

- 03/02/2021 – Navistar Field service receives communication from a customer describing a vehicle stall.
- 03/09/2021 – Navistar Field Service and Compliance review the customer engine shut down condition and decide to monitor the condition.
- 03/15/2021 – Field Service initiates investigation into possible ECM faults related to the engine stall condition.
- 03/24/2021 – Navistar ships ECM to supplier for root cause analysis to determine failure behind multiple fault codes resulting in engine shut down.
- 04/01/2021 through 04/27/2021 – No reports of engine shut down related to the multiple fault codes condition.
- 04/28/2021 – Navistar receives root cause analysis of the ECM from PSI and their supplier Borg Warner. Borg Warner concluded the ECM was acceptable with no internal hardware failure, no solder failure, and ECM functionality was intact. Failure could not be duplicated.
- 05/13/2021 – Navistar and PSI perform additional quality inspections of the vehicle interface connector (VIC) to verify the engine harness pin connections were not the cause of the power surge resulting in the fault codes and shut down.
- 05/26/2021 – Navistar and PSI review data collected to date and determine fault 629/12 may be related to the engine stall condition.
- 06/10/2021 – Navistar and PSI develop a diagnostic plan for a vehicle that is experiencing fault 629/12 to narrow down the scope or identify root cause.
- 06/15/2021 through 09/10/2021 – A Control Tec Data logger was installed on a vehicle that previously experienced fault code 629/12 with engine shut down with no repair after the incident. The failure could not be duplicated with over 5,000 miles logged.
- 06/23/2021 – Navistar and PSI meet to discuss potential failures such as intermittent loss of power supply to ECM and/or EMI/CAN bus overload or corrosion at the pin terminal resulting in communication error.
- 06/28/2021 – Navistar and PSI meet to discuss inventory inspection performed at PSI manufacturing. There were no bent pins found in the VIC. Additionally, Borg Warner confirmed shut down was appropriate when fault code 629/12 is set.
- 07/16/2021 – Navistar and PSI review fault code 629/12 occurrence and related Warranty data resulting in ECM replacement for 629/12. A test strategy was developed to test VIC power interruption to ECM and/or pin connections.
- 07/17/2021 through 10/14/2021 – No new reports of engine shut down resulting from fault code 629/12.
- 08/12/2021 – Navistar Compliance and Field Service meet to identify any additional failures since July 2021 and discuss progress to date of the Control Tec Data logger installed on suspect vehicle. There were no incidents of fault code 629/12 and engine shut down recorded. Data collection continues on this vehicle with the Control Tec Data logger installed.
- 08/18/2021 – Navistar Compliance and Engineering meet internally to discuss potential issue with ECM programming software that may cause fault 629/12.
- 8/19/2021 – Navistar Compliance Committee meet to review failure mode, potential root cause, and fault code 629/12 occurrence. The Committee recommended to continue review

of the ECM programming software and investigation of fault code 629/12 and reaction with supplier.

- 09/03/2021 – Navistar, PSI, and Borg Warner meet to discuss the functionality of the ECM and Fault code 629/12 and ECM sequence of fault reaction.
- 09/10/2021 – PSI and Borg Warner confirmed the sequence of fault code reaction was correct and determined to measure loop count from main micro to safety micro operation and maximum loop time of micro MPM software exchange.
- 09/14/2021 – PSI and Borg Warner confirmed measured loop count from main micro to safety micro was working properly and within program timing. Borg Warner confirms vehicle can restart after fault code 629/12 with a five second key off event before restart.
- 09/24/2021 – Navistar, PSI, and Borg Warner meet to discuss potential on-vehicle testing and bench testing of the ECM.
- 10/05/2021 – Tests interrupting the PT ignition were performed by Borg Warner and PSI. Borg Warner tests involved the use of a bench set-up with increased RPMs to simulate increase in CPU load. PSI performed the same increase in CPU load in their on-vehicle testing. Borg Warner and PSI were unable to reproduce the 629/12 shut down failure.
- 10/14/2021 – Navistar Compliance Committee meet to review the progress of the investigation causing fault code 629/12. Review the potential of main micro software delay/unsent message, software reacting to harness power interruption, and restart capability after vehicle shutdown caused by 629/12. Additional information for occurrence, time period of fault code 629/12, and vehicle build population was requested.
- 10/15/2021 – PSI and Borg Warner inspect four vehicles that experienced Fault code 629/12. One vehicle, the pins in the VIC inspected good and the failure could not be reproduced. The remaining three vehicles had a bent pin in the VIC connection and the failure could still not be reproduced.
- 10/19/2021 – Navistar reviewed the failure time periods. There was a total of 42 reports of fault code 629/12 occurring during the suspect date range. Not all of these reports could be confirmed as causing a vehicle shutdown. Based on these fault code reports Navistar declares a safety recall even though a cause could not be determined.
- 10/22/2021 – Navistar, PSI, and Borg Warner meet to discuss software programming change; should a vehicle experience fault code 629-12, can the program reaction be changed from shut down and reset to just reset.
- 10/29/2021 through 01/04/2022 – Borg Warner and PSI develop new software programming and validate there are no effects to ECM safety functionality.
- 11/09/2021 – Navistar mails interim notice to affected bus owners instructing the restart procedure until the final field remedy becomes available.
- 01/07/2022 – PSI and Navistar release new software programming to production and for the final field remedy.