Commercial Backup Sensor System

Installation Guide

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Function Specification

The Commercial Reverse Sensor System system consists of four ultrasonic sensors, one transmitter, one control unit, one wiring harness and one display with speaker function.

The sensors operate both as transmitters and as receivers, which send an ultra high frequency sound wave (sonar) that is reflected off an object and received. The distance from the obstacle is evaluated through the transit time of the signals and is indicated by a sequence of pulse tones, the closer the obstacle, the faster the sequence of pulse tones. The distance to the obstacle and obstacle location are communicated to the driver via a 4 color LED display.

The sensors attach to the rear bumper. The control module mounts beneath the vehicle with the display mounted to the dash in view of the driver.

Safety Precautions

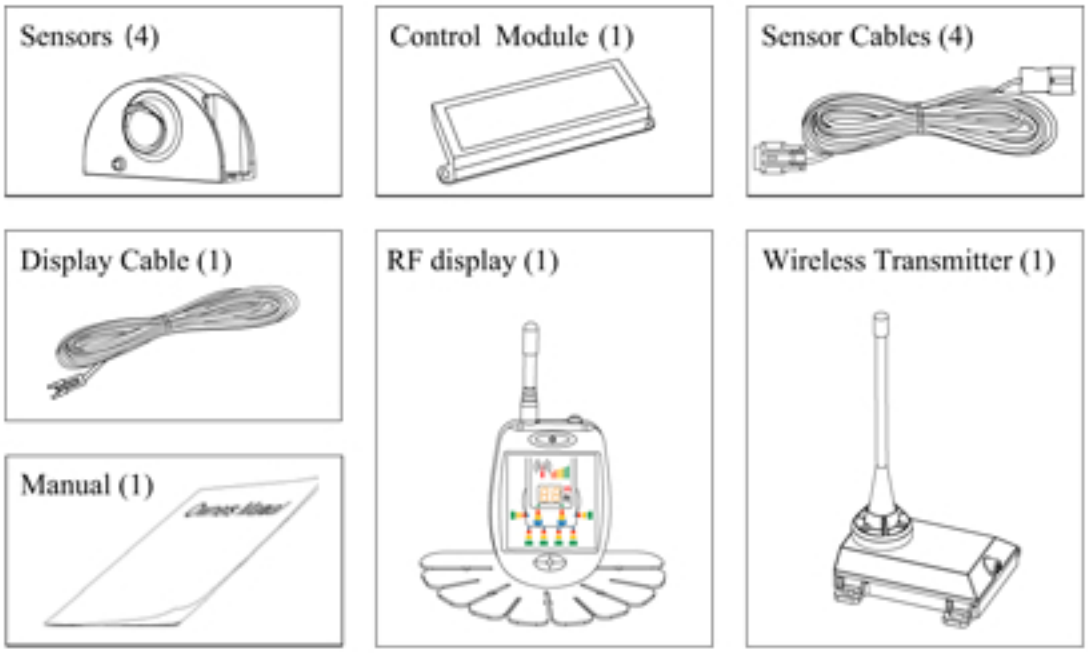
Warning!
Safety precaution: Failure to observe the instructions could damage the device and impair its function as well as cause injury due to electrical current.

Warning!
Due to the risk of short circuit, always disconnect the negative pole of the battery before starting work. Disconnecting the negative pole of the battery may result in loss of system memory and may need to be reset.

