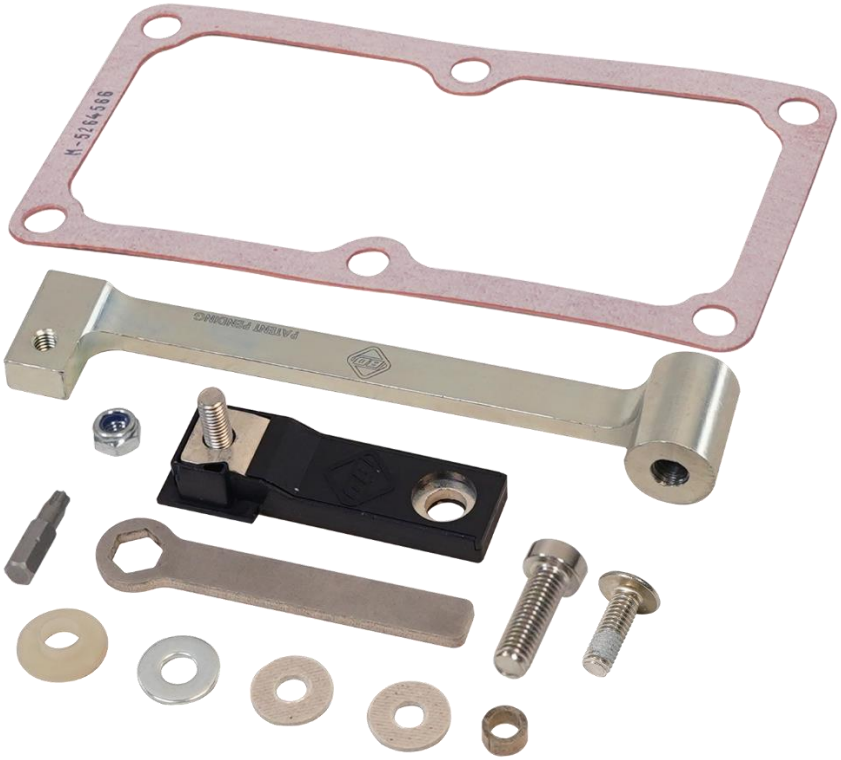
DOWNLOAD COLOUR INSTALL MANUALS AT



Killer Grid Heater Upgrade Kit

DODGE/RAM 6.7L ISB CUMMINS 2500/3500 PICK-UP / 3500/4500/5500 CAB & CHASSIS 2007-2024

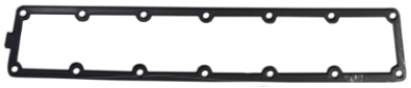
07-24 Grid Heater Replacement Parts

Scan the QR code to view the install video!

This kit includes everything required to upgrade the electrical components found on the intake grid heater – eliminating the terminal stud and nut that is a well-known failure point and also addresses the fastener located between the heating elements. The kit provides worry-free stock performance while being easy to install and maintaining emissions compliance.

Kit Contents

Please check to make sure that you have all the parts listed in this kit before you start the disassembly of your truck.

1401519	1401520	5086829AA
		
Upper Busbar Assembly	Busbar; Lower Grid Heater – Steel	Gasket; Intake Plate
Qty: 1	**Qty: 1**	**Qty: 1**

FT-11509602	1401531	1401526
		
Bolt; M8-1.25x25 SS Socket Low Profile	Insulating Washer; 0.75” OD Shoulder GF	Wrench; 10mm Grid Heater
Qty: 1	**Qty: 1**	**Qty: 1**

1401528	68024672AB	1502009	1100111
			
Bolt; M6-1.0x18 SS BHSCS Thead Locker	Gasket; Cummins Intake	IP25 Torx Plus Bit	Washer; 1/4"x0.625"OD
Qty: 1	**Qty: 1**	**Qty: 1**	**Qty: 1**

1130058	1401527	1401529	1300133
			
Nut; M6-1.0 Nyloc CZP	Insulating Washer; M6 Mica	Insulating Sleeve; Mica	Tie Wrap; Short
Qty: 1	**Qty: 2**	**Qty: 1**	**Qty: 2**

Table of Contents

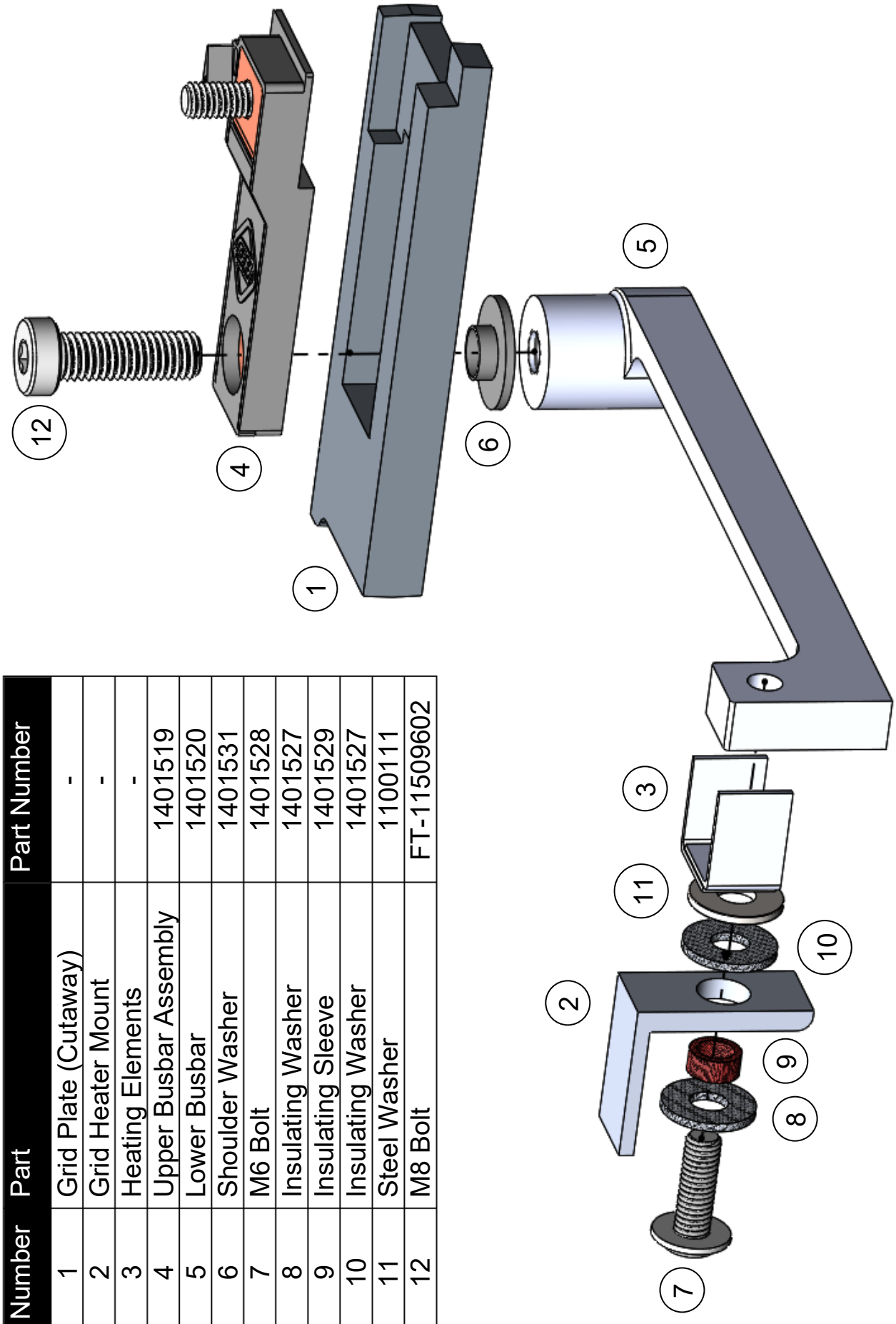
Introduction

This kit is designed to upgrade the electrical circuit for the components found on the Cummins intake grid heater. It directly addresses the known weakness of the grid heater where the stud and nut on the underside of the heater regularly sees 200A causing it to work itself loose, arc, melt, and eventually fall into the engine leading to expensive repairs or even replacement. By eliminating the stud and nut and replacing it with an upsized bolt fastened through the top of the grid heater, this kit offers reliable performance and peace-of-mind. The updated kit now also addresses the melting fastener found in between the heating elements by directly connecting the busbar to the heating element. Additional features include self-locking threads in the lower busbar to maintain clamping force, included specialty tools for heater disassembly, and replacement of all the stock fasteners and gaskets.

