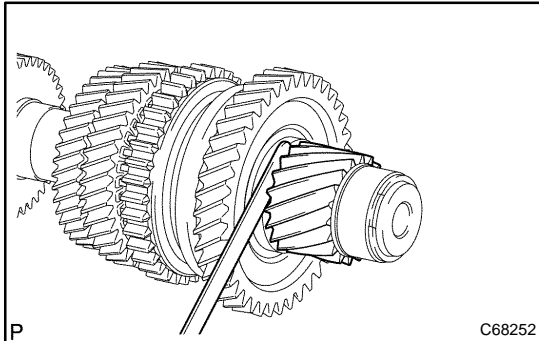


OVERHAUL

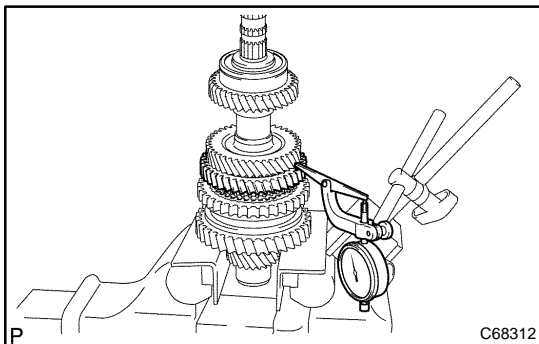


1. INSPECT 1ST GEAR THRUST CLEARANCE

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

Standard clearance:

0.10 – 0.40 mm (0.0039 – 0.0157 in.)

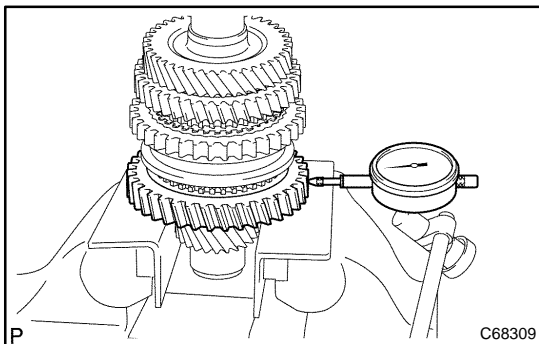


2. INSPECT 2ND GEAR THRUST CLEARANCE

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

Standard clearance:

0.10 – 0.45 mm (0.0039 – 0.0177 in.)



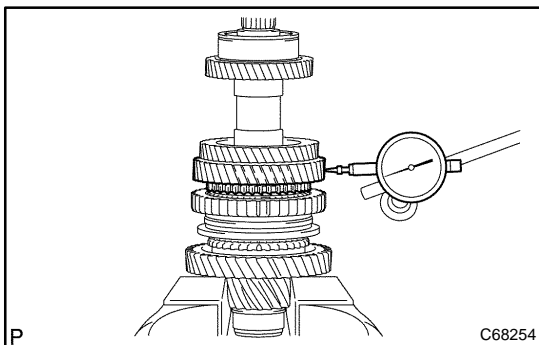
3. INSPECT 1ST GEAR RADIAL CLEARANCE

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

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0023)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

If the clearance is out of specification, replace the 1st gear needle roller bearing.



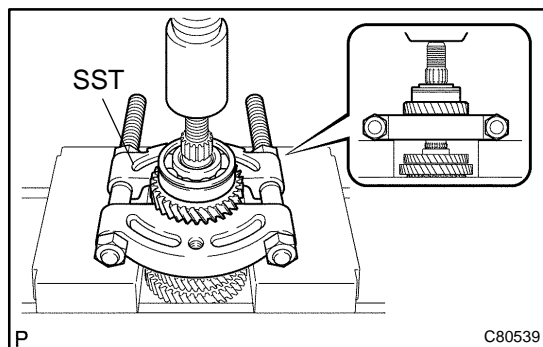
4. INSPECT 2ND GEAR RADIAL CLEARANCE

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

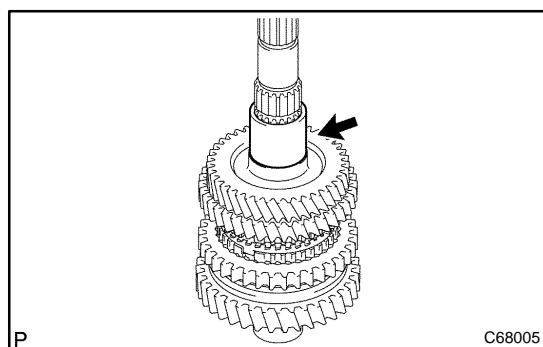
Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0023)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

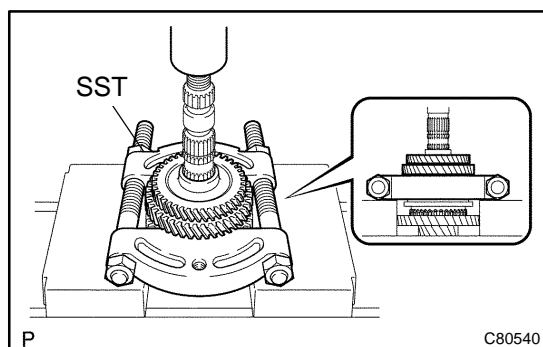
If the clearance is out of specification, replace the 2nd gear needle roller bearing.

