

Copyright Information

Copyright © 2021 by SHENZHEN SMARTSAFE TECH CO.,LTD. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of SMARTSAFE.

Neither SMARTSAFE nor its affiliates shall be liable to the purchaser of this unit or third parties for damages, losses, costs, or expenses incurred by purchaser or third parties as a result of: Accident, misuse, or abuse of this unit, or unauthorized modifications, repairs, or alterations to this unit, or failure to strictly comply with SMARTSAFE operating and maintenance instructions. SMARTSAFE shall not be liable for any damages or problems arising from the use of any options or any consumable products other than those designated as Original SMARTSAFE Products or SMARTSAFE Approved Products by SMARTSAFE.

All information, specifications and illustrations in this manual are based on the latest information available at the time of printing. SMARTSAFE reserves the right to make changes at any time without prior written or oral notice.

Trademark Information

SmartSafe is a registered trademark of SHENZHEN SMARTSAFE TECH CO.,LTD. in China and other countries. All other SMARTSAFE trademarks, service marks, domain names, logos, and company names referred to in this manual are either trademarks, registered trademarks, service marks, domain names, logos, company names of SMARTSAFE or are otherwise the property of SMARTSAFE or its affiliates. In countries where any of the SMARTSAFE trademarks, service marks, domain names, logos and company names are not registered, SMARTSAFE claims other rights associated with unregistered trademarks, service marks, domain names, logos, and company names. Other products or company names referred to in this manual may be trademarks of their respective owners. You may not use any trademark, service mark, domain name, logo, or company name of SMARTSAFE or any third party without permission from the owner of the applicable trademark, service mark, domain name, logo, or company name. You may contact SMARTSAFE by visiting the website at www.newsmartsafe.com, or writing to SHENZHEN SMARTSAFE TECH CO.,LTD., 3310, Building 11, Tian'an Cloud Park, Bantian Street, Longgang District, Shenzhen, China to request written permission to use Materials on this manual for purposes or for all other questions relating to this manual.

Safety Precautions

The ADAS ECO calibration tool is exclusively intended for vehicle ADAS system calibration. To avoid personal injury, property damage, or accidental damage to the product, read all of the information in this section before using the product:

- To operate the ADAS ECO calibration tool properly, user must have knowledge of automotive technology and is therefore aware of the sources of danger and risks in the repair shop and on vehicles.
- All notes given in the individual sections of the operating instructions apply. In principle it is required to follow the steps and safety precautions stated below.
- Furthermore, pay attention to all general instructions from labor inspectorates, trade associations and vehicle manufacturers as well as all laws, legal ordinances and instructions which have to be commonly obeyed by a repair shop.

The safety messages herein cover situations SMARTSAFE is aware of. SMARTSAFE cannot know, evaluate or advise you as to all of the possible hazards. You must be certain that any conditions or service procedure encountered do not jeopardize your personal safety.

Warning Symbols and Definitions	
	Indicates that there is a serious hazard. If it is not evaded or wrongly operated, it will cause death or serious injury to the user.
	Indicates that there is a potentially dangerous situation. If it is not circumvented or wrongly operated, it will cause minor injuries or property damage.
	Indicates the points of attention when using and the use situation to be avoided as much as possible.



The exhaust gas from the engine contains a variety of toxic compounds (such as hydrocarbons, carbon monoxide, nitrogen oxides, etc.), which can harm human health, cause unresponsiveness of personnel, and even cause serious personal injury or death. The vehicle under test should be parked in a well-ventilated place during operation.



Please read all safety warnings and operating information carefully. Failure to follow the safety warnings and operating information may result in electric shock, fire or serious personal injury.

1. Always keep the vehicle calibration in a safe environment.
2. Do not connect or disconnect the diagnostic equipment when the ignition switch is on or the engine is running.
3. Do not operate the diagnostic equipment while driving the vehicle to avoid distraction and cause a car accident.
4. Before starting the engine, the hand brake should be pulled, especially the front wheels should be blocked, and the gear lever should be placed in Neutral (manual transmission) or [P] position (automatic transmission) to avoid starting the engine and causing the vehicle to rush out and hurt people .
5. No smoking or sparks near the battery or engine. Do not operate the calibration tool in an explosive environment.
6. Please provide a fire extinguisher next to the workplace.
7. Please wear protective glasses when inspecting the car.
8. Make anti-rolling settings for the vehicle.
9. Be extremely careful when working around the ignition coil, distributor cap, ignition circuit and ignition plug. The voltage generated by these components when the engine is running is very dangerous.

10. To avoid damaging the diagnostic device or generating incorrect data, please ensure that the vehicle battery is sufficiently charged, the connection part of vehicle diagnostic link connector is clean, and the connection between the vehicle diagnostic link connector and the diagnostic device is safe.

Precautions for Operating ADAS ECO Calibration Tool

To avoid user injury or calibration tool damage caused by improper operation, please pay attention to the following points:

- Please be sure to install it in accordance with the method described in the manual.
- Prevent ADAS ECO from contacting water and being violently impacted.
- Prevent ADAS ECO from long-time sunlight.
- The light source should ensure that there are no reflection points on the calibration target.
- There should be no direct light source in the camera's field of view, otherwise the camera will reduce the exposure and darken the captured calibration target, which will adversely affect the calibration.
- Reasonable layout of light sources to ensure that the illumination of the calibration work site is evenly distributed.
- Please maintain ADAS ECO regularly.

Precautions for Operating the Vehicle

When performing calibration operations, please read the following information carefully:

- Ensure that all wheels of the vehicle are parked on level ground.
- Set the gear position to P (parking) state for Automatic Transmission vehicles.
- During the test, make sure the connection between the diagnostic device and the diagnostic link connector is good which is to avoid signal interruption affecting the test.
- The vehicle system is operating normally and there is no fault stored in the ECU DTC memory.
- To avoid losing the connector, please remove it from the vehicle diagnostic link connector after use.

