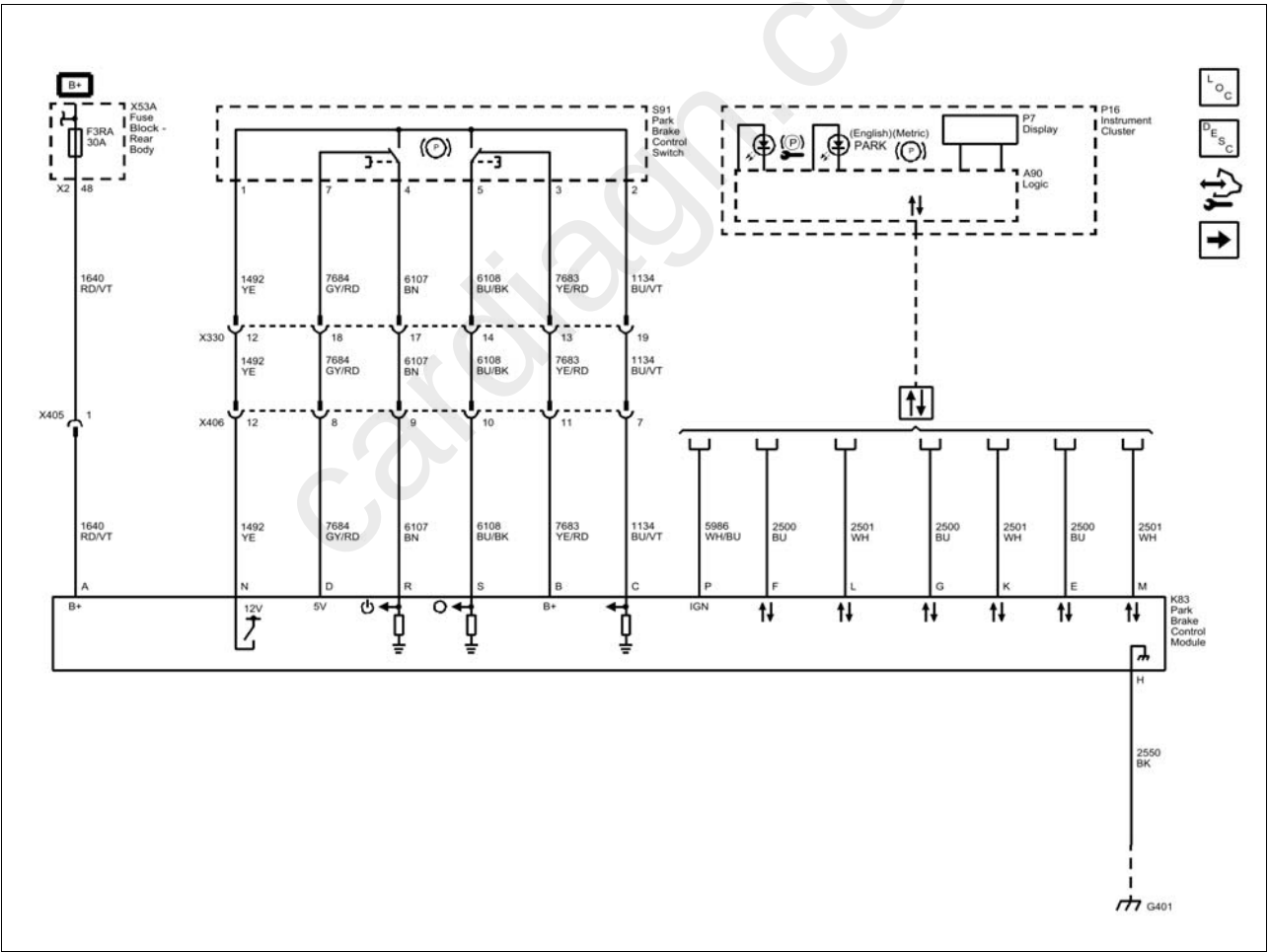


SPECIFICATIONS > FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Electronic Parking Brake Control Module Bolt	7 N.m	62 lb in
Electronic Parking Brake Control Module Bracket Bolt	9 N.m	80 lb in
Parking Brake Cable Bolt	9 N.m	80 lb in
Parking Brake Intermediate Cable Bolt	9 N.m	80 lb in
Parking Brake Intermediate Cable Nut	6 N.m	53 lb in

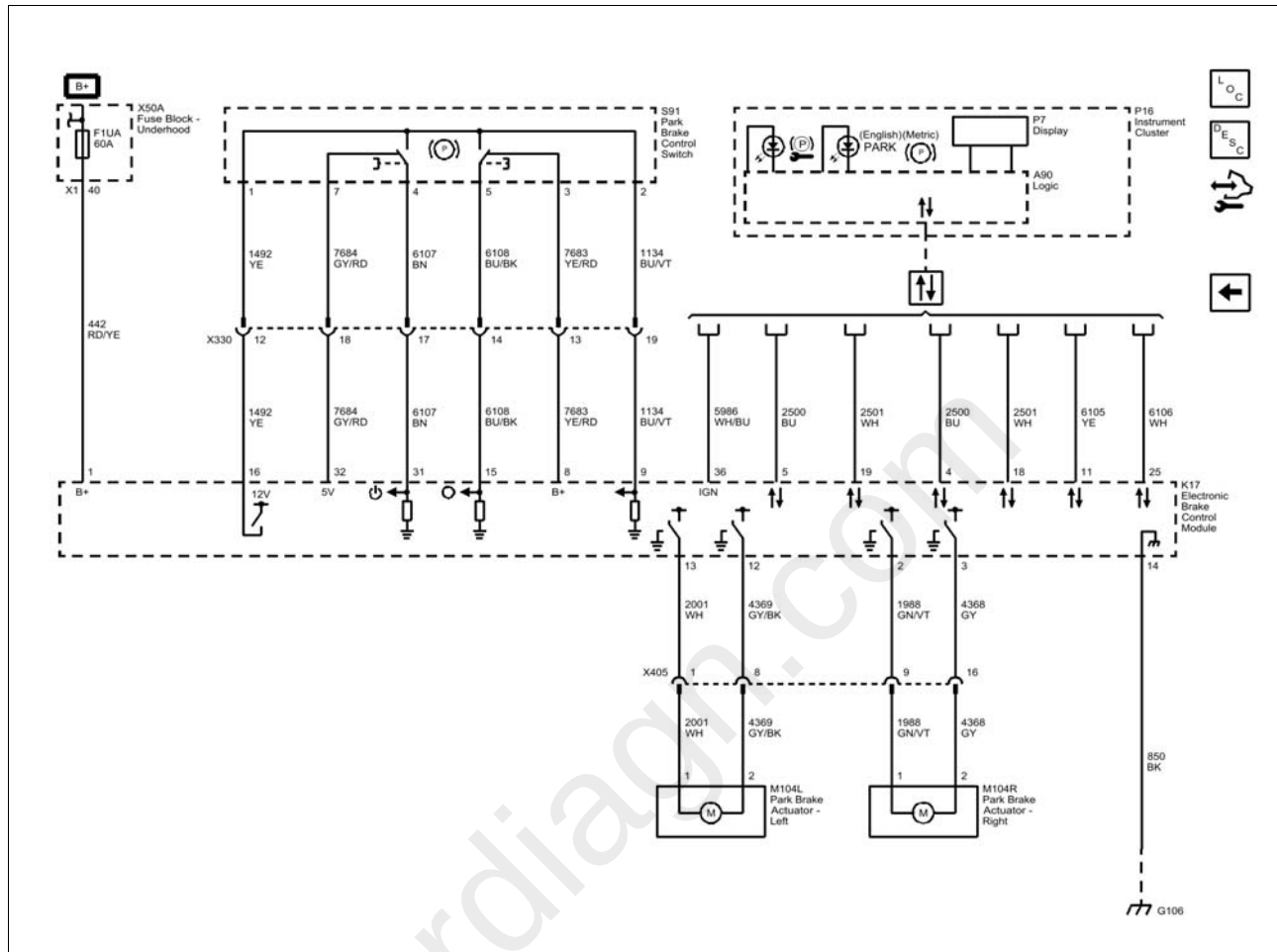
SCHEMATIC WIRING DIAGRAMS > PARK BRAKE SYSTEM WIRING SCHEMATICS > PARK BRAKE (J77)

Fig 1: Park Brake (J77)



SCHEMATIC WIRING DIAGRAMS > PARK BRAKE SYSTEM WIRING SCHEMATICS > PARK BRAKE (J71)

Fig 1: Park Brake (J71)



Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > DTC DESCRIPTORS

DTC C028A

Park Brake Motor Circuit

DTC C028B

Park Brake Motor Position Circuit

DTC C028F

Park Brake Solenoid Actuator Circuit

For symptom byte information, refer to Symptom Byte List

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Park Brake Motor Circuit	C028A 02	C028A 04 C028A 05	C028A 01 C028A 05	C028A 08 C028A 28
Park Brake Motor Position Circuit	-	-	-	-
Park Brake Solenoid Actuator Circuit	C028F 02	-	C028F 01	C028F 08

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > CIRCUIT/SYSTEM DESCRIPTION

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation.

The parking brake control module will diagnose the internal park brake motor circuit to verify it is functioning properly. The park brake motor circuit is used to command motor operation, apply and release tension on the parking brake cable, which will apply and release the parking brake. The park brake will self diagnose the internal park brake motor circuit. This circuit is used to drive the motor, which pulls on the park brake cable, ultimately applying and releasing the park brake.

The parking brake control module contains an internal park brake motor position sensor which monitors the park brake motor position. The parking brake control module contains an internal park brake solenoid actuator, and performs diagnostics on the solenoid actuator circuitry to verify it is functioning properly.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > CONDITIONS FOR RUNNING THE DTC

- Ignition OFF, ACCESSORY, or RUN mode.
- Battery voltage is between 9 - 16 V

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > CONDITIONS FOR SETTING THE DTC

DTC C028A

The parking brake control module detects an internal motor malfunction.

DTC C028B

The parking brake control module detects an internal motor position sensor signal malfunction.

DTC C028F

The parking brake control module detects an internal park brake solenoid malfunction.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > ACTION TAKEN WHEN THE DTC SETS

DTC C028A

- The parking brake is disabled.
- A message and/or a warning indicator may be displayed.

DTC C028B

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

OR

- The parking brake functionality is degraded.
- A message and/or a warning indicator may be displayed.

DTC C028F

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > CONDITIONS FOR CLEARING THE DTC

- The parking brake control module will clear the DTC after 40 consecutive ignition on/off cycles with

at least one test pass in each ignition cycle and no test fail result.

- The condition for the DTC is no longer present.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify that DTC C028A, C028B, or C028F is not set.

1. If any of the DTCs are set

1. Program the K83 Parking Brake Control Module. Refer to Electronic Parking Brake Control Module Programming and Setup .
2. Ignition ON.
3. Apply and release the park brake.
4. Verify the DTC is not set.

1. If the DTC is set, replace the K83 Parking Brake Control Module.

1. If the DTC is not set

5. All OK.

1. If none of the DTC are set

3. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028A, C028B, OR C028F (CABLE PULLER): PARK BRAKE > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for parking brake control module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > DTC DESCRIPTORS

DTC C027D 64

Park Brake Slip Detected

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > CIRCUIT/SYSTEM DESCRIPTION

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the park brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the parking brake control module performs the requested operation. The parking brake control module checks for rear wheel speeds after applying the parking brake to check for mechanical faults.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER):

PARK BRAKE SLIP DETECTED > CONDITIONS FOR RUNNING THE DTC

Ignition OFF, ACCESSORY, or RUN mode.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > CONDITIONS FOR SETTING THE DTC

The parking brake control module has detected wheel speed on the rear wheels with the parking brake applied.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > ACTION TAKEN WHEN THE DTC SETS

A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > CONDITIONS FOR CLEARING THE DTC

- The parking brake control module will clear the DTC after 100 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- Adjust or replace the park brake pads.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

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Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify no additional DTCs are set in other control modules.

1. If additional DTCs are set

Refer to Diagnostic Trouble Code (DTC) List - Vehicle

1. If no additional DTCs are set

3. Verify that DTC C027D is not set.

1. If the DTC is set

1. Verify the park brake cable is connected properly. Refer to Park Brake System Diagnosis
2. Check park brake pads for excessive wear. Refer to Disc Brake System Diagnosis
3. Program the K83 Parking Brake Control Module. Refer to Electronic Parking Brake Control Module Programming and Setup .
4. Ignition ON. Apply and release the park brake.
5. Verify the DTC is not set.

1. If the DTC is set, replace the K83 Parking Brake Control Module.

1. If the DTC is not set

6. All OK.

1. If the DTC is not set

4. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C027D (CABLE PULLER): PARK BRAKE SLIP DETECTED > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for parking brake control module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > DTC DESCRIPTORS

DTC C028E 05

Park Brake Solenoid Actuator Current Sensor Circuit Short to Battery or Open Circuit

DTC C028E 08

Park Brake Solenoid Actuator Current Sensor Circuit Performance - Signal Invalid

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation.

The parking brake control module will diagnose the internal park brake motor circuit to verify it is functioning properly. The park brake motor circuit is used to command motor operation, apply and release tension on the parking brake cable, which will apply and release the parking brake. The park brake will self diagnose the internal park brake motor circuit. This circuit is used to drive the motor, which pulls on the park brake cable, ultimately applying and releasing the park brake.

The parking brake control module contains an internal park brake motor position sensor which monitors the park brake motor position. The parking brake control module contains an internal park brake solenoid actuator, and performs diagnostics on the solenoid actuator circuitry to verify it is functioning properly.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Ignition OFF, ACCESSORY, or RUN mode.
- Battery voltage is between 9 - 16 V

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > CONDITIONS FOR SETTING THE DTC

The parking brake control module detects an internal park brake current sensor malfunction.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > ACTION TAKEN WHEN THE DTC SETS

- The parking brake will apply very slowly to avoid wheel lock up.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The parking brake control module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify no additional DTCs are set in other control modules.
 1. **If additional DTCs are set**
Refer to Diagnostic Trouble Code (DTC) List - Vehicle .
 1. **If no additional DTCs are set**
3. Verify DTC C028E is not set.
 1. **If the DTC is set**
Refer to Circuit/System Testing.
 1. **If the DTC is not set**
4. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER): PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF and all vehicle systems OFF, disconnect the harness at the K83 Parking Brake Control Module. 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 H and ground.
 1. **If 10 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 1. If 2 Ω or greater, repair the open high/resistance in the circuit.

2. If less than 2 Ω , repair open high/resistance in the ground connection.
1. **If less than 10 Ω**
3. Ignition ON.
4. Verify that a test lamp illuminates between the B+ circuit terminal A and ground.
 1. **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the B+ circuit end to end.
 1. If 2 Ω or greater, repair the open high/resistance in the circuit.
 2. If less than 2 Ω , verify the fuse is not open and there is voltage at the fuse.
 1. **If the test lamp does not illuminate and the circuit fuse is open**
 1. Ignition OFF.
 2. Test for infinite resistance between the B+ circuit and ground.
 1. If less than infinite resistance, repair the short to ground on the circuit.
 1. **If the test lamp illuminates**
5. Connect the harness connector at the K83 Parking Brake Control Module.
6. Verify the park brake cable is connected properly. Refer to Park Brake System Diagnosis
 1. **If park brake cable is not connected properly**

Repair as necessary.
 1. **If park brake cable is connected properly**
7. Ignition ON.
8. Apply and release the park brake.
9. Verify DTC C028E is not set.
 1. **If the DTC set**

Replace the K83 Parking Brake Control Module.
 1. **If the DTC is not set**
10. All OK.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028E (CABLE PULLER):
PARK BRAKE SOLENOID ACTUATOR CURRENT SENSOR CIRCUIT > REPAIR
INSTRUCTIONS**

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for parking brake control module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > DTC DESCRIPTORS

DTC C028F

Left Park Brake Actuator Circuit

For symptom byte information, refer to: Symptom Byte List

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Park Brake Actuator Apply Control	C028F 02	C028F 04	C028F 01 C028F 0B C028F 63	C028F 00 C028F 0B
Left Park Brake Actuator Release Control	C028F 02	C028F 04	C028F 01 C028F 0B C028F 63	C028F 00 C028F 0B

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The Electronic Brake Control Module will diagnose the park brake motor circuits to verify that they are functioning properly. The park brake motor circuits are used to command actuator motor operation, which will apply and release the parking brake. These circuits are used to activate the actuator, which applies or releases pressure on the rear caliper pistons, ultimately applying and releasing the park brake.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Ignition OFF, ACCESSORY, or RUN mode.
- Battery voltage is between 9-16 V

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > CONDITIONS FOR SETTING THE DTC

The Electronic Brake Control Module detects a malfunction in the left park brake actuator or its circuits.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > ACTION TAKEN WHEN THE DTC SETS

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The Electronic Brake Control Module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > CIRCUIT/SYSTEM VERIFICATION

1. Verify the M104L Park Brake Actuator - Left apply when pulling the S91 Park Brake Switch.

1. **If the M104L Park Brake Actuator - Left does not apply**

Refer to the Circuit/System Testing.

1. **If the M104L Park Brake Actuator - Left does apply**

2. Verify the M104L Park Brake Actuator - Left release when pressing the S91 Park Brake Switch.

1. **If the M104L Park Brake Actuator - Left does not release**

Refer to the Circuit/System Testing.

1. **If the M104L Park Brake Actuator - Left does release**

3. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the harness connector at the M104L Park Brake Actuator - Left.
Ignition ON
2. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2.
3. Verify the test lamp turns ON when commanding the M104L Park Brake Actuator - Left to apply and release with the S91 Park Brake Switch.

1. If the test lamp remains OFF during either of the commands

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K17 Electronic Brake Control Module.
2. Test for infinite resistance between each control circuit and ground.
 1. If less than infinite resistance, repair the short to ground on the circuit.
 1. If infinite resistance
3. Test for less than 2 Ω in each control circuit end to end.
 1. If 2 Ω or greater, repair the open/high resistance in the circuit.
 2. If less than 2 Ω , test or replace the K17 Electronic Brake Control Module.

1. If the test lamp is always ON

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K17 Electronic Brake Control Module, ignition ON.
2. Test for less than 1 V between each control circuit and ground.
 1. If 1 V or greater, repair the short to voltage on the circuit.
 2. If less than 1 V, test or replace the K17 Electronic Brake Control Module

1. If the test lamp turns ON during each of the commands

4. Test or replace the M104L Park Brake Actuator - Left.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > COMPONENT TESTING

Park Brake Actuator Test

1. Ignition OFF, disconnect the harness connector at the M104L Park Brake Actuator - Left.
2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M104L Park Brake Actuator - Left should perform the apply and release function.

1. If the actuator does not perform the apply and release function

Replace the M104L Park Brake Actuator - Left.

1. If the actuator performs the apply and release function

3. All OK

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C028F (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Rear Parking Brake Actuator Replacement
- Control Module References for control module replacement, programming and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > DTC DESCRIPTORS

DTC C0293 00

Park Brake Switch Circuit Malfunction

DTC C0293 01

Park Brake Switch Circuit Short to Battery

DTC C0293 02

Park Brake Switch Circuit Short to Ground

DTC C0293 04

Park Brake Switch Circuit Open

DTC C0293 08

Park Brake Switch Circuit Performance - Signal Invalid

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Park Brake Switch Supply Voltage Terminal N	C0298 08	C0298 08	-	C0293 08, C0298 08
Park Brake Apply Switch Voltage Reference Terminal D	C0293 02	C0293 04	C0293 01	C0293 08, C0298 08
Park Brake Release Switch Voltage Reference Terminal B	C0298 06	C0298 04	C0298 01	C0293 08, C0298 08
Park Brake Switch Signal Terminal C	C0298 08	C0298 08	-	C0293 08, C0298 08
Park Brake Apply Switch Signal Terminal R	C0293 02	C0293 04	C0293 01	C0293 08, C0298 08
Park Brake Release Switch Signal Terminal S	C0298 02	C0298 04	C0298 01	C0293 08, C0298 08

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. The parking brake control module will perform diagnostics on the park brake control switch and its wiring harness to verify it is functioning properly. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation.

The park brake control switch diagnostic checks for failure conditions in the park brake control switch and associated wiring into the parking brake control module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > CONDITIONS FOR RUNNING THE DTC

Ignition OFF, ACCESSORY, or RUN mode.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC C0293 00

The parking brake control module detects an internal malfunction.

DTC C0293 01

The parking brake control module detects a short to battery..

DTC C0293 02

The parking brake control module detects a short to ground.

DTC C0293 04

The parking brake control module detects an open circuit.

DTC C0293 08

The parking brake control module detects the apply or release button was activated for more than 90 seconds.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > ACTION TAKEN WHEN THE DTC SETS

- The parking brake is disabled.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The parking brake control module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.
- The park brake control switch button is INACTIVE using the scan tool without the switch being activated.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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- Circuit Testing
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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify DTC U0128 is not set.
 1. **If the DTC is set**
Please Refer to DTC U0100-U02FF
 1. **If the DTC is not set**
3. Verify the scan tool Park Brake Status parameter changes between Released and Apply while pressing and releasing the S91 Park Brake Control Switch.
 1. **If the parameter does not change**
Refer to Circuit/System Test.
 1. **If the parameter changes**
4. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > CIRCUIT/SYSTEM TEST

1. Ignition OFF, disconnect the harness connector at the K83 Parking Brake Control Module.
2. Test for less than 1 V between the circuit terminals listed below and ground:
 1. Terminal B
 2. Terminal C
 3. Terminal D
 4. Terminal N
 5. Terminal R

6. Terminal S

1. **If 1 V or greater**

Repair the short to voltage on the circuit.

1. **If less than 1 V**

3. Ignition OFF.

4. Test for infinite resistance between the circuit terminals listed below and ground:

1. Terminal B

2. Terminal C

3. Terminal D

4. Terminal N

5. Terminal R

6. Terminal S

1. **If less than infinite resistance**

Repair the short to ground on the circuit.

1. **If infinite resistance**

5. Test for less than 5 Ω between the circuit terminal D and the circuit terminal R.

1. **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

2. Test for less than 2 Ω in the circuits end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , replace the S91 Park Brake Control Switch.

1. **If less than 5 Ω**

6. Test for less than 5 Ω between the circuit terminal B and the circuit terminal S.

1. **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

2. Test for less than 2 Ω in the circuits end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , replace the S91 Park Brake Control Switch.

1. **If less than 5 Ω**

7. Test for less than 5 Ω between the circuit terminal C and the circuit terminal N.

1. If 5 Ω or greater

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

2. Test for less than 2 Ω in the circuits end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

8. Test for less than 5 Ω between the circuit terminal N and the circuit terminal R while closing the switch.

1. If 5 Ω or greater

Replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

9. Test for less than 5 Ω between the circuit terminal N and the circuit terminal S while closing the switch.

1. If 5 Ω or greater

Replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

10. Replace the K83 Parking Brake Control Module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (CABLE PULLER): PARK BRAKE SWITCH CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Parking Brake Switch Replacement
- Control Module References for control module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > DTC DESCRIPTORS

DTC C0293

Park Brake Control Switch Circuit

For symptom byte information, refer to: Symptom Byte List

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Park Brake Control Switch Supply Voltage Terminal 16	C0293 02	C0293 04, C0293 05	C0293 01, C0293 05	C0293 08
Park Brake Apply Switch Voltage Reference Terminal 32	C0293 02	C0293 04, C0293 05	C0293 01, C0293 05	C0293 08
Park Brake Release Switch Voltage Reference Terminal 8	C0293 02	C0293 04, C0293 05	C0293 01, C0293 05	C0293 08
Park Brake Control Switch Signal Terminal 9	C0293 02	C0293 04, C0293 05	C0293 01, C0293 05	C0293 08
Park Brake Apply Switch Signal Terminal 31	C0293 02	C0293 04, C0293 05	C0293 01, C0293 05	C0293 08
Park Brake Release Switch Signal Terminal 15	C0293 02	C0293 04, C0293 05	C0293 01, C0293 05	C0293 08

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The parking brake function is integrated into the Electronic Brake Control Module. The Electronic Brake Control Module contains the logic for applying and releasing the parking brake when commanded by the Park Brake Control Switch. The Electronic Brake Control Module will perform diagnostics on the Park Brake Control Switch and its wiring harness to verify it is functioning properly.

The Park Brake Control Switch diagnostic checks for failure conditions in the Park Brake Control Switch and associated wiring into the Electronic Brake Control Module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > CONDITIONS FOR RUNNING THE DTC

Ignition OFF, ACCESSORY, or RUN mode.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > CONDITIONS FOR SETTING THE DTC

The Electronic Brake Control Module detects a short to battery, short to ground, open circuit, or an internal Parking Brake Control Switch malfunction. The Electronic Brake Control Module detects the apply or release button was activated for more than 90 s.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > ACTION TAKEN WHEN THE DTC SETS

- The parking brake is disabled.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The Electronic Brake Control Module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.
- The Park Brake Control Switch button is INACTIVE using the scan tool without the switch being activated.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool Park Brake Control Switch parameter changes between Released and Apply while pressing and releasing the S91 Park Brake Control Switch.
 1. **If the parameter does not change**
Refer to Circuit/System Test.
 1. **If the parameter changes**
3. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > CIRCUIT/SYSTEM TEST

1. Ignition OFF, disconnect the harness connector at the K17 Electronic Brake Control Module. Ignition ON.
2. Test for less than 1 V between each circuit terminals listed below and ground;
 1. Terminal 16
 2. Terminal 32

3. Terminal 9
4. Terminal 15
5. Terminal 31
6. Terminal 8

1. **If 1 V or greater**

Repair the short to voltage on the circuit.

1. **If less than 1 V**

3. Ignition OFF.

4. Test for infinite resistance between the circuit terminals listed below and ground;

1. Terminal 16
2. Terminal 32
3. Terminal 9
4. Terminal 15
5. Terminal 31
6. Terminal 8

1. **If less than infinite resistance**

Repair the short to ground on the circuit.

1. **If infinite resistance**

5. Test for less than 5 Ω between the circuit terminal 32 and the circuit terminal 31.

1. **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

2. Test for less than 2 Ω in the circuits end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , replace the S91 Park Brake Control Switch.

1. **If less than 5 Ω**

6. Test for less than 5 Ω between the circuit terminal 8 and the circuit terminal 15.

1. **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

2. Test for less than 2 Ω in the circuits end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

7. Test for less than 5 Ω between the circuit terminal 16 and the circuit terminal 9.

1. If 5 Ω or greater

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

2. Test for less than 2 Ω in the circuits end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

8. Test for less than 5 Ω between the circuit terminal 9 and the circuit terminal 31 while closing the switch.

1. If 5 Ω or greater

Replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

9. Test for less than 5 Ω between the circuit terminal 9 and the circuit terminal 15 while closing the switch.

1. If 5 Ω or greater

Replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

10. Ignition OFF, all access doors closed, all vehicle systems OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

11. Test for less than 10 Ω between the ground circuit terminal 8 at the S91 Park Brake Control Switch and ground.

1. If 10 Ω or greater

1. Ignition OFF.

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

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

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

1. If less than 10 Ω

12. Replace the S91 Park Brake Control Switch.

13. Verify that DTC C0293 does not set while operating the vehicle within the Conditions for Running the DTC.

1. If the DTC sets

Replace the K17 Electronic Brake Control Module.

1. If DTC does not set

14. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0293 (MOTOR ON CALIPER): PARK BRAKE CONTROL SWITCH CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Parking Brake Switch Replacement
- Control Module References for module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER): PARK BRAKE UNLATCH SWITCH CIRCUIT > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER): PARK BRAKE UNLATCH SWITCH CIRCUIT > DTC DESCRIPTORS

DTC C0298 00

Park Brake Unlatch Switch Circuit Malfunction

DTC C0298 01

Park Brake Unlatch Switch Circuit Short to Battery

DTC C0298 02

Park Brake Unlatch Switch Circuit Short to Ground

DTC C0298 04

Park Brake Unlatch Switch Circuit Open

DTC C0298 08

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > DIAGNOSTIC FAULT INFORMATION**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Park Brake Switch Supply Voltage Terminal N	C0298 08	C0298 08	-	C0293 08, C0298 08
Park Brake Apply Switch Voltage Reference Terminal D	C0293 02	C0293 04	C0293 01	C0293 08, C0298 08
Park Brake Release Switch Voltage Reference Terminal B	C0298 06	C0298 04	C0298 01	C0293 08, C0298 08
Park Brake Switch Signal Terminal C	C0298 08	C0298 08	-	C0293 08, C0298 08
Park Brake Apply Switch Signal Terminal R	C0293 02	C0293 04	C0293 01	C0293 08, C0298 08
Park Brake Release Switch Signal Terminal S	C0298 02	C0298 04	C0298 01	C0293 08, C0298 08

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION**

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > CONDITIONS FOR RUNNING THE DTC**

Ignition OFF, ACCESSORY, or RUN mode.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > CONDITIONS FOR SETTING THE DTC**

DTC C0298 00

The parking brake control module detects an internal malfunction.

DTC C0298 01

The parking brake control module detects a short to battery.

DTC C0298 02

The parking brake control module detects a short to ground.

DTC C0298 04

The parking brake control module detects an open circuit.

DTC C0298 08

The parking brake control module detects the apply or release button was activated for more than 90 seconds.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > ACTION TAKEN WHEN THE DTC SETS**

A message and/or a warning indicator may be displayed.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > CONDITIONS FOR CLEARING THE DTC**

- The parking brake control module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.
- The park brake control switch button is INACTIVE using the scan tool without the switch being activated.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > DIAGNOSTIC AIDS**

Check if the park brake control switch is stuck in the apply or release position which may cause the DTC to set.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER):
PARK BRAKE UNLATCH SWITCH CIRCUIT > REFERENCE INFORMATION**

Schematic Reference

Park Brake System Schematics

Connector End View Reference

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Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER): PARK BRAKE UNLATCH SWITCH CIRCUIT > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify DTC U0128 is not set.
 1. **If the DTC is set**

Please Refer to DTC U0100-U02FF
 1. **If the DTC is not set**
3. Verify the scan tool Park Brake Status parameter changes between Released and Apply while pressing and releasing the S91 Park Brake Control Switch.
 1. **If the parameter does not change**

Refer to Circuit/System Test.
 1. **If the parameter changes**
4. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER): PARK BRAKE UNLATCH SWITCH CIRCUIT > CIRCUIT/SYSTEM TEST

1. Ignition OFF, disconnect the harness connector at the K83 Parking Brake Control Module.
2. Test for less than 1 V between the circuit terminals listed below and ground:

1. Terminal B
2. Terminal C
3. Terminal D
4. Terminal N
5. Terminal R
6. Terminal S

1. **If 1 V or greater**

Repair the short to voltage on the circuit.

1. **If less than 1 V**

3. Ignition OFF.

4. Test for infinite resistance between the circuit terminals listed below and ground:

1. Terminal B
2. Terminal C
3. Terminal D
4. Terminal N
5. Terminal R
6. Terminal S

1. **If less than infinite resistance**

Repair the short to ground on the circuit.

1. **If infinite resistance**

5. Test for less than 5 Ω between the circuit terminal D and the circuit terminal R.

1. **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.

2. Test for less than 2 Ω in the circuits end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , test or replace the S91 Park Brake Control Switch.

1. **If less than 5 Ω**

6. Test for less than 5 Ω between the circuit terminal B and the circuit terminal S.

1. **If 5 Ω or greater**

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.
2. Test for less than 2 Ω in the circuits end to end.
 1. If 2 Ω or greater, repair the open/high resistance in the circuit.
 2. If less than 2 Ω , test or replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

7. Test for less than 5 Ω between the circuit terminal C and the circuit terminal N.

1. If 5 Ω or greater

1. Ignition OFF, disconnect the harness connector at the S91 Park Brake Control Switch.
2. Test for less than 2 Ω in the circuits end to end.
 1. If 2 Ω or greater, repair the open/high resistance in the circuit.
 2. If less than 2 Ω , test or replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

8. Test for less than 5 Ω between the circuit terminal N and the circuit terminal R while closing the switch.

1. If 5 Ω or greater

Test or replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

9. Test for less than 5 Ω between the circuit terminal N and the circuit terminal S while closing the switch.

1. If 5 Ω or greater

Test or replace the S91 Park Brake Control Switch.

1. If less than 5 Ω

10. Replace the K83 Parking Brake Control Module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0298 (CABLE PULLER): PARK BRAKE UNLATCH SWITCH CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Parking Brake Switch Replacement
- Control Module References for control module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > DTC DESCRIPTORS

DTC C0558 55

Calibration Data Too Few Transitions

DTC C0558 5A

Calibration Data Not Plausible

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > CIRCUIT/SYSTEM DESCRIPTION

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > CONDITIONS FOR RUNNING THE DTC

Ignition OFF, ACCESSORY, or RUN mode.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > CONDITIONS FOR SETTING THE DTC

C0558 55

The parking brake control module detects a calibration malfunction.

C0558 5A

The parking brake control module detects mechanical problems with the parking brake system.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > ACTION TAKEN WHEN THE DTC SETS

C0558 55

- The parking brake is disabled, switch command will not be accepted.
- A message and/or a warning indicator may be displayed.

C0558 5A

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

OR

- The parking brake functionality is degraded.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > CONDITIONS FOR CLEARING THE DTC

- The parking brake control module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- Calibrate the parking brake control module after mechanical repairs are made.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > DIAGNOSTIC AIDS

- Verify the parking brake control module software and calibrations are the newest available versions.
- Verify the parking brake cable and related hardware is not broken, seized or pinched.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

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- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.

2. Verify that DTC C0558 55 is not set.

1. If DTC C0558 55 is set

1. Program the K83 Parking Brake Control Module. Refer to Electronic Parking Brake Control Module Programming and Setup .

2. Ignition ON.

3. Apply and release the park brake.

4. Verify the DTC is not set.

1. If the DTC is set, replace the K83 Parking Brake Control Module.

1. If the DTC is not set

5. All OK.

1. If DTC C0558 55 is not set

3. Verify the scan tool Park Brake Cable Position parameter is less than 1251 counts.

1. If 1251 counts or greater

1. Verify the park brake cable is connected properly. Refer to Park Brake System Diagnosis

2. Check park brake pads for excessive wear. Refer to Disc Brake System Diagnosis

1. If less than 1251 counts

4. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0558 (CABLE PULLER): CALIBRATION DATA > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for parking brake control module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER): ELECTRONIC CONTROL UNIT HARDWARE > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER): ELECTRONIC CONTROL UNIT HARDWARE > DTC DESCRIPTORS

DTC C056D 00

Electronic Control Unit Hardware Malfunction

DTC C056D 34

Electronic Control Unit Hardware RAM Malfunction

DTC C056D 35

Electronic Control Unit Hardware ROM Malfunction

DTC C056D 36

Electronic Control Unit Hardware EEPROM Performance/Malfunction

DTC C056D 37

Electronic Control Unit Hardware Software Malfunction

DTC C056D 38

Electronic Control Unit Hardware Supervision Software Malfunction

DTC C056D 39

Electronic Control Unit Hardware Internal Malfunction

DTC C056D 3B

DTC C056D 3C

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER):
ELECTRONIC CONTROL UNIT HARDWARE > CIRCUIT/SYSTEM DESCRIPTION**

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation. The parking brake module will perform diagnostics on the modules internal hardware to verify it is functioning properly

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER):
ELECTRONIC CONTROL UNIT HARDWARE > CONDITIONS FOR RUNNING THE DTC**

Ignition OFF, ACCESSORY, or RUN mode.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER):
ELECTRONIC CONTROL UNIT HARDWARE > CONDITIONS FOR SETTING THE DTC**

The parking brake control module detects an internal hardware malfunction.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER):
ELECTRONIC CONTROL UNIT HARDWARE > ACTION TAKEN WHEN THE DTC SETS**

DTC C056D 00, C056D 34, C056D 35, C056D 36, C056D 37, C056D 38, C056D 3B, or C056D 3C

- The parking brake is disabled.
- A message and/or a warning indicator may be displayed.

DTC C056D 39

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER):
ELECTRONIC CONTROL UNIT HARDWARE > CONDITIONS FOR CLEARING THE DTC**

- The parking brake control module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.
- The latest software and calibrations are programmed into the parking brake control module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER): ELECTRONIC CONTROL UNIT HARDWARE > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

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Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER): ELECTRONIC CONTROL UNIT HARDWARE > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify DTC C056D 36 is not set.

1. If DTC C056D 36 is set

1. Program the K83 Parking Brake Control Module. Refer to Electronic Parking Brake Control Module Programming and Setup .
2. Ignition ON.
3. Apply and release the park brake.

4. Verify the DTC is not set.

1. If the DTC is set, replace the K83 Parking Brake Control Module.

1. If the DTC is not set

5. All OK.

1. If DTC C056D 36 is not set

3. Perform the Parking Brake Motor Reset procedure with a scan tool for the Parking Brake Control Module.

4. Verify DTC C056D is not set.

1. If DTC C056D is set

Replace the K83 Parking Brake Control Module.

1. If DTC C056D is not set

5. All OK.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056D (CABLE PULLER):
ELECTRONIC CONTROL UNIT HARDWARE > REPAIR INSTRUCTIONS**

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for parking brake control module replacement, programming and setup.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER):
ELECTRONIC CONTROL UNIT SOFTWARE > 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 provide an overview of each diagnostic category.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER):
ELECTRONIC CONTROL UNIT SOFTWARE > DTC DESCRIPTORS**

DTC C056E 41

Electronic Control Unit Software Not Programmed

DTC C056E 42

Electronic Control Unit Software Calibration Not Programmed

DTC C056E 47

Electronic Control Unit Software VIN Not Programmed

DTC C056E 5A

Electronic Control Unit Software Not Plausible

DTC C056E 71

Electronic Control Unit Software Invalid Data

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER): ELECTRONIC CONTROL UNIT SOFTWARE > CIRCUIT/SYSTEM DESCRIPTION

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the park brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the parking brake control module performs the requested operation.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER): ELECTRONIC CONTROL UNIT SOFTWARE > CONDITIONS FOR RUNNING THE DTC

Ignition OFF, ACCESSORY, or RUN mode.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER): ELECTRONIC CONTROL UNIT SOFTWARE > CONDITIONS FOR SETTING THE DTC

The parking brake module has detected missing calibration data, calibration procedure not run or completed, missing VIN, or internal software malfunction.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER): ELECTRONIC CONTROL UNIT SOFTWARE > ACTIONS TAKEN WHEN DTC SETS

C056E 41 or C056E 5A

- The parking brake is disabled.
- A message and/or a warning indicator may be displayed.

C056E 42

- The parking brake functionality is degraded or disabled.
- A message and/or a warning indicator may be displayed.

C056E 47 or C056E 71

The parking brake will function normally.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER): ELECTRONIC CONTROL UNIT SOFTWARE > CONDITIONS FOR CLEARING THE DTC

- The parking brake control module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.
- The latest software and calibrations are programmed into the parking brake control module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER): ELECTRONIC CONTROL UNIT SOFTWARE > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER): ELECTRONIC CONTROL UNIT SOFTWARE > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify that DTC C056E is not set.

1. If the DTC is set

1. Program the K83 Parking Brake Control Module. Refer to Electronic Parking Brake Control Module Programming and Setup .
2. Verify the DTC is not set.
 1. If the DTC is set, replace the K83 Parking Brake Control Module.
 1. If the DTC is not set
3. All OK.

1. If the DTC is not set

3. All OK.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (CABLE PULLER):
ELECTRONIC CONTROL UNIT SOFTWARE > REPAIR INSTRUCTIONS**

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for parking brake control module replacement, programming and setup.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON
CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED
> 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 provide an overview of each diagnostic category.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON
CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED
> DTC DESCRIPTORS**

DTC C056E 4B

Electronic Control Unit Hardware Calibration Not Learned

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON
CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED
> CIRCUIT/SYSTEM DESCRIPTION**

The parking brake function is integrated into the Electronic Brake Control Module. The Electronic Brake Control Module contains the logic for applying and releasing the parking brake when commanded by the Park Brake Control Switch. The Electronic Brake Control Module will perform diagnostics on the Park Brake Control Switch and its wiring harness to verify it is functioning properly.

After replacement of the electronic brake control module, the programming procedure must be performed. Park brake calibration is done during the programming procedure.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED > CONDITIONS FOR RUNNING THE DTC

Ignition ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED > CONDITIONS FOR SETTING THE DTC

DTC C056E 4B

This DTC will set if the electronic park brake has not been calibrated during the electronic brake control module programming procedure.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED > ACTIONS TAKEN WHEN DTC SETS

- DTC is stored in memory.
- Park brake is degraded or disabled.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED > CONDITIONS FOR CLEARING THE DTC

DTC C056E 4B

A current or history DTC will clear after the electronic park brake has been calibrated.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED

> REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

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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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED > CIRCUIT/SYSTEM VERIFICATION

DTC C056E 4B

1. Ignition ON.
2. Verify that DTC C056E 4B is not set.

1. If the DTC C056E 4B is set

1. Perform the Configuration and Setup step of programming the K17 Electronic Brake Control Module. Refer to Electronic Brake Control Module Programming and Setup



NOTE:

It is not necessary to perform the Programming step in the case of this DTC.

2. Verify the DTC does not set.

1. If the DTC sets, replace the K17 Electronic Brake Control Module.

1. If the DTC does not set

3. All OK.

1. If the DTC C056E 4B is not set

3. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C056E (MOTOR ON CALIPER): ELECTRONIC CONTROL UNIT HARDWARE CALIBRATION NOT LEARNED > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Control Module References for control module replacement, programming and setup.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > DTC DESCRIPTORS

DTC C0574 00

Printed Circuit Board Temperature Sensor Malfunction

DTC C0574 01

Printed Circuit Board Temperature Sensor Short to Battery

DTC C0574 02

Printed Circuit Board Temperature Sensor Short to Ground

DTC C0574 54

Printed Circuit Board Temperature Sensor High

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > CIRCUIT/SYSTEM

DESCRIPTION

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > CONDITIONS FOR RUNNING THE DTC

Ignition OFF, ACCESSORY, or RUN mode.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > CONDITIONS FOR SETTING THE DTC

C0574 01 or C0574 02

The parking brake control module detects a short to battery or a short to ground.

C0574 00 or C0574 54

The parking brake control module has detected an internal temperature that is above the allowed value.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > ACTION TAKEN WHEN THE DTC SETS

- A message and/or a warning indicator may be displayed.
- The park brake is disabled, one release allowed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > CONDITIONS FOR CLEARING THE DTC

- The parking brake control module clears the history DTC when a current DTC is not detected in 40 ignition cycles.
- The parking brake control module is replaced or the internal temperature drops below the allowed temperature.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > DIAGNOSTIC AIDS

- Check for debris on the parking brake control module which may cause the module to overheat.
- Diagnose all other parking brake control module system related faults before performing this diagnostic. Other faults may cause the circuit board to overheat. Do not attempt to apply the park brake.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

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- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER): PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify no additional DTCs are set in other control modules.

1. If additional DTCs are set

Refer to Diagnostic Trouble Code (DTC) List - Vehicle

1. If no additional DTCs are set

3. Verify that DTC C0574 01 or C0574 02 is not set.

1. If DTC C0574 01 or C0574 02 is set

1. Ignition OFF. Remove the parking brake control module fuse and reinstall. Ignition ON.

2. Verify DTC C0574 01 or C0574 02 is not set.

1. If the DTC is set, replace the K83 Parking Brake Control Module.

1. If the DTC is not set

3. All OK.

1. If DTC C0574 01 or C0574 02 is not set

4. Allow the K83 Parking Brake Control Module to cool down for 15 minutes.

5. Verify the scan tool Calculated System Temperature parameter is less than 105° C.

1. If 105° C or greater

Replace the K83 Parking Brake Control Module.

1. If less than 105° C

6. All OK.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0574 (CABLE PULLER):
PRINTED CIRCUIT BOARD TEMPERATURE SENSOR > REPAIR INSTRUCTIONS**

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for parking brake control module replacement, programming and setup.

**DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON
CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON

CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > DTC DESCRIPTORS

DTC C1586

Right Park Brake Actuator Circuit

For symptom byte information, refer to: Symptom Byte List

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Right Park Brake Actuator Apply Control	C1586 02	C1586 04	C1586 01 C1586 0B C1586 63	C1586 00 C1586 0B
Right Park Brake Actuator Release Control	C1586 02	C1586 04	C1586 01 C1586 0B C1586 63	C1586 00 C1586 0B

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The Electronic Brake Control Module will diagnose the park brake motor circuits to verify that they are functioning properly. The park brake motor circuits are used to command actuator motor operation, which will apply and release the parking brake. These circuits are used to activate the actuator, which applies or releases pressure on the rear caliper pistons, ultimately applying and releasing the park brake.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Ignition OFF, ACCESSORY, or RUN mode.
- Battery voltage is between 9-16 V

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > CONDITIONS FOR SETTING THE DTC

The Electronic Brake Control Module detects a malfunction in the right park brake actuator or its circuits.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > ACTION TAKEN WHEN THE DTC SETS

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The Electronic Brake Control Module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > CIRCUIT/SYSTEM VERIFICATION

1. Verify the M104R Park Brake Actuator - Right apply when pulling the S91 Park Brake Switch.
 1. **If the M104R Park Brake Actuator - Right does not apply**
Refer to the Circuit/System Testing.
 1. **If the M104R Park Brake Actuator - Right does apply**
2. Verify the M104R Park Brake Actuator - Right release when pressing the S91 Park Brake Switch.
 1. **If the M104R Park Brake Actuator - Right does not release**
Refer to the Circuit/System Testing.
 1. **If the M104R Park Brake Actuator - Right does release**
3. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the harness connector at the M104R Park Brake Actuator - Right.
Ignition ON
2. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2.
3. Verify the test lamp turns ON when commanding the M104R Park Brake Actuator - Right to apply and release with the S91 Park Brake Switch.
 1. **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K17 Electronic Brake Control Module.
 2. Test for infinite resistance between each control circuit and ground.
 1. If less than infinite resistance, repair the short to ground on the circuit.
 1. If infinite resistance

3. Test for less than 2 Ω in each control circuit end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω , test or replace the K17 Electronic Brake Control Module.

1. If the test lamp is always ON

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K17 Electronic Brake Control Module, ignition ON.

2. Test for less than 1 V between each control circuit and ground.

1. If 1 V or greater, repair the short to voltage on the circuit.

2. If less than 1 V, test or replace the K17 Electronic Brake Control Module

1. If the test lamp turns ON during each of the commands

4. Test or replace the M104R Park Brake Actuator - Right.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > COMPONENT TESTING

Park Brake Actuator Test

1. Ignition OFF, disconnect the harness connector at the M104R Park Brake Actuator - Right.

2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M104R Park Brake Actuator - Right should perform the apply and release function.

1. If the actuator does not perform the apply and release function

Replace the M104R Park Brake Actuator - Right.

1. If the actuator performs the apply and release function

3. All OK

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1586 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Rear Parking Brake Actuator Replacement
- Control Module References for control module replacement, programming and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > DTC DESCRIPTORS

DTC C1587

Left Park Brake Actuator

For symptom byte information, refer to: Symptom Byte List

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > CIRCUIT/SYSTEM DESCRIPTION

The Electronic Brake Control Module will diagnose the park brake motor circuits to verify that they are functioning properly. The park brake motor circuits are used to command actuator motor operation, which will apply and release the parking brake. These circuits are used to activate the actuator, which applies or releases pressure on the rear caliper pistons, ultimately applying and releasing the park brake.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > CONDITIONS FOR RUNNING THE DTC

- Ignition OFF, ACCESSORY, or RUN mode.
- Battery voltage is between 9-16 V

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > CONDITIONS FOR SETTING THE DTC

The Electronic Brake Control Module detects a malfunction in the left park brake actuator.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > ACTION TAKEN WHEN THE DTC SETS

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > CONDITIONS FOR CLEARING THE DTC

- The Electronic Brake Control Module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.
- The condition for the DTC is no longer present.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > REFERENCE INFORMATION

Schematic Reference

Park Brake System Schematics

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Description and Operation

Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper)

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify that DTC C1587 is not set.

