

ANTI-LOCK BRAKE SYSTEMS



Ralph Seekins

Much to my surprise, a lot of folks have questions about (and misunderstandings of) how the anti-lock brake system ("ABS") works on their car or truck. And, today, almost all cars and trucks on the road have some kind of ABS system. So, let's see if we can explain what ABS is and how it works.

As any driver who has wintered in Interior Alaska knows, when a tire starts to spin or locks up on slippery surfaces, it's hard to get a vehicle started, stopped or steered correctly. Sliding or skidding tires just don't have the same traction as rolling tires. That's why, in years past, we were taught to quickly pump the brake pedal when we needed to slow down or stop on slippery roads. It was drummed into us that "the brake is not your friend" on snow or ice and locking up the wheels on slippery surfaces was not a good idea. The old rule no longer applies when your vehicle has an ABS system.

Today's ABS systems keep the wheels from locking up and skidding when you mash on the brakes. That does two really good things: the car or truck will be able

to stop quicker than you otherwise could; and you'll be able to steer the vehicle while you come to a stop. But don't think the vehicle will stop in the same distance it would if the road was dry.

So, how does the ABS system work? Since there are some differences in systems used by the various manufacturers in different models, let's talk about what is called a "four channel" system.

Basically, this ABS system includes four electronic wheel speed sensors, a computer – commonly called a "controller," a valve body that has dedicated brake lines leading from it to each of the four wheels and a pump that supplies pressure to the valve body.

A vehicle so equipped will have the electronic speed sensors located at each wheel. These sensors are wired to the controller that constantly monitors the sensors and looks for any ordinary decelerations in the wheels. Just before a wheel locks up, it will suddenly decelerate. The controller is programmed to know that a rapid deceleration isn't possible without a wheel lock-up quickly following. So it activates a valve that is located in the valve assembly. That valve then quickly and cyclically closes and re-opens so the pressure downstream to the brake so that the wheel doesn't lock up. The pump, located upstream between the valve and the brake pedal, provides a uniform brake fluid pressure for those moments when the valve opens. The brake is automatically pumped for each

wheel individually and so quickly that no human can duplicate the action.

Now, some of us older, hard to train drivers will still pump the brake pedal even though our vehicle is ABS equipped. All this does is confuse the controller and make it more difficult to stop or steer. **DON'T PUMP THE BRAKE PEDAL!!!**

And, when you hear a "grinding" noise and feel a strange "feedback" on the pedal, it means the system is working properly for you. We have had a number of folks who thought the noise and feedback were symptoms that something was actually wrong with the brakes.

ABS won't keep you from sliding through a downhill glare ice intersection or allow you to steer up a glare ice hill. You still need to exercise caution on slippery surfaces. It will, however, add an element of safety far superior to the old system of manually pumping the brake pedal. From my own personal experience, I know how dangerous motoring on our winter roads can be. Excessive speed can still override the safety benefit of ABS systems. And, now that snow covered roads will soon be upon us, I wish you and your family safe driving this winter.

Ralph Seekins has more than 41 years' experience in the automotive industry. He started as a mechanic, worked in sales, and for the past 34 years, has been the owner of Seekins Ford Lincoln.