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BD Diesel L5P Duramax Screamer Turbo

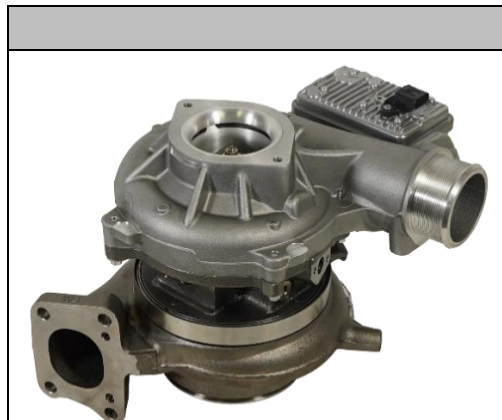
Drop-in Performance Turbocharger

Part #	Description
1045842	17-19 L5P Duramax Screamer Turbo
1045843	20-21 L5P Duramax Screamer Turbo
1045844	17-21 L5P Duramax Screamer Turbo

Please read these instructions fully before beginning the installation.

Kit Contents




Kit 1045842 or 1045844 includes:



L5P Screamer Turbo

Qty: 1

Kit 1045844 includes*:

Turbo Assembly	1405850	1045630
		
L5P Screamer Turbo	Adapter Harness (2020+)	Intake Horn
Qty: 1	Qty: 1	Qty: 1

Note: All gaskets removed in this procedure should be replaced to prevent exhaust or oil leaks. Replacement gaskets are **NOT INCLUDED** with this kit, and must be purchased separately. See the recommended gasket list on **page 3** for part numbers.

*1045844 uses the same turbo for both early and late model year vehicles. The 1405850 adapter harness is included to allow this turbocharger to fit both early and late model year vehicles.

Table of Contents	
Kit Contents	2
Table of Contents.....	3
Introduction	3
Tools Required for Installation	3
Recommended Gasket List.....	4
Installation.....	4
Removal	4
Installation	14
Appendix.....	26
Vane Position Learning.....	26
Air Intake Modifications.....	26

Introduction

The BD Screamer turbo series is designed to provide a drop-in stock-appearing performance turbocharger that increases airflow and reduces drive pressure and peak EGTs without sacrificing low-end drivability.

The L5P Duramax Screamer incorporates a 66.2mm billet compressor wheel and a 67mm turbine wheel to provide up to 80lb/min airflow. The BD Diesel L5P Screamer turbo provides up to 60hp increase over a stock turbo with equivalent tuning, and with supporting modifications the Screamer is capable of providing up to 680hp.

- Tools Required for Installation**
- 10mm Socket
 - 11mm Socket
 - 13mm Socket
 - 15mm Socket
 - Impact Gun
 - Spring Clamp Tool
 - Engine Scan Tool
 - Torque Wrench (min 5Nm/44inlbs, max 58Nm/43ftlbs)
 - Universal Joint Adapter
 - 1/2” Drive Ratchet w/ Extension
 - File and Sand Paper
 - Hack Saw

Recommended Gasket List

Name	Part Number	Quantity
Intake Manifold Gasket	12642410	2
Turbocharger Oil Drain Gasket	12642429	2
EGR Manifold Coolant Gasket	12648141	1
Turbocharger Air Inlet Seal	12651147	1
Throttle Body Mounting Gasket	12665248	1
Catalytic Converter Gasket	12672821	1
Turbocharger Mounting Gasket	12677294	1
EGR Pipe Gasket	12680216	1
Turbocharger Coolant Gasket	12691866	3
PCV – Compressor Gasket	12671847	1

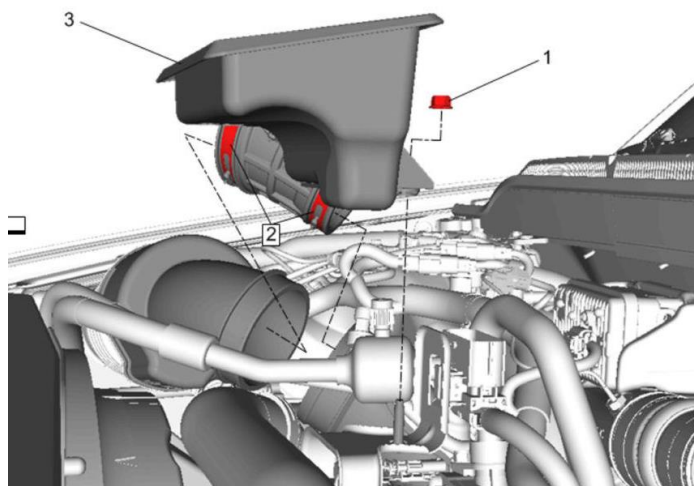
Note: This list is based on the procedure below, and is not a comprehensive list of all gaskets you may encounter. All gaskets exposed during installation should be replaced, even if they are not indicated in this list.

Installation

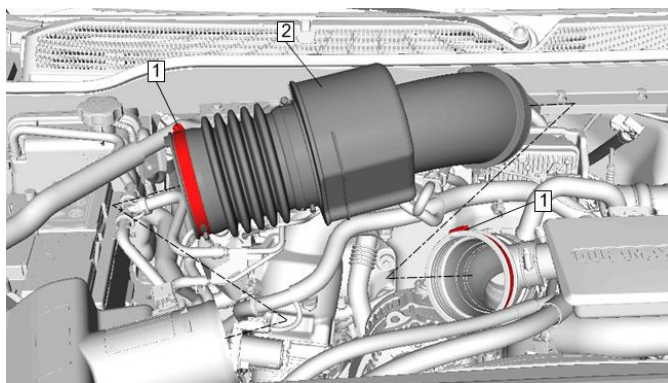
Removal

1. Disconnect both vehicle batteries for safety.
2. Drain the cooling system

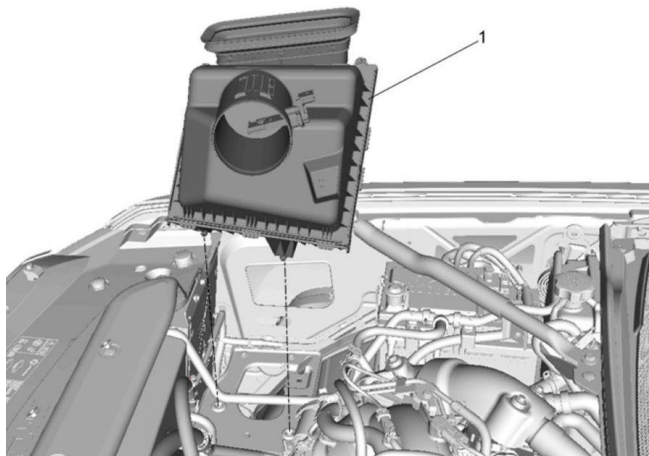
3. Remove the **13mm** nut (**#1**) and loosen the **two** (**2**) air cleaner outlet resonator clamps (**#2**).
4. Remove the air cleaner outlet resonator (**#3**).



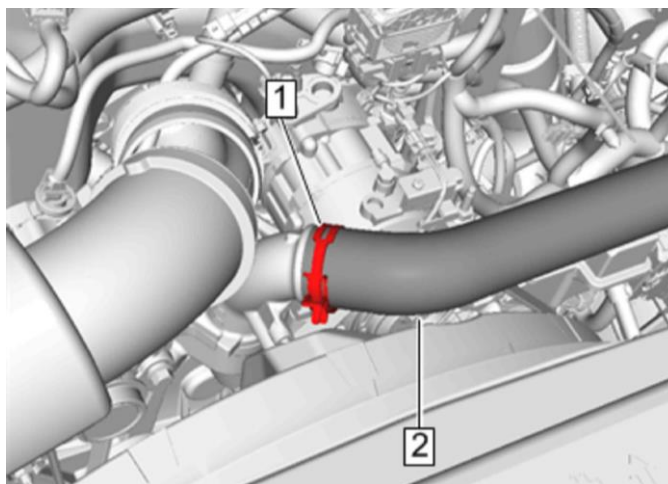
5. Loosen the **two (2)** band clamps (**#1**) and remove the air cleaner outlet front duct (**#2**).



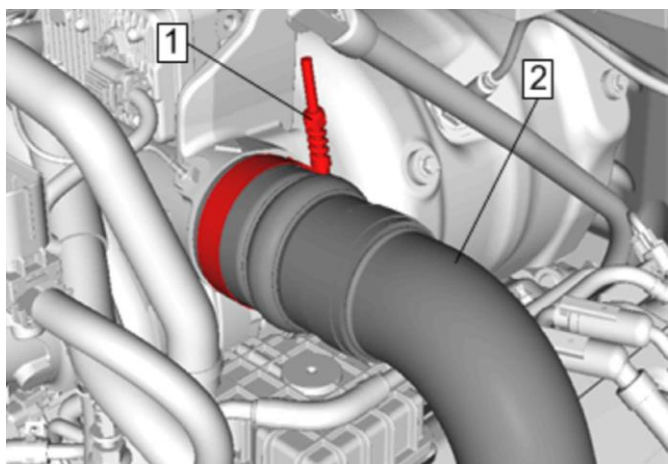
6. Remove the air cleaner assembly from its retainers.



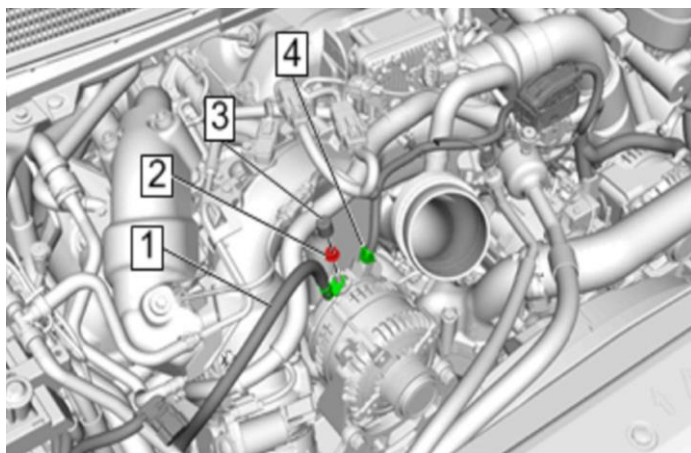
7. Disengage the spring clamp (**#1**), then disconnect the radiator inlet hose at the water outlet.



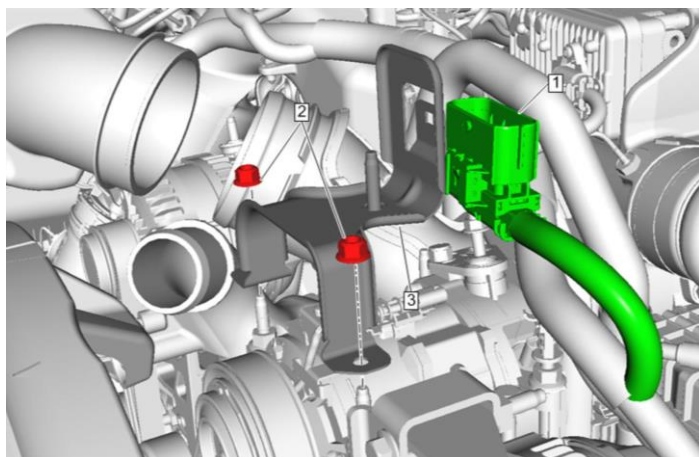
8. Remove charge air cooler band clamp (**#1**) and remove charge air cooler inlet pipe (**#2**) from turbo outlet.



9. Disconnect all alternator electrical connectors (**#4**).

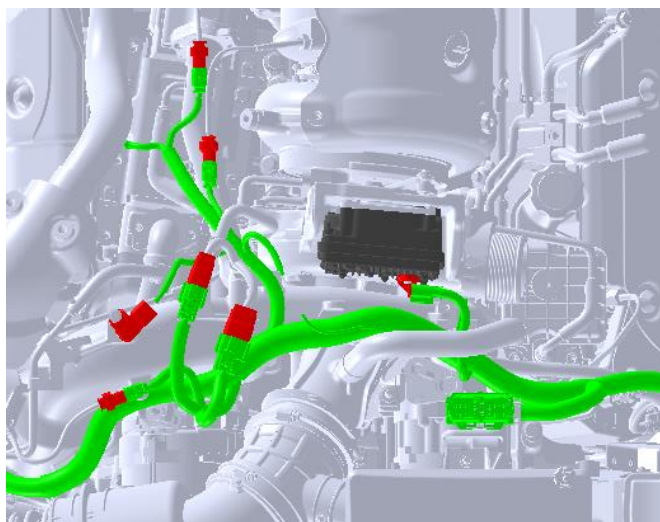


10. Remove the electrical connector (**#1**) from the bracket (**#3**).
11. Remove the **two (2) 13mm** nuts, then remove the bracket.



