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Service Information Bulletin

SUBJECT	DATE
GHG14 DD15 Asymmetrical Turbocharger	May 2013

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0081	DD Platform	Removal of the GHG14 DD15 Asymmetrical Turbocharger	Added several steps and changed order of steps in procedure. Added torque values.
		Installation of the GHG14 DD15 Asymmetrical Turbocharger	



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2 Removal of the GHG14 DD15 Asymmetrical Turbocharger

Remove as follows:



WARNING: PERSONAL INJURY

To avoid injury, never remove any engine component while the engine is running.



WARNING: PERSONAL INJURY

To avoid injury from hot surfaces, wear protective gloves, or allow engine to cool before removing any component.



WARNING: PERSONAL INJURY

To avoid injury from contact with rotating parts when an engine is operating with the air inlet piping removed, install an air inlet screen shield over the turbocharger air inlet. The shield prevents contact with rotating parts.

Prior to removal, visually check for:

- Missing or loose nuts and bolts
- Loose or damaged intake and exhaust ducting
- Damaged oil drain lines
- Cracked or deteriorating turbocharger housing
- External oil leakage or exhaust leaks

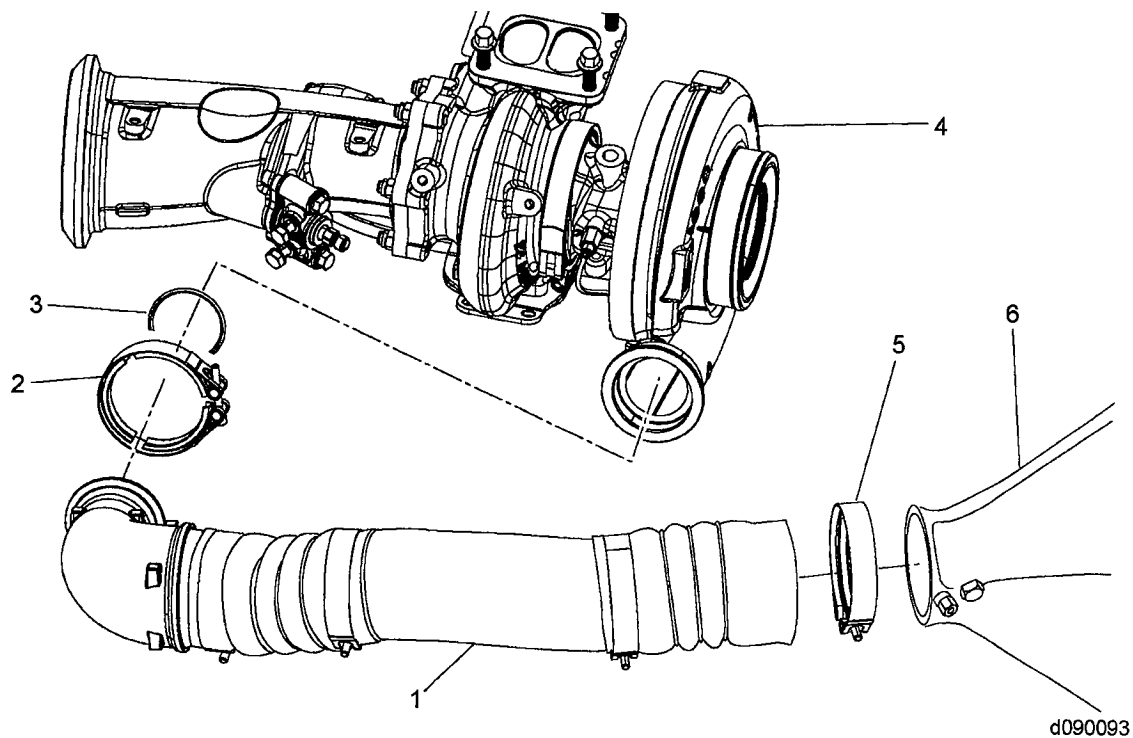
Replace damaged parts with new parts.

NOTICE: Do not attempt to remove carbon or dirt buildup on the compressor or turbine wheels without removing the turbocharger from the engine. If chunks of carbon are left on the blades, an unbalanced condition will exist and subsequent failure of the bearings will result if the turbocharger is operated. However, it is not necessary to disassemble the turbocharger to remove dirt or dust buildup.

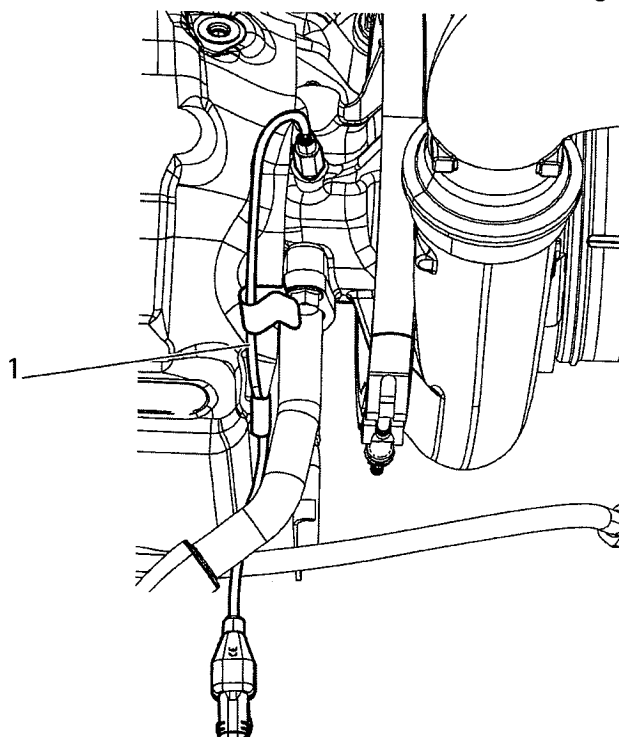
1. Chock the wheels.
2. Disconnect Park Smart batteries (if equipped).
3. Disconnect main batteries.
4. Open hood.

NOTE: The Charge Air Cooler (CAC) clamp (5) is reusable.

