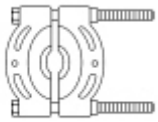
Output Shaft

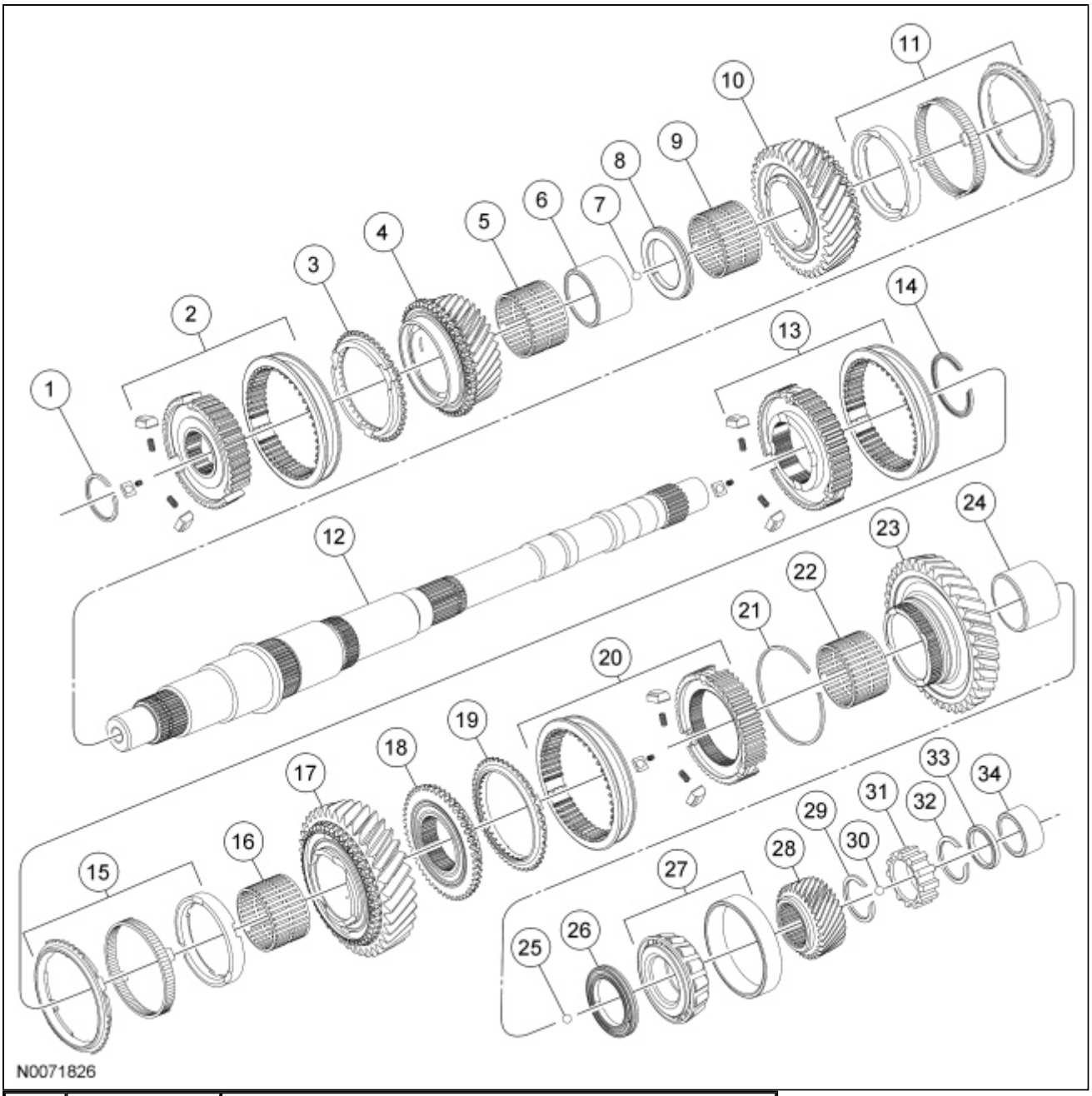
Special Tool(s)

 ST2388-A	Installer, Drive Pinion Bearing Cone 205-011 (T57L-4621-B)
 ST1895-A	Remover, Drive Pinion Bearing Cone 205-D002 (D79L-4621-A) or equivalent
 ST1303-A	Remover/Installer, Bearing Tube 308-025

Material

Item	Specification
MERCON® V Automatic Transmission Fluid XT-5-QM (or XT-5-QMC) (US); CXT-5-LM12 (Canada)	MERCON® V

Transmission Internal Components — Output Shaft Disassembled View

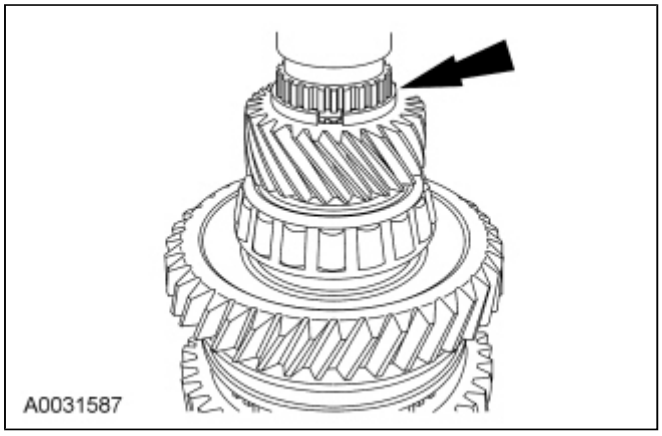


Item	Part Number	Description
1	7L271	Retaining ring (part of spring kit)
2	7124	3rd/4th gear synchronizer assembly
3	7107	3rd/4th gear synchronizer blocking ring
4	7B340	3rd gear
5	7025	3rd gear needle bearing kit
6	7N193	3rd gear bushing
7	7L271	Check ball (part of spring kit)
8	7L271	Thrust washer (part of spring kit)
9	7025	2nd gear needle bearing kit
10	7102	2nd gear
11	7107	1st/2nd gear synchronizer cones assembly (3 piece)
12	7061	Output shaft
13	7124	1st/2nd gear synchronizer assembly
14	7L271	Retaining ring (part of spring kit)

15	7107	1st/2nd gear synchronizer cones assembly (3 piece)
16	7025	1st gear needle bearing
17	7100	1st gear
18	7124	Reverse clutch cone
19	7107	Reverse gear synchronizer blocking ring
20	7124	Reverse gear synchronizer assembly
21	7124	Retaining ring
22	7025	Reverse needle bearing
23	7124	Reverse driven gear
24	7N193	Reverse gear bushing
25	7L271	Check ball (part of spring kit)
26	7L271	Selector gate (part of spring kit)
27	7025	Output shaft rear bearing and cup
28	7K316	Output shaft 5th gear
29	7L271	Retaining ring (part of spring kit)
30	7L271	Check ball (part of spring kit)
31	7H150	Output Shaft Speed (OSS) sensor ring
32	7L271	Retaining ring (part of spring kit)
33	7L271	Spacer (part of spring kit)
34	7025	Extension housing bearing bushing

Disassembly

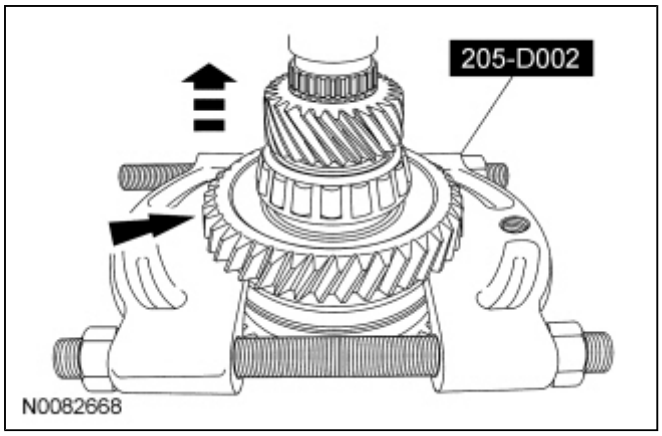
1. Remove the retaining ring above 5th gear.



