

TRANSMISSION

Shift Lock Control - Escalade, Suburban, Tahoe, Yukon

SPECIFICATIONS

FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Automatic Transmission Control Bolt (N38)	10 N.m	89 lb in
Automatic Transmission Control Bracket Bolt (N38)	10 N.m	89 lb in

SCHEMATIC WIRING DIAGRAMS

SHIFT LOCK CONTROL WIRING SCHEMATICS

Shift Lock Control

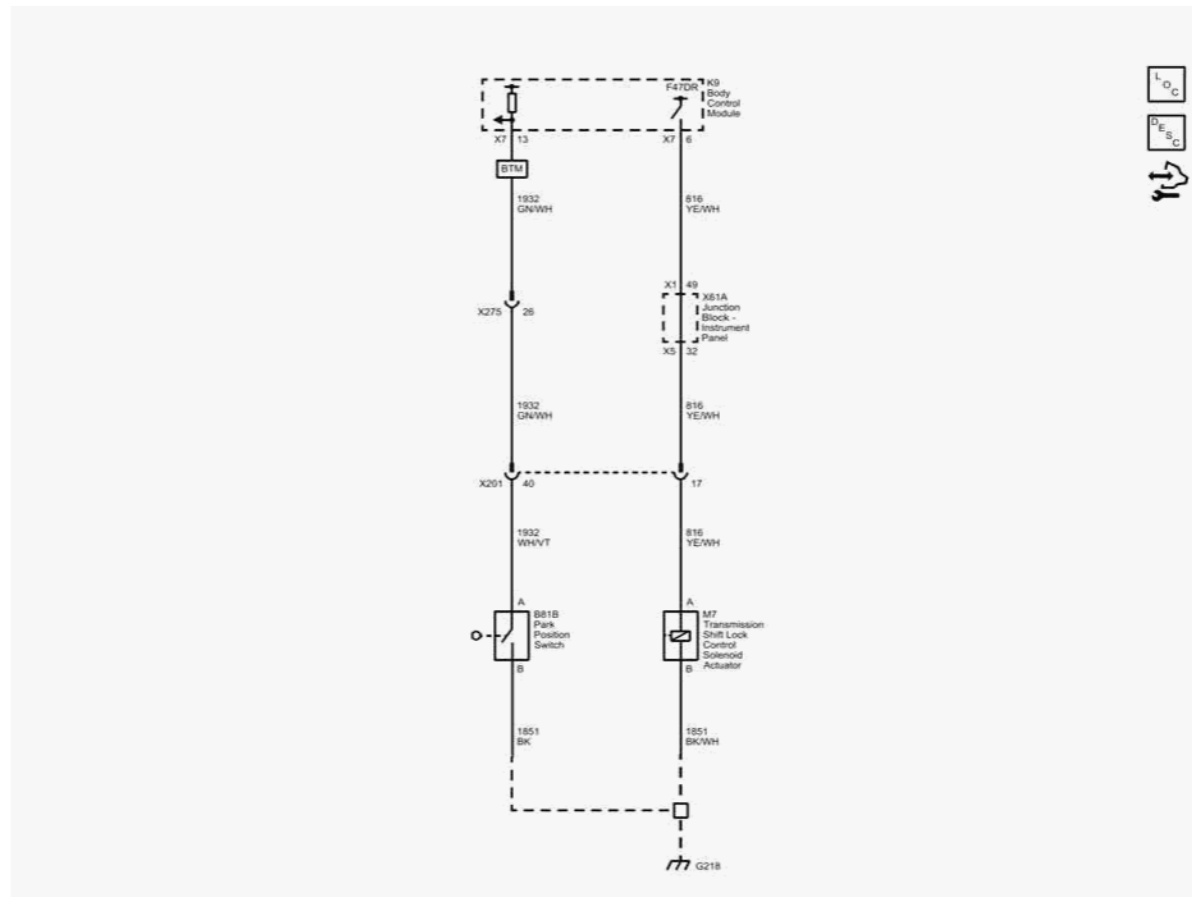


Fig. 1: Shift Lock Control

Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B270A: PARK LOCK SOLENOID CONTROL CIRCUIT SHORT

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.
- Refer to [Diagnostic Procedure Instructions](#) to provide an overview of each diagnostic category.

