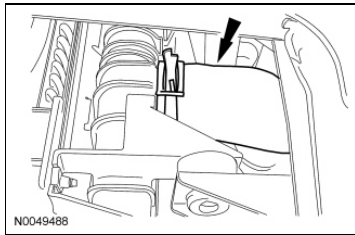
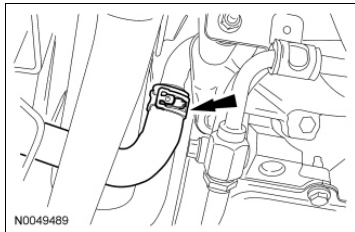


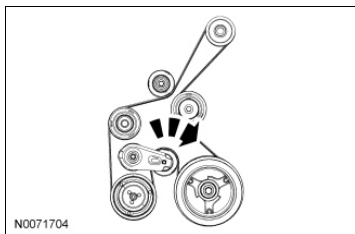
14. Position the lower radiator hose assembly into the vehicle.
- Connect the lower radiator hose to the radiator.



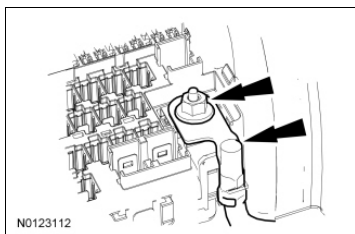
15. Connect the coolant hose to the oil cooler.



16. Rotate the SC drive belt tensioner clockwise and install the drive belt onto the SC drive pulley.

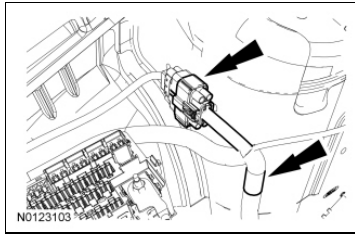


17. Position the Battery Junction Box (BJB) terminal and install the nut.
- Tighten to 10 Nm (89 lb-in).

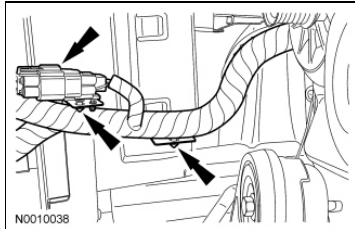


18. Install the PDB cover.

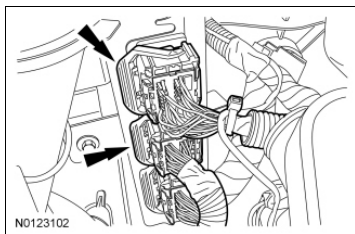
19. Connect the 16-pin electrical connector and attach the wiring retainers.



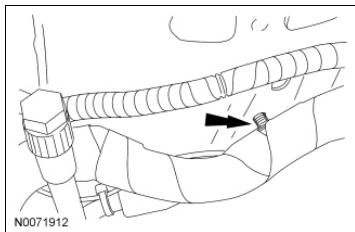
20. Connect the 16-pin electrical connector and attach the 2 wiring retainers.



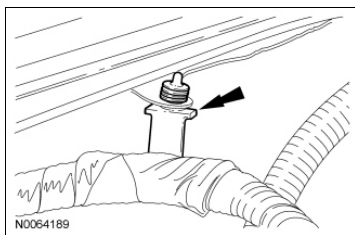
21. Connect the 2 PCM electrical connectors.



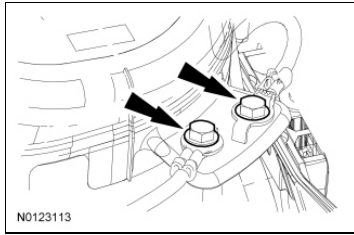
22. Attach the 2 wiring harness pin-type retainers.



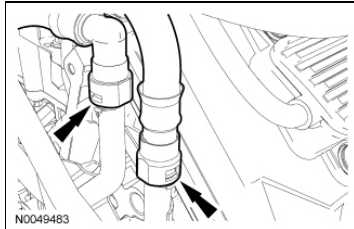
23. Attach the pin-type wire harness retainer to the cowl.



