

SECTION 4E

REAR DRUM BRAKES

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SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Brake Drum Detent Screw	4	-	35
Brake Line	16	12	-
Brake Wheel Hub/Backing Plate-to-Rear Axle Nuts	28	21	-
One-Piece Drum Castle Nut	25 - 180° + 2	18 - 180° + 1.5	-
Wheel Cylinder-to-Backing Plate Bolt	8	-	71

DIAGNOSIS

LINING INSPECTION

1. Raise and suitably support the vehicle.
2. Remove the wheel. Refer to Section 2E, Tires and Wheels.
3. Release the parking brake.
4. Remove the drum. Refer to “One-Piece Drum” or “Two-Piece Drum” in this section.
5. Measure the lining thickness. The minimum lining thickness is 0.5 mm (0.02 inch).

Caution: To avoid injury when servicing brake parts, do not create dust by grinding or sanding the brake linings or by cleaning the wheel brake parts with a dry brush or with compressed air.

Important: Replace the shoe and lining assembly in axle sets only.

7. Install the drum, if removed. Refer to “One-Piece Drum” or “Two-Piece Drum” in this section.
8. Install the wheel, if removed. Refer to Section 2E, Tires and Wheels.
9. Lower the vehicle.

DRUMS

Whenever brake drums are removed, they should be thoroughly cleaned and inspected to see if the drums are cracked, scored, deeply grooved, or beyond the specified out-of-round limit.

- A cracked drum is unsafe for further service and must be replaced. Do not attempt to weld a cracked drum. Smooth out any slight scores.
- Heavy or extensive scoring will cause excessive brake lining wear and may require refinishing the drum braking surface.

4E - 2 REAR DRUM BRAKES

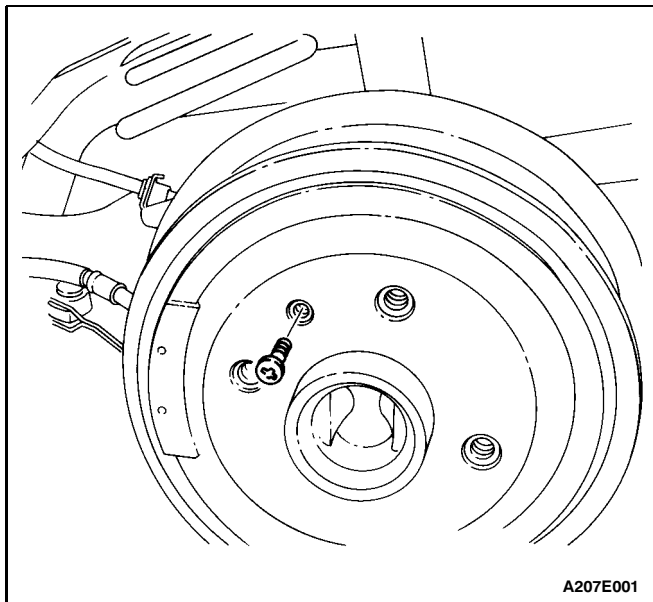
- If the brake linings are slightly worn but are still reusable and the drum is grooved, polish the drum with a fine emery cloth but do not refinish it. Eliminating all grooves in the drum and smoothing the ridges on the lining would remove too much metal and lining. If left alone, the grooves and ridges match, and satisfactory service can be obtained. If the brake linings need to be replaced, refinish a grooved drum. A grooved drum, used with a new lining, will not only wear the lining, but also will make it difficult, if not impossible, to obtain proper brake performance.
- An out-of-round drum makes accurate brake shoe adjustment impossible and is likely to cause excessive wear of other parts of the brake mechanism. An out-of-round drum can also cause severe and irregular tire tread wear, as well as a pulsating brake pedal.
- The extent to which a drum is worn or out of round can be measured accurately with an inside micrometer fitted with the proper extension rods. When measuring a drum for wear or the extent to which it is out of round, take measurements from the inside edge to the outside edge of the machined surface at 90-degree intervals around the circumference of the drum. When the drum exceeds the specified out-of-round limit, refinish the drum.

MAINTENANCE AND REPAIR ON-VEHICLE SERVICE

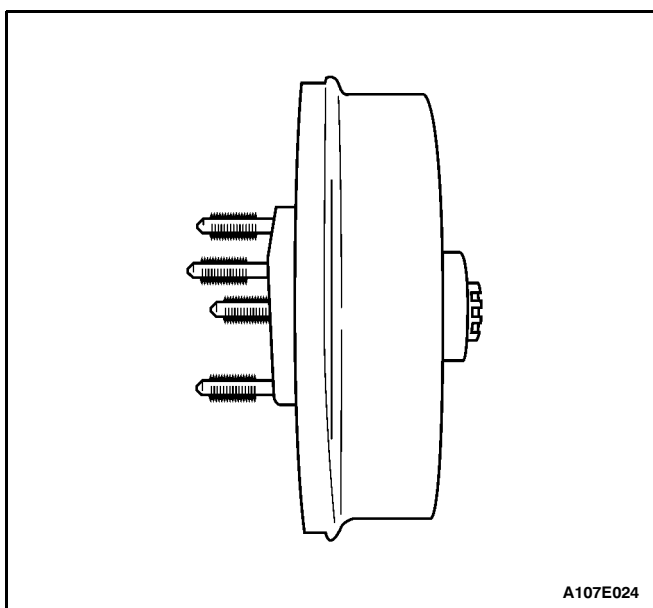
BRAKE ADJUSTMENT

Removal Procedure

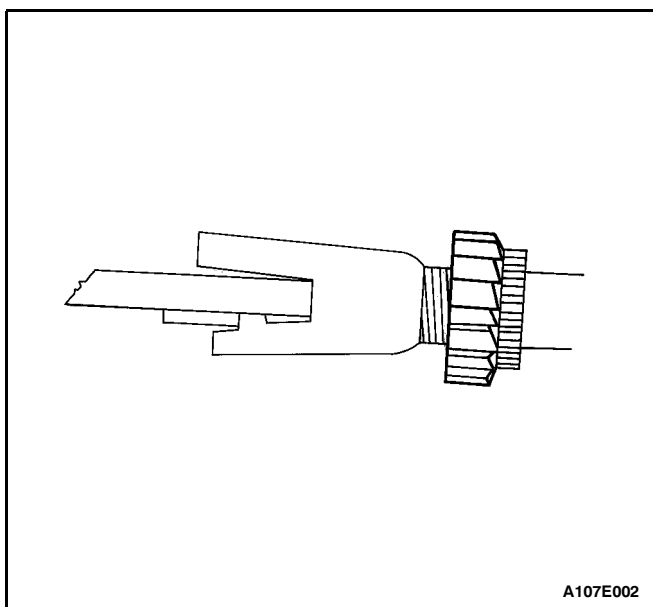
1. Release the parking brake.
2. Operate the brake at least 10 times until the jumping of the adjustment spring on the adjustment nut can no longer be heard on either brake drum.
3. Raise and suitably support the vehicle.
4. Remove the rear wheels. Refer to Section 2E, Tires and Wheels. Mark the position of the wheels relative to the wheel hubs.
5. For vehicles with an ABS braking system, remove the detent screw from the brake drum.
6. For vehicles with a non-ABS system, remove the split pin and the nut that secures the drum to the spindle.
7. Remove the brake drum.



