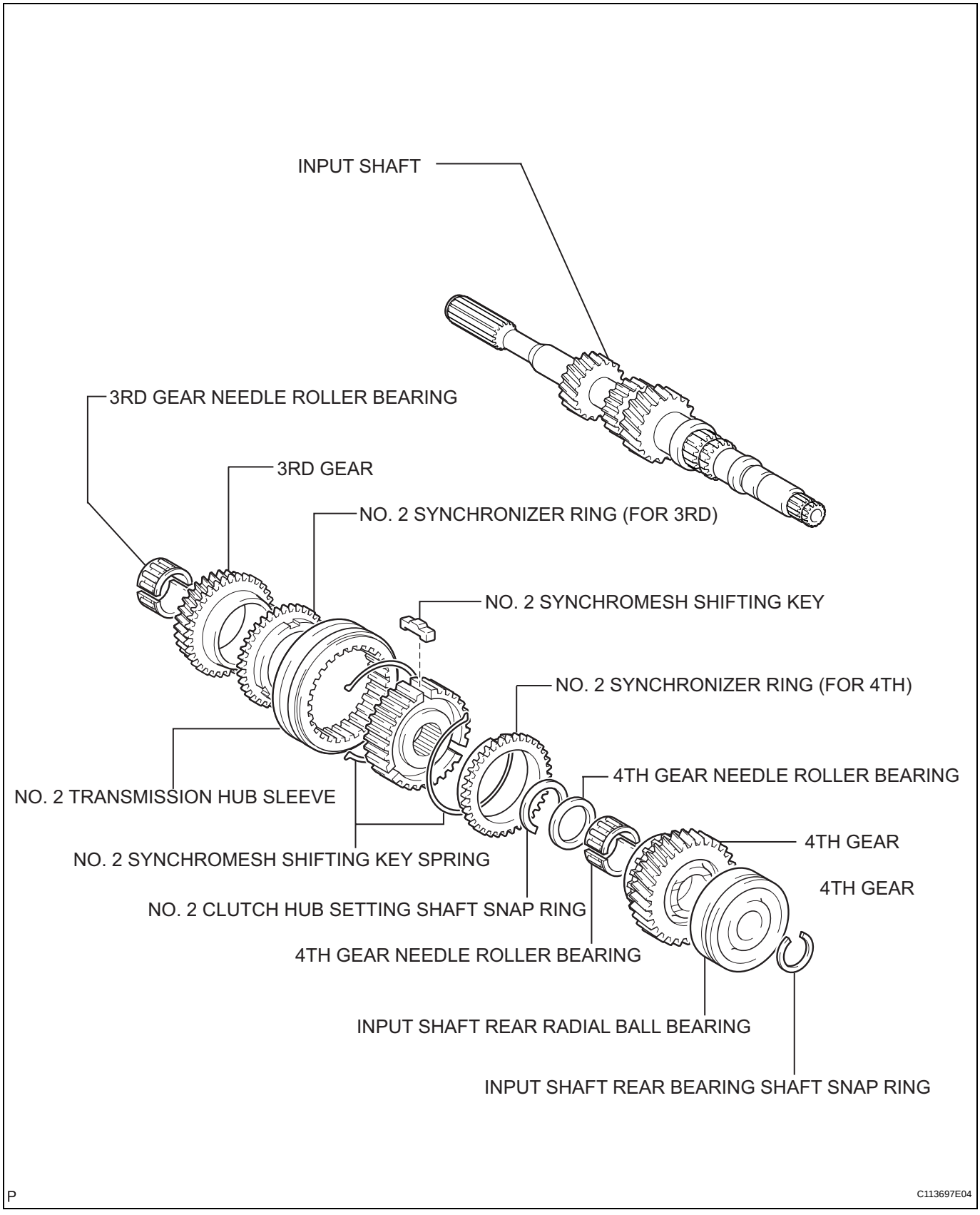
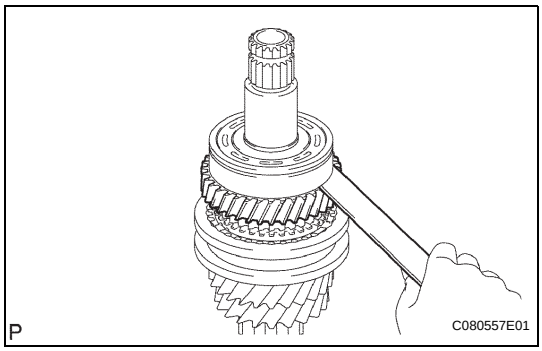
INPUT SHAFT

COMPONENTS



MX



DISASSEMBLY

1. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the thrust clearance.

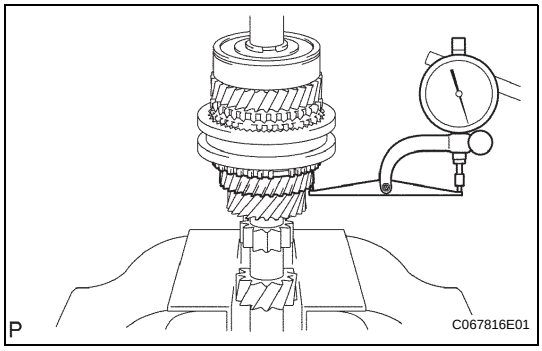
Standard clearance:

0.1 to 0.55 mm (0.0039 to 0.0217 in.)

