

SECTION 303-03: Engine Cooling
REMOVAL AND INSTALLATION

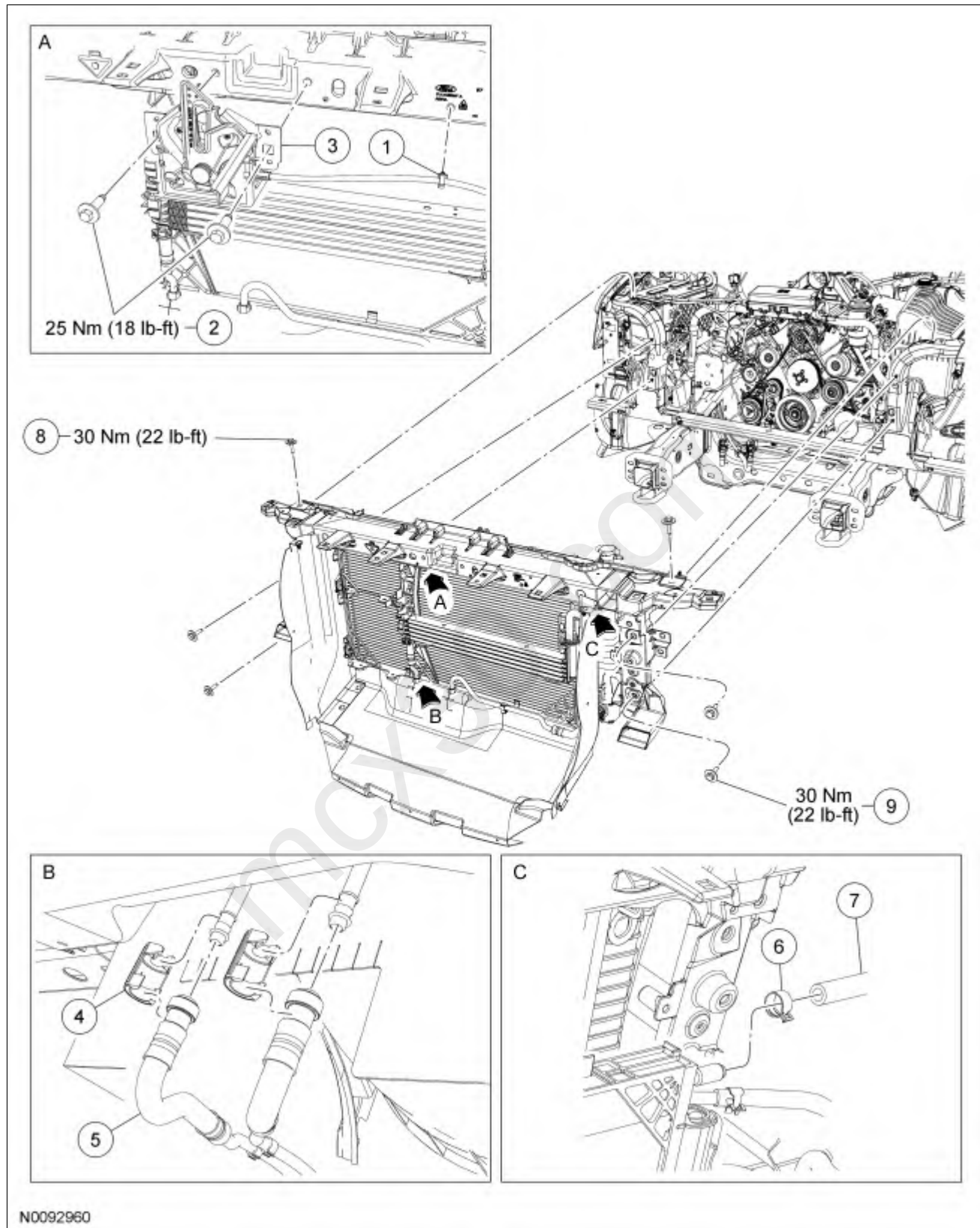
2014 F-150 Workshop Manual
Procedure revision date: 10/25/2013

Cooling Module

Special Tool(s)

 ST2935A	Disconnect Tool, Transmission Cooler Line 307-569
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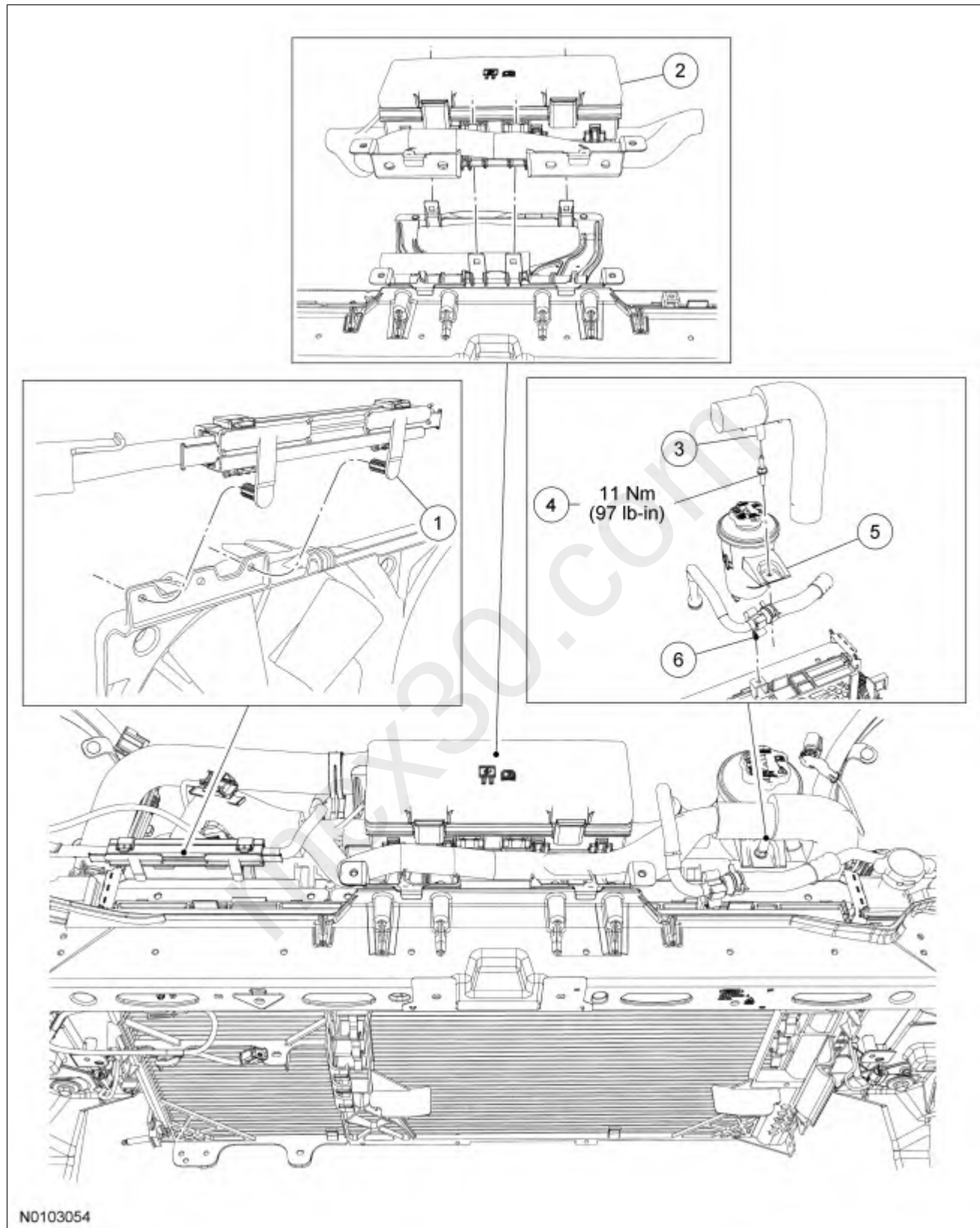
Hood Latch, Transmission Cooler Tubes, Power Steering Cooler Tubes (6.2L) and Cooling Module Bolts



Item	Part Number	Description
1	16B975	Hood latch assembly cable retainer

2	W711848	Hood latch assembly bolts (2 required)
3	6100	Hood latch assembly
4	7J801	Transmission fluid cooler tube secondary latch (2 required) (6.2L shown, 3.5L Gasoline Turbocharged Direct Injection (GTDI), 3.7L and 5.0L similar)
5	7H420	Transmission fluid cooler tube (2 required) (6.2L shown, 3.5L <u>GTDI</u> , 3.7L and 5.0L similar)
6	—	Power steering fluid cooler hose clamp (2 required) (6.2L only)
7	3A713	Power steering gear-to-fluid cooler return hose (6.2L only)
8	W701835	Cooling module upper bolt (2 required)
9	W701835	Cooling module front bolt (4 required)

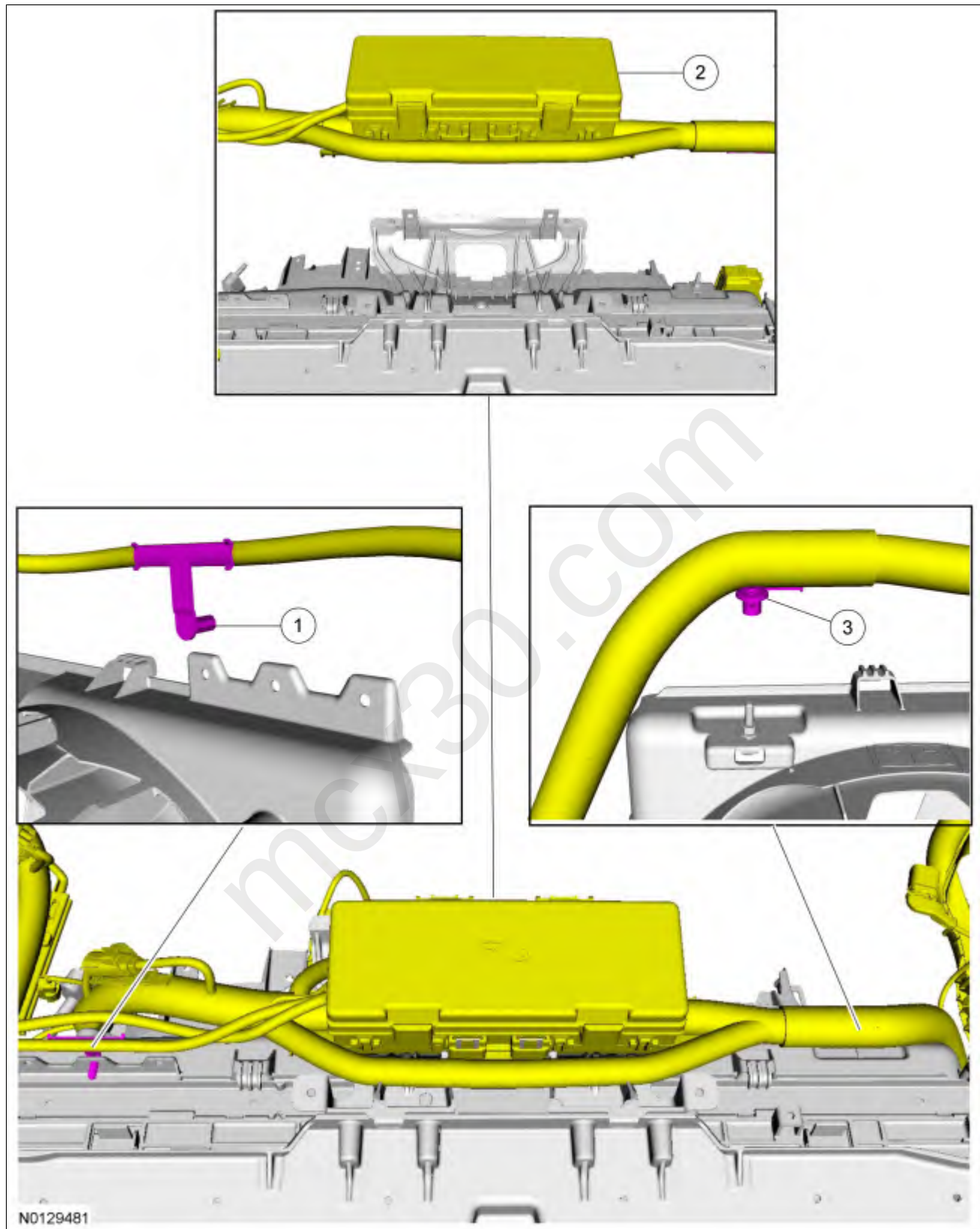
Wiring Harness and Power Steering Fluid Reservoir - 6.2L



