# SAFETY RECALL – NORTH AMERICA
## High Pressure Fuel Pump

**Reference: 01A / NHTSA 23V-263**

**FCA US LLC**

Remedy available for

2021-2023 JL Jeep Wrangler and JT Jeep Gladiator

Remedy available for

2022-2023 DT Ram 1500 Pickup

Template Version 1.8

| Revision | Edition | Detail |
|---|---|---|
| 6 | April 2025 | Parts, Procedures and LOPs for non-contaminated system updated. |

### SUBJECT

The High-Pressure Fuel Pump (HPFP) on about 49,900 of the above vehicles may fail prematurely. A HPFP failure may introduce internally failed component debris into the fuel system potentially causing fuel starvation. Vehicle occupants may notice a Malfunction Indicator Lamp, service Electronic Throttle Control indicator, a fuel leak at the HPFP, or excessive noise from the HPFP. Fuel starvation may result in an unexpected loss of motive power, which can cause vehicle crash without prior warning.

### SCOPE

This recall applies only to the above vehicles equipped with a 3.0L engine (sales code EXH or EXJ).

NOTE: Some vehicles above may have been identified as not involved in this recall and therefore have been excluded from this recall.

IMPORTANT: Some of the involved vehicles may be in dealer new vehicle inventory. Federal law requires you to complete this recall service on these vehicles before retail delivery. Dealers should also consider this requirement to apply to used vehicle inventory and should perform this recall on vehicles in for service. Involved vehicles can be determined by using the VIP inquiry process.

### REPAIR TO BE PERFORMED

Vehicles delivered to the dealer in good running condition should complete HPFP replacement only(non-contaminated system).

If the vehicle is brought to the dealer not running, the technician will follow the current diagnostic procedure to determine if there was an HPFP failure. If HPFP failure was determined, replacement of both the HPFP and fuel pump module is required, including fuel system cleaning (contaminated system).

### ALTERNATE TRANSPORTATION

Dealers should attempt to minimize customer inconvenience by placing the owner in a loaner vehicle if inspection determines that complete fuel system cleaning and replacement is required, and the vehicle must be held overnight.

### COMPLETION REPORTING AND REIMBURSEMENT

Claims for vehicles that have been serviced must be submitted on the DealerCONNECT Claim Entry Screen located on the Service tab. Claims paid will be used by FCA to record recall service completions and provide dealer payments.

Use the following labor operation numbers and time allowances:

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| Labor Description | Number | Hrs |
|---|---|---|
| Replace High Pressure Fuel Pump (JL and JT Only) | 14-01-A1-84 | 1.2 |
| Replace High Pressure Fuel Pump, Fuel Rails, Fuel Lines, Fuel Injectors, Fuel Filter, In Tank Fuel Pump, and Flush Lines (JL and JT Only) | 14-01-A1-85 | 5.0 |
| Replace High Pressure Fuel Pump (DT only) | 14-01-A1-82 | 0.9 |
| Replace High Pressure Fuel Pump, Rails, Injectors, Filter, In Tank Pump, and Flush Lines (DT Only) | 14-01-A1-83 | 6.2 |

| Related Operations | Number | Hrs |
|---|---|---|
| Fuel Allowance to Safety Recall 01A | 95-14-01-50 | $66.00 |
| Disposal of Contaminated Diesel Fuel for Safety Recall 01A (Receipt Required) | 95-14-04-51 | $300.00 |

| Optional Equipment | Number | Hrs |
|---|---|---|
| Drain Fuel - DT Models w/ 26 Gallon Tank Only | 14-01-A1-60 | 0.3 |
| Drain Fuel - DT Models w/ 33 Gallon Tank Only | 14-01-A1-61 | 0.4 |
| Drain Fuel - JL Models w/ 18.3 Gallon Tank Only | 14-01-A1-62 | 0.3 |
| Drain Fuel - JT Models w/ 19 Gallon Tank Only | 14-01-A1-63 | 0.3 |

| Labor Description | Number | Allowance |
|---|---|---|
| Floor Plan Reimbursement | 95-95-95-97 | Calculate See Below |

Floor Plan Reimbursement represents the vehicle's average daily allowance (see table below) multiplied by the number of days the vehicle was in dealer inventory and not available for sale. This reimbursement is limited to the number of days from the date of the stop sale to the date that the remedy was made available. Note: If the vehicle was received by your dealership (KZX date) AFTER the stop sale date, you will use the KZX date instead of the stop sale date. For this Recall, the stop sale was initiated on **04/20/2023.** The remedy for JL/JT was made available on **10/03/2023**, therefore, the number of days cannot exceed **166** days. The remedy for DT was made available on **10/31/2023**, therefore, the number of days cannot exceed **194** days.

| Vehicle | Average Daily Allowance |
|---|---|
| **2021-2023 (JL) Jeep Wrangler** | **$13.15** |
| **2021-2023(JT) Jeep Gladiator** | **$12.65** |
| **2022-2023 DT Ram 1500 Pickup** | **$14.06** |

**Add the cost of the recall parts package plus applicable dealer allowance to your claim.**

**In addition, enter "MATL" in the Part Number section of your claim with the applicable Material Allowance where appropriate.**

**NOTE: See the Warranty Administration Manual, Recall Claim Processing Section, for complete recall claim processing instructions.**

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## PARTS INFORMATION

| Part No. | Qty. | Part Name |
|---|---|---|
| **JL/JT & DT PARTS** | | |
| **ORDER THESE PARTS FOR ALL VEHICLES** | | |
| CSSMZ461AA | 1 | HP Fuel Pump (JL/JT/DT) (Contaminated and Non-Contaminated Vehicle) |
| | | |
| 04275086AE | 1 | Authorized Modification Label (Contaminated and Non-Contaminated Vehicle) |
| | | |
| CSFP01A1AA | | SEE ORDERING INFORMATION BELOW THIS TABLE. (Contaminated and Non-Contaminated Vehicle) |
| | 1 | Owner's Manual Addendum |
| | 1 | Tip Card |
| | 1 | Fuel Door Decal |
| | | |

## Process Steps to Order Campaign kit CSFP01A1AA:

1. Access the **"DealerCONNECT"** website.
2. Select the **"Marketing"** link in the header of DealerCONNECT.
3. Locate the **"Product Information"** section heading on the Marketing page.
4. Select the **"Literature and Merchandising Materials"** link in the product information section.
5. Locate the **"MOPAR"** section heading on the Literature and Merchandising Materials page.
6. Select the **"Recall Labels / Cards"** link listed in the MOPAR section.
7. Select **Item > Update Cart > Submit Order**.

| JL/JT PARTS | | |
|---|---|---|
| **ALONG WITH THE PARTS ON PAGE 3, ORDER THESE PARTS FOR CONTAMINATED JL/JT VEHICLES (WITH HPFP FAILURE)** | | |
| CSGNZ966AA | | Fuel Pump & Level Unit (JL/JT) (Contaminated vehicles only) |
| | 1 | Fuel Pump and Level Unit (O-Ring) |
| | 1 | Fuel Pump/Level Unit (Pkg Part) |
| | | |
| 68490022AA | 6 | Fuel Injector (JL/JT) (Contaminated vehicles only) |
| 68148333AA | 6 | Seal - Fuel Injector (JL/JT) (Contaminated vehicles only) |
| 68148329AB | 1 | Fuel Rail – Right (JL/JT) (Contaminated vehicles only) |
| 68490028AA | 1 | Fuel Rail – Left (JL/JT) (Contaminated vehicles only) |
| 68436631AA | 1 | Filter Kit (Fuel Water Separator) (JL/JT) (Contaminated vehicles only) |
| 68493361AA | 1 | O-Ring (Upper Turbo Inlet Elbow/EGR Cooler Elbow to LP EGR Valve) (JL/JT) (Contaminated vehicles only) |
| 68487031AA | 1 | O-Ring (Turbo Upper Air Intake Elbow/EGR Cooler Elbow to Turbo Air Intake Elbow) (JL/JT) (Contaminated vehicles only) |
| 68524869AA | 1 | TUBE KIT - FUEL SUPPLY (6 Tubes injector to rail, 2 tubes rail to pump, 1 tube rail to rail) (JL/JT) (Contaminated vehicles only) |
| CSGNZ961AA | | HP Fuel Pump Campaign Kit (JL/JT/DT) (Contaminated Vehicle) |
| | 1 | EGR Tube (Gasket) |
| | 1 | Rubber Gasket - Upper EGR Tube |

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| DT PARTS | | |
|---|---|---|
| ALONG WITH THE PARTS ON PAGE 3, ORDER THESE PARTS FOR NON-CONTIMATED DT VEHICLES (NO HPFP FAILURE) | | |
| CSGNZ967AA | | HPFP Campaign Kit (DT) (Non - Contaminated vehicles only) |
| | 4 | NUT - Injection Pump Cover |
| | | |

| DT PARTS | | |
|---|---|---|
| ALONG WITH THE PARTS ON PAGE 3, ORDER THESE PARTS FOR CONTAMINATED DT VEHICLES (WITH HPFP FAILURE) | | |
| CSGNZ964AA | | HPFP Campaign Kit (DT) (Contaminated vehicles only) |
| | 1 | Tube Kit - Fuel Supply (6 Tubes injector to rail, 2 tubes rail to pump, 1 tube rail to rail) |
| | 1 | Fuel Pump and Level Unit (O-Ring) |
| | 1 | Fuel Pump/Level Unit (Pkg Part) |
| | | |
| 68490022AA | 6 | Fuel Injector (DT) (Contaminated vehicles only) |
| 68148333AA | 6 | Seal - Fuel Injector (DT) (Contaminated vehicles only) |
| 68148329AB | 1 | Fuel Rail – Right (DT) (Contaminated vehicles only) |
| 68490028AA | 1 | Fuel Rail – Left (DT) (Contaminated vehicles only) |
| 68436631AA | 1 | Filter Kit (Fuel Water Separator) (DT) (Contaminated vehicles only) |
| 68493361AA | 1 | O-Ring (Upper Turbo Inlet Elbow/EGR Cooler Elbow to LP EGR Valve) (DT) (Contaminated vehicles only) |
| 68487031AA | 1 | O-Ring (Turbo Upper Air Intake Elbow/EGR Cooler Elbow to Turbo Air Intake Elbow) (DT) (Contaminated vehicles only) |
| CSGNZ961AA | | HP Fuel Pump Campaign Kit (JL/JT/DT) (Contaminated Vehicle) |
| | 1 | EGR Tube (Gasket) |
| | 1 | Rubber Gasket - Upper EGR Tube |

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## PARTS RETURN

There is a $120 core charge on the HPFP. No other parts return required for this campaign.

## SPECIAL TOOLS

| Number | Description | Picture |
|---|---|---|
| NPN | wiTECH MicroPod II | |
| NPN | Laptop Computer | |
| NPN | wiTECH Software | |
| VM.10345 | Tool, High Pressure Pump Installation | |
| 1023 | Puller (Originally Shipped In Kit Number(s) 8678) | |
| APS35IB | Blue Point Spanner Wrench or equivalent | |
| 2025400090 | Remover-Installer, Fuel Rail Bolt | |
| VM.10358A | Remover, Fuel Injector | |
| 9717 | Brush, Injector Bore (Originally Shipped In Kit Number(s) 9910) | |
| 8978A | Decay Tool, Fuel | |
| 9340 | SAE Fuel Pump Lock Ring Wrench (Originally Shipped In Kit Number(s) 9327, 9327CC, 9397, 9575. | |

## DEALER NOTIFICATION

To view this notification on DealerCONNECT, select "Global Recall System" on the Service tab, then click on the description of this notification.

## OWNER NOTIFICATION AND SERVICE SCHEDULING

All involved vehicle owners known to FCA are being notified of the service requirement by first class mail. They are requested to schedule appointments for this service with their dealers. A generic copy of the owner letter is attached.

## VEHICLE LISTS, GLOBAL RECALL SYSTEM, VIP AND DEALER FOLLOW UP

All involved vehicles have been entered into the DealerCONNECT Global Recall System (GRS) and Vehicle Information Plus (VIP) for dealer inquiry as needed.

GRS provides involved dealers with an updated VIN list of their incomplete vehicles. The owner's name, address and phone number are listed if known. Completed vehicles are removed from GRS within several days of repair claim submission.

To use this system, click on the "**Service**" tab and then click on "**Global Recall System**." Your dealer's VIN list for each recall displayed can be sorted by: those vehicles that were unsold at recall launch, those with a phone number, city, zip code, or VIN sequence.

**Dealers must perform this repair on all unsold vehicles before retail delivery.** Dealers should also use the VIN list to follow up with all owners to schedule appointments for this repair.

*Recall VIN lists may contain confidential, restricted owner name and address information that was obtained from the Department of Motor Vehicles of various states. Use of this information is permitted for this recall only and is strictly prohibited from all other use.*

## ADDITIONAL INFORMATION

If you have any questions or need assistance in completing this action, please contact your Service and Parts District Manager.

Customer Services / Field Operations
FCA US LLC.

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## SERVICE PROCEDURE

**NOTE: For all vehicles in this recall with contaminated systems (with HPFP failure), the fuel tubes must be replaced.**

**NOTE: For all vehicles in this recall with non-contaminated systems (without HPFP failure), the fuel tubes will be reused.**

**For vehicles with a contaminated fuel system, use the procedure below.**

## A. DT Vehicles

### Replace

**WARNING: High-pressure lines deliver diesel fuel under extreme pressure from the injection pump to the fuel injectors. This may be as high as 2000 bar (29,008 psi). Use extreme caution when inspecting for high-pressure fuel leaks. Fuel under this amount of pressure can penetrate skin causing personal injury or death. Inspect for high-pressure fuel leaks with a sheet of cardboard. Wear safety goggles and adequate protective clothing when servicing fuel system.**

**WARNING: Observe the following precautions when working on fuel systems: No sparks, open flames or smoking. Avoid inhaling and swallowing fuel. Avoid eye and skin contact with fuel. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing. Failure to observe these precautions may result in fire, explosion, property damage, and serious or fatal injury.**

**WARNING: High-pressure lines deliver diesel fuel under extreme pressure from the injection pump to the fuel injectors. This may be as high as 2000 bar (29,008 psi). Use extreme caution when inspecting for high-pressure fuel leaks. Fuel under this amount of pressure can penetrate skin causing personal injury or death. Inspect for high-pressure fuel leaks with a sheet of cardboard. Wear safety goggles and adequate protective clothing when servicing fuel system.**

**WARNING: Observe the following precautions when working on fuel systems: No sparks, open flames or smoking. Risk of poisoning from inhaling and swallowing fuel. Risk of injury to eyes and skin from contact with fuel. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing.**

**NOTE: When key is cycled to the off position, fuel system pressure automatically bleeds down.**

**NOTE: The fuel injection pump can be replaced without having to perform the entire base engine valve timing procedure. This procedure gives instruction on how to remove and install the new fuel injection pump without performing the base engine timing. Do not rotate the pump shaft after removing from the vehicle. The alignment of the pump shaft must be measured and recorded using a commercially available degree wheel after the pump is removed and before transferring the pump gear over to the new pump. This is done to align the pump to the same position during installation. If the base engine valve timing must be performed as part of the repair, refer to Service Library 09 - Engine/Valve Timing/Standard Procedure.**

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1. Remove and isolate the negative battery cable eyelet from the IBS. This will isolate the 12 volt from the vehicle electrical system (Figure 1).

**NOTE: If removing the negative battery cable clamp from the battery post instead of removing the negative battery cable eyelet, the Intelligent Battery Sensor (IBS) wire harness connector must be disconnecting prior to removing the cable end. Failure to disconnect the IBS wire harness connector can lead to damage of the IBS wire harness connector.**

2. Disconnect the negative battery cable by removing the ground terminal nut (1) (Figure 1).




**Figure 1 – Battery Disconnect**

3. Remove the two bolts (1) securing the engine cover (2) (Figure 2).

4. Lift up and pull forward and remove the engine cover (2) (Figure 2).




**Figure 2 – Engine Cover**

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5. Loosen the clamp (1) and disconnect the clean air hose (Figure 3).
6. Detach the coolant hose retainer (2) from the clean air hose (Figure 3).
7. Remove the bolt (3) securing the clean air hose (Figure 3).

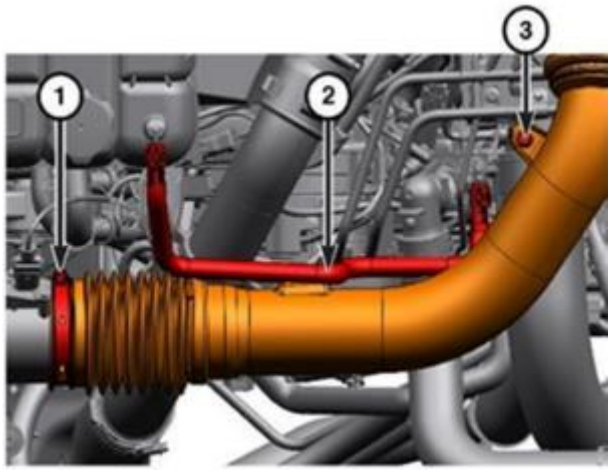



**Figure 3 – Clean Air Hose**

8. Disconnect the Closed Crankcase Heater Ventilation (CCV) heater wire harness connector (1) (Figure 4).
9. Detach the CCV heater wire harness retainer (2) (Figure 4).
10. Disconnect the crankcase breather hose (3) (Figure 4).

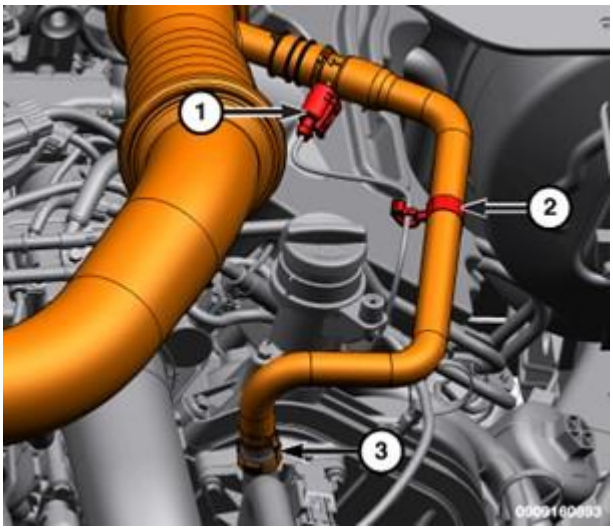



**Figure 4 – Closed Crankcase Ventilation Connector**

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11. Loosen clamp (1) and remove the clean air hose (2) (Figure 5).

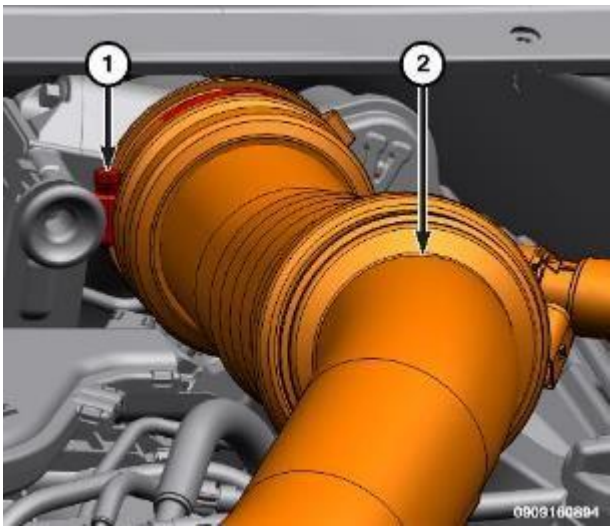



**Figure 5 – Clean Air Hose**

12. Remove the fastener (1) securing the right Charge Air Cooler (CAC) hose (Figure 6).
13. Release the retaining lock and disconnect the right CAC hose (2) from the turbocharger (Figure 6).

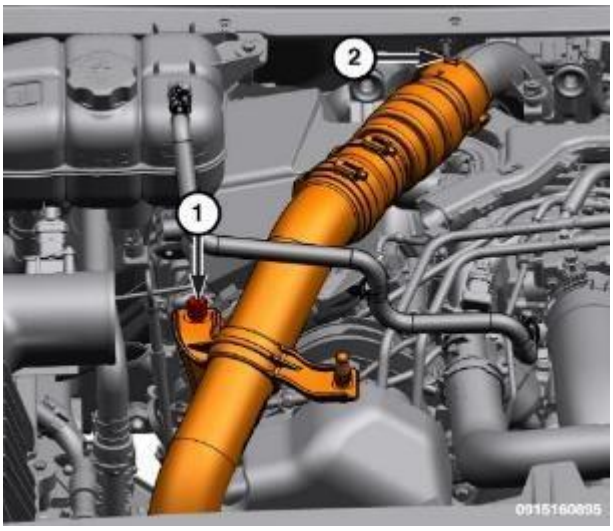



**Figure 6 – CAC Hose**

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14. Remove the retainers (1) that secure the cover (2) for the high-pressure fuel pump (Figure 7).

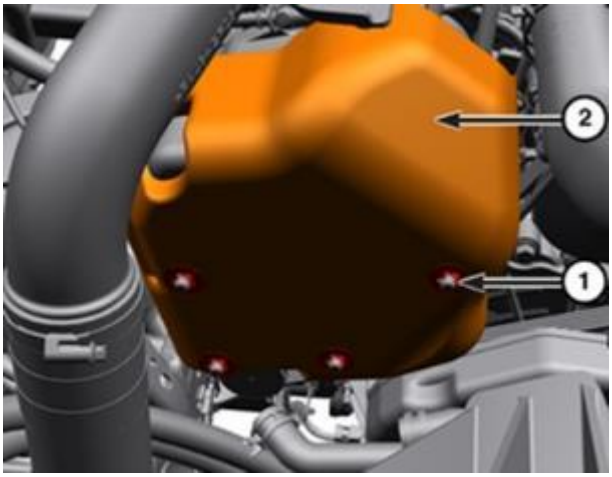



**Figure 7 – Pump Cover**

15. Remove the bolts (1) securing the sound proofing (2) to the fuel injection pump (Figure 8).

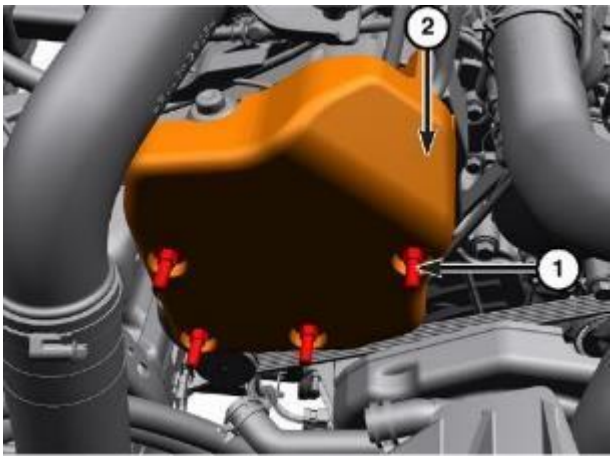



**Figure 8 – Pump Sound Proofing**

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16. Disconnect the fuel injection pump wire harness connector (2) (Figure 9).

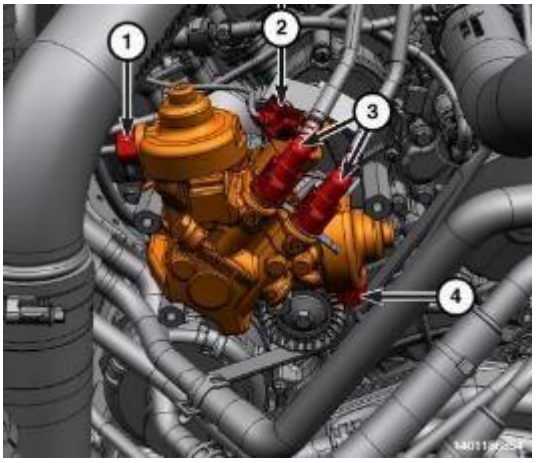



**Figure 9 – Pump Connections**

17. Remove the vent hose (1) from the left fuel rail cover (Figure 10).

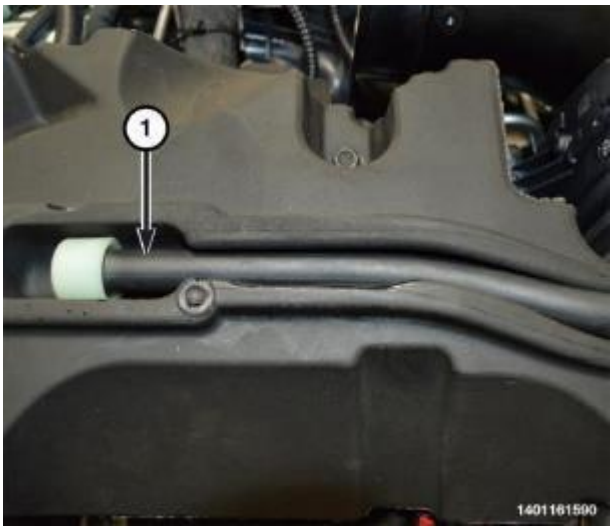



**Figure 10 – Left Bank Fuel Rail Cover**

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18. Remove the bolts (2) and the left fuel rail cover (1) (Figure 11).

