

INSTALLATION

ENGINE

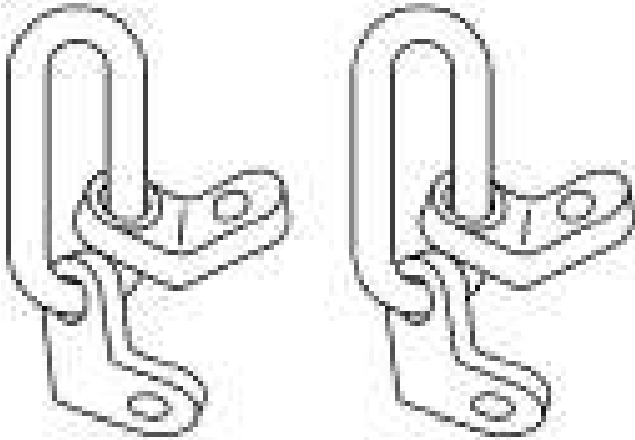
Special Tool(s)

SPECIAL TOOL SPECIFICATION



ST1341-A

Heavy Duty Floor Crane
014-00071 or equivalent



ST1595-A

Lifting Bracket, Engine
303-050 (T70P-6000)



Spreader Bar
303-D089 (D93P-6001-A3) or equivalent

Material

MATERIAL SPECIFICATION

Item	Specification
Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil XO-5W20-QSP (US); Motorcraft® SAE 5W-20 Super Premium Motor Oil CXO-5W20-LSP12 (Canada); or equivalent	WSS-M2C930-A

All vehicles

1. Position the engine in the vehicle. If equipped with an automatic transmission, make sure the index marks on the torque converter stud and flexplate made during removal are lined up.
2. Install the 2 side transmission-to-engine bolts.
3. **NOTE: Left side shown in illustration, right side similar.**

Install the 4 engine support insulator nuts.

- Tighten to 102 Nm (75 lb-ft).

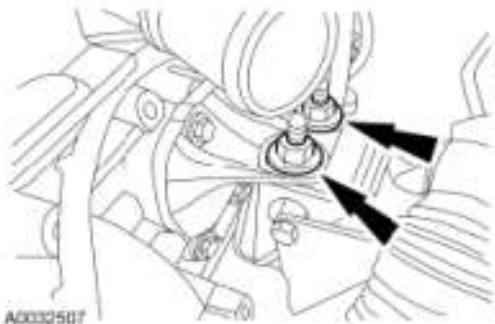


Fig. 333: Locating Engine Support Insulator Nuts

Courtesy of FORD MOTOR CO.

4. Remove the floor jack from the transmission.
5. Remove the Heavy Duty Floor Crane, the Spreader Bar and the Engine Lifting Brackets.

Vehicles with an automatic transmission

6. Install the 4 torque converter nuts.
 - Tighten to 35 Nm (26 lb-ft).

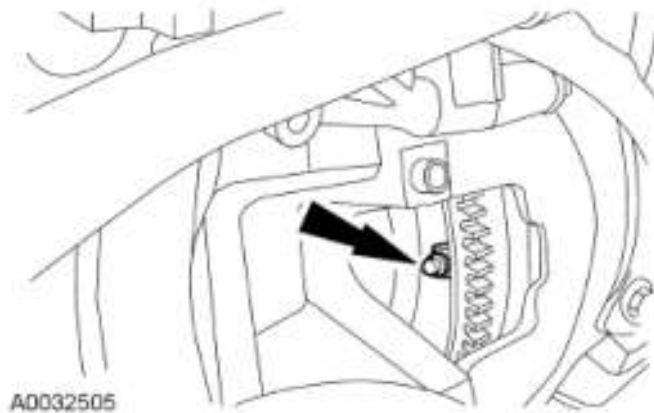


Fig. 334: Locating Torque Converter Nuts
Courtesy of FORD MOTOR CO.

7. Install the transmission fluid indicator and tube assembly.

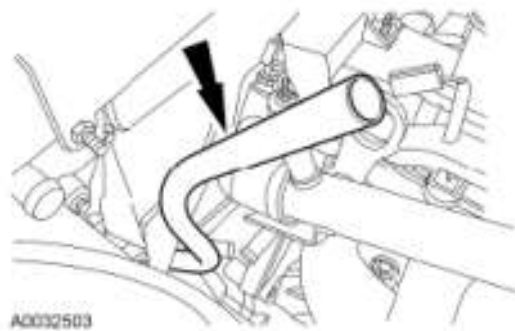


Fig. 335: Locating Transmission Fluid Indicator And Tube Assembly
Courtesy of FORD MOTOR CO.

