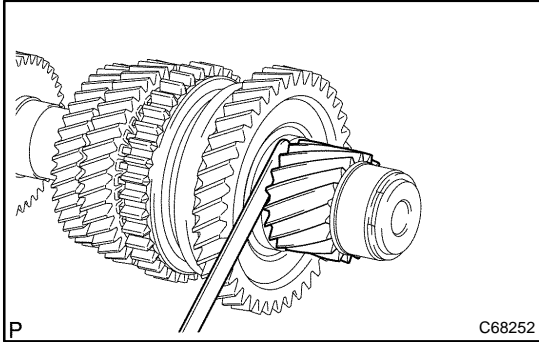


OVERHAUL

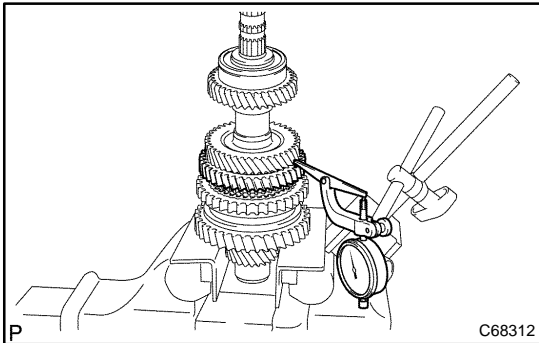


1. INSPECT 1ST GEAR THRUST CLEARANCE

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

Standard clearance:

0.10 – 0.40 mm (0.0039 – 0.0157 in.)

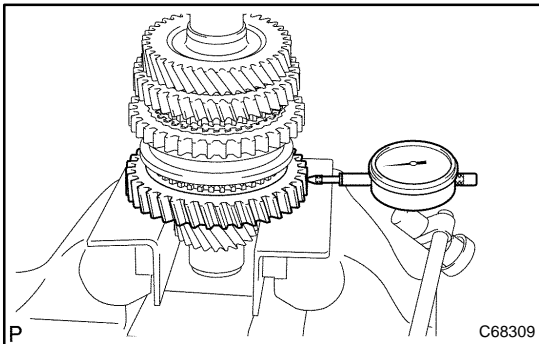


2. INSPECT 2ND GEAR THRUST CLEARANCE

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

Standard clearance:

0.10 – 0.55 mm (0.0039 – 0.0217 in.)



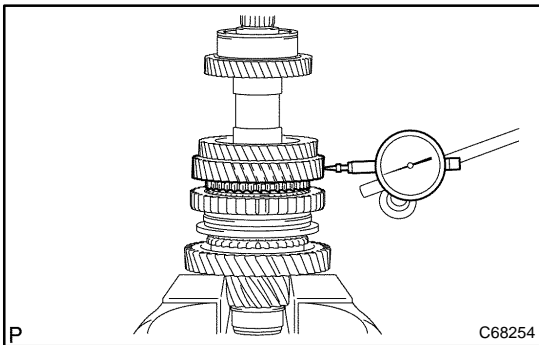
3. INSPECT 1ST GEAR RADIAL CLEARANCE

- (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.



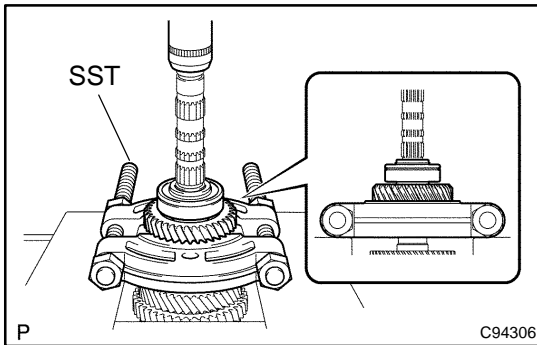
4. INSPECT 2ND GEAR RADIAL CLEARANCE

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

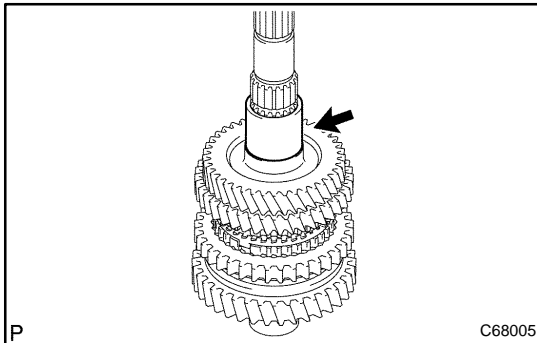
Standard clearance:

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

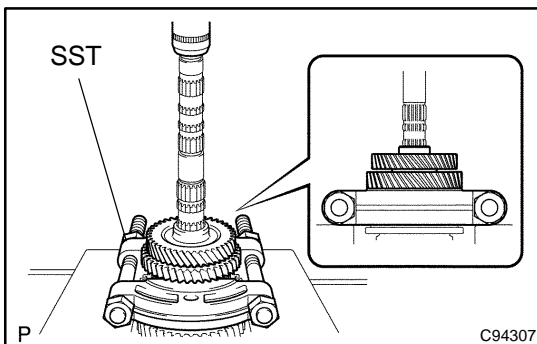
If the clearance is out of specification, replace the 2nd gear needle roller bearing.