Tools Required for Installation

• 8mm, 10mm Deep Socket • 7/16”, 1/2”, 1” Deep Socket • Ratchet with Extensions • 9/16” , 1” Wrench • 17mm, 19mm Wrench • 4mm, 5mm Hex • Torque wrench	• Pipe Dope • Flat Blade Screwdriver • Side Cutters • Razor Knife • Masking Tape & Pen • Bit Ratchet • Hacksaw

Exploded View of Killer Grid Heater Assembly

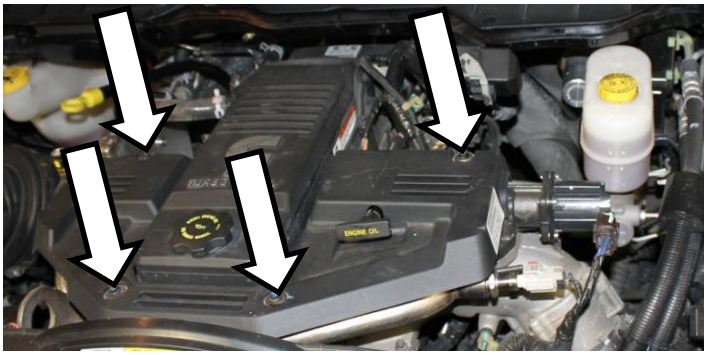


Number	Part	Part Number
1	Grid Plate (Cutaway)	-
2	Grid Heater Mount	-
3	Heating Elements	-
4	Upper Busbar Assembly	1401519
5	Lower Busbar	1401520
6	Shoulder Washer	1401531
7	M6 Bolt	1401528
8	Insulating Washer	1401527
9	Insulating Sleeve	1401529
10	Insulating Washer	1401527
11	Steel Washer	1100111
12	M8 Bolt	FT-11509602

Removal of Grid Heater

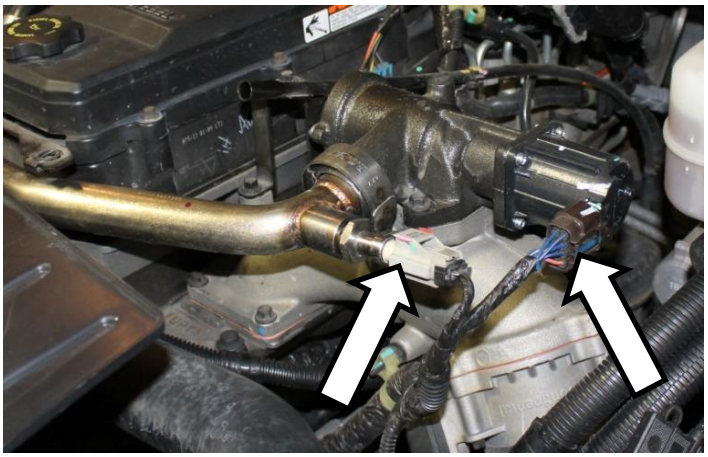
Record radio settings before disconnecting the negative terminals and then the positive terminals on both of the vehicle's batteries.

1. Pull out the oil dipstick then remove the four bolts that secure the plastic cover to the engine (8mm).



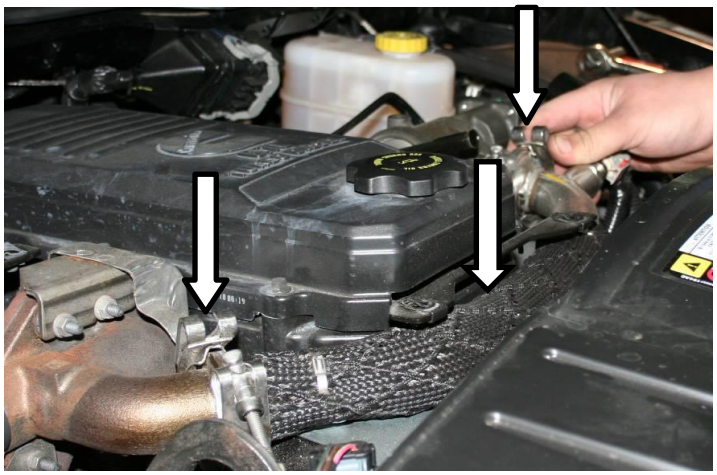
2. Disconnect the EGR valve connector from the EGR valve.

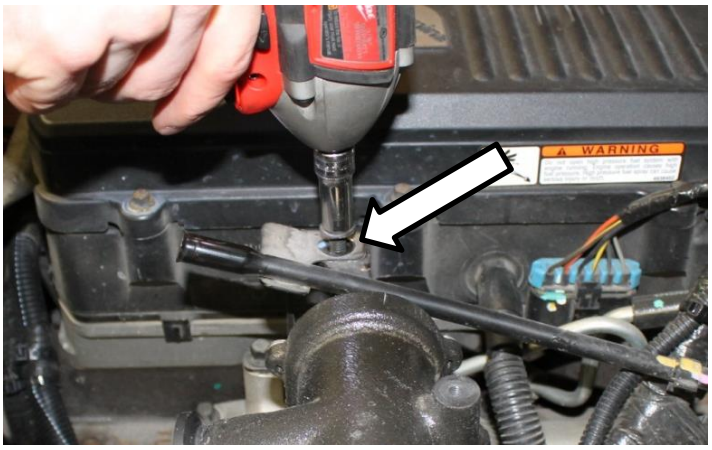
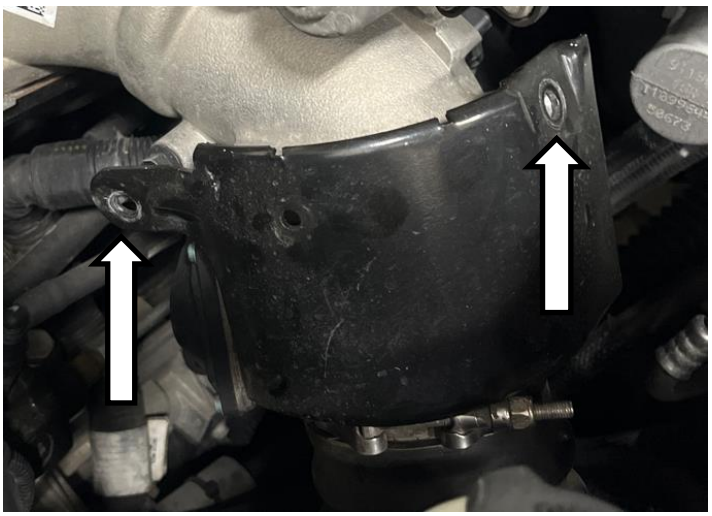
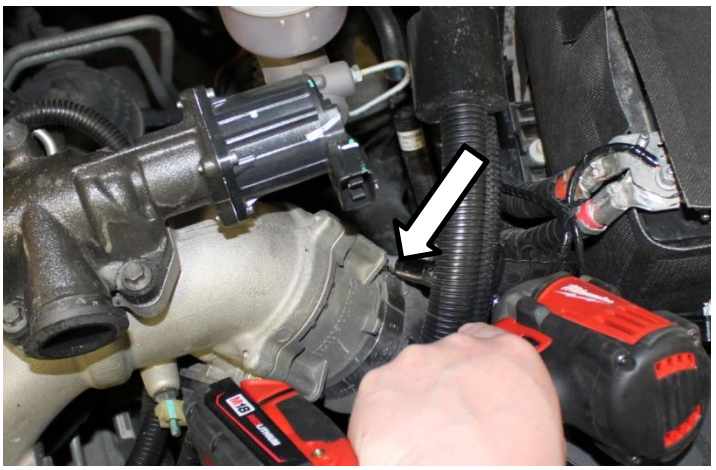
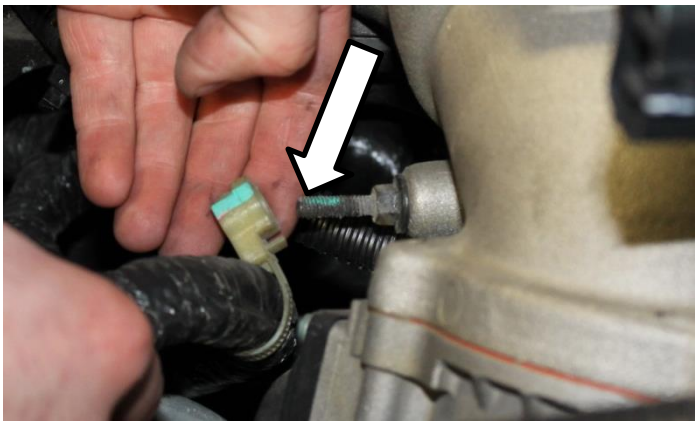
Note: For 2011+ models, the temperature sensor connector will need to be disconnected as well.



3. Loosen the EGR cross over pipe clamps (11 mm) and slide them down the pipe. Remove the bolt located at the center of the pipe, and remove the pipe from the vehicle (8mm).

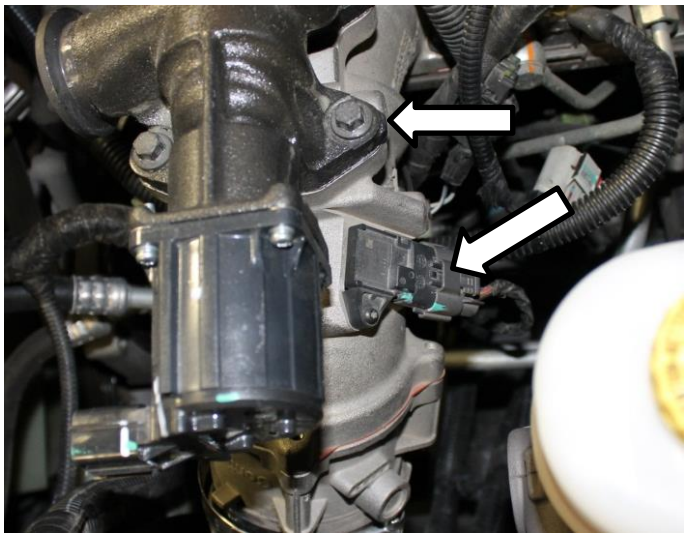
Note: When releasing the pipe from the engine there will be a loose washer on both sides. Be sure not to lose these as they will be reused.



4. Remove the bolt holding the dipstick tube to the intake horn (10mm).	
5. **For 2013+ models:** Remove the heatshield covering the intake control valve.	
6. Loosen the clamp between the rubber coupler and the intake horn. Use a blade screwdriver to gently break the seal.	
7. Pull off the harness clip from the intake horn.	

