

## Parking Brake and Actuation -

### General Specification

Item	Specification
Make	TRW
Type	Drum machined in centre of the brake disc
Operation	Manually applied cable operated system.
Parking brake drum internal diameter	185 mm (7.28 in)
Minimum brake lining material thickness	1 mm (0.039 in)

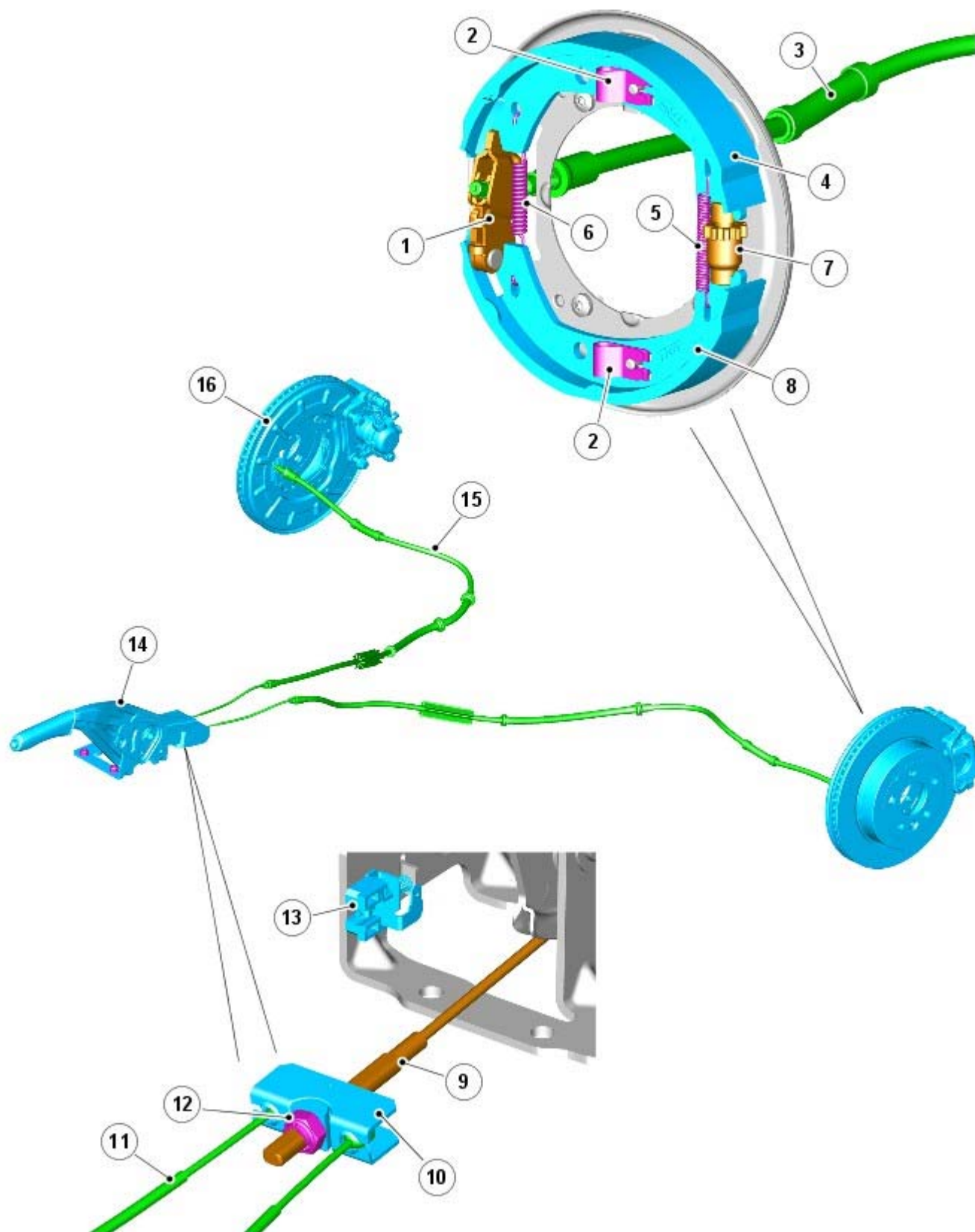
### Torque Specifications

Description	Nm	lb-ft
LH/RH parking brake cable bolts	10	7
Parking brake actuator mounting bracket bolts	25	18
Parking brake warning indicator switch Torx screw	2	1

# Parking Brake and Actuation - Parking Brake

Description and Operation

## COMPONENT LOCATION



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Item	Part Number	Description
1	-	Parking brake expander unit
2	-	Brake shoe retaining clip (2 off)

3	Parking brake outer cable sleeve
4	Upper (trailing) brake shoe
5	Brake shoe retaining spring
6	Brake shoe return spring
7	Brake shoe mechanical adjuster
8	Lower (leading) brake shoe
9	Parking brake lever cable
10	Parking brake cable equalizer
11	Parking brake inner cable
12	Equalizer fastener
13	Parking brake microswitch
14	Parking brake lever assembly
15	Parking brake outer cable
16	Brake dust shield

## OVERVIEW

The parking brake is a manually actuated system that operates brake shoes located in the rear brake discs. The inside center of the rear brake disc is manufactured to form the brake drum.

