*Think safety think Steelmate*

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PRI0000R/A

STEELMATE® Automotive

PTS411EX

# Dual-Purpose Parking Assist System (Front or Rear)



Manual

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# User Manual

## Important notice

Parking Assist System (PTS) helps to provide assistance when reversing and parking. Driving skills such as slowing down, use of mirrors are always essential.

1. This system is for vehicles with DC 9~27V only.
2. This system should be installed by a professional auto technician.
3. Route wiring harness away from heat source and electrical components.
4. It is strongly recommended to check the position of the sensors before the actual drilling of the holes.
5. Perform a functional test after installation.

## Disclaimer

The PTS is designed as a driver assistance device, and should not be used as a substitute for safe parking practices. The area into which the vehicle is to be reversed must be constantly monitored while parking.

The manufacturer and its distributors do not guarantee or assume liability for collisions or damages while reversing and braking the vehicle.

## About the product

The PTS411EX comes with 4-senor parking system that can be used as a front or rear ultrasonic distance monitoring device (Dual-purpose). It electronically detects the area in front or behind the vehicle while reversing and driving forward.
If the system detects an obstacle, it will have alerts with audible tones and visual warnings. It assists the driver when parking and in manoeuvring situation.

All the detachable sensors are waterproof and can be easily changed. Combined with the anti-interference and anti-false alert technology, the system can detect obstacles in any weather conditions and response quickly. The system has intelligent detection, which is ideal for vehicles with tow-bar or spare tire.

Each part of this system has passed the most stringent test before releasing to the market. It is reliable at a wide storage temperature range and becomes very useful when you are parking at a raining day, snowing day or at night etc. With the help of parking assist system, you can enjoy a comfortable, relaxed and safer parking experience.

## 2 or 4-sensor automatic recognition

The parking system can be used as a 2-sensor system when fitted on either the front or rear of vehicle. When using as a 2-sensor system make sure you connect the two sensor to either B&C port or A&D port on the ECU (please refer to page 28).

## Key features

- Dual-purpose parking assist system, can be used as a front or rear kit
- Can be used as a 2-sensor system (2 front or 2 rear)
- Buzzer can be upgraded with a visual display
- Self-testing function
- Anti-false alert technology
- Dual intelligent function together with learning function for vehicle with tow-bar, spare wheel or other protrusions



## Optional extension cable

When fitting this system on the front of a vehicle, we highly recommend purchasing a set of sensor cable extensions.
These extend the supplied 2.3m sensor cable by 2.3m making the sensor cables 4.6m long.

## Specifications

| | |
|---|---|
| Operating voltage: | DC 9~27V |
| Operating current: | <250mA |
| Buzzer SPL: | 80±10dB |
| **Operating temperature:** | |
| ECU: | -40°C~+80°C/ -40°F~+176°F |
| Buzzer: | -40°C~+80°C/ -40°F~+176°F |
| LED display: | -40°C~+80°C/ -40°F~+176°F |
| LCD display: | -20°C~+70°C/ -4°F~+158°F |
| **Storage temperature:** | |
| ECU: | -40°C~+85°C/ -40°F~+185°F |
| Buzzer: | -40°C~+85°C/ -40°F~+185°F |
| LED display: | -40°C~+85°C/ -40°F~+185°F |
| LCD display: | -30°C~+80°C/ -22°F~+176°F |
| **Detection range:** | |
| Front: | 0.30~0.99m/ 1.0~3.2ft |
| Rear: | 0.30~0.59m/ 1.0~1.9ft (reversing)<br>0.30~2.59m/ 1.0~8.5ft |

## Buzzer or optional Display

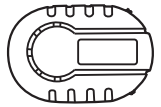
The system comes with a buzzer can be upgraded to display.

Below buzzer/display graphics are for reference only.
More displays are available for selection.

Tips: Some displays are with SET button, digital number distance indication and volume adjustable function.



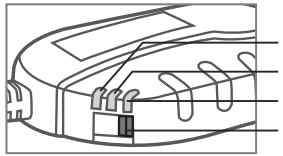

**Display (optional)**



**Buzzer**

## Buzzer volume and frequency adjustment

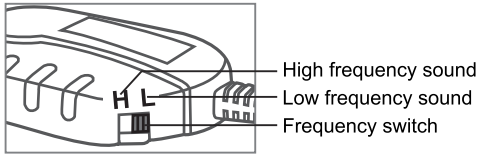
**Volume adjustment**




Frequency adjustment

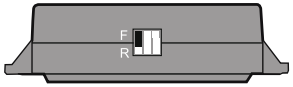
The buzzer sound frequency can be adjusted to High/ Low by turning the frequency switch.

*Tips: If front sensor system with buzzer installed together, recommended to use low frequency "L" sound alarm for rear system and high frequency "H" sound alarm for front system for distinguish 2 system alarms easily.*

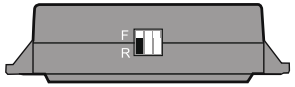



## Front or Rear system optional

The system can be used as a front or rear parking system. Please achieved by changing a jumper on the ECU before instalation.




Jumper position: "F"
The system is being as Front system

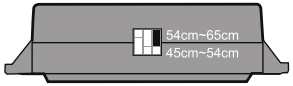



Jumper position: "R"
The system is being as Rear system

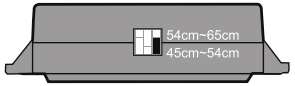


## Sensor installation height

The system can be changed the sensor installation height, please achieved by changing a jumper on the ECU before instalation.



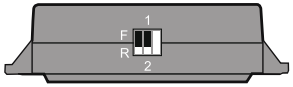

Jumper position: "54cm~65cm" (Default setting)
Recommended setting for sensor installation heights between 54cm~65cm from the ground



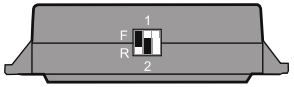

Jumper position: "45cm~54cm"
Recommended setting for sensor installation heights between 45cm~54cm from the ground.

## Activated by pressing foorbrake (Front system)

This function is being used as a front system (jumper position in “F”). The front system is activated by pressing the footbrake. When you press the footbrake and release it the system will continue to work.



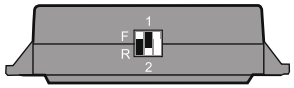

Jumper position: "1" (Default setting)
The system continues to work for 8 seconds
**Recommendation:** For Automatic



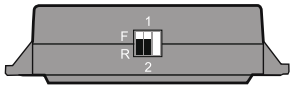

Jumper position: "2"
The system continues to work for 20 seconds
**Recommendation:** For Manual Cars

## Dual intelligent function for spare wheel (Rear system)

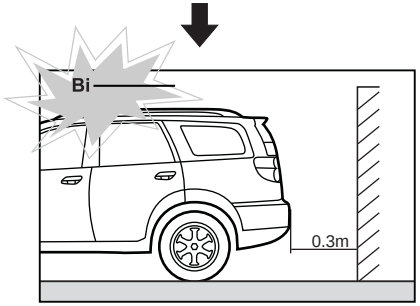
This function is being used as a rear system (jumper position in “R”).
When this function is ON, the detected distance will increase 20cm (from 30cm to 50cm) between the sensor and obstacle which is designed for the tow-bar or spare wheel.

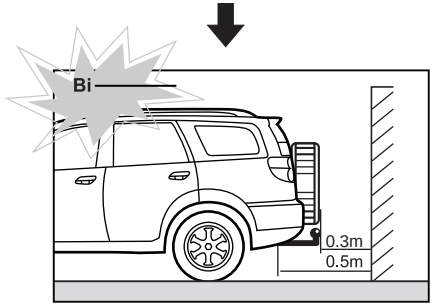



Jumper position: "1"
(Default setting)
Normal detected distance




Jumper position: "2"
The detected distance between the sensor head and the obstacle will be increased by 20cm




Note: The optional dispaly will still show a reading or 0.3m before -P when the jumper is in position 2.