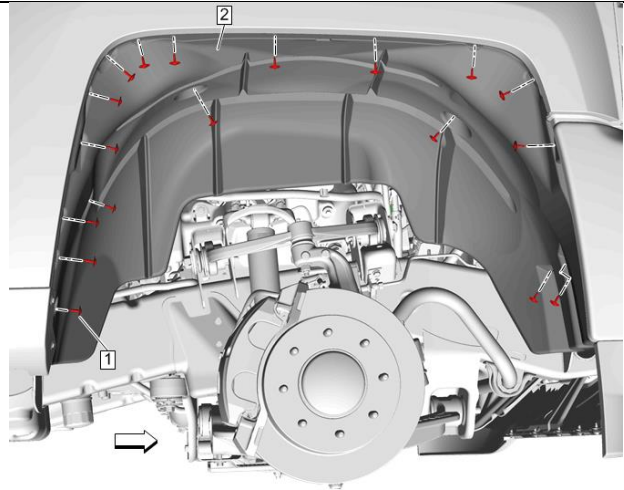
12. Disconnect and reposition the wiring harness as necessary.

Note: Take note of the wiring harness location and layout before starting to ensure it is reassembled correctly.



13. Raise the vehicle and remove the front passenger-side wheel.

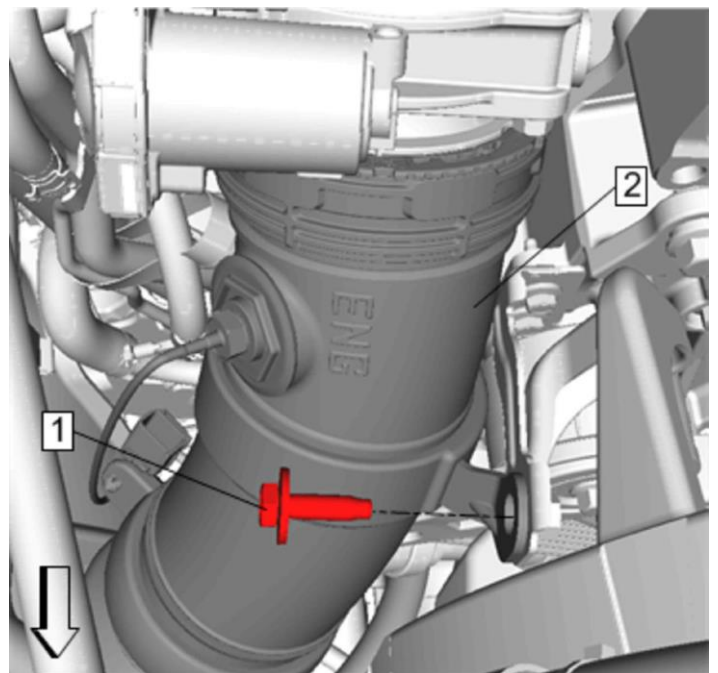
14. Remove the **eighteen (18)** wheelhouse liner screws (**#1**) from the front passenger side wheelhouse liner and remove the liner (**#2**).



15. Remove the **13mm** bolt (**#1**) from the charge air cooler outlet pipe

16. Remove the charge air cooler outlet pipe (**#2**) by rotating it **counterclockwise**.

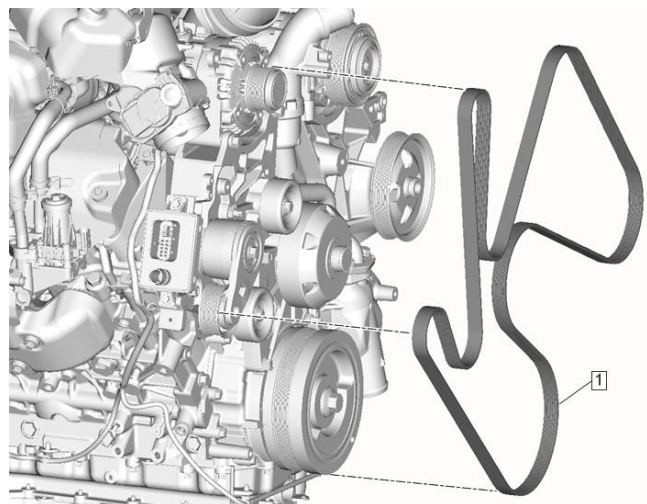
Note: If replacing a failed turbocharger, ensure CAC system is free of oil and debris before installing new turbo. Operating the engine with excess oil or debris in the CAC system will cause major damage to the engine and turbocharger.



17. Rotate the belt tensioner counterclockwise to remove belt from the tensioner.

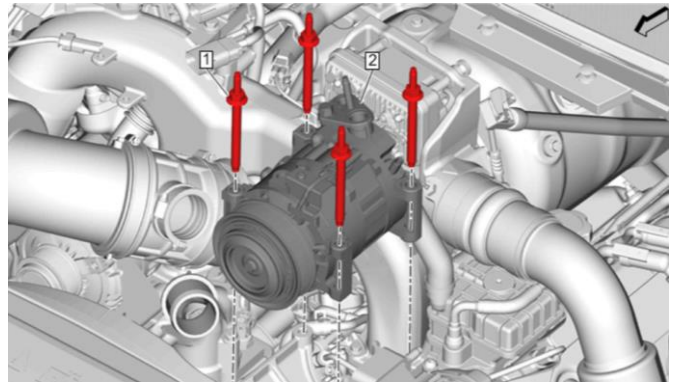
18. Slowly release the tensioner, then remove the belt from the remaining pulleys.

Note: The tensioner can be rotated using a **1/2"** drive ratchet.

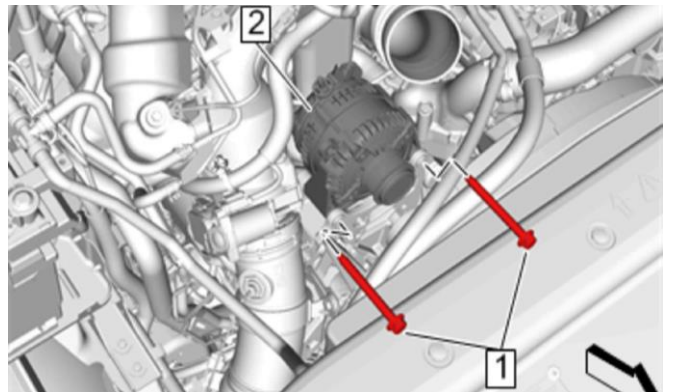


19. Disconnect all electrical connectors to the AC compressor (#2).

20. Remove the **four (4) 15mm** stud bolts (#1) and move the AC compressor (#2) aside.



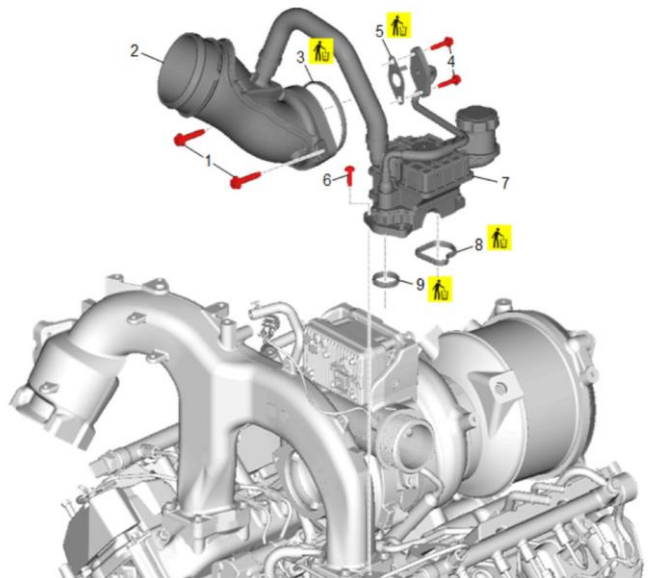
21. Remove the **two (2) 13mm** alternator bolts (#1), then remove the alternator (#2).



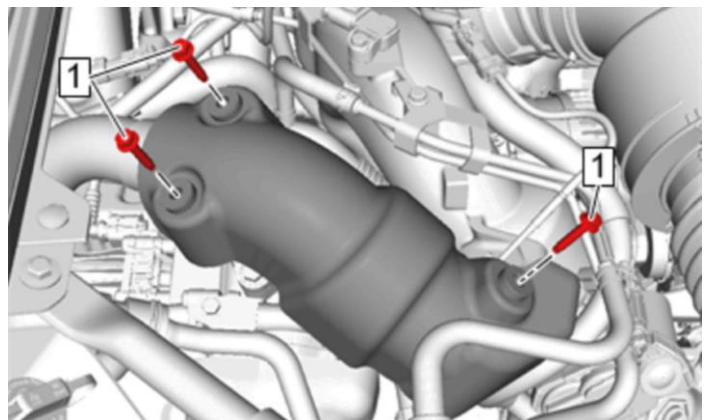
22. Remove the breather hose from the air inlet pipe (#2). If possible, avoid removing the tamperproof clamp.

23. Remove the **two (2) 13mm** bolts (#1) and remove the turbocharger air inlet pipe (#2).

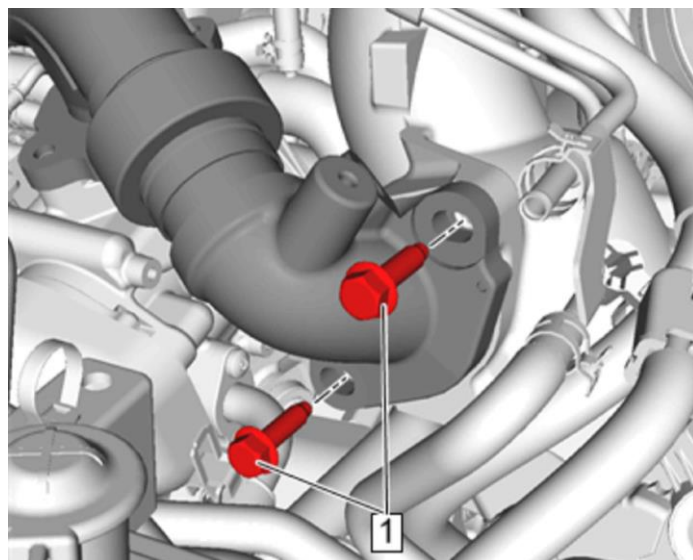
24. Remove the **four (4)** tamper proof screws from the oil filler assembly and remove from engine. **T-30 Torx socket (Impact driver is helpful for this step)**



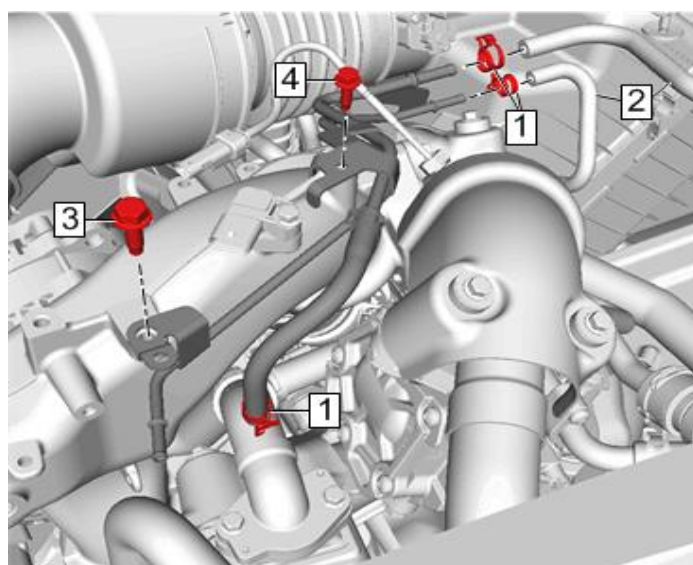
25. Remove the **three (3) 10mm** exhaust gas recirculation valve pipe heat shield bolts (#1) and remove the EGR valve pipe heat shield.