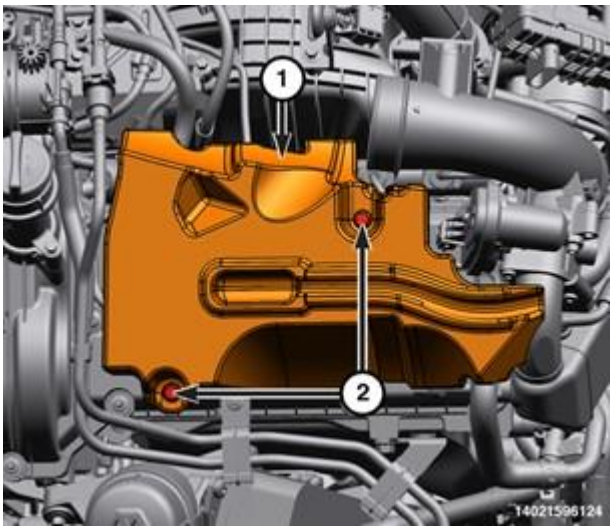



**Figure 11 – Left Bank Fuel Rail Cover Bolts**

19. Remove the fuel line supply safety clip (1) (Figure 12).




**Figure 12 – Safety Clip**

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20. Disconnect the fuel supply (2) and return (1) lines (Figure 13).

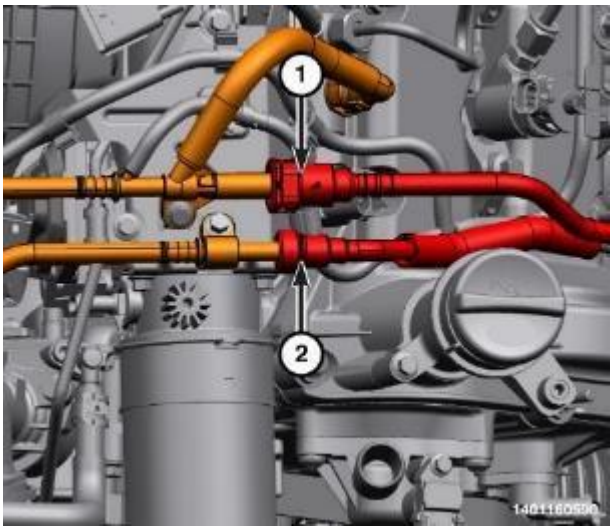



**Figure 13 – Fuel Supply and Return Lines**

21. Disconnect the fuel return lines (1, 2) (Figure 14).

22. Remove the fuel supply line bolt (3) and return line bolt (4) and both lines (Figure 14).

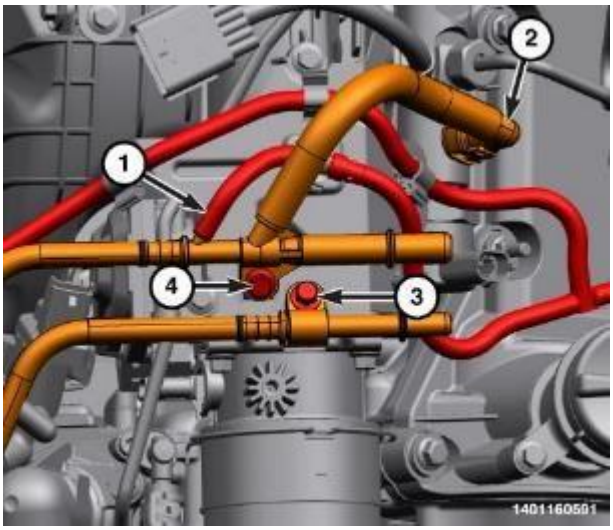



**Figure 14 – Fuel Return Lines**

23. Disconnect the low-pressure fuel supply and return lines (3) (Figure 9).

24. Remove the fuel rail supply tubes (1, 4) (Figure 9).

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25. Loosen the nut (1) and remove the right fuel rail cover (2) (Figure 15).

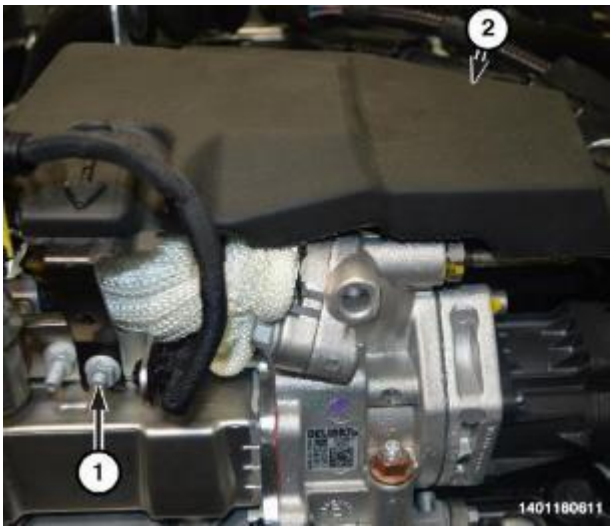



**Figure 15 – Right Fuel Rail Cover**

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26. Remove the left side bolts (1) from the upper High Pressure (HP) Exhaust Gas Recirculation (EGR) tube (2) (Figure 16).
27. Remove the right-side bolts (3) and the upper HP EGR tube (2) (Figure 16).
28. Remove and discard both gaskets.
29. Remove the bolts, nuts and CAC hose support bracket.

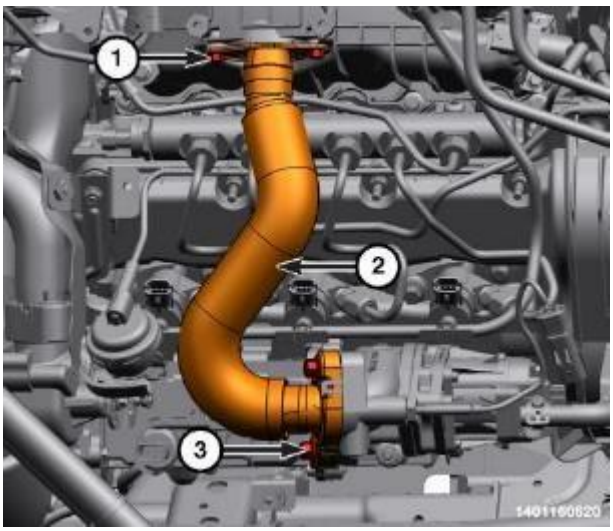



**Figure 16 – Upper High Pressure EGR Tube**

30. Remove the wire harness retainer (1) from the right front of cylinder head cover (Figure 17).




**Figure 17 – Harness Retainer**

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31. Lift up on the locking retaining tab (1) to unlock the lock (Figure 18).

32. Disconnect the fuel return line (2) by wiggling the hose free from the fuel injector (Figure 18).

    **NOTE: Use a backing wrench on the fuel injector when unscrewing the union nut.**

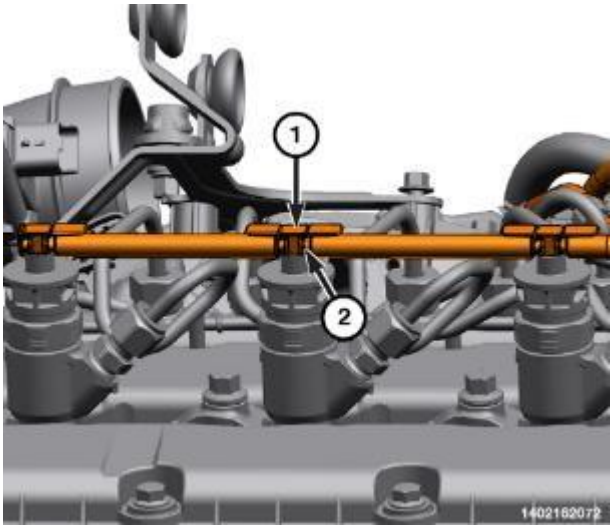



**Figure 18 – Fuel Return Lines and Locking Tabs**

33. Unscrew the union nuts (7 and 9) and remove cylinder No. 1 fuel tube (8) and the discard fuel tube (Figure 19).

34. Install protective caps to the fuel injector and fuel rail for cylinder No. 1 (Figure 19).

35. Unscrew the union nuts (4, 6) and remove cylinder No. 2 fuel tube (5), and discard the fuel tube (Figure 19).

36. Install protective caps to the fuel injector and fuel rail for cylinder No. 2 (Figure 19).

37. Unscrew the union nuts (1, 3) and remove cylinder No. 3 fuel tube (2), and discard the fuel tube (Figure 19).

38. Install protective caps to the fuel injector and fuel rail for cylinder No. 3 (Figure 19).

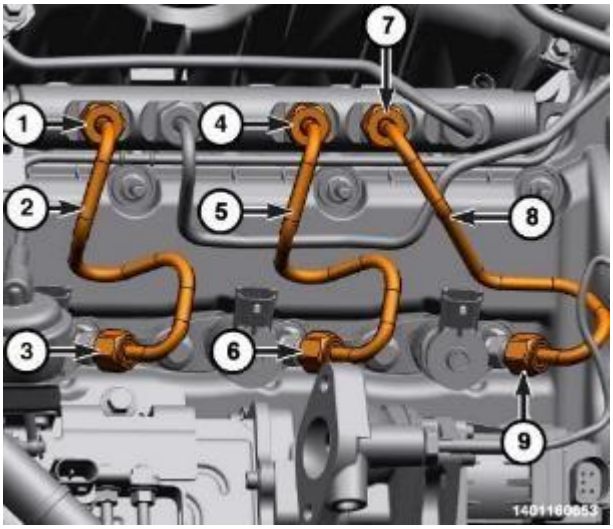



**Figure 19 – Right Bank Fuel Tubes**

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39. Unscrew the union nuts (1, 3) and remove and discard the fuel tube (2) (Figure 20).

40. Remove the PCV pipe from the valve cover.

41. Remove the right high pressure fuel line that connects the pump to the rail.

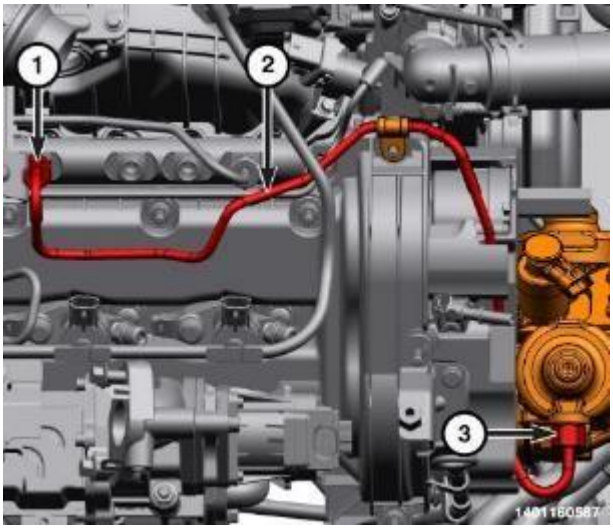



**Figure 20 – Right Bank Fuel Supply**

42. Detach the retainers (1) securing the fuel return hose to the fuel line support bracket (Figure 21).

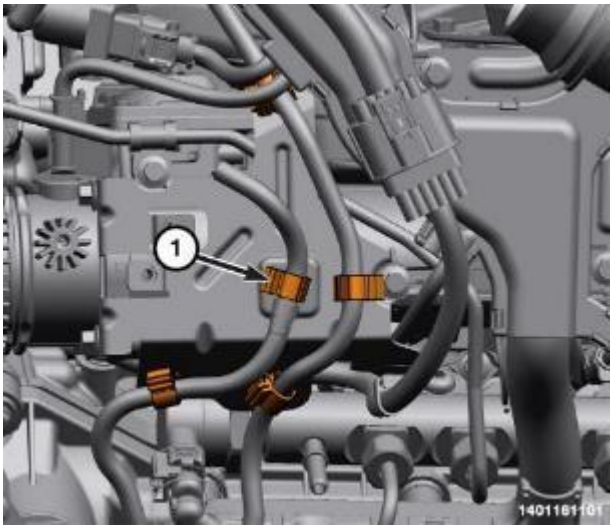



**Figure 21 – Fuel Return Hose Retainers**

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43. Detach the wire harness retainer (3) (Figure 22).

44. Remove the bolts (1) fuel line support bracket (2) (Figure 22).

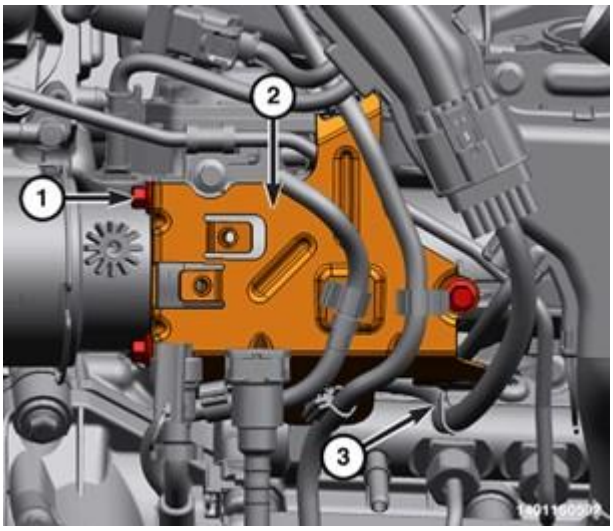



**Figure 22 – Harness Retainer**

45. Remove the bolt (1) securing the fuel tube (Figure 23).

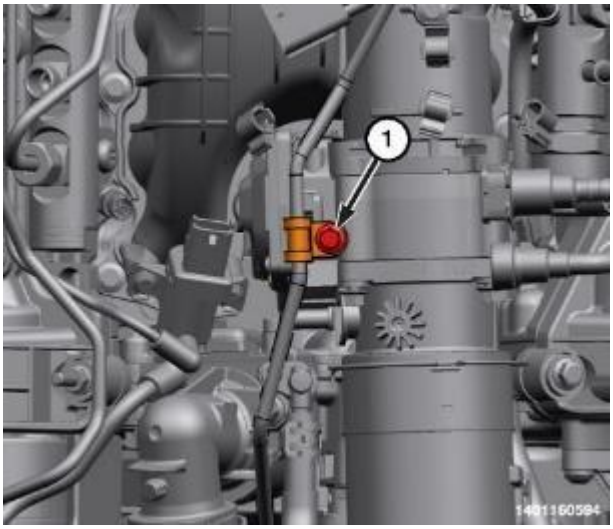



**Figure 23 – Fuel Tube Bolt**

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46. Unscrew the union nut (2) and remove the fuel tube (1) and then discard the fuel tube (Figure 24).

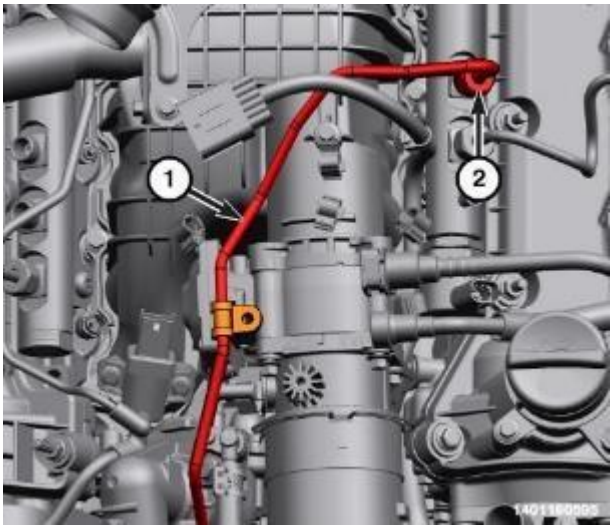



**Figure 24 – Fuel Tube**

47. Lift up on the locking retaining tab (1) to unlock the lock (Figure 25).

48. Disconnect the fuel return line (2) by wiggling the hose free from the fuel injector (Figure 25).

    **NOTE: Use a backing wrench on the fuel injector when unscrewing the union nut.**

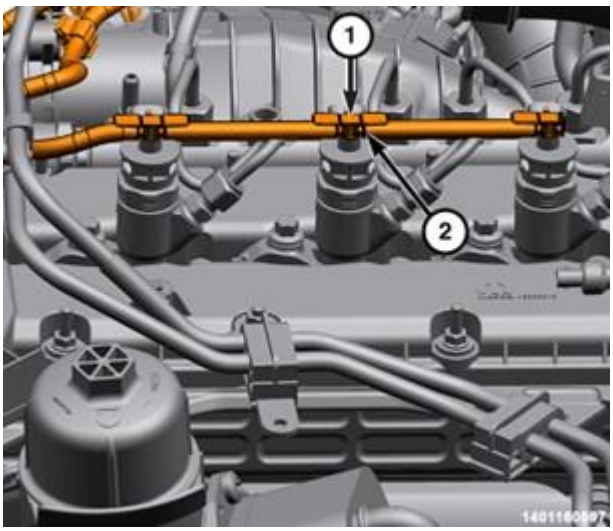



**Figure 25 – Fuel Return Lines and Locking Tabs**

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49. Unscrew the union nuts (1 and 3) and remove cylinder No. 4 fuel tubes (2) and discard the fuel tubes (Figure 26).

50. Install protective caps onto the fuel injectors and fuel rail.

51. Unscrew the union nuts (4, 6) and remove cylinder No. 5 fuel tube (5), and discard the fuel tube (Figure 26).

52. Install protective caps onto the fuel injectors and fuel rail.

53. Unscrew the union nuts (7, 9) and remove cylinder No. 5 fuel tube (8), and discard the fuel tube (Figure 26).

54. Install protective caps onto the fuel injectors and fuel rail.

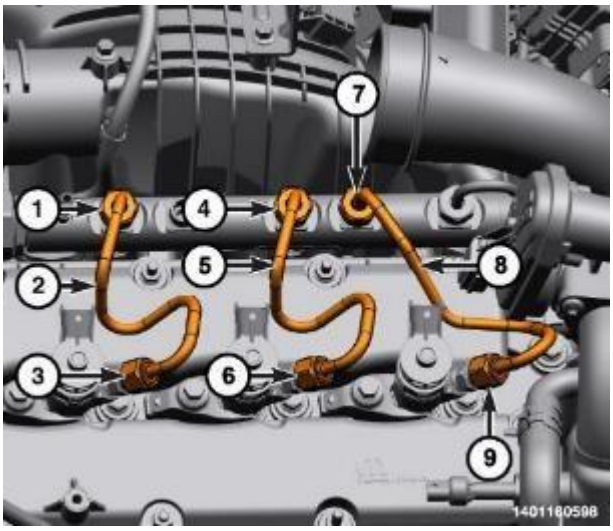



**Figure 26 – Right Bank Fuel Pipes**

**CROSS-OVER FUEL TUBE**

55. Remove the bolt (2) and reposition the differential pressure sensor (1) away from the upper turbocharger inlet elbow (Figure 27).

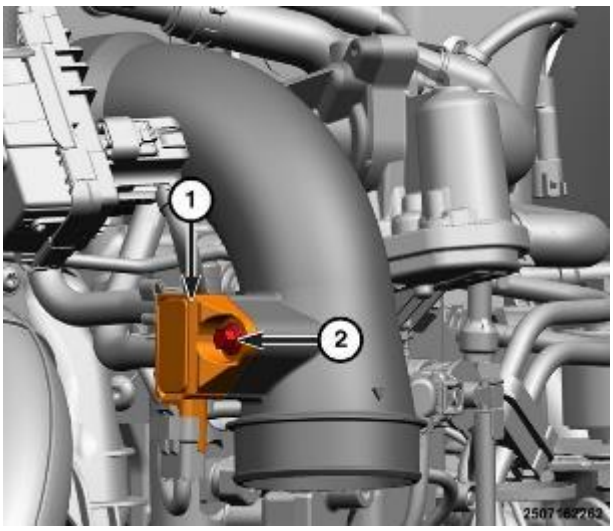



**Figure 27 – Differential Pressure Sensor**

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56. Remove and bolts (2) securing the low pressure EGR valve to the upper turbocharger inlet elbow (1) (Figure 28).

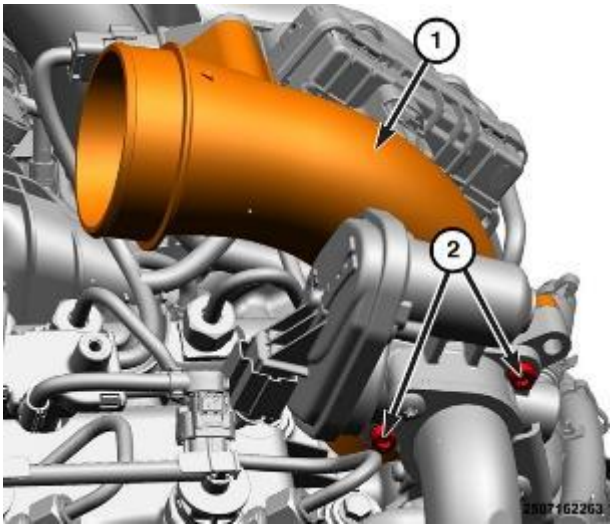



**Figure 28 – Low Pressure EGR Valve**

57. Remove the differential pressure sensor hose (2) from the upper turbocharger inlet elbow and remove the upper turbocharger inlet elbow (1) from the lower turbocharger inlet elbow (Figure 29).

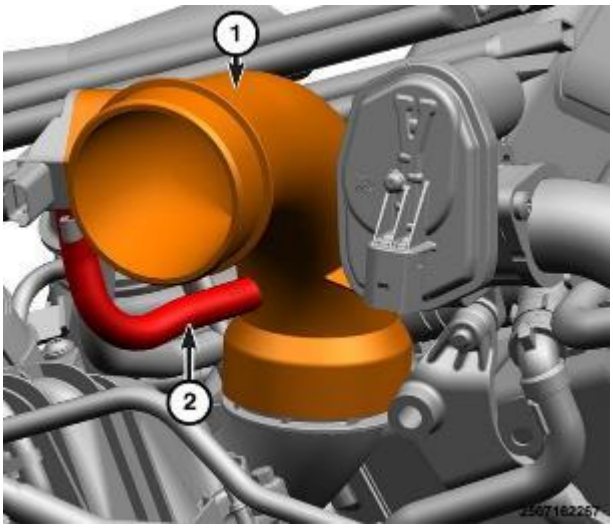



**Figure 29 – Differential Pressure Sensor Hose**

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58. Remove and DISCARD the low pressure EGR valve gasket (1) (Figure 30).

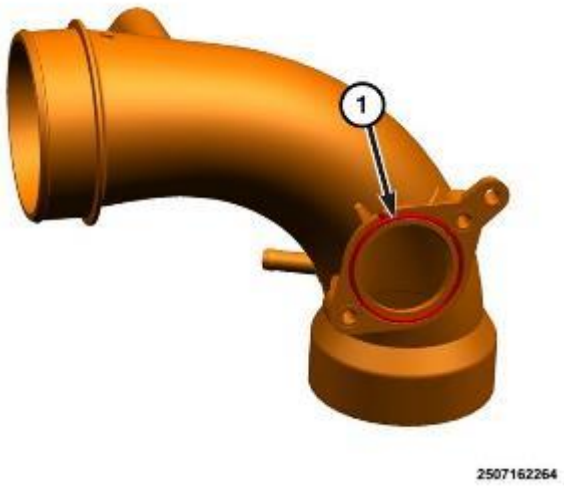



**Figure 30 – Low Pressure EGR Valve Gasket**

59. Remove and DISCARD the lower turbocharger inlet elbow gasket (1) (Figure 31).

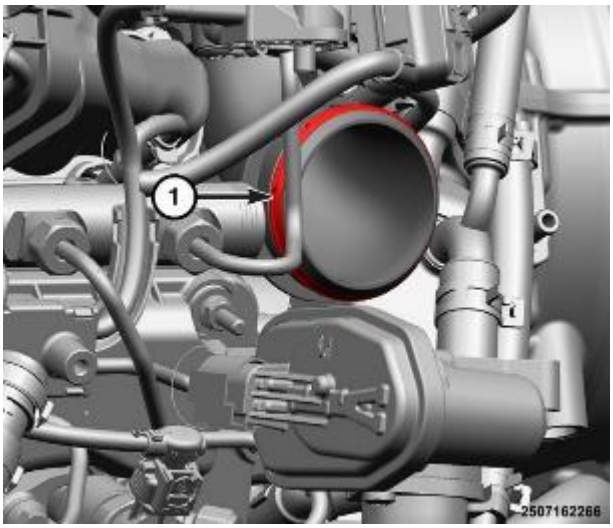



**Figure 31 – Lower Turbocharger Inlet Elbow Gasket**

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60. Disconnect the boost pressure sensor wire harness connector (1) (Figure 32).
61. Disconnect cylinder No. 3 glow plug wire harness connector.
62. Disconnect the fuel rail pressure sensor wire connector.
63. Disconnect the right-side rear swirl valve wire harness connector.

