


INSTALLATION

TRANSMISSION - FOUR WHEEL DRIVE (4WD)

Special Tool(s)

SPECIAL TOOL SPECIFICATION

 <p data-bbox="480 805 759 864">ST1636-A</p>	<p data-bbox="831 599 1415 668">Retainer, Torque Converter 307-346 (T97T-7902-A)</p>
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Material

MATERIAL SPECIFICATION

Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLV	MERCON® LV
Multi-Purpose Grease XG-4 and/or XL-5	ESB-M1C93-B

Installation

NOTE: Prior to the installation of the transmission, the torque converter pilot hub must be lubricated with multi-purpose grease or damage to the torque converter or engine crankshaft can occur.

1.

Lubricate the torque converter pilot hub with multi-purpose grease.

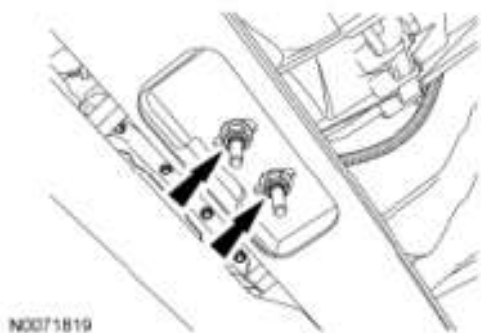


Fig. 608: Locating Torque Converter Pilot Hub
Courtesy of FORD MOTOR CO.

2. Install the Torque Converter Retainer.

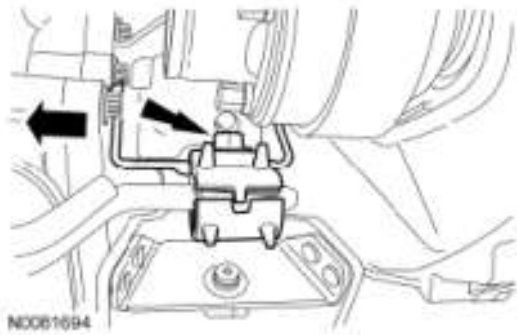


Fig. 609: Identifying Torque Converter Retainer
Courtesy of FORD MOTOR CO.

3.
NOTE: The converter housing is piloted into position by dowels in the rear of the engine block. The torque converter must rest squarely against the flexplate. This indicates that the converter pilot is not binding in the engine crankshaft.
NOTE: Make sure that the transmission jack makes contact on the outer ribs of the transmission fluid pan.
NOTE: Make sure that the transmission is securely fastened to the transmission jack.

Position and secure the transmission on the high-lift transmission jack. Raise and position the transmission into the vehicle.

4. Remove the Torque Converter Retainer.

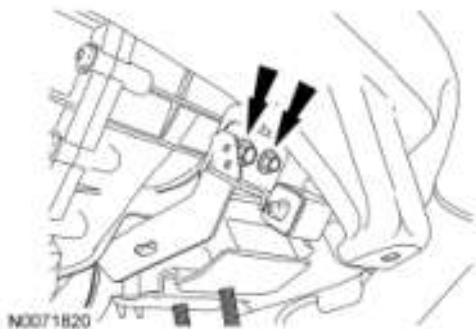


Fig. 610: Identifying Torque Converter Retainer
Courtesy of FORD MOTOR CO.

5.
NOTE: Make sure the torque converter is fully seated in the transmission before aligning the transmission to the engine.

With the transmission in a horizontal position, move it toward the engine. Align the orange balancing marks between the torque converter studs and the flexplate bolt holes.

6. **NOTE:** Install the transmission case bolts in their correct locations noted during removal.

NOTE: The top 2 transmission case bolts need to be installed prior to installing the remaining bolts.

NOTE: The top left bolt is inserted through the fuel line bracket first, then through the transmission case.

Install 6 of the remaining 7 transmission case bolts.

- Tighten to 48 Nm (35 lb-ft).

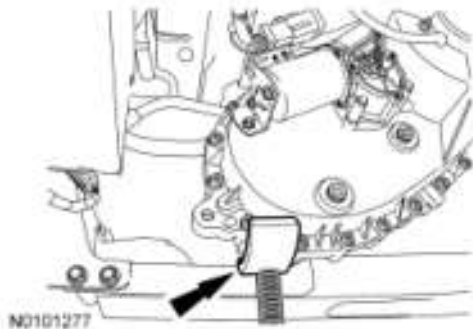


Fig. 611: Locating Transmission Case Bolts
Courtesy of FORD MOTOR CO.

7. Connect the transmission vehicle harness connector by pushing it in and twisting the outer shell to lock it in place.

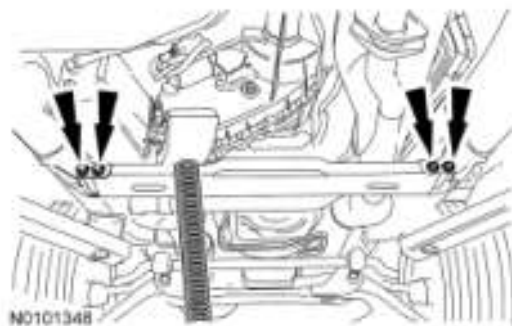


Fig. 612: Locating Transmission Vehicle Harness Connector
Courtesy of FORD MOTOR CO.

8. Connect the wire harness to the top of the transmission.

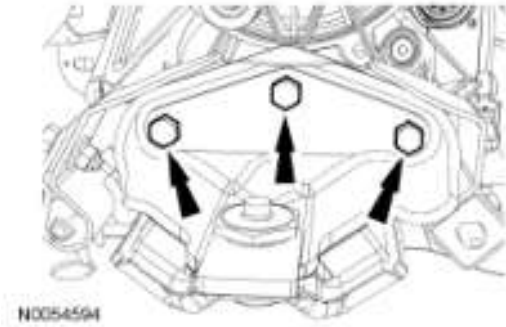


Fig. 613: Locating Transmission Wiring Harness
Courtesy of FORD MOTOR CO.

