

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

2008 TRANSMISSIONS

Manual Transaxle/Transmission - T5OD - Mustang

SPECIFICATIONS

Material

Item	Specification	Fill Capacity
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	2.6L (2.8 qt)
Multi-Purpose Grease XG-4 and/or XL-5	ESB-M1C93-B	-
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)	ESA-M1C75-B	-
Threadlock and Sealer TA-25	WSK-M2G351-A5	-
Thread Sealant with PTFE TA-24	WSK-M2G350-A2	-

GENERAL SPECIFICATIONS

Item	Specification
End Play	
Countershaft cluster gear end play	0.013 mm (0.0005 in) - 0.102 mm (0.0040 in)
Output shaft end play	0.03 mm (0.0010 in) - 0.230 mm (0.0090 in)
Synchronizer	
Synchronizer blocking ring-to-conical face runout	0.5 mm (0.02 in)
Transmission	
Physical weight	42 kg (93 lb)

TORQUE SPECIFICATIONS

Description	Nm	lb-ft	lb-in
Case cover bolt	12	-	106
Clutch housing bolt	63	46	-
Clutch housing cover bolt	31	23	-
Clutch slave cylinder bolt	9	-	80
Countershaft rear bearing retainer bolt	21	15	-
Crossmember bolt	62	46	-
Crossmember transmission bolt	70	52	-
Drain plug	18	-	159

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

Driveshaft bolt	103	76	-
Exhaust coupler	54	40	-
Extension cover bolt	19	-	168
Extension housing bolt	54	40	-
Filler plug	18	-	159
Gearshift underbody nut	11	-	97
Input shaft bearing retainer bolt	21	15	-
Output flange nut	142	105	-
Output Shaft Speed (OSS) sensor bolt	10	-	89
Over center spring bolt	35	26	-
Reversing lamp switch	37	27	-
Shift lever reverse pin	40	30	-
Starter bolt	25	18	-
Transmission bolt	45	33	-
Transmission mount nut	115	85	-
Transmission shift linkage bolt	40	30	-

DESCRIPTION AND OPERATION

MANUAL TRANSMISSION

The T5OD 5-speed transmission:

- fifth speed gear functions as an overdrive gear.
- forward gears are synchronized and helical cut.
- shift interlock system prevents the engagement of more than one gear.
- has an aluminum main case, extension housing and bellhousing.
- has an input shaft, output shaft and countershaft.
- reverse idler gear is used to produce a reverse rotation of the output shaft.

The transmission function is to move the vehicle from a rest position to motion. This is done by transferring the engine torque to the vehicle rear wheels. The transmission uses gears to adapt the torque to the demands of load and road conditions. It matches engine power to vehicle needs.

This power is delivered from the engine flywheel, to the transmission. The power is transmitted through a driver-operated clutch, which allows for engagement and disengagement of the engine to the transmission.

The transmission input shaft receives the power when the clutch is engaged. It is transferred through the input shaft to the drive gear. Torque is transferred to the countershaft drive gear and is delivered along the countershaft to all the countershaft gears. Torque is then transferred to the engaged mainshaft gear. The transmission then uses a system of mainshaft gears to change the speed and torque relationship between the engine crankshaft and the transmission output shaft.

Transmission Identification

The transmission identification tag is located under the lower left bolt that retains the extension housing to the case.

The T5OD transmission is available for the Mustang 4.0L SOHC.

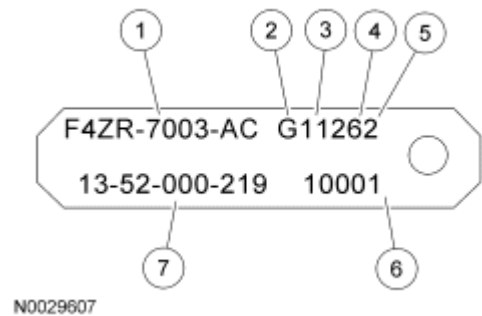


Fig. 1: Transmission Identification Tag
Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	-	Transmission assembly number
2	-	Build date code - month
3	-	Build date code - day
4	-	Build date code - year
5	-	Shift number
6	-	Serial number
7	-	Identification number (Located on the extension housing bolt on the LH side of the transmission)

DIAGNOSTIC TESTS

MANUAL TRANSMISSION

Refer to MANUAL TRANSAXLE/TRANSMISSION AND CLUTCH - GENERAL INFORMATION article.

GENERAL PROCEDURES

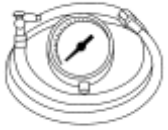
TRANSMISSION DRAINING AND FILLING

Special Tools

Illustration	Tool Name	Tool Number

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang



ST1565-A

Oil Suction Gun

303-D104 (D94T-9000-A) or equivalent

Material

Item	Specification
MERCON® V Automatic Transmission Fluid XT-5-QM (or XT-5-QMC) (US); CXT-5-LM12 (Canada)	MERCON® V
Thread Sealant with PTFE TA-24	WSK-M2G350-A2

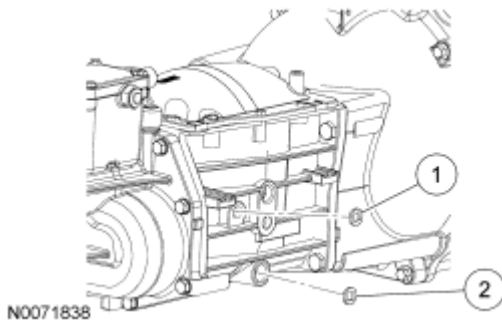


Fig. 2: Exploded View Of Transmission Draining & Filling
Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	7A010	Filler plug
2	7A010	Drain plug

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING AND LIFTING** article.

NOTE: Drain the transmission while the transmission fluid is warm.

NOTE: Position a drain pan under the transmission.

2. Remove the drain plug and drain the fluid.

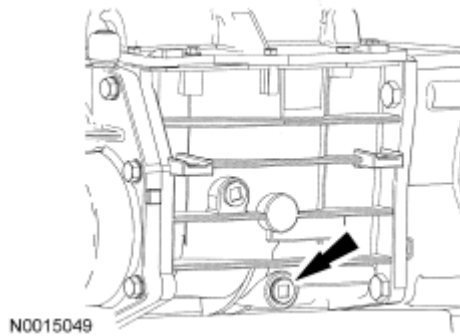


Fig. 3: Locating Drain Plug
Courtesy of FORD MOTOR CO.

3. Clean the drain plug. Apply thread sealant and reinstall.
 - Tighten to 18 Nm (159 lb-in).

NOTE: Prior to removal, clean the area around the filler plug.

4. Remove the filler plug.

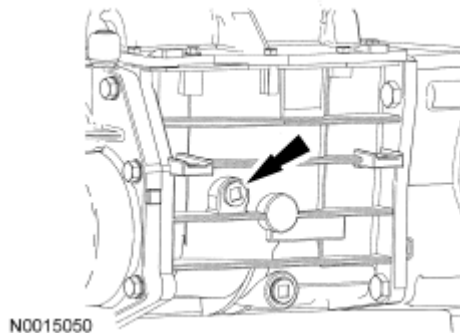
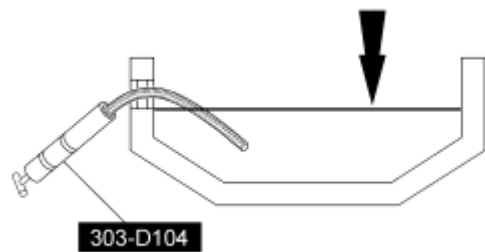


Fig. 4: Locating Fill Plug
Courtesy of FORD MOTOR CO.

NOTE: Do not overfill the transmission. This will cause transmission fluid to be forced out of the case.

5. Using an Oil Suction Gun, fill the transmission with the recommended fluid.
 - Transmission capacity is 2.6L (2.8 qt).



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Fig. 5: Filling Transfer Case Using Special Tool
Courtesy of FORD MOTOR CO.

6. Clean the filler plug. Apply thread sealant and reinstall.
 - Tighten to 18 Nm (159 lb-in).

REMOVAL

TRANSMISSION

NOTE: Do not separate the transmission from the clutch housing. Remove the transmission and clutch housing as an assembly.

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING AND LIFTING** article.
2. Disconnect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** article.

NOTE: Index-mark the driveshaft to the output shaft flange.

3. Remove the 4 driveshaft bolts and separate the driveshaft from the output flange. Position the driveshaft aside.
 - Using mechanic's wire, support the driveshaft.



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Fig. 6: Locating Driveshaft Bolts

Courtesy of FORD MOTOR CO.

4. Remove the shift linkage bolt and the shift linkage nut. Disconnect the shift linkage from the transmission.

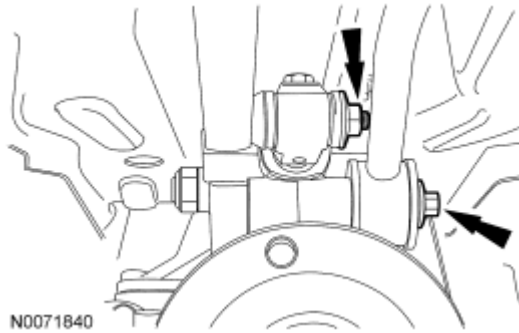


Fig. 7: Locating Shift Linkage Bolt & Shift Linkage Nut
Courtesy of FORD MOTOR CO.

5. Separate the wiring harness from the transmission. Disconnect the following:
 - Catalyst monitor sensor electrical connector
 - Reverse lamp switch electrical connector
 - Wiring harness clips
 - Output Shaft Speed (OSS) sensor electrical connector

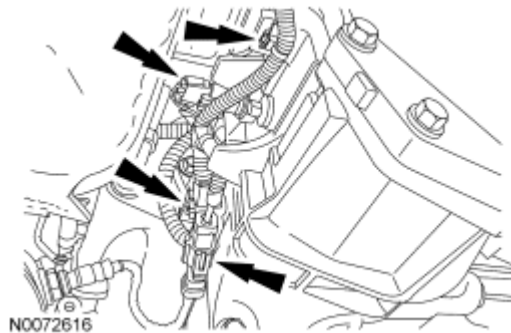


Fig. 8: Locating Catalyst Monitor Sensor Electrical Connector
Courtesy of FORD MOTOR CO.

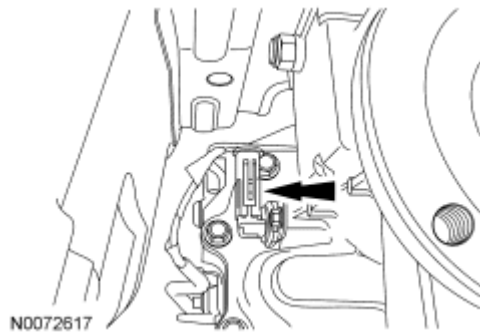


Fig. 9: Locating Output Shaft Speed (OSS) Sensor Electrical Connector
Courtesy of FORD MOTOR CO.

6. Remove the 2 starter motor bolts and the starter motor. Position the starter motor aside.
 - Using mechanic's wire, support the starter motor.

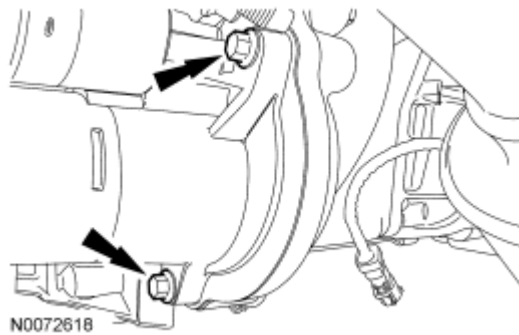


Fig. 10: Locating Starter Motor Bolts
Courtesy of FORD MOTOR CO.

7. Using a suitable transmission jack, support the transmission.
8. Remove the 4 crossmember bolts and the transmission mount bolt. Move the crossmember downward to slide the exhaust isolators from the brackets. Remove the crossmember.

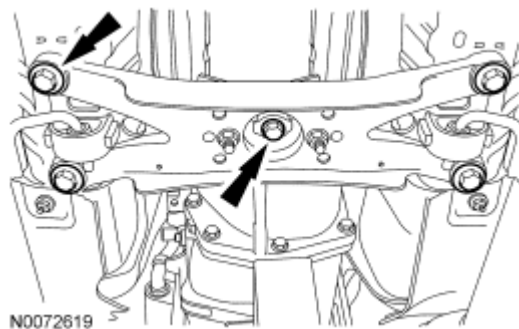


Fig. 11: Locating Crossmember Bolts & Transmission Mount Bolt
Courtesy of FORD MOTOR CO.

9. Release the clutch hydraulic tube clip and separate the connector from the clutch slave cylinder.

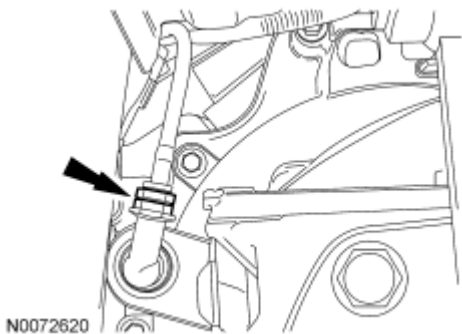


Fig. 12: Locating Clutch Hydraulic Tube Clip
Courtesy of FORD MOTOR CO.

10. Loosen the exhaust coupler and disconnect the intermediate pipe from the catalytic converter. Discard the exhaust coupler.

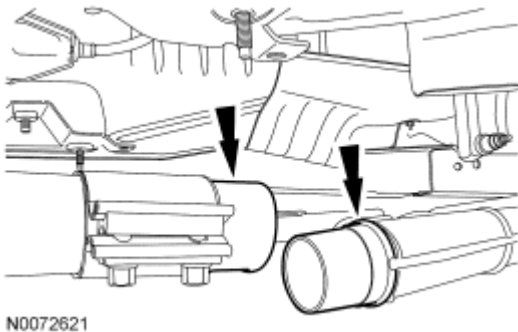


Fig. 13: Locating Exhaust Coupler
Courtesy of FORD MOTOR CO.

11. Remove the 8 transmission-to-engine bolts and the separator plate bolt.
12. Pull the transmission rearward until the input shaft is clear of the pressure plate, then lower the transmission from the vehicle.

DISASSEMBLY

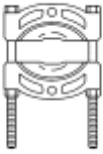
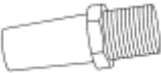
TRANSMISSION

Special Tools

Illustration	Tool Name	Tool Number
 ST1186-A	Holding Fixture, Transmission	307-003 (T57L-500-B)

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

 ST1368-A	Puller, Bearing	205-D064 (D84L-1123-A) or equivalent
 ST2538-A	Remover, Front Wheel Hub	205-D070 (D93P-1175-B) or equivalent
 ST1633-A	Remover/Installer, Front Wheel Hub	204-069 (T81P-1104-C)
 ST2581-A	Staking Tool, Lock nut	308-056 (T77J-7025-F)

1. Remove the clutch slave cylinder and the retaining clip. Discard the retaining clip.

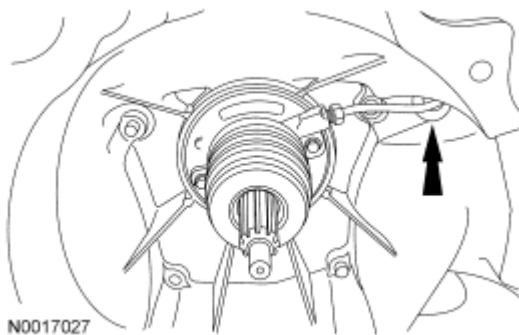


Fig. 14: Locating Clutch Release Slave Cylinder
Courtesy of FORD MOTOR CO.

2. Remove the 4 clutch housing bolts.
 - Separate the clutch housing from the transmission.

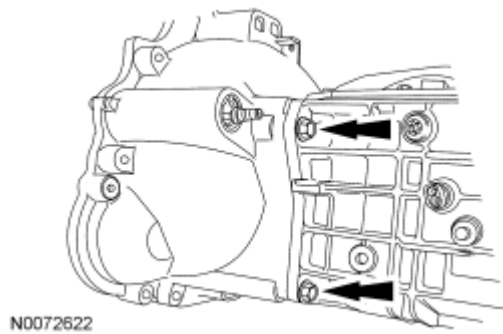


Fig. 15: Locating Clutch Housing Bolts
Courtesy of FORD MOTOR CO.

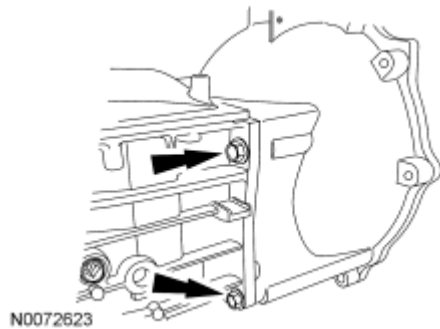


Fig. 16: Locating Clutch Housing Bolts
Courtesy of FORD MOTOR CO.

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

NOTE: Position the gearshift lever in NEUTRAL.

4. Attach the transmission to the Transmission Holding Fixture.

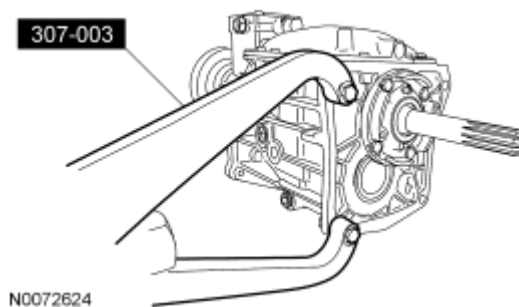


Fig. 17: Identifying Special Tool 307-003
Courtesy of FORD MOTOR CO.