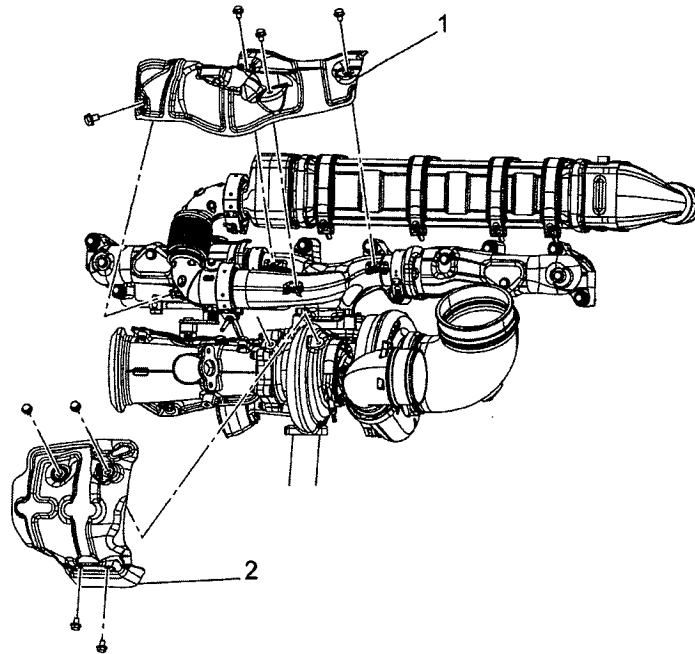
5. Remove the air duct (1) by removing the V-band clamp (2) from the turbocharger (4) and clamp (5) on the CAC inlet (6). Discard the turbocharger V-band clamp (2) and O-ring (3).



6. Remove the air duct between the inlet of the turbocharger (4) and the outlet of the air filter housing (may vary by vehicle).
7. Unclip the turbocharger speed sensor wire (1) from the turbocharger heat shield. See figure below.

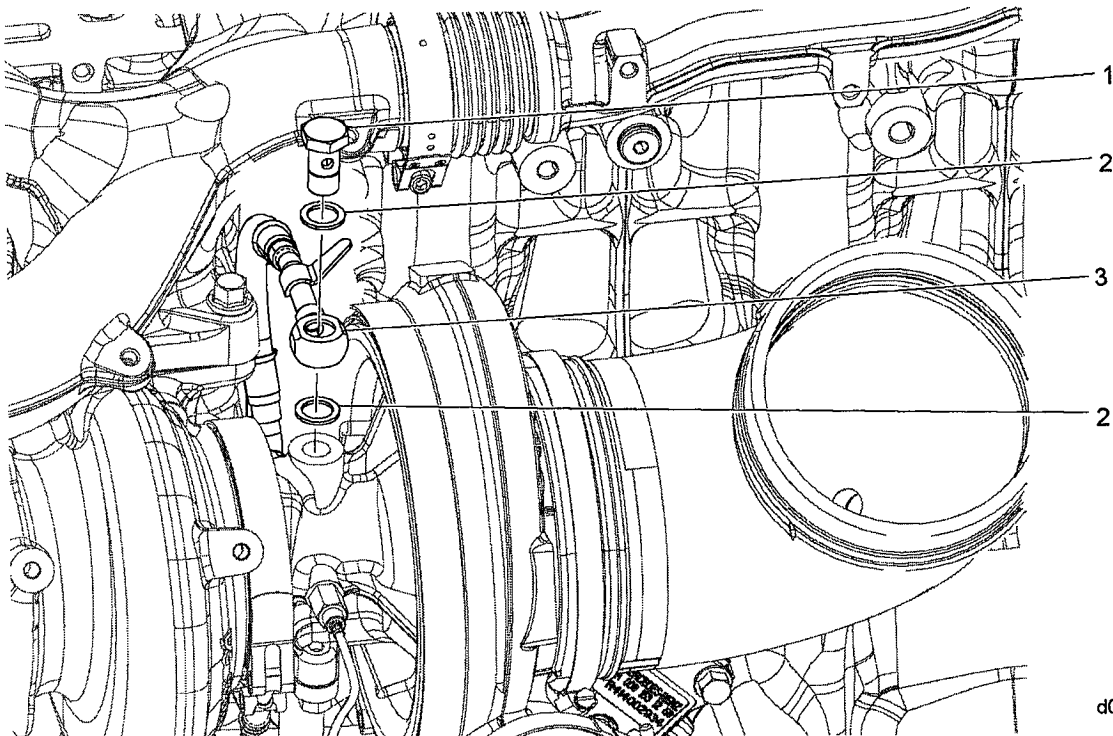


8. Remove the turbocharger (2) and exhaust manifold (1) heat shields. See figure below.



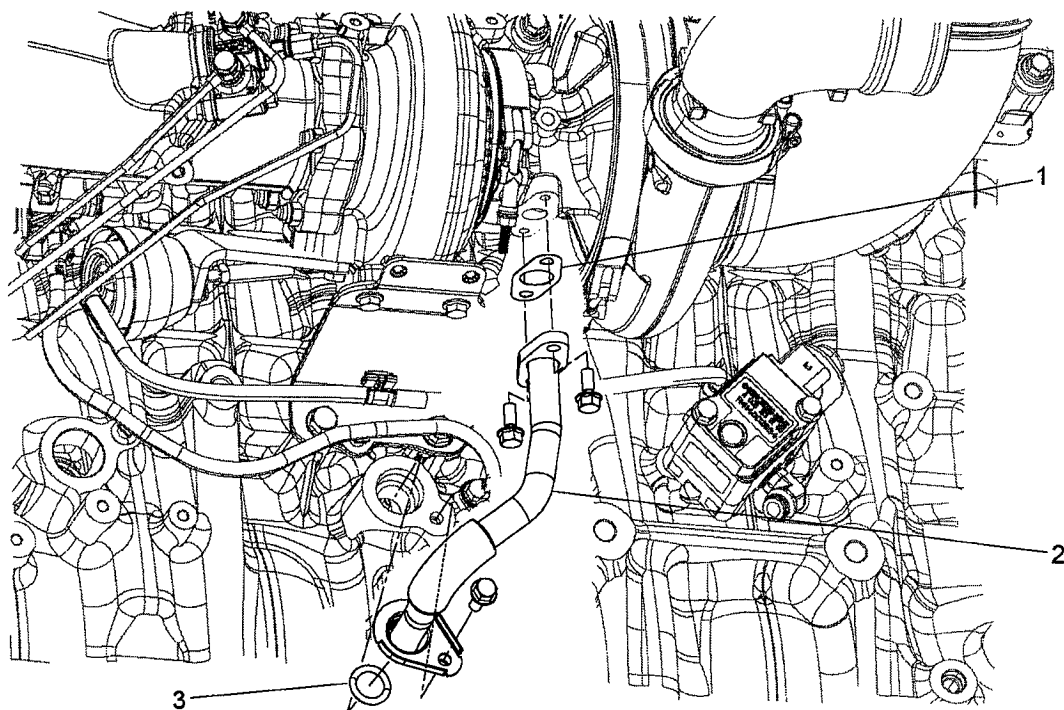
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9. Remove the oil supply line (3) from the top of the turbocharger by removing the banjo bolt (1). Discard the seal washers (2). See figure below.