**5. REMOVE 4TH DRIVEN GEAR**

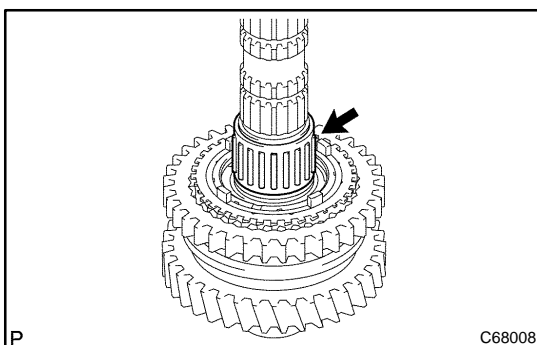
- (a) Using SST and a press, remove the output shaft center bearing with 4th driven gear from the output shaft.
SST 09950-00020

**6. REMOVE OUTPUT GEAR SPACER**

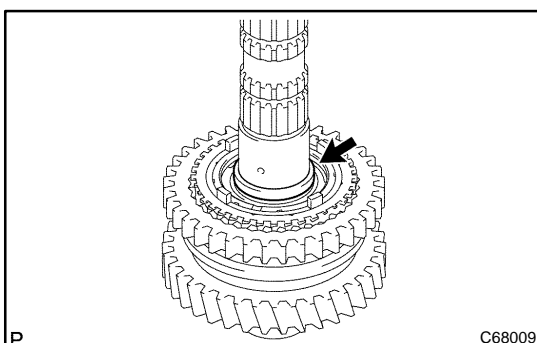
- (a) Remove the output gear spacer from the output shaft.

**7. REMOVE 2ND GEAR**

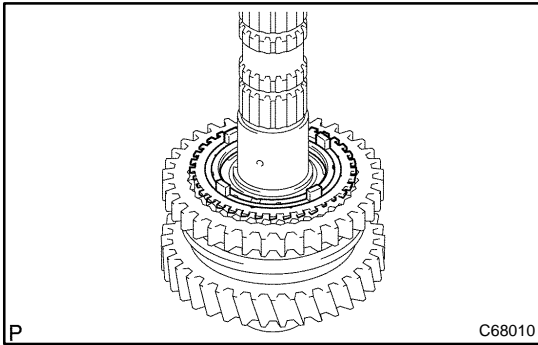
- (a) Using SST and a press, remove the 3rd driven gear with 2nd gear from the output shaft.
SST 09950-00020

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

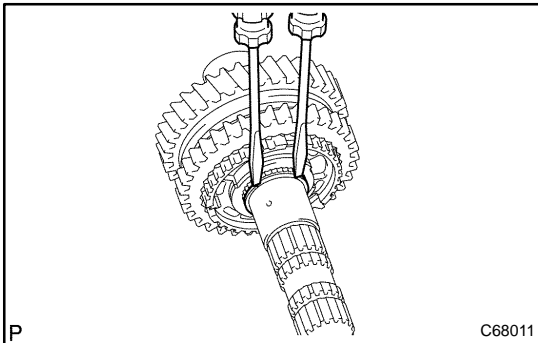
- (a) Remove the 2nd gear needle roller bearing from the output shaft.

**9. REMOVE 2ND GEAR BEARING SPACER**

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

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

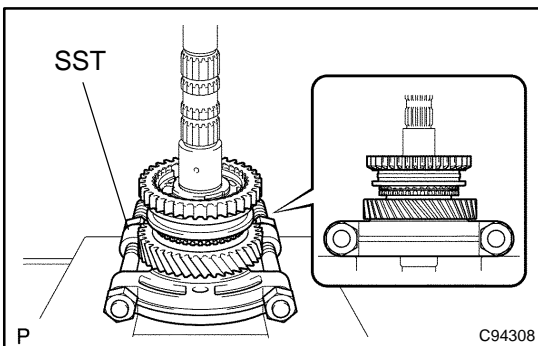
- (a) Remove the synchronizer ring set No.2 from the output shaft.

**11. REMOVE 1ST GEAR**

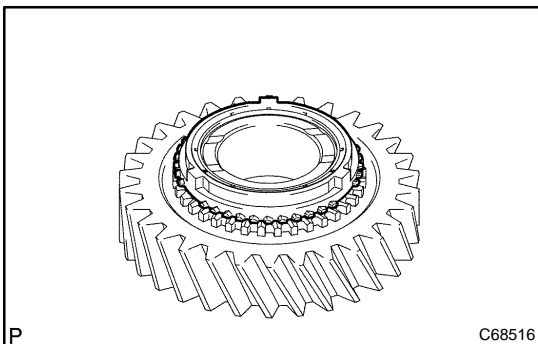
- (a) Using 2 screwdrivers and a hammer, remove the clutch hub No.1 shaft snap ring from the output shaft.

