



Technical Service Bulletin

Technical Service Bulletin: TSB210187	Released Date: 02-Dec-2021
Fault Codes 3868, 4572 and 4677 Caused by Diesel Exhaust Fluid (DEF) Header Malfunction	

Fault Codes 3868, 4572 and 4677 Caused by Diesel Exhaust Fluid (DEF) Header Malfunction

Warranty Statement

The information in this document has no effect on present warranty coverage or repair practices, nor does it authorize TRP or Campaign actions.

Contents

Product Affected

- B6.7 CM2350 B121B (Excluding engines built in 2021)
- B6.7 CM2450 B155B
- ISB6.7 CM2350 B101 (Engines built in 2016 **only**)
- ISL9 CM2350 L101 (Engines built in 2016 **only**)
- L9 CM2350 L116B
- L9 CM2350 L123B
- L9 CM2450 L126B
- ISX12 CM2350 X102
- ISX15 CM2350 X101 (Engines built in 2016 **only**)
- X12 CM2350 X119B
- X12 CM2450 X137B
- X15 CM2350 X114B
- X15 CM2350 X116B
- X15 CM2450 X124B
- X15 CM2450 X134B

Issue

Symptom:

- A combination of one or all DEF header fault code(s) 3868, 4572 and/or 4677 are logged.

Note : These ECM calibrations will **only** address DEF header sensor malfunctions that are logging one or combination of DEF header fault code(s) 3868, 4572 and/or 4677.

- Engine has a DEF header malfunction and replacement is **not** available.

Root Cause:

- DEF header replacement parts are **not** available and DEF header part shortages have necessitated the release of an ECM calibration code that allows the engine to operate normally without engine torque and vehicle speed limits until a DEF header is available for final repair.

Verification

- Verify one or all DEF header datalink Fault Codes 3868, 4572 and/or 4677 are logged.
- Verify published troubleshooting has been completed.
- Verify DEF header part is **not** available for the repair.

Resolution

- Because of the lack of DEF header part availability, new ECM calibration codes are being made available that allows the engine to operate normally without engine torque and vehicle speed limits until a DEF header is available for final repair.
- Along with the download of the new ECM calibration, the OEM wiring harness at the DEF header will need to be cut at least 4 inches on the DEF header side of the wiring harness and heat shrink repaired.
 - In some failure conditions the DEF header sensor can produce faults intermittently. The DEF header sensor **must** be removed electrically from the OEM harness to prevent intermittent faults as this can lead to additional warning and de-rate events.
 - The intent of the below procedure electrically removes the DEF header sensor from the circuit. The DEF header **must** remain in the tank and connected to the DEF and coolant lines as they are still required for vehicle operation.

Important: The steps below **must** be followed in order. The DEF header sensor pigtail on the DEF header must be disconnected from OEM wiring harness prior to the download of the new ECM calibration.

At no point is the DEF header removed from the DEF tank during this procedure.

1. Turn the keyswitch off and verify the DEF header is disconnected from the OEM harness. If the DEF header sensor is still connected this could result in shorting of the power circuit.
2. Turn keyswitch on and start the ECM calibration download.
 - a. These products have new corresponding engine ECM calibrations codes that align with the repair.
 - i. A Fleet Count will be required to install the new ECM calibration code.
 - ii. An ECM code lookup tool and complete listing of ECM codes are located at the following link:

Note :

https://quickserve.cummins.com/qs3/qsol/service/def_header_ecm_tools.html
(https://quickserve.cummins.com/qs3/qsol/service/def_header_ecm_tools.html)

3. While the ECM calibration is downloading, use wire cutters to cut the DEF header pigtail harness at least four inches from the connector. See Figure 1 below. Once cut, the pigtail can be moved to a bench for ease of installation