Precautions for Using Laser Equipment



- Please store in a dry place.
- The laser beam is projected directly into the eyes, which can cause eye damage.
- Do not look directly at the laser beam.
- Please fix the laser level, do not point the laser beam at people or animals.
- Do not operate the laser level around children. Do not allow children to use laser equipment.
- Do not use a magnifying glass or telescope to observe the laser beam.
- Do not tear off or scratch the warning labels on the laser equipment.
- Do not bring the instrument close to the pacemaker.
- The instrument must be far away from magnetic data carriers and machines that are easily disturbed by magnetic fields.
- Do not operate the instrument in an explosive environment, such as an environment with flammable liquid, gas or dust.
- Do not use strong detergents or chemicals to clean the instrument. The instrument can be cleaned with water or a small amount of soap with water.
- Please prevent the instrument from falling down.
- Remove the battery when not using the instrument for a long time.

- When installing the laser, make sure that it is firmly installed.



Laser recognition glasses cannot be used as protective glasses. After wearing laser recognition glasses, it can help you identify lasers, but they cannot protect you from laser radiation.

Contents

1. Product Introduction	1
1.1 About ADAS	1
1.2 About ADAS ECO	1
1.3 Main Calibration Frame	1
1.4 Packing List	3
2. First Use	4
2.1 Install the Main Frame	4
2.2 Activate ADAS Function	6
3. Start Using ADAS Calibration Tool	8
3.1 Prerequisites for Using ADAS Calibration Tool	8
3.1.1 Workstation size	8
3.1.2 Workplace Floor Requirements	10
3.1.3 Workstation lighting	11
3.2 Calibrating Camera-based ADAS	11
3.2.1 Calibrating the Front Camera	11
3.2.2 Calibrating the Rear Camera & AVM Camera	20
3.3 Calibrating the Radar Sensor	21
4. Service and Maintenance	25

1. Product Introduction

1.1 About ADAS

ADAS stands for "Advanced Driver Assistance System". Its principle is to use vehicle cameras, radars, distance measurement and other sensors to sense the surrounding environment, collect data, and perform identification, detection and tracking for static and dynamic objects at any time during vehicle driving. Combined with the navigation map data, perform system calculation and analysis, so as to allow the driver to perceive the possible danger in advance, which effectively increase the comfort and safety of driving.

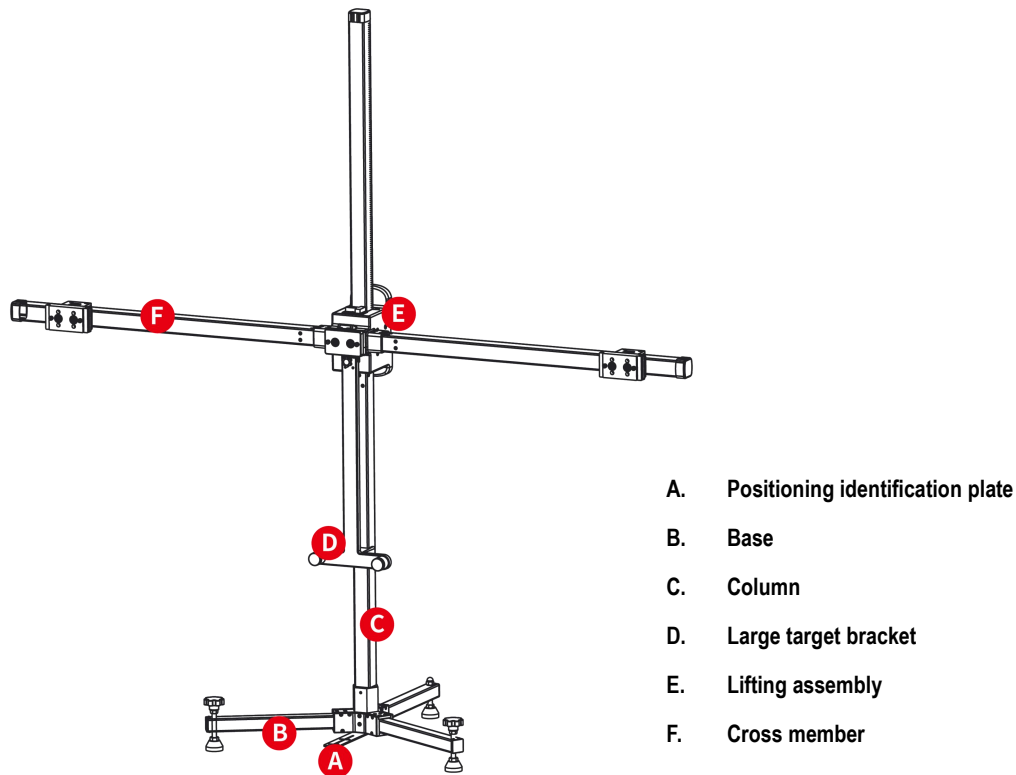
The cameras and sensors used in ADAS must be precisely calibrated and adjusted. Incorrect calibration will cause the system to output incorrect results or even completely fail, resulting in serious accidents or even death.

1.2 About ADAS ECO

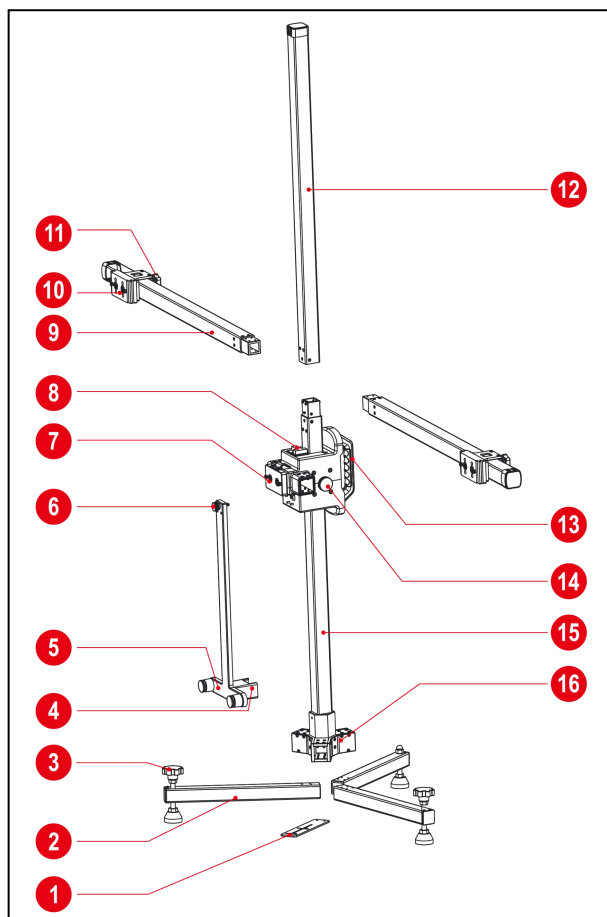
ADAS ECO is a lightweight, easy-to-install, and highly compatible passenger car ADAS calibration device developed by Smartsafe. It enables you to effectively and accurately calibrate vehicle cameras radars, and other sensors used in various driver assistance systems, such as front cameras for lane departure warning systems and radar sensors for ACC (Adaptive Cruise Control).

