

Think safety think Steelmate



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PRI0821R/A

STEELMATE®
Automotive

PTS810 Series

Parking assist system

Manual



Contents

User Manual

Important notice	02
Disclaimer	02
About the product	02
Key features	03
Specifications	03
Buzzer or optional display	04
Buzzer volume and frequency adjustment	04
Moving object detection (optional)	04
Self-testing function	05
Front ECU functions	06
Rear ECU functions	07
How does the system work	11
Attention	15
Sensor maintenance	15

Installation Manual

Brief installation diagram	17
Includes	18
Installation tools	18
Sensor installation	19
Buzzer installation	26
Wiring diagram (Front ECU)	27
Wiring diagram (Rear ECU) 1	30
Wiring diagram (Rear ECU) 2	31
Functional test	32
Troubleshooting	33

User Manual

Important notice

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

1. This system is for vehicles with 12V DC 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. (page 33).

Disclaimer

The PAS 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 visually monitored while parking.

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

About the product

This PAS comes with 8 sensors and 2 buzzer (or 2 displays) that is an ultrasonic detects the area behind the vehicle while reversing, and alerts with audible tones and/ or optional visual display, if the system detects an obstacle.

If the display comes with the digital numbers, the system will accurately show the distance to the obstacle.

With features of dual intelligent and learning function, this system is good for vehicle with tow-bar or spare wheels.

The various optional displays available are suitable for dash, interior mirror or rear roof mounting. When the display is mounted on the rear roof, it can be easily viewed from the interior mirror.

Key features

- 8-sensor system, complete front and rear vehicle protection
- Can be change to be 6-sensor system (2 front +4 rear)
- Adjustable sensitivity
- Buzzer with volume & frequency adjustable included
- Can be upgraded with display
- 2 control units designed for luxury vehicles
- Dual-intelligent detection, compatible with spare wheel or metal bar

Specifications

Operating voltage:	9~16V DC
Operating current:	Front: <250mA Rear: <200mA
Detection range	Front: 0.3~0.9cm/1.0~3.0ft Rear: 0.3~2.5cm/1.0~8.2ft
Buzzer SPL	Low frequency: 80±10dB High frequency: 90±10dB
ECU:	
Operating temp:	-40°C~+80°C/-40°F~+176°F
Storage temp:	-40°C~+85°C/-40°F~+185°F
LED:	
Operating temp:	-40°C~+80°C/-40°F~+176°F
Storage temp:	-40°C~+85°C/-40°F~+185°F
Buzzer:	
Operating temp:	-40°C~+80°C/-40°F~+176°F
Storage temp:	-40°C~+85°C/-40°F~+185°F

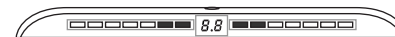
Buzzer or optional Display

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

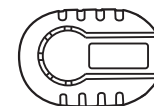
Below buzzer/display graphics are for reference only.

More displays are available for selection.

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



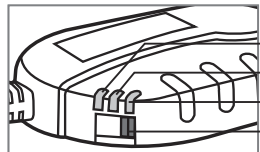
Display (optional)



Buzzer

Buzzer volume and frequency adjustment

Volume adjustment

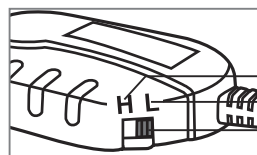


Low volume
Medium volume
High volume
Volume switch

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.



High frequency sound
Low frequency sound
Frequency switch

Moving object detection (optional)

This function will be achieved when the pink wire is connected to ACC+ (refer to page 31 "wiring diagram 2").

Once ACC is on, the system will work automatically for checking any obstacle at the back for 30 seconds. If the obstacle is detected and.

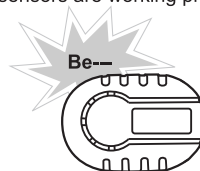
1. Doesn't move, the system will alarm immediately. The audio warning will stop and display will turn off after 5 seconds.
2. Is moving, the system will keep alarm for 30 seconds.
3. This function will stop completely after 30 seconds.

Self-testing function

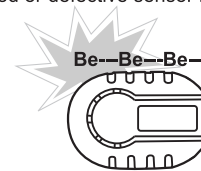
1. When ACC ON the front system will test all front sensors automatically.
2. When reverse gear is selected, the system will test all rear sensors automatically.
If all sensors are working properly, the buzzer/display will beep once for indication.
If a damaged or defective sensor is detected, then the system will beep 3 times for alarm.

For buzzer

All sensors are working property

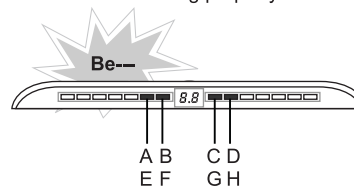


Damaged or defective sensor is detected.

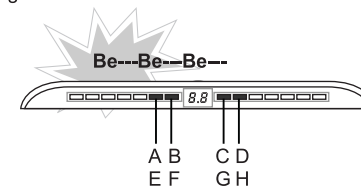


For display

All sensors are working property



Damaged or defective sensor is detected.



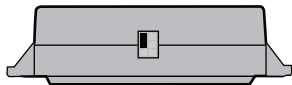
Note:

- Beep 3 times for alarm.
- Other proper sensors will keep working after the alarm.
- No. of sensor damaged/defective (E1~E4) will be shown on the display together with the corresponding LED lights on for showing which sensor(s) is(are) damaged/defective.
- For E2: The system will not alarm when sensors (A&D), (F&G), or (E&H) are damaged/defective as it will work as 2-sensor system automatically.

Front ECU functions

Activated by pressing footbrake

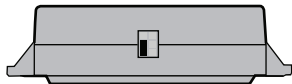
The system is activated by pressing the footbrake. When you press the footbrake and release it, the system will continue to work for some time.



In "5 s" position (Default setting)

The system continue to work for 5 seconds

Recommendation: For Automatic



In "20 s" position

The system continue to work for 20 seconds

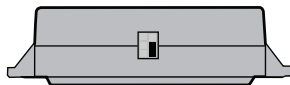
Recommendation: For Manual Cars

Sensor sensitivity adjustment



In "55~65cm" position (Default setting)

- Normal sensor sensitivity
- Recommended for the sensor which installed between 55~65cm from ground.

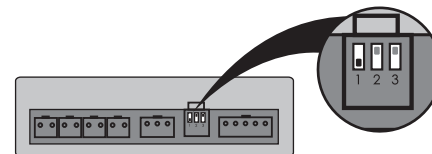


In "45~54cm" position

- Low sensor sensitivity
- Recommended for the sensor which installed between 45~54cm from ground.

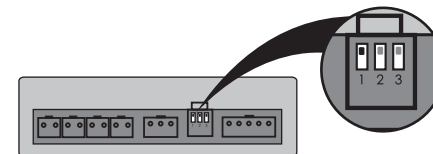
Rear ECU functions

Sensor sensitivity adjustment (Switch 1 on rear ECU)



Switch 1 in the "ON" position

- Normal sensor sensitivity.
- Recommended for the sensor which installed higher than 50cm from ground.



