

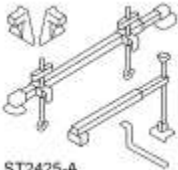


Engine — Manual Transmission

Special Tool(s)

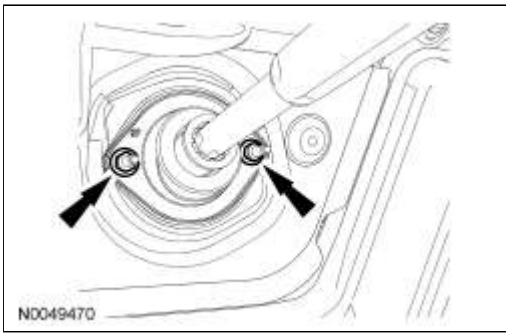
 <p>ST1341-A</p>	<p>Heavy Duty Floor Crane 014-00071 or equivalent</p>
 <p>ST1377-A</p>	<p>Lifting Bracket, Engine 303-F047 (014-00073) or equivalent</p>
 <p>ST2425-A</p>	<p>Support Bar, Engine 303-F072</p>

⚠ WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

⚠ WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result in serious personal injury.

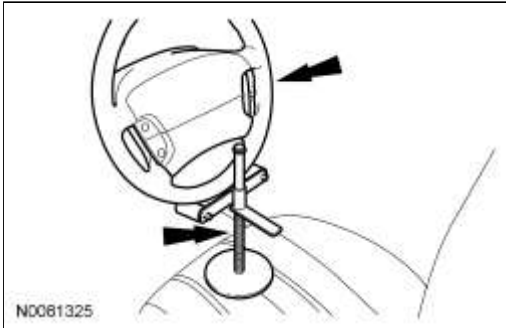
⚠ WARNING: Do not breathe dust or use compressed air to blow dust from storage containers or friction components. Remove dust using government-approved techniques. Friction component dust may be a cancer and lung disease hazard. Exposure to potentially hazardous components may occur if dusts are created during repair of friction components, such as brake pads and clutch discs. Exposure may also cause irritation to skin, eyes and respiratory tract, and may cause allergic reactions and/or may lead to other chronic health effects. If irritation persists, seek medical attention or advice. Failure to follow these instructions may result in serious personal injury.

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to [Section 100-02](#).
2. Release the fuel system pressure. For additional information, refer to [Section 310-00](#).
3. Drain the engine cooling system. For additional information, refer [Section 303-03A](#).
4. Disconnect the battery ground cable. For additional information, refer to [Section 414-01](#).
5. Remove the 2 steering column dash boot nuts.

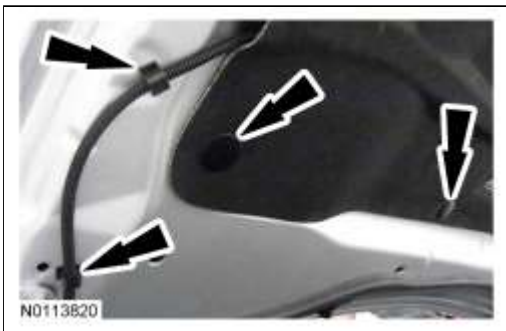


6. **NOTE:** Use a steering wheel holding device (such as Hunter® 28-75-1 or equivalent).

Using a suitable holding device, hold the steering wheel in the straight-ahead position.



7. Release the 2 windshield washer hose retainers and the 8 hood insulation pin-type retainers (2 shown).



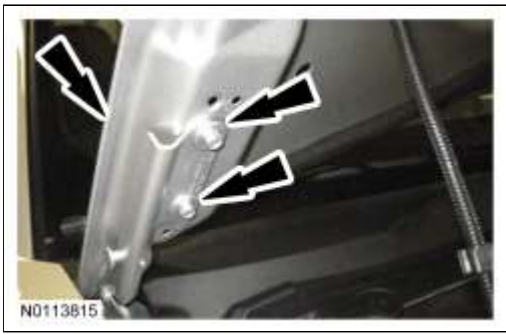
8. Detach the 2 windshield washer hose retainers and disconnect the 2 windshield washer hose C-Lock Couplers. For additional information, refer to [Section 501-16](#).