8. Disconnect the thermocouple from the backside of the intake horn, along with the bracket securing the wiring harness to the horn (10mm).

9. Unplug the map sensor plug.

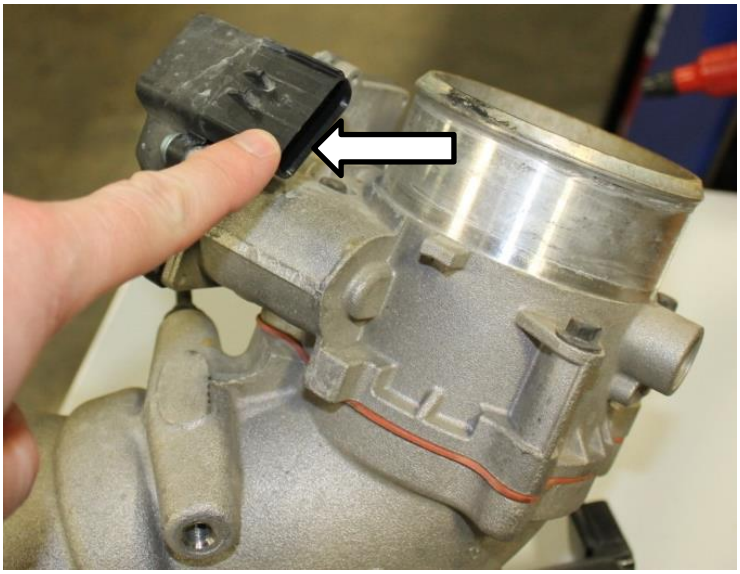


10. Remove the 6 bolts (10mm) that secure the horn to the engine.

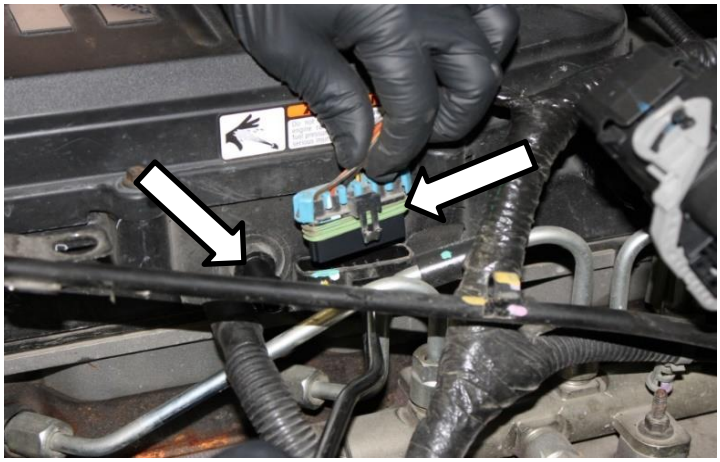
11. Gently twist the intake horn to expose the throttle valve sensor on the bottom of the horn. Disconnect the throttle valve connector then remove the horn from the vehicle.

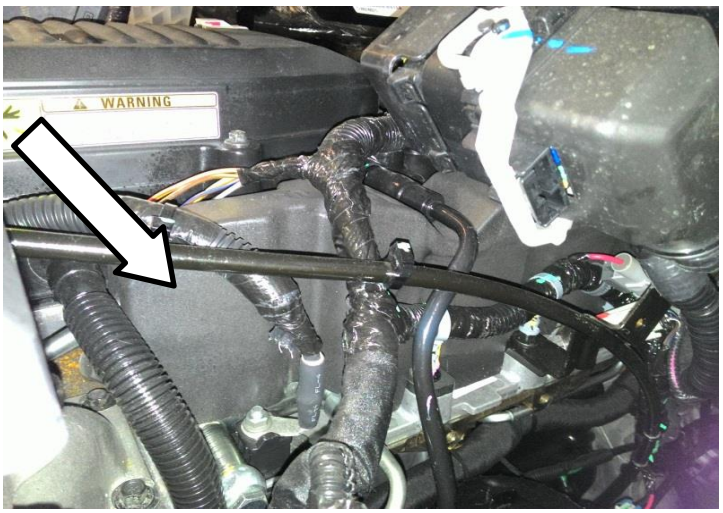
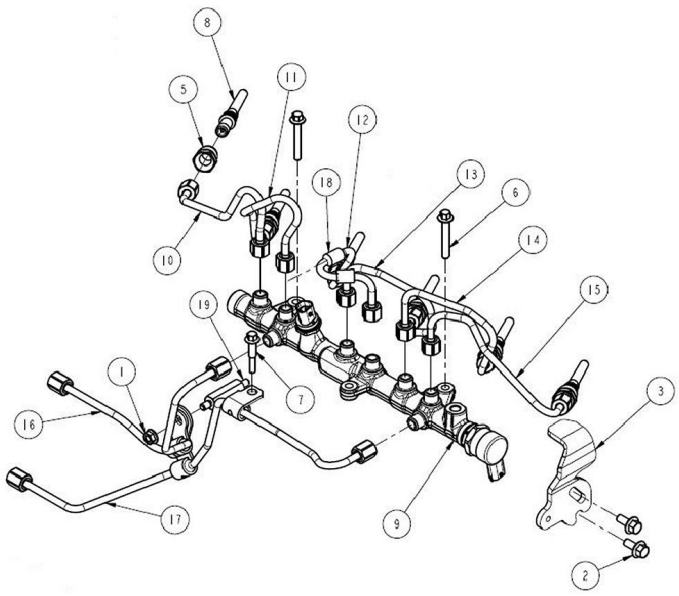
Note: The connector will need to be disconnected before you remove the horn from the vehicle.

Photo shown on bench for clarity.



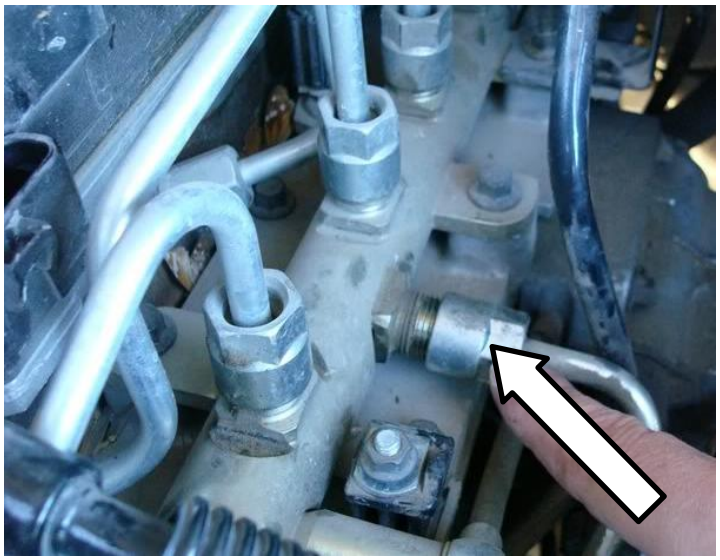
12. Disconnect the breather hose to the motor. Disconnect the two fuel line harness connectors on the side of the motor.



13. Using a puller tool pull out the harness clips that secure the harness to the grid heater and the other clip on the backside of the valve cover.	
14. **For 2013+ Models:** Remove the sound deadening foam rubber from around the fuel injection lines to allow access to the fuel lines.	
15. Disconnect the high pressure lines from the rail. 2019-2020 models with the CP4 injection pump will have two high pressure lines. The remaining models, including 2021+, will have one high pressure line. **Refer to the end of the manual for a detailed view of the fuel rails and lines.**	

16. Loosen the fittings on the line that goes from the fuel rail to the fuel pump. Once both fittings are loose the line can be removed from the vehicle.

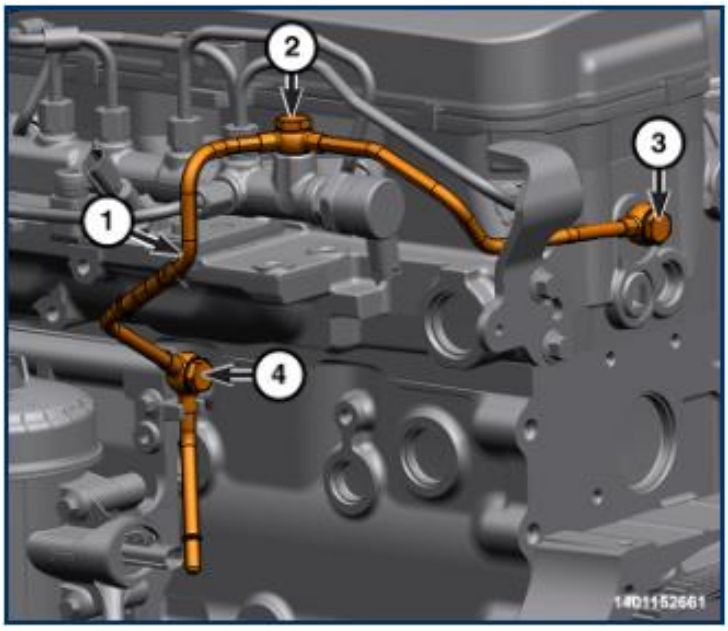
For 2019-2020 Models: The models with the CP4 pump have 2 lines to be removed from the side.



17. **For 2007-2018 Models:** Remove the banjo bolt with washer from the front side of the fuel rail (17mm).

18. **For 2019+ Models:** Remove the fuel return line (1) by removing the fuel return line banjo bolts (2, 3, 4).

Note: It is possible to remove the fuel rail with just the removal of bolt (2) by slipping it out from under the return line. Be careful not to excessively bend the line.

