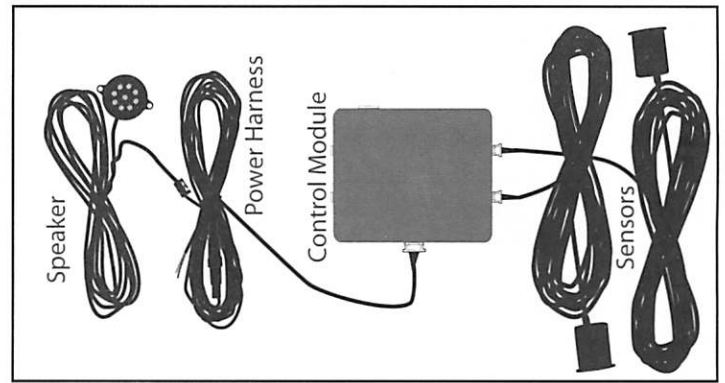


Installation Manual

for Back-Up Navigator™: Part# EMPV7 Part# EMPV6

Recommended Tools for Installation

- 1) High torque drill, use slow speed (approx 400 rpm)
- 2) Grease Pencil and Center Punch for marking drill point
- 3) 1/8" carbide tipped drill bit for starting pilot hole
- 4) Hole Saw 28 mm (# EMHS572). *Required.
- 5) Pliers for Scotch-Lock Connector.
- 6) Phillips head tip for drill
- 7) Multi-Meter.
- 8) Zinc Galvanizer (# EMZ) or a rust inhibitor for metal.
- 9) Safety goggles.
- 10) Angle Gauge Sleeve Selector (# EMAG).
- 11) Measuring Tape.



Optional Tools

- 1) Panel tool (for situations requiring plastic, inner panels to be removed)
- 2) 3/8" Slit Loom (use slit loom to shroud sensor wires)
- 3) Wire pulling tool (for routing wires)
- 4) Semi-circular metal file (for smoothing hole edges when necessary)- DO NOT use fingers to test holes for burrs or smoothness. EDGES ARE SHARP!!!

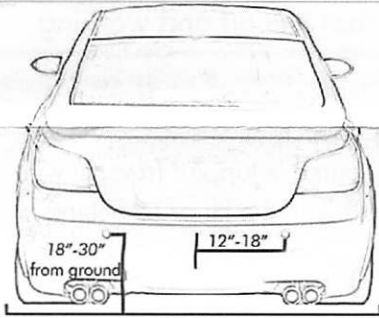
1 Determining Sensor Position

Inspect behind the bumper in the approximate mounting area to check for any possible obstructions.

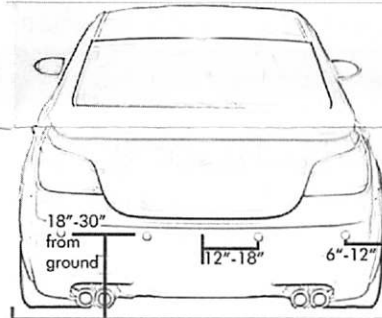
A proper installation will take into consideration two factors:

(1) Placement: height and distance either side of bumper center. (2) Angle: accurate detection depends on the correct sensor angle.

The sensors need a 1" clearance space behind the bumper to be completely inserted. Some bumpers have an outside cover or fascia and a metal backing. You may have to drill through both layers to insure you have enough clearance in order to fit the sensors. Other bumpers require some removal of foam backing. CAUTION: Be Careful of hot engine parts and/or sharp edges under bumper!!! **DO NOT INSTALL SENSORS ABOVE EXHAUST PIPE. Doing so may cause false alerts.**



2 Sensor Install: 12" and 18" from bumper center. Height of 18" thru 30" from the ground. Use ports CL and CR.

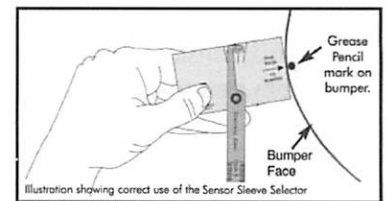


4 Sensor Install: 12" to 18" from center and 6" to 12" from the outer edge. Height of 18" thru 30" from the ground. Use ports CL and CR for center sensors, and L and R for outer sensors.

2 Choosing the Correct Angle Sleeve (Part # EMAG)

Vehicle is parked on flat and level ground and the parking brake is set. Next, the swing-arm on the EMAG is able to move freely by loosening the bolt. Place the Angle Gauge flat against the surface of the bumper with the arrow pointed toward the sensor dot you made (see illustration). DO NOT CONTINUE TO NEXT STEP IF ARM FALLS BEYOND THE LAST LINE ON THE MARKER!

This means that the placement is too steep, re-evaluate placement and find a better area.



3 Drilling Holes and Installing Sensors (Part # EMHS: 28mm hole saw)

Warnings / Precautions: Please consult with us before installing on a vehicle with any rear or front mounted external appliances, like spare tires, bike racks, brush guards, etc.. which may interfere with the system's detection and cause false detection.

