

Bendix Brakes

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Composite vs. Full-Cast Disc Brake Rotors

In their efforts to improve fuel economy, Original Equipment manufacturers are always looking for areas where weight can be cut out of components without adversely affecting their fit and function. A major breakthrough in this area was the introduction of the composite rotor.

A composite rotor is made up of a cast-iron braking surface and a lighter weight steel plate (or "hat") for the rotor hub. In contrast, a full-cast rotor is a one-piece cast-iron unit. In an industry that measures weight savings in ounces, a composite rotor can weigh as much as ten pounds less than a full-cast rotor of comparable size and appearance.

Composite technology is nothing new; in fact, composite brake drums have been used extensively since the 1930s. Like the rotors, composite drums combine a cast-iron braking surface with a steel mounting web. Composite drums have displayed the ability to function under even the most adverse conditions.

Composite rotors are manufactured in a two-step process. First, the hat section is stamped out of steel. This stamped steel section is much lighter and more flexible than a cast-iron hat section. This rotor hat is then placed in a mold into which molten iron is poured. As the iron cools, the steel hat section and the cast-iron braking surface bond to form a one-piece unit.

In addition to weight, there are other differences between

composite and full-cast rotors:

- Full-cast rotors can disperse heat from the disc pads quicker and more efficiently than composite rotors. This is because their additional weight/mass permits them to store more heat in the hat section, away from the braking surface. This allows the braking system to run cooler and decreases the potential of brake system overheating and fade.

- Special care must be taken when machining a composite rotor. Because of the increased flexibility of the steel rotor hat, rotor run-out, while turning in the lathe, is a concern. This can lead to a condition known as "herringbone". This sort of uneven cut can result in noisy, grabbing brakes while decreasing disc pad life.

In order to eliminate this problem, it is recommended that special adapters be used when mounting the rotor on the lathe. These adapters can be obtained from the manufacturer of the lathe. In addition, sharp cutting tools and vibration-dampening straps should be used when machining any rotor.

- Some manufacturers offer cast-iron replacements for composites on specific applications. This should pose no problem as long as the rotor supplier is reputable and the listed application information is strictly adhered to by the installer. However, if a change is being made, always replace the rotors in pairs. **Composite and cast-iron rotors should not be mixed on the same axle of a vehicle.**

