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SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

	Specification	
Application	Metric	English
Front Park Brake Cable Bracket Bolt	20 N.m	15 lb ft
Front Park Brake Cable Cowl Bolt (RHD)	20 N.m	15 lb ft
Front Park Brake Cable Lower Bolt (RHD)	20 N.m	15 lb ft
Park Brake Cable Bracket Nut	48 N.m	35 lb ft
Park Brake Cable Clip Bolt	25 N.m	18 lb ft
Park Brake Lever Lower Bracket Nut (RHD)	20 N.m	15 lb ft
Park Brake Lever Side Bracket Bolt (RHD)	20 N.m	15 lb ft
Park Brake Lever Upper Bracket Bolt (RHD)	20 N.m	15 lb ft
Park Brake Lever Upper Nut (RHD)	20 N.m	15 lb ft
Park Brake Pedal Bolt	20 N.m	15 lb ft
Park Brake Pedal Nut	20 N.m	15 lb ft
Park Brake Warning Lamp Switch Bolt	3 N.m	25 lb in

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - PARK BRAKE

Begin the system diagnosis by reviewing the system description and operation. Reviewing the description and operation information will help you determine the correct symptom diagnostic procedure when a malfunction exists. Reviewing the description and operation information will also help you determine if the condition described by the customer is normal operation. Refer to **Symptoms - Park Brake** in order to identify the correct procedure for diagnosing the system and where the procedure is located.

DTC B0005

Diagnostic Instructions

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- Perform the **Diagnostic System Check Vehicle** prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach
- **<u>Diagnostic Procedure Instructions</u>** provides an overview of each diagnostic category

DTC Descriptor

DTC B0005

In Park Switch Signal Circuit

Diagnostic Fault Information

DTC B0005

Circuit	Short to	Open/High	Short to	Signal
	Ground	Resistance	Voltage	Performance
Park Brake Switch Signal	B0005	-	-	-

Circuit/System Description

The body control module (BCM) monitors the park brake switch via the park brake switch signal circuit. With the park brake applied, the switch is closed and the signal circuit is grounded. The BCM will then send a serial data message to the IPC requesting the red brake warning indicator be illuminated.

Conditions for Running the DTC

Ignition is ON

Conditions for Setting the DTC

- Vehicle speed is greater than 5 mph (8 km/h)
- The BCM detects the park brake switch signal is grounded

Action Taken When the DTC Sets

The red brake warning indicator is illuminated

Conditions for Clearing the DTC

- A current DTC will clear when the condition for setting the DTC is no longer present
- A history DTC will clear after 100 malfunction free ignition cycles

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Reference Information

Schematic Reference

Hydraulic Brake Schematics

Connector End View Reference

Hydraulic Brake Connector End Views

Description and Operation

Brake Warning System Description and Operation

Electrical Information Reference

- Circuit Testing
- <u>Connector Repairs</u>
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Circuit/System Verification

Observe the scan tool BCM Park Brake Switch parameter while applying and releasing the park brake. The parameter should cycle between Applied and Release.

Circuit/System Testing

- 1. Ignition OFF, disconnect the harness connector at the park brake switch.
- 2. Ignition ON, verify the scan tool BCM Park Brake Switch parameter is Released.
 - If not the specified value, test the signal circuit terminal A for a short to ground. If the circuit tests normal, replace the BCM.
- 3. Install a 3A fused jumper wire between the signal circuit terminal A and ground. Verify the scan tool BCM Park Brake Switch parameter is Applied.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
- 4. If all circuits test normal, test or replace the park brake switch.

Repair Procedures

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Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- <u>Parking Brake Indicator Switch Replacement (LHD)</u> or <u>Parking Brake Indicator</u> <u>Switch Replacement (RHD)</u>
- <u>Control Module References</u> for BCM replacement, setup and programming

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**.

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.

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

PARK BRAKE WILL NOT HOLD OR RELEASE

Park Brake Will Not Hold or Release

Step	Action	Yes	No
	Were you sent here from the Park Brake		Go to
1	Symptom table?		Diagnostic
1			Starting Point -
		Go to Step 2	Park Brake
	Inspect the park brake system for proper		
2	operation. Refer to Park Brake System		
Z	Diagnosis.		
	Did you find and correct a condition?	Go to Step 5	Go to Step 3
	Inspect the disc brake system for proper		
3	operation. Refer to Disc Brake System		
3	operation. Refer to Disc Brake System		

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	Diagnosis .		
	Did you find and correct a condition?	Go to Step 5	Go to Step 4
	Inspect the hydraulic brake system for		Go to
4	proper operation. Refer to Hydraulic		Diagnostic
4	Brake System Diagnosis .		Starting Point -
	Did you find and correct a condition?	Go to Step 5	<u>Park Brake</u>
	Road test the vehicle in order to confirm		
5	proper operation. Refer to Brake System		
3	Vehicle Road Test .		
	Is the condition still present?	Go to Step 2	System OK

PARK BRAKE SYSTEM DIAGNOSIS

Park Brake System Diagnosis

Step	Action	Yes	No		
DEFINITION: '	DEFINITION: This diagnostic table is designed to diagnose ONLY the components of the				
PARK brake sys	stem in order to determine if the PARK	brake system is op	erating properly.		
You will be dire	ected by the appropriate Symptom Table	e to go to other bra	ake system		
diagnostic tables	s as appropriate.				
1	Were you sent here from a Hydraulic				
1	Brake Symptom Table?	Go to Step 4	Go to Step 2		
2	Were you sent here from a Park Brake				
Δ	Symptom Table?	Go to Step 4	Go to Step 3		
	Is the symptom related to the ability of		Go to		
	the park brake system to hold and/or	Go to	Diagnostic		
3	release?	Diagnostic	Starting Point -		
		Starting Point -	<u>Hydraulic</u>		
		<u>Park Brake</u>	<u>Brakes</u>		
	1. Raise and support the vehicle				
	with the rear axle supported by				
	jack stands. Refer to Lifting and				
	Jacking the Vehicle .				
4	2. Shift the transmission into				
4	NEUTRAL.				
	3. With the park brake				
	RELEASED, attempt to rotate				
	the rear wheels to check the rear				
	brakes for a significant amount of				

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	drag.		
	Do the rear brakes have a significant amount of drag?	Go to Step 11	Go to Step 5
5	 Shift the transmission into NEUTRAL. Apply the park brake. 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 6	Go to Step 7
6	 Release the park brake. Rotate the rear wheels to check the rear brakes for a significant reduction in the amount of drag. 		
	Did the rear brakes exhibit a significant reduction in the amount of drag?	Go to Step 22	Go to Step 11
7	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 8	Go to Step 9
8	Reconnect or replace the park brake cables as necessary. Refer to the following procedures as necessary: • <u>Parking Brake Lever Pedal</u> <u>Assembly Replacement</u> • <u>Park Brake Lever Assembly</u>		-
	<u>Replacement (RHD)</u> • <u>Parking Brake Front Cable</u> <u>Replacement (RHD)</u>		

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	 <u>Parking Brake Rear Cable</u> <u>Replacement - Left Side</u> Parking Brake Rear Cable 		
	Replacement - Right Side		
	Did you complete the repair and/or replacement?	Go to Step 9	
9	Check the adjustment of the park brake. Refer to <u>Park Brake</u> <u>Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u> . Was the park brake adjusted properly?	Go to Step 11	Go to Step 10
10	Adjust the park brake. Refer to <u>Park</u> <u>Brake Adjustment (LHD)</u> or <u>Park</u> <u>Brake Adjustment (RHD)</u> . Were you able to attain adjustment of the park brake?	Go to Step 16	Go to Step 11
11	 NOTE: 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. 1. Remove the rear brake rotors. Refer to <u>Rear Brake Rotor</u> <u>Replacement</u>. 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 actuators require replacement? 	Go to Step 12	Go to Step 13
	1. Replace park brake hardware components as necessary. Refer		

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12	 to <u>Parking Brake Shoe</u> <u>Replacement</u>. 2. Replace the park brake actuators as necessary. Refer to <u>Parking</u> <u>Brake Actuator Replacement</u>. Did you complete the replacement? 	Go to Step 13	_
13	Have an assistant apply and release the park brake, while you observe the park brake cables for free movement. Did the park brake cables move freely?	Go to Step 14	Go to Step 17
14	Check the adjustment of the park brake. Refer to <u>Park Brake</u> <u>Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u> . Was the park brake adjusted properly?	Go to Step 16	Go to Step 15
15	Adjust the park brake. Refer to <u>Park</u> Brake Adjustment (LHD) or <u>Park</u> Brake Adjustment (RHD). Were you able to attain adjustment of the park brake?	Go to Step 16	Go to Step 25
16	 With the transmission still in NEUTRAL, apply the park brake. Attempt to rotate the rear wheels to check the rear brakes for a significant amount of drag. Release the park brake. 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 27	Return to Symptom Table
	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	- E	

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17	movement. Do any of the park brake cables accessible on the underside of the vehicle require replacement? Replace any of the park brake cables that do not have free movement and/or are not releasing properly. Refer to the following procedures as necessary:	Go to Step 18	Go to Step 19
18	 Parking Brake Lever Pedal <u>Assembly Replacement</u> Park Brake Lever Assembly <u>Replacement (RHD)</u> Parking Brake Front Cable <u>Replacement (RHD)</u> Parking Brake Rear Cable <u>Replacement - Left Side</u> Parking Brake Rear Cable <u>Replacement - Right Side</u> 	Go to Step 19	-
19	 Disconnect the front park brake cable connection accessible INSIDE the vehicle at the park brake pedal assembly or the park brake lever assembly (RHD) and check for free movement. Replace the front park brake cable if it does not have free movement. Refer to <u>Parking</u> <u>Brake Lever Pedal Assembly Replacement</u> or <u>Parking Brake Front Cable Replacement (RHD)</u>. Did you find and correct a condition? 	Go to Step 25	Go to Step 20 or Go to Step 21 (RHD)
	1. Disconnect the park brake release		

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	handle assembly cable connection from the park brake pedal			
20	 assembly and check for free movement. 2. Replace the park brake release handle assembly if the release cable does not have free movement. Refer to Parking Brake Release Handle Assembly Replacement. 			
	Did you find and correct a condition?	Go to Step 25	Go to Step 21	
21	Replace the park brake pedal assembly or park brake lever assembly (RHD) that is not releasing properly. Refer to Parking Brake Lever Pedal Assembly Replacement or Park Brake Lever Assembly Replacement		-	
	(RHD). Did you complete the replacement?	Go to Step 25		
22	Check the adjustment of the park brake. Refer to <u>Park Brake</u> <u>Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u> . Is the park brake adjusted properly?	Go to Step 25	Go to Step 23	
23	Adjust the park brake. Refer to <u>Park</u> Brake Adjustment (LHD) or <u>Park</u> Brake Adjustment (RHD). Were you able to attain adjustment of the park brake system?	Go to Step 26	Go to Step 23	
24	 Remove the rear brake rotors, if they have not yet been removed. Refer to <u>Rear Brake Rotor</u> <u>Replacement</u>. Check the park brake actuators for a seized condition. Replace the park brake actuators as necessary. Refer to <u>Parking</u> 			

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	Brake Actuator Replacement.		Return to
	Did you find and correct a condition?	Go to Step 25	Symptom Table
	Adjust the park brake. Refer to <u>Park</u> Brake Adjustment (LHD) or <u>Park</u>		
25	Brake Adjustment (RHD).		
	Were you able to attain adjustment of the park brake system?	Go to Step 26	Return to Symptom Table
	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.		
26	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 27	Return to Symptom Table
	Install or connect any components that	Park Brake	
27	were removed or disconnected during	System OK	
21	diagnosis. Did you complete the operation?	Return to Symptom Table	-

PARKING BRAKE SHOE INSPECTION

CAUTION: Refer to Brake Dust Caution .

