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1 General Information

Symbols used in this document

**DANGER**
Description of an immediate situation which will result in irreversible injury or death if the warning is ignored.

**WARNING**
Description of a possible situation which may result in irreversible injury or death if the warning is ignored.

**CAUTION**
Description of a possible situation which may result in irreversible injury if the warning is ignored.

**NOTICE**
Description of a possible situation which may result in material damage if the warning is ignored.

- Important information, notes and/or tips
- Reference to information on the internet

1. Action step
   - Action step
   - Consequence of an action

- List
  - List

How to Obtain Additional Maintenance, Service and Product Information

Visit our Literature Center at wabco-na.com/literature to access and download additional information.

Contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-na.com.
General Information

WABCO Academy

https://www.wabco-academy.com/home/

WABCO online product catalog

https://www.wabco-customercenter.com

Your direct contact to WABCO

WABCO North America LLC
WABCO USA LLC
1220 Pacific Drive
Auburn Hills, MI 48326
Customer Care Center: (855) 228-3203
www.wabco-na.com
2 Safety Information

Provisions for a safe work environment

- Only trained and qualified auto technicians and automotive mechanics may carry out work on the vehicle.
- Read this publication carefully.
- Follow all warnings, notices and instructions to avoid personal injury and property damage.
- Always abide by the vehicle manufacturer's specifications and instructions.
- Observe all accident regulations of the respective company as well as regional and national regulations.
- The workplace should be dry, sufficiently lit and ventilated.
- Use personal protective equipment if required (safety shoes, protective goggles, respiratory protection and ear protectors).

Read and observe all Danger, Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

**WARNING**

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

**WARNING**

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip or fall over. Serious personal injury and damage to components can result.

**WARNING**

This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

3 How to Obtain Replacement Components

To order replacement components for the OnSide BSD System, contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com for assistance.

Please have the following information available:

- Vehicle make
- Vehicle model
- Vehicle model year
- BSD component part number and serial number
3.1 If Tools and Supplies are Specified in This Manual

Contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com.

Information contained in this publication was in effect at the time the publication was approved for printing and is subject to change without notice or liability. WABCO reserves the right to revise the information presented or to discontinue the production of parts described at any time.

4 OnSide Warnings, Cautions and Operating Guidelines

4.1 Driver-Related Information

⚠️ WARNING

The OnSide Blind Spot Detection (BSD) system is merely a driver’s assist tool and does not engage in all driving situations or traffic, weather or road conditions. The driver always bears ultimate responsibility for ensuring that the vehicle is driven safely and that applicable laws and road traffic regulations are followed. Failure to do so can result in serious personal injury or death and/or severe property damage. The driver is responsible for understanding the operation and limitations of the OnSide BSD system before operating the vehicle. Failure to do so can result in serious personal injury or death and/or severe property damage. Please refer to the OnSide Blind Spot Detection (BSD) Driver’s Tips available at www.wabco-na.com/literature for additional information on the correct operation and understanding of the situations in which the system may not provide assistance.

⚠️ WARNING

The OnSide Blind Spot Detection (BSD) system was designed, manufactured and installed as an operator assistant. This system is not intended to replace good attentive driving behaviors and practices which may change based upon traffic and road conditions. Use of OnSide cannot compensate for a driver that is tired, distracted, inattentive or impaired by fatigue, drugs or alcohol. As always, it is the driver’s responsibility to:

- Use safe driving techniques.
- Exercise proper judgement for the traffic, road and weather conditions.
- Maintain a safe distance between vehicles and respect speed limits.
- React to road conditions to maintain control of the vehicle.

Failure to do so can result in serious personal injury or death and/or severe property damage.
OnSide Warnings, Cautions and Operating Guidelines

**WARNING**

Always pay attention to the road when driving, whether the OnSide system is engaged or not. Distraction comes in many forms and can take your focus from the task of driving. Exercise good judgment and do not let other activities divert your attention away from the road. Many local governments have enacted laws regarding driver distraction. Become familiar with the local laws in your area. To avoid distracted driving, always keep your eyes on the road, hands on the wheel, and mind on the drive.

- Do not use a phone in demanding driving situations. Use a hands-free method to place or receive necessary phone calls.
- Watch the road. Do not read, take notes, or look up information on phones or other electronic devices.
- Designate a front seat passenger to handle potential distractions.
- Become familiar with vehicle features before driving, such as programming favorite radio stations and adjusting climate control and seat settings. Program all trip information into any navigation device prior to driving.
- Wait until the vehicle is parked to retrieve items that have fallen to the floor. Driving while distracted can result in serious personal injury or death and/or severe property damage.

**WARNING**

The OnSide Blind Spot Detection System is designed as a warning system and thus, will not actively intervene to prevent contact with other vehicles, persons or objects. The system is not intended as a substitute for proper lane change procedures. Alerted by an OnSide warning, the driver must take corrective measures to avoid an imminent side collision.

Drivers must remain aware of their surroundings by using all available mirrors before changing lanes. Never rely solely on the system. OnSide is a radar-based system and has a defined detection zone. Vehicles outside of the detection zone will not be detected by the system. In some situations, not every vehicle or object will be detected by the radar even within the detection zone.

By design, the OnSide BSD system will not warn of the following:

- Any stationary object, such as parked cars, trees, walls, etc.
- Vehicles moving in the opposite direction.
- Smaller objects, such as bicycles, animals or pedestrians.

OnSide will not offer alerts when the tractor is traveling below 15 mph (24.2 km/h).
4.2 Environment-Related Information

**WARNING**

The OnSide BSD radar sensor performance may be degraded or completely disabled under these conditions:
- Damaged fascia.
- Poor weather conditions such as heavy snow, ice, heavy rain or road spray.
- Dirt, mud or insect buildup.

If the system is not functioning correctly or as expected, have the OnSide system inspected to correct the issue. Whether or not the system is working correctly, it is the driver’s responsibility to react to changing road conditions to maintain vehicle control. Failure to do so can result in serious personal injury or death and/or severe property damage.

4.3 System Functions

The OnSide BSD System is designed as a warning system and thus, will not actively intervene to prevent contact with other vehicles, persons or objects. The system is not intended as a substitute for proper lane change procedures. Alerted by an OnSide warning, the driver must take corrective measures to avoid an imminent side collision. Drivers must remain aware of their surroundings by looking and using all available mirrors before changing lanes. Never rely solely on the system.

The OnSide BSD system is passive, there is no switch or button to turn the system on or off. The system powers up when the ignition is cycled on, at this time the OnSide BSD system will perform a bulb check and flash the OnSide BSD LED indicator. The OnSide BSD system automatically becomes active at speeds above 15 mph (24.2 km/h). Its blind spot detection alerts (visual and/or audible) are available as soon as the vehicle reaches 15 mph (24.2 km/h).

If the vehicle is equipped with OnGuard and uses the WABCO OnGuard dash display, there will be additional visual and audible warnings through the display.

Whether or not the system is engaged, it is the driver’s responsibility to react to changing road conditions to maintain vehicle control. Failure to do so can result in serious personal injury or death and/or severe property damage.
4.4 System Malfunction Information

**WARNING**

Modifications to electronic components and their software as well as wiring can impair their function and/or the function of other networked components. In particular, systems relevant to safety could also be affected. As a result, these may no longer function as intended and/or jeopardize the safe operation of the vehicle. There is an increased risk of an accident and injury. Never tamper with the wiring as well as electronic components or their software. You should have all work to electrical and electronic equipment carried out at a qualified specialist workshop.

If there is a malfunction and the system cannot provide assistance, the LED indicator (mounted on the A-pillar) may not illuminate at all, may continuously be illuminated or may blink intermittently. If the vehicle is equipped with the WABCO OnGuard dash display, during a malfunction OnSide, may not be listed/recognized in the OnGuard display "SYSTEMS DETECTED" start-up menu. When there is a BSD system malfunction, it may not warn correctly when a moving vehicle is detected in the passenger side blind spot zone.

Whether or not the system is functioning correctly, it is the driver’s responsibility to react to changing road conditions to maintain vehicle control. Failure to do so can result in serious personal injury or death and/or severe property damage.
5 OnSide® BSD Introduction

5.1 System Description

OnSide Blind Side Detection (BSD) is an advanced driver assistance system that supports drivers in overtaking and lane change maneuvers to help avoid side collisions. The OnSide system becomes active at speeds above 15 mph (24.2 km/h). Once active, the system constantly monitors the vehicle’s passenger side blind spot and warns of moving vehicles appearing in the vehicle’s passenger side blind spot. The system utilizes a short range radar sensor mounted on the right side of the truck cabin to constantly monitor the vehicle’s passenger side blind spot. When the OnSide BSD system detects a moving vehicle in the monitored blind spot, the system provides a visual warning from the OnSide BSD LED indicator mounted in the passenger side A-pillar (close to the side view mirror). This visual warning will occur with and without turn signal activation.

OnSide was designed to be a standalone system; no other WABCO systems are required to be installed on the vehicle for OnSide to function. OnSide is compatible with other WABCO systems such as OnGuard.

5.1.1 Dash Displays

5.1.1.1 WABCO OnGuard® Display

If the vehicle is equipped with a WABCO OnGuard display, when the vehicle is traveling above 15 mph (24.2 km/h) with the right turn signal activated, and the OnSide BSD system detects a moving vehicle in the passenger side blind spot, the OnGuard display will provide audible and visual alerts to warn the driver that the adjacent lane is not clear. These alerts are in addition to the visual warning provided by the OnSide BSD LED indicator.

Some installations have a WABCO OnGuard display mounted under/behind the dash for additional audible warnings only.

5.1.1.2 OEM Integrated Instrument Cluster Display

Some OnSide BSD systems may use the vehicle’s integrated instrument cluster display to provide additional warnings.

For these vehicles, consult OEM reference materials for display operation, diagnostics and repair instructions.
5.2 System Components

5.2.1 OnSide BSD Radar Sensor

The OnSide BSD system utilizes a 24 GHz short-range radar sensor (Figure 5.1) mounted on the right side of the truck cabin to constantly monitor the vehicle’s passenger side blind spot zone. The radar continuously detects a wide variety of stationary and moving objects in the vehicle’s passenger side blind spot, while the algorithm filters out the stationary objects. This allows the system to warn the driver only of moving objects (objects traveling in the same direction).

The radar sensor has a 160-degree field of view and reach of up to 33 ft. rearward and 13 ft. forward (Figure 5.2).
5.2.2 OnSide BSD Radar Fascia

The OnSide BSD radar sensor mounts on the passenger side of the truck. When the OnSide BSD radar sensor is mounted on the outside of the fairing or step area, it is covered by a fascia to provide protection against the elements and damage (Figure 5.3).

5.2.3 OnSide BSD LED Indicator

The OnSide BSD system constantly monitors the vehicle’s passenger side blind spot zone for moving vehicles. When the system detects moving vehicles appearing in the vehicle’s passenger side blind spot, it warns the driver using an LED warning lamp (Figure 5.4) mounted on the passenger side A-pillar (close to the rear view mirror). When OnSide is active, the LED warning lamp will illuminate (Figure 5.5) and will remain on until the detected vehicle exits the blind spot zone.
5.2.4 WABCO OnGuard Display

If the vehicle is equipped with OnGuard and uses the WABCO OnGuard display (Figure 5.6) during the key-on ignition cycle, OnSide should be listed in the WABCO display “SYSTEMS DETECTED” start-up menu (Figure 5.7).

The WABCO OnGuard display also provides additional visual (Figure 5.8) and audible warnings. The additional audible and visual warnings from the display occur if the right turn signal is activated while there is a moving vehicle detected in the passenger side blind spot zone.

Some vehicles may have a display mounted behind/under the dash for audible warning purposes only.
5.2.5 OnSide BSD Radar Sensor Mounts

There are several OnSide BSD radar sensor mounting plates/brackets (Figures 5.9 and 5.10) and spacers depending on the kit that was installed, the radar sensor mounting location, and the vehicle OEM. Your installation may use a spacer of some type. Some spacers have a “Wedge” shape (Figure 5.11), others may use an "Adapter Shim Housing" (Figure 5.12) with a number of "Shims" (Figure 5.13). The examples below are for fairing and step mounting applications.
5.2.6 OnSide BSD - WABCO Harness (If Equipped)

Not all vehicles will use the WABCO OnSide BSD harness; some may use an OEM harness. Please see the OEM reference materials for harness information. If the vehicle does use the WABCO OnSide BSD harness (Figure 5.14), it will have the BSD radar sensor connector and BSD LED indicator connector, and the turn signal input relay will be tapped to the harness. The harness will have a ground splice inside. The harness power (ignition) wire, ground wire, right turn input signal wire, and J1939 CAN High and Low wires will be spliced into the vehicle harness. The locations of the splices will vary depending on the installer and vehicle.
6 Diagnostics, Troubleshooting and Testing

OnSide BSD system does not have any type of warning to indicate the system has been disconnected or has a failure. The only way to determine that there is an OnSide BSD system issue is if it fails to perform correctly at start up and/or fails to perform correctly while driving. The system does not feature any type of manual diagnostic or blink code mode. If an issue with the OnSide BSD system is suspected, check for system faults or DTCs using TOOLBOX™ 12.9 Software or newer.

6.1 OnSide BSD System Functional Checks

When the ignition is turned on, the OnSide BSD LED indicator will illuminate briefly for a bulb check (Figure 6.1) and then go out (Figure 6.2), indicating the system is ready for use.

![Bulb Check or Vehicle Detected](image1)

![Normal or No Vehicle Detected](image2)

If the vehicle is also equipped with OnGuard and uses the WABCO OnGuard display, during the ignition key-on cycle, "OnSide" should be shown on the display in the "SYSTEMS DETECTED" start-up menu (Figure 6.3).

![OnSide Recognized](image3)

If the OnSide BSD LED indicator did not illuminate briefly and/or "OnSide" was not recognized in the WABCO OnGuard display start-up menu (Figure 6.4), a display issue, an OnSide BSD system issue, or J1939 circuit issue is indicated.

![OnSide Not Recognized](image4)
Once the OnSide BSD LED indicator bulb check has been performed, drive the vehicle above 15 mph (24.2 km/h) with a moving vehicle in your passenger side "blind spot zone" (Figure 6.5) and verify that the OnSide BSD LED indicator is illuminated. As the vehicle exits the passenger side blind spot zone, the OnSide BSD LED indicator should go out. The OnSide BSD LED indicator should always perform in this manner, with or without turn signal activation.

For vehicles equipped with a WABCO OnGuard display, when the vehicle is traveling above 15 mph (24.2 km/h), the right turn signal is activated, and a moving vehicle is detected in the blind spot zone, the display will also provide warnings. In addition to the warning from the OnSide BSD LED indicator, there will be an audible chirp heard and a visual "Blind Spot Alert" (Figure 6.6) warning message shown on the display. The "chirps" and "Blind Spot Alert" warning message will continue as long as the vehicle is traveling above 15 mph (24.2 km/h), the right turn signal is activated, and there is a moving vehicle in the passenger side blind spot zone.

If the right turn signal is not activated, there will be no indication (audible or visual) from the WABCO OnGuard display indicating that there is a moving vehicle in your passenger side blind spot zone.

### 6.2 System Visual Inspection

Perform a visual inspection of the OnSide BSD system before proceeding with any diagnostics or repairs.

- Ensure that the OnSide BSD radar sensor and fascia are not missing or visibly damaged, and are mounted correctly and securely.
- Verify that the OnSide BSD radar sensor and fascia are clean, with no buildup of snow, ice, dirt/mud, insects or debris.
- Ensure there are no loose or corroded connections, particularly where the OnSide BSD system harness may have been spliced into the vehicle harness.
Diagnostics, Troubleshooting and Testing

- Inspect the wiring for cut or frayed areas that could cause an open circuit or a short to the vehicle body, which would result in a short-to-ground condition.
- Verify the OnSide BSD LED indicator is mounted correctly and shows no visible sign of damage.
- Verify the WABCO display (if equipped) is mounted correctly and shows no visible sign of damage.
- Confirm the WABCO display is the correct part number and has the correct software.

6.3 TOOLBOX™ Software

WABCO TOOLBOX™ Software version 12.9 or later is the only software that can be used to fully communicate with, and diagnose, the OnSide BSD system. To obtain TOOLBOX™ 12.9 or the latest version of software, visit our website at wabco-na.com.

A diagnostic communication device is also needed to connect the laptop to the vehicle J1939 port.

1. Once the TOOLBOX™ Software has been installed on your computer, locate the TOOLBOX icon (Figure 6.7) on the desktop and double-click on the icon.

2. In the TOOLBOX™ main screen, click on the OnSide button to open the OnSide main screen (Figure 6.8).
3. Click on the "Display" heading and select "Diagnostic Trouble Codes" from the drop-down to open the Diagnostic Trouble Code page (Figure 6.9).

When the Diagnostic Trouble Code (DTC) screen opens, all of the DTCs active and stored should populate. The list will provide the DTC "Status", number of "Occurrences", the "SPN", the "FMI" and the "SYSTEM/State" (a brief DTC description) for each DTC listed.

Clicking on the "Generate DTC Report" button will offer the opportunity to save the DTC Report to a known location (Figure 6.10).
Clicking on any of the DTCs listed on the Diagnostic Trouble Code screen will populate the Repair Guide field with repair instructions and tips for that DTC (Figure 6.11).

### 6.4 OnSide BSD System Diagnostic Trouble Code Table

The following table provides a list of the OnSide BSD system Diagnostic Trouble Codes (DTCs), troubleshooting and repair instructions. If there is a DTC listed in TOOLBOX™ that is not in the Diagnostic Trouble Code table, contact the WABCO Customer Care Center at 855-228-3203 for assistance.

<table>
<thead>
<tr>
<th>SPN</th>
<th>FMI</th>
<th>DTC Description</th>
<th>DTC Detection Method</th>
<th>Action</th>
</tr>
</thead>
</table>
| 894 | 3   | BSD sensor voltage supply out of range - High. | Voltage supply to the radar sensor is abnormal high (raises above 18.7V) for more than 10 seconds. | With the ignition on, monitor the voltage (Ignition) at pin 5 of the BSD radar sensor harness connector to determine if the voltage is between 10 and 16 VDC. If the voltage is too high:  
- Troubleshoot the voltage regulator and alternator system.  
- Determine if a jump start or battery charging has occurred that could cause a vehicle overvoltage condition. |
<table>
<thead>
<tr>
<th>SPN</th>
<th>FMI</th>
<th>DTC Description</th>
<th>DTC Detection Method</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>894</td>
<td>4</td>
<td>BSD sensor voltage supply out of range - Low.</td>
<td>Voltage supply to the radar sensor is abnormal low (drops below 9V) for more than 10 seconds.</td>
<td>With the ignition on, monitor the voltage (Ignition) at pin 5 of the BSD radar sensor harness connector to determine if the voltage is between 10 and 16 VDC. If the voltage is less than 9VDC: - Inspect the BSD radar sensor circuit harness connectors, verify that there is no sign of damage or corrosion. - Inspect each of the power connections between the ignition switch and the BSD radar sensor harness connector to determine where loss of power may be occurring. Check for any loose connectors.</td>
</tr>
<tr>
<td>894</td>
<td>5</td>
<td>LED Short to Battery.</td>
<td>LED is continuously monitored to check for a short to battery.</td>
<td>- Verify the LED indicator lamp wiring circuit connectors are not loose and show no signs of damage or corrosion. - Check LED indicator lamp wiring circuit for short to voltage from pin 1 of LED harness connector to pin 4 of radar sensor harness connector. - Inspect LED indicator lamp pigtail for damage or short to voltage.</td>
</tr>
<tr>
<td>894</td>
<td>6</td>
<td>LED Short to Ground.</td>
<td>LED is continuously monitored to check for a short to ground</td>
<td>- Verify the LED indicator lamp wiring circuit connectors are not loose and show no signs of damage or corrosion. - Check LED indicator lamp wiring circuit for short to ground from pin 1 of LED harness connector to pin 4 of radar sensor harness connector. - Inspect LED indicator lamp pigtail for damage or short to ground.</td>
</tr>
<tr>
<td>894</td>
<td>7</td>
<td>LED open circuit.</td>
<td>LED is continuously monitored to check for an open circuit.</td>
<td>- Verify the LED indicator lamp wiring circuit connectors are not loose and show no signs of damage or corrosion. - Inspect LED indicator lamp pigtail for damage. - Check LED indicator lamp wiring circuit for continuity from pin 1 of LED harness connector to pin 4 of radar sensor harness connector. - Check LED indicator lamp wiring circuit for continuity from pin 2 of LED harness connector to ground.</td>
</tr>
<tr>
<td>894</td>
<td>8</td>
<td>BSD sensor temperature out of range.</td>
<td>If temperature at sensor is above 185°F or below -40°F.</td>
<td>Provide cooling or warming to the BSD radar sensor as needed, cycle the power and retest after the unit temperature is within range. If the temperature of the radar sensor is brought back into range and the DTC persists, a radar sensor failure is indicated.</td>
</tr>
<tr>
<td>SPN</td>
<td>FMI</td>
<td>DTC Description</td>
<td>DTC Detection Method</td>
<td>Action</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 894 | 9   | BSD sensor local CAN abnormal update rate or bus Off.| - If wheel-based vehicle speed is not received (missing) for 10 times in a row within a specified update time.  
- If vehicle speed is not received or >160 mph for 10 times in a row within a specified update time.  
- If the state "Bus Off" is detected on the CAN bus for a specified period.  
- If there is an active CAN bus internal fault.                                                                                                                                                  | - Check if the BSD radar sensor is properly connected to the vehicle CAN (J1939).  
- Verify J1939 data is on the vehicle communications bus using the standard vehicle diagnostic tool. If normal vehicle communications exist, remove the sensor from the vehicle and inspect it for any damage.  
- Inspect the connector for any signs of damage or corrosion.  
- If all checks are good, contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com (for technical service questions). |
| 894 | 11  | BSD sensor software fault.                          | Internal software fault in the side sensor that affects the sensor performance.                                                                                                                                          | Inspect the BSD radar sensor for any signs of damage or corrosion, verify good voltage (pin 5) and ground (pin 10) to the unit.                                                                                                                                       |
| 894 | 12  | BSD sensor hardware fault.                          | Internal hardware fault in the side sensor that affects the sensor performance.                                                                                                                                           | Inspect the BSD radar sensor for any signs of damage or corrosion, verify good voltage (pin 5) and ground (pin 10) to the unit.  
Contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com (for technical service questions). |
| 894 | 14  | BSD sensor blocked.                                 | If radar is blocked by a wave absorbing material, system is powered for more than 3 minutes and vehicle is running for more than 1/2 mile.                                                                                   | Park the vehicle in a safe location, set the parking brake and turn ignition OFF.  
Inspect the BSD radar sensor and fascia (front and back), remove any object/debris that is blocking the radar unit and check for any signs of damage or corrosion.  
- If all checks are good and the DTC persists, a radar sensor failure is indicated.                                                                                                                 |
6.5 Circuit Descriptions and Diagnostics

SYMPTOM CHART INDEX

<table>
<thead>
<tr>
<th>Symptom Chart</th>
<th>Symptom Name</th>
</tr>
</thead>
<tbody>
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<td>OnSide BSD Radar Fails to Power Up.</td>
</tr>
<tr>
<td>Symptom Chart B</td>
<td>BSD LED Indicator Will Not Illuminate.</td>
</tr>
<tr>
<td>Symptom Chart C</td>
<td>WABCO OnGuard Display Will Not Power Up.</td>
</tr>
<tr>
<td>Symptom Chart D</td>
<td>OnSide Not Listed in WABCO OnGuard Display &quot;SYSTEMS DETECTED&quot; Start-Up Menu.</td>
</tr>
<tr>
<td>Symptom Chart E</td>
<td>No WABCO OnGuard Display Blind Spot Zone Moving Vehicle Recognition with Right Turn Signal Activation (Relay System).</td>
</tr>
<tr>
<td>Symptom Chart F</td>
<td>No WABCO OnGuard Display Blind Spot Zone Moving Vehicle Recognition with Right Turn Signal Activation (J1939 CAN System).</td>
</tr>
<tr>
<td>Symptom Chart G</td>
<td>OnSide BSD System Does Not Recognize Moving Vehicles Correctly.</td>
</tr>
</tbody>
</table>

6.5.1 OnSide BSD Radar Sensor

Fig. 6.12
This simplified diagram (Figure 6.12) represents the OnSide BSD system circuit. Although they may not be shown here, additional in-line connectors and splices may be present in the circuit depending on the particular vehicle installation and OEM.

