



Bendix™ BlindSpotter®
Side Object Detection System

Installation Guide

Bendix™ BlindSpotter®
Side Object Detection System
BW2798 (Formerly VOIG0032)
April 2013

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General Information

Warnings and Cautions



Improper use of this system could lead to a serious accident. Read this entire Installation Guide before operating the Bendix™ BlindSpotter® system. Pay particular attention to the safety messages below. This guide should be used in conjunction with proper training.

Limitations of Collision Warning Systems

The Bendix™ BlindSpotter® rear collision warning system is intended solely as an aid for an alert and conscientious professional driver. It is not to be used or relied upon to operate a vehicle. The system should be used in conjunction with rear view mirrors and other instrumentation to maintain safe operation of the vehicle, ground personnel, and adjacent property. A vehicle equipped with the Bendix™ BlindSpotter® system should be operated in the same safe manner as if the system were not installed. The system is not a substitute for normal safe driving procedures. It will not compensate for any driver impairment, such as drugs, alcohol, or fatigue. Should the system become inoperative, it could jeopardize the safety or lives of those who depend on the system for safety.



The system will not sense objects if the sensor view is obstructed. Therefore, do not place objects in front of the system sensor. Remove heavy buildups of mud, dirt, ice, and other materials.

Proper alignment is critical to correct operation of the system.

Testing and inspection of the system in accordance with these instructions and record of the results should be listed on the daily maintenance report. The units on operating vehicles must be tested each day (see the “Testing System Operation” section) prior to the vehicle’s operation. Results of this test must be recorded in the maintenance log.

People operating this equipment **MUST** check for proper operation at the beginning of every shift or safety inspection period.

General Information

WARNING

People's lives depend on the proper installation of this product in conformance with these instructions. It is necessary to read, understand, and follow all instructions shipped with the product.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

The Bendix™ BlindSpotter® system is intended for commercial use. Proper installation of this system requires a good understanding of truck electrical systems and procedures, along with proficiency in the installation.

Store these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

FCC Compliance Statement

Federal Communications Commission

This device complies with Part 15 of the FCC (Federal Communications Commission) rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must be able to accept any interference received, including interference that may cause undesired operation. Any interference that may be caused should be reported to the local FCC field office or to the Federal Communications Commission; Enforcement Bureau; 445 12th Street S.W.; Room 7-C485; Washington, DC 20054.

Any changes or modifications made by the user to this equipment that are not expressly approved by Bendix Commercial Vehicle Systems LLC could void the user's authority to operate the equipment.

Every effort has been made to ensure the accuracy of all information in this brochure. However, Bendix Commercial Vehicle Systems LLC makes no expressed or implied warranty or representation based on the enclosed information. Errors or omissions should be reported to: Bendix Commercial Vehicle Systems LLC, 901 Cleveland Street, Elyria, OH 44035 or 1-800-AIR-BRAKE (1-800-247-2725).

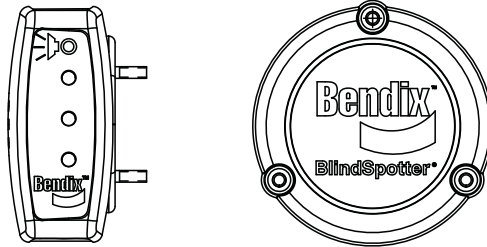
System Overview

Product Description

The Bendix™ BlindSpotter® Side Object Detection System is a pulse-modulated radar system capable of detecting the presence of other vehicles along side of the host vehicle, aiding the driver's ability to avoid collisions while merging into adjacent lanes of traffic.

A visual indicator, placed on the windshield pillar near the side view mirror provides the driver with an additional tool for checking lane clearance next to the vehicle before merging. When the driver signals to change lanes by activating the vehicle's turn signal, the system will provide an audible tone along with a visual indication, warning the driver that the lane next to the vehicle is not clear.

The BlindSpotter system is typically installed on the side opposite the driver, but can be installed on both sides of the vehicle as well.

