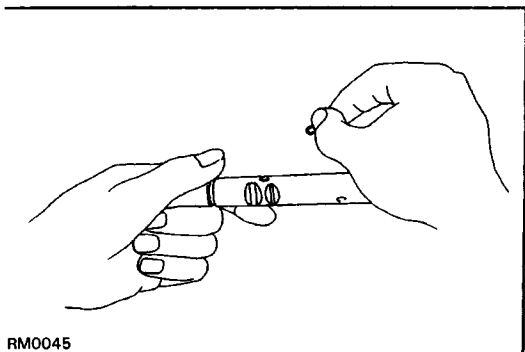
**17. INSTALL SHIFT FORK SHAFT NO.4, REVERSE SHIFT HEAD AND SHIFT FORK NO.3**

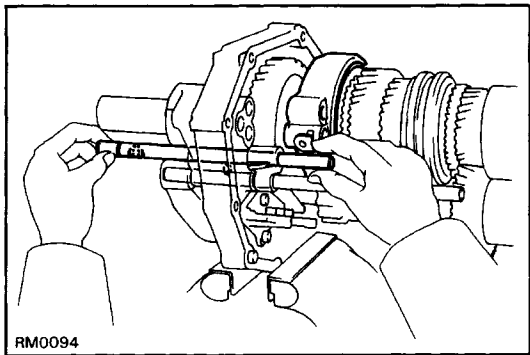
- (a) Place the shift fork No.3 into the groove of hub sleeve No. 3.
- (b) Install the shift fork shaft No.4 to shift fork No.3, reverse shift head and shift fork through the intermediate plate.
- (c) Install the locking ball into the reverse shift head.

**18. INSTALL SHIFT FORK SHAFT NO.3 AND SHIFT FORK NO. 1**

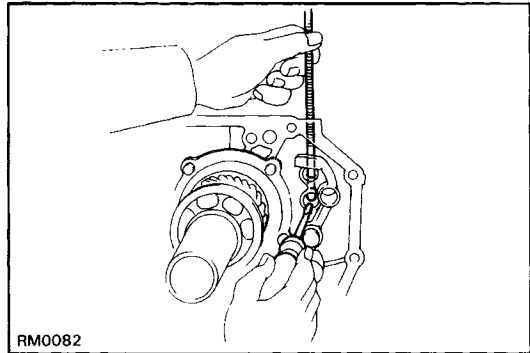
- (a) Using a magnetic finger and screwdriver, install the locking ball into the intermediate plate.

- (b) Install the interlock pin into the shaft hole.



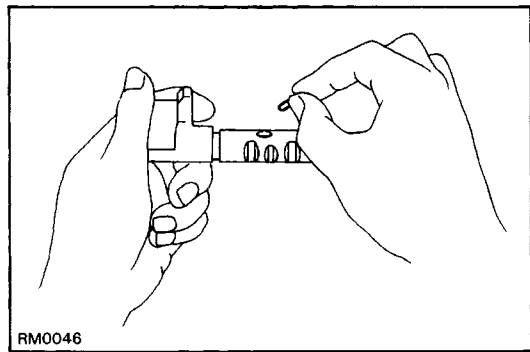


- (c) Place the shift fork No.1 into the groove of hub sleeve No. 1.
- (d) Install the fork shaft No.3 to the reverse shift fork and shift head through the intermediate plate.

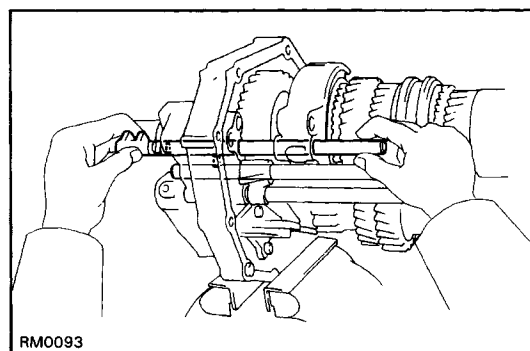


19. INSTALL SHIFT FORK SHAFT NO. 1

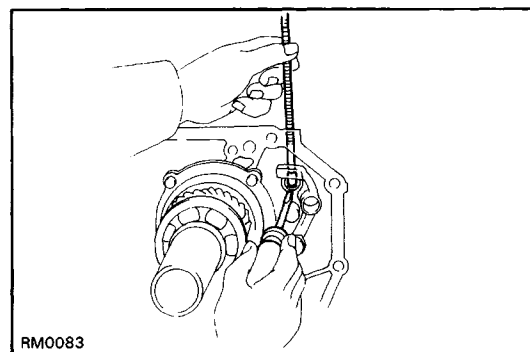
- (a) Using a magnetic finger and screwdriver, install the interlock pin into the intermediate plate.



