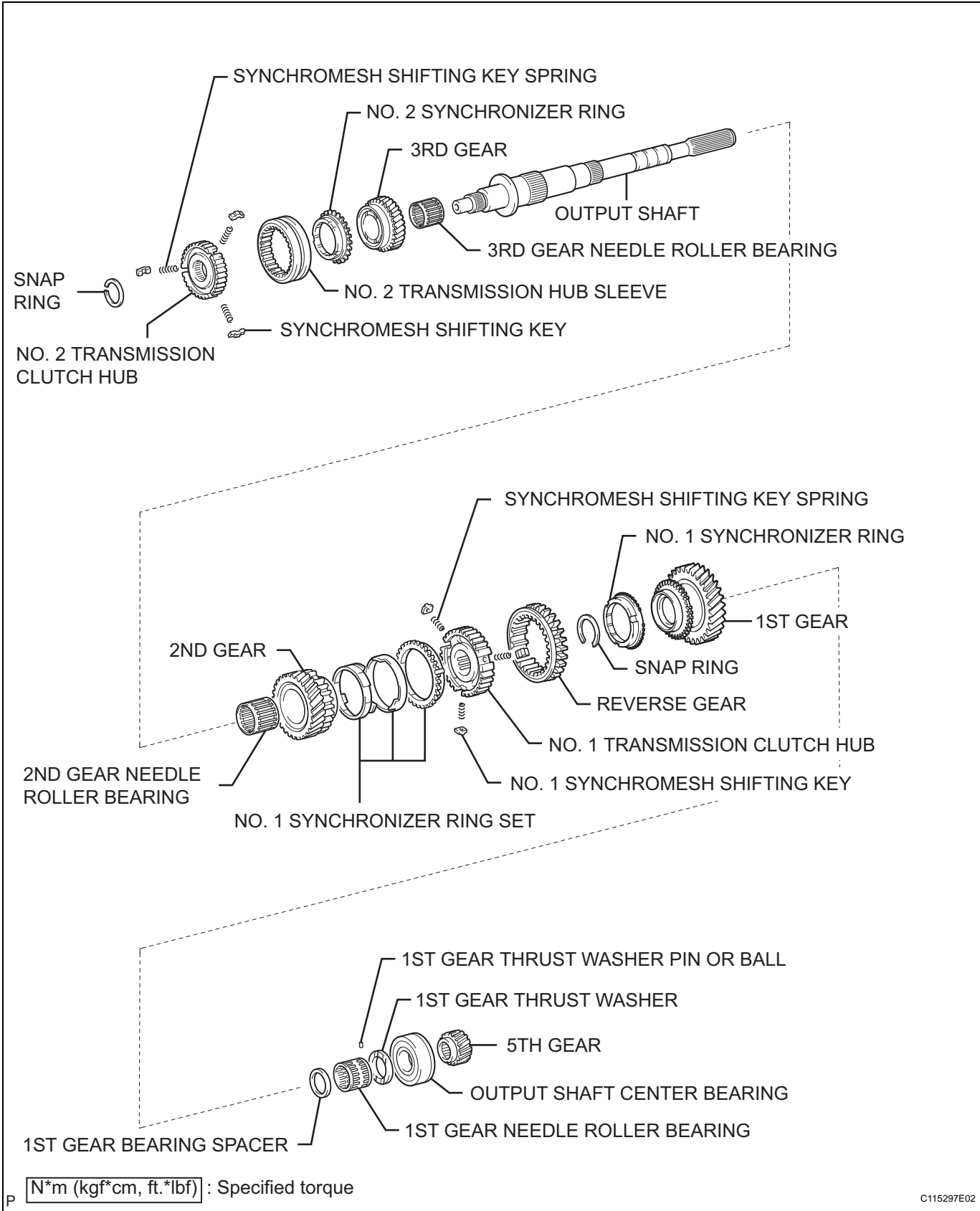


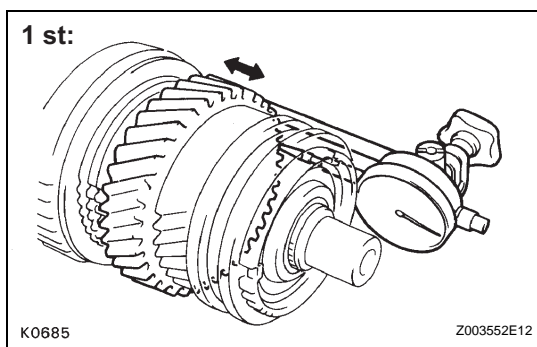
OUTPUT SHAFT

COMPONENTS

MT



DISASSEMBLY

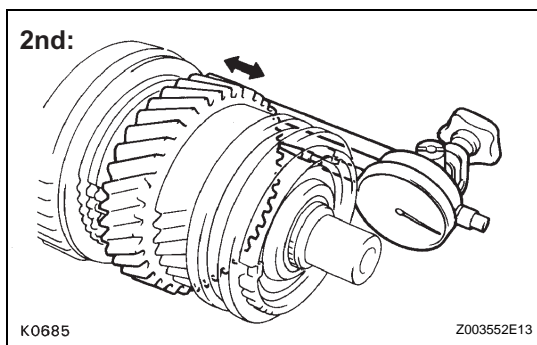


1. INSPECT 1ST GEAR THRUST CLEARANCE

- (a) Using a dial indicator measure the thrust clearance of the 1st gear.

Standard clearance:

0.20 to 0.45 mm (0.0079 to 0.0177 in.)

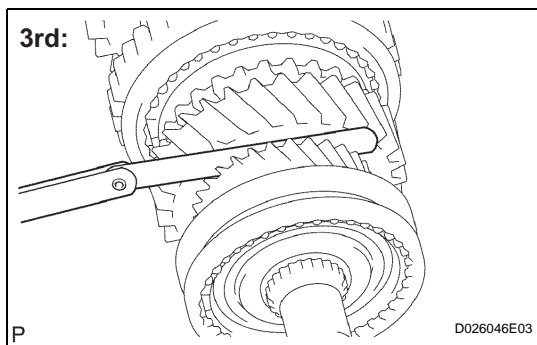


2. INSPECT 2ND GEAR THRUST CLEARANCE

- (a) Using a dial indicator measure the thrust clearance of the 2nd gear.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)

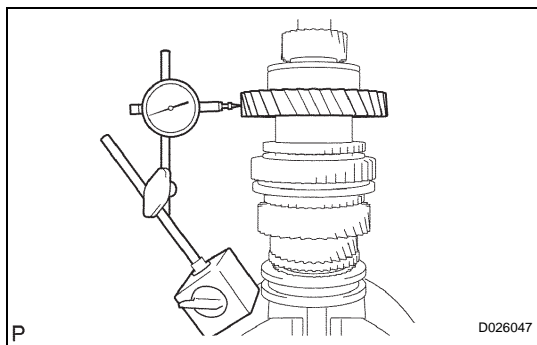


3. INSPECT 3RD GEAR THRUST CLEARANCE

- (a) Using a feeler gauge, measure the thrust clearance of the 3rd gear.

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)



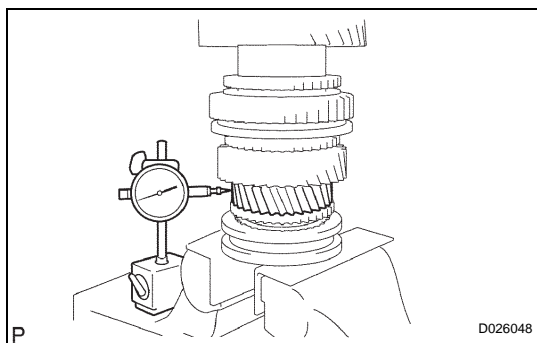
4. INSPECT 1ST GEAR RADIAL CLEARANCE

- (a) Using a dial indicator, measure the radial clearance of the 1st gear.