Item	Part Number	Description
1	—	Generator battery positive cable retainer (part of

		14305)
2	—	Battery Junction Box (BJB) (part of 12A581)
3	—	Wiring harness retainer (part of 12A581)
4	W710897	Power steering fluid reservoir stud bolt (6.2L only)
5	3E764	Power steering fluid reservoir (6.2L only)
6	—	Power steering fluid cooler hose retainer (part of 3A713) (6.2L only)

Wiring Harness - 3.5L Gasoline Turbocharged Direct Injection (GTDI), 3.7L and 5.0L

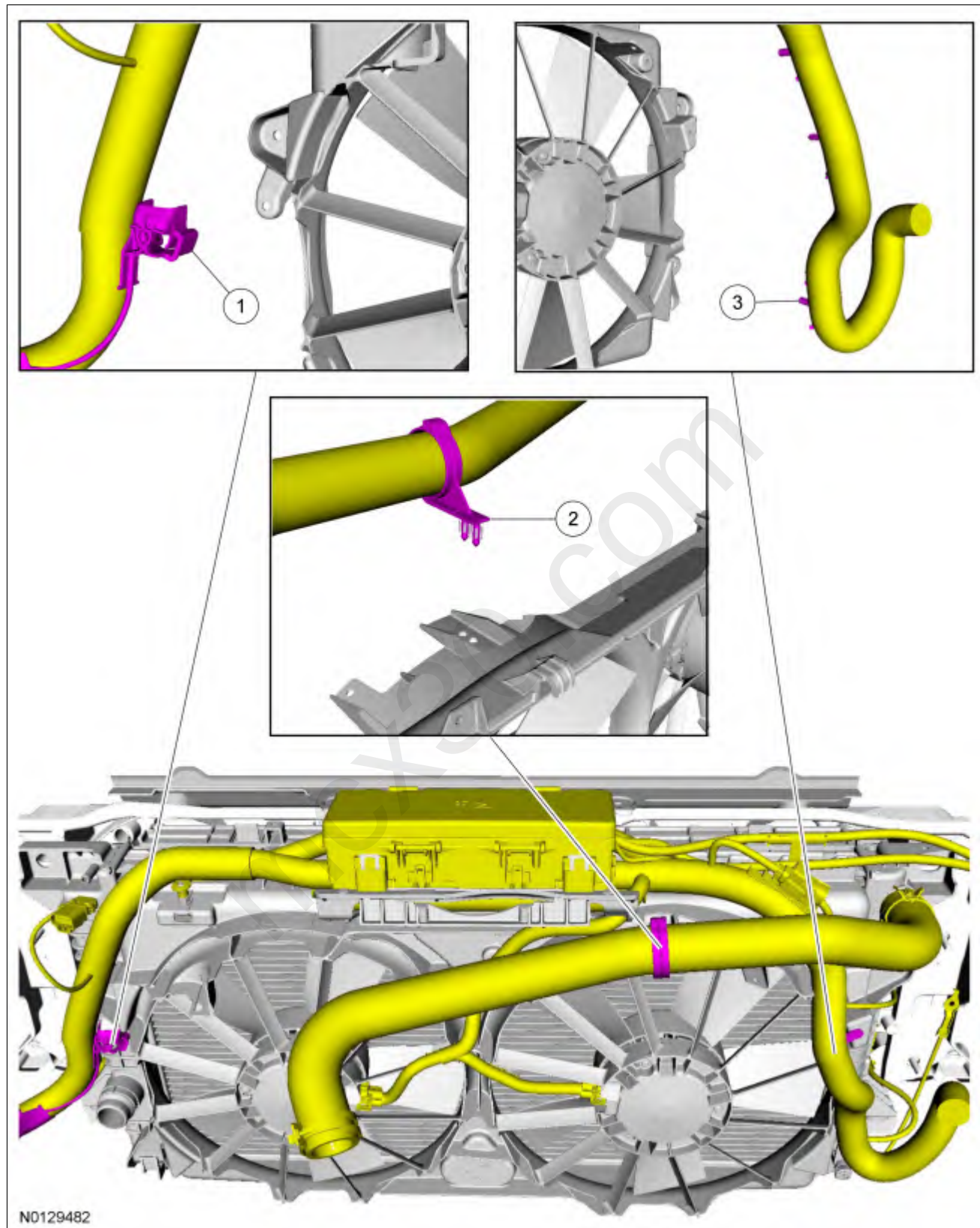


Item	Part Number	Description
1	—	Battery positive cable retainer (part of 14305)
2	—	Battery Junction Box (BJB) (part of 12A581)

3	—	Wiring harness retainer (part of 12A581)
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Wiring Harness and Radiator Hose Retainers

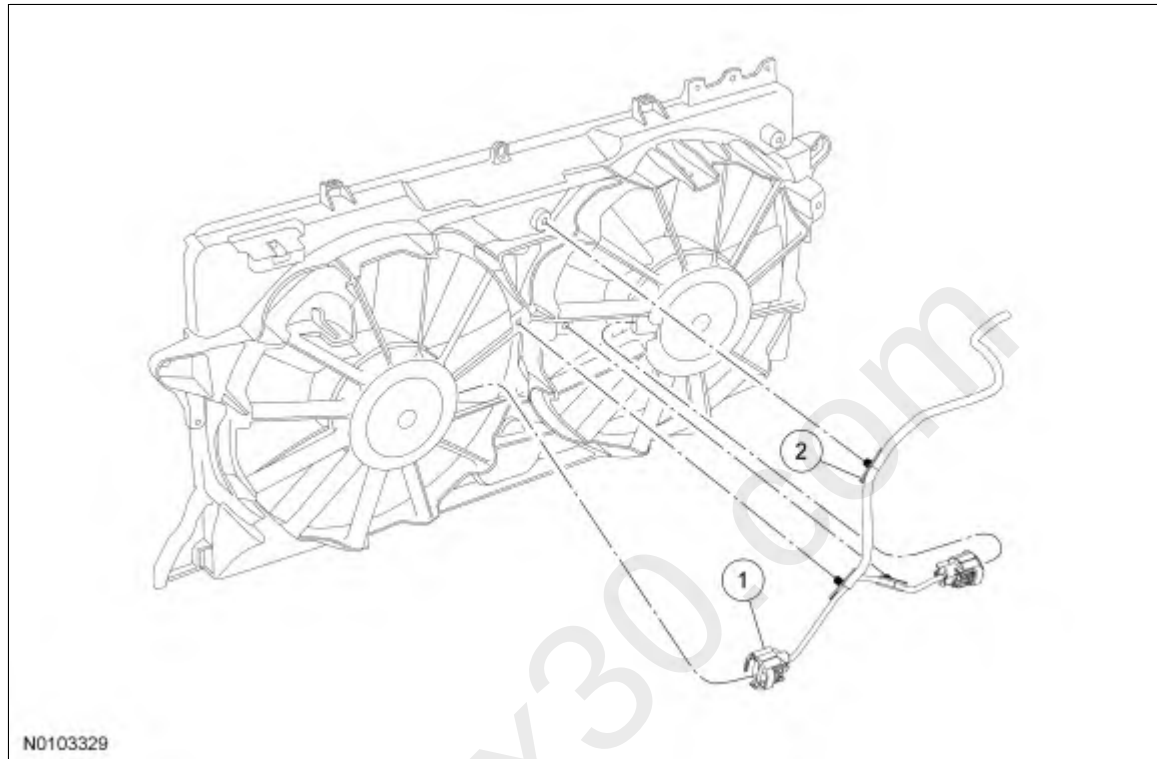
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Item	Part Number	Description
1	—	Wiring harness retainer (part of 12A581)
2	8W287	Upper radiator hose retainer (6.2L only)

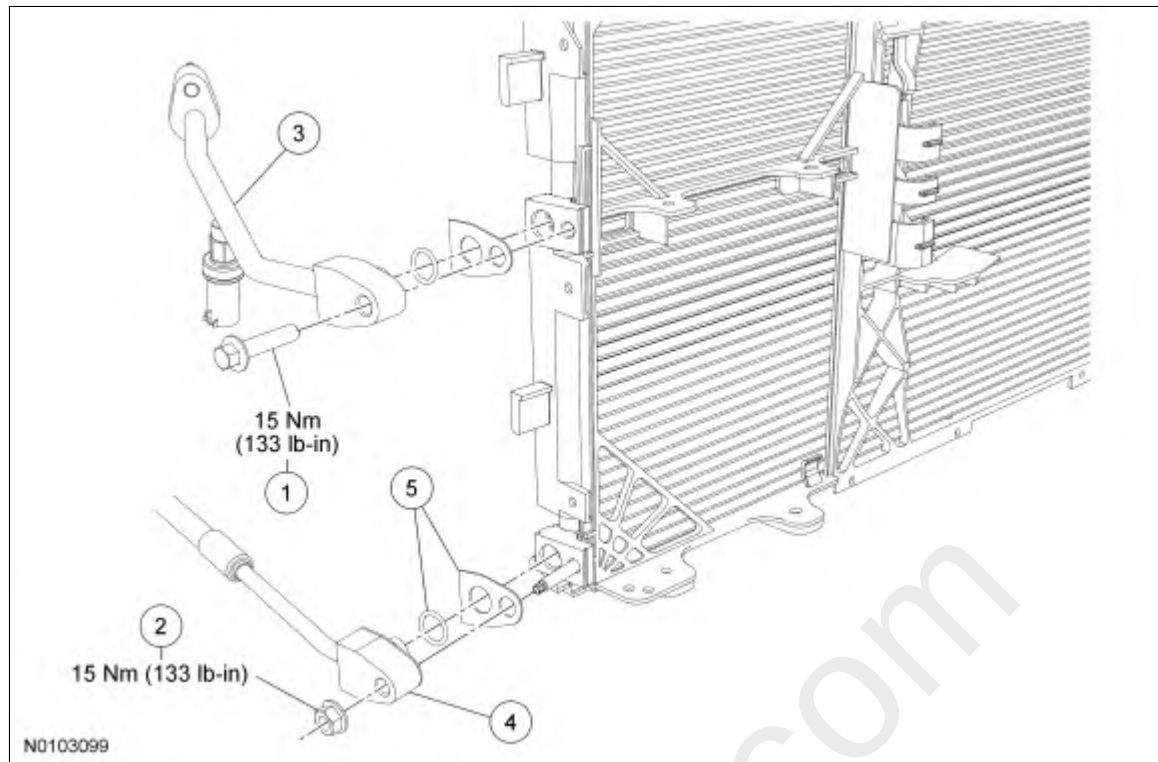
3	—	Wiring harness retainer (part of 12A581) (3 required)
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Cooling Fan Wiring