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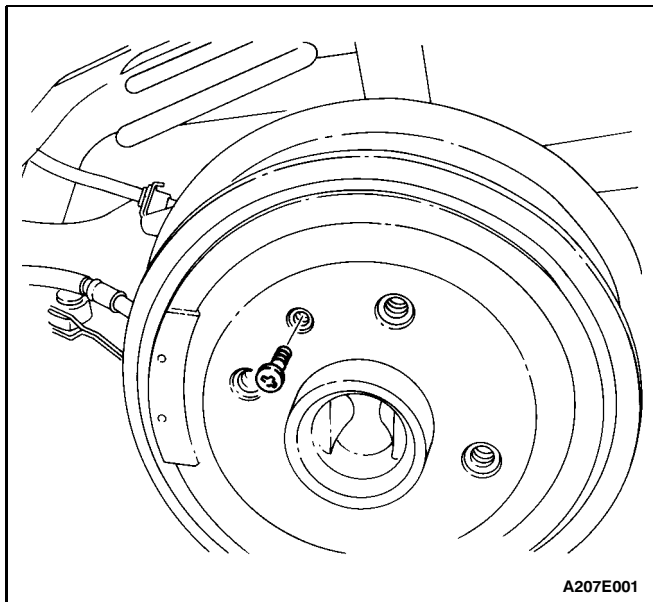


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8. Using the rear brake adjuster nut, turn the adjuster assembly in until there is a sufficient amount of drag on the brake drum.
9. Make sure that the parking brake lever stops are against the edge of the shoe web. If they are not, loosen the parking brake cable at the equalizer.

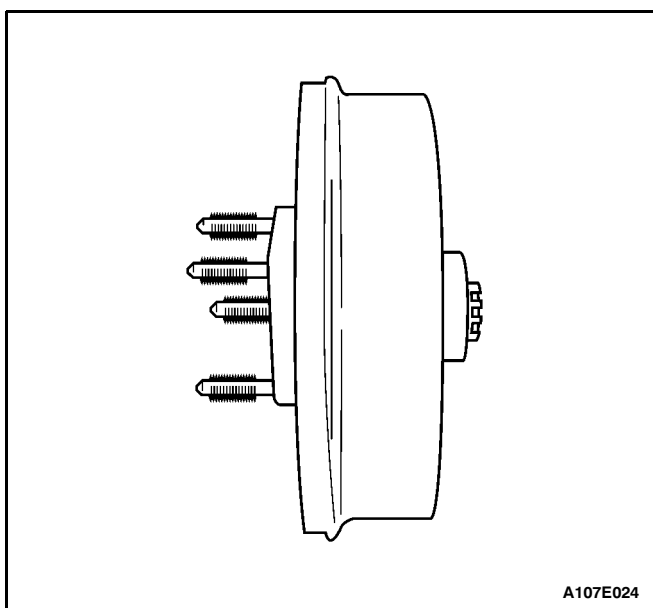


Installation Procedure

1. For vehicles with an ABS braking system, position the rear brake drum and fasten the detent screw.

Tighten

Tighten the brake drum detent screw to 4 N•m (35 lb-in).



2. For vehicles with a non-ABS braking system, position the rear brake drum. Fasten the one-piece drum castle nut and secure it with the new split pin.

Tighten

Tighten the one-piece drum castle nut to 25 N•m (18 lb-ft) minus 180 degrees plus 2 N•m (18 lb-in).

3. Install the rear wheels. Refer to Section 2E, Tires and Wheels.

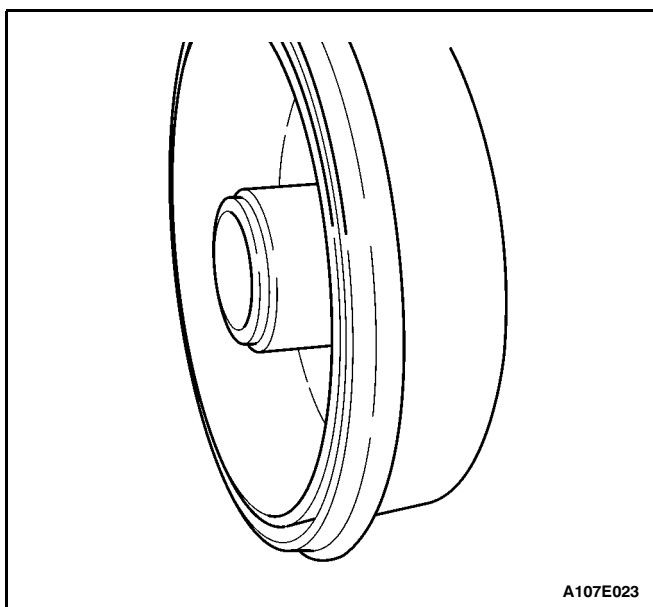
Important: The brake pedal must be operated more than 10 times. When the clicking can no longer be heard, the clearance between the brake shoe and drum is adjusted.

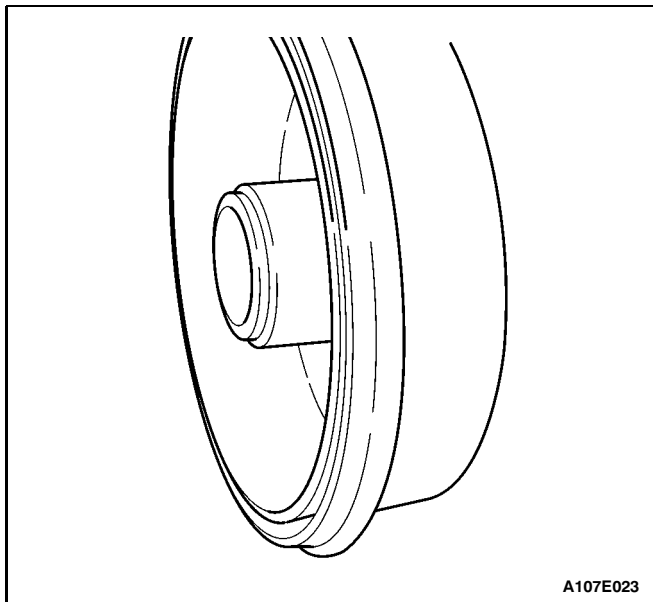
4. Apply the foot brake several times until the clicking of the adjustment actuator can no longer be heard.
5. Adjust the parking brake. Refer to Section 4G, Parking Brake.

ONE-PIECE DRUM

Removal Procedure

1. Raise and suitably support the vehicle.
2. Remove the wheel. Refer to Section 2E, Tires and Wheels.
3. Remove the split pin and the castle nut that secures the drum to the spindle. Discard the split pin.
4. Remove the rear brake drum.





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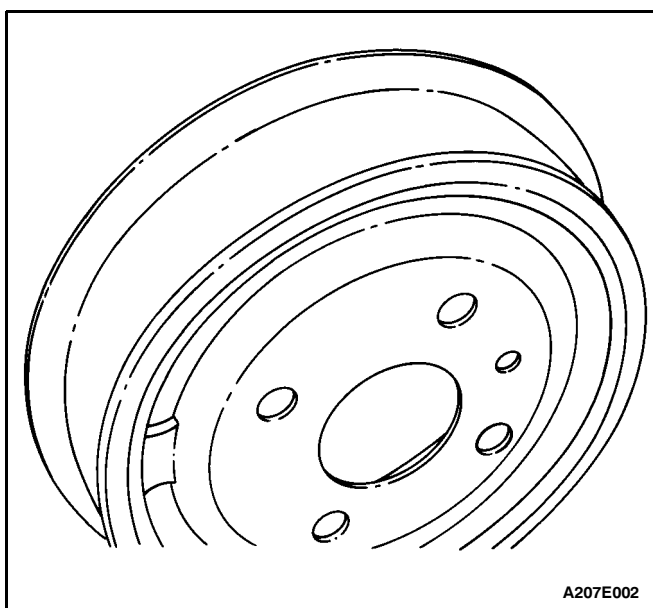
Installation Procedure

1. Inspect the hub bearing, and coat it with grease, if needed.
2. Install the rear brake drum.
3. Secure the drum with the castle nut and the new split pin.

Tighten

Tighten the one-piece drum castle nut to 25 N•m (18 lb-ft) minus 180 degrees plus 2 N•m (18 lb-in).