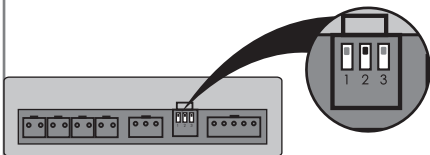
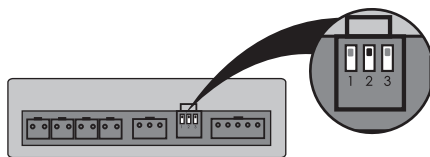
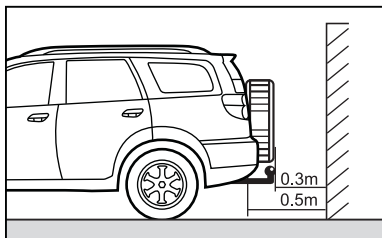
Switch 1 in the "OFF" position

- Low sensor sensitivity.
- Recommended for the sensor which installed between 45~50cm from ground.

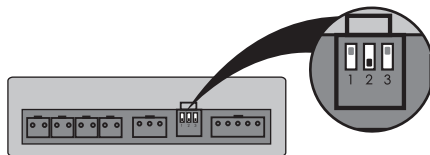
Tips: the default setting for the switch 1 is in "ON" position.

Dual intelligent function (Switch 2 on rear ECU)

When this function is ON, the detected distance will increase 20cm between the sensor and obstacle which is designed for the vehicle with tow-bar/spare wheel.



Switch 2 in the "OFF" position
Normal detected distance

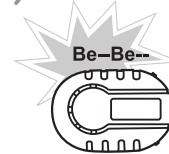
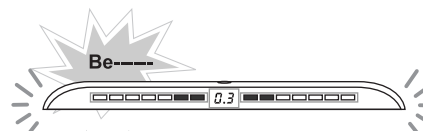
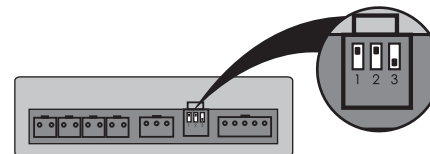


Switch 2 in the "ON" position
The detected distance from sensor to obstacle should be increased 20cm.

Tips: the default setting for the switch 2 is in "OFF" position.

Learning function for cars with tow-bars or spare wheels (rear ECU)

Method 1: by turning switch 3 on ECU



The system may have a false alarm due to vehicle with tow-bar / spare wheel / other stuff nearby rear sensors when it is located without obstacle and Reserve "R" gear selected. When learning function is ON, the system will ignore the tow-bar / spare wheel / other stuff nearby rear sensors in detection.

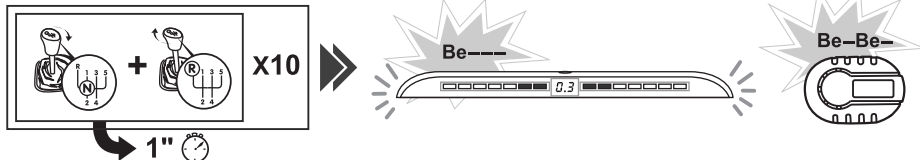
1. With the system powered off, turning the switch 3 to the "ON" position.
2. Turn the ignition/ACC on and select "R" gear.
3. Around 3 seconds, the buzzer / display will beep once to indicate that the system has entered into the learning mode.
4. After 2 seconds, the buzzer / display will beep twice to indicate the learning process has been completed.
5. Select Neutral "N" gear and turn switch 3 back to the "OFF" position to complete the learning function.

Clearing the learning function:

1. With the system powered off, turning the switch 3 to the "ON" position.
2. Turn the ignition/ACC on and select "R" gear.
3. Leave the vehicle in "R" gear for around 10 seconds (the system is in the learning function at the same time).
4. Until the buzzer/display sends out one long beep sound for 2 seconds to indicate the learning function has been cleared.
5. Select "N" gear and turn switch 3 back to the "OFF" to complete the clearing the learning function.

Tips: the default setting for the switch 3 is in "OFF" position.

Method 2: by selecting gear position

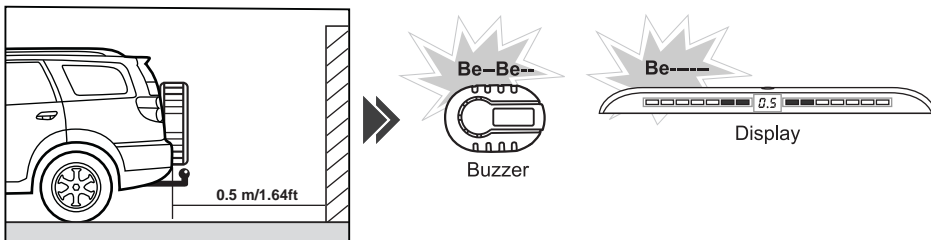


1. With the ignition ON, change the gear from "N" to "R" for 10 times (Each gear change must be within 1 second).
2. After 10th times, leave the gear in "R" position.
3. After 2 seconds the buzzer/display will beep once, another 2 seconds the buzzer/display will beep twice to complete the learning process.

Clearing 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), and the buzzer / display will not chirp.
2. Leave the gear in "R" position, the buzzer/display will beep once, after 5 seconds the buzzer/display will beep twice to indicate that the learning function is cleared successfully and the system is reset.

Tips: if miscarrying in the above learning procedures, leave vehicle in "R" position for 2 seconds to clear the system memory and the start the above learning procedure again.



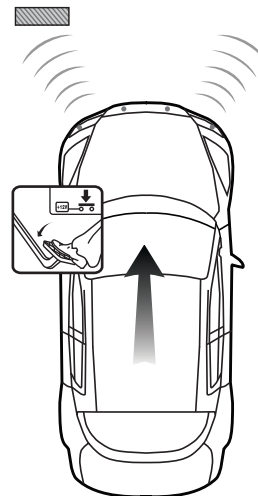
Functional test after learning function is set.

How does the system work

Driving forward (6 sensors)

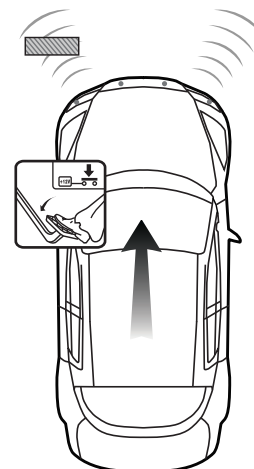
No beep

Distance: 1.3m/4.3ft



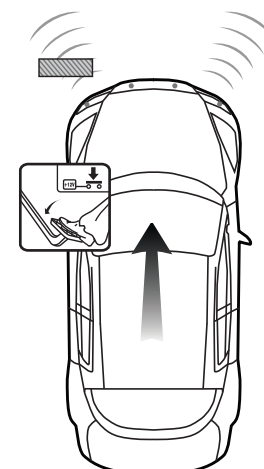
Be --- Be ---

Distance: 0.5m/1.6ft

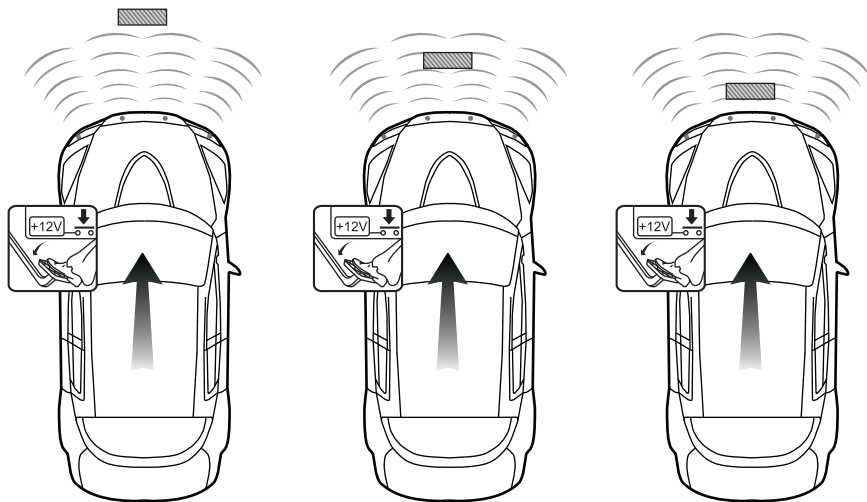


Be -----

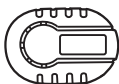
Distance: (<0.30m/1.0ft)