Step 1: The Sensor Holes

Using the EMHS, cut the sensor holes. Always wear approved safety glasses when drilling and use caution. If drilling a metal bumper, coat edges of holes with Zinc Galvanizer (part # EMZ), a rust inhibitor.

Step 2: Mount Sensor

Start by inserting the pre-selected sensor sleeve into bumper making sure the sleeve indicator marking faces up (see illustration). Then insert sensor into sleeve with the "up" marking facing up. (Sensor can only be inserted one way)



4 Connecting the Power Harness

To find reverse power you have to remove taillight and examine where and what wires plug into the reverse bulb. Located and verify with a volt meter. The wire carries 12 volts when in reverse and 0 volts when out of reverse.



NEVER USE A TEST LIGHT TO PROBE WIRES!!!

Once the reverse wires is found, connect the red wire from the power harness to it using a scotch lock and connect the black, ground, wire from the unit's wiring harness to the vehicle's ground wire. Route cable to Control Module and plug it..

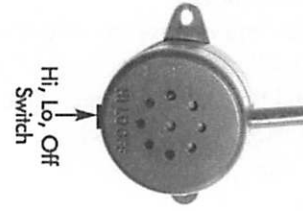


5 Running Sensors to Control Module

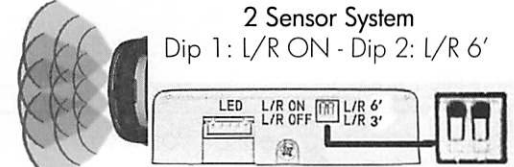
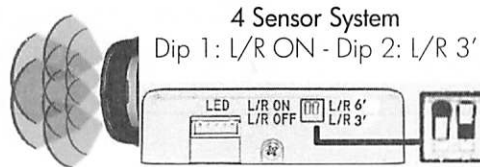
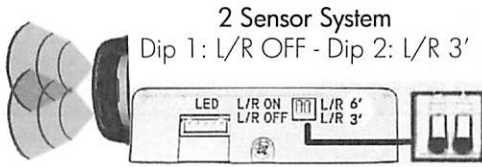
Many vehicles will have factory grommets to allow routing of wires from the outside to the inside of the vehicle. If you are drilling a hole through a metal body panel to route your sensor wires into the passenger compartment. Determine where the sensor wires will enter into the passenger compartment and route to control module.

6 Mounting Speaker

The speaker has 3 adjustment positions: Hi, Low and Off. You usually want to keep the speaker on the same side of the vehicle as the control module for ease. Clean the mounting area with the supplied alcohol pad, remove the backing strip from the Velcro and firmly press the speaker into place. Route speaker cable to control module and plug into power harness.



7 Choosing Correct Dip Switch Configuration



7 Mounting Control Module

You will want to mount the control module behind one of vehicle's body panels or in the dashboard. Cleaning a suitable location using the provided alcohol swab. Plug in all the wires, adjust dip switches, then peel backing of Velcro liner to mount. Finish by securing any loose and/or excess wiring. Before re-assembling any panels that might have been removed from the vehicle, test the system.

Trouble Shooting Tips: System beeps one time when started, to notify the driver that it is on and working.

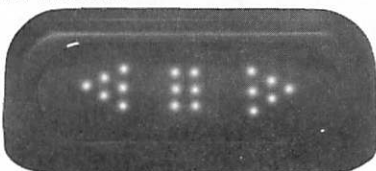
Condition	Cause	Solution
No Power Sensors do not detect objects No sound from speaker	• Control Module, Speaker or Sensor isn't getting the correct power.	<ul style="list-style-type: none"> • Check ground and power connection • Check if the proper power source is tapped (reverse wire) • Speaker wire plugged in and is in the Hi or Lo Setting • Control Module not working properly • Speaker not working properly
Zone 1, 2 or 3 constant tones Random beeping	• System is picking up the ground, or an object.	<ul style="list-style-type: none"> • Check for objects within 2' of vehicle • Sensors mounted too low or improper sleeve used • Testing surface too rough, such as gravel or snow • Unplug one sensor to isolate the false signal's source as far as which sensor is causing the false signal

System's Special Feature " Learning Mode" For EMPV7

Your Obstacle Detection System Features an all new "Learning Mode" that allows the system to adapt to fixed objects on the vehicle that would normally render the system inoperable. This feature takes objects like brush guards or similar and "tunes it out" while still being to have normal operation. This mode is accessed by the cycling of reverse gear. The programming mode access is 5 cycles of the system off and on leaving it on when you reach the 5th cycle, or: On, (one), Off, On, (two), Off, On, Off, On, Off, On which makes 5. At this point the system would have "Learned" an object which is impeding the sensor. NOTE, allow at least one second between cycling into reverse.

Optional Visual Indicator

All lights on the display will flash a visual warning in unison with warning speaker. Plugs into "LED" 5 pin port located on control module.



Installation help?

Call or Email us:
Phone: 888-324-6678
Email: info@echomaster.com

Go Online

1. Go to www.echomaster.com
2. Click on the [Login Area]
3. Click [Technician]
4. Click [Return User/Click here to log in]
5. User Name: tech
Password: echomaster
6. Click on a folder to view its content.