- (b) Install the interlock pin into the shaft hole.

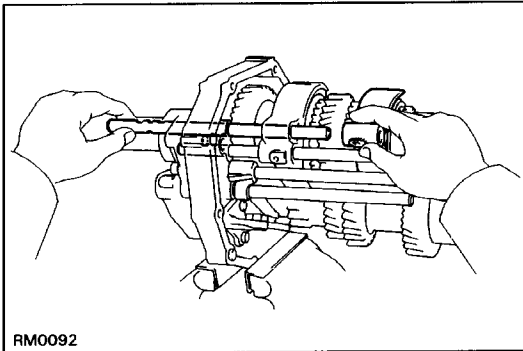


- (c) Install the fork shaft No. 1 to shift fork No .1 through the intermediate plate.

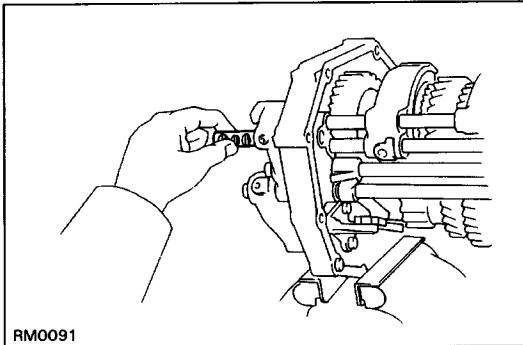


20. INSTALL SHIFT FORK SHAFT NO.2 AND SHIFT FORK

- (a) Using a magnetic finger and screwdriver, install the interlock into the intermediate plate.

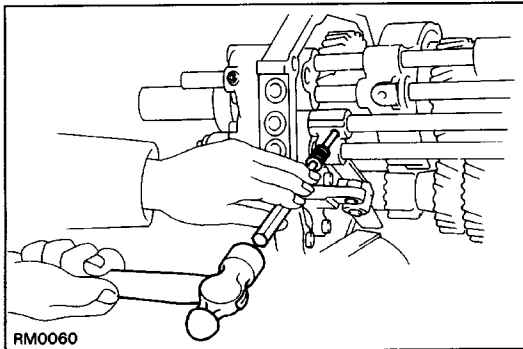


- (b) Place the shift fork No.2 into the groove of hub sleeve No.2.
- (c) Install fork shaft No.2 to shift fork No.1 and No.2 through the intermediate plate.



21. INSTALL SHIFT FORK SHAFT NO.5

Install the shift fork shaft No.5 to reverse shift head through the intermediate plate.

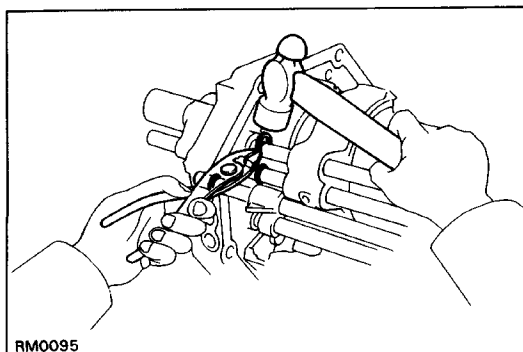


22. INSTALL SLOTTED SPRING PINS

Using a pin punch and hammer, drive in the two slotted spring pins to the reverse shift head and shift fork.

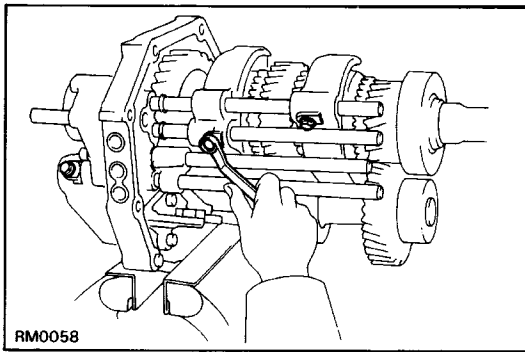
23. CHECK INTERLOCK

- (a) Shift fork shaft No. 1 to the 1 st speed position.
- (b) No.2, No.3, No.4 and No.5 fork shafts should not move.