All vehicles

8. Install the remaining 9 transmission-to-engine bolts.
 - Tighten to 48 Nm (35 lb-ft).

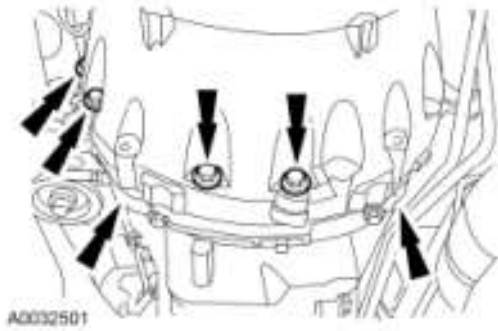


Fig. 336: Locating Transmission-To-Engine Bolts
Courtesy of FORD MOTOR CO.

9. Position the oil filter adapter and install the 4 bolts.
 - Tighten to 25 Nm (18 lb-ft).

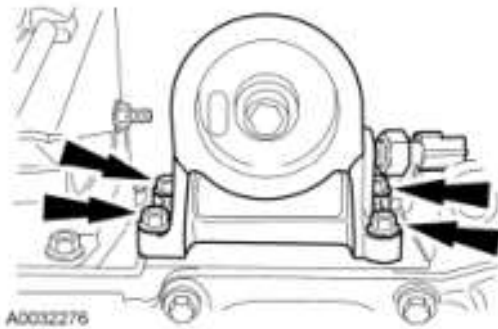


Fig. 337: Locating Oil Filter Adapter Bolts
Courtesy of FORD MOTOR CO.

10. Install the starter dust shield.

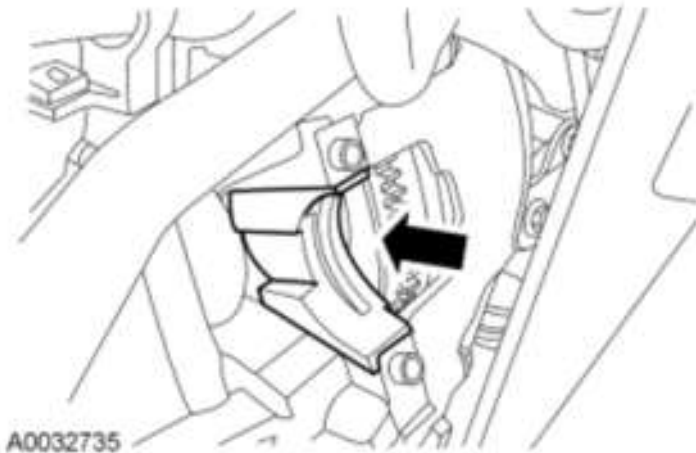


Fig. 338: Locating Starter Dust Shield
Courtesy of FORD MOTOR CO.

11. Install the starter, the bolt and the 2 stud bolts.
 - Tighten to 25 Nm (18 lb-ft).

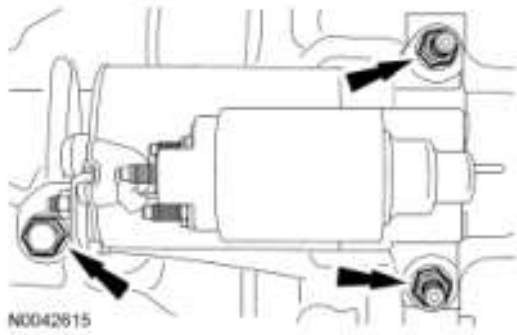


Fig. 339: Locating Starter, Stud Bolts And Nuts
Courtesy of FORD MOTOR CO.

12. Install a new oil filter.

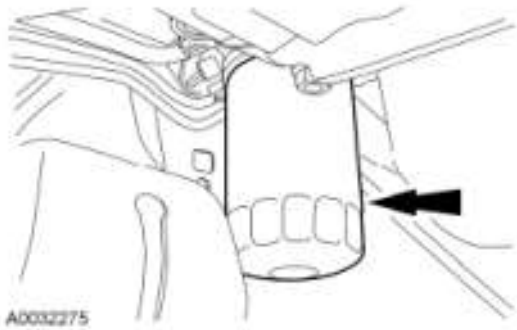


Fig. 340: Locating Engine Oil Filter
Courtesy of FORD MOTOR CO.