DTC Descriptors

DTC B270A 01

Park Lock Solenoid Control Circuit Short to Battery

DTC B270A 02

Park Lock Solenoid Control Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Fuse B+	1	1	-	-
Control	B270A 02, 1	1	B270A 01, 2	-
Ground	-	1	-	-
1. Transmission shift lever will not move from PARK with the brake pedal applied. 2. Transmission shift lever will move from PARK without the brake pedal applied.				

Circuit/System Description

The body control module controls the transmission shift lock control solenoid actuator by providing a battery positive voltage to the solenoid when the brake pedal is applied. The body control module monitors the voltage and current flow of the control circuit.

Conditions for Running the DTC

- Ignition ON / Vehicle in Service Mode.
- Brake pedal is applied.
- Transmission is in the PARK position.
- DTC runs continuously once the above conditions are met.

Conditions for Setting the DTC

B270A 01

The body control module detects a short to voltage in the transmission shift lock control solenoid actuator control circuit for 1 s.

B270A 02

The body control module detects a short to ground in the transmission shift lock control solenoid actuator control circuit for 1 s.

Action Taken When the DTC Sets

The body control module will not attempt to enable the voltage supply circuit of the transmission shift lock control solenoid actuator until the next key cycle.

Conditions for Clearing the DTC

- A current DTC B270A will clear when the malfunction is no longer present and the ignition switch is cycled.
- A history DTC will clear after 100 ignition cycles with no current DTC active during the 100 ignition cycles.

Reference Information

Schematic Reference

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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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 for scan tool information

Circuit/System Verification

1. Ignition ON / Vehicle in Service Mode.
2. Verify the scan tool Brake Pedal Applied parameter changes from Inactive to Active when the brake pedal is applied.

- **If the parameter does not change**

Refer to **Stop Lamps Malfunction**

- **If the parameter changes**

3. Verify the transmission shift lever moves out of the PARK position when the brake pedal is applied.

- **If the transmission shift lever does not move out of the PARK position**

Refer to Circuit/System Testing.

- **If the transmission shift lever does move out of the PARK position**

All OK.

Circuit/System Testing

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the M7 Transmission Shift Lock Control Solenoid Actuator. It may take up to 2 minutes for all vehicle systems to power down.

2. Test for less than 10 Ω between the ground circuit terminal B and ground.

- **If 10 Ω or greater**

1. Ignition OFF.

2. Test for less than 2 Ω in the ground circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

3. Ignition ON / Vehicle in Service Mode, connect a test lamp between the control circuit terminal A and the ground circuit terminal B.
4. Verify the test lamp turns ON and OFF when commanding the Brake Transmission Shift Interlock Solenoid Actuator Command parameter with

a scan tool.

- **If the test lamp is always OFF**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
3. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω
4. Ignition ON / Vehicle in Service Mode.
5. Verify a test lamp illuminates between each B+ and ignition circuit terminal at the control module harness connector.
 - If the test lamp does not illuminate, repair the circuit or fuse as necessary.
 - If the test lamp illuminates at each B+ and ignition circuit, replace the K9 Body Control Module.

- **If the test lamp is always ON**

1. Ignition OFF, disconnect the harness connector at the K9 body control module, Ignition ON / Vehicle in Service Mode.
2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K9 Body Control Module.

