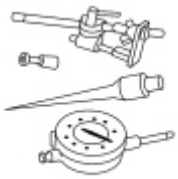
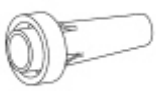
Transmission

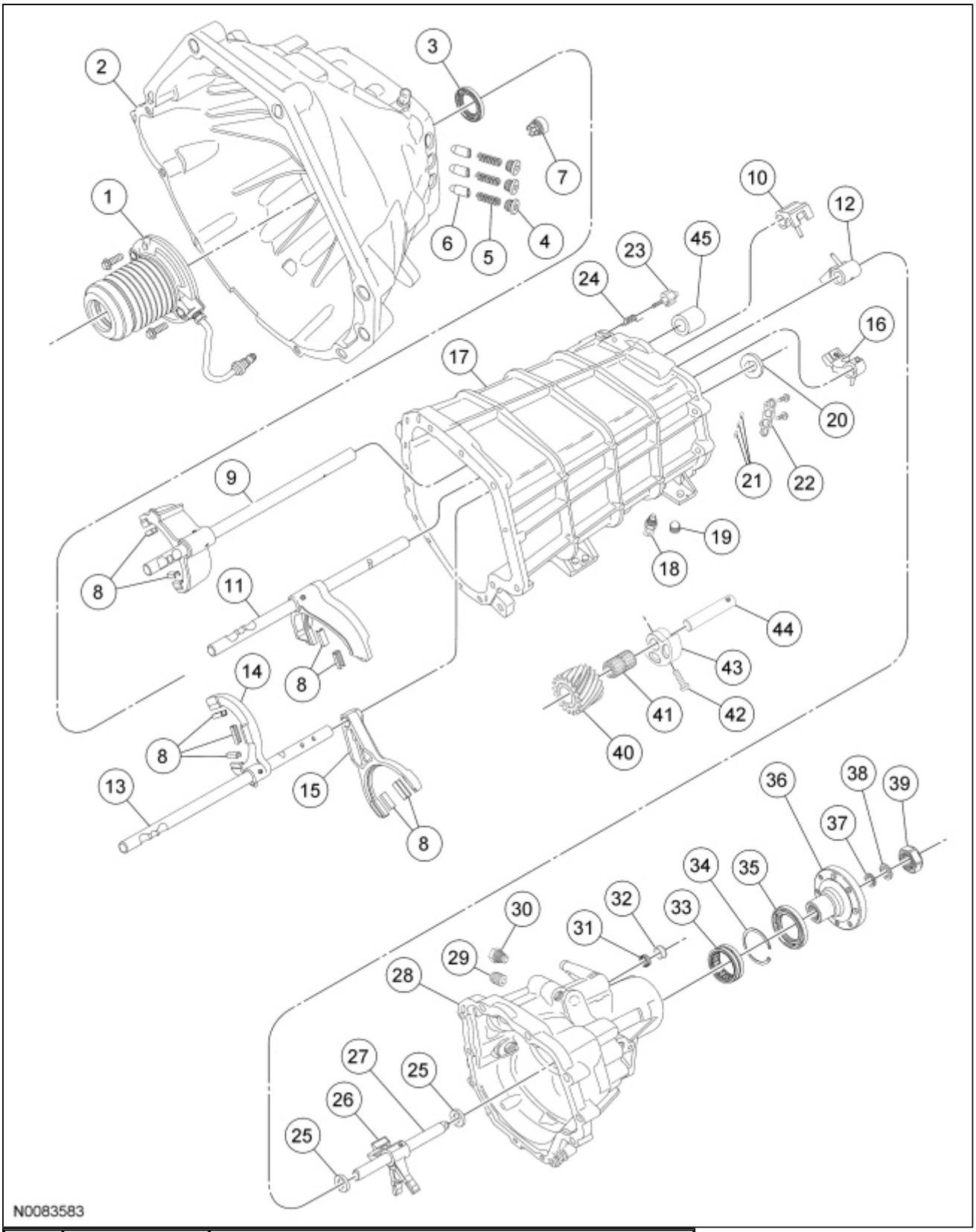
Special Tool(s)

 ST1214-A	Dial Indicator Gauge with Holding Fixture 100-002 (TOOL-4201-C) or equivalent
 ST1255-A	Handle 205-153 (T80T-4000-W)
 ST1186-A	Holding Fixture, Transmission 307-003 (T57L-500-B)
 ST3098-A	Installer, Drive Pinion Oil Seal 205-115
 ST2355-A	Installer, Input Shaft Oil Seal 308-220 (T94P-7025-AH)
T96P-7127-A  ST1087-A	Installer, Output Shaft Oil Seal 308-246 (T96P-7127-A) or use
 ST1303-A	Remover/Installer, Bearing Tube 308-024 (T75L-7025-B)
 ST2338-A	Replacer/Adapter 308-239 (T96P-7025-A)

Material

Item	Specification
Clear Silicone Rubber TA-32	ESB-M4G92-A
MERCON® V Automatic Transmission Fluid XT-5-QM (or XT-5-QMC) (US); CXT-5-LM12 (Canada)	MERCON® V
Threadlock and Sealer TA-25	WSK-M2G351-A5

Transmission Case and Shift Components — Disassembled View



Item	Part Number	Description
1	7A508	Slave cylinder and release bearing
2	7500	Clutch housing
3	7052	Input shaft seal
4	7A082	Detent plug (part of detent kit)
5	7A082	Detent spring (part of detent kit)
6	7A082	Detent (part of detent kit)
7	7K584	Slave cylinder line retainer

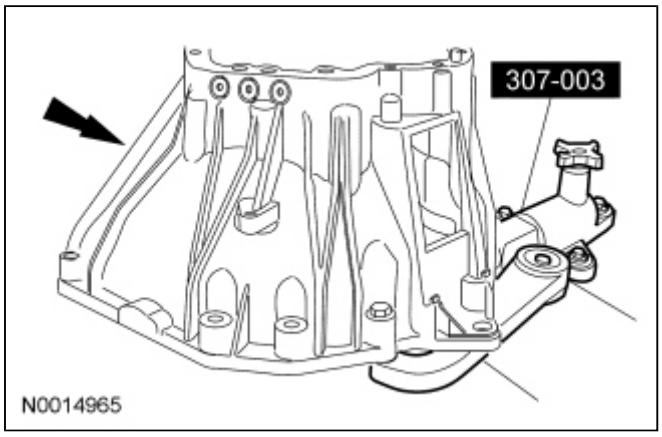
8	7L082	Shift fork inserts
9	7K491	3rd/4th shift rail and fork
10	7K131	3rd/4th shift gate
11	7N346	1st/2nd shift rail and fork
12	7K130	1st/2nd shift gate
13	7242	5th/reverse shift rail and reverse shift fork
14	7230	Selector shift rail bearing
15	7230	5th gear shift fork
16	4L042	5th shift gate
17	7005	Transmission main case
18	15520	Reverse lamp switch
19	7A010	Drain plug
20	7L027	Magnet
21	7A082	Interlock pins (part of shift kit)
22	7229	Shift interlock plate
23	7A082	5th/reverse gear lockout (part of kit)
24	7A082	5th/reverse gear lockout spring (part of kit)
25	7A082	Spacers
26	7337	Selector finger
27	7240	Selector rail
28	7A039	Extension housing
29	7A010	Fill plug
30	7234	Detent/bias spring plunger
31	7127	Selector shift rail bearing
32	7052	Selector shift rail seal
33	7025	Extension housing bearing/race assembly
34	7L271	Extension housing bearing snap ring (part of kit)
35	7052	Output shaft seal
36	7089	Transmission flange
37	7E397	Flange O-ring
38	7119	Flange washer
39	7K440	Flange nut
40	7141	Reverse idler gear
41	7025	Reverse idler gear needle bearing
42	7141	Reverse idler gear support bolt
43	7723	Reverse idler gear support
44	7140	Reverse idler gear shaft
45	—	Dowel (part of 7A039)

Assembly

NOTE: Install new roll pins, retaining rings or bearings that were removed during disassembly. Install bearings and bearing cups as a set.

1. Lubricate all components with transmission fluid during assembly.

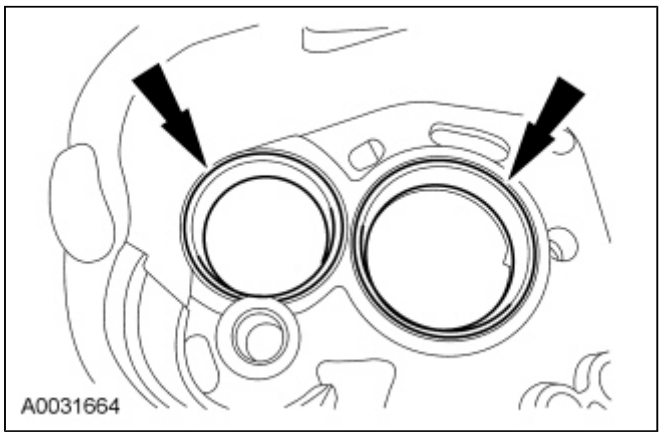
2. Attach the clutch housing to the Transmission Holding Fixture.



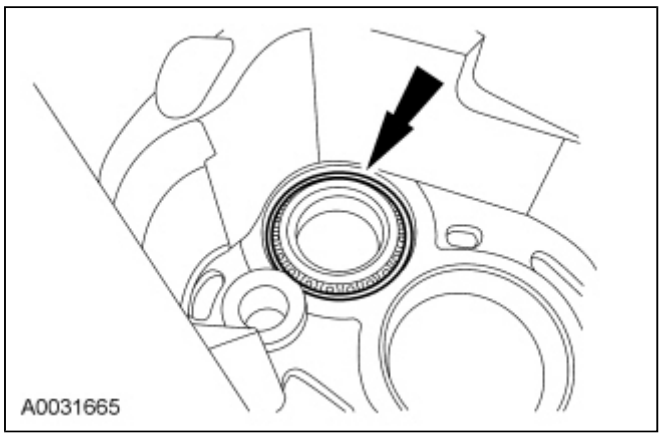
3. **NOTE:** If a new rear output shaft bearing was installed or a new rear countershaft bearing is being used, install new bearing cups.

   NOTE: Lubricate the bearing cups and the shift rail bearing with petroleum jelly.