4. Install the wheel. Refer to Section 2E, Tires and Wheels.
5. Lower the vehicle.

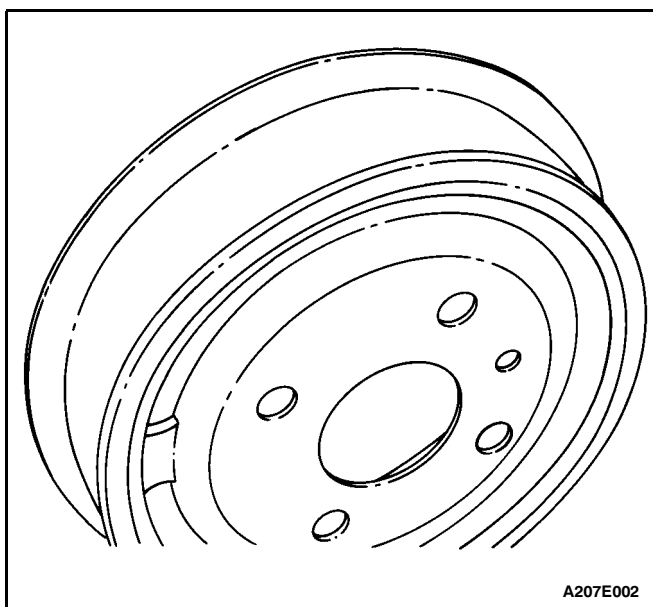


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TWO-PIECE DRUM

Removal Procedure

1. Raise and suitably support the vehicle.
2. Remove the wheel. Refer to Section 2E, Tires and Wheels.
3. Remove the detent screw from the brake drum.
4. Remove the brake drum.



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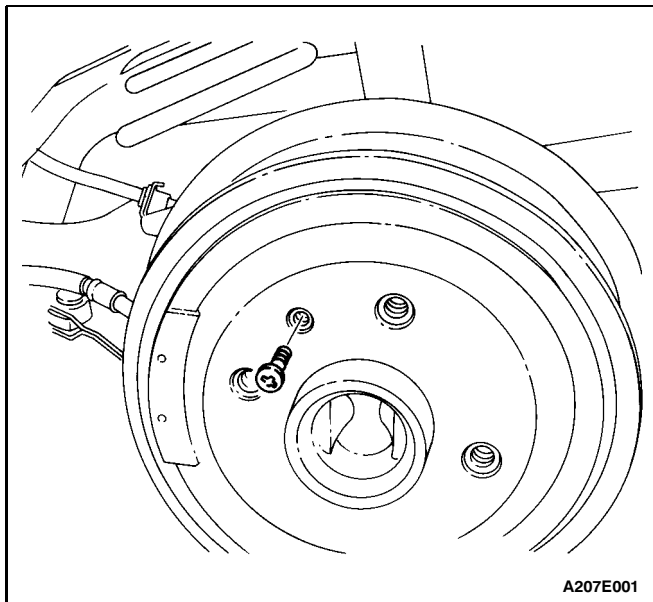
Installation Procedure

1. Inspect the brake drum. Refer to "Drums" in this section.
2. Install the brake drum.
3. Tighten the detent screw to secure the brake drum.

Tighten

Tighten the brake drum detent screw to 4 N•m (35 lb-in).

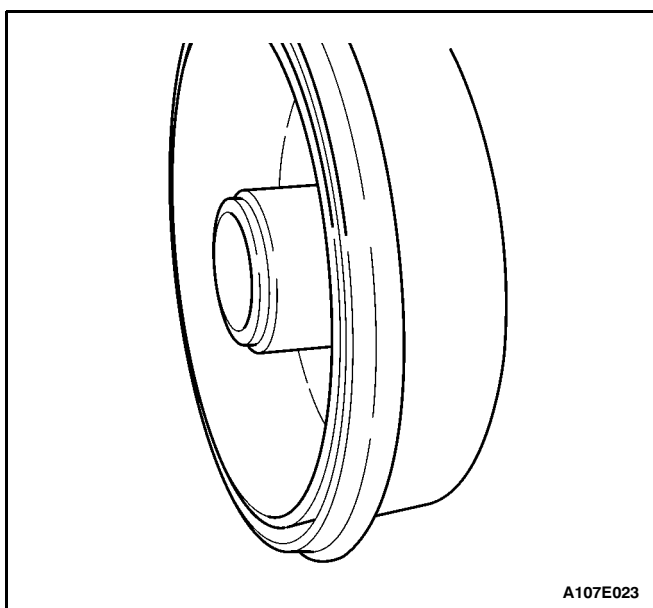
4. Install the wheel. Refer to Section 2E, Tires and Wheels.
5. Lower the vehicle.



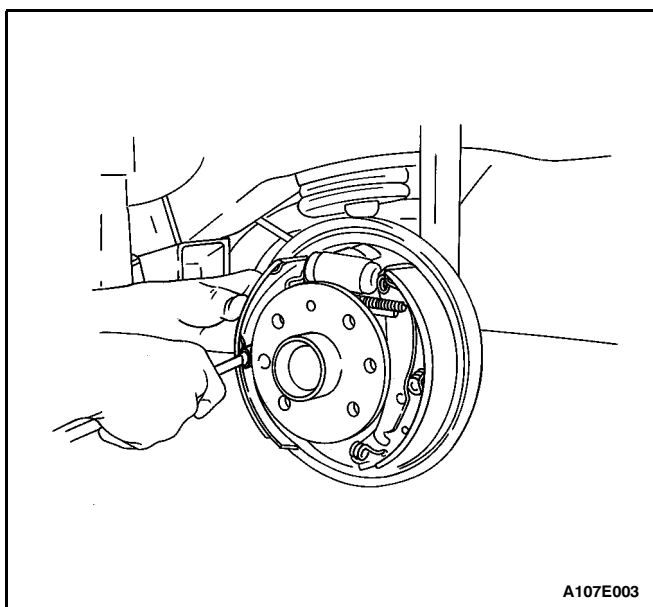
SHOE AND LINING

Removal Procedure

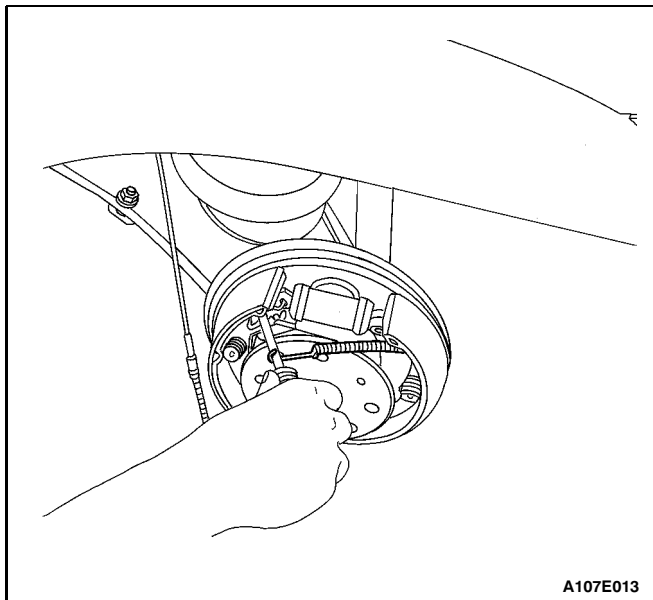
1. Raise and suitably support the vehicle.
2. Remove the rear wheels. Refer to Section 2E, Tires and Wheels.
3. Mark the position of the wheels relative to the wheel hub.
4. Loosen the parking brake cable. Refer to Section 4G, Parking Brake.
5. For vehicles with the ABS braking system, remove the detent screw from the brake drum. Remove the brake drum.



6. For vehicles with the non-ABS braking system, remove the rear brake drum by unfastening the split pin and the one-piece drum castle nut. Discard the split pin.

