

# Drum Brakes

## Specifications

### Fastener Tightening Specifications

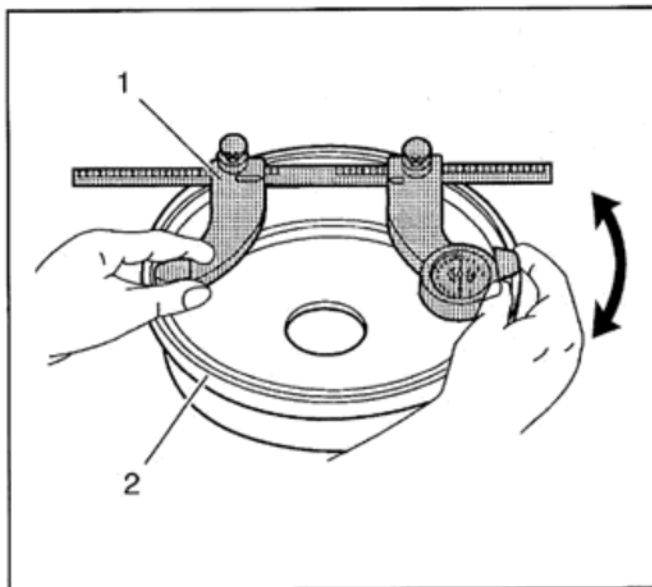
| Application              | Specification |          |
|--------------------------|---------------|----------|
|                          | Metric        | English  |
| Bleeder Valve Bolt       | 9 N•m         | 80 lb in |
| Brake Drum Bolt          | 9 N•m         | 80 lb in |
| Brake Pipe Fitting       | 18 N•m        | 13 lb ft |
| Rear Brake Cylinder Bolt | 10 N•m        | 89 lb in |

### Drum Brake Component Specifications

| Application                                | Specification |                |
|--------------------------------------------|---------------|----------------|
|                                            | Metric        | English        |
| Brake Drum Diameter - Discard              | 231.0 mm      | 9.094 in       |
| Brake Drum Diameter - New                  | 230.0 mm      | 9.055 in       |
| Brake Drum Maximum Allowable Radial Runout | 0.04 mm       | 0.002 in       |
| Brake Drum Maximum Allowable Scoring       | 0.50 mm       | 0.02 in        |
| Brake Drum Maximum Diameter After Refinish | 230.75 mm     | 9.085 in       |
| Brake Shoe Lining Minimum Thickness        | 1.40 mm       | 0.055 in       |
| Brake Shoe Lining Thickness - New          | 5.00 mm       | 0.197 in       |
| Brake Shoe Lining-to-Drum Clearance        | 0.40-0.90 mm  | 0.016-0.035 in |

## Diagnostic Information and Procedures

### Brake Drum Diameter Measurement



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**Warning:** Refer to *Brake Dust Warning* on page 0-4.

1. Remove brake drum. Refer to *Brake Drum Replacement* (J93, J94) on page 5-90
2. Clean the brake shoe lining contact surface of the brake drum (2) with denatured alcohol or an equivalent approved brake cleaner.
3. Using a brake drum micrometer (1) calibrated in thousandths-of-an-inch, measure and record the largest diameter of the brake drum at four or more points, equally spaced around the drum.  
Ensure the measurements are only taken within the brake shoe lining contact area. The micrometer must be positioned the same distance from the outside edge of the drum for each measurement.
4. Compare the largest diameter measurement recorded to the brake drum component specifications. Refer to *Drum Brake Component Specifications* on page 5-87.
5. If the largest diameter measurement of the brake drum is less than the maximum allowable inside diameter after refinishing specification; the drum may be refinished, depending upon surface and wear conditions.
6. If the largest diameter measurement of the brake drum is equal to or greater than the maximum allowable diameter after refinishing specification; the drum may not be refinished.

7. If the largest diameter measurement of the brake drum is equal to or greater than the discard diameter specification; the drum requires replacement.
8. Install brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.

## Brake Drum Surface and Wear Inspection

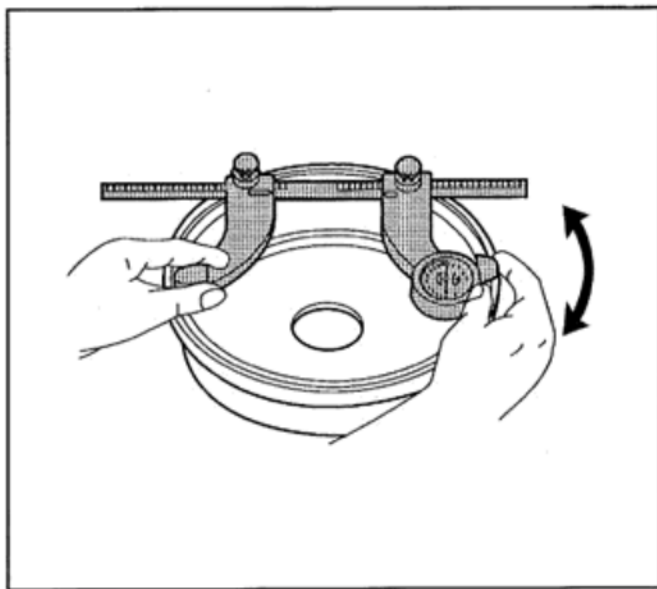
### Special Tools

CH-8001 Dial Indicator Set

For equivalent regional tools, refer to *Special Tools* on page 5-107.

**Warning:** Refer to *Brake Dust Warning* on page 0-4.

1. With the brake drum removed, clean the brake shoe lining contact surface of the brake drum with denatured alcohol or an equivalent approved brake cleaner.
2. Inspect the braking surface of the brake drum for the following braking surface conditions:
  - Heavy rust and/or pitting  
Light surface rust can be removed with an abrasive disc; heavy surface rust and/or pitting must be removed by refinishing the drum.
  - Cracks and/or heat spots
  - Excessive blueing discoloration
  - Missing balance weights
3. If the braking surface of the brake drum exhibits one or more of the braking surface conditions listed, the drum requires refinishing or replacement.



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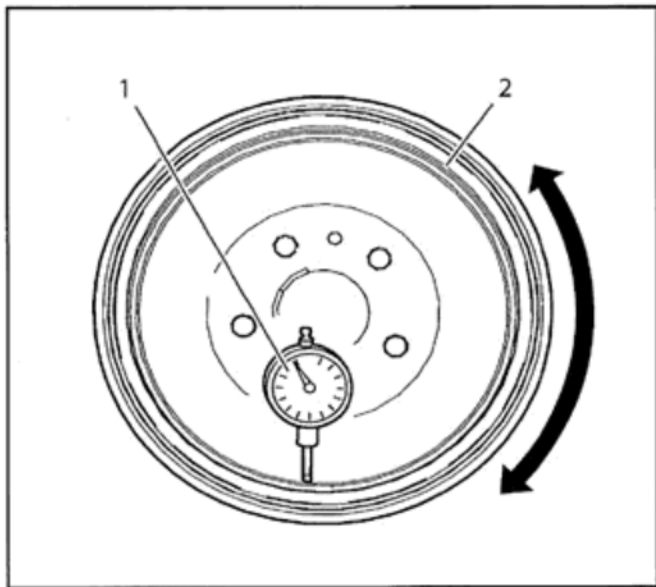
4. Using a brake drum micrometer calibrated in thousandths-of-an-inch, measure and record any grooves present on the drum braking surface. Ensure that the measurements are only taken within the brake shoe lining contact area.

5. Compare the groove, or scoring depth recorded to the following specification:

### Specification

Brake drum maximum allowable scoring: 0.50 mm (0.020 in)

6. If the brake drum scoring depth exceeds the specification, or if an excessive amount of scoring is present, the drum requires refinishing or replacement.
7. Mount the brake drum on a brake lathe.



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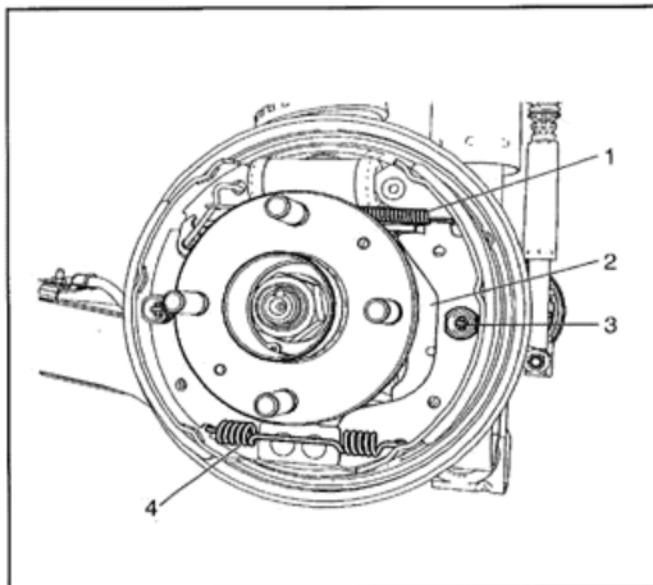
8. Mount a dial indicator, CH-8001 indicator (1), or equivalent, and position the indicator button so it contacts the braking surface of the brake drum (2) at a 90 degree angle, approximately 19 mm (0.75 in) from the outer edge of the drum.
9. Measure and record the radial runout of the brake drum.
  - 9.1. Rotate the drum until the lowest reading is displayed on the indicator dial, then zero the dial.
  - 9.2. Rotate the drum until the highest reading is displayed on the dial.
10. Compare the radial runout of the brake drum to the following specification:

### Specification

Brake drum maximum allowable radial runout: 0.03 mm (0.001 in)

11. If the brake drum radial runout exceeds the specification, the drum requires refinishing or replacement.

## Drum Brake Hardware Inspection

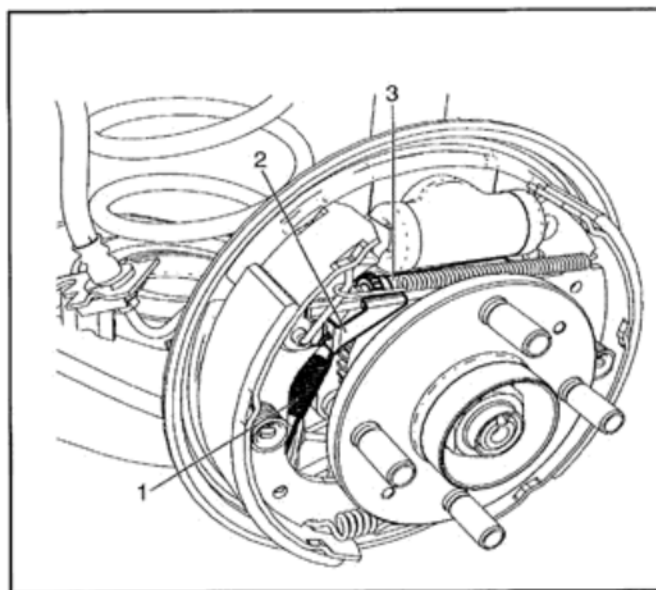


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**Warning:** Refer to Brake Dust Warning on page 0-4.

1. Visually inspect the drum brake upper return spring (1) for the following conditions:
  - Excessive corrosion
  - Excessive stretching
  - Broken
  - Missing
2. If any of the conditions listed were found, the drum brake upper return spring requires replacement.
3. Visually inspect the park brake apply lever (2) for the following conditions:
  - Bent
  - Broken
  - Missing
4. If any of the conditions listed were found, the park brake shoes require replacement.
5. Visually inspect the drum brake shoe hold down springs and cups (3) and pins for the following conditions:
  - Excessive corrosion
  - Broken
  - Missing
  - Bent pins
6. If any of the conditions listed were found, the hold down springs, cups, and pins require replacement.
7. Visually inspect the drum brake lower return spring (4) for the following conditions:
  - Excessive corrosion
  - Excessive stretching
  - Broken
  - Missing
8. If any of the conditions listed were found, the drum brake lower spring requires replacement.

## Drum Brake Adjusting Hardware Inspection



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**Warning:** Refer to Brake Dust Warning on page 0-4.

1. Visually inspect the adjuster actuator spring (1) for the following conditions:
  - Excessive stretching
  - Excessive bending
  - Excessive corrosion
  - Broken
  - Missing
2. If any of the conditions listed were found, the adjuster actuator spring requires replacement.
3. Visually inspect the adjuster actuator lever (2) for the following conditions:
  - Bent
  - Broken
  - The lever engagement surface excessively worn
  - Excessively bent or broken spring attachment tab
  - Missing
4. If any of the conditions listed were found, the adjuster actuator lever requires replacement.
5. Visually inspect the adjuster assembly (3) for the following conditions:
  - Bent
  - Broken
  - Seized adjuster wheel threads
  - Excessively worn, damaged, or missing teeth
6. If any of the conditions listed were found, the adjuster assembly requires replacement.