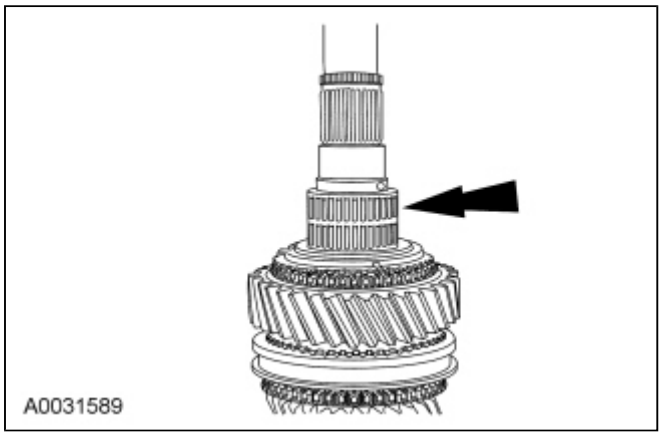
2. ***NOTICE:*** **Hand-tighten the Drive Pinion Bearing Cone Remover to prevent gear damage.**

   NOTICE: **Support the output shaft while using the press to prevent damage to the shaft or gears.**

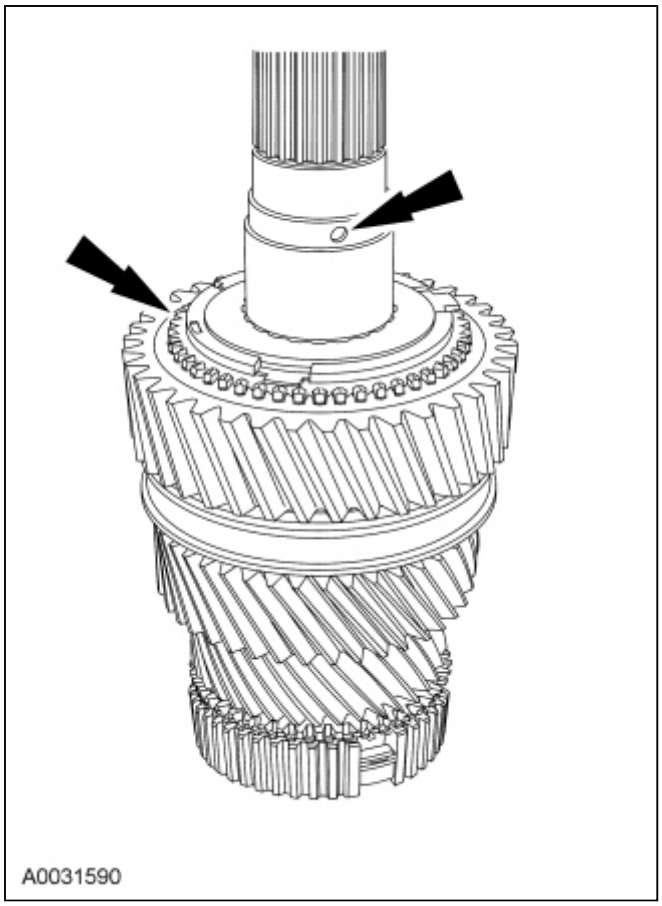
   Using the Drive Pinion Bearing Cone Remover, press 5th gear, the spacer, the output shaft bearing and reverse gear from the output shaft.
   - Discard the output shaft bearing.



3. Remove reverse gear needle bearing.
    - Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.

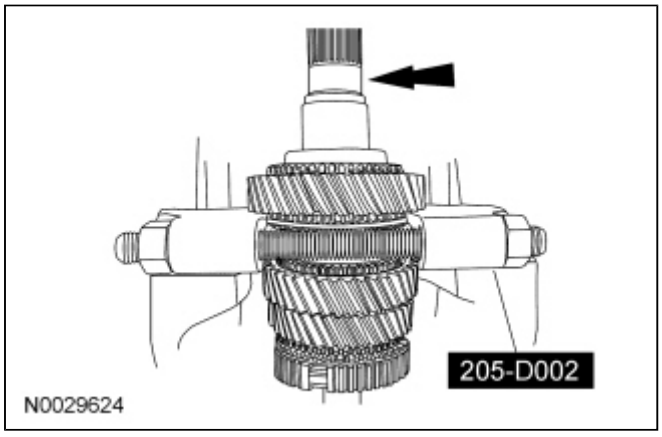


4. Remove the check ball and the blocking ring.
    - Inspect the blocking ring for wear or damage. Install new blocking rings as necessary.

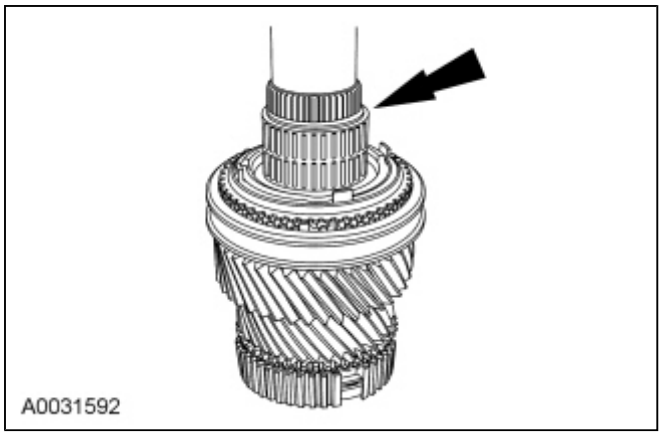


5. **NOTE:** Install the Drive Pinion Bearing Cone Remover with the flat side facing 1st gear.

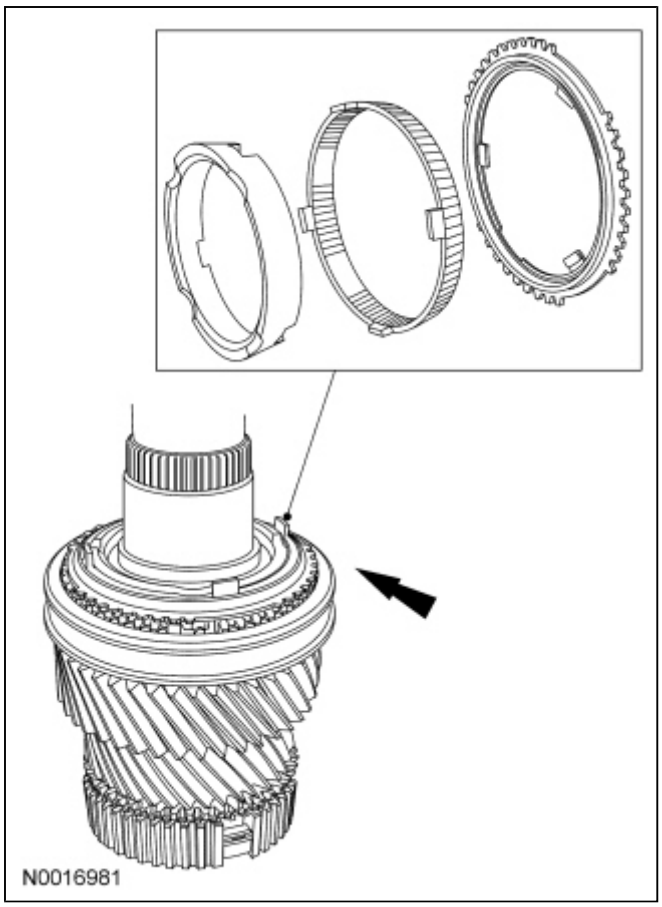
   Using the Drive Pinion Bearing Cone Remover, press the bearing spacer, the reverse gear synchronizer cone and 1st gear from the output shaft.



6. Remove the 1st gear needle bearing.
   - Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.

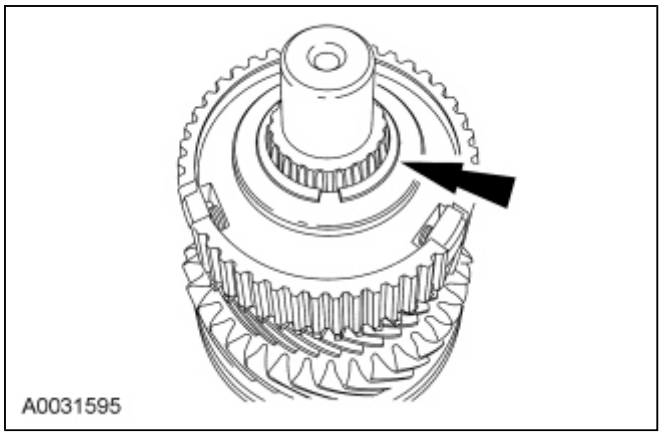


7. Remove the 1st gear synchronizer inner cone, the 1st gear synchronizer outer cone and the 1st gear synchronizer blocking ring.
    - Inspect all components for wear or damage. Install new components as necessary.

