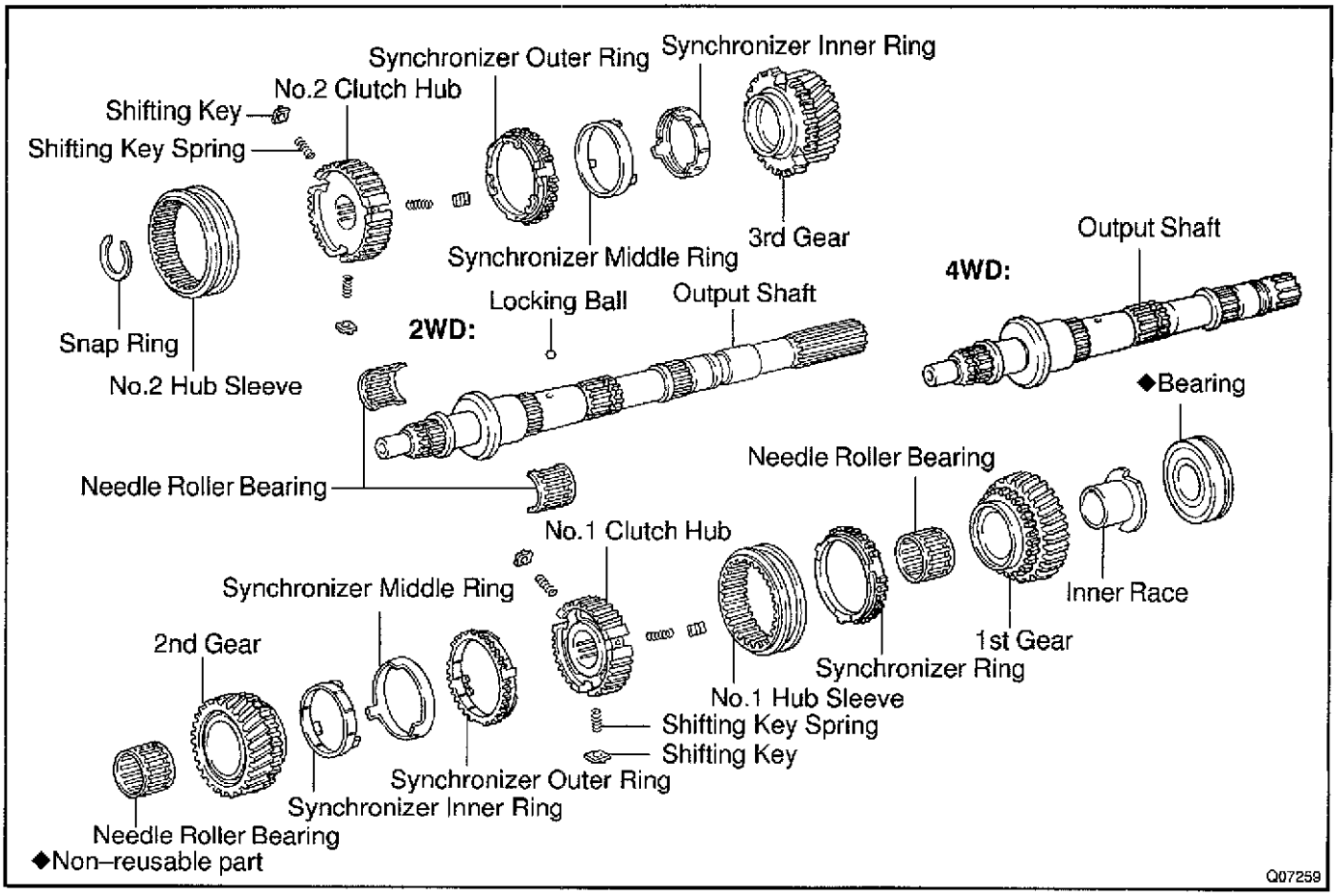
OUTPUT SHAFT

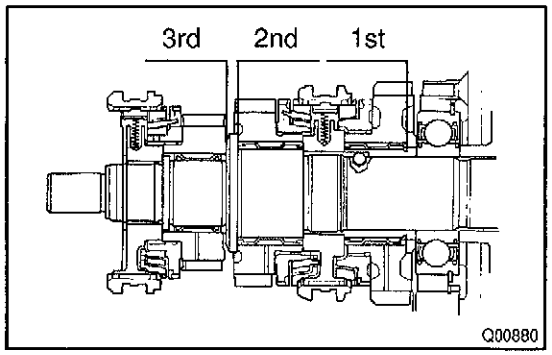
COMPONENTS

MT00T–03



MT00U-03

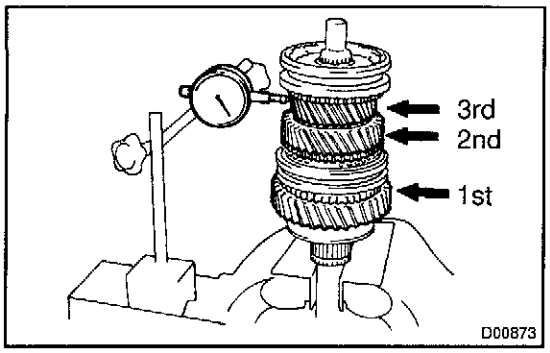
DISASSEMBLY



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:
0.30 mm (0.0118 in.)

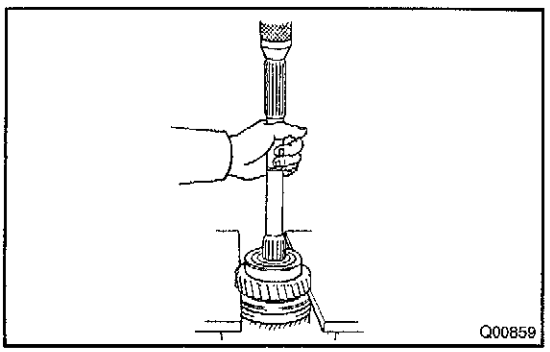


2. INSPECT EACH GEAR RADIAL CLEARANCE

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

Standard clearance:
1st and 2nd gears:
0.009 – 0.060 mm (0.0004 – 0.0024 in.)
