

## DIAGNOSIS AND TESTING

### Parking Brake

#### Material

Item	Specification
High Performance DOT 3 Motor Vehicle Brake Fluid PM-1 (Canada CPM-1)	ESA-M6C25-A

#### Inspection and Verification

**⚠ WARNING:** Use of any brake fluid other than the approved DOT 3 will cause permanent damage to brake components and will render the brakes inoperative. Failure to follow these instructions may result in personal injury.

**⚠ WARNING:** Brake fluid contains polyglycol ethers and polyglycols. Avoid contact with eyes. Wash hands thoroughly after handling. If brake fluid contacts eyes, flush eyes with running water for 15 minutes. Get medical attention if irritation persists. If taken internally, drink water and induce vomiting. Get medical attention immediately. Failure to follow these instructions may result in personal injury.

**⚠ CAUTION:** Do not spill brake fluid onto painted or plastic surfaces. If spilled, wipe up immediately before damage to the plastic or painted surfaces occurs.

**⚠ CAUTION:** Do not allow the brake fluid to come in contact with the adhesive backing on the brake pads. If brake fluid is spilled onto the brake pads, new pads must be installed.

**NOTE:** Always check the fluid level in the brake master cylinder reservoir before carrying out the test procedures. If the fluid level is not at the correct level, clean the reservoir cap before removing, then add DOT 3 brake fluid.

**NOTE:** Prior to carrying out any diagnosis, make sure the red brake warning indicator is functional. For additional information, refer to Section 413-01.

The first indication that something may be wrong in the brake system is a change in the feeling through the parking brake control. The parking brake not holding on an incline or dragging after being released are also indicators of system concerns.

Check the operation of the parking brake system with the vehicle on a hoist and the parking brake control fully released. Check for any damaged cables and install new components as necessary. Carry out the brake system diagnosis.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical damage.

#### Visual Inspection Chart

Mechanical
<ul style="list-style-type: none"> <li>• Parking brake control</li> <li>• Parking brake cables</li> <li>• Parking brake release handle</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 cause is not visually evident, verify the symptom and GO to [Symptom Chart](#).

**DIAGNOSIS AND TESTING (Continued)**

**Symptom Chart**

**Symptom Chart**

Condition	Possible Sources	Action
<ul style="list-style-type: none"> <li>Brakes drag</li> </ul>	<ul style="list-style-type: none"> <li>Parking brake component</li> <li>Brake caliper guide pins</li> <li>Brake caliper</li> <li>Brake booster</li> <li>Brake master cylinder</li> </ul>	<ul style="list-style-type: none"> <li>REPAIR or INSTALL new parking brake components as necessary. REFER to Parking Brake Control or Parking Brake Cable — Rear in this section.</li> <li>REPAIR or INSTALL new brake caliper guide pins. REFER to Section 206-00.</li> <li>REPAIR or INSTALL new brake calipers as necessary. REFER to Section 206-00.</li> <li>CARRY OUT the Brake Booster Component Test in this section.</li> <li>CARRY OUT the Brake Master Cylinder Component Test in this section.</li> </ul>
<ul style="list-style-type: none"> <li>The parking brake will not apply</li> </ul>	<ul style="list-style-type: none"> <li>Parking brake control</li> <li>Parking brake cables</li> <li>Parking brake rear wheel components</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test A.</li> </ul>
<ul style="list-style-type: none"> <li>The parking brake will not release</li> </ul>	<ul style="list-style-type: none"> <li>Parking brake cables</li> <li>Parking brake control</li> <li>Parking brake rear wheel components</li> </ul>	<ul style="list-style-type: none"> <li>GO to Pinpoint Test B.</li> </ul>

**Pinpoint Test A: The Parking Brake Will Not Apply**

**Normal Operation**

The parking brake system is cable-actuated and controlled by an independent hand-operated parking brake control that is not self-adjusting. The parking brake system is actuated when the parking brake control is pulled up. The parking brake control applies tension to the brake pads through the front parking brake cable and conduit and the LH and RH rear parking brake cables.

**Possible Causes**

- parking brake control
- parking brake cables
- parking brake rear wheel components

**PINPOINT TEST A: THE PARKING BRAKE WILL NOT APPLY**

Test Step	Result / Action to Take
<b>A1 CHECK THE PARKING BRAKE CABLES</b> <ul style="list-style-type: none"> <li>With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to Section 100-02.</li> <li>Inspect for broken or binding parking brake cables.</li> <li><b>Is there a parking brake cable concern?</b></li> </ul>	<p><b>Yes</b> INSTALL a new parking brake cable as necessary. REFER to Parking Brake Cable — Rear in this section. TEST the system for normal operation.</p> <p><b>No</b> GO to <b>A2</b>.</p>

(Continued)

**DIAGNOSIS AND TESTING (Continued)**

**PINPOINT TEST A: THE PARKING BRAKE WILL NOT APPLY (Continued)**

Test Step		Result / Action to Take
<b>A2</b>	<b>CHECK THE PARKING BRAKE CONTROL</b>	<b>Yes</b> GO to <b>A3</b> .  <b>No</b> INSTALL a new parking brake control. For additional information, refer to Parking Brake Control in this section. TEST the system for normal operation.
	<ul style="list-style-type: none"> <li>Operate the parking brake control.</li> <li><b>Does the parking brake control operate smoothly?</b></li> </ul>	
<b>A3</b>	<b>CHECK THE PARKING BRAKE COMPONENTS</b>	<b>Yes</b> CHECK the brake pad installation. REFER to Section 206-04.  <b>No</b> INSTALL new components. TEST the system for normal operation.
	<ul style="list-style-type: none"> <li>Operate the parking brake control and observe the parking brake components.</li> <li><b>Do the parking brake components operate correctly?</b></li> </ul>	

**Pinpoint Test B: The Parking Brake Will Not Release**

**Normal Operation**

The parking brake system is cable-actuated and controlled by an independent hand-operated parking brake control that is not self-adjusting. The parking brake system is actuated when the parking brake control is pulled up. The parking brake control applies tension to the brake pads through the front parking brake cable and conduit and the LH and RH rear parking brake cables.

**Possible Causes**

- parking brake cables
- parking brake control
- parking brake rear wheel components

**PINPOINT TEST B: THE PARKING BRAKE WILL NOT RELEASE**

Test Step		Result / Action to Take
<b>B1</b>	<b>CHECK THE FRONT PARKING BRAKE CABLE</b>	<b>Yes</b> INSPECT the front parking brake cable for binding. INSPECT the parking brake control for wear or damage. INSTALL new components as necessary. For additional information, refer to Parking Brake Control in this section. TEST the system for normal operation.  <b>No</b> GO to <b>B2</b> .
	<ul style="list-style-type: none"> <li>Release the parking brake control.</li> <li>If the vehicle cannot be moved, raise and support it.</li> <li>Release the parking brake cable tension. Refer to Parking Brake Cable Tension Release in this section.</li> <li>Disconnect the parking brake cable at the parking brake lever.</li> <li><b>Does the parking brake release?</b></li> </ul>	
<b>B2</b>	<b>CHECK THE PARKING BRAKE REAR CABLES</b>	<b>Yes</b> INSPECT the parking brake rear cable and conduits for wear or damage. INSTALL new components as necessary. For additional information, refer to Parking Brake Cable — Rear in this section. TEST the system for normal operation.  <b>No</b> REPAIR the worn or damaged rear wheel parking brake components as necessary. TEST the system for normal operation.
	<ul style="list-style-type: none"> <li>Disconnect the RH parking brake rear cable and conduit and the LH parking brake rear cable and conduit from the parking brake lever at each wheel.</li> <li><b>Does the parking brake release?</b></li> </ul>	