⚠ Caution

Some cases that may not be recognized

- **Trailer towing bar and towing hook;**
- **Slender or wedge-shaped objects;**
- **Objects that are high and protruding, such as wall projections or loads;**
- **Objects with corners and sharp edges;**
- **Objects with fine surfaces or structures, such as fences;**
- **Barbed wire fence, fluffy snow, potholes in the ground;**
- **Object that is above the detection range and the sensor cannot detect accurately;**
- **Certain objects whose surfaces do not reflect detection signals and persons wearing clothing of such materials;**
- **Other situations that affect target recognition.**

⚠ Warning

- **When using the automatic parking assist system, the driver must comply with the Road Traffic Safety Law of the People' s Republic of China.**
- **The automatic parking assist system only provides assistance to the driver, and cannot operate normally under all driving conditions, weather conditions, traffic or road conditions.**
- **When using the system, the driver has responsibility to control the vehicle, monitor the system operation and intervene when necessary to avoid danger.**

⚠ Caution

The use of the system is prohibited in the following cases:

- **Severe weather such as rain, snow, heavy fog, etc.;**
- **There are three-wheeled or two-wheeled non-motorized vehicles, low obstacles (such as parking lines, ground locks, stones, etc.) or vehicles without continuous physical form for lower body (such as large trucks, oil tankers, trailer, etc.) near the alternative parking spaces;**
- **Potholes on the road near the alternative parking spaces, or there are sidewalks or parking spaces with elevation difference on the road and cliffs (danger);**
- **The wheel size is different from the original wheel size. For example: installing non-original size wheels, spare wheels, snow chains or tires with non-standard tire pressure;**
- **Vehicle modification causes the size of vehicle to change or there is an extended load outside the vehicle during parking.**

2 Matching Learning

2.1 Panoramic Control System (AVM)

■ Calibration scenario

In the following scenarios, the panoramic view monitor system needs to be calibrated:

- Removal an installation of camera;
- Removal an installation of view mirror with camera;
- Removal an installation of rear bumpers;
- Camera position changes due to vehicle accident;
- After replacing panoramic view monitor system controller.

■ Preparation before alignment

In order to ensure the success rate and effect of the calibration, the following status should be confirmed before calibration:

(1) All components on vehicle have been installed (including: spare tires, on-board tools, etc.), and all liquids have been filled to the state of leaving the factory (such as: brake fluid, coolant, washer fluid, gasoline, etc.);

(2) The vehicle has completed the calibration of steering system and four-wheel aligN·ment, and has passed the inspection;

(3) The grid of calibration site are not obviously damaged/dirty, the guide rails are not loose or poorly fixed, and the lights above the site have been turned on;

(4) There are no people, vehicles or other obstacles in the area of the calibration site;

(5) There is no malfunction prompt of panoramic view monitor or camera in the vehicle instrument cluster;

(6) Four cameras (front/rear/left/right) lens surface is not covered by plastic protective film or has been removed;

(7) During the calibration process, please make sure that there is no other person on the vehicle, and only the driver is allowed to perform calibration operations on driver seat.

⚠ Caution

- **When parts are supplied, in order to avoid accidental wear on the surface of panoramic view monitor system camera lens, a plastic protective film is usually attached to the lens. Please confirm whether it has been removed before calibration? If it is not removed, please remove the protective film before performing the calibration operation.**

■ Manual calibration process

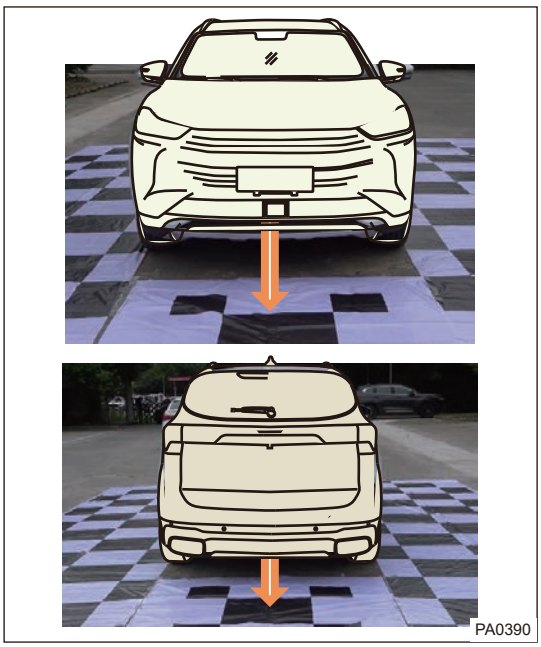
Hint:
Manual calibration process are generally used for self-calibration cloth in 4S shop.