9. Install the starter motor and the 3 starter motor bolts.
 - Tighten to 26 Nm (19 lb-ft).

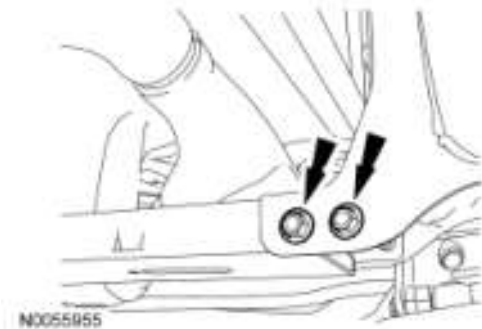


Fig. 614: Identifying Starter Motor Bolts
Courtesy of FORD MOTOR CO.

10. Install the ground wire on the stud and install the ground wire nut.
 - Tighten to 23 Nm (17 lb-ft).

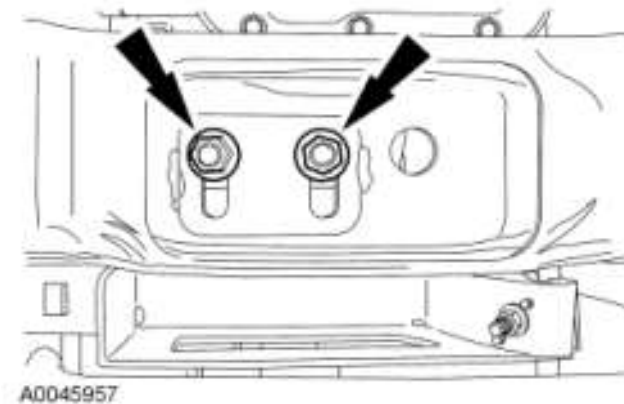


Fig. 615: Identifying Ground Wire
Courtesy of FORD MOTOR CO.

11. Install the starter motor electrical connectors.
 1. Tighten to 12 Nm (106 lb-in).
 2. Tighten to 6 Nm (53 lb-in).



Fig. 616: Identifying Starter Motor Electrical Connectors Bolts
Courtesy of FORD MOTOR CO.

12. Install the plastic starter motor electrical connector cap.



Fig. 617: Locating Plastic Starter Motor Electrical Connector Cap
Courtesy of FORD MOTOR CO.

13. Position the transmission fluid cooler tubes in place and install the transmission fluid cooler tube bracket front stud bolt nut.
 - Tighten to 27 Nm (20 lb-ft).



Fig. 618: Identifying Transmission Fluid Cooler Tube Bracket
Courtesy of FORD MOTOR CO.

14. Align the transmission fluid cooler tube bracket and install the remaining transmission case bolt.
 - Tighten to 48 Nm (35 lb-ft).

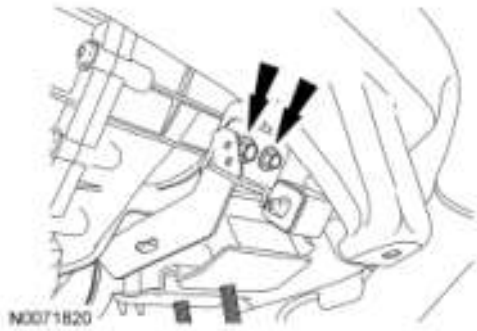


Fig. 619: Locating Transmission Case Bolt
 Courtesy of FORD MOTOR CO.

15. **NOTE:** Inspect the case to make sure that the old transmission fluid cooler tube O-rings are not stuck in the case.

NOTE: Install new transmission fluid cooler tube O-rings on the ends of the transmission fluid cooler tubes prior to installing.

Install new transmission fluid cooler tube O-rings on the transmission fluid cooler tubes.

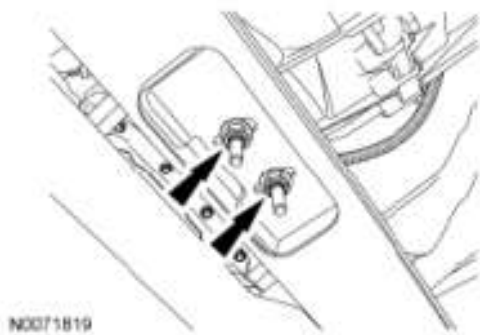


Fig. 620: Locating O-Rings On Transmission Fluid Cooler Tubes
 Courtesy of FORD MOTOR CO.

16. Install the transmission fluid cooler tubes and the transmission fluid cooler tube bracket bolt.
- Tighten to 23 Nm (17 lb-ft).

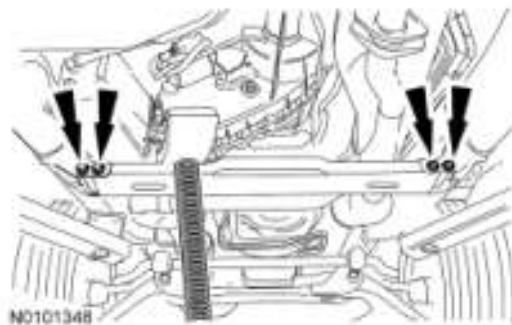


Fig. 621: Locating Transmission Fluid Cooler Tube Bracket Bolt
 Courtesy of FORD MOTOR CO.

17. Install 4 new flexplate-to-torque converter nuts.
 - Tighten to 35 Nm (26 lb-ft).

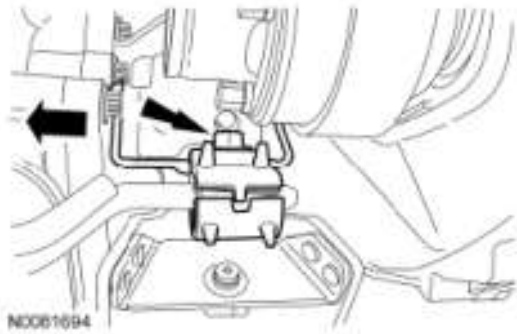


Fig. 622: Identifying Flexplate-To-Torque Converter Nuts
Courtesy of FORD MOTOR CO.

18. Install the rubber access plug.



Fig. 623: Identifying Rubber Torque Converter Access Plug
Courtesy of FORD MOTOR CO.

19. Install the flexplate inspection cover and the inspection cover bolts.
 - Tighten to 35 Nm (26 lb-ft).



Fig. 624: Identifying Flexplate Inspection Cover Bolts
Courtesy of FORD MOTOR CO.