The OnSide BSD radar sensor will be mounted on the passenger side of the vehicle, either step mounted or fairing mounted. The exact location of the BSD radar sensor on the fairing may vary slightly based on the installer or OEM.

If the OnSide BSD radar is functioning properly, the OnSide BSD LED indicator should illuminate briefly when the ignition is turned on for a lamp check. The only other time it should illuminate is when the vehicle is traveling above 15 mph (24.2 km/h) and the system is tracking a moving vehicle in the passenger side blind spot zone.

The OnSide BSD radar sensor or circuit may not be functioning properly if:

- The OnSide BSD LED indicator will not illuminate at all.
- The OnSide BSD LED indicator is always illuminated.
- The OnSide BSD LED indicator will perform a "Bulb check" but will not indicate moving vehicles in the blind spot zone when traveling above 15 mph (24.2 km/h).
- The OnSide BSD LED indicator will not perform an ignition on "Bulb check" but will indicate moving vehicles in blind spot zone when traveling above 15 mph (24.2 km/h).
- The OnSide BSD LED indicator works intermittently.

Inspect the OnSide BSD radar sensor connector and verify that it is not loose, and shows no sign of damage or corrosion. If the OnSide BSD radar sensor connector passes inspection, check the BSD Radar circuits. See Symptom Chart A.

### SYMPTOM CHART A

**OnSide BSD RADAR FAILS TO POWER UP**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Key on. Disconnect the OnSide BSD radar sensor harness connector. Check voltage between pin 5 of the radar sensor harness connector and ground.</td>
</tr>
</tbody>
</table>

**Correct Range**: Check the circuit between the BSD radar sensor harness connector pin 5 of and the vehicle ignition for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring and connections and fuses. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com.
## Diagnostics, Troubleshooting and Testing

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Key off.&lt;br&gt;The OnSide BSD radar sensor harness connector disconnected.&lt;br&gt;Check voltage between pin 5 of the radar sensor harness connector and ground.</td>
<td>0.0 volts.</td>
<td>Go to Step 3.</td>
<td>If voltage is found when the key is off check pin 5 circuit and verify there are no shorts, no sign of damage or corrosion. Check all circuit wiring. (Note if pin 5 circuit is connected or shorted to constant battery voltage the system will not perform a bulb check but will warn of vehicle in blind spot correctly.) Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>3</td>
<td>Key off.&lt;br&gt;The OnSide BSD radar sensor harness connector disconnected.&lt;br&gt;Check resistance between pin 10 of the radar sensor harness connector and ground.</td>
<td>Less than 1 ohm.</td>
<td>Go to Step 4.</td>
<td>If the resistance is out of range, check the circuit between pin 10 and ground for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring and connections. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>4</td>
<td>Key on.&lt;br&gt;The OnSide BSD radar sensor harness connector disconnected.&lt;br&gt;Load test across the BSD radar sensor harness connector pins 5 and 10 with a 2-4 amp sealed head lamp.</td>
<td>Lamp should be bright.</td>
<td>Go to Step 5.</td>
<td>If the lamp does not illuminate, is dim or flickers, a wiring or connection issue is indicated. Check the pin 5 circuit and pin 10 circuit for continuity, verify both circuits have no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections and fuses. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
</tbody>
</table>
## Diagnostics, Troubleshooting and Testing

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Reconnect the OnSide BSD radar sensor harness connector. Disconnect the OnSide BSD LED indicator harness connector. During key on cycle, monitor voltage between the BSD LED harness connector pin 1 and ground.</td>
<td>Brief period maximum of 4.5 volts.</td>
<td>Go to Symptom Chart B.</td>
<td>During the key on cycle there should be a brief period where the radar sensor sends a max of 4.5 volts to the BSD LED indicator for a bulb check. If performance or voltage is out of range, go to step 6.</td>
</tr>
<tr>
<td>6</td>
<td>Check the circuit between the OnSide BSD LED harness connector pin 1 and the OnSide BSD radar sensor harness connector pin 4 for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections.</td>
<td>Circuit checks good.</td>
<td>Go to Step 7.</td>
<td>Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>7</td>
<td>Visually inspect OnSide BSD radar sensor for any sign of damage.</td>
<td>Visual inspection checks good.</td>
<td>OnSide BSD radar sensor failure is indicated.</td>
<td>Physical damage indicates unit has failed and will need to be replaced and is not warrantable.</td>
</tr>
</tbody>
</table>
6.5.2 OnSide BSD System LED Indicator

This simplified diagram (Figure 6.13) represents the OnSide BSD LED indicator circuit. Although they may not be shown here, additional in-line connectors and splices may be present in the circuit depending upon the particular vehicle installation.

The OnSide BSD LED indicator will be mounted on the passenger A-pillar near the right-side view mirror. The exact position location on the A-pillar may vary slightly based on the installer or OEM. If the OnSide BSD radar is functioning properly, the OnSide BSD LED indicator should illuminate briefly when the ignition is turned on for a bulb check. The only other time it should illuminate is when the vehicle is traveling above 15 mph (24.2 km/h) and the system is tracking a moving vehicle in the passenger side blind spot zone.

There may be an issue with the OnSide BSD LED indicator or circuit if:

- The OnSide BSD LED indicator will not illuminate at all.
- The OnSide BSD LED indicator is always illuminated.
- The OnSide BSD LED indicator works intermittently.

Inspect the OnSide BSD LED indicator and connector and verify that it is not loose, and shows no sign of damage or corrosion. If the OnSide BSD LED indicator passes inspection, check the OnSide BSD LED indicator circuits. See Symptom Chart B.
# SYMPTOM CHART B

**OnSide BSD LED INDICATOR WILL NOT ILLUMINATE**

**NOTE:** Prior to performing the diagnostic steps in the chart below:
- Verify that the OnSide BSD LED indicator is not illuminating (bulb check and moving vehicle recognition).
- Perform a system visual inspection prior to diagnostics.
- Check for active OnSide BSD DTCs.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disconnect the OnSide BSD LED indicator harness connector. During key on cycle, monitor voltage between the BSD LED harness connector pin 1 and ground.</td>
<td>Brief period maximum of 4.5 volts.</td>
<td>Go to Step 2.</td>
<td>During the key on cycle there should be a brief period where the radar sensor sends a max of 4.5 volts to the BSD LED indicator for a bulb check. If the voltage is out of range, go to Step 4.</td>
</tr>
<tr>
<td>2</td>
<td>Key off. OnSide BSD LED indicator harness connector disconnected. Check resistance between BSD LED indicator harness connector pin 2 and ground.</td>
<td>Less than 1 ohm.</td>
<td>Go to Step 3.</td>
<td>If the resistance is out of range, check the circuit between the OnSide BSD LED harness connector pin 2 and ground for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>3</td>
<td>Check the OnSide BSD LED indicator, LED pig tail and harness connectors for signs of damage or corrosion.</td>
<td>Visual inspection checks good.</td>
<td>OnSide BSD LED Indicator failure is indicated.</td>
<td>Physical damage indicates the BSD LED has failed and will need to be replaced and is not warrantable.</td>
</tr>
<tr>
<td>4</td>
<td>Check the circuit between the OnSide BSD LED harness connector pin 1 and the OnSide BSD radar sensor harness connector pin 4 for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections and fuses.</td>
<td>Circuit checks good.</td>
<td>Go to Symptom Chart A.</td>
<td>Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
</tbody>
</table>
6.5.3 WABCO OnGuard Display

This simplified diagram (Figure 6.14) represents the WABCO OnGuard display circuit. Although they may not be shown here, additional in-line connectors and splices may be present in the circuit depending upon the particular vehicle installation.

If the vehicle is equipped with a WABCO OnGuard display, there are two possible configurations:

- On the dash for supplemental visual and audio warnings.
- Under or behind the dash for audio warnings only.

The exact location of the WABCO OnGuard display on the dash or under/behind the dash may vary slightly based on the installer or OEM. For either configuration, the display circuit is the same.

If the WABCO OnGuard display and OnSide BSD systems are functioning properly, OnSide will be listed in the "SYSTEMS DETECTED" display screen during the WABCO OnGuard display start-up screen process (Figure 6.15).