Driving forward (8 sensors)

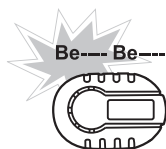


No beep



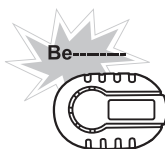
Distance: >0.9m/3.0ft

Be--- Be---



Distance: 0.6m/2.0ft

Be-----



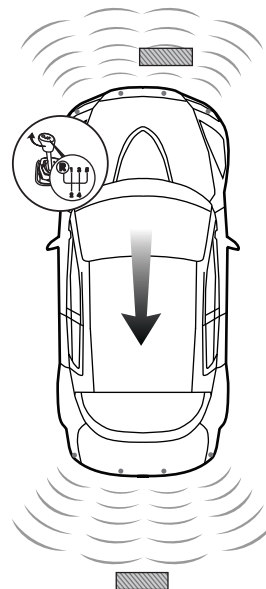
Distance: <0.3m/1.0ft

Note: The front system will keep working for 5 seconds after the footbrake is released.

Reversing

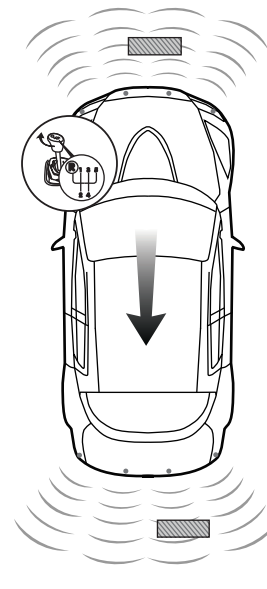
Be-----

Distance: <0.3m/1.0ft



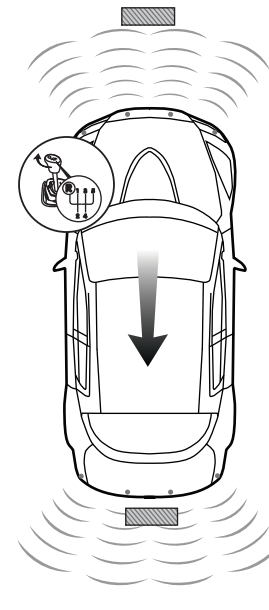
Be--Be--Be--

Distance: 0.5m/1.6ft



No beep

Distance: 1.1m/3.6ft



No beep

Distance: Buzzer distance: >1.5m/4.9ft

Display distance: >2.0m/6.6ft

Be--Be--Be--Be--

Distance: 0.8m/2.6ft

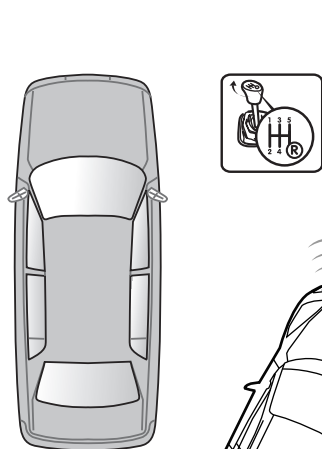
Be-----

Distance: <0.3m/1.0ft

Zigzag reversing

Be--Be--Be--

Distance: 0.4m/1.3ft

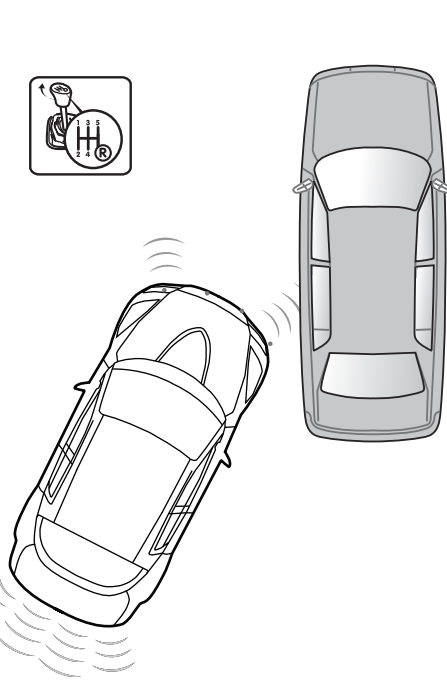


Be--Be--Be--

Distance: 0.6m/2.0ft

Be---Be---

Distance: <0.6m/2.0ft

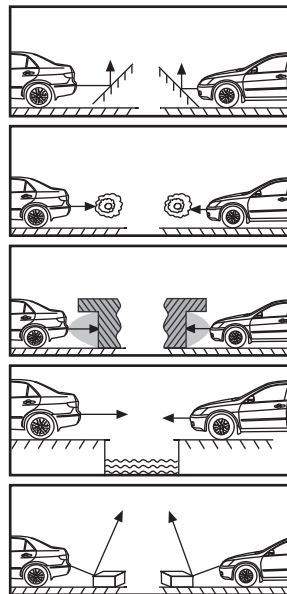


Be-----

Distance: 0.3m/1.0ft

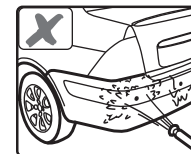
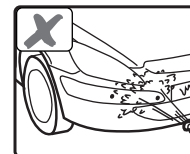
Attention

False detection may occur in the following situations:

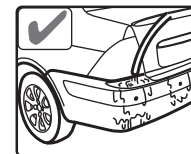
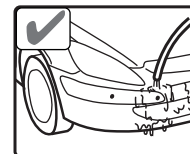


- After installation, please fully test the system before use.
- Heavy rain, dirty or damaged sensors may result in false alarm occasionally.
- Ensure that the self-test procedure is completed and all sensors are functioning before reversing.

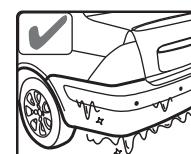
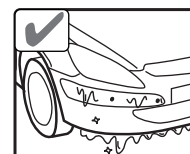
Sensor maintenance



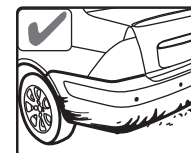
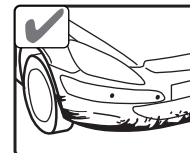
Do not wash the sensor with squirt gun or swab them forcibly.



Please wash car with low-pressure water.