When using the ADAS ECO calibration device for vehicle calibration, it is necessary to use it together with a diagnostic tool authorized or recognized by Smartsafe that is compatible with ADAS functions (to be purchased separately). By adjusting the relative position between the ADAS ECO calibration device and the vehicle to be calibrated, and combining it with the calibration software on the diagnostic tool, the ADAS system calibration is completed.

1.3 Main Calibration Frame



(*This picture is for demonstration purposes only. Due to continuous product improvement, it will be updated from time to time. Please refer to the actual product.)



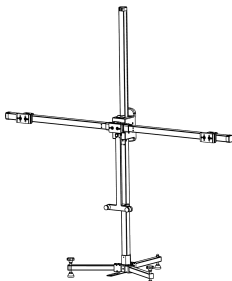
No.	Specific description
1	Positioning identification plate Used for locating the placement position for the calibration equipment.
2	Base support Used for supporting and balancing the calibration equipment.
3	Adjusting knob Used for adjusting the calibration equipment to be level.
4	Card slot Used for positioning the large target bracket on the column to ensure that the large target bracket moves up and down along the column direction with the lifting assembly.
5	Target positioning seat Used for supporting a large-sized front camera target.
6	Fixing knob Used for securing the large target bracket to the lifting assembly.
7	Center target fixing block Used for installing a center laser and small-sized target. When installing a large target, it should be pushed up to ensure that the target is correctly installed.

8	Spirit level
9	Beam Divided into two sections, left and right, including the target fixing seat and a scale ruler.
10	Target fixing block Used for installing the target and target extension rod.
11	Locking knob Used for securing the target fixing block. When unlocked, the target fixing block can move left and right on the beam.
12	Column - Upper section Provided with a scale for locating the moving position of the lifting assembly.
13	Handle Convenient for moving the device.
14	Fixing knob Used for fixing lifting assembly.
15	Column - Lower section Used for connecting the base and the positioning identification plate.
16	Base connecting seat Used for installing the base support and positioning identification plate.

1.4 Packing List

The following attachment is for reference only. For product configuration details, please consult the local dealer or refer to the accompanying packing list.

 **Heavy equipment may fall and cause personal injury. Please unload the equipment with the help of others or use appropriate auxiliary tools as needed.**

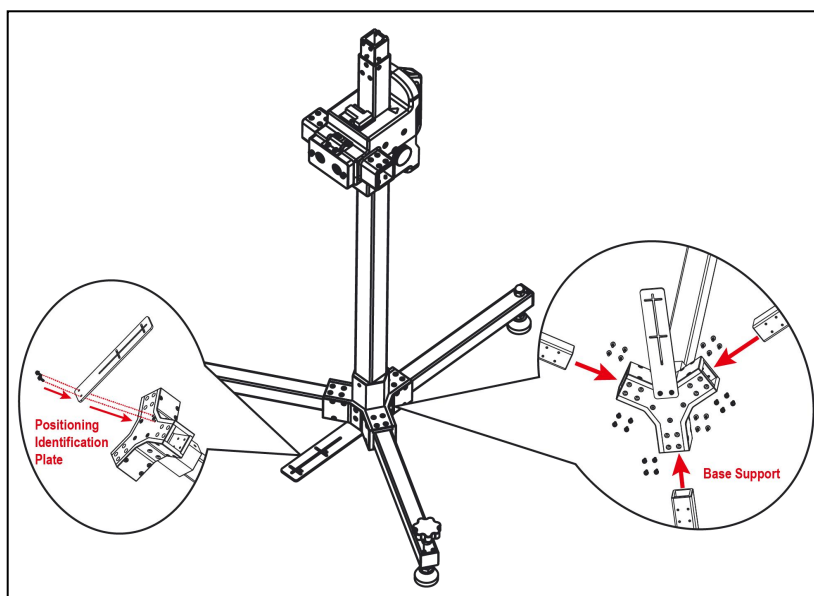
Accessory Name	Reference Image	Quantity
Main Calibration Frame		1
ADAS Activation Card	-	1
User Manual	-	1
Installation Guide	-	1
Packing List	-	1

2. First Use

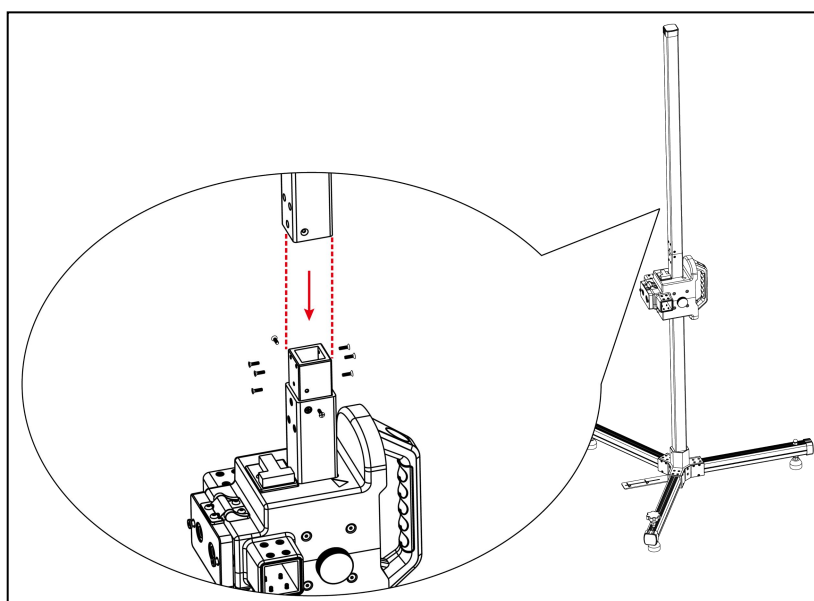
2.1 Install the Main Frame

When the ADAS ECO is shipped from the factory, its main components are disassembled and packaged for ease of transportation. Please follow the steps below to assemble it.

