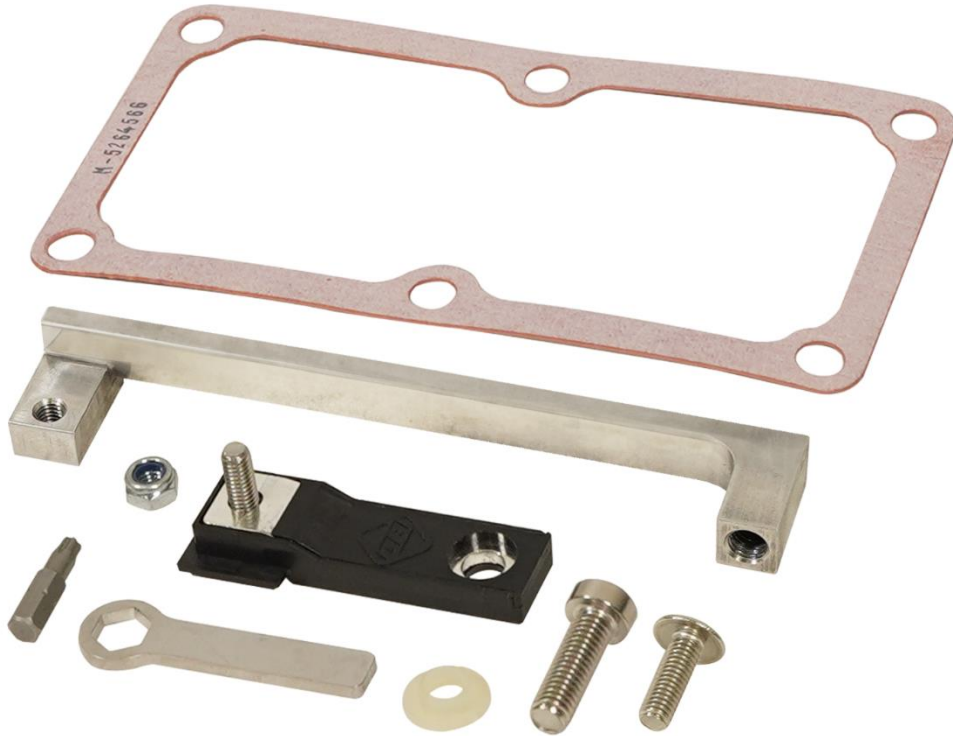




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## **Killer Grid Heater Upgrade Kit**

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

**1041520**




**07-24 Grid Heater Replacement Parts**






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 in the updated kit, now also addresses the fastener located between the heating elements. The kit provides worry-free stock performance while being easy to install and maintaining emissions compliancy.

## 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.

	1401520	1401524
		
Upper Busbar Assembly <b>Qty: 1</b>	Busbar; Lower Grid Heater – Steel <b>Qty: 1</b>	Insulating Washer; Shoulder 5/16" GF <b>Qty: 1</b>

FT-11509602	5086829AA	1401526
		
Bolt; M8-1.25x25 SS Socket Low Profile <b>Qty: 1</b>	Gasket; Intake Plate <b>Qty: 1</b>	Wrench; 10mm Grid Heater <b>Qty: 1</b>

1401528	68024672AB	1502009
		
Bolt; M6-1.0x18 SS BHSCS Thead Locker <b>Qty: 1</b>	Gasket; Cummins Intake <b>Qty: 1</b>	IP25 Torx Plus Bit <b>Qty: 1</b>

1130058	1401527	1300133
		
Nut; M6-1.0 Nyloc CZP <b>Qty: 1</b>	Insulating Washer; M6 Mica <b>Qty: 2</b>	Tie Wrap; Short <b>Qty: 2</b>

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# **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.

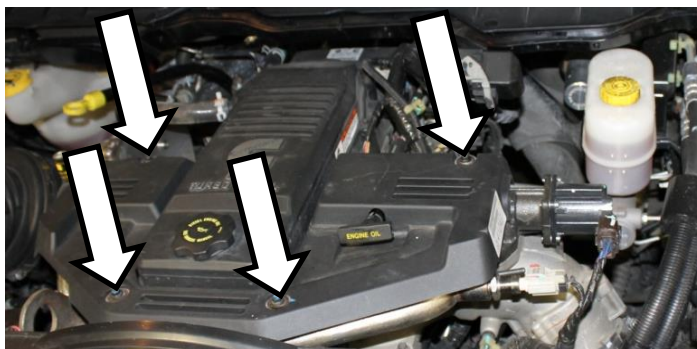
# **Tools Required for Installation**

<ul style="list-style-type: none"> <li>• 8mm, 10mm Deep Socket</li> <li>• 7/16", 1/2", 1" Deep Socket</li> <li>• Ratchet with Extensions</li> <li>• 9/16" , 1" Wrench</li> <li>• 17mm, 19mm Wrench</li> <li>• 4mm, 5mm Hex</li> <li>• Torque wrench</li> </ul>	<ul style="list-style-type: none"> <li>• Pipe Dope</li> <li>• Flat Blade Screwdriver</li> <li>• Side Cutters</li> <li>• Razor Knife</li> <li>• Masking Tape &amp; Pen</li> <li>• Bit Ratchet</li> <li>• Hacksaw</li> </ul>
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## 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).