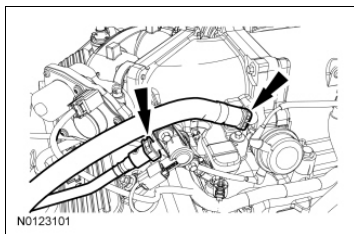
24. Position the ground cables and install the 2 bolts.
• Tighten to 10 Nm (89 lb-in).



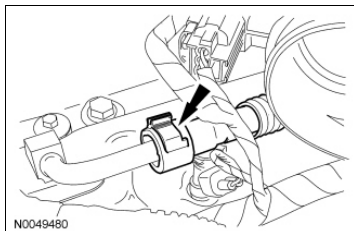
25. Connect the 2 heater hoses to the coolant tube assembly at the rear of the engine.



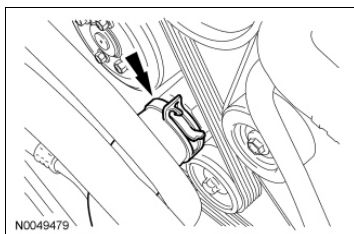
26. Connect the Evaporative Emission (EVAP) tube quick connect coupling and the brake booster vacuum supply tube to the Throttle Body (TB) spacer. For additional information, refer to [Section 310-00](#).



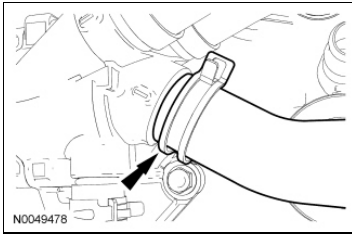
27. Connect the fuel supply tube. For additional information, refer to [Section 310-00](#).



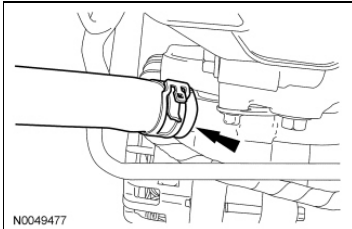
28. Connect the coolant hose to the coolant pump.



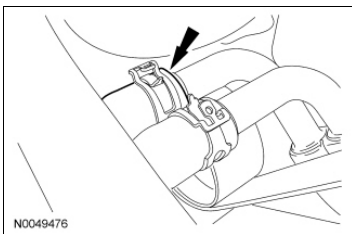
29. Connect the coolant hose to the thermostat housing.



30. Connect the coolant hose to the coolant tube assembly (above the generator).



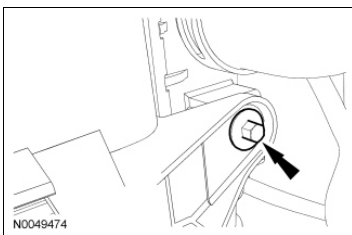
31. Connect the coolant hose to the Charge Air Cooler (CAC).



32. **NOTE:** RH bolt shown, LH similar.

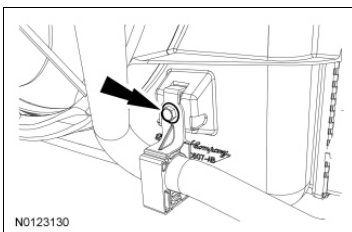
Install the cooling fan assembly and the 2 bolts.

- Tighten to 9 Nm (80 lb-in).

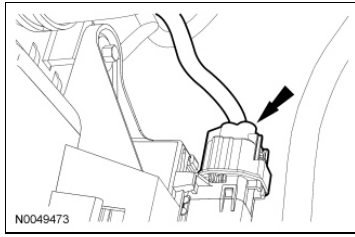


33. Position the charge air cooler hose and install the bolt.

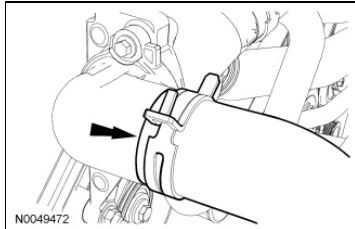
- Tighten to 8 Nm (71 lb-in).



