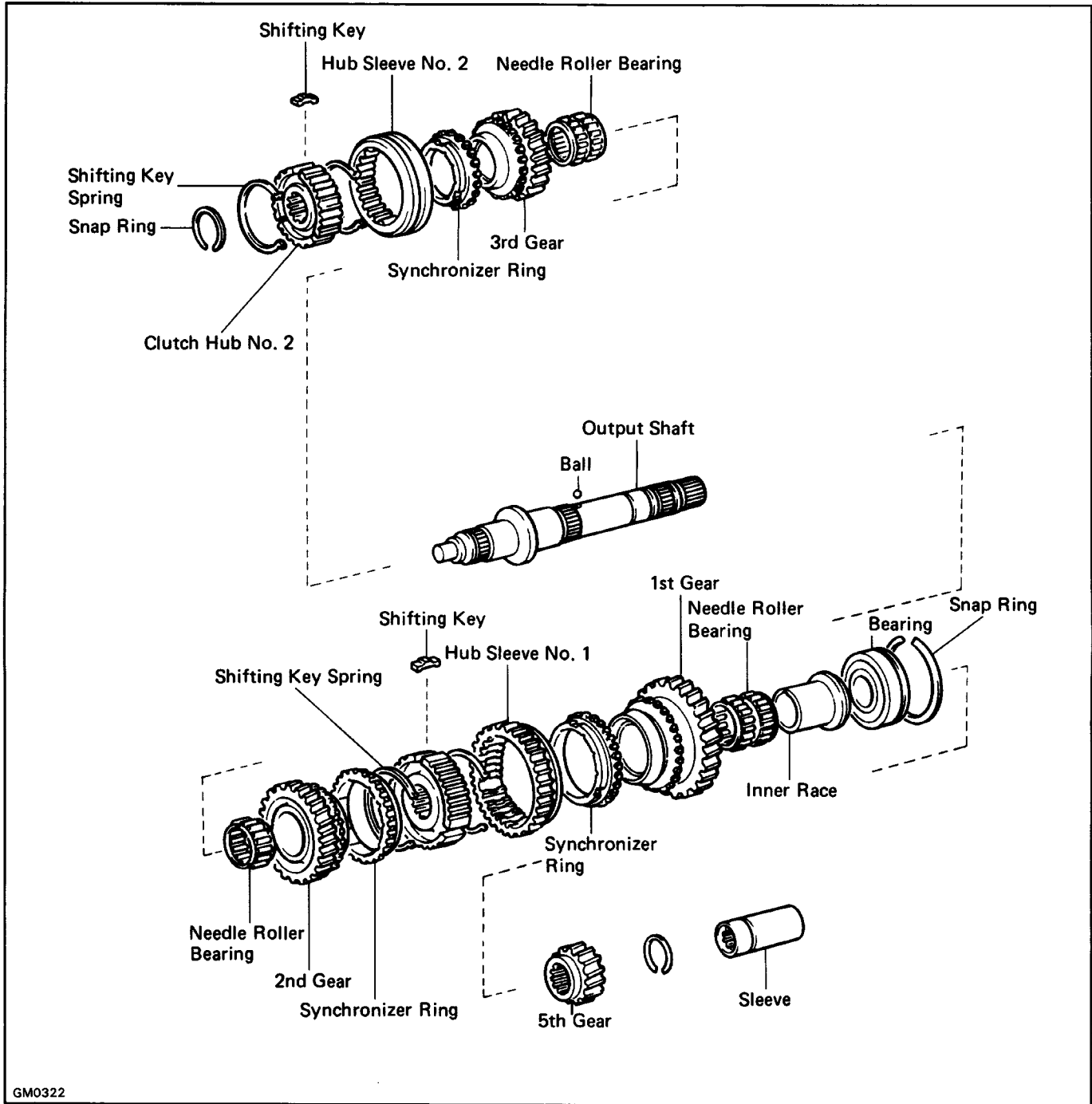
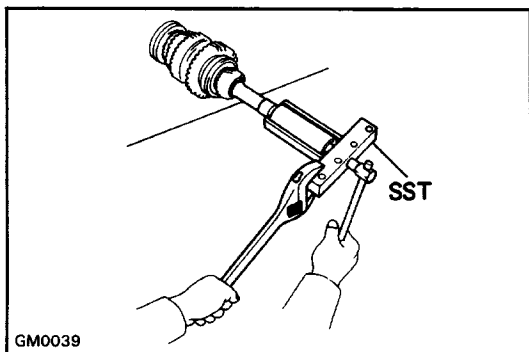