26. Remove the **two (2) 13mm EGR** pipe bolts **(#1)** at the upper intake.

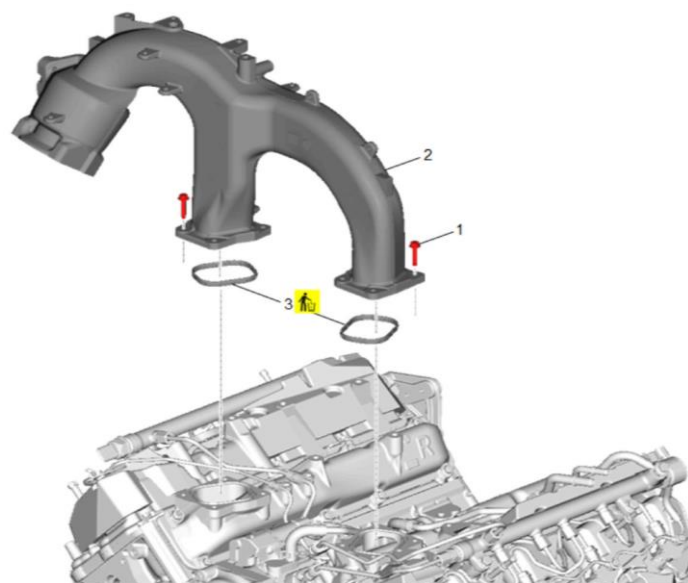


27. Remove the **13mm (#3)** and **10mm (#4)** bolts from the intake manifold and move the radiator surge tank inlet hose aside.



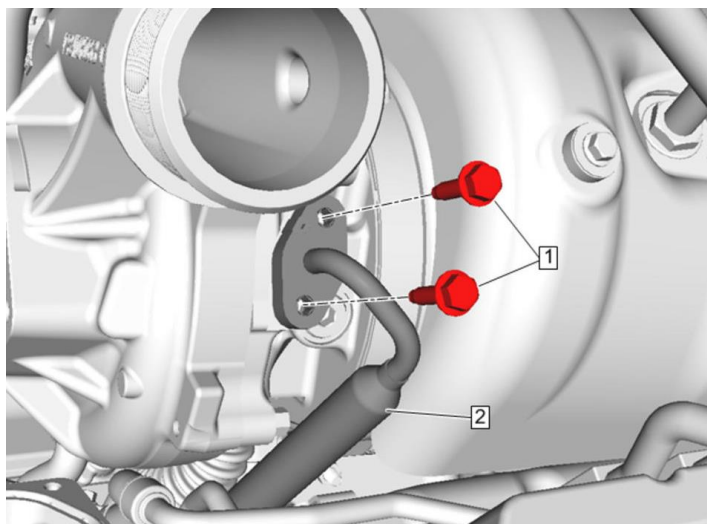
28. Remove the **eight (8) 10mm** upper intake manifold bolts **(#1)**.

Remove the upper intake manifold **(#2)**.

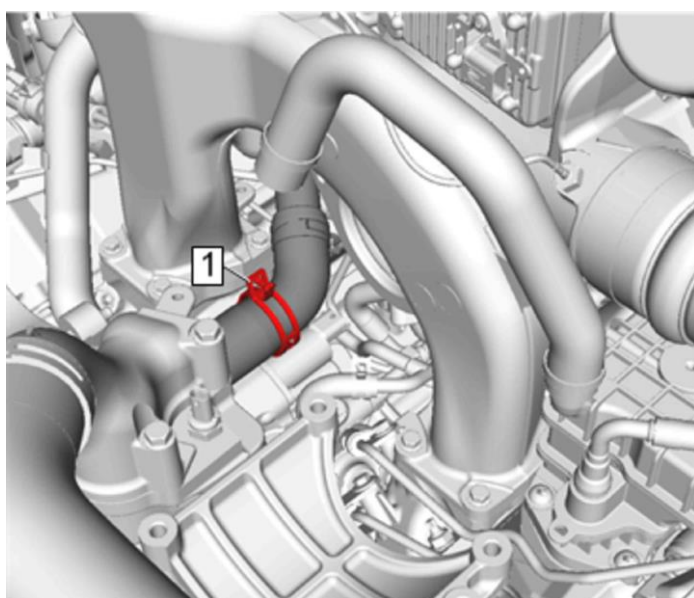


29. Remove the **two (2) 10mm** turbocharger oil feed pipe bolts (**#1**).

30. Reposition the turbo oil feed line (**#2**) aside.

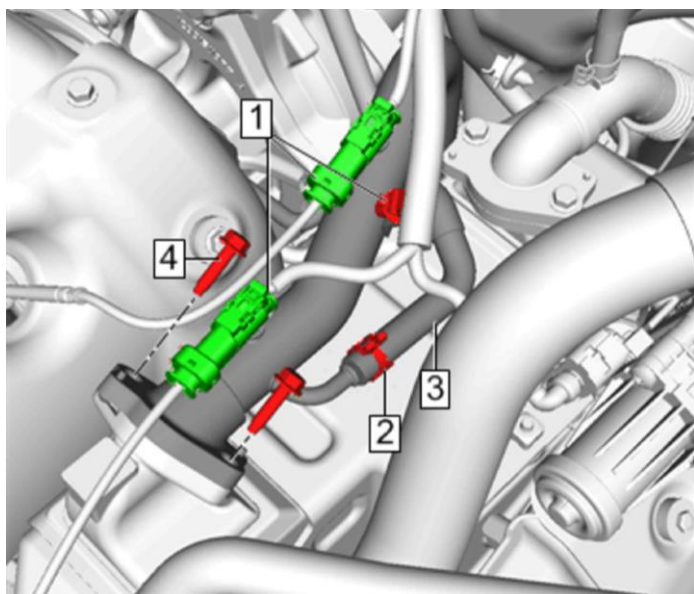


31. Disengage the EGR coolant return pipe hose clamp (**#1**).

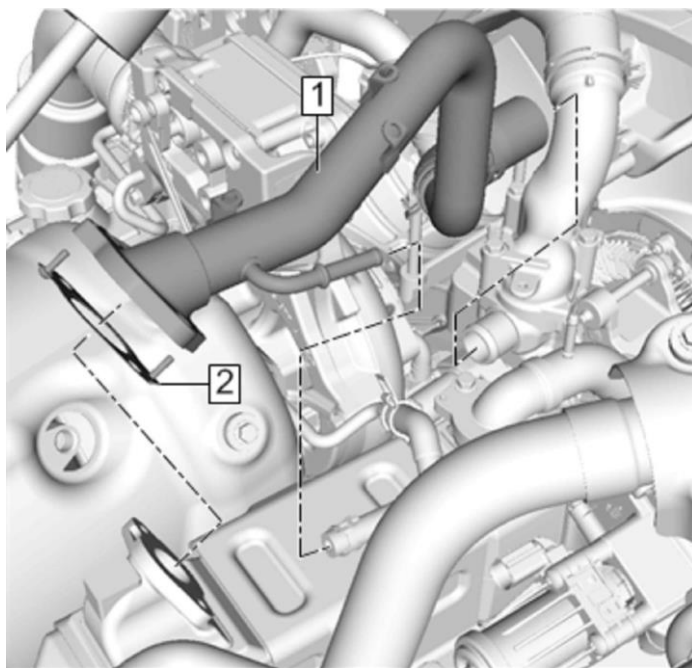


32. Disconnect the **two (2) wiring** connectors (**#1**).

33. Disconnect the hose clamp (**#2**) and remove the **two (2) 10mm** bolts (**#4**).

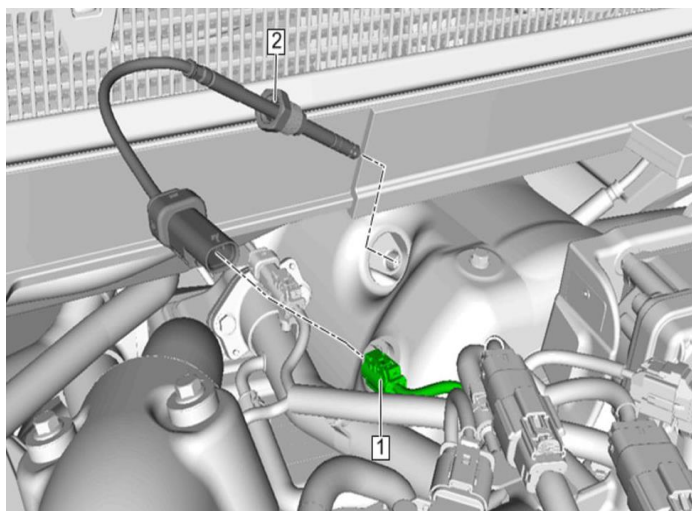


34. Remove the EGR coolant return pipe (#1).

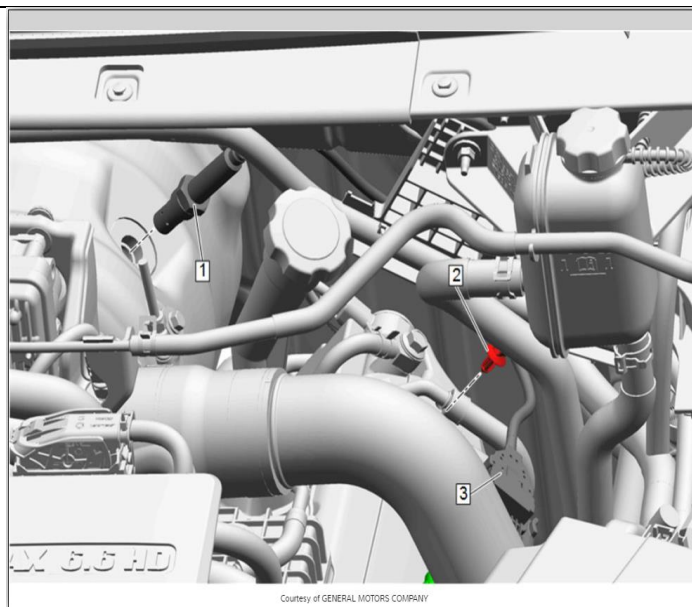


35. Unplug and remove the exhaust temperature sensor (#2) using a **17mm** flare nut wrench.

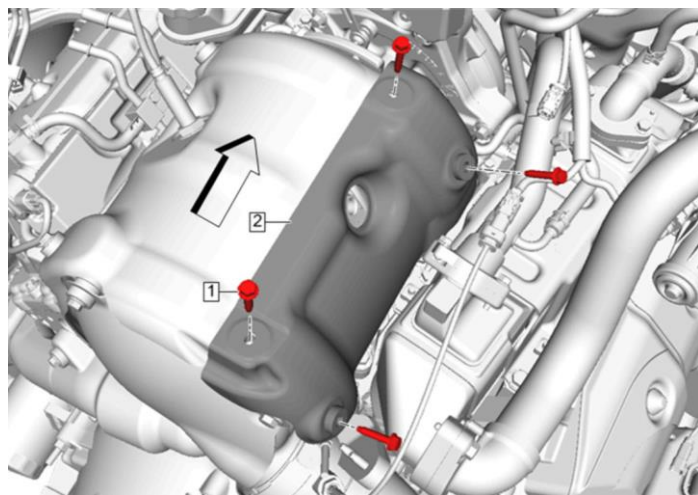
Note: If sensor is seized, apply penetrating oil and let soak for **10 minutes** before removal.



