

2021 BRAKES

Parking Brake System - Canyon, Colorado

SPECIFICATIONS

FASTENER SPECIFICATIONS

Single Use Threaded Fastener/Component Tightening Specifications

NOTE: <i>All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.</i>	
Application	Specification
	Metric (English)
Parking Brake Cable Bracket Nut	16 N.m (12 lb ft)

Reusable Threaded Fastener Tightening Specifications

NOTE: <i>All fasteners listed in this table can be reused after removal.</i>	
Application	Specification
	Metric (English)
Parking Brake Cable Bracket Bolt	22 N.m (16 lb ft)
Parking Brake Cable Guide Bolt	16 N.m (12 lb ft)
Parking Brake Cable Rear Axle Nut	22 N.m (16 lb ft)
Parking Brake Control Module Nut	25 N.m (18 lb ft)

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.](#)

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

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

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 4	Go to Step 2
2	Were you sent here from a Park Brake Symptom Table?	Go to Step 4	Go to Step 3
3	Is the symptom related to the ability of the park brake system to hold and/or release?	Go to <u>Symptoms - Park Brake</u>	Go to <u>Symptoms - Hydraulic Brakes</u>
4	1. Raise and support the vehicle with the rear axle supported by jack stands. Refer to <u>Lifting and Jacking the Vehicle</u> . 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 9	Go to Step 5
5	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 18	Go to Step 6
6	Visually check the park brake cable connections and the cables that are accessible on the UNDERSIDE of the vehicle for disconnections and/or damage.	Go to Step 7	Go to Step 8

Step	Action	Yes	No
	Were any or the park brake cables disconnected and/or damaged?		
7	Reconnect or replace the park brake cables as necessary. Refer to the following procedures as necessary: • Parking Brake Control Module Replacement (The front park brake cable and the park brake pedal are replaced as an assembly.) • Parking Brake Intermediate Cable Replacement • Parking Brake Rear Cable Replacement (Left), or Parking Brake Rear Cable Replacement (Right) Did you complete the repair and/or replacement?	Go to Step 18	-
8	Check the adjustment of the park brake and adjust as necessary. Refer to Parking Brake Adjustment. Did you find and correct the condition?	Go to Step 18	Go to Step 9
9	CAUTION: 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 Rear Brake Rotor Replacement. 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 10	Go to Step 11

Step	Action	Yes	No
10	Replace park brake hardware components as necessary. Refer to Parking Brake Shoe Replacement . Did you complete the replacement?	Go to Step 18	-
11	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 12	Go to Step 14
12	Check the adjustment of the park brake and adjust as necessary. Refer to Parking Brake Adjustment . Did you find and correct the condition?	Go to Step 18	Go to Step 13
13	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 18	Go to Symptoms - Park Brake
14	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 15	Go to Step 16
15	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 Control Module Replacement (The front park brake cable and the park brake pedal are replaced as an assembly.) • Parking Brake Intermediate Cable Replacement • Parking Brake Rear Cable Replacement (Left), or Parking Brake Rear Cable Replacement (Right) Did you complete the replacement?	Go to Step 18	-
16	Inspect the park brake control module for proper operation and replace as necessary. Refer to Parking Brake Control Module Replacement . Did you find and correct the condition?	Go to Step 18	Go to Step 17
17	1. Replace the component that is used to adjust the park brake system. Refer to 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 18	Go to Symptoms - Park Brake

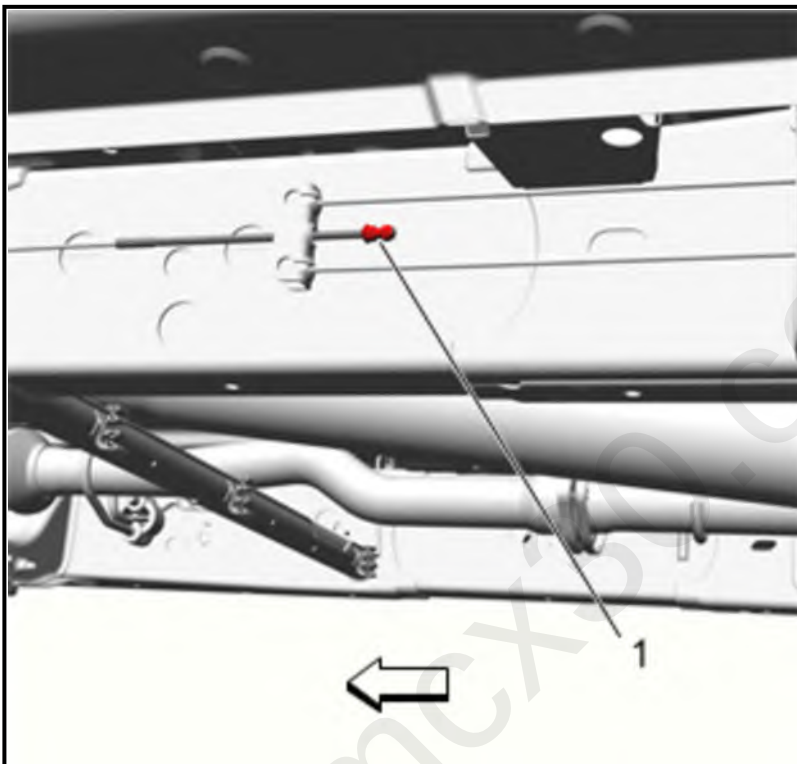
Step	Action	Yes	No
18	Install or connect any components that were removed or disconnected during diagnosis. Did you complete the operation?	Park Brake System OK	Go to Symptoms - Park Brake

REPAIR INSTRUCTIONS

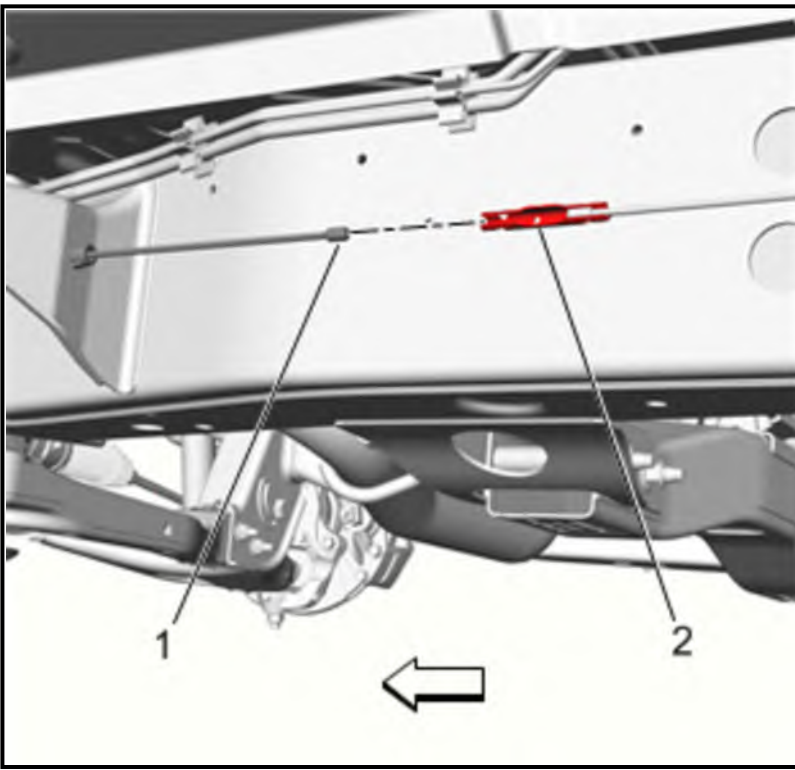
PARKING BRAKE CONTROL MODULE REPLACEMENT

Removal Procedure

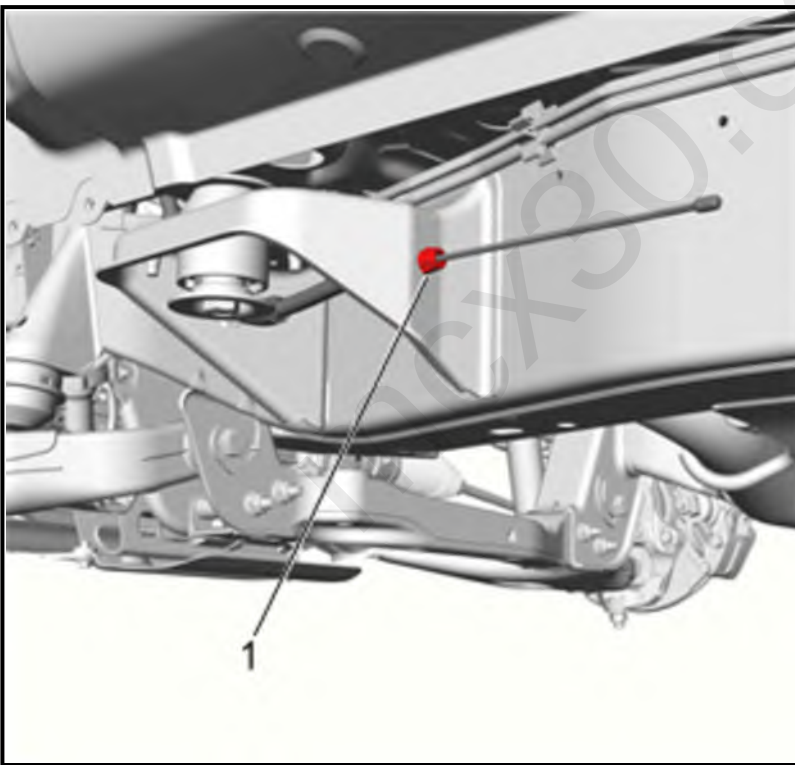
1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
2. While holding the parking brake intermediate cable stationary, loosen the parking brake intermediate cable adjustment nut (1).



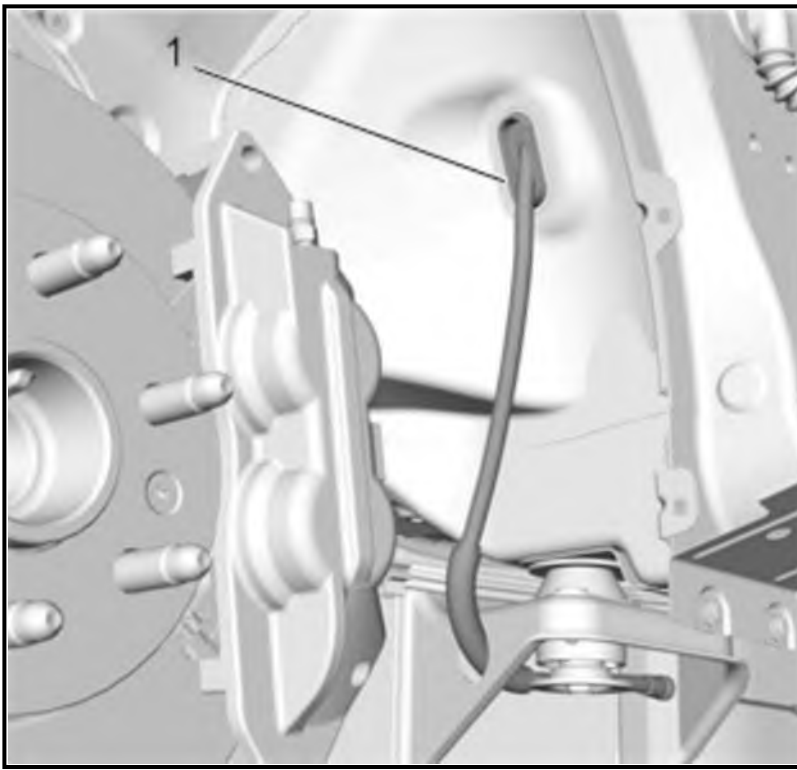
3. Disconnect the parking brake control module cable (1) from the parking brake intermediate cable connector (2).



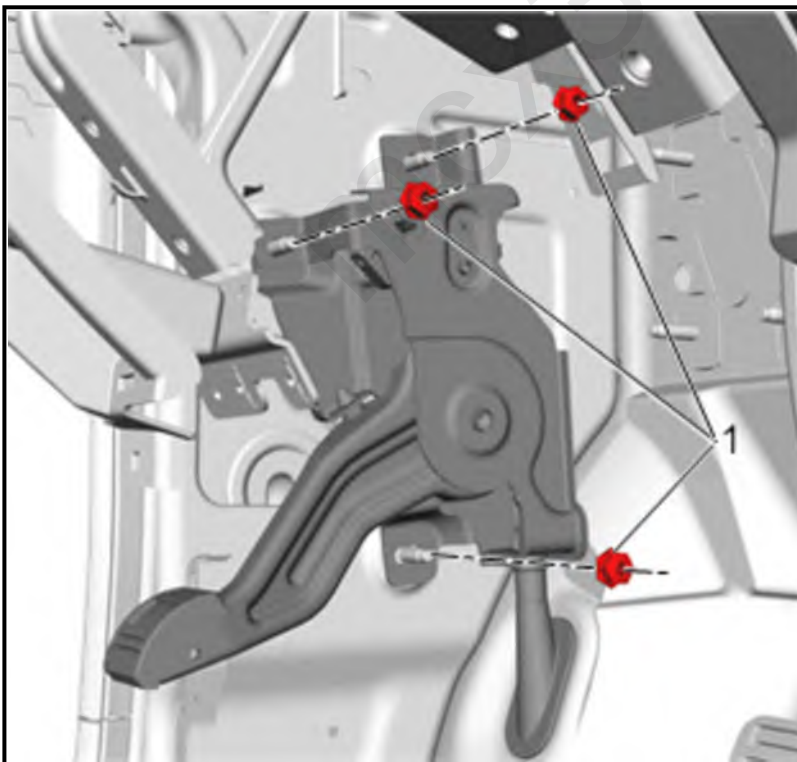
4. Compress the parking brake control module cable locking tabs (1) and remove the cable from the forward body mount.



5. Remove the left front wheelhouse liner. Refer to [Front Wheelhouse Liner Replacement \(Without ZR2\)](#) , or [Front Wheelhouse Liner Replacement \(With ZR2\)](#) , or [Front Wheelhouse Liner Replacement \(Bison\)](#) .
6. Release the parking brake control module cable grommet (1) from the front floor panel.



7. Lower the vehicle.
8. Remove the body control module bracket. Refer to [Body Control Module Bracket Replacement](#).
9. Remove the left body hinge pillar garnish molding. Refer to [Body Hinge Pillar Garnish Molding Replacement \(Left Side\)](#), or [Body Hinge Pillar Garnish Molding Replacement \(Right Side\)](#).
10. Position aside the front floor carpet to expose the parking brake control module cable.
11. Disconnect the parking brake indicator switch electrical connector.
12. Remove the parking brake control module nuts (1).