Output Shaft Assembly COMPONENTS



GM0322



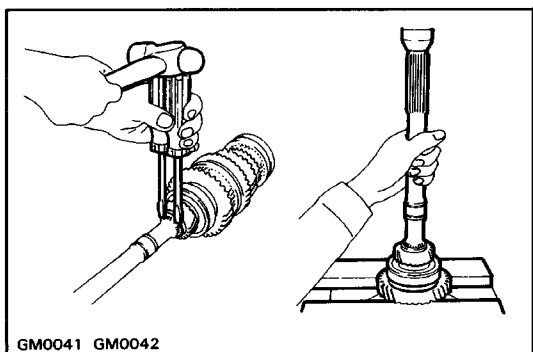
GM0039

DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. REMOVE SLEEVE FROM OUTPUT SHAFT

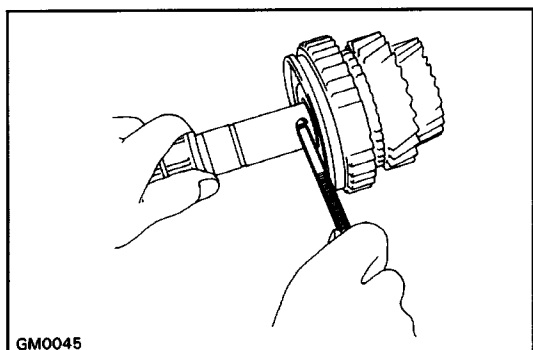
Using SST, remove the sleeve from the output shaft.

SST 09950-20017



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

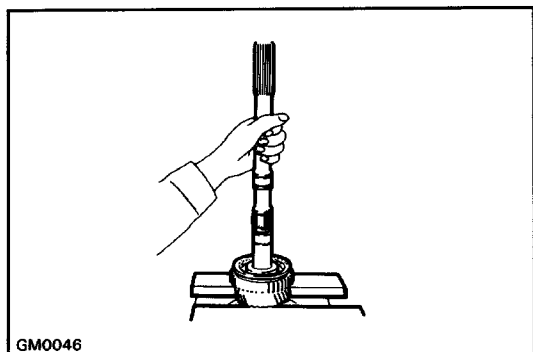
- (a) Using two screwdrivers and a hammer, tap out the snap ring.
- (b) Using a press, remove the 5th gear, rear bearing, 1st gear and inner race.
- (c) Remove the needle roller bearing.



3. REMOVE SYNCHRONIZER RING

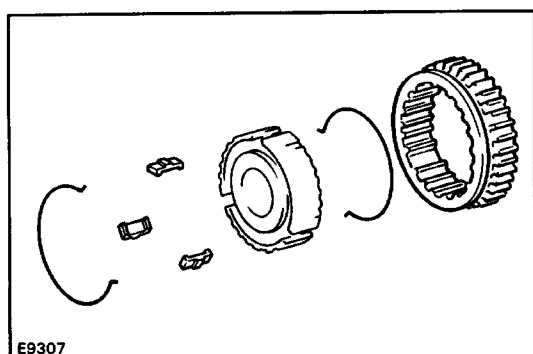
4. REMOVE LOCKING BALL

Using a magnetic finger, remove the locking ball.



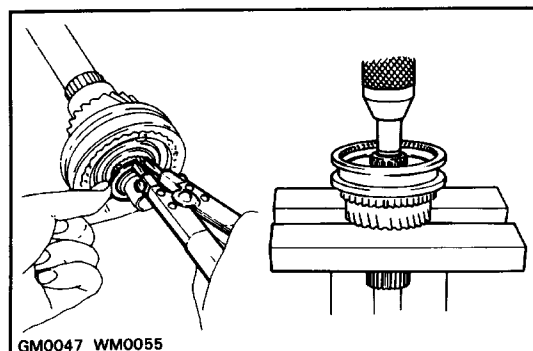
5. REMOVE HUB SLEEVE NO. 1 ASSEMBLY, SYNCHRONIZER RING, SECOND GEAR AND NEEDLE ROLLER BEARING