Maximum clearance:

0.55 mm (0.0217 in.)

If the clearance is greater than the maximum, replace the No. 2 transmission clutch hub, 4th gear or input shaft rear radial ball bearing.



2. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the thrust clearance.

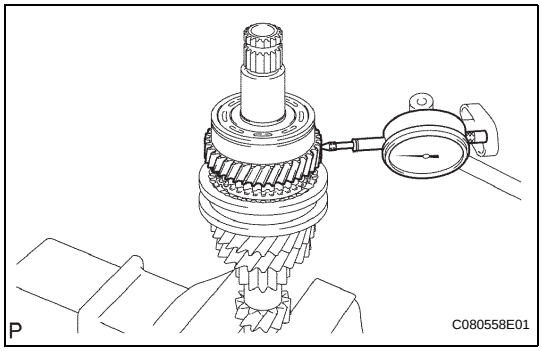
Standard clearance:

0.1 to 0.35 mm (0.0039 to 0.0138 in.)

Maximum clearance:

0.35 mm (0.0138 in.)

If the clearance is greater than the maximum, replace the No. 2 transmission clutch hub, 3rd gear or input shaft.



3. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure than the radial clearance between the gear and shaft.

Standard clearance:

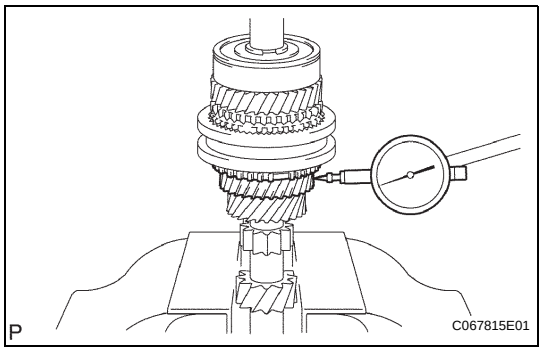
0.009 to 0.050 mm (0.0004 to 0.0020 in.)

Maximum clearance:

0.050 mm (0.0020 in.)

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

MX



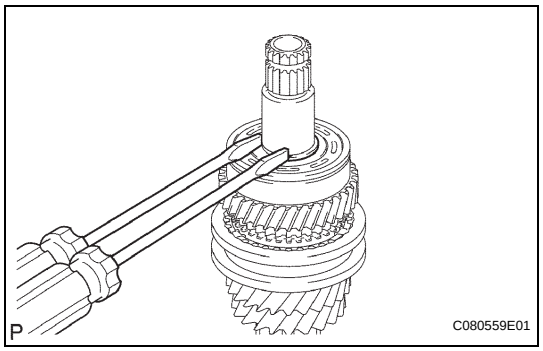
4. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance between the gear and shaft.

Standard clearance

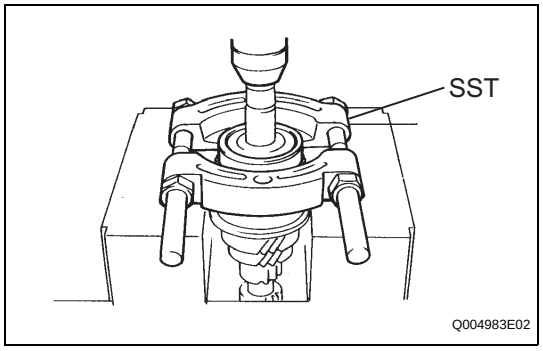
Bearing	Specified Condition
KOYO made	0.015 to 0.058 mm (0.0006 to 0.0023 in.)
NSK made	0.015 to 0.056 mm (0.0006 to 0.0022 in.)

If the clearance is not within the specification, replace the gear, needle roller bearing or shaft.

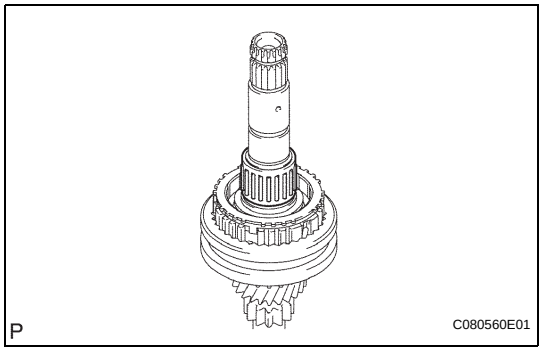


5. REMOVE 4TH GEAR

(a) Using 2 screwdrivers and a hammer, tap out the input shaft rear bearing shaft snap ring from the input shaft.
HINT:
Use a cloth to prevent the snap ring from springing away.

