



Backup Monitoring System

Installation and Operation Manual

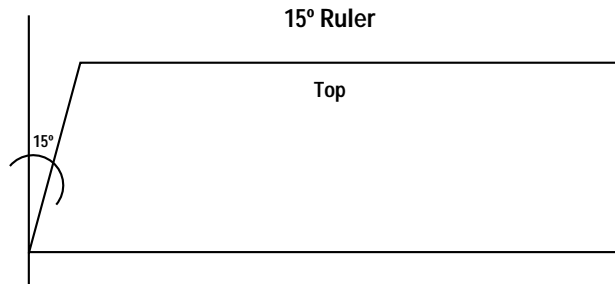
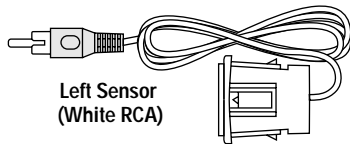
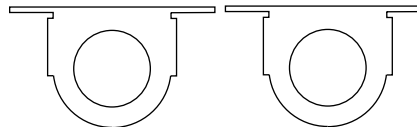
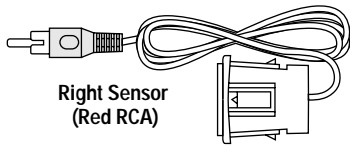
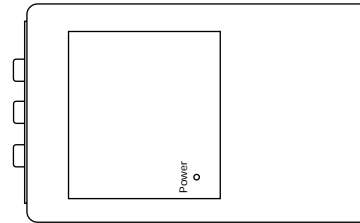
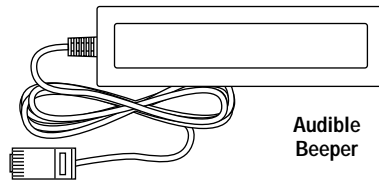
Model: MBS250

For Technical Assistance (800) 638-3600

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Packing List

Warning: to obtain the best performance from this device, the installation procedures and recommendations enclosed must be followed as stated. Diverting from the enclosed directions could result in less than desired operation.



Flush Mounted Sensor Installation

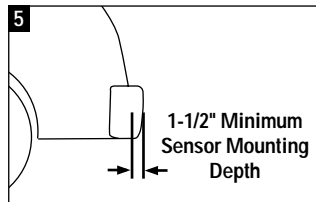
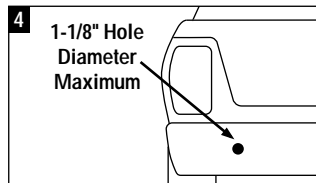
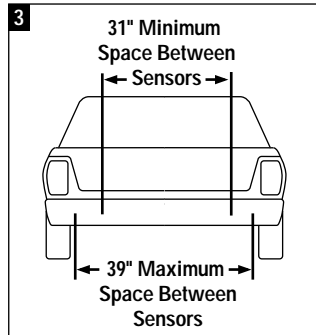
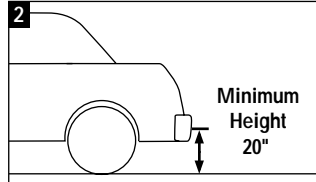
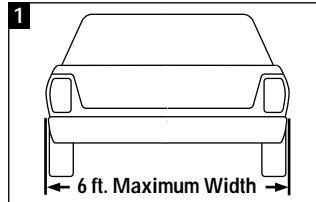
Application: Passenger Cars, SUV and Mini-Van flush bumper mounting

Installer Notes:

1. For proper detection the vehicle should not exceed a maximum width of 6ft.

Note: Vehicles wider than 6 ft. will require an optional third sensor for proper operation.
Model # MBS-250-B.