- **If the test lamp turns ON and OFF**

5. Test or replace the M7 Transmission Shift Lock Control Solenoid Actuator.

Component Testing

1. Ignition OFF, disconnect the harness connector at M7 Transmission Shift Lock Control Solenoid Actuator.
2. Install a 3 A fused jumper wire between the control terminal A and 12 V. Momentarily install a jumper wire between the ground terminal B and ground.
3. Verify the M7 Transmission Shift Lock Control Solenoid Actuator turns on and off/clicks, etc.
 - **If the M7 Transmission Shift Lock Control Solenoid Actuator does not turn on and off/clicks, etc**

Replace the M7 Transmission Shift Lock Control Solenoid Actuator.

- If the M7 Transmission Shift Lock Control Solenoid Actuator does turn on and off/clicks, etc

4. All OK.

Repair Instructions

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

- Refer to [Automatic Transmission Shift Lock Control Actuator Replacement \(N33, N37\)](#) [Automatic Transmission Shift Lock Control Actuator Replacement \(N38\)](#)
- Refer to [Control Module References](#) for control module replacement, programming, and setup.

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Fuse B+	1	1	-	-
Control	B270A 02, 1	1	B270A 01, 2	-
Ground	-	1	-	-
1. Transmission shift lever will not move from PARK with the brake pedal applied. 2. Transmission shift lever will move from PARK without the brake pedal applied.				

Circuit/System Description

The body control module controls the shift lock solenoid by providing battery voltage to the shift lock control solenoid. The body control module utilizes a smart driver to control the voltage supplied to the shift lock solenoid. The smart driver monitors the voltage and current flow of the control circuit.

Reference Information

Schematic Reference

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

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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

Scan Tool Reference

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

Circuit/System Verification

1. Ignition ON / Vehicle in Service Mode.
2. Verify the scan tool Brake Pedal Applied parameter changes from Inactive to Active when the brake pedal is applied.

- **If the parameter does not change**

Refer to [Stop Lamps Malfunction](#)

- **If the parameter changes**

3. Verify the transmission shift lever moves out of the PARK position when the brake pedal is applied.

- **If the transmission shift lever does not move out of the PARK position**

Refer to Circuit/System Testing.

- **If the transmission shift lever does move out of the PARK position**

All OK.

Circuit/System Testing

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the M7 Transmission Shift Lock Control Solenoid Actuator. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal B and ground.

- **If 10 Ω or greater**

1. Ignition OFF.
2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

3. Ignition ON / Vehicle in Service Mode, connect a test lamp between the control circuit terminal A and the ground circuit terminal B.
4. Verify the test lamp turns ON and OFF when commanding the Brake Transmission Shift Interlock Solenoid Actuator Command parameter with a scan tool.

- **If the test lamp is always OFF**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
3. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω
4. Ignition ON / Vehicle in Service Mode.
5. Verify a test lamp illuminates between each B+ and ignition circuit terminal at the control module harness connector.
 - If the test lamp does not illuminate, repair the circuit or fuse as necessary.
 - If the test lamp illuminates at each B+ and ignition circuit, replace the K9 Body Control Module.

- **If the test lamp is always ON**

1. Ignition OFF, disconnect the harness connector at the K9 body control module, ignition ON.
2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K9 Body Control Module.

- **If the test lamp turns ON and OFF**

5. Test or replace the M7 Transmission Shift Lock Control Solenoid Actuator.

Component Testing

1. Ignition OFF, disconnect the harness connector at M7 Transmission Shift Lock Control Solenoid Actuator.
2. Install a 3 A fused jumper wire between the control terminal A and 12 V. Momentarily install a jumper wire between the ground terminal B and ground.
3. Verify the M7 Transmission Shift Lock Control Solenoid Actuator turns on and off/clicks, etc.
 - **If the M7 Transmission Shift Lock Control Solenoid Actuator does not turn on and off/clicks, etc**
 Replace the M7 Transmission Shift Lock Control Solenoid Actuator.
 - **If the M7 Transmission Shift Lock Control Solenoid Actuator does turn on and off/clicks, etc**
4. All OK.