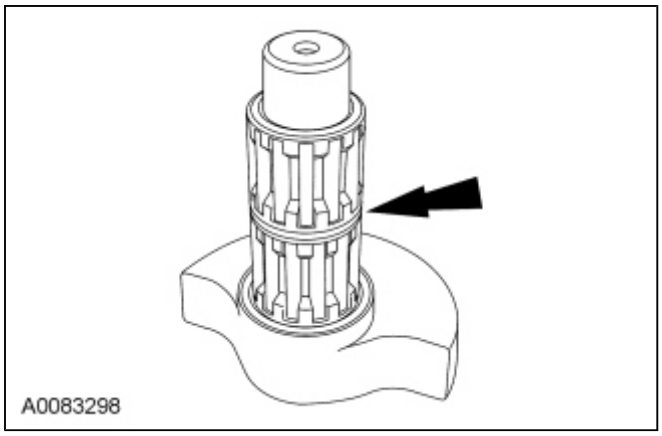
   Install the rear countershaft bearing cup and the rear output shaft bearing cup.



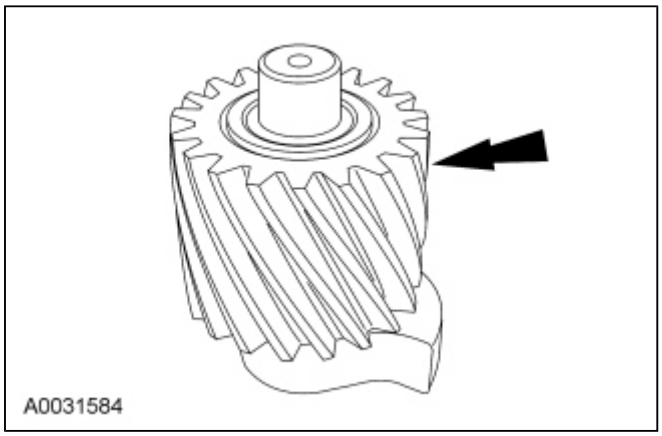
4. Install the rear countershaft bearing.



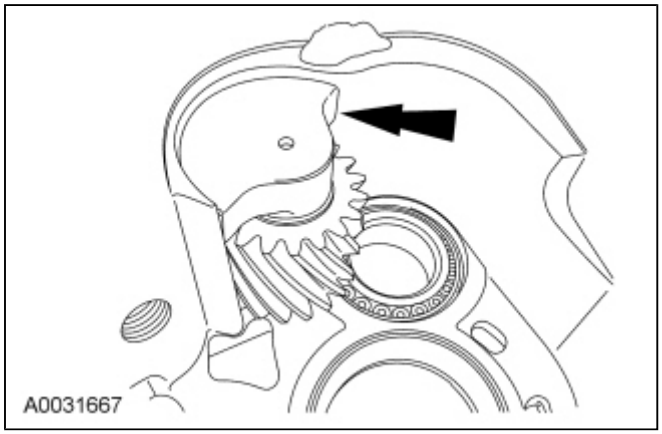
5. Install the reverse idler gear bearing on the reverse idler gear shaft.



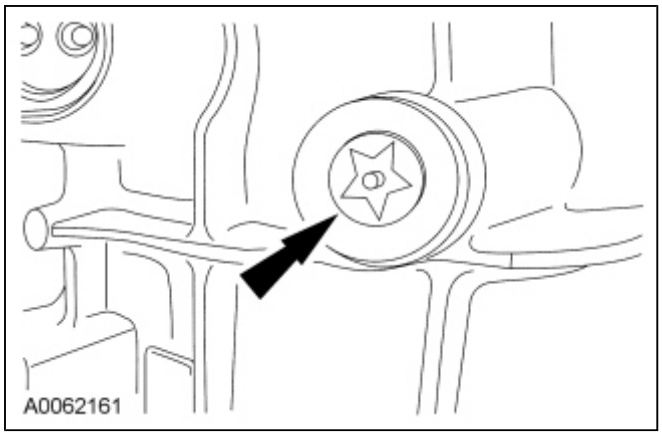
6. Install the reverse idler gear on the shaft.



7. Install the reverse idler gear into the case.

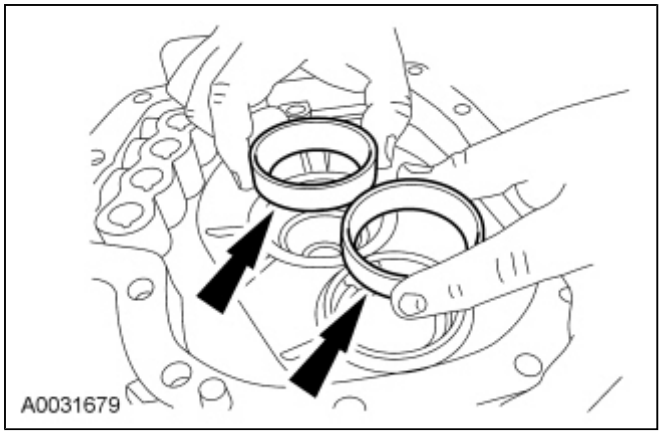


8. Install a new seal on the reverse idler bolt, then install the reverse idler bolt in the transmission case.
    - Tighten to 27 Nm (20 lb-ft).

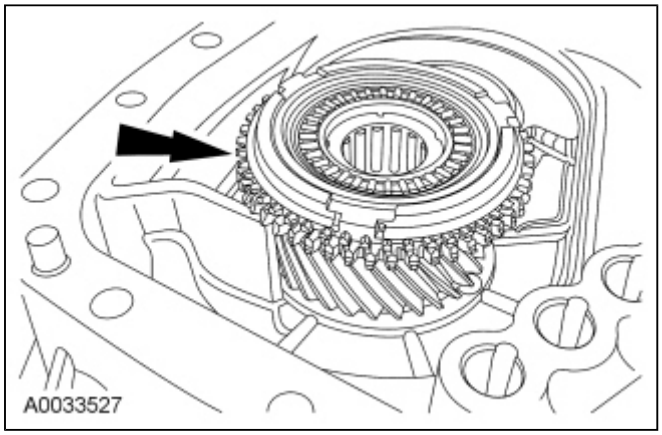


9. **NOTE:** If a new front input shaft bearing or front countershaft bearing was installed, install new bearing cups.

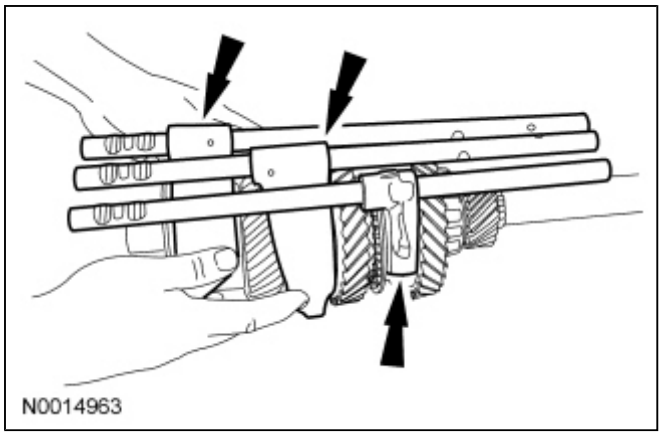
   Install the front input shaft bearing cup and the front countershaft bearing cup. Do not install the shims at this time.
   - Install the transmission main case.



10. Install the input shaft with the 3rd/4th synchronizer blocking ring.



11. Install the shift rails and shift forks on the mainshaft.



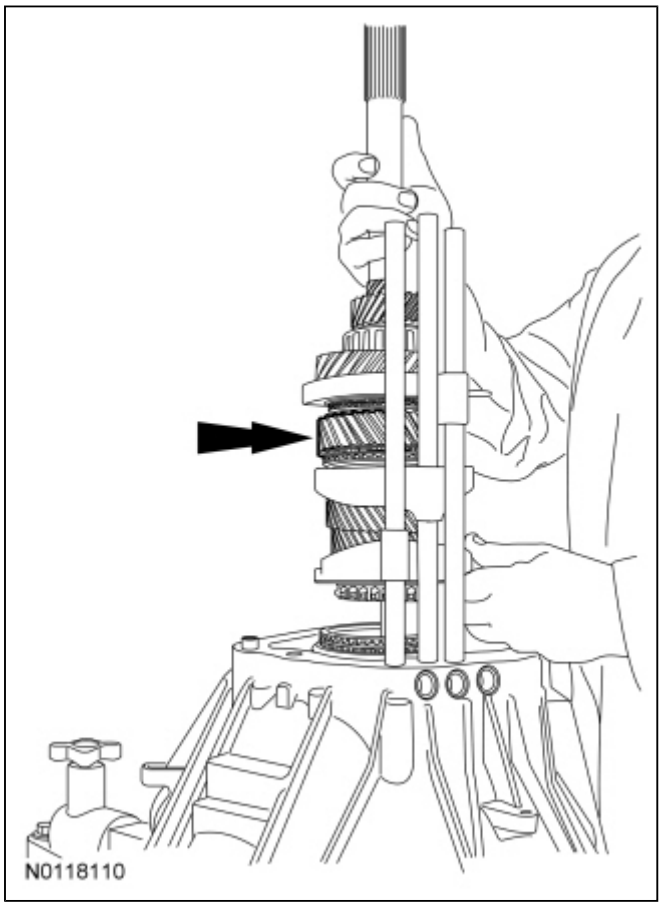
12. **NOTE:** The notches on the shift rail should be pointing upward.

    NOTE: Align the shift rails in the bores.

    NOTE: The 3rd/4th shift fork has an oil deflector that will line up with an oil deflector on the inside of the case.

