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Title: Starter kicks out after 1 second on MV/HVs with L9 engines

Applies To: MVs and HVs with Cummins L9 engines.

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

08/10/2023 - Initial Article Release

DESCRIPTION

This document is intended to inform the user of a potential issue with some Cummins L9 (CM2350 and CM2450) powered MV and HV vehicles. When cranking the engine with the key, the starter may kick out or disengage before the engine starts. On vehicles built after 11/5/2020 (or have had the BCM software updated since then), the BCM monitors engine RPM and will disable the starter if there is no engine RPM reported after 1 second of the starter being energized. This is to prevent damage to the starter and wiring if the starter fails to engage the ring gear correctly and fails to turn the engine over. Intermittently the Cummins L9 ECM may take more than 1 second to report engine RPM while cranking. When this happens the BCM will incorrectly disable the starter after 1 second of cranking. Multiple unsuccessful attempts may cause the BCM to disable cranking completely for 2 minutes.

Note: The procedure below requires engineering level access in DLB. A case file may be necessary to complete this repair.

SYMPTOM(s)

Diagnostic Trouble Code(s) & Dashboard Indicator Light(s):

DTC/Light	Description
None	None

Customer Observations or Concerns:

The starter engages for 1 second then disengages for 1 second repeatedly before the engine starts (with the key in the crank position the whole time).

SPECIAL TOOL(s) / SOFTWARE

Tool Description	Tool Number	Comments	Instructions
Diamond Logic® Builder		EZ-Tech Software	

Tools Resource Center

SERVICE PARTS INFORMATION

Kit Description	Part Number	Quantity Required	Notes
No Parts Needed For This Procedure			

DIAGNOSTIC STEP(s)

Note: The procedure below requires engineering level access in DLB. A case file may be necessary to complete this repair.

To verify the abutment feature is causing the starting complaint a signal can be monitored in DLB while cranking.

Note: The procedure should only be performed if it has been verified the +12V starter signal from the BCM on pin T of the 1606 (J6) connector is dropping out.

1. Connect to the vehicle using DLB and an applicable data link cable with the ignition key on.

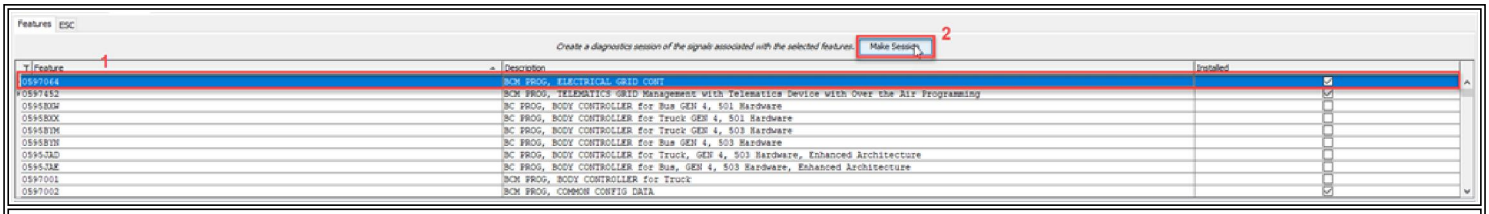

Figure 1: Create a session

Item 1: Feature 597064
Item 2: Make Session Button

2. Create a session with feature 597064 BCM PROG, ELECTRICAL GRID CONT by selecting feature 597064 (Figure 1, Item 1) and then selecting the "Make Session" button (Figure 1, Item 2).

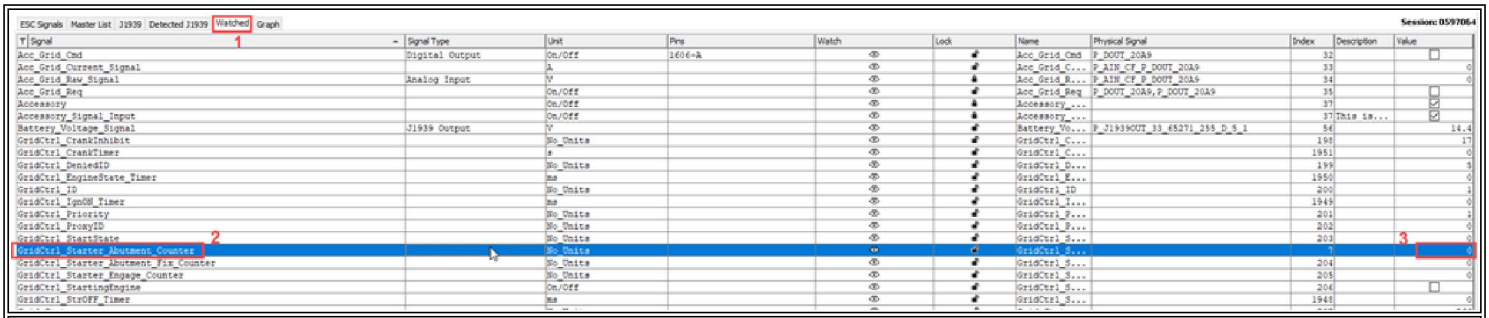

Figure 2: Abutment signal

Item 1: Watched tab
Item 2: GridCtrl_Starter_Abutment_Counter Signal
Item 3: GridCtrl_Starter_Abutment_Counter Signal Value