## Repair Instructions

### Brake Drum Replacement (J93, J94)

#### Special Tools

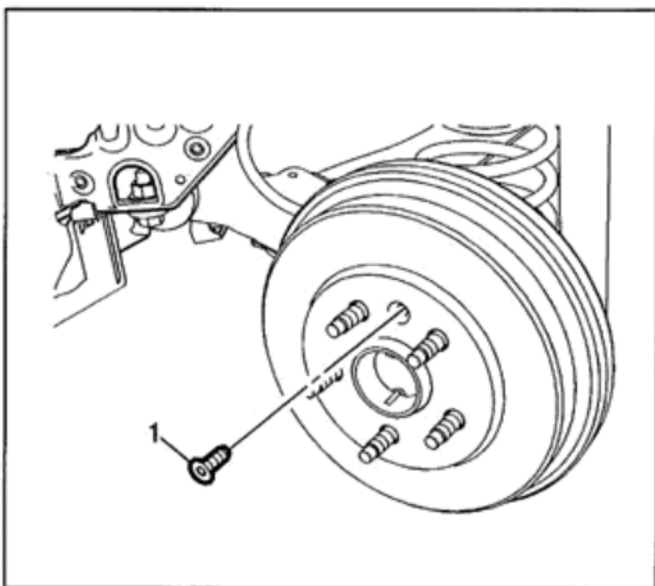
- CH-41013 Rotor Resurfacing Kit
- CH-42450-A Wheel Hub Resurfacing Kit

For equivalent regional tools, refer to *Special Tools* on page 5-107.

#### Removal Procedure

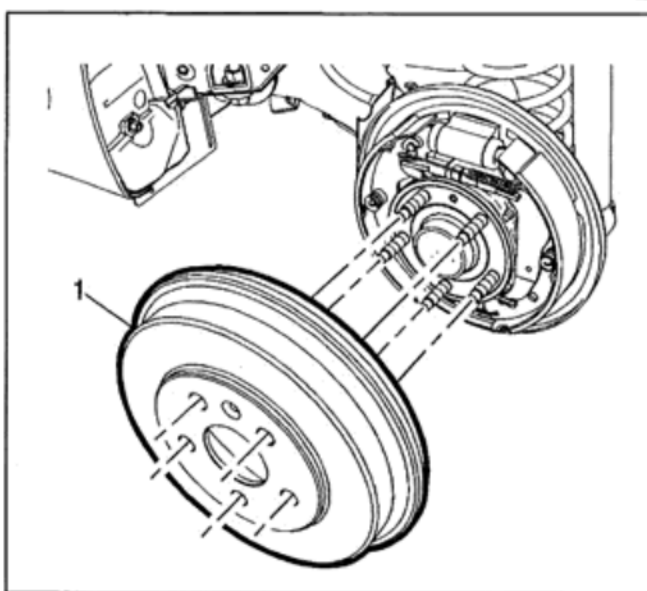
**Warning:** Refer to *Brake Dust Warning* on page 0-4.

1. Release the park brake.
2. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
3. Remove the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.



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4. Remove the brake drum bolt (1).

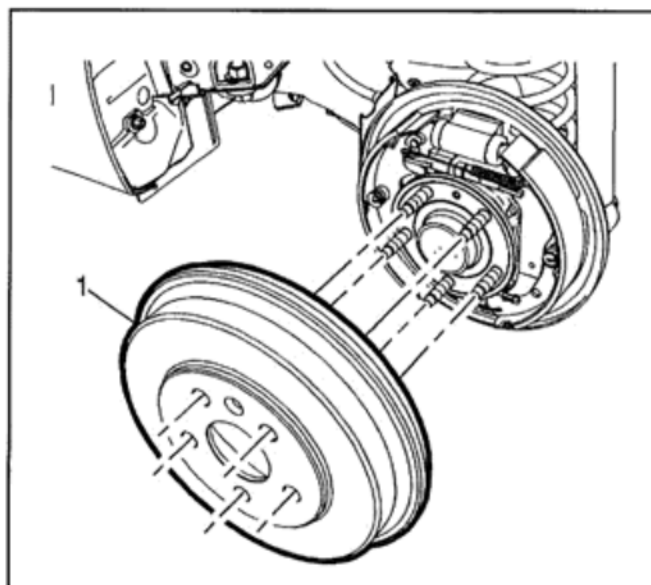


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5. Remove the brake drum (1).
6. If reinstalling the brake drum, use the CH-41013 Rotor Resurfacing Kit to clean the wheel hub flange mating surface of the brake drum of any corrosion.

#### Installation Procedure

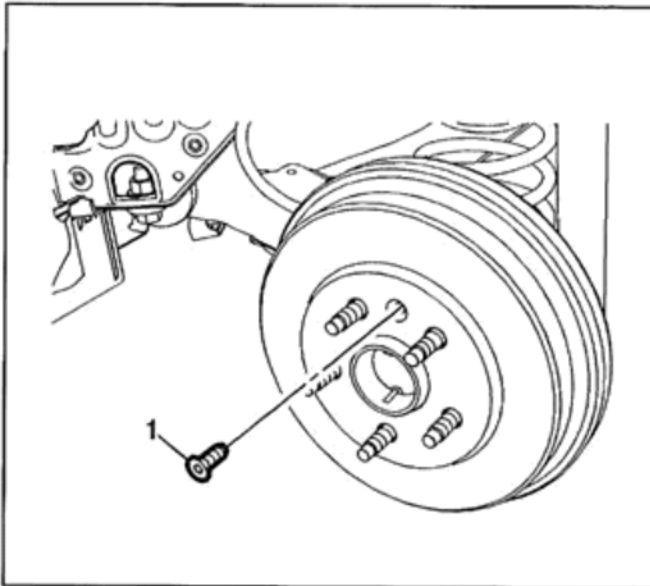
1. Using the CH-42450-A Wheel Hub Resurfacing Kit to clean the wheel hub flange of any corrosion.
2. Adjust the drum brakes. Refer to *Drum Brake Adjustment* on page 5-105.



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3. Install the brake drum (1).

**Caution:** Refer to *Fastener Caution* on page 0-8.



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4. Install the brake drum screw (1) and tighten to **9 N·m (80 lb in)**.
5. Install the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
6. Apply the brakes 2 or 3 times to seat and center the brake shoes on the brake drum.

## Brake Drum Refinishing

### Special Tools

- CH-41013 Rotor Resurfacing Kit
- CH-42450-A Wheel Hub Resurfacing Kit

For equivalent regional tools, refer to *Special Tools* on page 5-107.

**Warning:** Refer to *Brake Dust Warning* on page 0-4.

1. The brake drums do not require refinishing as part of routine brake system service. Do not refinish brake drums in an attempt to correct the following conditions:
  - Brake system noise (squeal, growl, groan)
  - Uneven and/or premature brake lining wear
  - Superficial or cosmetic corrosion/rust of the brake drum surface
  - Scoring of the brake drum surface (less than the maximum allowable specification)
2. Brake drums should only be refinished if the following conditions exist:
  - Excessive corrosion/rust and/or pitting
  - Cracks and/or heat spots
  - Excessive blueing discoloration
  - Scoring of the brake drum surface (in excess of the maximum allowable specification)
  - Radial runout in excess of the maximum allowable specification
3. Inspect each of the brake drums and determine if the brake drums can be refinished and remain within the maximum allowable diameter after refinish specification:
  - 3.1. With the tire and wheel assemblies removed, measure the diameter of each of the brake drums. Refer to *Brake Drum Diameter Measurement* on page 5-87.
  - 3.2. Inspect each of the brake drums for excessive surface wear and/or radial runout. Refer to *Brake Drum Surface and Wear Inspection* on page 5-88.
4. If the brake drums can be refinished, proceed with the rotor refinishing procedure.
5. If necessary, use the CH-41013 rotor resurfacing kit in order to thoroughly clean any corrosion/rust from the brake drum flange.
6. Mount the brake drum to the brake lathe according to the lathe manufacturer instructions.
7. Ensure that any vibration dampening attachments are securely in place.
8. With the brake lathe running, slowly bring in the cutting tool until it just contacts the brake drum friction surface.
9. Observe the witness mark on the brake drum. If the witness mark extends approximately three-quarters or more of the way around the brake drum surface, the brake drum is properly mounted to the lathe.
10. If the witness mark does not extend three-quarters or more of the way around the brake drum, re-mount the brake drum to the lathe.
11. Following the brake lathe manufacturer instructions, refinish the brake drum.
12. After each successive cut, inspect the brake drum diameter. Refer to *Brake Drum Diameter Measurement* on page 5-87.
13. If at any time the brake drum exceeds the maximum allowable diameter after refinish specification, the brake drum must be replaced.
14. After refinishing the brake drum, use the following procedure in order to obtain the desired non-directional finish:
  - 14.1. Follow the brake lathe manufacturer's recommended speed setting for applying non-directional finish.
  - 14.2. Using the moderate pressure, apply the non-directional finish:
    - If the lathe is equipped with a non-directional finishing tool, apply the finish with 120-grit aluminum oxide sandpaper.
    - If the lathe is not equipped with a non-directional finishing tool, apply the finish with a sanding block and 150-grit aluminum oxide sandpaper.

- 14.3. After applying a non-directional finish, clean the friction surface of the brake drum with denatured alcohol or an equivalent brake cleaner and wipe the friction surface using a clean shop towel to remove metal particles remaining from machining. Repeat the cleaning process if necessary to remove all metal particles.
15. Remove the brake drum from the brake lathe.
16. If necessary, use the CH-42450-A wheel hub resurfacing kit in order to thoroughly clean any corrosion from the wheel bearing flange.

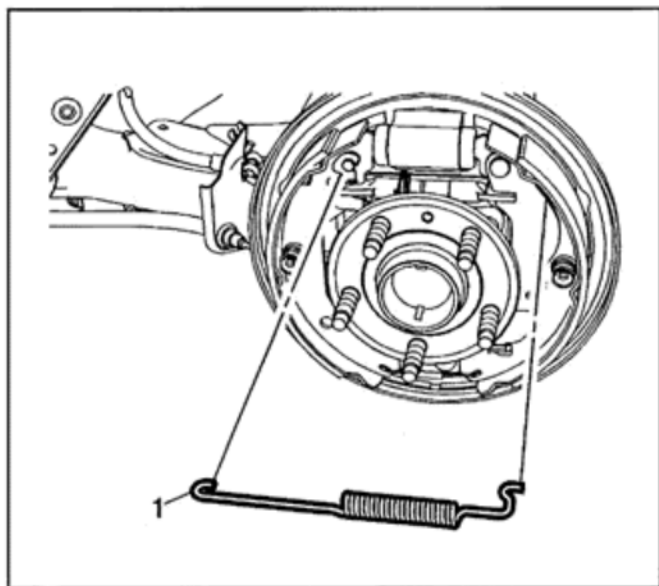
## Brake Shoe Replacement (J93, J94)

### Removal Procedure

**Warning:** Refer to Brake Dust Warning on page 0-4.

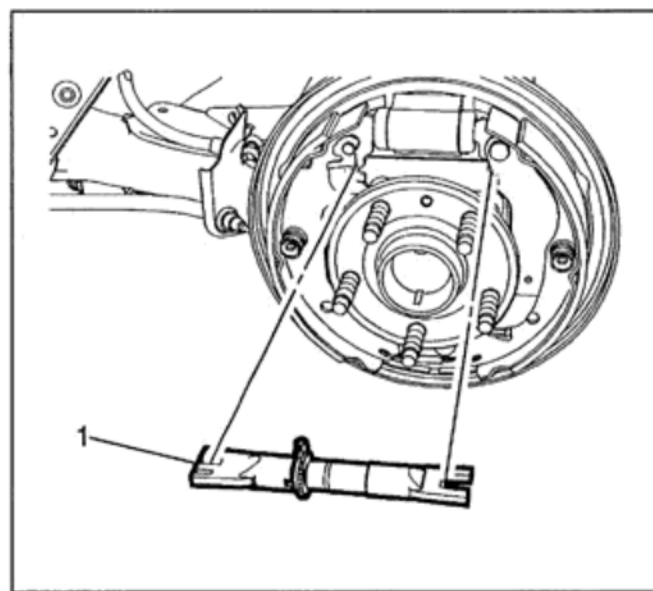
**Note:** Always replace brake shoes in axle sets.

1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
2. Remove the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
3. Remove the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.



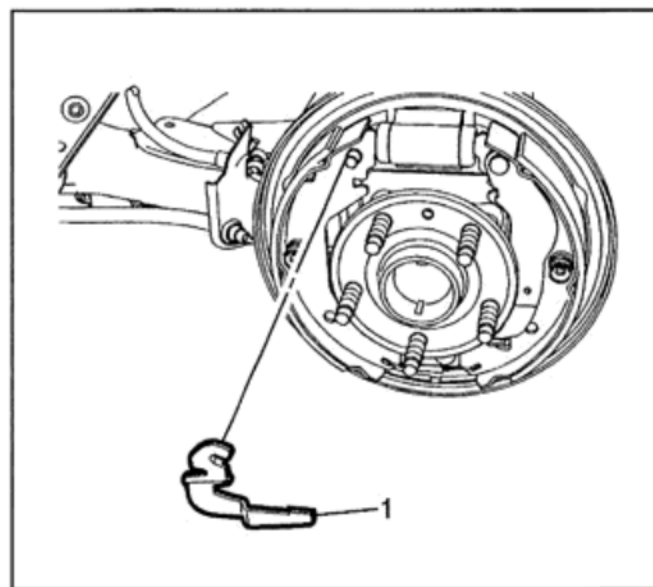
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4. Remove the upper brake shoe return spring (1).