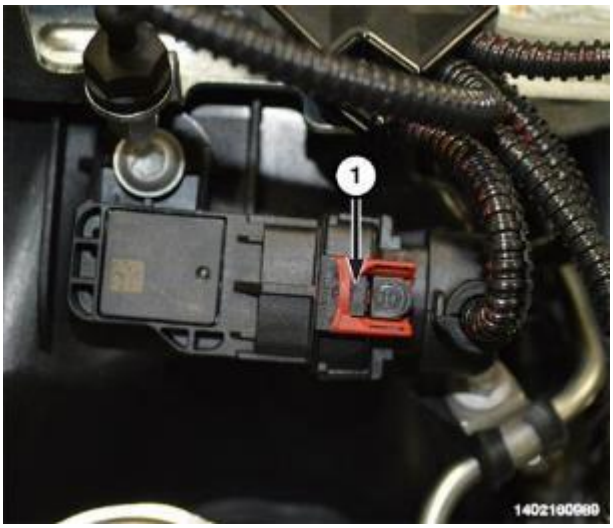



**Figure 32 – Sensor Harness Connector**

64. Remove the bolt (1) securing the fuel crossover tube (Figure 33).

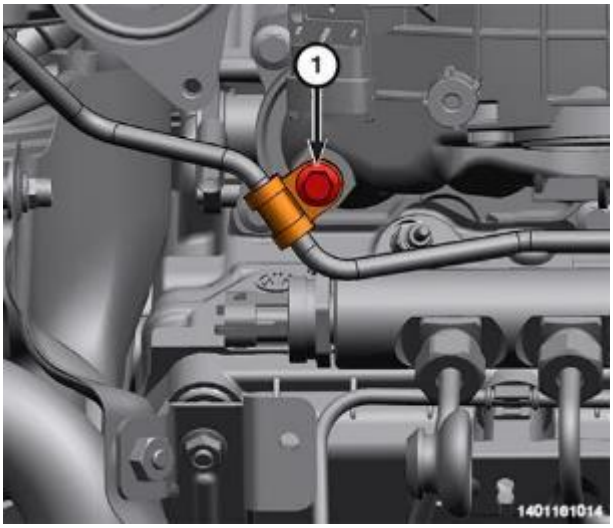



**Figure 33 – Crossover Tube Bolt**

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65. Unscrew the union nuts (1, 3) and remove the fuel crossover tube (2) and discard (Figure 34).

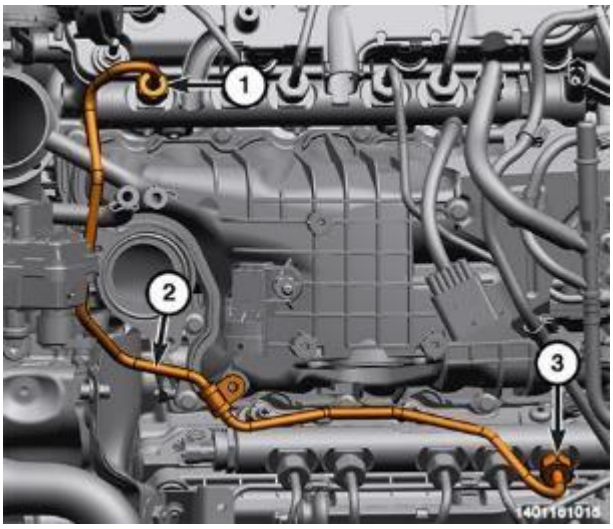



**Figure 34 – Crossover Tube**

**FUEL RAILS - Remove**

66. Using the Remover-Installer, Fuel Rail Bolt 2025400090 remove the bolts (1) and the right fuel rail (2) (Figure 35).

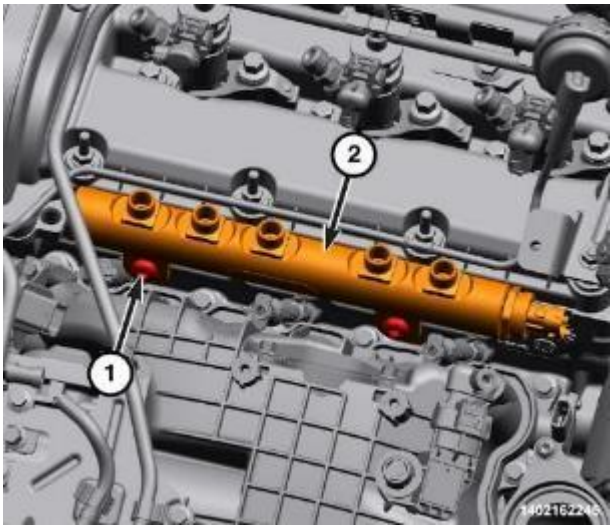



**Figure 35 – Right Fuel Rail Bolts**

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67. Using the Remover-Installer, Fuel Rail Bolt 2025400090, remove the bolts (1) and the left fuel rail (2) and discard (Figure 36).

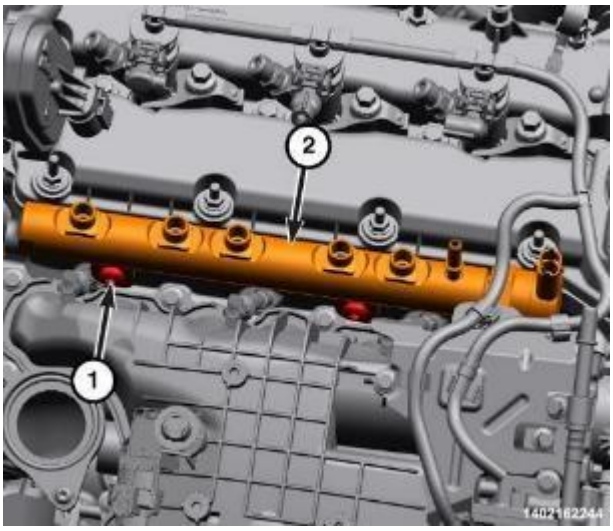



**Figure 36 – Left Fuel Rail Bolts**

68. Disconnect the fuel injection pump electrical connector (2) (Figure 37).

69. Disconnect the low-pressure fuel supply and return lines (3) (Figure 37).

**NOTE: Use a backing wrench on the fuel injector when unscrewing the union nut.**

70. Unscrew the union nuts for the fuel rail supply tubes (1 and 4) (Figure 37).

71. Disconnect the fuel quantity solenoid wire harness connector (2) (Figure 37).

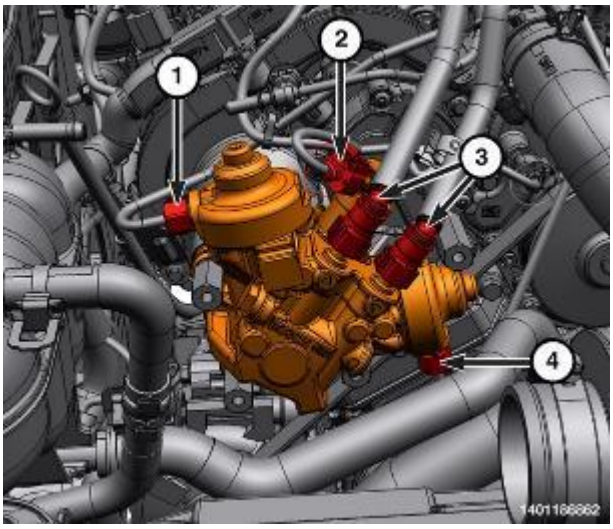



**Figure 37 – HPFP Electrical Connector**

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**NOTE: The fuel injection pump can be replaced without having to perform the entire base engine valve timing procedure. Do not rotate the pump shaft after removing from the vehicle. The alignment of the pump shaft must be measured and recorded using a commercially available degree wheel after the pump is removed and before transferring the pump gear over to the new pump. This is done to align the pump to the same position during installation. If the base engine valve timing must be performed as part of the repair (Refer to 09 - Engine/Valve Timing/Standard Procedure).**

72. Remove the upper bolts (1) from the high-pressure pump (2) (Figure 38).

73. Using Tool, High Pressure Pump Installation VM.10345 Install the studs in the upper locations.

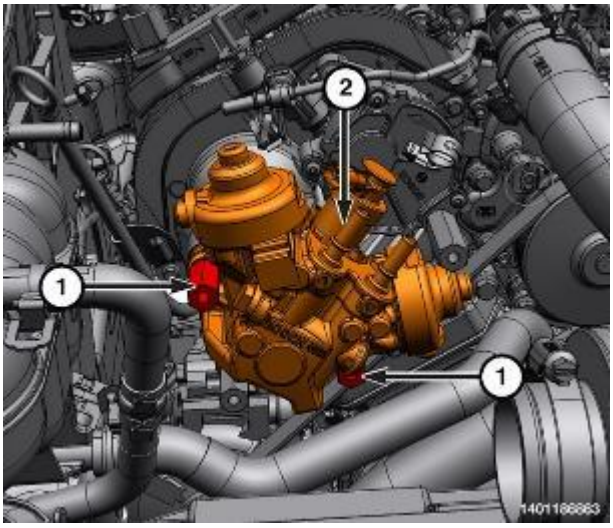



**Figure 38 – Fuel Quantity Solenoid Connector and HPFP Upper Bolts**

74. Remove the lower bolt (1) from the HPFP (2) and remove it from the vehicle (Figure 39).

**NOTE: The fuel injection pump needs to be timed using a commercially available degree wheel.**

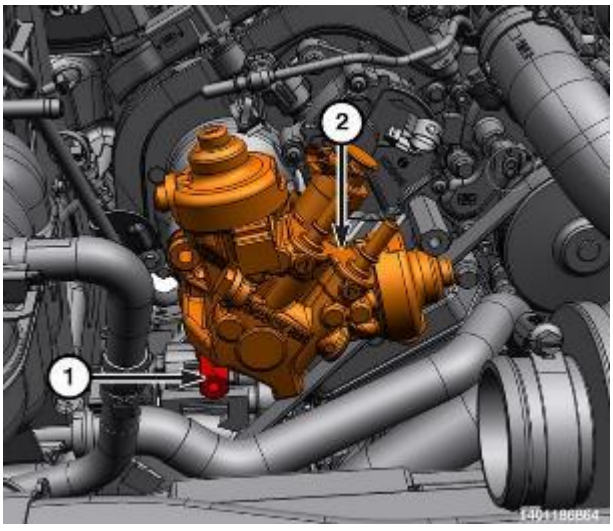



**Figure 39 – HPFP Lower Bolt**

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75. Install the degree wheel onto the pump and record the position of the hole in the gear on the degree wheel (Figure 40).

76. The use of Puller 1023 or a commercially available gear puller is required to remove the fuel injection pump gear (Figure 41).




**Figure 40 – Degree Wheel**

**NOTE: The use of Puller 1023 or a commercially available gear puller is required to remove the fuel injection pump gear (2) (Figure 41).**

**CAUTION: Do Not Force the high-pressure pump into the right timing cover or attempt to seat it by drawing it in with the bolts. The pump gear must be properly aligned with the drive gear on the camshaft before the high-pressure pump will seat on the cylinder head mounting surface. Failure to properly align drive gears will damage the high-pressure pump or camshaft drive gear.**

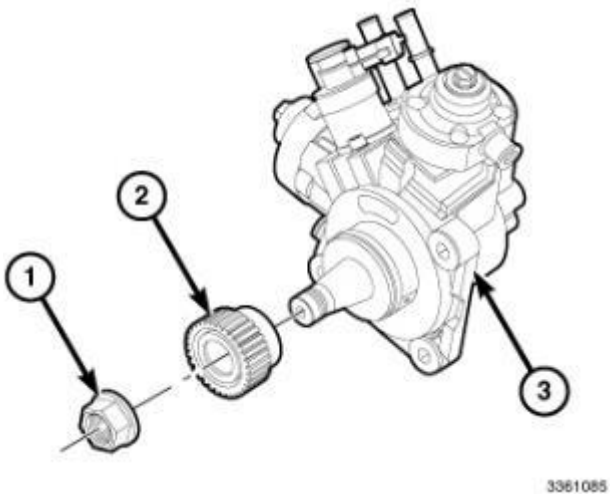



**Figure 41 – Gear Removal**

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77. Install a **NEW** O-ring seal (1) to the fuel injection pump (Figure 42).




**Figure 42 – O-ring Seal**

78. Install the gear (2) and nut (1) onto the fuel injection pump (3) and tighten the nut (1) finger tight (Figure 43).

**Note: NEVER use an impact to tighten the gear nut.**

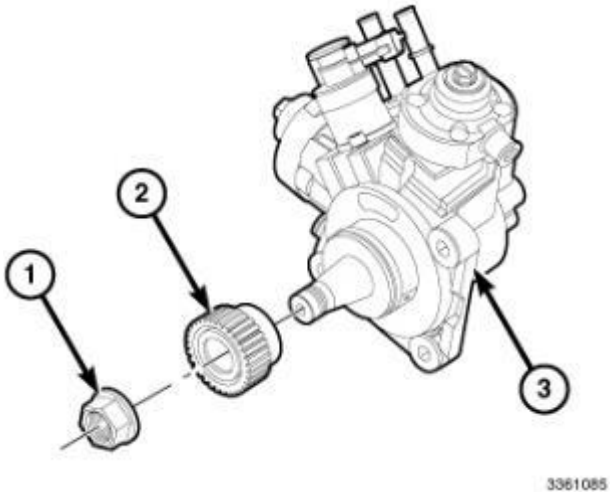



**Figure 43 – O-ring Seal**

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79. Using a commercially available spanner wrench (2) such as Blue Point APS35IB or equivalent, tighten the nut (1) to 50 N·m (37 ft. lbs.) (Figure 44).




**Figure 44 – Nut with Spanner Wrench**

80. Install the degree wheel and rotate the pump shaft so that the hole aligns with the reference mark on the degree wheel referenced during the removal (Figure 45).

81. Install the fuel injection pump onto the Tool, High Pressure Pump Installation VM.10345 in the upper timing cover.

82. Install the lower fuel injection pump bolt (2) and hand tighten the bolt (1) (Figure 39).

83. Remove the Tool, High Pressure Pump Installation VM.10345 from the upper bolts location and install the bolts.

84. Tighten the bolts (1) that secure the fuel injection pump to 25 N·m (18 ft. lbs.) (Figures 38 and 39).




**Figure 45 – Degree Wheel**

85. Connect the fuel injection pump electrical connector (2) (Figure 37).

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**WARNING: Observe the following precautions when working on fuel systems: No sparks, open flames or smoking. Avoid inhaling and swallowing fuel. Avoid eye and skin contact with fuel. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing. Failure to observe these precautions may result in fire, explosion, property damage, and serious or fatal injury.**

**WARNING: High-pressure lines deliver diesel fuel under extreme pressure from the injection pump to the fuel injectors. This may be as high as 2000 bar (29,008 psi). Use extreme caution when inspecting for high-pressure fuel leaks. Fuel under this amount of pressure can penetrate skin causing personal injury or death. Inspect for high-pressure fuel leaks with a sheet of cardboard. Wear safety goggles and adequate protective clothing when servicing fuel system.**

**NOTE: High pressure fuel tubes are a one time only use and must be replaced anytime they have been removed.**

**FUEL INJECTORS – Remove and Replace**

86. Clean the area around the fuel injector to be removed so that no debris falls into the injector bore.

87. Remove the bolt (1) and the fuel injector clamp (2) (Figure 46).

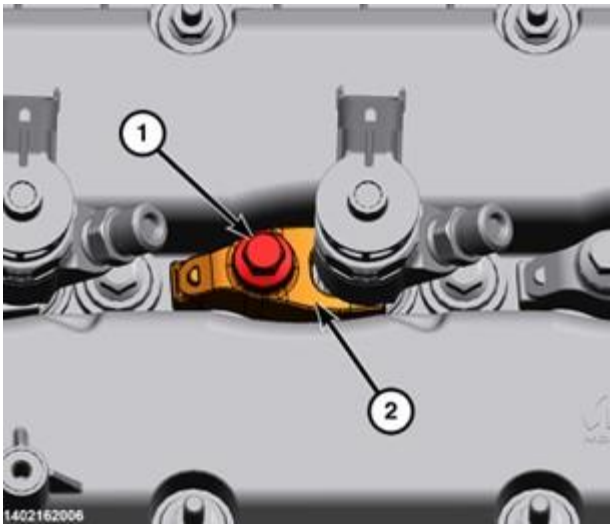



**Figure 46 – Fuel Injector Bolt and Clamp**

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88. Using your hand, pull the fuel injector (1) straight up from the cylinder head for removal. Discard the lower sealing washer and place a protective cap over the nozzle and injector bore (Figure 47).

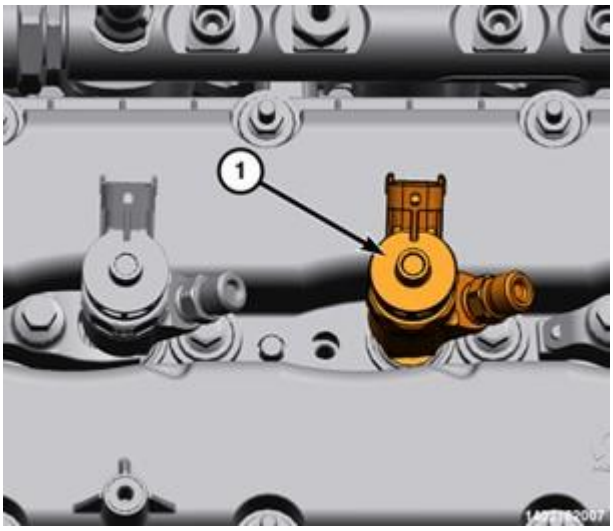



**Figure 47 – Fuel Injector Bolt**

89. If injector can't be removed by hand, install the Remover, Fuel Injector VM.10358A (1) to remove the fuel injector. Discard the injector. Place a protective cap over the injector bore (Figure 48).

**NOTE: Check and MAKE SURE that the copper sealing washer did not remain in the cylinder head.**




**Figure 48 – Fuel Injector Remover**

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90. To remove the rear injector on the right side of the engine, remove the EGR Cooler Vacuum Bypass. Remove the E-clip from shaft on the cooler, and two T25 Torx screws. Set the bypass aside with heat shield and bracket (Figure 49).

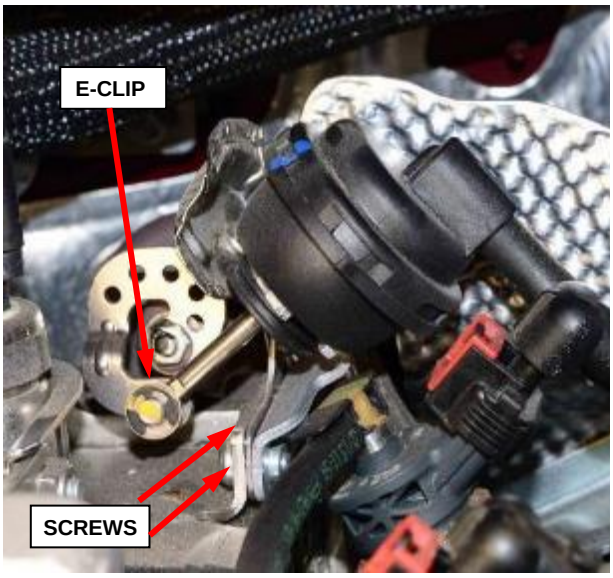



**Figure 49 – EGR Cooler Bypass**

**NOTE: When a NEW fuel injector is being installed, or if an existing injector is installed in any location other than its original location, the injector quantity adjustment procedure must be performed (Refer to 14 - Fuel System/Fuel Injection - Standard Procedure).**

91. Remove the protective cap from the appropriate injector bore.

**NOTE: Make sure the old copper sealing washer is not stuck in bore.**

92. Clean the fuel injector bore (Refer to 09 - Engine/Fuel Injection/INJECTORS, Fuel/Cleaning).

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93. Install a **NEW** fuel injector seal (1) in the cylinder head cover (Figure 50).

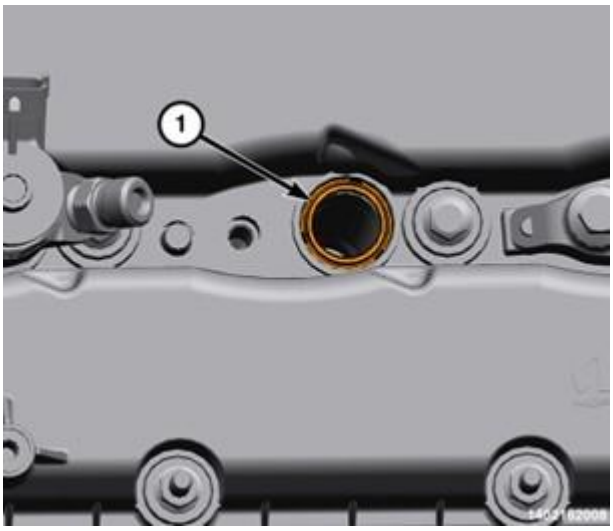



**Figure 50 – Upper Sealing Washer**

94. Install a **NEW** sealing washer (2) onto the fuel injector (1) (Figure 51).

**NOTE: Do Not apply any lubricant to the fuel injector nozzle. Care must be taken not to restrict the discharge orifices in the nozzle.**

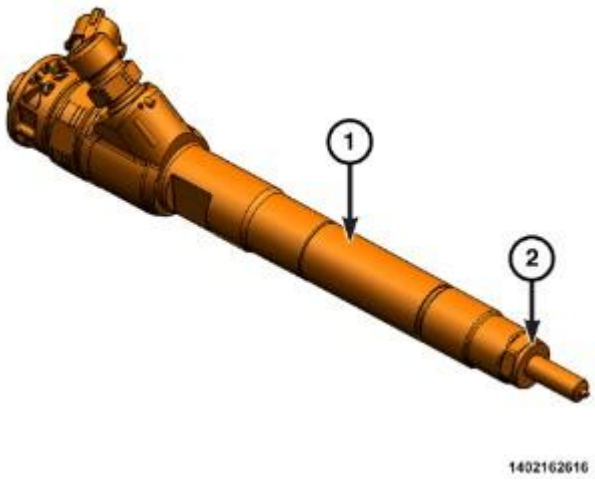



**Figure 51 – Lower Sealing Washer**

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95. Lubricate the injector body with Nickel Anti-Seize Lubricant (Figure 52).



**Figure 52 – Lubricate the Fuel Injector**

96. Install the fuel injector (1) in the cylinder head (Figure 53).

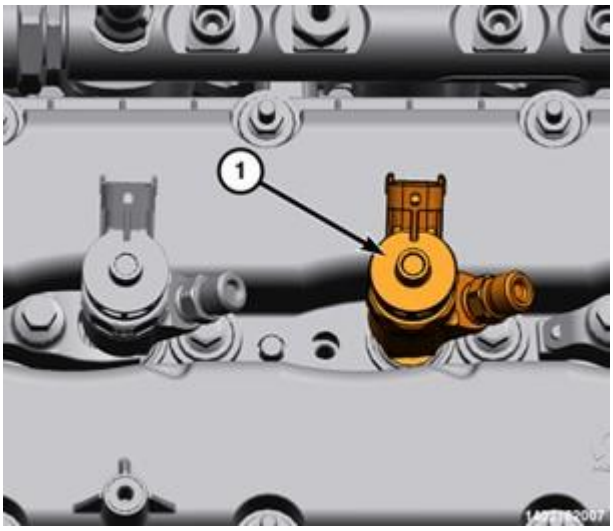



**Figure 53 – Fuel Injector Bolt**

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97. Install the fuel injector clamp (2) and tighten the bolt (1) and tighten the bolt (1) to 33 N·m (24 ft. lbs.) (Figure 54).

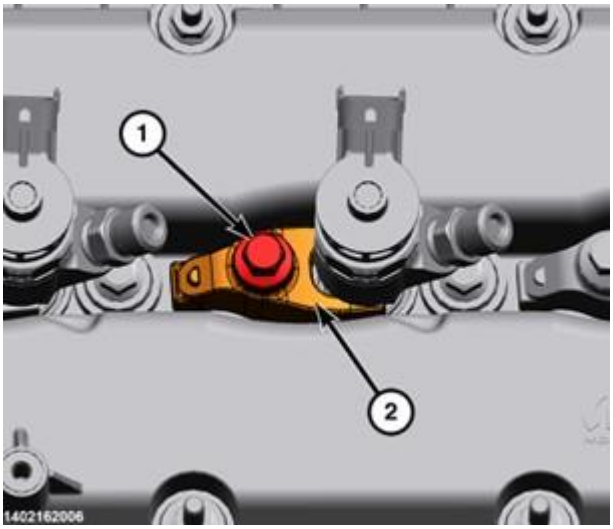



**Figure 54 – Fuel Injector Bolt and Clamp**

**LEFT BANK - INSTALL**

**NOTE: Transfer pipe clamps and dampers from the old lines to the new as necessary.**

98. Install the fuel rails. Using the Remover-Installer, Fuel Rail Bolt 2025400090 tighten the bolts to 25 N·m (18 ft. lbs.).

99. Install the **NEW** right high-pressure fuel tube (2) and tighten the union nuts (1, 3) to 11 N·m + 75° (8 ft. lbs. + 75°) (Figure 55).

