Authorized Field Change

NAVISTAR®

AFC 12910

Date: November 2012

Subject File: ENGINE

Subject: Exhaust Gas Recirculation (EGR) Valve Replacement

Model: PayStar®, ProStar®, WorkStar®, and TranStar®
Start Date: 04 February 2011 End Date: 23 June 2011

Engine Family: MaxxForce® 11 and 13

DESCRIPTION

This AFC describes the procedure for EGR valve replacement on vehicles marked with AFC 12910.

PARTS INFORMATION

Table 1. Parts Information

Part Number	Description	Quantity
7092735C91	Kit, EGR Valve	1
*3007671C96	EGR Inlet tube (Inner)	1
*3007670C96	EGR Inlet tube (Outer)	1

WARNING: Read all safety instructions in the "Safety Information" section of the *Engine Service Manual* or *Engine Diagnostic Manual* to prevent personal injury or death.

WARNING: To prevent personal injury or death, shift transmission to park or neutral, set parking brake, and block wheels before doing diagnostic or service procedures.

WARNING: If the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over, potentially resulting in property damage, personal injury, and/or death.

WARNING: Always wear safe eye protection when performing vehicle maintenance. Failure to do so may result in serious eye injury.

WARNING: Keep flames or sparks away from vehicle and do not smoke while servicing the vehicle's batteries. Batteries expel explosive gases. Failure to do so may result in property damage, personal injury, and/or death.

WARNING: Remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last. Failure to do so may result in property damage, personal injury, and/or death.

EGR VALVE REPLACEMENT PROCEDURE

1. Turn vehicle wheels to right and remove engine cover. Refer to Engine Cover Removal procedure in the MaxxForce® 11 and MaxxForce® 13 EGR Cooler Resource Center.

2. Using Coolant Management Tool (KL5007NAV), drain cooling system. Refer to TSI 12–12–01.

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

3. Disconnect Engine Coolant Temperature sensor 1 (ECT1) (Figure 1, Item 2).

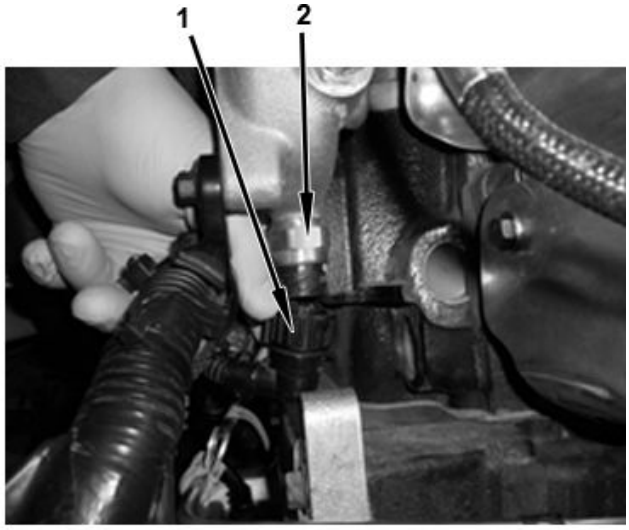

Figure 1. Engine Coolant Temperature (ECT) Sensor.

1. Engine harness
2. ECT1 sensor

4. Disconnect EGR valve engine harness connector (Figure 2, Item 2).

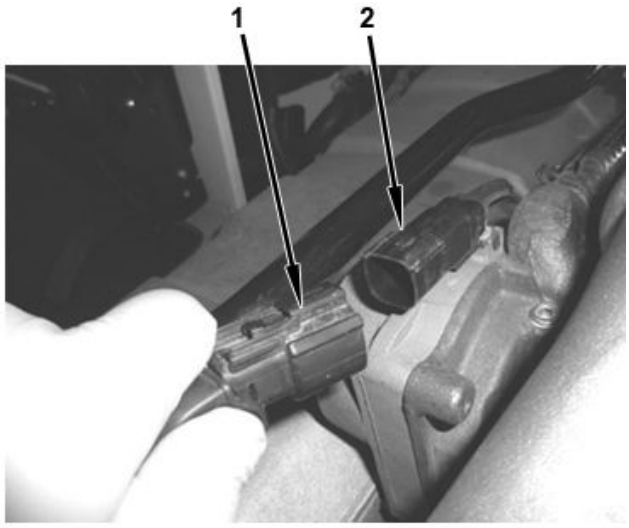

Figure 2. EGR Valve Engine Harness Connector.

1. Engine harness
2. EGR valve engine harness connector

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

5. Cut and remove wire tie (Figure 3, Item 1) near EGR valve electrical connector (Figure 3, Item 2).

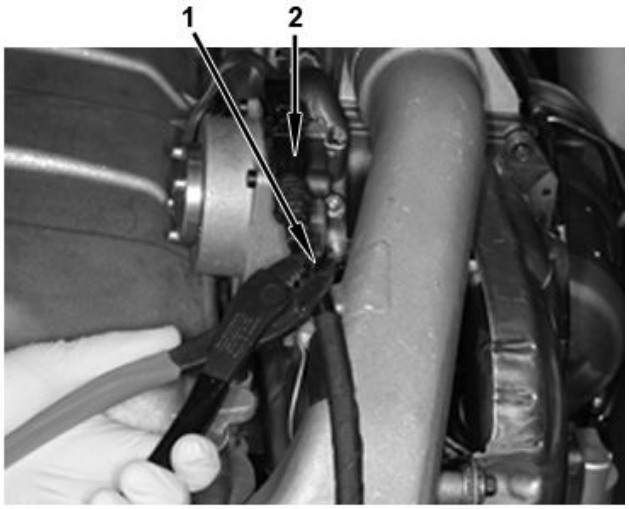

Figure 3. EGR Valve Electrical Connector.

1. Wire tie
2. EGR valve electrical connector

6. Remove engine harness guide (Figure 4, Item 1) from bolt (Figure 4, Item 2).

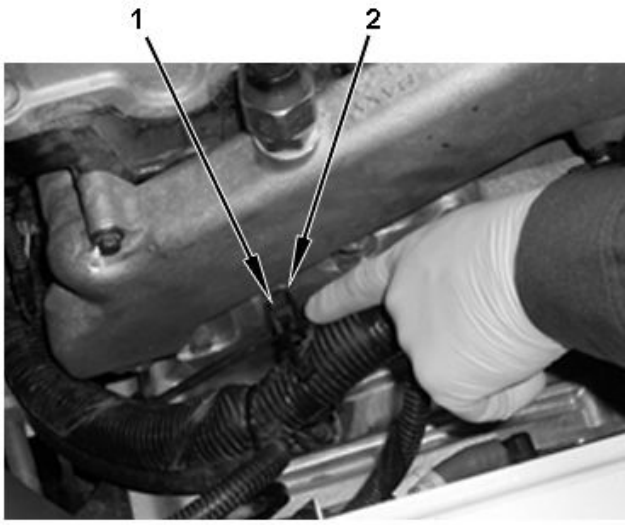

Figure 4. Engine Harness Guide.

1. Engine harness guide
2. Bolt (not shown, located behind engine harness guide)

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

7. Remove engine harness guide (Figure 5, Item 1) from bolt (Figure 5, Item 2).

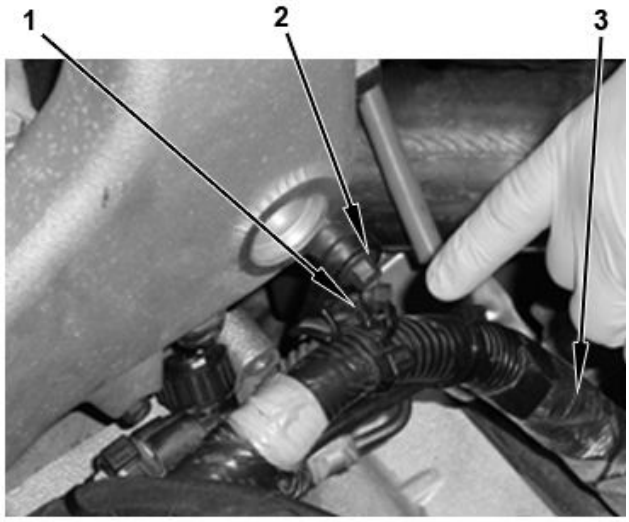

Figure 5. Engine Harness Guide.

