BLIND SPOT OBJECT DETECTION SYSTEMS

Blind spot object detection systems are designed to alert the driver to the presence of vehicles that may be in the blind spot areas of adjacent lanes of traffic. Blind spots are the areas on both sides and rearward of a vehicle, not visible within the rearview or door mirrors.

Blind spot object detection systems can be as simple as using a convex mirror as part of the door mirrors, or it may be an electronic system. This article will focus on the electronically operated blind spot object detection systems.

SYSTEM FEATURES

Blind spot object detection systems may have different names depending on the vehicle maker. Audi calls their system Side Assist, the Mercedes-Benz system is called Blind Spot Monitoring (BSM), and Volvo calls their system Blind Spot Information System (BLIS).

Depending on the vehicle maker, these systems may use either radar sensors or cameras to provide blind spot object detection. For example, the Side Assist system on Audi models uses radar sensors located behind the rear bumper cover. The Volvo BLIS uses cameras located near the door mirrors to detect vehicles in a blind spot (see Figure 1).

SYSTEM ACTIVATION AND OPERATION

Blind spot object detection systems have different activation and operation features. The Audi system is active from a speed of 56 km/h (35 mph) and can be switched off manually. If a trailer is attached to the vehicle, the Side Assist system is deactivated because the scanning range of the sensor may be impaired. A corresponding message will be provided in the information display.

The Mercedes-Benz S-Class BSM is activated automatically when the engine is started but may be switched on and off manually in the “Assistance” menu in the information display.

Volvo’s BLIS may be switched on and off with a switch located on the instrument panel (see Figure 2).

Blind spot object detection systems do not intervene in the driving and control of the vehicle.

SYSTEM RANGE

Blind spot object detection system sensors or cameras monitor for objects within a limited detection range. This range varies by vehicle maker. For example, the Audi Side Assist system has a range of about 50 m (164 ft), and the Ford blind spot object detection system has a range of 20 m (65 ft) from either side of the vehicle.

DRIVER ALERTS

The method of alerting the driver differs depending on the vehicle maker. The Side Assist system on an Audi uses yellow LEDs in the side mirror housing that light up when an object is detected in a blind spot (see Figure 3). If the driver switches on a lane change indicator while the blind spot object warning lights are on, the LEDs become brighter and start to flash.

On a Cadillac DTS, the blind spot object detection system uses visual indicators located on both side mirrors to alert the driver to the presence of a vehicle in the detection zone. This feature is similar on the Ford Taurus (see Figure 4).

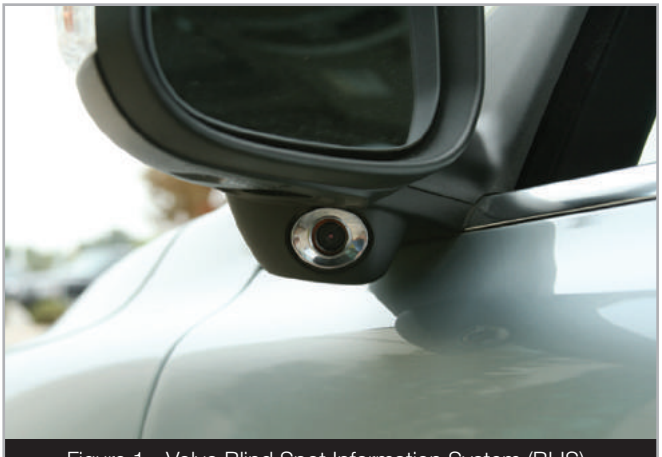

Figure 1 - Volvo Blind Spot Information System (BLIS) cameras are located on the door mirrors.