20. Install the selector lever cable bracket and selector lever cable bracket bolts.
 - Tighten to 48 Nm (35 lb-ft).

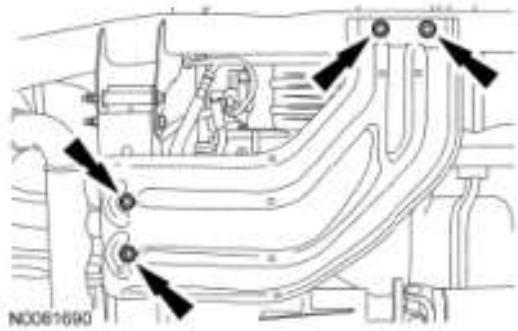


Fig. 625: Locating Selector Lever Bracket Bolts
 Courtesy of FORD MOTOR CO.

21. **NOTE:** When installing the selector lever cable end, make sure that the selector lever cable end is correctly installed onto the manual control lever. Pull back on the selector lever cable to make sure that the selector lever cable end is securely installed onto the manual control lever.

NOTE: Apply pressure to the selector lever cable end while connecting it to the manual control lever to make sure the selector lever has not moved out of the **DRIVE** position.

Connect the selector lever cable to the manual control lever.

- Listen for the audible click.
- Pull back on the selector lever cable to make sure that the selector lever cable is securely installed.

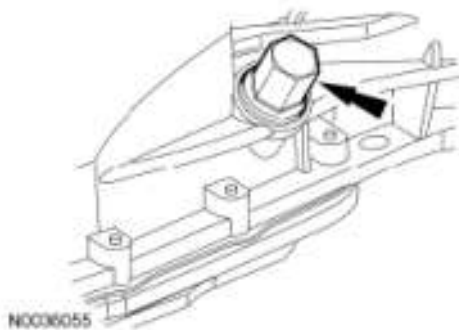


Fig. 626: Locating Selector Lever Cable
 Courtesy of FORD MOTOR CO.

22. Lock the selector lever cable lock tab.

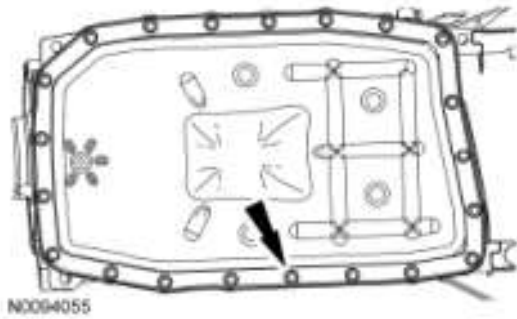


Fig. 627: Locating Selector Lever Cable Lock Tab
Courtesy of FORD MOTOR CO.

23. Install the selector lever cable heat shield.

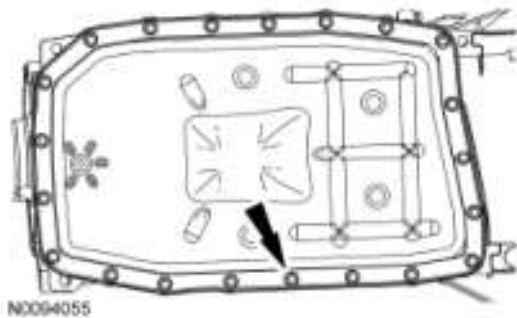


Fig. 628: Identifying Heat Shield
Courtesy of FORD MOTOR CO.

24. Install the fuel line bracket and the fuel line bracket bolt.
• Tighten to 25 Nm (18 lb-ft).

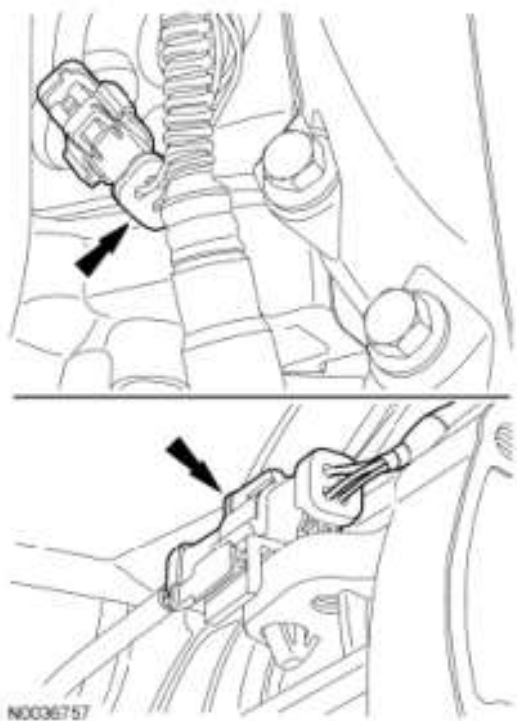


Fig. 629: Locating Fuel Line Bracket Bolt
Courtesy of FORD MOTOR CO.

25. **NOTE:** Prior to Installation, Inspect the Heated Oxygen Sensor (HO2S) and the Catalyst Monitor Sensor (CMS) wiring harness for damage.

Position the dual converter Y-pipe in place and install the 2 dual converter Y-pipe bolts.

- Tighten to 40 Nm (30 lb-ft).

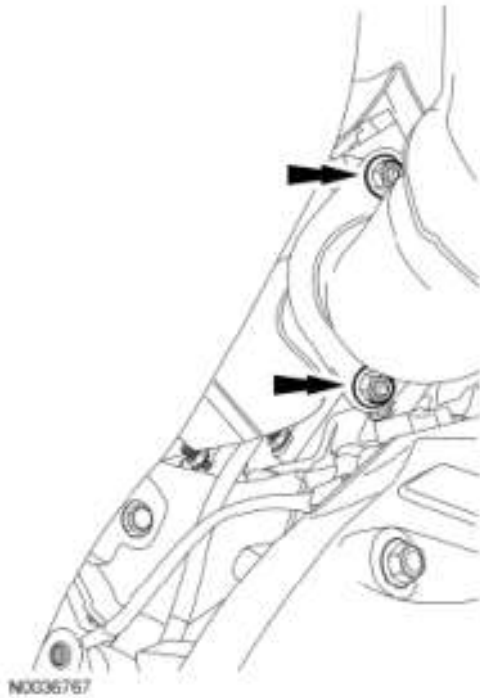


Fig. 630: Locating Dual Converter Y-Pipe Bolts
Courtesy of FORD MOTOR CO.