34. Connect the cooling fan electrical connector.



35. Connect the upper radiator hose from the thermostat housing.



36. Install the SC coolant degas bottle. For additional information, refer to [Section 303-03B](#) .

37. Install the engine coolant degas bottle. For additional information, refer to [Section 303-03A](#) .

38. Install the brake booster. For additional information, refer to [Section 206-07](#) .

39. Install the battery tray and battery. For additional information, refer to [Section 414-01](#) .

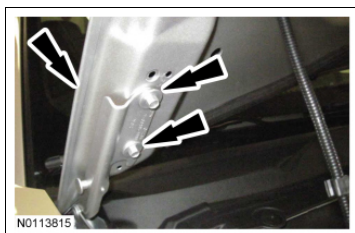
40. Install the Air Cleaner (ACL) and ACL outlet pipe. For additional information, refer to [Section 303-12](#) .

41. Install the battery and tray. For additional information, refer to [Section 414-01](#) .

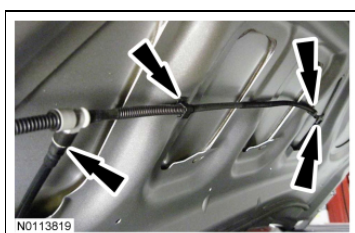
42. **NOTE:** Use the hood hinge location index marks made during removal to aid in hood installation.

Install the hood and the 4 bolts.

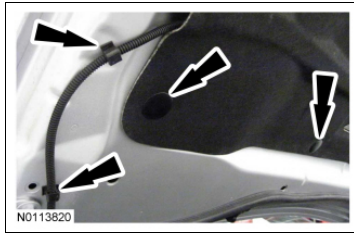
- Tighten to 12 Nm (106 lb-in).



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



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



45. Fill the engine with clean engine oil.
46. Fill and bleed the engine cooling system. For additional information, refer to [Section 303-03A](#) .
47. Fill and bleed the SC cooling system. For additional information, refer to [Section 303-03B](#) .
48. After completing the repairs, use the scan tool to perform the Misfire Monitor Neutral Profile Correction procedure, following the on-screen instructions.
-

Material

Item	Specification	Fill Capacity
Motorcraft® Metal Surface Prep ZC-31-A	-	-
Motorcraft® Orange Antifreeze/Coolant Concentrated VC-3-B (US); CVC-3-B2 (Canada)	WSS-M97B44-D	3.7L engine: 11.7L (12.4 qt.) Base 5.0L engine without oil cooler: 12.3L (13.0 qt.) Base 5.0L engine with oil cooler: 14.4L (15.2 qt.) Boss® 302 engine: 14.4L (15.2 qt.) 5.4L engine 20.0L (21.1 qt.)
Motorcraft® Premium Cooling System Flush VC-1	ESR-M14P7-A	-

General Specifications

Item	Specification
Pressure Tests	
Complete cooling system maximum pressure	138 kPa (20 psi)
Pressure relief cap	110 kPa (16 psi)
Radiator (out of vehicle)	138 kPa (20 psi)
Thermostat Opening Temperatures	
Starts to open (3.7L)	83.8-90.6°C (183-195°F)
Fully open (3.7L)	98.8°C (210°F)
Starts to open (5.0L, Boss® 302)	82.2°C (180°F)
Fully open (5.0L, Boss® 302)	94.5°C (202°F)
Starts to open (5.4L)	86.7-90.6°C (188-195°F)
Fully open (5.4L)	100°C (212°F)