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



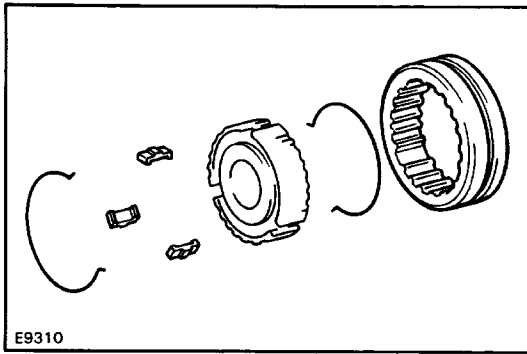
6. REMOVE HUB SLEEVE NO. 1, SHIFTING KEYS AND SPRINGS FROM CLUTCH HUB NO. 1

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



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

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



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

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

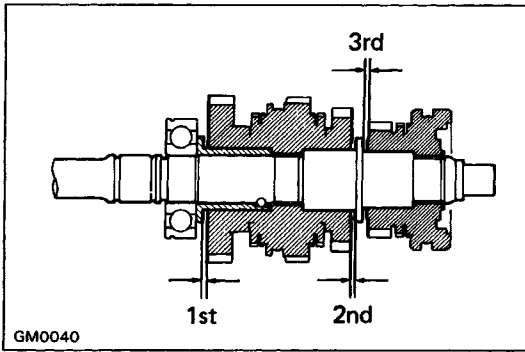
INSPECTION OF OUTPUT SHAFT ASSEMBLY

1. INSPECT EACH GEAR THRUST CLEARANCE

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

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

Maximum clearance: 0.25 mm (0.0098 in.)



GM0040

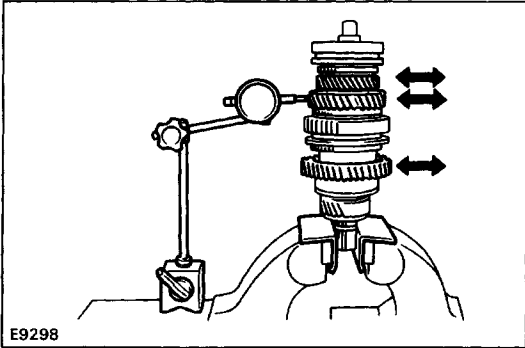
2. INSPECT EACH GEAR OIL CLEARANCE

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

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

Maximum clearance: 0.032 mm (0.0013 in.)

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



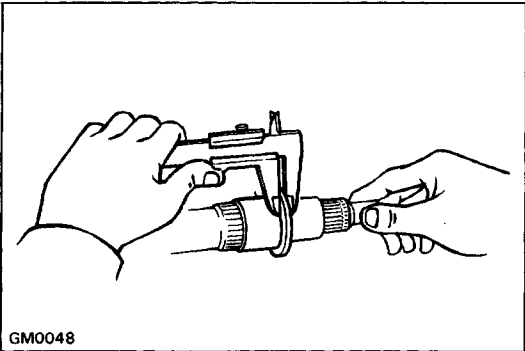
E9298

3. INSPECT OUTPUT SHAFT AND INNER RACE

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

Minimum thickness: 4.80 mm (0.1890 in.)

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

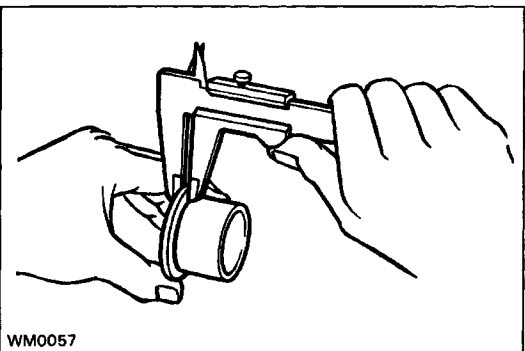


GM0048

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

Minimum thickness: 3.99 mm (0.1571 in.)