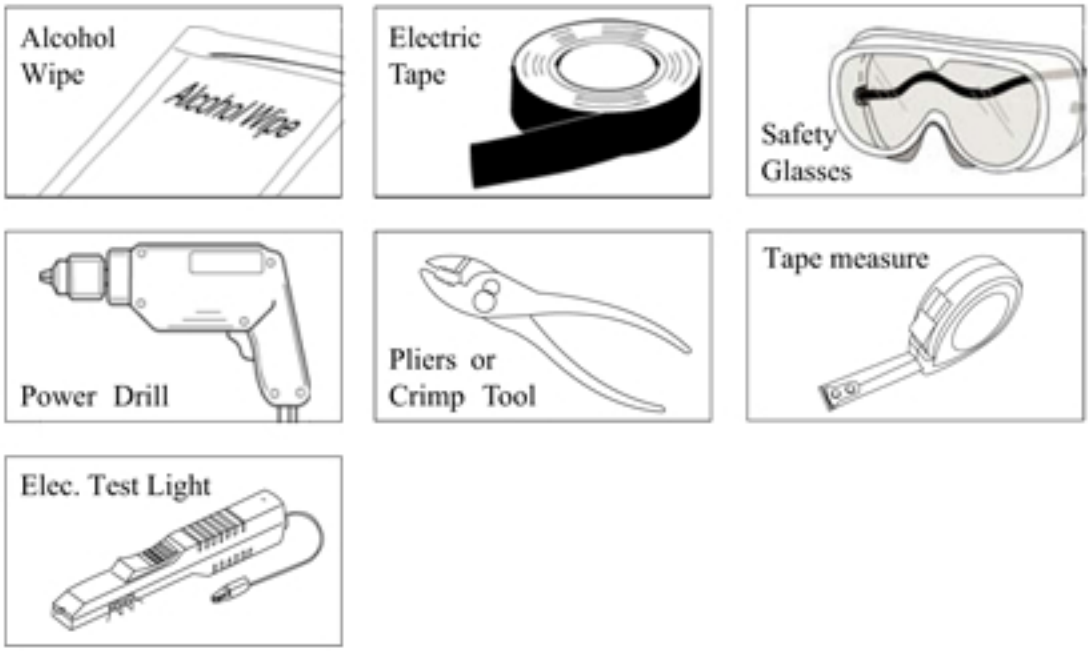
Warning!
Commercial Reverse Sensor System is intended as a parking aid. Due to the nature of the system, some obstacles may not be detected or may be identified inaccurately due to physical reflection properties. The system does not relieve the driver of their responsibility to exercise caution when reversing and to obey the safety rules and regulations given by the vehicle manufacturer.

Function Specification

Material and Tool Check
Ensure that all of the components are in the kit, they include:



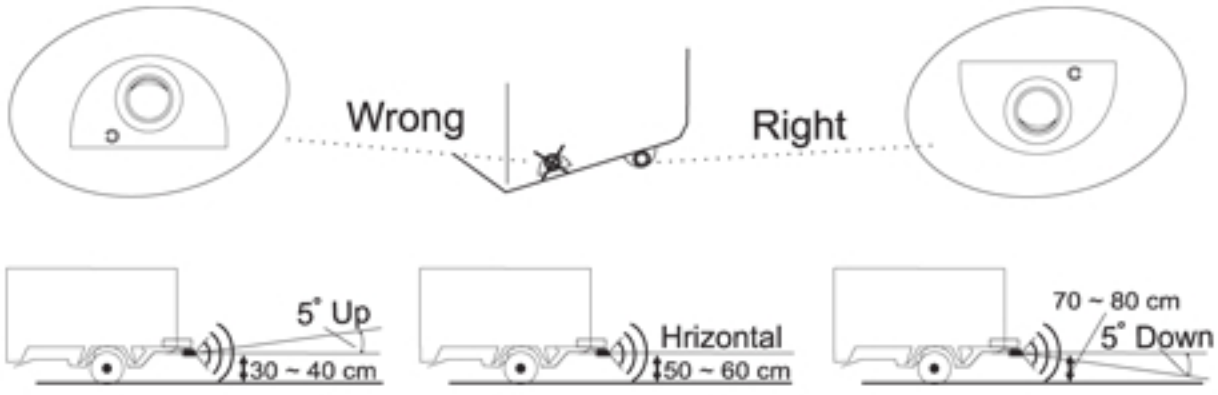
Tools Required to Install the System



Function Specification

Material and Tool Check
Sensors need to be mounted below the bumper. To protect the rear corner of the vehicle, mount sensors within 1' from the edge. Place the sensors at the desired locations and mark drill holes with a felt tip marker. Prior to drilling, check the underside of the bumper to be certain that there are no wires or items that may be damaged by the drill bit. Drill using a 5/32" size bit. Screw sensor onto bumper.

