

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+ - Body Control Module Terminal 4 X1	B270A 01, B270A 02, 1	B270A 01, 1	-	-
Control	B270A 02, 1	1	B270A 01, 2	-
Ground	-	B270A 01, 1	-	-
1. S3 Transmission Shift Lever = Locked - Brake Pedal Applied 2. S3 Transmission Shift Lever = Unlocked - Brake Pedal Not Applied				

Circuit/System Description

For an overview of the component/system, refer to: [Automatic Transmission Shift Lock Control Description and Operation](#)

Circuit	Description
Control	The output circuit is switched to 12 V to activate the component.
Ground	Chassis Ground

Conditions for Running the DTC

- Ignition - On/Vehicle - In Service Mode
- Brake Pedal Applied
- Transmission in Park

Frequency the DTC runs = Continuously - After the running conditions are met

Conditions for Setting the DTC

B270A 01

M7 Transmission Shift Lock Control Solenoid Actuat or Control Circuit = Short to Battery - For greater than 60 s

B270A 02

M7 Transmission Shift Lock Control Solenoid Actuat or Control Circuit = Short to Ground - For greater than 60 s

Actions Taken When the DTC Sets

S3 Transmission Shift Lever = Locked

Conditions for Clearing the DTC

- A current DTC will clear on the next malfunction-free ignition cycle.
- A history DTC will clear after 100 consecutive malfunction-free ignition cycles.

Reference Information

Schematic Reference

- [Body Control System Wiring Schematics](#)
- [Shift Lock Control Wiring Schematics](#)

Connector End View Reference

[Master Electrical Component List](#) , or [Inline Harness Connector End Views - Index](#) or [Component Connector End Views - Index](#)

Electrical Information Reference

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

Control Module References

Circuit/System Verification

1. Ignition - On/Vehicle - In Service Mode
2. Verify the scan tool parameter: Brake Pedal Applied = Inactive
 - **If not the specified state**
 - Refer to: [Stop Lamps Malfunction](#)
 - **Go to next step: If the specified state**
3. Verify the scan tool Driver Seat Belt Status and Passenger Seat Belt Status parameter changes between Buckled and Unbuckled when the seat belt is buckled and unbuckled.
 - **If the Driver Seat Belt Status and Passenger Seat Belt Status parameter does not change**

Refer to [Symptoms - Seat Belts](#)
 - **Go to next step: If the Driver Seat Belt Status and Passenger Seat Belt Status parameter changes**

NOTE: Vehicles with the Safety Belt Assurance System, will not allow the vehicle to shift out of PARK if the driver and front outboard passenger, if present, do not have safety belt(s) buckled. Buckle the safety belt(s) to unlock the shifter. This system may not allow the vehicle to shift out of PARK if an object such as a briefcase, handbag, grocery bag, laptop, or other electronic devices is on the front outboard passenger seat. If this happens, remove the object from the seat or buckle the safety belt.

- 4.
5. Operate the component: Brake Pedal - Pressed

Operate the component: S3 Transmission Shift Lever - Park & Drive
 - **If not the specified state**

Refer to: Circuit/System Testing
 - **Go to next step: If the specified state**
6. All OK.

Circuit/System Testing

1. Ignition/Vehicle & All vehicle systems - Off
2. Disconnect the electrical connector: X1K9 Body Control Module
3. Ignition - On/Vehicle - In Service Mode
4. Verify a test lamp turns On between the test points: B+ circuit terminal 4 & Ground
 - **If the test lamp does not turn On and the circuit fuse is OK**
 1. Ignition/Vehicle - Off & Remove - Test lamp
 2. Test for less than 2 ohms between the test points: B+ circuit terminal 4 & Output terminal @ Fuse
 - If 2 ohms or greater - Repair the open/high resistance in the circuit.
 - If less than 2 ohms - Verify the fuse is OK and there is voltage at the fuse.
 - **If the test lamp does not turn On and the circuit fuse is open**
 1. Ignition/Vehicle - Off & Remove - Test lamp
 2. Disconnect the electrical connector: X7K9 Body Control Module

3. Test for infinite resistance between the test points: Control circuit terminal 4 & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance - Replace the component: K9 Body Control Module
- **Go to next step: If the test lamp turns On**

NOTE: It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.