1. Engine harness guide
2. Bolt
3. Engine harness

8. Remove cab heater supply tube support brackets (Figure 6, Item 1) from EGR cooler (Figure 6, Item 2).

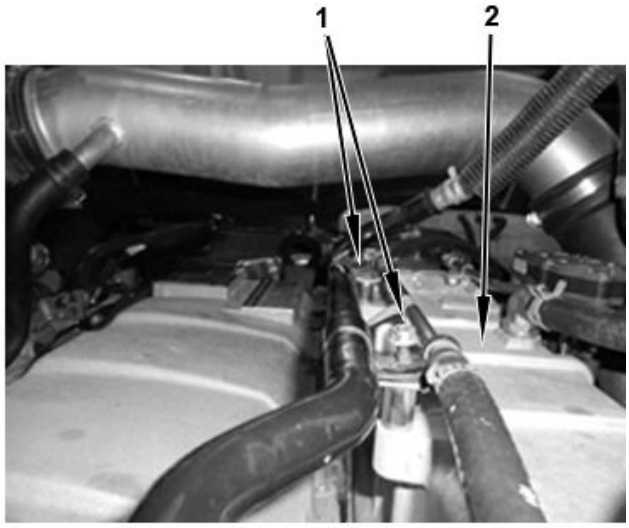

Figure 6. Cab Heater Supply Tube Brackets.

1. Cab heater supply tube brackets
2. EGR cooler

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

9. Disconnect cab heat tube (Figure 7, Item 1) from heat tube nipple (Figure 7, Item 2) on coolant manifold.

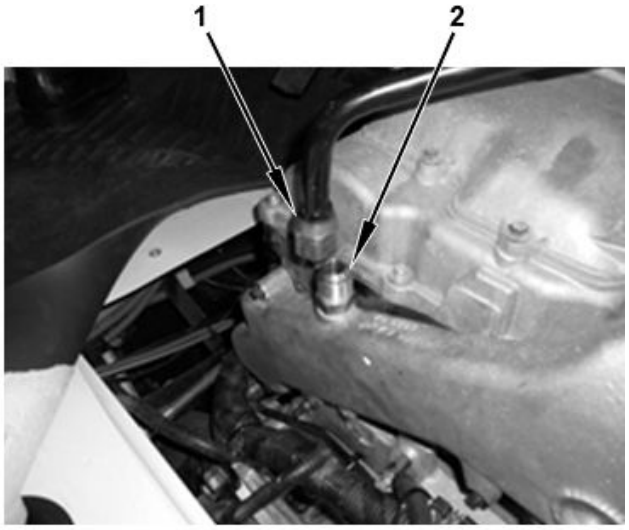

Figure 7. Cab Heat Tube.

1. Cab heat tube
2. Heat tube nipple

10. Remove hydrocarbon injector (HCI) coolant supply tube nut (Figure 8, Item 1) from coolant manifold (Figure 8, Item 2).

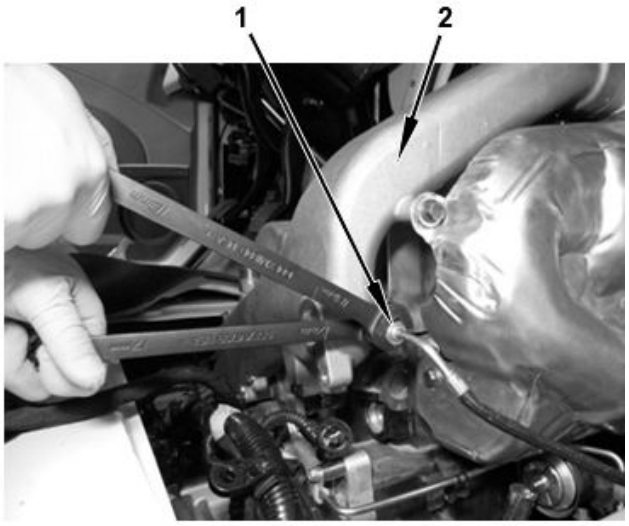

Figure 8. Coolant Manifold.

1. HCI coolant supply tube nut
2. Coolant manifold

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

CAUTION: To prevent component damage, do not bend fuel supply line.

CAUTION: To prevent component damage, do not drop hydrocarbon injector onto a hard surface. The HCl nozzle tip is easily damaged. If this happens, replace the injector.

11. Remove and cap HCl fuel supply line (Figure 9, Item 2) and inlet nut (Figure 9, Item 1).

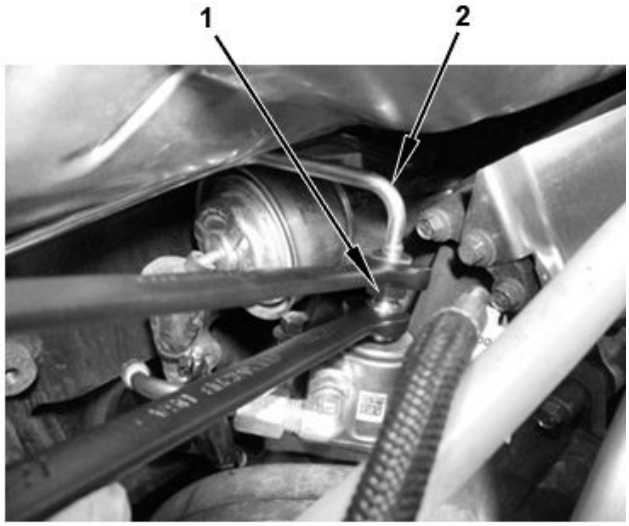

Figure 9. HCl Fuel Supply Line.

1. HCl fuel inlet nut
2. HCl fuel supply line

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

12. Remove HCI coolant outlet tube (Figure 10, Item 1).

13. Remove two HCI bolts (Figure 10, Item 2), and remove HCI from thermal management valve housing.

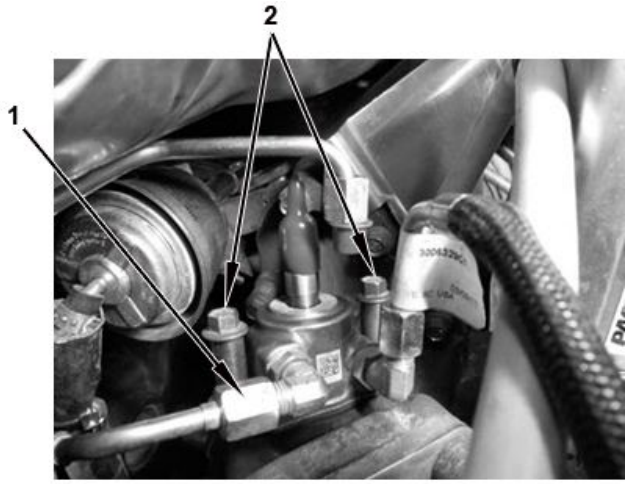

Figure 10. HCI Fuel Inlet.

1. HCI coolant outlet tube
2. HCI bolt (2)

14. Discard HCI bolts and gasket (Figure 11, Item 1).

15. Place cap (Figure 11, Item 2) on thermal management valve housing port.

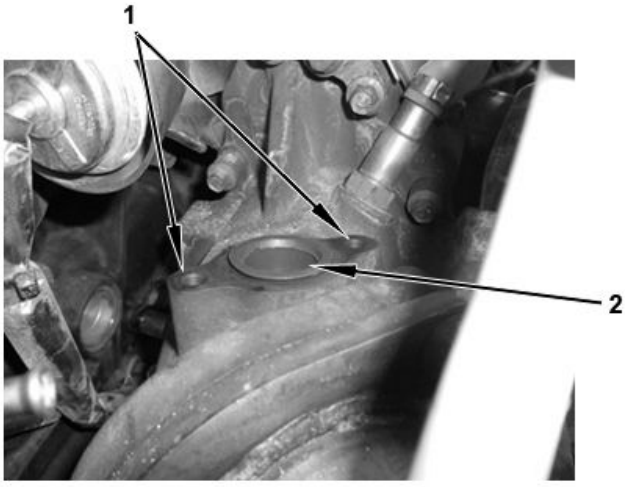

Figure 11. Thermal Management Valve Housing Port.

1. HCI bolt hole and gasket location
2. Thermal management valve housing port cap

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

16. Remove EGR inlet tube heat shield (Figure 12, Item 1), remove one heat-resistant bolt (Figure 12, Item 2),and remove three bolts (Figure 12, Item 3).

