

## Anti-Lock Braking System

(Originally by Iain Grayson)

Have you ever thought what ABS means and what it does? Hopefully the next few lines will shed a little light on the subject and dispel some of the myths.

Stopping is one of the more important functions you carry out as a car driver, more importantly is being able to stop in a controlled manner without skidding. Under normal braking conditions this is not a problem to most of us, but in an emergency it can all go a little "pear shaped".

This is where ABS (Anti-lock Braking System) comes into its own.

### Momentum

When you are driving along the wheels of the car are moving forward at the same speed as the rest of the vehicle. But when you come to stop you are slowing the forward movement of the wheels whilst the rest of the car still wants to move forward under its own momentum. It's just like putting a cardboard box on the back seat, if you stop the car suddenly the box carries on at the speed it was traveling at and slides off the seat.

In the case of stopping your car it is the grip between the tyre and the road that allows you to stop safely and stops you skidding.

The problem arises when the forward force of the car overcomes the traction the tyres have on the road and you skid.

### Slip Ratio

The difference between the speed of the wheels and the rest of the car is technically known as the slip ratio. A ratio of 0% means the wheels are turning freely, whereas a ratio of 100% means you're experiencing one of the most terrifying moments of your life, you're skidding.

### Cadence braking and how does ABS help?

Tests have shown that if you want to stop safely and quickly you need to maintain a slip ratio between 10% and 30%, this has been done in the past by the use of cadence braking. This is when you pump the brake pedal, by fully releasing the brakes and then reapplying them. With ABS, sensors on the wheels and a computer calculate the slip ratio and maintain the optimum braking level for you by automatically pumping the brakes just like cadence braking only a lot faster. This will bring the car to a halt generally within a minimum stopping distance (depending on lots of factors) but more importantly *it allows the driver to keep directional control of the car in an emergency stop situation*. Those of you who have driven on a skid pan will know that in a front wheel skid you lose control of your steering, and it's not a nice feeling.

### Using ABS

If you have ABS on your car, do you know what it feels like when it operates? One problem that arises with ABS is that people only use it in an emergency and when they

feel the pedal moving up and down (vibrating) under their foot they panic and take their foot off the brakes.

It's also worth knowing that when snow or gravel forms a wedge under your front wheels it can sometimes confuse the ABS system and your stopping distance may increase.

Remember, drive safely and hopefully you will never need your ABS.

***Disclaimer: Driving is never a black and white activity, but full of grey areas, therefore neither I nor my fellow Observers in the St Helens & District Group of Advanced Motorists are liable for any consequences you may experience as a result of reading our advice. You are the driver. You should be in control of your vehicle at all times.***