NOTICE:

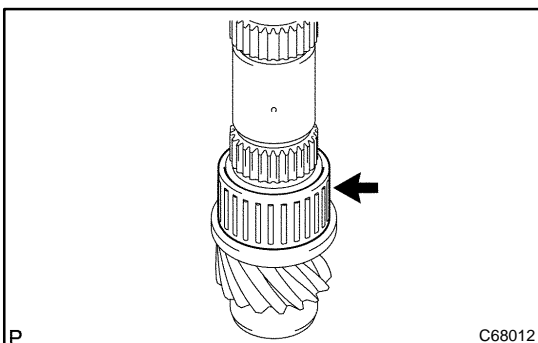
Using a waste to prevent the snap ring from being scattered.



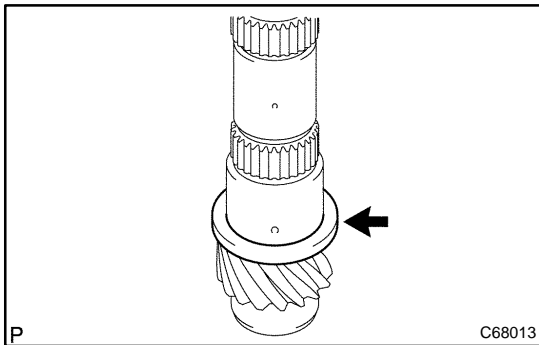
- (b) Using SST and a press, remove the transmission clutch hub No.1 with 1st gear from the output shaft.
SST 09950-00020

**12. REMOVE SYNCHRONIZER RING NO.1**

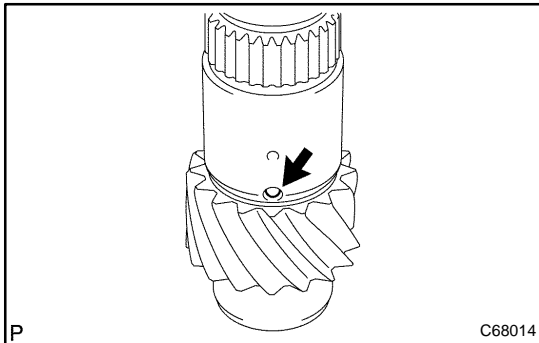
- (a) Remove the synchronizer ring No.1 from the 1st gear.

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

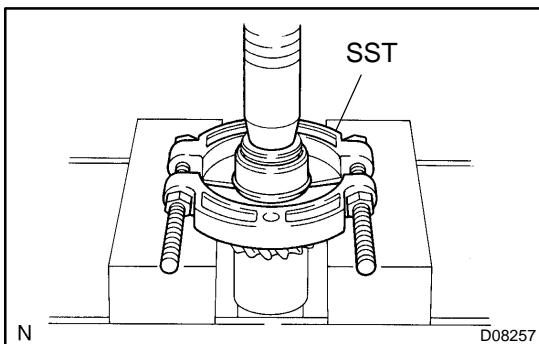
- (a) Remove the 1st gear needle roller bearing from the output shaft.

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

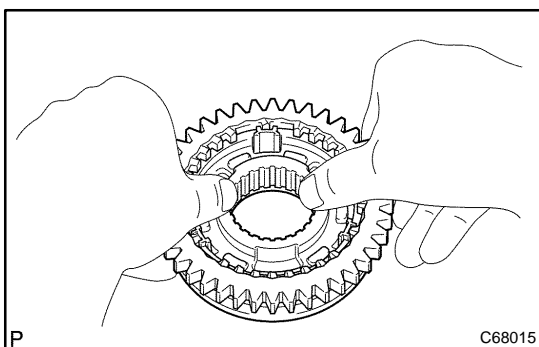
- (a) Remove the 1st gear thrust washer from the output shaft.

**15. REMOVE 1ST GEAR THRUST WASHER PIN OR BALL**

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

**16. REMOVE OUTPUT SHAFT FRONT BEARING**

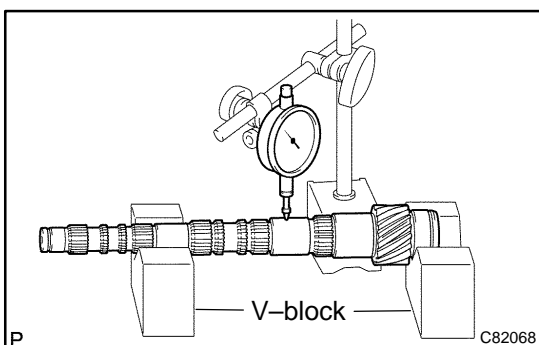
- (a) Using 2 screwdrivers, remove the output shaft front bearing snap ring.
- (b) Using SST and a press, remove the output shaft front bearing from the output shaft.
- SST 09950-00020

**17. REMOVE REVERSE GEAR**

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

NOTICE:

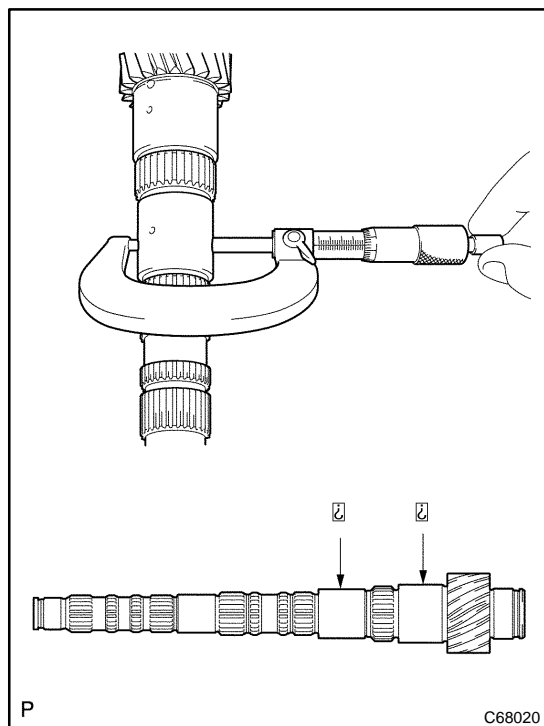
Using a waste to prevent the synchromesh shifting key and spring from being scattered.

**18. 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.

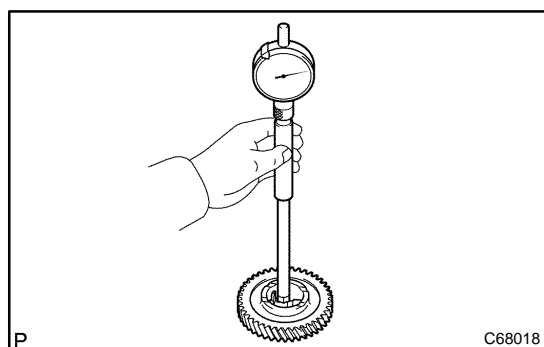


- (b) Using a micrometer, measure the outer diameter of the output shaft journal surface.

Outer diameter:

Part	New shaft: mm (in.)	Minimum outer diameter: mm (in.)
A	31.985 – 32.000 (1.2592 – 1.2598)	31.985 (1.2592)
B	37.985 – 38.000 (1.4955 – 1.4961)	37.985 (1.4955)

If the outer diameter is less than the minimum, replace the output shaft.



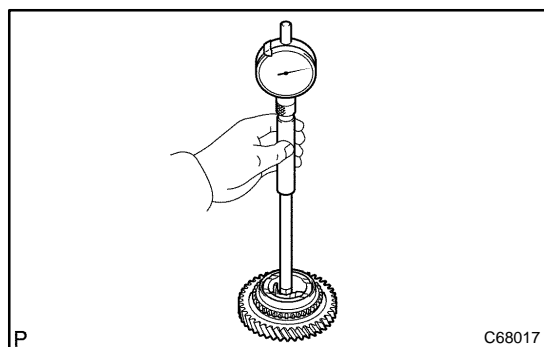
19. INSPECT 2ND GEAR

- (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.



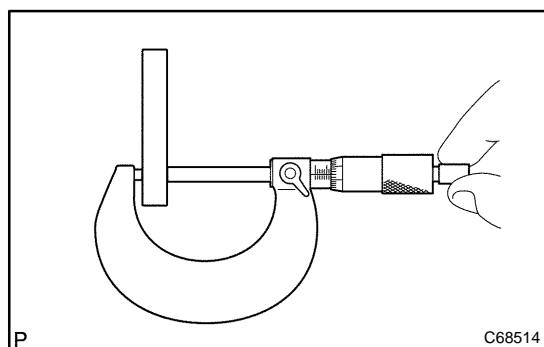
20. INSPECT 1ST GEAR

- (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.



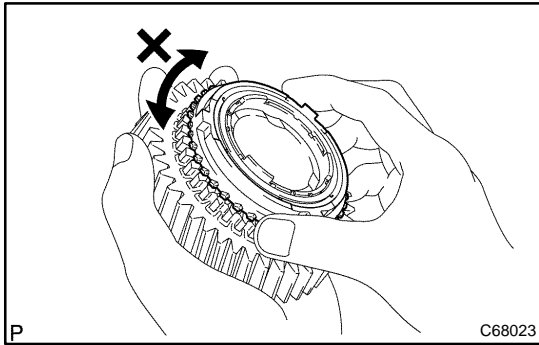
21. INSPECT 1ST GEAR THRUST WASHER

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

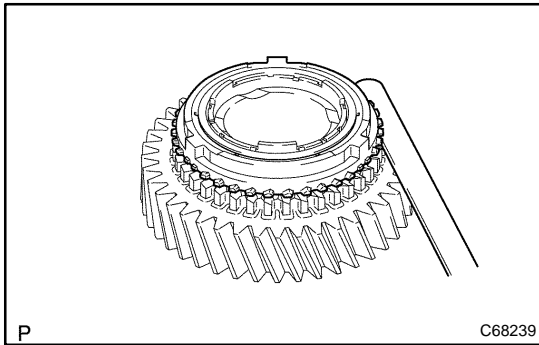
Thickness:

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

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

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

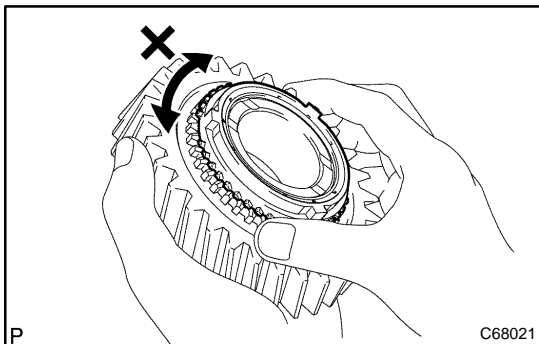
- (a) Coat the 2nd gear cone with gear oil.
Check the braking effect of the synchronizer ring.