5. Remove the drain plug and drain the transmission fluid.

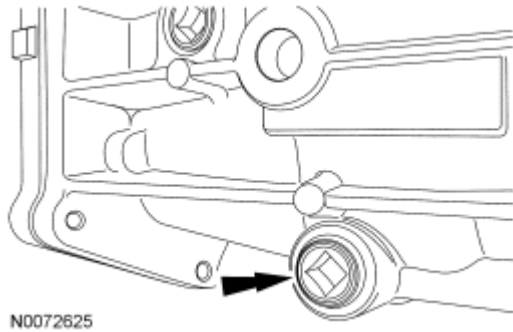


Fig. 18: Locating Drain Plug
Courtesy of FORD MOTOR CO.

6. Remove the output shaft flange nut. Using the Front Wheel Hub Remover, remove the output shaft flange, the washer and the seal. Discard the seal.

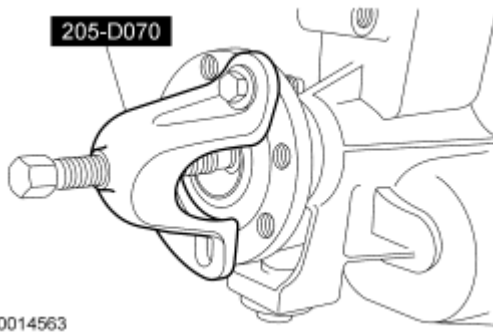


Fig. 19: Locating Output Shaft Flange
Courtesy of FORD MOTOR CO.

7. Remove the Output Shaft Speed (OSS) sensor.

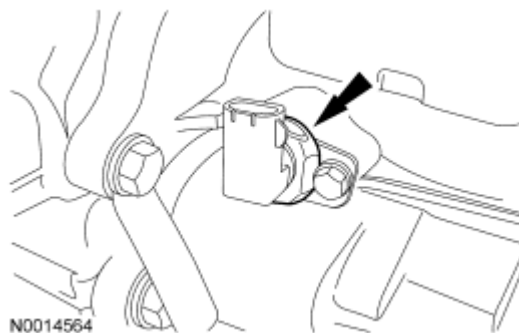


Fig. 20: Locating Output Shaft Speed Sensor
Courtesy of FORD MOTOR CO.

8. Remove the 4 bolts and pry the shift cover plate off.

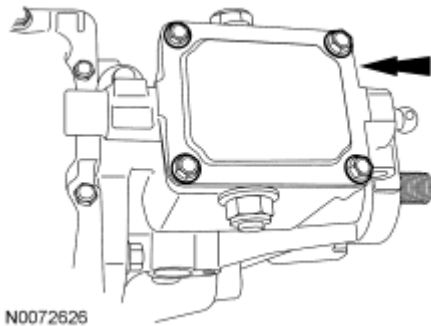


Fig. 21: Locating Shift Cover Plate Bolts
Courtesy of FORD MOTOR CO.

NOTE: Do not attempt to remove the gearshift offset lever with the extension housing bolted in place. A lug, located on the bottom of the gearshift offset lever, meshes with the detent plate preventing enough rearward movement of the gearshift offset lever to allow removal.

9. Using a suitable punch, remove the roll pin and discard.

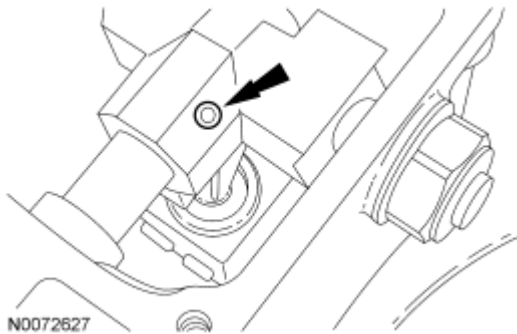


Fig. 22: Installing New Gearshift Lever Roll Pin
Courtesy of FORD MOTOR CO.

10. Remove the 2 shift detents.

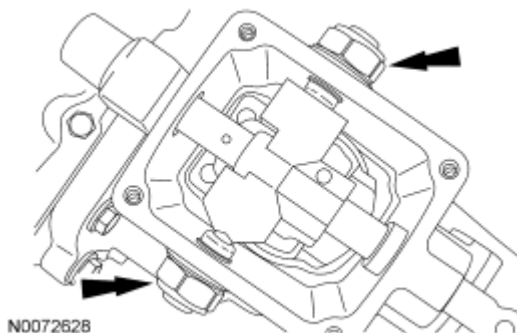


Fig. 23: Locating Shift Detents
Courtesy of FORD MOTOR CO.

11. Move the gearshift shaft rearward, then remove the shift lever. Remove the gearshift shaft.

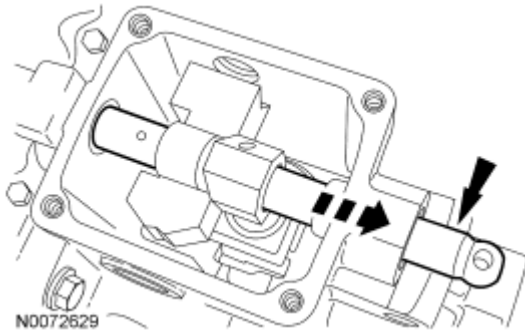


Fig. 24: Moving Gearshift Shaft Rearward, Then Removing Shift Lever
Courtesy of FORD MOTOR CO.

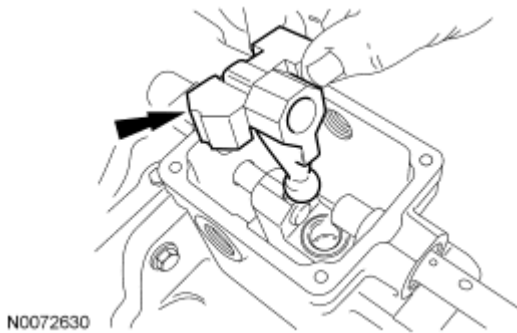


Fig. 25: Locating Shift Lever & Gearshift Shaft
Courtesy of FORD MOTOR CO.

12. Using a suitable punch, remove the gearshift offset lever roll pin and discard.

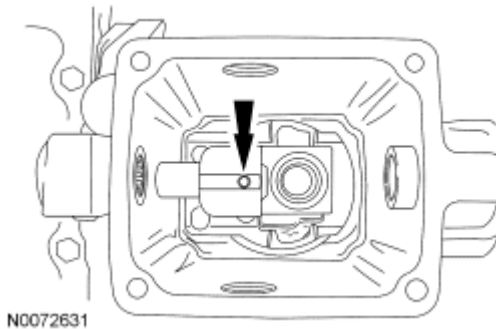
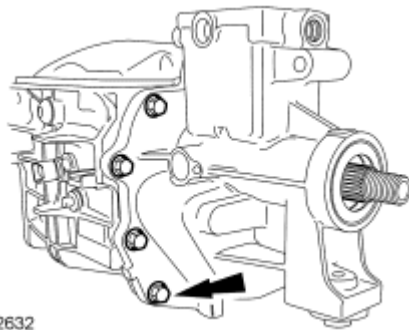


Fig. 26: Locating Gearshift Offset Lever Roll Pin
Courtesy of FORD MOTOR CO.

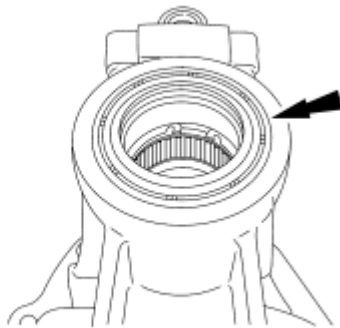
13. Remove the 7 extension housing bolts and the identification tag.
 - Carefully pry the extension housing to break the gasket seal.



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Fig. 27: Locating Identification Tag & Extension Housing Bolts
Courtesy of FORD MOTOR CO.

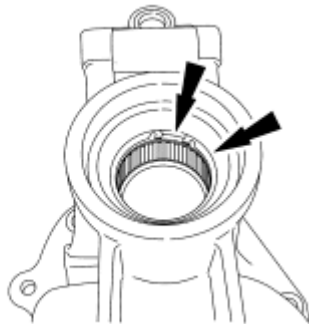
14. Remove the extension housing and the gearshift offset lever as an assembly.
15. Remove the gearshift offset lever and the split pin.
16. Using a hammer and a drift, remove the output shaft seal from the inside. Discard the seal.



N0014594

Fig. 28: Locating Output Shaft Seal
Courtesy of FORD MOTOR CO.

17. Remove and discard the snap ring, then using a hammer and a drift, remove the output shaft bearing.



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Fig. 29: Locating Output Shaft Bearing
Courtesy of FORD MOTOR CO.

18. Remove the small output shaft spacer.

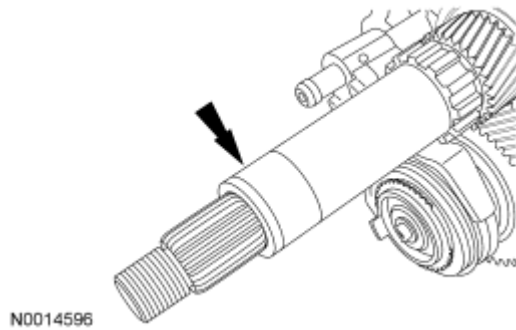


Fig. 30: Locating Small Output Shaft Spacer
Courtesy of FORD MOTOR CO.

19. Remove the check ball.

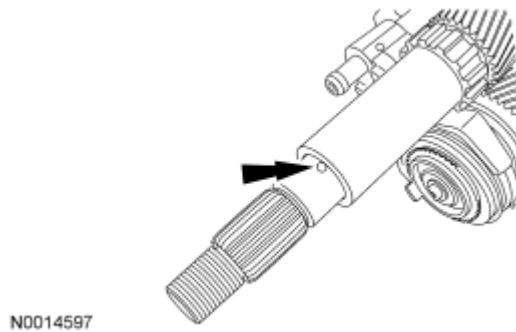


Fig. 31: Locating Check Ball
Courtesy of FORD MOTOR CO.

20. Remove the large output shaft spacer.

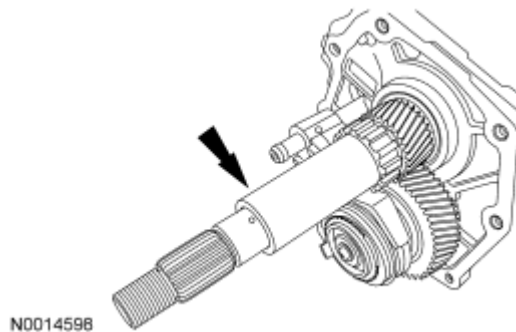


Fig. 32: Locating Large Output Shaft Spacer
Courtesy of FORD MOTOR CO.

NOTE: Support the reverse gear shift rail with a block of wood to prevent damaging the shift rail.

21. Remove the roll pin and discard.

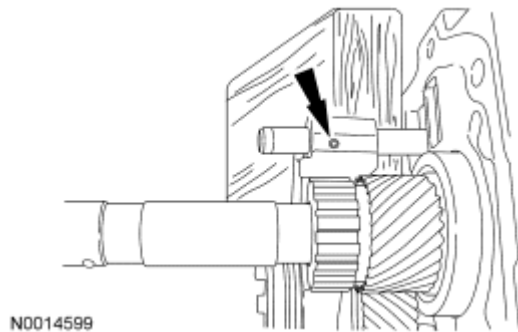


Fig. 33: Locating Roll Pin
Courtesy of FORD MOTOR CO.

22. Remove the 10 case cover bolts. Carefully pry the case cover to break the gasket seal. Lift the case cover and slide it toward the filler plug side of the case to clear the reverse gearshift lever.

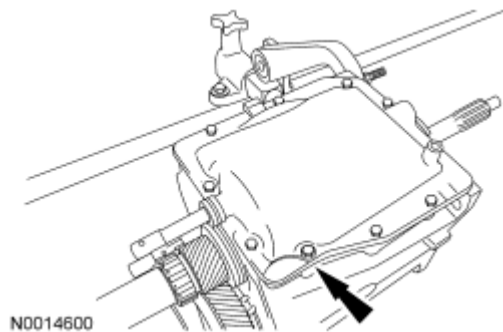


Fig. 34: Locating Case Cover And Bolts
Courtesy of FORD MOTOR CO.

23. Rotate the transmission with the output shaft facing upward.
24. Remove the 5th speed synchronizer snap ring, the thrust washer, the reverse brake ring and the synchronizer blocking ring.
25. Remove the 5th speed cluster gear, the synchronizer blocking ring, the synchronizer assembly and the 5th gear shifter fork as an assembly.

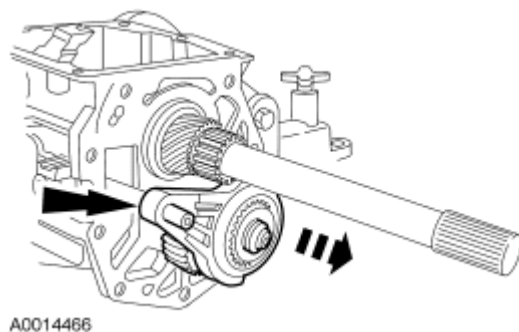


Fig. 35: Removing 5th Speed Cluster Gear, Synchronizer Blocking Ring, Synchronizer Assembly And 5th Gear Shifter Fork

Courtesy of FORD MOTOR CO.

26. Rotate the reverse gear shift rail clockwise to disengage the ball stud from the reverse gearshift lever. Pull the reverse gear shift rail rearward slightly. Rotate the reverse gear shift rail counterclockwise to align the ball stud with the slot in the case and remove the reverse gear shift rail.
27. Loosen the rear bearing cup in the case. Pull upward on the mainshaft and remove the 5th gear.
28. Rotate the transmission with the input shaft facing upward.

NOTE: The input shaft bearing retainer is notched. Carefully pry the retainer to break the gasket seal.

29. Remove the 4 input shaft bearing retainer bolts and the input shaft bearing retainer.

NOTE: Make sure not to drop the 15 roller bearings, the input shaft bearing spacer, the thrust bearing or thrust washer from the rear of the input shaft when removing.

NOTE: Rotate the input shaft until the flat on the 4th gear clutching teeth align with the countershaft cluster gear.

30. Remove the input shaft.
31. Remove the 4th gear synchronizer ring, the thrust washer, the thrust bearing, the input shaft bearing spacer and the 15 roller bearings.

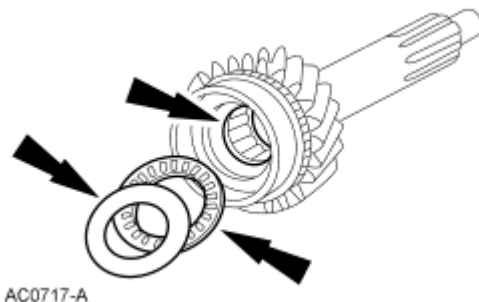


Fig. 36: Identifying 4th Gear Synchronizer Ring, Thrust Washer, Thrust Bearing & Input Shaft Bearing Spacer

Courtesy of FORD MOTOR CO.

NOTE: If the output shaft rear bearing cup sticks, it is misaligned in the case bore. To free the output shaft rear bearing cup, work the output shaft assembly back and forth in the case.

32. Remove the output shaft rear bearing cup.

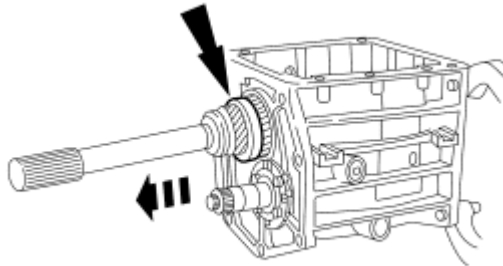


Fig. 37: Removing Output Shaft Rear Bearing Cup
Courtesy of FORD MOTOR CO.

33. Remove the output shaft assembly.
34. Using the Lock nut Staking Tool, flatten the tabs on the countershaft rear bearing retainer.

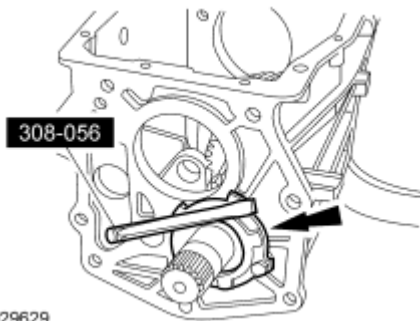


Fig. 38: Locating Tabs On Countershaft Rear Bearing Retainer
Courtesy of FORD MOTOR CO.

35. Remove the 4 bolts, the countershaft rear bearing retainer and the shim.

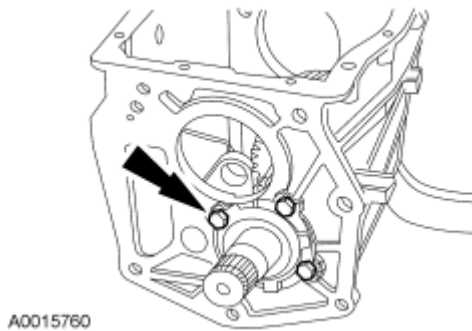


Fig. 39: Locating Countershaft Rear Bearing Retainer And Shim
Courtesy of FORD MOTOR CO.

NOTE: If the bearing race sticks in the case, it is misaligned in the case bore. To free the race, work the countershaft cluster gear back and forth.

36. Remove the bearing race.

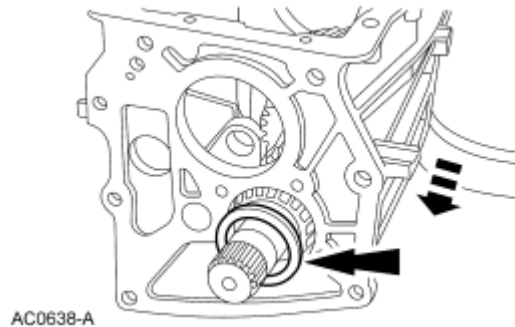


Fig. 40: Locating Bearing Race
Courtesy of FORD MOTOR CO.