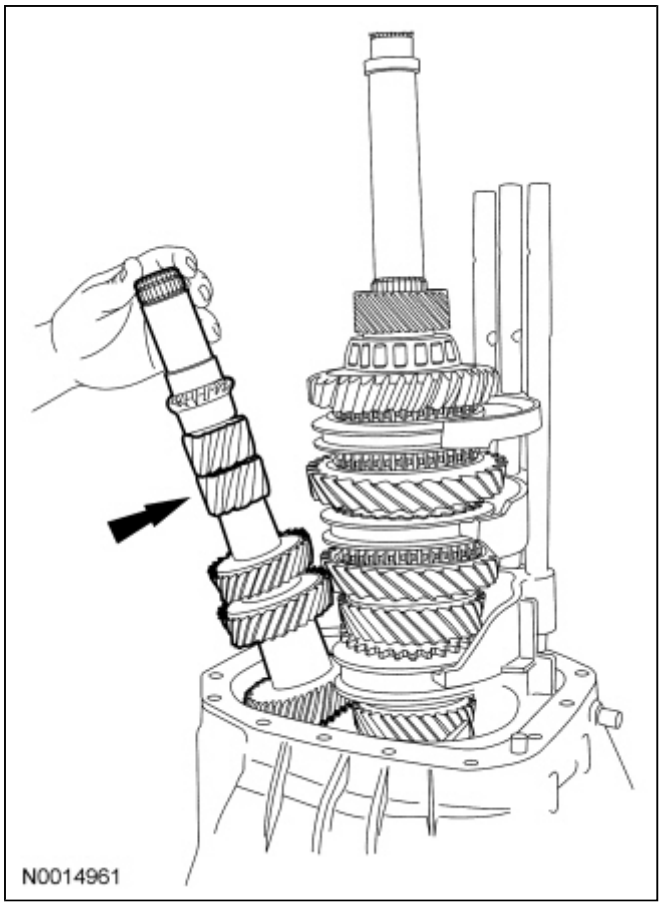
    NOTE: Make sure the 3rd/4th synchronizer blocking ring is aligned with the slots in the 3rd/4th synchronizer hub.

    Install the mainshaft onto the clutch housing.

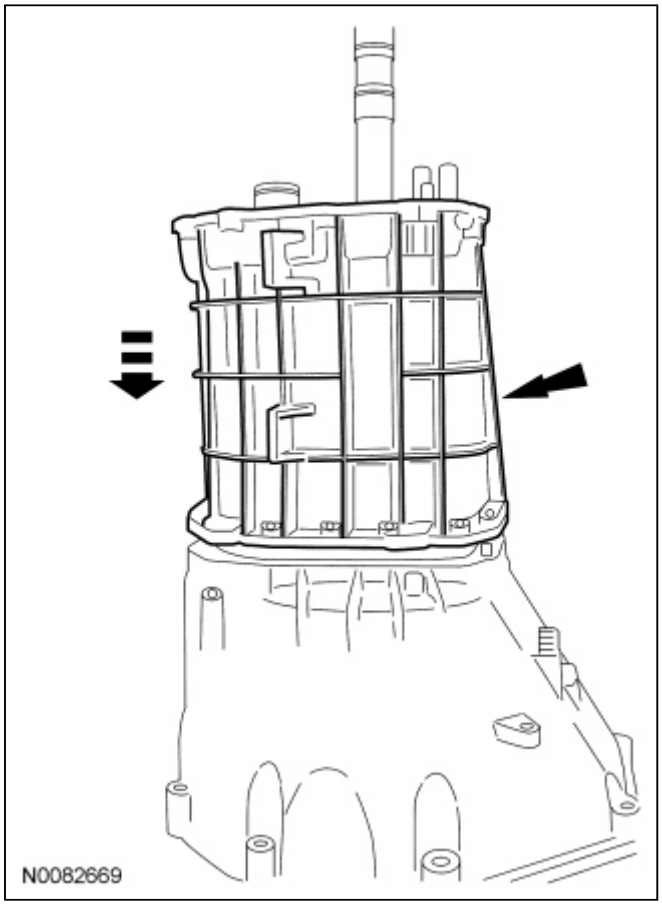


13. **NOTE:** Make sure all synchronizer assemblies are in the neutral position.

    Using a jack and a block of wood, lift the mainshaft 13 mm (0.511 in) upward, then tilt the countershaft inward and install the countershaft.



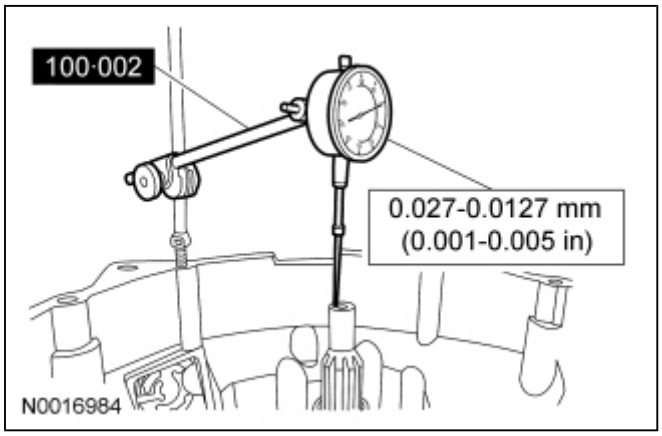
14. Install the case while holding the countershaft bearing in place. Install 2 opposing clutch housing-to-main case bolts.

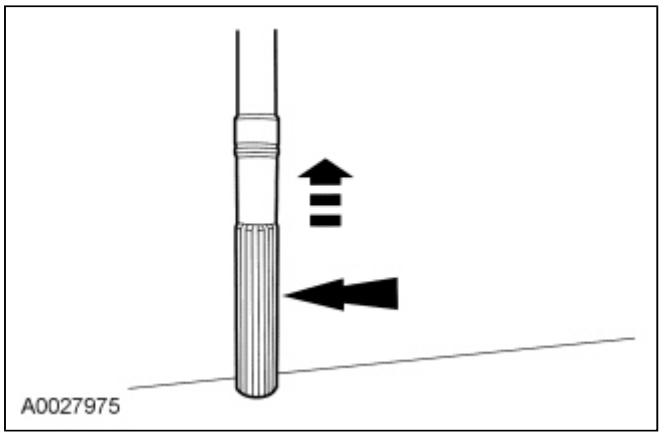


15. **NOTE:** Rotate the transmission so that the input shaft is pointing upward.

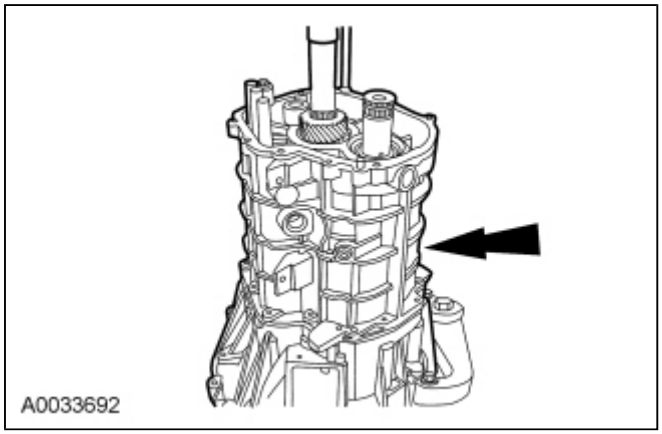
NOTE: Rotate the input shaft to seat the bearings.

Using the Dial Indicator Gauge with Holding Fixture, measure the input shaft end play by applying an upward load on the output shaft. Record the measurement.



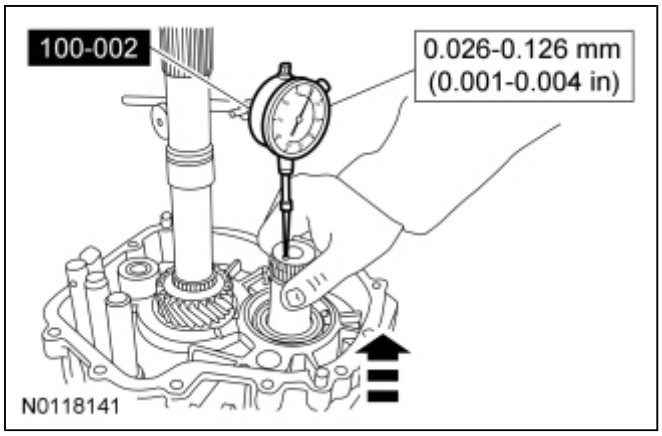


16. Rotate the transmission so that the input shaft is pointing downward.

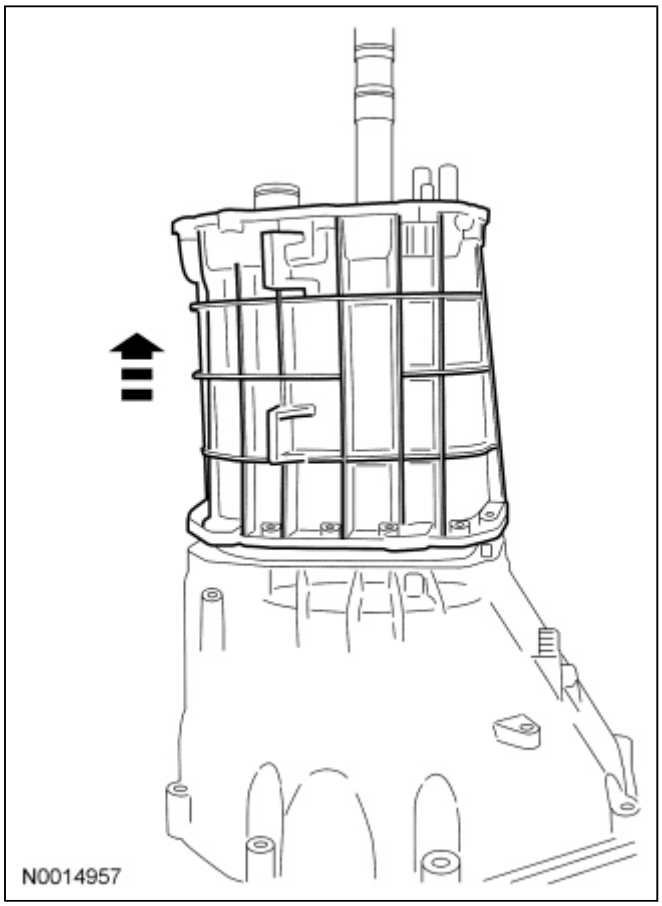


17. **NOTE:** Rotate the countershaft to seat the bearings.

