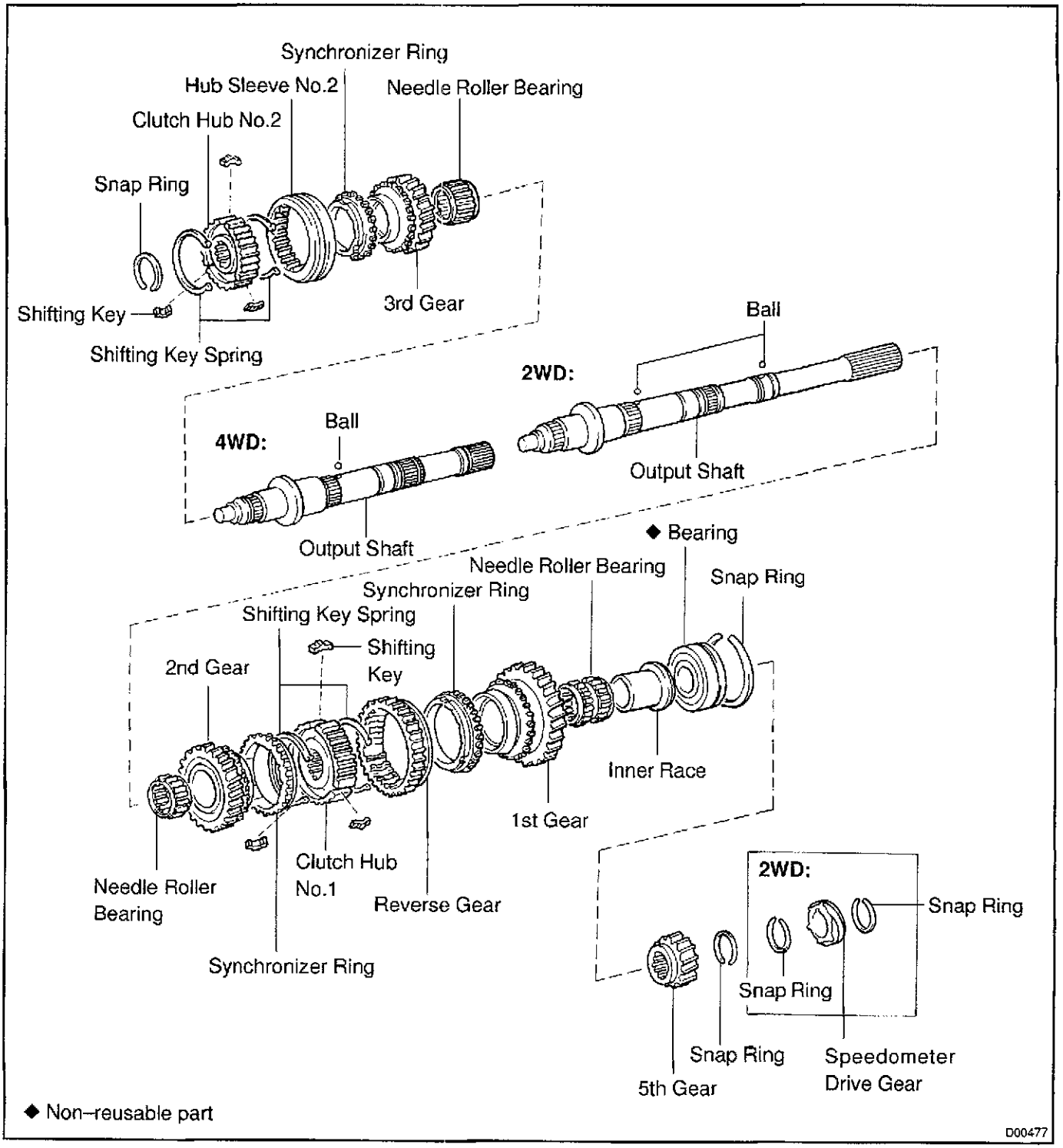
OUTPUT SHAFT

COMPONENTS

MT059-01

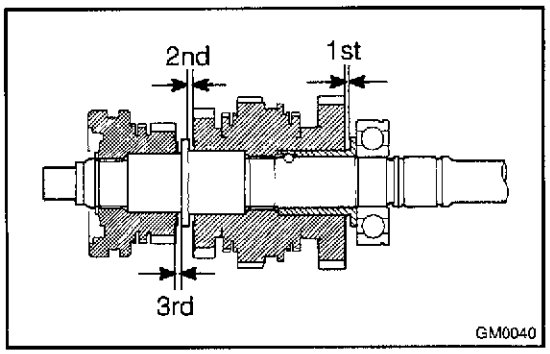


◆ Non–reusable part

D00477

MT059–01

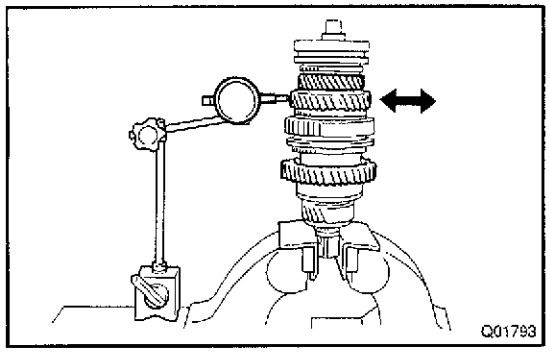
DISASSEMBLY



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.)

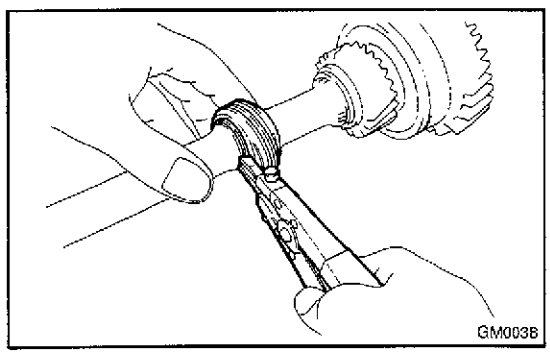


2. MEASURE EACH GEAR RADIAL CLEARANCE

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

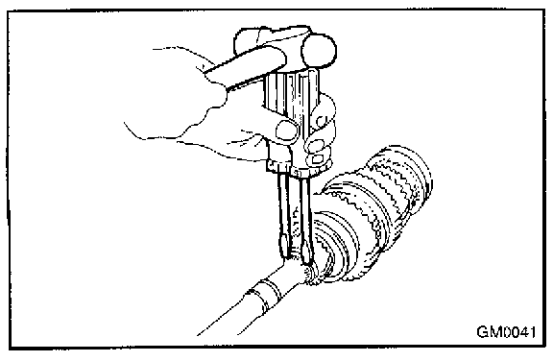
Standard clearance:
2nd and 3rd gears:
0.009–0.033 mm (0.0004–0.0013 in.)
1st gear:
0.009–0.032 mm (0.0004–0.0013 in.)
Maximum clearance:
2nd and 3rd gears: 0.033 mm (0.0013 in.)
1st gear: 0.032 mm (0.0013 in.)

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



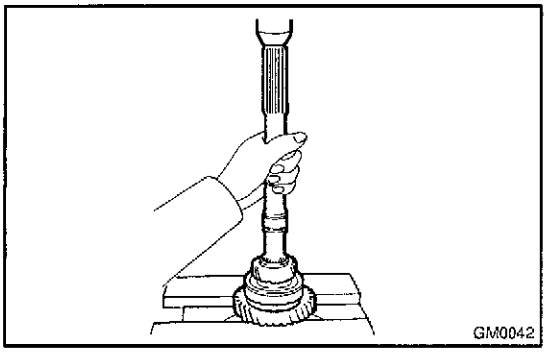
3. 2WD: REMOVE SPEEDOMETER DRIVE GEAR

(a) Using a snap ring expander, remove the snap ring.
(b) Remove the drive gear.
(c) Using a magnetic finger, remove the ball.
(d) Using a snap ring expander, remove the snap ring.



