

DTC B0001 or B0002

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC B0001 Steering Wheel Module Stage 1 High Control

DTC B0002 Steering Wheel Module Stage 2 High Control

Diagnostic Fault Information

Circuit	Circuit Function	Short to Ground	Low Resistance	High Resistance	Open Circuit	Short to Voltage	Signal Performance
3021	Control	B0001 11	B0001 1A	B0001 1B	B0001 13	B0001 12	—
3020	Control	B0001 11	B0001 1A	B0001 1B	B0001 13	B0001 12	—
3023	Control	B0002 11	B0002 1A	B0002 1B	B0001 13	B0002 12	—
3022	Control	B0002 11	B0002 1A	B0002 1B	B0001 13	B0002 12	—

Circuit/System Description

The F107 Steering Wheel Airbag is a dual-stage inflator located in the steering wheel. The F107 Steering Wheel Airbag contains a housing, inflatable Airbag, an initiating device, a canister of gas generating material and, in some cases, stored compressed gas. The F107 Steering Wheel Airbag uses two discrete deployment loops to supply current and deploy each state of the Airbag. Each deployment loop has a high control circuit that will supply voltage to deploy the Airbag and a low control circuit that will supply ground to deploy the Airbag. Stage 1 uses circuit 3021 as a high control and circuit 3020 as a low control. Stage 2 uses circuit 3023 as a high control and circuit 3022 as a low control.

Based on inputs from the impact sensors, the K36 Restraints Control Module will command deployment of Stage 1 or Stage 2 of the F107 Steering Wheel Airbag depending on crash specifics. To deploy the F107 Steering Wheel Airbag, the K36 Restraints Control Module will simultaneously apply voltage to the high control circuit and ground to the low control circuit.

The X85 Steering Wheel Airbag Coil contains a coil of ribbon cable that allows multiple full rotations of the steering wheel while maintaining continuity of the control circuits.

Conditions for Running the DTC

- Ignition ON
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- Ignition voltage is between 9–16 V

Conditions for Setting the DTC

B0001 11

Circuit 3021 or circuit 3020 is shorted to ground for 2 s.

B0002 11

Circuit 3023 or circuit 3022 is shorted to ground for 2 s.

B0001 12

Circuit 3021 or circuit 3020 is shorted to voltage for 2 s.

B0002 12

Circuit 3023 or circuit 3022 is shorted to voltage for 2 s.

B0001 13

Circuit 3021 or circuit 3020 is open for 2 s.

B0002 13

Circuit 3023 or circuit 3022 is open for 2 s.

B0001 1A

Circuit 3021 or circuit 3020 resistance is less than 1.7 Ω for 2 s.

B0002 1A

Circuit 3023 or circuit 3022 resistance is less than 1.7 Ω for 2 s.

B0001 1B

Circuit 3021 or circuit 3020 resistance is greater than 4.4 Ω for 2 s.

B0002 1B

Circuit 3023 or circuit 3022 resistance is greater than 4.4 Ω for 2 s.

Action Taken When the DTC Sets

Airbag Indicator ON.

The inflatable restraint sensing and diagnostic module will store a DTC, however if an event occurs the system will still attempt deployment.

Conditions for Clearing the DTC

- A current DTC will clear when the diagnostic runs and passes.
- A history DTC will clear after 100 consecutive malfunction-free ignition cycles.

Diagnostic Aid

Note: The following diagnostic aids apply for both current and history DTCs.

A worn steering wheel Airbag coil can cause a repeated history DTC to set. To verify this condition, turn the steering wheel 360 degrees in one direction then back 360 degrees in the other direction, multiple times, while viewing the scan tool Deployment Loop Resistance 1 and 2 parameters.

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An incorrectly installed connector position assurance (CPA) or incorrectly seated connector can cause a shorting bar to short both control circuits together. Check the connectors and CPAs if a DTC with symptom byte 11 or 1A is set, to ensure the shorting bars are not causing the circuits to be shorted together. Shorting bars are used in the locations listed below:

- F107 Steering Wheel Airbag
- X85 Steering Wheel Airbag Coil
- Inline harness connectors
- Harness side of the K36 Restraints Control Module connector

Terminal fretting or incorrectly seated connector can cause an open/high resistance condition. Check the circuit terminals for fretting or incorrectly seated connector if a DTC with symptom byte 1B is set.

Reference Information

Schematic Reference

[SIR Schematics](#)

Connector End View Reference

[Master Electrical Component List](#)

Description and Operation

[Supplemental Inflatable Restraint System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)
- [Connector Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

EL-38125-580 Terminal Release Tool Kit

Circuit/System Verification

Note:

- Refer to [SIR Service Precautions](#).
- Inspect all terminals for damage or corrosion when disconnecting connectors. Damage or corrosion in the following requires repair or replacement of the affected component/connector.
 - Steering Wheel Airbag
 - Steering wheel Airbag coil
 - Restraints Control Module
 - Airbag wiring harness connector
 - Restraints Control Module wiring harness connector
- The connector and connector position assurance (CPA) may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click. The

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CPA isolates the shorting-bars within the connector allowing the deployment circuit to operate properly.

- If the condition is intermittent or cannot be duplicated, disconnect the connectors and add dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087). This procedure will correct the high resistance condition due to terminal fretting corrosion.

