

Think safety think Steelmate



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STEELMATE CO., LTD

Steelmate Industrial Park, Heping Street, Dongfu Road, Dongfeng Town,
Zhongshan City, Guangdong, P.R. China 528425



STEELMATE[®]
Automotive

PTS410 series

Parking assist system



Manual

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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 18)

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 4 sensors and a buzzer 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

- The system can be upgraded to use a display with built-in buzzer
- Can be used as a 2-sensor system
- Dual intelligent function together with learning function for vehicle with tow-bar, spare wheel or other protrusions.
- Precise detection range
- Self-test function
- Anti-false alert technology
- Waterproof connector
- All weather design

Specifications

Operating voltage:	9~16V DC
Operating current:	<250mA
Detection range	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
LCD:	
Operating temp:	-20°C~+70°C/-4°F~+158°F
Storage temp:	-30°C~+80°C/-22°F~+176°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.

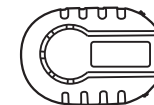
Below buzzer/display graphics are for reference only.

More displays are available for selection.

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



Display (optional)

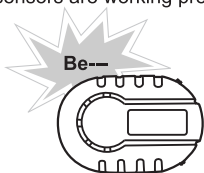


Buzzer

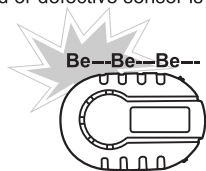
Self-test function

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.

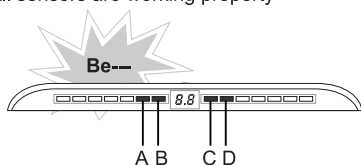
For buzzer
 All sensors are working property



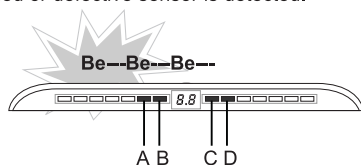
Damaged or defective sensor is detected.



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 (B&C) are damaged/defective as it will work as 2-sensor system automatically.

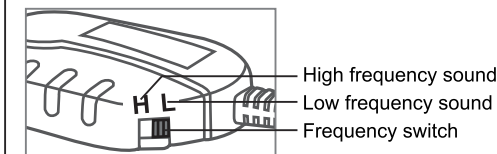
Buzzer volume and frequency adjustment

Volume adjustment

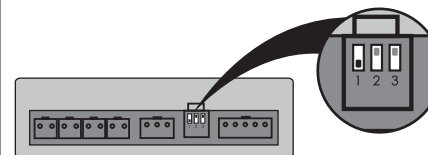


Frequency adjustment
 The buzzer sound frequency can be adjusted to High/Low by turning the frequency switch.

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.

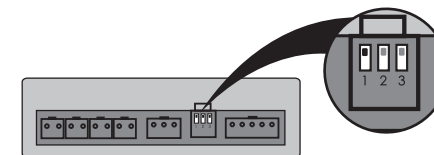


Sensor sensitivity adjustment (Switch 1 on ECU)



Switch 1 in the "ON" position

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



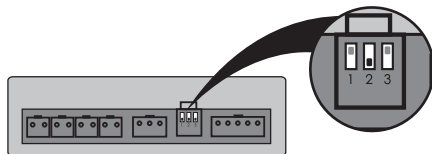
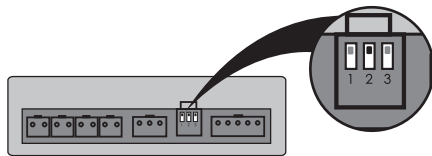
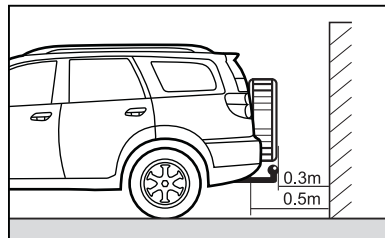
Switch 1 in the "OFF" position

- 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.

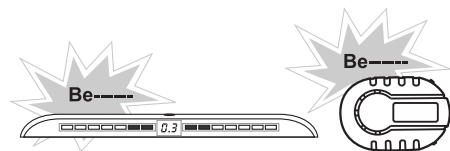
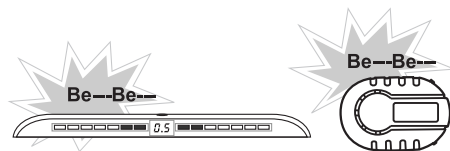
Dual intelligent function (Switch 2 on ECU)

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

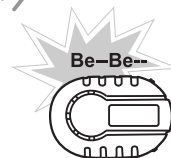
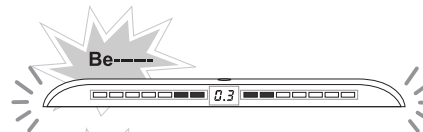
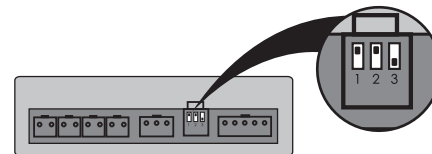
Switch 2 in the "ON" position
The detected distance from sensor to obstacle should be increased 20cm.