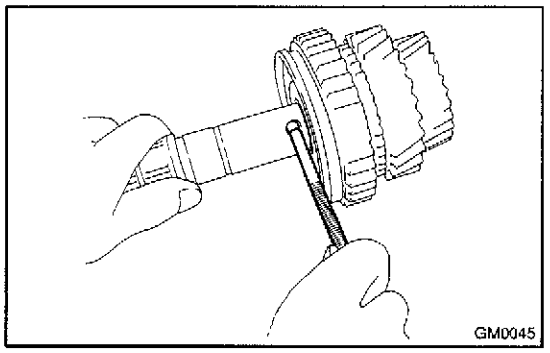
4. REMOVE 5TH GEAR, REAR BEARING, 1ST GEAR, INNER RACE AND NEEDLE ROLLER BEARING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.



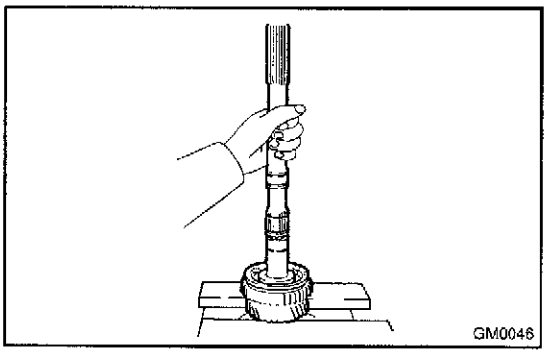
(b) Using a press, remove the 5th gear, rear bearing, 1st gear and inner race.
(c) Remove the needle roller bearing.

5. REMOVE SYNCHRONIZER RING



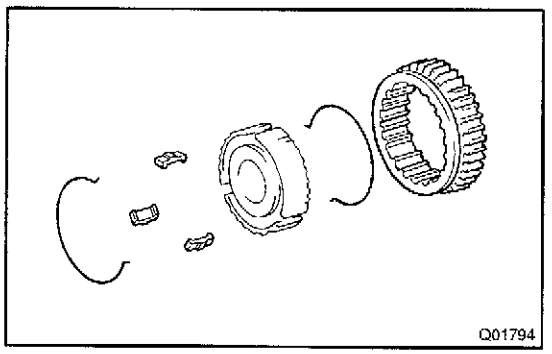
6. REMOVE LOCKING BALL

Using a magnetic finger, remove the locking ball.



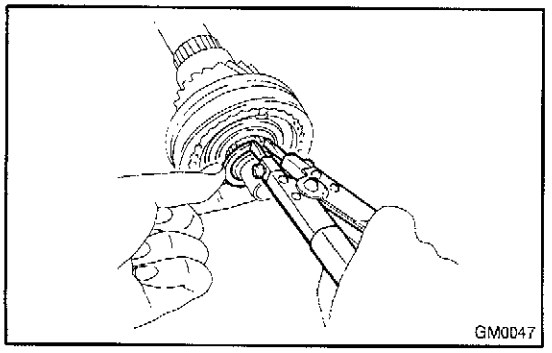
7. REMOVE REVERSE GEAR ASSEMBLY, SYNCHRONIZER RING, 2ND GEAR AND NEEDLE ROLLER BEARING

(a) Using a press, remove the reverse gear assembly, synchronizer ring and 2nd gear.
(b) Remove the needle roller bearing.



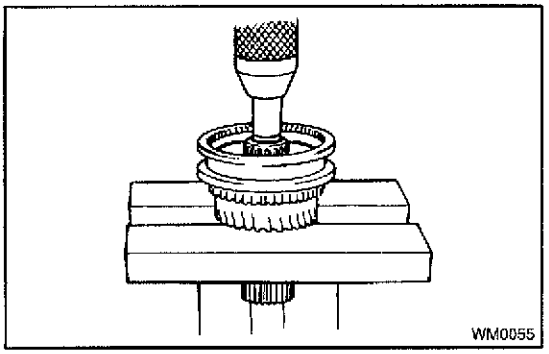
8. REMOVE REVERSE GEAR, SHIFTING KEY AND SPRING FROM CLUTCH HUB NO.1.

Using a screwdriver, remove the 3 shifting keys and 2 springs from the clutch hub No.1.

