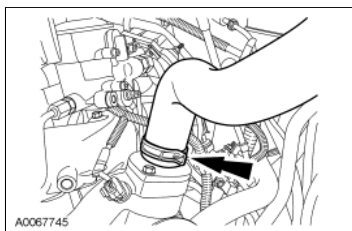


Intake Manifold [Printable View \(2002 KB\)](#)**Material**

Item	Specification
Motorcraft Premium Gold Engine Coolant VC-7-A (in California, Oregon and New Mexico VC-7-B, in Canada CVC-7-A) or equivalent (yellow color)	WSS-M97B51-A1

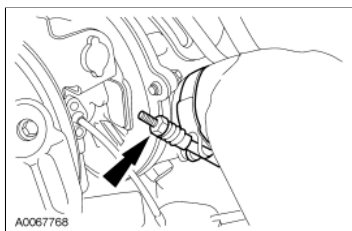
Removal**All vehicles**

1. Remove the auxiliary battery. For additional information, refer to [Section 414-01](#).
2. Remove the air cleaner assembly. For additional information, refer to [Section 303-12](#).
3. Remove the cooling fan-blade, clutch and shroud, 6.0L diesel engine. For additional information, refer to [Section 303-03](#).
4. Remove the coolant reservoir. For additional information, refer to [Section 303-03](#).
5. Remove the upper radiator hose.



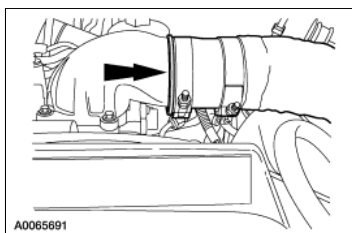
6. **NOTE:** Engine side shown, charge air cooler (CAC) side similar.

Remove the turbocharger-to-charge air cooler pipe.

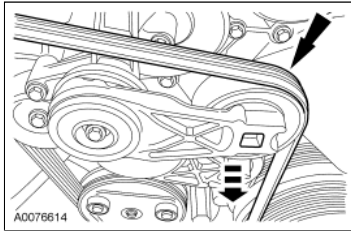


7. **NOTE:** Engine side shown, charge air cooler side similar.

Remove the charge air cooler-to-engine pipe.

**Vehicles with dual generators**

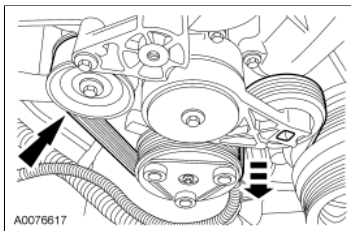
8. Remove the accessory drive belt.



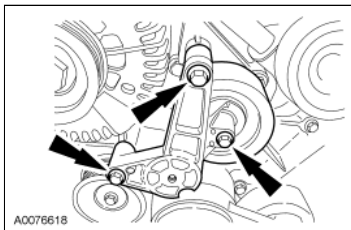
9. Remove the bolt and the accessory drive belt tensioner.



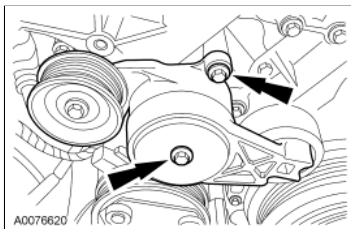
10. Remove the accessory drive belt.



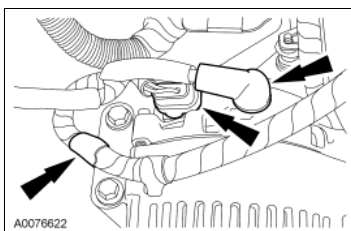
11. Remove the bolts, bracket and accessory drive belt idler pulley.



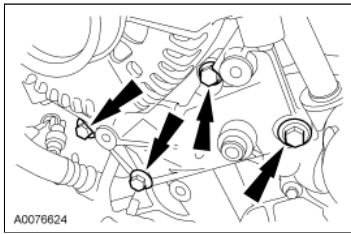
12. Remove the bolts and the accessory drive belt tensioner.