26. **NOTE:** LH shown in illustration, RH similar.

Install the LH and RH exhaust flange nuts.

- Tighten to 40 Nm (30 lb-ft).

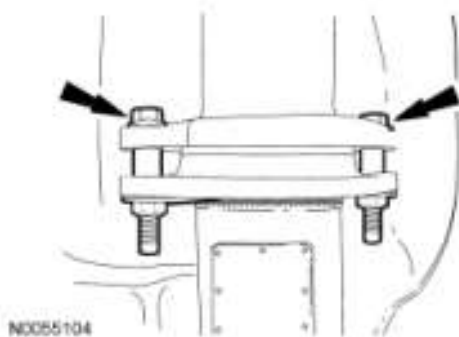


Fig. 631: Locating RH And LH Exhaust Flange Nuts
Courtesy of FORD MOTOR CO.

27. **NOTE:** LH shown in illustration, RH similar.

Connect the RH and LH HO₂S and the CMS electrical connectors.

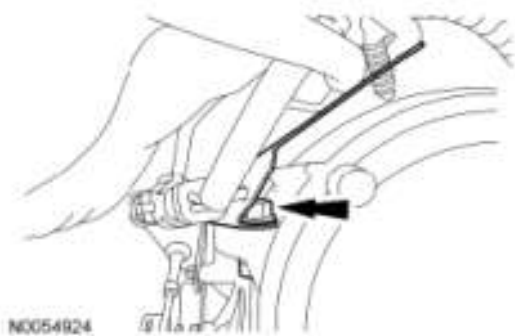


Fig. 632: Locating Heated Oxygen Sensor And Catalyst Monitor Sensor Electrical Connectors
Courtesy of FORD MOTOR CO.

28. Position a jackstand under the transmission, and remove the transmission jack.

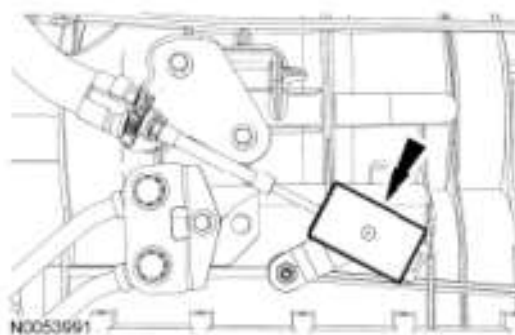


Fig. 633: Positioning Jackstand Under Transmission
Courtesy of FORD MOTOR CO.

29. Install the transfer case. For additional information, refer to **TRANSFER CASE** .
30. Connect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** .
31. Verify that the selector lever cable is correctly adjusted. For additional information, refer to **AUTOMATIC TRANSAXLE/TRANSMISSION EXTERNAL CONTROLS** .
32. Reprogram the Transmission Control Module (TCM) with the latest calibration.
33. Fill the transmission with automatic transmission fluid. For additional information, refer to **TRANSMISSION FLUID DRAIN AND REFILL**.

TRANSMISSION - REAR WHEEL DRIVE (RWD)

Special Tool(s)

SPECIAL TOOL SPECIFICATION



ST1636-A

Retainer, Torque Converter 307-346 (T97T-7902-A)

Material

MATERIAL SPECIFICATION

Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLV	MERCON® LV
Multi-Purpose Grease XG-4 and/or XL-5	ESB-M1C93-B

Installation

NOTE: Prior to the installation of the transmission, the torque converter pilot hub must be lubricated with multi-purpose grease or damage to the torque converter or engine crankshaft can occur.

1.

Lubricate the torque converter pilot hub with multi-purpose grease.

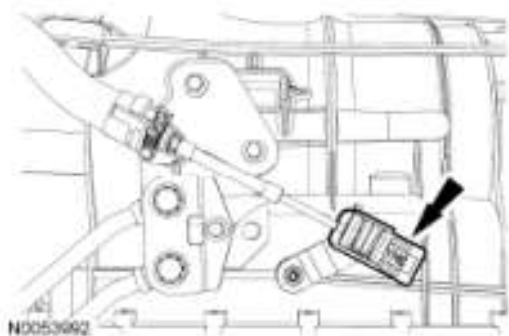


Fig. 634: Locating Torque Converter Pilot Hub
 Courtesy of FORD MOTOR CO.

2. Install the Torque Converter Retainer.

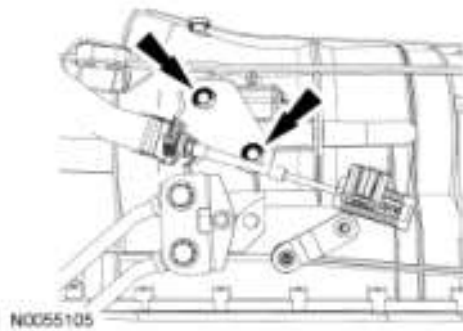


Fig. 635: Identifying Torque Converter Retainer
 Courtesy of FORD MOTOR CO.

3. **NOTE:** The converter housing is piloted into position by dowels in the rear of the engine block. The torque converter must rest squarely against the flexplate. This indicates that the converter pilot is not binding in the engine crankshaft.

NOTE: Make sure that the transmission jack makes contact on the outer ribs of the transmission fluid pan.

NOTE: Make sure that the transmission is securely fastened to the transmission jack.

Position and secure the transmission on the high-lift transmission jack. Raise and position the transmission into the vehicle.

4. Remove the Torque Converter Retainer.

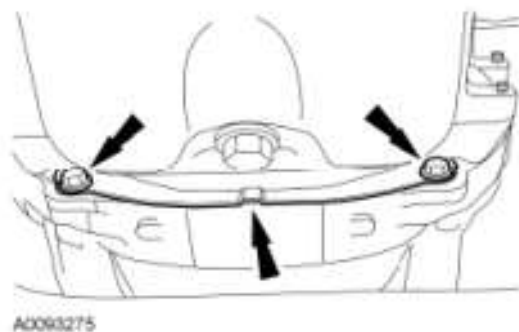


Fig. 636: Identifying Torque Converter Retainer
 Courtesy of FORD MOTOR CO.