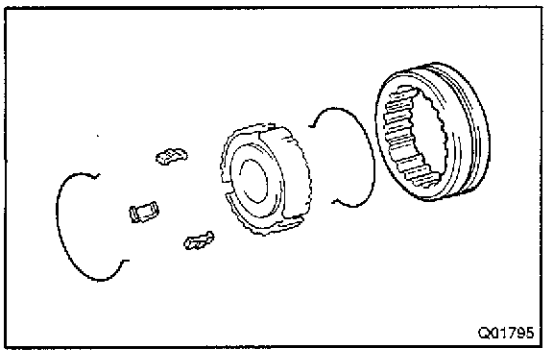


9. REMOVE HUB SLEEVE NO.2 ASSEMBLY, SYNCHRONIZER RING, 3RD GEAR AND NEEDLE ROLLER BEARING

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



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



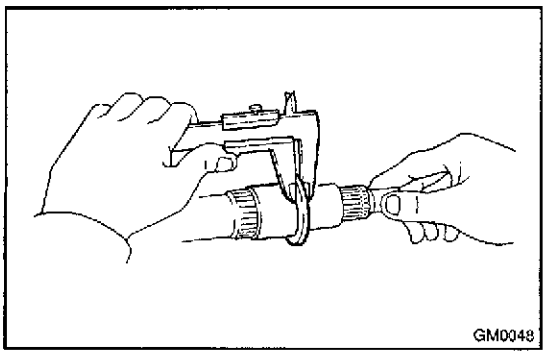
10. REMOVE HUB SLEEVE NO.2, SHIFTING KEY AND SPRING FROM CLUTCH HUB NO.2

Using a screwdriver, remove the 3 shifting keys and 2 springs from the clutch hub No.2.

MT06A-01

INSPECTION

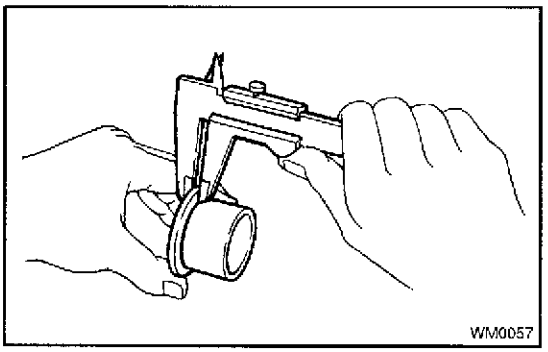
1. INSPECT OUTPUT SHAFT AND INNER RACE



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

Minimum thickness: 4.70 mm (0.1850 in.)

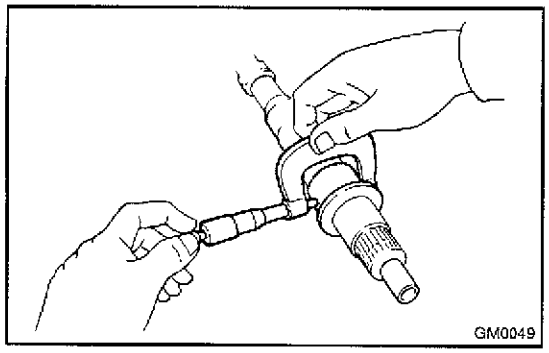
If the thickness is less than the minimum, replace the output shaft.



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

Minimum thickness: 3.99 mm (0.1571 in.)

If the thickness is less than the minimum, replace the inner race.



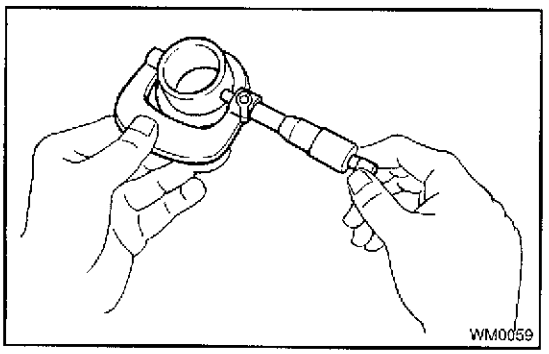
(c) Using a micrometer, measure the outer diameter of the output shaft journal.

Minimum diameter:

2nd gear: 37.86 mm (1.4905 in.)

3rd gear: 34.86 mm (1.3724 in.)