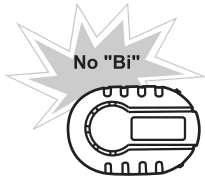
## Self-testing function

**For Front System:**
Once ACC on, the system will test all front sensor automotically.
If all sensor are working properly, the buzzer will not have alert.
If a damaged or defective sensor is detected, then then system will “Bi” 3 times for alarm.

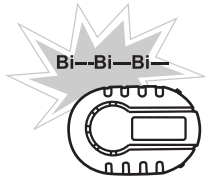
**After self-testing function**, the system will continue working for 8 seconds (jumper position “1” in ECU) or 20 seconds (jumper position “2” in ECU) when the vehicle is moving closer or away from the obstacle.

For buzzer

All sensors are working property




Damaged or defective sensor is detected.




Notes:
- Once sensor(s) is (are) damaged or defective, the buzzer will “Bi” for 3 times to indicate the sensor(s) is (are) damaged or defective.
- The system will not alarm when sensors (A&D), (B&C) are damaged/ defective as it will work as 2-sensor front system automatically.

**For Rear System:**

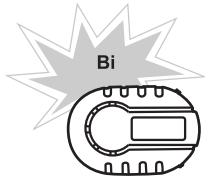
When reverse gear is selected, the system will test all rear sensor automatically.

If all sensor are working properly, the buzzer will "Bi" once.

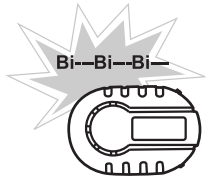
If a damaged or defective sensor is detected, then then system will “Bi” 3 times for alarm.

For buzzer

All sensors are working property




Damaged or defective sensor is detected.




Notes:

- Once sensor(s) is (are) damaged or defective, the buzzer will “Bi” for 3 times to indicate the sensor(s) is (are) damaged or defective.
- The system will not alarm when sensors (A&D), (B&C) are damaged/ defective as it will work as 2-sensor front system automatically.



## Learning function

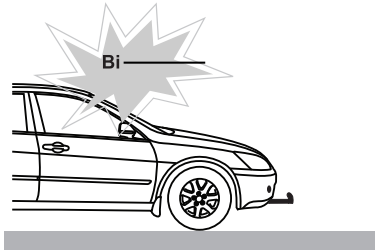
### Learning function for cars with nudge bars or other protrusions (Front system)

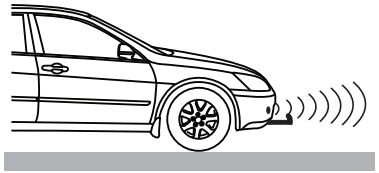
Please find a no obstacle place to activate this function.

1. With the ignition “ON”, press and release the foorbrake 10 times with 1 second intervals.
2. On the 10th times, hold the footbrake down , the buzzer will "Bi" once after 5 seconds, then has a long "Bi" sound for 2 seconds after 3 seconds to complete the learning process.

Clear the learning function:

1. With the ignition “ON”, press and release the foorbrake 12 times with 1 second intervals.
2. On the 12th times, hold the footbrake down, the buzzer will "Bi" once after 5 seconds, then "Bi" once again after 3 seconds to complete the clearing process.



Note:

- This function is valid and acievable only if all sensors are working properly.
- The above procedure must be carried out with 3 minutes of the ignition being switched on. If the ignition has been on for over 3 minutes turn the ignition off and back on again.
- If you make a mistake while carrying out the above procedure, release the footbrake for 3 seocnds to clear the system memory and then start the procedure again.
- If the vehicle does not have nudge bars or other protrusions, you do not need to use this function.
- Perform a functional test after learning function is set.

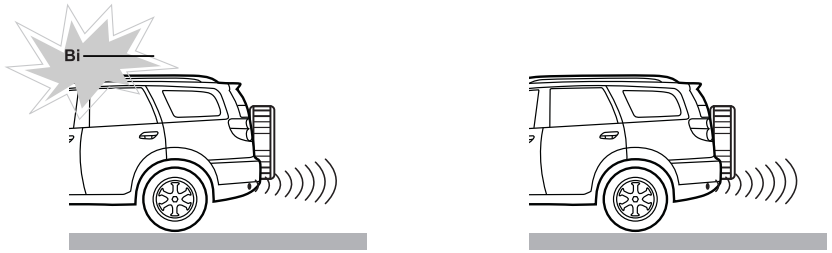
## Learning function for cars with tow-bar or spare wheel (Rear system)

Please find a no obstacle place to activate this function.

1. With the ignition “ON”, change the gear from “N” to “R” for 10 times (each gear change must bewithin 1 second).
2. On the 10th times,leave the gear in “R” position, the buzzer will "Bi" once after 2 seconds, then has a long "Bi" sound for 2 seconds after 3 seconds to complete the learning process.
3. When the learning function is activated, the system will ignore the tow-bar or spare wheel and only detect behind the vehicle.

Clear the learning function:

1. With the ignition “ON”, change the gear from “N” to “R” for 12 times (each gear change must be within 1 second).
2. On the 12th times, leave the gear in “R” position , the buzzer will "Bi" once after 2 seconds, then "Bi" once again after 2 seconds to complete the clearing process.





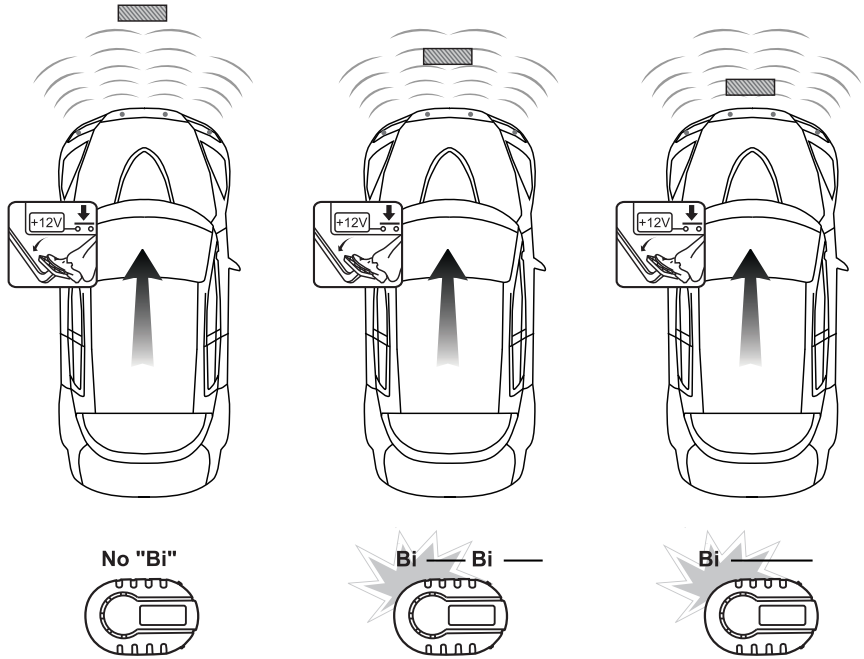

Note:

- This function is valid and acievable only if all sensors are working properly.
- If you make a mistake while carrying out the above procedure, leave the gear in “R” position for 2 seocnds to clear the system memory and then start the procedure again.
- If the vehicle does not have tow-bar or spare wheel, you do not need to use this function.
- Perform a functional test after learning function is set.