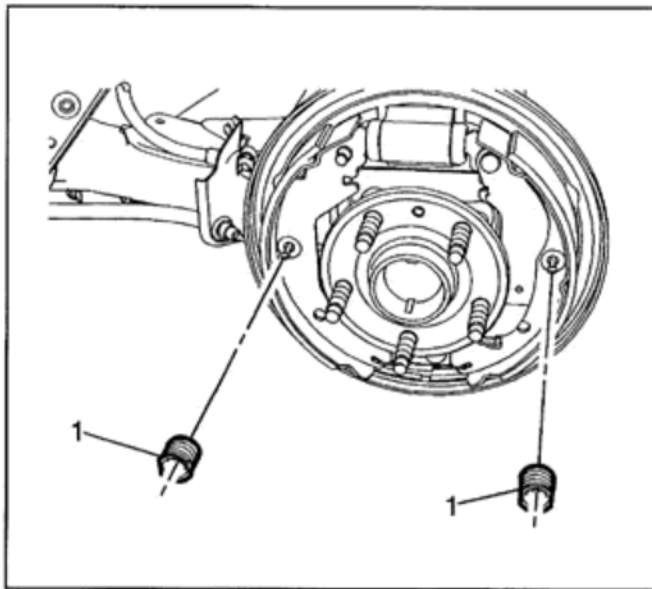
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5. Remove brake shoe adjuster (1).



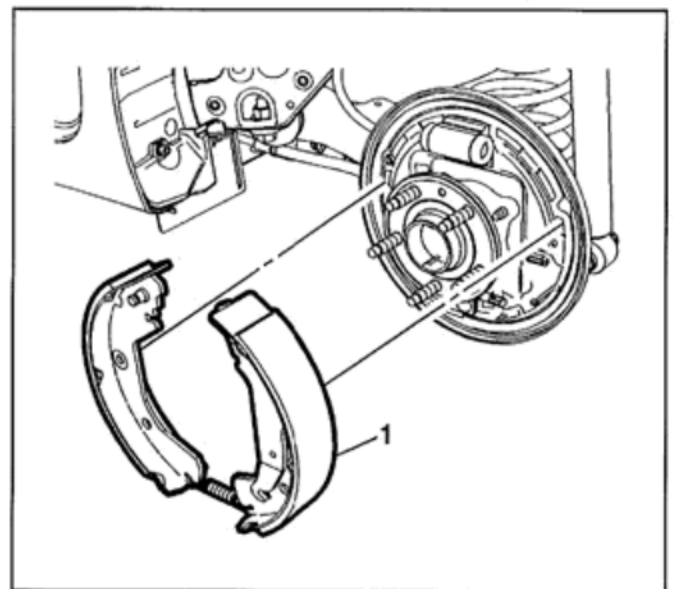
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6. Remove the brake shoe adjuster actuator lever (1).



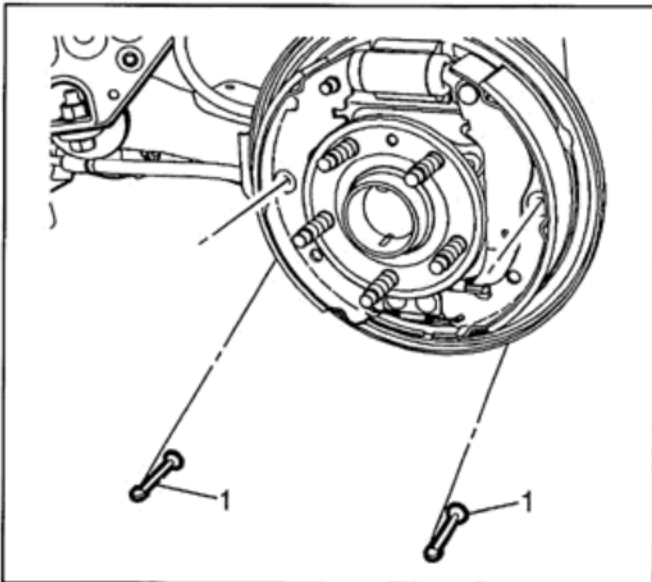
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7. Remove the brake shoe hold down spring and cup assemblies (1) by compressing the spring and rotating the assembly 1/4 turn.



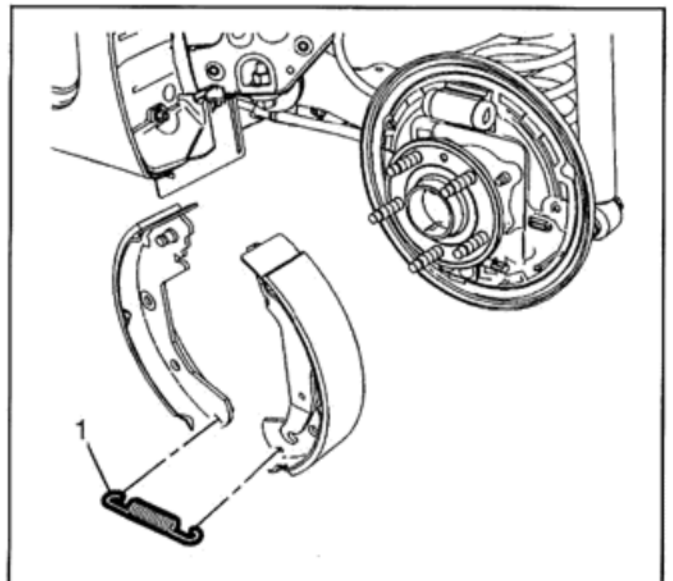
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9. Spread the top of the brake shoe assembly (1) and lift the assembly over the wheel hub.
10. Release the park brake actuator lever from the park brake cable eyelet.



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8. Remove the hold down spring and cup assembly pins (1).

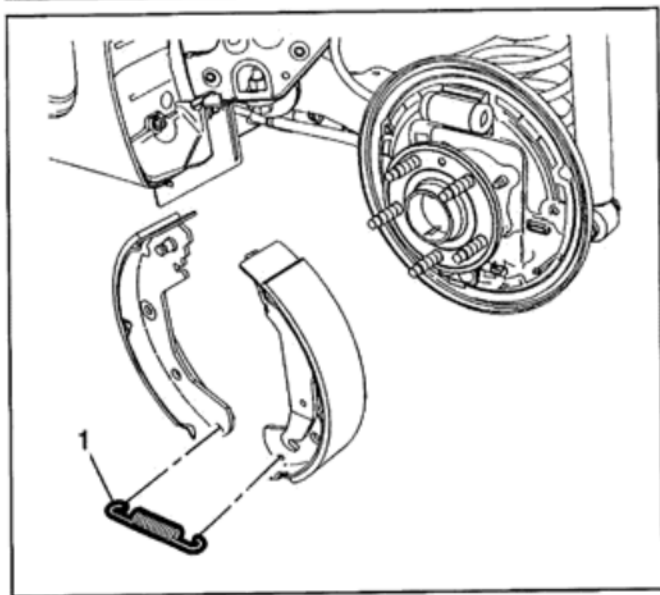


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11. Remove the lower brake shoe return spring (1).
12. Inspect the drum brake hardware and replace any components, as necessary. Refer to *Drum Brake Hardware Inspection* on page 5-89.

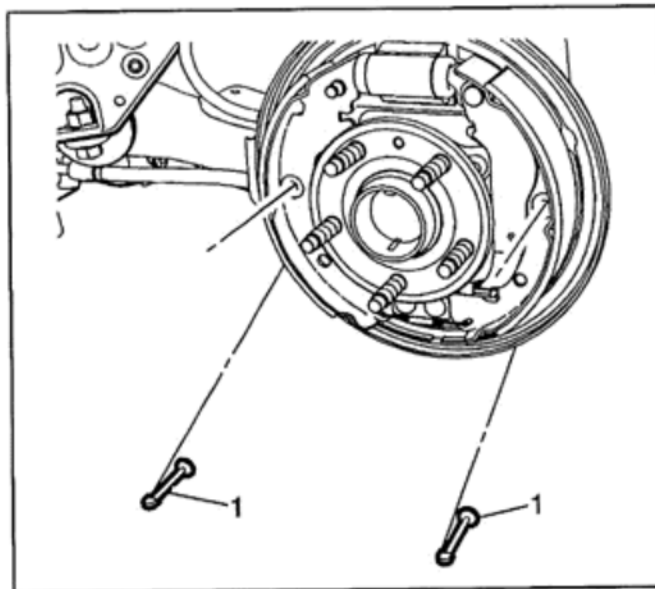
### Installation Procedure

1. Clean the drum brake backing plate of any dirt and debris.
2. Apply a light coat of high temperature brake lubricant to the brake drum backing plate shoe contact surfaces.



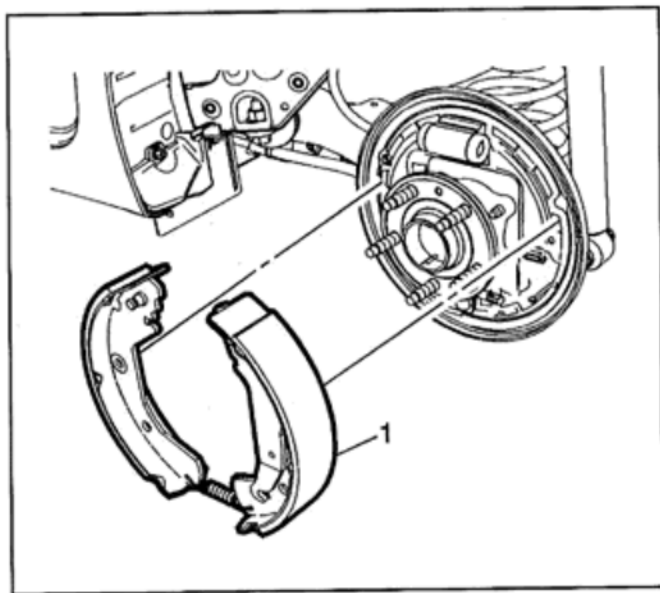
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3. Install the lower brake shoe return spring (1).



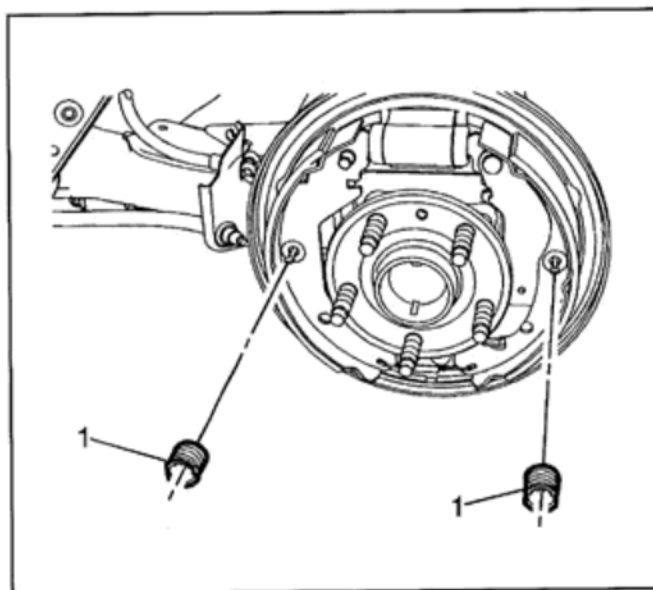
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7. Install the hold down spring and cup assembly pins (1).



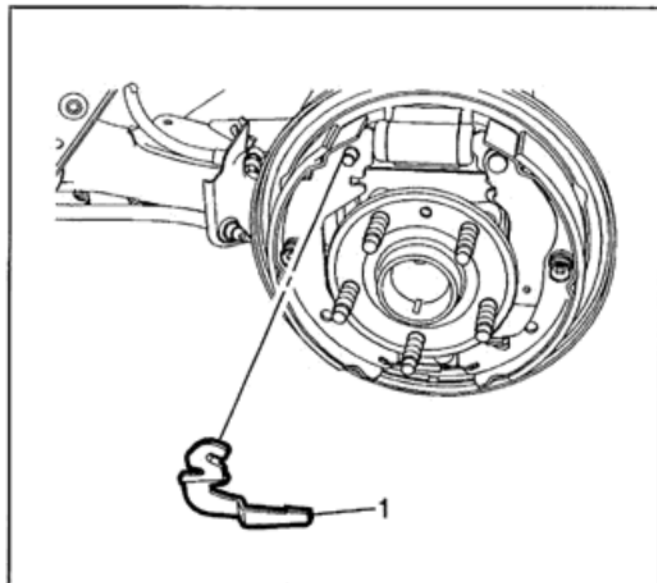
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4. Install the park brake actuator lever to the park brake cable eyelet.
5. Spread the top of the brake shoe assembly (1) and lift the assembly over the wheel hub.
6. Position the brake shoe assembly to the drum brake backing plate.



