



Antilock Brake Systems

Antilock Braking Systems (ABS) is a form of electronic braking which was invented to help a driver control a vehicle under heavy braking by preventing the wheels from locking up.

How they work

Braking systems take the force applied to the foot pedal by the driver and transfer it via a mechanical system to the brakes on the wheel. The mechanism works by increasing the input force via a servo to the master cylinder, which converts the force into the pressure applied by brakes. The master cylinder has two pressure chambers both of which are responsible for the braking pressure on two of the wheels and this is to provide an extra level of safety should there be a failure.

During this process there is a chance that the wheels stop rotating before the car comes to a halt. This process is known as 'locking up' and means that the braking force on the wheel is not being transferred efficiently to stop the vehicle due to the fact that the tyre is sliding upon the road.

This leads to a longer stopping distance than if the wheel had not locked because there is reduced grip between the car and the road, which in turn leads to an increased chance of losing control of the vehicle and skidding.

On vehicles without ABS the best method to regain control of the vehicle is to 'pump' the brakes by taking your foot off the pedal and reapplying it. This allows the tyres to regain traction upon the road, rather than skid over the surface of it.

ABS works in a similar but much more effective manner. Electric sensors monitor the speed of the wheel as it rotates and detect if it is about to lock up under braking. When this happens the brakes are automatically released and then rapidly reapplied. This process occurs several times to prevent a skid and to ensure that a vehicle can be steered by the driver to avoid a collision.

The advantages of ABS

Although the ABS will not decrease a vehicle's stopping distance compared to an identical vehicle without ABS, it ensures that the shortest distance in which a vehicle can be brought to rest is achieved. It is particularly effective in doing this on surfaces which are wet or icy upon which a vehicle is much more likely to skid.

The main benefit of ABS is the control that a driver has over the vehicle's steering. In an emergency the driver of a vehicle equipped with ABS will have a better chance of steering around the obstacle due to the reduced risk of skidding.



Road Safety..... **Information**

Antilock Brake Systems and your vehicle

When buying or driving a new car, find out if it has ABS, as this will greatly effect what you should be doing in an emergency situation. Consult the vehicle's handbook, which will tell you what active safety features your vehicle has and also what warning lights will be displayed should there be a failure.

When hiring a car or taking out a new company pool car, ask what safety features the car has and whether it has ABS.

What to do in an emergency situation

If your vehicle has ABS, in an emergency situation firmly press the brake pedal and keep your foot hard on the brakes.

It is likely that you will feel feedback from the ABS on the brake pedal in the form of vibration or pulsation. This can be an unfamiliar and maybe uncomfortable experience but it is proof that the ABS is working and the correct course of action is to keep your foot hard on the brakes.

As previously stated, the main advantage with ABS is the increased control over the steering. In situations such as when a small obstacle appears in the road or attempting to remain in the same lane when braking – this can be invaluable.

However, care should always be taken to avoid any rash steering manoeuvres that would increase the severity of the collision.

Although ABS ensures that the minimum stopping distance is achieved, it is still important to drive at a safe speed for the conditions and leave a gap of at least 2 seconds between yourself and the vehicle in front in order to reduce the chances of needing to make use of the ABS.