



9001

**Commercial Vehicle Blind
Spot Detection System**

**Installation Guide
User Guide**

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IMPORTANT

READ BEFORE PROCEEDING

The Zorg Blind Spot Detection System should only be installed by a qualified or suitably competent and experienced automotive technician.

The steps outlined herein are only a guide to assist in installing the system. It is assumed that the technician has sufficient knowledge in the dismantling/reassembly of the vehicle, the wiring, and installing automotive electrical components. In addition, the technician is responsible for ensuring that the Blind Spot Detection system is installed correctly and tested to ensure proper operation.

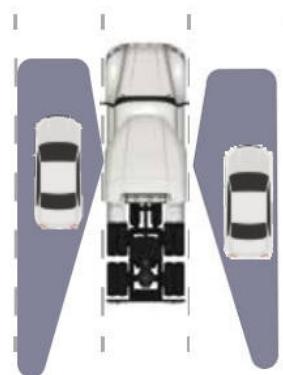
Note: The Blind spot detection system does not prevent contact with other vehicles. The system is only an aid in detecting possible objects within the blind spot of the vehicle. The driver has the final responsibility to ensure that there is nothing in the vehicle's path when changing lanes or turning. This device does not eliminate the need for mirrors or good driving practices.

WARNING: The system may not operate properly during severe weather conditions, for example, snow, ice, heavy rain, dirt, and mud. Always drive responsibly with due care and attention. Failure to take care may result in a crash.

1 System Overview

To reduce the risk of collisions with objects in the truck's blind spot, the Blind Spot Radar monitors the area along the vehicle's left or right side (depending upon installation). It will warn the driver with visual and audible alerts to objects in the detection zone.

The system consists of the Radar sensor mounted to the side of the vehicle, the Blind Spot LED Indicator install on the side A-pillar matching the side that the Radar sensor is mounted on for visual alerts, plus a buzzer installed under the dash, which delivers audible warnings.

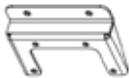


The truck's driving speed is obtained via an installed GPS receiver and has two operational modes -low-speed urban mode with Turn-Assist below 20 Mph / 30km/h and normal driving mode above 20 Mph / 30km/h.

2 What's in the box



Radar Sensor



Sensor Mounting Bracket



Control Box



GPS Receiver



Main Harness



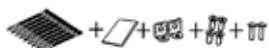
Blind Spot Indicator LED



Sensor Extension Cable



Buzzer



Installation Kit

Cable Ties

Velcro

Control Box Bracket - 2 pcs

Bolts M6*16 - 4 pcs

Screws ST8*30 - 2 pcs



Blind Spot Indicator Mounting Kit

LED Housing

LED Housing Back Plate

Double-sided Tape

Screw 3*12 - 1pc

14mm (9/16") Hole Saw



Buzzer Extension Cable

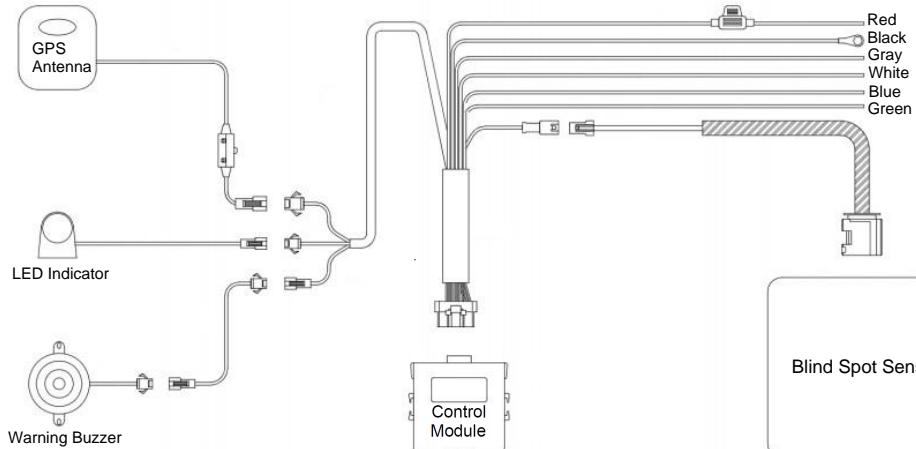
*Parts shown are for reference only and may be different or changed or deleted based upon application