## How does the system work (Front system)

**Driving forward, press footbrake**



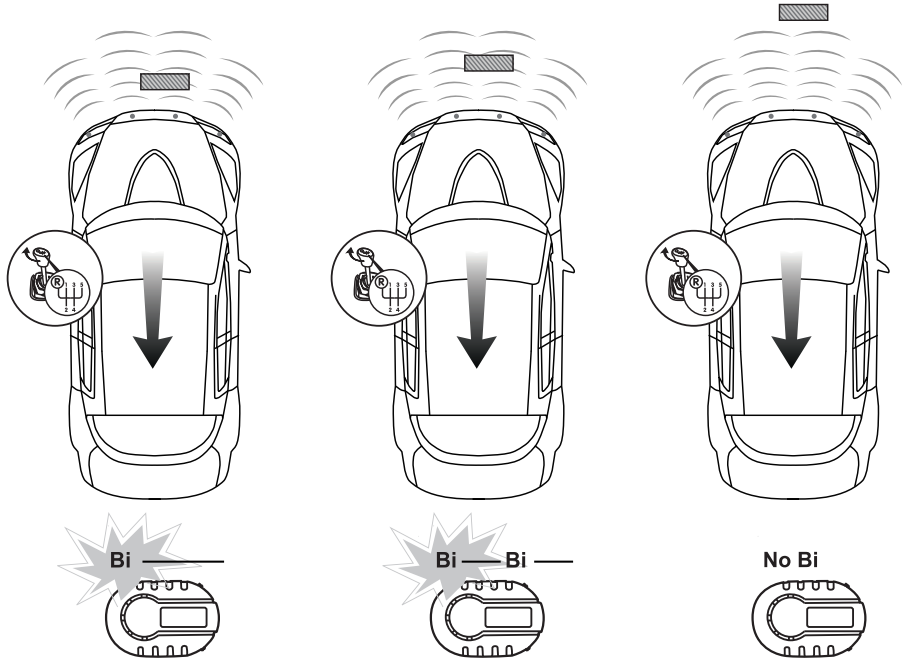

Distance: >1.0m/ 3.3ft

Distance: 0.6m/ 2.0ft

Distance: <0.3m/ 1.0ft

Note: The max. detection range of outside sensors (A&D) sensors are 0.69m/ 2.3ft.
The max. detection range of central sensors (B&C) sensors are 0.89m/ 2.9ft.

**Reversing**




Distance: <0.3m/ 1.0ft

Distance: 0.4m/ 1.3ft

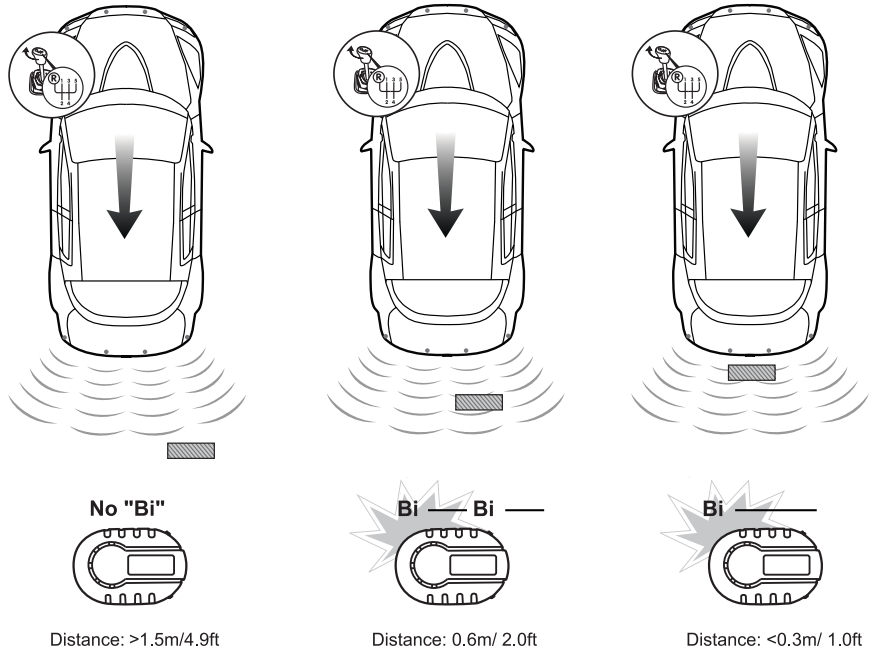
Distance: >0.7m/ 2.3ft

Note: The max. detection range of outside sensors (A&D) sensors are 0.69m/ 2.3ft.
The max. detection range of central sensors (B&C) sensors are 0.59m/ 1.9ft.



## How does the system work (Rear system)

**Reversing**




Distance: >1.5m/4.9ft

Distance: 0.6m/ 2.0ft

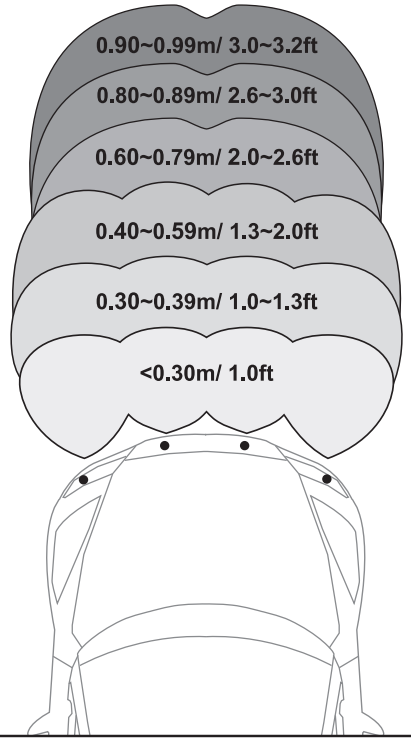
Distance: <0.3m/ 1.0ft

Note: The max. detection range of outside sensors (A&D) sensors are 0.99m/ 3.2ft.
The max. detection range of central sensors (B&C) sensors are 1.49m/ 4.9ft.

## Different scenarios for system with buzzer (Front system)

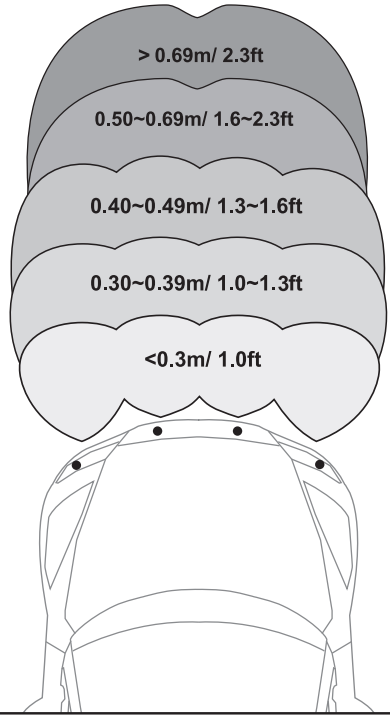
**Braking:**

| Buzzer | |
|---|---|
| No Bi | |
| Bi---Bi--- | |
| Bi---Bi--- | |
| Bi--Bi– | |
| Bi--Bi–Bi–Bi– | |
| Bi-------- | |

