

# Mechatrends

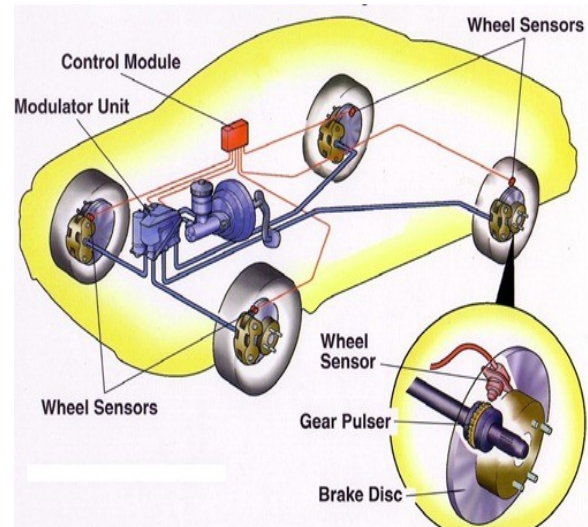
## ANTILOCK OR ANTISKID DEVICE | ANTI-LOCK BREAKING SYSTEM

### Antilock or antiskid device

The vehicle will stop more quickly if the brakes are applied just hard enough to get maximum static friction between the tyres and road. If the brakes are applied harder than this then the wheels will lock, the tyres will skid or slide on the road and a lesser kinetic friction will result. Then braking the vehicle is much less effective.

To prevent skidding and thus provide maximum effective braking several devices have been proposed. Mostly skid control of the rear wheels only is provided. Some others provide control at all the four wheels. What is meant by “control” is this. As long as the wheels are rotating the antiskid device permits normal application of the brakes. But if the brakes are applied so tough that the wheels tend to stop turning and thus a skid starts to develop the device comes into operation and partly release the brakes so that the wheels continue to rotate. Still intermittent braking continues. But it is held

to just below the point where a skid would start. The result is maximum braking effect.



ANTILOCK BREAKING SYSTEM

### Antilock brake system:

The hydraulic unit is the central component of an ABS system. Each of the four wheels has a speed sensor, which measures the rotational speed of the wheel.

This information is monitored by an Electronic Control Unit: which opens and closes the magnetic valves at the right time. If a wheel is about to lock under heavy braking, the system continues to reduce the hydraulic pressure on that wheel alone, till the threat of locking is past. Once the wheel

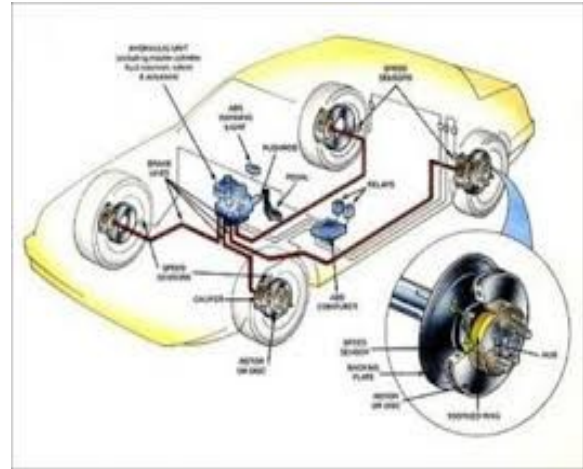
is turning freely again, the hydraulic pressure is increased. This increase and release of pressure continues until the driver reduces the force on the brake pedal or until the tendency to lock is overcome. ABS is incorporated in some of the cars to prevent skidding and to rove braking.

### Senstronic braking control (SBC) :

Braking Control is basically a brake-by-wire system which eliminates the need for mechanical linkage between the brake pedal and brake master cylinder. SBS also work in conjunction with ABS to enhance braking.

It was developed by Mercedes in association with Robert Bosch GmbH. Among its most important performance features are the dynamic building up of brake pressure and the precise monitoring of driver and vehicle behavior using sensors. In an emergency situation, SBC increases brake line pressure and readies the brakes, so that they can grip instantly with full force when the brakes are applied.

Additionally, variable brake proportioning offers enhanced safety when braking on bends. SBC controls each wheel individually. When in corners, they apply varying degree of pressure on the inside and outside wheels of a car, and in the wet road condition. The SBC is found in Mercedes Benz E cars.



SENSTRONIC BRAKING SYSTEM

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MECH

SELF DRIVING CAR TECHNOLOGY |  
AUTONOMOUS CAR | CAR OF THE  
FUTURE



In the future, automated systems will help to avoid accidents and reduce congestion. The future vehicles will be capable of determining the best route and warn each other about the conditions ahead.

Google has been working on it's self driving car technology, where the user is

required to enter an address in Google maps, after which the system gathers information from Google Street View and combines it with artificial intelligence software. The software includes information from video cameras in car, a LIDAR sensor on top of vehicle, radar sensors in front and a position sensor attached to one of the rear wheels that helps locate the car's position on map. These sensors aid the car in maintaining distance with surrounding vehicles/objects.



The control mechanism of an autonomous car consists of three main blocks as shown in below picture:

### 1. Sensors

- laser sensors
- cameras
- radars
- ultrasonic sensors
- GPS, etc.

### 2. Logic Processing units

- Software
- Decision making
- Checking functionality
- User interface

### 3. Mechanical control systems

- Consists of servo motors and relays
- Driving Wheel Control
- Brake control
- Throttle control, etc.



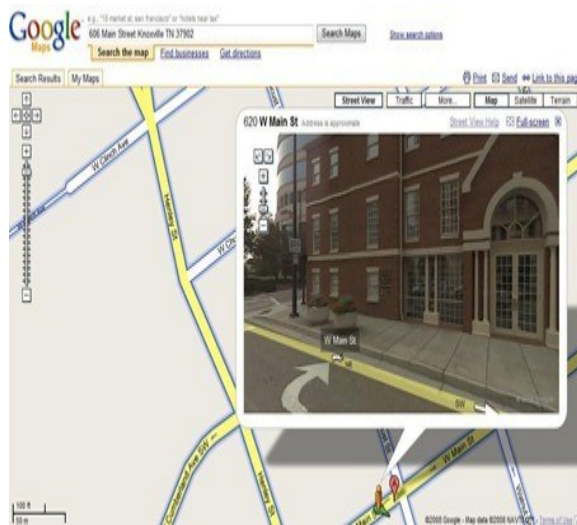
### Artificial Intelligence Software:

Artificial intelligence is the making of intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence. This system

exhibits human intelligence and behaviour include robots, expert systems, voice recognition, natural language processing, face recognition, handwriting recognition, game intelligence, artificial creativity and more. By this technology both google map and google street view are interrelated.

### Google Map:

Google Maps is a Google service offering powerful, user-friendly mapping technology and local business information-including business locations, contact information, and driving directions.



### Google Street View:

Google Street View (GSV) has rapidly expanded to provide street-level images of entire cities all around the world. The number and density of geo-positioned

images available make this service truly unprecedented. A Street View user can wander through city streets, enabling a wide range of uses such as scouting a neighbourhood, or finding specific items such as bike racks or mail boxes.

### LIDAR Sensor:

Light Detection And Ranging is an optical remote sensing technology that can measure the distance to, or other properties of a target by illuminating the target with light, often using pulses from a laser. LIDAR uses ultraviolet, visible, or near infrared light to image objects and can be used with a wide range of targets, including non-metallic objects, rocks, rain, chemical compounds, aerosols, clouds and even single molecules. A narrow laser beam can be used to map physical features with very high resolution.

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**MECH**

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