**5. REMOVE 4TH DRIVEN GEAR**

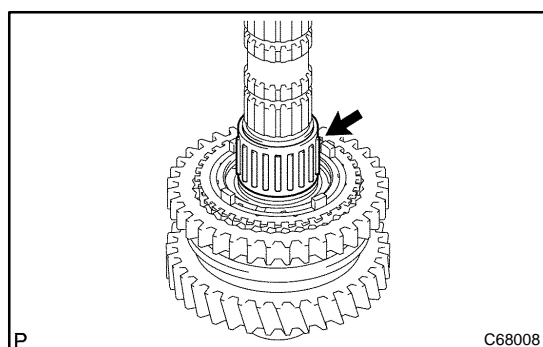
- (a) Using SST and a press, remove the output shaft rear bearing with 4th driven gear from the output shaft.
SST 09950-00020

**6. REMOVE OUTPUT GEAR SPACER**

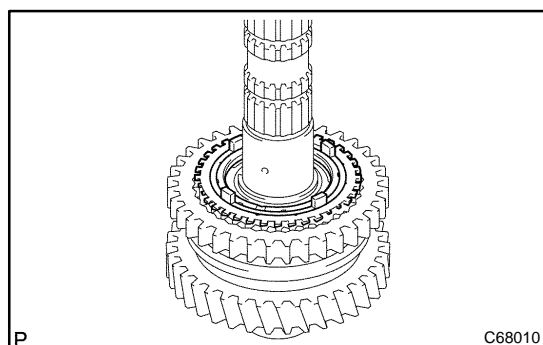
- (a) Remove the output gear spacer from the output shaft.

**7. REMOVE 2ND GEAR**

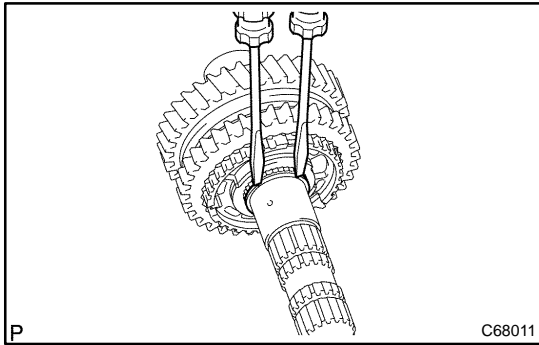
- (a) Using SST and a press, remove the 3rd driven gear with 2nd gear from the output shaft.
SST 09950-00020

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

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

**9. REMOVE SYNCHRONIZER RING SET NO.2**

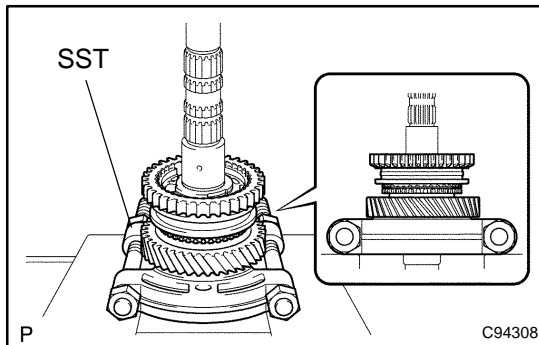
- (a) Remove the synchronizer ring set No.2 from the output shaft.

**10. REMOVE 1ST GEAR**

- (a) Using 2 screwdrivers and a hammer, tap out the snap ring.

HINT:

Using a waste to prevent the snap ring from being scattered.

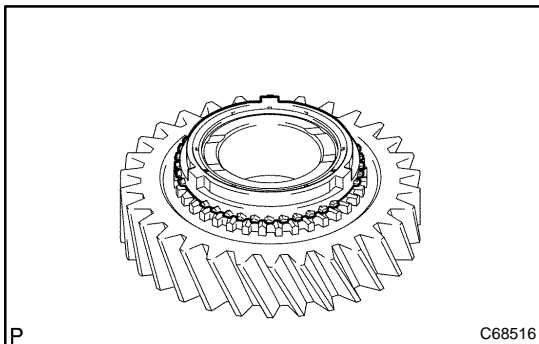


- (b) Using SST and a press, remove the transmission clutch hub No.1 with 1st gear from the output shaft.

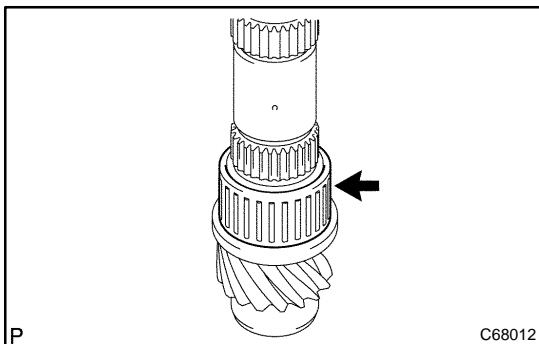
SST 09950-00020

NOTICE:

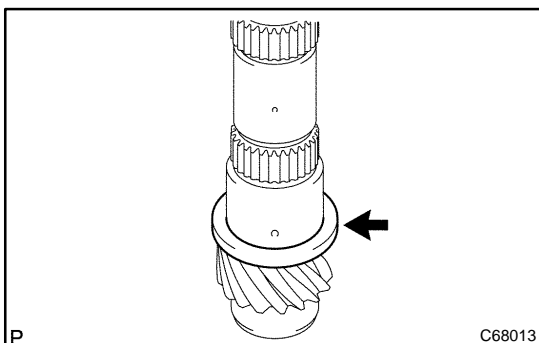
- Do not tighten SST excessively.
- Support the input shaft by hand so that it will not be dropped off.