37. Using the Front Wheel Hub Remover/Installer and Bearing Puller, remove the rear countershaft bearing assembly.

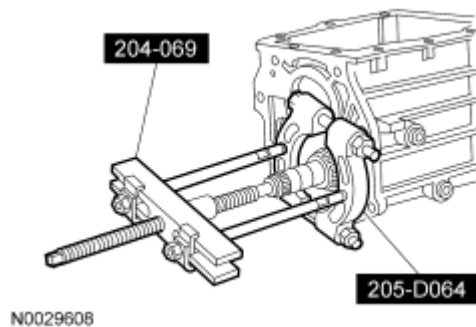


Fig. 41: Identifying Special Tool 204-069 And 205-D064
Courtesy of FORD MOTOR CO.

38. Remove the reverse gearshift lever retaining clip.

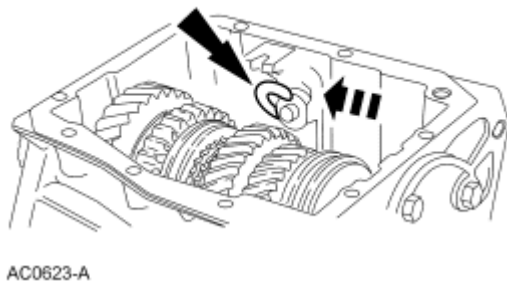


Fig. 42: Locating Reverse Gearshift Lever Retaining Clip
Courtesy of FORD MOTOR CO.

39. Using a Torx bit driver, remove the shift lever reverse pin.

40. Remove the reversing lamp switch.

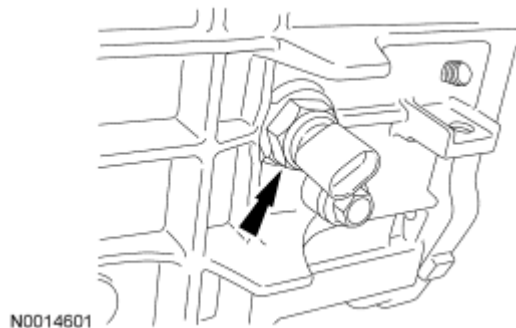


Fig. 43: Locating Reversing Lamp Switch
Courtesy of FORD MOTOR CO.

- NOTE:** Observe the location of the reverse gearshift lever, the reverse shift fork and the reverse positioning spring.
- NOTE:** Observe the rotation action of the reverse positioning spring.
- NOTE:** Hold the reverse gearshift lever and lift it upward as straight up as possible to remove the assembly.

41. Remove the reverse gearshift lever, the reverse shift fork and the reverse positioning spring as an assembly.

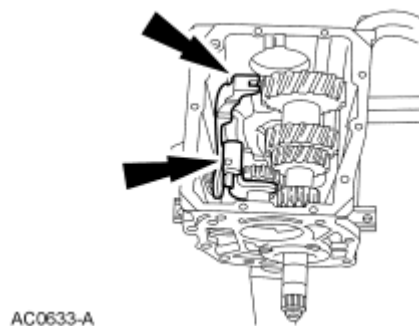
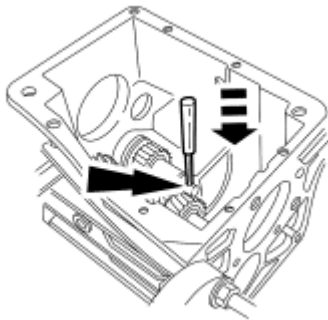


Fig. 44: Locating Reverse Gearshift Lever & Reverse Shift Fork
Courtesy of FORD MOTOR CO.

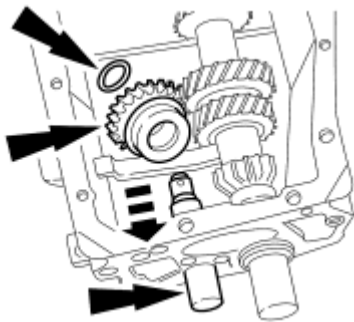
42. Using a suitable punch, remove the roll pin and discard.



AC0634-A

Fig. 45: Removing/Installing Roll Pin Using A Suitable Punch
Courtesy of FORD MOTOR CO.

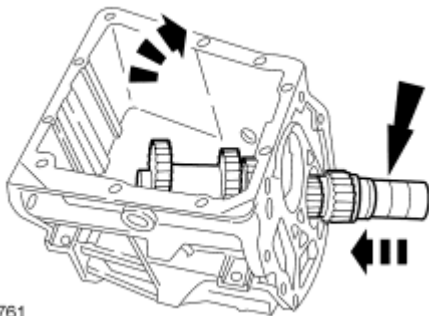
43. Remove the reverse idler gear shaft, the reverse idler gear and bushing and the reverse gear overtravel stop.



A0015758

Fig. 46: Removing Reverse Idler Gear Shaft
Courtesy of FORD MOTOR CO.

44. Move the countershaft cluster gear rearward through the bearing bore. Tilt the assembly upward and remove it from the case.



A0015761

Fig. 47: Removing Countershaft Cluster Gear
Courtesy of FORD MOTOR CO.

45. Inspect the rail bearing for wear or damage. Remove the bearing as necessary. Using a suitable puller, remove the rail bearing from the transmission. Discard the rail bearing.

46. Inspect the main shift rail bearings for wear or damage. Remove the bearings as necessary. Using a suitable puller, remove the main shift rail bearings from the extension housing. Discard the bearings.

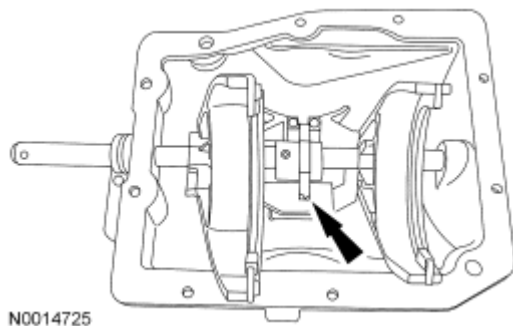
DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES

SELECTOR PLATE

DISASSEMBLY

NOTE: Mark the position of each gear shifter fork.

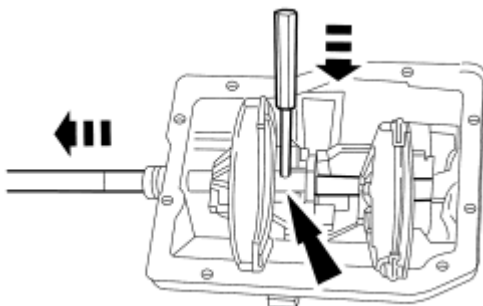
1. Place the gear shift plates and the gear selector interlock sleeve in the NEUTRAL position to center the gear shift plates and the selector body.



N0014725

Fig. 48: Locating Gear Shift Plates And Gear Selector Interlock Sleeve
Courtesy of FORD MOTOR CO.

2. Rotate the main shift control shaft counterclockwise and pull it rearward to access the pin. Remove the roll pin and discard.



AC0642-A

Fig. 49: Rotating Main Shift Control Shaft Counterclockwise & Pulling Rearward To Access Pin
Courtesy of FORD MOTOR CO.

3. Using a twisting motion, remove the main shift control shaft.

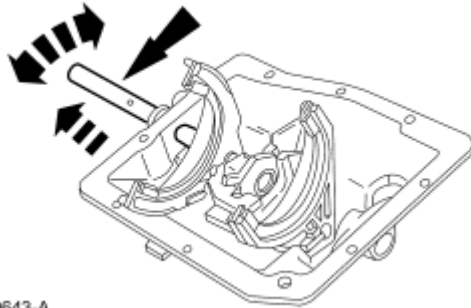


Fig. 50: Removing Main Shift Control Shaft Using A Twisting Motion
Courtesy of FORD MOTOR CO.

4. Remove the gear shifter forks, the gear shift plates, the pin, the gear selector interlock sleeve and the selector body.

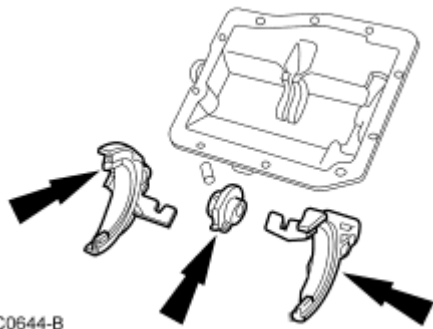


Fig. 51: Locating Gear Shifter Forks, Gear Shift Plates, Pin, Gear Selector Interlock Sleeve & Selector Body
Courtesy of FORD MOTOR CO.

5. Remove and discard the O-ring.

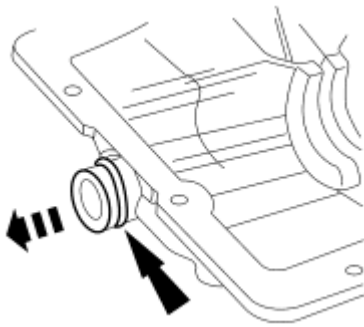


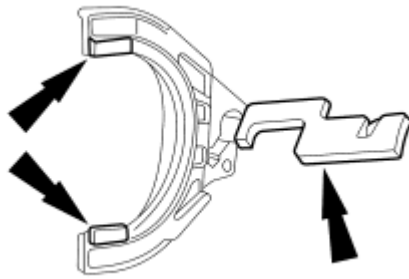
Fig. 52: Removing & Discarding O-Ring
Courtesy of FORD MOTOR CO.

6. Inspect the main shift control shaft bushings for wear or damage. Remove the bushings as necessary. Using a suitable puller, remove the main shift control shaft bushings from the transmission case cover.

Discard the bushings.

NOTE: **Note the orientation of the gear shift plate for assembly reference.**

7. Remove the gear shift plate and the gear shift fork inserts from the shifter forks.

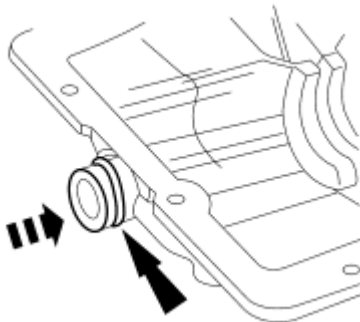


A0015762

Fig. 53: Removing Gear Shift Plate And Gear Shift Fork
Courtesy of FORD MOTOR CO.

ASSEMBLY

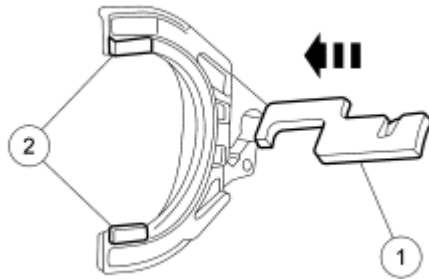
1. If removed, install new main shift control shaft bushings.
2. Install a new O-ring.



AC0546-A

Fig. 54: Installing New O-Ring
Courtesy of FORD MOTOR CO.

3. Assemble the gear shifter forks.
 1. Install the gear shift plate into the gear shifter fork.
 2. Install the gear shift fork inserts.

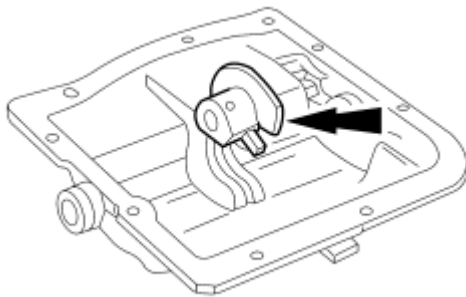


N0029609

Fig. 55: Installing Gear Shift Fork
Courtesy of FORD MOTOR CO.

NOTE: Position the narrow side of the C-shaped gear selector interlock sleeve in the case cover slot. Position the roll pin hole in the selector body toward the rear of the cover.

4. Install the gear selector interlock sleeve and the selector body as an assembly.



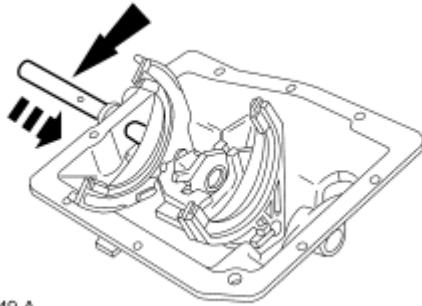
AC0648-A

Fig. 56: Locating Gear Selector Interlock Sleeve & Selector Body
Courtesy of FORD MOTOR CO.

5. Lubricate the main shift control shaft with petroleum jelly.

NOTE: The 1-2 gear shifter fork is the larger shifter fork. The gear shifter fork offset lever must face the cover. Position the gear shift plate attached to the 3-4 gear shifter fork under the gear shift plate attached to the 1-2 gear shifter fork.

6. Position the gear shifter forks and the main shift control shaft in the cover.
 - Slide the shaft through the cover and shift the components until the shaft stops against the cover.



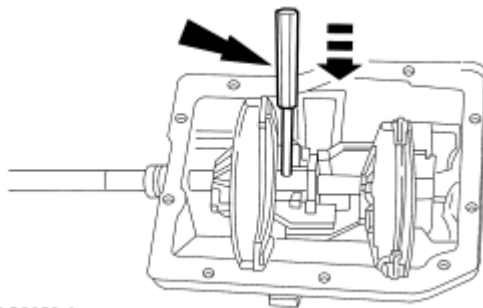
AC0649-A

Fig. 57: Sliding Shaft Through Cover
Courtesy of FORD MOTOR CO.

NOTE: Install the pin slightly below the selector body surface. Failure to countersink the pin may result in interference between the pin and the gear selector interlock sleeve during shifts.

NOTE: The flat on the main shift control shaft must face upward.

7. Install the new roll pin.



AC0650-A

Fig. 58: Installing Pin Slightly Below Selector Body Surface
Courtesy of FORD MOTOR CO.

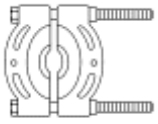
INPUT SHAFT AND BEARING

Special Tools

Illustration	Tool Name	Tool Number
 ST2355-A	Input Shaft Seal Replacer	308-220 (T94P-7025-AH)

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang



ST1895-A

Pinion Bearing Cone Remover

205-D002 (D79L-4621-A) or equivalent

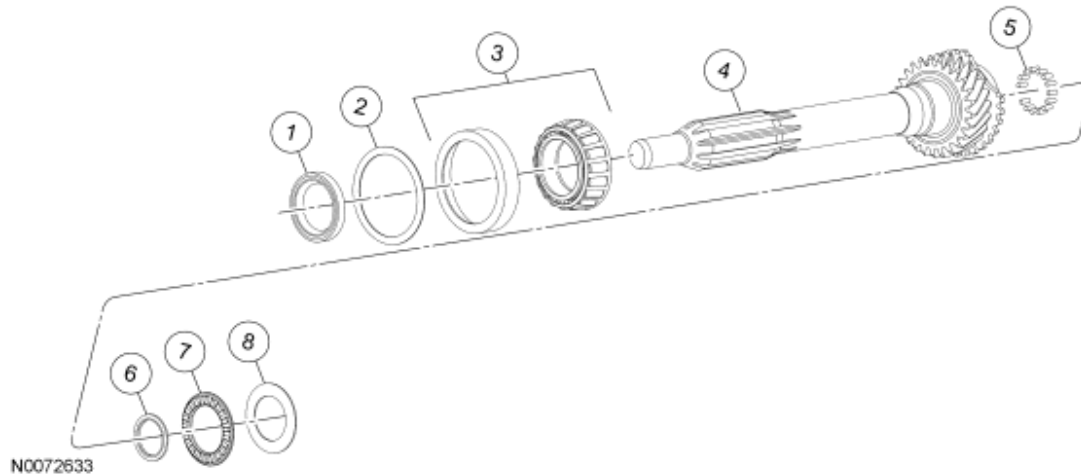


Fig. 59: Exploded View Of Input Shaft & Bearing
Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	7052	Input shaft seal
2	7L172	Shim
3	7025	Input shaft cup and bearing
4	7017	Input shaft
5	7118	Roller bearing (15 required)
6	7L357	Input shaft bearing spacer
7	7D234	Input shaft thrust bearing
8	7D235	Input shaft thrust washer

DISASSEMBLY

1. Using the Pinion Bearing Cone Remover and a press, remove the input shaft bearing.

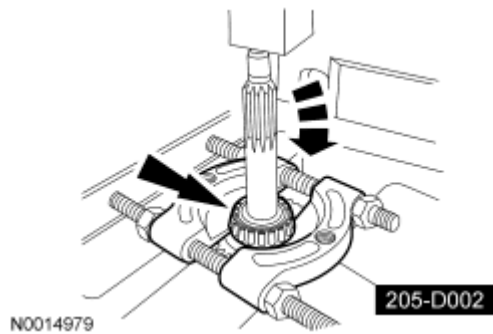


Fig. 60: Removing Input Shaft Bearing
Courtesy of FORD MOTOR CO.

2. Remove the input shaft bearing cup and the end play selective shims.

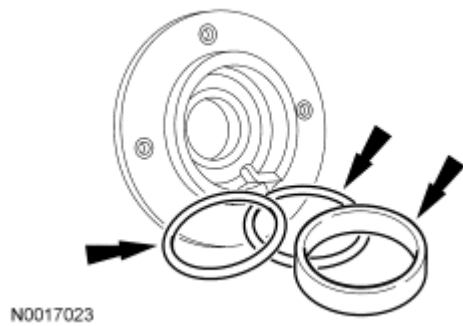


Fig. 61: Locating Input Shaft Bearing Cup
Courtesy of FORD MOTOR CO.

3. Remove and discard the input shaft seal.
4. Inspect the input shaft for damage or wear.
 - Inspect the surface of the input shaft in the area of the bearing race to make sure it is smooth and free of burrs.
 - Inspect the splines for nicks. Install a new input shaft as necessary.

ASSEMBLY

1. Using the Input Shaft Seal Replacer, install a new input shaft seal.

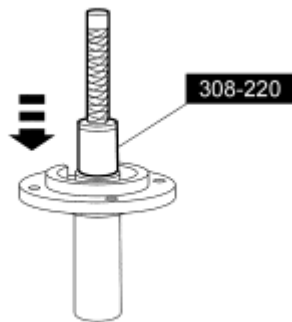


Fig. 62: Installing Input Shaft Seal
Courtesy of FORD MOTOR CO.

NOTE: Do not install the end play selective shims at this time.