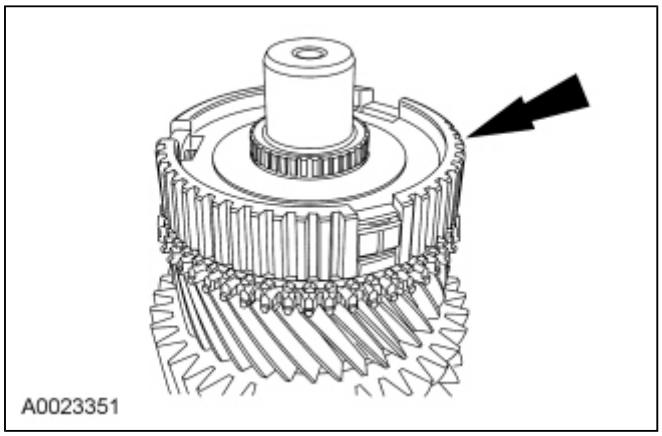


8. **NOTE:** Reposition the output shaft on the press with the input shaft end facing upward.

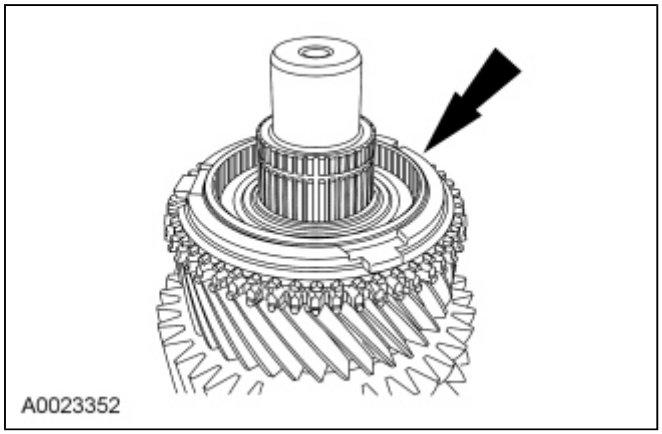
   Remove and discard the retaining ring.



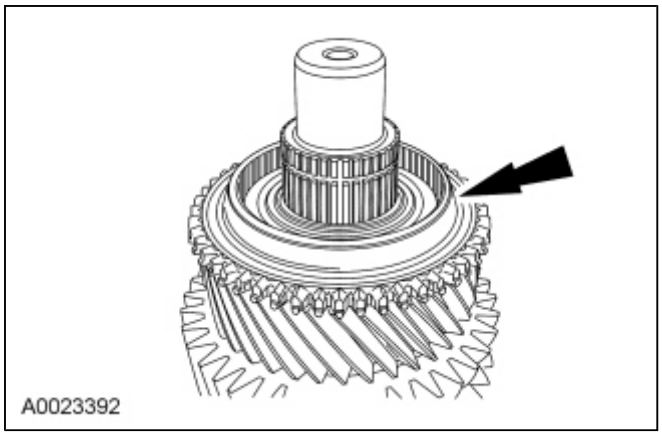
9. Remove the 3rd/4th synchronizer hub.



10. Remove the 3rd/4th blocking ring.

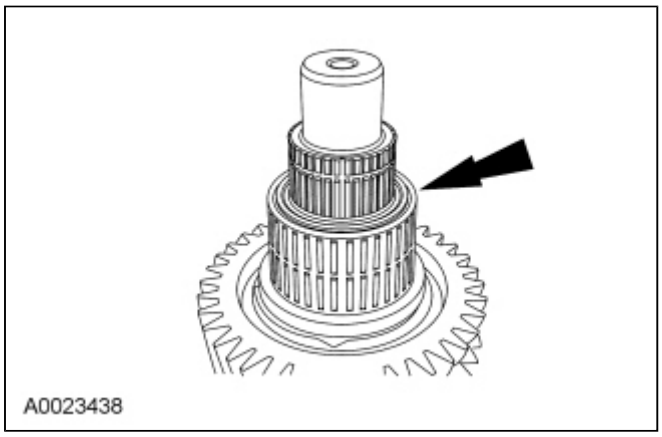


11. Remove the 3rd gear.
    - Inspect the gear for wear or damage. Install a new gear as necessary.



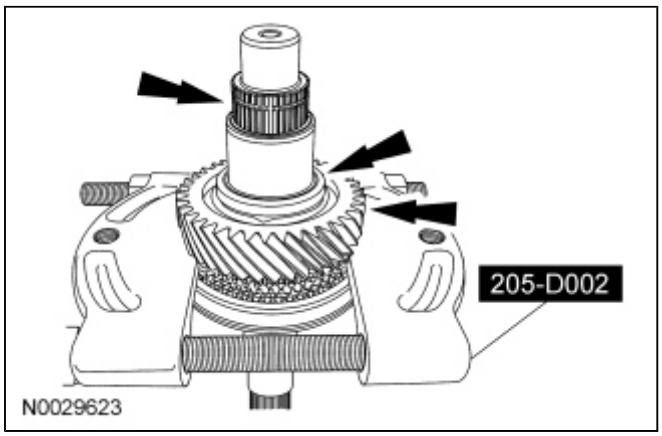
12. **NOTE:** Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.

    Remove the 3rd gear needle bearing.

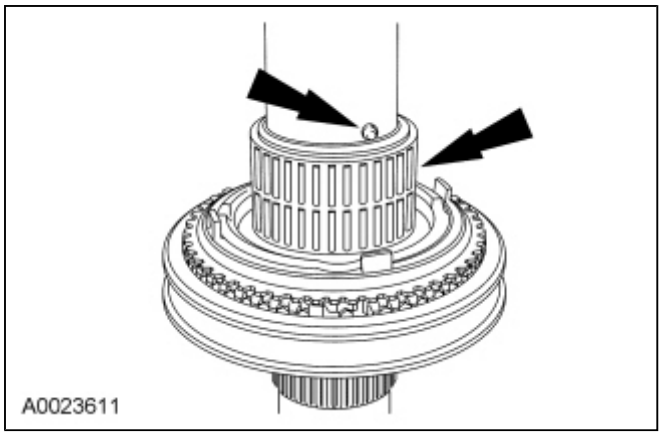


13. **NOTE:** Install the Drive Pinion Bearing Cone Remover behind 2nd gear with the flat side of the tool facing 2nd gear.

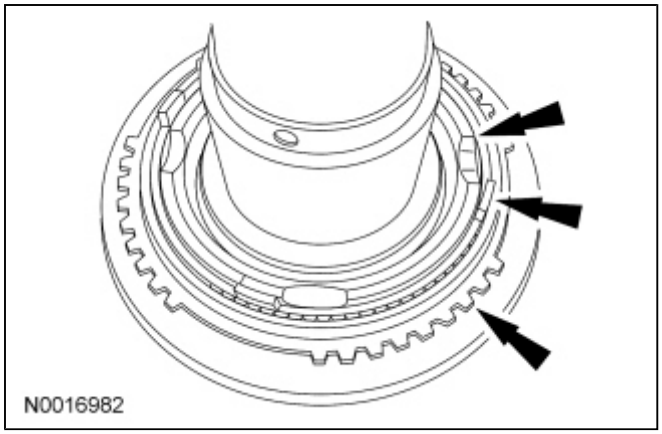
    Using the Drive Pinion Bearing Cone Remover, remove the spacer, 2nd gear thrust washer and 2nd gear.
    - Inspect the gear for wear or damage. Install a new gear as necessary.



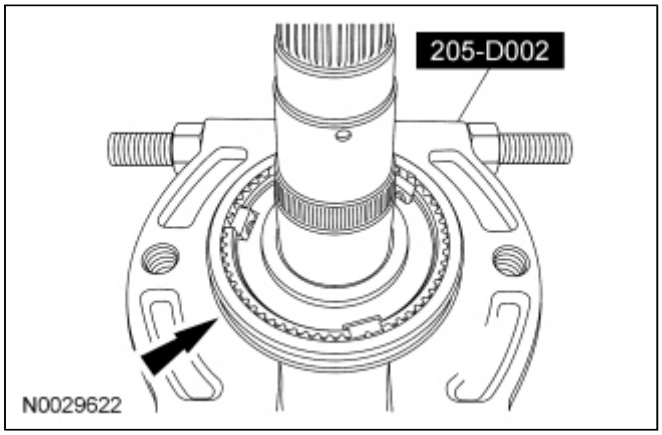
14. Remove the check ball and 2nd gear needle bearing.
    - Inspect the needle bearing for wear or damage. Install a new needle bearing as necessary.



15. Remove the 2nd gear synchronizer inner cone, 2nd gear synchronizer outer cone and the 2nd gear synchronizer blocking ring.
    - Inspect all components for wear or damage. Install new components as necessary.



16. Remove and discard the snap ring, then using the Drive Pinion Bearing Cone Remover, press off the 1st/2nd gear synchronizer.



Assembly

1. Carry out the following before reassembling:
    - Inspect the gears for broken or cracked teeth. Check for unusual wear patterns.
    - Inspect the thrust washers for face wear, cracks, scoring and for signs of heat damage.
    - Inspect the bearings, bearing cups and the synchronizers for wear or damage.
    - Inspect the output shaft for scoring, wear or damaged splines. Install new components as necessary.
    - Always install new retaining rings.

2. Lubricate all components with the recommended transmission fluid when reassembling.

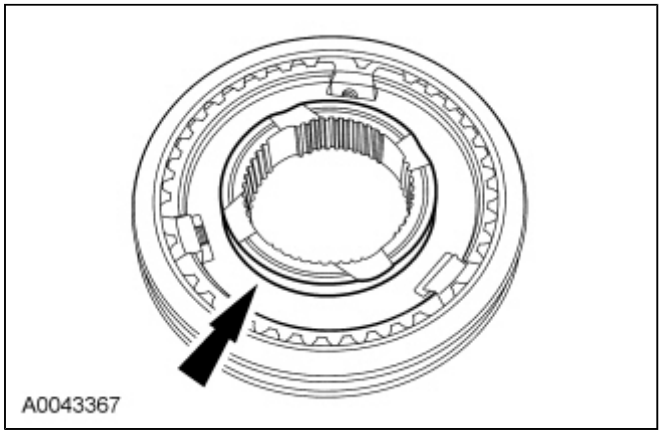
3. **NOTE:** Install the synchronizer assembly with the deeper center flange of the synchronizer hub facing toward the rear of the output shaft.

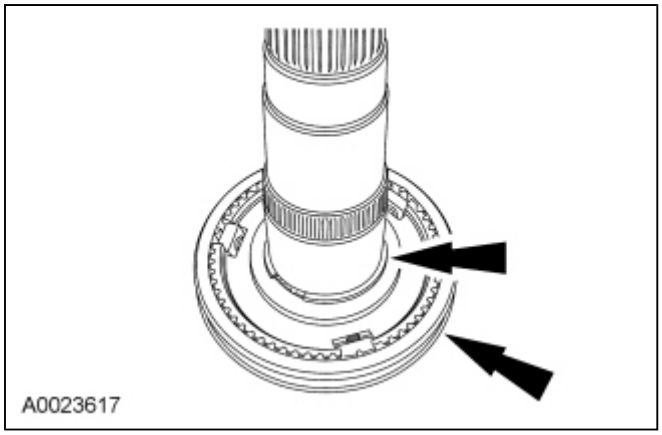
   NOTE: If installing the original synchronizer assembly, make sure the index marks made during disassembly are aligned.

   NOTE: It may be necessary to press the hub into position on the shaft.

   NOTE: Do not overextend the retaining ring. A damaged or overextended retaining ring will not allow 1st gear to fully seat.

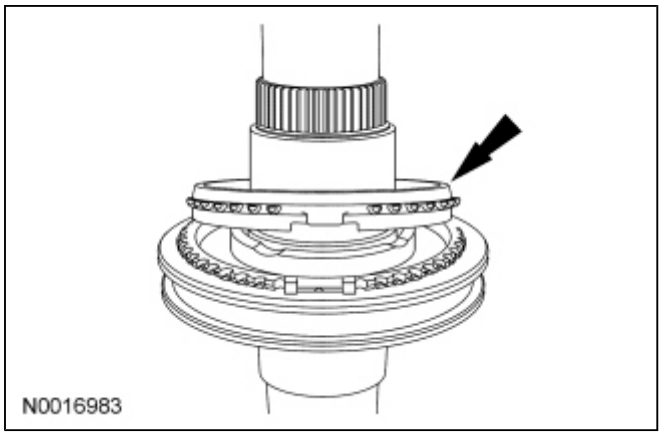
   Position the output shaft with the output end facing upward. Install the 1st/2nd synchronizer assembly on the output shaft, then install a new retaining ring.



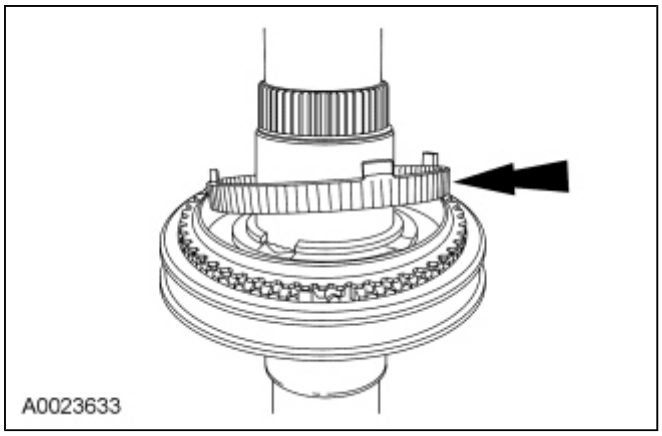


4. **NOTE:** Align the blocking ring tabs with the synchronizer assembly.

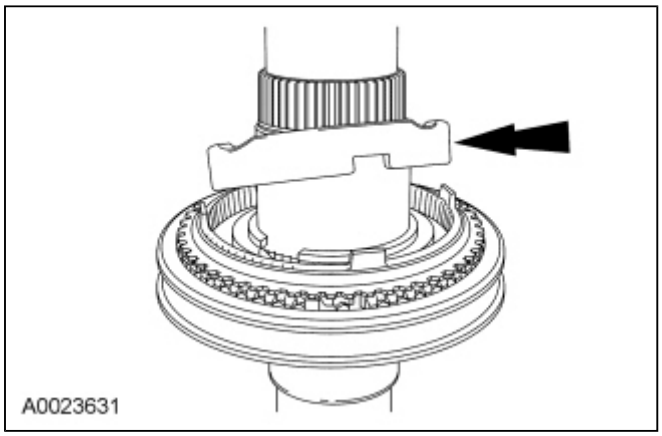
   Install the 1st gear synchronizer blocking ring.



5. Install the outer 1st gear synchronizer cone.

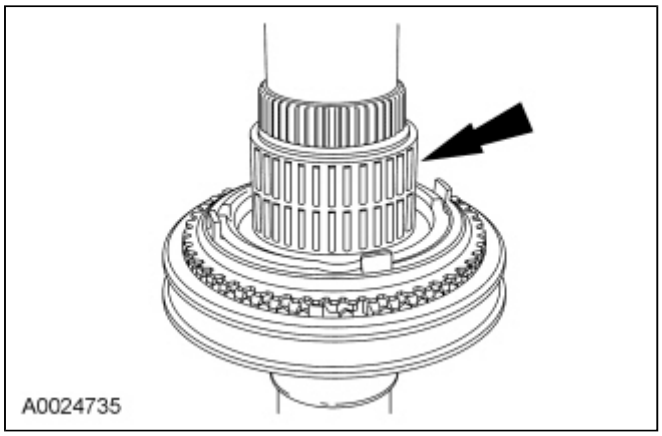


6. Install the inner 1st gear synchronizer cone. Rotate the inner cone until it is seated.



7. **NOTE:** Apply petroleum jelly to the bearing.

   Install the 1st gear needle bearing.