(1) Calibration method:

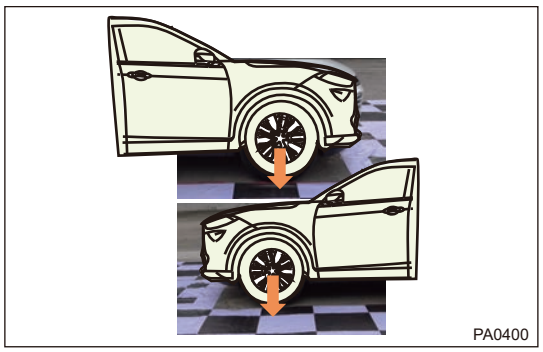
1) Park vehicle at the fixed location.

2) Lay calibration cloth (front, rear, left and right sides) around the vehicle.

- "Center line position of front bumper" of calibration cloth corresponds to the front side of vehicle.
- "Center line position of rear bumper" of calibration cloth corresponds to the rear side of vehicle.

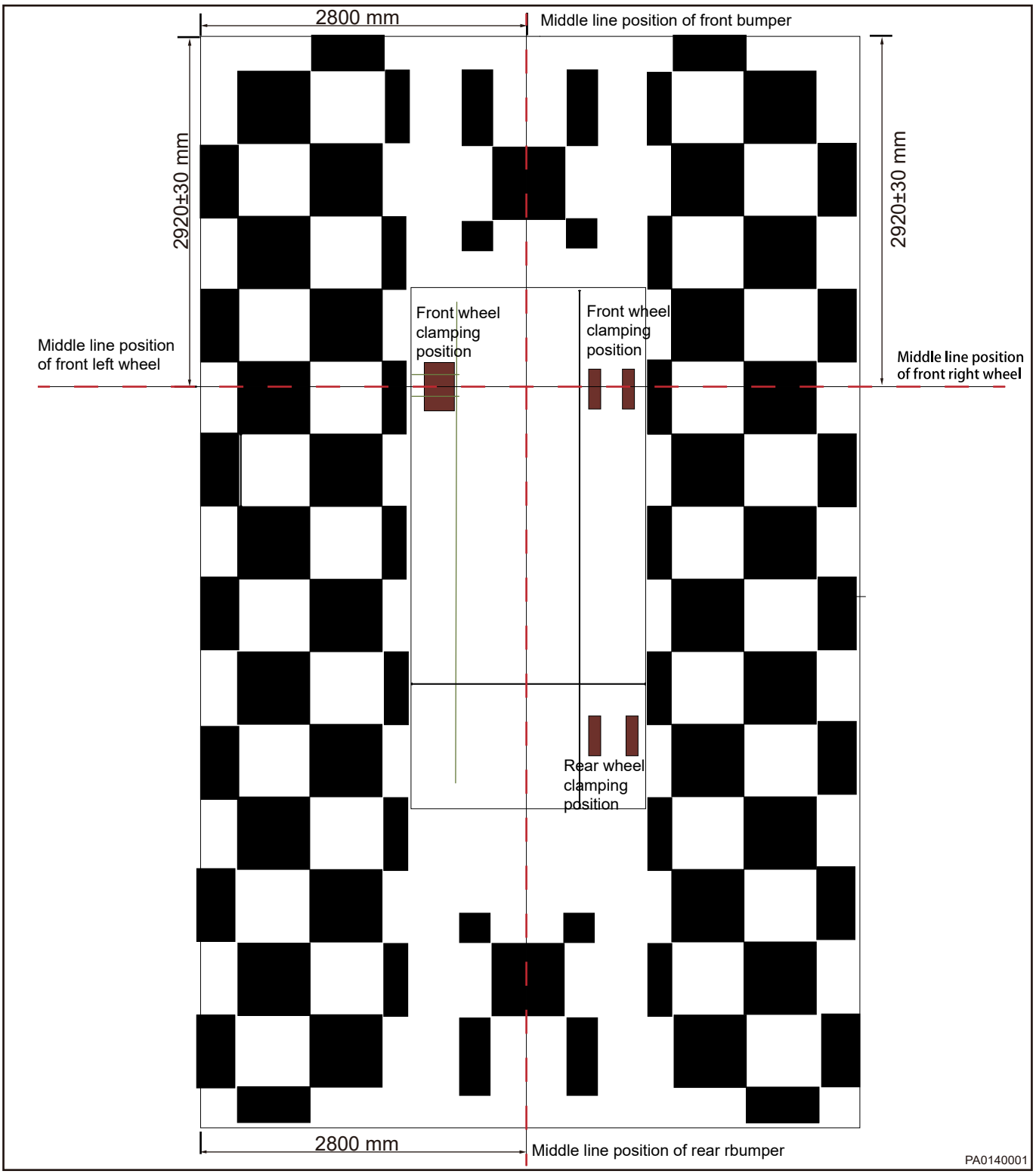


- Unfold calibration cloth (left and right sides) and lay it onto both sides of vehicle.