13. Disconnect the wire retainer, generator electrical connector and B+ wire.

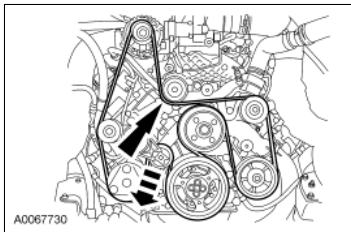


14. Remove the bolts and the generator with mounting bracket.



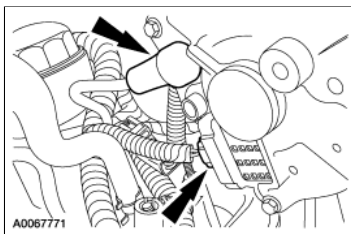
Vehicles with single generator

15. Remove the accessory drive belt.

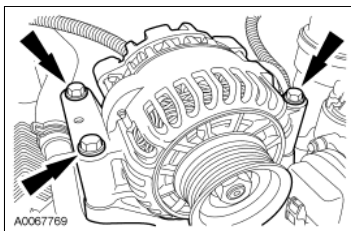


All vehicles

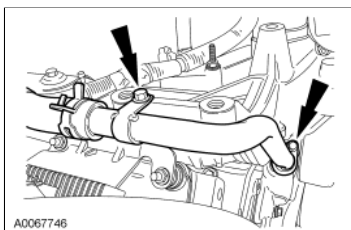
16. Position the boot back and disconnect the generator B+ wire and electrical connector.



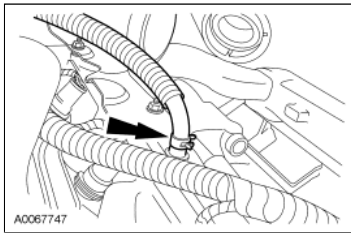
17. Remove the three bolts and the generator.



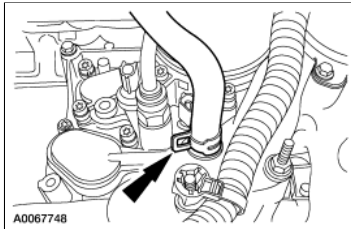
18. Remove the turbocharger and the turbocharger pedestal. For additional information, refer to [Section 303-04F](#).
19. Remove the bolts and position the heater hose tube aside.
 - Remove and discard the O-ring.



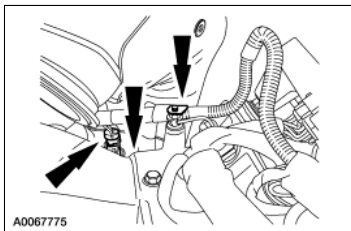
20. Disconnect the manifold absolute pressure (MAP) sensor hose.



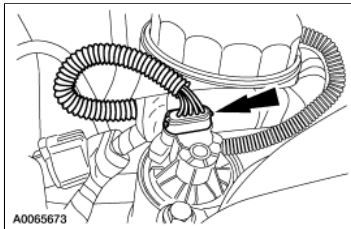
21. Disconnect the engine coolant vent hose.



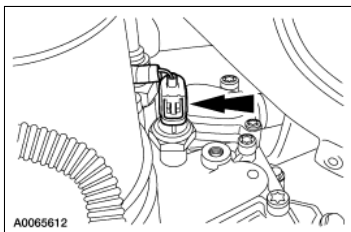
22. Remove the fuel injector control module. For additional information, refer to [Section 303-14C](#).
23. Disconnect the wiring retainer, injector pressure regulator and injector control pressure (ICP) sensor electrical connector.



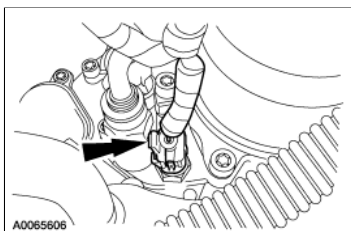
24. Disconnect the exhaust gas recirculation (EGR) valve electrical connector.



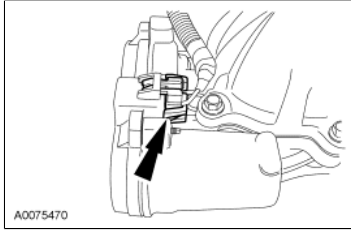
25. Disconnect the oil pressure sensor electrical connector.



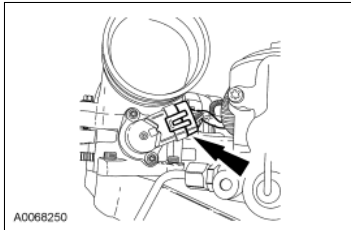
26. Disconnect the oil temperature sensor electrical connector.



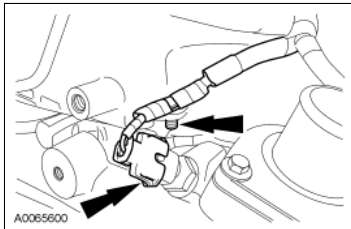
27. Disconnect the throttle position (TP) control module electrical connector.



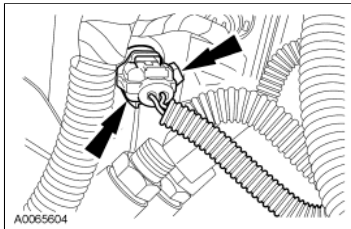
28. Disconnect the throttle position (TP) sensor electrical connector.



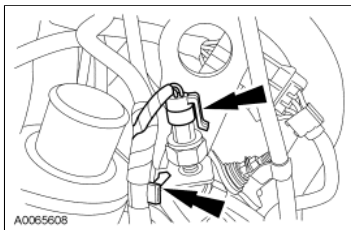
29. Disconnect the pin-type retainer and water temperature sensor.



30. Disconnect the intake air temperature (IAT) sensor electrical connector and wiring connector.

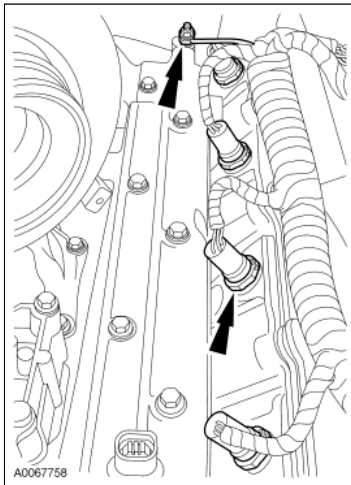


31. Disconnect the exhaust backpressure sensor and retaining clip.

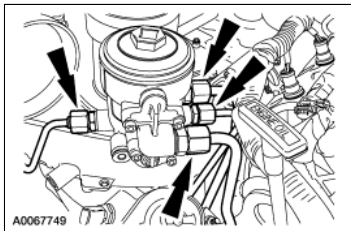


32. **NOTE:** Left side shown, right side similar.

Disconnect the eight fuel injectors. Remove the nut and the fuel injector wiring harness.

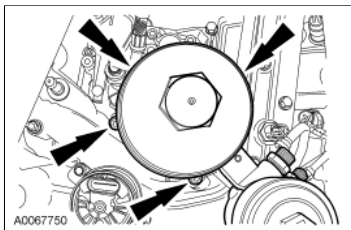


33. Disconnect the fuel line fittings.

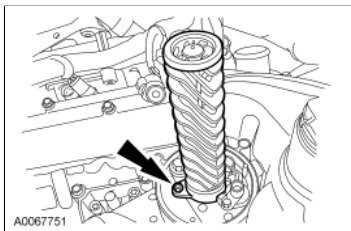


34. **NOTE:** It is necessary to remove the filter and drain the housing.

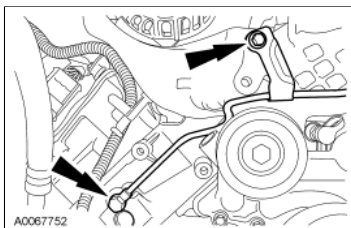
Remove the four bolts and the oil filter housing.



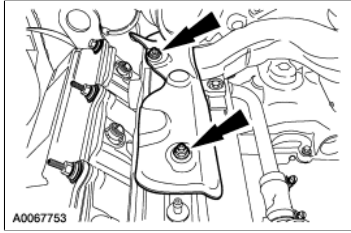
35. Remove the bolt and the oil filter return tube.



36. Remove the fuel line.
- Remove the bolt, and the banjo fitting from the fuel line.
 - Discard the sealing washers and remove the fuel line.

