

FORD MOTOR COMPANY (FORD) RESPONSE TO RQ24014-2 Request 8Request 8

Furnish Ford's assessment of the effectiveness of the subject recall remedy in addressing the alleged defect, including:

- a. Its effectiveness in providing warning to the driver when 12V battery failure occurs during a drive cycle;
- b. Its effectiveness in inhibiting loss of motive power after stopping during a drive cycle; and
- c. Its effectiveness in inhibiting loss of motive power while the vehicle is in motion during a drive cycle.

Answer

Ford recall 24S24 provided updated calibrations to the Body Control Module (BCM) and Powertrain Control Module (PCM). The BCM calibration update increased the sensitivity to detect a degraded battery, including sudden change in battery health during a drive cycle, and added a cluster warning message to the driver. If a degraded battery is detected, the BCM would set Diagnostic Trouble Code (DTC) B11D9 -09 and display the message "Charging System Service Soon" in the cluster. This DTC also inhibits the auto stop-start feature as well as Smart Regen Charging (SRC). With the new calibration, if a battery experiences a sudden, catastrophic degradation during a drive cycle, it may still take up to 3 minutes or longer (potentially across multiple drive cycles), depending on the magnitude of the battery failure, for the BCM software to detect the degraded state of the battery. As a result, some sudden failures may not be detected prior to a stop-start event depending on the drive conditions and whether the driver comes to a stop prior to the detection occurring.

To address potential loss of motive power (LOMP) occurrences after coming to a stop during a drive cycle, if the BCM detects a battery degradation and sets the associated DTC, the auto stop-start feature will be inhibited and the vehicle will not request an engine shutdown while at a stop. While the engine is running, the PCM calibration change increased the minimum setpoint voltage while at idle from 12.4V to 12.75V, maintaining that minimum output from the alternator at all times, preventing engine stall. The combination of these calibration updates effectively eliminates loss of motive power occurrences when the BCM detects battery degradation. In cases where the enhanced BCM calibration is still unable to detect sudden battery degradation, the auto stop-start feature will not be inhibited and vehicles may still experience a failure to restart while stopped during a drive cycle.

To address LOMP while the vehicle is in motion, if the BCM detects a battery degradation and sets the associated DTC, the auto stop-start feature as well as SRC will be inhibited. Additionally, while the engine is running, the PCM calibration change that increases the minimum setpoint voltage while at idle from 12.4V to 12.75V, maintains a minimum output from the alternator at all times, preventing engine stall. The combination of these calibration updates effectively eliminates loss of motive power occurrences when the BCM detects battery degradation. Although the BCM may not be able to detect all degradations of the battery, the PCM calibration change is not dependent on a detection or DTC. As a result, the increased minimum setpoint voltage increase to 12.75V at idle applies to all circumstances while the engine is running. Ford's review of warranty data for vehicles serviced with the 24S24 remedy shows no confirmed cases of drivers experiencing a LOMP event while in motion with the engine running.

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