Torque Specifications

Description	Nm	lb-ft	lb-in
A/C condenser bolts	10	-	89

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A/C condenser nuts	8	-	71
Block heater	40	30	-
Charge air cooler hose bolt - 5.4L	8	-	71
Coolant outlet connector bolts - 5.4L	10	-	89
Coolant pump bolts - 3.7L ^a	-	-	-
Coolant pump bolt - 5.0L ^a	-	-	-
Coolant pump bolts - 5.4L	25	18	-
Coolant pump pulley bolts - 3.7L	24	18	-
Coolant pump pulley bolts - 5.0L ^a	-	-	-
Coolant pump pulley bolts - 5.4L	25	18	-
Cooling fan motor and shroud bolt and stud bolt	8	-	71
Degas bottle bolts	8	-	71
Heater outlet tube bolt - 5.0L	10	-	89
Lower splash shield bolts	5	-	44
Radiator support bracket bolts	10	-	89
Supercharger (SC) degas bottle bolt - 5.4L	8	-	71
Thermostat housing bolts - 3.7L ^a	-	-	-
Thermostat housing bolts - 5.0L	10	-	89
Thermostat housing nuts - 5.4L	25	18	-
Transmission cooler bolts (if equipped)	8	-	71
Transmission cooler tubes bracket bolt (if equipped)	7	-	62

^a Refer to procedure

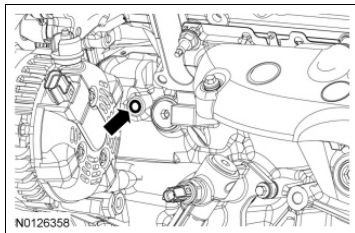
Engine Cooling

NOTICE: The engine cooling system is filled with Motorcraft® Specialty Orange Engine Coolant. Always fill the cooling system with the manufacturer's specified coolant. If a non-specified coolant has been used the cooling system must be chemically flushed. Refer to Cooling System Flushing in this section. Failure to follow these instructions may damage the engine or cooling system.

NOTE: During normal vehicle operation, Motorcraft® Specialty Orange Engine Coolant may change color from orange to pink or light red. As long as the engine coolant is clear and uncontaminated, this color change does not indicate the engine coolant has degraded nor does it require the engine coolant to be drained, the system to be flushed, or the engine coolant to be replaced.

The cooling system components include the:

- block heater (if equipped)
- Cylinder Head Temperature (CHT) sensor
- fan motor and shroud assembly
- radiator
- radiator cap
- radiator draincock
- coolant pump
- coolant thermostat
- oil filter adapter (Boss® 302 and 5.4L engine)
- oil cooler (Boss® 302 and 5.4L engines)
- radiator overflow hose
- degas bottle
- upper radiator hose
- lower radiator hose
- Engine Coolant Temperature (ECT) sensor (5.4L engine)



The 3.7L engine has a channel cover plate located under the engine front cover mounted to the block and has 2 press-in-place gaskets. A weep hole is provided on the front left side of the engine behind the generator. If oil or coolant leaks from this weep hole, the channel cover plate gaskets are leaking and new gaskets must be installed. Refer to Section 303-01A .

The 3.7L, 5.0L and Boss® 302 engines use a cold side thermostat. This means the thermostat controls the flow of cooled radiator coolant into the warmer engine cooling circuit. The thermostat is located at the lower radiator hose connection to the engine. During initial warm-up, the engine coolant increases in temperature, causing the thermostat to open. The cooler coolant from the radiator mixes with the warm engine coolant, causing the thermostat to close. The thermostat opens and closes several times before the engine coolant is warm enough to allow the thermostat to remain open. The engine must run much longer than a vehicle with a hot side thermostat before the thermostat remains fully opened.

The 5.4L engine uses a typical hot side thermostat.

The fan motor:

- operates only when the ignition switch is in the RUN position.
- will not operate with the switch in the OFF position.

Engine coolant provides boil protection, corrosion protection, freeze protection and cooling efficiency to the engine and cooling components. In order to obtain these protections, maintain the engine coolant at the correct concentration and fluid level in the degas bottle.

When adding engine coolant, use a 50/50 mixture of engine coolant and distilled water. A coolant concentration of 50% will provide freeze point protection down to -37°C (-34°F).