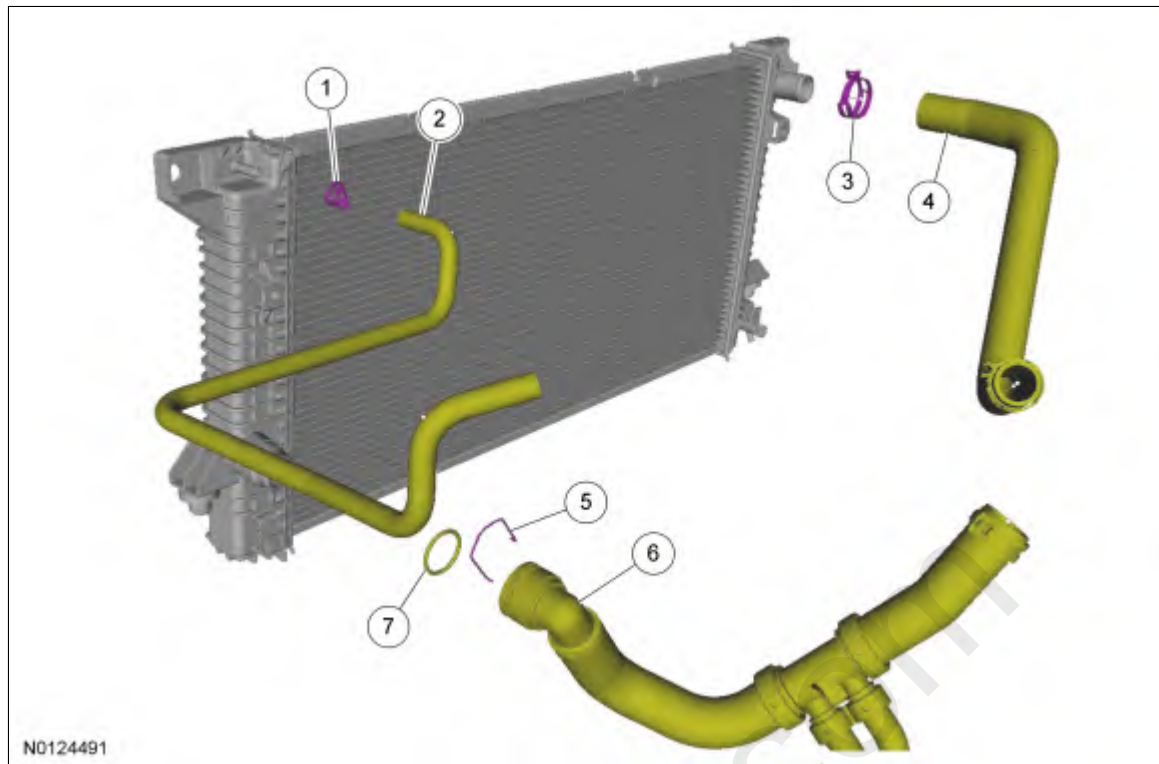
Item	Part Number	Description
1	—	Cooling fan electrical connector (part of 12A581) (2 required)
2	—	Cooling fan wiring harness retainer (part of 12A581) (3 required)

A/C Fittings



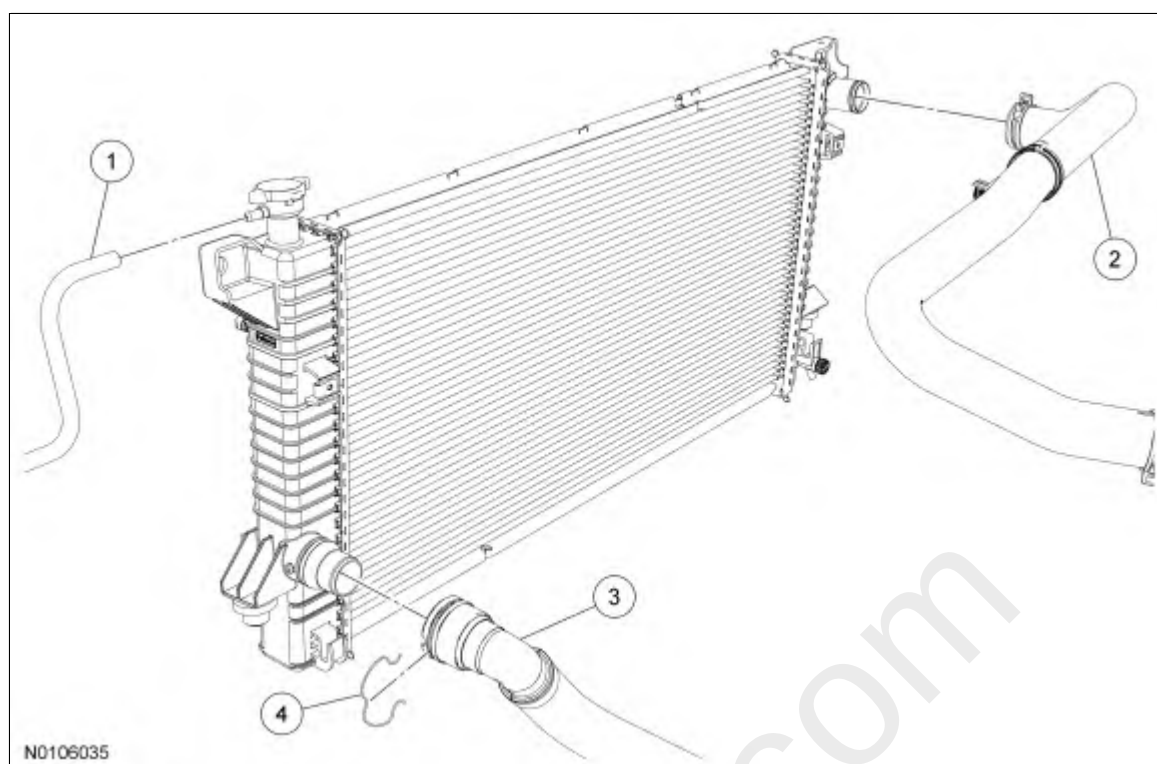
Item	Part Number	Description
1	W500110	Condenser inlet fitting bolt
2	W520413	Condenser outlet fitting nut
3	19E558	Condenser inlet jumper line fitting
4	—	Condenser outlet fitting (part of 19A834)
5	19B596	O-ring seal and gasket seal kit (2 required)

Radiator Hoses - 3.5L Gasoline Turbocharged Direct Injection (GTDI), 3.7L and 5.0L



Item	Part Number	Description
1	15161	Radiator-to-degas bottle hose clamp
2	8W005	Radiator-to-degas bottle hose
3	15161	Upper radiator hose clamp
4	8260	Upper radiator hose
5	8D037	Lower radiator hose spring clip
6	8286	Lower radiator hose
7	8D038	Lower radiator hose O-ring seal

Radiator Hoses - 6.2L

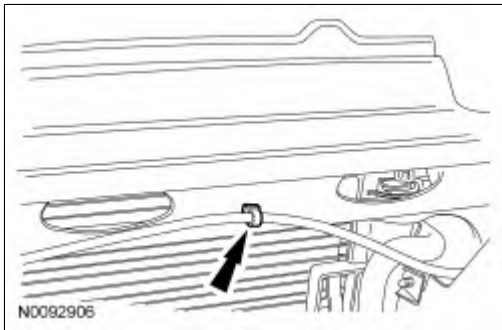


Item	Part Number	Description
1	8N029	Radiator overflow hose
2	8B274	Upper radiator hose
3	8B273	Lower radiator hose
4	8B365	Lower radiator hose spring clip

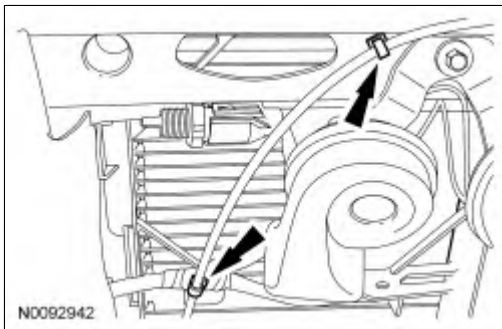
Removal

All engines

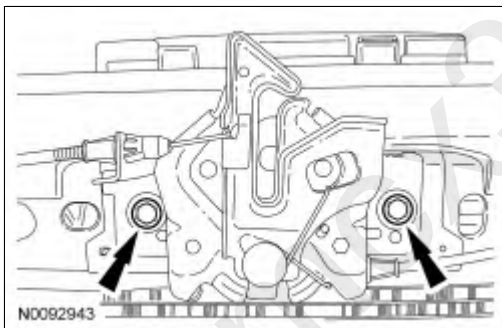
1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to [Section 100-02](#).
2. Drain the cooling system. For additional information, refer to [Cooling System Draining, Filling and Bleeding](#) in this section.
3. Evacuate the A/C system. For additional information, refer to [Section 412-00](#).
4. Disconnect the battery ground. For additional information, refer to [Section 414-01](#).
5. Remove the headlights. For additional information, refer to [Section 417-01](#).
6. Detach the LH hood latch cable retainer.



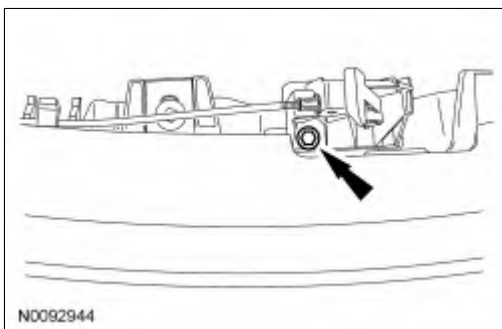
7. Detach the 2 RH hood latch cable retainers.



8. Remove the bolts and position the hood latch aside.

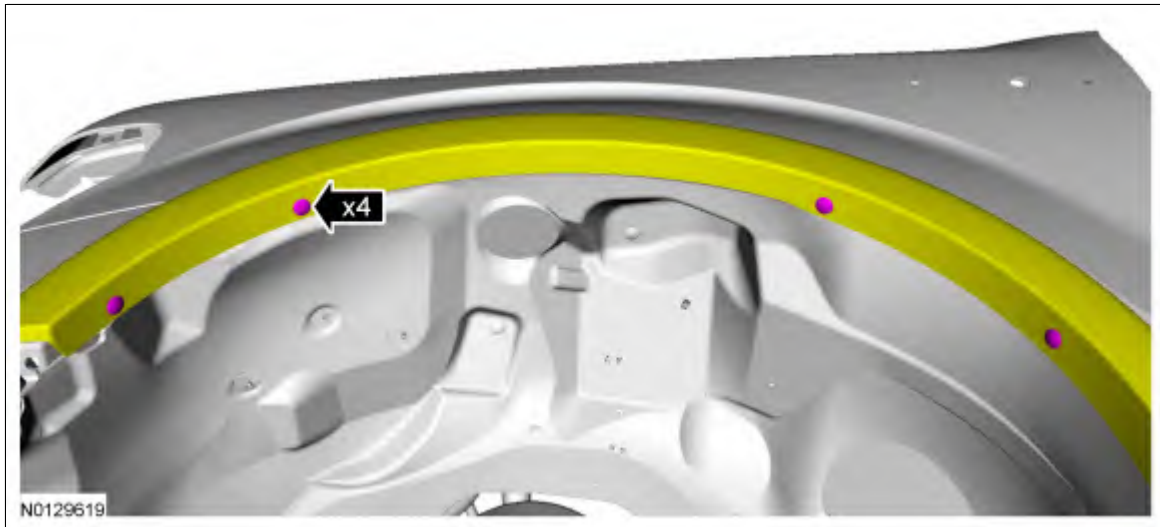


9. Remove the bolt, detach the hood latch release handle and the cable from the front bumper cover, and position the hood latch release handle aside.