13. Connect the Engine Oil Pressure (EOP) sensor electrical connector.

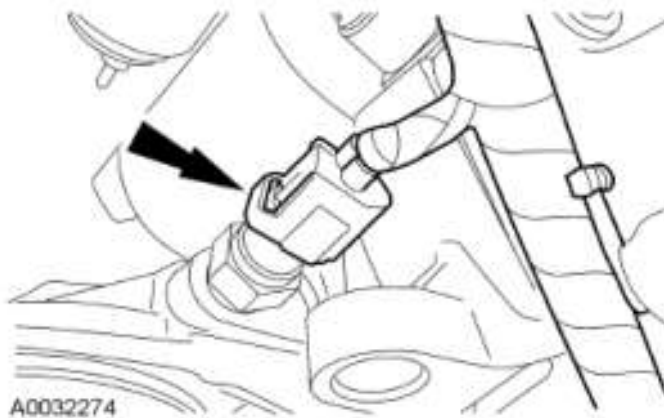


Fig. 341: Locating Engine Oil Pressure Sensor Electrical Connector
Courtesy of FORD MOTOR CO.

Vehicles with an automatic transmission

14. Attach the wiring harness retainers.

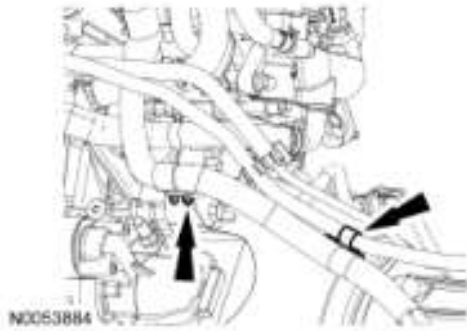


Fig. 342: Locating Wiring Harness Retainers
Courtesy of FORD MOTOR CO.

15. Attach the wiring harness retainers and connect the transmission electrical connectors.

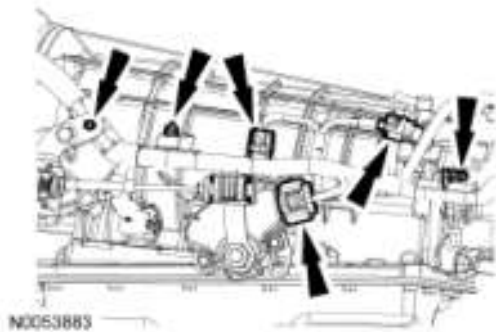


Fig. 343: Locating Transmission Electrical Connectors
Courtesy of FORD MOTOR CO.

16. Route the wiring harness over the transmission, position the bracket and install the nut. Connect the Catalyst Monitor Sensor (CMS) electrical connector.
 - Tighten to 10 Nm (89 lb-in).

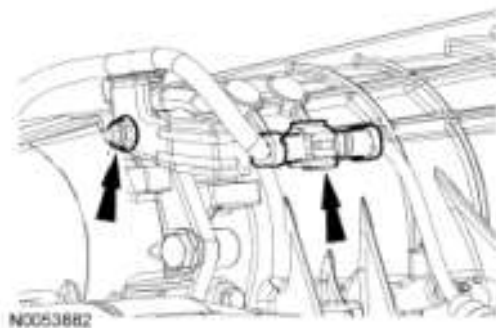


Fig. 344: Locating Catalyst Monitor Sensor Electrical Connector
Courtesy of FORD MOTOR CO.

17. Connect the Heated Oxygen Sensor (HO2S) electrical connector.

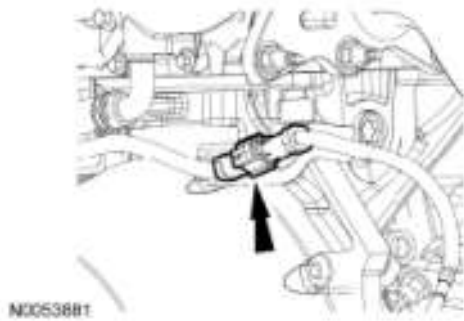


Fig. 345: Locating HO2S Electrical Connector
Courtesy of FORD MOTOR CO.