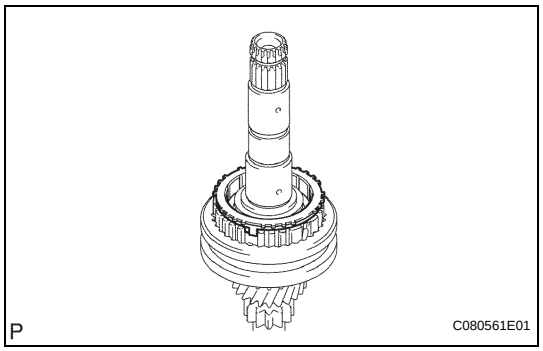


(b) Using SST and a press, press out the input shaft rear radial ball bearing and 4th gear from the input shaft.
SST 09950-00020
NOTICE:
- **Do not tighten SST excessively.**
- **Support the input shaft assembly by hand so that it will not drop.**



6. REMOVE 4TH GEAR NEEDLE ROLLER BEARING

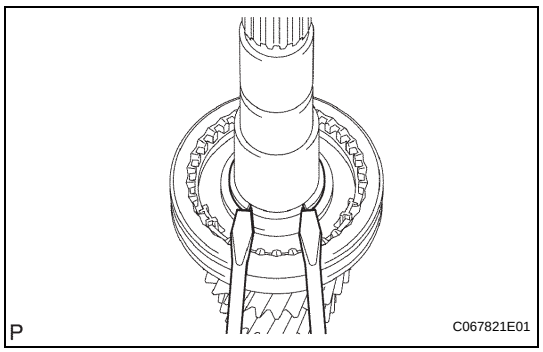
(a) Remove the 4th gear needle roller bearing and 4th gear bearing spacer from the input shaft.



7. REMOVE NO. 2 SYNCHRONIZER RING (for 4th Gear)

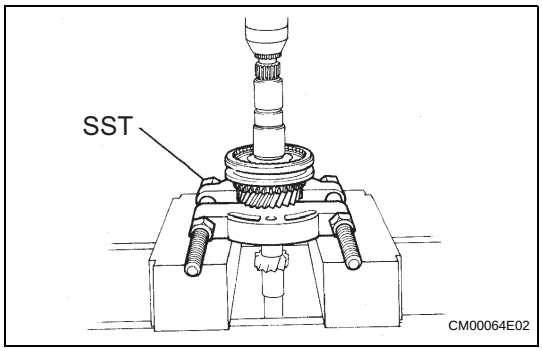
(a) Remove the No. 2 synchronizer ring from the No. 2 transmission clutch hub.

MX

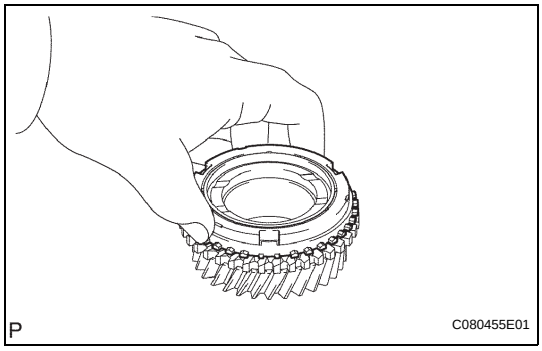


8. REMOVE 3RD GEAR

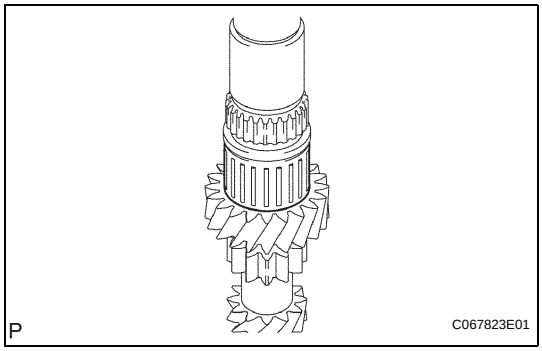
(a) Using 2 screwdrivers and a hammer, tap out the No. 2 clutch hub setting shaft snap ring from the input shaft.
HINT:
Use a cloth to prevent the snap ring from springing away.



(b) Using SST and a press, remove the No. 2 transmission clutch hub and 3rd gear from the input shaft.
SST 09950-00020
NOTICE:
- **Do not tighten SST excessively.**
- **Support the input shaft by hand so that it will not drop.**

