TROUBLESHOOTING SOLUTIONS

For Some Elusive Brake and Suspension Symptoms

Troubleshooting driveability symptoms based solely on a description provided by the vehicle owner can be a real challenge for the technician. A road test with the customer is the preferred method of obtaining the crucial information necessary to make an accurate diagnosis. The next step is to check the availability of technical service bulletins from the vehicle manufacturer. This information can save many hours of diagnostic time. Let's consider some symptoms and solutions that would be very difficult to pinpoint and almost impossible to correct without some factory assistance.

GM DRIVELINE BUMP OR CLUNK

Recently, we participated in troubleshooting what was described as a violent suspension or brake related condition. The vehicle was a 2007 Chevrolet Silverado that would intermittently encounter a bump or clunking condition during a traffic stop. The owner was certain that something in the suspension or braking system was loose. When the condition was first encountered, the customer was certain that he had been rear-ended by another vehicle. Repair tickets that were provided reflected that a brake inspection and suspension service had been performed.

The evaluation started with a lengthy road test, to no avail. The vehicle performed flawlessly. Keeping the vehicle an additional day paid big dividends, as the violent symptom eventually reared its ugly head. The shudder or bumping sensation could be felt throughout the chassis, and was so violent that our first thought was a transmission related condition. Later, it was determined that a little grease was the solution. Read on for the factory fix:

GM has addressed the described symptom that affects 2007–2009 Chevrolet Avalanche, Silverado, GMC Sierra, 2008–2009 Chevrolet Suburban, Tahoe, GMC Yukon, and Yukon XL applications equipped with the 4L60 automatic transmission. GM advises that some customers may complain of a bumping sensation or clunking noise during a traffic stop or during the initial launch following a stop. The customer may get the sensation of being bumped from the rear by another vehicle after the vehicle has come to a complete stop.

Cause: The described symptom results from a slip/stick condition in the interface between the rear driveshaft slip yoke and the transmission output shaft splines. Braking to a complete stop can force the driveshaft slip yoke forward into the transmission, while the vehicle rebounds slightly backward after stopping its momentum, creating the bumping sensation.

Correction: GM recommends cleaning the slip yoke splines 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 the lubrication fails to alleviate the condition, the driveshaft slip yoke must be replaced with a nickel-plated slip yoke GM P/N 20877209. Four wheel drive applications require the replacement of the rear output shaft, when lubricating the slip yoke splines fails to correct the symptom.

SPONGY PEDAL FEEL

When the brake pedal encounters a spongy pedal sensation, increased pedal travel and increased effort to stop, aerated fluid is the likely culprit. We have all encountered these symptoms and experienced the frustrations that can go with removing the air from the system. In some cases the technician may bleed the system and return the pedal height and feel to normal, only to encounter recurring symptoms. Some basic checks should be performed to include the level of the fluid in the master cylinder and for any external fluid leaks. Bleeding the system can be a challenge, as some ABS systems may require a scan tool to properly purge the air from the system. Check the factory service bulletins for information pertaining to recurring low or spongy pedal conditions. The problem could be in the design of the system or a defect with one of the ABS components. GM has addressed a recurring spongy brake pedal sensation on the following vehicles equipped with RPO JL4 (Active Brake Control) only:

- 2009 Chevrolet Cobalt
- 2009 Chevrolet Colorado
- 2009 Chevrolet Equinox
- 2009 Chevrolet HHR
- 2009 GMC Canyon
- 2009 Pontiac G5
- 2009 Pontiac Torrent
- 2009 Pontiac Solstice
- 2009 Saturn SKY, VUE

Cause: GM acknowledges that the condition is caused by an accumulation of air in the master cylinder or due to a missing filter in the brake pressure modulator valve (BPMV).

Correction: GM recommends inspecting the label on the brake pressure modulator valve, paying special attention to the 4-digit number positioned beneath the bar code to the far right *(see illustration 1)*. If the 4-digit number is one of the following (2428, 2438, 2448, 2458, 2468,

ILLUSTRATION 1

2478, 2488, 2498), the BPMV must be replaced and the system filled with brake fluid and properly bled, utilizing a scan tool to perform the ABS automated bleeding procedure.

Having access to the factory information is the only way a technician could repair one of the mentioned vehicles and retain a good pedal feel. Any other repairs would only be temporary.

