U.S. Department of Transportation
National Highway Traffic Safety Administration

OFFICE OF DEFECTS INVESTIGATION

ODI RESUME

Investigation: PE21004
Prompted By: VOQ Review
Date Opened: 02/25/2021 **Date Closed:** 01/14/2025
Investigator: Kyle Bowker **Reviewer:** Joshua Neff
Approver: Tanya Topka
Subject: Engine Electrical Wiring Harness Chafe

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Daimler Trucks North America, LLC
Products: 2017-2021 Freightliner Cascadia
Population: 313,101

Problem Description: Engine electrical wiring harness may chafe against the air compressor support bracket, the transmission case or coolant surge tank, possibly resulting in a loss of motive power (LOMP) condition.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	EWR D&I	Other	Total	EWR Field Reports
All Incidents:	6	174	0	0	180	CONF
Crashes/Fires:	0	0	0	0	0	0
Injury Incidents:	0	0	0	0	0	0
Number of Injuries:	0	0	0	0	0	0
Fatality Incidents:	0	0	0	0	0	0
Number of Fatalities:	0	0	0	0	0	0

Description of Other:

ACTION/SUMMARY INFORMATION

Action: This Preliminary Evaluation has been closed.

Summary:
The Office of Defects Investigation (ODI) opened this Preliminary Evaluation to investigate reports of engine electrical wiring harness chafe on the subject vehicles. ODI analysis found thousands of

unique harness part numbers, spanning the two generations of vehicle chassis assembled at multiple vehicle assembly plants in two different countries, with multiple sub-models, incorporating over thirty powertrain choices. Each wiring harness could contain several dozen individual wires for power, ground and communication purposes depending on the multitude of equipment options available for custom vehicle configuration.

ODI identified three primary areas where a wiring harness bundle may chafe: the air compressor support bracket, the transmission case, or the coolant surge tank. In each case, the root cause was some combination of inadequate design clearance, installation variability and relative motion between the wiring harness and the point of contact, such as from vibration. The chafing could result in a range of consequences from none to various diagnostic fault codes, telltale illumination, driver warning center messages, erratic electrical component operation, difficult or no engine start condition, engine de-rate (power reduction), engine shut down, inoperative transmission gear selection, or an unexpected shift to neutral. These potential consequences vary depending on the specific damaged wire in the harness and the exact failure mode, such as intermittent short circuit to ground or open circuit.

Generally, the chafing resulted in a progressive series of driver warnings with high levels of detectability over the course of several days and ignition cycles. Drivers usually heed warnings before an engine shutdown condition occurs and the driver may override an engine shutdown countdown timer using the override switch. If the driver allows the shutdown event to occur, the engine can almost always be immediately restarted. Incident rates for an engine shutdown with no warning or a transmission shift to neutral while driving are both very low. ODI received one complaint (NHTSA ID Number 11366557) from a fleet mechanic, who reported in a subsequent interview that he repaired at least six subject vehicles that experienced the alleged defect condition. However, there have been no new Vehicle Owner Questionnaire complaints received by ODI since opening this investigation, and there are no known crashes, fires or thermal events, or injuries or deaths related to the alleged defect. Accordingly, no safety-related defect trend has been identified.

Based on available information, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that a safety-related defect does not exist. The Agency reserves the right to take additional action if warranted by future circumstances. To review the ODI report cited in the Closing Resume ODI Report Identification Numbers document, go to NHTSA.gov.