1. If the DTC is set

1. Perform the Park Brake Calibration learn procedure. Refer to Park Brake Calibration (Motor on Caliper) .
2. Ignition ON.
3. Apply and release the park brake.
4. Verify the DTC is not set.
 1. If the DTC is set, replace the M104L Park Brake Actuator - Left.
 1. If the DTC is not set
5. All OK.

1. If the DTC is not set

3. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1587 (MOTOR ON CALIPER): LEFT PARK BRAKE ACTUATOR > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Rear Parking Brake Actuator Replacement
- Control Module References for control module replacement, programming and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > 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 provide an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > DTC DESCRIPTORS

DTC C1588

Right Park Brake Actuator

For symptom byte information, refer to: Symptom Byte List

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > CIRCUIT/SYSTEM DESCRIPTION

The Electronic Brake Control Module will diagnose the park brake motor circuits to verify that they are functioning properly. The park brake motor circuits are used to command actuator motor operation, which will apply and release the parking brake. These circuits are used to activate the actuator, which applies or releases pressure on the rear caliper pistons, ultimately applying and releasing the park brake.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > CONDITIONS FOR RUNNING THE DTC

- Ignition OFF, ACCESSORY, or RUN mode.
- Battery voltage is between 9-16 V

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > CONDITIONS FOR SETTING THE DTC

The Electronic Brake Control Module detects a malfunction in the right park brake actuator.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > ACTION TAKEN WHEN THE DTC SETS

- The parking brake is disabled, one release allowed.
- A message and/or a warning indicator may be displayed.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > CONDITIONS FOR CLEARING THE DTC

- The Electronic Brake Control Module will clear the DTC after 40 consecutive ignition on/off cycles with at least one test pass in each ignition cycle and no test fail result.

- The condition for the DTC is no longer present.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > REFERENCE INFORMATION

Schematic Reference

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify that DTC C1588 is not set.

1. If the DTC is set

1. Perform the Park Brake Calibration learn procedure. Refer to Park Brake Calibration (Motor on Caliper) .
2. Ignition ON.
3. Apply and release the park brake.
4. Verify the DTC is not set.

1. If the DTC is set, replace the M104R Park Brake Actuator - Right.

1. If the DTC is not set

5. All OK.

1. If the DTC is not set

3. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C1588 (MOTOR ON CALIPER): RIGHT PARK BRAKE ACTUATOR > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Rear Parking Brake Actuator Replacement
- Control Module References for control module replacement, programming and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > SYMPTOMS - PARK BRAKE



IMPORTANT:

Review the system operation in order to familiarize yourself with the system functions.

Refer to Park Brake System Description and Operation (J77) .

DIAGNOSTIC INFORMATION AND PROCEDURES > SYMPTOMS - PARK BRAKE > VISUAL/PHYSICAL INSPECTION

- Inspect for aftermarket devices which could affect the operation of the park brake system.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

DIAGNOSTIC INFORMATION AND PROCEDURES > SYMPTOMS - PARK BRAKE > SYMPTOM LIST

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

Park Brake Will Not Hold or Release

DIAGNOSTIC INFORMATION AND PROCEDURES > PARK BRAKE WILL NOT HOLD OR RELEASE

Step	Action	Yes	No
1	Were you sent here from the Park Brake Symptom table?	Go to Step 2	Go to Diagnostic Starting Point - Vehicle
2	Inspect the park brake system for proper operation. Refer to Park Brake System Diagnosis . Did you find and correct a condition?	Go to Step 5	Go to Step 3
3	Inspect the disc brake system for proper operation. Refer to Disc Brake System Diagnosis . Did you find and correct a condition?	Go to Step 5	Go to Step 4
4	Inspect the hydraulic brake system for proper operation. Refer to Hydraulic Brake System Diagnosis . Did you find and correct a condition?	Go to Step 5	Go to Diagnostic Starting Point - Vehicle
5	Road test the vehicle in order to confirm proper operation. Refer to Brake System Vehicle Road Test . Is the condition still present?	Go to Step 2	System OK

DIAGNOSTIC INFORMATION AND PROCEDURES > PARK BRAKE SYSTEM

DIAGNOSIS

Step	Action	Yes	No
DEFINITION: This diagnostic table is designed to diagnose ONLY the components of the PARK brake system in order to determine if the PARK brake system is operating properly. You will be directed by the appropriate Symptom Table to go to other brake system diagnostic tables as appropriate.			
1	Were you sent here from a Hydraulic Brake Symptom Table?	Go to Step 3	Go to Step 2
2	Were you sent here from a Park Brake Symptom Table?	Go to Step 3	Go to Diagnostic Starting Point - Vehicle
3	1. Raise and support the vehicle. Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP) 2. Shift the transmission into NEUTRAL. 3. With the park brake RELEASED, attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag. Do the rear brakes have a significant amount of drag?	Go to Step 8	Go to Step 4

4	1. Shift the transmission into NEUTRAL. 2. Apply the park brake. 3. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag. Do the rear brakes have a significant amount of drag?	Go to Step 17	Go to Step 5
5	Visually check the park brake cable connections and the cables that are accessible on the UNDERSIDE of the vehicle for disconnections and/or damage. Were any or the park brake cables disconnected and/or damaged?	Go to Step 6	Go to Step 7
6	Reconnect or replace the park brake cables as necessary. • Parking Brake Intermediate Cable Replacement • Parking Brake Rear Cable Replacement Did you complete the repair and/or replacement?	Go to Step 17	-
7	Check the adjustment of the park brake and adjust as necessary. Parking Brake Adjustment Did you find and correct the condition?	Go to Step 17	Go to Step 8
8	CAUTION: <i>Do not depress the brake pedal with the brake rotors and/or the brake drums removed, or with the brake calipers repositioned away from the brake rotors, or damage to the brake system may result.</i> 1. Remove the rear brake rotors. Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55) 2. Inspect the park brake shoe hardware for looseness, damaged, broken or missing components. 3. Check the park brake actuators for a seized condition. Does the park brake hardware and/or the park brake	Go to Step 9	Go to Step 10

	actuators require replacement?		
9	1. Replace park brake hardware components as necessary. Parking Brake Shoe Replacement 2. Replace the park brake actuators as necessary. Rear Parking Brake Actuator Lever Replacement Did you complete the replacement?	Go to Step 17	-
10	With the aid of an assistant, apply and release the parking brake while observing the cables for free movement. Do the park brake cables move freely?	Go to Step 11	Go to Step 13
11	Check the adjustment of the park brake and adjust as necessary. Parking Brake Adjustment Did you find and correct the condition?	Go to Step 17	Go to Step 12
12	1. With the transmission still in NEUTRAL, apply the park brake. 2. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag. 3. Release the park brake. 4. Rotate the rear wheels to check the rear brakes for a significant reduction of drag. Did the park brake apply and release properly?	Go to Step 17	Go to Symptoms - Park Brake
13	Disconnect the park brake cable connections that are accessible on the UNDERSIDE of the vehicle one at a time and check each cable for free movement. Do any of the park brake cables accessible on the underside of the vehicle require replacement?	Go to Step 14	Go to Step 15
14	Replace any of the park brake cables that do not have free movement (not releasing properly). Refer to the following procedures as necessary: • Parking Brake Intermediate Cable Replacement • Parking Brake Rear Cable Replacement Did you complete the replacement?	Go to Step 17	-
15	Inspect the electronic parking brake control module for proper operation and replace as necessary.	Go to Step 17	Go to Step 16

	Electronic Parking Brake Control Module Replacement Did you find and correct the condition?		
16	1. Replace the component that is used to adjust the park brake system. Electronic Parking Brake Control Module Replacement 2. Adjust the park brake. Refer to Parking Brake Adjustment Did you complete the replacement and adjustment?	Go to Step 17	Go to Symptoms - Park Brake
17	Install or connect any components that were removed or disconnected during diagnosis. Did you complete the operation?	Park Brake System OK	Go to Symptoms - Park Brake

DIAGNOSTIC INFORMATION AND PROCEDURES > PARKING BRAKE SHOE INSPECTION



WARNING:

Refer to Brake Dust Warning .

1. Raise and suitably support the vehicle. Refer to Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP) .
2. Remove the rear brake rotor. Refer to Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55) .
3. Inspect and replace the park brake shoe and lining if any of the following conditions are found:
 1. Excessive wear indicated by the park brake lining being worn down to the shoe
 2. Brake lining cracking
 3. Oil or fluid contamination
4. Adjust the park brake shoes if necessary. Refer to Parking Brake Adjustment .
5. Install the rear brake rotor. Refer to Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55) .
6. Lower the vehicle.

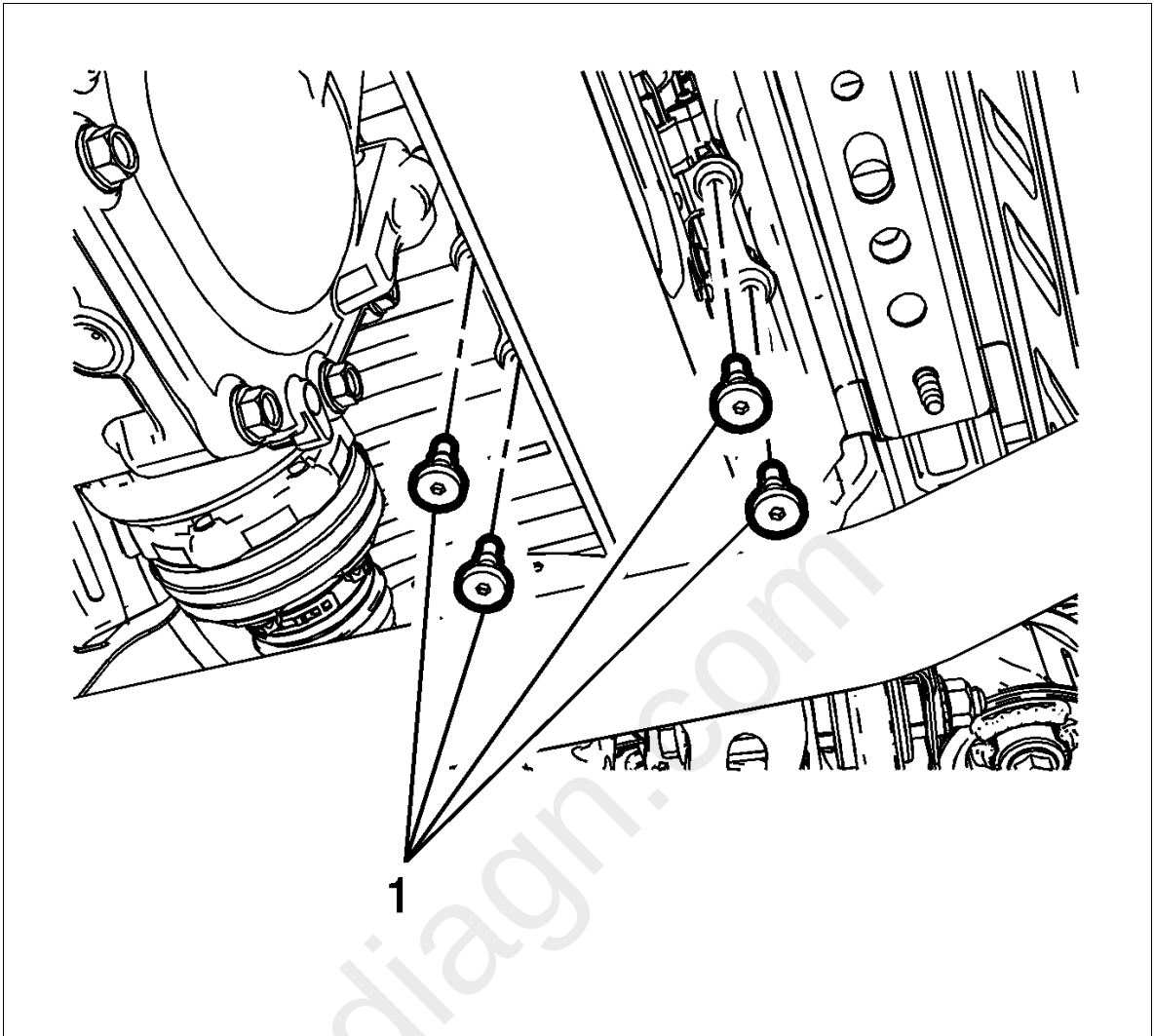
REPAIR INSTRUCTIONS > PARK BRAKE CALIBRATION (MOTOR ON CALIPER)

1. Block the drive wheels.
2. Install a scan tool to the vehicle.
3. Turn the ignition switch to the ON/RUN position with the engine OFF.
4. Select Configuration/Reset Functions from the electronic brake control module menu.
5. Perform the parking brake calibration procedure.

REPAIR INSTRUCTIONS > ELECTRONIC PARKING BRAKE CONTROL MODULE REPLACEMENT > REMOVAL PROCEDURE

1. Block the drive wheels.
2. Disable the parking brake cable adjuster. Parking Brake Cable Adjuster Disabling
3. Place the ignition in the OFF position.
4. Raise and support the vehicle. Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP)
5. Remove Exhaust Muffler - Exhaust Muffler Replacement (LGX, Coupe)Exhaust Muffler Replacement (LGX, Convertible)Exhaust Muffler Replacement (LT1, Coupe)Exhaust Muffler Replacement (LT1, Convertible)Exhaust Muffler Replacement (LTG, Coupe)Exhaust Muffler Replacement (LTG, Convertible)

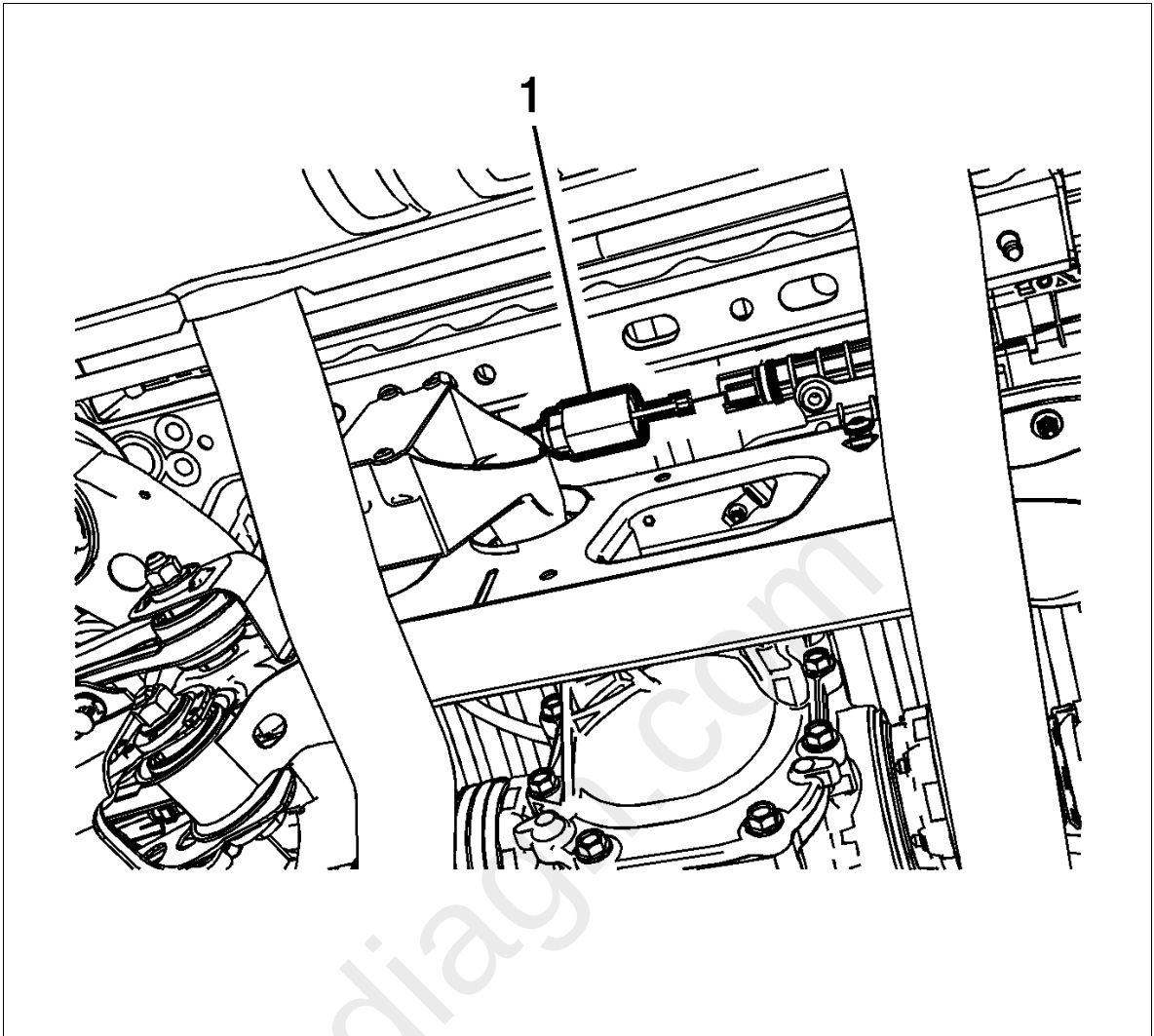
Fig 1: Electronic Parking Brake Control Module Bolts



Courtesy of GENERAL MOTORS COMPANY

6. Remove the electronic parking brake control module bolts (1).
7. Position the electronic parking brake control module to access the electrical connector.
8. Disconnect the electronic parking brake control module electrical connector.

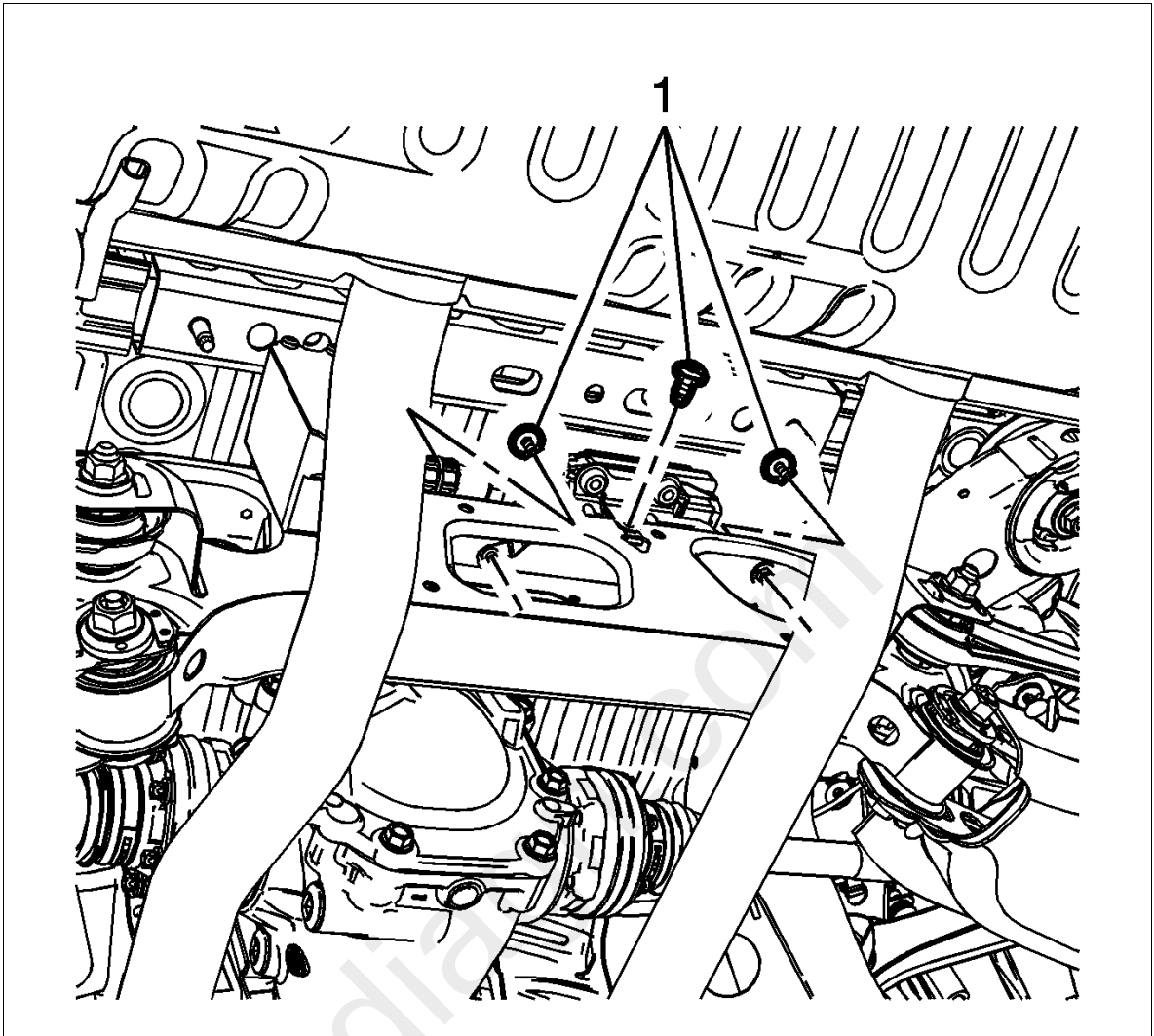
Fig 2: Parking Brake Intermediate Cable Nut



Courtesy of GENERAL MOTORS COMPANY

9. Disconnect the parking brake intermediate cable nut (1).

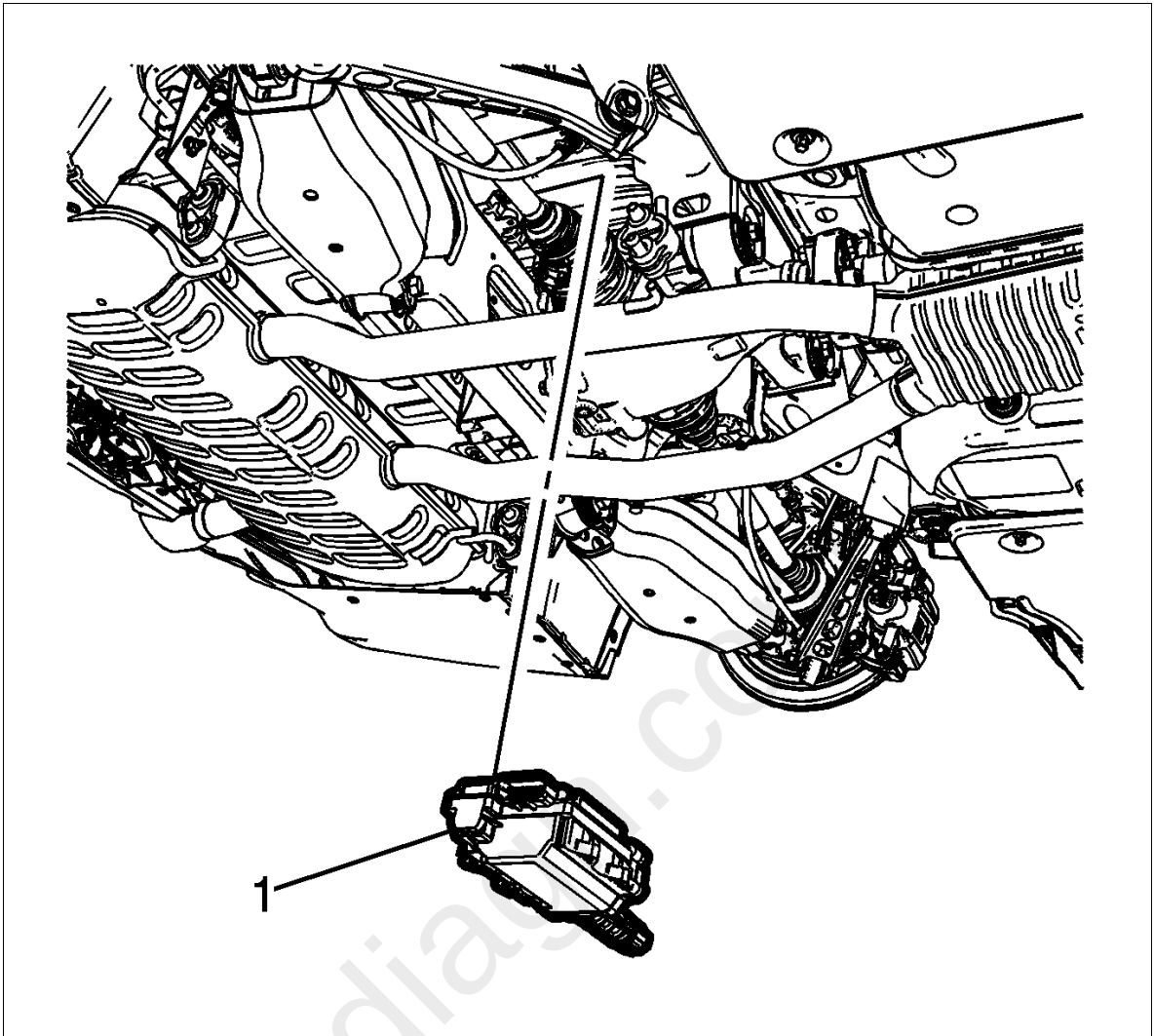
Fig 3: Electronic Parking Brake Control Module Bracket Bolts



Courtesy of GENERAL MOTORS COMPANY

10. Remove the electronic parking brake control module bracket bolts (1).
11. Separate the electronic parking brake control module from the bracket.

Fig 4: Electronic Parking Brake Control Module

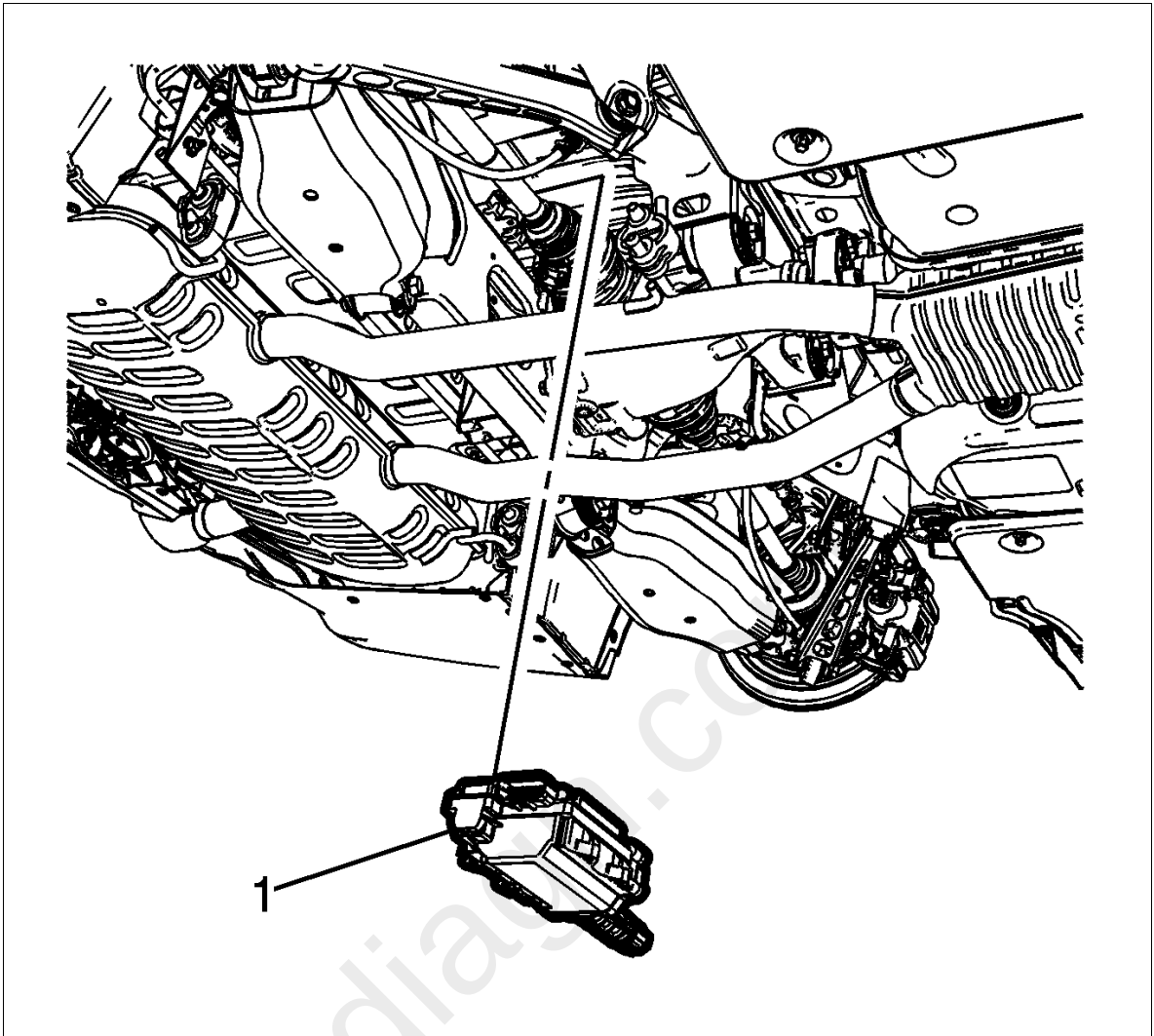


Courtesy of GENERAL MOTORS COMPANY

12. Maneuver and remove the electronic parking brake control module (1).

**REPAIR INSTRUCTIONS > ELECTRONIC PARKING BRAKE CONTROL MODULE
REPLACEMENT > INSTALLATION PROCEDURE**

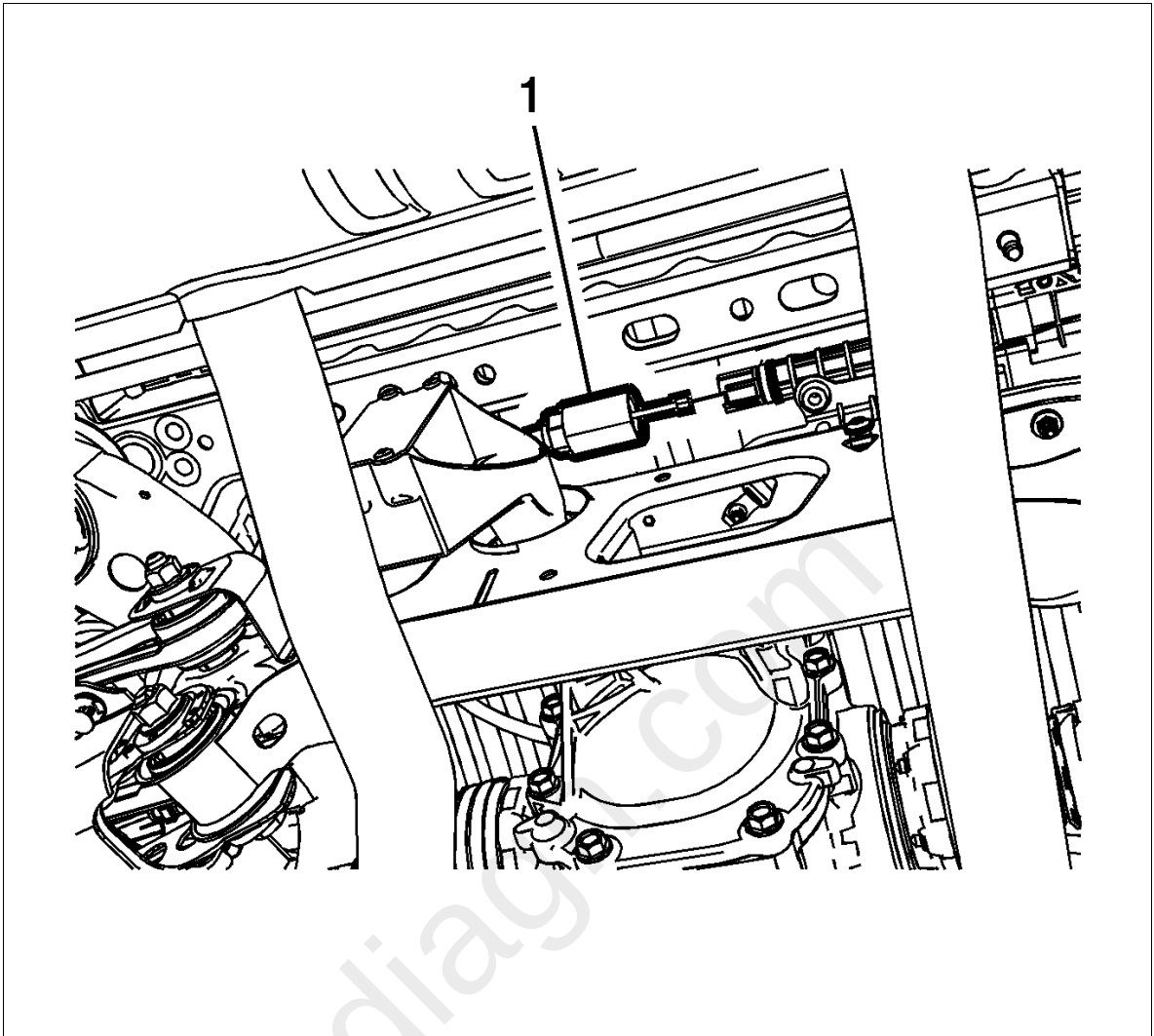
Fig 1: Electronic Parking Brake Control Module



Courtesy of GENERAL MOTORS COMPANY

1. Position the electronic parking brake control module (1) to the electronic parking brake control module bracket.
2. Inspect the O-ring seals on the spindle and the intermediate cable for damage and correct positioning and replace, if necessary.

Fig 2: Parking Brake Intermediate Cable Nut



Courtesy of GENERAL MOTORS COMPANY

 CAUTION:

Refer to Fastener Caution .

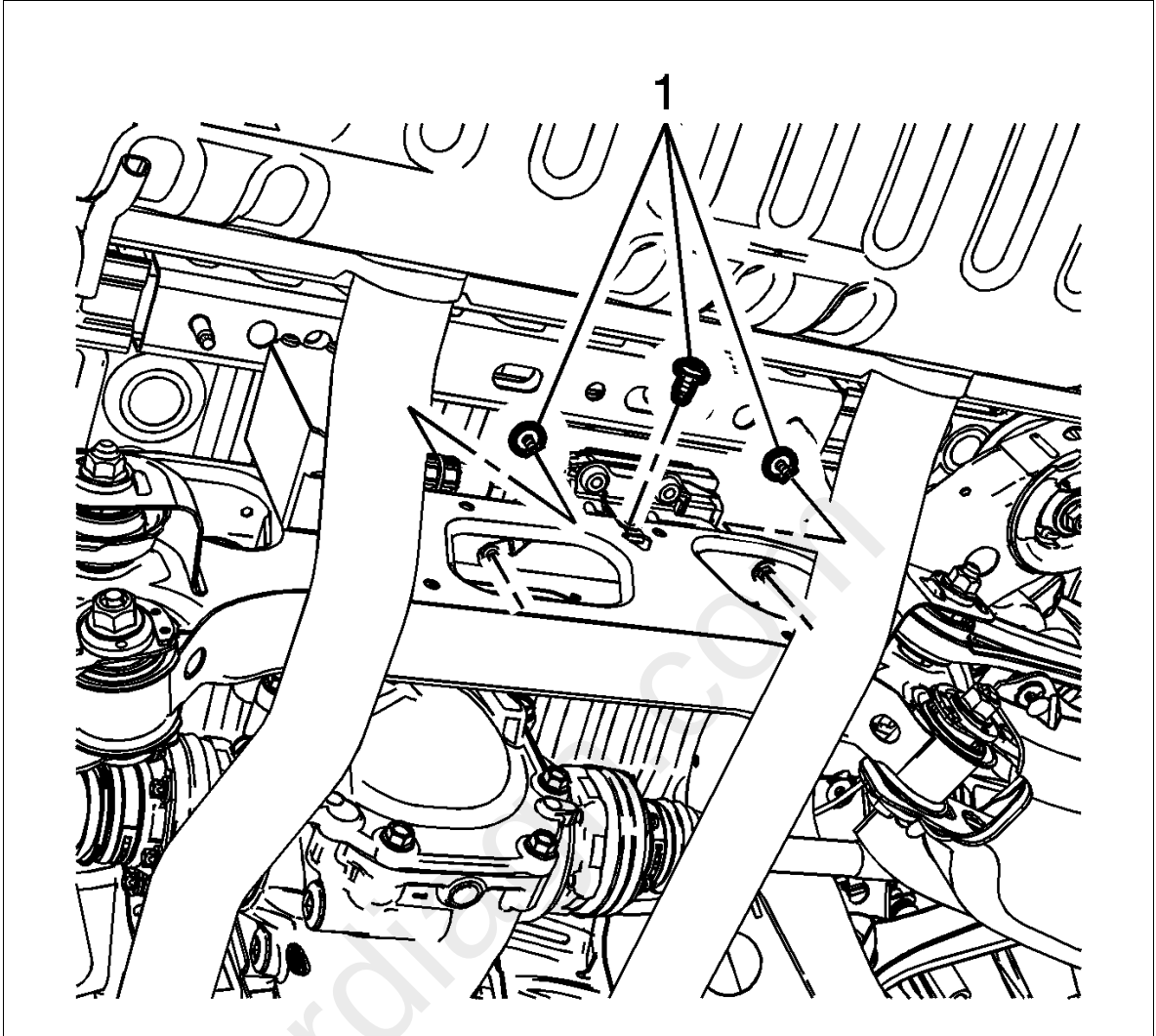
 NOTE:

When installing the electronic park brake intermediate cable nut to the electronic park brake module spindle, hold the spindle housing securely to avoid distorting the housing.

3. Install the parking brake intermediate cable nut (1) and tighten to 6 N.m (53 lb in).
4. Maneuver and install the electronic parking brake control module and bracket to the rear suspension support.

5. Connect the electronic parking brake control module electrical connector.

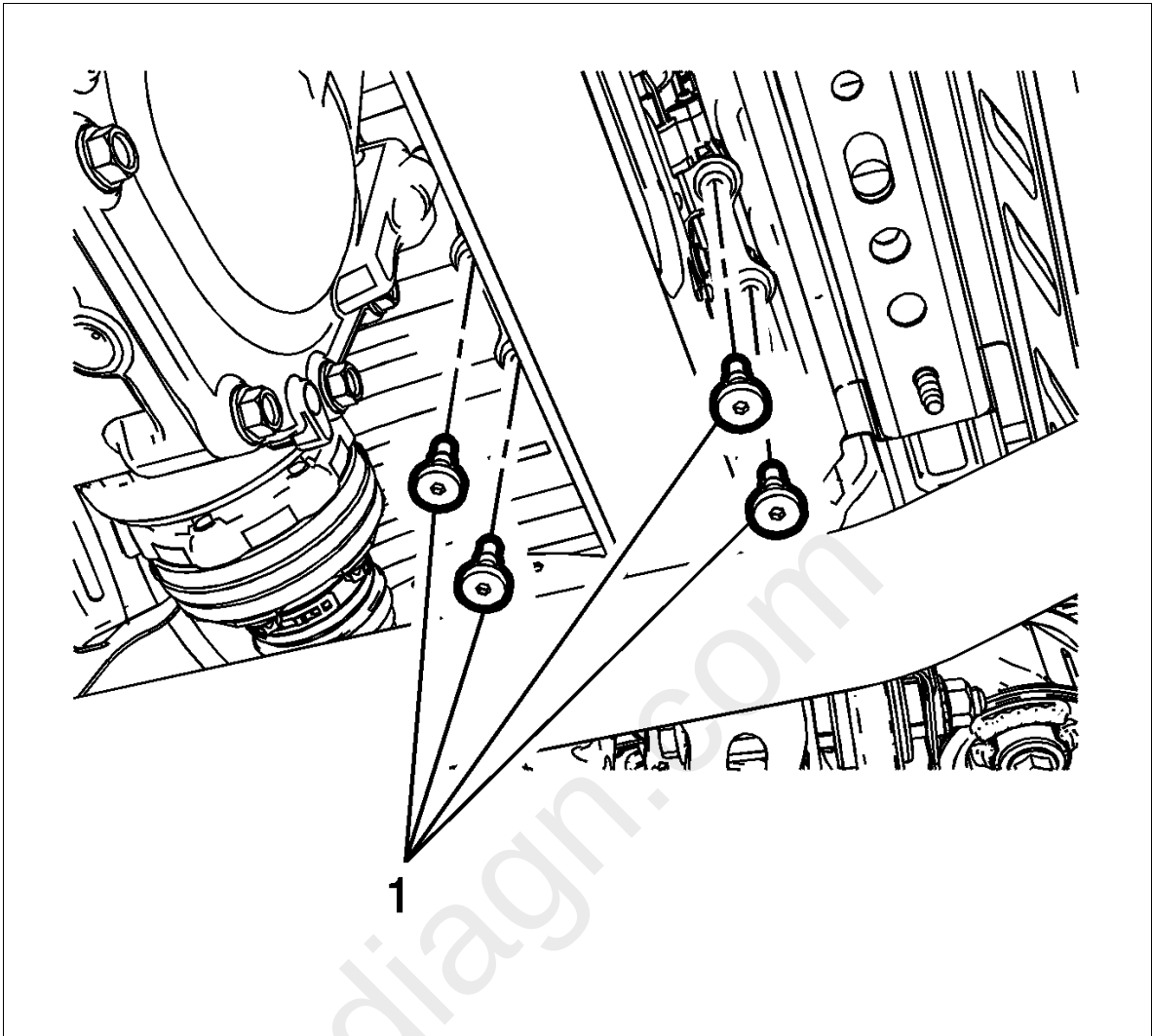
Fig 3: Electronic Parking Brake Control Module Bracket Bolts



Courtesy of GENERAL MOTORS COMPANY

6. Install the electronic parking brake control module bracket bolts (1) and tighten to 9 N.m (80 lb in).

Fig 4: Electronic Parking Brake Control Module Bolts



Courtesy of GENERAL MOTORS COMPANY

7. Install the electronic parking brake control module bolts (1) and tighten to 7 N.m (62 lb in).
8. Install Exhaust Muffler - Exhaust Muffler Replacement (LGX, Coupe)Exhaust Muffler Replacement (LGX, Convertible)Exhaust Muffler Replacement (LT1, Coupe)Exhaust Muffler Replacement (LT1, Convertible)Exhaust Muffler Replacement (LTG, Coupe)Exhaust Muffler Replacement (LTG, Convertible)
9. Program the electronic parking brake control module. Electronic Parking Brake Control Module Programming and Setup

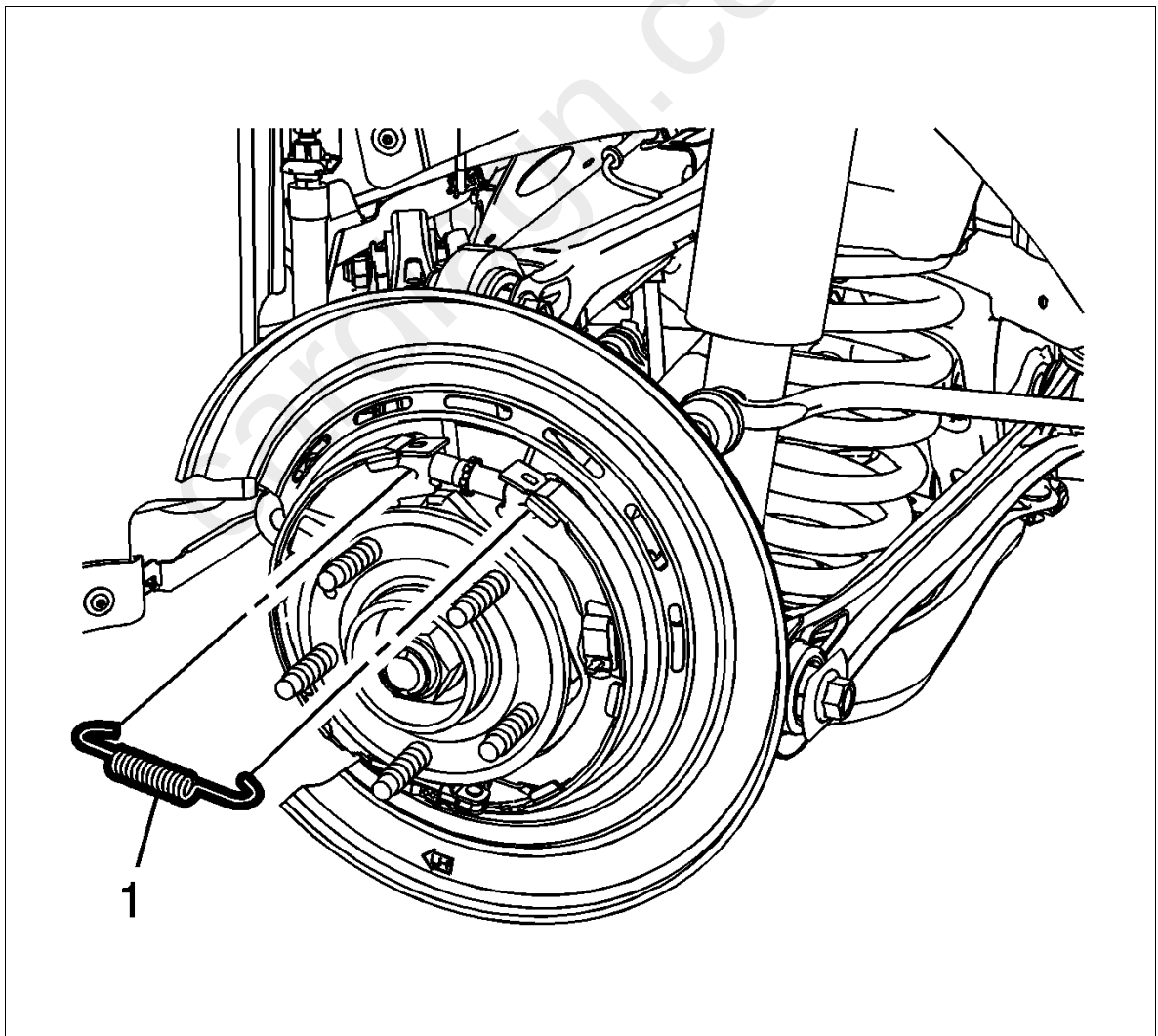
REPAIR INSTRUCTIONS > PARKING BRAKE SHOE REPLACEMENT > REMOVAL PROCEDURE

⚠ WARNING:

Refer to Brake Dust Warning .