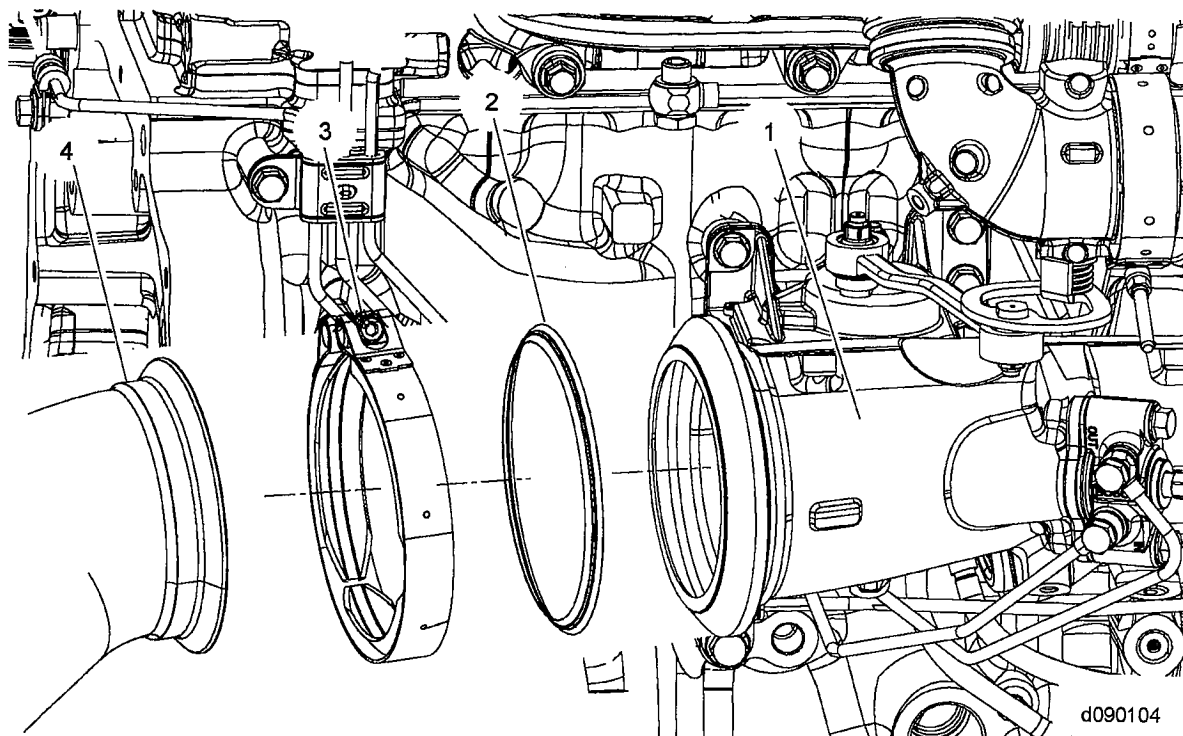
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10. Remove the drain line (3) from the turbocharger and the engine block. Discard the drain line gasket (1) and O-ring (4). See figure below.



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11. Remove and discard the V-band clamp (3) and seal (2) attached between the bellows (4) and the flanged turbocharger exhaust manifold (1).

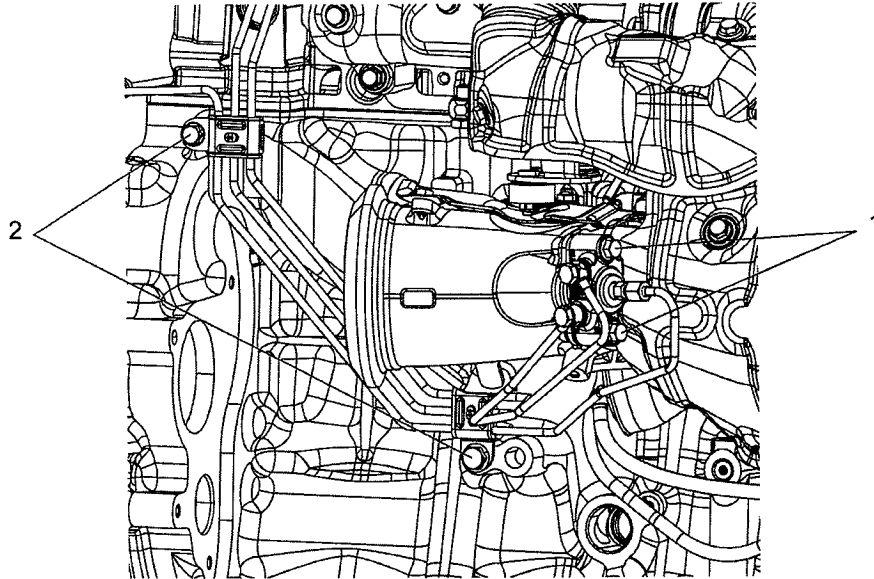


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12. Remove the two P-clip bolts (2) holding the Hydrocarbon (HC) fuel doser housing fuel and coolant lines. See graphic in step 13.

NOTICE: When removing the turbocharger, make sure the HC fuel doser coolant and fuel lines are not bent or kinked, causing damage.

13. Remove the two HC fuel doser housing bolts (1) and position the HC fuel dosing housing aside. Remove and discard the mounting gasket.