Vehicles with a manual transmission

18. Attach the wiring harness retainers and connect the transmission electrical connectors.

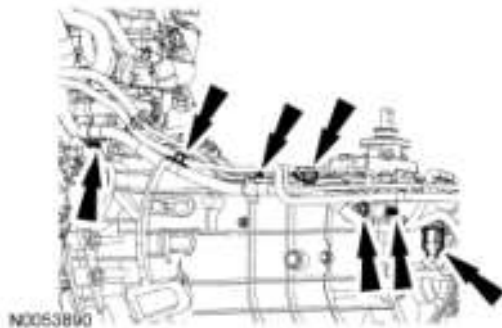


Fig. 346: Locating Wiring Harness Retainers
Courtesy of FORD MOTOR CO.

19. Route the wiring harness over the transmission, position the bracket and install the nut. Connect the CMS electrical connector.
 - Tighten to 10 Nm (89 lb-in).

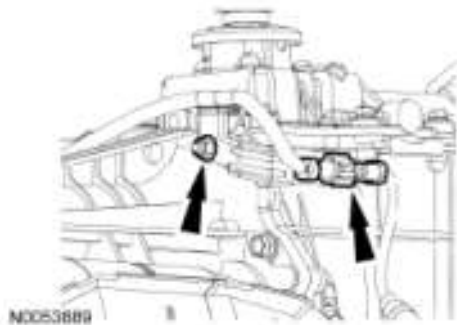


Fig. 347: Locating CMS Electrical Connector
Courtesy of FORD MOTOR CO.

20. Connect the **HO2S** electrical connector.

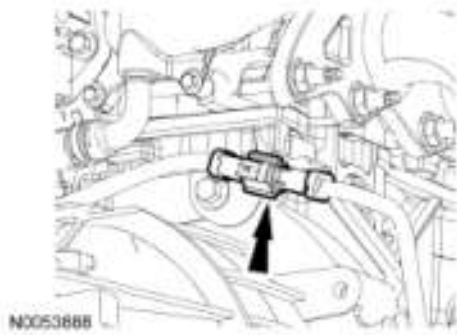


Fig. 348: Locating HO2S Electrical Connector
Courtesy of FORD MOTOR CO.

All vehicles

21. Connect the electrical connector and attach the wiring harness retainer to the crossmember.

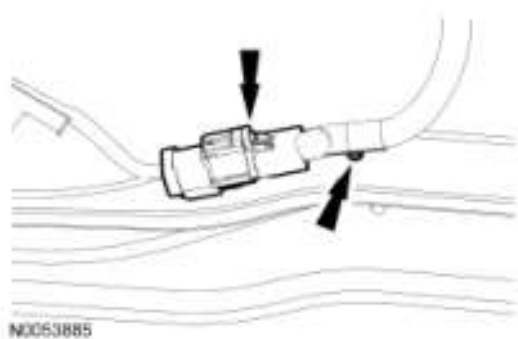


Fig. 349: Locating Electrical Connector
Courtesy of FORD MOTOR CO.

22. Position the exhaust front pipe and install the 2 nuts.
 - Tighten to 40 Nm (30 lb-ft).

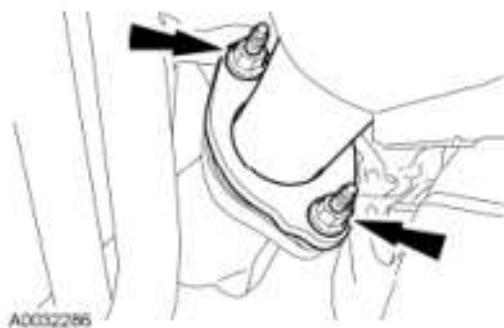


Fig. 350: Locating Exhaust Manifold-To-Front Pipe Nuts
Courtesy of FORD MOTOR CO.

23. Position the transmission dust shield and install the bolt.
 - Tighten to 10 Nm (89 lb-in).

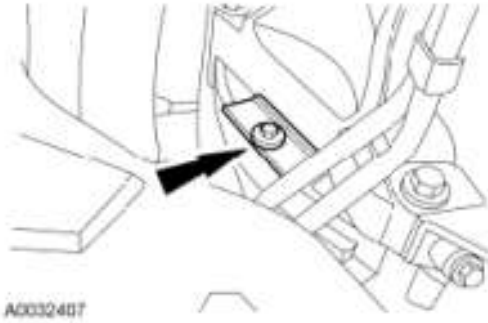


Fig. 351: Locating Transmission Dust Shield
Courtesy of FORD MOTOR CO.