2. Install the input shaft bearing cup.

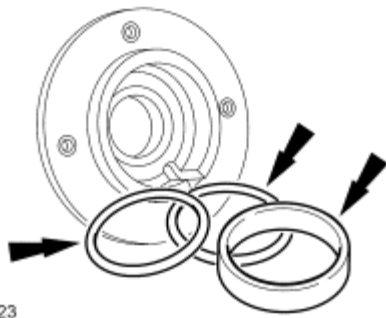


Fig. 63: Locating Input Shaft Bearing Cup
Courtesy of FORD MOTOR CO.

3. Using a press and a capped length of pipe, install the input shaft bearing.

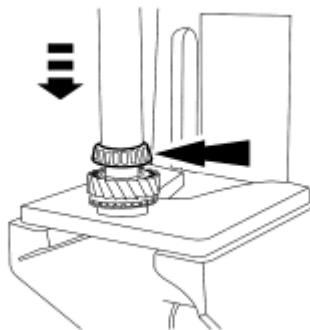
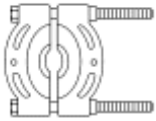
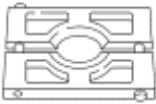


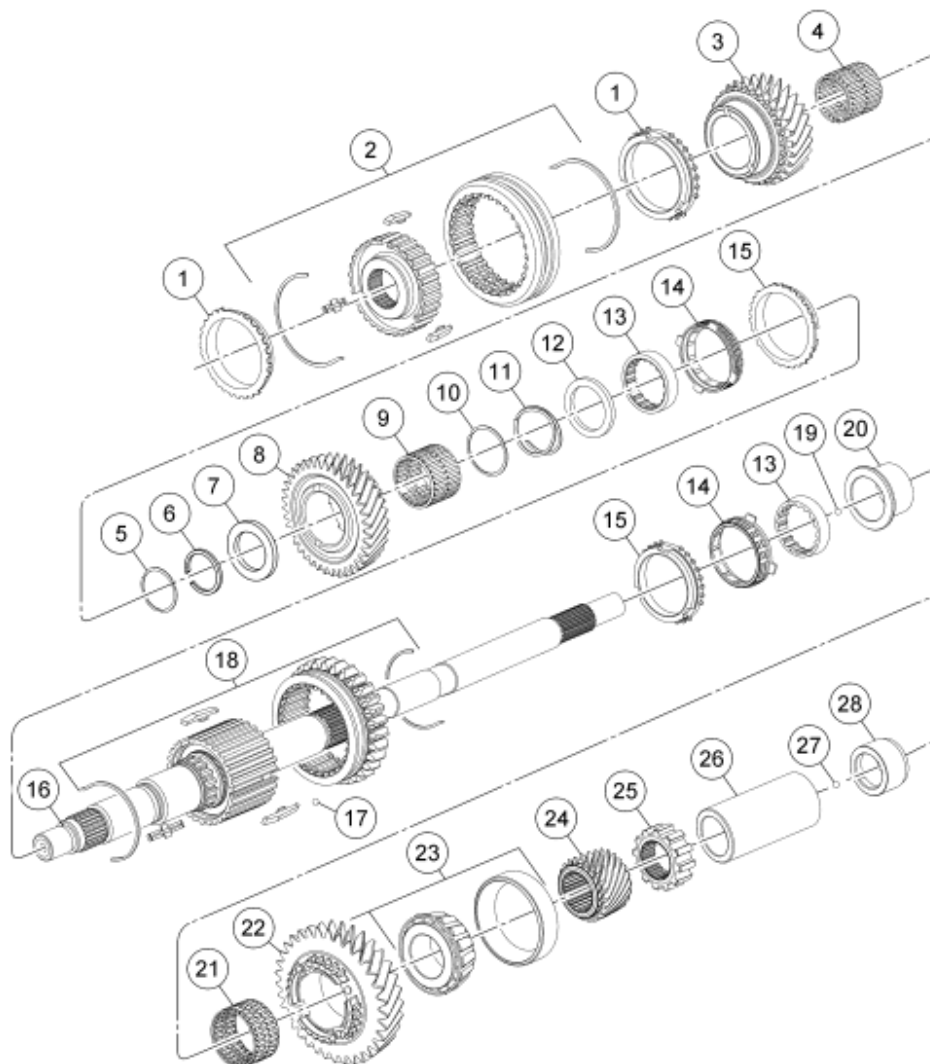
Fig. 64: Installing Input Shaft Bearing Using A Press & A Capped Length Of Pipe
Courtesy of FORD MOTOR CO.

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

Special Tools

Illustration	Tool Name	Tool Number
 ST1895-A	Pinion Bearing Cone Remove	205-D002 (D79L-4621-A) or equivalent
 ST1310-A	Remover, Bearing	205-055 (T71P-4621-B)



N0072634

Fig. 65: Exploded View Of Transmission Internal Components - Output Shaft

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	7107	3rd/4th gear synchronizer blocking rings
2	7124	3rd/4th gear synchronizer assembly
3	7B340	3rd gear
4	7B369	3rd gear needle bearing
5	7B320	3rd gear bearing spacer
6	7064	Snap ring
7	7119	Thrust washer
8	7102	2nd gear
9	7B369	2nd gear needle bearing
10	7B320	2nd gear bearing spacer
11	7160	Main shaft bearing snap ring
12	7117	2nd gear synchronizer thrust washer
13	7175	1st/2nd gear synchronizer inner cones
14	7107	1st/2nd gear synchronizer intermediate cones
15	7107	1st/2nd gear synchronizer blocking rings
16	7061	Main shaft and synchronizer assembly
17	7K218	1st/2nd gear synchronizer check ball
18	7124	1st/2nd gear synchronizer assembly (serviced with 7061)
19	-	1st gear bearing spacer check ball
20	7173	1st gear bearing spacer
21	7127	1st gear needle bearing
22	7100	1st gear
23	7065	Main shaft rear bearing and cup
24	7K316	Main shaft 5th gear
25	7H373	Output Shaft Speed (OSS) sensor ring
26	7A021	Main shaft inner spacer
27	-	Main shaft outer spacer check ball
28	7065	Main shaft outer bearing and race assembly

DISASSEMBLY

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

1. Using the Bearing Remover, press the Output Shaft Speed (OSS) sensor ring from the output shaft.

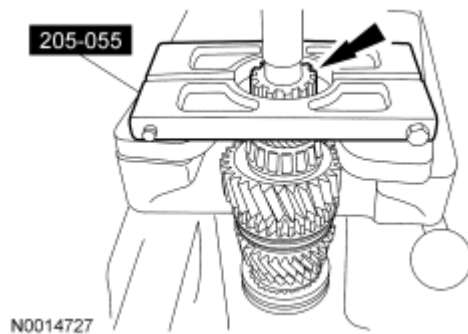


Fig. 66: Locating Output Shaft Speed (OSS) Sensor Ring From Output Shaft
Courtesy of FORD MOTOR CO.

2. Using the Pinion Bearing Cone Remover, press 1st gear, the output shaft rear bearing and the 5th speed driven gear from the output shaft as an assembly.
 - Discard the output shaft rear bearing.
 - Inspect the gears for wear or damage. Install new gears as necessary.

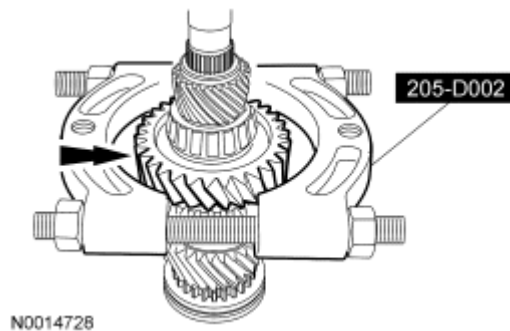


Fig. 67: Identifying Special Tool 205-D002
Courtesy of FORD MOTOR CO.

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

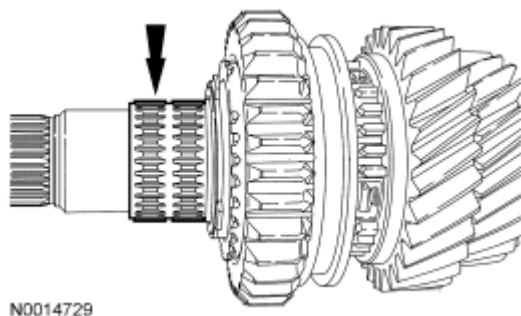


Fig. 68: Locating Needle Bearing
Courtesy of FORD MOTOR CO.

NOTE: The 1st gear bearing spacer fits snugly on the output shaft.

4. Remove the 1st gear bearing spacer.

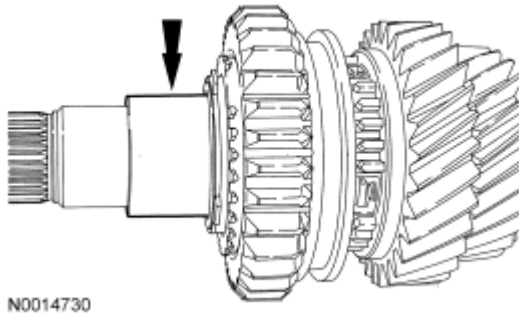


Fig. 69: Locating Gear Bearing Spacer
Courtesy of FORD MOTOR CO.

5. Remove the 1st and 2nd speed synchronizer hub ball.

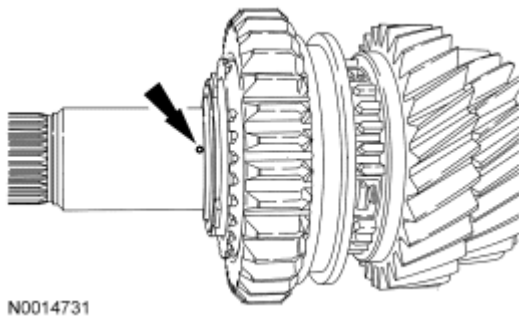


Fig. 70: Locating 1st And 2nd Gear Synchronizer Hub Ball
Courtesy of FORD MOTOR CO.

6. Remove the 1st gear synchronizer inner cone, 1st gear synchronizer outer cone and the 1st gear synchronizer blocking ring.

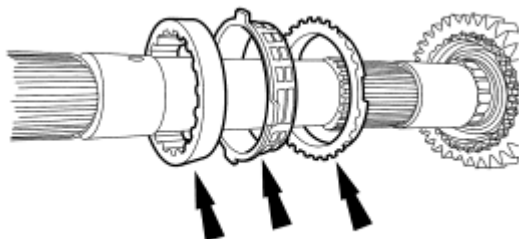
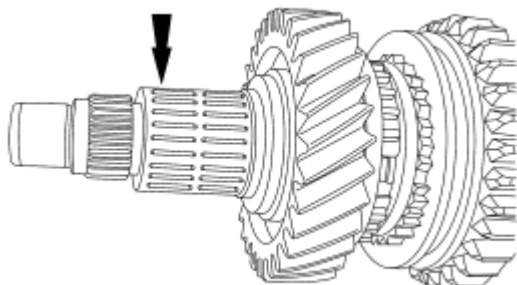


Fig. 71: Locating 1st Gear Synchronizer Inner Cone And 1st Gear Synchronizer Blocking Ring
Courtesy of FORD MOTOR CO.

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

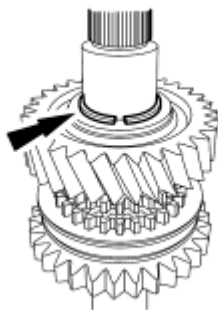
7. Using a suitable tool, press the 3rd and 4th gear synchronizer assembly, the 3rd gear blocking ring and 3rd gear from the output shaft as an assembly.
 - Inspect the gear for wear or damage. Install a new gear as necessary.
8. Disassemble and inspect the 3rd and 4th gear synchronizer assembly. For additional information, refer to **Synchronizers**.
9. Remove 3rd gear needle bearing.
 - Inspect the needle bearing for wear or damage. Install a new bearing as necessary.



N0014734

Fig. 72: Locating 3rd Gear Needle Bearing
Courtesy of FORD MOTOR CO.

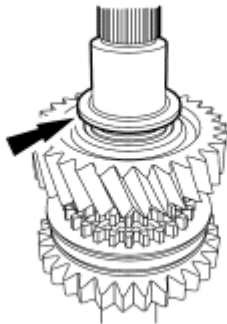
10. Remove the snap ring and discard.



N0014735

Fig. 73: Locating Snap Ring
Courtesy of FORD MOTOR CO.

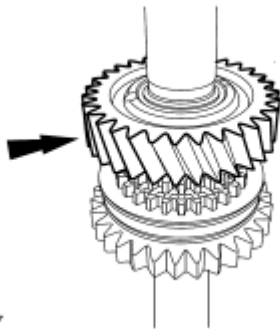
11. Remove the 2nd gear bearing spacer.



N0014736

Fig. 74: Locating 2nd Gear Bearing Spacer
Courtesy of FORD MOTOR CO.

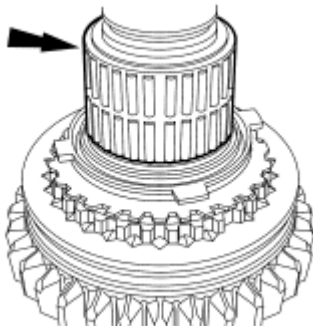
12. Remove 2nd gear.
 - Inspect the gear for wear or damage. Install a new gear as necessary.



N0014737

Fig. 75: Inspecting Gear For Wear Or Damage
Courtesy of FORD MOTOR CO.

13. Remove 2nd gear needle bearing.
 - Inspect the needle bearing for wear or damage. Install a new bearing as necessary.



N0014738

Fig. 76: Locating 2nd Gear Needle Bearing
Courtesy of FORD MOTOR CO.

14. Remove the output shaft bearing snap ring and discard.

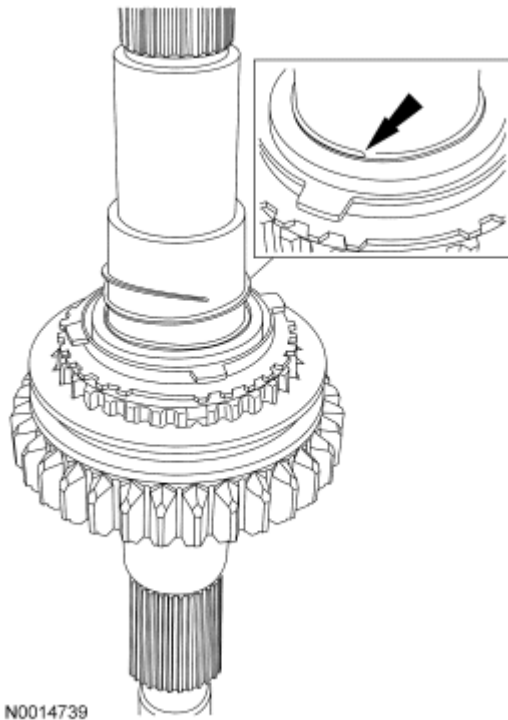


Fig. 77: Locating Output Shaft Bearing Snap Ring
Courtesy of FORD MOTOR CO.

15. Remove the 2nd gear synchronizer thrust washer.

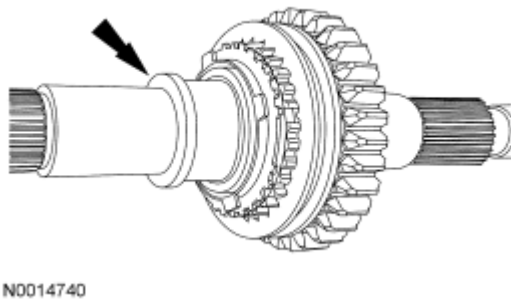


Fig. 78: Locating 2nd Gear Synchronizer Thrust Washer
Courtesy of FORD MOTOR CO.

16. Remove the 2nd gear synchronizer inner cone, the 2nd gear synchronizer outer cone and the 2nd gear synchronizer blocking ring as an assembly.

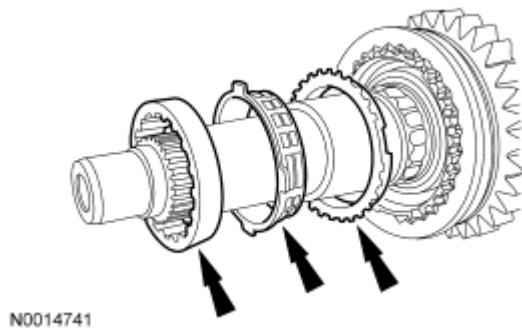


Fig. 79: Locating 2nd Gear Synchronizer Blocking Ring
Courtesy of FORD MOTOR CO.

NOTE: The 1st and 2nd gear synchronizer sliding sleeve, the hub and the output shaft are an assembly. Do not attempt to separate the hub from the output shaft. Only the synchronizer hub insert springs and the synchronizer hub inserts are available separately.

17. Remove the 1st and 2nd gear synchronizer sliding sleeve. Disassemble and inspect the 1st and 2nd gear synchronizer assembly. For additional information, refer to Synchronizers.

ASSEMBLY

1. Lubricate all components with transmission fluid during assembly. Soak the blocking rings in transmission fluid for 10 minutes.
2. Install the 1st and 2nd gear synchronizer hub insert springs and the synchronizer inserts into the synchronizer hub. Install the sliding sleeve onto the hub.

NOTE: Align the slots in the synchronizer blocking ring with the tabs in the 1st and 2nd gear synchronizer.

3. Install the 2nd gear synchronizer blocking ring, the 2nd gear synchronizer outer cone and the 2nd gear synchronizer inner cone.