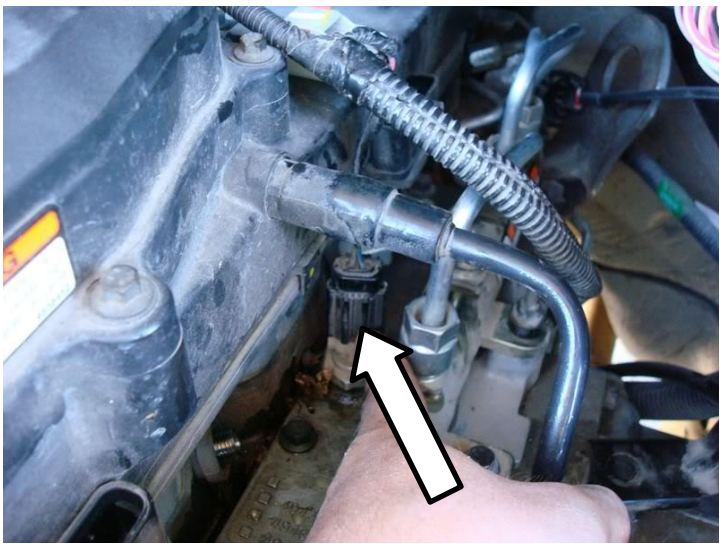


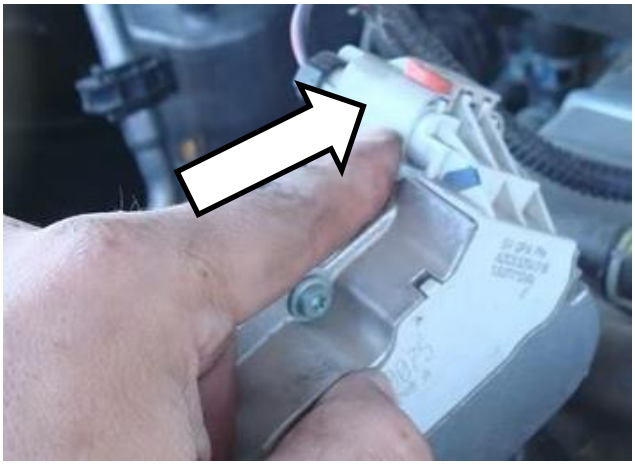
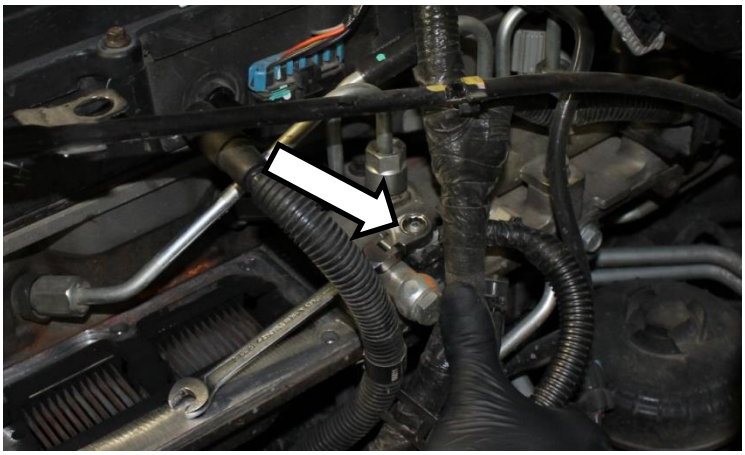
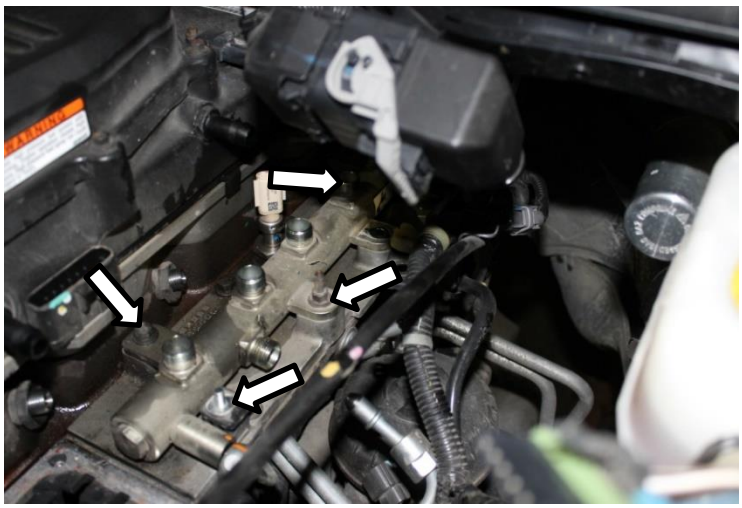
19. Remove the six injector lines starting with loosening of the fittings at the front of the fuel rail and the #1 injector (19mm). *As you remove the fuel lines identify them in some way (eg. masking tape and felt pen) so they can be easily reinstalled in the same location.*

Note: Fittings on both sides of the line will need to be backed off before the line can be removed.

20. Disconnect the intake air temperature sensor connector from the grid heater.

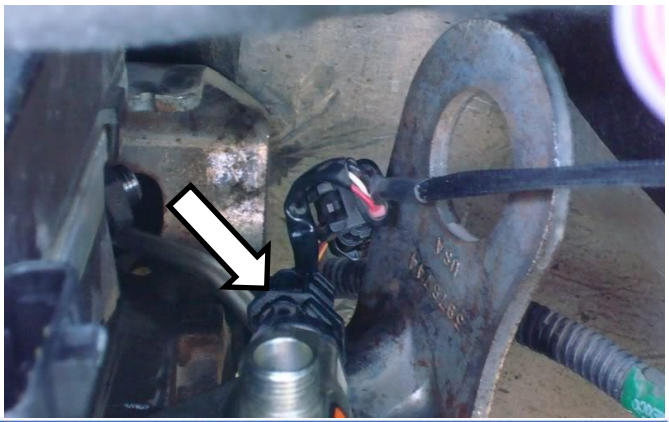
Note: 2013+ models have this sensor located closer to the driver side of the intake plate.

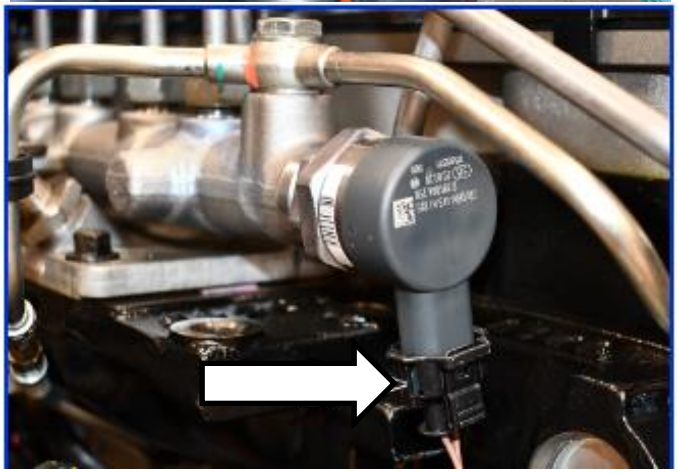


21. Disconnect CCV pressure sensor harness connector that is located at rear of the valve cover. This needs to be disconnected to allow you to coil the harness aside to access the grid heater.	
22. Disconnect the EGR servo motor connector.	
23. Remove the power wire from the grid heater (10 mm).	
24. Remove the four bolts holding the fuel rail to the grid heater (10mm).	

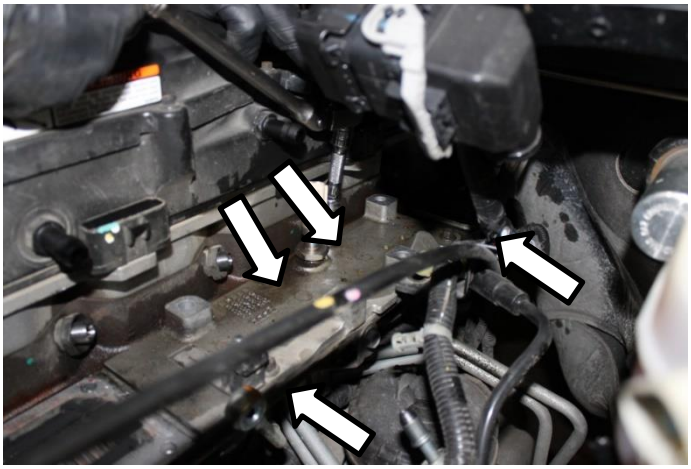
25. Disconnect the fuel rail connector from the back of the rail.

Note: For 2019+ models the harness connector is facing down.





26. Remove the four remaining bolts that hold the grid heater to the engine.



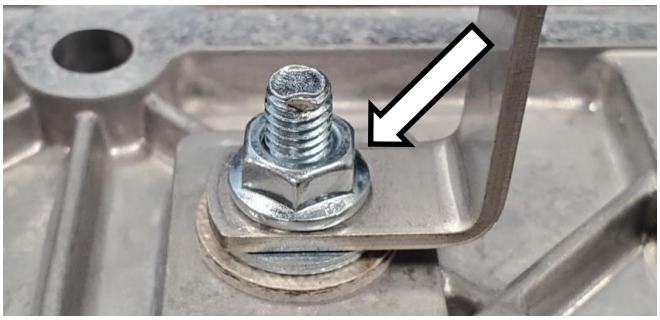
27. With the four bolts removed you may need to gently pry the grid heater from the gasket before it can be removed from the vehicle.

Note: Clean off the old gasket if any is left on the engine and wipe clean so the new gasket will have a good seal.