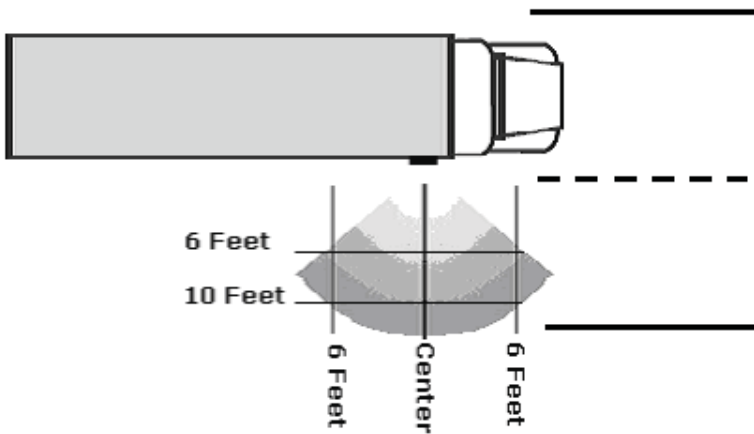


Note: Up to four sensors can be daisy chained to a single display unit for applications that require an increased area of detection. Contact your OEM parts dealer for information on purchasing additional sensors, brackets, and harnessing.

System Operation

System Operation

The Bendix™ BlindSpotter® Side Object Detection System is powered by the vehicle's ignition switch, and consists of a pulse-modulated radar sensor mounted to the side of the vehicle coupled to a cab mounted display unit, that constantly monitors the area within the radar's view for any objects present that may pose a collision hazard during a lane change.

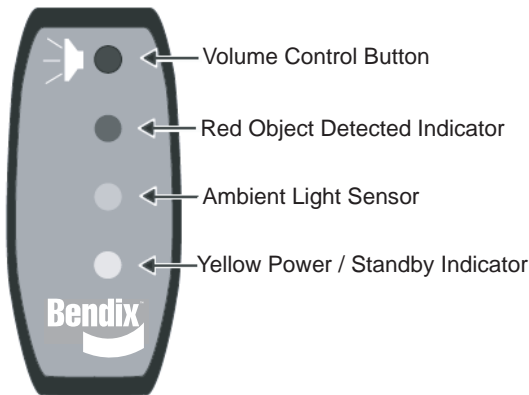


The pulse-modulated radar utilized in the BlindSpotter system will detect objects, stationary or moving, while the vehicle is in motion or stopped. The radar's effective range is approximately ten feet from the center view of the sensor.

Side Object Detection Display

The display unit has two bright LED indicators used to display the system status. A yellow LED indicates when the system is active, and a red LED indicates an object is detected. An ambient light sensor automatically controls the intensity of the two status LEDs, dimming them in low light conditions.

The display unit's built-in speaker provides an audible alert if an object is detected when the vehicle's turn signal is activated. A button located on the front of the display allows the driver to adjust the volume level.



System Failure

If the system detects a failure and becomes inoperative, the display unit will warn the driver by continuously illuminating both the red and yellow LEDs at the same time.

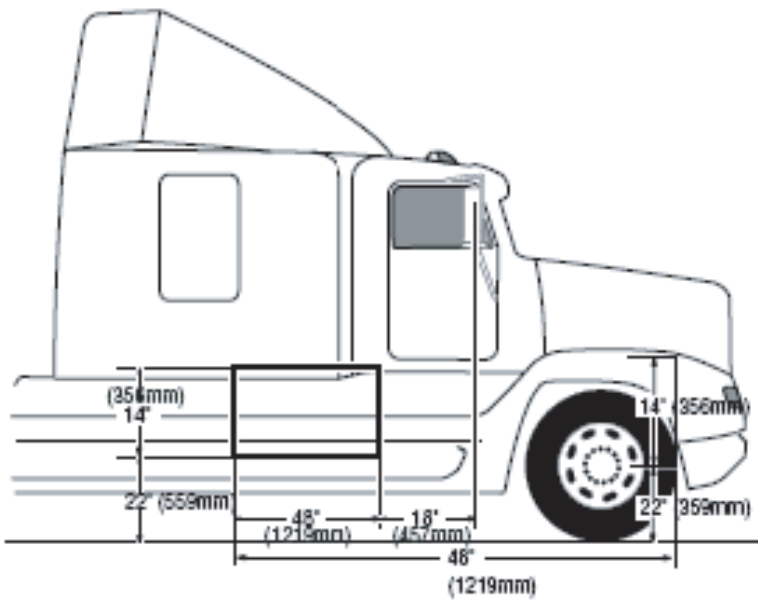
Refer to the troubleshooting section for more information about system failure.