2. Sensors must be mounted a minimum of 20" from the ground (optimal height is 22").
3. Horizontal spacing can be from 31" to 39" maximum.
4. Hole diameter requirement for the sensor is 1-1/8" (28mm) maximum
5. Clearance behind the bumper or bumper cover should be 1-1/2" minimum

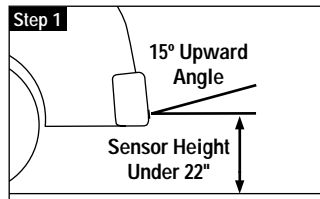
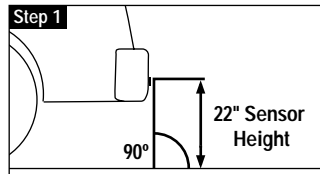


Flush Mounted Sensor Installation

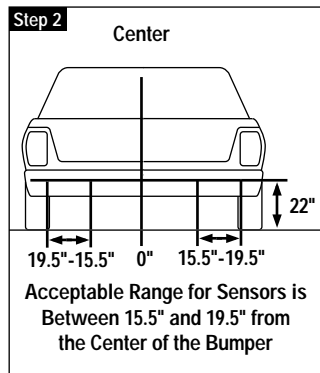
Installation Procedures:

Step 1. Examine the rear of the vehicle and locate a mounting surface on the bumper that maintains a 22" sensor height and has a surface that is relatively 90 degrees to the ground.

Installer Note: Some vehicles may not be able to provide a 22" mounting height for the sensor. For these vehicles, attempt to locate a mounting surface that has a slight upward angle. If the sensor is mounted below the 22" mark, it will need to point upward about 15 degrees. Failure to provide the 15 degree upward angle when mounting below the 22" mark will result in false sensor readings.



Step 2. Find the center of the bumper and measure outward 15-1/2" minimum to 19-1/2" maximum on each side and mark the location. All sensor locations should maintain a horizontal plane.



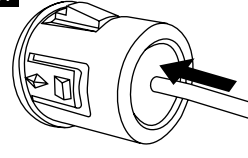
Step 3. Once the locations have been confirmed, use a 1-1/8" (28mm) hole saw and cut the holes requires for the sensors. Do not cut holes bigger than 1-1/8" or the sensors will fit poorly and rotate.

Flush Mounted Sensor Installation

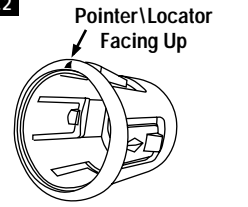
Step 4.

1. Separate the sensor element from the plastic holder. Push on the rear of the sensor to release it from the holder.
2. Install the plastic holders into the cut holes until they snap into place. **Note:** The holder has a built-in 5 degree angle and a pointer/ locator arrow molded into the face of the plastic. This arrow should point upwards for all installations.
3. Feed the sensor cable through the center of the plastic holder and route it to the location of the electronic control unit (ECU). **Note:** The right sensor will have a red RCA connector and the left sensor will have a white RCA connector.
4. Align the sensor in the plastic holder with the arrow on the side of the sensor's housing pointing upward.
5. Press the sensor into the holder by pressing on the rubber edges of the sensor. NEVER press on the plastic center of the sensor. You will damage it.

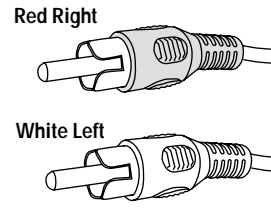
Step 4.1



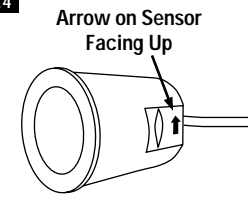
Step 4.2



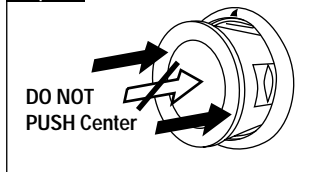
Step 4.3



Step 4.4



Step 4.5



Under Bumper Sensor Installation

Application: Trucks, Full Size Vans, Medium Duty Commercial Vehicles and all other vehicles that can not flush mount the sensor in the bumper.