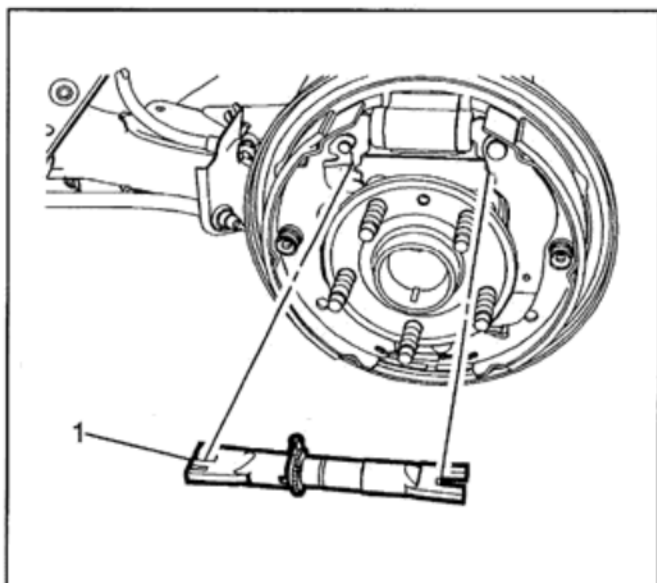
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8. Install the brake shoe hold down spring and cup assemblies (1) by compressing the spring and rotating the assembly 1/4 turn.



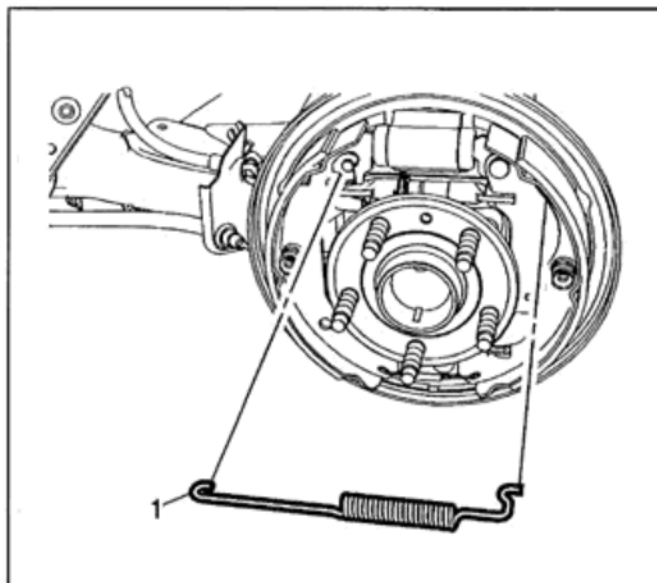
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9. Install the brake shoe adjuster actuator lever (1).



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10. Install brake shoe adjuster (1).



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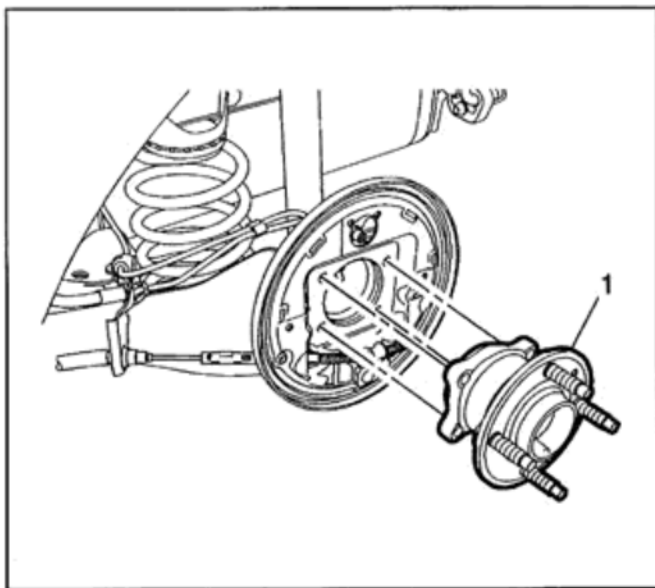
11. Install the upper brake shoe return spring (1).  
 12. Adjust the drum brakes. Refer to *Drum Brake Adjustment* on page 5-105.  
 13. Install the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.  
 14. Install the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.

## Rear Brake Backing Plate Replacement

### Removal Procedure

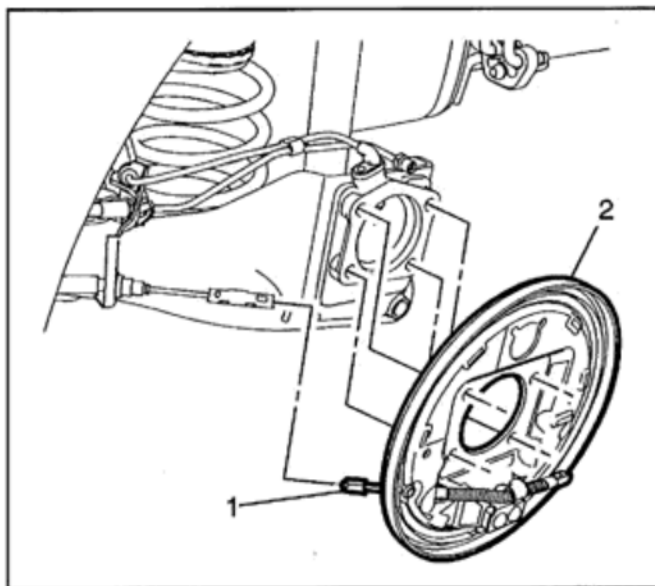
**Warning:** Refer to *Brake Dust Warning* on page 0-4.

1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
2. Remove the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
3. Remove the rear wheel speed sensor, if equipped. Refer to *Rear Wheel Speed Sensor Replacement* on page 5-47.
4. Remove the rear brake cylinder. Refer to *Rear Brake Cylinder Replacement* on page 5-102.
5. Remove the brake shoes. Refer to *Brake Shoe Replacement (J93, J94)* on page 5-92.



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6. Remove the rear wheel bearing and hub assembly (1). Refer to *Rear Wheel Bearing and Hub Replacement (Drum Brake)* on page 16-24 or *Rear Wheel Bearing and Hub Replacement (Disc Brake)* on page 16-25.



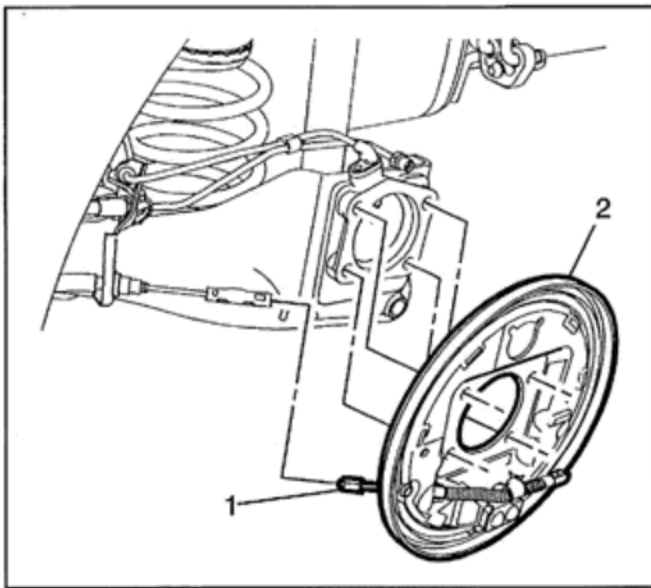
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**Note:** The park brake cable connector is part of the cable attached to the rear brake backing plate.

7. Disconnect the front park brake cable from the park brake cable connector (1).
8. Remove the rear brake backing plate (2).
9. If necessary, remove the park brake cable from the rear brake backing plate by compressing the park brake cable locking tab.

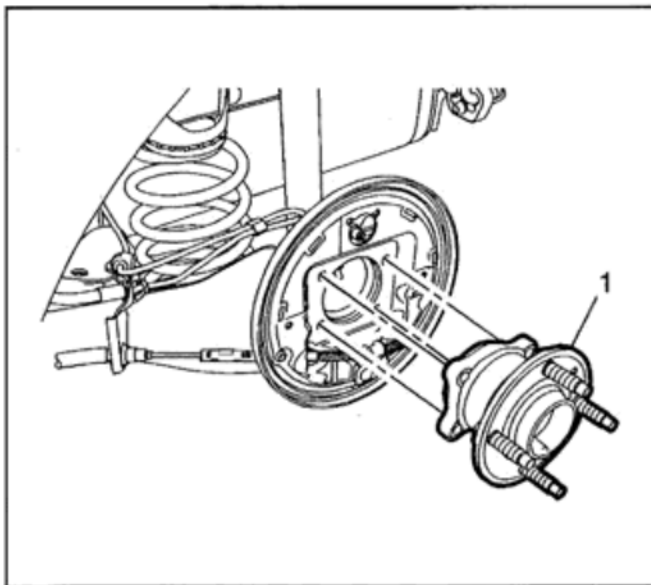
### Installation Procedure

1. If removed, install the park brake cable to the rear brake backing plate.
2. Ensure the park brake cable locking tab is fully engaged in the rear brake backing plate.



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3. Insert the front park brake cable into the park brake cable connector (1).
4. Install the rear brake backing plate (2).



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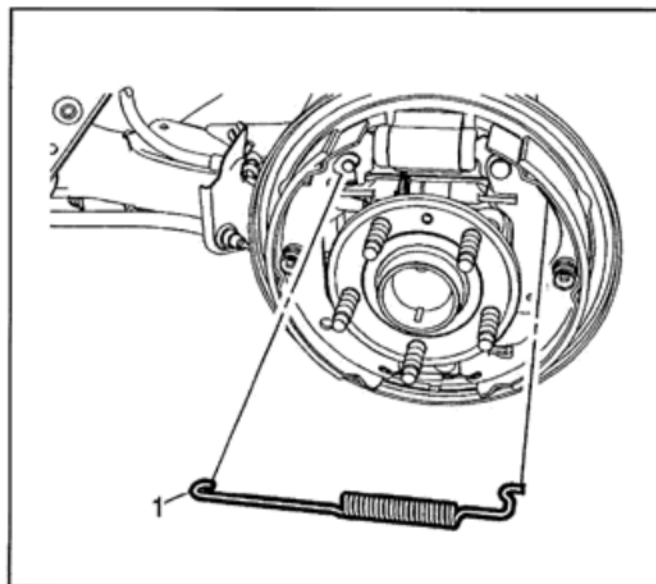
5. Install the rear wheel bearing and hub assembly (1). Refer to *Rear Wheel Bearing and Hub Replacement (Drum Brake)* on page 16-24 or *Rear Wheel Bearing and Hub Replacement (Disc Brake)* on page 16-25.
6. Install the rear wheel speed sensor, if equipped. Refer to *Rear Wheel Speed Sensor Replacement* on page 5-47.
7. Install the rear brake cylinder. Refer to *Rear Brake Cylinder Replacement* on page 5-102.
8. Install the brake shoes. Refer to *Brake Shoe Replacement (J93, J94)* on page 5-92.
9. Install the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.

## Drum Brake Hardware Replacement (J93, J94)

### Removal Procedure

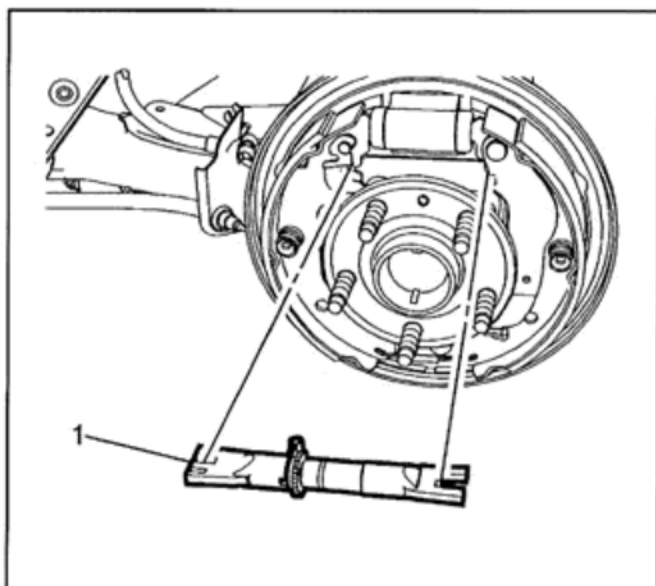
**Warning:** Refer to Brake Dust Warning on page 0-4.

1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
2. Remove the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
3. Remove the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.