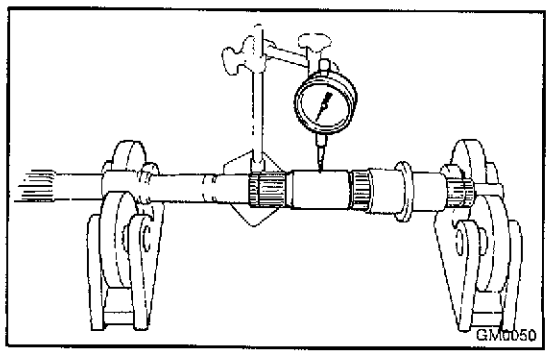
If the outer diameter is less than the minimum, replace the output shaft.



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

Minimum diameter: 38.985 mm (1.5348 in.)

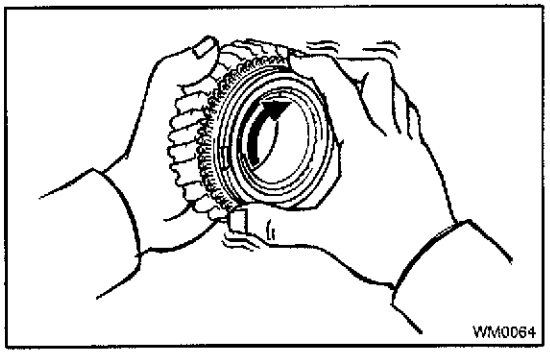
If the outer diameter is less than the minimum, replace the inner race.



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

Maximum runout: 0.06 mm (0.0024 in.)

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



2. INSPECT SYNCHRONIZER RING

(a) Check for wear or damage.

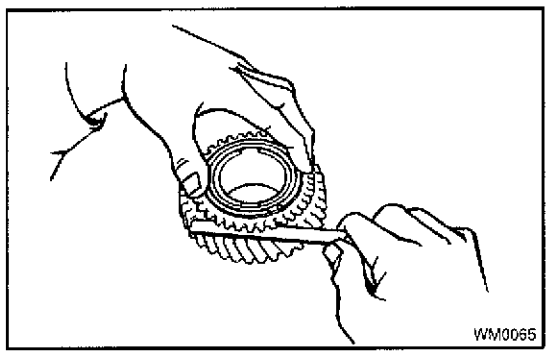
(b) Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks.

If the braking effect is insufficient, apply a small amount of the fine lapping compound between the synchronizer ring and gear cone. Lightly rub the synchronizer ring and gear cone together.

NOTICE:

Ensure the fine lapping compound is completely washed off after rubbing.

(c) Check again the braking effect of the synchronizer ring.



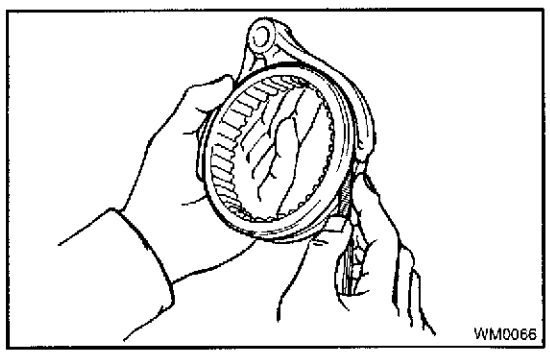
(d) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance: 0.8 mm (0.031 in.)

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

NOTICE:

Ensure the fine lapping compound is completely washed off after rubbing.



3. MEASURE SHIFT FORK AND HUB SLEEVE CLEARANCE

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

Maximum clearance: 1.0 mm (0.039 in.)

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

MT05B–02

REASSEMBLY

HINT:

Coat all of the sliding and rotating surfaces with gear oil before reassembly.