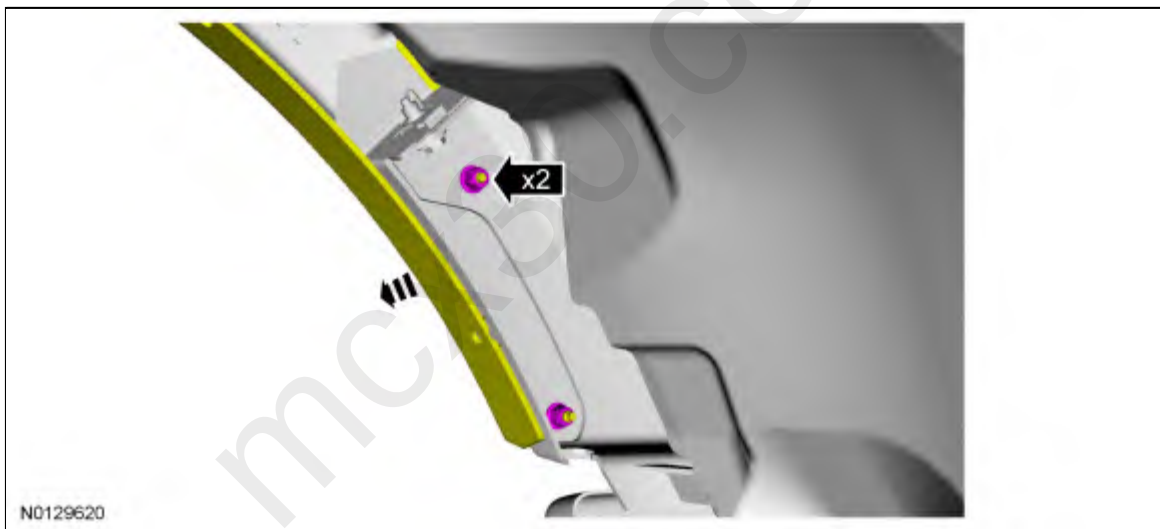
10. **NOTE:** LH shown, RH similar.

If equipped, remove the 4 LH and 4 RH front wheel moulding pushpins.



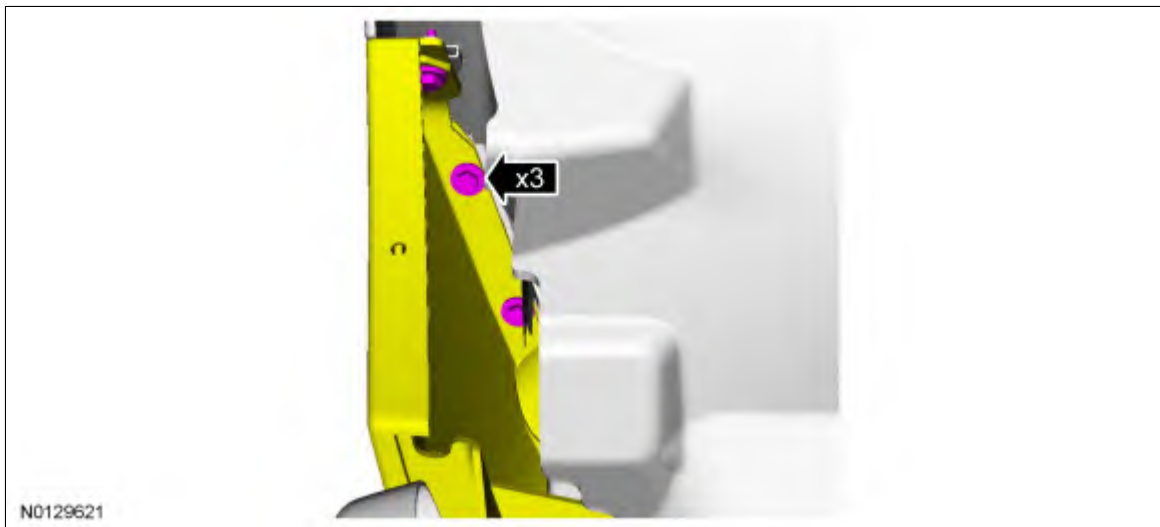
11. **NOTE:** LH shown, RH similar.

If equipped, remove the 2 LH and 2 RH front wheel moulding nuts and detach the front wheel mouldings far enough to remove the front bumper cover.

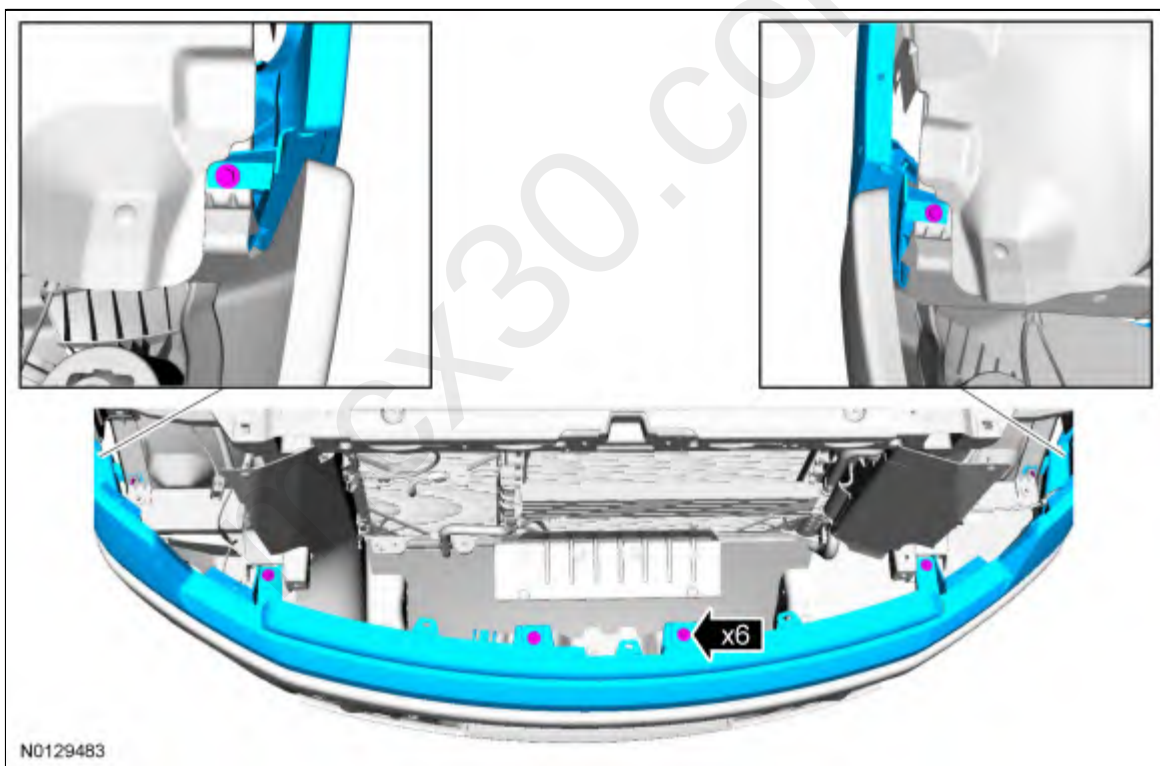


12. **NOTE:** LH shown, RH similar.

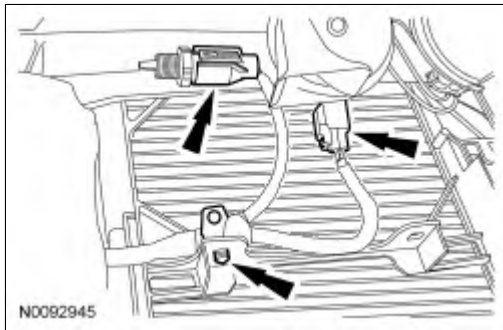
Remove the 3 LH and 3 RH bumper cover-to-fender bolts.



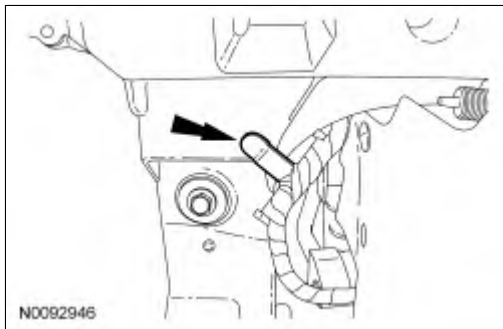
13. Remove the 6 bumper cover bracket bolts and remove the bumper cover and the brackets as an assembly.



14. Disconnect the horn electrical connector and detach the wiring harness and ambient temperature sensor retainers. Position the wiring harness aside.

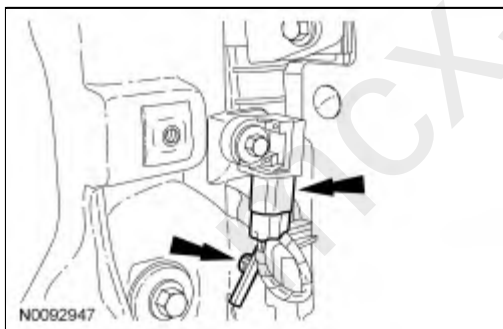


15. Detach the wiring harness retainer from the RH side of the radiator grille support.

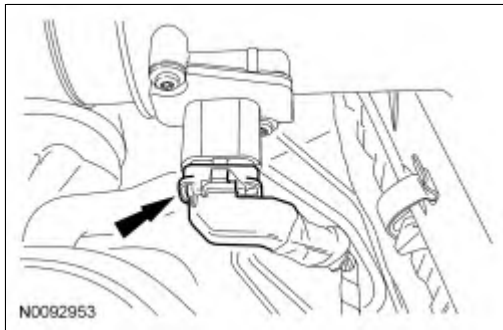


16. **NOTE:** RH shown, LH similar.

Disconnect the RH and LH front impact severity sensor electrical connectors and 2 wiring harness retainers. Position the wiring harnesses aside.

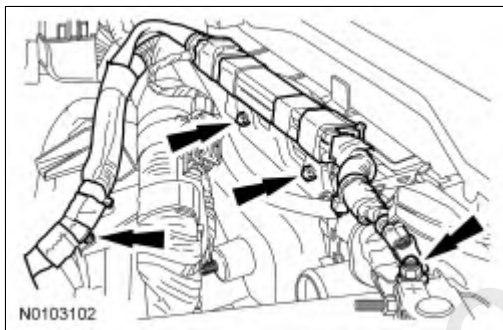


17. Release the clamp and disconnect the upper radiator hose from the radiator.
18. Remove the Air Cleaner (ACL) outlet tube. For additional information, refer to [Section 303-12](#).
19. Disconnect the Mass Air Flow (MAF) sensor electrical connector.



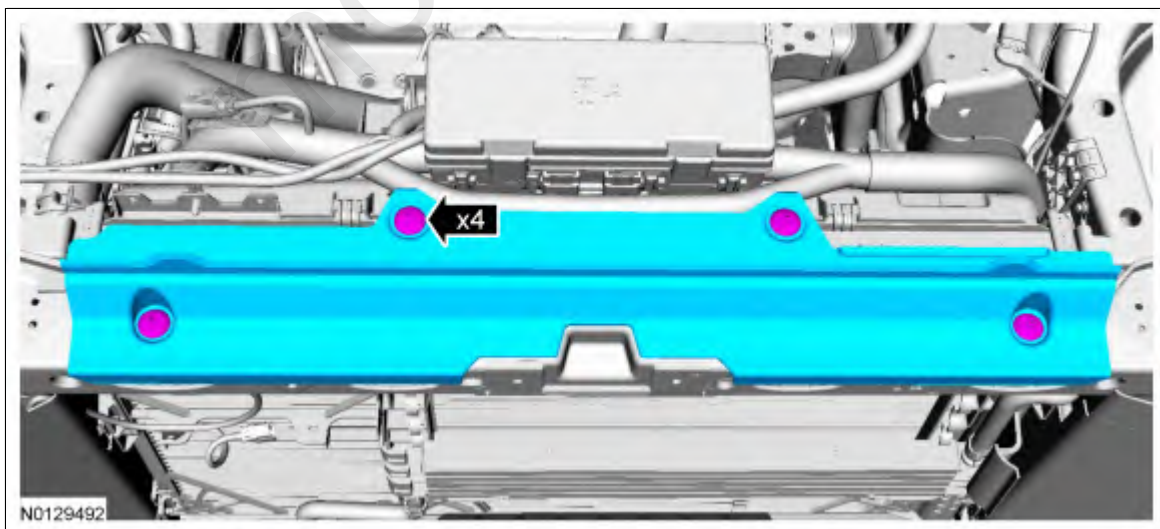
6.2L engines

20. Detach the upper radiator hose retainer from the cooling fan motor and shroud.
21. Remove the nut, detach the generator battery positive cable, detach the 3 wiring harness retainers from the cooling fan shroud and position the wiring harness aside.