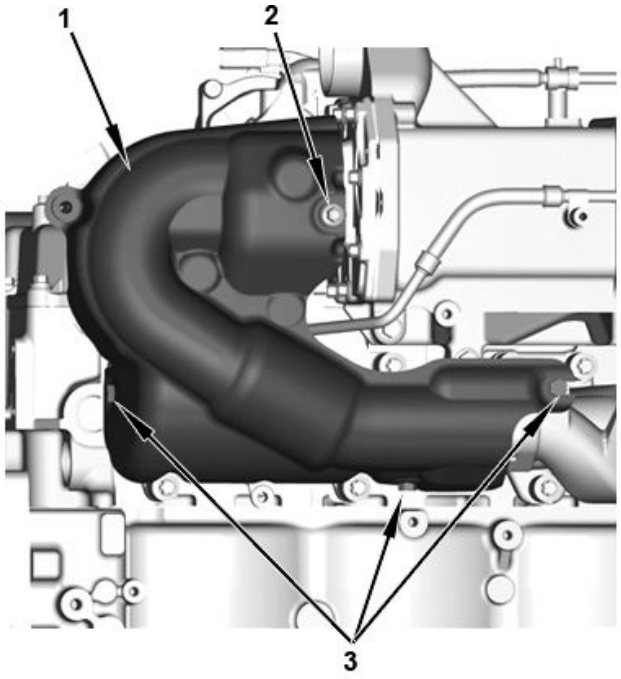

Figure 12. EGR Inlet Tube Heat Shield.

1. EGR inlet tube heat shield
2. Heat-resistant bolt
3. Bolt (3)

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

NOTE: Place drip pan under truck to prevent coolant from leaking on ground.

17. Remove coolant manifold (Figure 13, Item 1), remove two bolts (Figure 13, Item 2), and one stud bolt (Figure 12, Item 3).

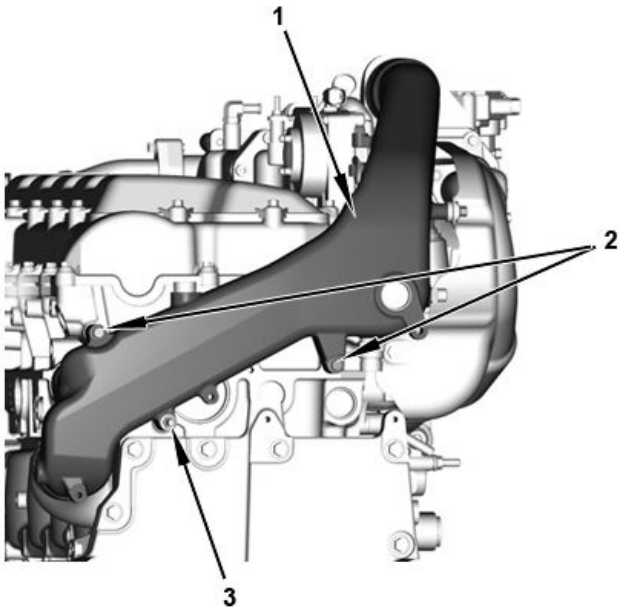

Figure 13. Coolant Manifold.

1. Coolant manifold
2. Bolt (2)
3. Stud bolt

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

CAUTION: To prevent engine damage, extension tubes should be handled with care.

18. Remove EGR inlet tube (Figure 14, Item 1), and remove four heat-resistant bolts and two gaskets (Figure 14, Item 2). Discard bolts and gaskets.

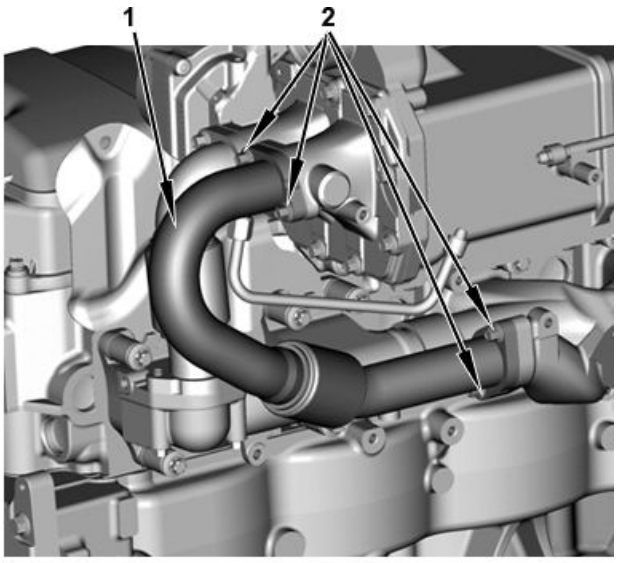

Figure 14. EGR Inlet Tube (Outside).

1. EGR inlet tube (outside)
2. Heat-resistant bolt (4) and gasket (2)

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

19. Remove EGR inlet tube (Figure 15, Item 1), remove two heat-resistant bolts and gasket (Figure 15, Item 2), and remove two heat-resistant bolts and gasket (Figure 15, Item 3). Discard bolts and gaskets.

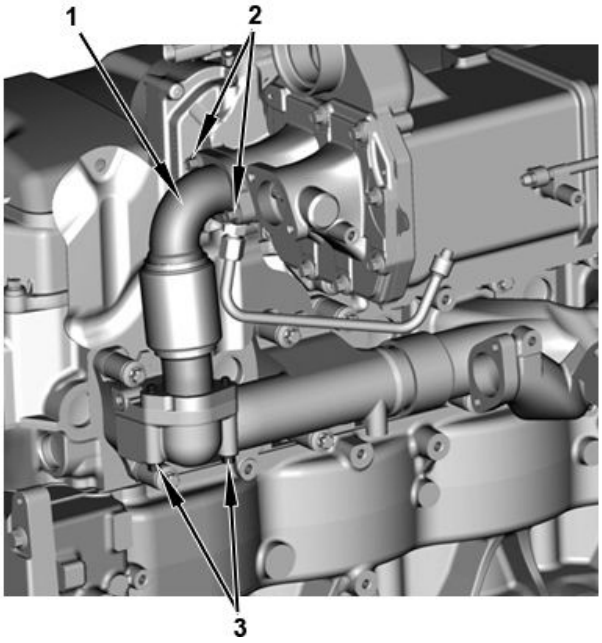

Figure 15. EGR Inlet Tube (Inside).

1. EGR inlet tube (inside)
2. Heat-resistant bolt (2) and gasket
3. Heat-resistant bolt (2) and gasket

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

20. Place cap on rear exhaust manifold outlet (Figure 16, Item 1).

Figure 16. Rear Exhaust Manifold Outlet.

1. Rear exhaust manifold outlet cap

21. Remove EGR valve coolant supply tube nut (Figure 17, Item 1) and position tube away from valve (Figure 17, Item 2).

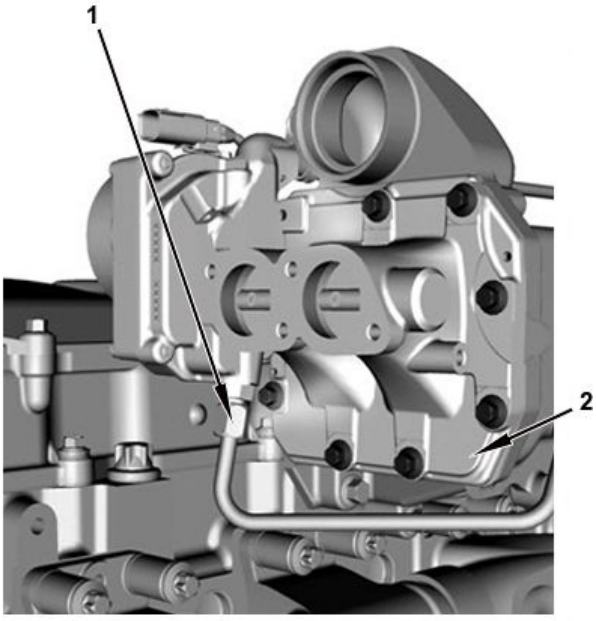

Figure 17. EGR Valve.

