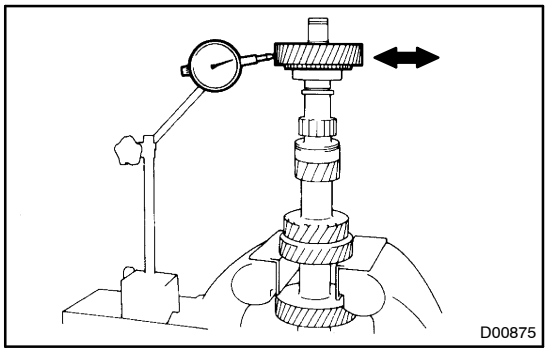
COUNTER GEAR ASSY (W56)

410BU–01

OVERHAUL

HINT:

COMPONENTS: See page 41–1



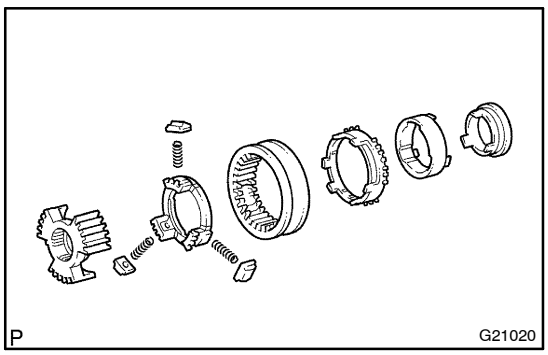
1. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Install the counter gear spacer No.2, countershaft 5th gear and 5th gear bush bearing on the counter gear.

(b) Using a dial indicator, measure the countershaft 5th gear radial clearance.

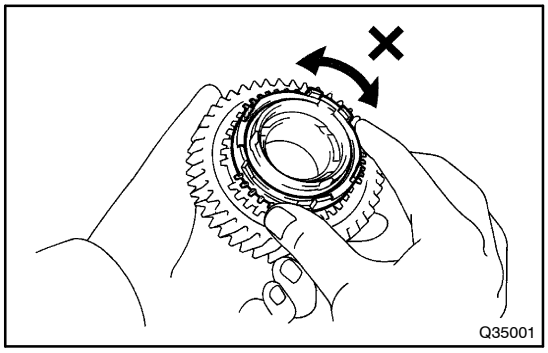
Standard clearance:
0.012 – 0.059 mm (0.0005 – 0.0023 in.)
Maximum clearance:
0.059 mm (0.0023 in.)

If the clearance exceeds the maximum, replace the counter gear, the 5th gear bush bearing or the countershaft 5th gear.



2. REMOVE TRANSMISSION HUB SLEEVE NO.3

(a) Remove the transmission hub sleeve No.3, the synchronizer pull ring, the synchronizer cone ring, the synchronizer ring outer No.3, the 3 compression springs, the 3 synchromesh shifting key No.3 and the reverse synchronizer ring from the transmission clutch hub No.3.



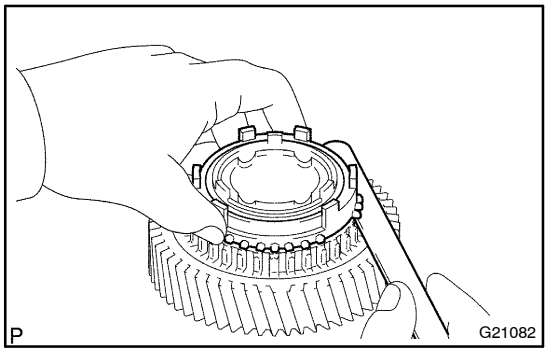
3. INSPECT SYNCHRONIZER RING OUTER NO.3

(a) Coat the countershaft 5th gear cone with gear oil. Check the braking effect of the synchronizer ring outer No.3. Turn the synchronizer ring outer No.3 in one direction while pushing it to the countershaft 5th 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 outer No.3, the synchronizer pull ring, the synchronizer cone ring and the countershaft 5th gear cone together.

