

MANUAL TRANSMISSION

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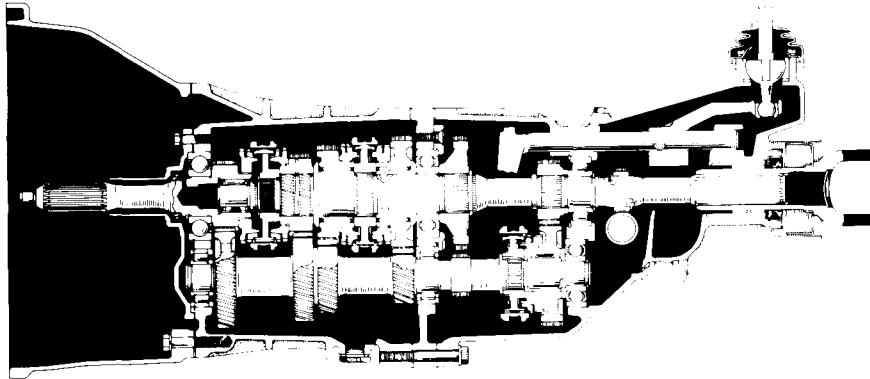
DESCRIPTION

Transmission

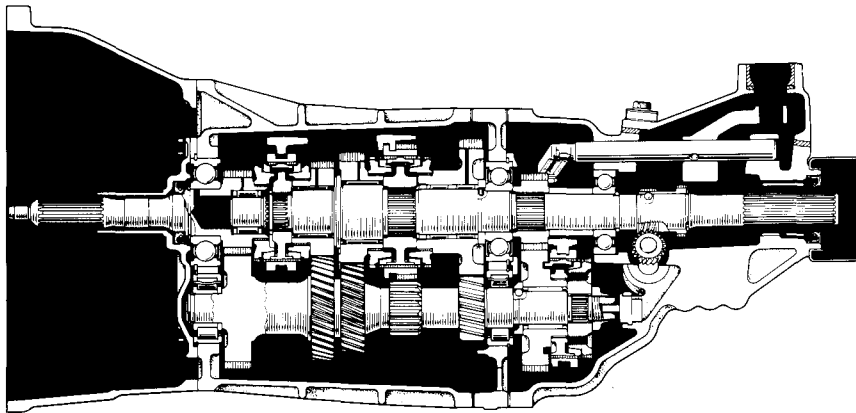
- Transmission types W58 and R154 are constant mesh synchronizers for forward gear and a sliding mesh reverse gear.

The specifications and cross-section diagram are a shown.

W58



R154



A3718
E9674

Specifications

Transmission Type		W58	R154
Type of Engine			
Item		7M-GE	7M-GTE
Gear Ratio	1st	3.285	3.251
	2nd	1.894	1.955
	3rd	1.275	1.310
	4th	1.000	1.000
	5th	0.783	0.753
	Reverse	3.768	3.180
Oil Capacity		2.4 liters (2.5 US qts., 2.1 Imp. qts)	3.0 liters (3.2 US qts., 2.6 Imp. qts)
Type of Oil		API GL-4 or GL-5 SAE 75W-90 or 80W-90	API GL-4 or GL-5 SAE 75W-90

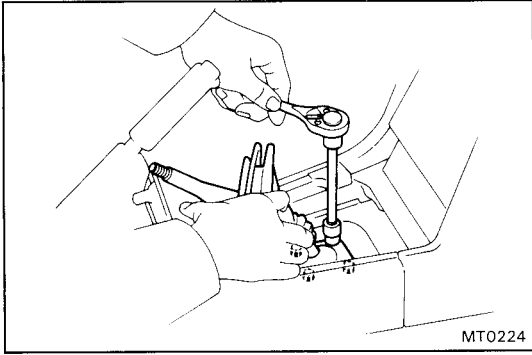
PRECAUTIONS

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

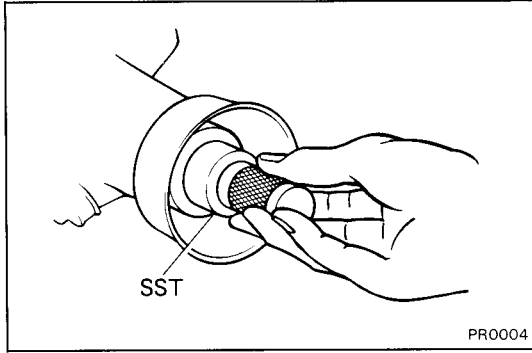
- Using a razor blade and gasket scraper, remove all the old packing(FIPG)material from the gasket surfaces.
- Thoroughly clean all components to remove all the loose material.
- Clean both sealing surfaces with a non-residue solvent.
- Apply the seal packing in approx. 1 mm (0.04 in.) bead along the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

TROUBLESHOOTING

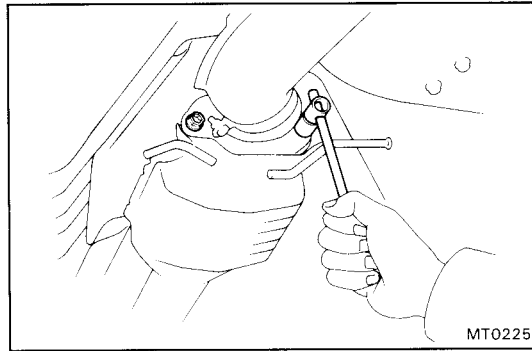
Problem	Possible cause	Remedy	Page
Noise	Transmission faulty Wrong oil grade Oil level low	Disassemble and inspect transmission Replace oil Add oil	MT-4
Oil leakage	Oil level too high Oil seal, O-ring or gasket worn or damaged	Drain oil Replace oil seal, O-ring or gasket	MT-4
Hard to shift or will not shift	Spline on input shaft dirty or burred Transmission faulty	Repair as necessary Disassemble and inspect transmission	MT-4 MT-4
Jumps out of gear	Transmission faulty	Disassemble and inspect transmission	MT-4



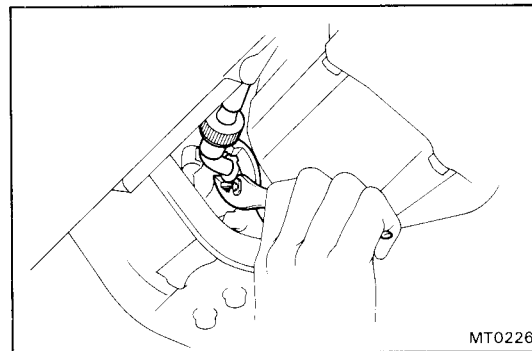
MT0224



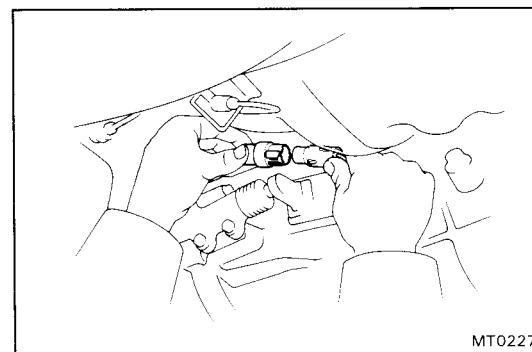
PR0004



MT0225



MT0226



MT0227

REMOVAL AND INSTALLATION OF TRANSMISSION

Removal of Transmission

1. REMOVE NEGATIVE BATTERY CABLE

CAUTION: Work must be started after approx. 20 seconds or longer from the "LOCK" position and the negative (-) terminal cable is disconnected from the battery.

2. REMOVE CENTER CLUSTER FINISH PANEL

3. REMOVE SHIFT LEVER FROM INSIDE OF VEHICLE

4. RAISE VEHICLE AND DRAIN TRANSMISSION OIL

NOTICE: Be sure the vehicle is securely supported.

5. REMOVE PROPELLER SHAFT

Remove the propeller shaft and insert SST into the extension housing.

SST 09325-20010 (for W58 M/T)

09325-40010 (for R154 M/T)

6. DISCONNECT EXHAUST FRONT PIPE FROM TAIL PIPE

(a) Remove the rubber hanger.

(b) Disconnect the pipe at the front side of the converter.

7. (R154 M/T)

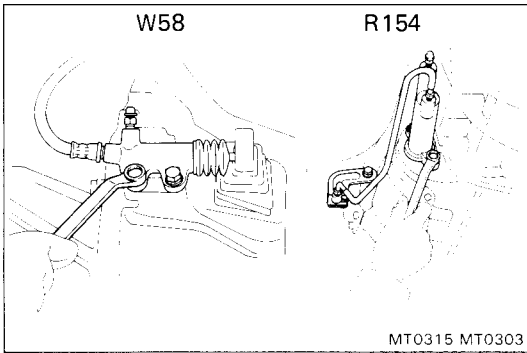
REMOVE EXHAUST FRONT PIPE

(a) Disconnect the exhaust pipe bracket from the clutch housing.

(b) Remove the nuts and exhaust pipe from the exhaust manifold.

8. DISCONNECT SPEEDOMETER CABLE

9. DISCONNECT BACK-UP LIGHT SWITCH CONNECTOR AND REAR SPEED SENSOR CONNECTOR (w/ A.B.S.)



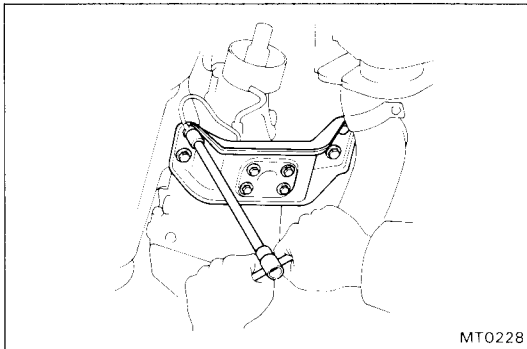
10. REMOVE CLUTCH RELEASE CYLINDER

11. REMOVE STARTER

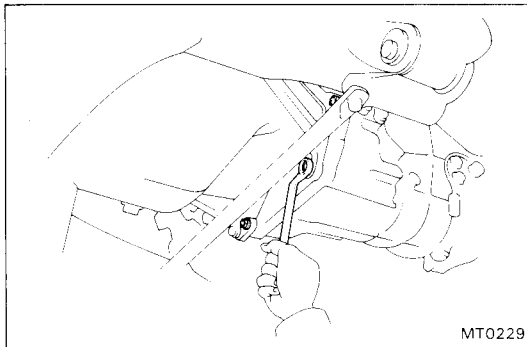
Remove the mounting bolts and lay the starter alongside the engine.

12. JACK UP TRANSMISSION SLIGHTLY

Raise the transmission enough to remove the weight from the rear support.



13. REMOVE ENGINE REAR MOUNTING

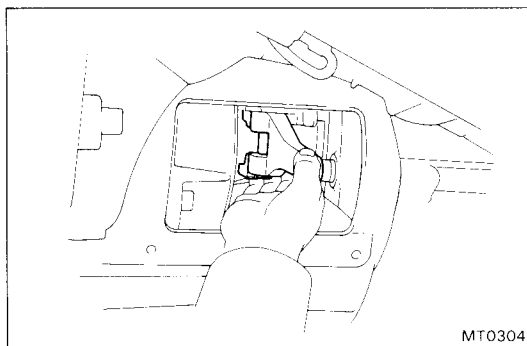


14. REMOVE TRANSMISSION MOUNTING BOLTS AND FLYWHEEL HOUSING UNDER COVER

15.-1 (W58 M/T)

REMOVE TRANSMISSION ASSEMBLY

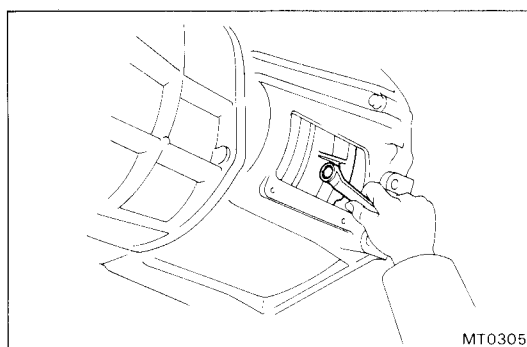
Pull out the transmission down and toward the rear.



15.-2 (R154 M/T)

REMOVE TRANSMISSION ASSEMBLY WITH CLUTCH COVER AND DISC

- (a) Remove the two clutch housing covers.
- (b) Pull out the release fork through the left clutch housing hole.



- (c) Place the matchmarks on the clutch cover and flywheel.
- (d) Remove the clutch cover set bolts while turning the crankshaft pulley.

HINT: Loosen each set bolt one turn at a time until spring tension is released.

- (e) Remove the clutch cover and disc from the flywheel, and fully move them toward the transmission.
- (f) Pull out the transmission with the clutch cover and disc.

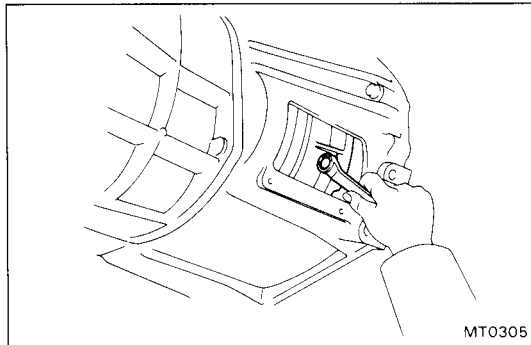
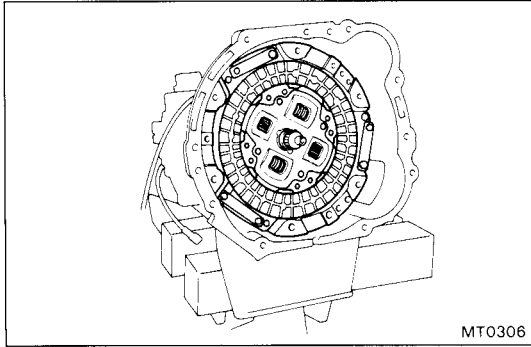
Installation of Transmission

1-1. (R154)

PLACE TRANSMISSION AT INSTALLATION POSITION, AND INSTALL TRANSMISSION MOUNTING BOLTS

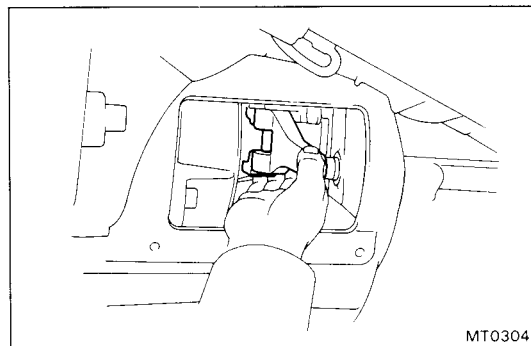
- (a) Apply molybdenum disulphide lithium base grease to the following parts:
 - Release bearing hub inside groove
 - Input shaft spline
 - Release fork contact surface
- (b) Install the clutch cover and disc on the retainer and input shaft spline.
- (c) Align the input shaft tip with the pilot bearing, and push the transmission fully into position.
- (d) Install the two mounting bolts of the upper transmission, and torque the bolts.

Torque: 400 kg-cm (29 ft-lb, 39 N·m)



- (e) Align the matchmarks on the clutch cover and flywheel.
- (f) Tighten the clutch cover set bolts evenly and gradually while turning the crankshaft pulley. Make several passes around the cover until the cover is snug. Torque the bolts.

Torque: 195 kg-cm (14 ft-lb, 19 N·m)



- (g) Install the release fork to the release fork support through the left clutch housing hole.
- (h) Install the two clutch housing covers.

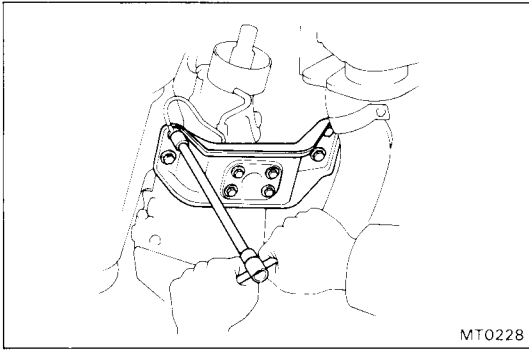
Torque: 120 kg-cm (9 ft-lb, 12 N·m)

1-2. (W58)

PLACE TRANSMISSION AT INSTALLATION POSITION, AND INSTALL TRANSMISSION MOUNTING BOLTS

- (a) Align the input shaft spline with the clutch disc, and push the transmission fully into position.
- (b) Install the two mounting bolts of the upper transmission, and torque the bolts.

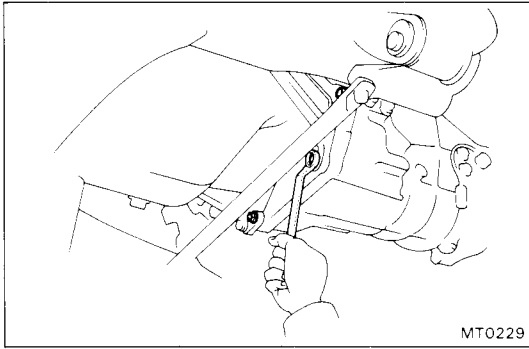
Torque: 400 kg-cm (29 ft-lb, 39 N·m)



2. INSTALL ENGINE REAR MOUNTING

Install the eight bolts, and torque them.

Torque: 250 kg-cm (18 ft-lb, 25 N·m)



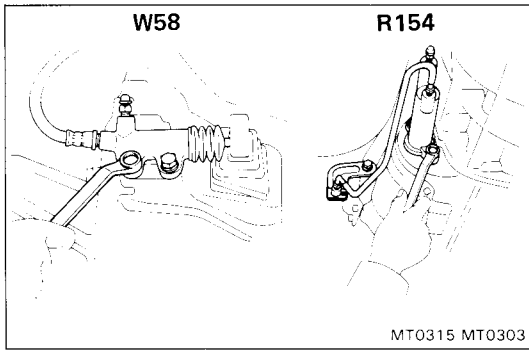
3. INSTALL TRANSMISSION MOUNTING BOLTS AND FLYWHEEL HOUSING UNDER COVER

Install and torque the bolts.

Torque:

Transmission mounting bolt 400 kg-cm
(29 ft-lb, 39 N·m)

Stiffener plate bolt 380 kg-cm
(27 ft-lb, 37 N·m)



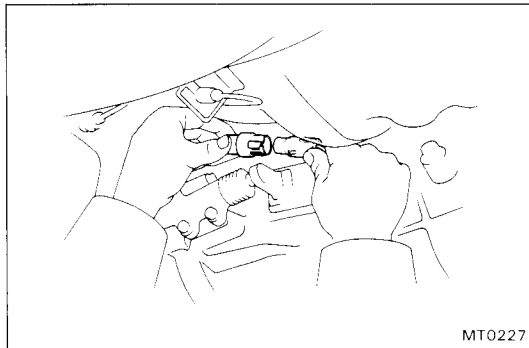
4. INSTALL STARTER

Install the starter, and torque the bolts.

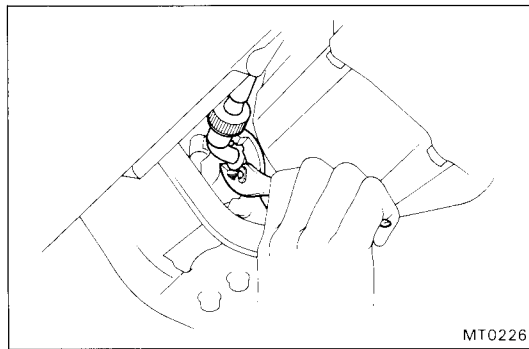
5. INSTALL CLUTCH RELEASE CYLINDER

Install and torque the two bolts.

Torque : 120 kg-cm (9 ft-lb, 12 N·m)



6. CONNECT BACK-UP LIGHT SWITCH CONNECTOR AND REAR SPEED SENSOR CONNECTOR (w/ A.B.S.)



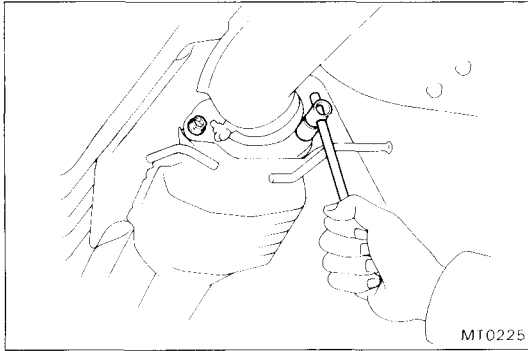
7. CONNECT SPEEDOMETER CABLE

8. (R154) INSTALL EXHAUST FRONT PIPE

(a) Install the exhaust front pipe and nuts to the exhaust manifold. Torque the nuts.

Torque: 630 kg-cm (46 ft-lb, 62 N·m)

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

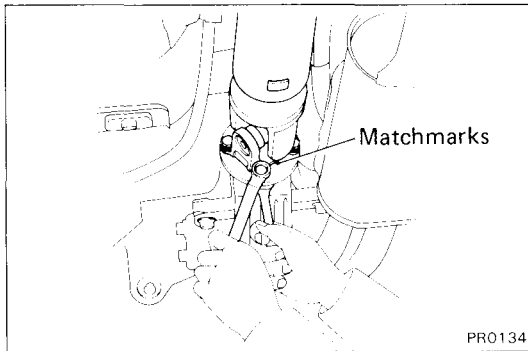


9. CONNECT EXHAUST FRONT PIPE TO TAIL PIPE

- (a) Connect the front pipe to the tail pipe, and torque the bolts.

Torque: 440 kg-cm (32 ft-lb, 43 N·m)

- (b) Install the rubber hanger.



10. INSTALL PROPELLER SHAFT

- (a) Align the matchmarks on both flanges.

- (b) Install and torque the bolts.

Torque:

Propeller shaft flange
750 kg-cm (54 ft-lb, 74 N·m)

Center support bracket
500 kg-cm (36 ft-lb, 49 N·m)

11. FILL WITH TRANSMISSION OIL

Oil grade: API GL-4 or GL-5

Viscosity:

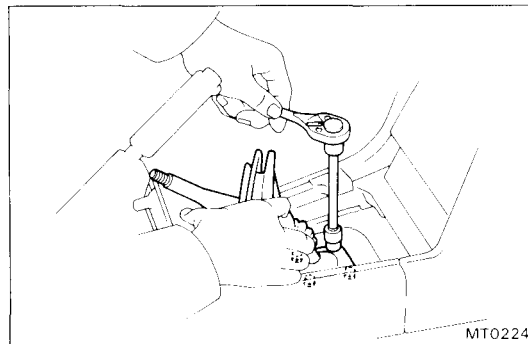
W58 M/T SAE 75W-90 or 80W-90

R154 M/T SAE 75W-90

Capacity:

W58 M/T 2.4 liters (2.5 US qts, 2.1 Imp. qts)

R154 M/T 3.0 liters (3.2 US qts, 2.6 Imp. qts)



12. INSTALL SHIFT LEVER

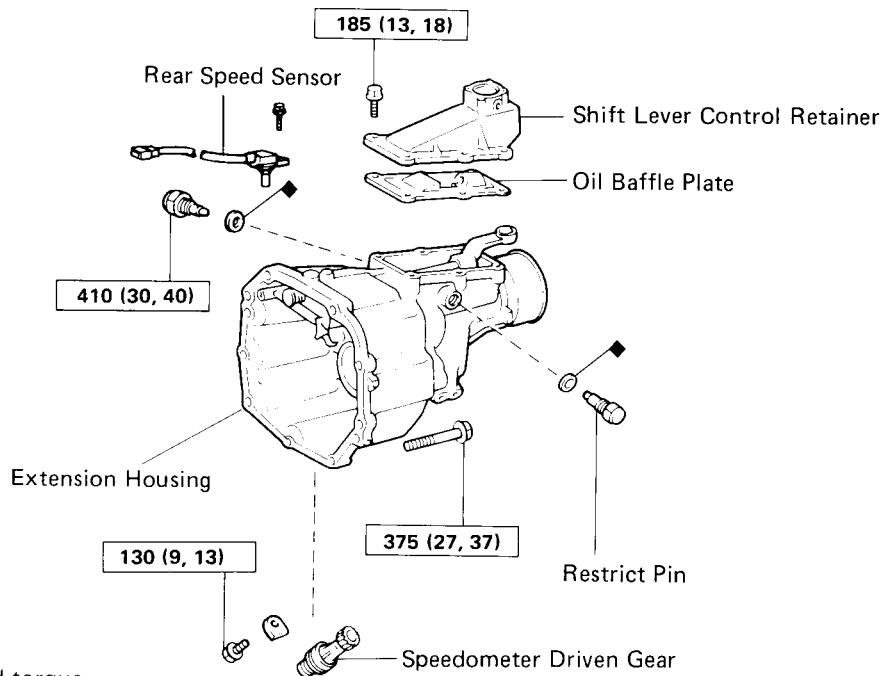
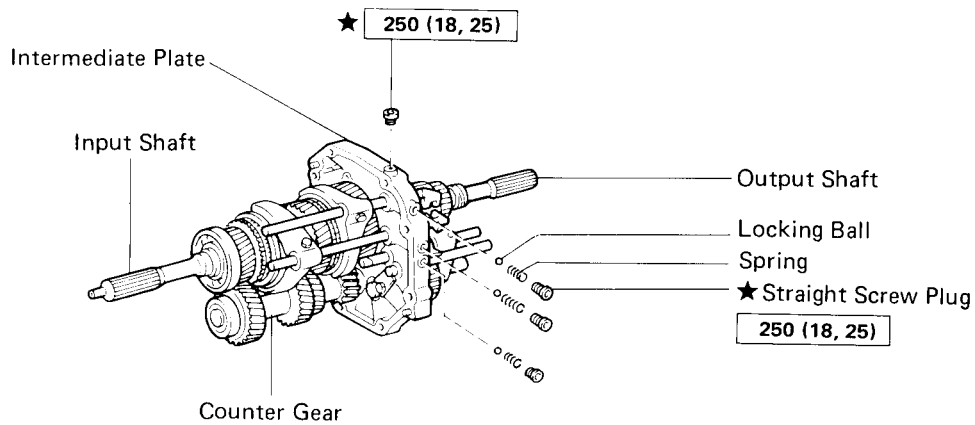
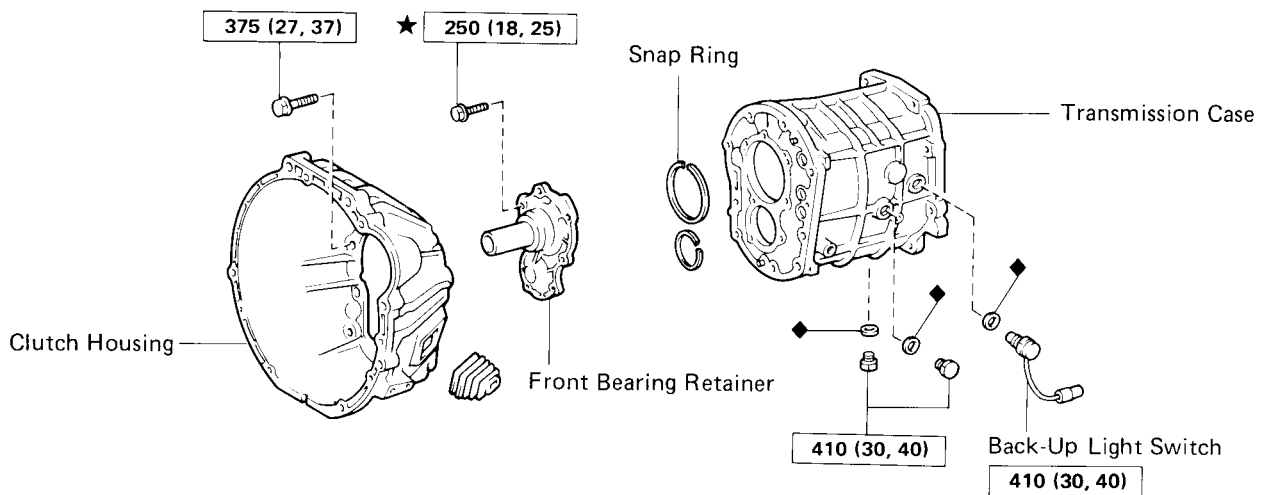
13. INSTALL CENTER CLUSTER FINISH PANEL

14. INSTALL NEGATIVE BATTERY CABLE

15. PERFORM ROAD TEST

Check for any abnormal noise or operation.

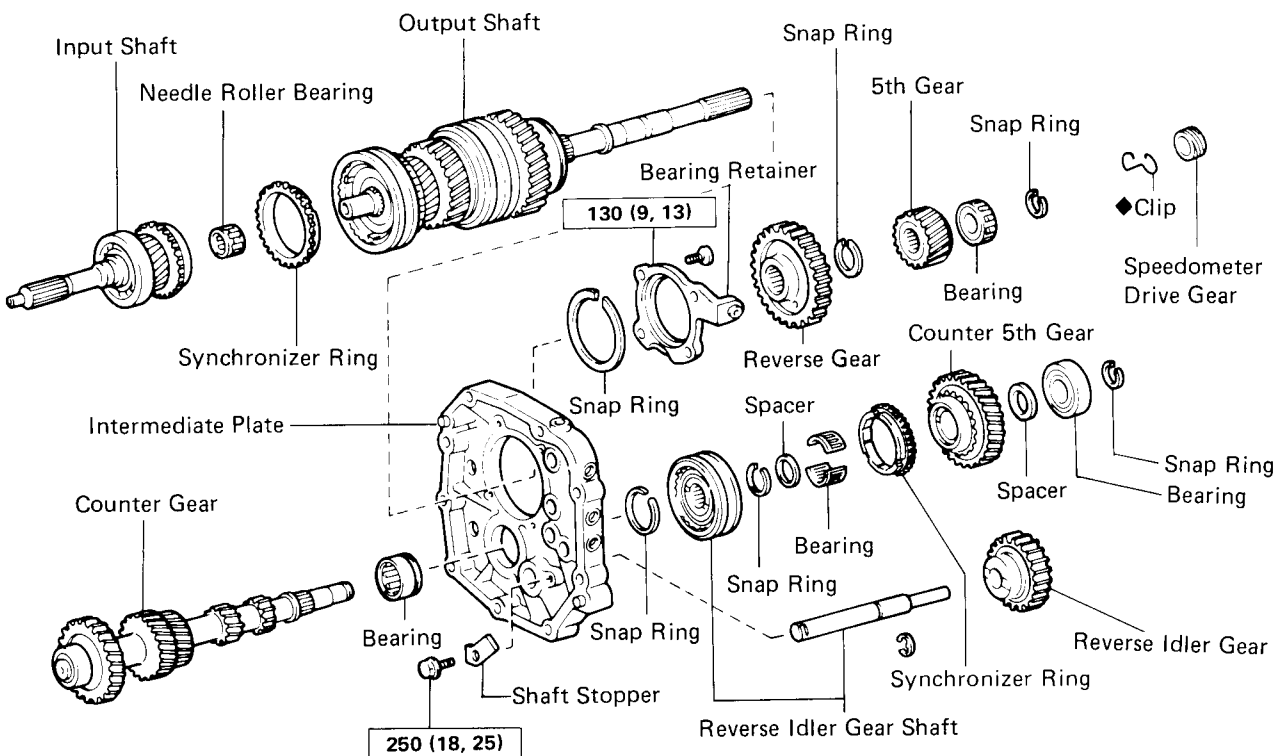
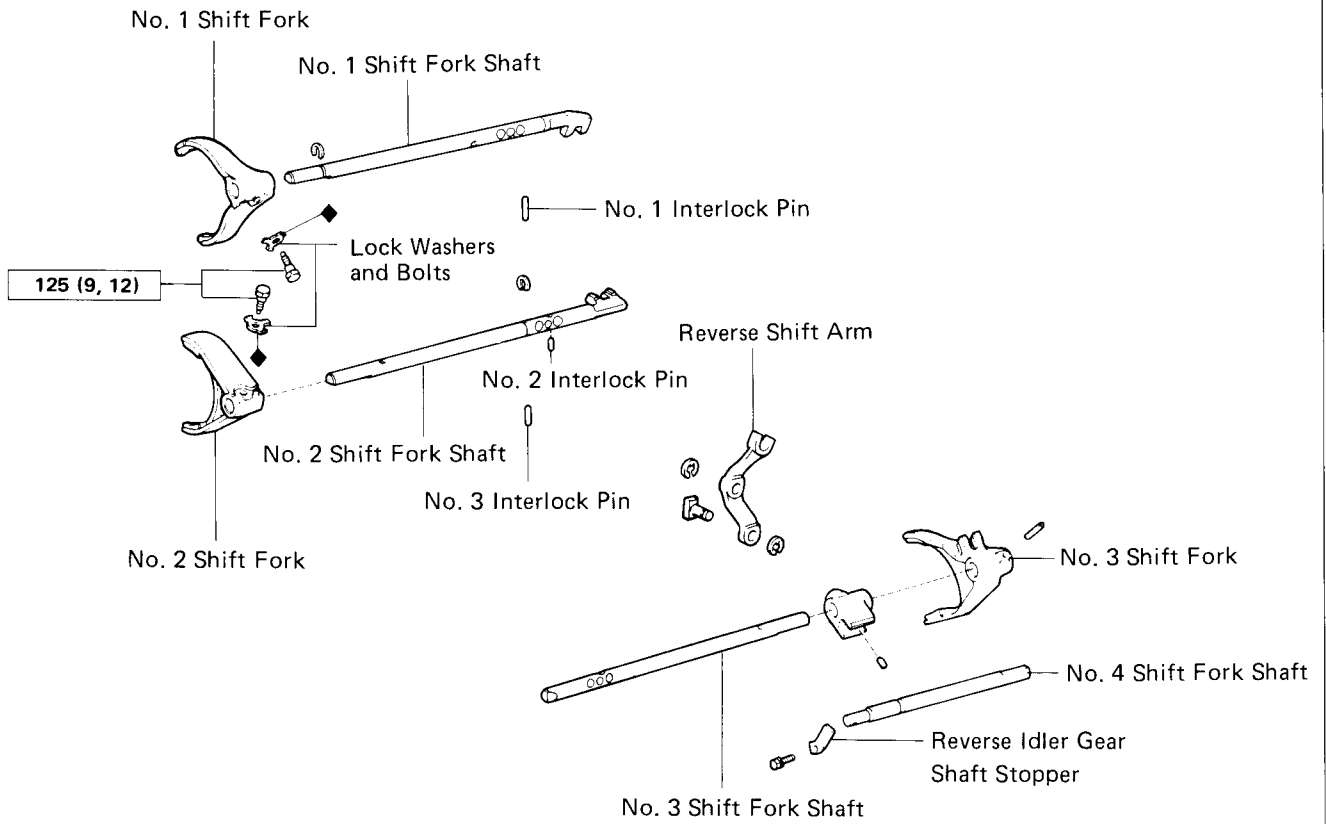
Components (W58 Transmission)



kg-cm (ft-lb, N.m) : Specified torque

- ◆ Non-reusable part
- ★ Precoated part

Components (Cont'd)



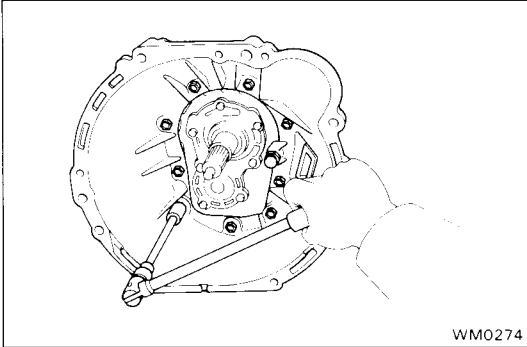
kg-cm (ft-lb, N-m) : Specified torque

◆ Non-reusable part

DISASSEMBLY OF TRANSMISSION

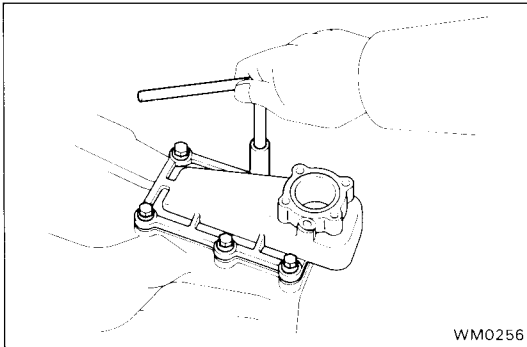
(See pages MT-9, 10)

1. REMOVE BACK-UP LIGHT SWITCH, REAR SPEED SENSOR (w/ A.B.S.) AND SPEEDOMETER DRIVEN GEAR



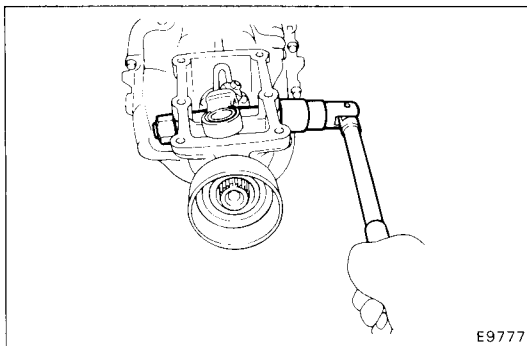
2. REMOVE CLUTCH HOUSING FROM TRANSMISSION CASE

Remove nine bolts and clutch housing from transmission case.



3. REMOVE SHIFT LEVER RETAINER

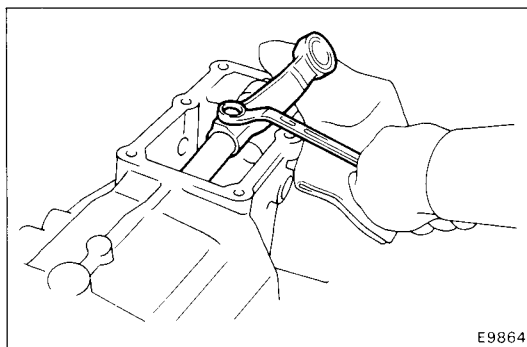
- (a) Remove the six bolts.
- (b) Remove shift lever retainer and oil baffle plate.