3.5L GTDI, 3.7L and 5.0L engines

22. Remove the 4 pushpins and the upper radiator air deflector.

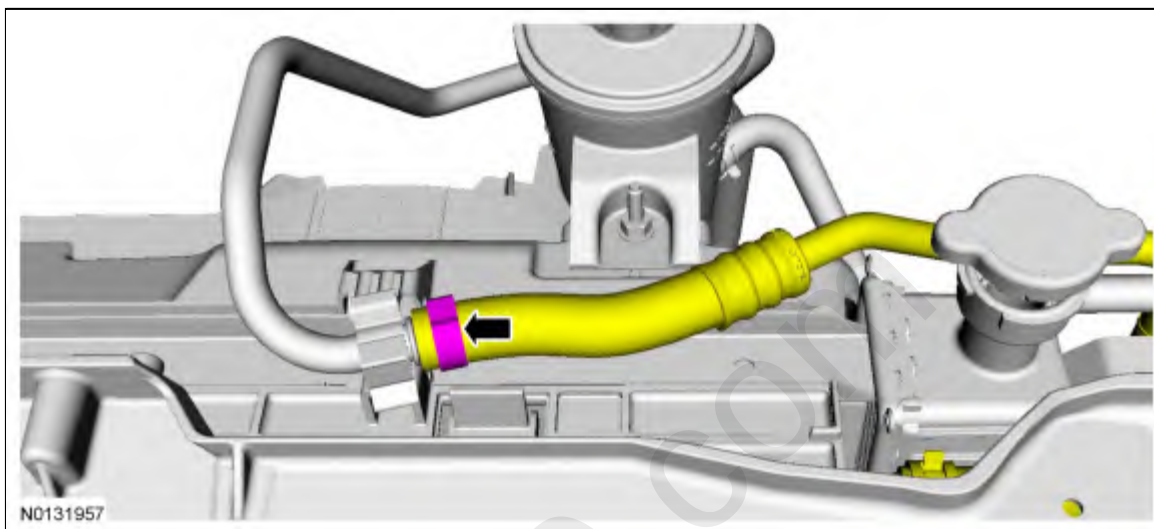


23. Detach the wiring harness retainer from the stud bolt on the LH side of the cooling fan shroud.
24. Disconnect the positive battery cable. For additional information, refer to [Section 414-01](#).

25. Detach the battery cable retainer from the cooling fan shroud.

6.2L engines

26. Detach the power steering fluid cooler hose retainer and position the hose aside.
27. Syphon the power steering fluid from the power steering reservoir, release the clamp and disconnect the power steering fluid cooler return hose on top of the radiator.



28. Detach the wiring harness retainer from the power steering fluid reservoir stud bolt.
29. Remove the power steering fluid reservoir stud bolt and position aside the reservoir.

All engines

30. If equipped, cut the block heater tie strap.
31. Remove the bolt and nut, and disconnect the A/C tube fittings from the A/C condenser.
 - Discard the O-ring seals and gaskets.
32. Disconnect the 2 cooling fan electrical connectors and detach the 3 cooling fan wiring harness retainers.
33. Release the 4 Battery Junction Box (BJB) retaining tabs and detach the BJB from the bracket.
34. **NOTE:** Push the 2 LH wiring harness retainer tabs outward to release.

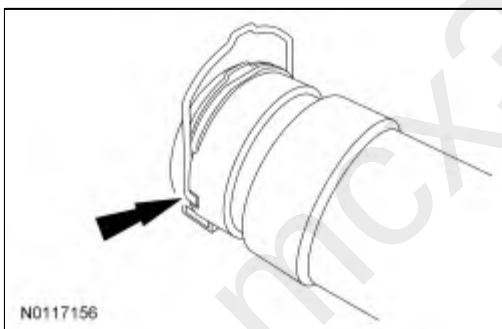
Detach the LH wiring harness retainer and the 3 RH wiring harness pushpins and position the BJB, the wiring harness.



3.5L GTDI, 3.7L and 5.0L engines

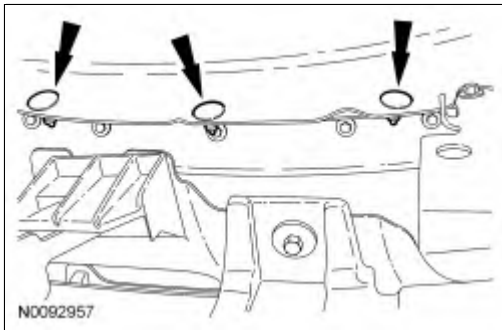
35. Release the clamp and disconnect the radiator-to-degas bottle hose from the radiator.
36. **NOTE:** The quick connect coupling illustrated is to show the spring clip release location only. The quick connect coupling on the hose may differ.

Pull the lower radiator hose spring clip up until the end of the clip is in the detent on the quick connect coupling and disconnect the lower radiator hose from the radiator.



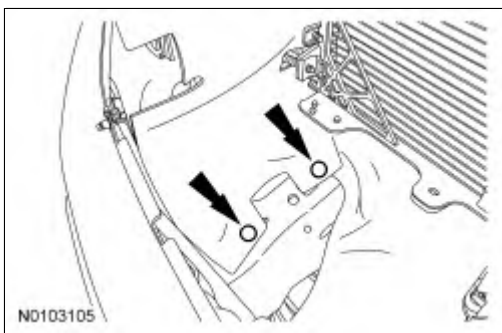
6.2L engines

37. Remove the spring clip and disconnect the lower radiator hose from the radiator.
38. Disconnect the radiator overflow hose from the radiator.
39. Remove the 3 front air deflector-to-bumper pushpins.



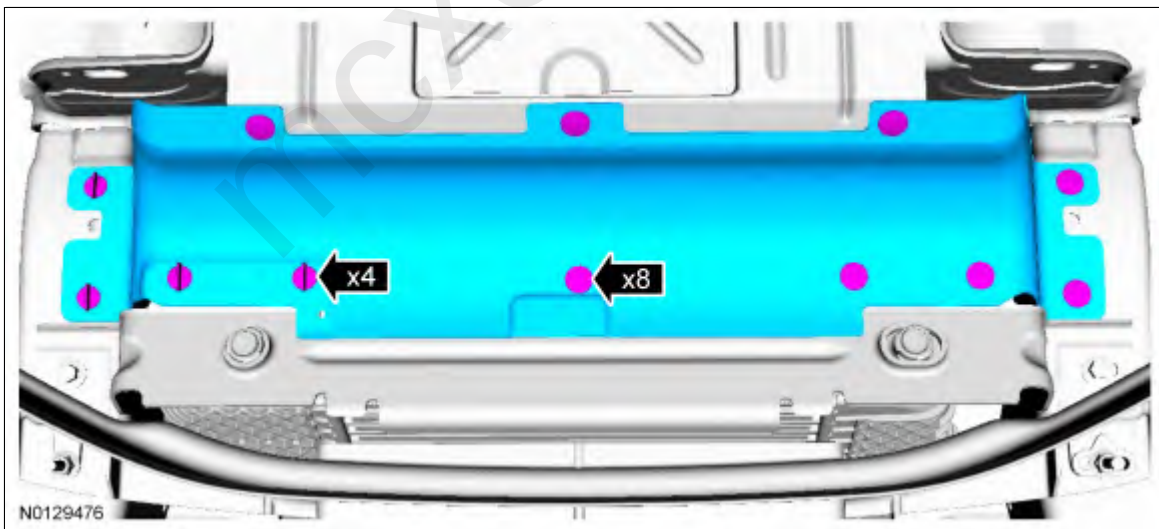
All engines

40. Remove the 2 RH air deflector-to-frame rail pushpins.



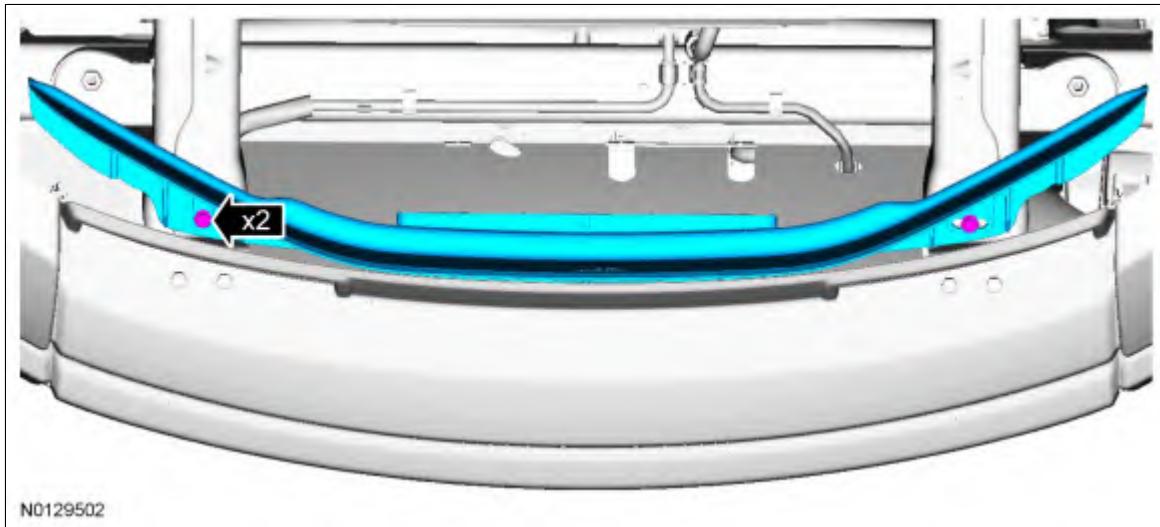
3.5L GTDI engines

41. Turn the 4 quarter-turn retainers, detach the 8 pushpins and remove the lower air deflector.



3.7L and 5.0L engines

42. Remove the 2 air dam bolts and the air dam.



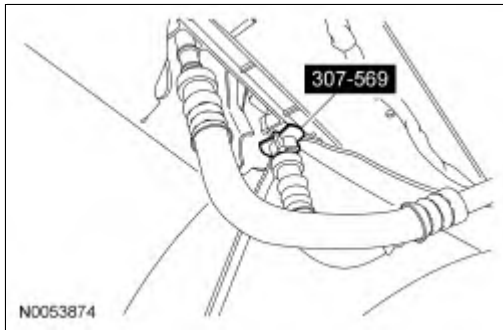
43. Remove the 3 front air deflector-to-bumper pushpins.



All engines

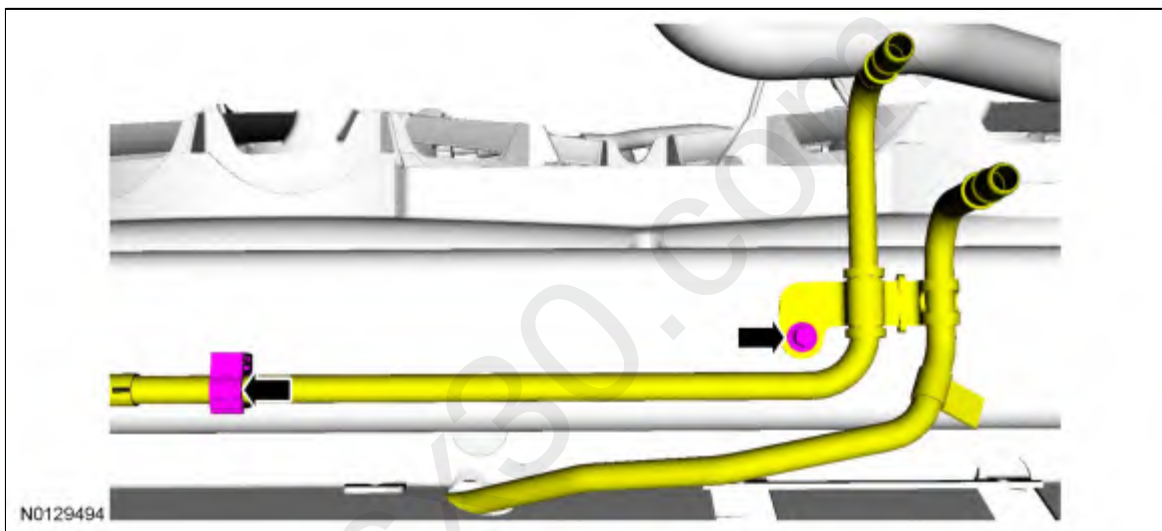
44. Remove the 2 transmission cooler tube latch assemblies.
45. **NOTE:** 6.2L shown, 3.5L GTDI, 3.7L and 5.0L similar.