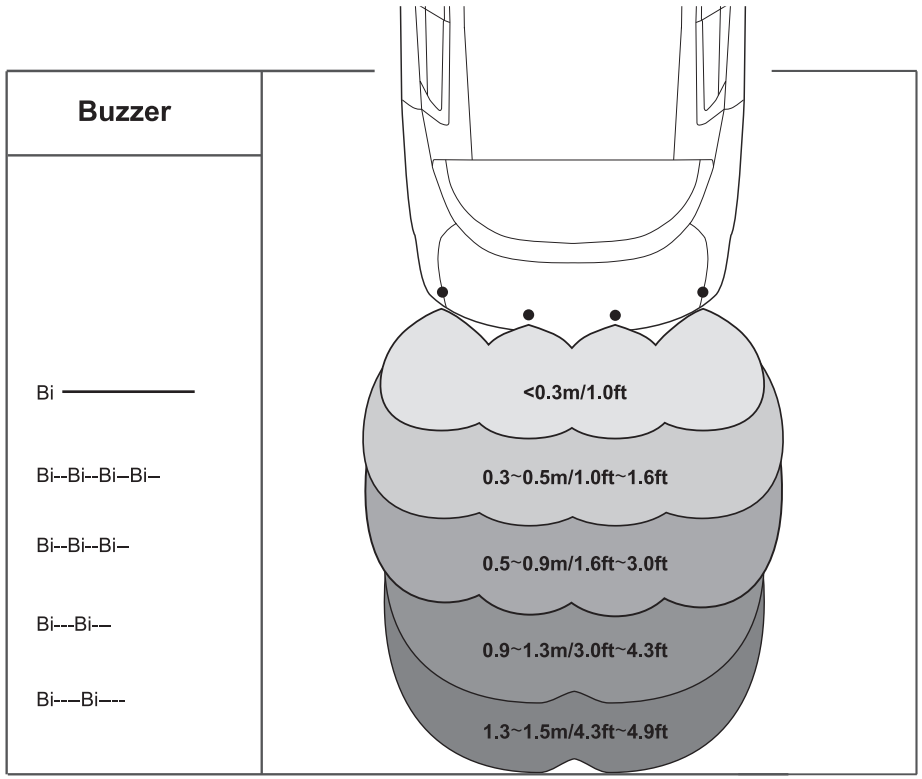



**Reversing:**

| Buzzer | |
|---|---|
| No Bi | |
| Bi---Bi--- | |
| Bi--Bi--Bi– | |
| Bi--Bi--Bi–Bi– | |
| Bi-------- | |



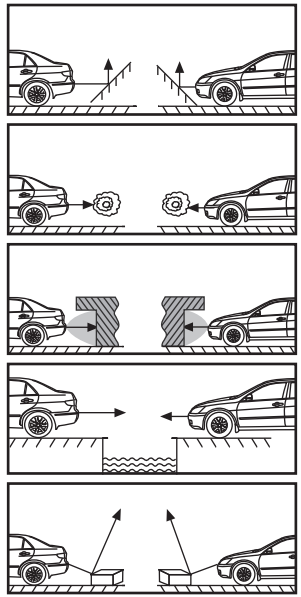
## Different scenarios for system with buzzer (Rear system)





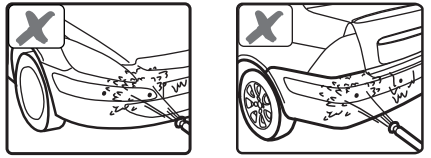

## Attention

False detection may occur in the following situations:

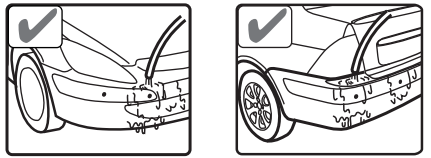


- After installation, please perform a functional test before use
- Heavy rain, dirty or damaged sensors may cause in false alarm occasionally
- Ensure that the self-testing procedure is completed and all sensors are are function properly before using the system

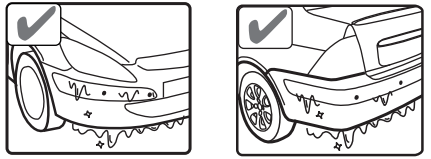
## Sensor maintenance



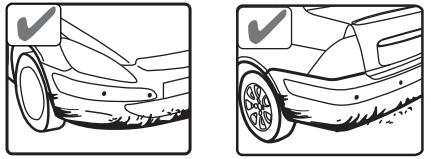
Do not wash the sensor with a pressure washer or scrub them forcibly.



Please wash car with low-pressure spray.



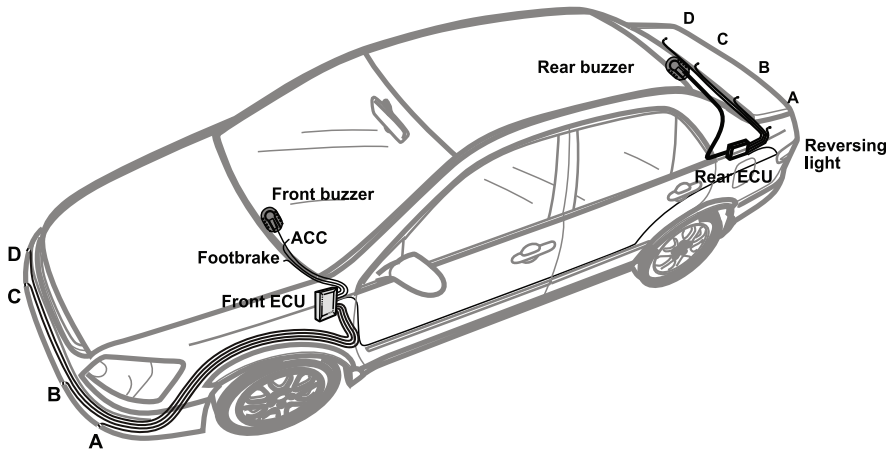
Please melt the snow with water when the sensors are covered.



Please clean the sensors with cloth or low-pressure spray when the sensors are covered by dirt.

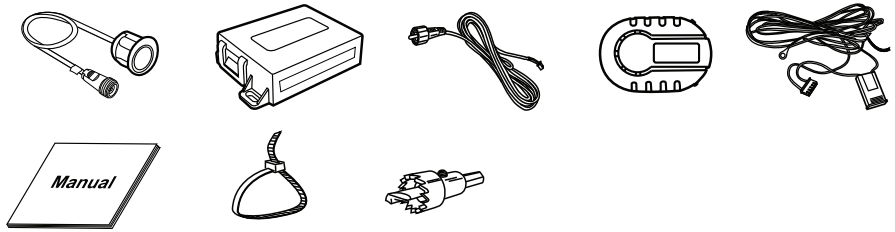
## Installation Manual

## Brief installation diagram



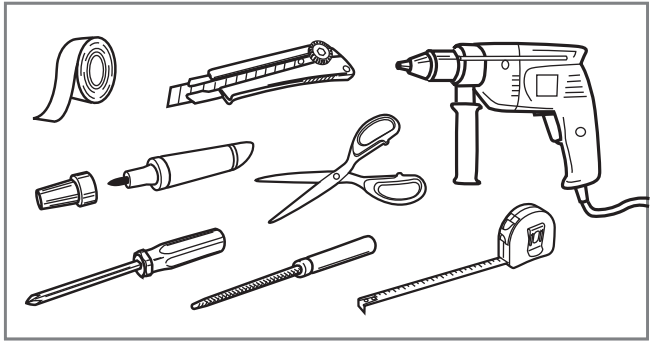



## Includes




※ The above graphics are for reference only.