Installer Notes:

1. For proper detection the vehicle should not exceed a maximum width of 6 ft.

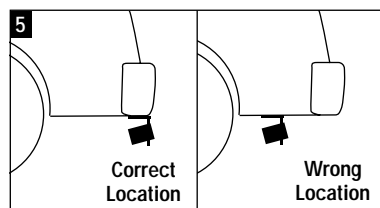
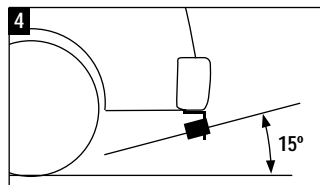
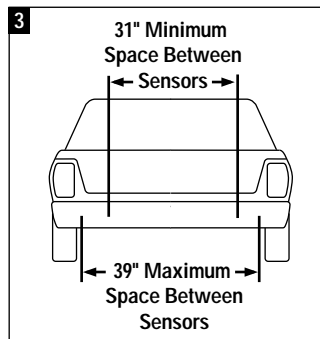
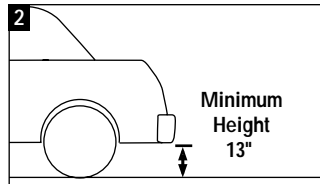
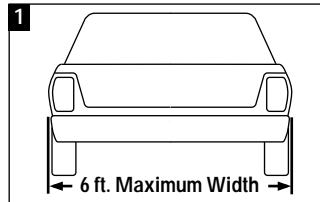
Note: Vehicles wider than 6 ft. will require an optional third sensor for proper operation.
Model # MBS-250-B.

2. Under-bumper sensors must be mounted a minimum of 13 inches from the ground.

3. Horizontal spacing can be from 31" to 39" maximum.

4. A 15 degree upward angle must be fixed unless the sensor is mounted 22" or higher from the ground.

5. The face of the sensor must be flush with the farthest outside edge of the mounting surface in order for the sensor to not detect the bumper overhang as an obstacle and give a false indication.



Under Bumper Sensor Installation

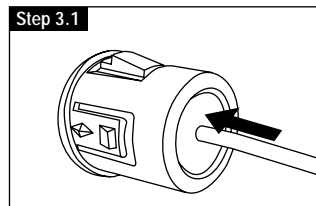
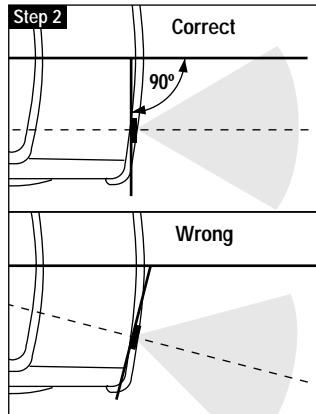
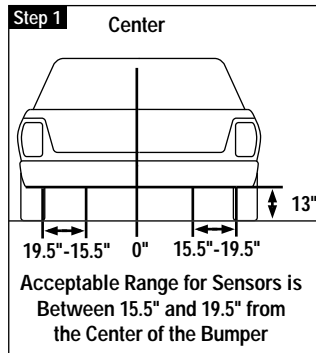
Installation Procedures:

Step 1. Find the center of the bumper and measure outward 15-1/2" minimum to 19-1/2" maximum on each side and mark the location. All sensor locations should maintain a horizontal plane.

Step 2. Once the locations have been confirmed, attach the metal under-bumper sensor brackets to the bumper. Keep in mind that the sensors must face the rear of the vehicle 90 degrees to the center line of the vehicle. Aiming the sensors outward or inward will result in un-desirable performance.

Step 3.

1. Separate the sensor element from the plastic holder. Push on the rear of the sensor to release it from the holder.

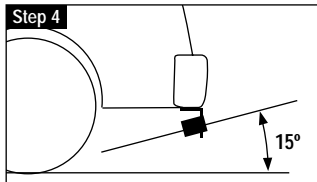
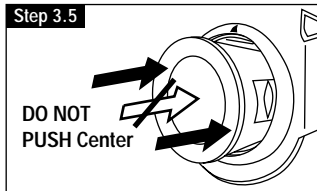
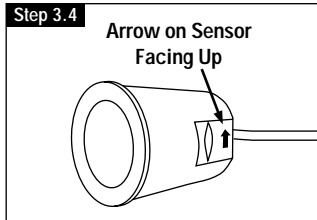
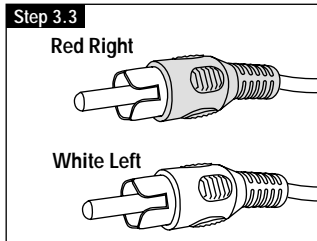
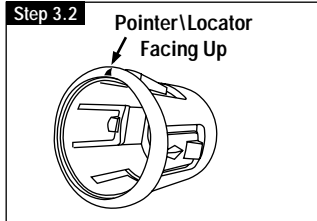