3rd gear: 0.015 – 0.066 mm (0.0006 – 0.0026 in.)
Maximum clearance:
1st and 2nd gears: 0.150 mm (0.0059 in.)
3rd gear: 0.200 mm (0.0079 in.)

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

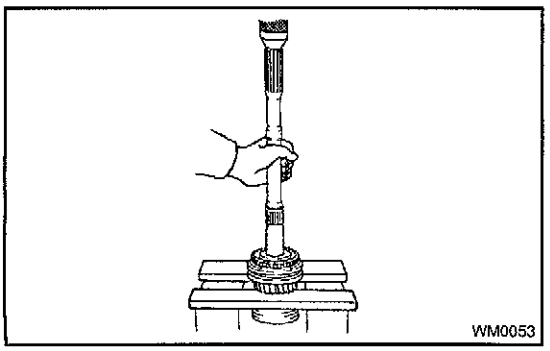


3. REMOVE OUTPUT SHAFT CENTER BEARING AND 1ST GEAR ASSEMBLY

(a) Shift the 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.

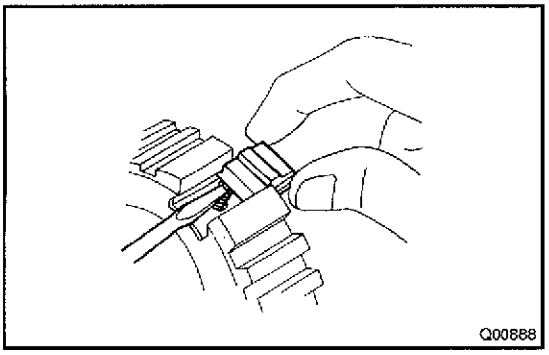
4. REMOVE LOCKING BALL ON OUTPUT SHAFT

Using a magnetic finger, remove the locking ball.