## BRAKE SHOE ASSEMBLY

The brake shoes are mounted horizontally on an integral brake dust shield and backplate, and form an upper trailing and lower leading brake shoe type system. Retaining pins pass through holes in the dust shield and corresponding holes in each brake shoe bracket. Each pin is secured to the brake shoe with a retaining clip. The retaining pins allow movement of the brake shoe toward the drum surface during parking brake operation, but prevent sideways movement of the brake shoe away from the dust shield.

An expander unit and manual adjuster are located along the horizontal axis of the dust shield. The expander unit is positioned at the front of the dust shield and forms the location for the leading and trailing ends of the brake shoe brackets. The manual adjuster is mounted at the rear of the dust shield and forms the location and fulcrum point for the opposite ends of the brake shoe brackets.

The manual adjuster provides the means to adjust the brake shoe lining to drum clearance for maintenance purposes. Access to the manual adjuster knurled wheel is through a formed hole in the front of the brake disc. Adjustment is required if the brake shoes or discs are renewed. A bedding-in procedure must also be performed to make sure the drum brakes operate satisfactorily.

For additional information, refer to: [Parking Brake Shoes Bedding-In](#) (206-05 Parking Brake and Actuation, General Procedures).

The corresponding ends of both the upper and lower brake shoe brackets are maintained in contact with the expander unit and manual adjuster by 2 return springs. The return springs are located between the ends of each upper and lower brake shoe and attach to holes formed in the brake shoe brackets. The return springs pull the brake shoes away from the drum when the parking brake is released.

## PARKING BRAKE LEVER

The parking brake lever is located in the floor console between the driver and passenger seats, and comprises a toothed quadrant, pawl and press-button release mechanism. A single cable with a formed threaded rod-end connects the quadrant to the equalizer unit, and is secured with either a locknut or a locking washer and nut.

The threaded rod allows adjustments to the parking brake cable tension and parking brake lever travel to be performed for maintenance purposes.

For additional information, refer to: [Parking Brake Cable Adjustment](#) (206-05 Parking Brake and Actuation, General Procedures).

The parking brake cable is routed from the parking brake lever equalizer, and along the chassis to the rear parking brake expander unit. The parking brake cable protrudes through the brake dust shield, and is formed with a nipple that connects to the expander unit. The opposite ends of each Left-Hand (LH) and Right-Hand (RH) parking brake cable are formed with a nipple that connect to the equalizer unit. The equalizer unit makes sure the LH and RH parking brake assemblies operate simultaneously when the parking brake is applied.

A microswitch is located on the base of the parking brake lever. The microswitch operates the parking brake warning indicator lamp located in the instrument cluster, when the parking brake is applied.

For additional information, refer to: [Instrument Cluster](#) (413-01 Instrument Cluster, Description and Operation).

## PRINCIPLES OF OPERATION

As the parking brake lever is applied, the toothed quadrant rotates and pulls on the threaded rod and cable equalizer. The

equalizer pulls the 2 parking brake cables and operates the 2 expander units simultaneously. Movement of the expander unit causes the upper and lower brake shoes to pivot against the manual adjuster fulcrum, and the brake shoes contact the brake drum against the tension of the 2 return springs.

As the parking brake lever quadrant rotates, the teeth on the pawl engage with corresponding teeth on the quadrant. In the applied position, the pawl teeth are held under spring tension against the quadrant teeth to prevent the lever from disengaging.

With the parking brake applied and the ignition in power mode 6 (ignition), the microswitch connects a ground to the instrument cluster and illuminates the parking brake warning indicator lamp.

For additional information, refer to: [Instrument Cluster](#) (413-01 Instrument Cluster, Description and Operation).

When the parking brake lever press-button is pressed and the lever moved to release the parking brake, the pawl teeth are raised clear from the quadrant teeth. As the parking brake lever is lowered, the parking brake cable closes the expander unit and the brake shoes are immediately moved away from the brake drum by the 2 return springs.

As the parking brake lever reaches the fully released position, the microswitch is opened to disconnect the circuit to the instrument cluster. With the parking brake released, the parking brake warning indicator lamp is extinguished.