Repair Instructions

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

- Refer to [Automatic Transmission Shift Lock Control Actuator Replacement \(N33, N37\)](#)[Automatic Transmission Shift Lock Control Actuator Replacement \(N38\)](#)
- Refer to [Control Module References](#) for control module replacement, programming, and setup

REPAIR INSTRUCTIONS

AUTOMATIC TRANSMISSION SHIFT LOCK CONTROL ACTUATOR REPLACEMENT (N33, N37)

Removal Procedure

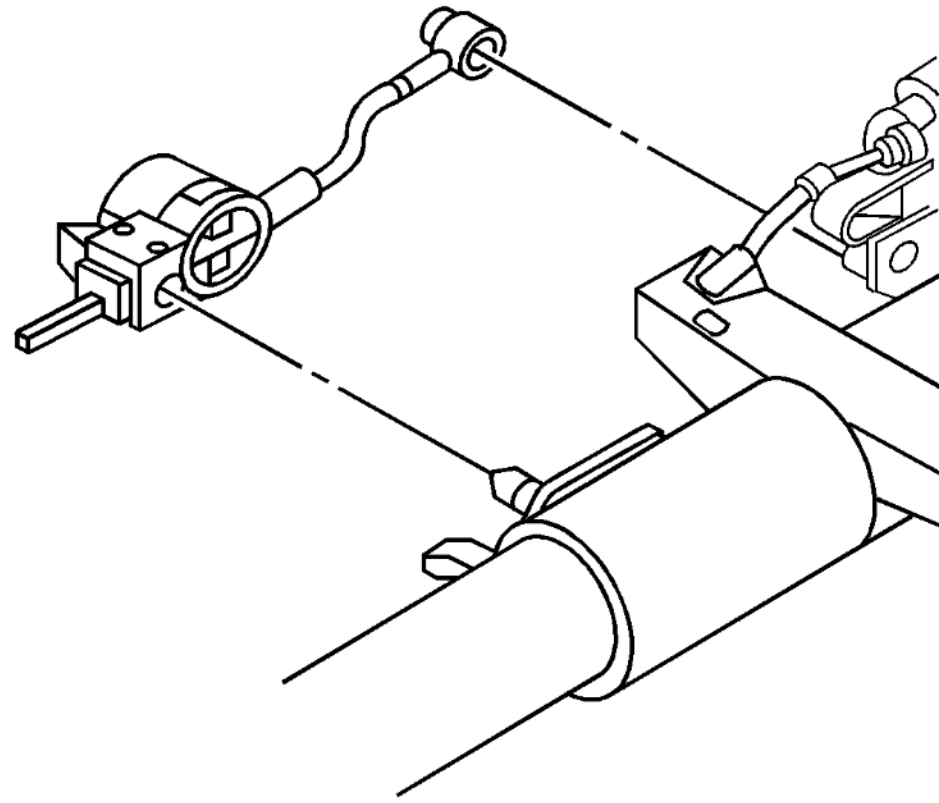


Fig. 2: Automatic Transmission Shift Lock Control Actuator

Courtesy of GENERAL MOTORS COMPANY

1. Disable the SIR system. Refer to [SIR Disabling and Enabling](#) .
2. Remove the knee bolster. Refer to [Instrument Panel Knee Bolster Replacement \(Chevrolet / GMC\)](#) [Instrument Panel Knee Bolster Replacement \(Cadillac\)](#) .
3. Put the shift lever clevis into the neutral position.

4. Disconnect the electrical connector.
5. Using a small screwdriver, pry the automatic transmission shift lock control actuator away from the steering column jacket and the cable shift cam.
6. Remove the shift lock control actuator.