Using the Transmission Cooler Line Disconnect Tool, disconnect the transmission fluid cooler tubes.

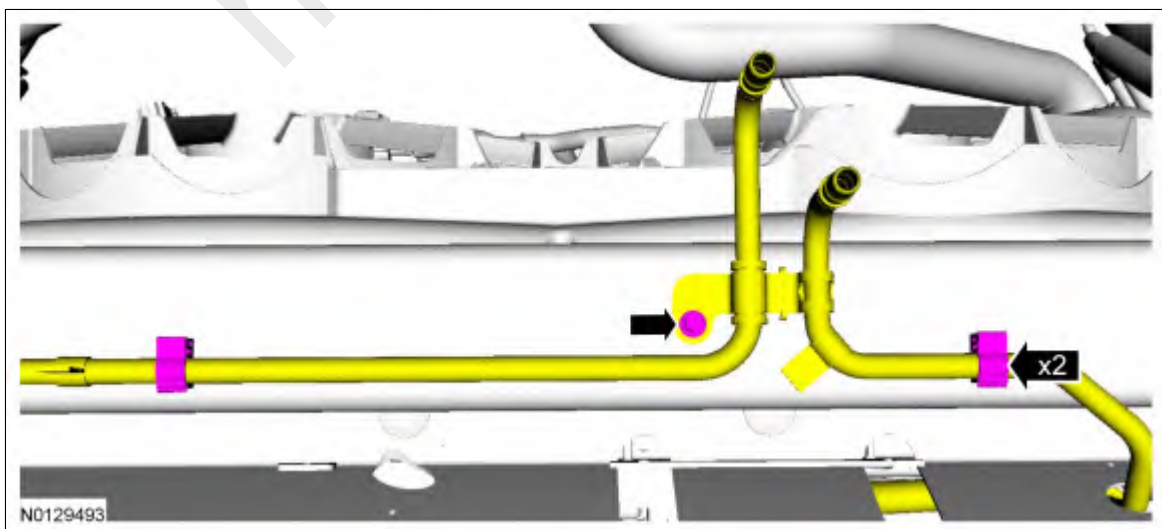


3.5L GTDI, 3.7L and 5.0L engines

46. For vehicles without an auxiliary transmission fluid cooler, remove the transmission cooler tube bracket bolt and detach the transmission cooler tube retainer from the crossmember.

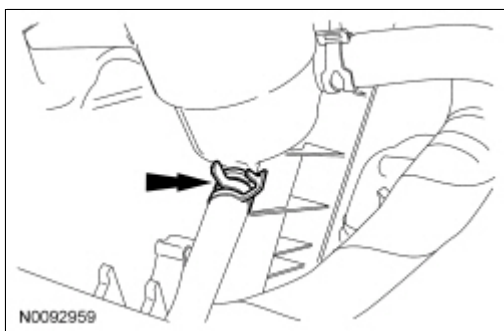


47. For vehicles with an auxiliary transmission fluid cooler, remove the transmission cooler tube bracket bolt and detach the 2 transmission cooler tube retainers from the crossmember.



6.2L engines

48. Disconnect the power steering cooler-to-power steering fluid reservoir hose from the power steering fluid reservoir.



All engines

49. Remove the 6 cooling module bolts.
50. Remove the cooling module.

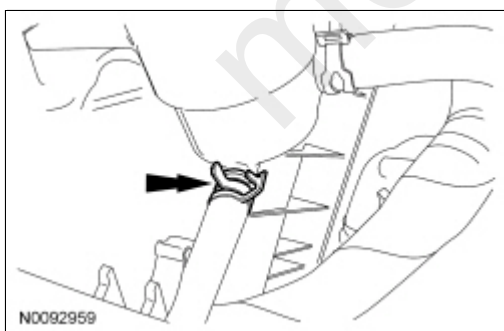
Installation

All engines

1. Position the cooling module into the vehicle.
2. Install the 6 cooling module bolts.
 - Tighten to 30 Nm (22 lb-ft).

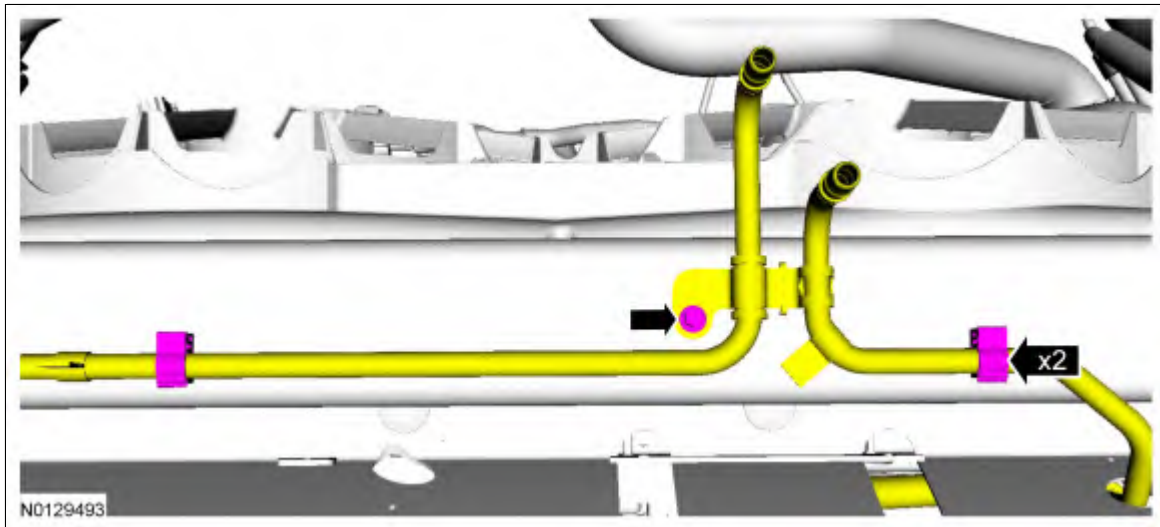
6.2L engines

3. Connect the power steering cooler-to-power steering fluid reservoir hose at the power steering reservoir.



3.5L Gasoline Turbocharged Direct Injection (GTDI), 3.7L and 5.0L engines

4. For vehicles with an auxiliary transmission fluid cooler, attach the 2 transmission cooler tube retainers and install the transmission cooler tube bracket bolt.
 - Tighten to 12 Nm (106 lb-in).



5. For vehicles without an auxiliary transmission fluid cooler, attach the transmission cooler tube retainer and install the transmission cooler tube bracket bolt.
 - Tighten to 12 Nm (106 lb-in).

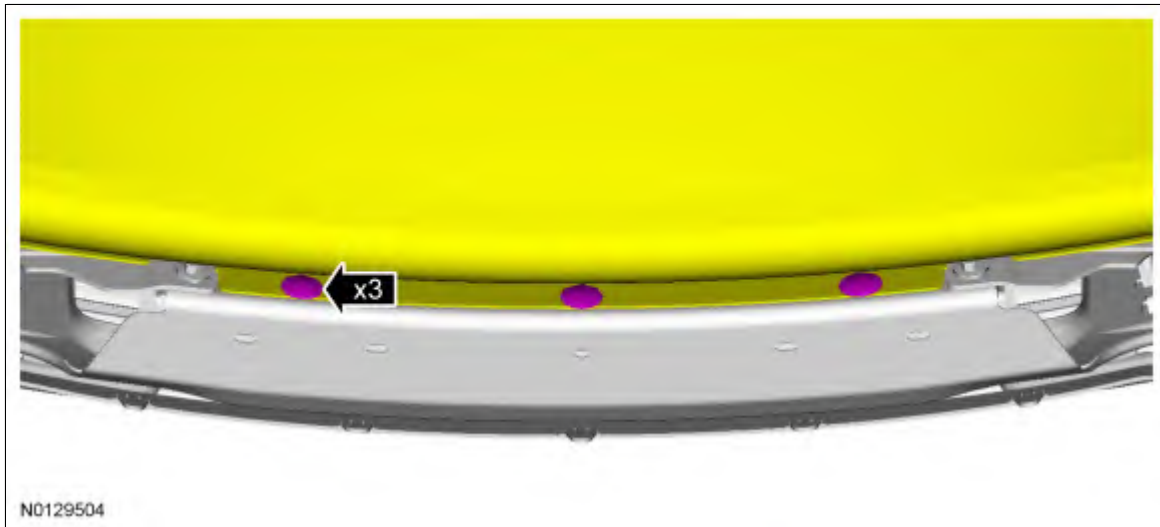


All vehicles

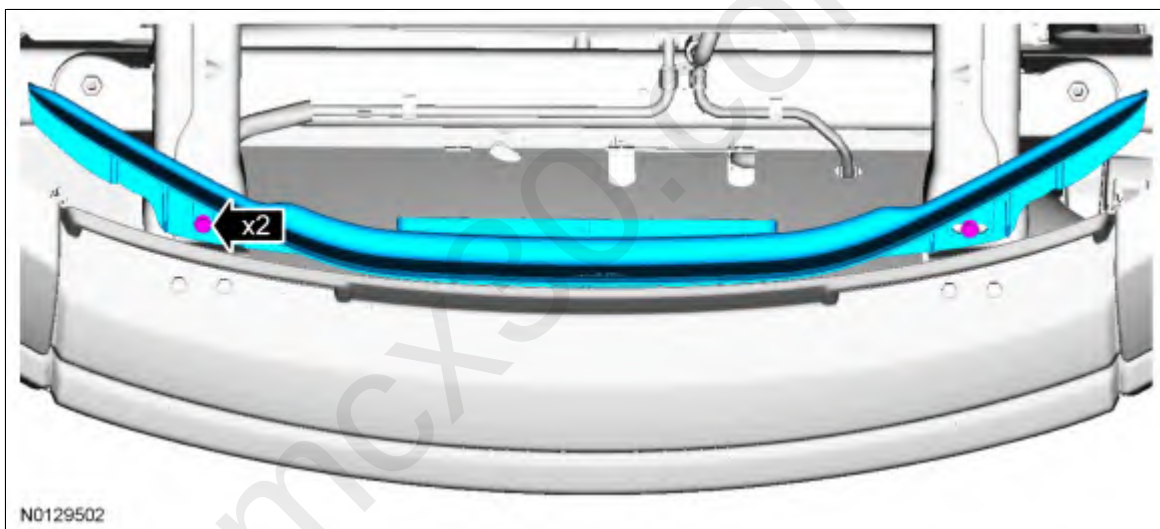
6. Connect the transmission cooler tubes.
7. Install the transmission cooler tube latch assemblies.