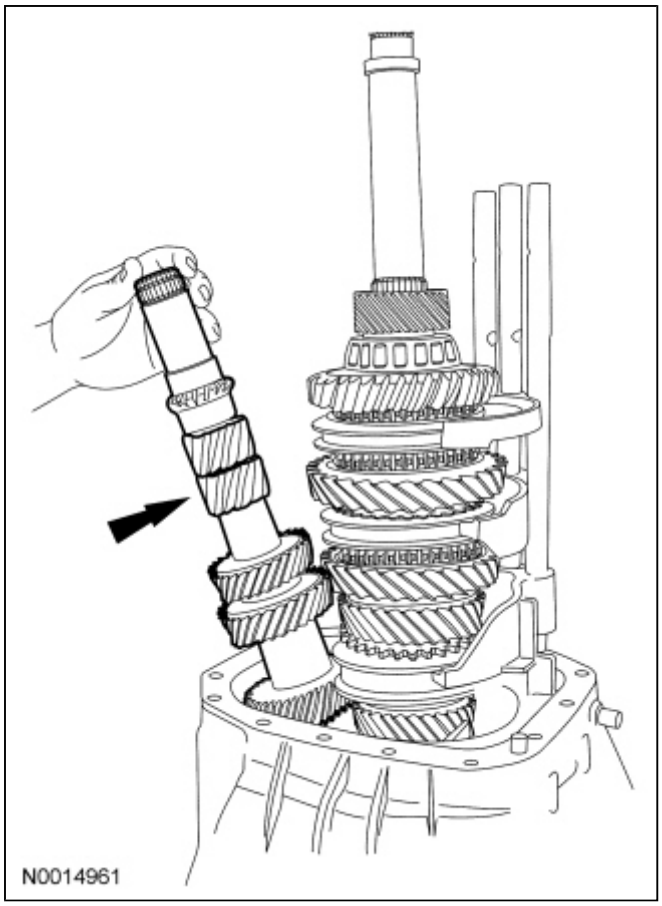
    Using the Dial Indicator Gauge with Holding Fixture, measure the countershaft gear end play by pulling upward on the countershaft. Record the measurement.



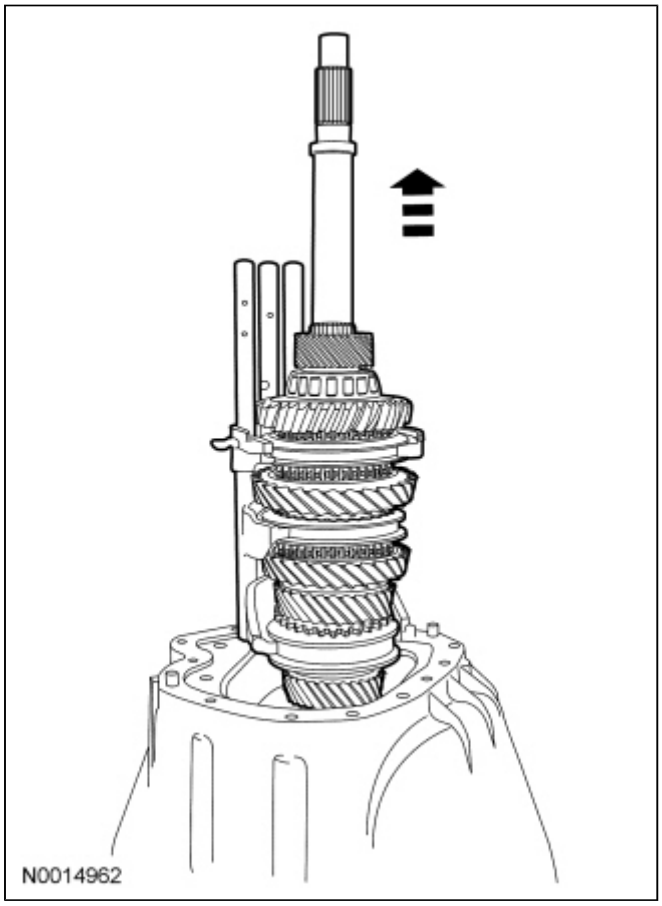
18. Remove the 2 bolts and lift the transmission main case off.



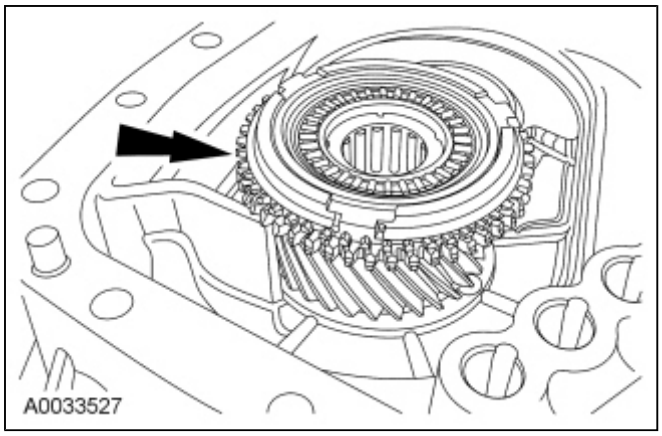
19. Using a jack and a block of wood, lift the mainshaft 13 mm (0.511 in) upward, then tilt the countershaft outward and remove the countershaft.



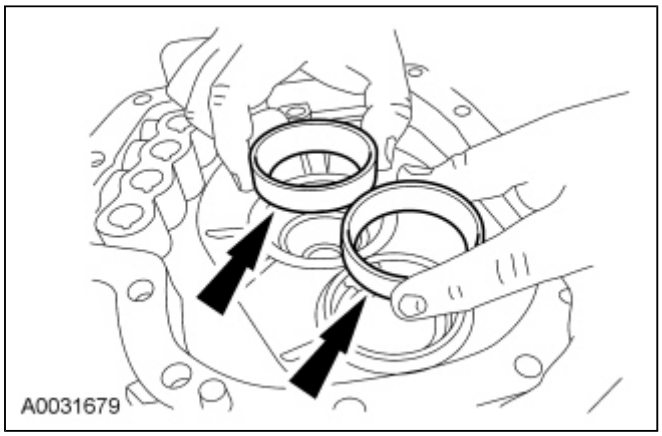
20. While holding the mainshaft, release the jack and remove the mainshaft and shift assembly.



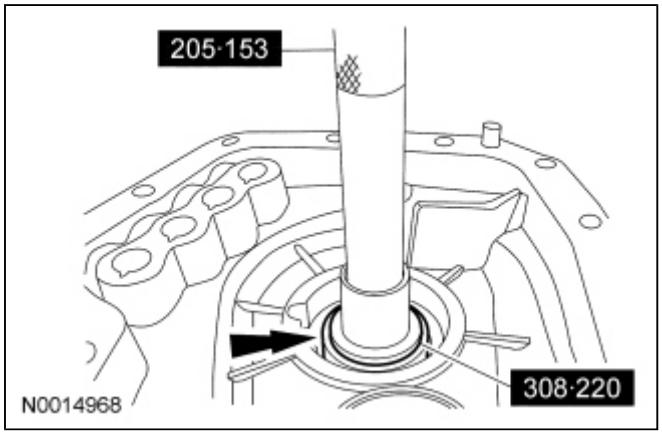
21. Remove the input shaft.



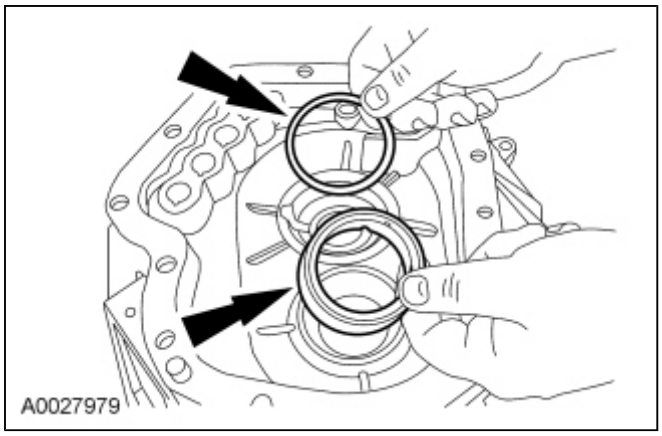
22. Remove the front input shaft bearing cup and the front countershaft bearing cup.



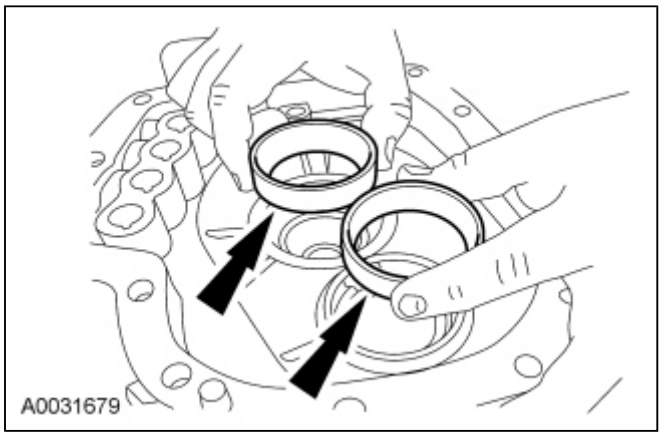
23. Using the Input Shaft Oil Seal Installer and Handle, install the new input shaft seal.



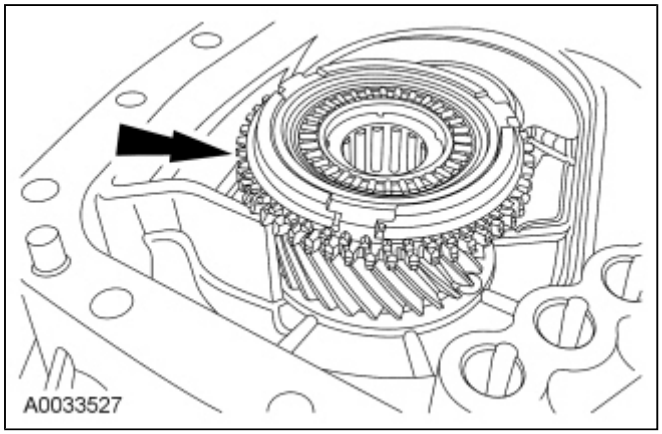
24. Using the recorded end play measurements, select and install the appropriate shims to achieve the correct end play.