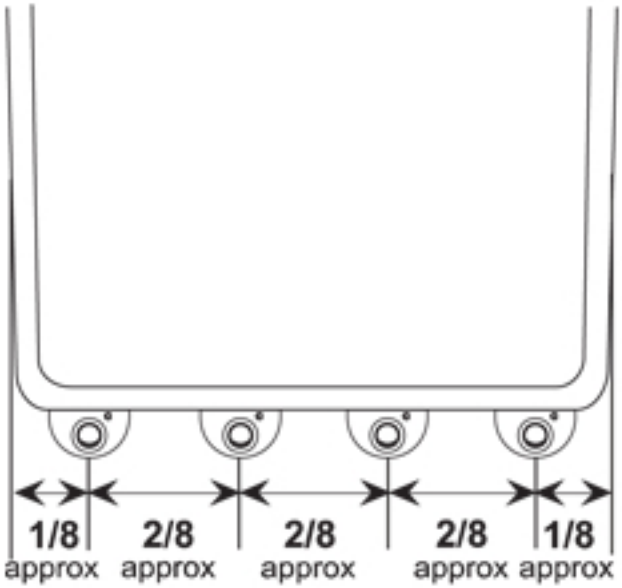
Each sensor comes with a flexible transducer, whose surface has a sensor- angle-adjustment screw. By loosing the screw, adjust transducer angle and then lock it to select a proper angle if the mounting position would otherwise be too low.



NOTE:

The driver's side is considered the left side of the vehicle. The sensors are marked: R=Right, CR=Center Right, CL=Center Left, L=Left

Begin by parking on a flat level surface, set brake and disconnect ground wire from battery. Measure the length of the bumper and mark the center point with a mark on masking tape. Divide the bumper as shown below. To protect the rear corner of the vehicle, mount sensors within 1' from the bumper ends.



Control Box, Wireless Transmitter & Display Installation

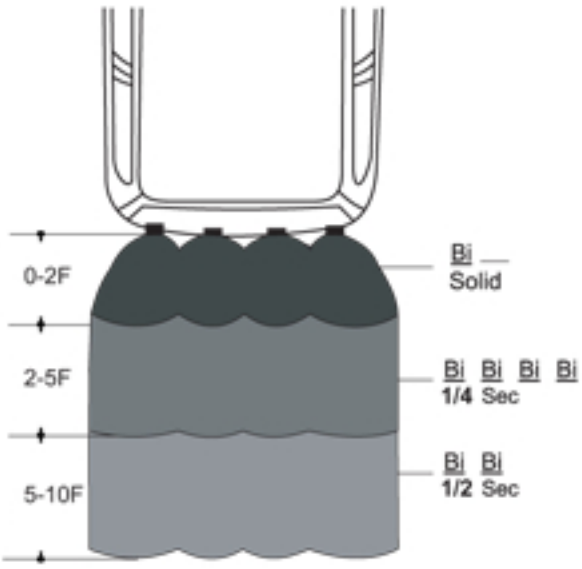
Before assembly, install Control Box in a area that loose fit the water resistant control module in a location that minimizes physical damage, away from extreme heat and severe water ingress.
Loose the taper from base of transmitter, then knob antenna to the base and fix it with taper to assemble transmitter. Drill using a 5/32" size bit, then fix the transmitter beside control box with screw around the corner.

Attach sensor cable extensions and cable tie the sensor cables to conceal. Be certain the cables will reach the control module then fasten the control module using the screws provided. Attach the sensor cables to the control module. Be sure to match the correct sensor location with the module inputs. Clean the display location with alcohol and attach display to dash.

(Wireless Display) Loosen the screw at the base of display, then insert display sphere to base and fix the screw to assemble display. Splice red (+) power lead into a keyed circuit or run to fuse box. Splice or attach black (-) ground wire to sufficient ground. Clean the display location with alcohol and attach display to dash. Cable tie power cable and conceal.

Identify the power wire to the reverse lights using a test light. Connect the Red positive wire from the control box to the reverse lights positive lead, and the Black ground wire to the reverse light's ground or other ground using the splice connectors supplied. Electrical tape or shrink-wrap the splices for additional protection.