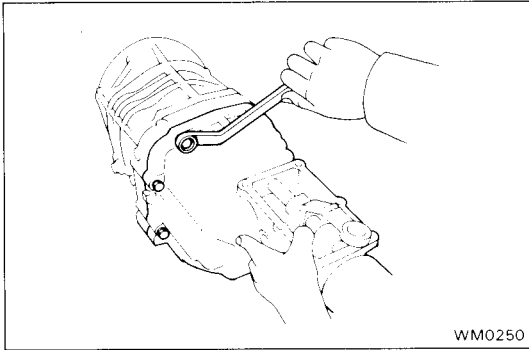


4. REMOVE RESTRICT PIN

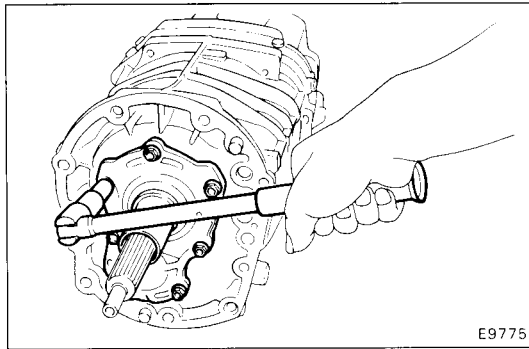
5. REMOVE EXTENSION HOUSING

- (a) Remove the shift lever housing set bolt.



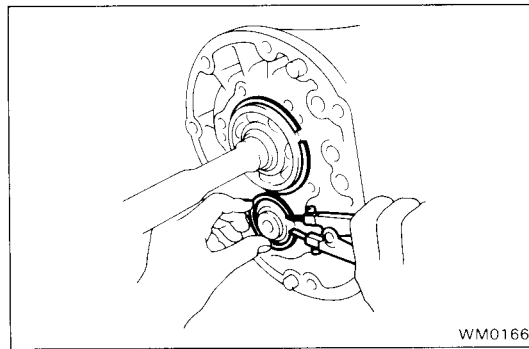


- (b) Remove the nine bolts.
- (c) Using a plastic hammer, tap the extension housing.
- (d) Disengage the shift and select lever from the shift head.
- (e) Pull out the extension housing.

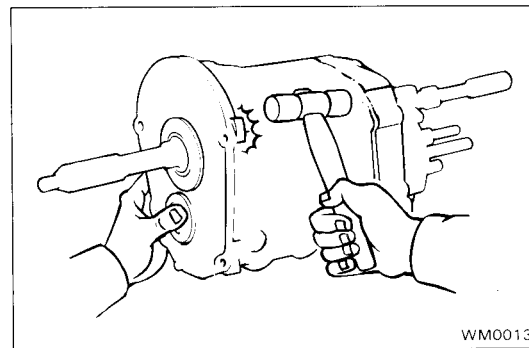


6. REMOVE FRONT BEARING RETAINER AND BEARING SNAP RINGS

- (a) Remove seven bolts and front bearing retainer.

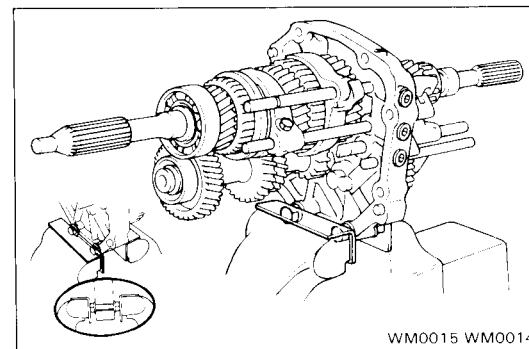


- (b) Using a snap ring pliers, remove two bearing snap rings.



7. SEPARATE INTERMEDIATE PLATE FROM TRANSMISSION CASE

- (a) Using a plastic hammer, carefully tap the transmission case.
- (b) Pull the transmission case from the intermediate plate.

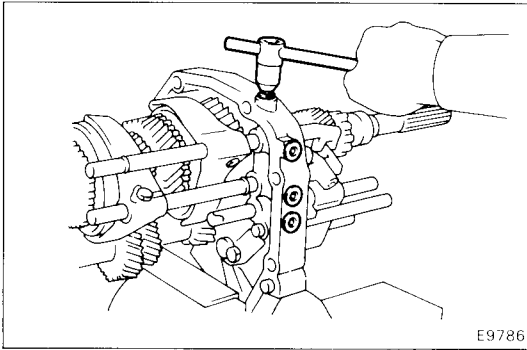


8. MOUNT INTERMEDIATE PLATE IN VISE

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

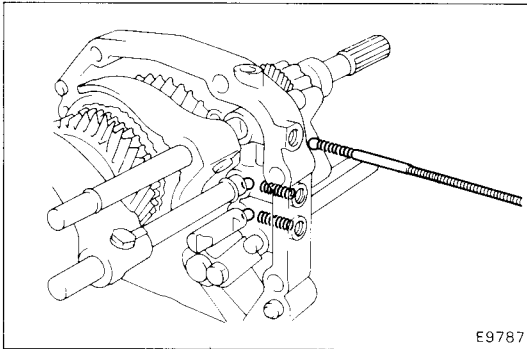
NOTICE: Install the plate washers in reverse of normal. Increase or decrease plate washers so that the bolt tip and the front tip surface of the nut are aligned.

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

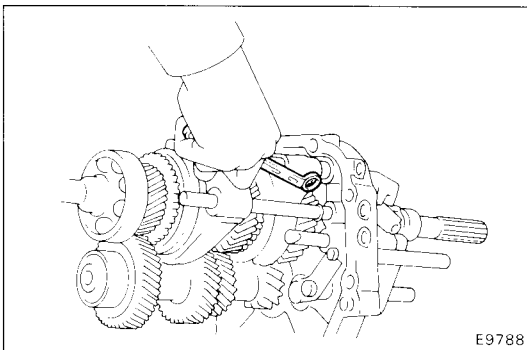


9. REMOVE LOCKING BALL AND SPRING

- (a) Using SST, remove the four plugs.
SST 09313-30021

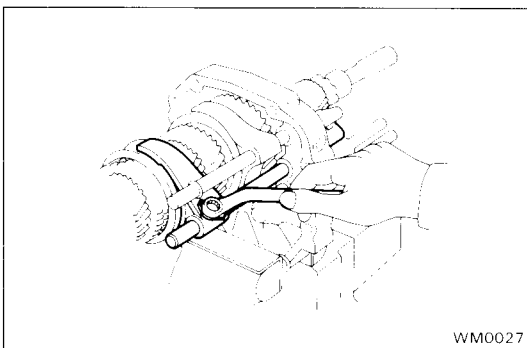


- (b) Using a magnetic finger, remove the three springs and balls.

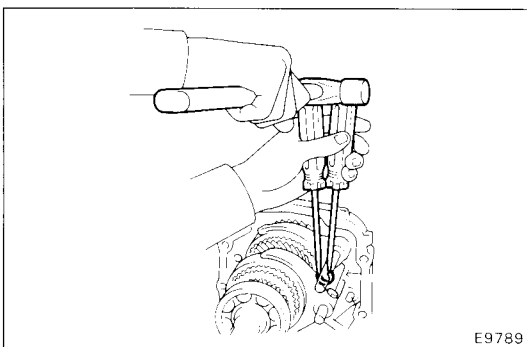


10. REMOVE SHIFT FORKS, SHIFT FORK SHAFTS AND REVERSE IDLER GEAR

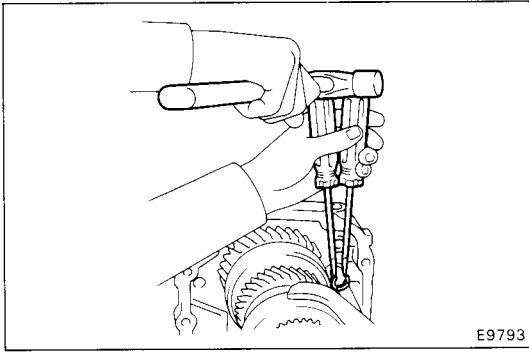
- (a) Pry out the lock washer of No.1 shift fork and remove the set bolt.



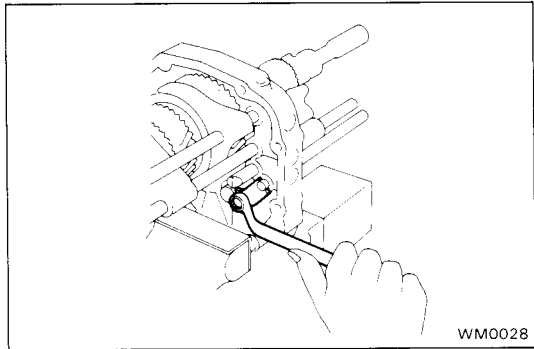
- (b) Pry out the lock washer of No.2 shift fork and remove the set bolt.



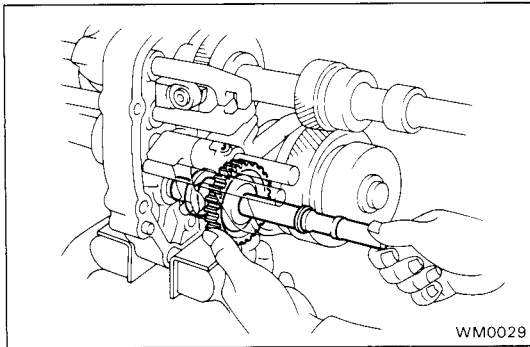
- (c) Using two screwdriver and a hammer, tap out the snap ring of No.1 fork shaft.



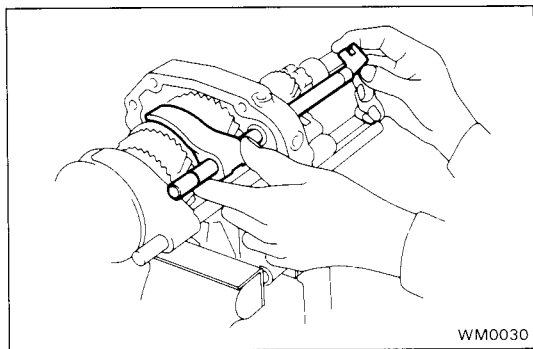
(d) Using two screwdriver and hammer, tap out the snap ring of No.2 fork shaft.



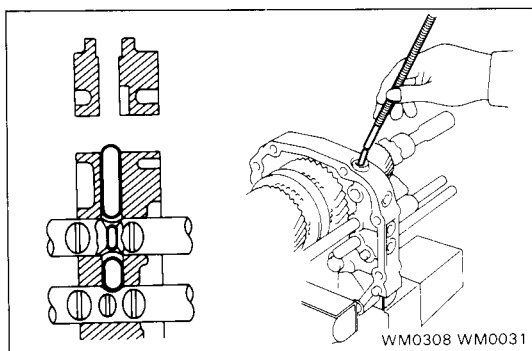
(e) Remove the reverse idler gear shaft stopper.



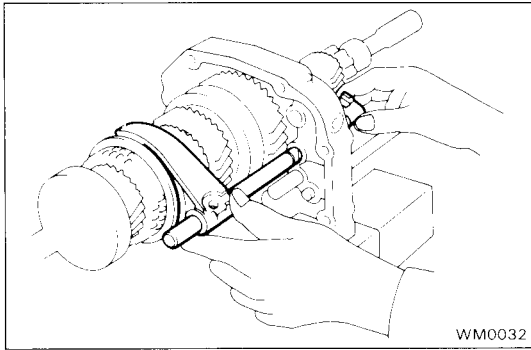
(f) Remove the reverse idler gear and shaft.



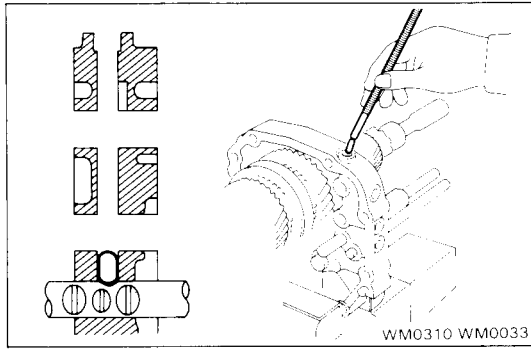
(g) Remove No.1 shift fork and shaft.



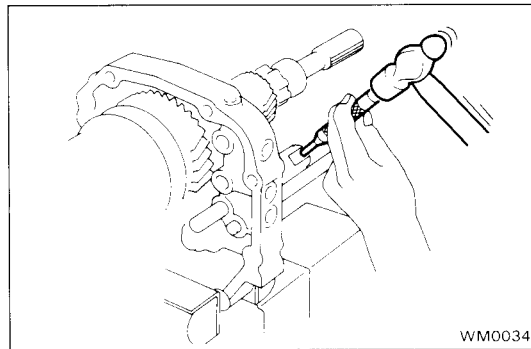
(h) Using a magnetic finger, remove No.1 and No.2 interlock pins.



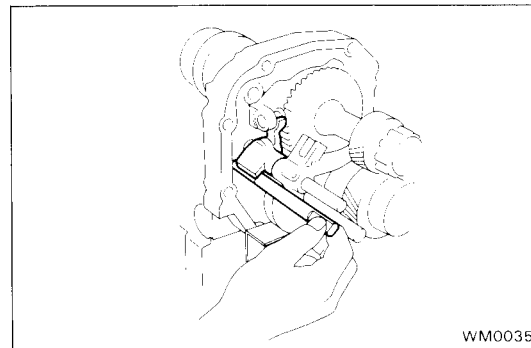
(i) Remove No.2 shift fork and shaft.



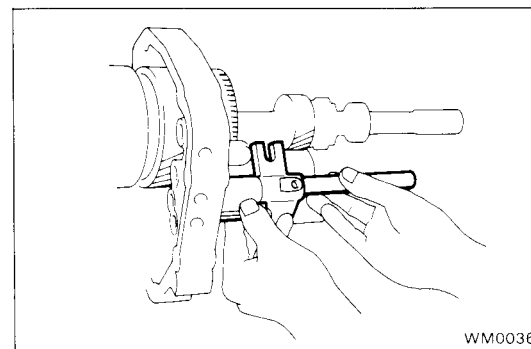
(j) Using a magnetic finger, remove No.3 interlock pin.



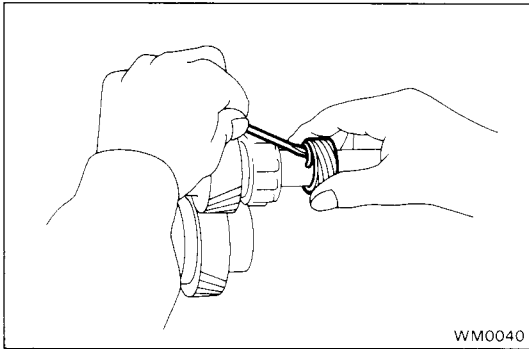
(k) Using a pin punch and hammer, drive out No.3 fork shaft pin.



(l) Pull out No.4 shift fork shaft.

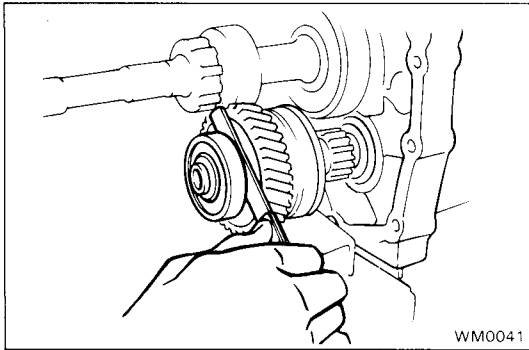


(m) Remove No.3 shift fork, fork shaft and reverse shift arm with the pin.



11. REMOVE SPEEDOMETER DRIVE GEAR

Pry out both ends of the clip and remove the drive gear.

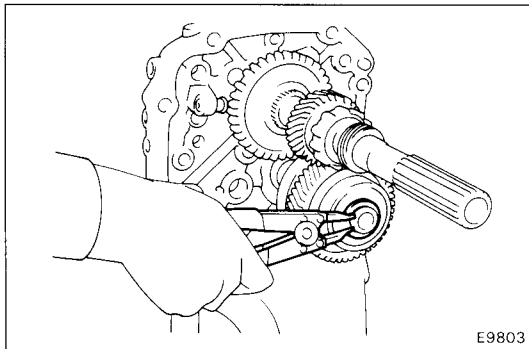


12. MEASURE COUNTER FIFTH GEAR THRUST CLEARANCE

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

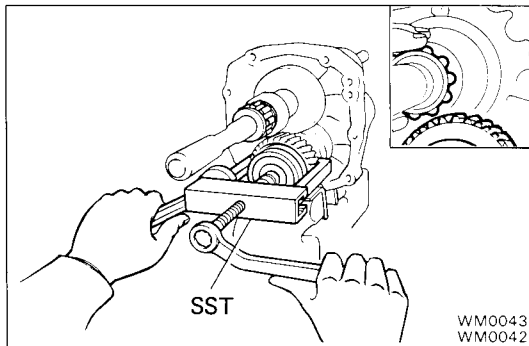
Standard clearance: 0.10 – 0.41 mm
(0.0039 – 0.0161 in.)

Maximum clearance: 0.46 mm (0.0181 in.)



13. REMOVE COUNTER REAR BEARING, SPACER, COUNTER FIFTH GEAR AND NEEDLE ROLLER BEARING

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

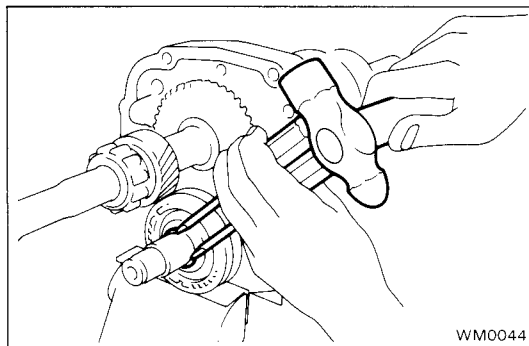


(b) Using SST, remove the rear bearing, spacer, 5th gear and bearing.

SST 09213-36020

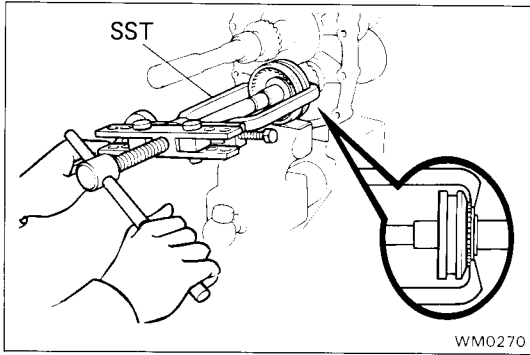
NOTICE: Be careful not to catch the output shaft rear bearing roller on the counter 5th gear.

(c) Remove the spacer.



14. REMOVE NO.3 HUB SLEEVE ASSEMBLY

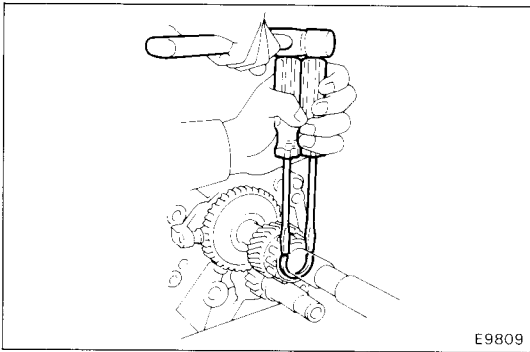
(a) Using two screwdrivers and a hammer, tap out the snap ring.



(b) Using SST, remove No.3 clutch hub.

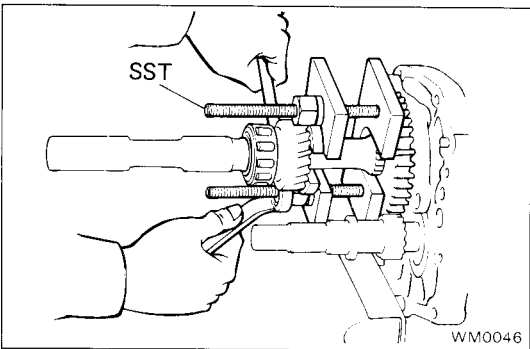
SST 09950-20017

NOTICE: Latch the claw of the SST onto the clutch hub not the shifting key retainer.



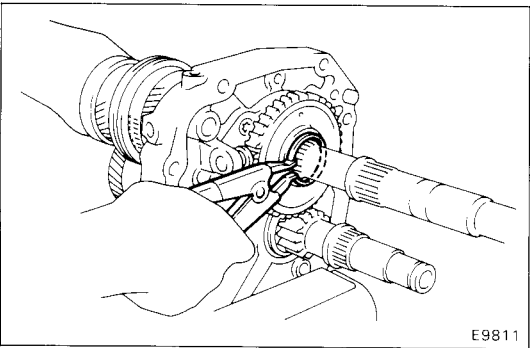
15. REMOVE OUTPUT SHAFT REAR BEARING AND FIFTH GEAR

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



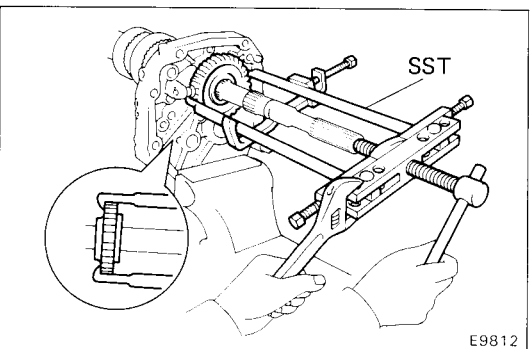
(b) Using SST, remove the rear bearing and 5th gear.

SST 09312-20011



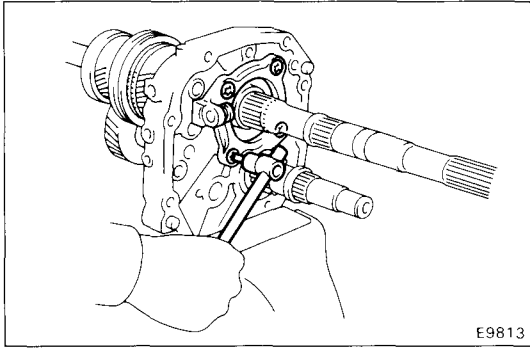
16. REMOVE REVERSE GEAR

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



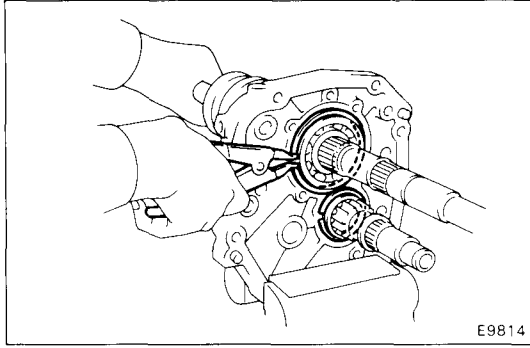
(b) Using SST, remove the reverse gear.

SST 09950-20017

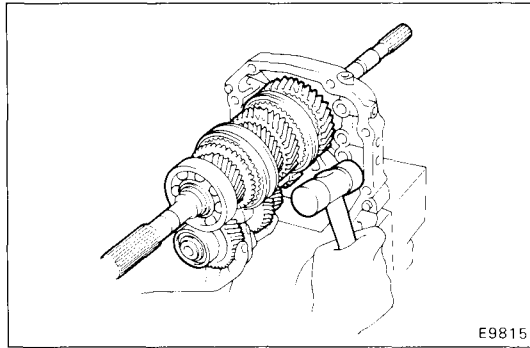


17. REMOVE CENTER BEARING RETAINER

- (a) Using a torx socket wrench, unscrew the torx screws and remove the retainer.

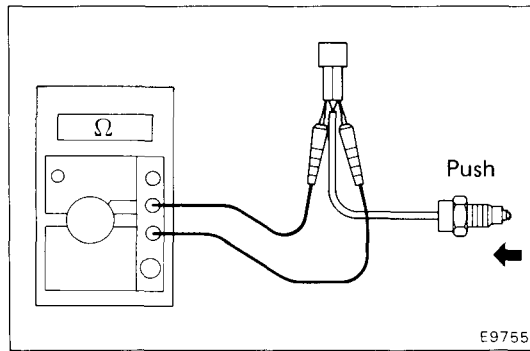


- (b) Using snap ring pliers, remove the snap rings.



18. REMOVE OUTPUT SHAFT AND COUNTER GEAR AS A UNIT FROM INTERMEDIATE PLATE

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



19. INSPECT BACK UP LIGHT SWITCH

Check that there is continuity between terminal as shown.

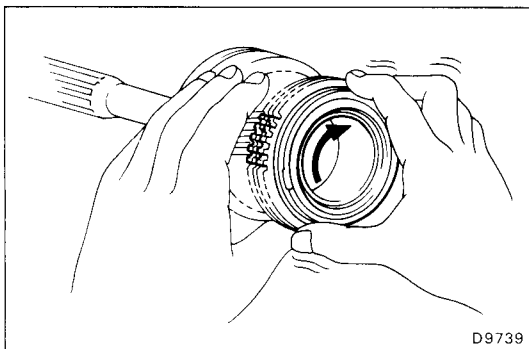
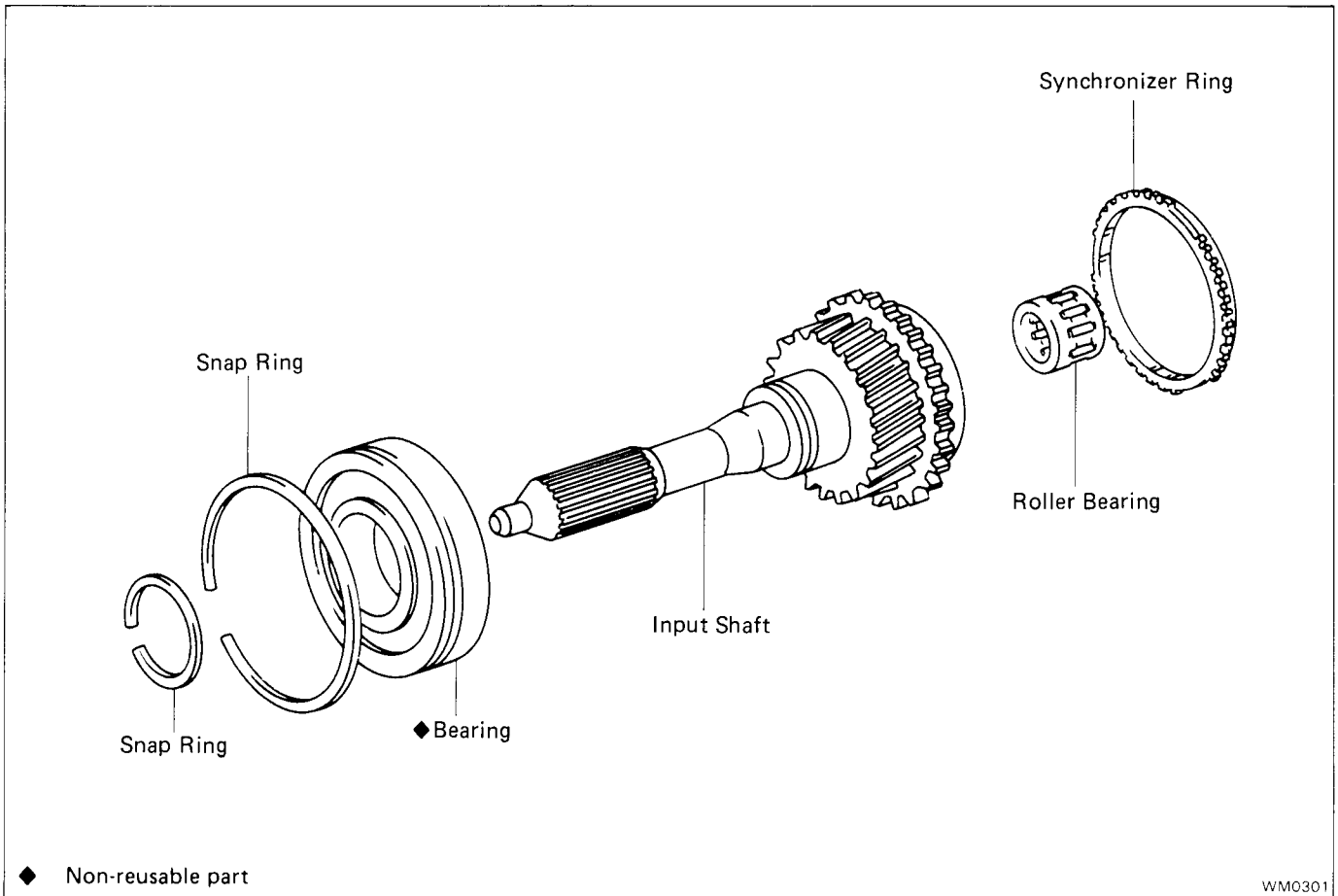
Switch Position	Specified
Push	Continuity
Free	No continuity

If operations not as specified, replace switch.

COMPONENT PARTS

Input Shaft Assembly

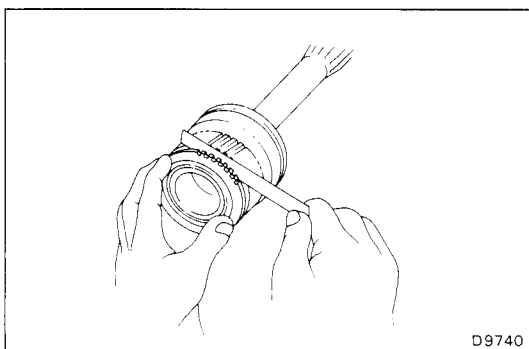
COMPONENTS



INSPECTION OF INPUT SHAFT ASSEMBLY

INSPECT SYNCHRONIZER RING

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



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

Standard clearance: 0.7 — 1.7 mm
(0.028 — 0.067 in.)

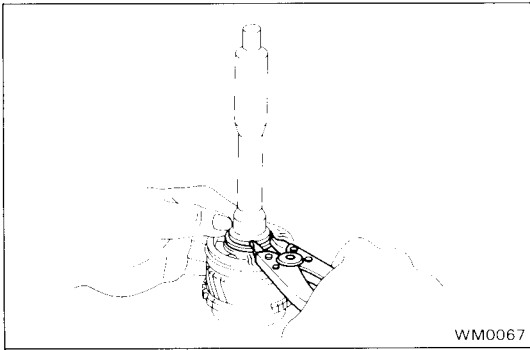
Minimum clearance: 0.5 mm (0.020 in.)

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

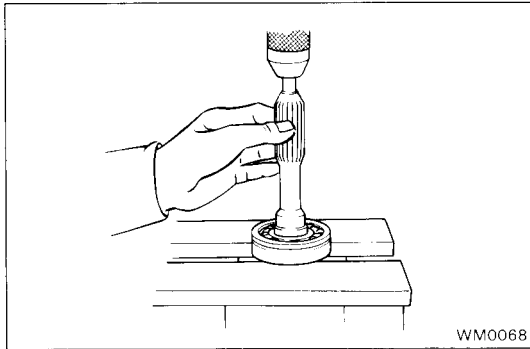
REPLACEMENT OF BEARING

IF NECESSARY, REPLACE INPUT SHAFT BEARING

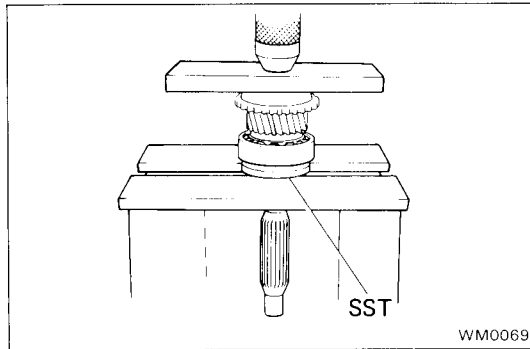
(a) Using snap ring pliers, remove the snap ring.



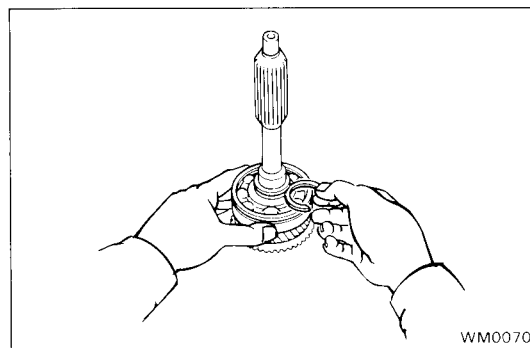
(b) Using a press, remove the bearing.



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



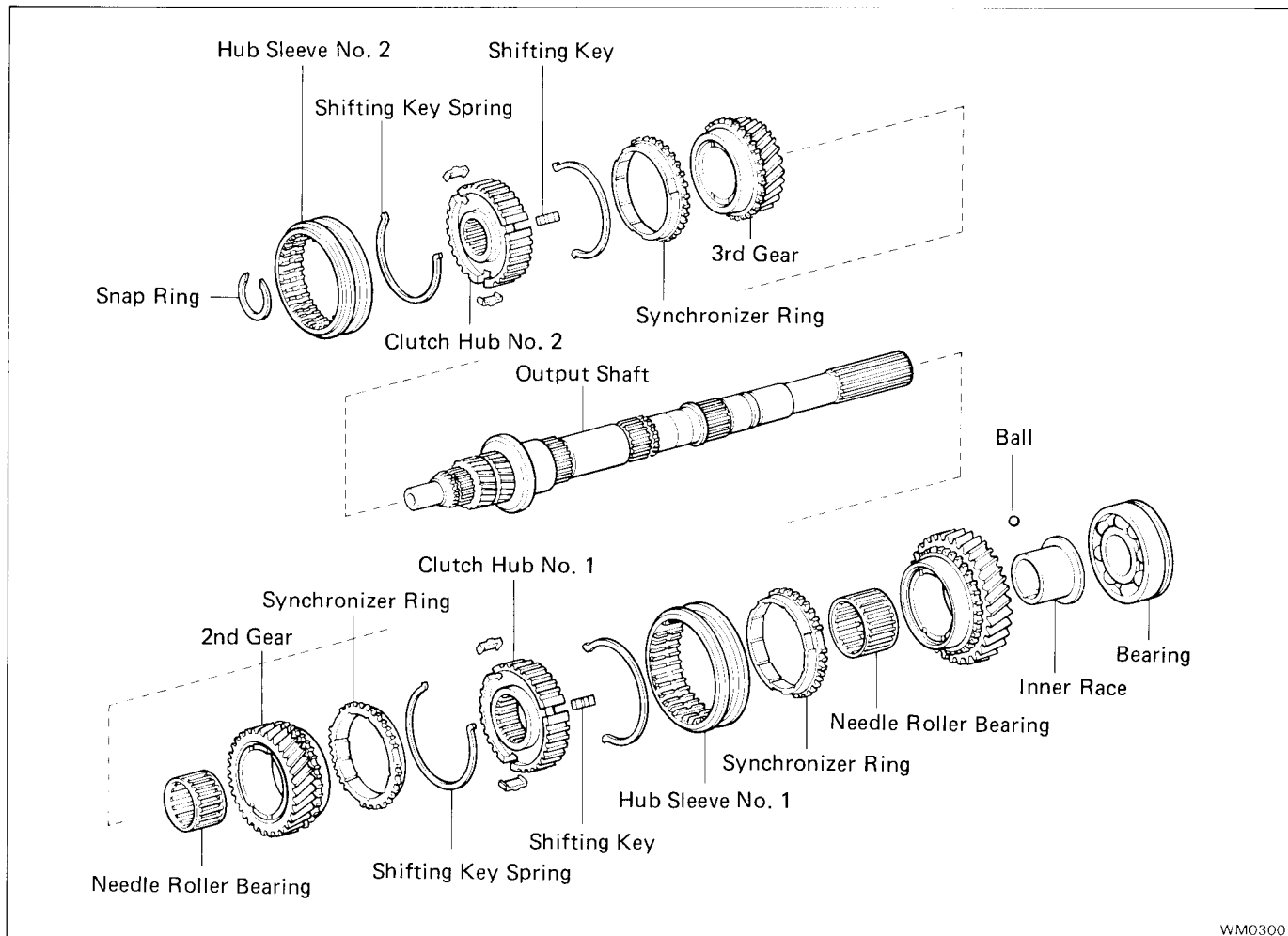
(d) Select a snap ring that will allow minimum axial play and install it on the shaft.



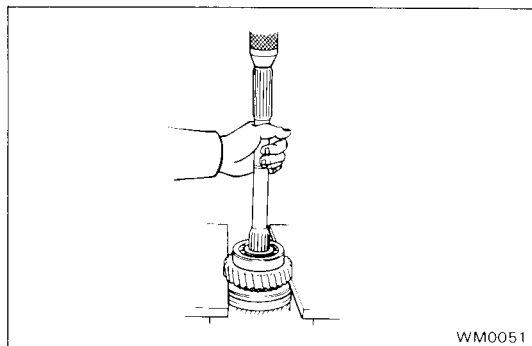
Mark	Thickness	mm (in.)
1	2.05 – 2.10	(0.0807 – 0.0827)
2	2.10 – 2.15	(0.0827 – 0.0846)
3	2.15 – 2.20	(0.0846 – 0.0866)
4	2.20 – 2.25	(0.0866 – 0.0886)
5	2.25 – 2.30	(0.0886 – 0.0906)
11	2.30 – 2.35	(0.0906 – 0.0925)
12	2.35 – 2.40	(0.0925 – 0.0945)

Output Shaft Assembly

COMPONENTS



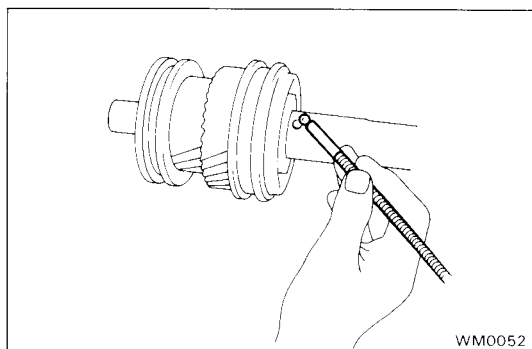
WM0300



DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

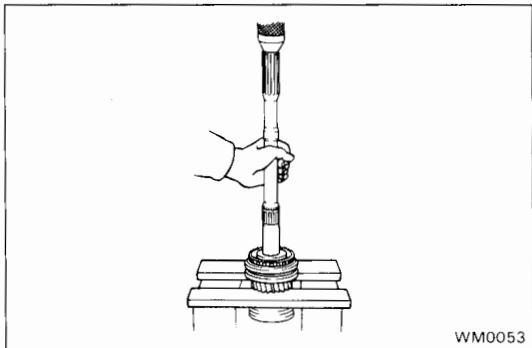
1. REMOVE OUTPUT SHAFT CENTER BEARING AND FIRST GEAR ASSEMBLY

- (a) Shift No.1 hub sleeve onto the 2nd gear.
- (b) Using a press, remove the center bearing, 1st gear, needle roller bearing, inner race and synchronizer ring.