- 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
- 2. Remove the tire and wheel. Refer to **<u>Tire and Wheel Removal and Installation</u>**.
- 3. Remove the rear brake caliper bracket with the rear brake caliper. Refer to <u>Rear Brake</u> <u>Caliper Bracket Replacement</u>.
- 4. Remove the rear brake rotor. Refer to **<u>Rear Brake Rotor Replacement</u>**.
- 5. Inspect and replace the park brake shoe and lining if any of the following conditions are

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found:

- Excessive wear indicated by the park brake lining being worn down to the shoe
- Brake lining cracking
- Oil or fluid contamination of the brake lining
- 6. Adjust the park brake shoe. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u>.
- 7. Install the rear brake rotor. Refer to **<u>Rear Brake Rotor Replacement</u>**.
- 8. Install the rear brake caliper with the rear brake caliper bracket. Refer to <u>Rear Brake</u> <u>Caliper Bracket Replacement</u>.
- 9. Install the tire and wheel. Refer to **<u>Tire and Wheel Removal and Installation</u>**.
- 10. Lower the vehicle.

PARK BRAKE DRUM INSPECTION

CAUTION: Refer to Brake Dust Caution .

- 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
- 2. Remove the tire and wheel. Refer to **<u>Tire and Wheel Removal and Installation</u>**.
- 3. Remove the rear brake caliper bracket with the rear brake caliper. Refer to <u>Rear Brake</u> <u>Caliper Bracket Replacement</u>.
- 4. Remove the rear brake rotor. Refer to **<u>Rear Brake Rotor Replacement</u>**.
- 5. Inspect and replace the park brake shoe and lining if any of the following conditions are found:
 - Excessive wear indicated by the park brake lining being worn down to the shoe
 - Brake lining cracking
 - Oil or fluid contamination of the brake lining
- 6. Adjust the park brake shoe. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u>.
- 7. Install the rear brake rotor. Refer to **<u>Rear Brake Rotor Replacement</u>**.
- 8. Install the rear brake caliper with the rear brake caliper bracket. Refer to <u>Rear Brake</u> <u>Caliper Bracket Replacement</u>.
- 9. Install the tire and wheel. Refer to **<u>Tire and Wheel Removal and Installation</u>**.
- 10. Lower the vehicle.

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REPAIR INSTRUCTIONS

PARKING BRAKE SHOE REPLACEMENT

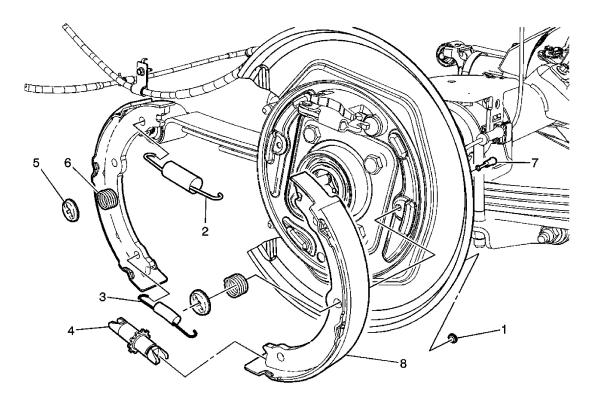


Fig. 1: Identifying Parking Brake Shoe Components Courtesy of GENERAL MOTORS CORP.

Parking Brake Shoe Replacement

Callout	Component Name
Preliminary	Procedures
1 D	
1. Raise and	d support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove	the tire and wheel. Refer to <u>Tire and Wheel Removal and Installation</u> .
3. Remove	the brake rotor. Refer to Rear Brake Rotor Replacement .
1	Plug, Park Brake Adjuster Access
2	Spring, Park Brake Shoe Upper Return
3	Spring, Park Brake Shoe Lower Return
	Adjuster, Park Brake Shoe
	Tip:

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4	 Clean the adjuster threads and apply a light coat of high temperature brake lubricant to the adjuster threads. Fully retract the park brake shoe adjuster.
5	Cap, Park Brake Shoe Retainer Spring (Qty: 2)
6	Spring, Park Brake Shoe Retainer (Qty: 2)
7	Pin, Park Brake Shoe Retainer Spring (Qty: 2)
8	 Shoe, Park Brake (Qty: 2) Tip: Set the J 21177-A so that it contacts the inside diameter of the rotor. See <u>Special Tools</u>. Position the J 21177-A over the shoe and the lining at the widest point. See <u>Special Tools</u>. Turn the adjuster nut until the lining just contacts the J 21177-A . See <u>Special Tools</u>. Turn the adjuster nut until the lining just contacts the J 21177-A . See <u>Special Tools</u>. Repeat steps 1-3 for the opposite side. Adjust the park brake cable. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake Adjustment (RHD)</u>.

PARKING BRAKE RELEASE HANDLE ASSEMBLY REPLACEMENT

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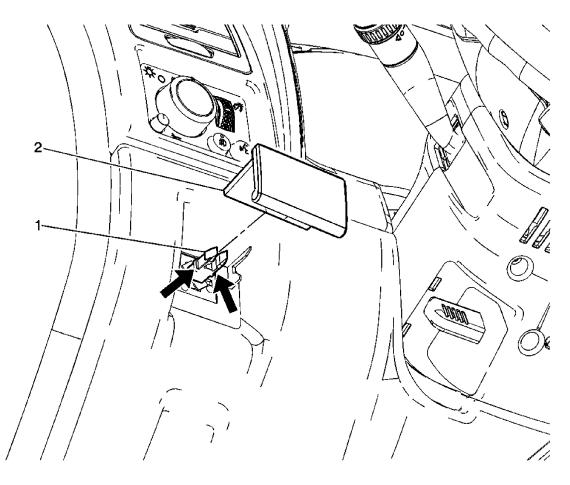


Fig. 2: Replacing Park Brake Release Handle Assembly Courtesy of GENERAL MOTORS CORP.

Parking Brake Release Handle Assembly Replacement

Callout	Component Name	
Fastener Tightening Specifications: Refer to Fastener Tightening Specifications.		
	Cable, Park Brake Front	
1	Tip: Depress the locking tabs on the park brake release cable in order to	
	release the park brake handle.	
2	Handle, Park Brake Release	

PARK BRAKE RELEASE CABLE REPLACEMENT

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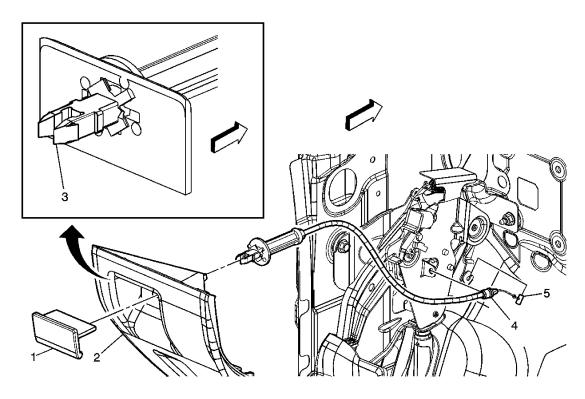


Fig. 3: Replacing Park Brake Release Cable Courtesy of GENERAL MOTORS CORP.

Park Brake Release Cable Replacement

Callout	Component Name	
Fastener Tightening Specifications: Refer to Fastener Tightening Specifications.		
1	Handle, Park Brake Release Tip: Depress the locking tabs on the park brake front cable in order to release the park brake handle. Refer to Parking Brake Release Handle	
	Assembly Replacement.	
2	Panel, Knee Bolster Trim Tip: Remove the knee bolster trim panel in order to access the park brake front cable. Refer to Driver Knee Bolster Replacement (Left Hand Drive) or Driver Knee Bolster Replacement (Right Hand Drive) .	
3	Cable, Park Brake Front Tip: Twist to remove the park brake front cable from the knee bolster trim panel. The park brake front cable is secured by the locking notches in the knee bolster trim panel.	
4	Grommet, Front Park Brake Cable Tip: Install the grommet to the park brake pedal assembly attachment point.	

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5 Cable, Park Brake Front **Tip:** Install the cable end to the park brake pedal clip.

PARKING BRAKE LEVER PEDAL ASSEMBLY REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .

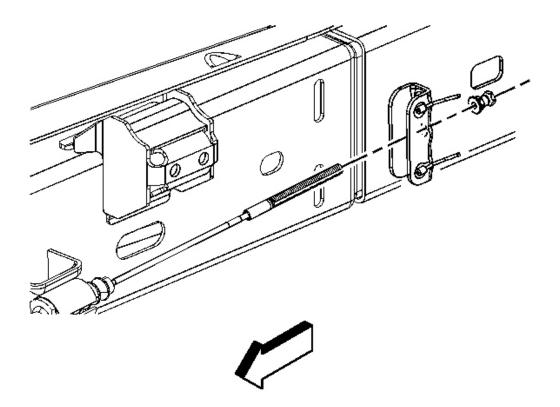


Fig. 4: Identifying Equalizer Bar Adjustment Nut Courtesy of GENERAL MOTORS CORP.

2. Remove the equalizer bar adjustment nut.

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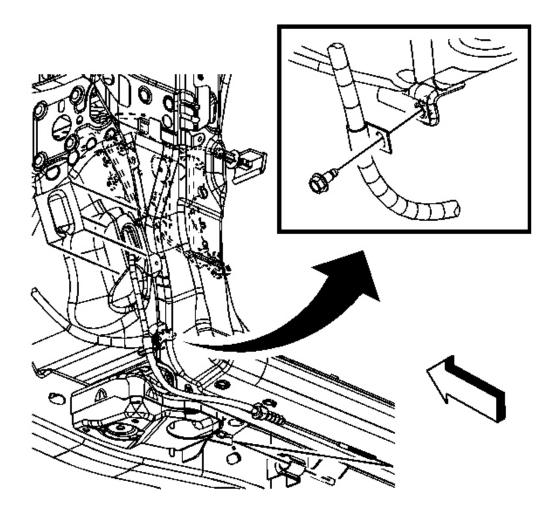


Fig. 5: Removing/Installing Brake Cable Bracket Bolt Courtesy of GENERAL MOTORS CORP.

- 3. Remove the front brake cable from the frame bracket.
- 4. Remove the front brake cable bracket bolt.
- 5. Lower the vehicle.
- 6. Remove the left side trim panel. Refer to <u>Cowl Side Trim Panel Replacement</u>.