## Installation tools

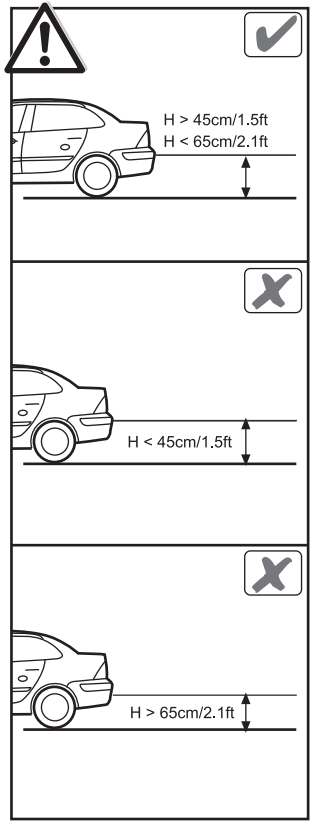


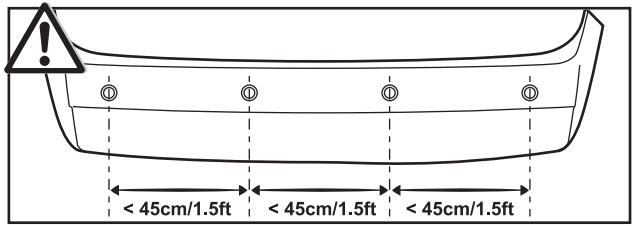


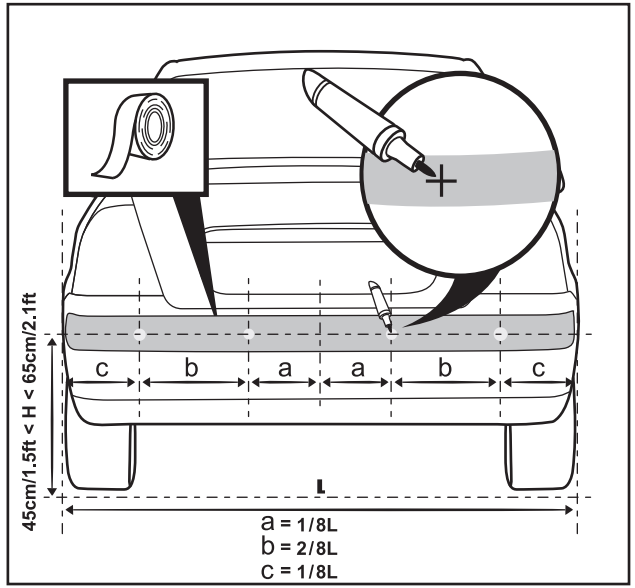
60' ~ 80'

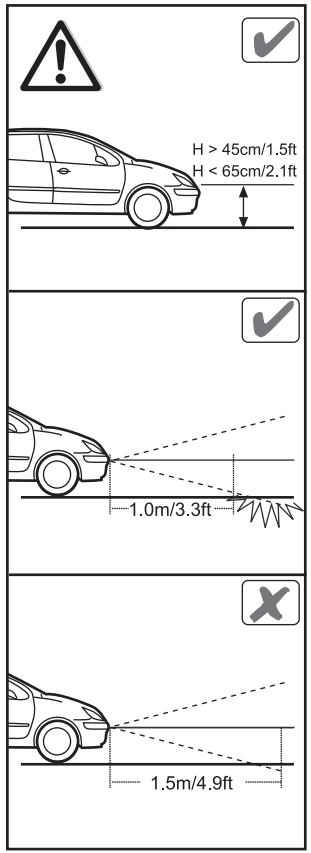
## Sensor installation

**1** The sensor head angle can be changed to compensate for angled bumpers. Please see the instructions overleaf.

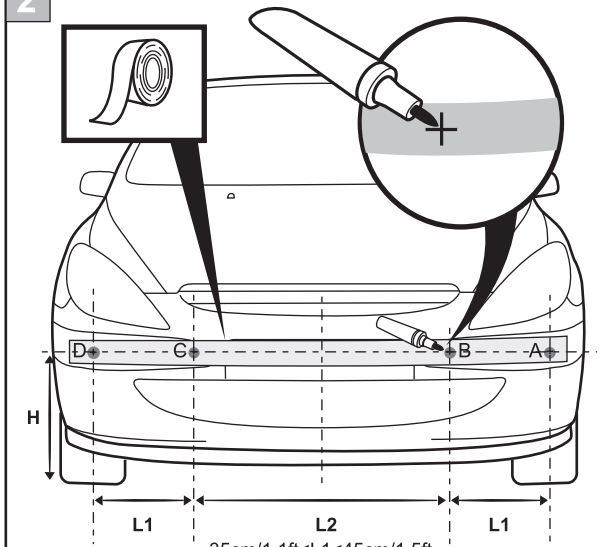



**2**



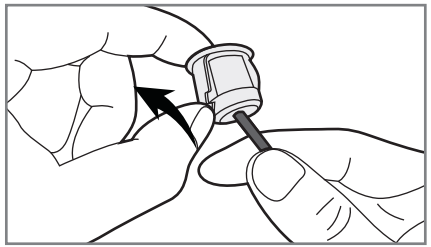

35cm/1.1ft<L1<45cm/1.5ft
45cm/1.5ft<L2<55cm/1.8ft
45cm/1.5ft<H<65cm/2.1ft

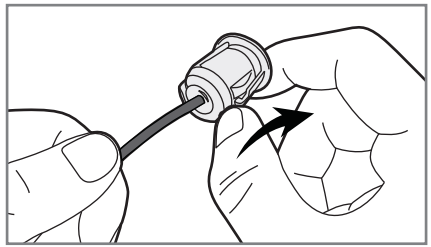
Notes:

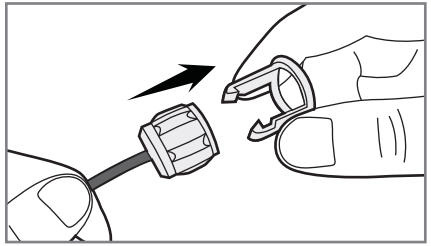
1. For 2-sensor front sensor system, recommended to install 2 sensors on position E&H for the best performance.
2. On some vehicles, due to the number plates location or bumper design, the distance between the centre of two sensors (L2) will be greater, i.e. L2>60cm. The kit will still function, however the detection of narrow objects i.e. posts will be reduced.

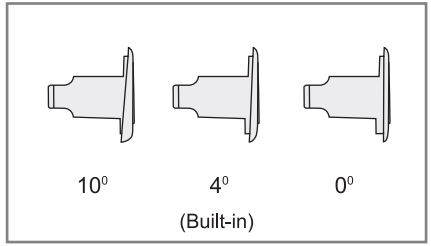
## 3

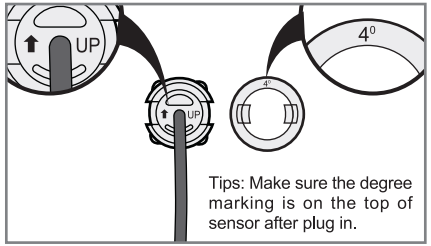
Change of sensor cover.



