



# Tech Tip

BRAKES 182

## BRAKE AND SUSPENSION SOLUTIONS For Some Difficult to Diagnose Symptoms

### FRONT BRAKE CALIPER LEAK

GM has identified a defect in certain 2015 Chevrolet Colorado and GMC Canyon vehicles whereby the front brake calipers on these vehicles can leak brake fluid. The condition is caused by tiny air pockets in the caliper castings that occurred during the casting process. If the casting contains a continuous string of air pockets that penetrate the casting, brake fluid leakage can occur. This condition can result in a loss of brake pedal, increased stopping distances and the possibility of a crash. The first evidence of leakage may involve brake fluid deposited on their carport floor next to one of the front tires. Eventually, the loss of fluid will illuminate the brake system warning light in the instrument panel.

Notices should have been sent to the vehicle owners and the dealers advised to check for the condition during any inspection or repairs being performed. Revised calipers are available to correct the leakage condition.

### INCORRECT ROTOR INSTALLATION

GM has recalled certain 2014 Buick LaCrosse vehicles manufactured January 29, 2014 through March 31, 2014 and Chevrolet Malibu vehicles manufactured between February 7, 2014 through March 31, 2014 equipped with 17 inch front brake rotors. It is possible the vehicles may have had the rear brake rotors installed on the front. The rear rotors are the same diameter but thinner. This can allow the front disc pads to detach from the caliper, resulting in a reduced or loss of braking.

With the similarity of these front and rear rotors, it is possible for this condition to repeat itself in the process of performing a brake service and the machining of the brake rotors. The same brake failure condition can happen with any vehicle make or model when rotors are machined beyond the discard thickness.

### CONTAMINATED ROTORS/FRICTION

For years in our brake clinics we have cautioned about using chemicals on the rotors or disc pads and how those chemicals could promote noise and brake pull symptoms. That recommendation was met with much controversy. Chrysler has encountered those symptoms with their Ram

1500 Pickups due to friction contamination.

Chrysler advises that 2012-2015 Ram 1500 Pickups built prior to July 10, 2015 may encounter brake pull or drift due to an anti-corrosion coating they applied to the brake rotor. The coating, grey in color, is designed to wear off during the first few miles of driving. The coating can stick to the friction surface of the disc pad promoting a pull or brake drift symptom. Do not replace the rotors or calipers for this condition.

The coating cannot be removed from the friction. Clean the rotors with brake clean in the area where the pads make contact with the rotor and install new disc pads.

Test drive the vehicle to confirm the symptoms have been eliminated.

### LOW FREQUENCY BRAKE NOISE

A low frequency moaning brake noise may be present on 2012-2015 Jeep Compass and Patriot vehicles with 4-wheel disc brakes during the first brake application in reverse, when the vehicle is cold, or has been parked for several hours. Often the disc pads get replaced in a futile effort to eliminate the noise.

The vehicle manufacturer recommends the addition of an anti-vibration bracket to correct the condition. The anti-vibration bracket/service kit (68244275AB) is to be installed on the rear brake system/calipers. The installation procedure is outlined in Jeep Service Bulletin 05-003-14 REV.A.

In previous years, Jeep has introduced updated calipers to eliminate harmonic vibrations that produced brake noise complaints. Often these noise symptoms receive factory fixes, only to have the symptoms recur at a later date when the updated calipers are replaced during a brake service. Unknowingly, the technician reintroduces the brake noise complaint by changing the calipers.

### DRIVELINE NOISE AND VIBRATION

When diagnosing driveline noise or vibration, the first step in the diagnostic process should be determining if any adjustments or modifications have been made to the chassis or suspension. These modifications could include raising or lowering the vehicle body or suspension. Increasing the tire size or installing a more aggressive

tire can promote noise and vibration symptoms. When lowering the vehicle, numerous methods are performed to achieve the desired look. These modifications could include the installation of drop spindles or lowering blocks. When these modifications are made, the driveline working angles of the u-joints are affected, which can result in premature wear, noise, vibration or catastrophic component failure.