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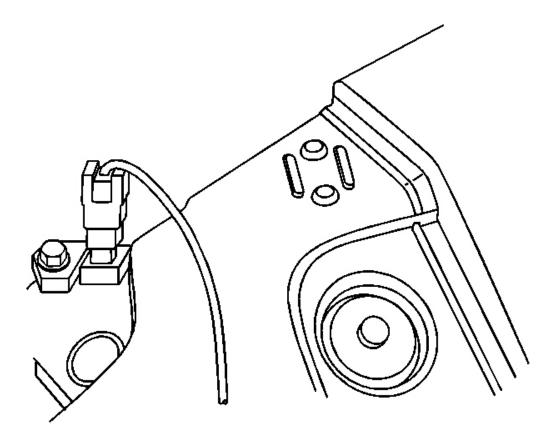


Fig. 6: Identifying Park Brake Warning Lamp Switch Electrical Connector Courtesy of GENERAL MOTORS CORP.

- 7. Disconnect the park brake warning lamp connection.
- 8. Disconnect the park brake release cable from the park brake pedal.

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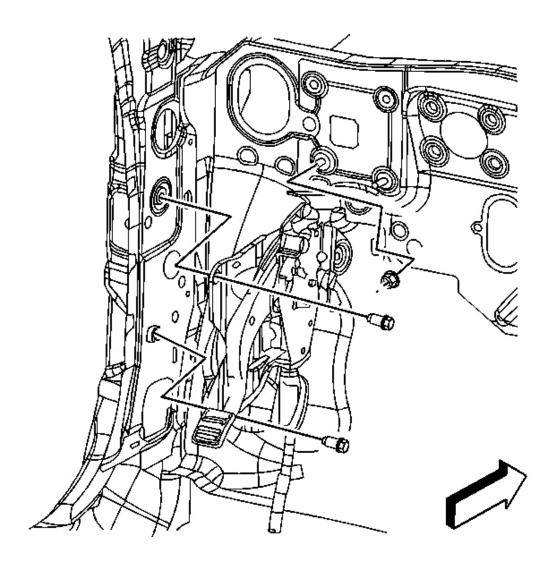


Fig. 7: Park Brake Pedal Assembly Removal/Installation Courtesy of GENERAL MOTORS CORP.

- 9. Remove the park brake pedal mounting nut.
- 10. Remove the park brake pedal mounting bolts.
- 11. Remove the pedal assembly from the vehicle.

Installation Procedure

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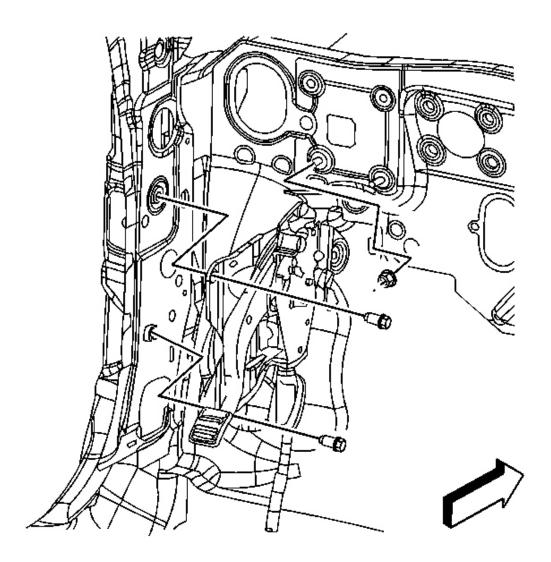


Fig. 8: Park Brake Pedal Assembly Removal/Installation Courtesy of GENERAL MOTORS CORP.

1. Install the pedal assembly to the vehicle.

NOTE: Refer to <u>FASTENER NOTICE</u>.

2. Install the park brake pedal mounting bolts.

Tighten: Tighten the bolts to 20 N.m (15 lb ft).

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3. Install the park brake pedal mounting nut.

Tighten: Tighten the nut to 20 N.m (15 lb ft).

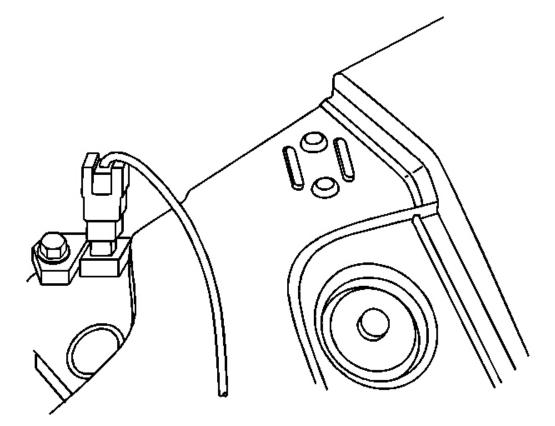


Fig. 9: Identifying Park Brake Warning Lamp Switch Electrical Connector Courtesy of GENERAL MOTORS CORP.

- 4. Connect the park brake release cable to the park brake lever.
- 5. Connect the park brake warning lamp connector.
- 6. Install the left side trim panel. Refer to <u>Cowl Side Trim Panel Replacement</u>.
- 7. Raise the vehicle.

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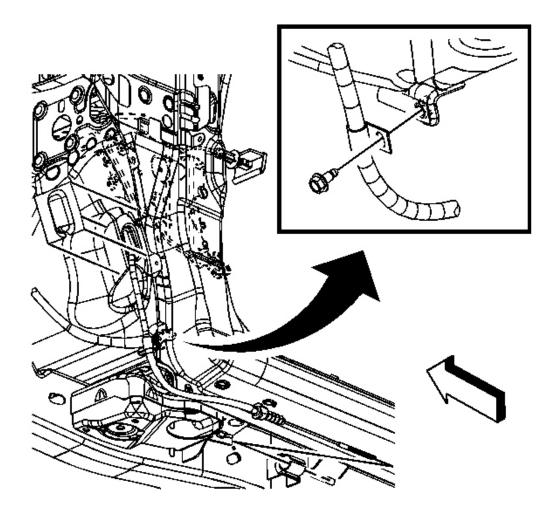


Fig. 10: Removing/Installing Brake Cable Bracket Bolt Courtesy of GENERAL MOTORS CORP.

8. Install the front brake cable bracket bolt.

Tighten: Tighten the bolts to 20 N.m (15 lb ft).

9. Install the front brake cable to the frame bracket.

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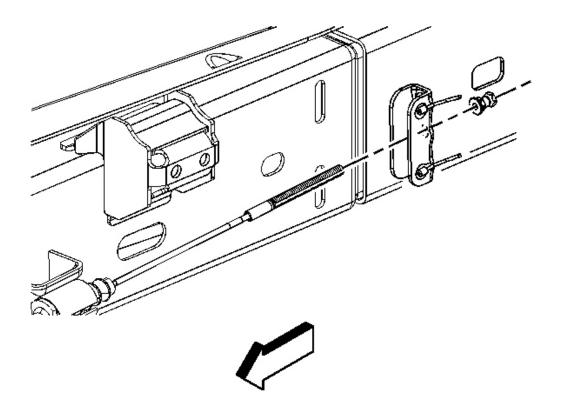


Fig. 11: Identifying Equalizer Bar Adjustment Nut Courtesy of GENERAL MOTORS CORP.

- 10. Install the equalizer bar adjustment nut.
- 11. Adjust the park brake. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u>.

PARK BRAKE LEVER ASSEMBLY REPLACEMENT (RHD)

Removal Procedure

1. Release the park brake lever.

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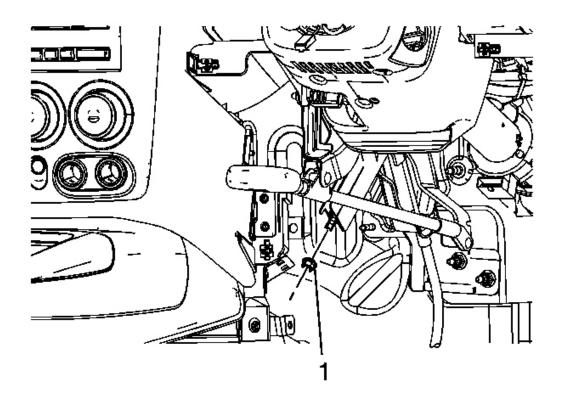


Fig. 12: Identifying Park Brake Cable Adjuster Nut Courtesy of GENERAL MOTORS CORP.

- 2. Remove the driver knee bolster bracket. Refer to <u>Driver Knee Bolster Bracket</u> <u>Replacement (Left Hand Drive)</u> or <u>Driver Knee Bolster Bracket Replacement (Right</u> <u>Hand Drive)</u>.
- 3. Remove the park brake cable adjuster nut (1).

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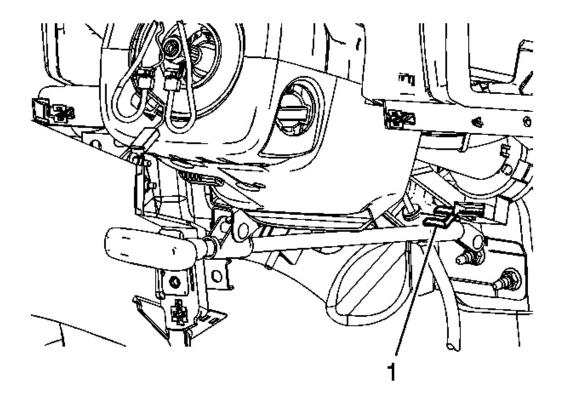


Fig. 13: Identifying Park Brake Cable Retaining Clip Courtesy of GENERAL MOTORS CORP.

- 4. Remove the park brake cable retaining clip (1).
- 5. Remove the front park brake cable from the park brake lever and position aside.

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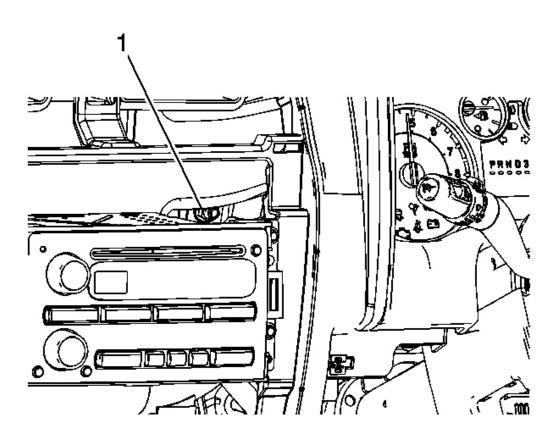


Fig. 14: Locating Park Brake Lever Upper Nut Courtesy of GENERAL MOTORS CORP.

- 6. Remove the instrument panel center trim panel. Refer to <u>Instrument Panel Center Trim</u> <u>Panel Replacement (Left Hand Drive)</u> or <u>Instrument Panel Center Trim Panel</u> <u>Replacement (Right Hand Drive)</u>.
- 7. Using an appropriate socket and extension, remove the park brake lever upper nut (1) through the opening above the radio.

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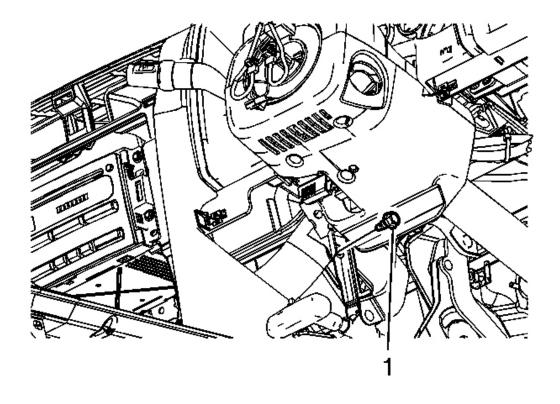


Fig. 15: Identifying Park Brake Lever Side Bracket Bolt Courtesy of GENERAL MOTORS CORP.