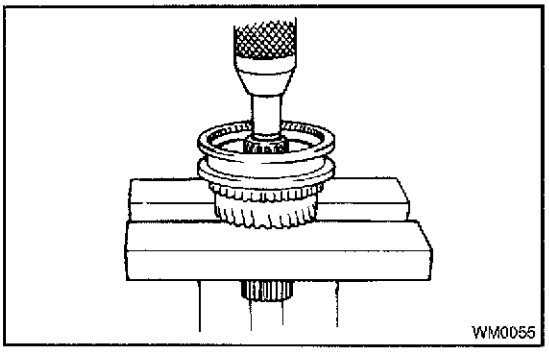
5. REMOVE NO.1 HUB SLEEVE ASSEMBLY, 2ND GEAR AND NEEDLE ROLLER BEARING

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



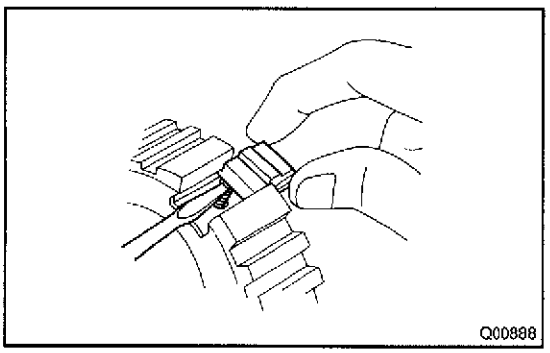
6. REMOVE NO.1 HUB SLEEVE, SHIFTING KEY AND SPRING FROM NO. 1 CLUTCH HUB

(a) Remove the No.1 hub sleeve from the No.1 clutch hub.
(b) Push the shifting key spring with a screwdriver, remove the 3 shifting keys and key springs.



7. REMOVE NO.2 HUB SLEEVE ASSEMBLY AND 3RD GEAR

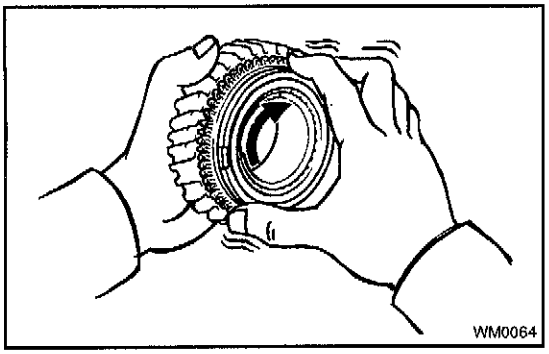
(a) Using a snap ring expander, remove the snap ring.
(b) Using a press, remove the No.2 hub sleeve, synchronizer ring and 3rd gear.



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

(a) Remove the No.2 hub sleeve from the No.2 clutch hub.
(b) Push the shifting key spring with a screwdriver, remove the 3 shifting keys and key springs.

MT00V-03


WM0064

INSPECTION

1. INSPECT 1ST GEAR SYNCHRONIZER RING

(a) Check for wear or damage.

(b) Check for the braking effect of the synchronizer ring.

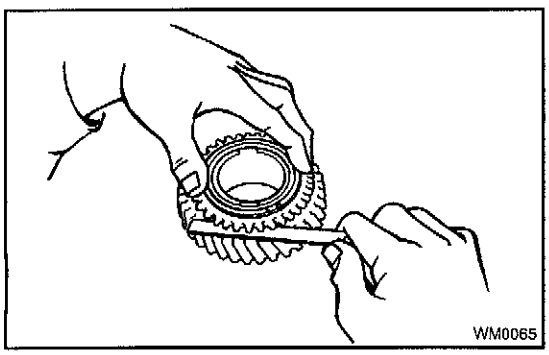
Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks.