5. Ignition/Vehicle & All vehicle systems - Off
6. Disconnect the electrical connector: S3 Transmission Shift Lever
7. Test for less than 10 ohms between the test points: Ground circuit terminal 2 & Ground
 - **If 10 ohms or greater**
 1. Disconnect ground terminal.
 2. Test for less than 2 ohms between the test points: Ground circuit terminal 2 & Ground
 - If 2 ohms or greater - Repair the open/high resistance in the circuit.
 - If less than 2 ohms - Repair the open/high resistance in the ground connection.
 - **Go to next step: If less than 10 ohms**
8. Connect a test lamp between the test points: Control circuit terminal 4 & Ground circuit terminal 2
9. Ignition - On/Vehicle - In Service Mode
10. Perform the scan tool control function: Brake Transmission Shift Interlock Solenoid Actuator

Verify the test lamp turns On and Off.

- **If the test lamp is always Off**
 1. Ignition/Vehicle - Off & Remove - Test lamp
 2. Disconnect the electrical connector: K9 Body Control Module
 3. Test for infinite resistance between the test points: Control circuit terminal 4 @ Component harness & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
 4. Test for less than 2 ohms between the test points: Control circuit terminal 4 @ Component harness & Terminal 6 X7 @ Control module harness
 - If 2 ohms or greater - Repair the open/high resistance in the circuit.
 - If less than 2 ohms Replace the component: K9 Body Control Module
- **If the test lamp is always On**
 1. Ignition/Vehicle - Off & Remove - Test lamp
 2. Disconnect the electrical connector: K9 Body Control Module
 3. Ignition - On/Vehicle - In Service Mode
 4. Test for less than 1 V between the test points: Control circuit terminal 4 @ Component harness & Ground
 - If 1 V or greater - Repair the short to voltage on the circuit.
 - If less than 1 V - Replace the component: K9 Body Control Module
 - **Go to next step: If the test lamp turns On and Off**
 5. Test or replace the component: S3 Transmission Shift Lever

Component Testing

1. Ignition/Vehicle - Off
2. Disconnect the electrical connector: S3 Transmission Shift Lever

3. Connect a 3 A fused jumper wire between the test points: Control terminal 4 & 12 V
4. Momentarily connect a jumper wire between the test points: Ground terminal 2 & Ground

Verify the component produces a clicking sound: M7 Transmission Shift Lock Control Solenoid Actuator

- **If the component does not produce a sound**

Replace the component: S3 Transmission Shift Lever

- **Go to next step: If the component produces a sound**

5. All OK.

Repair Instructions

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

- [Transmission Control Replacement](#)
- For control module replacement, programming, and setup refer to: [Control Module References](#)

SYMPTOMS - AUTOMATIC TRANSMISSION SHIFT LOCK CONTROL

NOTE: The following steps must be completed before using the symptom tables.

1. Perform the [Diagnostic System Check - Vehicle](#) before using the Symptom Tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to [Automatic Transmission Shift Lock Control Description and Operation](#).

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the automatic transmission shift lock control.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#)

Symptom List

Refer to a symptom diagnostic procedure in order to diagnose the symptom:

[Transmission Control Lever Malfunction](#)

TRANSMISSION CONTROL LEVER MALFUNCTION

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)
- An overview of each diagnostic category can be found here: [Diagnostic Procedure Instructions](#)

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
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Control	B270A 02, 1	1	B270A 01, 2	-
Ground	-	B270A 01, 1	-	-
1. S3 Transmission Shift Lever = Locked - Brake Pedal Applied 2. S3 Transmission Shift Lever = Unlocked - Brake Pedal Not Applied				

Circuit/System Description

For an overview of the component/system, refer to: [Automatic Transmission Shift Lock Control Description and Operation](#)

Circuit	Description
Control	The output circuit is switched to 12 V to activate the component.
Ground	Chassis Ground

Reference Information

Schematic Reference

- [Body Control System Wiring Schematics](#)
- [Shift Lock Control Wiring Schematics](#)

Connector End View Reference

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Description and Operation

[Automatic Transmission Shift Lock Control Description and Operation](#)

Electrical Information Reference

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

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition - On/Vehicle - In Service Mode
2. Verify the scan tool parameter: Brake Pedal Applied = Inactive
 - **If not the specified state**
 - Refer to: [Stop Lamps Malfunction](#)
 - **Go to next step: If the specified state**
3. Verify the scan tool Driver Seat Belt Status and Passenger Seat Belt Status parameter changes between Buckled and Unbuckled when the seat belt is buckled and unbuckled.

