



# Tech Tip

BRAKES 145

## COMMON BRAKE SYMPTOMS Sometimes They Require Unique Solutions

**D**iagnosing brake related complaints can be a challenge. A well trained brake technician can follow a methodical diagnostic procedure and still be faced with the same annoying brake complaint. Sometimes the technician will resolve a problem temporarily, only to have the vehicle return at a later date with the same condition. Vehicle owners get very frustrated and often take the vehicle to another repair facility, in an effort to resolve a recurring condition. This article will cover some vehicles that have a history of brake related problems and some unique solutions to resolve some frustrating customer complaints.

### REAR BRAKE GRAB

Imagine the owner of a 2005–2008 Chevrolet Colorado or GMC Canyon with a complaint of rear brake grab. The condition usually involves a rear brake grabbing sensation, which promotes tire chirping or skid marks on brake application, especially after the vehicle has been parked for a while. The symptoms will usually diminish after making a few stops, only to return after the vehicle has been parked for a few hours. The first impression may be an over-sensitive friction formulation, which may be influenced by high humidity or extreme moisture conditions. With the formulation of non-asbestos organic friction, this has been a common symptom with both foreign and domestic applications.

**BASIC CHECKS...** For an aggressive rear brake condition, make certain that the front brakes are functioning. On vehicles equipped with rear drum brakes, pull the rear wheels and drums and make a visual inspection. Is there evidence of loose, missing or damaged components? Have the correct shoes been installed, and is the friction making proper contact with the brake drums? Examine the drums for evidence of being scored or out-of-round. Is there any contamination such as a leaking wheel cylinder, axle seal, water, mud, etc.? Examine the backing plate for distortion, wear spots or a loose anchor. Are the brakes properly adjusted? Check for conditions that may prevent one brake from functioning, such as a fluid restriction, etc. Taking a pressure reading at each wheel can identify or eliminate a hydraulic problem. If the vehicle is equipped with a height sensing proportioning valve, make certain it is properly adjusted. On some applications, non-asbestos organic friction material has been known to cause a brake grabbing

condition during extreme moisture conditions, or in the presence of high humidity. Under these conditions, sealing the backing plate component entry points with silicone can reduce the symptoms. A friction formulation change may also be necessary. Examine all suspension components, as loose parts that allow movement can promote a brake grabbing condition.

**FACTORY FIX...** In the case of the previously mentioned Chevrolet Colorado and GMC Canyon, GM advised that the rear brake grabbing condition is caused by a mirror-like finish between the drum and brake shoe. Remove the rear drums and inspect the axle seals and wheel cylinders for fluid leaks. If the friction is contaminated with fluid, it must be replaced. Machine both rear drums to eliminate high spots. Replace the adjuster wheel on the left side with GM P/N 19133371. This part is a 15-tooth adjuster. On the right side, modify the adjuster wheel by grinding off every other tooth of the adjuster wheel with the use of a dremel tool and a 1-1/4 inch x 1/16 inch cut-off wheel. Do not attempt to install the mentioned 15-tooth adjuster wheel on the right side, as it is threaded for the left side only. Reinstall the modified adjuster wheel and adjust both shoes accordingly.

### UNEVEN PAD WEAR

Front inner brake pad wear, pulsation and brake noise have plagued 2005–2008 Chevrolet Cobalt, 2006–2008 Chevrolet HHR (excluding SS Models), 2006 Pontiac Pursuit (Canada) and 2007–2008 Pontiac G5 vehicles.

Customer complaints involve brake noise and pulsation during brake application. The condition can be corrected during normal brake service, only to return within seven to ten thousand miles following the service. When examining the disc pads, the technician will notice a substantial difference between the inboard and outboard friction thickness.