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



WM0057

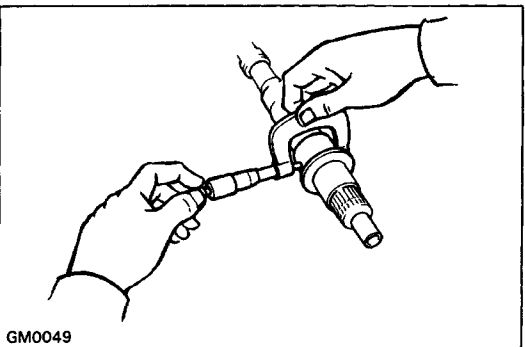
(c) Using a micrometer, measure the outer diameter of the output shaft journal.

Minimum diameter:

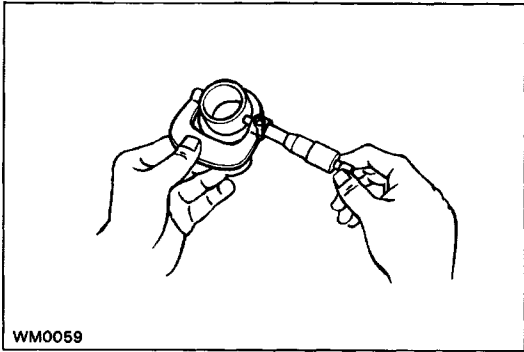
2nd gear 37.984 mm (1.4954 in.)

3rd gear 34.984 mm (1.3773 in.)

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



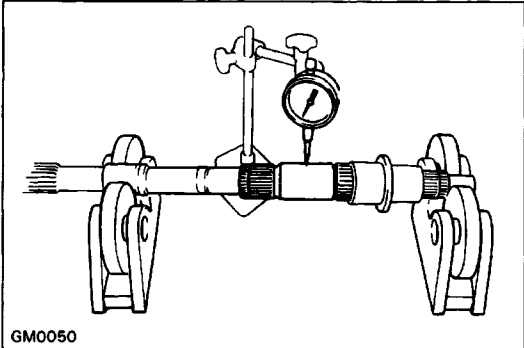
GM0049



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

Minimum diameter: 38.985 mm (1.5348 in.)

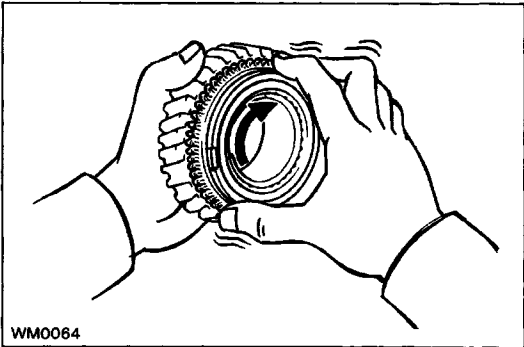
If the outer diameter exceeds the minimum, replace the inner race.



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

Maximum runout: 0.05 mm (0.0020 in.)

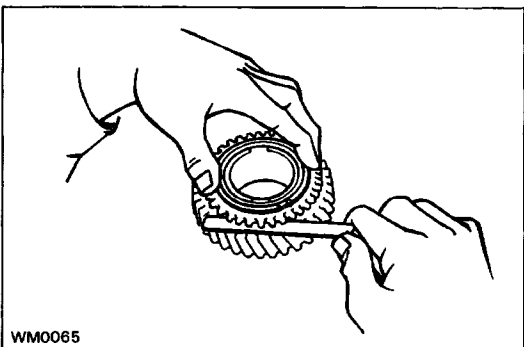
If the runout exceeds the maximum, replace the output shaft.



4. INSPECT SYNCHRONIZER RINGS

(a) Check for wear or damage.

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



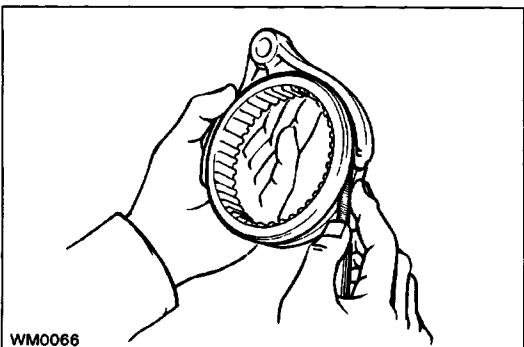
(c) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Standard clearance: 1.0 – 2.0 mm

(0.039 – 0.079 in.)