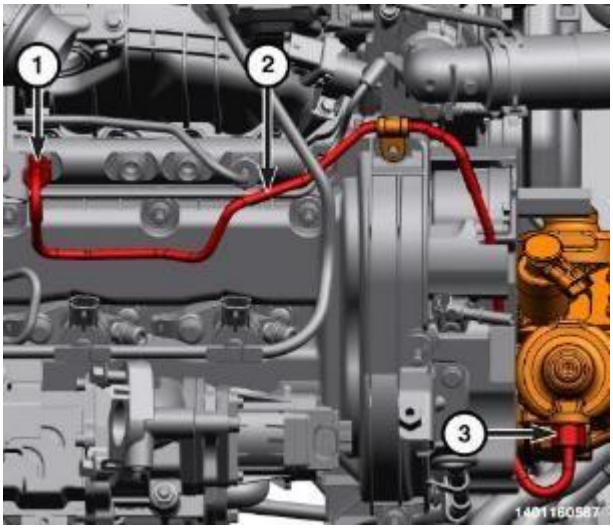



**Figure 55 – Right High-Pressure Fuel Tube**

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100. Install the nut (1) securing the high-pressure fuel tube and tighten to 11 N·m (8 ft. lbs.) (Figure 56).




**Figure 56 – High Pressure Fuel Tube Bolt**

**NOTE: Use a backing wrench on the fuel injector when tightening the union nut.**

**NOTE: Do not use any type of lubrication when installing the fuel injector return line.**

101. Install a **NEW** fuel crossover tube (2) and tighten the union nuts (1, 3) to 11 N·m + 75° (8 ft. lbs. + 75°) (Figure 57).

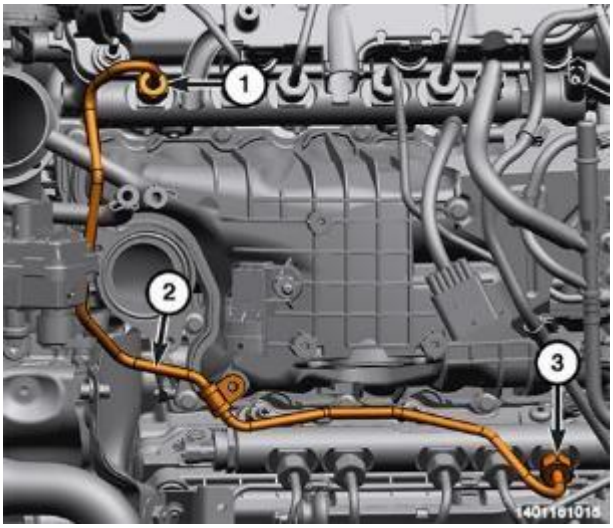



**Figure 57 – Crossover Tube**

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102. Install the bolt (1) securing the fuel crossover tube and tighten to 11 N·m (8 ft. lbs.) (Figure 58).

103. Install the fuel supply tubes and tighten the fuel tube union nuts to:

    • At fuel injector, tighten to 11 N·m + 75° (8 ft. lbs. + 75°).
    • At fuel rail, tighten to 11 N·m + 75° (8 ft. lbs. + 75°).

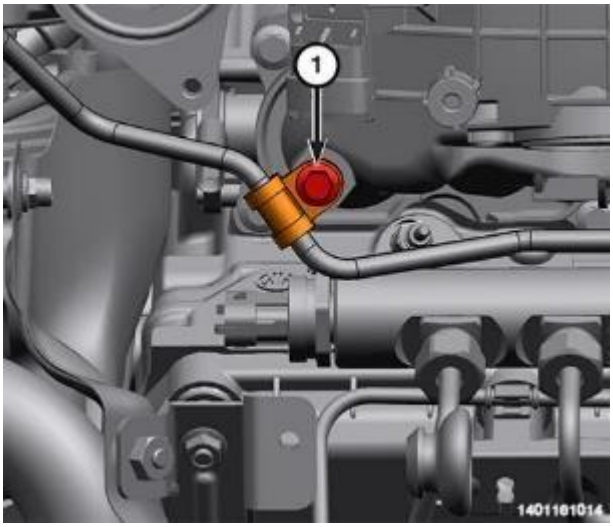



**Figure 58 – Crossover Tube Bolt**

104. Install the wire harness bracket (1) and securely tighten the bolts (2) (Figure 59).

105. Connect the right-side rear swirl valve wire harness connector.

106. Connect the fuel rail pressure sensor wire connector.

107. Connect cylinder No. 3 glow plug wire harness connector.

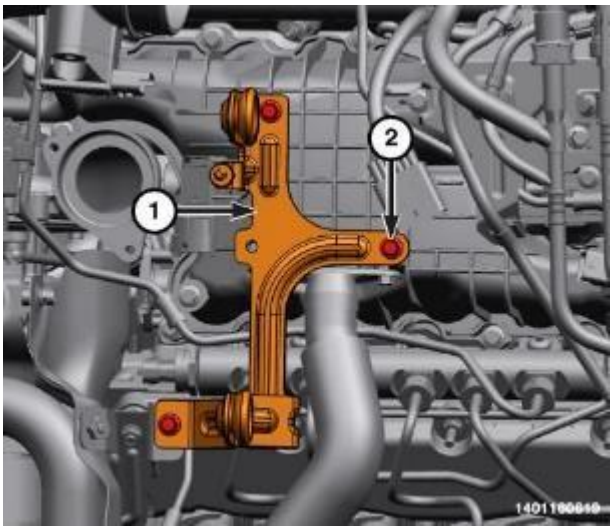



**Figure 59 – Harness Bracket Bolts**

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108. Connect the boost pressure sensor wire harness connector (1) (Figure 60).

109. Install the turbocharger outlet elbow and securely tighten the screws.

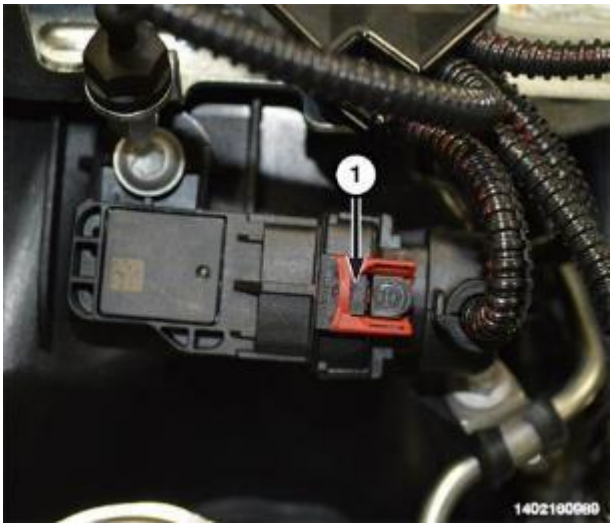



**Figure 60 – Sensor Connector**

110. Using a **NEW** gasket, install the turbocharger outlet elbow (2) and securely tighten the screws (1) (Figure 61).

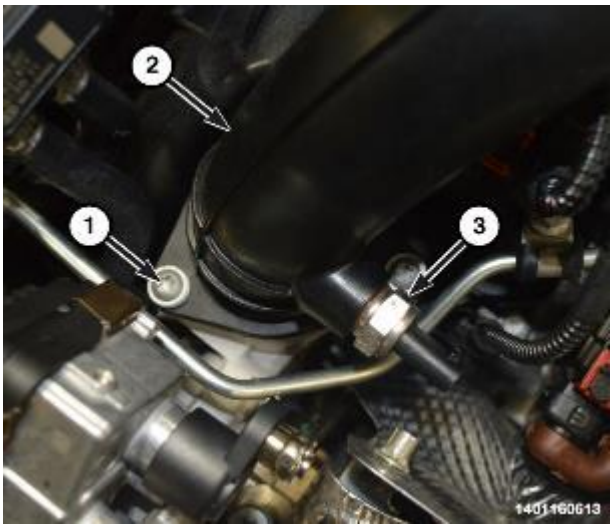



**Figure 61 – Turbo Outlet Elbow**

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111. Connect the outlet air temperature sensor wire harness connector (1) (Figure 62).




**Figure 62 – Sensor Wire Harness Connector**

112. Install the fuel injector return line (2) and be sure it is fully seated (Figure 63).

113. Push down on the lock tab (1) to lock in place (Figure 63).

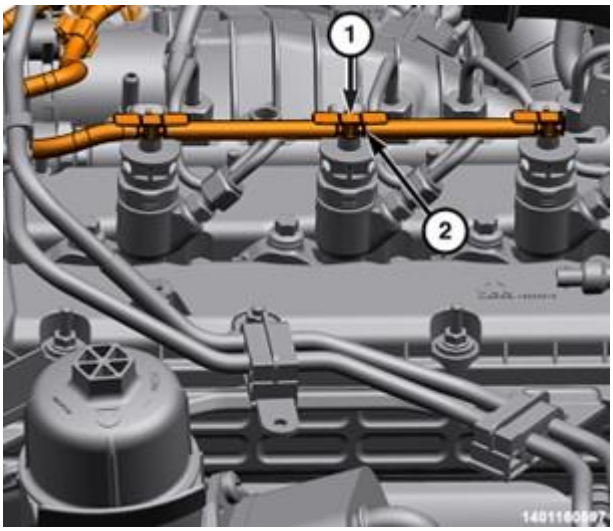



**Figure 63 – Fuel Return Lines and Locking Tabs**

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114. Install the left fuel rail cover (1) and securely tighten the bolts (2) (Figure 64).

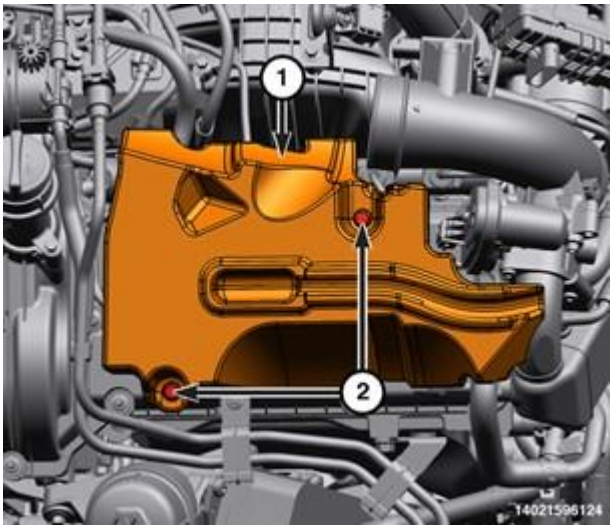



**Figure 64 – Left Bank Fuel Rail Cover Bolts**

115. Install the vent hose to the left fuel rail cover (1) (Figure 65).

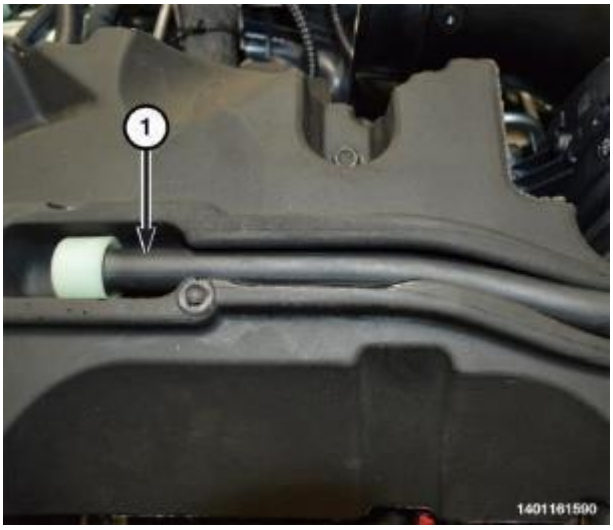



**Figure 65 – Left Bank Fuel Rail Cover**

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116. Install the **NEW** left high pressure fuel tube (1) and tighten the rail union nut (2) finger tight (Figure 66).

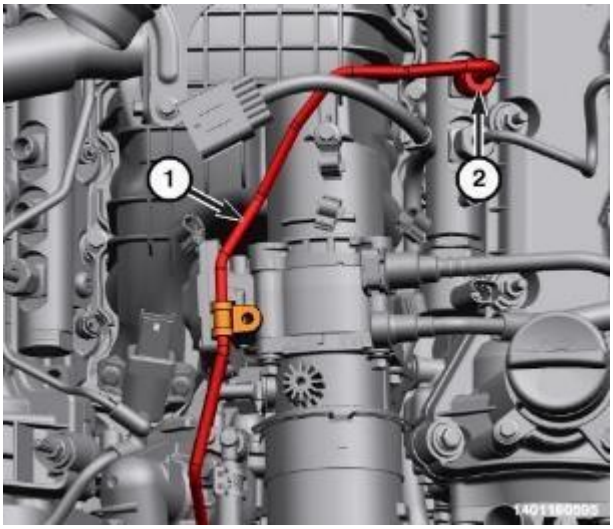



**Figure 66 – Fuel Tube**

117. Tighten the pump union nut (2) finger tight (Figure 67).

118. Tighten both the union nuts to 11 N·m + 75° (8 ft. lbs. + 75°).

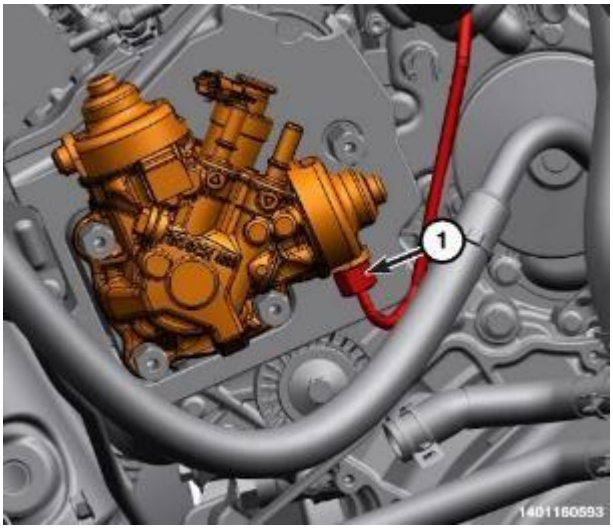



**Figure 67 – Fuel Tube**

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119. Install the bolt (1) securing the high-pressure fuel tube and tighten to 11 N·m (8 ft. lbs.) (Figure 68).

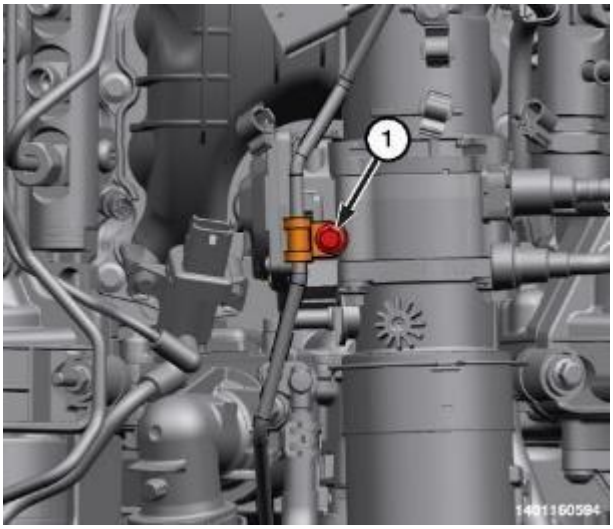



**Figure 68 – Fuel Tube Bolt**

120. Install the fuel line support bracket (2) and tighten the bolts (1) to 11 N·m (8 ft. lbs.) (Figure 69).

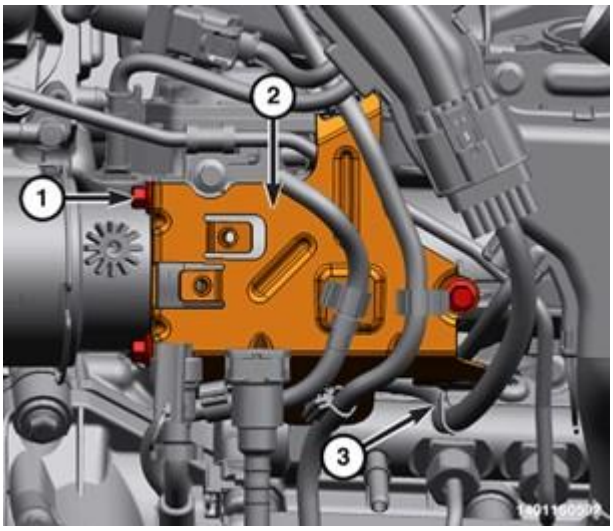



**Figure 69 – Harness Retainer**

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121. Attach the retainers (1) securing the fuel return hose to the fuel line support bracket (Figure 70).

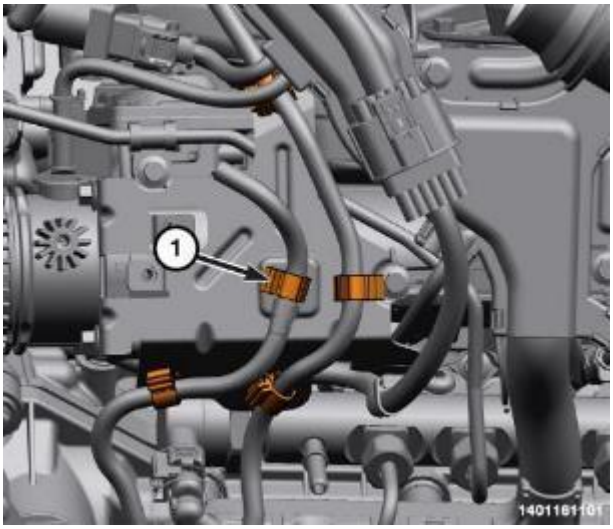



**Figure 70 – Hose Retainers**

122. Install the fuel return lines (1, 2) (Figure 71).

123. Install the fuel supply line and return line and tighten the bolt (3, 4) to 11 N·m (8 ft. lbs.).

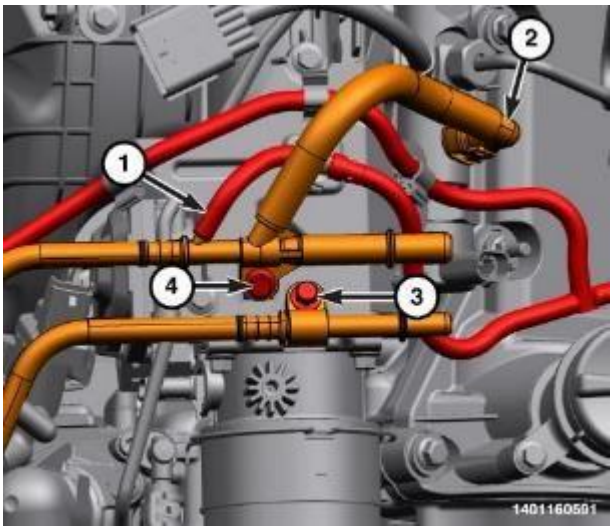



**Figure 71 – Fuel Return Lines**

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124. Connect the fuel supply (2) and return (1) lines (Figure 72).

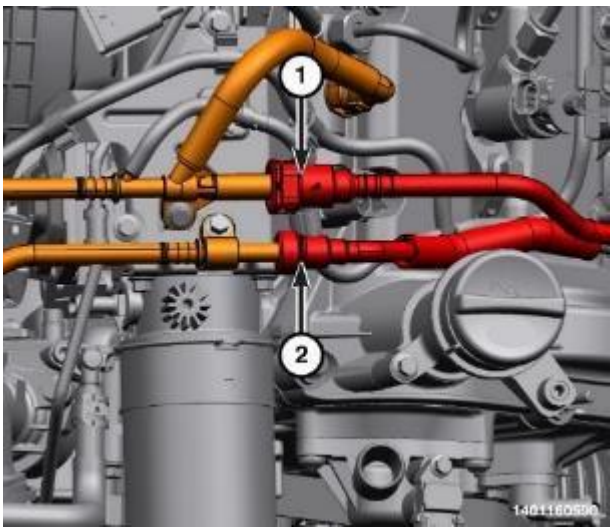



**Figure 72 – Fuel Supply and Return Lines**

125. Install the fuel line supply safety clip (1) (Figure 73).

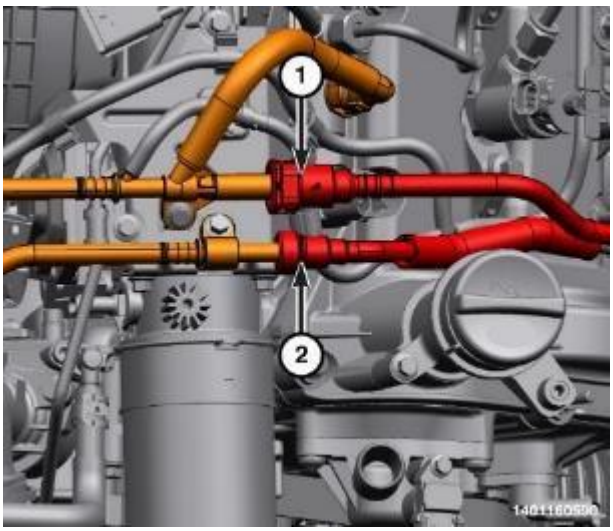



**Figure 73 – Safety Clip**

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126. Connect the low-pressure return (1) line to the fuel injection pump. Leave the supply (2) loose at this time (Figure 74).

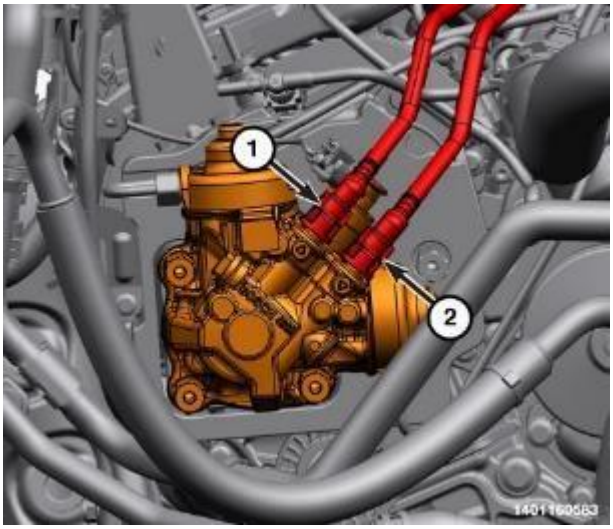



**Figure 74 – Low Pressure Supply Lines**

127. Install the clean air hose (2) to turbocharger and securely the tighten clamp (1) (Figure 75).

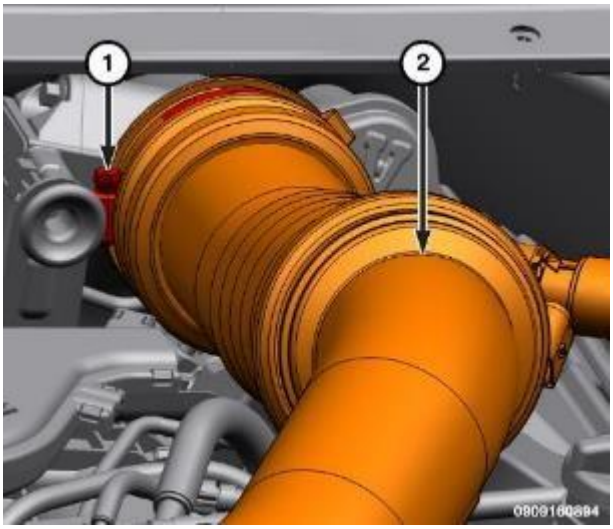



**Figure 75 – Clean Air Hose**

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128. Connect the crankcase breather hose.

129. Attach the Closed Crankcase Heater Ventilation (CCV) heater wire harness retainer (2) (Figure 76).

130. Connect the CCV hose heater wire harness connector (1) (Figure 76).

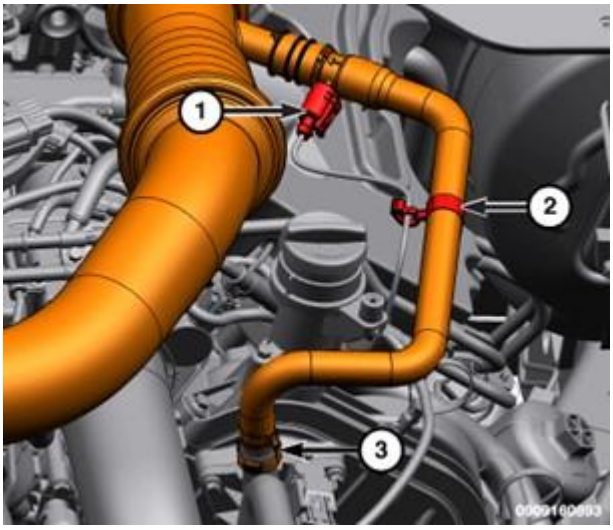



**Figure 76 – CCV Harness Retainer and Connector**

**FUEL TANK – DRAIN, CLEAN, REPLACE PUMP**

Conventional Procedure

**CAUTION: Dispose of petroleum based products in a manner consistent with all applicable Local, State, Federal, and Provincial regulations.**

**NOTE: Due to a one-way check valve installed into the fuel fill fitting at the tank, the tank cannot be drained at the fuel fill cap.**

131. Disconnect the fuel supply line at the quick-connect fitting near the cowl.

132. Install the appropriate Fuel Line Adapters / Fitting from the Decay Tool, Fuel 8978A. Route the opposite end of this hose to a diesel fuel draining station.

**NOTE: Activation of the fuel pump module may time out and need to be restarted several times to completely drain the fuel tank.**

133. Using a diagnostic scan tool, activate the fuel pump module until the fuel tank has been evacuated.

Alternative Procedure

**NOTE: If the electric fuel pump is not operating, the fuel tank must be removed and drained through the fuel pump module opening of the fuel tank.**

134. Raise and support the vehicle.

**WARNING: The fuel system may be under a constant pressure (even with the engine off). Before servicing the fuel pump module, the fuel system pressure must be released.**

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135. Using a suitable hydraulic jack with a fuel tank adapter, support the fuel tank.

