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### DISC BRAKE ROTOR MINIMUM THICKNESS

As with all safety related components which are subject to high rates of wear, disc brake rotors have a maximum safe life. The maximum life of a disc brake rotor is achieved when it reaches what we call the "minimum thickness".

Disc Brake Rotor Minimum Thickness (RMT) is the minimum safe working thickness of a rotor. When a disc brake rotor reaches RMT it must be replaced.

Choosing to ignore RMT is a safety risk. Continued use of disc brake rotors below RMT can lead to brake system failure.

The vehicle manufacturer during initial vehicle design determines RMT. Some aspects that are considered when determining RMT are:

#### Heat Absorption & Dissipation

A brake systems function is to take in kinetic energy and transfer it into thermal energy. The driver creates this energy when he puts his foot on the brake pedal. The driver's foot force is boosted then converted into hydraulic pressure, which forces the piston to move inside the caliper. This piston movement forces the brake pads in contact with the spinning rotor. Rubbing between the brake pads and the brake rotor generates heat, which is dissipated by convection to the atmosphere.

As rotor thickness reduces, so does its ability to absorb and dissipate heat generated during braking. Once RMT has been reached the rotors ability to absorb and dissipate heat is reduced to such an extent that a significant reduction in braking capacity can result. This can be evident in premature fade and increased stopping distance.

### **Caliper Piston Retention**

As disc rotor and pad thickness reduces the caliper piston moves further out inside the caliper body. When RMT is reached with fully worn pads the pistons may lack support within the caliper bore. This can cause it to jam in the bore causing brake drag or lock.

Brake drag will cause excessive heat build up and possible fluid vaporisation. This will lead to half system failure and increased stopping distance.

### **Brake Pad Retention**

Fully worn brake pads and RMT can allow in some caliper designs, for the pad backing plate to jam between the caliper anchor bracket and disc rotor. This will cause either brake drag or wheel lock up. Both concerns can result in vehicle instability.

### **Brake Fluid Retention**

It is also possible, under certain conditions when brake pads are fully worn and RMT is reached, for the caliper piston to cease forming a hydraulic seal. This will cause leakage, hydraulic half system failure and increased stopping distance.

PBR recommends that disc brake rotors are measured as part of every brake service and replaced as soon as they reach the specified "minimum thickness".