

OPERATING MANUAL

ROSTRA OBSTACLE SENSING SYSTEM

ROSS



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Rostra is a Certified
QS9000 / ISO9001
Manufacturer

Made in the



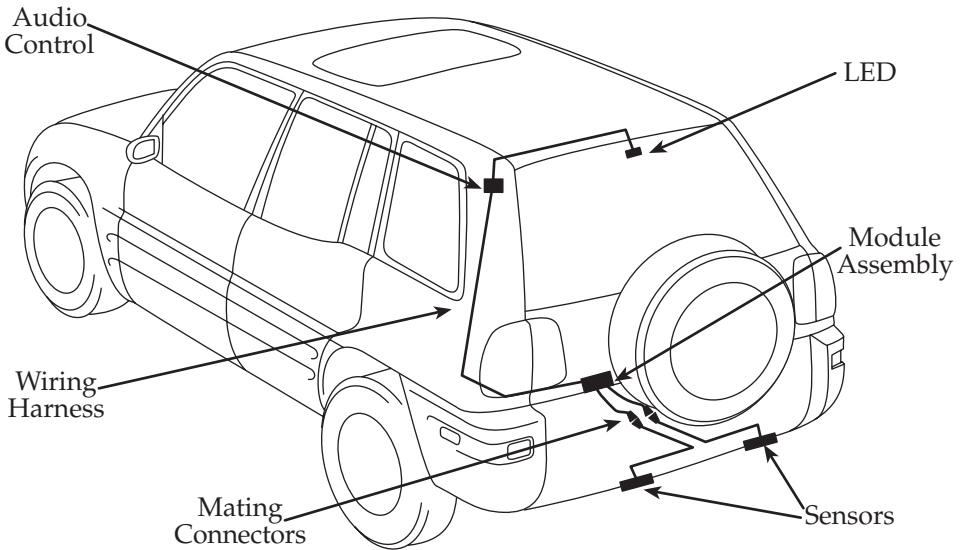
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SYSTEM OVERVIEW

The Rostra Obstacle Sensing System (ROSS) is a state of the art obstacle detection system designed to alert drivers to obstacles to the rear and laterally to the left and right of their vehicle bumpers. The system uses a microwave signal to detect obstacles in your vehicle's "blind spots".

When an obstruction is detected in the sensor's coverage area, the sensor determines the distance to the obstacle. This information is then instantaneously converted into a tricolor display and an audible alert. The ROSS is not affected by adverse weather conditions such as extreme heat or cold, rain, sleet, snow, hail, mist, or fog.



GENERAL OPERATING INSTRUCTIONS

Obstacle Detection

The ROSS detects obstacles up to 12 feet behind your vehicle and can also sense objects next to the rear end of the vehicle. Before the ROSS can provide obstacle alerts, the following must occur:

- The vehicle ignition must be in the “on” position.
- The vehicle must be in reverse gear.
- The vehicle or the obstacle must be moving.

The ROSS will detect obstacles within the sensor coverage area including trees, posts, buildings, animals, children’s toys, plastic products, people, and other vehicles. However, obstacle density and moisture content of the object will affect the sensitivity of the ROSS sensors. For this reason, some objects may not be detected until they are closer to the rear bumper of the vehicle than the outermost detection zone. (Please see the section entitled Detection Zones.)

For example, a relatively low-density object such as a utility pole, sign, or fence post may not be detected when it is located in the Safe Zone, but may be detected in the Alert Zone. In addition, in some cases, small objects such as a ball or a small shrub may not be detected in the Danger Zone, but will be detected in the Hazard Zone. Regardless of density or moisture content, objects will be detected in either the Hazard Zone or the Danger Zone whether or not they are also detected further away from the vehicle. When an obstacle is detected in the Hazard Zone or the Danger Zone, stop your vehicle immediately.