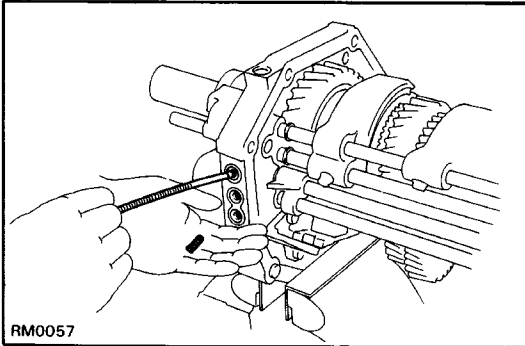
24. INSTALL SNAP RINGS

Using pliers and a hammer, install the three snap rings.

**25. INSTALL SET BOLTS**

Install and torque the three bolts.

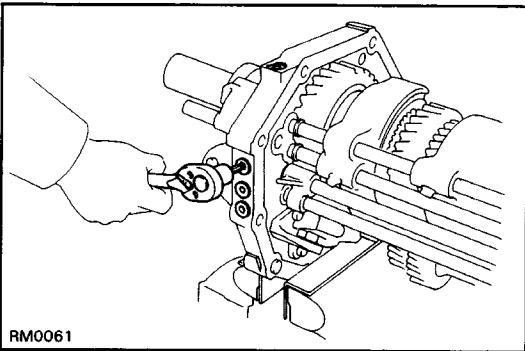
Torque: 20 N-m (200 kgf-cm, 14 ft-lbf)

**26. INSTALL LOCKING BALLS, SPRINGS AND SCREW PLUGS**

(a) Apply liquid sealer to the plug threads.

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

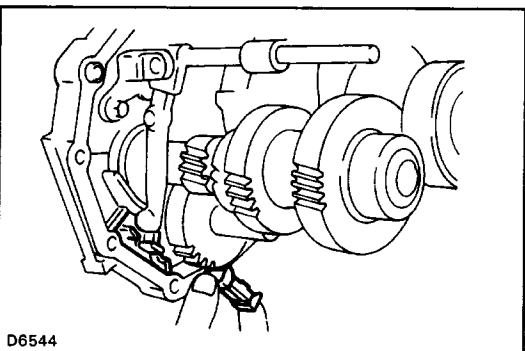
(b) Install the four locking balls, springs and screw plugs.



(c) Using a torx socket wrench, torque the screw plugs.

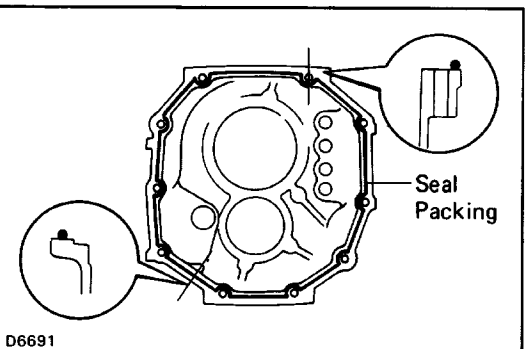
(Torx socket wrench T40 09042-00020)

Torque: 19 N - m (190 kgf - cm, 14 ft - lbf)

**27. INSTALL MAGNET TO INTERMEDIATE PLATE****28. DISMOUNT INTERMEDIATE PLATE FROM VISE**

(a) Dismount the intermediate plate from the vise.

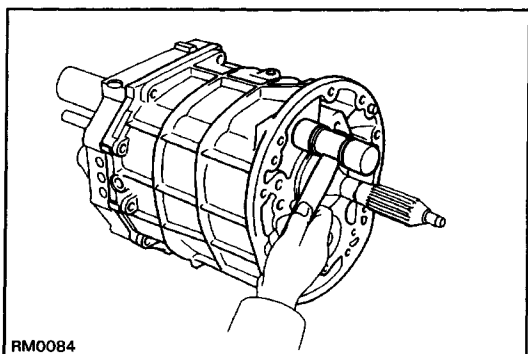
(b) Remove the bolts, nuts and plate washers.

