Vehicle Crash Sensors: Blind Spot Detection

By Kalwinder Kaur May 10 2013

Blind spots are the regions around a vehicle that are invisible to the driver. They can be caused by the passengers, headrests, window pillars or other objects. Although they are relatively small near the vehicle, they cover a large area in the distance.

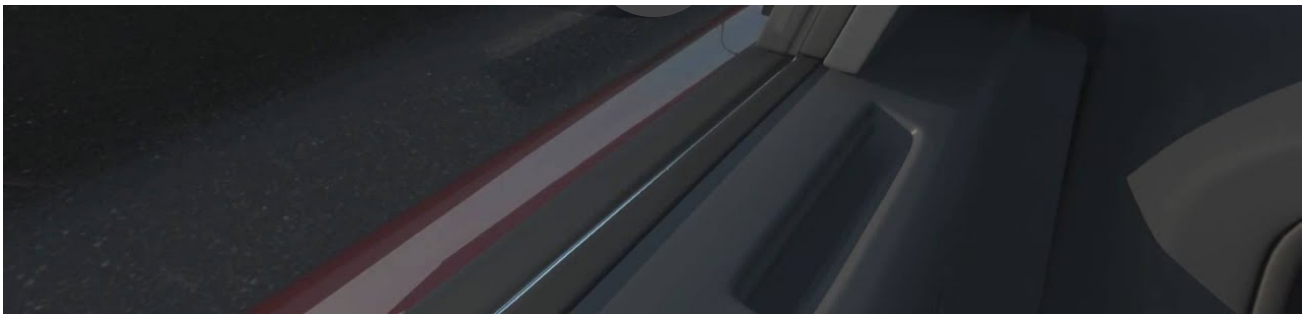
A blind spot caused by an A-pillar can hide large objects such as cars and people even at moderate distances. Another type of blind spot occurs between the area reflected by the rear-view mirrors and the driver's peripheral vision. This type of blind spot is very dangerous as it can severely damage the vehicle.

Mirrors can be used to eliminate the blind spots behind the driver, but they cover large areas on both sides of the vehicle. A convex blind spot mirror can enable a driver to view the objects in vehicle sides. However, the images displayed by the convex blind spot mirror are distorted, which makes it difficult for the driver to determine distances.

Blind spot detection systems, on the other hand, employ various sensors and cameras to provide information about the objects that are outside the driver's vision range.

Sensors can detect the presence of objects and passes the information to the driver through visual/audible means. Cameras provide views of the vehicle sides to enable the driver to accurately locate the blind spot.

Rear-view cameras are used for parallel parking or backing up. Certain blind spot detection systems can display a warning in the corner of the rear-view mirror upon identifying the blind spot.



Blind spot detection with the application of sensors. Video courtesy of the Insurance Institute for Highway Safety.

What Cars Have Blind Spot Detection Systems?

A number of auto manufacturers offer different types of blind spot detection systems. Volvo and Ford use an automated blind spot detection system in its cars, which monitors the approach of an object on both left and right sides of the vehicle. The system uses RADAR that indicates the presence of a hidden vehicle by causing an LED to glow on the A-pillar. However, the RADAR-based detectors in Ford are mounted on the outside rear view mirror.

Audi's blind spot detection system called as Audi Side Assist can detect the vehicles coming up from as far as 45.7 m behind and flash a light in an external rearview mirror. Mercedes, Nissan, Chrysler and other original equipment manufacturers also have their own blind spot monitoring systems.

Certain vehicles have an additional option like a blind spot intervention system which can be found on Infiniti M-Series cars. Besides alerting the driver if the vehicle approaches the blind spot, the blind spot intervention system also provides steering wheel resistance if the driver tries to neglect the warning.

These blind spot detections systems are not provided in all car models. As of now, luxury cars have these systems as they are an optional part of a more extensive safety package, and costs few thousands extra than other conventional safety systems. However, with the rapid fall in prices of the safety systems, most of the new cars will likely have blind spot detections systems.

Working of Blind Spot Detectors

A typical blind spot detector uses any kind of electronic detection devices such as RADAR sensors mounted on the car's sides, often in the rear bumpers or external rear view mirrors. These devices transmit electromagnetic waves in the RADAR wavelengths or take

computer-processed images using a digital camera and analyze them.

When these sensors notice another vehicle coming nearby, it alerts the driver by flashing a light or by making audible sounds. The alert indication is usually a red or yellow light located in the side mirrors. Certain systems will provide an additional haptic warning that vibrates the steering wheel and or the driver's seat.

Benefits of Blind Spot Detectors

The following are some of the major advantages of blind spot detection systems:

- High level of safety
- Decline in truckload and car body damage
- Safe lane changing in the city as well as on the highway
- Provide reliable information on vehicles in the blind spot.

Products on the Market

Some of the blind spot detection systems currently available in the market are listed below:

Rear and Side Detection System

Delphi's rear and side detection system features a 76GHz, single-beam mono-pulse RADAR that makes the driver aware of the nearing vehicles when changing lanes by providing audible chimes and/or visual indicators. The audible alerts can be automatically deactivated when the turn signal is used thereby avoiding nuisance warnings. In addition to blind spot detection, it also performs rear pre-crash sensing, rear cross traffic alert and lane change merge assist functions.

The key benefits of rear and side detection system include:

- Higher quality target discrimination
- Better Doppler discrimination
- Simplified vehicle integration
- Excellent range accuracy.

BSDS3016 Blind Spot Detection System

The BSDS3016 Blind Spot Detection System introduced by GOSHERS features RADAR type sensors that can be installed on the rear bumper of an automobile. It also includes two LED indicators for installation inside the vehicle on the left and right front door panels. When the turn signal is activated, the corresponding LED will glow in addition to an audible beep.

Some of the major advantages of BSDS3016 Blind Spot Detection System include:

- It uses reliable, SONAR technology with detection in less than 120ms
- It includes a four wire system hook-up for easy installation
- It is more suitable for sports cars, sedans, SUVs and trucks.

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ActiVue™

Autoequips Tech has developed a new technology, ActiVue™ to assist blind spots at both the front and side sides of the vehicle. It uses a camera system to detect the danger during driving. The technology offers two and four camera inputs depending on the applications.

The following are the major advantages of ActiVue™:

- The detection zone and sensitivity can be adjusted to ensure easy and flexible adjustment
- Activation of camera system and detection can be automatically enabled and disabled
- Different programmable functions can be activated by designated vehicle signals/indicators.

References

- BSDS3016 Blind Spot Detection System - GOSHERS
- ActiVue™ – Autoequips Tech
- Rear and Side Detection System - Delphi
- How are cars making the blind spot less dangerous? – HowStuffWorks?
- Decoding Blind Spot Detection and Warning Systems - About.com
- Blind Spot Detection – The Clemson University Vehicular Electronics Laboratory
- Blind Spot Detection (BSD) - Continental

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