Installation Procedure

Sensor Location

The Bendix™ BlindSpotter® Side Object Detection Sensor should be mounted on the side of the vehicle, between 22 and 36 inches from the ground and at least 18 inches rear of the side view mirror (see diagram below).

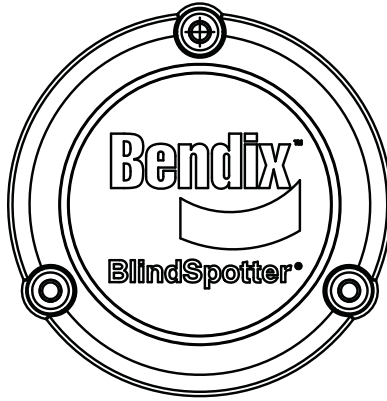
Note: To reduce the possibility of the sensor detecting objects mounted to the vehicle like the steps or fuel tanks, make sure the face of the sensor extends out a minimum of 5/16 of an inch further than any other object within six (6) inches of the sensor's body.



Installation Procedure

Sensor Orientation

The Bendix™ BlindSpotter® Side Object Detection Sensor should be orientated so the embossed logo is parallel to the ground (see diagrams below). Orientation is crucial for proper operation due to the radar's polarized beam profile.

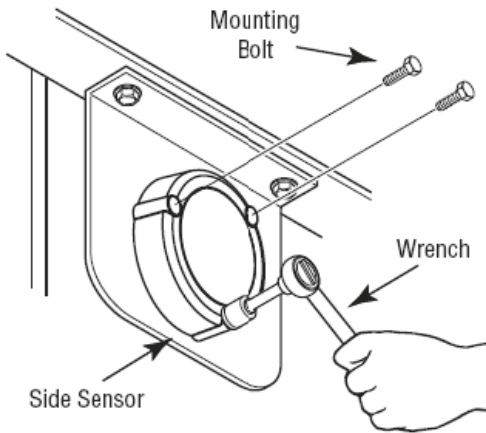


Installation Procedure

Mounting the Sensor

The sensor should be mounted to the vehicle using 10-24 (6 mm) stainless steel hardware. Bolts should be installed from the sensor side, with flat washers and nylock nuts on the backside.

Torque hardware to a maximum of 22 lbs. in. Do not over torque.



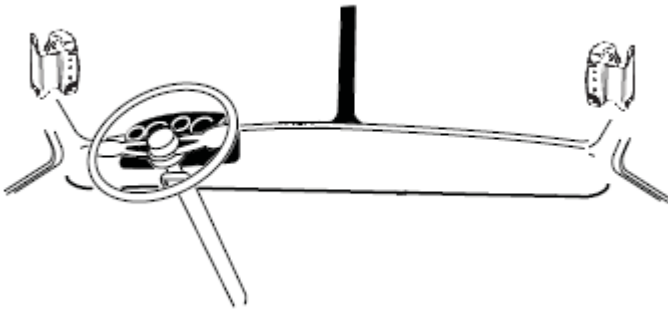
Installation Procedure

Side Object Display Mounting

The Bendix™ BlindSpotter® Side Object Detection Display Unit should be mounted on the inside of the cab to the windshield pillar. The display unit should be positioned in line with the side view mirror on the same side of the vehicle as the sensor without obstructing the driver's view.



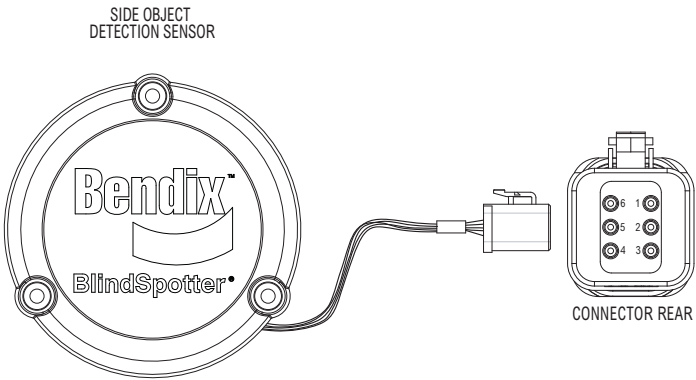
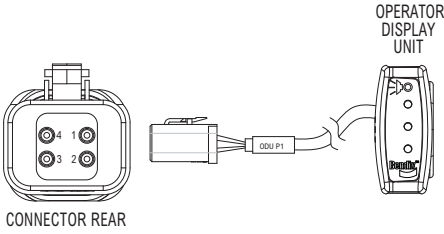
The Side Object Display Unit is not weather proof and must be mounted on the inside of the cab. Failure to observe this warning will result in a void of warranty.