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

(b) Check the braking effect of the synchronizer ring outer No.3 again.



(c) Using a feeler gauge, measure the clearance between the synchronizer ring outer No.3 back and the counter 5th gear spline end.

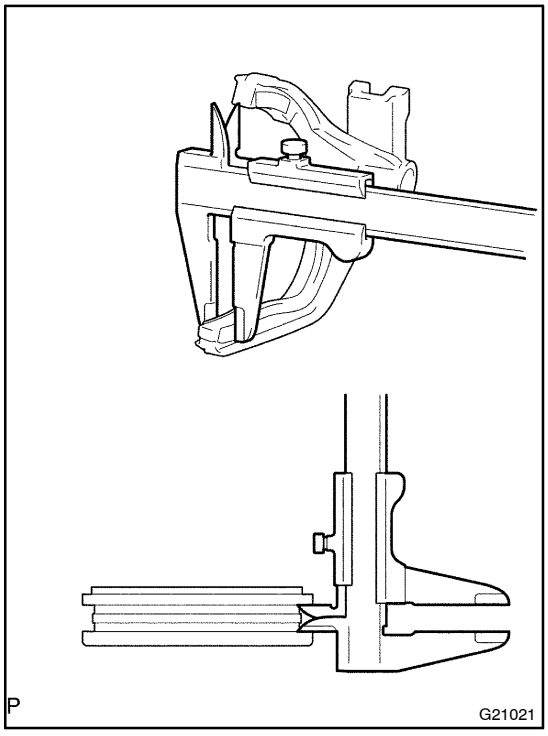
Standard clearance:

0.35 – 1.05 mm (0.0138 – 0.0413 in.)

If the clearance exceeds the standard clearance, replace the synchronizer ring outer No.3 and apply a small amount of the fine lapping compound on the counter 5th gear cone.

NOTICE:

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



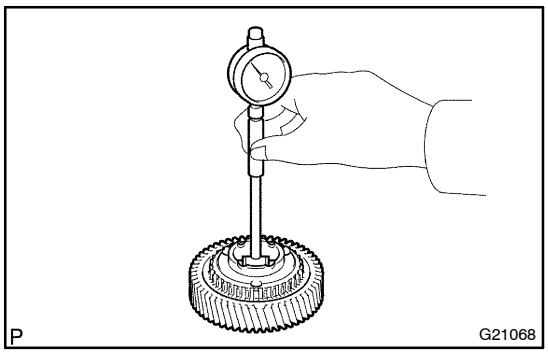
4. INSPECT TRANSMISSION HUB SLEEVE NO.3

(a) Using vernier calipers, inspect the transmission hub sleeve No.3 and the gear shift fork No.3 as shown in the illustration.

Standard clearance:

0.26 mm – 0.84 mm (0.0102 – 0.0331 in.)

If the clearance exceeds the standard clearance, replace the transmission hub sleeve No.3 and the gear shift fork No.3.



5. INSPECT COUNTERSHAFT 5TH GEAR

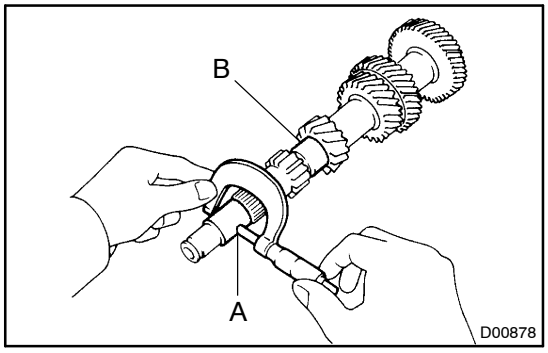
(a) Using a cylinder gauge, measure the inside diameter of countershaft 5th gear.

Standard clearance:

33.000 – 33.025 mm (1.2992 – 1.3001 in.)

Maximum clearance: 33.025 mm (1.3001 in.)

If the clearance exceeds the maximum, replace the countershaft 5th gear.