# Parking Brake and Actuation - Parking Brake

Diagnosis and Testing

## Principle of Operation

For a detailed description of the parking brake, refer to the relevant Description and Operation section in the workshop manual.

REFER to: [Parking Brake](#) (206-05 Parking Brake and Actuation, Description and Operation).

## Inspection and Verification

1. Verify the customer concern by operating the system to duplicate the condition.
2. Visually inspect for obvious signs of damage and system integrity.

### Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> <li>● Parking brake control</li> <li>● Cable and conduit</li> <li>● Equalizer</li> </ul>	<ul style="list-style-type: none"> <li>● Parking brake control warning circuit</li> </ul>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom and refer to the Symptom Chart.

## Symptom Chart

Symptom	Possible Cause	Action
The parking brake will not engage	<ul style="list-style-type: none"> <li>● Parking brake control</li> <li>● Cable and conduit</li> </ul>	Go to Pinpoint Test A
The parking brake will not release	<ul style="list-style-type: none"> <li>● Cable and conduit</li> <li>● Parking brake control</li> </ul>	Go to Pinpoint Test B

## Pinpoint Tests

PINPOINT TEST A : THE PARKING BRAKE WILL NOT ENGAGE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>A1: CHECK FOR INCORRECTLY ADJUSTED REAR PARKING BRAKE CABLE</b>	
	<b>1</b> Carry out parking brake cable adjustment procedure. REFER to: <a href="#">Parking Brake Cable Adjustment</a> (206-05 Parking Brake and Actuation, General Procedures).
	Does the parking brake now engage correctly? <b>Yes</b> Vehicle OK. <b>No</b> <a href="#">GO to A2.</a>
<b>A2: CHECK FOR WORN PARKING BRAKE SHOES</b>	
	<b>1</b> Inspect the rear parking brake shoes for excessive wear.
	Are parking brake shoes OK? <b>Yes</b> <a href="#">GO to A3.</a> <b>No</b> INSTALL new parking brake shoes. REFER to: <a href="#">Parking Brake Shoes</a> (206-05 Parking Brake and Actuation, Removal and Installation). Test the system for normal operation.
<b>A3: CHECK FOR DAMAGED PARKING BRAKE CABLES</b>	
	<b>1</b> Inspect the parking brake components, cables and conduit for damage, rust or fraying.
	Are the parking brake components, cables and conduits OK? <b>Yes</b> CHECK for other causes such as loose parking brake control or system components. <b>No</b> REPAIR or INSTALL new components, cables and conduit as necessary. REFER to: <a href="#">Parking Brake Front Cable</a> (206-05 Parking Brake and Actuation, Removal and Installation) / <a href="#">Parking Brake Rear Cables</a> (206-05 Parking Brake and Actuation, Removal and Installation). TEST the system for normal operation.

PINPOINT TEST B : THE PARKING BRAKE WILL NOT RELEASE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>B1: CHECK PARKING BRAKE CONTROL</b>	
<a href="#">NOTE: Ensure correct adjustment of parking brake shoes prior to test.</a>	
	<ol style="list-style-type: none"> <li>1 Raise and support the vehicle with the parking brake fully applied. REFER to: <a href="#">Lifting</a> (100-02 Jacking and Lifting, Description and Operation).</li> <li>2 Release the parking brake by pulling upwards on the control lever and pushing the release button.</li> </ol>
	<p>Did the parking brake control release?</p> <p><b>Yes</b></p> <p>CHECK for other causes such as conventional brake system components, REPAIR or INSTALL new components as necessary.</p> <p><b>No</b></p> <p><a href="#">GO to B2.</a></p>
<b>B2: CHECK PARKING BRAKE CABLES</b>	
	<ol style="list-style-type: none"> <li>1 Loosen the parking brake cable tension. <ul style="list-style-type: none"> <li>● Rotate the wheels by hand.</li> </ul> </li> </ol>
	<p>Did the rear wheels rotate OK?</p> <p><b>Yes</b></p> <p>CHECK and INSTALL a new parking brake control as required. REFER to: <a href="#">Parking Brake Control</a> (206-05 Parking Brake and Actuation, Removal and Installation). TEST the system for normal operation.</p> <p><b>No</b></p> <p><a href="#">GO to B3.</a></p>
<b>B3: CHECK REAR PARKING BRAKE CABLES</b>	
	<ol style="list-style-type: none"> <li>1 Disconnect the parking brake rear cable from the vehicle and check for binding/sticking.</li> </ol>
	<p>Did the parking brake rear cable show signs of binding/sticking?</p> <p><b>Yes</b></p> <p>INSTALL a new rear parking brake cable. REFER to: <a href="#">Parking Brake Rear Cables</a> (206-05 Parking Brake and Actuation, Removal and Installation). TEST the system for normal operation.</p> <p><b>No</b></p> <p>Check for parking brake component or rear brake caliper failures.</p>