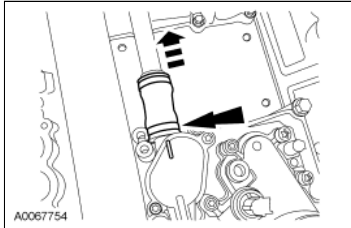


37. Remove the nuts and the turbocharger heat shield.



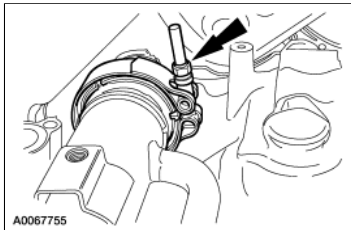
38. **NOTE:** Align the flat edge with the index feature located on the coolant supply port.

Pull the EGR cooler clamp forward, twist and then slide the EGR cooler hose rearward to remove.

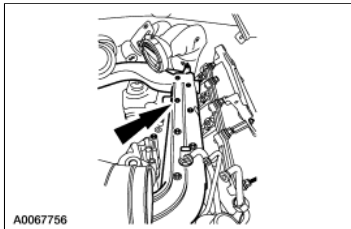


39. **NOTE:** Intake removed for clarity.

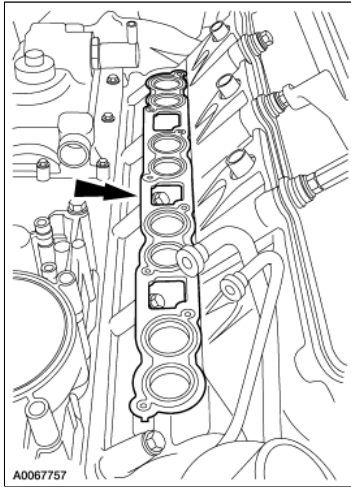
Remove the EGR cooler V-clamp and gasket.



40. Remove the bolts and the intake manifold.



41. Remove the intake manifold gaskets.
- Clean and inspect the gaskets. Install new gaskets if necessary.
 - Clean and inspect the sealing surfaces.

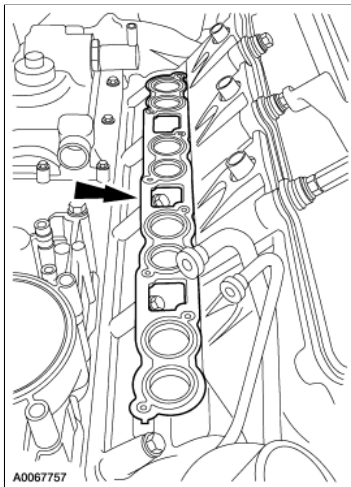


Installation

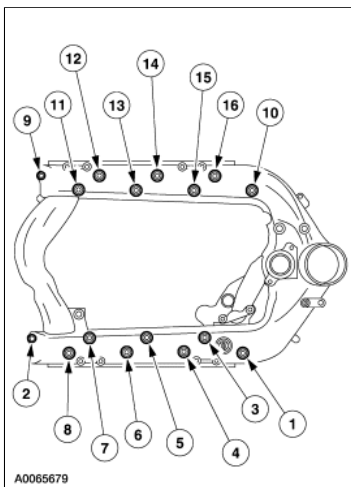
All vehicles

1. **NOTE:** Locating tabs on the gaskets must be up and toward the center of the engine, or a leak will occur.

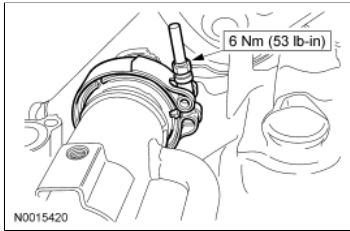
Install the intake manifold gaskets.



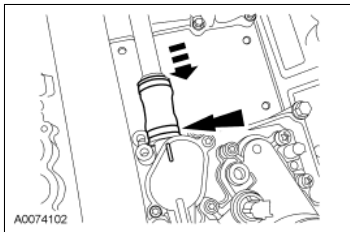
2. Install the intake manifold and bolts and tighten in the following sequence.
 1. Loosely install the bolts 1-8.
 2. Tighten bolts 9-16 to 11 Nm (8 lb-ft).
 3. Tighten all bolts to 11 Nm (8 lb-ft) in the sequence shown.