Standard clearance:

0.020 to 0.073 mm (0.0008 to 0.0029 in.)

If the clearance is not within the specified values, replace the 1st gear needle roller bearing with a new one.



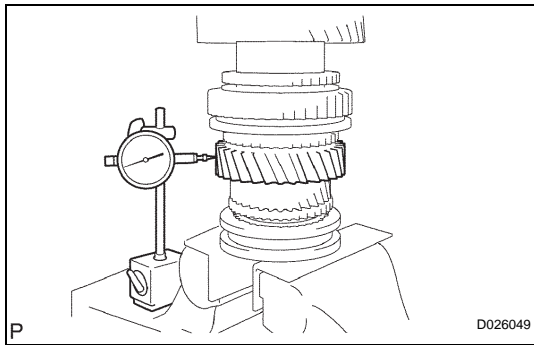
5. INSPECT 2ND GEAR RADIAL CLEARANCE

- (a) Using a dial indicator, measure the radial clearance of the 2nd gear.

Standard clearance:

0.015 to 0.068mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 2nd gear needle roller bearing with a new one.



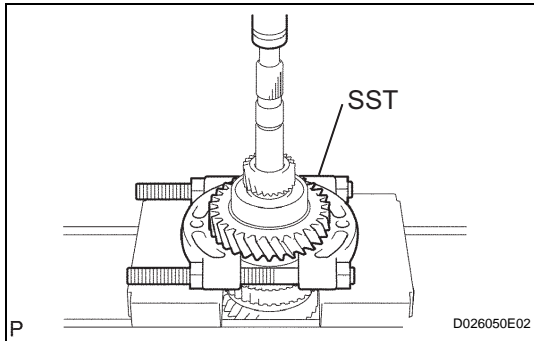
6. INSPECT 3RD GEAR RADIAL CLEARANCE

- (a) Using a dial indicator, measure the radial clearance of the 3rd gear.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

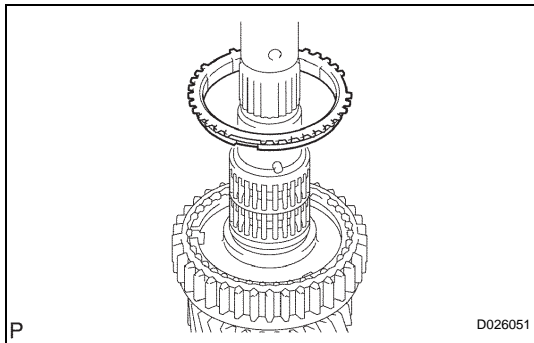
If the clearance is not within the specified values, replace the 3rd gear needle roller bearing with a new one.



7. REMOVE 1ST GEAR

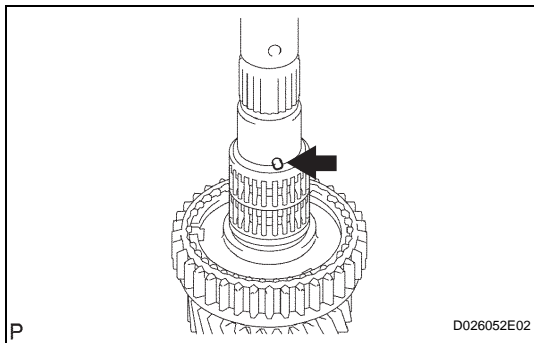
- (a) Using SST and a press, remove the 5th gear, output shaft center bearing, 1st gear thrust washer and 1st gear from the output shaft.

SST 09950-00020



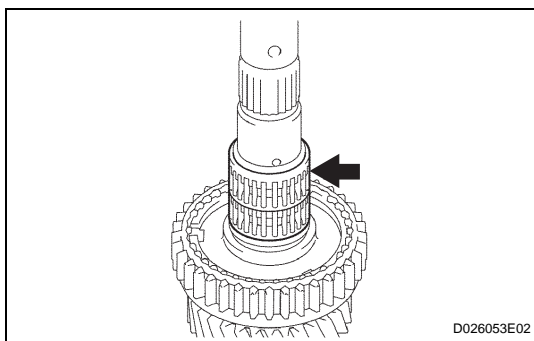
8. REMOVE NO. 1 SYNCHRONIZER RING

- (a) Remove synchronizer ring No. 1 (for the 1st gear) from the output shaft.



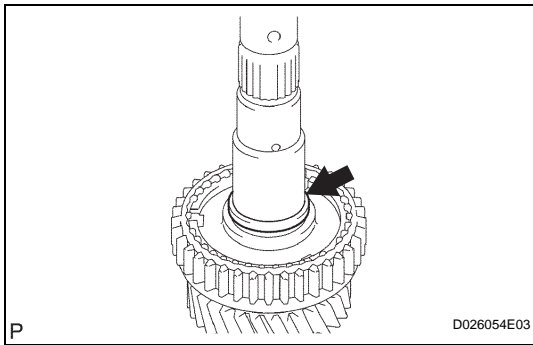
9. REMOVE 1ST GEAR THRUST WASHER PIN OR BALL

- (a) Remove the 1st gear thrust washer pin from the output shaft.

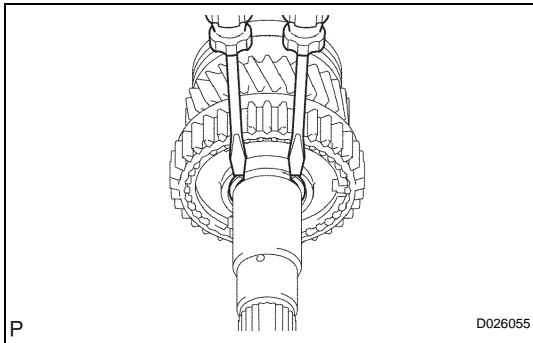


10. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

- (a) Remove the 1st gear needle roller bearing from the output shaft.

**11. REMOVE 1ST GEAR BEARING SPACER**

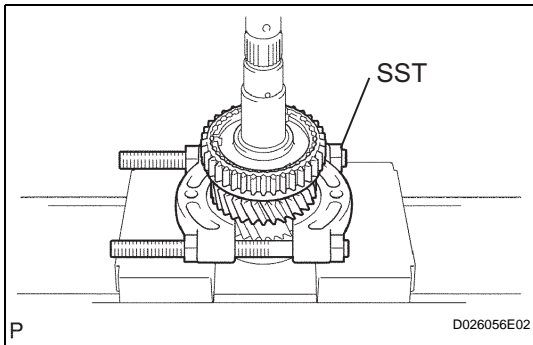
- (a) Remove the 1st gear bearing spacer from the output shaft.

**12. REMOVE BEARING SHAFT SNAP RING**

- (a) Using 2 screwdrivers and a hammer, remove the bearing shaft snap ring from the output shaft.

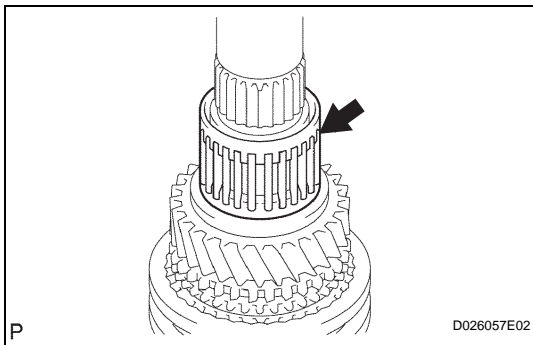
NOTICE:

Use a shop rag to prevent the snap ring from flying off.