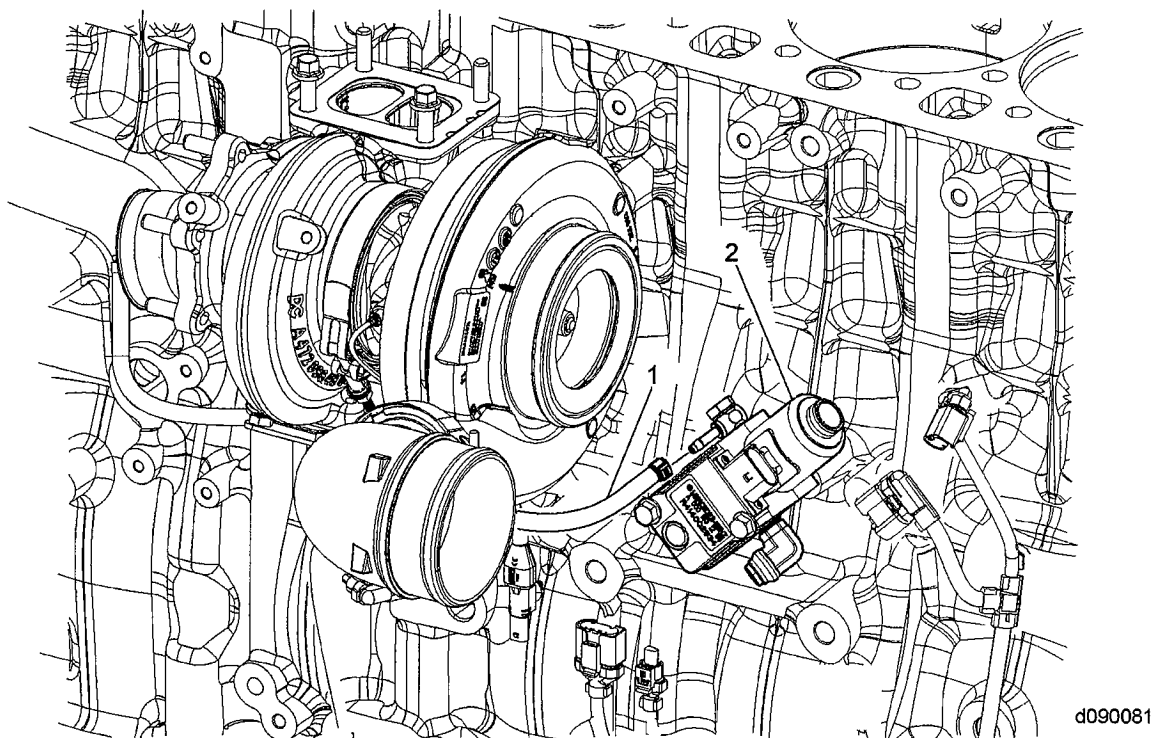
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NOTE: The turbocharger speed sensor electrical connector is clipped onto a bracket mounted on the cylinder block; use a 90° pick to move the tab behind the connector to disconnect the turbocharger speed sensor connector from the cylinder block.

14. Disconnect the turbocharger speed sensor electrical connector.

NOTE: Leave the air hose connected to the turbocharger.

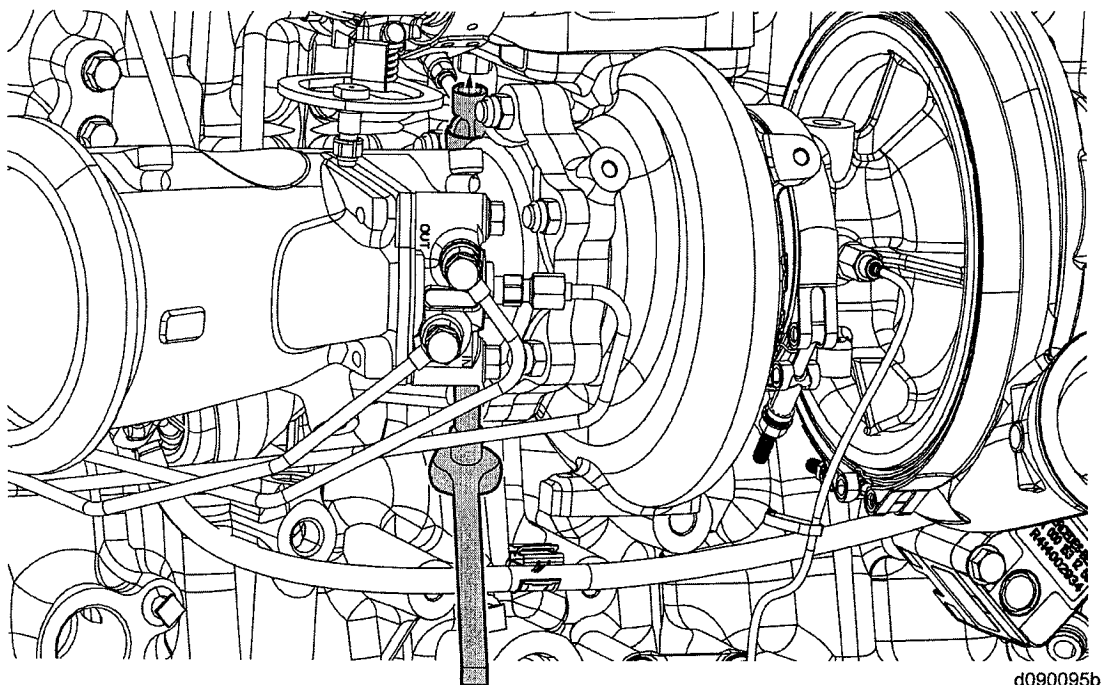
15. Remove the air hose (1) from the wastegate solenoid (2).



16. Remove the zip-ties holding the air hose in place.
17. Remove the zip-tie holding the EGR actuator harness to the turbocharger support bracket.
18. Remove the four bolts from the turbocharger support bracket.

NOTE: When looking at the turbocharger, the mounting stud on the exhaust manifold center section is located towards the rear of the engine closest to the cylinder block. The size of the nut is larger than the size of the bolt heads.

19. Remove the three bolts and one nut attaching the turbocharger to the exhaust manifold center section.



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NOTICE: Ensure the HC fuel doser coolant and fuel lines are not bent or kinked, causing damage.

20. Lower the turbocharger assembly from the exhaust manifold center section and remove it towards the front of the engine.
21. Discard the turbocharger gasket.
22. Remove the three heat shield bolts and the heat shield from the flanged turbocharger exhaust manifold.

