

# 9401T Back Up Sensor

Congratulations on your purchase of the 9401T back up sensor, designed to aid operation when going in reverse. Easy installation and simple to operate, the 9401T back up sensor notifies the driver with a series of beeps when the rear of the vehicle comes close to anything.

Before using the 9401T back up sensor, be sure to practice and test the product in order to familiarize yourself with the beep indicators and detection zones as they vary by vehicle.

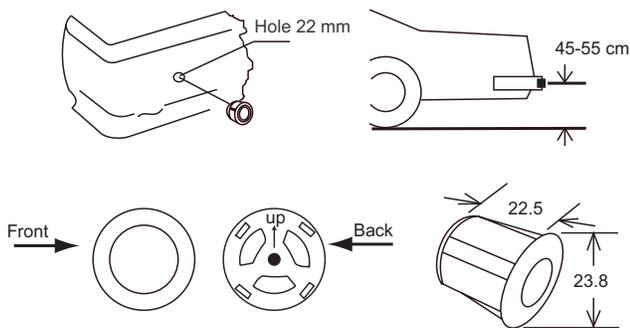
## Sensor Installation

### Tools Required

- Tape measure
- 22 mm hole saw
- Wire stripper
- Electrical tape

### Installation

Install the sensor between 45–55 cm above the ground level for optimum performance and mount on the outer edges of the vehicle's rear.



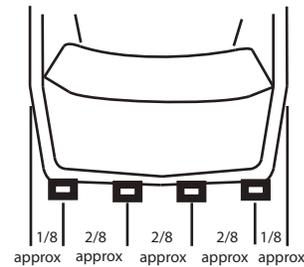
To mount the sensors, mark four equally-spaced points, the outer sensors should be 1/8 the total distance from the outside edge and the sensors

should be 2/8 of the total distance apart.

**NOTE:** Be sure to check the behind the drill area for obstructions or reinforcements bars.

**NOTE:** When mounting the sensors, ensure that the sensors are mounted with the up ↑ pointing up.

**NOTE:** Mount each sensor in its correct position as given by its label (L, CL, CR, and R—Left, Center Left, Center Right, and Right) (refer to wiring instructions).



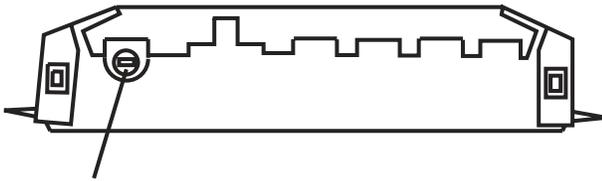
It is important not to drill the hole larger than the measurement indicated.

### Installation Tips

All measurements are approximate. Due to an object's position, angle, size, or shape, the reflected signal may mislead the receiving sensor(s). For a better understanding of the measurements, please test from different angles after installation.

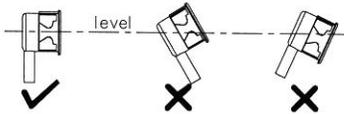
If 2 or more sensors detect an object(s), the optional digital display will show the distance of the nearest object to any one sensor.

The sensitivity adjustment potentiometer has been factory preset for proper operation. If adjustment is required, use a screwdriver and turn the potentiometer by a small increment clockwise to increase the sensitivity, or counterclockwise to decrease the sensitivity.

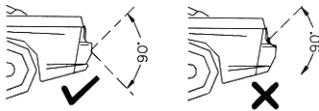


Sensitivity Adjustment Potentiometer

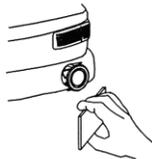
The sensor should be mounted vertically and level; mounting on a tilt or unlevelled surface will affect sensor performance.



To avoid false warnings from the sensor be sure there are no obstructions within a 90 degree lateral range.



After routing and attaching the cables, use a small block of wood to press the sensors into place.



### Control Module

The control module should be located in the trunk area securely mounted away from any moving parts and in an area free of moisture and heat.

### Warning Buzzer

The buzzer should be mounted in an area inside the vehicle where it can be heard clearly by the driver. The deck above the rear seat is the recommended location.