Lifting the vehicle with the use of suspension or body lift kits can alter the driveline working angles, which can result in propeller shaft related symptoms and component failures.

It may be difficult for the customer to understand and accept that these modifications have caused the related symptoms, as they may not have been present immediately following the installation of the mentioned components or chassis/suspension adjustments. These changes occur as the components begin to fail due to the stress created by the excessive operating angles, such as that of a worn u-joint.

In the case of four wheel drive vehicles, the transfer case chain and bearings may encounter excessive stress due to tire size and aggressive driving, which can result in premature component failure or excessive noise.

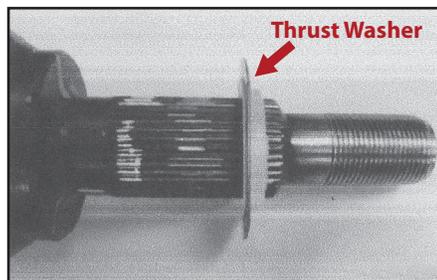
These considerations should be taken when diagnosing driveline noise and vibration symptoms. If not, you may waste a lot of diagnostic time and create unnecessary expense for the customer.

## CLICKING OR POPPING NOISES

Customer complaints of a clicking or popping noise from the front wheels on 2011-2014 Ford Flex, 2011-2015 Explorer, Taurus and 2011-2014 Lincoln MKS and MKT vehicles may occur when accelerating from a stop, during turns, or when shifting between drive and reverse.

Ford recommends the following service procedure to eliminate the noise complaint:

- 1) Separate the half-shaft from the wheel hub.
- 2) Do not remove the half-shaft from the transmission or the power transfer unit.
- 3) Install a thrust washer (Ford # BB5Z-7G273-B), metal surface first, over the half-shaft splines until the metal ring is flat against the wheel bearing mating surface (see illustration). The nylon surface of the thrust washer should face outward toward the hub/splines, as illustrated.
- 4) Install the half-shaft to the wheel hub.



This procedure will eliminate the movement, which causes the clicking, popping noises previously described.

## BUMPING SENSATION/CLUNKING NOISE WHEN STOPPING

Some customers may complain of a bumping sensation or clunking noise when stopping or during vehicle launch. Some comment that the encounter feels like the vehicle has been bumped from behind. Vehicles affected include: 2007-2015 Chevrolet Silverado and GMC Sierra with a 34 or 36 gallon fuel tank.

The bump or clunking sensation may be due to fuel movement in the fuel tank when not completely full. Filling the fuel tank will verify that the condition is due to fuel movement in the fuel tank and no repair attempts should be taken, as this is considered a normal characteristic.

GM addressed the same symptoms that affected 2007-2009 Chevrolet Avalanche, Silverado, GMC Sierra, 2008-2009 Chevrolet Suburban, Tahoe, GMC Yukon and Yukon XL applications equipped with the 4L60 automatic transmission.

**Cause:** The bumping sensation resulted from a slip/stick condition in the interface between the rear driveshaft slip yoke and the transmission output shaft splines. When braking and coming to a complete stop, the driveshaft slip yoke can be forced forward into the transmission, while the vehicle rebounds slightly backward after stopping its momentum. This creates a bumping sensation like the vehicle has been bumped in the rear.

**Correction:** The slip yoke splines should be cleaned with brake cleaner; making sure the yoke is free of rust and burrs. The slip yoke splines should be lubricated with a light coating of grease GM P/N 12345879 and reassembled. If this procedure fails to alleviate the symptoms, the driveshaft slip yoke must be replaced with a nickel-plated slip yoke GM P/N 20877209. Four wheel drive vehicles require the replacement of the rear output shaft, when lubricating the slip yoke splines fails to eliminate the symptom.

Make it a point to always research factory service information prior to spending a lot of diagnostic time. In many cases the repair will require a PCM/ECM re-program. In those cases, replacing parts will not eliminate the symptoms. Your research may identify a factory solution that will resolve the customer's complaint and it may involve a procedure or replacing a component that we would not normally consider in our diagnostics.

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