Under Bumper Sensor Installation

Step 3.

2. Install the plastic holders into the brackets until they snap into place. **Note:** The holder has a built-in 5 degree angle and a pointer / locator arrow molded into the face of the plastic. This arrow should point upwards for all installations.
3. Feed the sensor cable through the center of the plastic holder and route it to the location of the electronic control unit (ECU). **Note:** The right sensor will have a red RCA connector and the left sensor will have a white RCA connector.
4. Align the sensor in the plastic holder with the arrow on the side of the sensor's housing pointing upward.
5. Press the sensor into the holder by pressing on the rubber edges of the sensor. **NEVER** press on the plastic center of the sensor. You will damage it.

Step 4. Re-check the angle of the sensor and make adjustments as needed. For good performance, the sensor must angle upward about 15 degrees to compensate for the low under-bumper mounting position.



Module Installation

Electronic Control Module Location:

The ECM should be located in a dry location in the rear of the vehicle close to the tail lights. Rear splash panel, rear deck, fender walls are all good mounting locations. The ECM can be mounted using the double sided tape already applied to the back of the case or nylon wire ties can be used to secure the ECM to another location.

Note: If the ECM can be mounted in a wet location using an optional waterproof housing. (Model: MBS250-WPH)

Power Wire Connections:

Locate the wires connected to one of the vehicle tail lights. Use a test light or volt meter to locate the wire that is active when the vehicle shift lever is placed in the "R" (reverse) position. In most all vehicles, the correct wire will show +12 volts. If for some reason the vehicle you are working on switches a ground to turn on the reverse lights, you will need to add a relay. The MBS250 will only turn on from a +12 volt signal. Connect the power wires as follows.

Red Wire: Connect to the + trigger wire to the backup light(s).

Black Wire: Connect to the frame of the vehicle. Scrape away all paint at the grounding location to insure and good connection to the vehicle metal.

Sensor Connections:

Route the sensor wires up to the location when the ECM is located. Connect the RCA cables as follows:

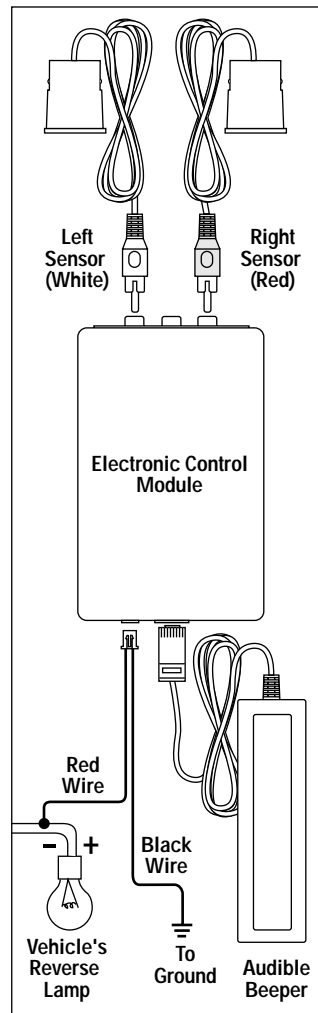
Red RCA Cable: Connect to the red right side input connector on the ECM.

White RCA Cable: Connect to the white left side input connector on the ECM.