136. Remove the nuts (1) from the tank straps (Figure 77).

137. Remove both fuel tank straps (2) (Figure 77).

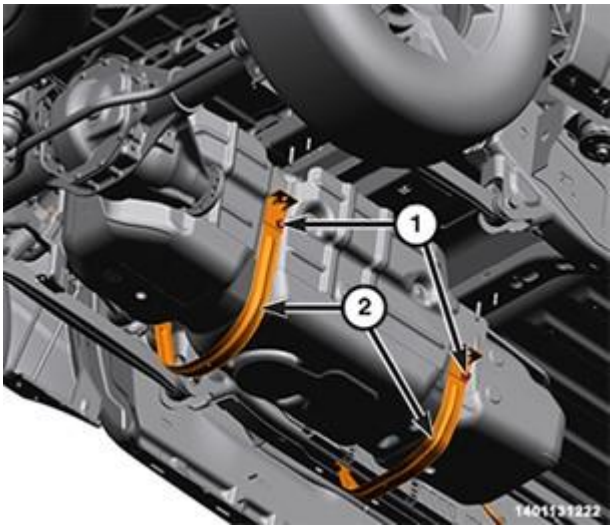



**Figure 77 – Tank Straps**

138. Disconnect the return fuel line quick-connect fitting (1) at the front of fuel tank (Figure 78).

139. Disconnect the two fuel vent line quick-connect fittings (2) (Figure 78).

140. Disconnect the fuel supply line quick-connect fitting (4) (Figure 78).

141. Disconnect the fuel filler vent line quick-connect fitting (3) at the fuel pump module (Figure 78).

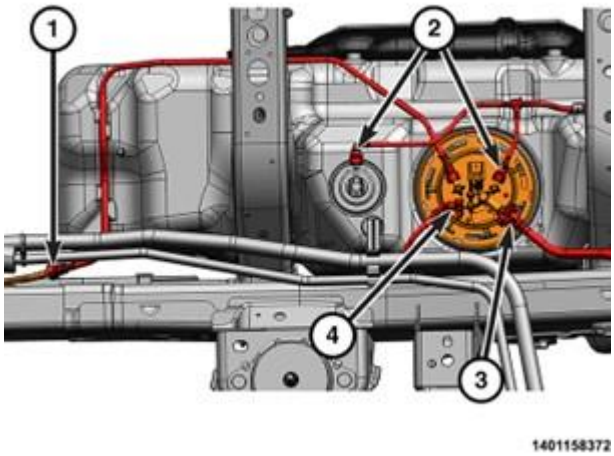



**Figure 78 – Top View of Tank**

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142. Disconnect the fuel pump module wire harness connector (1) (Figure 79).

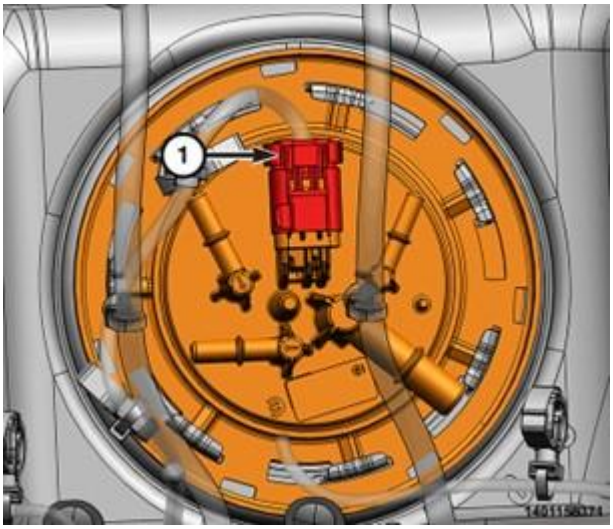



**Figure 79 – Pump Module Connector**

143. Loosen the clamp (2) and disconnect fill hose from fuel tank (Figure 80).

144. Remove the fuel vent lines from the retaining clips (1) (Figure 80).

145. Lower the fuel tank and remove from hydraulic jack.

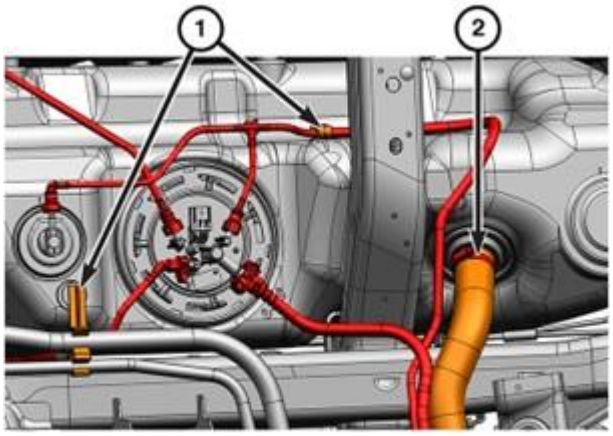



**Figure 80 – Tank Connections**

**CAUTION: An indexing arrow is located on top of the main fuel pump module to clock its position into the fuel tank, note its location for reassembly.**

**CAUTION: When positioning the Fuel Pump Lock Ring Wrench, do so that the tool will not contact the fuel return fitting. Failure to do so may result in breaking the fitting.**

**NOTE: Prior to removing the fuel pump module, use compressed air to remove any accumulated dirt and debris from around fuel tank opening.**

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146. Position the 9340 SAE Fuel Pump Lock Ring Wrench in the notches on the outside edge of the lock ring (1) (Figure 81).

147. Install a 1/2-inch drive breaker bar into the top of the lock ring remover/installer.

148. Rotate the breaker bar counterclockwise and remove the lock ring (1) (Figure 81).

**CAUTION: Whenever the fuel pump module is serviced, the rubber O-ring seal must be replaced.**

149. Remove the fuel pump module (2) from the fuel tank and discard (Figure 81).

150. Ensure the swirl pot indentation below the in-tank electric fuel pump inlet is completely drained of any contaminated fuel and thoroughly clean the fuel tank.

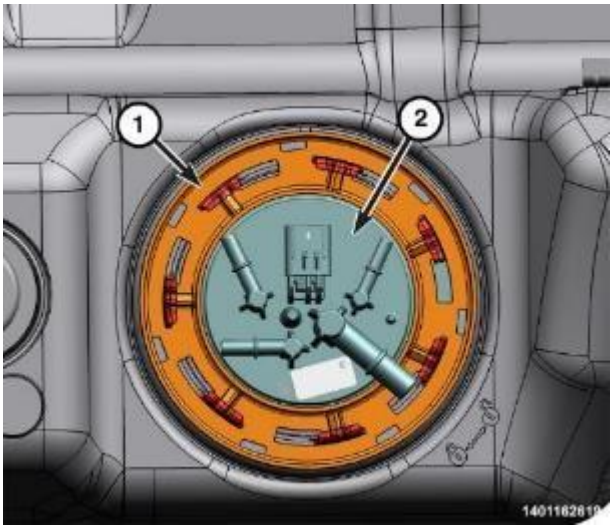



**Figure 81 – Tank Connections**

151. Completely drain the low-pressure fuel lines and flush with clean diesel fuel, then install a **NEW** fuel filter.

**CAUTION: An indexing arrow is located on top of the main fuel pump module to clock it's position into the fuel tank. The fuel pump module must be installed in the same position as removed.**

152. Make sure the fuel return tube (1) is inside the cup (Figure 82).

153. Using a **NEW** rubber O-ring seal, position the **NEW** fuel pump module into the fuel tank opening.

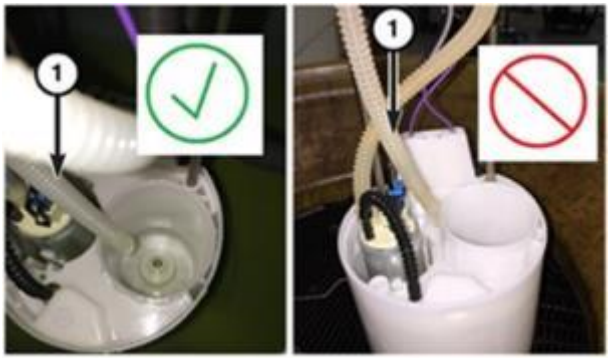



**Figure 82 – Fuel Return Tube**

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154. Position the lock ring (1) over top of the fuel pump module (2) (Figure 83).

155. Rotate the fuel pump module (2) until the embossed alignment arrow points to the center alignment mark or the same position as noted during removal. This step must be performed to prevent the float from contacting the side of the fuel tank (Figure 83).

**CAUTION: When positioning the Fuel Pump Lock Ring Wrench, do so that the tool will not contact the fuel return fitting. Failure to do so may result in breaking the fitting.**

156. Install the 9340 SAE Fuel Pump Lock Ring Wrench in the notches on the outside edge of the lock ring (1) (Figure 83).

157. Install a 1/2 inch drive breaker bar into the SAE Fuel Pump Lock Ring Wrench.

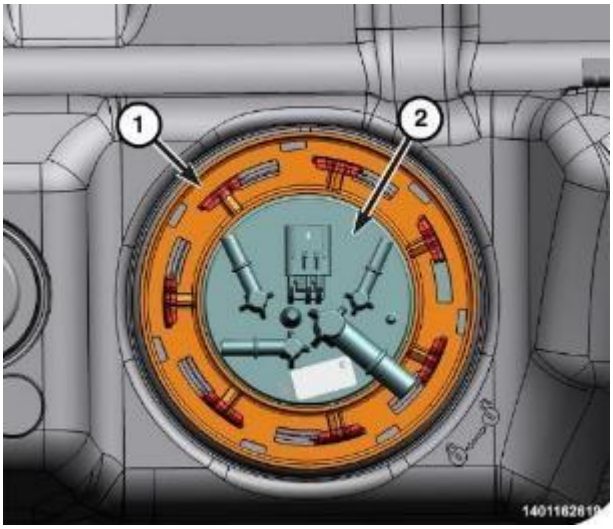



**Figure 83 – Tank Connections**

158. Rotate the breaker bar clockwise until all seven notches of the lock ring (1) have engaged (Figure 83).

159. Secure the fuel tank onto a suitable hydraulic jack with a fuel tank adapter.

160. Raise and position the fuel tank leaving room to make the connections at the top of the fuel tank.

161. Install the fuel vent lines into the retaining clips (1) (Figure 84).

162. Install the fuel fill hose and securely tighten the clamp (2) (Figure 84).

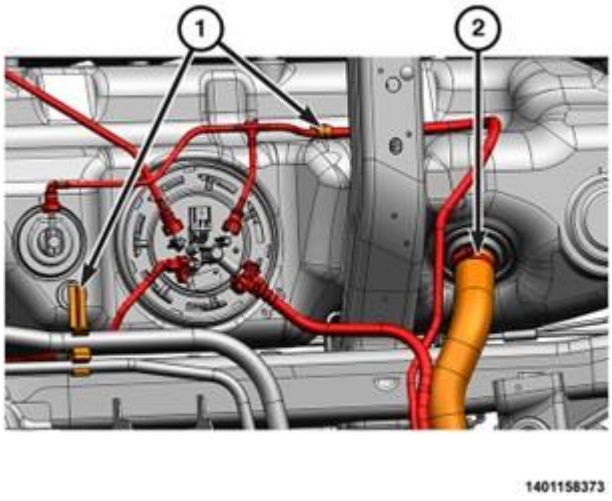



**Figure 84 – Tank Connections**

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163. Connect the fuel pump module wire harness connector (1) (Figure 85).

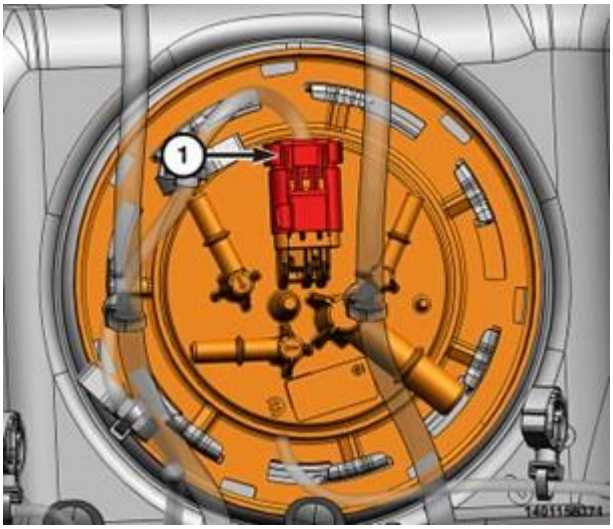



**Figure 85 – Tank Module Connections**

164. Connect the fuel filler vent line quick-connect fitting (3) to the fuel pump module (Figure 86).

165. Connect the fuel supply line quick-connect fitting (4) (Figure 86).

166. Connect the fuel vent line quick-connect fittings (2) (Figure 86).

167. Connect the return fuel line quick-connect fitting (1) at the front of fuel tank (Figure 86).

168. Raise the fuel tank until snug to the body.

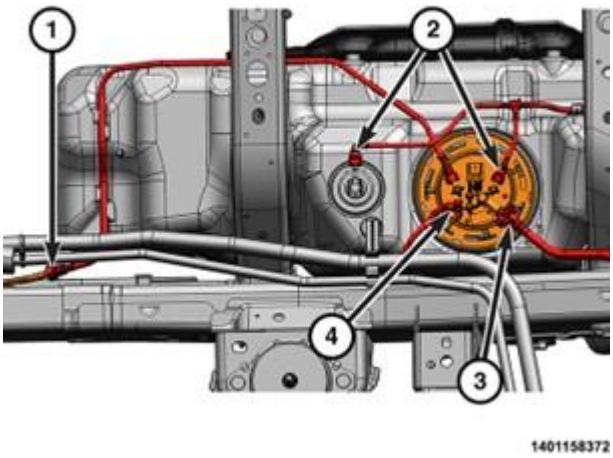



**Figure 86 – Tank Connections**

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169. Install the fuel tank straps (2) and tighten the nuts (1) to 54 N·m (40 ft. lbs.) (Figure 87).

170. Remove the hydraulic jack.

171. Lower the vehicle and add 5 gallons of clean diesel fuel to the tank.

172. Connect a clean hose to the low-pressure fuel line at the high pressure fuel pump fitting and place the other end in a suitable clean container.

173. Install the negative battery cable eyelet to the IBS stud and secure using the nut. Tighten the nut to 5 N·m (44 in. lbs.).

**NOTE: Overtightening of the nut connecting the negative cable to the IBS will cause damage to the IBS or break the stud for the nut.**

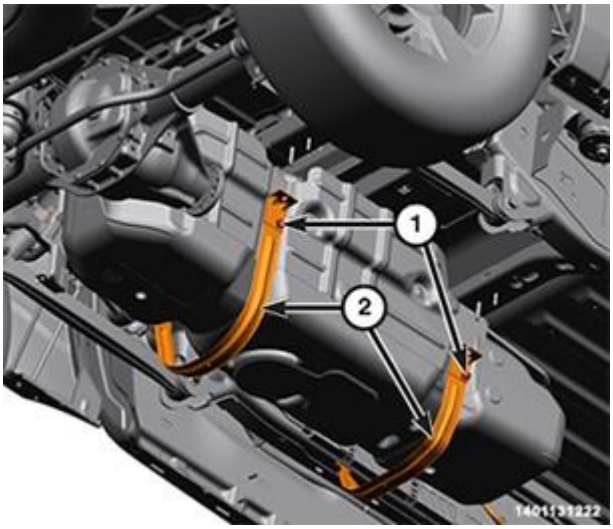



**Figure 87 – Fuel Tank Straps**

174. Connect the IBS wire harness connector if the negative battery cable clamp was removed.

175. Turn the ignition ON, and collect the fuel escaping from the low pressure feed into a clean container.

176. Connect the lower pressure supply line (2) to the high pressure pump (Figure 74).

177. Install the fuel injection pump silencer (1) (Figure 88).

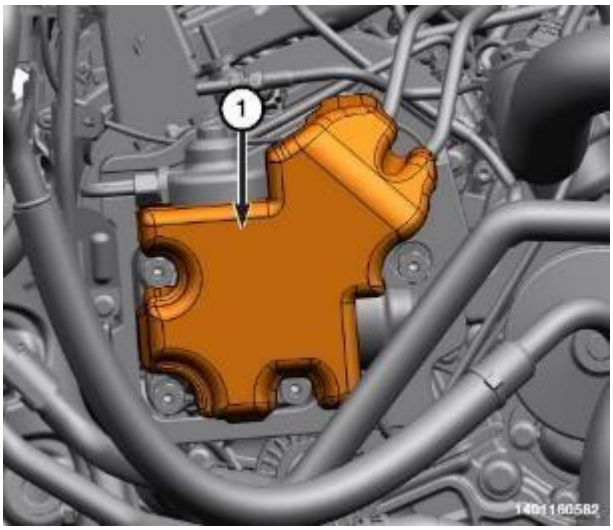



**Figure 88 – Pump Silencer**

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178. Install the fuel injection pump blocker shield (2) and tighten the bolts (1) to 25 N·m (18 ft. lbs.) (Figure 89).

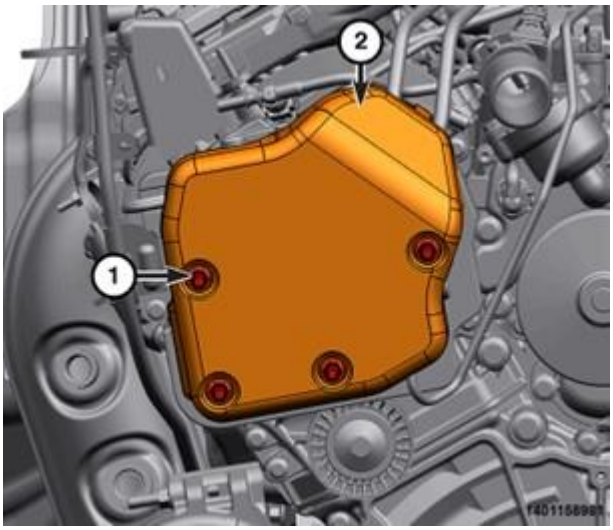



**Figure 89 – Pump Blocker Shield**

179. Install the fuel injection pump silencer (1) and the fasteners (2) (Figure 90).

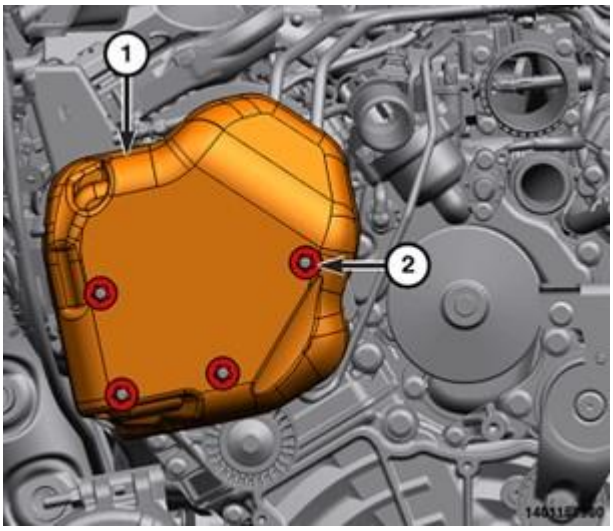



**Figure 90 – Pump Silencer**

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180. Start the engine and check for leaks at all fuel connections.

181. Install the engine cover (2) and securely tighten the bolts (1) (Figure 91).




**Figure 91 – Engine Cover**

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## B. JL/JT Vehicles

**For vehicles with a contaminated fuel system, use the procedure below.**

### Remove

**WARNING: High-pressure lines deliver diesel fuel under extreme pressure from the injection pump to the fuel injectors. This may be as high as 2000 bar (29,008 psi). Use extreme caution when inspecting for high-pressure fuel leaks. Fuel under this amount of pressure can penetrate skin causing personal injury or death. Inspect for high-pressure fuel leaks with a sheet of cardboard. Wear safety goggles and adequate protective clothing when servicing fuel system.**

**WARNING: Observe the following precautions when working on fuel systems: No sparks, open flames or smoking. Avoid inhaling and swallowing fuel. Avoid eye and skin contact with fuel. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing. Failure to observe these precautions may result in fire, explosion, property damage, and serious or fatal injury.**

**WARNING: High-pressure lines deliver diesel fuel under extreme pressure from the injection pump to the fuel injectors. This may be as high as 2000 bar (29,008 psi). Use extreme caution when inspecting for high-pressure fuel leaks. Fuel under this amount of pressure can penetrate skin causing personal injury or death. Inspect for high-pressure fuel leaks with a sheet of cardboard. Wear safety goggles and adequate protective clothing when servicing fuel system.**

**WARNING: Observe the following precautions when working on fuel systems: No sparks, open flames or smoking. Risk of poisoning from inhaling and swallowing fuel. Risk of injury to eyes and skin from contact with fuel. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing.**

**NOTE: When key is cycled to the off position, fuel system pressure automatically bleeds down.**

**NOTE: The fuel injection pump can be replaced without having to perform the entire base engine valve timing procedure. This procedure gives instruction on how to remove and install the new fuel injection pump without performing the base engine timing. Do not rotate the pump shaft after removing from the vehicle. The alignment of the pump shaft must be measured and recorded using a commercially available degree wheel after the pump is removed and before transferring the pump gear over to the new pump. This is done to align the pump to the same position during installation. If the base engine valve timing must be performed as part of the repair, refer to Service Library 09 - Engine/Valve Timing/Standard Procedure.**

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**Battery Disconnect**

1. On this dual battery system the auxiliary battery ground cable connects to the main battery cable end (shown in generic graphic) and grounds through the main battery ground cable connection to the body, chassis or engine (depending on vehicle). Therefore, simply disconnecting and isolating the main battery negative cable clamp from the main battery post will not isolate the auxiliary from the vehicle's electrical system. The auxiliary battery will still be grounded through it's connection to the main battery negative cable end. If both battery negative cables are not isolated it will result in the vehicle electrical system and Power Distribution Center (PDC) still having battery connection which can cause vehicle wiring damage or deployment of air bags on re-connection (Figure 92). In Service Library, see 08 - Electrical / 8F - Engine Systems / Battery System / Standard Procedure / Battery Disconnect - Dual 12 Volt Battery System.

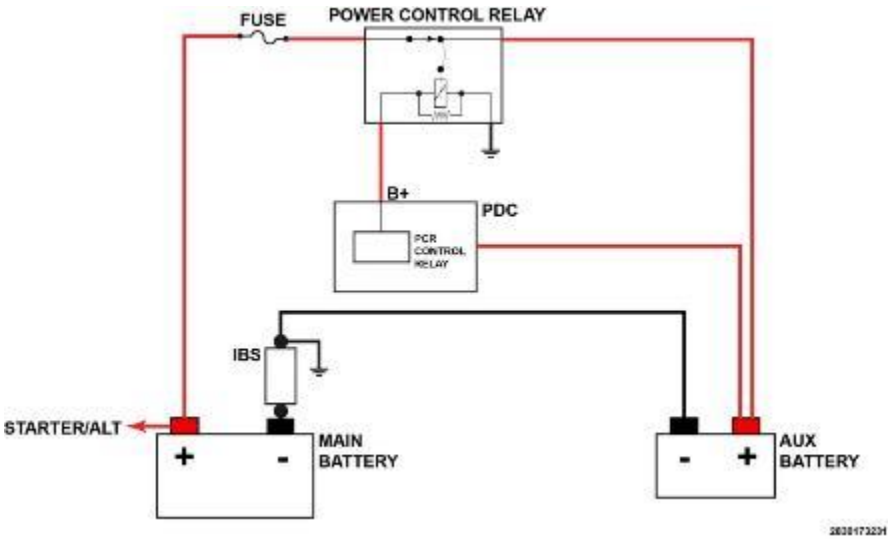



**Figure 92 – Dual Battery System**

2. Turn the ignition off. Wait five minutes to allow the main modules to go to sleep.

3. Disconnect and isolate the supplemental (auxiliary) battery negative cable from the main battery negative cable end. This will disconnect and isolate the auxiliary battery ground.

4. The main battery ground can be disconnected by removing the main battery negative cable from the negative battery cable end, or by disconnecting the IBS connector, loosening the negative battery clamp nut and removing the negative battery cable end from the battery post. Either method will disconnect the main battery. Both batteries should be disconnected from the vehicle electrical system.

5. Measure the voltage at the PDC positive battery cable connection to verify the vehicle electrical system is powered down.

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**NOTE: On some vehicles a small amount of voltage may be present (typically less than approximately 0.5 volts) due to capacitors is some modules still having voltage stored. Anything less than 1.0 volts should be safe.**

6. Remove the engine cover (Figure 93).



**Figure 93 – Engine Cover**

**PUMP COVER - Remove**

7. Remove the clamp at the turbocharger air inlet elbow (1). Slide the CCV hose (2) off at the head. Disconnect the Mass Air Flow connector (3) (Figure 94).

8. Remove the air cleaner body bolt then lift up and the air cleaner body and remove it and the clean air hose as an assembly.

