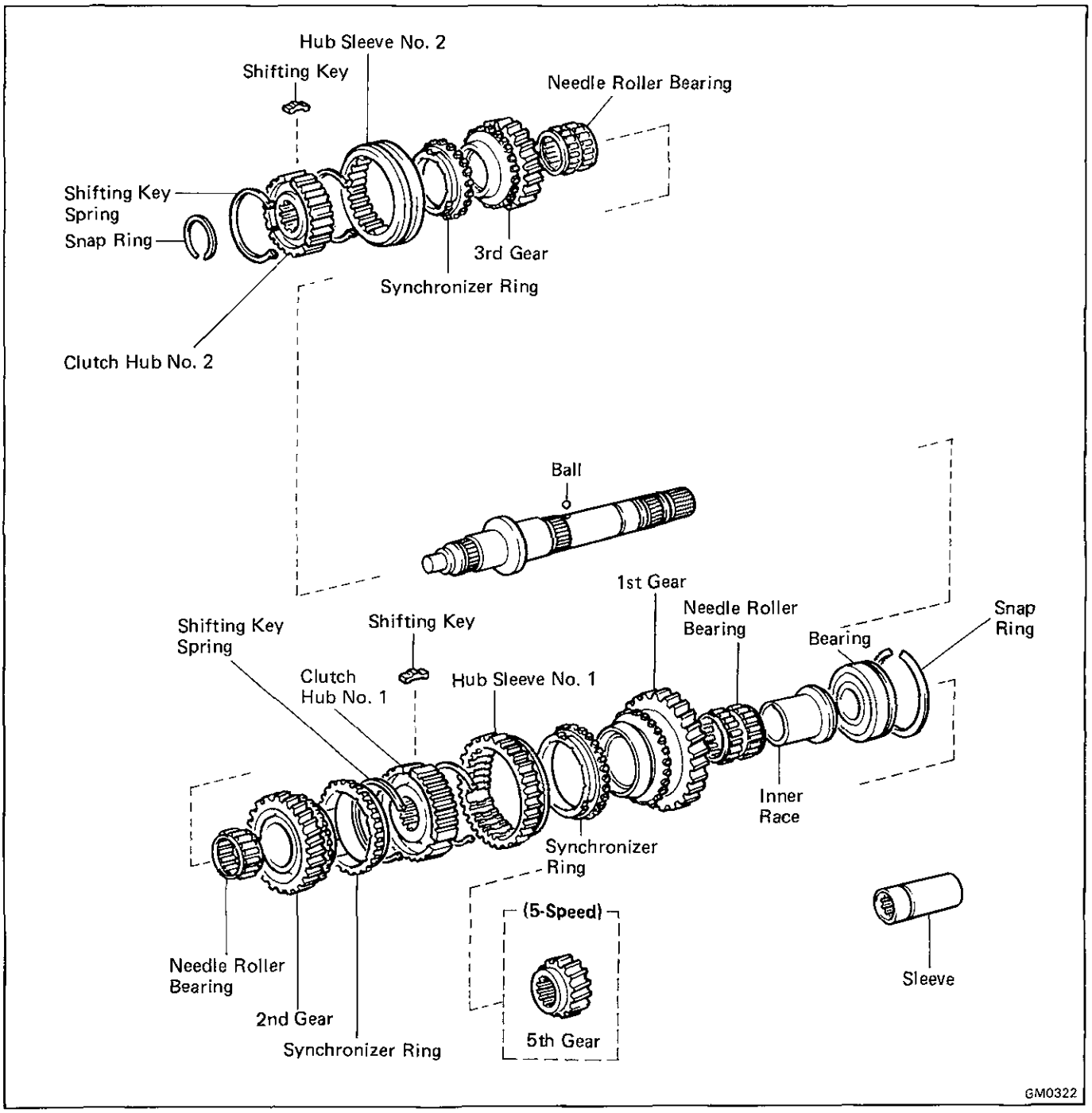
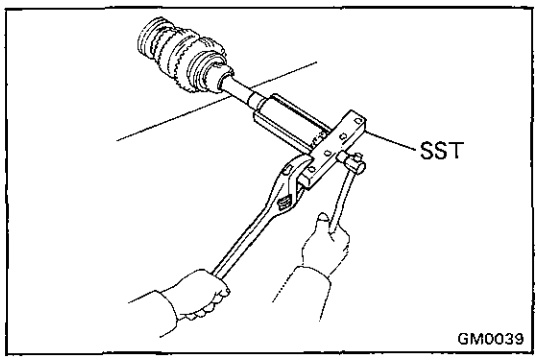
Output Shaft Assembly