Installation Procedure

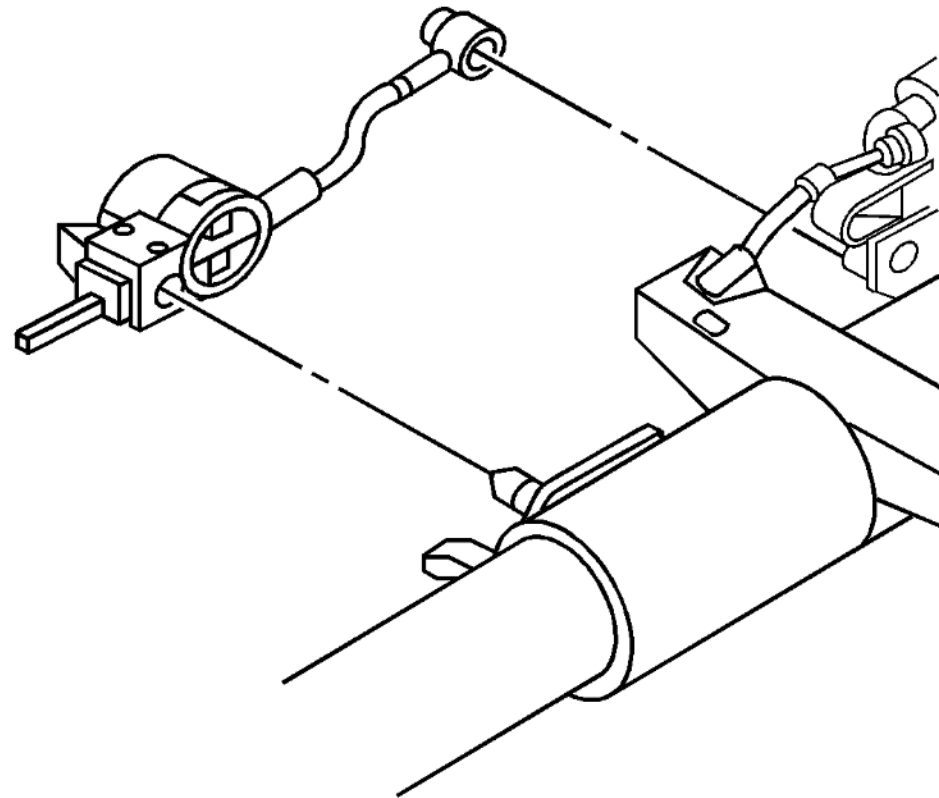


Fig. 3: Automatic Transmission Shift Lock Control Actuator

Courtesy of **GENERAL MOTORS COMPANY**

1. Firmly install the shift lock control actuator onto the steering column jacket and the cable shift cam.
2. Connect the electrical connector.
3. Place the shift lever clevis into the neutral position.