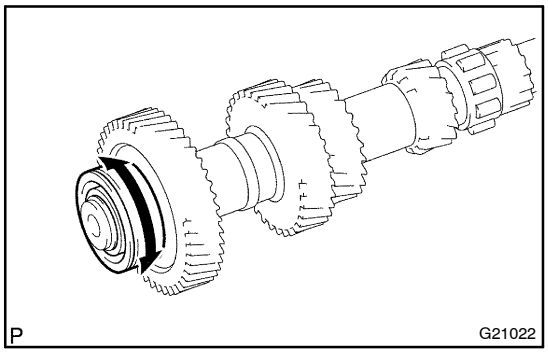


6. INSPECT COUNTER GEAR

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

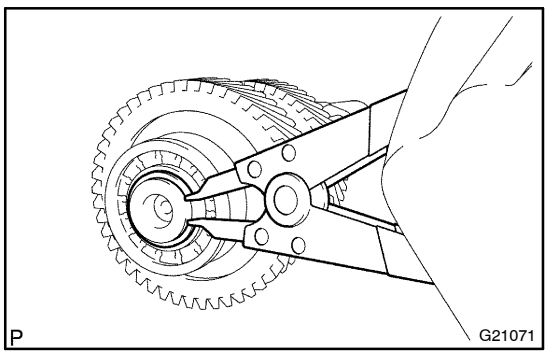
Standard clearance:
Part A: 26.975 – 26.991 mm (1.0620 – 1.0626 in.)
Part B: 29.950 – 29.970 mm (1.1791 – 1.1799 in.)
Minimum clearance:
Part A: 26.975 mm (1.0620 in.)
Part B: 29.950 mm (1.1791 in.)

If the outer diameter is less than the minimum, replace the counter gear.



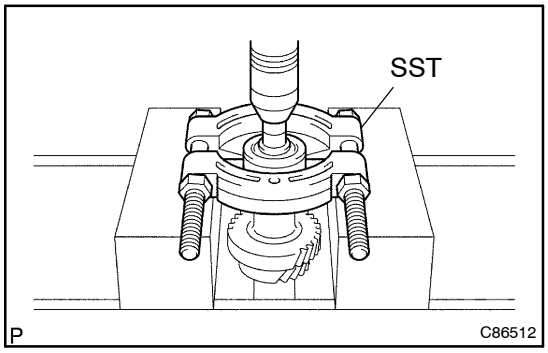
7. INSPECT COUNTER GEAR FRONT BEARING OR ROLLER

(a) Make sure the counter gear front bearing or roller rotates smoothly.

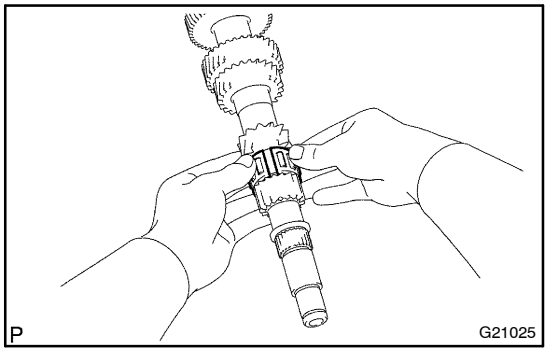


8. REMOVE COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using snap ring pliers, remove the counter gear front bearing snap ring No.1 from the counter gear.