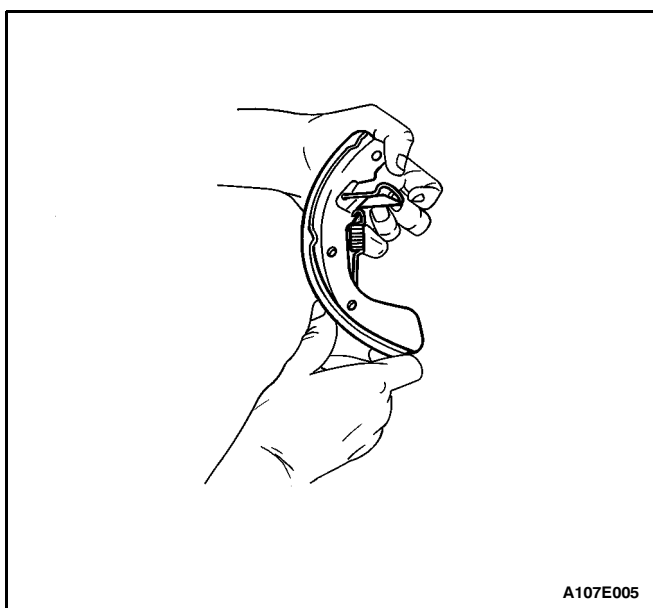


7. Loosen the leading shoe hold-down return spring. (The ABS braking system configuration is illustrated.)



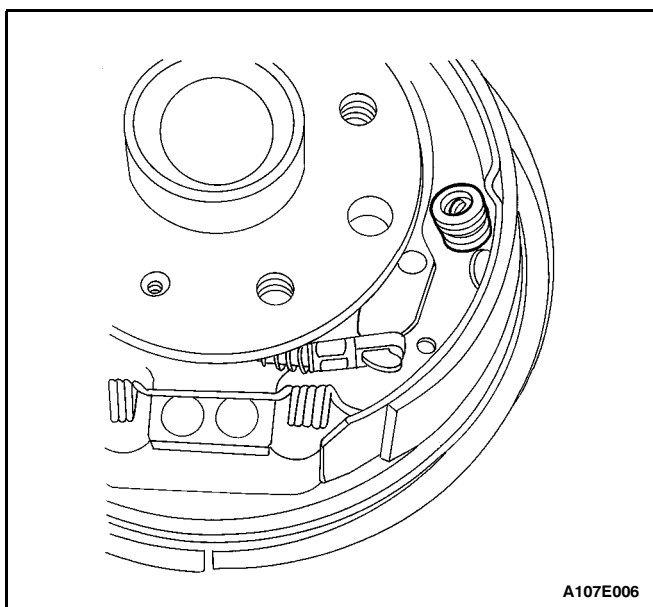
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8. Disconnect the upper link of the connecting link-spring of the leading shoe to relieve tension on the upper return spring.
9. Remove the upper return spring and the adjuster.



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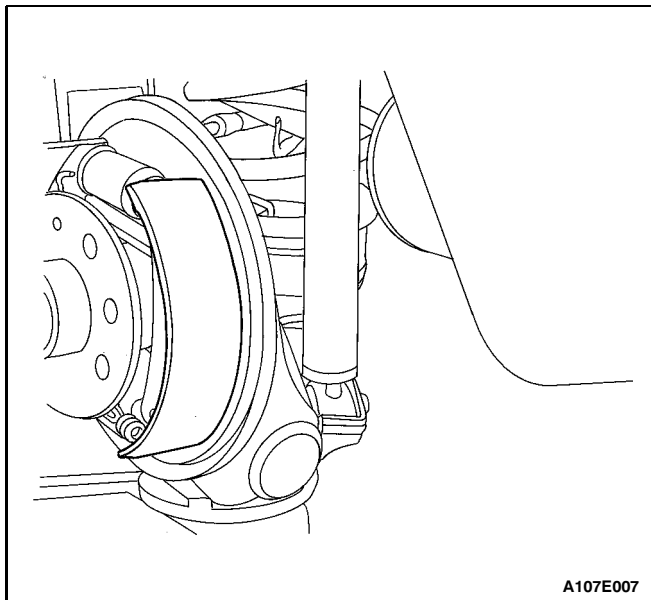
10. Remove the leading shoe by unlatching it from the lower return spring.



A107E006

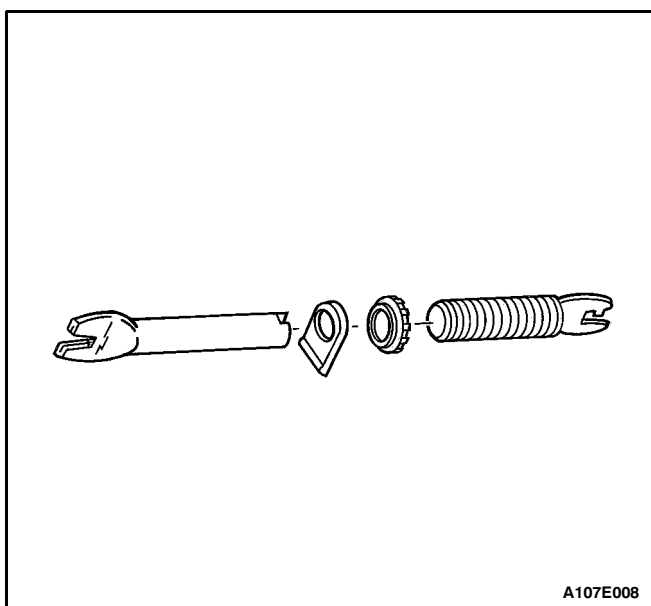
11. Unfasten the trailing shoe and lining assembly hold-down return spring.

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12. Disconnect the trailing shoe and lining assembly on the right side.

13. Detach the lower return spring.



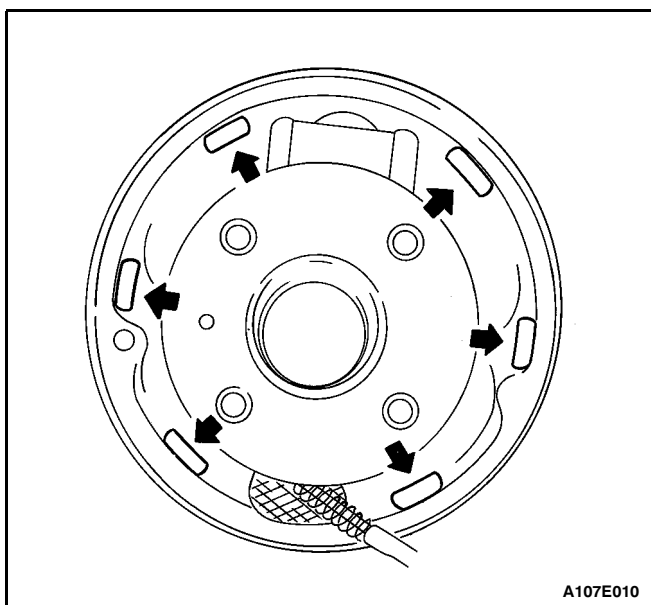
Installation Procedure

1. Measure the minimum brake lining thickness. Refer to "Lining Inspection" in this section.

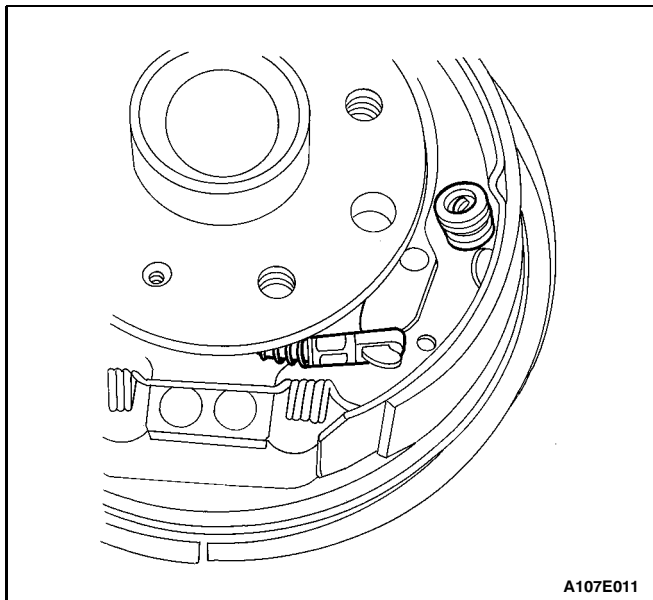
2. Clean the adjuster assembly and apply grease.

Notice: If any parts are of questionable strength or quality because of heat discoloration, excessive stress, or wear, the shoes, the springs, or the adjuster assembly should be replaced.