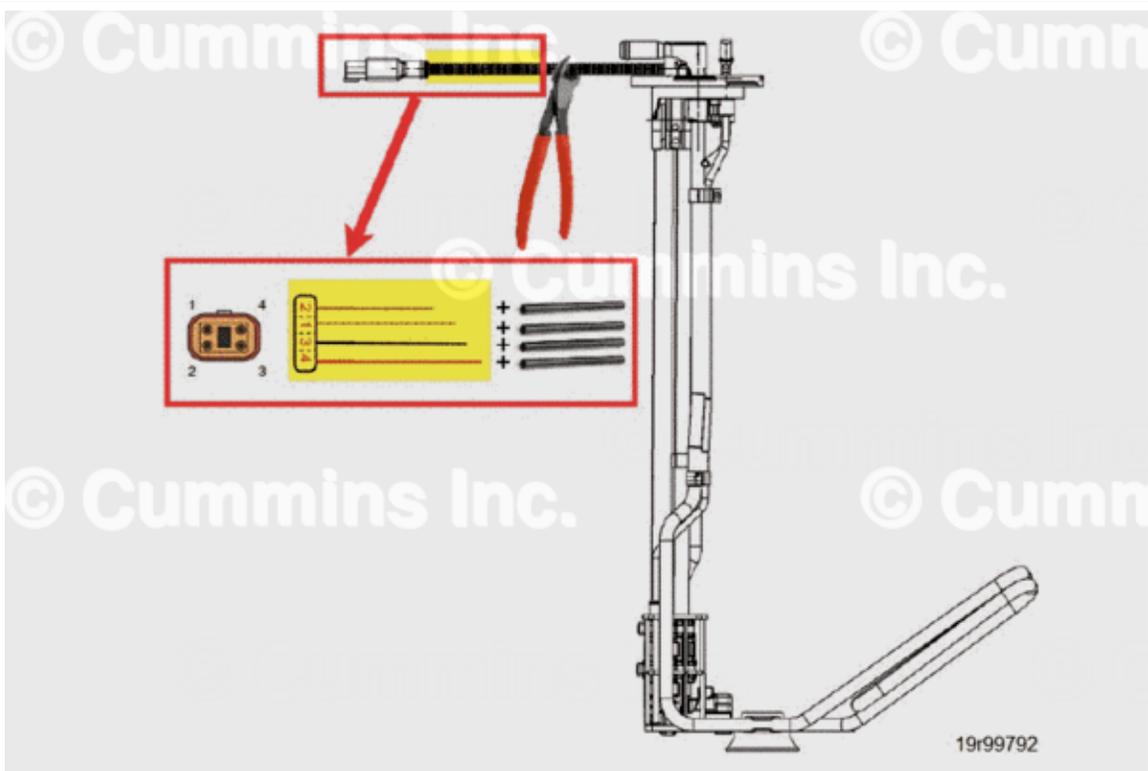


Figure 1, DEF Header Pigtail Harness Cut Location.

- 4. Remove the wire loom from the pigtail end.
- 5. Loop each wire and apply heat shrink tubing to each end of the wire. See Figure 2 below.



Figure 2, Heat Shrink Applied To Looped Wire.

6. Use a heat gun to apply heat to each piece of heat shrink tubing, verify glue is extruded from the end and sealed by pinching the end of each piece with pliers. See Figure 3 below.

