

MAINTENANCE



Russ Evans

Anti-Lock Braking Systems

By now chances are you own a car with anti-lock brakes or have driven one.

Anti-lock braking systems have been around since 1929 when the first patent was issued for anti-lock brakes in an aircraft application. Anti-lock brake systems have evolved over the years but their function has not changed much. Anti-lock brake systems prevent single wheels from locking up before the others causing a loss of braking.

The first modern ABS system used on a car and available as a regular option was unveiled in 1971 on the Chrysler Imperial. This system was available for several years and was called "Sure Brake." Unlike some short-lived limited feature options the "Sure Brake" system consisted of a computer controlled three channel electronic control system much like today's vehicles have. This system allowed electronic wheel slippage control of each individual front wheel and the rear wheels as a pair. The rear was paired due to the rear wheel drive limited slip axle.

An ABS system consists of three major components; the HCU or hydraulic control unit which contains valves that open and close to bleed off or hold pressure and a pump to maintain it. The Wheel Speed Sensors that are located near each wheel and measure



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road speed. And the ECU or Electronic Control Unit is the brain of the system which processes braking information and controls the system.

When you apply your brakes several things happen almost instantaneously. As the brake switch closes the ECU reads wheel speed and continues to monitor it as long as the brake is depressed. If one wheel starts to slow down faster than the rest indicating and impending lock-up then the valves of the HCU close to reduce pressure to the slower wheel to prevent lock-up. When you stop on ice and feel the brake pedal shake and hear a motor noise the feeling and sound come from the valves opening and clos-

ing and the pump running.

ABS systems are designed to be operated differently than regular braking systems. In a system without ABS you would pump the brakes to stop in a limited traction situation such as on ice. This is not the case with ABS. If you pump the brakes when your vehicle is equipped with ABS then the system will not work correctly. The system is designed so that applying a firm even pressure will give you the maximum stopping power and allow you to steer around objects in your path.

To get the most from your ABS brakes read your owners manual to determine if your car is also equipped with

Traction Control, then take your car to a large clear parking area that has some ice or snow, or gravel where there is nothing to hit and practice some slow speed stops to get a feel for how the system operates. This will help when it comes time for a panic stop on the road. Accelerate to about 30 MPH and firmly apply the brakes. You should feel the pedal shake and may hear the ABS pump make noise. Again, a large vacant parking lot is a must.

If you have a question about car care or want to know how something works then send your questions to help@underthehoodshow.com we may write about it in The Motor Market. ^{TMM}

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Contact us at 605-332-0421
or email your info to steve@michelscom.com



Name: Todd Esche with sons Matthew & Daniel
City: Canton, SD
Year/Make/Model: 1955 Chevy Bel Air Nomad
Engine: Original 265 V8 (first year offered)
Transmission: Powerglide Automatic
Suspension: Air Ride Suspension
Special Features: 18" front & 20" rear custom built Budnig Wheels

Body: Harvest Gold paint, body on restoration
Interior: Original
Comments: "I enjoy this car as a driver and as a show car. It is one of my favorites. We won first place at a Good Guys Show in Kansas City for 'Best Driven '55'"