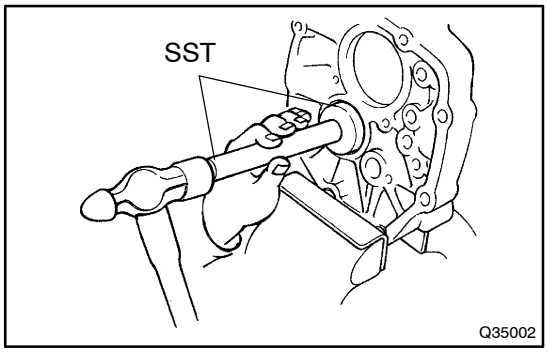


(b) Using SST and a press, remove the counter gear front bearing or roller from the counter gear.
SST 09950–00020

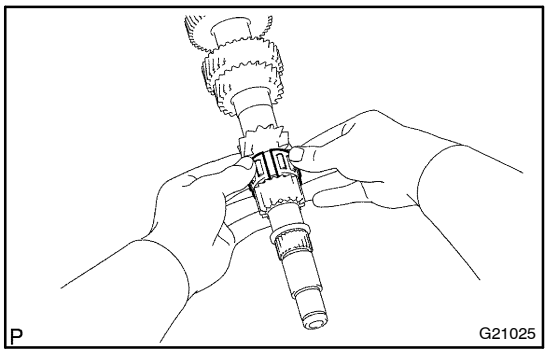


9. REMOVE COUNTER SHAFT CENTER BEARING

(a) Remove the counter shaft center bearing from the counter gear.

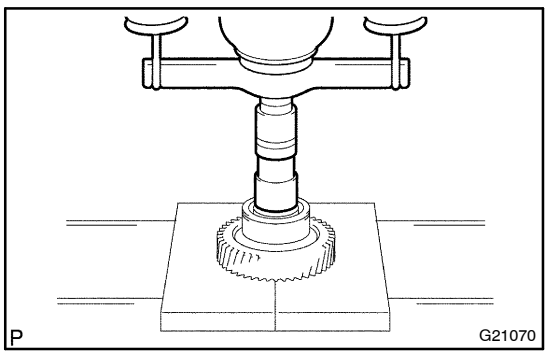


(b) Using SST and a hammer, tap out the bearing outer race.
SST 09950–60010 (09951–00510), 09950–70010 (09951–07150)



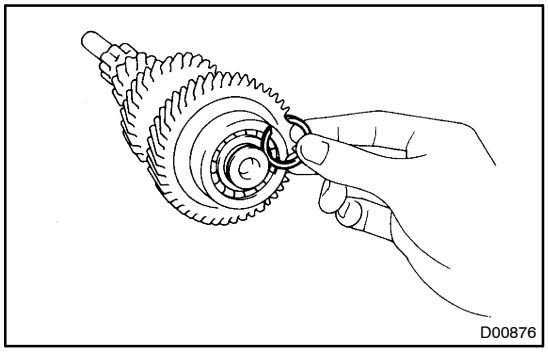
10. INSTALL COUNTER SHAFT CENTER BEARING

(a) Install a new counter shaft center bearing on the counter gear.



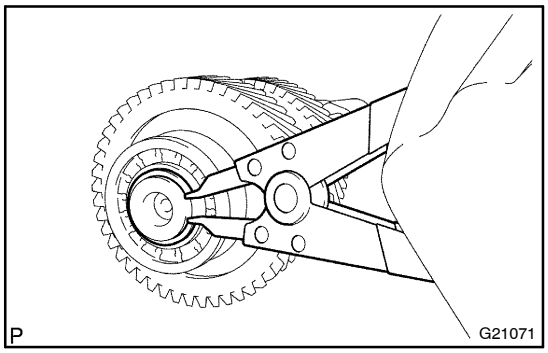
11. INSTALL COUNTER GEAR FRONT BEARING OR ROLLER

(a) Using a socket wrench and press, install a new counter gear front bearing or roller on the counter gear.