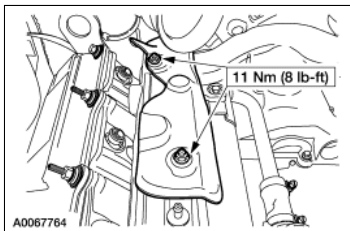
3. Install the gasket and the EGR cooler V-clamp.



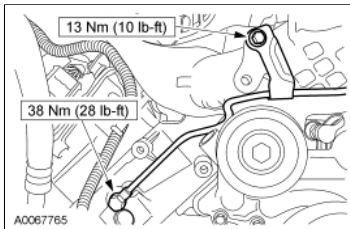
4. Slide the EGR cooler hose forward and rotate flat to lock.



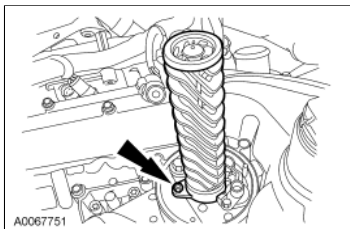
5. Install the turbocharger heat shield and the nuts.



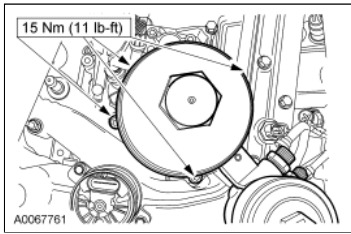
6. Install the fuel line.
- Install new sealing washers.
 - Install the fuel line.
 - Install the banjo fitting and the bolt.



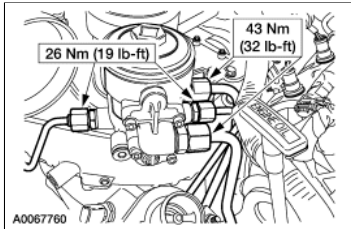
7. Install the oil filter return tube and bolt.
- On new oil filter return tubes, tighten to 6 Nm (53 lb-in).
 - On used oil filter return tubes, tighten to 3 Nm (27 lb-in).



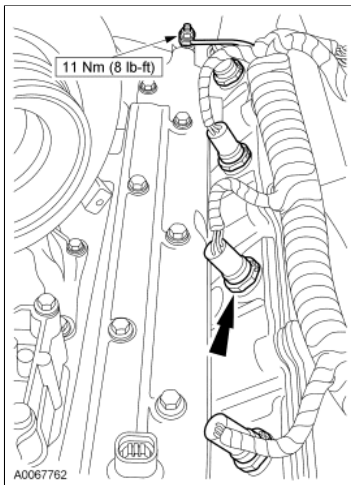
8. Install the oil filter and the four bolts.



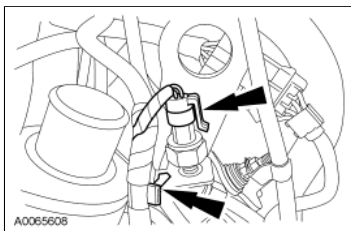
9. Connect the fuel line fittings.



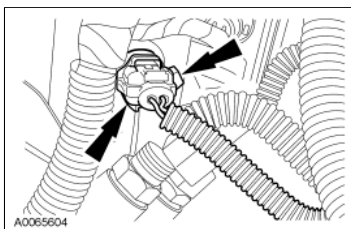
10. Position the fuel injector harness and install the retaining nut. Connect the eight fuel injectors electrical connectors.



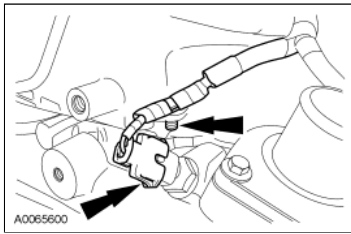
11. Connect the retaining clip and exhaust backpressure sensor electrical connector.



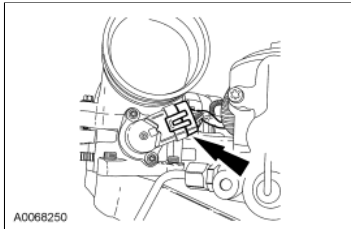
12. Connect the wiring retainer and the IAT sensor electrical connector.