- Center line corresponds to front left and right wheel positions.
- Left and right sides and front and rear sides of calibration cloth should be placed in accordance with single and double arrow marks respectively.

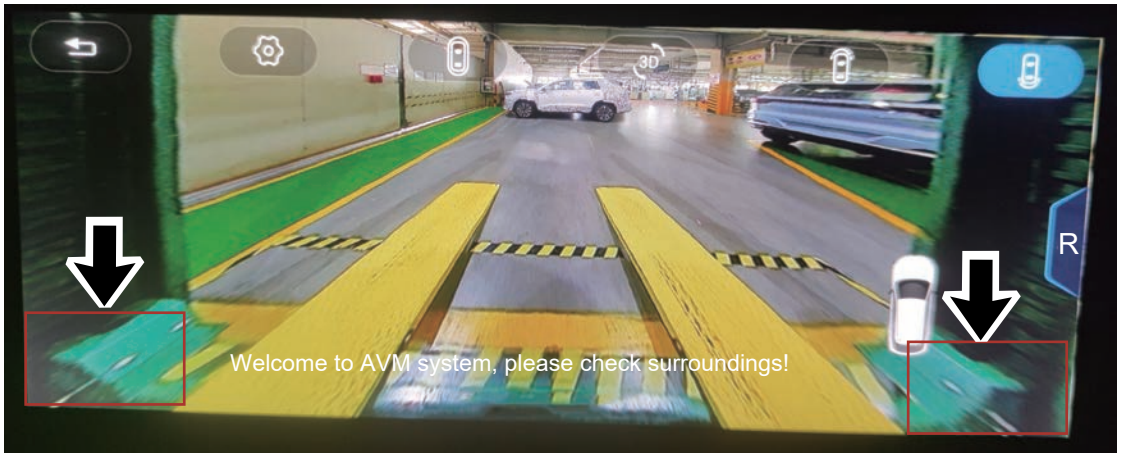


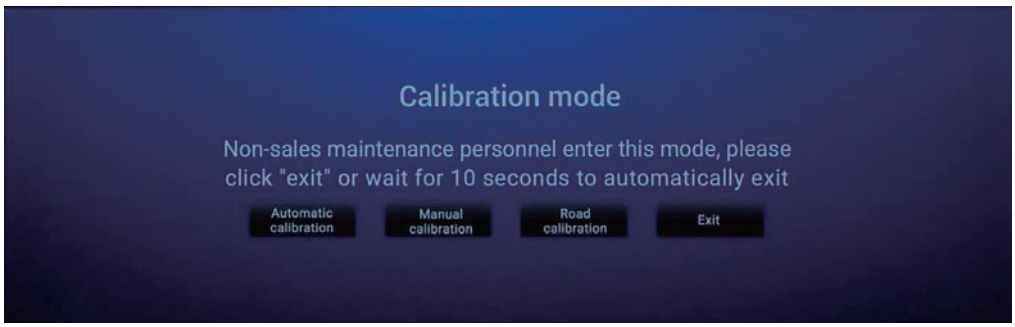
3) Marking positions on the front, rear, left and right sides of the calibration cloth.

Hint:
Hint: Schematic description of calibration cloth spreading: It is recommended to have a certain clearance (about 5 cm) between calibration cloth and the left and right sides of the vehicle.