NOTE: Mark the flanged turbocharger exhaust manifold orientation before removing it from the turbocharger.

23. Remove the flanged turbocharger exhaust manifold from the turbocharger.
24. Remove and discard the sealing gasket from the outlet of the flanged turbocharger exhaust manifold.
25. Cover the end of the oil supply line, the oil drain line, the air inlet, and the exhaust outlet openings on the engine and turbocharger to prevent entry of foreign material.



WARNING: PERSONAL INJURY

To avoid injury from improper use of chemicals, follow the chemical manufacturer's usage, handling, and disposal instructions. Observe all manufacturer's cautions.

26. If the turbocharger is being reused, clean the exterior of the turbocharger with a non-caustic cleaning solvent.
27. Clean the inlet and outlet of the flanged turbocharger exhaust manifold.

3 Installation of the GHG14 DD15 Asymmetrical Turbocharger

Install as follows:

NOTICE: If the turbocharger is being replaced, replace the engine oil and filter.

1. If the turbocharger is being replaced, install the six new studs for the flanged turbocharger exhaust manifold. Torque studs to 25 N•m (18 lb•ft).
2. Install the flanged turbocharger exhaust manifold onto the turbocharger. Torque nuts to 50 N•m (36 lb•ft).
3. Install the flanged turbocharger exhaust manifold heat shield and the three bolts. Torque bolts to 25 N•m (18 lb•ft).

NOTE: The mounting stud on the exhaust manifold center section is located towards the rear of the engine closest to the cylinder block.

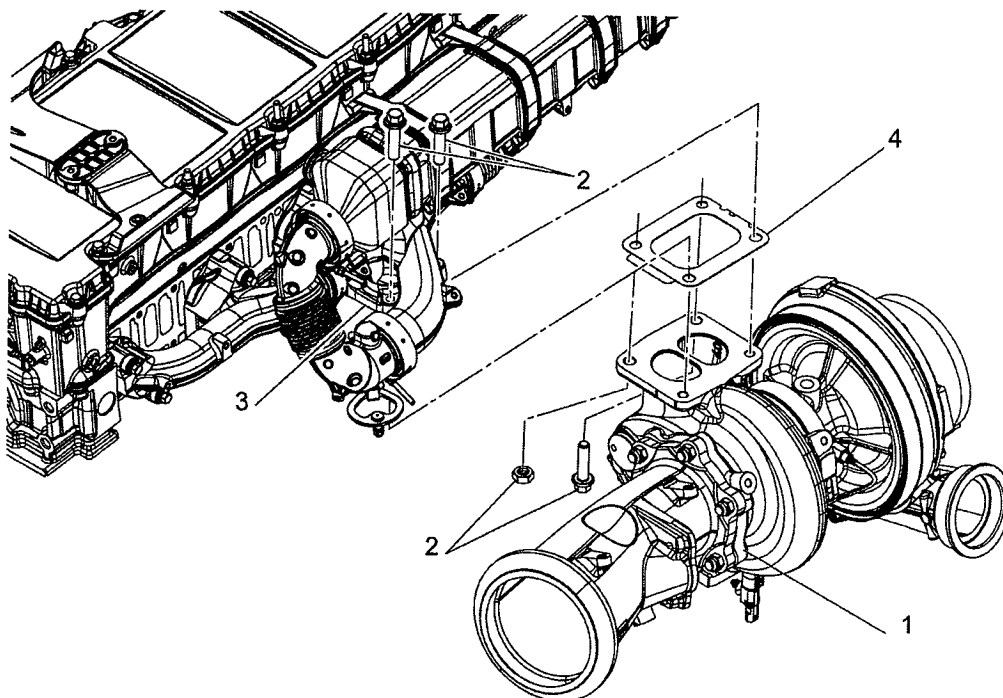
4. If removed, install a new turbocharger mounting stud into the exhaust manifold. Torque stud to 25 N•m (18 lb•ft).

NOTE: When looking at the engine, the mounting stud with the nut is located towards the rear of the engine closest to the block. The hex size of the nut may be larger than the hex size of the bolt heads.

5. Remove all covers that were placed on the engine and turbocharger during removal.
6. Position a new V-band clamp over the inlet to the bellows.

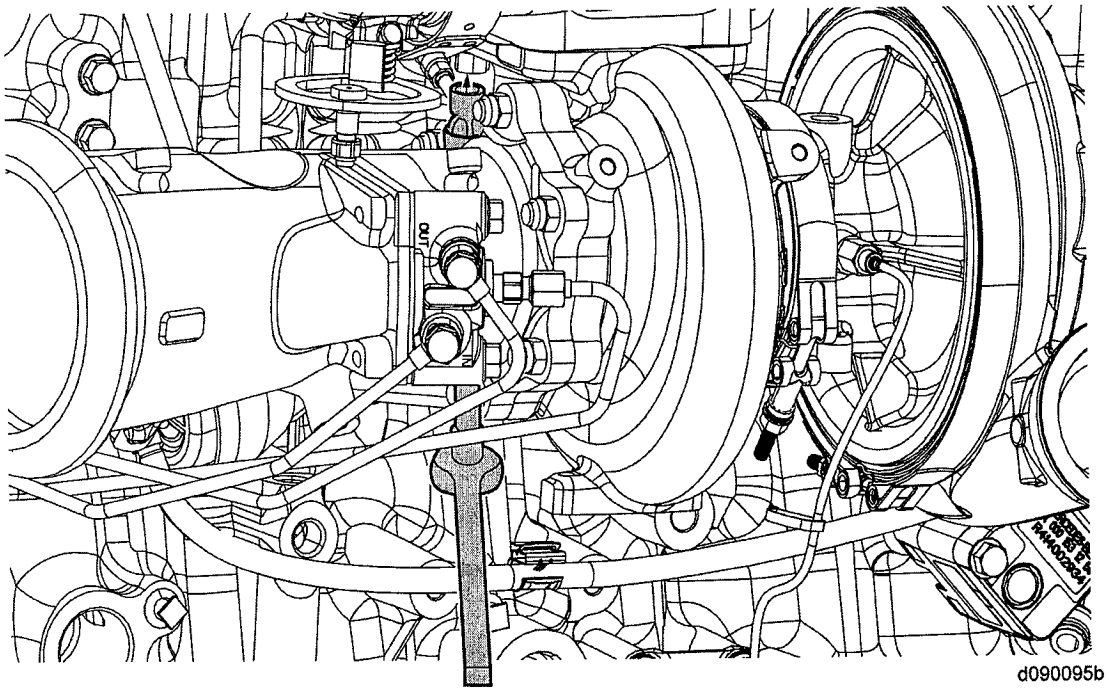
NOTICE: When installing the turbocharger, make sure the Hydrocarbon (HC) fuel doser coolant and fuel lines are not bent or kinked, causing damage.