If the braking effect is insufficient, apply a small amount of 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.


WM0065

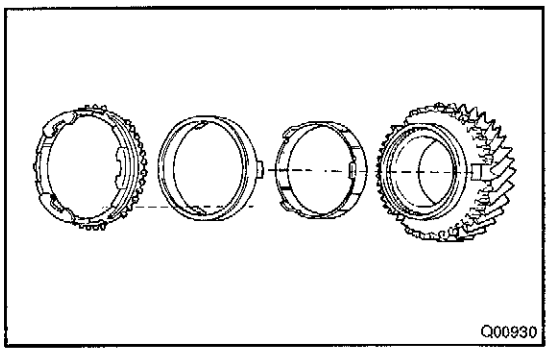
(d) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Minimum clearance:
0.5 mm (0.020 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:

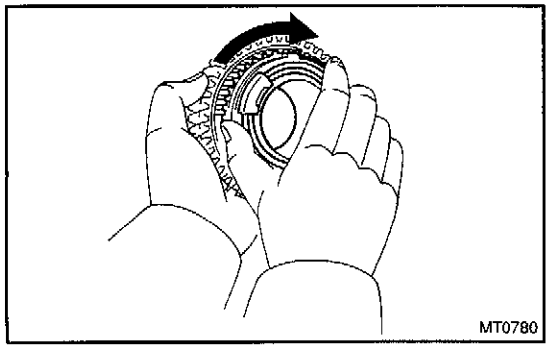
Ensure the fine lapping compound is completely washed off after rubbing.


Q00930

2. INSPECT 2ND AND 3RD GEAR SYNCHRONIZER RINGS

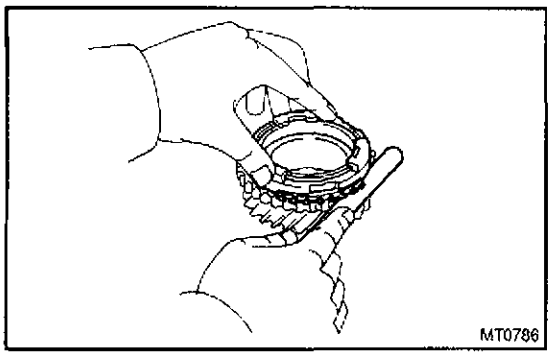
(a) Check for wear or damage.

(b) Install the synchronizer inner ring, middle ring and outer ring to each gear.

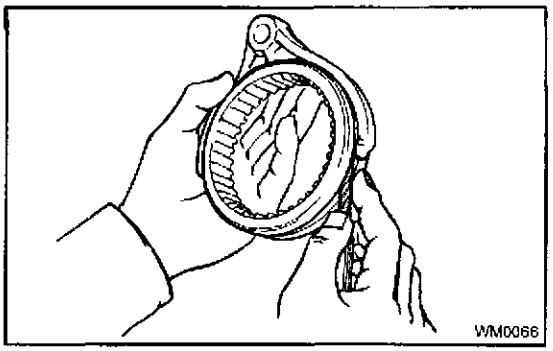

MT0780

(c) 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 it does not lock, replace the synchronizer ring.

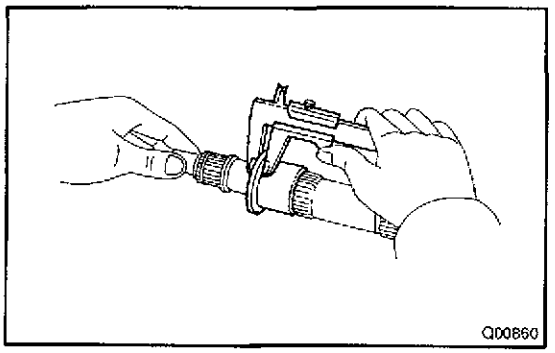


(d) Using a feeler gauge, measure the clearance between the synchronizer ring back and the gear spline end.
Minimum clearance:
0.7 mm (0.028 in.)
If the clearance is less than the minimum, replace the synchronizer ring.