9. **NOTE:** Index-mark the hood hinge location to aid in hood installation.

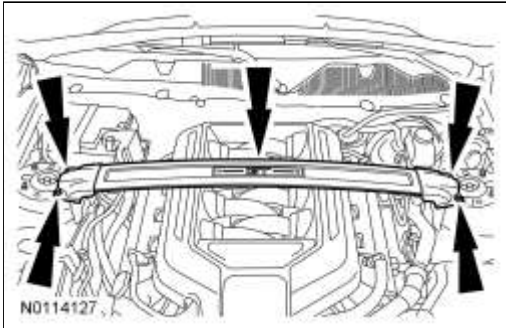
NOTE: RH shown, LH similar.

Remove the 4 bolts (2 shown) and the hood.



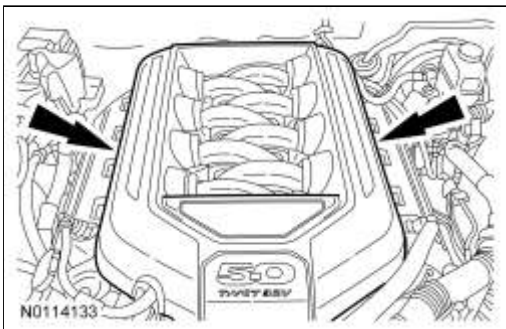
10. **NOTE:** Base 5.0 L (4V) shown, Boss® 302 similar.

If equipped, remove the 4 nuts and the strut tower cross brace.



11. **NOTE:** The engine appearance cover rubber grommets may remain on the cover. If so, remove the grommets from the cover and install them on the intake manifold before installing the cover.

If equipped, remove the engine appearance cover.

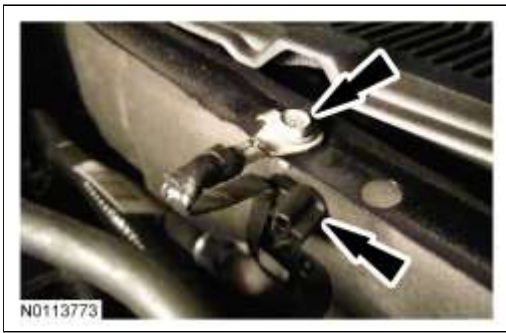


12. Remove the 2 LH cowl vent screen plastic rivets.



13. Lift the cowl screen and remove the bolt and ground strap.

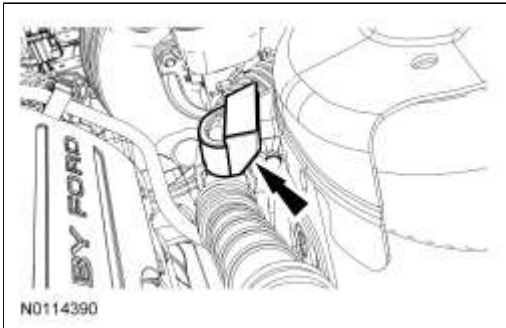
- Detach the wiring harness retainer from the cowl.



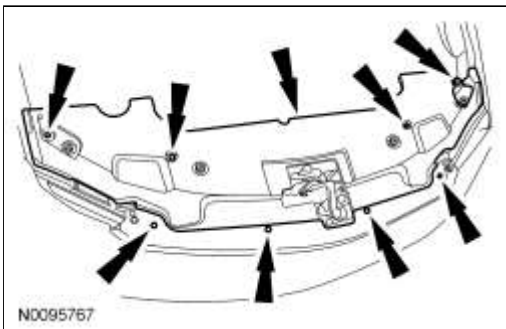
14. **NOTE:** It is not necessary to separate the Air Cleaner (ACL) outlet pipe and the ACL , the 2 components can be removed as an assembly.