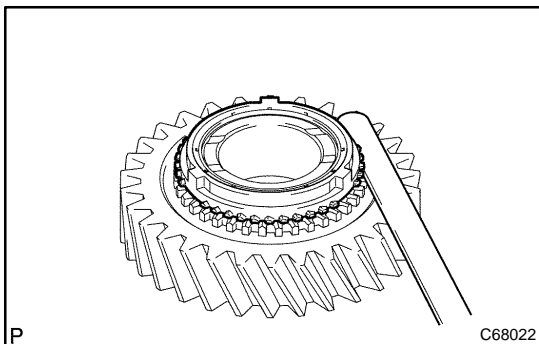
- (b) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

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

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

**23. INSPECT SYNCHRONIZER RING NO.1**

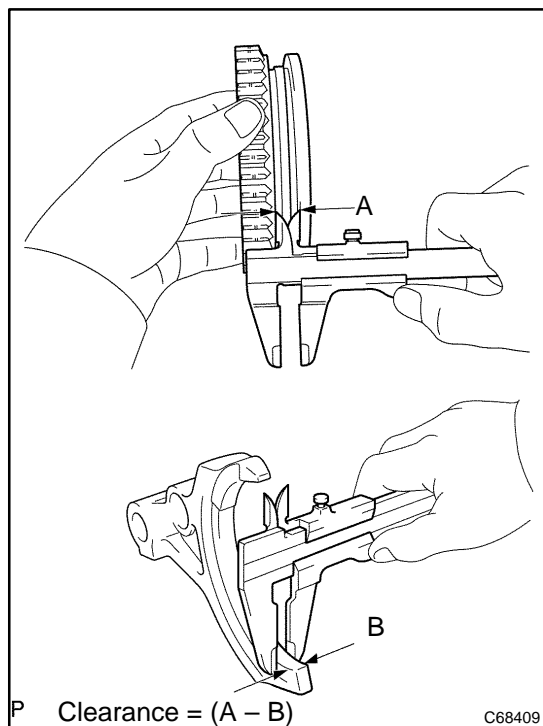
- (a) Coat the 1st gear cone with gear oil.
Check the braking effect of the synchronizer ring.



- (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)

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

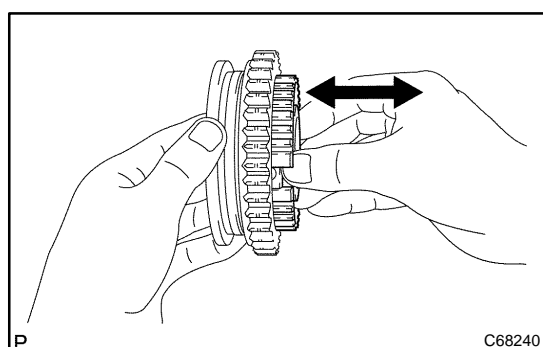
**24. INSPECT REVERSE GEAR**

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

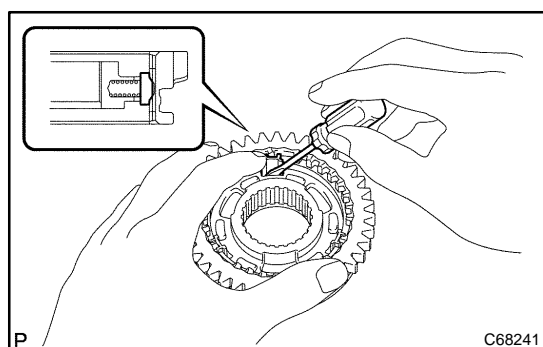
Standard clearance:

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.

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

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

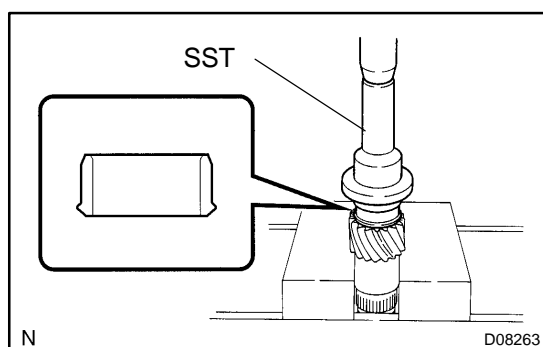
**26. INSTALL REVERSE GEAR**

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

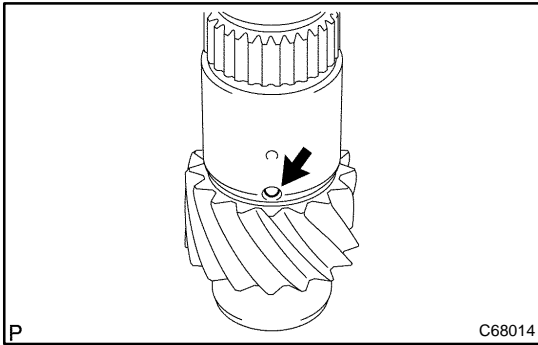
NOTICE:

Do not set the reverse gear and transmission clutch hub No.1 in incorrect orientation.