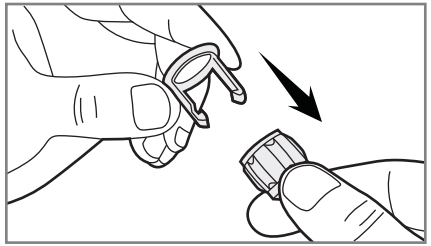






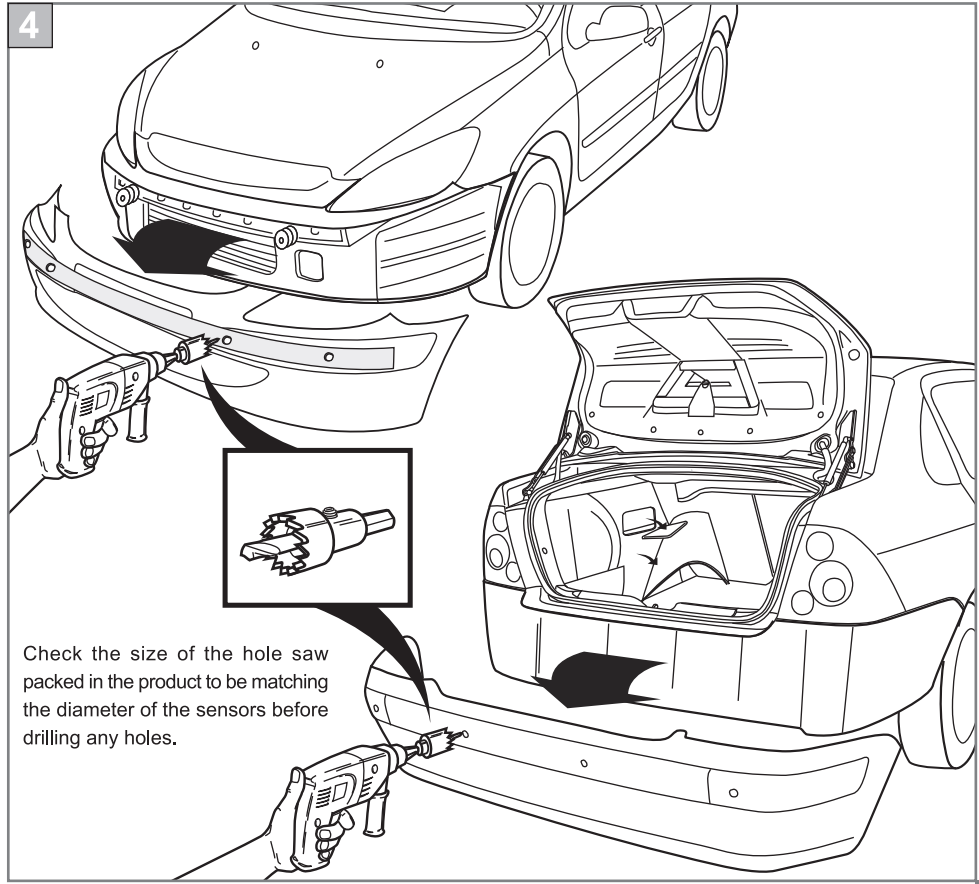




Tips: Make sure the degree marking is on the top of sensor after plug in.



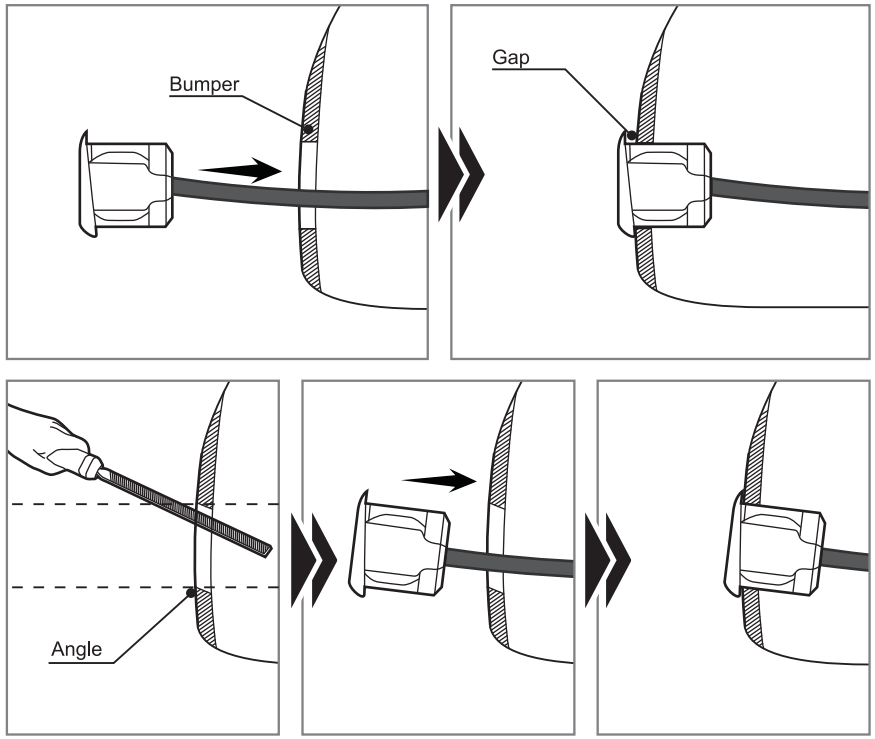


## 4

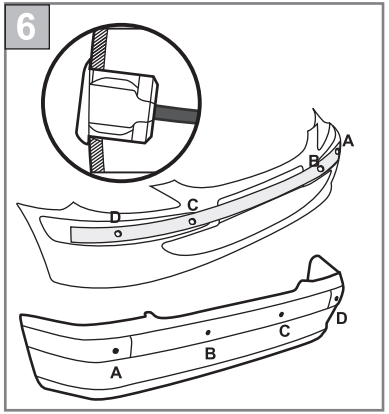


Check the size of the hole saw packed in the product to be matching the diameter of the sensors before drilling any holes.

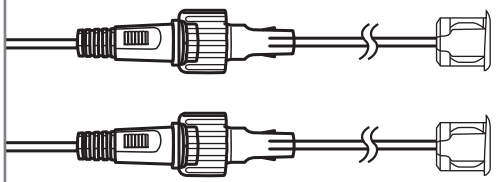
**5** Hint: If a gap found between bumper and 10° sensor cover after installation, please adjust the angle of the hole shown as below.