4) Start: Panoramic AVM screen, single-channel view, three clicks in the lower left corner and the lower right corner respectively.





PA0170001

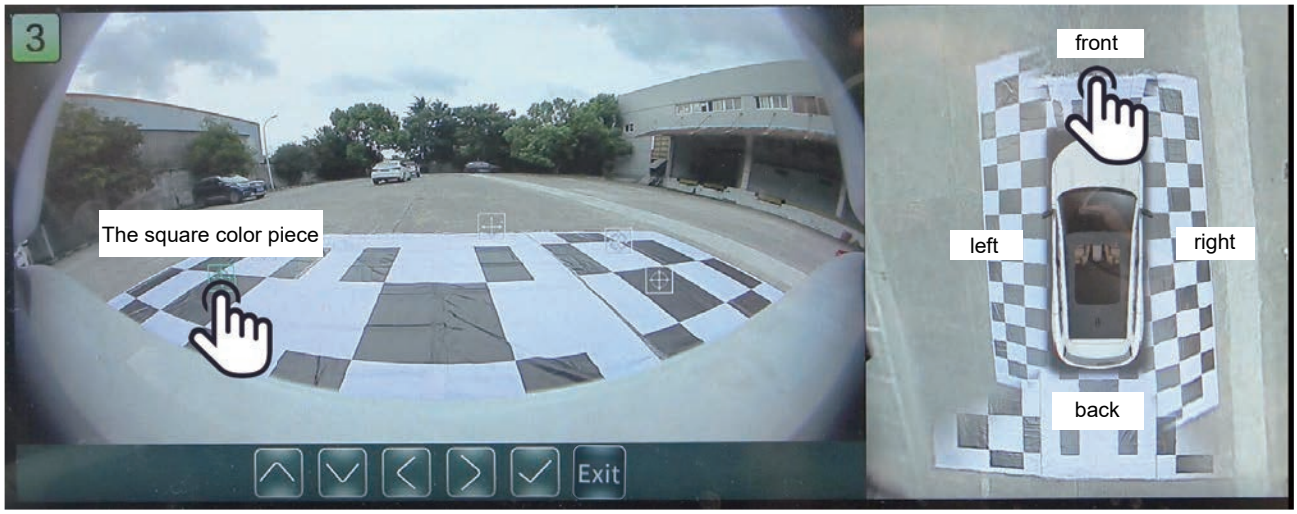
⚠ Caution

- **It is relatively difficult for users to access hidden functions.**

(2) Manual calibration process: After entering the manual calibration screen in the previous step, it is necessary to manually calibrate the front, right, rear and left views. Front view calibration operation is taken as an example:

1) Manually click “front side” view of panorama view on right side, and 5 square color lumps in the single side view can be seen. The selected color lump is green and unselected color lump is white.

2) Manually click to select the color lump, and perform adjustment by up, down, left and right buttons. Adjust the center of the color block to the focal point of the two black blocks in the corresponding point of the calibration, and click “√” after completing to save.



PA0080001

3) According to the previous step, make 5 color lumps correspond to the 5 different block focus in illustration respectively, thus the calibration operation of “front” view is completed. Then, perform calibrations for “left”, “right” and “rear” views in accordance with the procedures above.

4) After calibration of 4 directions are completed, it is necessary to observe if panoramic view screen on right side is displayed smoothly without misalignment, which can be determined by lines on calibration cloth. If the line is straight without any misalignment or twist, it is determined that the calibration is OK.

5) After calibration is confirmed, click Exit” button to exit, then select “√” in the pop-up dialog box to complete the whole calibration operation.