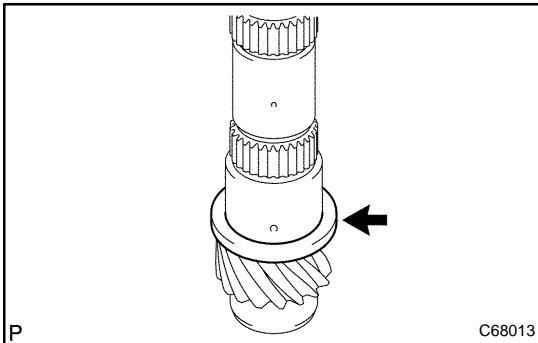
- (b) Using a screwdriver, install the 3 synchromesh shifting key springs and 3 synchromesh shifting keys.

**27. INSTALL OUTPUT SHAFT FRONT BEARING**

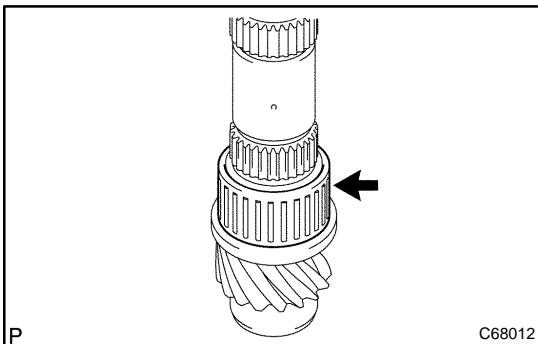
- (a) Using SST and a press, install the output shaft front bearing (inner race) to the output shaft.
SST 09223-50010
- (b) Using a brass bar and a hammer, install the output shaft snap ring to the output shaft.

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

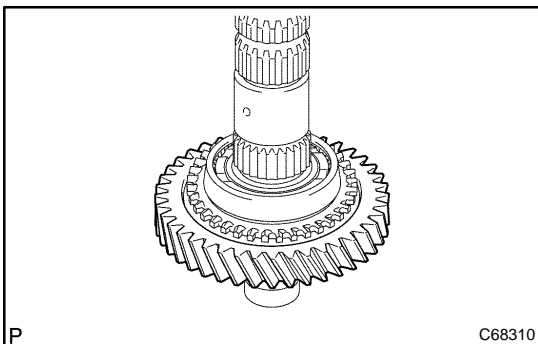
- (a) Coat the 1st gear thrust washer pin or ball with MP grease, install it to the output shaft.

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

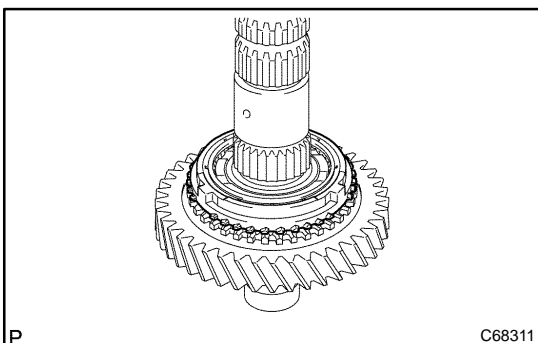
- (a) Coat the 1st gear thrust washer with gear oil, install it to the output shaft.

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

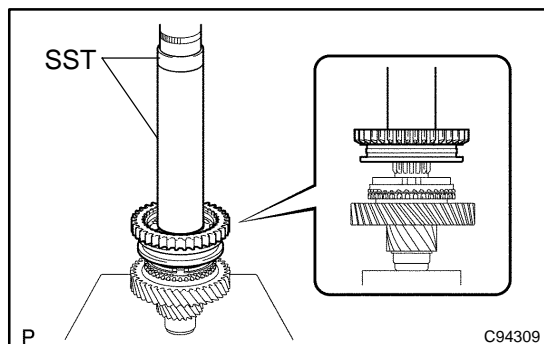
- (a) Coat the 1st gear needle roller bearing with gear oil, install it to the output shaft.