Minimum clearance: 0.8 mm (0.031 in.)

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

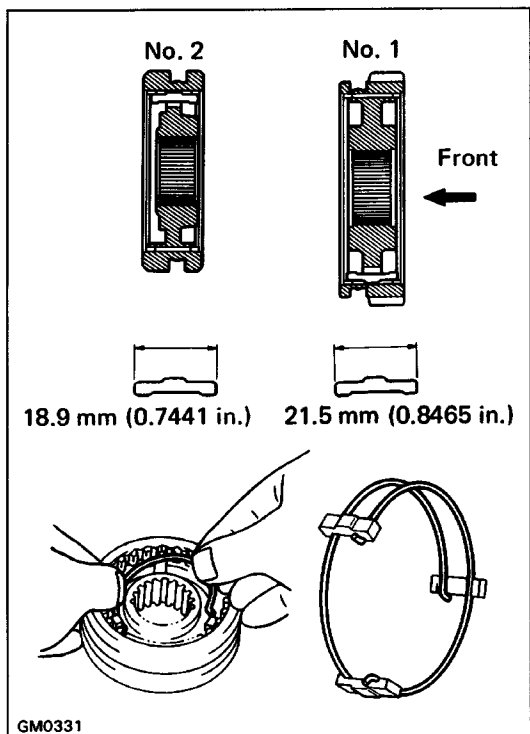


5. INSPECT CLEARANCE OF SHIFT FORKS AND HUB SLEEVES

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

Maximum clearance: 1.0 mm (0.039 in.)

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

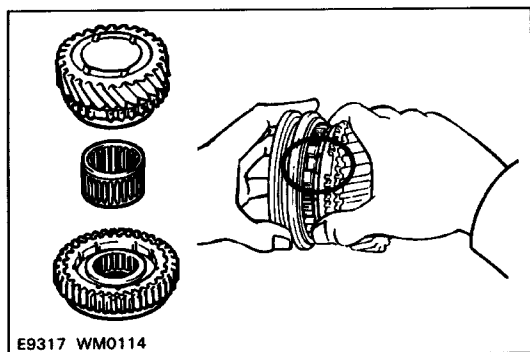


ASSEMBLY OF OUTPUT SHAFT ASSEMBLY
1. INSTALL CLUTCH HUB NO.1 AND NO.2 INTO HUB SLEEVE

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

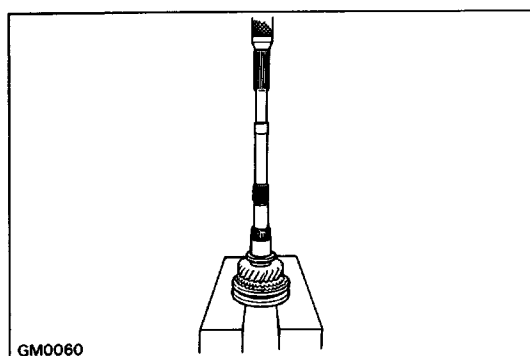
- (a) Install the clutch hub and shifting keys to the hub sleeve.
- (b) Install the shifting key springs under the shifting keys.

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

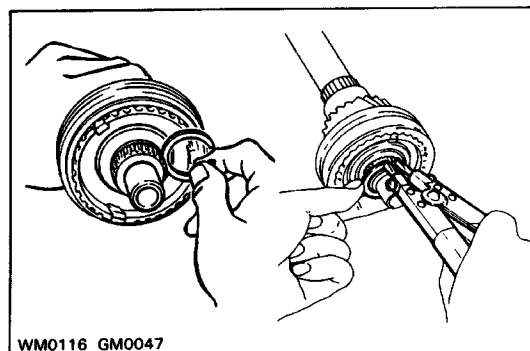


2. INSTALL THIRD GEAR AND HUB SLEEVE NO.2 ON OUTPUT SHAFT

- (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.