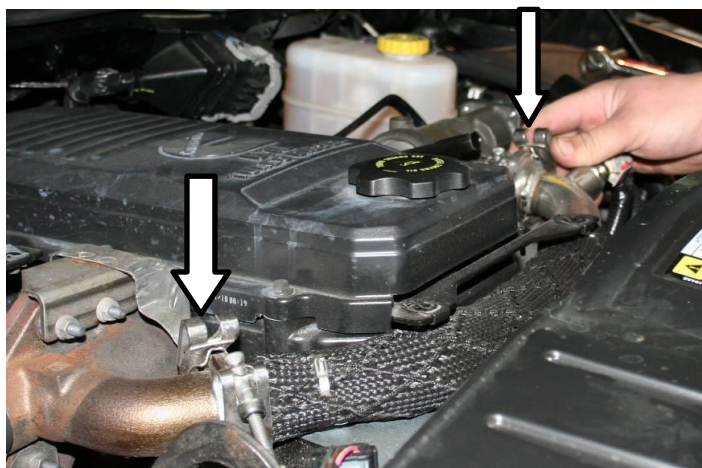
2. Disconnect the EGR valve connector from the EGR valve.

2011 and up only

You will need to disconnect the temperature sensor connector as well.



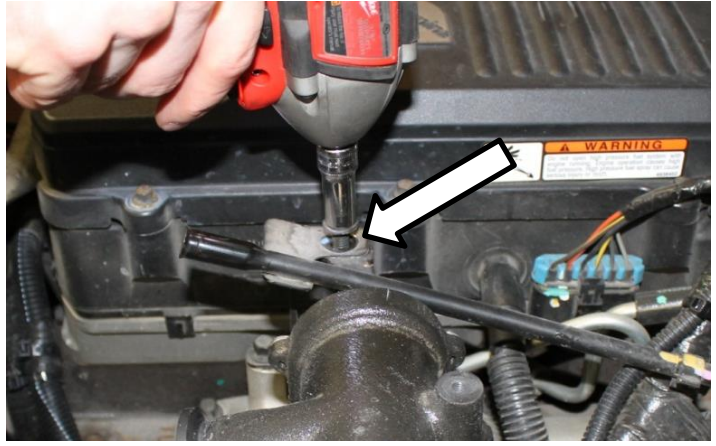
3. Loosen the EGR cross over pipe clamps (11 mm) and slide them down the pipe. Remove the bolt located at the center of the pipe, and remove the pipe from the vehicle (8mm).



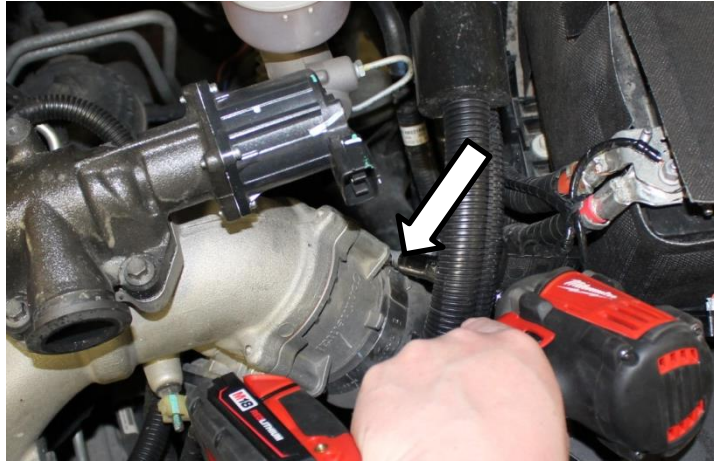
Note: When releasing the pipe from the engine there will be a loose washer on the left side. Be sure not to lose this as it will be reused.