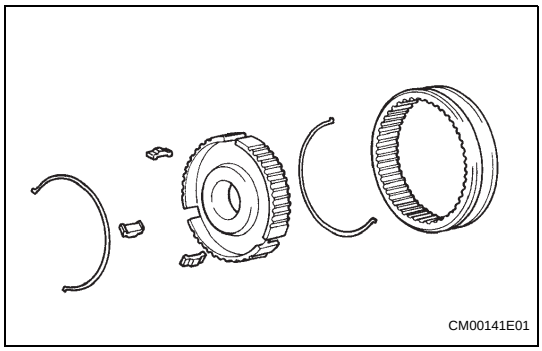


9. REMOVE NO. 2 SYNCHRONIZER RING (for 3rd Gear)
(a) Remove the No. 2 synchronizer ring from the 3rd gear.

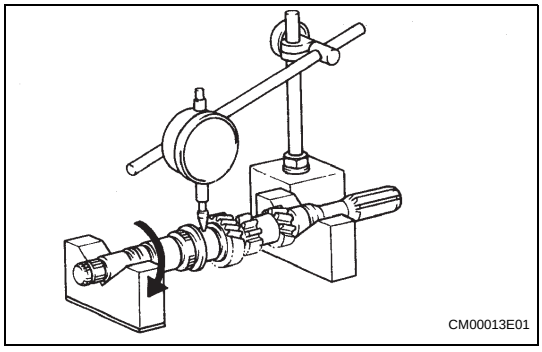


10. REMOVE 3RD GEAR NEEDLE ROLLER BEARING
(a) Remove the 3rd gear needle roller bearing from the input shaft.

MX

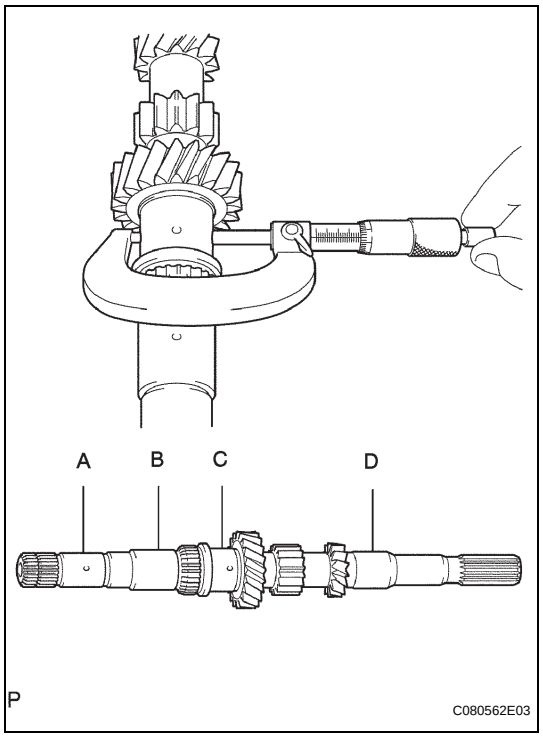


11. REMOVE NO. 2 TRANSMISSION HUB SLEEVE
(a) Remove the No. 2 transmission hub sleeve, 3 No. 2 shifting keys and 3 No. 2 shifting key springs from the No. 2 transmission clutch hub.
NOTICE:
Use a cloth to keep the shifting key and shifting key from spring springing away.



INSPECTION

1. INSPECT INPUT SHAFT
(a) Using a dial indicator, measure the input shaft runout.
Maximum runout:
0.015 mm (0.0006 in.)
If the runout is greater than the maximum, replace the input shaft.



(b) Using a micrometer, measure the diameter of the input shaft journal surface.

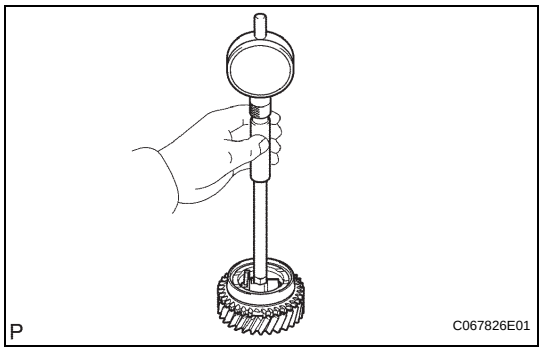
Standard diameter

Journal Position	Specified Condition
A	24.885 to 24.900 mm (0.9797 to 0.9803 in.)
B	28.991 to 29.006 mm (1.1414 to 1.1420 in.)
C	30.985 to 31.000 mm (1.2198 to 1.2204 in.)
D	24.985 to 25.000 mm (0.9836 to 0.9842 in.)

Minimum diameter

Journal Position	Specified Condition
A	24.885 mm (0.9797 in.)
B	28.991 mm (1.1414 in.)
C	30.985 mm (1.2198 in.)
D	24.985 mm (0.9836 in.)

If the diameter is less than the minimum, replace the input shaft.

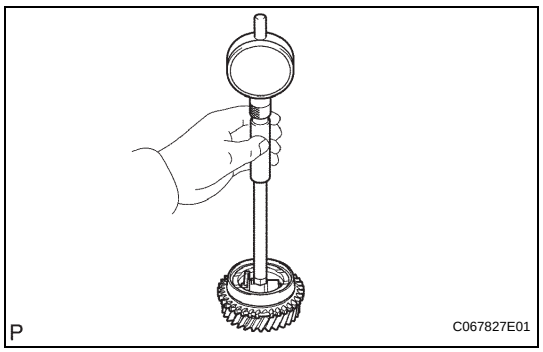


2. INSPECT 4TH GEAR

(a) Using a cylinder gauge, measure the inside diameter.

Standard inside diameter:
34.015 to 34.031 mm (1.3391 to 1.3398 in.)
Maximum inside diameter:
34.031 mm (1.3398 in.)

If the inside diameter is greater than the maximum, replace the 4th gear.