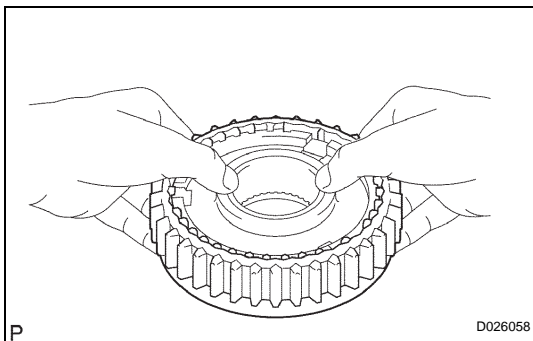
**13. REMOVE 2ND GEAR**

- (a) Using SST and a press, remove the transmission clutch hub No. 1, reverse gear, synchronizer ring No. 1 and 2nd gear from the output shaft.

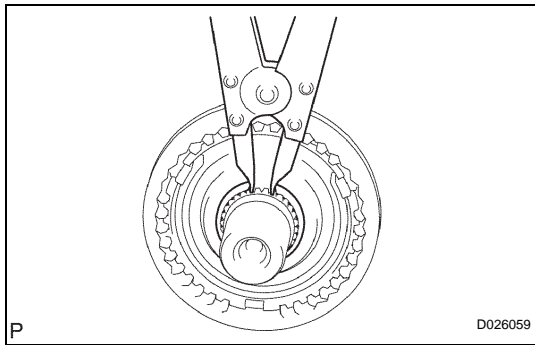
SST 09950-00020

**14. REMOVE 2ND GEAR NEEDLE ROLLER BEARING**

- (a) Remove the 2nd gear needle roller bearing from the output shaft.

**15. REMOVE REVERSE GEAR**

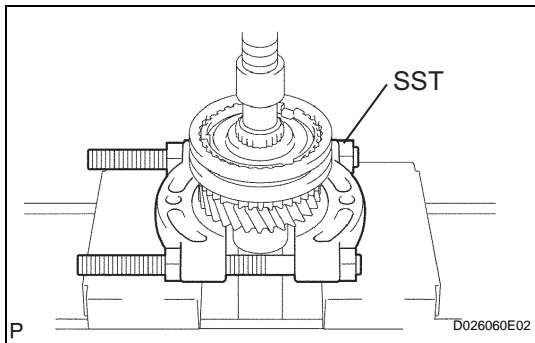
- (a) Remove the reverse gear, 3 synchromesh shifting keys No. 1 and 3 synchromesh shifting key springs. Use a shop rag to prevent the shifting key and the shifting spring from popping out.

**16. REMOVE CLUTCH HUB SET SHAFT SNAP RING**

- (a) Using snap ring pliers, remove the clutch hub set shaft snap ring from the output shaft.

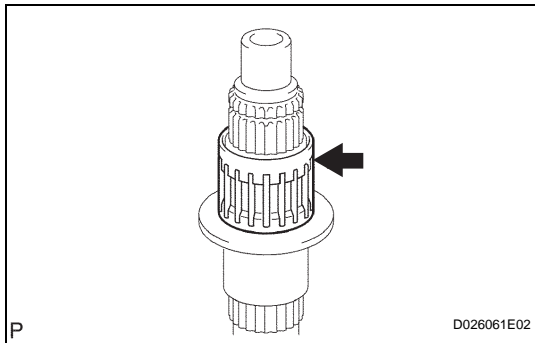
NOTICE:

Do not damage the sliding surface of the bearing.

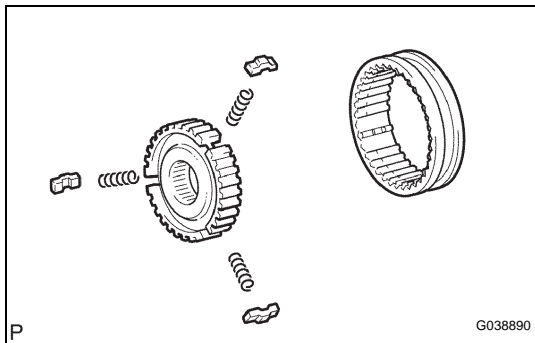
**17. REMOVE 3RD GEAR**

- (a) Using SST and a press, remove the clutch hub No. 2 with the hub sleeve No. 2, synchronizer ring No. 2 and 3rd gear from the output shaft.

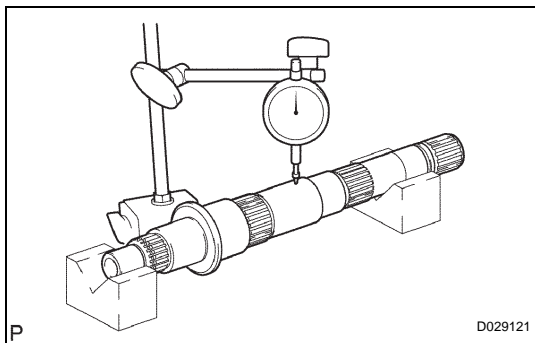
SST 09950-00020

**18. REMOVE 3RD GEAR NEEDLE ROLLER BEARING**

- (a) Remove the 3rd gear needle roller bearing from the output shaft.

**19. REMOVE NO. 2 TRANSMISSION HUB SLEEVE**

- (a) Remove the transmission hub sleeve No. 2, 3 synchronesh shifting key springs and 3 synchronesh shifting keys No. 2 from the transmission clutch hub No. 2.

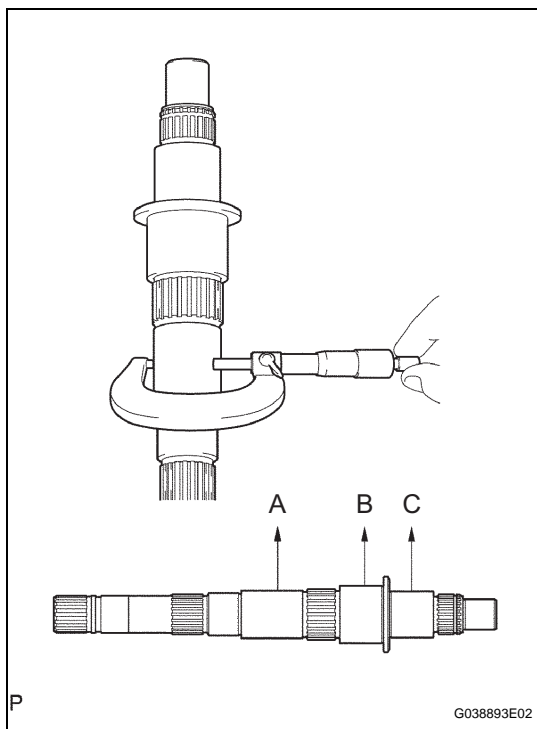
**INSPECTION****1. INSPECT OUTPUT SHAFT**

- (a) Using a dial indicator, measure the circle runout of the output shaft.

Maximum circle runout:

0.03 mm (0.0012 in.)

If the circle runout is greater than the maximum, replace the output shaft with a new one.



- (b) Using a micrometer, measure the outer diameter of the output shaft at A, B and C.

Standard diameter:

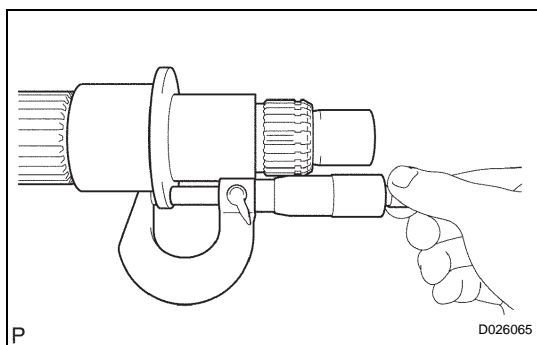
38.979 to 38.995 mm (1.5334 to 1.5352 in.) for A
 46.984 to 47.000 mm (1.8498 to 1.8504 in.) for B
 37.984 to 38.000 mm (1.4954 to 1.4961 in.) for C

Minimum diameter:

38.979 mm (1.5334 in.) for A
 46.984 mm (1.8498 in.) for B
 37.984 mm (1.4954 in.) for C

If the outer diameter is less than the minimum, replace the output shaft with a new one.

