

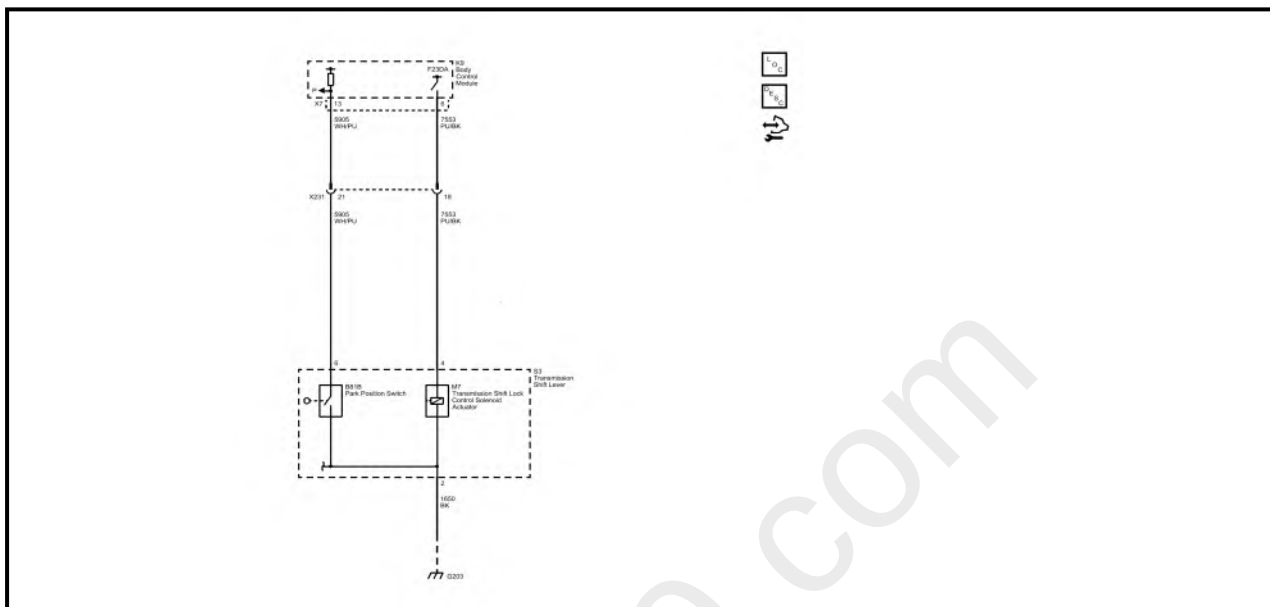
2018 TRANSMISSION

Shift Lock Control - Traverse

SCHEMATIC WIRING DIAGRAMS

SHIFT LOCK CONTROL WIRING SCHEMATICS

Shift Lock Control (X88)



DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B270A

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](#)

DTC Descriptor

DTC B270A 01

Park Lock Solenoid Actuator Control Circuit = Short to Battery

DTC B270A 02

Park Lock Solenoid Actuator Control Circuit = Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+ - Body Control Module Terminal 4 X1	1	1	-	-
Control	B270A 02, 1	1	B270A 01, 2	-
Ground	-	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 ActuatorControl Circuit = Short to Battery - For greater than 60 s

B270A 02

M7 Transmission Shift Lock Control Solenoid ActuatorControl 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

COMPONENT CONNECTOR END VIEWS - INDEX

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. 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**

4. 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. Refer to [Checking Aftermarket Accessories](#) .
- 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
B+ - Body Control Module Terminal 4 X1	1	1	-	-
Control	B270A 02, 1	1	B270A 01, 2	-
Ground	-	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

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Automatic Transmission Shift Lock Control Description and Operation

- [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. 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**

4. 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 park lock control system is a safety device that prevents an inadvertent shift out of PARK. The driver must press the brake pedal before moving the park lever out of the PARK position. The system consists of the following components:

- The automatic transmission park lock solenoid (serviced as the automatic transmission shift lock actuator), is located within the floor shift control assembly.
- The body control module, which controls the voltage supply circuit of the park lock control solenoid.
- The engine control module.

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

- The ignition is in the ON position.
- The engine control module sends an input via GMLAN serial data to the body control module indicating the transmission is in the PARK position.
- The body control module determines the brake pedal is applied according the brake pedal position.

Since the park lock control solenoid is permanently grounded, the body control module supplies voltage to the automatic transmission park lock control solenoid, unlocking the park lever allowing the driver to move the park lever out of the PARK position as the solenoid energizes. When the brake pedal is not applied, the body control module turns the control voltage output of the park lock control solenoid OFF, de-energizing the park lock control solenoid. The de-energized solenoid mechanically locks the park lever in the PARK position.
