

Disc Brake Service Recommended Procedures

Completed

1. *Inspect rotor for lateral run-out, parallelism and minimum thickness specification. Compare to manufacturers specifications. If rotor is not within specifications, see Step 2.*
2. *Replace or Machine Rotor - Ensure tool bits are sharp and brake lathe is in good operating condition.*
 - *Perform a secondary finish operation using 120 & 150 grit sandpaper with mild pressure for 60 seconds on each side.*
3. *Wash all rotors (including new) with soap and hot water and a scrub brush, to remove oils and fine particles to prevent noise and maximize braking.*
4. *To provide a long and quiet brake service life, we recommend:*
 - *Use a wire brush or sand/bead blasting to remove rust from caliper brackets/guides.*
 - *Clean or Replace attaching hardware.*
 - *Lubricate "Metal-to-Metal" contact points (brackets to guides/guides to pads) with a Molybdenum Disulfide high temperature lube, commonly called "Moly Lube".*
 - *Lubricate "Metal-to-Rubber" friction points (guide pins to boots) with high temperature silicone lube (Wagner # F132005) or approved moly-lube.*
 - *Lubricate the pad to piston contact area of any pad that has an attached shim (Inboard Disc Pad).*
 - *DO NOT lubricate or apply any compounds on the backing plate of Wagner ThermoQuiet[®] with "IMI" brake pads.*
 - *Test drive vehicle and perform break-in (burnish) procedure on new brake pads:*
 - *Make approximately 20 "Complete Stops" from 30-mph or 20 "Slow-Downs" from 50-mph to 20-mph with light to moderate pedal pressure, allow 30 seconds cool down between brake applications.*
 - *Communicate with customers to continue this burnish process by avoiding aggressive braking for the next couple of days.*

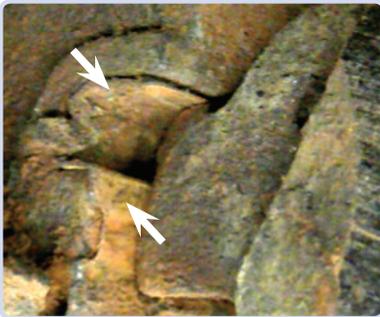
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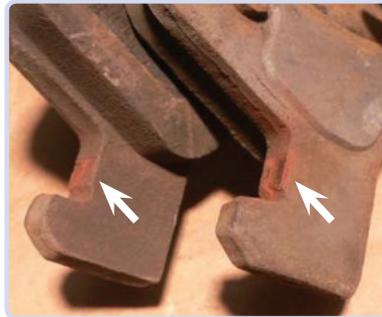
Brake Caliper - Cleaning/Lubrication Tech Tips

Failure to clean rust buildup and properly lubricate caliper brackets during brake service is proven to be a major cause of brake noise, premature wear and increased stopping distance. Federal-Mogul's Technical Education Center recommends a meticulous cleaning and lubricating of all caliper brackets and mounting points. This will allow proper caliper/pad movement to ensure maximum brake performance and customer satisfaction.

Pad Guide Rust/Corrosion



Pad Rust Buildup



Rust Jacking - No Pad Movement



Caliper/Pad/Guide Rust Buildup From Lack of Lubrication

To provide long, quiet, brake service life, we recommend;

- Use a wire brush or sand/bead blasting to remove rust from caliper brackets/guides
- Clean or Replace attaching hardware
- Lubricate "Metal-to-Rubber" friction points (guide pins to boots) with Silicone lube (Wagner # F132005)
- Lubricate "Metal-to-Metal" friction points (brackets to guides/guides to pads) with a Molybdenum Disulfide lube, commonly called "Moly Lube"
- DO NOT lubricate or apply any compounds on the backing plate of Wagner ThermoQuiet[®] with "IMI" brake pads
- Use premium quality Wagner ThermoQuiet[®] brake pads
- Use premium quality rotors

Note: Molybdenum Disulfide is effective in wet or corrosive environments over a wide range of temperatures.

Cleaned Caliper Bracket



Lubed Guide Pins



Properly Lubed Guides



Additional information is available at www.fme360.com and click on "Technical Training"

Prevent Brake Noise - Proper Rotor Preparation

Many service technicians are experiencing comebacks on disc brake pads sooner than they expected due to noise. Proper rotor surface and cleaning are critical to overall braking performance. The Federal-Mogul Technical Education Center and the Rotor & Drum Engineering Facility have teamed up to provide the following information and recommendations.

Rotor Surface's Impact on Brake Noise

The smoother the rotor finish, the better. When dragging a fingernail over the rotor surface, it should feel glass smooth. Obtaining the proper rotor surface finish is critical to reducing brake noise and eliminating comebacks. Many new rotors are machined to a mirror-like finish and require no additional machining prior to installation.

Most shop lathes will require a secondary finish procedure to break off the "mountain peaks" that are produced when the brake rotor is machined. The recommended procedure is to block sand for 60 seconds per side with 120 grit sandpaper followed up with 60 seconds of 150 grit sandpaper. A former alternative method is to apply a non-directional finish utilizing a ball hone to provide the required surface finish of 14-75 Ra. If this secondary finish is not performed, the rotor surface fragments break off during the initial brake applications and become trapped into the microscopic grooves or valleys of the rotor. These fragments end up embedded in the brake pad and create noise. Additionally, the "peaks and grooves" prevent the proper rotor surface area from contacting the disc pad. As a result, the reduced contact points on the rotor are more prone to overheating and hardening, which sets up the potential for vibration and noise. A secondary finish will also reduce the phonograph record type grooves, which can sometimes produce a clicking noise.

A Note Regarding Brake Lathes

Many technicians have reported very good results using the newer, more expensive round bits over the traditional three point bits. Older lathes should be inspected for wear in the arbor bearings, which will prevent the rotor being held true during machining. Adaptors should be inspected for damage and machined true to prevent run-out.

Cleaning the Rotor and Its Impact on Brake Noise

Proper cleaning of resurfaced and "new" rotors must be done. This is one of the most overlooked areas. The proper way to clean a rotor prior to installation is to use soap and hot water and a scrub brush. This will clean the particles out of the "valleys". Brake cleaner spray will not clean fragments from the rotor surface. Subsequently, the fragments become embedded in the pads, eventually causing noise. Try the two methods (brake cleaner spray vs. soap and water). Using the "white paper towel test", you'll discover the soap and water method is the most effective.

The following steps are also important to reduce the vibration that causes brake noise

- Inspect and replace worn brake hardware and guide pins
- Be certain to use the proper lubricants. Molybdenum (Moly-lube) or silicone brake lube (Wagner # F132005). Properly clean and lubricate all caliper mountings and disc pad mounting points. Finally, check for proper wheel bearing adjustment and wheel nut torque.