4. Remove the bolt holding the dipstick tube to the intake horn (10mm).



5. Loosen the clamp between the rubber coupler and the intake horn. Use a blade screwdriver to gently break the seal.

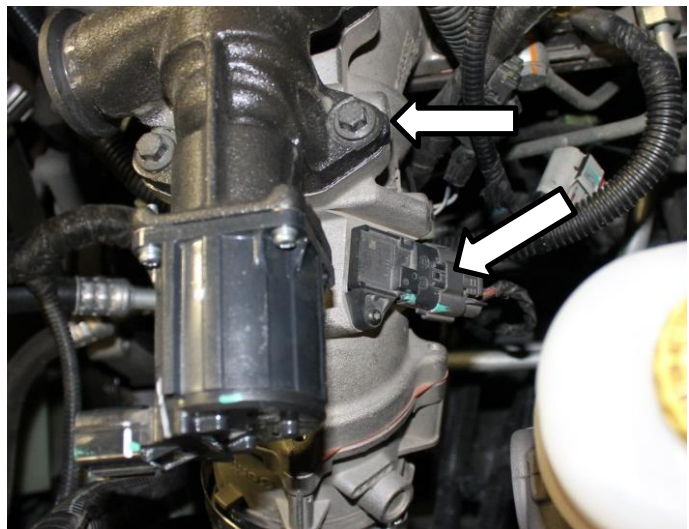


6. Pull off the harness clip from the intake horn.



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

8. Unplug the map sensor plug.

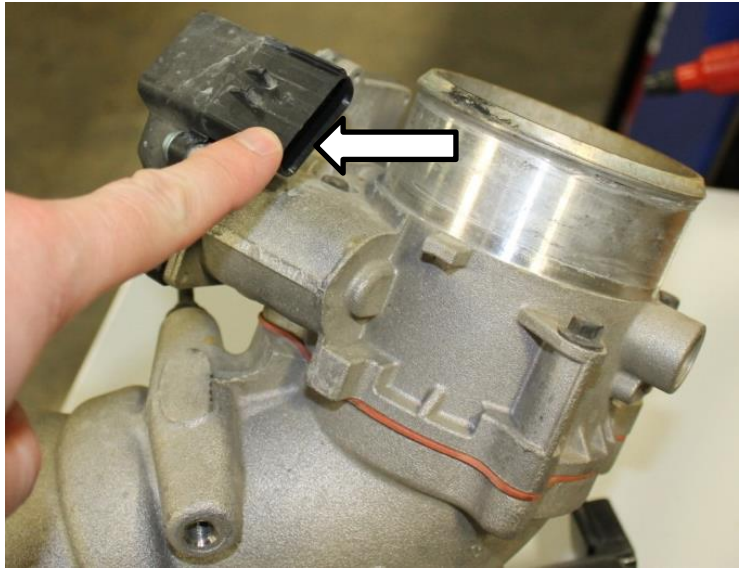


9. Remove the 6 bolts (10mm) that secure the horn to the engine.

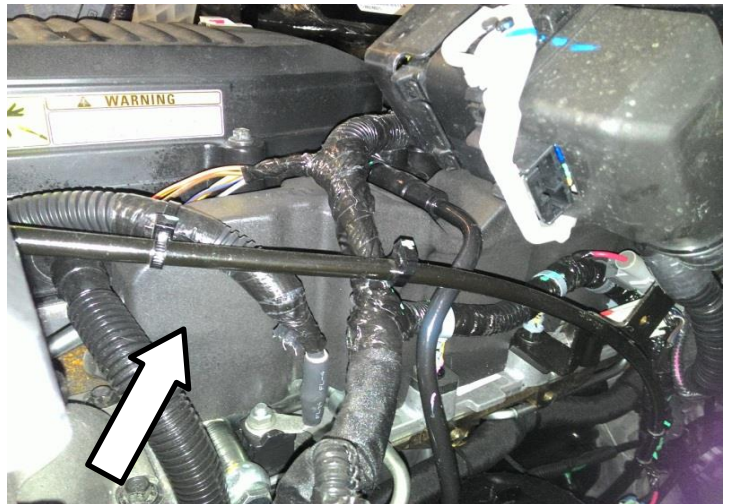
10. Gently twist the intake horn to expose the throttle valve sensor on the bottom of the horn. Disconnect the throttle valve connector then remove the horn from the vehicle.

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

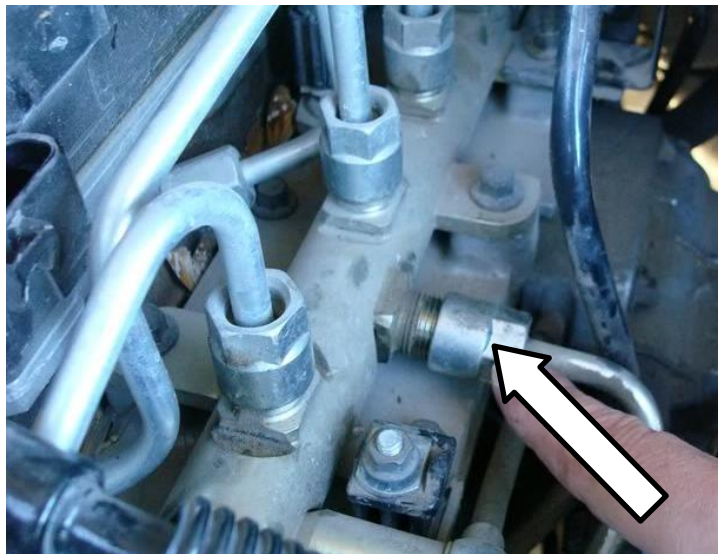
***Photo shown on bench for clarity.***



11. **2013+ Models Only:** Remove the sound deadening foam rubber from around the fuel injection lines to allow access to the fuel lines.



12. 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 (19mm).



13. Remove the banjo bolt with washer from the front side of the fuel rail (17mm).

Note: Be careful not to lose the washer when you pull out the banjo bolt.