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

Learning function for cars with tow-bars or spare wheels

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 ECU will beep once to indicate that the system has entered into the learning mode.
4. After 2 seconds, the ECU 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.

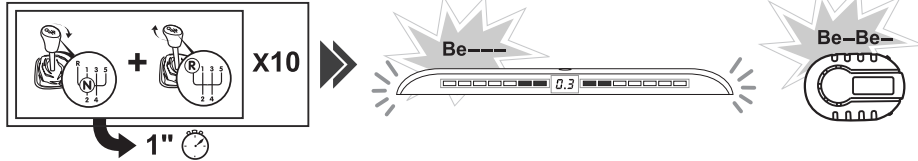
Clearing the learning function:

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.

Different scenarios for system with buzzer

Method 2: by selecting gear position

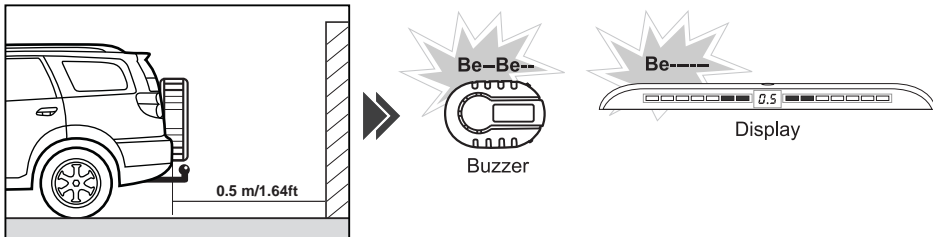


1. With the ignition ON, change the gear from "N" to "R" for 10 times (Each gear change must be within 1 second).
2. After 10th times, leave the gear in "R" position.
3. After 2 seconds the buzzer/display will beep once, another 2 seconds the buzzer/display will beep twice to complete the learning process.

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.

Buzzer	Scenario
Be-----	<0.3m/1.0ft
Be--Be--Be--Be--	0.3~0.5m/1.0ft~1.6ft
Be--Be--Be--	0.5~0.9m/1.6ft~3.0ft
Be---Be---	0.9~1.3m/3.0ft~4.3ft
Be----Be----	1.3~1.5m/4.3ft~4.9ft

Moving object detection (optional)

This function will be achieved when the pink wire is connected to ACC+ (refer to page 23 "wiring diagram 2").

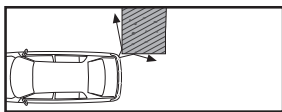
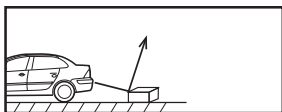
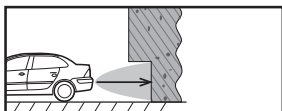
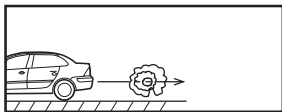
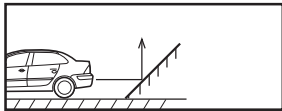
Once ACC is on, the system will work automatically for checking any obstacle at the back for 30 seconds.

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.

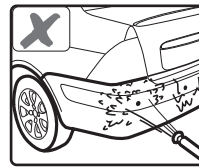
Attention

False detection may occur in the following situations:

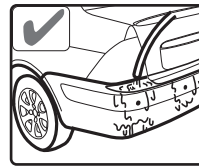


- After installation, please perform a functional test before use.
- Heavy raining, dirty/damaged sensors may cause false alarm occasionally.
- Ensure the self-test is completed and all sensors are function properly before using the system.

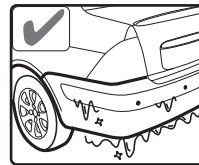
Sensor maintenance



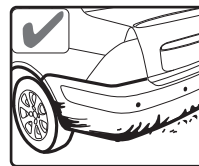
Do not wash the sensor with a pressure washer or scrub them forcibly.



Please wash car with low-pressure spray.



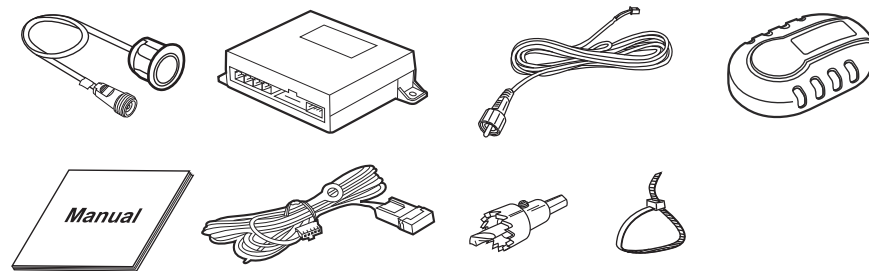
Please melt the snow with water when the sensors are covered.