Vehicles with dual left and right side sensors will have a display mounted on both the left and right windshield pillars.

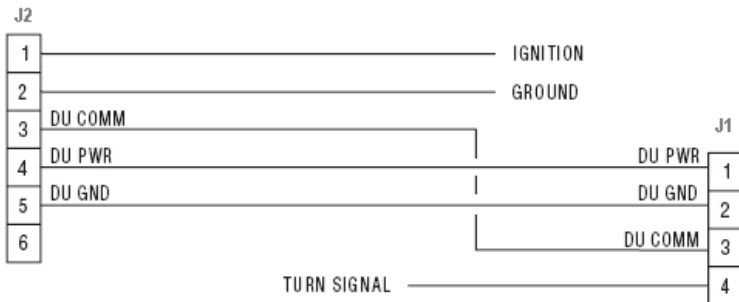
Installation Procedure

Component Connectors



Installation Procedure

Harness Connector Pin-Out



J1 - Deutsch Part Number DT04-4P

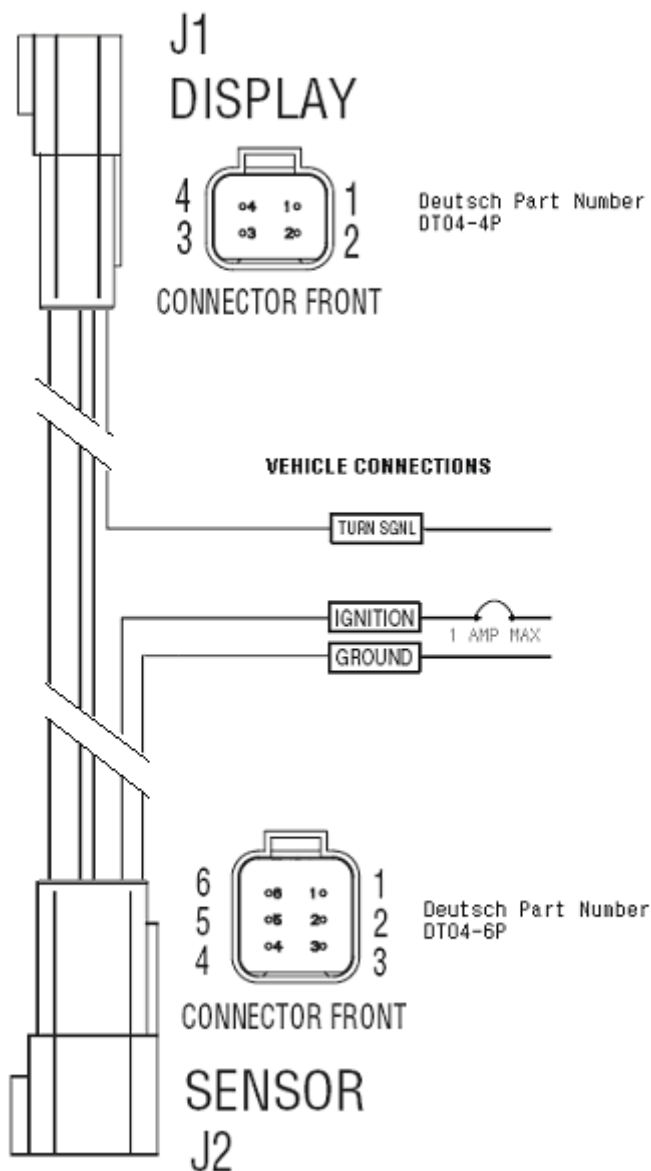
Pin 1	J2 - Pin 4
Pin 2	J2 - Pin 5
Pin 3	J2 - Pin 3
Pin 4	Turn Signal Input

J2 - Deutsch Part Number DT04-6P

Pin 1	Ignition Power
Pin 2	Chassis Ground
Pin 3	J1 - Pin 3
Pin 4	J1 - Pin 1
Pin 5	J1 - Pin 2
Pin 6	Not Used

Installation Procedure

Harness Layout Diagram



Testing System Operation

1. Before testing the system, move the vehicle to an area where there are no objects within a minimum of a 15-foot radius of the sensor.
2. Turn the vehicle's ignition to the on position (do not start vehicle).