Remove the ACL outlet pipe and the ACL . For additional information, refer to the exploded view in [Section 303-12](#).

15. Detach the sound enhancement pipe retainer and position the pipe aside.



16. Remove the 8 pin-type retainers and the upper radiator sight shield.

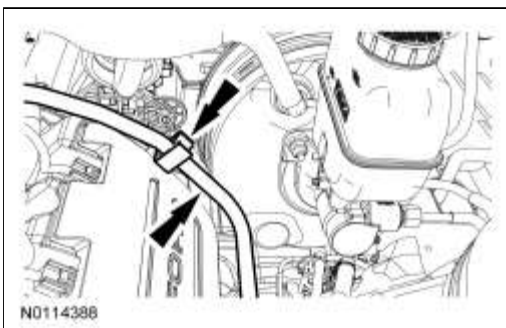


17. Remove the degas bottle. For additional information, refer to [Section 303-03A](#).

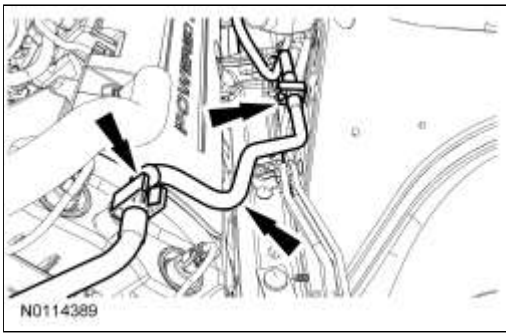
18. Remove the intake manifold. For additional information, refer to [Intake Manifold](#) in this section.

19. **NOTE:** Base 5.0 L (4V) shown, Boss® 302 similar.

Detach the fuel supply tube from the retainer clip on the LH valve cover.

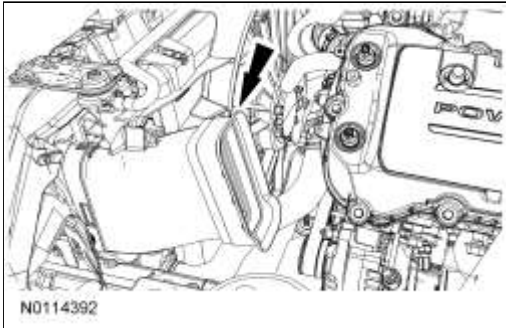


20. If equipped, detach the Evaporative Emission (EVAP) tube from the LH valve cover and the LH inner fender.

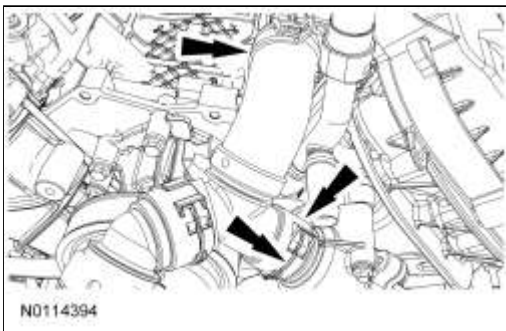


21. Remove the battery tray. For additional information, refer to [Section 414-01](#).

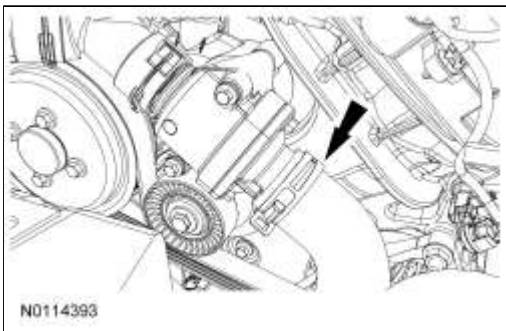
22. Remove the ACL inlet pipe.