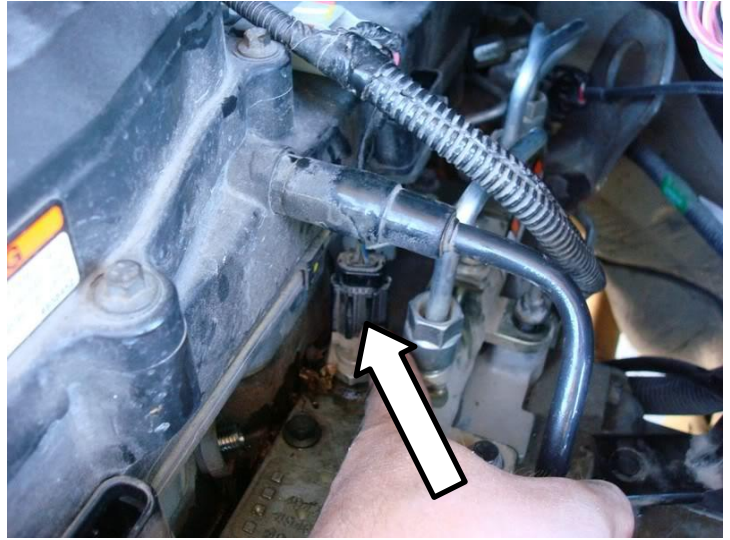
14. Remove the six injector lines starting with loosening of the fittings at the front of the fuel rail and the #1 injector (19mm). As you remove the fuel lines identify them in some way (eg. masking tape and felt pen) so they can be easily reinstalled in the same location.

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

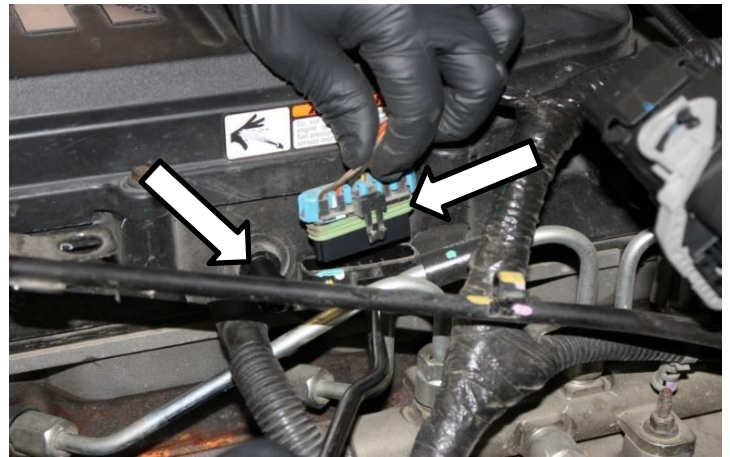


15. Disconnect the intake air temperature sensor connector from the grid heater.

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



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



17. 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.

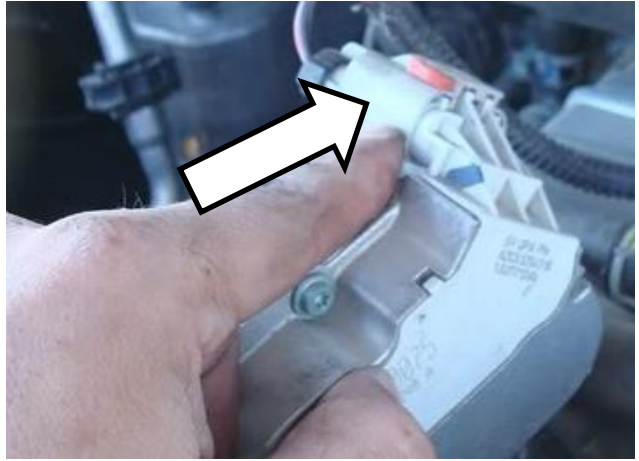


18. Disconnect CCV pressure sensor harness connector that is located at rear of the valve cover. This needs to be disconnected to allow you to coil the harness aside to access the grid heater.

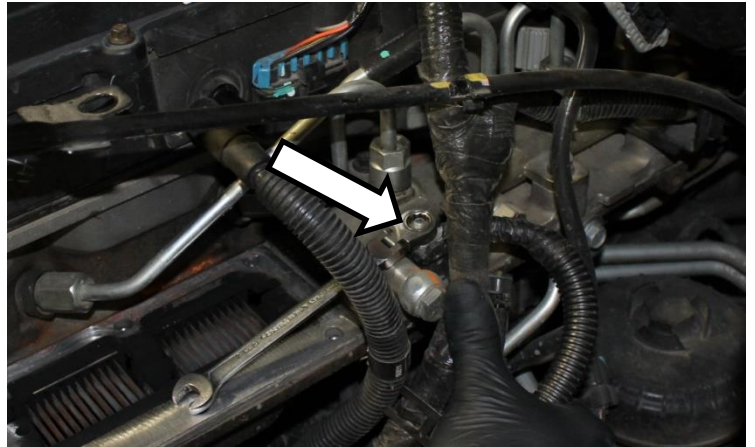




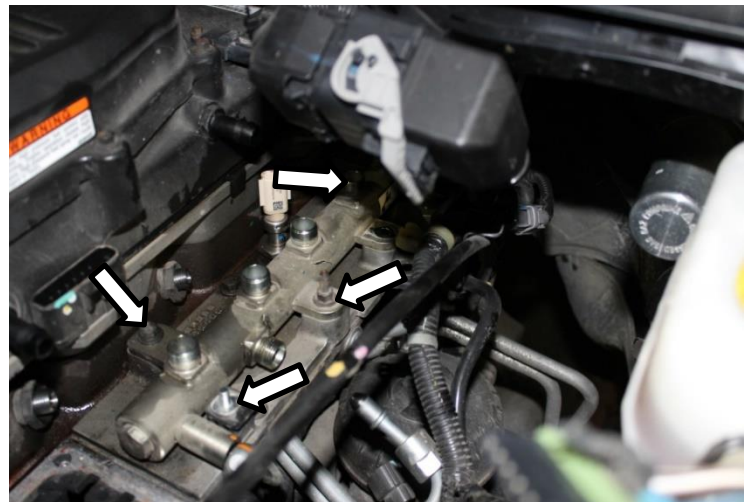
19. Disconnect the EGR servo motor connector.