1. INSTALL CLUTCH HUBS NO.1 AND NO.2 INTO REVERSE GEAR AND HUB SLEEVE NO.2

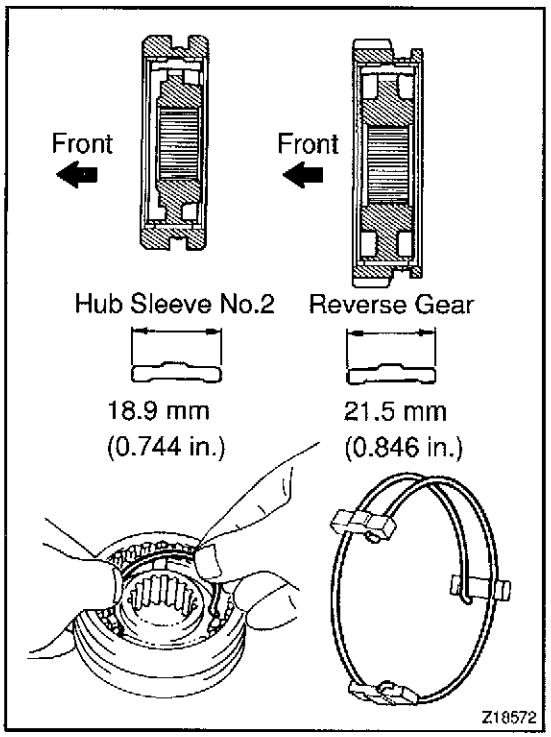
(a) Install the clutch hub No.2 and shifting keys to the hub sleeve No.2.

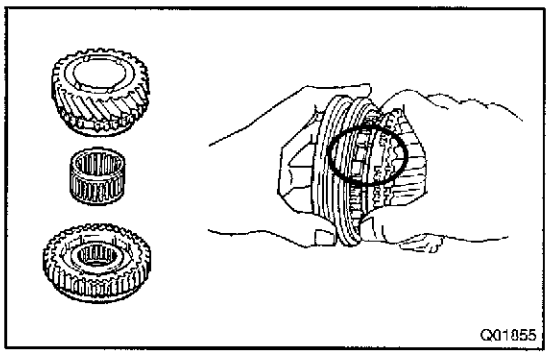
(b) Install the clutch hub No.1 and shifting keys to the reverse gear.

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

NOTICE:

Position the key springs so that their end gaps are not aligned.



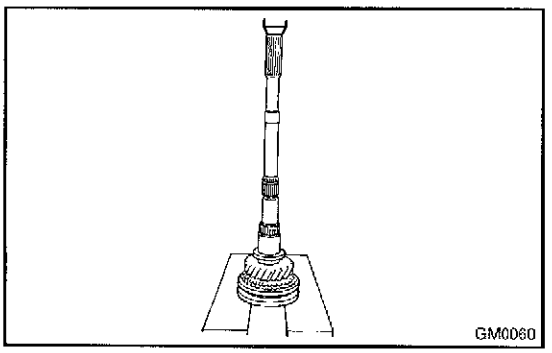


2. INSTALL 3RD GEAR AND HUB SLEEVE NO.2 ON OUTPUT SHAFT

(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 hub sleeve No.2.

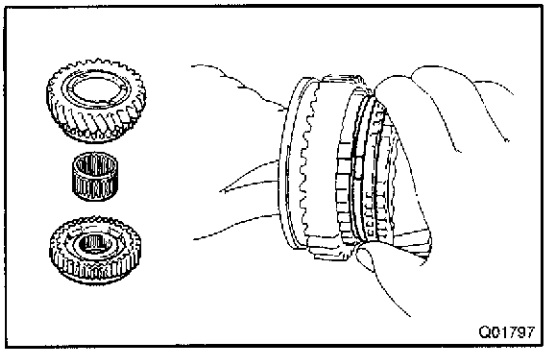
3. INSTALL SNAP RING

(a) Select a snap ring that allows the minimum axial play.

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

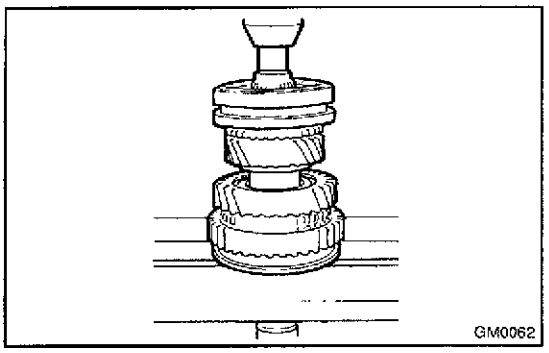
(b) Using a snap ring expander, install the snap ring.