25. Install the front input shaft bearing cup and the front countershaft bearing cup.



26. Install the input shaft and the 3rd/4th synchronizer blocking ring.



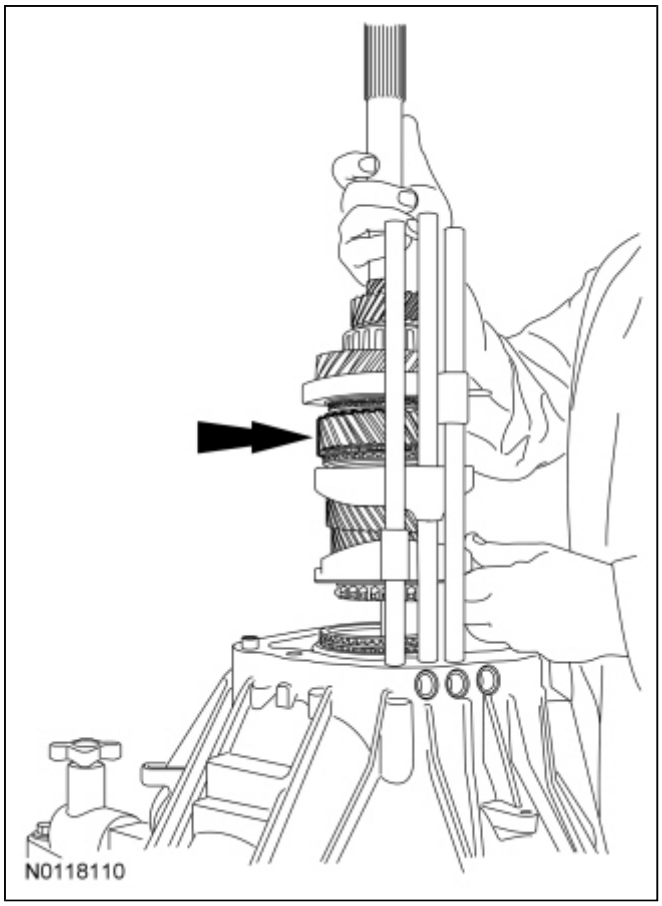
27. **NOTE:** The notches on the shift rail should be pointing upward.

    NOTE: Align the shift rails in the bores.

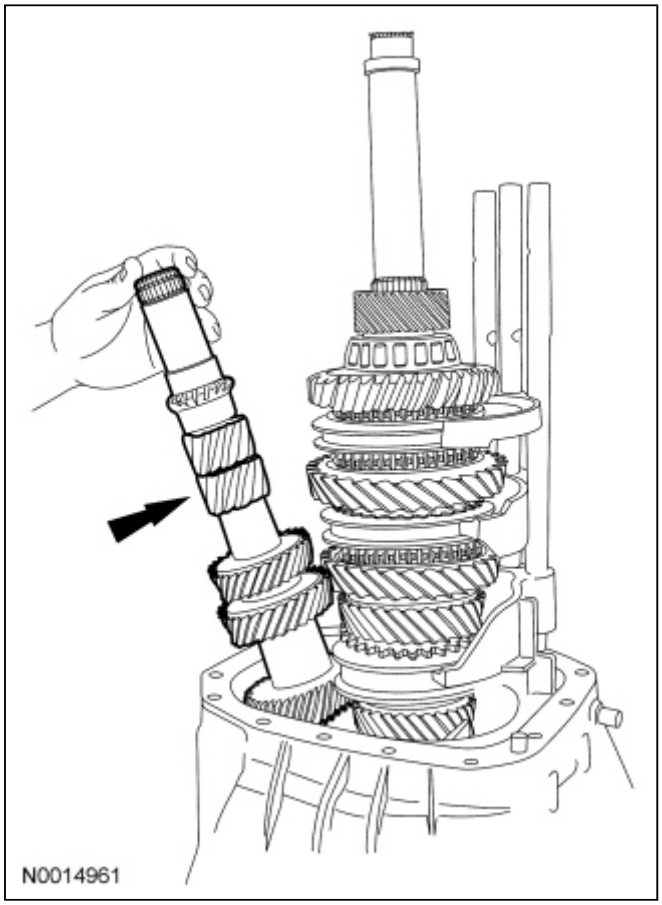
    NOTE: The 3rd/4th shift fork has an oil deflector that will line up with an oil deflector on the inside of the case.

    NOTE: Make sure the 3rd/4th synchronizer blocking ring is aligned with the slots in the 3rd/4th synchronizer hub.

    Install the mainshaft.

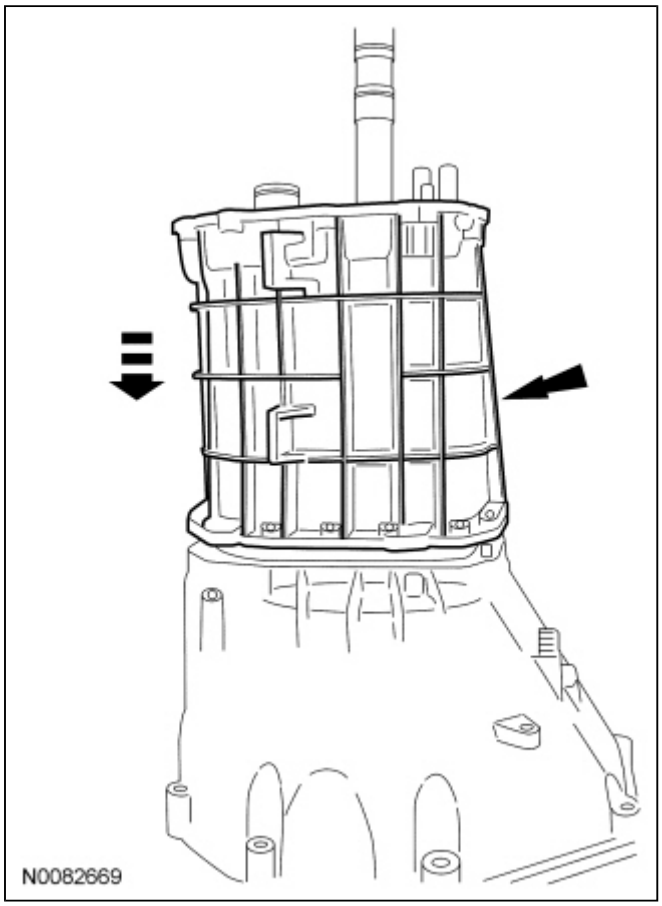


28. Using a jack and a block of wood, lift the mainshaft 13 mm (0.511 in) upward, then tilt the countershaft inward and install the countershaft.

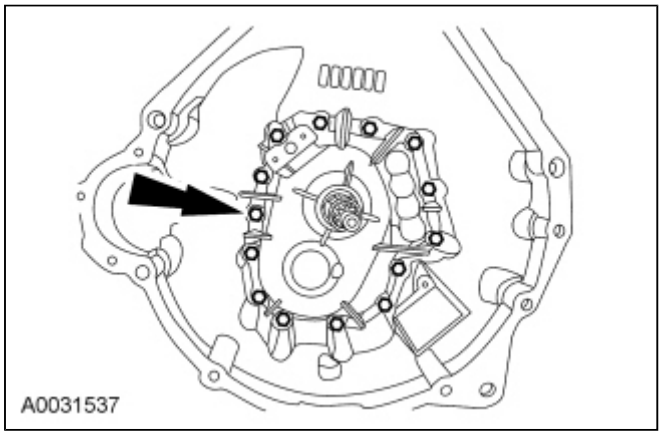


29. Clean the mating surfaces of the transmission main case and the clutch housing. Apply a bead of clear

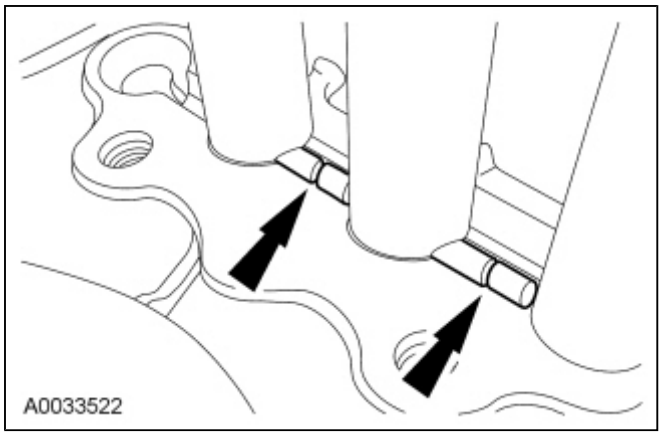
silicone rubber to the sealing surface on the clutch housing, then install the transmission main case.



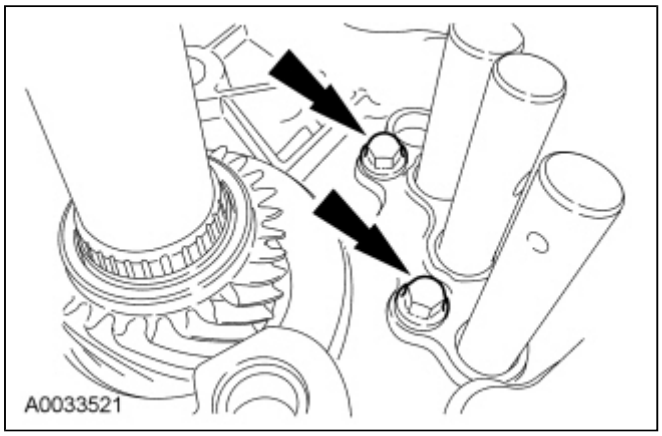
30. Install the clutch housing-to-main case bolts.
    - Tighten the bolts in a star pattern to 32 Nm (24 lb-ft).



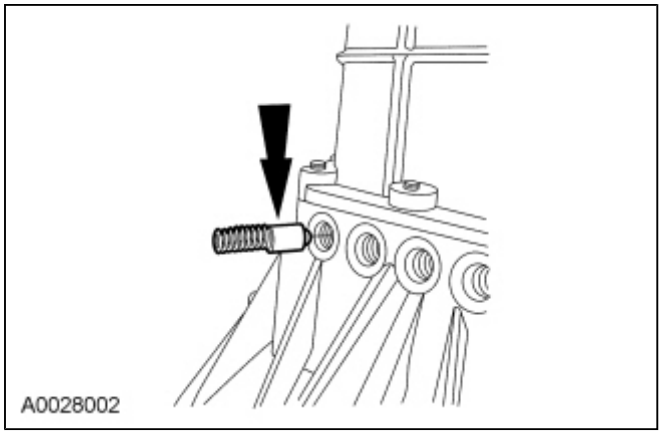
31. Install the lock pins.