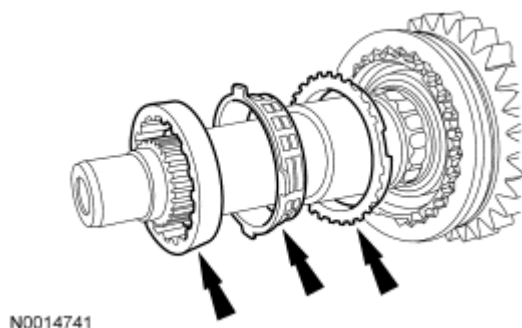
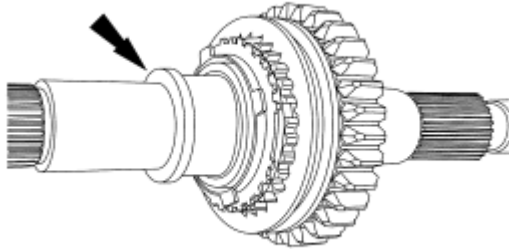


Fig. 80: Locating 2nd Gear Synchronizer Blocking Ring
Courtesy of FORD MOTOR CO.

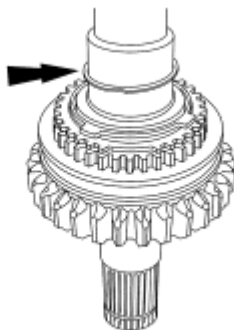
4. Install the 2nd gear synchronizer thrust washer.



N0014740

Fig. 81: Locating 2nd Gear Synchronizer Thrust Washer
Courtesy of FORD MOTOR CO.

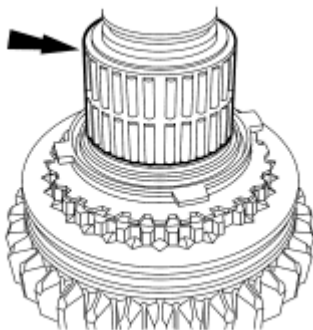
5. Install the new output shaft bearing snap ring.



N0014742

Fig. 82: Locating 2nd Gear Synchronizer And 2nd Gear Synchronizer Outer Ring
Courtesy of FORD MOTOR CO.

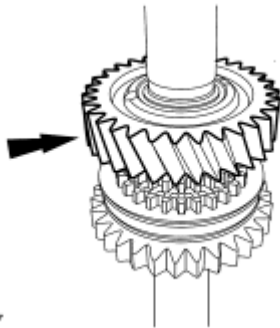
6. Install the 2nd gear needle bearing.



N0014738

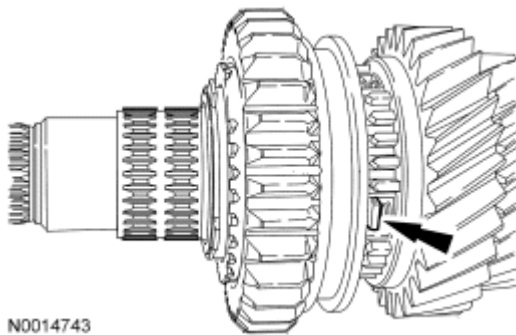
Fig. 83: Locating 2nd Gear Needle Bearing
Courtesy of FORD MOTOR CO.

7. Align the slots on 2nd gear with the tabs on the synchronizer blocking ring. Install 2nd gear.



N0014737

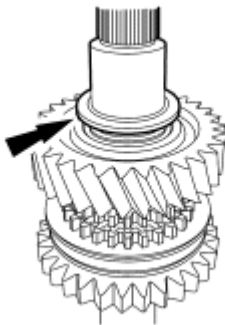
Fig. 84: Inspecting Gear For Wear Or Damage
Courtesy of FORD MOTOR CO.



N0014743

Fig. 85: Aligning Slots On 2nd Gear With Tabs On Synchronizer Blocking Ring
Courtesy of FORD MOTOR CO.

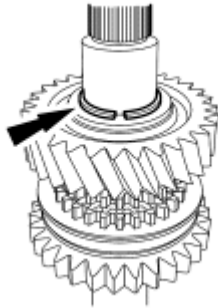
8. Install the 2nd gear bearing spacer.



N0014736

Fig. 86: Locating 2nd Gear Bearing Spacer
Courtesy of FORD MOTOR CO.

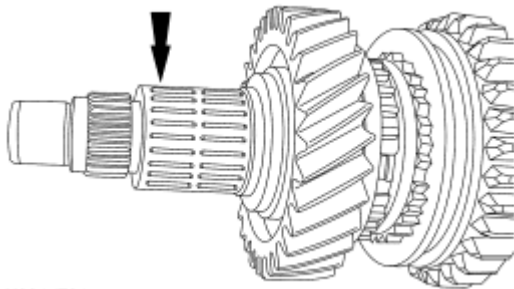
9. Install a new snap ring.



N0014735

Fig. 87: Locating Snap Ring
Courtesy of FORD MOTOR CO.

10. Install 3rd gear needle bearing.

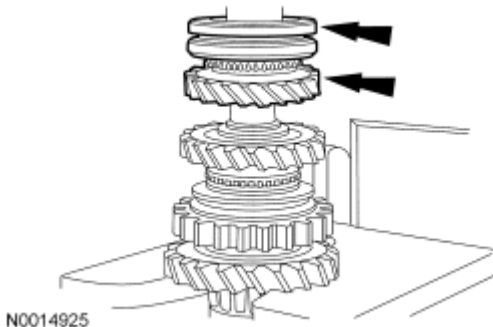


N0014734

Fig. 88: Locating 3rd Gear Needle Bearing
Courtesy of FORD MOTOR CO.

NOTE: Align the slots on 3rd gear with the tabs on the synchronizer blocking ring.

11. Position 3rd gear, the 3rd gear synchronizer blocking ring and the 3rd and 4th gear synchronizer assembly on the output shaft.



N0014925

Fig. 89: Locating Slots On 3rd Gear
Courtesy of FORD MOTOR CO.

NOTE: Before pressing the components together, verify that the synchronizer hub

faces the short end of the output shaft. Hold 3rd gear against the synchronizer to maintain the synchronizer blocking ring alignment.

12. Using a 1-1/2-inch deep well socket, press the 3rd gear, the 3rd gear synchronizer blocking ring and the 3rd and 4th gear synchronizer assembly onto the output shaft.

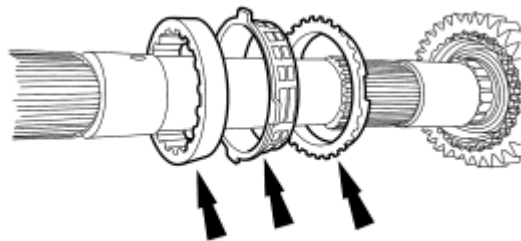


N0014745

Fig. 90: Locating 3rd Gear, 3rd Gear Synchronizer Blocking Ring And 3rd And 4th Gear Synchronizer Assembly
Courtesy of FORD MOTOR CO.

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

13. Install the 1st gear synchronizer blocking ring, the 1st gear synchronizer outer cone and the 1st gear synchronizer inner cone.



N0014732

Fig. 91: Locating 1st Gear Synchronizer Inner Cone And 1st Gear Synchronizer Blocking Ring
Courtesy of FORD MOTOR CO.

14. Install the 1st and 2nd gear synchronizer hub ball.

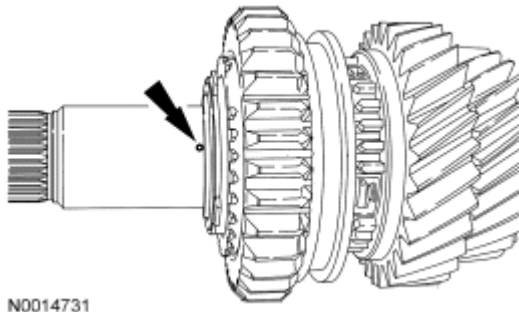


Fig. 92: Locating 1st And 2nd Gear Synchronizer Hub Ball
Courtesy of FORD MOTOR CO.

NOTE: The 1st gear bearing spacer fits snugly on the output shaft.

15. Align the notch in the 1st gear bearing spacer and the 1st and 2nd gear synchronizer hub ball. Install the 1st gear bearing spacer.

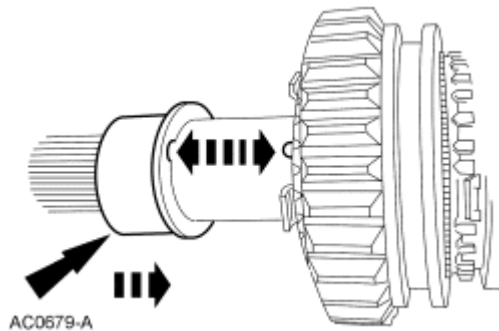


Fig. 93: Aligning Notch In 1st Gear Bearing Spacer & 1st And 2nd Gear Synchronizer Hub Ball
Courtesy of FORD MOTOR CO.

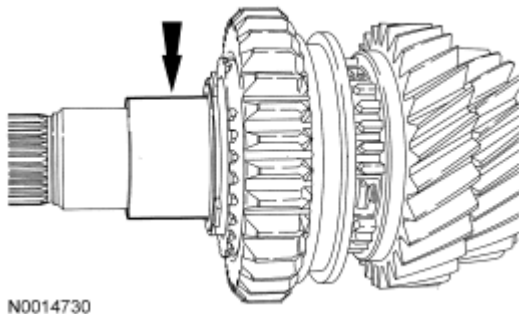


Fig. 94: Locating Gear Bearing Spacer
Courtesy of FORD MOTOR CO.

16. Install the 1st gear needle bearing.

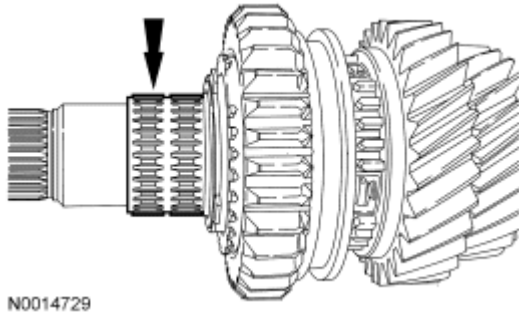


Fig. 95: Locating Needle Bearing
Courtesy of FORD MOTOR CO.

17. Align the slots on the synchronizer blocking ring and the slots on the 1st gear. Install 1st gear.

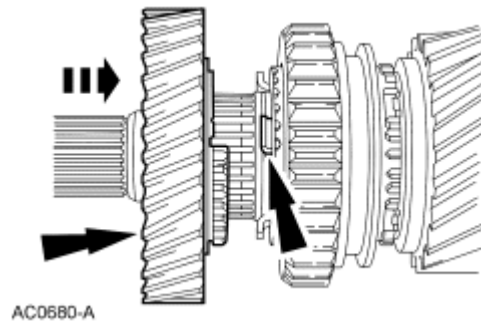


Fig. 96: Aligning Slots On Synchronizer Blocking Ring & Slots On 1st Gear
Courtesy of FORD MOTOR CO.

18. Install the output shaft rear bearing.

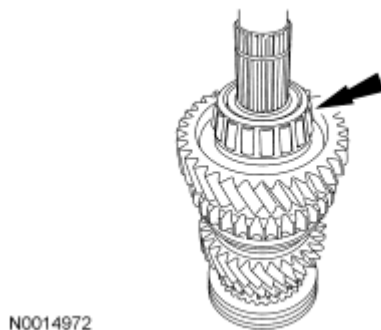
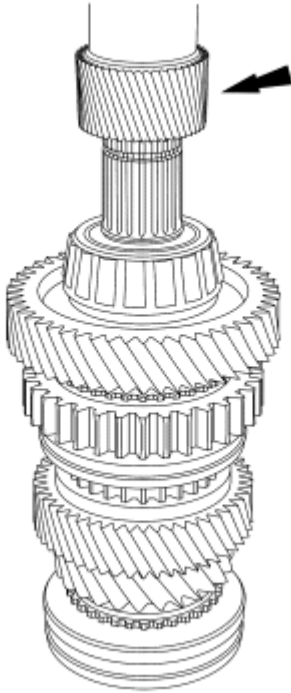


Fig. 97: Installing Output Shaft Rear Bearing
Courtesy of FORD MOTOR CO.

NOTE: Align the output shaft splines and the splines of the 5th speed driven gear or damage will occur.

19. Lubricate the splines of the 5th speed driven gear with petroleum jelly. Position the 5th speed driven gear

on the output shaft. Using a capped length of pipe 31.7 mm (1.24 in) inside diameter by 356 mm (14.01 in) long, press on the 5th speed driven gear.



N0014973

Fig. 98: Aligning Output Shaft Splines And Splines Of 5th Speed Driven Gear
Courtesy of FORD MOTOR CO.

20. Using the capped length of pipe 31.7 mm (1.24 in) inside diameter by 356 mm (14.01 in) long, press the OSS sensor ring on the output shaft.

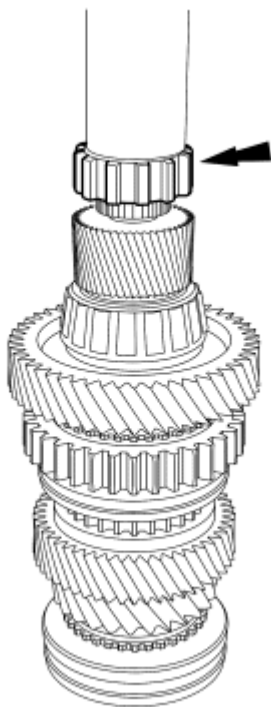
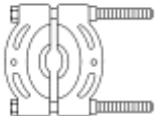


Fig. 99: Locating Output Shaft Speed (OSS) Sensor Ring On Output Shaft
Courtesy of FORD MOTOR CO.

COUNTERSHAFT BEARING

Special Tools

Illustration	Tool Name	Tool Number
 ST2356-A	Installer, Bearing	308-061 (T77J-7025-L)
 ST2359-A	Installer, Drive Pinion Bearing Cone	205-011 (T57L-4621-B)
 ST2358-A	Installer, Input Shaft Bearing	308-062 (T77J-7025-M)

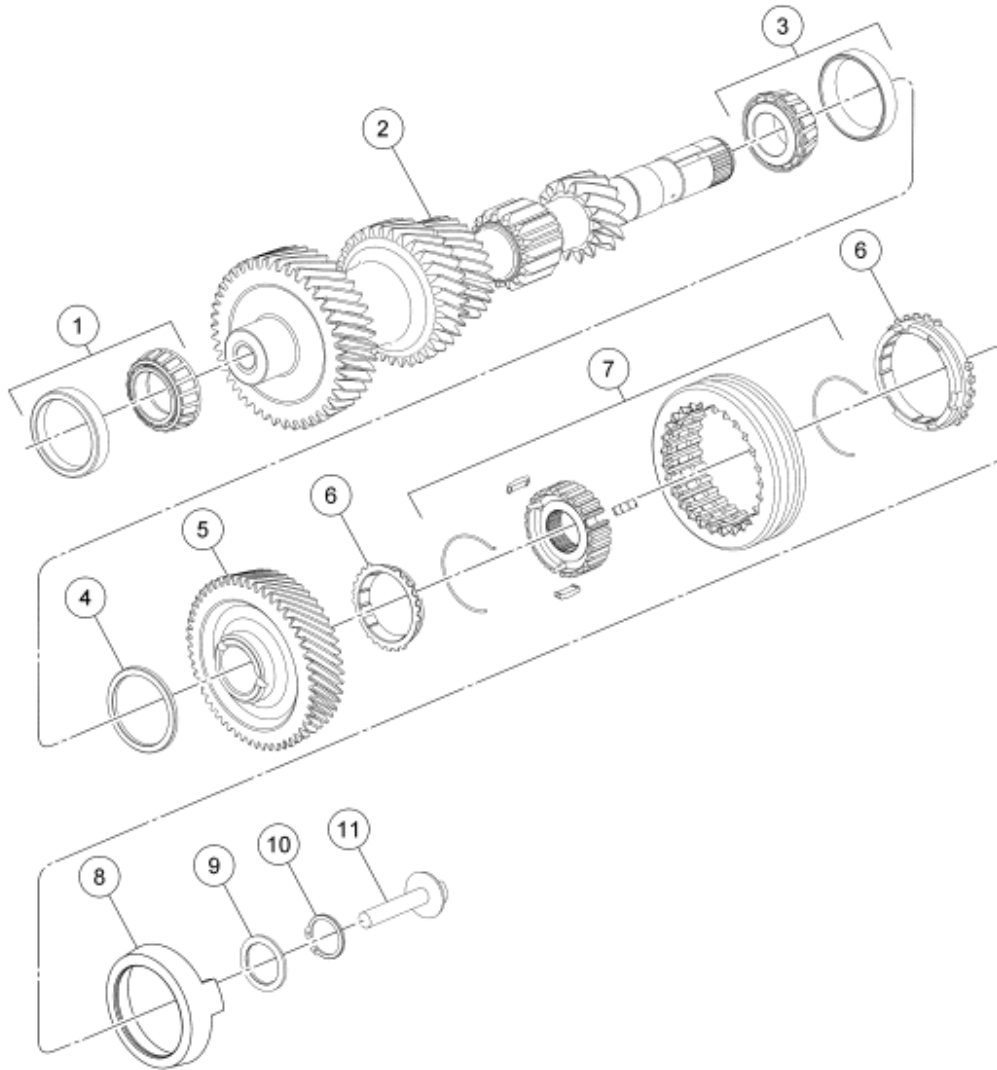
 ST2357-A	Installer, Mainshaft Front Bearing	308-081 (T82T-7003-DH)
 ST1895-A	Remover, Drive Pinion Bearing Cone	205-D002 (D79L-4621-A) or equivalent
 ST1303-A	Remover/Installer, Bearing Tube	308-024 (T75L-7025-B)
 ST2147-A	Remover/Installer, Bearing Tube	308-052 (T77J-7025-B)

Material

Item	Specification
Threadlock and Sealer TA-25	WSK-M2G351-A5

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang



N0072635

Fig. 100: Exploded View Of Transmission Internal Components - Countershaft
Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	7F431	Countershaft front bearing and cup
2	7113	Countershaft
3	7F431	Countershaft rear bearing and cup
4	7L172	Countershaft rear bearing adjustment shim
5	7144	Countershaft 5th gear
6	7107	5th gear synchronizer blocking rings
7	7124	5th gear synchronizer assembly
8	7M000	Reverse brake ring
9	7G042	Thrust washer

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

10	7059	5th gear synchronizer retaining ring
11	7L276	Oil pick up funnel

DISASSEMBLY

1. Using the Drive Pinion Bearing Cone Remover, press and remove the countershaft bearing from the countershaft.

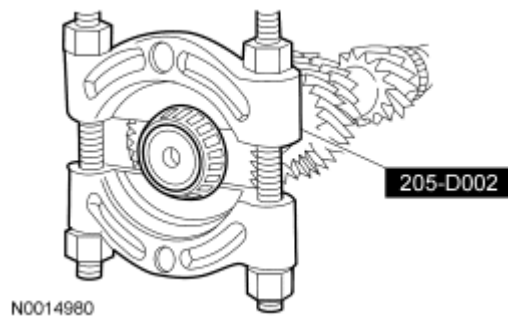


Fig. 101: Identifying Special Tool 205-D002
Courtesy of FORD MOTOR CO.