- If the Driver Seat Belt Status and Passenger Seat Belt Status parameter does not change

Refer to [Symptoms - Seat Belts](#)

- Go to next step: If the Driver Seat Belt Status and Passenger Seat Belt Status parameter changes

NOTE: Vehicles with the Safety Belt Assurance System, will not allow the vehicle to shift out of PARK if the driver and front outboard passenger, if present, do not have safety belt(s) buckled. Buckle the safety belt(s) to unlock the shifter. This system may not allow the vehicle to shift out of PARK if an object such as a briefcase, handbag, grocery bag, laptop, or other electronic devices is on the front outboard passenger seat. If this happens, remove the object from the seat or buckle the safety belt.

4.

5. Operate the component: Brake Pedal - Pressed

Operate the component: S3 Transmission Shift Lever - Park & Drive

- If not the specified state

Refer to: Circuit/System Testing

- Go to next step: If the specified state

6. All OK.

Circuit/System Testing

1. Ignition/Vehicle & All vehicle systems - Off
2. Disconnect the electrical connector: X1K9 Body Control Module
3. Ignition - On/Vehicle - In Service Mode
4. Verify a test lamp turns On between the test points: B+ circuit terminal 4 & Ground
 - If the test lamp does not turn On and the circuit fuse is OK
 1. Ignition/Vehicle - Off & Remove - Test lamp
 2. Test for less than 2 ohms between the test points: B+ circuit terminal 4 & Output terminal @ Fuse
 - If 2 ohms or greater - Repair the open/high resistance in the circuit.
 - If less than 2 ohms - Verify the fuse is OK and there is voltage at the fuse.
 - If the test lamp does not turn On and the circuit fuse is open
 1. Ignition/Vehicle - Off & Remove - Test lamp
 2. Disconnect the electrical connector: X7K9 Body Control Module
 3. Test for infinite resistance between the test points: Control circuit terminal 4 & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - If infinite resistance - Replace the component: K9 Body Control Module
 - Go to next step: If the test lamp turns On

NOTE: It may take up to 2 min for all vehicle systems to power down before an accurate ground or low reference circuit continuity test can be performed.

5. Ignition/Vehicle & All vehicle systems - Off

6. Disconnect the electrical connector: S3 Transmission Shift Lever

7. Test for less than 10 ohms between the test points: Ground circuit terminal 2 & Ground

- If 10 ohms or greater

1. Disconnect ground terminal.
2. Test for less than 2 ohms between the test points: Ground circuit terminal 2 & Ground
 - If 2 ohms or greater - Repair the open/high resistance in the circuit.
 - If less than 2 ohms - Repair the open/high resistance in the ground connection.
- **Go to next step: If less than 10 ohms**
8. Connect a test lamp between the test points: Control circuit terminal 4 & Ground circuit terminal 2
9. Ignition - On/Vehicle - In Service Mode
10. Perform the scan tool control function: Brake Transmission Shift Interlock Solenoid Actuator

Verify the test lamp turns On and Off.