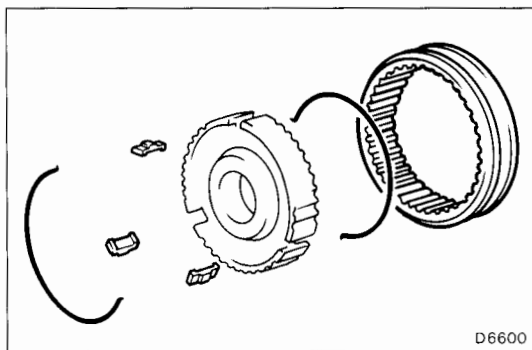
2. REMOVE LOCKING BALL

Using a magnetic finger, remove the locking ball.



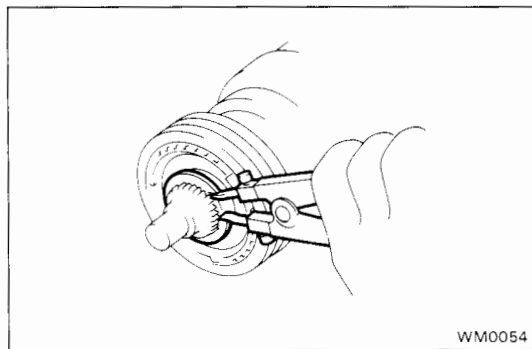
3. REMOVE NO.1 HUB SLEEVE ASSEMBLY, SECOND GEAR AND NEEDLE ROLLER BEARING

Using a press, remove the parts from the shaft as an assembly.



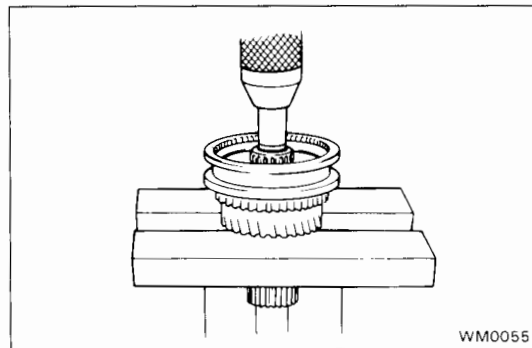
4. REMOVE THE HUB SLEEVE NO.1, SHIFTING KEYS AND SPRINGS FROM CLUTCH HUB NO.1

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

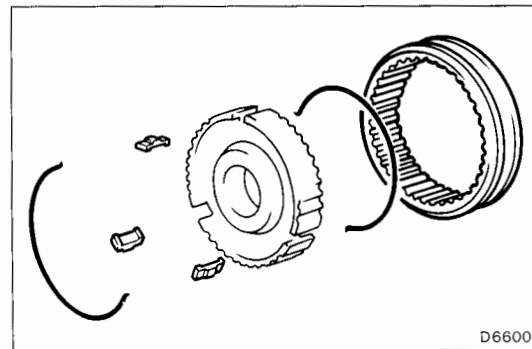


5. REMOVE NO.2 HUB SLEEVE ASSEMBLY AND THIRD GEAR

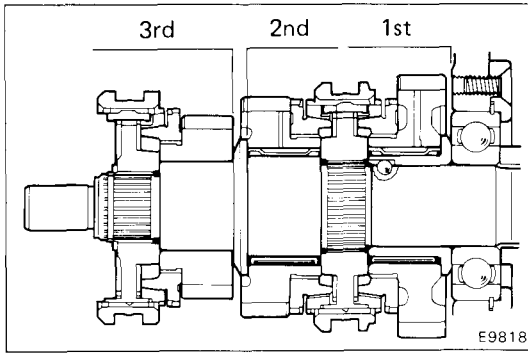
(a) Using snap ring pliers, remove the snap ring.



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



6. REMOVE THE HUB SLEEVE NO.2



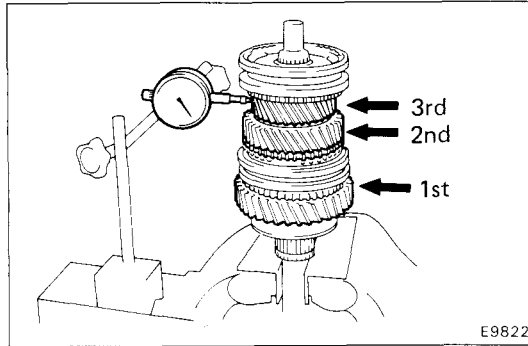
INSPECTION OF OUTPUT SHAFT ASSEMBLY

1. MEASURE 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: 0.30 mm (0.0118 in.)



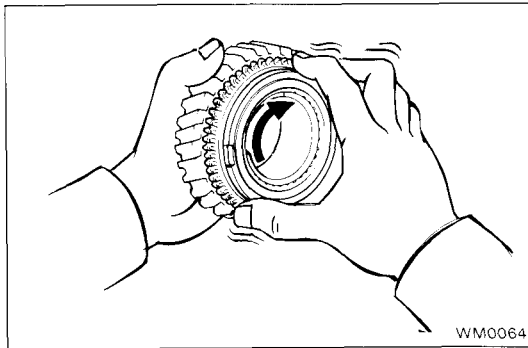
2. MEASURE EACH GEAR OIL CLEARANCE

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

Standard clearance:
 1st and 2nd gear 0.009 – 0.060 mm
(0.0004 – 0.0024 in.)
 3rd gear 0.060 – 0.103 mm
(0.0024 – 0.0041 in.)

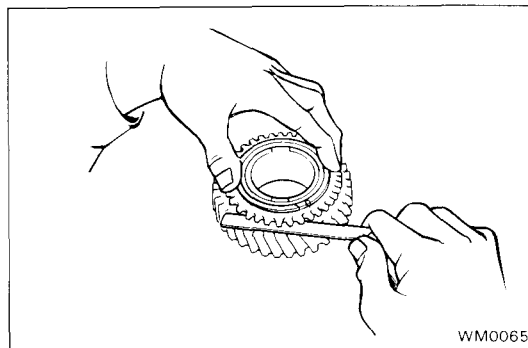
Maximum clearance:
 1st and 2nd gear 0.15 mm (0.0059 in.)
 3rd gear 0.20 mm (0.0079 in.)

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



3. INSPECT SYNCHRONIZER RINGS

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

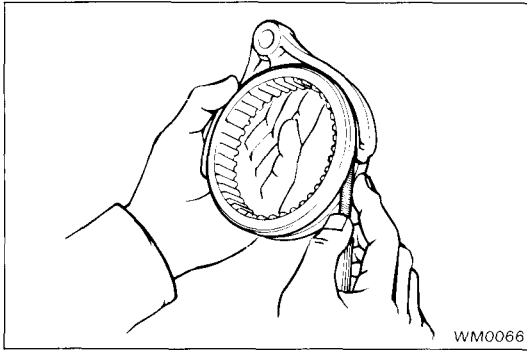


(b) Measure the clearance between the synchronizer ring back and the gear spline end.

Standard clearance: 0.7 – 1.7 mm
(0.028 – 0.067 in.)

Minimum clearance: 0.5 mm (0.020 in.)

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

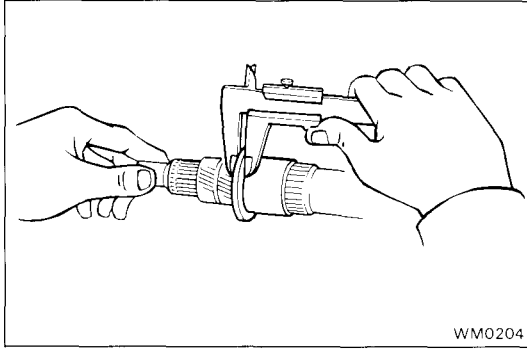


4. MEASURE CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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

Maximum clearance: 1.0 mm (0.039 in.)

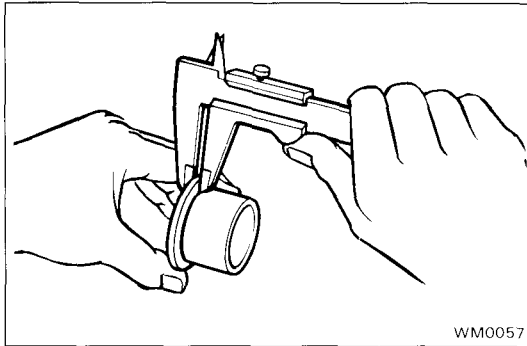
If the clearance exceeds the limit, replace the shift fork or hub sleeve.



5. INSPECT OUTPUT SHAFT AND INNER RACE

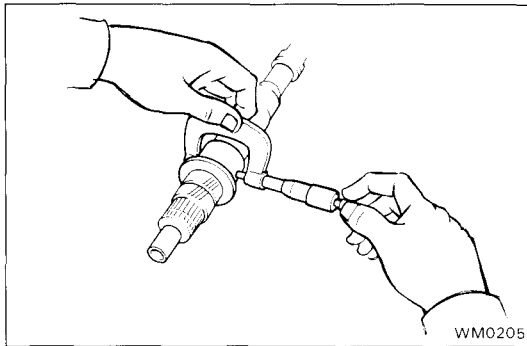
(a) Using calipers, measure the output shaft flange thickness.

Minimum thickness: 5.60 mm (0.2205 in.)



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

Minimum thickness: 4.76 mm (0.1874 in.)

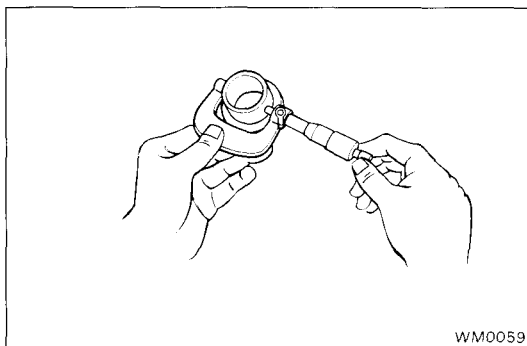


(c) Using a micrometer, measure the outer diameter of the output shaft journal.

Minimum diameter:

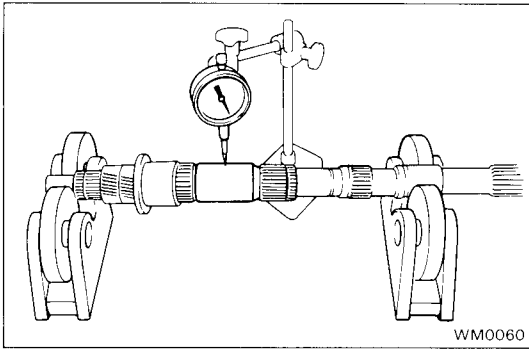
2nd gear 42.84 mm (1.6866 in.)

3rd gear 27.86 mm (1.0968 in.)

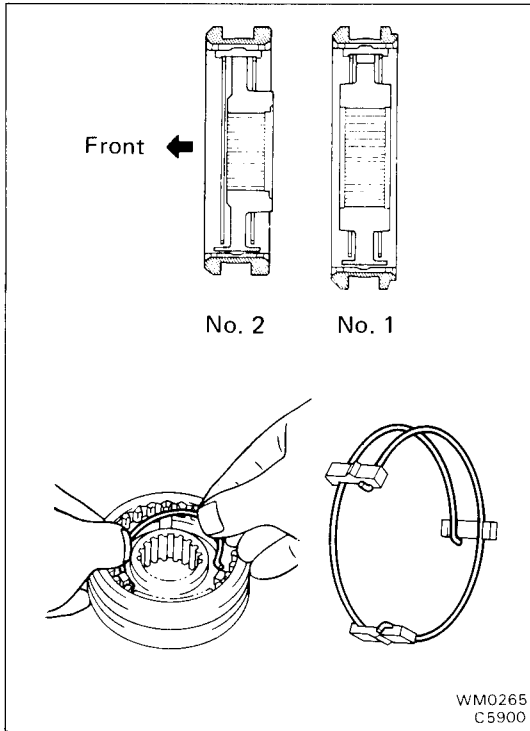


(d) Using a micrometer, measure the outer diameter of the inner race.

Minimum diameter: 42.85 mm (1.6870 in.)



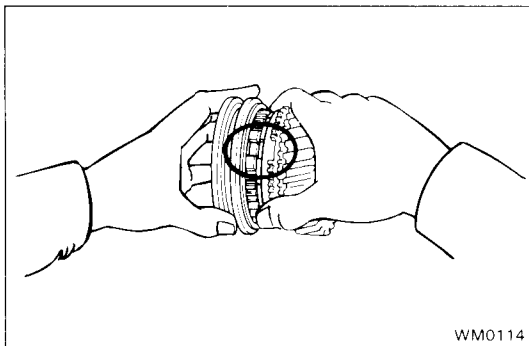
- (e) Using a dial indicator, check the shaft runout.
Maximum runout: 0.06 mm (0.0024 in.)



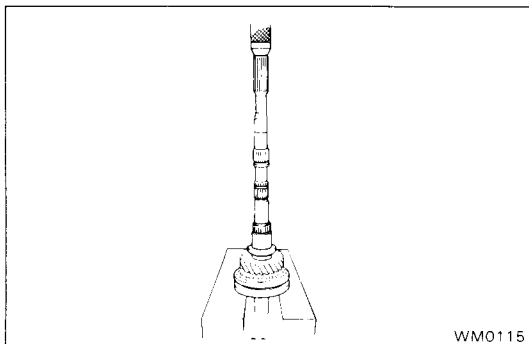
ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. **INSERT NO.1 AND NO.2 CLUTCH HUB INTO HUB SLEEVE**
 - (a) Install the clutch hub and shifting keys to the hub sleeve.
 - (b) Install the shifting key springs under the shifting keys.

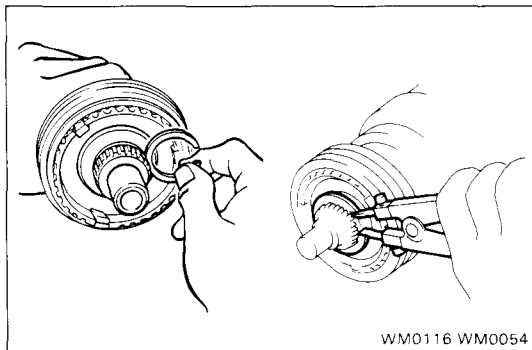
NOTICE: Install the key springs positioned so that their end gaps are not in line.



2. **INSTALL THIRD GEAR AND NO.2 CLUTCH HUB ON OUTPUT SHAFT**
 - (a) Apply gear oil to the shaft.
 - (b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.



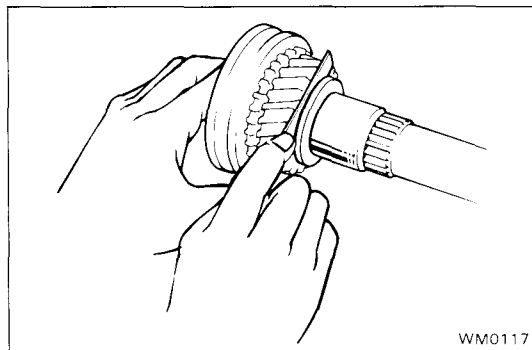
- (c) Using a press, install the 3rd gear and No.2 clutch hub.



3. INSTALL SNAP RING

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

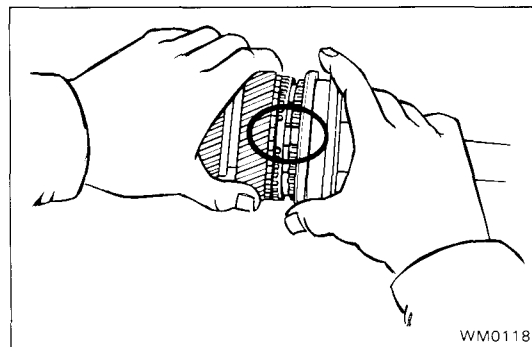
Mark	Thickness	mm (in.)
D	1.80 — 1.85	(0.0709 — 0.0728)
11	1.86 — 1.91	(0.0732 — 0.0752)
12	1.92 — 1.97	(0.0756 — 0.0776)
13	1.98 — 2.03	(0.0780 — 0.0799)
14	2.04 — 2.09	(0.0803 — 0.0823)
15	2.10 — 2.15	(0.0827 — 0.0846)



4. MEASURE THIRD GEAR THRUST CLEARANCE

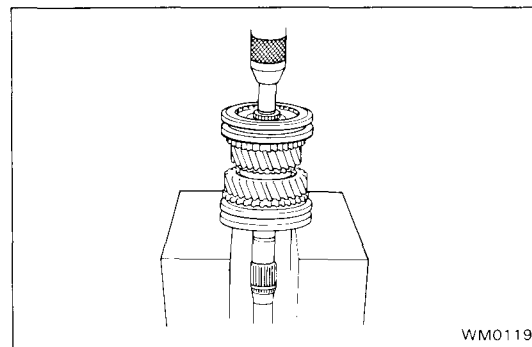
Using a feeler gauge, measure the 3rd gear thrust clearance.

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

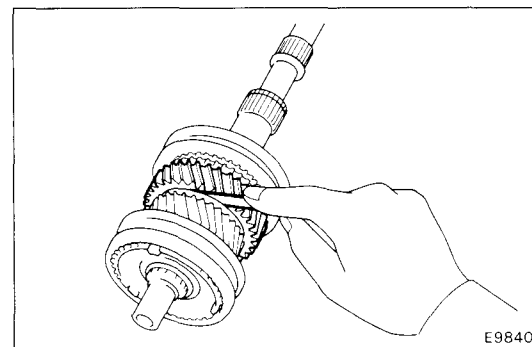


5. INSTALL SECOND GEAR AND NO.1 CLUTCH HUB

- (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.



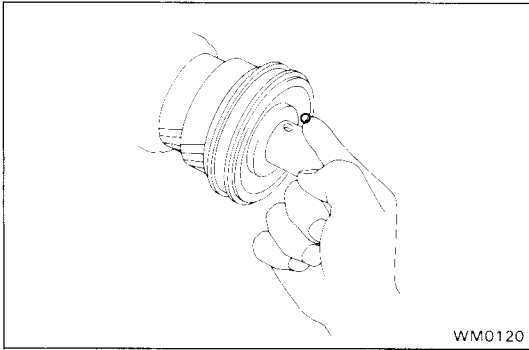
- (d) Using a press, install the 2nd gear and No.1 clutch hub.



6. MEASURE SECOND GEAR THRUST CLEARANCE

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

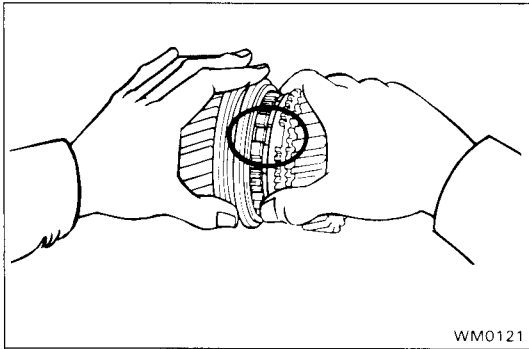
Standard clearance: 0.10 — 0.25 mm
(0.0039 — 0.0098 in.)



WM0120

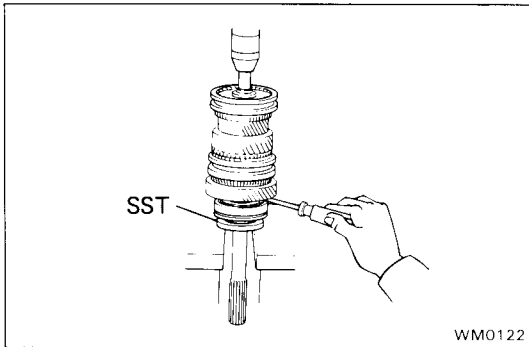
7. INSTALL LOCKING BALL AND FIRST GEAR ASSEMBLY

- (a) Install the locking ball in the shaft.
- (b) Apply gear oil to the bearing.
- (c) Assemble the 1st gear, synchronizer ring, needle roller bearing and bearing inner race.



WM0121

- (d) Install the assembly on the output shaft with the synchronizer ring slots aligned with the shifting keys and turn the inner race to align it with the locking ball.



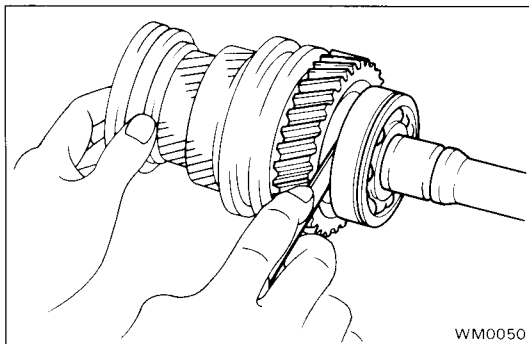
WM0122

8. INSTALL OUTPUT SHAFT CENTER BEARING

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

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

SST 09506-35010



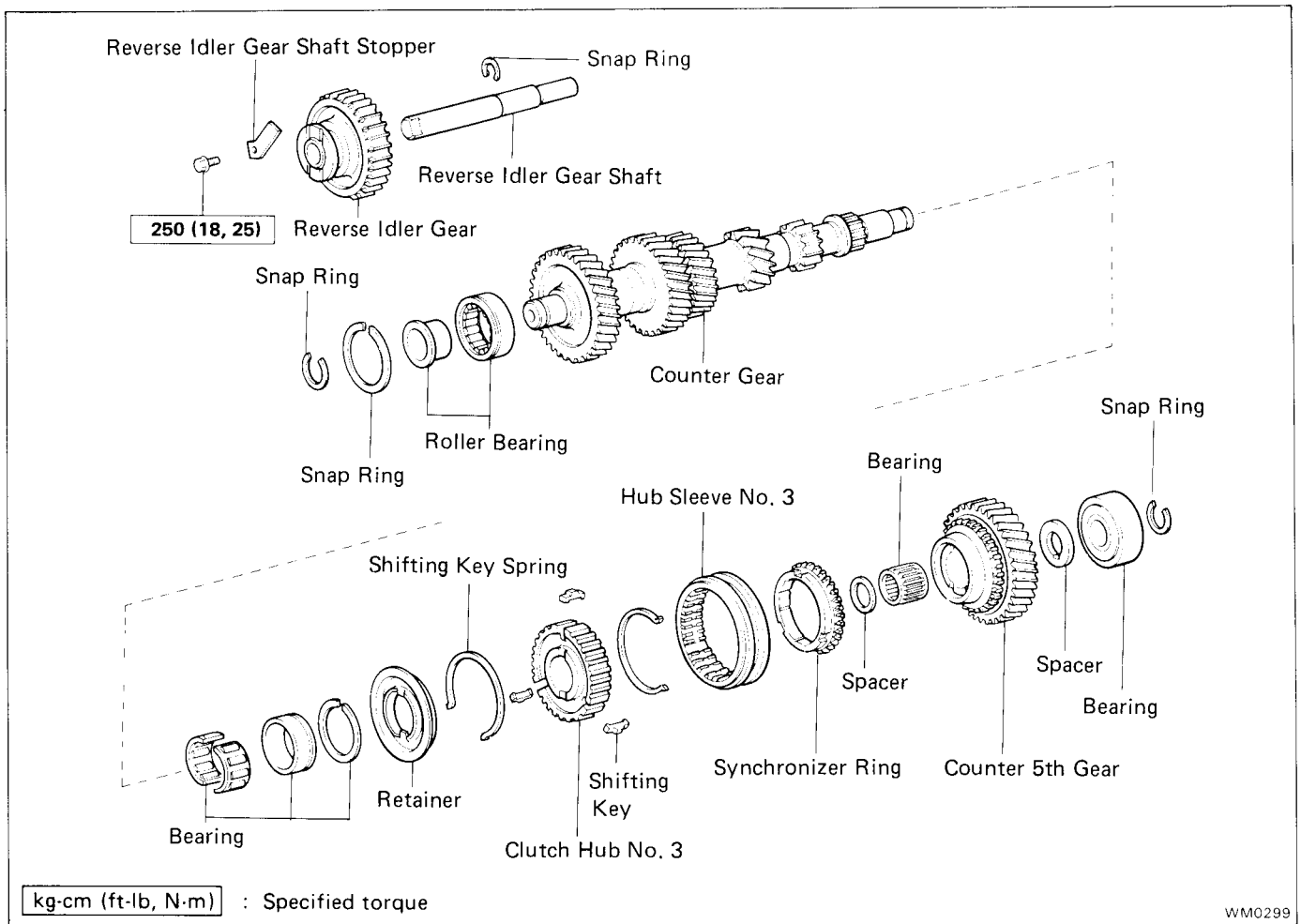
WM0050

9. MEASURE FIRST GEAR THRUST CLEARANCE

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

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

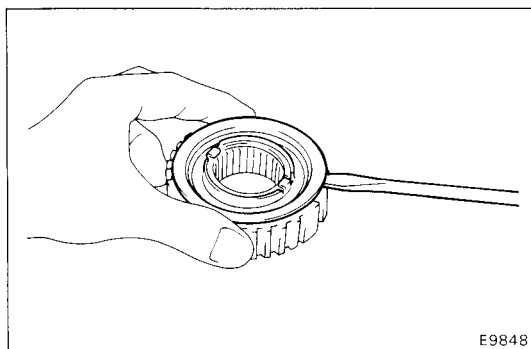
Counter Gear and Reverse Idler Gear COMPONENTS



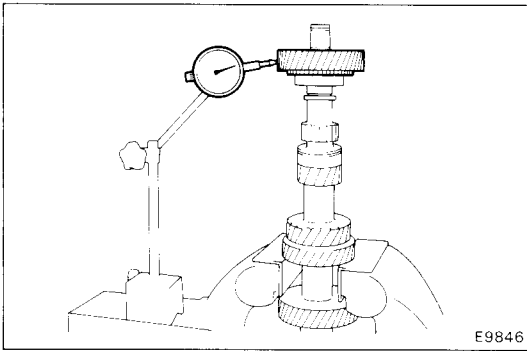
DISASSEMBLY OF COUNTER GEAR ASSEMBLY

REMOVE HUB SLEEVE SHIFTING KEYS AND SPRINGS FROM CLUTCH HUB

- (a) Using a screwdriver, remove rear side shifting key spring and three keys and hub sleeve from clutch hub.



- (b) Using a screwdriver, remove retainer and front side shifting key spring.



INSPECTION OF COUNTER GEAR

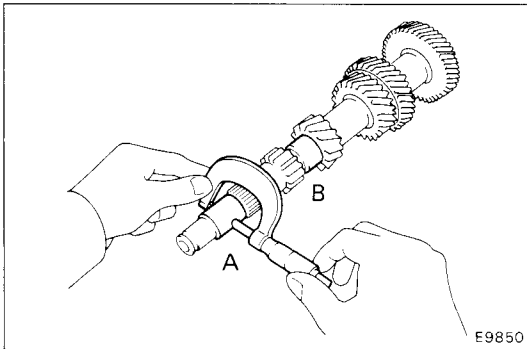
1. MEASURE COUNTER 5TH GEAR OIL CLEARANCE

- (a) Install, spacer, counter 5th gear and needle roller bearing to counter gear.
- (b) Using a dial indicator, measure counter 5th gear oil clearance.

Standard clearance: 0.009 — 0.062 mm
(0.0004 — 0.0024 in.)

Maximum clearance: 0.15 mm (0.0059 in.)

If the clearance exceeds the limit, replace the counter gear or needle roller bearing or counter 5th gear.



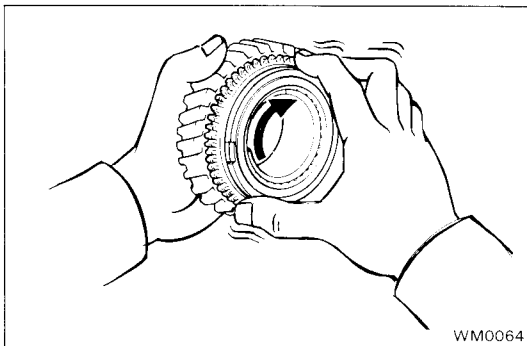
2. INSPECT COUNTER GEAR

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

Minimum diameter:

Part A 26.835 mm (1.0564 in.)

Part B 29.81 mm (1.1736 in.)



3. INSPECT SYNCHRONIZER RINGS

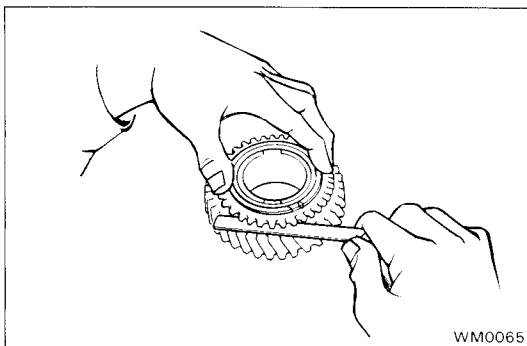
- (a) Turn the ring and push it in to check the braking action.

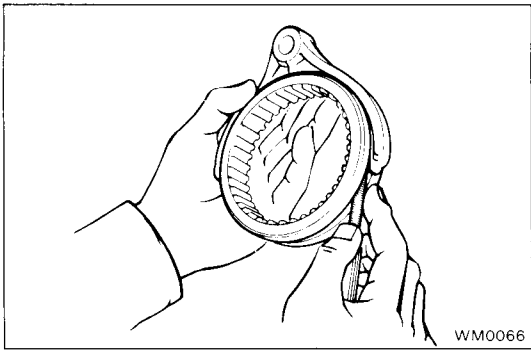
- (b) Measure the clearance between the synchronizer ring back and the gear spline end.

Standard clearance: 0.7 — 1.17 mm
(0.028 — 0.067 in.)

Minimum clearance: 0.5 mm (0.020 in.)

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





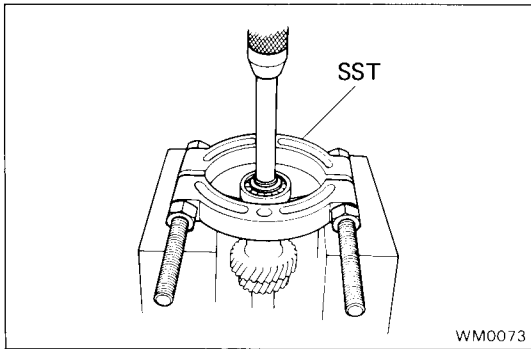
WM0066

4. MEASURE 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 limit, replace the shift fork or hub sleeve.

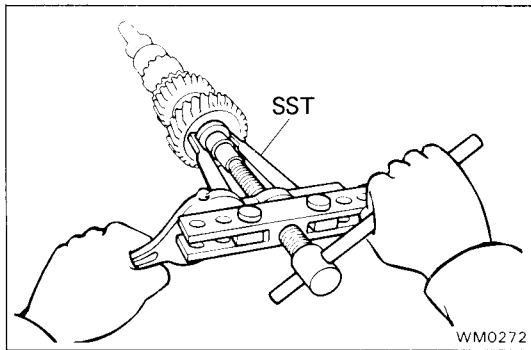


WM0073

REPLACEMENT OF BEARING

1. IF NECESSARY, REPLACE COUNTER GEAR FRONT BEARING AND SIDE RACE

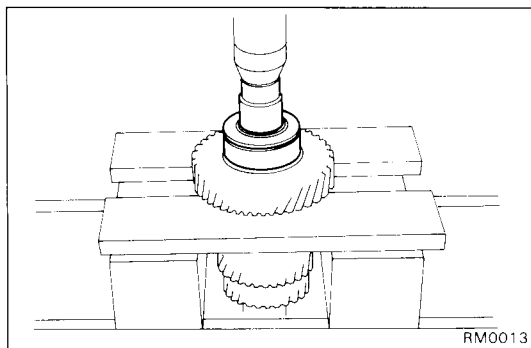
- (a) Using snap ring pliers, remove the snap ring.
- (b) Using a press and SST, press out the bearing.
SST 09950-00020
- (c) Check the side race for wear or damage.



WM0272

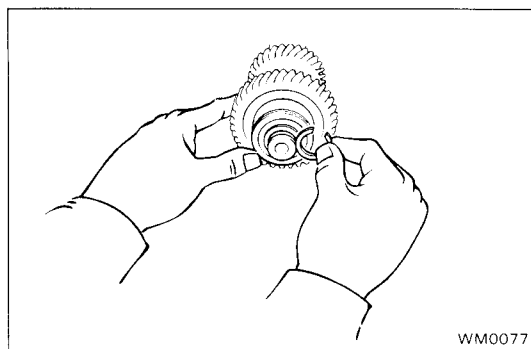
- (d) If necessary, remove the side race.
 - Using SST and socket wrench, remove the side race.

SST 09950-20017



RM0013

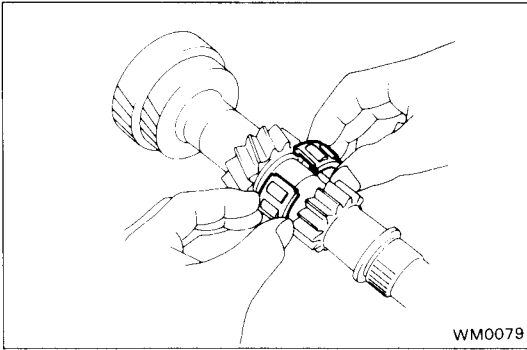
- (e) Using a socket wrench, press in a new bearing, side race and inner race.



WM0077

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

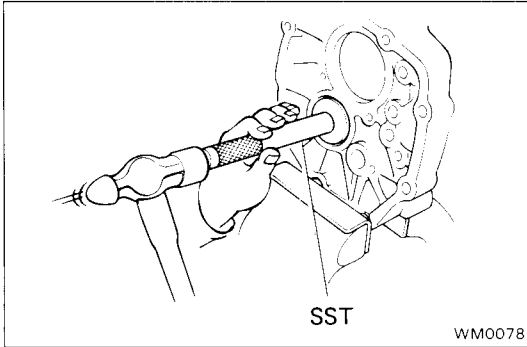
Mark	Thickness	mm (in.)
1	2.05 – 2.10	(0.0807 – 0.0827)
2	2.10 – 2.15	(0.0827 – 0.0846)
3	2.15 – 2.20	(0.0846 – 0.0866)
4	2.20 – 2.25	(0.0866 – 0.0886)
5	2.25 – 2.30	(0.0886 – 0.0906)
6	2.30 – 2.35	(0.0906 – 0.0925)
7	2.35 – 2.40	(0.0925 – 0.0945)



2. IF NECESSARY, REPLACE COUNTER GEAR CENTER BEARING

- (a) Remove the bearing from the counter gear.
- (b) Install a new bearing on the counter gear.

HINT: Engage the roller cages.



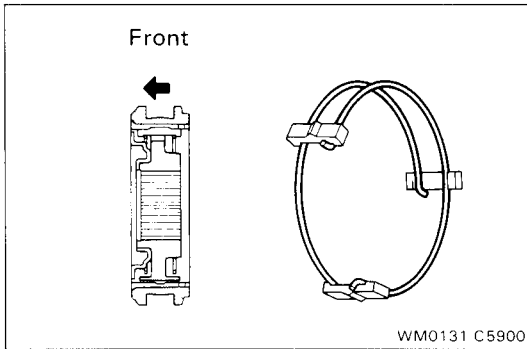
- (c) Using SST, tap out the bearing outer race.

SST 09608-35014 (09608-06020, 09608-06090)

HINT: The outer race will be installed later, as the transmission is assembled.

ASSEMBLY OF COUNTER GEAR ASSEMBLY

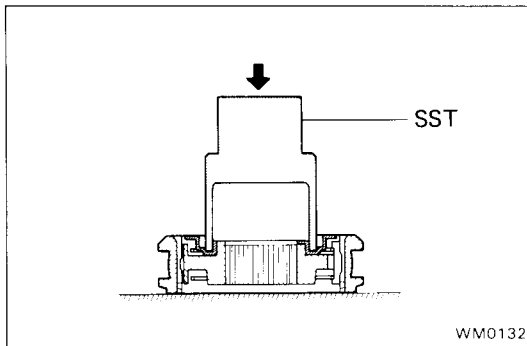
INSERT NO.3 CLUTCH HUB INTO HUB SLEEVE



- (a) Install No.3 clutch hub and the 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.



- (c) Using SST, install the shifting key retainer.

SST 09238-47012

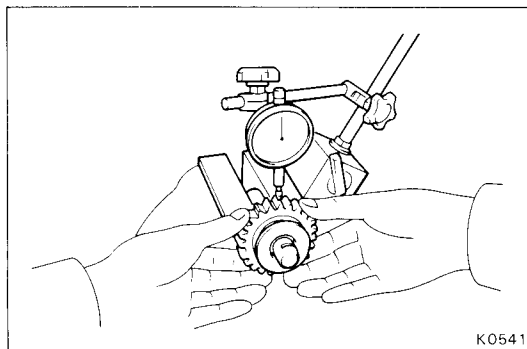
INSPECTION OF REVERSE IDLER GEAR

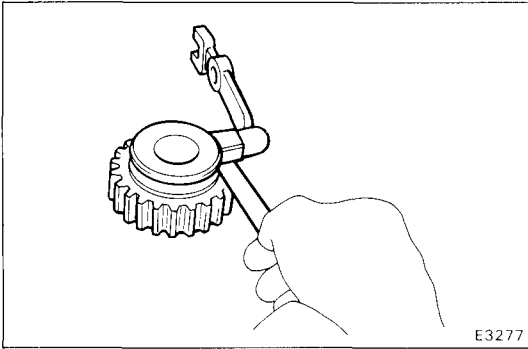
1. MEASURE REVERSE IDLER GEAR OIL CLEARANCE

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

Standard clearance: 0.041 — 0.074 mm
(0.0016 — 0.0029 in.)