**BASIC CHECKS...** When one pad is worn excessively compared to its companion pad, lack of maintenance is usually the reason for the condition. If the braking system is neglected, contamination and corrosion results in restricted movement, promoting uneven friction wear. The caliper's ability to retract a disc pad from the rotor relies on inertia, and in the case of a low drag system, a square cut seal that functions as a spring of sort. Contamination

and corrosion reduce the ability of the disc pads to move freely, resulting in premature or uneven wear, and promote pulsations due to rotor thickness variations. The corrosion may be internal, such as from fluid contamination, or external due to rust or debris accumulation on the caliper hardware. Check the caliper guide pins/bolts and sleeves for freedom of movement. Contaminates can seep past the rubber bushings, promoting corrosion, thereby restricting movement. If you cannot move a pin/bolt and sleeve assembly through a bushing by hand, it's too tight. Make certain all components are properly lubricated.

**FACTORY FIX...** If the owner of one of the previously mentioned vehicles complains of front brake noise, pulsation, or premature inner pad wear, replace the disc pads and add splash shields available from GM and identified by application and part number in GM service bulletin 08-05-23-003B. The splash shields offer protection from debris, which can contaminate the disc pads and related hardware, especially on those vehicles that may travel on dirt or gravel roads.

## **BRAKE GRABBING OR PEDAL KICK-BACK**

Vehicles affected include: 1999–2008 F-Super Duty, 2000–2005 Excursion and 1997–2007 E-Series Ford vehicles equipped with the Hydro-Boost® brake booster system. The Hydro-Boost® system is a hydraulically operated brake booster that is powered by the power steering pump. The pump provides fluid pressure to operate both the power brake booster and the power steering system. The brake pedal on one of these applications may exhibit a kick-back or grabbing condition during brake application due to contamination in the power steering system. Ford recommends filtering the power steering fluid by installing a temporary filter in the power steering system.

### **SERVICE PROCEDURE**

- a) Examine to be certain that the line from the pump and the line to the gear at the Hydro-Boost® are routed correctly and they are not crossed. The passenger side goes to the pump and the driver side goes to the gear.
- b) Secure a clamping device to the lower power steering hose approximately six inches from the lower port of the power steering cooler to prevent the fluid from draining out of the system when the hose is disconnected.
- c) Disconnect the power steering hose from the lower port on the cooler and cap the cooler port to minimize fluid leakage. Install a temporary filter (Ford XC3Z-7B155-BA) in line with the power steering hose, using clamps to retain the filter (the filter will be installed in the low pressure line that goes from the gear to cooler to reservoir).

- d) Attach the opposite end of the filter to the cooler and secure with clamps.
- e) Remove the pinch-off clamp from the power steering hose.

### **FILTERING PROCEDURE**

- a) Prior to starting the vehicle, check the power steering fluid level.
- b) With the parking brake secured, start the engine and allow it to idle for 15 seconds.
- c) Turn the steering wheel lock-to-lock 10 times. **DO NOT HOLD THE STEERING WHEEL IN THE LOCK POSITION FOR MORE THAN 5 SECONDS.**
- d) Apply and release the brake pedal hard to the floor 25 times.
- e) Turn steering wheel lock-to-lock 5 times.
- f) With the engine off, remove the filter and reconnect the power steering line to the cooler. Discard the filter and fill the power steering system.
- g) With the engine idling, gradually apply the brake pedal until fully applied. If the pedal kickback continues, Ford recommends replacing the Hydro-Boost® brake booster.

## **SPONGY PEDAL SENSATION**

Owners of 2006–2008 Explorer, Mountaineer and 2007–2008 Sport Trac vehicles may complain of a lack of pedal firmness. The sensation is much like that of aerated fluid.

Ford recommends first bleeding the brake system, using the anti-lock brake system hydraulic control unit bleeding procedure. If bleeding the system resolves the mentioned pedal issues, return the vehicle to the customer. If bleeding the system fails to resolve the pedal feel complaint, it is recommended that an updated pedal assembly be installed.

### **UPDATED PEDAL ASSEMBLY**

8L2Z-2455-A	Fixed Brake Pedal
8L2Z-2C434-C	Adjustable Pedal (Non-Memory)
8L2Z-2C434-D	Adjustable Pedal (Memory)

While most brake complaints can be resolved following basic diagnostic procedures, sometimes help from the vehicle manufacturer is necessary. Always check for factory service information when trying to eliminate a recurring brake system complaint.

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