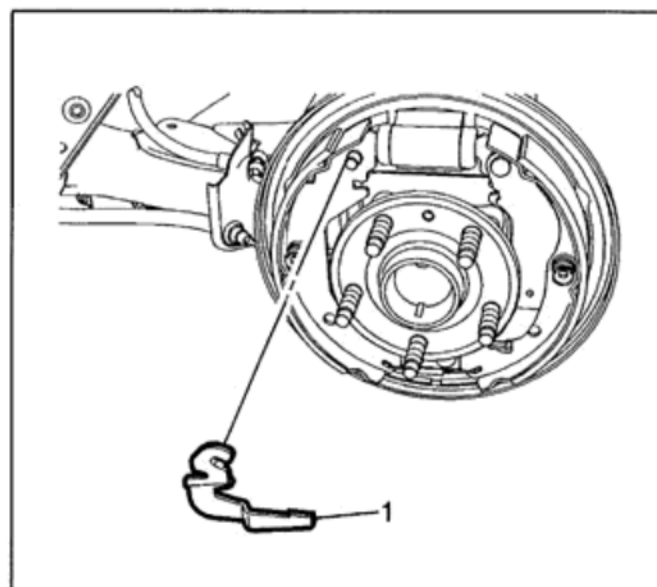
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4. Remove the upper brake shoe return spring (1).



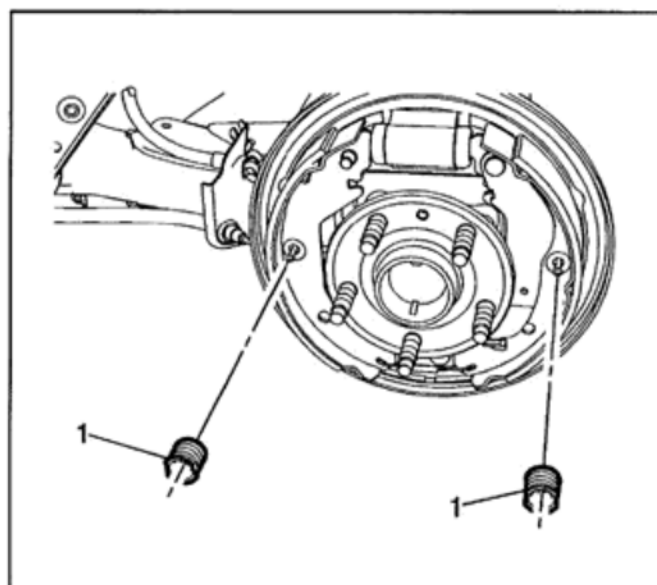
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5. Remove brake shoe adjuster (1).



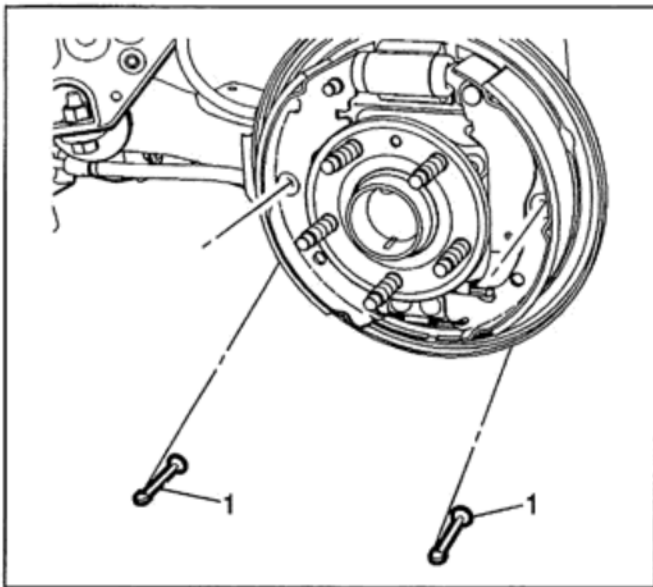
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6. Remove the brake shoe adjuster actuator lever (1).



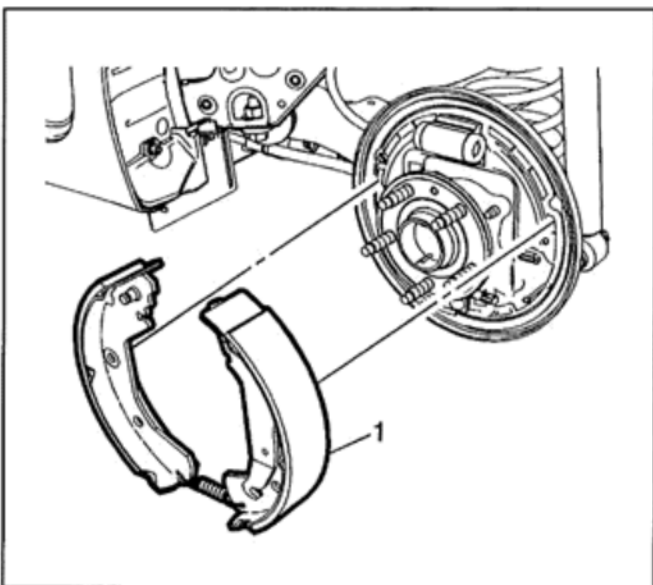
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7. Remove the brake shoe hold down spring and cup assemblies (1) by compressing the spring and rotating the assembly 1/4 turn.



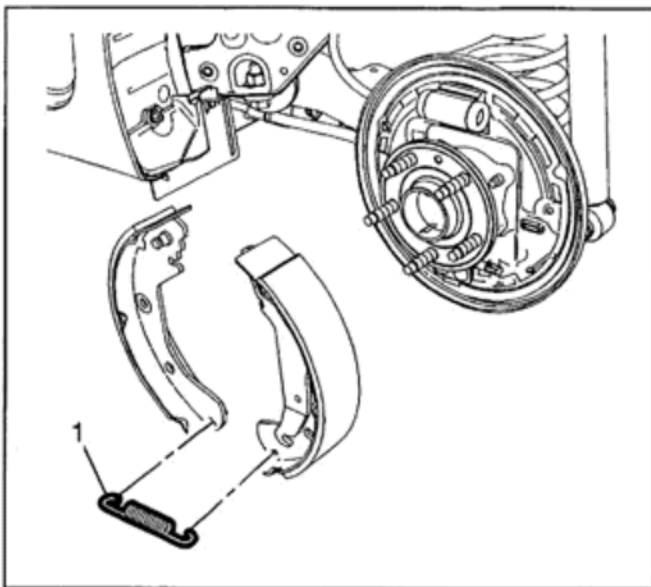
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8. Remove the hold down spring and cup assembly pins (1).



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9. Spread the top of the brake shoe assembly (1) and lift the assembly over the wheel hub.  
10. Release the park brake actuator lever from the park brake cable eyelet.

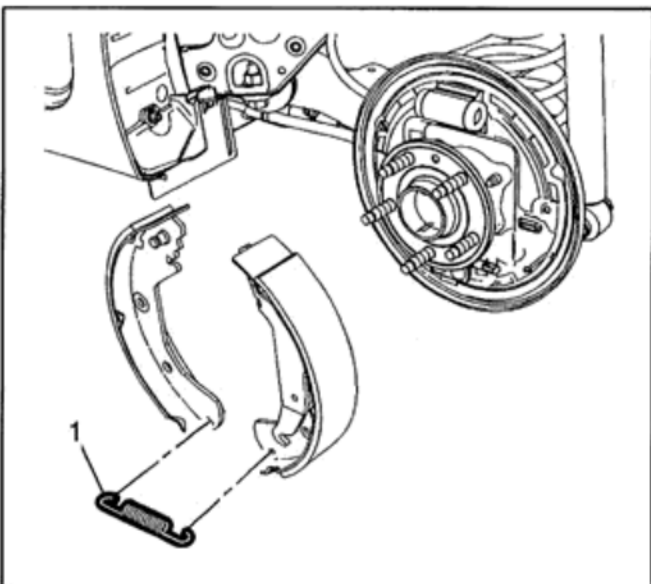


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11. Remove the lower brake shoe return spring (1).  
12. Inspect the drum brake hardware and replace any components, as necessary. Refer to *Drum Brake Hardware Inspection* on page 5-89.

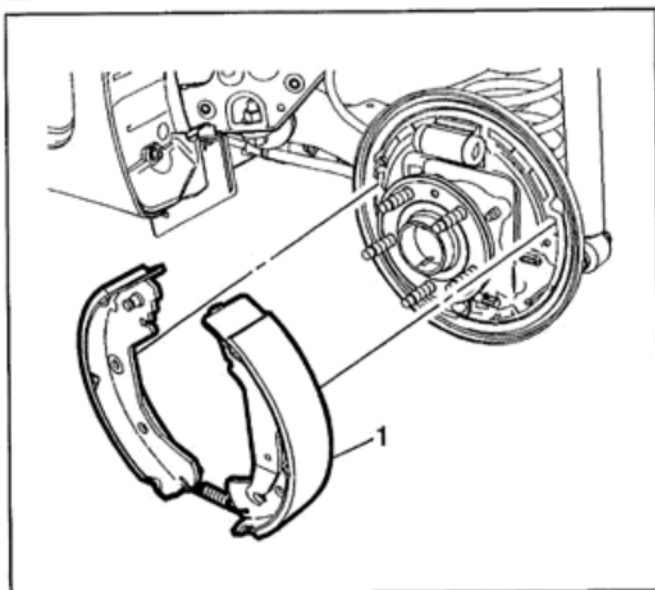
### Installation Procedure

1. Clean the drum brake backing plate of any dirt and debris.
2. Apply a light coat of high temperature brake lubricant to the brake drum backing plate shoe contact surfaces.



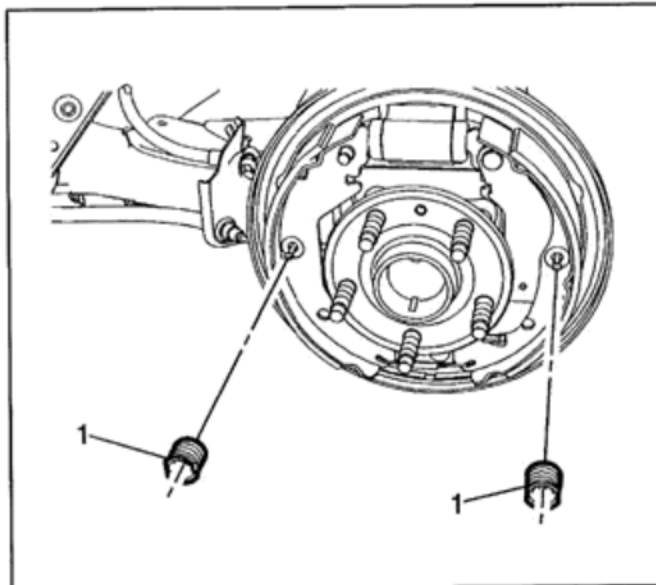
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3. Install the lower brake shoe return spring (1).



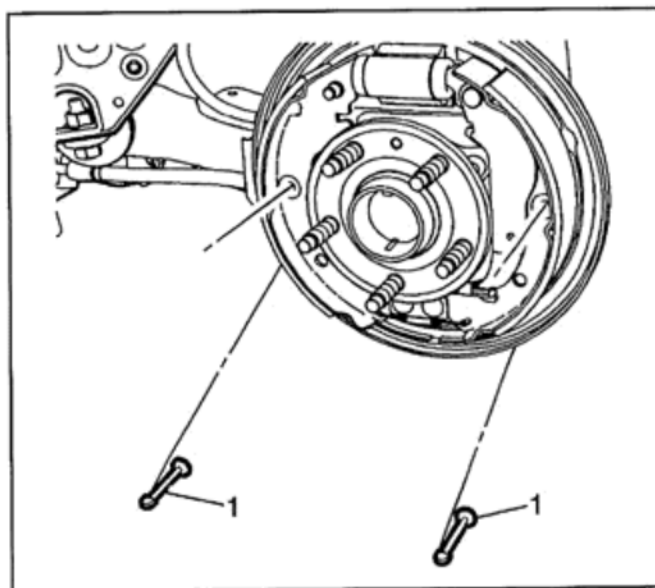
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4. Install the park brake actuator lever to the park brake cable eyelet.
5. Spread the top of the brake shoe assembly (1) and lift the assembly over the wheel hub.
6. Position the brake shoe assembly to the drum brake backing plate.



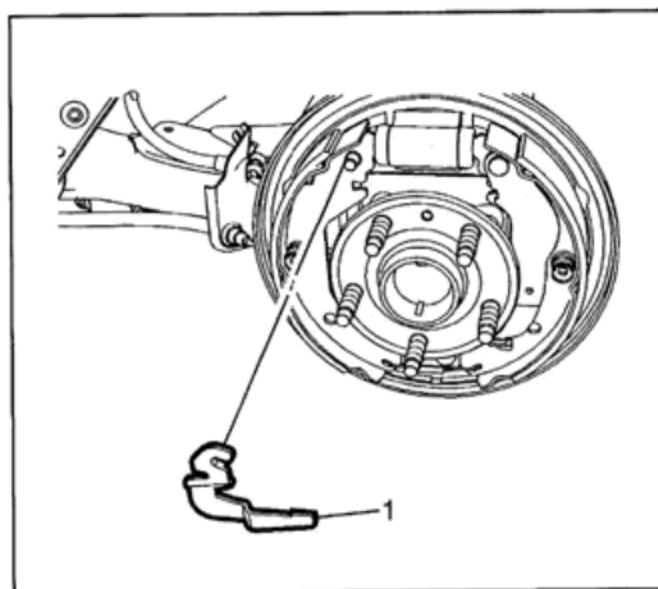
2511188

8. Install the brake shoe hold down spring and cup assemblies (1) by compressing the spring and rotating the assembly 1/4 turn.