Maximum clearance: 0.194 mm (0.0076 in.)





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

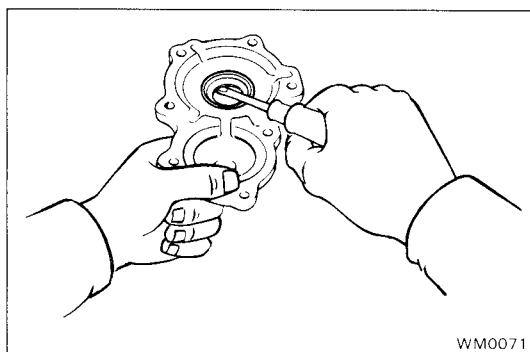
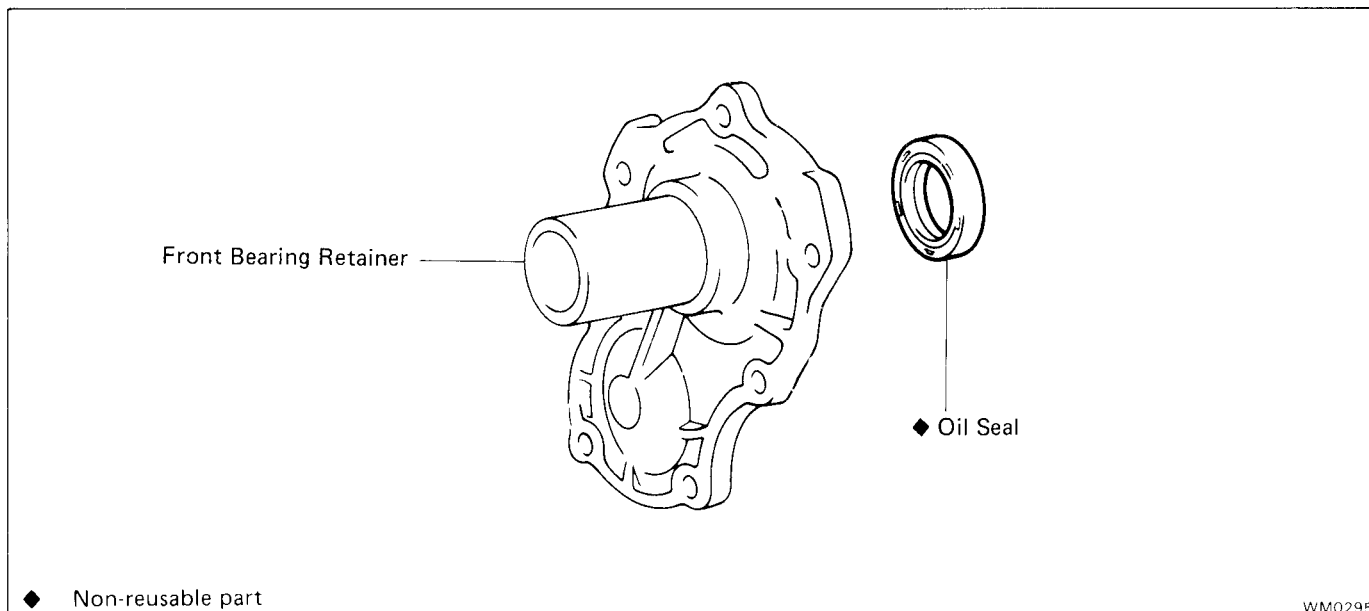
Using a feeler gauge, measure the clearance between the reverse idler gear and shift arm shoe.

Standard clearance: 0.20 – 0.41 mm
(0.008 – 0.0161 in.)

Maximum clearance: 0.9 mm (0.0354 in.)

Front Bearing Retainer

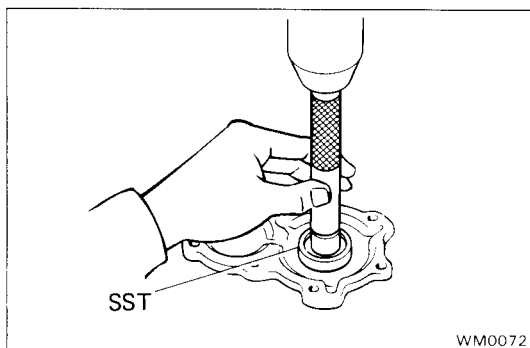
COMPONENTS



REPLACEMENT OF OIL SEAL

IF NECESSARY, REPLACE FRONT BEARING RETAINER OIL SEAL

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



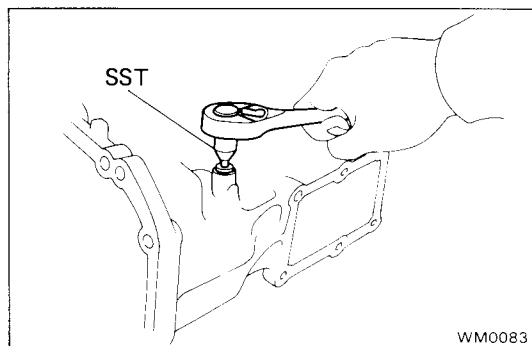
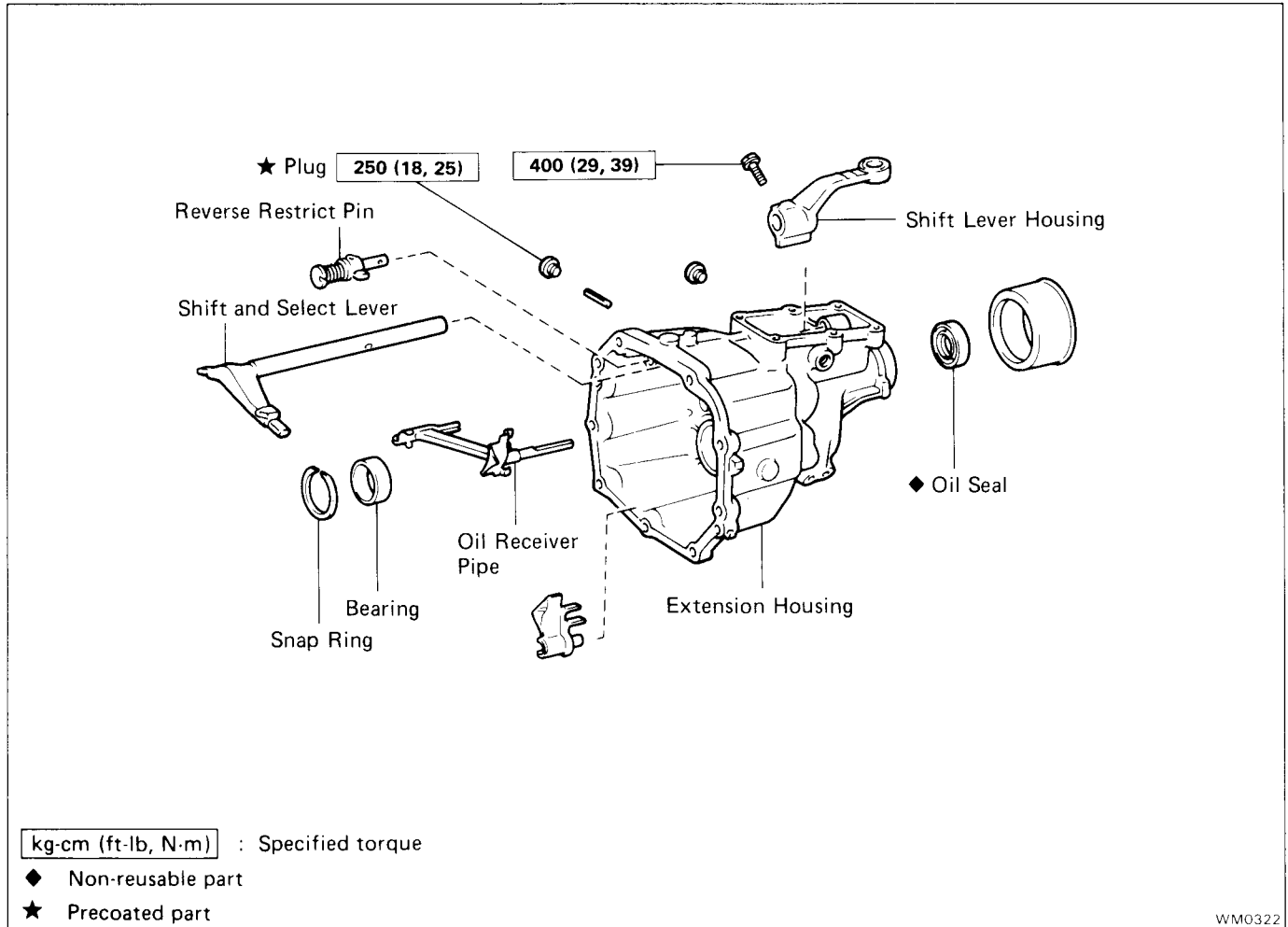
- (b) Using SST, press in a new oil seal.

SST 09608-20012 (09608-03020, 09608-00080)

Drive in depth: 11.4 — 12.0 mm from retainer end
(0.449 — 0.472 in.)

Extension Housing

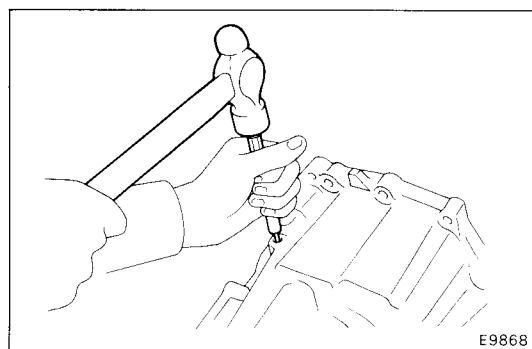
COMPONENTS



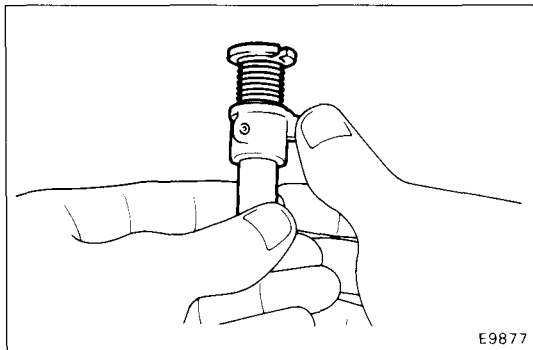
REPLACEMENT OF REVERSE RESTRICT PIN

1. REMOVE REVERSE RESTRICT PIN

- (a) Using SST, remove the screw plug.
SST 09313-30021

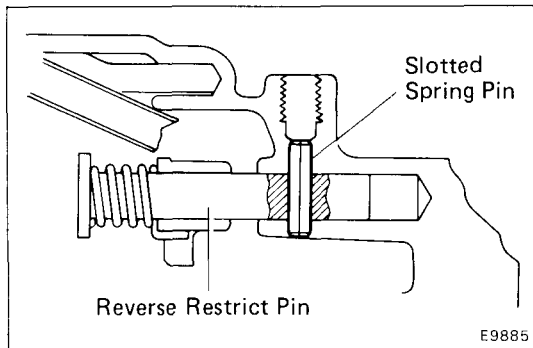


- (b) Using a pin punch and hammer, drive out the slotted spring pin.
- (c) Pull off the lever housing and slide out the shaft.



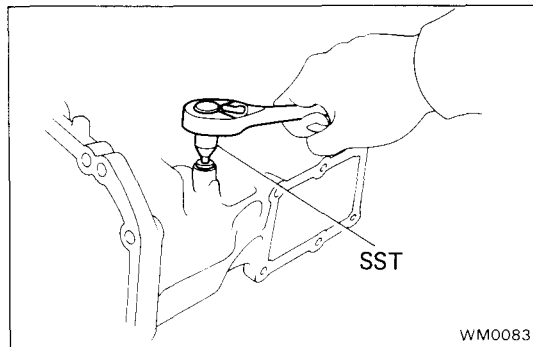
2. INSPECT REVERSE RESTRICT PIN

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



3. INSTALL REVERSE RESTRICT PIN

- (a) Install the lever housing.
- (b) Using a pin punch and hammer, drive in the slotted spring pin as shown.

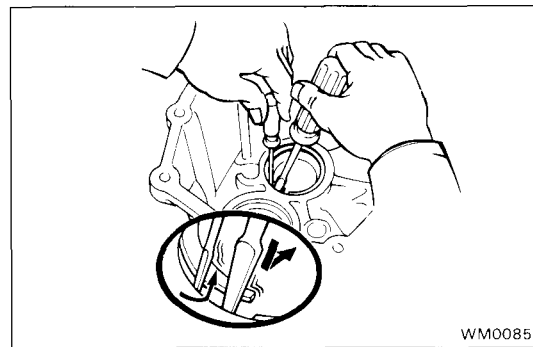


- (c) Apply liquid sealer to the plug.

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

- (d) Install and torque the screw plug.

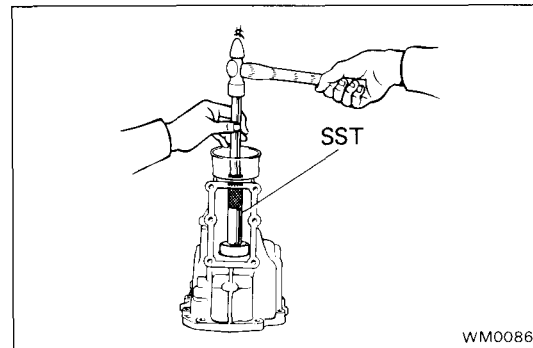
Torque: 250 kg-cm (18 ft-lb, 25 N·m)



REPLACEMENT OF BEARING

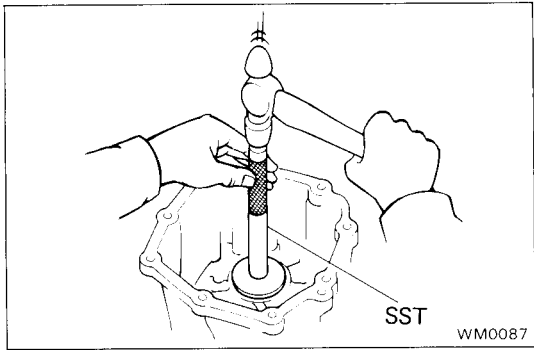
IF NECESSARY, REPLACE REAR BEARING OUTER RACE

- (a) Remove the outer race from the extension housing.
 - (1) Using two screwdrivers, remove the snap ring.

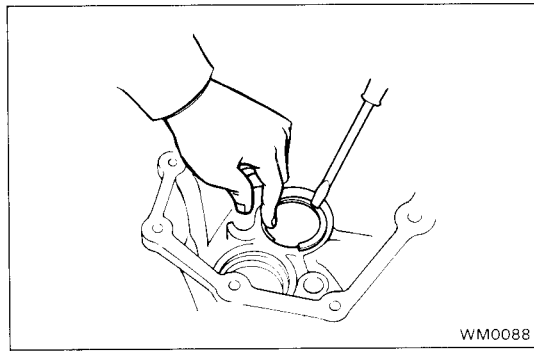


- (2) Using SST, tap out the outer race.

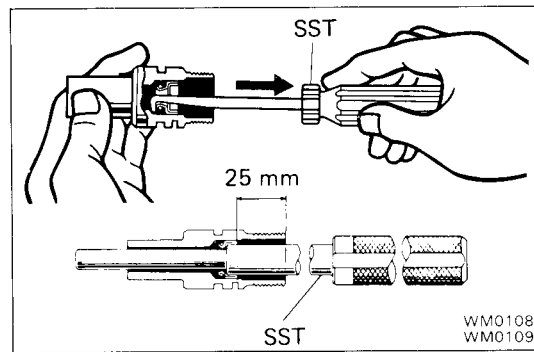
SST 09608-12010 (09608-00020, 09608-00050)



- (b) Install the bearing outer race.
 - (1) Using SST, install a new outer race.
- SST 09608-35014 (09608-06020, 09608-06100)



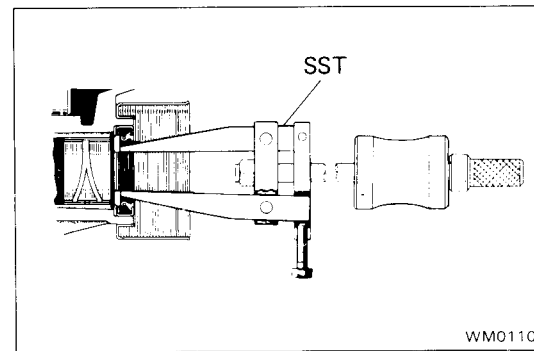
- (2) Install the snap ring.



REPLACEMENT OF OIL SEALS

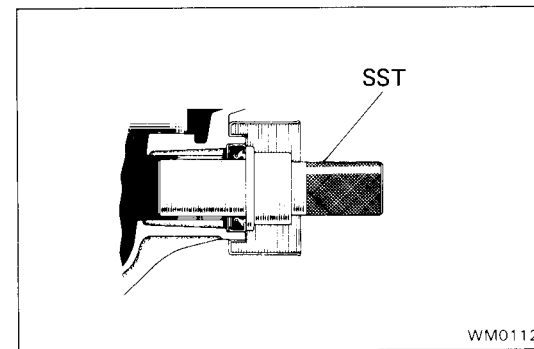
1. IF NECESSARY, REPLACE SPEEDOMETER GEAR OIL SEAL

- (a) Using SST, remove the oil seal.
- SST 09921-00010
- (b) Using SST, install a new oil seal.
- SST 09201-60011
- Oil seal depth: 25 mm (0.98 in.)**



2. IF NECESSARY, REPLACE OIL SEAL

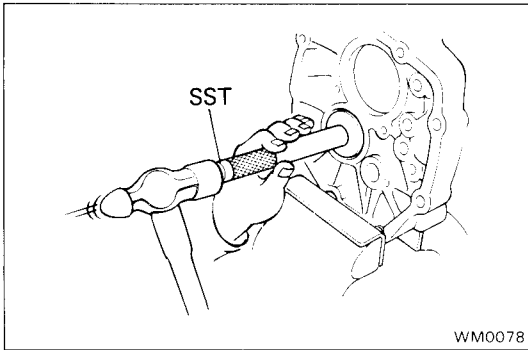
- (a) Using SST, remove the oil seal.
- SST 09308-00010 or
09308-10010 w/ output shaft installed



- (b) Using SST, drive in a new oil seal.
- SST 09325-20010

ASSEMBLY OF TRANSMISSION

(See pages MT-9, 10)

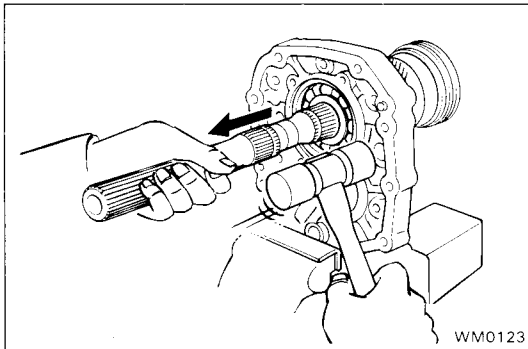


1. INSTALL OUTPUT SHAFT TO INTERMEDIATE PLATE

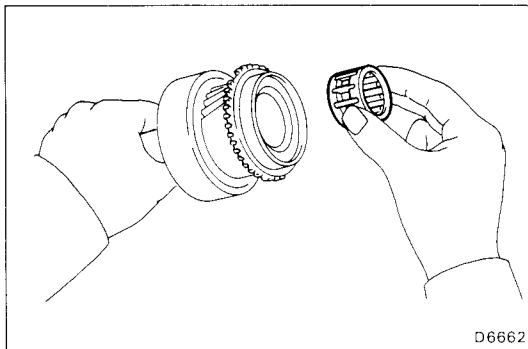
- (a) Before installing the output shaft, use SST to remove the counter gear center bearing outer race.

SST 09608-35014 (09608-06020, 09608-06090)

HINT: Install the outer race after installing the counter gear.

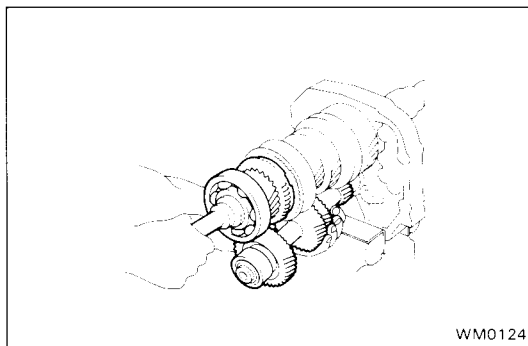


- (b) Install the output shaft into the intermediate plate by pulling on the output shaft and tapping on the intermediate plate.

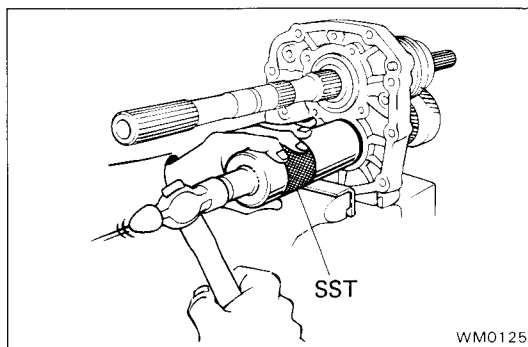


2. INSTALL INPUT SHAFT AND COUNTER GEAR

- (a) Apply gear oil to the needle roller bearing.
 (b) Install needle roller bearing to the input shaft.



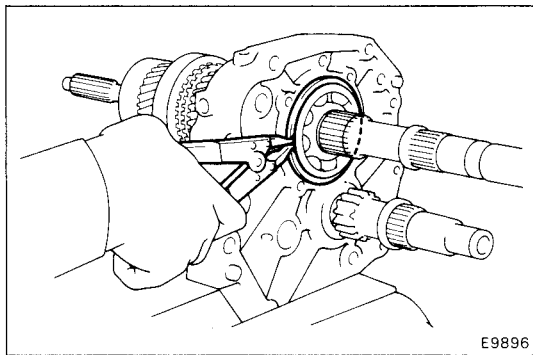
- (c) Install the input shaft and counter gear together.



- (d) Using SST, install the counter gear center bearing outer race.

SST 09316-60010 (09316-00010)

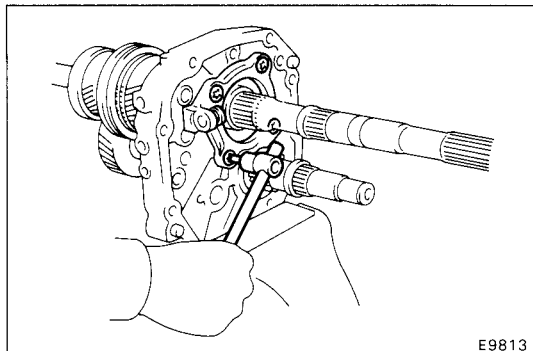
HINT: Be careful not to damage the bearing rollers.



E9896

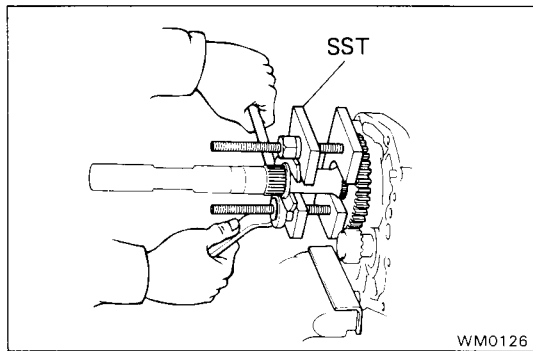
3. INSTALL BEARING RETAINER

(a) Using snap ring pliers, install the bearing snap ring.
HINT: Be sure the snap ring is flush with the intermediate plate surface.



E9813

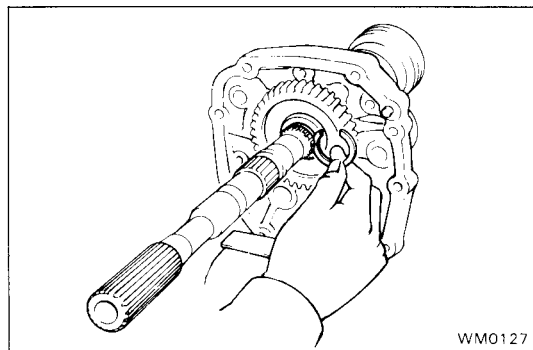
(b) Using a torx socket wrench, tighten the screws.
Torque: 130 kg-cm (9 ft-lb, 13 N·m)



WM0126

4. INSTALL REVERSE GEAR

Using SST, install the reverse gear.
SST 09312-20011



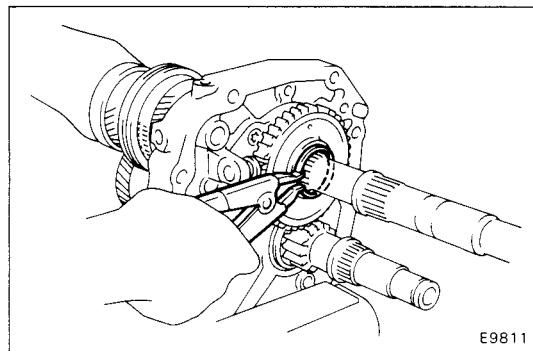
WM0127

5. INSTALL SNAP RING

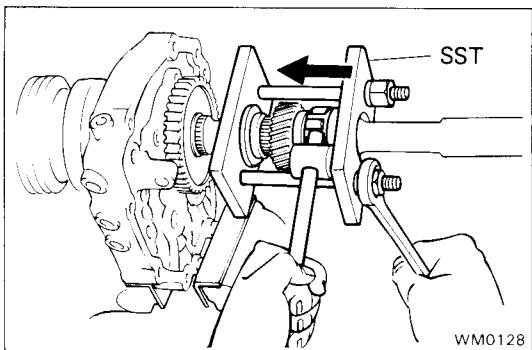
(a) Select a snap ring that will allow minimum axial play.

Mark	Thickness	mm (in.)	Mark	Thickness	mm (in.)
5	2.25 – 2.30	(0.0886 – 0.0906)	17	2.61 – 2.66	(0.1028 – 0.1047)
11	2.30 – 2.35	(0.0906 – 0.0925)	18	2.67 – 2.72	(0.1051 – 0.1071)
12	2.35 – 2.40	(0.0925 – 0.0945)	19	2.73 – 2.78	(0.1075 – 0.1094)
13	2.40 – 2.45	(0.0945 – 0.0965)	20	2.79 – 2.84	(0.1098 – 0.1118)
14	2.45 – 2.50	(0.0965 – 0.0984)	21	2.85 – 2.90	(0.1122 – 0.1142)
15	2.50 – 2.55	(0.0984 – 0.1004)	22	2.91 – 2.96	(0.1146 – 0.1165)
16	2.55 – 2.60	(0.1004 – 0.1024)	23	2.97 – 3.02	(0.1169 – 0.1189)

(b) Using a snap ring pliers, install snap ring.

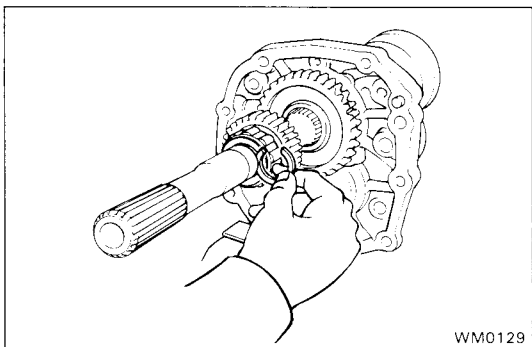


E9811



6. INSTALL FIFTH GEAR AND OUTPUT SHAFT REAR BEARING

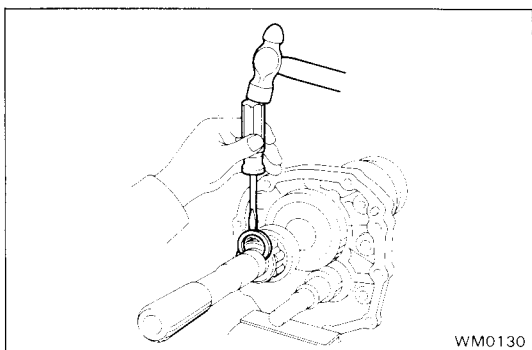
Using SST, install the 5th gear and rear bearing.
SST 09312-20011



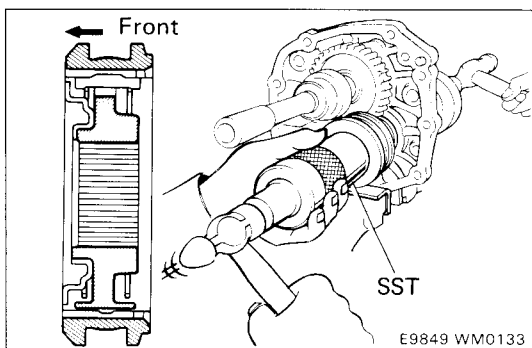
7. INSTALL SNAP RING

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

Mark	Thickness	mm (in.)	Mark	Thickness	mm (in.)
8	2.31 – 2.36	(0.0909 – 0.0929)	12	2.55 – 2.60	(0.1004 – 0.1024)
9	2.37 – 2.42	(0.0933 – 0.0953)	13	2.61 – 2.66	(0.1028 – 0.1047)
10	2.43 – 2.48	(0.0957 – 0.0976)	14	2.68 – 2.73	(0.1055 – 0.1075)
11	2.49 – 2.54	(0.0980 – 0.1000)	15	2.74 – 2.79	(0.1079 – 0.1098)



(b) Using a screw driver and hammer, install snap ring.

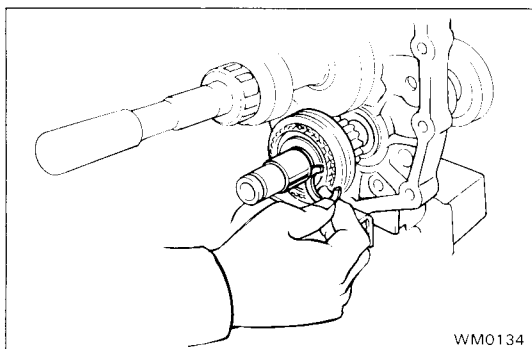


8. INSTALL NO.3 CLUTCH HUB

Using SST, drive in No.3 clutch hub.

SST 09316-60010 (09316-00010, 09316-00070)

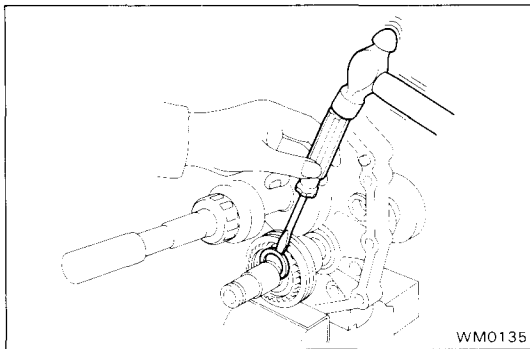
HINT: When installing the clutch hub, support the countershaft in front with a 3-5 lb hammer or equivalent.



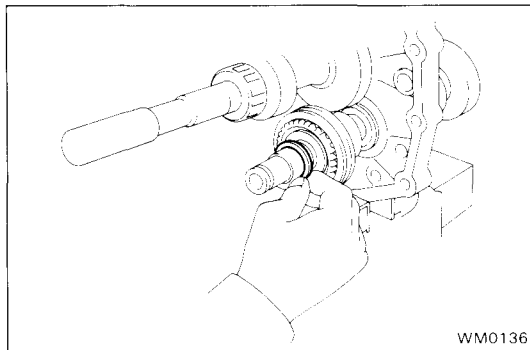
9. INSTALL SNAP RING

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

Mark	Thickness	mm (in.)
2	2.06 – 2.11	(0.0811 – 0.0831)
3	2.12 – 2.17	(0.0835 – 0.0854)
4	2.18 – 2.23	(0.0858 – 0.0878)
5	2.24 – 2.29	(0.0882 – 0.0902)

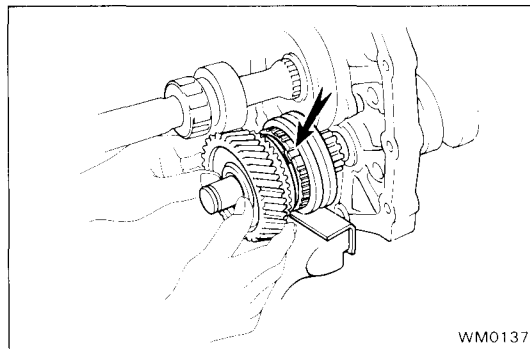


(b) Using a screwdriver and hammer, install snap ring.

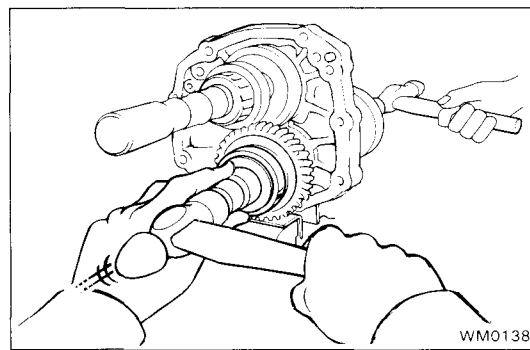


10. INSTALL SPACER, SYNCHRONIZER RING, NEEDLE ROLLER BEARING AND COUNTER FIFTH GEAR

- (a) Install the bearing spacer.
- (b) Apply gear oil to the needle roller bearings.
- (c) Assemble the counter 5th gear, synchronizer ring and needle roller bearings.



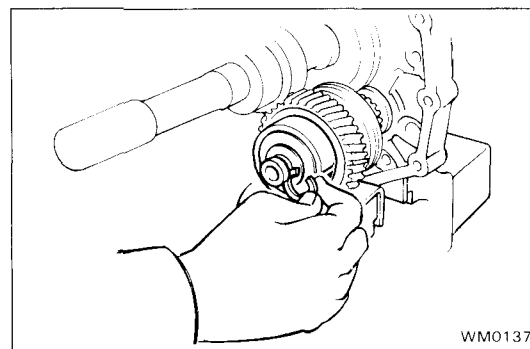
(d) Install the 5th gear assembly with the synchronizer ring slots aligned with the shifting keys.



11. INSTALL SPACER AND BEARING

- (a) Install the spacer.
- (b) Install the bearing with the ball shield toward the rear.
- (c) Using a hammer and socket wrench, drive in the bearing.

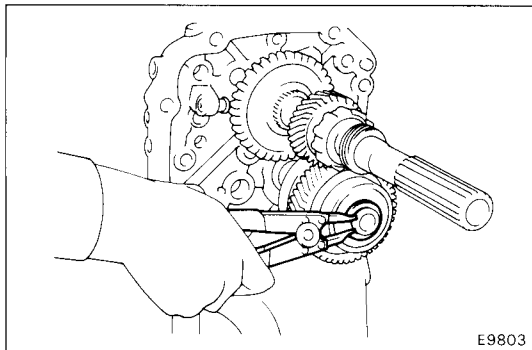
HINT: When driving in the bearing, support the counter-shaft in front with a 3-5 lb hammer or equivalent.



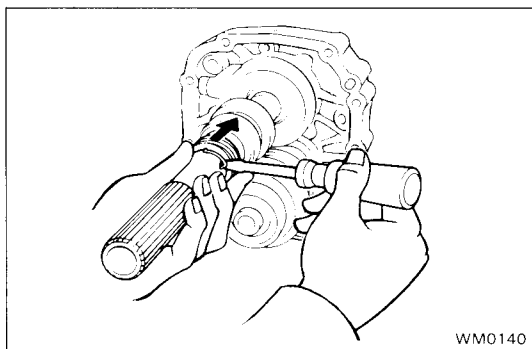
12. INSTALL SNAP RING

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

Mark	Thickness	mm (in.)	Mark	Thickness	mm (in.)
1	1.90 – 1.95	(0.0748 – 0.0768)	5	2.14 – 2.19	(0.0843 – 0.0862)
2	1.96 – 2.01	(0.0772 – 0.0791)	6	2.20 – 2.25	(0.0866 – 0.0886)
3	2.02 – 2.07	(0.0795 – 0.0815)	7	2.26 – 2.31	(0.0890 – 0.0909)
4	2.08 – 2.13	(0.0819 – 0.0839)			

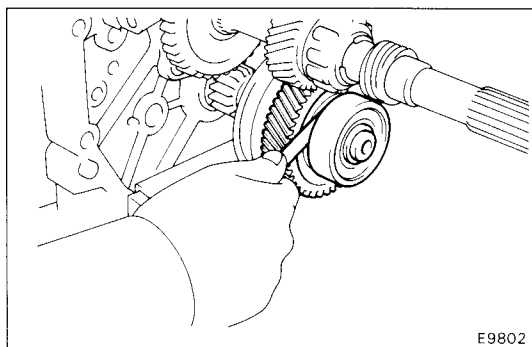


- (b) Using a snap ring pliers, install snap ring.



13. INSTALL SPEEDOMETER DRIVE GEAR

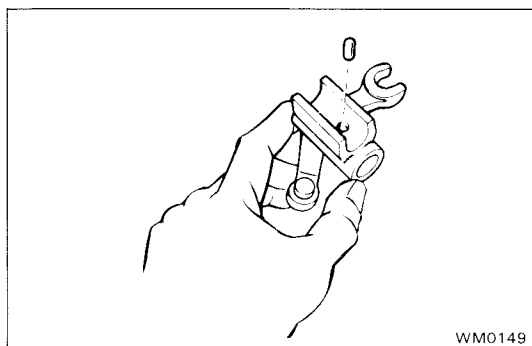
- (a) Put a clip on the output shaft and install the drive gear clip into the slot.
 (b) Slide the drive gear with clip and fit the clip into the holes.