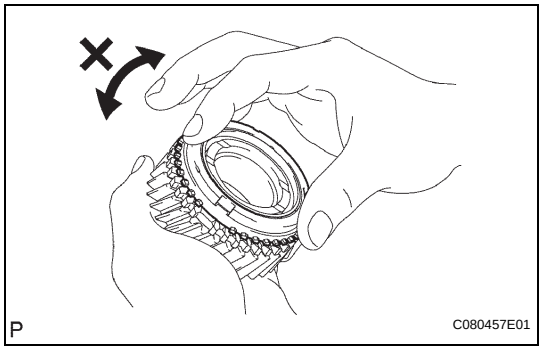


3. INSPECT 3RD GEAR

(a) Using a cylinder gauge, measure the inside diameter.

Standard inside diameter:
36.015 to 36.031 mm (1.4179 to 1.4185 in.)
Maximum inside diameter:
36.031 mm (1.4185 in.)

If the inside diameter is greater than the maximum, replace the 3rd gear.

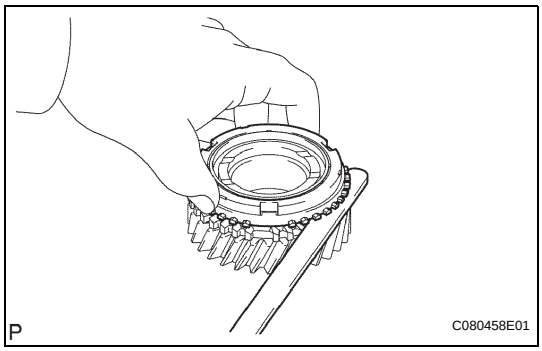


4. INSPECT NO. 2 SYNCHRONIZER RING (for 4th Gear)

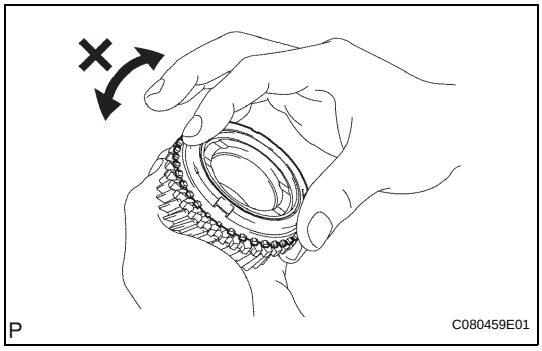
(a) Check for wear or damage.

(b) Coat the 4th gear cone with gear oil. Turn the synchronizer ring in one direction while pushing it against the 4th gear cone. Check that the ring locks. If the synchronizer outer ring does not lock, replace the ring or 4th gear.

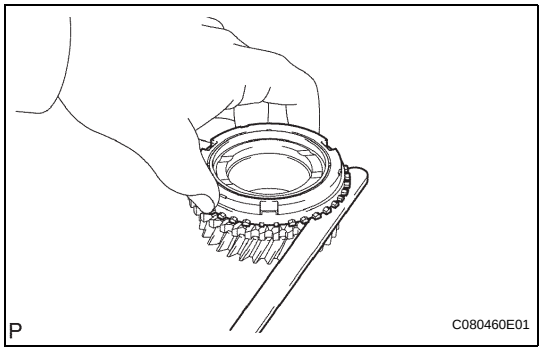
MX



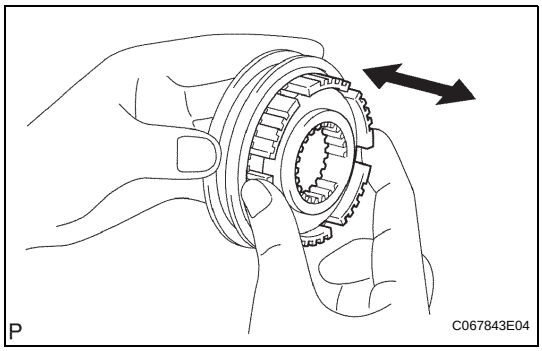
(c) Using a feeler gauge, measure the clearance between the No. 2 synchronizer ring and 4th gear with the No. 2 synchronizer ring contacting the cone of the 4th gear.
Standard clearance:
0.75 to 1.65 mm (0.0295 to 0.0649 in.)
Minimum clearance:
0.75 mm (0.0295 in)
If the clearance is less than the minimum, replace the synchronizer ring.



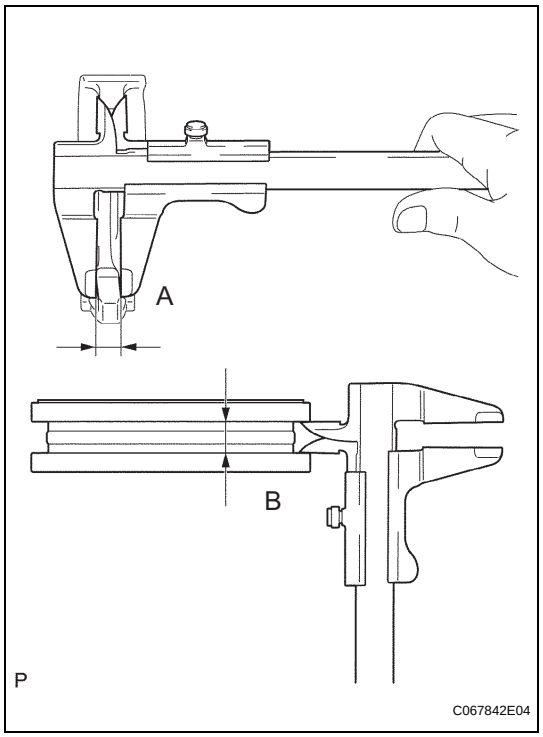
5. INSPECT NO. 2 SYNCHRONIZER RING (for 3rd Gear)
(a) Check for wear or damage.
(b) Coat the 3rd gear cone with gear oil. Turn the synchronizer ring in one direction while pushing it against the 3rd gear cone. Check that the ring locks. If the synchronizer outer ring does not lock, replace the ring or 3rd gear.