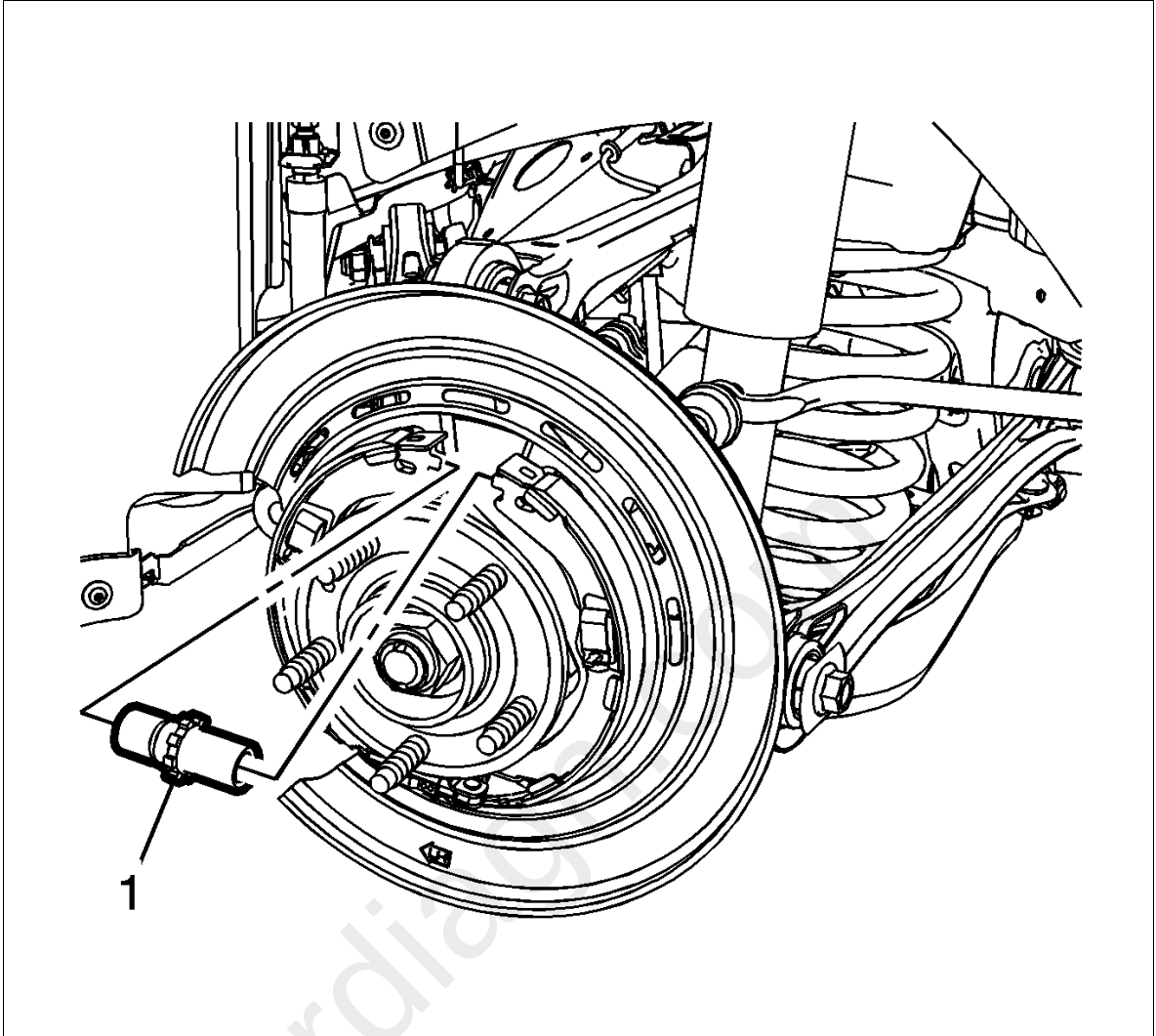
1. Turn the ignition OFF.
2. Block the rear drive wheels.
3. Release the park brake lever, if equipped.
4. Disable the parking brake cable adjuster. Refer to Parking Brake Cable Adjuster Disabling .
5. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP) .
6. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
7. Remove the rear brake rotor. Refer to Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55) .

Fig 1: Parking Brake Shoe Upper Return Spring



8. Remove the parking brake shoe upper return spring (1).

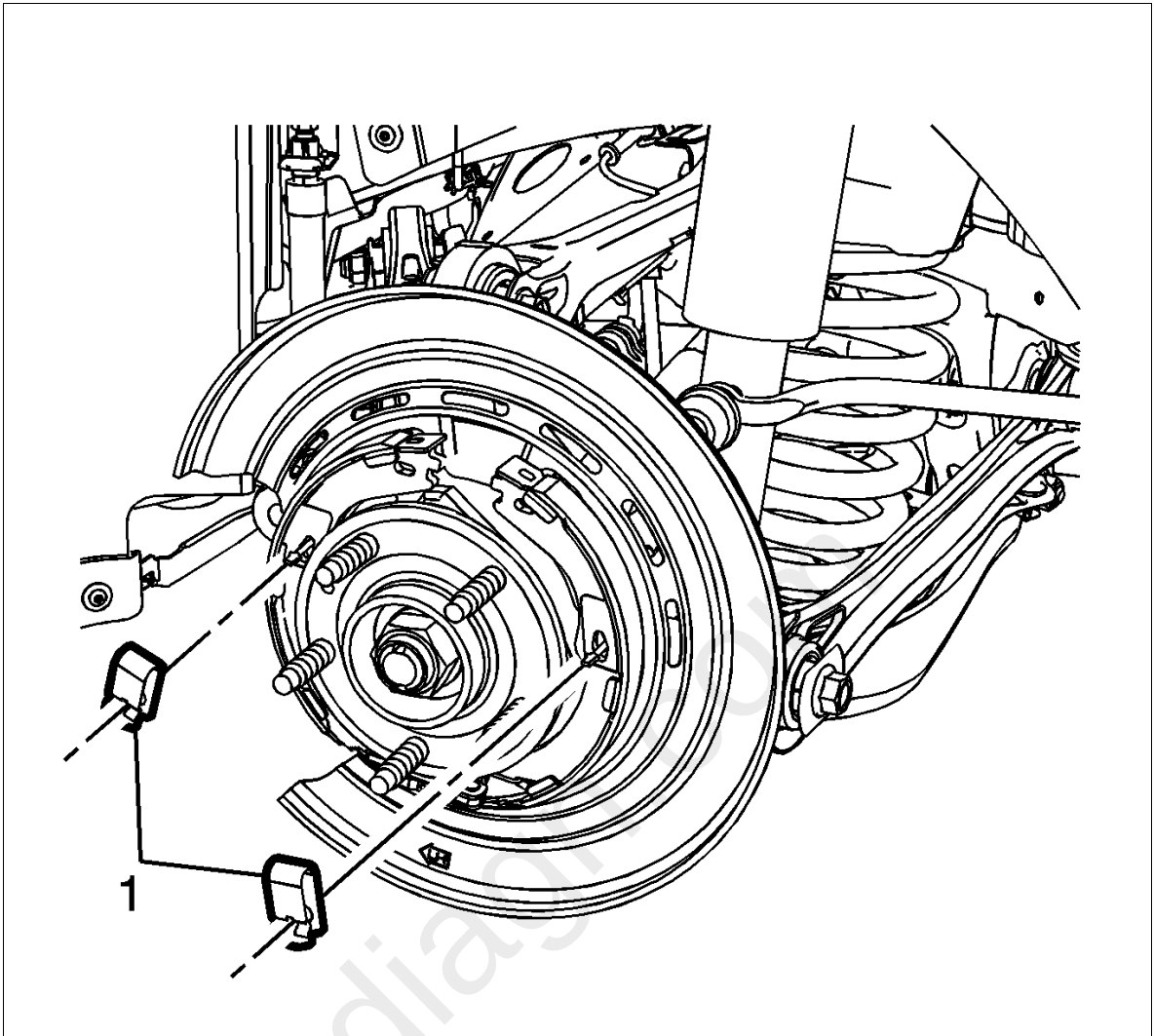
Fig 2: Parking Brake Shoe Adjuster



Courtesy of GENERAL MOTORS COMPANY

9. Remove the parking brake shoe adjuster (1).

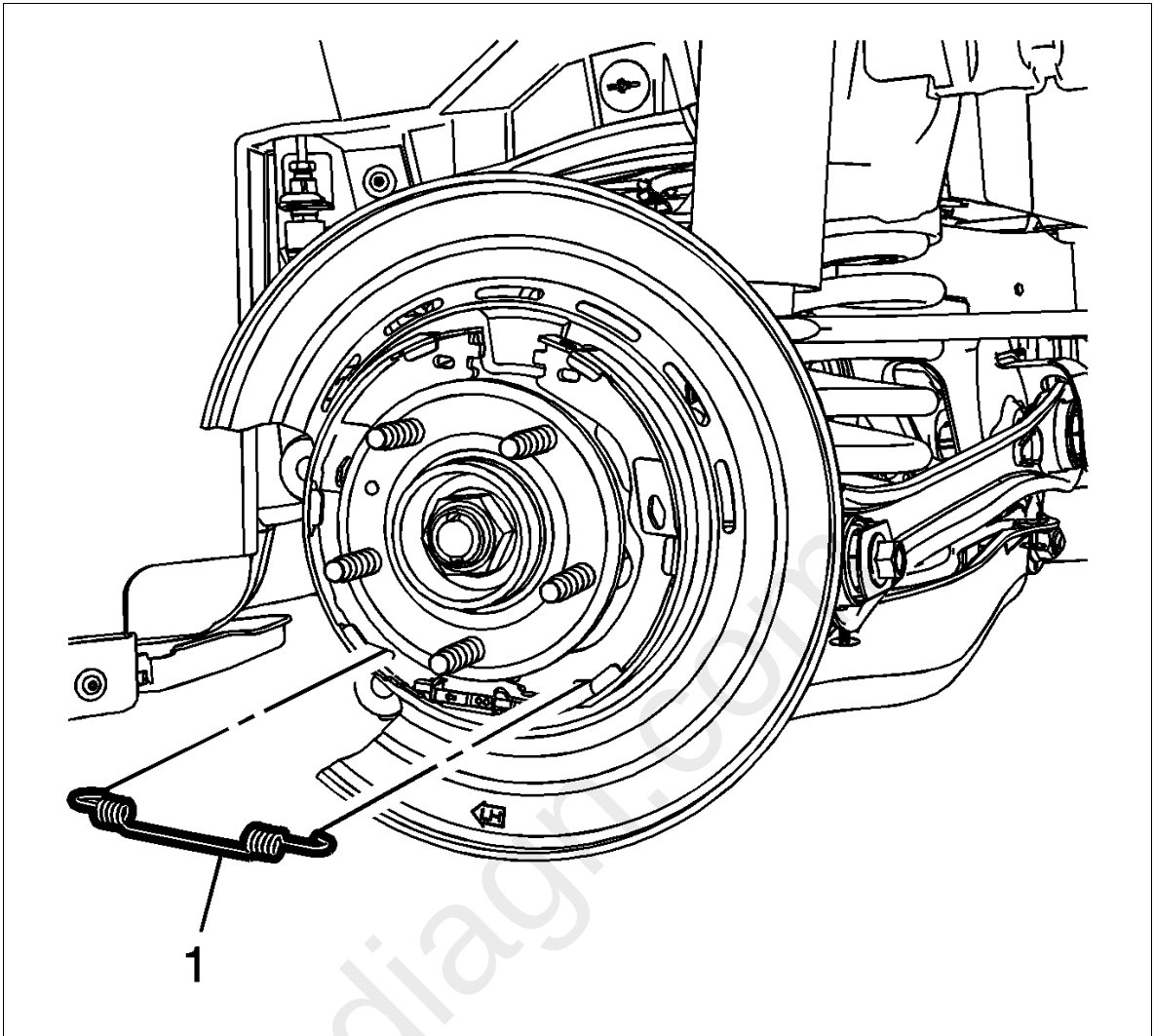
Fig 3: Parking Brake Shoe Hold Down Springs



Courtesy of GENERAL MOTORS COMPANY

10. Remove the parking brake shoe hold down springs (1) by compressing the hold down springs and rotating the spring 1/4 turn and removing the hold down spring pins.

Fig 4: Parking Brake Shoe Lower Return Spring



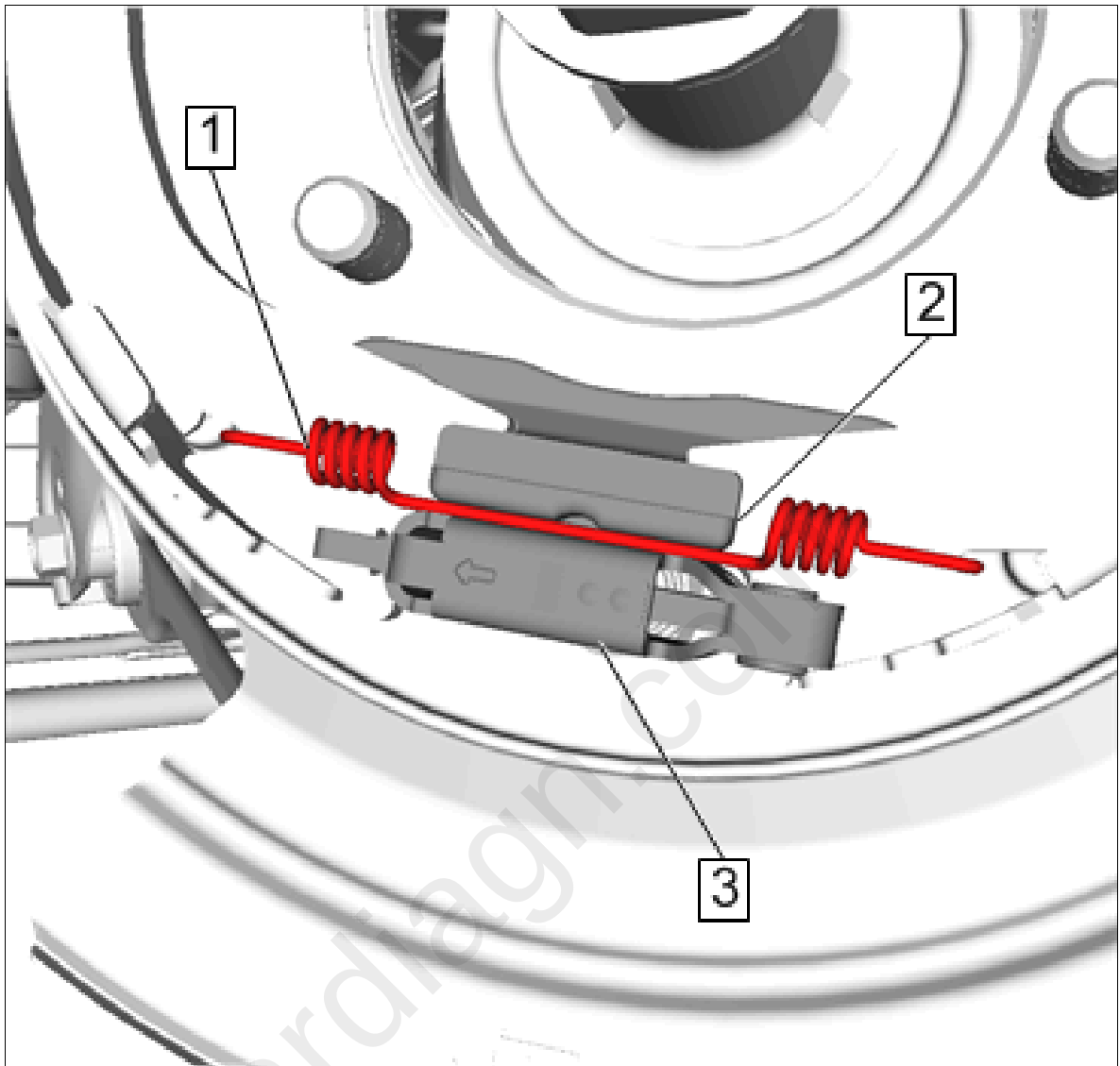
Courtesy of GENERAL MOTORS COMPANY

11. Remove the parking brake shoe lower return spring (1).
12. Remove the parking brake shoes from the rear brake backing plate.
13. Lubricate the park brake shoe to backing plate contact points with high temperature brake lubricant.

REPAIR INSTRUCTIONS > PARKING BRAKE SHOE REPLACEMENT > INSTALLATION PROCEDURE

1. Install the parking brake shoes to the rear brake backing plate.
2. Position the lower portion of the parking brake shoes into the notches of the parking brake shoe actuator lever.

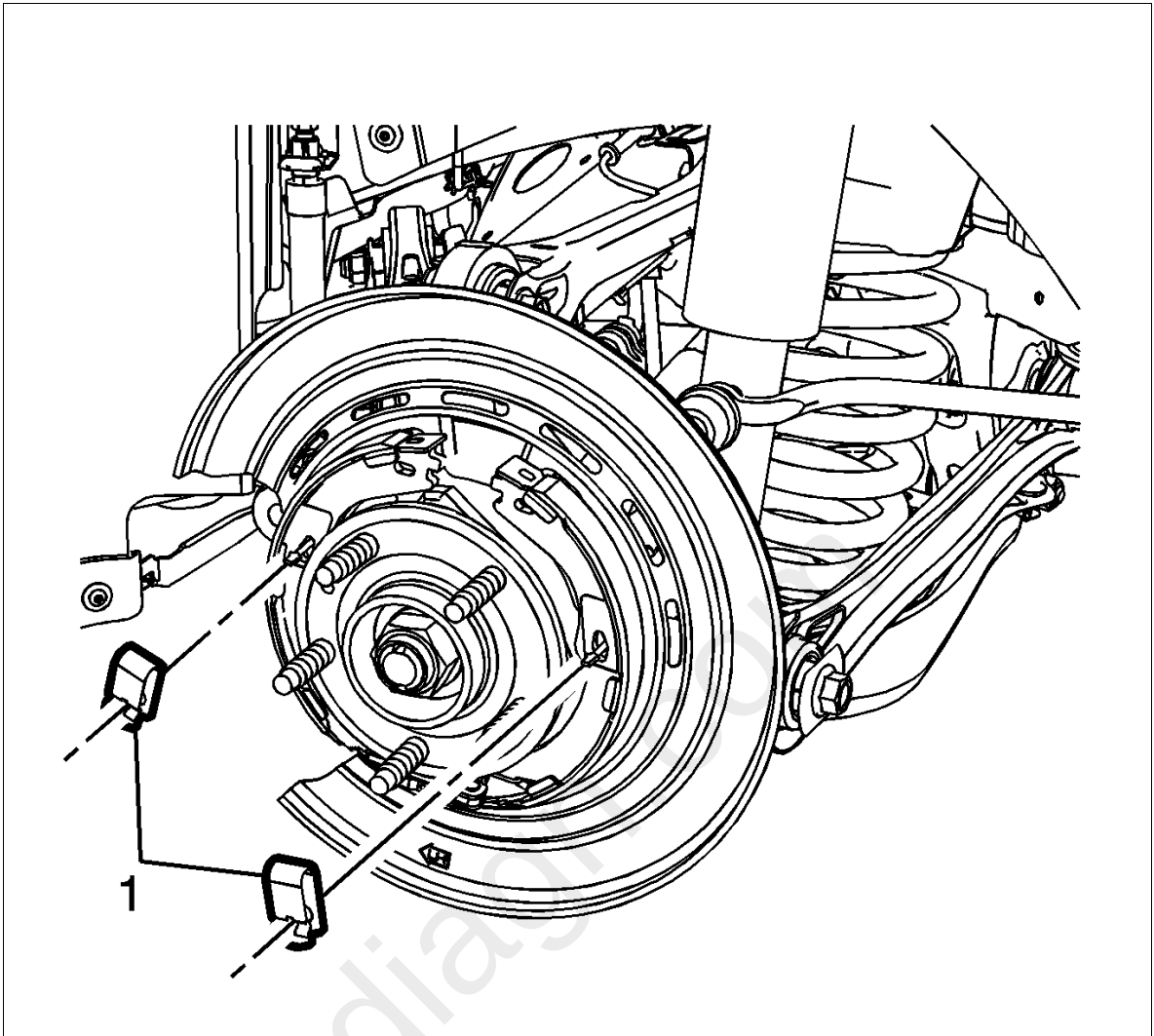
Fig 1: Parking Brake Shoe Lower Return Spring



Courtesy of GENERAL MOTORS COMPANY

3. Install the parking brake shoe lower return spring (1).
4. Position the parking brake shoe lower return spring between the parking brake shoe anchor (2) and the actuator lever (3).

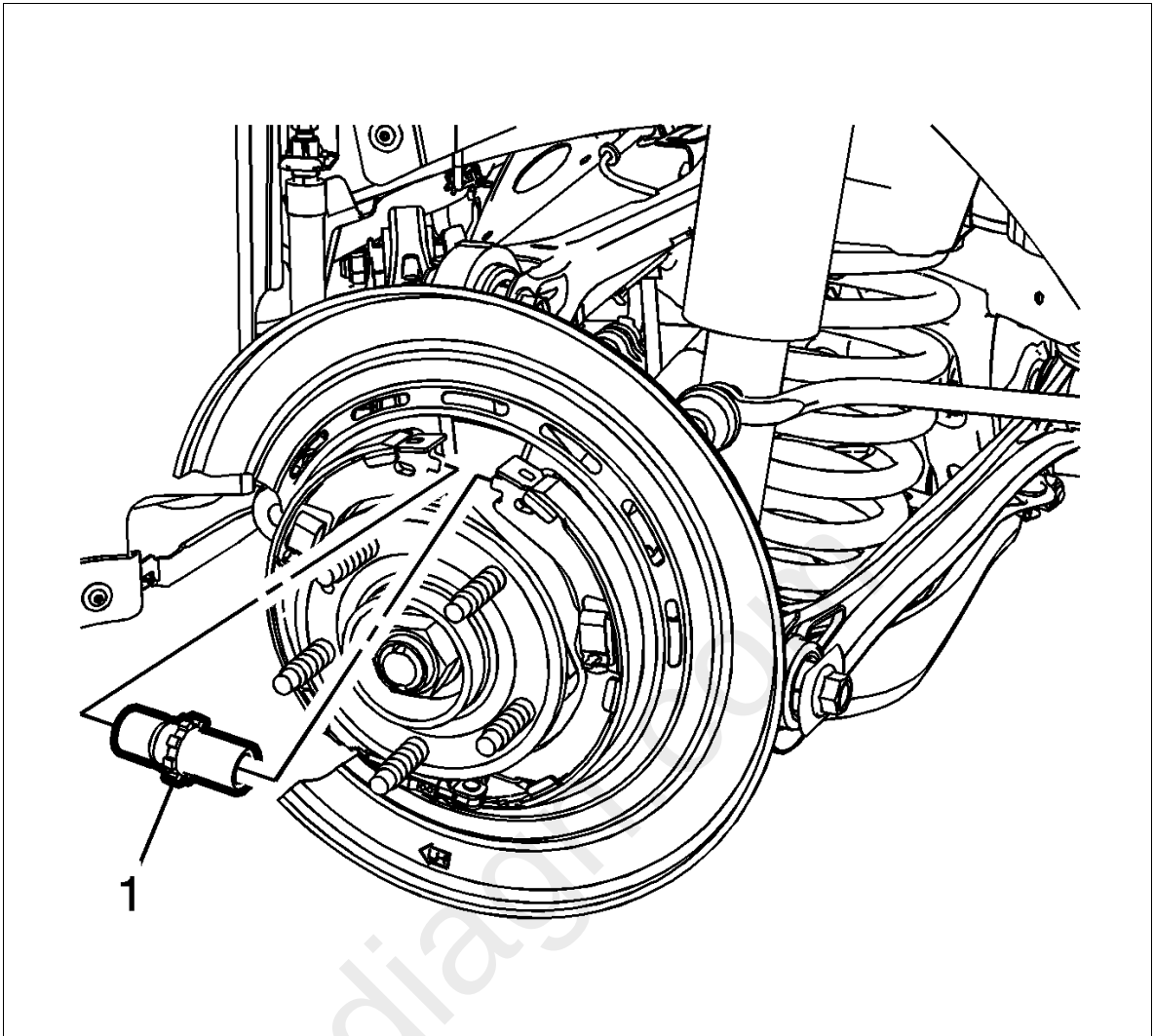
Fig 2: Parking Brake Shoe Hold Down Springs



Courtesy of GENERAL MOTORS COMPANY

5. Install the parking brake shoe hold down springs (1) by compressing the hold down springs and rotating the spring 1/4 turn and installing the hold down spring pins.

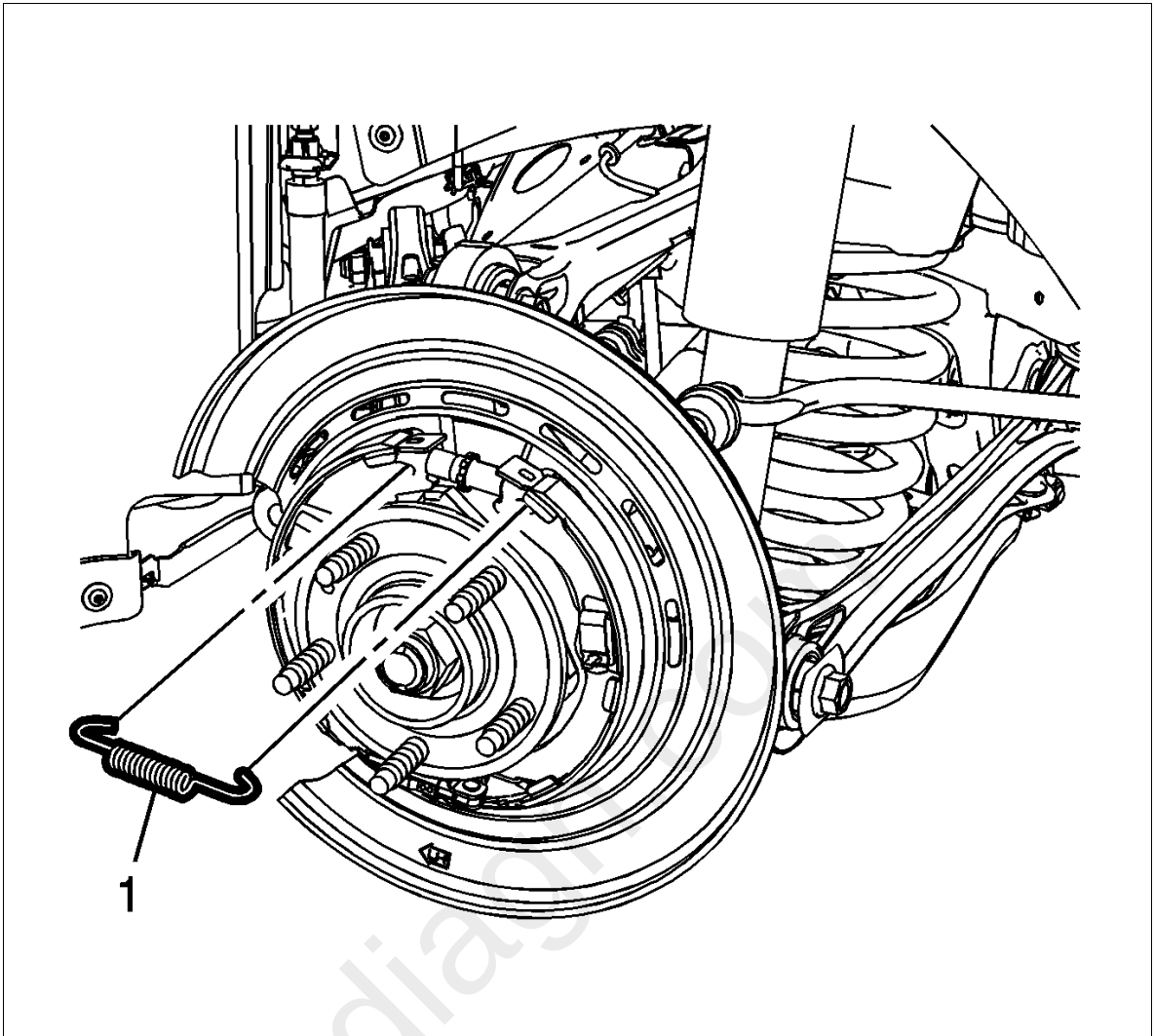
Fig 3: Parking Brake Shoe Adjuster



Courtesy of GENERAL MOTORS COMPANY

6. Rotate the parking brake shoe adjuster to the fully retracted position and install the parking brake shoe adjuster (1).

Fig 4: Parking Brake Shoe Upper Return Spring



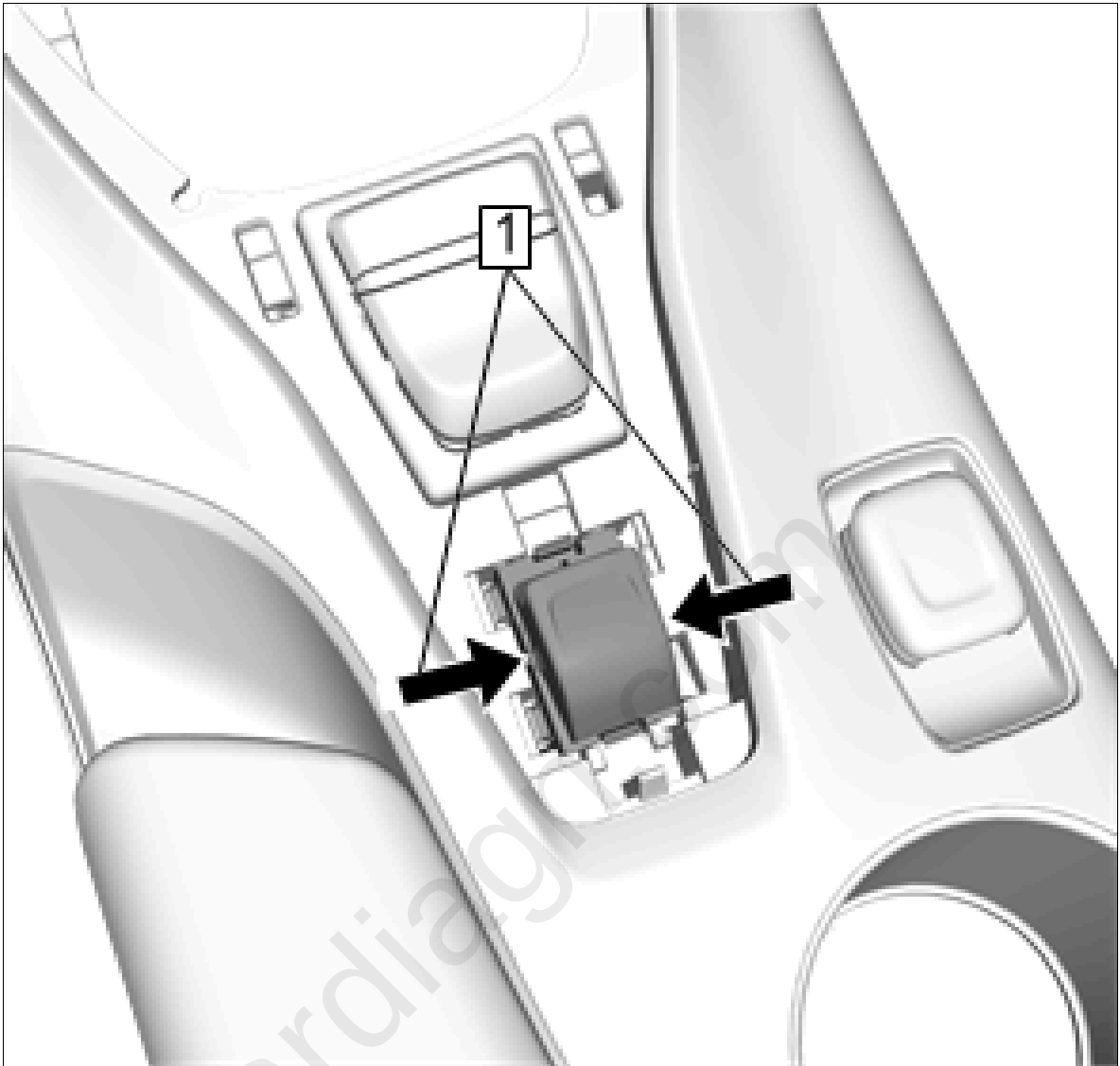
Courtesy of GENERAL MOTORS COMPANY

7. Install the parking brake shoe upper return spring (1).
8. Adjust the parking brake. Refer to Parking Brake Adjustment .
9. Install the rear brake rotor. Refer to Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55) .
10. Install the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
11. Enable the parking brake cable adjuster. Refer to Parking Brake Cable Adjuster Enabling .

REPAIR INSTRUCTIONS > PARKING BRAKE SWITCH REPLACEMENT > REMOVAL PROCEDURE

1. Remove Front Floor Console Replacement

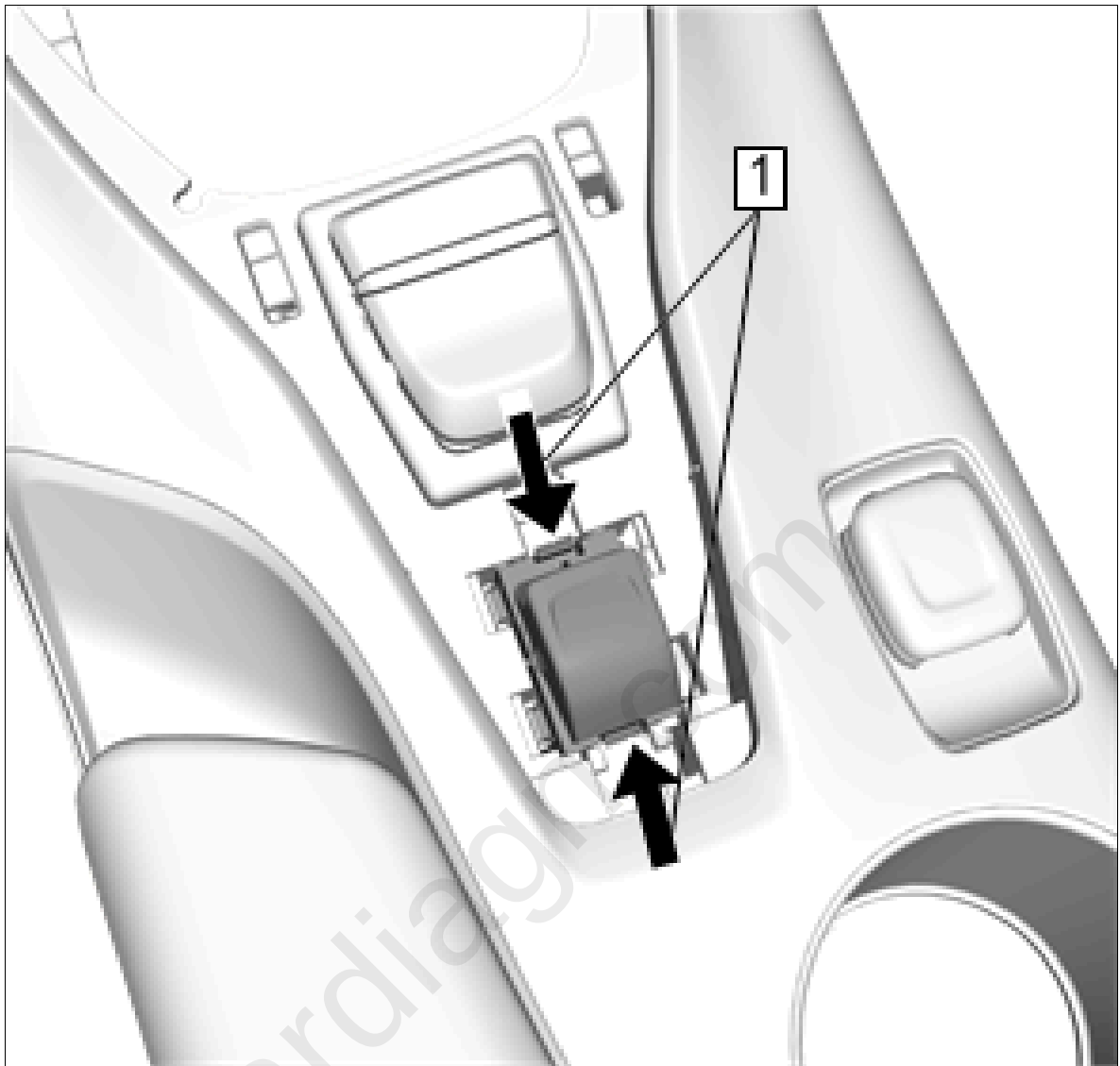
Fig 1: Front Floor Console Locating Tabs



Courtesy of GENERAL MOTORS COMPANY

2. Carefully spread the locating tabs <p01> on the front floor console.

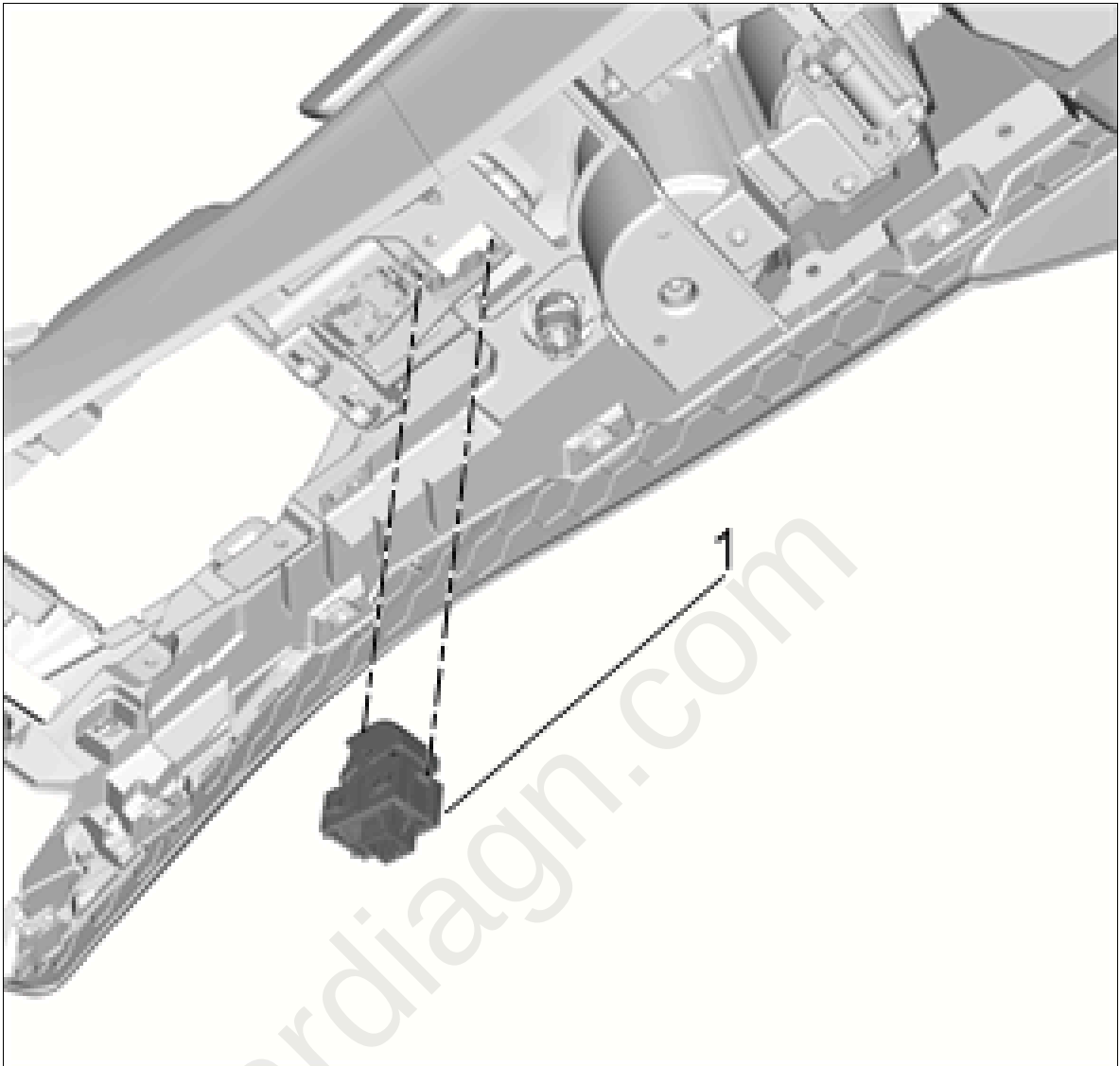
Fig 2: Parking Brake Switch Locking Tabs



Courtesy of GENERAL MOTORS COMPANY

3. Compress the locking tabs (1) on the parking brake switch.

Fig 3: Parking Brake Switch

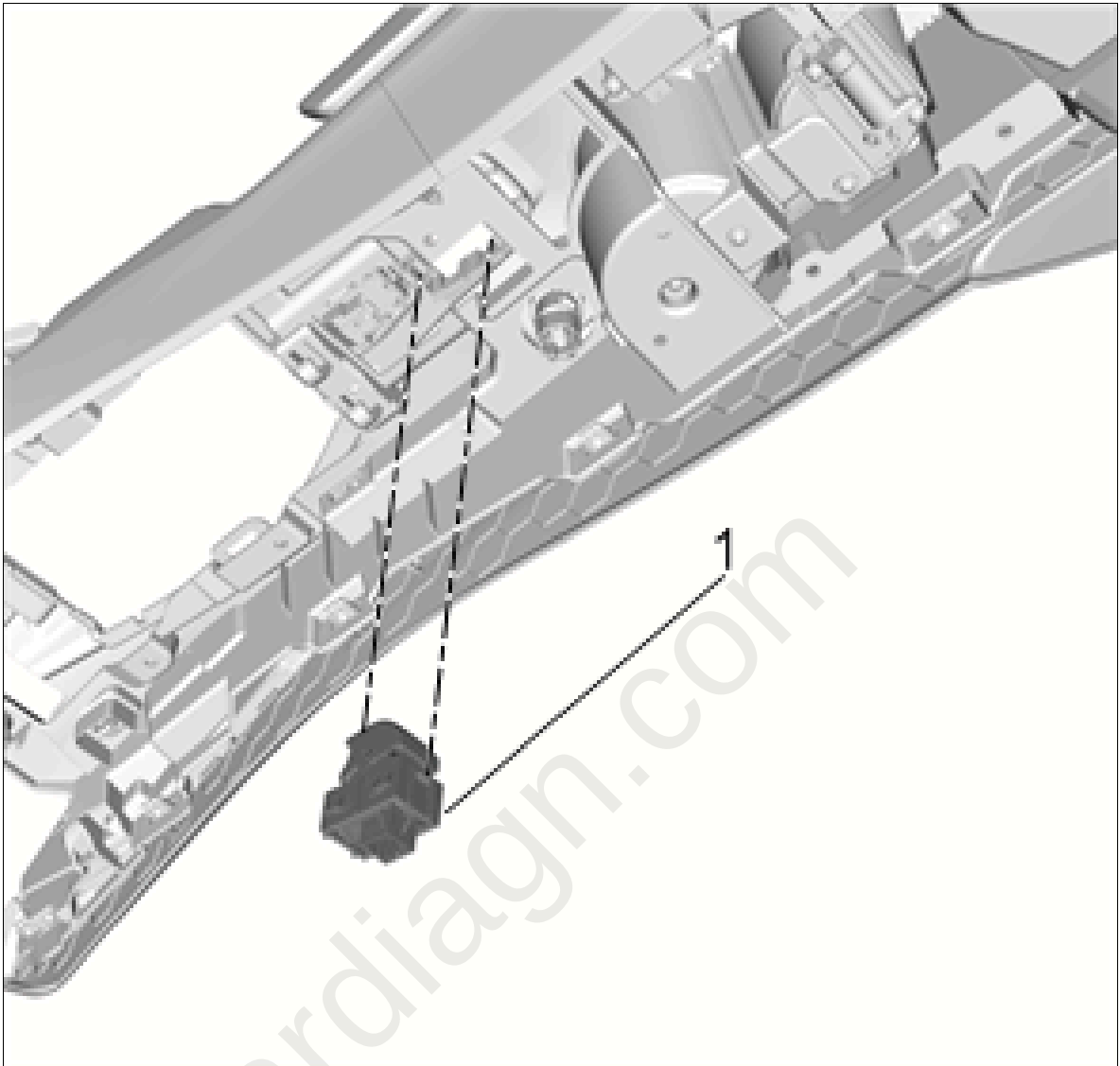


Courtesy of GENERAL MOTORS COMPANY

4. Remove the parking brake switch (1) from the underside of the front floor console.

**REPAIR INSTRUCTIONS > PARKING BRAKE SWITCH REPLACEMENT >
INSTALLATION PROCEDURE**

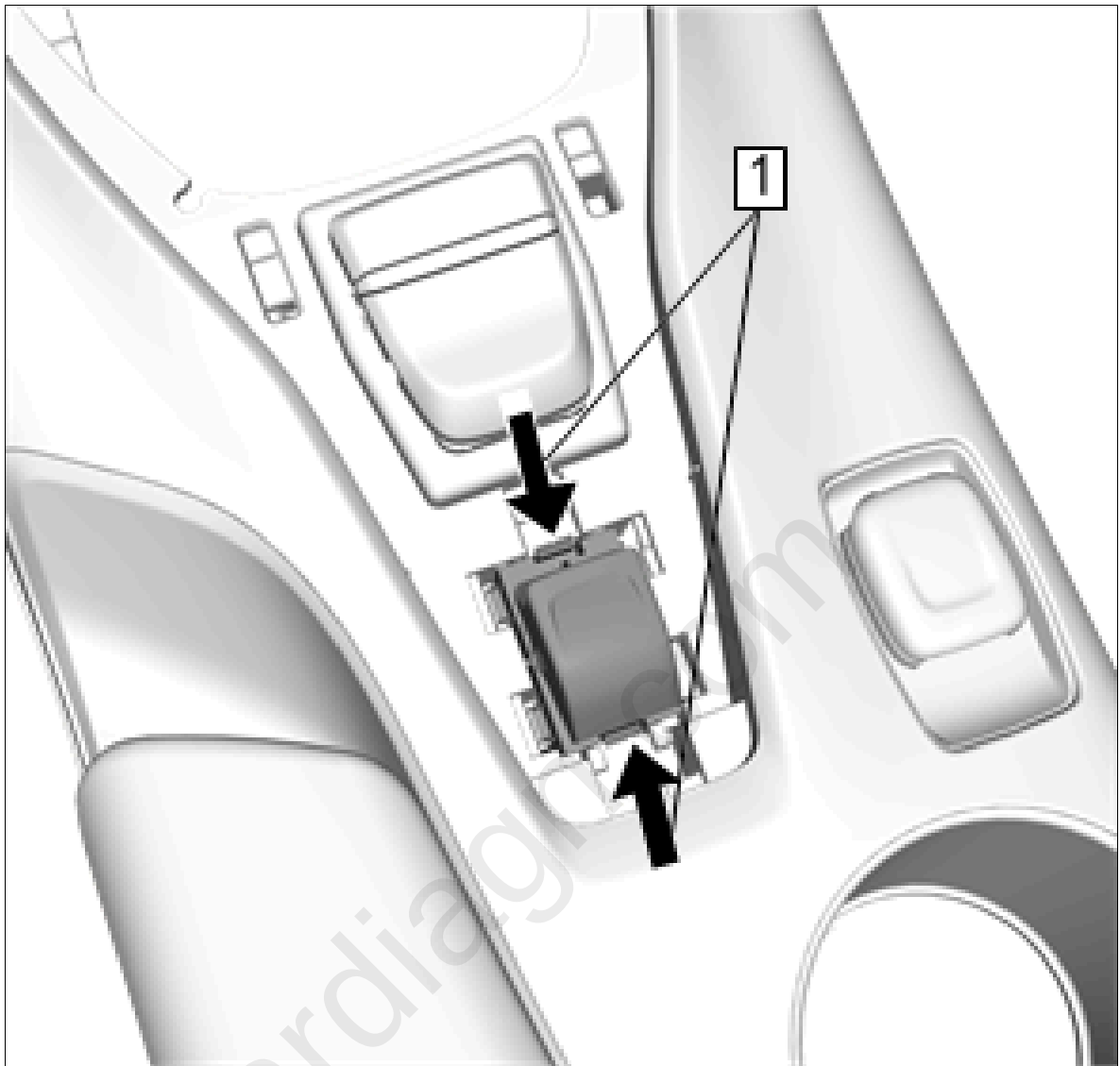
Fig 1: Parking Brake Switch



Courtesy of GENERAL MOTORS COMPANY

1. Install the parking brake switch (1) to the underside of the front floor console.

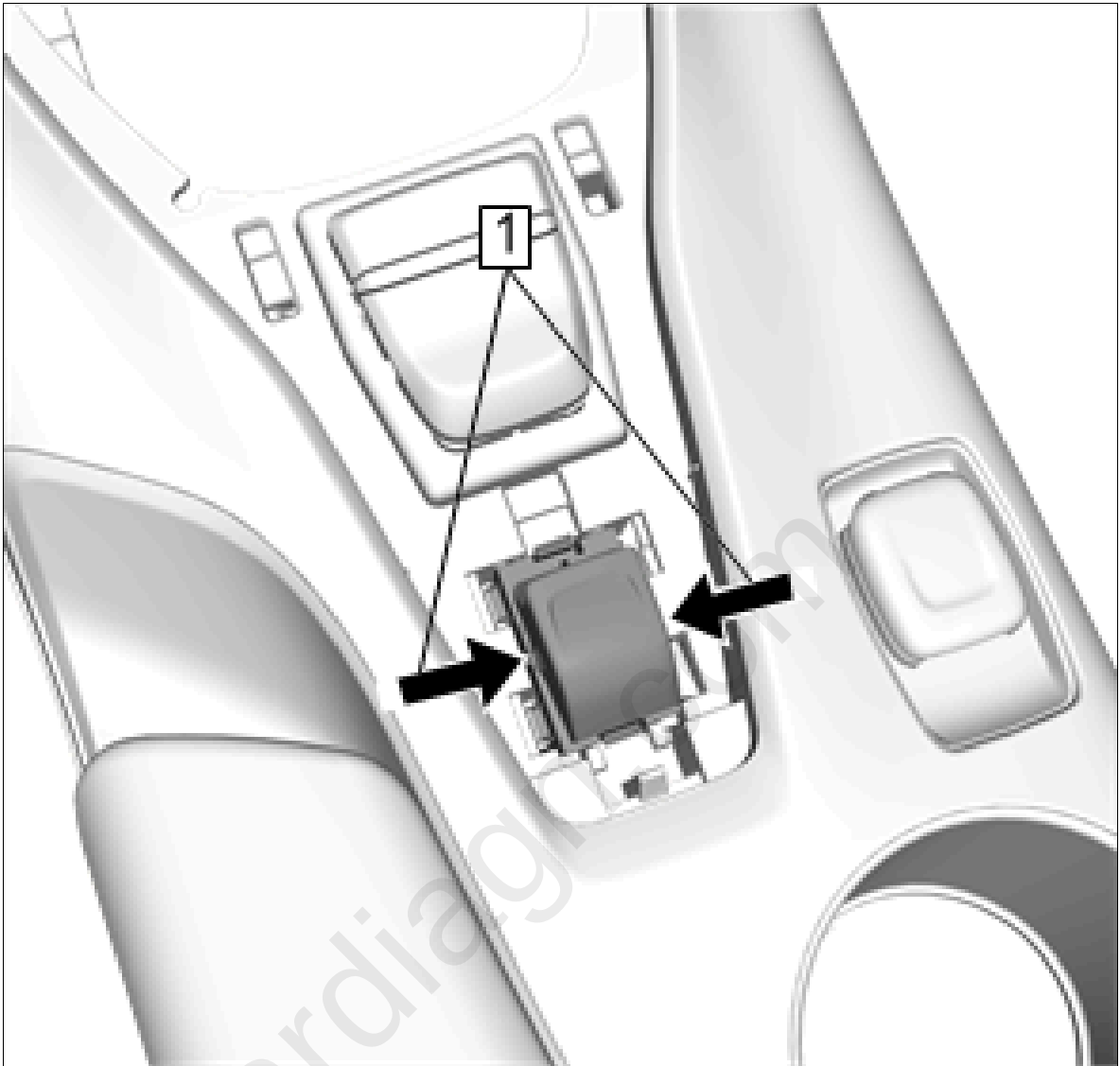
Fig 2: Parking Brake Switch Locking Tabs