COMPONENTS



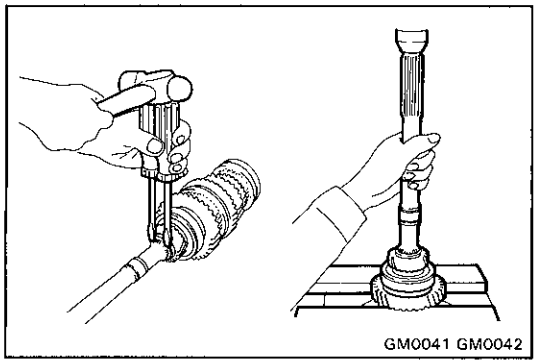


DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. **REMOVE SLEEVE FROM OUTPUT SHAFT**

   Using SST, remove the sleeve from the output shaft.

   SST 09950-20017

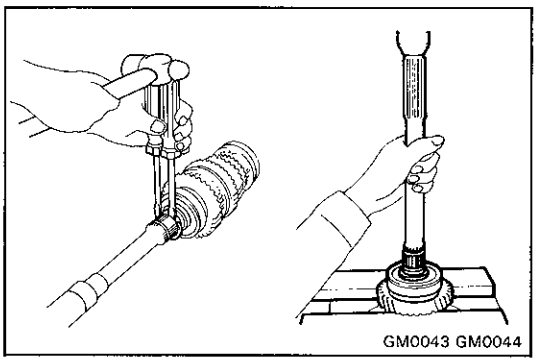

GM0041 GM0042

2.-1 (5-Speed)
REMOVE FIFTH GEAR, REAR BEARING, FIRST GEAR, INNER RACE AND NEEDLE ROLLER BEARING

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

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

(c) Remove the needle roller bearing.

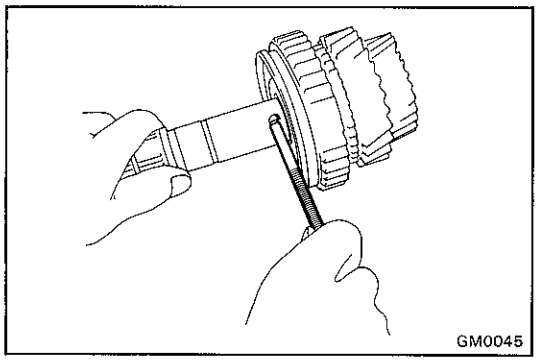

GM0043 GM0044

2.-2 (4-Speed)
REMOVE REAR BEARING, FIRST GEAR, INNER RACE AND NEEDLE ROLLER BEARING

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

(b) Using a press, remove the rear bearing, 1st gear and inner race.

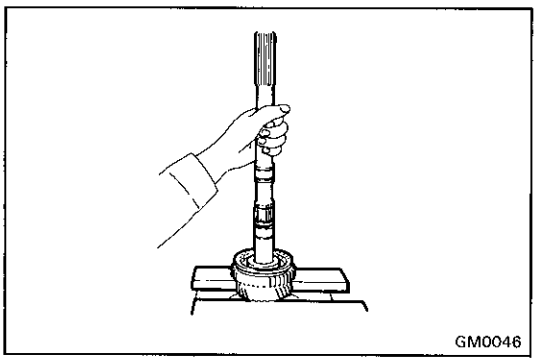
(c) Remove the needle roller bearing.