NOTE: Failure to correctly support the case during bearing race removal will result in permanent distortion of the case.

NOTE: Remove the front countershaft bearing cup if damaged, worn or a new countershaft bearing is being installed.

2. Using the Bearing Tube Remover/Installer, Input Shaft Bearing Installer, Mainshaft Front Bearing Installer and the Bearing Installer, press and remove the bearing cup and the countershaft front bearing seal from the case.

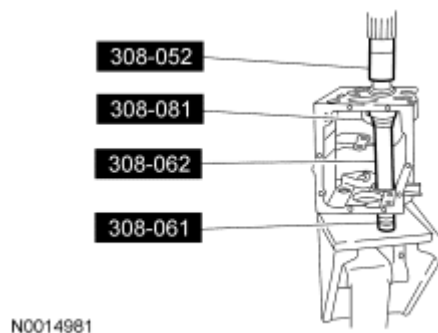


Fig. 102: Removing Bearing Cup And Countershaft Front Bearing Seal From Case
Courtesy of FORD MOTOR CO.

ASSEMBLY

NOTE: Position the countershaft in the transmission case before installing the rear countershaft bearing.

1. Install the countershaft front bearing seal on the bearing cup.

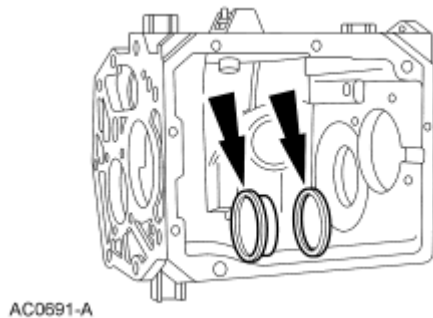


Fig. 103: Locating Countershaft Front Bearing Seal
Courtesy of FORD MOTOR CO.

2. Coat the outside diameter of the bearing cup with threadlock.

NOTE: Failure to correctly support the case during bearing race installation will result in permanent distortion of the case.

3. Using the Bearing Tube Remover/Installer and Drive Pinion Bearing Cone Installer and a press, install the bearing cup.

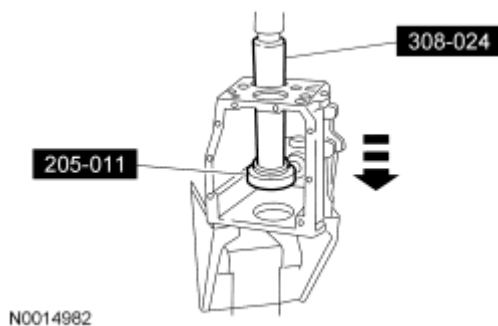


Fig. 104: Installing Bearing Cup
Courtesy of FORD MOTOR CO.

4. Using the Drive Pinion Bearing Cone Installer and a press, install the front countershaft bearing.

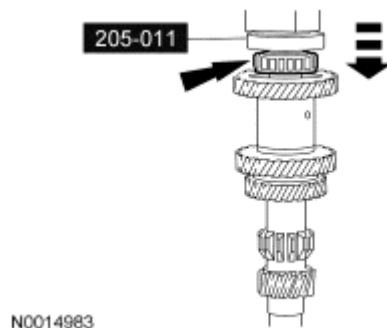


Fig. 105: Installing Front Countershaft Bearing
Courtesy of FORD MOTOR CO.

SYNCHRONIZERS

DISASSEMBLY

NOTE: This procedure applies to all synchronizer assemblies.

NOTE: Synchronizer components are not interchangeable. During disassembly, mark each individual synchronizer for assembly. Synchronizer hubs and sleeves are a selected assembly and should be kept together as originally assembled. Blocking rings are not interchangeable, do not mix.

1. Scribe an alignment mark on the sliding sleeve and the hub for assembly reference.
2. Using a screwdriver, remove the spring. Turn the synchronizer over and remove the 2nd spring. Remove the sliding sleeve and the synchronizer struts from the hub.



Fig. 106: Identifying Sliding Sleeve And Synchronizer Struts From Hub
Courtesy of FORD MOTOR CO.

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

4. Inspect the synchronizer blocking rings.
- Check for wear or damage. Install new synchronizer blocking rings 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 0.38 mm (0.015 in), install new blocking rings.

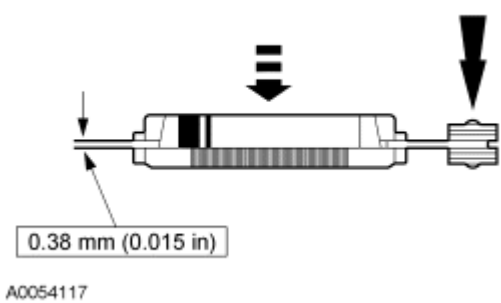


Fig. 107: Measuring Clearance Between Synchronizer Blocking Ring And Gear
 Courtesy of FORD MOTOR CO.

ASSEMBLY

NOTE:

Match the alignment marks make during disassembly. The sleeve and the hub have an extremely close fit. Hold the sleeve and hub square to prevent jamming. Do not force the sleeve onto the hub.

1. Assemble the synchronizer as follows:
- Position the synchronizer sleeve on the hub. Make sure to align key openings in the hub with the synchronizer sleeve.
 - Install the keys with the slots facing the hub.
 - Install the spring. Locate the tang to one of the key slots and position into place. Install the second spring. Locate the spring tank on the same key but position in the opposite direction.

ASSEMBLY

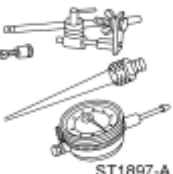
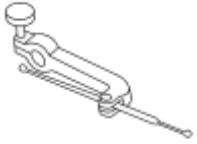
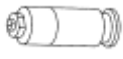
TRANSMISSION

Special Tools

Illustration	Tool Name	Tool Number
	Dial Indicator Gauge with Holding	100-002 (TOOL-4201-C) or

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

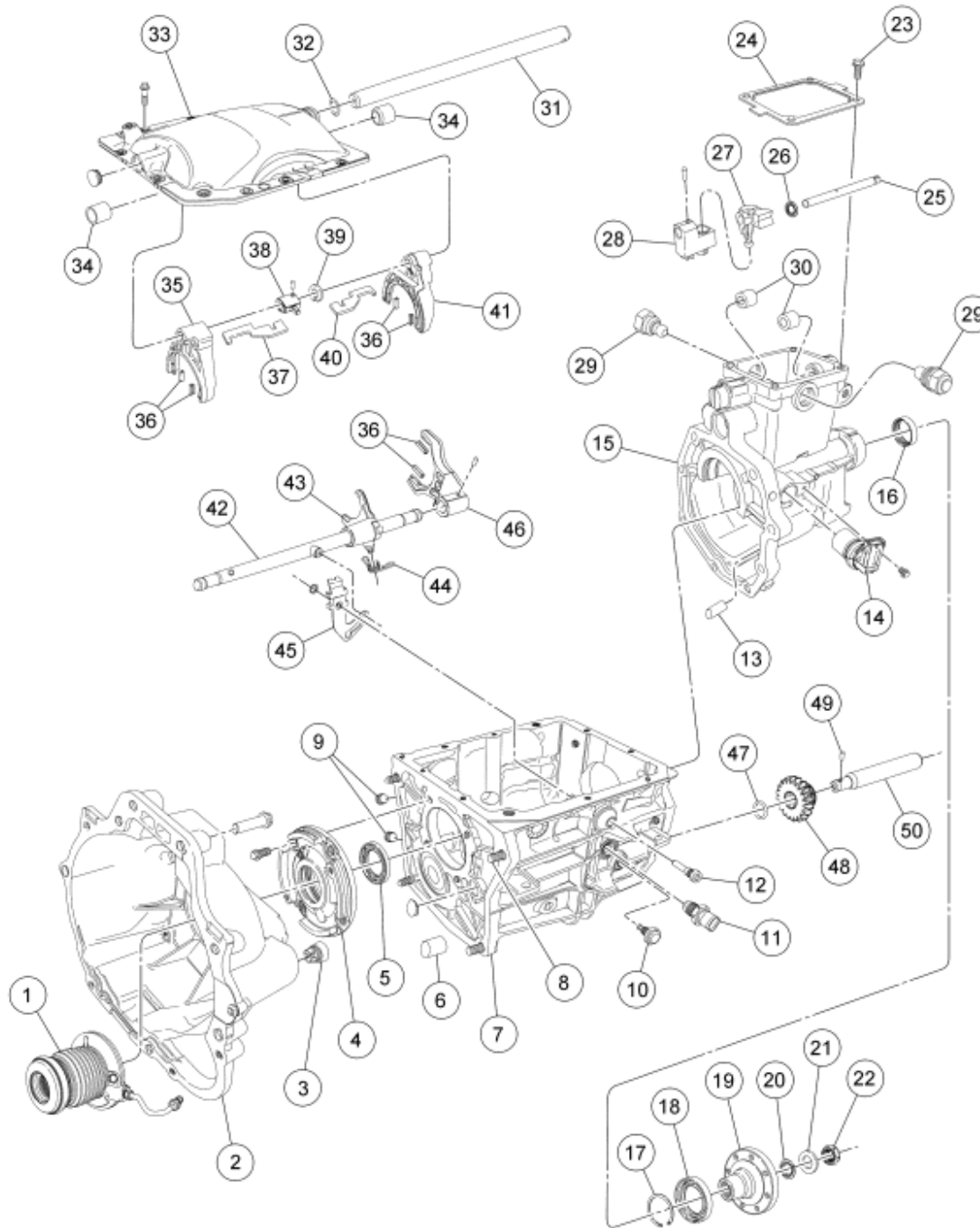
 ST1897-A	Fixture	equivalent
 ST1348-A	Gauge, Clutch Housing	308-021 (T75L-4201-A)
 ST2360-A	Installer, Torrington Bearing	308-083 (T83P-7025-AH)
 ST2199-A	Installer, Transmission Extension Housing Oil Seal	308-227 (T94P-7657-A)
 ST2147-A	Remover/Installer, Bearing Tube	308-052 (T77J-7025-B)

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
Multi-Purpose Grease XG-4 and/or XL-5	ESB-M1C93-B
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)	ESA-M1C75-B
Thread Sealant with PTFE TA-24	WSK-M2G350-A2

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang



N0076691

Fig. 108: Exploded View Of Transmission Case & Shift Components
 Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	7A508	Slave cylinder and release bearing
2	7500	Clutch housing

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

3	7K584	Slave cylinder line retainer
4	7050	Input shaft bearing retainer
5	7052	Input shaft seal
6	7W425	Shaft bearing
7	7005	Main case
8	7A443	Main case-to-clutch housing bolt
9	87675-S	Drain and fill plugs
10	7K024	Reverse lever pivot bolt
11	15520	Reverse lamp switch
12	7K024	Shift lever reverse pin
13	7W425	Shaft bearing
14	7H103	Output Shaft Speed (OSS) sensor
15	7A039	Extension housing
16	7065	Extension housing bearing
17	7109	Extension housing bearing snap ring
18	7052	Output shaft seal
19	7K359	Transmission flange
20	7E397	Flange seal
21	7119	Thrust washer
22	7K440	Output flange nut
23	7A443	Gear shift cover bolt
24	7222	Gear shift cover
25	7240	Shift rail selector
26	7052	Selector rail seal
27	7N094	Selector finger
28	7F018	Gearshift offset lever
29	7234	Shifter detents
30	7127	Main shift rail bearings
31	7358	Main shift control shaft
32	87038-S91	Main shift rail seal
33	7222	Transmission case cover
34	7W425	Main shift control shaft bushings
35	7230	3rd/4th gear shift fork
36	7L082	Shift fork inserts
37	7N232	Gear shift plate
38	7302	Selector body
39	7K201	Gear selector interlock sleeve
40	7N232	Gear shift plate
41	7230	1st/2nd gear shift fork
42	7240	Reverse gear shift rail
43	7230	Reverse shift fork

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

	7E485	Reverse shift fork spring
45	7K002	Reverse gearshift lever
46	7230	5th gear shift fork
47	7E397	Reverse gear overtravel stop
48	7141	Reverse idler gear and bushing
49	357479-S15	Pin
50	7140	Reverse idler gear shaft

NOTE: Soak the blocking rings in transmission fluid for 10 minutes.

1. Lubricate all components with transmission fluid during assembly.
2. If removed, install new rail bearings into the transmission case.
3. If removed, install new main shift rail bearings into the extension housing.
4. Position the countershaft cluster gear in the case.

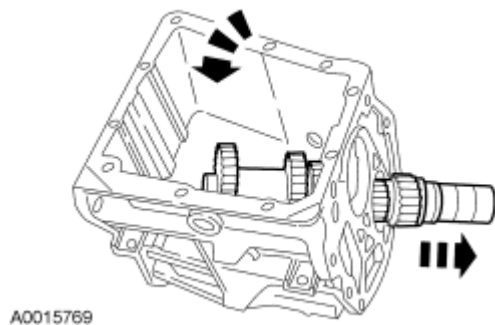


Fig. 109: Positioning Countershaft Cluster Gear In Case
Courtesy of FORD MOTOR CO.

NOTE: Failure to correctly support the case during bearing installation will result in permanent distortion of the case.

5. Using the Bearing Tube Remover/Installer and Torrington Bearing Installer and a press, install the rear countershaft bearing assembly.
 1. Position two 6.35 mm (0.25 in) pieces of bar stock between the countershaft and the case.
 2. Press the rear countershaft bearing assembly in the case.

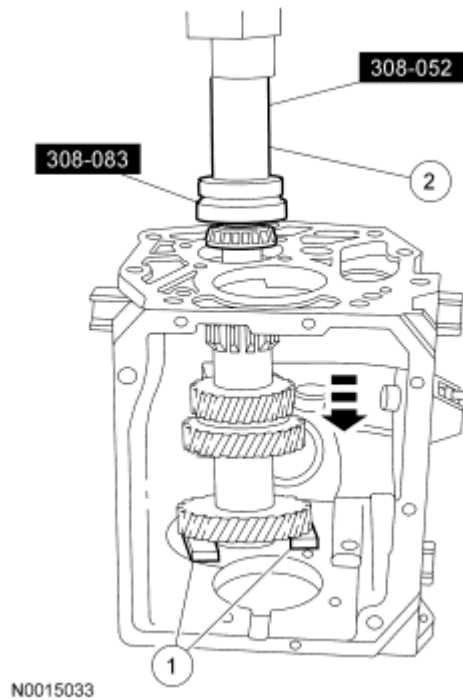


Fig. 110: Installing Rear Countershaft Bearing Assembly
Courtesy of FORD MOTOR CO.

6. Position the reverse idler gear and bushing in the case with the shift lever groove facing the rear of the case. Install the reverse idler gear shaft and the reverse gear overtravel stop.

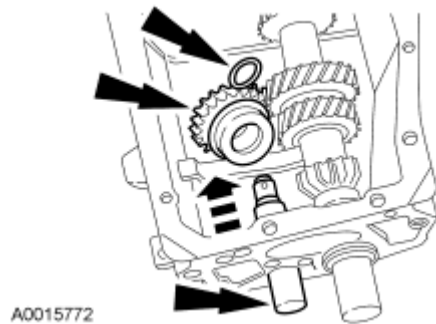


Fig. 111: Positioning Reverse Idler Gear And Bushing In Case
Courtesy of FORD MOTOR CO.

7. Install the rear countershaft bearing cup.

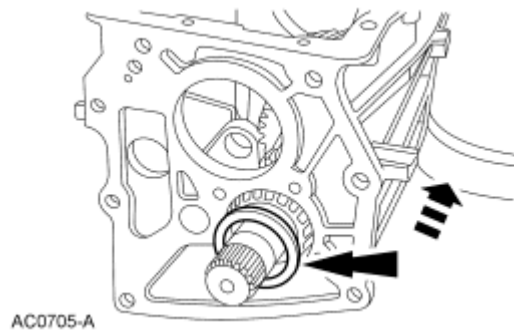


Fig. 112: Installing Rear Countershaft Bearing Cup
Courtesy of FORD MOTOR CO.

NOTE: Do not install the shims at this time.

8. Install the countershaft rear bearing retainer.
 - Tighten to 21 Nm (15 lb-ft).

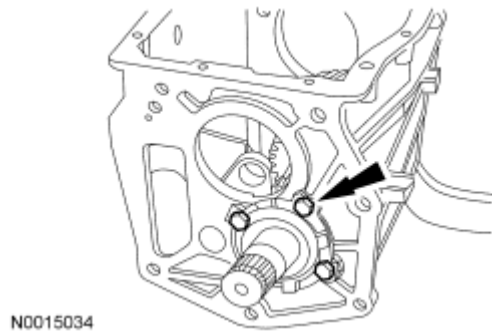


Fig. 113: Installing Countershaft Rear Bearing Retainer
Courtesy of FORD MOTOR CO.

9. Using the Dial Indicator Gauge with Holding Fixture and Clutch Housing Gauge, measure the countershaft cluster gear end play.
 - If the end play is not within specification, remove the countershaft rear bearing retainer and install the necessary thickness shim(s). Reinstall the countershaft rear bearing retainer and recheck the end play.
 - Bend the tabs of the countershaft rear bearing retainer over the bolts when the end play adjustment is complete.