5. **NOTE:** Make sure the torque converter is fully seated in the transmission before aligning the transmission to the engine.

With the transmission in a horizontal position, move it toward the engine. Align the orange balancing marks between the torque converter studs and the flexplate bolt holes.

6. **NOTE:** Install the transmission case bolts in their correct locations noted

6. during removal.

NOTE: The top 2 transmission case bolts need to be installed prior to installing the remaining bolts.

NOTE: The top left bolt is inserted through the fuel line bracket first, then through the transmission case.

Install 6 of the remaining 7 transmission case bolts.

- Tighten to 48 Nm (35 lb-ft).

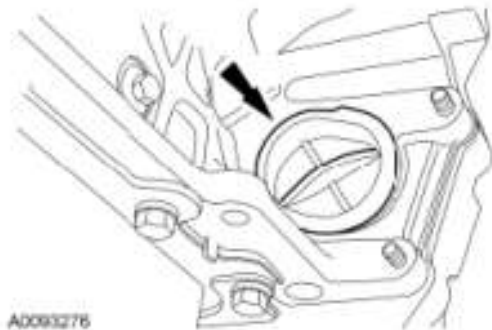


Fig. 637: Locating Transmission Case Bolts
Courtesy of FORD MOTOR CO.

7. Connect the transmission vehicle harness connector by pushing it in and twisting the outer shell to lock it in place.

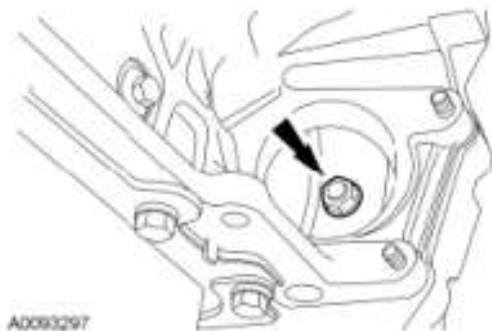


Fig. 638: Locating Transmission Vehicle Harness Connector
Courtesy of FORD MOTOR CO.

8. Connect the wire harness to the top of the transmission.

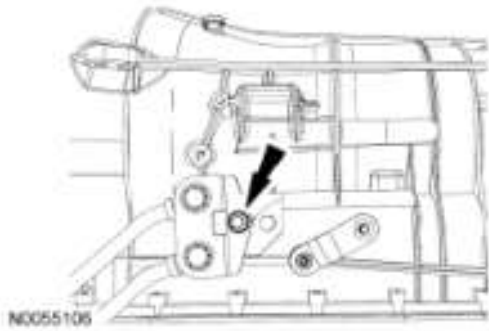


Fig. 639: Locating Transmission Wire Harness
Courtesy of FORD MOTOR CO.

9. **NOTE:** Prior to Installation, Inspect the Heated Oxygen Sensor (HO2S) and the Catalyst Monitor Sensor (CMS) wiring harness for damage.

Position the dual converter Y-pipe in place and install the 2 dual converter Y-pipe bolts.

- Tighten to 40 Nm (30 lb-ft).

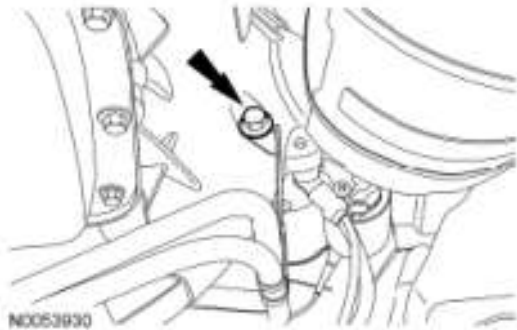


Fig. 640: Locating Dual Converter Y-Pipe Bolts
Courtesy of FORD MOTOR CO.

10. **NOTE:** LH shown in illustration, RH similar.

Install the LH and RH exhaust flange nuts.

- Tighten to 40 Nm (30 lb-ft).

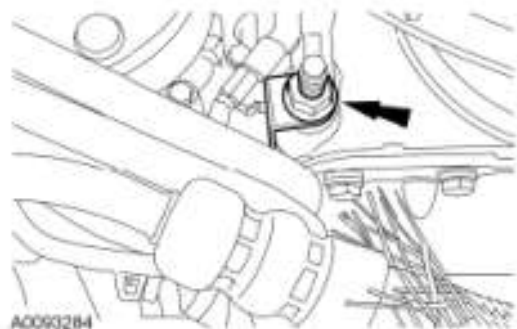


Fig. 641: Locating RH And LH Exhaust Flange Nuts

Courtesy of FORD MOTOR CO.

11. Position the transmission insulator and retainer to the transmission and install the 3 transmission insulator and retainer bolts.
 - Tighten to 90 Nm (66 lb-ft).

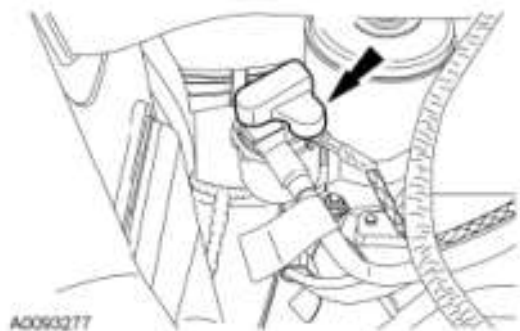


Fig. 642: Locating Transmission Mounting Bracket Bolts
Courtesy of FORD MOTOR CO.

12. Position the transmission crossmember in place and loosely install the transmission insulator and retainer nuts.

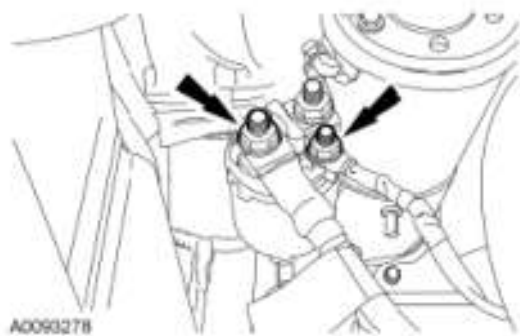


Fig. 643: Locating Transmission Insulator And Retainer Crossmember Nuts
Courtesy of FORD MOTOR CO.