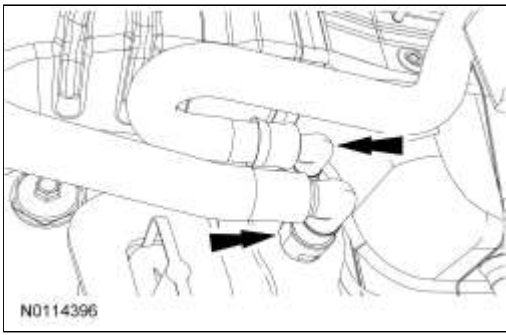
23. Remove the spring clip, the clamp and disconnect the coolant bypass T assembly from the engine.



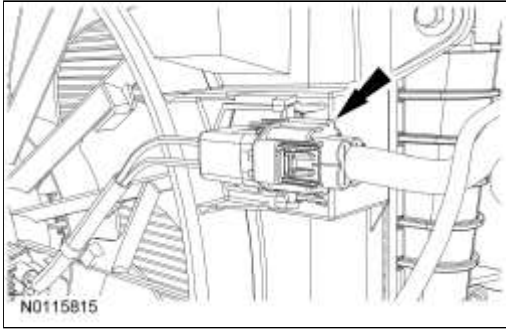
24. Disconnect the lower radiator hose from the engine.



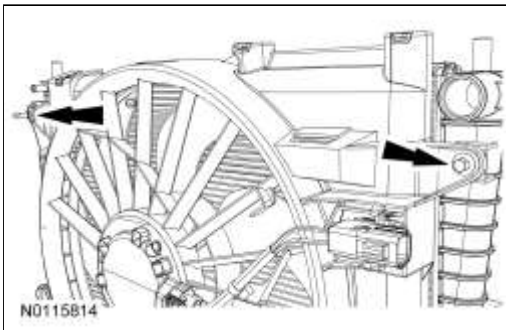
25. Disconnect the 2 heater hose quick connect couplings from the heater core. For additional information, refer to [Section 412-00](#).



26. Disconnect the engine cooling fan electrical connector.

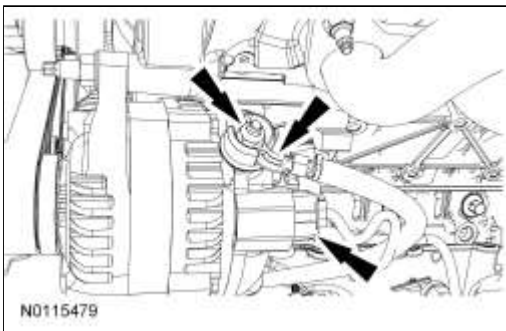


27. Remove the bolt, the stud bolt and the engine cooling fan assembly.



28. **NOTE:** *Protective rubber cover removed from graphic for clarity.*

Position aside the protective rubber cover and remove the nut, the B+ cable and the electrical connector from the generator.

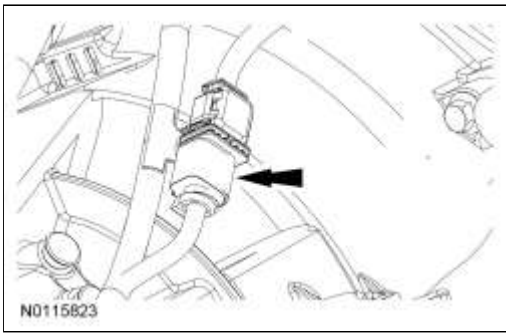


29. **NOTICE:** **Support the H-pipe with a length of mechanics wire. Do not bend, twist or allow the exhaust side pipes to hang from the flexible bellows or damage to the exhaust side pipe may occur.**

Remove the RH and LH catalytic converters. For additional information, refer to [Section 309-00](#).

30. **NOTE:** *RH shown, LH similar.*

Disconnect the RH and LH Heated Oxygen Sensor (HO2S) electrical connectors.