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

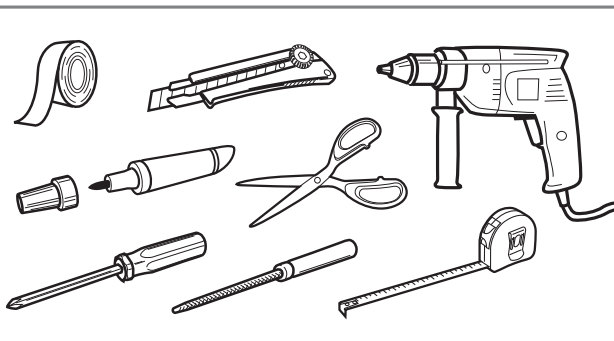
Installation Manual

Packing list



※ The above graphics are for reference only

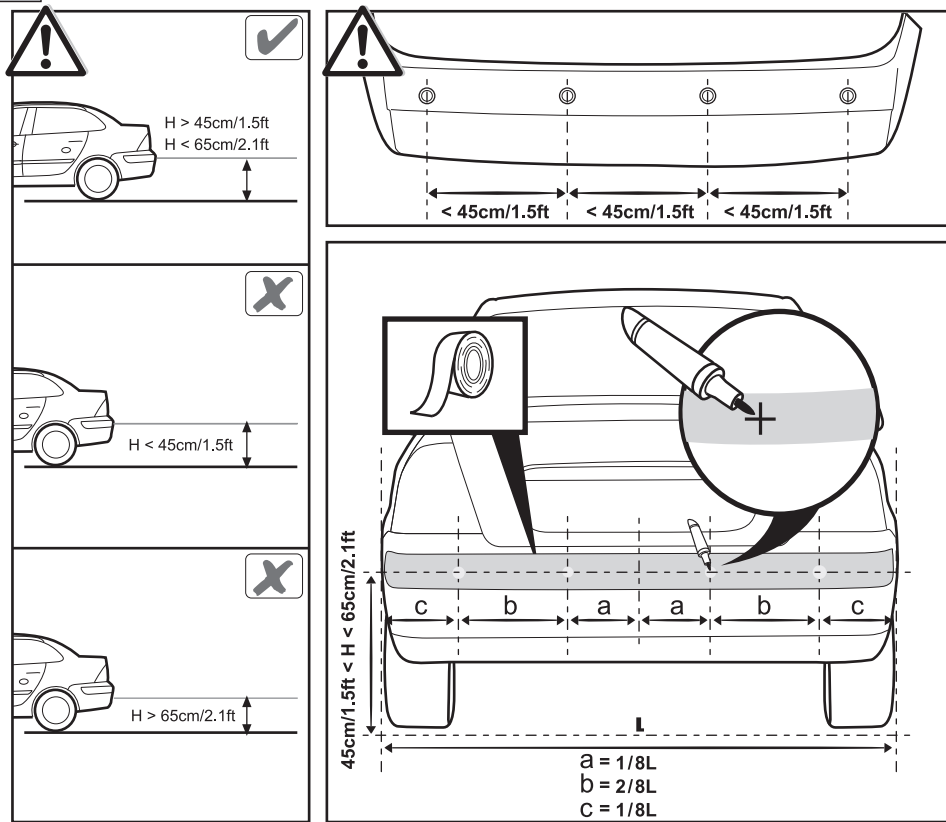
Installation tools



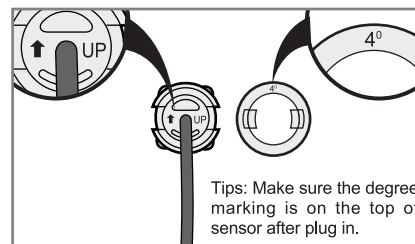
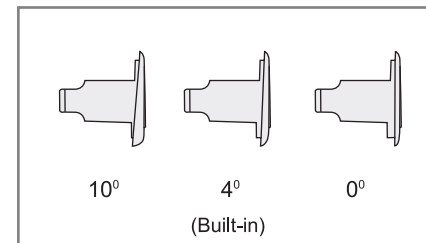
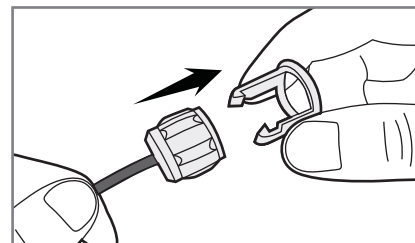
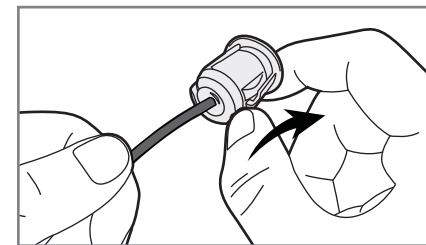
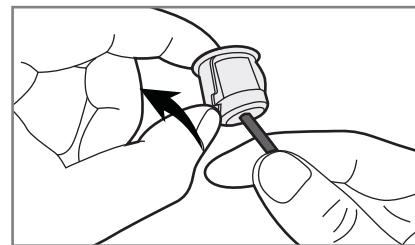
30' ~ 60'

Sensor installation

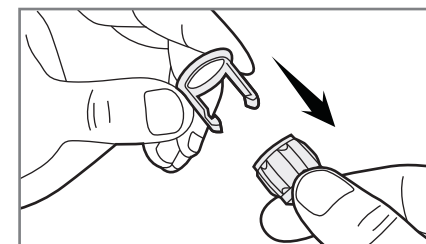
1 The sensor head angle can be changed to compensate for angled bumpers. Please see the instructions overleaf.