IV. System Check:
A. Re-connect battery
B. Engage brake, turn the ignition on
C. Shift transmission into reverse and make certain reverse lights are on.
Two beeps from the display indicate the system is active. D. Note detection patterns and alerts levels below.

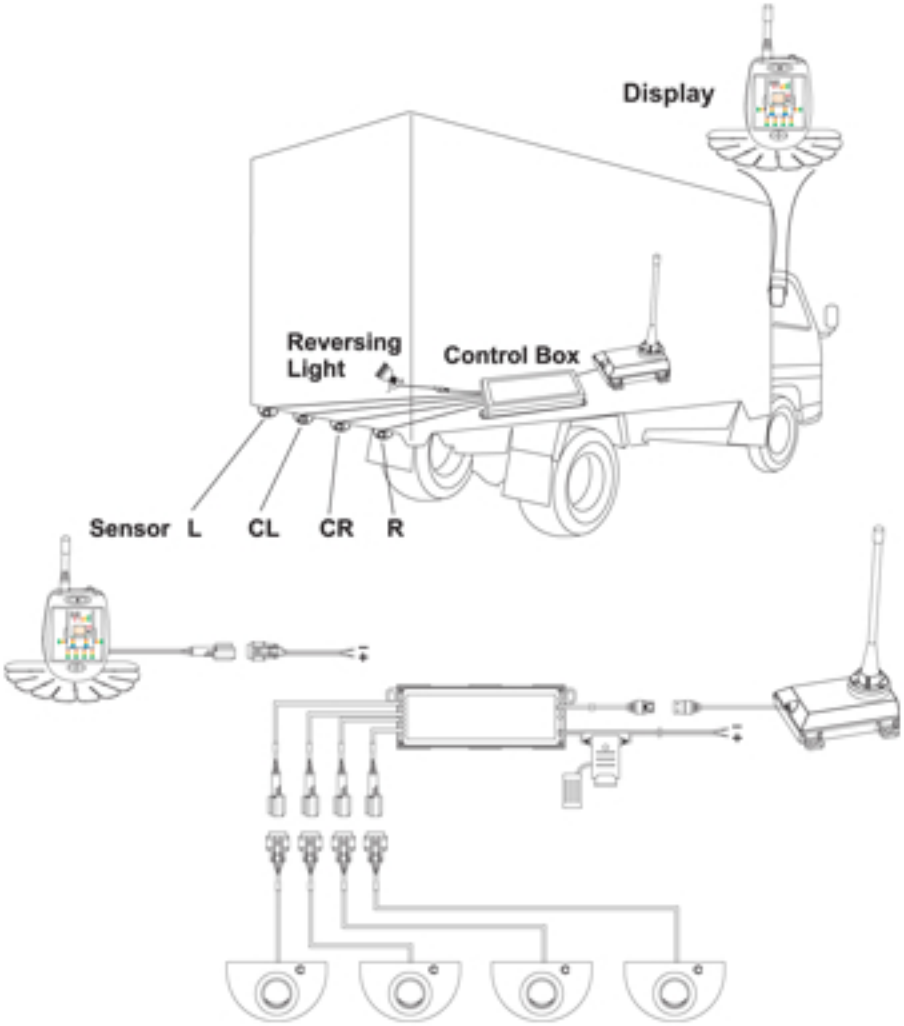


Digital LED

L	CL	CR	R		
●	●	●	●	Red	0-2F
▬	▬	▬	▬	Orange	2-5F
▬	▬	▬	▬	Green	5-10F
▬	▬	▬	▬	Blue	10-32F

Note:
All measurements are approximate. Due to an object's position, angle, size or shape, the reflected signal may mislead the receiving sensor. For a better understanding we suggest that you test your vehicle with different objects for a better understanding of the systems capabilities.

Complete Installation



A. Conceal all cables starting at the display and beeper and work towards the control box. Use remaining cable ties to bundle any excess cable or wire. Be certain excess wire is secured and out of the way.