## Parking Brake and Actuation - Parking Brake Cable Adjustment

General Procedures

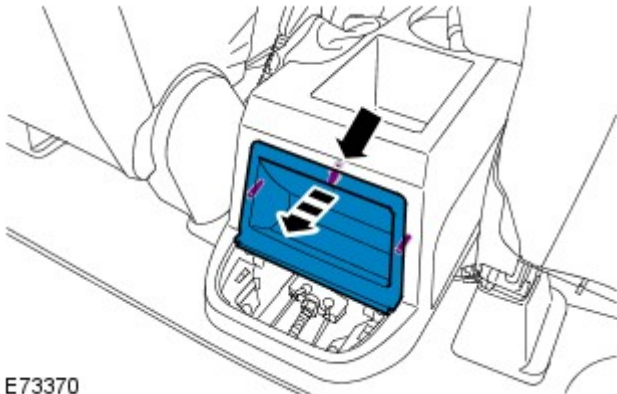
1. Apply the parking brake lever one click at a time and count the number of clicks required to apply the brakes firmly. The brakes should be firmly applied between 3 and 9 clicks.

2.



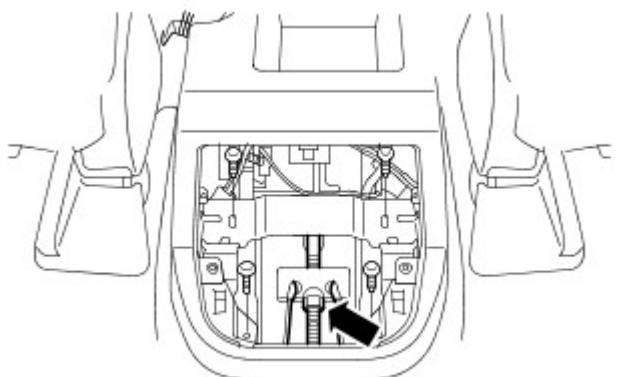
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3.




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4. With the parking brake lever fully lowered, release the parking brake cable adjustment.



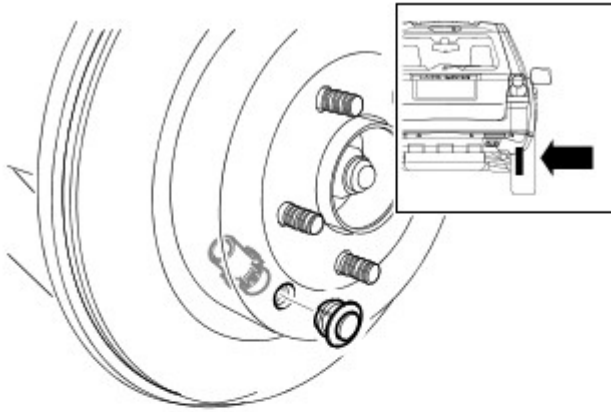
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5.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

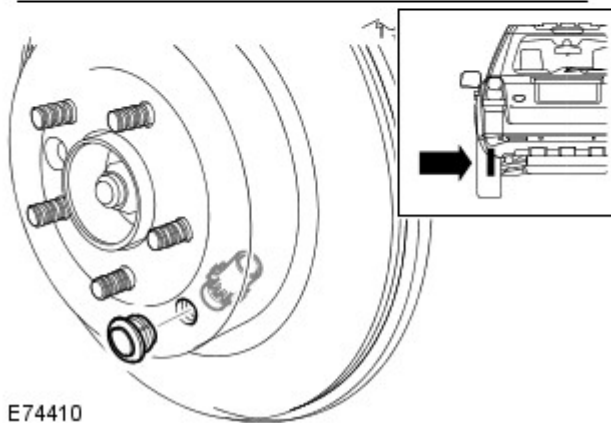
6. Remove the rear wheels and tires

Refer to: [Wheel and Tire](#) (204-04 Wheels and Tires, Removal and Installation).