3 Wiring Schematic

Wiring:

Red - Ignition/ACC 9-36 Vdc+
Black - Ground Vdc.
Gray - Right Turn Signal In (+)
White - Left Turn Signal In (+)
Blue - Dimmer Input from Headlamp (+)
Green - Output Trigger 12 Vdc+ (pulsed .05amp max)

2 Amp Fuse ONLY

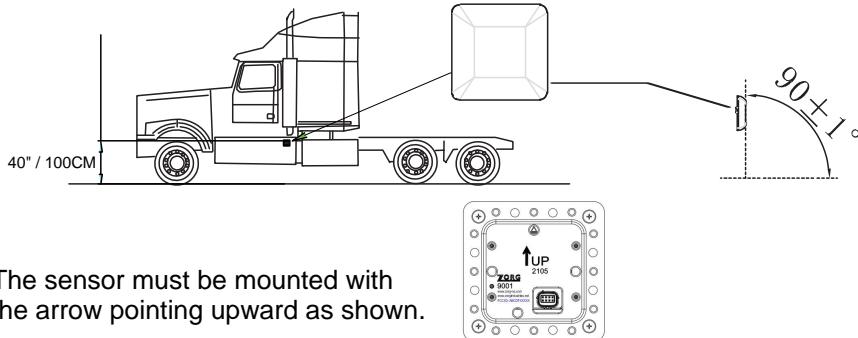


4 Installing the Radar Sensor

IMPORTANT

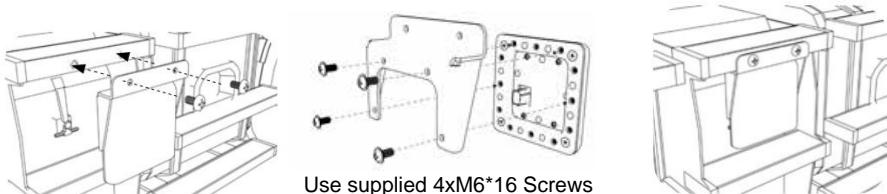
To ensure optimum detection performance, the radar sensor must be installed within the following tolerances:

- 1: The face of the sensor must be parallel with the truck body.
- 2: The face of the sensor must be perpendicular to the ground (90°)
- 3: The center of the sensor should be 40" (100cm) +/- 10% from the ground
- 4: Mount the Sensor behind the front door / mid way on the vehicle



The sensor must be mounted with the arrow pointing upward as shown.

- 1: Use the Sensor Bracket to find a location that is suitable. The face of the sensor should be flush with the vehicle if possible. The sensor should not be blocked by object such as body panels. keep the sensor straight in line with the vehicle, and must be at a 90 degree angle from the ground.
- 2: Using the bracket mark the mounting hole locations
- 3: After double checking to ensure there is nothing blocked by the sensor or behind where you will be drilling, drill two holes for the mounting screws (Not Supplied).
- 4: Mount the Sensor to the bracket using the supplied 4 x M6*16 screws,
- 5: Connect the wire harness and then mount the sensor bracket to the vehicle.



Ensure the Radar sensor orientation is correct - Arrow facing upwards.

4 Installing the Radar Sensor Cont.

The Sensor extension wire must be run into the vehicle interior. Find a suitable route for the cable where it will not interfere with any other vehicle system, safety device, or engine component such as the exhaust pipe.

- 1: Route the cable into the vehicle and seal the entry point to ensure no water will enter the vehicle.
- 2: Find a good location for the control module. The module needs be secure and safe from any moving item, possibility of damage, or extreme heat.
- 3: Route the sensor extension cable to the location for the module.

***** Before making any electrical connections to the vehicle disconnect the Negative battery terminal*****

5 Installing the Blind Spot Indicator

The warning indicator should be mounted in a location that is directly in the line-of-site of the driver when checking the side mirror of the side of the vehicle that the sensor is mounted on. The recommended location is on the A-pillar. DO NOT INSTALL OVER A AIR-BAG OR OTHER SAFETY DEVICE. The Indicator can be surface mounted or mounted to the dash in the supplied housing.