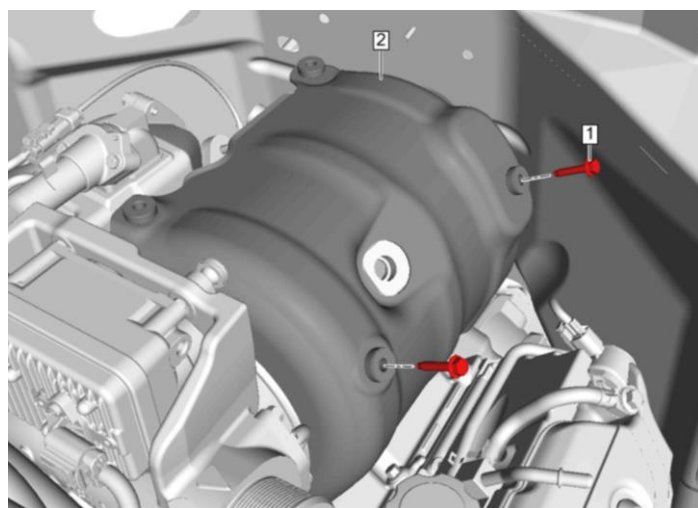
36. Remove the NOX sensor (#1) using a **M22** flare nut wrench or socket.



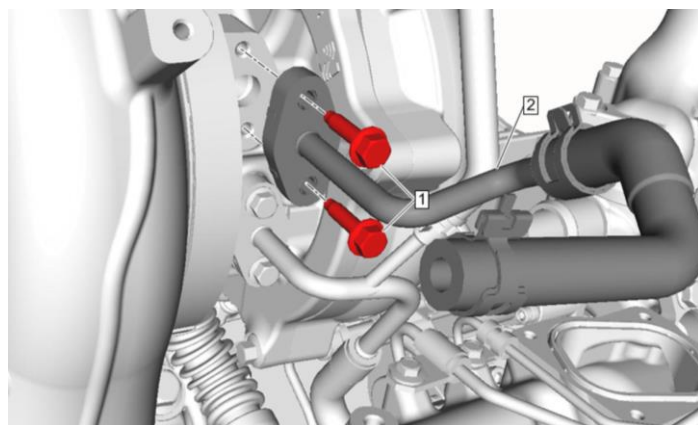
37. Remove the **four (4) 10mm bolts (#1)** and remove the right side turbocharger heat shield (**#2**).



38. Remove the **two (2) 10mm bolts (#1)** and remove the left side turbocharger heat shield (**#2**).

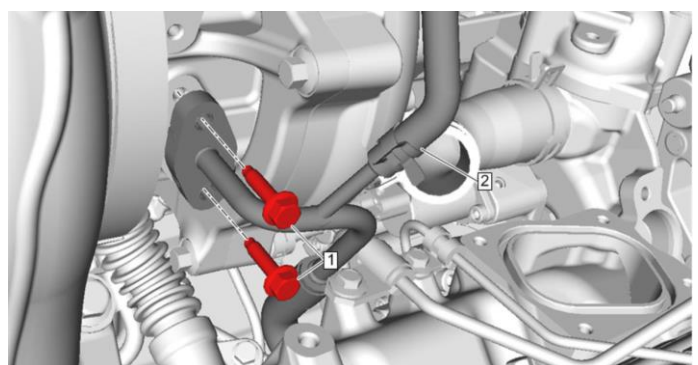


39. Remove the **two (2) 10mm turbo coolant return pipe bolts (#1)**.

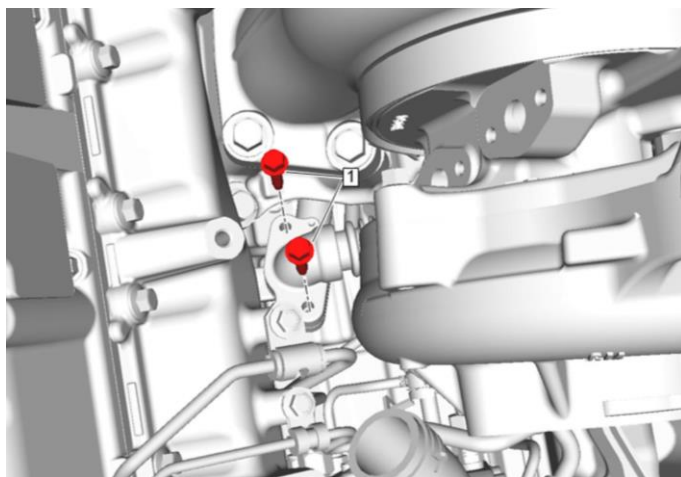


40. Remove the **two (2) 10mm turbo coolant feed pipe bolts (#1)**.

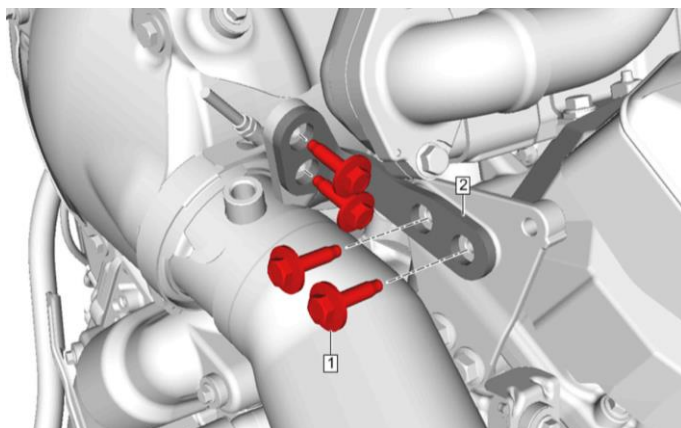
41. Position coolant feed pipe (**#2**) aside.



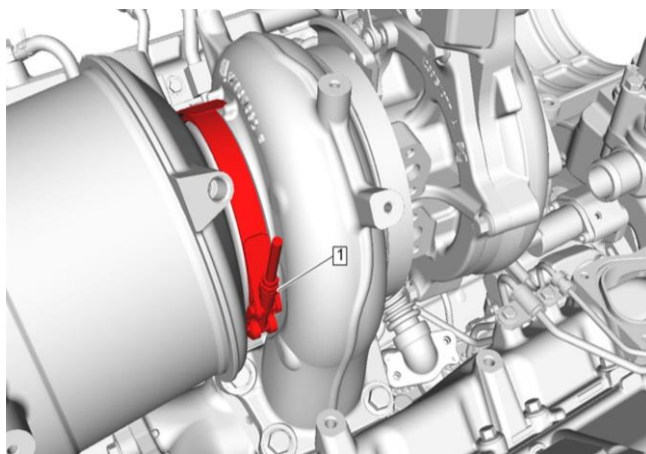
42. Remove the **two (2) 10mm** oil drain pipe bolts (**#1**).



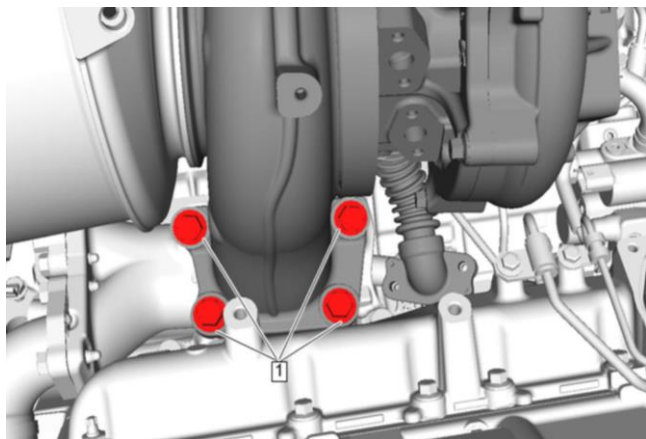
43. Remove the **four (4) 13mm** exhaust front bracket bolts (**#1**) from the back of the catalytic converter and remove the exhaust front bracket (**#2**).



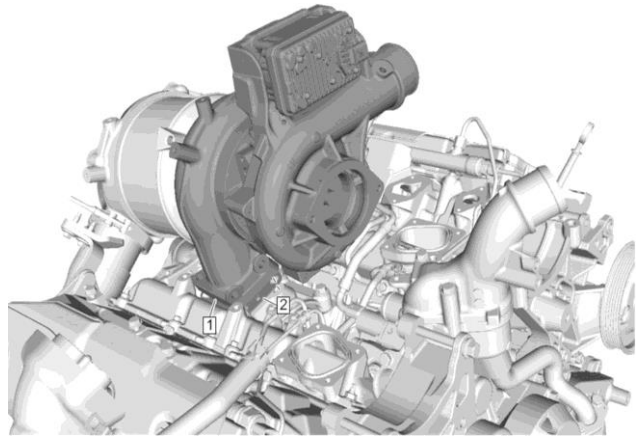
44. Remove the turbo exhaust band clamp (**#1**) using an **11mm** socket.



45. Remove the **four (4) 15mm** turbocharger pedestal bolts (**#1**).



46. Lift the old turbocharger out of the engine.



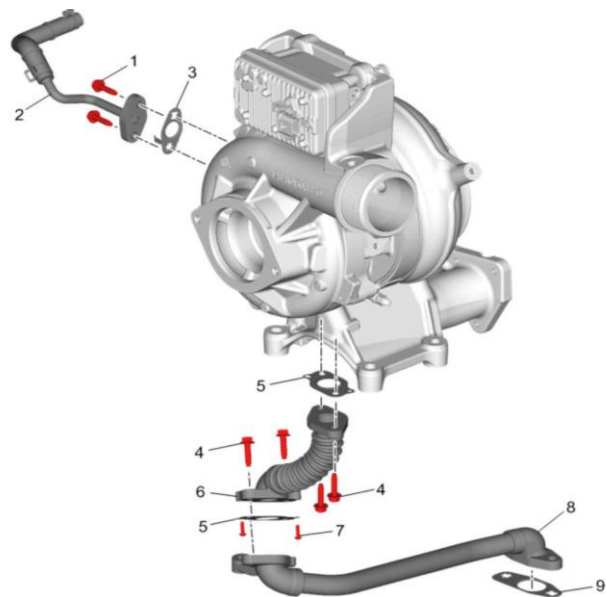
Installation

Important! Ensure all old gaskets are removed and discarded. Old gaskets must be replaced with new to prevent leaks. See the recommended gasket list on **page 3**.

1. Transfer the oil feed pipe from the old turbocharger to the new BD Screamer turbo using new gaskets.

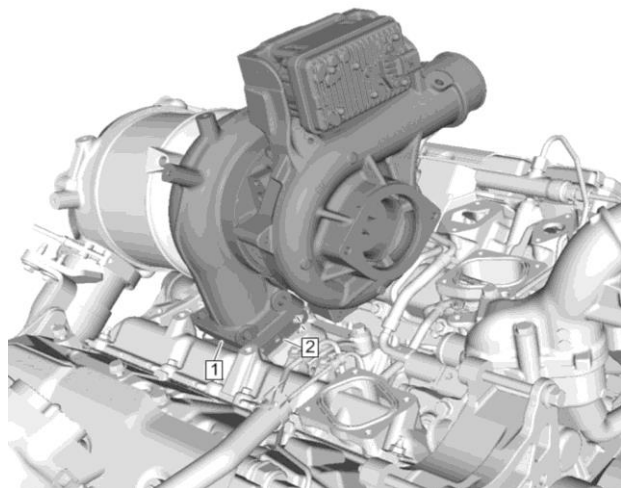
Note: Torque oil return pipe bolts (#4) to **89inlbs (10Nm)**.

Note: Gasket part number (**12642429**).



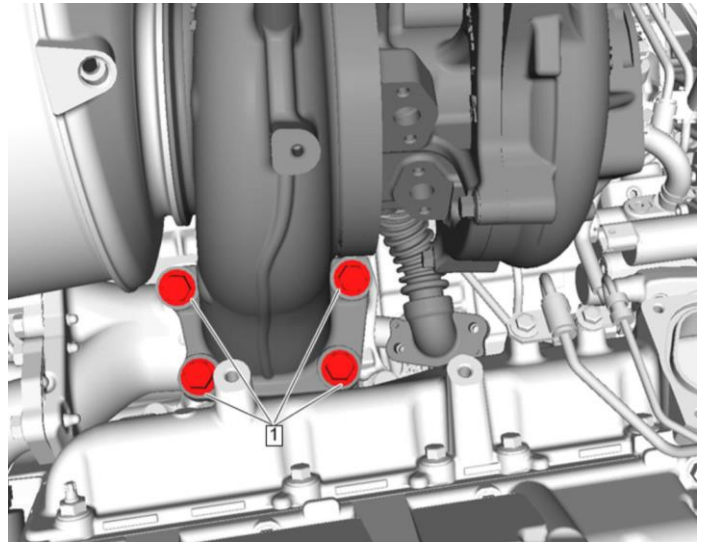
2. Lower the BD Screamer turbocharger assembly (#1) into the engine, aligned over the new mounting gasket (#2).