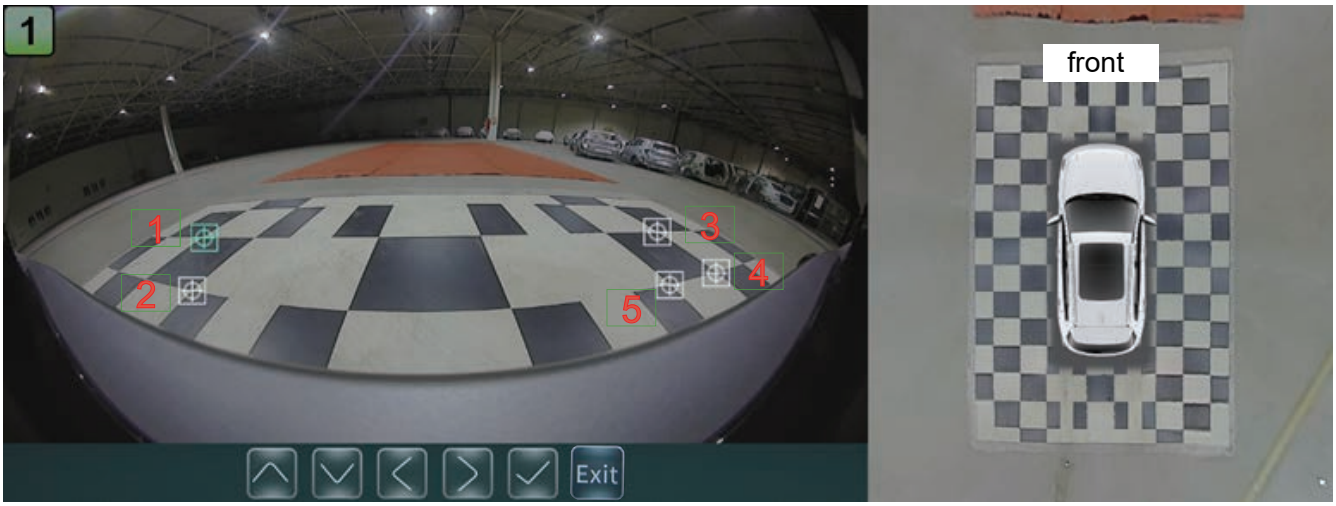
⚠ Caution

- **The premise of clicking save, you need to ensure that the image on the right window is normal.**