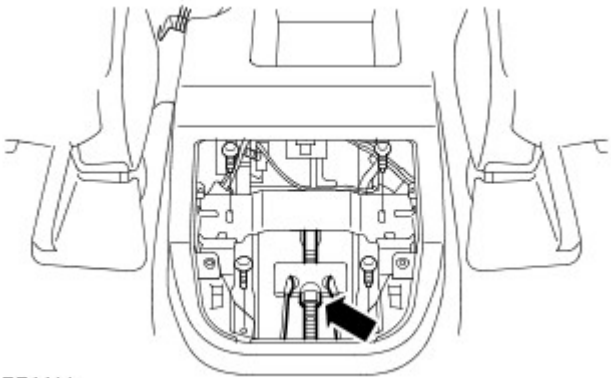
7. **NOTE:** Apply the parking brake control lever several times to centralize the brake shoes.

Rotate the parking brake adjuster until the disc cannot be turned, then back the adjuster off 8 clicks.



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8. Repeat the above procedure for the other side.



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9. Adjust the parking brake front cable to give a parking brake lever travel of between 3 and 9 clicks, to firmly apply the brakes.

10. Install the coin tray and stowage compartment.

11. Install the rear wheels and tires.

Refer to: [Wheel and Tire](#) (204-04 Wheels and Tires, Removal and Installation).

12. If necessary, carry out the parking brake shoe bedding-in procedure.

Refer to: [Parking Brake Shoes Bedding-In](#) (206-05 Parking Brake and Actuation, General Procedures).



## Parking Brake and Actuation - Parking Brake Shoes Bedding-In

### General Procedures

NOTE: This procedure must be carried out if, new parking brake shoes are fitted, new rear brake discs are fitted or if the vehicle has been mud wading (not water) for more than 50 miles.


1. Carry out the parking brake shoe bedding-in procedure.

2. Adjust the parking brake.

Refer to: [Parking Brake Cable Adjustment](#) (206-05 Parking Brake and Actuation, General Procedures).

3.

- Carry out the parking brake shoe bedding-in procedure.
- On a dynamometer: Apply the parking brake lever for approximately 40 seconds, a braking force reading of 800 Nm must be obtained.

4.  **WARNING:** Where possible, all road tests should be on well surfaced and dry roads. Always comply with speed limits and local traffic regulations.

- Carry out the parking brake shoe bedding-in procedure.
- On a road test: At approximately 24 mph (40 km/h), apply the parking brake lever until a braking force can be felt. Apply the parking brake lever by one further notch and drive on for 400 metres (440 yards).

5. Re-adjust the parking brake.

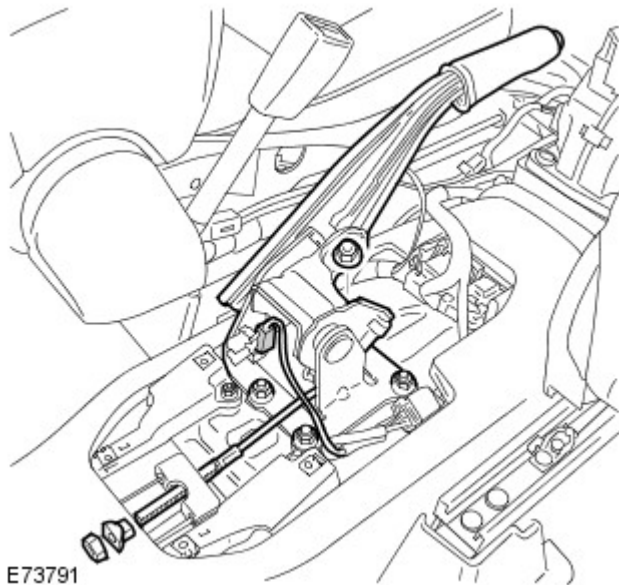
## Parking Brake and Actuation - Parking Brake Control

Removal and Installation

### Removal

1. Remove the floor console.

Refer to: [Floor Console](#) (501-12 Instrument Panel and Console, Removal and Installation).



- 2.

- Torque: 25 Nm

### Installation

1. To install, reverse the removal procedure.
2. Adjust the parking brake.

Refer to: [Parking Brake Cable Adjustment](#) (206-05 Parking Brake and Actuation, General Procedures).

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## Parking Brake and Actuation - Parking Brake Warning Indicator Switch

Removal and Installation

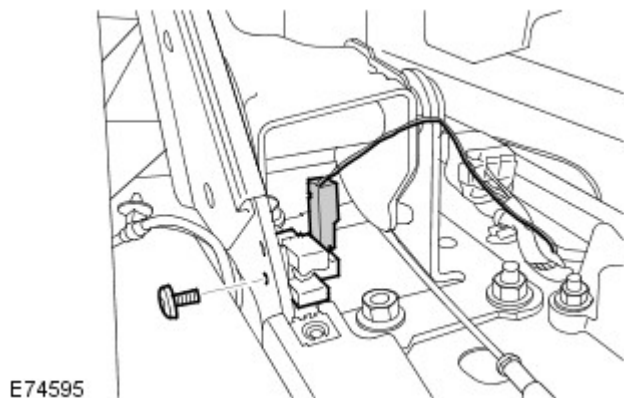
### Removal

1. Remove the floor console.

Refer to: [Floor Console](#) (501-12 Instrument Panel and Console, Removal and Installation).