20. Remove the power wire from the grid heater (10 mm).



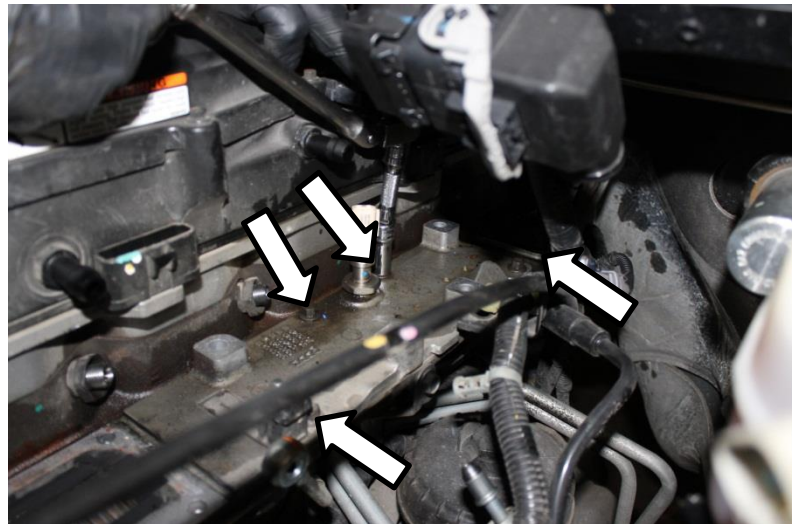
21. Remove the four bolts holding the fuel rail to the grid heater (10mm).



22. Disconnect the fuel rail connector from the back of the rail. The rail can now be removed from the vehicle.



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



24. 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.

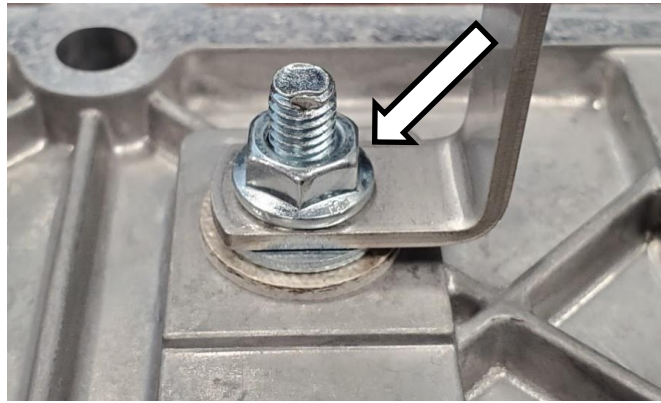
Note: Clean off the old gasket if any is left on the engine and wipe clean so the new gasket will have a good seal. The heater should also be cleaned at this time if it is covered in soot.



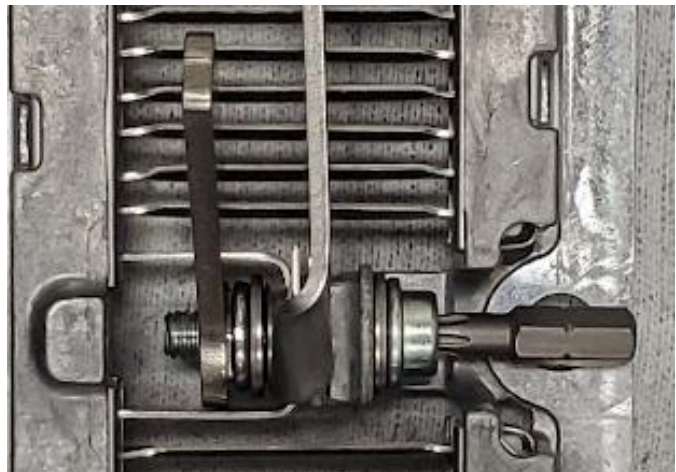
## Installation of Heater Kit Components

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.



