

# REAR MICRO SENSOR WITH SQUARE DISPLAY V3 MANUAL

## 1.0 INTRODUCTION

Microsensors are the 'Third Generation' of ultrasonic sensors that are 19mm in diameter making it the smallest today. The 'Third Generation Microsensor' utilises the most advanced ultrasonic ASYMMETRICAL sensing technology used in the latest Mercedes Benz. The microsensor has super-wide detecting capabilities that senses an extra wide angle of 160 degrees horizontally and 60 degrees vertically. This technology increases the detection angle by 100% compared to other conventional systems. The micro-sized sensors are designed to blend into all cars and can be spray painted for that original factory fitted look.

## 2.0 PRODUCT FUNCTIONS

The device has a choice of two or four ultrasonic sensors which is fitted at the rear bumper. The system will only be activated when the reverse gear is engaged and indicated by a single audible tone. The frequency of the audible beeping tone and light of the LED bar will alert the driver of the any presence of object/s and the distance behind the vehicle.

## 3.0 BENEFITS AND ADVANTAGES

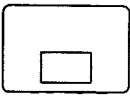

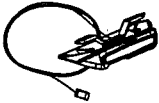


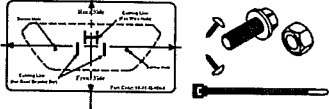
The microsensor over other systems in the market is that the microsensor work in ultrasonic ASYMMETRICAL sensing technology.

- i) Asymmetrical detection technology.
- ii) Small sensor diameter of 19mm.
- iii) Flush and paint able sensor surface area.
- iv) Prevents and Reduces accidents.
- v) Reduces stress when reversing.
- vi) Helps getting in and out of tight parking spots.

## 4.0 SPECIFICATIONS

Power requirement	: DC 10V ~ 25V
Max. power consumption	: 5W
Max. current consumption	: 200mA
Operating temperature	: -20°C ~ 70°C
Storage temperature	: -30°C ~ 80°C
Operating humidity	: Up to 95%
Detection distance	: Up to 5.5 Ft.
Transmitting frequency	: 40 kHz
System response time	: 0.12 sec

## 5.0 PART LISTING

Part Name: Control Unit  Fig. 1	Part Name: Power Cable  Fig. 2	Part Name: Display Module  Fig. 3
Part Name: Sensor Unit  Fig. 4	Part Name: Micro Sensor Bracket  Fig. 5 (Optional)	Part Name: Installation Guide, Screw, Nut & Cable tie  Fig. 6

6.0 WIRING DIAGRAM

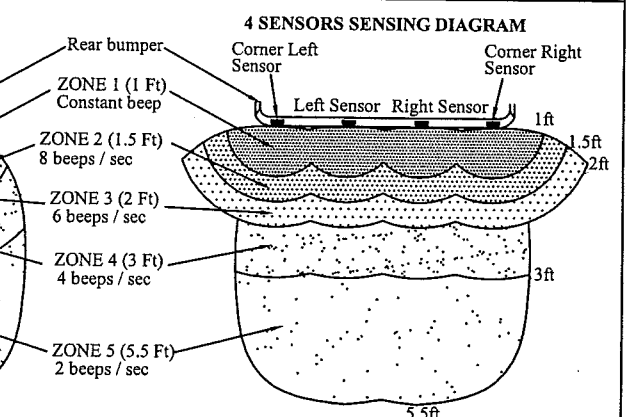
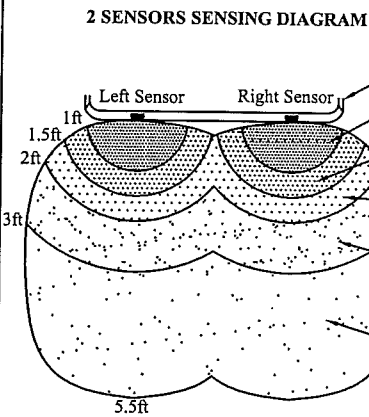
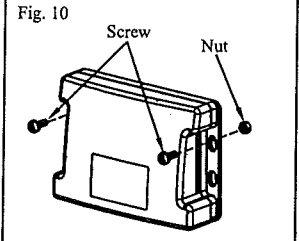
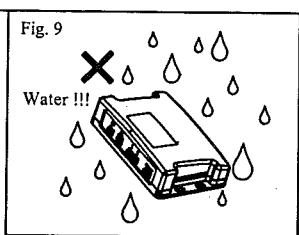
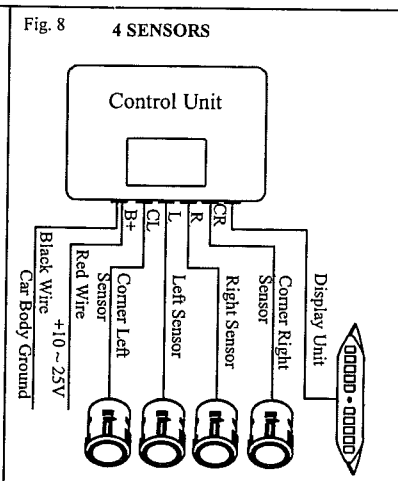
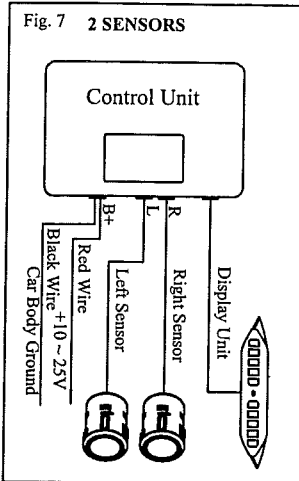
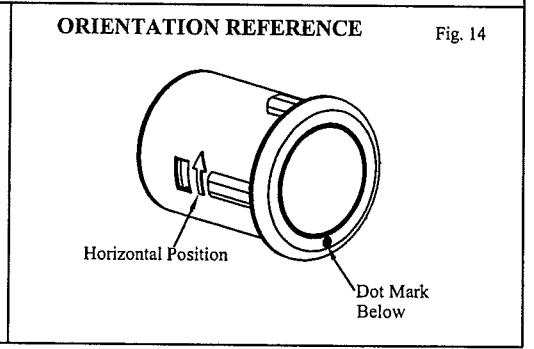
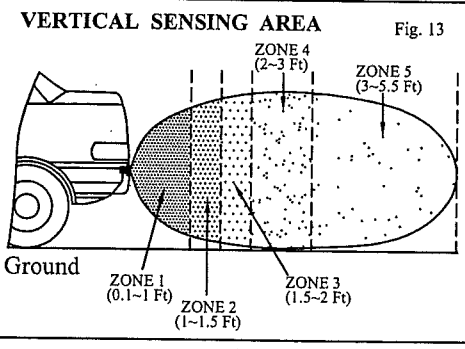


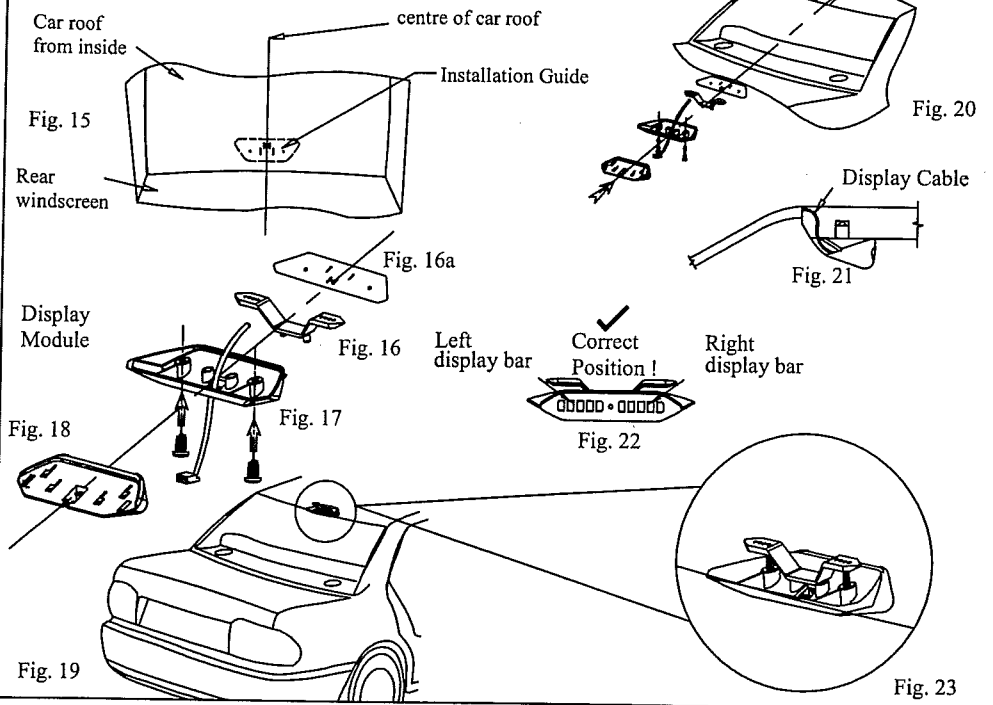
Fig. 11

Fig. 12

NOTE: Square object is used to test the Horizontal coverage area of the sensor.  
 The dimensions of the square object is 10cm X 100cm.  
 Small and fine objects with poor reflectance may not be detected.



**DISPLAY MODULE INSTALLATION LOCATION**



**A) 2 SENSORS INSTALLATION**

**B) 4 SENSORS INSTALLATION**

Power Cable :  
 i) Red (+) to reverse lamp positive terminal  
 ii) Black (-) to ground (Car body)

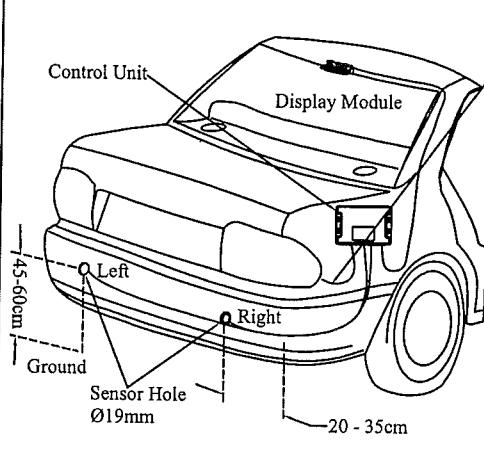


Fig. 24

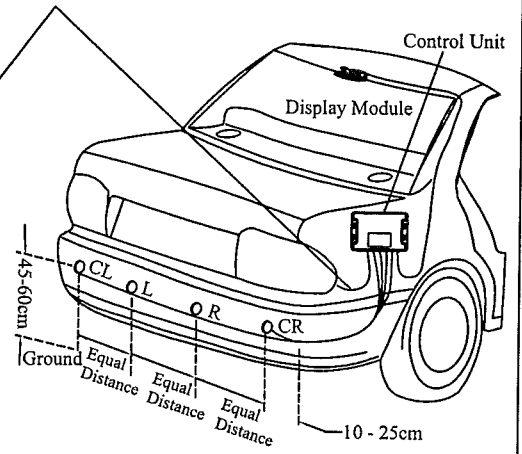
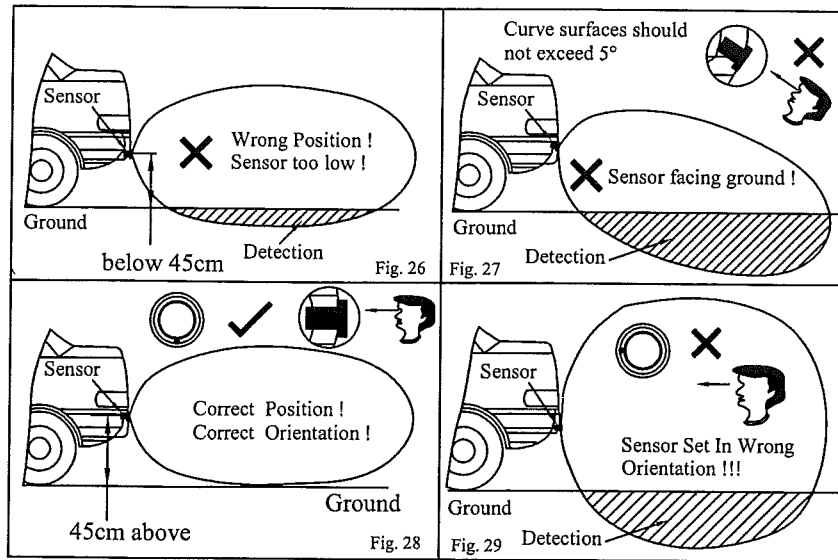


Fig. 25



### 7.0 FOR 2 SENSORS UNIT INSTALLATION PROCEDURES

Procedures on the positioning and mounting of sensors depends on the types of cars and shape of rear bumpers.

1. Measure from both corners of the rear bumper and mark a horizontal distance of 20cm ~ 35cm for both left and right sensors. (Fig. 24)
2. Measure from the ground level a distance of 45cm ~ 60cm to indicate the final position of the sensors. (Fig. 24)

**Important !** The preset of the sensitivity for the sensor height is 45cm above the ground. To avoid false alarm, please install the sensors above 45cm from ground. (Fig. 26 & Fig.28)

3. Ensure that the bumper surface where the sensors are to be mounted is flat. If not, the curve surface should not be more than 5 degrees facing to the ground. (Fig. 27)
4. Drill two 19mm diameter through holes on the bumper markings. (Fig. 24)
5. Insert the left and right sensors into the 19mm diameter sensor holes respectively. (Fig. 24)

**Important !** Ensure that the sensors are mounted at the correct position. The dot mark of the sensor should always be in the bottom position as shown in Fig. 28.

6. Use cable tie to secure and route the sensor cables along the internal bumper wall. When routing the sensor cables, avoid sharp bends, edges and loose routings.
7. Insert the sensor cable connectors to the control unit headers respectively. Do not swop the sensor cable connection. (Fig. 7)

### 8.0 FOR 4 SENSORS UNIT INSTALLATION PROCEDURES

Procedures on the positioning and mounting of sensors depends on the types of cars and shape of rear bumpers.

1. Measure from both corners of the rear bumper and mark a horizontal distance of 10cm ~ 25cm for both corner sensors CL and CR right ( Fig. 25)
2. Mark sensor left (L) and sensor right (R) which have equal distance as shown in Fig. 25.

3. Measure from the ground level a distance of 45cm ~ 60cm to indicate the final position of the sensors. (Fig. 25)

**Important !** The preset of the sensitivity for the sensor height is 45cm above the ground. To avoid false alarm, please install the sensors above 45cm from ground. (Fig. 26 & Fig.28)

4. Ensure that the bumper surface where the sensors are to be mounted is flat. If not, the curve surface should not be more than 5 degrees facing to the ground. (Fig. 27)
5. Drill four 19mm diameter through holes on the bumper markings.
6. Insert the left, right, corner left and corner right sensors into the 19mm diameter sensor holes respectively. (Fig.25)

**Important !** Ensure that the sensors are mounted at the correct position. The dot mark of the sensor should always be in the bottom position as shown in Fig. 28

7. Use cable tie to secure and route the sensor cables along the internal bumper wall. When routing the sensor cables, avoid sharp bends, edges and loose routings.
8. Insert the sensor cable connectors to the control unit headers respectively. Do not swop the sensor cable connection. (Fig. 8)

#### 9.0 DISPLAY UNIT INSTALLATION PROCEDURES

1. Locate the installation guide sticker to a suitable position for viewing the display unit preferably near to the top of rear windscreen .( Fig. 19, Fig. 20 & Fig. 16a )
2. Make the screw holes and cutting line according to the installation guide sticker.
3. Tear off the sticker after you have make the screw holes.
4. Install the display module as show in Fig. 18 & Fig.19.
5. Route the cable along the rear windscreen to the control unit.
6. Plug in the display cable connector into the control unit as indicated. (Fig. 7 & Fig. 8)

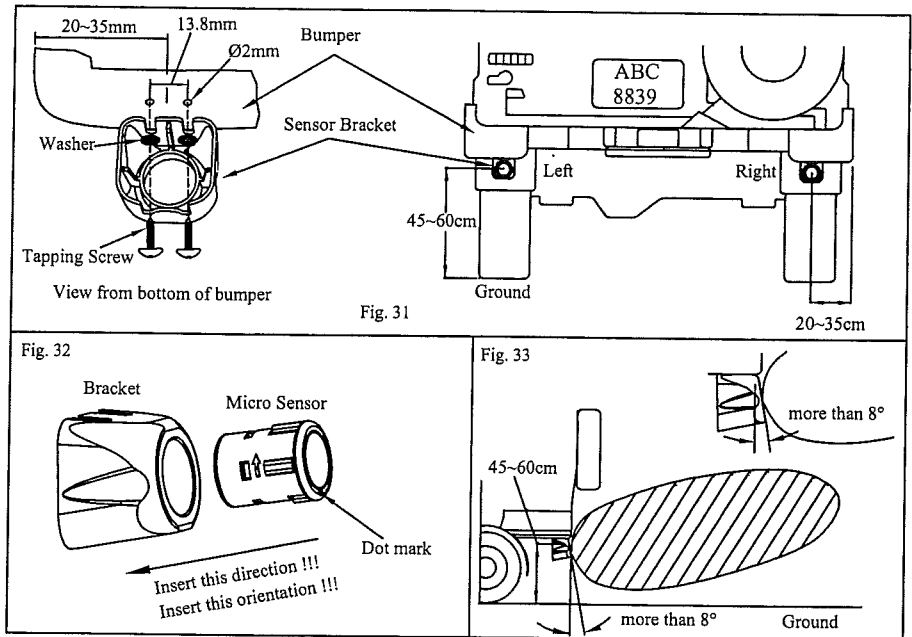
#### 10.0 CONTROL UNIT INSTALLATION PROCEDURES

1. Locate a suitable surface to mount the control unit, preferably to be fitted to the right side steel panel inside the boot using screw and nut. (Fig. 24 & Fig. 25)
2. To prevent water from getting into the control unit, please note the vertical positioning of the control unit as shown in Fig. 10.
3. Route and conceal wire harness underneath the boot carpet.
4. Connect red cable to the reverse lamp positive terminal. (+10 ~ 25V power supply)
6. Connect black cable to an independent ground terminal. (Ensure that it is properly grounded) Plug in the power cable connector to the control unit. (Fig. 7 & Fig. 8)
7. Caution: Do not mount the control unit outside the vehicle, make sure that it is installed in a clean dry place, away from dirt, water and moisture (Fig. 9).

#### **Important (Special Note To Owner)**

- This device is designed to aid drivers when reversing and during reverse parking. It should not be considered as a safety device for any other purpose. Proper driving technique and the use of mirrors are always essential.
- The manufacturer, distributor and dealer shall not be held liable for any unforeseen accident.
- Detection of human beings and animals are not advisable.

### 11.0 MICRO SENSOR BRACKETS INSTALLATION PROCEDURES (OPTIONAL ACCESSORIES)



Note : It is not recommended to use the brackets if the bottom edge of the bumper is less than 45cm above the ground.

Procedures on the positioning and mounting of sensor brackets depends on the types of cars and rear bumpers.

1. Measure from both corners of the rear bumper and mark a horizontal distance of 20cm ~ 35cm for both left and right sensors. (Fig. 31)
2. Measure from the ground level a distance of 45cm ~ 60cm to indicate the final position of the sensors. (Fig. 31)

**Important !** The preset of the sensitivity for the sensor height is 45cm above the ground. To avoid false alarm, please install the sensors above 45cm from ground. (Fig. 26 & Fig.28)

3. Ensure that the bumper surface where the sensors are to be mounted is flat and horizontal. Otherwise the sensor brackets must be installed 8 degrees facing up from the ground. (Fig. 33)
4. Drill two 2mm diameter through holes on the bumper marking. The distance between the holes is 13.8mm. (Fig. 31)
5. Use tapping screws to secure the sensor brackets to the rear bumper. (Fig. 31)
6. Insert the left and right sensors into the sensor brackets respectively. (Fig. 31)

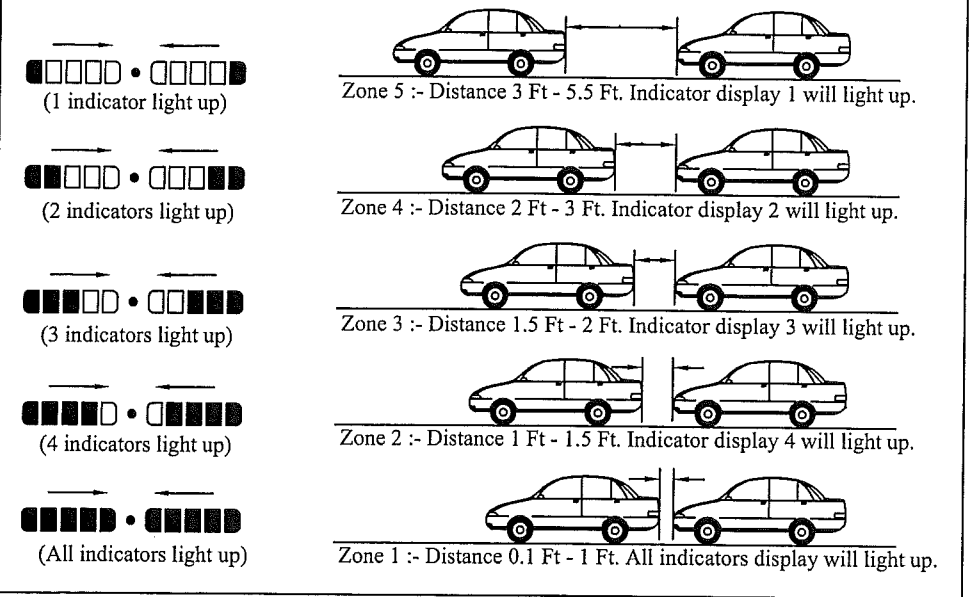
**Important !** Ensure that the sensors are mounted at the correct position. The dot mark of the sensor should always be in the bottom position as shown in Fig. 28.

7. Use cable tie to secure and route the sensor cables along the internal bumper wall. When routing the sensor cables, avoid sharp bends, edges and loose routings.
8. Connect the sensor cable connectors to the control unit headers respectively. Do not swop the sensor cable connection. (Fig. 7)

**12.0 OPERATION AND TESTING**

1. Turn the ignition key to ACC position and engage into reverse gear, the display indicator will light up with a single audible beep.
2. To ensure the corner sensors are plug into the correct terminals, "CR" & "CL" (for 4 sensors only) proceed to the following test.
  - 2.1 Use cloth or sponge to cover the left and right sensor, hold a flat object (10cm x 50cm) and approach the corner right (CR) sensor from 3 feet apart. Nothing should be detected more than 2 feet. (Refer to fig. 12). Note: the maximum detection for corner sensor is 2 feet only.
  - 2.2 Repeat step 2.1 to test the corner left (CL) sensor.
3. Remove the cloth or sponge from the left and right sensor, hold a flat object and approach the sensors. For result, please refer to fig. 34, visual and audible status.

Fig. 34



**13.0 VISUAL AND AUDIBLE STATUS :**

<u>Zone</u>	<u>Obstacle Distance</u>	<u>Tone</u>	<u>Display Indicator</u>
Zone 5 :	distance between 3 Ft to 5.5 Ft	2 beeps / sec.	(1 indicator light up)
Zone 4 :	distance between 2 Ft to 3 Ft	4 beeps / sec.	(2 indicators light up)
Zone 3 :	distance between 1.5 Ft to 2 Ft	6 beeps / sec.	(3 indicators light up)
Zone 2 :	distance between 1 Ft to 1.5 Ft	8 beeps / sec.	(4 indicators light up)
Zone 1 :	distance between 0.1 Ft to 1 Ft	non-stop (constant) beep	(All indicators light up)