



Mechanism of Anti-lock Braking System

John Ming*

Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan

DESCRIPTION

Anti-lock Braking System also known as anti-skid braking system (ABS) is an automobile safety system which prevents the locking of wheels during braking and avoid uncontrolled skidding. Current ABS systems allow you to operate the steering while braking, giving you more control over the vehicle in the event of sudden braking. The main advantage of using an ABS system on a vehicle is that it gives you better control over the vehicle and reduces braking distance on dry, slippery roads. Vehicles equipped with ABS have a very low risk of skidding, which improves steering control during braking. Without the ABS system, even a professional driver would not be able to prevent a vehicle from skidding on dry, slippery roads during sudden braking.

However, with the ABS system, the average person can easily prevent the vehicle from skidding and improve steering control when braking. The anti-lock braking system prevents the wheels from locking during braking, maintains traction contact with the road surface and allows the driver to maintain more control over the vehicle.

The anti-lock braking system is an automatic system that uses the principles of threshold braking and cadence braking, a technique that was once practiced by experienced drivers before ABS became widespread. ABS works much faster and more effectively than most drivers can handle. ABS usually improves vehicle control and reduces braking distance on dry or slippery roads, but on loose gravel and snow-covered roads, ABS improves braking distance while improving steering control. It can be greatly extended. Since ABS was introduced in production vehicles, such systems have become more sophisticated and effective. The latest version not only prevents the wheels from locking when braking, but also allows you to change the brake bias from front to back. This latter function is variously known as electronic braking force distribution, traction control system, emergency brake assist, or electronic stability control (ESC), depending on the particular function and implementation.

COMPONENTS OF ANTI-LOCK BRAKING SYSTEM

Pump

ABS pumps are used to restore pressure on the hydraulic brakes after the valve releases the hydraulic brakes. When a wheel slip is detected, a signal from the controller releases the valve. After the valve releases the pressure supplied by the user, the pump is used to return the required amount of pressure to the braking system. The controller adjusts the condition of the pump to provide the desired pressure and reduce slipping.

Controller

The controller used in the ABS system is of ECU type. Its main function is to receive information from each individual wheel speed sensors and if a wheel loses its traction with the ground, a signal is sent to the controller, the controller then limit the brake force (EBD) and activate the ABS modulator. The activated ABS modulator actuates the braking valves on and off and varies the pressure to the brakes.

WORKING OF ANTI-LOCK BRAKING SYSTEM (ABS)

The controller (ECU-Electronic Control Unit) reads the signal from every of the velocity sensors of the wheel.

- As the brakes are unexpectedly carried out with the aid of using the driving force, this makes the wheel to slow down at quicker charge and might motive the wheel to Lock.
- As the ECU reads the signal which shows the speedy lower with inside the velocity of the wheel, it sends signal to the valve which makes the valve near and the strain to the brake pad reduces and stops the wheel from locking.
- The wheel once more begins evolved to accelerate, once more the signal sends to the controller, this time it opens the valve, growing the strain to the brake pad and brakes are carried out,

Correspondence to: John Ming, Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan, E-mail: johnming@mail.ncku.edu.tw

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this once more reduces the velocity of the wheel and attempts to make it stop.

- This system of making use of brakes and it takes place 15 instances in a 2nd while a motive force unexpectedly

applies the brake harder. Due to this the locking of the wheel is avoided and the skidding of the automobile eliminated. During braking with ABS system, the driving force can steer the automobile and reduce the risk of automobile collision.