13. Remove the parking brake control module and cable assembly from the vehicle.

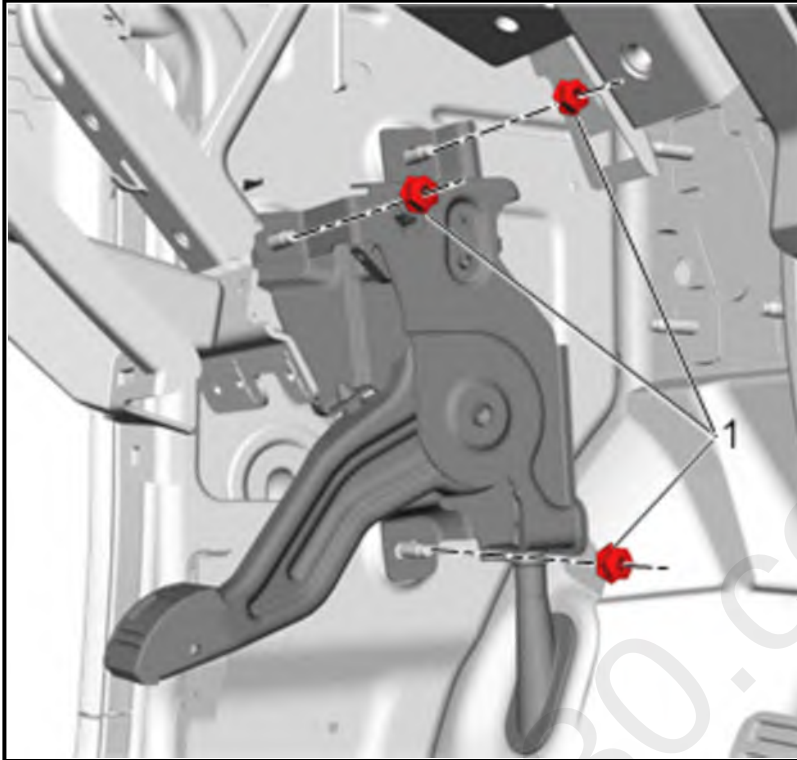
Installation Procedure

1. Install the parking brake control module and cable assembly to the vehicle.

2. Route the parking brake control module cable through the front floor panel and through the forward body mount.

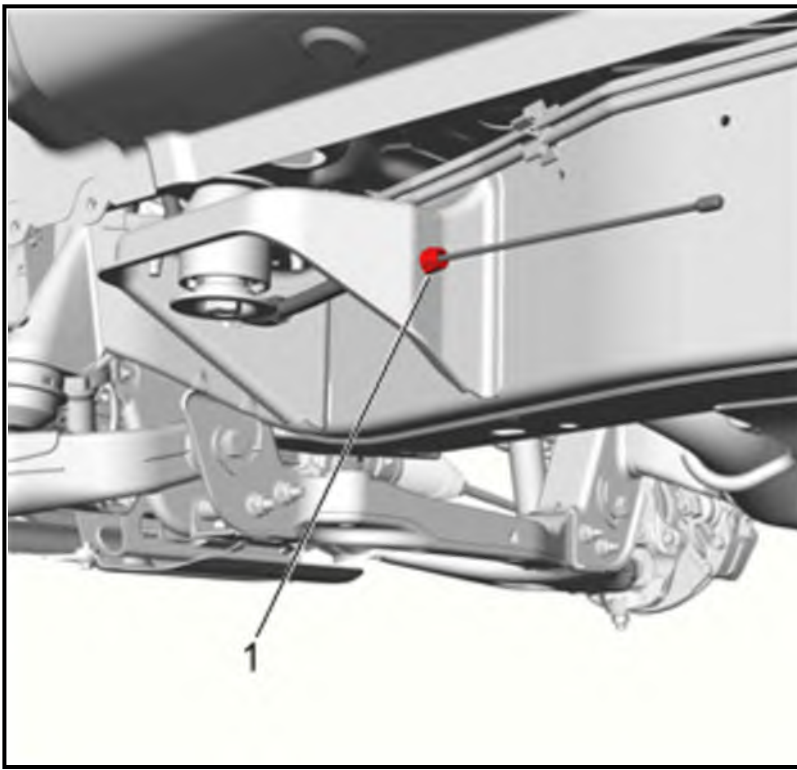
NOTE: Ensure the parking brake control module grommet is properly seated in the front floor panel.

3. Seat the parking brake control module cable grommet in the front floor panel.
4. Install the parking brake control module nuts (1) and tighten to 25 N.m (18 lb ft).

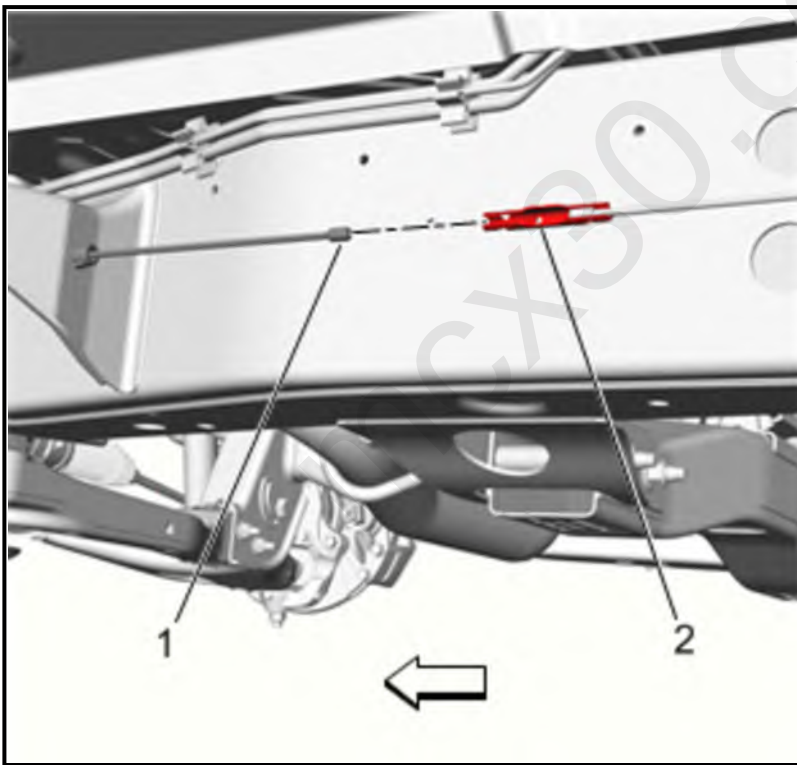


CAUTION: Refer to [Fastener Caution](#) .

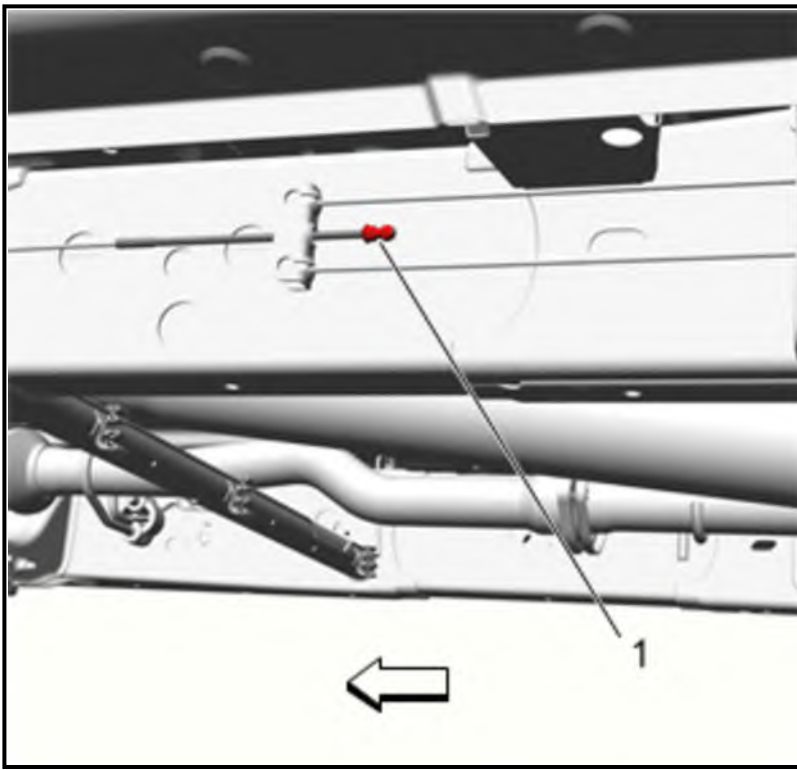
5. Connect the parking brake indicator switch electrical connector.
6. Position the front floor carpet to the floor panel.
7. Install the left body hinge pillar garnish molding. Refer to [Body Hinge Pillar Garnish Molding Replacement \(Left Side\)](#) , or [Body Hinge Pillar Garnish Molding Replacement \(Right Side\)](#) .
8. Install the body control module bracket. Refer to [Body Control Module Bracket Replacement](#) .
9. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
10. Secure the parking brake control module cable locking tabs (1) to the forward body mount.



11. Connect the parking brake control module cable (1) to the parking brake intermediate cable connector (2).



12. While holding the parking brake intermediate cable stationary, loosely install the parking brake intermediate cable adjustment nut (1).



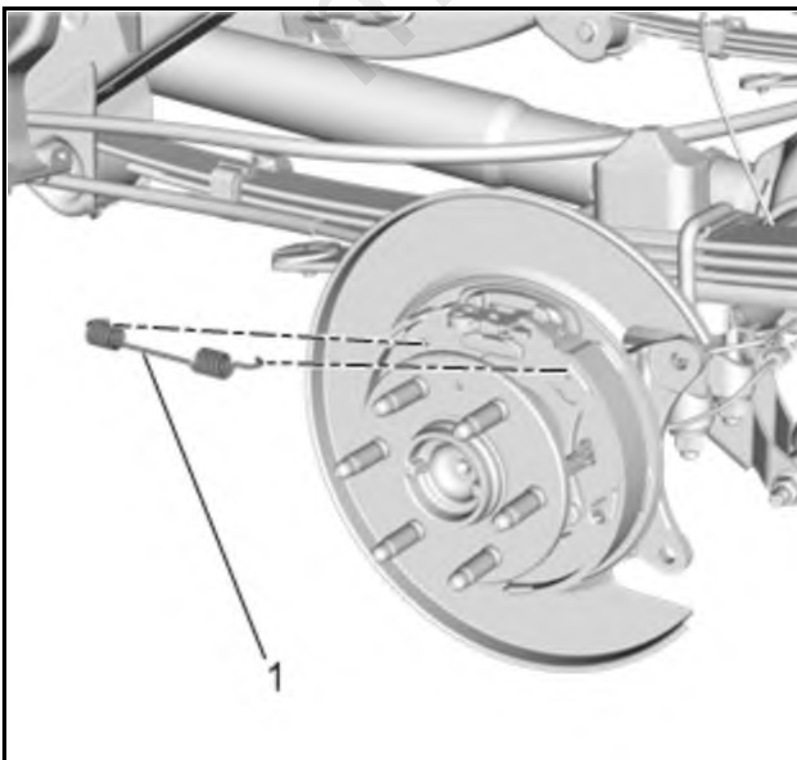
NOTE: Do not tighten the parking brake cable intermediate cable adjustment nut.

13. Install the left front wheelhouse liner. Refer to [Front Wheelhouse Liner Replacement \(Without ZR2\)](#) , or [Front Wheelhouse Liner Replacement \(With ZR2\)](#) , or [Front Wheelhouse Liner Replacement \(Bison\)](#) .
14. Adjust the parking brake. Refer to [Parking Brake Adjustment](#).

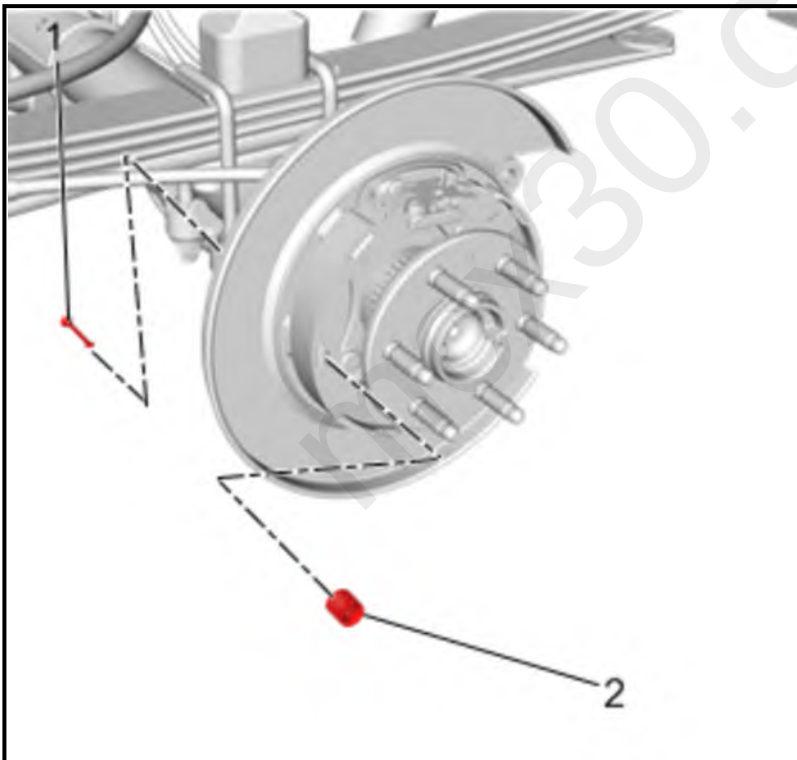
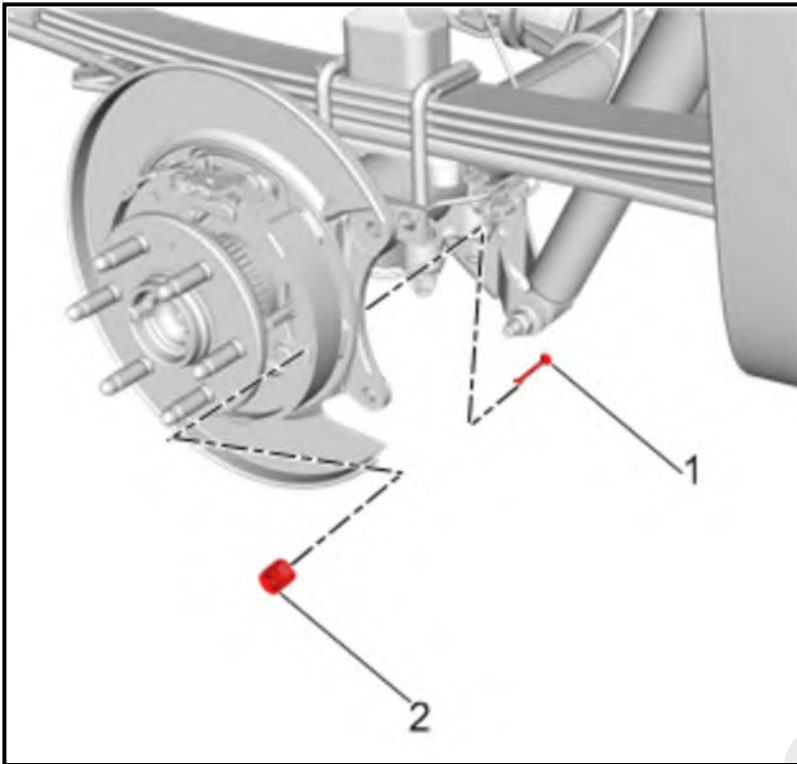
PARKING BRAKE SHOE REPLACEMENT

Removal Procedure

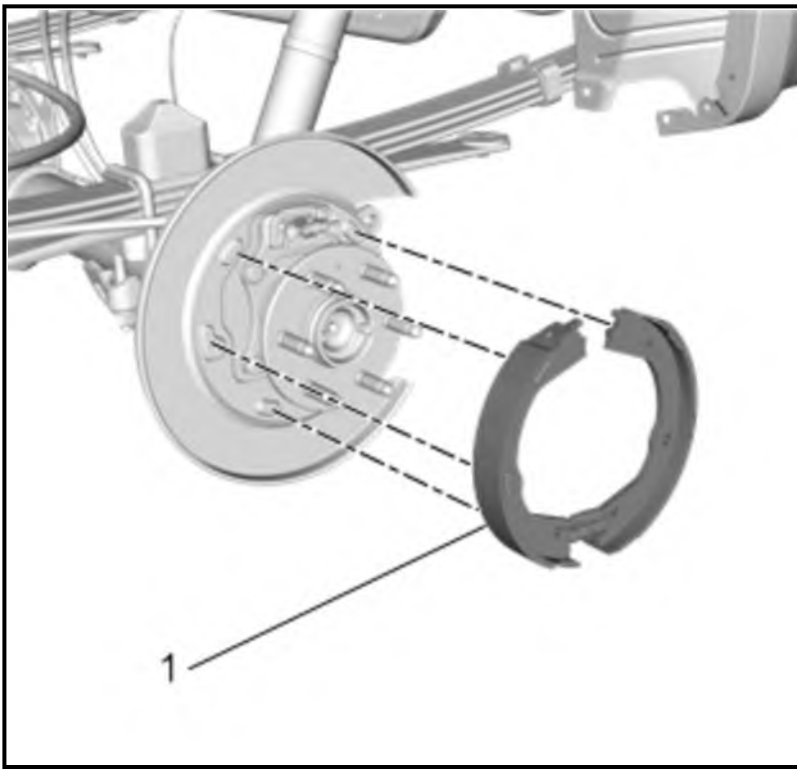
1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
2. Remove the rear brake rotor. Refer to [Rear Brake Rotor Replacement](#) .
3. Remove the upper parking brake shoe return spring (1).