B. Congratulations on a job well done!

Technical Data

CONTROL BOX	
ITEM	SPECIFICATION
Specified voltage	DC12/24V
Operation voltage range	DC18~30V
Operation current	Below 48MA
Operation Temperature	-30°C~80°C
Storage Temperature	-35°C~85°C
Operation frequency	40KHz ± 1KHz

SENSOR	
ITEM	SPECIFICATION
Operation voltage range	DC 7.5~8.5V
Operation temperature	-30°C~80°C
Storage temperature	-40°C~85°C
Operation frequency	40KHz ± 1KHz
Detection angle	45° Horizontal 45° Vertical
Detection method	Ultrasonic wave

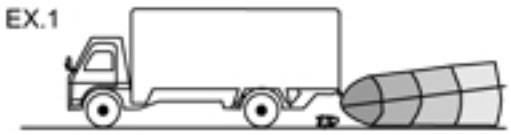
Troubleshooting Guide

PROBLEM	REASON	SOLUTION
System does not work when reverse gear is engaged	Bad connection of main power lead	Check power lead
	Bad jack connection	Reconnect all jacks
Audio alarm/same distance displayed continuously		Reset the system
	Sensor detects the ground	Adjust angle of sensor installation
No audio alarm when obstacle is in detection range		Reset the system
	Bad sensor connection	Reconnect sensors
False alarm	Sensor detects the ground	Adjust angle of sensor installation
	System sensitivity is too high	Ask your dealer/professional installer to adjust sensitivity

Obstacles may not be detected

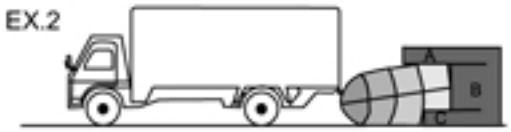
Due to the obstacle's position, angle or size, the reflected signal may not reach the receiving sensor . Complex reflec- tions may also occur in a complex environment causing inaccurate detection. See examples 1, 2, 3, 4, 5 and 6.

EX.1



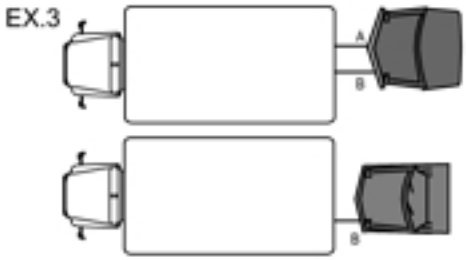
Low Lying Obstacle

EX.2



Complex environment: B will be detected but A cannot be detected.

EX.3

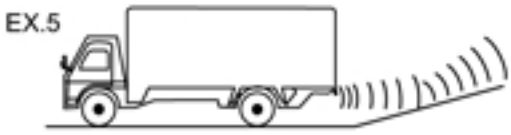


Distance A will be detected first, then distance B, as the car reverses. However, as the car nears, A will fall into the sensor's blind zone. In such cases, the system will misjudge B as the closest distance.

EX.4

When the car approaches a glass wall (or any other smooth surface) almost paralleled to the body of the car, the wall may not be detected as most of the signal is reflected away.

EX.5



When the car approaches a smooth slope, the slope may not be detected.

EX.6

The system may not detect a small, round, smooth pole.

Important Notice!

1). This reverse sensing system is strictly meant as a drivers aid when parking or backing up your vehicle. Not all objects will be detected by your sensors, therefore you must exercise caution and common sense when reversing your vehicle.

2). Reverse your vehicle at a speed lower than 6mph for safety purpose.

3). Always stop your vehicle when a solid beeping is heard as it indicates an object in a dangerous distance no more than 2' to your vehicle.

4). Execute regular check on your sensors for any dirt or snow, always keep your sensors clean.

5). In case of water drops on the surface of the sensor (e.g., washing , raining... etc.), the sensitivity may be decreased by about 20% until water evaporates.

6). Keep all the cables and sensors away from the vicinity of high temperature objects such as engine or exhaust which could
cause system failure.

7). System components are complex, opening by user may damage its completeness. The manufacturer or its distributors shall NOT take any responsibility for equipment that has been tampered with by the user .

8). In case of defective sensor , please check the cable for color coding, match a replacement sensor with the same color code..