Option 1: Flush mount

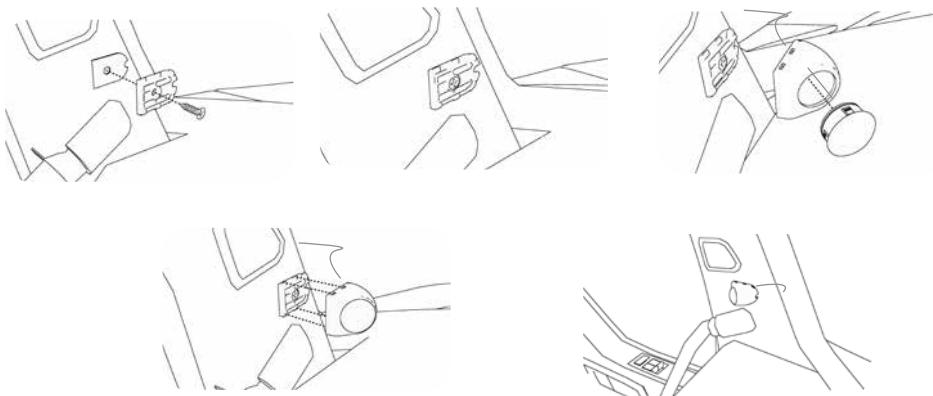
1. Remove the plastic trim panel from the A-pillar, inspect behind it for wires or an air-bag. DO NOT INSTALL IN FRONT OF A AIR-BAG!
2. Mark the desired location and drill a 14mm hole in the A-pillar trim using the supplied hole saw.
3. Insert the cable into the hole and run it down the inside of the trim.
4. Press the Blind Spot Indicator into the hole.
5. Route the indicator wire to the control box location.



5 Installing the Blind Spot Indicator cont.

Option 2: Surface Mounting

- 1: The Surface mount option can be used on the A-pillar or the top of the dashboard in front of the A-pillar.
- 2: Use the supplied double sided tape and mounting screw. Always double check behind any surface that you will screw into before securing the housing.
- 3: Attach the base plate to the desired location.
- 4: Insert the LED indicator into the surface mount housing cover, snap in place.
- 5: Route the wire out of the back of the housing and snap the housing into place over the base plate.
- 6: Route the wire to the control box and connect.



6 Buzzer Installation

The warning buzzer should be located in the footwell of the vehicle on the side that the blind spot sensor is located. It must not be blocked behind a panel or inside the dash board as the driver may not be able to hear the warning tone.

- 1: Determine the mounting location.
- 2: Use the supplied double sided tape and / or two screws to mount the buzzer securely.
- 3: Route the buzzer wire to the control box and connect.

7 Attaching the GPS Receiver

The GPS Receiver Antenna provides data to the control box and selects the mode based on the vehicle speed. The Antenna MUST have a clear view of the sky in order to operate correctly. If the signal is lost due to a tunnel or other obstruction the system will still function but only in driving speed mode.

- 1: The antenna should be attached to the windshield on the inside at the lower corner behind the A-pillar.
- 2: Clean the glass where the antenna will be mounted using an alcohol pad to ensure a proper contact and bond can be made when attaching the antenna.
- 3: We recommend using a adhesive promoter such as 3M brand 4298 (not included) to ensure a lasting bond and application.
- 4: Using the supplied double sided tape attach the antenna to the glass. Press firmly for 30 seconds to allow the tape to bond.
- 5: Route the wire from the antenna to the control box and connect.



8 Wiring

***** Before making any electrical connections to the vehicle disconnect the Negative battery terminal*****

Do not connect the wire harness to the control box until all vehicle connections are made. The Sensor, Buzzer, GPS Antenna, and LED indicator should already be connected to the box at this time.

With the wire harness located at the control box you will route the listed wires to proper vehicle connection. Each vehicle is different, refer to the vehicle service manual for proper location to connect to as needed.

Refer to the wiring schematic on page 2 if needed.