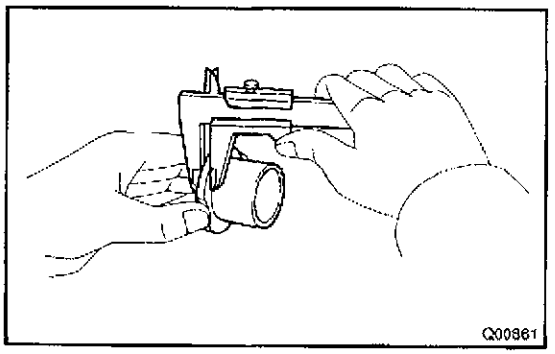
3. INSPECT SHIFT FORK AND HUB SLEEVE CLEARANCE

Using a feeler gauge, measure each clearance between the hub sleeves and shift forks.
Maximum clearance:
1.0 mm (0.039 in.)
If the clearance exceeds the maximum, replace the shift fork or hub sleeve.

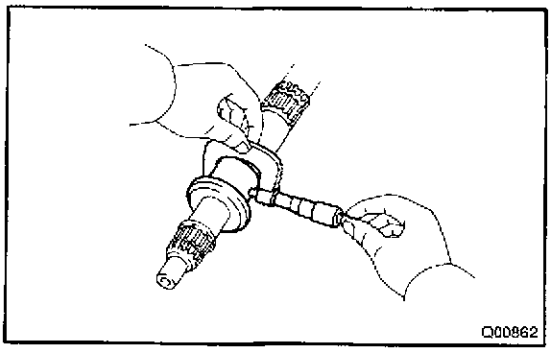


4. INSPECT OUTPUT SHAFT AND INNER RACE

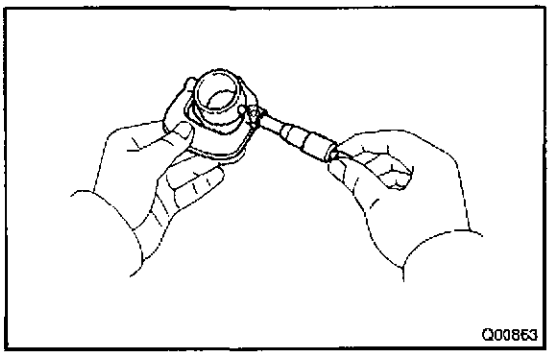
(a) Using vernier calipers, measure the output shaft flange thickness.
Minimum thickness:
5.60 mm (0.2205 in.)
If the thickness is less than the minimum, replace the output shaft.



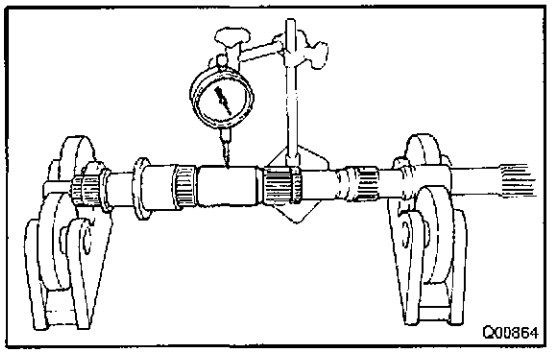
(b) Using vernier calipers, measure the inner race flange thickness.
Minimum thickness:
4.78 mm (0.1881 in.)
If the thickness is less than the minimum, replace the inner race.