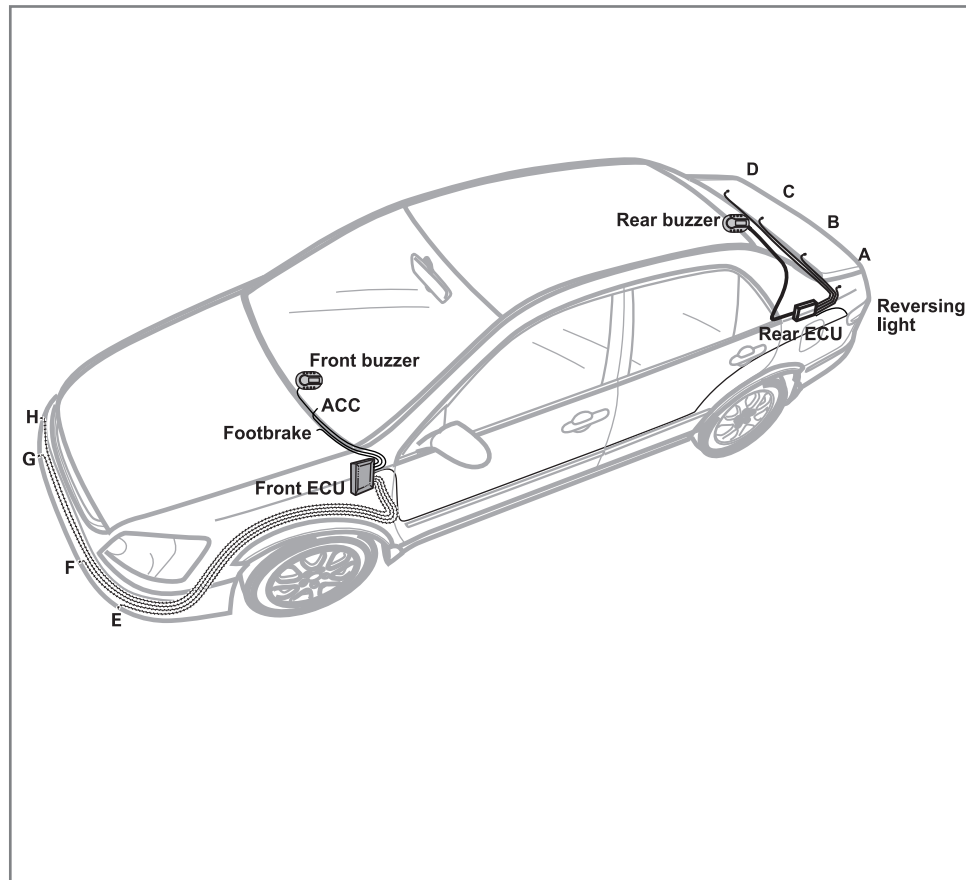


Please melt the ice with water when the sensors are covered by ice.

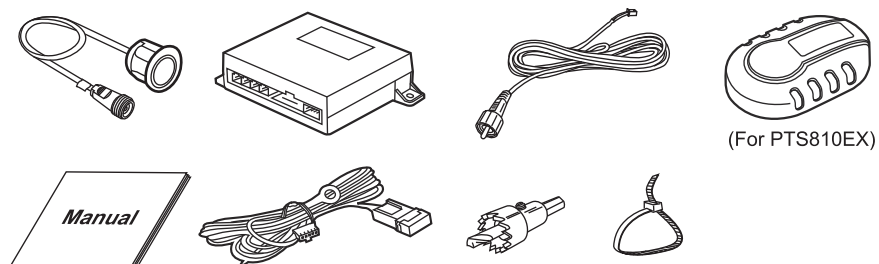


Please clean the sensors with cloth or low-pressure water when the sensors are covered by mud or snow.

Brief installation diagram

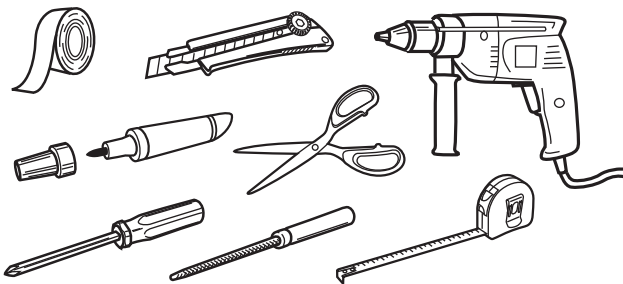


Includes



※ The above graphics are for reference only.

Installation tools

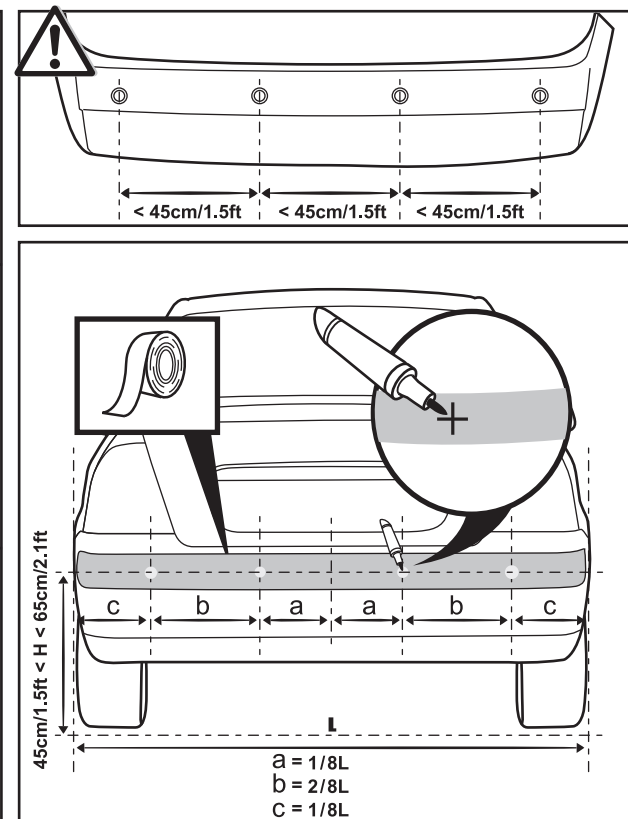
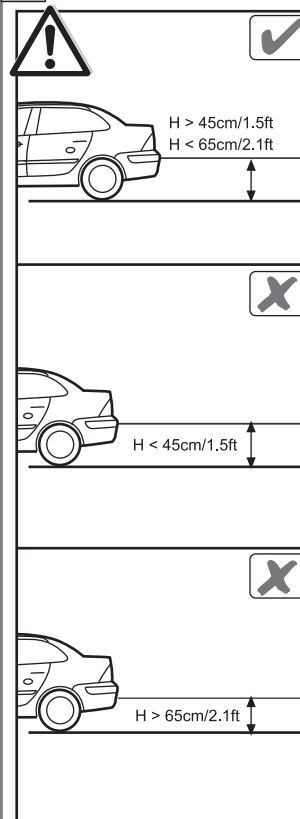


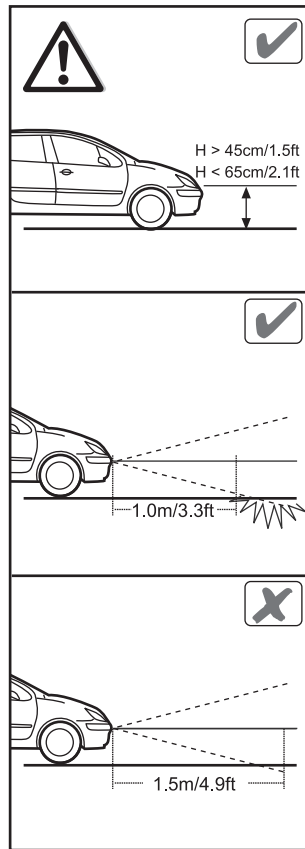
60' ~ 80'

