

# BRAKES

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## BASE BRAKE SYSTEM

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### DESCRIPTION AND OPERATION

#### FRONT DISC BRAKES

The front disc brake assembly used on this vehicle consists of the following components.

- The driving hub and bearing assembly
- Braking disc (rotor)
- Caliper assembly
- Shoes and linings

The floating double pin single piston calipers, (Fig. 1) used on this vehicle are mounted directly to the steering knuckles and use no adapter. The caliper is mounted to the steering knuckle using bushings, sleeves and 2 through bolts which thread directly into the steering knuckle (Fig. 2).

Two machined abutments on the steering knuckle, (Fig. 2) position and align the caliper fore and aft. The guide pin bolts, sleeves and bushings control the side to side movement of the caliper. The piston seal, is designed to pull the piston back into the bore of the caliper when the brake pedal is released. This maintains the proper brake shoe to rotor clearance.

The disc brake calipers, have anti-rattle clips attached to the inner and outer brake shoe and lining assemblies (Fig. 1).

All of the braking force is taken up directly by the steering knuckle of the vehicle.

The caliper is a one piece casting with the inboard side containing a single piston cylinder bore.

**WARNING: THE PISTONS THAT ARE USED IN THE FRONT AND REAR DISC BRAKE CALIPER ASSEMBLIES ARE UNIQUE TO THE CALIPER THEY ARE USED IN. THE DIMENSIONS OF THESE PISTONS ARE DIFFERENT, DO NOT INTERCHANGE THE CALIPER PISTONS. IMPROPER USE COULD CAUSE A COMPLETE FAILURE OF THE BRAKE SYSTEM.**

The front disc brake caliper phenolic piston is 60 mm (2.36 inch) in diameter.

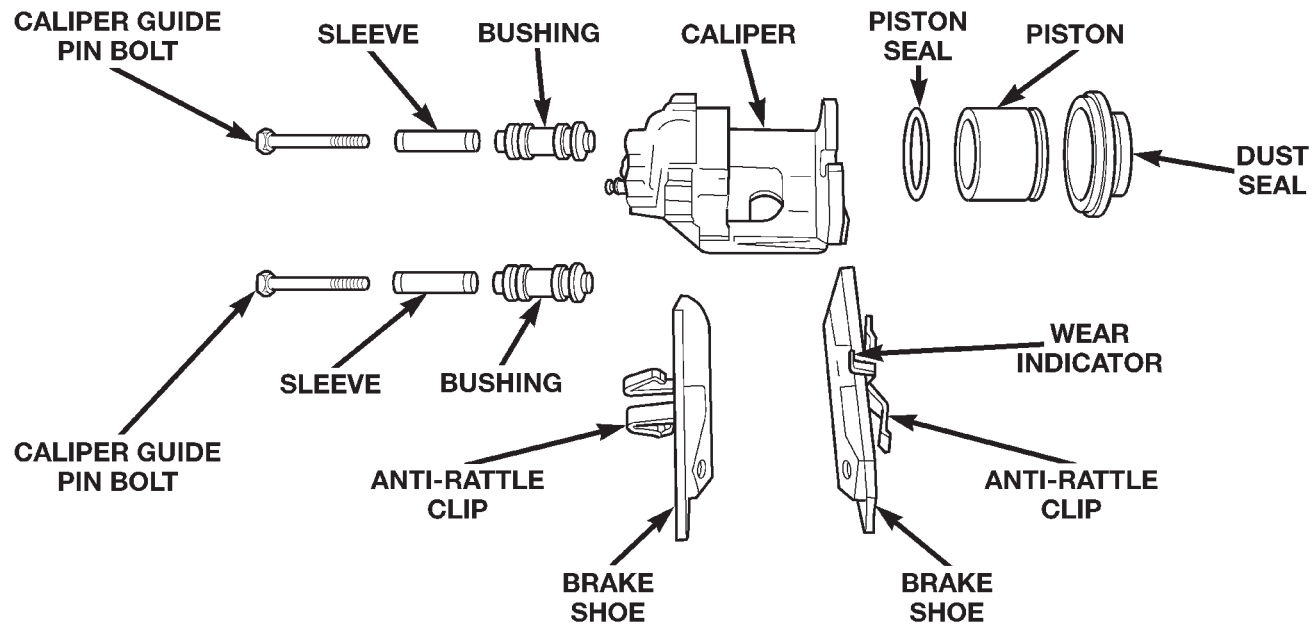
A rubber piston seal is located in a machined groove in the cylinder bore. This provides a hydraulic seal between the piston and the cylinder wall (Fig. 3).

