

## **Side Collision Warning Systems**

---

### **Objective**

Side collision warning systems help to enhance safety by assisting the driver in avoiding collisions during lane changes and merge situations. These systems monitor blind spot areas along the sides of a commercial motor vehicle, detect stationary and moving objects in these areas, and provide warnings to drivers of possible collisions with vehicles traveling in an adjacent lane.



Eaton VORAD Blindspotter Side Collision Warning System

### **Description**

Side collision warning systems monitor the lanes adjacent to a vehicle to detect moving and stationary objects located within the side blind spots. These systems work at varying speeds, such as when a driver is navigating turns, merging into highway traffic, or making lane changes in congested highway traffic. Certain systems currently on the market can detect objects within a 120 degree field of view or a monitoring area of approximately 13 feet by 8 feet to the side of the vehicle. In addition, they may be integrated with other systems, such as forward collision warning systems. Currently available side collision warning systems utilize ultrasonic or radar detection technology.

Ultrasonic technology or sonar (SOund Navigation And Ranging) determines the range of objects by emitting a transmitter pulse of ultrasonic energy. The emitter is a membrane that transforms mechanical energy into a chirp (inaudible sound wave) and sends it out toward the target area. When the sound wave encounters an object, the resultant echo is reflected back to the receiver circuit that is tuned to the frequency of the emitter. A sensor in the receiver measures how long it takes for the echo to return and converts this information into distance. It then transfers the data to a driver display unit. In one type of side collision warning system, this process is repeated 20 times each second.

Radar (Radio Detection and Ranging) technology is also used for side collision warning systems. Radar typically operates in the ultra-high-frequency or microwave range of the radio-frequency spectrum. These radio frequency waves are transmitted from the vehicle at defined intervals within a specific coverage area. If there is an object in the path of the radio wave, it will reflect some of the electromagnetic energy, and the radio wave, or echo, will bounce back to the radar device. Radio waves move through the air at a constant speed (the speed of light); therefore, the radar device can calculate how far away the object is based on how long it takes the radio signal to return. These

echoes are sent to a signal processing unit within the vehicle and communicated as a warning on a driver display.

Side collision warning systems provide visual and/or audible alerts to warn drivers when objects are detected. Some systems indicate the distance from a detected object on a digital display installed either in or on the dashboard. Other systems provide visual indicators or lights on the vehicle's mirrors when an object is detected alongside the vehicle. Visual alerts can be used in combination with audible alerts that vary in tone and frequency as the vehicle moves closer to an object.

## **Application**

Side collision warning systems can provide an added measure of safety for turning, merging and lane changing maneuvers when a driver cannot see objects in the blind spots along the sides of his vehicle. If a vehicle is in the adjacent lane when a driver has begun a lane change or merge, then the driver may not be aware of the potential hazard. These systems can provide an advanced warning to allow additional time for a driver to react and avoid a collision.

Side collision warning systems are a safety supplement to driver awareness. They are not intended to replace visual observations or mirrors and they do not take any automatic action to avoid a collision or to control the vehicle. Therefore, drivers remain responsible for driving safely.

## **Operations and Benefits**

Side collision warning systems are activated when the vehicle's ignition system is on. They provide continuous monitoring of blind spot areas along the sides the vehicle. When these systems are activated, they basically operate "hands-free," leaving the driver free to focus his attention on safely operating the vehicle.

Commercial motor vehicle drivers operate their vehicles in a wide range of environmental conditions that can temporarily limit their vision. Side collision warning systems provide advanced warning of objects within the vehicle's path in turns, traffic merges, and lane changes and in low visibility situations. These warnings give drivers more time to respond appropriately to detected objects and avoid crashes. In particular, side collision warning systems aid in reducing crashes associated with blind spots along the sides of commercial motor vehicles.

Although many kinds of fleets could benefit from using side collision warning systems, two types of fleets appear to benefit the most by their use. These are those whose trucks have accumulated high mileage over their operational life and those whose operating conditions present driving challenges such as nighttime or limited visibility due to adverse weather conditions.

## **Cost**

Side collision warning systems range in cost from approximately \$760 to \$2,000, depending upon the type of system purchased, installation costs, and possible integration with other collision warning systems.

## Vendors

<p><b>Delphi Corporation</b> World Headquarters 5725 Delphi Drive Troy, Michigan 48098-2815 USA Phone: 248-813-2000 <a href="http://delphi.com/manufacturers/cv/safety/active/sidealert/">http://delphi.com/manufacturers/cv/safety/active/sidealert/</a></p>	<p><b>Eagle Eye</b> 2400 Roosevelt Avenue Indianapolis, IN 46218 (317)263-0979 Phone: 800-428-4449 <a href="http://www.tst-eagleeye.com/">http://www.tst-eagleeye.com/</a></p>
<p><b>Eaton Corporation (VORAD®)</b> P.O. Box 4013 Kalamazoo, MI 49003 Phone: 800-826-4357 <a href="http://www.roadranger.com/Roadranger/productssolutions/collisionwarningsystems/index.htm">http://www.roadranger.com/Roadranger/productssolutions/collisionwarningsystems/index.htm</a></p>	

### Disclaimer

The information provided in these guides about products and services available from private entities does not constitute an endorsement by the Federal Motor Carrier Safety Administration (FMCSA) of the views expressed by any non-Federal entity, or its products or services. FMCSA is publishing lists of vendors on this site solely in an effort to further public awareness of vendors identified as possible contacts for further information and possible purchase of different types of safety and security equipment. The list of vendors is not a complete list. The information in these product guides is disseminated by FMCSA in the interest of information exchange. The United States Government assumes no liability for the contents or use of these guides. These guides do not constitute standards, specifications, or regulations, and FMCSA provides no assurance that the listed vendors and their products and services meet applicable standards, specifications, or regulations. Links to Web sites outside the U.S. Government or the use of trade, firm, or corporation names within FMCSA's Web site are solely for the convenience of the user. Users who select a link to a non-government Web site leave the FMCSA Web site, and are subject to the privacy and security policies of the owners/sponsors of those Web sites. FMCSA does not control or guarantee the accuracy, relevance, timeliness, or completeness of information on a linked non-Government Web site. FMCSA cannot authorize the use of copyrighted materials contained in linked Web sites. Users must request such authorization from the sponsor of the linked Web site. FMCSA is not responsible for transmissions users receive from linked Web sites. FMCSA does not guarantee that outside Web sites comply with Section 508 (Accessibility Requirements) of the Rehabilitation Act.