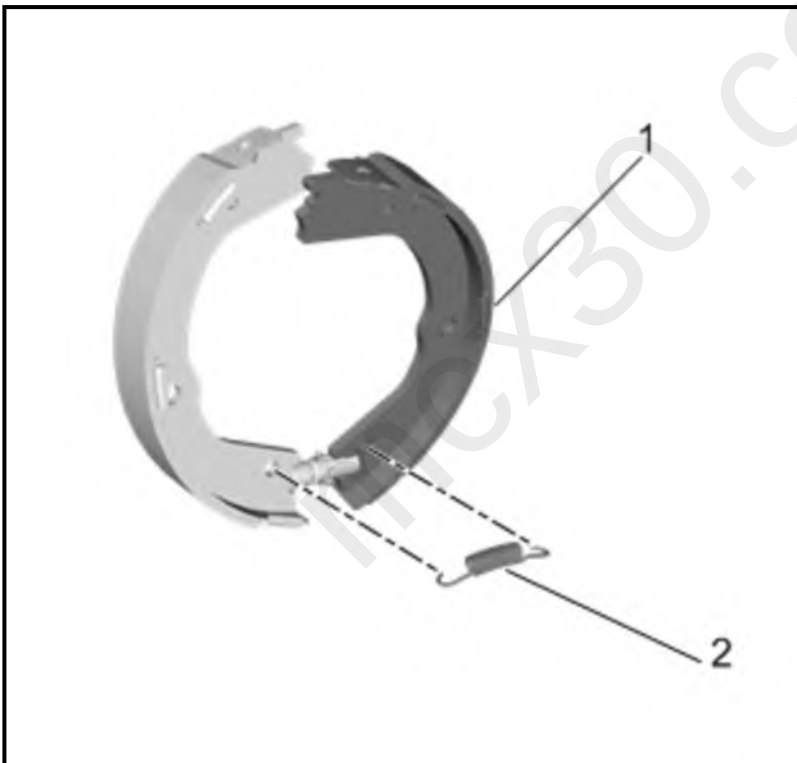
4. While keeping the pin (1) stationary, compress and rotate the hold down spring and cup (2) 1/4 turn and remove the hold down spring and cup.



5. While keeping the pin (1) stationary, compress and rotate the hold down spring and cup (2) 1/4 turn and remove the hold down spring and cup.
6. Remove the parking brake shoes (1) by grasping the shoes near the parking brake actuator, spread the shoes apart and lift over the rear axle flange.

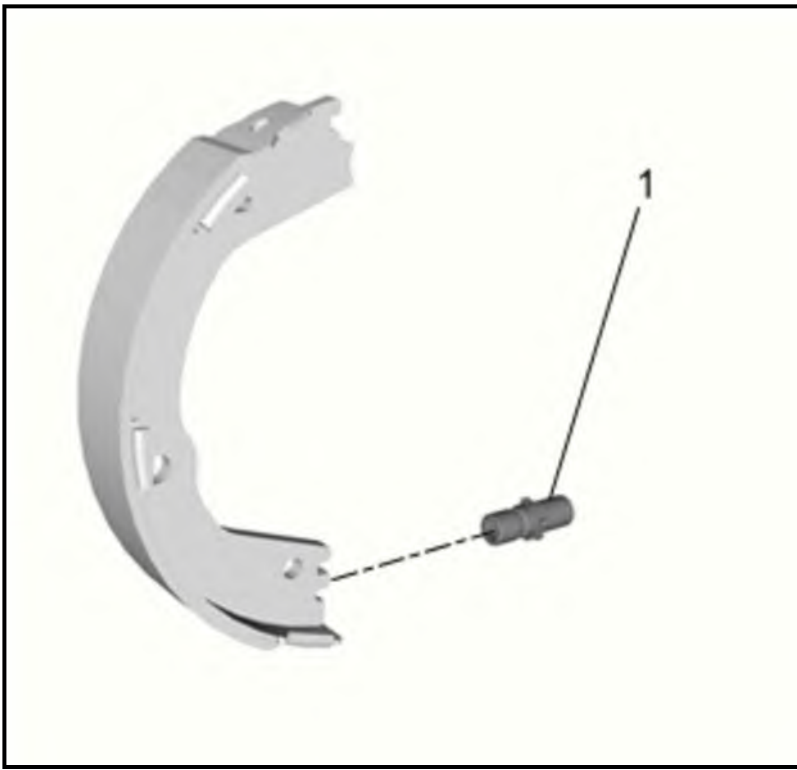


7. Cross the top of one of the parking brake shoes (1) over the opposite parking brake shoe.

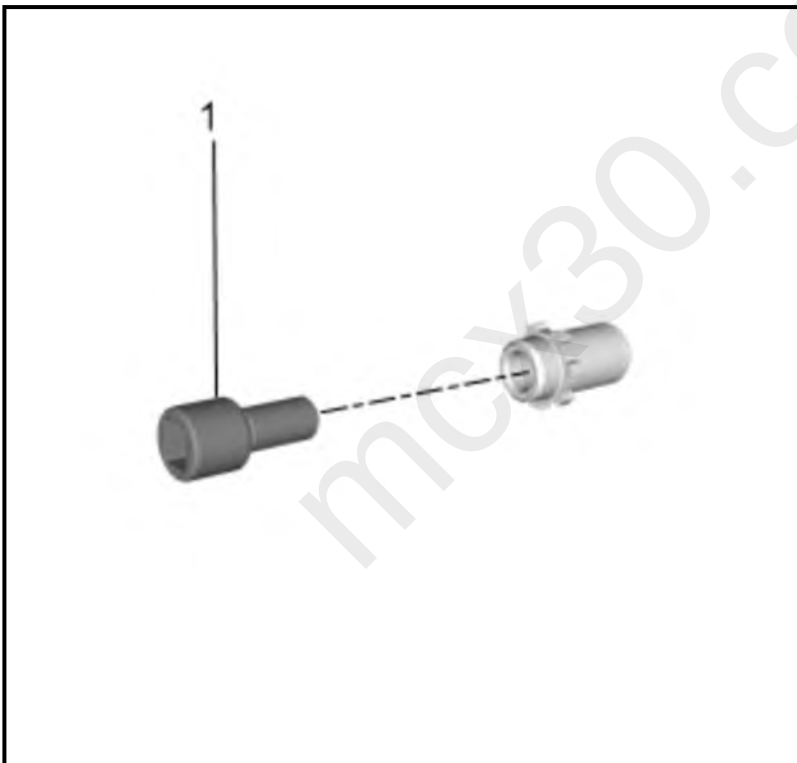


8. Remove the parking brake lower return spring (2).

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



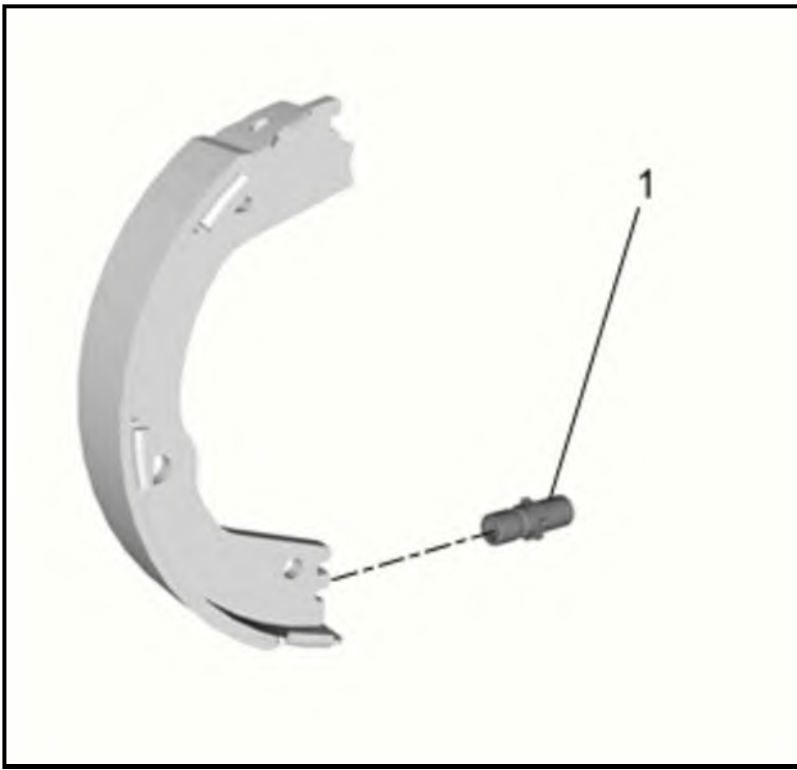
10. Disassemble the parking brake shoe adjuster.



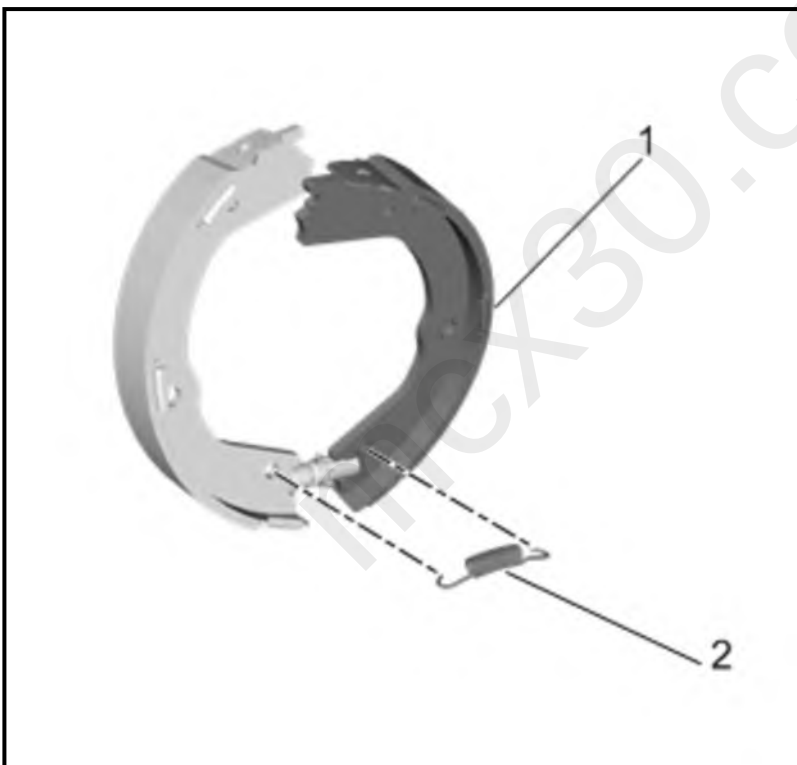
11. Clean the threads of the parking brake shoe adjuster screw (1) of any corrosion or debris.
12. Lightly lubricate the parking brake shoe adjuster screw threads with high temperature brake lubricant and reassemble the adjuster to the fully retracted position.
13. Clean the parking brake shoe backing plate with denatured alcohol and allow to dry.

Installation Procedure

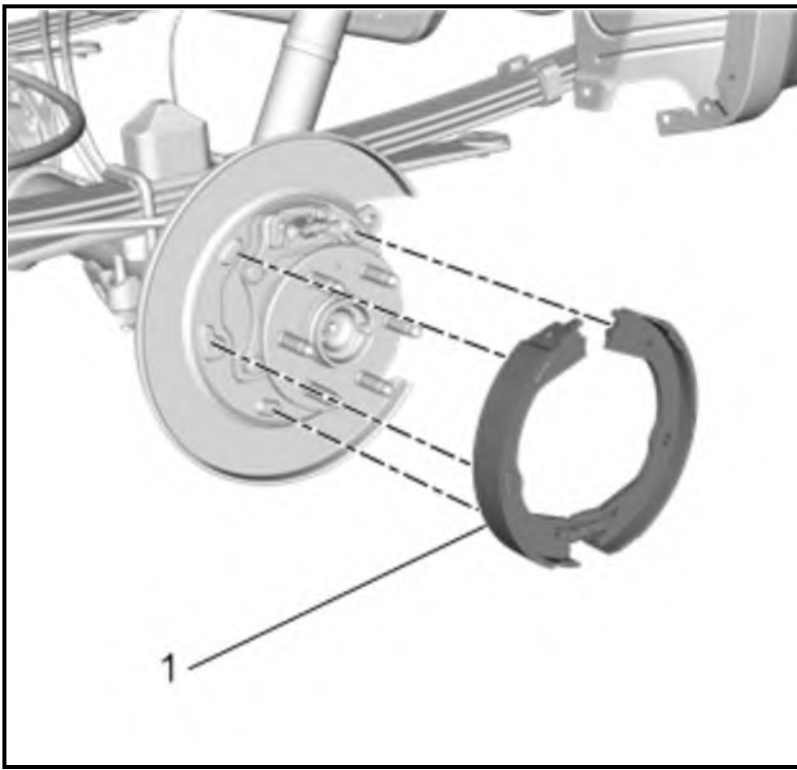
1. Apply a light coat of high temperature brake lubricant to the parking brake shoe to backing plate contact points.
2. Install the parking brake shoe adjuster assembly (1).



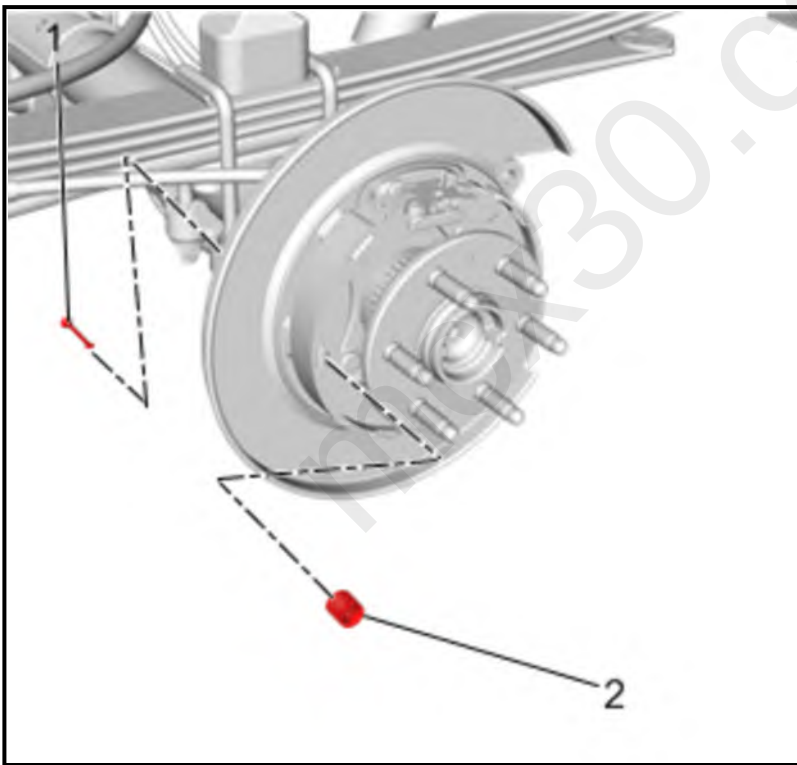
3. Cross the top of one of the parking brake shoes (1) over the opposite parking brake shoe.