Sensor installation

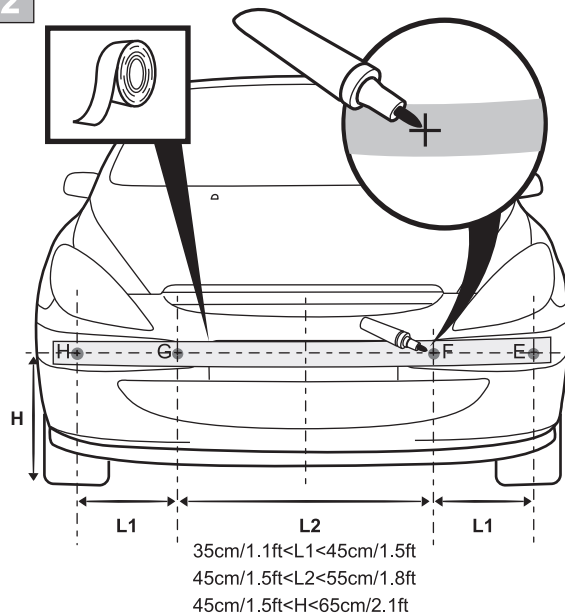
1

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





2

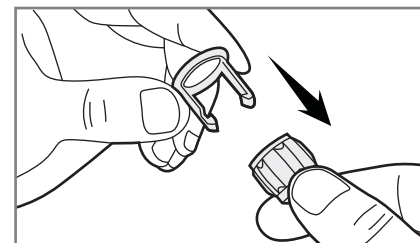
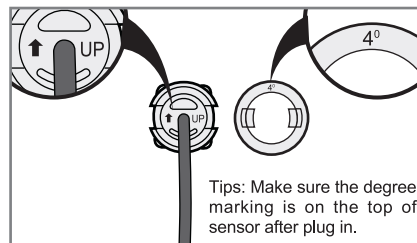
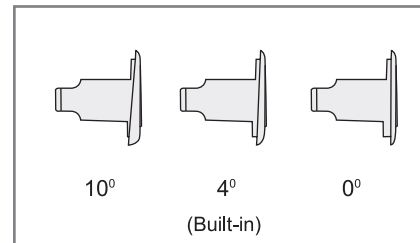
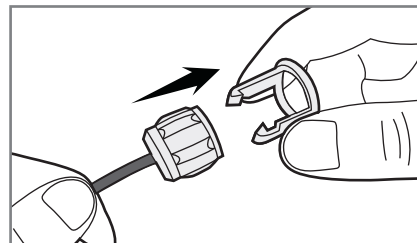
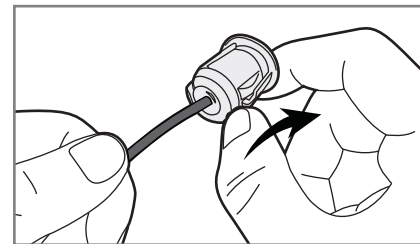
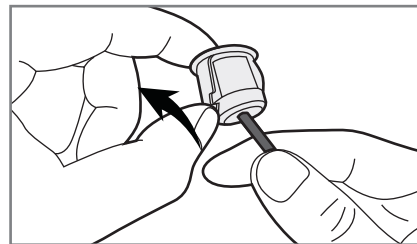


Notes:

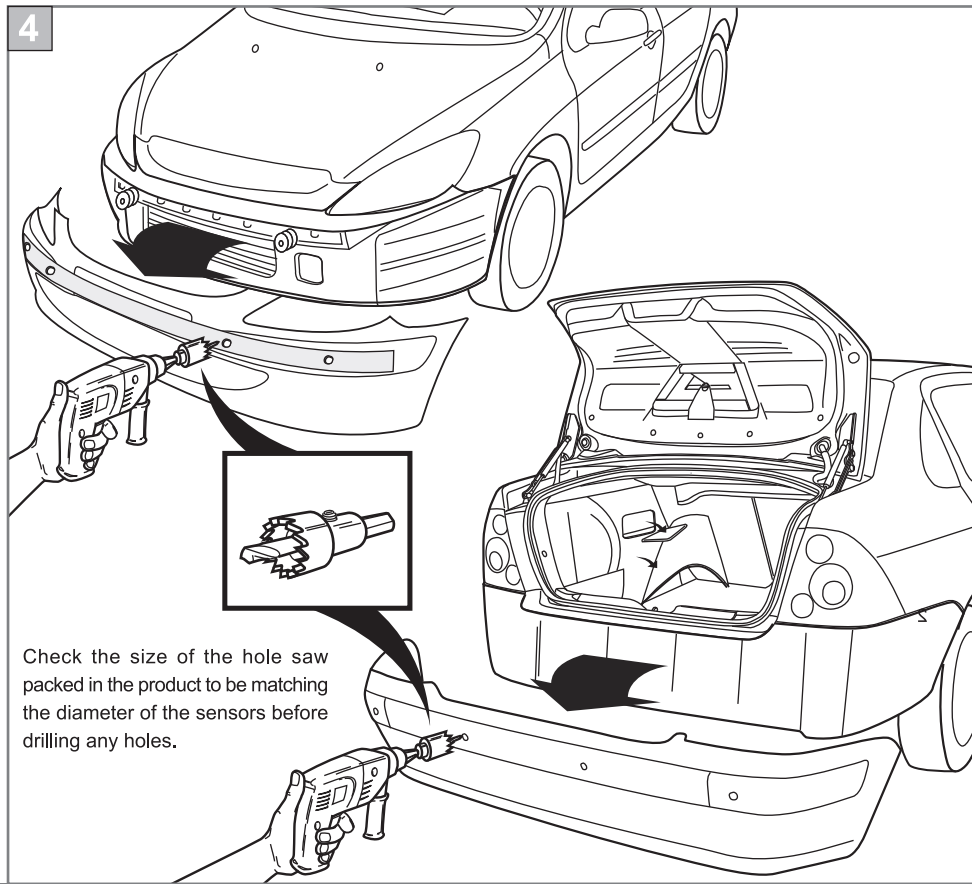
1. For 2-sensor system, recommended to install 2 sensors on position either E&H or F&G for the best performance.
2. On some vehicles, due to the number plates location or bumper design, the distance between the centre of two sensors (L2) will be greater, i.e. $L2 > 60\text{cm}$. The kit will still function,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

3

Change of sensor cover.