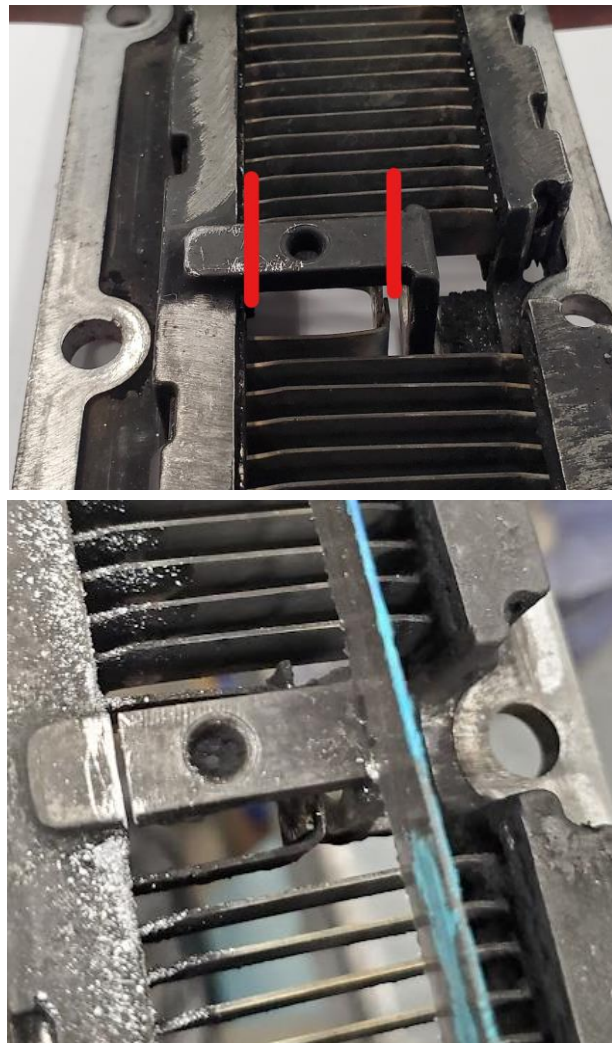
2. To remove the lower busbar, use the included IP25 Torx Plus bit and slim 10mm wrench to remove the bolt and nut in between the heating elements. Retain the steel washer and the small insulating insert that fits in the grid heater mount bolt hole.



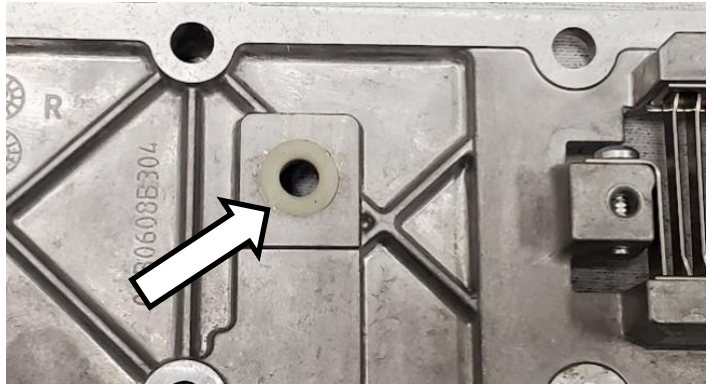
3. 2007-2012 grid heaters will require modification before proceeding with installation. These grid heaters have a casting feature that bridges where the heating elements connect to the body of the heater and needs to be cut to be removed. 2013+ grid heaters have this casting feature removed from factory and will not require modification.



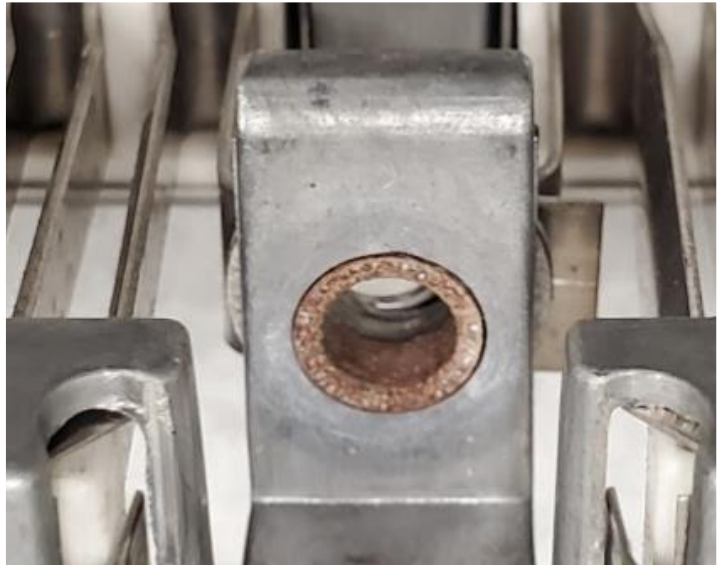
4. For 2007-2012 grid heaters, cut the cast aluminum feature using a rotary tool with cutting disc or hacksaw. Make two cuts flush with the vertical wall in the locations shown on the picture, making sure not to damage the heating elements underneath. The end result after cutting will be a grid heater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



5. Install the nylon insulating washer to the bottom of the grid plate with the washer shoulder inserted into the bolt hole.



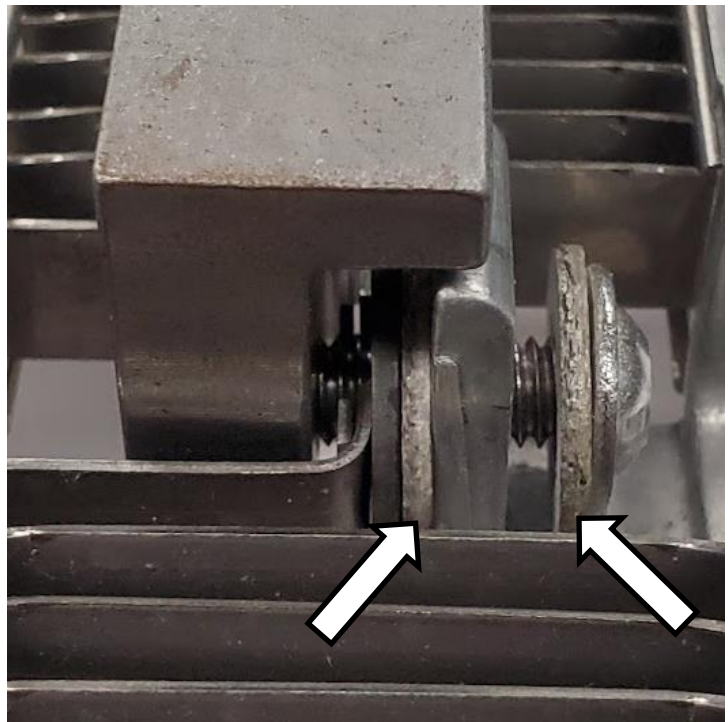
6. Install the small insulating insert into the grid heater mount bolt hole located in between the heating elements.