13. Install the transmission crossmember.
 1. Install the transmission crossmember.
 2. Install the 4 transmission crossmember bolts and nuts.
 - Tighten to 90 Nm (66 lb-ft).

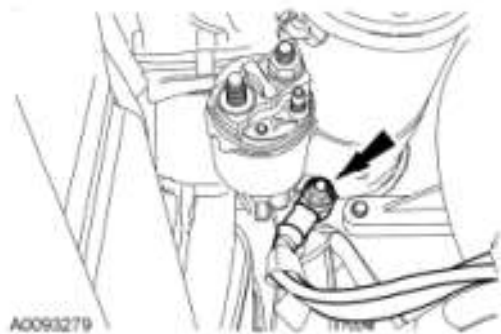


Fig. 644: Identifying Transmission Crossmember With Bolts And Nuts
Courtesy of FORD MOTOR CO.

14. Tighten the transmission insulator and retainer nuts.
 - Tighten to 115 Nm (85 lb-ft).



Fig. 645: Locating Transmission Insulator And Retainer Crossmember Nuts
Courtesy of FORD MOTOR CO.

15. Install the LH isolator cap and bolt.
 - Tighten to 35 Nm (26 lb-ft).

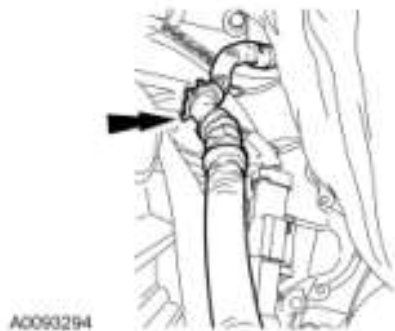


Fig. 646: Locating LH Isolator Cap And Bolt
Courtesy of FORD MOTOR CO.

16. Install the Evaporative Emission (EVAP) canister front bracket bolt to the transmission crossmember.
 - Tighten to 20 Nm (177 lb-in).
17. Install the fuel line bracket and fuel line bracket bolt.
 - Tighten to 25 Nm (18 lb-ft).

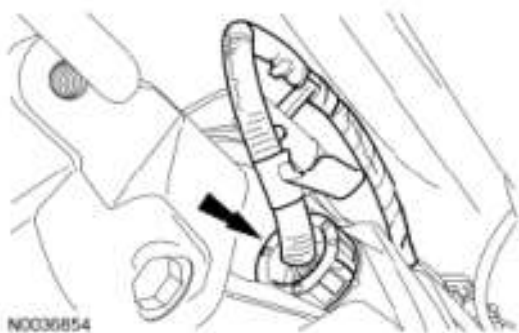
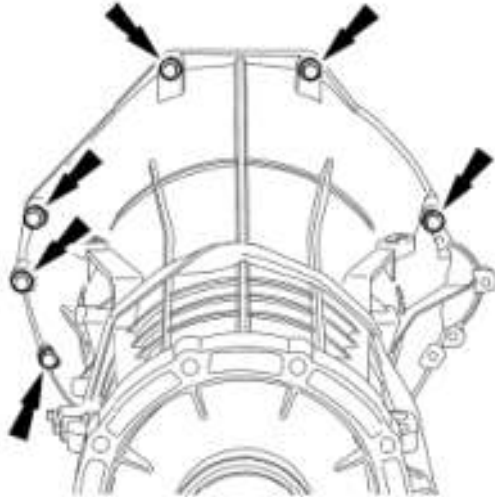


Fig. 647: Locating Fuel Line Bracket Bolt
Courtesy of FORD MOTOR CO.

18. **NOTE:** LH shown in illustration, RH similar.

Connect the RH and LH HO₂S and the CMS electrical connectors.



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Fig. 648: Locating Heated Oxygen Sensor And Catalyst Monitor Sensor Electrical Connectors
Courtesy of FORD MOTOR CO.

19. Install the LH exhaust heat shield and Evaporative Emission (EVAP) canister bolts.
- Tighten to 15 Nm (133 lb-in).

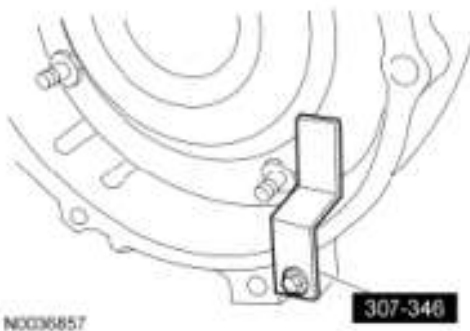


Fig. 649: Locating Evaporative Emission Canister Bolts
Courtesy of FORD MOTOR CO.

20. Install the RH exhaust heat shield bolt.
- Tighten to 15 Nm (133 lb-in).

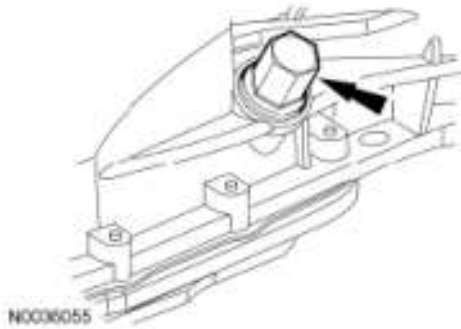


Fig. 650: Locating Exhaust Heat Shield Bolt
 Courtesy of FORD MOTOR CO.

21. Position the starter motor in place and install the 3 starter motor bolts.
 - Tighten to 26 Nm (19 lb-ft).

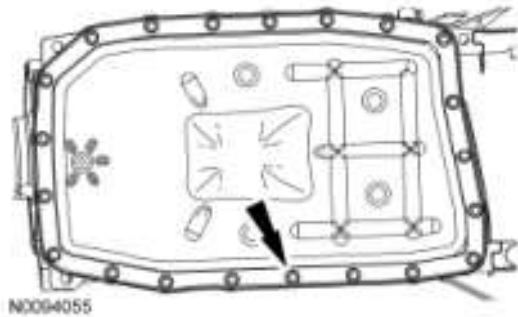


Fig. 651: Identifying Starter Motor Bolts
 Courtesy of FORD MOTOR CO.