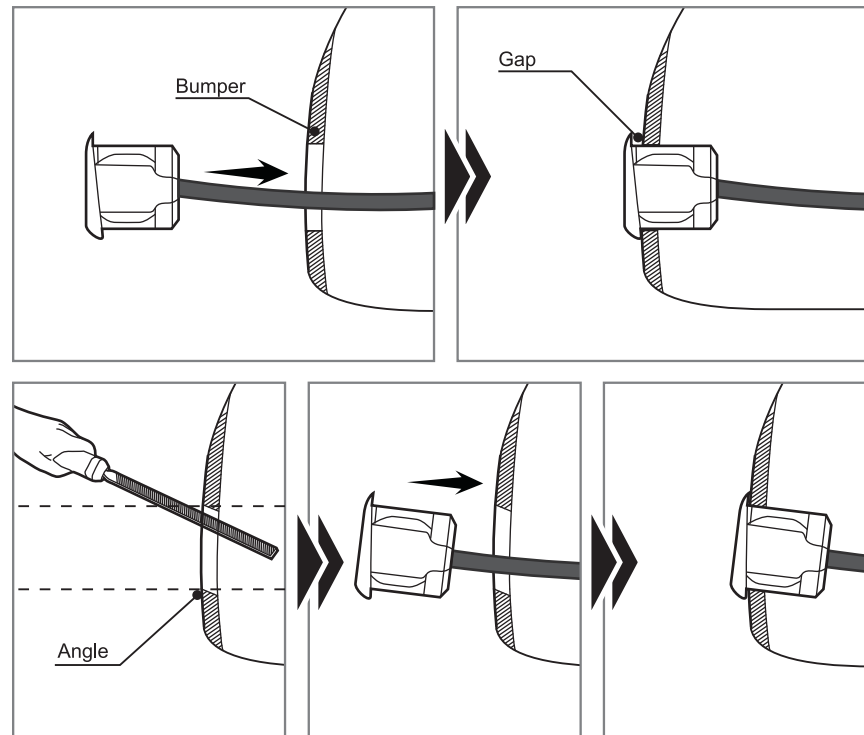


4

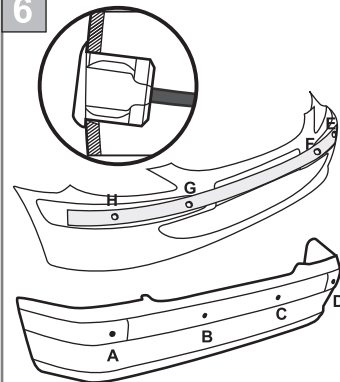


5

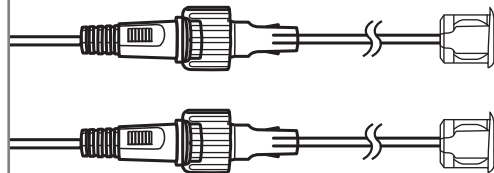
Hint: If a gap found between bumper and 10° sensor cover after installation, please adjust the angle of the hole shown as below.



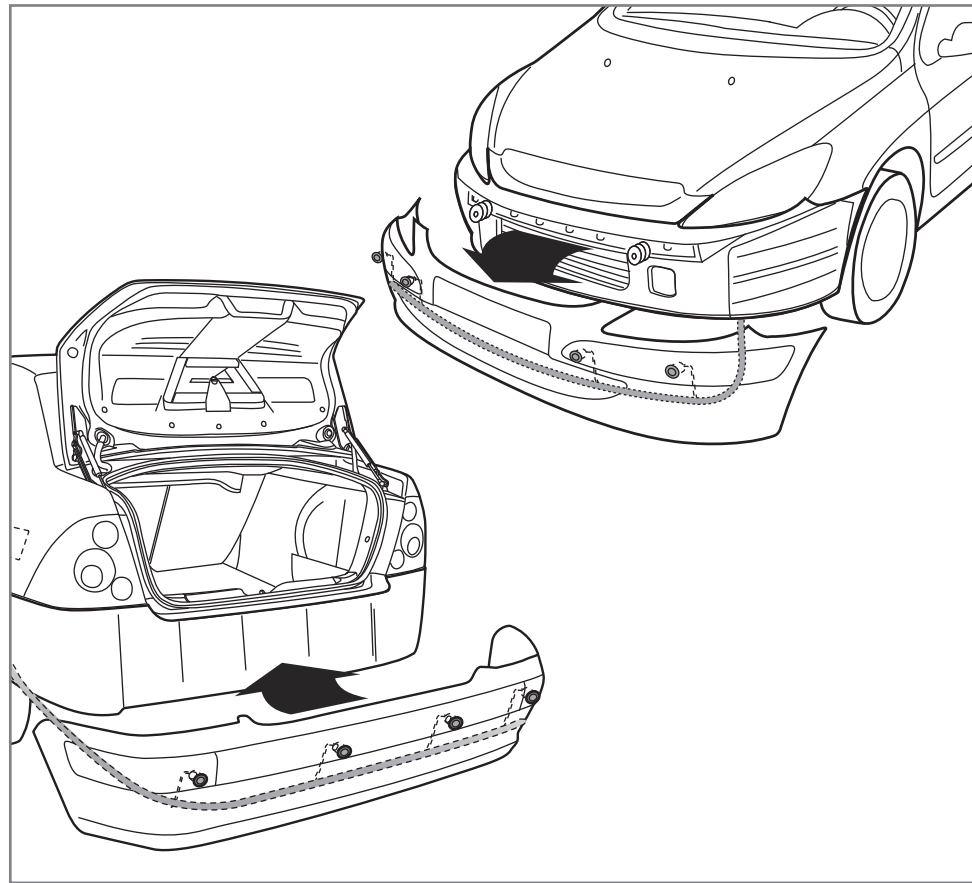
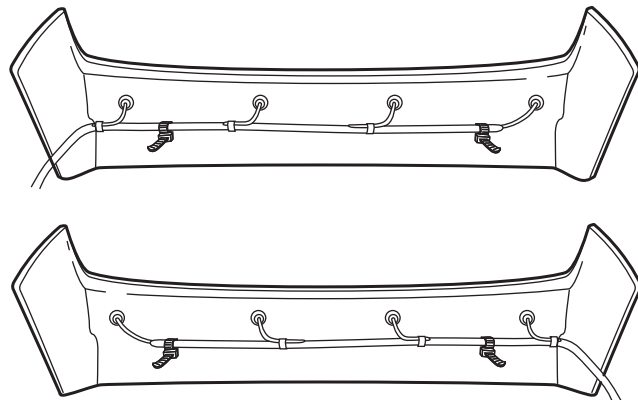
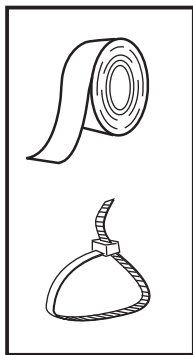
6