Note: Optional center sensor cable with black RCA, connects to the black center input connector on the ECM

Audible Beeper:

Plug the large connector from the beeper in to the mating plug on the ECM. Route the cable to the desired beeper mounting location. The beeper can be mounted up to 30ft away from the ECM. Mount the beeper using the double side tape already applied to the back of the beeper or use nylon wire ties to secure the beeper into position.



Operation and Testing

Step 1: Distance and Electronic Buzzer Testing

After installation drive the vehicle to an area where there are no obstacles within the range (Zone 1) of the sensors. Switch on the ignition and selected reverse gear to activate the system, the buzzer will beep three times to indicate the operation is normal.

Note: With manual transmission turn the ignition on and select reverse gear this will activate the system for the initial test. With auto transmission the same procedure can be adopted, if you run the engine ENSURE the parking brake is fully on.

Step 2: Verifying Different Tones

When an obstacle is detected within **Zone 1** the buzzer will beep **SLOWLY**.

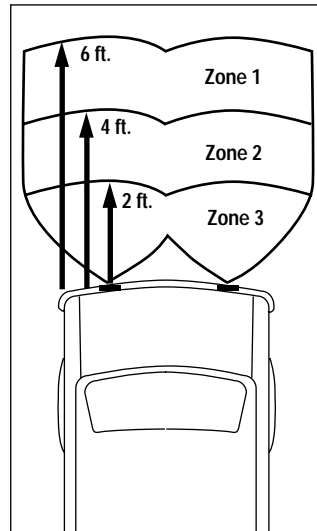
When an obstacle is detected within **Zone 2** the buzzer will beep **QUICKER**.

When an obstacle is detected within **Zone 3** the buzzer will beep **CONTINUOUSLY**.

Note:

1. Maintain a speed of less than 3 MPH when reversing close to an obstacle.
2. When beep changes to a continuous tone stop reversing and visually check.
3. Reversing up or down a steep incline may give you a false warning.
4. After checking out all the above functions correctly. The unit will now be ready for use. This system will automatically activate every time reverse is selected.

If your encounter problems during testing or operation please refer to the trouble shooting table.



WARNING: This unit is designed to assist the driver when reversing. The system is not intended to replace the driver's normal attention and therefore must be used as an aid to safe parking. Remember that ultimate driving safety remains the sole responsibility of the driver.

The system's operation may be affected by certain objects and conditions:

1. Other ultrasonic sources or sensors in close proximity.
2. Use on very uneven surfaces, long grass, or close proximity to hedges.

3. Very heavy rain falling directly on the sensor.
4. Sensor is covered in mud, snow or ice.

It should also be noted that some types of objects can give a false or misleading reading:

1. Solid objects with a steep incline or acutely angled surface (waves are reflected away from sensor).
2. Thin or circular poles or bars (again waves reflect at odd angles)
3. Sound absorbent cloth or fabric (waves absorbed by object).

Trouble Shooting

Problem	Cause	Solution
The system works when reverse is not selected.	Incorrect wiring with reversing light circuit.	Check power LED on control unit, if it is lighting: ENSURE the red and black cables of the 2-pin power line is connected to the Reversing light.
The system doesn't work when reverse is selected (Control unit power LED is still OFF)	<ol style="list-style-type: none"> 1. No power supply to the control unit 2. The control unit is damaged. 	<ol style="list-style-type: none"> 1. Check the red and black cables with multimeter. 2. Ensure good connection between the 2-pin power cable and reversing light. 3. Replace control unit.
The system doesn't work when reverse is selected. (Control unit power LED is turn ON).	<ol style="list-style-type: none"> 1. Bad connection with the audible beeper. 2. The connecting cable is damaged 3. Damaged control unit. 4. Damaged audible beeper. 	<ol style="list-style-type: none"> 1. Check the connection cable 2. Ensure good connection between the audible beeper and control unit. 3. Replace connecting cable. 4. Replace control unit. 5. Replace audible beeper.
The system works correctly but one of sensors is not detecting	<ol style="list-style-type: none"> 1. The cable of sensor damaged 2. Damaged sensor. 3. Damaged control unit. 	<ol style="list-style-type: none"> 1. Ensure good connection between sensor and the control unit. 2. Change another working sensor and connect with RCA socket on control unit, if still not working, replace control unit.
The system works but there is no objects behind the car.	The sensor is detecting small object from very uneven road surface.	System is OK <ol style="list-style-type: none"> 1. Make sure sensor is correctly mounted horizontally. 2. Adjust the angle of sensor. 3. Re-locate sensor at a higher position.
The system works abnormally in the same location repeatedly.	The sensor is picking up interference or backscatter from another ultrasonic source.	System is OK Identify and if possible eliminate external source of interference.
The system continuously beeps	The sensor is resonance with the car body	System is OK Change the location of the sensor to get a free resonance position.