(c) Using a feeler gauge, check the clearance between the No. 2 synchronizer ring and 3rd gear with the No. 2 synchronizer ring contacting the cone of the 3rd gear.
Standard clearance:
0.75 to 1.65 mm (0.0295 to 0.0650 in.)
Minimum clearance:
0.75 mm (0.0295 in)
If the clearance is less than the minimum, replace the synchronizer ring.

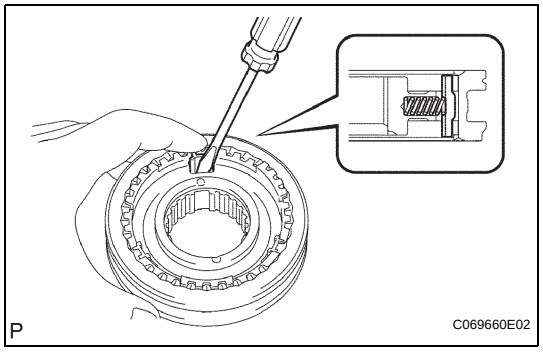


6. INSPECT NO. 2 TRANSMISSION HUB SLEEVE
(a) Check the sliding condition between the No. 2 transmission hub sleeve and No. 2 transmission clutch hub.
(b) Check that the spline gear edges of the No. 2 transmission hub sleeve are not worn down.



(c) Using a vernier caliper, measure the width of the No. 2 transmission hub sleeve groove (B) and the thickness of the claw part on the No. 2 gear shift fork (A), and calculate the clearance.
Standard clearance:
B - A = 0.15 to 0.35 mm (0.0059 to 0.0137 in.)
If the clearance is not within the specification, replace the No. 2 transmission hub sleeve and No. 2 gear shift fork.

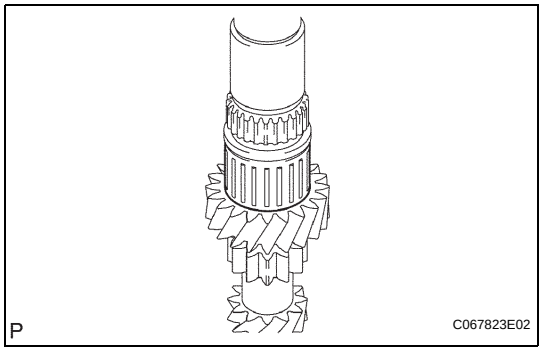
REASSEMBLY



1. INSTALL NO. 2 TRANSMISSION HUB SLEEVE

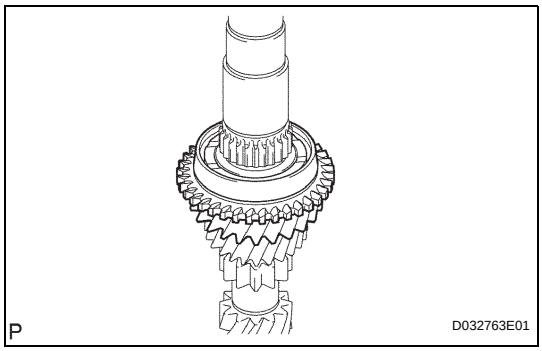
(a) Coat the No. 2 transmission hub sleeve with gear oil, and install it to the No. 2 transmission clutch hub.
NOTICE:
Be sure to set the No. 2 transmission hub sleeve and No. 2 transmission clutch hub in the correct orientation.

(b) Using a screwdriver, install the 3 synchromesh key springs with 3 No. 2 synchromesh shifting keys to the No. 2 transmission clutch hub.



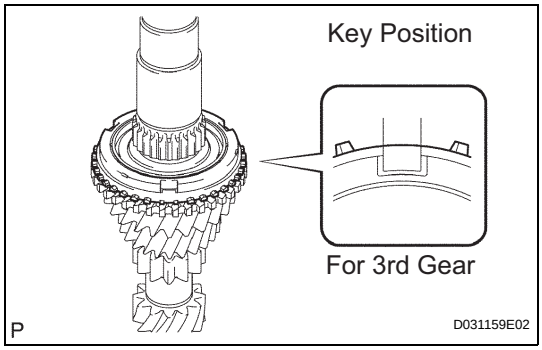
2. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

(a) Coat the 3rd gear needle roller bearing with gear oil, and install it to the input shaft.



