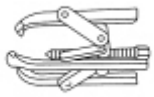
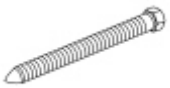
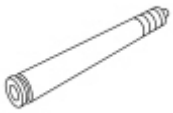
Transmission

Special Tool(s)

 ST1184-A	2 or 3 Jaw Puller 205-D027 (D80L-1013-A)
 ST1186-A	Holding Fixture, Transmission 307-003 (T57L-500-B)
 ST1304-A	Removal Screw, Bearing Tube 308-092 (T84T-7025-B)
 ST2163-A	Remover/Installer, Bearing Tube 308-025 (T75L-7025-C)
 ST1305-A	Remover, Mainshaft Bearing 308-058 (T77J-7025-H)
 ST1306-A	Remover, Mainshaft Bearing 308-059 (T77J-7025-J)
 ST2415-A	Remover, Output Flange 307-523

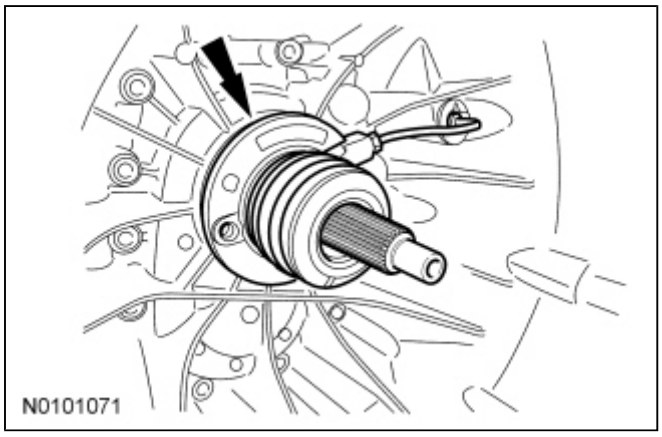
Disassembly

NOTE: During disassembly, if any roll pins, retaining rings or bearings are removed, install new components. Install bearings and bearing cups as a set only.

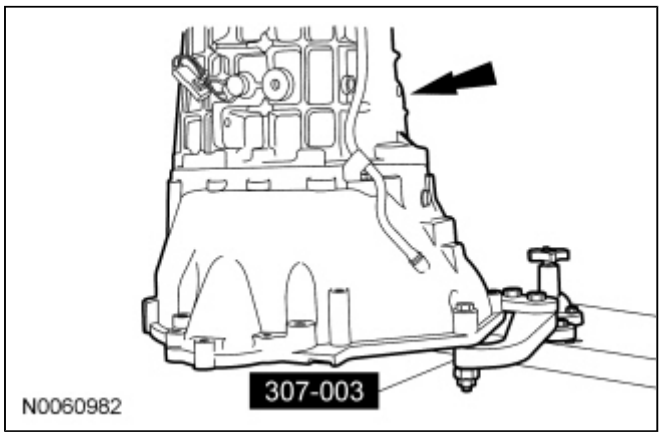
NOTE: For additional information, refer to the exploded view under the Assembly procedure in this section.

1. Clean the transmission exterior with solvent and dry with compressed air. During disassembly, clean all components with solvent and dry with compressed air.

2. Remove the 2 clutch slave cylinder bolts and the clutch slave cylinder.



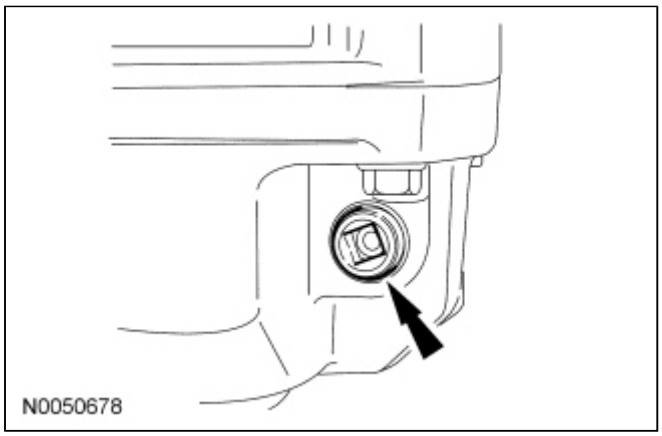
3. Attach the transmission to the Transmission Holding Fixture.



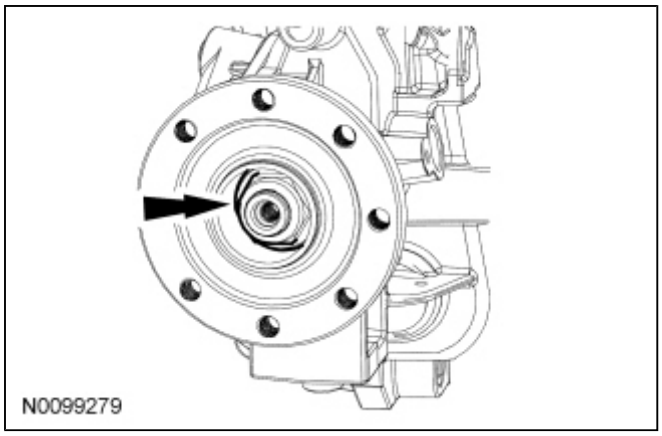
4. Rotate the transmission to a horizontal position.

5. **NOTE:** Position a drain pan under the transmission.

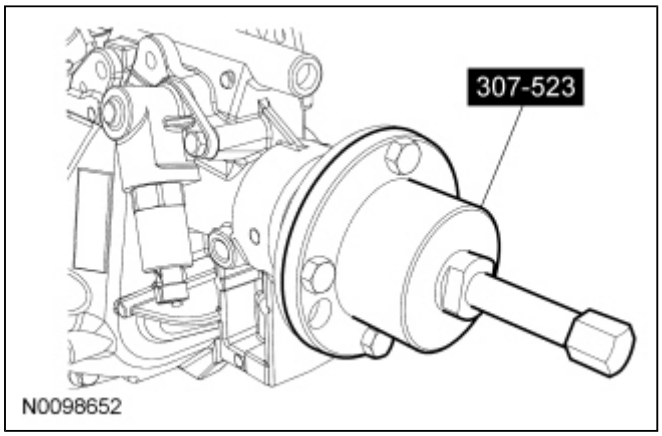
   If the transmission was not drained during removal, remove the drain plug and drain the transmission.