Vehicles with an automatic transmission

24. Install the transmission cooling tubes retaining bracket and the bolt.
 - Tighten to 28 Nm (21 lb-ft).

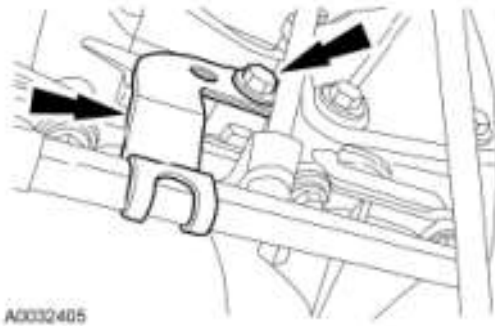


Fig. 352: Locating Transmission Cooling Tubes Retaining Bracket
Courtesy of FORD MOTOR CO.

All vehicles

25. Position the engine wiring harness and install the anchor and the pin-type retainer.

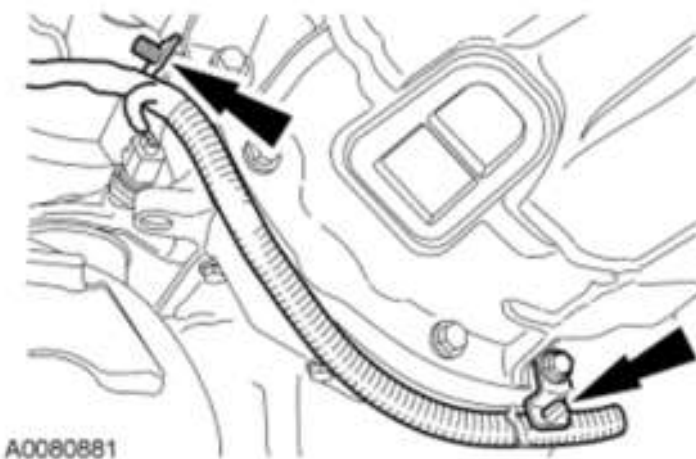


Fig. 353: Locating Engine Wiring Harness Anchor And Pin-Type Retainer
Courtesy of FORD MOTOR CO.

26. If equipped, connect the block heater electrical connector.

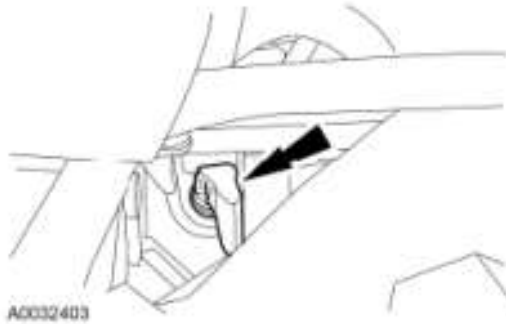


Fig. 354: Locating Block Heater Electrical Connector
Courtesy of FORD MOTOR CO.

27. Attach the generator wiring pin-type retainer.



Fig. 355: Locating Generator Wiring Pin-Type Retainer
Courtesy of FORD MOTOR CO.

28. Connect the generator electrical connections.
- Tighten to 12 Nm (106 lb-in).

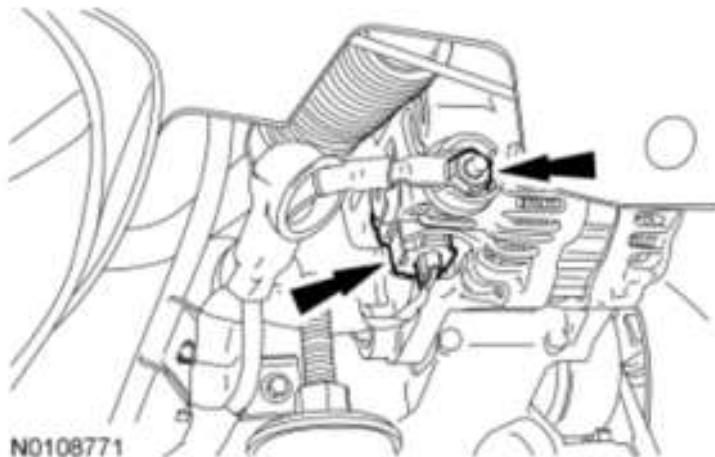


Fig. 356: Locating Generator Electrical Connections
Courtesy of FORD MOTOR CO.

29. Position the RH splash shield and install the 3 rear pushpins.

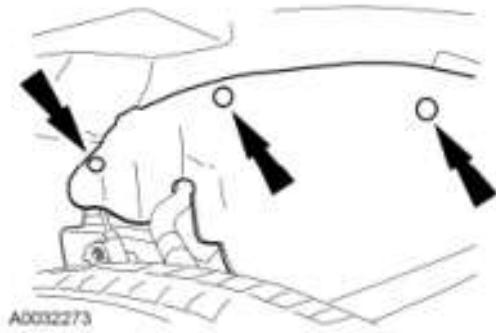


Fig. 357: Locating Rear Pushpins
Courtesy of FORD MOTOR CO.