A molded rubber dust boot is installed in a groove in the cylinder bore and the piston, keeping contamination from the cylinder wall and the piston (Fig. 3).

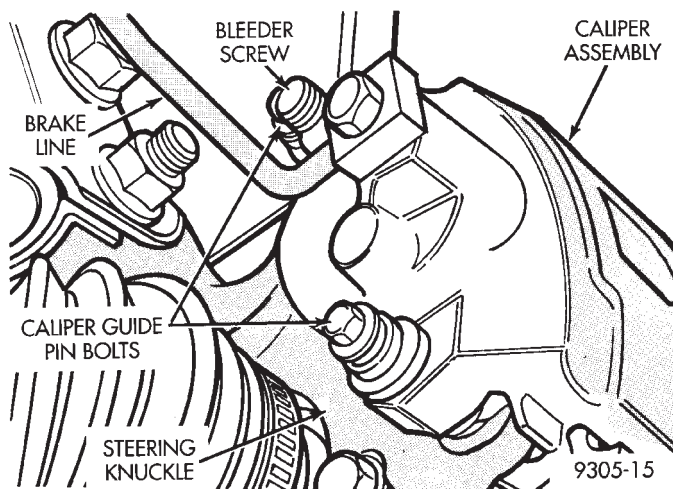
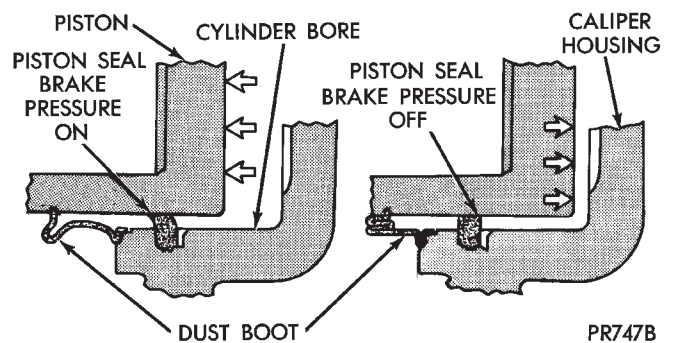
As lining wears, master cylinder reservoir brake fluid level will go down. If brake fluid has been added to the reservoir, reservoir overflow may occur when the piston is pushed back into the new lining position. Overflowing can be avoided in this case by removing a small amount of fluid from the master cylinder reservoir.

All these vehicles, are equipped with an audible wear indicator (Fig. 1) on the outboard pad of the front disc brake assemblies. This indicator when emitting a sound signals that brake lining may need inspection and/or replacement.

## DESCRIPTION AND OPERATION (Continued)



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*Fig. 1 Front Disc Brake Caliper Assembly**Fig. 2 Disc Brake Caliper Mounting**Fig. 3 Piston Seal Function for Automatic Adjustment Of Front Brakes*

## REMOVAL AND INSTALLATION

### FRONT DISC BRAKE CALIPER

During service procedures, grease or any other foreign material must be kept off brake shoe assemblies, and braking surfaces of rotor.

Handle the rotor and caliper carefully, to avoid damaging the rotor and/or scratching or nicking of brake shoe lining.

If inspection reveals that the caliper piston seal is leaking, it **MUST** be replaced immediately.

During removal and installation of a wheel and tire assembly, use care not to strike the caliper.

#### REMOVE

(1) Raise vehicle on jackstands or centered on a hoist. See Hoisting in the Lubrication and Maintenance section of this manual.

(2) Remove front wheel and tire assemblies from vehicle.

(3) Remove the 2 caliper assembly to steering knuckle guide pin bolts (Fig. 4).