Installation of Heater Kit Components

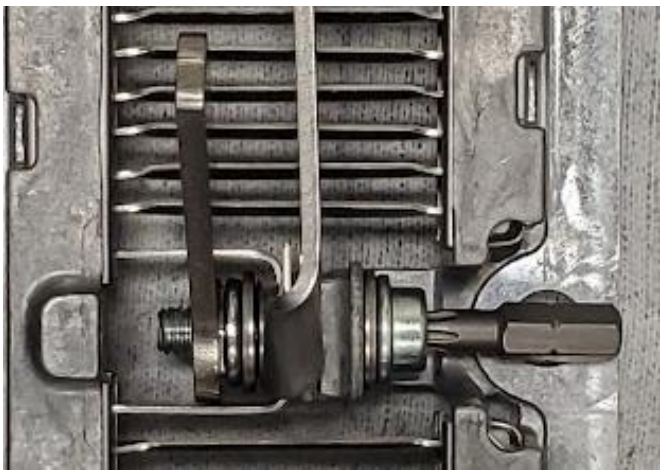
1. Disassemble the grid heater by first removing the stud terminal nut (10mm) on the underside of the heater. The busbar on the top of the plate can be removed by first unhooking the end on the edge of the plate before lifting it out.

Note: The stud has its threads staked from factory so the nut may be tight coming off.

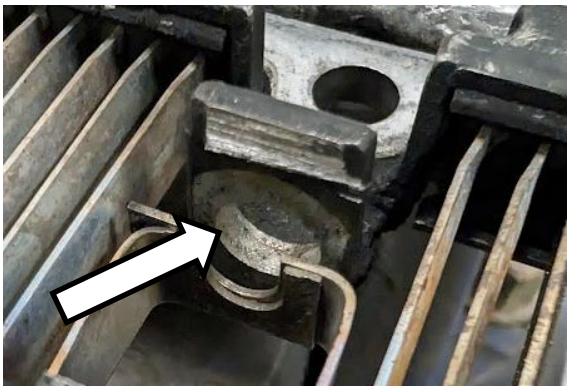


2. To remove the lower busbar, use the included IP25 Torx Plus bit and compact 10mm wrench to remove the bolt and nut in between the heating elements.

All the components removed here, including the insulating sleeve and steel washer will be replaced.

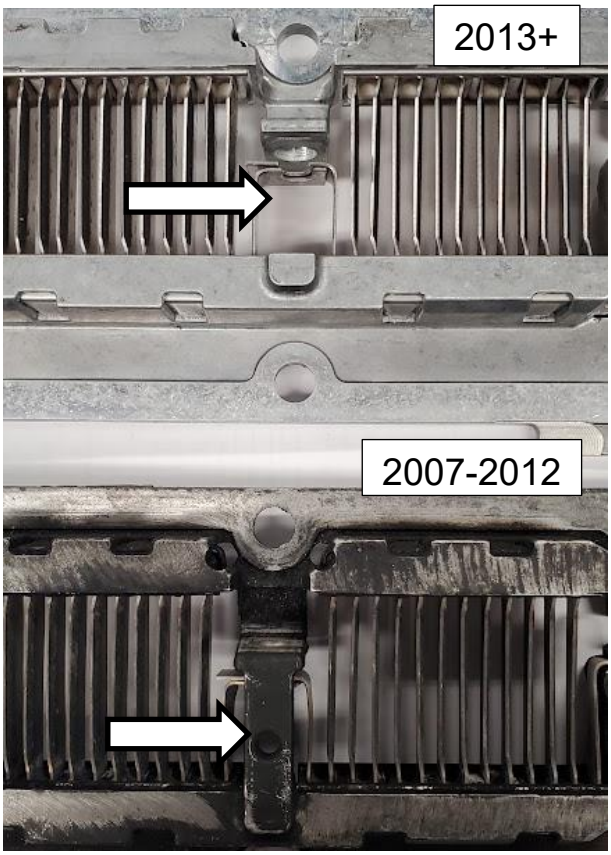


3. With the components removed, clean the heater and intake horn if they are covered in soot. Scotch-Brite or similar can be used on the mounting surfaces.

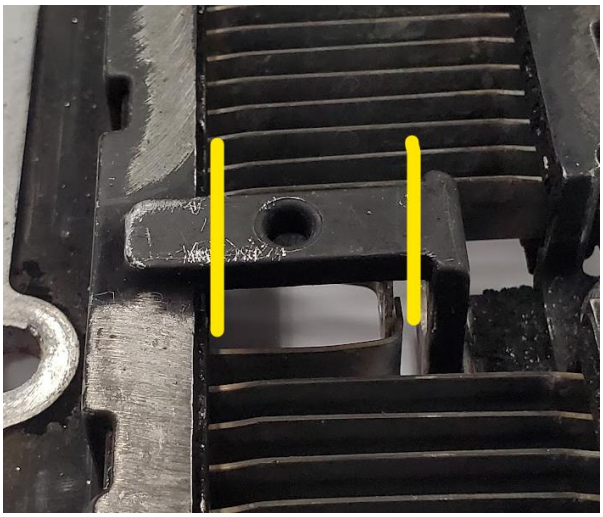


4. **For 2007-2012 Models:** the grid heaters will require modification before proceeding with installation. These grid heaters have a casting feature that bridges where the heating elements connect to the body of the heater and needs to be cut to be removed.

2013+ grid heaters have this casting feature removed from factory and will not require modification.



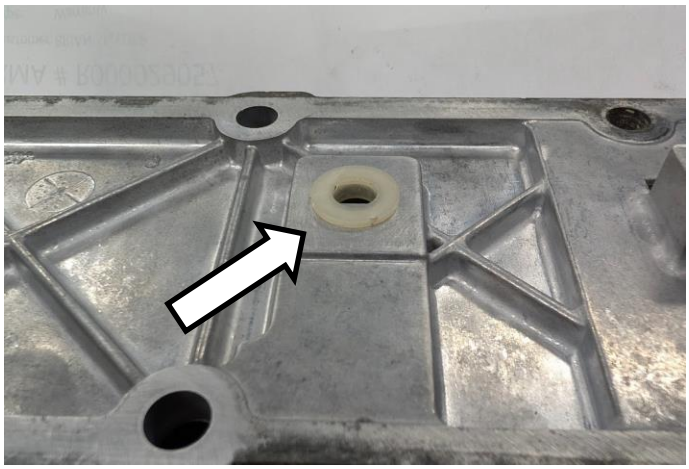
5. **For 2007-2012 Models:** cut the cast aluminum feature using a rotary tool with cutting disc or hacksaw. Make two cuts flush with the vertical wall in the locations shown on the picture, making sure not to damage the heating elements underneath. The end result after cutting will be a grid heater that looks like the 2013+ version as shown above.



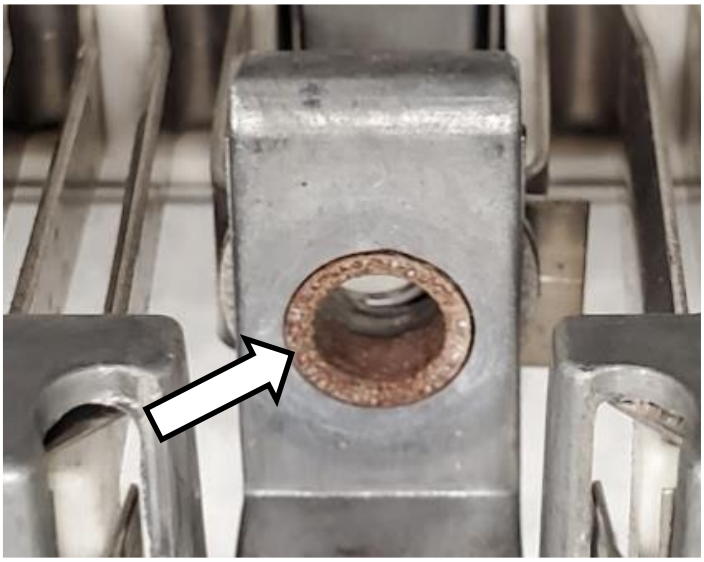
6. Install the nylon insulating washer to the bottom of the grid plate with the washer shoulder pressed firmly into the bolt hole.

IMPORTANT!

The shoulder washer is required to insulate the lower busbar from the grid heater body.