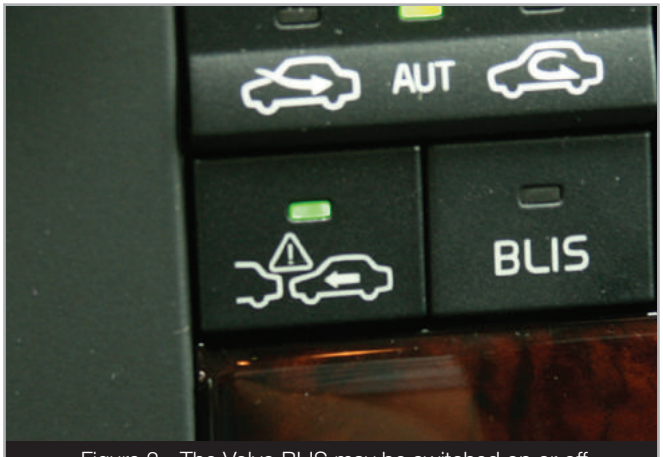

Figure 2 - The Volvo BLIS may be switched on or off using the instrument panel switch.

Figure 3 - The Audi Q7 has yellow LED indicators on the door mirrors to indicate the presence of objects in the blind spot.

The displays of the Mercedes-Benz BSM consist of a triangle in the side mirrors. The triangles light up yellow when the system is activated but not in operation (speed less than 30 km/h (19 mph)). At or above this speed, the yellow triangles are off, and the triangle in the respective mirror will light up red if an object in the warning range is detected. If the driver indicates a lane change via the turn signal indicator, the system delivers a single audible warning, and the red triangle in the respective mirror starts to flash. When a trailer is attached to the vehicle, the function indicators of the BSM system are switched off.

IDENTIFYING A BLIND SPOT DETECTION SYSTEM

To determine if a vehicle is equipped with this option, check the door mirrors. The mirrors are equipped with an LED that lights when the approaching vehicle comes into the blind spot. On some vehicles, such as the Ford Fusion, both of these LEDs light when the vehicle is started. On Volvo vehicles, look for a camera below the door mirrors. Some vehicles may also provide an icon on the driver information center or instrument cluster.

SENSOR PROBLEMS

Along with collision damage and /or mechanical problems, dirt, snow, mud, and other miscellaneous debris can build up on blind spot object detection sensors, preventing proper operation of the system. Sensor problems may be shown by indicator lights in the door mirror and/or an instrument cluster message, such as "Blind Spot System Fault", "Blind Spot Not Available", "Block Sensor", etc.

GM service information states that the 2008 Cadillac DTS side object detection (SOD) system has a diagnostic function that is capable of detecting when either sensor is severely blocked by mud, snow, water or ice buildup in front of the sensor. When both sensors are blocked, the SOD indicator in the left and right door mirrors are turned on and the driver information center (DIC) displays CLEAN SIDE BLIND ZONE ALERT. The SOD system transitions back to the normal operating state when the blockage is removed.

REPLACING SENSORS

With some systems, such as those used on GM vehicles, the sensors are identical and may be interchangeable from side-to-side. BMW uses different sensors on each side of the vehicle and should not be changed from side-to-side.

Correct alignment of cameras and/or sensors is necessary to ensure the proper operation of blind spot object detection systems. Calibration may be required following collision repairs if there is damage in the area of a sensor or if a sensor is replaced. Some of these calibration procedures may require the use of special tools.

Once the repair process is finished, inspect the parts and test for proper operation. Inspecting repairs may include connecting a scan tool to the data link connector (DLC) to verify that the system is operational, and test-driving the vehicle to verify that the system is functioning properly.

CONCLUSION

Blind spot object detection systems provide another element of safety for vehicle occupants. It is important that these safety systems are repaired correctly to ensure proper operation. System features and operation can vary from one vehicle maker to another. Always refer to the appropriate service information to verify specific system features and operation, and to determine the recommended repair procedures.

This article first appeared in the I-CAR Advantage Online, which is published and distributed free of charge. I-CAR, the Inter-Industry Conference on Auto Collision Repair, is a not-for-profit international training organization that researches and develops quality technical education programs related to automotive repair. To learn more about I-CAR, and to subscribe to the free publication, visit: www.i-car.co.nz, then click on 'Links', then 'I-CAR Advantage Online'

For information on I-CAR training courses conducted throughout New Zealand, contact I-CAR NEW ZEALAND PHONE 07 - 847 0218

Figure 4 -The 2010 Ford Taurus has visual indicators on the door mirrors to indicate the presence of an object in a blind spot.