The WABCO OnGuard display should also warn visually with a "Blind Spot Alert" (Figure 6.16) screen and audibly with chirps, when the vehicle is traveling above 15 mph (24.2 km/h), the right turn signal is activated, and the system is tracking a moving vehicle in the passenger side blind spot zone.
There may be an issue with the WABCO "OnGuard" display or circuit if:

- The WABCO OnGuard display will not illuminate at all.
- The WABCO OnGuard display does not list OnSide in the "SYSTEMS DETECTED" screen and will not indicate moving vehicles in blind spot zone when the vehicle is traveling above 15 mph (24.2 km/h) with the right turn signal activated.
- The WABCO OnGuard display works intermittently.

Inspect the WABCO OnGuard display and connector and verify that they are not loose, and show no sign of damage or corrosion. If the WABCO OnGuard display passes inspection, check the WABCO OnGuard display circuits. Depending on the complaint, see Symptom Charts C and D.

### 6.5.4 WABCO OnGuard Display Will Not Illuminate

**SYMPTOM CHART C**

**WABCO OnGuard DISPLAY WILL NOT POWER UP**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Key on. Disconnect the WABCO OnGuard display connector. Check voltage between the WABCO OnGuard display harness connector pin 4 and ground.</td>
<td>9.0-16.0 volts.</td>
<td>Go to Step 2.</td>
<td>If the voltage is out of range, check between the WABCO OnGuard display harness connector pin 4 and the vehicle ignition circuit for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections and fuses. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
</tbody>
</table>

NOTE: Prior to performing the diagnostic steps in the chart below:
- If the WABCO OnGuard display screen is dark, verify that the display screen brightness settings are not all the way down.
- Verify that the display alarm volume settings are not all the way down.
- Check for active OnGuard DTCs.
## Diagnostics, Troubleshooting and Testing

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Key off. The WABCO OnGuard display harness disconnected. Check resistance between the WABCO OnGuard display harness connector pin 5 and ground.</td>
<td>Less than 1 ohm.</td>
<td>Go to Step 3.</td>
<td>If the resistance is out of range, check between the WABCO OnGuard display harness connector pin 5 and ground circuit for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>3</td>
<td>Key on. The WABCO OnGuard display connector disconnected. Load test across pins 4 and 5 with a 2-4 amp sealed head lamp.</td>
<td>Lamp should be bright.</td>
<td>Go to Step 4.</td>
<td>If the lamp does not illuminate, is dim or flickers, a wiring or connection issue is indicated. Check the pin 4 circuit and pin 5 circuit for continuity, verify both circuits have no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections and fuses. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>4</td>
<td>Check the WABCO OnGuard display and harness connector for signs of damage.</td>
<td>Visual inspection checks good.</td>
<td>WABCO OnGuard Display failure is indicated.</td>
<td>Physical damage indicates unit has failed and will need to be replaced and is not warrantable.</td>
</tr>
</tbody>
</table>

### 6.5.5 WABCO OnGuard Display Does Not Recognize OnSide

If OnSide is the only WABCO system on the vehicle and it is not detected or no WABCO systems are detected, as indicated by the "SYSTEMS DETECTED" screen during start-up, the screen in Figure 6.17 will be displayed.

![Fig. 6.17](4016965a)
If the WABCO OnGuard display is not recognizing the OnSide BSD system during the key-on "SYSTEMS DETECTED" screen, the display software may be incorrect.

To verify the correct display software, turn the ignition on and allow the WABCO OnGuard display to go through its start-up screens process. Once the start-up process is complete, tap the "Mode" button on the display a few times and scroll through the screens until the "SOFTWARE REV" screen appears (Figure 6.18).

For vehicles with OnGuard and OnSide, the WABCO display software is:

- For 250 kBd systems the display should show: "DISPLAY SOF00086230"
- For 500 kBd systems the display should show: "DISPLAY SOF00089830"

If the display does not have these software levels or newer, the software will need to be updated.

To obtain the latest display software, or for additional information regarding OnSide or OnGuard, please go to our website: www.wabco-na.com.

If you need further assistance, please contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com.

### SYMPTOM CHART D

**OnSide NOT LISTED IN WABCO OnGuard DISPLAY "SYSTEMS DETECTED" START-UP MENU**

**NOTE:** Prior to performing the diagnostic steps in the chart below:
- Verify that the OnSide BSD LED indicator functions correctly (bulb check and moving vehicle recognition). If not, see Symptom Chart A.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirm the WABCO OnGuard display software is up to date and compatible with OnSide BSD system.</td>
<td>Correct software.</td>
<td>Go to Step 2.</td>
<td>Update the WABCO OnGuard display software to the correct software, and go to Step 10.</td>
</tr>
<tr>
<td>2</td>
<td>Connect to the OnSide BSD system with TOOLBOX™ 12.9 or newer software.</td>
<td>BSD system connects to TOOLBOX™.</td>
<td>Go to Step 3.</td>
<td>If TOOLBOX™ software will not connect to the OnSide BSD system, go to Step 8.</td>
</tr>
<tr>
<td>3</td>
<td>Check for any active OnSide BSD system Diagnostic Trouble Codes.</td>
<td>No active codes.</td>
<td>Go to Step 4.</td>
<td>If there are active DTCs, go to Step 9.</td>
</tr>
</tbody>
</table>
# Diagnostics, Troubleshooting and Testing

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Check for any active vehicle J1939 DTCs.</td>
<td>No active vehicle codes.</td>
<td>Go to Step 5.</td>
<td>If other vehicle system J1939 DTCs are found, they should be corrected prior to diagnosing the OnSide BSD system. Go to Step 10.</td>
</tr>
<tr>
<td>5</td>
<td>Check for any recent hardware or software changes in the vehicles J1939 equipment.</td>
<td>No changes.</td>
<td>Go to Step 6.</td>
<td>If there have been any recent hardware or software changes in J1939 equipment. Go to Step 11.</td>
</tr>
<tr>
<td>6</td>
<td>Check for any Issues with the J1939 circuit between the WABCO OnGuard display harness connector pins 6 and 7 and the OnSide BSD Radar sensor harness connector pins 7 and 2.</td>
<td>Circuit checks good.</td>
<td>Go to Step 7.</td>
<td>Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>, and go to Step 10.</td>
</tr>
<tr>
<td>7</td>
<td>Check the WABCO OnGuard Display and harness for signs of damage or corrosion.</td>
<td>Visual inspection checks good.</td>
<td>WABCO OnGuard Display failure is indicated.</td>
<td>Physical damage indicates unit has failed and will need to be replaced and is not warrantable, and go to Step 10.</td>
</tr>
<tr>
<td>8</td>
<td>Attempt to connect TOOLBOX™ 12.9 other WABCO systems (ABS or OnGuard).</td>
<td>TOOLBOX™ 12.9 connects to other WABCO system.</td>
<td>Go to Step 6.</td>
<td>Check for issue with Diagnostic device. Check for issue with the vehicle J1939 port and circuit.</td>
</tr>
<tr>
<td>9</td>
<td>Repair active DTC. See OnSide BSD system Diagnostic Trouble Code Table in this section.</td>
<td>DTC no longer active.</td>
<td>Go to Step 10.</td>
<td>Go to OnSide BSD system Diagnostic Trouble Code Table in this section.</td>
</tr>
<tr>
<td>10</td>
<td>OnSide BSD system performance should be rechecked to confirm complaint or repair.</td>
<td>OnSide BSD system functions correctly.</td>
<td>Return vehicle to service.</td>
<td>Diagnose based on the OnSide BSD system issue. See Symptom and DTC Charts.</td>
</tr>
<tr>
<td>11</td>
<td>Verify that the new component software parameter settings and hardware are set correctly and are compatible with OnGuard and OnSide.</td>
<td>Settings, software and hardware correct.</td>
<td>Go to Step 6.</td>
<td>Update software parameters settings and/or hardware that were not compatible with OnGuard and OnSide, and go to Step 10.</td>
</tr>
</tbody>
</table>
6.5.6 Right Turn Signal Activation Input

If the vehicle uses the WABCO OnGuard display, whether on the dash or behind/under the dash, it will need to receive a "Right Turn Signal Activation" signal. This can be performed by the OnSide BSD radar sensor in one of two ways:

- Through a direct wire input from the turn signal circuit using a relay.
- Through the vehicle J1939 circuit using the "Turn Signal Switch" parameter in the "Operators External Light Controls" message.