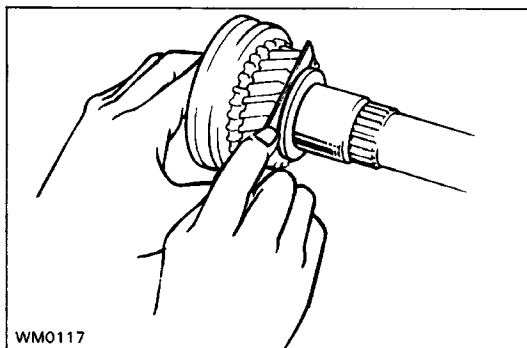
- (d) Using a press, install the 3rd gear and hub sleeve No. 2.



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)



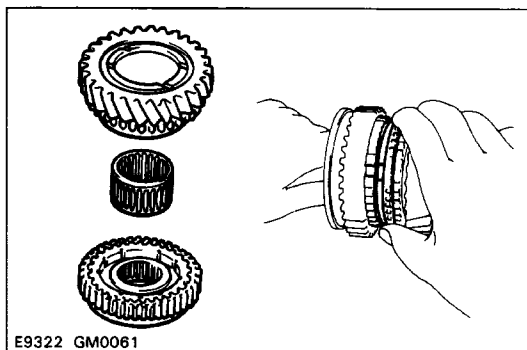
WM0117

4. INSPECT THIRD GEAR THRUST CLEARANCE

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

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

Maximum clearance: 0.25 mm (0.0098 in.)

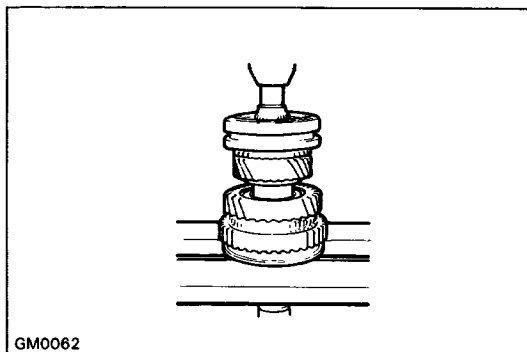


E9322 GM0061

5. INSTALL SECOND GEAR AND HUB SLEEVE NO. 1

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

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



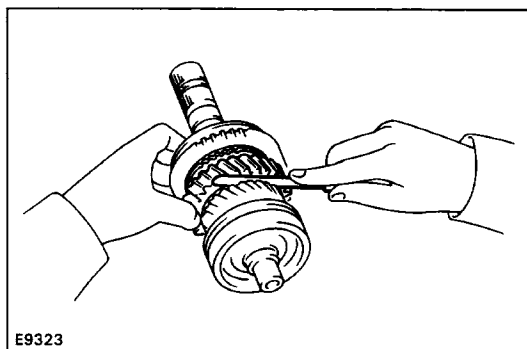
GM0062

6. INSPECT SECOND GEAR THRUST CLEARANCE

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

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

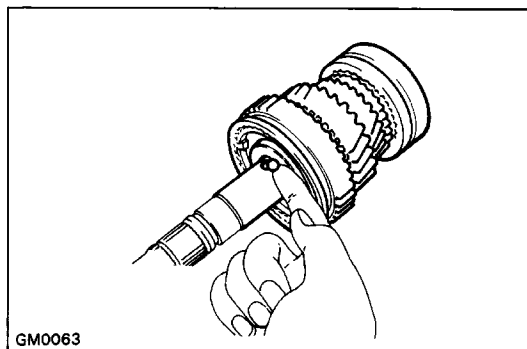
Maximum clearance: 0.25 mm (0.0098 in.)



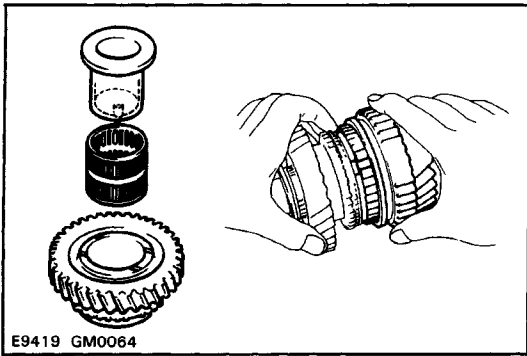
E9323

7. INSTALL LOCKING BALL AND FIRST GEAR ASSEMBLY

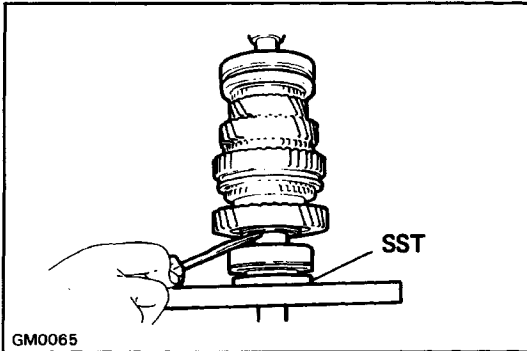
- (a) Install the locking ball in the shaft.