2. Release the vehicle parking brake.

3. Remove the parking brake switch.



### Installation

1. To install, reverse the removal procedure.

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## Parking Brake and Actuation - Parking Brake Front Cable

Removal and Installation

### Removal

NOTE: The parking brake front cable is part of the [parking brake control](#).

1. Remove the parking brake control.

Refer to: [Parking Brake Control](#) (206-05 Parking Brake and Actuation, Removal and Installation).

### Installation

1. Install the parking brake control.

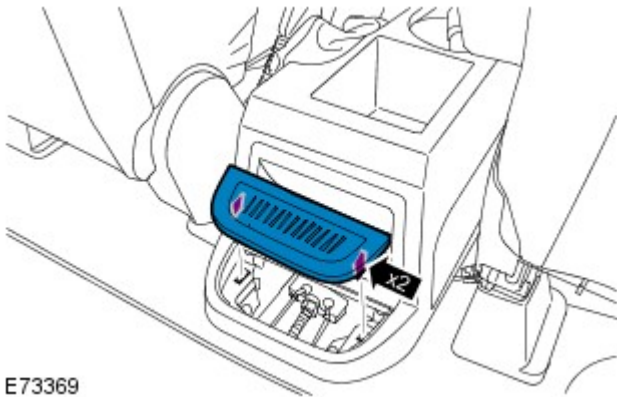
Refer to: [Parking Brake Control](#) (206-05 Parking Brake and Actuation, Removal and Installation).

# Parking Brake and Actuation - Parking Brake Rear Cables

Removal and Installation

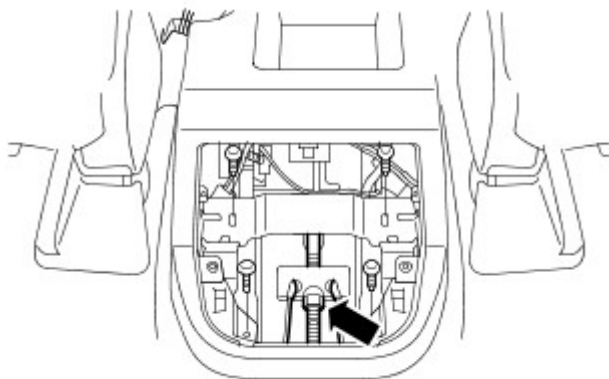
## Removal


1. Remove the coin tray.



2. Remove the stowage compartment.
3. Remove the adjusting nut and disconnect the front parking brake cable.

4. Release the rear parking brake cables and remove the compensator.

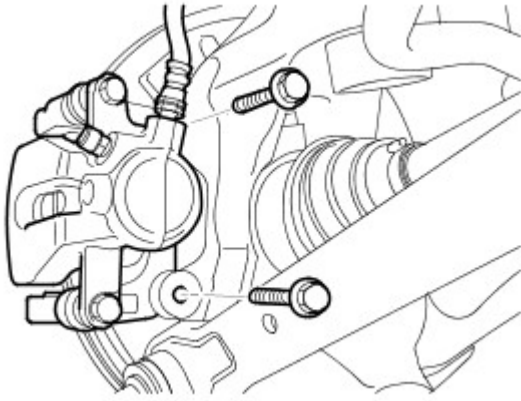


5.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

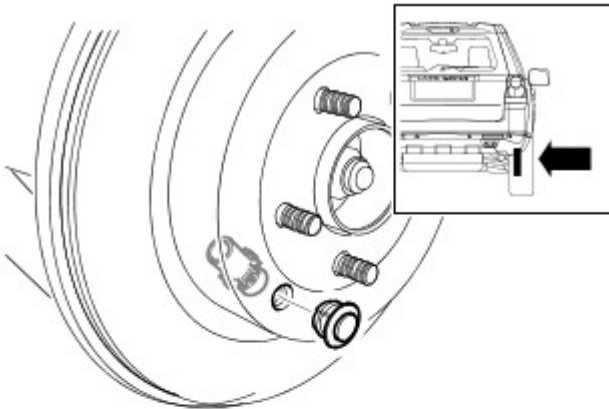
6. Remove both rear wheels and tires.

Refer to: [Wheel and Tire](#) (204-04 Wheels and Tires, Removal and Installation).