30. Position the starter wiring harness and install the support bracket and the bolt.
- Tighten to 24 Nm (18 lb-ft).

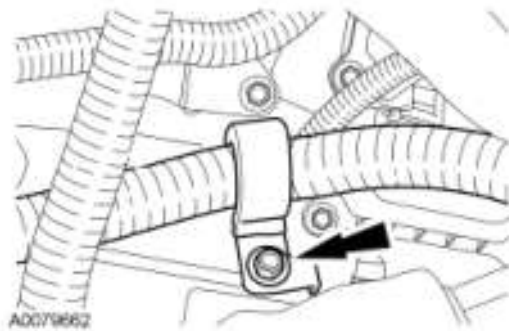


Fig. 358: Locating Starter Wiring Harness Support Bracket And Bolt
Courtesy of FORD MOTOR CO.

31. Connect the following starter motor electrical connections.
- Install the solenoid control wire and nut.
 - Tighten to 6 Nm (53 lb-in).
 - Install the negative battery cable and nut.
 - Tighten to 12 Nm (106 lb-in).
 - Install the positive battery cable at the starter and the nut.
 - Tighten to 12 Nm (106 lb-in).

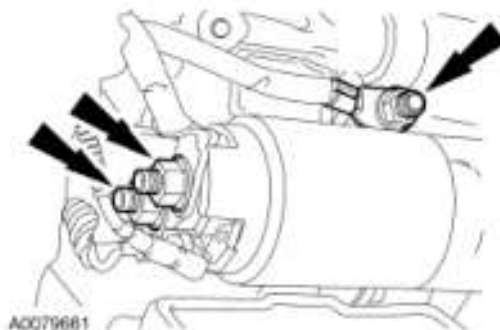


Fig. 359: Locating Positive And Negative Battery Cable
Courtesy of FORD MOTOR CO.

32. Connect the brake booster vacuum hose and the engine ground strap.
 - Tighten to 10 Nm (89 lb-in).

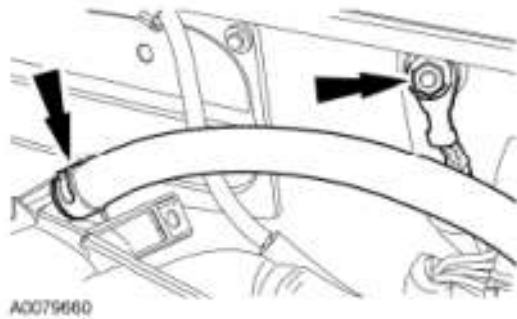


Fig. 360: Locating Brake Booster Vacuum Hose And Engine Ground Strap
Courtesy of FORD MOTOR CO.

33. Connect the electrical connectors, the fuel supply tube and the evaporative purge tube quick connect coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** .

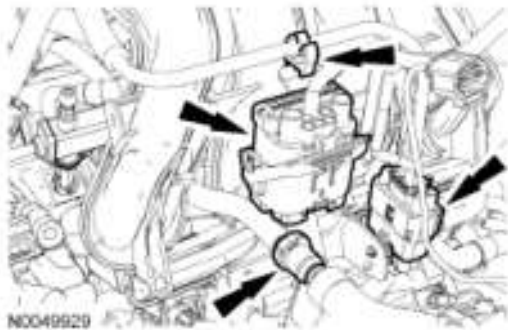


Fig. 361: Locating Evaporative Purge Tube Quick Connect Coupling
Courtesy of FORD MOTOR CO.

34. Connect the fuel supply tube spring lock coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** .

35. **NOTE:** **Install a new nylon O-ring seal.**

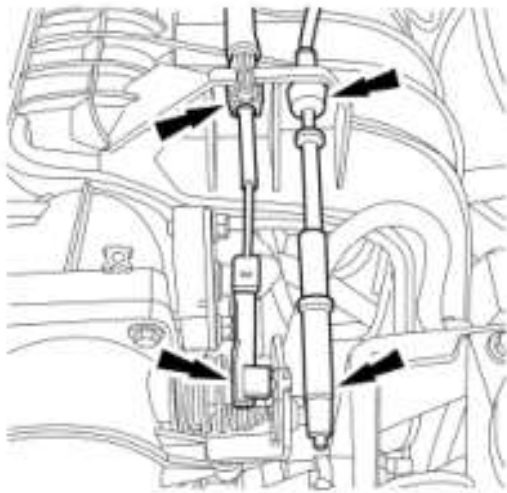
Connect the power steering high-pressure tube and the Power Steering Pressure (PSP) switch electrical connector.

- Tighten to 20 Nm (177 lb-in).



Fig. 362: Locating Power Steering Pressure Switch Electrical Connector And High-Pressure Power Steering Tube
Courtesy of FORD MOTOR CO.

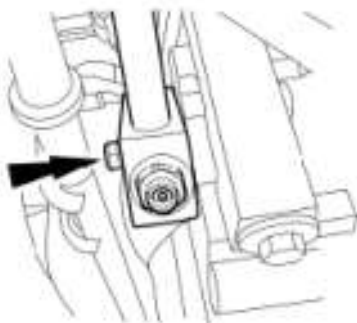
36. Connect the accelerator cable and, if equipped, the speed control cable to the Throttle Body (TB) and the cable mounting bracket.



N0042612

Fig. 363: Identifying Accelerator Cable Mounting Bracket
Courtesy of FORD MOTOR CO.

37. Remove the plugs and connect the A/C compressor manifold.
- Tighten to 20 Nm (177 lb-in).



A0032387

Fig. 364: Locating A/C Compressor Manifold
Courtesy of FORD MOTOR CO.

38. Connect the Mass Air Flow (MAF) sensor electrical connector.



Fig. 365: Locating Mass Air Flow Electrical Connector
Courtesy of FORD MOTOR CO.

39. Connect the A/C compressor electrical connector.

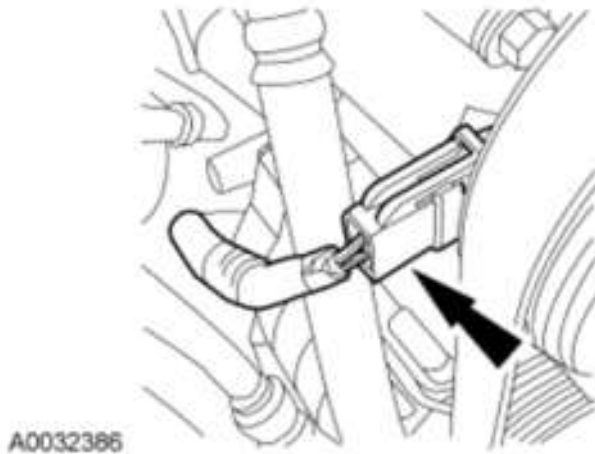


Fig. 366: Locating A/C Compressor Electrical Connector
Courtesy of FORD MOTOR CO.

40. Connect the coolant reservoir-to-engine supply hose.



Fig. 367: Locating Engine Coolant Supply Hose
Courtesy of FORD MOTOR CO.

41. Connect the engine-to-coolant reservoir bypass hose.

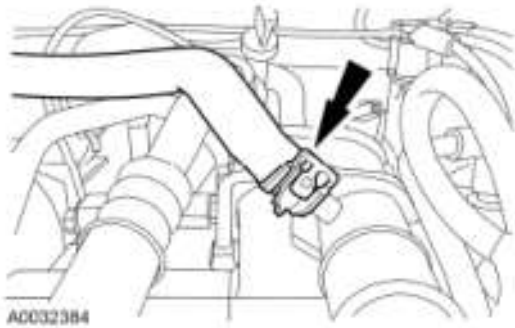


Fig. 368: Locating Engine-To-Degas Bottle Coolant Bypass Hose
Courtesy of FORD MOTOR CO.

42. Connect the vacuum reservoir tube.

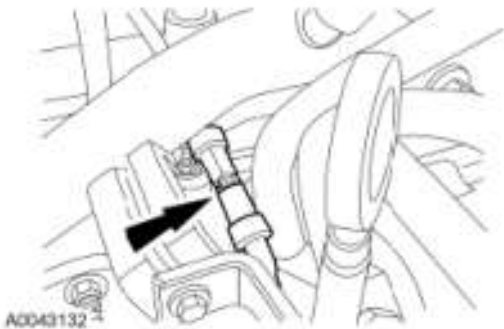


Fig. 369: Locating Vacuum Reservoir Tube Connection
Courtesy of FORD MOTOR CO.