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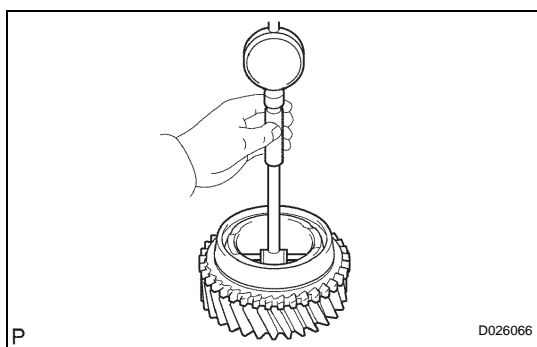


- (c) Using a micrometer, measure the thickness of the output shaft flange as shown in the illustration.

Standard thickness:

4.8 to 5.2 mm (0.1890 to 0.2047 in.)

If the thickness is not within the specified values, replace the output shaft.



2. INSPECT 3RD GEAR

- (a) Using a cylinder gauge, measure the inner diameter of the 3rd gear.

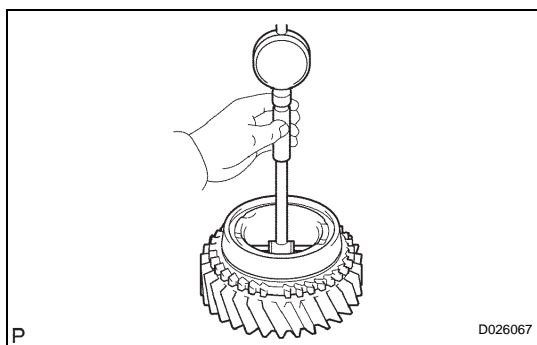
Standard diameter:

44.015 to 44.040 mm (1.7329 to 1.7339 in.)

Maximum diameter:

44.040 mm (1.7339 in.)

If the inner diameter is greater than the maximum, replace the 3rd gear with a new one.



3. INSPECT 2ND GEAR

- (a) Using a cylinder gauge, measure the inner diameter of the 2nd gear.

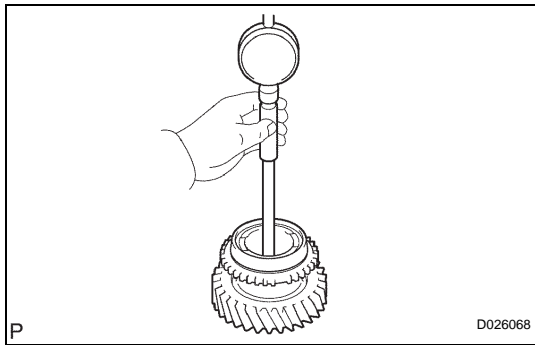
Standard diameter:

53.015 to 53.040 mm (2.0872 to 2.0881 in.)

Maximum diameter:

53.040 mm (2.0881 in.)

If the inner diameter is greater than the maximum, replace the 2nd gear with a new one.



4. INSPECT 1ST GEAR

- (a) Using a cylinder gauge, measure the inner diameter of the 1st gear.

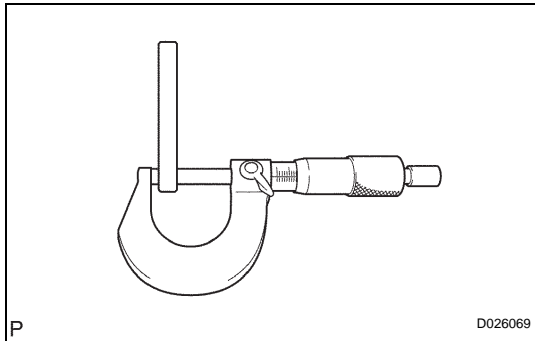
Standard diameter:

46.015 to 46.040 mm (1.812 to 1.8126 in.)

Maximum diameter:

46.040 mm (1.8126 in.)

If the inner diameter is greater than the maximum, replace the 1st gear with a new one.



5. INSPECT 1ST GEAR THRUST WASHER

- (a) Using a micrometer, measure the thickness of the 1st gear thrust washer.

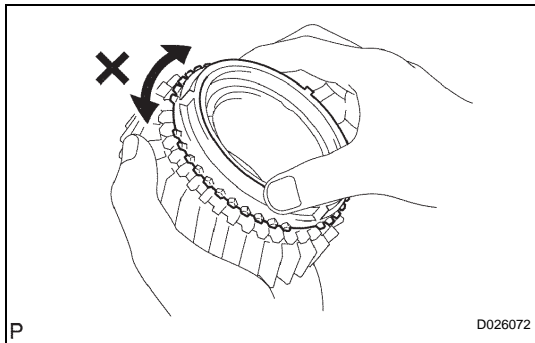
Standard thickness:

5.95 to 6.05 mm (0.2346 to 0.2382 in.)

Minimum thickness:

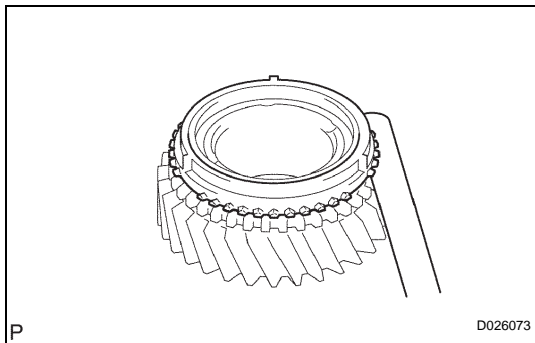
5.96 mm (0.2346 in.)

If the thickness is out of specification, replace the 1st gear thrust washer.



6. INSPECT NO. 1 SYNCHRONIZER RING

- (a) Apply gear oil to the cone of the 1st gear, and check that it does not turn in both directions while pushing the synchronizer ring No. 1 (for the 1st gear). If it turns, replace the synchronizer ring No. 1.

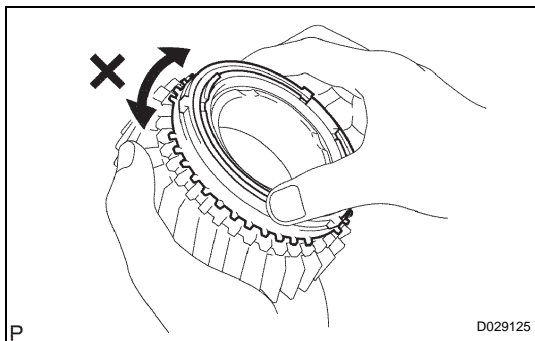


- (b) Measure the clearance between the synchronizer ring No. 1 and the 1st gear while pushing the synchronizer ring No. 1 to the cone of the 1st gear.

Standard clearance:

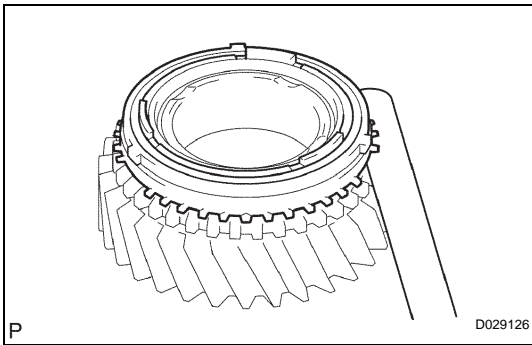
0.75 to 1.65 mm (0.0295 to 0.0649 in.)

If the clearance is not within the specified values, replace the synchronizer ring No. 1 with a new one.