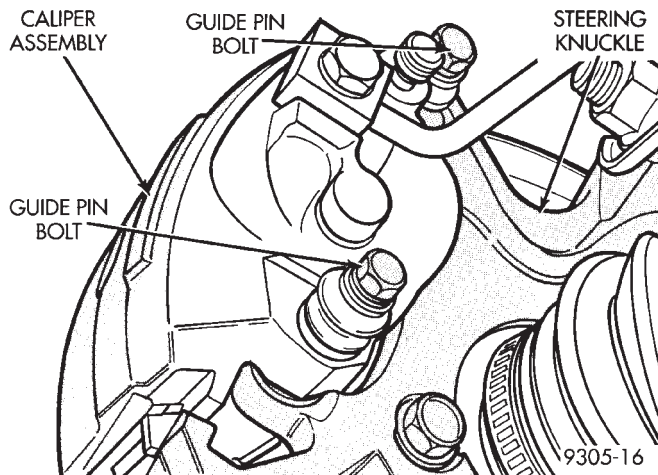


**Fig. 4 Removing Caliper Assembly Guide Pin Bolts**

(4) Remove caliper assembly from steering knuckle. Proceed by first rotating top of caliper away from steering knuckle and then lifting caliper off bottom machined abutment on steering knuckle (Fig. 5).

(5) If the caliper is to be completely removed from the vehicle, remove the banjo bolt connecting the brake flex hose to the caliper. There will be 2 washers (one on each side of the flex hose fitting) that will come off at the same time.

(6) If the caliper is not being completely removed from the vehicle, support the caliper firmly to prevent weight of caliper from damaging the flexible brake hose (Fig. 6).

(7) If required, remove rotor from hub by pulling it straight off wheel mounting studs (Fig. 7).