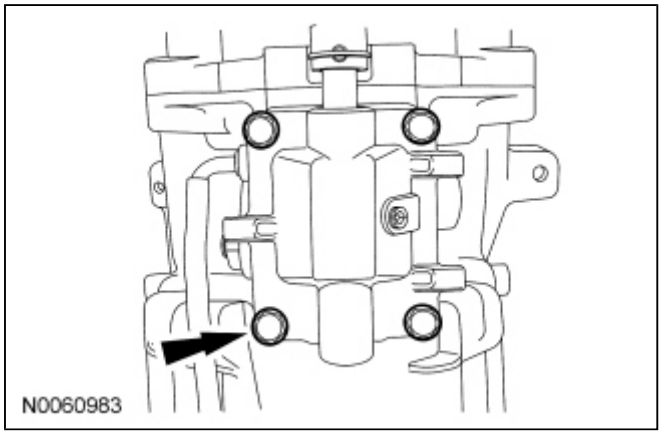
6. Remove the output shaft flange nut.



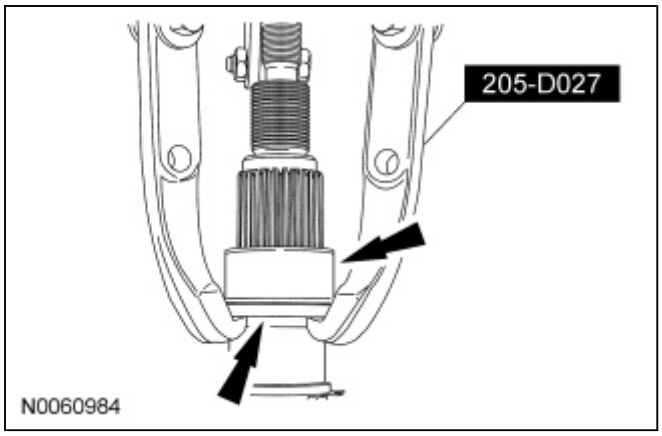
7. Using the Output Shaft Flange Remover, remove the output shaft flange.



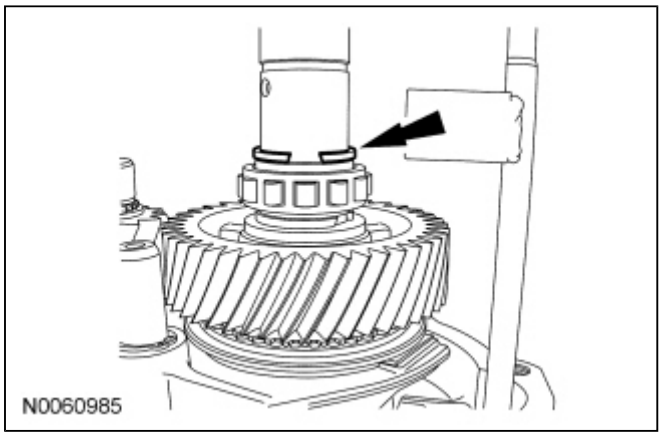
8. Remove the 4 bolts and the shift detent cover.



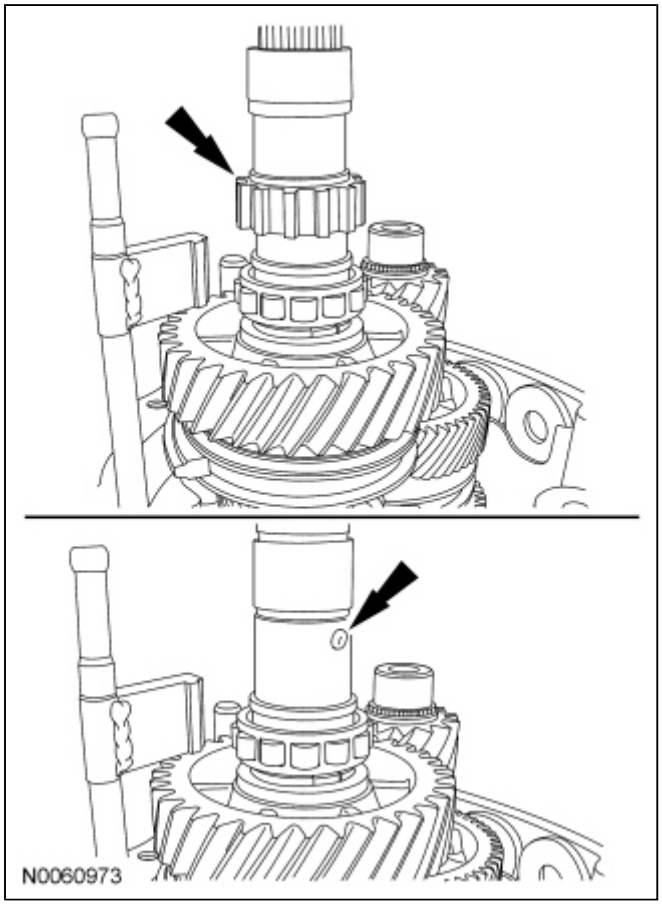
9. Rotate the transmission to a vertical position.
10. Remove the 8 bolts and carefully separate the extension housing from the transmission.
11. Using a 2 or 3 Jaw Puller, remove the bearing race and the spacer.



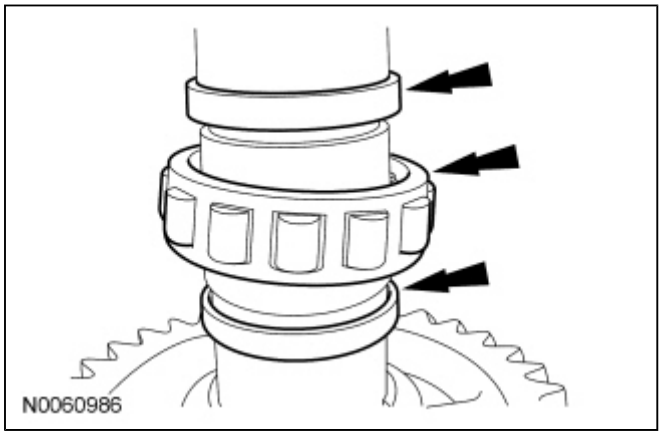
12. Remove and discard the Output Shaft Speed (OSS) sensor tone wheel snap ring.



13. Remove the tone wheel and the ball.

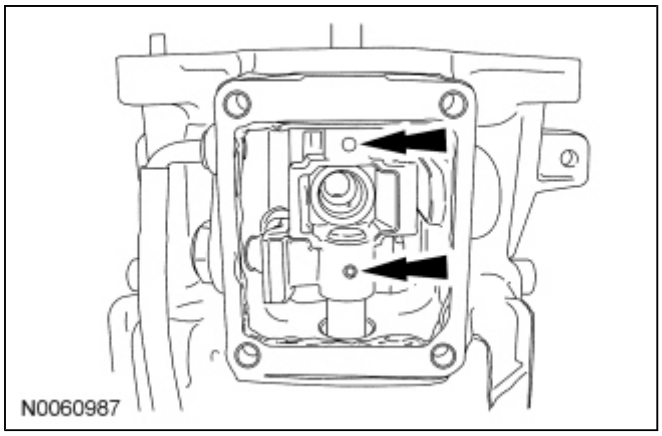


14. Remove and discard the snap ring, the upper spacer, the rear output shaft roller bearing and the lower spacer.
    - Inspect the rear output shaft roller bearing for wear or damage. Install a new bearing as necessary.

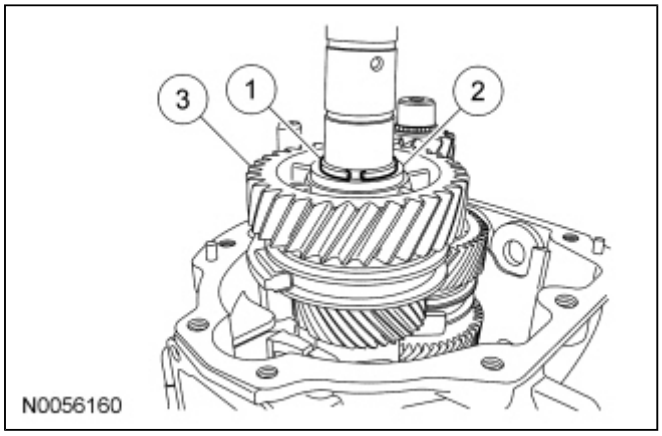


15. **NOTE:** Position the gearshift lever in 3rd/4th neutral position.

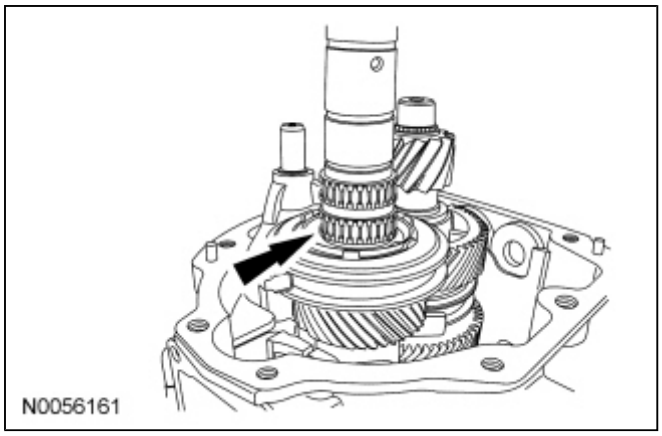
    Using a 5/32-inch drift and a hammer, drive the roll pins downward, then remove the reverse shift rail.
    - Discard the roll pins.



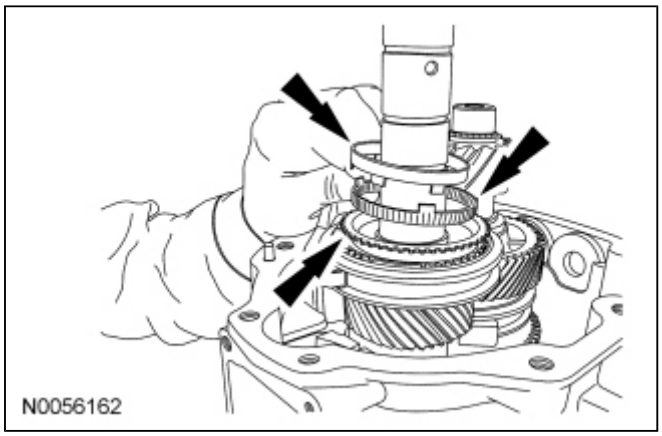
16. Remove the following:
    1. The reverse gear snap ring.
    2. The reverse gear thrust washer.
    3. The reverse gear.
    - Discard the reverse gear snap ring.
    - Inspect reverse gear for wear or damage. Install a new gear as necessary.



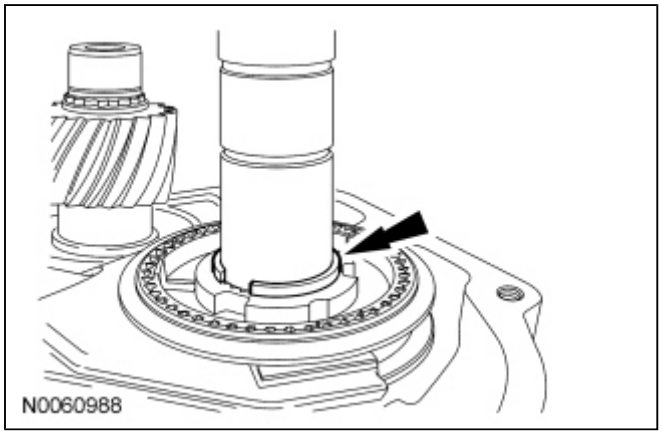
17. Remove the reverse gear needle bearing.
    - Inspect the needle bearing for wear or damage. Install a new bearing as necessary.



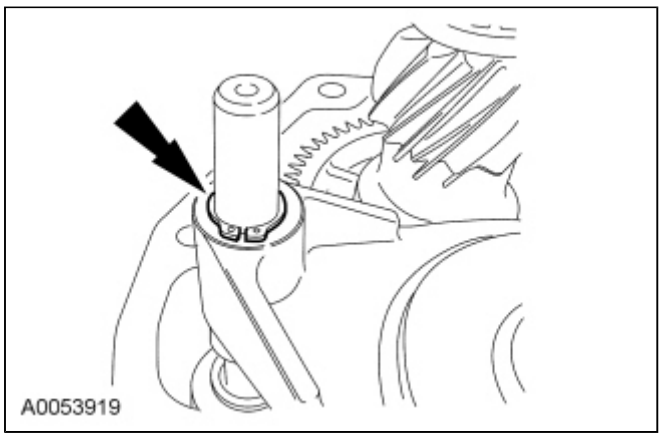
18. Remove the 3-piece reverse gear synchronizer blocking ring.



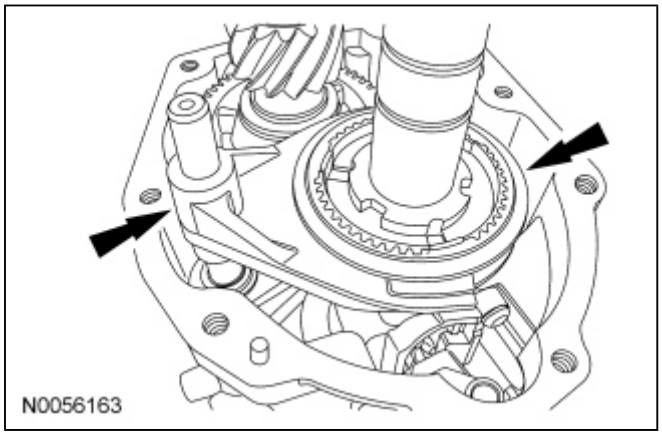
19. Remove and discard the reverse gear synchronizer snap ring.



20. Remove and discard the reverse shift fork snap ring.

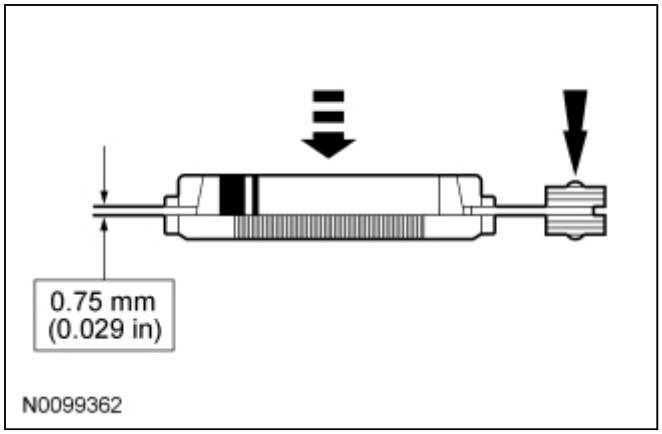


21. Remove the reverse shift fork and the reverse synchronizer.
    - The synchronizer hub is a tight fit on the shaft, and may need to be removed separately. After removing the fork and synchronizer sleeve, carefully pry off the synchronizer hub.

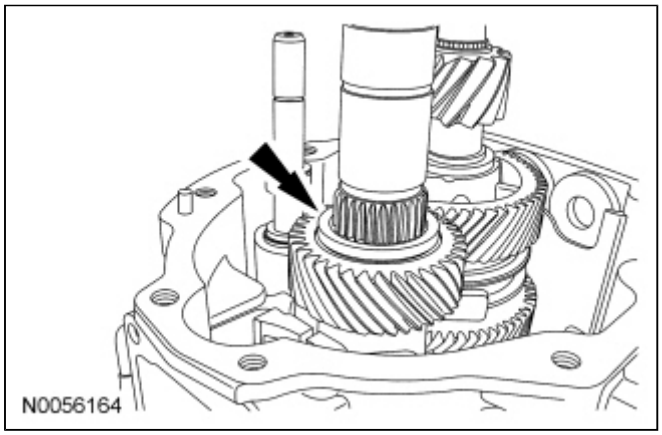


22. Inspect the synchronizer for the following:
    - Check for worn, nicked or broken teeth. Install a new synchronizer as necessary.
    - Check keys for wear or distortion. Check the springs for distortion. Install a new synchronizer as necessary.

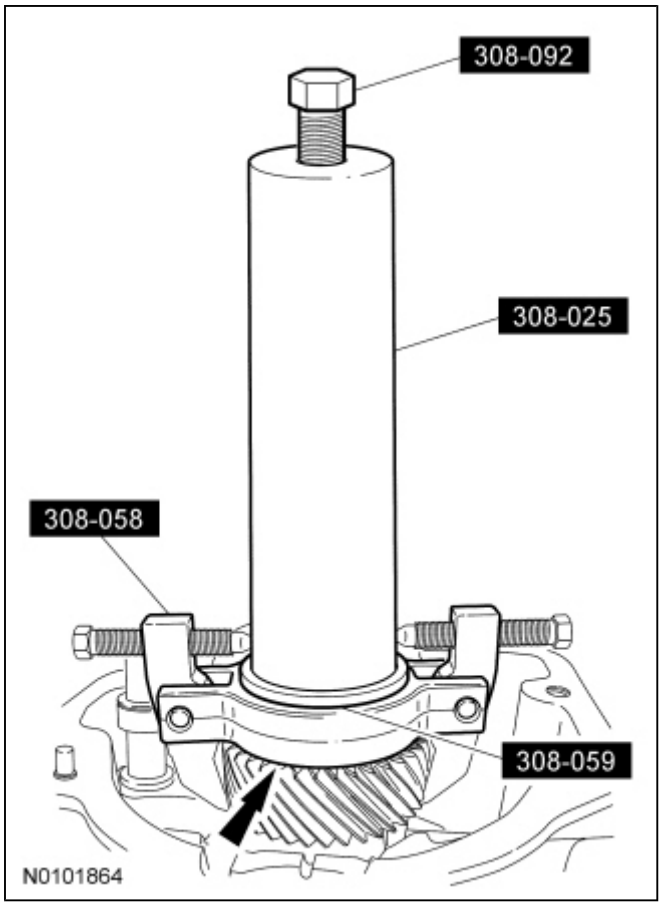
23. Inspect the synchronizer blocking ring for the following:
    - Check for wear or damage. Install a new synchronizer blocking ring as necessary.
    - Check the clearance between the synchronizer blocking ring and the gear.
        - Position the blocking ring onto the gear. Make sure the correct blocking ring is measured with the correct gear and that the blocking ring is fully seated on the gear.
        - Insert a feeler gauge and measure the clearance while applying pressure and rotating the blocking ring. The measurement should be the same around the entire circumference. If the clearance is less than 0.75 mm (0.029 in), install new blocking ring.