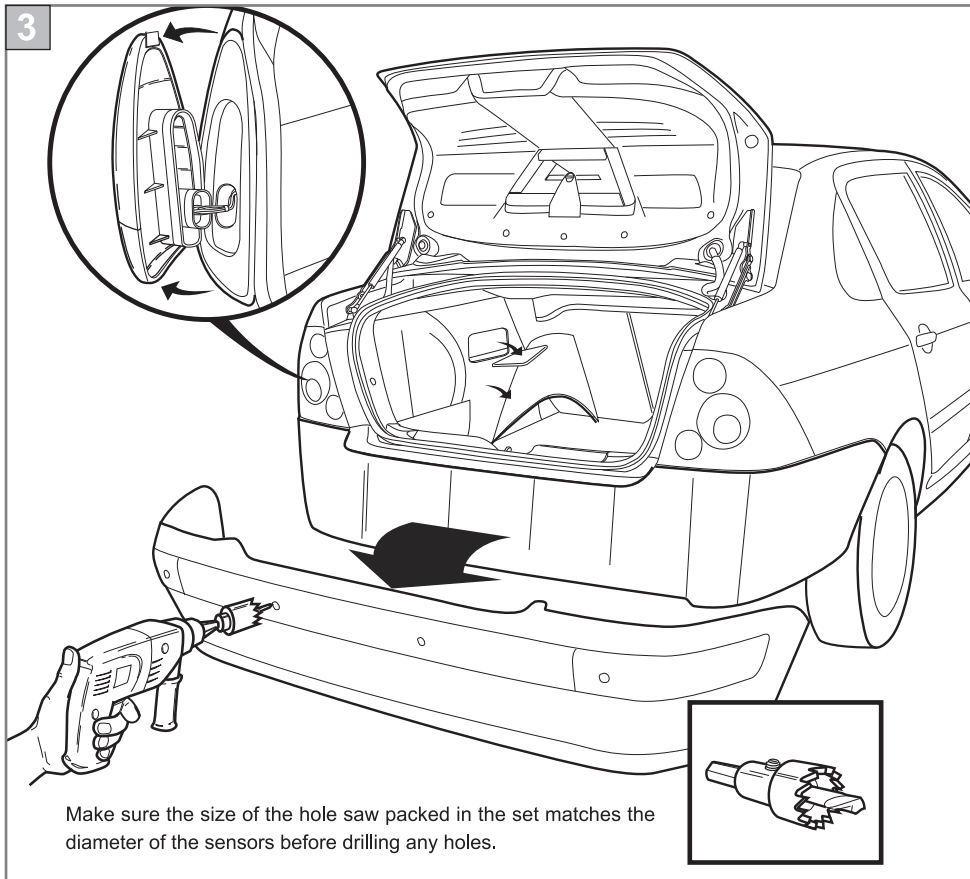
2 Change of sensor cover



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

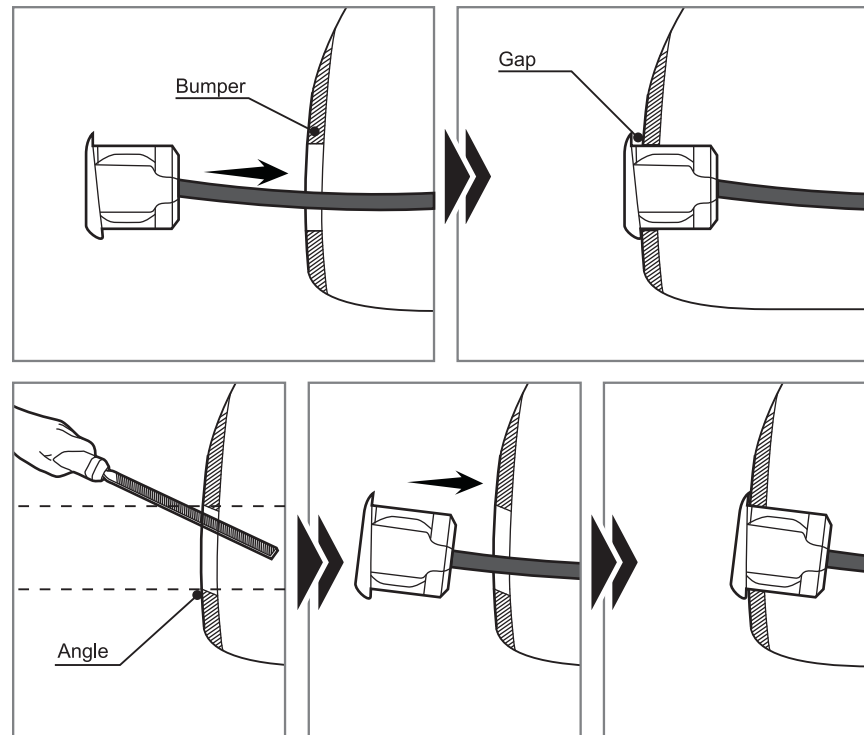


