

17-02: Problems with Corrosion on Calipers

Date: April 28th, 2017

Vehicles Involved: All

Condition:

Corrosion begins immediately after the installation of calipers. Open-wheel designs on modern vehicles leave calipers more exposed to the elements. 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 calipers over time, it can eventually cause problems and affect the overall performance of your brake system.

Caliper:

Outboard Side

Corrosion on and around the bleeder screw can result in the screw binding to the caliper. Binding makes the screw difficult to remove or even causes it to snap during removal.



Corrosion can also cause the banjo bolt to seize to its housing, stripping the bolt or caliper threads when removed.

Inboard Side

Rust that undercuts or damages the sealing area of the piston boot may result in water leaking into the bore region of the caliper.

Additionally, corrosion surrounding the piston and its seal can cause the piston to bind to the caliper body. This binding condition affects the ability of the piston to cycle back and forth and release the brake pads.



Caliper Brackets:

Caliper Guide Pins:

Caliper guide pins are responsible for guiding the brake pad to meet the rotor at a proper angle. When the pins become corroded, they can bind to the slides. This binding condition affects the ability of your brake pads to make proper contact with the rotor, resulting in uneven pad wear.



Brake Pads & Abutment Clips:

The edges of brake pads where the pad meets the caliper bracket are prone to rust and corrosion.

When corrosion builds up on the edges of the pads, on the abutment clips or on the area under the abutment clips, it can cause the pad to bind to the caliper bracket. This affects the ability of the pads to move freely within the caliper housing and make proper contact with the rotor. This may result in a variety of issues, including brake pull, premature wear and brake noise.



Repair Procedure:

With the open-wheel designs on modern vehicles, your calipers are more exposed to the elements than ever before. Plated calipers help to protect your caliper and your brake system as a whole from the damaging effects of rust and corrosion we just discussed.

Zinc Coating vs. Powder Coating

Raybestos RPT Rust Prevention Technology™ plated calipers are coated with a zinc electroplating on all cast iron housings and brackets. This differs from a lot of our competitors who use a powder coat on their calipers.

Some of the advantages of zinc plating over powder coating include:

- Zinc plating fights corrosion even if the coating is scratched to the caliper surface. Powder coating does not.
- Zinc plating adds virtually no thickness to the part. Powder coating does.
- Zinc plating has superior heat transfer properties over powder coating.
- Zinc plating is resistant to brake fluid. Powder coating is damaged by it.



Zinc Coating on Outboard Side of the Caliper

The areas around the bleeder screw and banjo bolts are coated with our zinc plating. This prevents corrosion in these areas, making it easy to remove during servicing.

Zinc Coating on Inboard Side of the Caliper

The rims of the piston bore and all sealing surfaces are plated to prevent rust from undercutting the sealing surface. This prevents water from entering the bore region of the caliper and also protects the piston from binding to the caliper body.

Zinc Coating on Caliper Bracket

The entire caliper bracket is coated with our zinc plating. This protects against corrosion and prevents brake pads from binding to the caliper bracket.

Finally, pre-lubricated slide pins and new rubber components help keep your guide pins sliding freely.