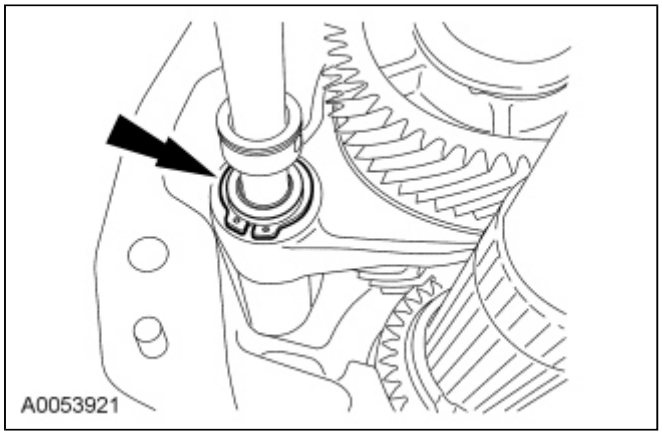
24. Remove the 5th driven gear split ring and retainer.



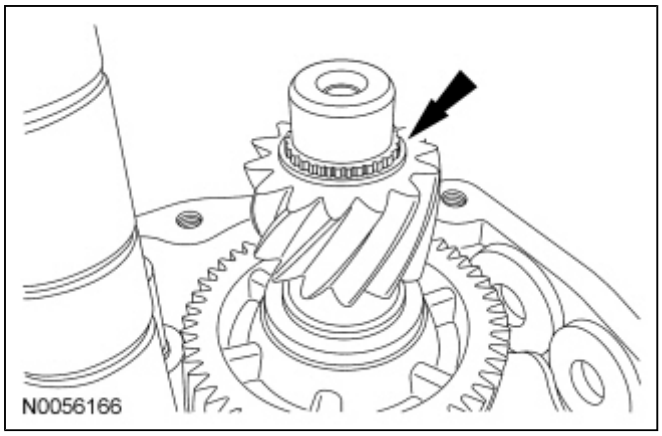
25. Using the Bearing Tube Removal Screw, Bearing Tube Remover/Installer and the Mainshaft Bearing Removers, remove the 5th driven gear.



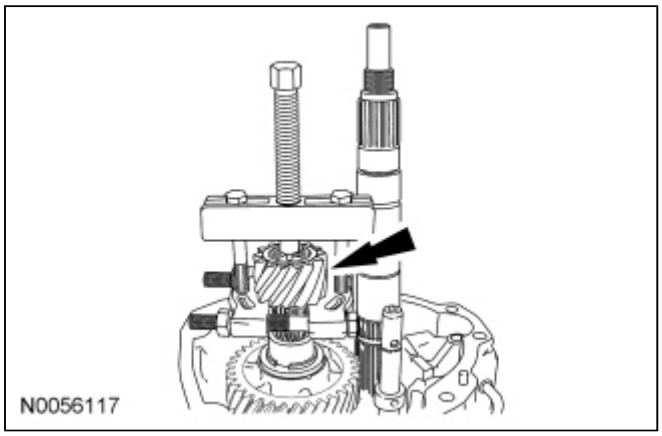
26. Remove the 5th/6th shift fork snap ring.
    - Discard the snap ring.



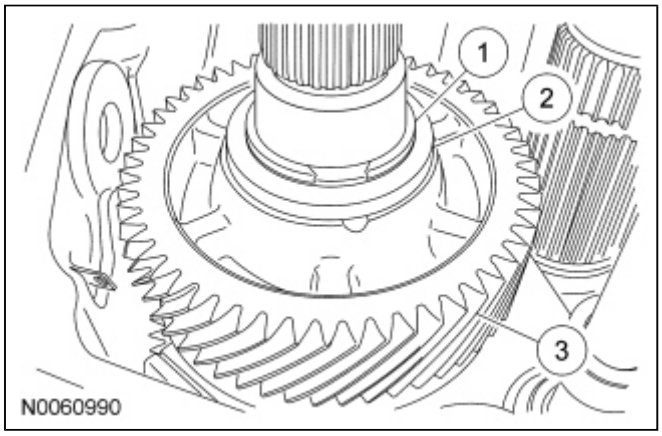
27. Remove the reverse drive gear snap ring.
    - Discard the snap ring.



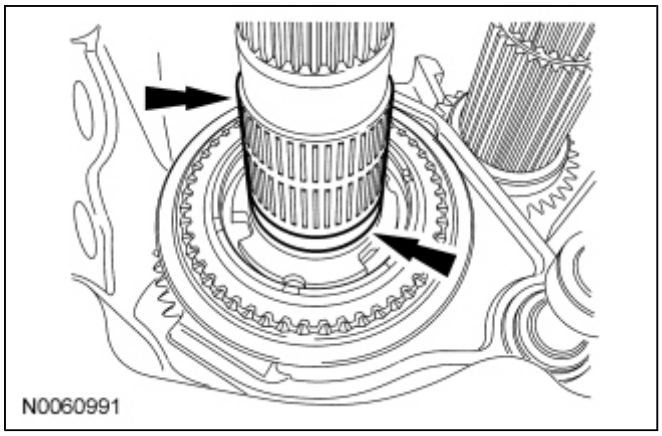
28. Using a suitable puller, remove the reverse drive gear.
    - Inspect reverse drive gear for wear or damage. Install a new gear as necessary.