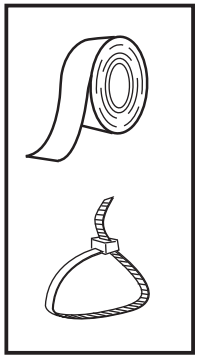

**6**

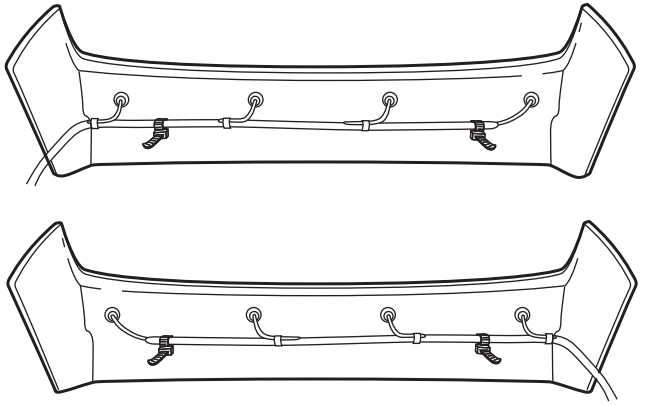



**7**

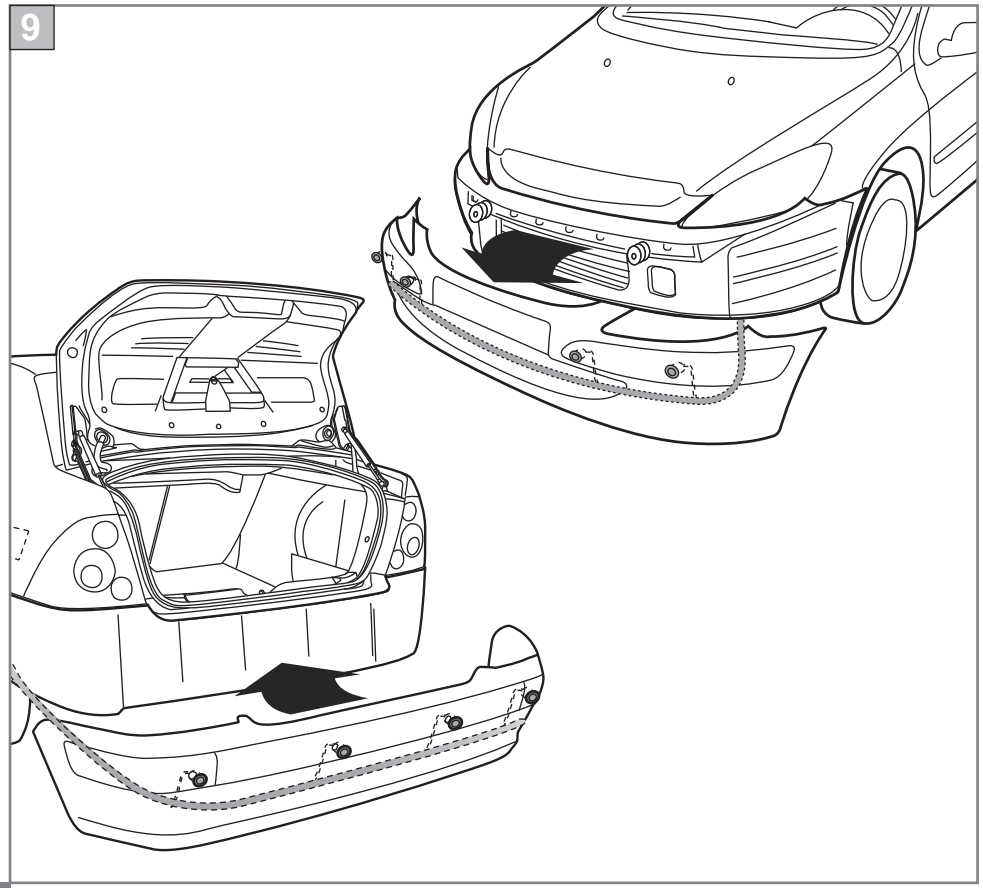


**8**





9

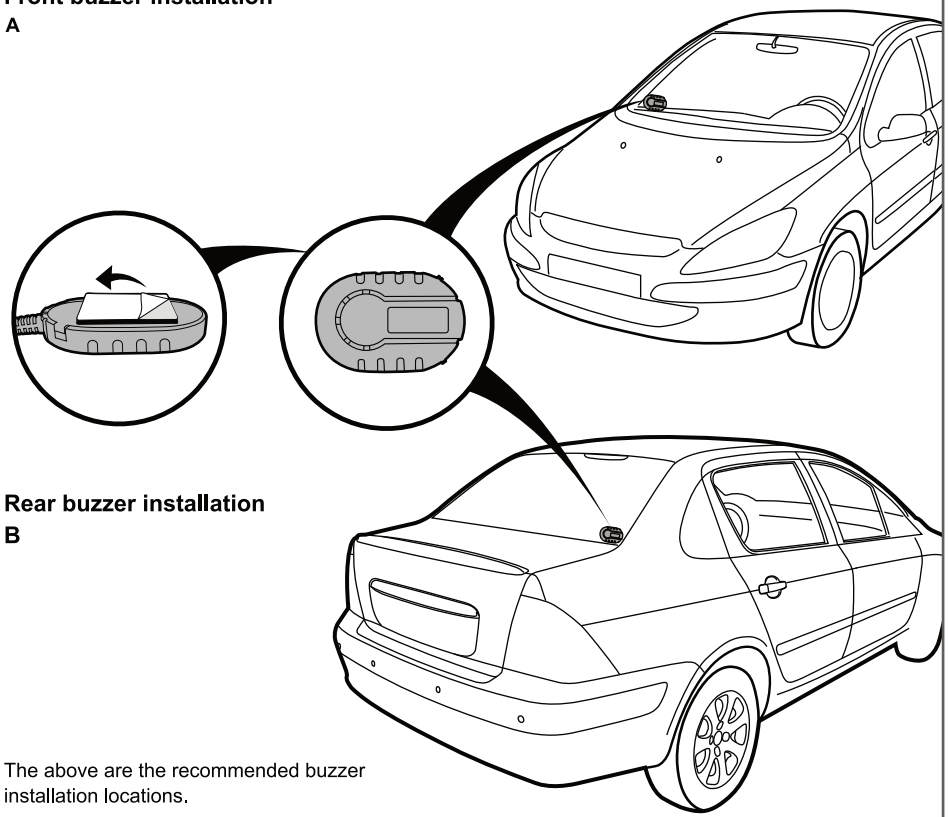




## Buzzer installation

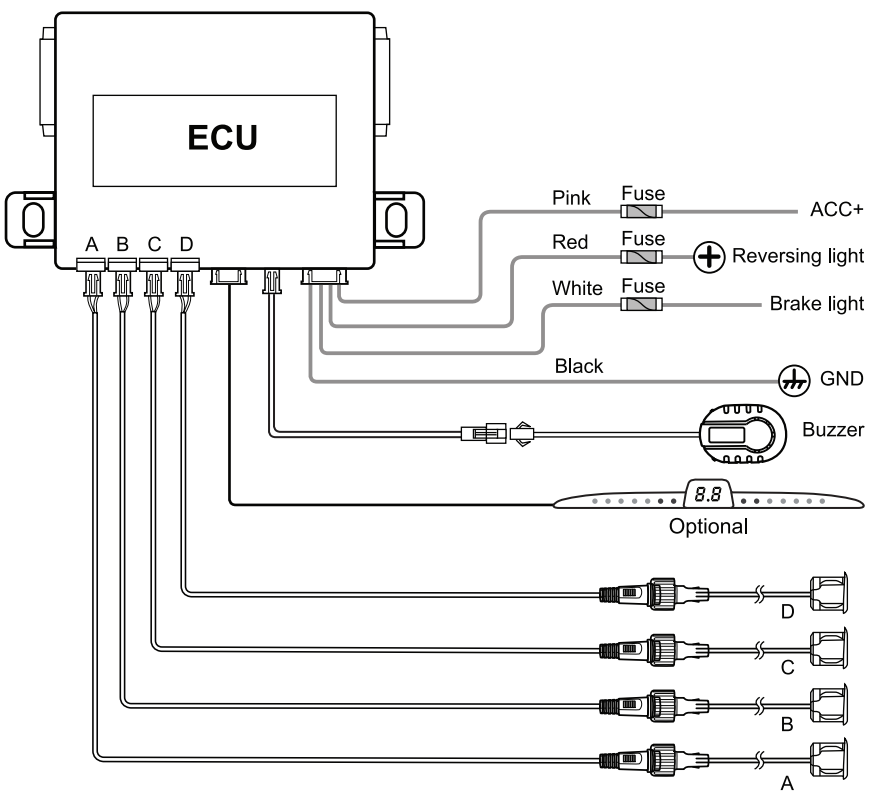
**Front buzzer installation**
**A**

**Rear buzzer installation**
**B**



The above are the recommended buzzer installation locations.