1. EGR valve coolant supply tube nut
2. EGR valve

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

22. Remove EGR heat shield (Figure 18, Item 1) and remove two bolts (Figure 18, Item 2).

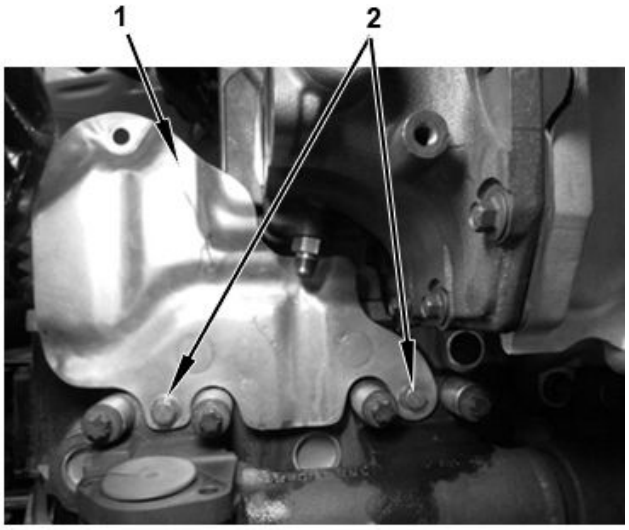

Figure 18. EGR Heat Shield.

1. EGR heat shield
2. Bolt (2)

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

23. Remove nine heat-resistant bolts (Figure 19, Item 3) and the EGR valve (Figure 19, Item 3). Position EGR valve coolant return tube assembly (Figure 19, Item 2) out of the way.

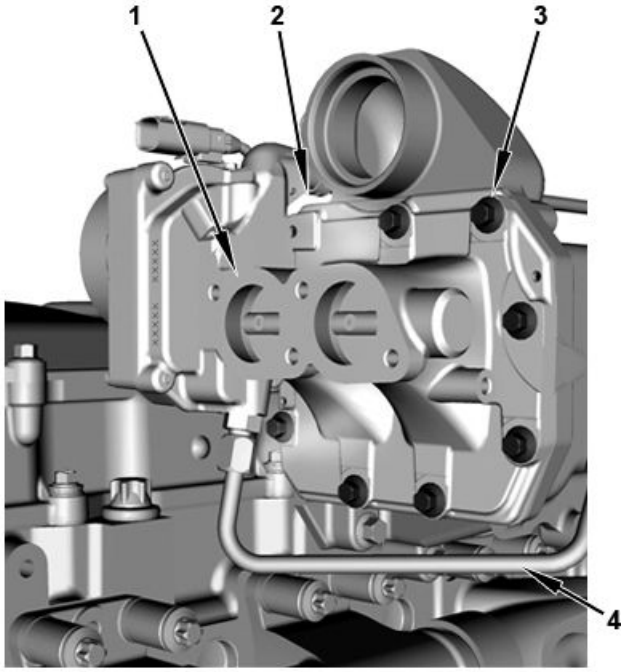

Figure 19. EGR Valve.

1. EGR valve
2. EGR valve coolant return tube assembly
3. Heat-resistant bolt (9)
4. EGR valve coolant supply tube (previously removed)

NOTE: Discard gasket after removal of the EGR valve.

EGR VALVE REPLACEMENT PROCEDURE (CONT.)

24. Inspect High-Temp (HT) EGR cooler inlet for damage (Figure 20, Item 1). If HT EGR cooler is damaged, replace HT cooler per HT EGR Cooler Replacement procedure in the MaxxForce® 11 and MaxxForce® 13 EGR Cooler Resource Center.

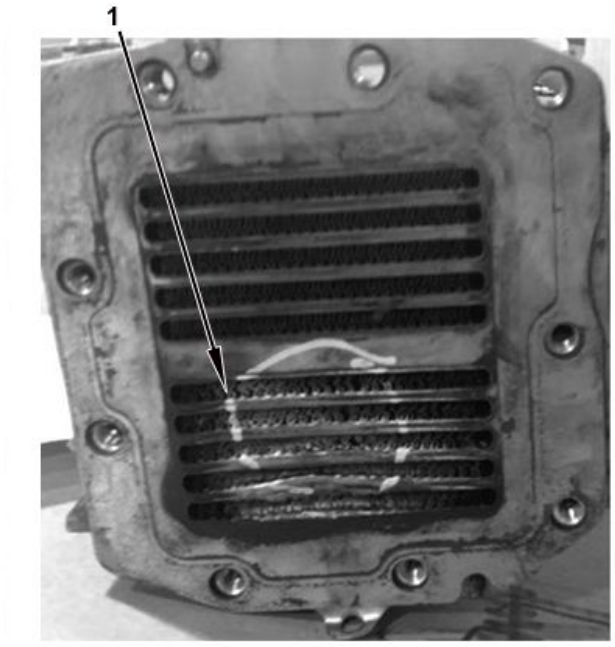

Figure 20. High-Temp (HT) EGR Cooler Inlet.

1. HT EGR cooler inlet damage

NOTE: EGR cooler inlet may have internal rust due to condensation (Figure 21). This condensation or rust is normal and does not require replacement of high-temp EGR cooler.

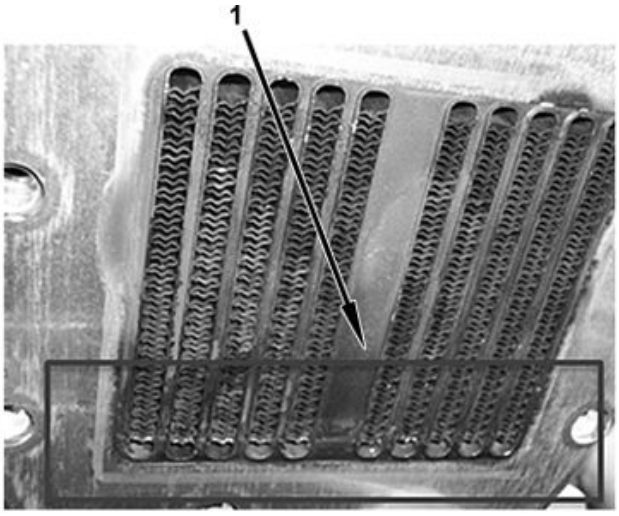

Figure 21. EGR Cooler Inlet.

1. EGR cooler inlet internal rust

EGR VALVE INSTALLATION INSTRUCTIONS

1. Install EGR valve (Figure 22, Item 1) with nine new M8 x 30 heat-resistant bolts (Figure 22, Item 3) and finger tighten. Install EGR valve coolant return tube assembly (Figure 22, Item 2).

NOTE: Use new gasket when replacing EGR valve.

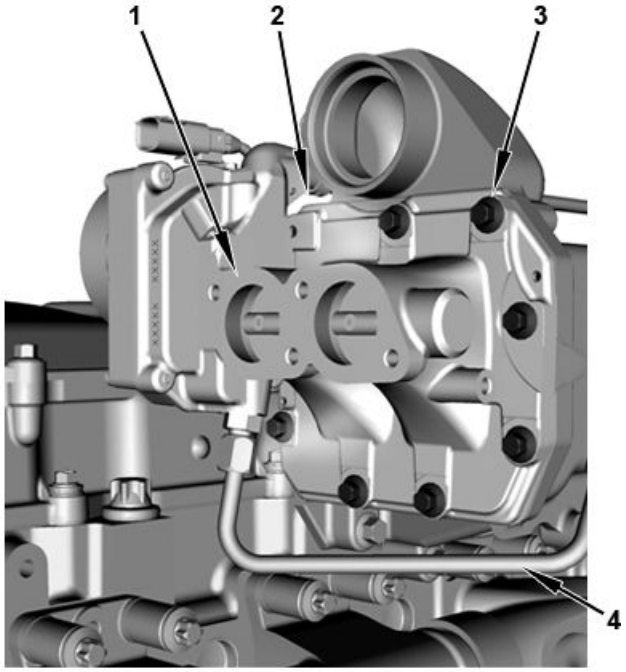

Figure 22. EGR Valve.