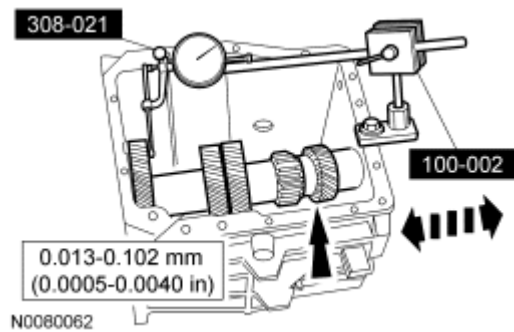


Fig. 114: Bending Tabs Of Countershaft Rear Bearing Retainer Over Bolts When End Play Adjustment Is Complete
Courtesy of FORD MOTOR CO.

10. Install a new roll pin.

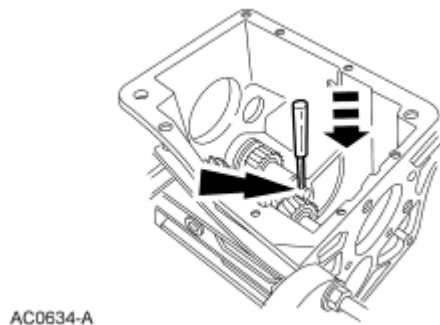


Fig. 115: Removing/Installing Roll Pin Using A Suitable Punch
Courtesy of FORD MOTOR CO.

11. Align the reverse gearshift lever, the reverse shift fork and the reverse positioning spring.

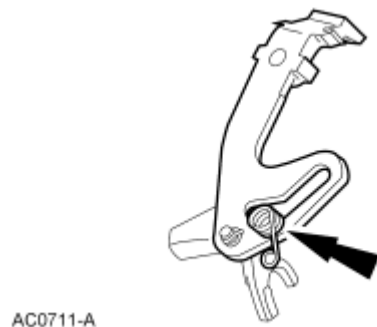


Fig. 116: Aligning Reverse Gearshift Lever
Courtesy of FORD MOTOR CO.

NOTE: Observe the reverse positioning spring rotation. The spring must rotate counterclockwise into its installed position.

12. Install the reverse shift fork.

- Place the reverse idler gear and bushing into the NEUTRAL position. Align the reverse shift fork and the reverse idler gear and bushing. Push downward on the reverse shift fork until fully engaged into the reverse idler gear and bushing.

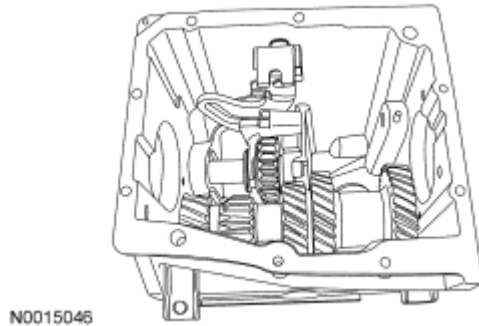


Fig. 117: Identifying Idler Gear And Bushing Into Neutral Position
Courtesy of FORD MOTOR CO.

13. Install the output shaft assembly.

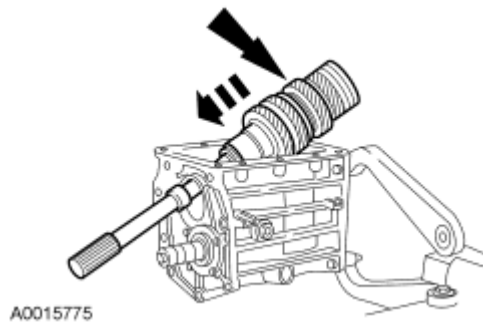


Fig. 118: Installing Output Shaft Assembly
Courtesy of FORD MOTOR CO.

14. Apply pipe sealant to the shift lever reverse pin threads. Position the looped end of the reverse positioning spring around the shift lever reverse pin. Install the pin.

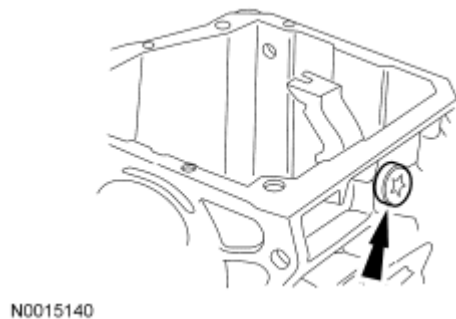


Fig. 119: Locating Shift Lever Reverse Pin

Courtesy of FORD MOTOR CO.

NOTE: Coat the 15 bearings, the spacer, the thrust bearing and the thrust washer with grease.

15. Install the roller bearings, the input shaft bearing spacer, the thrust bearing and the thrust washer.

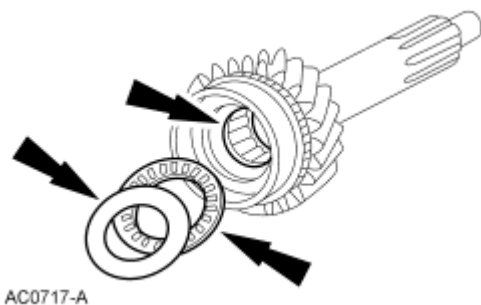


Fig. 120: Identifying 4th Gear Synchronizer Ring, Thrust Washer, Thrust Bearing & Input Shaft Bearing Spacer

Courtesy of FORD MOTOR CO.

16. Align the notches in the synchronizer blocking ring and the synchronizer hub inserts. Install the 4th gear synchronizer blocking ring.

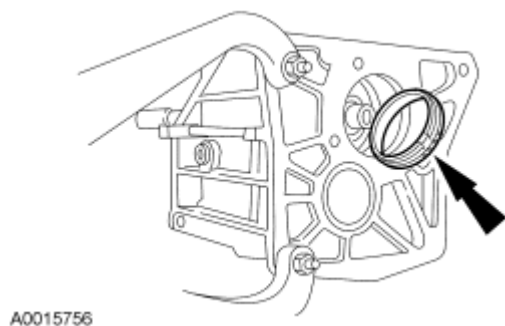


Fig. 121: Locating 4th Gear Synchronizer Blocking Ring

Courtesy of FORD MOTOR CO.

NOTE: Verify that the 4th speed synchronizer blocking ring is still in position.

17. Align the flat on the 4th gear clutching teeth with the countershaft cluster gear, then install the input shaft.

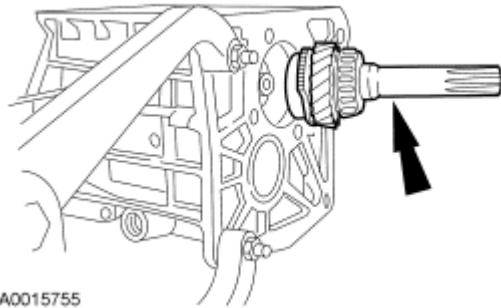


Fig. 122: Locating Input Shaft
Courtesy of FORD MOTOR CO.

NOTE: Do not install the end play shims at this time.

NOTE: Do not apply sealant to the input shaft bearing retainer at this time.

18. Install the bearing race in the bearing retainer.

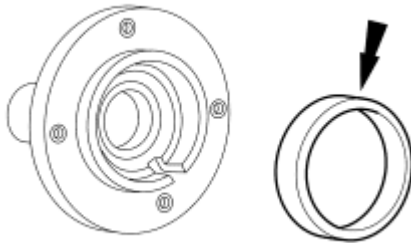


Fig. 123: Locating Bearing Race In Bearing Retainer
Courtesy of FORD MOTOR CO.

19. Install the input shaft bearing retainer with the notch facing upward.

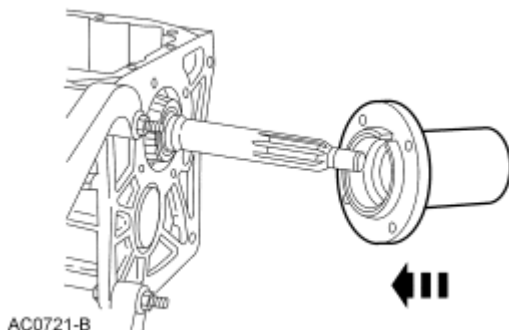
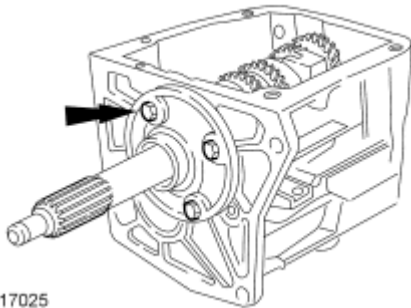


Fig. 124: Locating Input Shaft Bearing Retainer With Notch Facing Upward
Courtesy of FORD MOTOR CO.

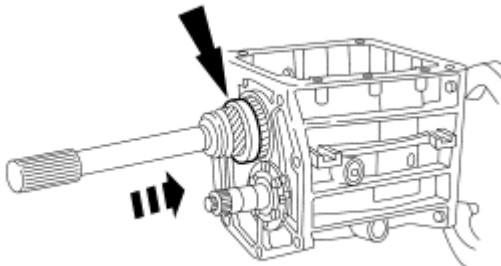
20. Install the 4 input shaft bearing retainer bolts.
- Tighten to 21 Nm (15 lb-ft).



N0017025

Fig. 125: Locating Input Shaft Bearing Retainer Bolts
Courtesy of FORD MOTOR CO.

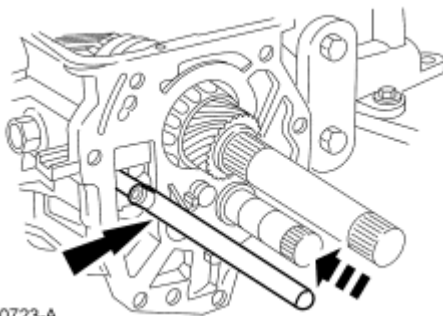
21. Install 5th gear and the output shaft rear bearing cup.



AC0722-A

Fig. 126: Locating 5th Gear & Output Shaft Rear Bearing Cup
Courtesy of FORD MOTOR CO.

22. Install the reverse gear shift rail. Align the ball stud with the slot in the case and align the reverse gear shift rail with the reverse shift fork. Once the ball stud enters the case, rotate the reverse gear shift rail until the ball aligns with the reverse gearshift lever. Rotate the reverse gear shift rail counterclockwise until the ball stud fully engages the reverse gearshift lever.



AC0723-A

Fig. 127: Installing reverse gear shift rail

Courtesy of FORD MOTOR CO.

23. Install the 5th gear shifter fork, the synchronizer blocking ring, the synchronizer assembly and the 5th gear shifter fork pin as an assembly.

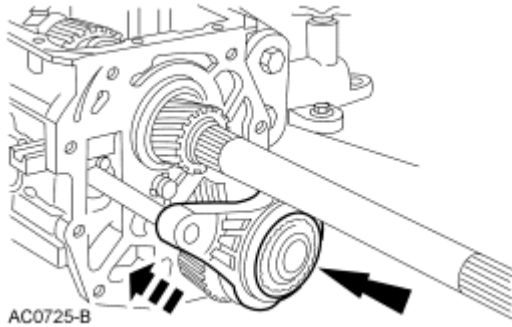


Fig. 128: Installing 5th Gear Shifter Fork, Synchronizer Blocking Ring, Synchronizer Assembly & 5th Gear Shifter Fork Pin

Courtesy of FORD MOTOR CO.

NOTE: To prevent component damage when installing the extension housing, the alignment tab on the reverse brake ring must engage the alignment slot in the extension housing.

24. Install the synchronizer blocking ring, the reverse brake ring, the thrust washer and a new 5th speed synchronizer retaining snap ring.

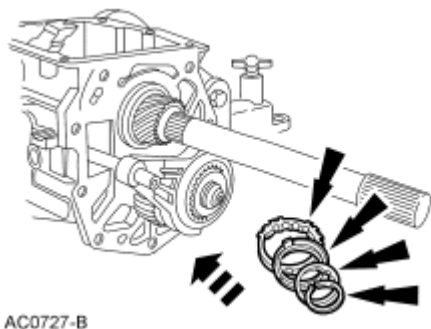


Fig. 129: Installing Synchronizer Blocking Ring, Reverse Brake Ring, Thrust Washer & 5th Speed Synchronizer Retaining Snap Ring

Courtesy of FORD MOTOR CO.

25. Apply pipe sealant to the reversing lamp switch threads and install the switch.

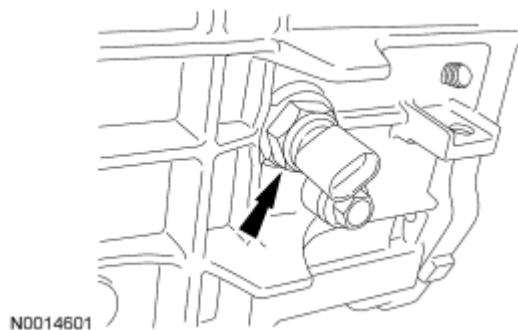


Fig. 130: Locating Reversing Lamp Switch
Courtesy of FORD MOTOR CO.

26. Install the reverse gearshift lever retaining clip.

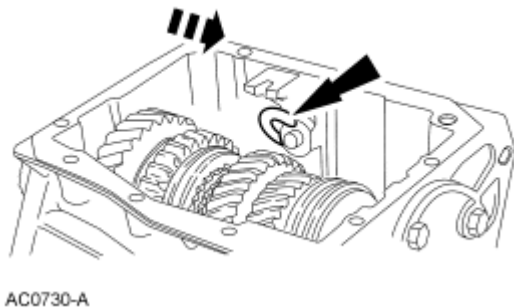


Fig. 131: Locating Reverse Gearshift Lever Retaining Clip
Courtesy of FORD MOTOR CO.

NOTE: Do not, under any circumstance, apply silicone sealant to the top of the transmission case. The sealant could fall into the transmission and affect transmission operation.

27. Apply a 3.2 mm (1/8 in) bead of silicone rubber to the sealing surface on the case cover.

NOTE: Verify that all of the synchronizers are in the NEUTRAL position and the gear shifter forks in the cover are in the NEUTRAL position.

28. Position the case cover toward the filler plug side of the transmission and lower it until the gear shifter forks engage the synchronizers. Continue to lower the cover and move it into position to engage the reverse gearshift lever.

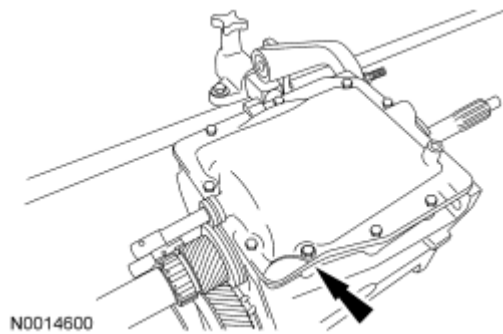


Fig. 132: Locating Case Cover And Bolts
Courtesy of FORD MOTOR CO.

29. Install the 10 transmission case cover bolts.
 - Tighten to 12 Nm (106 lb-in).
30. Install a new output shaft bearing and a new snap ring.

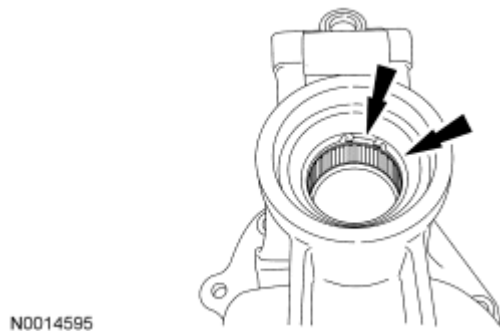


Fig. 133: Locating Output Shaft Bearing
Courtesy of FORD MOTOR CO.

31. Using the Transmission Extension Housing Oil Seal Installer, install a new output shaft seal.

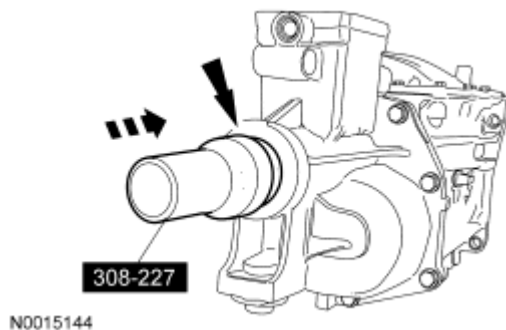


Fig. 134: Installing Output Shaft Seal
Courtesy of FORD MOTOR CO.

32. Install the large output shaft spacer.

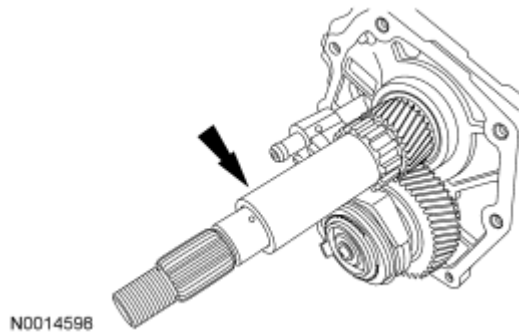


Fig. 135: Locating Large Output Shaft Spacer
Courtesy of FORD MOTOR CO.

33. Install a new check ball.

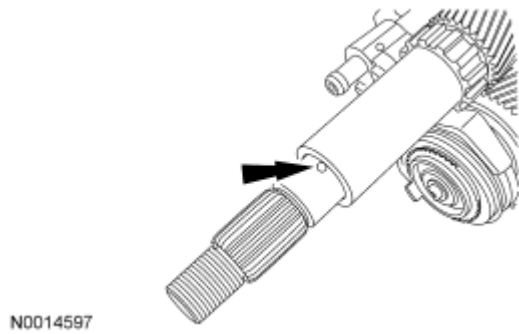


Fig. 136: Locating Check Ball
Courtesy of FORD MOTOR CO.

