

"Parking becomes much easier..."

## ***Parking Sensor System***

### **USER'S GUIDE & INSTALLATION MANUAL**



***Advanced Ultrasonic Sensing Technology***

## Table of Contents

### User's Guide

Understanding Your System .....	1
Safety Precaution .....	6
Care & Maintenance .....	7

### Installation Instruction

Wiring Diagram .....	8
Installing Sensors .....	9
Positioning Control Box, Display and Buzzer .....	13
Connecting Power Harness .....	13
Testing Your Installation .....	14
Troubleshooting Guide .....	16

## User's Guide

Thank you for purchasing the advanced parking sensor system. It is a highly sophisticated obstacle detection device specially designed to assist you in parking or reversing your vehicle.

Your parking sensor system incorporates latest advances in ultrasonic sensing technology. It is comprised of 2 to 4 ultrasonic sensors, control box and audible/visual distance indicator(s). Mounted in the rear bumper, sensors emit ultrasonic waves automatically to detect the distance of obstacles behind when you reverse your vehicle. Detection data is transformed by control box into acoustic/visual signals, released via a buzzer/display installed in the driver's compartment.

Compared with other kinds of obstacle detection systems, your ultrasonic system is more accurate and reliable. It can work under various adverse weather conditions like extreme temperatures, bright sunlight, rain, darkness, etc.. With proper installation and usage, it will be a great help in preventing collision and accident, reducing injuries and losses thus occurred. Whether parking in tight areas, or reverse in darkness, with the parking sensor installed you can drive with enhanced safety and confidence.

### Understanding Your System

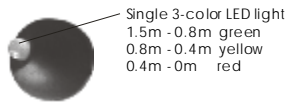
Each time you engage reverse gear, you will hear an audible signal "Bi" indicating the system is activated and sensors start to scan for objects in the predefined zone behind your vehicle.



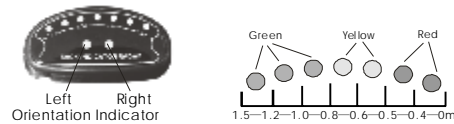
1

## Display Indicator

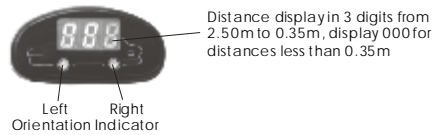
### DP-01 Visual LED Indicator



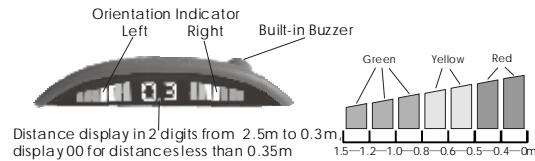
### DP-02 Visual LED Indicator



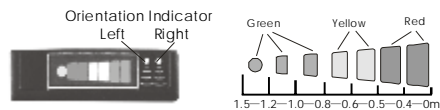
### DP-03 Visual Numeric LED Indicator



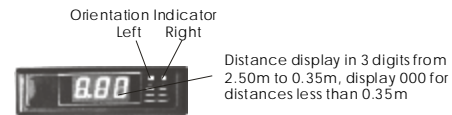
### DP-04 Audio-visual Numeric LED Indicator



### DP-05 Visual LED Indicator



### DP-06 Visual Numeric LED Indicator



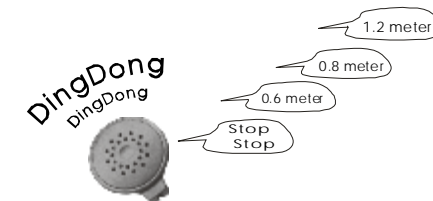
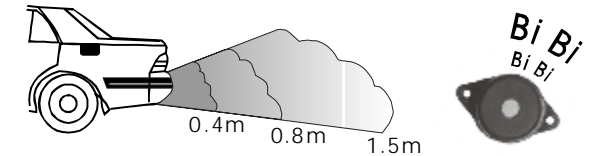
3

As per the model of your system, it will alert you of obstacle distance via

- a buzzer by means of audible signals,
- or - a buzzer by means of audible signals plus a display by means of color change/numeric readout,
- or - a display with built-in buzzer by means of both audible signals and color change/numeric readout.

### Acoustic Alert

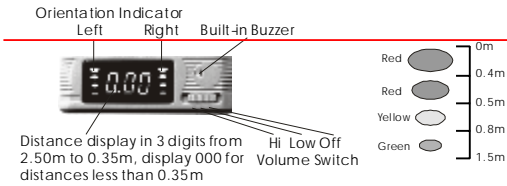
Reverse slowly towards a large, flat object like a wall, at a distance of approximately 1.5m the buzzer will begin to beep about 4 times per second. At a distance of approximately 0.8m, the buzzer will beep faster. When the distance is less than 0.4m, the beeping turns solid, indicating you have entered the dangerous zone and must stop your vehicle.



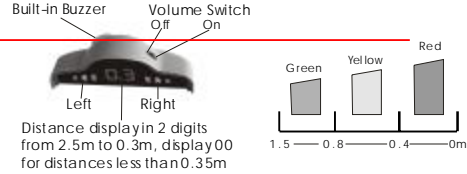
If your system is equipped with a voice speaker, when an object is detected, the speaker will report the distance in human voice at some predefined distance intervals, and simultaneously release audible signals "DingDong" that change in frequency when the distance of the object varies.

2

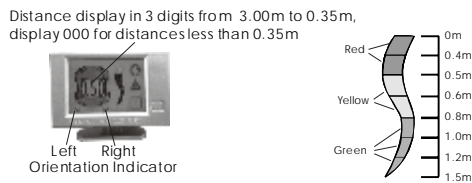
**DP-07 Audio-visual Numeric LED Indicator**



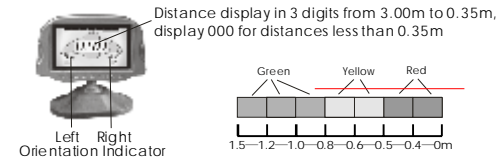
**DP-08 Audio-visual Numeric LED Indicator**



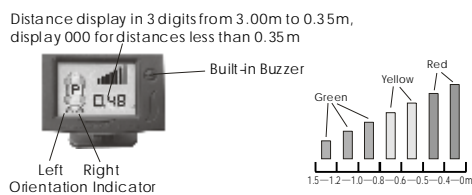
**DP-51 Visual Numeric LCD Indicator**



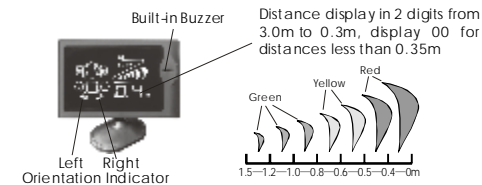
**DP-52 Visual Numeric LCD Indicator**



**DP-53 Audio-visual Numeric LCD Indicator**

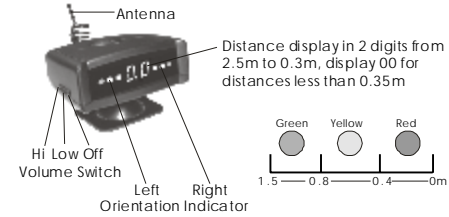


**DP-61 Audio-visual Numeric VFD Indicator**

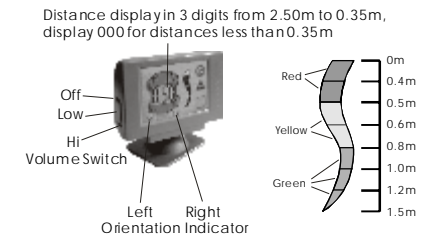


4

**DP-41RF Audio-visual Numeric LED Indicator with Built-in RF Receiver**



**DP-51RF Audio-visual Numeric LCD Indicator with Built-in RF Receiver**



**Note**

- Your system may have a new display that is not listed above.
- Possibility exists that your system is tailor-made to alert/alternate alert signals at different distances, or indicate distances in inches/feet. (1 inch equals 0.0254m.)

**Attention**

- Measurements might be approximate. Due to the angle, shape or material of the objects, the reflected signals may mislead the receiving sensor(s).
- Detection distance may vary due to the size and material of different objects. For example, a wall or a large, flat object can be detected at 2.5m, while human body may be detected at around 1.1m. Different clothes may also affect the detection distance as different materials may have different absorptivity of waves.



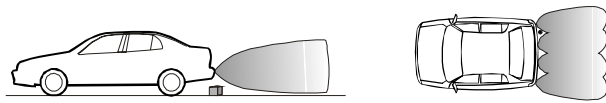
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## Safety Precaution

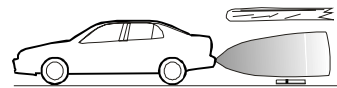
Using the ultrasonic parking sensor system can greatly reduce the chance of collision and damage, you will surely benefit from installing the system. However, due to size, angle, shape, position or material of the object, under some circumstances, an object may not be detected. So always use common sense and caution when reverse your vehicle, look behind and keep speeds of less than 6 Km per hour, watch for people or objects that may suddenly move into your path giving little time for your system to respond.

### Examples on situations where objects may not be detected

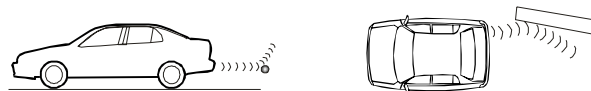
1. Small object under the bumper, or in the blind zone close to bumper.



2. High object suspended in the air, or too low object like a kerb.

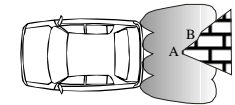


3. Smooth surface may deflect the waves, like a small round pole, or a glass wall at a diagonal angle.



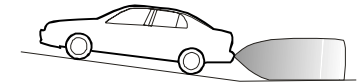
6

4. Object with a complex shape as shown, position A will be detected first, when A enters blind zone, the distance indicated is that of position B.

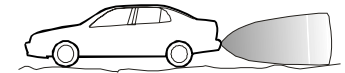


### Examples on situations where momentary detection signals may be produced

1. Reversing down a steep slope to the level ground, your sensors are angled downwards and may detect the ground.



2. Some road conditions like rough surfaces, pot holes, gravel, snow, or grass on roadside may produce intermittent detection.



**Disclaimer:** Parking sensor system is strictly a driving aid device, and should not be regarded as a substitute for safe driving practices. Using of it does not release the drivers' responsibilities to maneuver with common sense and caution. The owner shall not be entitled to claim from the manufacturer, its distributors, authorized dealers, or retailers for any incidental and consequential damages, such as personal injury, property damage, loss of time or income, etc..

### Care & Maintenance

Your parking sensor system is precisely designed and manufactured, under normal circumstances it requires no user adjustments and little maintenance. The following tips will help you exercise proper care of your system.

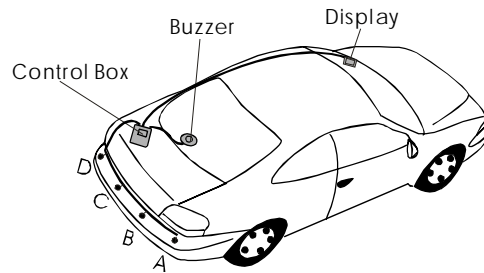
7

- Clean the surface of the sensors periodically with a piece of soft, damp cloth to remove mud or snow.
- It is suggested not painting the surface of the sensors by yourself, too thick or uneven painting may affect the sensitivity of the sensors.
- In case of removal, adjustment or replacement of sensors, please contact your selling dealer.
- Attempt to repair, modify or reconfigure the system by end user may lead to malfunction or damage, the manufacturer reserves the rights to terminate product warranty should this situation happen.

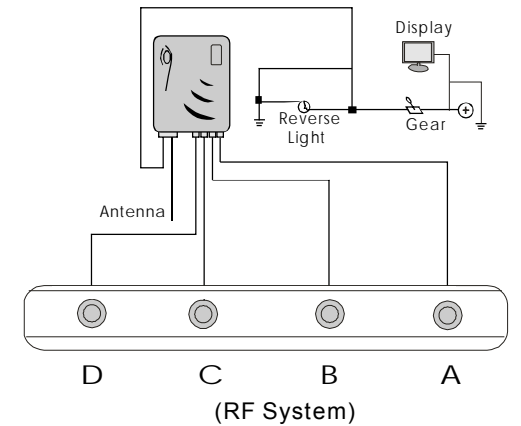
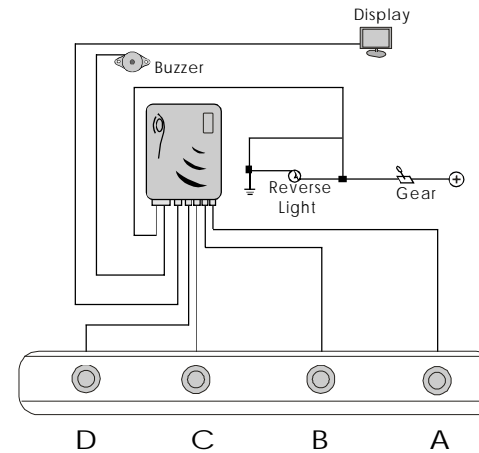
## Installation Instruction

Installation of the parking sensor system by trained installer is suggested. Improper installation will affect performance of the system. Please read this manual carefully before you start.

### Wiring Diagram



8



### Installing Sensors

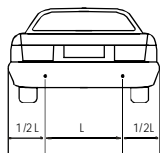
#### Embedded Sensors

Before you start, inspect behind the bumper where to mount the sensors for any possible obstructions, make sure there is enough space for drill bit to emerge and to fully insert the sensors. Some bumpers may require some removal of foam backing to give more clearance.

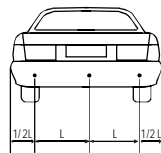
The ideal height to install the sensors is 50 to 65 cm where the bumper is vertical to the ground. Mark the chosen positions at the same level on the bumper as shown on the next page.

9

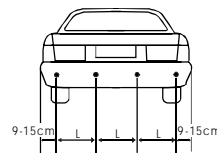




2 Sensors



3 Sensors

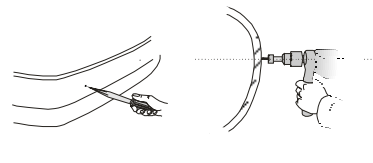


4 Sensors

**Note**

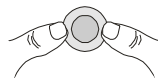
Due to limitation of the bumper, you may have to choose a nearby position.

Cut holes at selected positions with proper drill bit in accordance with the diameter of the sensor shaft. Contact your selling dealer if you are not sure about the size of the drill bit. Always create a dimple in the bumper prior to drilling to prevent slippage of the cutting tool, and keep drill bit parallel to the ground when cut holes in the bumper. Remove burrs (if any) with a semi-circular metal file.

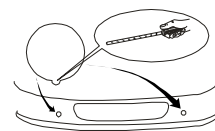


Tight fitting of sensors on bumper will ensure super performance, however, too tight fitting may lead to false alarm. Burnish the edges of the hole in case of too tight fitting. Use care not to create an oversize hole resulting in loose installation.

Push the outer plastic edge to insert sensors one by one into the holes, do not push the center of the sensor surface.

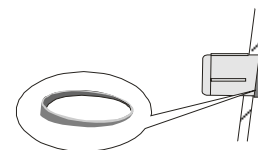


10



If your sensor is marked with "UP" on the shaft, position the "UP" marked side on the straight top when insert sensor into the hole. Usually the "UP" mark comes with an anti-rotation nipple on the neck of the sensor. Use a small semi-circular file to create a proper-sized notch on the edge of the sensor hole where the anti-rotation nipple will be positioned.

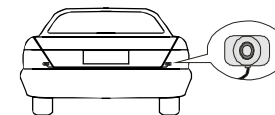
In case the sensor has a built-in angle collar, always put the side with angle collar down to the ground. The angle collar will help to lift up the sensor head when the installation is too low, or the bumper where to mount the sensor is leaning to the ground. This is designed to help prevent false alarm due to detection of the ground.



If your sensors detect the ground after installation, please contact your selling dealer to check the availability of angle washers to fit on the neck of sensors.

**Stick-on Sensors**

Choose positions as low as possible and close to the opening of the trunk to conceal sensor cables as much as possible, clean the surface of chosen positions and stick on the sensors firmly with the adhesive tape at the back of the sensors.

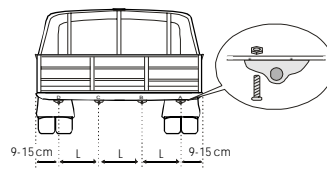


11

### Suspended Sensors

Suspended sensors are designed to screw underneath the bodywork of the vehicle, applicable for commercial vehicles like bus, truck, or vehicles without suitable places to drill holes.

Mount the sensors as close to the rear as possible, and with a clear path for the ultrasonic beams, make sure the sensors will not detect any part of the vehicle's own bodywork.



### Routing Sensor Cables

Find out where the sensor cables should enter into the trunk or passenger compartment. Many vehicles have factory grommets allowing cables going through to the inside of the vehicle. For some vehicles, you may need to drill a hole through the body panel to route the sensor cables into the trunk area. Use zinc galvanizer to coat the metal edges of the hole newly created. To prevent moisture from entering the vehicle and sharp edges from abrading your sensor cables, use a rubber grommet or quality silicone to fit the hole.

### Attention:

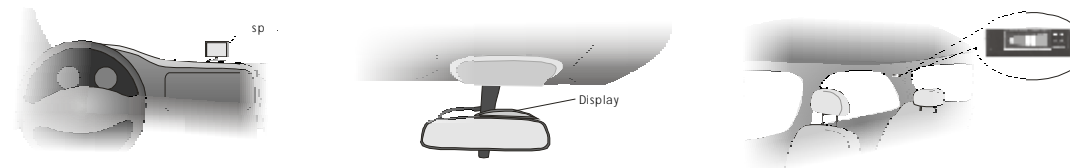
- Avoid installing sensors and routing cables too close to the exhaust system.
- If your vehicle has a spare tire or tow bar at the back, prior to drilling the hole, power on the system, pre-position the sensor at the back of your vehicle where you intend to mount it - you can position the sensor head with your hand to imitate the same angle as if it were mounted. Check if the sensor will detect the spare tire or tow bar.
- Wear safety glasses, do not use your fingers to touch the sharp edge of the holes created in metal bumper, watch exhaust parts and sharp edges under bumper to avoid any possible injuries.

12

### Positioning Control Box, Display and Buzzer

Place control box temporarily in a waterproof position close to reverse light in the trunk or passenger compartment.

For display installation, as per its type and your driving habit, you may choose dashboard, rear-view mirror, or a flat position on passenger side at the back like C or D pillar which is visible through the rearview mirror, or over the shoulder of the driver. Avoid mounting your display in direct sunlight.



Buzzer can be positioned at a hearable place in driver's compartment.

### Note

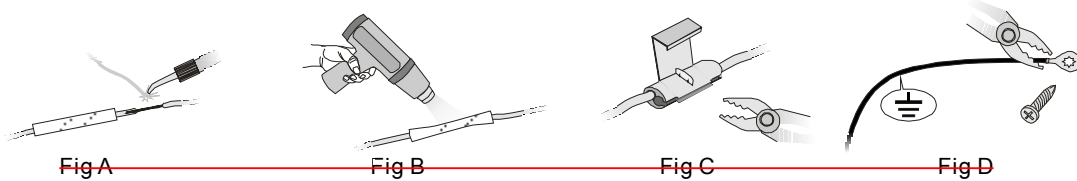
If the system is not specially designed, obstacle orientation indication is based on front-view installation. Pay attention to the correspondence between display indication and obstacle orientation when display is mounted at the back.

### Connecting Power Harness

Control box needs power supply from reverse light. Before you start, make sure the working voltage of the system is in conformity with your vehicle power supply.

13

Connect the red wire of supplied power harness to the positive wire of reverse light, connect the black wire to the negative wire of reverse light. Soldering the connection (Fig A) and then cover the connection with a piece of plastic shrink (Fig B). You may also connect the wires with scotch-lock connectors (Fig C), make sure you have a solid connection. The black wire can also be screwed to the vehicle's chassis (Fig D).



If your parking sensor is a RF system, which utilizes radio frequency for data transmission and requires no wire harness between display and control box, you need connect the provided another set of power harness for display to reverse light power supply or ACC. Connecting to reverse light is better than ACC as the display only needs to work when you reverse the vehicle. Usually power supply for reverse light can also be found in the front of the vehicle. For the power harness supplied for control box, you will find a third black wire that works as an antenna, simply stretch and conceal the wire inside the trunk or passenger compartment.

## Connecting Cables & Testing Your Installation

Connect control box with cables from sensors, display, buzzer and power supply, loose-fit cables at this stage in case mounting positions need to be adjusted. Avoid cross-routing the sensor cables to the control box, as this may result in contrary indication of obstacle orientation. (Refer to Wiring Diagram on page 9.)

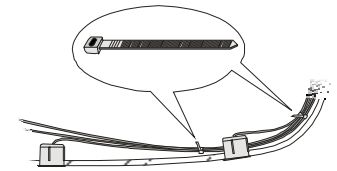
14

- Park your vehicle on flat, level ground, free from obstructions within 3 meters from the rear of your vehicle.
- Turn ignition key to the ON position, do not start engine.
- Select reverse gear. You will hear one beep, indicating the system is activated.
- Roll down the windows so that you can hear the buzzer from outside the vehicle.
- Hold a medium-sized piece of cardboard in your hands, keep the surface of cardboard facing to the sensors, walk slowly from a distance of about 2 meters towards to the rear bumper. You will hear beeping about 4 times per second at approximately 1.5 meters. The beeping becomes faster when your cardboard is moving between about 0.8 meter and 0.4 meter from the bumper. When the distance is less than 0.4 meter, the beeping turns solid.

Start engine and drive your vehicle, reverse at speeds of less than 6 Km per hour from different angles towards different obstructions, watch the changes of audible and visual signals when distance varies. Always stop your vehicle when solid beeping is heard.

## Completing the Installation

Conceal and secure all the cables as much as possible, make sure no cables will be pinched by moving parts or panels. Tie-strap the sensor cables underneath the bumper, or wherever needed. Keep all cables away from vicinity of engine, exhaust system, or moving suspension parts. Do not yank the sensor cable close to sensor head, as this may damage the connection inside sensor head.



Stick control box, display and buzzer firmly with the supplied Velcro or double-sided adhesive tape on the desired positions.

15

## Troubleshooting Guide

**Problem 1** No beeping to indicate system functioning when reverse gear is engaged

**Cause/Action**

- Check control box connection with display, power wires and buzzer.
- Check ground and power connection.
- Check if system is connected to the proper power source.
- Check if the voltage of power source is too low.
- Try a new buzzer or display (with built-in buzzer).
- Try a new control box.

**Problem 2** No alarm when object in a supposed detectable range

**Cause/Action**

- Check power connection.
- Replace new sensor(s) to test.
- Try a new buzzer or/and display.
- Try a new control box.

**Problem 3** False alarm

**Cause/Action**

- Restart the system by quitting and re-selecting reverse gear.
- Sensor(s) mounting position is too low or leaning to the ground resulting in detection of the ground. Need to adjust sensor(s) with angle washer(s) or reposition the sensor(s).
- Detect protrudent part of vehicle body, need to adjust sensor angle or reposition the sensor(s).
- Too small hole(s) for sensor(s) resulting in too tight fitting, burnish the edges of the hole(s).
- Sensor(s) in vicinity of high temperature objects, such as exhaust parts.
- Hard part of vehicle behind the bumper touches sensor shaft giving pressure on sensor housing.

16

- Metal bumper may affect performance of the sensors.
- Adverse environmental conditions, such as extremely cold weather.
- Defective sensor(s), replace new sensor(s) to test.
- System sensitivity may be too high, sensitivity adjustment on control box may be available for some models.

**Problem 4** Audible alert is hoarse or too low

**Cause/Action**

- Check if the voltage of power source is too low.

**Problem 5** Display works improperly

**Cause/Action**

- Try a new display.
- Strong electromagnetic wave nearby may interfere with RF system.

**Problem 6** Contrary indication of object orientation

**Cause/Action**

- Check if sensor cables are cross-routed to control box.

Due to diversity of the vehicles, and demands from the market may change from time to time, the manufacturer is always in a process to develop new systems for customers. If your system is a new variety from those in this manual, it may have some new features and may require some different operation in sensor installation, wiring, or display mounting, etc., however, the main working principle and the basic installation methods explained in this manual are still applicable. In case you have any questions, always contact your selling dealer for help.

17