1. EGR valve
2. EGR valve coolant return tube assembly
3. Heat-resistant bolt (9)
4. EGR valve coolant supply tube

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

2. Torque four new M8 x 30 heat-resistant bolts to 45 lb-in (5 N·m) in bolt tightening sequence 1 (Figure 23).

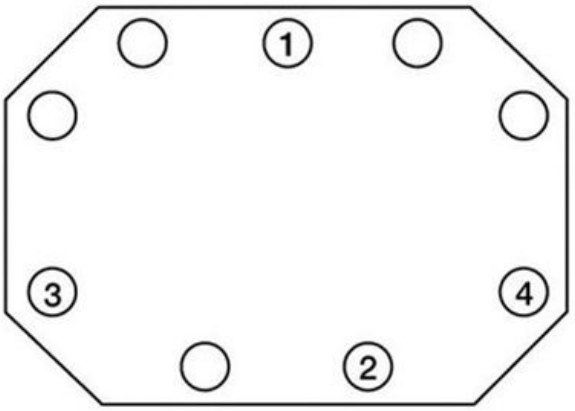

Figure 23. Bolt Tightening Sequence 1.

3. Torque all nine M8 x 30 heat-resistant bolts to 12 lb-ft (16 N·m) in bolt tightening sequence 2 and 3 (Figure 24). Repeat sequence and torque to 18 lb-ft (24 N·m).

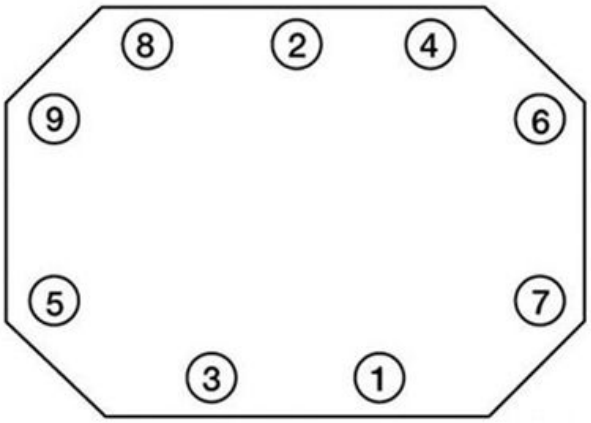

Figure 24. Bolt Tightening Sequence 2 and 3.

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

4. Install EGR heat shield (Figure 25, Item 1), two M8 x 12 bolts (Figure 25, Item 2), and torque to 18 lb-ft (24 N·m).

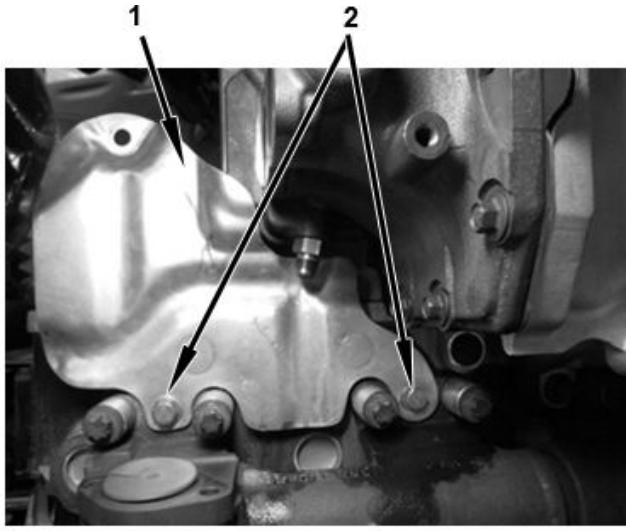

Figure 25. EGR Heat Shield.

1. EGR heat shield
2. M8 x 12 bolt (2)

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

5. Install the EGR valve coolant supply tube (Figure 26, Item 1) and torque the coolant supply tube nut (Figure 26, Item 2) to 18 lb-ft (24 N·m).

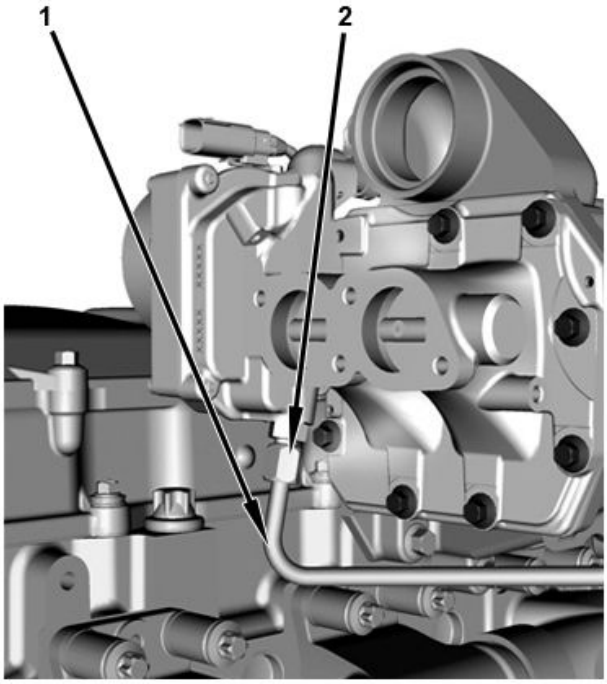

Figure 26. EGR Valve Coolant Supply Tube.

1. EGR valve coolant supply tube
2. EGR valve coolant supply tube nut

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

NOTE: Ensure gasket tab is on inside of mating surface.

6. Remove cap from rear exhaust manifold outlet and install gasket (Figure 27, Item 1).

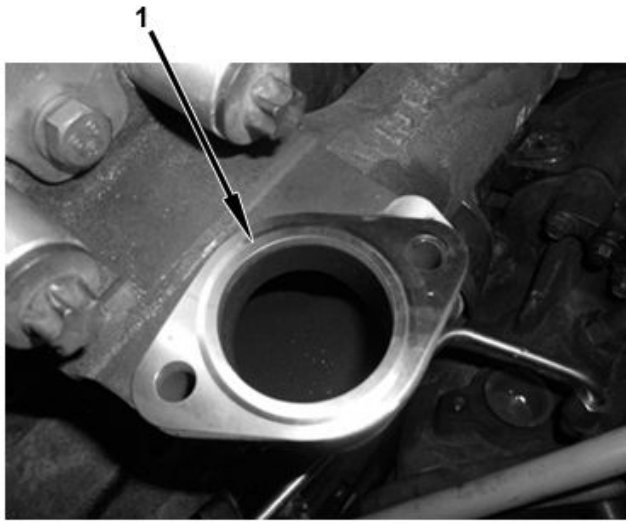

Figure 27. Rear Exhaust Manifold Outlet Gasket.

1. Rear exhaust manifold outlet gasket

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

CAUTION: To prevent engine damage, ensure EGR inlet tube gaskets have the tab at the top so gaskets do not overlap.

7. Install new EGR inlet tube gaskets with tabs pointing up (Figure 28, Item 1).

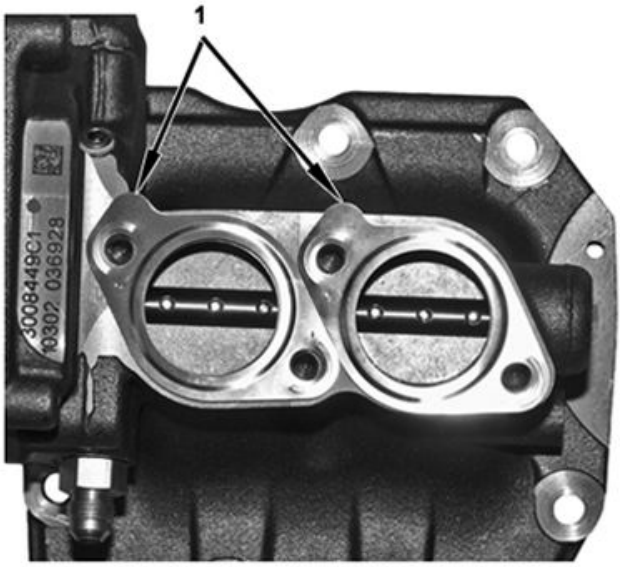

Figure 28. EGR Inlet Tube Gasket.

1. EGR inlet tube gasket

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

8. Install new EGR inlet tube (Figure 29, Item 1) if existing tube has leaks or has outdated parts number 3005416C3, 3005782C3 stamped on the wall. Install four heat-resistant bolts (Figure 29, Items 2 and 3) finger tight. Torque bolts to 18 lb-ft (24 N·m).