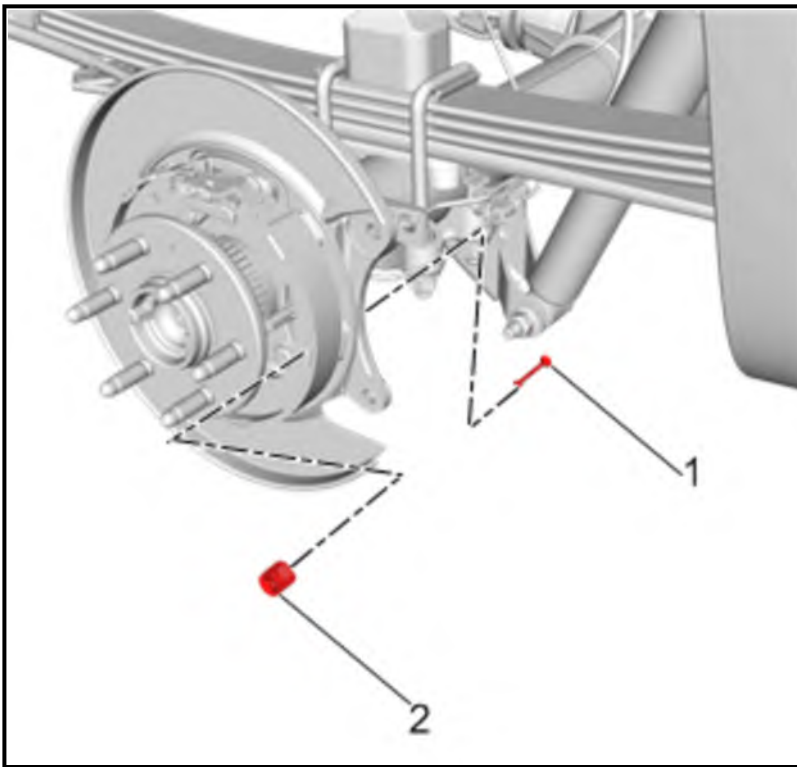
- 4. Install the parking brake lower return spring (2).
- 5. Install the parking brake shoes (1) by grasping the shoes near the parking brake actuator, spread the shoes apart and lift over the rear axle flange.



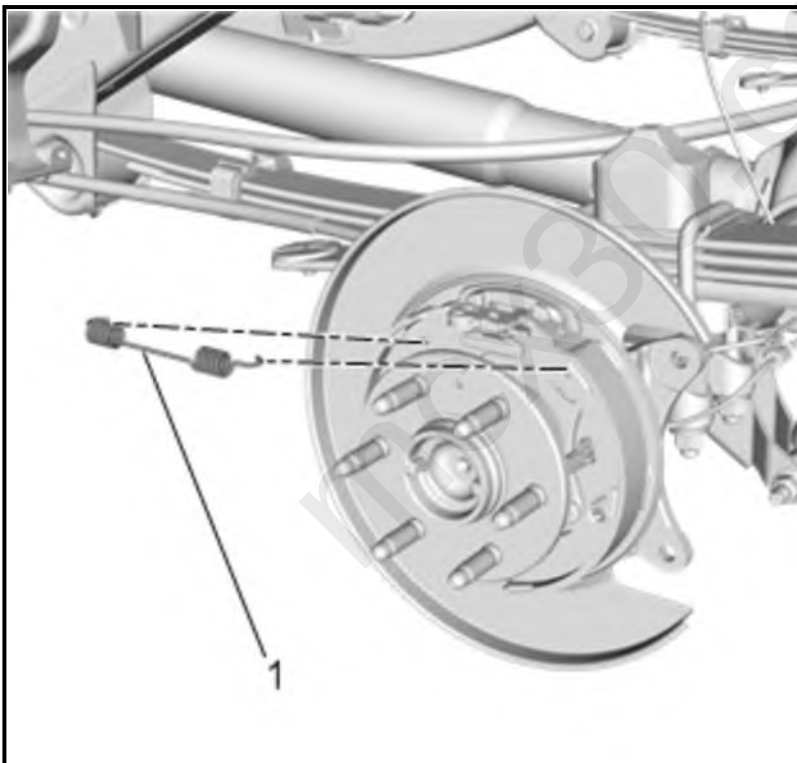
6. While keeping the pin (1) stationary, compress and rotate the hold down spring and cup (2) 1/4 turn and install the hold down spring and cup.



7. While keeping the pin (1) stationary, compress and rotate the hold down spring and cup (2) 1/4 turn and install the hold down spring and cup.



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



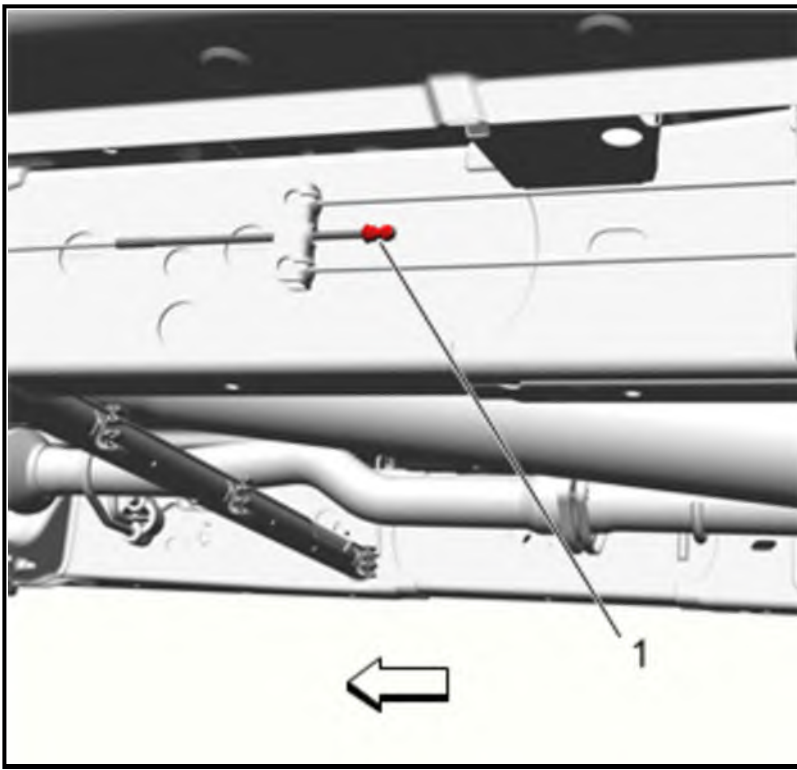
9. Install the rear brake rotor. Refer to [Rear Brake Rotor Replacement](#) .

10. Adjust the parking brake. Refer to [Parking Brake Adjustment](#).

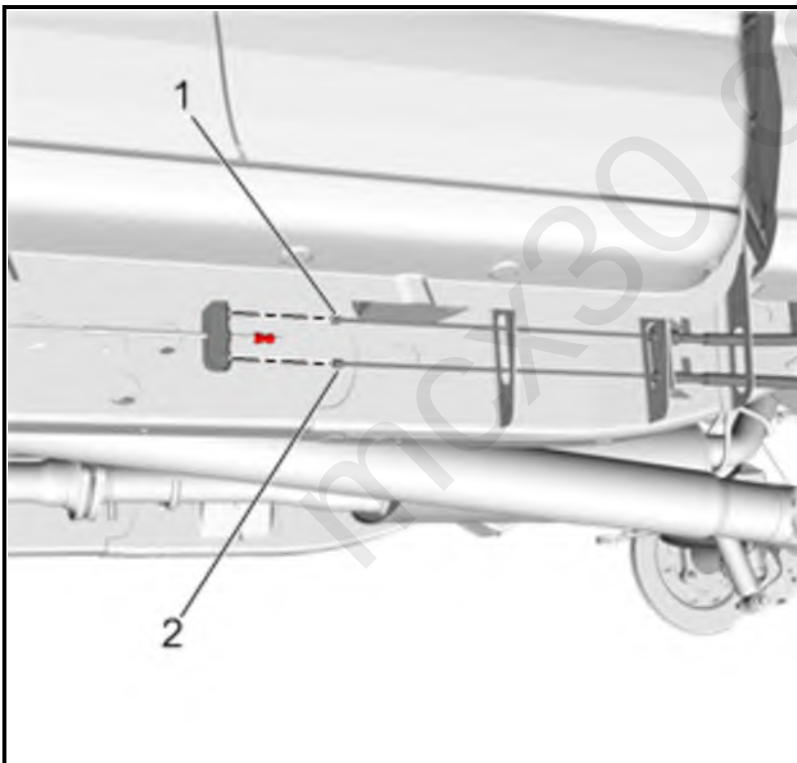
PARKING BRAKE INTERMEDIATE CABLE REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
2. Loosen the intermediate parking brake cable equalizer nut (1).

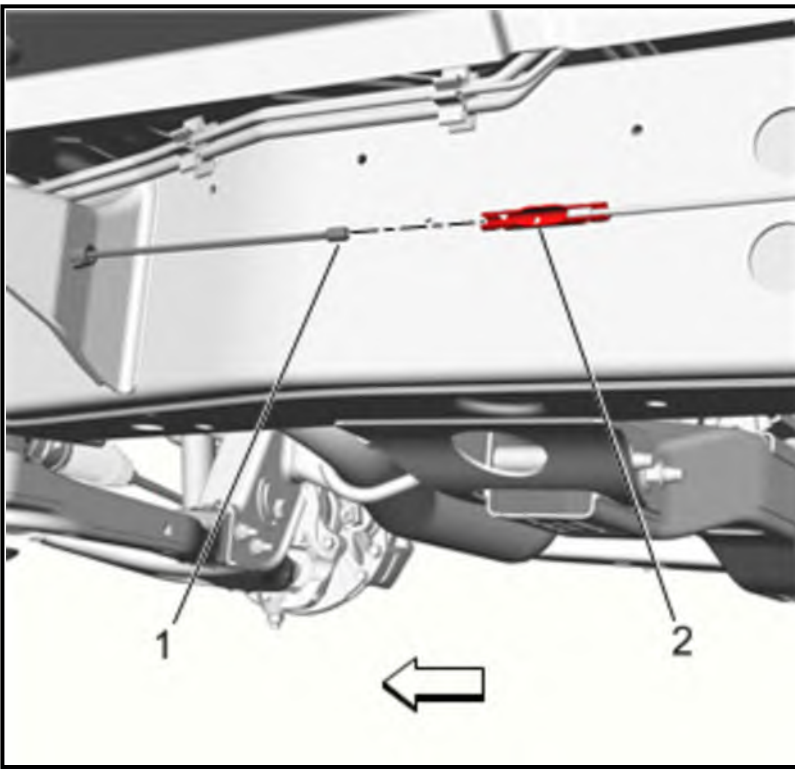


3. Disconnect the right rear parking brake cable (1) from the equalizer.



4. Disconnect the left rear parking brake cable (2) from the equalizer.

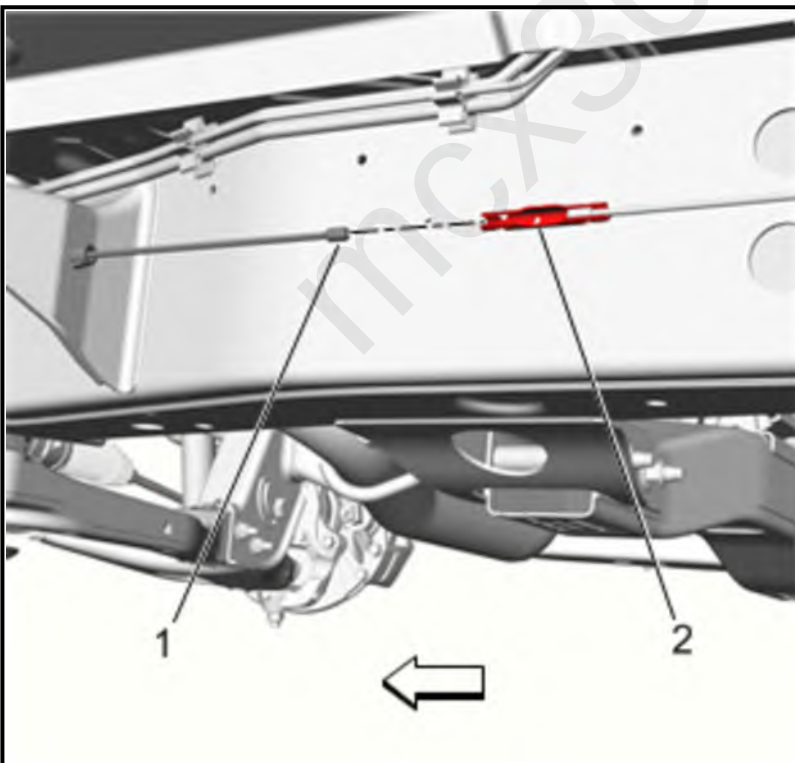
5. Disconnect the parking brake control module cable (1) from the intermediate parking brake cable connector (2).



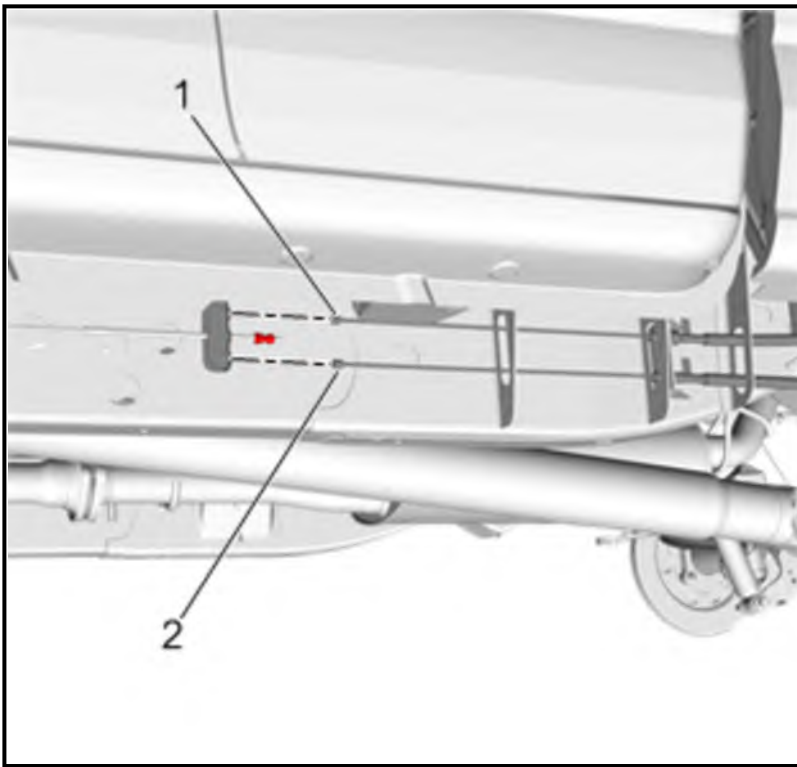
6. Remove the intermediate parking brake cable.