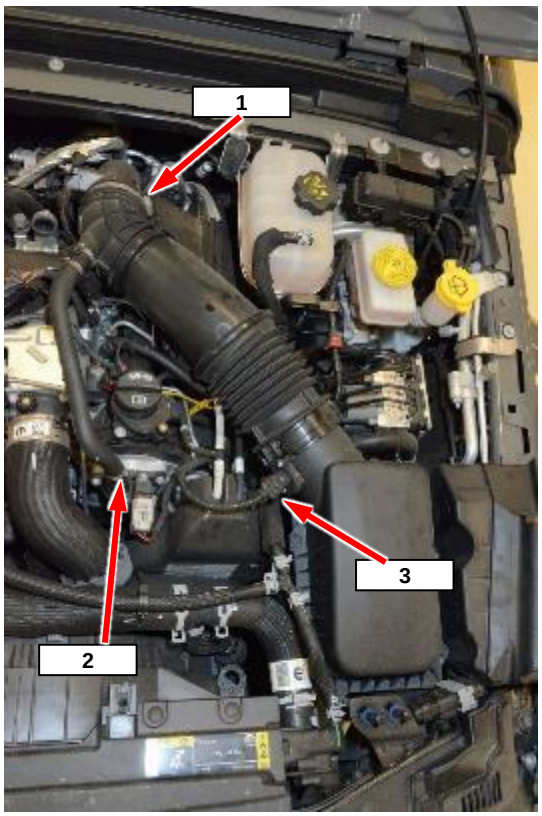



**Figure 94 – Inlet Air Tube**

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9. Release the retaining lock (1) and disconnect the Charge Air Cooler (CAC) hose from the EGR air flow control valve (Figure 95).




**Figure 95 – CAC Hose from EGR Air Flow Control Valve**

10. Loosen the left CAC hose clamp and disconnect the left CAC hose from the CAC and remove it (Figure 96).




**Figure 96 – CAC Hose from Intercooler**

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11. Remove the fuel injection pump blocker plate bolts (2) and the fuel injection pump blocker plate (1) from the fuel injection pump (Figure 97).

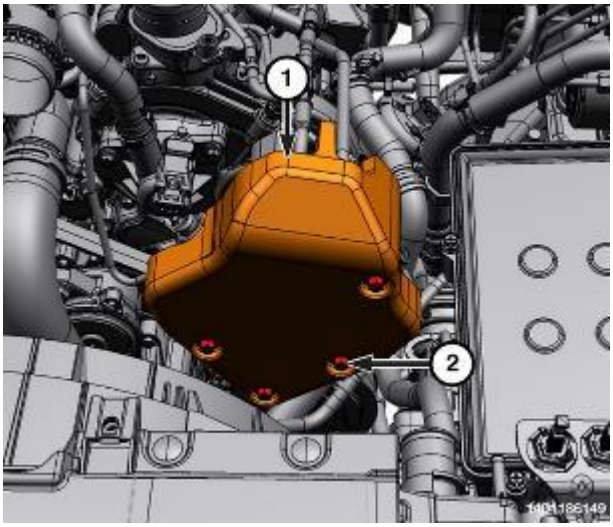



**Figure 97 – Blocker Plate**

12. Disconnect the low-pressure fuel supply/return lines (4) (Figure 98).
13. Disconnect the fuel quantity solenoid wire harness connector (2) (Figure 98).
14. Remove the fuel rail supply tubes (1 and 3) from the HPFP (Figure 98).

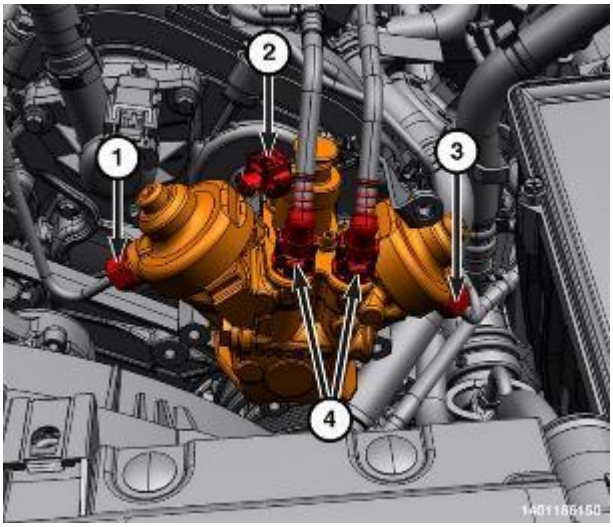



**Figure 98 – Fuel Rail Supply Tubes**

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**RIGHT SIDE - Remove**

15. Remove the Charge Air Cooler (CAC) hose bolt (2) (Figure 99).

16. Release the retaining clip (1) and disconnect the CAC hose from the turbocharger elbow and position aside.

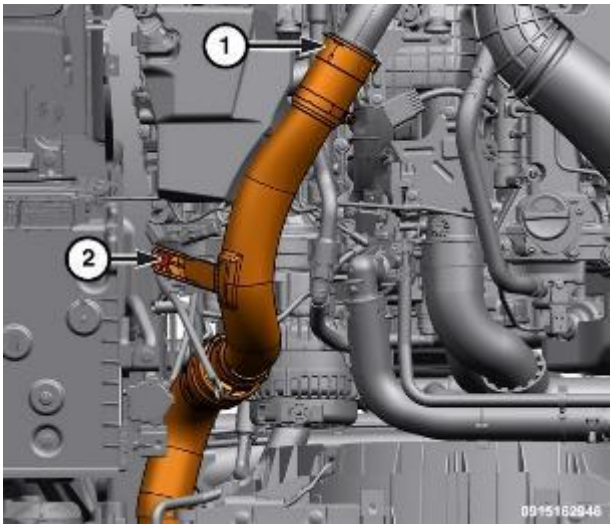



**Figure 99 – CAC Hose**

17. Loosen the fuel rail cover nut (3), detach the wire harness retainer (1) and remove the fuel rail cover (2) (Figure 100).

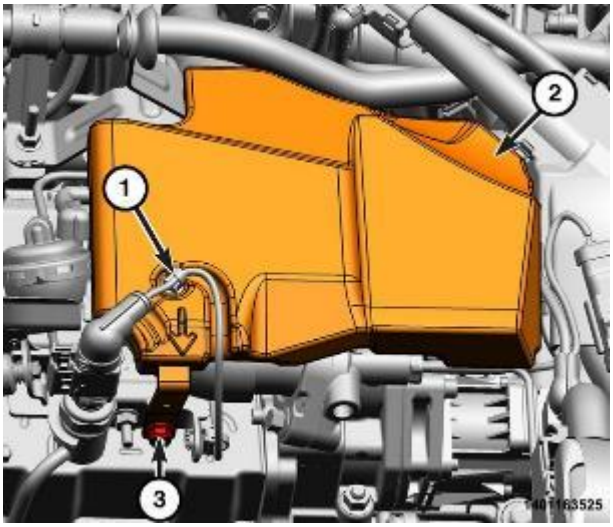



**Figure 100 – Fuel Rail Cover**

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18. Remove fasteners from coolant hose support brackets at the front and rear of the engine (Figure 101 and 102).

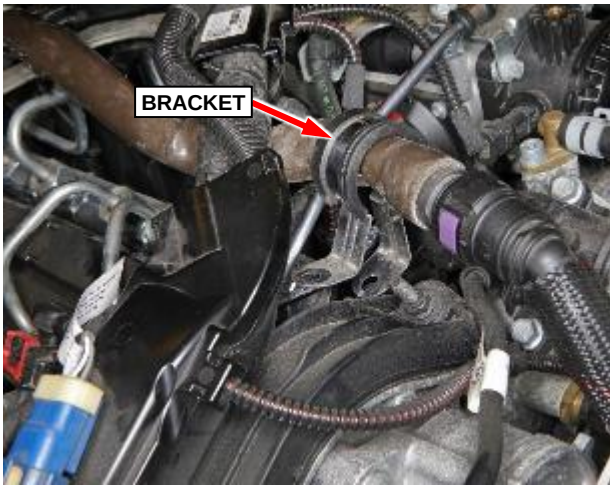



**Figure 101 – Front Coolant Hose Bracket**

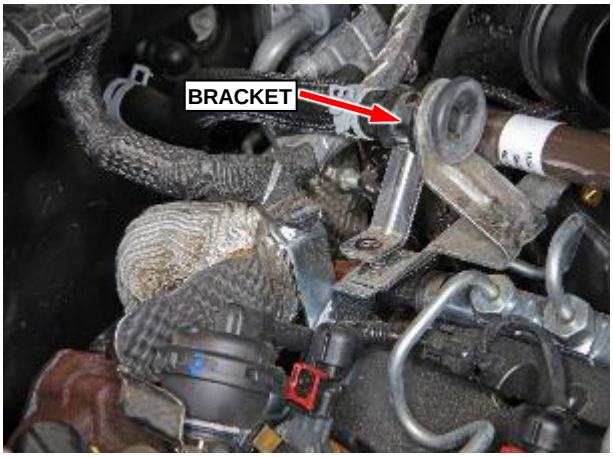



**Figure 102 – Rear Coolant Hose Bracket**

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19. Remove the upper Exhaust Gas Recirculation (EGR) tube bolts (1) (Figure 103).

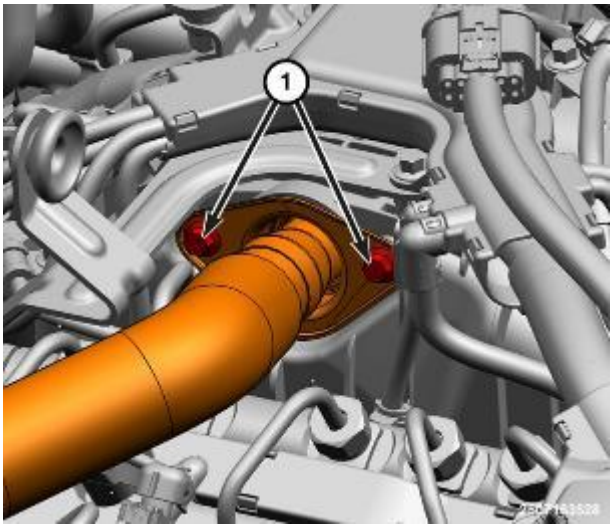



**Figure 103 – Upper EGR Tube**

20. Remove the lower EGR tube bolts (2) and the EGR tube (1) (Figure 104).

21. Remove and discard both gaskets.

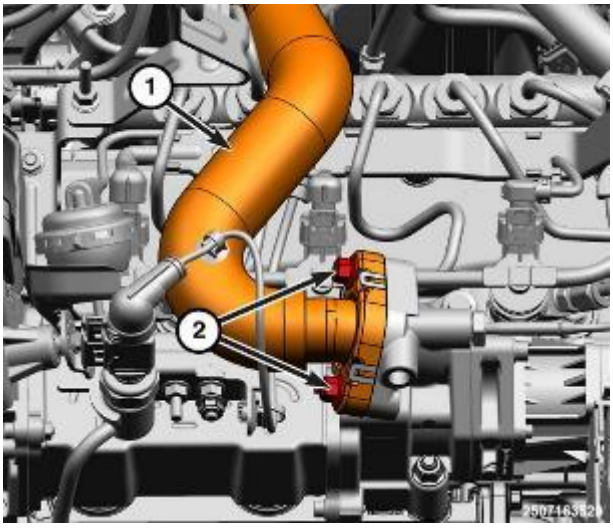



**Figure 104 – Lower EGR Tube**

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22. Lift up on locking tabs (1) to unlock the locks (2) on the right bank fuel return hoses on the tops of the injectors (Figure 105).

23. Remove the fuel return hoses (2) by wiggling hoses free from the fuel injector (Figure 105).

    **NOTE: Use a backing wrench on the fuel injector when unscrewing the union nut.**

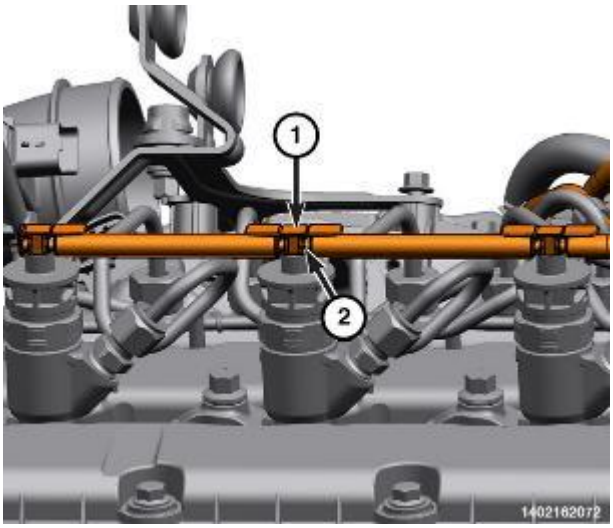



**Figure 105 – Fuel Return Hoses**

24. Unscrew the union nuts (7 and 9) and remove cylinder No. 1 fuel tube (8) and the discard fuel tube (Figure 106).

25. Unscrew the union nuts (4 and 6) and remove cylinder No. 2 fuel tube (5) and discard the fuel tube (Figure 106).

26. Unscrew the union nuts (1 and 3) and remove cylinder No. 3 fuel tube (2) and discard the fuel tube (Figure 106).

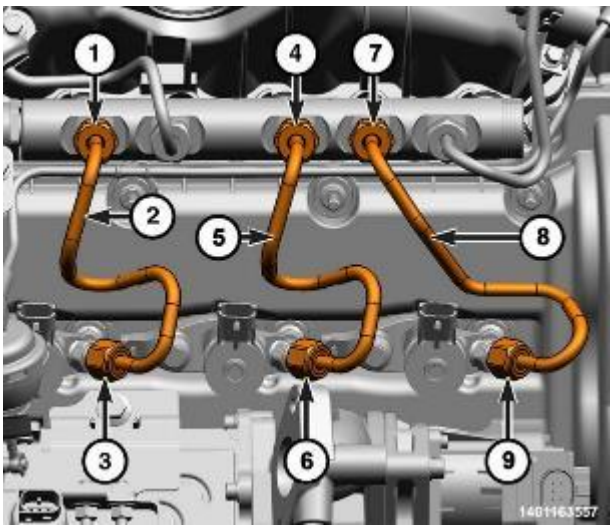



**Figure 106 – Right Fuel Injector Tubes**

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**LEFT SIDE - Remove**

27. Remove the vent hose (1) from the left fuel rail cover (Figure 107).




**Figure 107 – Vent Hose**

28. Remove the left fuel rail cover bolts (1) and the left fuel rail cover (2) (Figure 108).

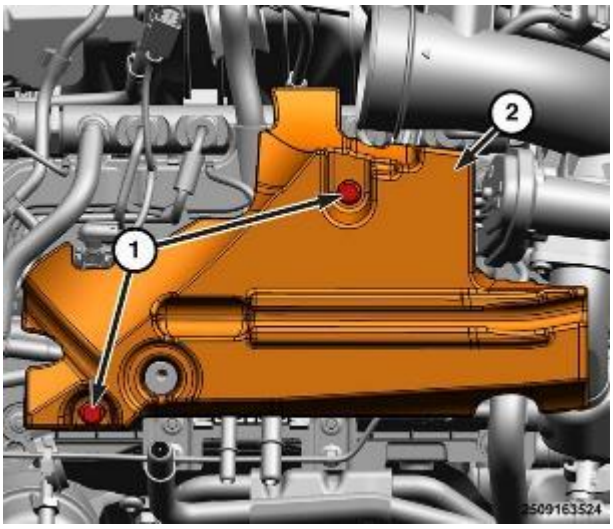



**Figure 108– Fuel Rail Cover**

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29. Lift up on locking tabs (1) to unlock the locks on the fuel return hoses on the tops of the injectors (Figure 109).

30. Disconnect the fuel return lines by wiggling the hoses free from the fuel injectors (Figure 109).

    **NOTE: Use a backing wrench on the fuel injector when unscrewing the union nut.**

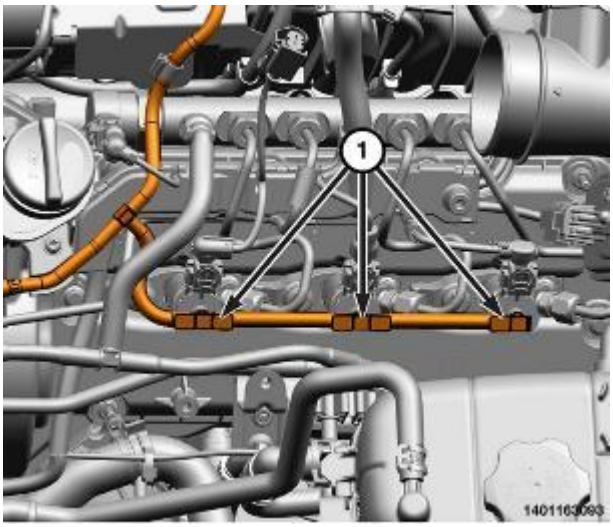



**Figure 109 – Fuel Return Hoses**

31. Unscrew the union nuts (1 and 3) and remove cylinder No. 4 fuel tube (2) and discard the fuel tube (Figure 110).

32. Unscrew the union nuts (4 and 6) and remove cylinder No. 5 fuel tube (5) and discard the fuel tube (Figure 110).

33. Unscrew the union nuts (7 and 9) and remove cylinder No. 6 tube (8) and discard the fuel tube (Figure 110).

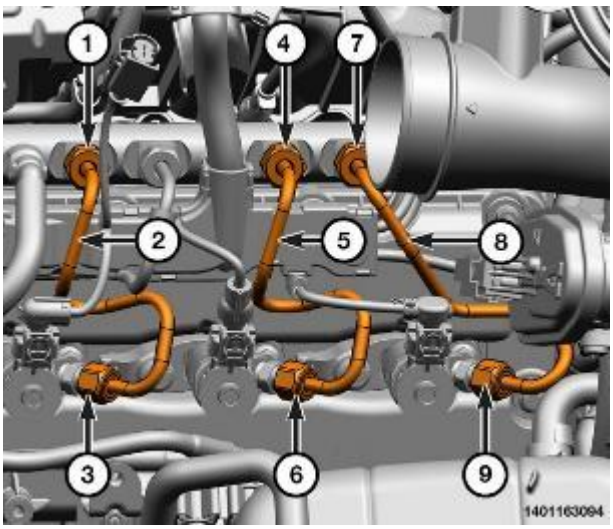



**Figure 110 – Fuel Injector Tubes**

**<u>Crossover Tube - Remove</u>**

34. Detach the vacuum line from the coolant bottle bracket.

35. Remove the coolant bottle bolts and position aside the coolant bottle.

36. Detach the brake booster vacuum hose from the bracket.

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37. Disconnect the differential pressure sensor wire harness connector (1) (Figure 111).

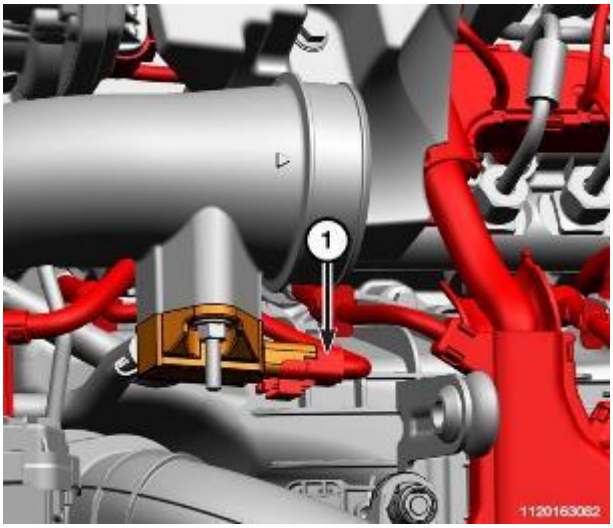



**Figure 111 – Pressure Sensor Connector**

38. Disconnect the differential pressure sensor hoses (1) (Figure 112).

39. Remove the differential pressure sensor nut (3) and the differential pressure sensor (2) (Figure 112).

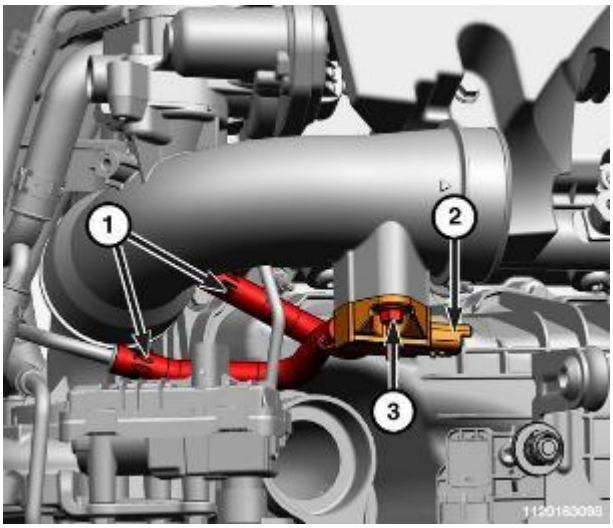



**Figure 112 – Differential Pressure Sensor**

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40. Remove the low pressure EGR valve to the upper turbocharger inlet elbow bolts and remove the upper turbocharger inlet elbow (Figure 113).
41. Remove and DISCARD the low pressure EGR valve gasket (1) (Figure 113).

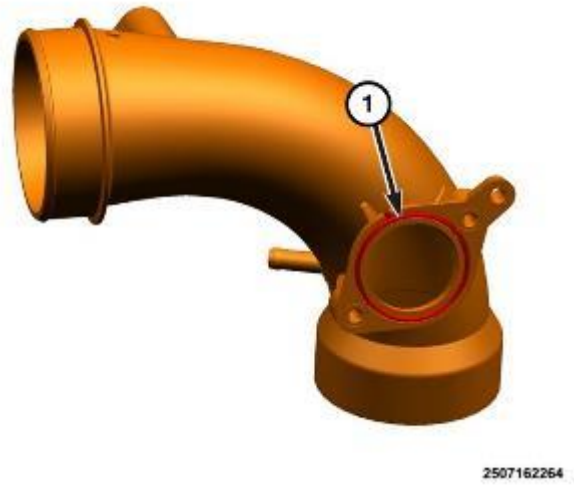



**Figure 113 – Upper Turbo Inlet Elbow Gasket**

42. Remove and DISCARD the lower turbocharger inlet elbow gasket (1) (Figure 114).
43. Disconnect the boost pressure sensor wire harness connector.
44. Disconnect the swirl valve wire harness connector.
45. Disconnect the fuel pressure sensor wire harness connector.

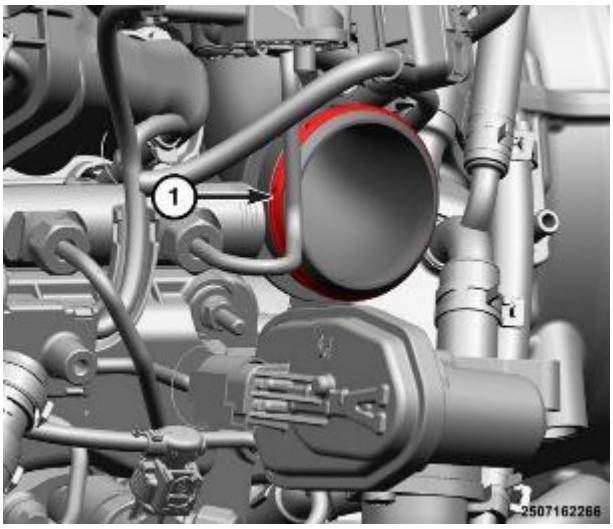



**Figure 114 – Lower Turbo Inlet Elbow Gasket**

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46. Remove the fuel crossover tube bolt (1) (Figure 115).

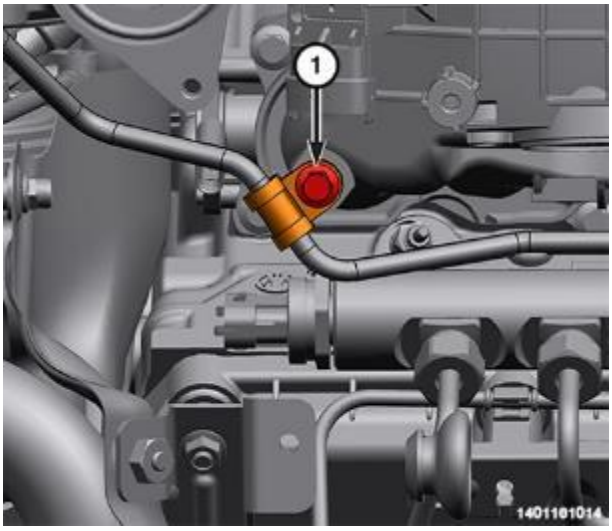



**Figure 115 – Crossover Tube Bolt**

47. Unscrew the union nuts (1 and 3) and remove the fuel crossover tube (2) and discard (Figure 116).

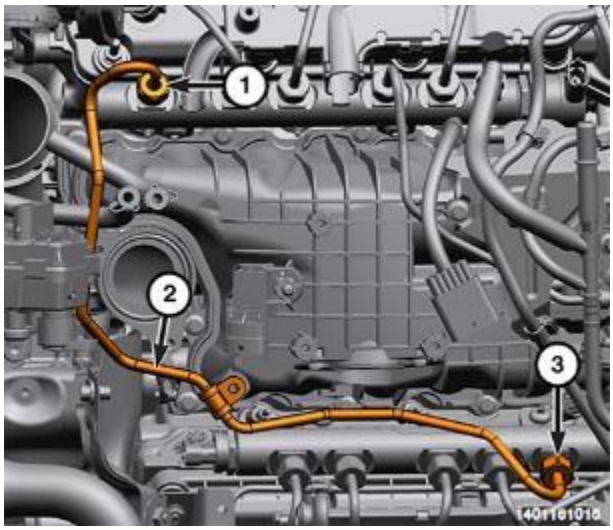



**Figure 116 – Crossover Tube Bolt**

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**Left Fuel Rail Supply Tube - Remove**

48. Remove the left fuel tube bracket nut (1) securing the fuel tube (Figure 117).
49. Unscrew the union nut (2) from the fuel rail and remove and discard the fuel tube (Figure 117).