3.7L and 5.0L engines

8. Install the 3 air deflector-to-front bumper pushpins.

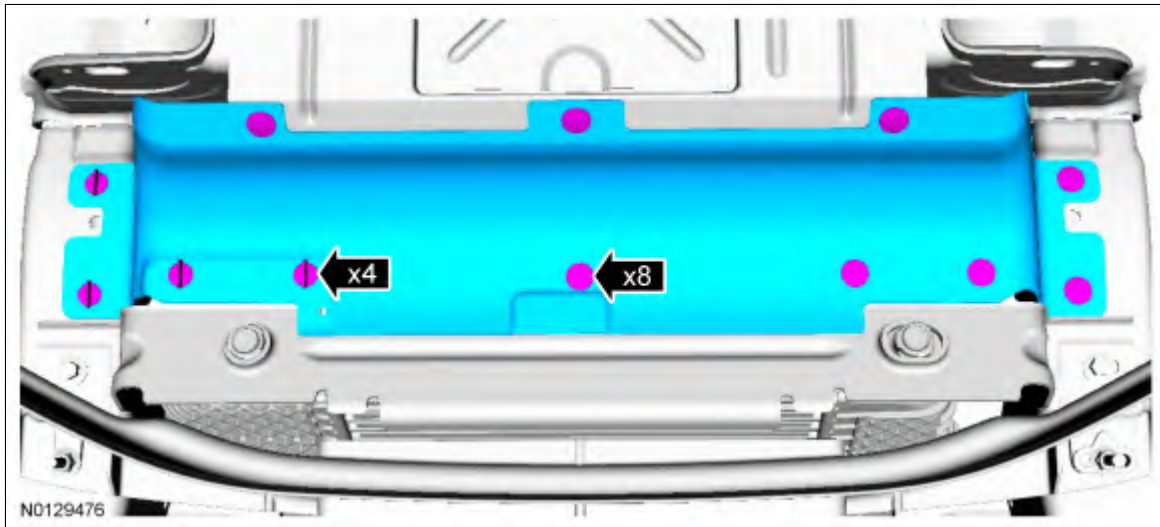


9. Position the air dam and install the 2 bolts.
 - Tighten to 20 Nm (177 lb-in).



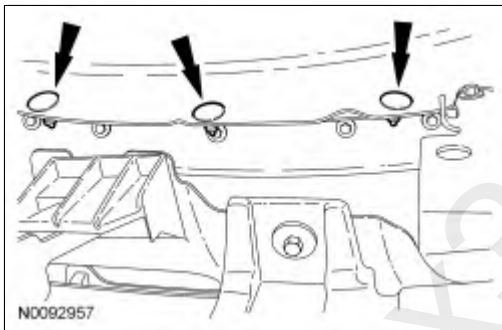
3.5L GTDI engines

10. Position the lower air deflector, attach the 8 pushpins and turn the 4 quarter-turn retainers.



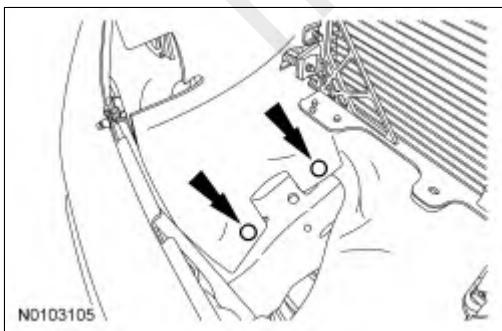
6.2L engines

11. Install the 3 front air deflector-to-bumper pushpins.



All engines

12. Install the 2 RH air deflector-to-frame rail pushpins.



3.5L GTDI, 3.7L and 5.0L engines

13. Push the spring clip in place and connect the lower radiator hose quick connect coupling to the radiator, making sure the coupling is secure.
14. Connect the radiator-to-degas bottle hose to the radiator and position the clamp.

6.2L engines

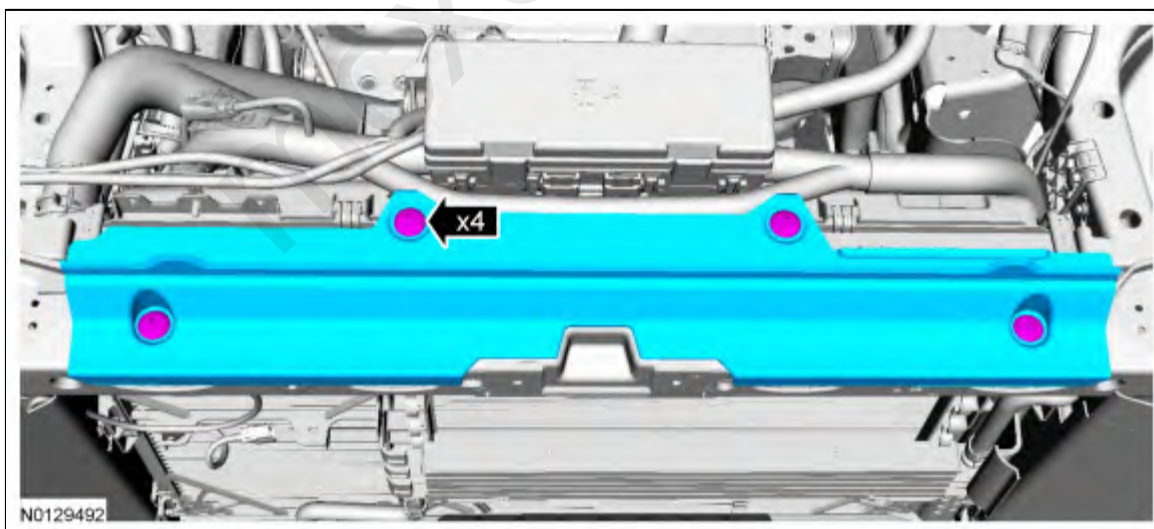
15. Connect the radiator overflow hose to the radiator.
16. Connect the lower radiator hose to the radiator and install the spring clip.

All engines

17. Position the BJB and wiring harness into place, connect the BJB retaining tabs, and attach the LH wiring harness retainer and the 3 RH wiring harness pushpins.
18. Attach the 3 cooling fan wiring harness retainers and connect the 2 cooling fan electrical connectors.
19. Install new O-ring seals and gaskets on the A/C condenser fittings.
20. Connect the A/C fittings to the A/C condenser and install the bolt and the nut.
 - Tighten to 15 Nm (133 lb-in).
21. If equipped, install a new block heater tie strap.

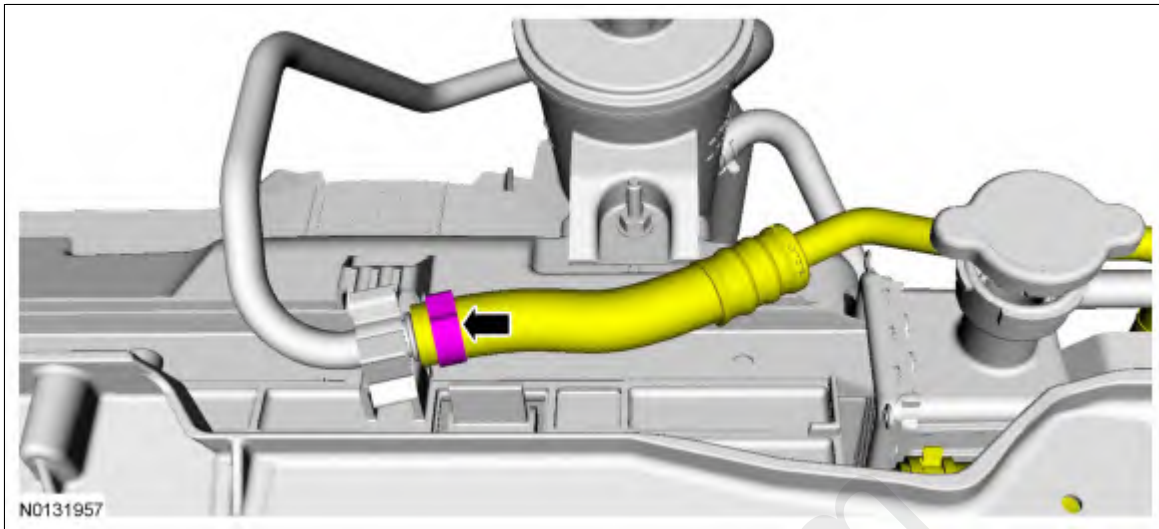
3.5L GTDI, 3.7L and 5.0L engines

22. Attach the wiring harness retainer to the stud bolt on the LH side of the cooling fan shroud.
23. Connect the battery positive cable. For additional information, refer to [Section 414-01](#).
24. Attach the battery cable retainer to the cooling fan shroud.
25. Install the upper radiator air deflector and install the 4 pushpins.

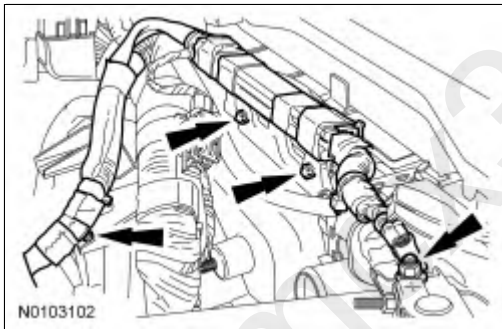
**6.2L engines**

26. Position the power steering fluid reservoir and install the stud bolt.
 - Tighten to 11 Nm (97 lb-in).
27. Attach the wiring harness retainer to the power steering fluid reservoir stud bolt.

28. Connect the power steering fluid cooler return hose on top of the radiator.



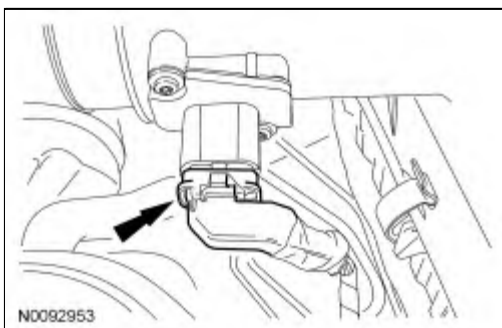
29. Connect the power steering fluid cooler hose retainer.
30. Position the wiring harness, attach the 3 wiring harness retainers to the cooling fan shroud, attach the generator battery positive cable and install the nut.
- Tighten to 9 Nm (80 lb-in).



31. Attach the upper radiator hose retainer to the cooling fan motor and shroud.

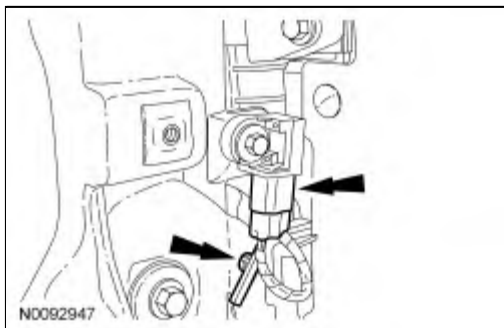
All engines

32. Connect the MAF sensor electrical connector.

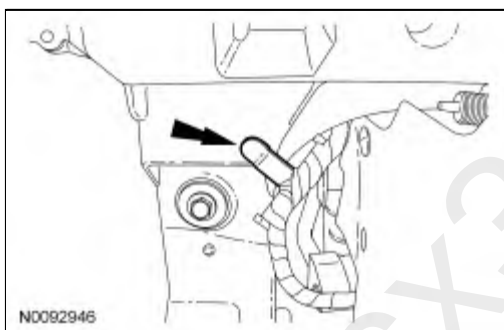


33. Install the ACL outlet tube. For additional information, refer to [Section 303-12](#).
34. Connect the upper radiator hose to the radiator and install the clamp.
35. **NOTE:** RH shown, LH similar.

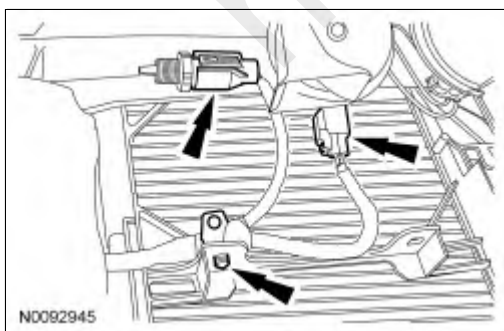
Position the wiring harness into place and connect the RH and LH front impact severity sensor electrical connectors and wiring harness pushpin retainers.