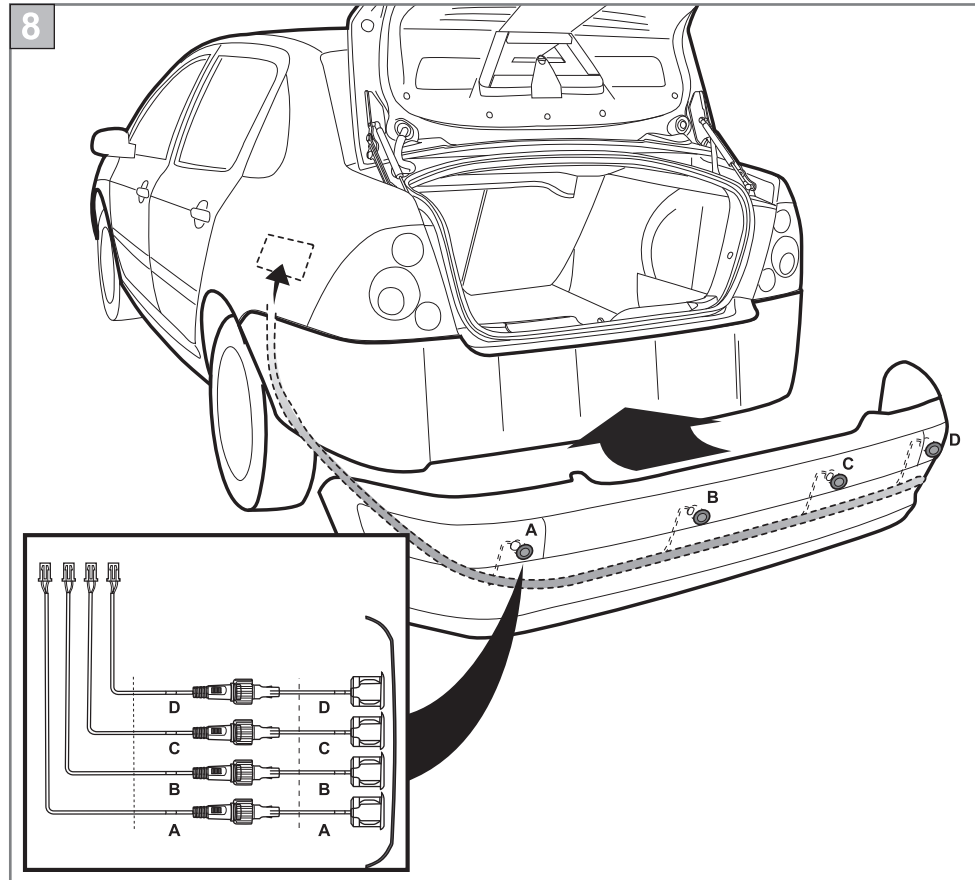
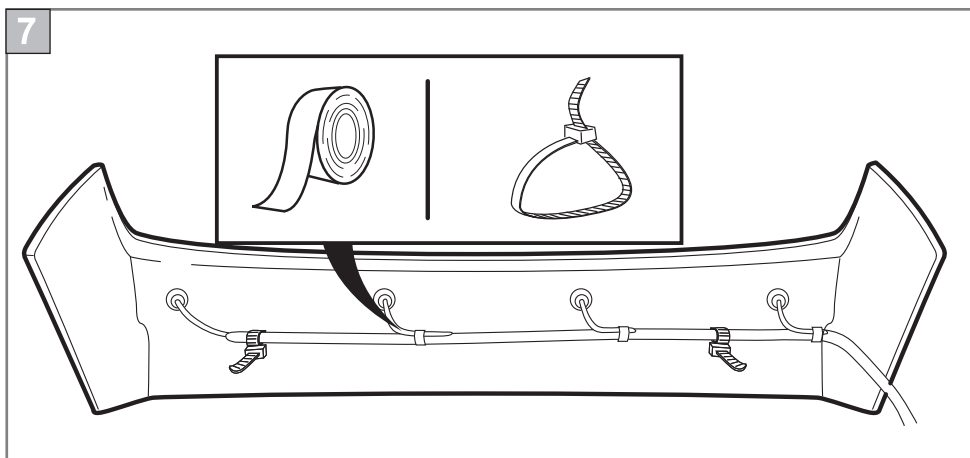
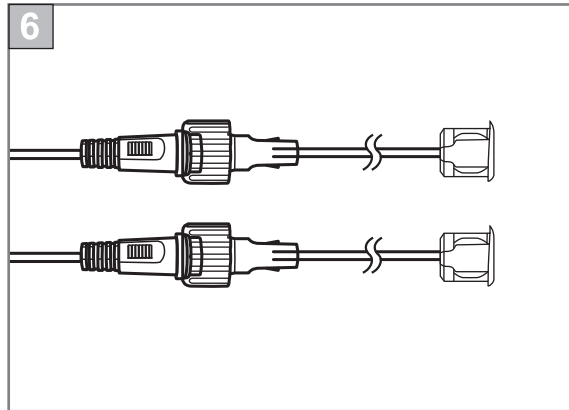
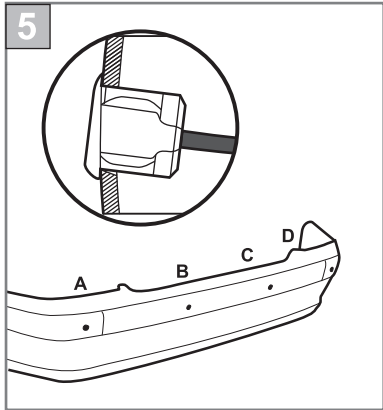
3