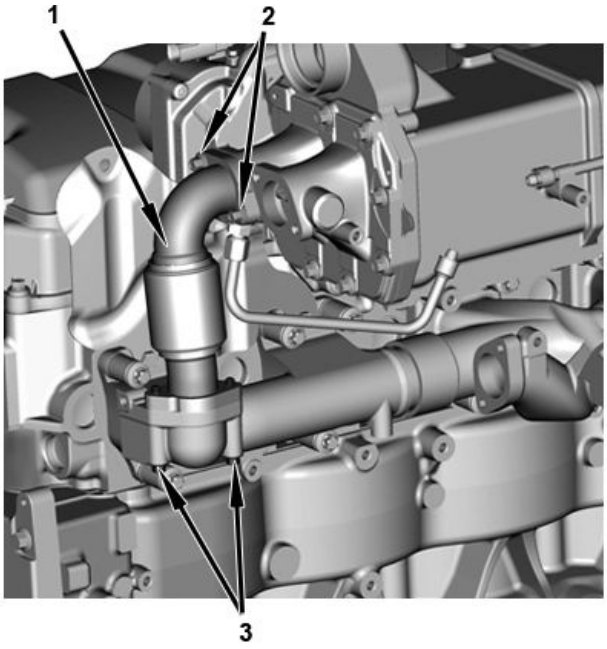

Figure 29. EGR Inlet Tube (Inside).

1. EGR inlet tube (inside)
2. M8 x 25 heat-resistant bolt (2)
3. M8 x 65 heat-resistant bolt (2)

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

9. Install new EGR inlet tube (Figure 30, Item 1) if existing tube has leaks or has outdated parts number 3005416C3, 3005782C3 stamped on the wall. Install four heat-resistant bolts (Figure 30, Items 2 and 3) finger tight. Torque bolts to 18 lb-ft (24 N·m).

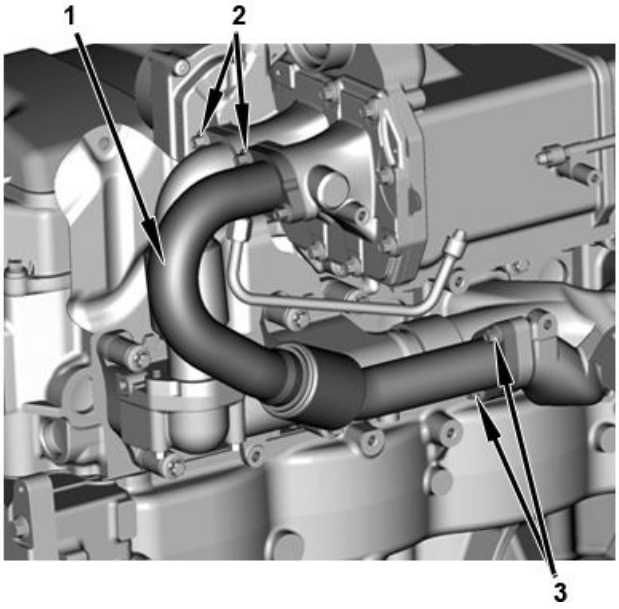

Figure 30. EGR Inlet Tube (Outside).

1. EGR inlet tube (outside)
2. M8 x 25 heat-resistant bolt (2)
3. M8 x 25 heat-resistant bolt (2)

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

10. Install coolant manifold (Figure 31, Item 2), two M8 x 45 bolts (Figure 31, Item 1), and one M8 x 50 x 16 stud bolt (Figure 31, Item 3) finger tight. Torque bolts to 26 lb-ft (35 N·m).

> **CAUTION: To prevent engine damage, extension tubes should be handled with care.**

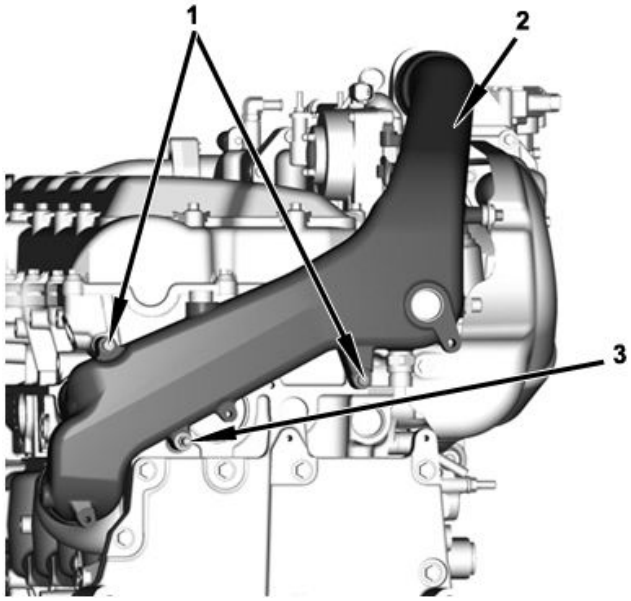

Figure 31. Coolant Manifold.

1. M8 x 45 bolt (2)
2. Coolant manifold
3. M8 x 50 x 16 stud bolt

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

11. Install EGR inlet tube heat shield (Figure 32, Item 1), one M8 x 25 heat-resistant bolt (Figure 32, Item 2), and three M8 x 12 bolts (Figure 32, Item 3) finger tight. Torque bolts to 18 lb-ft (24 N·m).

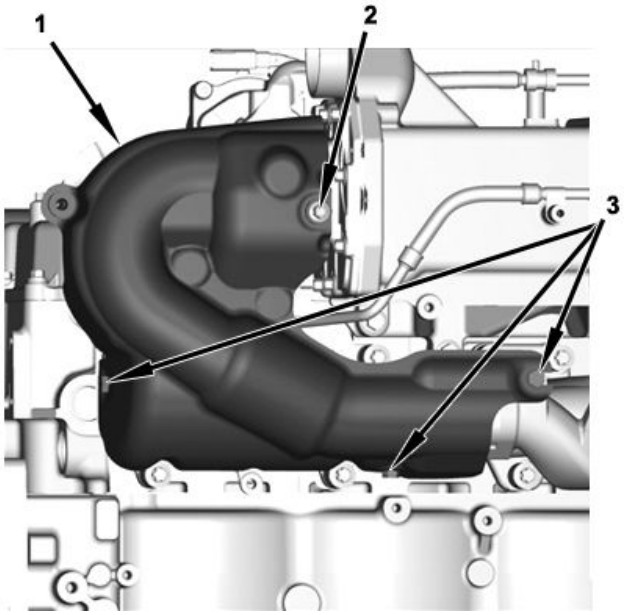

Figure 32. EGR Inlet Tube Heat Shield.

1. EGR inlet tube heat shield
2. M8 x 25 heat-resistant bolt
3. M8 x 12 bolt (3)

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

12. Remove cap from thermal management valve housing.

> **CAUTION: To prevent component damage, do not drop hydrocarbon injector onto a hard surface. The HCI nozzle tip is easily damaged. If this happens, replace the injector.**

13. Install HCI on thermal management valve housing (Figure 33, Item 2) with two M8 x 45 bolts (Figure 33, Item 1) and pre-torque bolts to 97 lb-in (11 N·m).

14. Final torque HCI bolts to 18 lb-ft (24 N·m).

> **CAUTION: To prevent component damage, install new HCI M8 x 45 bolts.**

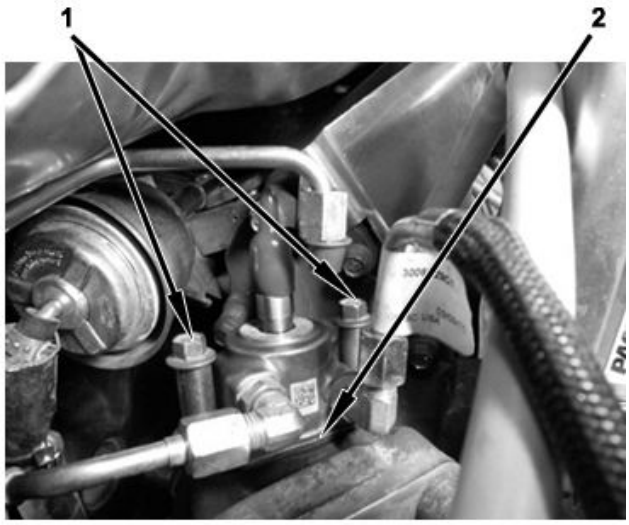

Figure 33. Hydrocarbon Injector (HCI).