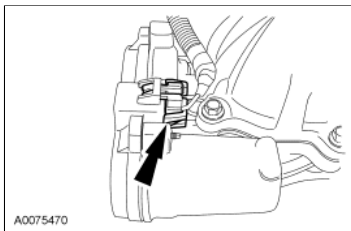
13. Connect the water temperature sensor and the pin-type retainer.



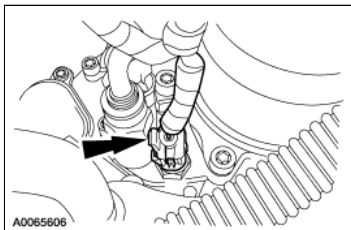
14. Connect the TP sensor electrical connector.



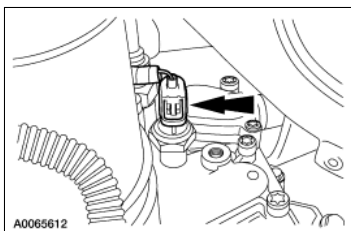
15. Connect the TP control module electrical connector.



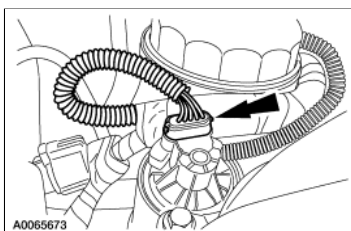
16. Connect the oil temperature sensor electrical connector.



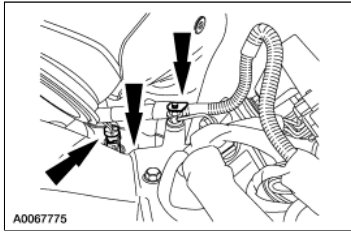
17. Connect the oil pressure sensor electrical connector.



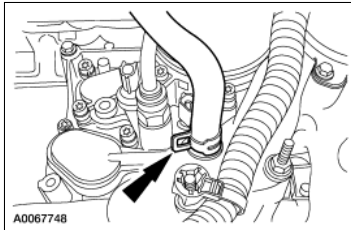
18. Connect the EGR valve electrical connector.



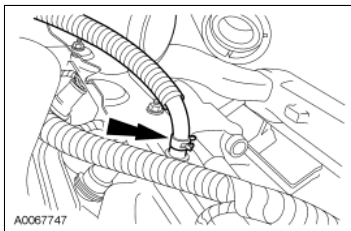
19. Connect the wiring retainer, injector pressure regulator and ICP sensor electrical connectors.



20. Install the fuel injector control module. For additional information, refer to [Section 303-14C](#).
21. Connect the engine coolant vent hose and clamp.

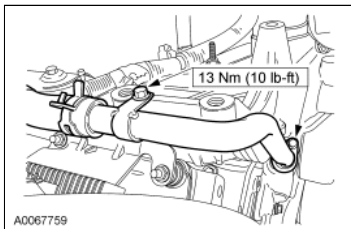


22. Connect the MAP sensor hose.

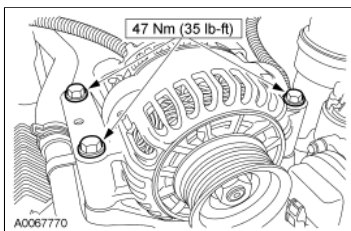


23. **NOTE:** Install a new O-ring on the heater hose tube.

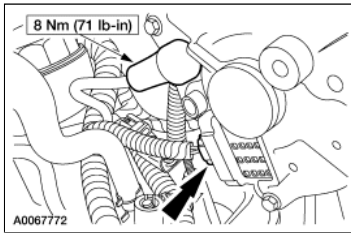
Install the heater hose tube and bolts.



24. Install the turbocharger pedestal and turbocharger. For additional information, refer to [Section 303-04F](#).
25. Install the generator and the three bolts.