22. Install the ground wire on the stud and install the ground wire nut.
 - Tighten to 23 Nm (17 lb-ft).

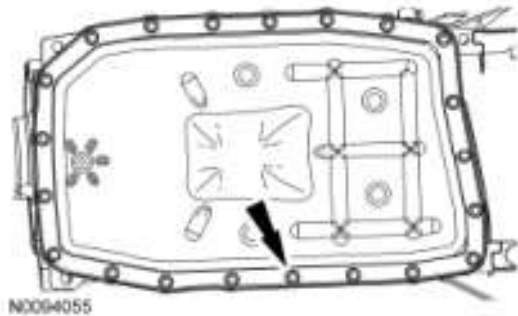


Fig. 652: Identifying Ground Wire
 Courtesy of FORD MOTOR CO.

23. Install the starter motor electrical connectors.
 1. Tighten to 12 Nm (106 lb-in).
 2. Tighten to 6 Nm (53 lb-in).

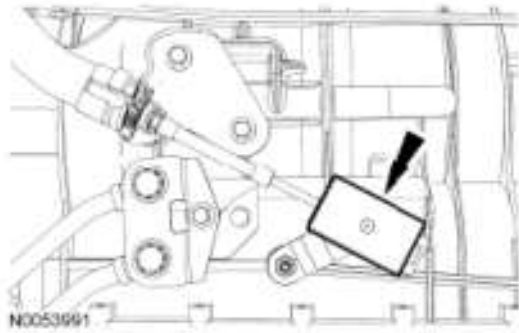


Fig. 653: Identifying Starter Motor Electrical Connectors Bolts
Courtesy of FORD MOTOR CO.

24. Install the plastic starter motor electrical connector cap.

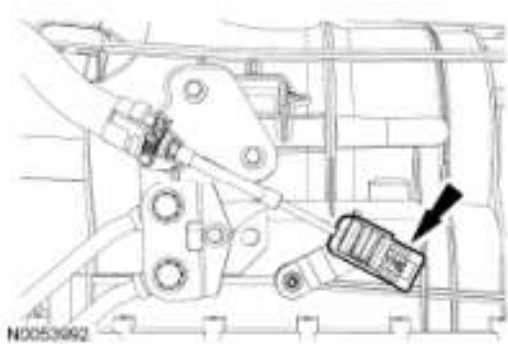


Fig. 654: Identifying Plastic Starter Motor Electrical Connector Cap
Courtesy of FORD MOTOR CO.

25. Position the transmission fluid cooler tubes in place and install the transmission fluid cooler tube bracket nut.
- Tighten to 27 Nm (20 lb-ft).

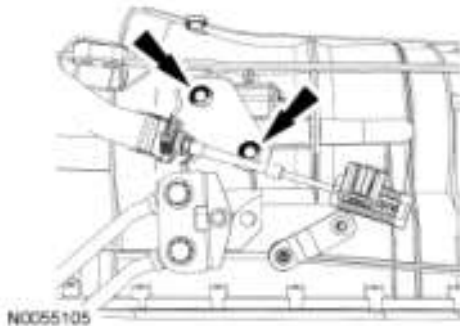
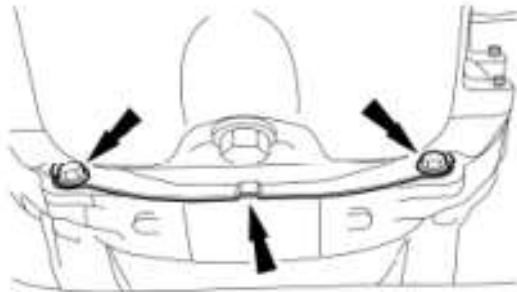


Fig. 655: Identifying Transmission Fluid Cooler Tube Bracket
Courtesy of FORD MOTOR CO.

26. Align the transmission fluid cooler tube bracket and install the remaining transmission case bolts.
- Tighten to 48 Nm (35 lb-ft).



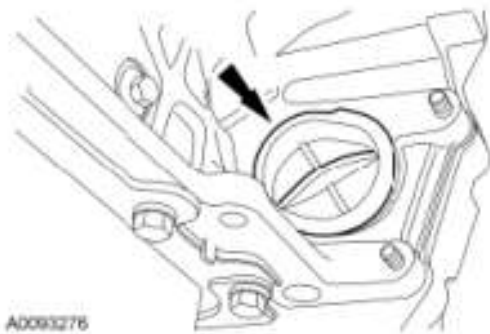
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Fig. 656: Locating Transmission Case Bolt
 Courtesy of FORD MOTOR CO.

27. **NOTE:** Inspect the case to make sure that the old transmission fluid cooler tube O-rings are not stuck in the case.

NOTE: Install new transmission fluid cooler tube O-rings on the ends of the transmission fluid cooler tubes prior to installing.

Install new transmission fluid cooler tube O-rings on the transmission fluid cooler tubes.

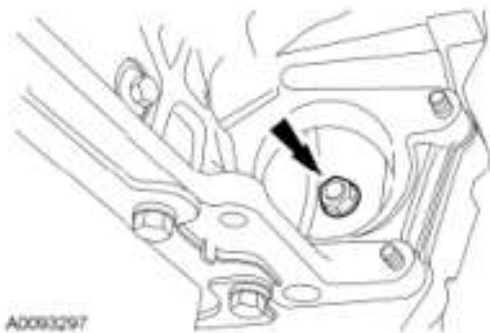


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Fig. 657: Locating O-Rings On Transmission Fluid Cooler Tubes
 Courtesy of FORD MOTOR CO.

28. Install the transmission fluid cooler tubes and the transmission fluid cooler tube bracket bolt.

- Tighten to 23 Nm (17 lb-ft).



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Fig. 658: Locating Transmission Fluid Cooler Tube Bracket Bolt
 Courtesy of FORD MOTOR CO.