**31. INSTALL 1ST GEAR**

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

**32. INSTALL SYNCHRONIZER RING NO.1**

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



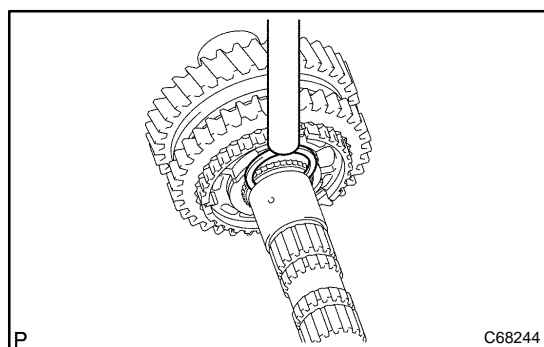
33. INSTALL TRANSMISSION CLUTCH HUB NO.1

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

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

NOTICE:

The 1st gear can be turned.



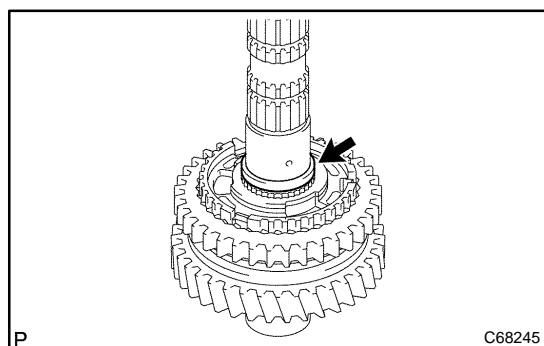
- (b) Select a snap ring that will allow minimum axial play.

Standard clearance: 0.1 mm (0.004 in.) or less

Snap ring thickness:

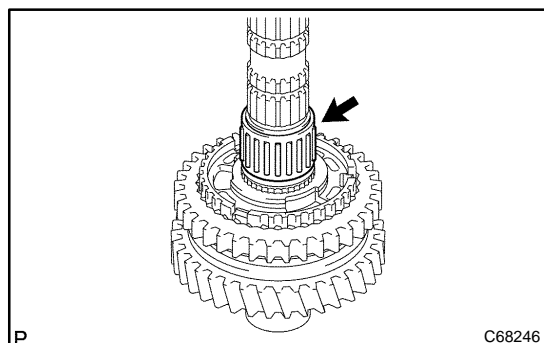
Part No.	Thickness: mm (in.)	Mark
90520 - 29018	2.50 (0.0984)	A
90520 - 29019	2.56 (0.1008)	B
90520 - 29020	2.62 (0.1031)	C
90520 - 29021	2.68 (0.1055)	D
90520 - 29022	2.74 (0.1079)	E
90520 - 29023	2.80 (0.1102)	F

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



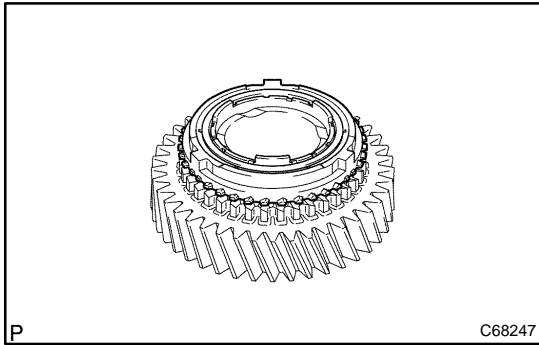
34. INSTALL 2ND GEAR BEARING SPACER

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

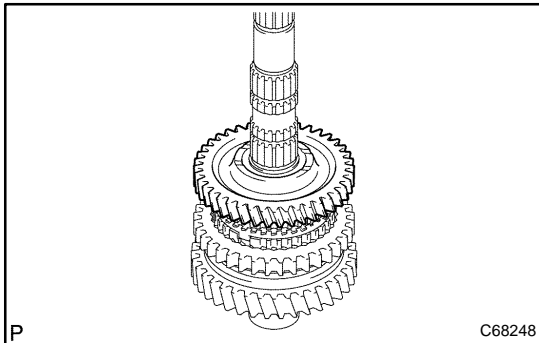


35. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

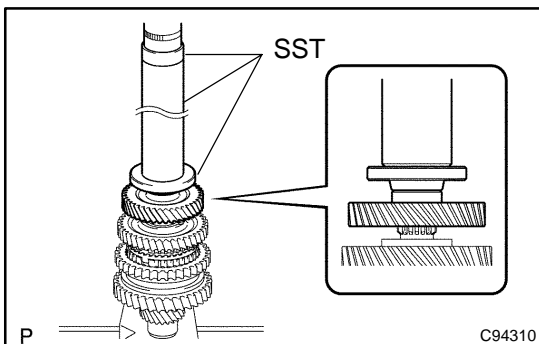
- (a) Coat the 2nd gear needle roller bearing with gear oil, install it to the output shaft.