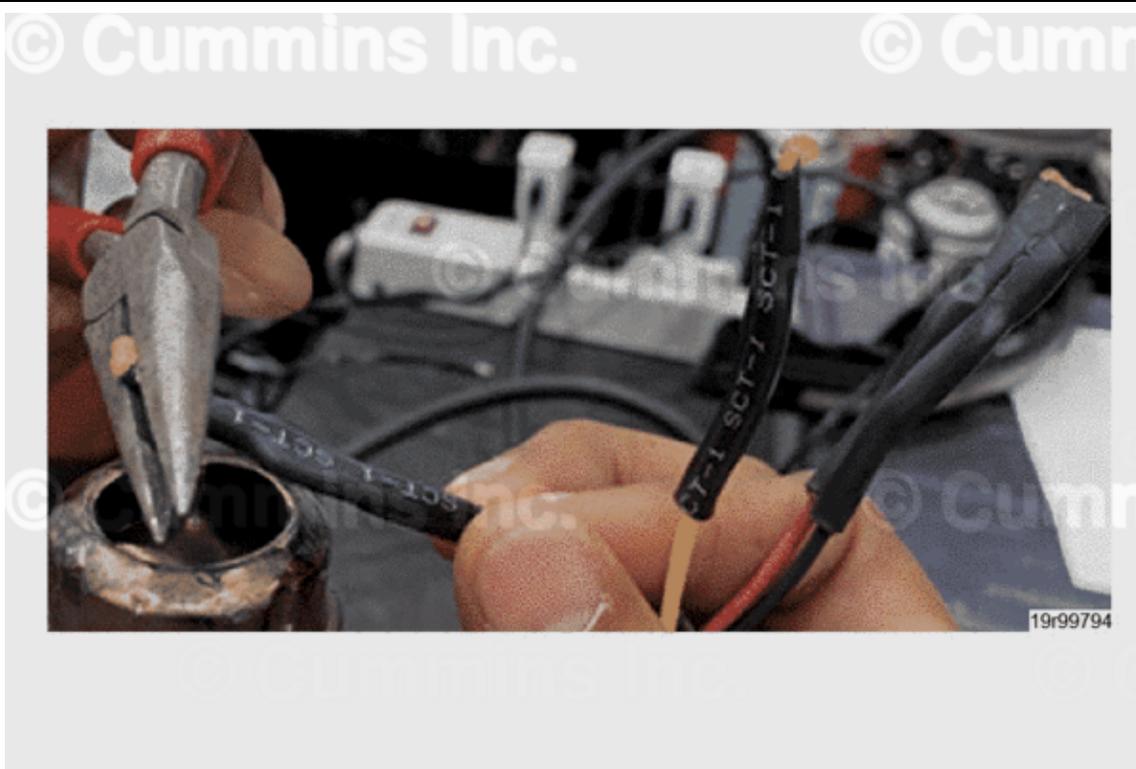


Figure 3, Pliers Used to Pinch and Verify Glue Extruding.

7. After the four wires are sealed, reconnect the pigtail to the OEM wiring harness connector.
8. Secure the wiring harness using a zip tie. See Figure 4 below.



Figure 4, OEM Wiring Harness.

1. Zip tie securing the harness
 2. Pigtail connected to chassis connector
 3. Harness to DEF header left unsealed
9. Verify new ECM calibration code download is completed.
- Downloading this ECM calibration code and cutting of the DEF sensor header harness **must** be filed in accordance with one of the appropriate TRPs. See appropriate TRP for further details.
 - TRP2488 – qualified engine installed in PACCAR chassis. Proper PACCAR authorization number **must** be obtained, reference the TRP for further instructions.
 - TRP2490 – qualified engine installed in DTNA (Freightliner, Freightliner Custom Chassis, Thomas Bus, and Western Star) chassis.
 - TRP2489 – qualified engines installed in Navistar® chassis
 - TRP2484 – qualified engines installed in the following chassis types.
 - Tico, Tiffin, Oshkosh Mixers, Sutphen, Gillig, ENC bus (EIDorado), Grande West (Vicinity) Bus
 - Kalmar Ottawa: For Kalmar Ottawa chassis, authorization code is required prior to repair. Kalmar dealers **must** enter a request in the Kalmar Case Management system (salesforce). All non-Kalmar repair locations **must** contact the appropriate Kalmar regional support area manager. The name and contact information is below:
 - U.S. regions:
 - Northeast - Christopher Pruitt 1-785-214-3401
 - Southeast - Warren Chase 1-785-691-5811
 - Midwest - Rufino Borrero 1-785-521-8002
 - Western - Lee Diggle 1-785-893-4474
 - Backup :

- Mike Conroy - 1-785-214-2988
- Brian Goudreau - 1-785-214-3119
- Nova Bus: For Nova Bus chassis, authorization code is required prior to repair. The repair location **must** contact their local Customer Support Manager. A list of local support managers is available in the following links (First link is for Canada. Second link is for U.S.):

Note : https://novabus.com/parts_and_service/#customer-support-managers
(https://novabus.com/parts_and_service/#customer-support-managers)

Note : https://us.novabus.com/parts_and_service/#customer-support-managers
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- New Flyer Industries (MCI Coach, New Flyer, and ADL)
- For MCI chassis the repair location **must** contact their local MCI product support representative or MCI Emergency Roadside Assistance (1-800-241-2947) to determine if they are eligible to receive an authorization code.
- For New Flyer and ADL chassis the repair location **must** contact their local New Flyer product support representative to determine if they are eligible to receive an authorization code.
- Additional chassis types will be added as they become eligible.
- Unauthorized download of this ECM calibration code is considered tampering of emission control devices on Cummins products. Cummins Inc. prohibits tampering of emissions control devices on Cummins® products in any capacity. Reference Warranty Memo 1633 for additional details. See link below.