3. In the "Watched" tab (Figure 2, Item 1) select the signal named GridCtrl_Starter_Abutment_Counter

4. Attempt to crank the engine. If the starter kicks out and the value of GridCtrl_Starter_Abutment_Counter (Figure 2, Item 2) goes up then the abutment feature is causing the starter to kick out. Proceed to the repair steps below.

REPAIR STEP(s)

1. Create a case file, requesting programming support to adjust the abutment feature from 1000ms to 1500ms per the below programming instructions. Refer to this IKNow article in the case file request.

The procedure below requires engineering level access in DLB. A case file may be necessary to complete this repair.

PROGRAMMING PROCEDURE:

2. Connect to the vehicle using DLB and an applicable data link cable with the ignition key on.

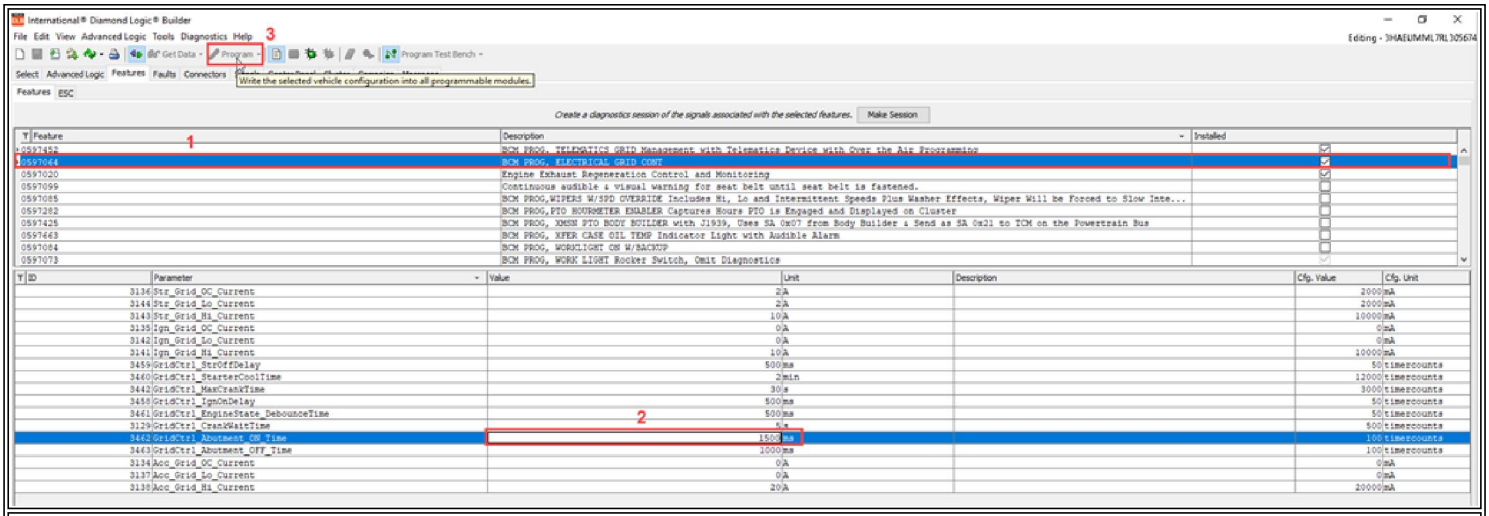

Figure 3: Programming Procedure

Item 1: Feature 597064
Item 2: Parameter 3462
Item 3: Program Button

3. In the features tab select feature 597064 (Figure 3, Item 1).

Note: Do not use a higher value than 1500ms. Damage to the starter or starter wiring can result.

4. Change the value of parameter 3462 GridCtrl_Abutment_ON_Time from 1000ms to 1500ms (Figure 3, Item 2)

5. Press the program button to commit the changes to the BCM (Figure 3, Item 3)

6. After programming retest for failure.

WARRANTY INFORMATION

Warranty Claim Coding:

Refer to the Warranty Coding Manual for Group and Noun Codes.

Standard Repair Time(s):

Refer to the SRT Manual for Repair Times

OTHER RESOURCES

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