**36. INSTALL SYNCHRONIZER RING SET NO.2**

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

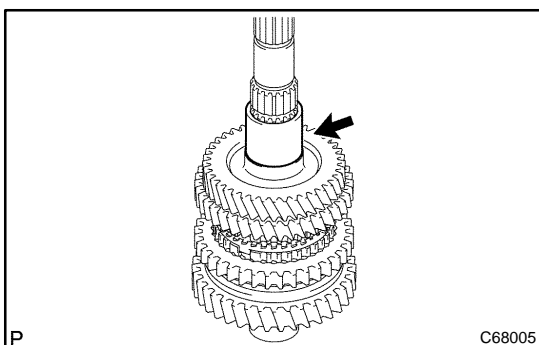
**37. INSTALL 2ND GEAR**

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

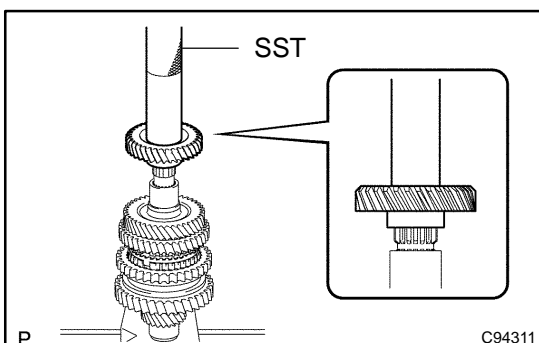
**38. INSTALL 3RD DRIVEN GEAR**

- (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)

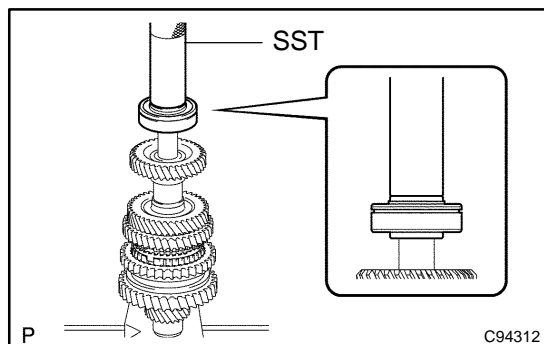
**39. INSTALL OUTPUT GEAR SPACER**

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

**40. INSTALL 4TH DRIVEN GEAR**

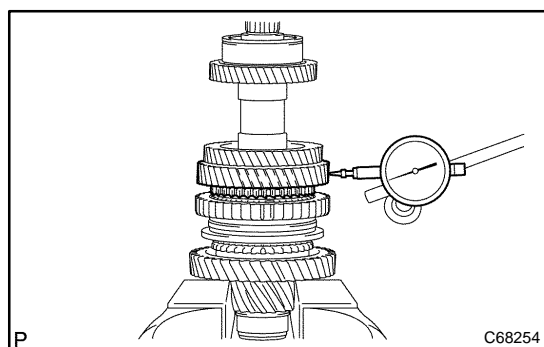
- (a) Using SST and a press, install 4th driven gear to the output shaft.

SST 09612-22011

**41. INSTALL OUTPUT SHAFT CENTER BEARING**

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

SST 09612-22011

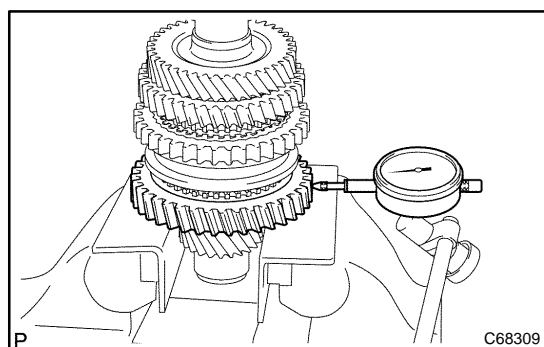
**42. INSPECT 2ND GEAR RADIAL CLEARANCE**

- (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 - 0.0230)
NSK made	0.015 - 0.056 (0.0006 - 0.0022)

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

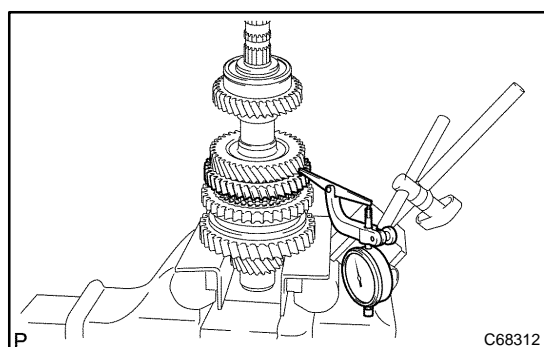
**43. INSPECT 1ST GEAR RADIAL CLEARANCE**

- (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 - 0.0230)
NSK made	0.015 - 0.056 (0.0006 - 0.0022)

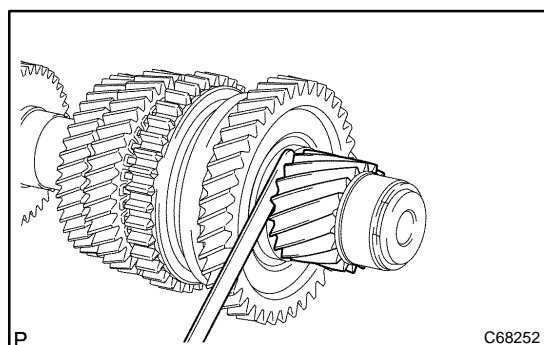
If the clearance is out of specification, replace the 1st gear needle roller bearing.

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

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

Standard clearance:

0.10 - 0.55 mm (0.0039 - 0.0217 in.)

**45. 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.)