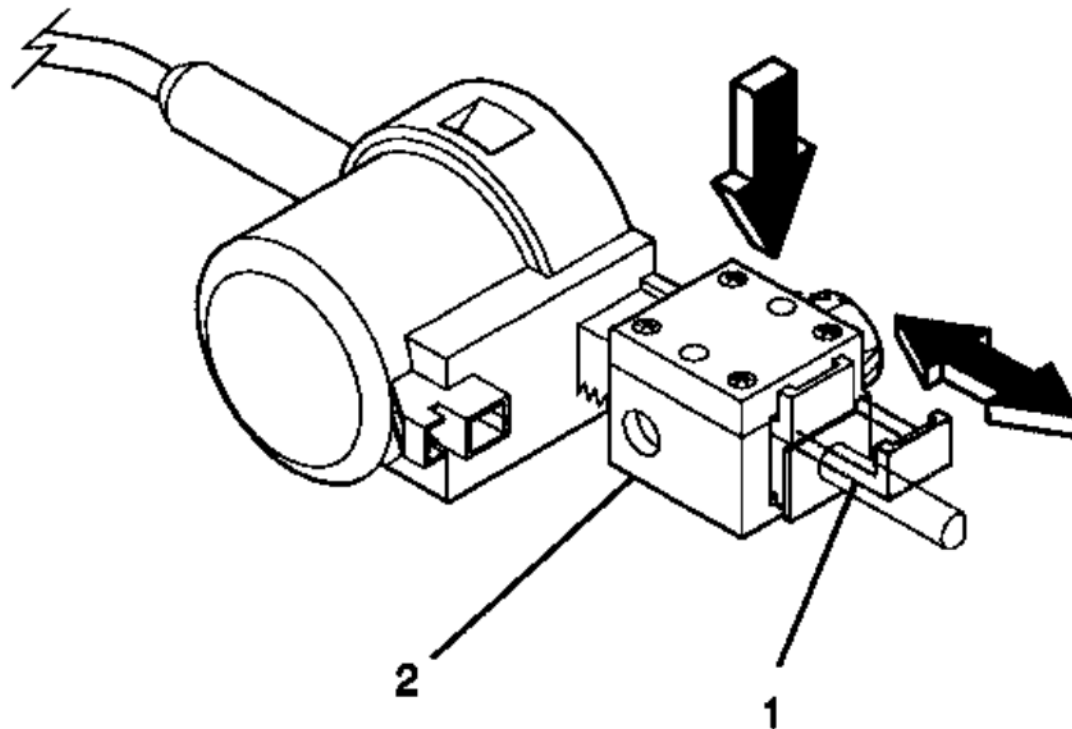


Fig. 4: Adjusting Automatic Transmission Shift Lock Control Actuator**Courtesy of GENERAL MOTORS COMPANY**

4. Adjust the shift lock control actuator (with the shift lever clevis in the neutral position) in the following way:
 1. Pull out the tab (1) on the adjuster block side (2) of the shift lock control actuator.
 2. Press on the adjuster block (2) to compress the internal adjuster spring which disengages the adjuster teeth. Slide the adjuster block (2) as far away from the actuator as possible.
5. Place the shift lever into the park position.
6. Lock the adjuster block (2) in place by pushing in on the tab (1).
7. Inspect the shift lock control actuator for the following items:
 1. The shift lock control actuator must lock the shift lever clevis when the shift lever clevis is put into the park position.
 2. Depress the brake pedal to move the shift lever out of the park position.
 3. The actuator will be energized.
 4. Readjust the shift lock control actuator if needed.
8. Install the knee bolster. Refer to **[Instrument Panel Knee Bolster Replacement \(Chevrolet / GMC\)](#)** **[Instrument Panel Knee Bolster Replacement \(Cadillac\)](#)**.
9. Enable the SIR system. Refer to **[SIR Disabling and Enabling](#)**.

AUTOMATIC TRANSMISSION SHIFT LOCK CONTROL ACTUATOR REPLACEMENT (N38)