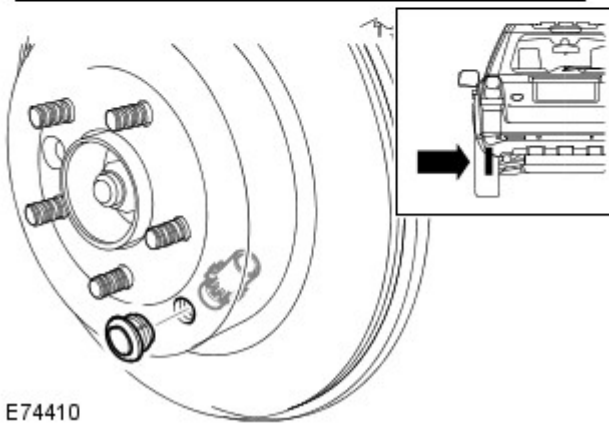


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7. Tie the rear brake caliper aside.

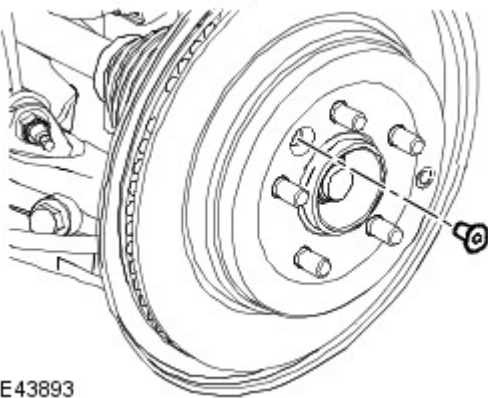


8. Back-off the parking brake adjuster.

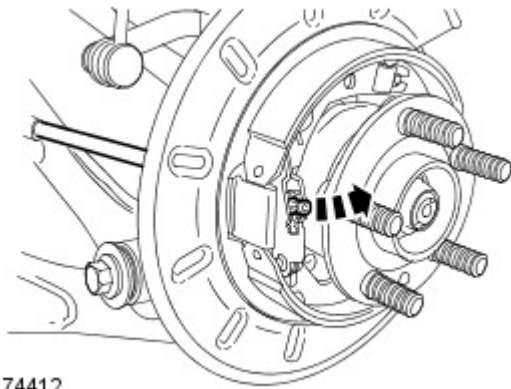


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9. Remove the brake disc.

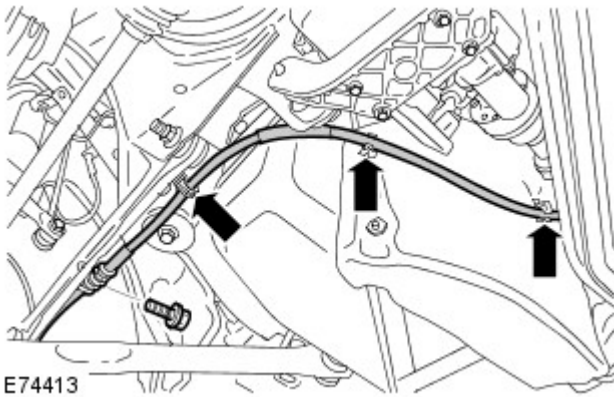


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10. Release the cable support bracket, clip and cable-tie.

11. Release the parking brake cable from the body.



12. Disconnect and remove the cable.

13. Repeat the above procedure for the other side.

## Installation

1. Install the parking brake cable to the hub and connect the nipple.
2. Install the parking brake cable to the body.
3. Connect the cable support bracket, clip and cable tie.
4.
  - Install the brake disc.
  - Torque: 35 Nm
5.
  - Install the brake caliper.
  - Torque: 110 Nm
6. Repeat the above procedure for the other side.
7. Install the compensator to the rear parking brake cables.
8. Connect the front parking brake cable and install the adjusting nut.
9. Adjust the parking brake.

Refer to: [Parking Brake Cable Adjustment](#) (206-05 Parking Brake and Actuation, General Procedures).

10. Install the coin tray and stowage compartment.

11. Install both wheels and tires.

Refer to: [Wheel and Tire](#) (204-04 Wheels and Tires, Removal and Installation).




## Parking Brake and Actuation - Parking Brake Shoes

Removal and Installation

### Removal

**NOTE:** If the parking brake shoes or the brake discs have been removed for access to other components then DO NOT carry out the bedding in procedure.