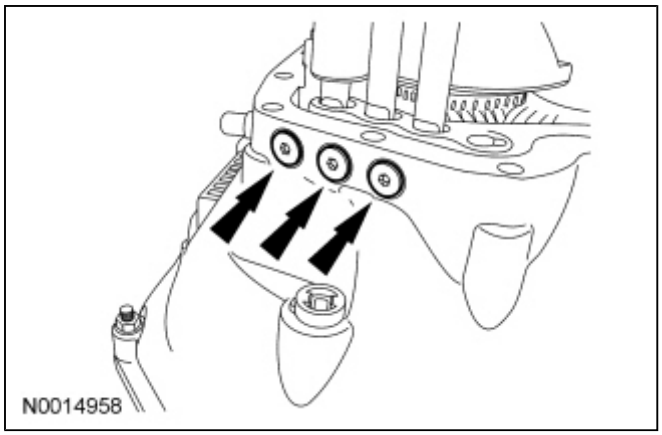
32. Install the lock plate and the lock plate bolts.
    - Tighten to 31 Nm (23 lb-ft).



33. Install the 3 detents and the 3 detent springs.

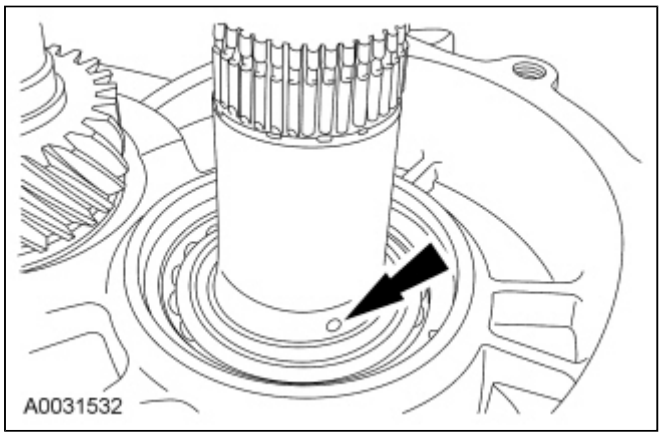


34. Install the 3 detent plugs.
    - Tighten to 28 Nm (21 lb-ft).



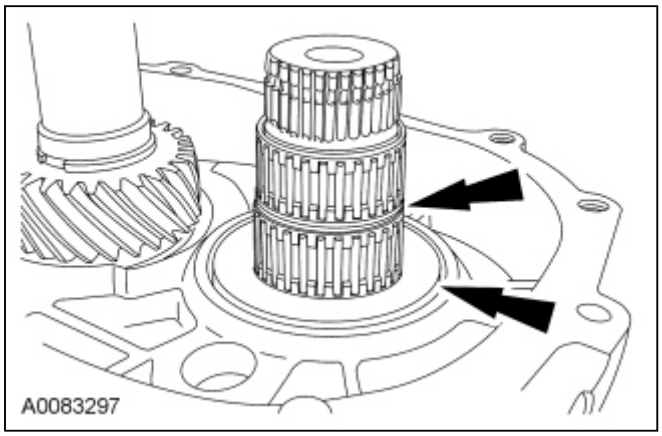
35. **NOTE:** Use petroleum jelly to hold the check ball in place.

    Install the check ball.

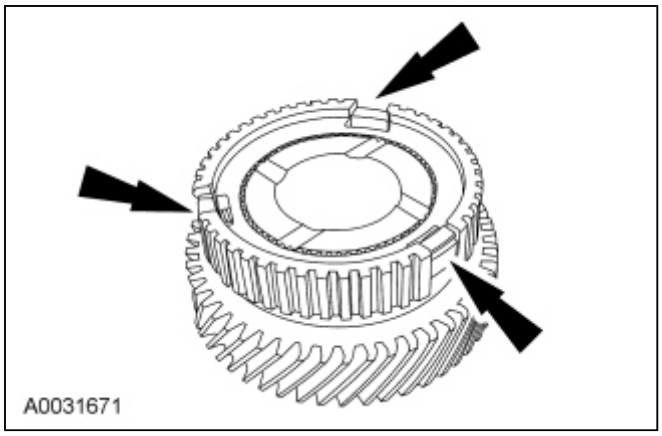


36. **NOTE:** The thrust washer is positioned with the flat surface facing upward towards 5th gear.

    Install the thrust washer and the 5th gear needle bearings.



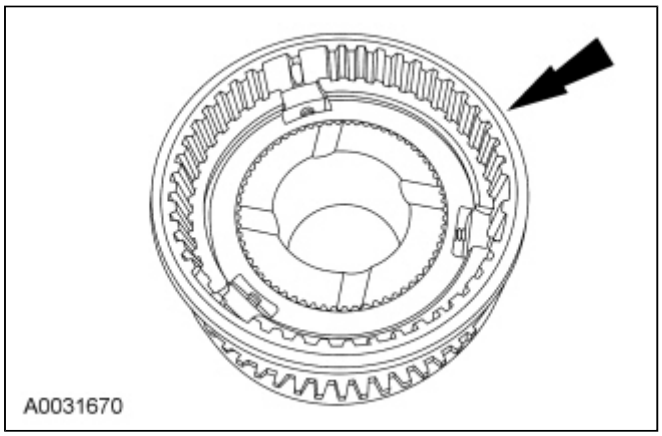
37. Place the 5th gear synchronizer blocking ring and the synchronizer hub on the countershaft 5th gear. Install the synchronizer springs and inserts.



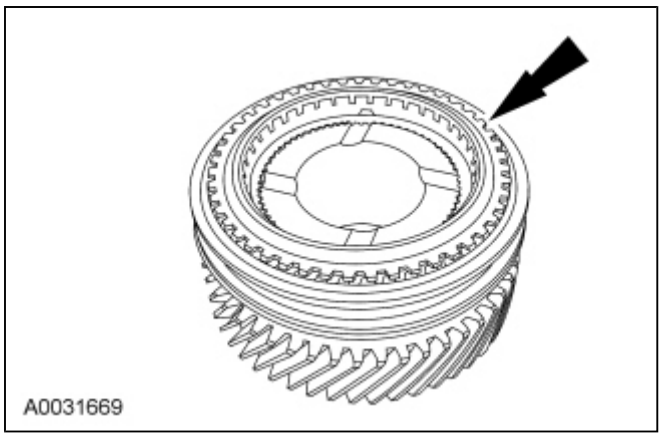
38. **NOTE:** Align the pockets in the blocking ring with the struts in the synchronizer.

    NOTE: The sliding sleeve is not reversible. Install the sleeve with the pointed teeth on the synchronizer sleeve away from 5th gear.

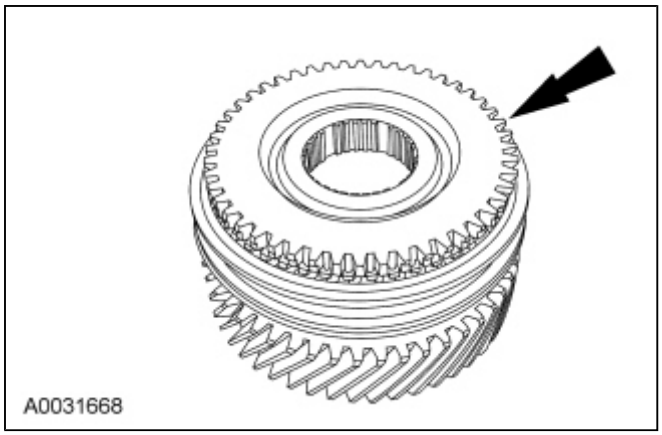
    Install the sliding sleeve on the synchronizer hub.



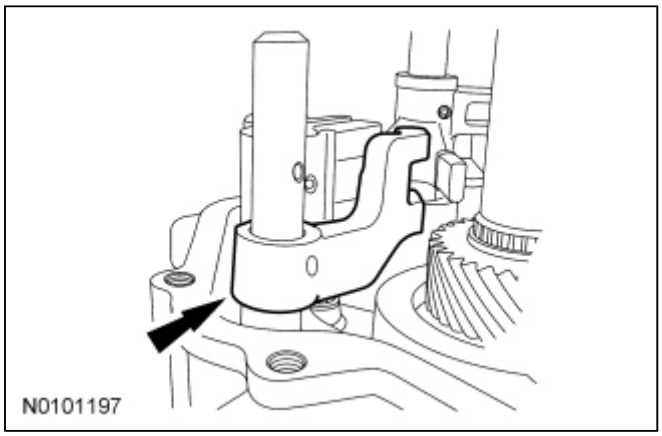
39. Install 5th gear synchronizer blocking ring.



40. Install the 5th gear synchronizer cone.

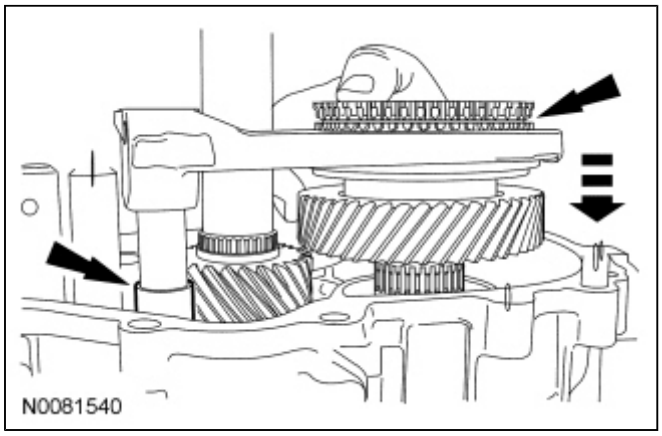


41. Install the 5th/reverse lever fork and a new split pin.

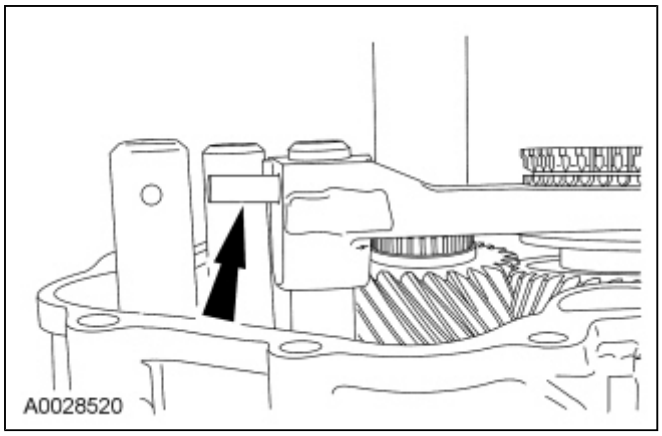


42. **NOTE:** Lubricate the shift rail with transmission fluid. Using a plastic hammer, alternately tap the shift fork and the synchronizer cone into position.