Note: Gasket Part # **12677294**.



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3. Secure the turbine inlet to the exhaust manifold using **four (4) 15mm bolts (#1)**.

Note: Torque bolts to **43ftlb (58Nm)**.



4. Plug in the turbocharger actuator connector.

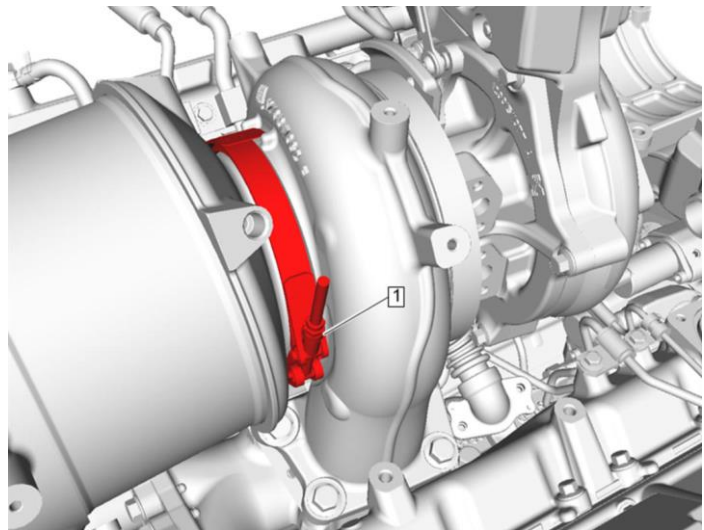
If installing a **1045844** turbocharger on a 2020-2021 model year, use the supplied adapter wire pigtail (**1405850**).



5. Secure the turbo to the catalytic converter using new gaskets and the exhaust band clamp.

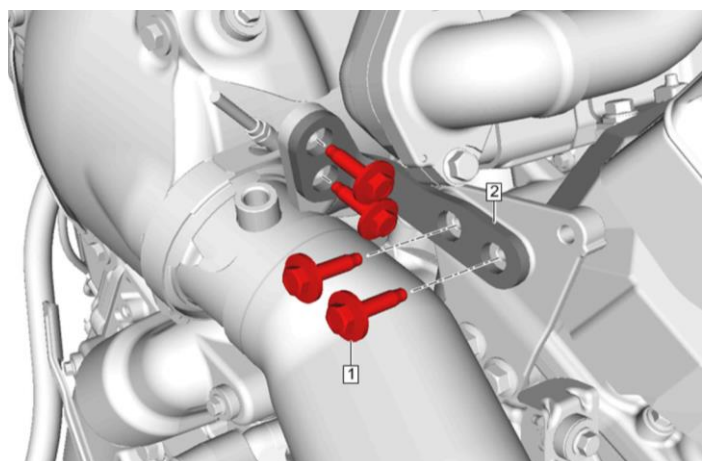
Note: Torque band clamp to **106inlb (12Nm)**.

Note: Gasket Part # **12672821**.



6. Align the exhaust system and reinstall the front exhaust bracket (#2) with **four (4) 13mm bolts**.

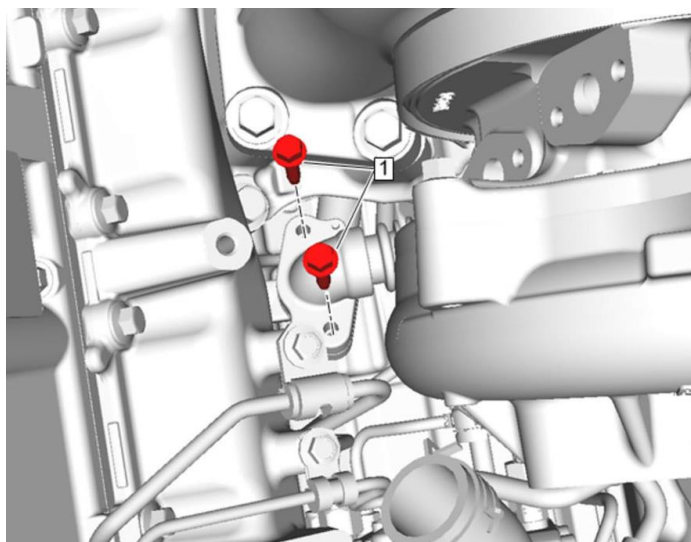
Note: Torque bolts to **18ftlbs (25 Nm)**.



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7. Reinstall turbocharger oil return pipe with new gasket and **two (2) 10mm bolts**.

Note: Torque bolts to **89inlbs (10Nm)**.

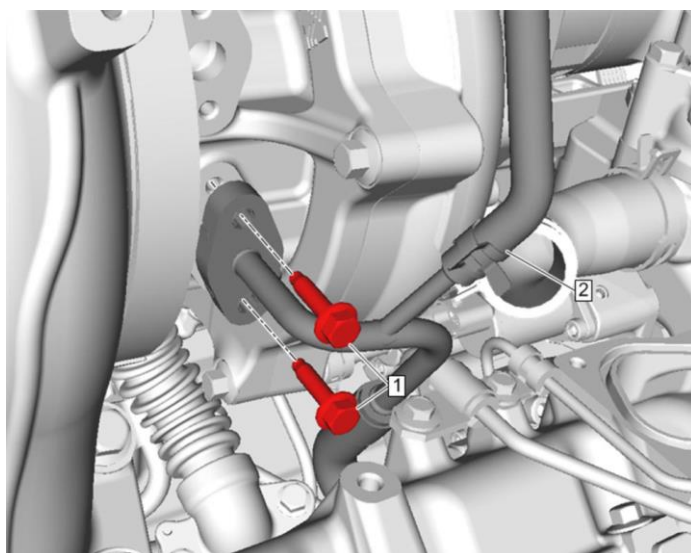
Note: Gasket Part # **12642429**.



-
8. Reinstall turbocharger coolant feed line (**#2**) using new gasket and **two (2) 10mm bolts (#1)**.

Note: Torque bolts to **89inlbs (10Nm)**.

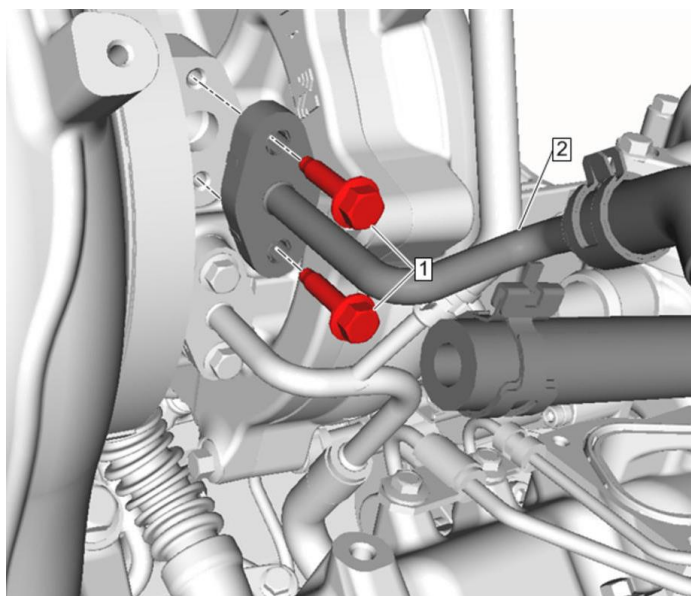
Note: Gasket Part # **12691866**.



-
9. Reinstall turbocharger coolant return line (**#2**) using new gasket and **two (2) 10mm bolts (#1)**.

Note: Torque bolts to **89inlbs (10Nm)**.

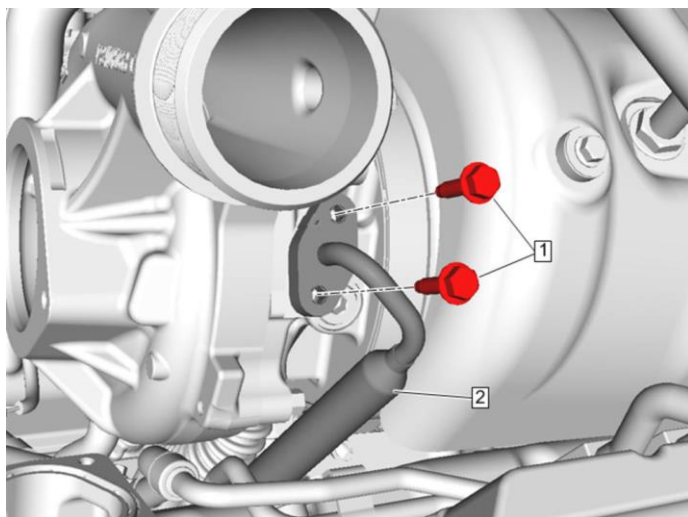
Note: Gasket Part # **12691866**.



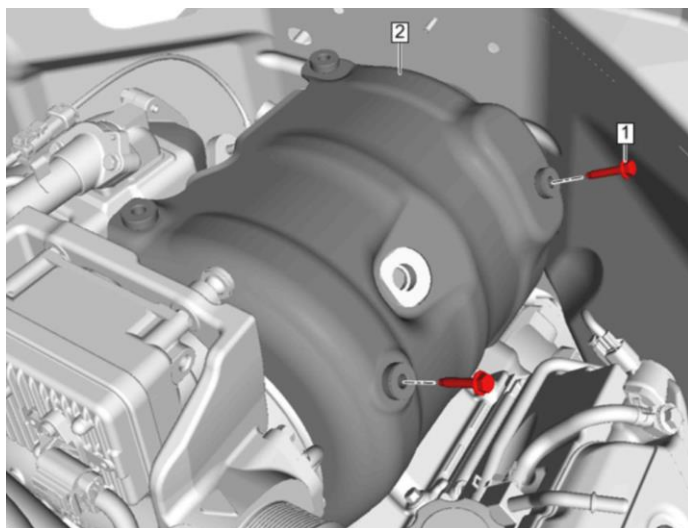
10. Reinstall turbocharger oil feed pipe (**#2**) using new gasket and **two (2) 10mm bolts (#1)**.

Note: Torque bolts to **89inlbs (10Nm)**.

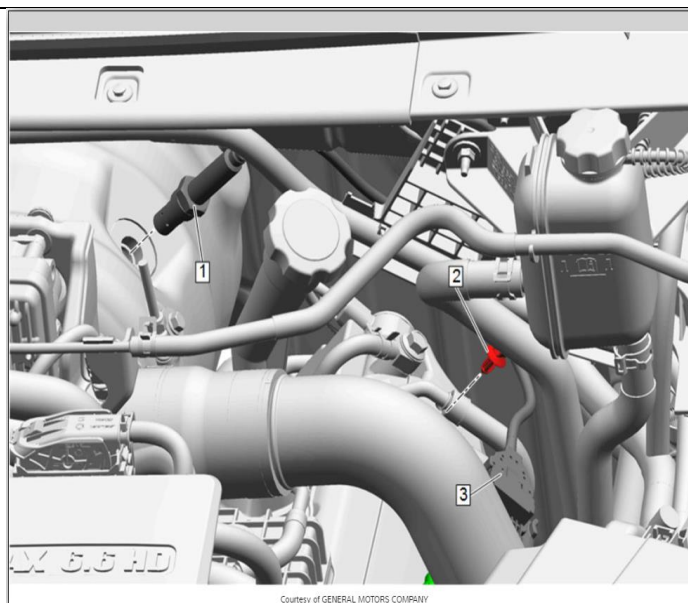
Note: Gasket Part # **12691866**.