PA0090001

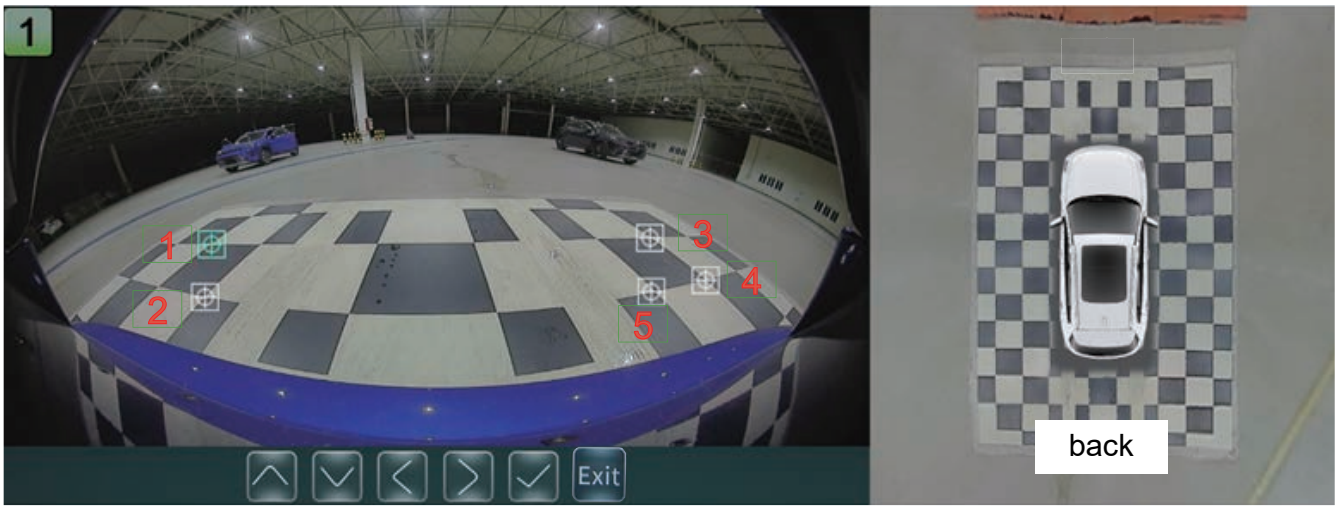
Calibration corresponding point

- Front corresponding calibration point



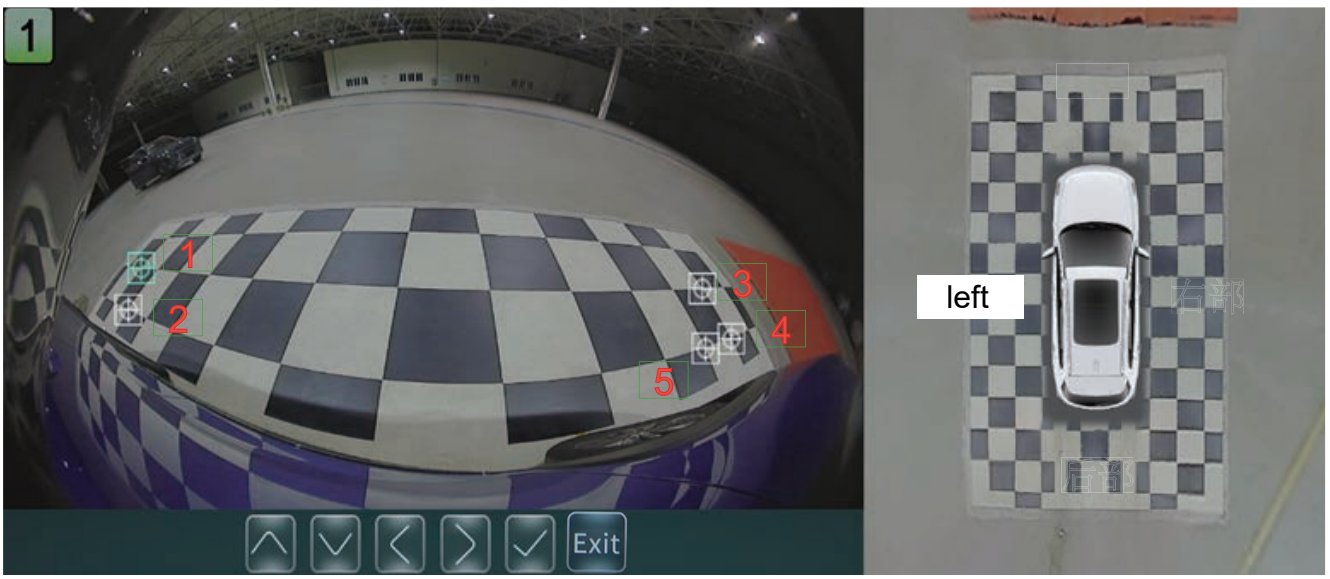
PA0100001

- Rear corresponding calibration point



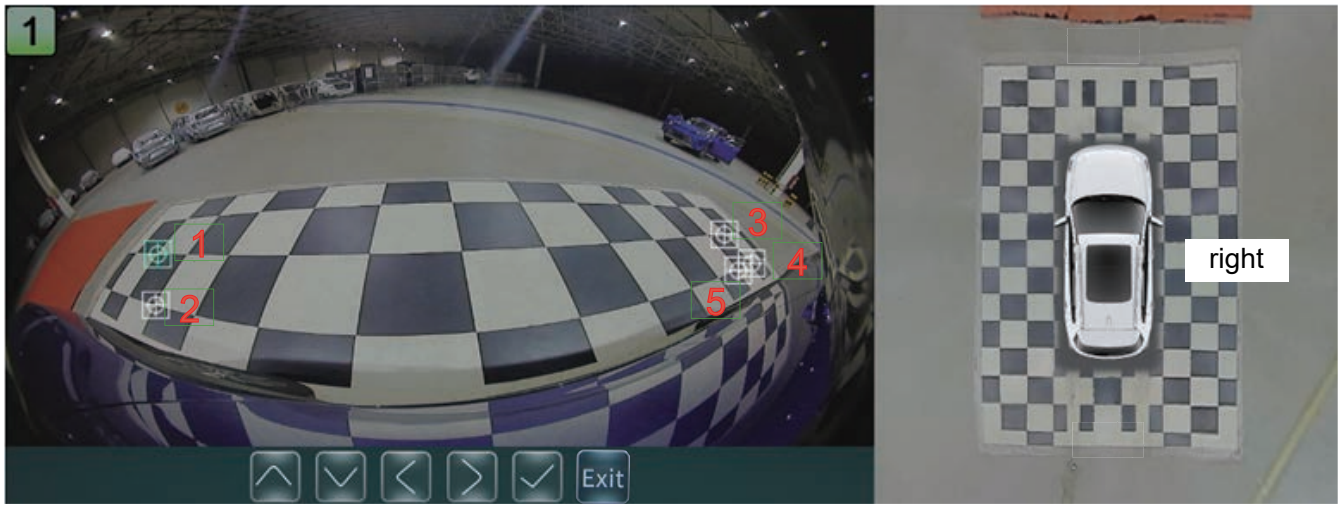
PA0110001

- Left corresponding calibration point



PA0130001

- Right corresponding calibration point



PA0120001

(3) Calibration environment requirement

1) Site requirement: Calibration site size: About 5.6 m in width and 8.4 m in length, which can accommodate the vehicle driving and calibration cloth laying.

2) Ground flatness and calibration cloth laying requirement:

- To ensure the calibration effect, calibration site requires the ground as flat as possible, and calibration cloth has no any obvious bumps after laying;
- When laying a calibration cloth, pay attention that it is fully unfolded and laid smoothly, and each piece should be corresponded according to requirement.

3) Lighting conditions: There is no special requirement for light environment of calibration site. Make sure each positioning point and its focus can be clearly seen during calibration.

4) Storage of calibration cloth: Calibration cloth should be rolled up smoothly (with left and right sides separated) after use for safekeeping.