Note :

<https://quickserve.cummins.com/protected/files/qsol/en/warranty/memos/m1633.pdf>
(<https://quickserve.cummins.com/protected/files/qsol/en/warranty/memos/m1633.pdf>)

Customer Communication

- This communication is for information purposes **only** and to help provide clear communication to the customer.
 - Because of a global shortage of parts in the industry, as a result of unprecedented demand in the wake of the global pandemic and other events beyond the manufacturers' control, an ECM calibration code solution is being provided that reduces the inducement levels when DEF header datalink communication faults are detected. Fault codes 3868, 4572 and/or 4677 could be active but no amber check engine light illuminated indicating there is no communication between the engine and DEF header, however the vehicle will be allowed to operate normally without engine torque and vehicle speed limits.
 - DEF Level indicator will **not** provide an accurate reading and is **not** indicative of amount of DEF available in the tank. See Table 1.
 - The DEF fluid level in the tank will need to be manually inspected to allow proper vehicle operation.
 - By agreeing to this repair, one is agreeing to make the vehicle available at a later date once DEF header parts are available. A future communication will be sent to make these arrangements.
- DEF quality, DEF temperature and DEF level in the electronic service tool will **not** read correctly.

- Fault Codes 3868, 4572 and/or 4677 will still be active.
- Running an engine that is **not** properly maintained such as without DEF or improper DEF quality are conditions that are consider customer abuse. Reference Responsibilities procedure in the Warranty Administration Manual.

Note : <https://quickserve.cummins.com/qs3/pubsys2/xml/en/procedures/111/111-502-003.html> (<https://quickserve.cummins.com/qs3/pubsys2/xml/en/procedures/111/111-502-003.html>)

Item	With Existing ECM Calibration Code	With New ECM Calibration Code
FC3868	Amber lamp and Malfunction indicator lamp (MIL)/Torque and speed inducement	No lamps/ no torque and speed inducement
FC4572	Amber lamp and MIL/Torque and speed inducement	No lamps/ no torque and speed inducement
FC4677	Amber lamp and MIL/Torque and speed inducement	No lamps/ no torque and speed inducement
DEF Level	DEF gauge is not accurate/Electronic service tool is not accurate	DEF gauge is not accurate/Electronic service tool is not accurate
DEF Temperature	Electronic service tool is not accurate	Electronic service tool is not accurate
DEF Quality	Electronic service tool is not accurate	Electronic service tool is not accurate

Document History

Date	Details
2021-8-26	Module Created
2021-9-16	Updated Resolution section and updated Table 4 and Table 6.
2021-9-17	Added B6.7 CM2350 B121B, deleted Tables 2, 3, 4, 5, 6, 7, and 8, and added link to PDF that includes all ECM calibration codes.
2021-9-19	Added mention of Tiffin in Resolution section.
2021-9-23	Added reference to TRP2488 and TRP2490. Added Note in issue section.
2021-9-27	Added mention of Oshkosh in Resolution section.
2021-9-28	Added mention of Stuphen in Resolution section.

Date	Details
2021-9-30	Fixed typo.
2021-10-18	Added Gillig and exclusion of engines built in 2021 for B6.7 CM2350 B121B.
2021-10-21	Updated Product Affected with ISX15 CM2350 X101
2021-10-28	Added L9 CM2350 L123B and Nova Bus.
2021-10-29	Removed ISX15 CM2350 X101 and L9 CM2350 L123B. Added instruction for Nova Bus.
2021-11-5	Add 2 SMNs
2021-11-5	Non-Product Problem Solving (PPS)
2021-11-8	Added ISL9 CM2350 L101.
2021-11-8	Updated Product Affected with (Engines built in 2016 only) for select engines.
2021-11-12	Added L9 CM2350 L123B.
2021-11-15	Added ISB6.7 CM2350 B101 (Engines built in 2016 only). Added ENC bus and ADL.
2021-11-17	Added Grande West (Vicinity) Bus
2021-12-2	Added OEMs and Kalmar contact information.

Last Modified: 02-Dec-2021