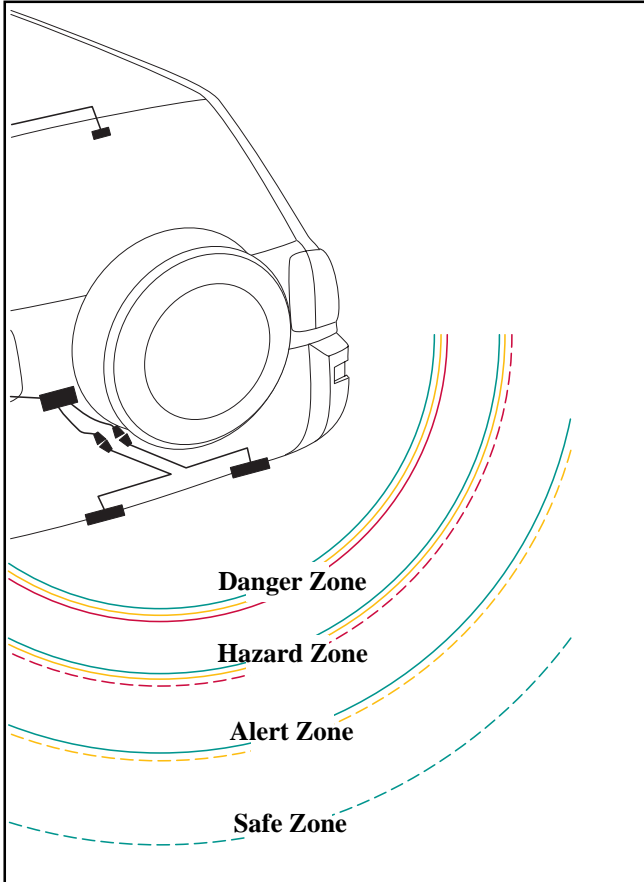
WARNING

The ROSS system is designed to supplement other safety practices by enhancing driver awareness of difficult-to-see areas. The ROSS system does not take any automatic action to prevent accidents. Responsibility for safe operation of the vehicle remains with the driver. Failure to operate the ROSS in the manner specified in this manual could result in personal injury, property damage, or possibly death.

Detection Zones

The ROSS sensor coverage area is divided into four zones as shown in Figure 1.

Figure 1



Driver Alerts

Table 1 (below) shows the types of visual and audio alerts provided by the ROSS when an obstacle is detected within each detection zone. Should obstacles be located in more than one zone, the ROSS will provide alerts for the closest one.

TABLE 1

Detection Zone Alerts

Detection Zone	LED Indication			Audio Alert
	Green Light	Yellow Light	Red Light	
Safe zone	Flashing	None	None	None
Alert zone	Solid	Flashing	None	Slow beeping
Hazard Zone	Solid	Solid	Flashing	Fast beeping
Danger Zone	Solid	Solid	Solid	Continuous tone

Operation When No Obstacles are Detected

When no obstacles are detected, the visual display unit will show a solid green light indicating that the ROSS is turned on and that no obstacles are detected.

Cleaning and Care

The ROSS does not require cleaning or special care.

Getting Started

After your ROSS has been professionally installed in your vehicle and you have thoroughly reviewed the Operating Manual, take a few moments to familiarize yourself with the ROSS by following these steps:

1. To ensure proper installation and operation of your ROSS, have another individual stand outside of the car to verify proper obstacle clearance and traffic avoidance while you become familiar with the operation of the ROSS.
2. In your driveway or in a quiet parking lot, identify an obstacle, such as a parked vehicle or a building.
3. Park your vehicle such that the rear bumper is approximately 20 feet from the obstacle.
4. With your vehicle still in “Park” and the vehicle ignition turned on, the visual display should not show any lights, nor should the ROSS sound any alerts.
5. With the brakes applied, place your vehicle in reverse gear. The visual display should show a solid green light.
6. Slowly release the brakes and begin to back your vehicle toward the obstacle.
7. As you back your vehicle closer to the selected obstacle, you should receive the audio and visual alerts outlined in Table 1. Continue backing toward the obstacle until you receive the alerts for the Hazard Zone or the Danger Zone. **Be advised that the obstacle may not appear in both of these zones** [see “Obstacle Detection”]. Once the obstacle is detected in the Danger Zone or the Hazard Zone, place your vehicle in “Park”. Have the individual assisting you estimate the distance between the vehicle bumper and the obstacle.
8. Repeat this entire procedure using other obstacles. Because of differences in obstacle moisture content and density, the ROSS will detect some obstacles further away from the vehicle bumper than others. [see “Obstacle Detection”]

Please remember that the ROSS is a driver’s aid. Safe operation of the vehicle is the driver’s responsibility.