3. Inspect the threads of the adjuster assembly for smooth rotation.



4. Coat the backing plate with grease at the brake shoe contact points.

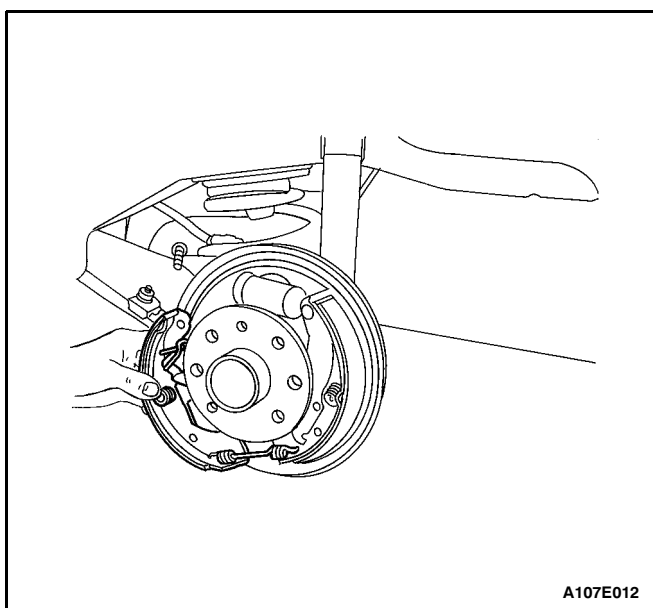


A107E011

5. Install the trailing shoe and lining assembly with the hold-down spring, the washer, and the pin.
6. Make sure the parking brake cable is properly routed and attached to the shoe lever.

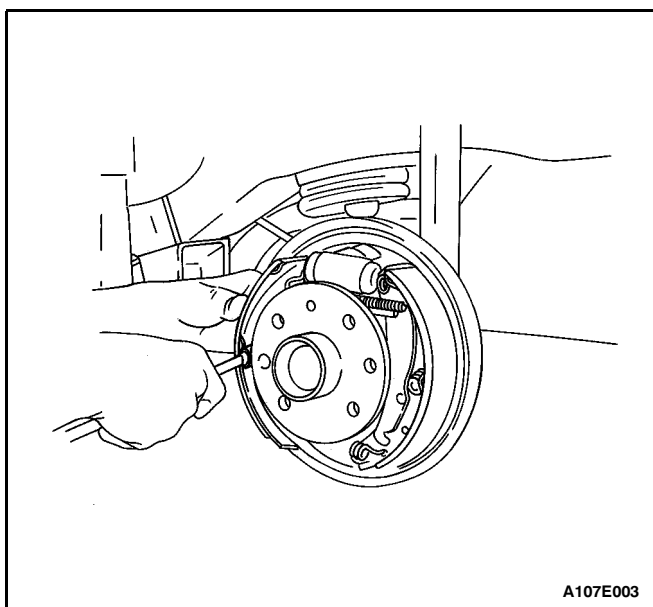
Notice: Do not overstretch the lower return spring.

7. Fasten the lower return spring on the shoe.



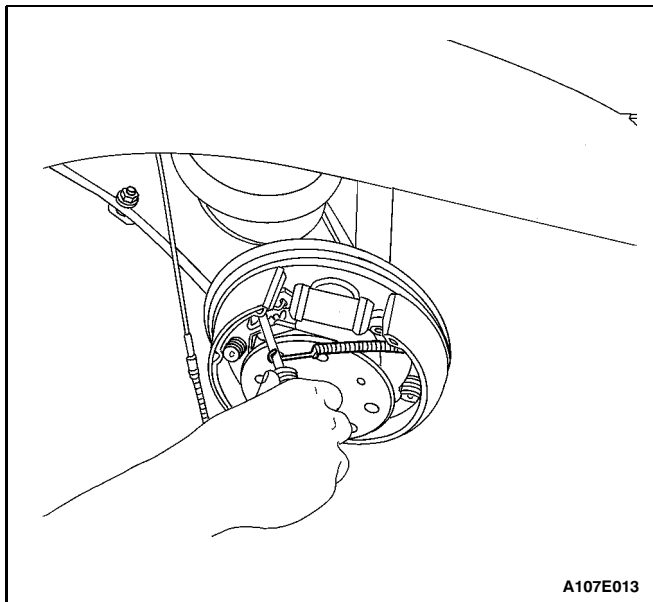
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8. Position the leading shoe and the adjuster assembly against the backing plate.
9. Fasten the lower return spring to the leading shoe.



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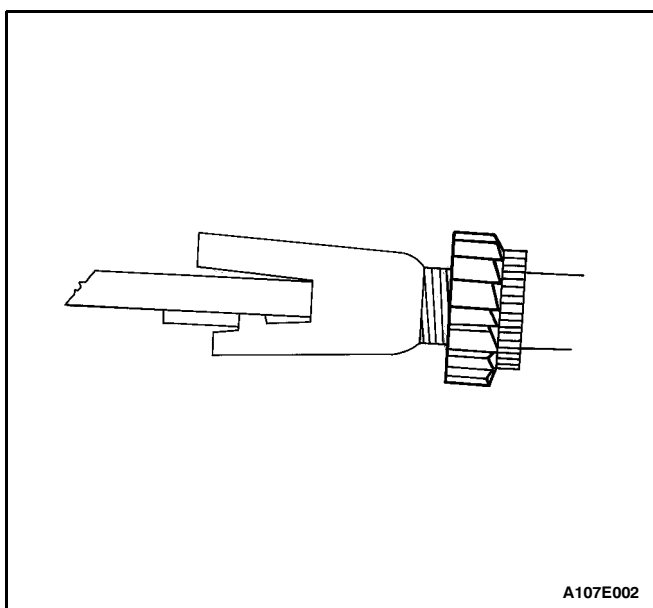
10. Install the adjuster assembly.
11. Turn the adjuster in as far as possible.
12. Position the spring clip toward the backing plate.
13. Install the leading shoe with the hold-down spring.



14. Attach the leading shoe upper link-spring connection, which applies tension to the upper return spring.

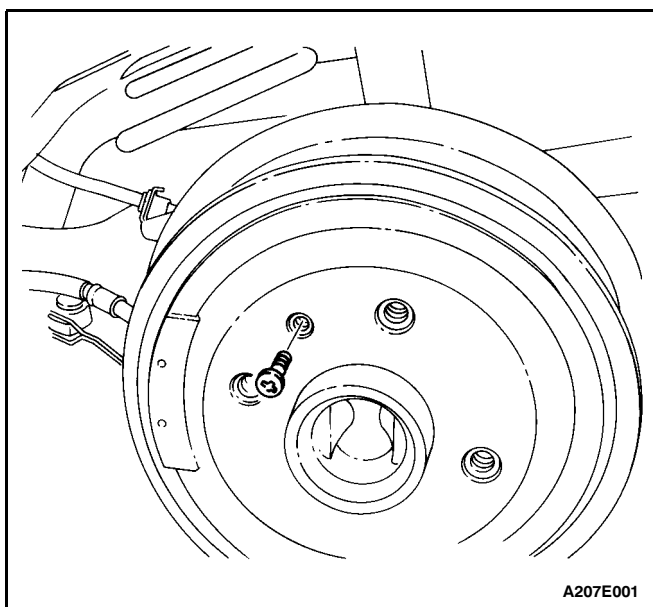
Notice: Do not overstretch the upper return spring.

15. Install the upper return spring from the spring connecting link to the brake shoe.



Notice: The nut must not lock firmly at the end of the adjustment assembly.