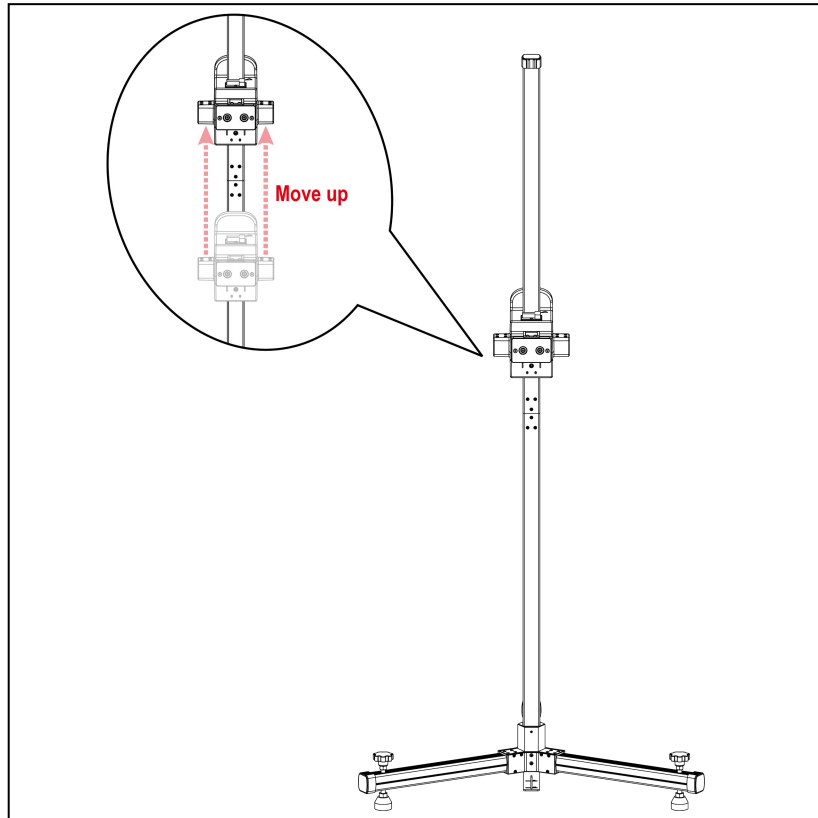
1. Remove the lower section of the column and place it on the workbench.
2. Take out the positioning identification plate, keep the side with screen print facing up, align the positioning identification plate with the mounting holes on the base connecting seat, tighten the screws to secure the positioning identification plate to the base connecting seat.
3. Align the three sections of base support with the fixing grooves on the base connecting seat respectively, and insert the base support into the bottom of the fixing grooves. Use eight screws (four on top and four on the bottom) to fasten each section of the base support and the base connecting seat.



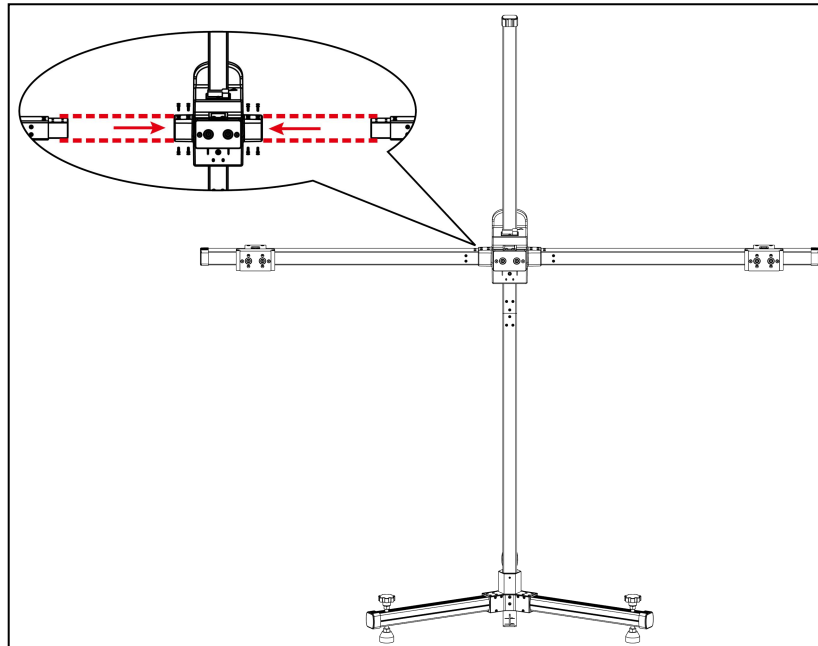
4. Remove the upper section of the column and align the upper and lower sections of the column before inserting it into the base. Use eight screws (three each in the front and back, one each on the left and right) to tighten the upper and lower sections of the column.



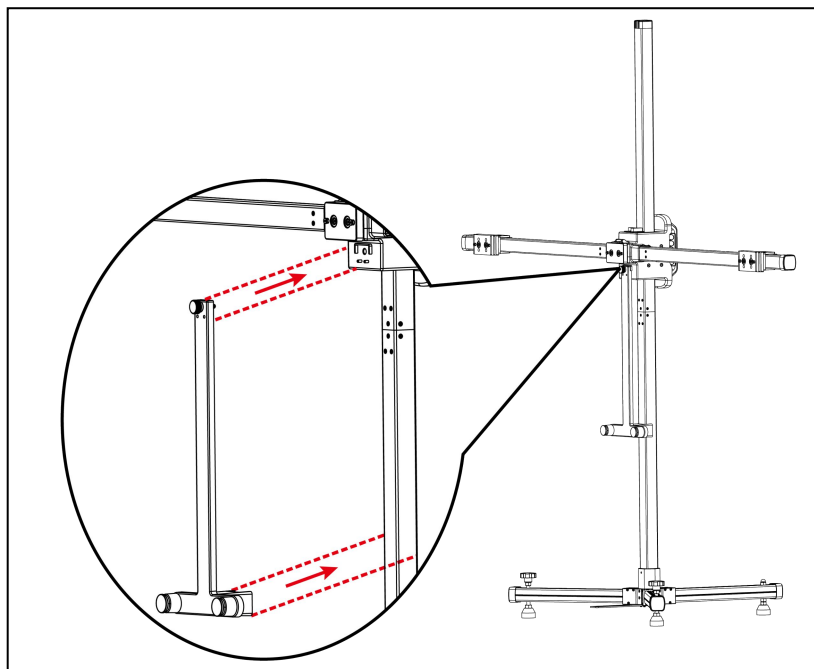
5. Loosen the fixing knob on the lifting assembly to move the lifting assembly to the upper section of the column, then tighten the fixing knob to secure it.