To maintain the integrity of the coolant and the cooling system:

- add Motorcraft® Specialty Orange Engine Coolant or equivalent (orange color) meeting Ford specification WSS-M97B44-D. Do not mix coolant types.
- do not add or mix with any other engine coolant. Mixing coolants may degrade the coolant corrosion protection.
- do not add alcohol, methanol or brine, or any engine coolants mixed with alcohol or methanol antifreeze. These can cause engine damage from overheating or freezing.
- Ford Motor Company does NOT recommend the use of recycled engine coolant in vehicles originally equipped with Motorcraft® Specialty Orange Engine Coolant since a Ford-approved recycling process is not yet available.

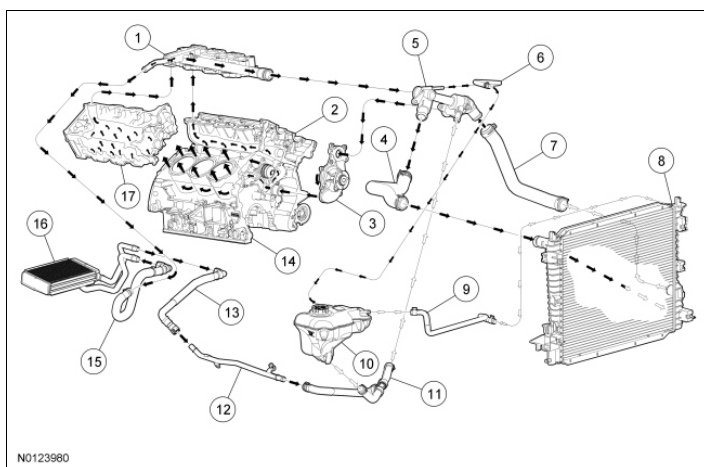
The optional block heater:

- electrical heating element is installed in the core plug opening.
- uses a standard 110V electrical supply.
- keeps the engine coolant warm during cold weather.

Coolant Flow Diagram

3.7L

NOTE: Black arrows indicate hot, white arrows indicate cold.

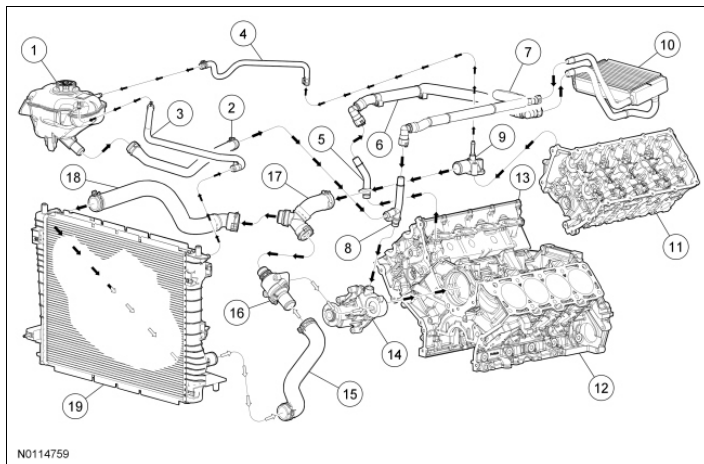


Item	Part Number	Description
1	9J447	Intake manifold

2	8050	LH cylinder head
3	8501	Coolant pump
4	8B274	Upper radiator hose
5	8A586	Thermostat housing
6	8075A	Thermostat housing-to-degas bottle hose
7	8B273	Lower radiator hose
8	8005	Radiator
9	8075B	Radiator-to-degas bottle hose
10	8A080	Degas bottle
11	8K289	Coolant return hose
12	18B402	Heater outlet tube
13	18472B	Heater outlet hose
14	6010	Cylinder block
15	18K579	Heater inlet hose
16	18B539	Heater core
17	6049	RH cylinder head

5.0L without Engine Oil Cooler

NOTE: Black arrows indicate hot, white arrows indicate cold.



Item	Part Number	Description
1	8A080	Degas bottle
2	8K276	Degas bottle-to-engine hose
3	8276	Radiator-to-degas bottle hose
4	8276	Coolant outlet connector-to-degas bottle hose
5	18696	Heater inlet tube
6	18K579	Heater inlet hose
7	18K580	Heater outlet hose
8	18663	Heater outlet tube
9	8594	Coolant outlet connector
10	18B539	Heater core