GM0045

3. REMOVE SYNCHRONIZER RING

4. REMOVE LOCKING BALL

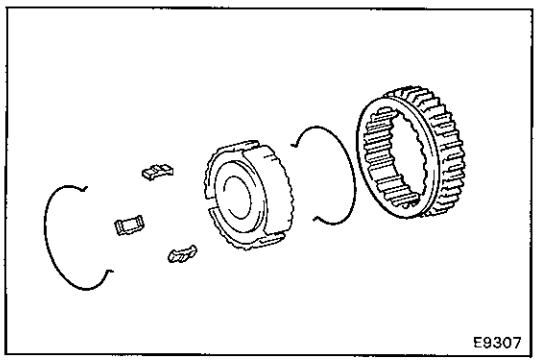
Using a magnetic finger, remove the locking ball.


GM0046

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

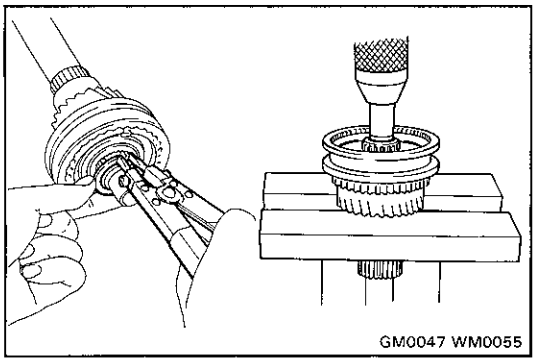
(a) Using a press, remove hub sleeve No.1, synchronizer ring and 2nd gear.

(b) Remove the needle roller bearing.


E9307

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

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

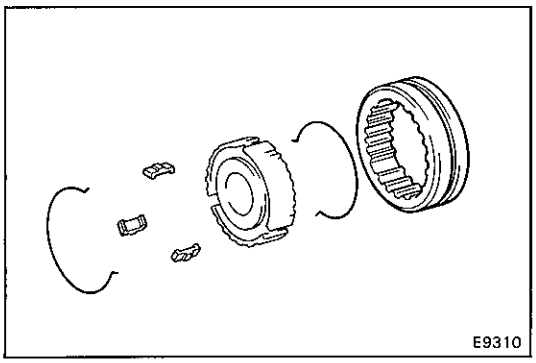


7. REMOVE HUB SLEEVE NO.2 ASSEMBLY, SYNCHRONIZER RING, THIRD GEAR AND NEEDLE ROLLER BEARING

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

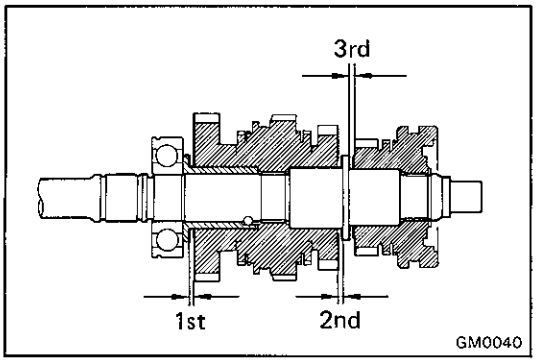
(b) Using a press, remove hub sleeve No.2, synchronizer ring and 3rd gear.

(c) Remove the needle roller bearing.



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

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



INSPECTION OF OUTPUT SHAFT ASSEMBLY

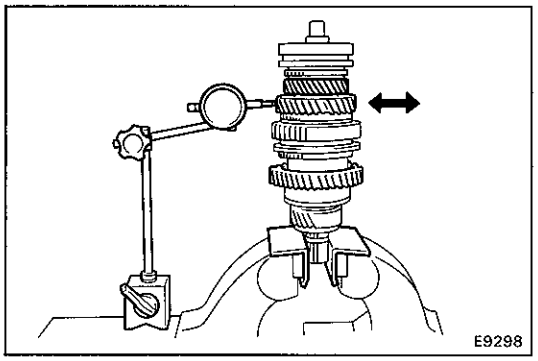
1. MEASURE EACH GEAR THRUST CLEARANCE

Measure the thrust clearance of each gear.