Observe proper safety procedures by making sure the vehicle's parking brakes are set and the engine is off before performing any tests.

3. Observe the side sensor display unit's red and yellow indicators and refer to the table below for proper power-up and system operation. Have an assistant walk within ten feet of the front of the sensor to test for object detection.

System Status	Display Indicator
Power-up (initial display test)	Red and Yellow (< 5 sec.)
Power-up (initial sensor test)	Red only (< 5 sec.)
No Objects Detected	Yellow only
Object Detected	Red only
Object Detected (turn signal active)	Red only (tone)
System Failure	Red and Yellow

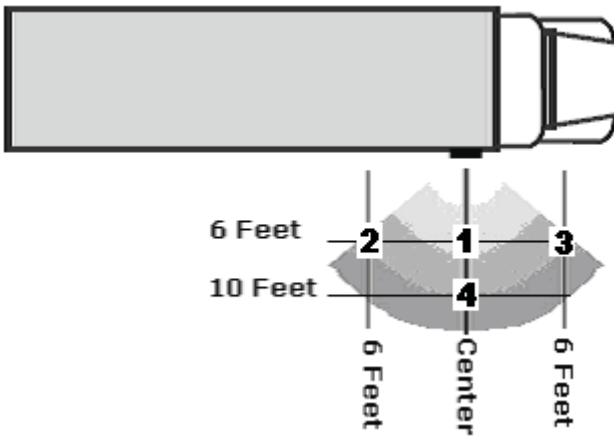
4. To test the audible warning, activate the turn signal while testing the object detection. The warning tone is only heard once for each activation of the turn signal.
5. If the red and yellow LEDs remain on continuously for more than five seconds after the initial power-up, this is an indication the system has detected a failure. Refer to the troubleshooting section for more information.

Operation Testing

Testing Sensor Detection

To test the sensor's maximum effective detection capabilities, use a flat metallic object with a minimum surface area of one (1) square foot, and hold it facing the sensor at the following positions using the diagram below as a reference.

1. Six (6) feet out from center.
2. Six (6) feet out, six feet left from center.
3. Six (6) feet out, six feet right from center.
4. Ten (10) feet from center (maximum effective distance).



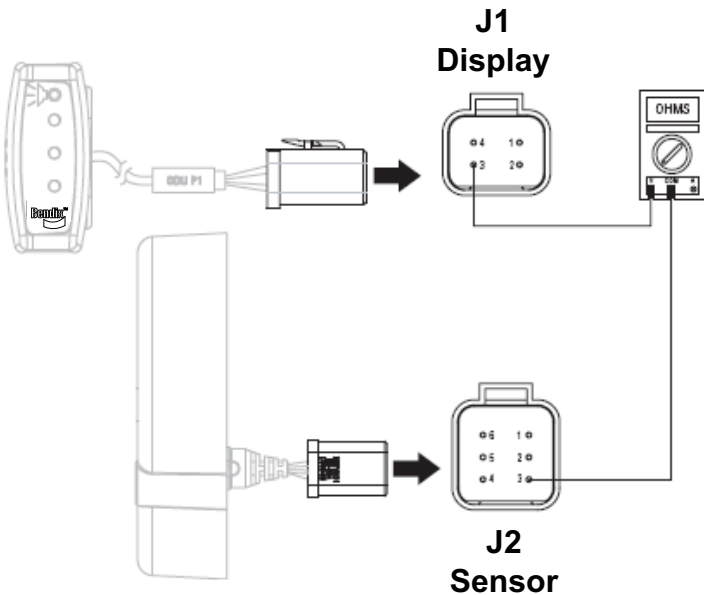
The effective detection zone of the sensor can be drawn as a ten (10)-foot arc, ± 45 degrees from center. The sensor may detect objects beyond this zone, shown in dark grey above, but should not be considered reliable.

Note: The ability of the sensor to detect objects in its effective detection zone depends on the object's size, composition, and its ability to reflect electromagnetic energy.

System Fault Indication

If both the red and yellow LEDs remain illuminated continuously after five seconds of initial power-up, or anytime during normal operation, this is an indication that the system has detected a failure with the radar sensor or a loss of communications between the sensor and the side sensor display.