11. Reinstall the left-side turbocharger heat shield (**#2**) using **two (2) 10mm bolts (#1)**.

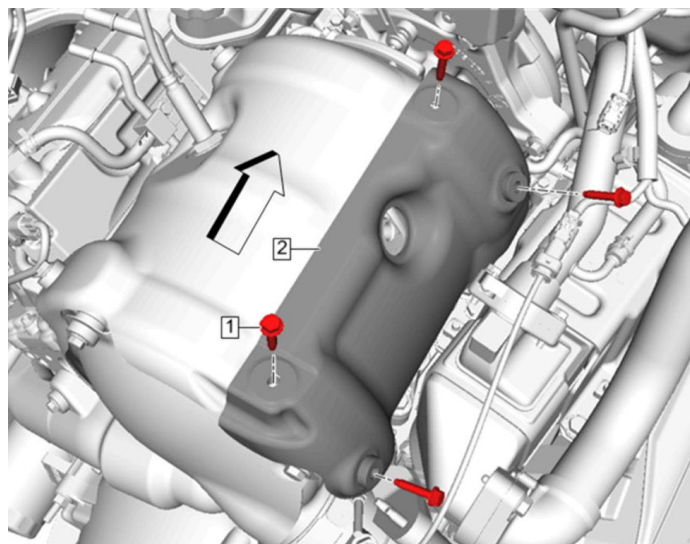


12. Install the NOX sensor (**#1**) using a **M22** flare nut wrench or socket.



13. Reinstall the right-side turbocharger heat shield (#2) using four (4) 10mm bolts (#1).

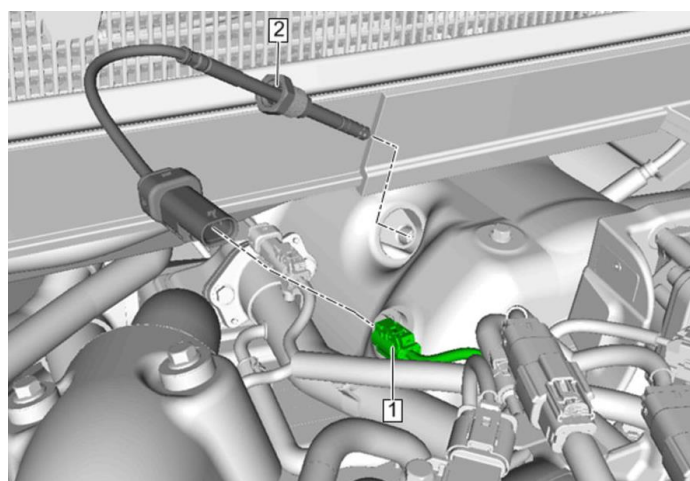
14. **Note:** Torque all heat shield bolts to 89 inlbs (10 Nm).



15. Clean and reinstall the exhaust temperature sensor (#2).

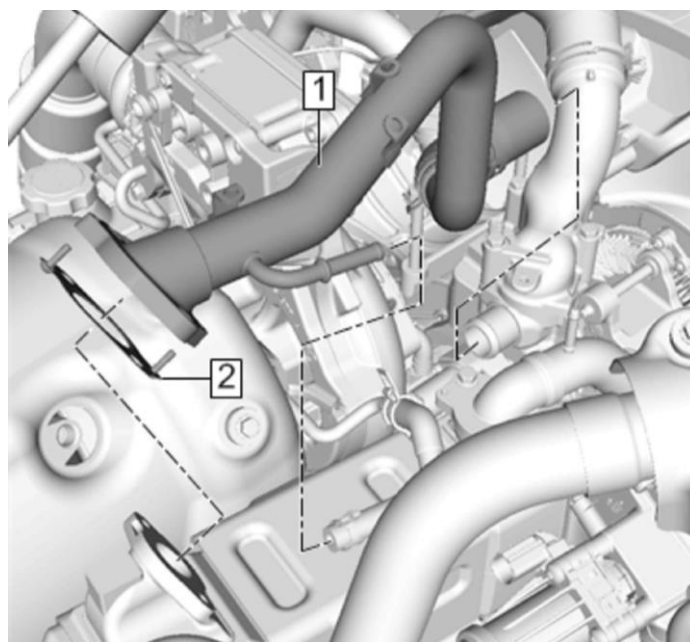
Note: Apply an anti-seize compound to temperature sensor threads prior to install.

Note: Torque sensor to 33ftlbs (45Nm) using a M17 flare nut wrench.



16. Reinstall the EGR coolant return pipe (#1) and align it with the new gasket (#2).

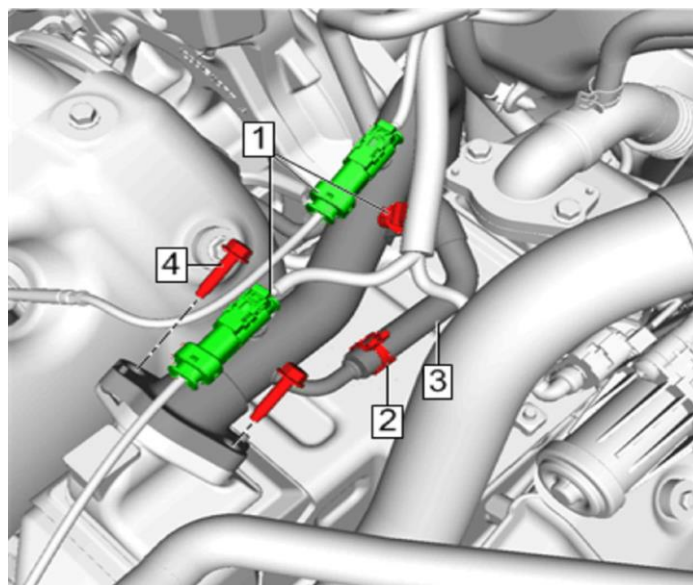
Note: Gasket Part # 12648141.



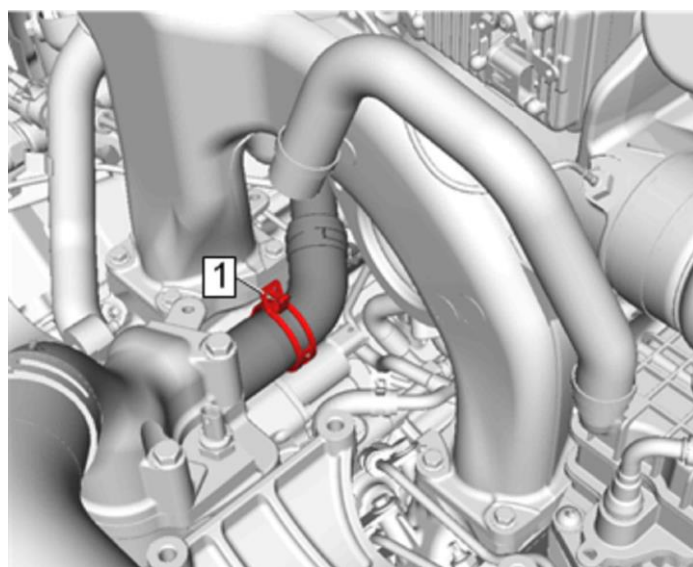
17. Secure the EGR coolant return pipe with **two (2) 10mm bolts (#4)**.

Note: Torque bolts to **89inlbs (10Nm)**.

18. Reconnect the electrical connectors **(#1)** and coolant return hose **(#3)**.



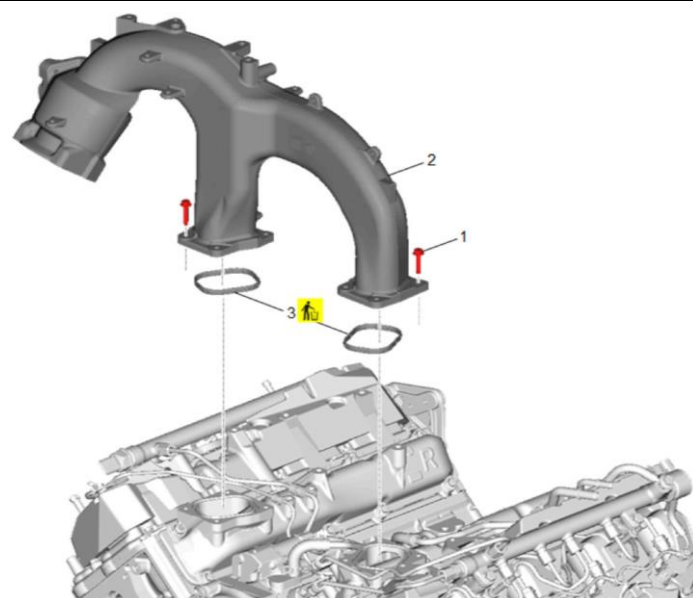
19. Reengage the EGR coolant return hose clamp **(#1)**.



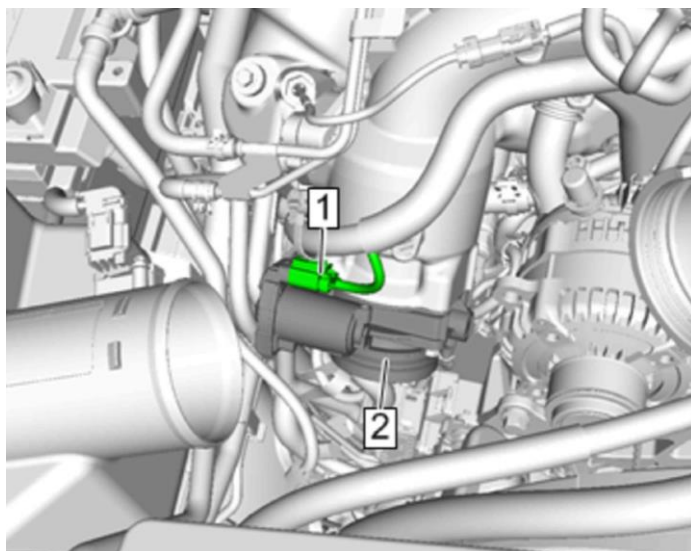
20. Reinstall the upper intake manifold using new gaskets **(#3)** and **eight (8) 10mm bolts**.

Note: Torque bolts to **89inlbs (10Nm)**.

Note: Gasket Part # **12642410**

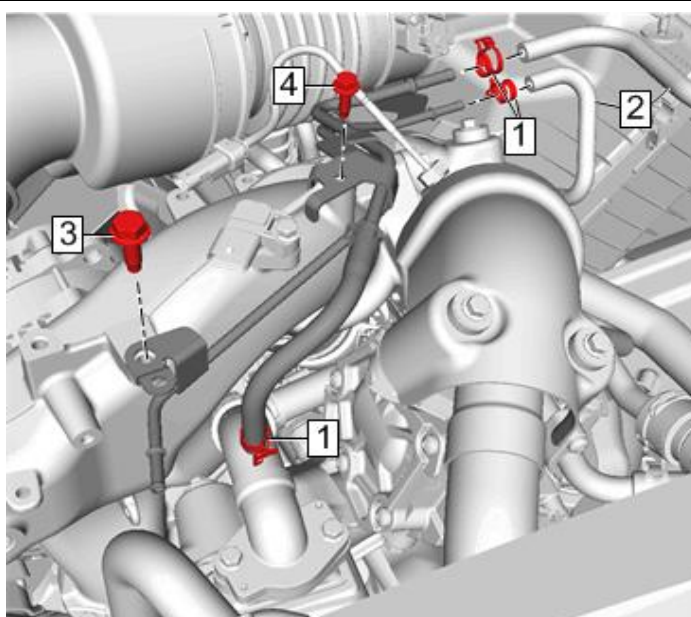


Reconnect the throttle body electrical connector (#1).