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

Maximum clearance: **0.25 mm (0.0098 in.)**

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



2. MEASURE EACH GEAR OIL CLEARANCE

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

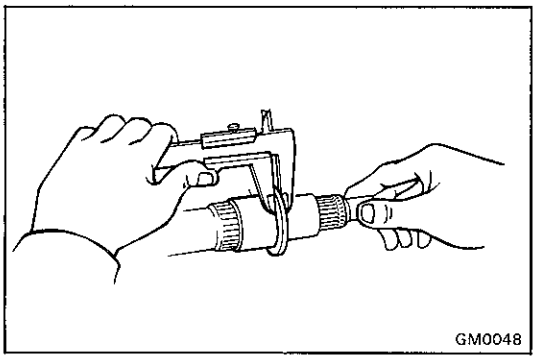
Standard clearance:

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.)**

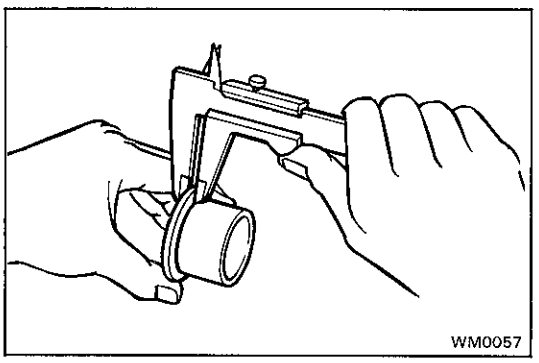
If the clearance more than the limit, replace the gear, needle roller bearing or shaft.



3. INSPECT OUTPUT SHAFT AND INNER RACE

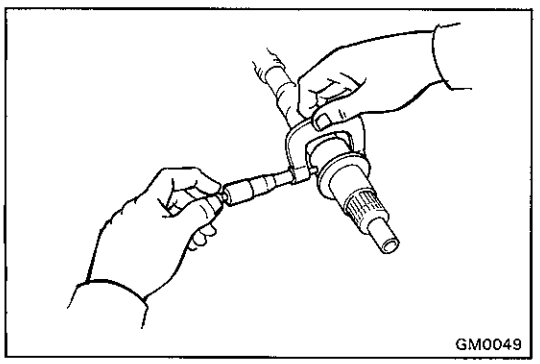
(a) Using calipers, measure the output shaft flange thickness.

Minimum thickness: **4.80 mm (0.1890 in.)**



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

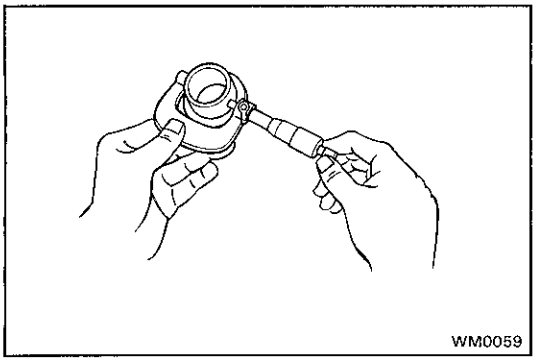
Minimum thickness: **3.99 mm (0.1571 in.)**



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

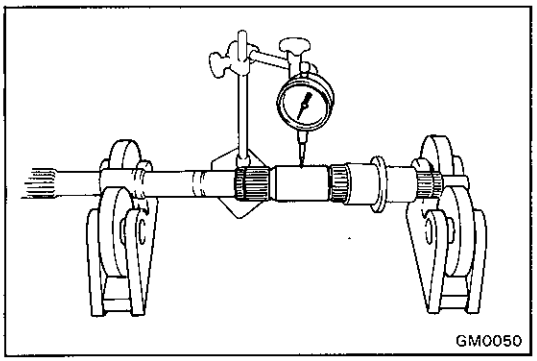
Minimum diameter:

2nd gear	**37.984 mm (1.4954 in.)**
3rd gear	**34.984 mm (1.3773 in.)**


WM0059

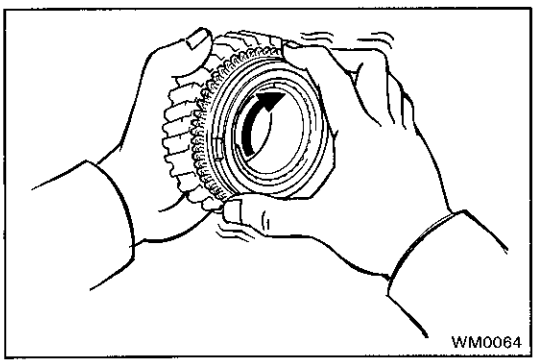
(d) Using a micrometer, measure the outer diameter of the inner race.

Minimum diameter: 38.985 mm (1.5348 in.)


GM0050

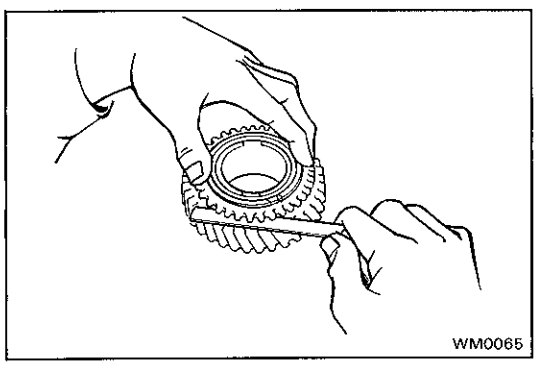
(e) Using a dial indicator, check the shaft runout.

Maximum runout: 0.05 mm (0.0020 in.)


WM0064

4. INSPECT SYNCHRONIZER RINGS

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

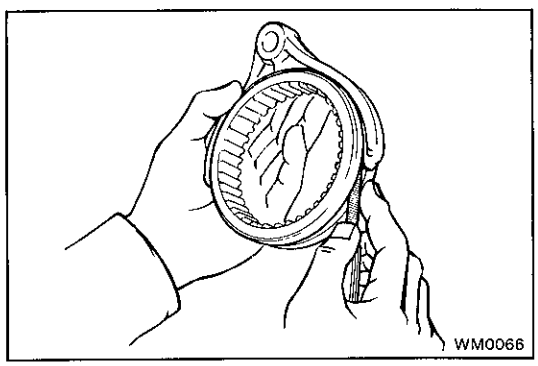

WM0065

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

Standard clearance: 1.0 — 2.0 mm (0.039 — 0.079 in.)

Minimum clearance: 0.8 mm (0.031 in.)

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

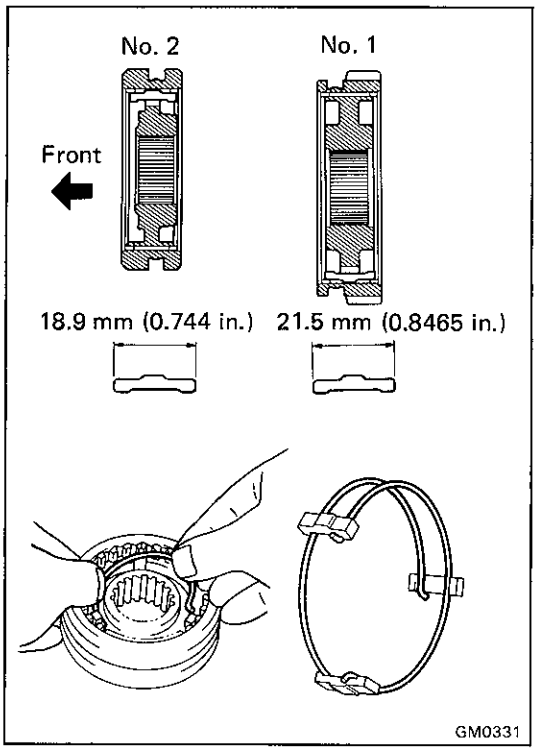

WM0066

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 more than the limit, replace the shift fork or hub sleeve.