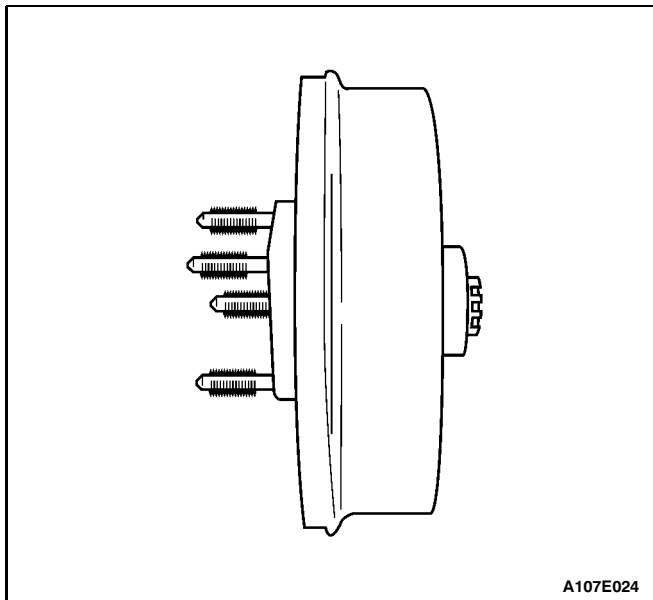
16. Before installing the brake drum, make sure the adjuster assembly nut is drawn all the way to the stop.



17. For vehicles with the ABS braking system, install the brake drum and fasten it with the detent screw.

Tighten

Tighten the brake drum detent screw to 4 N•m (35 lb-in).



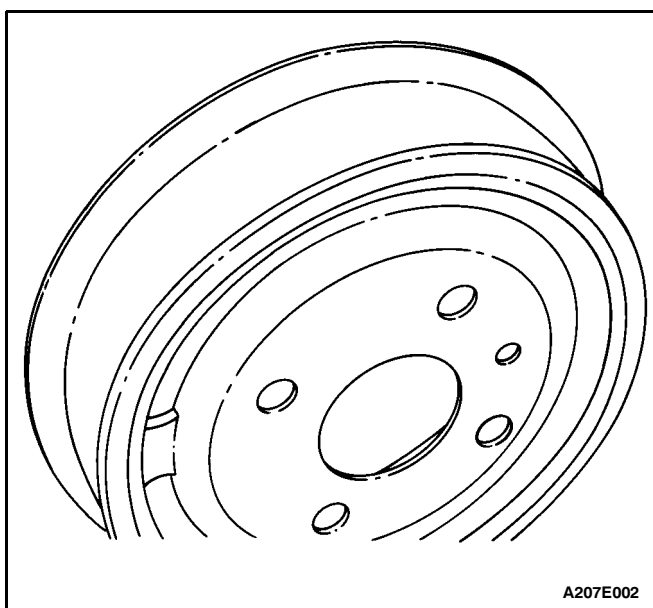
A107E024

18. For vehicles with the non-ABS braking system, install the brake drum and fasten it with the castle nut and the new split pin.

Tighten

Tighten the one-piece drum castle nut to 25 N•m (18 lb-ft) minus 180 degrees plus 2 N•m (18 lb-in).

19. Install the rear wheels. Refer to Section 2E, Tires and Wheels.
20. Adjust the rear wheel brakes. Refer to "Brake Adjustment" in this section.
21. Adjust the parking brake. Refer to Section 4G, Parking Brake.
22. Lower the vehicle.

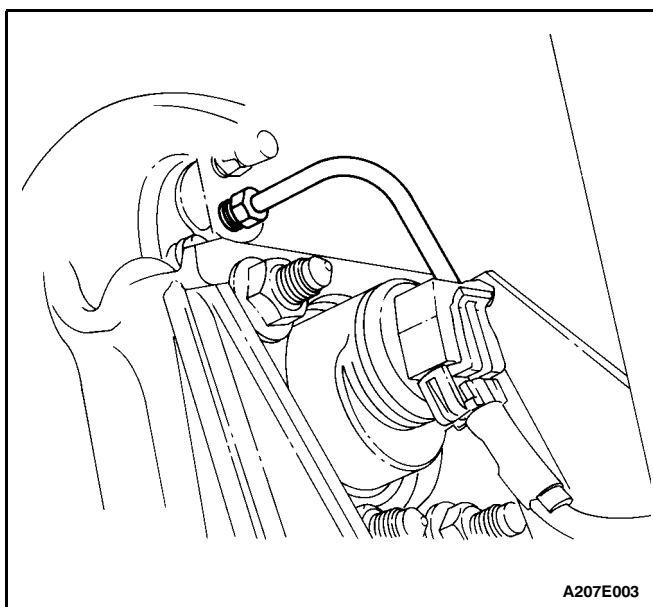


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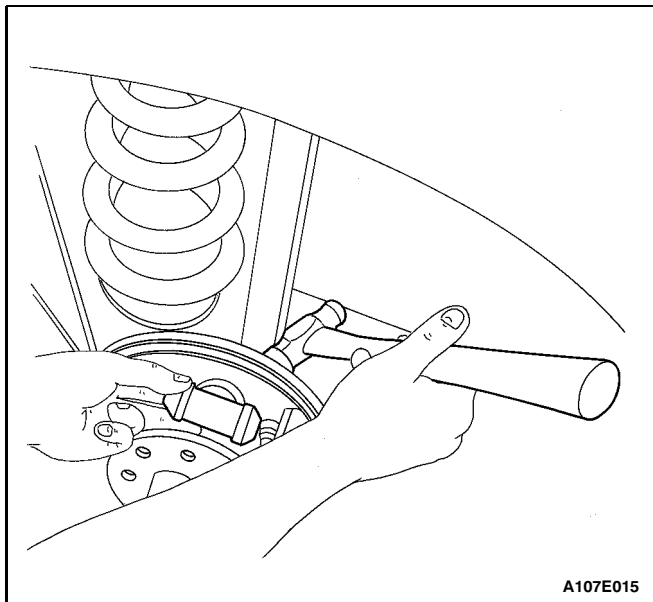
WHEEL CYLINDER ASSEMBLY

Removal Procedure

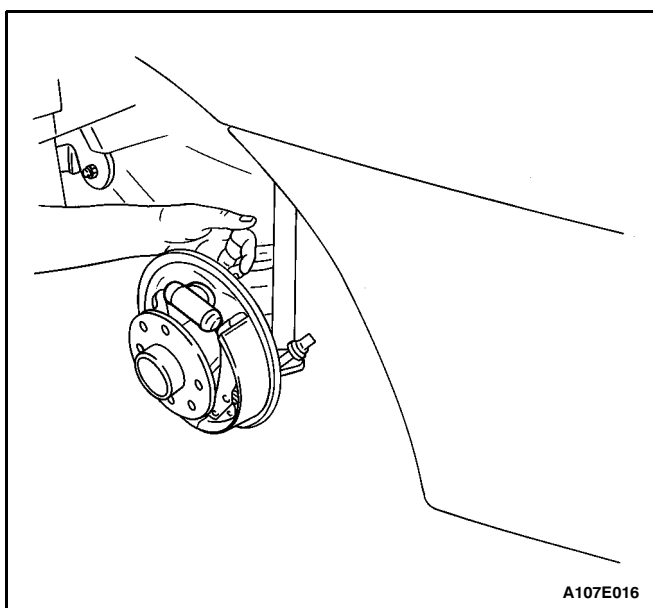
1. Raise and suitably support the vehicle.
2. Remove the rear wheels. Refer to Section 2E, Tires and Wheels.
3. Mark the position of the wheels relative to the wheel hubs.
4. Remove the brake drum.
5. Remove the shoe and lining. Refer to "Shoe and Lining" in this section.
6. Clean dirt and foreign material from around the wheel cylinder brake line inlet, the pilot, and the bolt.
7. Disconnect the brake line from the wheel cylinder.
8. Plug the opening in the brake line to prevent fluid loss or contamination.



A207E003



9. Remove the wheel cylinder-to-backing plate bolt.
10. Gently tap out the wheel cylinder from the backing plate, using care not to damage the bleeder valve or its cap.