6. Remove the left and right beams, align the beam fixing slot on the lifting assembly and insert to the bottom. Use eight screws in total (four on top and four on the bottom) to tighten the left and right beams and the lifting assembly.



7. Align the slot under the large target bracket with the column, align the screw on the top of the large target bracket with the mounting holes on the lifting assembly, and then tighten the screw to fix the large target bracket on the lifting assembly.



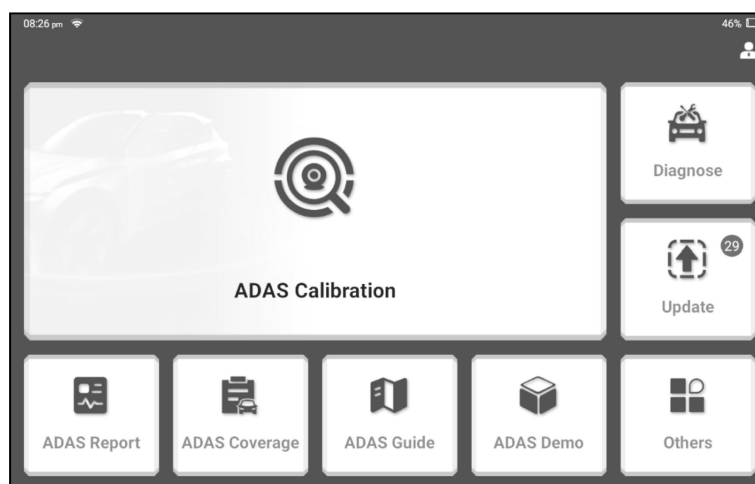
2.2 Activate ADAS Function

Before using the calibration function, the user needs to activate the ADAS function authorization on the diagnostic tool (purchased separately) with the activation card included with the machine.

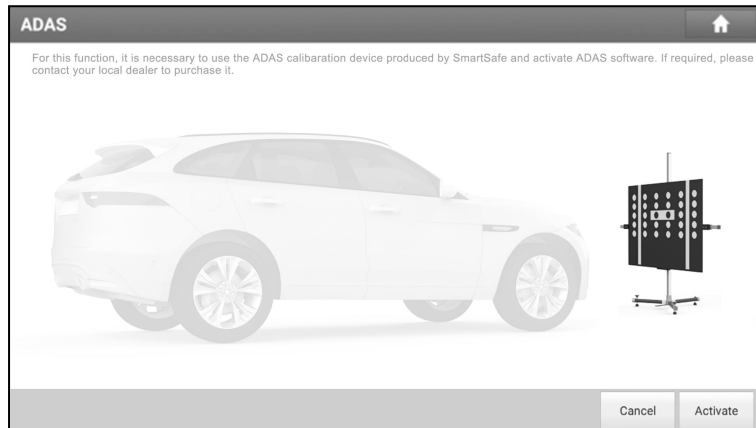
The specific activation steps are as follows:

 **Note:** For different diagnostic tool, the access to ADAS function may be different.

1. Start the diagnostic device and enter the software main interface.
2. Click the **ADAS** icon on the screen to enter the following screen:



3. Tap **ADAS Calibration**, if the ADAS function is not activated, the screen will display as follows:



4. Tap **Activate** to enter the ADAS activation screen.

Please choose the device serial number to activate the ADAS software:

Please enter the ADAS Activation Card password:

Activation Code

ACTIVATE

5. Select the correct device serial number, enter the 24-digit activation code (take out the ADAS activation card that comes with the tool, and scratch the coating area to display the activation code), and tap **ACTIVATE**.
6. Now the ADAS function becomes accessible and is ready for use.

3. Start Using ADAS Calibration Tool

The calibration operations must strictly follow the software prompts on the diagnostic tool. ADAS calibration can be divided into dynamic calibration and static calibration. For static calibration, it requires using the calibration tool and corresponding target to complete. During static calibration, the user is required to place the calibration tool in a fixed position in front of the vehicle according to the software prompts and adjust the device to be parallel and centered to the vehicle, use the correct calibration target, and adjust the target altitude to the one specified by the software.

3.1 Prerequisites for Using ADAS Calibration Tool

Reason for Calibration:

- Repair or replace the sensor control unit (replace ACC radar, front camera sensor).
- The deviation angle of the sensor is out of normal range (the angle of installation position is incorrect).
- The position of the sensor on the vehicle body has changed (the sensor or the component used to fix the sensor has been moved)
- Repair or replace the parts that fix the sensors (replace the bumper, front windshield).
- Adjust the chassis.

Before using the calibration tool to perform the calibration, please ensure the following conditions:

- The position of the vehicle with a sensor cannot be damaged.
- The fixed sensor components and brackets cannot be deformed.
- Check the air pressure of tire and correct it to the recommended value if necessary.
- Apply the parking brake and close the door.
- Make sure that the vehicle's coolant and oil should be within the recommended range, and fill up with fuel. The vehicle does not carry any items (passengers or cargo).
- Connect the VCI to the vehicle to ensure that there is no DTC in other systems of the vehicle except ADAS-related systems.
- During calibration, the operator should not support on the vehicle.