7. Install the new insulating sleeve into the grid heater mount bolt hole as shown.

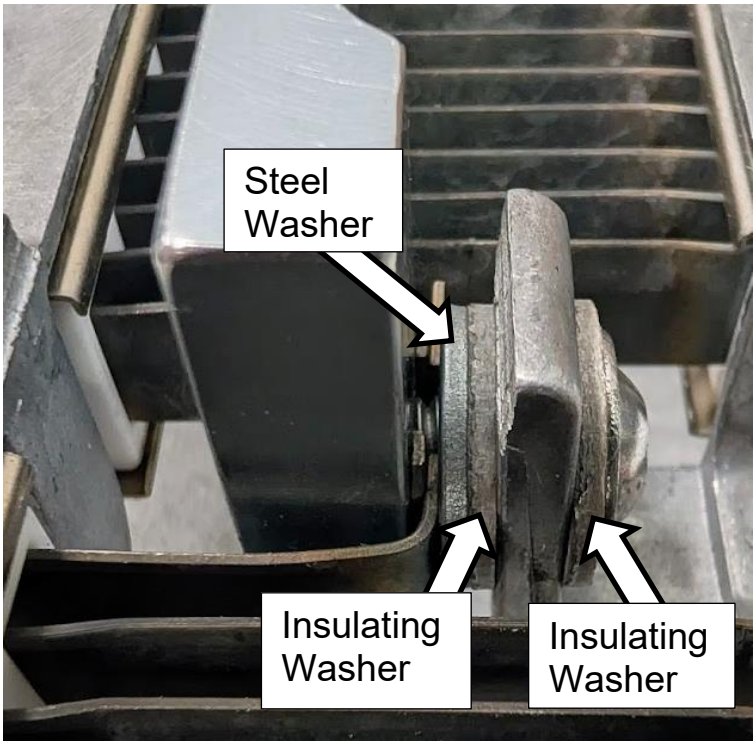


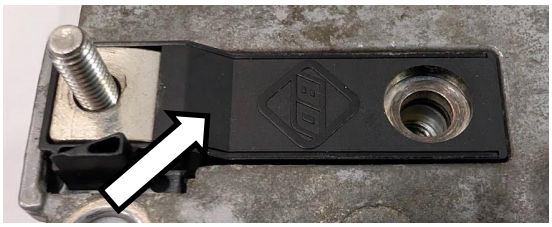
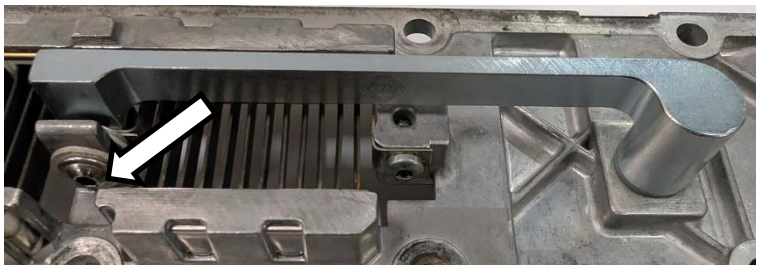
8. Install the new lower busbar between the heater elements using the supplied button head bolt with threadlocker, the new insulating washers and the supplied steel washer. Hand-tighten for now – this bolt will be torqued at a later step.

IMPORTANT!

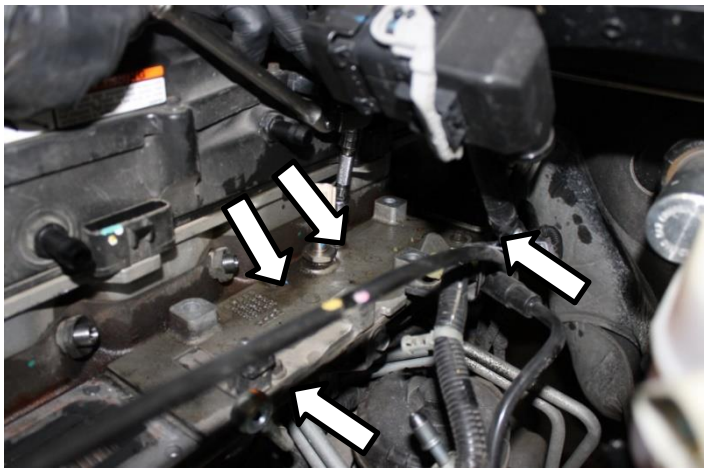
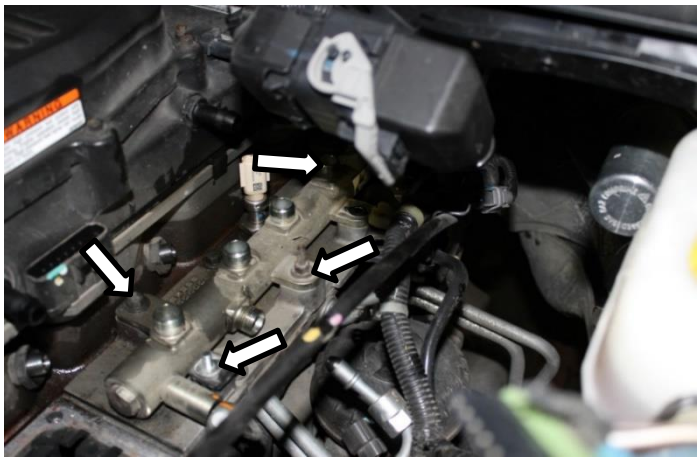
The mica insulating washers must sandwich the grid heater mount to electrically isolate it.

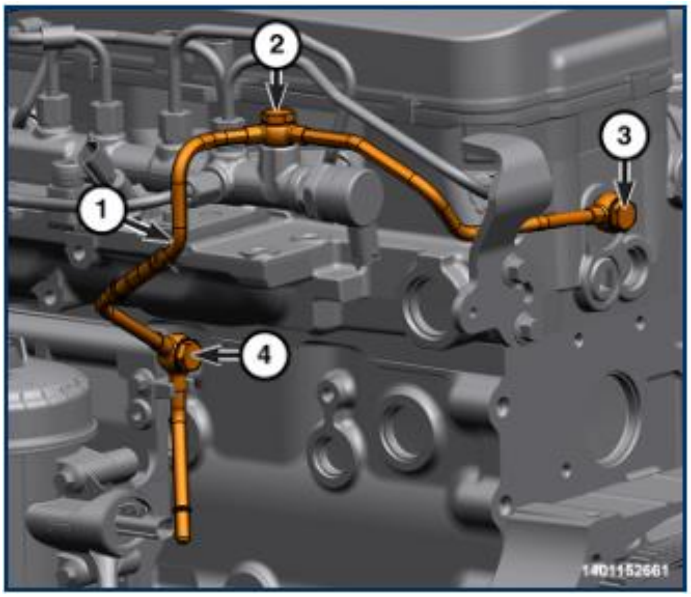
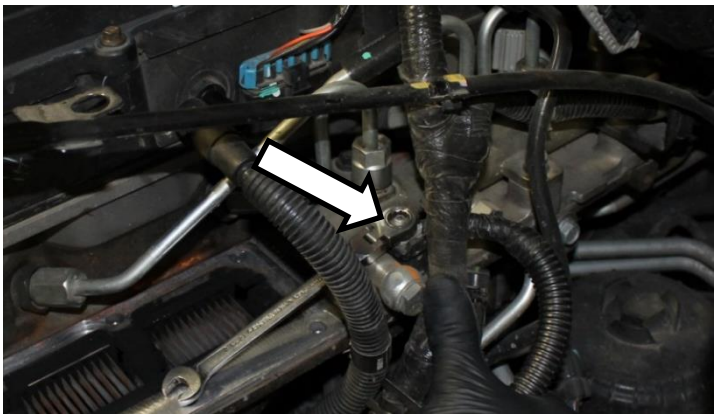
Refer to end of document for a detailed view.



9. Install the new upper busbar assembly into the top of the grid heater.	
10. Install the M8 socket cap screw through the top into the lower busbar into the lower busbar. Torque to 15 ft-lbs (20.3 Nm).	
11. Tighten the lower busbar bolt to the heating elements to 7 ft-lbs (9.5 Nm).	

Installation of Grid Heater

1. Apply some pipe dope to the four OEM intake bolts then install the grid heater plate with the supplied gasket. Tighten to 18 ft-lbs (24.4 Nm). Note: Threading in the intake horn bolts finger tight will help with the alignment of the holes so the horn will be easier to install later. Unthread intake horn bolts once the plate is in place.	
2. Reconnect the fuel rail connector. Then apply some pipe dope to the four OEM fuel rail bolts and install the fuel rail to the intake plate. Torque to 18 ft-lbs (24.4 Nm).	

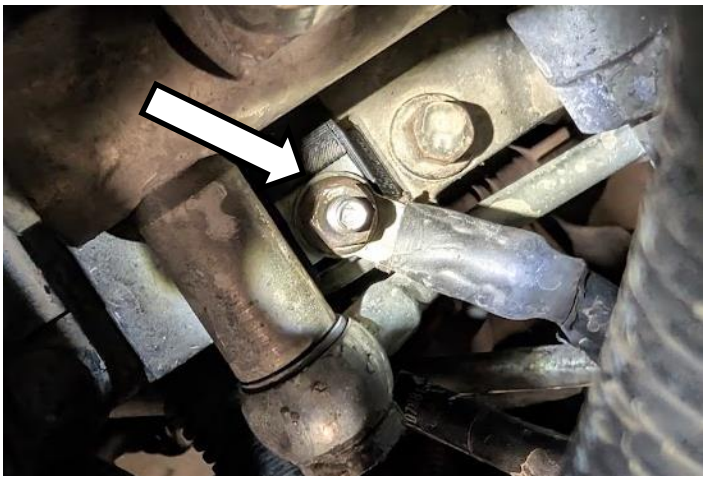
3. Reinstall the six injector lines (19mm). Torque to 30 ft-lbs (40.7 Nm).	
4. **For 2019+ Models:** Reinstall the fuel return line as shown. 5. **For 2007-2018 Models:** Reinstall the banjo bolt with washers back into the side of the fuel rail (17mm).	
6. Reinstall the line that goes from the fuel rail to the pump. 2019-2020 models will have 2 lines to reinstall.	

7. Install the heater cable to grid heater stud using the supplied Nyloc nut. Tighten to 9 ft-lbs (12.2 Nm).

IMPORTANT!

Ensure the cable connector is clocked so that it is butted up on the stop between the bolt head and grid heater stud when tightening to prevent contact with the bolt head.

