THE IMPORTANCE OF CLEANING BRAKE COMPONENTS

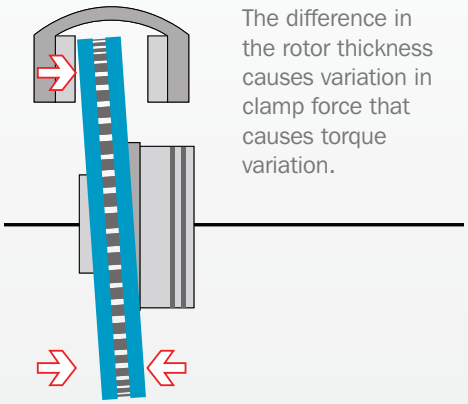
WHY YOU SHOULD CLEAN YOUR BRAKE COMPONENTS WHEN INSTALLING NEW BRAKE PADS

When servicing your brakes or installing new brake components it is vital that you clean your disc rotors when fitting to reduce the risk of problems in the bedding-in stage. New and re-machined rotors both require to be cleaned and wiped down before being fitted as the manufacturing process includes oils, graphite, carbon and silicone and new parts are generally covered with a rust protection film which can all end up as residue on the rotor. If not cleaned carefully at the time of being fitted these compounds and chemicals can impregnate the brake pads resulting in a reduction in brake performance and an increase in the likelihood of squeaking or shuddering brakes.

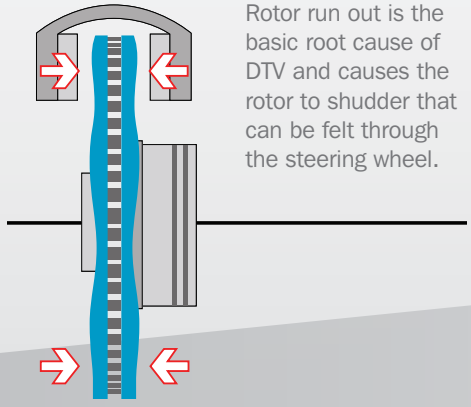
The uneven wear of a disc rotor often referred to as Disc Thickness Variation (DTV) is where the disc varies in the thickness as indicated in the diagram below.

As the disc rotates through the caliper the variation in disc thickness results in a variation in braking pressure applied by the disc pads to the rotor. This variation in braking effort is translated in vibration that can be felt through the vehicle such as pedal pulsation, steering wheel oscillation and vibration through the floor of the vehicle.

A number of suggestions are recommended by Bendix to avoid these problems. These include using a medium to fine grit emery on the rotor whilst still spinning after machining and ensuring the disc is completely free of burrs. Spraying with a noncorrosive, non staining brake cleaner such as Bendix Brake/Parts Cleaner and Degreaser to remove any rust protection from new rotors and to clean away any residue from machined parts is essential to ensure these are completely clean.



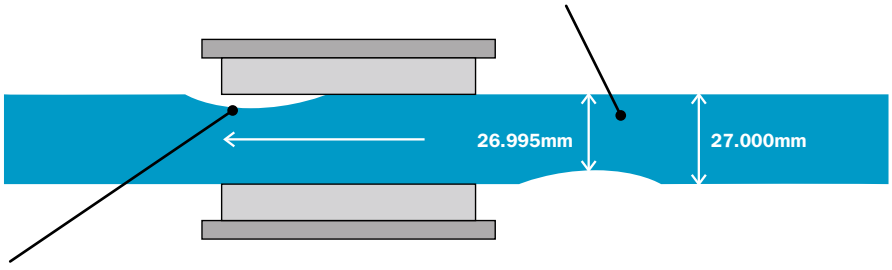
The difference in the rotor thickness causes variation in clamp force that causes torque variation.



Rotor run out is the basic root cause of DTV and causes the rotor to shudder that can be felt through the steering wheel.

DTV Effect on Braking

Flat spots (worn off-brake) seen as thin sections of rotor



Thin sections of rotor slip between pads with less resistance than thick sections

20μm (0.02mm) of DTV can often be detected as brake shudder

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Bendix TEST PILOT PROGRAM

Bendix Brake/Parts Cleaner and Degreaser is specifically recommended for the cleaning process as it contains no CFC's, is ozone friendly and effectively removes all impurities. The product can be used on all brake parts including brake assemblies, ABS, brake drums, disc pad backing plates, calipers and wheel cylinders. It is also ideal for use on other degreasing jobs around the workshop leaving surfaces residue free, clean and dry.

Bendix Brake/Parts Cleaner and Degreaser is designed to penetrate rapidly, clean instantly and evaporate quickly. It can also be applied without disassembling the brakes. All components can then be wiped off with a clean soft cloth.

DTV often does not become apparent until 10,000 to 15,000 kms after disc machining or replacement and poorly serviced calipers can accelerate the occurrence of DTV, as can high levels of rotor run-out at fitment (greater than 0.10mm). You can measure the disc thickness of the rotor 25mm in front of the outer edge using a Vernier caliper.

This measurement should be taken at a minimum of 10 points around the circumference and there should be no greater than 0.03mm variance in any of the measurements. If greater, the rotor should be replaced or machined with a light skim to clean up any DTV flat spots. If the vehicle is using ceramic pads the rotor must be machined on every brake job. Calipers should be overhauled, side pins must move freely and the piston seals must be checked for good condition or replaced. On-vehicle machining eliminates variation in axles, bearings etc.

If there is zero rotor run-out at fitment then DTV will not happen. Unfortunately vehicle design, tolerance variations and general wear and tear may mean that zero rotor run-out is unachievable. However, on-vehicle measurement of rotor run-out with an accurate dial indicator combined with the use of a good quality torque wrench to tighten the wheel nuts will minimise run-out and minimise DTV effects.

Installed run-out should be less that 100μm (0.1mm) and when this cannot be achieved checks on the bearings, flange, stub axle and rotor hat should be made. Wheel nuts should be evenly torqued with the use of a torque wrench to avoid distortion.

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*Bendix brake components are appropriate for the purpose intended and if installed by qualified staff, to the vehicle manufacturer's specifications, can be used in logbook servicing. PRJ-05570

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