GM0063



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

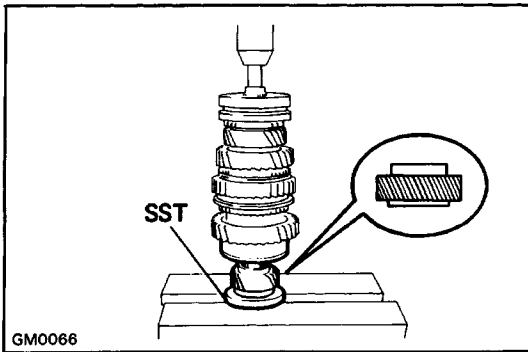


8. INSTALL OUTPUT SHAFT REAR BEARING

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

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

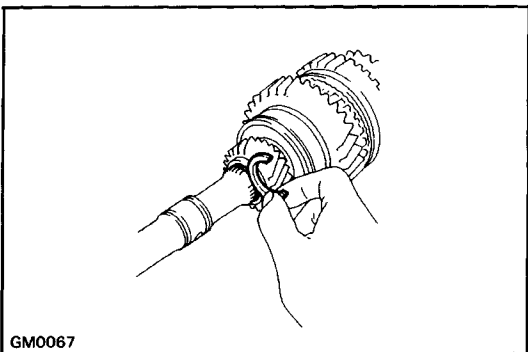
SST 09 506-3 5010



9. INSTALL FIFTH GEAR

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

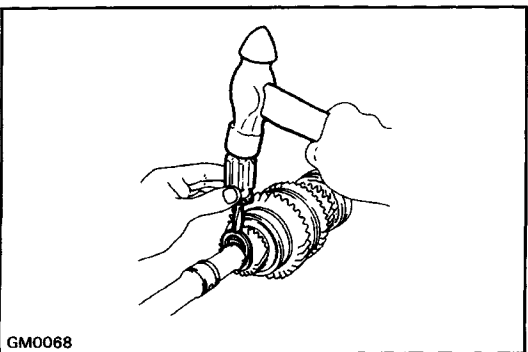
SST 09506-35010



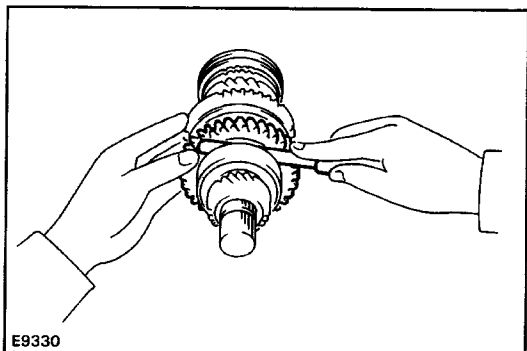
10. INSTALL SNAP RING

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

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



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

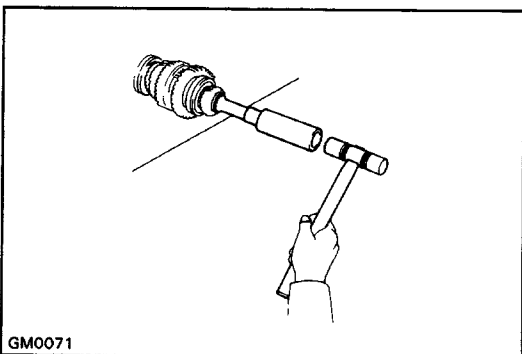
**11. MEASURE FIRST GEAR THRUST CLEARANCE**

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

Standard clearance: 0.10 – 0.25 mm

(0.0039 – 0.0098 in.)

Maximum clearance: 0.25 mm (0.0098 in.)

**12. INSTALL SLEEVE TO OUTPUT SHAFT**

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