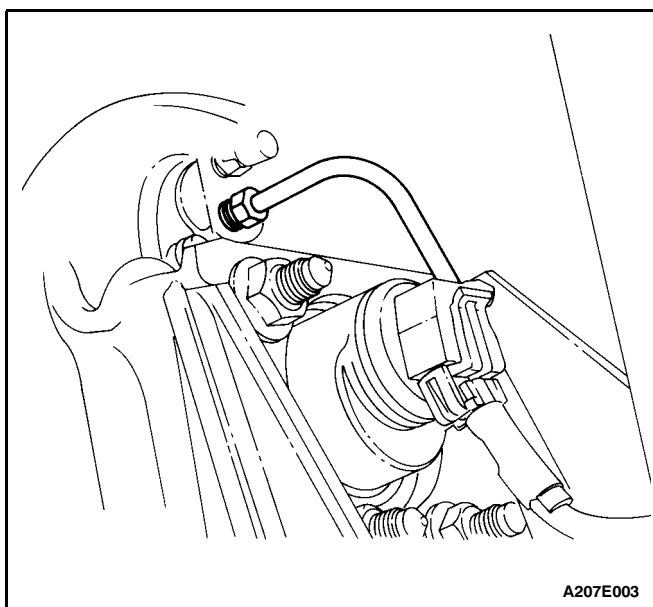


Installation Procedure

1. Install the wheel cylinder to the backing plate with the wheel cylinder bolt.

Tighten

Tighten the wheel cylinder-to-backing plate bolt to 8 N•m (71 lb-in).

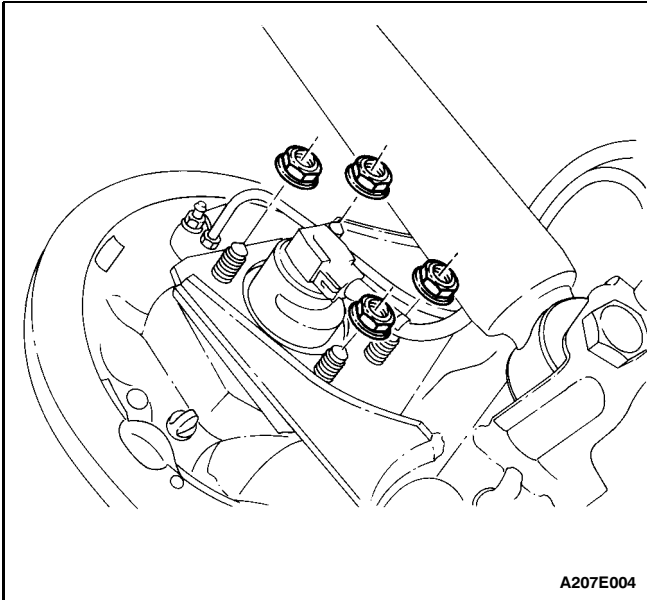


2. Connect the brake line to the wheel cylinder.

Tighten

Tighten the brake line to 16 N•m (12 lb-ft).

3. Install the shoe and lining, and the brake drum. Refer to "Shoe and Lining" in this section.
4. Bleed the brakes. Refer to Section 4A, Hydraulic Brakes.

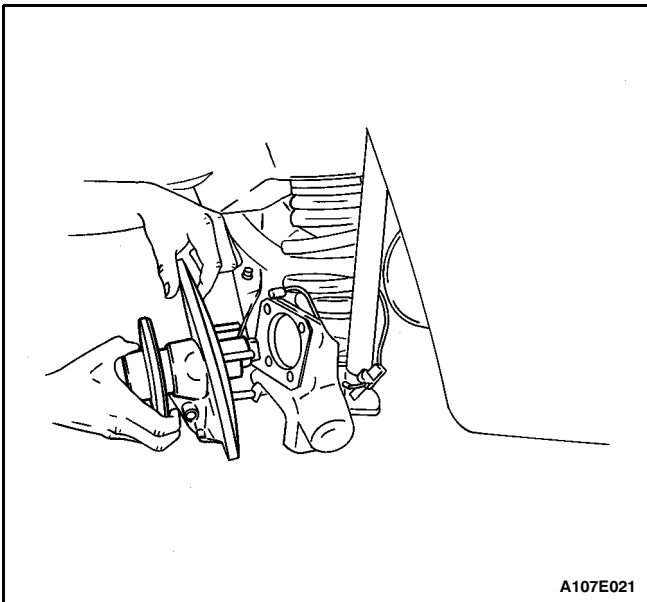


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BACKING PLATE

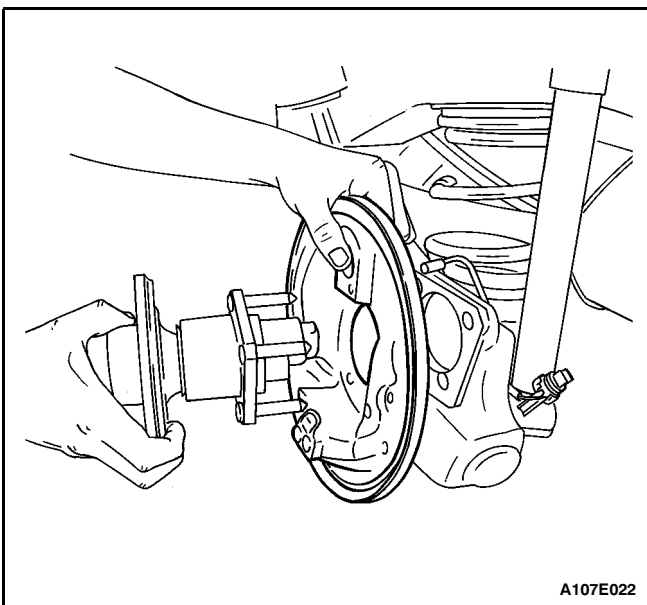
Removal Procedure

1. Raise and suitably support the vehicle.
2. Remove the brake shoe components, including complete removal of the parking brake with the retainer. Refer to "Shoe and Lining" in this section.
3. Remove the nuts that secure the wheel hub assembly to the backing plate.
4. Remove the brake line and plug the opening in the line to prevent fluid loss or contamination.



A107E021

5. Remove the wheel cylinder assembly. Refer to "Wheel Cylinder Assembly" in this section.
6. Remove the wheel hub assembly. (The ABS hub is shown.) Disconnect the cable that goes to the wheel speed sensor on ABS brakes.
7. Separate the backing plate and the gasket.



A107E022

Installation Procedure

1. Place the backing plate with a new gasket on the wheel hub. (The ABS hub is shown.)
2. Insert the complete wheel hub/backing plate assembly into the rear axle plate. Install the nuts and connect the wheel speed sensor on ABS brakes.

Tighten

Tighten the brake wheel hub/backing plate-to-rear axle nuts to 28 N•m (21 lb-ft).