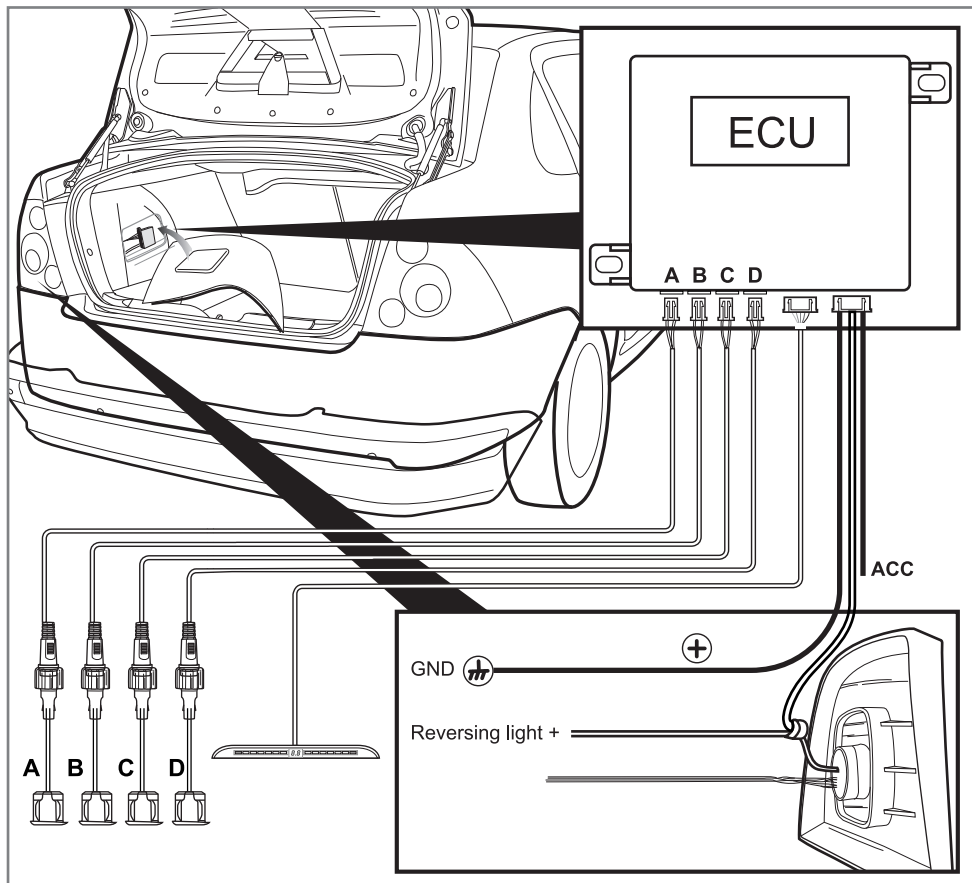
4

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

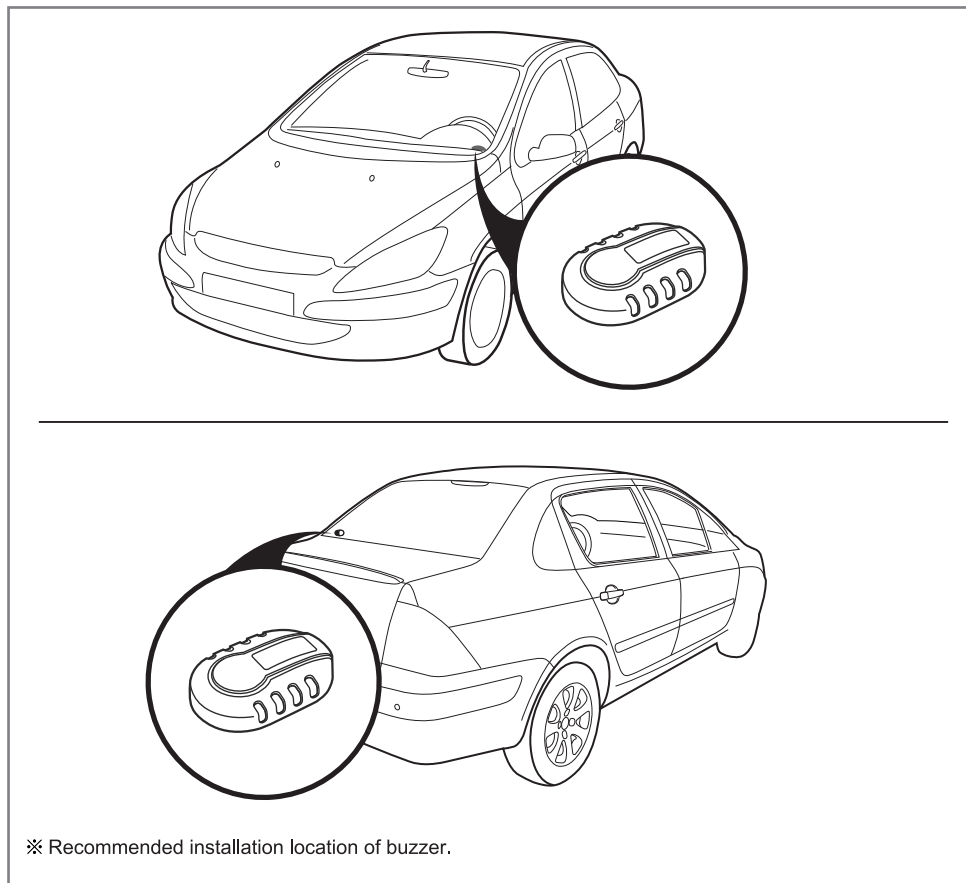




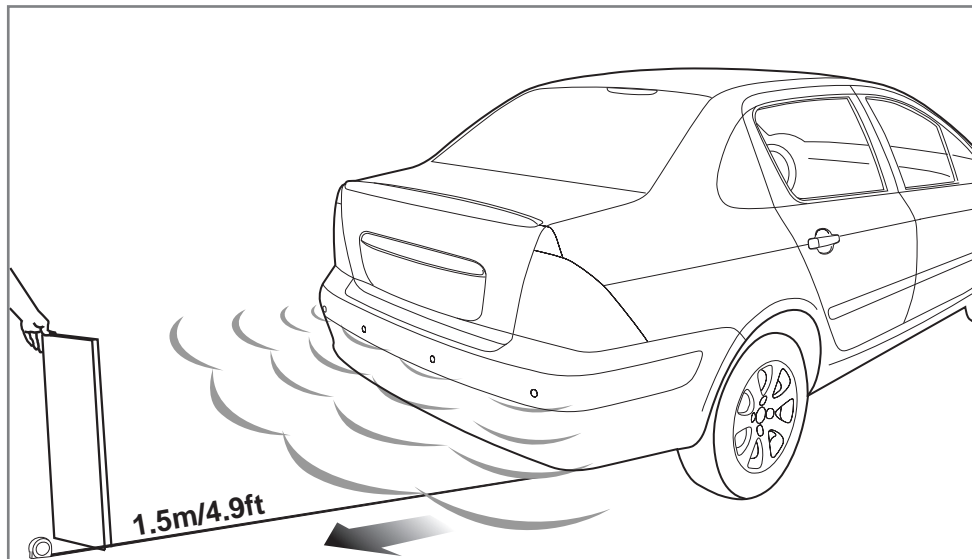
ECU installation