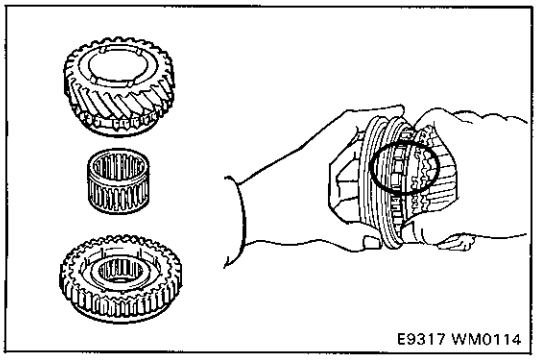
ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

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

(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.

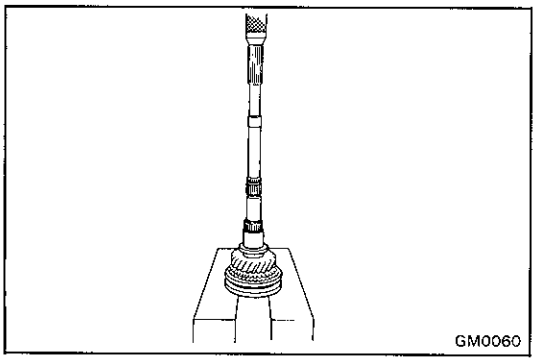


2. INSTALL THIRD GEAR AND HUB SLEEVE NO.2 ON OUTPUT SHAFT

(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.

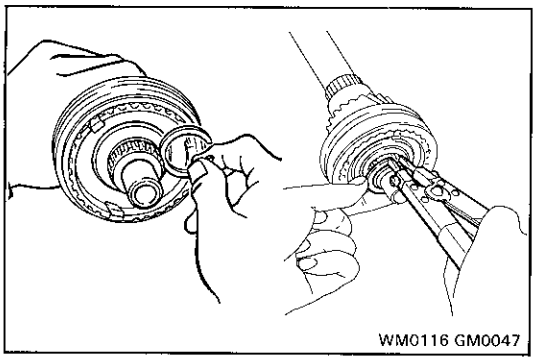
(c) Install the needle roller bearing in the 3rd gear.



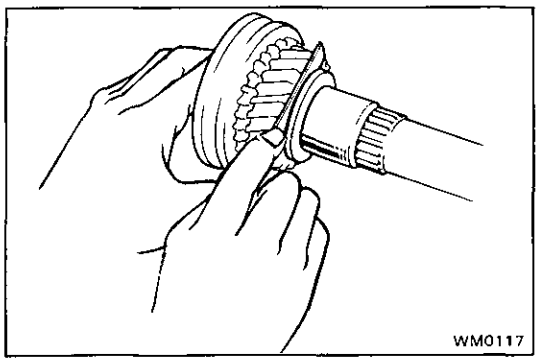
(d) Using a press, install the 3rd gear and hub sleeve No.2.