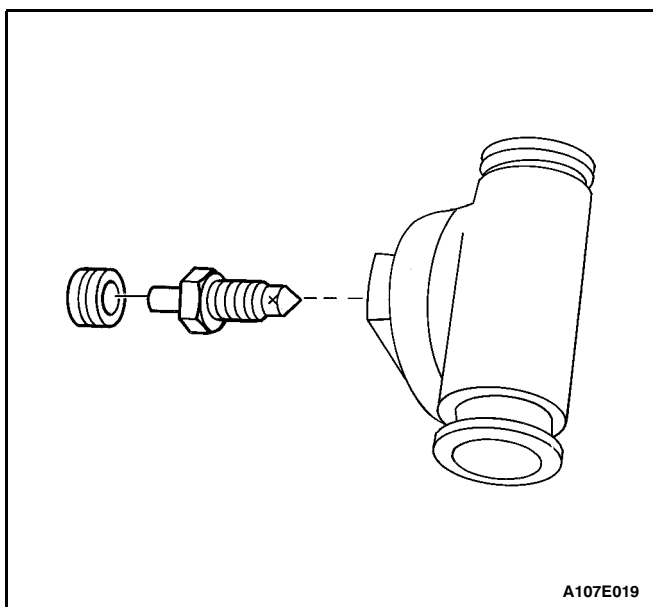
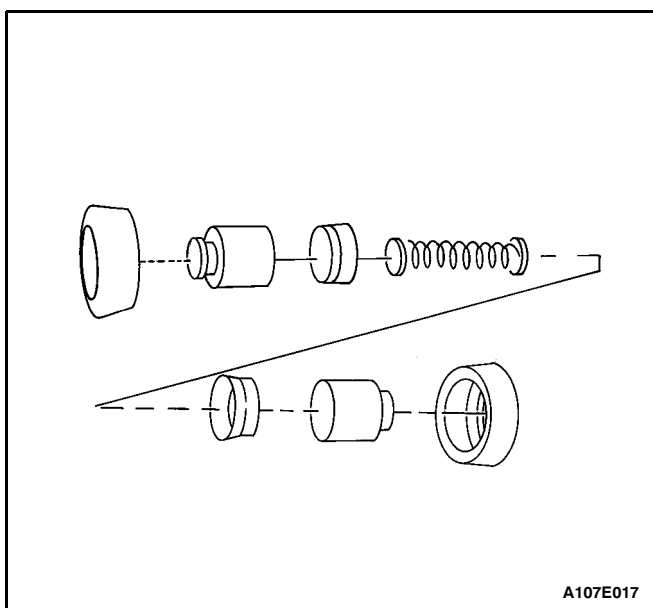
3. Install the brake wheel cylinder assembly to the backing plate. Refer to "Wheel Cylinder Assembly" in this section.
4. Connect the brake line.
Tighten
Tighten the brake line to 16 N•m (12 lb-ft).
5. Install the brake components. Refer to "Shoe and Lining" in this section.
6. Install the parking brake cable with the retainer by attaching the cable to the brake shoe lever. Refer to Section 4G, Parking Brake.
7. Bleed the brakes. Refer to Section 4A, Hydraulic Brakes.
8. Lower the vehicle.

UNIT REPAIR

WHEEL CYLINDER

Disassembly Procedure

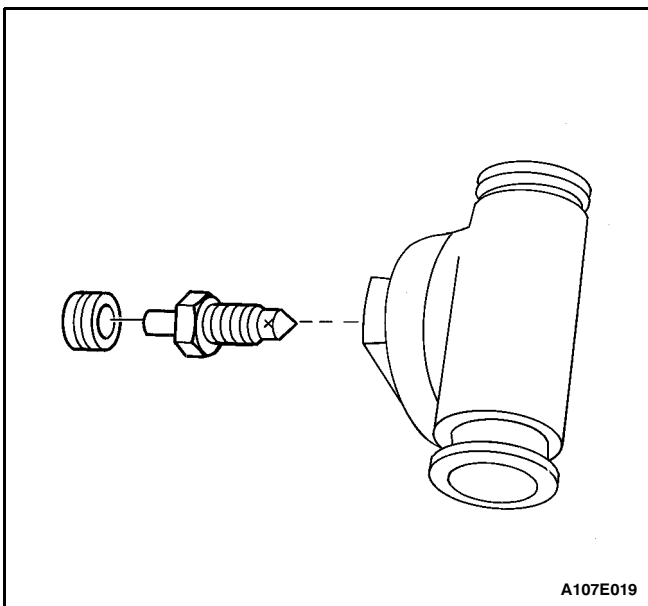
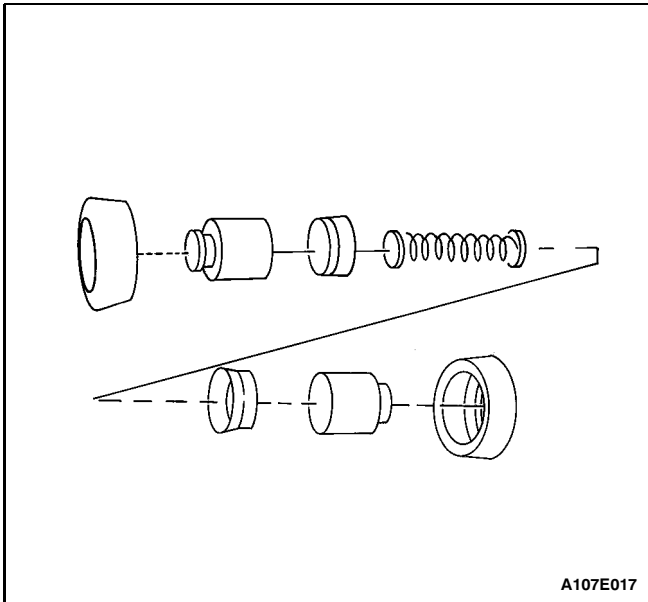
1. Remove the wheel cylinder assembly from the backing plate. Refer to "Wheel Cylinder Assembly" in this section.
2. Twist off the boots, the pistons, and the seals from each end of the wheel cylinder.
3. Remove the spring assembly.
4. Remove the bleeder cap and the bleeder valve.



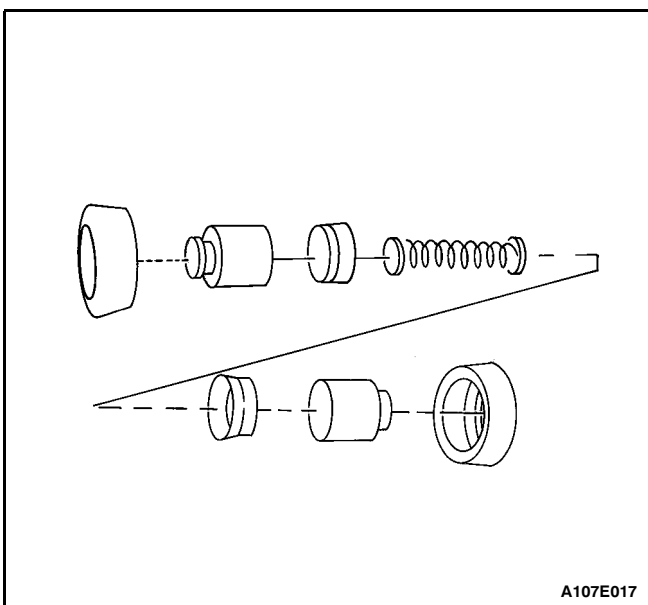
Assembly Procedure

1. Inspect the wheel cylinder bore and the pistons for scoring, nicks, corrosion, and wear.
2. Use a crocus cloth to polish out light corrosion in the wheel cylinder bore.

Important: If the bore will not clean up with a crocus cloth, replace the assembly.



3. Clean all the parts in clean denatured alcohol or brake fluid. Dry all the parts with unlubricated compressed air and lubricate the new seals, the pistons, and the wheel cylinder bore with clean brake fluid before assembly.
4. Thinly coat all the parts except the dust caps with brake cylinder fluid.
5. Fasten the bleeder valve and the cap to the wheel cylinder.



6. Attach to the wheel cylinder the spring assembly, followed by the pistons, the seals, and the boots.
7. Inspect the pistons for free movement.
8. Install the wheel cylinder assembly. Refer to "Wheel Cylinder Assembly" in this section.

GENERAL DESCRIPTION AND SYSTEM OPERATION

DRUM BRAKES

This drum brake assembly is a leading/trailing shoe design. Both brake shoes are held against the wheel cylinder pistons by the lower return spring and the fixed anchor plate near the lower return spring. When the brakes are applied, the wheel cylinder pistons move both shoes out to contact the drum. With forward wheel rotation, the forward brake shoe will wrap into the drum and become self-energized. With reverse wheel rotation, the rear brake shoe is self-energized. Force from the brake shoes is transferred to the anchor plate through the backing plate to the axle flange. Adjustment is automatic and occurs on any service brake application. Do not switch the position of shoes that have been

in service, as this may render the self-adjustment feature inoperative and result in increased pedal travel.

Notice: To avoid damaging the vehicle, observe the following directions:

- Replace all the components included in the repair kits used to service this drum brake.
- Do not use lubricated shop air on the brake parts, as damage to the rubber components may result.
- If any hydraulic component is removed or disconnected, it may be necessary to bleed all or part of the braking system.
- Replace the shoe and linings in axle sets only.
- The torque values specified are for dry, unlubricated fasteners.
- Perform service operations on a clean bench that is free from all mineral oil materials.