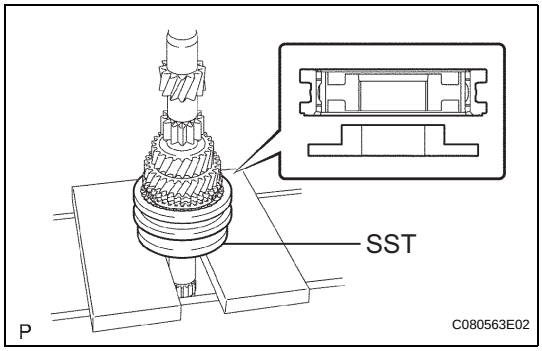
3. INSTALL 3RD GEAR

(a) Coat the 3rd gear with gear oil, and install it to the input shaft.



4. INSTALL NO. 2 SYNCHRONIZER RING (for 3rd Gear)

(a) Coat the No. 2 synchronizer ring with gear oil, and install it to the 3rd gear.



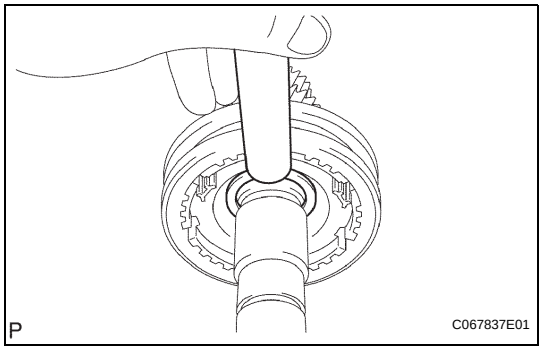
5. INSTALL NO. 2 TRANSMISSION CLUTCH HUB

(a) Using SST and a press, press in the No. 2 transmission clutch hub to the input shaft.
SST 09316-60011 (09316-00021)
NOTICE:
Fit the synchromesh shifting key into the groove of the synchronizer ring correctly.

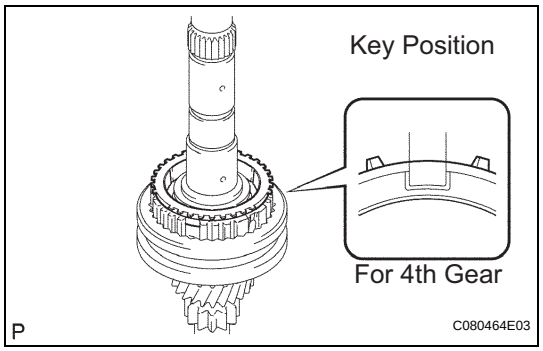
(b) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Standard snap ring thickness

Mark	Thickness mm (in)
0	2.30 (0.0906)
1	2.36 (0.0929)
2	2.42 (0.0953)
3	2.48 (0.0976)
4	2.54 (0.1000)
5	2.60 (0.1024)

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

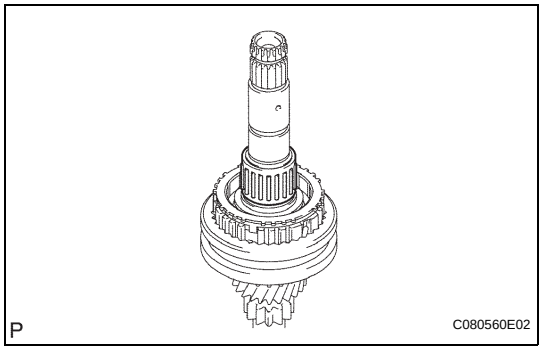


MX



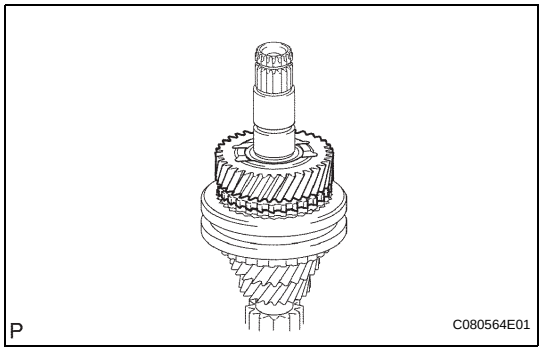
6. INSTALL NO. 2 SYNCHRONIZER RING (for 4th Gear)

(a) Coat the No. 2 synchronizer ring with gear oil, and install it to the No. 2 transmission clutch hub.



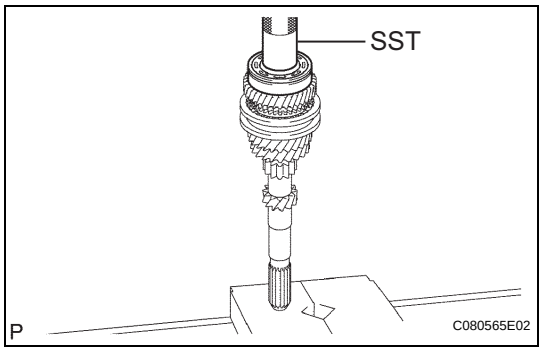
7. INSTALL 4TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 4th gear needle roller bearing and 4th gear bearing spacer with gear oil, and install them to the No. 2 transmission clutch hub.



