

Fault Code 3334 ECU CAN Bus Communication Failure

Fault Code: 3334 ECU CAN Bus Communication Failure

Description: CAN Bus communications between the Electronic Control Unit (ECU) and the Vehicle Control Module (VCM) failed. The ECU has not received a message from the VCM for a period greater than 5 seconds. This fault code may be displayed with other CAN bus faults.

Possible failure modes:

- An open circuit in the CAN bus wiring.
- A short circuit in the CAN bus wiring.
- Faulty ECU.
- Faulty VCM.

Solution

Step 1: Verify that the fault code is active.

- Connect the electronic service tool to the service tool connector.
 - Start and operate the machine.
- A. The fault code is present and active. Go to step 2.
B. The fault code is not active. Return the machine to service.

Step 2: Check the harness for damage.

- Turn the ignition switch OFF.
 - Verify the connections to the ECU, VCM, instrument cluster and service tool connector are tight and secure.
 - Verify the harness is free of damage, abrasion, corrosion, and incorrect attachment from the ECU to the VCM.
 - Verify all CAN bus drops are free of damage, abrasion, corrosion, and incorrect attachment.
- A. The CAN bus harness is not damaged and all connections are secure. Go to step 3.
B. The harness has damage or the connectors are loose or damaged. Repair or replace the harness as required. Return the step 1 to confirm elimination of the fault.

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Step 3: Measure the resistance through the CAN bus harness.

- Turn the ignition switch OFF.
- Measure the resistance between diagnostic connector pin C (CAN High) and diagnostic connector pin D (CAN Low). The resistance should be approximately 60 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - A. The resistance is less than 54 Ω . Go to step 4.
 - B. The resistance is between 54 Ω and 66 Ω . Go to step 5.
 - C. The resistance is between 108 Ω and 132 Ω . Go to step 7.
 - D. The resistance is greater than 133 Ω . Go to step 6.

Step 4: Measure the resistance between the CAN High and CAN Low signal wires.

- Turn the ignition switch OFF.
- Disconnect the ECU.
- Disconnect the VCM.
- Disconnect the instrument cluster and service tool.
- Measure the resistance between diagnostic connector pin C (CAN High) and diagnostic connector pin D (CAN Low). The resistance should be greater than 20,000 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - A. The resistance is greater than 20,000 Ω . Connect each component to the CAN bus one at a time while measuring the resistance. The resistance should be greater than 54 Ω . Replace the component that drops the CAN bus resistance below 54 Ω . Return to step 1 to confirm the elimination of the fault.
 - B. The resistance is less than 54 Ω . There is a short circuit between the CAN High and CAN Low wires. Repair or replace the harness as required. Return to step 1 to confirm elimination of the fault.

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Step 5: Measure the resistance of the harness between chassis ground and positive battery.

- Turn the ignition switch OFF.
 - Disconnect all devices connected to the CAN bus.
 - Measure the resistance between VCM connector X-058 pin 4 and chassis ground. The chassis ground connection must be clean and free of paint, oil, and dirt. The resistance should be greater than 20,000 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - Measure the resistance between VCM connector X-058 pin 4 and X-059 pin 21, switched battery. The resistance should be greater than 20,000 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - Measure the resistance between VCM connector X-058 pin 4 and X-059 pin 14, unswitched battery. The resistance should be greater than 20,000 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - Measure the resistance between VCM connector X-058 pin 3 and chassis ground. The chassis ground connection must be clean and free of paint, oil, and dirt. The resistance should be greater than 20,000 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - Measure the resistance between VCM connector X-058 pin 3 and X-059 pin 21, switched battery. The resistance should be greater than 20,000 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - Measure the resistance between VCM connector X-058 pin 3 and X-059 pin 14, unswitched battery. The resistance should be greater than 20,000 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
- A. All resistance measurements are greater than 20,000 Ω . Verify that the ECU and other CAN bus modules are powered and operational. Verify that all minus battery and chassis ground connections to the CAN bus modules are clean and secure. Repair as required. Return to step 1 to confirm elimination of the fault.
- B. The resistance is less than 20,000 Ω . There is a short circuit in the CAN bus to chassis ground or positive battery. Repair or replace the harness as required. Return to step 1 to confirm elimination of the fault.

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Step 6: Measure the resistance through the CAN bus circuit.

- Turn the ignition switch OFF.
 - Disconnect all components connected to the CAN bus.
 - Fabricate a jumper wire that will connect between ECU connector X-120 pin 34 and X-120 pin 35.
 - Connect the jumper wire between X-120 pin 34 and X-120 pin 35.
 - Measure the resistance between diagnostic connector pin C (CAN High) and diagnostic connector pin D (CAN Low). The resistance should be less than 10 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
 - Measure the resistance between VCM connector X-058 pin 3 and pin 4. The resistance should be less than 10 Ω . Wiggle the harness during measurement to reveal an intermittent condition.
- A. All resistance measurements are less than 10 Ω . Go to step 7.
- B. One or more resistance measurements are greater than 20,000 Ω . There is an open circuit in the CAN bus wiring. Repair or replace the harness as required. Return to step 1 to confirm elimination of the fault.

Step 7: Measure the resistance of the CAN circuit in the ECU and VCM.

- Turn the ignition switch OFF.
 - Disconnect the ECU.
 - Disconnect the VCM.
 - Measure the resistance directly on the ECU CAN bus pin. Measure the resistance between X-120 pin 34 and pin 35. The resistance should be between 108 Ω and 132 Ω .
 - Measure the resistance directly on the VCM CAN bus pin. Measure the resistance between X-058 pin 3 and pin 4. The resistance should be between 108 Ω and 132 Ω .
- A. Both resistance measurements are between 108 Ω and 132 Ω . Temporarily replace the ECU and retest. Return to step 1 to confirm elimination of the fault.
- B. One or both resistance measurements are greater than 140 Ω . There is an open circuit within the control module. Temporarily replace the control module and retest. Return to step 1 to confirm elimination of the fault.