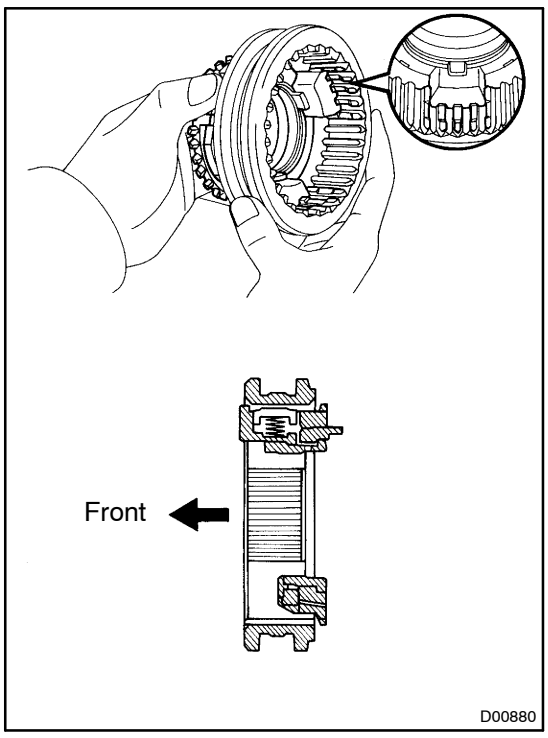


(b) Select a counter gear front bearing snap ring No.2 that will allows the minimum axial play.
Standard clearance: 0.1 mm (0.0039 in.) or less
Counter gear front bearing snap ring No.2 thickness: mm (in.)

Mark	Thickness
A	2.05 – 2.10 (0.0807 – 0.0827)
B	2.10 – 2.15 (0.0827 – 0.0846)
C	2.15 – 2.20 (0.0846 – 0.0866)
D	2.20 – 2.25 (0.0866 – 0.0886)
E	2.25 – 2.30 (0.0886 – 0.0906)
F	2.30 – 2.35 (0.0906 – 0.0925)



(c) Using snap ring pliers, install the counter gear front bearing snap ring No.2 on the counter gear.



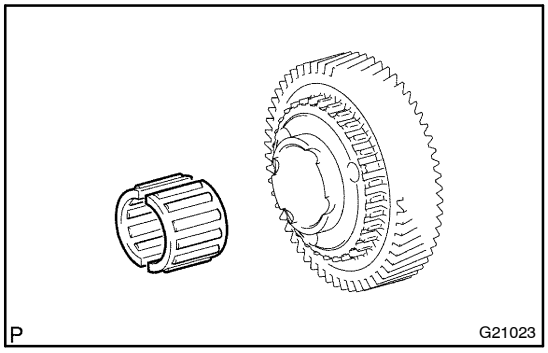
12. INSTALL TRANSMISSION HUB SLEEVE NO.3

(a) Push the compression spring, install the synchromesh shifting key No.3 on the reverse synchronizer ring.

(b) Install the synchronizer pull ring, synchronizer cone ring and synchronizer ring outer No.3 on the reverse synchronizer ring.

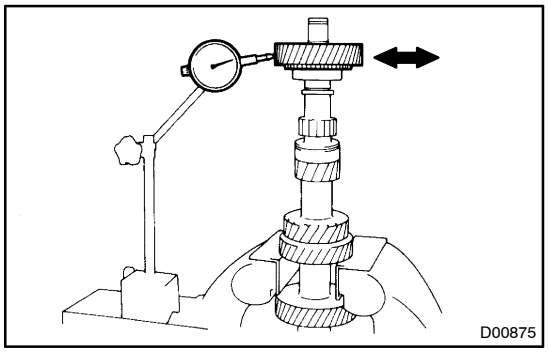
(c) While pushing the 3 synchromesh shifting keys No.3, install the synchronizer ring assy on the transmission hub sleeve No.3.

(d) Check the sliding condition between the transmission hub sleeve No.3 and the reverse synchronizer ring.



13. INSTALL 5TH GEAR BUSH OR BEARING

(a) Coat the 5th gear bush or bearing with gear oil, install it on the countershaft 5th gear.



14. INSPECT COUNTER SHAFT 5TH GEAR RADIAL CLEARANCE

(a) Install the 5th gear bush bearing, the counter gear spacer No.2 and the countershaft 5th gear on the counter gear.

(b) Using a dial indicator, measure the countershaft 5th gear radial clearance.

Standard clearance:
0.012 – 0.059 mm (0.0005 – 0.0023 in.)