1. HCI M8 x 45 bolt (2)
2. Thermal management valve housing

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

15. Install HCI coolant outlet tube (Figure 34, Item 1) to HCI, tighten HCI coolant outlet tube nut (Figure 34, Item 2), and torque to 11 lb-ft (14.9 N·m).

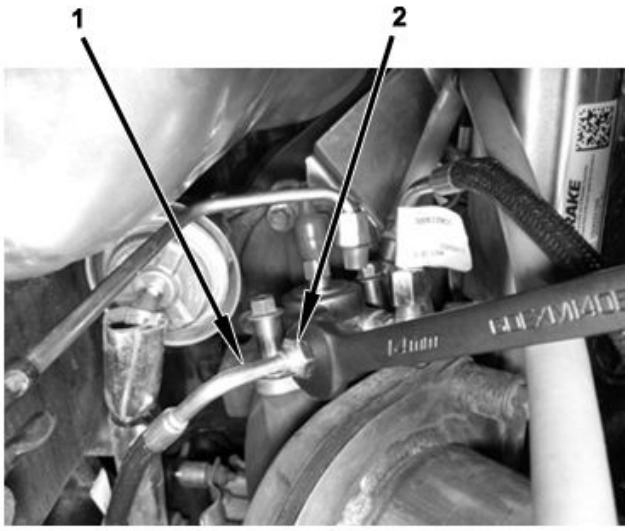

Figure 34. HCI Coolant Outlet Tube.

1. HCI coolant outlet tube
2. HCI coolant outlet tube nut

16. Remove HCI fuel supply line cap (Figure 35, Item 1) and HCI fuel inlet cap (Figure 35, Item 2).

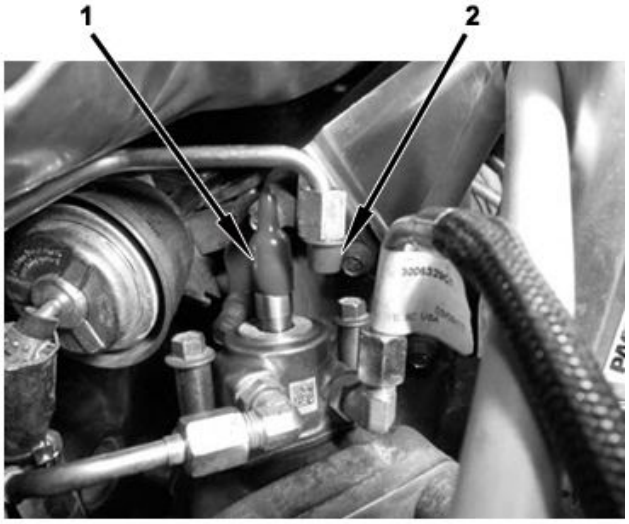

Figure 35. HCI Fuel Supply Line.

1. HCI fuel supply line with cap
2. HCI fuel inlet cap

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

CAUTION: To prevent component damage, do not bend fuel supply line.

17. Attach HCI fuel supply line nut (Figure 36, Item 1) to HCI fuel inlet (Figure 36, Item 2) and torque to 18 lb-ft (24 N·m).

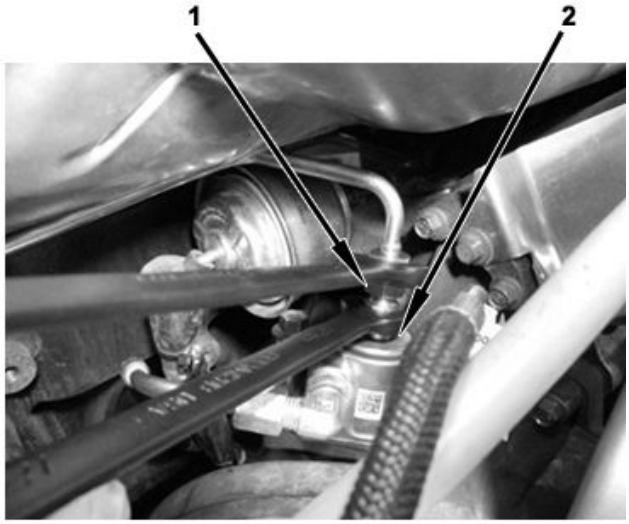

Figure 36. HCI Fuel Inlet.

1. HCI fuel supply line nut
2. HCI fuel inlet

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

18. Install Hydrocarbon Injector (HCI) coolant supply tube nut (Figure 37, Item 1) to the coolant manifold (Figure 37, Item 2) and torque to 18 lb-ft (24 N·m).

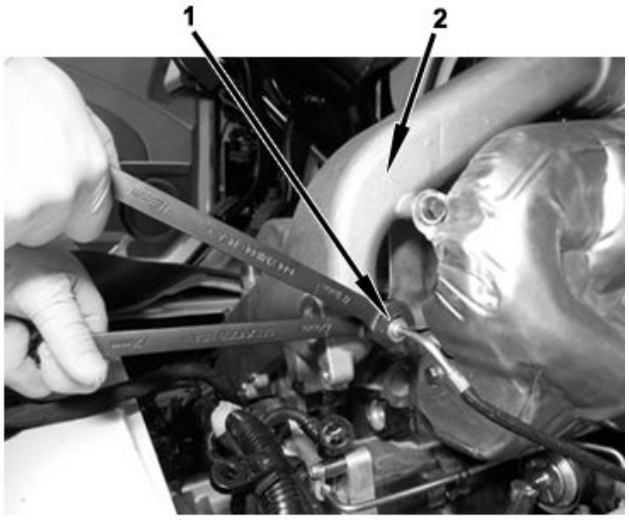

Figure 37. Coolant Manifold.

1. HCI coolant supply tube nut
2. Coolant manifold

19. Connect cab heat tube (Figure 38, Item 1) to coolant manifold (Figure 38, Item 2).

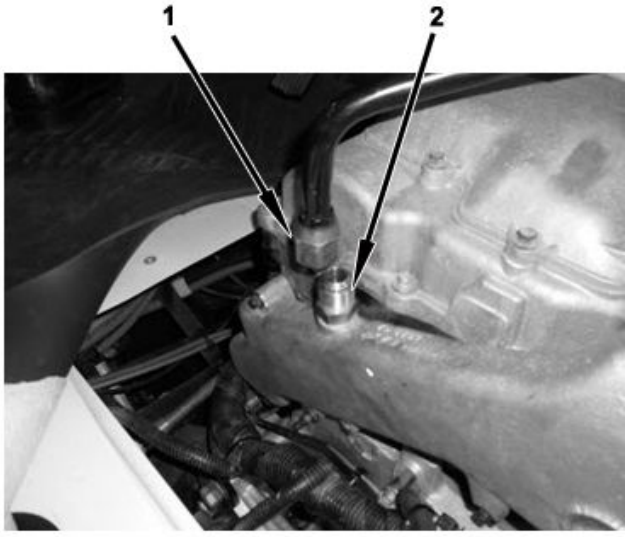

Figure 38. Cab Heat Tube.

1. Cab heat tube
2. Coolant manifold

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

20. Install cab heater supply tube support brackets (Figure 39, Item 1) to EGR cooler (Figure 39, Item 2) and torque to 13 lb-ft (17.6 N·m).

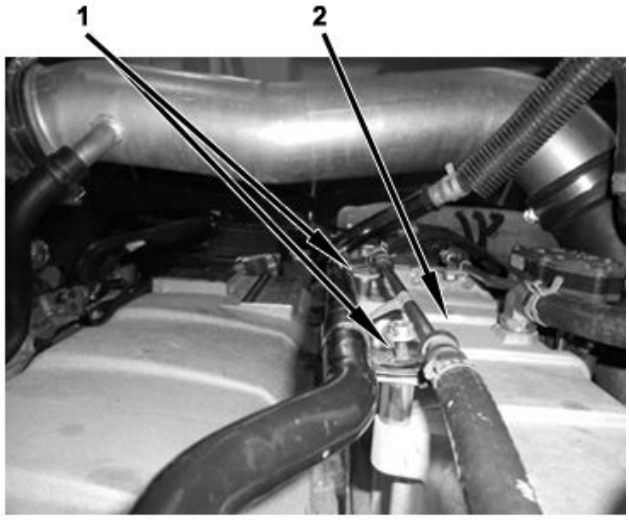

Figure 39. EGR Cooler.