1. Disconnect the sensor and the side object display from the harness and check the connectors for corrosion, or damage to the harness.
2. Using an ohm meter, check the harness for a short to ground by testing the resistance from J1 Pin 3 and J2 Pin 3 to chassis ground. This reading should be greater than 100K ohms or infinite.
3. Using an ohm meter, check the communications link between the sensor and the side object display for continuity by testing the resistance from J1 Pin 3 to J2 Pin 3 (see diagram below). This reading should be less than 0.9 ohms.

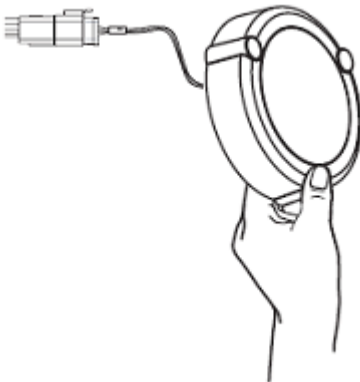


Troubleshooting

Red Detection LED Remains On

If after the initial five second system power-up test, the red detect indicator remains illuminated constantly, even when no objects are present in the radar sensors detection zone, either the radar sensor is improperly mounted or has malfunctioned.

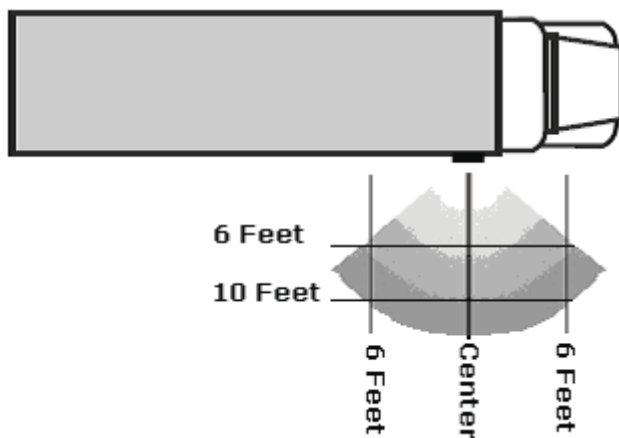
1. Review the sensor installation section in this manual to verify proper sensor positioning, orientation, and mounting.
2. Make sure there are no other surfaces or objects on the vehicle, like steps, fuel tanks, mirrors, that extend beyond the face of the radar sensor that may be interfering with the sensor's operation.
3. Remove the sensor from the vehicle and inspect it for any damage. Inspect the connector for any signs of damage or corrosion.
4. Connect the sensor to the harness and hold it away from the vehicle into an open area away from any objects. Power up the system and check for proper operation.



No Objects Detected

If after the initial system power-up the sensor does not appear to detect any objects, the radar sensor may have malfunctioned. Refer to the Testing System Operation section in this manual.

1. Hold and aim a test object six (6) feet out from center, directly at the sensor, and verify if the side object display indicates the object has been detected.
2. Continuing to hold the test object six (6) feet from the sensor, refer to the diagram below and move six (6) feet to the right and then to the left of center from the sensor, keeping the test object positioned directly at the face of the sensor. Verify if the side object display indicates the object has been detected in both extreme positions.
3. Hold and aim the test object ten (10) feet out from center, directly at the sensor, and verify if the side object display indicates the object has been detected.