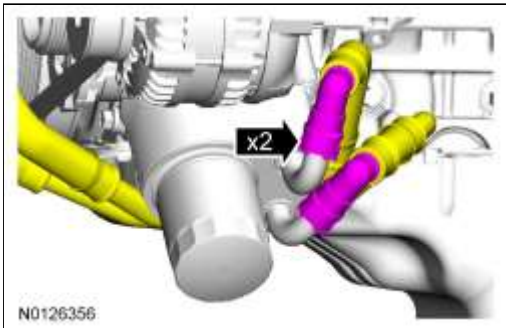


31. Remove the starter motor. For additional information, refer to [Section 303-06](#).

32. Remove the 3 bolts and lower the underbody shield.

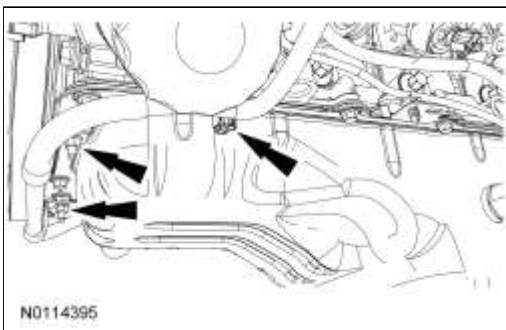


33. If equipped, disconnect the 2 coolant hose quick connect couplings from the oil cooler. For additional information, refer to [Section 412-00](#).

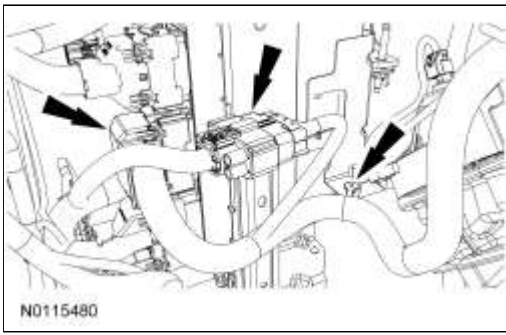


34. Remove the oil pan drain plug and drain the engine oil.
• Install the drain plug and tighten to 26 Nm (19 lb-ft).

35. Remove the 2 nuts and detach the wiring harness retainers from the LH side of the oil pan and the front oil pan stud bolts.

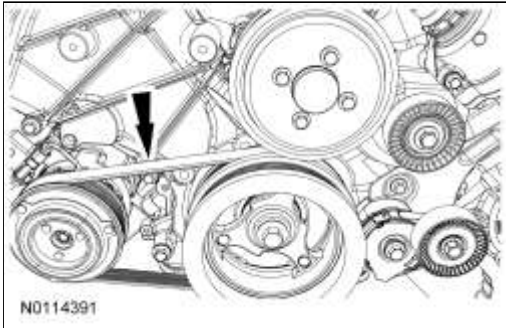


36. Disconnect the middle PCM electrical connector, the 16 pin electrical connector and detach the wiring harness retainers from the PCM bracket.