7. INSPECT NO. 1 SYNCHRONIZER RING SET

- (a) Apply gear oil to the cone of the 2nd gear, and check that it does not turn in both directions while pushing the synchronizer ring set No. 1 (for the 2nd synchronizer ring). If it turns, replace the synchronizer ring set No. 1.

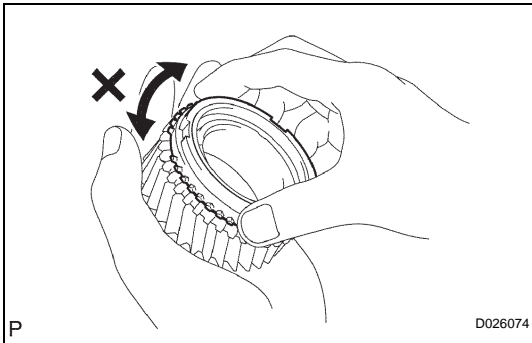


- (b) Measure the clearance between the synchronizer ring set No. 1 (for the 2nd synchronizer ring) and 2nd gear while pushing the synchronizer ring set No. 1 to the cone of the 2nd gear.

Standard clearance:

0.65 to 1.75 mm (0.0256 to 0.0689 in.)

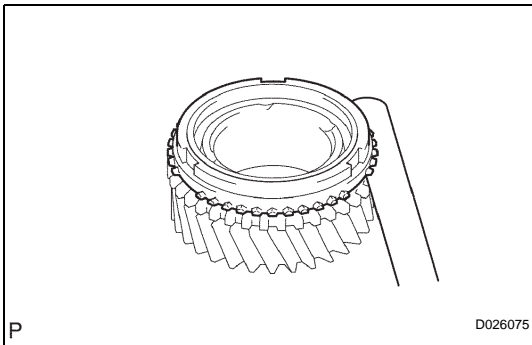
If the clearance is not within the specified values, replace the synchronizer ring set No. 1 (for the 2nd synchronizer ring) with a new one.



8. INSPECT NO. 2 SYNCHRONIZER RING

- (a) Apply gear oil to the cone of the 3rd gear, and check that it does not turn in both directions while pushing the synchronizer ring No. 2 (for the 3rd synchronizer ring).

If it turns, replace the synchronizer ring No. 2.

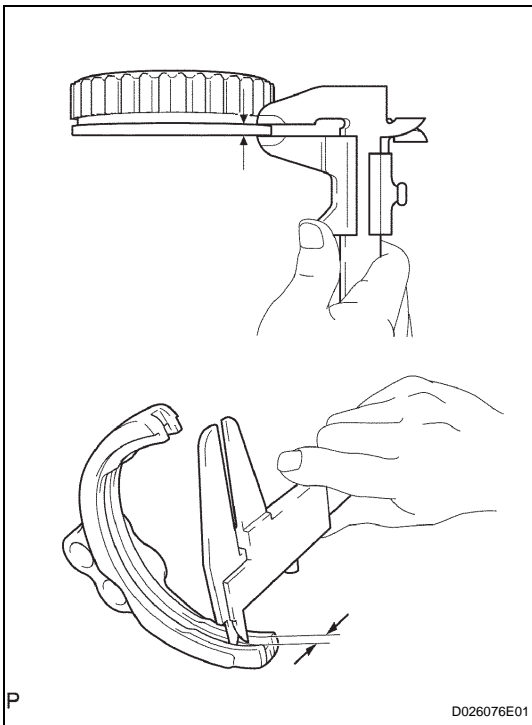


- (b) Check the clearance between the synchronizer ring No. 2 (for the 3rd synchronizer ring) and 3rd gear while pushing the synchronizer ring No. 2 (for the 2nd synchronizer ring) to the cone of the 3rd gear.

Standard clearance:

0.75 to 1.65 mm (0.0295 to 0.0650 in.)

If the clearance is not within the specified values, replace the synchronizer ring No. 2 (for the 3rd synchronizer ring) with a new one.



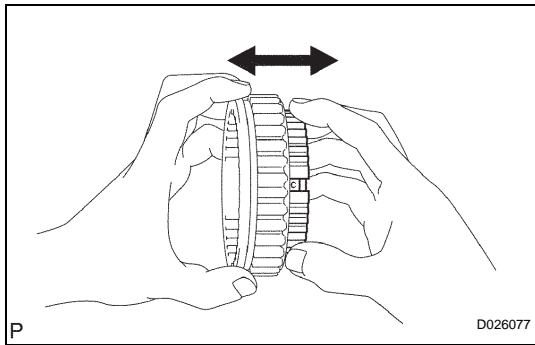
9. INSPECT REVERSE GEAR

- (a) Using vernier calipers, measure the reverse gear groove and the thickness of the gear shift fork claw No. 1 clearance.

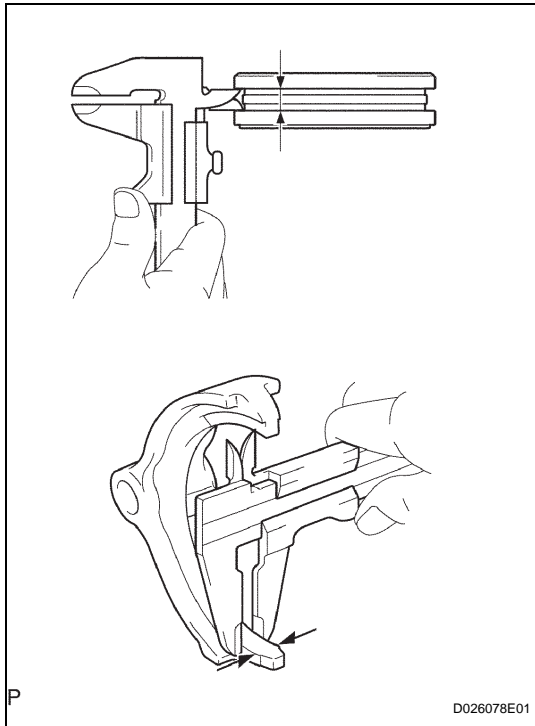
Standard clearance:

0.15 to 0.41 mm (0.0060 to 0.0161 in.)

If the clearance is not within the specified values, replace the reverse gear and the shift fork No. 1 with new ones.

**10. INSPECT NO. 1 TRANSMISSION CLUTCH HUB**

- (a) Check that the transmission clutch hub No. 1 and reverse gear slide smoothly each other.
 - (b) Check the tip of the spline gear sleeve of the reverse gear for wear.
- If there are any defects, replace the transmission clutch hub No. 1.

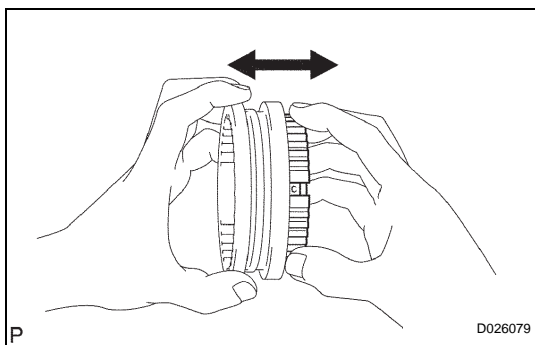
**11. INSPECT NO. 2 TRANSMISSION HUB SLEEVE**

- (a) Using vernier calipers, measure the clearance between the transmission hub No. 2 groove and claw of the gear shift fork No. 2.

Standard clearance:

0.15 to 0.35 mm (0.0059 to 0.0138 in.)

If the clearance is not within the specified values, replace the No. 2 transmission hub sleeve No. 2 and the shift fork No. 2 with the new ones.