Installation Procedure

1. Install the intermediate parking brake cable to the vehicle.
2. Connect the parking brake control module cable (1) to the intermediate parking brake cable connector (2).



3. Connect the right rear parking brake cable (1) to the equalizer.

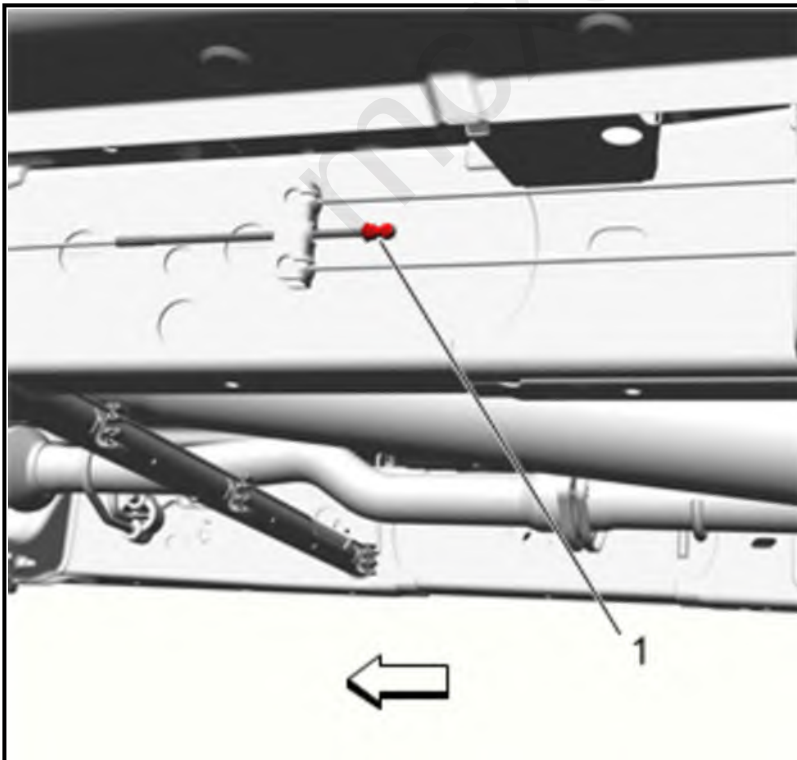


4. Connect the left rear parking brake cable (2) to the equalizer.
5. Adjust the parking brake. Refer to [Parking Brake Adjustment](#).

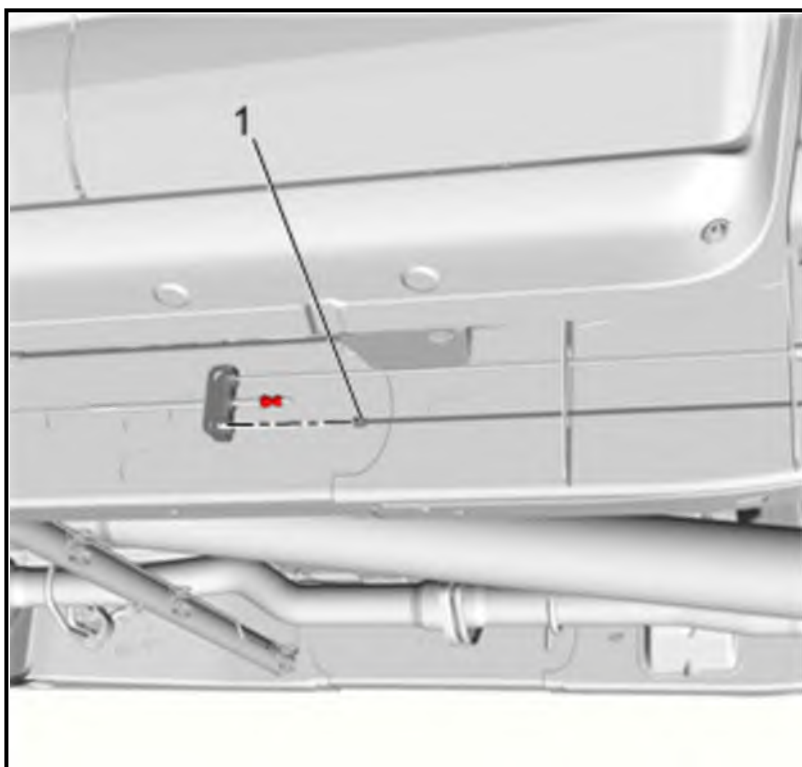
PARKING BRAKE REAR CABLE REPLACEMENT (LEFT)

Removal Procedure

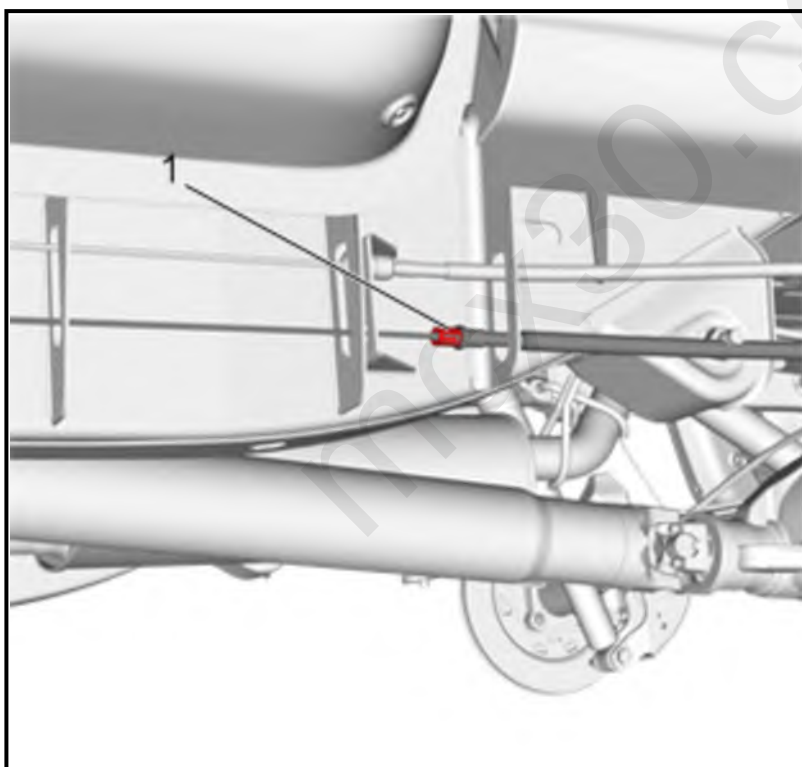
1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)
2. Loosen the intermediate parking brake cable equalizer nut (1) to relieve the tension on the rear parking brake cables.



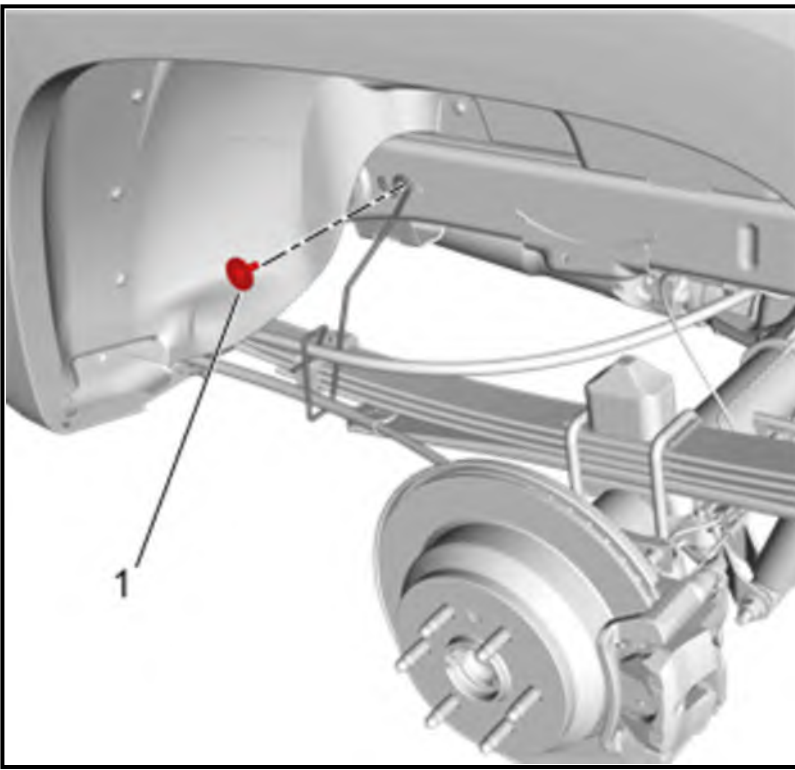
3. Disconnect the left rear parking brake cable (1) from the equalizer.



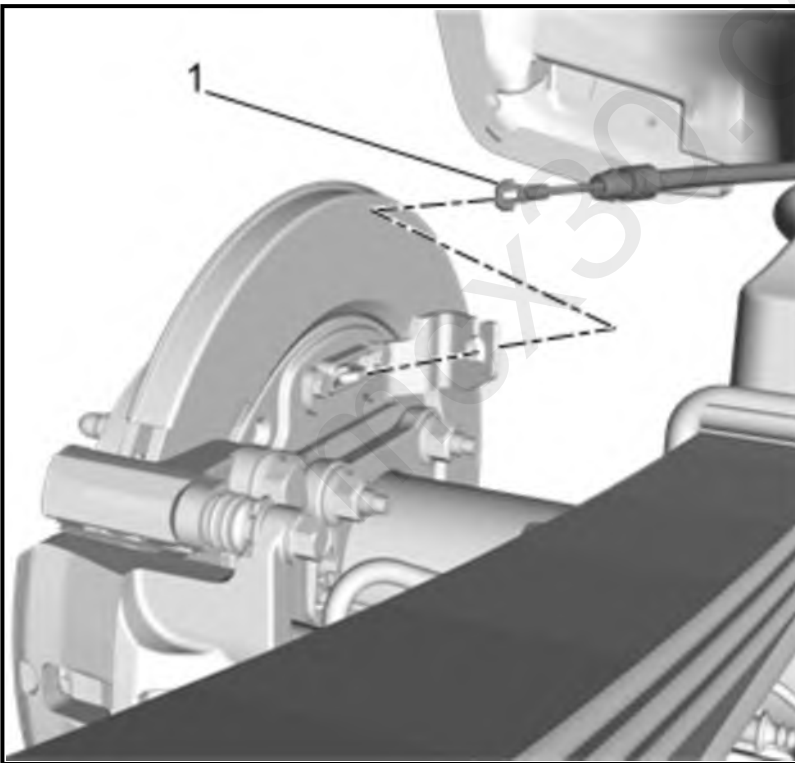
4. Release the left rear parking brake cable from the frame bracket by compressing the locking tabs (1) and pulling the cable conduit rearward.



5. Remove the parking brake cable guide bolt (1).



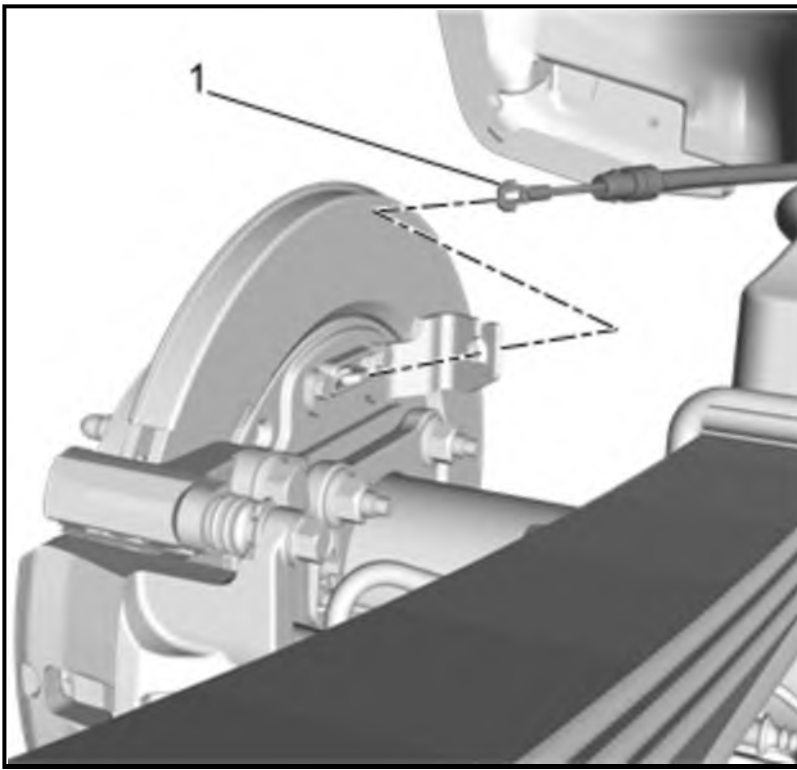
6. Remove the parking brake cable guide from the rear parking brake cables.
7. Disconnect the left rear parking brake cable eye from the park brake actuator lever.



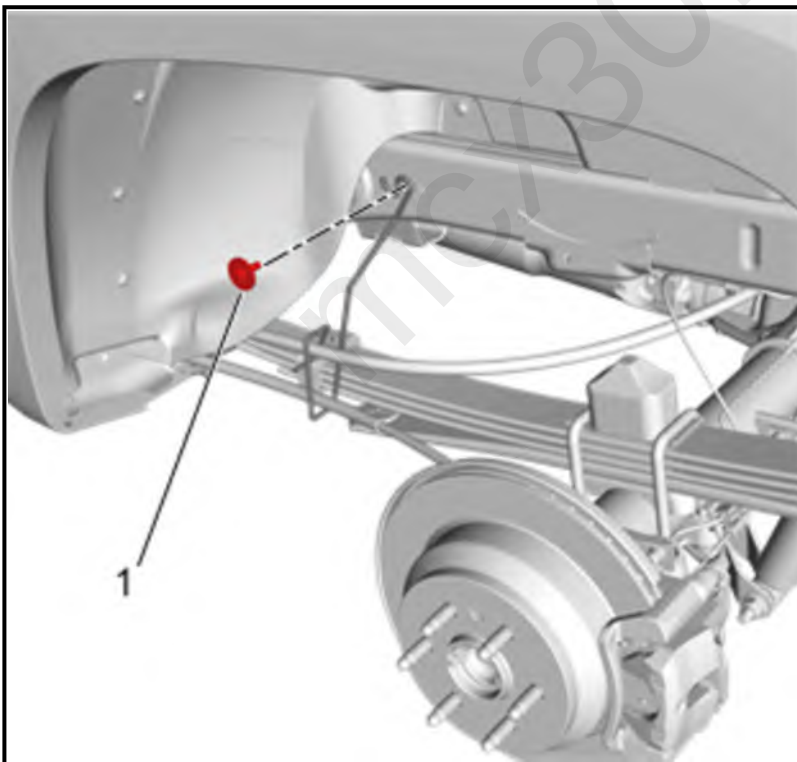
8. Release the left rear parking brake cable (1) from the rear axle bracket by compressing the locking tabs and pulling the park brake cable conduit rearward.
9. Remove the left rear parking brake cable assembly from the vehicle.

Installation Procedure

1. Install the left rear parking brake cable assembly to the vehicle.
2. Install the left rear parking brake cable (1) to the rear axle bracket by inserting the cable through the bracket.