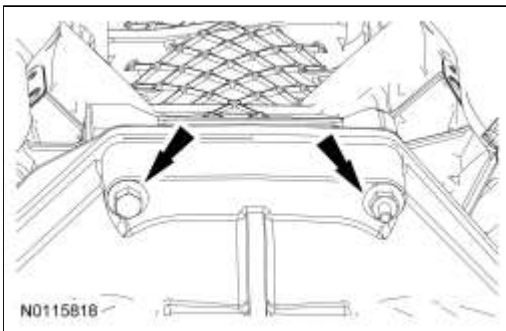


37. Remove the accessory drive belt. For additional information, refer to [Section 303-05](#).

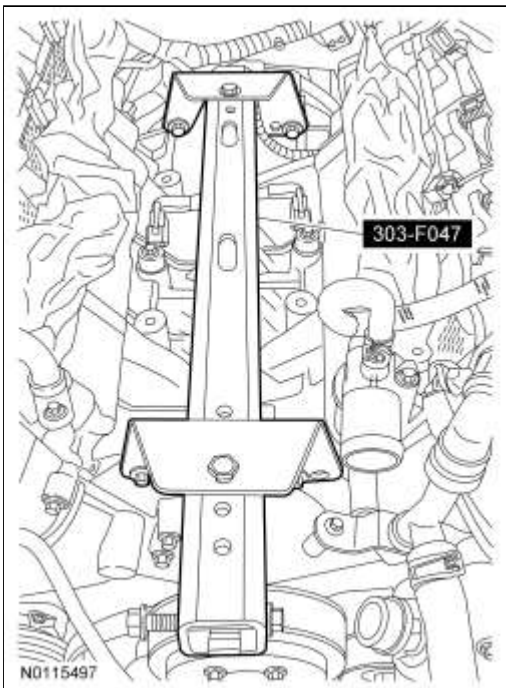
38. Cut and discard the A/C belt.



39. Remove the top transmission-to-engine bolt and stud bolt.



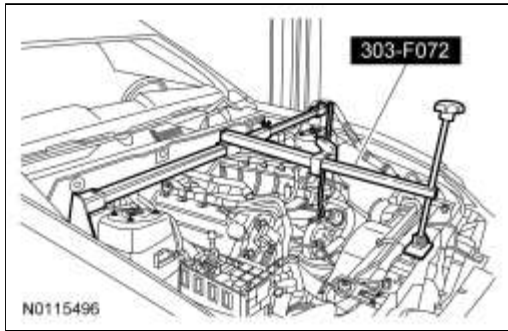
40. Install the Engine Lifting Bracket.



41. **NOTICE:** Do not position the legs of the Engine Support Bar on the fenders. Instead, the legs should be positioned on the body structure near the suspension strut tower. Failure to follow these instructions may result in body damage.

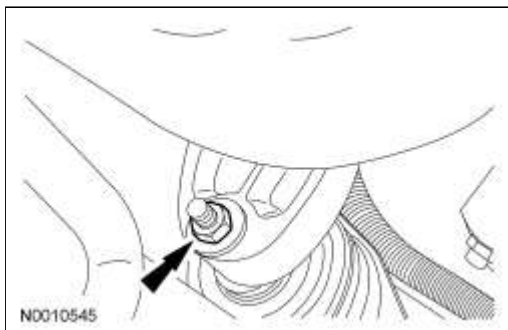
Install the Engine Support Bar.

- Attach the Engine Support Bar to the through bolt on the Engine Lifting Bracket.

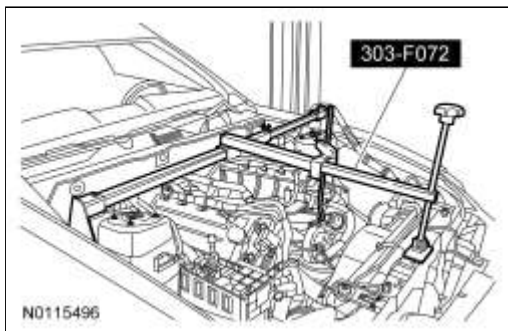


42. **NOTE:** RH shown, LH similar.

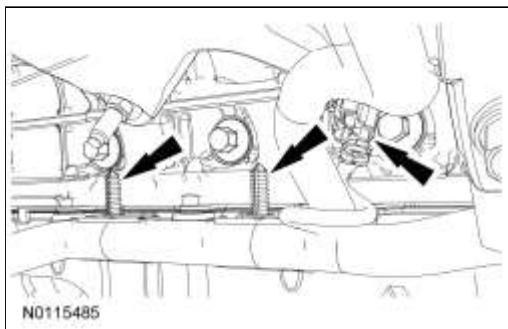
Remove the RH and LH engine support insulator nuts.