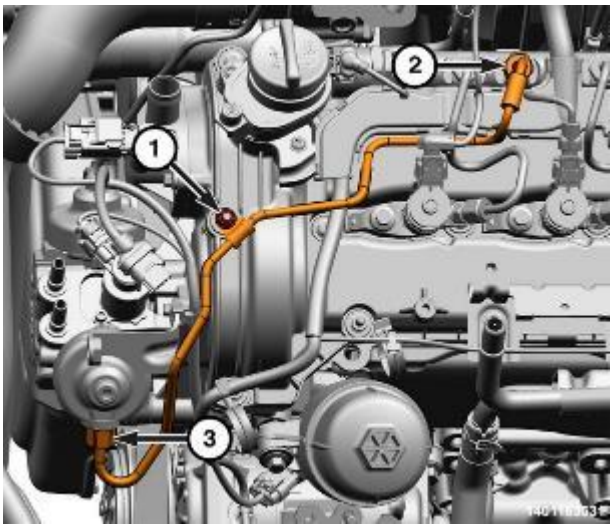



**Figure 117 – Left High Pressure Fuel Tube Nut**

**Right Fuel Rail Supply Tube - Remove**

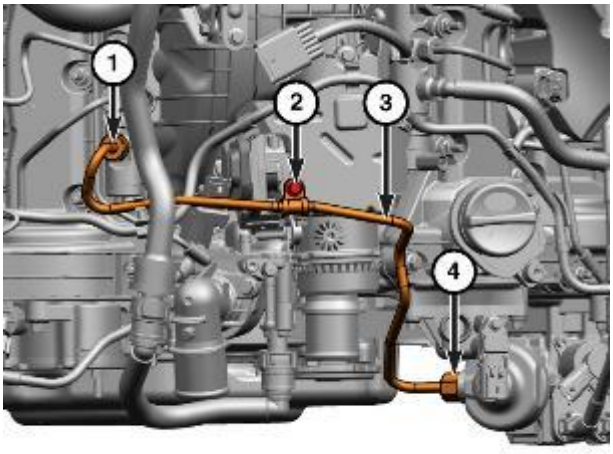
50. Release the retaining clip (1) and disconnect the CAC hose from the EGR air flow control valve (Figure 118).




**Figure 118 – CAC Hose Clip**

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51. Remove the fuel tube bolt (2) securing the fuel tube (Figure 119).
52. Unscrew the union nut (1) and remove and discard the fuel tube (3) (Figure 119).
53. Install protective caps over the openings.

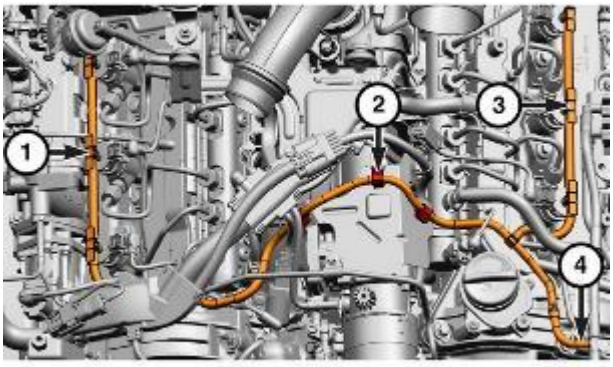



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**Figure 119 – Right High-Pressure Fuel Tube Bolt**

**Fuel Injector Return Lines - Remove**

54. Lift up on locking tabs (1 and 3) at each injector to unlock the locks (Figure 120).
55. Remove the fuel return lines by wiggling hose free from the fuel injectors (Figure 120).
56. Remove the fuel line retainers (2) and detach the fuel injector return line from the main fuel return line (4) (Figure 120).




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**Figure 120 – Injector Return Lines**

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57. Detach the fuel return line retainers (1 and 2) (Figure 121).

58. Remove the fuel injector return line assembly (3) (Figure 121).

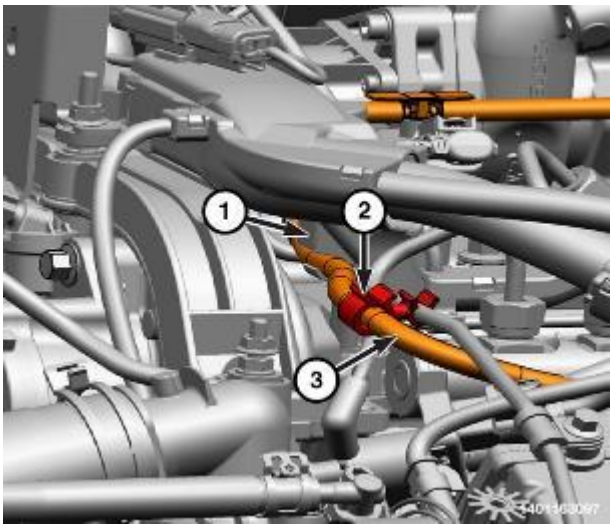



**Figure 121 – Injector Return Line Retainers**

**Fuel Injector Rails - Remove**

59. Disconnect the fuel pressure regulator wire harness connector (1) on the LEFT rail (Figure 122).




**Figure 122 – Fuel Pressure Regulator Connector (Left Rail)**

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60. Using the Remover-Installer, Fuel Rail Bolt 2025400090, remove the left fuel rail bolts (2) and the left fuel rail (1) (Figure 123).

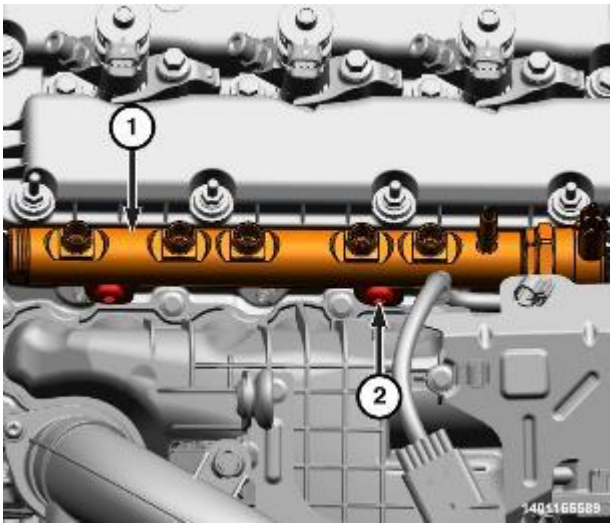



**Figure 123 – Left Fuel Rail**

61. Disconnect the fuel pressure sensor harness connector (1) on the RIGHT rail (Figure 124).

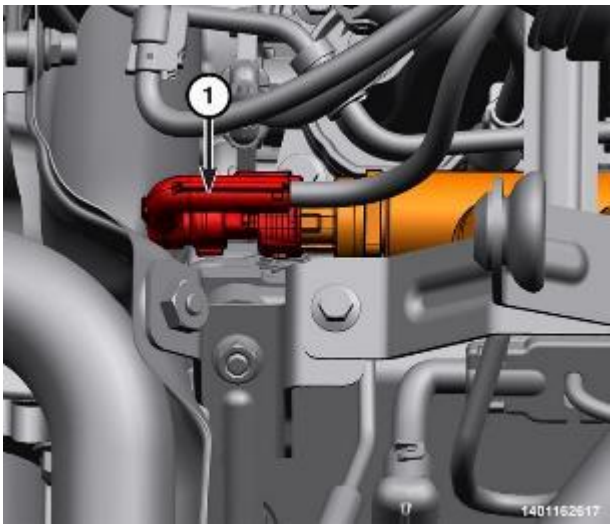



**Figure 124 – Fuel Pressure Sensor Right Fuel Rail**

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62. Using the Remover-Installer, Fuel Rail Bolt 2025400090, remove the right fuel rail bolts (2) and the right fuel rail (1) (Figure 125).

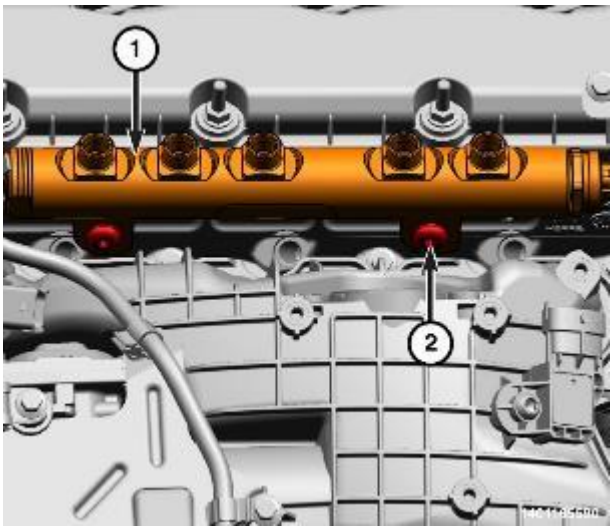



**Figure 125 – Right Fuel Rail**

**Fuel Injectors - Remove**

63. Disconnect the fuel injector wire harness connectors (1) (Figure 126).

64. Clean the area around the fuel injectors so that no debris falls into the injector bores.

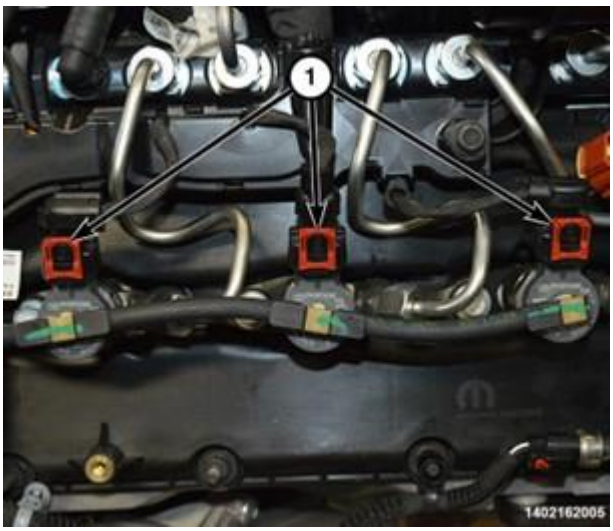



**Figure 126 – Fuel Injector Wire Harness Connectors**

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65. Remove the fuel injector clamp bolts (1) and the fuel injector clamps (2) (Figure 127).

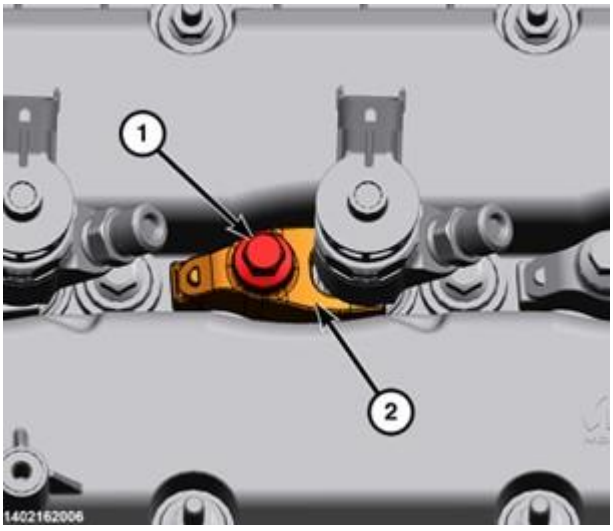



**Figure 127 – Fuel Injector Clamps**

66. Using your hand, pull the fuel injectors (1) straight up from the cylinder head for removal. Discard the lower sealing washer and place a protective cap over the injector bore (Figure 128).

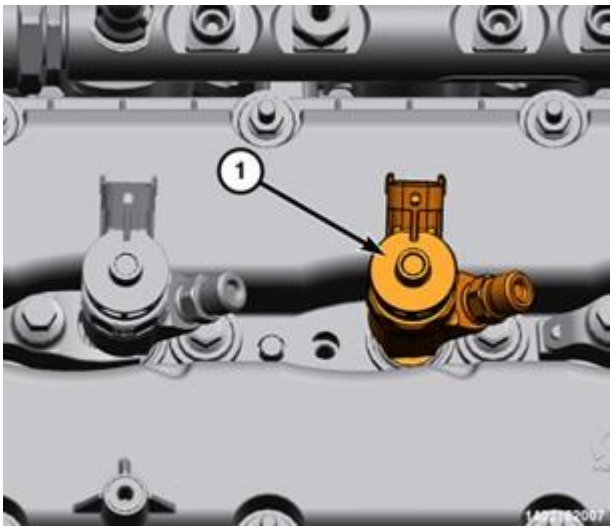



**Figure 128 – Fuel Injectors**

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67. If an injector can't be removed by hand, install the Remover, Fuel Injector VM.10358A (1) to remove the fuel injector. Discard lower sealing washer and place a protective cap over the injector bore (Figure 129).

    **NOTE: Check and MAKE SURE that the copper sealing washer did not remain in the cylinder head.**

    **NOTE: Steps 68 - 69 necessary for fuel injector No. 3.**




**Figure 129 – Remover, Fuel Injector VM.10358A**

68. Disconnect the EGR cooler vacuum bypass hose (1) (Figure 130).

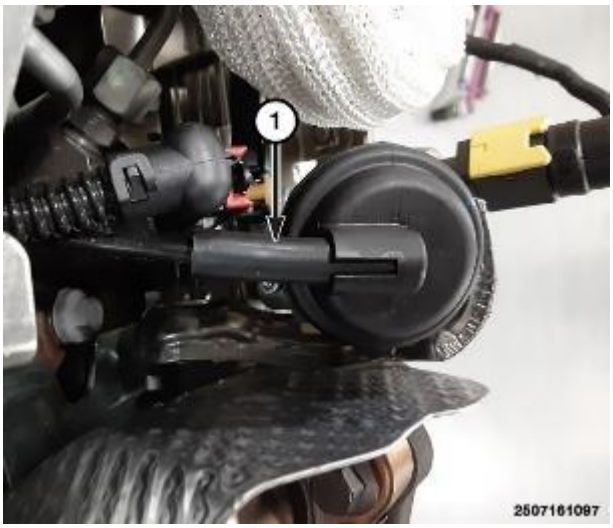



**Figure 130 – EGR Cooler Vacuum Bypass Hose**

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69. Remove the vacuum actuator with heat shield screws (1) and position aside the vacuum actuator (Figure 131).

**NOTE: When a NEW fuel injector is being installed, or if an existing injector is installed in any location other than its original location, the injector quantity adjustment procedure must be performed (Refer to 14 - Fuel System/Fuel Injection - Standard Procedure).**

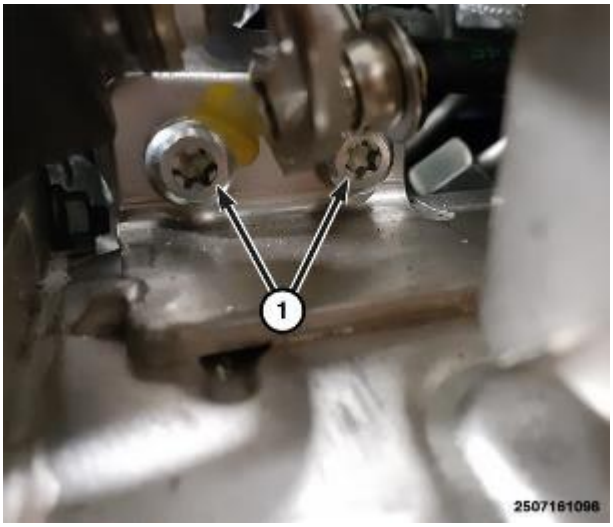



**Figure 131 – Vacuum Actuator Screws**

**HIGH PRESSURE FUEL PUMP – Remove and Replace**

**NOTE: The fuel injection pump can be replaced without having to perform the entire base engine valve timing procedure. Do not rotate the pump shaft after removing from the vehicle. The alignment of the pump shaft must be measured and recorded using a commercially available degree wheel after the pump is removed and before transferring the pump gear over to the new pump. This is done to align the pump to the same position during installation. If the base engine valve timing must be performed as part of the repair (Refer to 09 - Engine/Valve Timing/Standard Procedure).**

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70. Remove the upper bolts (1) from the high-pressure pump (Figure 132). Using Tool, High Pressure Pump Installation VM.10345 Install the studs in the upper locations.

71. Remove the lower bolt (1) from the HPFP (2) and slide the pump away from the engine as far as possible (Figure 133).

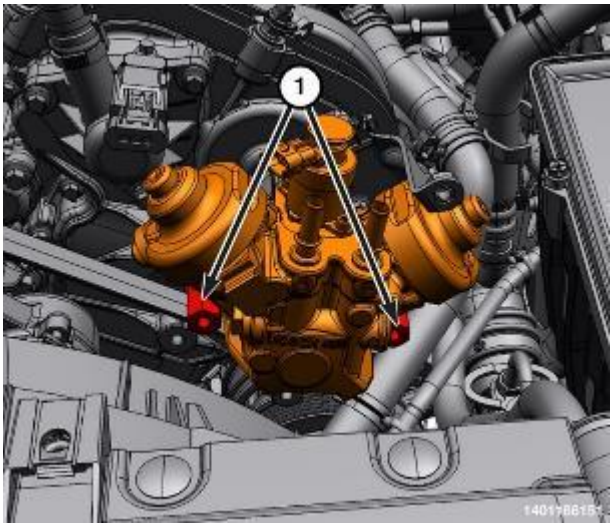



**Figure 132 – Fuel Quantity Solenoid Connector and HPFP Upper Bolts**

72. While holding the pump in place, remove the VM. 10345 pins, then remove the pump from the vehicle.

    **NOTE: The fuel injection pump needs to be timed using a commercially available degree wheel.**

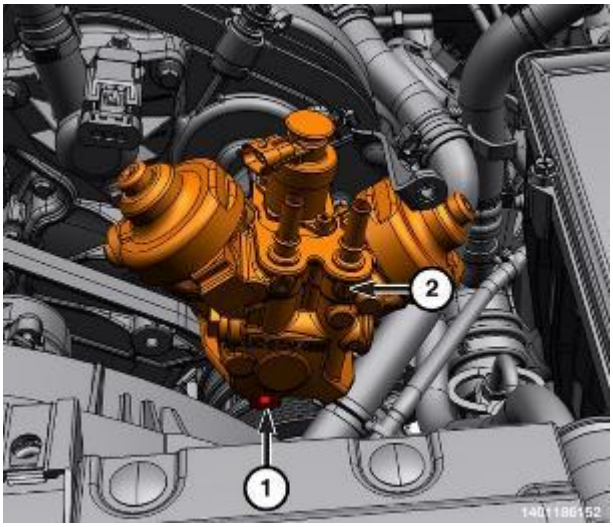



**Figure 133 – HPFP Lower Bolt**

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73. Install the degree wheel onto the pump and record the position of the hole in the gear on the degree wheel (Figure 134).

74. The use of Puller 1023 or a commercially available gear puller is required to remove the fuel injection pump gear (Figure 134).




**Figure 134 – Degree Wheel**

**NOTE: The use of Puller 1023 or a commercially available gear puller is required to remove the fuel injection pump gear (2) (Figure 135).**

**CAUTION: Do Not Force the high-pressure pump into the right timing cover or attempt to seat it by drawing it in with the bolts. The pump gear must be properly aligned with the drive gear on the camshaft before the high-pressure pump will seat on the cylinder head mounting surface. Failure to properly align drive gears will damage the high-pressure pump or camshaft drive gear.**

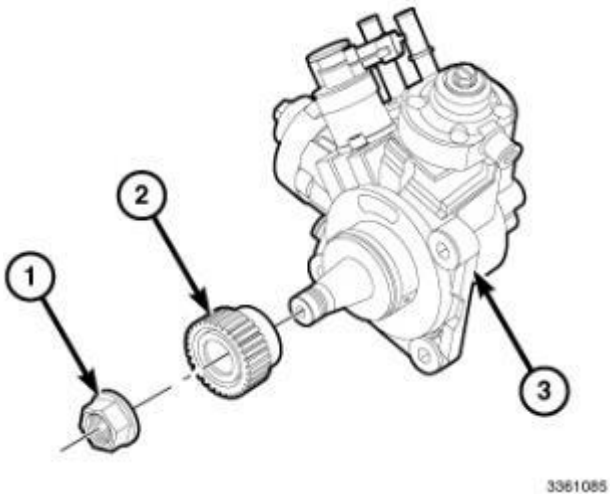



**Figure135 – Gear Removal**

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75. Install a **NEW** O-ring seal (1) to the fuel injection pump (Figure 136).




**Figure 136 – O-ring Seal**

76. Install the gear (2) and nut (1) onto the fuel injection pump (3) and tighten the nut (1) finger tight (Figure 137).

    **Note: NEVER use an impact to tighten the gear nut.**

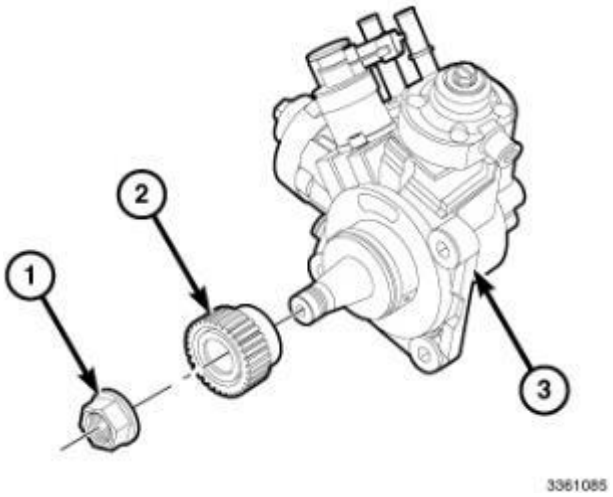



**Figure 137 – O-ring Seal**

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77. Using a commercially available spanner wrench (2) such as Blue Point APS35IB or equivalent, tighten the nut (1) to 50 N·m (37 ft. lbs.) (Figure 138).




**Figure 138 – Nut with Spanner Wrench**

78. Install the degree wheel and rotate the pump shaft so that the hole aligns with the reference mark on the degree wheel referenced during the removal (Figure 139).

79. While holding the pump in place, install the VM. 10345 pins in the upper timing cover.

80. Install the pump to the engine using the pins as a guide. Install the lower fuel injection pump bolt (1) and hand tighten the bolt (Figure 133).

81. Remove the Tool, High Pressure Pump Installation VM.10345 from the upper bolts location and install the bolts.

82. Tighten the bolts (1) that secure the fuel injection pump to 25 N·m (18 ft. lbs.) (Figures 133 and 132).



**Figure 139 – Degree Wheel**

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83. Remove the protective cap from the appropriate injector bore.

**NOTE: Make sure the old copper sealing washer is not stuck in bore.**

84. Clean the fuel injector bore (Refer to 09 - Engine/Fuel Injection/INJECTORS, Fuel/Cleaning).

85. Install a **NEW** fuel injector seal (1) in the cylinder head cover (Figure 140).

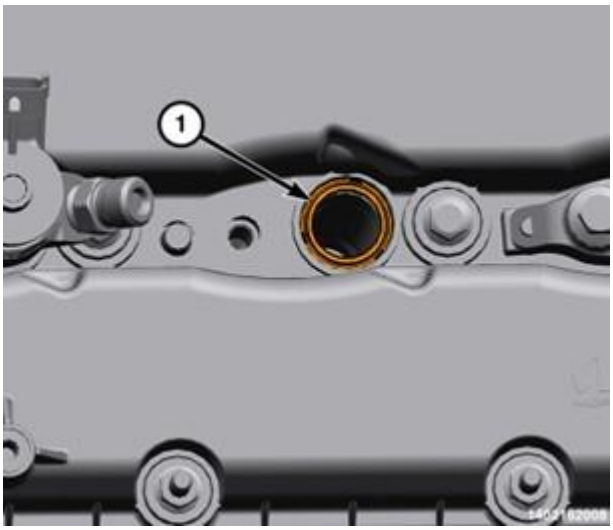



**Figure 140 – Upper Sealing Washer**

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86. Install a **NEW** sealing washer (2) onto the fuel injector (1) (Figure 141).