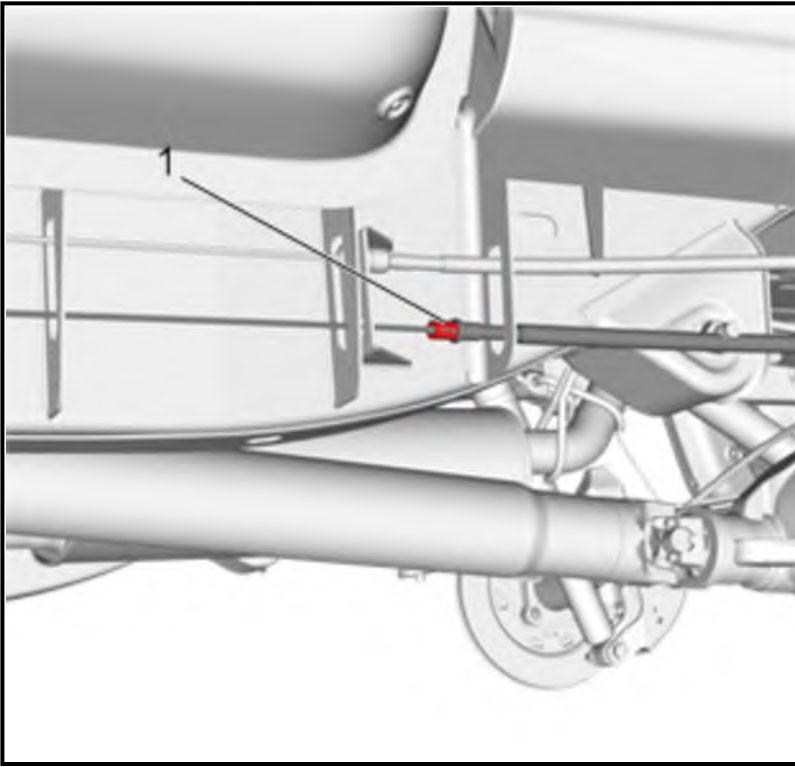


3. Ensure the cable locking tabs are fully engaged in the rear axle bracket.
4. Connect the left rear parking brake cable eye to the park brake actuator lever.
5. Install the left rear parking brake cable guide to the rear parking brake cables.
6. Position the rear parking brake cable guide to the frame rail.
7. Install the parking brake cable guide bolt (1) and tighten to 16 N.m (12 lb ft).

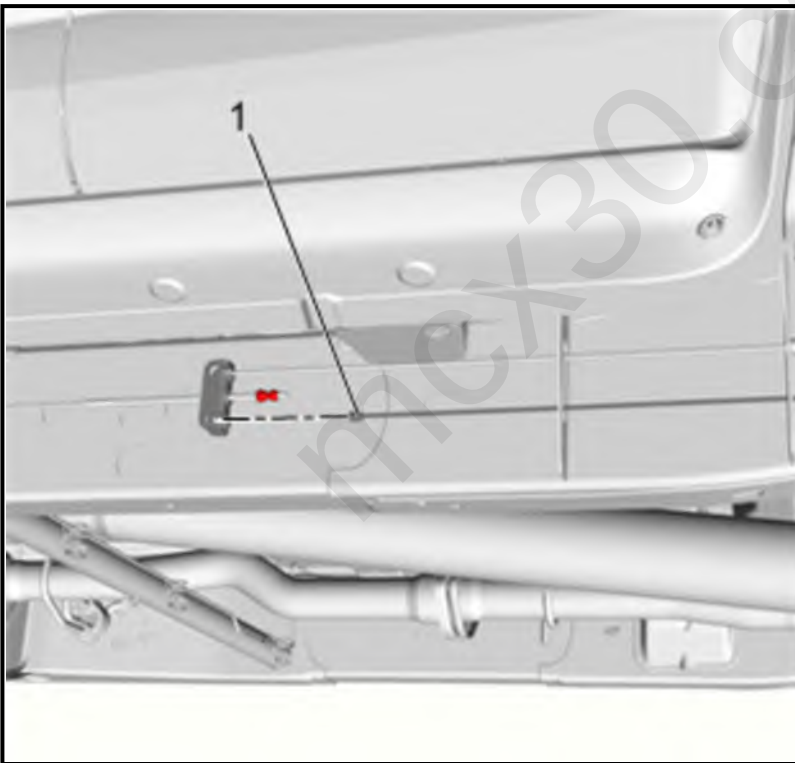


CAUTION: Refer to [Fastener Caution](#) .

8. Install the left rear parking brake cable to the frame bracket.



9. Ensure the locking tabs on the cable (1) are fully engaged into the frame bracket.
10. Install the left rear parking brake cable (1) to the equalizer.

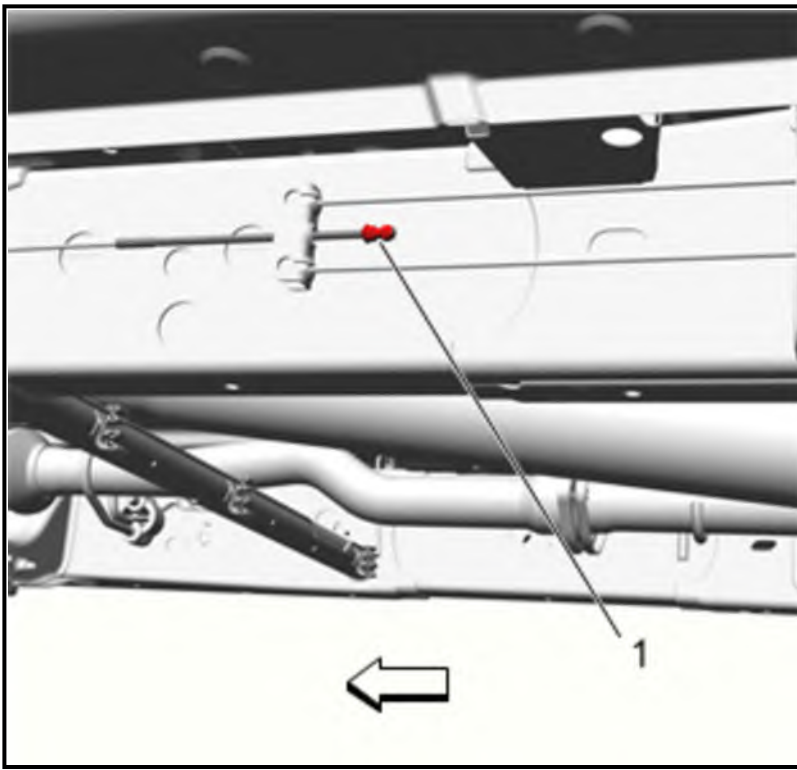


11. Adjust the park brake. [Parking Brake Adjustment](#)

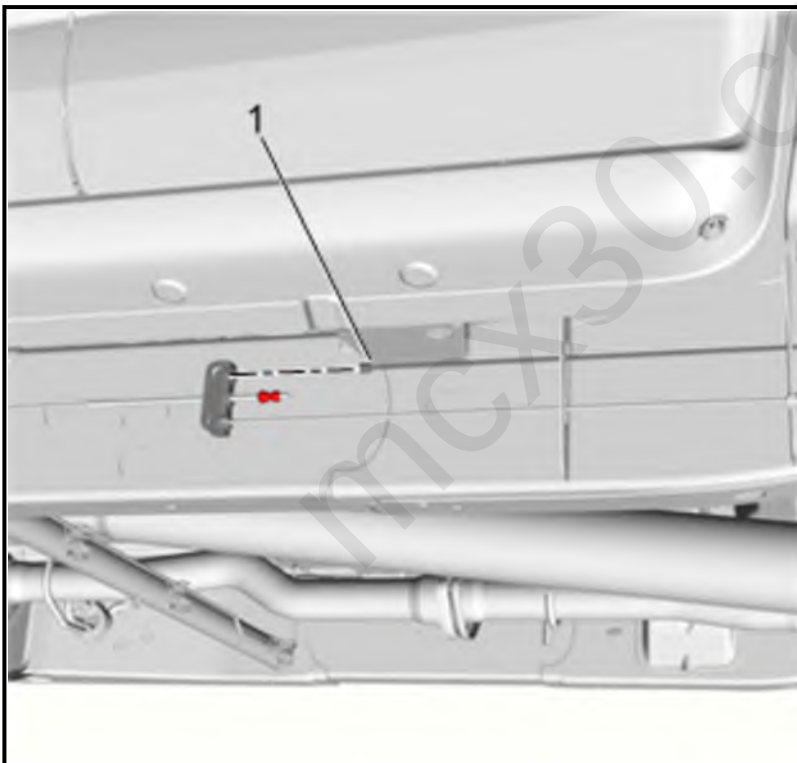
PARKING BRAKE REAR CABLE REPLACEMENT (RIGHT)

Removal Procedure

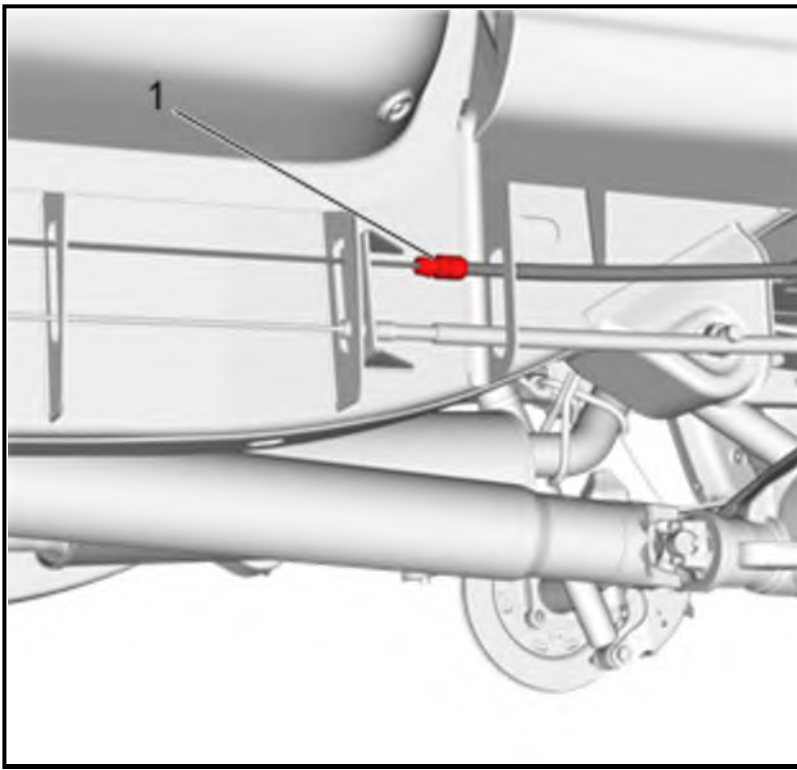
1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)
2. Loosen the intermediate parking brake cable equalizer nut (1) to relieve the tension on the rear parking brake cables.



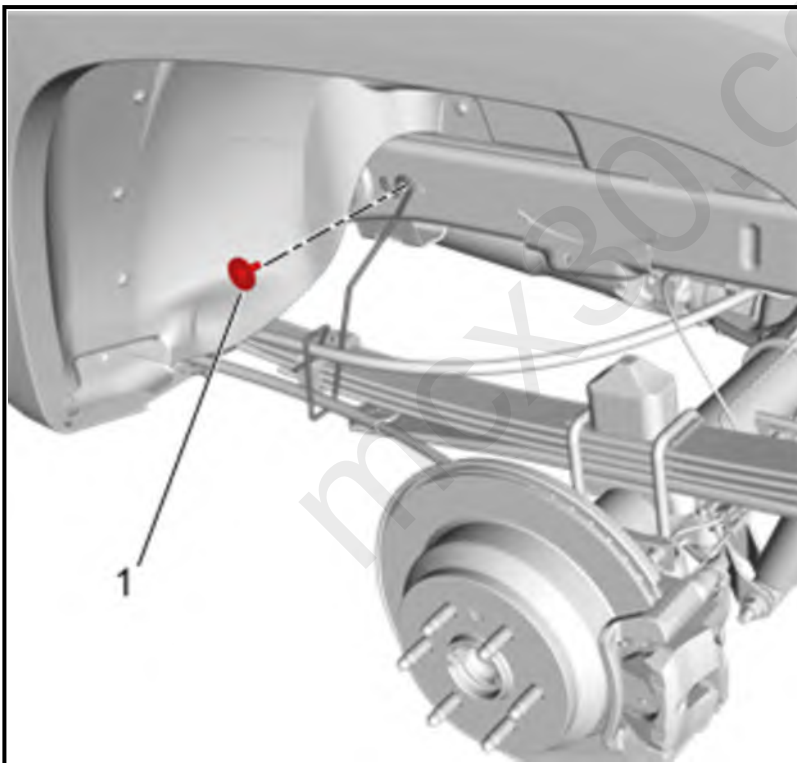
3. Disconnect the right rear parking brake cable (1) from the equalizer.



4. Release the right rear parking brake cable from the frame bracket by compressing the locking tabs (1) and pulling the cable conduit rearward.