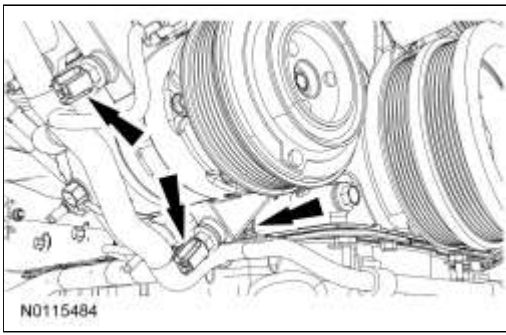
43. Using the Engine Support Bar, raise the engine 25 mm (0.984 in).



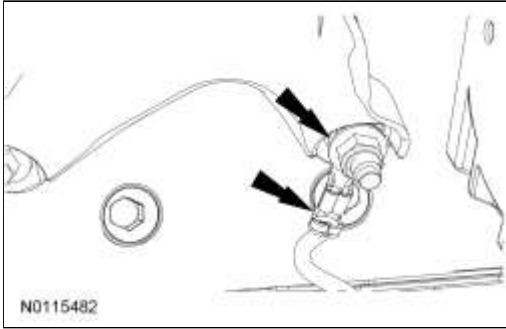
44. Detach the wiring harness retainers from the RH side of the oil pan and the RH engine support insulator bracket stud bolt.



45. Detach the wiring harness retainers from A/C compressor stud bolt and the RH side of the oil pan.

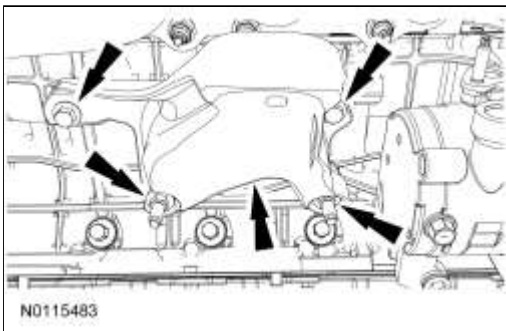


46. Remove the nut and ground strap from the RH engine support insulator bracket.

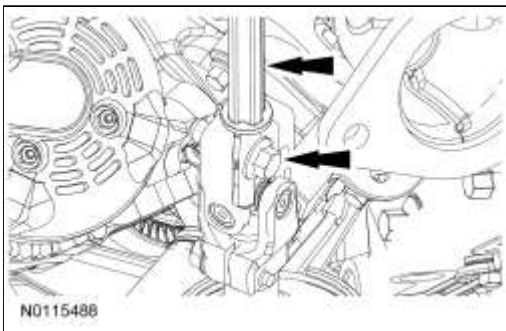


47. **NOTE:** *The RH engine support insulator has been removed from the graphic for clarity.*

Remove the 2 bolts, the 2 stud bolts and the RH engine support insulator bracket.

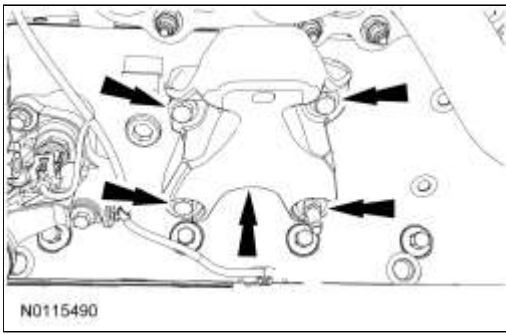


48. Remove the bolt and position the steering intermediate shaft aside.

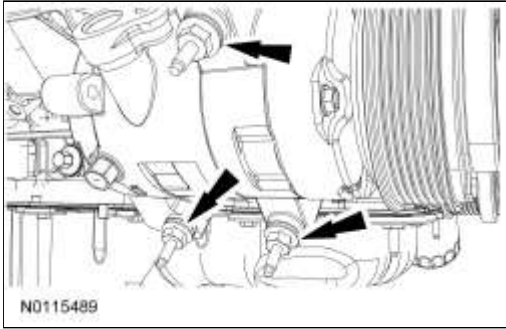


49. **NOTE:** *The LH engine support insulator has been removed from the graphic for clarity.*