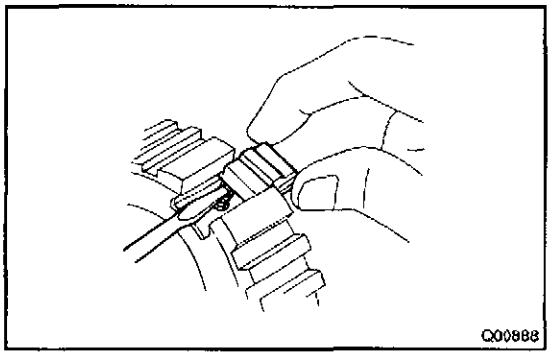
(c) Using a micrometer, measure the outer diameter of the output shaft journal.
Minimum diameter:
2nd gear: 42.975 mm (1.6919 in.)
3rd gear: 31.969 mm (1.2586 in.)
If the outer diameter is less than the minimum, replace the output shaft.



(d) Using a micrometer, measure the outer diameter of the inner race.
Minimum diameter:
42.975 mm (1.6919 in.)
If the outer diameter is less than the minimum, replace the inner race.



(e) Using a dial indicator, check for the shaft runout.
Maximum runout:
0.06 mm (0.0024 in.)
If the runout exceeds the maximum, replace the output shaft.

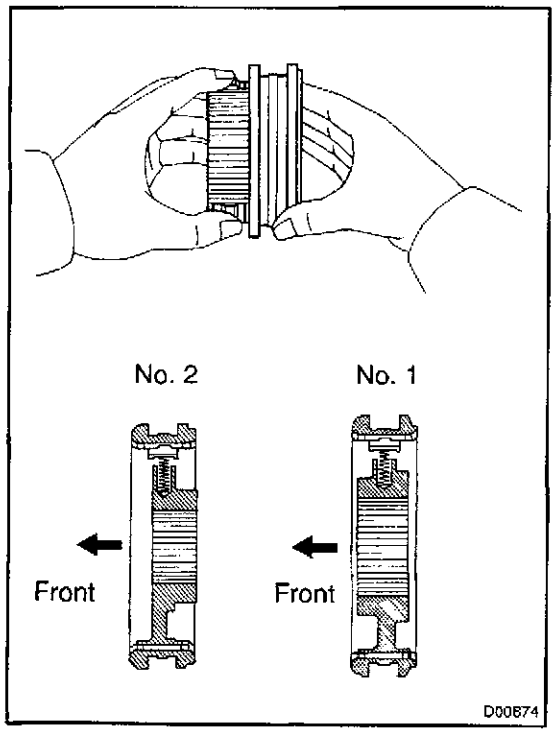


REASSEMBLY

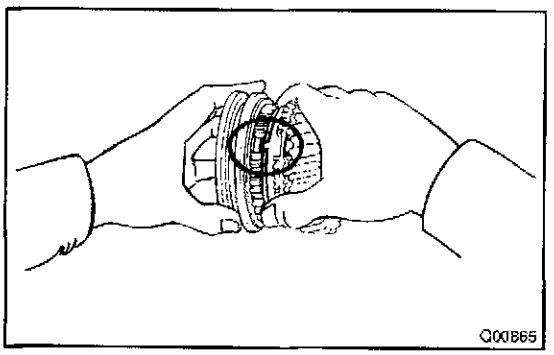
HINT:
Coat all of the sliding and rotating surfaces with gear oil before reassembly.

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

(a) Install the 3 shifting key springs to the clutch hub.
(b) While pushing the shifting key spring with a screwdriver, install the 3 shifting keys.

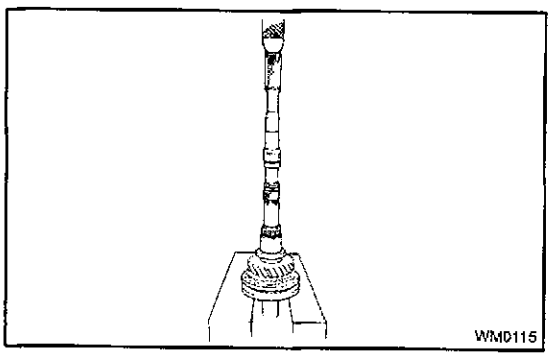


(c) While pushing the 3 shifting keys, install the clutch hub to the hub sleeve, as shown.