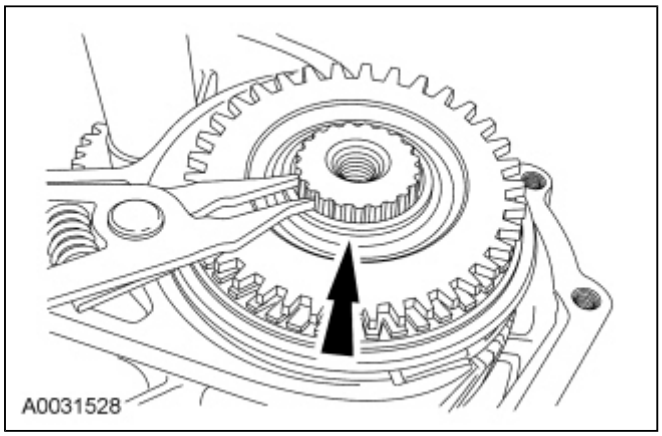
    Install the shift arm and the 5th gear shift fork, the synchronizer assembly, the synchronizer cone and 5th gear as an assembly.



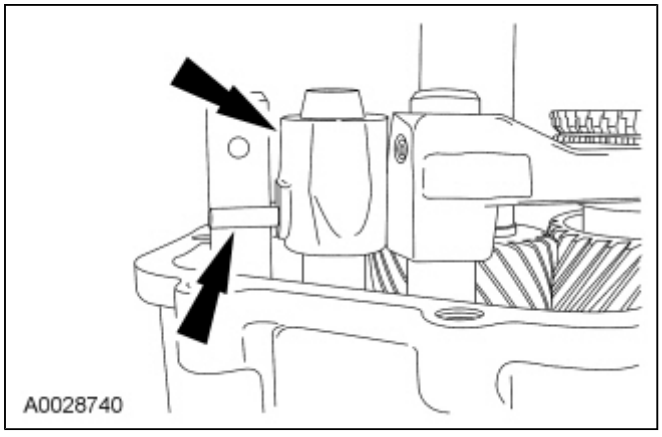
43. Install a new split pin.
    - Install the pin until it is flush with the fork.



44. Install a new snap ring.

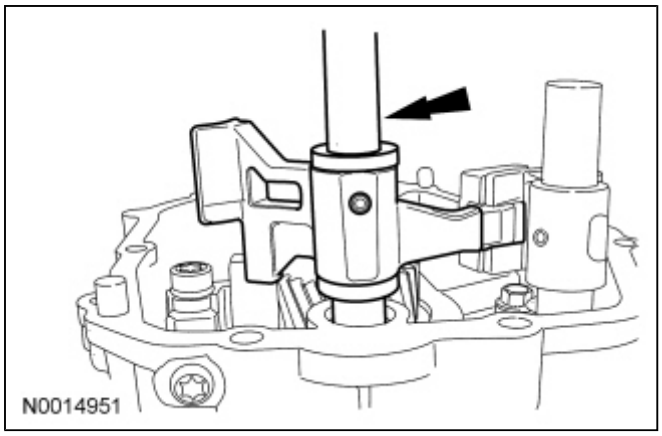


45. Install the 3rd/4th shift finger, then install a new split pin.
    - Install the split pin until it is flush with the shift finger.



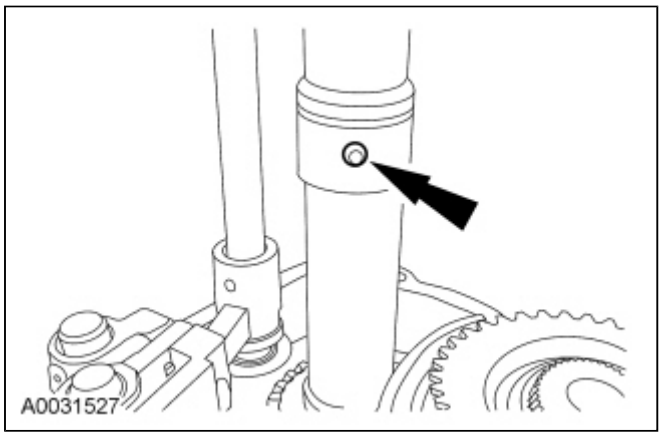
46. Install new plastic spacers on the main shift rail.

47. Install the main shift rail, then install the 1st/2nd shift finger. Install new split pins.
    - Install the split pins until it is flush with the shift finger and the shift rail.



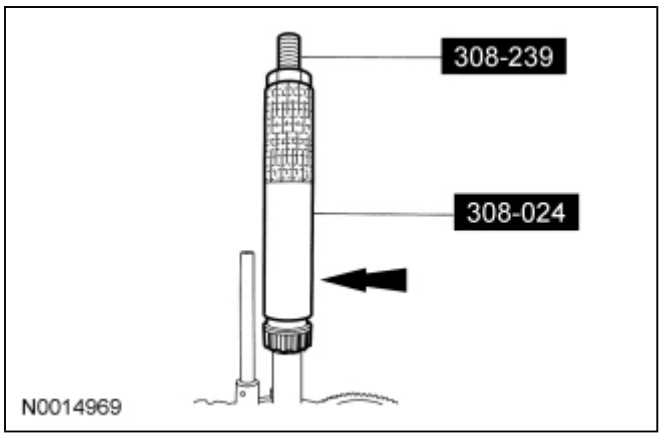
48. **NOTE:** Use petroleum jelly to hold the check ball in place.

    Install the Output Shaft Speed (OSS) sensor tone wheel check ball.

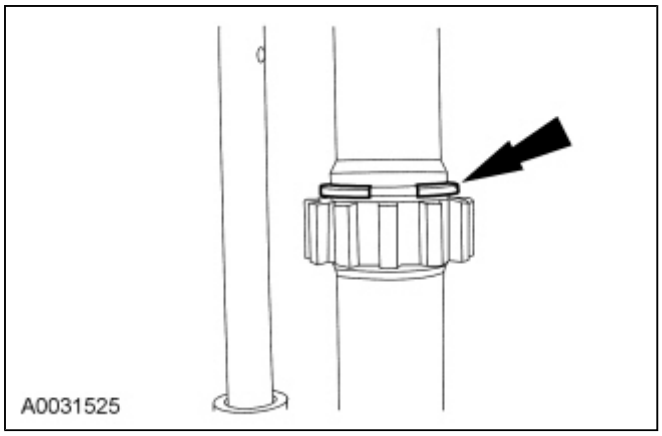


49. **NOTE:** The OSS sensor tone wheel is brittle. Gently tap the tone wheel into position.

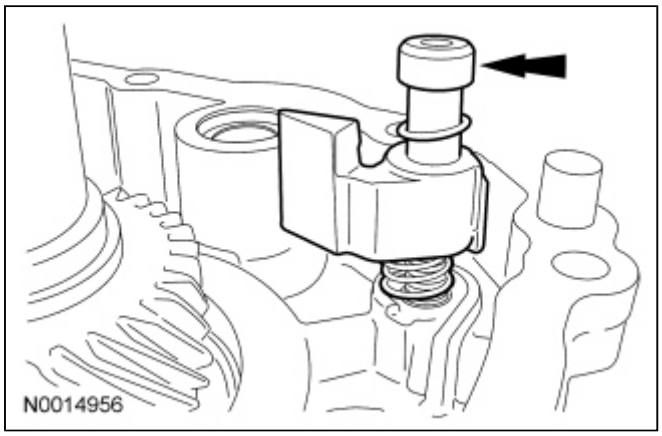
    Place the OSS sensor tone wheel on the output shaft, aligning the slot in the OSS wheel with the check ball. Using the Bearing Tube Remover/Installer and Replacer/Adapter, install the OSS sensor tone wheel.



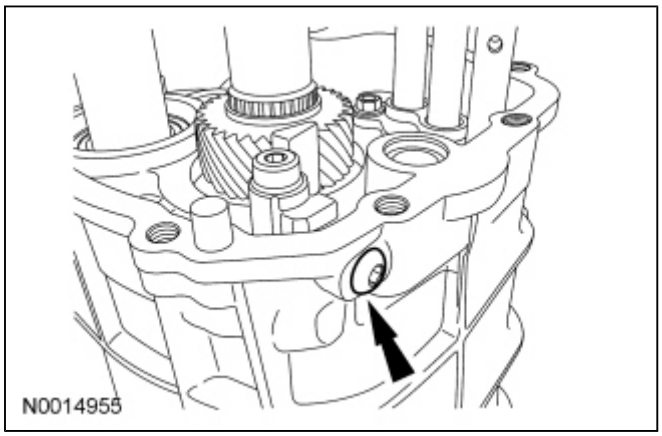
50. Install a new OSS sensor tone wheel retaining ring.



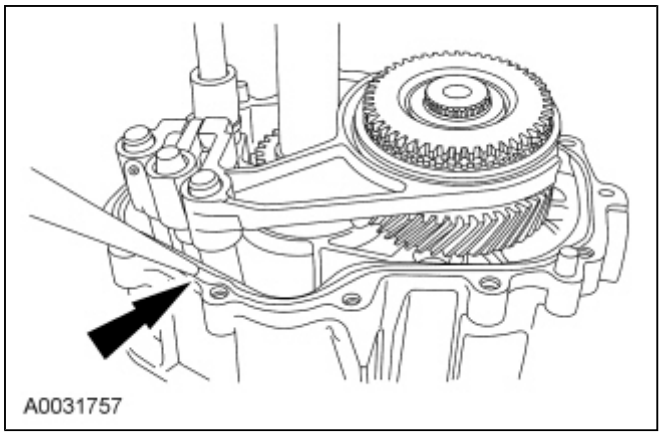
51. Install the 5th/reverse gear lockout spring, arm, seal and top bolt.
    - Tighten to 20 Nm (177 lb-in).