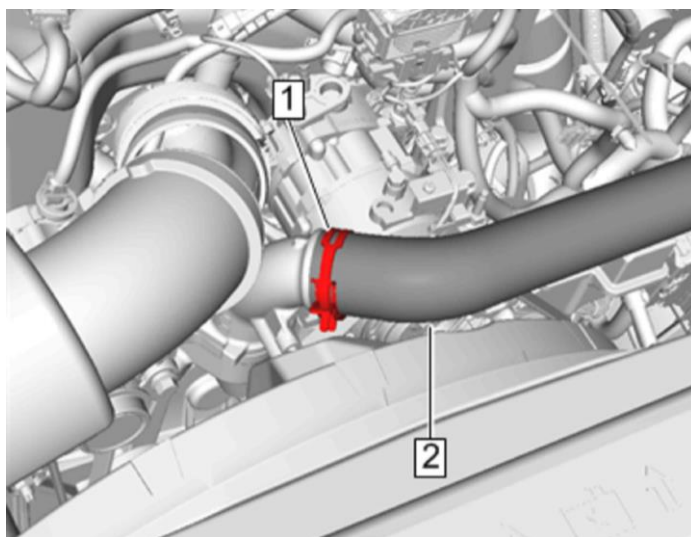


21. Reinstall the radiator surge inlet hose using **one (1) 13mm bolt (#3)** and **one (1) 10mm bolt (#4)**.

22. **Note:** Torque the **13mm bolt (#3)** to **16ftlb (22Nm)**, and the **10mm bolt (#4)** to **80inlb (9Nm)**.



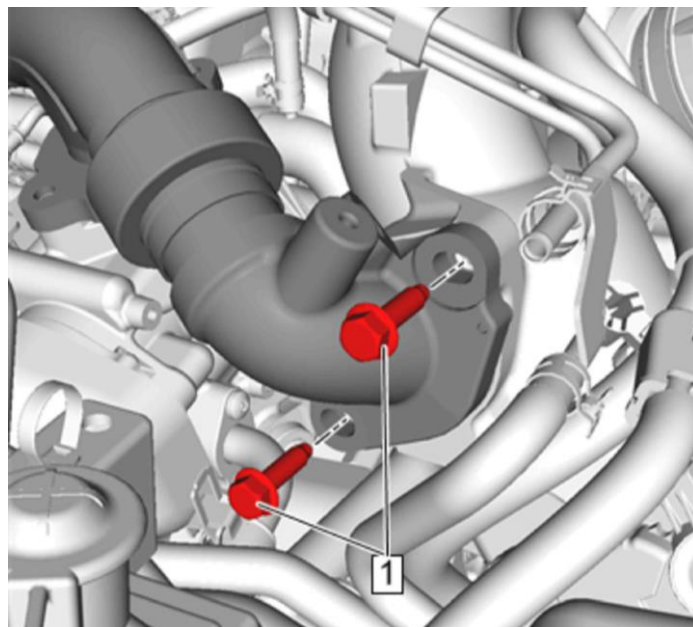
Reconnect the radiator inlet hose (#2) to the water outlet with the spring clamp (#1).



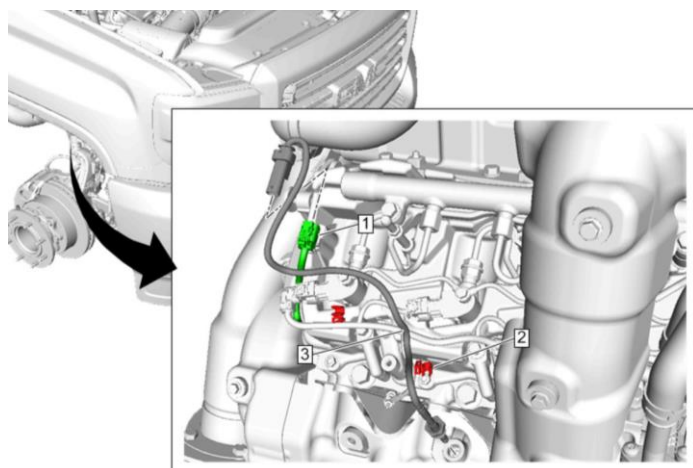
23. Reinstall the EGR pipe using new gaskets and **two (2) 13mm bolts (#1)**.

Note: Torque bolts to **30ftlbs (40Nm)**.

Note: Gasket Part # **12680216**.

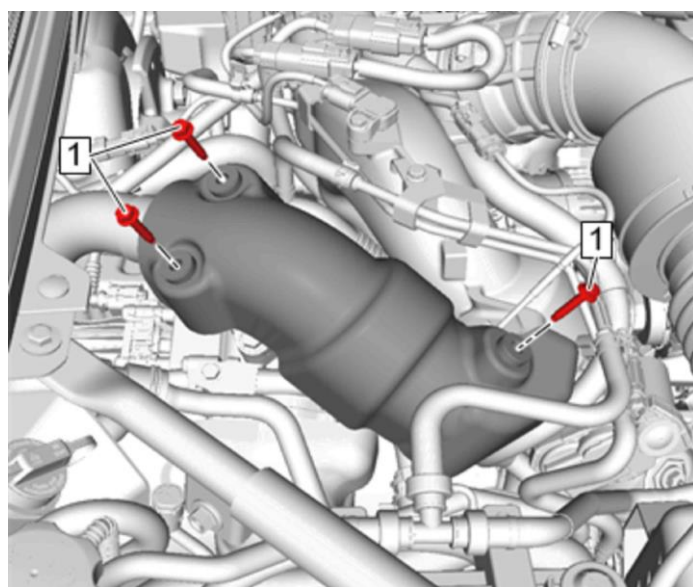


24. Reconnect the EGR valve temperature sensor.



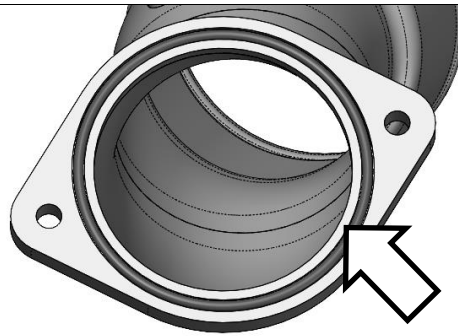
25. Reinstall the EGR pipe heat shield using **three (3) 10mm bolts**.

Note: Torque bolts to **89inlbs (10Nm)**.



26. Install supplied o-ring into new BD intake horn with a small amount of grease.

Note: avoid petroleum or synthetic lubricant that may damage o-rings.

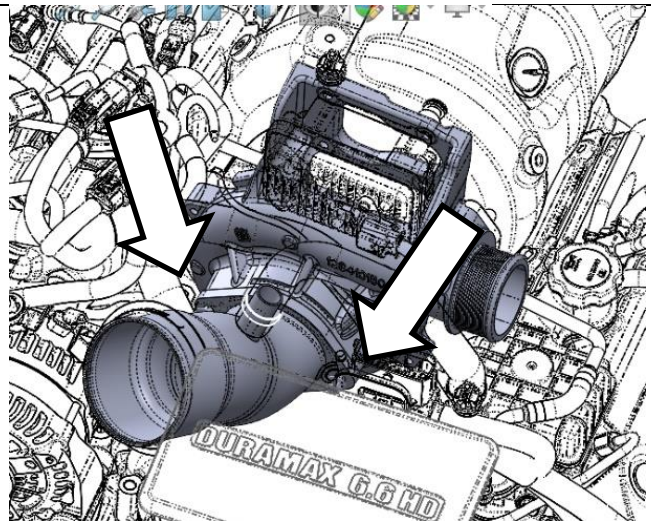


27. Install supplied BD Intake onto turbo with supplied bolts.

Torque Spec: 18 ft-lbs

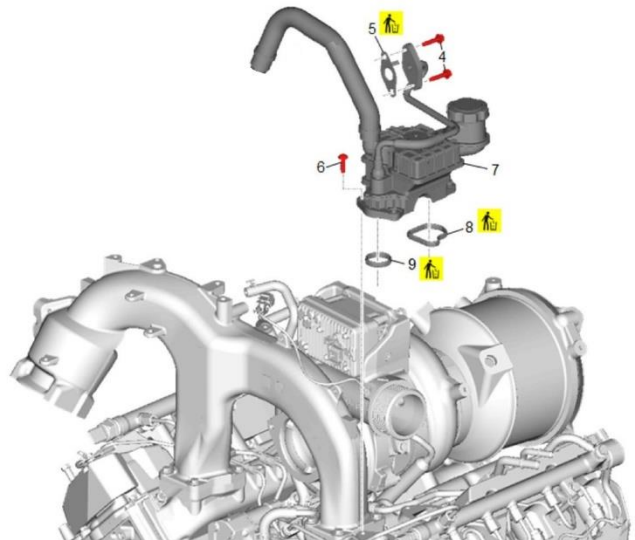
For additional detail of the intake, see install manual I-00489.

NOTE: If using the stock intake, minor modification is required. See appendix at the end of the manual.



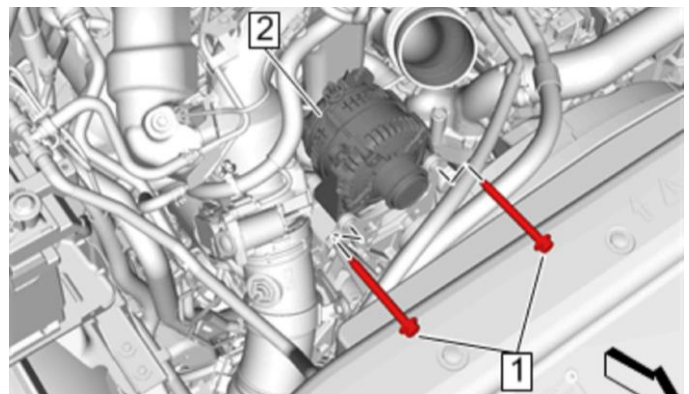
28. Reinstall the oil filter assembly with the **four (4)** tamper proof screws.

Torque Spec: T-30 Torx 89in-lbs



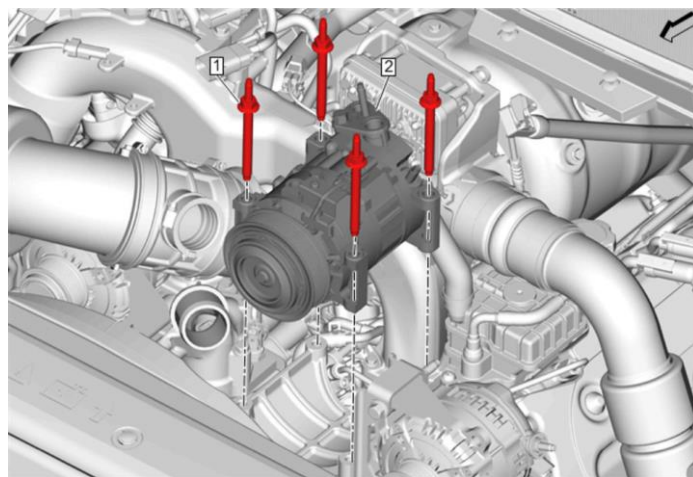
29. Reinstall the alternator using **two (2)** 13mm bolts.

Note: Torque bolts to **43ftlbs (58Nm)**.



30. Realign the AC compressor and install the **four (4) 15mm** stud bolts.

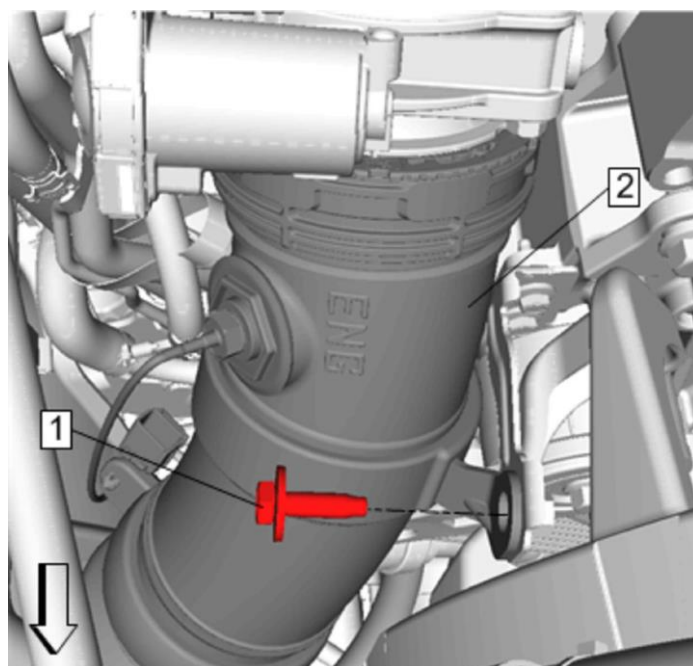
Note: Torque bolts to **43ftlbs (58Nm)**.