3. INSTALL SNAP RING

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



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

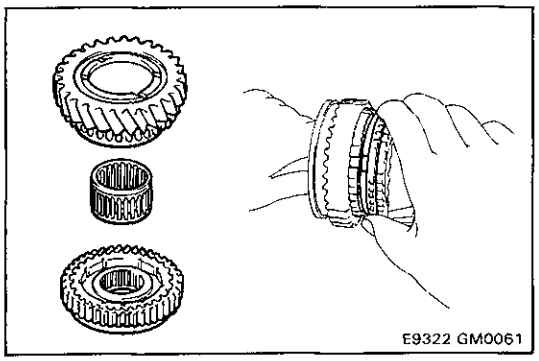


4. MEASURE THIRD GEAR THRUST CLEARANCE

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

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

Maximum clearance: **0.25 mm (0.0098 in.)**

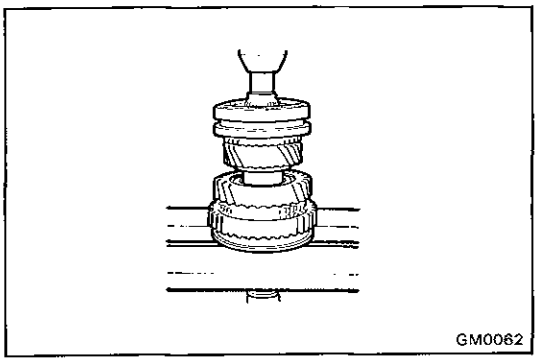


5. INSTALL SECOND GEAR AND HUB SLEEVE NO.1

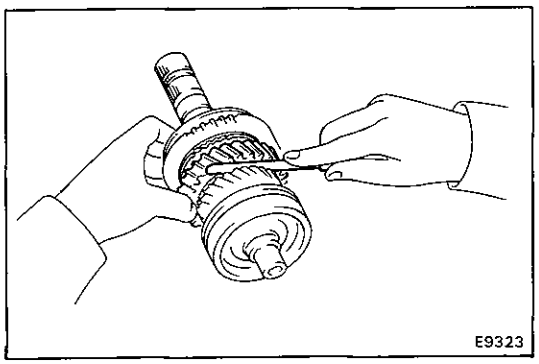
(a) Apply gear oil to the shaft and needle roller bearing.

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

(c) Install the needle roller bearing in the 2nd gear.



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

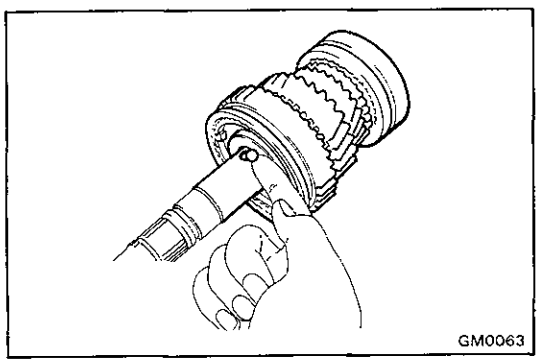


6. MEASURE SECOND GEAR THRUST CLEARANCE

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

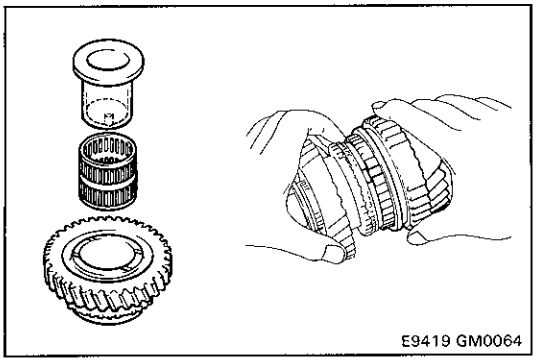
Standard clearance: **0.10 — 0.25 mm (0.0039 — 0.0098 in.)**

Maximum clearance: **0.25 mm (0.0098 in.)**



7. INSTALL LOCKING BALL AND FIRST GEAR ASSEMBLY

(a) Install the locking ball on the shaft.

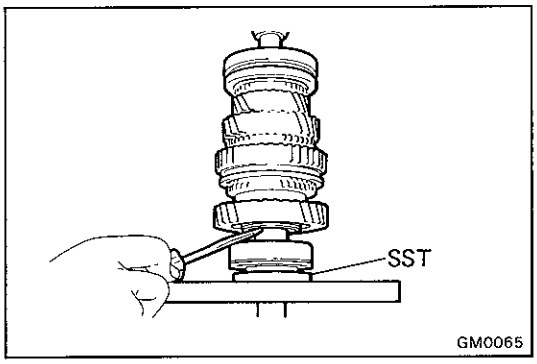

E9419 GM0064

(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.