3.1.1 Workstation size

3.1.1.1 For Front Camera Calibration

The workplace requirements when calibrating the front camera are as follows:

Distance A = about 1.8 meters (the width of the calibration tool)

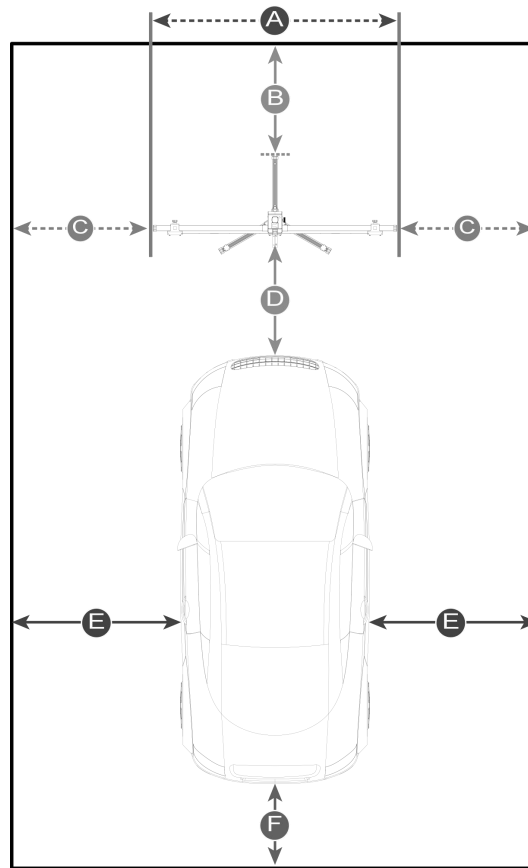
Distance B = about 1 meter (from the target holder to the wall)

Distance C = at least 0.5 meters (from the edge of the calibration tool to other obstacles)

Distance D = varies from vehicle to vehicle, about 1.5 meters is strongly recommended (from the calibration tool to the vehicle)

Distance E = reserved for about 1 meters (from the vehicle to other obstacles)

Distance F = at least 0.5 meters (a lane for technician to walk through)



3.1.1.2 For Rear & AVM Cameras Calibration (Optional)

For calibrating the rear & AVM camera, the whole workstation size depends on the vehicle size and the calibration reference pattern. The following illustration describes the maximum workstation size for reference only.

For American vehicles:

- Distance A = about 7.3 meters (the width of the whole workstation)
- Distance B = about 12 meters (the length of the whole workstation)
- Distance C = at least 0.5 meters (a lane for technician to walk through)
- Distance D = about 1.7 meters (the width of the calibration reference pattern. It varies from vehicle to vehicle)
- Distance E = about 2.9 meters (the width of the vehicle, varies from vehicle to vehicle)

For European vehicles:

- Distance A = about 4.5 meters (the width of the whole workstation)
- Distance B = about 7 meters (the length of the whole workstation)
- Distance C = at least 0.5 meters (a lane for technician to walk through)
- Distance D = about 0.8 meters (the width of the calibration reference pattern. It varies from vehicle to vehicle)
- Distance E = about 1.9 meters (the width of the vehicle. It varies from vehicle to vehicle)

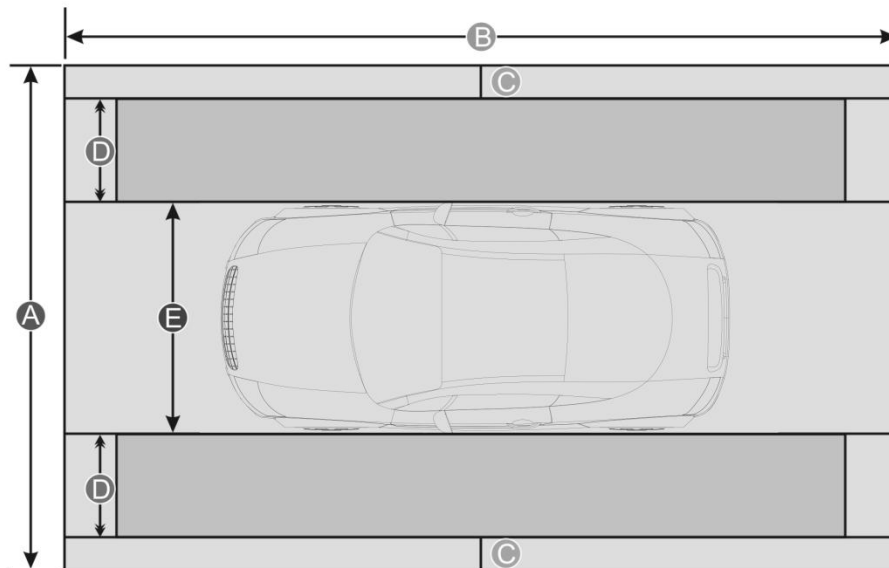
For Asian vehicles:

- Distance A = about 6.1 meters (the width of the whole workstation)
- Distance B = about 9.5 meters (the length of the whole workstation)

Distance C = at least 0.5 meters (a lane for technician to walk through)

Distance D = about 1.6 meters (the width of the calibration reference pattern. It varies from vehicle to vehicle)

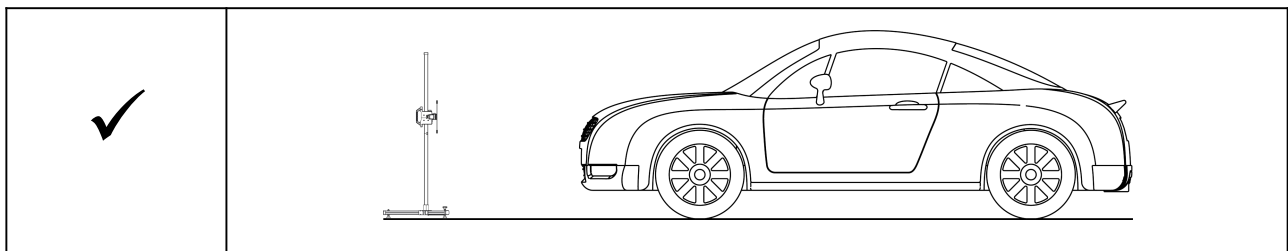
Distance E = about 1.9 meters (the width of the vehicle. It varies from vehicle to vehicle)



