



MOLY LUBE USE IN DISC BRAKE SYSTEMS

Whitepaper

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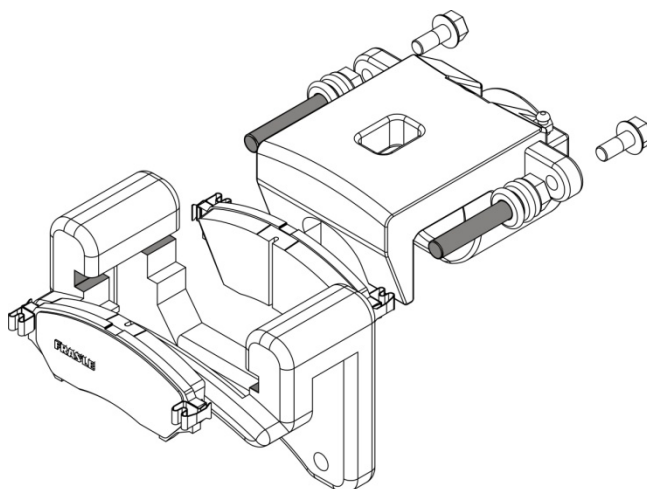
A lubricant's primary purpose is to create a layer between two surfaces, avoiding direct contact between those surfaces. In a mechanical system, the absence of friction between metallic parts results in key benefits like wear reduction of those parts and unnecessary generation of extra heat.

There are multiple types of lubricants, each developed for specific purposes. One type of lubricants are specially developed for use in brake systems. Those lubricants in particular are formulated to support higher temperatures than multipurpose greases, retaining their characteristics, even in extreme conditions.

Today's cars, SUVs and pickups are powerful; as a consequence, they are assembled with better and more robust brake systems. Several factors can increase the operating temperature of the brake system: braking hard or repeatedly, carrying a heavy load, mountain driving, driving in stop-and-go traffic, towing a trailer, etc. Under those extreme conditions, lubricants have to withstand the heat without melting or burning off. Also, in normal duty conditions, the grease has to not harm the rubber seals or plastic bushings. For this reason, petroleum-based lubricants should never be used for brake assemblies because this kind of lubricant can degrade the system seals and cause a brake failure. Another reason to not use this type of grease is that if melted, the runoff can contaminate the friction material, which could also cause a brake failure.

Before using a lubricant in your brake job, always check these 3 points first:

- Make sure the lubricant is formulated for use in brake systems;
- Verify if it contains petroleum distillates or any substance that can cause soft rubber parts to swell, rupture or leak;
- Operational temperature range (The minimum a lubricant should be able to handle is 400 °F).



The main components in disc brakes that should be lubricated are those that slide, move, rotate or bear pressure. This includes caliper slides and bushings (the gray parts shown in the image on this page), self-adjuster mechanisms on rear disc brakes with locking calipers, and the parking brake cables and linkage. The lubricant creates a thin layer between those parts, allowing most of the vibration frequencies generated when the brake is working to be isolated. Those vibrations are commonly known as noise, or NVH (Noise Vibration Harshness).

Another important point to remember is to apply grease between the disc brake pads and the caliper pistons. Apply just a little bit – not a lot- on the back of a pad without a shim, or between the pad shim and caliper. Never apply grease between the pad and any noise suppression shims being used.

For lubricating hydraulic components, such as the piston seals inside calipers, you should use a silicone-based brake lubricant. This type of lubricant will help assure smooth movement of the seals in their bores, and will help prevent these parts from sticking or corroding.

Remember, never put any kind of grease on the surface of the friction material, or you will contaminate the entire brake system. If it is contaminated, replacing the components of the system is mandatory. A friction material contaminated with grease or oil loses all of its braking power.

Typically, sets of disc brake pads are packaged with a synthetic or silicone-based lubricant for hardware. It is a special lubricant, formulated for high-temperatures, and will provide long-lasting protection.

What makes these lubricants special, and designed specifically for use in brake systems? These types of lubricants contain friction-reducing ingredients such as molybdenum disulfide (moly) and graphite, which are ideal for high temperature applications, where long-lasting metal-to-metal lubrication is essential for good brake performance. Moly and graphite are dry-film lubricants that can handle high temperatures. Some of these can withstand intermittent temperatures as high as 2,000°F and won't evaporate or burn off over time.