**NOTE:** The warning buzzer should not be mounted on any metal object.

### LED Display Indicator

A port is available for the addition of an optional LED display indicator.

### Wiring Instructions

**NOTE:** Refer to diagram on next page.

- **RED Wire** - Connected to the wire that provides (+)12V when the vehicle's reverse light is on.
- **BLACK Wire** - Connected to ground.
- **2-Wire Pigtail Harness** - The buzzer is plugged into this connector.
- **WHITE Connectors** - The sensors are plugged into these ports.

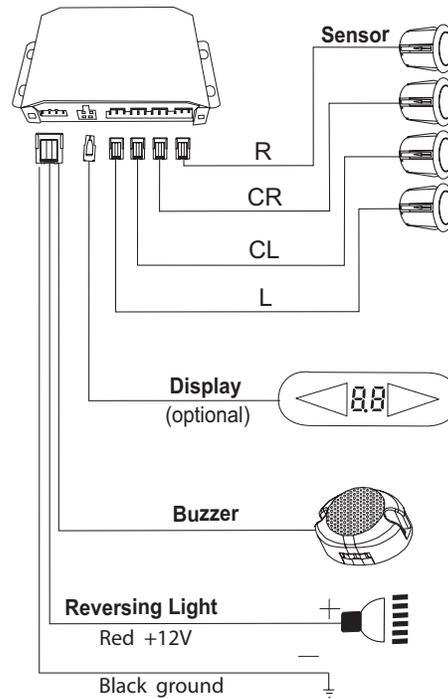
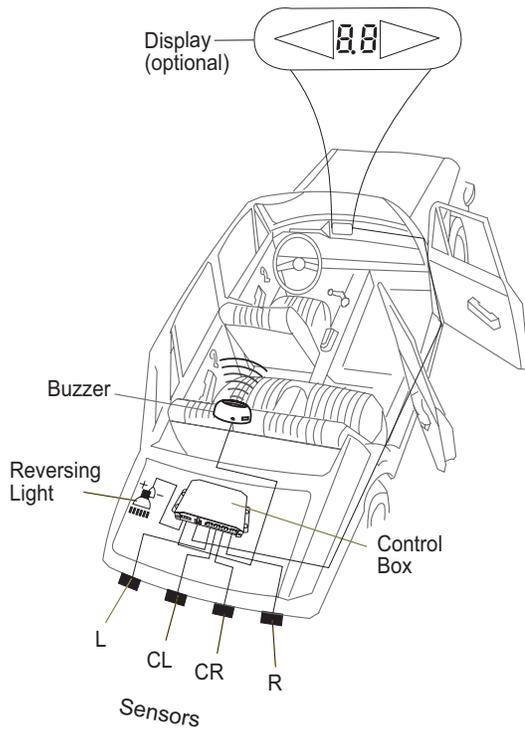
### Testing

**NOTE:** To avoid incident during testing, a second person should watch the rear of the vehicle.

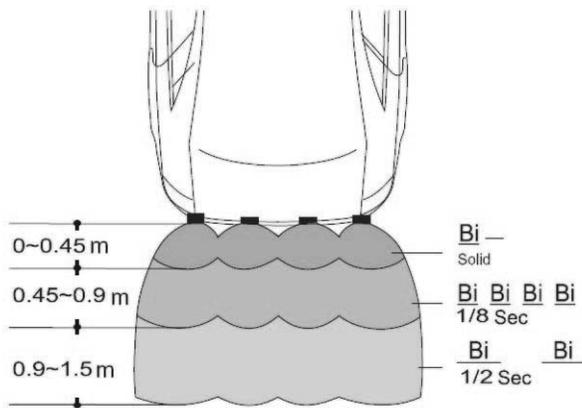
Place the gearshift in reverse. The buzzer will emit two quick beeps indicating the system is on. Back up the vehicle slowly.

The first beep pattern indicates the vehicle is 0.4–1.5 meters away from the nearest obstacle. As the vehicle gets closer to the object, the buzzer emits a different beep patterns. Please refer to the *Detection Range* chart for pattern description.

Be aware that certain shapes will mislead the sensor and it is necessary to test the sensor backing up against multiple shaped objects. Examples of false detecting are discussed later in this manual.