8 Wiring Continued

- 1: Connect the Red wire to Ignition/ACC 9-36 (Vdc+)
- 2: Connect the Black wire to a vehicle Ground (Vdc-)
- 3: Connect the Gray wire to the Right Turn Signal Indicator (+)
- 4: Connect the White wire to the Left Turn Signal Indicator (+)
- 5: Connect the Blue wire to a positive source when the headlamps are turned on (+)
- 6: Connect the Green wire if required - 12Vdc+ Output Trigger (pulsed output - same as the LED Indicator) Max 0.5amps out.
- 7: Connect the wire harness to the module.

9 Setting The Dip Switches

The DIP Switches on the Control Box set the operational mode of the system. Adjust as needed for your installation.

SWITCH #	STATUS	DEFINITION	
1	OFF	Enable audible alert at speed below 20Mph / 30km/h	DEFAULT
	ON	Disable audible alert at speed below 20Mph / 30km/h	
2	OFF	System is always active	DEFAULT
	ON	System is only active at speed below 20Mph / 30km/h	
3	OFF	n/a	
	ON	n/a	
4	OFF	Radar is mounted to the LEFT side of the vehicle	DEFAULT
	ON	Radar is mounted to the RIGHT side of the vehicle	

10 Mounting The Control Box

After the DIP Switches are set to meet your installation needs mount the control box to a metal surface using the included double sided tape and brackets. Clean the mounting surface with alcohol and use the adhesive promoter for the best result.

Using the included wire ties, secure the wire harness so it cannot be pulled out of the control box or become tangled or damaged.

11 System Self-Test

The 9001 Blind Spot system will run a self diagnostic test every time the vehicle is started.

In a normal operational situation the LED Indicator will turn on and remain on for two seconds, then turn off. This confirms proper operation.

If the LED Does not light at start up check the system fuse, if blown replace with a 2 amp fuse.

If trouble is detected the LED Indicator will flash when first turned on.

- Five flashes indicates that there is a problem with the Radar Sensor or the Wiring.
- Fifteen flashes indicates there is a problem with the GPS Antenna

12 Technical Specifications

	Standard <20Mph / 30Kph	Slow >20Mph / 30Kpm
Operating Voltage (V)	9 - 36v	
Operating Current (mA)	<300mA @ 12V	
Operating Temperature (°C)	-40°C ~ 80°C	
Storage Temperature (°C)	-40°C ~ 85°C	
Operating Frequency (GHz)	77GHz - 81GHz	
Transmission Power (dBm)	39.79 dBm	
Modulation Mode	FMCW	
Antenna Type	2TX, 4RX	
FOV Angle (vertical) (°)	30°	
FOV Angle (horizontal) (°)	150°	
Angle Accuracy (°)	± 0.5°	
Speed Measurement Range (Mph-km/h)	-75Mph ~ + 75Mph -120km/h ~ +120km/h	-20Mph ~ + 20Mph -30km/h ~ +30km/h
Speed Resolution (km/h)	0.94km/h	0.46km/h
Speed Accuracy (Mph - km/h)	± 0.29 Mph ± 0.47km/h	± 0.14 Mph ± 0.23km/h
Distance Resolution (m)	0.36m	0.04m
Distance Accuracy (m)	±0.18m	±0.02m
Angle Resolution (°)	30°	15°
Detection Distance (m)	12m	10m

For More Information contact Zorg at:

Australia / Asia / Europe -

www.zorgindustries.net

North America - www.zorg-na.com

Commercial Vehicle Blind Spot Detection System

User Guide

The Zorg Blind Spot Radar is mounted to the side of the vehicle and incorporates advanced microwave technology that aids in the detection of objects alongside the truck including: All types of vehicles, Motorcycles, Cyclists, Pedestrians Road infrastructures such as poles, barriers, and guard rails.

Advanced algorithms are able to identify whether an object is stationary or moving, including its speed and distance from the truck.



The Blind Spot Indicator is typically installed at the A-pillar in direct line of sight when checking the side mirror. When the Blind Spot system senses an object in the detection zone, the Blind Spot LED Indicator will illuminate and remain illuminated until the detection zone is clear. In addition, if the vehicle's turn signal indicator is activated, the Blind Spot LED Indicator will flash and sound a alert tone. (no tone will sound if the turn signal is not activated).