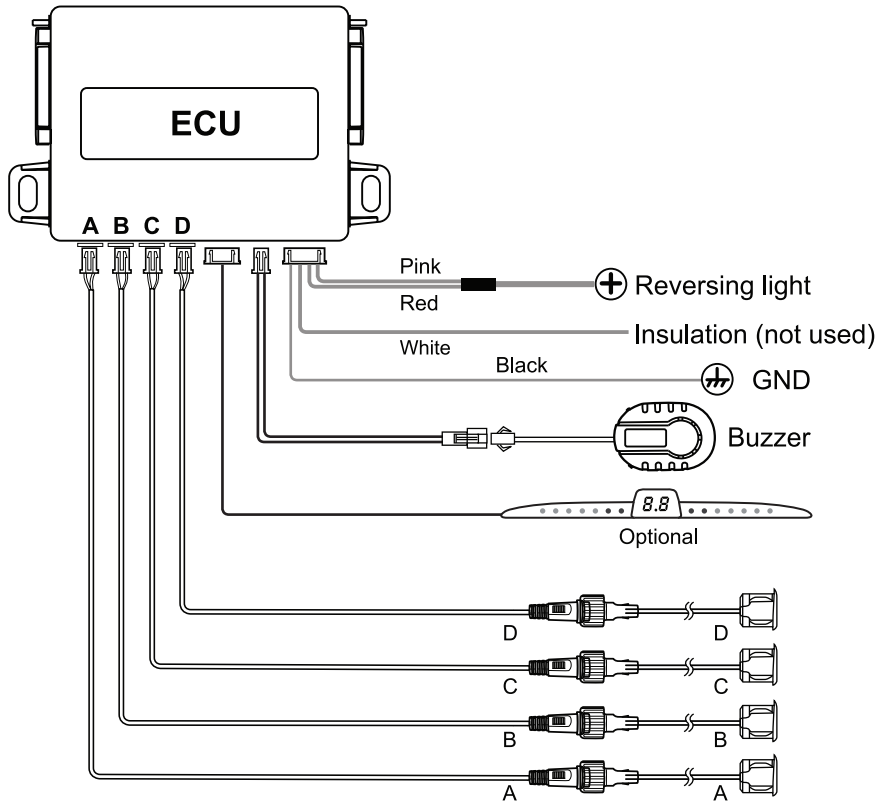
## Wiring diagram (Front ECU)




Note: Connected A&D or B&C sensors to be as front 2-sensor system

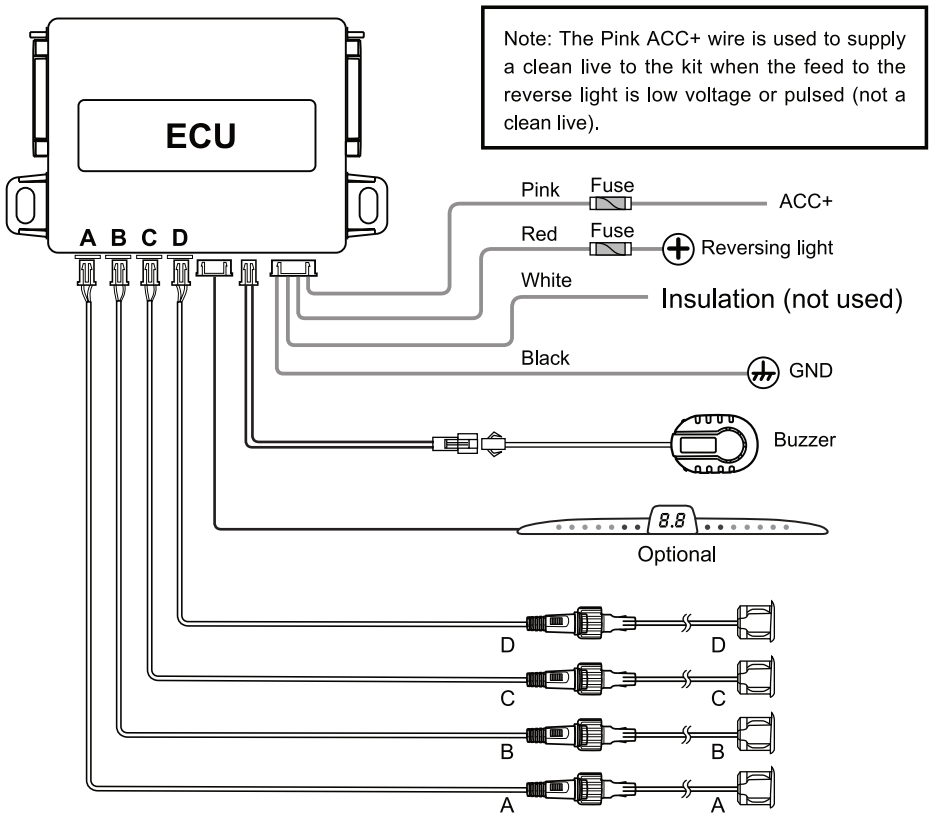


## Wiring diagram (Rear ECU) 1




Note: Connected A&D or B&C sensors to be as rear 2-sensor system

## Wiring diagram (Rear ECU) 2

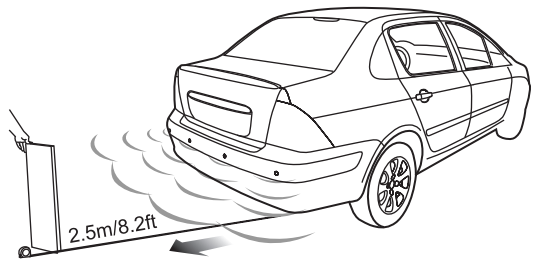



Note: Connected A&D or B&C sensors to be as rear 2-sensor system

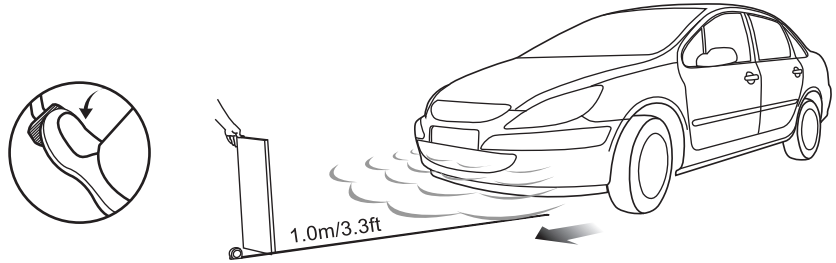


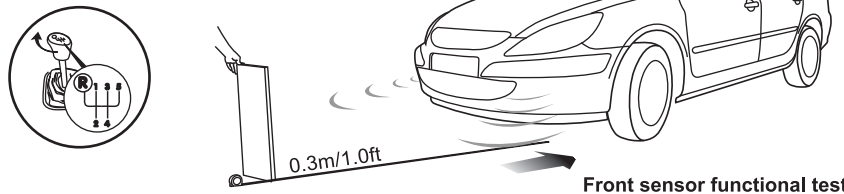
## Functional test

Functional testing is performed by holding a wooden board (0.3 x1.0m/1x3.3ft) standing at the front or rear of the car, and drive the car forward and backward to test each function respectively as shown in this manual.




**Rear sensor functional test**




**Front sensor functional test**

## Troubleshooting

**1. After installation, the buzzer doesn't work.**

- Make sure the wires connected properly
- Make sure the vehicle is ACC ON
- Make sure the reverse gear is selected (the reversing light should be lighted on)

**2. Damaged sensor detected**

- Make sure ALL sensors plugged into the ECU correctly and tightly
- Make sure no snow or dirt covered on the sensor
- Please check the sensor is damaged or not

**3. False alarm**

- Make sure ALL sensors plugged into the ECU in the correct position tightly
- Please check if any of sensors detected the ground
- Please check if the rubber ring of the sensor came out (if sensor comes with rubber ring)

**4. Buzzer alarm sound is too low or too high**

- Press volume button to adjust the volume to a suitable level.

**5. Learning function is invalid**

- Sensor(s) is/are damaged
- Make sure ALL sensors plugged into the ECU correctly and tightly

**6. If the problem persists, please follow below.**

- For consumer: Please contact the nearby dealer or customer service center
- For installer/dealers:

a. Test the sensors with a certified ECU by performing a functional test.

b. Replace another ECU and retest the sensors
Plug the certified sensors into the ECU and performing a functional test again
Please email us at customerservice@steel-mate.com about the problems with details