14. MEASURE COUNTER FIFTH GEAR THRUST CLEARANCE

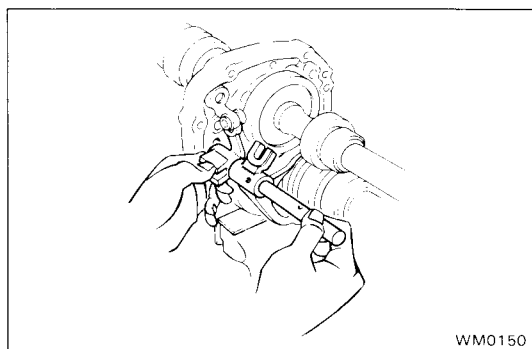
Using a feeler gauge, measure counter 5th gear thrust clearance.

Standard clearance: 0.10 – 0.41 mm
 (0.0039 – 0.0161 in.)



15. INSTALL SHIFT FORKS, SHIFT FORK SHAFTS AND REVERSE IDLER GEAR

- (a) Install the reverse idler gear and shaft.
 (b) Install No.3 shift fork, No.3 fork shaft and reverse shift arm.
- (1) Coat the pin with MP grease and insert it into the reverse shift head hole.

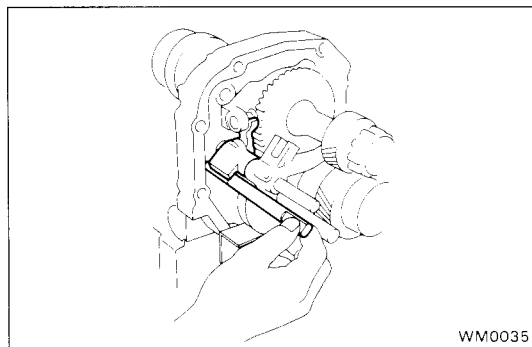


- (2) Insert No.3 shift fork shaft through No.3 shift fork and the reverse shift arm.
- (3) Align No.3 shift fork with the No.3 hub sleeve groove, put the reverse shift arm into the pivot of bearing retainer and align the reverse shift arm shoe with the reverse idler gear groove. Install No.3 shift fork shaft to the intermediate plate.



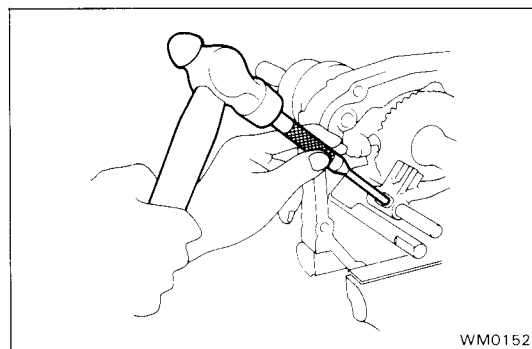
(c) Install No.4 shift fork shaft.

- (1) Push the pin, which was inserted into the reverse shift arm hole, into the groove of No.3 shift fork shaft.

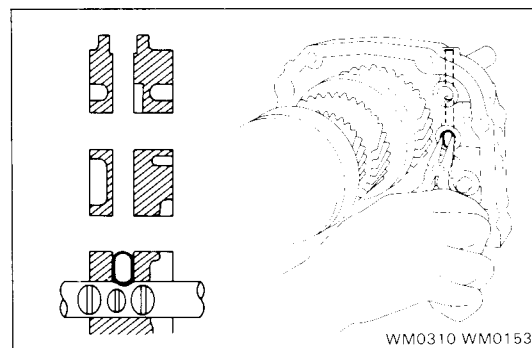


- (2) Insert No.3 shift fork shaft through No.3 shift fork and the reverse shift arm.

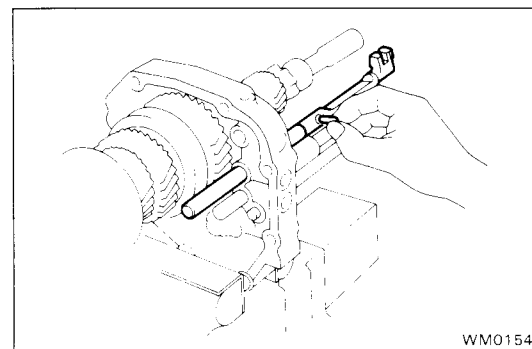
- (3) Align No.3 shift fork with the No.3 hub sleeve groove, put the reverse shift arm into the pivot of bearing retainer and align the reverse shift arm shoe with the reverse idler gear groove. Install No.3 shift fork shaft to the intermediate plate.



- (d) Using a pin punch and hammer, drive in the slotted spring pin until it is flush with the fork.

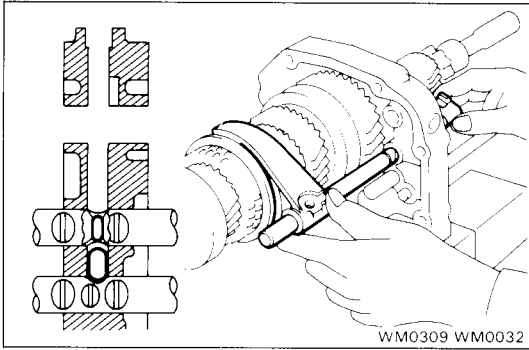


- (e) Apply MP grease No.3 interlock pin and install the pin into the intermediate plate hole.

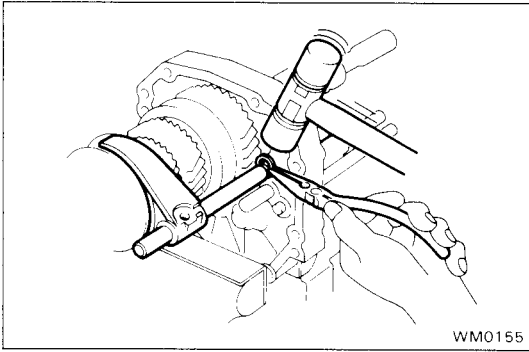


(f) Install No.2 shift fork and fork shaft.

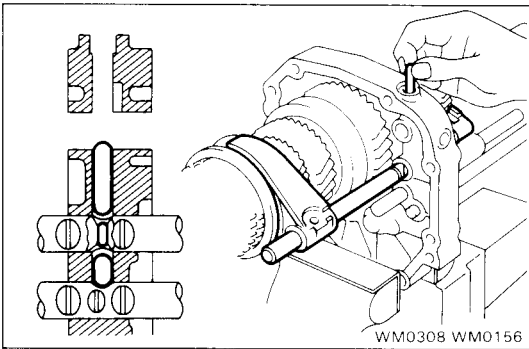
- (1) Apply MP grease to No.2 interlock pin and install the pin into the shaft hole.



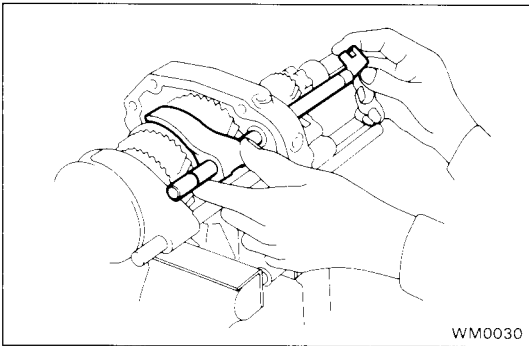
- (2) Place No.2 shift fork into the groove of No.2 hub sleeve.
- (3) Install No.2 fork shaft to the shift fork through the intermediate plate.



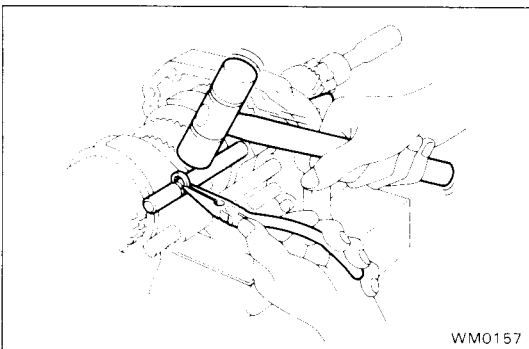
- (g) Install the snap ring of No.2 fork shaft.



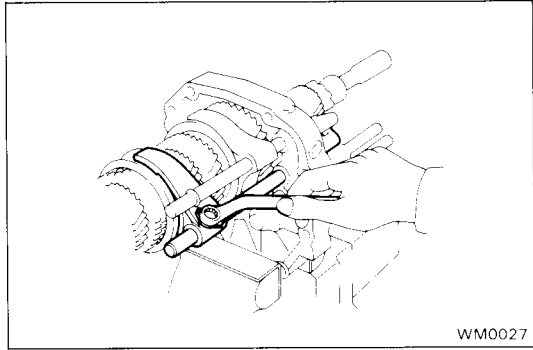
- (h) Apply MP grease to No.1 interlock pin and install the pin into the intermediate plate.



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

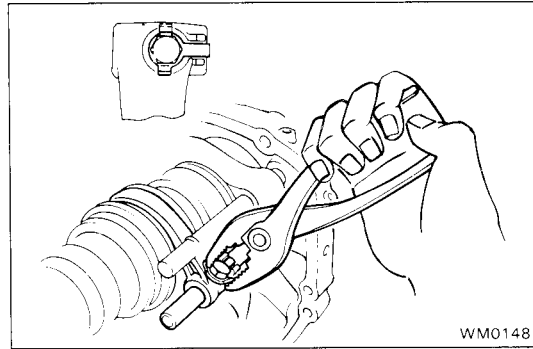


- (j) Install the snap ring of No.1 fork shaft.

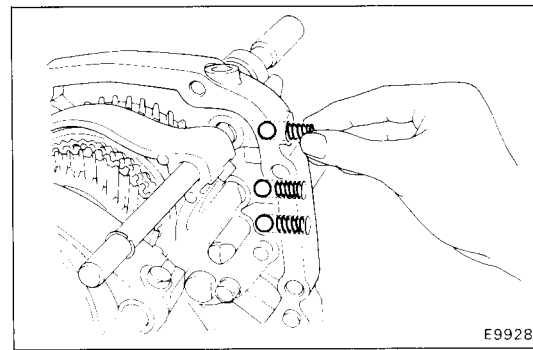


- (k) Install the No.1 and No.2 shift fork set bolts with lock washers.

Torque: 125 kg-cm (9 ft-lb, 12 N·m)

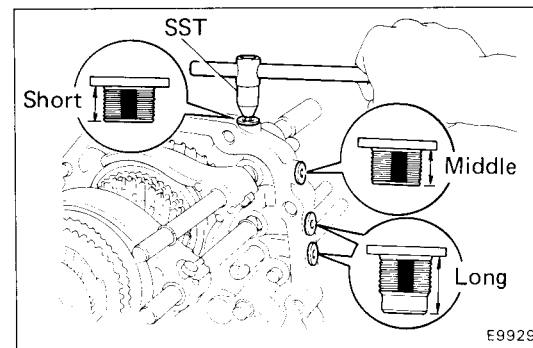


- (l) Using pliers, stake the bolts with lock washers.



16. INSTALL LOCKING BALL AND SPRING

- (a) Install the balls and spring into each hole.



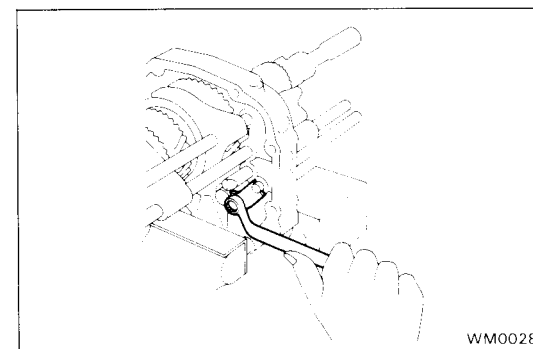
- (b) Apply liquid sealer to the plug threads.

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

- (c) Using SST, tighten the four plugs.

SST 09313-30021

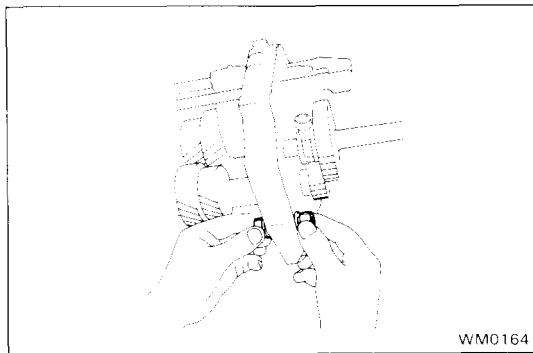
Torque: 250 kg-cm (18 ft-lb, 25 N·m)



17. INSTALL REVERSE IDLER GEAR SHAFT STOPPER

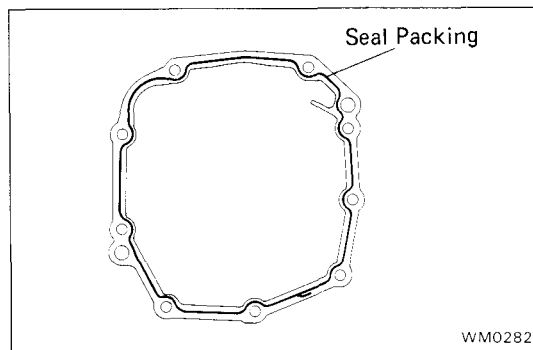
Install the reverse idler gear shaft stopper and tighten the bolt.

Torque: 250 kg-cm (18 ft-lb, 25 N·m)



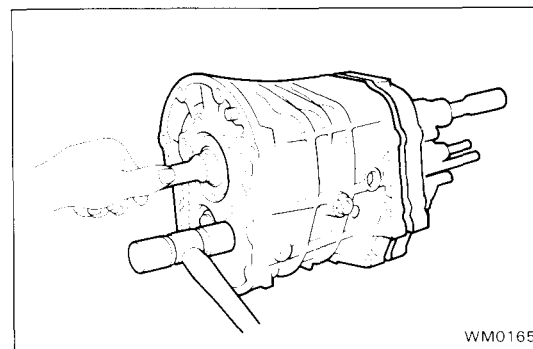
18. DISMOUNT INTERMEDIATE PLATE FROM VISE

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

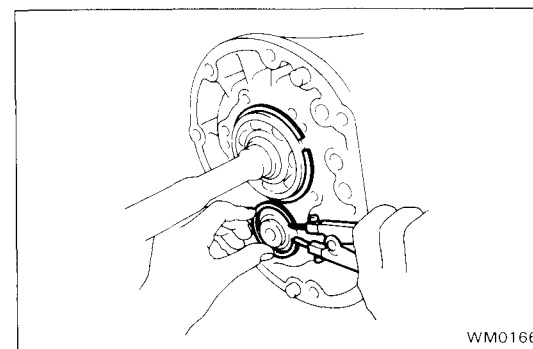


19. INSTALL TRANSMISSION CASE TO INTERMEDIATE PLATE

- (a) Apply seal packing to the transmission case as shown.
Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent

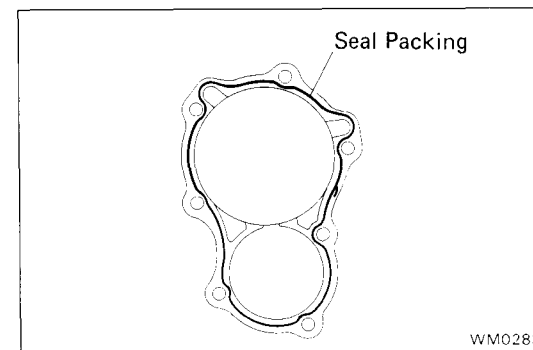


- (a) Align each bearing outer race and each shift fork shaft end with the case holes.
- (b) Using a plastic hammer, tap on the case to install it.



20. INSTALL BEARING SNAP RINGS

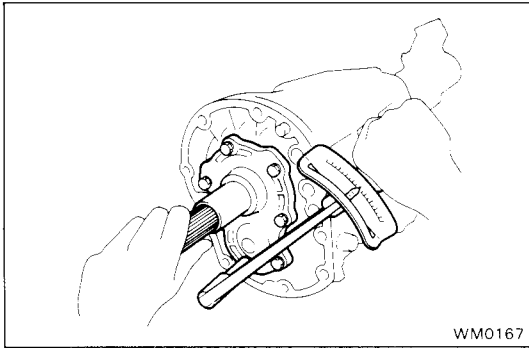
Using snap ring pliers, install the two snap rings.



21. INSTALL FRONT BEARING RETAINER

- (a) Apply seal packing to the retainer as shown, and install it to the transmission case.

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

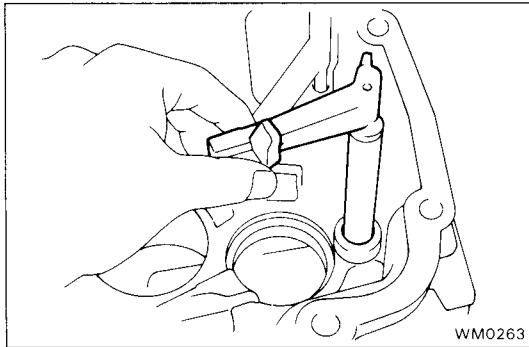


(b) Apply liquid sealer to the bolt threads.

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

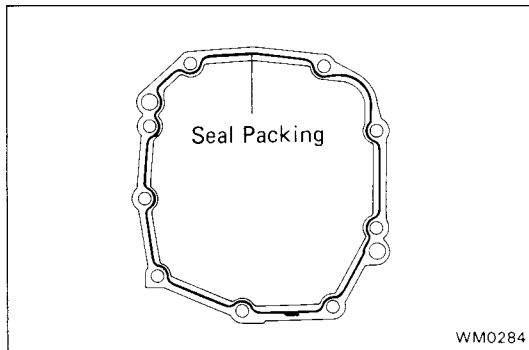
(c) Install and torque the bolts.

Torque: 250 kg-cm (18 ft-lb, 25 N·m)



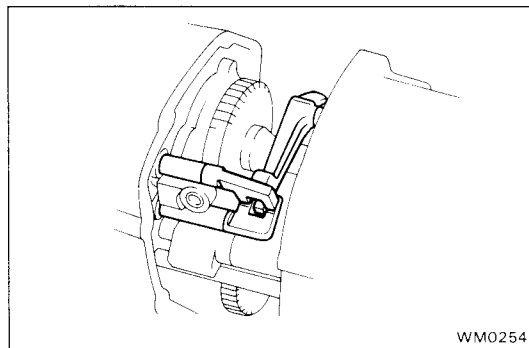
22. INSTALL EXTENSION HOUSING

(a) Insert shift and select lever into the extension housing.

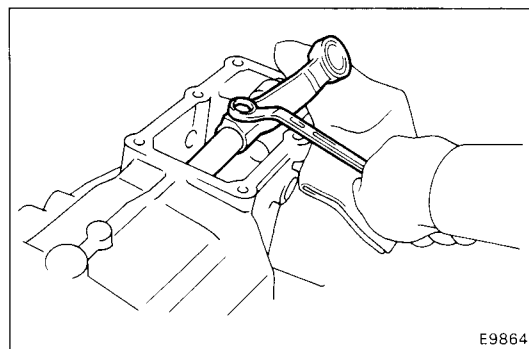


(b) Apply seal packing to the extension housing.

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



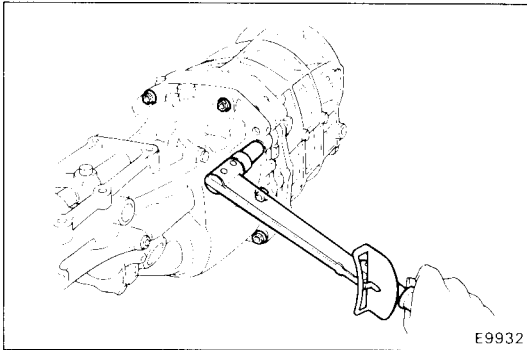
(c) Connect the shift and select lever to the shift fork shaft.



(d) Install shift lever housing to shift and select lever shaft, push in the extension housing.

(e) Install and torque the bolt.

Torque: 400 kg-cm (29 ft-lb, 39 N·m)



(f) Install nine bolts to the extension housing.

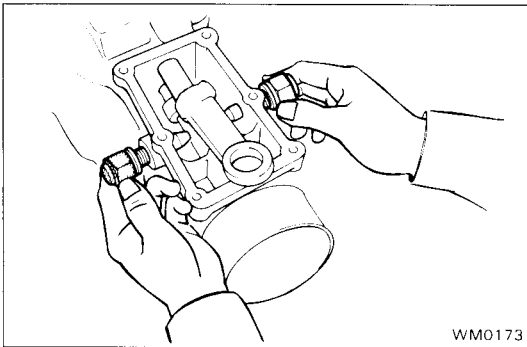
(g) Torque the bolts.

Torque: 375 kg-cm (27 ft-lb, 37 N·m)

23. AFTER INSTALLING EXTENSION HOUSING, CHECK FOLLOWING ITEMS:

(a) Check to see that input shaft and output shaft rotate smoothly.

(b) Check to see that shifting can be made smoothly to all positions.



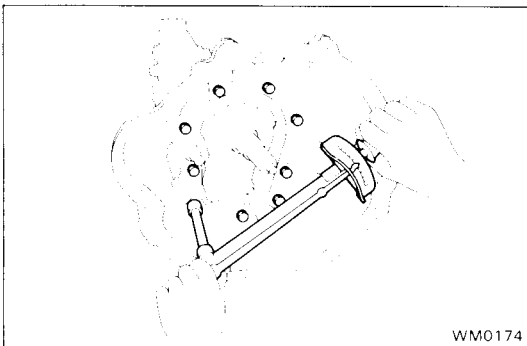
24. INSTALL RESTRICT PINS

(a) Install the restrict pins together with a gasket.

HINT: Install the black pin on the reverse gear/5th gear side.

(b) Torque the restrict pins.

Torque: 410 kg-cm (30 ft-lb, 40 N·m)

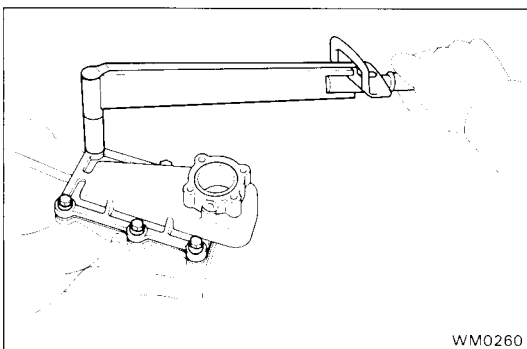


25. INSTALL CLUTCH HOUSING

(a) Install the clutch housing.

(b) Install and torque the nine bolts.

Torque: 375 kg-cm (27 ft-lb, 37 N·m)



26. INSTALL SHIFT LEVER RETAINER

(a) Install the shift lever retainer with a oil baffle.

(b) Install and torque the six bolts.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)

27. INSTALL SPEEDOMETER DRIVEN GEAR

- (a) Install the speedometer driven gear.
- (b) Install the bolt with lock plate.
- (c) Torque the bolt.

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

28. INSTALL BACK-UP LIGHT SWITCH

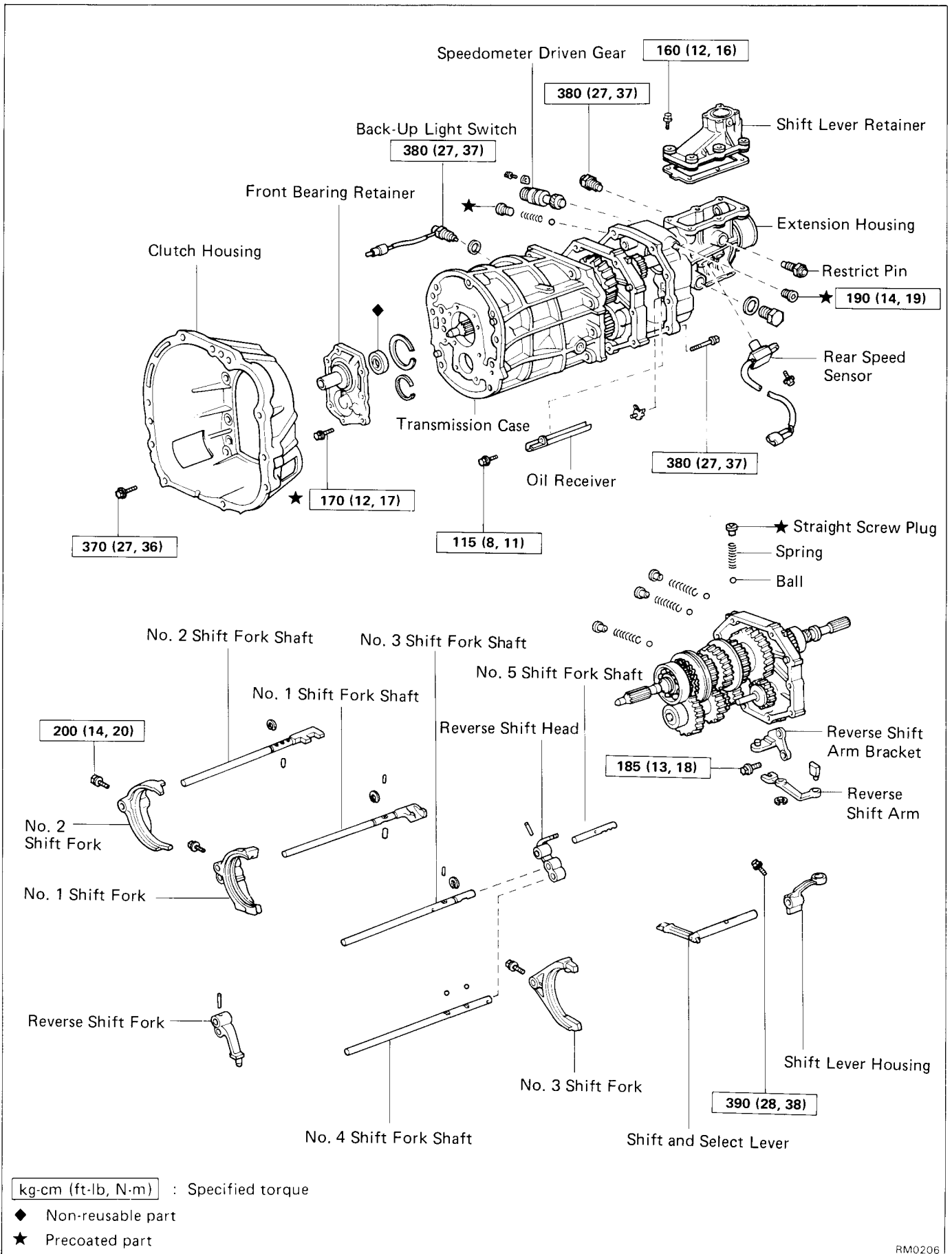
- (a) Install and torque the back-up light switch.

Torque: 410 kg-cm (30 ft-lb, 40 N·m)

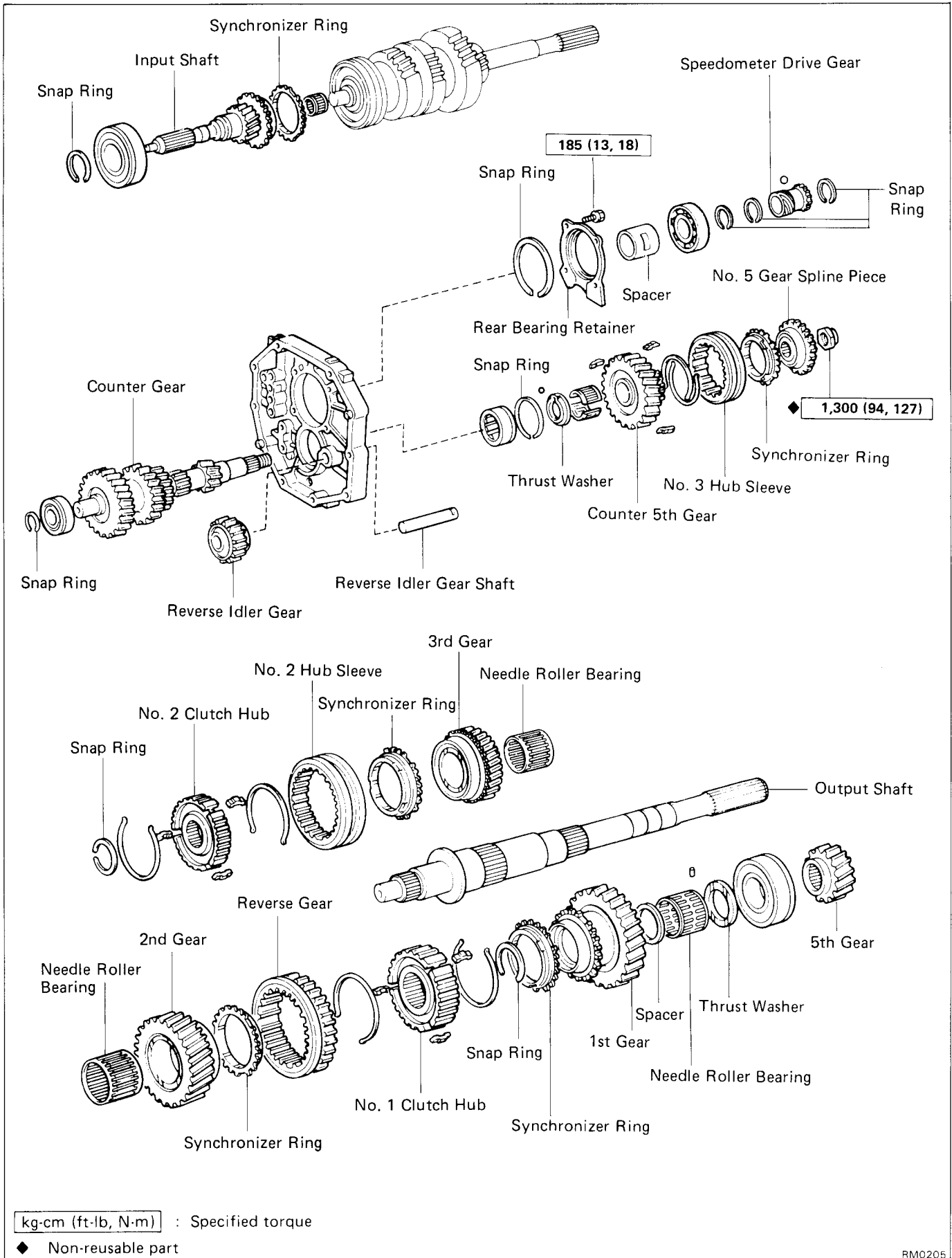
- (b) Install the wire clamp.

29. INSTALL REAR SPEED SENSOR (w/ A.B.S.)

Components (R154 Transmission)



Components (Cont'd)

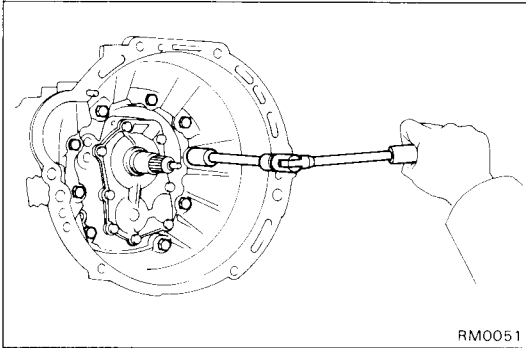


kg-cm (ft-lb, N-m) : Specified torque

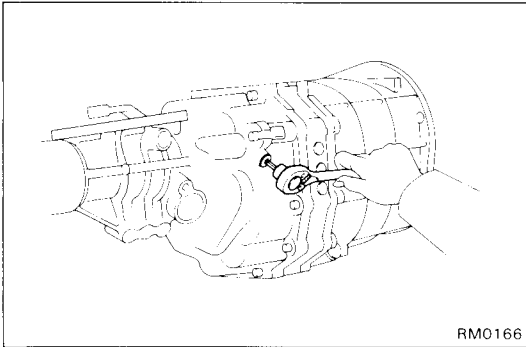
◆ Non-reusable part

DISASSEMBLY OF TRANSMISSION

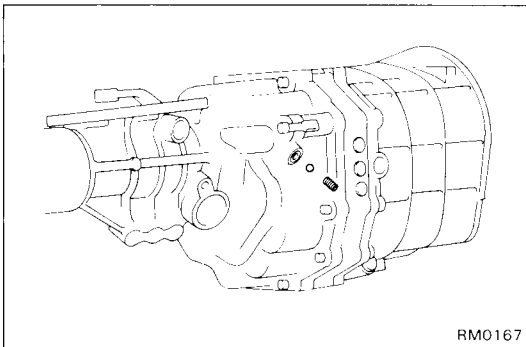
(See pages MT-49, 50)



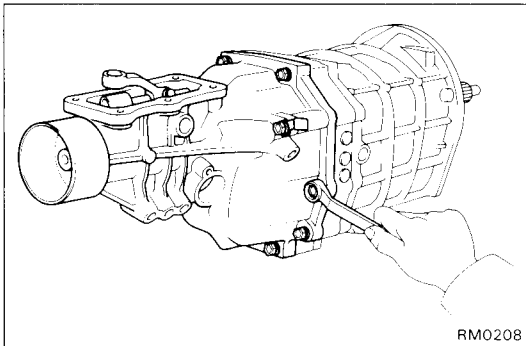
1. REMOVE RELEASE FORK AND BEARING
2. REMOVE BACK-UP LIGHT SWITCH, SPEEDOMETER DRIVEN GEAR, SHIFT LEVER RETAINER, REAR SPEED SENSOR (w/ A.B.S.) AND RESTRICT PINS
3. REMOVE CLUTCH HOUSING FROM TRANSMISSION CASE



4. REMOVE STRAIGHT SCREW PLUG, SPRING AND BALL
 - (a) Using a torx socket wrench, remove the screw plug from the transfer adaptor.

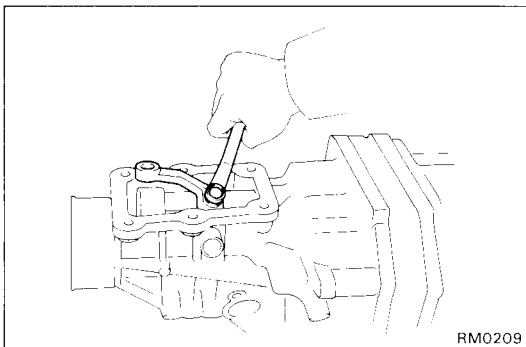


- (b) Using a magnetic finger, remove the spring and ball.

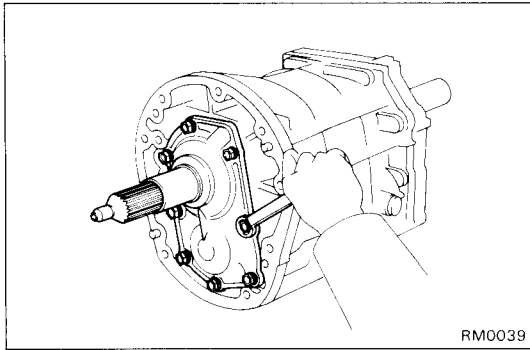


5. REMOVE EXTENSION HOUSING

- (a) Remove the ten bolts.

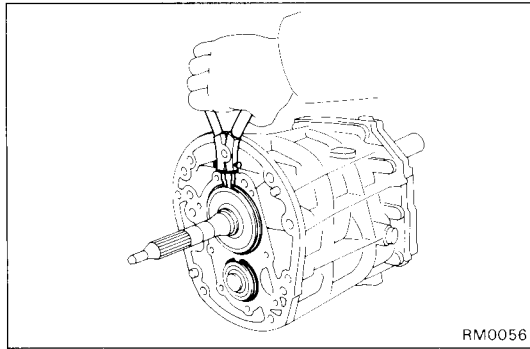


- (b) Remove the shift lever housing set bolt.
- (c) Using a plastic hammer, tap the extension housing and remove the shift lever housing and shift and select lever.



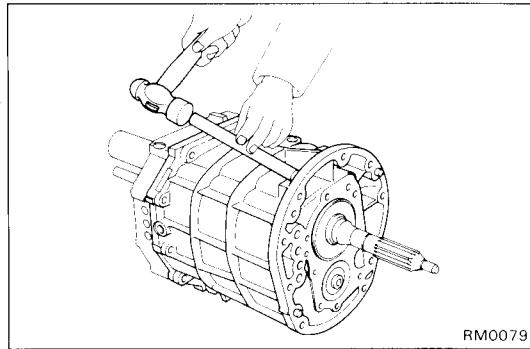
6. REMOVE FRONT BEARING RETAINER

- (a) Remove the eight bolts.
- (b) Using a plastic hammer, tap the front bearing retainer.



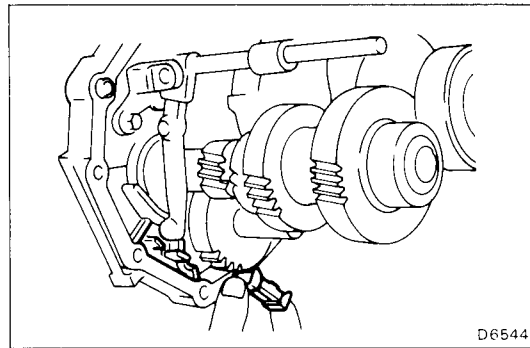
7. REMOVE BEARING SNAP RINGS

Using snap ring pliers, remove the two snap rings.

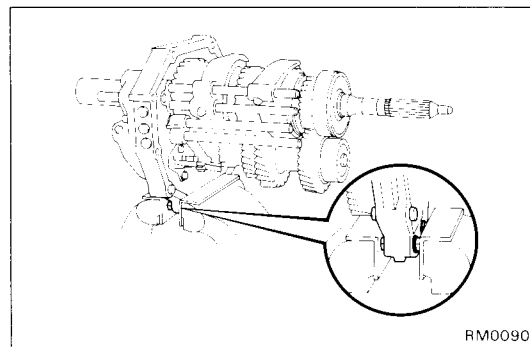


8. SEPARATE INTERMEDIATE PLATE FROM TRANSMISSION CASE

- (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

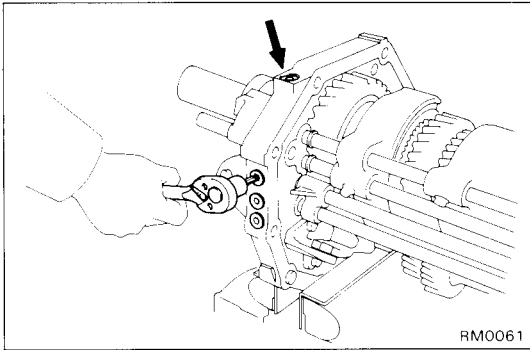


10. MOUNT INTERMEDIATE PLATE IN VISE

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

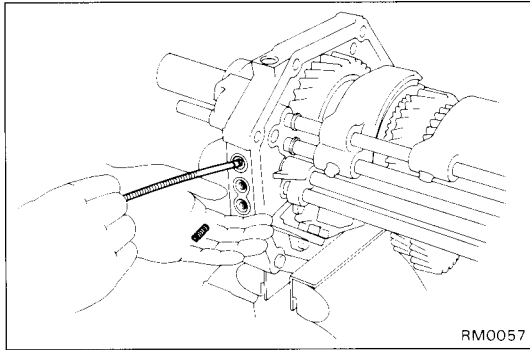
NOTICE: Install the plate washers in reverse of normal. Increase or decrease plate washers so that the bolt tip and front tip surface of the nut are aligned.