• **If the test lamp is always Off**

1. Ignition/Vehicle - Off & Remove - Test lamp
2. Disconnect the electrical connector: K9 Body Control Module
3. Test for infinite resistance between the test points: Control circuit terminal 4 @ Component harness & Ground
 - If less than infinite resistance - Repair the short to ground on the circuit.
 - Go to next step: If infinite resistance
4. Test for less than 2 ohms between the test points: Control circuit terminal 4 @ Component harness & Terminal 6 X7 @ Control module harness
 - If 2 ohms or greater - Repair the open/high resistance in the circuit.
 - If less than 2 ohms Replace the component: K9 Body Control Module

• **If the test lamp is always On**

1. Ignition/Vehicle - Off & Remove - Test lamp
2. Disconnect the electrical connector: K9 Body Control Module
3. Ignition - On/Vehicle - In Service Mode
4. Test for less than 1 V between the test points: Control circuit terminal 4 @ Component harness & Ground
 - If 1 V or greater - Repair the short to voltage on the circuit.
 - If less than 1 V - Replace the component: K9 Body Control Module
- **Go to next step: If the test lamp turns On and Off**
5. Test or replace the component: S3 Transmission Shift Lever

Component Testing

1. Ignition/Vehicle - Off
2. Disconnect the electrical connector: S3 Transmission Shift Lever
3. Connect a 3 A fused jumper wire between the test points: Control terminal 4 & 12 V
4. Momentarily connect a jumper wire between the test points: Ground terminal 2 & Ground

Verify the component produces a clicking sound: M7 Transmission Shift Lock Control Solenoid Actuator

• **If the component does not produce a sound**

Replace the component: S3 Transmission Shift Lever

• **Go to next step: If the component produces a sound**

5. All OK.

Repair Instructions

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

- [Transmission Control Replacement](#)
- For control module replacement, programming, and setup refer to: [Control Module References](#)

DESCRIPTION AND OPERATION

AUTOMATIC TRANSMISSION SHIFT LOCK CONTROL DESCRIPTION AND OPERATION

The Automatic Transmission Shift Lock Control System is a safety device that prevents an inadvertent shift out of PARK when the engine is running. This vehicle is equipped with RPO "T4Z" Safety Belt Assurance System. This system will not allow the vehicle to be shifted out of park unless the seat belt Driver/Passenger (if occupied) is buckled. The system consists of the following components:

- The Automatic Transmission Shift Lock Solenoid (serviced as the Automatic Transmission Shift Lock Actuator)
- The Body Control Module (BCM)
- The Engine Control Module (ECM)
- The Inflatable Restraint Sensing and Diagnostic Module (SDM).

The BCM controls the voltage to the shift lock control solenoid through the shift lock control solenoid controlled voltage circuit. The following conditions must be met before the BCM will supply voltage to the shift lock control solenoid:

- The ignition is in the ON position.
- The ECM sends an input via GMLAN serial data to the BCM when the Transmission Control Module (TCM) indicates the transmission is in the PARK position.
- The BCM receives a brake applied input from the stop lamp switch.
- The SDM determines if the occupied driver and front outboard passenger, if present, have their safety belt(s) buckled.

Since the shift lock control solenoid is permanently grounded, the BCM supplies voltage to the automatic transmission shift lock control solenoid, releasing the mechanical lock on the shift lever as the solenoid energizes. The energized solenoid allows the driver to move the shift lever out of the PARK position. When the brake pedal is not applied, the BCM turns the control voltage output of the shift lock control solenoid OFF, de-energizing the shift lock control solenoid. When the transmission is in the PARK position, the de-energized shift lock control solenoid will prevent shifting as the lever is mechanically locked in the PARK position.

During remote start operation, the BCM will energize the shift lock control circuit, locking the shift lever in the PARK position.

Vehicles with the Safety Belt Assurance System, will display the following message "Shift Locked, Buckle Seatbelt" if the driver or front outboard passenger, if present, and safety belt(s) are not buckled. The vehicle will not shift out of PARK. Buckle the safety belt(s) to unlock the shifter.

This system may not allow the vehicle to shift out of PARK if an object such as a briefcase, handbag, grocery bag, laptop, or other electronic devices is on the front outboard passenger seat. If this happens, remove the object from the seat or buckle the safety belt.

Vehicles with the Safety Belt Assurance System, will display the following message "Shift Unlocked, Brake To Shift" if the system times out and allows the vehicle to be shifted out of PARK after 30 s following brake applied.

The Safety Belt Assurance System can be disabled with a calibration file update in the K36 Inflatable Restraint Sensing and Diagnostic Module using SPS. This procedure should only be done to help resolve a customer dissatisfaction issue.