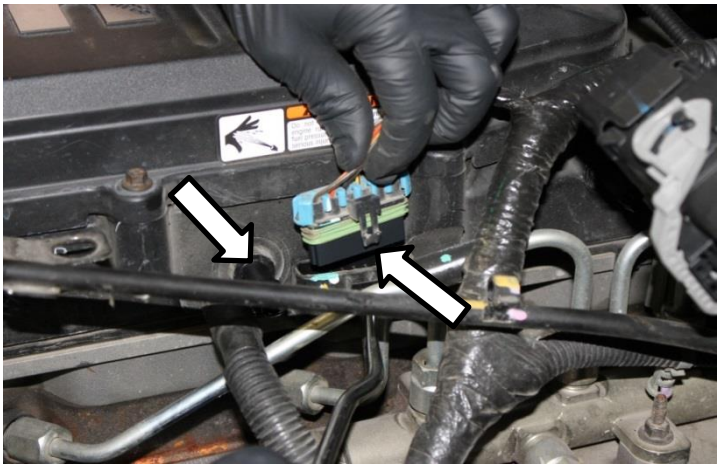
Use the included zip ties to secure the heater cable to a nearby wire or component.

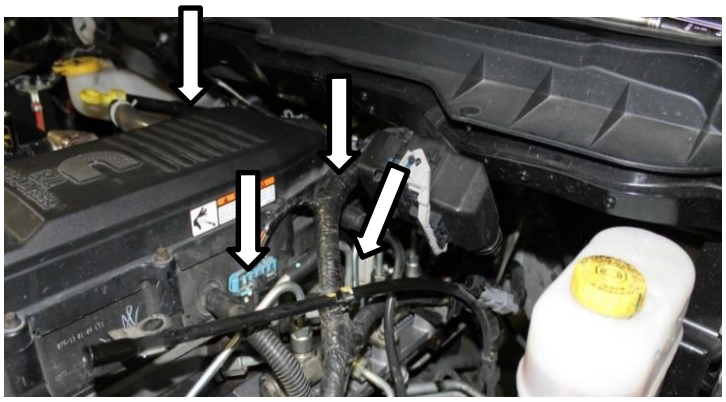


8. Reconnect the air breather hose to the motor and the fuel line harness connectors on the side of the motor (x2).

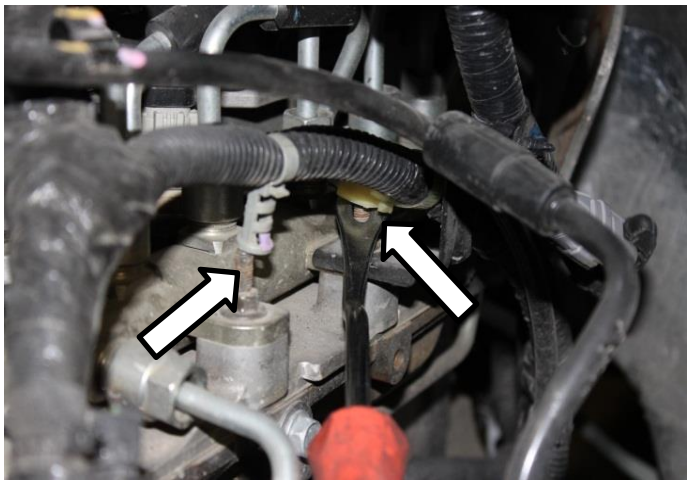
9. Reconnect the servo motor connector and CCV pressure sensor connector located behind the valve cover.

10. Reconnect the IAT sensor connector to the sensor in the intake plate.

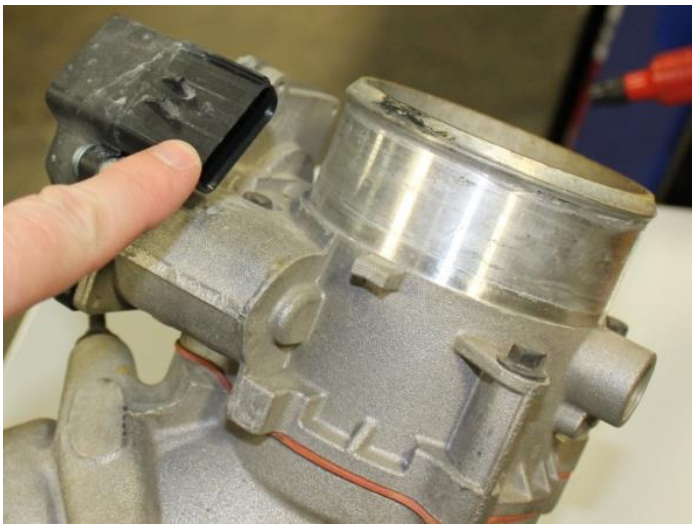




11. Reconnect the harness clips onto the fuel rail in the same location as they were removed from.

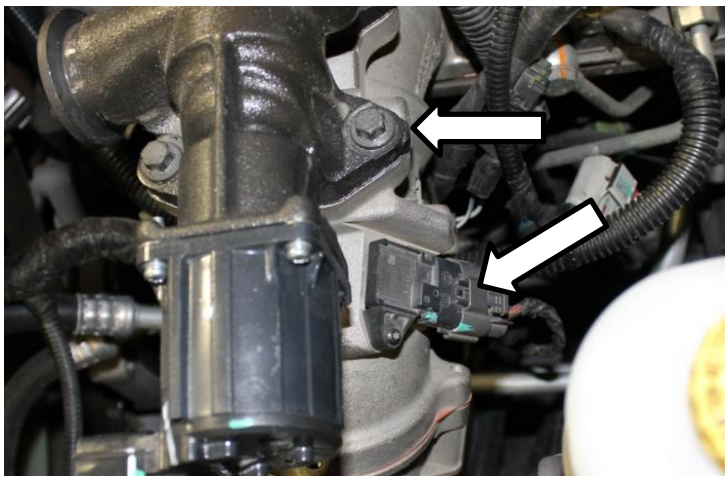


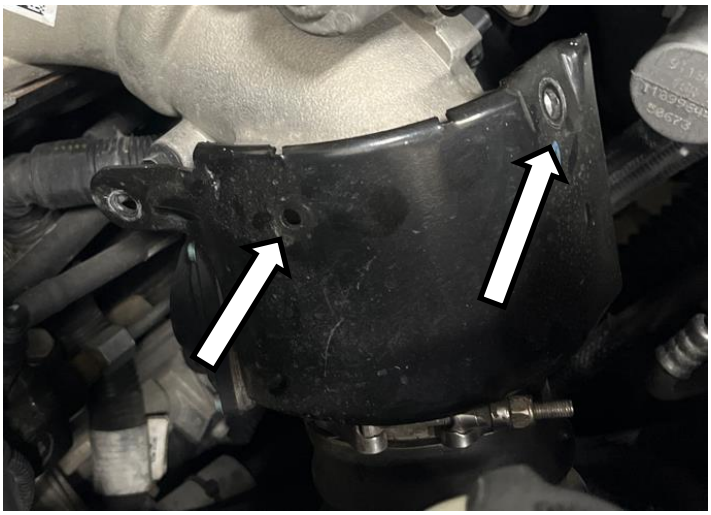
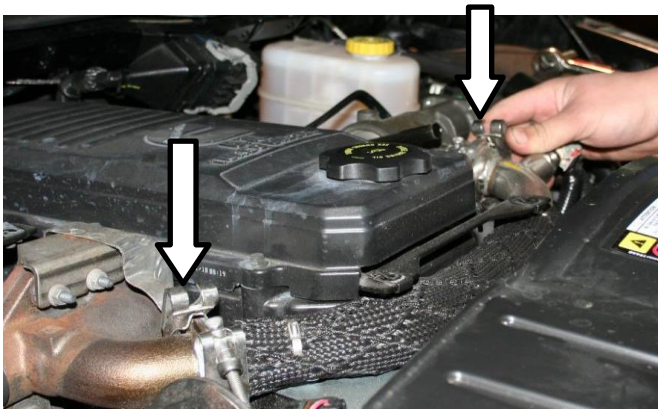
12. Reconnect the throttle valve sensor to the bottom of the intake horn.

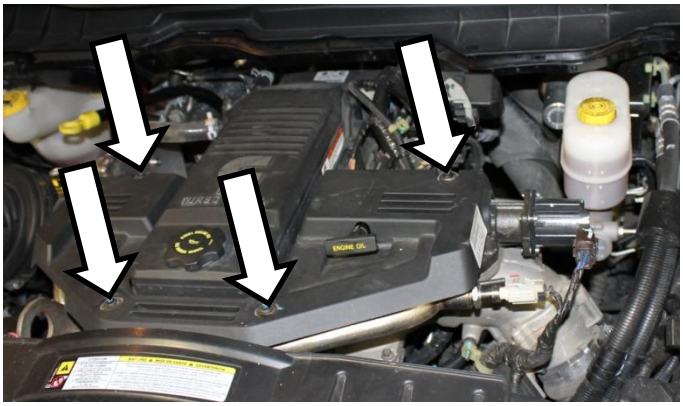


13. Reinstall the OEM horn into rubber coupler and fasten intake horn into place with the six bolts (10mm) along with the supplied gasket. Torque to 18 ft-lbs (24.4 Nm). Then tighten clamp at the rubber coupler connection.

14. Reconnect the thermocouple on the backside of the horn and reattach the bracket securing the wiring harness (10 mm). Reconnect the MAP sensor.



15. Reinstall dipstick bracket.	
16. **For 2013+ models:** Reinstall the heatshield covering the intake control valve.	
17. Reinstall the harness clip back onto the horn.	
18. Reinstall the cross over pipe clamps (11 mm) and slide them down the pipe. Install the bolt (8mm) located at the center of the pipe, and tighten the clamps.	

19. Reconnect the EGR valve connector to the EGR valve. Note: For 2011+ models, reconnect the temperature sensor.	
20. Reinstall the four bolts that secure the plastic cover to the engine (8mm). Reinsert the oil dipstick. 21. Once complete test the vehicle for proper function and check for leaks.	