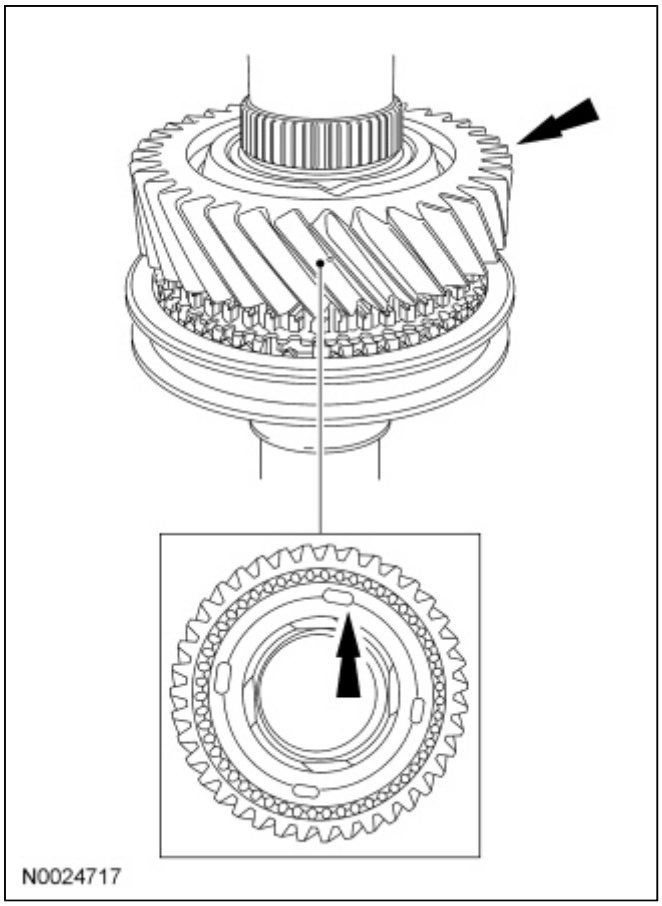


8. **NOTE:** First gear is 127 mm (5 in) diameter.

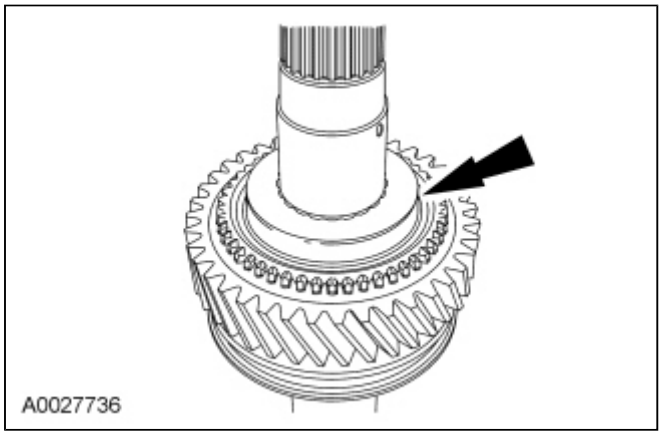
   NOTE: Rotate the gear to align the gear slots with the inner cone tabs.

   NOTE: Make sure that the gear fits over the retaining ring.

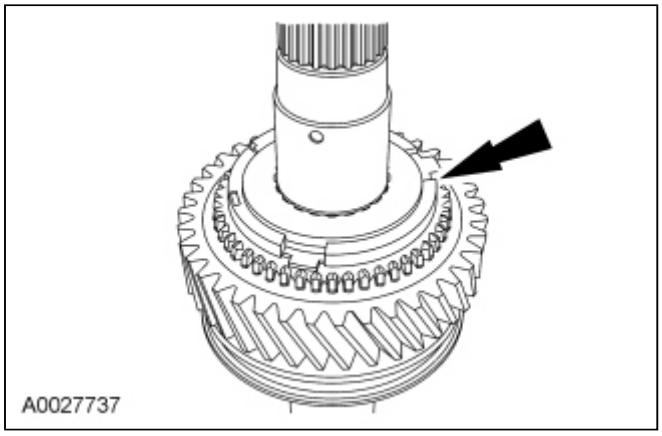
   Install 1st gear.



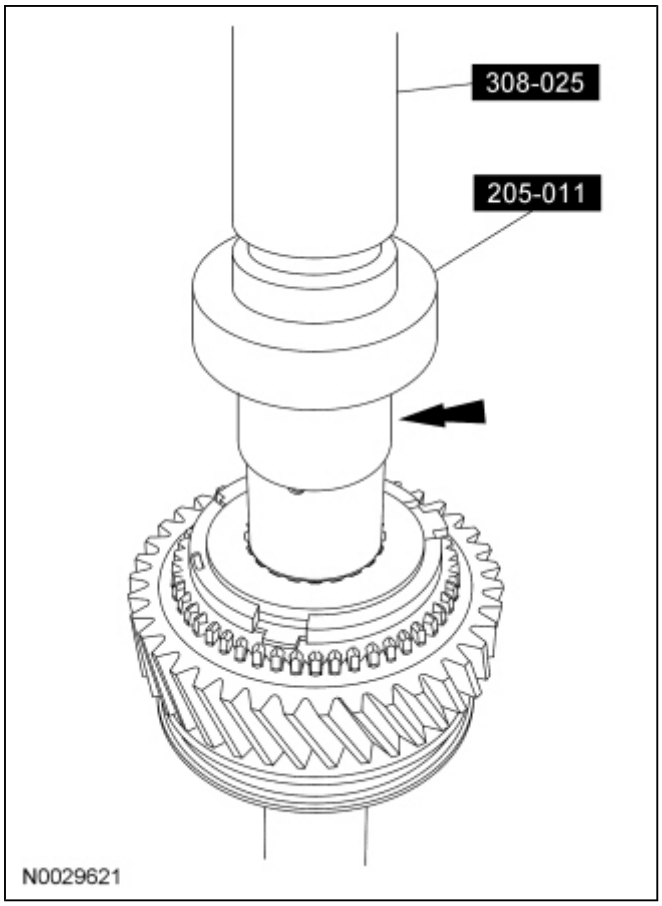
9. Install the reverse synchronizer cone.



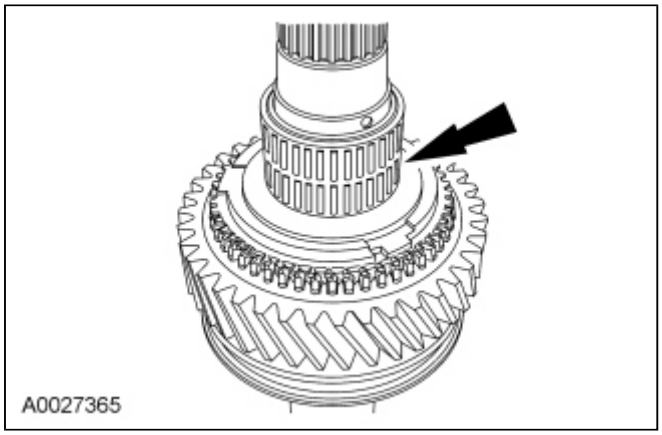
10. Install the reverse gear blocking ring.



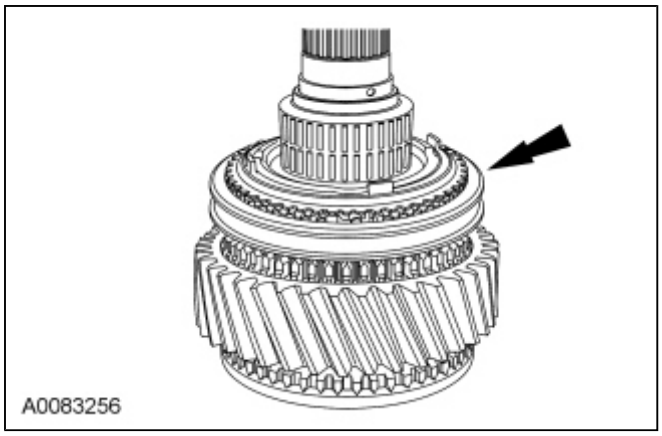
11. Using the Bearing Tube Remover/Installer and Drive Pinion Cone Installer, install the reverse gear bearing spacer.