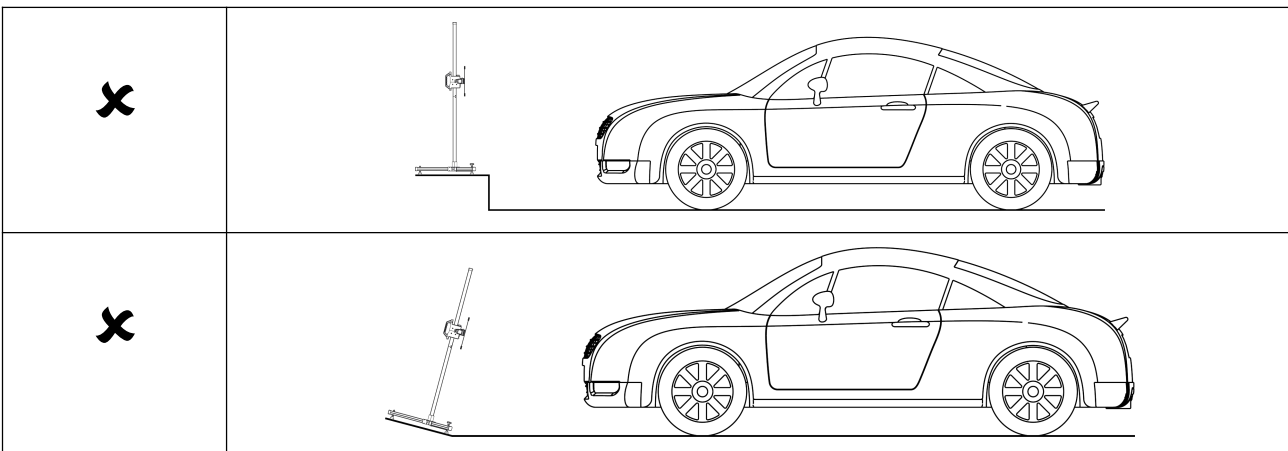
3.1.2 Workplace Floor Requirements

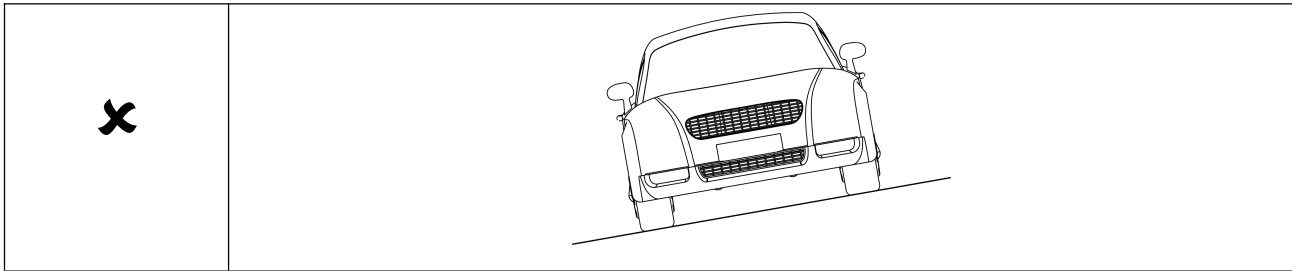
Make sure all the wheels of the vehicle are parked on a level surface.

Correct way:



Incorrect ways:





3.1.3 Workstation lighting

- ✓ The lighting system around the calibration work site should be a non-frequency flash source, including but not limited to: LED light source, industrial lighting that meets international standards, and reverse phase dual light sources.
- ✓ There should be no direct light source in the view range of camera, otherwise the camera will reduce the exposure and darken the captured calibration target, which will adversely affect the calibration.
- ✓ Reasonable layout of light sources to ensure there are no reflection points on the calibration target.
- ✓ Reasonable layout of light sources to ensure even distribution of light in the calibration workplace
- ✓ Do not change the light brightness and ensure that there are no other changing light sources around the work site, such as a driving vehicle with lights on.

3.2 Calibrating Camera-based ADAS

Before calibration, you need to connect the diagnostic device and the vehicle, start the APP, and then click "ADAS" to automatically scan to obtain vehicle information and enter the ADAS menu, or manually select the vehicle software and the system that needs to be calibrated.

3.2.1 Calibrating the Front Camera

When using ADAS ECO to perform the calibration of vehicle front camera, the following steps are generally required:

 **Note:** The accessories and calibration targets mentioned below, such as the plumb line LAM09-06, five-line laser, laser reflector LAM09-03, auxiliary mirror LAM09-04, positioning bracket LAM09-05, target extension rod LAM09-08 and LAM09-09, etc., are optional.

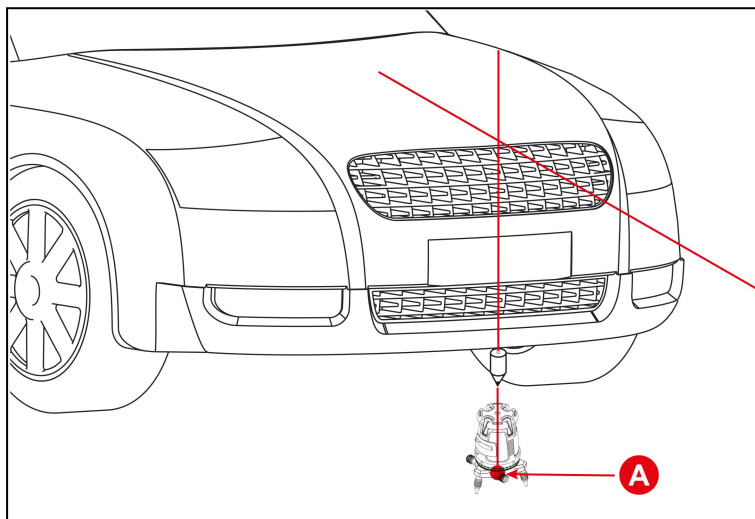
- Step 1.** Identify point A and point B
- Step 2.** User laser to connect points A and B to determine the centerline P of the car
- Step 3.** Identify point C
- Step 4.** Place the calibration equipment and adjust it to be parallel to the vehicle
- Step 5.** Set height
- Step 6.** Select and install the target for corresponding vehicle type
- Step 7.** Execute the calibration function

 **Note:** The placement position of ADAS ECO calibration tool varies with vehicle models. Please strictly refer to the software prompts.

