Cummins Engines – Intake Air Grid Heater and Relay

A technician may find Diagnostic Trouble Code (DTC) P2609 or P0542 set in the Powertrain Control Module (PCM) memory. In addition, you may receive a vehicle with an engine showing signs of engine damage due to foreign debris primarily on the #6 cylinder.

When diagnosing a Cummins engine with damage due to foreign debris primarily in the #6 cylinder, please inspect the grid heater assembly closely for signs of overheating. Please see the inspection guidelines below.

Inspect the grid heater power terminal located on the intake manifold cover for the plastic over-mold being deformed as well as the power feed cable for signs of terminal sealant flow from the terminal sleeve (See Figure 1 and 2).

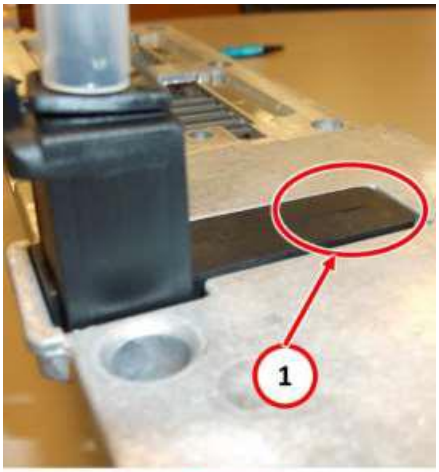


Figure 1

Good part. No deformation

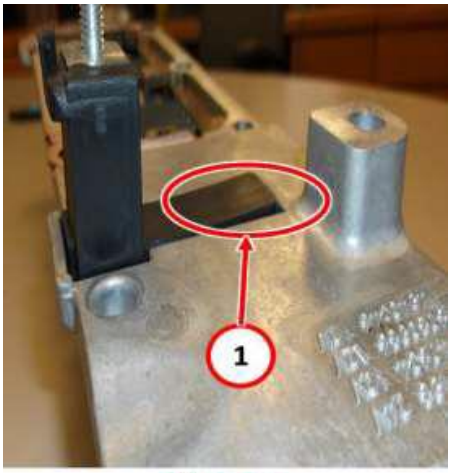


Figure 2

Failed part. Slight lifting of plastic

Check to see if the grid heater power terminal can be moved by hand (See Figure 3).

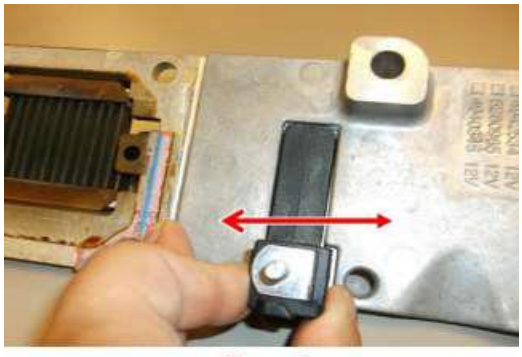


Figure 3

There should be NO movement of the terminal back and forth.

Remove the grid heater assembly and inspect the bolt on the bus bar for signs of arching and damage. See (Figure 4)



Figure 4

If any of the above conditions are found, replace the intake grid heater assembly and grid heater relay as a set.

It is important to determine the root cause of the failure, since it may have been caused by either the grid heater or the grid heater relay.

The warranty coverage may vary between the grid heater (Powertrain Warranty) and grid heater relay (Basic Warranty), so always verify the component that caused the failure and use the applicable LOP in a VIP search to confirm warranty coverage. Cummins engine replacements require pre-authorization through the Powertrain Service Center (PTSC). The root cause of the failure and proper warranty coverage must be confirmed before submitting the PTSC request.