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

Note: The mica insulating washers must sandwich the grid heater mount.

***Refer to the end of manual for a detailed view.***



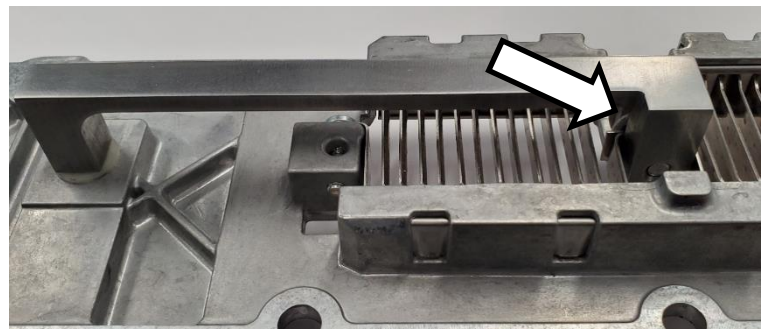
8. Install the new upper busbar assembly into the top of the grid heater.



9. 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).



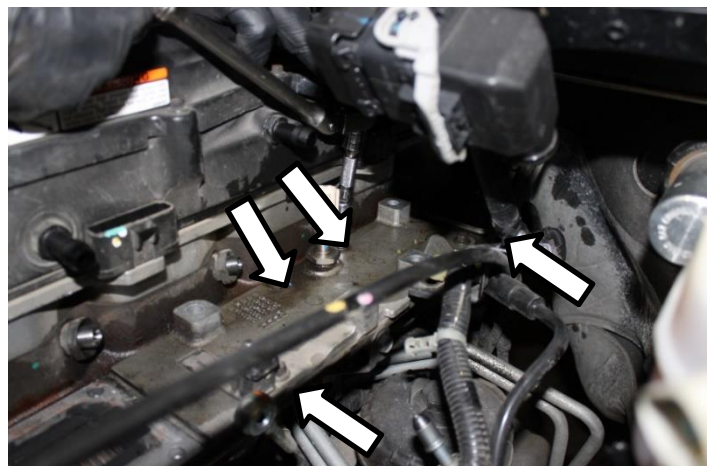
10. Tighten the lower busbar bolt to the heating elements to 7 ft-lbs (9.5 Nm).



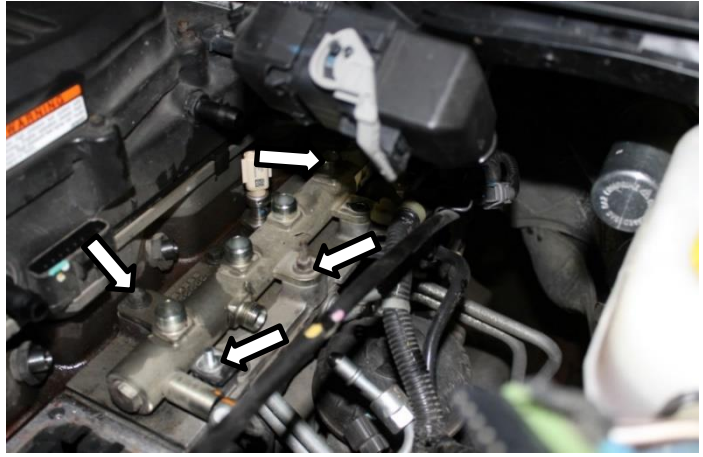
## ***Installation of Grid Heater***

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), an easy task if previously marked for identification.



4. Reinstall the line that goes from the fuel rail to the CP3 pump.

5. Reinstall the banjo bolt with washer back into the fuel rail (17mm).

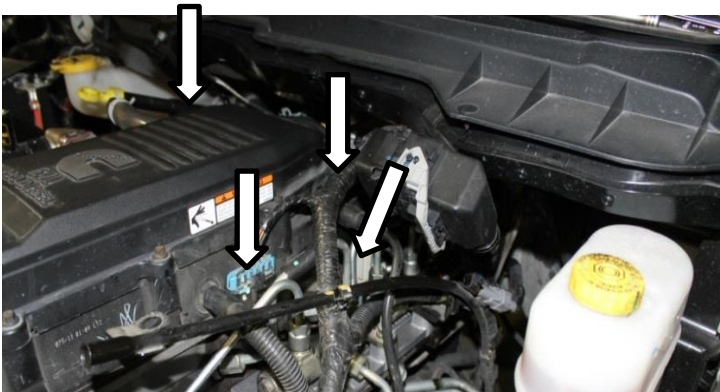
6. Install the heater cable to grid heater stud using the supplied Nyloc nut. Tighten to 9 ft-lbs (12.2 Nm). Ensure the connector is clocked so that it's not contacting the surrounding metal components. Use the included zip ties to secure the heater cable to an adjacent wire.