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

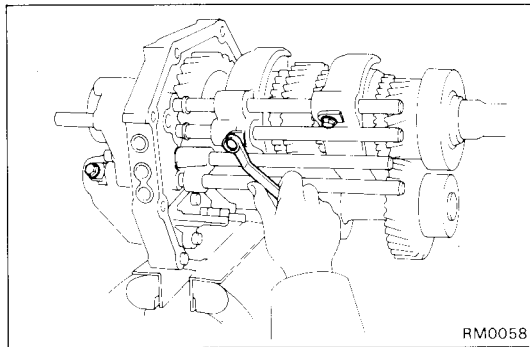


11. REMOVE STRAIGHT SCREW PLUGS, LOCKING BALLS AND SPRINGS

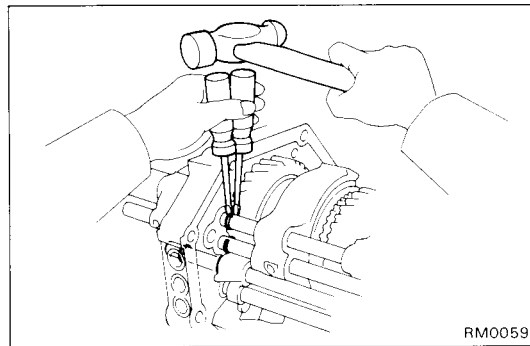
(a) Using a torx socket wrench, remove the four plugs.



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

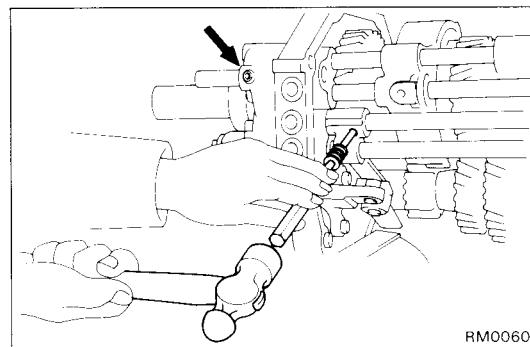


12. REMOVE SHIFT FORK SET BOLTS



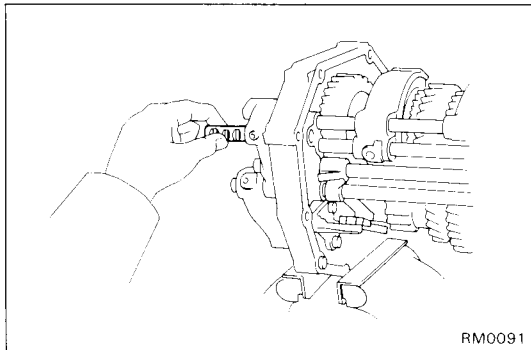
13. REMOVE SNAP RINGS

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

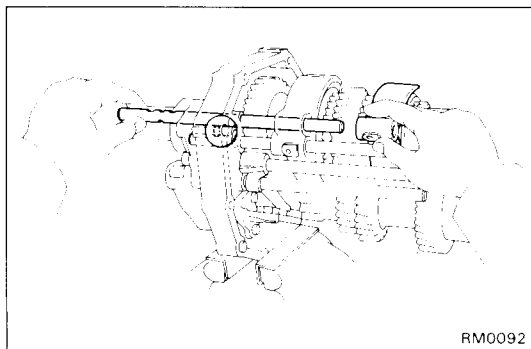


14. REMOVE SLOTTED SPRING PINS

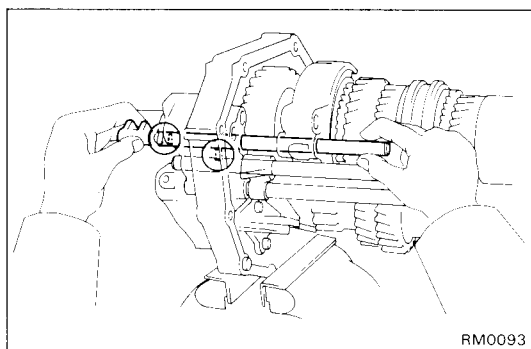
Using a pin punch and hammer, drive out the two pins.

**15. REMOVE NO.5 SHIFT FORK SHAFT**

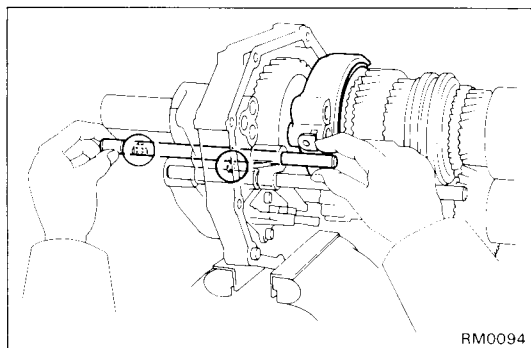
Pull out No.5 shift fork shaft from the intermediate plate.

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

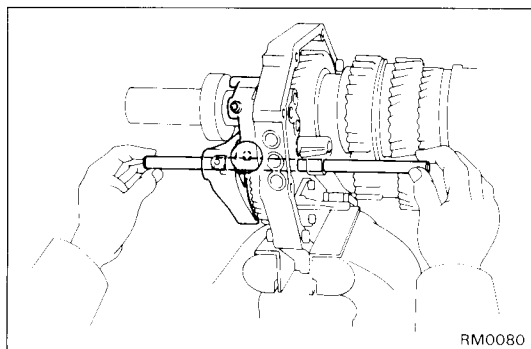
- (a) Pull out No.2 shift fork shaft from the intermediate plate.
- (b) Remove No.2 shift fork.
- (c) Using a magnetic finger, remove the interlock pin from the intermediate plate.

**17. REMOVE NO.1 SHIFT FORK SHAFT**

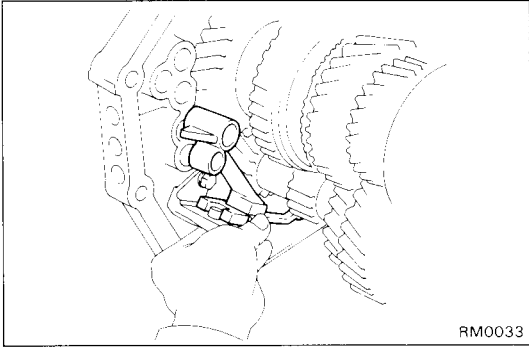
- (a) Pull out No.1 shift fork shaft from the intermediate plate.
- (b) Using a magnetic finger, remove the interlock pins from the shaft hole and intermediate plate.

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

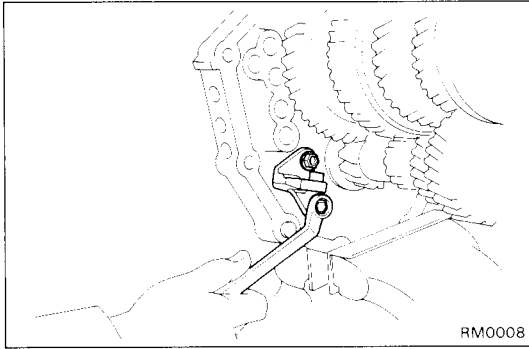
- (a) Pull out No.3 shift fork shaft from the intermediate plate.
- (b) Remove No.1 shift fork.
- (c) Using a magnetic finger, remove the interlock pin and locking ball from the shaft hole and intermediate plate.

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

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

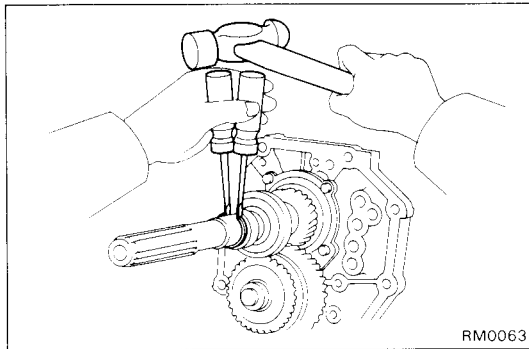


20. REMOVE REVERSE SHIFT ARM FROM REVERSE SHIFT ARM BRACKET



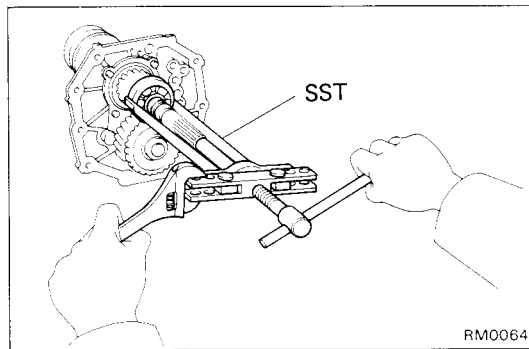
21. REMOVE REVERSE SHIFT ARM BRACKET

Remove the two bolts and the reverse shift arm bracket.



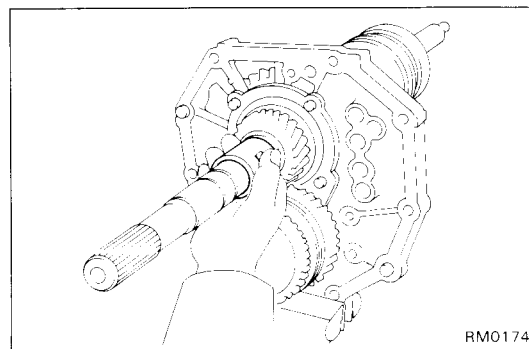
22. REMOVE SPEEDOMETER DRIVE GEAR

- (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.

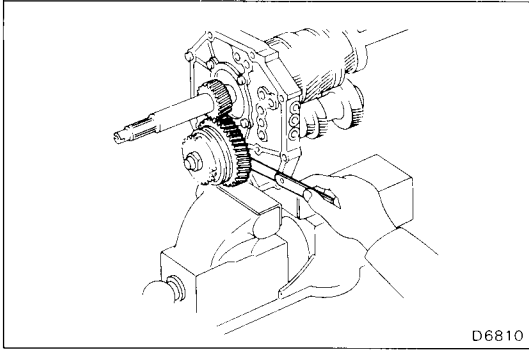


23. REMOVE OUTPUT SHAFT REAR BEARING

- (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

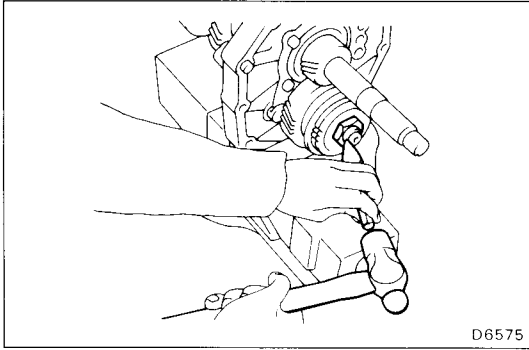


25. MEASURE COUNTER FIFTH GEAR THRUST CLEARANCE

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

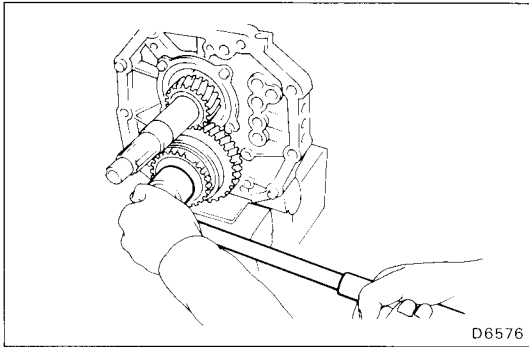
Standard clearance: 0.10 — 0.35 mm
(0.0039 — 0.0138 in.)

Maximum clearance: 0.40 mm (0.0157 in.)

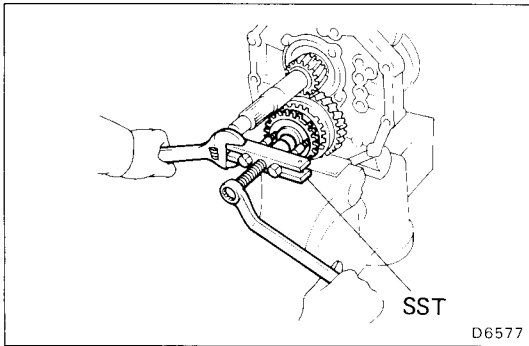


26. REMOVE NO.5 GEAR SPLINE PIECE, SYNCHRONIZER RING, NEEDLE ROLLER BEARING AND COUNTER FIFTH GEAR WITH NO.3 HUB SLEEVE

- (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.



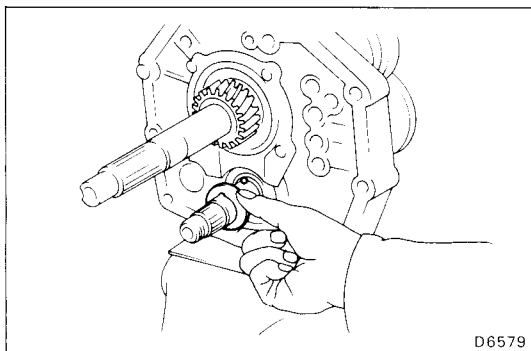
- (e) Using SST, remove No.5 gear spline piece.

SST 09213-31021

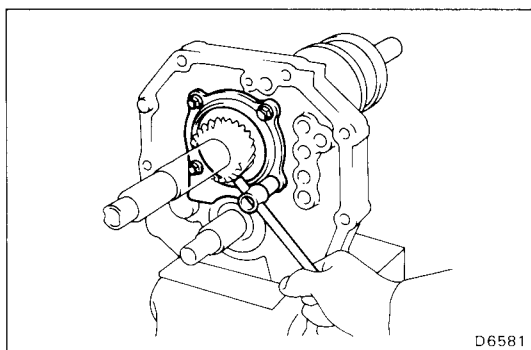
- (f) Remove the counter 5th gear with No.3 hub sleeve.

27. REMOVE SHIFTING KEYS AND SPRINGS FROM 5TH GEAR AND NO.3 HUB SLEEVE

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

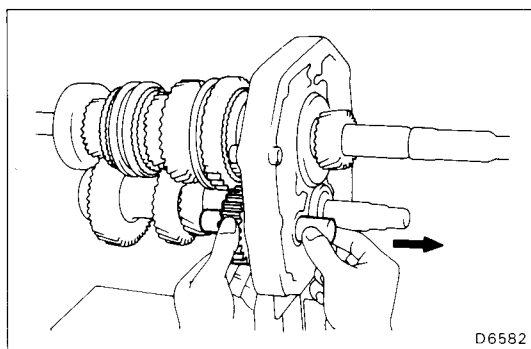


28. REMOVE THRUST WASHER AND BALL



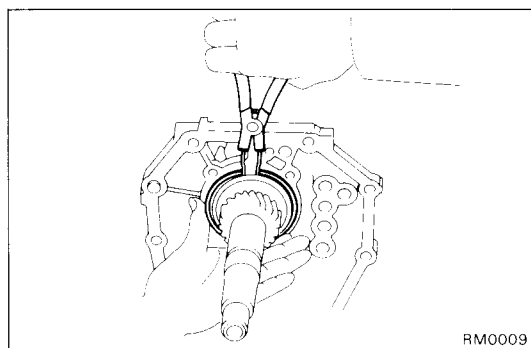
29. REMOVE REAR BEARING RETAINER

Remove the four bolts and rear bearing retainer.



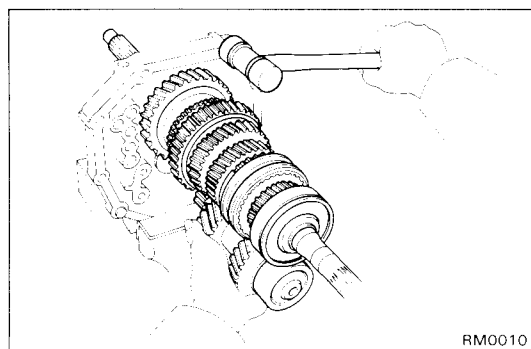
30. REMOVE REVERSE IDLER GEAR AND SHAFT

Pull out the shaft toward the rear.



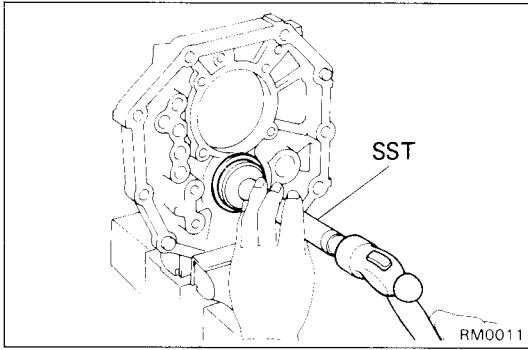
31. REMOVE BEARING SNAP RING

Using snap ring pliers, remove the snap ring.



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

- (a) 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.
- (b) Remove the input shaft with the needle roller bearing from the output shaft.



33. REMOVE COUNTER REAR BEARING FROM INTERMEDIATE PLATE

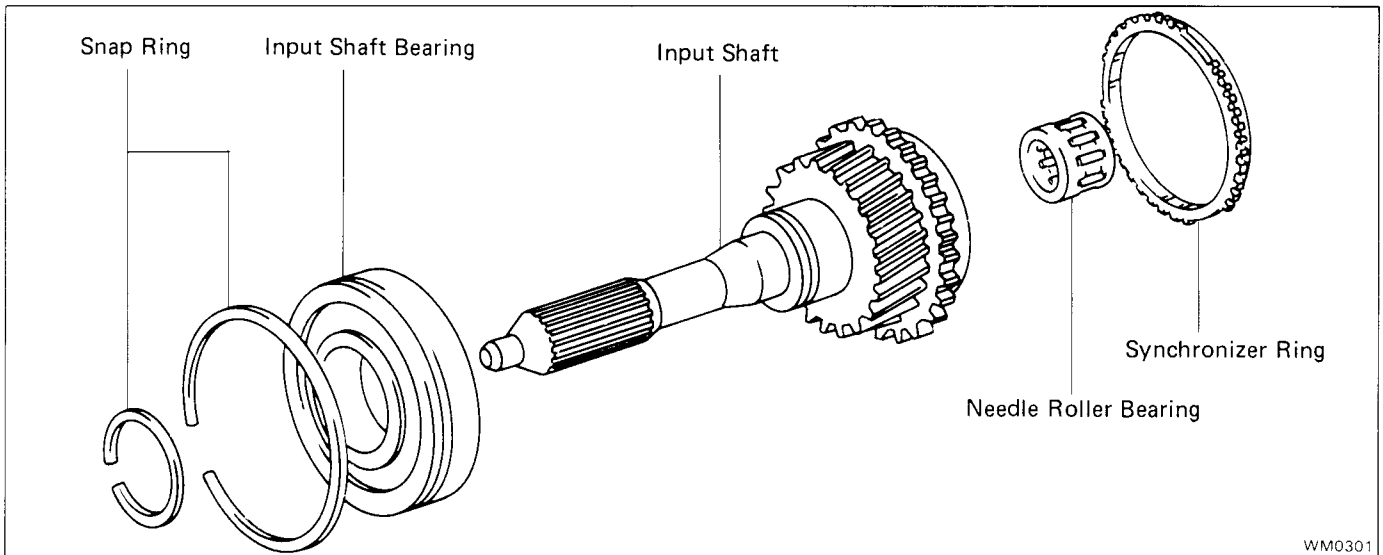
Using SST, remove the counter rear bearing.

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

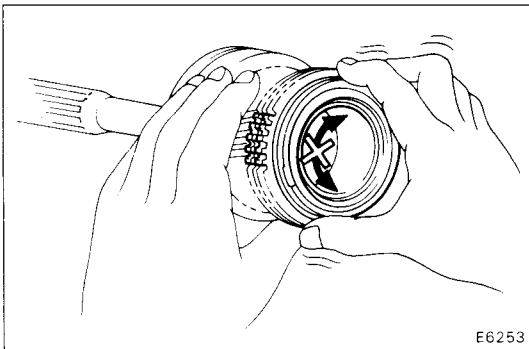
COMPONENT PARTS

Input Shaft Assembly

COMPONENTS



WM0301

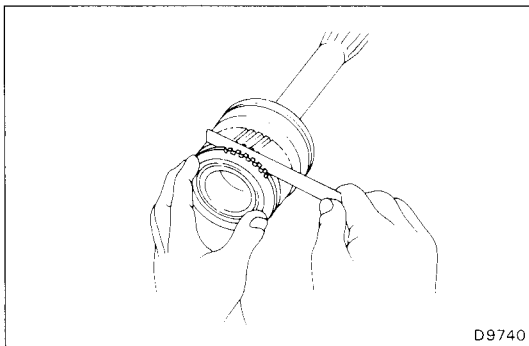


E6253

INSPECTION OF INPUT SHAFT

INSPECT SYNCHRONIZER RING

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



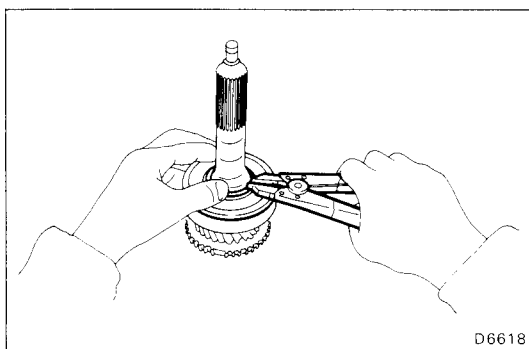
D9740

(b) 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 limit, replace the synchronizer ring.

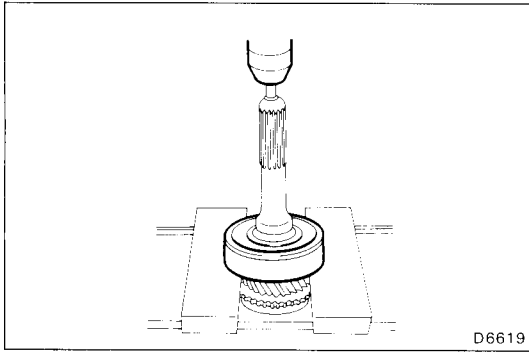


D6618

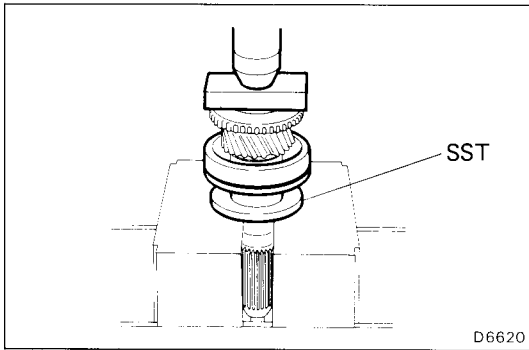
REPLACEMENT OF BEARING

IF NECESSARY, REPLACE INPUT SHAFT BEARING

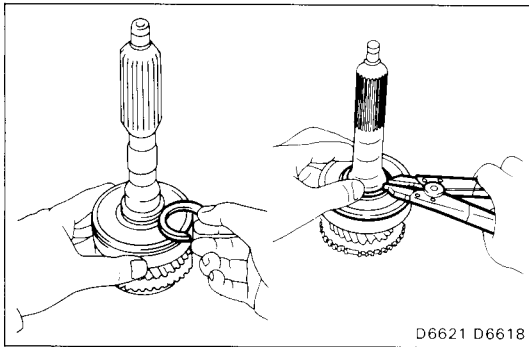
(a) Using snap ring pliers, remove the snap ring.



(b) Using a press, remove the bearing.



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

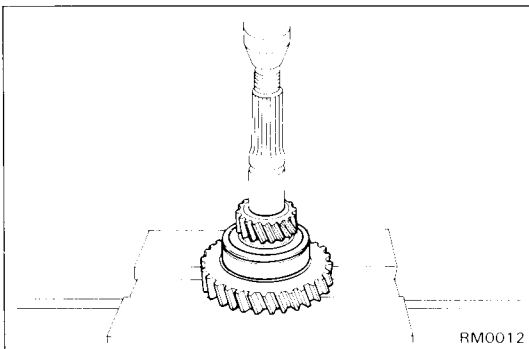
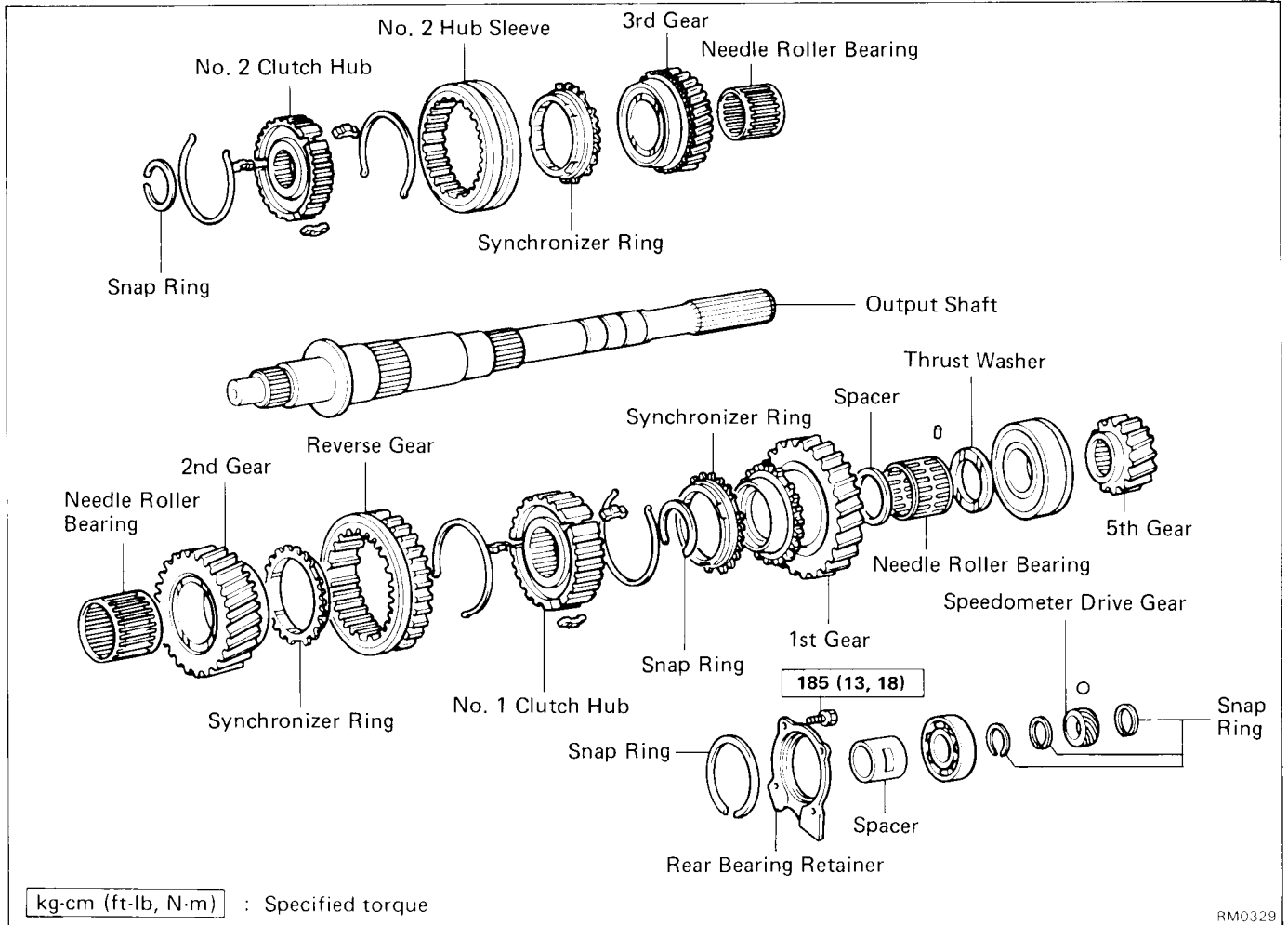


(d) Select a snap ring that will allow minimum axial play and install it on the shaft.

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

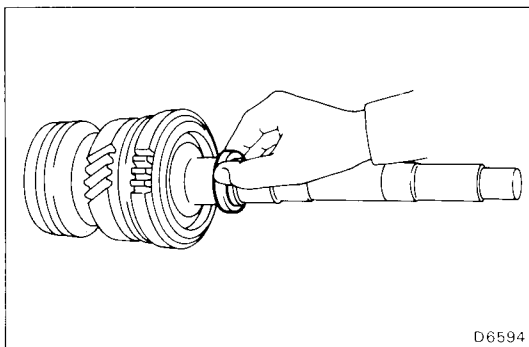
COMPONENTS

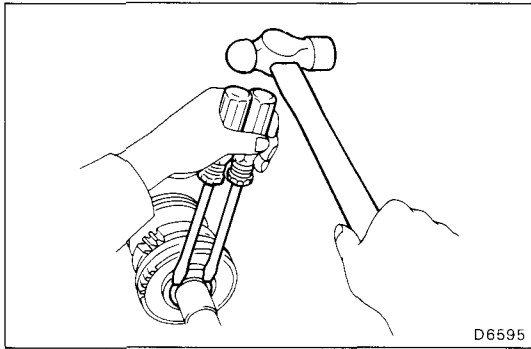


DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

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

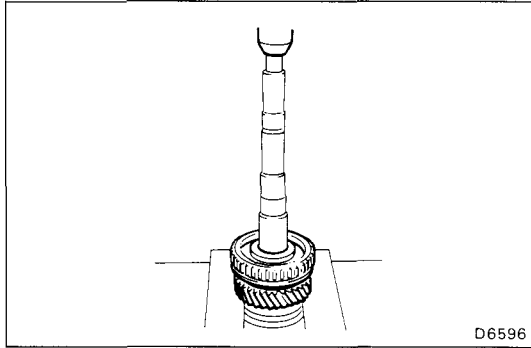
- (a) Using a press, remove the 5th gear, center bearing, thrust washer and 1st gear.
- (b) Remove the synchronizer ring.
- (c) Remove the straight pin and needle roller bearing.
- (d) Remove the spacer.





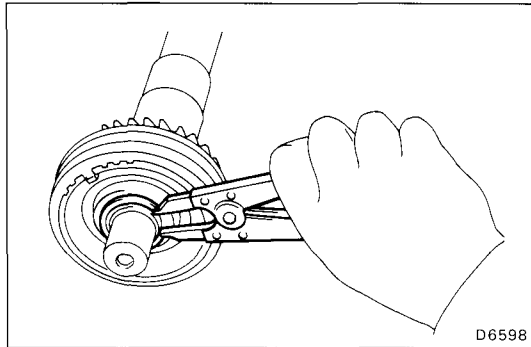
2. REMOVE NO.1 HUB SLEEVE ASSEMBLY AND SECOND GEAR ASSEMBLY

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



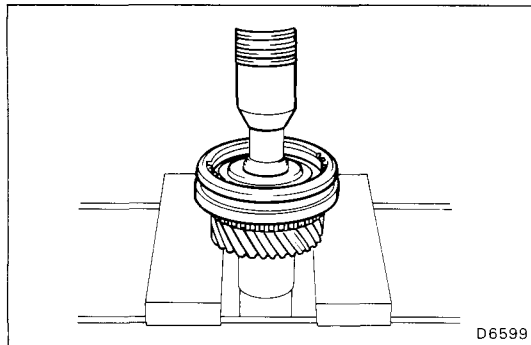
- (b) Using a press, remove No.1 hub sleeve, synchronizer ring and 2nd gear.

- (c) Remove the needle roller bearing.



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

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



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

- (c) Remove the needle roller bearing.

4. REMOVE SHIFTING KEYS AND SPRINGS FROM HUB SLEEVE ASSEMBLY

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

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

INSPECT OF OUTPUT SHAFT ASSEMBLY

1. MEASURE EACH GEAR THRUST CLEARANCE

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

1st gear

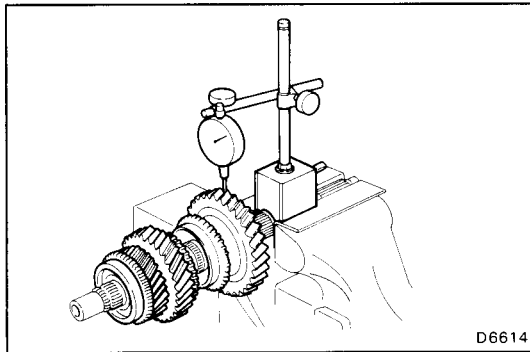
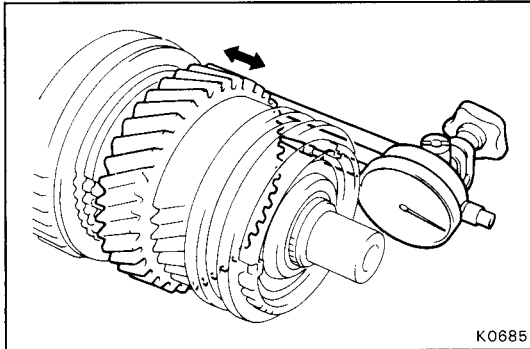
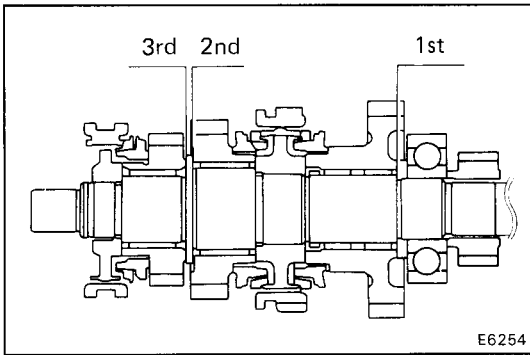
Standard clearance: 0.10 – 0.45 mm
(0.0039 – 0.0177 in.)

Maximum clearance: 0.50 mm (0.0197in.)

2nd and 3rd gear

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

Maximum clearance: 0.30 mm (0.0118in.)



2. CHECK OIL CLEARANCE OF EACH GEAR

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.)

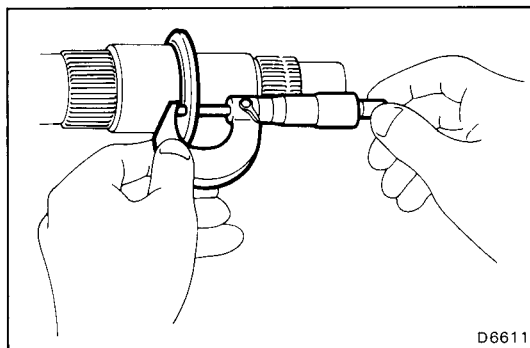
Maximum clearance: 0.16 mm (0.0063 in.)

2nd and 3rd gear

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 limit, replace the gear, needle roller bearing or shaft.



3. INSPECT OUTPUT SHAFT

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

Minimum thickness: 4.70 mm (0.1850 in.)

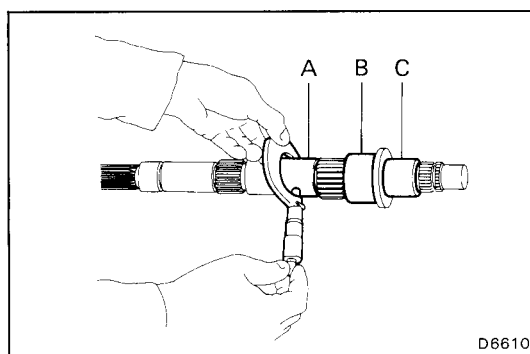
- (b) Using a micrometer, measure the outer diameter of the output shaft journal.

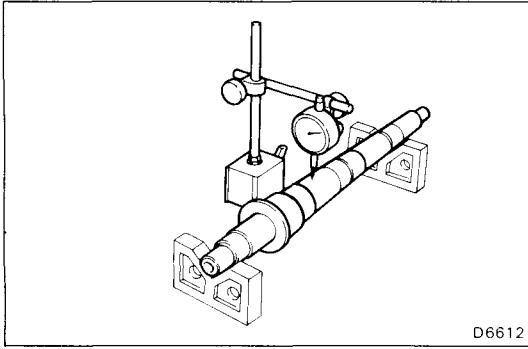
Minimum diameter:

A 1st gear 38.860 mm (1.5299 in.)

B 2nd gear 46.860 mm (1.8449 in.)

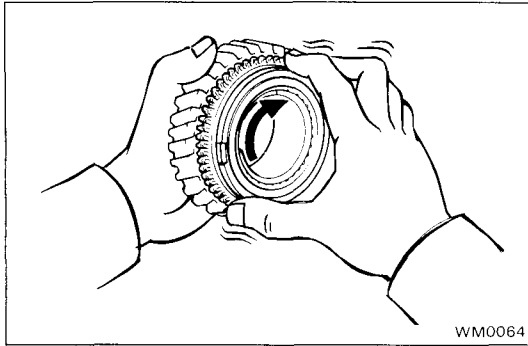
C 3rd gear 37.860 mm (1.4905 in.)





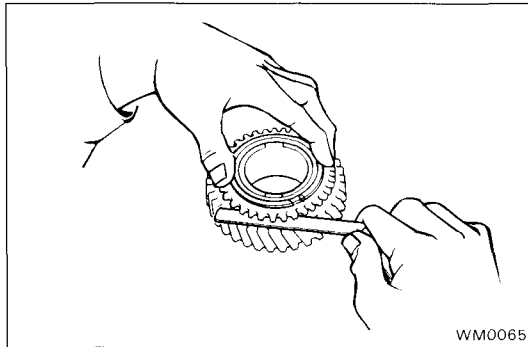
(c) Using a dial indicator, check the shaft runout.