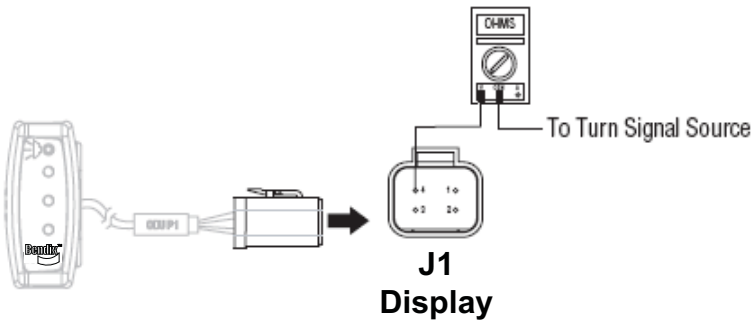


Troubleshooting

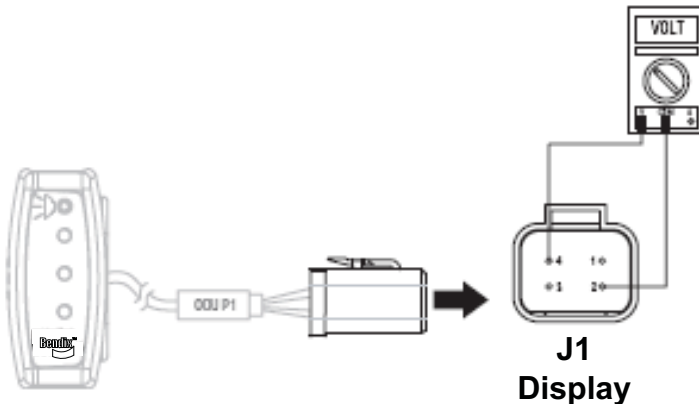
No Audible Tone

When an object is detected while the vehicle's turn signal is active, but the side object display does not emit an audible tone, either the system is improperly wired or the side object display has malfunctioned.

1. With the vehicle's ignition switch in the off position, disconnect the display connector (J1) and use an ohm meter to test the continuity between pin 1 and the turn signal source point.



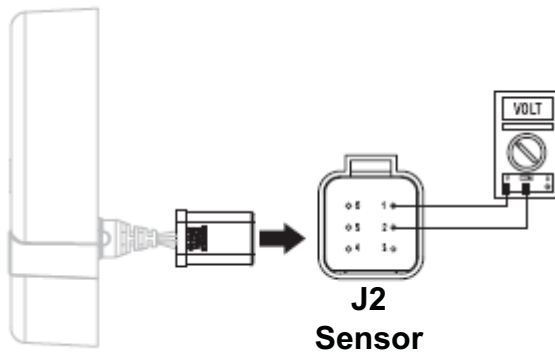
2. Turn the vehicle's ignition switch to the on position and activate the vehicle's turn signal, on the same side of the vehicle the side object sensor is located, and use a volt meter to check for the turn signal voltage between pins 2 and 4.



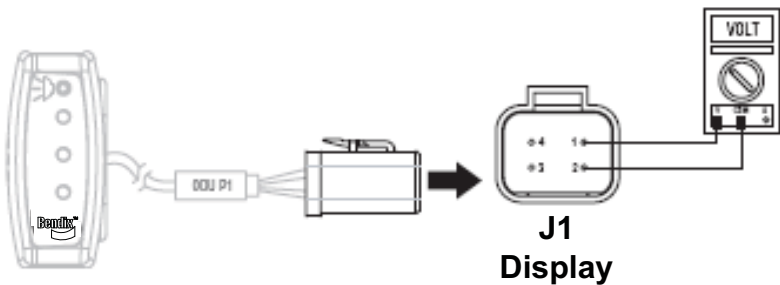
System Does Not Power-Up

When the vehicle's ignition switch is turned to the on position and the side object display fails to power-up, either the system's fuse has blown, the harness is wired improperly or damaged, or the system has malfunctioned.

1. Check the system's inline one amp fuse.
2. With the vehicle's ignition switch in the off position, disconnect the sensor connector (J2). Use a voltmeter to test for ignition voltage between pins 1 and 2. Check the connector pins for corrosion or damage.

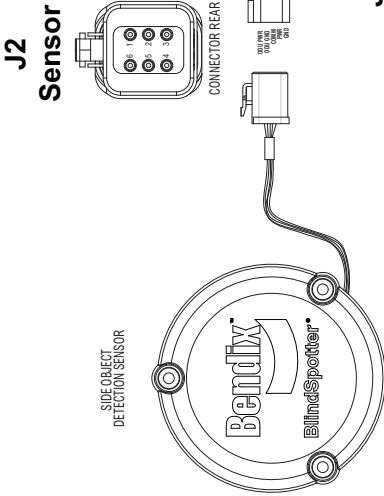


3. Re-connect the sensor connector (J2) to the harness and then disconnect the display connector (J1). Use a voltmeter to test for ignition voltage between pins 1 and 2 at the display connector. Check the connector pins for corrosion or damage.