29. Install 4 new flexplate-to-torque converter nuts.
- Tighten to 35 Nm (26 lb-ft).

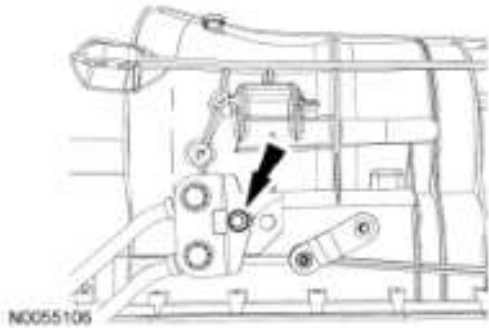


Fig. 659: Identifying Flexplate-To-Torque Converter Nuts
Courtesy of FORD MOTOR CO.

30. Install the rubber access plug.

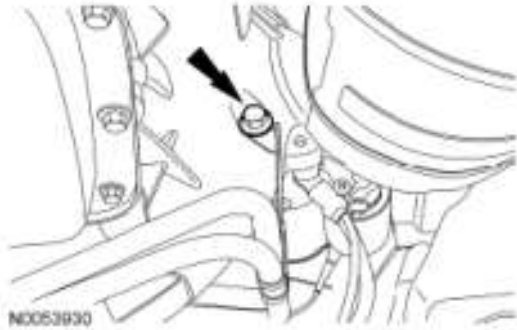


Fig. 660: Locating Rubber Access Plug
Courtesy of FORD MOTOR CO.

31. Install the flexplate inspection cover and the flexplate inspection cover bolts.
- Tighten to 35 Nm (26 lb-ft).

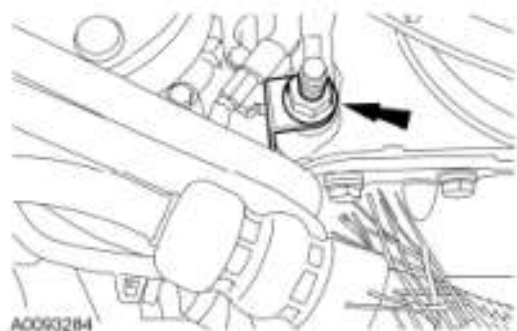


Fig. 661: Identifying Flexplate Inspection Cover Bolts
Courtesy of FORD MOTOR CO.

32. Install the selector lever cable bracket and selector lever cable bracket bolts.
- Tighten to 48 Nm (35 lb-ft).

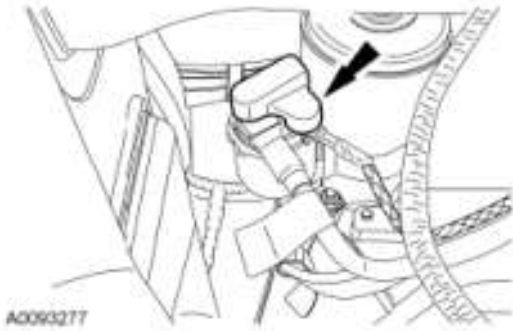


Fig. 662: Locating Selector Lever Bracket Bolts
 Courtesy of FORD MOTOR CO.

33.

NOTE: When installing the selector lever cable end, make sure that the selector lever cable end is correctly installed onto the manual control lever. Pull back on the selector lever cable to make sure that the selector lever cable end is securely installed onto the manual control lever.

NOTE: Apply pressure to the selector lever cable end while connecting it to the manual control lever to make sure the selector lever has not moved out of the **DRIVE** position.

Connect the selector lever cable to the manual control lever.

- Listen for the audible click.
- Pull back on the selector lever cable to make sure that the selector lever cable is securely installed.

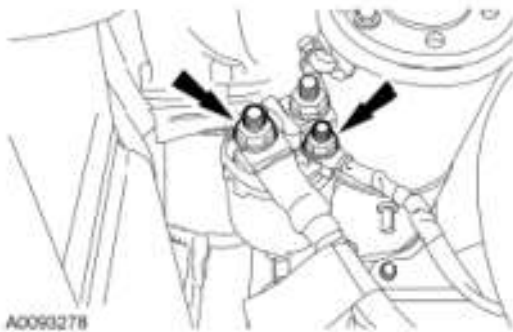


Fig. 663: Locating Selector Lever Cable
 Courtesy of FORD MOTOR CO.

34. Lock the selector lever cable lock tab.

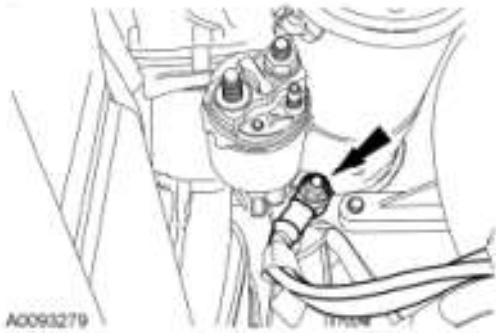


Fig. 664: Locating Selector Lever Cable Lock Tab
Courtesy of FORD MOTOR CO.

35. If equipped, install the selector lever cable heat shield.

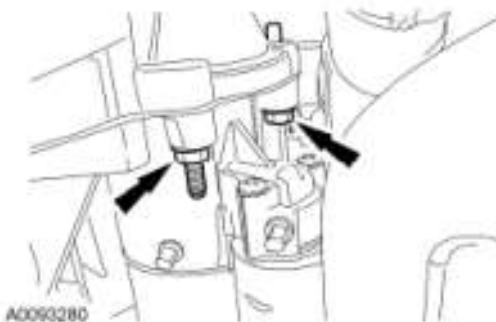


Fig. 665: Locating Heat Shield
Courtesy of FORD MOTOR CO.

36. Install the driveshaft. For additional information, refer to **DRIVESHAFT** .
37. Connect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** .
38. Verify that the selector lever cable is correctly adjusted. For additional information, refer to **AUTOMATIC TRANSAXLE/TRANSMISSION EXTERNAL CONTROLS** .
39. Reprogram the Transmission Control Module (TCM) with the latest calibration.
40. Fill the transmission with automatic transmission fluid. For additional information, refer to **TRANSMISSION FLUID DRAIN AND REFILL**.