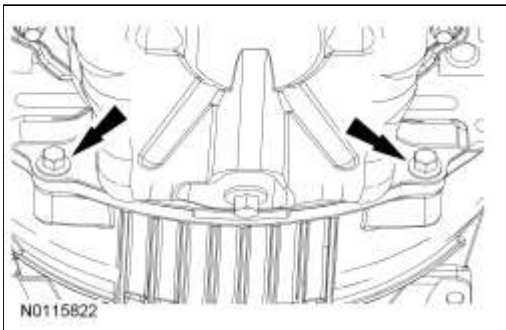
Remove the 3 bolts, the stud bolt and the LH engine support insulator bracket.



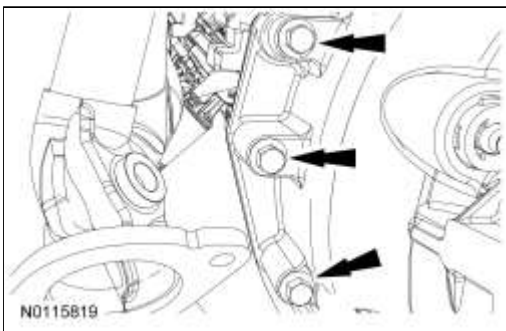
50. Remove the 3 stud bolts and position the A/C compressor aside.



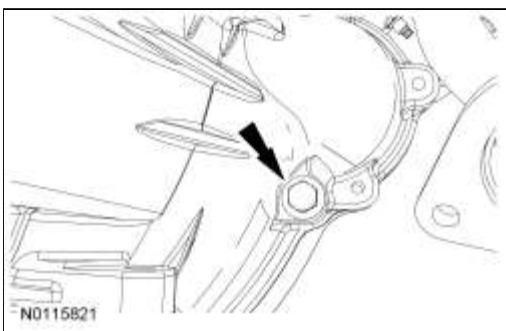
51. Remove the 2 separator plate bolts.



52. Remove 3 LH transmission-to-engine bolts.



53. Remove RH transmission-to-engine bolt.

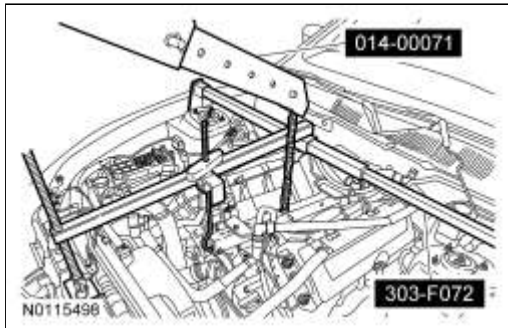


54. Loosely install the 3 underbody shield bolts.



55. Attach the Engine Crane to the Engine Lifting Bracket.

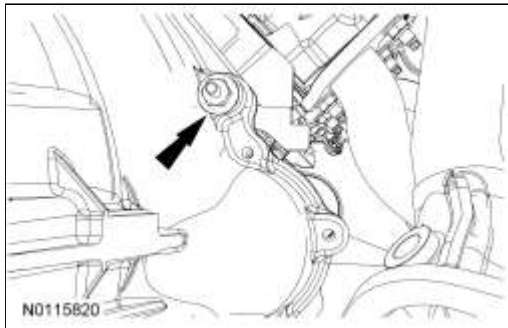
- Once the engine is supported by the Engine Crane, remove the Engine Support Bar.



56. **NOTICE: Do not support the transmission by the fluid pan, failure to follow this instruction may result in serious damage to the transmission.**

Support the bellhousing of the transmission with a suitable floor jack and a block of wood.

57. Remove the remaining transmission-to-engine stud bolt.



58. Using the Engine Crane, separate the engine from the transmission and remove the engine from the vehicle.