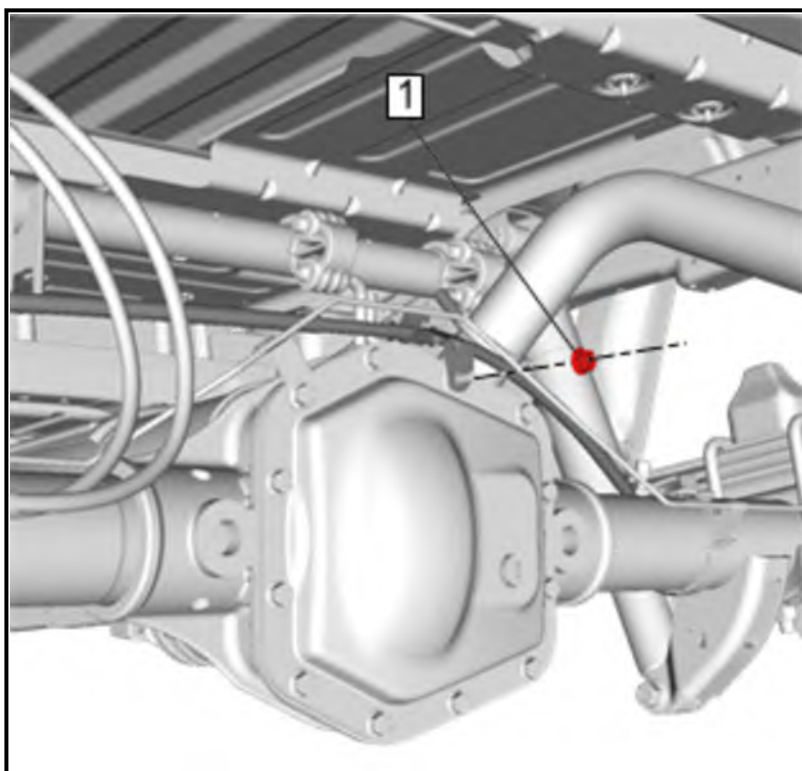


5. Remove the parking brake cable guide bolt (1).

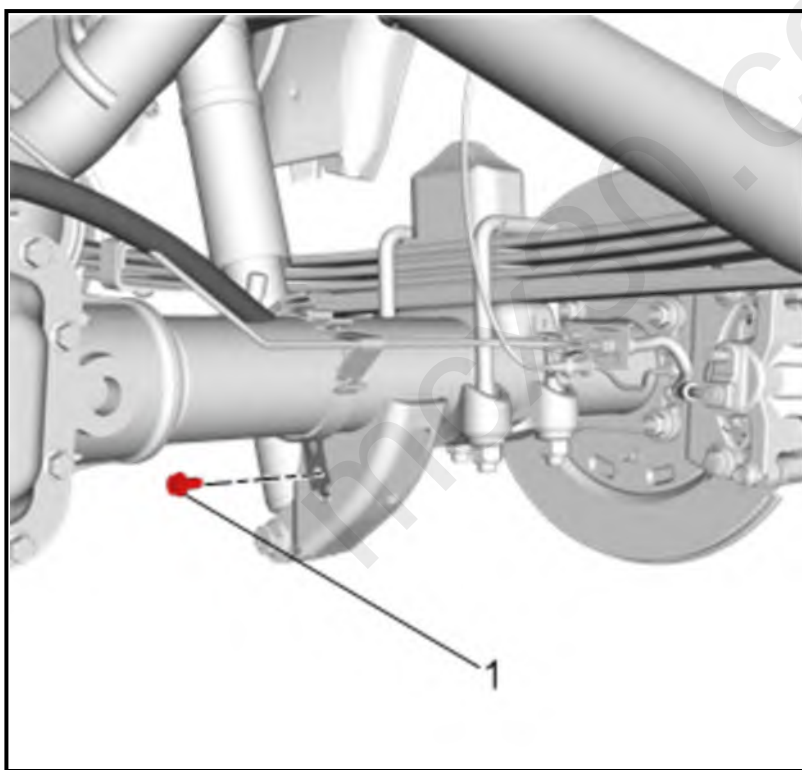


6. Remove the parking brake cable guide from the rear parking brake cables.

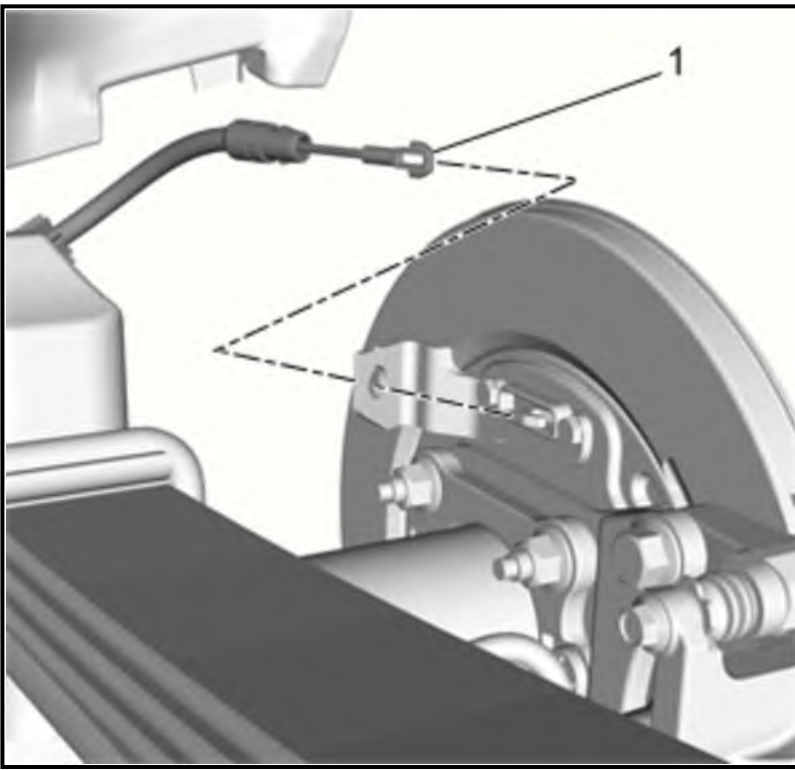
7. Remove and DISCARD the parking brake cable bracket nut (1).



8. Remove the parking brake cable bracket bolt (1).



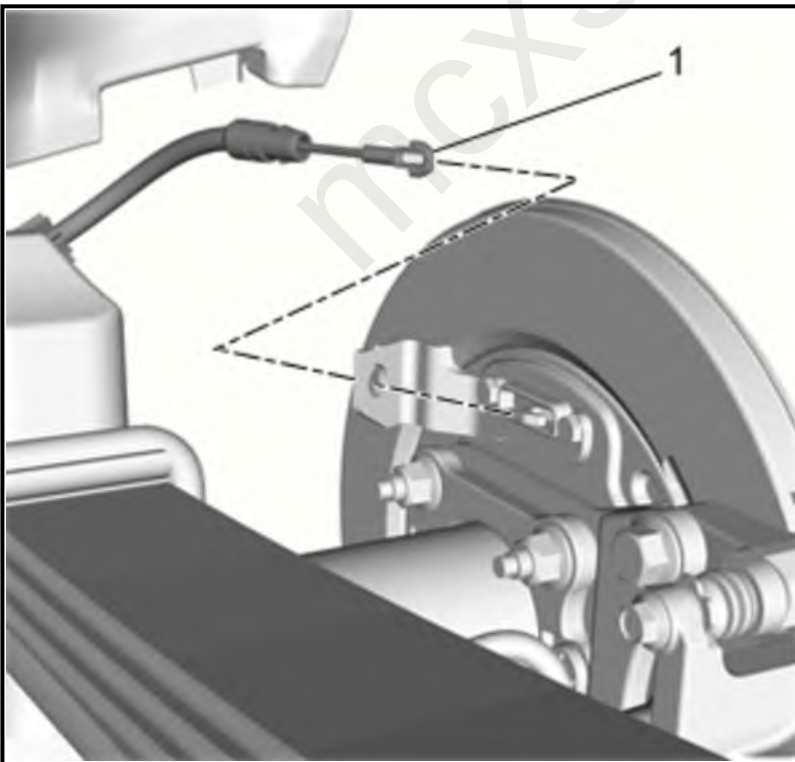
9. Disconnect the right rear parking brake cable eye from the park brake actuator lever.



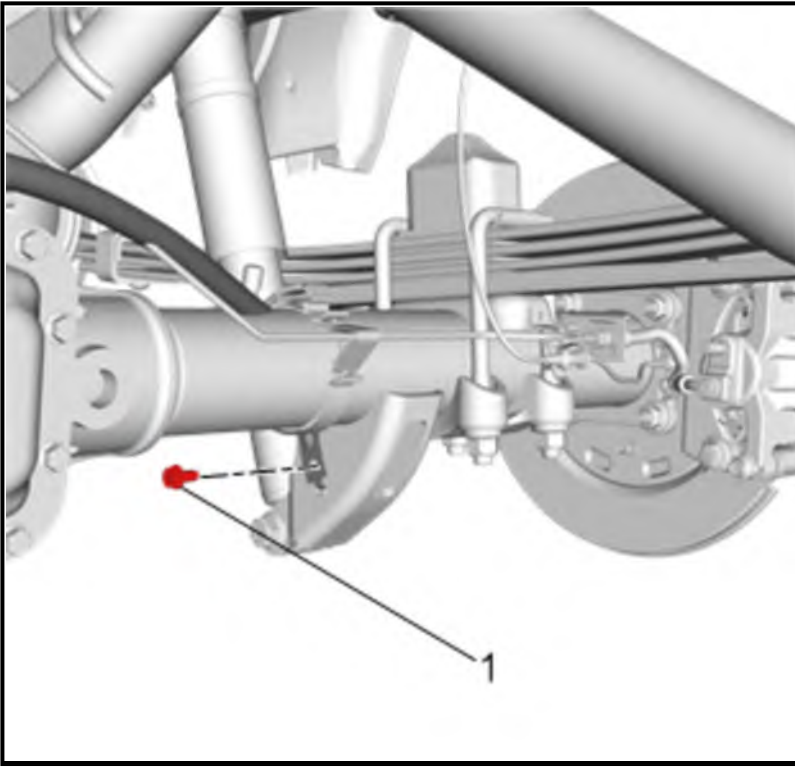
10. Release the right rear parking brake cable (1) from the rear axle bracket by compressing the locking tabs and pulling the park brake cable conduit rearward.
11. Remove the right rear parking brake cable assembly from the vehicle.

Installation Procedure

1. Install the right rear parking brake cable assembly to the vehicle.
2. Install the right rear parking brake cable (1) to the rear axle bracket by inserting the cable through the bracket.

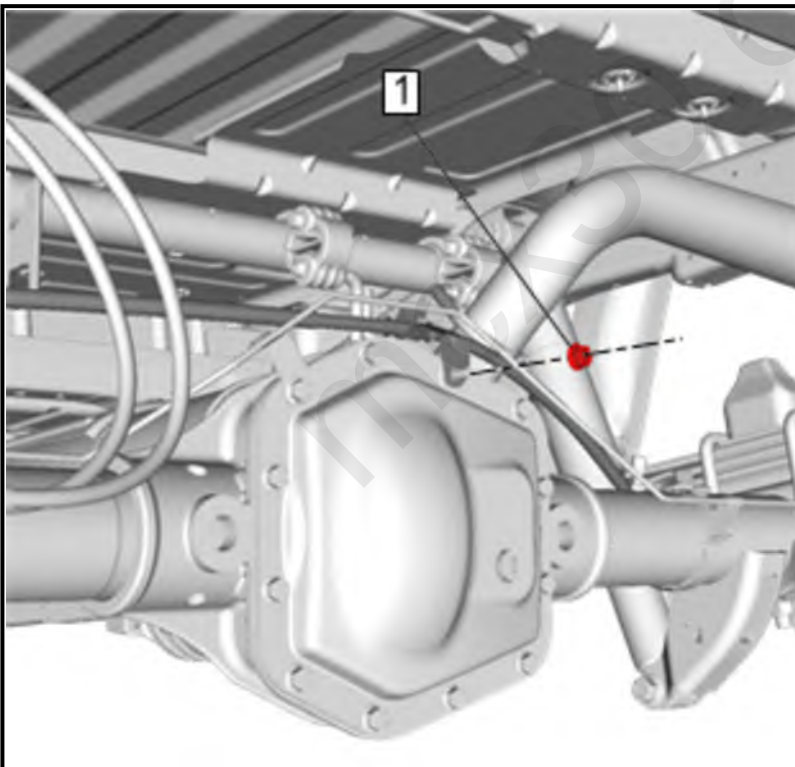


3. Ensure the cable locking tabs are fully engaged in the rear axle bracket.
4. Connect the right rear parking brake cable eye to the park brake actuator lever.
5. Install the parking brake cable bracket bolt (1) and tighten to 22 N.m (16 lb ft).

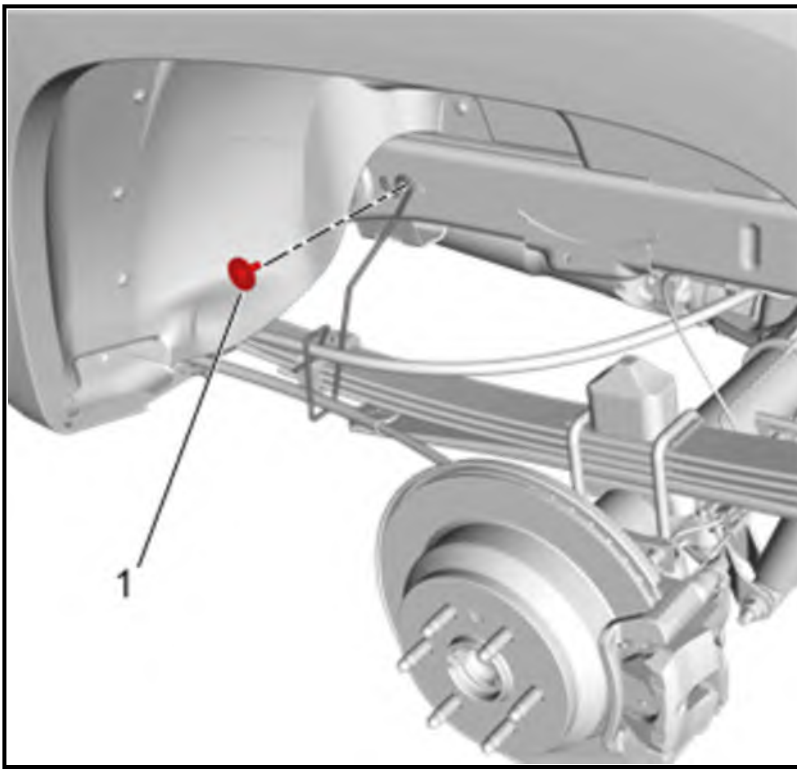


CAUTION: Refer to [Fastener Caution](#) .

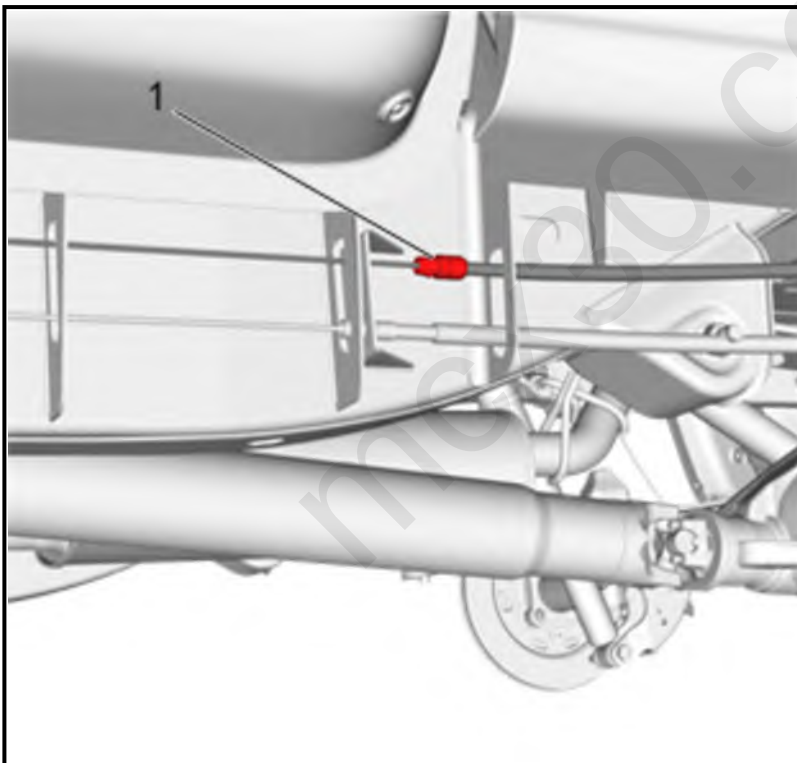
6. Install NEW parking brake cable bracket nut (1) and tighten to 22 N.m (16 lb ft).



7. Install the right rear parking brake cable guide to the rear parking brake cables.
8. Position the rear parking brake cable guide to the frame rail.
9. Install the parking brake cable guide bolt (1). [Parking Brake Rear Cable Replacement \(Right\)](#).