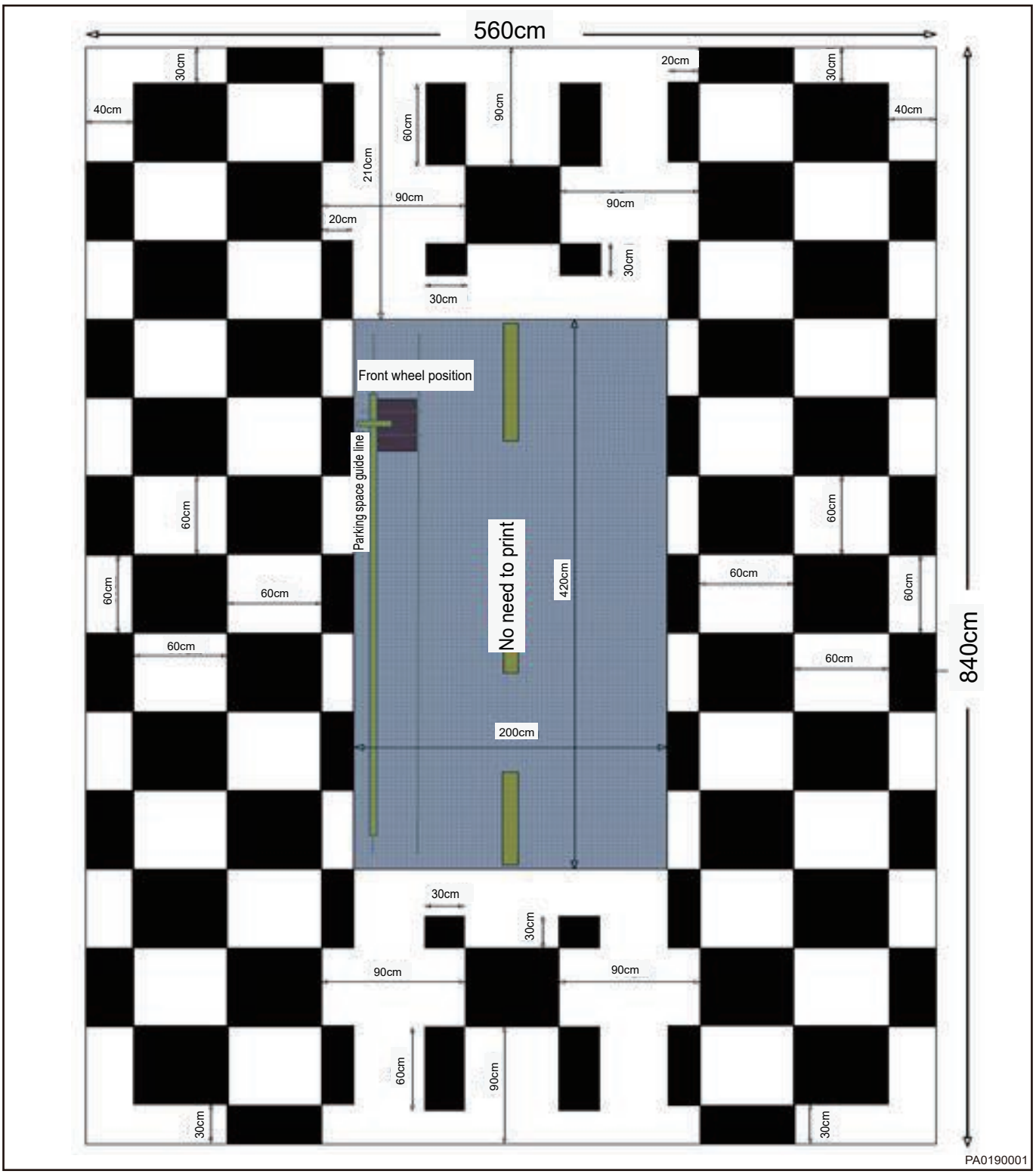
⚠ Caution

- **If calibration cloth is wet, please dry it and then roll it up. Avoid wrinkles during rolling, so as not to affect the subsequent use.**

■ Calibration EnviroN·ment Requirement and Condition Layout

■ Site Requirement

Calibration site size: about 5.6 meters wide and about 8.4 meters long. The black blocks in picture are 60 cm*60 cm, 30 cm*30 cm, 20 cm*60 cm, 30 cm*60 cm, 40 cm*60 cm, and the accuracy is controlled within +/-5 mm. Make sure the black block is on the corresponding straight line with the deviation within 5mm on one side of the line. The vertical and vertical extension lines of any black square intersect at 90° with an deviation of ± 0.5°. Please refer to the illustration below for detailed dimensions.



⚠ Caution

- **The calibration site can be adapted to the vehicle size: length of 4.4m ～ 4.95 m, width of less than 2 m.**

■ Ground Flatness Requirement

In order to ensure the calibration effect, the flatness of the ground after laying is required to be high, the flatness deviation is required to be within the maximum deviation of +/-10mm for any 2 meters length. If the construction conditions permit, it is recommended to be controlled within +/-5 mm.

■ **Light Condition**

The ambient lighting requirements of the calibration site are mainly diffuse light, LED lighting (LED tube specification: 1.2 meters long, 6500 K color temperature, power above 16 W), using LED tube vertical lighting, requiring ambient brightness between 300 lux and 1000 lux (It is recommended to use at least three rows of LED tubes, and at least 7 LED tubes in each row). The lighting LED tubes should be installed at a height of 3 to 5 meters directly above the calibration field. In order to prevent sunlight from entering the calibration field through doors and windows, it is required the doors and windows around the field are covered with thick white cloth or shading plates.

3 Diagnosis & Testing

3.1 Problem Symptoms Table

Hint:
Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair, replace or adjust faulty components as necessary.

Symptom	Suspected Area
After reverse gear is engaged, there is no reversing view monitor and the meter does not display the reverse distance	Observe whether the back-up light is come on: If it is come on, check the reverse signal input of DVD/ navigation system and BCM. If it is not come on, check the back-up light switch and line
After reverse gear is engaged, there is no reversing view monitor and the meter display the reverse distance	Check the reverse signal input of DVD/navigation system, camera and line.
After reverse gear is engaged, there is reversing view monitor (if equipped with reversing view monitor) but the meter does not display the reverse distance	Check the reverse signal input of BCM, the LIN of BCM and reversing radar controller, and check the reversing radar controller
Sensor failure, and instrument cluster send an alarm	Check whether there is dirt on reversing radar sensor. If so, remove the dirt on the sensor and check whether the sensor is damaged. If necessary, replace the inspection sensor wire harness

3.2 Radar Control Module

■ **Reversing Radar Module Terminal Definition**

PIN	Description	PIN	Description
1	–	9	–
2	–	10	–
3	Radar Control Module Power Source	11	Sensor Power Source
4	–	12	Sensor Ground
5	BCAN-H	13	BCAN-L
6	–	14	Ground
7	Rear Left Radar Signal	15	Rear Right Radar Signal
8	Rear Center Radar Signal	16	Ground

■ **Front (Four) and Rear (Four) Radar Module Terminal Definition**

PIN	Description	PIN	Description
1	–	13	–
2	–	14	–