8. Remove the park brake lever side bracket bolt (1).

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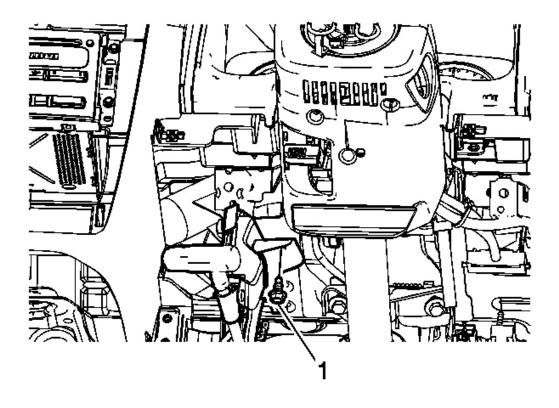


Fig. 16: Removing/Installing Park Brake Lever Upper Bracket Bolt Courtesy of GENERAL MOTORS CORP.

9. Remove the park brake lever upper bracket bolt (1).

2007 BRAKES Park Brake - H3

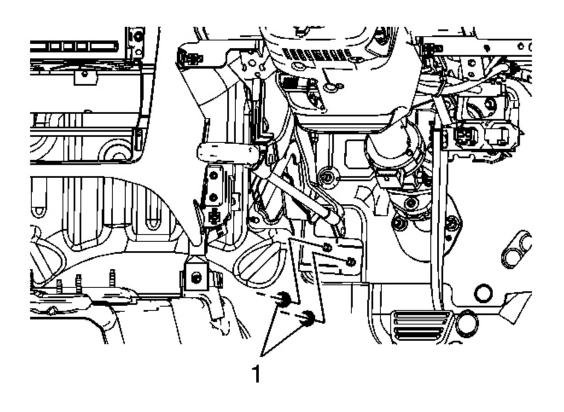


Fig. 17: Removing/Installing Park Brake Lever Lower Bracket Nuts Courtesy of GENERAL MOTORS CORP.

- 10. Remove the 2 park brake lever lower bracket nuts (1).
- 11. Lower the park brake lever assembly and disconnect the park brake warning lamp switch electrical connector.
- 12. Remove the park brake lever assembly.

Installation Procedure

2007 BRAKES Park Brake - H3

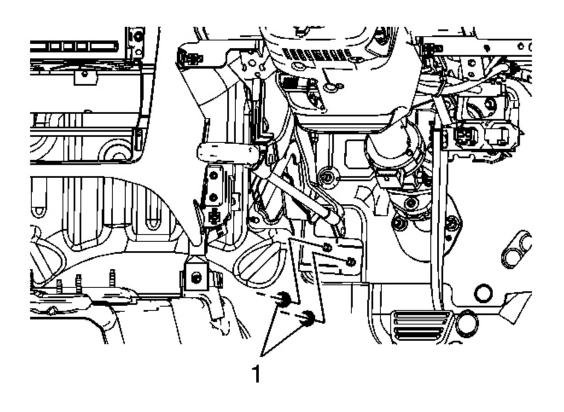


Fig. 18: Removing/Installing Park Brake Lever Lower Bracket Nuts Courtesy of GENERAL MOTORS CORP.

1. Connect the park brake warning lamp switch electrical connector and position the park brake lever assembly to the vehicle.

NOTE: Refer to Fastener Notice .

2. Install the 2 park brake lever lower bracket nuts (1).

Tighten: Tighten the nuts to 20 N.m (15 lb ft).

2007 BRAKES Park Brake - H3

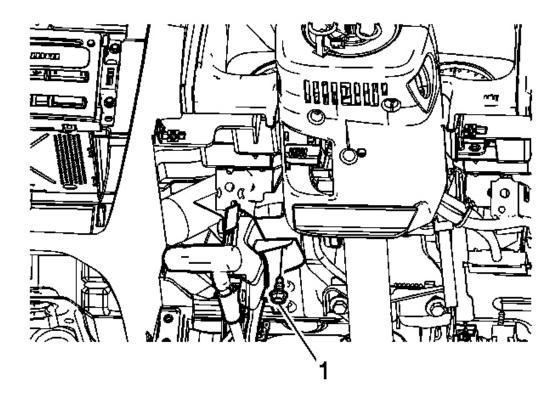


Fig. 19: Removing/Installing Park Brake Lever Upper Bracket Bolt Courtesy of GENERAL MOTORS CORP.

3. Install the park brake lever upper bracket bolt (1).

Tighten: Tighten the bolt to 20 N.m (15 lb ft).

2007 BRAKES Park Brake - H3

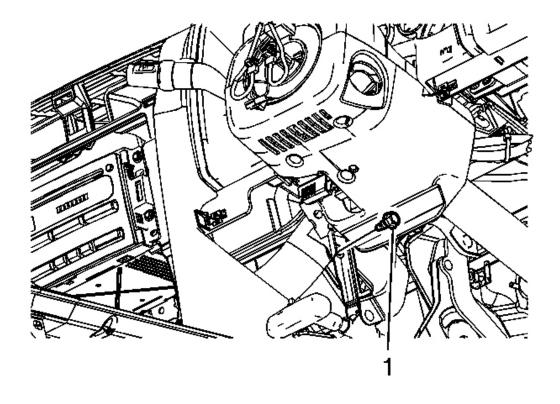


Fig. 20: Identifying Park Brake Lever Side Bracket Bolt Courtesy of GENERAL MOTORS CORP.

4. Install the park brake lever side bracket bolt (1).

Tighten: Tighten the bolt to 20 N.m (15 lb ft).

2007 BRAKES Park Brake - H3

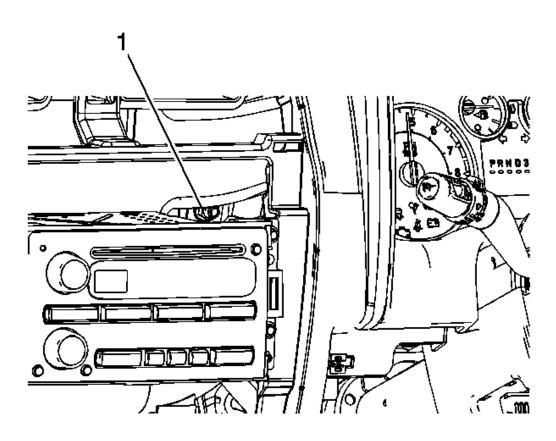


Fig. 21: Locating Park Brake Lever Upper Nut Courtesy of GENERAL MOTORS CORP.

5. Using an appropriate socket and extension, install the park brake lever upper nut (1) through the opening above the radio.

Tighten: Tighten the nut to 20 N.m (15 lb ft).

6. Install the instrument panel center trim panel. Refer to <u>Instrument Panel Center Trim</u> <u>Panel Replacement (Left Hand Drive)</u> or <u>Instrument Panel Center Trim Panel</u> <u>Replacement (Right Hand Drive)</u>.

2007 BRAKES Park Brake - H3

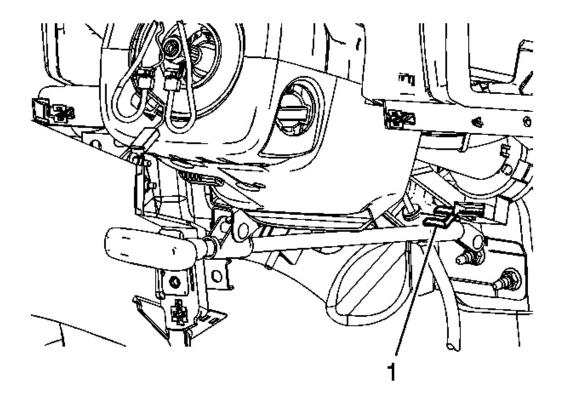


Fig. 22: Identifying Park Brake Cable Retaining Clip Courtesy of GENERAL MOTORS CORP.

- 7. Install the front park brake cable to the park brake lever.
- 8. Install the park brake cable retaining clip (1).

2007 BRAKES Park Brake - H3

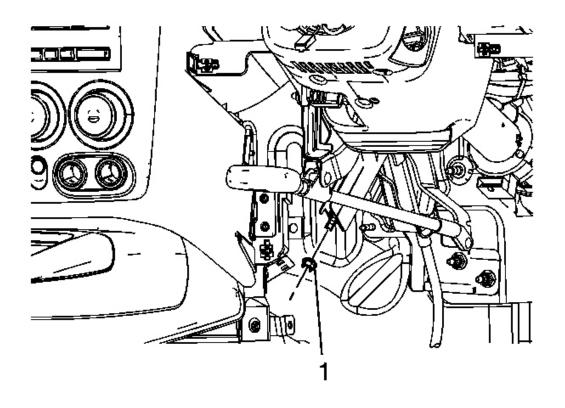


Fig. 23: Identifying Park Brake Cable Adjuster Nut Courtesy of GENERAL MOTORS CORP.

- 9. Loosely install the park brake cable adjuster nut (1).
- 10. Adjust the park brake. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u>.
- Install the driver knee bolster bracket. Refer to <u>Driver Knee Bolster Bracket</u> <u>Replacement (Left Hand Drive)</u> or <u>Driver Knee Bolster Bracket Replacement (Right</u> <u>Hand Drive)</u>.

PARKING BRAKE INDICATOR SWITCH REPLACEMENT (LHD)

Removal Procedure

2007 BRAKES Park Brake - H3

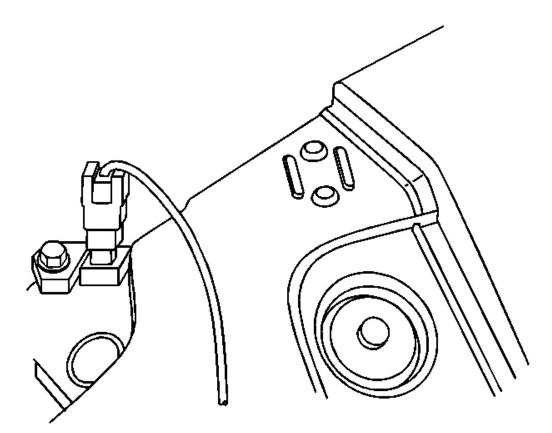


Fig. 24: Identifying Park Brake Warning Lamp Switch Electrical Connector Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to **BATTERY DISCONNECT CAUTION** .

- 1. Disconnect the negative battery cable. Refer to <u>Battery Negative Cable Disconnection</u> <u>and Connection</u>.
- 2. Remove the MID-bussed electrical center from the bracket.
- 3. Disconnect the park brake warning lamp switch electrical connector.