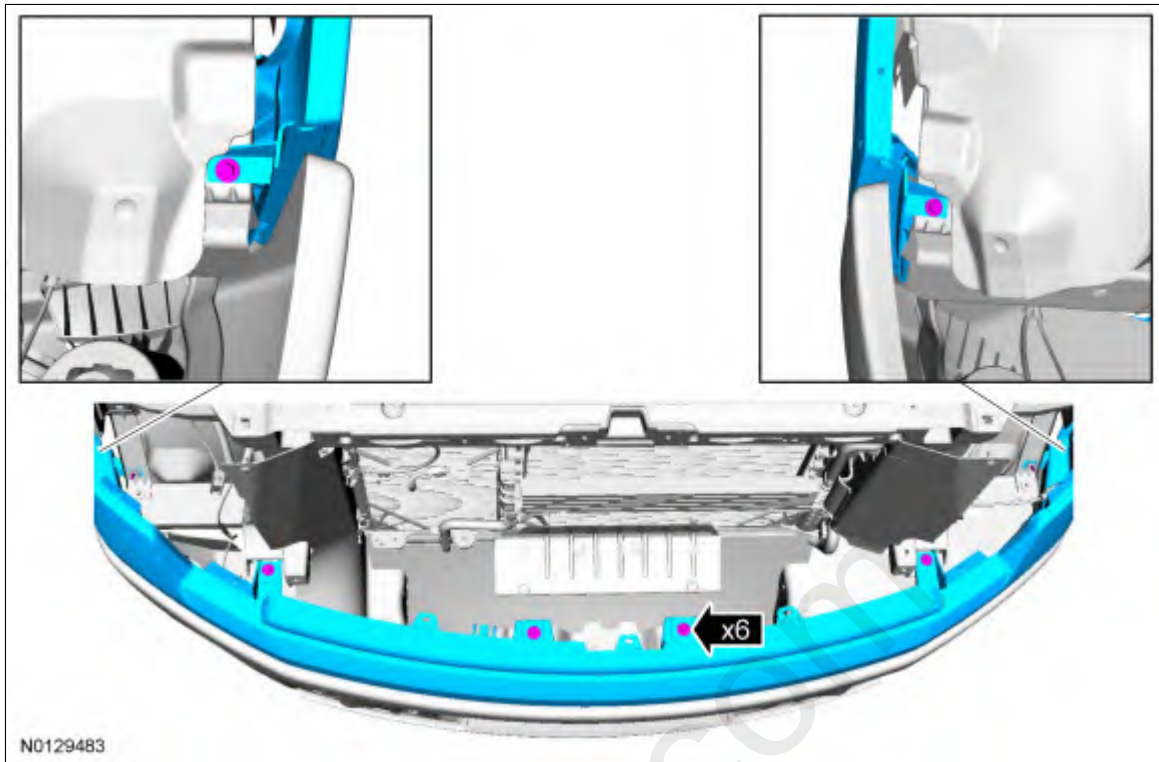
36. Attach the wiring harness retainer to the RH side of the radiator grille support.



37. Position the wiring harness into place and connect the horn and ambient temperature sensor electrical connectors and attach the pushpin retainer.



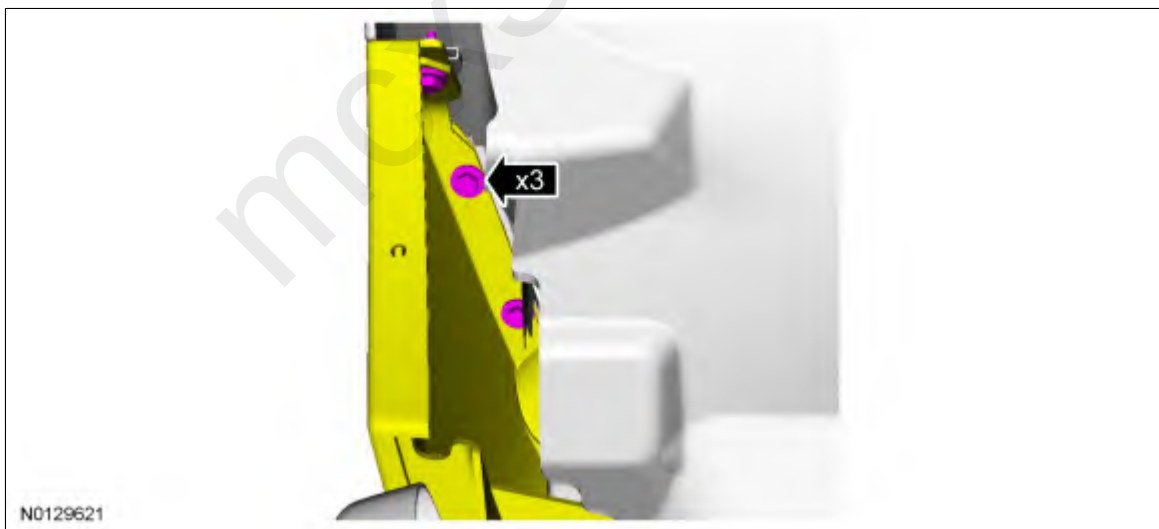
38. Position the front bumper cover and the brackets as an assembly and install the 6 bumper cover bracket bolts.
 - Tighten to 3 Nm (27 lb-in).



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

Install the 3 LH and 3 RH bumper cover-to-fender bolts.

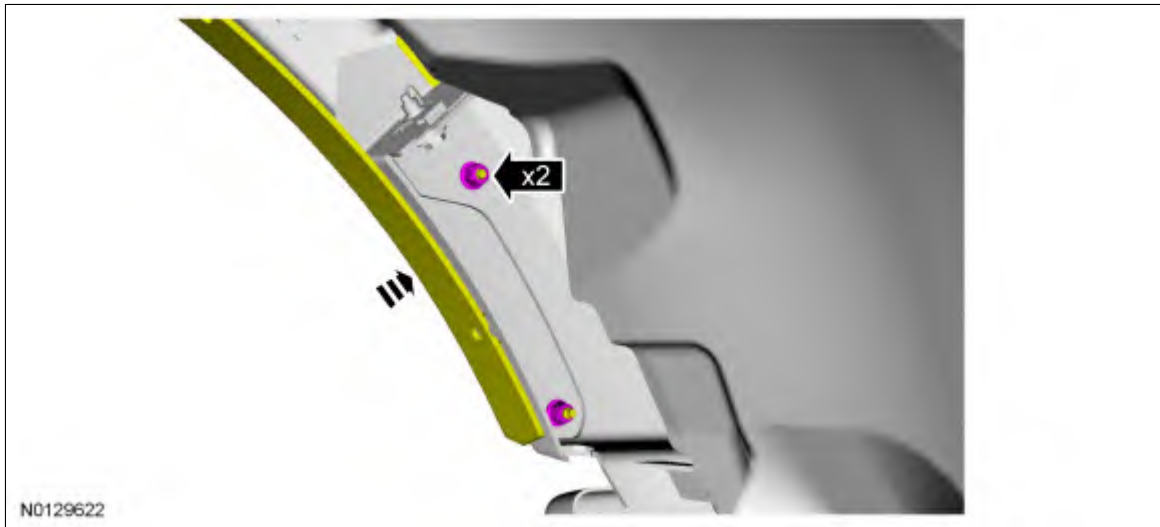
- Tighten to 3 Nm (27 lb-in).



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

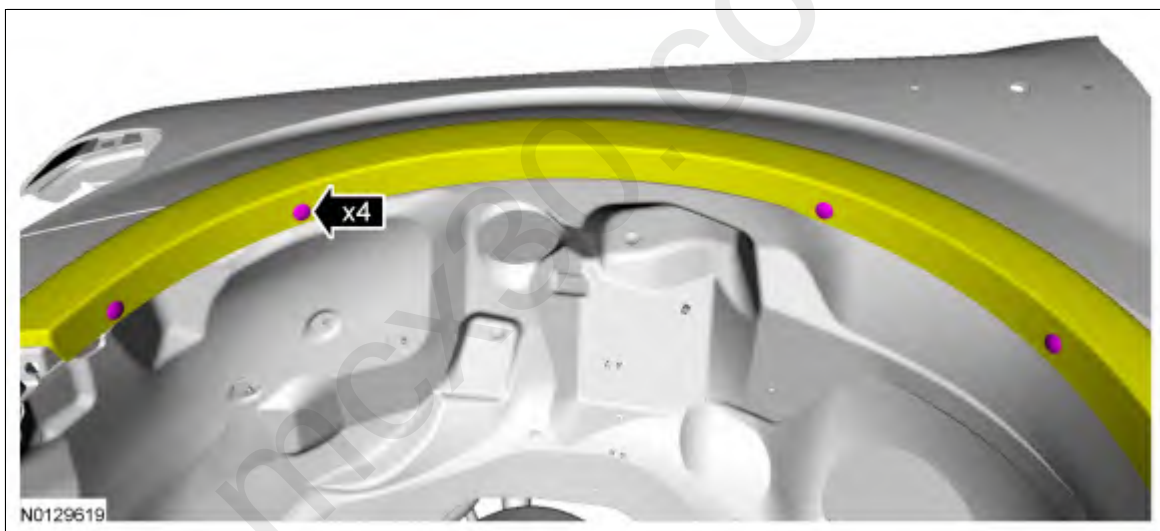
If equipped, attach the front wheel mouldings and install the 2 LH and 2 RH nuts.

- Tighten to 3 Nm (27 lb-in).

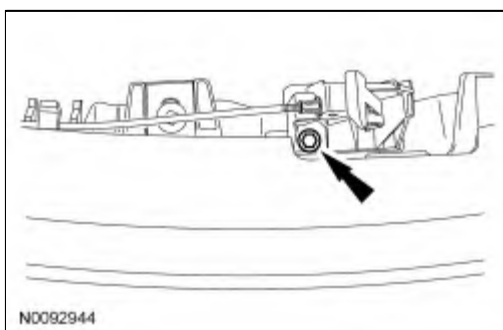


41. **NOTE:** LH shown, RH similar.

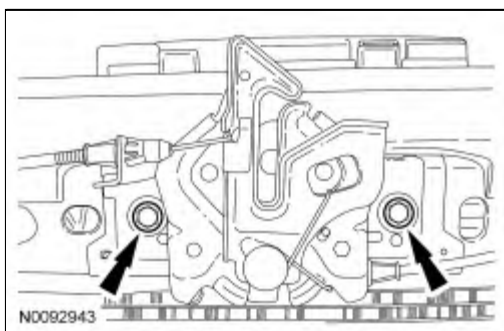
If equipped, install the 4 LH and 4 RH front wheel moulding pushpins.



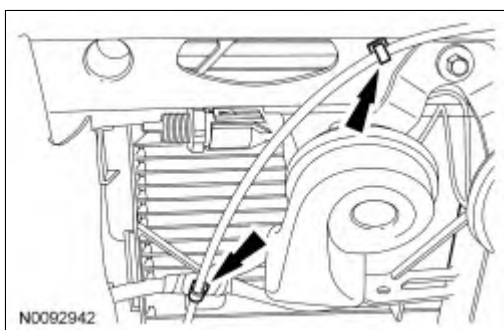
42. Position and attach the hood latch release handle and cable onto the front bumper cover and install the bolt.
- Tighten to 8 Nm (71 lb-in).



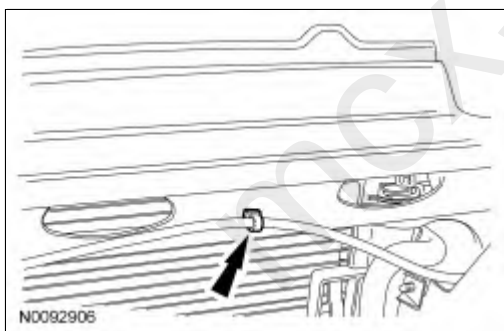
43. Position the hood latch into place and install the 2 bolts.
- Tighten to 25 Nm (18 lb-ft).



44. Attach the 2 RH hood latch cable pushpin retainers.



45. Attach the LH hood latch cable pushpin retainers.



46. Install the headlights. For additional information, refer to [Section 417-01](#).
47. Connect the battery ground cable. For additional information, refer to [Section 414-01](#).
48. Fill the cooling system. For additional information, refer to [Cooling System Draining, Filling and Bleeding](#) in this section.
49. Recharge the A/C system. For additional information, refer to [Section 412-00](#).
50. If equipped, fill the power steering system. For additional information, refer to [Section 211-00B](#).
51. Check the transmission fluid and fill as necessary. For additional information, refer to [Section 307-01](#).

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