**12. INSPECT NO. 2 TRANSMISSION CLUTCH HUB**

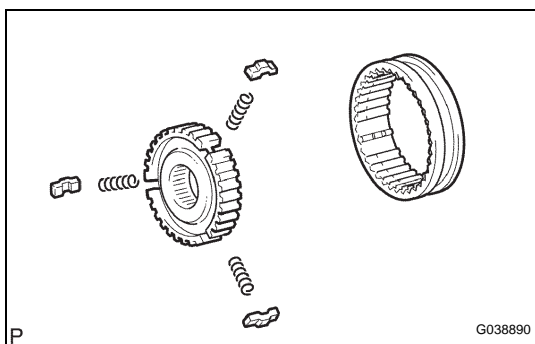
- (a) Check the sliding condition between the transmission clutch hub No. 2 and the transmission hub sleeve No. 2.
- (b) Check the tip of the spline gear of the sleeve of the reverse gear for wear.

REASSEMBLY**1. INSTALL NO. 2 TRANSMISSION HUB SLEEVE**

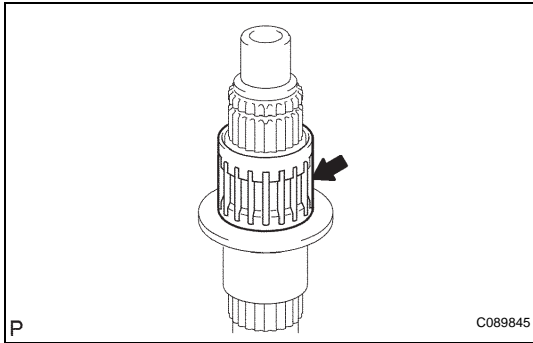
- (a) Install the 3 synchromesh shifting key springs No. 2 and the 3 synchro-mesh shifting key No. 2 to the transmission clutch hub No. 2.

NOTICE:

Make sure that the transmission hub sleeve No. 2 and transmission clutch hub No. 2 are oriented in the correct direction.

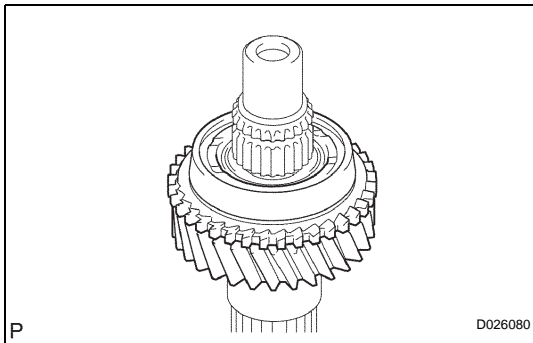


- (b) Apply gear oil to the sliding part of the transmission hub sleeve No. 2, and install it onto the transmission clutch hub No. 2.



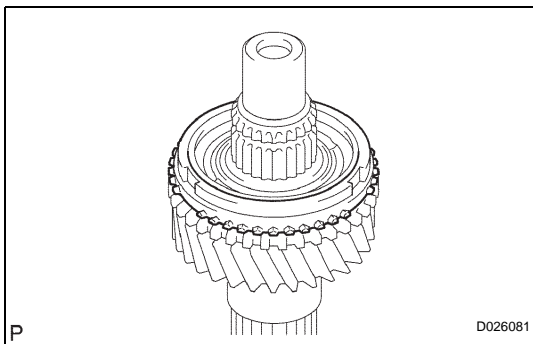
2. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

- (a) Apply gear oil to the 3rd gear needle roller bearing, and install it onto the output shaft.



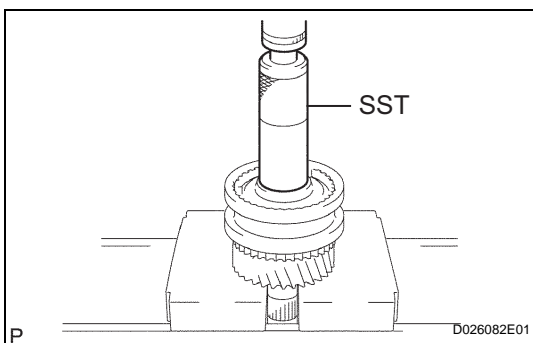
3. INSTALL 3RD GEAR

- (a) Apply gear oil to the 3rd gear, and install it onto the output shaft.



4. INSTALL NO. 2 SYNCHRONIZER RING

- (a) Apply gear oil to the synchronizer ring No. 2, and install it onto the 3rd gear.



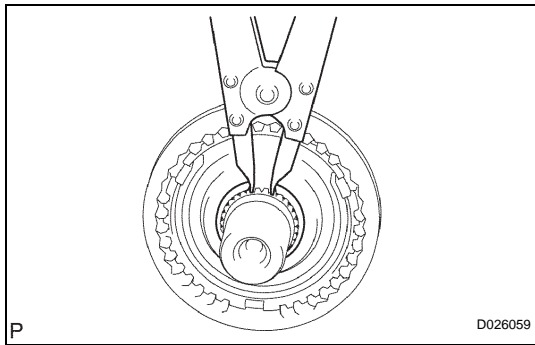
5. INSTALL NO. 2 TRANSMISSION CLUTCH HUB

- (a) Using SST, install the transmission clutch hub No. 2 onto the output shaft.

SST 09608-06041

NOTICE:

- Install it with the synchronizer ring key No. 2 groove aligned with the shifting key position.
- Make sure that the 3rd gear rotates smoothly.



- (b) Select the correct clutch hub shaft snap ring so that the clearance between the transmission clutch hub No. 2 and shaft snap ring thrust is within the specified values. Then install it onto the output shaft.

Standard clearance:

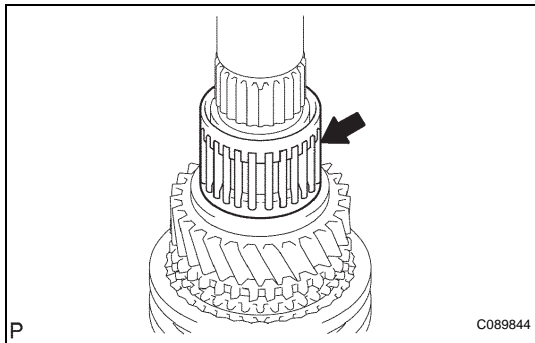
0.1 mm or less

NOTICE:

Do not damage the sliding surface of the bearing.

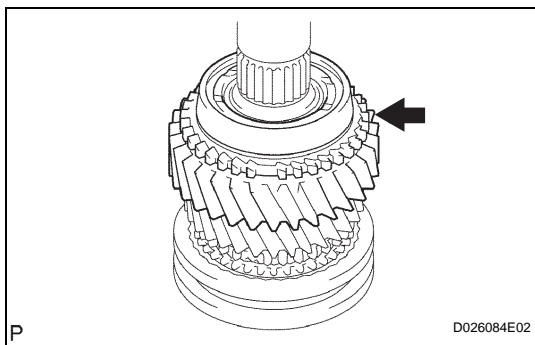
Mark	Thickness mm (in.)
A	1.80 to 1.85 (0.0709 to 0.0728)
B	1.85 to 1.90 (0.0728 to 0.0748)
C	1.90 to 1.95 (0.0748 to 0.0768)
D	1.95 to 2.00 (0.0768 to 0.0787)
E	2.00 to 2.05 (0.0787 to 0.0807)
F	2.05 to 2.10 (0.0807 to 0.0827)
G	2.10 to 2.15 (0.0827 to 0.0846)

MT



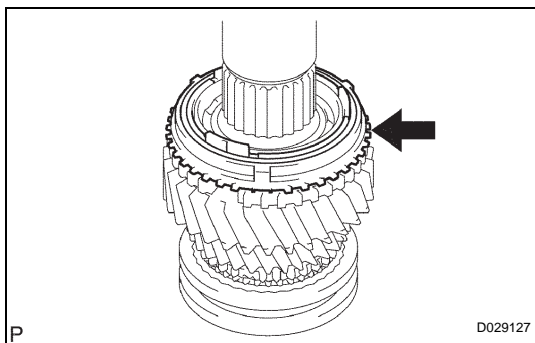
6. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

- (a) Apply gear oil to the 2nd gear needle roller bearing, and install it onto the output shaft.