Maximum runout: 0.06 mm (0.0024 in.)



4. INSPECT SYNCHRONIZER RINGS

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

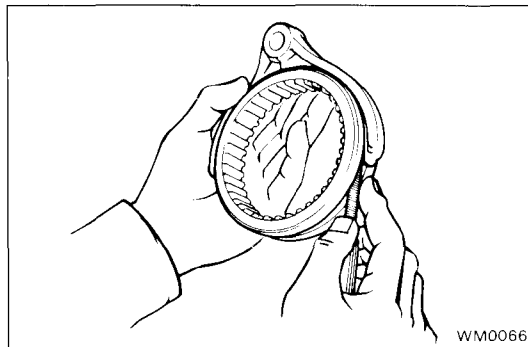


(b) Measure the clearance between the synchronizer ring back and the gear spline end.

**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 limit, replace the synchronizer ring.

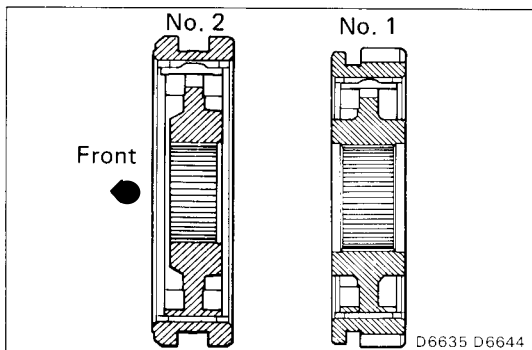


5. MEASURE CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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 limit, replace the shift fork or hub sleeve.

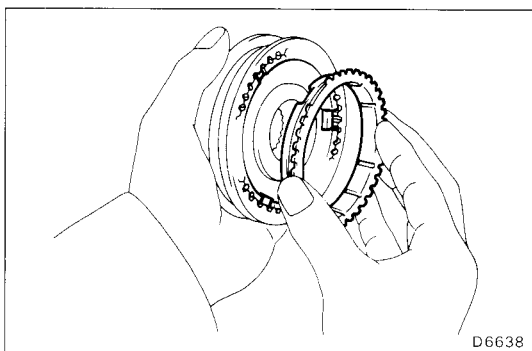


ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

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

- (a) Install the clutch hub and shifting keys to the hub sleeve.
- (b) Install the shifting key springs under the shifting keys.

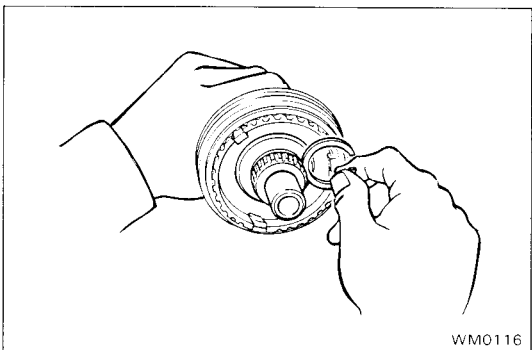
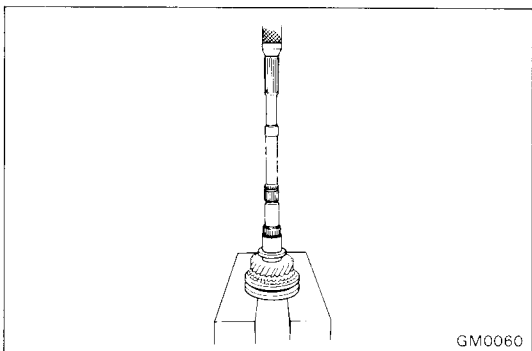
NOTICE: Install the key springs positioned so that their end gaps are not in line.



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

- (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 3rd gear.

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

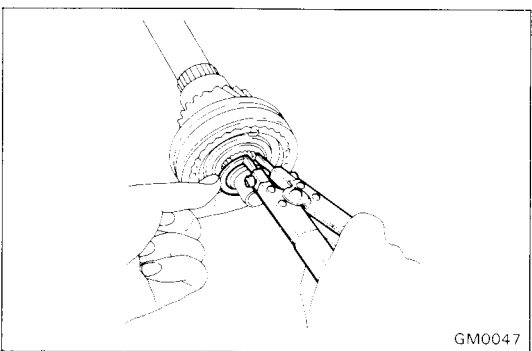


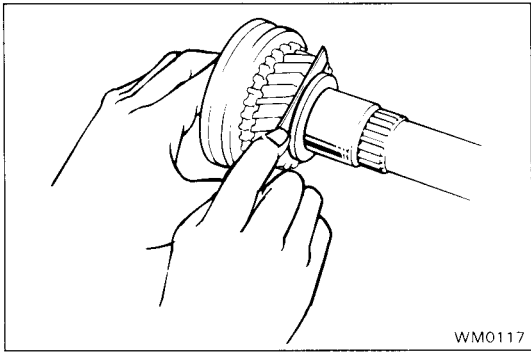
3. INSTALL SNAP RING

- (a) 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)

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

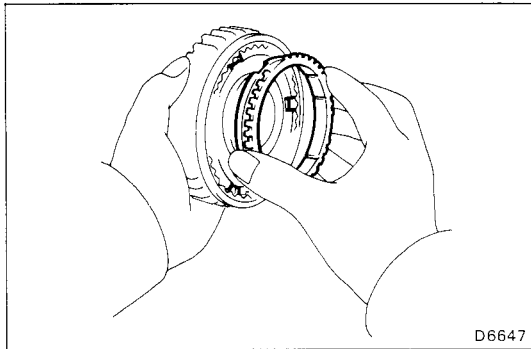




4. MEASURE THIRD GEAR THRUST CLEARANCE

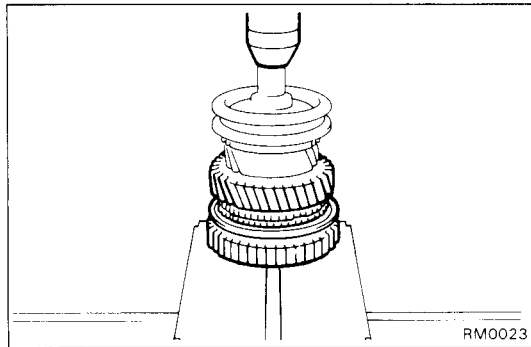
Using a feeler gauge, measure the 3rd gear thrust clearance.

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

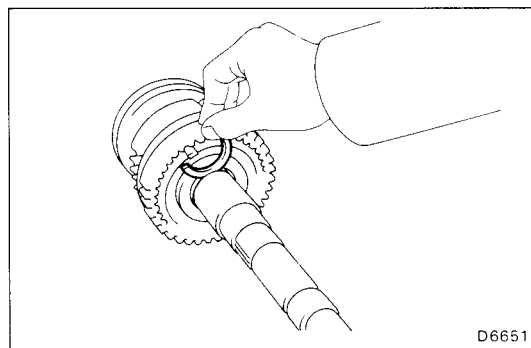


5. INSTALL SECOND GEAR AND NO.1 HUB SLEEVE

- (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 No.1 hub sleeve.

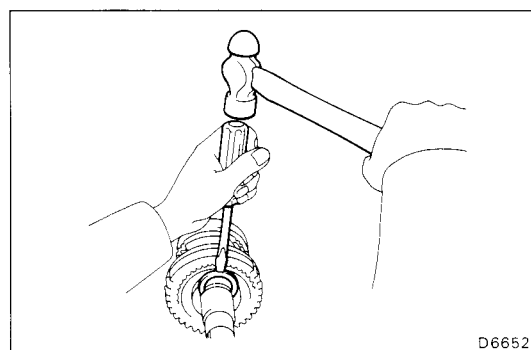


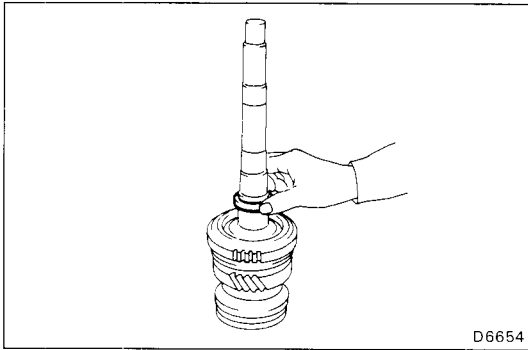
6. INSTALL SNAP RING

- (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)

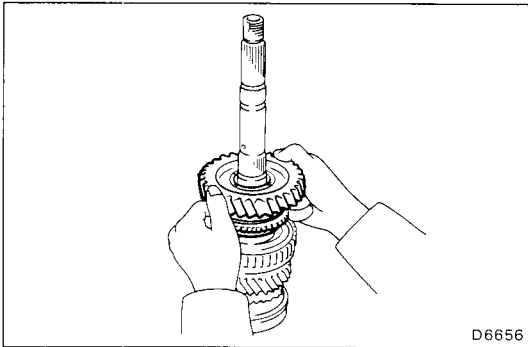
- (b) Using a screwdriver and hammer, install the snap ring.





7. INSTALL SPACER AND FIRST GEAR ASSEMBLY

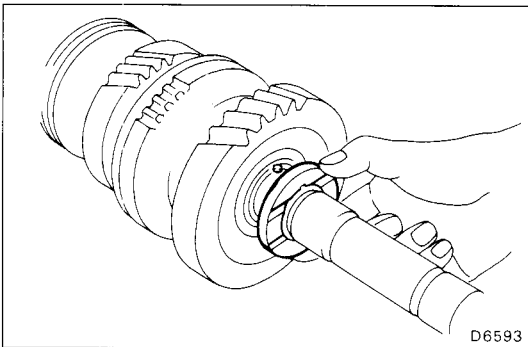
(a) Install the spacer on the output shaft.



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

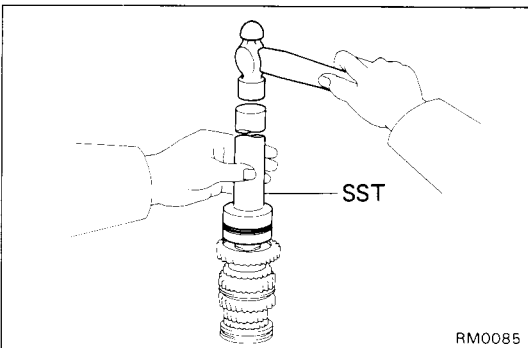
(c) Assemble the 1st gear, synchronizer ring and needle roller bearing.

(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

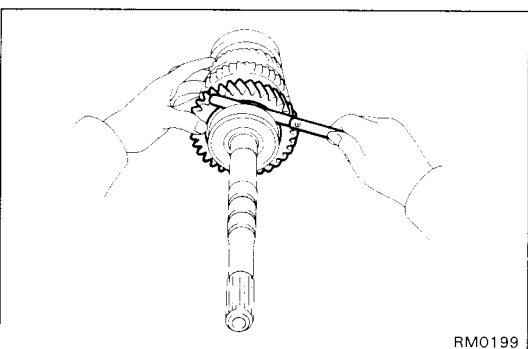
Install the 1st gear thrust washer onto the output shaft with the straight pin aligned with the 1st gear thrust washer.



9. INSTALL OUTPUT SHAFT CENTER BEARING

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

SST 09309-35010

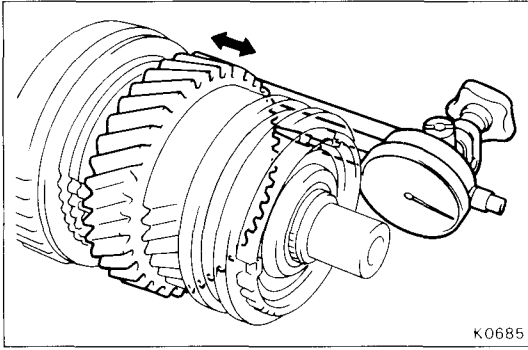


10. MEASURE FIRST GEAR THRUST CLEARANCE

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

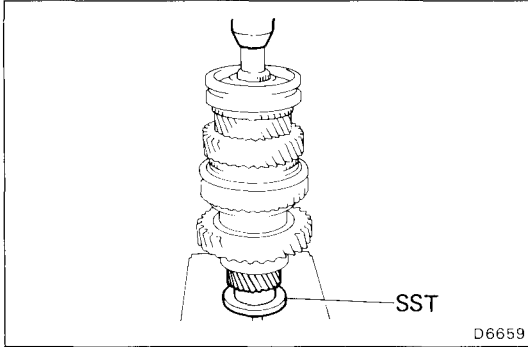
Standard clearance: 0.10 — 0.45 mm

(0.0039 — 0.0177 in.)

**11. MEASURE SECOND GEAR THRUST CLEARANCE**

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

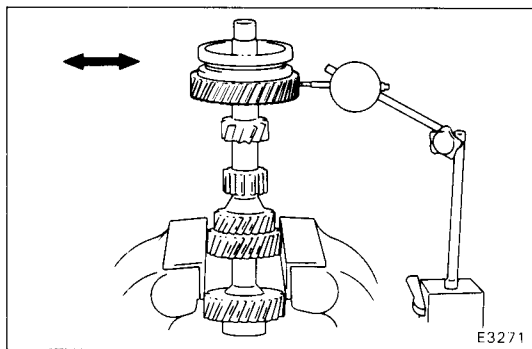
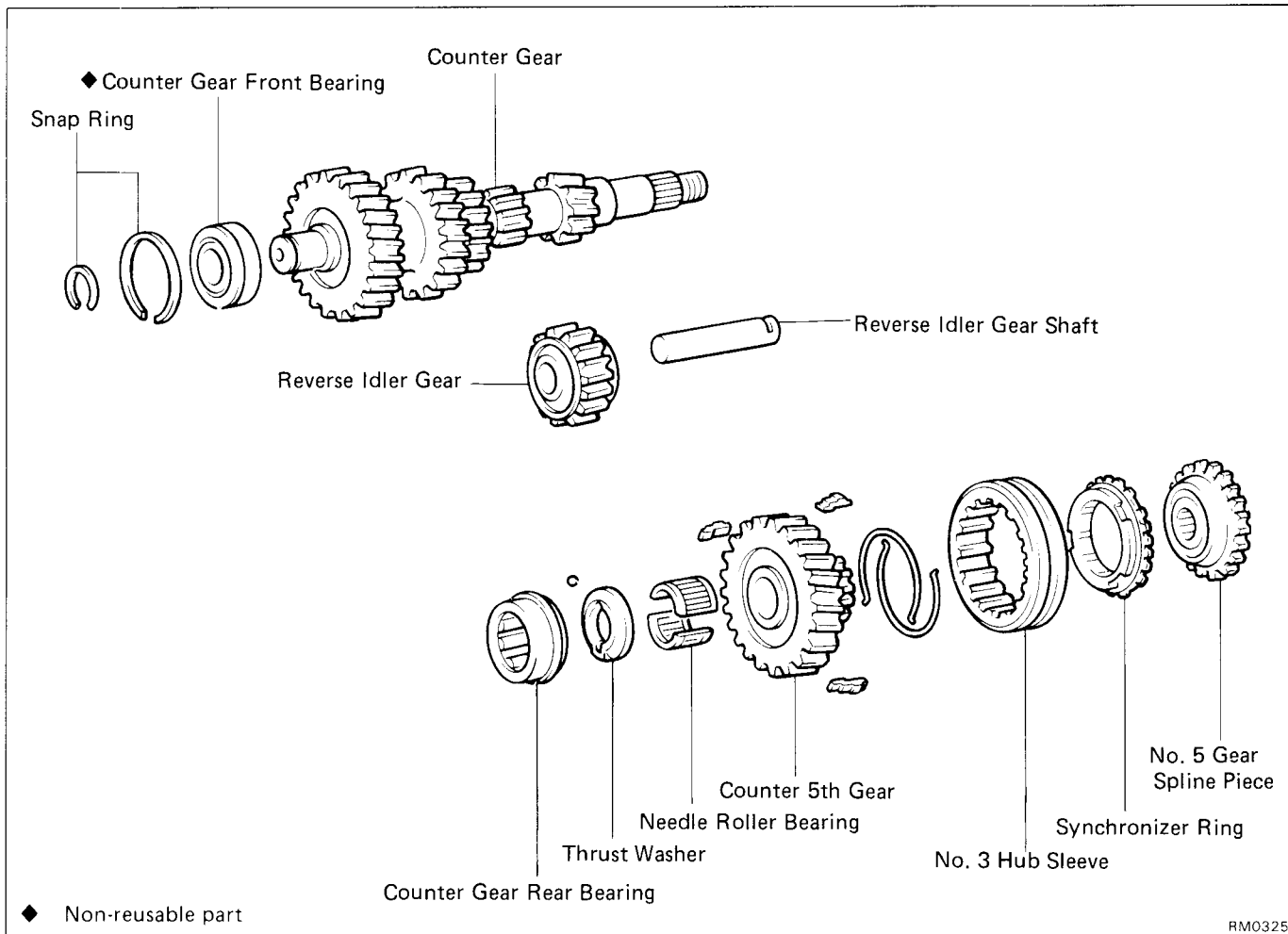
Standard clearance: 0.10 – 0.25 mm
(0.0039 – 0.0098in.)

**12. INSTALL FIFTH GEAR**

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

SST 09316-60010 (09316-00030)

Counter Gear and Reverse Idler Gear COMPONENTS



INSPECTION OF COUNTER GEAR

1. CHECK OIL CLEARANCE OF 5TH GEAR

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

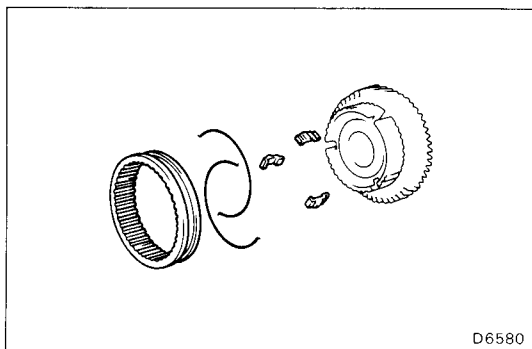
Standard clearance: 0.015 — 0.068 mm
(0.006 — 0.0027 in.)

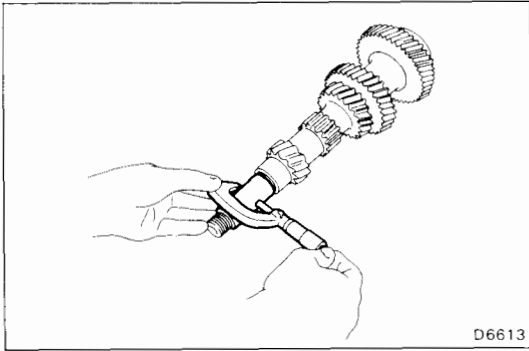
Maximum clearance: 0.16 mm (0.0063 in.)

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

2. REMOVE HUB SLEEVE NO.3 SHIFTING KEYS AND SPRINGS FROM COUNTER 5TH GEAR

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

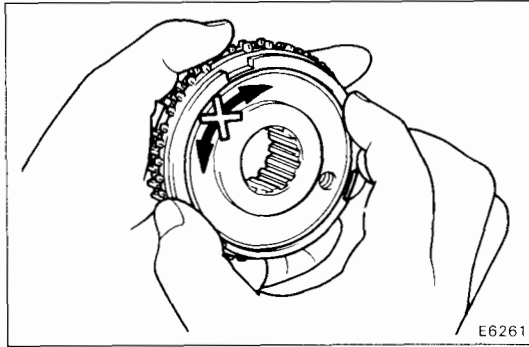




3. INSPECT COUNTER GEAR

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

Minimum diameter: 27.860 mm (1.0968 in.)



4. INSPECT SYNCHRONIZER RINGS

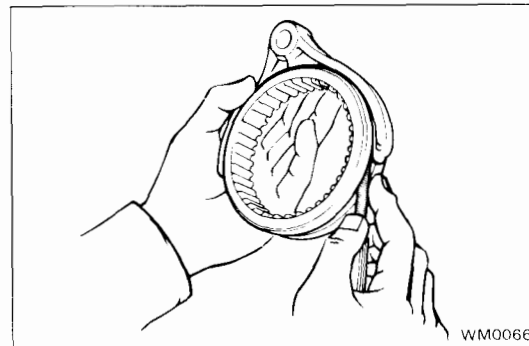
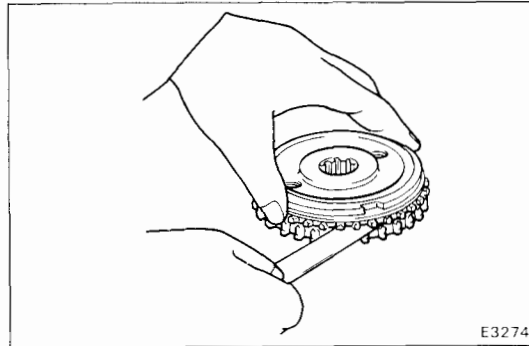
(a) Turn the ring and push it in to check the braking action.

(b) 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 limit, replace the synchronizer ring.

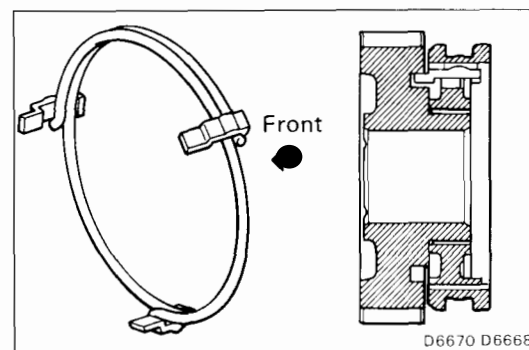


5. MEASURE CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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 limit, replace the shift fork or hub sleeve.

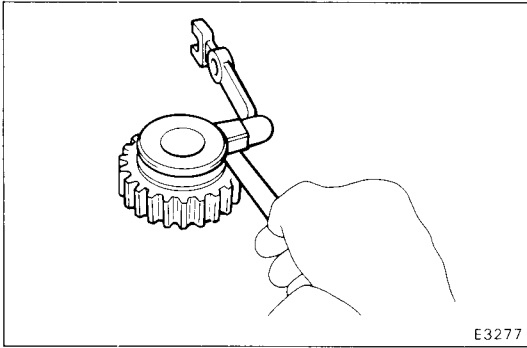


6. INSTALL HUB SLEEVE NO.3 SHIFTING KEYS AND SPRINGS TO COUNTER 5TH GEAR

(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

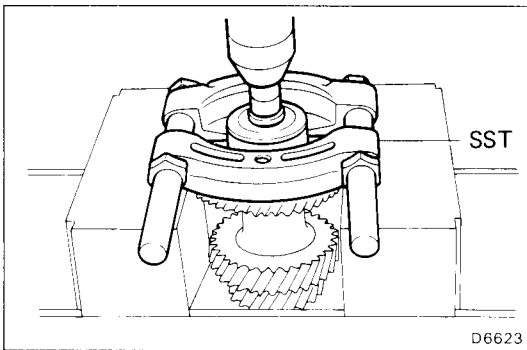
MEASURE CLEARANCE OF REVERSE IDLER GEAR AND SHIFT ARM SHOE

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 (0.020 in.)

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



REPLACEMENT OF BEARING

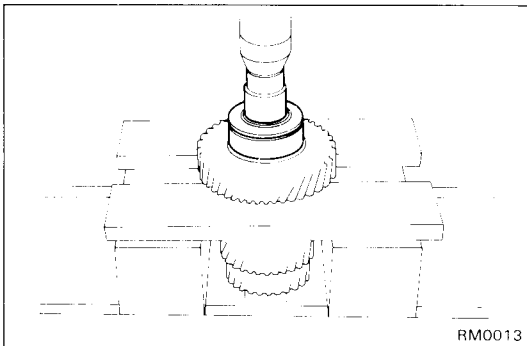
IF NECESSARY, REPLACE COUNTER GEAR FRONT BEARING

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

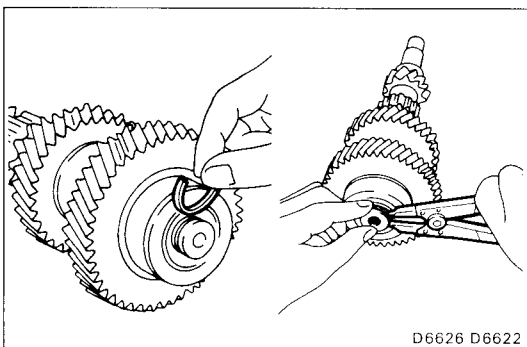
(b) Using SST, press out the bearing.

SST 09950-00020

(c) Replace the side race.



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

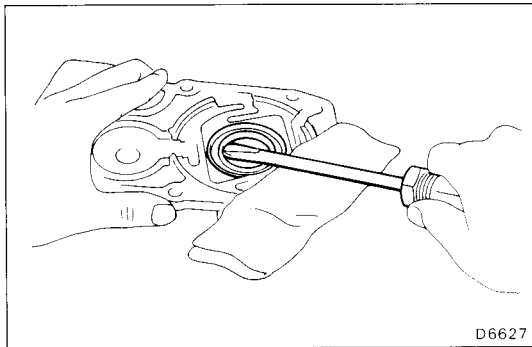
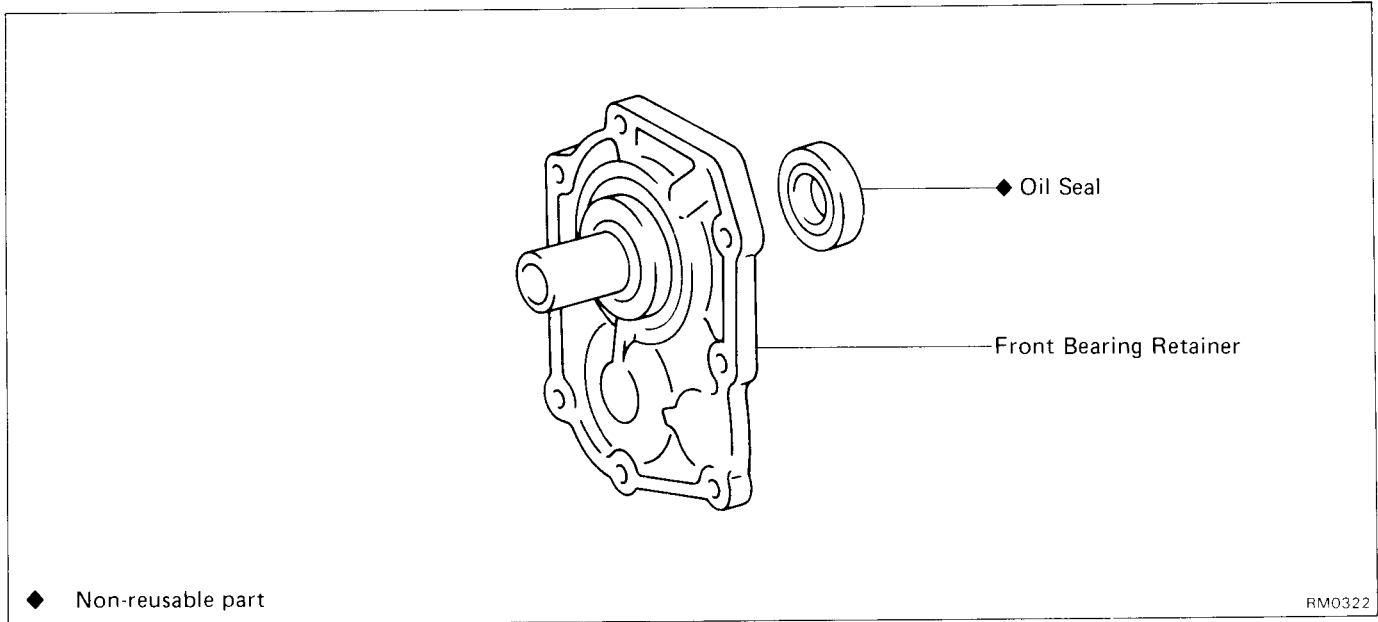


(e) Select a snap ring that will allow minimum axial play and install it on the shaft.

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)

Front Bearing Retainer

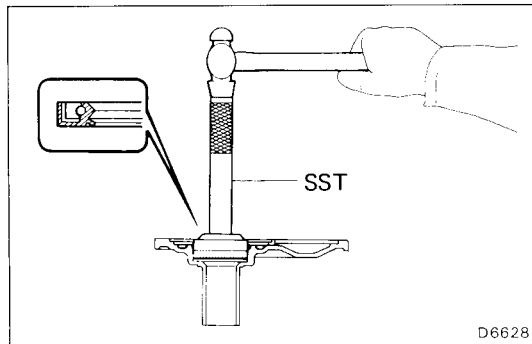
COMPONENTS



REPLACEMENT OF OIL SEAL

IF NECESSARY, REPLACE FRONT BEARING RETAINER OIL SEAL

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

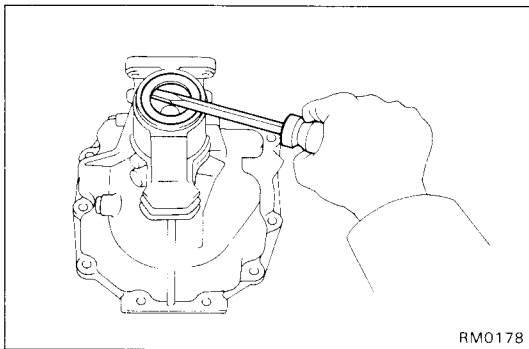
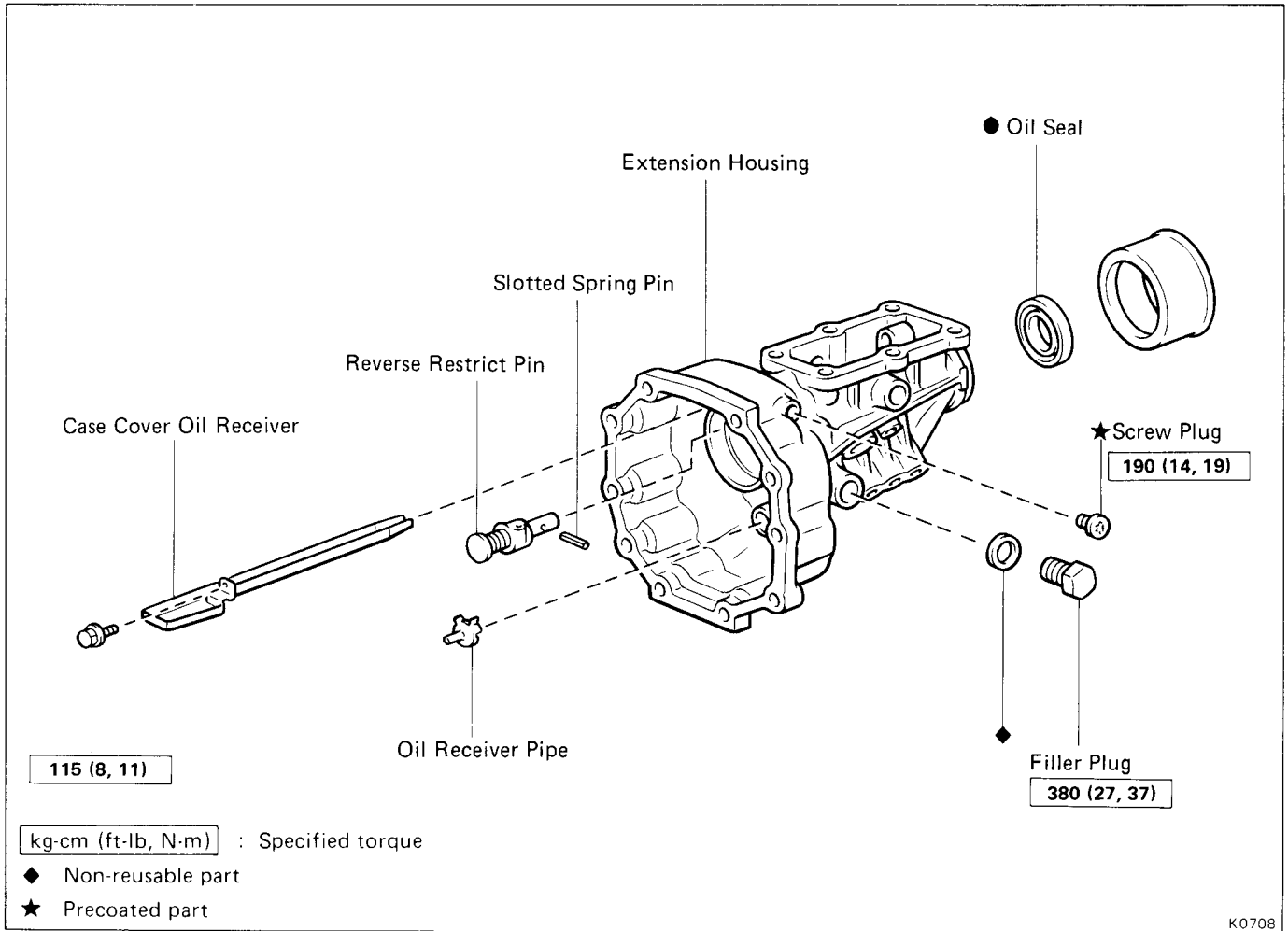


(b) Using SST, drive in a new oil seal.

SST 09608-35014 (09608-06020, 09608-06090)

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

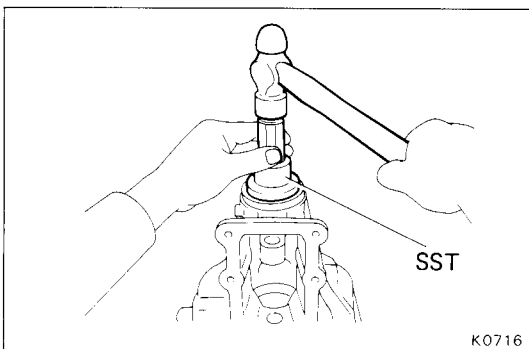
Extension Housing COMPONENTS



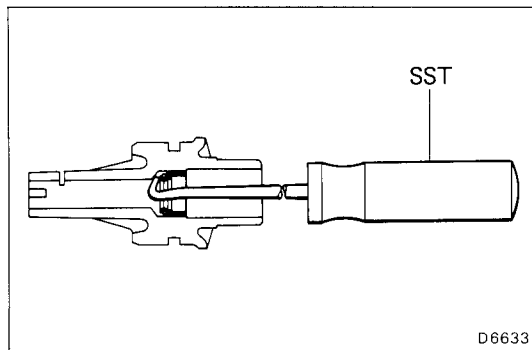
REPLACEMENT OF OIL SEAL

1. IF NECESSARY, REPLACE EXTENSION HOUSING OIL SEAL

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

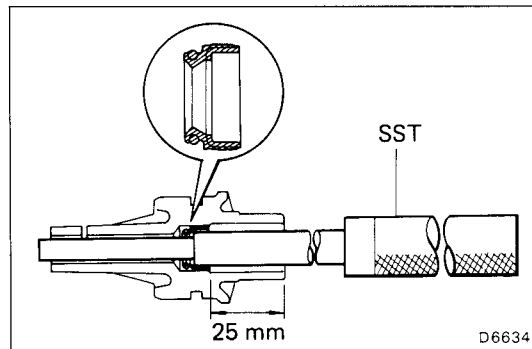


- (c) Using SST, drive in a new oil seal.
SST 09325-40010
- (d) Install the dust deflector.



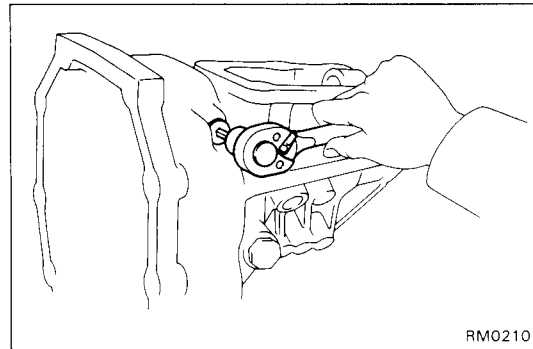
2. IF NECESSARY, REPLACE SPEEDOMETER DRIVEN GEAR OIL SEAL

- (a) Using SST, pull out the oil seal.
SST 09921-00010



- (b) Using SST, drive in a new oil seal into the sleeve.
SST 09201-60011

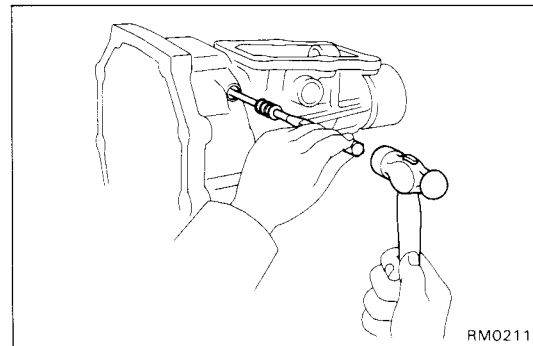
Drive in depth: 25 mm (0.98 in.)



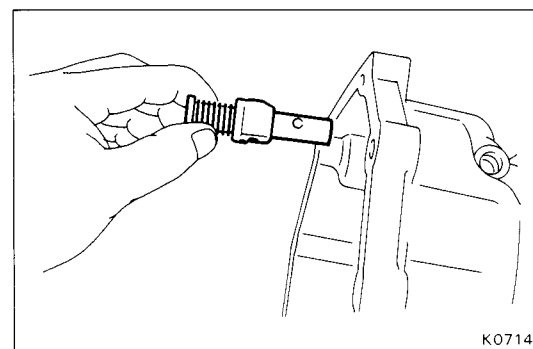
INSPECTION AND REPLACEMENT OF REVERSE RESTRICT PIN

1. REMOVE REVERSE RESTRICT PIN

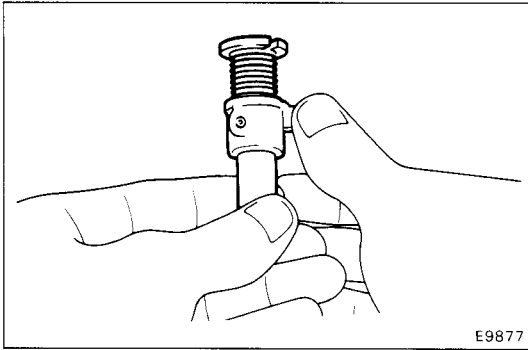
- (a) Using a torx socket wrench, remove the screw plug.