**11. REMOVE SYNCHRONIZER RING NO.1**

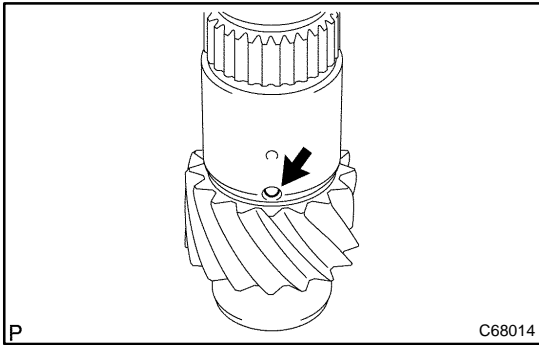
- (a) Remove the synchronizer ring No.1 from the 1st gear.

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

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

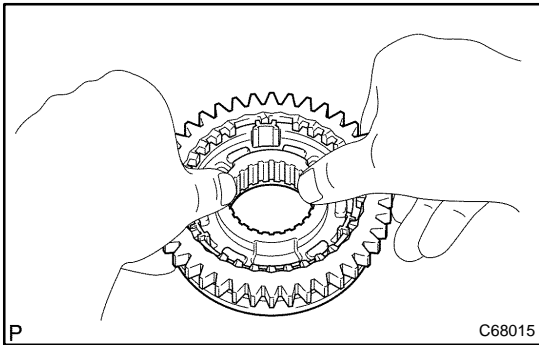
**13. REMOVE 1ST GEAR THRUST WASHER**

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



14. REMOVE 1ST GEAR THRUST WASHER PIN OR BALL

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

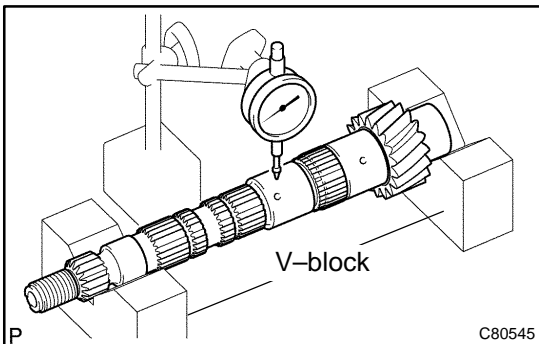


15. REMOVE REVERSE GEAR

- (a) Remove the 3 synchromesh shifting keys, 3 synchromesh shifting key springs and reverse gear.

NOTICE:

Using a waste to prevent the synchromesh shifting key and spring from being scattered.

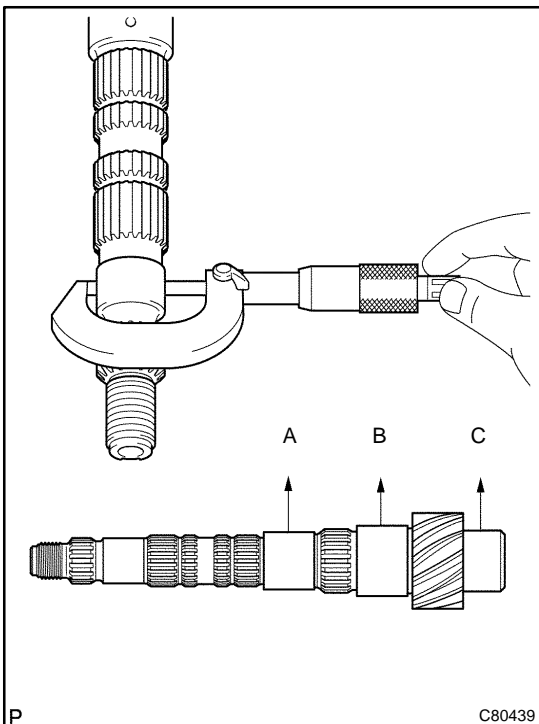


16. INSPECT OUTPUT SHAFT

- (a) Using a dial indicator and 2 V-blocks, measure the shaft runout.

Maximum runout: 0.015 mm (0.0006 in.)

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



- (b) Using a micrometer, measure the outer diameter of the output shaft journal surface.

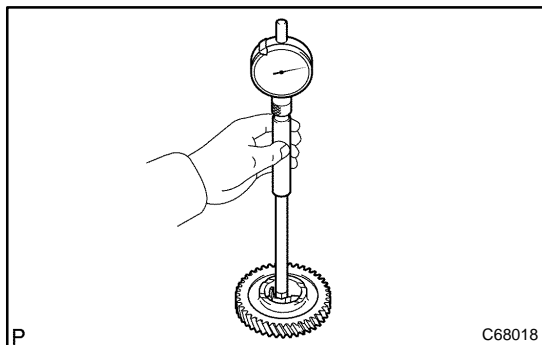
Outer diameter:

Part A: 31.985 mm (1.2592 in.)

Part B: 37.985 mm (1.4955 in.)

Part C: 32.985 mm (1.2986 in.)

If the outer diameter is below the minimum, replace the output shaft.