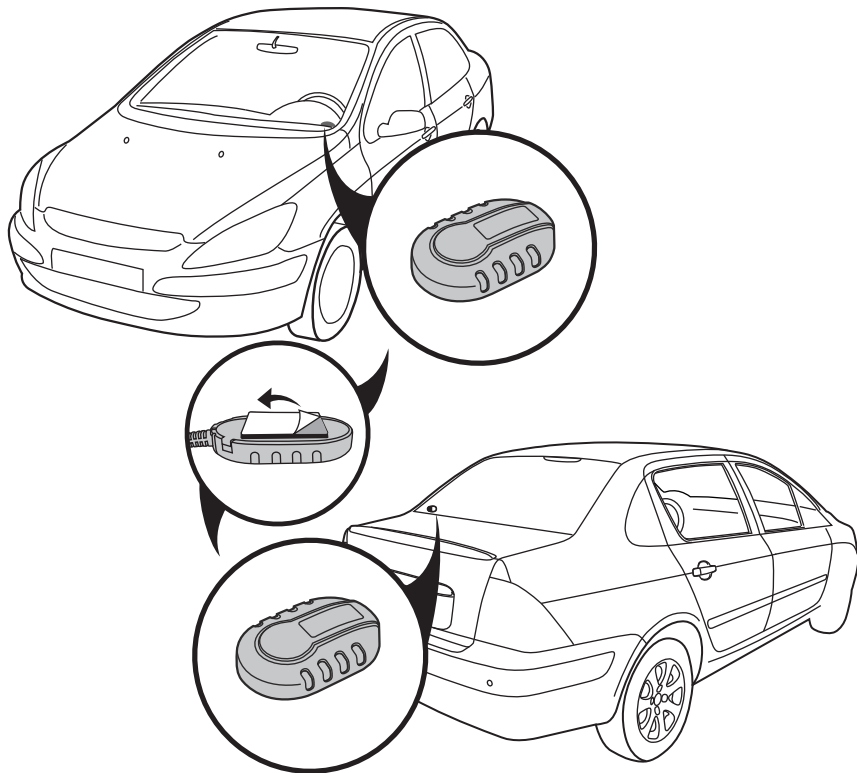
7



8



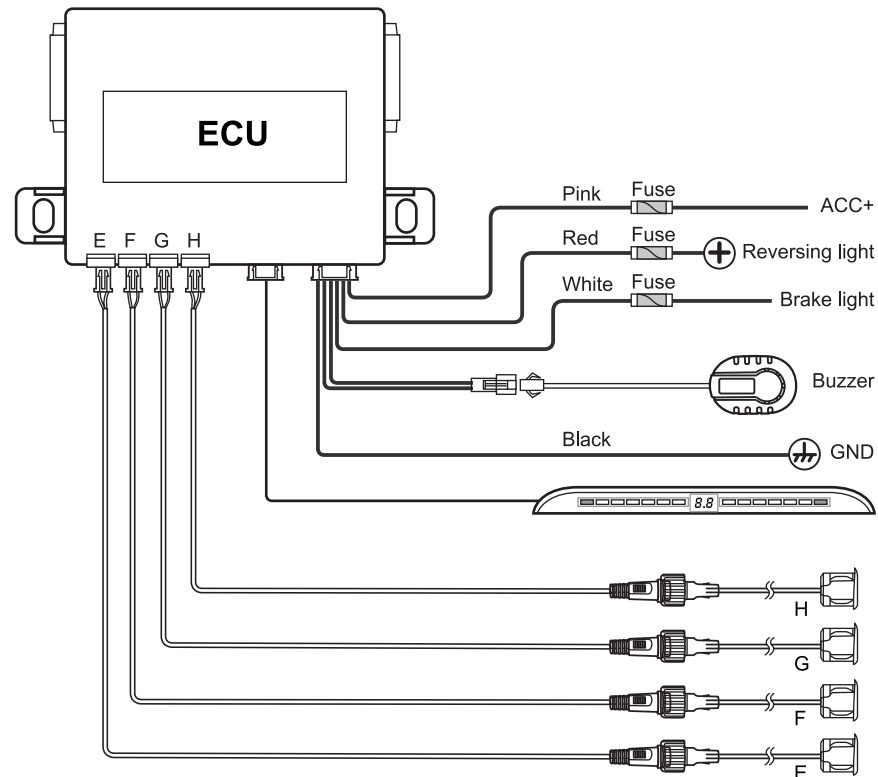
Buzzer installation



※ Recommended installation location of buzzer.

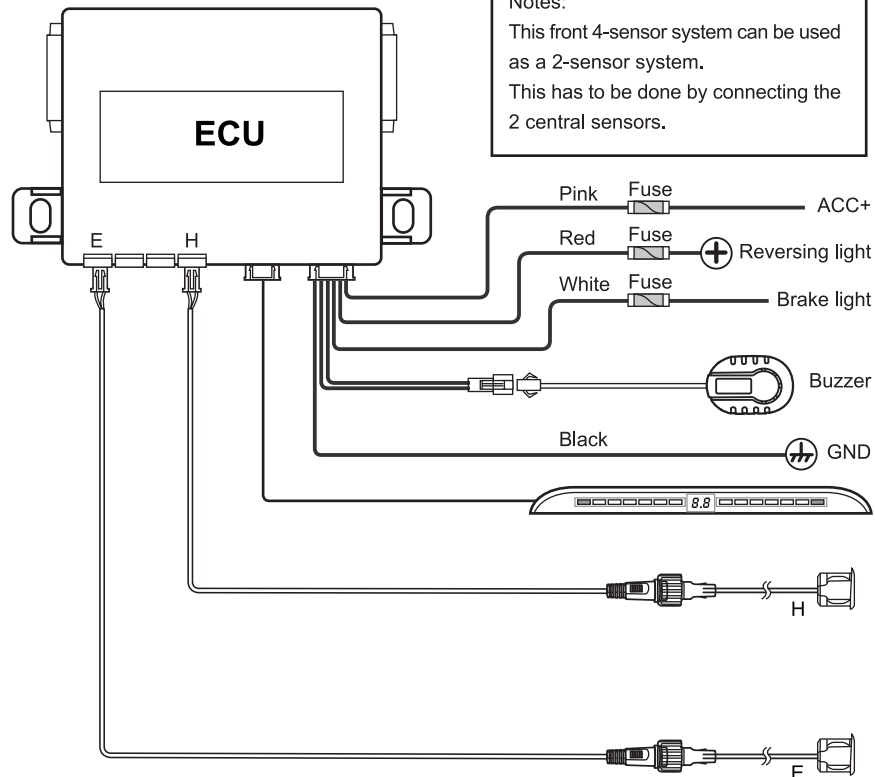
Wiring diagram (Front ECU)

Front 4-sensor system



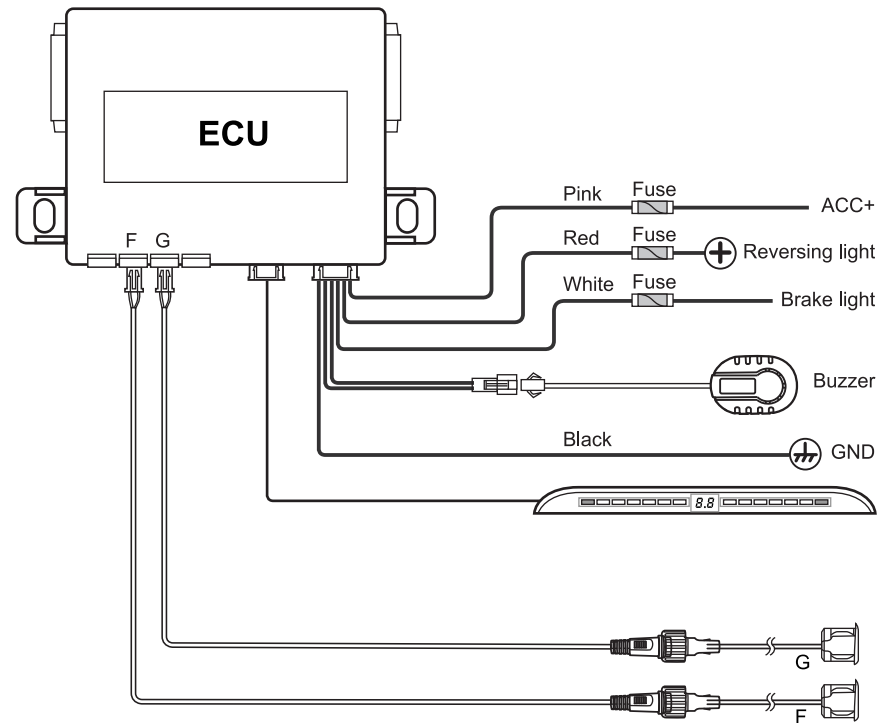
Note: 4 sensors display range: 0.3m ~ 0.9m/1.0ft ~ 3.0ft