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

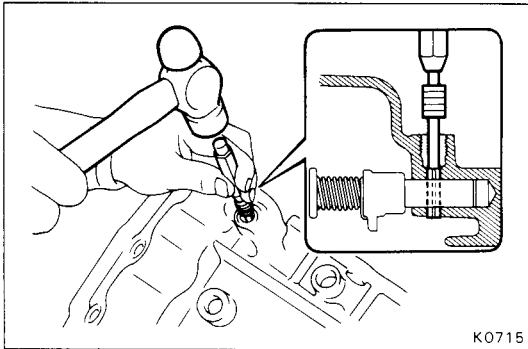


- (c) Remove the reverse restrict pin.



2. INSPECTION OF REVERSE RESTRICT PIN

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



3. INSTALL REVERSE RESTRICT PIN

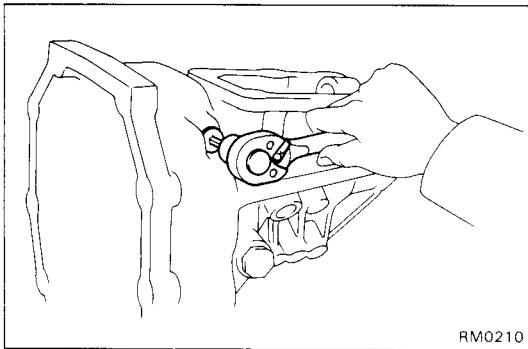
- (a) Install the reverse restrict pin to the extension housing or transfer adaptor.
- (b) Using pin punch and hammer, drive in the slotted spring pin.

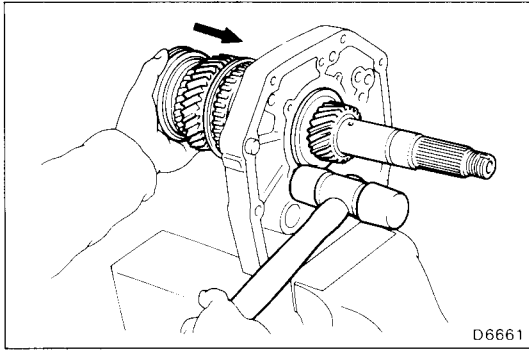
- (c) Apply liquid sealer to the plug threads.

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

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

Torque: 190 kg-cm (14 ft-lb, 19 N·m)





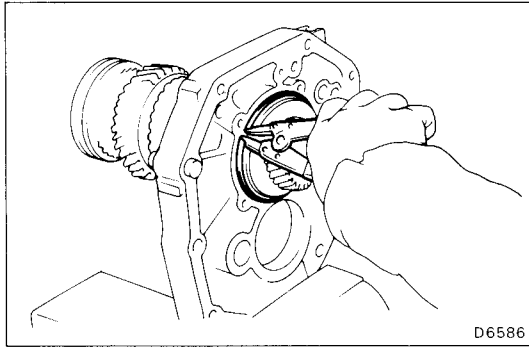
D6661

ASSEMBLY OF TRANSMISSION

(See pages MT-49, 50)

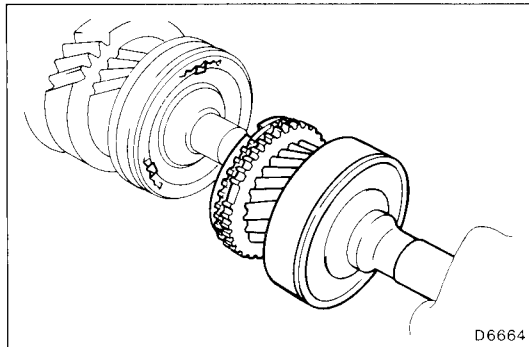
1. INSTALL OUTPUT SHAFT TO INTERMEDIATE PLATE

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



D6586

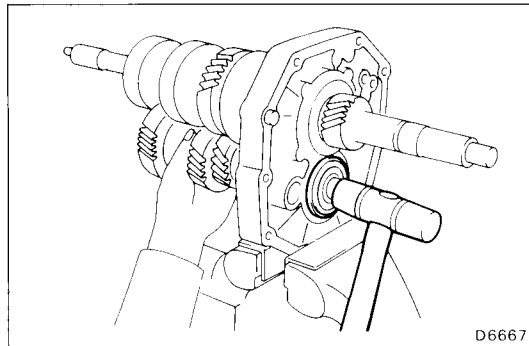
- (b) Using snap ring pliers, install the snap ring.



D6664

2. INSTALL INPUT SHAFT

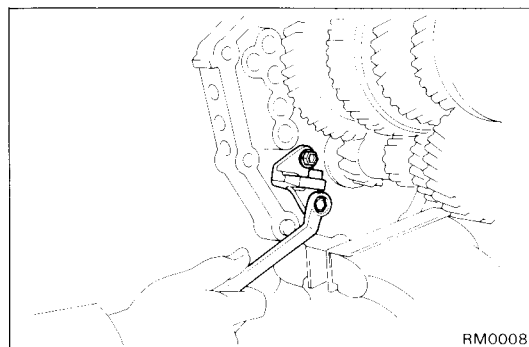
- (a) Apply gear oil to the needle roller bearing and install it into the input shaft.
- (b) Install the input shaft to the output shaft with the synchronizer ring slots aligned with the shifting keys.



D6667

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.

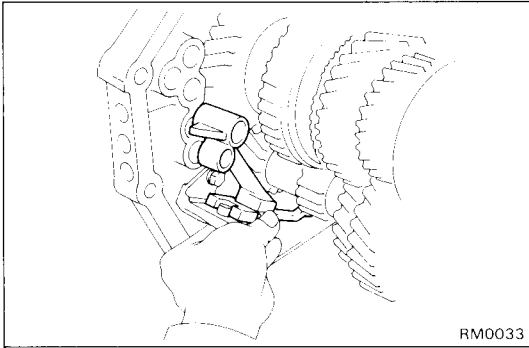


RM0008

4. INSTALL REVERSE SHIFT ARM BRACKET

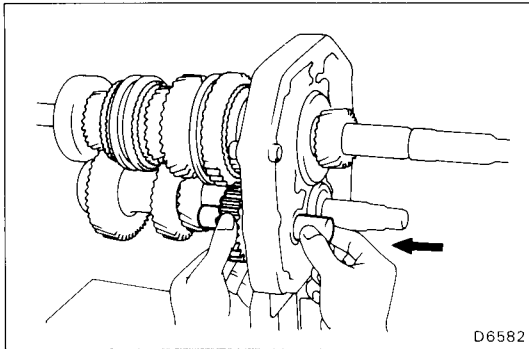
Install the reverse shift arm bracket and torque the bolts.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)



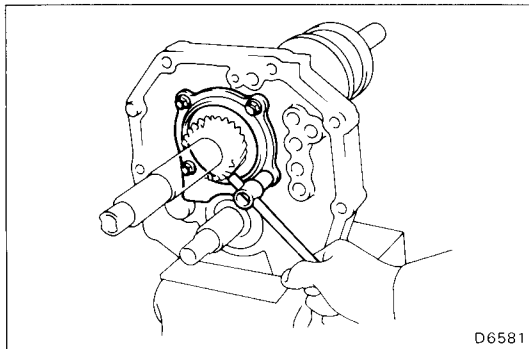
5. INSTALL REVERSE SHIFT ARM TO REVERSE SHIFT ARM BRACKET

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



6. INSTALL REVERSE IDLER GEAR AND SHAFT

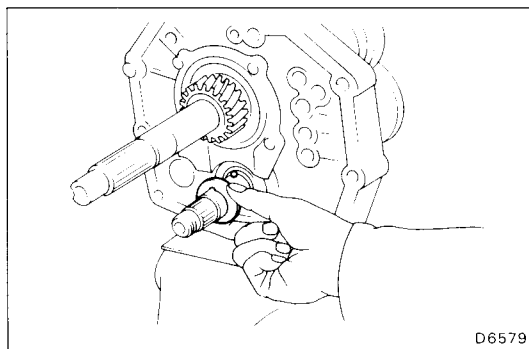
Align the reverse shift arm shoe to the reverse idler gear groove and insert the reverse idler gear shaft to the intermediate plate.



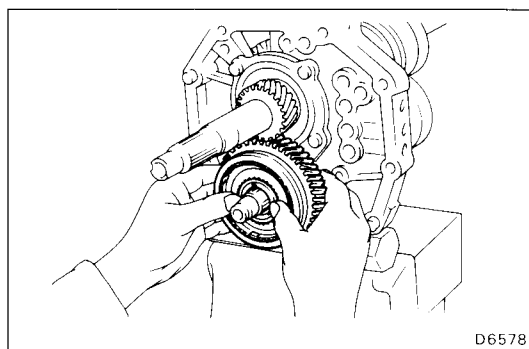
7. INSTALL REAR BEARING RETAINER

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

Torque: 185 kg-cm (13 ft-lb, 18 N·m)

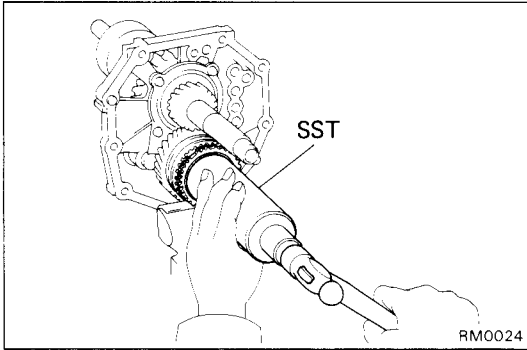


8. INSTALL BALL AND THRUST WASHER



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.

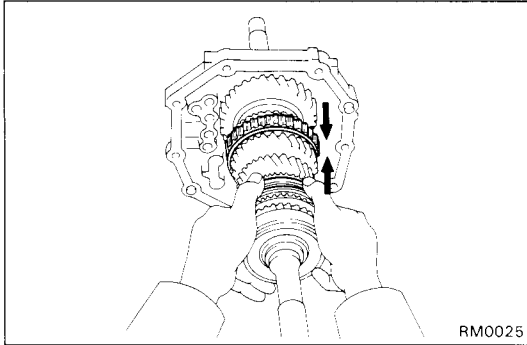


10. INSTALL SYNCHRONIZER RING AND NO. 5 GEAR SPLINE PIECE

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

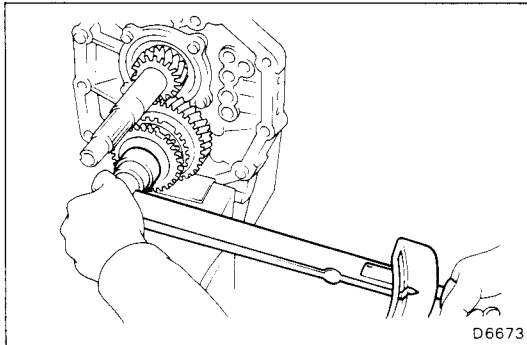
SST 09316-60010 (09316-00010)

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



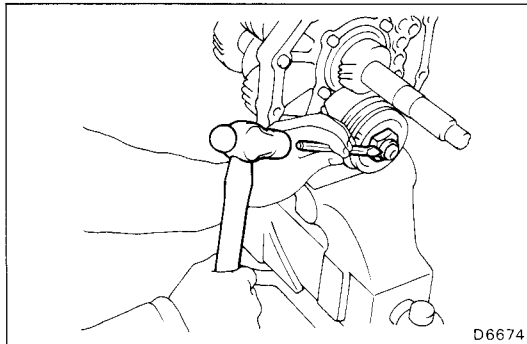
11. INSTALL LOCK NUT

- (a) Engage the gear double meshing.



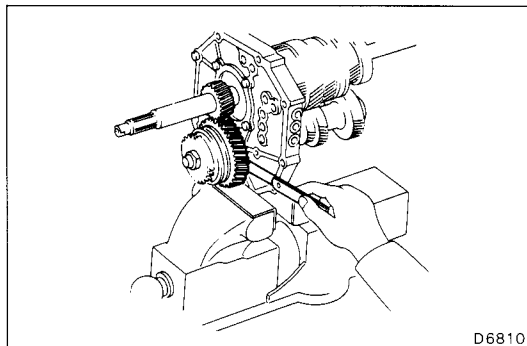
- (b) Install and torque the lock nut.

Torque: 1,300 kg-cm (94 ft-lb, 127 N·m)



- (c) Stake the lock nut.

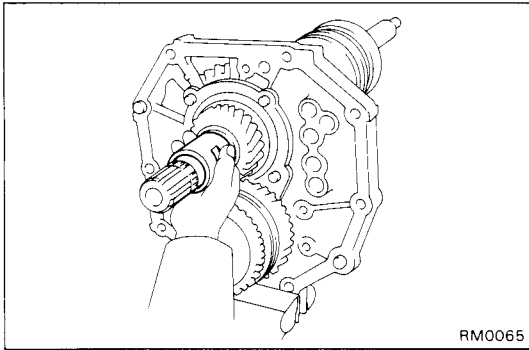
- (d) Disengage the gear double meshing.



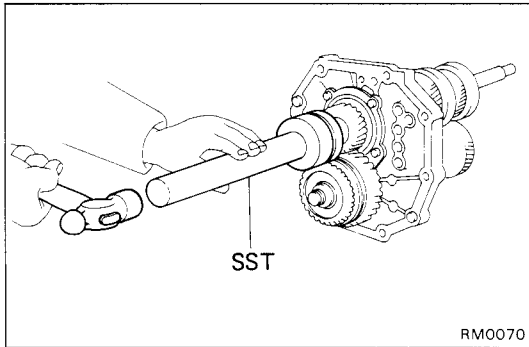
12. MEASURE COUNTER FIFTH GEAR THRUST CLEARANCE

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

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



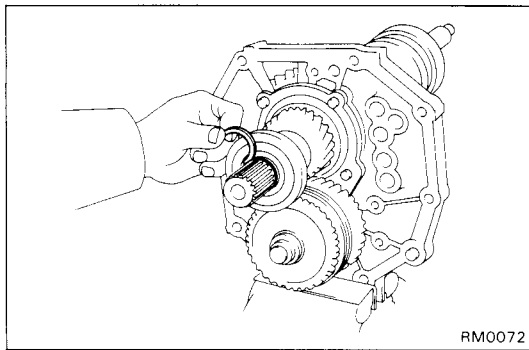
13. INSTALL SPACER



14. INSTALL OUTPUT SHAFT REAR BEARING

Using SST, drive in the rear bearing.

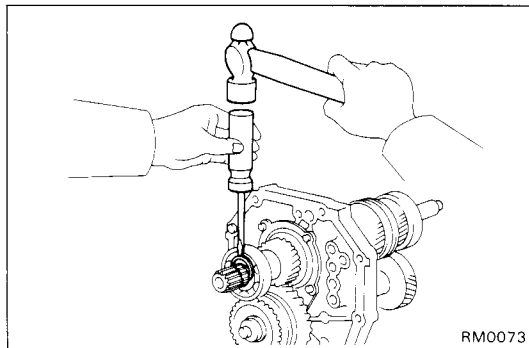
SST 09309-35010



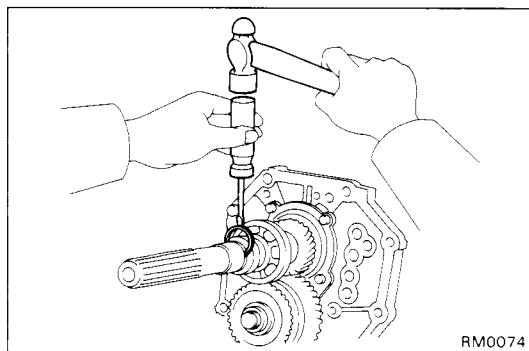
15. INSTALL SNAP RING

(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.

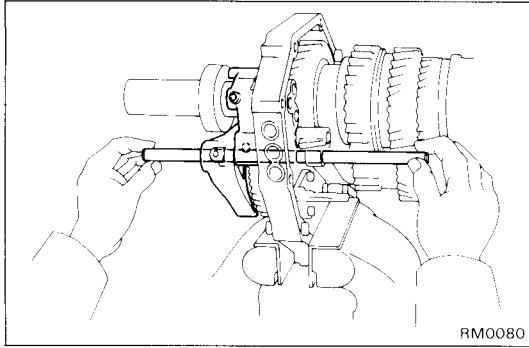


16. INSTALL SPEEDOMETER DRIVE GEAR

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

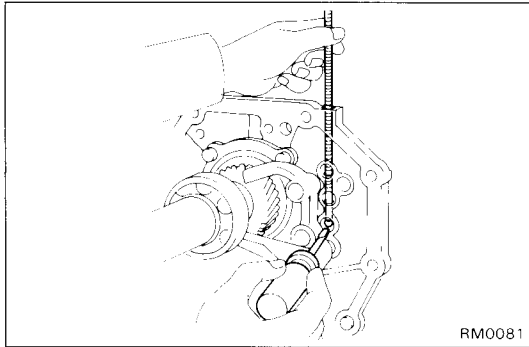
(b) Install the ball and drive gear.

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



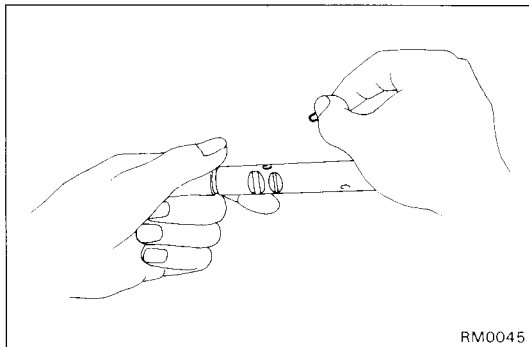
17. INSTALL NO.4 SHIFT FORK SHAFT, REVERSE SHIFT HEAD AND NO.3 SHIFT FORK

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

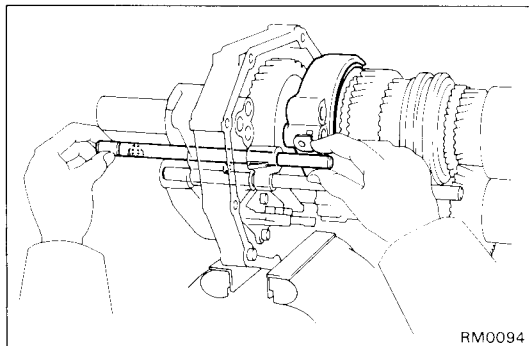


18. INSTALL NO.3 SHIFT FORK SHAFT AND NO.1 SHIFT FORK

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

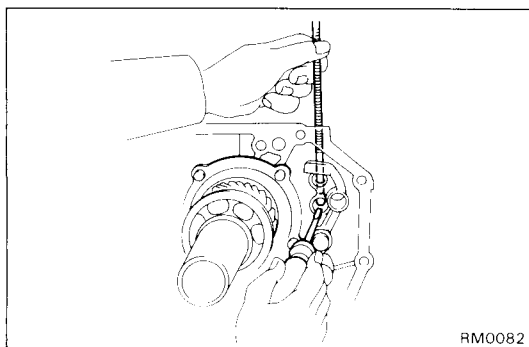


- (b) Install the interlock pin into the shaft hole.



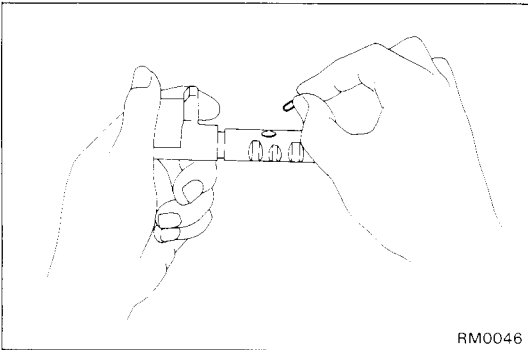
- (c) Place No.1 shift fork into the groove of No.1 hub sleeve.

- (d) Install No.3 fork shaft to the reverse shift fork and shift head through the intermediate plate.

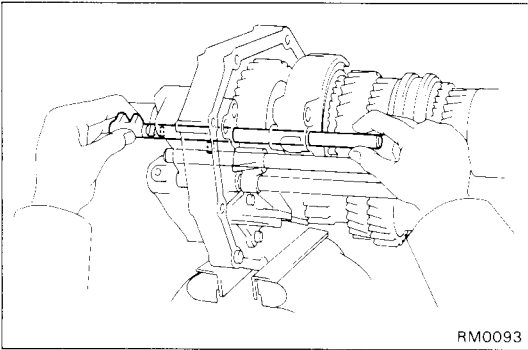


19. INSTALL NO.1 SHIFT FORK SHAFT

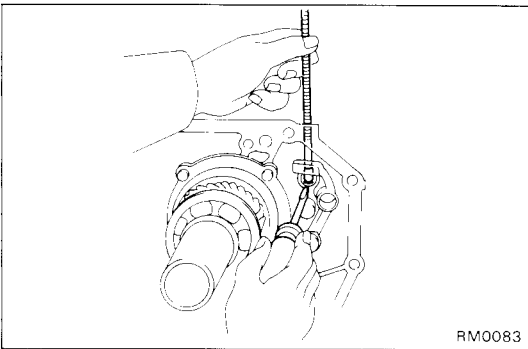
- (a) Using a magnetic finger and screwdriver, install the interlock pin into the intermediate plate.



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

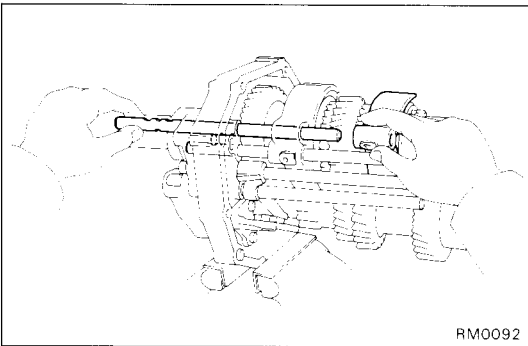


(c) Install No.1 fork shaft to No.1 shift fork through the intermediate plate.



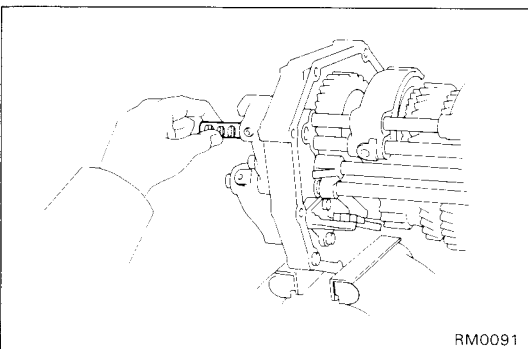
20. INSTALL NO.2 SHIFT FORK SHAFT AND SHIFT FORK

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



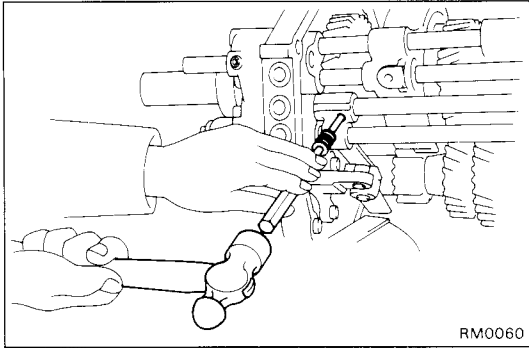
(b) Place No.2 shift fork into the groove of No.2 hub sleeve.

(c) Install No.2 fork shaft to No.1 and No.2 shift forks through the intermediate plate.



21. INSTALL NO.5 SHIFT FORK SHAFT

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

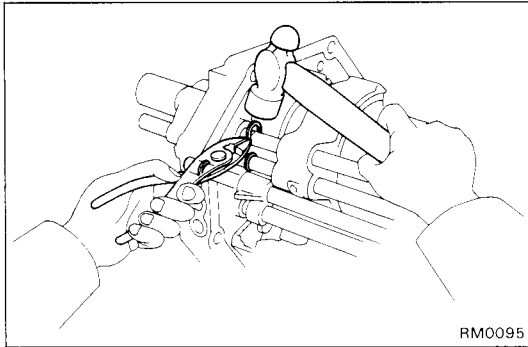


22. INSTALL SLOTTED SPRING PINS

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

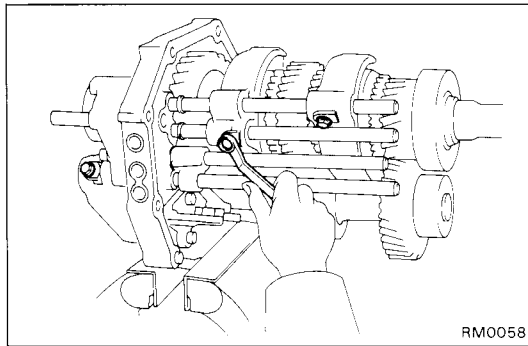
23. CHECK INTERLOCK

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



24. INSTALL SNAP RINGS

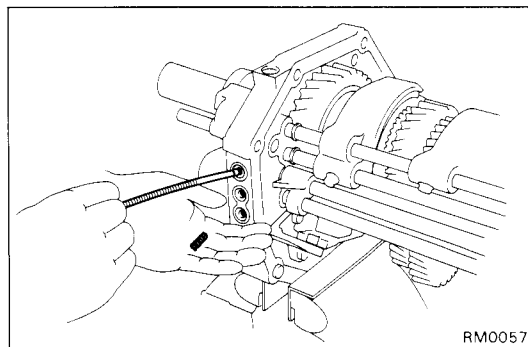
Using pliers and a hammer, install the three snap rings.



25. INSTALL SET BOLTS

Install and torque the three bolts.

Torque: 200 kg-cm (14 ft-lb, 20 N·m)

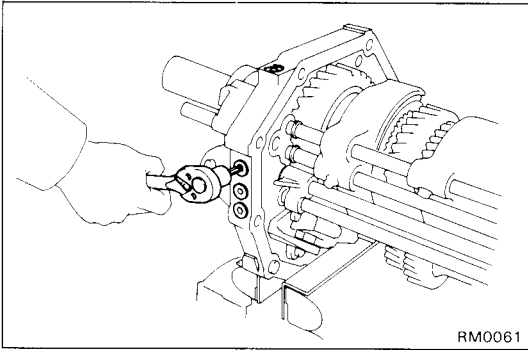


26. INSTALL LOCKING BALLS, SPRINGS AND SCREW PLUGS

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

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

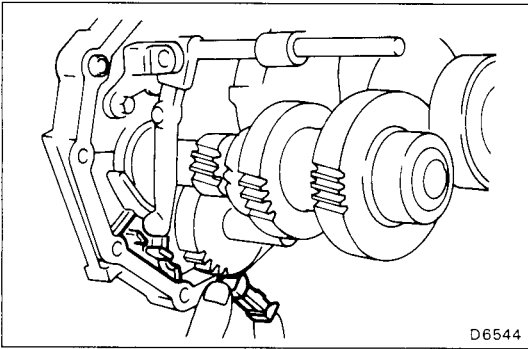
- (b) Install the four locking balls, springs and screw plugs.



RM0061

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

Torque: 190 kg-cm (14 ft-lb, 19 N·m)

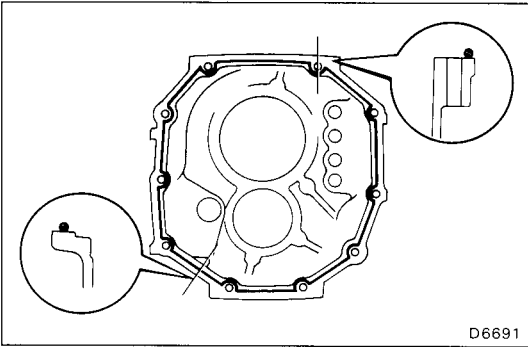


D6544

27. INSTALL MAGNET TO INTERMEDIATE PLATE

28. DISMOUNT INTERMEDIATE PLATE FROM VISE

- Dismount the intermediate plate from the vise.
- Remove the bolts, nuts and plate washers.



D6691

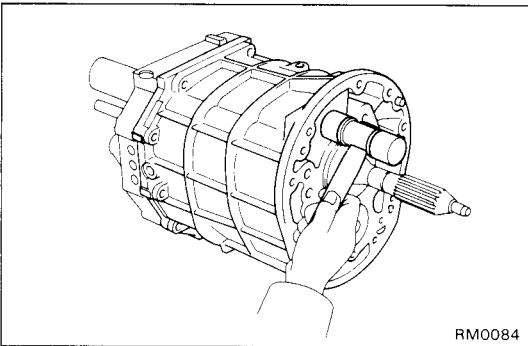
29. INSTALL TRANSMISSION CASE

- Apply seal packing to the transmission case as shown.

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

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

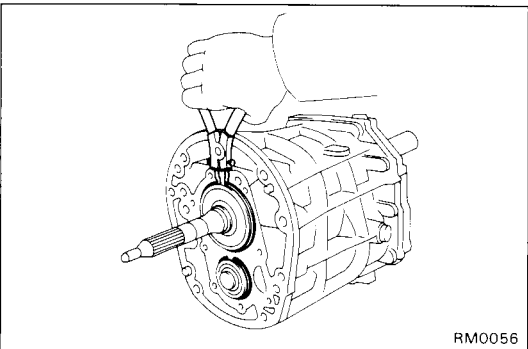
If necessary, tap on the case with a plastic hammer.



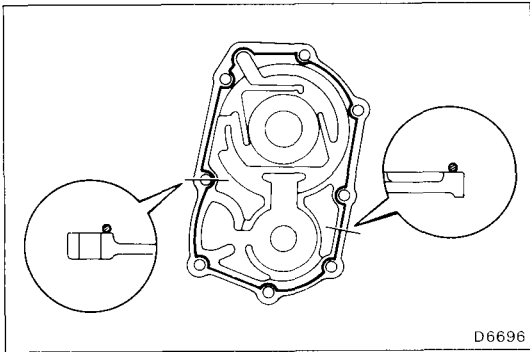
RM0084

30. INSTALL BEARING SNAP RINGS

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



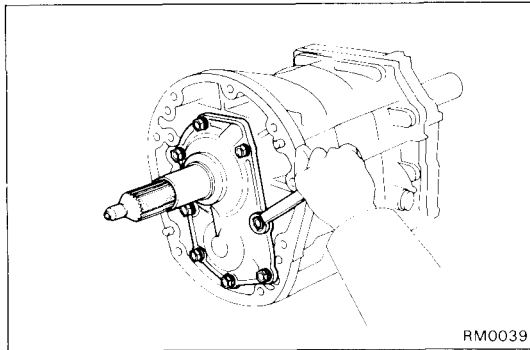
RM0056



31. INSTALL FRONT BEARING RETAINER

- (a) Apply seal packing to the retainer as shown, and install it to the transmission case.

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

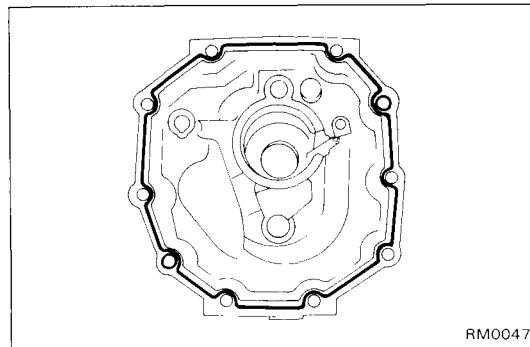


- (b) Apply liquid sealer to the bolt threads.

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

- (c) Install and torque the bolts.

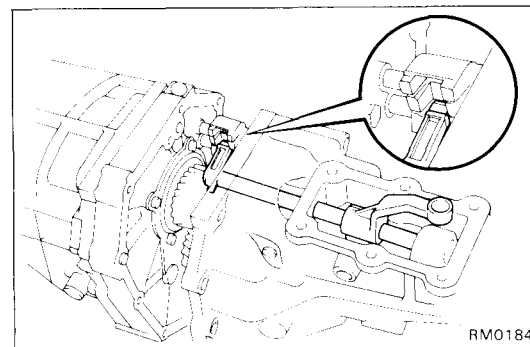
Torque: 170 kg-cm (12 ft-lb, 17 N·m)



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

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

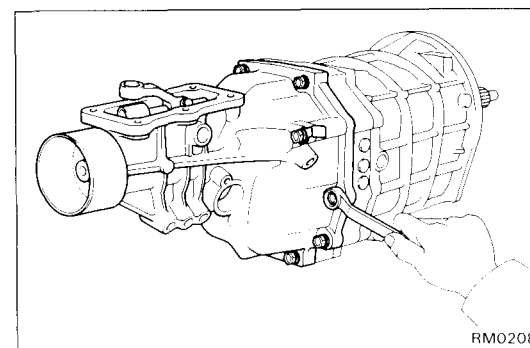
Seal packing: Part No.08826-00090, THREE BOND 1281 or equivalent



- (b) Insert the shift and select lever into the extension housing.

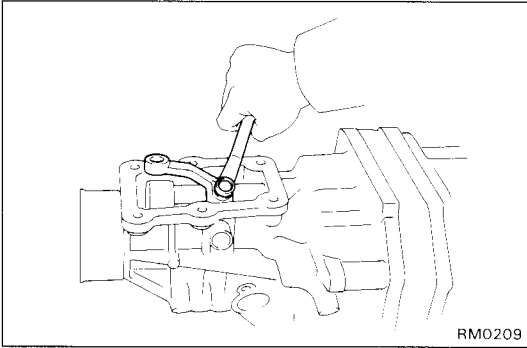
- (c) Connect the shift and select lever to the fork shaft and put in the shift lever housing.

- (d) Align No.5 fork shaft to the extension housing installation hole and push in the extension housing.

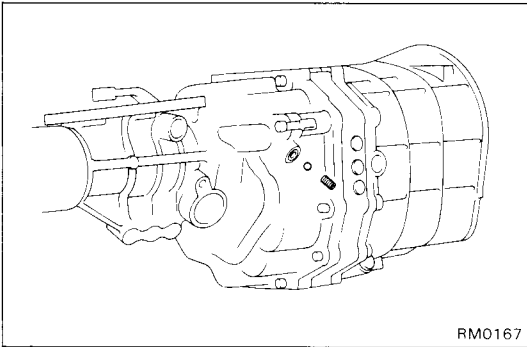


- (e) Install and torque the extension housing bolts.

Torque: 380 kg-cm (27 ft-lb, 37 N·m)



- (f) Install and torque the shift lever housing bolt.
Torque: 390 kg-cm (28 ft-lb, 38 N·m)

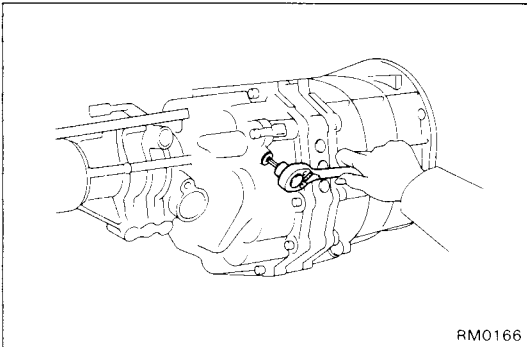


33. INSTALL LOCKING BALL, SPRING AND SCREW PLUG

- (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.

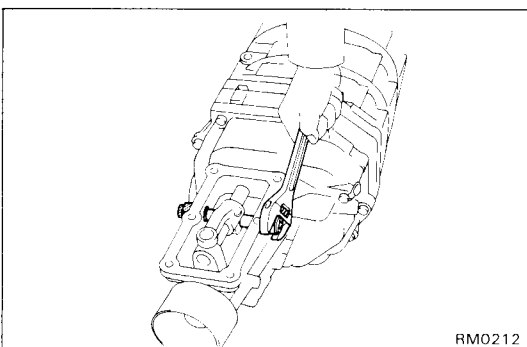


- (c) Torque the plug.

Torque: 190 kg-cm (14 ft-lb, 19 N·m)

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

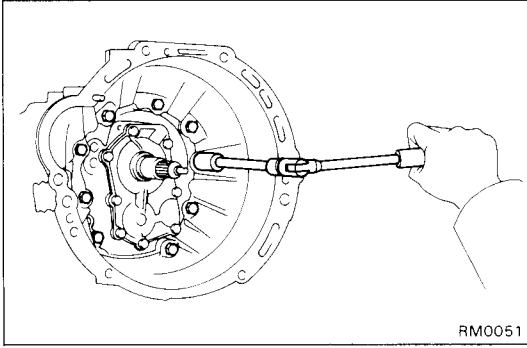
- (a) Check to see that the input and output shafts rotate smoothly.
 (b) Check to see that shifting can be made smoothly to all positions.



35. INSTALL RESTRICT PINS

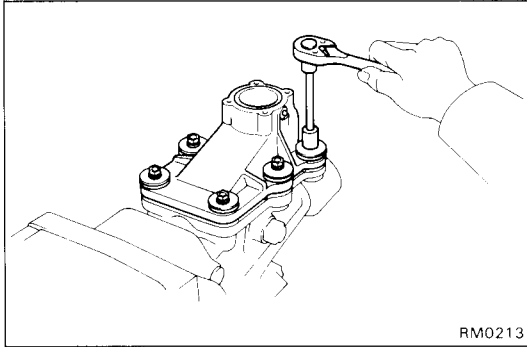
- (a) Install the black pin on the reverse gear/5th gear side.
 (b) Install another pin and torque the pins.

Torque: 380 kg-cm (27 ft-lb, 37 N·m)

**36. INSTALL CLUTCH HOUSING**

- (a) Install the clutch housing.
- (b) Install and torque the nine bolts.

Torque: 370 kg-cm (27 ft-lb, 36 N·m)

**37. INSTALL SHIFT LEVER RETAINER**

Torque: 160 kg-cm (12 ft-lb, 16 N·m)

39. INSTALL BACK-UP LIGHT SWITCH

Torque: 380 kg-cm (27 ft-lb, 37 N·m)

40. INSTALL SPEEDOMETER DRIVEN GEAR**41. INSTALL REAR SPEED SENSOR (w/ A.B.S.)**