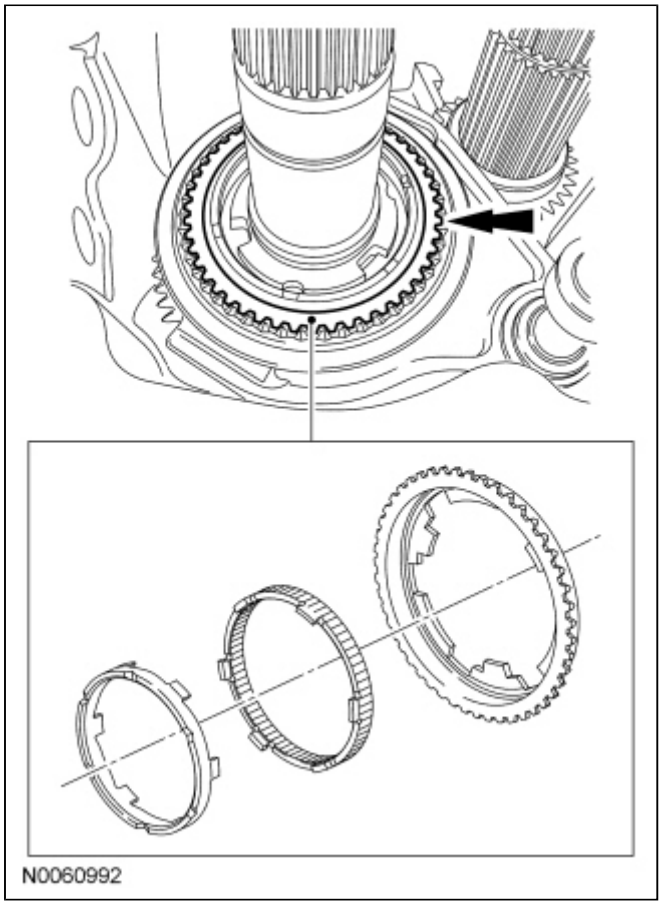
29. Remove the following:
    1. The 5th drive gear snap ring.
    2. The 5th drive gear thrust washer.
    3. The 5th drive gear.
    - Discard the snap ring.
    - Inspect the 5th drive gear for wear or damage. Install a new gear as necessary.



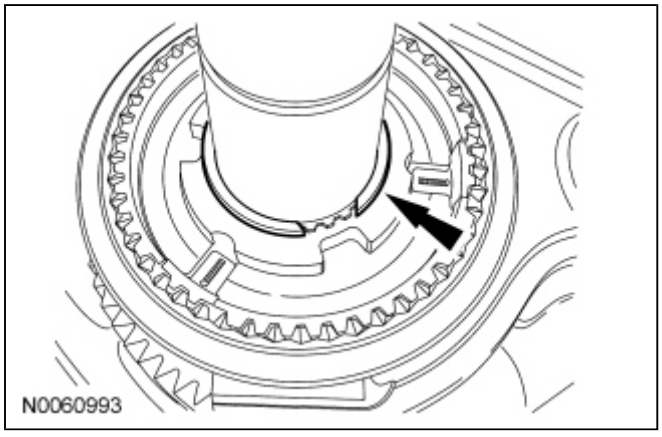
30. Remove the 5th/6th drive gear needle bearing and spacer.



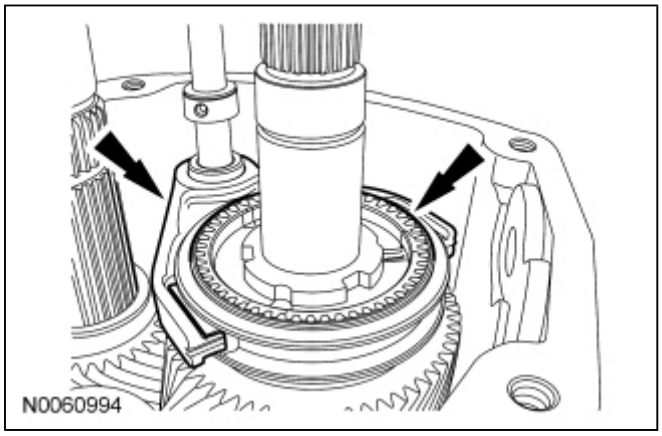
31. Remove the 5th/6th gear synchronizer intermediate cone, the 5th/6th gear synchronizer outer cone and the 5th/6th gear synchronizer blocking ring.

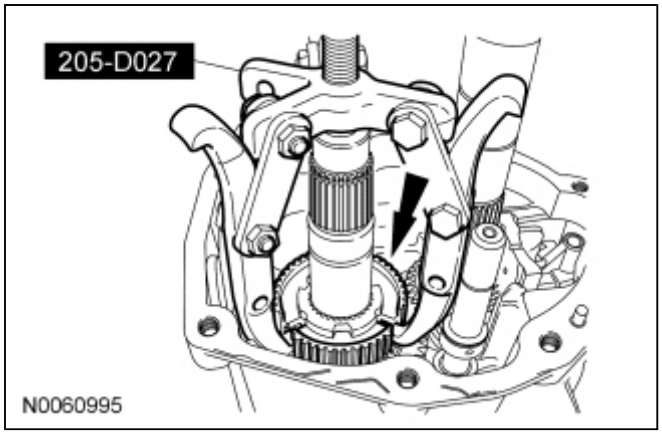


32. Remove the snap ring.

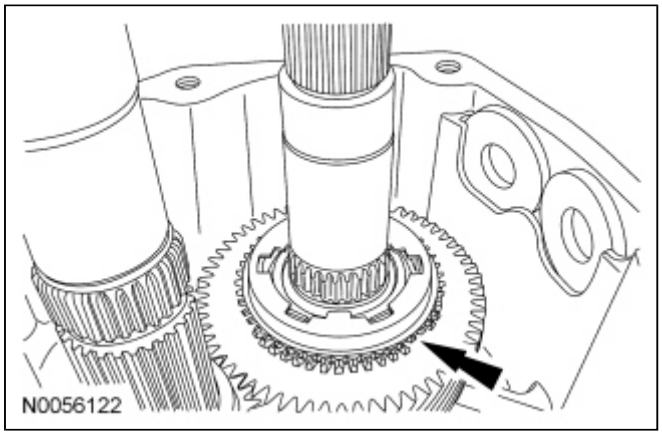


33. Remove the 5th/6th gear shift fork and 5th/6th gear synchronizer.
    - The synchronizer hub is a tight fit on the shaft, and may need to be removed separately. Using a 2 or 3 Jaw Puller, remove the synchronizer hub.