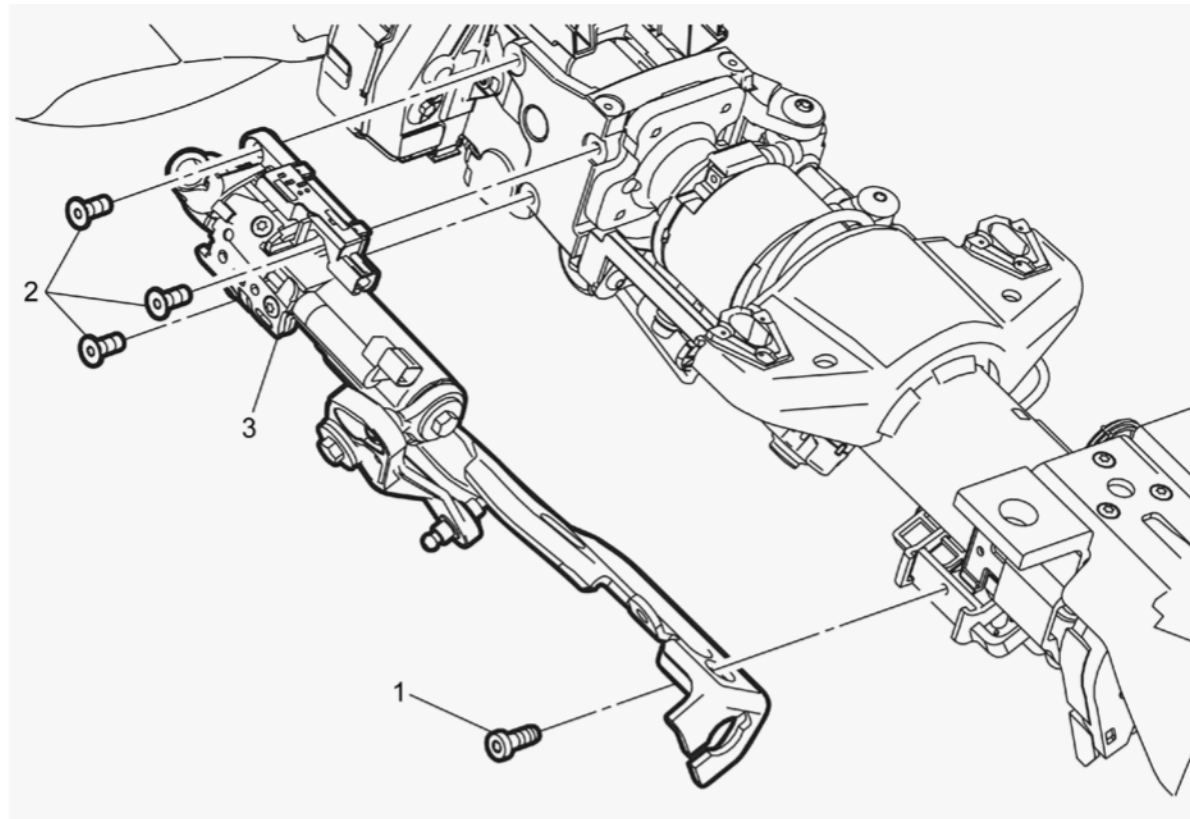


Fig. 5: Transmission Control (N38)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to SIR Warning . Preliminary Procedures 1. Remove steering column. Refer to Steering Column Replacement (N38) 2. Remove range selector lever cable lever. Refer to Range Selector Lever Cable Lever Replacement (N38) NOTE:	

Callout	Component Name
When equipped with the N38 steering column, the automatic transmission shift lock control actuator is service as part of the automatic transmission control. It is NOT serviced separately.	
1	Automatic Transmission Control Bracket Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 10 N.m (89 lb in)
2	Automatic Transmission Control Bolt (Qty: 3) Tighten 10 N.m (89 lb in)
3	Automatic Transmission Control Procedure

Callout	Component Name
	1. Disconnect the electrical connectors. 2. Transfer components as necessary.

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. The driver must press the brake pedal before moving the shift lever out of the PARK position. The system consists of the following components:

- The automatic transmission shift lock solenoid (serviced as the automatic transmission shift lock actuator), as well as the body control module (BCM) and the engine control module (ECM). The shift lock solenoid is located within the floor shift control assembly with vehicles equipped with floor shift.
- 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 remove voltage from the shift lock solenoid:
 - The ignition is in the ON position.
 - The engine control module (ECM) sends an input via GMLAN serial data to the BCM indicating the transmission is in the PARK position.
 - The BCM determines the brake pedal is applied according the brake pedal position.

Since the shift lock control solenoid is permanently grounded, the BCM supplies voltage to the automatic transmission shift lock control solenoid, mechanically locking the shift lever in the PARK position as the solenoid energizes. When the brake pedal is applied, the BCM turns the control voltage output of the shift lock control solenoid OFF, de-energizing the shift lock control solenoid. The de-energized solenoid releases the mechanical lock allowing the driver to move the shift lever out of the PARK position. When the transmission is out of the PARK position, the shift lock control solenoid remains de-energized.

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