Courtesy of GENERAL MOTORS COMPANY

2. Secure the locking tabs (1) on the parking brake switch.

Fig 3: Front Floor Console Locating Tabs



Courtesy of GENERAL MOTORS COMPANY

3. Engage the locating tabs (1) on the front floor console.
4. Install Front Floor Console Replacement

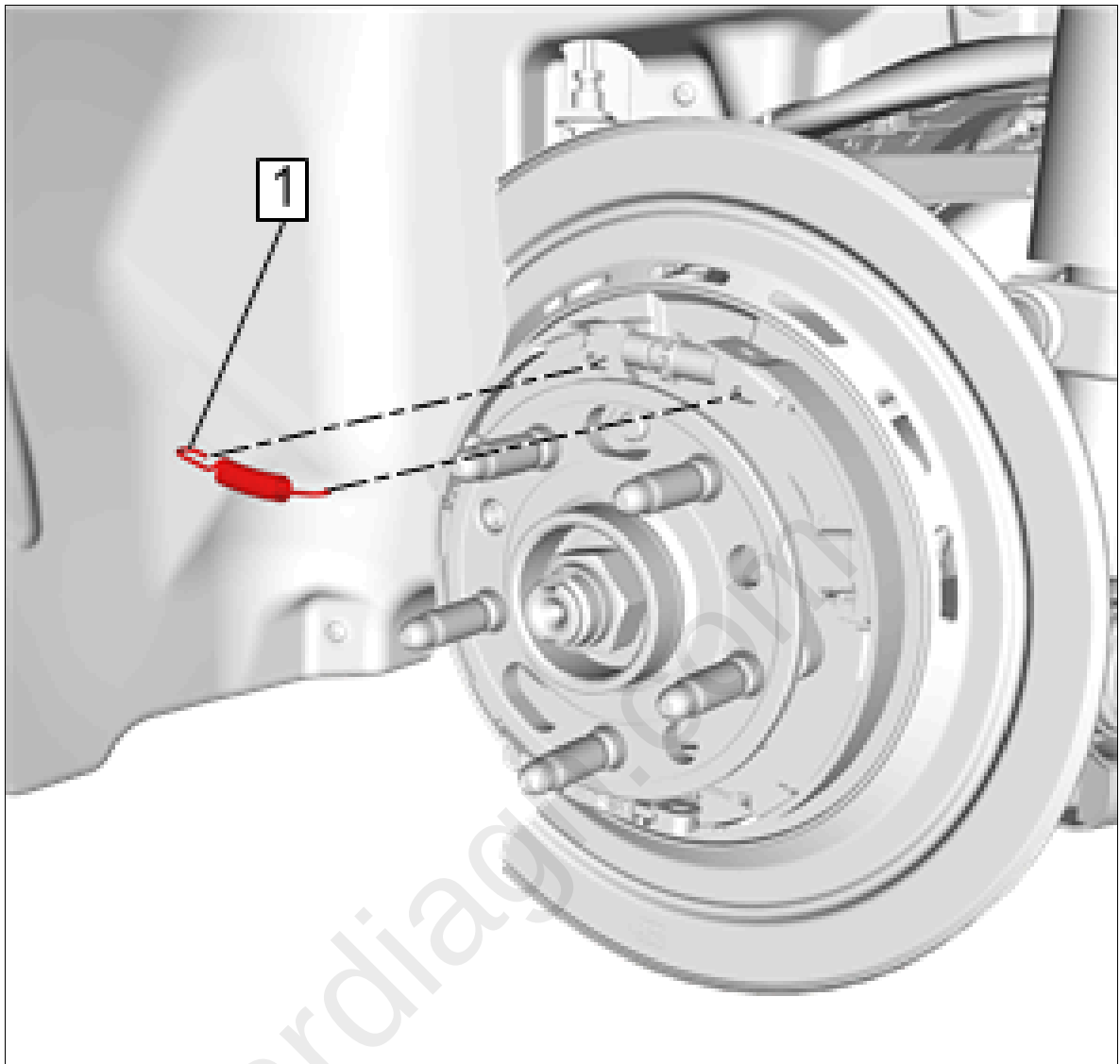
REPAIR INSTRUCTIONS > PARK BRAKE HARDWARE REPLACEMENT > REMOVAL PROCEDURE

 **WARNING:**

Brake Dust Warning

1. Remove Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)

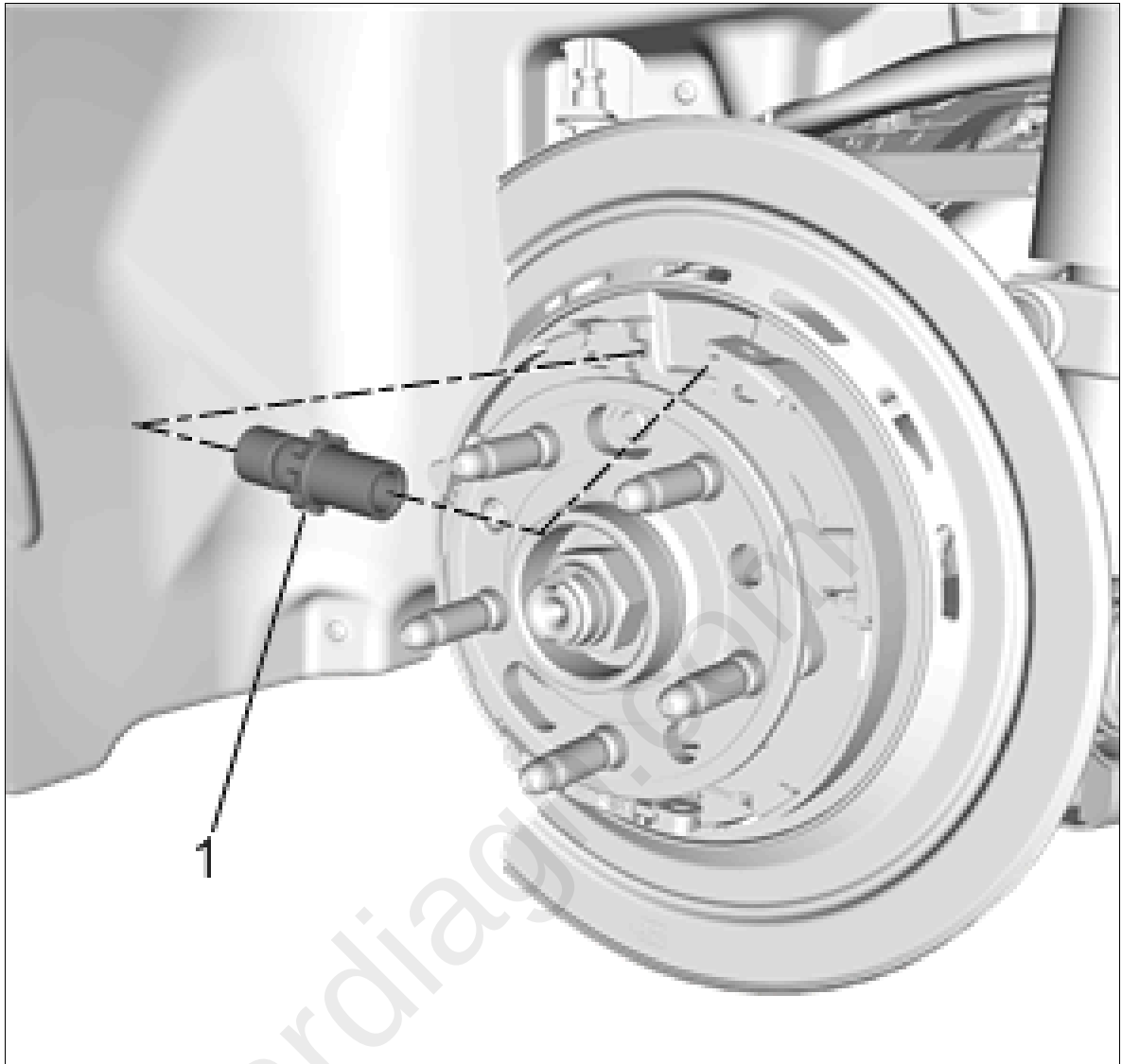
Fig 1: Rear Parking Brake Adjuster Spring



Courtesy of GENERAL MOTORS COMPANY

2. Remove Rear Parking Brake Adjuster Spring (1)

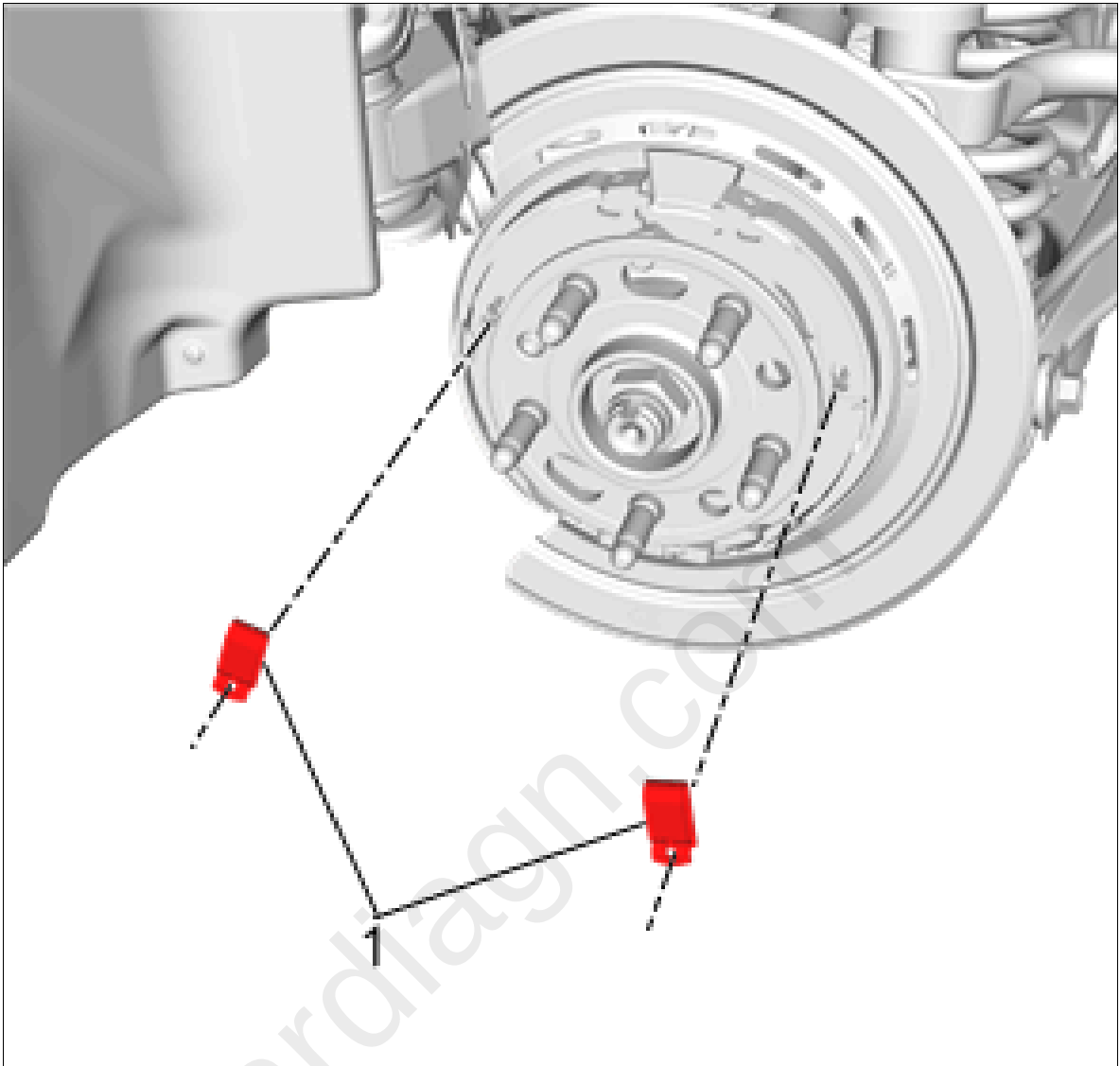
Fig 2: Rear Parking Brake Adjuster



Courtesy of GENERAL MOTORS COMPANY

3. Remove Rear Parking Brake Adjuster (1)

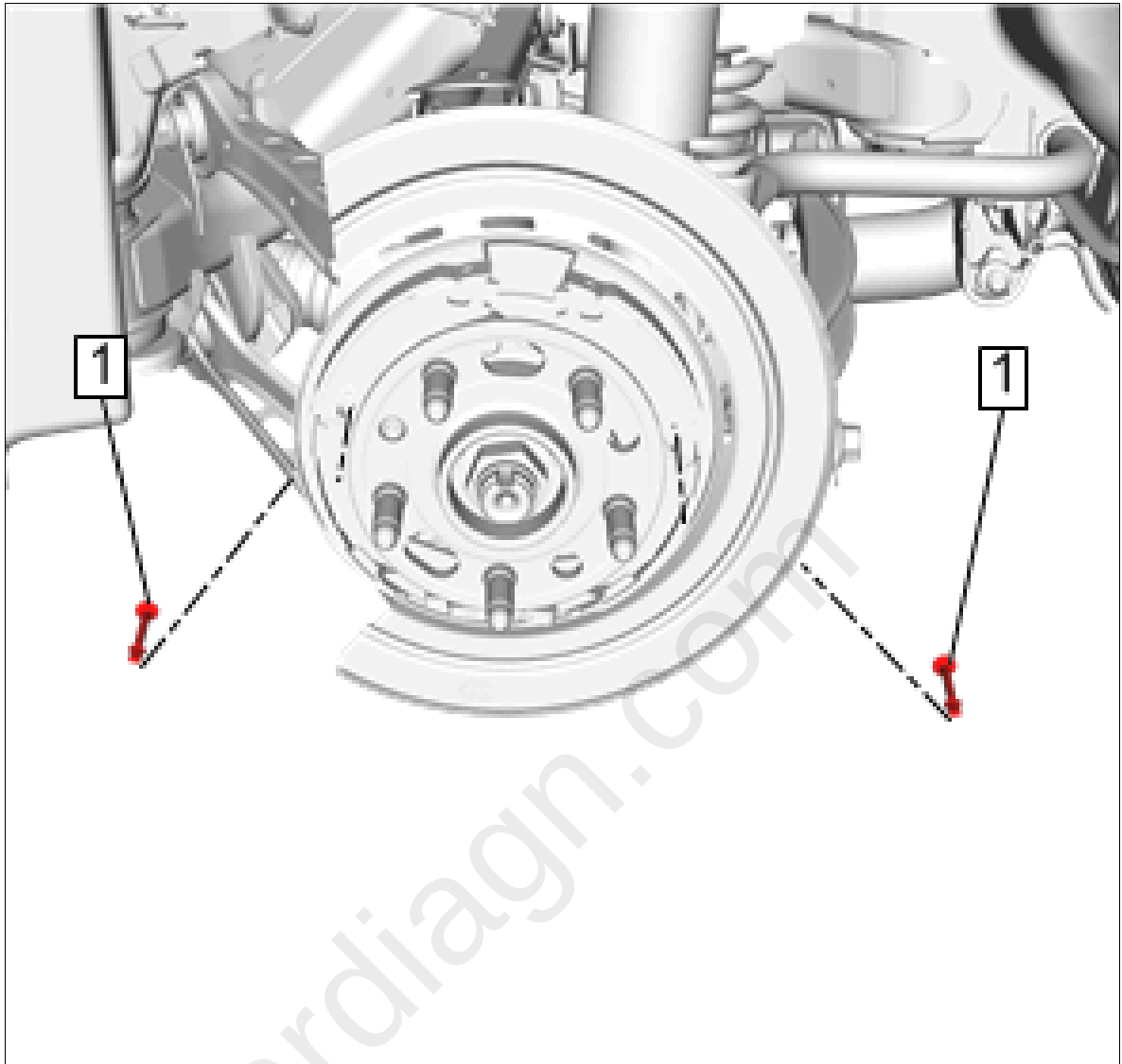
Fig 3: Hold Down Spring



Courtesy of GENERAL MOTORS COMPANY

4. Remove Hold Down Spring (1) (Qty: 2)
5. Compress the hold down spring, then rotate the retaining pin 1/4 turn and remove the spring.

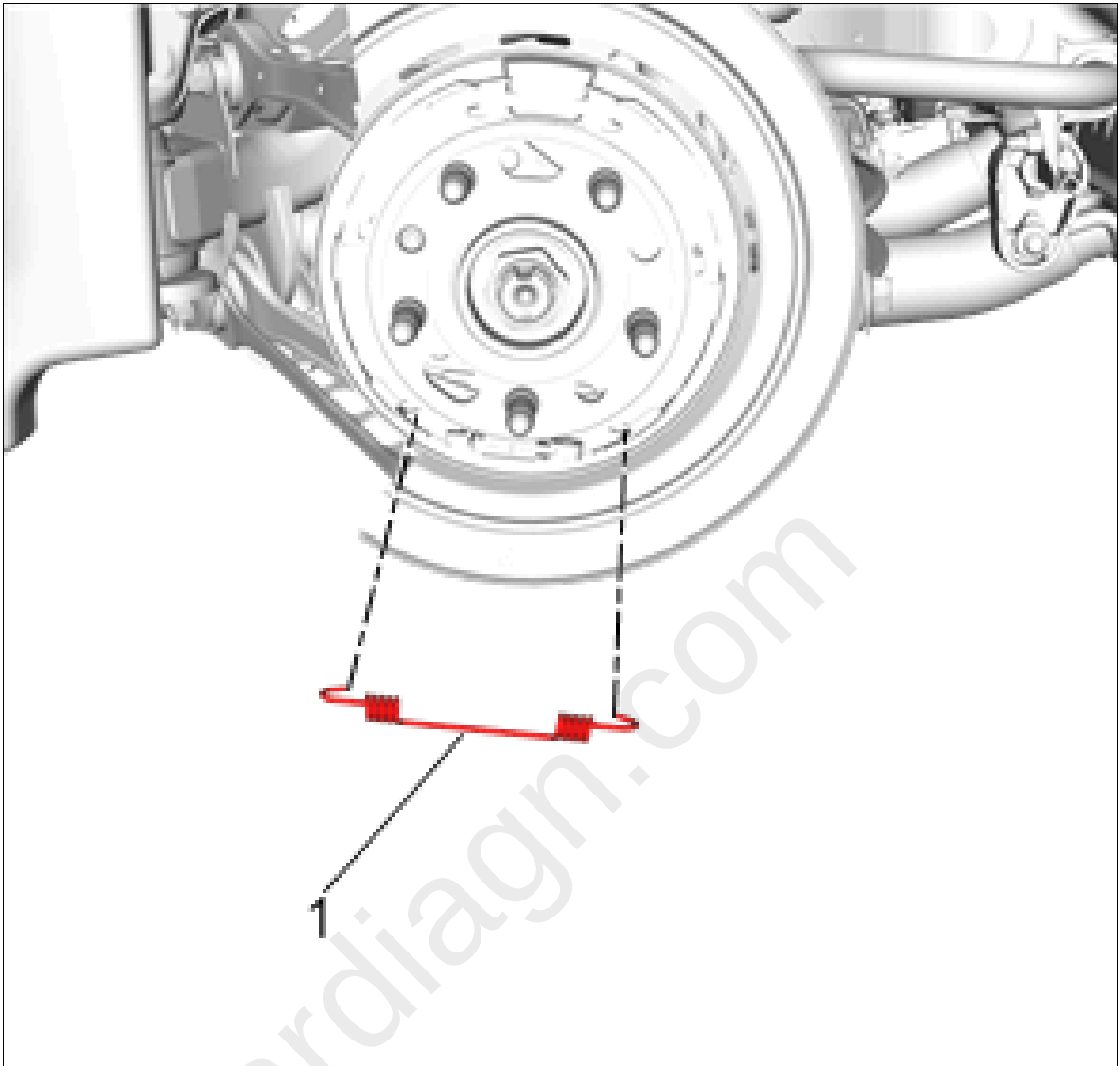
Fig 4: Retaining Pin



Courtesy of GENERAL MOTORS COMPANY

6. Remove Retaining Pin (1) (Qty: 2)

Fig 5: Rear Parking Brake Shoe Return Spring

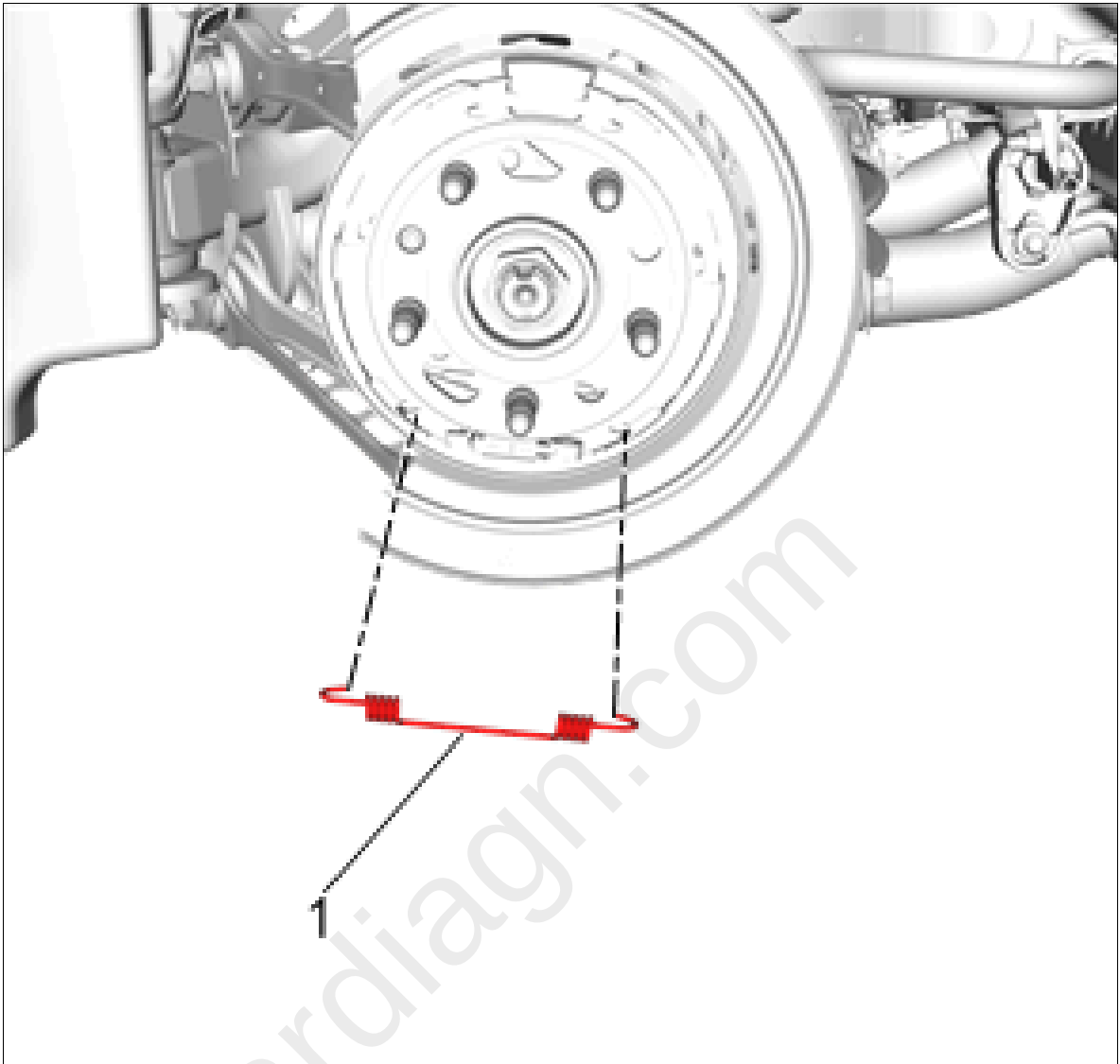


Courtesy of GENERAL MOTORS COMPANY

7. Remove Rear Parking Brake Shoe Return Spring (1)

**REPAIR INSTRUCTIONS > PARK BRAKE HARDWARE REPLACEMENT >
INSTALLATION PROCEDURE**

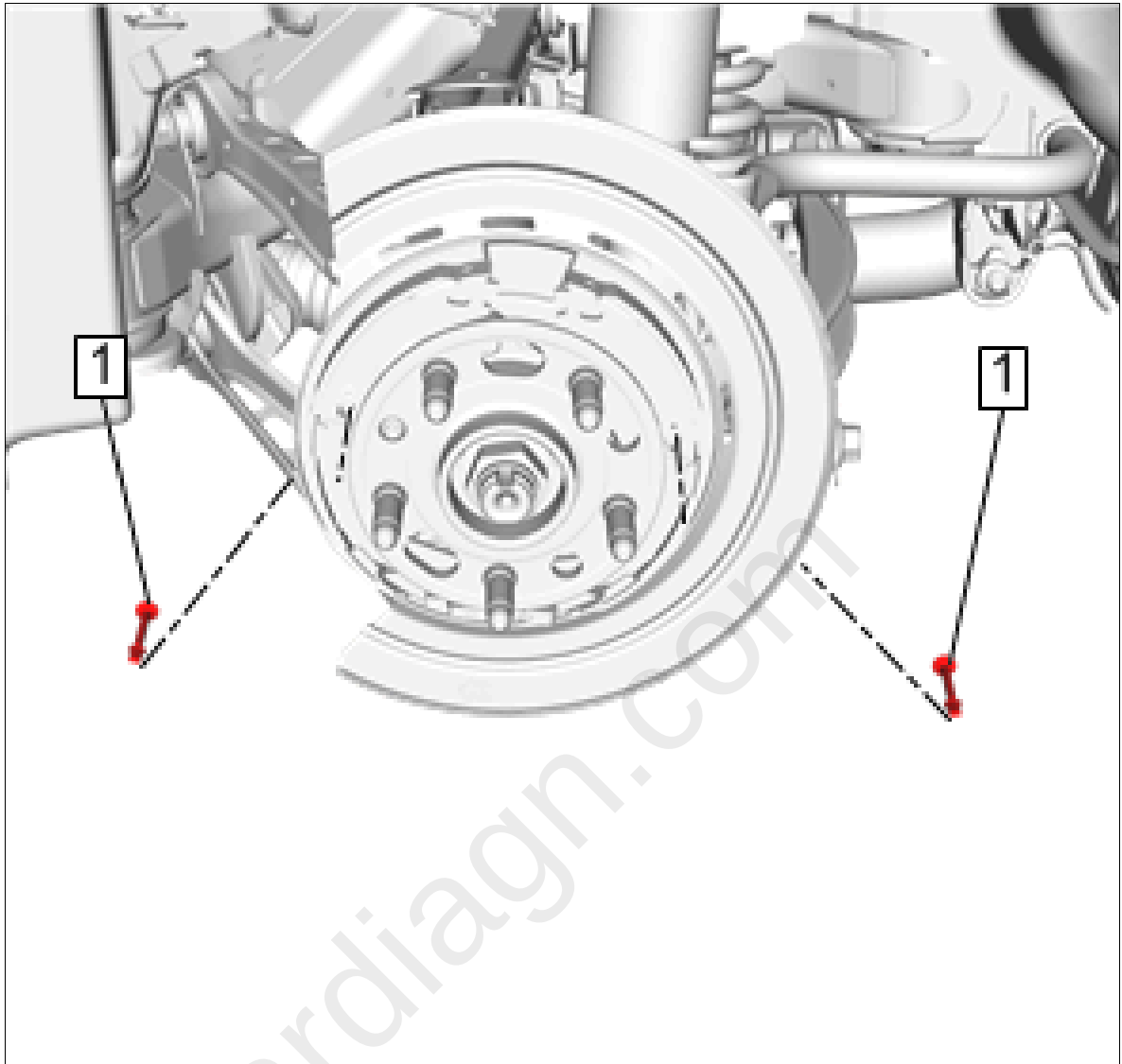
Fig 1: Rear Parking Brake Shoe Return Spring



Courtesy of GENERAL MOTORS COMPANY

1. Install Rear Parking Brake Shoe Return Spring (1)

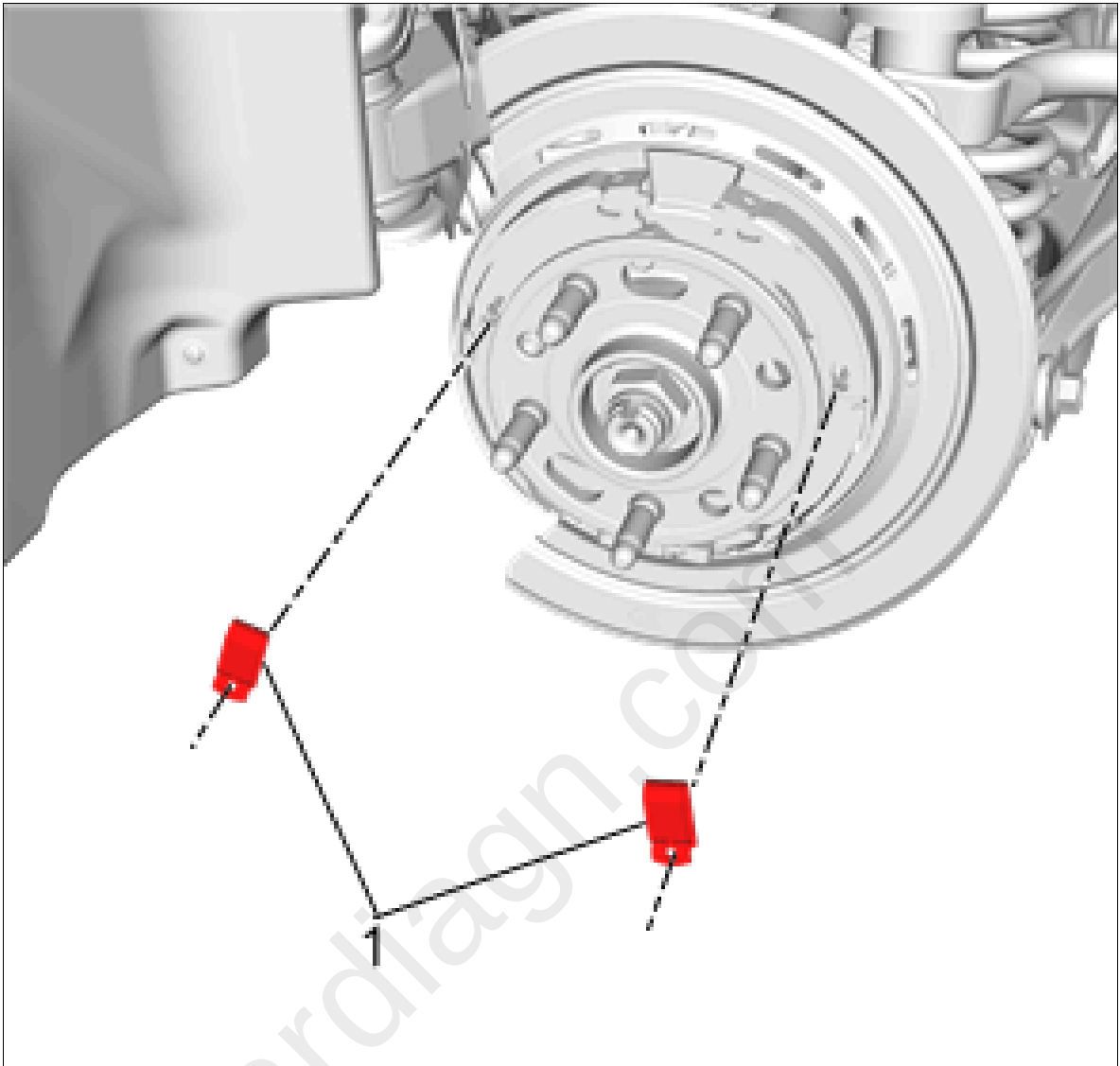
Fig 2: Retaining Pin



Courtesy of GENERAL MOTORS COMPANY

2. Install Retaining Pin (1) (Qty: 2)

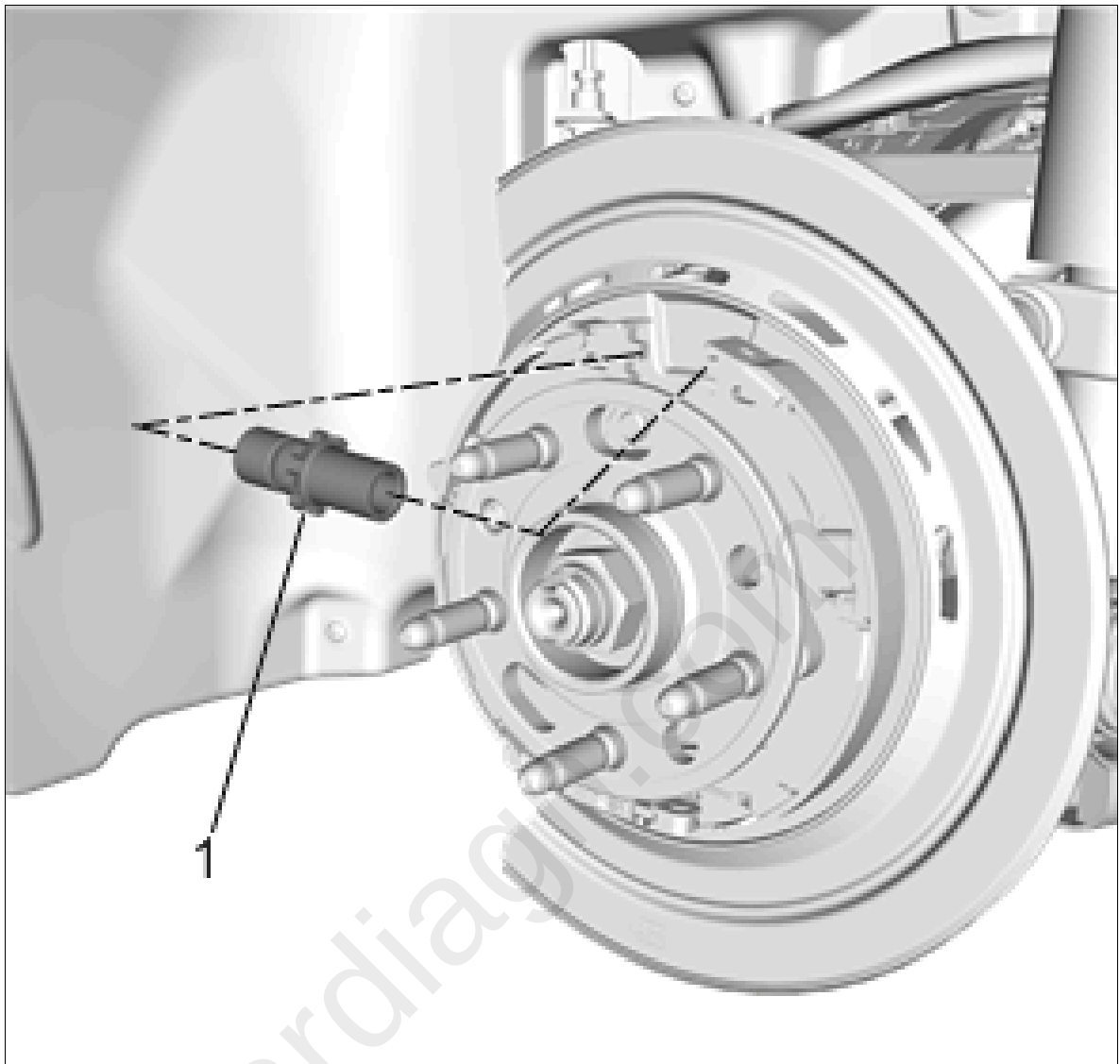
Fig 3: Hold Down Spring



Courtesy of GENERAL MOTORS COMPANY

3. Install Hold Down Spring (1) (Qty: 2)
4. Compress the hold down spring, then rotate the retaining pin 1/4 turn and install the spring.

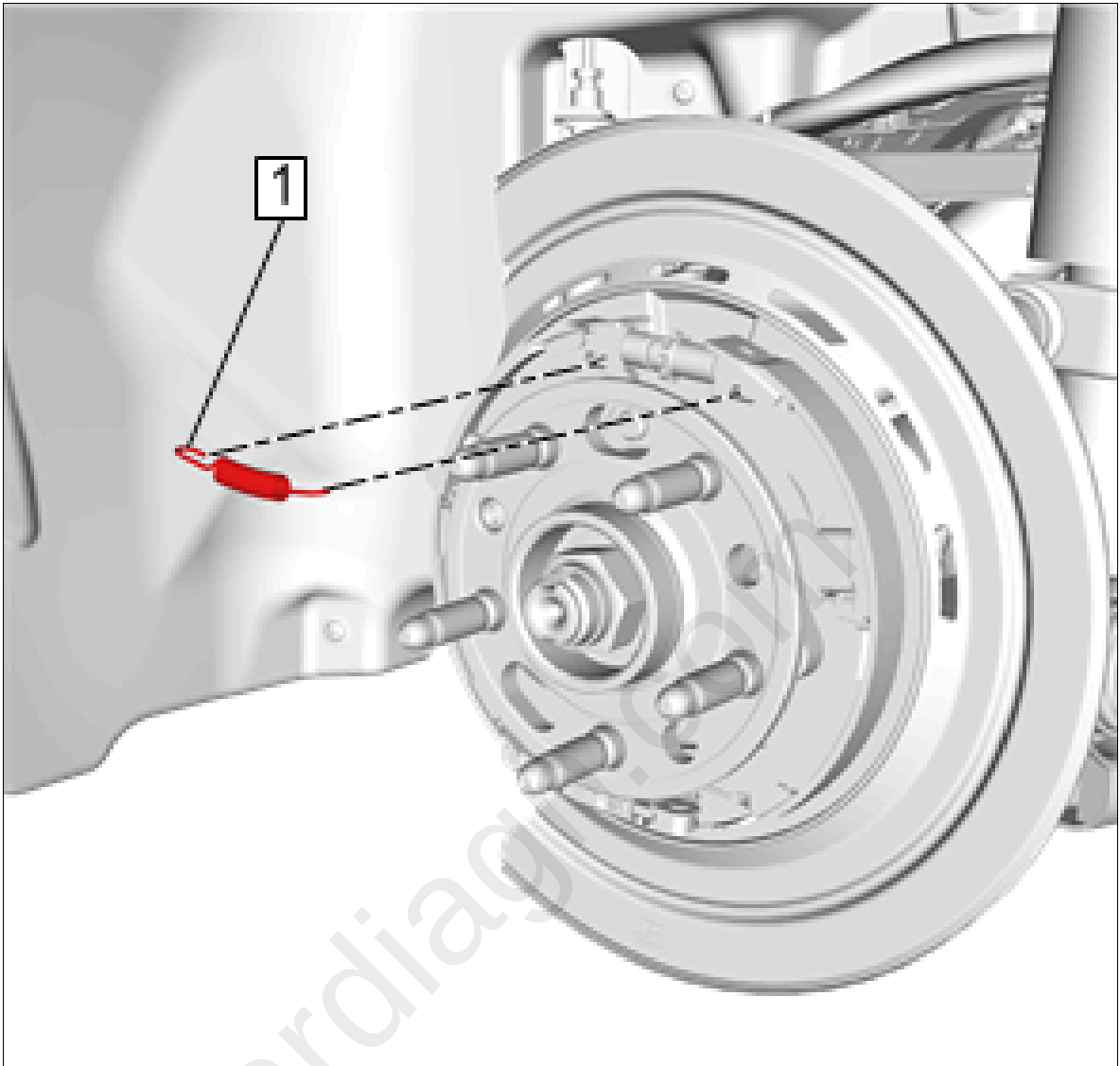
Fig 4: Rear Parking Brake Adjuster



Courtesy of GENERAL MOTORS COMPANY

5. Install Rear Parking Brake Adjuster (1)

Fig 5: Rear Parking Brake Adjuster Spring



Courtesy of GENERAL MOTORS COMPANY

6. Install Rear Parking Brake Adjuster Spring (1)
7. Adjust the parking brake. Parking Brake Adjustment
8. Install Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)

REPAIR INSTRUCTIONS > PARKING BRAKE INTERMEDIATE CABLE REPLACEMENT

Special Tools

CH-37043 Parking Brake Cable Release Tool

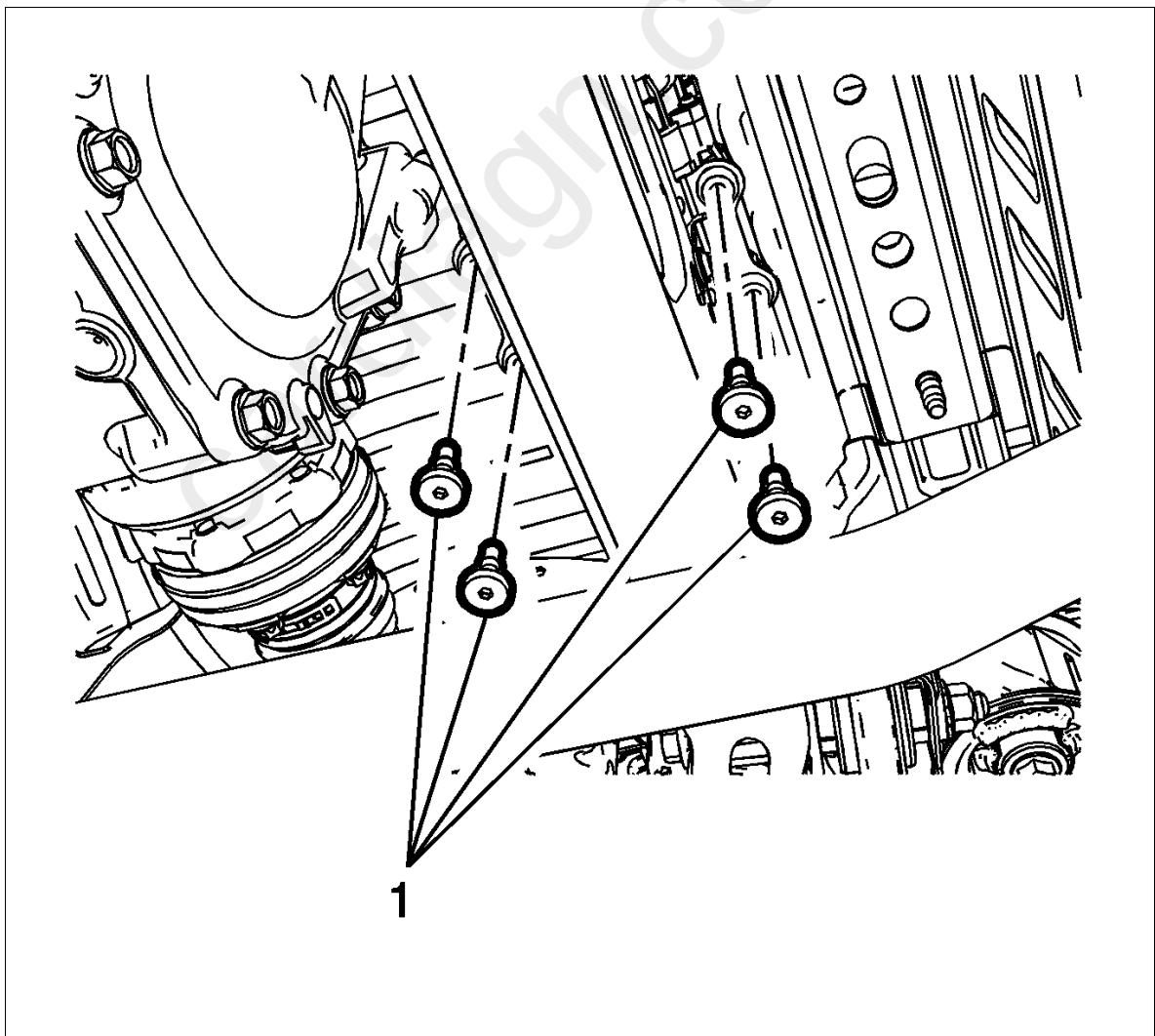
Equivalent regional tools:Special Tools

REPAIR INSTRUCTIONS > PARKING BRAKE INTERMEDIATE CABLE REPLACEMENT

> REMOVAL PROCEDURE

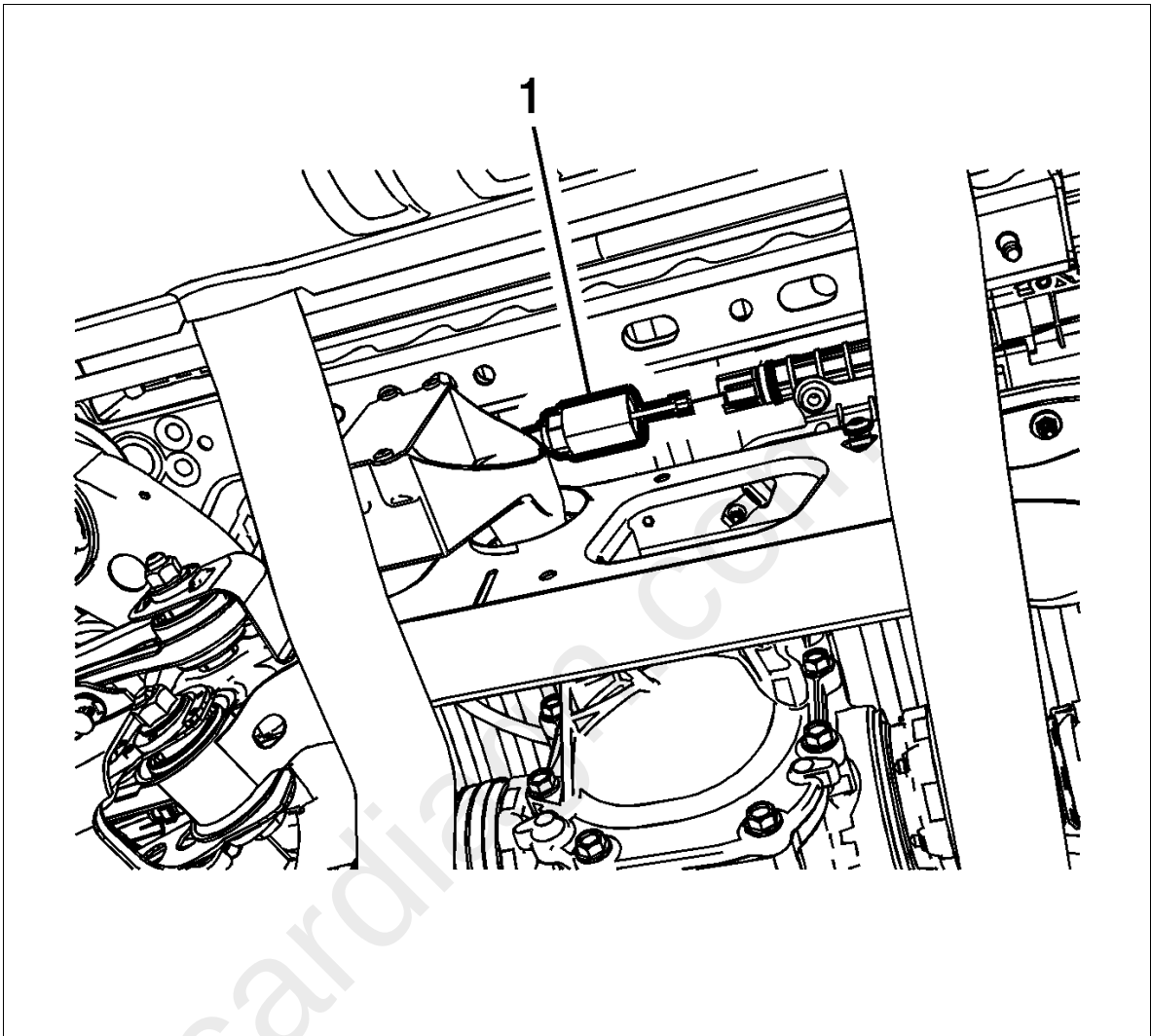
1. Block the drive wheels.
2. Disable the parking brake cable adjuster. Parking Brake Cable Adjuster Disabling
3. Place the ignition in the OFF position.
4. Raise and support the vehicle. Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP)
5. Remove the right rear tire and wheel assembly. Tire and Wheel Removal and Installation
6. Remove the right rear brake rotor. Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)
7. Remove Exhaust Muffler - Exhaust Muffler Replacement (LGX, Coupe)Exhaust Muffler Replacement (LGX, Convertible)Exhaust Muffler Replacement (LT1, Coupe)Exhaust Muffler Replacement (LT1, Convertible)Exhaust Muffler Replacement (LTG, Coupe)Exhaust Muffler Replacement (LTG, Convertible)

Fig 1: Electronic Parking Brake Control Module Bolts



8. Remove the electronic parking brake control module bolts (1).
9. Position the electronic parking brake control module to access the parking brake intermediate cable nut.