**29. INSTALL TRANSMISSION CASE**

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

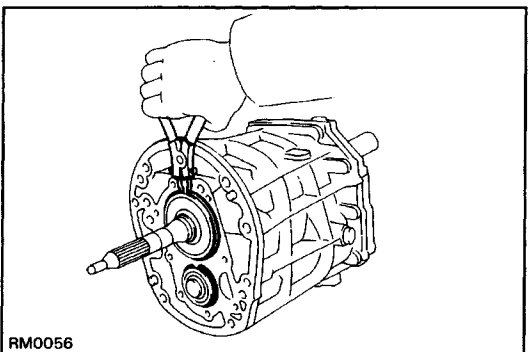
(b) Apply seal packing to the transmission case as shown.

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



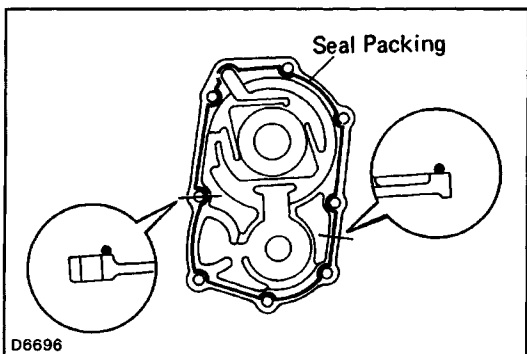
- (c) Align the each bearing outer race, each fork shaft end and reverse idler gear shaft end with the case installation holes, and install the case.

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



30. INSTALL BEARING SNAP RINGS

Using a snap ring expander, install the two snap rings to the input shaft bearing and counter gear front bearing.

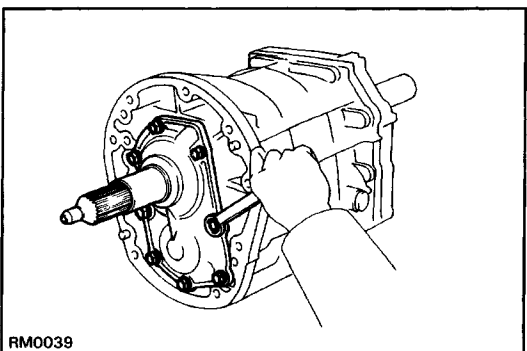


31. INSTALL FRONT BEARING RETAINER

- (a) Remove the any packing material and be careful not to drop oil on the contacting surfaces of the front bearing retainer or transmission case.

- (b) Apply seal packing to the retainer as shown.

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

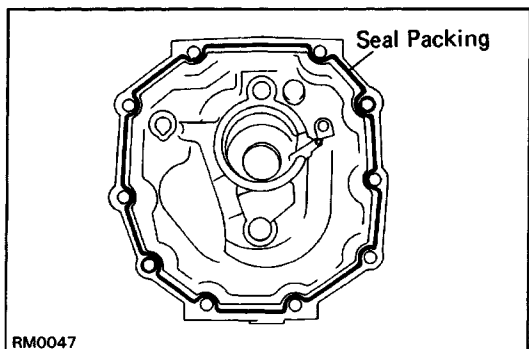


- (c) Apply liquid sealer to the bolt threads.

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

- (d) Install and torque the bolts.

Torque: 17 N – m (170 kgf – cm, 12 ft – lbf)



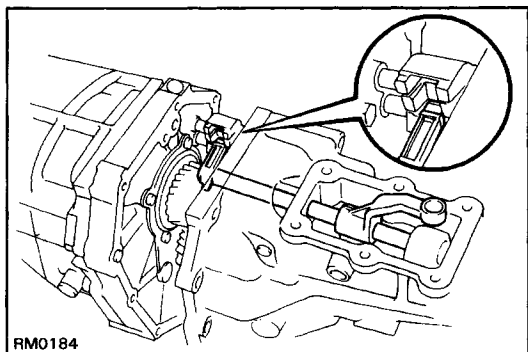
32.-1 (2WD)