8. INSTALL 4TH GEAR

(a) Coat the 4th gear with gear oil, and install it to the input shaft.



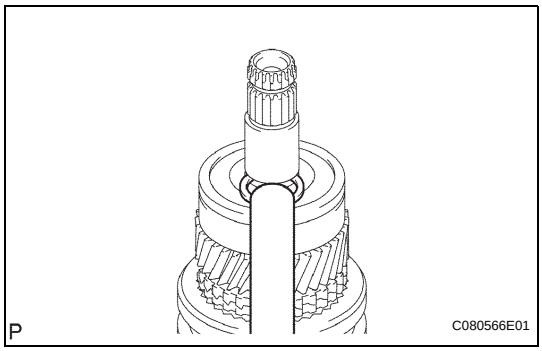
9. INSTALL REAR INPUT SHAFT BEARING SHAFT SNAP RING

(a) Using SST and a press, press in the radial ball bearing to the input shaft.
SST 09608-04031

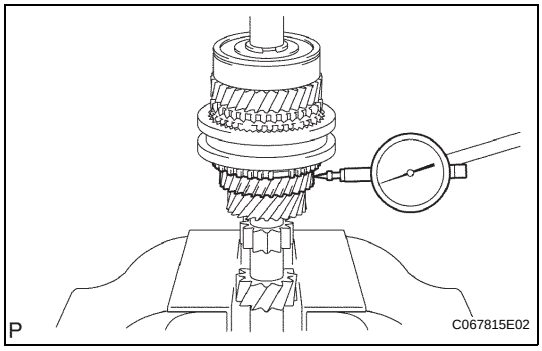
(b) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less
Standard snap ring thickness

Mark	Thickness mm (in)
A	2.29 (0.0901)
B	2.35 (0.0925)
C	2.41 (0.0948)
D	2.47 (0.0972)
E	2.53 (0.0996)
F	2.59 (0.1019)

MX



(c) Using a brass bar and hammer, and tap in the snap ring to the input shaft.
NOTICE:
Take care not to damage the journal surface of the snap ring.

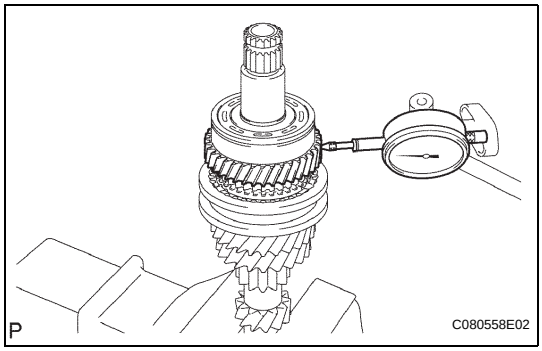


10. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance.
Standard clearance

Item	Specified Condition
KOYO made	0.015 to 0.058 mm (0.0006 to 0.0023 in.)
NSK made	0.015 to 0.056 mm (0.0006 to 0.0022 in.)

If the clearance is not within the specification, replace the gear, needle roller bearing or shaft.



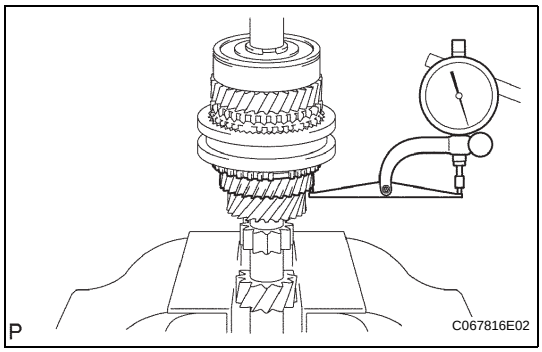
11. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the radial clearance.
Standard clearance

Item	Specified Condition
KOYO made	0.009 to 0.050 mm (0.0004 to 0.0020 in.)
NSK made	0.009 to 0.050 mm (0.0004 to 0.0020 in.)

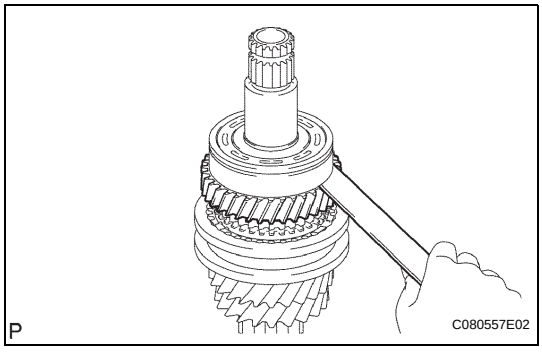
If the clearance is not within the specification, replace the gear, needle roller bearing or shaft.

MX



12. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the thrust clearance.
Standard clearance:
0.1 to 0.35 mm (0.0039 to 0.0138 in.)
If the clearance is not within the specification, replace the gear, No. 2 synchronizer ring or No. 2 transmission clutch hub.



13. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the thrust clearance.
Standard clearance:
0.1 to 0.55 mm (0.0039 to 0.0217 in.)
If the clearance is not within the specification, replace the gear or input shaft rear radial ball bearing.