1.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

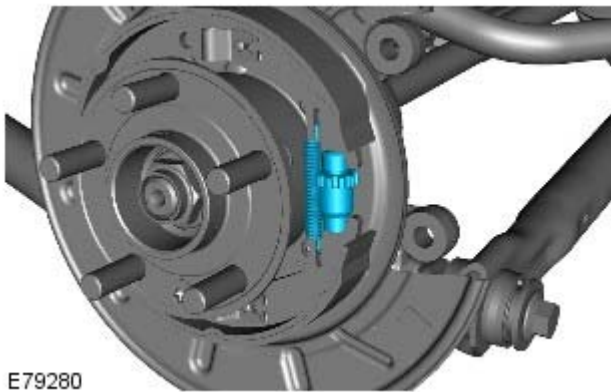
2. Remove the wheels and tires.

Refer to: [Wheel and Tire](#) (204-04 Wheels and Tires, Removal and Installation).

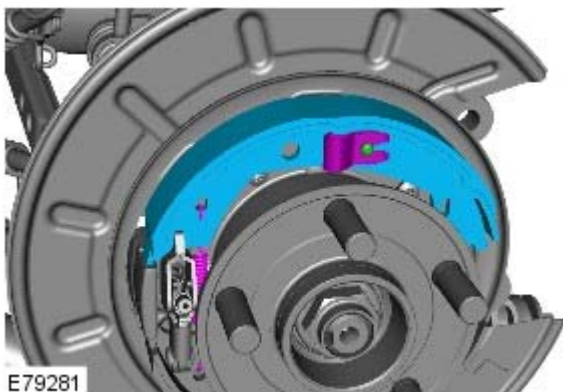
3. Remove both rear brake discs.

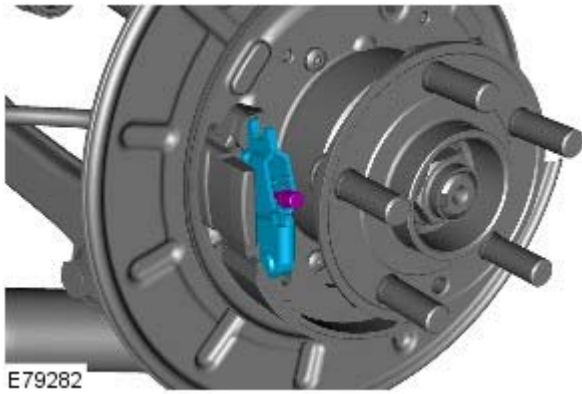
Refer to: [Brake Disc](#) (206-04 Rear Disc Brake, Removal and Installation).

- 4.

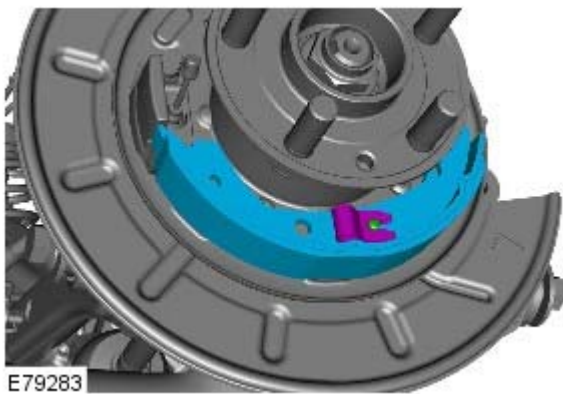


- 5.









6.



7.

8. Repeat the above procedure for the other side.

## Installation

1.  **WARNING:** Do not use compressed air to clean brake components. Dust from friction materials can be harmful if inhaled.  
Clean the backing plate and apply grease to the brake shoe contacts.
2. Clean the adjuster and set it to its minimum extension.
3.  **CAUTION:** Make sure the brake shoe spring is not over stretched.
  - Install the secondary brake shoe.
  - Connect the parking brake cable.
  - Connect the parking brake cable retaining spring to the brake shoe lever, making sure the spring is not twisted.
  - Install the hold-down spring and retaining pin.
4.  **WARNING:** Make sure the return spring and the adjuster spring are correctly installed to the primary shoe.  
 **CAUTION:** Make sure the brake shoe spring is not over stretched.  
 Install the brake shoe adjuster.
6. Repeat the above procedure for the other side.
  - Install the primary brake shoe.
  - Install the spreader plate and the spring.
  - Install the return spring.
7. Install both rear brake discs.
  - Install the hold-down spring and retaining pin.

Refer to: [Brake Disc](#) (206-04 Rear Disc Brake, Removal and Installation).

8. Install the wheels and tires.

Refer to: [Wheel and Tire](#) (204-04 Wheels and Tires, Removal and Installation).

9. If necessary, carry out the parking brake shoe bedding-in procedure.

Refer to: [Parking Brake Shoes Bedding-In](#) (206-05 Parking Brake and Actuation, General Procedures).