REAR SUSPENSION SQUEAKS

Suspension squeaks can be very annoying for the vehicle owner. They can be more annoying for the technician trying to pinpoint and eliminate the squeaking symptoms. It can be very difficult to isolate suspension noises, as a dry bushing will make a similar noise as a squeaking shock absorber, or other components making metal to metal contact. Construction vehicles or trucks that are used off-road such as farm use, hunting, etc. are frequent candidates for suspension related noise complaints, due to component contamination.

GM has received its fair share of rear leaf spring squeaks on its truck fleet, to include the following models:

1999–2007 Chevrolet Silverado (Classic)
2007–2009 Chevrolet Colorado, Silverado
1999–2007 GMC Sierra (Classic)
2007–2009 GMC Canyon, Sierra
2007–2009 Hummer H3, H3T

GM advises that the truck owner may complain about a squeaking noise coming from the rear of the vehicle during normal vehicle operation. This condition is usually traced to the rear leaf springs. GM states that this is a normal characteristic of any leaf spring assembly, but may become more pronounced as the frequency of the noise may be affected by road surface conditions.

Cause: The noise condition may be promoted due to debris accumulating between the leaf springs, especially on those vehicles operated on construction sites or off-road service.

Correction: To correct the noise condition, it will be necessary to clean and lubricate the leaf springs.

1) The vehicle should be lifted on a frame lift hoist.
2) Make certain the springs are not damaged or broken.
3) Clean the rear leaf springs and remove as much debris as possible. GM recommends pressure washing the springs.
4) Force dry the springs with compressed air.
5) Apply a liberal amount of grease (GM P/N 12345996) under the front and rear tip inserts for the #2 and #3 leaves, on the top of the tip inserts, and in between #1 and #2, and #2 and #3 leaves. It may be necessary to pry up the tip insert to deposit the grease. A flat bladed tool such as a scraper will help to distribute the grease. If the inserts are missing or broken they must be replaced to prevent slapping or clunking noises.

Inform the customer that this procedure is not a lifetime repair and may require periodic cleaning and a new application of grease.

GM states that if lubricating the leaf springs fails to eliminate the noises on 1500 Series trucks built prior to October 2004, it could be caused by an incorrectly dimensioned splay clip (the band holding the ends of the leaf springs together) that interferes with the leaf springs. A wider splay clip was introduced in early 2005 to provide additional clearance. To correct this concern will require replacing the rear leaf spring assembly.

CLUNKING NOISE FROM REAR SUSPENSION

GM advises that customer complaints of a clunking noise from the rear suspension of 2007–2010 Chevrolet Silverado and GMC Sierra trucks may be located in the leaf spring area. While the braking system is usually the focus of the diagnosis, GM advises that the noise may be eliminated by re-torquing the joints of the leaf spring assembly.

The procedure is simple.

1) Support the vehicle at curb height when making the leaf spring torque adjustments.
2) The following components should be loosened:
   a) The shackle joint to the frame.
   b) The front eye joint to the frame.
   c) The rear eye to shackle joint.
   d) The anchor plate U-bolts.
3) Re-torque the shackle joint to the frame and to the rear eye. Tighten the shackle nut to 73 ft-lb.
4) Re-torque the anchor plate U-bolts (see illustration 2). Tighten nuts 1, 2, 3, 4 to 74 ft-lb.
5) Re-torque the front rear spring mounting nut. Tighten to 148 ft-lb.
6) Repeat steps for opposite side leaf spring assembly.

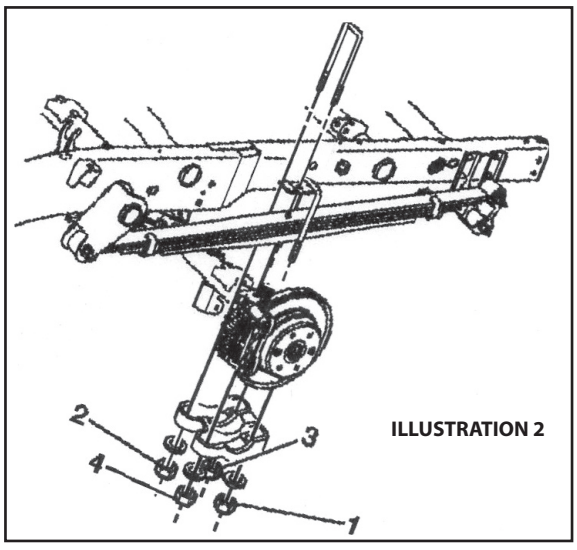

ILLUSTRATION 2

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