

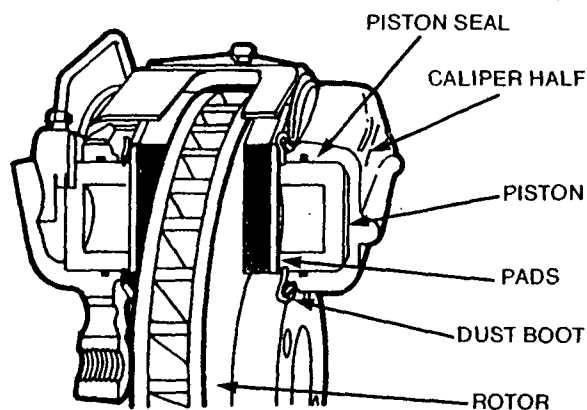
OBJECTIVES

When you complete this chapter on disc brakes, you will be able to:

- Identify the components of the disc brake.
- Explain the function of each component and its importance to proper brake operation.
- Explain proper maintenance procedures for the disc brake.
- List the probable causes of common disc brake problems, and explain the proper solution.
- Explain the difference between the various caliper types.

DISC BRAKES

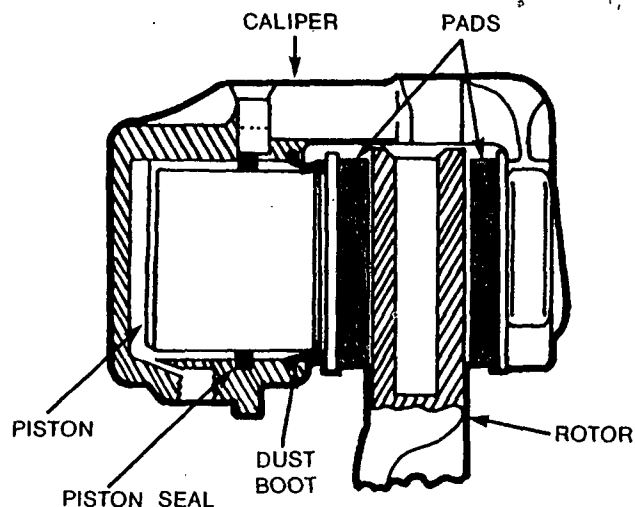
Disc brakes were introduced on American production cars in 1962, and by 1965 they were standard equipment on certain models of Ford, General Motors, and American Motors cars. The combination of front disc brakes and rear drum brakes represented a major improvement in automotive braking.



(Figure 56) The Fixed Caliper

Unfortunately, the improvement was not totally satisfactory. The first disc brakes, the four-piston, fixed caliper design, was prone to freezeups, leaks and noise. A better caliper design, the single-piston floating caliper, was introduced in 1968.

The new caliper used only one piston to actuate two brake pads. It was lightweight, easy to service, and more dependable than the four-piston type. This caliper design is used on today's brake systems.



(Figure 57) The Floating and Sliding Caliper

Whether it uses the floating caliper or the fixed caliper, the disc brake consists of the following components: a rotor (braking surface) that turns with the vehicle; a caliper (hydraulic cylinder), and disc brake pads (frictional force).

CALIPER

When hydraulic pressure is applied, the caliper piston pushes the brake pads against the rotor surface, braking the automobile. As the brake pads wear, the caliper automatically adjusts itself.

Brake calipers consist of four major components: the dust boot, the seal, the piston, and the housing. Depending on its design, the caliper may have one, two, three or four pistons, seals and boots in a single housing. In either case, however, the operation is essentially the same.

Calipers ride in anchor plates which are either mounted to the suspension or frame. When the brakes are applied, hydraulic pressure causes the piston to move out of the caliper bore, and the opposing reaction slides the caliper in the anchor plate pushing the friction pads to the rotor with equal pressure. (See Figure 58) The piston seal prevents leakage from the cylinder bore, and also acts as a return spring. Under pressure, the square-cut piston seal distorts. When the brakes are released, the seal returns to its normal position, retracting the piston enough to provide running clearance for the pads. This design provides a means for self-adjustment.