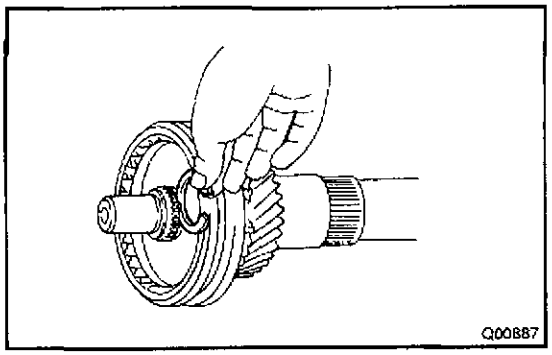


2. INSTALL 3RD GEAR AND NO.2 CLUTCH HUB ON OUTPUT SHAFT

(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.



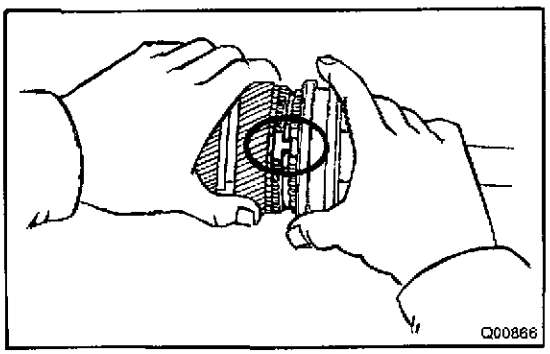
3. INSTALL SNAP RING

(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)
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)

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

4. INSPECT 3RD GEAR THRUST CLEARANCE
(See page MT–35)

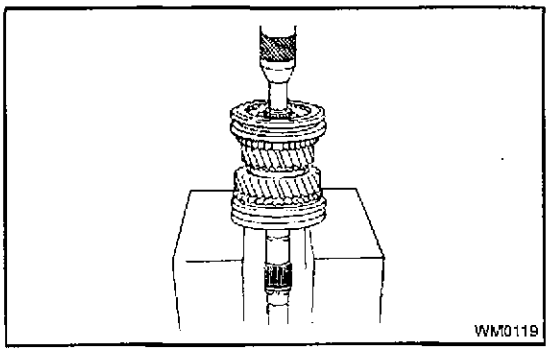


5. INSTALL 2ND AND NO.1 CLUTCH HUB

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

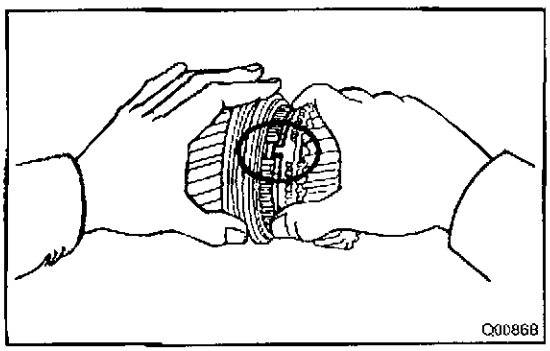
(b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.

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



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

6. INSPECT 2ND GEAR THRUST CLEARANCE
(See page MT–35)



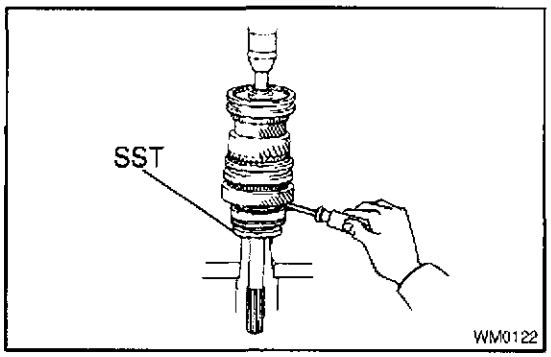
7. INSTALL LOCKING BALL AND 1ST GEAR ASSEMBLY

(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.

(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.



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

9. INSPECT 1ST GEAR THRUST CLEARANCE

(See page MT–35)