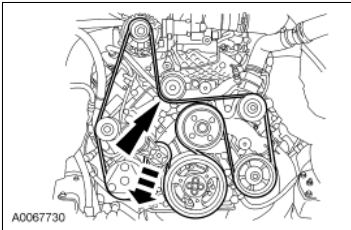


26. Connect the generator B+ wire land electrical connector and position the boot back.



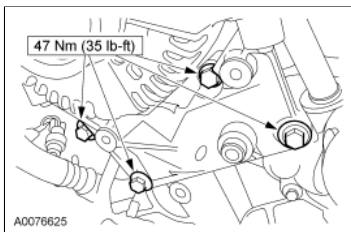
Vehicles with single generator

27. Install the accessory drive belt.

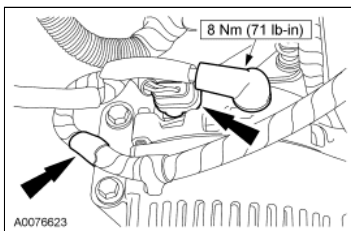


Vehicles with dual generators

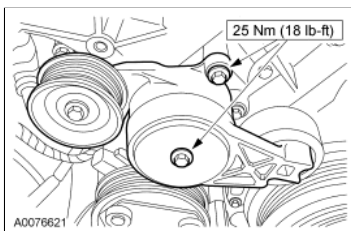
28. Install the generator with mounting bracket and bolts.



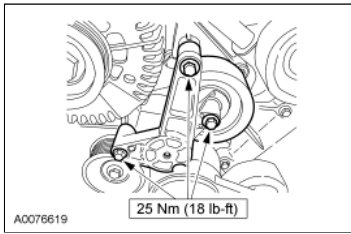
29. Connect the B+ wire, generator electrical connector and wire retainer.



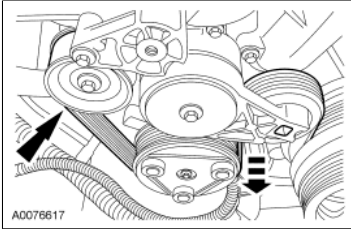
30. Install the accessory drive belt tensioner and bolts.



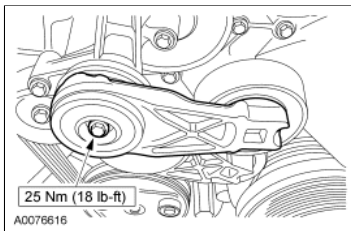
31. Position the accessory drive belt idler pulley. Install the bracket and bolts.



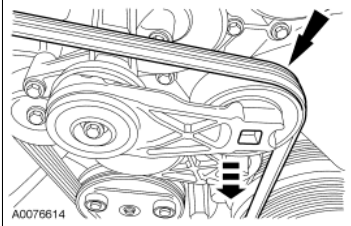
32. Install the accessory drive belt.



33. Install the accessory drive belt tensioner and bolt.



34. Install the accessory drive belt.

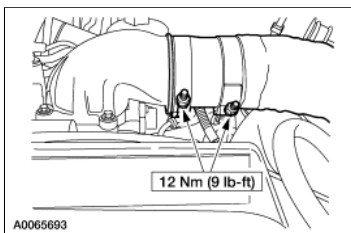


All vehicles

35. **NOTE:** If there is any oil residue, clean both connecting ports and the inside surface of the charge air cooler pipe to prevent the pipe from blowing off.

NOTE: Engine side shown, charge air cooler side similar.

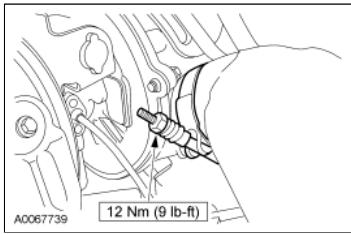
Install the charge air cooler-to-engine pipe.



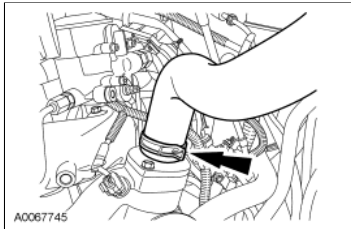
36. **NOTE:** If there is any oil residue, clean both connecting ports and the inside surface of the charge air cooler pipe to prevent the pipe from blowing off.

NOTE: Engine side shown, charge air cooler side similar.

Install the turbocharger-to-charge air cooler pipe.



37. Install the upper radiator hose.



38. Install the coolant reservoir. For additional information, refer to [Section 303-03](#).
39. Install the auxiliary battery. For additional information, refer to [Section 414-01](#).
40. Install the air cleaner assembly. For additional information, refer to [Section 303-12](#).
41. Install the cooling fan blade, clutch and shroud, 6.0L diesel engine. For additional information, refer to [Section 303-03](#).
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