4. MEASURE 3RD GEAR THRUST CLEARANCE
(See page MT–36)



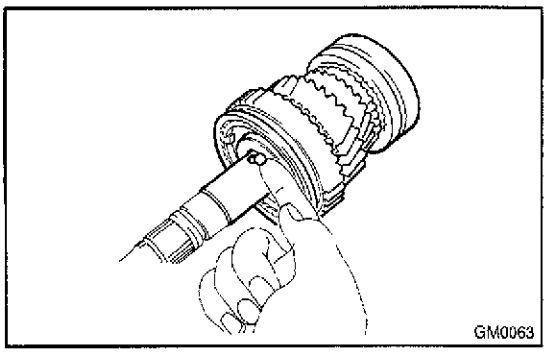
5. INSTALL 2ND GEAR AND REVERSE GEAR ASSEMBLY

(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.



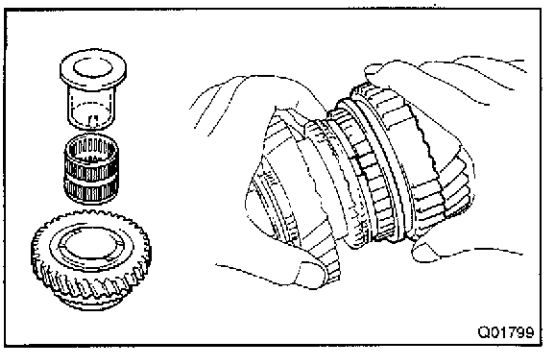
(d) Using a press, install the 2nd gear and reverse gear assembly.

6. MEASURE 2ND GEAR THRUST CLEARANCE
(See page MT–36)

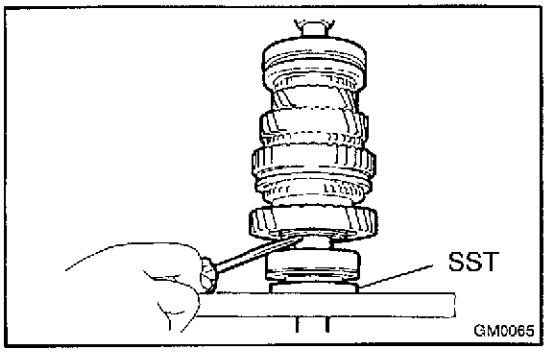


7. INSTALL LOCKING BALL AND 1ST GEAR ASSEMBLY

(a) Install the locking ball in the shaft.



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



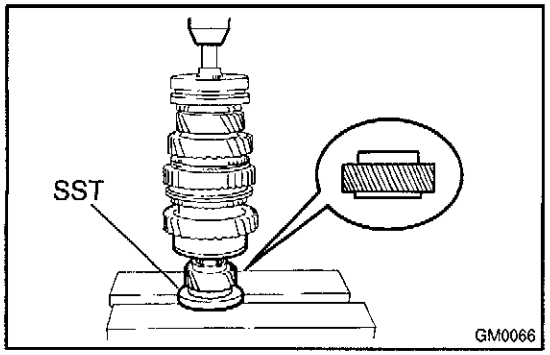
8. INSTALL OUTPUT SHAFT REAR BEARING

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

HINT:

Hold the 1st gear inner race to prevent it from falling, as shown.

SST 09506–35010



9. INSTALL 5TH GEAR

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

SST 09506–35010

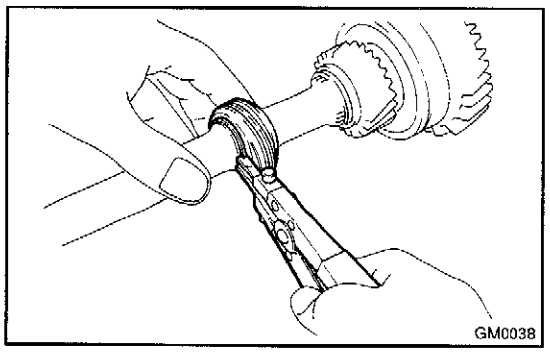
10. INSTALL SNAP RING

(a) Select a snap ring that allows the minimum axial play.

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

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

11. MEASURE 1ST GEAR THRUST CLEARANCE
(See page MT–36)



12. 2WD:
INSTALL SPEEDOMETER DRIVE GEAR

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

(b) Install the ball and drive gear.

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