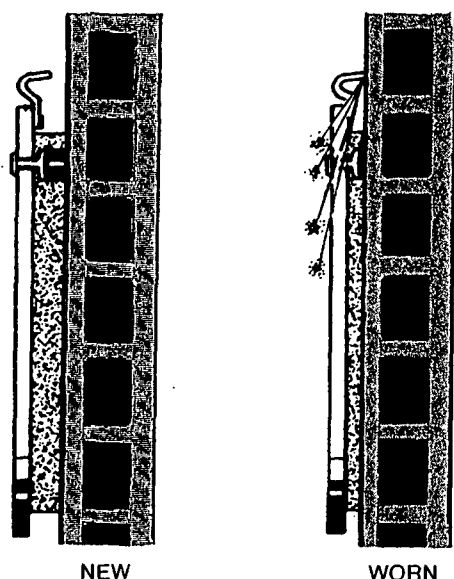


ture range of up to 700 degrees, can work properly at that heat. The organic and asbestos-free pads are designed for operating temperatures of 350 to 500 degrees.

In some brake applications, a combination semi-metallic and organic brake pad is used on the same caliper.

Using brake pads other than the type the application requires can result in premature pad failure and possible rotor damage. Proper procedure calls for replacing pads strictly according to application requirements. Semi-metallic or asbestos-free pads can be installed on earlier model vehicles for severe braking requirements.



(Figure 60) Wear indicators on a new pad (left) and a worn pad (right).

Many brake pads have wear indicators to let drivers know when their pads are worn below safe limits. (Figure 60) When the brake pad wears down to the replacement point, the metal indicator attached to the pad comes in contact with the rotor surface, causing a squealing noise. Replacing the pads as soon as the wear indicator starts making noise will protect against rotor damage.

Disc Brake Pad Characteristics

Brake pad performance can vary according to the grade of the friction material. Quality brake pads will offer a longer life and more dependable stopping.

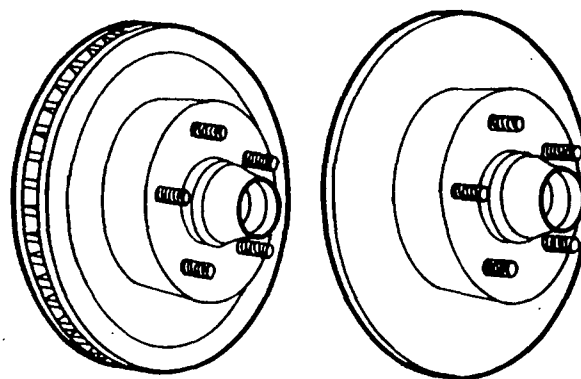
If organic (asbestos) linings are exposed to the extreme operating temperatures found in today's downsized disc brakes, they will wear quickly. In 1978 semi-metallic brake pads were introduced, providing improved operating characteristics and longer life than organic pads, even at high operating temperatures.

Today's disc brake pad characteristics are suited to the extreme operating temperatures, but a number of other factors—caliper operation, rotor condition and environmental operating conditions impact directly on pad life.

BRAKE ROTOR

The disc brake rotor is similar to the drum on the drum brake; it serves the same purpose and has many of the same problems. The braking action of the vehicle comes from the friction of the brake pad against the rotor, and as with the brake drum, proper contact depends on the surface being free of defects.

A part of the rotor's function is to dissipate heat into the atmosphere, and the disc brake has splash shields or plates to direct the flow of air over the rotor surface, cooling the brake while the vehicle is moving. Many small vehicles have solid rotors, and larger vehicles have vented rotors with fan-like cooling fins cast between the brake surfaces.



(Figure 61) Two common types of rotors: vented (left) and solid (right).

One problem that disc brakes do not share with drum brakes is brake fade due to expansion. Where the brake drum expands (away from the shoe) when it overheats, the rotor moves toward the lining as it gets hotter.