PRECAUTIONS

To ensure proper operation of your new ROSS, the following precautions must be considered at all times:

- The ROSS operates only while the vehicle is in reverse gear. In addition, either the vehicle or an obstacle must be moving for the driver alerts to function.
- The system sensors are affected by tall grass and may not provide proper obstacle sensing if the vehicle is located in an unmowed area such as a meadow or other off-road situations.
- The system will not detect obstacles properly if you are towing a trailer behind the vehicle in which the ROSS is installed.
- The ROSS will not work on vehicles with bumpers that are lower than 14" above the ground.
- Detection ranges may vary according to the size and material composition of various obstacles.
- The ROSS does not provide accurate obstacle detection on vehicles more than seven feet wide.
- **The ROSS will not detect obstacles under the bumper. Always inspect behind and below your vehicle prior to backing up to eliminate the possibility of property damage and bodily injury.**

Troubleshooting Guide

PROBLEM	CHECK THE FOLLOWING
LED does not display any lights	<ul style="list-style-type: none">• Make sure that the vehicle reverse light bulbs are working properly• Verify that the vehicle ignition is either “on” or in “accessory” mode
LED is working properly, but system is not detecting obstacles	<ul style="list-style-type: none">• Make sure that the vehicle is in reverse gear and either the vehicle or an obstacle within the sensor range is moving• Confirm that the vehicle is not parked in tall grass
Audio alert sounds, but is barely audible	<ul style="list-style-type: none">• Check the volume control knob on the audio control unit
LED display is barely visible	<ul style="list-style-type: none">• Check the dimmer control on the visual display unit
Red or yellow LED light is illuminated and/or audio alert sounds, but no obstacle is present within 8 feet of the rear bumper	<ul style="list-style-type: none">• Verify that no obstacles are located within the detection zone• If the car is parked on a hill with the rear end of the car pointed down the hill this may be a normal condition

If you continue to have difficulties with the operation of your ROSS, please contact our Technical Assistance Hotline at (910) 277 - 1828 between the hours of 8 AM and 5 PM (EST), Monday through Friday.

36 MONTH/ 36,000 MILE LIMITED WARRANTY

Rostra Precision Controls, Inc. (the Company) warrants to the original retail purchaser of this product that should this product or any part thereof, under normal use and conditions, be proven to have defective material or workmanship within 36 months or 36,000 miles of the original purchase, which ever first occurs, such defects will be repaired or replaced (at the Company's option) without charge for the parts. This warranty does not apply to batteries or normal wear and tear associated with the Product.

To obtain repair or replacement with the terms of this Warranty, the product is to be delivered with proof of warranty coverage (e.g. dated bill of sale), specification of defects, transportation prepaid, to the installing dealer and/or retailer.

This Warranty does not cover costs incurred for the removal or reinstallation of the product, and / or related components, and/or damage to the vehicle's electrical system or components.

This Warranty does not apply to any product or part thereof which in the opinion of the Company has been damaged through alteration, improper installation, misuse, neglect, accident, or customer abuse.

This Warranty is in lieu of all other express warranties or liabilities. ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, SHALL BE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. ANY ACTION FOR BREACH OF ANY WARRANTY HEREUNDER INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY MUST BE BROUGHT WITHIN A PERIOD OF 42 MONTHS FROM DATE OF ORIGINAL PURCHASE. IN NO CASE SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED WHATSOEVER. No person or representative is authorized to assume for the Company any liability other than expressed herein in connection with the sale of this product.

THE EXTENT OF THE COMPANY'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT PROVIDED ABOVE AND IN NO EVENT, SHALL THE COMPANY'S LIABILITY EXCEED THE PURCHASE PRICE PAID BY THE PURCHASER FOR THE PRODUCT. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damage so the above limitations or exclusions may not apply to you. This Warranty gives you specific legal rights and you may also have other rights, which vary, from state to state.

Customer's Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Dealer Name: _____

Dealer Address: _____

City: _____ State: _____ Zip: _____

Date Purchased: _____ Date Installed: _____

Make & Year of Car: _____

Mileage at installation: _____

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Manufacturing smart products for
smart consumers.

Committed to Your Driving Pleasure

- Cruise Control
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