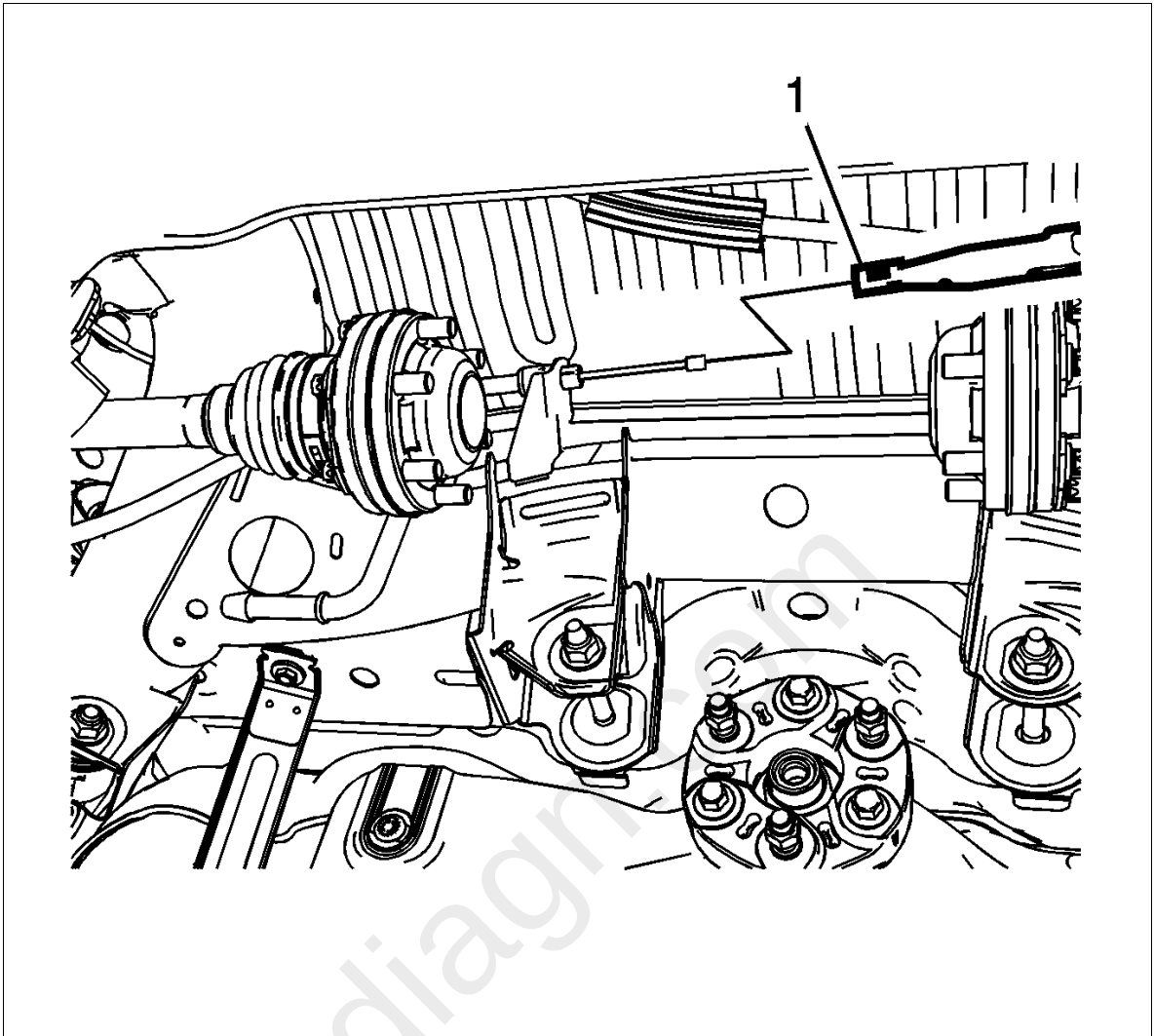
Fig 2: Parking Brake Intermediate Cable Nut



Courtesy of GENERAL MOTORS COMPANY

10. Disconnect the parking brake intermediate cable nut (1).

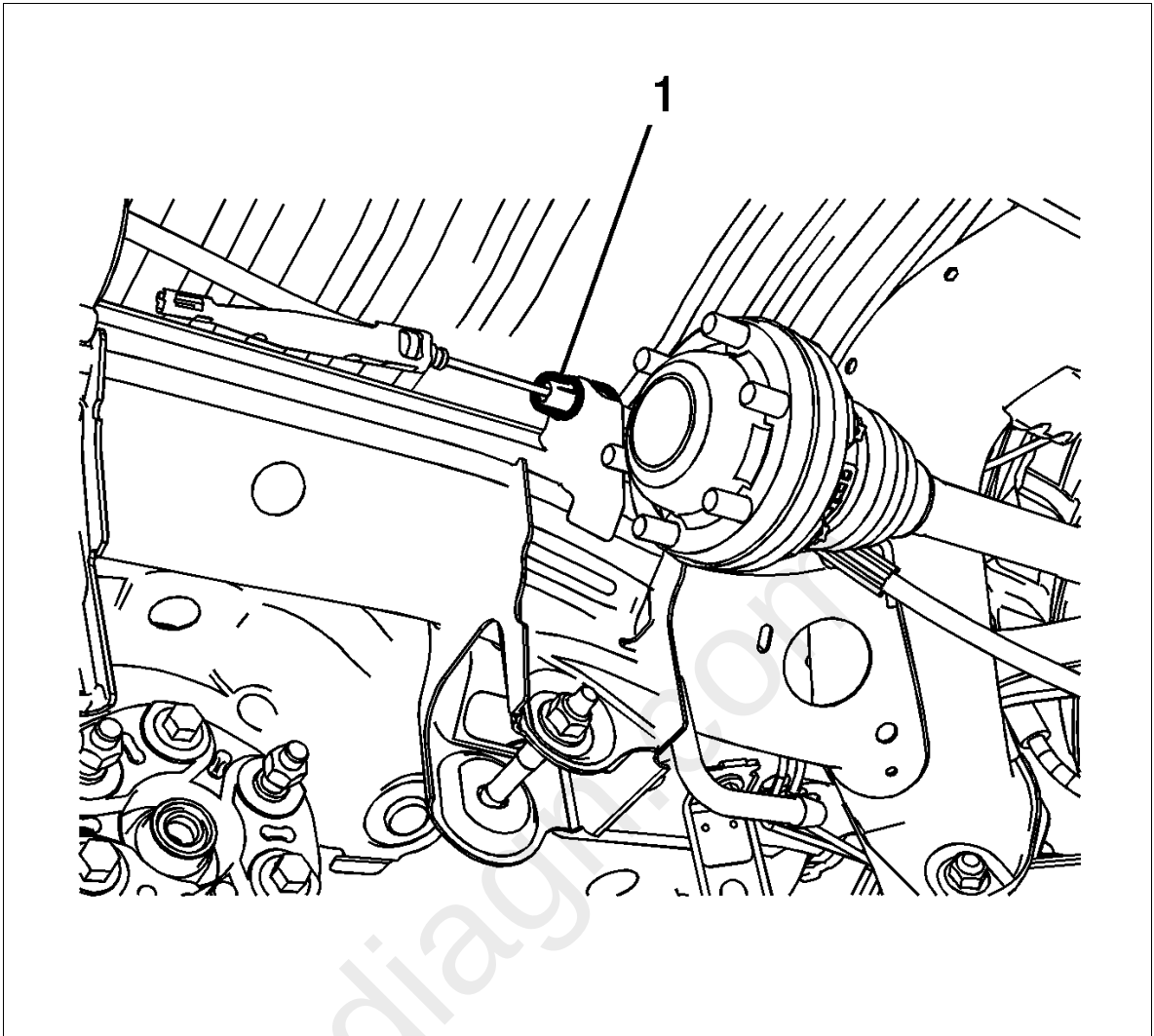
Fig 3: Rear Park Brake Cable



Courtesy of GENERAL MOTORS COMPANY

11. Disconnect the rear park brake cable (1) from the parking brake intermediate cable equalizer.

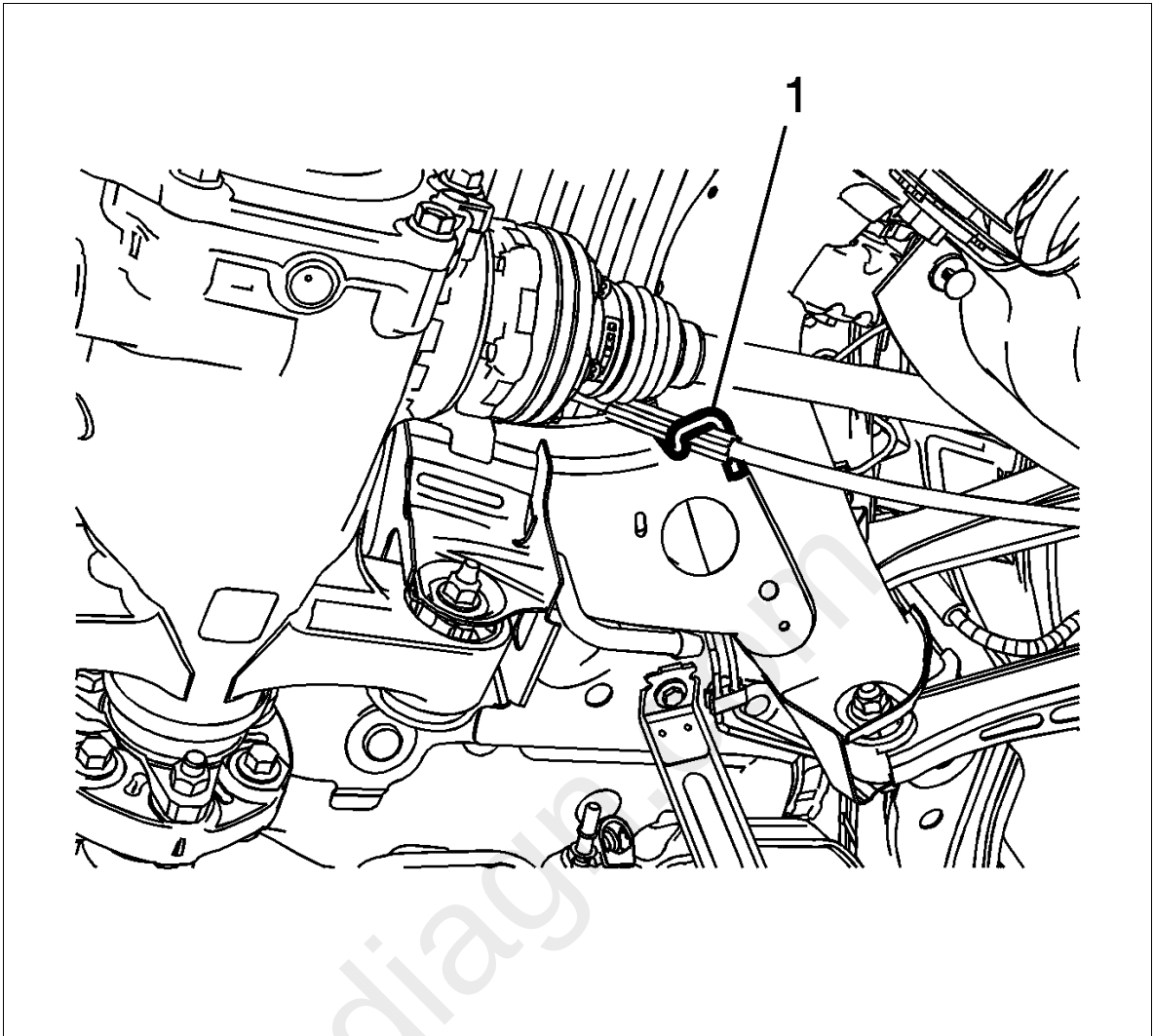
Fig 4: Parking Brake Intermediate Cable



Courtesy of GENERAL MOTORS COMPANY

12. Using the **CH-37043** Parking Brake Cable Release Tool, release the parking brake intermediate cable from the bracket on the rear frame.

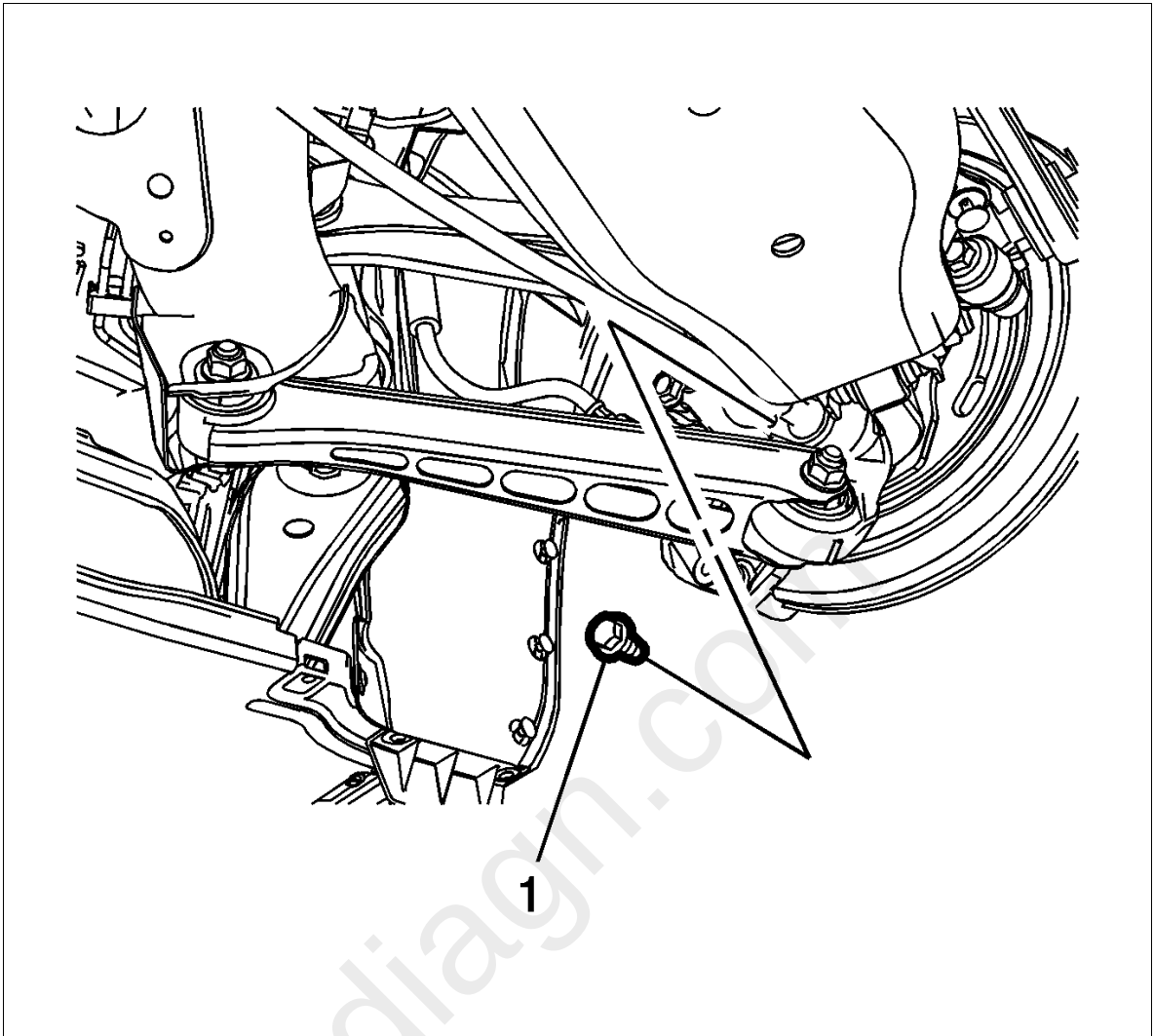
Fig 5: Parking Brake Intermediate Cable Bracket



Courtesy of GENERAL MOTORS COMPANY

13. Feed the parking brake intermediate cable through the bracket (1) on the rear frame.

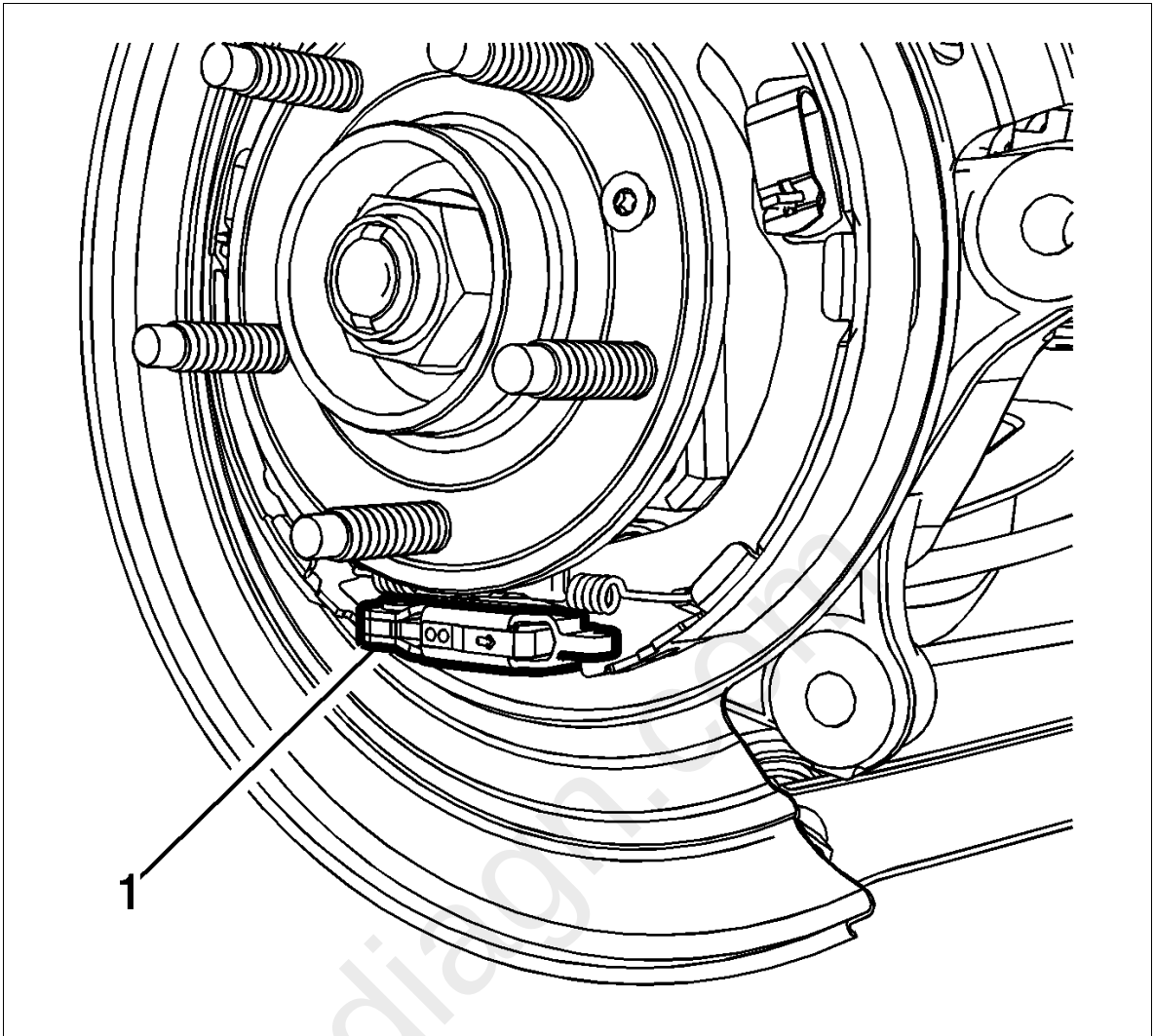
Fig 6: Parking Brake Intermediate Cable Bolt



Courtesy of GENERAL MOTORS COMPANY

14. Remove the parking brake intermediate cable bolt (1).

Fig 7: Parking Brake Shoe Actuator Lever Spring



Courtesy of GENERAL MOTORS COMPANY

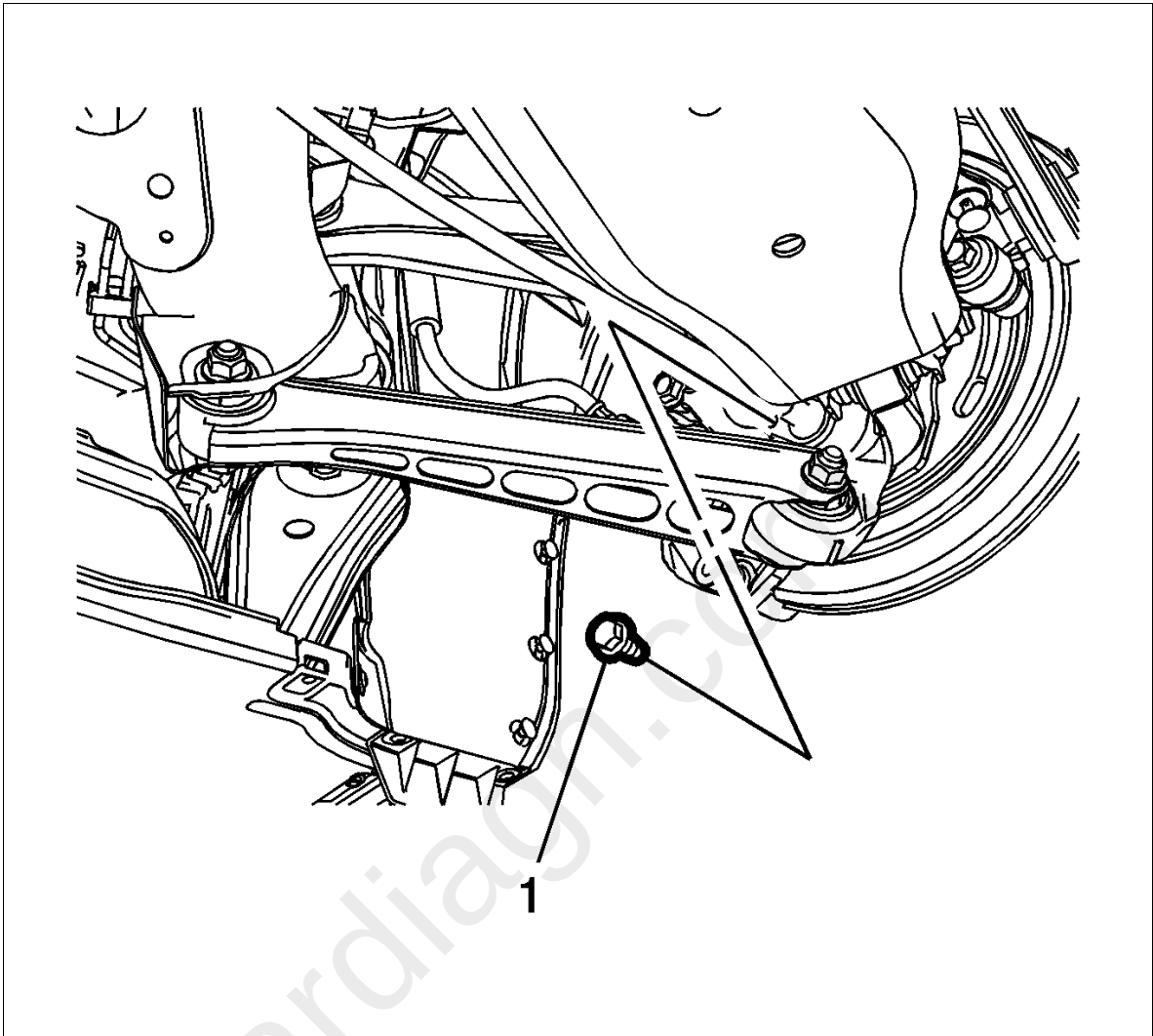
15. Lift the parking brake shoe actuator lever spring (1).
16. Using a small tool, lift the parking brake intermediate cable over and off of the parking brake cable actuator lever.
17. Remove the parking brake intermediate cable from the vehicle.

REPAIR INSTRUCTIONS > PARKING BRAKE INTERMEDIATE CABLE REPLACEMENT > INSTALLATION PROCEDURE

1. Install the parking brake intermediate cable to the vehicle.
2. Insert the parking brake intermediate cable end into the rear brake backing plate.
3. Grasp the parking brake intermediate cable and push the cable into the rear brake backing plate until the cable end seats in the parking brake shoe actuator lever.

4. Ensure the parking brake cable end is fully seated in the parking brake shoe actuator lever by attempting to pull the cable from the rear brake backing plate.

Fig 1: Parking Brake Intermediate Cable Bolt



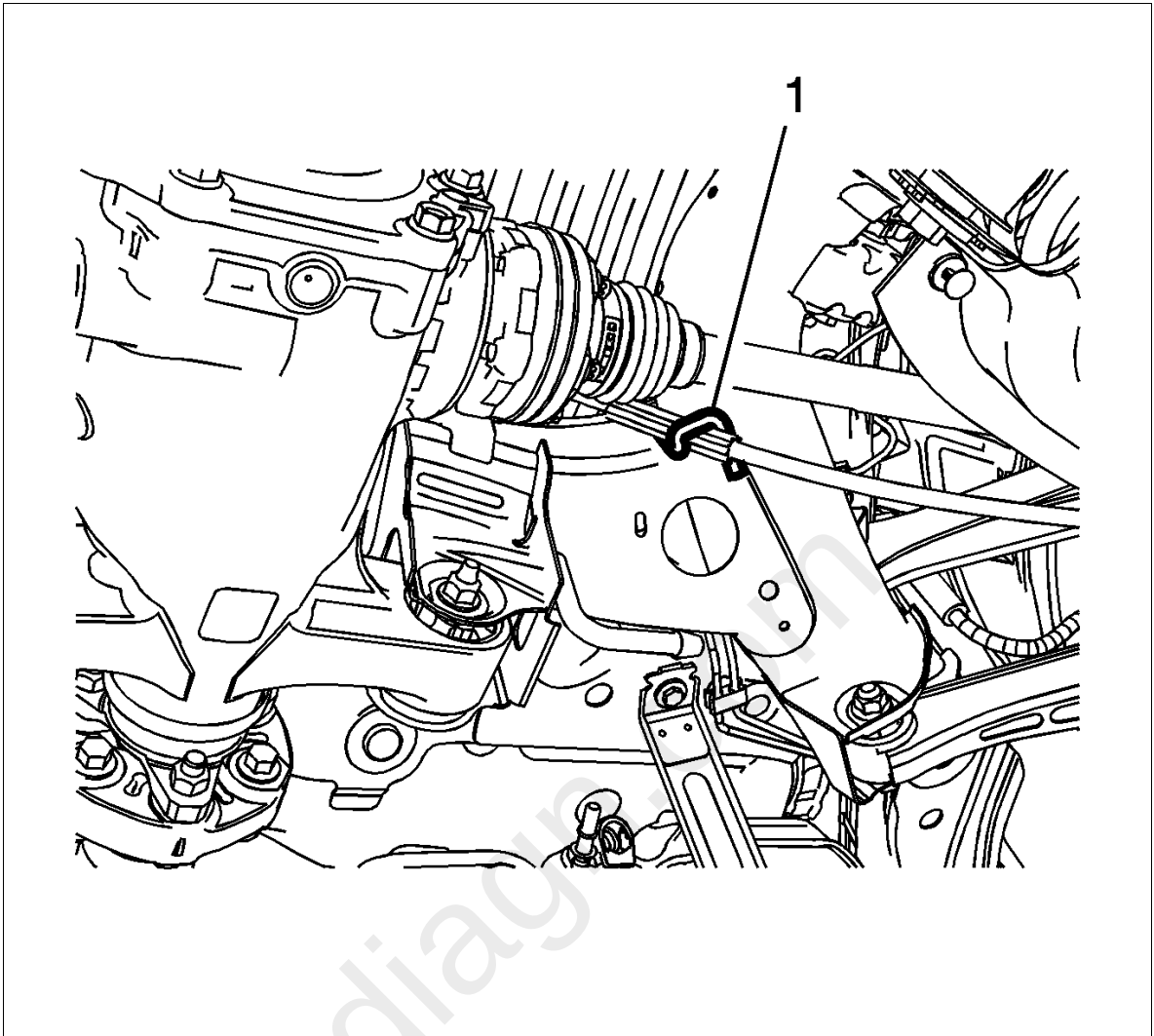
Courtesy of GENERAL MOTORS COMPANY

 **CAUTION:**

Refer to Fastener Caution .

5. Install the parking brake intermediate cable bolt (1) and tighten to 9 N.m (80 lb in).

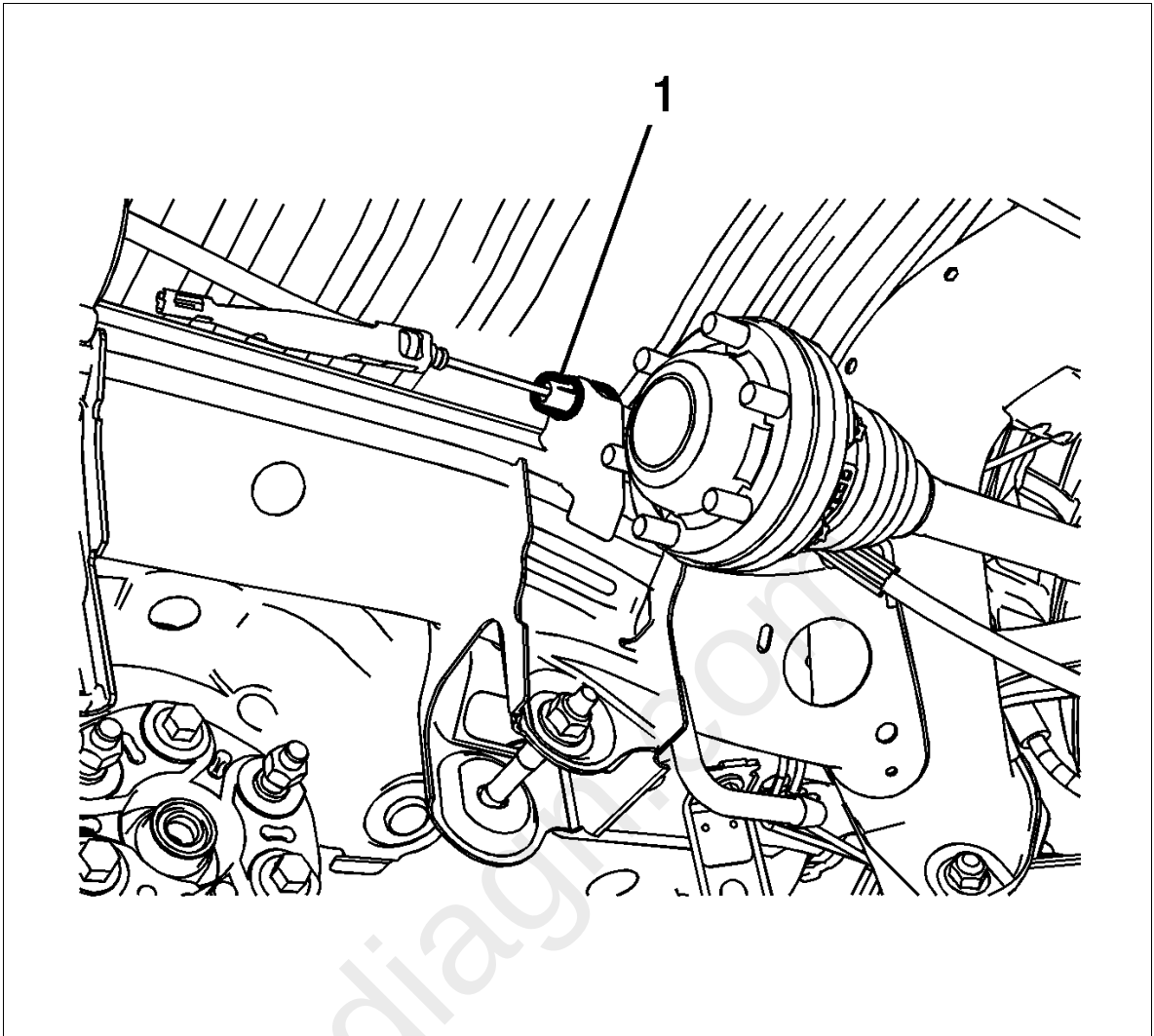
Fig 2: Parking Brake Intermediate Cable Bracket



Courtesy of GENERAL MOTORS COMPANY

6. Feed the parking brake intermediate cable through the bracket (1) on the rear frame.

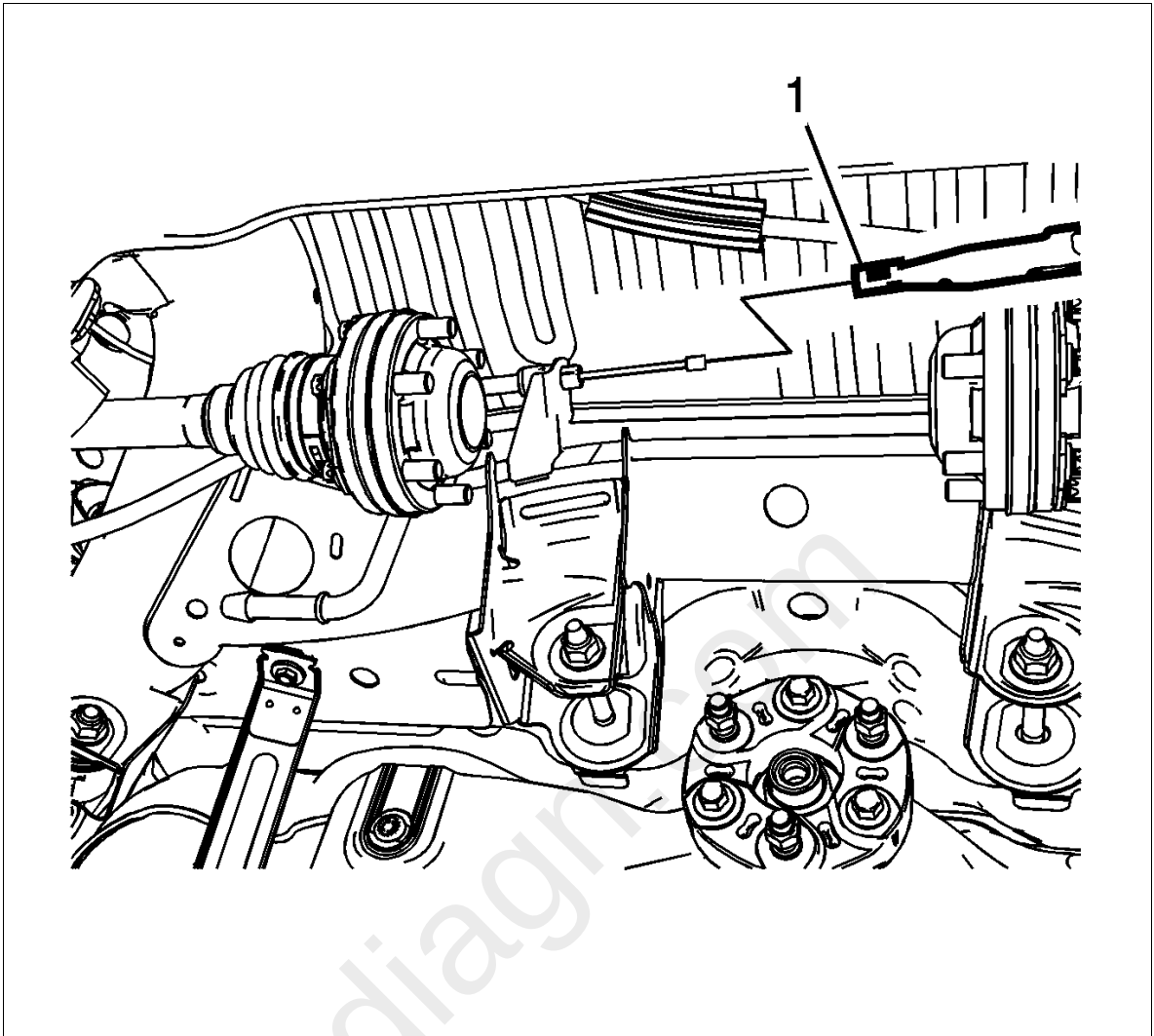
Fig 3: Parking Brake Intermediate Cable



Courtesy of GENERAL MOTORS COMPANY

7. Install the parking brake intermediate cable (1) to the bracket on the rear frame until there is an audible click.
8. Ensure the parking brake intermediate cable locking tabs are fully engaged to the parking brake cable bracket on the rear frame.

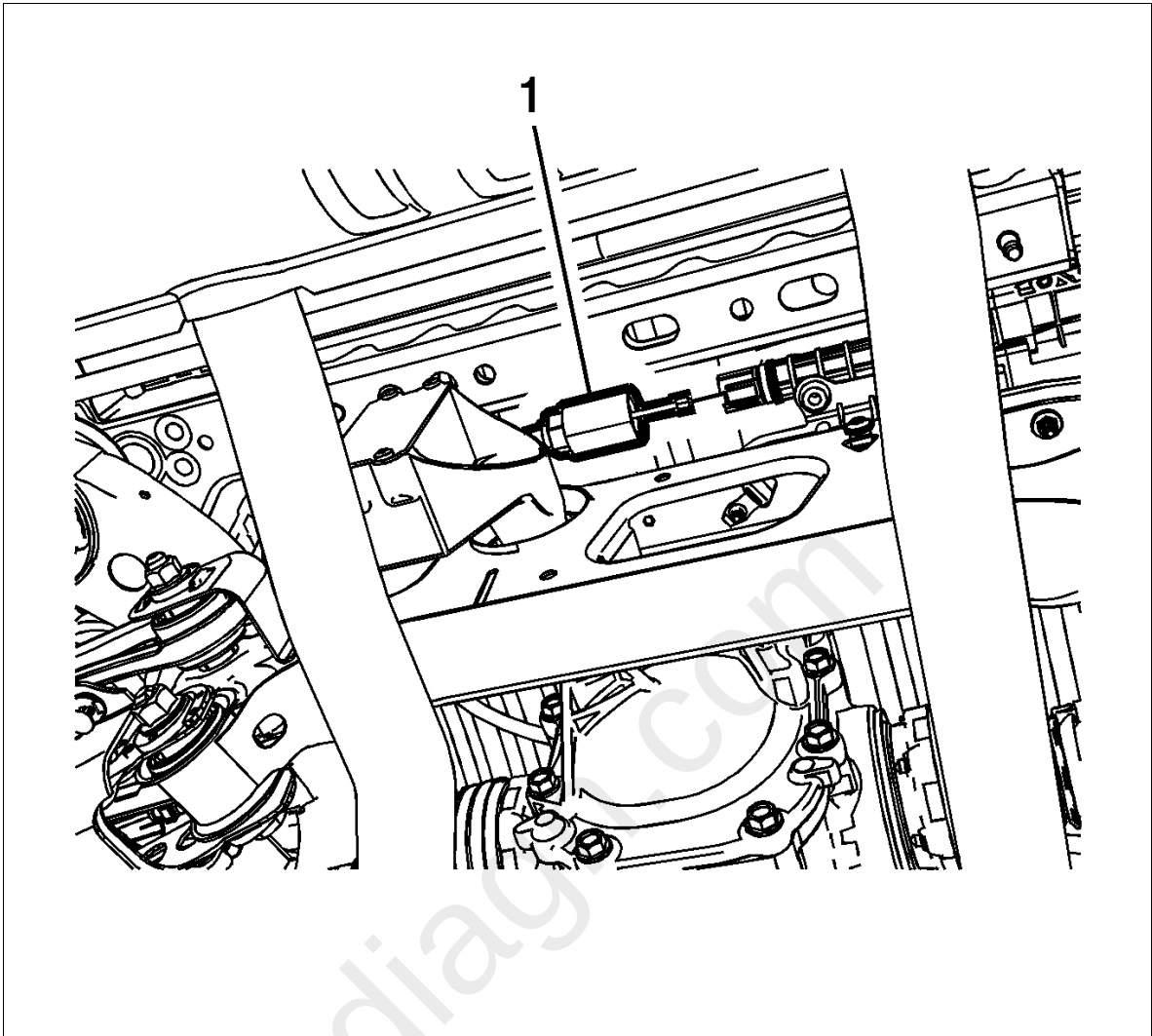
Fig 4: Rear Park Brake Cable



Courtesy of GENERAL MOTORS COMPANY

9. Connect the parking brake rear cable (1) to the intermediate parking brake cable equalizer.

Fig 5: Parking Brake Intermediate Cable Nut



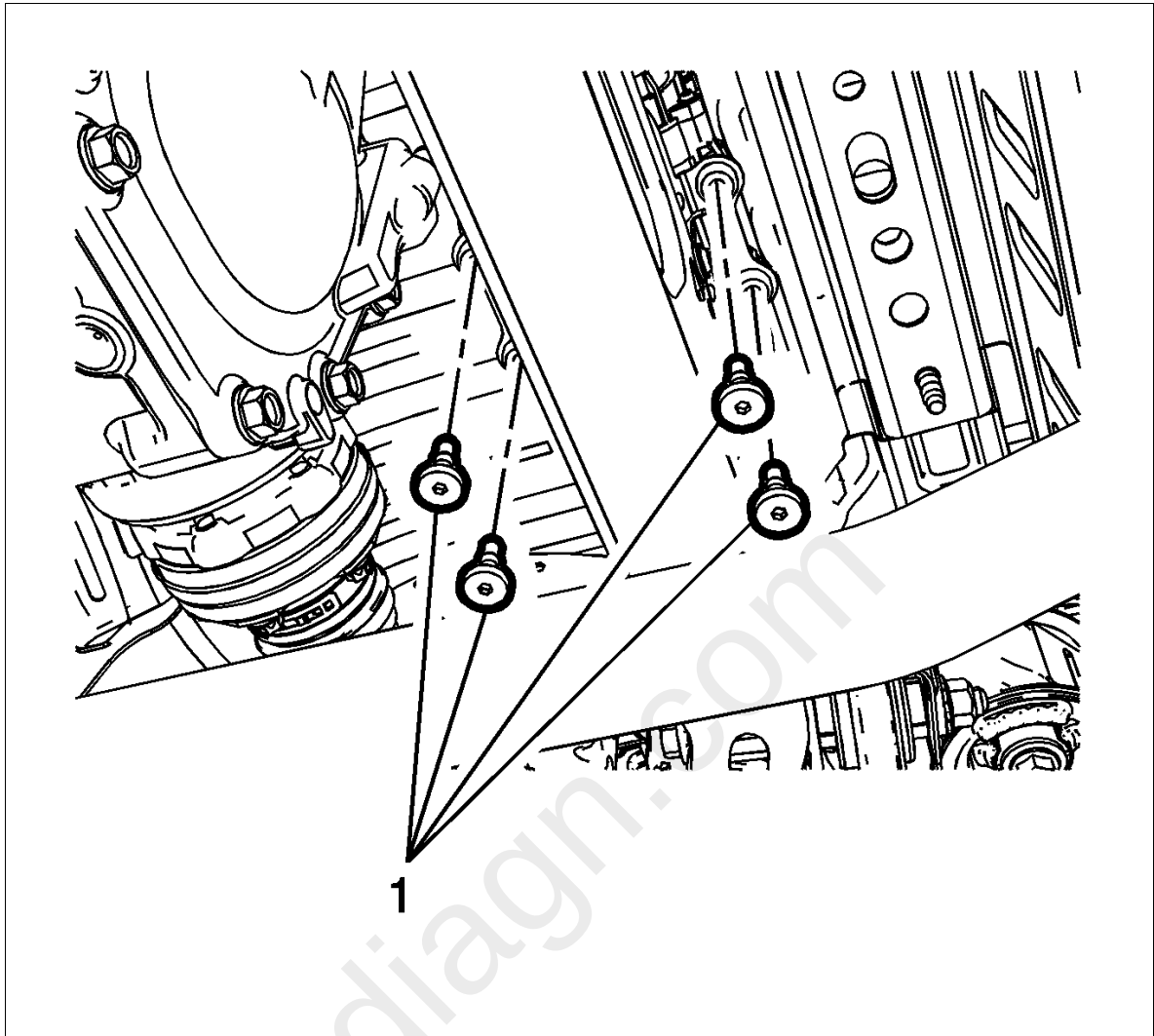
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

When installing the electronic park brake intermediate cable nut to the electronic park brake module spindle, hold the spindle housing securely to avoid distorting the housing.