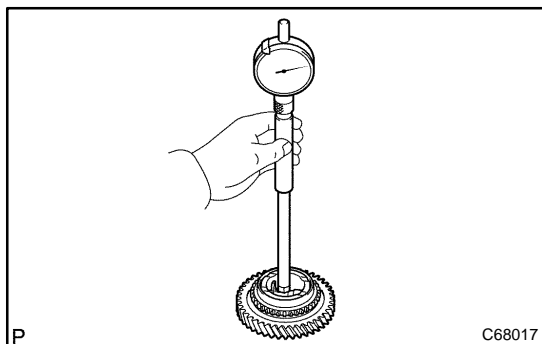
**17. INSPECT 2ND GEAR**

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

Inside diameter:

New gear: mm (in.)	Maximum inside diameter: mm (in.)
38.015 – 38.031 (1.4967 – 1.4973)	38.031 (1.4973)

If the inside diameter exceeds the maximum, replace the 2nd gear.

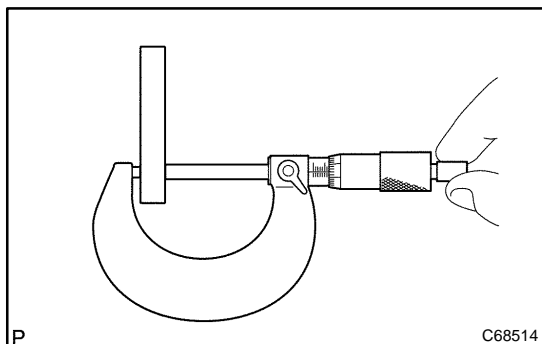
**18. INSPECT 1ST GEAR**

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

Inside diameter:

New gear: mm (in.)	Maximum inside diameter: mm (in.)
44.015 – 44.031 (1.7329 – 1.7335)	44.031 (1.7335)

If the inside diameter exceeds the maximum, replace the 1st gear.

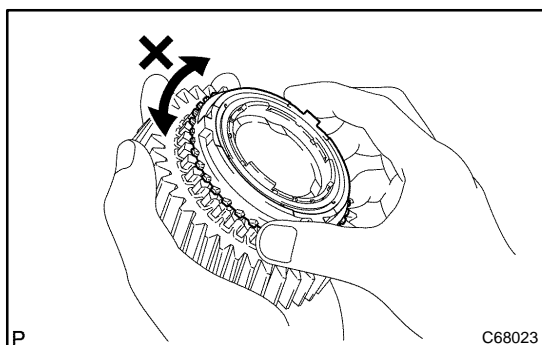
**19. INSPECT 1ST GEAR THRUST WASHER**

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

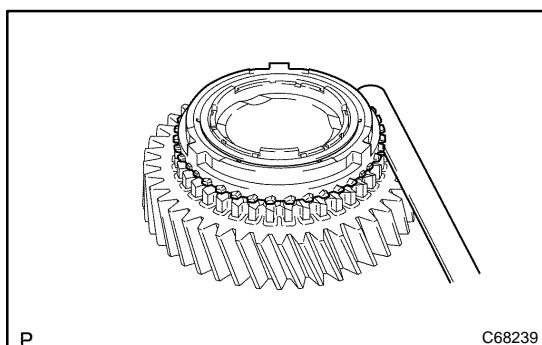
Thickness:

New thrust washer: mm (in.)	Minimum thickness: mm (in.)
5.975 – 6.025 (0.2352 – 0.2372)	5.9755 (0.2352)

If the thickness is below the minimum, replace the 1st gear thrust washer.

**20. INSPECT SYNCHRONIZER RING SET NO.2**

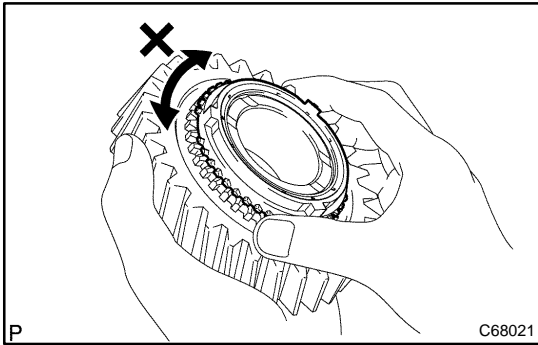
- (a) Coat the 2nd gear cone with gear oil.
Check the braking effect of the synchronizer ring set No.2.



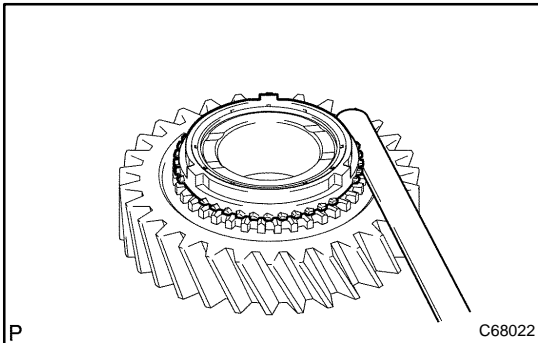
- (b) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Standard clearance: 0.7 – 1.3 mm (0.0276 – 0.0512 in.)

If the clearance is out of specification, replace the synchronizer ring set No.2.

**21. INSPECT SYNCHRONIZER RING NO.1**

- (a) Coat the 1st gear cone with gear oil.
Check the braking effect of the synchronizer ring No.1.