2007 BRAKES Park Brake - H3

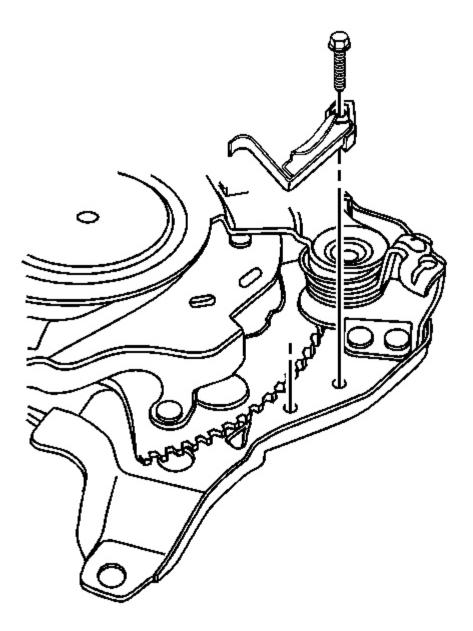


Fig. 25: View Of Park Brake Warning Lamp Switch & Mounting Bolt Courtesy of GENERAL MOTORS CORP.

- 4. Remove the park brake warning lamp switch mounting bolt.
- 5. Remove the park brake warning lamp switch.

2007 BRAKES Park Brake - H3

Installation Procedure

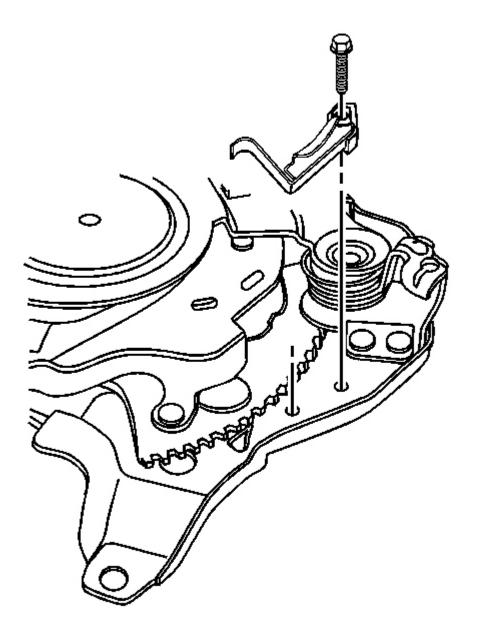


Fig. 26: View Of Park Brake Warning Lamp Switch & Mounting Bolt Courtesy of GENERAL MOTORS CORP.

1. Install the park brake warning lamp switch.

2007 BRAKES Park Brake - H3

NOTE: Refer to <u>FASTENER NOTICE</u>.

2. Install the park brake warning lamp switch mounting bolt.

Tighten: Tighten the bolt to 3 N.m (25 lb in).

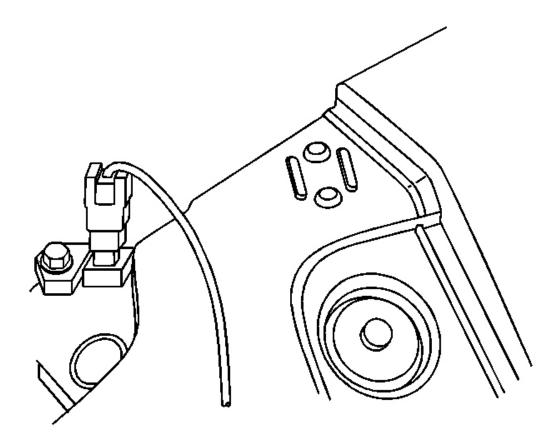


Fig. 27: Identifying Park Brake Warning Lamp Switch Electrical Connector Courtesy of GENERAL MOTORS CORP.

- 3. Connect the park brake warning lamp switch electrical connector.
- 4. Install the MID-bussed electrical center to the bracket.
- 5. Connect the negative battery cable. Refer to <u>Battery Negative Cable Disconnection and</u> <u>Connection</u>.

PARKING BRAKE INDICATOR SWITCH REPLACEMENT (RHD)

2007 BRAKES Park Brake - H3

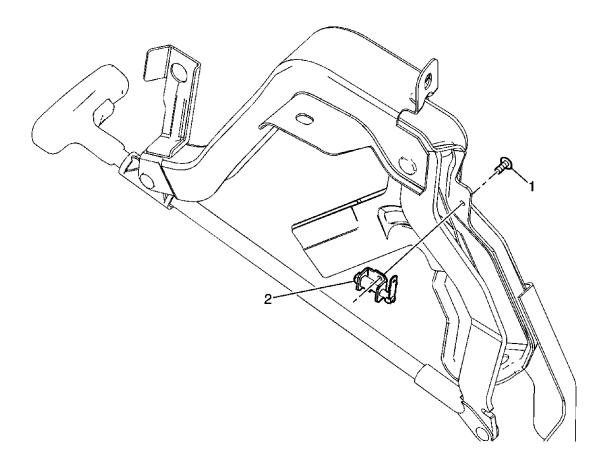


Fig. 28: Locating Parking Brake Indicator Switch Courtesy of GENERAL MOTORS CORP.

Parking Brake Indicator Switch Replacement (RHD)

Callout	Component Name
Preliminary l	Procedures
2. Release t	e vehicle on a level surface and block the wheels. the park brake lever.
5. Remove (RHD).	the park brake lever. Refer to Park Brake Lever Assembly Replacement
1	Park Brake Warning Lamp Switch Bolt NOTE: Refer to <u>Fastener Notice</u> . Tighten: 3 N.m (25 lb in)

2007 BRAKES Park Brake - H3

2 Park Brake Warning Lamp Switch

PARKING BRAKE FRONT CABLE REPLACEMENT (RHD)

Removal Procedure

1. Release the park brake lever.

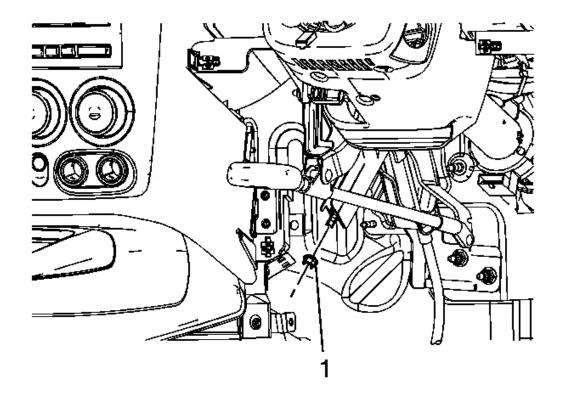


Fig. 29: Identifying Park Brake Cable Adjuster Nut Courtesy of GENERAL MOTORS CORP.

- Remove the driver knee bolster bracket. Refer to <u>Driver Knee Bolster Bracket</u> <u>Replacement (Left Hand Drive)</u> or <u>Driver Knee Bolster Bracket Replacement (Right</u> <u>Hand Drive)</u>.
- 3. Remove the park brake cable adjuster nut (1).

2007 BRAKES Park Brake - H3

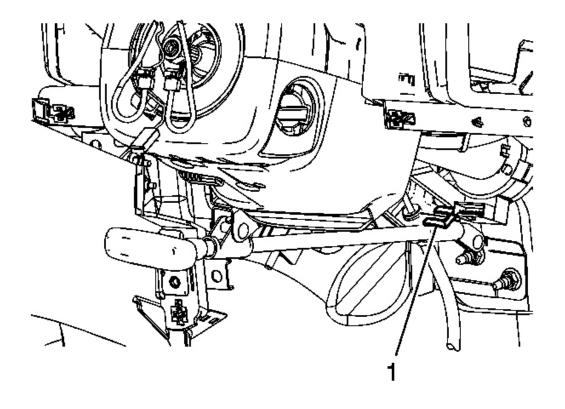


Fig. 30: Identifying Park Brake Cable Retaining Clip Courtesy of GENERAL MOTORS CORP.

- 4. Remove the park brake cable retaining clip (1).
- 5. Remove the front park brake cable from the park brake lever.
- 6. Remove the driver and passenger side cowl side trim panels. Refer to <u>Cowl Side Trim</u> <u>Panel Replacement</u>.

2007 BRAKES Park Brake - H3

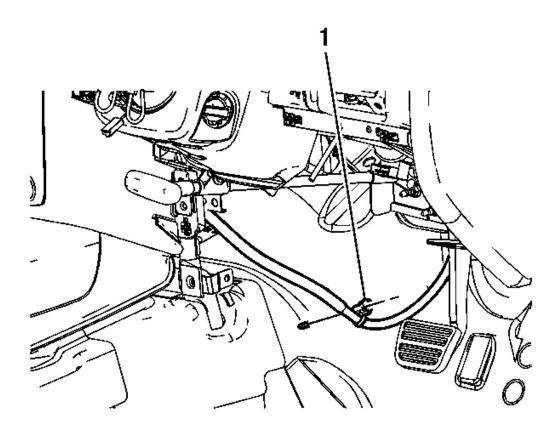


Fig. 31: View Of Front Park Brake Cable Retainer Courtesy of GENERAL MOTORS CORP.

- 7. Carefully position the driver side floor carpet rearward to expose the front park brake cable.
- 8. Release the front park brake cable retainer (1) from the stud on the driveline tunnel.

2007 BRAKES Park Brake - H3

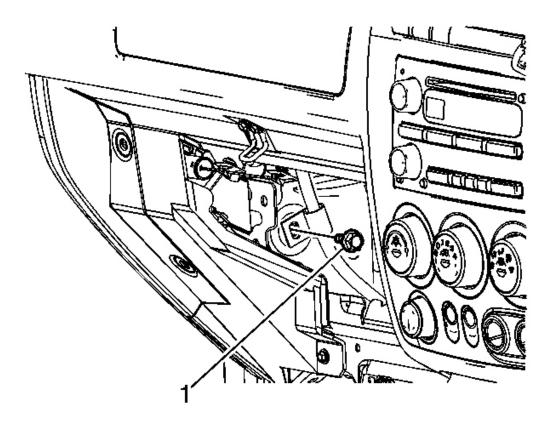


Fig. 32: Removing/Installing Front Park Brake Cable Cowl Bolt Courtesy of GENERAL MOTORS CORP.

- 9. Remove the instrument panel compartment. Refer to <u>Instrument Panel Compartment</u> <u>Replacement (Left Hand Drive)</u> or <u>Instrument Panel Compartment Replacement</u> (<u>Right Hand Drive</u>).
- 10. Remove the front park brake cable cowl bolt.
- 11. Reach through the instrument panel compartment opening and release the front park brake cable from the retainers on the HVAC module.

2007 BRAKES Park Brake - H3

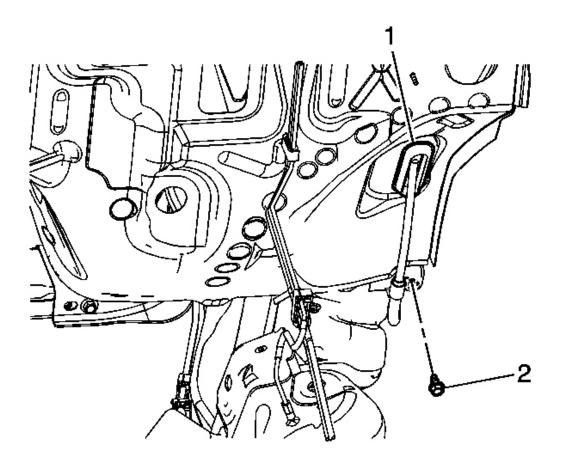


Fig. 33: Identifying Front Park Brake Cable Lower Bolt Courtesy of GENERAL MOTORS CORP.