6.5.6.1 Right Turn Signal Relay Input

This simplified diagram (Figure 6.19) represents the right turn signal relay circuit. Although they may not be shown here, additional in-line connectors and splices may be present in the circuit depending upon the particular vehicle and installation.

If the OnSide BSD system was installed as an "Add-On" or "Aftermarket" kit, the relay will be tapped into the OnSide BSD system harness and will have a relay pin numbers 1, 2, 3 and 5.

If the vehicle is equipped the WABCO OnGuard display and uses the direct wire input system, the OnSide BSD radar sensor needs to see ground at pin 9 to recognize that the right turn signal has been activated.

If the vehicle does use the right turn signal relay input and no chirp or visual warning comes from the WABCO OnGuard display when the vehicle is traveling above 15 mph (24.2 km/h) with the right turn signal
activated, and a moving vehicle is detected (indicated by the A-pillar OnSide BSD LED indicator), there may be an issue with the turn signal relay or circuit. See Symptom Chart E.

**SYMPTOM CHART E**

**NO WABCO OnGuard DISPLAY BLIND SPOT ZONE MOVING VEHICLE RECOGNITION WITH RIGHT TURN SIGNAL ACTIVATION (RELAY SYSTEM)**

NOTE: Prior to performing the diagnostic steps in the chart below:
- Verify that the OnSide BSD LED Indicator functions correctly (bulb check and moving vehicle recognition).
- Check for active OnSide BSD DTCs.
- Perform a system visual inspection prior to diagnostics.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Key on. Disconnect the OnSide BSD radar sensor harness connector.</td>
<td>Open circuit.</td>
<td>Go to Step 2.</td>
<td>If resistance is out of range, go to Step 3.</td>
</tr>
<tr>
<td></td>
<td>Check resistance between BSD radar sensor harness connector pin 9 and ground.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Key on. Right turn signal on. OnSide BSD radar sensor harness connector disconnected.</td>
<td>Continuous on-off signal alternating between continuity to ground and open circuit.</td>
<td>Go to Symptom Chart A.</td>
<td>If resistance or performance is out of range, go to Step 3.</td>
</tr>
<tr>
<td></td>
<td>Check resistance between BSD radar sensor harness connector pin 9 and ground.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>OnSide BSD radar sensor harness connector disconnected. Turn signal input relay disconnected from the relay socket. Check the radar sensor connector pin 9 to turn signal input relay socket pin 5/87 circuit for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring and connections.</td>
<td>Circuit checks good.</td>
<td>Go to Step 4.</td>
<td>Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>Step</td>
<td>Action</td>
<td>Correct Range</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>------</td>
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</tr>
</tbody>
</table>
| 4    | Key off.  
Turn signal input relay disconnected from the relay socket.  
Check resistance between relay socket pin 3/30 and ground. | Less than 1 ohm. | Go to Step 5. | If the resistance is out of range, check between the turn signal input relay socket pin 3/30 and the vehicle ground circuit or continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring connections.  
May need to see OEM reference materials for diagnostics and repair instructions.  
Repair any circuit issues in accordance with OEM repair guidelines.  
For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com. |
| 5    | Key off.  
Turn signal input relay disconnected from the relay socket.  
Check resistance between relay socket pin 1/86 and ground. | Less than 1 ohm. | Go to Step 6. | If the resistance is out of range, check between the turn signal input relay socket pin 1/86 and the vehicle ground circuit for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring connections.  
May need to see OEM reference materials for diagnostics and repair instructions.  
Repair any circuit issues in accordance with OEM repair guidelines.  
For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com. |
| 6    | Key on.  
Turn signal input relay disconnected from the relay socket.  
Check voltage between relay socket pin 2/85 and ground. | No voltage. | Go to Step 7. | If the voltage is out of range, check between the turn signal relay socket pin 2/85 and the vehicle right turn signal circuit for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections and fuses.  
May need to see OEM reference materials for diagnostics and repair instructions.  
Repair any circuit issues in accordance with OEM repair guidelines.  
For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email wnacustomercare@wabco-auto.com. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Key on. Right turn signal on. Turn signal input relay disconnected from the relay socket. Check voltage between relay socket pin 2/85 and ground.</td>
<td>Continuous on-off signal alternating between voltage (9.0-16.0 volts) and open circuit.</td>
<td>Go to Step 8.</td>
<td>If the voltage or performance is out of range, check between the turn signal relay socket pin 2/85 and the vehicle right turn signal circuit for continuity, verify there are no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections and fuses. May need to see OEM reference materials for diagnostics and repair instructions. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>8</td>
<td>Key on. Right turn signal on. Turn signal input relay disconnected from the relay socket. Load test across socket pins 1/86 and 2/85 with a 2-4 amp sealed head lamp.</td>
<td>Lamp should continuously alternate between on (bright) and off.</td>
<td>Go to Step 9.</td>
<td>If the lamp performance is out of range, does not illuminate, does not alternate, is dim or flickers, a wiring or connection issue is indicated. Check the pin 1/86 circuit and pin 2/85 circuit for continuity, verify both circuits have no shorts, loose connections and no sign of damage or corrosion. Check all circuit wiring, connections and fuses. May need to see OEM reference materials for diagnostics and repair instructions. Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>.</td>
</tr>
<tr>
<td>9</td>
<td>Check the turn signal input relay and socket terminals for signs of damage or corrosion.</td>
<td>Visual inspection checks good.</td>
<td>Turn signal input relay failure is indicated.</td>
<td>Physical damage indicates unit has failed and will need to be replaced and is not warrantable.</td>
</tr>
</tbody>
</table>
6.5.6.2 Right Turn Signal (Operators External Light Controls SAE J1939) Messaging Input

This simplified diagram (Figure 6.20) represents the OnSide BSD system J1939 circuit. Although they may not be shown here, additional in-line connectors and splices may be present in the circuit depending upon the particular vehicle and installation.

If the vehicle is set up to use the SAE J1939 operators external light controls message input, the OnSide BSD radar sensor will monitor the SAE J1939 network for the right turn signal activation message. When the OnSide BSD radar sensor sees the right turn signal active in the turn signal switch parameter, it will send a message to the WABCO OnGuard display using the SAE J1939 network to indicate when the right turn signal is activated and a moving vehicle is detected.

If the vehicle is traveling 15 mph (24.2 km/h) or greater and there is no chirp or visual warning from the WABCO OnGuard display when the right turn signal is activated and a moving vehicle is detected (indicated by the A-pillar OnSide BSD LED indicator), there may be an issue with the operators external light controls SAE J1939 message or circuit. See Symptom Chart F.
**SYMPTOM CHART F**

NO WABCO OnGuard DISPLAY BLIND SPOT ZONE MOVING VEHICLE RECOGNITION WITH RIGHT TURN SIGNAL ACTIVATION (J1939 CAN SYSTEM)