INSTALL EXTENSION HOUSING, SHIFT AND SELECT LEVER AND SHIFT LEVER HOUSING

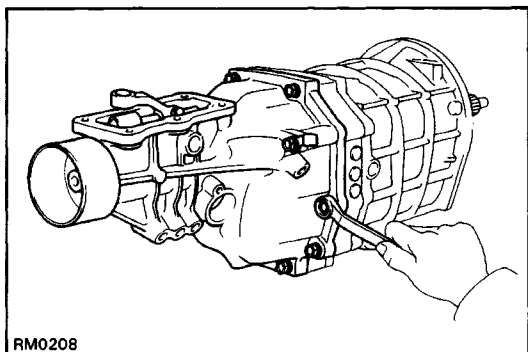
- (a) Remove the any packing material and be careful not to drop oil on the contacting surfaces of the extension housing or transmission case.

- (b) Apply seal packing to the extension housing as shown.

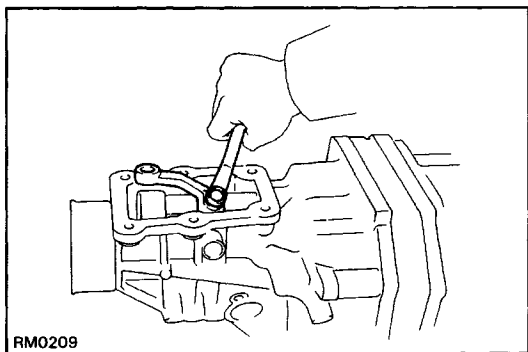
Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent



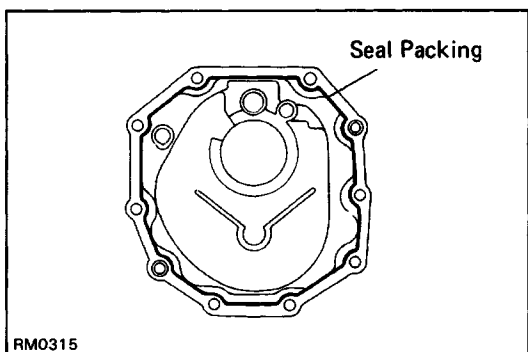
- (c) Install the shift and select lever into the extension housing.
- (d) Connect the shift and select lever to the fork shaft and put in the shift lever housing.
- (e) Align the fork shaft No.5 to the extension housing installation hole and push in the extension housing.



- (f) Install and torque the extension housing bolts.
Torque: 37 N-m (380 kgf-cm, 27 ft-lbf)



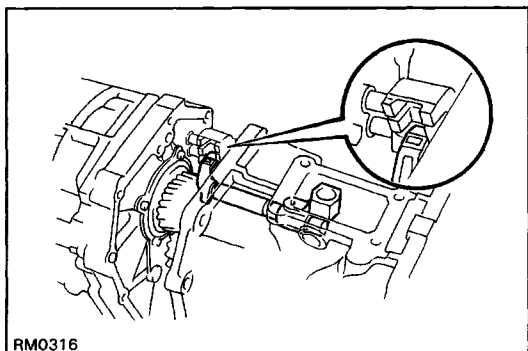
- (g) Install and torque the shift lever housing bolt.
Torque: 38 N-m (390 kgf-cm, 28 ft-lbf)

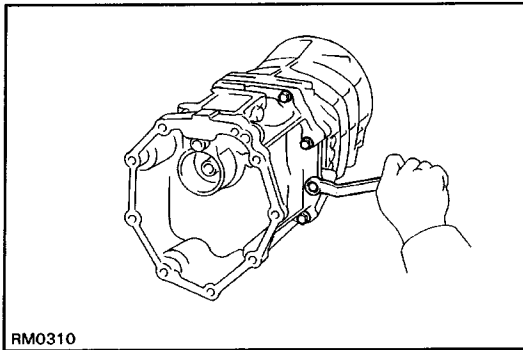


32.-2(4WD)

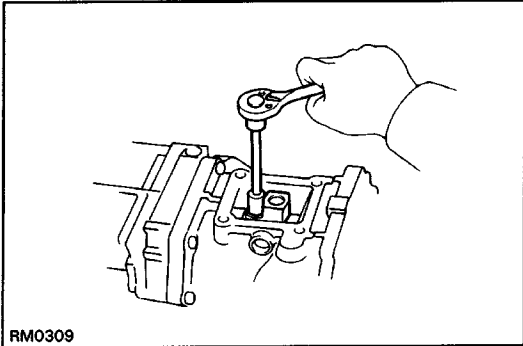
INSTALL TRANSFER ADAPTOR, SHIFT LEVER SHAFT AND SHIFT LEVER HOUSING