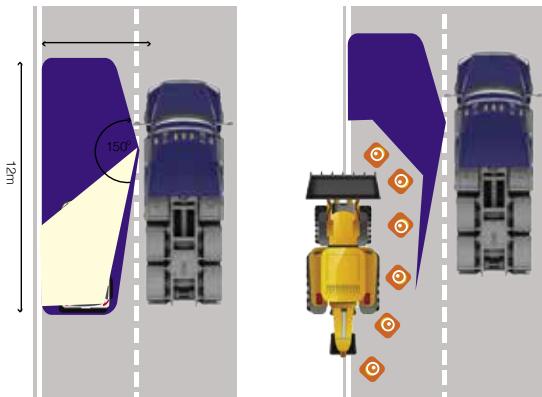
The Blind spot detection system does not prevent contact with other vehicles. It does not detect parked vehicles, pedestrians, animals, or other infrastructure. The system is only an aid in detecting possible objects within the blind spot of the vehicle. The driver has the final responsibility to ensure that there is nothing in the vehicle's path when changing lanes or turning. This device does not eliminate the need for mirrors or good driving practices.

WARNING: The system may not operate properly during severe weather conditions, for example, snow, ice, heavy rain, dirt, and mud. Always drive responsibly with due care and attention. Failure to take care may result in a crash.

The 9001 Blind Spot Detection System performs a self test each time the vehicle is started to ensure proper operation. When turning the ignition on the LED indicator will light solid for 2 seconds and shut off, this is indicating proper operation. If the LED Indicator flashes this indicates that there is a problem and the system is not operating properly. Do not rely on the system if this happens and contact the installing dealer for service as soon as possible.

At speeds above 20Mph / 30 Km/h, the detection zone will extend to 3m (9ft) into the adjacent lane and up to 12m (36 feet) alongside the truck.

In this mode, the Blind Spot system focuses on detecting moving objects like vehicles, motorcycles, and cyclists. It will ignore stationary objects such as parked cars, guard rails, and poles to minimize false alerts.

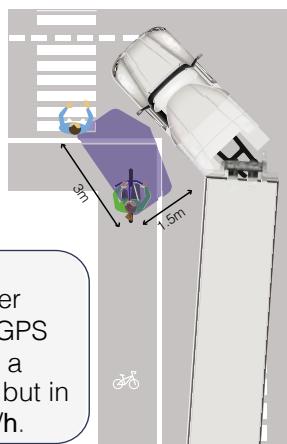


At speeds below 20Mph / 30Km/h, the blind spot system Turn-Assist mode activates. The detection zone is reduced to 3m (9ft) by 1.5m (4.5ft) and will alert the driver to both moving and stationary objects.

This mode is beneficial when turning at intersections or maneuvering in tight areas. In addition, the system can detect pedestrians, cyclists, and other objects in the Blind Spot area.

IMPORTANT

The system calculates driving speed via a GPS receiver attached to the windshield. Do not cover or block the GPS receiver. If GPS signal is unavailable, such as when in a tunnel or other obstruction the system will still operate but in driving mode only, as for speed above 20Mph / 30Km/h.



Note: The system can be deactivated by turning on the emergency 4-way flashers of the vehicle. If driving with the 4 way flashers on the system will not be operational.

Speed	Detection Zone	What's detected	Object in Detection Zone?	Truck's Turn Signal Indicator	Blind Spot Indicator	Blind Spot Audible Alert	
Below 20 Mph 30km/h	1.5m x 3m	All objects. Stationary & moving. Includes pedestrians and cyclists	NO	OFF	OFF	NO	
				ON	OFF	NO	
	3m x 12m		YES	OFF	ON	NO	
				ON	FLASH	YES	
Above 20 Mph 30km/h	3m x 12m	Moving objects only	NO	OFF	OFF	NO	
				ON	OFF	NO	
			YES	OFF	ON	NO	
				ON	FLASH	YES	

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment . This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 30cm between the radiator& your body.