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

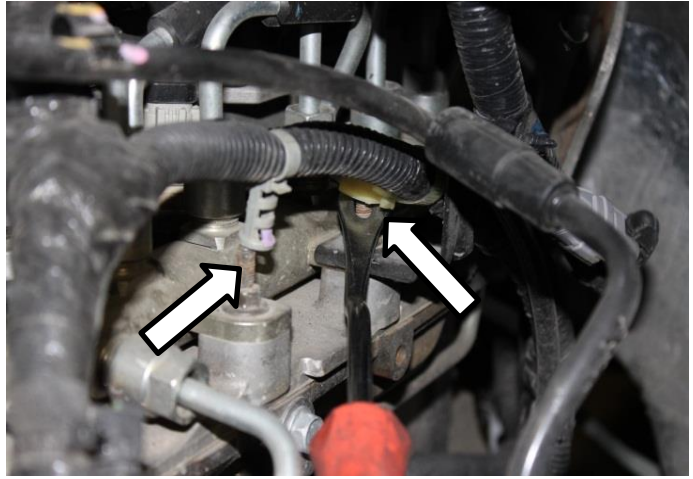
8. Reconnect the servo motor connector and CCV pressure sensor connector located behind the valve cover.

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





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



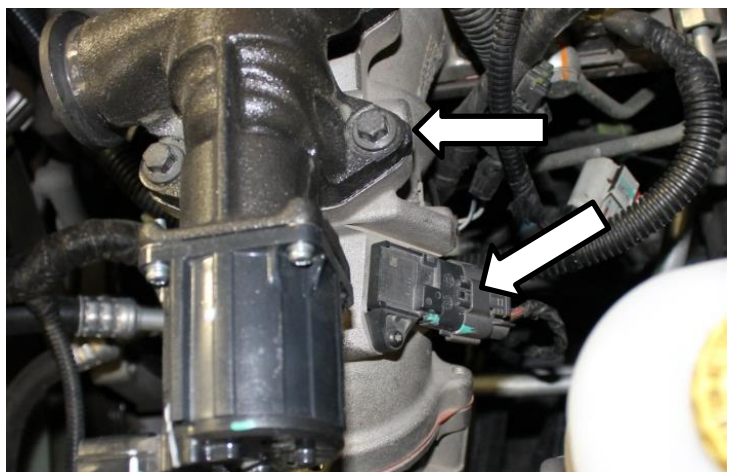
11. Reconnect the throttle valve sensor to the bottom of the intake horn.



12. 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.



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



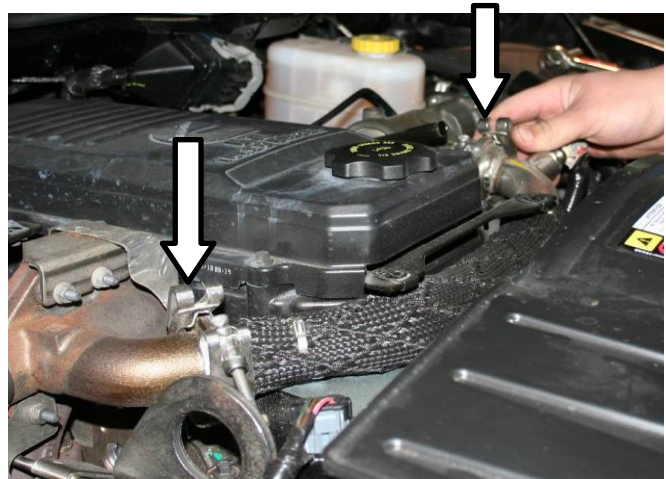
14. Reinstall dipstick bracket.



15. Reinstall the harness clip back onto the horn.



16. 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.



17. Reconnect the EGR valve connector to the EGR valve.

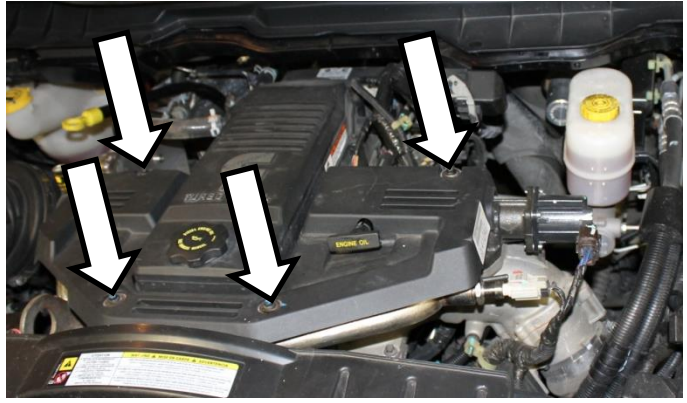
2011 and up only

Reconnect the temperature sensor connector as well.



18. Reinstall the four bolts that secure the plastic cover to the engine (8mm). Reinsert the oil dipstick.

19. Once complete test the vehicle for proper function and check for leaks.



**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.**

### **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 insert inside), insulating washer, steel washer, heating elements, and lower busbar.