7. Using a new turbocharger mounting gasket (4), install the gasket with the part number up and the tab towards the rear of the engine, onto the exhaust manifold center section outlet.
8. Install a new sealing gasket on the outlet of the flanged turbocharger exhaust manifold.
9. Install the turbocharger (1) onto the exhaust manifold center section (3) and secure with three bolts and one nut.

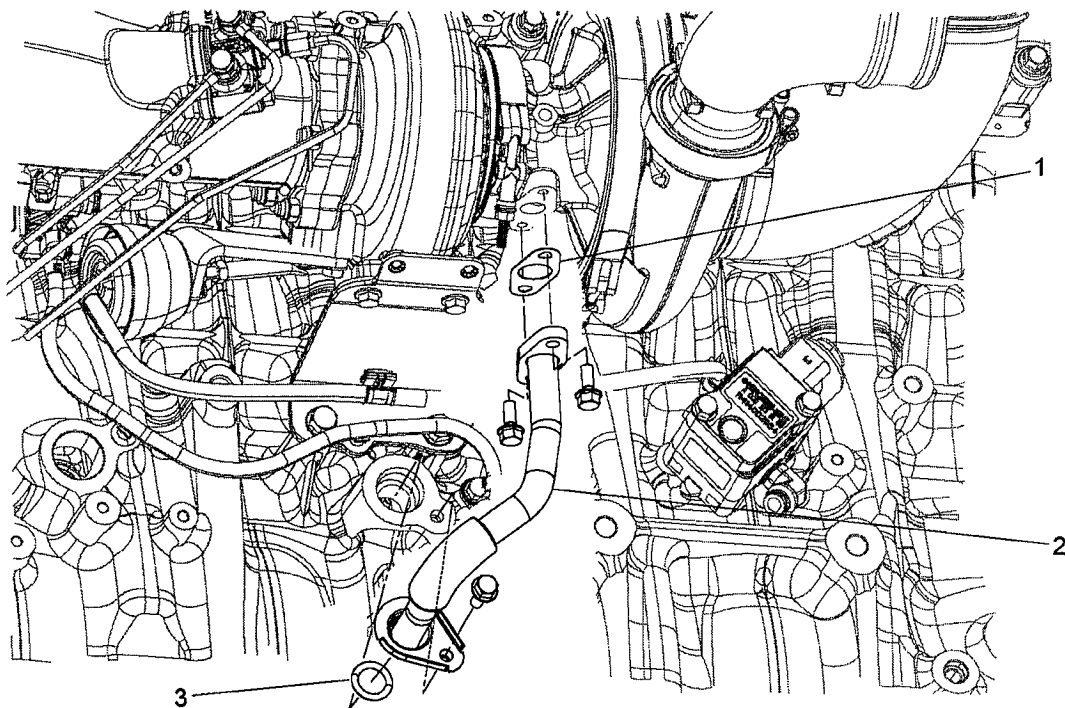


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10. Torque the three bolts and one nut on the turbocharger-to-exhaust manifold center section to 50 N•m (37 lb•ft).

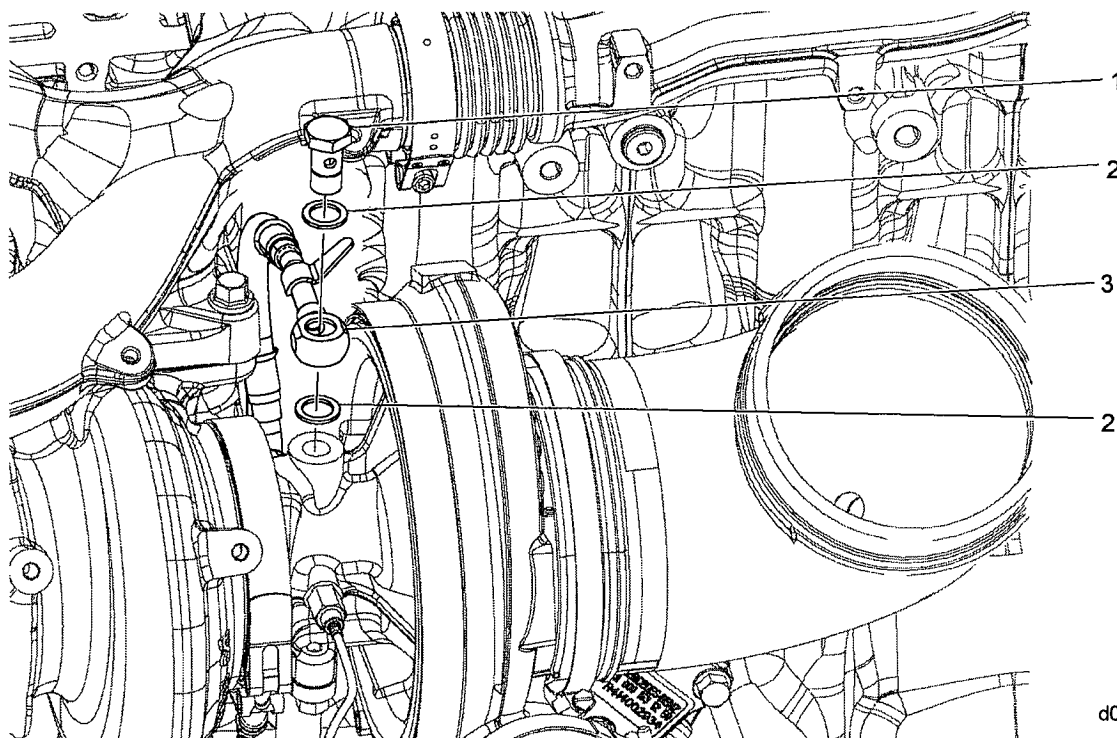


11. Install the turbocharger support bracket and the four bolts.
12. Torque the two turbocharger support bracket-to-turbocharger bolts to 25 N•m (18 lb•ft).
13. Torque the two turbocharger support bracket-to-cylinder block bolts to 60 N•m (44 lb•ft).
14. Install zip-tie holding EGR actuator harness to the turbocharger support bracket.
15. Install the V-band clamp onto the flanged turbocharger exhaust manifold and the inlet of the exhaust bellows. Torque clamp to 14 N•m (124 lb•in.).
16. Using a new gasket (1) (bevel side up) and O-ring (4), install the turbocharger oil drain line (3) and three bolts (2). Torque the bolts to 30 N•m (22 lb•ft).