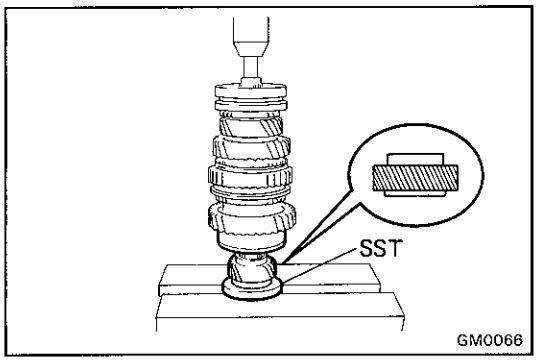
GM0065

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.

SST 09506-35010



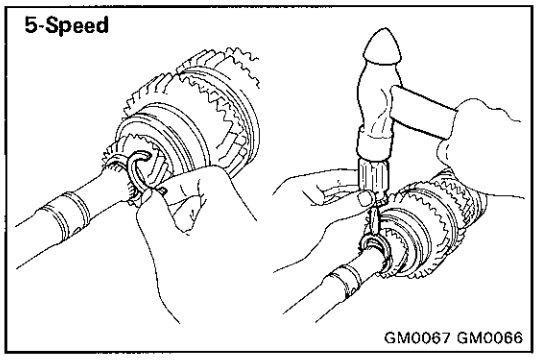
GM0066

9. (5-Speed) INSTALL FIFTH GEAR

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

SST 09506-35010

5-Speed


GM0067 GM0066

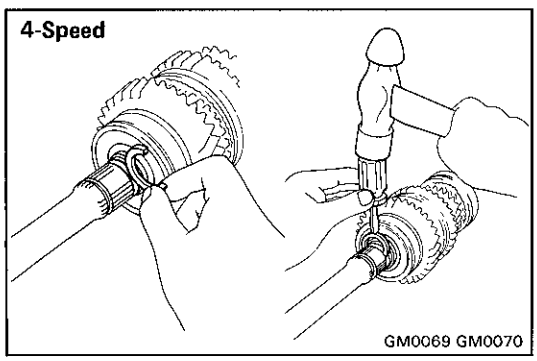
10. INSTALL SNAP RING

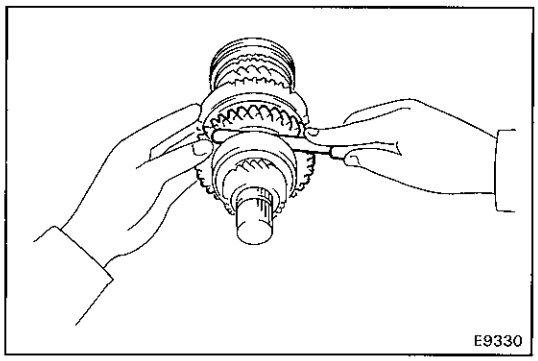
(a) Select a snap ring that will allow minimum axial play.

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

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)

4-Speed


GM0069 GM0070

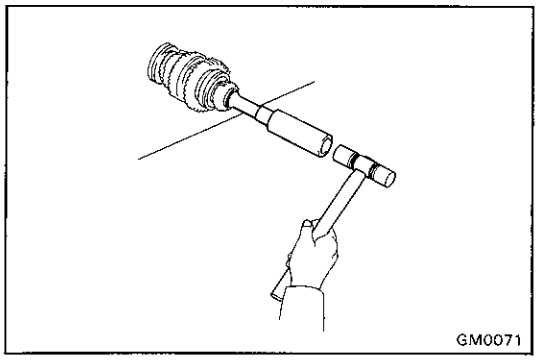


11. MEASURE FIRST GEAR THRUST CLEARANCE

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

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

Maximum clearance: **0.25 mm (0.0098 in.)**



12. INSTALL SLEEVE TO OUTPUT SHAFT

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