- 12. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
- 13. Remove the front park brake cable lower bolt (2).
- 14. Release the front park brake cable pass-through grommet (1).

2007 BRAKES Park Brake - H3

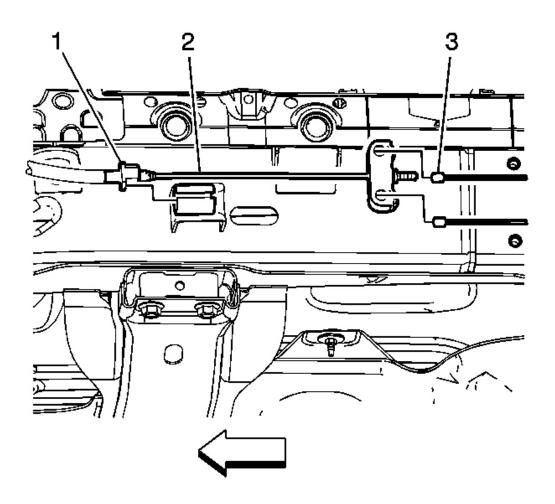


Fig. 34: View Of Front Park Brake Cable Assembly Courtesy of GENERAL MOTORS CORP.

- 15. Disconnect the rear park brake cables (3) from the equalizer.
- 16. Remove the front park brake cable conduit (1) from the cable mounting bracket.
- 17. Remove the front park brake cable assembly (2) from the vehicle.

Installation Procedure

2007 BRAKES Park Brake - H3

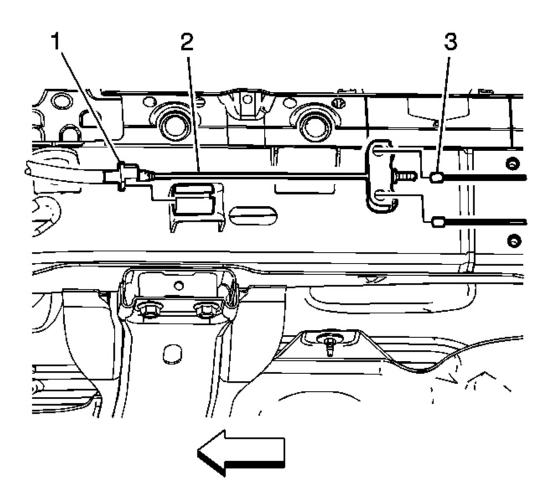


Fig. 35: front park brake cable assembly Courtesy of GENERAL MOTORS CORP.

- 1. Install the front park brake cable assembly (2) to the vehicle.
- 2. Install the front park brake cable conduit (1) to the cable mounting bracket.
- 3. Connect the rear park brake cables (3) to the equalizer.

NOTE: Refer to Fastener Notice .

2007 BRAKES Park Brake - H3

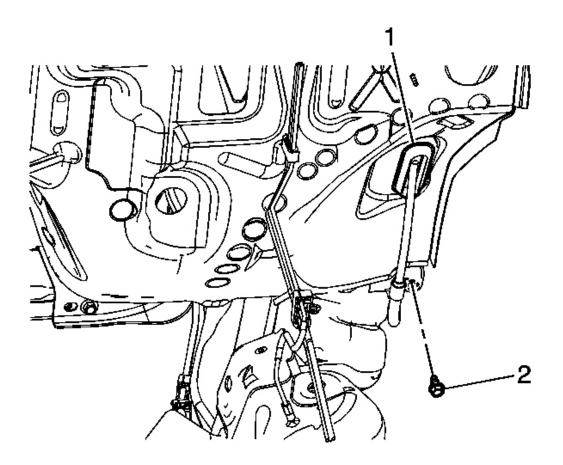


Fig. 36: Identifying Front Park Brake Cable Lower Bolt Courtesy of GENERAL MOTORS CORP.

4. Install the front park brake cable lower bolt (2).

Tighten: Tighten the bolt to 20 N.m (15 lb ft).

- 5. Install the front park brake cable pass-through grommet (1).
- 6. Lower the vehicle. Refer to Lifting and Jacking the Vehicle .

2007 BRAKES Park Brake - H3

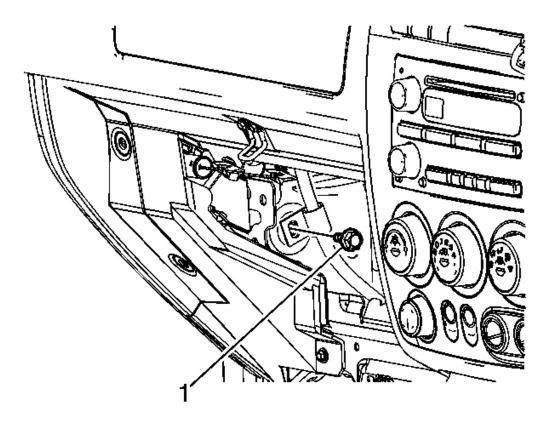


Fig. 37: Removing/Installing Front Park Brake Cable Cowl Bolt Courtesy of GENERAL MOTORS CORP.

7. Install the front park brake cable cowl bolt.

Tighten: Tighten the bolt to 20 N.m (15 lb ft).

- 8. Reach through the instrument panel compartment opening and install the front park brake cable to the retainers on the HVAC module.
- 9. Install the instrument panel compartment. Refer to <u>Instrument Panel Compartment</u> <u>Replacement (Left Hand Drive)</u> or <u>Instrument Panel Compartment Replacement</u> (Right Hand Drive).

2007 BRAKES Park Brake - H3

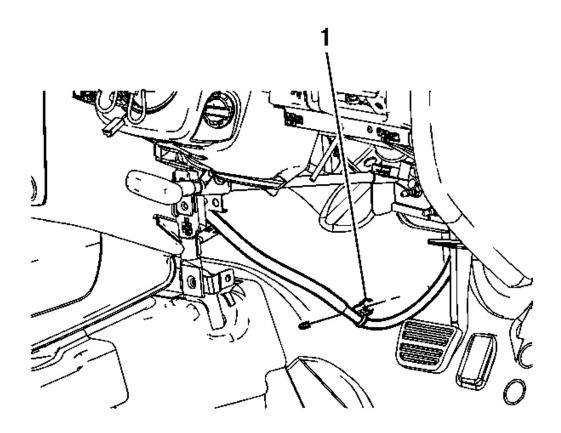


Fig. 38: View Of Front Park Brake Cable Retainer Courtesy of GENERAL MOTORS CORP.

- 10. Install the front park brake cable retainer (1) to the stud on the driveline tunnel.
- 11. Carefully position the driver side floor carpet to the front floor.

2007 BRAKES Park Brake - H3

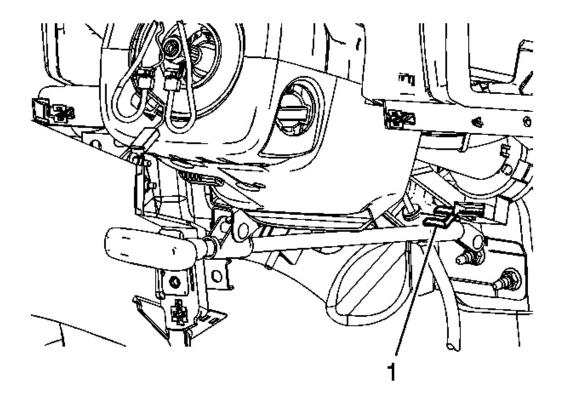


Fig. 39: Identifying Park Brake Cable Retaining Clip Courtesy of GENERAL MOTORS CORP.

- 12. Install the front park brake cable to the park brake lever.
- 13. Install the front park brake cable retaining clip (1).
- 14. Install the driver and passenger side cowl side trim panels. Refer to <u>Cowl Side Trim Panel</u> <u>Replacement</u>.

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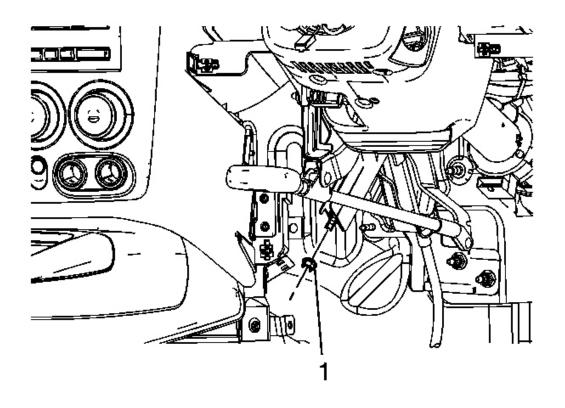


Fig. 40: Identifying Park Brake Cable Adjuster Nut Courtesy of GENERAL MOTORS CORP.

- 15. Loosely install the front park brake cable adjuster nut (1).
- 16. Adjust the park brake. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u>.
- 17. Install the driver knee bolster bracket. Refer to <u>Driver Knee Bolster Bracket</u> <u>Replacement (Left Hand Drive)</u> or <u>Driver Knee Bolster Bracket Replacement (Right</u> <u>Hand Drive)</u>.

PARKING BRAKE REAR CABLE REPLACEMENT - LEFT SIDE

Removal Procedure

- 1. Release the park brake.
- 2. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .

2007 BRAKES Park Brake - H3

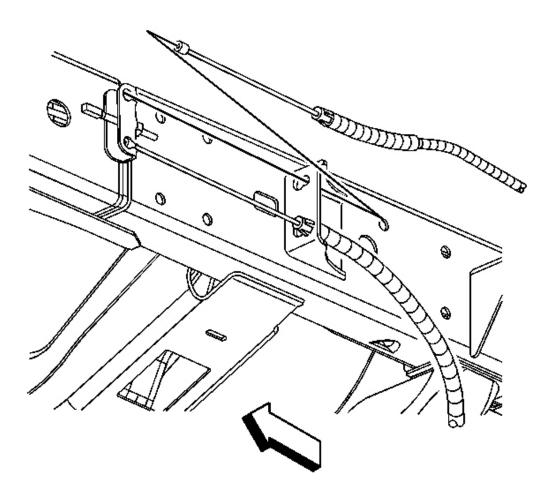


Fig. 41: Park Brake Cable At Frame Bracket Removal/Installation Courtesy of GENERAL MOTORS CORP.

- 3. Relieve the tension from the park brake cable by pulling down on the park brake cable in front of the equalizer and removing the left rear park brake cable from the equalizer bar.
- 4. Remove the park brake cable from the frame bracket.

2007 BRAKES Park Brake - H3

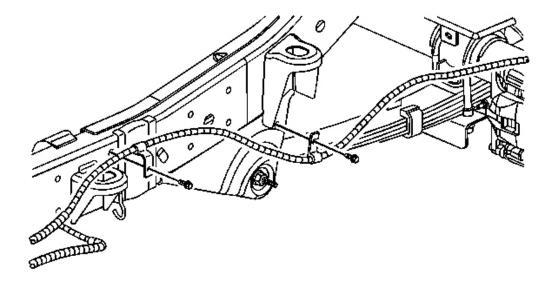


Fig. 42: Identifying Park Brake Cable Clips Courtesy of GENERAL MOTORS CORP.