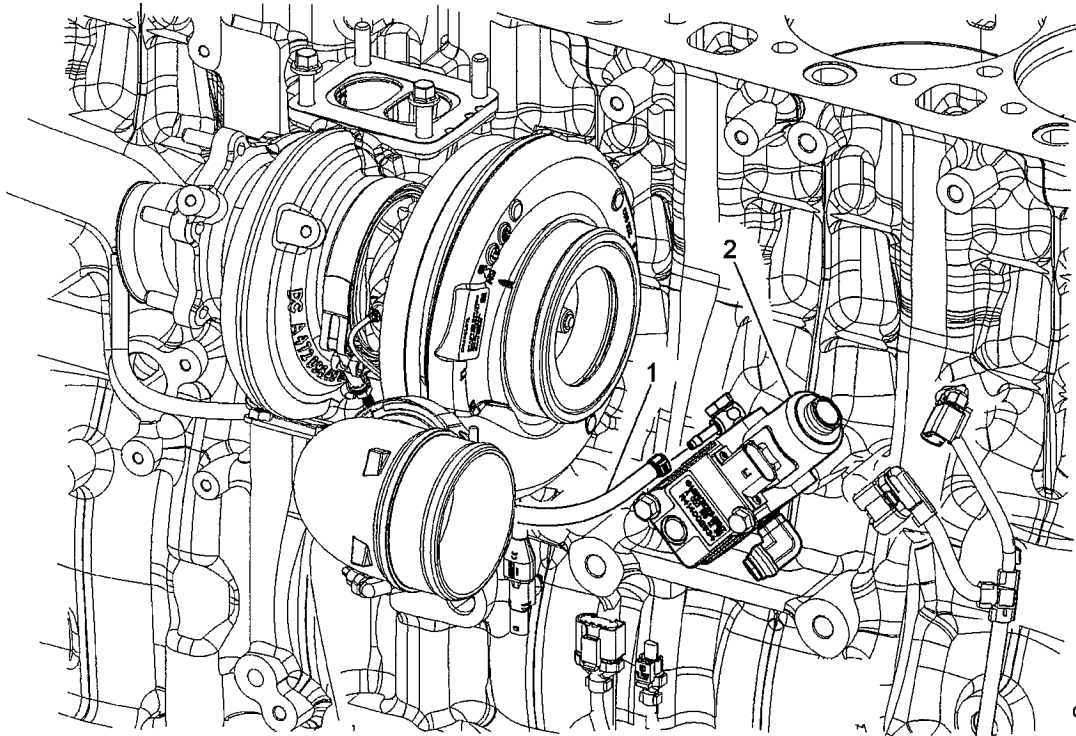
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17. Using new seal washers (2) install the turbocharger oil supply line (3). Torque banjo fitting (1) to 40 N•m (30 lb•ft).



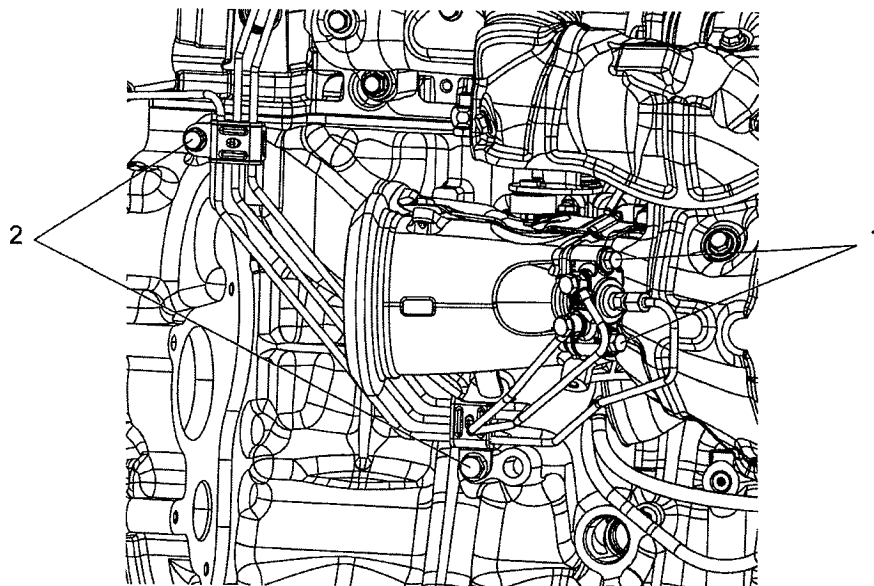
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18. Connect the wastegate air supply line (1) to the wastegate solenoid (2). Torque clamp to .3 N•m (2.6 lb•in.).



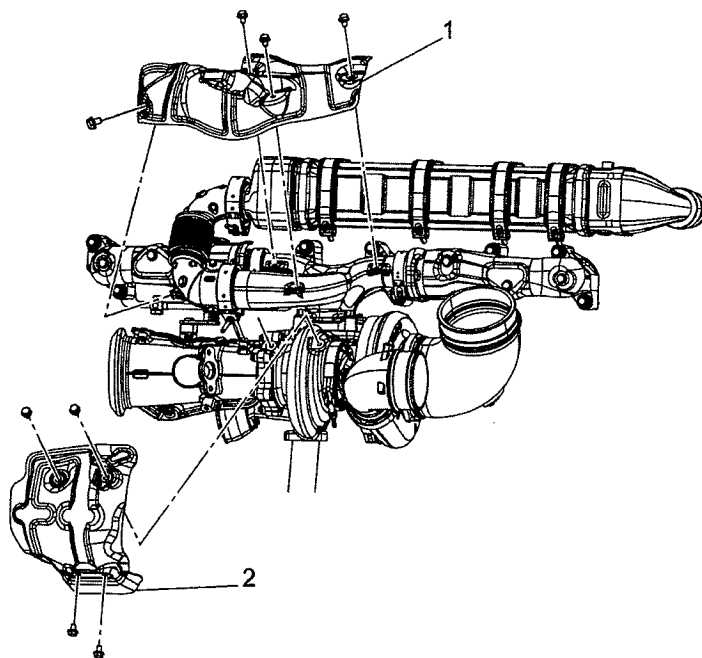
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19. Connect the turbocharger speed sensor to the electrical connector.
20. Using a new mounting gasket, install the HC fuel doser housing and two bolts (1). See graphic in step 21.
21. Install the bolts (2) mounting the P-clips to the block for the fuel and coolant lines.