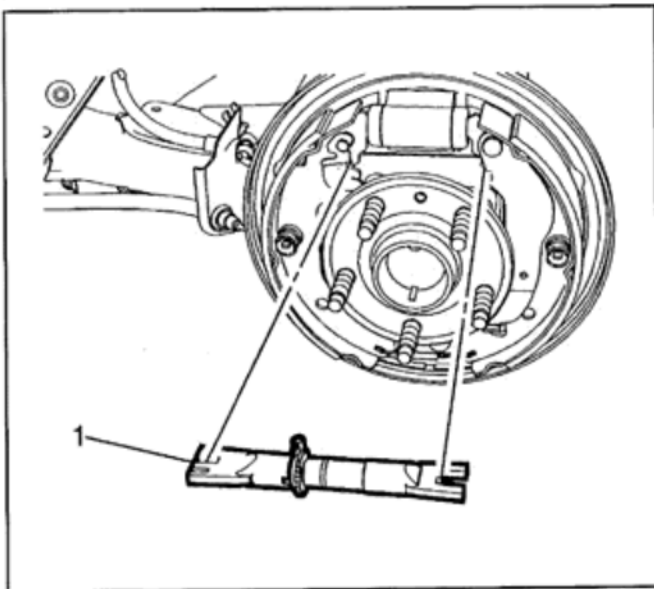
2511192

7. Install the hold down spring and cup assembly pins (1).



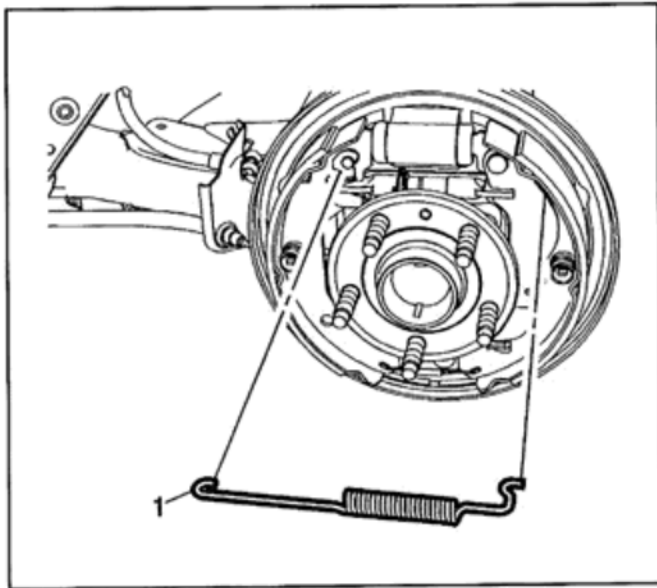
2511185

9. Install the brake shoe adjuster actuator lever (1).



2511181

10. Install brake shoe adjuster (1).



2511177

11. Install the upper brake shoe return spring (1).
12. Adjust the drum brakes. Refer to *Drum Brake Adjustment* on page 5-105.
13. Install the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.
14. Install the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.

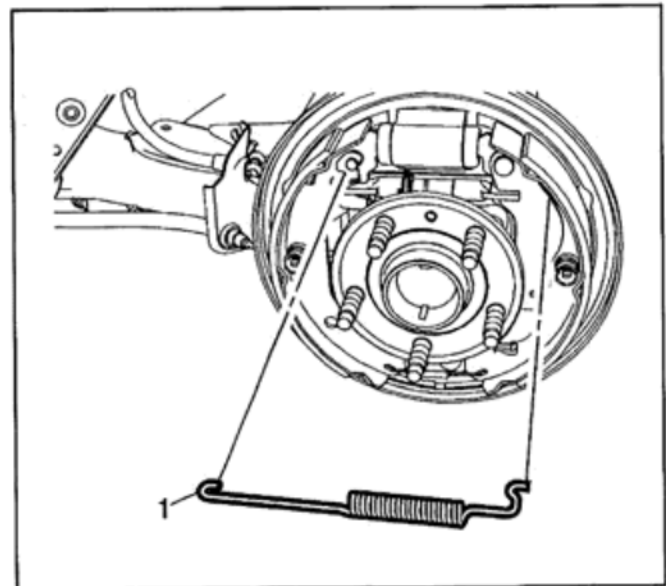
## Drum Brake Adjusting Hardware Replacement (J93, J94)

### Removal Procedure

**Warning:** Refer to *Brake Dust Warning* on page 0-4.

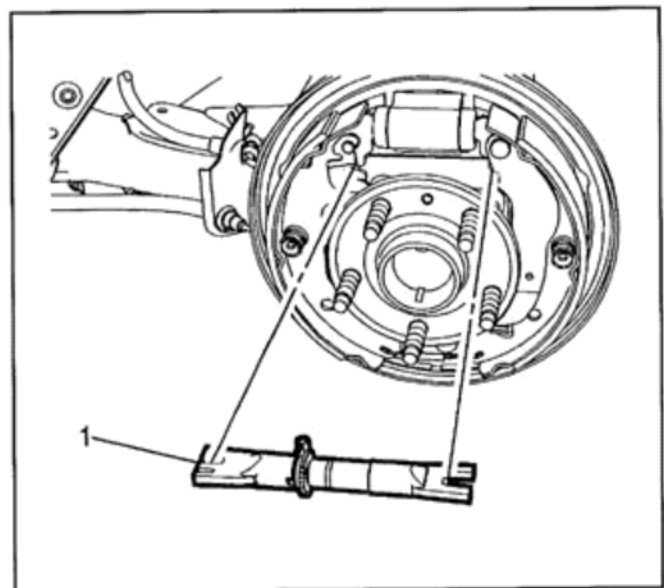
1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.

2. Remove the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
3. Remove the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.



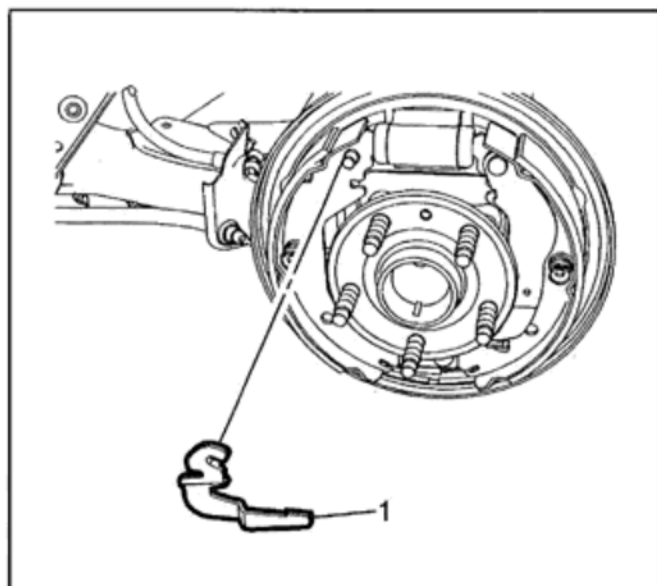
2511177

4. Remove the upper brake shoe return spring (1).



2511181

5. Remove brake shoe adjuster (1).

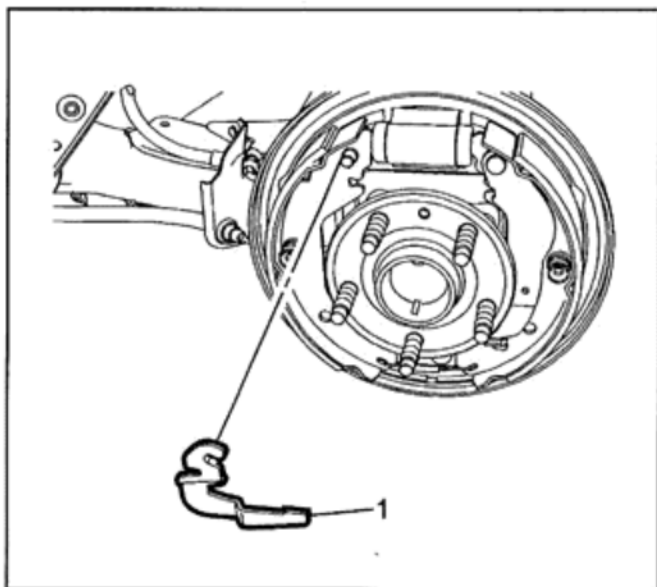


2511185

6. Remove the brake shoe adjuster actuator lever (1).
7. Inspect the drum brake adjusting hardware and replace any damaged components as necessary. Refer to *Drum Brake Adjusting Hardware Inspection* on page 5-89.
8. Disassemble the brake shoe adjuster and thoroughly clean the adjuster screw threads of any corrosion.
9. Apply a light coat of high temperature brake lubricant to the brake shoe adjuster screw threads.

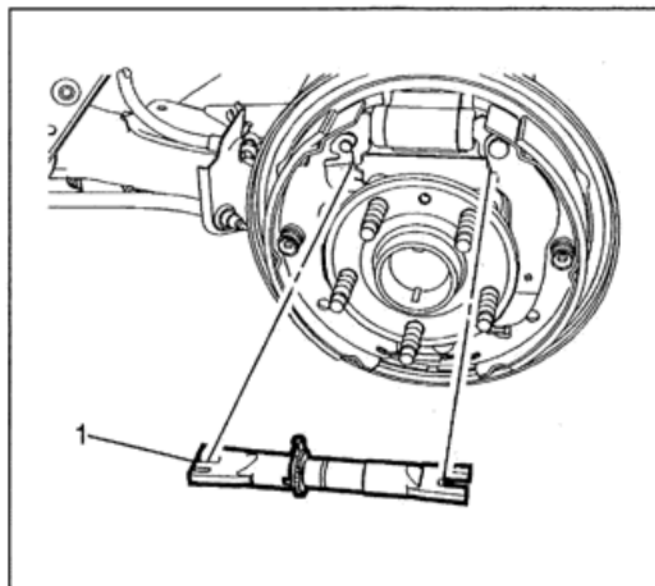
### Installation Procedure

1. Assemble the brake shoe adjuster, setting the adjuster to the fully retracted position.
2. Clean the drum brake backing plate of any dirt and debris.
3. Apply a light coat of high temperature brake lubricant to the brake drum backing plate shoe contact surfaces.



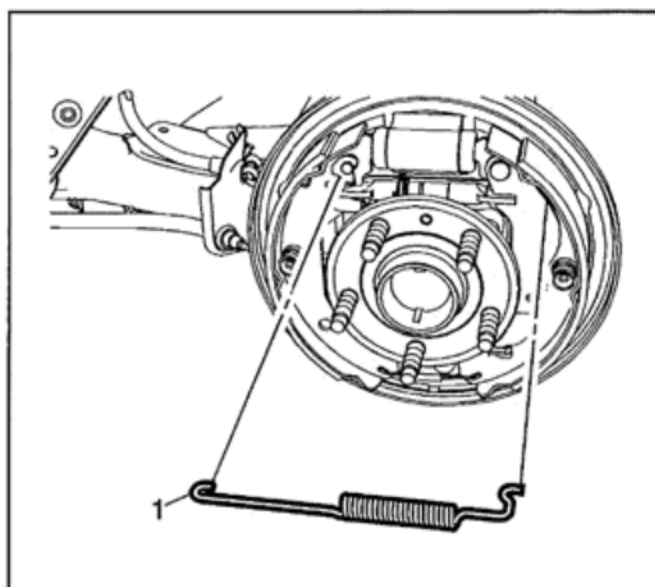
2511185

4. Install the brake shoe adjuster actuator lever (1).



2511181

5. Install brake shoe adjuster (1).



2511177

6. Install the upper brake shoe return spring (1).
7. Adjust the drum brakes. Refer to *Drum Brake Adjustment* on page 5-105.
8. Install the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.
9. Install the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.