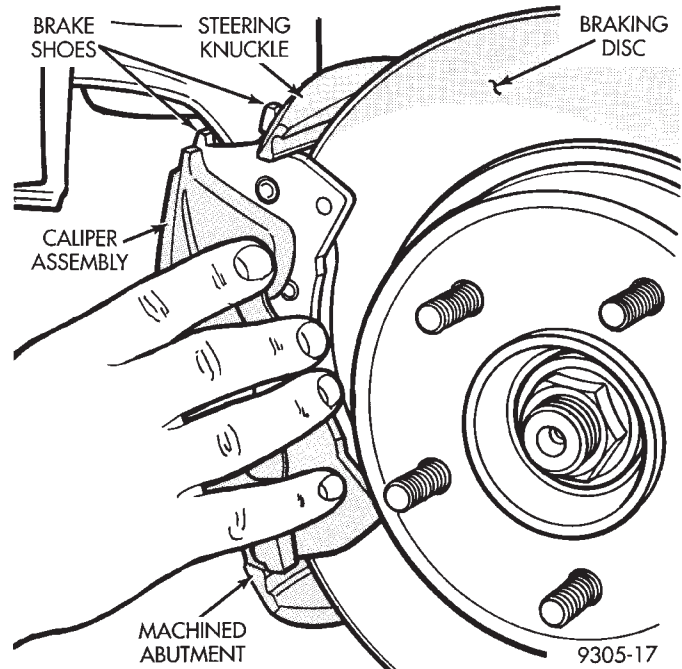


**Fig. 5 Removing Caliper Assembly**

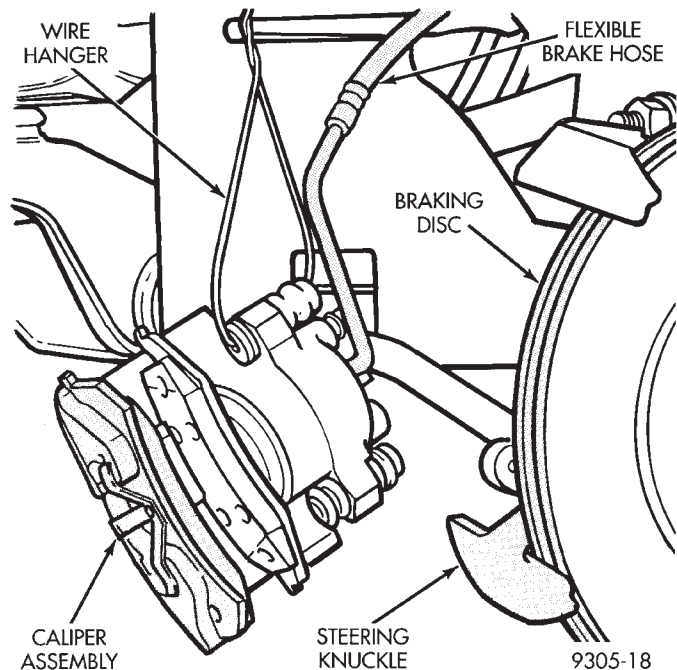


**Fig. 6 Storing Caliper**

#### INSTALL

**CAUTION:** Use care when installing the caliper assembly on the steering knuckle, so seals on caliper guide pin bushings do not get damaged by the steering knuckle bosses.

(1) Completely retract the caliper piston back into the piston bore of the caliper, if new brake shoes have been installed.

## REMOVAL AND INSTALLATION (Continued)

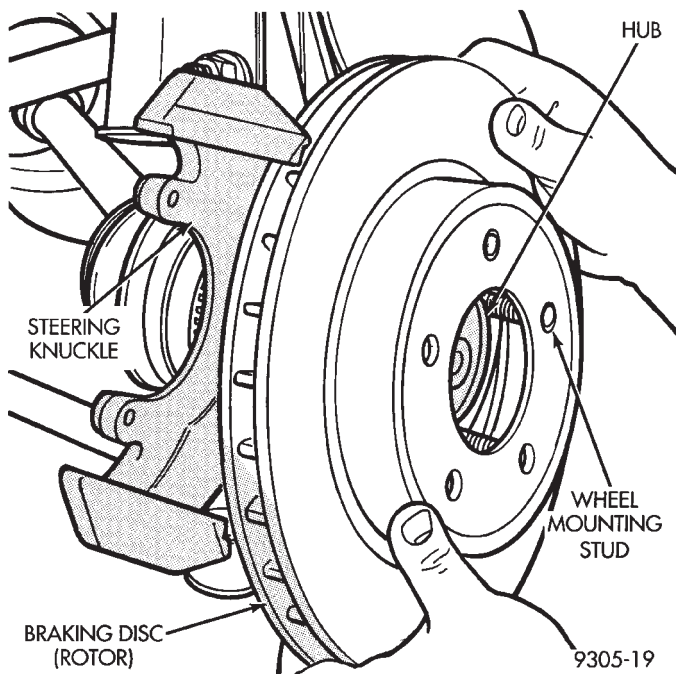


**Fig. 7 Removing Or Installing Braking Disc**

(2) If removed, install rotor on hub (Fig. 7).

**NOTE:** Make sure shoe retainer clips are in position between the shoe backing plates on each end of shoes before caliper installation.

(3) Carefully position caliper and brake shoe assemblies over rotor using the reversed required removal procedure (Fig. 5).

(4) Install the banjo bolt connecting the flex hose to the caliper. One washer should be installed on each side of the flex hose fitting before installing the banjo bolt. Tighten guide pin bolts to a torque of 48 N·m (35 ft. lbs.).

**CAUTION:** When being installed, extreme caution should be taken not to crosstread the caliper guide pin bolts.

(5) Install the caliper guide pin bolts. Tighten guide pin bolts to a torque of 22 N·m (192 in. lbs.).

(6) Install the wheel and tire assembly.

(7) Tighten the wheel mounting stud nuts in proper sequence until all nuts are torqued to half specification. Then repeat the tightening sequence to the full specified torque of 129 N·m (95 ft. lbs.).

(8) Remove jackstands or lower hoist. **Before moving vehicle, pump the brake pedal several times to insure the vehicle has a firm brake pedal to adequately stop vehicle.**

**WARNING:** Before moving vehicle after performing any service to the vehicle brake system, be sure to obtain a firm brake pedal.

(9) Road test the vehicle and make several stops to wear off any foreign material on the brakes and to seat the brake shoe linings.