- (a) Remove the any packing material and be careful not to drop oil on the contacting surfaces of the transfer adaptor or transmission case.
- (b) Apply seal packing to the transfer adaptor as shown.
Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent
- (c) Install the shift and select lever into the transfer adaptor.
- (d) Connect the shift and select lever to the fork shaft and put in the shift lever housing.
- (e) Align the fork shaft No.5 to the transfer adaptor installation hole and push in the transfer adaptor.





- (f) Install and torque the bolts.
Torque: 37 N-m (380 kgf-cm, 27 ft-lbf)

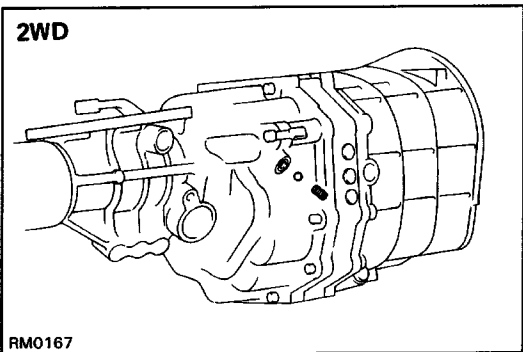


- (g) Install and torque the shift lever housing bolt.

Torque: 38 N-m (390 kgf-cm, 28 ft-lbf)

- (h) Apply liquid sealer to the plug threads.

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

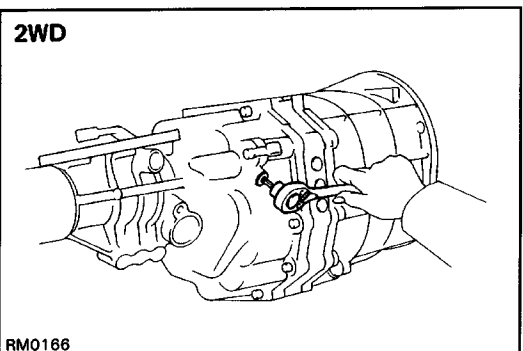
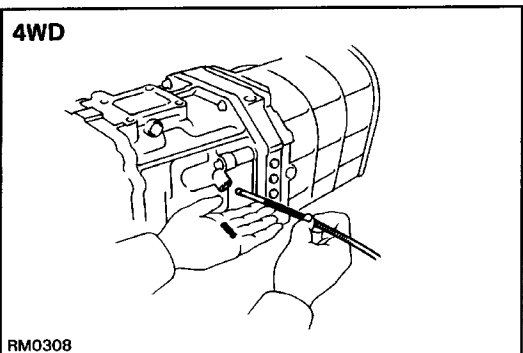


33. INSTALL LOCKING BALL, SPRING AND SCREW PLUG

- (a) Apply liquid sealer to the plug threads.

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

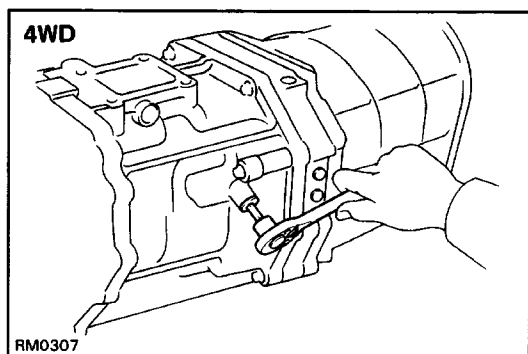
- (b) Install the locking ball, spring and plug.



- (c) Torque the plug.