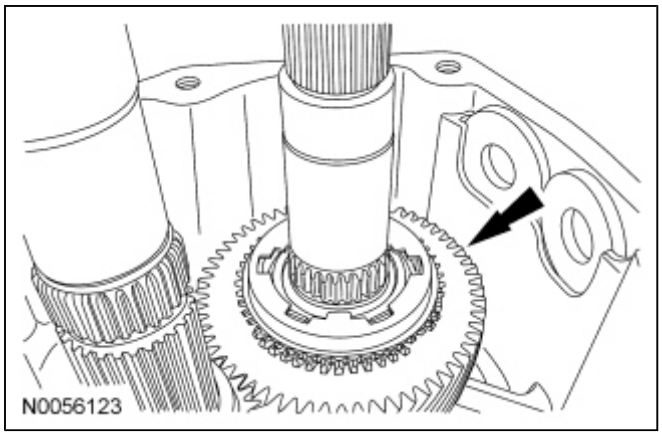




34. Remove the 5th/6th gear synchronizer intermediate cone, the 5th/6th gear synchronizer outer cone and the 5th/6th gear synchronizer blocking ring.

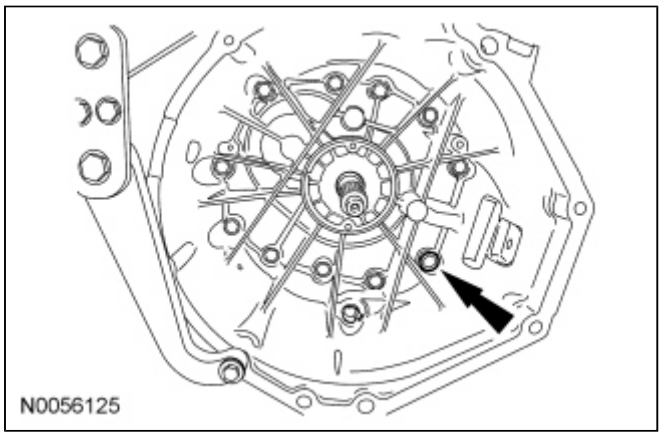


35. Remove 6th gear.



36. Remove the 6th gear needle bearing.

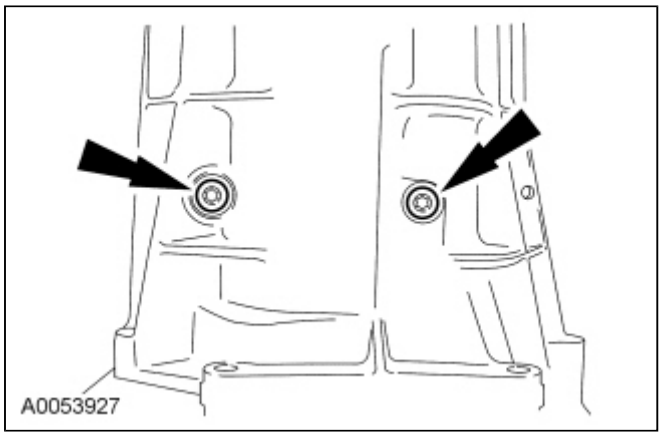
37. Remove 9 of the transmission main case-to-clutch housing bolts.



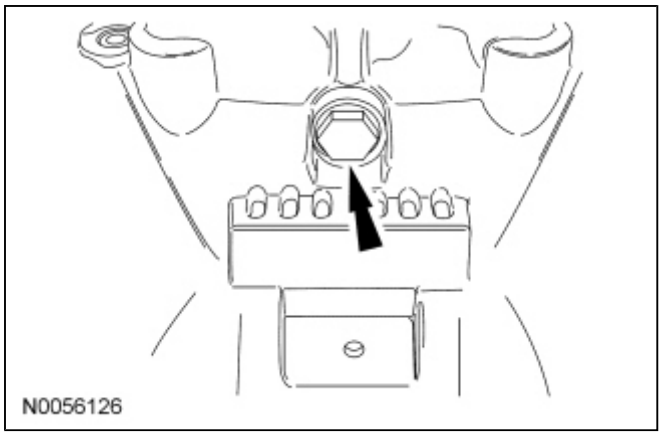
38. Remove the vent hose.

39. **NOTE:** Rotate the transmission to a vertical position.

    Remove the 2 shift lever guide bolts.

