

## Bulletin BES 01-03

**Subject:** Diagnosing a Sinking Brake Pedal on Delco VI Equipped Vehicles

**Vehicle Involved:** 1991 and newer GM Equipped vehicles

**Condition:** Vehicles utilizing the Delco VI ABS anti lock braking system that have a sinking brake pedal, may have a bad master cylinder, or an ABS motor pack that has worn or broken brakes.

**Repair Procedure:** Technicians must first verify that the base brake system parts including brake calipers, wheel cylinders, brake hoses and steel lines have no hydraulic leaks or air in the system. Review bulletin **BES 00-06** for low brake pedal isolation procedures. Vehicles equipped with rear drum brakes must have proper shoe to drum adjustment as well. Having confirmed that the base brake system has good integrity, suspect either the Master Cylinder or ABS Motor Pack as the cause for a sinking pedal.

**Note:** A scan tool with bi-directional capability may be used to check the motor pack electro magnetic brakes or expansion spring brakes, **(EMB/ESB)**. To diagnose the motor pack function without a bi-directional scan tool, remove the six screws securing the black plastic gear cover. On most vehicles it will be necessary to first remove the master cylinder from the brake booster and pull the assembly up giving you enough clearance to remove the six screws from the black plastic cover. After you have removed the cover, bolt the master cylinder assembly back up to the booster. Now you are ready to test the assembly. Have an assistant apply pressure to the brake pedal while you observe the gears at the bottom of the ABS hydraulic unit. The use of a small mirror held under the gears will help you observe any movement. If any of the gears move, the motor pack brakes are either worn or broken allowing brake fluid pressure to force the ball screw assemblies down which in turn move the gears. Replacement of the Motor Pack will be required. If the gears do not move, yet the brake pedal sinks, the problem is isolated to the master cylinder. See bulletin **ST 98-21** for detailed instructions on Replacing a Master Cylinder on Delco VI equipped vehicles.