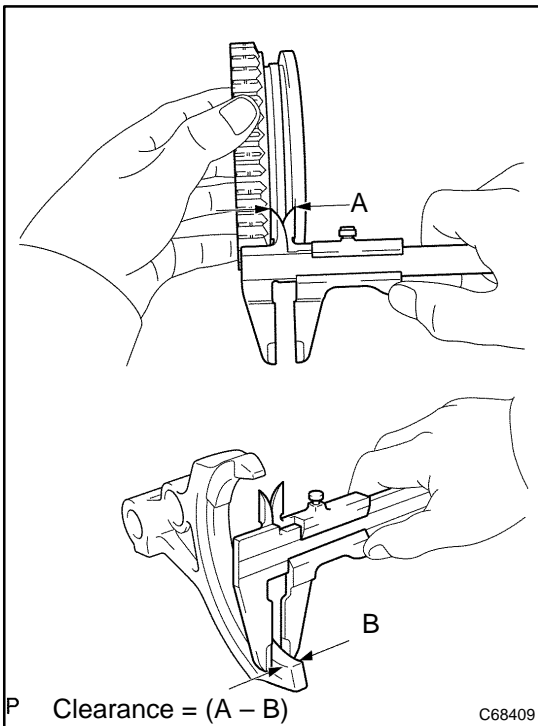


- (b) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Standard clearance:

0.75 – 1.65 mm (0.0295 – 0.065 in.)

If the clearance is out of specification, replace the synchronizer ring No.1.

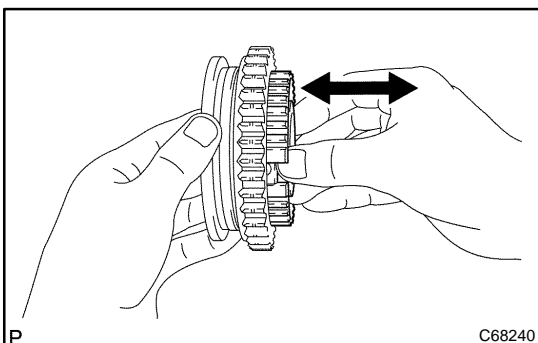
**22. INSPECT REVERSE GEAR**

- (a) Using a vernier caliper gauge, measure the clearance between reverse gear and shift fork.

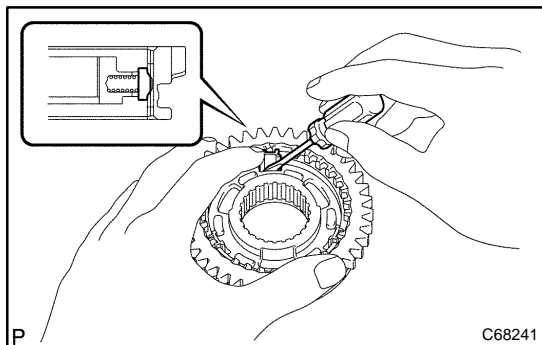
Standard clearance:

0.15 – 0.35 mm (0.0059 – 0.0138 in.)

If the clearance is out of specification, replace the reverse gear and reverse shift fork.

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

- (a) Check that the transmission clutch hub No.1 and reverse gear sub-assy slides smoothly.
(b) Check that the spline gear's edges of the reverse gear sub-assy is not worn down.



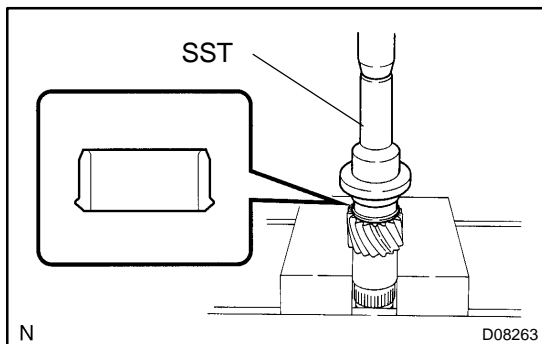
24. INSTALL REVERSE GEAR

- (a) Coat the reverse gear with gear oil, install it to the transmission clutch hub No.1.

NOTICE:

Be sure to set the reverse gear and transmission clutch hub No.1 in incorrect orientation.

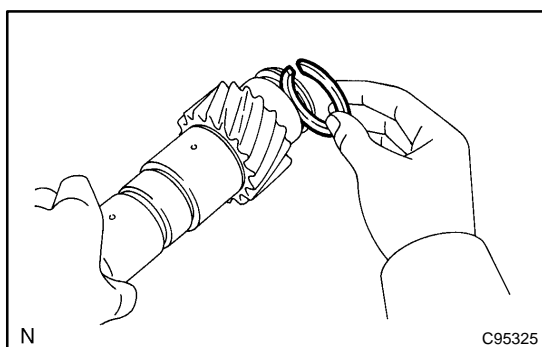
- (b) Using a screwdriver, install the 3 synchromesh shifting key springs and 3 synchromesh shifting keys.



25. INSTALL OUTPUT SHAFT FRONT BEARING

- (a) Using SST and a press, install the output shaft front bearing (inner race) to the output shaft.

SST 09223-50010



- (b) Select a snap ring from the table below that will make the thrust clearance of the output shaft front bearing (inner race) below 0.1 mm (0.0039 in.).