Troubleshooting and Diagnostics

DTC P2609 or P0542 Code Set: These codes indicate an issue with the Intake Air Heater System Performance. During the grid heater preheat cycle, the intake air heater monitor looks for a calibrated voltage drop to detect proper heater operation.

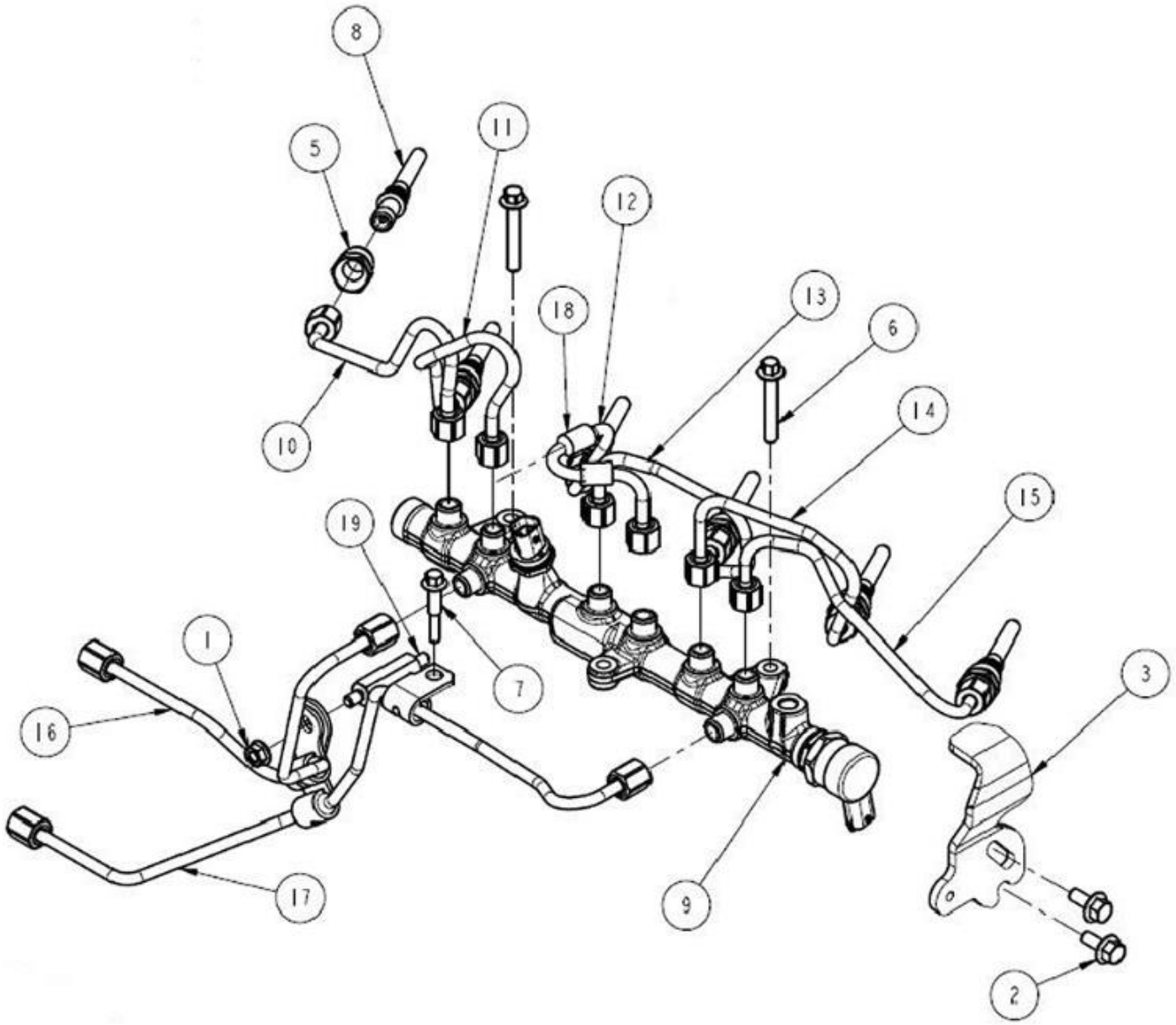
Diagnosis: The common cause of this DTC is an incorrectly installed grid heater upgrade kit, usually due to errors when installing insulating washers. Start by referring to the images on Page 4 and Page 24 to check for correct washer order installation. With the kit installed in the truck, check for functionality of the heater by using a clamp ammeter on the power wire going to the grid heater. If it's working properly, you should get a reading of approximately 200A while the heater is on. Check that the grid heater circuit is properly grounded by testing resistance between the grid heater power connection point and battery negative using a multimeter. This should read zero or close to zero ohms. Further diagnosis will require removal of the grid heater in order to inspect.

If you have any technical difficulties, concerns, or comments, please phone our Technical Support hotline at (800) 887-5030 between 8:30am-5:00pm PST (Pacific Standard Time) Monday to Friday.

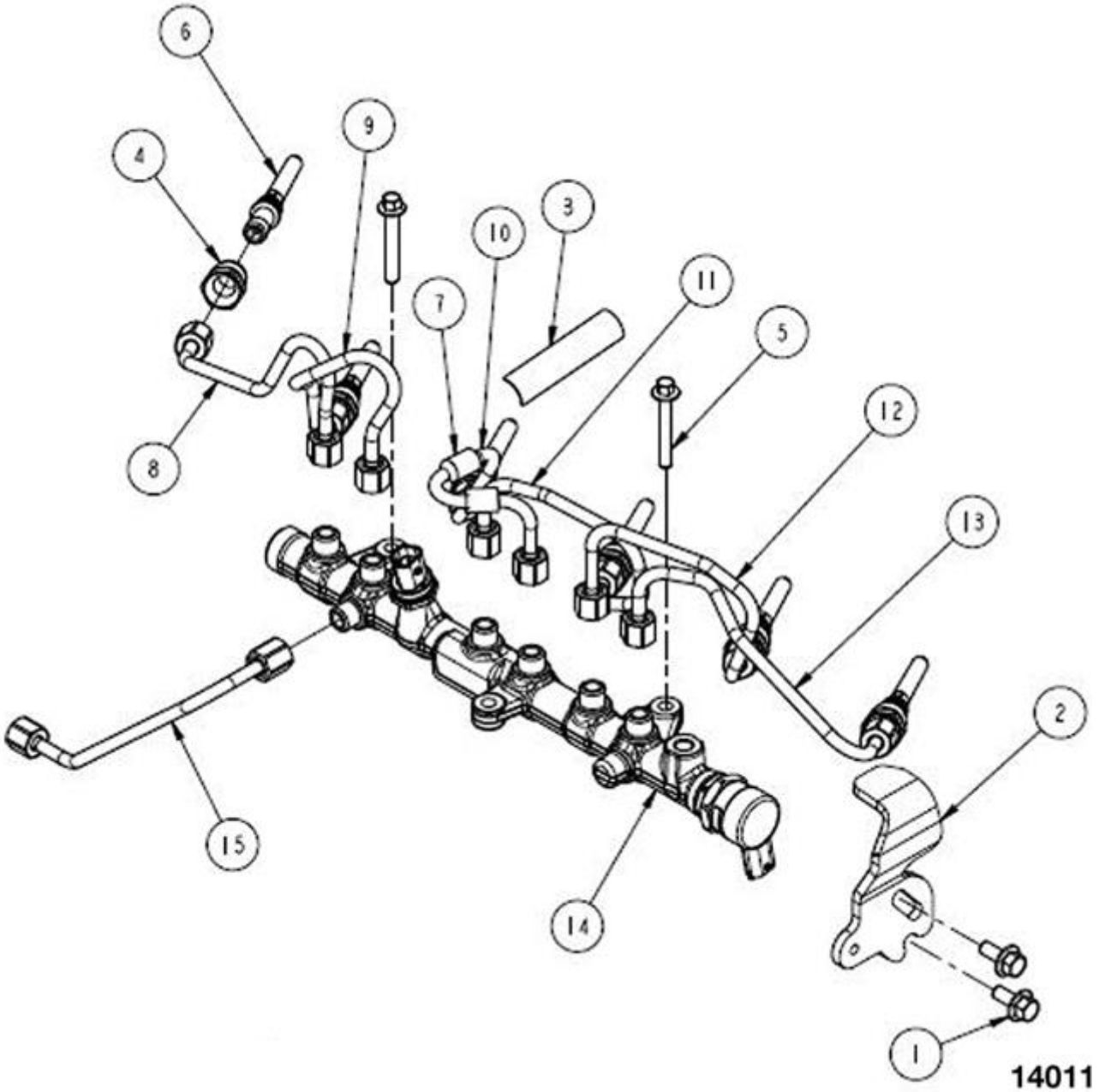
Detailed View of 2019+ Fuel Rails

For model years 2019 and 2020, the Cummins 6.7L engine came with a CP4.2 injection pump before reverting back to a CP3 for 2021+.

Below is a detailed view of the **2019-2020** fuel rail. Note that there are two high pressure lines (16 and 17).



Below is a detailed view of the **2021+** fuel rail. Note that there is only high pressure line (15).



Lower Busbar Installation Detailed View

Install order from right to left (refer to picture): Button head bolt with threadlocker, insulating washer, grid heater mount (with insulating sleeve inside), insulating washer, steel washer, heating elements, and lower busbar.

CAUTION! WARNING! IMPORTANT!

It is very important that the grid heater mount is electrically isolated using the mica washers to prevent vehicle damage. Follow the washer order below carefully.