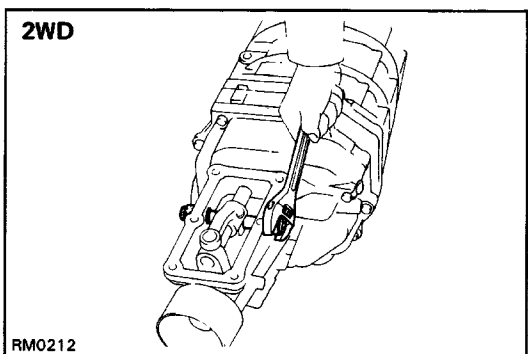
(Torx socket wrench T40 09042-00020)

Torque: 19 N - m (190 kgf - cm, 14 f t - lbf)



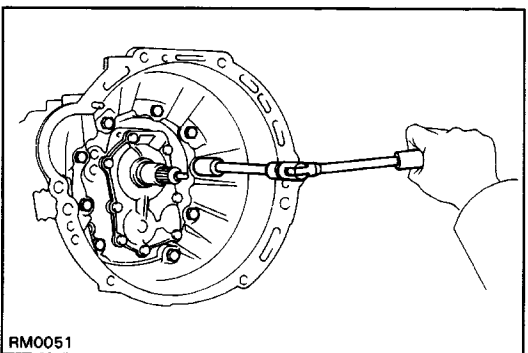
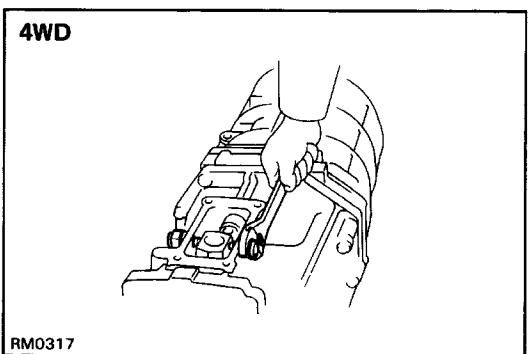
34. AFTER INSTALLING EXTENSION HOUSING OR TRANSFER ADAPTOR CHECK FOLLOWING ITEMS

- (a) Check to see that the input and output shafts rotate smoothly.
- (b) Check to see that shifting can be made smoothly to all positions.



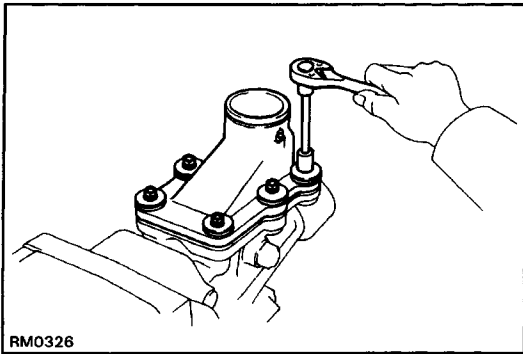
35. INSTALL RESTRICT PINS

- (a) Install the black pin on the reverse gear/5th gear side.
- (b) Install another pin and torque the pins.
Torque: 37 N-m (380 kgf-cm, 27 ft-lbf)

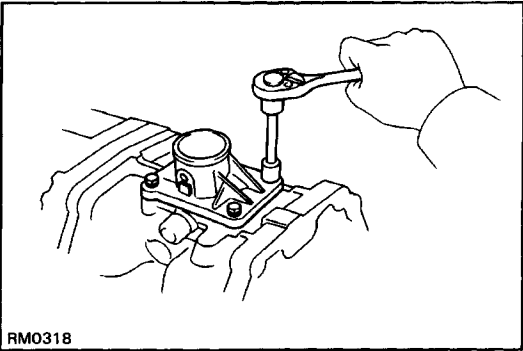


36. INSTALL CLUTCH HOUSING

- (a) Install the clutch housing.
- (b) Install and torque the nine bolts.
Torque: 36 N-m (370 kgf-cm, 27 ft-lbf)

**37.-1 (2WD)****INSTALL SHIFT LEVER RETAINER**

Torque: 16 N-m (160 kgf-cm, 12 ft-lbf)

**37.-2(4WD)****INSTALL SHIFT LEVER RETAINERS WITH NEW GASKETS**

(a) Apply liquid sealer to the bolt threads.

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

(b) Install the torque the four bolts.

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

38. INSTALL BACK-UP LIGHT SWITCH

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

39. (2WD)**INSTALL SPEEDOMETER DRIVEN GEAR**

(a) Install speedometer driven gear and lock plate.

(b) Install and torque the bolt.

Torque: 11 N-m (115 kgf-cm, 8 ft-lbf)

40. INSTALL RELEASE FORK AND BEARING

(See page [CL-14](#))