31. Reinstall the CAC outlet pipe (**#2**) to the throttle body, rotating the pipe clockwise to lock it in place

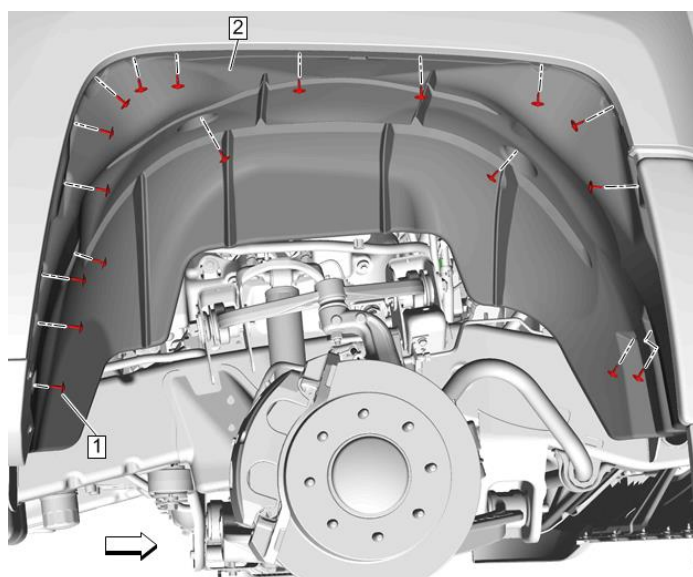
32. Secure CAC outlet pipe with **one (1) 13mm** bolt.

Note: Torque bolt to **16ftlbs (22Nm)**.



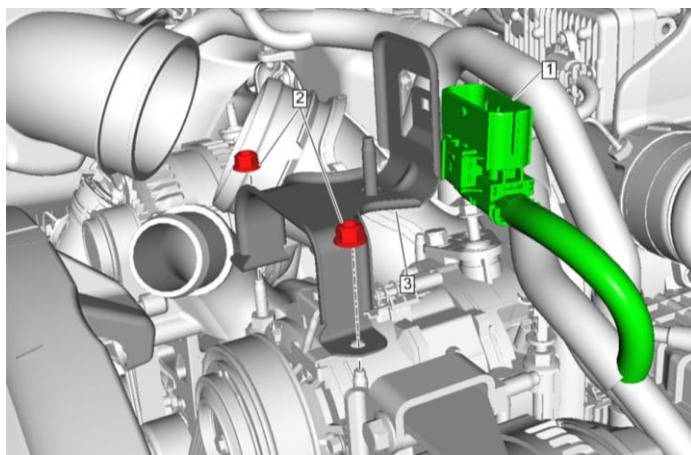
33. Reinstall the front passenger side wheelhouse liner using the **eighteen (18)** wheelhouse liner screws (**#1**).

34. Reinstall the front passenger-side wheel and lower the vehicle.

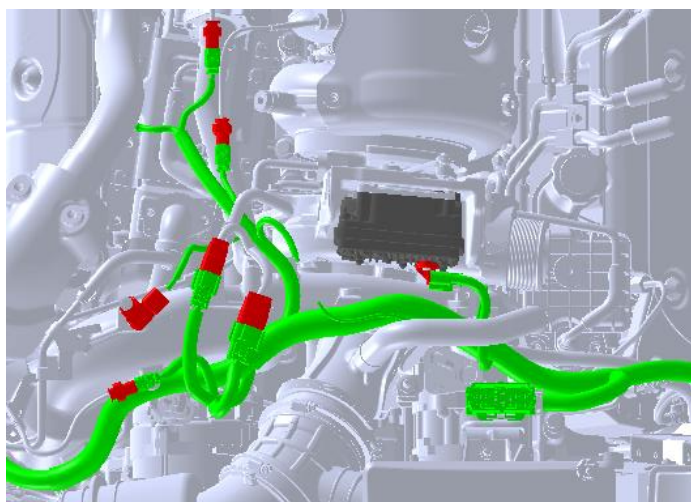


35. Reinstall the electrical bracket over the AC compressor using **two (2) 13mm** nuts.

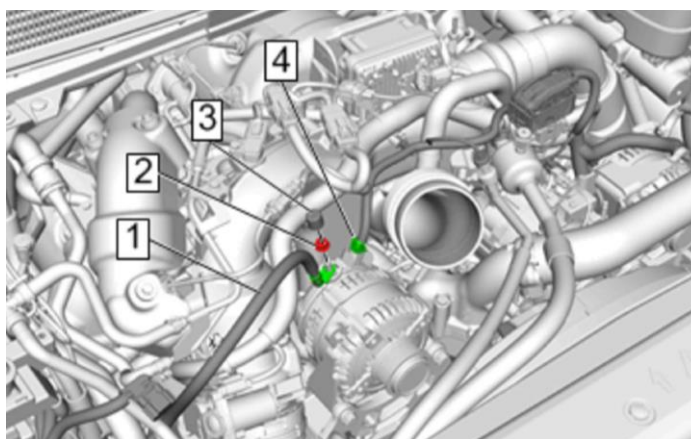
36. Reconnect the electrical connector (**#1**) to the bracket.



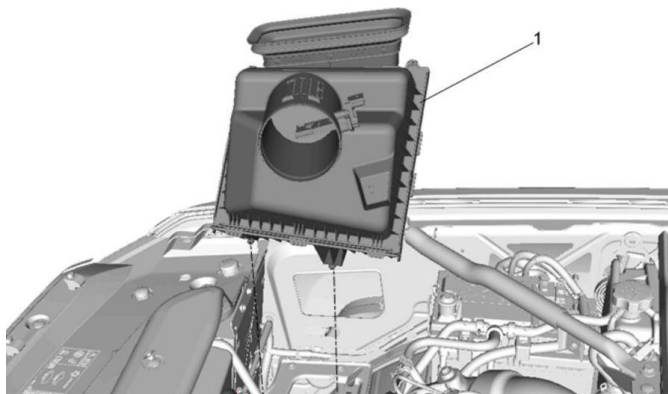
37. Reconnect the engine wiring harness.



38. Reconnect the alternator electrical connectors.

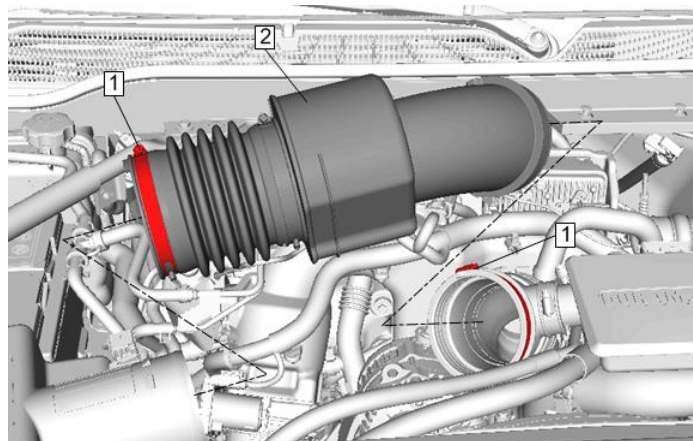


39. Reinstall the air cleaner assembly to its retainers and reconnect the electrical connector.



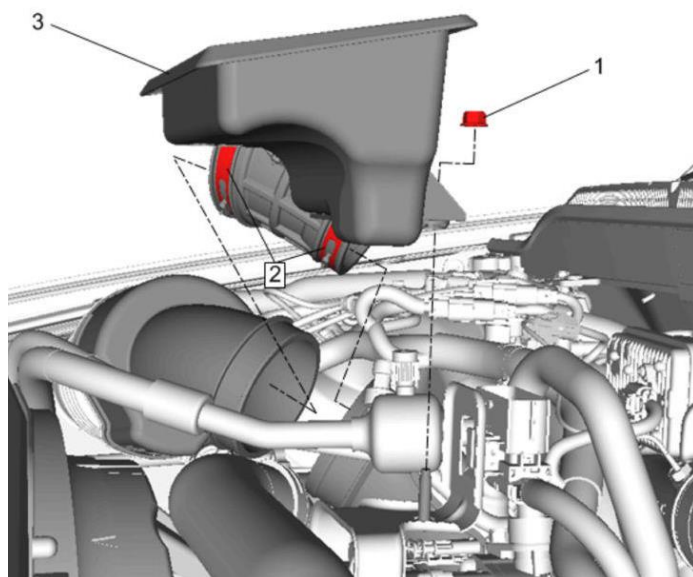
-
40. Reinstall the air cleaner outlet front duct using **two (2)** band clamps and an **11mm socket**.

Note: Torque band clamps to **44inlbs (5Nm)**.



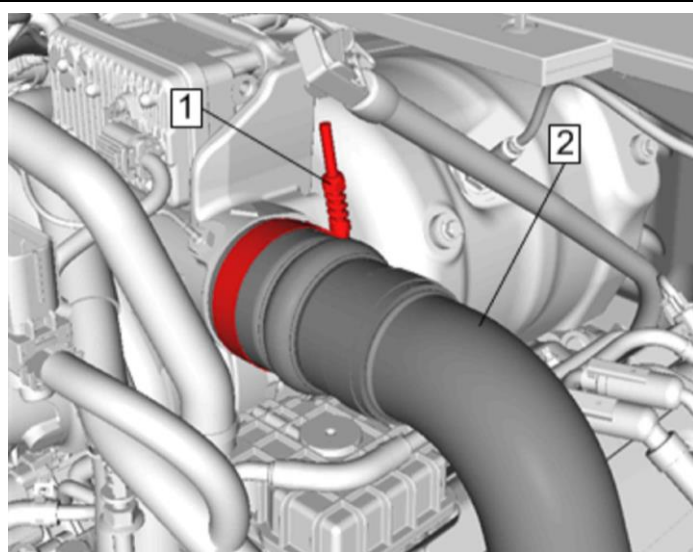
-
41. Reinstall the air cleaner outlet resonator using **two (2)** band clamps and **one (1) 13mm nut**.

Note: Torque nut to **16ftlbs (22Nm)**.
Torque band clamps to **44inlbs (5Nm)**.



-
42. Reinstall the CAC inlet pipe (**#2**) to the turbocharger outlet using an **11mm socket**.

Note: Torque the band clamp (**#1**) to **89inlbs (10Nm)**.



-
43. Reconnect the vehicle batteries.

-
44. Refill and bleed the cooling system.
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Appendix

Vane Position Learning

The L5P Duramax engine uses a variable geometry turbocharger to help control engine airflow. Whenever the turbocharger is serviced or replaced, it is important to perform the vane position relearn procedure to calibrate the ECM to the new turbocharger.

Important Failure to complete the turbo vane position relearn procedure may cause poor performance and slow turbo response.

Vehicle conditions for the vane position relearn procedure:

- DTC P003A, P0046, P00AF, P100A, and P2599 = **NOT SET**
- Engine = **OFF**
- Ignition = **ON**

Using a scan tool:

1. Ignition – On, Vehicle – In Service Mode
2. Select: Module Diagnostics
3. Select: Engine Control Module
4. Select: Configuration/Reset Functions
5. Select: Learn Functions
6. Select: Turbocharger Vane Position Learn
7. Follow instructions on the scan tool

Once relearn is complete, perform the diagnostic repair verification:

1. Ignition/Vehicle- **OFF**
2. Ignition – **ON**, Vehicle – **In Service Mode**
3. Clear the DTCs.
4. Ignition/Vehicle – **OFF** for more than 60s
5. Perform Circuit/System verification and verify the results end with an “All OK”

Air Intake Modifications

To ensure proper fitment and airflow to the turbo, modifications to the air intake are required.

If installing a BD Diesel L5P Intake Pipe (**1405630**) no modifications are necessary.

1. Remove the gasket from the intake if not done so already.

-
2. Gently secure the intake in a vice.



3. Use a hack saw to remove the protruding lip.

Note: This profile is replaced by an aluminum profile ring in the screamer to match the increased compressor wheel diameter.

While the intake will now physically fit, the inside of the pipe now chokes the airflow.



4. Use a file or Dremel tool to open up the inner diameter slightly and clean up the hacksaw cut.
5. Once the profiling is complete, sand the modified surfaces smooth and clean out any shavings or debris.