10. Install the parking brake intermediate cable nut (1) and tighten to 6 N.m (53 lb in).

Fig 6: Electronic Parking Brake Control Module Bolts



Courtesy of GENERAL MOTORS COMPANY

11. Install the electronic parking brake control module bolts (1) and tighten to 7 N.m (62 lb in).
12. Install Exhaust Muffler - Exhaust Muffler Replacement (LGX, Coupe)Exhaust Muffler Replacement (LGX, Convertible)Exhaust Muffler Replacement (LT1, Coupe)Exhaust Muffler Replacement (LT1, Convertible)Exhaust Muffler Replacement (LTG, Coupe)Exhaust Muffler Replacement (LTG, Convertible)
13. Install the right rear brake rotor. Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)
14. Install the right rear tire and wheel assembly. Tire and Wheel Removal and Installation
15. Enable the parking brake cable adjuster. Parking Brake Cable Adjuster Enabling

REPAIR INSTRUCTIONS > PARKING BRAKE REAR CABLE REPLACEMENT

Special Tools

REPAIR INSTRUCTIONS > PARKING BRAKE REAR CABLE REPLACEMENT > REMOVAL PROCEDURE

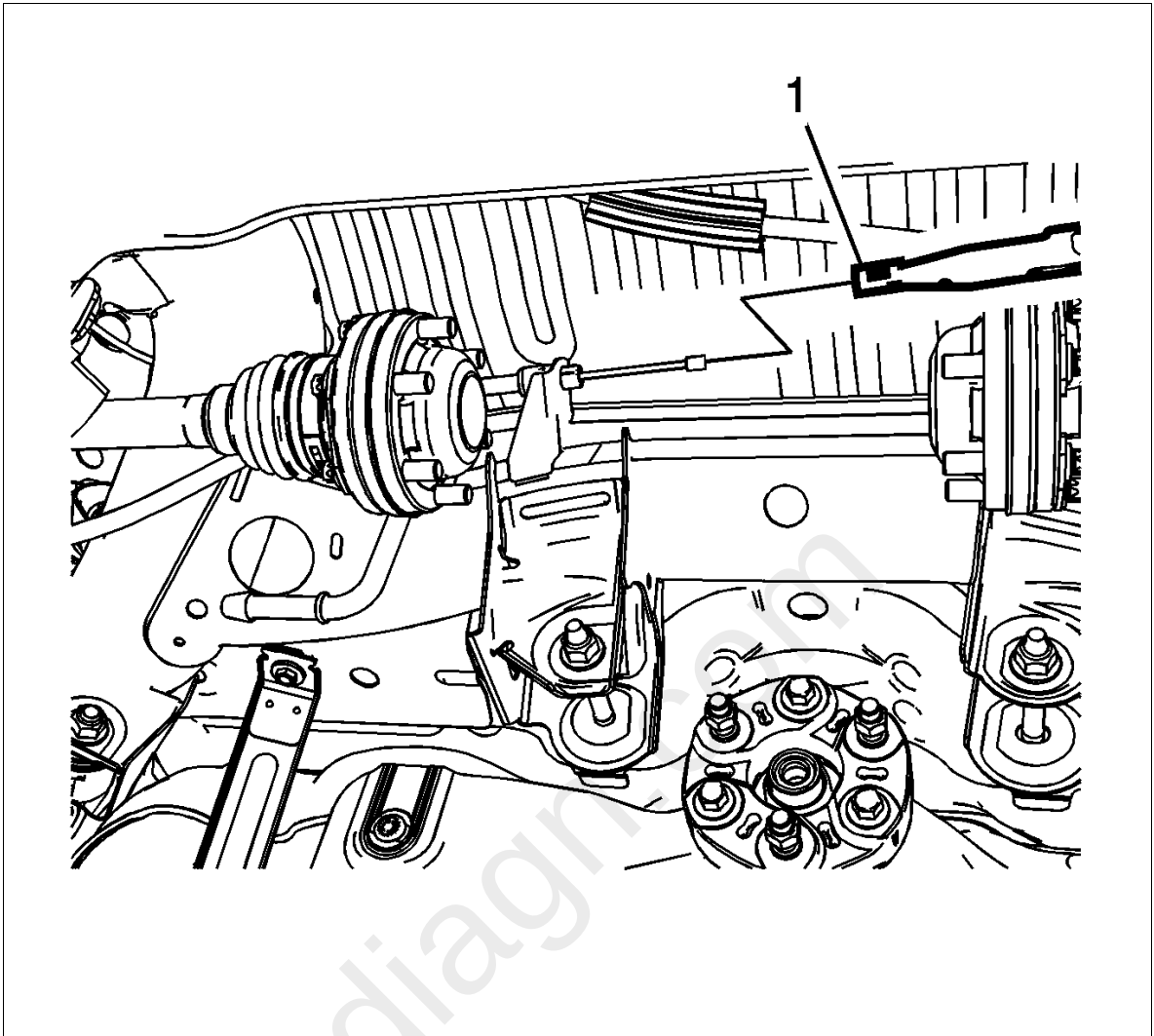


WARNING:

Refer to Brake Dust Warning .

1. Block the drive wheels.
2. Disable the parking brake cable adjuster. Parking Brake Cable Adjuster Disabling
3. Turn the ignition OFF.
4. Raise and support the vehicle. Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP)
5. Remove the left rear tire and wheel assembly. Tire and Wheel Removal and Installation
6. Remove the left rear brake rotor. Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)
7. Remove Exhaust Muffler - Exhaust Muffler Replacement (LGX, Coupe)Exhaust Muffler Replacement (LGX, Convertible)Exhaust Muffler Replacement (LT1, Coupe)Exhaust Muffler Replacement (LT1, Convertible)Exhaust Muffler Replacement (LTG, Coupe)Exhaust Muffler Replacement (LTG, Convertible)

Fig 1: Rear Park Brake Cable



Courtesy of GENERAL MOTORS COMPANY

8. Disconnect the parking brake rear cable (1) from the intermediate parking brake cable equalizer.

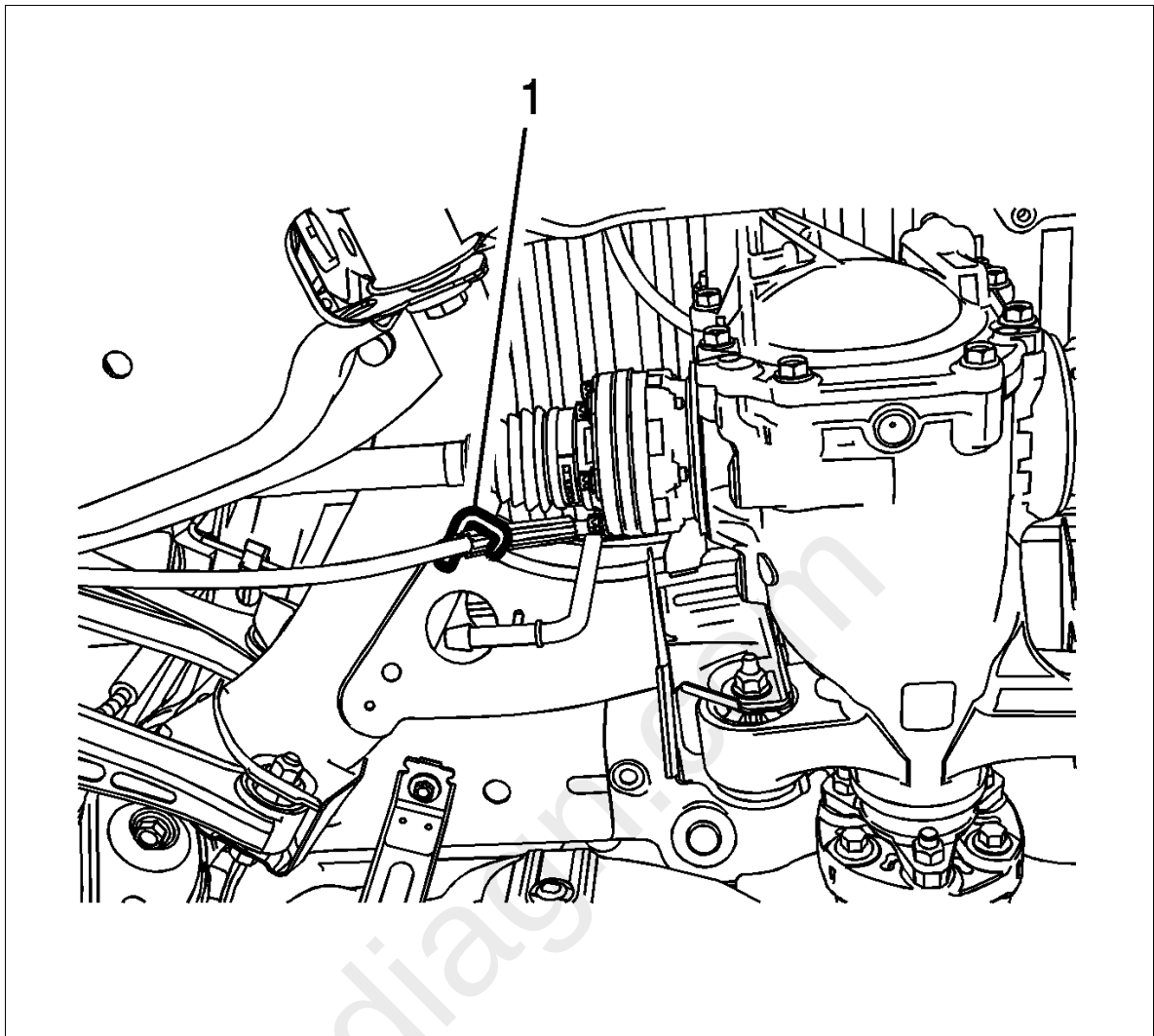
Fig 2: Rear Parking Brake Cable



Courtesy of GENERAL MOTORS COMPANY

9. Using the **CH-37043** Parking Brake Cable Release Tool, release the rear parking brake cable (1) from the bracket on the rear frame.

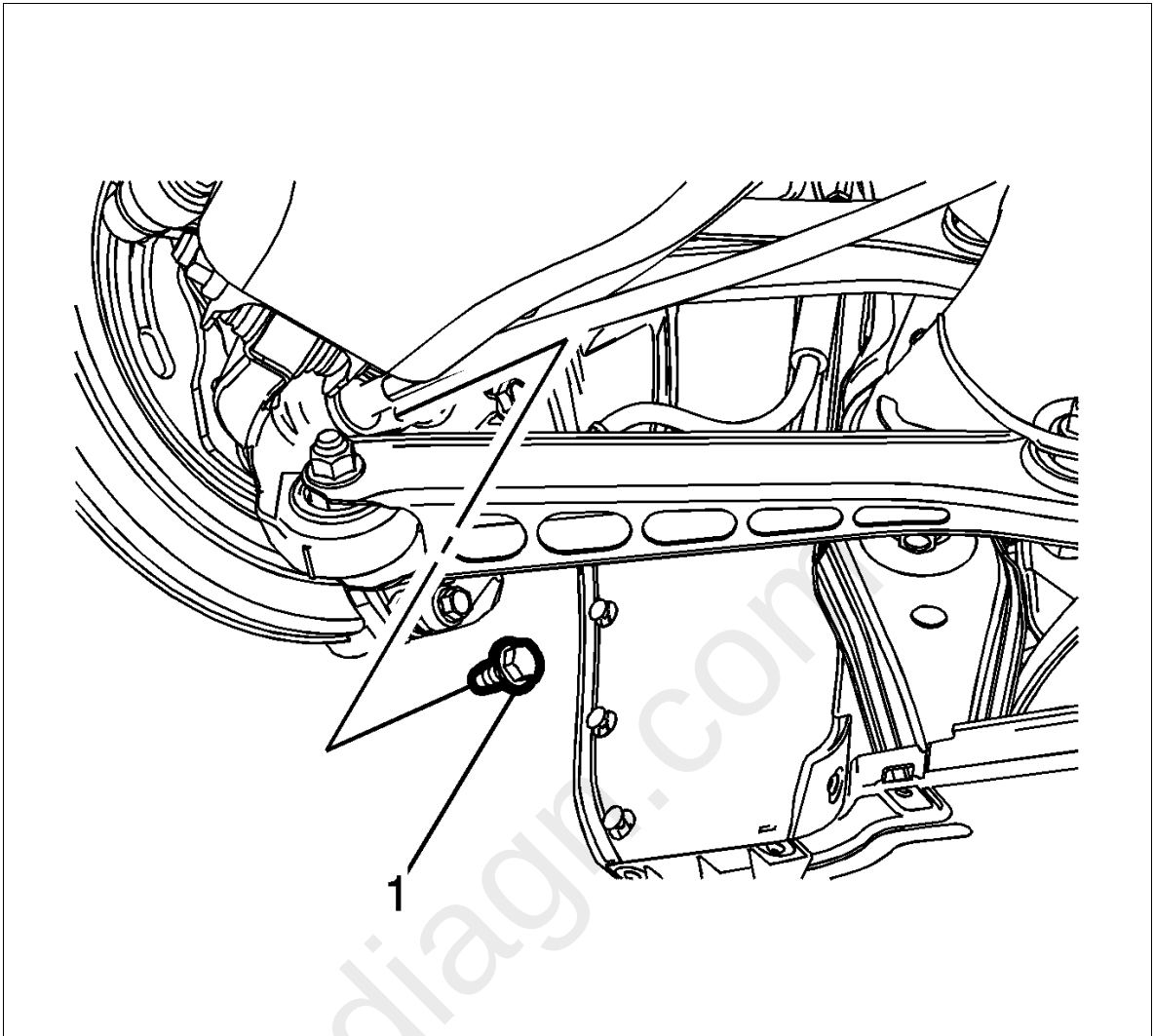
Fig 3: Rear Parking Brake Cable Bracket



Courtesy of GENERAL MOTORS COMPANY

10. Feed the rear parking brake cable through the bracket (1) on the rear frame.

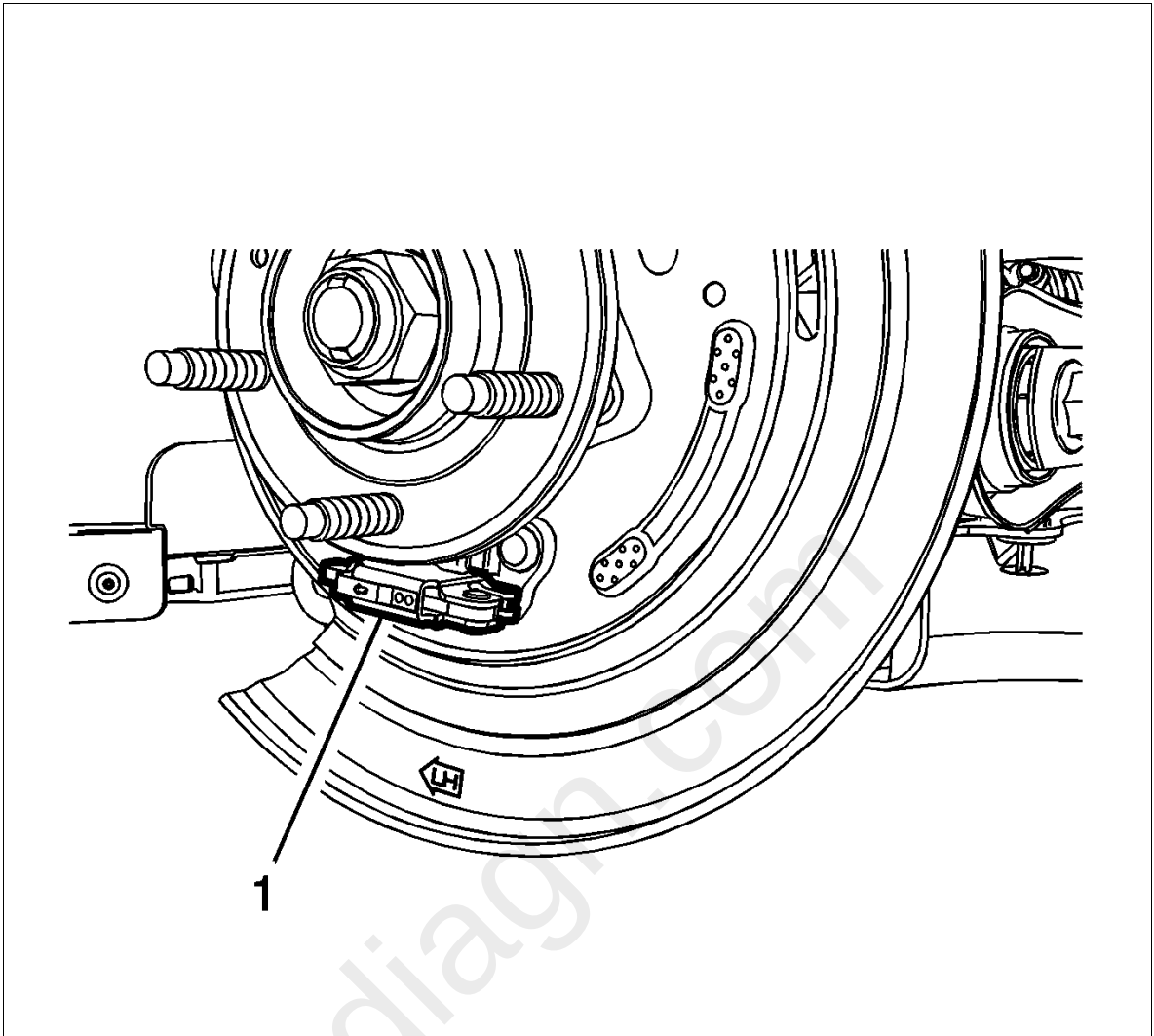
Fig 4: Parking Brake Cable Bolt



Courtesy of GENERAL MOTORS COMPANY

11. Remove the parking brake cable bolt (1).

Fig 5: Parking Brake Shoe Actuator Lever Spring



Courtesy of GENERAL MOTORS COMPANY

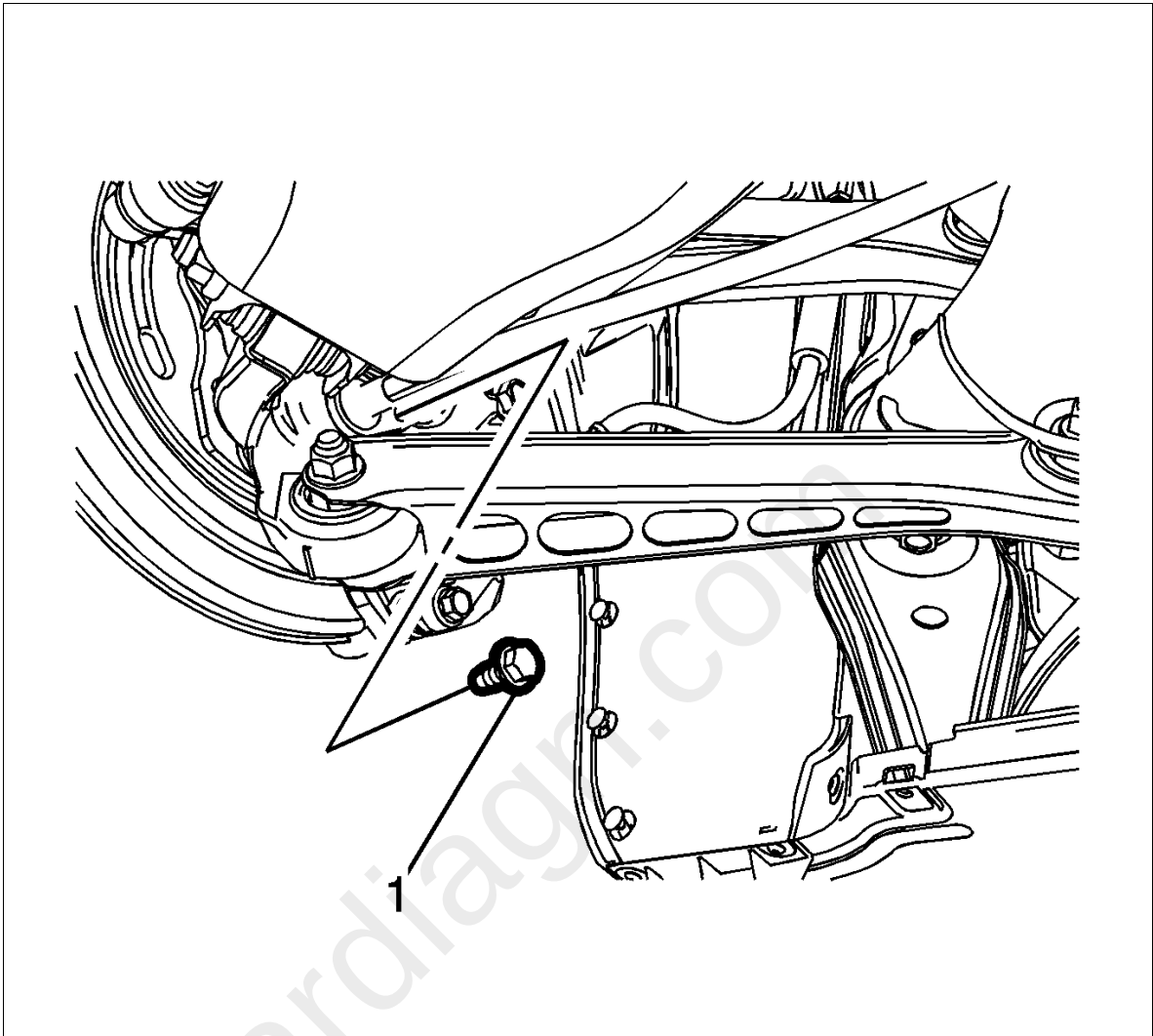
12. Lift the parking brake shoe actuator lever spring (1).
13. Using a small tool, lift the rear parking brake cable over and off of the parking brake cable actuator lever.
14. Remove the rear parking brake cable from the vehicle.

REPAIR INSTRUCTIONS > PARKING BRAKE REAR CABLE REPLACEMENT > INSTALLATION PROCEDURE

1. Install the rear parking brake cable to the vehicle.
2. Insert the rear parking brake cable end into the rear brake backing plate.
3. Grasp the rear parking brake cable and push the cable into the rear brake backing plate until the cable end seats in the parking brake shoe actuator lever.

4. Ensure the parking brake cable end is fully seated in the parking brake shoe actuator lever by attempting to pull the cable from the rear brake backing plate.

Fig 1: Parking Brake Cable Bolt



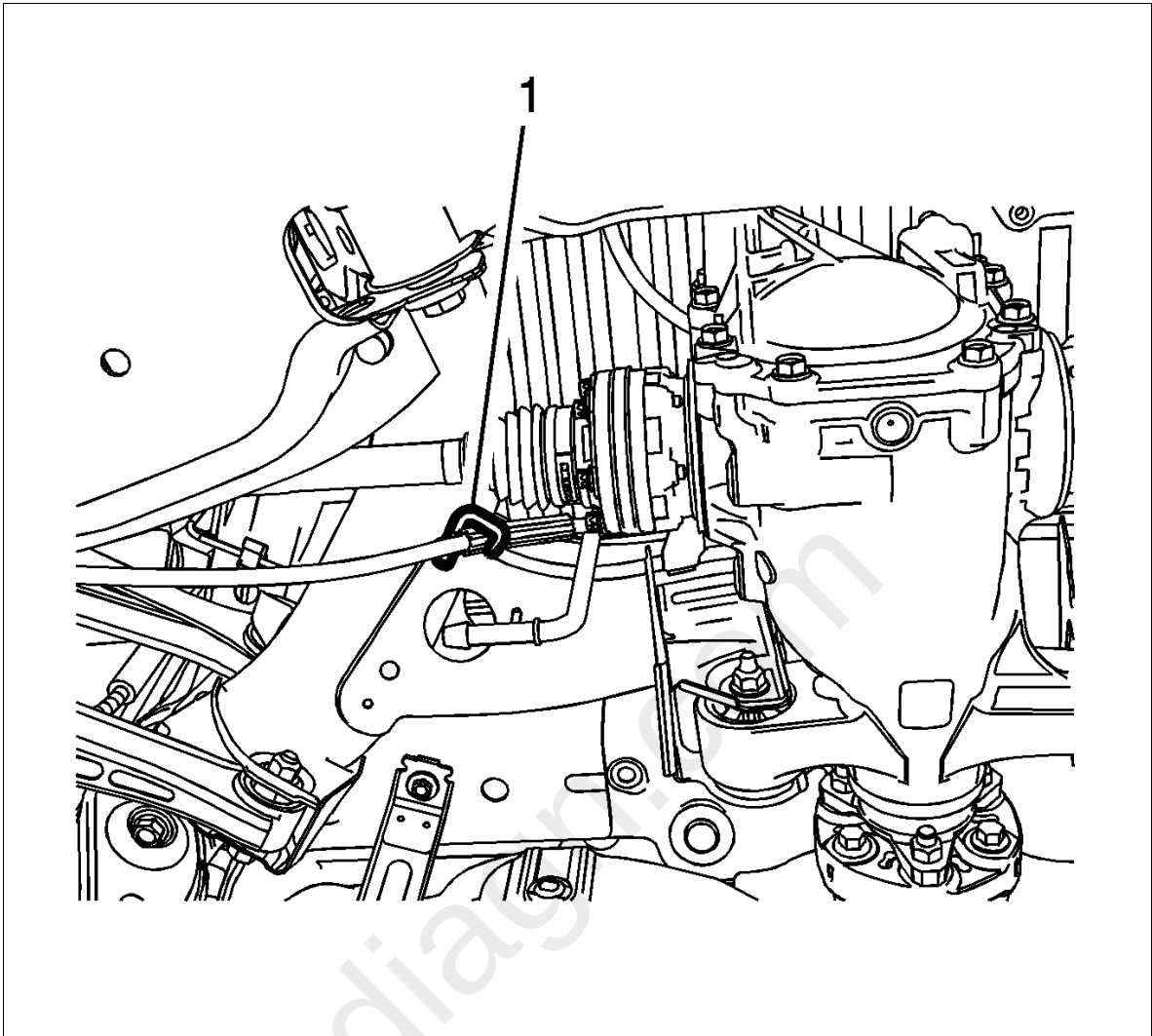
Courtesy of GENERAL MOTORS COMPANY

 **CAUTION:**

Refer to Fastener Caution .

5. Install the parking brake cable bolt (1) and tighten to 9 N.m (80 lb in).

Fig 2: Rear Parking Brake Cable Bracket



Courtesy of GENERAL MOTORS COMPANY

6. Feed the rear parking brake cable through the bracket (1) on the rear frame.

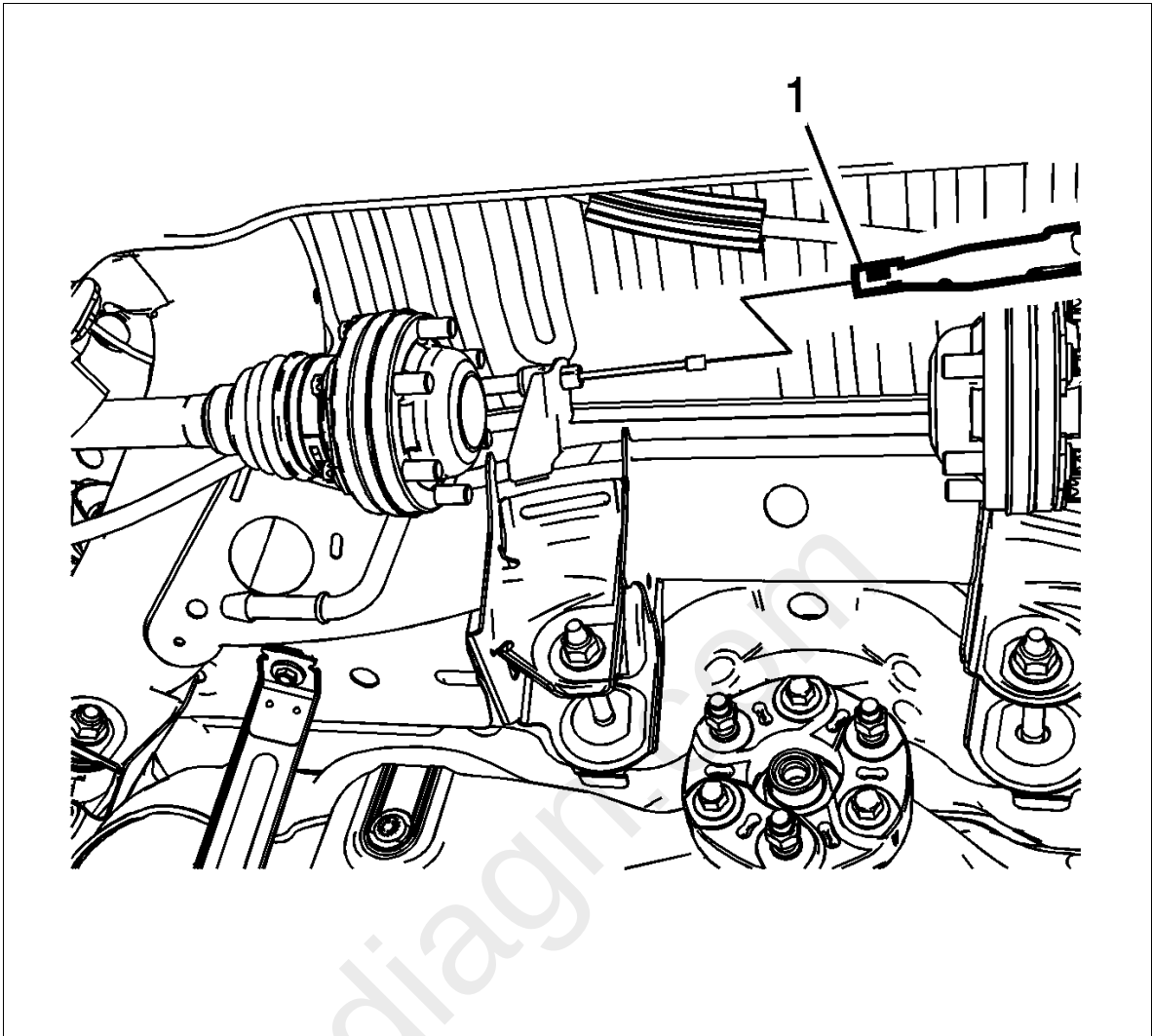
Fig 3: Rear Parking Brake Cable



Courtesy of GENERAL MOTORS COMPANY

7. Install the rear parking brake cable (1) to the bracket on the rear frame until there is an audible click.
8. Ensure the rear parking brake cable locking tabs are fully engaged to the parking brake cable bracket on the rear frame.

Fig 4: Rear Park Brake Cable



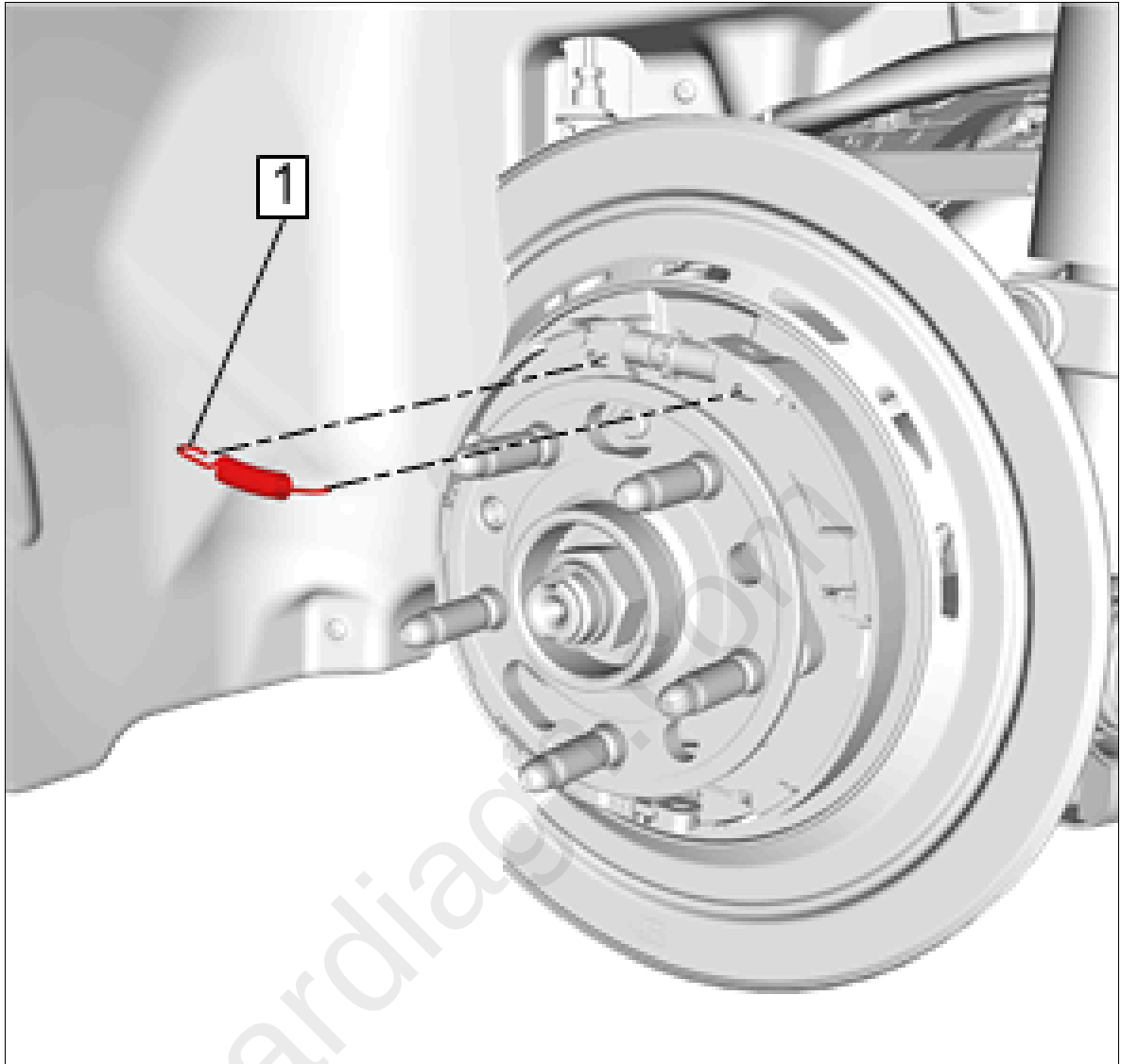
Courtesy of GENERAL MOTORS COMPANY

9. Connect the parking brake rear cable (1) to the intermediate parking brake cable equalizer.
10. Install Exhaust Muffler - Exhaust Muffler Replacement (LGX, Coupe)Exhaust Muffler Replacement (LGX, Convertible)Exhaust Muffler Replacement (LT1, Coupe)Exhaust Muffler Replacement (LT1, Convertible)Exhaust Muffler Replacement (LTG, Coupe)Exhaust Muffler Replacement (LTG, Convertible)
11. Install the left rear brake rotor. Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)
12. Install the left rear tire and wheel assembly. Tire and Wheel Removal and Installation
13. Enable the parking brake cable adjuster. Parking Brake Cable Adjuster Enabling

REPAIR INSTRUCTIONS > REAR PARKING BRAKE ADJUSTER REPLACEMENT > REMOVAL PROCEDURE

1. Remove Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)

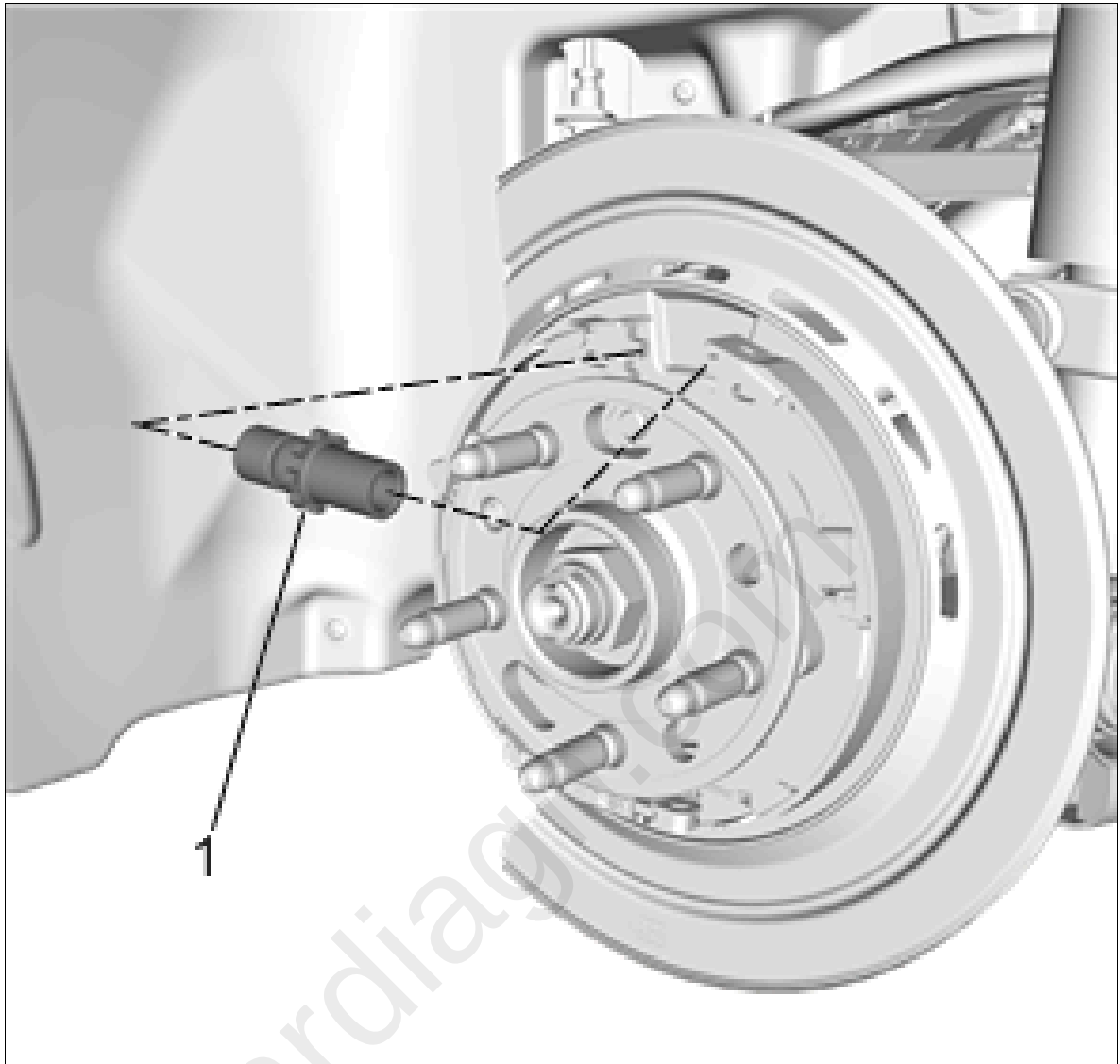
Fig 1: Rear Parking Brake Adjuster Spring



Courtesy of GENERAL MOTORS COMPANY

2. Remove Rear Parking Brake Adjuster Spring (1)

Fig 2: Rear Parking Brake Adjuster

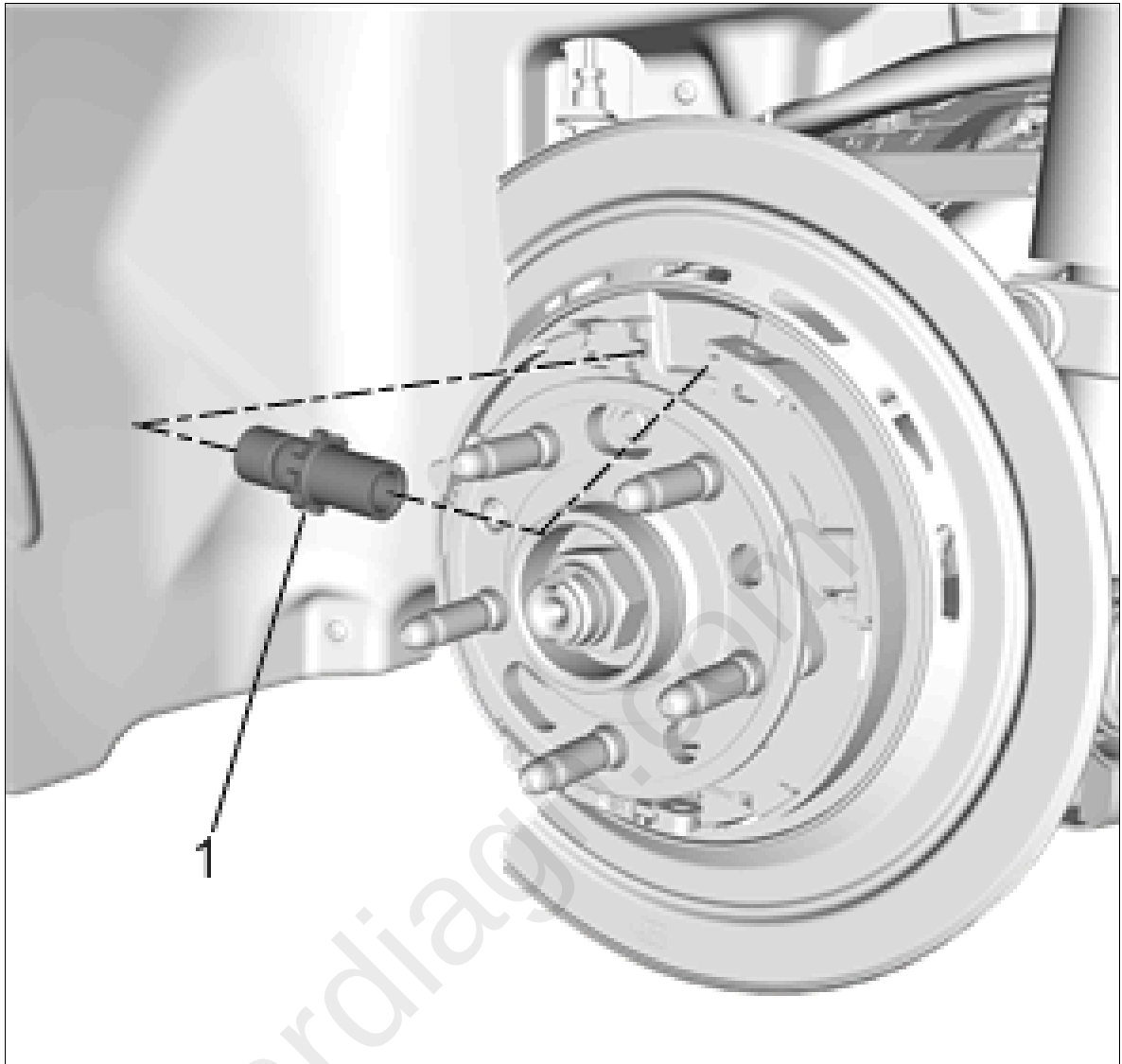


Courtesy of GENERAL MOTORS COMPANY

3. Remove Rear Parking Brake Adjuster (1)

**REPAIR INSTRUCTIONS > REAR PARKING BRAKE ADJUSTER REPLACEMENT >
INSTALLATION PROCEDURE**

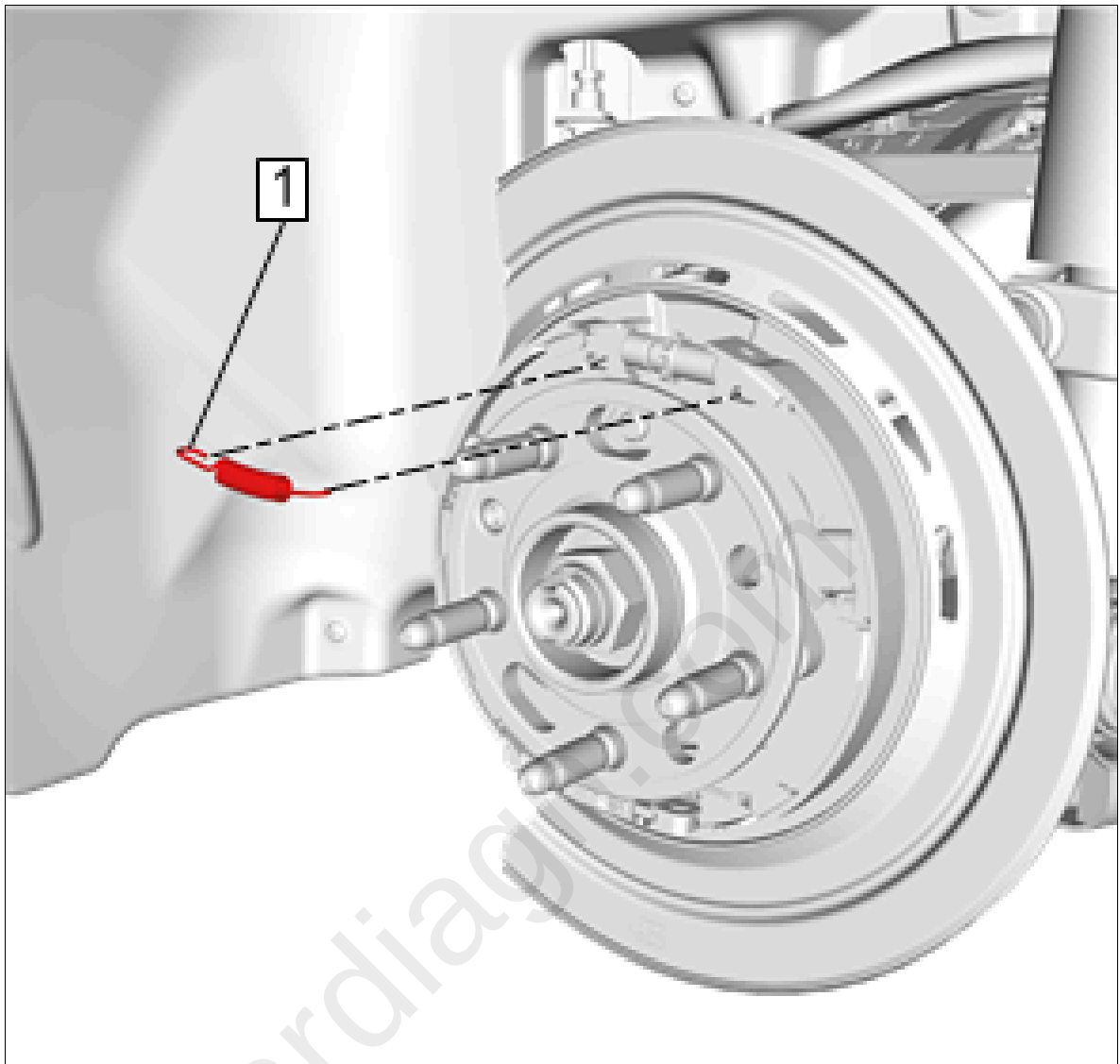
Fig 1: Rear Parking Brake Adjuster



Courtesy of GENERAL MOTORS COMPANY

1. Install Rear Parking Brake Adjuster (1)

Fig 2: Rear Parking Brake Adjuster Spring



Courtesy of GENERAL MOTORS COMPANY

2. Install Rear Parking Brake Adjuster Spring (1)
3. Adjust the parking brake. Parking Brake Adjustment
4. Install Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)

REPAIR INSTRUCTIONS > PARKING BRAKE CABLE ADJUSTER DISABLING

The park brake cable tension is controlled by the electronic park brake (EPB) module. Tension can be fully released from the park brake cables to allow for service of the park brake system. Perform one of the following three methods to fully release cable tension.

REPAIR INSTRUCTIONS > PARKING BRAKE CABLE ADJUSTER DISABLING >

ELECTRONIC PARKING BRAKE CABLE TENSION RELEASE

With Scan Tool - Preferred Method

1. Block the drive wheels.
2. Install a scan tool to the vehicle.
3. Turn the ignition switch to the ON/RUN position with the engine OFF.
4. Select Control Functions from the electronic parking brake control module menu.
5. Follow the instructions on the scan tool.

Without Scan Tool - Optional Method

1. Block the drive wheels.
2. Turn the ignition switch to the ON/RUN position with the engine OFF.
3. Place the automatic transmission in PARK or manual transmission in NEUTRAL, as equipped.
4. Apply and hold the brake pedal. The brake pedal must remain applied throughout the park brake cable tension release process.
5. Press and hold down the electronic park brake (EPB) switch approximately 10 seconds.
6. Observe the PARK BRAKE lamp on the instrument cluster.
7. When the PARK BRAKE lamp flashes, release then immediately press and release the EPB switch.