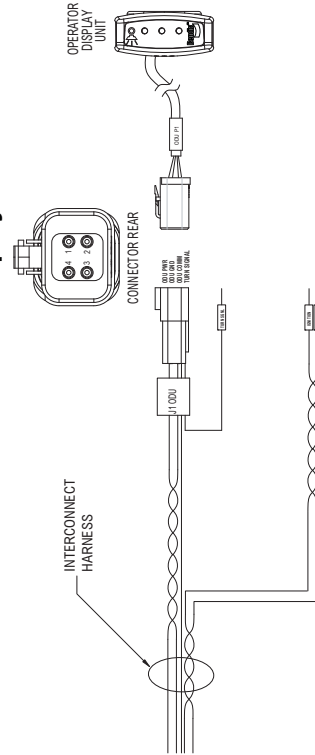


Troubleshooting

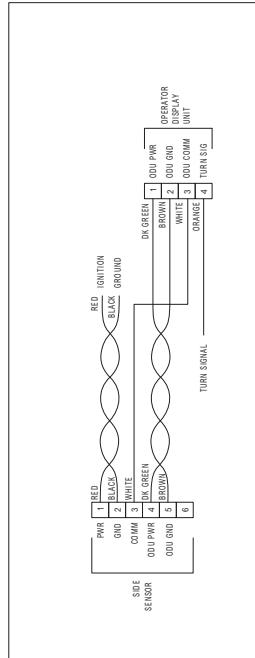
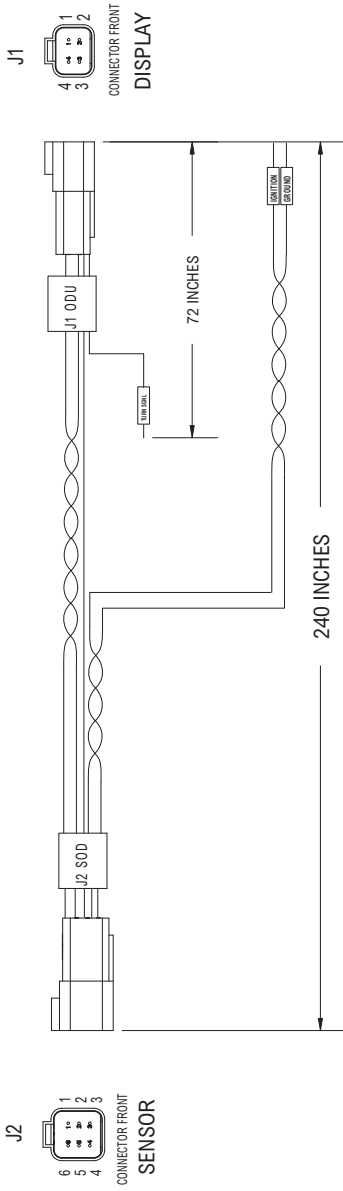
Wiring Diagrams



J1 Display



Troubleshooting



Specifications

Typical:

Electronics	Solid state
Sealing	Encapsulated to protect from dust, moisture, and vibration.
Operating Temperature	-40°F to +185°F (-40°C to +85°C)
Sensor	Pulsed RF transmitter at 5.8 GHz
Material	Polycarbonate radome with aluminum back plate
Weight	1.25 lbs. (0.57 kg)
Dimensions	5.25" (13.3 cm) diameter x 1.375" (3.5 cm) deep
Mounting	3 - 0.188 (4.8 mm) diameter mounting holes
Operator Display Unit (ODU)	
Material	Polycarbonate / ABS alloy
Weight	.25 lbs. (.11 kg)
Dimensions	1.00" (2.5 cm) height x 2.25" (5.7 cm) width x 2.00" (5.1 cm) depth
Mounting	User dependent

Electrical:

Input Voltage	9 - 33 volts DC
Input Current	0.25 amp maximum (fused at 1 amp)
Polarity	Polarity protected
Power Connection	2 - 18 AWG wires
Turn Signal Connection	1 - 18 AWG wire

Regulatory Compliance:

Compliant with	FCC Part 15.249 (5725-5875 MHz)
FCC ID	OXZSTDPREVIEW

Warranty

Manufacturer Limited Warranty

The Bendix standard warranty specific to retrofit systems is 12 months/100,000 miles when the product is installed on its intended application. The limited warranty does not cover defects or damage caused by abuse, misuse, road debris, accidents or improper installation, maintenance or service.

Note: Some exclusions do apply. Refer to the Bendix Limited Warranty VORAD® Collision Warning System (BW2759) for complete warranty information visit www.bendix.com or call 1-800-AIR-BRAKE (1-800-247-2725).

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