

## Navistar Recall 21501 Chronology of Events

- 05/18/2020 – Navistar Field Service receives first communication from a fleet customer that a negative battery cable detached from the frame.
- 06/23/2020 – Navistar Field Service receives a second communication from a fleet customer that a battery ground cable ring terminal broke causing the ground cable to separate from the frame, which caused the engine to shut down. This was the first identified report that the vehicle shut down after a ring terminal failure.
- 07/06/2020 – Navistar Compliance reviews customer concerns related to negative battery cable failures.
- 07/14/2020 – Navistar Compliance and Reliability meet to review warranty claims for negative battery cable replacement.
- 07/23/2020 – Navistar Compliance, Reliability, and Engineering meet and initiate Finite Element Analysis (FEA) testing to determine likelihood of a repetitive failure mode.
- 08/11/2020 – Navistar Compliance and Engineering meet to review results of the FEA. The FEA analysis showed elevated stresses at the bend in the ring terminal, however no conclusions could be made relating to a life prediction.
- 08/14/2020 – Navistar Compliance, Reliability, and Engineering meet and initiate Weibull analysis to predict mileage for the ring terminal failures. Due to the low number of claims in the warranty period, and no other reports of vehicle shut down, the data was inconclusive.
- 08/27/2020 – Navistar Compliance Committee meet to discuss the failure mode and warranty history of the negative battery cable. Navistar Engineering receives confirmation to proceed with physical tests to validate the FEA analysis.
- 09/10/2020 – Navistar receives previous Prostar and early LT battery cables to perform dimension and material evaluation compared to previous failed cables in the field. Material evaluation concluded all failed parts were within material and dimensional specification.
- 09/11/2020 – Navistar engineers meet to discuss common characteristics within the warranty failures. Navistar also requested information from the supplier to verify if any tooling change occurred for the terminal and retrieved additional failed battery cables to analyze.
- 09/16/2020 – The Battery Cable supplier confirmed there was no tooling change and was in the process reviewing sub supplier material.
- 09/23/2020 The supplier reported that no material changes or tooling changes were made by their sub supplier.
- 10/01/2020 Navistar Compliance Committee meets to discuss Weibull, the field findings of possible misrouted battery cables. No new warranty claims or field reports were found since the 8/14/20 meeting. However, in analyzing the claim data, there were five claims reporting vehicle shutdown in 2019, and four in 2020. The Committee agreed to begin vibration testing in an attempt to recreate the failure mode.
- 10/03/2020 – Bench vibration testing could not reproduce the ring terminal failure mode.
- 10/07/2020 – Navistar requests a customer vehicle that had experienced negative battery cable breakage to perform additional testing.
- 11/03/2020 through 11/16/2020 – Navistar performs strain test on ring terminal performing certain vehicle maneuvers on vehicle received from customer.
- 11/18/2020 – Navistar Compliance Committee meet to discuss the results of the strain test and the potential root cause resulting in the stress on the ring terminal. Certain vehicle maneuvers did cause stress rates above what is believed to be normal for a copper terminal. The Committee

requested actions to investigate and evaluate chassis “racking” as the root cause, review current production failures, and perform additional testing on current production vehicles.

- 12/03/2020 through 01/23/2021 – Navistar initiates plans and testing for additional vehicle battery cable configurations designs of current production for similar failure modes.
- 01/14/2021 – Navistar Compliance, Data Analytics and Engineering meet to identify potential suspect population based on certain vehicle characteristics.
- 01/29/2021 – Navistar Compliance Committee meets to review test results on current configuration design and strain test results confirm current configuration design experienced high stress on the ring terminal as well.
- 02/03/2021 – Navistar finalizes the suspect population based on certain vehicle configuration and characteristics.
- 02/11/2021 – Navistar discusses final vehicle testing and suspect vehicle configurations and declares a Safety Recall.