17-01: Problems Caused by Corrosion on Rotors

Date: March 27th, 2017

Vehicles Involved: All

Condition:

Corrosion begins immediately after the installation of rotors. Open-wheel designs on modern vehicles leave rotors more exposed to the elements. That corrosion is accelerated in:

- The Rust Belt areas of the North America, where harsh road chemicals are used to treat frequent snow and ice.
- Coastal climates with salt in the air and high humidity.

While corrosion is a natural process that happens to all rotors over time, it can eventually cause problems and affect the overall performance of your brake system.

Rotor Surfaces:

Corrosion begins to form on the unswept areas of the rotor where the pad does not contact the rotor's surface.

Modern brake pads transfer a thin layer of friction material onto the rotor's surface when applied. We call this the friction material layer. Over time and mileage, corrosion and moisture begins to creep from the unswept areas into and under the friction material layer. Eventually, that moisture can cause the friction deposits to flake or pop off. This can lead to a condition commonly known as rust jacking or edge lift.

Rust Jacking Example:

Rust jacking causes your rotor to wear unevenly, which may lead to a thickness variation of the rotor. This will result in an excessive lateral runout leading to pedal pulsation.

Cooling Vanes:

Cooling vanes play a vital role in the overall performance of your brake system. These vanes allow air to pass through the rotor and cool it, which keeps your brake system operating smoothly.

Corrosion will develop in the cooling vanes. Over time and mileage, rust buildup can restrict or block the airflow through the vents, which can lead to the rotors overheating. Overheated rotors can affect the ability of the brake pad to generate enough friction. This can lead to a reduction or complete loss in braking power, which is known as brake fade.

As you can see in the picture below, three winters on the roads of snowy Chicago caused the vanes of this rotor to become severely corroded. This will restrict airflow and affect the ability of the rotor to cool properly.

Vanes after three Chicago winters:

Repair Procedure:

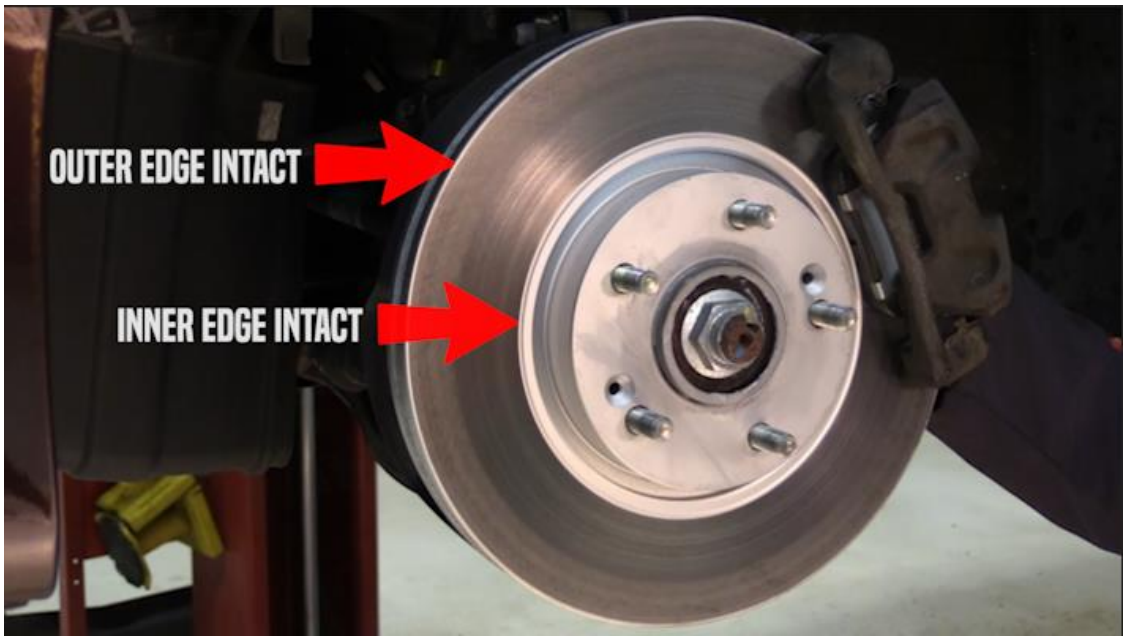
While there is no way to stop corrosion completely, coated rotors help protect your rotors from the damaging effects of corrosion.

Raybestos RPT Rust Prevention Technology ™ rotors are coated with a full Grey Fusion 4.0™ coating. The entirety of the rotor's surface is coated, including the cooling vanes. This helps to protect against the spread of corrosion.

Raybestos RPT Rust Prevention Technology ™ Rotor:

It is important to note that the coating in the pad swept areas dissapears quickly after installation. This is normal. The coating on the inner and outer edges of the rotor's surface remain intact. This prevents the corrosion from creeping under the friction material layer and protects your rotor from rust jacking.

Raybestos coated rotor after a test drive:



Additionally, the coating helps prevent corrosion and rust from building up in the cooling vanes. This allows air to flow smoothly through the vanes and keeps the rotor cool.

As you can see in the image alone, there is minimal rust and corrosion present in the cooling vanes after two Chicago winters on the road. There is nothing present to restrict airflow throughout the vanes.

Coated vanes after two Chicago winters: