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w w w . m a c r o m . i t

PARKING
Assistance

User Manual

EPS4160EM Rear or Front Flash Mount sensor

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User Manual

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Warranty

Thank you for purchasing this Macrom product.
Please read this instruction manual carefully so that you know the correct operation of the product.
After you finish reading the instructions, keep the manual in a safe place for future reference.
If the product requires assistance, refer to the shop where it was purchased or the local distributor in your country.
The warranty does not cover accidental damage due to improper use or installation, incorrect connections to the power supply or damage caused to the vehicle.

Important notes

The sensors are reversing and parking assistance systems. Normal driving rules such as slowing down and using the mirrors remain essential.

1. Device suitable for DC 9-27V vehicles.
2. The device requires professional installation.
3. Lay the wiring away from heat sources and electrical components.
4. It is recommended to check the position of the sensors before drilling the bumper.
5. After installation, carry out a function test.

Safety information

Before starting the installation, disconnect the cable from the negative battery terminal to avoid short circuits during installation.
This subwoofer must be installed correctly by a Macrom authorized installer.
Improper installation can damage the unit and/or vehicle.
Check the electrical connections and the driveability of the vehicle before installation.

Indemnify

The parking sensor is a driving assistance device, it does not replace normal safe driving and parking rules. When parking, however, the external situation must be monitored.
The manufacturer and distributor are not responsible for impacts or damage during parking operations.

Product information

The EPS4160EM device is supplied with 4 sensors and can be used posteriorly or anteriorly (dual use). Electronically detects the area in front of or behind the vehicle when driving forward or backward. If the system detects an obstacle, it warns with audible and visual alarms. Provides assistance while driving or maneuvering.

All sensors are waterproof and can be easily replaced. Thanks to the anti-interference and anti-false alarm technology, the device can detect obstacles in any weather situation and give prompt feedback. The system is equipped with intelligent detection ideal for vehicles with towbar or external spare wheel.

Each component has been rigorously tested before being put on the market and is reliable in a wide range of temperatures and is very useful for parking when the weather and visibility conditions are not good, when it rains, when it snows or at night. With the help of a parking sensor you can enjoy the experience of relaxed driving and safe parking.

Use recognition with 2 or 4 sensors

The device can also be used with only 2 sensors and can be installed on the front or rear. When only 2 sensors are used, sensors B&C or A&D must be connected to the control unit.

Main features

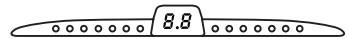
- Dual use front or rear parking sensor.
- It can also be used only with 2 sensors at the front and at the back.
- A display (optional) is available.
- Self-test function.
- Anti false alarm technology
- Self-learning function for vehicle with tow hook or external spare wheel.

Specifications

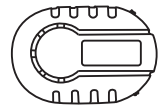
Operating voltage:	DC 9~27V
Operating current:	←250mA
Buzzer:	80±10dB
Usage temperature:	
ECU:	-40°C~+80°C
Buzzer:	-40°C~+80°C
Led displays:	-40°C~+80°C
LCD display:	-20°C~+70°C
Storage temperature:	
ECU:	-40°C~+85°C
Buzzer:	-40°C~+85°C
Led displays:	-40°C~+85°C
LCD display:	-30°C~+80°C
Detection range:	
Front:	0.30~0.99m/ 1.0~3.2ft
Rear:	0.30~0.59m/ 1.0~1.9ft (reversing) 0.30~2.59m/ 1.0~8.5ft

Optional buzzer or display

The device comes with a buzzer but an additional display is available.
Graphics of display and buzzer are for reference only.
Other types of displays are available.
Tips: Some displays have SET button, digital numbers, distance indicator and adjustable volume.



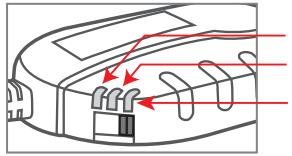
Display (optional)



Buzzer

Volume and buzzer frequency adjustment

Volume adjustment

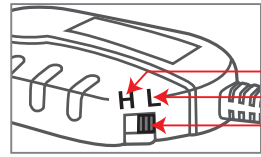


Low volume
Medium volume
High volume

Frequency regulation

The frequency of the buzzer is adjustable from high to low by rotating the switch.

Tips: if both front and rear sensors are installed, both with buzzer, we suggest choosing the "low" frequency for the rear one and "high" for the front one.

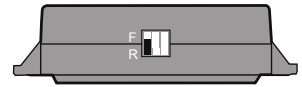


High frequency
Low frequency
Frequency adjustment switch

Front or rear use setting

This device can be used as either a front or rear sensor by adjusting the switch on the back of the controller before installation.

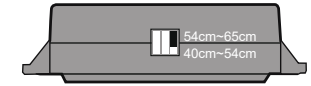
F position switch (front)



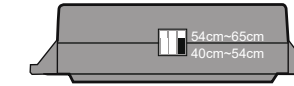
R position switch (rear)

Sensor installation height

It is possible to vary the installation height of the sensors by moving the switch on the control unit.



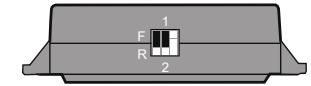
Switch position: 54cm-65cm
(by default) suggested installation height between 54 and 65 cm from the ground.



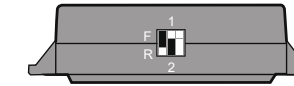
Switch position: 40cm-54cm suggested installation height between 40 and 54 cm from the ground.

Activation by pressing the brake pedal (use as front)

This function is used with the sensor in front mode (switch in position F).
The front system is activated by pressing the foot brake.
When you press and release the brake pedal, the system will continue to operate.



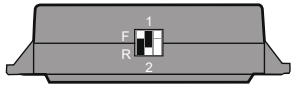
Switch in position 1 (default setting) the device works for 8 seconds - Attention: recommended for automatic cars



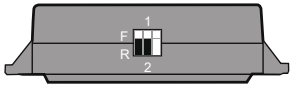
Switch in position 2 the device works for 20 seconds - Attention: recommended for manual cars.

Spare wheel detection function (used as rear)

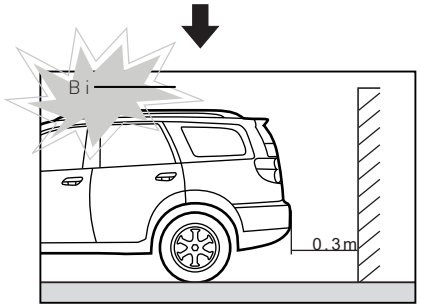
This function is required when used as a rear sensor (switch position R)
If this function is selected, the detection distance is lengthened by 20 cm (from 30 to 50 cm) between the sensor and the obstacle, it is designed for cars with a spare wheel or tow hitch.

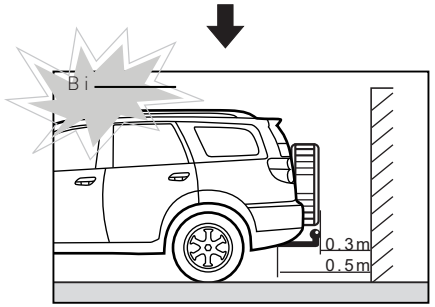


Switch position 1 (default) normal sensing distance.



Switch position 2 the detection distance between the sensor and the obstacle is increased by 20 cm.





Notes: in case of use with display (optional) the display will continue to indicate 0.3 m if the switch is in position 2.

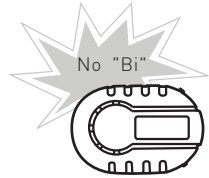
Self-test function

Utilizzato come frontale :
Accendendo l'auto il dispositivo testerà automaticametne tutti i sensori.
Se tutti i sensori funzionano perfettamente il buzzer non emetterà nessun suono.
Se viene rilevato un sensore difettoso o danneggiato il buzzer emetterà 3 bip.

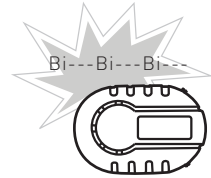
After the self-test function, the system will continue to operate for 8 seconds (switch pos 1) or 20 seconds (switch pos 2) if the vehicle approaches or moves away from the obstacle.

For the buzzer:

All sensors work properly



A faulty or damaged sensor has been detected



Note:

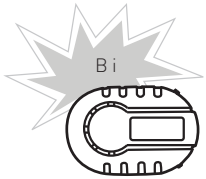
- If one or more sensors are damaged or faulty the buzzer will emit 3 beeps.
- The device will not report if the A&D or B&C sensors fail but will continue to operate as a 2 sensor system.

Funzione auto test

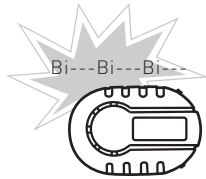
Used as rear:
By engaging reverse gear, the device automatically tests all the rear sensors.
If all the sensors work correctly, the buzzer will emit 1 beep.
If a faulty or damaged sensor is detected the buzzer will emit 3 beeps.

For the buzzer:

All sensors work properly



Detected a faulty or damaged sensor



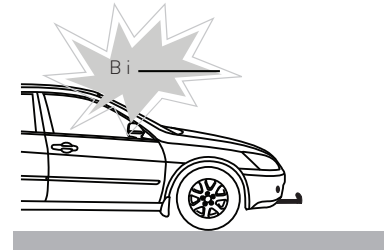
Note:
- If one or more sensors are defective or damaged, the buzzer will emit 3 beeps.
- The system will not warn if sensors A&D or B&C are not functioning and will continue to operate as a two sensor system.

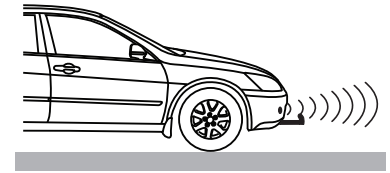
Front self-learning function

Self-learning function for vehicles with front bumper bar

Activate this function in an open place without obstacles.
1. with the car on, press and release the brake pedal 10 times with intervals of 1 sec.
2. the tenth time keep the pedal pressed, the buzzer will emit 1 beep after 5 seconds and then a long beep for 2 seconds and after 3 seconds and the procedure will be completed.

Elimination of self-learning:
1. with the car on, press and release the brake pedal 12 times with intervals of 1 sec.
2. the twelfth time, keep the pedal pressed, the buzzer will emit 1 beep after 5 seconds and then a long beep for 2 seconds and after 3 seconds and the procedure will be completed.





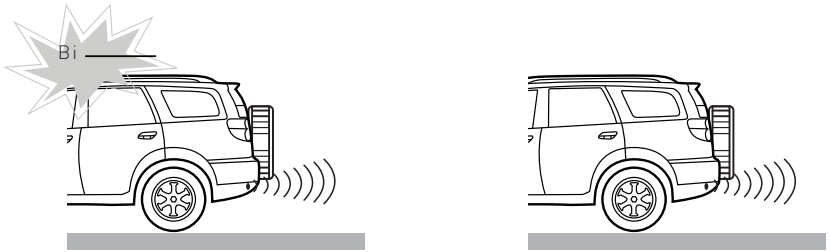
Note:
- This function is valid and achievable only if all 4 sensors are functional.
- The procedure must be carried out 3 minutes after starting the car.
- If you make a mistake during the procedure, release the brake pedal for 3 seconds and then start again.
- If the vehicle does not have any frontal protrusions, this procedure does not need to be performed.
- Run a self-test.

Rear self-learning function

Self-learning function for vehicles with rear external spare wheel or towbar

Activate this function in an open place without obstacles.
1. with the car on, change reverse /1st gear 10 times with 1 second intervals.
2. the tenth time leave in reverse, the buzzer will emit a beep after 2 seconds and then a long beep after 3 seconds.
3. after self-learning, the device will ignore the tow hook or the spare wheel.

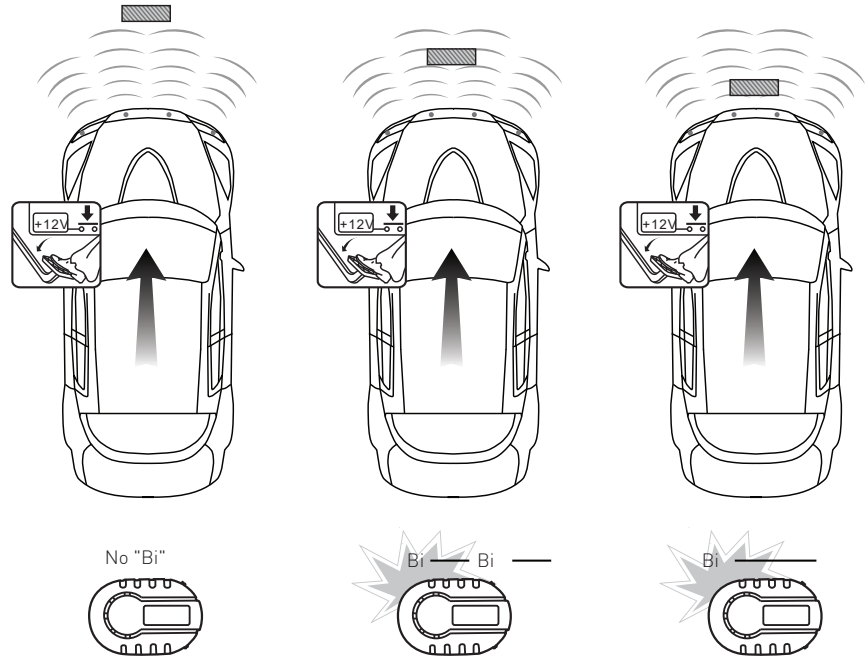
Elimination of self-learning:
1. with the car on, change reverse / 1st gear 12 times with 1 second intervals.
2. the twelfth time leave in reverse gear, the buzzer will emit a beep after 2 seconds and a long beep after 3 seconds.



Note:
- This function is valid and achievable only if all 4 sensors are functional.
- If you make a mistake during the procedure, release the brake pedal for 2 seconds and then start again.
- If the vehicle is not equipped with a tow hook or external spare wheel, this procedure is not necessary.
- Run a self test.

How the device works (front use)

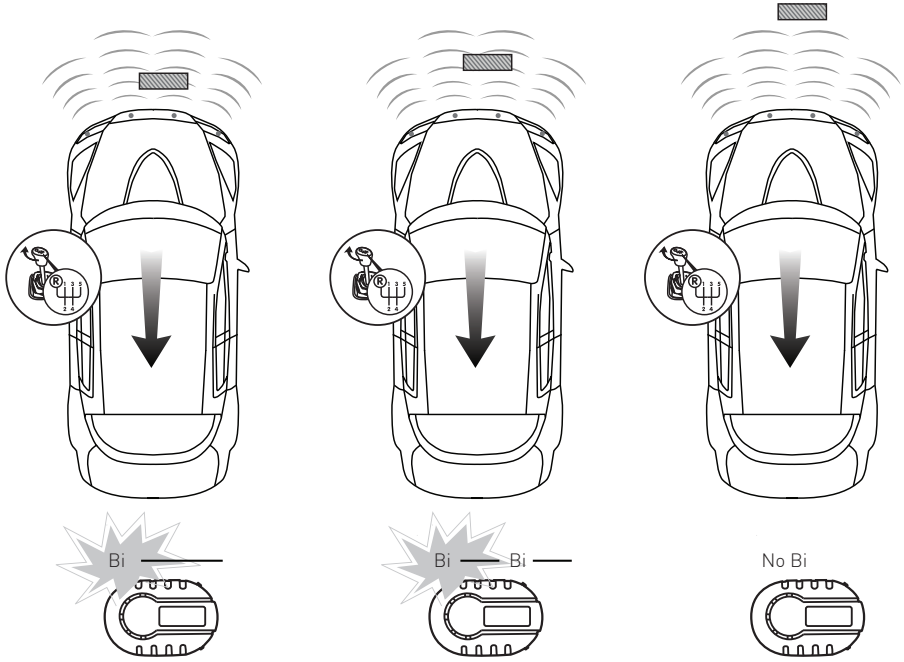
Press the brake pedal to activate the sensing device.



Notes: The maximum detection of external sensors (A&D) is 0.69m/2.3ft.
The maximum detection of the central sensors (B&C) is 0.89m/2.9ft.

Device operation (front use)

Engage reverse gear to activate the front sensing device.



Distance: ←0.3m/ 1.0ft

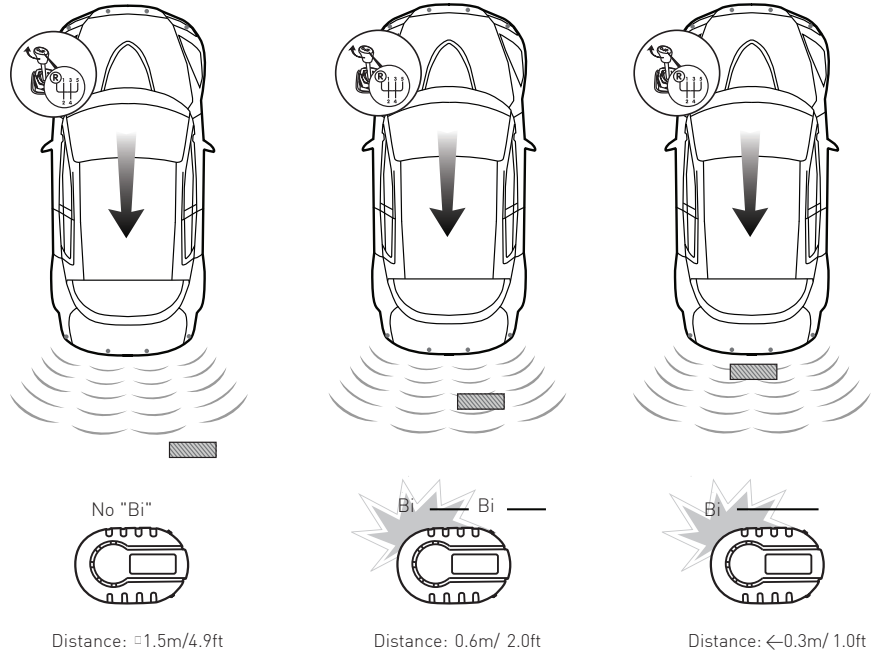
Distance: 0.4m/ 1.3ft

Distance: 0.7m/ 2.3ft

Notes: The maximum detection of external sensors (A&D) is 0.69m / 2.3ft.
The maximum detection of the central sensors (B&C) is 0.59m / 1.9ft.

Device operation (rear use)

Engage reverse gear to activate the rear sensing device.



Distance: □1.5m/4.9ft

Distance: 0.6m/ 2.0ft

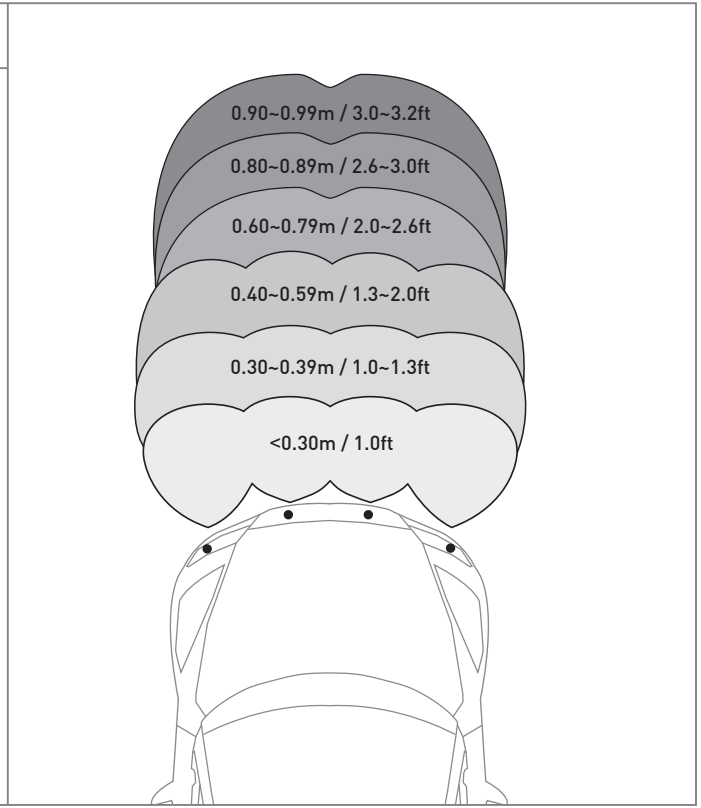
Distance: ←0.3m/ 1.0ft

Notes: The maximum detection of external sensors (A&D) is 0.99m / 2.3ft.
The maximum detection of the central sensors (B&C) is 1.49m / 4.9ft.

Acoustic warnings and distances (braking)

Braking:

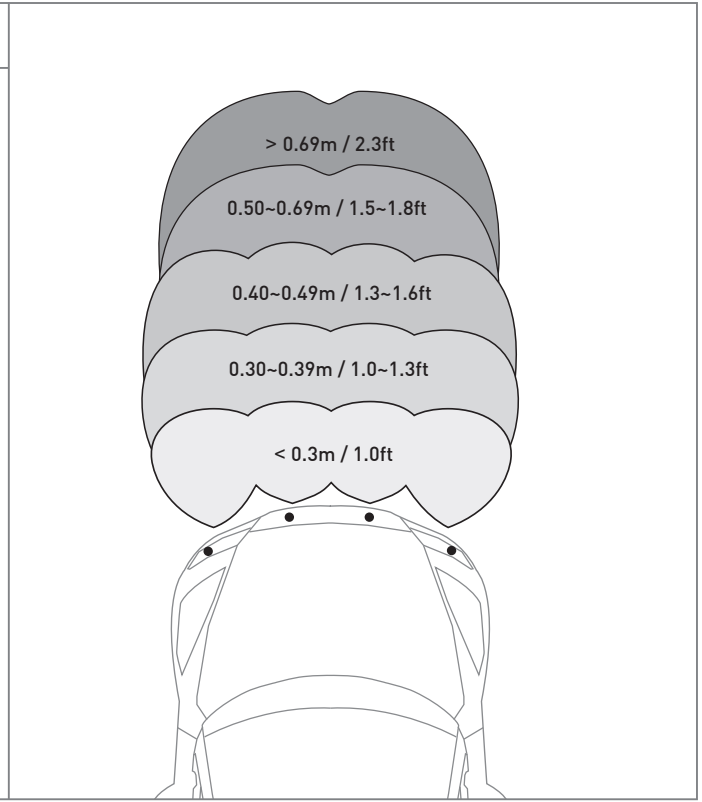
Buzzer	
No beeps	
Bi----Bi----	
Bi---Bi---	
Bi--Bi--	
Bi--Bi--Bi--Bi--	
Bi----------	



Acoustic warnings and distances (reverse)

Reverse gear:

Buzzer	
No beeps	
Bi----Bi----	
Bi--Bi--Bi--	
Bi--Bi--Bi--Bi--	
Bi----------	

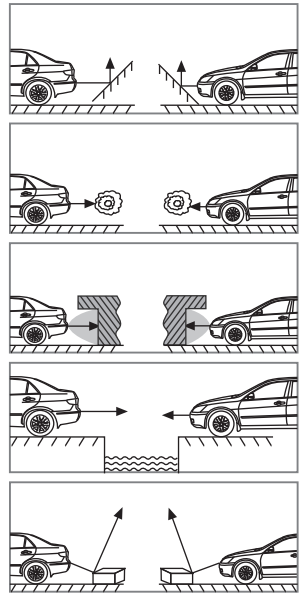


Acoustic warnings and rear distances

Buzzer	
Bi	< 0.30m / 1.0ft
Bi--Bi--Bi--Bi--	0.30~0.50m / 1.0~1.6ft
Bi--Bi--Bi--	0.50~0.90m / 1.6~3.0ft
Bi---Bi---	0.90~1.3m / 3.0~4.3ft
Bi----Bi----	1.3~1.5m / 4.3~4.9ft

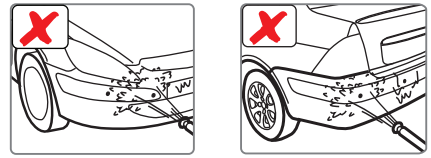
Warnings

After installation, perform a functional test. False alarms can occur in the following situations:

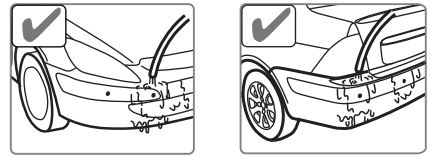


- Heavy rain, muddy or damaged sensors.
- Make sure the self-test procedure has completed and all sensors are working properly.

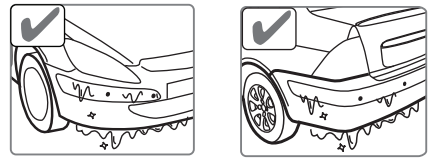
Sensor maintenance



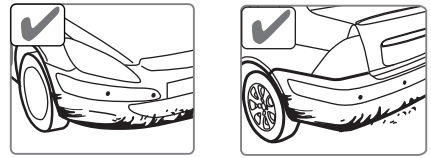
Do not wash the sensors with a high pressure cleaner.



Do not wash the sensors with a high pressure cleaner.

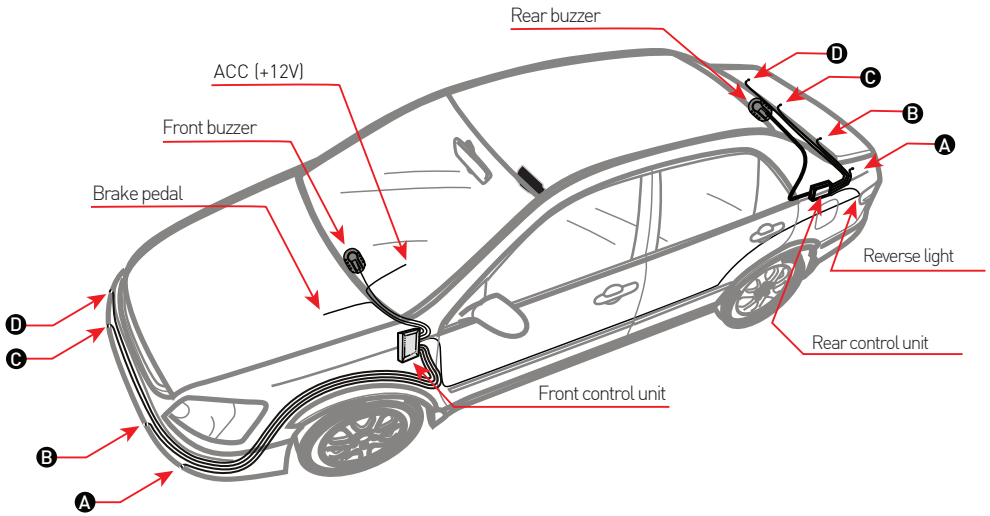


Melt the snow with water if the sensors are covered.

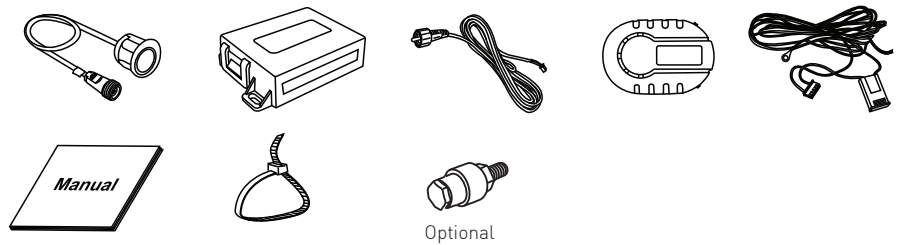


Clean the sensors with a cloth or low pressure hose if they are dirty or covered in mud.

Installation overview



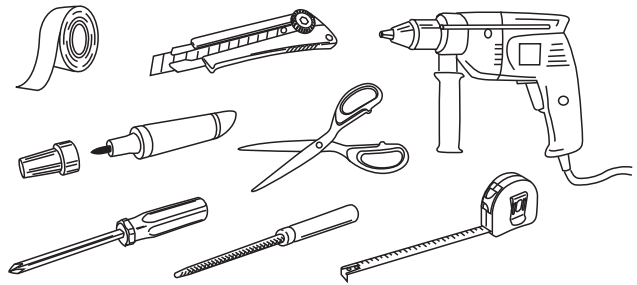
Content



Optional

The images are representative, they may differ from the actual component depicted.

Tools required for installation

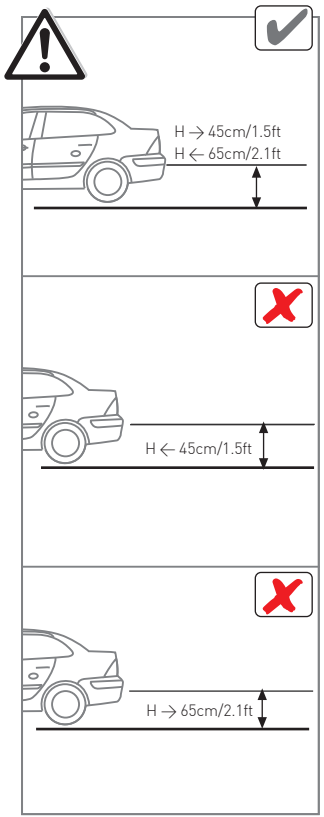


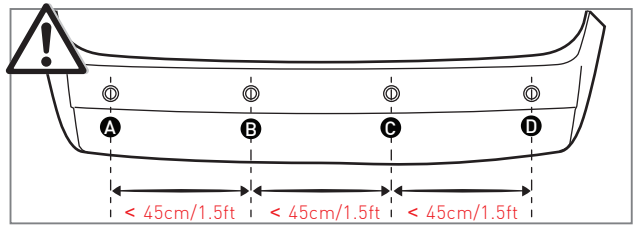
The installation accessories are not included in the product package

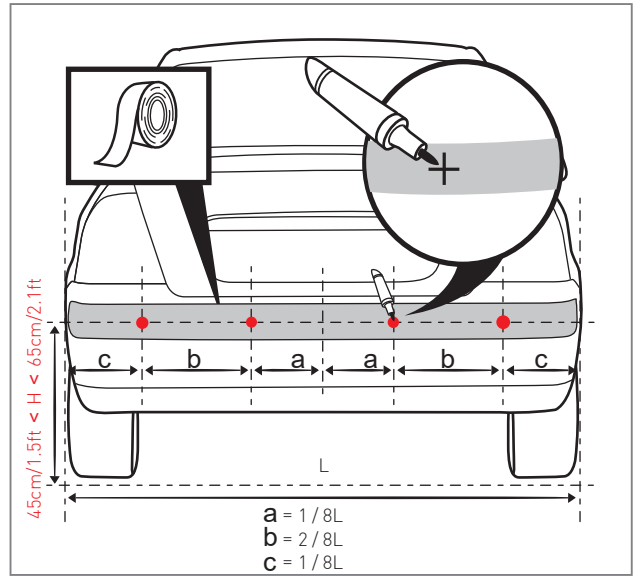
60' ~ 80'

1 Sensor installation

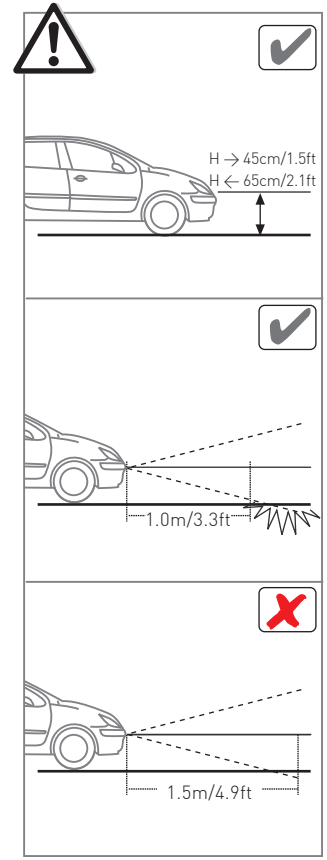
Note: Any drilling requests indicated in the bumpers may not correspond to the measurements indicated in this manual.
Only follow the measurements given in the installation guide. Inappropriate distances and heights could cause malfunctions.

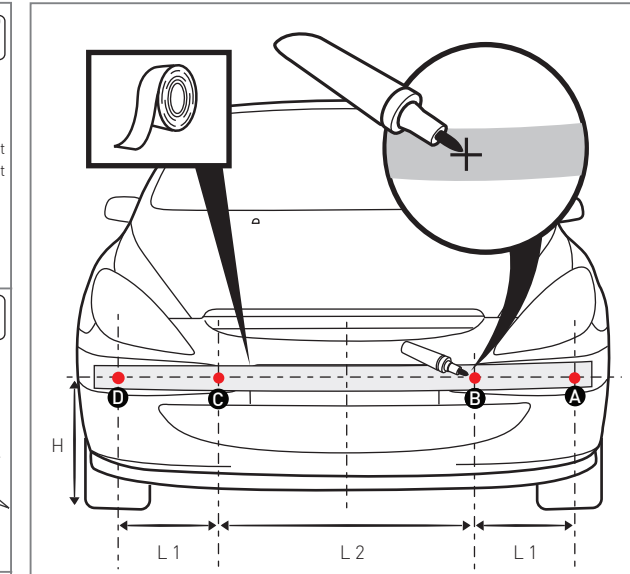






2 Sensor installation



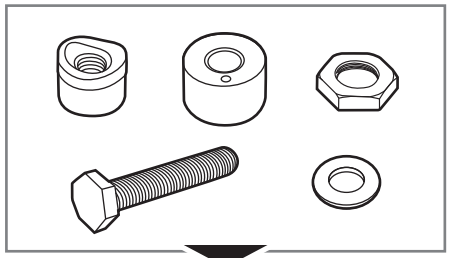


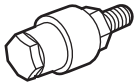
35cm/1.1ft < L1 < 45cm/1.5ft
45cm/1.5ft < L2 < 55cm/1.8ft
45cm/1.5ft < H < 65cm/2.1ft

Note:

1. When used as a 2 sensor device it is recommended to install the sensors in positions A & D.
2. On some vehicles, due to the position of the number plate or the design of the bumper the distance between the central sensors (L2) can be greater, e.g. L2 → 60cm. The device will still work but the detection of narrow objects will be reduced.

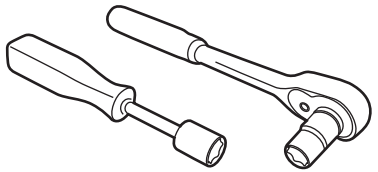
3 Sensor installation

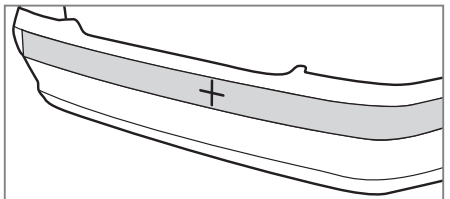




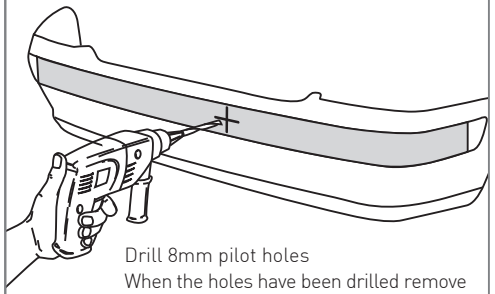
We recommend using a 16mm die

Note:
The die is not supplied, it must be purchased separately and is available as an accessory.



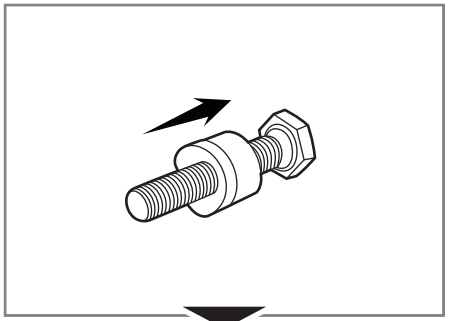


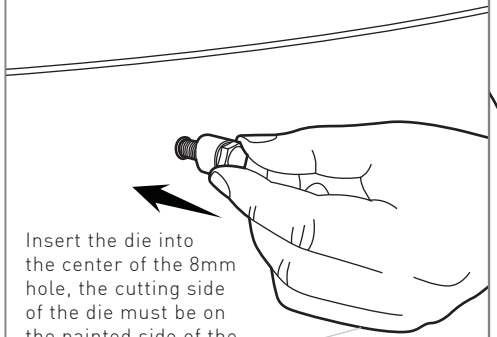
Measure and mark the position of the sensors
Check that there are no obstructions on the back of the bumper.
Drill pilot holes



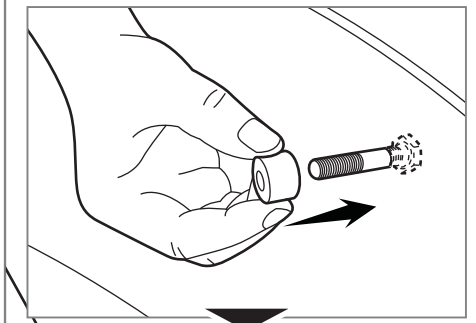
Drill 8mm pilot holes
When the holes have been drilled remove the bumper from the vehicle.

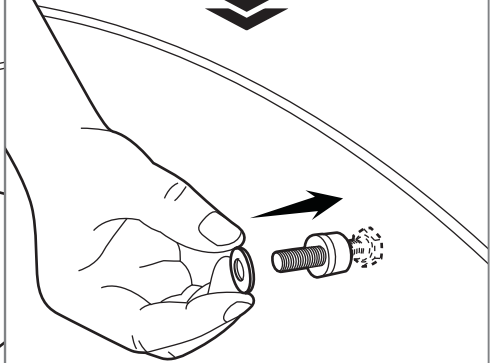
4 Sensor installation





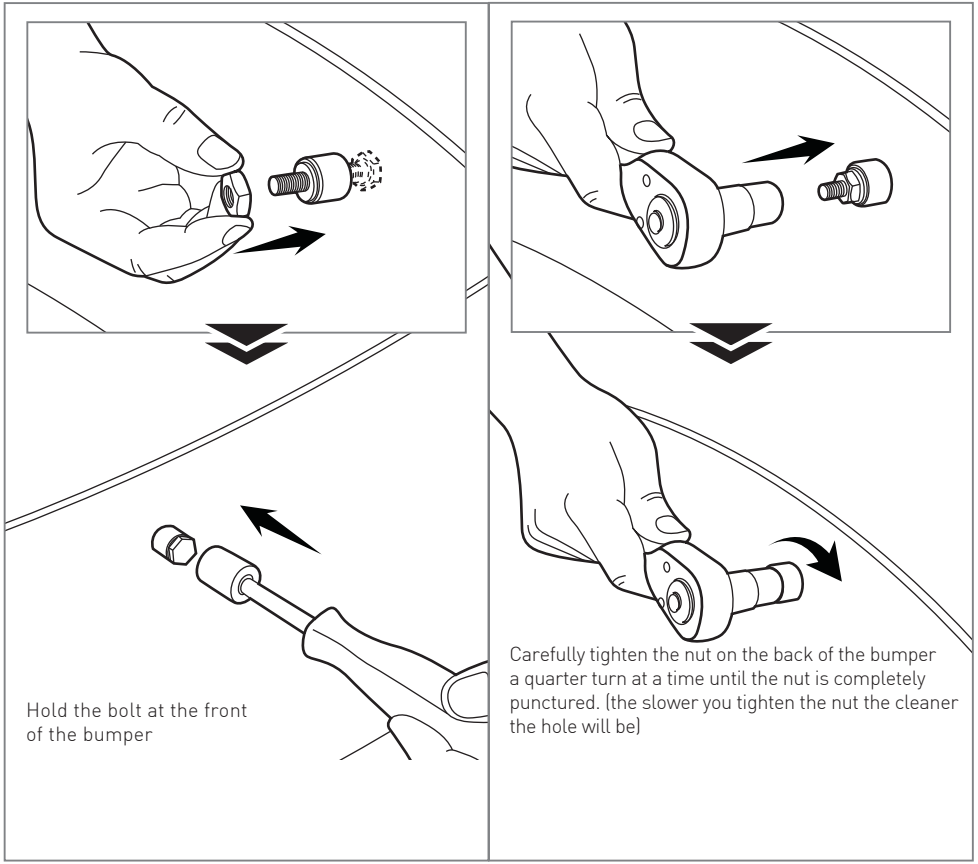
Insert the die into the center of the 8mm hole, the cutting side of the die must be on the painted side of the bumper





Slide the outer sleeve and hole washer over the bolt thread and secure the nut by hand tightening.

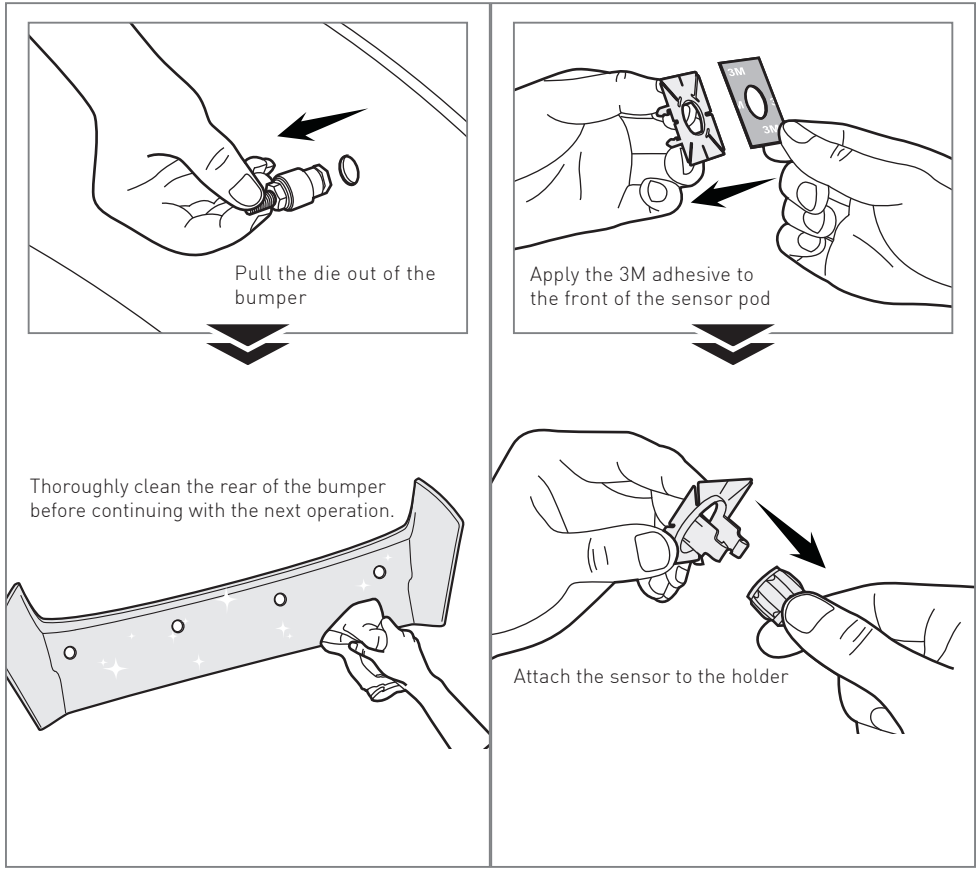
5 Sensor installation



Hold the bolt at the front of the bumper

Carefully tighten the nut on the back of the bumper a quarter turn at a time until the nut is completely punctured. (the slower you tighten the nut the cleaner the hole will be)

6 Sensor installation



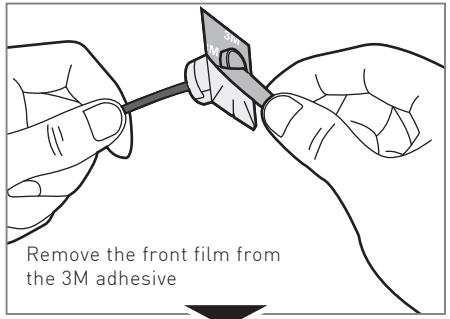
Pull the die out of the bumper

Apply the 3M adhesive to the front of the sensor pod

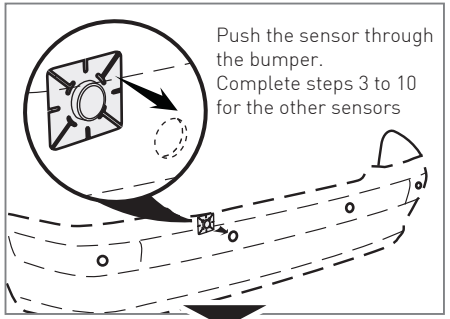
Thoroughly clean the rear of the bumper before continuing with the next operation.

Attach the sensor to the holder

7 Sensor installation

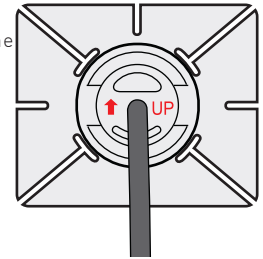


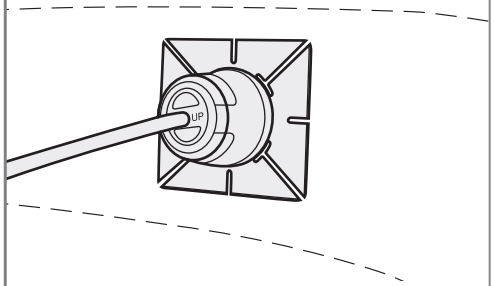
Remove the front film from the 3M adhesive



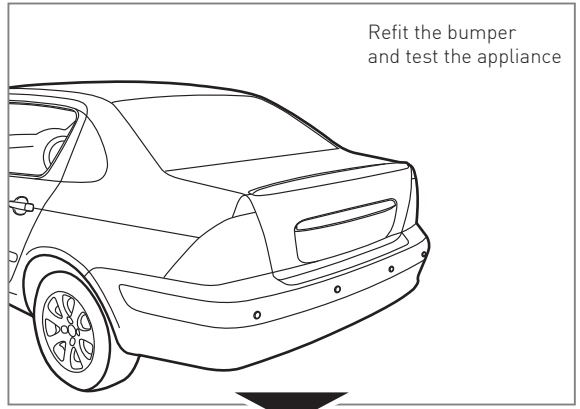
Push the sensor through the bumper.
Complete steps 3 to 10 for the other sensors

Notes: Make sure the sensor is in the correct position before inserting it into the bumper

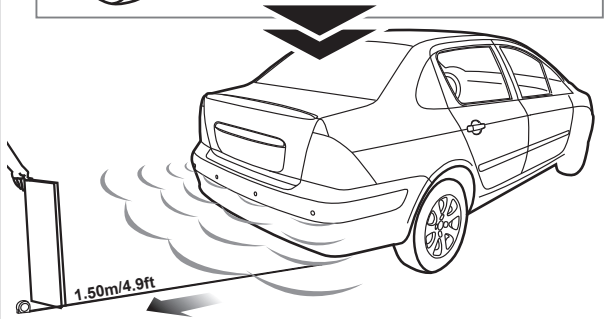




8 Sensor installation



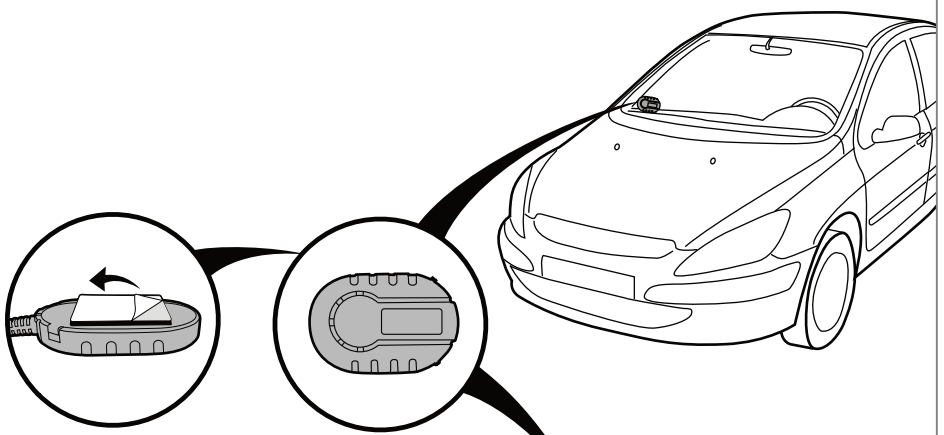
Refit the bumper and test the appliance



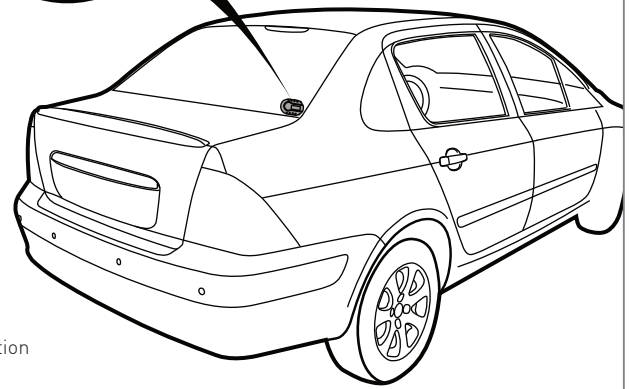
The function test is done by holding a wooden board (0.3m x 1.0m) behind the vehicle and slowly backing up to test all functions as indicated in the product manual

Buzzer installation

Front buzzer installation

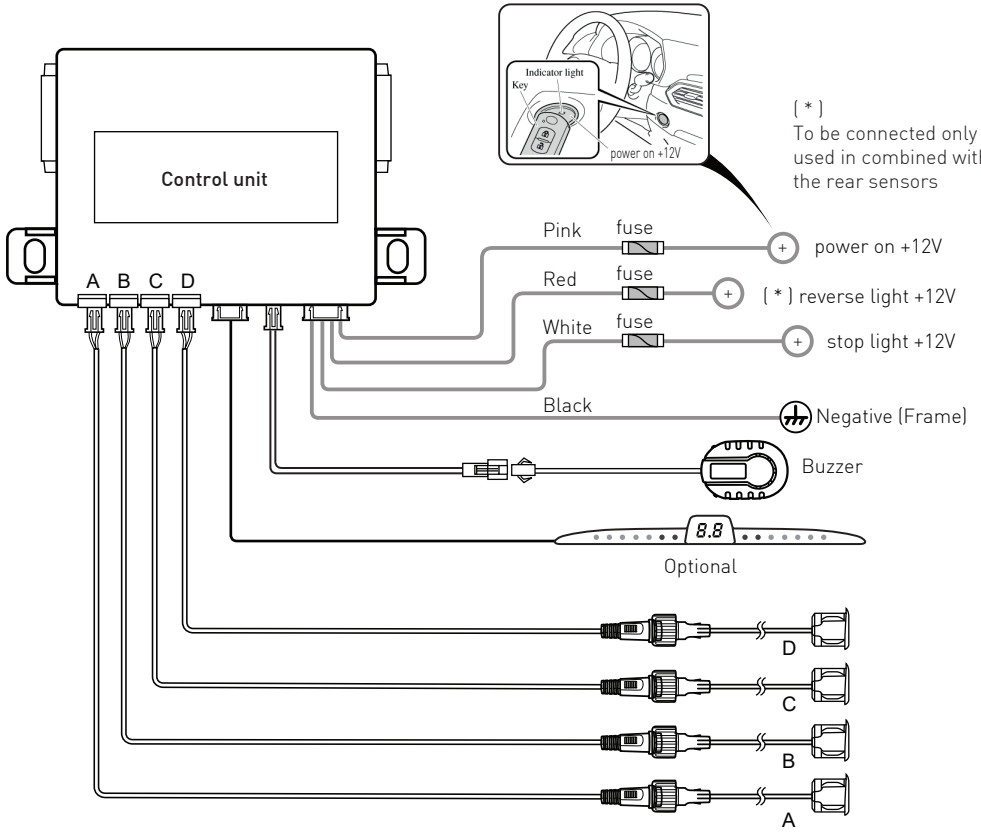


Rear buzzer installation



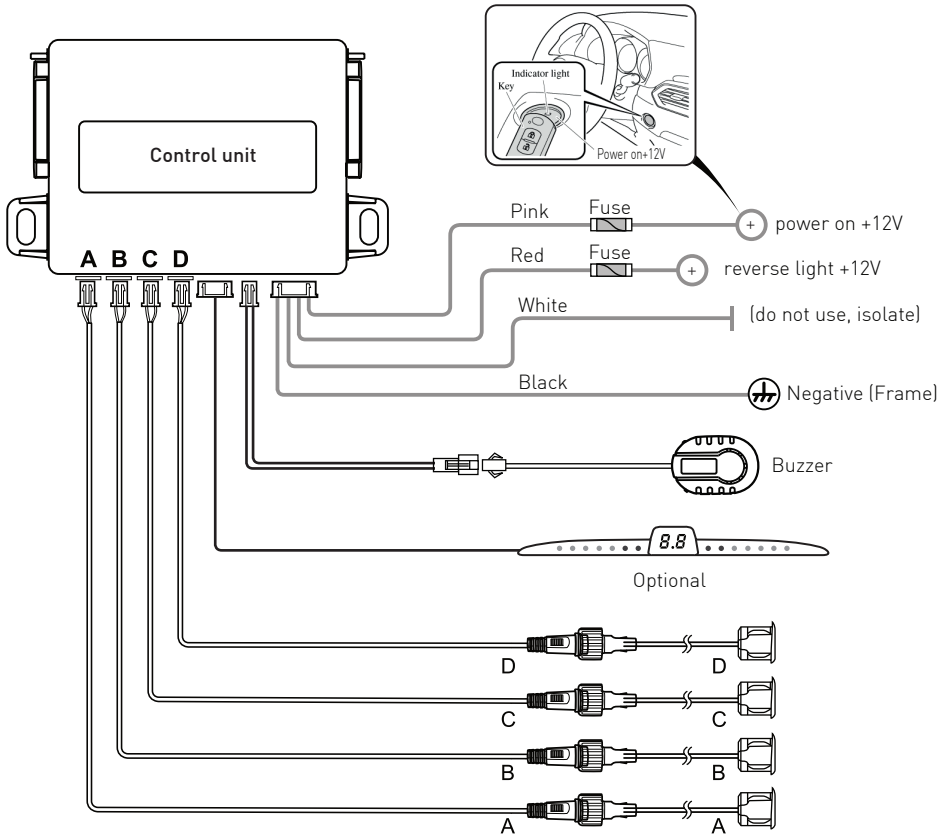
Recommended locations for installation some buzzers

Front connection diagram



Notes: Connect sensors A&D or B&C if used as a 2-sensor front system.

Wiring diagram (rear ECU) 2

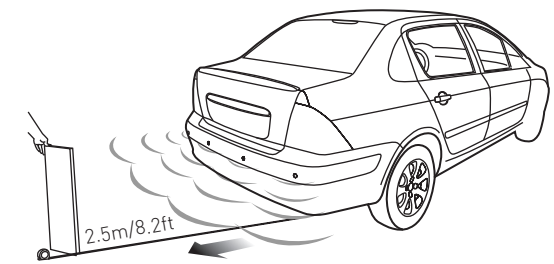


Notes: Notes: Connect sensors A&D or B&C if used as a 2 sensor rear system.

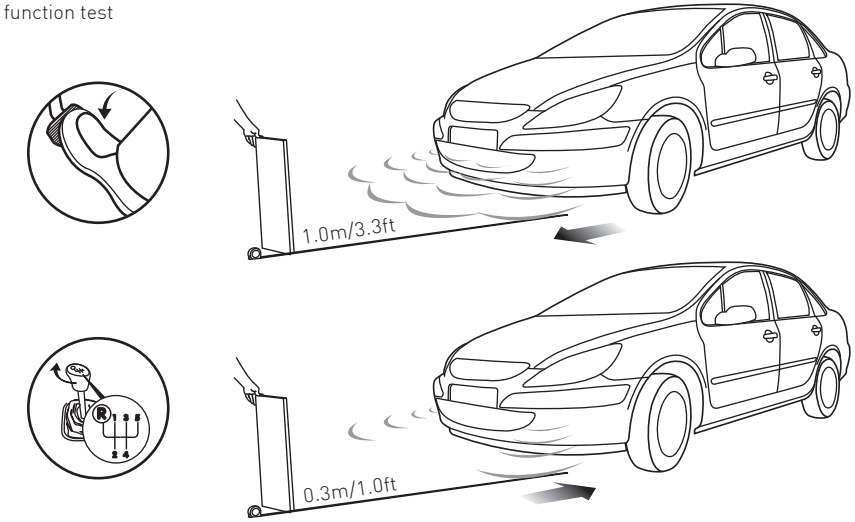
Function test

Function test is performed by holding a 0.3m x1.0m wooden board in front or rear of the vehicle and moving forward or backward to check the respective functions as per the manual.

Rear function test



Front function test



Troubleshooting

1. After installation the buzzer does not work

- Make sure the harnesses are secure.
- Make sure the car is turned on.
- Make sure reverse is engaged (reverse light should be on).

2. Damaged sensor detected

- Make sure all sensors are well connected to the ECU.
- Make sure the sensors are not covered in dirt or snow.
- Check if the sensor is damaged.

3. False alarms

- Make sure all sensors are well connected to the ECU.
- Make sure none of the sensors are detecting the ground.
- Make sure the rubber has not come off the sensor (if the sensor has a rubber)

4.Buzzer volume too high or too low

- Press the button and adjust the volume.

5. Self-learning function

- Damaged sensor(s).
  make sure that all sensors are well connected to the ECU.

6. If the problem persists.

- For the end user: contact the installer.

- For the installer:
  (A) check the device with a known working control unit.
  (B) Replace ECU and retest sensors.

Declaration of Conformity

CE

The complete Declaration of Conformity is available
at: GMA ITALIA s.r.l, V. Di Vittorio, 7/33 - 20017 - Rho (MI) Italy
and available on the website www.macrom.it
Made in China by
GMA ITALIA s.r.l, via G. Di Vittorio, 7/33 - 20017 - Rho (MI) Italy

Information to Users of Household Appliances

Pursuant to Legislative Decree No. 49 of 14 March 2014 "Implementation of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)". The crossed-out wheeled bin symbol shown on the equipment indicates that the product at the end of its useful life must be collected separately from other waste. The user must therefore deliver the equipment intact with essential components that has reached the end of its life to the appropriate differentiated collection centers for electronic and electrotechnical waste, or return it to the retailer at the time of purchase of new equipment of an equivalent type, on the basis of one to one, or 1 to zero for equipment with a longer side less than 25 CM. Adequate differentiated collection for the subsequent start-up of the equipment sent for environmentally compatible recycling, treatment and disposal helps to avoid possible negative effects on the environment and on health and promotes the recycling of the materials of which the equipment is made.

Illegal disposal of the product by the user involves the application of administrative sanctions pursuant to Legislative Decree no. Legislative Decree No. 49 of 14 March 2014.