12. Install the reverse gear needle bearing.
    - Apply petroleum jelly to the bearing.



13. Install the reverse gear synchronizer assembly.

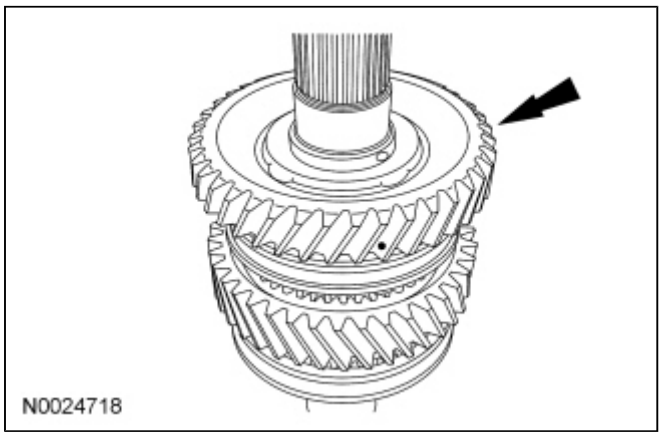


14. **NOTE:** Rotate the gear to align the gear slots with the inner cone tabs.

    NOTE: Make sure the clutching teeth on the gear snap inside the sliding sleeve and the sliding sleeve is against the gear.

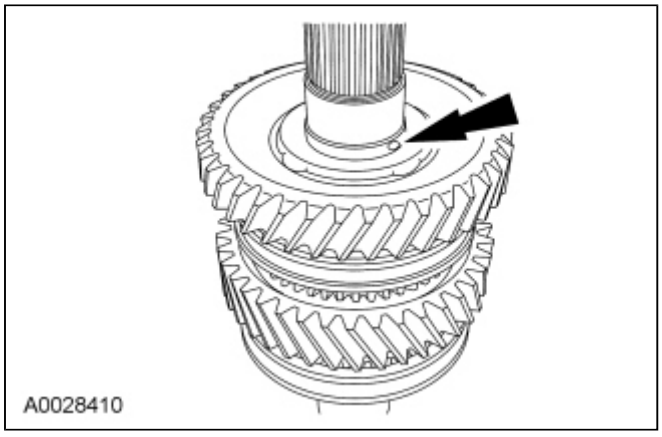
    NOTE: Function the synchronizer sleeve through the 2 positions to make sure of normal function.

    Install reverse gear.

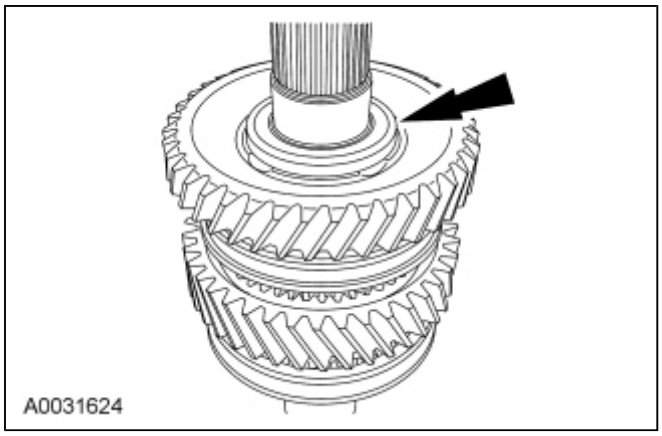


15. **NOTE:** Use petroleum jelly to hold the check ball in place.

    Install the check ball.

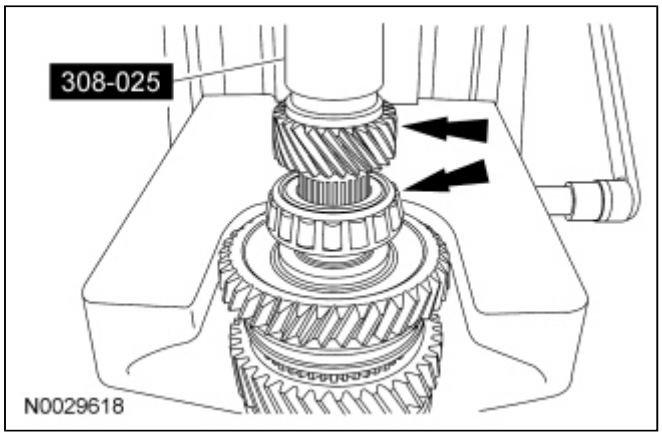


16. Install the thrust washer. Be sure to align the slot in the washer with the check ball.



17. **NOTE:** The flatside of 5th gear faces the output shaft end.

    Install the rear output shaft bearing, then 5th gear. Using the Bearing Tube Remover/Installer, press both the bearing and gear into place.

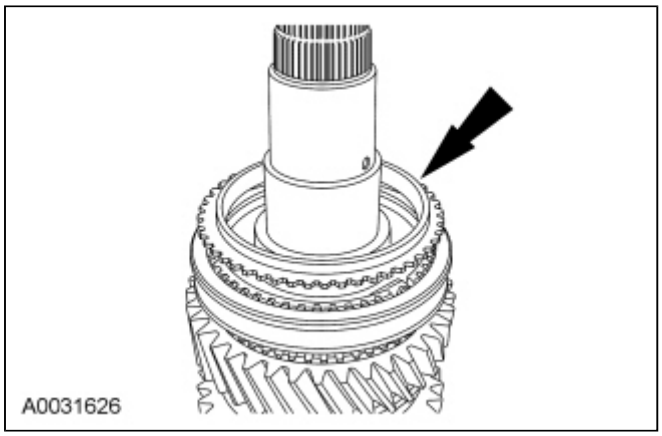


18. **NOTE:** Do not overextend the retaining ring.

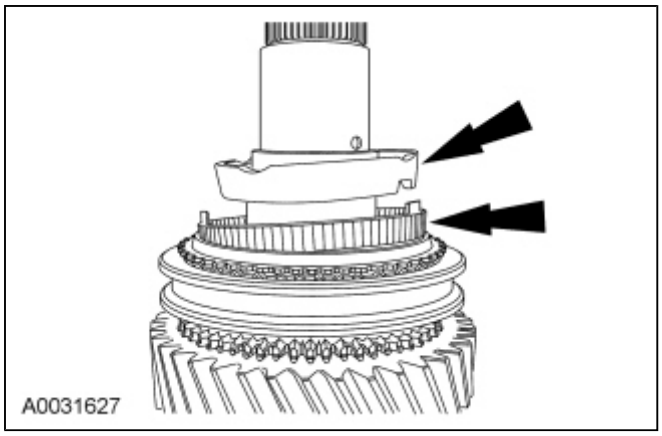
    Install a new retaining ring.