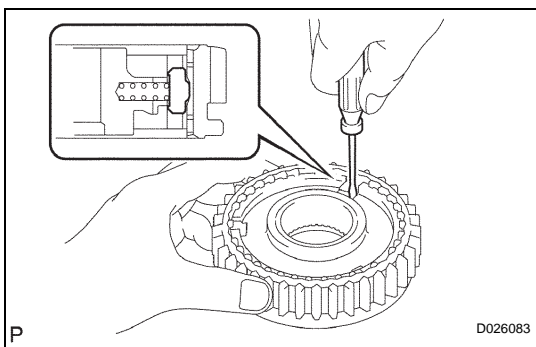
7. INSTALL 2ND GEAR

- (a) Apply gear oil to the 2nd gear, and install it onto the output shaft.



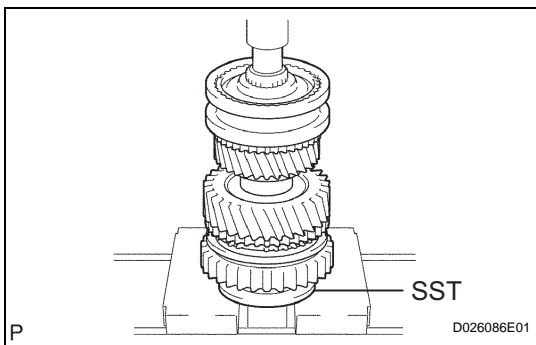
8. INSTALL NO. 1 SYNCHRONIZER RING SET

- (a) Apply gear oil to the synchronizer ring set No. 1, and install it onto the 2nd gear.



9. INSTALL REVERSE GEAR

- (a) Using a screwdriver, install the 3 synchronesh shifting key springs and 3 synchronesh shifting key No.1 onto the transmission clutch hub No. 1.
- (b) Apply gear oil to the reverse gear, and install it onto the transmission clutch hub No. 1



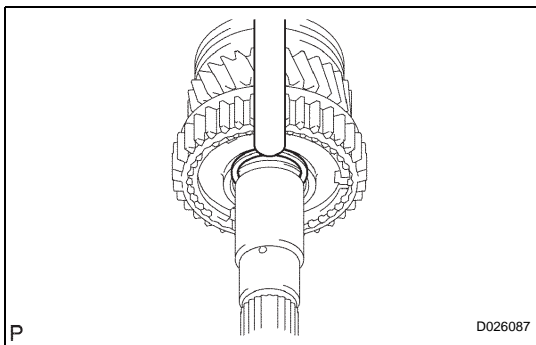
10. INSTALL NO. 1 TRANSMISSION CLUTCH HUB

- (a) Using SST and a press, install transmission clutch hub No. 1 onto the output shaft.

SST 09316-60011 (09316-00041)

NOTICE:

- Perform installation making sure that the synchronizer ring key No. 1 groove and synchro-mesh shifting key No. 1 are in place.
- Make sure that the 1st gear rotates smoothly.



- (b) Select the correct bearing shaft snap ring so that the clearance between the transmission clutch hub No. 1 and bearing shaft snap ring is within the specified values. Then install it onto the output shaft.

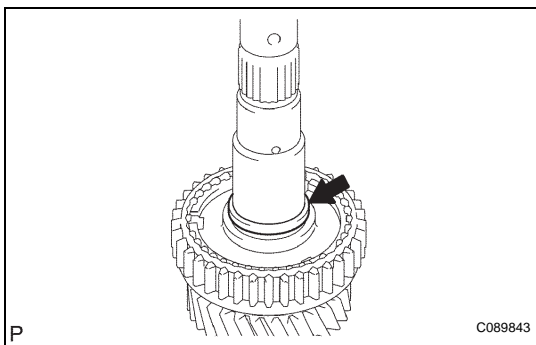
Standard clearance:

0.1mm (0.039 in.) or less

NOTICE:

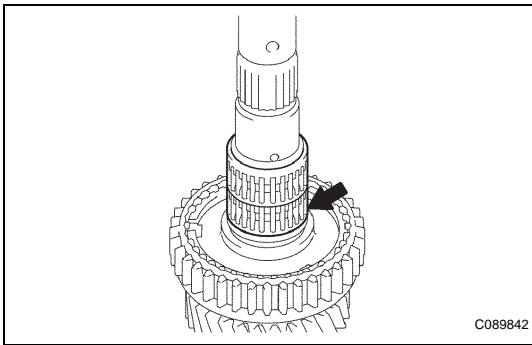
Do not damage the sliding surface of the bearing.

Mark	Thickness mm (in.)
A	2.30 to 2.35 (0.0906 to 0.0925)
B	2.35 to 2.40 (0.0925 to 0.0945)
C	2.40 to 2.45 (0.0945 to 0.0965)
D	2.45 to 2.50 (0.0965 to 0.0984)
E	2.50 to 2.55 (0.0984 to 0.1004)
F	2.55 to 2.60 (0.1004 to 0.1024)
G	2.60 to 2.65 (0.1024 to 0.1043)

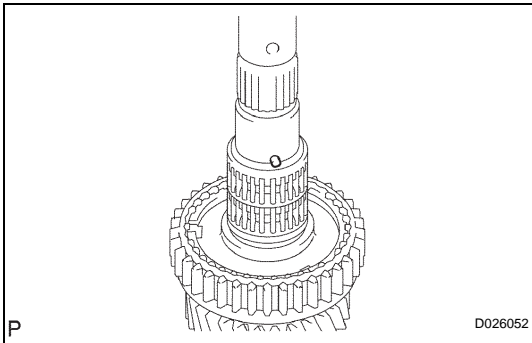


11. INSTALL 1ST GEAR BEARING SPACER

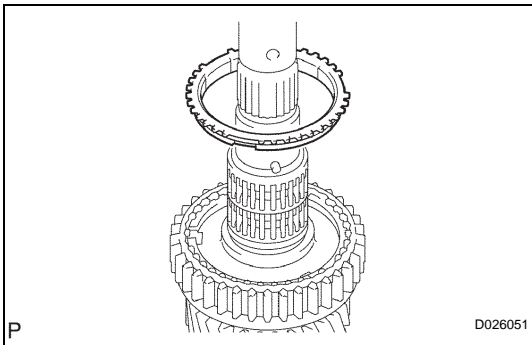
- (a) Apply gear oil to the 1st gear bearing spacer, and install it onto the output shaft.

**12. INSTALL 1ST GEAR NEEDLE ROLLER BEARING**

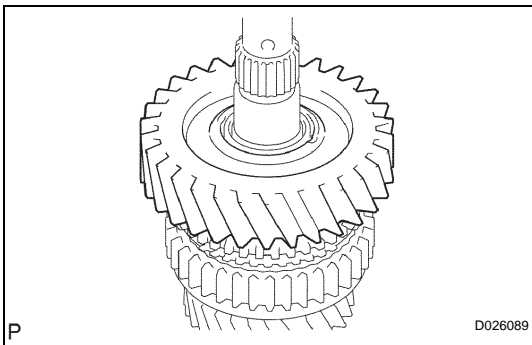
- (a) Apply gear oil to the 1st gear needle roller bearing, and install it onto the output shaft.