    **NOTE: Do Not apply any lubricant to the fuel injector nozzle. Care must be taken not to restrict the discharge orifices in the nozzle.**

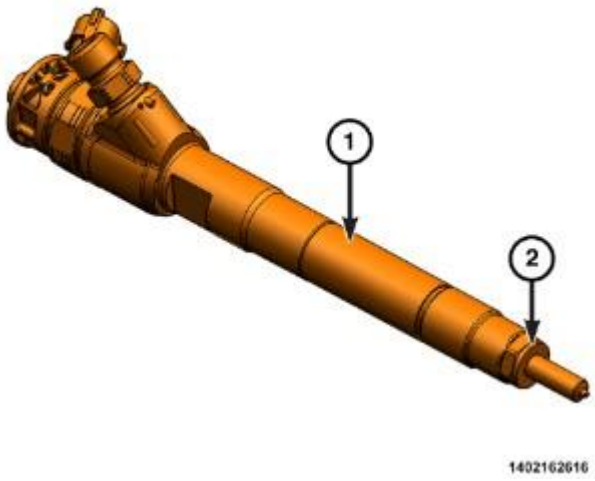



**Figure 141 – Lower Sealing Washer**

87. Lubricate the **NEW** injector body with Nickel Anti-Seize Lubricant (Figure 142).



**Figure 142 – Lubricate the Fuel Injector**

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88. Install the fuel injector (1) in the cylinder head (Figure 143).

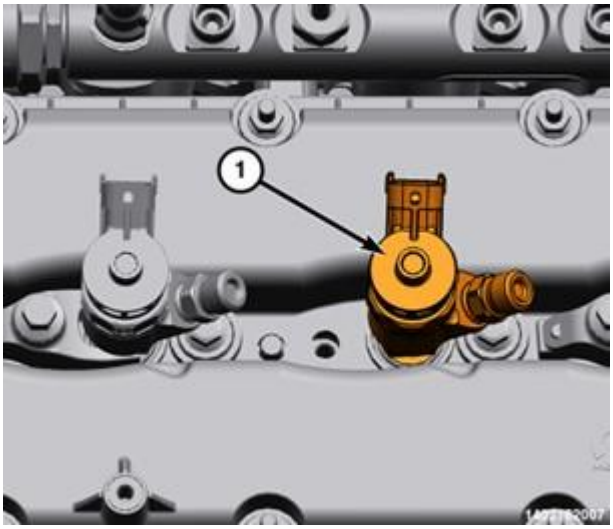



**Figure 143 – Fuel Injector Bolt**

89. Install the fuel injector clamp (2) and tighten the bolt (1) to 33 N·m (24 ft. lbs.) (Figure 144).

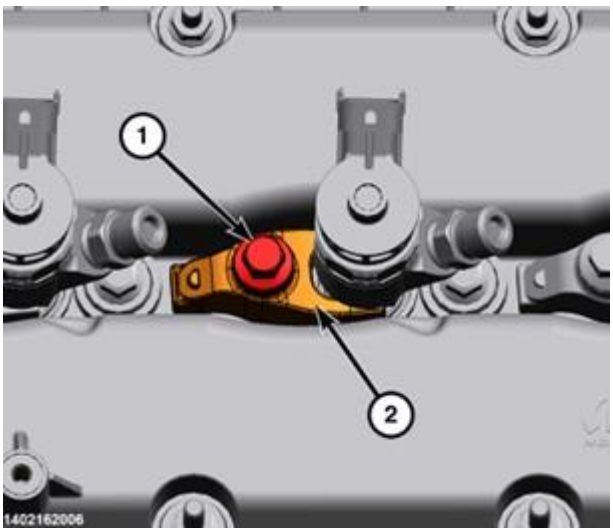



**Figure 144– Fuel Injector Bolt and Clamp**

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90. Install the **NEW** fuel rails. Using the Remover-Installer, Fuel Rail Bolt 2025400090 tighten the bolts to 25 N·m (18 ft. lbs.).
91. Connect the fuel pressure sensor harness connector on the RIGHT rail (Figure 124).
92. Install the vacuum actuator with heat shield screws (1) (Figure 131).
93. Install the EGR cooler vacuum bypass hose (1). Be sure this hose is fully seated (Figure 130).
94. Install the fuel injector wire harness connectors (1) (Figure 126).
95. Install the fuel pressure regulator wire harness connector on the LEFT rail (Figure 122).
96. Install low-pressure fuel return line to the hard lines and to the return side of the pump. Leave the fuel supply side disconnected from the pump at this time.
97. Connect the fuel quantity solenoid wire harness connector (2) (Figure 98).
98. Install a **NEW** fuel crossover tube (2) and tighten the union nuts (1, 3) to 11 N·m + 75° (8 ft. lbs. + 75°) (Figure 116).
99. Install the fuel crossover tube bolt (1) and tighten securely (Figure 115).
100. Connect the fuel pressure sensor wire harness connector.
101. Connect the swirl valve wire harness connector.
102. Connect the boost pressure sensor wire harness connector.
103. Install a **NEW** lower turbocharger inlet elbow gasket (Figure 114).
104. Install a **NEW** low pressure EGR valve gasket (Figure 113).
105. Install the upper turbocharger inlet elbow and the low pressure EGR valve to the upper turbocharger inlet elbow bolts and tighten to 11 N·m (8 ft. lbs.) (Figure 113).
106. Install the differential pressure sensor and securely tighten the differential pressure sensor nut (Figure 112).
107. Connect the differential pressure sensor hoses (1) (Figure 112).
108. Connect the differential pressure sensor wire harness connector (1) (Figure 111).
109. Attach the brake booster vacuum hose from the bracket.
110. Install the coolant bottle, bracket, and nuts, and tighten the nuts to 10 N·m (89 In. Lbs.).
111. Attach the vacuum line to the coolant bottle bracket.

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**NOTE: Use a backing wrench on the fuel injector when tightening the union nut.**

112. Install the **NEW** fuel rail supply tubes (1 and 3) at the HPFP and rails. Tighten both ends to 11 N·m + 75° (8 ft. lbs. + 75°) (Figures 98, 117 and 119).

113. Connect the CAC hose from the EGR air flow control valve and secure the retaining clip (1) (Figure 118).

114. Install the fuel tube bracket bolts and securely tighten.

115. Install the **NEW** right side fuel tubes (Figure 106):

- Remove the protective caps from cylinder No. 3 fuel injector and fuel rail.
- Install the **NEW** fuel tube to cylinder No. 3 and tighten the union nuts finger tight.
- Remove the protective caps from cylinder No. 2 fuel injector and fuel rail.
- Install the **NEW** fuel tube to cylinder No. 2 and tighten the union nuts finger tight.
- Remove the protective caps from cylinder No. 1 fuel injector and fuel rail.
- Install the **NEW** fuel tube to cylinder No. 1 and tighten the union nuts finger tight.
- Tighten the fuel rail union nuts to 11 N·m + 75° (8 ft. lbs. + 75°).
- Tighten the fuel injector union nuts to 11 N·m + 75° (8 ft. lbs. + 75°).

116. Install the **NEW** left side fuel tubes (Figure 110):

- Remove the protective caps from cylinder No. 6 fuel injector and fuel rail.
- Install the **NEW** fuel tube to cylinder No. 6 and tighten the union nuts finger tight.
- Remove the protective caps from cylinder No. 5 fuel injector and fuel rail.
- Install the **NEW** fuel tube to cylinder No. 5 and tighten the union nuts finger tight.
- Remove the protective caps from cylinder No. 4 fuel injector and fuel rail.
- Install the **NEW** fuel tube to cylinder No. 4 and tighten the union nuts finger tight.
- Tighten the fuel rail union nuts to 11 N·m + 75° (8 ft. lbs. + 75°).
- Tighten the fuel injector union nuts to 11 N·m + 75° (8 ft. lbs. + 75°).

**NOTE: Do not use any type of lubrication when installing the fuel injector return hose.**

117. Install the fuel injector return hose assembly. Install the fuel injector return hose and be sure it is fully seated. Push down on the lock tab to lock in place (Figures 120 and 121).

118. Install the left fuel rail cover (2) and the left fuel rail cover bolt (1) and tighten securely (Figure 108).

119. Install the vent hose (1) to the left fuel rail cover (Figure 107).

120. Install the lower EGR tube (1) and the EGR tube bolts (2) and tighten to 25 N·m (18 Ft. Lbs.) (Figure 104).

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121. Install the upper Exhaust Gas Recirculation (EGR) tube bolts (1) and tighten to 11 N·m (8 Ft. Lbs.) (Figure 103).

122. Install fasteners to coolant hose support brackets at the front and rear of the engine and tighten securely (Figure 101 and 102).

123. Install the fuel rail cover (2), attach the wire harness retainer (1), and securely tighten the right fuel rail cover nut (3) (Figure 100).

124. Connect the CAC hose to the turbocharger elbow and fasten the retaining clip (Figure 99).

125. Install the Charge Air Cooler (CAC) hose bolt (2) and tighten to 11 N·m (8 Ft. Lbs.) (Figure 99).

126. Remove all fuel from the fuel tank. (Refer to 09 - Engine/Fuel System/Standard Procedure) Use an appropriate fuel container. Dispose of the contaminated fuel using the proper procedures.

**CAUTION: Dispose of petroleum-based products in a manner consistent with all applicable Local, State, Federal, and Provincial regulations.**

127. Remove the fuel tank (Refer to 09 - Engine/Fuel System/TANK, Fuel/Removal and Installation).

128. Ensure the swirl pot indentation below the in-tank electric fuel pump inlet is completely drained of any contaminated fuel and thoroughly clean the fuel tank.

129. Completely drain the low-pressure fuel lines and flush with clean diesel fuel, then install a **NEW** fuel filter.

130. Install the fuel tank and fill with clean diesel fuel.

131. Install the appropriate Fuel Line Adapters / Fitting from the Decay Tool, Fuel 8978A to the low-pressure feed pipe at the HPFP. Route the opposite end of this hose into a suitable container.

132. Using a diagnostic scan tool, activate the fuel pump to fully purge the low-pressure feed line from the tank to the HPFP.

133. Connect the low-pressure feed line to the HPFP.

134. Connect a clean hose to the low pressure return line fitting at the tank and place the other end in a suitable clean container.

135. Using a diagnostic scan tool, activate the fuel pump to fully purge the low-pressure fuel return from the HPFP to the tank.

136. Connect the low pressure return line at the tank.

137. Install the fuel tank (Refer to 09 - Engine/Fuel System/TANK, Fuel/Removal and Installation).

138. Connect the negative battery cable(s). In Service Library, see 08 - Electrical / 8F - Engine Systems / Battery System / Standard Procedure / Battery Disconnect - Dual 12 Volt Battery System.

139. Start the engine and check for leaks.

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140. Install the fuel injection pump blocker plate and the fuel injection pump blocker plate bolts to the fuel injection pump and tighten to 25 N·m (18 Ft. Lbs.) (Figure 97).

141. Connect the left CAC hose to the CAC and tighten the left CAC hose clamp (Figure 96).

142. Connect the Charge Air Cooler (CAC) hose to the EGR air flow control valve and secure the retaining lock (1) (Figure 95).

143. Set the air cleaner body (2) and the clean air hose (1) as an assembly into place and press down to seat it on its retainer. Install the air cleaner body bolt (3) and tighten to 5 N·m (44 In. Lbs.) (Figure 94).

144. Install the clamp at the turbocharger air inlet elbow (1). Slide the PCV hose (2) on at the head. Connect the Mass Air Flow electrical connector (3) (Figure 94).

145. Install the engine cover and engine cover bolts and tighten to 4 N·m (35 In. Lbs.) (Figure 93).

146. Close the hood and return the vehicle to the customer.

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**For vehicles with a non-contaminated fuel system, use the procedure below.**

## C. JL/JT and DT Vehicles

### Replace HPFP – Non-Contaminated System

**WARNING: Observe the following precautions when working on fuel systems: No sparks, open flames or smoking. Avoid inhaling and swallowing fuel. Avoid eye and skin contact with fuel. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing. Failure to observe these precautions may result in fire, explosion, property damage, and serious or fatal injury.**

**WARNING: High-pressure lines deliver diesel fuel under extreme pressure from the injection pump to the fuel injectors. This may be as high as 2000 bar (29,008 psi). Use extreme caution when inspecting for high-pressure fuel leaks. Fuel under this amount of pressure can penetrate skin causing personal injury or death. Inspect for high-pressure fuel leaks with a sheet of cardboard. Wear safety goggles and adequate protective clothing when servicing fuel system.**

**WARNING: Observe the following precautions when working on fuel systems: No sparks, open flames or smoking. Risk of poisoning from inhaling and swallowing fuel. Risk of injury to eyes and skin from contact with fuel. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing.**

**NOTE: When key is cycled to the off position, fuel system pressure automatically bleeds down.**

**NOTE: The fuel injection pump can be replaced without having to perform the entire base engine valve timing procedure. This procedure gives instruction on how to remove and install the new fuel injection pump without performing the base engine timing. Do not rotate the pump shaft after removing from the vehicle. The alignment of the pump shaft must be measured and recorded using a commercially available degree wheel after the pump is removed and before transferring the pump gear over to the new pump. This is done to align the pump to the same position during installation. If the base engine valve timing must be performed as part of the repair, refer to Service Library 09 - Engine/Valve Timing/Standard Procedure.**

**This procedure is for the removal and installation of the fuel injection pump only. The fuel injection pump can be replaced without needing to perform the entire base engine valve timing procedure. This procedure gives instruction on how to properly align the new fuel injection pump. If the base engine valve timing must be performed, (Refer to 09 - Engine/Valve Timing/Standard Procedure). The timing of the pump is crucial and the gear must not be moved once the pump is removed from the timing cover.**

**NOTE: Service Library has been updated to indicate that the high pressure fuel pipes may be reused for a non-contaminated repair.**

1. Remove and install the High Pressure Fuel Pump. See 09 - Engine, 3.0L Turbo Diesel / Fuel System / ASSEMBLY, Fuel Pump / Removal and Installation in Service Library.

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For all platforms above (DT, JL, JT) and both contaminated and non-contaminated systems, complete step **D-G.**

## D. Install the Authorized Modifications Label:

1. Type or print (with a ballpoint pen) the necessary information shown in (Figure 145) onto the authorized modifications Label.

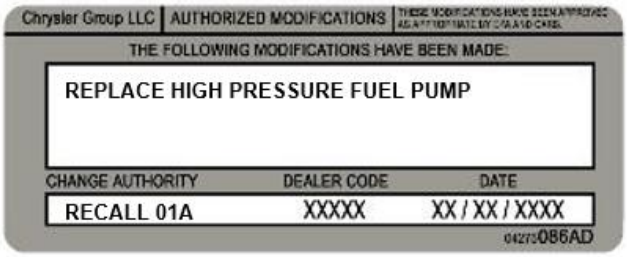



**Figure 145 – Authorized Modifications Label**

2. Remove the paper backing from the clear film on the front of the authorized modifications label then carefully apply the clear film over the front of the authorized modifications label (Figure 146).

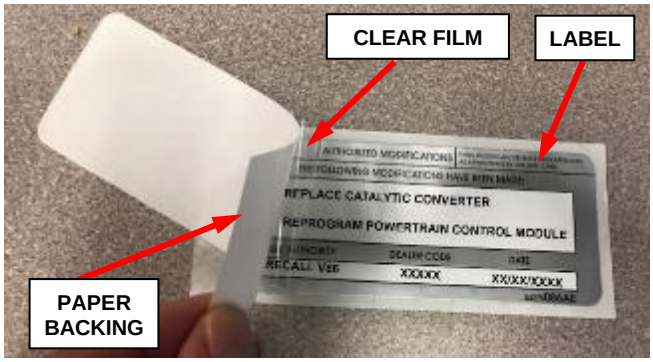



**Figure 146 – Apply Clear Film**

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**NOTE: The Authorized Modifications Label should be located near the Vehicle Emission Control Information (VECI) label (Figure 147).**

3. Locate the VECI label on the underside of the engine compartment hood (Figure 147).

   **NOTE: For vehicles missing a VECI label, locate a flat protected area on the underside of the hood to apply the authorized modifications label**.

4. Clean the surface near the VECI label with isopropyl alcohol or equivalent and a soft cloth.

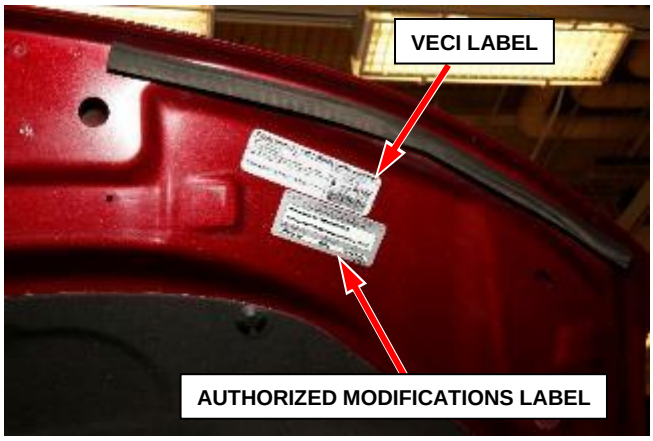



**Figure 147 – Apply Authorized Modifications Label Near VECI Label (Specific Vehicle May Look Different)**

5. Remove the authorized modifications label from its paper backing.
6. Apply the authorized modifications label next to the VECI label (Figure 147).
7. Firmly press and smooth the authorized modifications label to ensure good adhesion.
8. Close the engine compartment hood.
9. Complete the Proof of Correction Form for California Residents, **Section E**.

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## E. Complete Proof of Correction Form for California Residents:

This recall is subject to the **State of California Registration Renewal/Emissions Recall Enforcement Program**. Complete a Vehicle Emission Recall Proof of Correction Form **(Form No. 81-016-1053)** and **supply it to vehicle owners residing in the state of California** for proof that this recall has been performed when they renew the vehicle registration.

Process Steps to obtain the California Proof of Correction form:

a. Access the "**DealerCONNECT**" website.

b. Select the "**Service**" tab.

c. Under the "**Publications**" heading, select the "**ePublishing**" link.

d. Sign in using your **Dealer Code** and **Password**.

e. Select the "**Proof of Correction form**".

## F. Owner's Manual Addendum and Tip Card:

From Campaign kit CSFP01A1AA, place the Owner's Manual Addendum in the glovebox with the Owner's Manual.

Place the Tip Card in a conspicuous location that will be visible to the drive so that they will review it. Suggestions would be the top of the instrument panel, in front of the instrument cluster, etc. Please review the information on the card with the owner when the vehicle is returned to them.

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## G. Fuel Door Label:

**NOTE: Do not apply the label over an existing label. Apply the label on a flat surface on the inside of the fuel door. For example, on the top of the fuel door hinge (Figure 149).**

From Campaign kit CSFP01A1AA, install the fuel door decal.

1. Open the fuel door.
2. Clean the top surface of the hinge with isopropyl alcohol or equivalent and a soft cloth. Repeat as needed until the soft cloth comes off the surface clean.
3. Remove the fuel door label from its paper backing (Figure 148).
4. Apply the fuel door label (Figure 148) to the top of the fuel door hinge (Figure 149).
5. Firmly press and smooth the fuel door label to ensure good adhesion.
6. Close the fuel door.

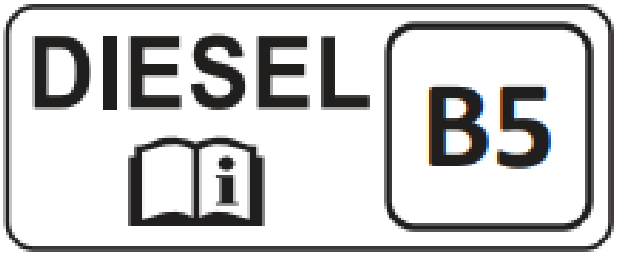



**Figure 148 – Fuel Door Label**

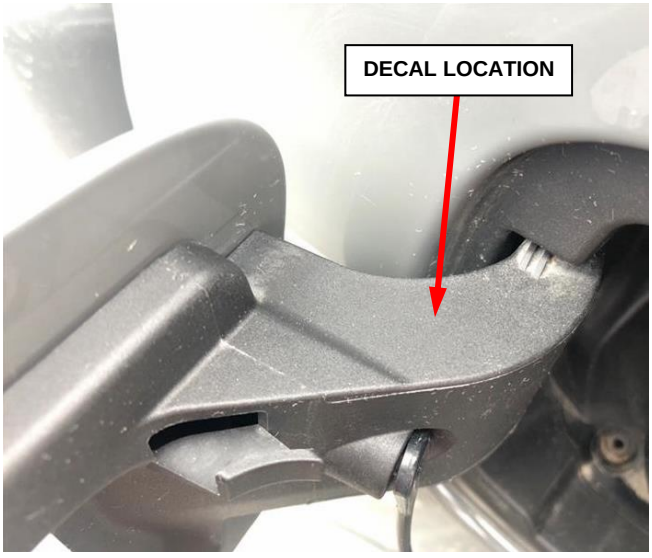



**Figure 149 – Fuel Door Hinge Location**

Strictly respect STELLANTIS Group safety, cleanliness, and environmental instructions for any intervention.
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(DJT)

**This notice applies to your vehicle,**

[Model Year and Model]
VIN XXXXXXXXXXXXXXXXX

**01A/NHTSA 23V-263**

**LOGO**

**VEHICLE PICTURE**

**YOUR SCHEDULING OPTIONS**

1. **RECOMMENDED OPTION**
   **Call your authorized Chrysler / Dodge / Jeep® / RAM Dealership.**

2. **Call the FCA Recall Assistance Center at 1-800-853-1403. An agent can confirm part availability and help schedule an appointment**

3. **Visit recalls.mopar.com, scan the QR code below, or download the Mopar Owner's Companion App.**

**QR Code**

Get access to recall notifications, locate your nearest dealer, and more through this website or Mopar Owner's Companion App. You will be asked to provide your Vehicle Identification Number (VIN) to protect and verify your identity. The last eight characters of your VIN are provided above.

**DEALERSHIP INSTRUCTIONS**
Please reference Safety Recall 01A.

# IMPORTANT SAFETY RECALL

## High Pressure Fuel Pump

Dear [Name],

This notice is sent to you in accordance with the National Traffic and Motor Vehicle Safety Act.

FCA US LLC, has decided that a defect, which relates to motor vehicle safety, exists in certain [2022 through 2023 Model Year (DT) Ram 1500 Pickups and 2021 through 2023 Model Year (JL) Jeep® Wrangler and (JT) Gladiator] vehicles.

It is extremely important to take steps now to repair your vehicle to ensure the safety of you and your passengers.

### WHY DOES MY VEHICLE NEED REPAIRS?

The **High-Pressure Fuel Pump (HPFP)** on your vehicle [1] **may fail prematurely.** A HPFP failure may introduce internally failed component debris into the fuel system potentially causing fuel starvation. Vehicle occupants may notice a Malfunction Indicator Lamp, service Electronic Throttle Control indicator, a fuel leak at the HPFP, or excessive noise from the HPFP. **Fuel starvation may result in an unexpected loss of motive power, which can cause a vehicle crash without prior warning.**

### HOW DO I RESOLVE THIS IMPORTANT SAFETY ISSUE?

FCA US will repair your vehicle [2] free of charge (parts and labor). To do this, your dealer will replace the HPFP, inspect and, if necessary, replace additional fuel system components. The estimated repair time is estimated to be between 2 hours to 7 hours depending on the repair needed. In addition, your dealer will require your vehicle for proper check-in, preparation, and check-out during your visit, which may require more time. Your time is important to us, so we recommend that you schedule a service appointment to minimize your inconvenience. Please bring this letter with you to your dealership.

**TO SCHEDULE YOUR FREE REPAIR,**
**CALL YOUR CHRYSLER, DODGE, JEEP OR RAM DEALER TODAY**

### CALIFORNIA RESIDENTS

The State of California requires the completion of emission recall repairs prior to vehicle registration renewal. Your dealer will provide you with a Vehicle Emission Recall Proof of Correction Form after the Safety Recall service is performed. Be sure to save this form since the California Department of Motor Vehicles may require that you supply it as proof that the Safety Recall has been performed.

In order to ensure your full protection under the emissions warranty provisions, it is recommended that you have your (vehicle or engine) serviced as soon as possible. Failure to do so could be determined as lack of proper maintenance of your (vehicle or engine).

### WHAT IF I ALREADY PAID TO HAVE THIS REPAIR COMPLETED?

If you have already experienced this specific condition and have paid to have it repaired, you may visit **www.fcarecallreimbursement.com** to submit your reimbursement request online. [3] Once we receive and verify the required documents, reimbursement will be sent to you within 60 days. If you have had previous repairs performed and/or already received reimbursement, you may still need to have the recall repair performed.

We apologize for any inconvenience, but are sincerely concerned about your safety. Thank you for your attention to this important matter.

Customer Assistance/Field Operations
FCA US LLC

FIAT CHRYSLER AUTOMOBILES

**Mr. Mrs. Customer**
**1234 Main Street**
**Hometown, MI 48371**

[1] If you no longer own this vehicle, please help us update our records. Call the FCA Recall Assistance Center at 1-800-853-1403 to update your information.

[2] If your dealer fails or is unable to remedy this defect without charge and within a reasonable time, you may submit a written complaint to the Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Ave., S.E., Washington, DC 20590, or you can call the toll-free Vehicle Safety Hotline at 1-888-327-4236 (TTY 1-800-424-9153), or go to safercar.gov.

[3] You can also mail in your original receipts and proof of payment to the following address for reimbursement consideration: FCA Customer Assistance, P.O. Box 21-8004, Auburn Hills, MI 48321-8007, Attention: Recall Reimbursement.

Note to lessors receiving this recall notice: Federal regulation requires that you forward this recall notice to the lessee within 10 days.