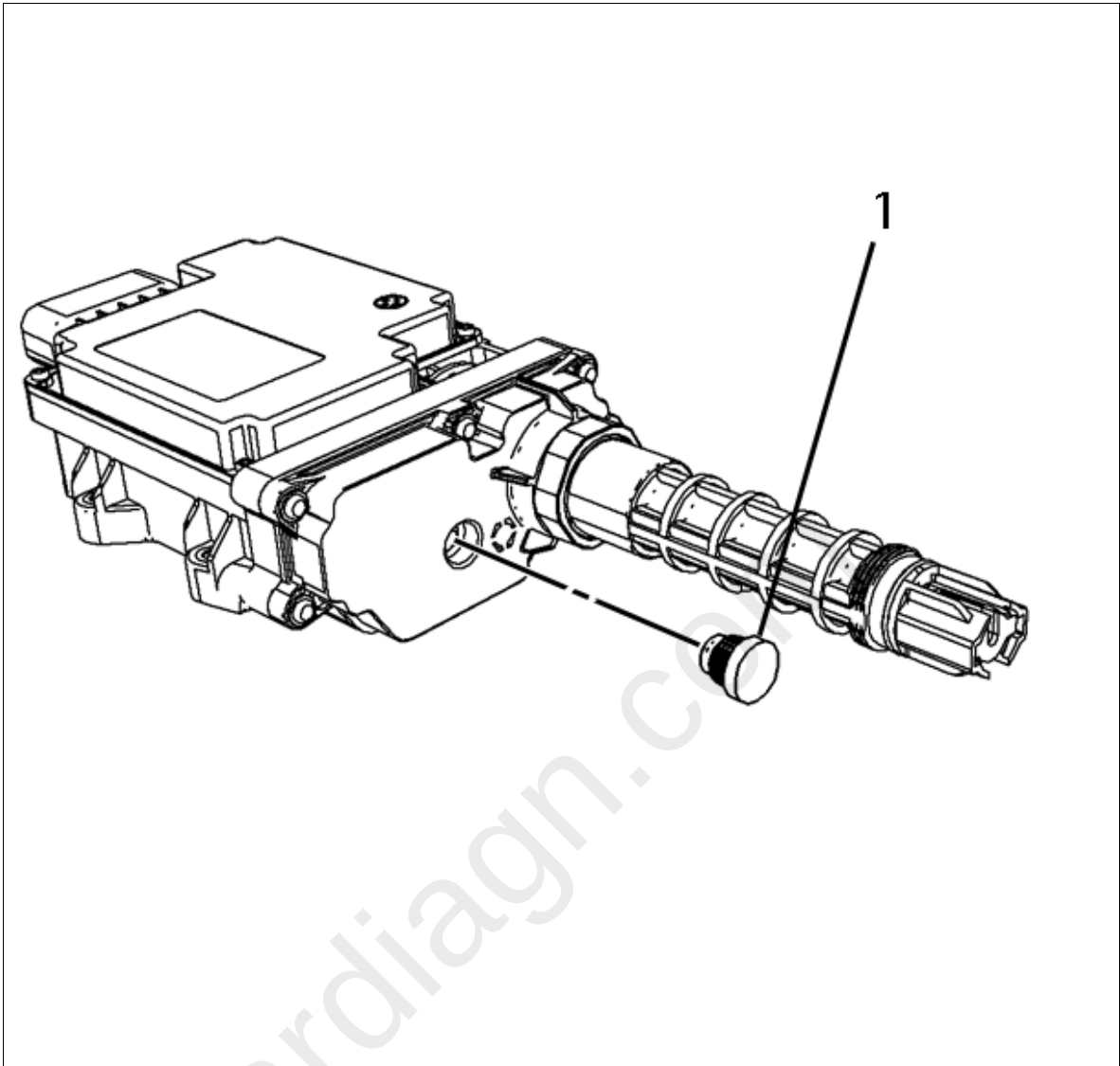
The parking brake cable tension is fully released.
8. Release the brake pedal.

REPAIR INSTRUCTIONS > PARKING BRAKE CABLE ADJUSTER DISABLING > MANUAL PARKING BRAKE CABLE TENSION RELEASE

In the event the above methods to release the parking brake cable tension are unsuccessful, the following procedure may be necessary to release the parking brake cable tension.

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP) .
2. Reposition the electronic parking brake control module. Refer to Electronic Parking Brake Control Module Replacement .

Fig 1: EPB Manual Release Protective Plug



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

The protective plug for the manual release is located near the cable spindle.

3. Remove the protective plug (1) from the EPB manual release.

 NOTE:

Do NOT use power tools or exceed 5 N.m (44 lb in) of force to rotate the release mechanism. Excessive force can damage the EPB module gear drive mechanism.

4. Using an appropriate tool, rotate the mechanism clockwise until the tension is fully released

from the parking brake cables.

Up to 50 cycles may be required until the parking brake cable tension is fully released.

5. Install the protective plug to the EPB module.

REPAIR INSTRUCTIONS > PARKING BRAKE CABLE ADJUSTER ENABLING

The park brake cable tension is controlled by the electronic park brake (EPB) module. Cable tension needs to be set and the EPB module needs to be calibrated following the cable tension disabling procedure. Perform one of the following two methods to fully restore cable tension.

REPAIR INSTRUCTIONS > PARKING BRAKE CABLE ADJUSTER ENABLING > ELECTRONIC PARKING BRAKE CABLE TENSIONING

1. Block the drive wheels.
2. Install a scan tool to the vehicle.
3. Turn the ignition switch to the ON/RUN position with the engine OFF.
4. Select Configuration/Reset Functions from the electronic parking brake control module menu.
5. Perform the parking brake calibration procedure. Refer to Electronic Parking Brake Control Module Programming and Setup .

REPAIR INSTRUCTIONS > REAR PARKING BRAKE ACTUATOR REPLACEMENT > REMOVAL PROCEDURE

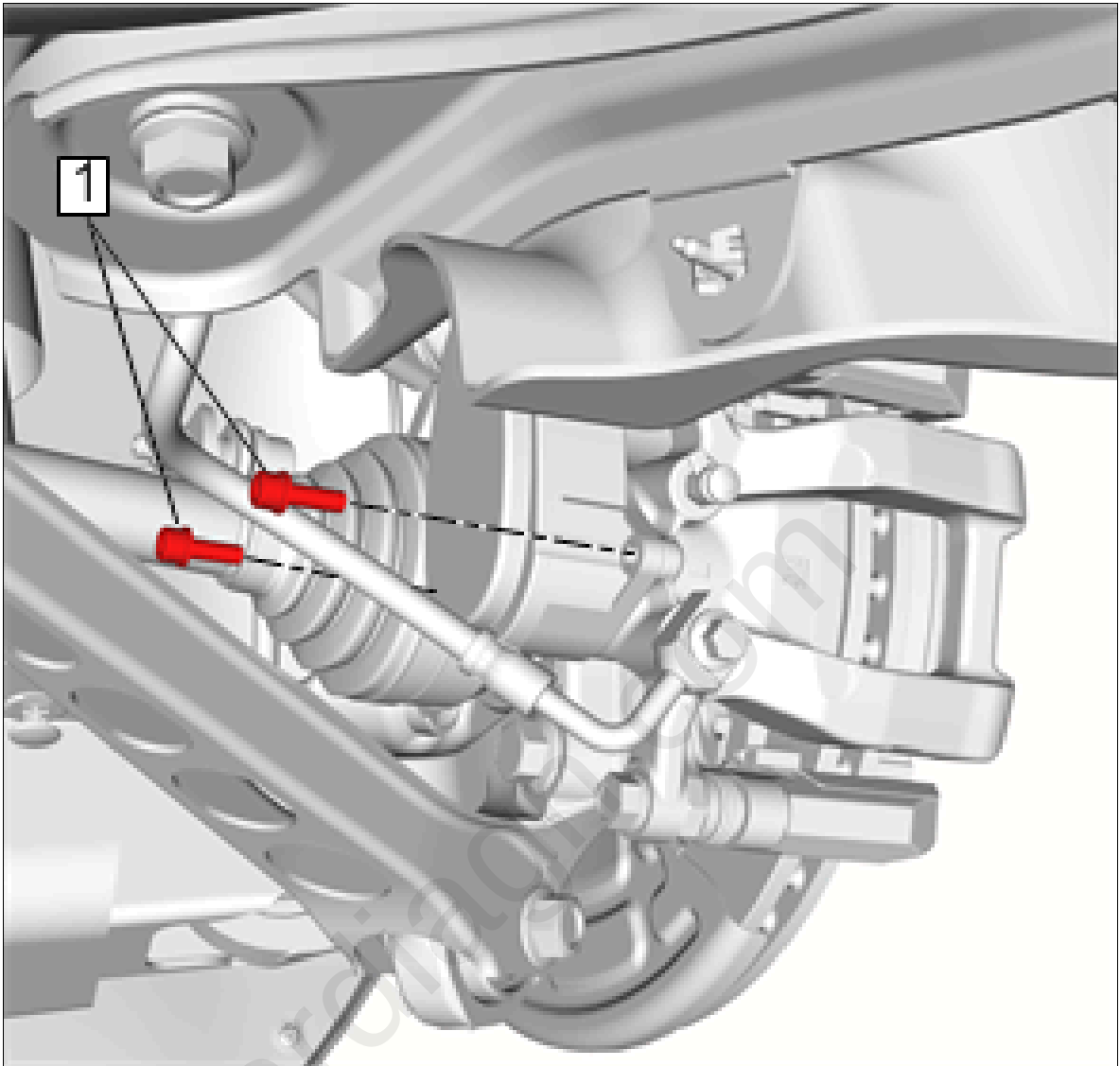


WARNING:

Brake Dust Warning

1. Raise and support the vehicle. Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP)
2. Remove the tire and wheel assembly. Tire and Wheel Removal and Installation

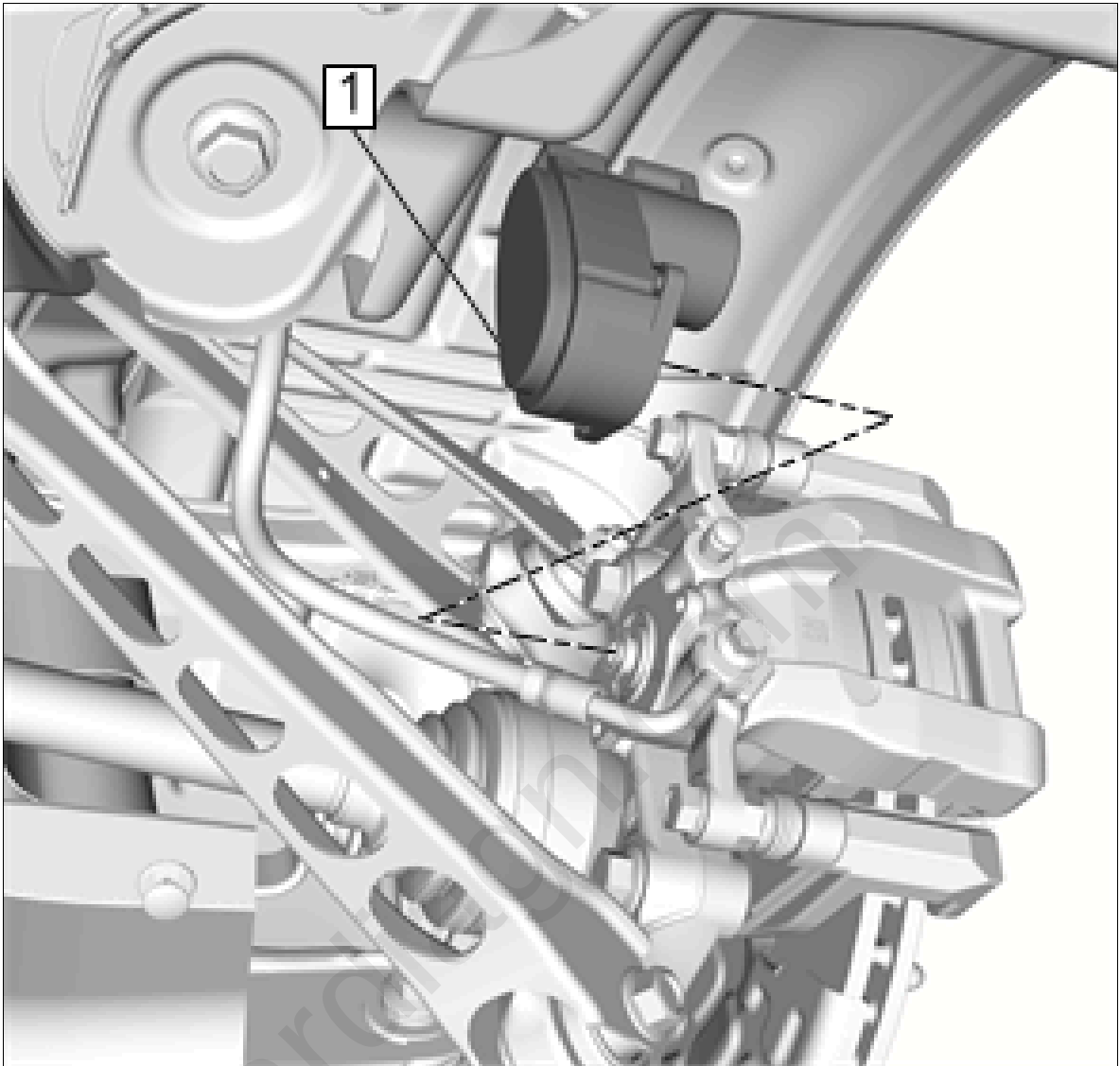
Fig 1: Parking Brake Actuator Bolt



Courtesy of GENERAL MOTORS COMPANY

3. Disconnect the electrical connector.
4. Remove Parking Brake Actuator Bolt (1) (Qty: 2)

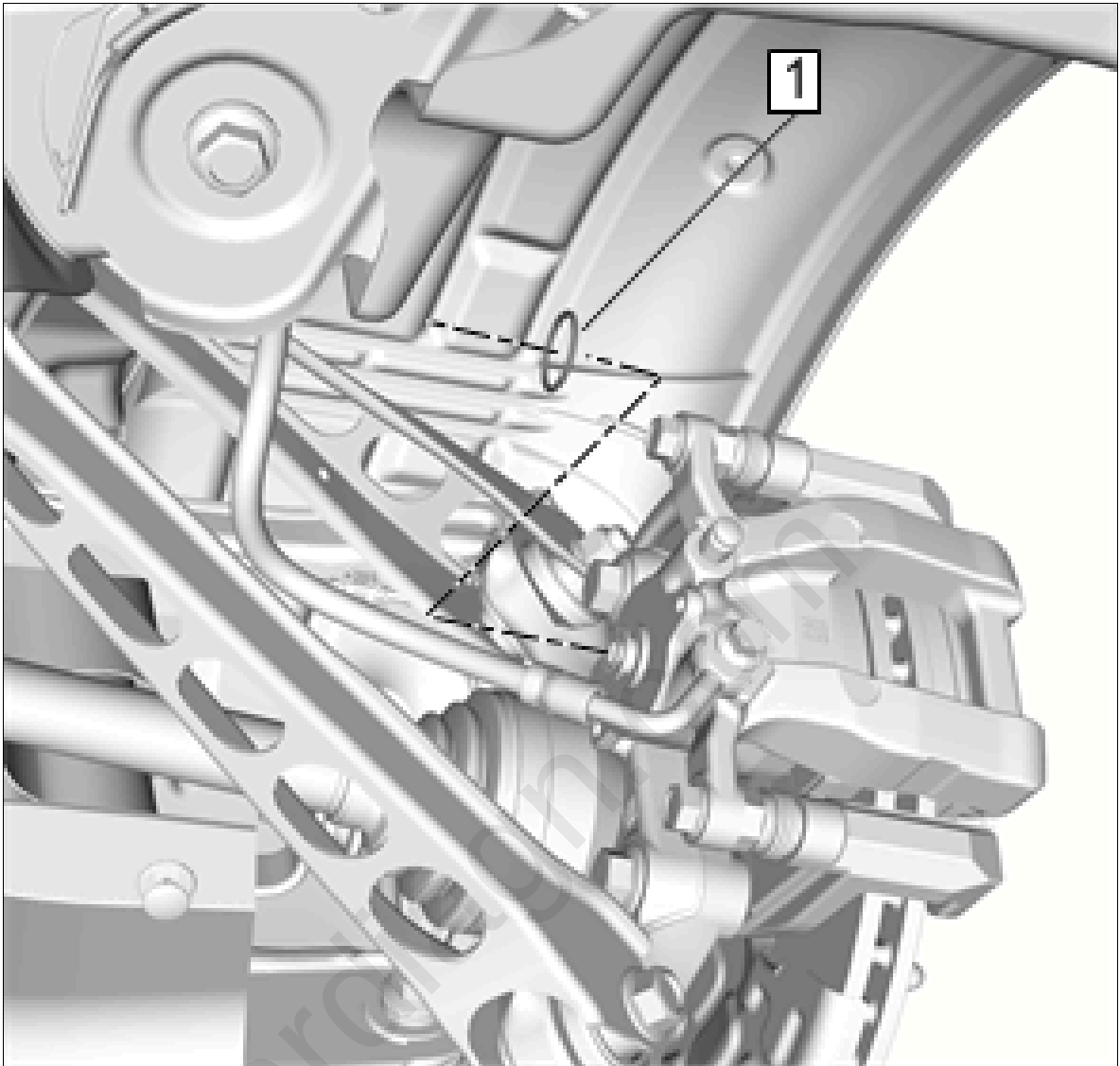
Fig 2: Parking Brake Actuator



Courtesy of GENERAL MOTORS COMPANY

5. Remove Parking Brake Actuator (1)

Fig 3: Parking Brake Actuator Seal

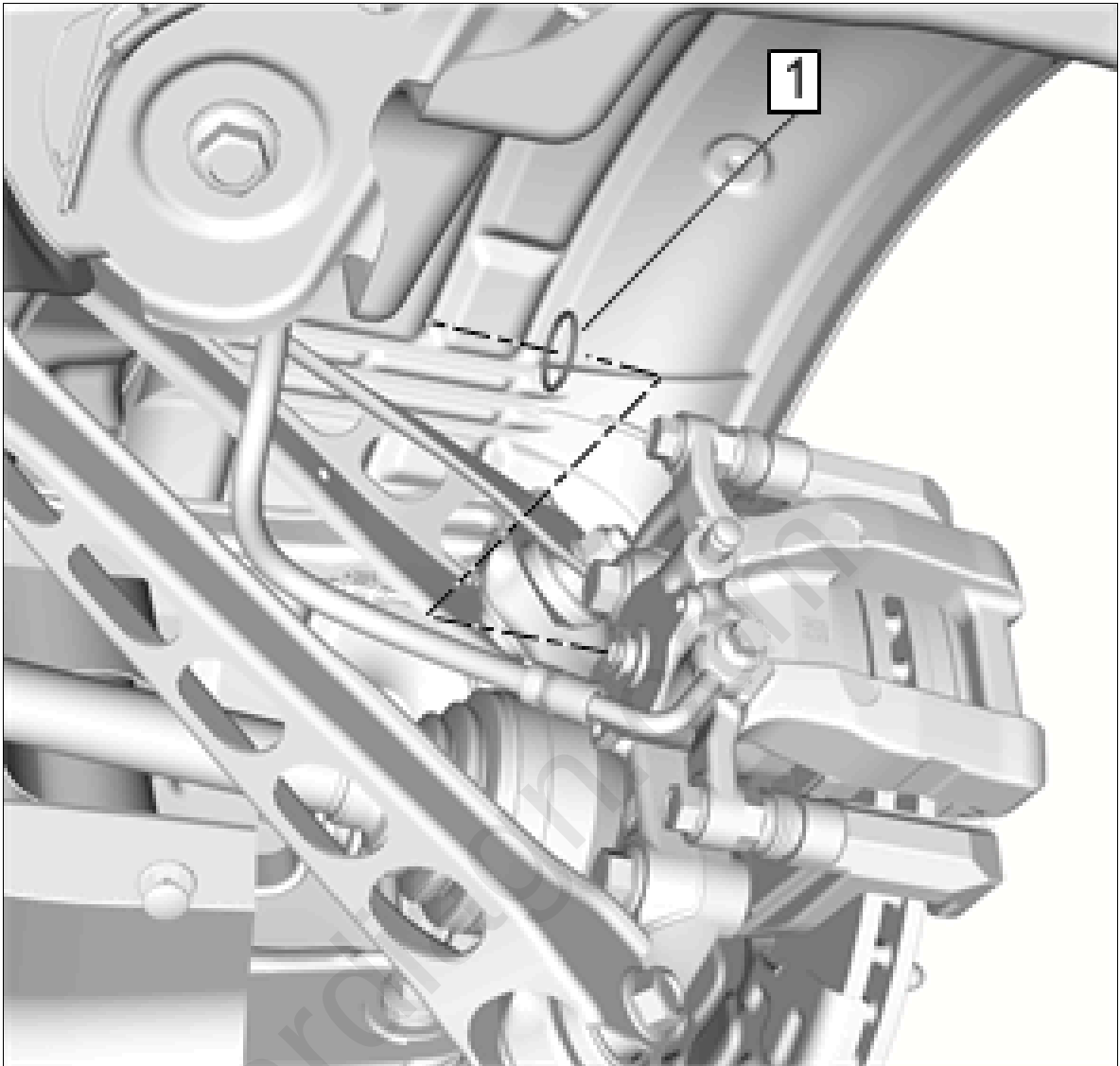


Courtesy of GENERAL MOTORS COMPANY

6. Remove and DISCARD Parking Brake Actuator Seal (1)

REPAIR INSTRUCTIONS > REAR PARKING BRAKE ACTUATOR REPLACEMENT > INSTALLATION PROCEDURE

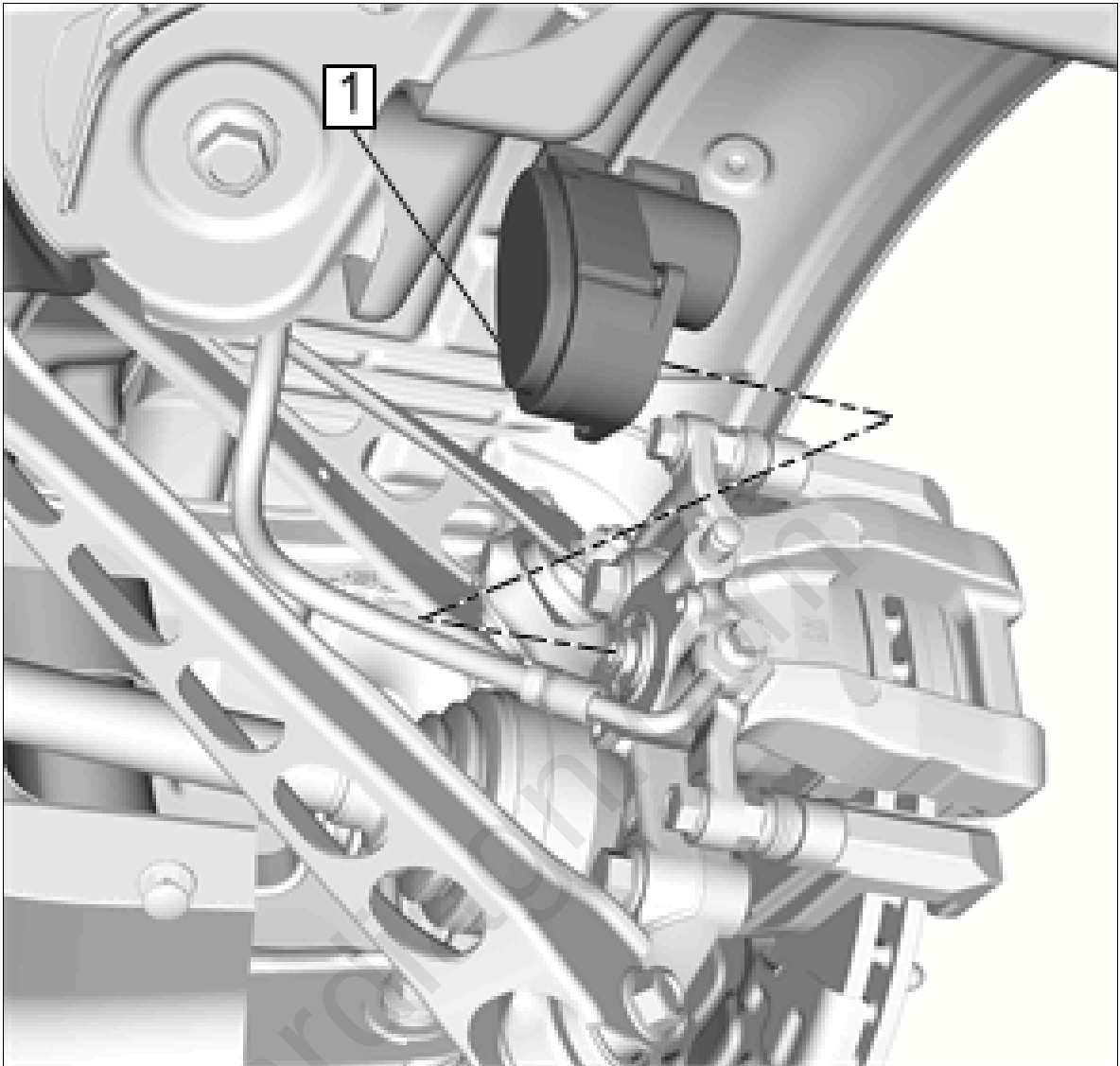
Fig 1: Parking Brake Actuator Seal



Courtesy of GENERAL MOTORS COMPANY

1. Install NEW Parking Brake Actuator Seal (1)

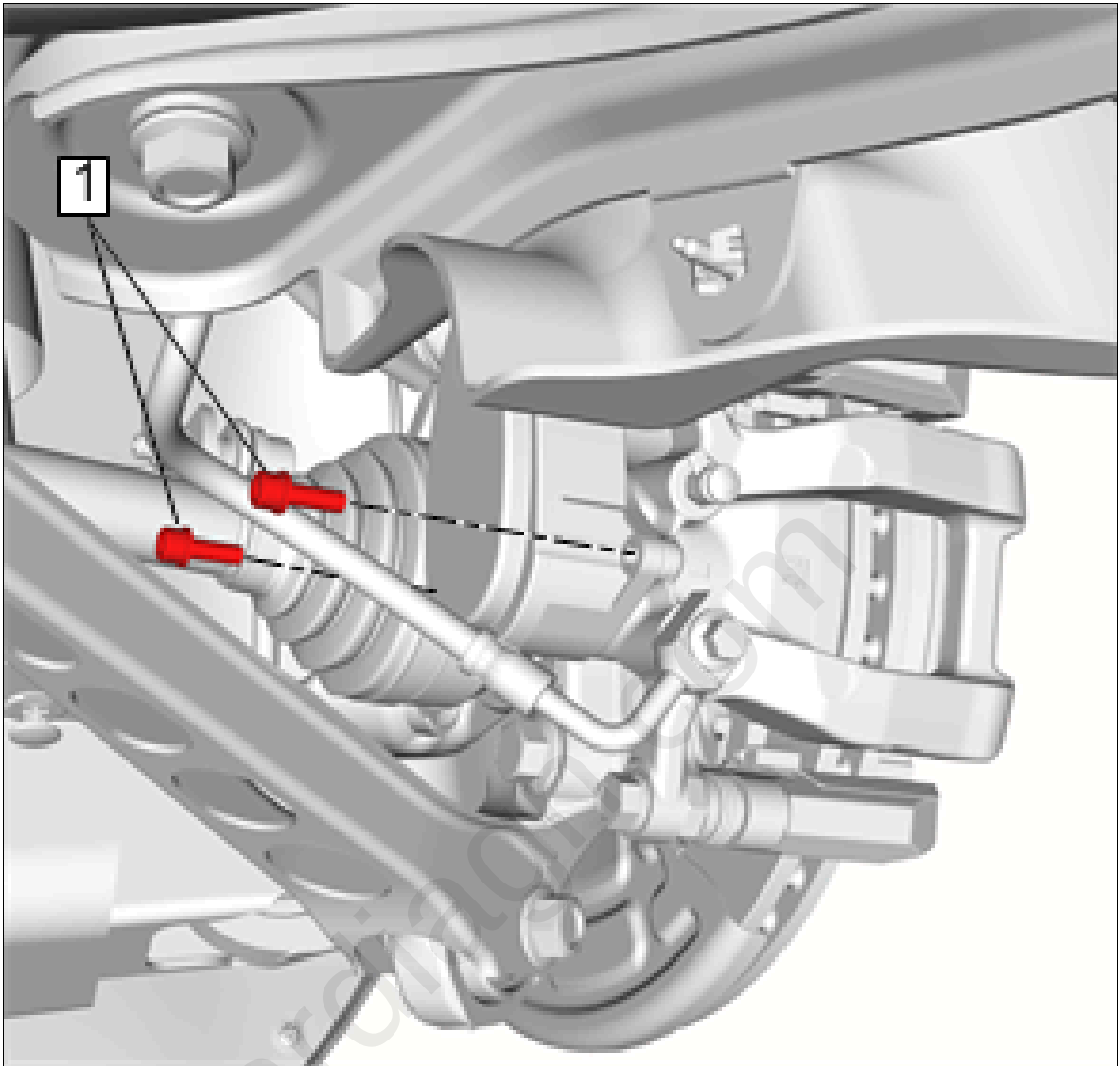
Fig 2: Parking Brake Actuator



Courtesy of GENERAL MOTORS COMPANY

2. Install Parking Brake Actuator (1)

Fig 3: Parking Brake Actuator Bolt



Courtesy of GENERAL MOTORS COMPANY



CAUTION:

Fastener Caution

3. Install Parking Brake Actuator Bolt (1) (Qty: 2) and tighten to 10 N.m (89 lb in)
4. Connect the electrical connector.
5. Install the tire and wheel assembly. Tire and Wheel Removal and Installation
6. Park Brake Calibration (Motor on Caliper)

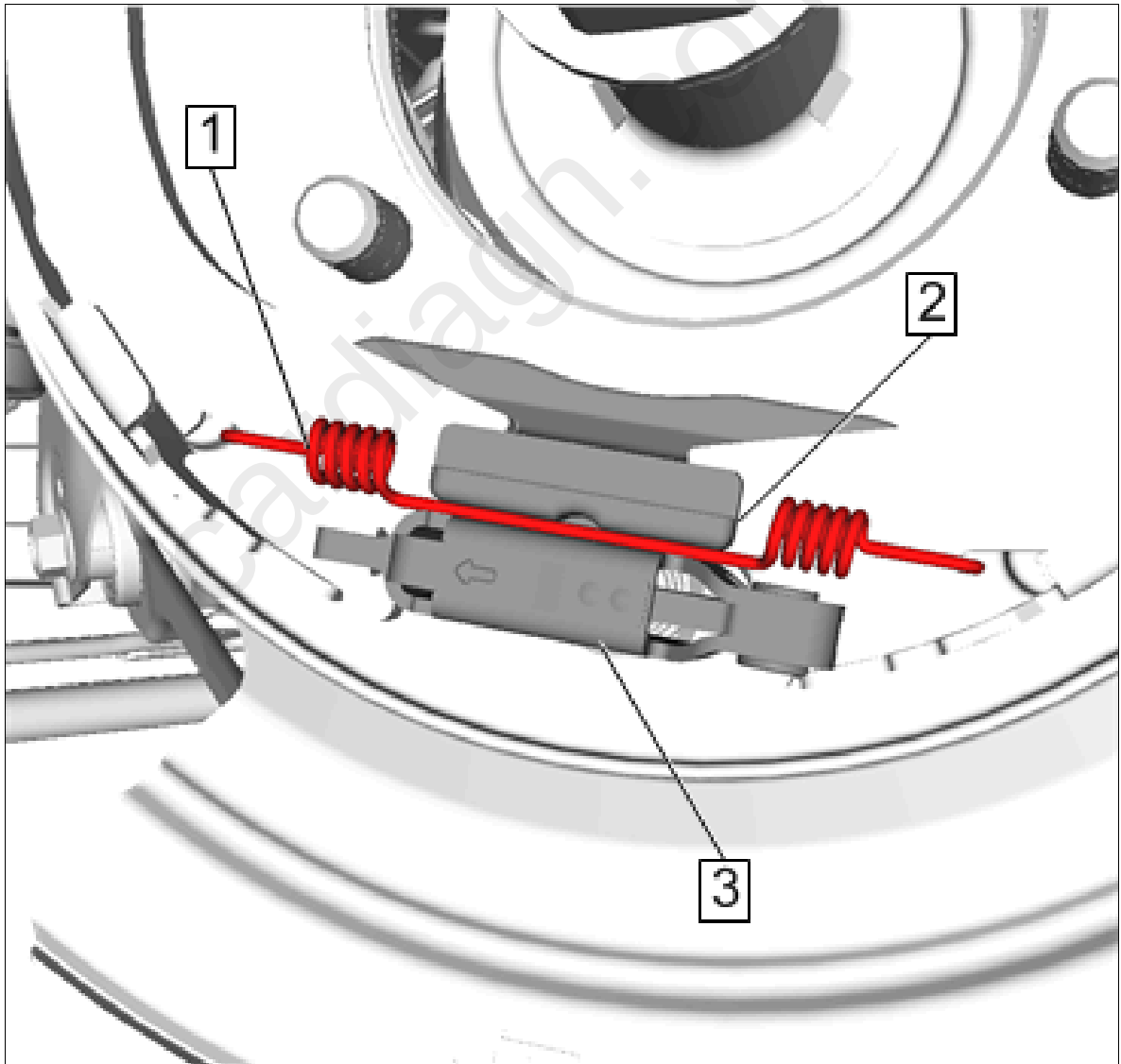
REPLACEMENT > REMOVAL PROCEDURE

⚠ WARNING:

Refer to Brake Dust Warning .

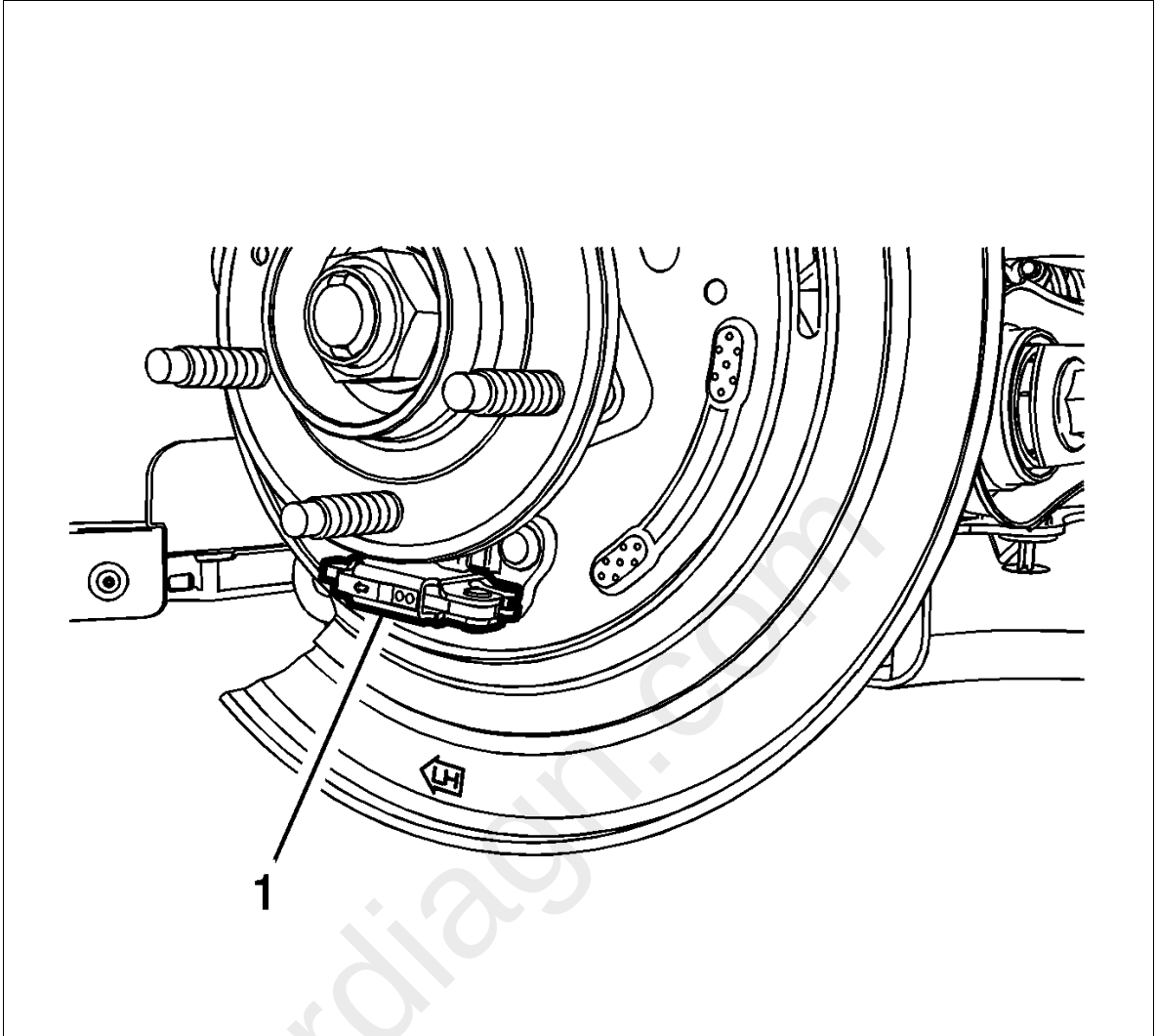
1. Turn the ignition OFF.
2. Block the rear drive wheels.
3. Disable the parking brake cable adjuster, if equipped. Parking Brake Cable Adjuster Disabling
4. Raise and support the vehicle. Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP)
5. Remove the tire and wheel assembly. Tire and Wheel Removal and Installation

Fig 1: Parking Brake Shoe Lower Return Spring



6. Remove the parking brake shoe lower return spring (1) - Parking Brake Shoe Replacement

Fig 2: Parking Brake Shoe Actuator Lever Spring

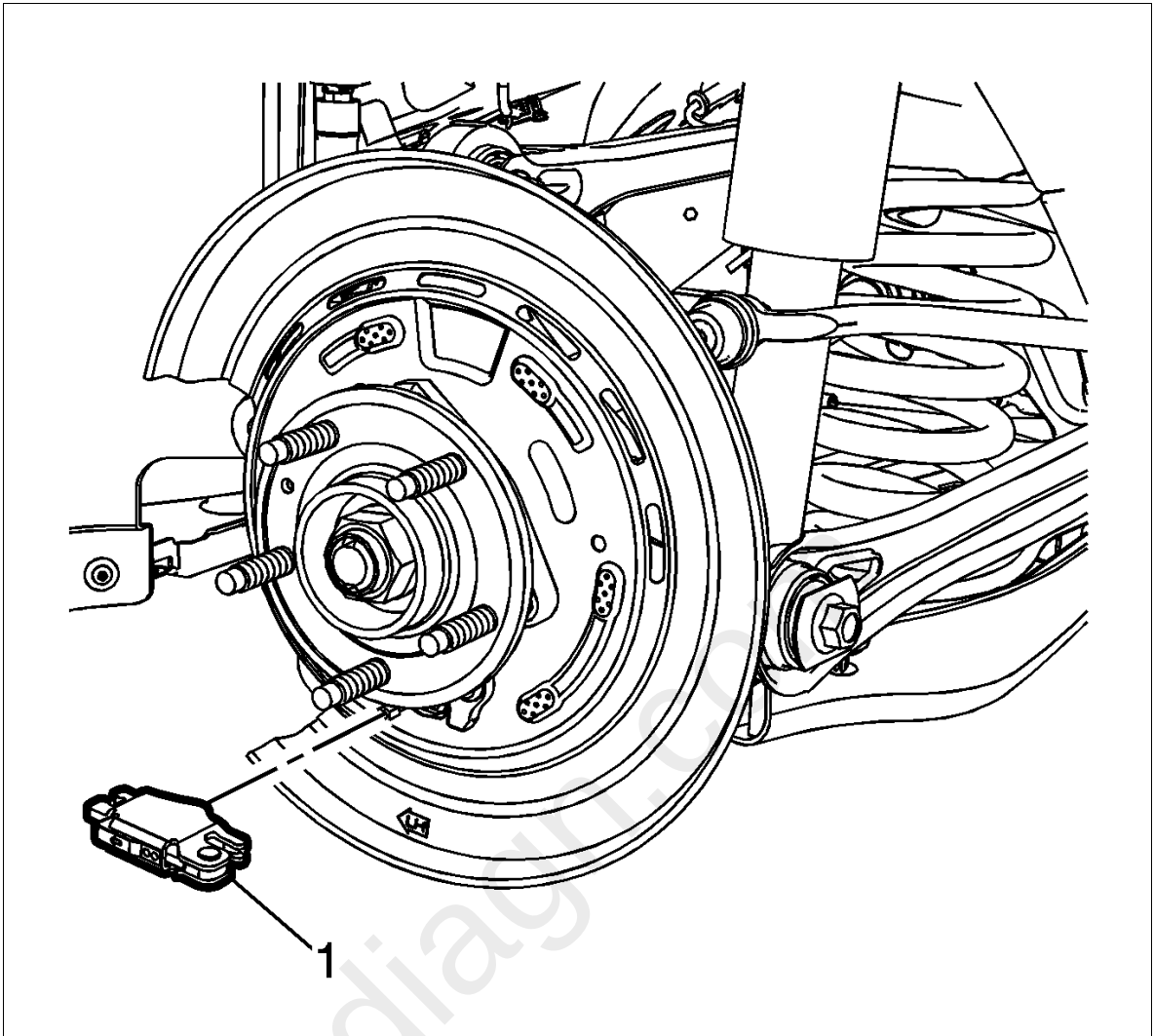


Courtesy of GENERAL MOTORS COMPANY

7. Lift the parking brake actuator lever spring clip (1).

8. Disconnect the park brake cable from the actuator.

Fig 3: Parking Brake Actuator Lever

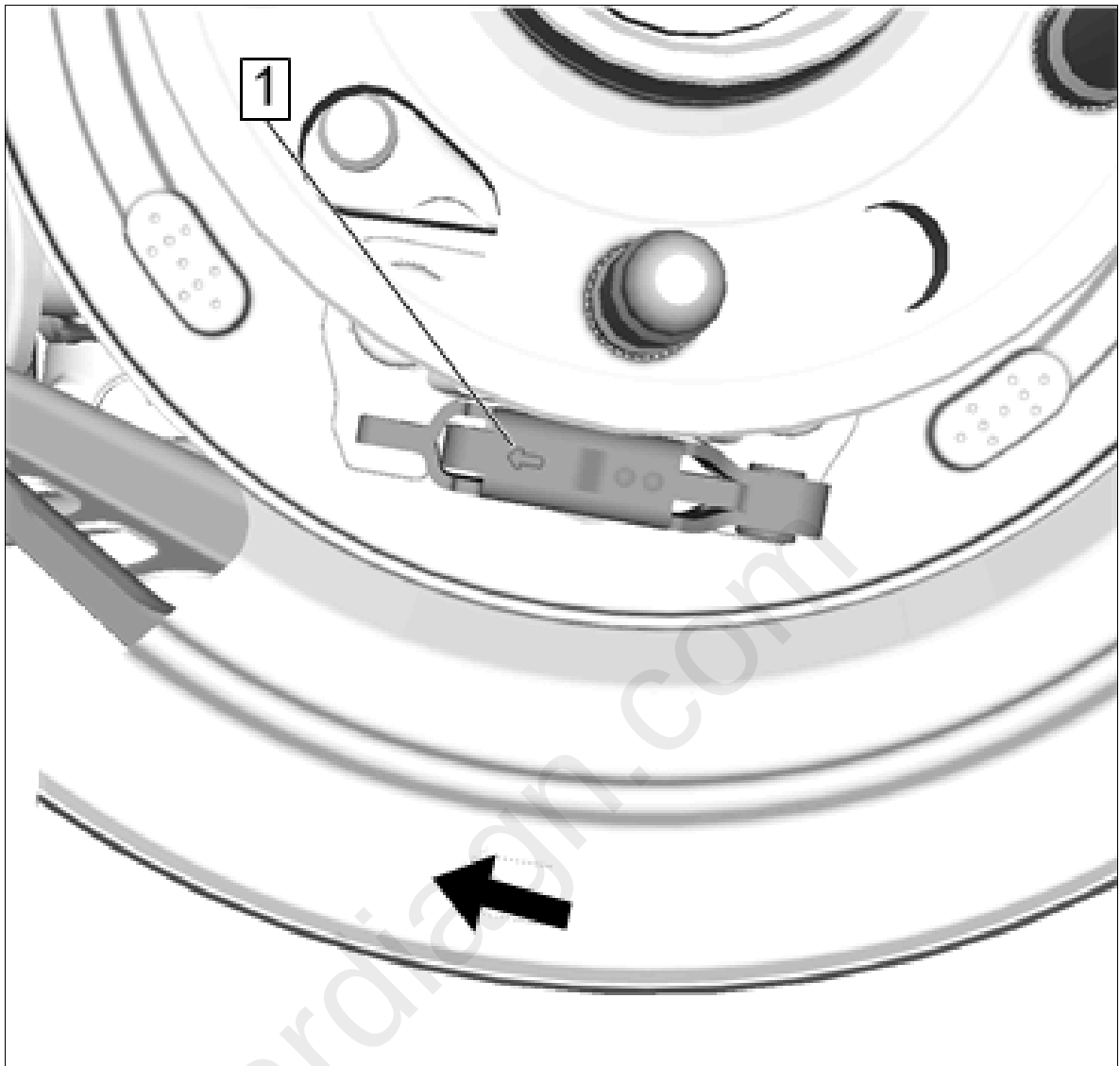


Courtesy of GENERAL MOTORS COMPANY

9. Remove the parking brake actuator lever (1).

**REPAIR INSTRUCTIONS > REAR PARKING BRAKE ACTUATOR LEVER
REPLACEMENT > INSTALLATION PROCEDURE**

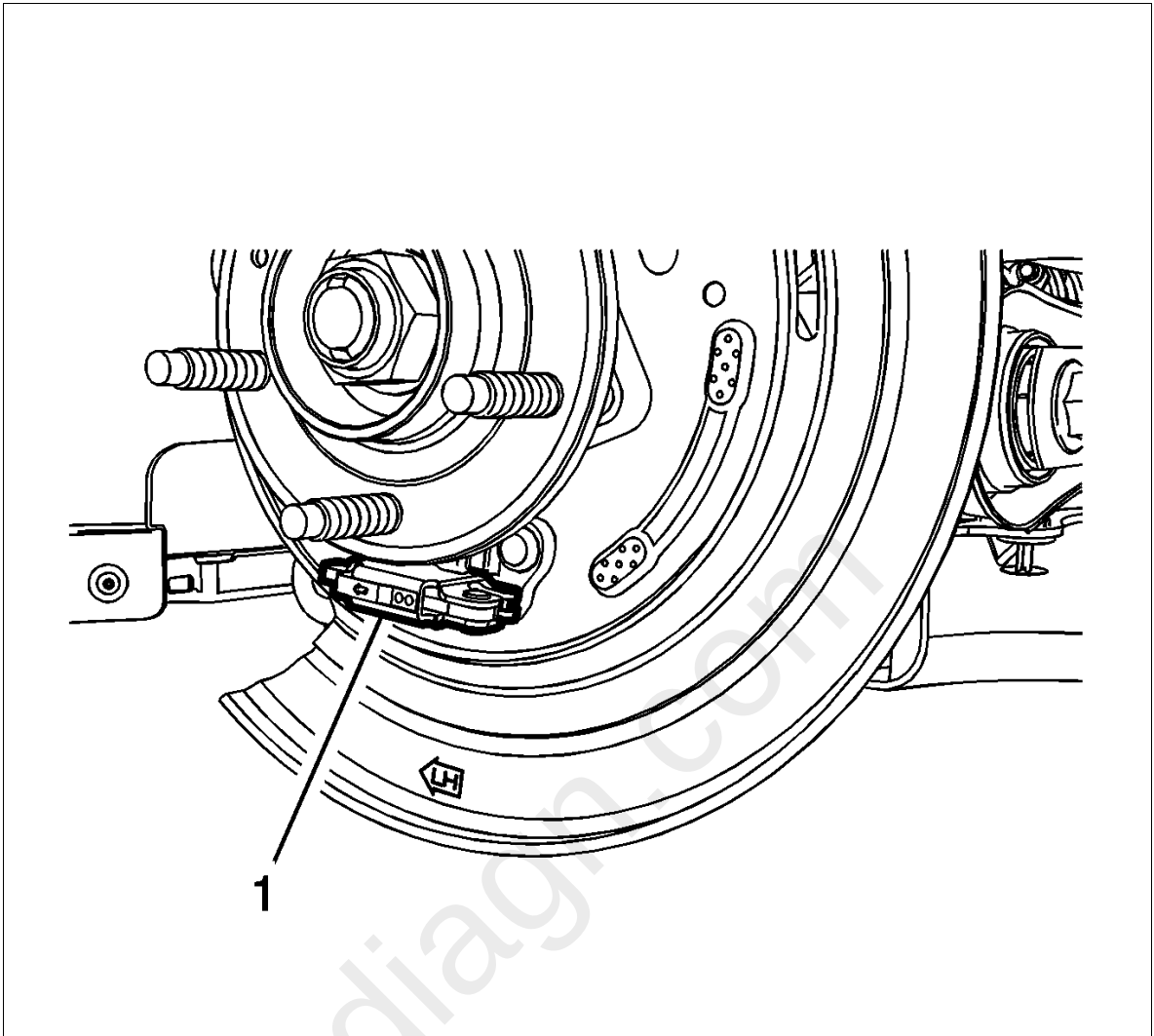
Fig 1: Parking Brake Actuator Lever



Courtesy of GENERAL MOTORS COMPANY

1. Install the parking brake actuator lever, aligning the arrow (1) on the actuator lever with the arrow on the rear parking brake anchor backing plate.