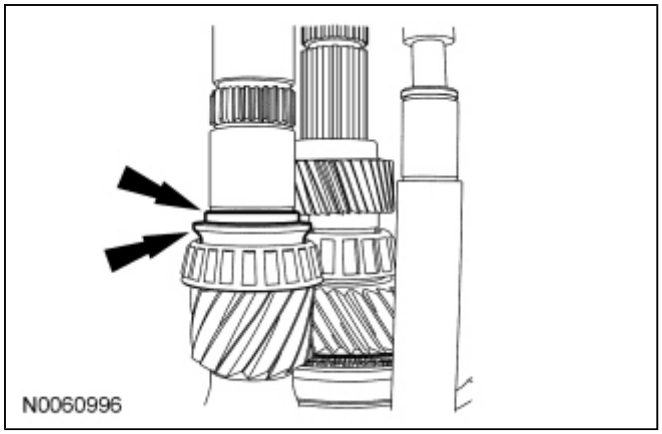


40. Remove the 5th/6th and reverse shift lever detent bolt, spring and detent.

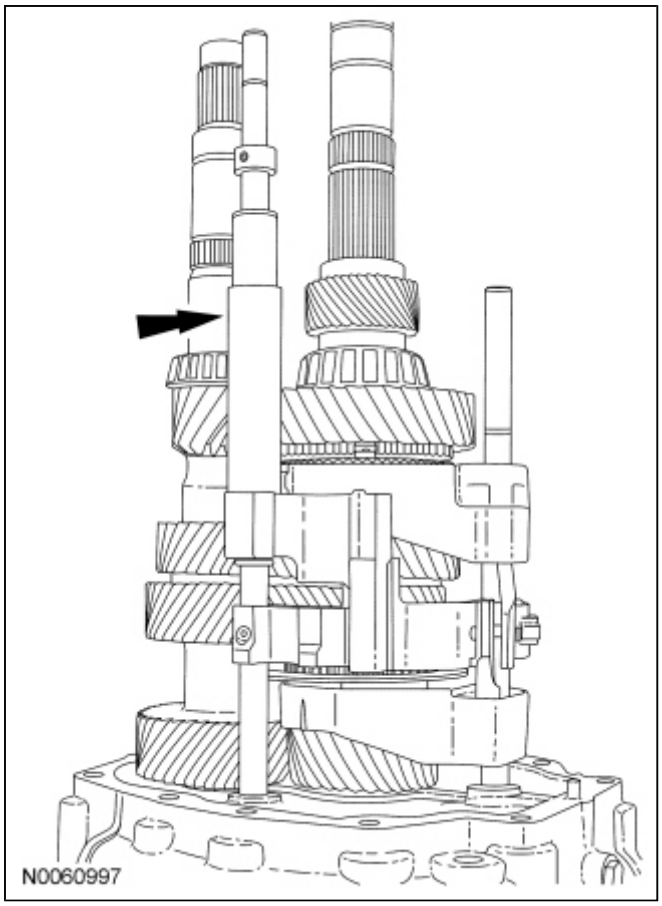


41. Remove the 2 remaining transmission main case-to-clutch housing bolts, then remove the transmission case and the front offset lever.
    - Slide the transmission case upward, off the output shaft and shift rails. Hold the offset lever against the guide plate.

42. Remove the 6th gear spacer and thrust washer.

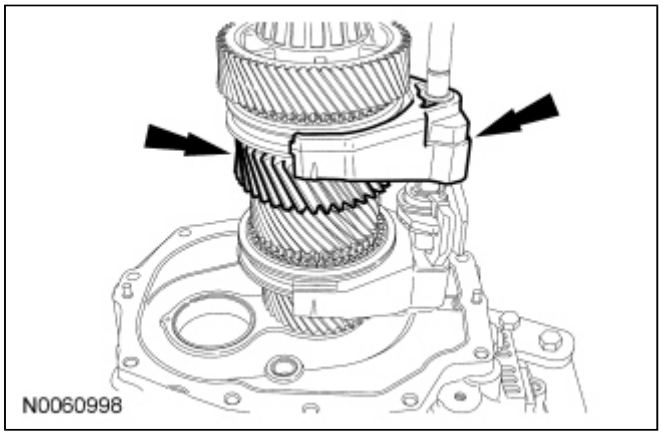


43. Rotate the 5th/6th and reverse shift levers from the shift interlock plate, then remove the 5th/6th and reverse shift rail assembly.

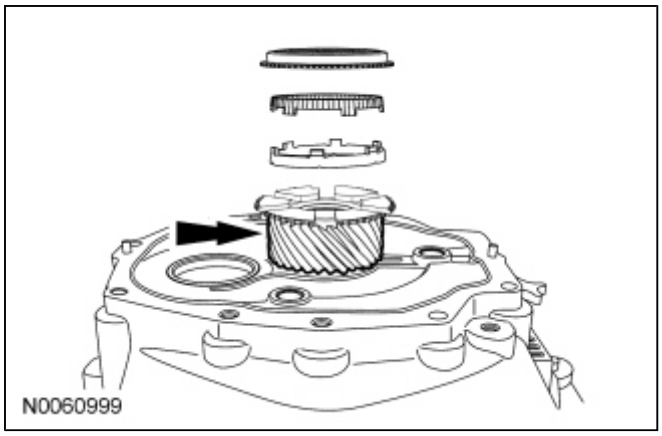


44. Lift up the output shaft, then remove the countershaft.

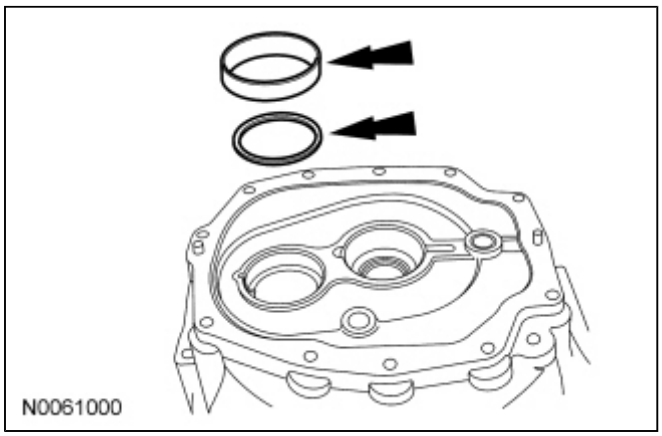
45. Remove the output shaft and shift rail as an assembly. Separate the shift rail assembly from the output shaft on the work bench.



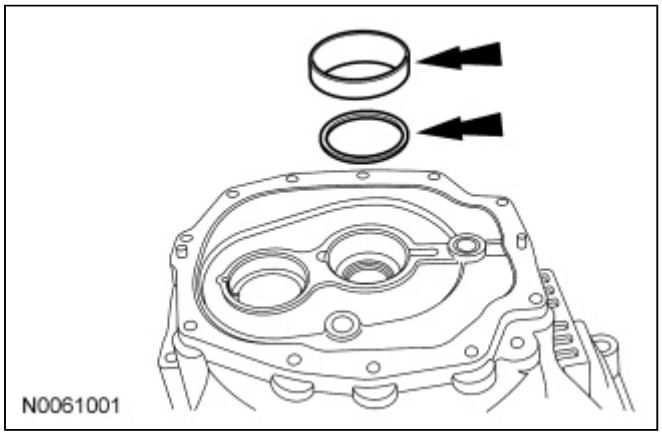
46. Remove the input shaft, the 4th gear synchronizer blocking ring and the double cone (3 rings).



47. Remove the countershaft bearing cup and the countershaft shim.
    - Inspect the cup for wear or damage. Install a new cup and bearing as necessary.
    - Inspect the cup bore for wear, scratches or grooves. Install a new transmission adapter plate as necessary.



48. Remove the input shaft bearing cup and input shaft shim.
    - Inspect the cup for wear or damage. Install a new cup and bearing as necessary.
    - Inspect the cup bore for wear, scratches or grooves. Install a new transmission adapter plate as necessary.



49. Remove and discard the input shaft seal.

50. Inspect the clutch housing for cracks. Clean and check the sealing surface for nicks or scratches.
    - If the clutch housing is cracked, install a new housing. If the sealing surface has nicks or scratches, use a soft stone or crocus cloth to remove.