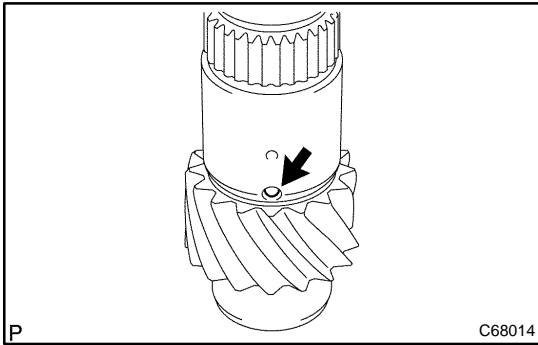
Snap ring thickness:

Part No.	Thickness: mm (in.)	Mark
90520 - 30032	1.85 - 1.90 (0.0728 - 0.0748)	7
90520 - 30033	1.90 - 1.95 (0.0748 - 0.0768)	8
90520 - 30002	1.95 - 2.00 (0.0768 - 0.0787)	1
90520 - 30003	2.00 - 2.05 (0.0787 - 0.0807)	2
90520 - 30004	2.05 - 2.10 (0.0807 - 0.0827)	3
90520 - 30005	2.10 - 2.15 (0.0827 - 0.0846)	4
90520 - 30006	2.15 - 2.20 (0.0846 - 0.0866)	5
90520 - 30007	2.20 - 2.25 (0.0866 - 0.0886)	6

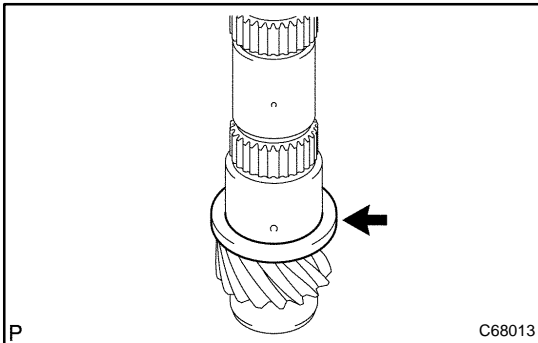
- (c) Using a brass bar and a hammer, tap in the snap ring.

NOTICE:

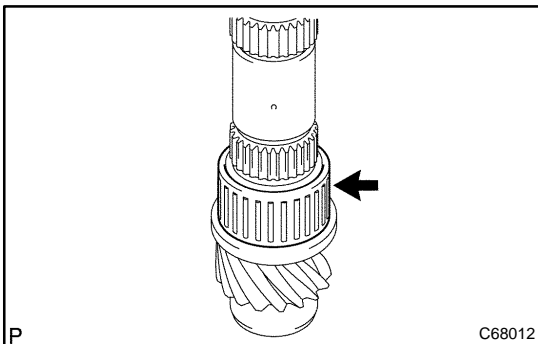
Take care not to damage the journal surface of the output shaft.

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

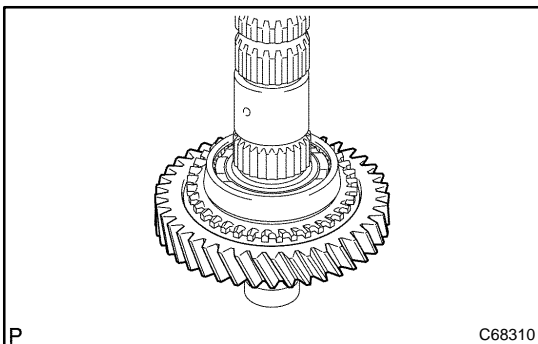
- (a) Coat the 1st gear thrust washer pin or ball with MP grease, install it to the output shaft.

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

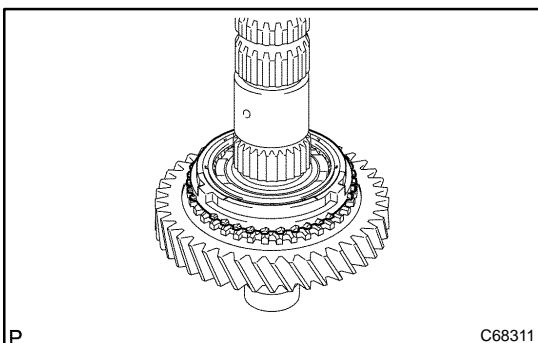
- (a) Coat the 1st gear thrust washer with gear oil, install it to the output shaft.

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

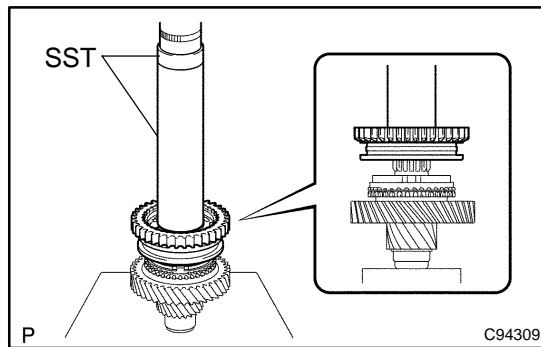
- (a) Coat the 1st gear needle roller bearing with gear oil, install it to the output shaft.

**29. INSTALL 1ST GEAR**

- (a) Coat the 1st gear with gear oil, install it to the output shaft.

**30. INSTALL SYNCHRONIZER RING NO.1**

- (a) Coat the synchronizer ring No.1 with gear oil, install it to the 1st gear.