19. Reposition the output shaft with the input end facing upward.

20. Install the 2nd gear synchronizer blocking ring. Rotate the blocking ring until seated.

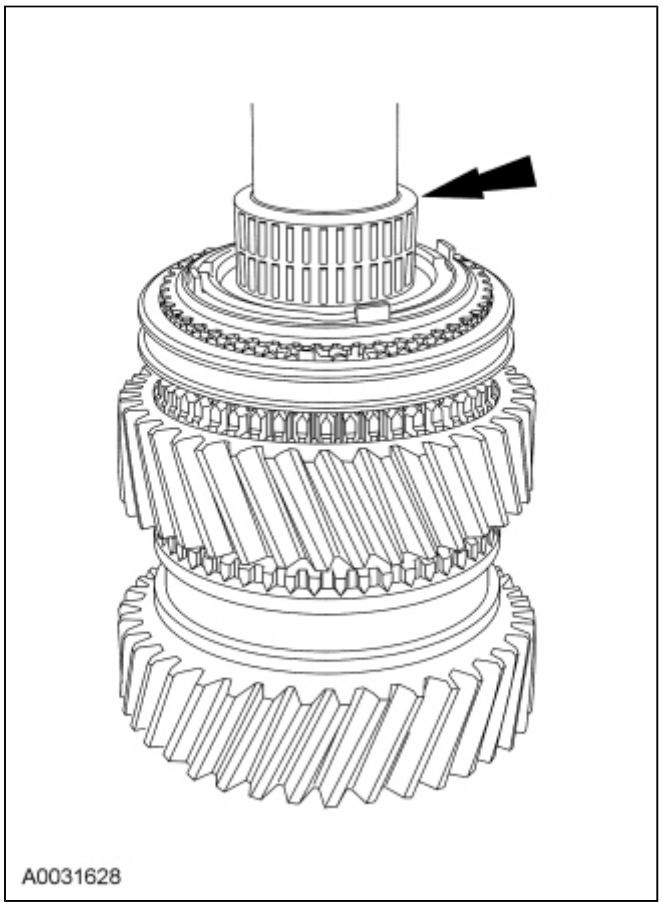


21. Install the 2nd gear synchronizer outer cone and the second gear synchronizer inner cone.



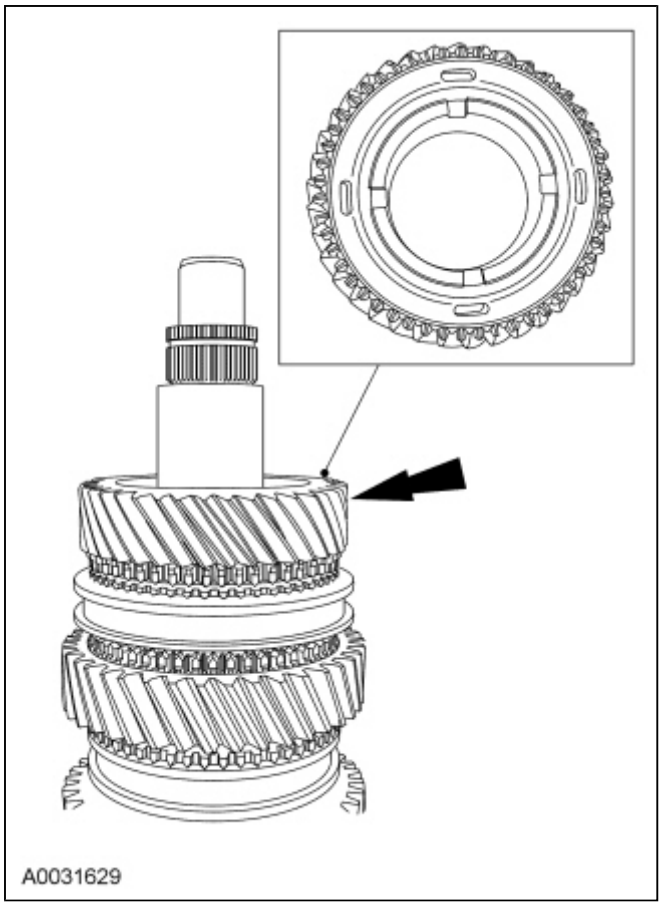
22. **NOTE:** Apply petroleum jelly to the bearing.

    Install the 2nd gear bearing.



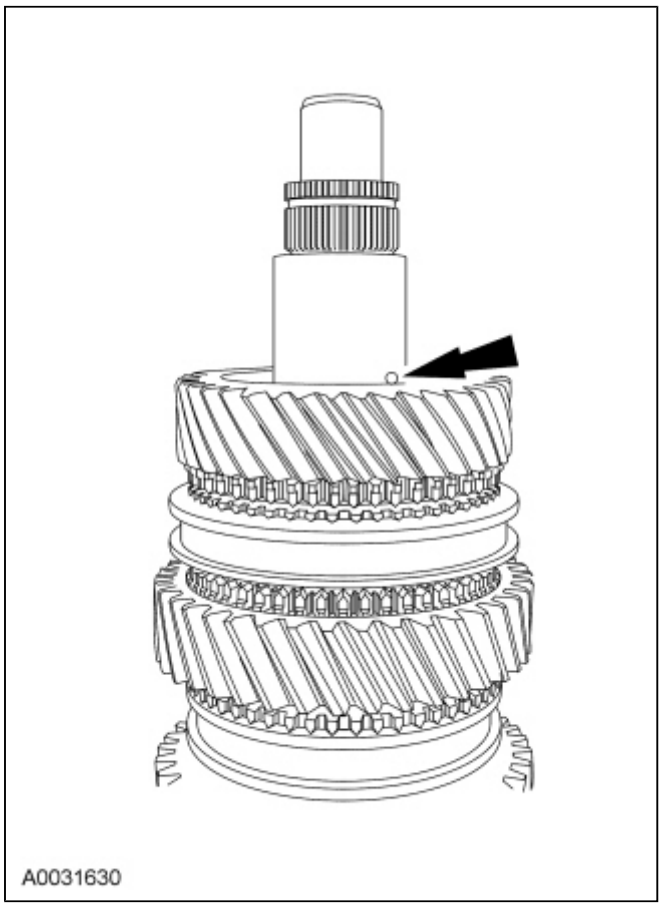
23. **NOTE:** Rotate the gear to align the gear slots with the inner cone tabs.

    Install 2nd gear.

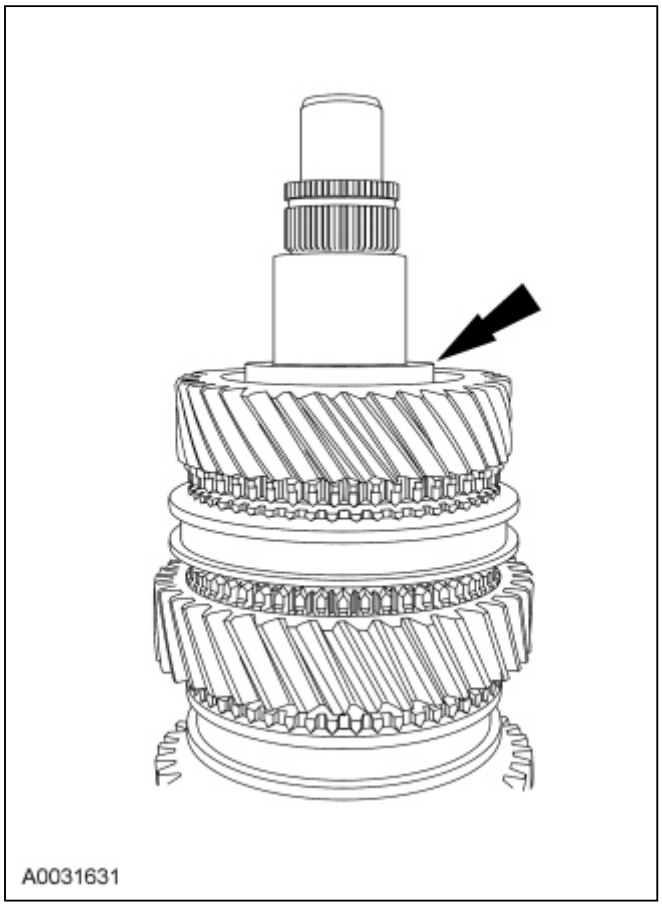


24. **NOTE:** Use petroleum jelly to hold the check ball in place.

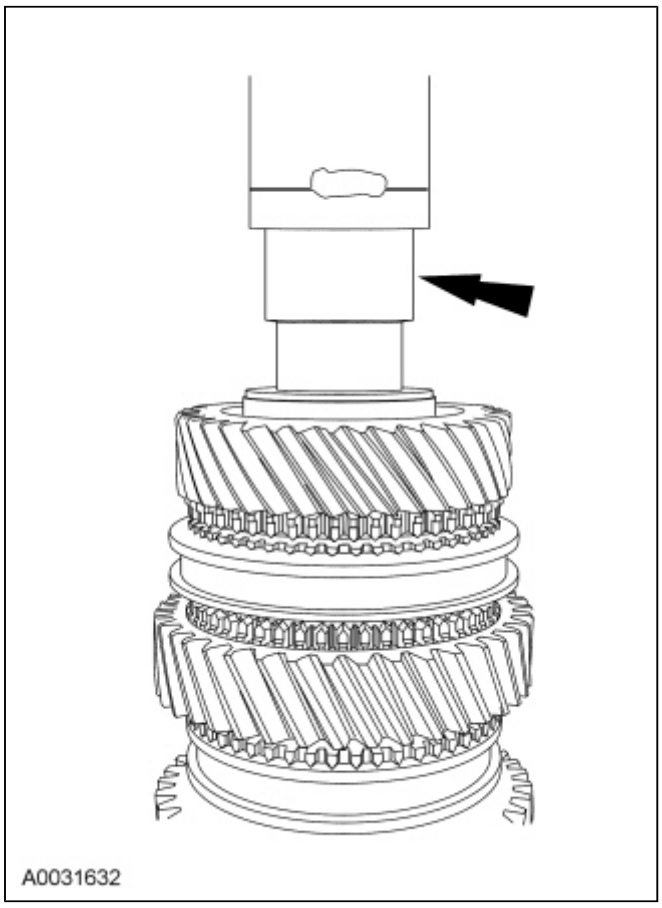
    Install the check ball.