**13. INSTALL 1ST GEAR THRUST WASHER PIN OR BALL**

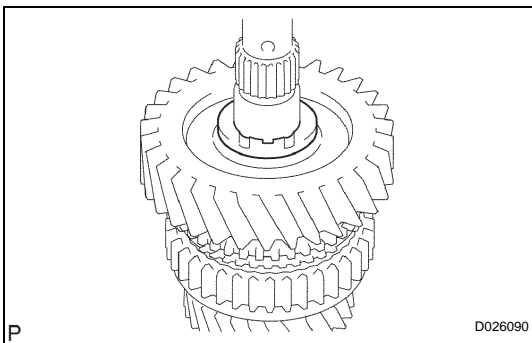
- (a) Install the 1st gear thrust washer pin onto the output shaft.

**14. INSTALL NO. 1 SYNCHRONIZER RING**

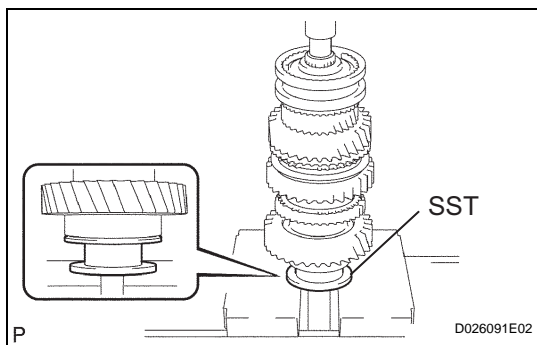
- (a) Apply gear oil to the synchronizer ring No. 1, and install it onto the output shaft.

**15. INSTALL 1ST GEAR**

- (a) Apply gear oil to the 1st gear, and install it onto the output shaft.

**16. INSTALL 1ST GEAR THRUST WASHER**

- (a) Apply gear oil to the 1st gear thrust washer, and install it onto the output shaft.

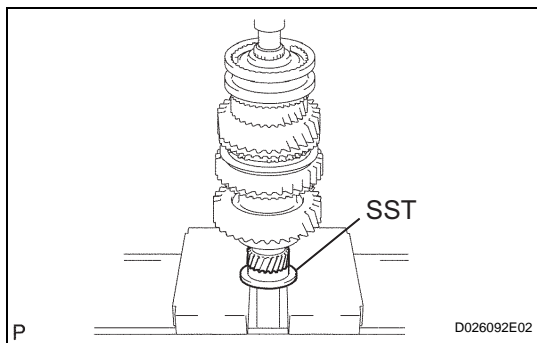
**17. INSTALL OUTPUT SHAFT CENTER BEARING**

- (a) Using SST and a press, install a new output shaft center bearing onto the output shaft.

SST 09316-60011 (09316-00031)

NOTICE:

Install it with the snap ring groove of the bearing facing to the rear side.

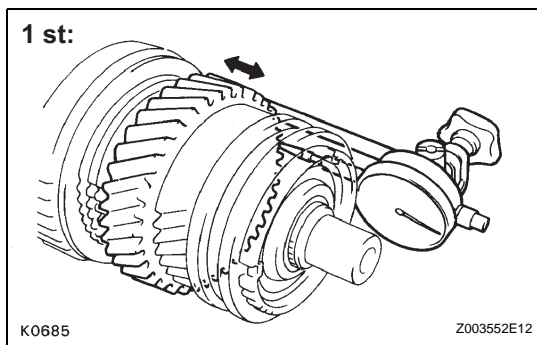
**18. INSTALL 5TH GEAR**

- (a) Using SST and a press, install the 5th gear onto the output shaft.

SST 09316-60011 (09316-00031)

NOTICE:

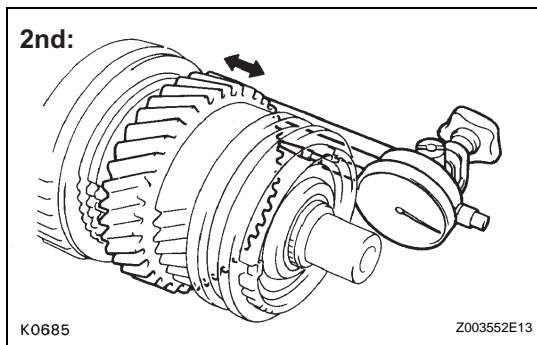
- Check that the 5th gear is fitted into the spline of the output shaft before installing.
- Face the convex part of the gear to the front side.

**19. INSPECT 1ST GEAR THRUST CLEARANCE**

- (a) Using a dial indicator, measure the 1st gear thrust clearance.

Standard clearance:

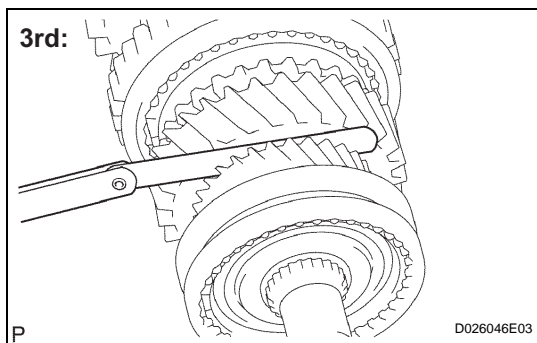
0.20 to 0.45 mm (0.0079 to 0.0177 in.)

**20. INSPECT 2ND GEAR THRUST CLEARANCE**

- (a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

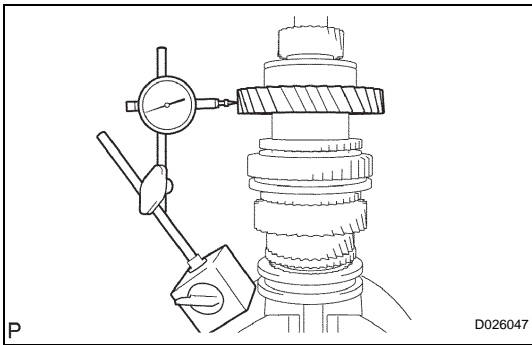
0.10 to 0.25 mm (0.0039 to 0.0098 in.)

**21. INSPECT 3RD GEAR THRUST CLEARANCE**

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

Standard clearance:

0.10 to 0.25 mm (0.0039 to 0.0098 in.)



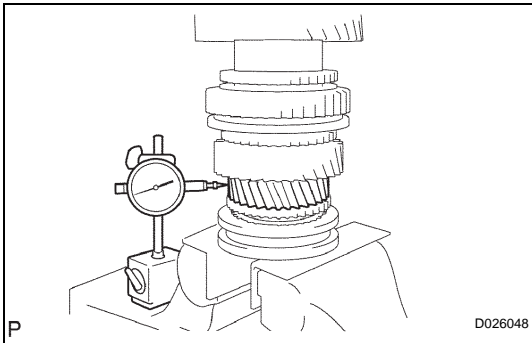
22. INSPECT 1ST GEAR RADIAL CLEARANCE

- (a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

0.020 to 0.073 mm (0.0008 to 0.0029 in)

If the clearance is not within the specified values, replace the 1st gear needle roller bearing with a new one.



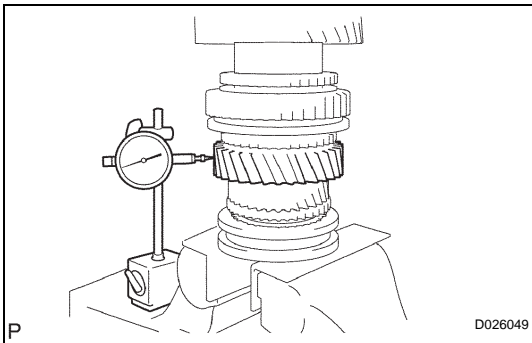
23. INSPECT 2ND GEAR RADIAL CLEARANCE

- (a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 2nd gear needle roller bearing with a new one.



24. INSPECT 3RD GEAR RADIAL CLEARANCE

- (a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

0.015 to 0.068 mm (0.0006 to 0.0027 in.)

If the clearance is not within the specified values, replace the 3rd gear needle roller bearing with a new one.