### FRONT DISC BRAKE SHOES

**WARNING:** ALTHOUGH FACTORY INSTALLED BRAKE LININGS ARE MADE FROM ASBESTOS FREE MATERIALS, SOME AFTER MARKET BRAKE LINING MAY CONTAIN ASBESTOS. THIS SHOULD BE TAKEN INTO ACCOUNT WHEN SERVICING A VEHICLE'S BRAKE SYSTEM, WHEN AFTERMARKET BRAKE LININGS MAY HAVE BEEN INSTALLED ON THE VEHICLE. ALWAYS WEAR A RESPIRATOR WHEN CLEANING BRAKE COMPONENTS AS ASBESTOS CAN CAUSE SERIOUS BODILY HARM SUCH AS ASBESTOSIS AND OR CANCER. NEVER CLEAN BRAKE COMPONENTS BY USING COMPRESSED AIR, USE ONLY A VACUUM CLEANER SPECIFICALLY DESIGNED FOR THE REMOVAL OF BRAKE DUST. IF A VACUUM CLEANER IS NOT AVAILABLE, CLEAN BRAKE PARTS USING ONLY WATER DAMPENED SHOP TOWELS. DO NOT CREATE BRAKE LINING DUST BY SANDING BRAKE LININGS WHEN SERVICING A VEHICLE. DISPOSE OF ALL DUST AND DIRT SUSPECTED OF CONTAINING ASBESTOS FIBERS USING ONLY SEALED AIR-TIGHT BAGS OR CONTAINERS. FOLLOW ALL RECOMMENDED SAFETY PRACTICES PRESCRIBED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND THE ENVIRONMENTAL PROTECTION AGENCY (EPA), FOR HANDLING AND DISPOSAL OF PRODUCTS CONTAINING ASBESTOS.

### REMOVE

(1) Remove caliper as described in Front Disc Brake Caliper Removal and Installation, found elsewhere in this section of this service manual.

(2) Remove outboard brake shoe, by prying the shoe retaining clip over raised area on caliper. Then slide the brake shoe off the caliper (Fig. 8).

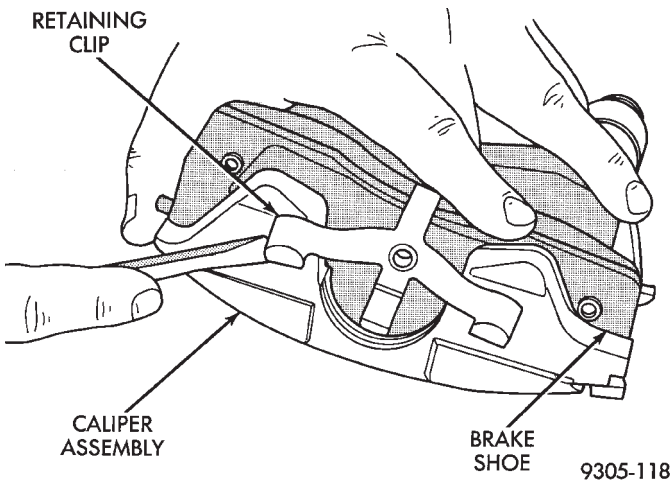
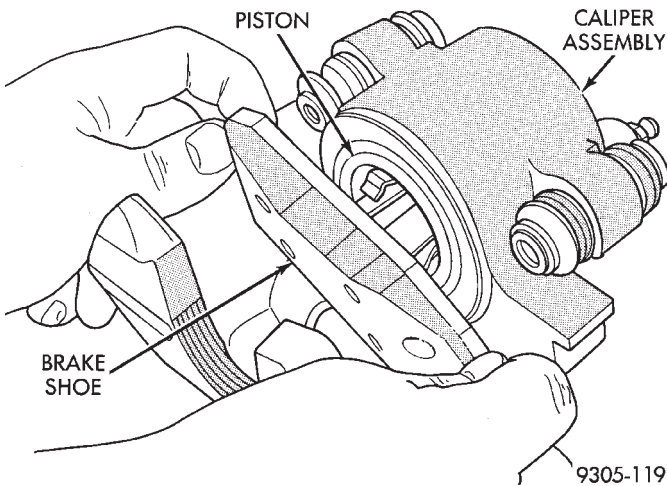
(3) Pull inboard brake shoe away from piston, until retaining clip is free from cavity in piston (Fig. 9).