5. Remove the 2 bolts from the park brake cable clips.

2007 BRAKES Park Brake - H3

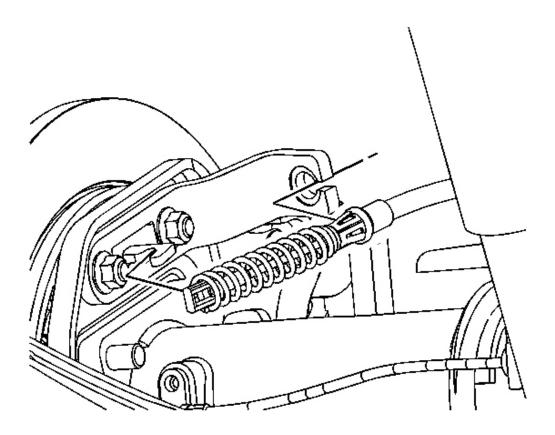


Fig. 43: View Of Park Brake Cable At Cable Bracket & Park Brake Lever Courtesy of GENERAL MOTORS CORP.

6. Remove the park brake cable from the cable bracket and the park brake lever assembly.

Installation Procedure

2007 BRAKES Park Brake - H3

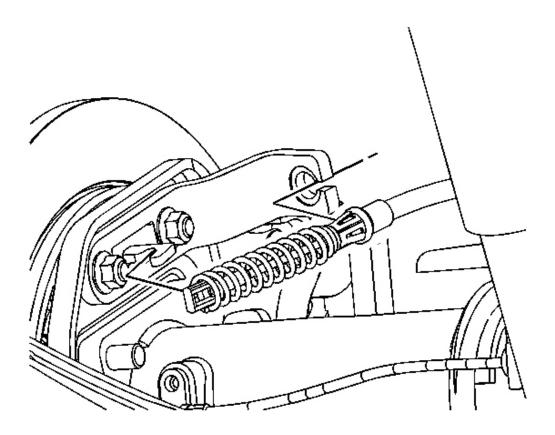


Fig. 44: View Of Park Brake Cable At Cable Bracket & Park Brake Lever Courtesy of GENERAL MOTORS CORP.

1. Install the park brake cable to the cable bracket and the park brake lever assembly.

2007 BRAKES Park Brake - H3

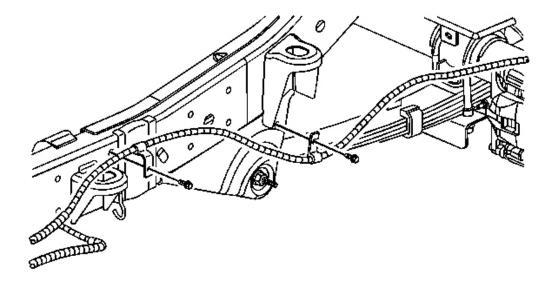


Fig. 45: Identifying Park Brake Cable Clips Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to <u>Fastener Notice</u>.

2. Install the 2 bolts from the park brake cable clips.

Tighten: Tighten the bolts to 25 N.m (18 lb ft).

2007 BRAKES Park Brake - H3

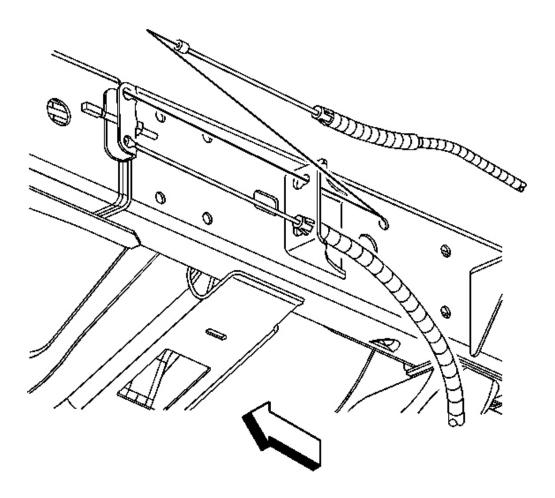


Fig. 46: Park Brake Cable At Frame Bracket Removal/Installation Courtesy of GENERAL MOTORS CORP.

- 3. Install the park brake cable to the frame bracket.
- 4. Connect the left rear park brake cable by pulling down on the park brake cable in front of the equalizer and installing the left rear park brake cable to the equalizer bar.
- 5. Adjust the park brake brake. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u>.

PARKING BRAKE REAR CABLE REPLACEMENT - RIGHT SIDE

Removal Procedure

2007 BRAKES Park Brake - H3

- 1. Release the park brake.
- 2. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .

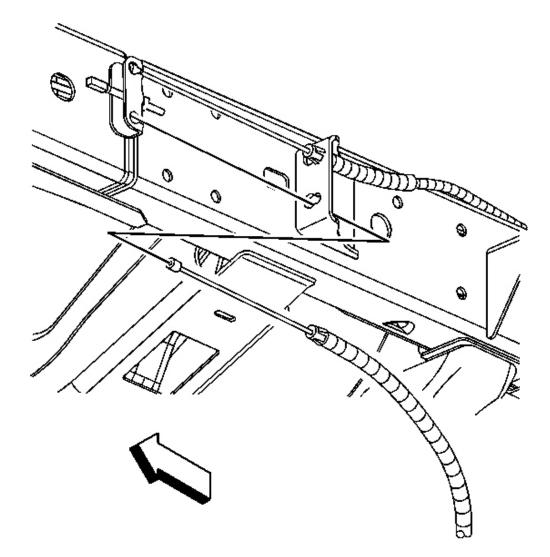


Fig. 47: View Of Park Brake Cable At Frame Bracket Courtesy of GENERAL MOTORS CORP.

3. Relieve the tension from the park brake cable by pulling down on the park brake cable in front of the equalizer and removing the right rear park brake cable from the equalizer bar.

2007 BRAKES Park Brake - H3

4. Remove the park brake cable from the frame bracket.

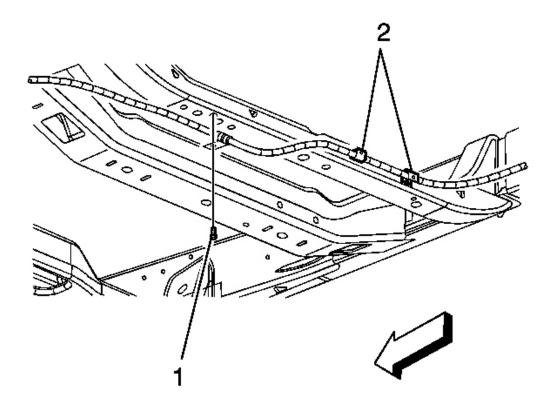


Fig. 48: Park Brake Cable At Frame Brackets Removal/Installation Courtesy of GENERAL MOTORS CORP.

- 5. Remove the bolt (1) from the park brake cable clip.
- 6. Remove the park brake cable from the frame brackets (2).

2007 BRAKES Park Brake - H3

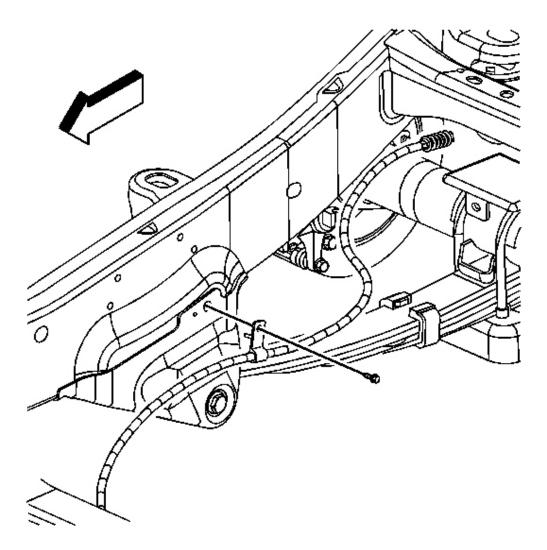


Fig. 49: Identifying Park Brake Cable Clip Courtesy of GENERAL MOTORS CORP.

7. Remove the bolt from the park brake cable clip.

2007 BRAKES Park Brake - H3

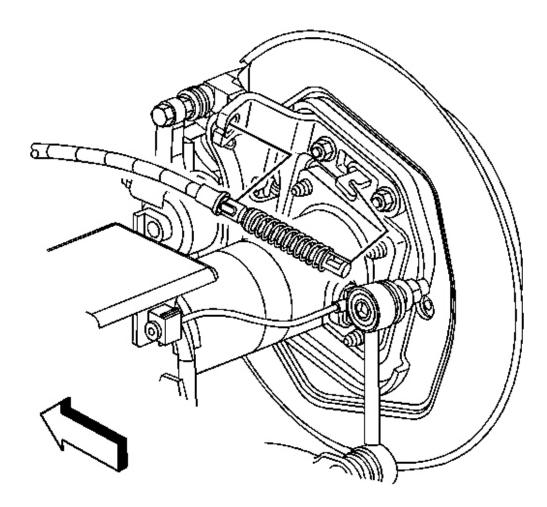


Fig. 50: Identifying Park Brake Cable At Cable Bracket & Park Brake Lever Courtesy of GENERAL MOTORS CORP.

8. Remove the park brake cable from the cable bracket and the park brake lever assembly.

Installation Procedure

2007 BRAKES Park Brake - H3

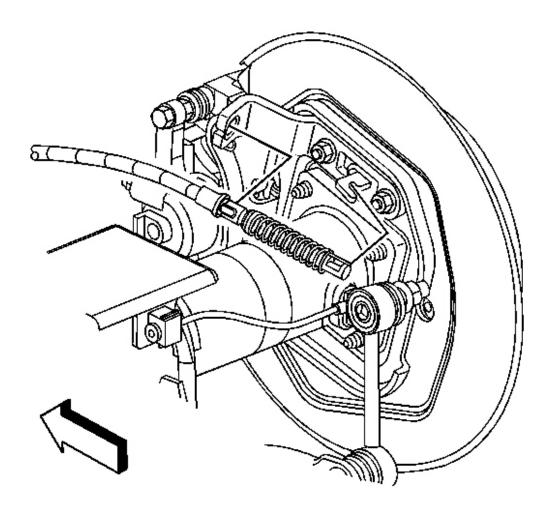


Fig. 51: Identifying Park Brake Cable At Cable Bracket & Park Brake Lever Courtesy of GENERAL MOTORS CORP.

1. Install the park brake cable to the cable bracket and the park brake lever assembly.

2007 BRAKES Park Brake - H3

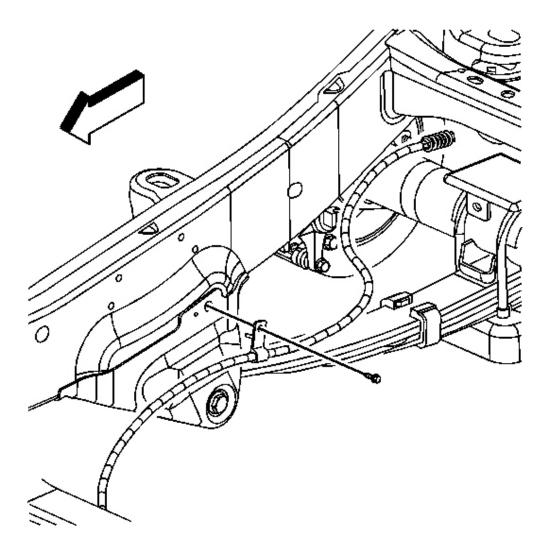


Fig. 52: Identifying Park Brake Cable Clip Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

2. Install the bolt to the park brake cable clip.

Tighten: Tighten the bolt to 25 N.m (18 lb ft).