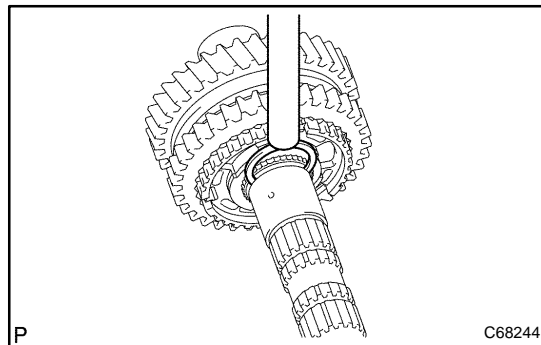


31. INSTALL TRANSMISSION CLUTCH HUB NO.1

- (a) Using SST and a press, install the transmission clutch hub No.1 to the output shaft.
SST 09316-60011 (09316-00031)

NOTICE:

The 1st gear can be turned.



- (b) Select a snap ring from the table below that will make the thrust clearance of the transmission clutch hub No.1 below 0.1 mm (0.0039 in.).

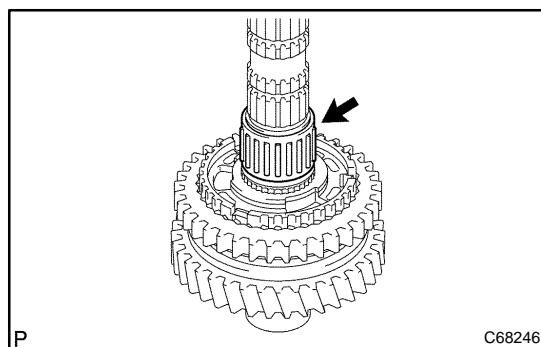
Snap ring thickness:

Part No.	Thickness: mm (in.)	Mark
90520 - 29018	2.50 (0.0984)	A
90520 - 29019	2.56 (0.1008)	B
90520 - 29020	2.62 (0.1031)	C
90520 - 29021	2.68 (0.1055)	D
90520 - 29022	2.74 (0.1079)	E
90520 - 29023	2.80 (0.1102)	F

- (c) Using a brass bar and a hammer, install the snap ring to the output shaft.

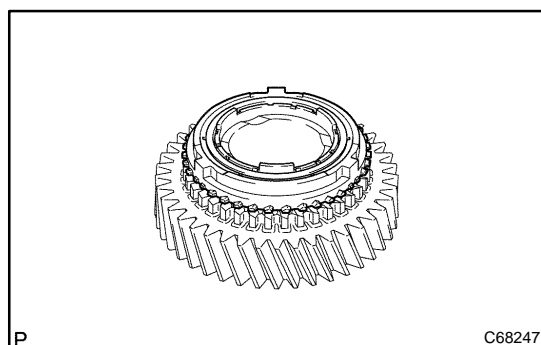
NOTICE:

Take care not to damage the journal surface of the output shaft.



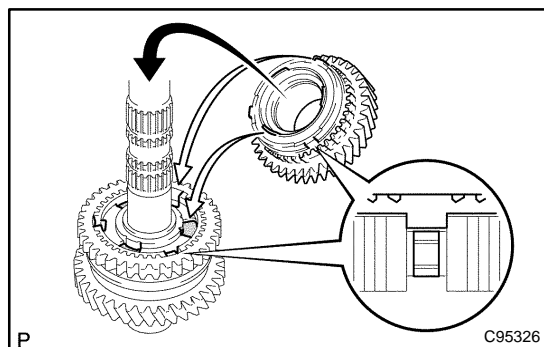
32. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

- (a) Coat the 2nd gear needle roller bearing with gear oil, install it to the output shaft.



33. INSTALL SYNCHRONIZER RING SET NO.2

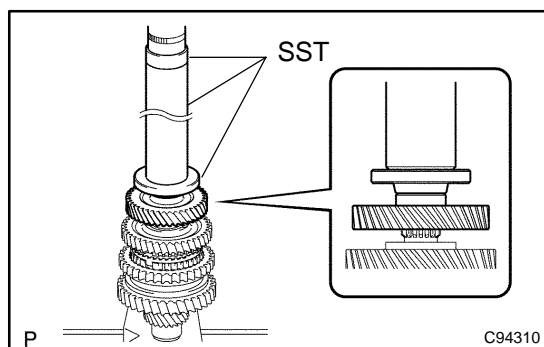
- (a) Coat the synchronizer ring set No.2 with gear oil, install it to the 2nd gear.

**34. INSTALL 2ND GEAR**

- (a) Coat the 2nd gear with gear oil, install it to the output shaft.

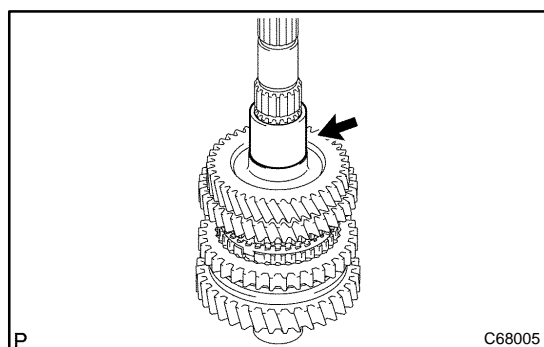
NOTICE:

Fit the synchronizer inner ring claws into the slots in the transmission clutch hub No.1.