**NOTE:** Prior to performing the diagnostic steps in the chart below:
- Verify that the OnSide BSD LED indicator functions correctly (bulb check and moving vehicle recognition).
- Verify OnSide is listed the "SYSTEMS DETECTED" screen during the WABCO OnGuard start-up process.
- Check for active OnSide BSD DTCs.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirm the WABCO OnGuard display software is up to date and compatible with OnSide BSD system.</td>
<td>Correct software.</td>
<td>Go to Step 2.</td>
<td>Update the WABCO OnGuard display software to the correct software, and go to Step 11.</td>
</tr>
<tr>
<td>2</td>
<td>Connect to the OnSide BSD system with TOOLBOX™ 12.9 or newer software.</td>
<td>BSD system connects to TOOLBOX™.</td>
<td>Go to Step 3.</td>
<td>If TOOLBOX™ software will not connect to the OnSide BSD system, go to Step 9.</td>
</tr>
<tr>
<td>3</td>
<td>Check for any active OnSide BSD system Diagnostic Trouble Codes.</td>
<td>No active codes.</td>
<td>Go to Step 4.</td>
<td>If there are active DTCs, go to Step 10.</td>
</tr>
<tr>
<td>4</td>
<td>Check for any active vehicle J1939 DTCs.</td>
<td>No active vehicle codes.</td>
<td>Go to Step 5.</td>
<td>If other vehicle system J1939 DTCs are found, they should be corrected prior to diagnosing the OnSide BSD system. Go to Step 11.</td>
</tr>
<tr>
<td>5</td>
<td>Verify that the right turn signal message is on the J1939 vehicle bus and is functioning correctly. Review with the vehicle OEM to confirm proper messaging, may need to review OEM reference materials.</td>
<td>Correct right turn signal message.</td>
<td>Go to Step 6.</td>
<td>Review right turn signal J1939 messaging diagnostics and repair with the vehicle OEM.</td>
</tr>
<tr>
<td>6</td>
<td>Check for any recent hardware or software changes in the vehicles J1939 equipment.</td>
<td>No changes.</td>
<td>Go to Step 7.</td>
<td>If there have been any recent hardware or software changes in J1939 equipment, go to Step 12.</td>
</tr>
<tr>
<td>7</td>
<td>Check for any issues with the J1939 circuit between the vehicle J1939 CAN bus, the WABCO OnGuard display harness connector pins 6 and 7 and the OnSide BSD radar sensor harness connector pins 7 and 2.</td>
<td>Circuit checks good.</td>
<td>Go to Step 8.</td>
<td>Repair any circuit issues in accordance with OEM repair guidelines. For any failed WABCO circuit components contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 001-800-889-1834 (Mexico); or email <a href="mailto:wnacustomercare@wabco-auto.com">wnacustomercare@wabco-auto.com</a>, and go to Step 10.</td>
</tr>
</tbody>
</table>
### Diagnostics, Troubleshooting and Testing

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>OnSide BSD radar sensor and harness for signs of damage or corrosion.</td>
<td>Visual inspection checks good.</td>
<td>OnSide BSD radar sensor failure is indicated.</td>
<td>Physical damage indicates unit has failed and will need to be replaced and is not warrantable, and go to Step 10.</td>
</tr>
<tr>
<td>9</td>
<td>Attempt to connect TOOLBOX™ software with other WABCO systems (ABS or OnGuard).</td>
<td>TOOLBOX™ connects to other WABCO system.</td>
<td>Go to Step 6.</td>
<td>Check for issue with diagnostic device. Check for issue with the vehicle J1939 port and circuit.</td>
</tr>
<tr>
<td>10</td>
<td>Repair active DTC. See OnSide BSD system Diagnostic Trouble Code Table in this section.</td>
<td>DTC no longer active.</td>
<td>Go to Step 11.</td>
<td>Go to OnSide BSD system Diagnostic Trouble Code Table.</td>
</tr>
<tr>
<td>11</td>
<td>OnSide BSD system performance should be rechecked to confirm complaint or repair.</td>
<td>OnSide BSD system functions correctly.</td>
<td>Return vehicle to service.</td>
<td>Diagnose based on the OnSide BSD system issue. See Symptom and DTC Charts.</td>
</tr>
<tr>
<td>12</td>
<td>Verify that the new component software parameter settings and hardware are set correctly and are compatible with OnGuard and OnSide in accordance with OEM guidelines.</td>
<td>Settings, software and hardware correct.</td>
<td>Go to Step 7.</td>
<td>Update software parameters settings and/or hardware that were not compatible with OnGuard and OnSide according to OEM guidelines, and go to Step 11.</td>
</tr>
</tbody>
</table>

#### 6.5.6.3 OnSide BSD Vehicle Recognition

The OnSide BSD system supports drivers in overtaking and lane change maneuvers to help avoid side collisions. The OnSide BSD system is designed as a warning system and thus, **will not actively intervene to prevent contact with smaller objects such as other vehicles, persons or objects**. The OnSide BSD system becomes active at speeds above 15 mph (24.2 km/h). Once active, the system constantly monitors the vehicle’s passenger side blind spot "Detection Zone", as shown in Figure 6.21, and warns of moving vehicles appearing in the vehicle’s passenger side blind spot.

![Fig. 6.21](4016869a)

The blind spot "Detection Zone" consists of an area that begins at the OnSide BSD radar sensor and extends approximately 9 feet to the right of the vehicle. The "Detection Zone" extends, on an angle, approximately 13 feet forward of the OnSide BSD radar sensor and extends, on an angle, approximately 33 feet to the rear of the OnSide BSD radar sensor.
Vehicles outside of the "Detection Zone" will not be detected by the system. In some situations, not every vehicle or object will be detected by the radar even within the detection zone. By design, the OnSide BSD system will not warn of the following:

- Any stationary object, such as parked cars, trees, walls, etc.
- Vehicles moving in the opposite direction.
- Smaller objects such as bicycles, animals or pedestrians.

If the vehicle is traveling above 15 mph (24.2 km/h) and the OnSide BSD system does not warn of a moving vehicle or reacts to vehicle outside of the described "Detection Zone", there may be an issue with the OnSide BSD radar sensor or sensor mounting. See Symptom Chart G.

### SYMPTOM CHART G

**OnSide BSD SYSTEM DOES NOT RECOGNIZE MOVING VEHICLES CORRECTLY**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Correct Range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirm the OnSide BSD system LED performs bulb check.</td>
<td>BSD LED bulb check.</td>
<td>Go to Step 2.</td>
<td>Go to Symptom Chart B.</td>
</tr>
<tr>
<td>2</td>
<td>Confirm that OnSide is shown in the WABCO OnGuard Display Start up &quot;SYSTEMS DETECTED&quot; screen (if equipped).</td>
<td>OnSide recognized.</td>
<td>Go to Step 3.</td>
<td>Go to Symptom Chart D.</td>
</tr>
<tr>
<td>3</td>
<td>Verify the OnSide BSD system fascia is clean, front and back and shows no sign of damage.</td>
<td>Clean/No damage.</td>
<td>Go to Step 4.</td>
<td>Clean OnSide BSD fascia as needed. Physical damage indicates unit has failed and will need to be replaced and is not warrantable. Go to Step 7.</td>
</tr>
<tr>
<td>4</td>
<td>Verify the OnSide BSD radar sensor is clean and shows no sign of damage.</td>
<td>Clean/No damage.</td>
<td>Go to Step 5.</td>
<td>Clean OnSide BSD radar sensor as needed. Physical damage indicates unit has failed and will need to be replaced and is not warrantable, and go to Step 7.</td>
</tr>
<tr>
<td>5</td>
<td>Verify the OnSide BSD radar is securely mounted and aligned correctly.</td>
<td>Mounted and aligned correctly.</td>
<td>Go to Step 6.</td>
<td>Go to &quot;OnSide BSD radar sensor Mounting&quot; later in this section. Once the repair is complete, go to Step 7.</td>
</tr>
<tr>
<td>6</td>
<td>Confirm the OnSide BSD radar sensor is not losing power after start up.</td>
<td>OnSide BSD radar sensor circuit checks good.</td>
<td>OnSide BSD radar sensor failure is indicated.</td>
<td>Go to Symptom Chart A. Once the repair is complete, go to Step 7.</td>
</tr>
<tr>
<td>7</td>
<td>OnSide BSD system performance should be rechecked to confirm complaint or repair.</td>
<td>OnSide BSD system functions correctly.</td>
<td>Return vehicle to service.</td>
<td>Diagnose based on the OnSide BSD System issue. See Symptom and DTC Charts.</td>
</tr>
</tbody>
</table>
6.5.6.4 OnSide BSD Radar Sensor Mounting

If the OnSide BSD system does not detect moving vehicles in the passenger side blind spot zone when traveling above 15 mph (24.2 km/h) or if the system detects vehicles outside of the blind spot zone, verify that the BSD radar sensor is mounted correctly.

The angles and measurements below apply to both Fairing and Step mounted OnSide BSD systems.