General Specifications

Working Voltage Range:	11V to 28V	Number of Sensors:	2 Sensors
Power Consumption:	Less than 5W	Transmitting Frequency:	40kHz
Current Consumption:	0.3A max.	Distance Accuracy:	Approx.
Operation Temperature:	-20 to 60 Degree C	Detection Angle:	Horizontal 90 Degree
Operation Humidity:	40% to 95%		Vertical 70 Degree
Alarm Level:	84dB (4")	Detection Range:	Zone 1 180-212 cm
Alarm Frequency:	2.3Khz \pm 0.3k		Zone 2: 120-61 cm
Type of Sensor:	Close Type		Zone 3: 61-40 cm
	Water and Rust Proof		

Limited 1 Year Warranty

Magnadyne Corporation or its authorized agents will, for a period of 1 year to the original purchaser, repair or replace said product or any part thereof, at the option of the Magnadyne Corporation or its authorized agents, if said product or part is found defective in materials or workmanship, when properly connected and operating on the correct power requirements designated for the specific product. This warranty and Magnadyne Corporation or its authorized agents obligations, hereunder do not apply where the product was: damaged while in the possession of the consumer, subjected to unreasonable or unintended use, not reasonably maintained, utilized in commercial or industrial operation, or serviced by anyone other than Magnadyne Corporation or its authorized agent, or where the warning seal on the product is broken or the power plugs or wires are detached from the unit. Magnadyne Corporation or any of its authorized agents do not assume any labor costs for the removal and reinstallation of any product found to be defective, or the cost of transportation to Magnadyne Corporation or its authorized agents. Such costs are the sole responsibility of the purchaser.

This warranty does not cover the cabinet, appearance items, normal wear and tear or accessories used in connection with the product resulting from improper installation, alteration, accident, misuse, abuse or acts of nature.

MAGNADYNE CORPORATION OR ITS AUTHORIZED AGENTS SHALL NOT BE LIABLE TO ANYONE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES OR CLAIMS THAT MAY ARISE DUE TO FAILURE OF PRODUCT TO OPERATE PROPERLY EXCEPT THOSE ACCORDED BY LAW. MAGNADYNE'S OR ITS AUTHORIZED AGENTS LIABILITY TO THE REPAIR, REPLACEMENT OF THE PRODUCT AS STATED ABOVE IF ALL CONDITIONS OF THE WARRANTY ARE MET. NO EXPRESSED WARRANTY OR IMPLIED WARRANTY IS GIVEN EXCEPT THOSE SET FORTH HEREIN. MAGNADYNE DOES NOT WARRANT OR GUARANTEE AGAINST BREAK IN DAMAGE OR THE THEFT OF THE VEHICLE IN PART OR WHOLE, OR AGAINST THE LOSS OR DAMAGE TO THE CONTENTS OF ANY VEHICLE IN WHICH A SECURITY SYSTEM IS INSTALLED. MAGNADYNE SECURITY SYSTEMS ARE ONLY A DETERRENT AGAINST POSSIBLE THEFT.

This warranty extends only to the original purchaser of the product and for the vehicle in which it was originally installed. This warranty is not transferable or assignable to any person or vehicle. Defective merchandise should be returned to the original point of purchase or secondly to Magnadyne Corporation, 1111 W. Victoria Street, Compton, CA 90220. A return authorization must be obtained before sending, or merchandise may be refused.