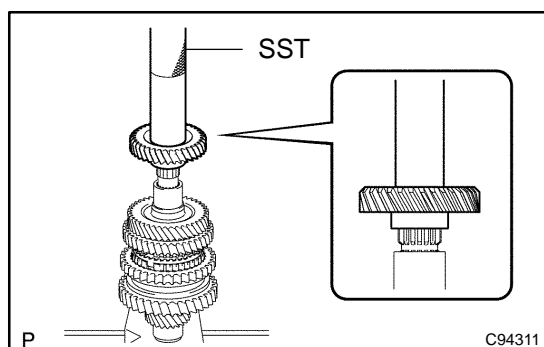
**35. INSTALL 3RD DRIVEN GEAR**

- (a) Using SST and a press, install the 3rd driven gear to the output shaft.

SST 09309-36100 (09309-03610), 09608-00071,
09950-60010 (09951-00450)

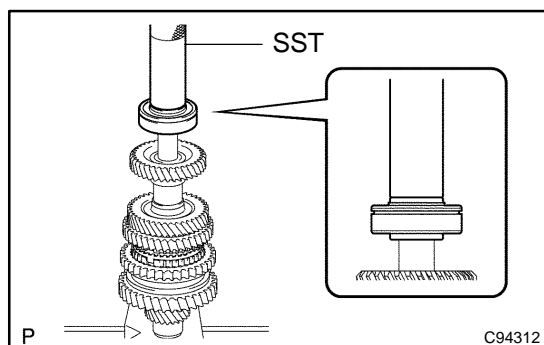
**36. INSTALL OUTPUT GEAR SPACER**

- (a) Install the output gear spacer to the output shaft.

**37. INSTALL 4TH DRIVEN GEAR**

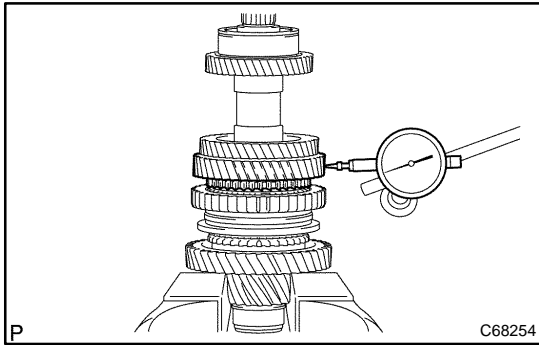
- (a) Using SST and a press, install 4th driven gear to the output shaft.

SST 09612-22011

**38. INSTALL OUTPUT SHAFT REAR BEARING**

- (a) Using SST and a press, install output shaft rear bearing to the output shaft.

SST 09612-22011

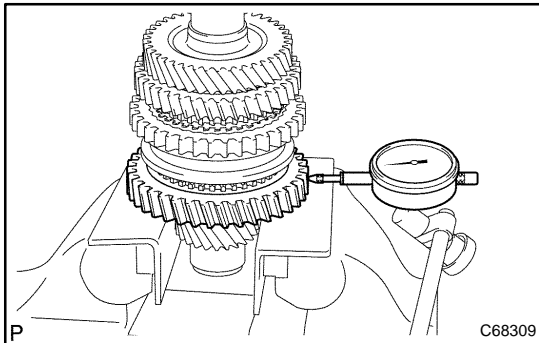
**39. INSPECT 2ND GEAR RADIAL CLEARANCE**

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

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 - 0.058 (0.0006 - 0.0023)
NSK made	0.015 - 0.056 (0.0006 - 0.0022)

If the clearance is out of specification, replace the 2nd gear needle roller bearing.

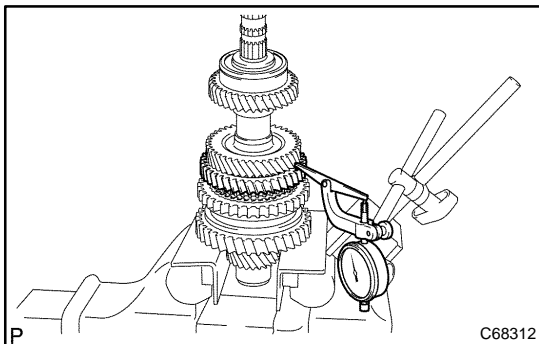
**40. INSPECT 1ST GEAR RADIAL CLEARANCE**

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

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 - 0.058 (0.0006 - 0.0023)
NSK made	0.015 - 0.056 (0.0006 - 0.0022)

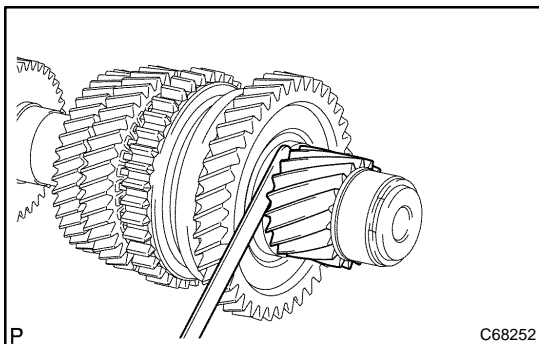
If the clearance is out of specification, replace the 1st gear needle roller bearing.

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

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

Standard clearance:

0.10 - 0.45 mm (0.0039 - 0.0177 in.)

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

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

Standard clearance:

0.10 - 0.40 mm (0.0039 - 0.0157 in.)