52. Install the 5th/reverse gear lockout side bolt.
    - Tighten to 20 Nm (177 lb-in).



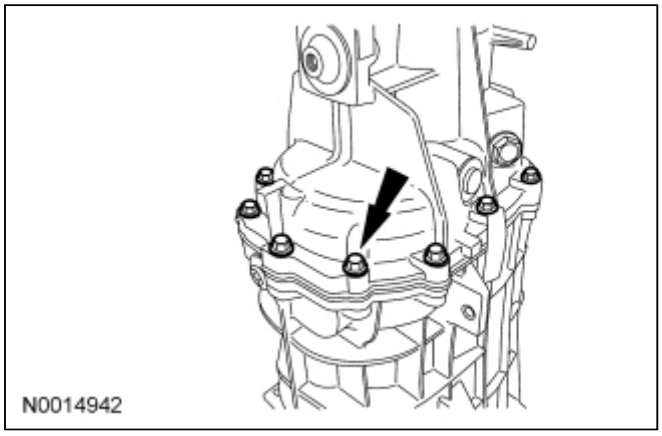
53. Clean the mating surfaces of the transmission main case and the extension housing. Apply a bead of clear silicone rubber to the sealing surface of the transmission case.



54. Install a new split pin in the gear shift offset lever.
    - The split pin should be flush in the gear shift offset lever.

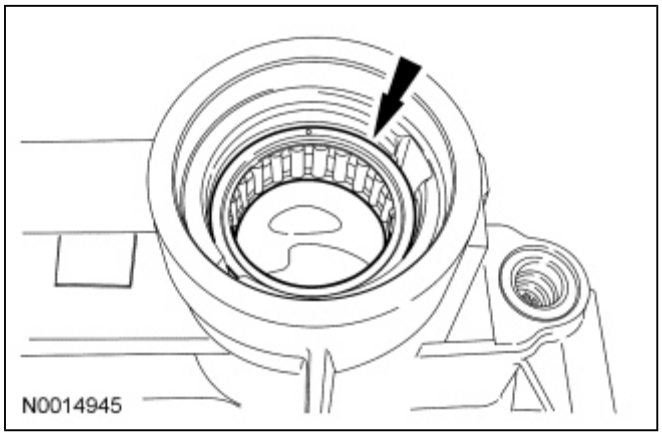
55. **NOTE:** Fill the gear shift offset lever with petroleum jelly.

    Seat the extension housing and install the bolts.
    - Tighten to 32 Nm (24 lb-ft).

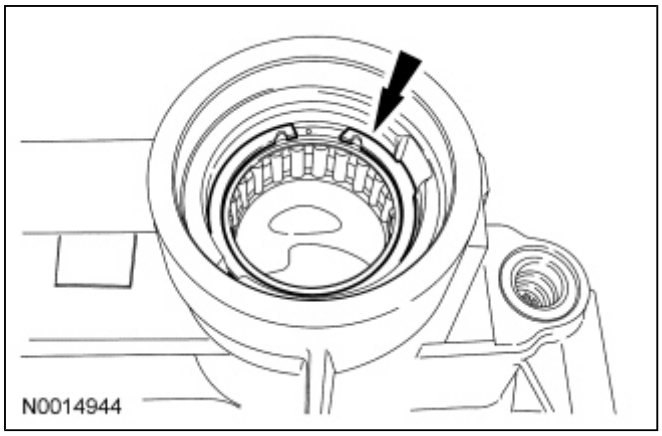


56. **NOTE:** If a new rear output shaft bearing was installed, install a new bearing cup.

    Install the output shaft bearing.

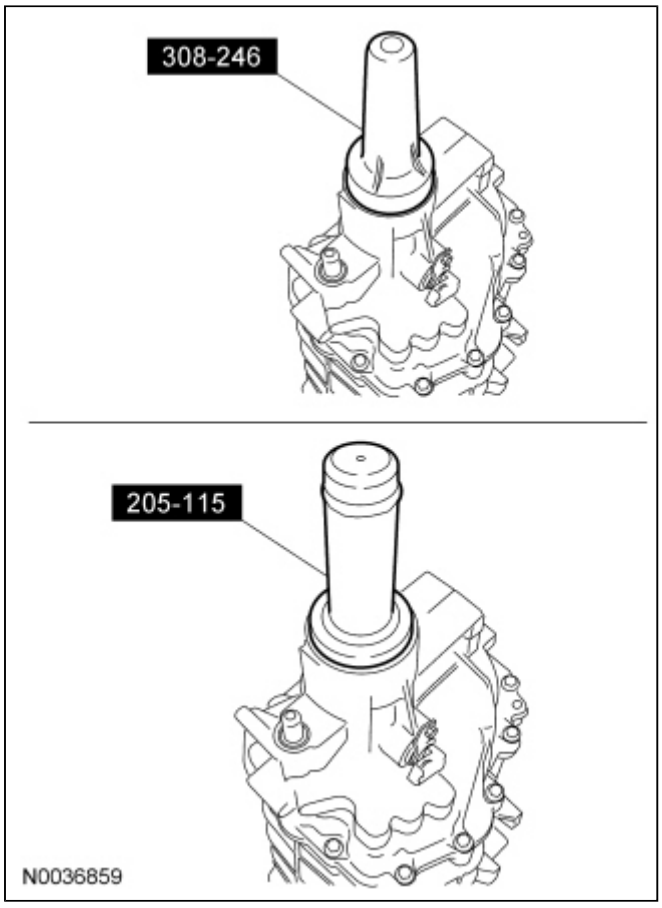


57. Install the new snap ring.

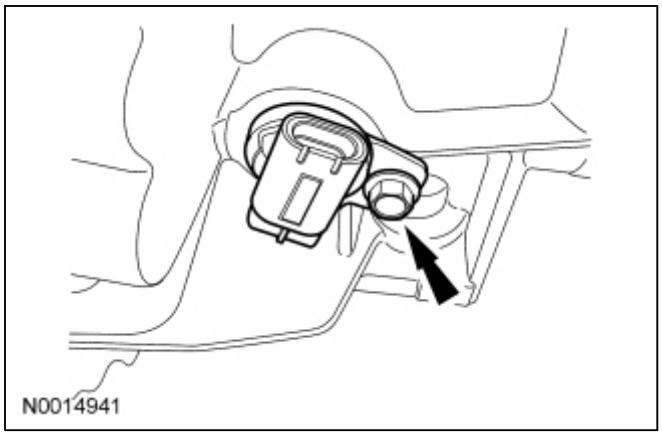


58. **NOTE:** Lubricate the seal with transmission fluid.

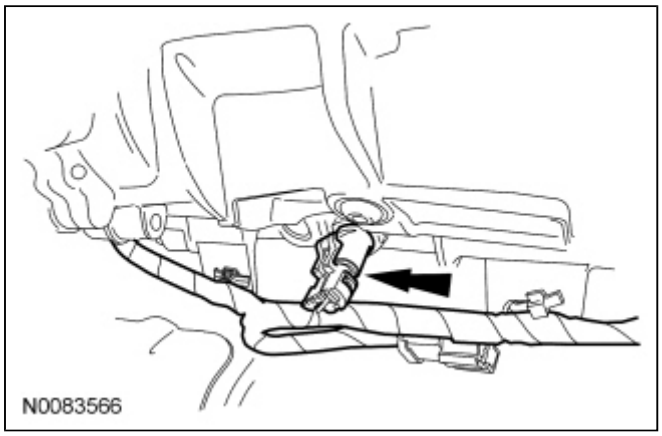
    Use the Output Shaft Oil Seal Installer to position the oil seal on the extension housing and the Drive Pinion Oil Seal Installer to seat the seal.



59. Install the OSS sensor.
    - Tighten to 10 Nm (89 lb-in).



60. Install the reversing lamp switch.
    - Tighten to 27 Nm (20 lb-ft).



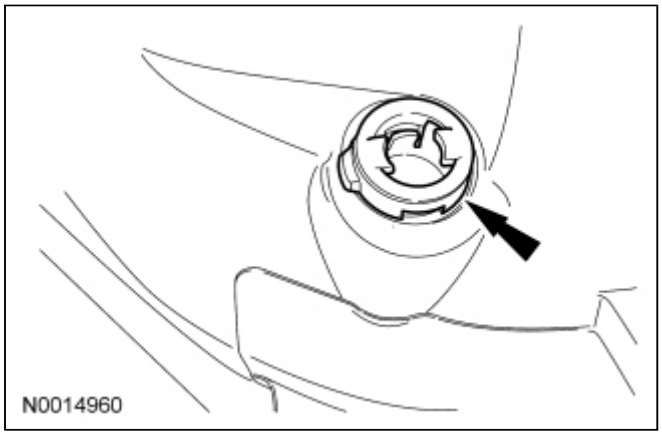
61. Position the output flange onto the output shaft. Install the thrust washer and the output flange nut and tighten until the output flange is fully seated onto the output shaft.

62. Remove the output flange nut and thrust washer.

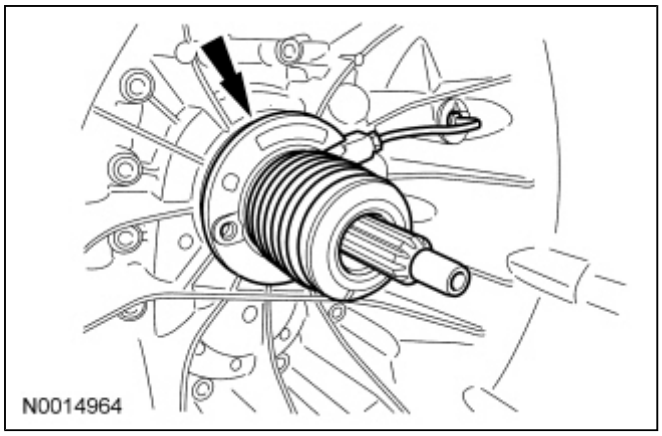
63. Install a new output flange seal. Carefully push it through until it is fully seated against the output flange pocket.

64. Install the output flange washer and the output flange nut.
    - Tighten to 142 Nm (105 lb-ft).

65. Install a new plastic retainer.



66. Install the clutch slave cylinder. For additional information, refer to Section 308-02 .



67. Install the clutch slave cylinder connector and engage the clip.

68. Fill the transmission with transmission fluid to the specified level.
    - Transmission capacity is 3.0L (6.3 pt).

69. Apply threadlock and sealer to the fill plug threads and install the fill plug.
    - Tighten to 25 Nm (18 lb-ft).