1. Cab heater supply tube bracket
2. EGR cooler

21. Install the engine harness guide (Figure 40, Item 1) to M8 x 45 bolt (Figure 40, Item 2) and torque to 26 lb-ft (35.2 N·m).

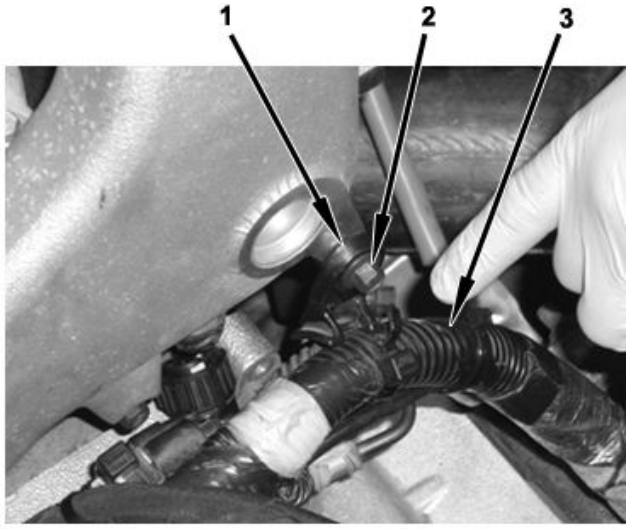

Figure 40. Engine Harness Guide.

1. Engine harness guide
2. M8 x 45 bolt
3. Engine harness

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

22. Install the engine harness guide (Figure 41, Item 1) to M8 x 50 x 16 stud bolt (Figure 41, Item 2) and torque to 26 lb-ft (35.2 N·m).

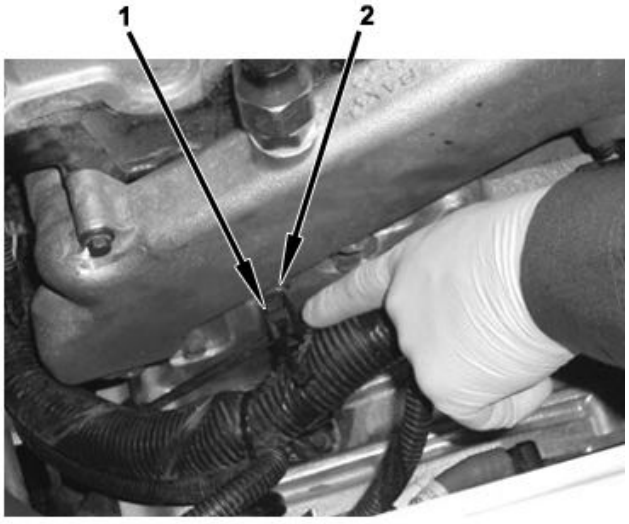

Figure 41. Engine Harness Guide.

1. Engine harness guide
2. M8 x 50 x 16 Stud Bolt (not shown, located behind engine harness guide)

23. Install wire tie (Figure 42, Item 1) located before the EGR valve electrical connector (Figure 42, Item 2).

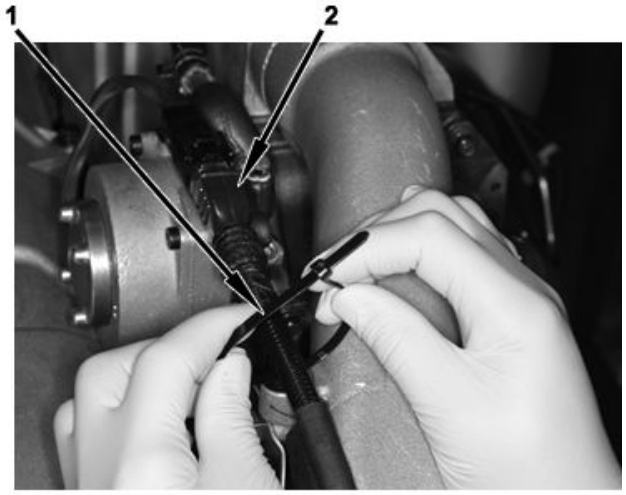

Figure 42. EGR Valve Electrical Connector.

1. Wire tie
2. EGR valve electrical connector

EGR VALVE INSTALLATION INSTRUCTIONS (CONT.)

24. Connect engine harness (Figure 43, Item 1) to EGR valve engine harness connector (Figure 43, Item 2).

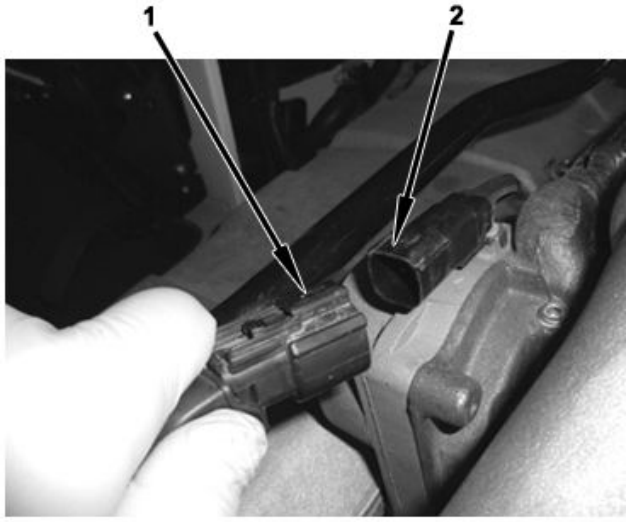

Figure 43. EGR Valve Engine Harness Connector.

1. Engine harness
2. EGR valve engine harness connector

25. Connect engine harness (Figure 44, Item 1) to engine coolant temperature sensor (Figure 44, Item 2).

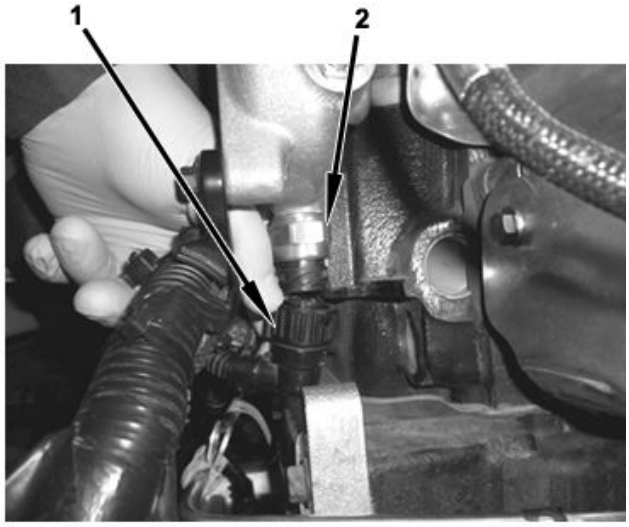

Figure 44. Engine Coolant Temperature Sensor.

1. Engine harness
2. Engine coolant temperature sensor

26. Refill cooling system using the Coolant Management Tool (KL5007NAV). Refer to TSI 12–12–01.

27. Install engine cover. Refer to the Engine Cover Removal procedure in the MaxxForce® 11 and MaxxForce® 13 EGR Cooler Resource Center.

LABOR INFORMATION

Operation number must appear on all claims.

Table 2. Labor Information

Operation No.	Description	Time
A40-12910-1	EGR Valve Replacement – PayStar®, WorkStar®, and TranStar® with standard interior with MaxxForce® 11 or 13	2.8 hr
A40-12910-2	EGR Valve Replacement – ProStar® and TranStar® with premium interior with MaxxForce® 11 or 13	3.5 hr

ADMINISTRATIVE PROCEDURE

Expense is to be charged to Warranty. Claims are to be submitted in the normal manner, making reference to Authorized Field Change Number G-12910.

It is important that the coding be completed properly to assist in processing the warranty claim. Complete instructions will be found in the Warranty Policy Manual, Section 7.1.8.

As with all claim submission, items acquired locally must be submitted in the “Other Charges” tab. The cost of any bulk items (bag of cable tie straps, roll of wire, barrel of oil, tube of silicone, etc.) should be prorated for the cost of the individual pieces/amount used during each repair.

To assure this important improvement is made in a timely manner, all claims for G-12910 activity must be submitted by 16 November 2013 or within the normal warranty period for the vehicle, if after 16 November 2013.