### Detection Range

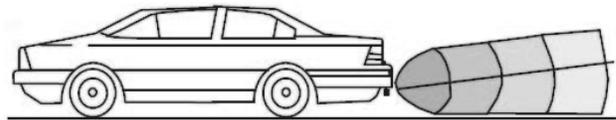


*NOTE: Stop the vehicle when the buzzer makes a constant sound.*

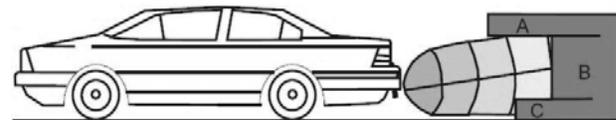
### Obstacle Flase Detection

Due to an obstacle's position, angle, shape, or size, the reflected signal may not reach the receiving sensor. Complex reflections may also occur in certain environments causing inaccurate detection. Examples of some of these scenarios follow:

#### ■ Low lying object (e.g. curb)

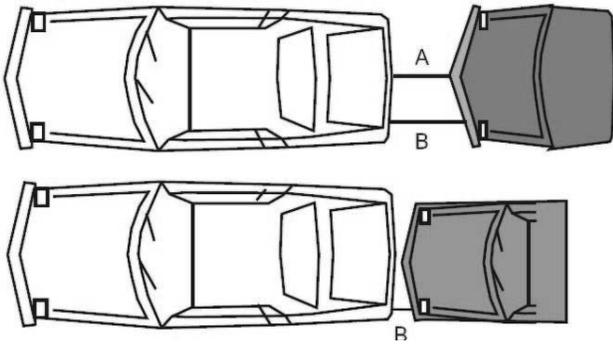


#### ■ Complex environment—B and C will be detected, but A cannot be detected.

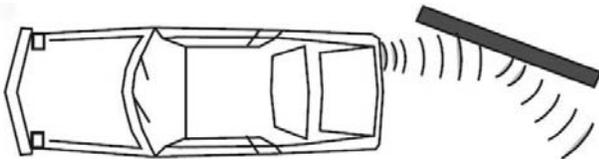


#### ■ In the sequence depicted below, at first distance A will be detected first and then distance B is detected as the car backs up. Then in the

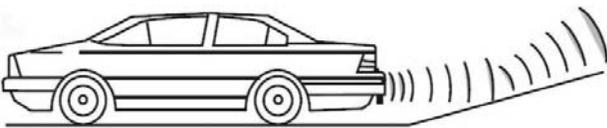
second diagram, as the car continues backing up distance A may fall into a blind area for the sensors. In such cases the system will falsely call out distance B as the closest distance.



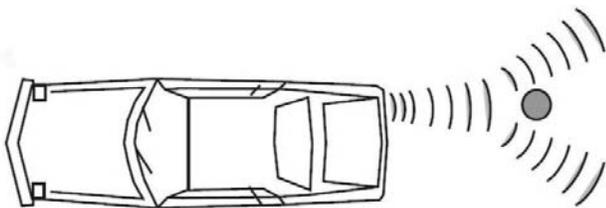
■ When the vehicle approaches a glass wall (or any other smooth surface) which is almost parallel to the sides of the vehicle, the wall may not be detected as most of the signal will be reflected away and not back at the vehicle.



■ When the vehicle approaches a smooth rising slope, the slope may not be detected as most of the signal will be reflected up and not back at the vehicle.



■ The system may not detect a small and smooth round pole (such as a light pole, etc).



### Technical Data

CONTROL BOX	
ITEM	SPECIFICATION
Specified voltage	DC 12V/24V
Operating voltage range	DC 9.6-30V
Standby current	Below 100mA
Operating current	Below 200mA
Operating temperature	-25°C-80°C
Storage temperature	-30°C-85°C
Operating frequency	40kHz+2kHz

SENSOR	
ITEM	SPECIFICATION
Operating voltage range	AC 90-130V
Operating temperature	-25°C-80°C
Storage temperature	-30°C-85°C
Operating frequency	40kHz+2kHz
Detection angle	120°horiz. 60° vert.
Detection method	Ultrasonic wave