25. Install the thrust washer. Be sure to align the slot in the washer with the check ball.

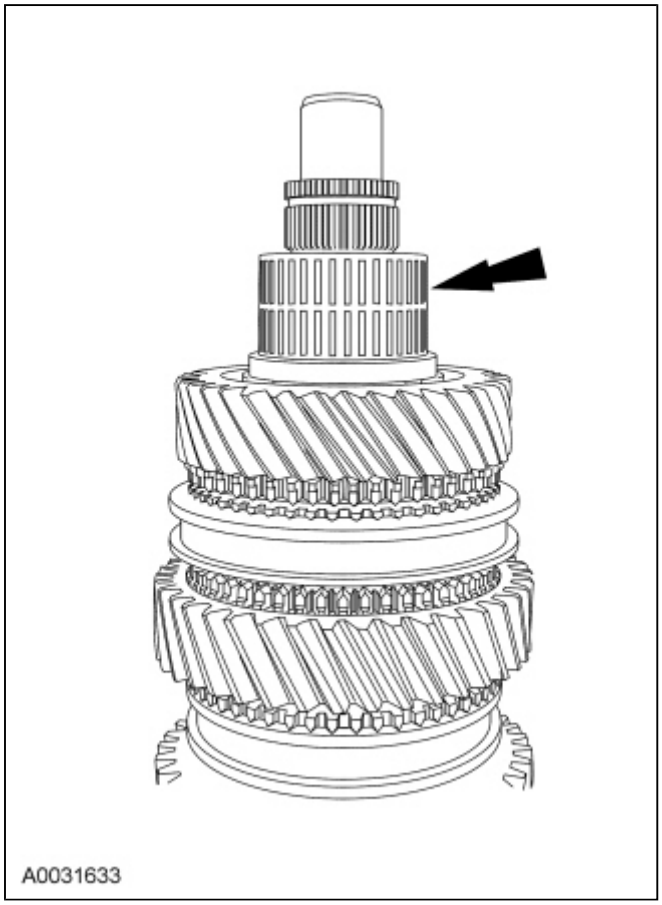


26. Press the bearing spacer onto the output shaft.

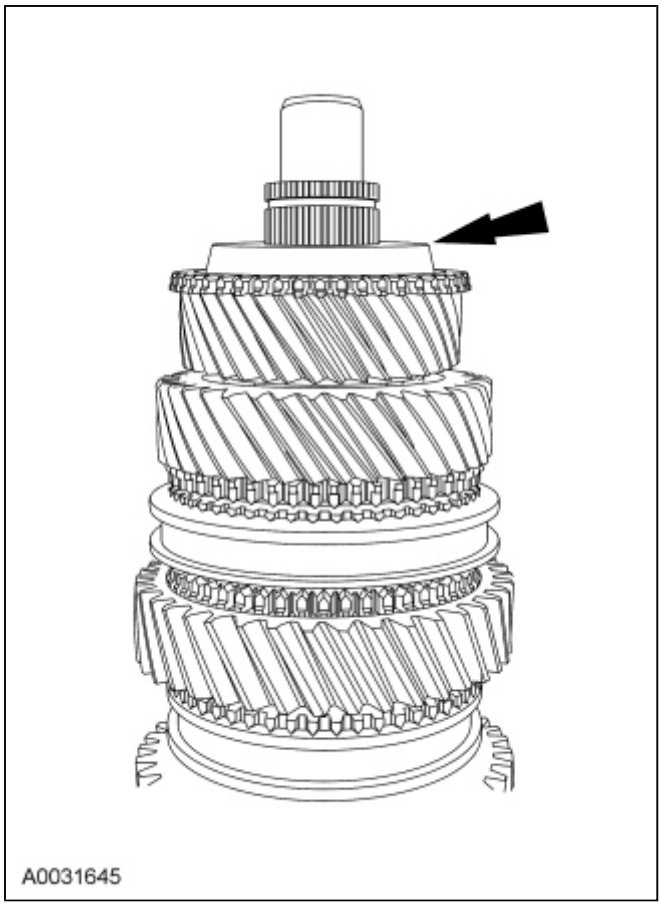


27. **NOTE:** Apply petroleum jelly to the bearing.

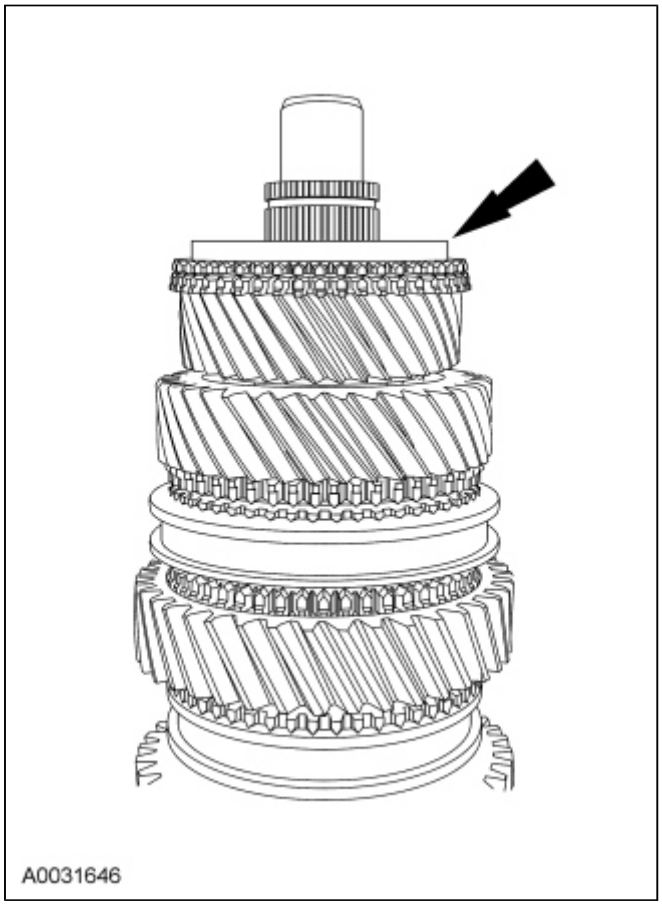
    Install the 3rd gear bearing.



28. Install 3rd gear.



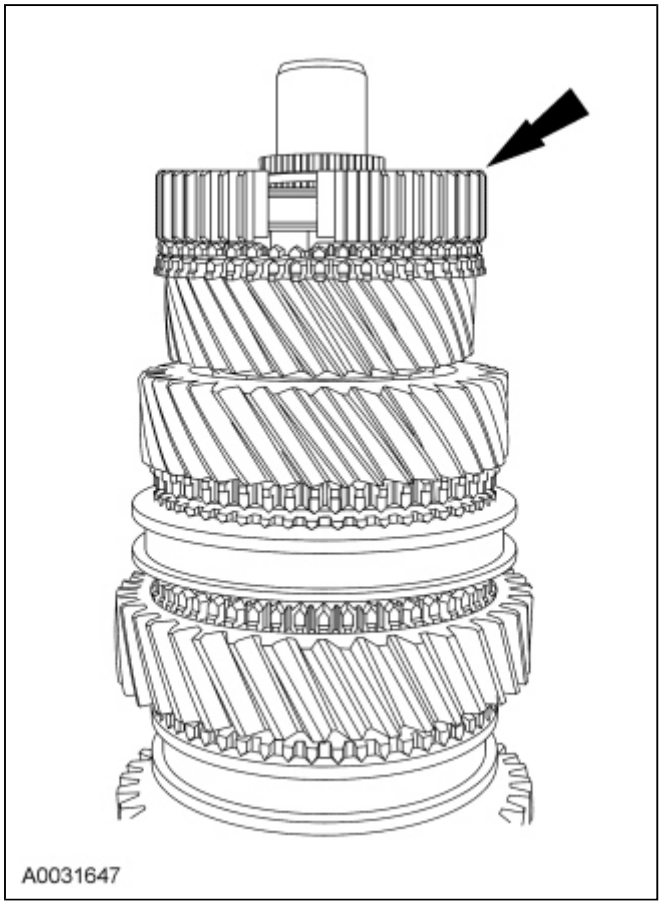
29. Install the 3rd gear synchronizer blocking ring.



30. **NOTE:** Install the synchronizer body with the raised center facing downward.

NOTE: Rotate the blocking ring until seated.

Install the 3rd/4th gear synchronizer body.



31. Install a new retaining ring.