### INSTALL

**NOTE:** Step 1 below is only required when installing a caliper after new brake shoes have been installed.

(1) Completely retract caliper piston back into piston bore of caliper assembly.

## REMOVAL AND INSTALLATION (Continued)

**Fig. 8 Removing Outboard Brake Shoe****Fig. 9 Inboard Brake Shoe**

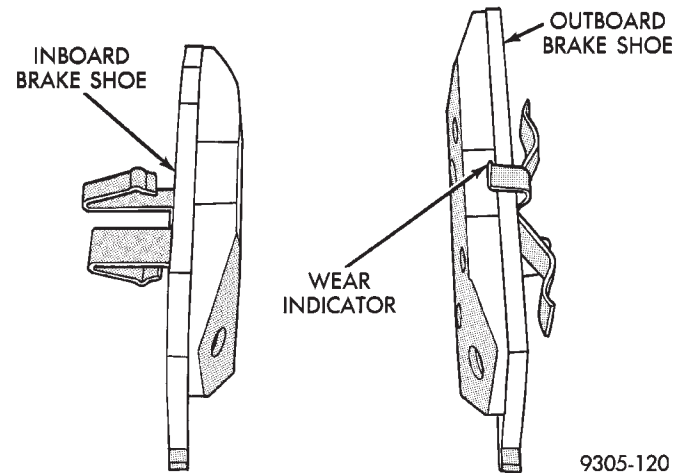
(2) Lubricate both steering knuckle abutments with a liberal amount of Mopar® Brake Grease for Caliper Slides Lubricant, or equivalent.

(3) Remove the protective paper from the noise suppression gasket on both the inner and outer brake shoe assemblies (if equipped).

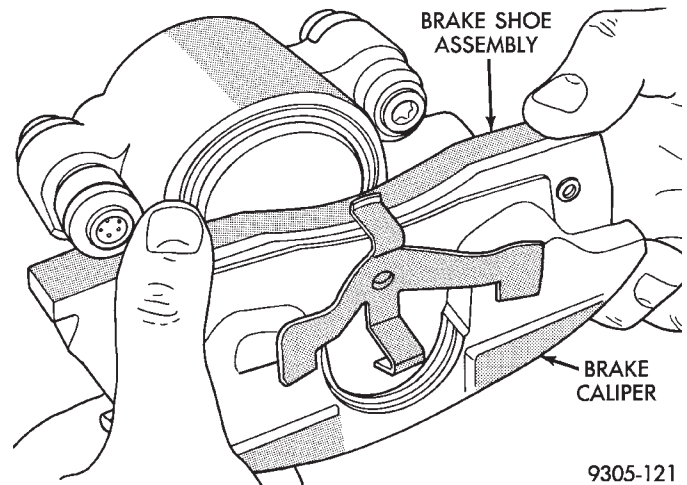
**NOTE:** The inboard and outboard brake shoes are not common, refer to (Fig. 10) for inboard and outboard brake shoe assembly identification.

**NOTE:** When installing inboard brake shoe into caliper piston, be sure brake shoe is positioned squarely against the face of the caliper piston.

(4) Install the new inboard brake shoe assembly into the caliper piston by firmly pressing it into bore of caliper piston with thumbs (Fig. 9).

**Fig. 10 Front Brake Shoe Assembly Identification**

(5) Slide the new outboard brake shoe assembly onto the caliper assembly (Fig. 11).

**Fig. 11 Installing Outboard Brake Shoe Assembly**

(6) Reinstall caliper as described in Front Disc Brake Caliper Removal and Installation, found elsewhere in this section of this service manual.

**CAUTION:** Before vehicle is moved after performing a service procedure on the vehicle brake system, pump the brake pedal several times to insure the vehicle has a firm brake pedal that is adequate to stop the vehicle.

(7) Road test the vehicle and make several stops to wear off any foreign material on the brakes and to seat the brake shoe linings.