43. Install the heater hose assembly.
1. Connect the heater hoses to the heater core.
 2. Connect the vacuum hose.
 3. Connect the heater hoses to the engine.

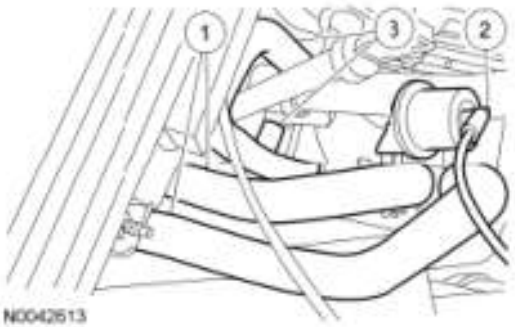


Fig. 370: Identifying Vacuum And Heater Hose
Courtesy of FORD MOTOR CO.

44. Install the ground strap and stud bolt.
- Tighten to 10 Nm (89 lb-in).

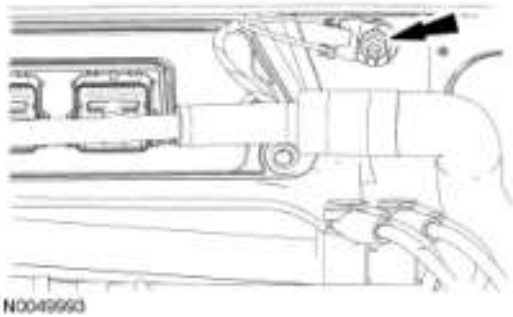


Fig. 371: Locating Stud Bolt And Ground Cable
Courtesy of FORD MOTOR CO.

45. Position the PCM harness, install the harness retaining nut and connect the 3 PCM electrical connectors.
 - Tighten the harness retainer nut to 4 Nm (35 lb-in).

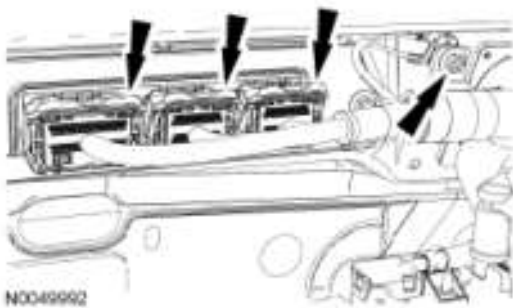


Fig. 372: Locating PCM Electrical Connectors
Courtesy of FORD MOTOR CO.

46. Install the lower radiator hose.

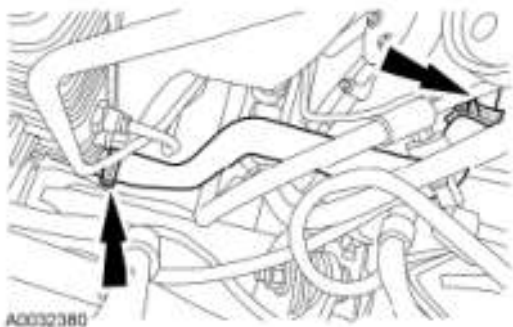


Fig. 373: Identifying Lower Radiator Hose With Clips
Courtesy of FORD MOTOR CO.

47. Install the fan shroud. For additional information, refer to **ENGINE COOLING**.
48. Install the upper radiator hose.

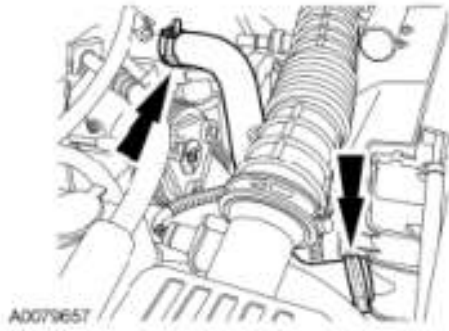


Fig. 374: Identifying Upper Radiator Hose With Clips
Courtesy of FORD MOTOR CO.

49. Install the Air Cleaner (ACL) outlet pipe. For additional information, refer to **INTAKE AIR DISTRIBUTION & FILTERING** .
50. Install the hood.
51. Fill the engine with clean engine oil.
52. Connect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** .
53. Fill and bleed the engine cooling system. For additional information, refer to **ENGINE COOLING** .
54. Fill and bleed the power steering system. For additional information, refer to **STEERING SYSTEM** .
55. Evacuate and charge the A/C system. For additional information, refer to **CLIMATE CONTROL SYSTEM - GENERAL INFORMATION AND DIAGNOSTICS** .