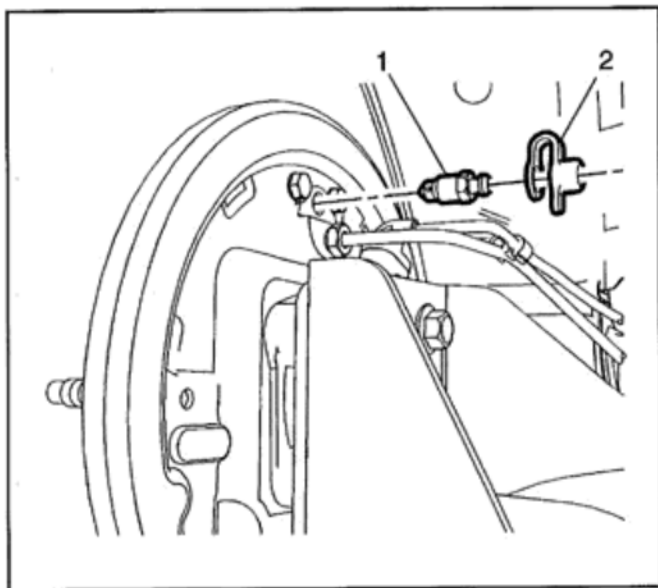
## Rear Brake Cylinder Replacement

### Removal Procedure

**Warning:** Refer to Brake Dust Warning on page 0-4.

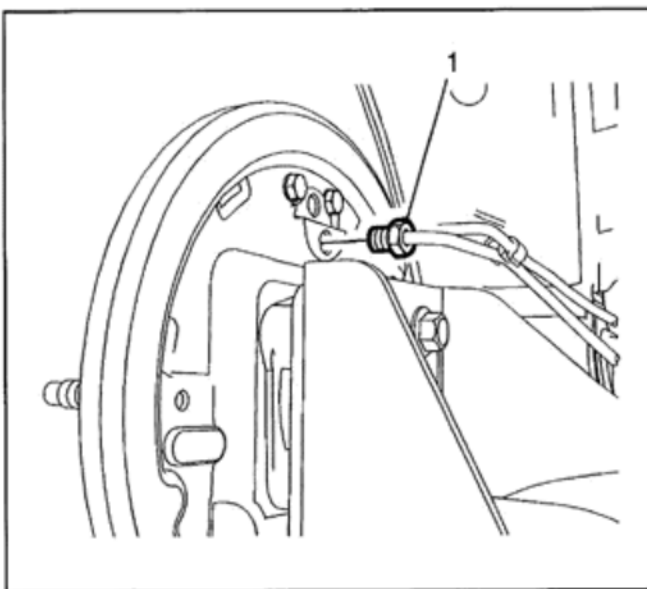
**Warning:** Refer to Brake Fluid Irritant Warning on page 0-4.

1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
2. Remove the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
3. Remove the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.
4. Remove the drum brake adjusting hardware. Refer to *Drum Brake Adjusting Hardware Replacement (J93, J94)* on page 5-100.
5. Clean the area surrounding the wheel cylinder of dirt and debris.



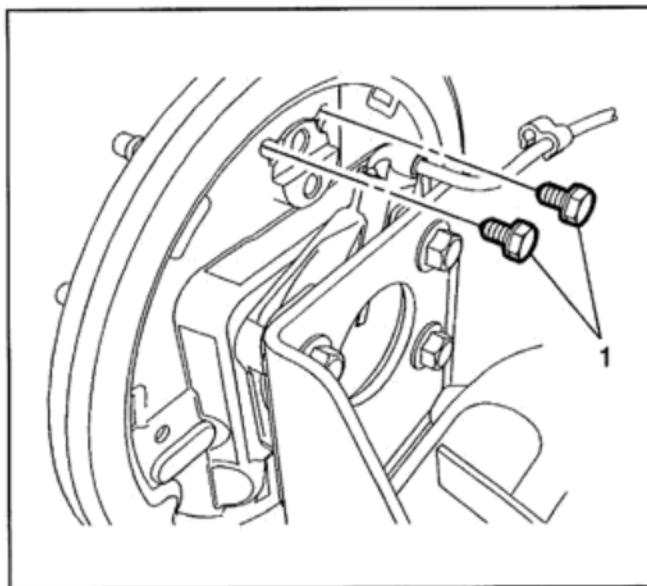
2507681

6. Remove the rear brake cylinder bleeder valve bolt (1) and cap (2).



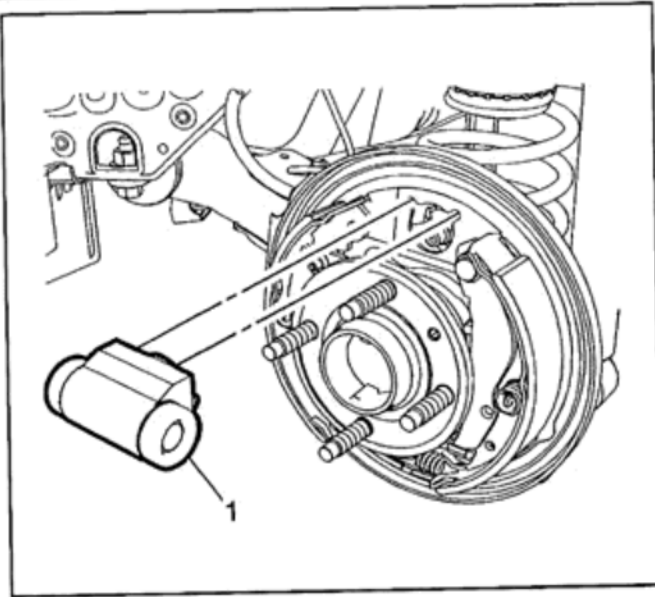
2507684

7. Disconnect the brake pipe fitting (1).  
Cap the brake pipe fitting to prevent brake fluid loss and contamination.



2507686

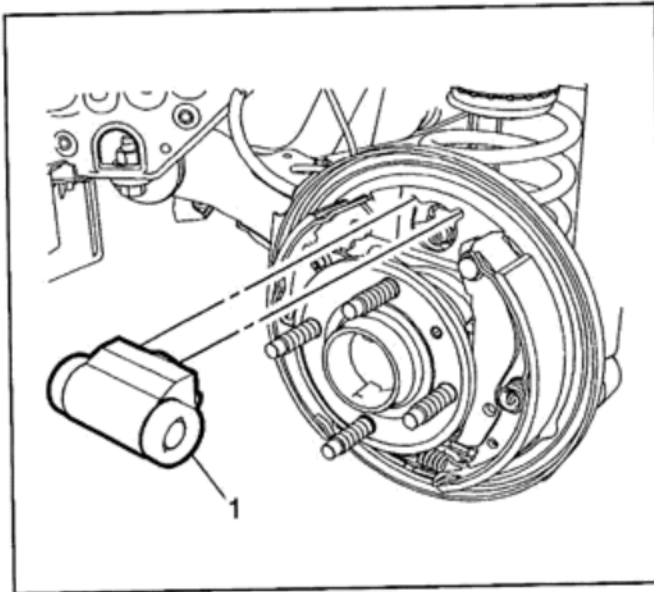
8. Remove the rear brake cylinder bolts (1).



2507688

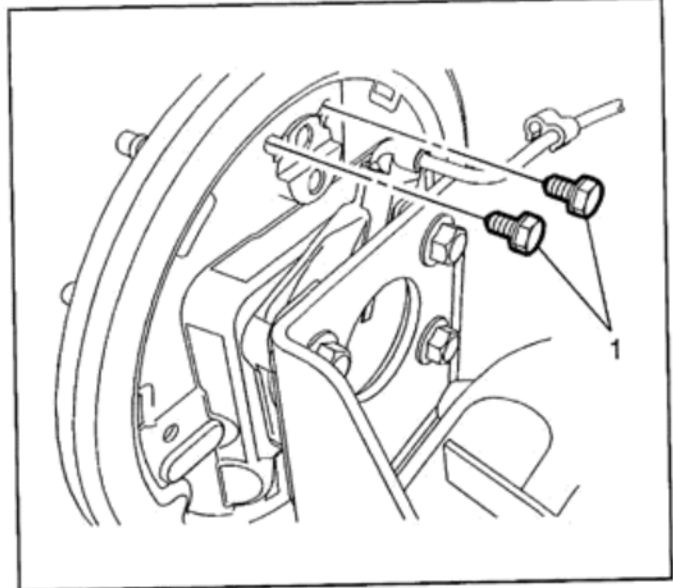
9. Spread the top of the brake shoes slightly and remove the rear brake cylinder (1).

### Installation Procedure



2507688

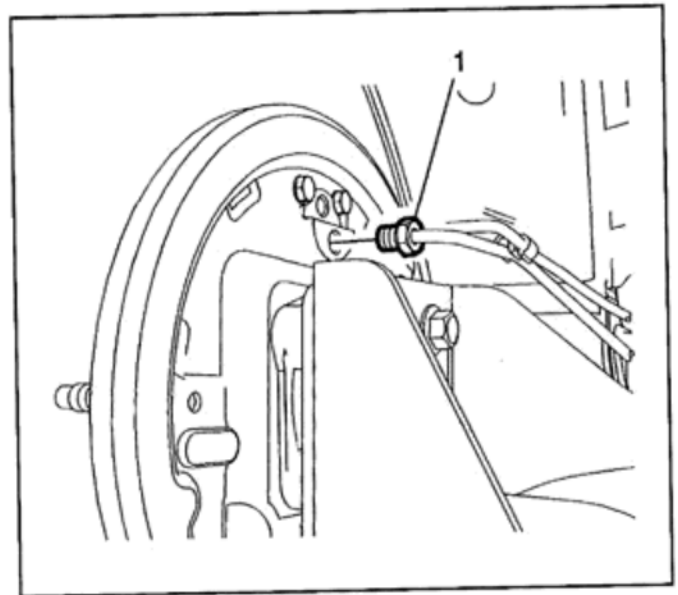
1. Spread the top of the brake shoes slightly and install the rear brake cylinder (1).



2507686

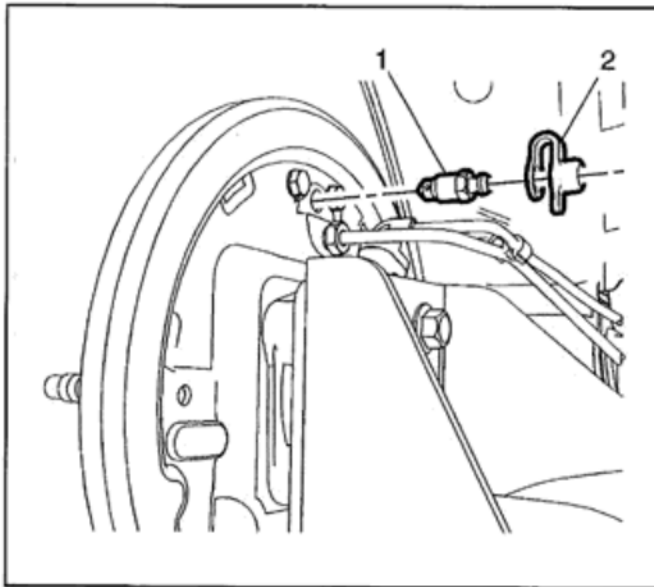
**Caution:** Refer to *Fastener Caution* on page 0-8.

2. Install the rear brake cylinder bolts (1) and tighten to 10 N·m (89 lb in).

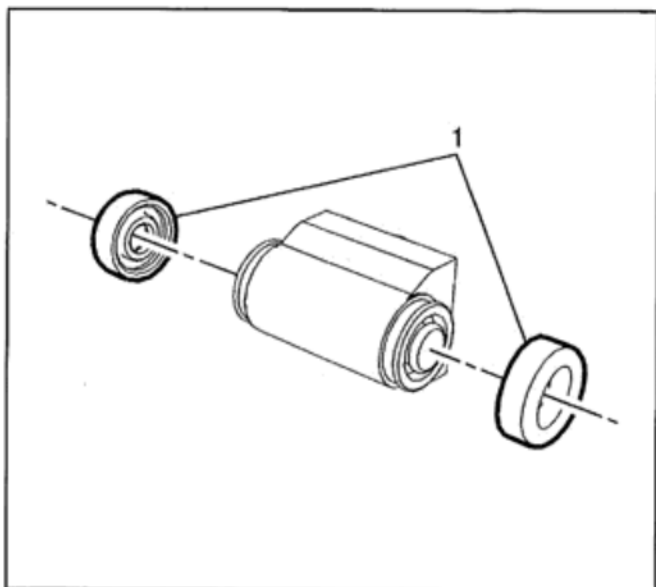


2507684

3. Connect the brake pipe fitting (1) and tighten to 18 N·m (13 lb ft).



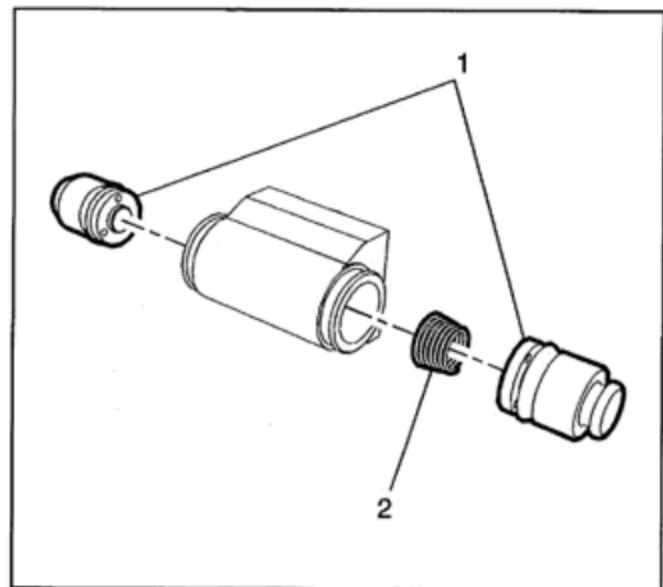
2507681



2507691

4. Install the rear brake cylinder bleeder valve bolt (1) and tighten to **9 N•m (80 lb in)**.
5. Install the rear brake cylinder bleeder valve bolt cap (2).
6. Install the drum brake adjusting hardware. Refer to *Drum Brake Adjusting Hardware Replacement (J93, J94)* on page 5-100.
7. Adjust the drum brakes. Refer to *Drum Brake Adjustment* on page 5-105.
8. Install the brake drum. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.
9. Install the tire and wheel assembly. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
10. Bleed the hydraulic brake system. Refer to *Hydraulic Brake System Bleeding (Pressure)* on page 5-169 or *Hydraulic Brake System Bleeding (Manual)* on page 5-170.