2007 BRAKES Park Brake - H3

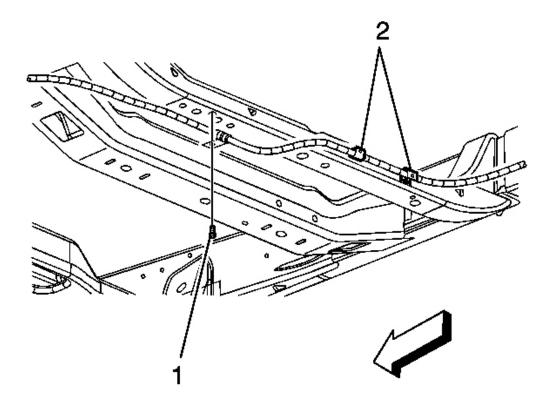


Fig. 53: Park Brake Cable At Frame Brackets Removal/Installation Courtesy of GENERAL MOTORS CORP.

- 3. Install the park brake cable to the frame brackets (2).
- 4. Install the bolt (1) to the park brake cable clip.

Tighten: Tighten the bolt to 25 N.m (18 lb ft).

2007 BRAKES Park Brake - H3

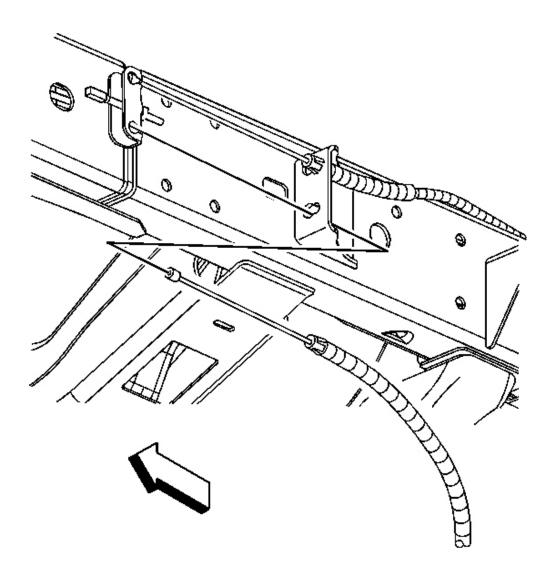


Fig. 54: View Of Park Brake Cable At Frame Bracket Courtesy of GENERAL MOTORS CORP.

- 5. Install the park brake cable to the frame bracket.
- 6. Connect the right rear park brake cable by pulling down on the park brake cable in front of the equalizer and installing the right rear park brake cable to the equalizer bar.
- 7. Adjust the park brake brake. Refer to <u>Park Brake Adjustment (LHD)</u> or <u>Park Brake</u> <u>Adjustment (RHD)</u>.

2007 BRAKES Park Brake - H3

PARK BRAKE CABLE EQUALIZER REPLACEMENT

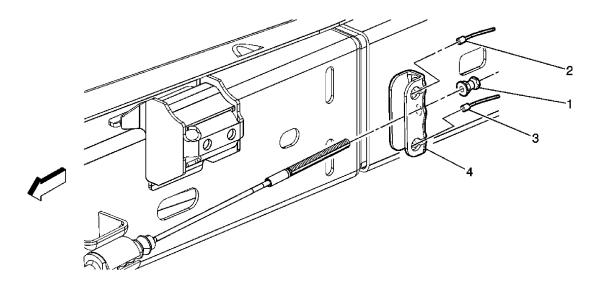


Fig. 55: Park Brake Cable Equalizer Replacement Courtesy of GENERAL MOTORS CORP.

Park Brake Cable Equalizer Replacement

Callout	Component Name
Fastener Tigh	tening Specifications: Refer to Fastener Tightening Specifications.
Preliminary P	rocedure:
Raise the vehic	le. Refer to Lifting and Jacking the Vehicle.
	Nut, Park Brake Lever
1	Tip: Adjust the park brake. Refer to Park Brake Adjustment (LHD) or
	<u>Park Brake Adjustment (RHD)</u> .
2	Cable, Left Rear Park Brake
3	Cable, Right Rear Park Brake
4	Equalizer, Park Brake

PARKING BRAKE ACTUATOR REPLACEMENT

2007 BRAKES Park Brake - H3

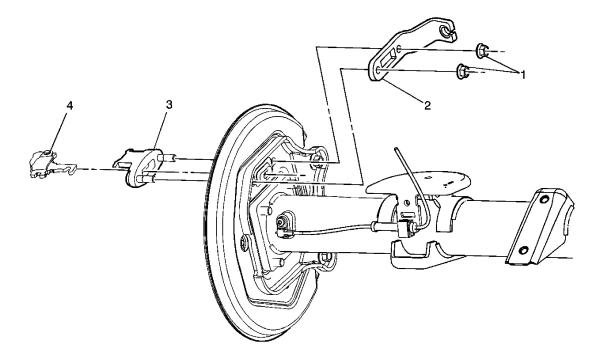


Fig. 56: Replacing Parking Brake Actuator Courtesy of GENERAL MOTORS CORP.

Parking Brake Actuator Replacement

C	allout	Component Name
CAU	TION:	
Refe	r to <u>Brake I</u>	Dust Caution .
NOT	E:	
Refe	r to <u>Fasten</u>	er Notice .
Fast	ener Tigl	ntening Specifications: Refer to Fastener Tightening Specifications.
Preli	iminary l	Procedure
1.	Raise the	vehicle. Refer to Lifting and Jacking the Vehicle.
2.	Remove	the park brake shoes. Refer to Parking Brake Shoe Replacement .
3.	Remove	the park brake cable from he actuator. Refer to Parking Brake Rear Cable

- **Replacement Left Side** for the left side or **Parking Brake Rear Cable Replacement - Right Side** for the right.
- 4. Remove the rear brake park brake shoes. Refer to <u>Parking Brake Shoe</u> <u>Replacement</u>.

2007	Hummer	H3
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2007 BRAKES Park Brake - H3

	Nut (Qty: 2)
1	Tightening Specifications: Tighten to 48 N.m (35 lb ft).
2	Bracket
3	Actuator Bracket
4	Actuator

PARK BRAKE ADJUSTMENT (LHD)

IMPORTANT: The following service procedure must be performed to ensure the proper adjustment of the park brake system.

- 1. Release the park brake.
- 2. Raise the vehicle. Refer to Lifting and Jacking the Vehicle .
- 3. Clean the threads on the front park brake cable.
- 4. Adjust the park brake until the right rear brake is locked.
- 5. Apply and release the park brake 5 times.
- 6. With the park brake in the release position, adjust the park brake until the right rear brake develops a slight drag.
- 7. Back off the adjusting nut 6 complete turns.

PARK BRAKE ADJUSTMENT (RHD)

2007 BRAKES Park Brake - H3

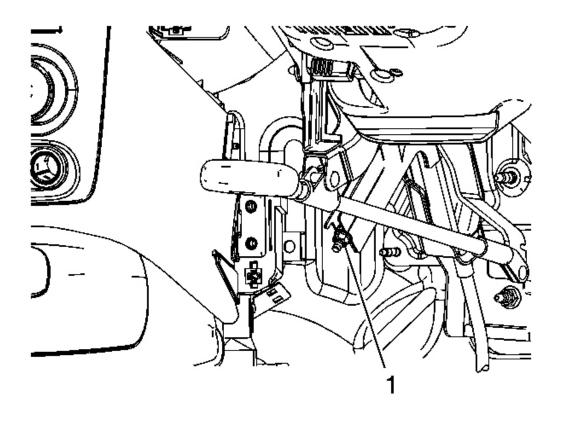


Fig. 57: Identifying Park Brake Cable Adjustment Nut Courtesy of GENERAL MOTORS CORP.

1. Fully apply and release the park brake lever with an operating force equivalent to the specification 10 times to settle the front park brake cable.

Specification: 490 N (108 lb)

- 2. Turn ON the ignition. Verify the red BRAKE warning lamp is not illuminated.
- 3. Turn OFF the ignition.
- 4. Remove the driver knee bolster bracket. Refer to <u>Driver Knee Bolster Replacement</u> (Left Hand Drive) or <u>Driver Knee Bolster Replacement (Right Hand Drive)</u>.
- 5. Loosen the front park brake cable adjustment nut (1).
- 6. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
- 7. Verify both rear wheel and tire assemblies rotate freely with no drag.

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- 8. Apply the brake lever to 8 notches.
- 9. Tighten the front park brake cable adjustment nut until it contacts the park brake lever.
- 10. Fully release the park brake lever.
- 11. Verify both rear wheel and tire assemblies rotate freely with no drag.
- 12. Apply the park brake lever with an operating force equivalent to the specification to 8 notches.

Specification: 294 N (64 lb)

- 13. Attempt to rotate the rear wheel and tire assemblies.
- 14. The rear wheel and tire assemblies should not rotate.
- 15. If the rear tire and wheel assemblies rotate, repeat the adjustment procedure.
- 16. Fully release the park brake lever.
- 17. Verify both rear wheel and tire assemblies rotate freely with no drag.
- 18. Lower the vehicle.
- 19. Install the driver knee bolster bracket. Refer to **Driver Knee Bolster Replacement (Left Hand Drive)** or **Driver Knee Bolster Replacement (Right Hand Drive)**.

DESCRIPTION AND OPERATION

PARK BRAKE SYSTEM DESCRIPTION AND OPERATION

System Component Description

The park brake system consists of the following:

Park Brake Pedal Assembly

Receives and transfers park brake system apply input force from driver to park brake cable system.

Park Brake Release Handle Assembly

Releases applied park brake system when pulled.

Park Brake Cables

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

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Park Brake Cable Equalizer

Evenly distributes input force to both the left and right park brake units. Threaded park brake cable equalizers are also used to remove slack in park brake cables.

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-inhat portion of the rear brake rotor.

System Operation

Park brake apply input force is received by the park brake pedal assembly being depressed, 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 release handle assembly releases an applied park brake system when it is pulled rearward.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

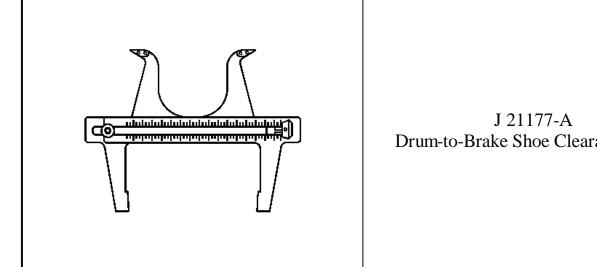
Special Tools

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Illustration	Tool Number/Description

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Drum-to-Brake Shoe Clearance Gage