34. Install the small output shaft spacer.

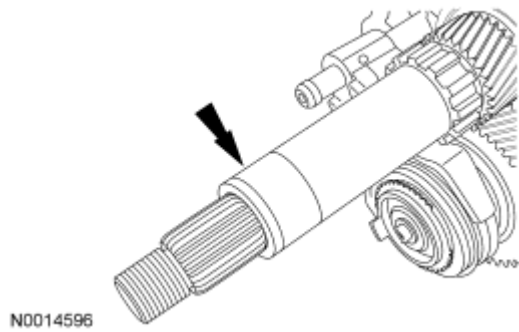
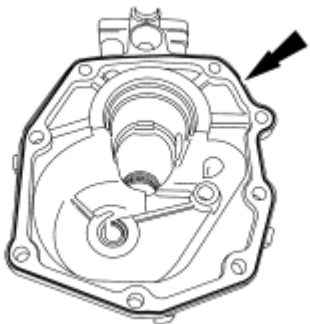


Fig. 137: Locating Small Output Shaft Spacer
Courtesy of FORD MOTOR CO.

35. Apply a 3.2 mm (1/8 in) bead of silicone rubber to the sealing surface on the extension housing.



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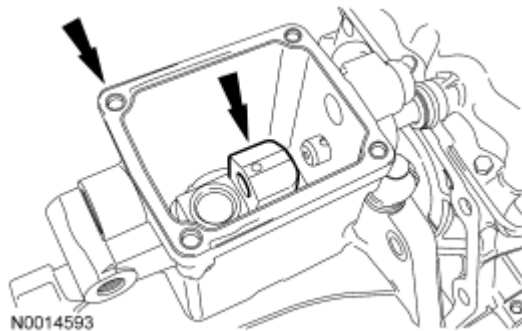
Fig. 138: Locating Bead Of Silicone Rubber To Sealing Surface On Extension Housing
Courtesy of FORD MOTOR CO.

36. Lubricate the detent plate. Position the gearshift offset lever in the extension housing.

NOTE: To prevent component damage, the alignment tab on the reverse brake ring must align with the alignment slot in the extension housing.

NOTE: Verify that the oil pick-up funnel engages the 5th gear synchronizer.

37. Slide the gearshift offset lever onto the shift shaft and the position the extension housing into place.



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Fig. 139: Locating Extension Housing And Gearshift Offset Lever
Courtesy of FORD MOTOR CO.

38. Install the identification tag and the 8 extension housing bolts.
- Tighten to 54 Nm (40 lb-ft).

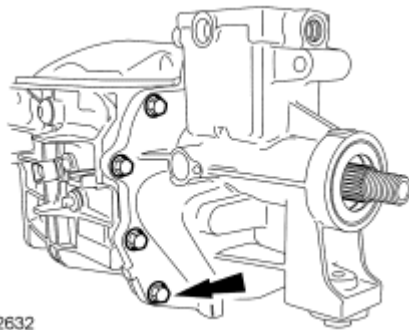


Fig. 140: Locating Identification Tag & Extension Housing Bolts
Courtesy of FORD MOTOR CO.

39. Install a new gearshift offset lever roll pin.

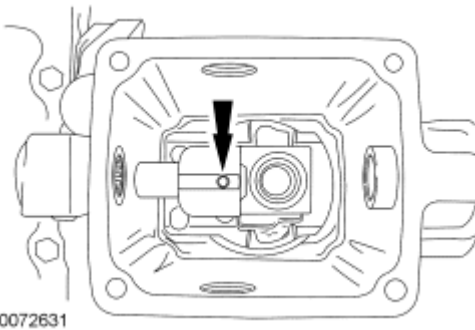


Fig. 141: Locating Gearshift Offset Lever Roll Pin
Courtesy of FORD MOTOR CO.

40. Install the shift lever and the gearshift shaft.

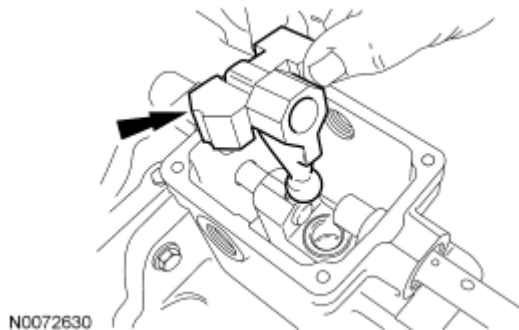


Fig. 142: Locating Shift Lever & Gearshift Shaft
Courtesy of FORD MOTOR CO.

41. Install the shift lever detents.
- Tighten to 40 Nm (30 lb-ft).

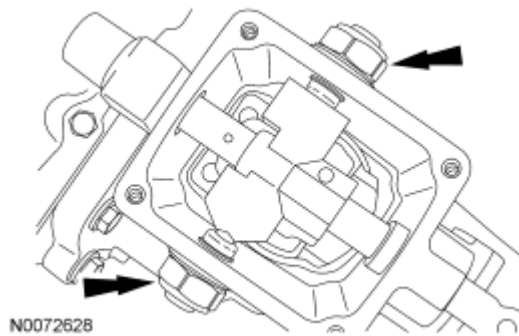


Fig. 143: Locating Shift Detents
Courtesy of FORD MOTOR CO.

42. Install a new gearshift lever roll pin.

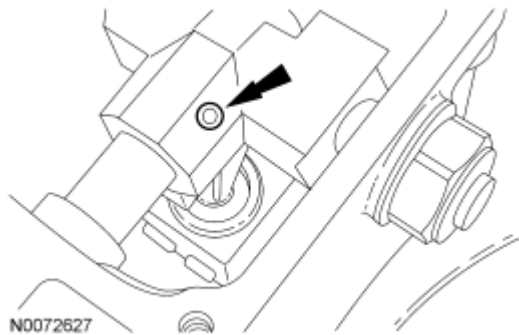


Fig. 144: Installing New Gearshift Lever Roll Pin
Courtesy of FORD MOTOR CO.

43. Using the Dial Indicator Gauge with Holding Fixture, measure the output shaft end play.
1. Place the transmission in a vertical position.
 2. Install the Dial Indicator Gauge with Holding Fixture.
 3. Push upward on the input shaft and record the dial indicator reading.

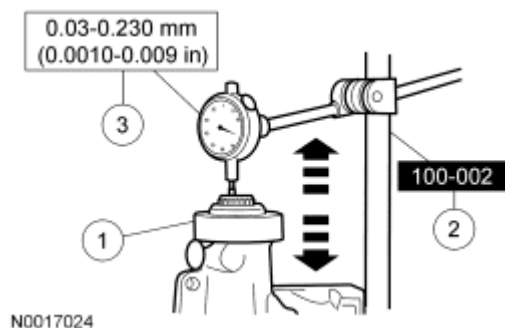


Fig. 145: Measuring Output Shaft End Play
Courtesy of FORD MOTOR CO.

NOTE: Although zero end play is the ideal, end play up to 0.230 mm (0.009 in) is an acceptable tolerance. Do not overload the bearings with a shim that is too thick as damage may occur.

NOTE: Select a shim with a thickness equal to the dial indicator reading. This will provide zero end play. Install the thickest shim closest to the front bearing cup to provide support for the cup.

44. Rotate the transmission to the horizontal position and remove the input shaft bearing retainer. Remove the bearing race and install the necessary shim(s).

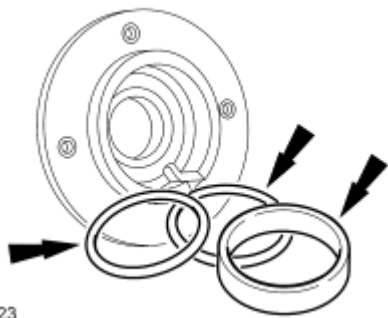


Fig. 146: Locating Input Shaft Bearing Cup
Courtesy of FORD MOTOR CO.

45. Apply a 3.2 mm (1/8 in) bead of silicone rubber to the sealing surface on the input shaft bearing retainer. Do not cover the notch in the input shaft bearing retainer with sealer.
46. Install the input shaft bearing retainer and the 4 bolts.
 - Tighten to 21 Nm (15 lb-ft).

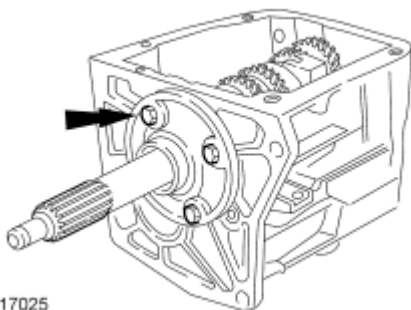


Fig. 147: Locating Input Shaft Bearing Retainer Bolts
Courtesy of FORD MOTOR CO.

47. Apply a 3.2 mm (1/8 in) bead of silicone rubber to the sealing surface on the gearshift lever.
48. Install the shift cover plate and the 4 shift cover plate bolts.
 - Tighten to 19 Nm (168 lb-in).

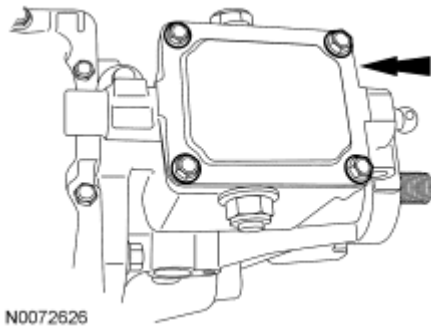


Fig. 148: Locating Shift Cover Plate Bolts
Courtesy of FORD MOTOR CO.

NOTE: Apply thread sealant to the drain plug threads.

49. Install the drain plug.
 - Tighten to 18 Nm (159 lb-in).

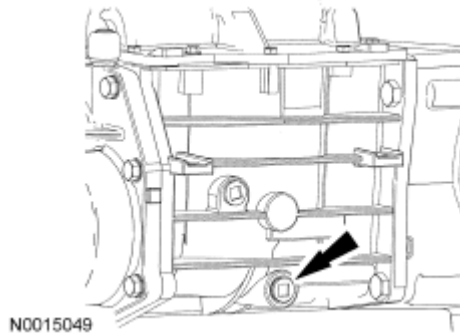


Fig. 149: Locating Drain Plug
Courtesy of FORD MOTOR CO.

50. Install the Output Shaft Speed (OSS) sensor.
 - Tighten to 10 Nm (89 lb-in).

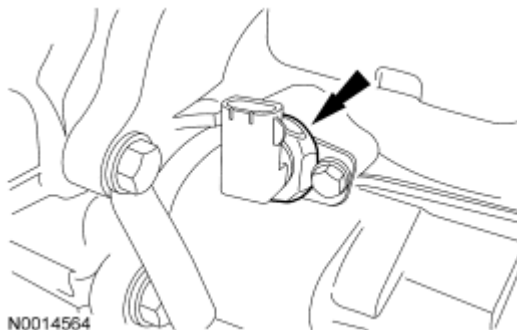


Fig. 150: Locating Output Shaft Speed Sensor
Courtesy of FORD MOTOR CO.

51. Position the output flange onto the output shaft. Install the thrust washer and output flange nut. Tighten until the output flange is fully seated.
52. Remove the output flange nut and thrust washer.
53. Install a new flange seal. Carefully push it through until it is fully seated against the flange and output flange pocket.
54. Install the thrust washer and output flange nut.
 - Tighten to 142 Nm (105 lb-ft).
55. Install the clutch housing to the transmission.
 - Tighten to 31 Nm (23 lb-ft).

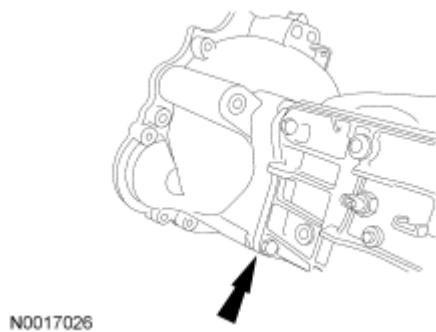


Fig. 151: Locating Clutch Housing Bolts
Courtesy of FORD MOTOR CO.

56. Install a new clutch slave cylinder retaining clip.
57. Install the clutch release slave cylinder.
 - Tighten to 9 Nm (80 lb-in).

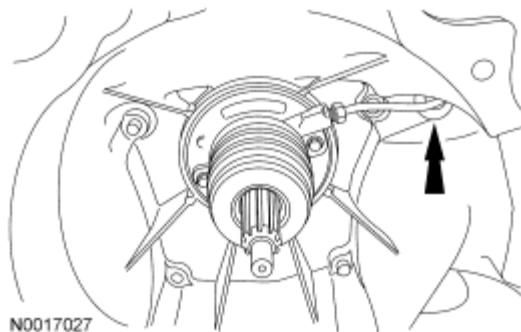


Fig. 152: Locating Clutch Release Slave Cylinder
Courtesy of FORD MOTOR CO.

INSTALLATION

TRANSMISSION

Material

2008 Ford Mustang

2008 TRANSMISSIONS Manual Transaxle/Transmission - T5OD - Mustang

Item	Specification
MERCON® V Automatic Transmission Fluid XT-5-QM (or XT-5-QMC) (US); CXT-5-LM12 (Canada)	MERCON® V
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)	ESA-M1C75-B
Threadlock and Sealer TA-25	WSK-M2G351-A5

NOTE: Before installing the transmission, the input shaft must be cleaned and lubricated with a small amount of grease.

1. Position the transmission to the engine.

NOTE: Insert the clutch hydraulic tube into the clutch slave cylinder and install the clip before tightening the transmission-to-engine bolts.

2. Install the 8 transmission-to-engine bolts and the separator plate bolt.
 - Tighten to 45 Nm (33 lb-ft).
3. Install a new exhaust coupler. Connect the intermediate pipe to the catalytic converter.
 - Tighten to 54 Nm (40 lb-ft).

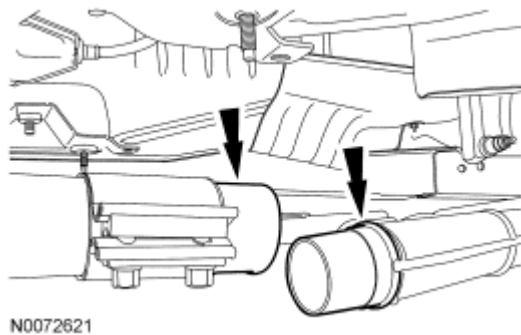
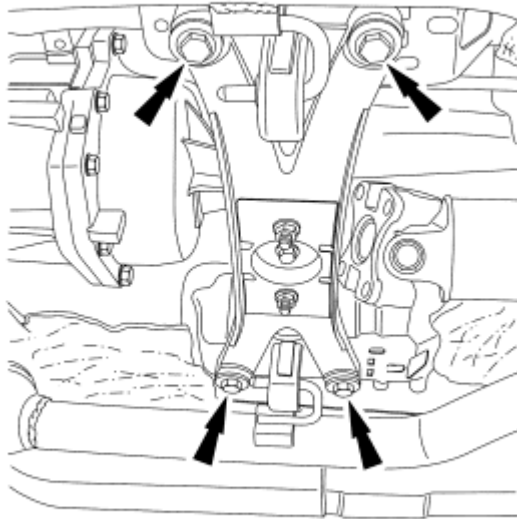


Fig. 153: Locating Exhaust Coupler
Courtesy of FORD MOTOR CO.

4. Install the transmission crossmember.
 - Tighten the crossmember-to-transmission bolt to 70 N.m (52 lb-ft).
 - Tighten the 4 crossmember-to-frame bolts to 62 N.m (46 lb-ft).

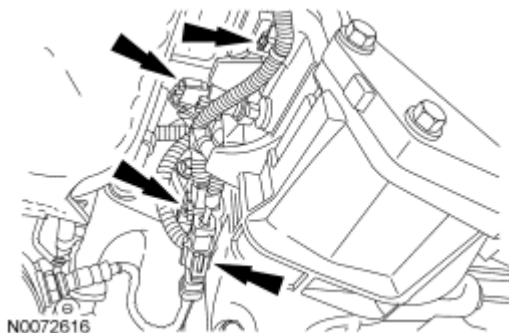


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Fig. 154: Locating Crossmember Bolts
Courtesy of FORD MOTOR CO.

NOTE: Clean the starter motor mounting flange and mating surface of the starter motor to ensure a proper ground connection.

5. Install the starter motor and the 2 starter motor bolts.
 - Tighten to 25 Nm (18 lb-ft).
6. Connect the wiring harness to the transmission. Connect the following:
 - Catalyst monitor sensor electrical connector
 - Reverse lamp switch electrical connector
 - Wiring harness clips
 - Output Shaft Speed (OSS) sensor electrical connector



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Fig. 155: Locating Catalyst Monitor Sensor Electrical Connector
Courtesy of FORD MOTOR CO.

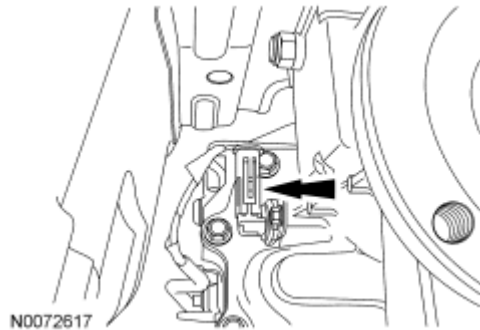


Fig. 156: Locating Output Shaft Speed (OSS) Sensor Electrical Connector
Courtesy of FORD MOTOR CO.

7. Connect the shift linkage to the transmission.
 - Tighten to 40 Nm (30 lb-ft).

NOTE: **Align the index marks made during removal.**

8. Install the driveshaft and the 4 driveshaft bolts.
 - Tighten to 103 Nm (76 lb-ft).
9. Check, and as necessary, fill the transmission with transmission fluid. Apply threadlock and sealer to the fill plug threads and install the fill plug.
 - Total fill capacity is 2.6L (2.8 pt).
 - Tighten to 18 Nm (159 lb-in).
10. Connect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** article.
11. Fill the brake and clutch reservoir. Bleed the clutch hydraulic system. For additional information, refer to **MANUAL TRANSAXLE/TRANSMISSION AND CLUTCH - GENERAL INFORMATION** article.