1. Verify the appropriate scan tool Deployment Loop Resistance parameter stays consistently between 2.1 and 4.0 Ω without any spikes or dropouts while turning the steering wheel 360 degrees in one direction then back 360 degrees in the other direction.

⇒ **If less than 2.1 or greater than 4.0 Ω**

Refer to Circuit/System Testing.

⇒ **If there are spikes or dropouts**

Replace the X85 Steering Wheel Airbag Coil.

⇓ **If within 2.1 and 4.0 Ω without any spikes or dropouts**

2. Verify DTC B0001 or B0002 is set as a history DTC.

⇒ **If the DTC is set as current**

Refer to Circuit/System Testing.

⇓ **If the DTC is set as history**

3. Verify the scan tool Deployment Loop Resistance parameter stays consistently between 2.1 and 4.0 Ω without any dropouts or spikes while moving the harness near each connector listed below:

- X85 Steering Wheel Airbag Coil
- F107 Steering Wheel Airbag
- K36 Restraints Control Module
- Any inline harness connector

⇒ **If the reading is erratic while moving the harness, perform the following**

- Inspect each connector terminal for damage or corrosion and repair as necessary.
- Apply dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087) to each connector terminal.
- Insure each connector and CPA is correctly seated.

⇓ **If within 2.1 and 4.0 Ω without any spikes or dropouts**

4. A fault is not currently present and may be an intermittent condition.

Circuit/System Testing

1. Ignition OFF, disconnect the appropriate connector at the F107 Steering Wheel Airbag:

- DTC B0001 = X1
- DTC B0002 = X2

2. Test for greater than 25 Ω between control circuit terminal 1 and control circuit terminal 2.

⇒ **If 25 Ω or less**

Note: Some connectors may be equipped with shorting bars as a safety component to prevent accidental inflator deployment. When testing on a connector with shorting bars, the shorting bars must be disabled to ensure accurate test results. Insert an appropriate pick from EL-38125-580 and depress the shorting bars above the appropriate terminals. This will lift the shorting bar from the terminal and allow accurate test results. Take care not to damage the connector, shorting bar, or terminal when depressing the shorting bar.

- 2.1. Verify the appropriate circuits are not shorted together:

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- DTCB0001 = Circuit 3021 and circuit 3020

- DTCB0002 = Circuit 3023 and circuit 3022

⇒ If a short between the circuit is found, repair the fault on the circuit.

⇓ If a short between the circuits is not found

2.2. Replace the K36 Restraints Control Module.

⇓ **If greater than 25 Ω**

3. Ignition ON.

4. Test for less than 11 V between the control circuit terminals listed below and ground:

- Control circuit terminal 1

- Control circuit terminal 2

⇒ **If 11 V or greater**

4.1. Test the following circuits for a short to voltage:

- DTCB0001 = Circuit 3021 and circuit 3020

- DTCB0002 = Circuit 3023 and circuit 3022

⇒ If a short to voltage is found, repair the fault on the circuit.

⇓ If a short to voltage is not found

4.2. Replace the K36 Restraints Control Module.

⇓ **If less than 11 V**

5. Ignition OFF.

6. Test for greater than 25 Ω between the control circuit terminals listed below and ground:

- Control circuit terminal 1

- Control circuit terminal 2

⇒ **If 25 Ω or less**

6.1. Test the following circuits for a short to ground:

- DTCB0001 = Circuit 3021 and circuit 3020

- DTCB0002 = Circuit 3023 and circuit 3022

⇒ If a short to ground is found, repair the fault on the circuit.

⇓ If a short to ground is not found

6.2. Replace the K36 Restraints Control Module.

⇓ **If greater than 25 Ω**

7. Ignition OFF, install a 3 A fused jumper wire between control circuit terminal 1 and control circuit terminal 2, ignition ON.

8. Verify the appropriate scan tool Deployment Loop Resistance parameter is consistently less than 2 Ω while turning the steering wheel 360 degrees in one direction then back 360 degrees in the other direction.

⇒ **If the reading is erratic while turning the steering wheel**

Replace the X85 Steering Wheel Airbag Coil.

⇒ **If 2 Ω or greater**

8.1. Test the following circuits for an open/high resistance:

- DTCB0001 = Circuit 3021 and circuit 3020

- DTCB0002 = Circuit 3023 and circuit 3022

⇒ If an open/high resistance is found, repair the fault on the circuit.

⇓ If an open/high resistance is not found

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8.2. Replace the K36 Restraints Control Module.

↓ **If less than 2 Ω**

9. Ignition OFF, connect the harness connector at the F107 Steering Wheel Airbag and press in the CPA (if equipped) until an audible and/or tactile click is heard.

10. Ignition ON, clear DTCs. Operate the vehicle within the Conditions for Running the DTC.

11. Verify DTC B0001 or B0002 is not set.

⇒ **If DTC B0001 or B0002 is set**

Replace the F107 Steering Wheel Airbag.

↓ **If DTC B0001 or B0002 is not set**

12. A fault is not currently present and may be an intermittent condition.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Steering Wheel Airbag Replacement](#)
- [Steering Wheel Airbag Coil Replacement](#)
- [Control Module References](#) for control module replacement, programming, and setup