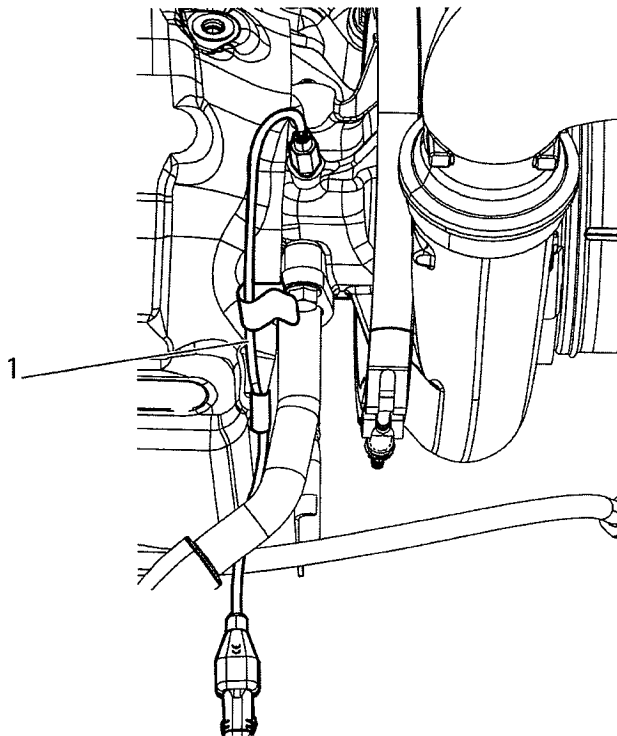
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22. Torque the P-clip bolt closest to the HC doser housing to 60 N•m (44 lb•ft).
23. Torque the rear P-clip bolt to 30 N•m (22 lb•ft).
24. Torque the HC fuel doser housing bolts to 30 N•m (22 lb•ft).
25. Install the turbocharger (2) and exhaust manifold (1) heat shields. Torque bolts to 12 N•m (106 lb•in.).



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26. Attach the turbocharger speed sensor wire (1) to the clip on the turbocharger heat shield.



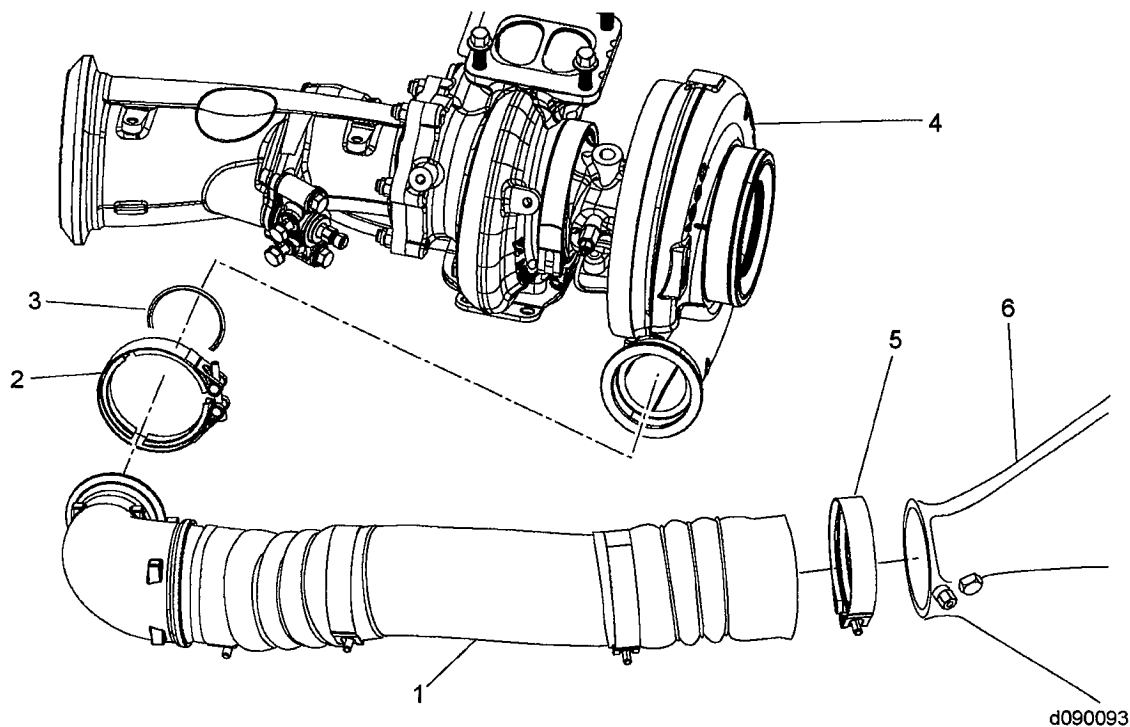
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27. Attach the wastegate air supply line to the mounting clip on the bottom of the turbocharger heat shield.

NOTE: Check the turbocharger inlet elbow for any cracking at the connection to the turbocharger flange and replace if necessary.

28. Install the turbocharger inlet duct. Torque clamps to Original Equipment Manufacturers (OEM) specifications.

29. Using a new turbocharger V-band clamp (2) and a new O-ring (3), install the air duct (1) between the turbocharger (4) and Charge Air Cooler (CAC) inlet (6).



30. Torque the turbocharger V-band clamp (2) to 12 N•m (106 lb•in.).
31. Torque the CAC inlet clamp (5) to 11 N•m (97 lb•in.).



WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

32. Connect Main batteries.
33. Connect Park Smart batteries (if equipped).
34. Start the engine and check for leaks.