Table 1: General Mounting Requirements

<table>
<thead>
<tr>
<th>Mounting Position</th>
<th>Nominal</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevation</td>
<td>0°</td>
<td>-4°</td>
</tr>
<tr>
<td>Pitch</td>
<td>0°</td>
<td>-5°</td>
</tr>
<tr>
<td>Azimuth</td>
<td>0°</td>
<td>0°</td>
</tr>
<tr>
<td>Height</td>
<td>600 mm</td>
<td>-100 mm</td>
</tr>
</tbody>
</table>

Fig. 6.22

Fig. 6.23

Fig. 6.24

Azimuth

Elevation
7 Component Replacement Procedures

7.1 OnSide BSD Radar Sensor

7.1.1 Exterior Fairing-Mounted Radar Sensor/Fascia Assembly Replacement

Removal
1. Turn the ignition switch to the OFF position.
2. Place blocks under the rear tires to prevent the vehicle from moving. Apply the parking brake.
3. While holding the two M6 flanged lock nuts on the back side of the fairing, remove the two M6 mounting bolts and flat washers from the fascia and set the fascia aside (Figure 7.1). Be careful when removing the bolts as they also hold the radar sensor/fascia assembly to the vehicle.
4. While holding the BSD radar sensor in place, disconnect the harness connector from the radar sensor.
5. Remove the radar sensor/bracket assembly, shim housing and shims from the vehicle.
6. Set the shim housing and shims aside.
7. Unscrew the M8 flanged lock nut and two M6 flanged lock nuts from the mounting bracket studs and remove the radar sensor from the bracket.

Installation
1. Install the radar sensor over the studs and into position on the mounting bracket. Install the M8 flanged lock nut and two M6 flanged lock nuts.
2. Tighten the M8 flanged lock nut to 61-75 in-lb (6.9-8.4 N•m) and then the M6 flanged lock nuts to 61-75 in-lb (6.9-8.4 N•m).
3. Thread the harness though the shim housing, shims and mounting bracket and connect it to the radar sensor.
4. Place the fascia, radar sensor/bracket assembly, wedge and/or shims assembly together and align the mounting holes with the mounting holes on the fairing.
5. Install the flat washers on the two M6 fascia mounting bolts.
6. While holding the assembly together, thread the two M6 mounting bolts through the assembly mounting holes and into the mounting holes on the fairing.
7. Using the M6 flanged lock nuts and oversized washers on the back side of the fairing, tighten the two M6 fascia mounting bolts to 92 in-lb (10.4 N•m).

### 7.1.2 Step-Mounted Radar Sensor Assembly Replacement

#### 7.1.2.1 Assembly with Bracket P/N 400 874 014 4.

**Removal With Bracket P/N 400 874 014 4**

1. Turn the ignition switch to the OFF position.
2. Place blocks under the rear tires to prevent the vehicle from moving. Apply the parking brake.
3. While holding the two M6 flanged lock nuts on the back side of the Onside step mount bracket, remove the two M6 mounting bolts and flat washers from the fascia and set the fascia aside (Figure 7.2).

   Be careful when removing the bolts as they also hold the radar sensor/shim assembly to the vehicle.

4. While holding the BSD radar sensor in place, disconnect the harness connector from the radar sensor.
5. Remove the radar sensor/plate assembly, shim housing and shims from the vehicle.
6. Set the shim housing and shims aside.

7. Unscrew the M8 flanged lock nut and two M6 flanged lock nuts from the radar mounting plate studs and remove the radar sensor from the radar mounting plate.

8. To remove the OnSide step mount bracket unscrew the 5/16-18 bolts, nut and washers. (On some models, it may be necessary remove the vehicle step in order to remove the bracket, follow the manufacturer’s guidelines and procedures to remove the step.

**Installation – With Bracket P/N 400 874 014 4**

1. Hold the step-mount bracket in mounting position on the vehicle step and reinstall the 5/16-18 mounting bolts, nuts and washers. Tighten to 22-24 ft-lb (29.8-32.5 N•m). (On some models, it may be necessary reinstall the vehicle step, follow the manufacturer’s guidelines and procedures to re install the step.)

2. Install the radar sensor over the studs into position on the radar mounting plate.

3. Install the M8 flanged lock nut and two M6 flanged lock nuts, tighten the M8 flanged lock nut to 61-75 in-lb (6.9-8.4 N•m) and tighten the M6 flanged lock nuts to 61-75 in-lb (6.9-8.4 N•m).

4. Thread the harness though the back of the OnSide step mount bracket, shim housing, shims and mounting plate and connect it to the radar sensor.

> Through this procedure make sure to leave enough slack in the harness at the radar connector for a “Drip Loop”.

5. While holding the fascia, radar and shim assembly together, thread the 2 M6 mounting bolts with washers through the assembly mounting holes and the step mount bracket mounting holes.

6. Using the M6 flanged lock nuts on the back side of the OnSide step mount bracket tighten the 2 M6 mounting bolts to 92 in-lb (10.4 N•m).

> For more information on the OnSide Step mount assembly refer to TP19022 available at our website: www.wabco-na.com.

### 7.1.3 OnSide BSD LED Indicator Replacement

![Diagram](4016875a)
The OnSide BSD LED indicator is mounted on the passenger side A-pillar near the right-side view mirror. (Figure 7.3).

The OnSide BSD LED indicator is attached to the passenger side A-pillar using plastic ribbed push rivets. (Figure 7.4). The “Pig Tail” harness cannot be removed from the BSD LED indicator. (Figure 7.5).

**Removal**

1. Turn the ignition switch to the OFF position.
2. Using a flat blade or panel tool, gently pry the OnSide BSD LED indicator loose from the A-pillar trim panel and remove it from the A-pillar trim panel.

   **CAUTION**

   Make sure not to damage the OnSide BSD LED indicator or the A-pillar trim panel during removal.

3. Carefully pull the OnSide BSD LED indicator pig tail from the access hole in the A-pillar until the connector can be accessed (Figure 7.5).
4. Disconnect the OnSide BSD LED indicator pig tail from the harness connector.

**Installation**

1. Connect the OnSide BSD LED indicator pigtail connector to the A-pillar harness connector.
2. Gently feed the OnSide BSD LED indicator pigtail and harness back into the A-pillar access hole.
3. Align the plastic ribbed push rivets (Figure 7.4) with the A-pillar mounting holes and gently press the OnSide BSD LED indicator into place until seated against the A-pillar trim panel.
7.1.4 WABCO OnGuard Display Replacement

7.1.4.1 On Dash Mounted Display

Removal
1. Turn the ignition switch to the OFF position.
2. Remove the necessary instrument cluster paneling to gain access to the back of the display. Refer to the OEM instructions for correct procedures.
3. Disconnect the display harness connector from the display (Figure 7.6).
4. Remove the two 6-32 nuts and save for installation of the new display.
5. Remove the display from the dash panel.

Installation
1. Mount the new display (Figure 7.7) on the dash panel.
2. Install the two saved 6-32 nuts and tighten to 6-8 in-lb (0.68-0.9 N•m).
3. Connect the wiring connector to the new display.
4. Reassemble the instrument cluster paneling according to OEM procedures.
7.1.5 Under/Behind Dash Mounted Display

See OEM reference materials for the Under/Behind Dash Mounted Display removal and installation instructions.

7.1.6 Right Turn Signal Input Relay (If equipped)

If the OnSide BSD system uses the WABCO OnSide harness as part of an "aftermarket" or WABCO kit installation, the turn signal input relay will be plugged in to a "socket" style connector that will be taped to the harness.

Removal

1. Turn the ignition switch to the OFF position.
2. Place blocks under the rear tires to prevent the vehicle from moving. Apply the parking brake.
3. Locate where the turn signal input relay is taped to the WABCO OnSide BSD system harness (Figure 7.8).
4. Carefully pull the relay from the socket.

Fig. 7.8

Installation

1. Install the relay into the socket connector.
2. Re-tape the socket connector to secure it to the harness.

If the OnSide BSD system was installed on the vehicle as original equipment at the factory, it may not use the WABCO OnSide BSD system harness. Please check the OEM reference materials for the turn signal input relay location and replacement instructions.
About ZF Friedrichshafen AG

ZF is a global technology company and supplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. ZF allows vehicles to see, think and act. In the four technology domains Vehicle Motion Control, Integrated Safety, Automated Driving, and Electric Mobility, ZF offers comprehensive solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. ZF electrifies different kinds of vehicles. With its products, the company contributes to reducing emissions and protecting the climate.

ZF, which acquired WABCO Holdings Inc. on May 29, 2020, now has 162,000 employees worldwide with approximately 260 locations in 41 countries. In 2019, the two then-independent companies achieved sales of €36.5 billion (ZF) and $3.4 billion (WABCO). For more information, visit www.wabco-na.com.