Buzzer installation

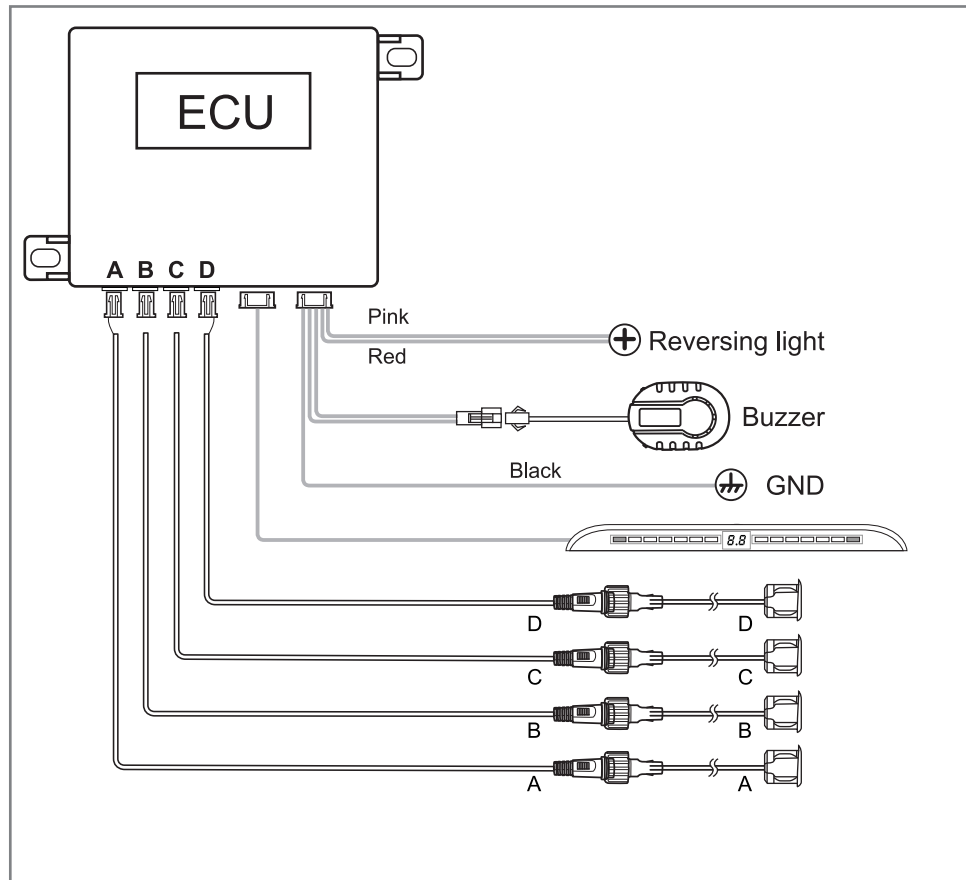


Function test after installation

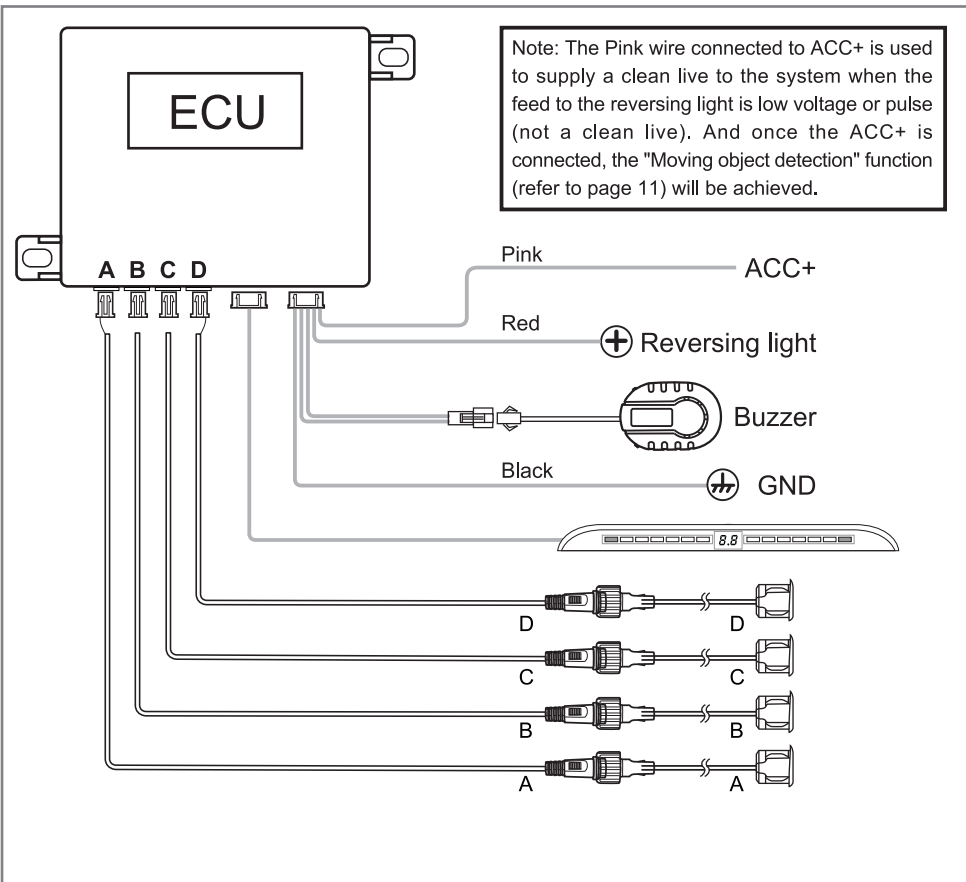


Function test is performed by holding a wooden board (0.3x1m/1x3.3ft) at the back of the vehicle, and reverse the car slowly to test each function respectively as shown in this manual.

Wiring diagram 1



Wiring diagram 2



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