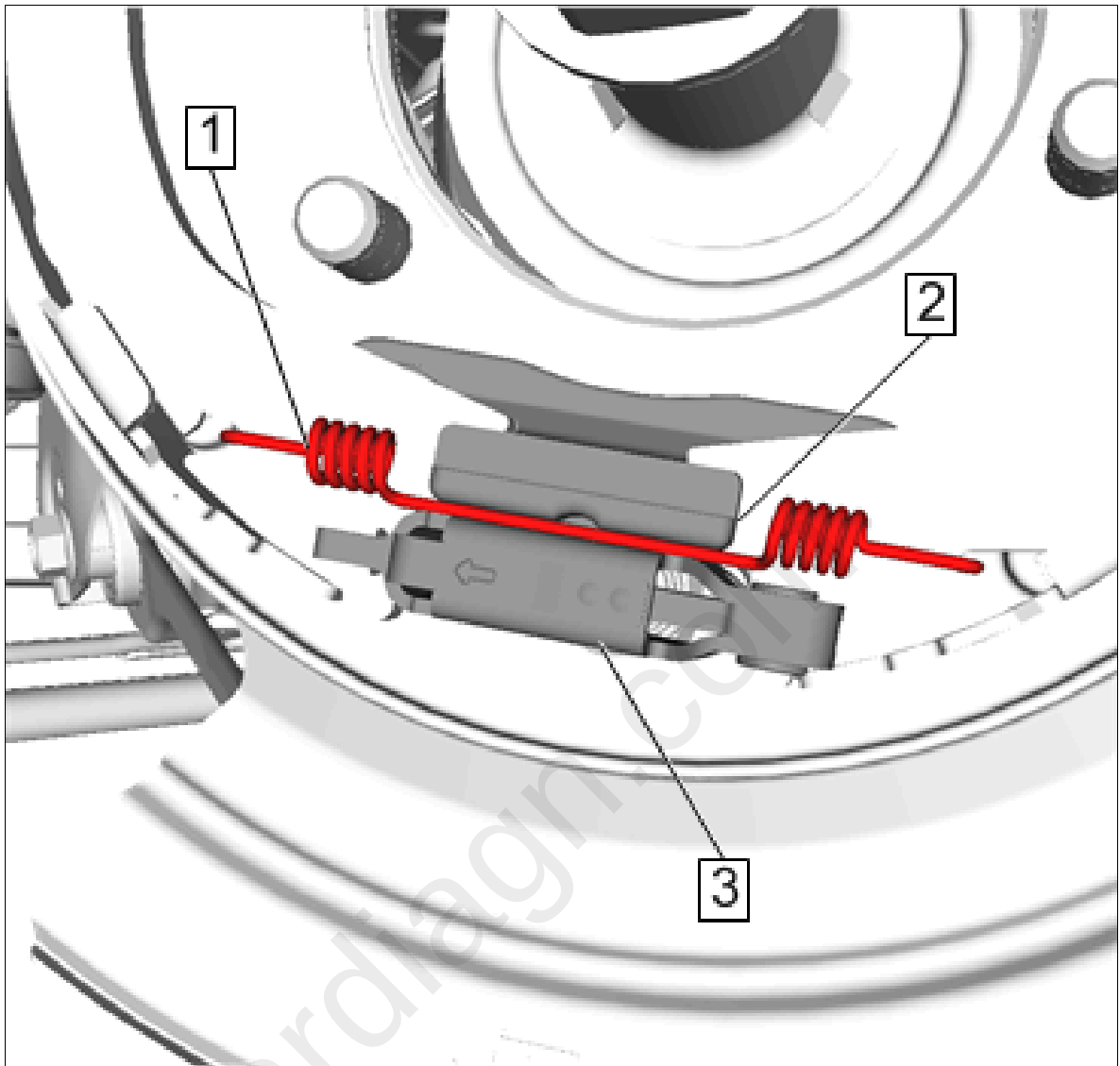
Fig 2: Parking Brake Shoe Actuator Lever Spring



Courtesy of GENERAL MOTORS COMPANY

2. Lift the parking brake actuator lever spring clip (1).
3. Connect the park brake cable to the actuator.

Fig 3: Parking Brake Shoe Lower Return Spring



Courtesy of GENERAL MOTORS COMPANY

4. Install the parking brake shoe lower return spring (1) - Parking Brake Shoe Replacement
5. Adjust the parking brake. Parking Brake Adjustment
6. Enable the parking brake cable adjuster, if equipped. Parking Brake Cable Adjuster Enabling
7. Install the tire and wheel assembly. Tire and Wheel Removal and Installation

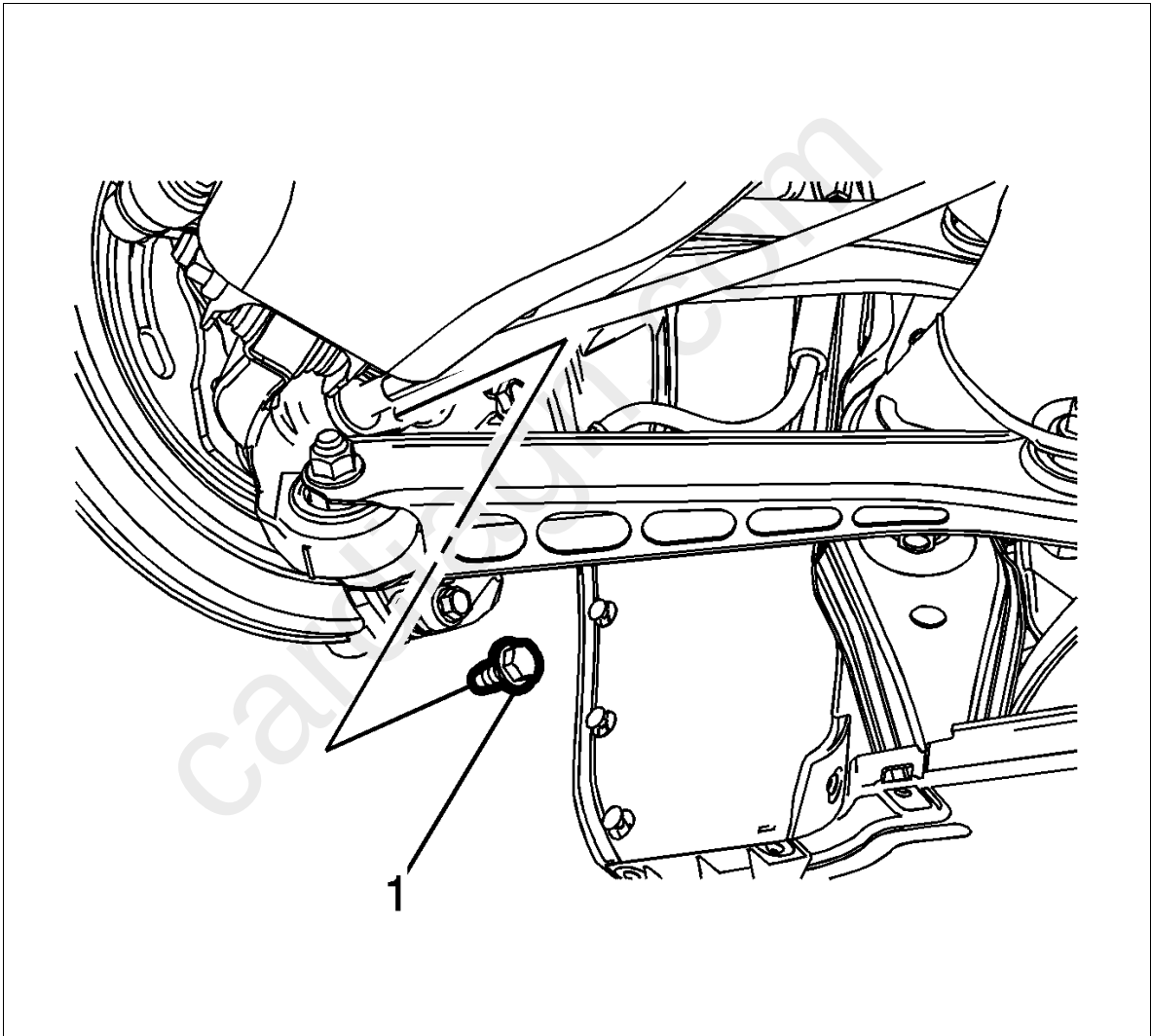
**REPAIR INSTRUCTIONS > REAR PARKING BRAKE ANCHOR BACKING PLATE
REPLACEMENT > REMOVAL PROCEDURE**

⚠ WARNING:

Refer to Brake Dust Warning .

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP) .
2. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
3. Remove the parking brake shoes. Refer to Parking Brake Shoe Replacement .

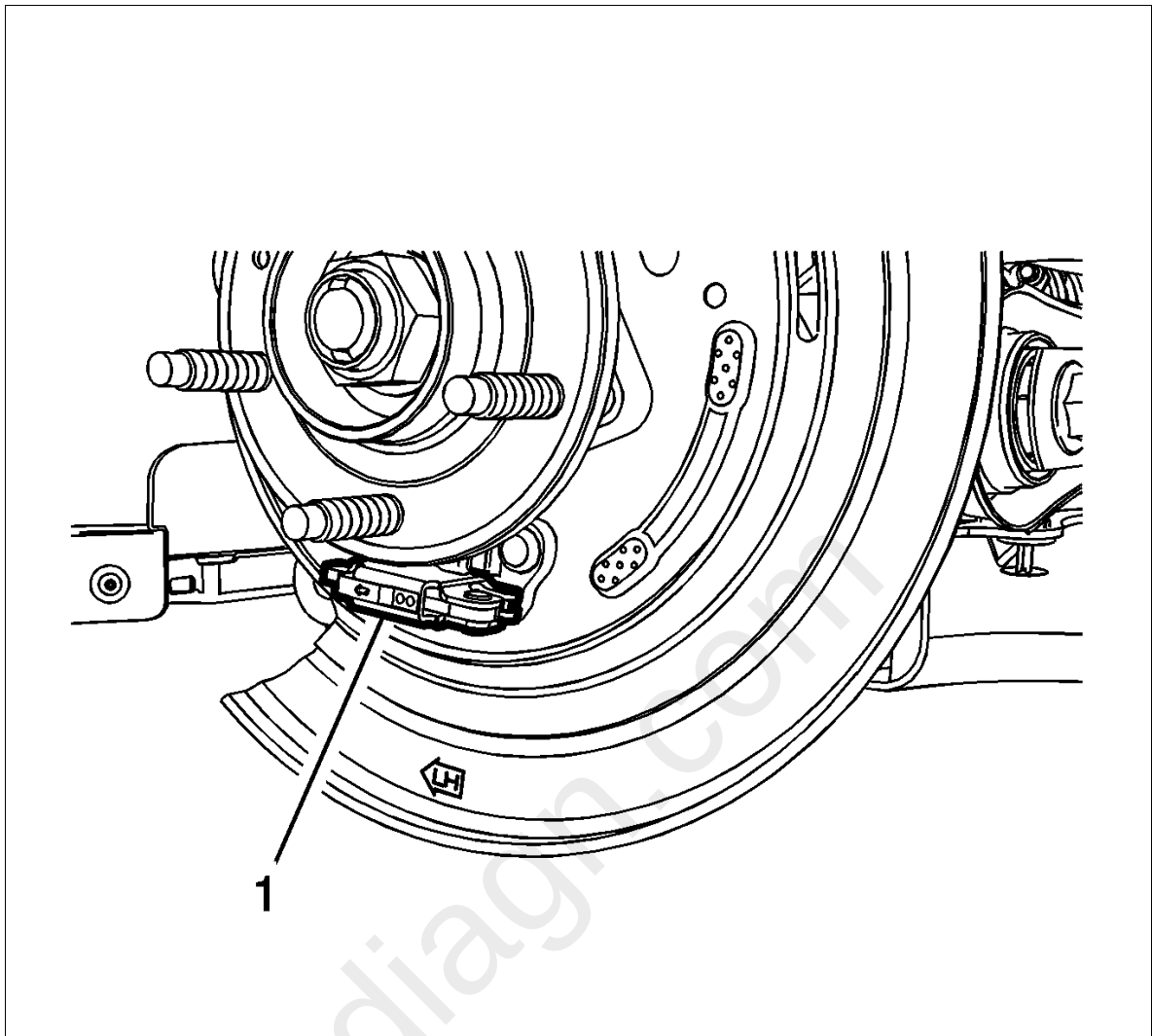
Fig 1: Parking Brake Cable Bolt



Courtesy of GENERAL MOTORS COMPANY

4. Remove the parking brake cable bolt (1).

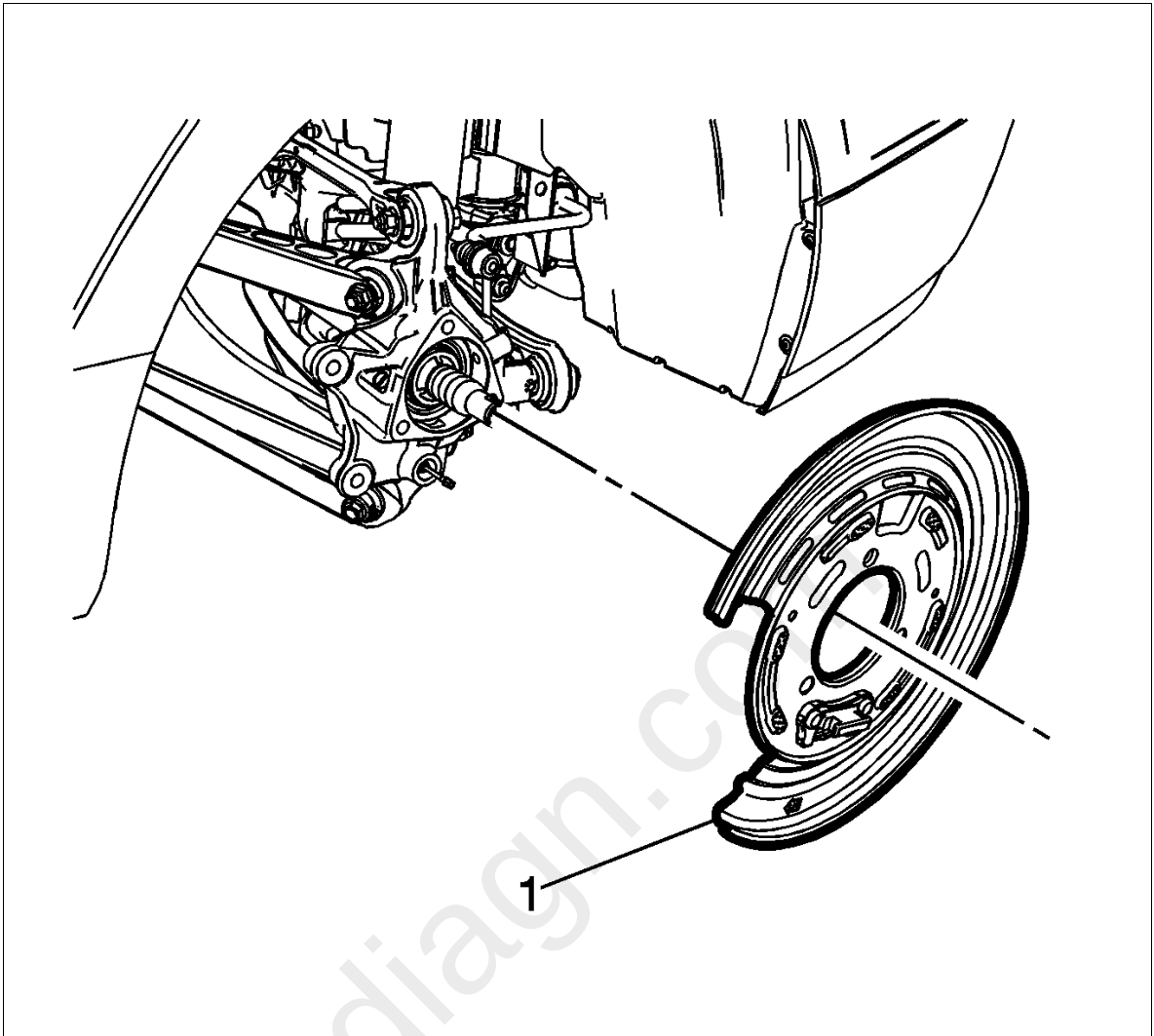
Fig 2: Parking Brake Shoe Actuator Lever Spring



Courtesy of GENERAL MOTORS COMPANY

5. Lift the parking brake actuator lever spring (1).
6. Using a small tool, lift the parking brake cable over and off of the parking brake actuator lever.
7. Remove the parking brake cable from the rear parking brake anchor backing plate and position aside.
8. Remove the rear wheel bearing and hub assembly. Refer to Rear Wheel Bearing and Hub Replacement .

Fig 3: Rear Parking Brake Anchor Backing Plate

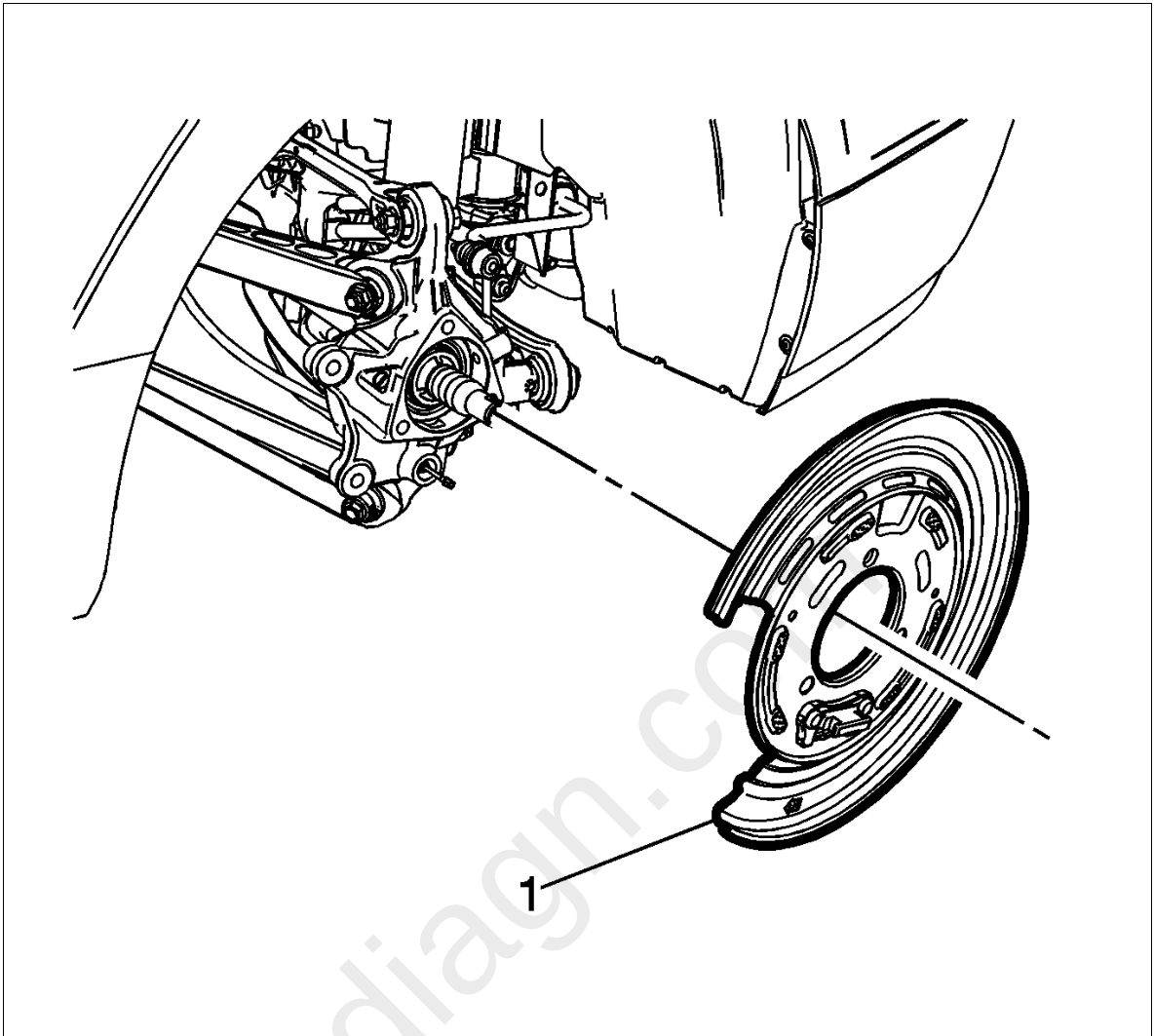


Courtesy of GENERAL MOTORS COMPANY

9. Remove the rear parking brake anchor backing plate (1).

**REPAIR INSTRUCTIONS > REAR PARKING BRAKE ANCHOR BACKING PLATE
REPLACEMENT > INSTALLATION PROCEDURE**

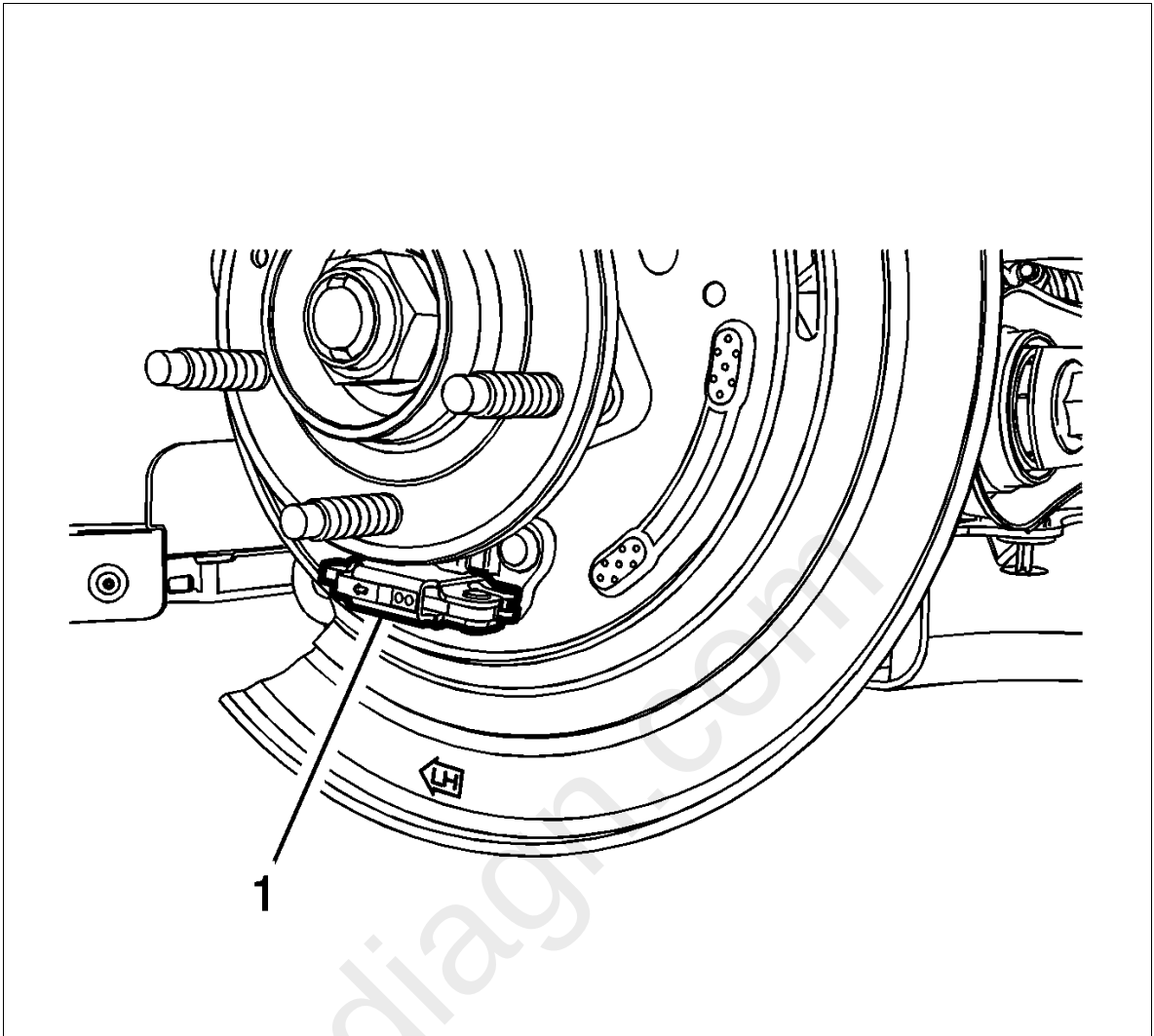
Fig 1: Rear Parking Brake Anchor Backing Plate



Courtesy of GENERAL MOTORS COMPANY

1. Install the rear parking brake anchor backing plate (1).
2. Install the rear wheel bearing and hub assembly. Refer to Rear Wheel Bearing and Hub Replacement .
3. Insert the parking brake cable end into the rear parking brake anchor backing plate.

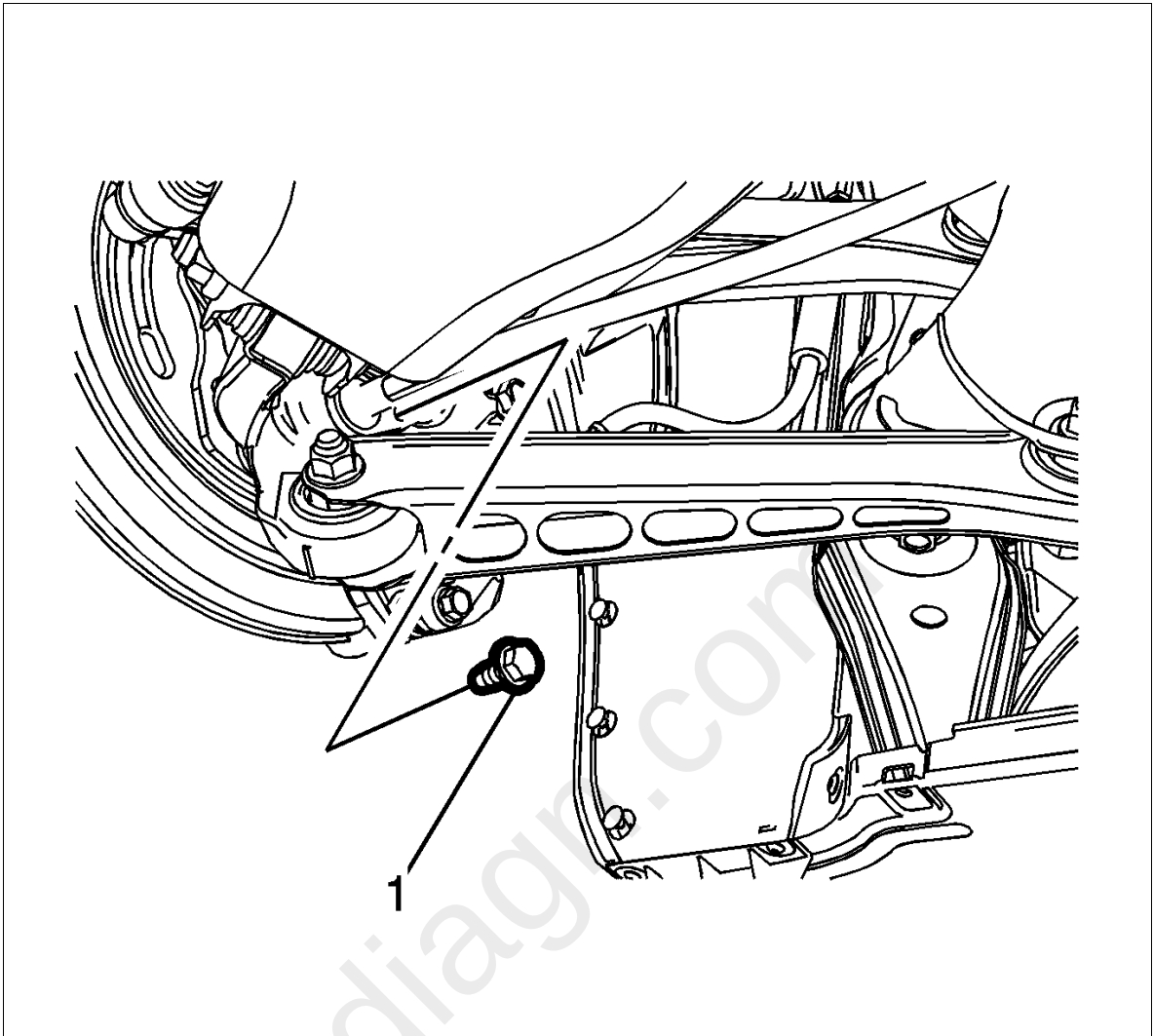
Fig 2: Parking Brake Shoe Actuator Lever Spring



Courtesy of GENERAL MOTORS COMPANY

4. Lift the parking brake actuator lever clip (1).
5. Grasp the parking brake cable and push the cable into the rear parking brake anchor backing plate until the cable end seats in the parking brake shoe actuator lever.
6. Ensure the parking brake cable end is fully seated in the parking brake shoe actuator lever by attempting to pull the cable from the rear brake backing plate.

Fig 3: Parking Brake Cable Bolt



Courtesy of GENERAL MOTORS COMPANY



CAUTION:

Refer to Fastener Caution .

7. Install the parking brake cable bolt (1) and tighten to 9 N.m (80 lb in).
8. Install the parking brake shoes. Refer to Parking Brake Shoe Replacement .
9. Install the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .

REPAIR INSTRUCTIONS > PARKING BRAKE ADJUSTMENT

Special Tools

CH-21177-A Drum To Brake Shoe Clearance Gauge

 WARNING:

Brake Dust Warning

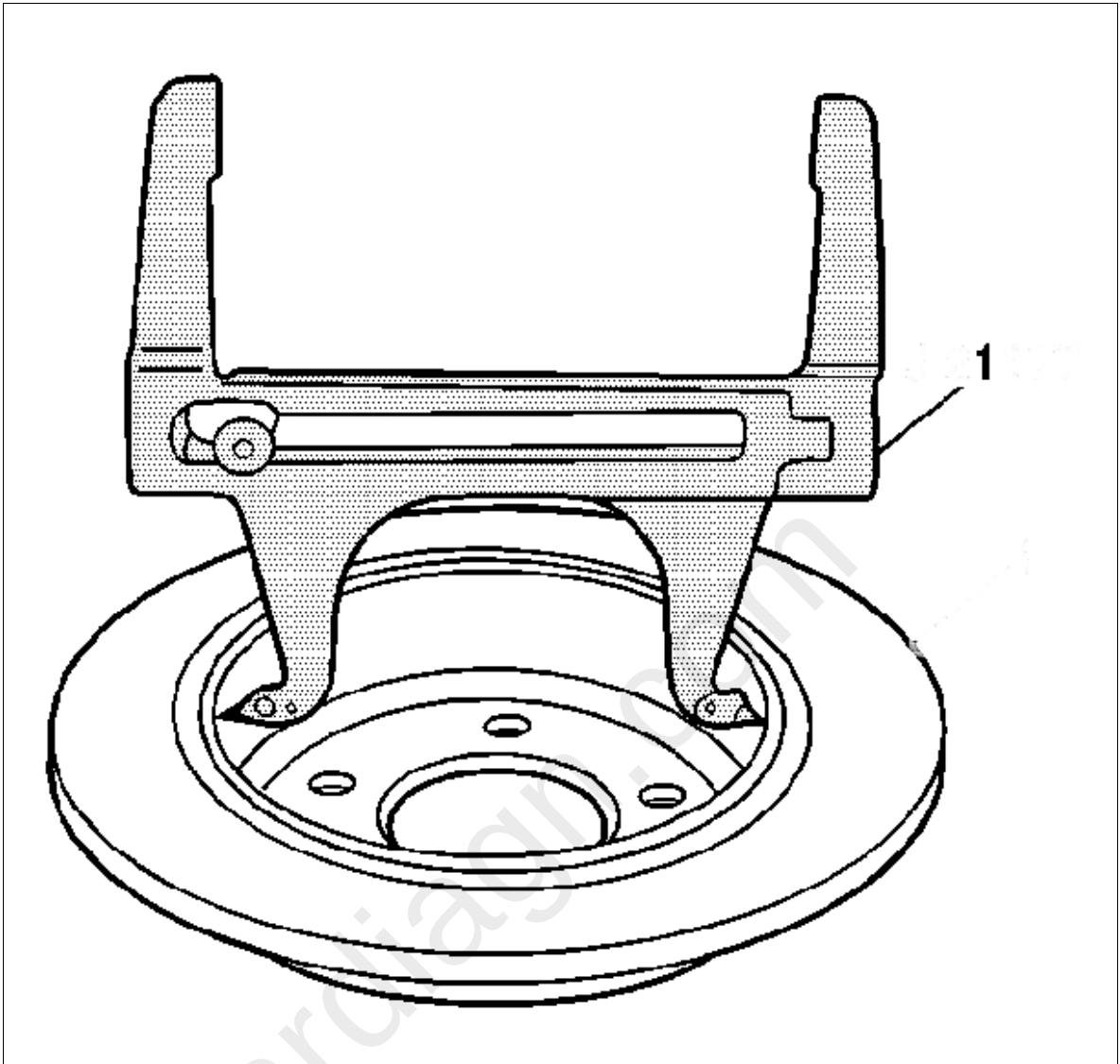
1. Adjustments to the parking brake shoes are not necessary after replacing the electronic parking brake control module or parking brake cable.
2. Disable the parking brake cable adjuster. Parking Brake Cable Adjuster Disabling
3. Verify that the parking brake releases completely.
4. Raise and support the vehicle. Lifting and Jacking the Vehicle (Base)Lifting and Jacking the Vehicle (HP)
5. Remove the rear tire and wheel assemblies. Tire and Wheel Removal and Installation

 NOTE:

Do not operate the electronic parking brake with the rear disc brake rotor(s) removed.

6. Remove the rear brake rotors. Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)

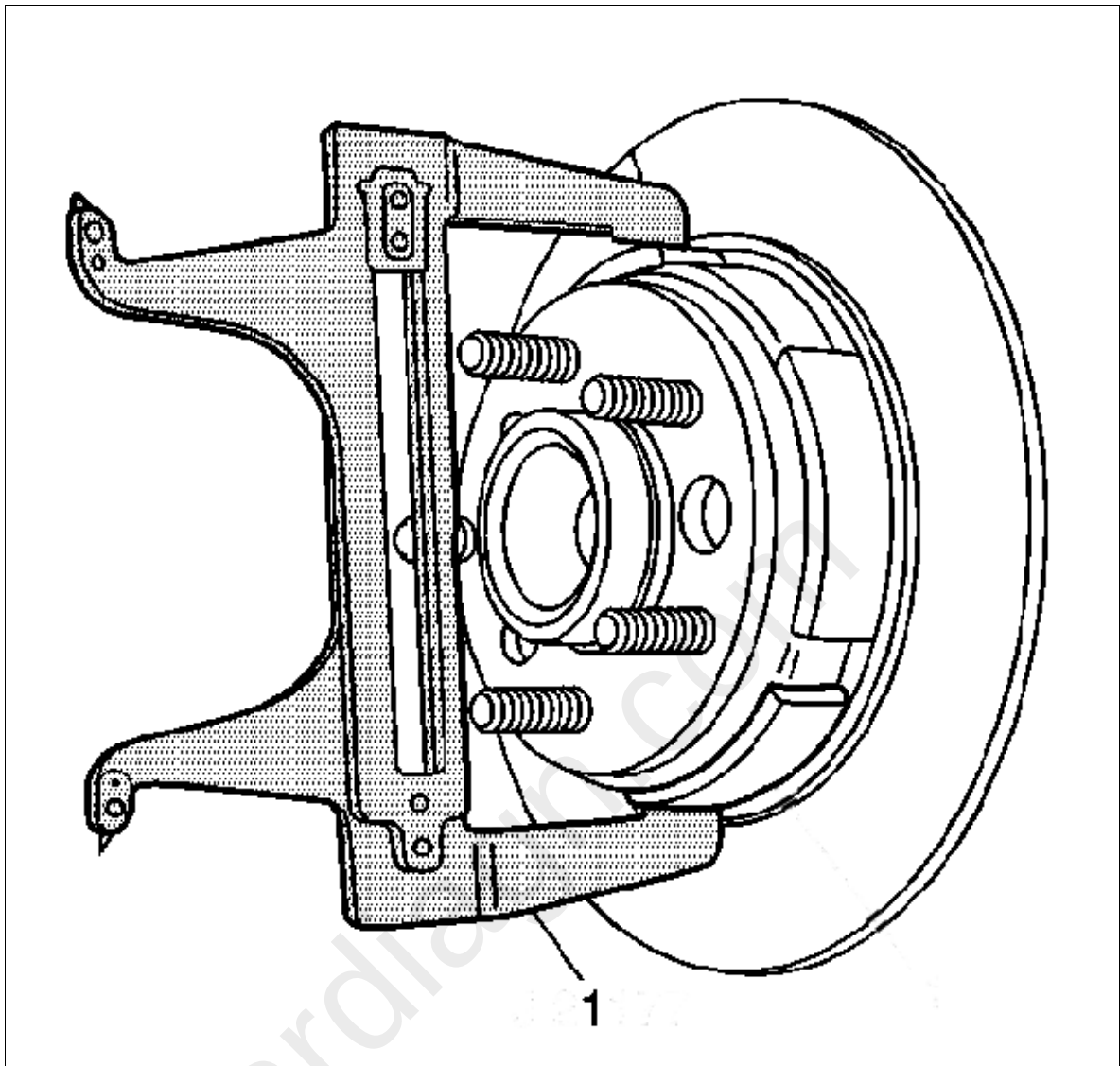
Fig 1: Drum-To-Brake Shoe Clearance Gauge



Courtesy of GENERAL MOTORS COMPANY

7. Set the **CH-21177-A** Drum To Brake Shoe Clearance Gauge (1) inside of the parking brake drum at the widest point.
 1. Place the contacts of the tool at the widest point of the parking brake drum portion of the rotor.
 2. Tighten the set screw on the tool to ensure the proper measurement when removing the tool from the drum.

Fig 2: Drum-To-Brake Shoe Clearance Gauge



Courtesy of GENERAL MOTORS COMPANY

8. Position the **CH-21177-A** Drum To Brake Shoe Clearance Gauge (1) over the parking brake shoes at the widest point.
9. Turn the parking brake shoe adjuster until the parking brake shoes just contact the **CH-21177-A** drum to brake shoe clearance gauge.
10. Repeat steps 8-10 for the opposite parking brake assembly.
11. Install the rear brake rotors. Rear Brake Rotor Replacement (J6G)Rear Brake Rotor Replacement (JL9, J55)
12. Rotate the rotor and turn shoe adjuster until there slight drag then back off shoe adjuster until the rotor rotates freely.
13. Install the rear tire and wheel assemblies. Tire and Wheel Removal and Installation
14. Lower the vehicle to curb height.

15. Enable the parking brake cable adjuster. Parking Brake Cable Adjuster Enabling

 **NOTE:**

If the rear wheels rotate during the following test, readjust the parking brake shoes.

16. Apply the parking brake. Inspect the rotation of the rear wheels:

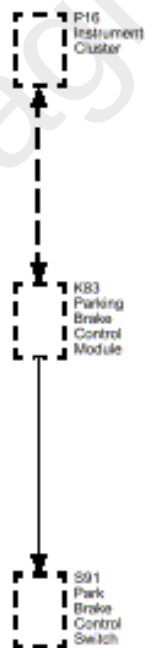
1. The wheels should not rotate forward.
2. The wheels should not rotate rearward.

17. Release the parking brake. Verify that the wheels rotate freely.

18. Lower the vehicle.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION (J77, CABLE PULLER)

Fig 1: Electronic Parking Brake Schematic Flow



Courtesy of GENERAL MOTORS COMPANY

Vehicles with the electric parking brake have a switch in the center console, which takes the place of the

manual parking brake system, the foot pedal and release handle. In case of insufficient electrical power, the electric parking brake cannot be applied or released.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION (J77, CABLE PULLER) > ELECTRIC PARKING BRAKE CONTROL MODULE

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation.

The electric parking brake module receives hard wired signals from the apply/release switch and communication enable. The electric parking brake module receives wheel speed sensor signals, engine torque, gear information, brake pedal signal, and etc. through GM-LAN.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION (J77, CABLE PULLER) > ELECTRIC PARKING BRAKE APPLY

The electric parking brake can be applied any time the vehicle is stopped or in motion. The electric parking brake is applied by momentarily lifting up on the park brake control switch. The red park brake light will momentarily flash while the parking brake is being applied. Once fully applied, the red park brake light will turn on. If the electric parking brake is applied while the vehicle is in motion, a chime will sound, and the message "Release Park Brake Switch" will be displayed.

If the red park brake light is flashing, the electric parking brake is only partially applied or released, or there is a problem with the electric parking brake. The message "Service Park Brake" will be displayed.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION (J77, CABLE PULLER) > ELECTRIC PARKING BRAKE RELEASE

To release the electric parking brake, turn the ignition switch to the ON or RUN position, apply and hold the brake pedal, and push down momentarily on the park brake control switch. When the electric parking brake is released the red park brake light turns off.

The electric parking brake can be used to prevent roll back for vehicles with a manual transmission taking off on a hill. In a situation where no roll back is desired, an applied electric parking brake will allow both feet to be used for the clutch and accelerator pedals in preparation for starting the vehicle moving in the intended direction. In this situation, perform the normal clutch and accelerator actions required to begin moving the vehicle. There is no need to push the switch to release the electric parking brake. To disable this feature lift and hold the park brake control switch while the vehicle is in motion, this will keep the electric parking brake applied.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION

(J77, CABLE PULLER) > MANUAL PARKING BRAKE CABLE TENSION RELEASE

If the park brake cable tension cannot be released under normal mode of operation, it can be released manually. The manual release capability will make it possible for the driver to transfer the vehicle into a movable state in the case of a failure of the electric parking brake system. The procedure can be found in the Repair Instructions, Parking Brake Cable Adjuster Disabling procedure.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION (J71, MOTOR ON CALIPER)

Vehicles with the electric parking brake have a switch in the center console or on the dashboard, which takes the place of the manual parking brake system, the foot pedal and release handle. In case of insufficient electrical power, the electric parking brake cannot be applied or released.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION (J71, MOTOR ON CALIPER) > ELECTRONIC BRAKE CONTROL MODULE

The parking brake function is integrated into the Electronic Brake Control Module. The Electronic Brake Control Module contains the logic for applying and releasing the parking brake when commanded by the Park Brake Switch.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION (J71, MOTOR ON CALIPER) > ELECTRIC PARKING BRAKE APPLY

The electric parking brake can be applied any time the vehicle is stopped or in motion. The electric parking brake is applied by momentarily lifting up on the park brake control switch. The red park brake light will momentarily flash while the parking brake is being applied. Once fully applied, the red park brake light will turn on. If the electric parking brake is applied while the vehicle is in motion, a chime will sound, and the message "Release Park Brake Switch" will be displayed.

If the red park brake light is flashing, the electric parking brake is only partially applied or released, or there is a problem with the electric parking brake. The message "Service Park Brake" will be displayed.

The vehicle may automatically apply the electric parking brake in some situations when the vehicle is not moving. This is normal, and is done to periodically check the correct operation of the electric parking brake system.

DESCRIPTION AND OPERATION > ELECTRONIC PARKING BRAKE DESCRIPTION

(J71, MOTOR ON CALIPER) > ELECTRIC PARKING BRAKE RELEASE

To release the electric parking brake, turn the ignition switch to the ON or RUN position, apply and hold the brake pedal, and push down momentarily on the park brake control switch. When the electric parking brake is released the red park brake light turns off.

The electric parking brake can be used to prevent roll back for vehicles with a manual transmission taking off on a hill. In a situation where no roll back is desired, an applied electric parking brake will allow both feet to be used for the clutch and accelerator pedals in preparation for starting the vehicle moving in the intended direction. In this situation, perform the normal clutch and accelerator actions required to begin moving the vehicle. There is no need to push the switch to release the electric parking brake. To disable this feature lift and hold the park brake control switch while the vehicle is in motion, this will keep the electric parking brake applied.

DESCRIPTION AND OPERATION > PARK BRAKE SYSTEM DESCRIPTION AND OPERATION (J77) > SYSTEM COMPONENT DESCRIPTION

The park brake system consists of the following:

Electronic Parking Brake Control Module

Electronically transfers park brake system apply input force to the park brake cable system. Refer to Electronic Parking Brake Description (J77, Cable Puller) Electronic Parking Brake Description (J71, Motor on Caliper) .

Park Brake Cables

Transfers input force, through park brake cable equalizer, to park brake apply lever.

Park Brake Cable Equalizer

Evenly distributes input force to both the left and right park brake units.

Park Brake Apply Lever

Multiplies and transfers input force to park brake actuator.

Park Brake Actuator/Adjuster

Uses multiplied input force from apply lever to expand park brake shoe toward the friction surface of the drum-in-hat portion of the rear brake rotor.

Threaded park brake actuators are also used to control clearance between the park brake shoe and the friction surface of the drum-in-hat portion of the rear brake rotor.

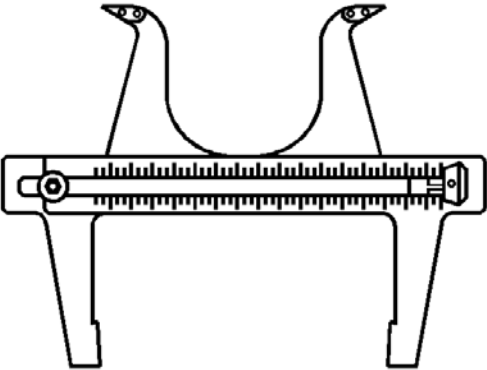
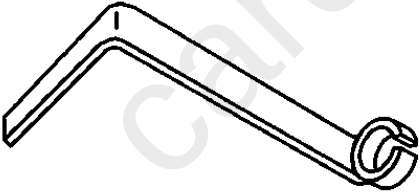
Park Brake Shoe

Applies mechanical output force from park brake actuator to friction surface of the drum-in-hat portion of the rear brake rotor.

DESCRIPTION AND OPERATION > PARK BRAKE SYSTEM DESCRIPTION AND OPERATION (J77) > SYSTEM OPERATION

Park brake apply input force is transferred and evenly distributed, through the park brake cables and the park brake cable equalizer, to the left and right park brake apply levers. The park brake apply levers multiply and transfer the apply input force to the park brake actuators which expand the park brake shoe toward the friction surface of the drum-in-hat portion of the rear brake rotor in order to prevent the rotation of the rear tire and wheel assemblies. The park brake lever/pedal assembly, if equipped, releases an applied park brake system when it is depressed again.

SPECIAL TOOLS AND EQUIPMENT > SPECIAL TOOLS

Illustration	Tool Number/ Description
	CH 21177 J 21177 Drum To Brake Shoe Clearance Gauge
	CH 37043 J 37043 Parking Brake Cable Release Tool