Front 2-sensor system



Note: E&H sensors display range: 0.3m ~ 0.7m/1.0ft ~ 2.3ft

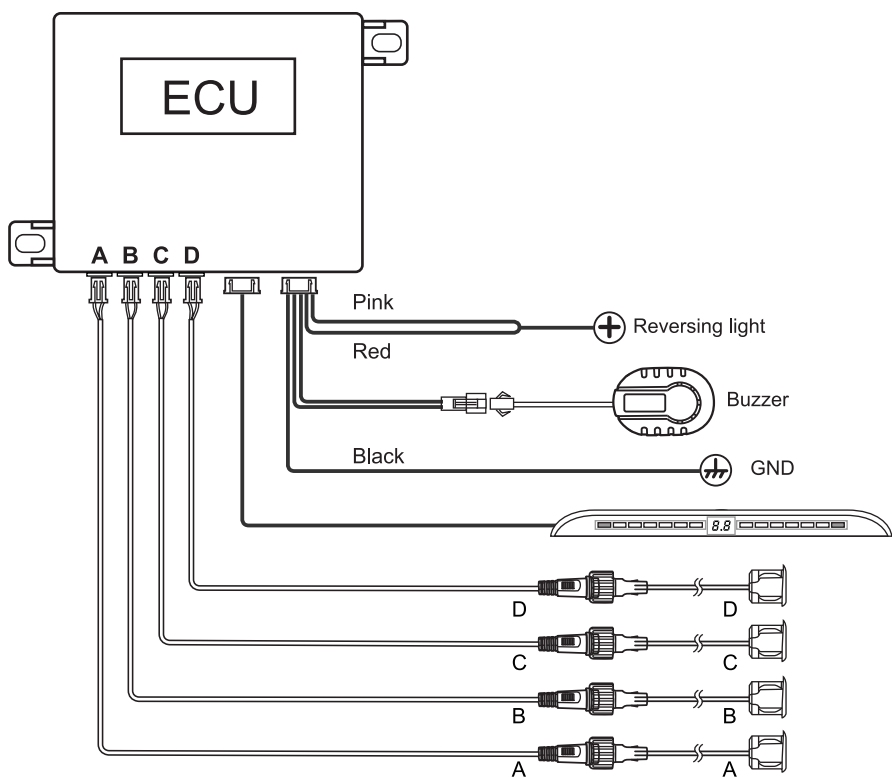
Front 2-sensor system



Note: G&F sensors display range: 0.3m ~ 0.9m/1.0ft ~ 3.0ft

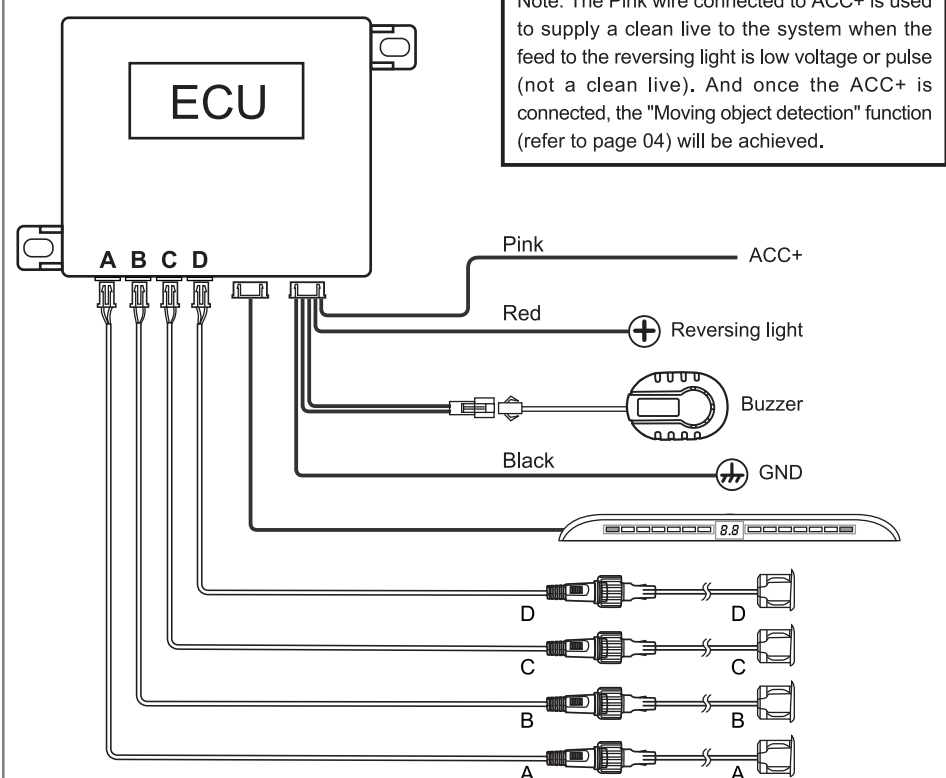
Wiring diagram (Rear ECU) 1

Rear 4-sensor system



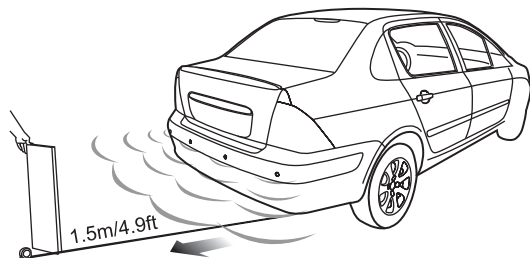
Wiring diagram (Rear ECU) 2

Rear 4-sensor system

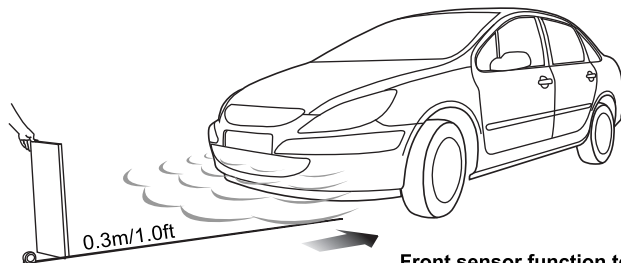
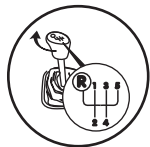
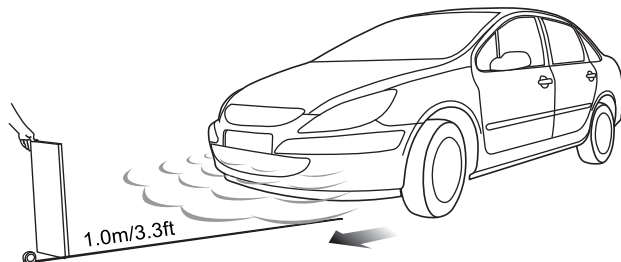


Functional test

Functional testing is possible by holding a wooden board (0.3 x 1.0m/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 function test



Front sensor function test

Troubleshooting

1. After installation, the buzzer/display 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. Display alarm sound is too low or too high

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

5. 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 sales@steel-mate.com about the problems with details.