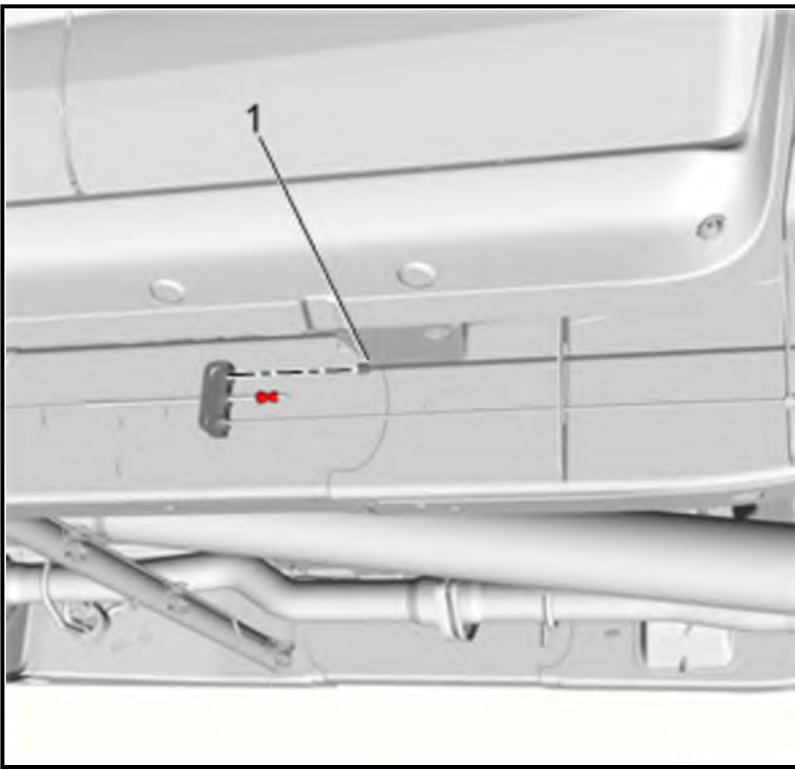


10. Install the right rear parking brake cable to the frame bracket.



11. Ensure the locking tabs on the cable (1) are fully engaged into the frame bracket.

12. Install the right rear parking brake cable (1) to the equalizer.



13. Adjust the park brake. [Parking Brake Adjustment](#)

PARKING BRAKE ADJUSTMENT

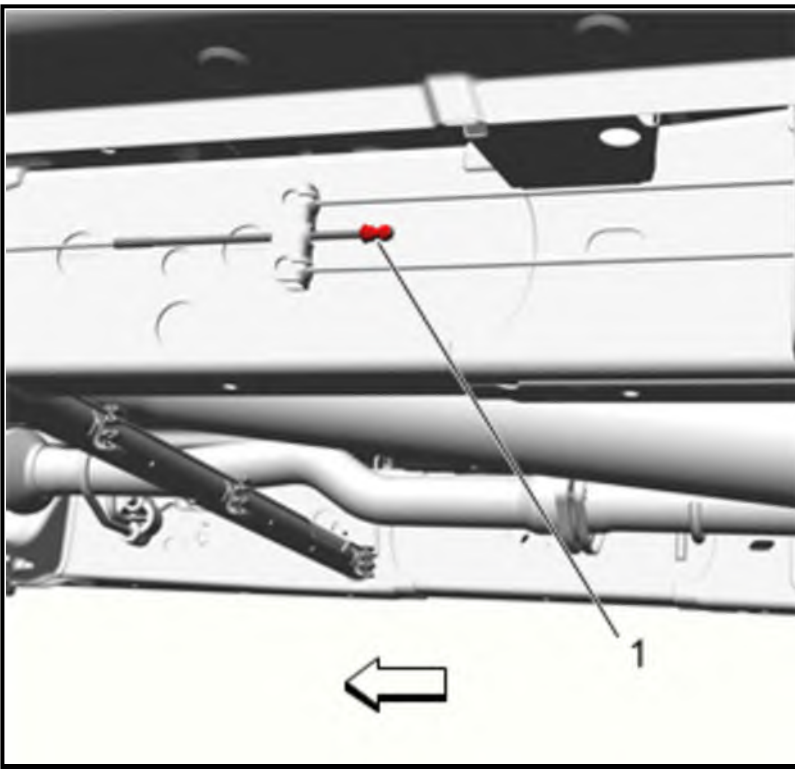
Special Tools

CH-21177-A Drum-to-Brake Shoe Clearance Gauge

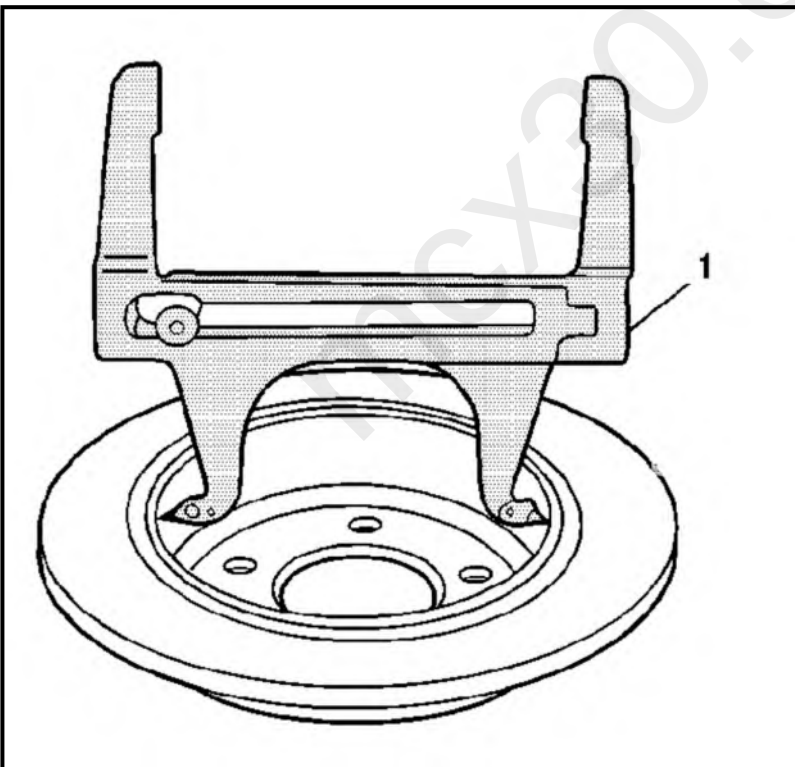
For equivalent regional tools, refer to [Special Tools](#).

WARNING: Refer to [Brake Dust Warning](#) .

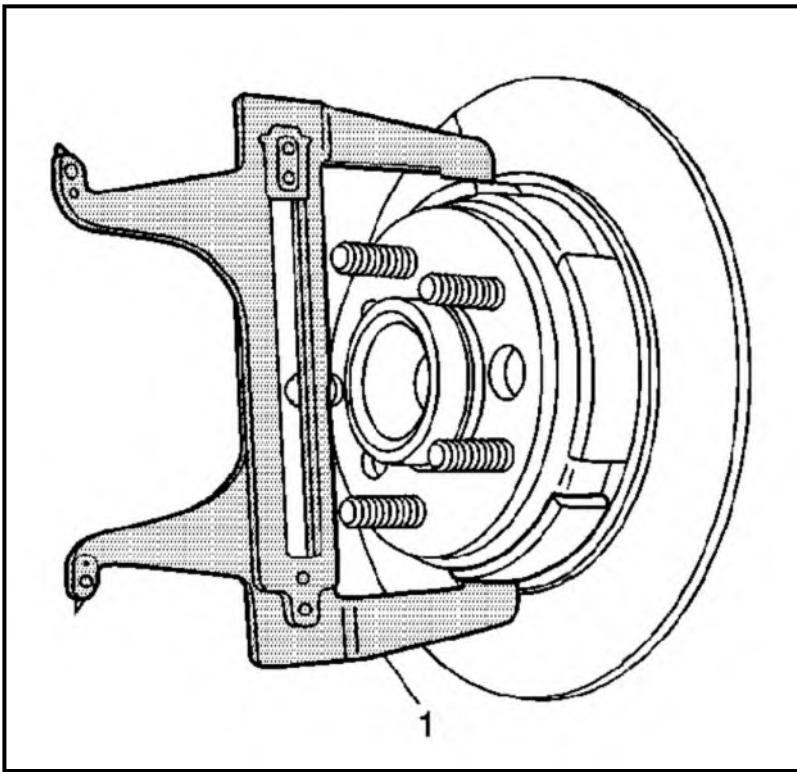
1. Apply and fully release the park brake.
2. Verify that the park brake pedal releases completely.
 - Turn ON the ignition. Verify the BRAKE indicator lamp is off.
 - If the BRAKE indicator lamp is on, ensure the park brake pedal is in release mode and has fully returned to the stop. Remove the slack in the front park brake cable by pulling downward on the cable.
3. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
4. Remove the rear tire and wheel assemblies. Refer to [Tire and Wheel Removal and Installation](#) .
5. Loosen the locknut (1) at the park brake cable equalizer to relieve tension on the park brake system.



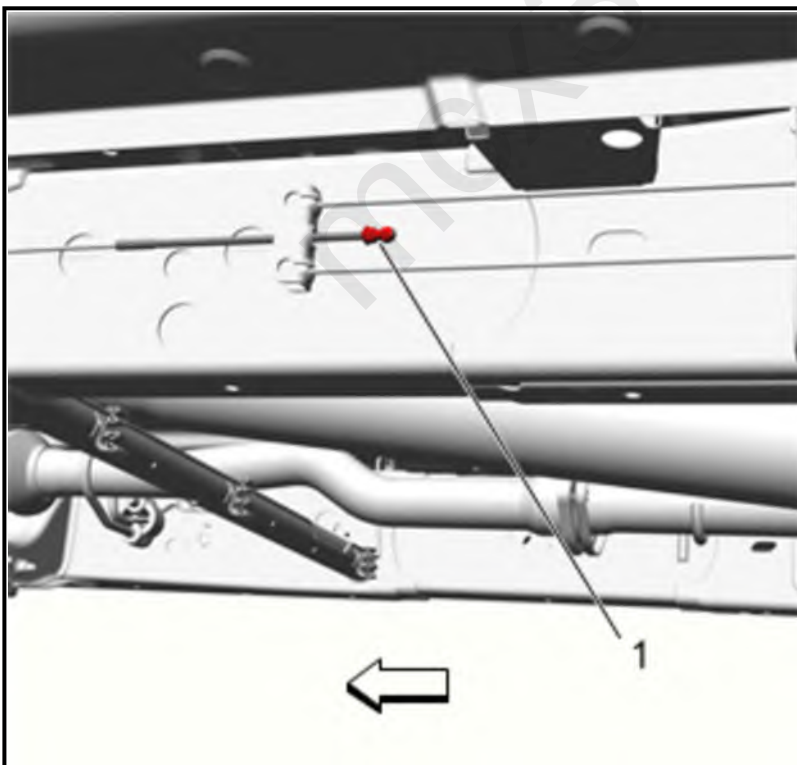
6. Remove the rear brake rotors. Refer to [Rear Brake Rotor Replacement](#) .
7. Using appropriate cleaning equipment, clean the parking brake components of any accumulated dust.
8. Set the **CH-21177-A** Drum-to-Brake Shoe Clearance Gauge (1) inside of the park brake drum at the widest point.



- Place the contacts on the tool to the widest point of the drum.
 - Tighten the set screw on the tool to ensure the proper measurement when removing the tool from the drum.
9. Position the **CH-21177-A** Drum-to-Brake Shoe Clearance Gauge (1) over the park brake shoe at the widest point.



10. Turn the adjuster screw until the park brake shoe just contacts the **CH-21177-A Drum-to-Brake Shoe Clearance Gauge**.
11. Repeat steps 8-10 for the opposite side.
12. Install the rear brake rotors. Refer to [Rear Brake Rotor Replacement](#) .
13. Install the rear tire and wheel assemblies. Refer to [Tire and Wheel Removal and Installation](#) .
14. While holding the intermediate parking brake cable stationary, tighten the parking brake intermediate cable locknut (1) until all slack is removed from the parking brake cables.



15. Apply a minimum of 538 N (120 lb) of force to the parking brake control module pedal.
16. Release the parking brake control module pedal.
17. Verify the parking brake control module pedal releases completely and the red BRAKE warning indicator is not illuminated.

18. Apply 480 N (108 lb) of force to the parking brake control module pedal.
19. Verify the parking brake control module pedal is within the specification range when the force is applied.

Specification

Number of pedal clicks when 480 N (108 lb) of force is applied: 6-9 clicks

20. Lower the vehicle to curb height.
21. Apply the park brake, then inspect for rotation of the rear wheels. If the rear wheels rotate during this inspection, then readjust the park brake shoes.
22. Release the park brake. Verify the rear wheels rotate freely.
23. Lower the vehicle.

DESCRIPTION AND OPERATION

PARK BRAKE SYSTEM DESCRIPTION AND OPERATION

System Component Description

The park brake system consists of the following:

Park Brake Lever Assembly

Receives and transfers park brake system apply input force from driver to park brake cable system. Releases applied park brake system when the lever is returned to the at-rest rest position.

Park Brake Cables

Transfers input force received from park brake lever, 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. An auto adjust spring is used to remove the slack in the park brake cables.

Park Brake Actuator/Adjuster

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

Threaded park brake actuators/adjusters 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 (Rear Disc, Drum-In-Hat System)

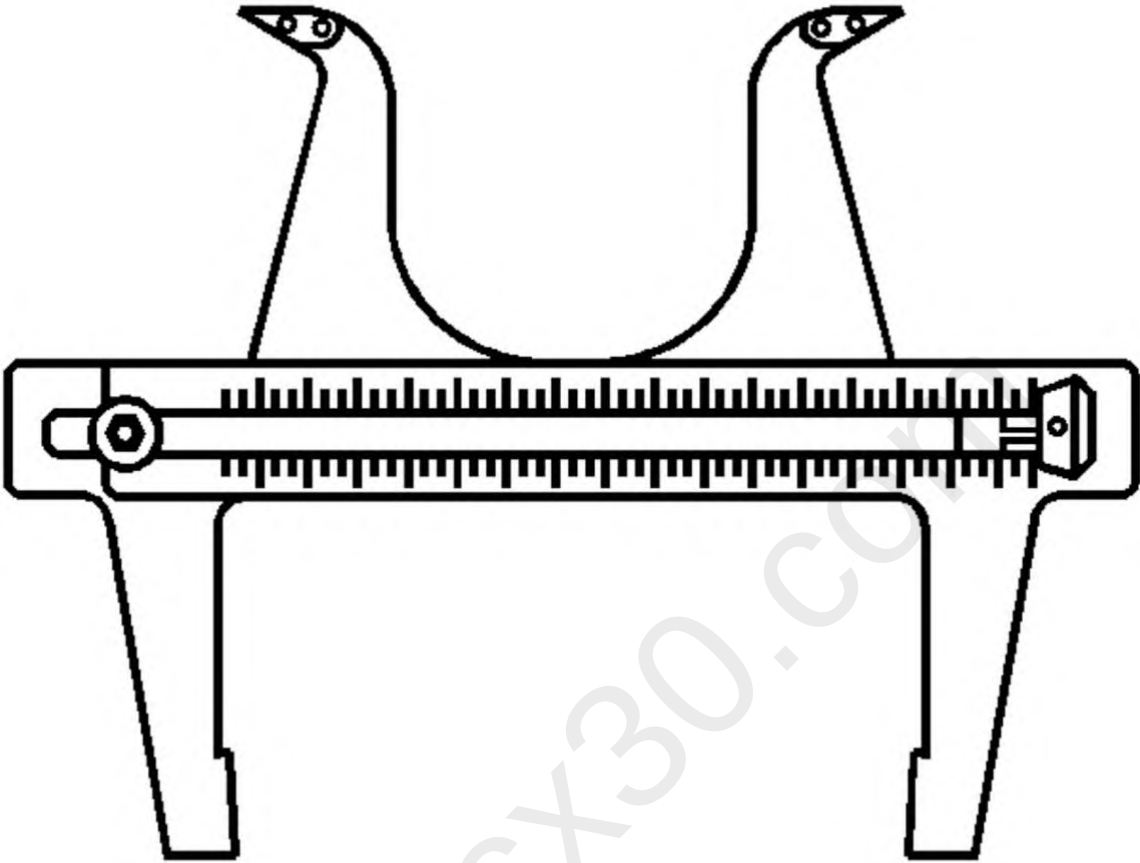
Applies mechanical output force from park brake actuator/adjuster to friction surface of the drum-in-hat portion of the rear brake rotor.

System Operation

Park brake apply input force is received by the park brake lever assembly being raised, 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/adjusters 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 assembly releases an applied park brake system when the lever is returned to the at-rest rest position.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/ Description
	CH 21177-A J 21177-A Drum to Brake Shoe Clearance Gauge