



**Baltimore County Fire Department
Logistics Division**

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Service Bulletin

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We have recently had a high volume of units that have reported to Fire Maintenance with metal to metal braking components. The below information is being supplied in an attempt to educate and eliminate future occurrences. This is not only a costly repair; it jeopardizes the stopping ability of the unit.

Never Ignore These Warning Signs of Brake Problems

1. Brake Light On

When one of the red or yellow brake indicators on the dashboard illuminates, it may mean the unit is due for an inspection; however, it could also be the unit's smart electronics is indicating a problem.

An engaged parking brake could also cause the light to illuminate, be sure it's fully released to confirm that's not the issue. To do this, reapply the parking brake and release.



2. Squealing, Squeaking or Grinding Noises

Hearing a Metallic Squeal While You're in Motion?

If there is a high-pitched noise that stops when applying the brakes, it's likely being caused by the brake pad wear indicators. They're made of steel so they make this sound when they start contacting the rotor.

This sound is indicating that the brake pads are worn out and need to be replaced before rotor damage occurs, which can be a costly and long term repair.

Grinding Sound When Brakes Are Applied?

Grinding that is felt in the pedal could mean a number of things:

- There could just be some gravel or a rock caught in the caliper unit, easily remedied.
- Brakes need servicing. The brake pads may be worn through, and the sound is being caused by metal on metal when the brakes are applied. This will create grooves in the brake rotor, which is an immediate out of service item.

If you hear any of these sounds, place the unit out of service and contact Fire Maintenance immediately.

3. Wobbling, Vibration or Scraping When Braking

Shaking in the steering wheel or vibration when the brakes are applied may be the result of an uneven rotor. Brake rotors are big discs that sit inside of the wheels. When the brakes are applied, the brake pads hug the rotors, slowing them and the vehicle. The rotors are designed to be smooth and completely even in thickness.

Over time and thousands of wheel revolutions, it's normal for the rotor surface to get slight variations and rust has a tendency to develop. The tiniest differences in disc thickness — we're talking thousandths of an inch, about three sheets of paper in width — can cause a wobbly feeling when the brakes are applied.

An uneven rotor surface may also cause the rotor to hit one of the brake pads as it spins, causing some of the pad material to transfer onto the rotor in that spot. When this occurs, the operator will feel shaking when the brake is applied as a result of the brake pad hitting the bump in the rotor.

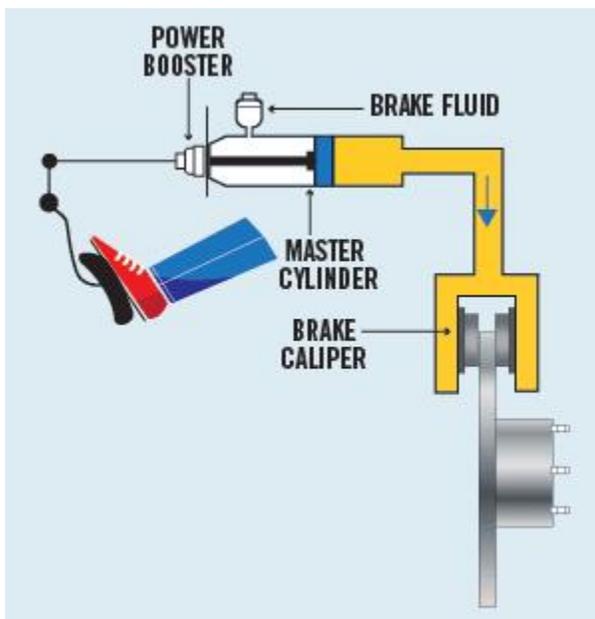
Another possible cause of rough braking is the brake caliper not releasing properly. The job of a brake caliper is to squeeze the brake pads against the brake rotors, which slows the vehicle down. It's the motion of the piston inside the caliper unit that causes this contact. Due to wear from heat or road debris, the piston can get sticky and may not fully retract the pads into the full "off" position when the brake pedal is released.

A fourth cause of bumpy braking could be damage to a brake component(s) from improper wheel lug nut installation.

4. Leaking Fluid

If a soft brake pedal is experienced when applying the brakes, place the unit out of service and contact fire maintenance immediately. A technician will look for fluid leaking from the master cylinder or elsewhere in the brake system.

The master cylinder is the unit that creates the power for the brakes. It has a reservoir like the one for the wiper fluid that contains brake fluid.



When the brakes are applied, the fluid is pushed through thin piping, creating hydraulic pressure. If fluid is leaking from this system, there may not be enough power to force the brake pads to clamp hard to the rotors, increasing the stopping distance.

5. Spongy or Soft Brake Pedal

If there is a difference in the resistance in the brake pedal — it feels “softer,” or sinks all the way to the floor mat when depressed — it’s an indication that immediate service is indicated. There could be air or moisture in the braking system or a problem with the master cylinder. Generally, in medics with hydraulic brakes, the pedal should stop 1 to 1 ½ inches from the floor.

6. Apparatus pulling to one side when braking

This could be caused by a brake hose that has failed or a caliper problem. The brake calipers may be applying pressure unequally when the brake pedal is depressed, resulting in the steering to be pulled to one side.

7. Burning smell while driving

A sharp, chemical odor after repeated hard braking on steep roads is a sign of overheated brakes. Pull over immediately in a safe place, ensure the parking brake is fully released and allow the brakes to cool. Place the unit out of service and notify fire maintenance immediately.

Smoke coming from a wheel may indicate a stuck brake caliper. Place the unit out of service and notify fire maintenance immediately.

If you have questions or concerns, contact Fire Maintenance at extension 8316 or FM2 Huber at extension 6547.