3. Remove and discard the brake cylinder dust seals (1).



2507692

## Rear Brake Cylinder Overhaul

### Disassembly Procedure

**Warning:** Refer to *Brake Dust Warning* on page 0-4.

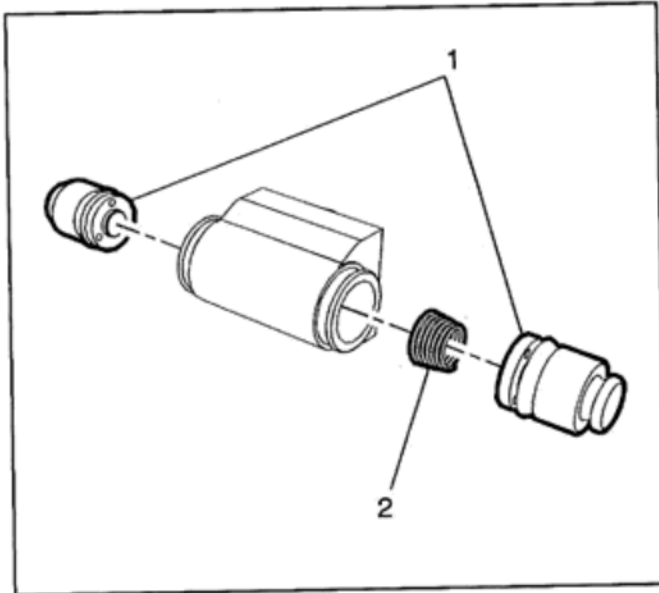
**Warning:** Refer to *Brake Fluid Irritant Warning* on page 0-4.

1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
2. Remove the rear brake cylinder. Refer to *Rear Brake Cylinder Replacement* on page 5-102.

4. Remove the brake cylinder pistons (1) and spring (2).
5. Remove and discard the brake cylinder piston seals.
6. Inspect the brake cylinder bore for excessive corrosion, scoring, nicks, and pitting.
7. If the brake cylinder bore exhibits the above conditions, the brake cylinder assembly requires replacement.
8. Remove light corrosion in the cylinder bore with a fine crocus cloth.
9. Thoroughly clean the brake cylinder and pistons with denatured alcohol and dry with filtered, non-lubricated compressed air.

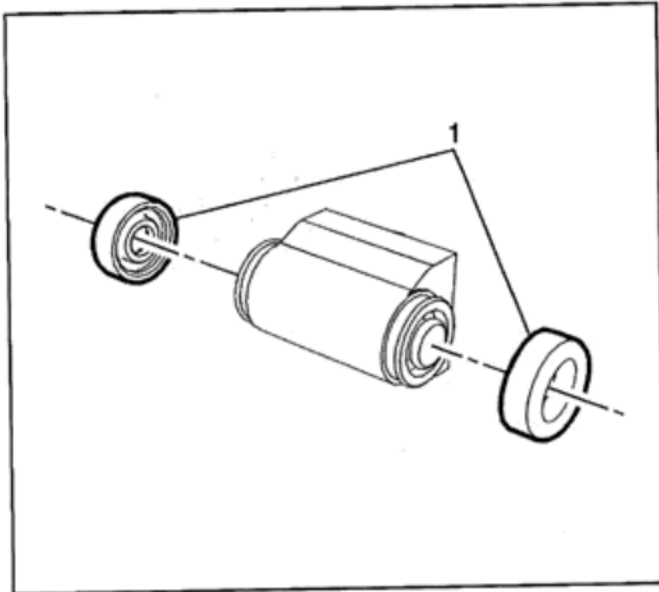
## Assembly Procedure

1. Lightly lubricate the new piston seals and brake cylinder bore with GM approved brake fluid from a clean, sealed, brake fluid container.
2. Assemble the new piston seals with the lip of the seals facing inward to the brake cylinder pistons.



2507692

3. Install the brake cylinder pistons (1) and spring (2) into the brake cylinder bore.



2507691

**Note:** Do not lubricate the brake cylinder dust seals.

4. Install the new brake cylinder dust seals (1).
5. Install the rear brake cylinder. Refer to *Rear Brake Cylinder Replacement* on page 5-102.
6. Bleed the hydraulic brake system. Refer to *Hydraulic Brake System Bleeding (Pressure)* on page 5-169 or *Hydraulic Brake System Bleeding (Manual)* on page 5-170.

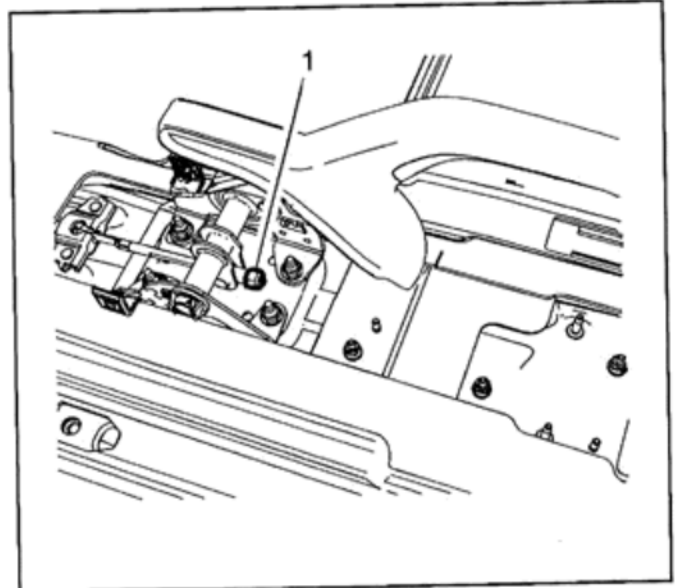
## Drum Brake Adjustment

### Special Tools

CH-21177-A Drum to Brake Shoe Clearance Gauge  
For equivalent regional tools, refer to *Special Tools* on page 5-107.

**Warning:** Refer to *Brake Dust Warning* on page 0-4.

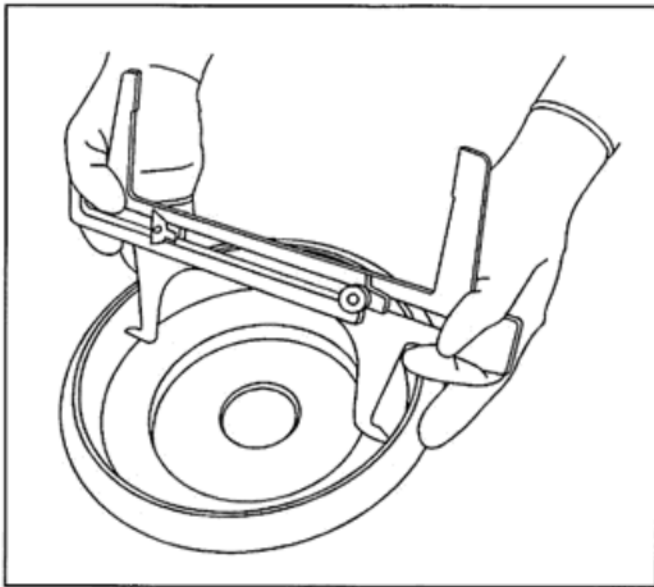
1. Ensure the park brake lever is in the fully released position.
2. Remove the front floor console cupholder insert.



2513001

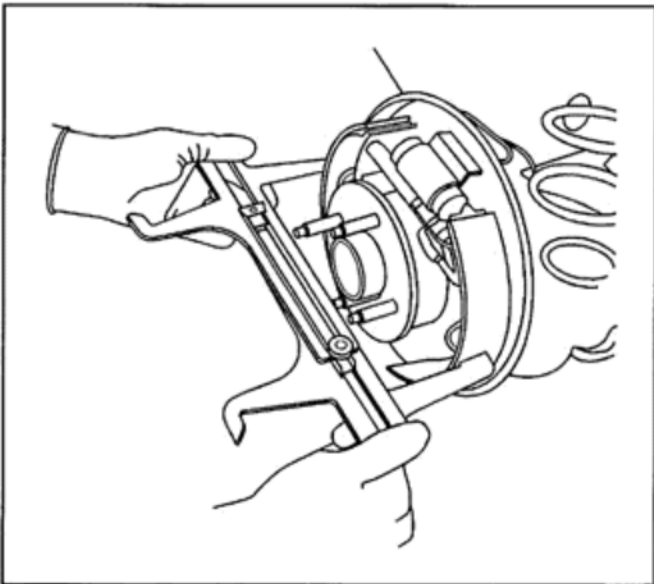
**Note:** Use ONLY HAND TOOLS when loosening or tightening the adjusting nut.

3. Using ONLY HAND TOOLS, loosen the adjusting nut (1) completely to the end of the front cable threaded rod.
4. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
5. Remove the rear tire and wheel assemblies. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
6. Remove the brake drums. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.



891757

7. Position the CH-21177-A Drum to Brake Shoe Clearance Gauge to the widest point of the brake drum inside diameter.
8. Firmly hand tighten the set screw on the CH-21177-A Drum to Brake Shoe Clearance Gauge.



891758

9. Remove the CH-21177-A Drum to Brake Shoe Clearance Gauge from the brake drum and position it over the corresponding brake shoe assembly at its widest point.
10. While holding the CH-21177-A Drum to Brake Shoe Clearance Gauge in position, insert a proper feeler gauge between one side of the CH-21177-A Drum to Brake Shoe Clearance Gauge, and the corresponding brake shoe lining.

11. Rotate the brake shoe adjuster screw until the brake shoe linings contact the CH-21177-A Drum to Brake Shoe Clearance Gauge and the feeler gauge. Refer to *Drum Brake Component Specifications* on page 5-87.
12. Repeat the above steps for the opposite brake drum and brake shoe assembly.
13. Install the brake drums. Refer to *Brake Drum Replacement (J93, J94)* on page 5-90.
14. Adjust the park brake. Refer to *Parking Brake Adjustment (Drum Brake)* on page 5-197 or *Parking Brake Adjustment (Disc Brake)* on page 5-198.
15. Install the rear tire and wheel assemblies. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
16. Lower the vehicle.
17. Install the front floor console cupholder insert.

## Description and Operation

### Drum Brake System Description and Operation

#### System Component Description

The drum brake system consists of the following:

**Drum Brake Shoes:** Applies mechanical output force, from hydraulic brake wheel cylinders, to friction surfaces of brake drums.

**Brake Drums:** Uses mechanical output force applied to friction surface from drum brake shoes to slow speed of tire and wheel assembly rotation.

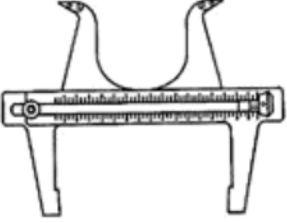
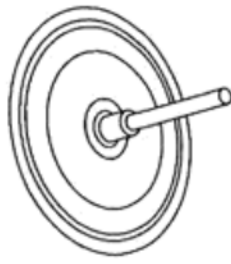
**Brake Drum Hardware:** Secures drum brake shoes firmly in proper relationship to hydraulic brake wheel cylinders. Enables sliding motion of brake shoes needed to expand toward friction surface of drums when mechanical output force is applied. Provides return of brake shoes when mechanical output force is relieved.

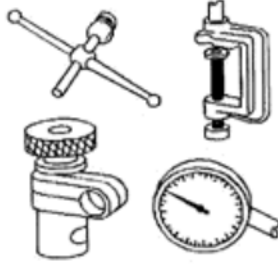
**Brake Drum Adjusting Hardware:** Provides automatic adjustments of brake shoes to brake drum friction surface whenever brake apply occurs.

#### System Operation

Mechanical output force is applied from the hydraulic brake wheel cylinder pistons to the top of the drum brake shoes. The output force is then distributed between the primary and secondary brake shoes as the shoes expand toward the friction surface of the brake drums. The brake shoes apply the output force to the friction surface of the brake drums, which slows the rotation of the tire and wheel assemblies. The proper friction of both the drum brake hardware and adjusting hardware is essential to the proper distribution of braking force.

## Special Tools and Equipment

| Illustration                                                                                 | Tool Number/Description                                        |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <br>9123    | CH 21177<br>J 21177-A<br>Drum to Brake Shoe<br>Clearance Gauge |
| <br>2028167 | CH 41013<br>J 41013<br>Rotor Resurfacing Kit                   |

| Illustration                                                                                  | Tool Number/Description                              |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------|
| <br>2028165 | CH 42450-A<br>J 42450-A<br>Wheel Hub Resurfacing Kit |
| <br>2014    | CH 8001<br>J 8001<br>Dial Indicator Set              |