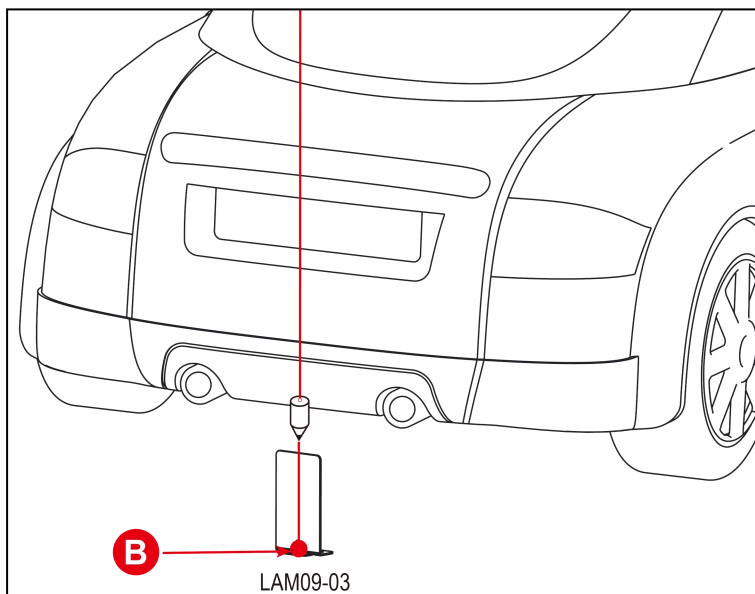
The following is an example of measuring the distance from the target to the center of the front wheel hub. Detailed operation steps are as follows:

【Step 1】 Identify point A and point B

1. Place the plumb line LAM09-06 in the center of the car's logo on the front of the car, naturally hanging down to the ground, and place a cross positioning sticker at the contact point between the plumb line and the ground, which is point A. Place a five-line laser at point A.



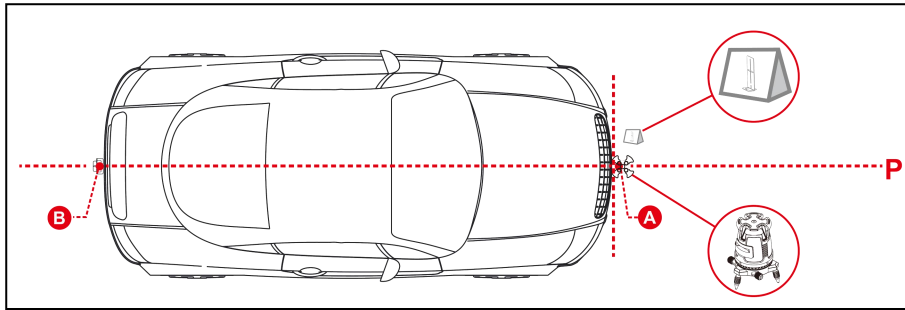
2. Place the plumb line LAM09-06 in the center of the car's logo on the rear of the car, naturally hanging down to the ground, and place a cross positioning sticker at the contact point between the plumb line and the ground, which is point B. Place the laser reflector LAM09-03 at point B.



【Step 2】 User laser to connect points A and B to determine the centerline P of the car

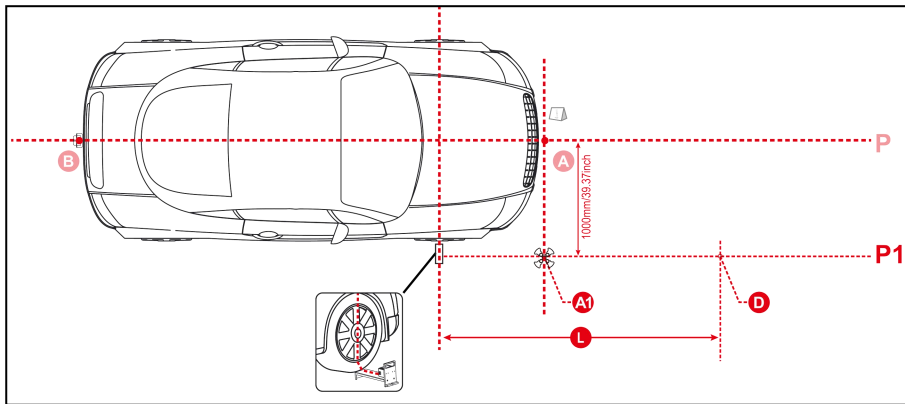
1. Place the auxiliary mirror LAM09-04 in front of the car. Adjust the five-line laser to be horizontal, turn on its power switch to activate the laser beam.
2. Adjust the five-line laser so that the vertical laser beam is projected onto the central axis (reflective strip) of the laser reflector LAM09-03.

 **Note:** If the vehicle chassis is too low for the laser to pass through, please swap the position of the five-line laser with the laser reflector LAM09-03.

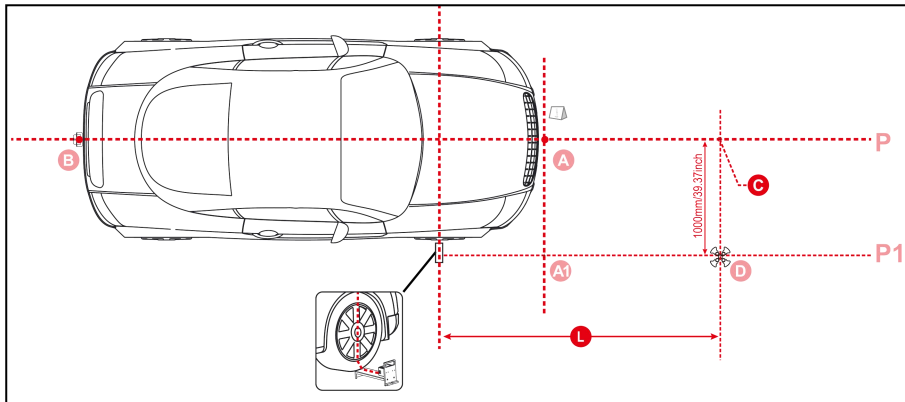


【Step 3】 Identify point C

1. Place the positioning bracket LAM09-05 at the center of the front wheel hub of the vehicle.
2. Place a cross positioning sticker on the horizontal laser line at the center of the five-line laser, marking point A1; the recommended distance from point A1 to point A is 1000mm/39.37inch.
3. Move the five-line laser to point A1, so that its horizontal laser line passes through point A, and measure the distance from point D to the positioning bracket LAM09-05 on the vertical laser line P1 as L (L = the distance indicated by the calibration software).

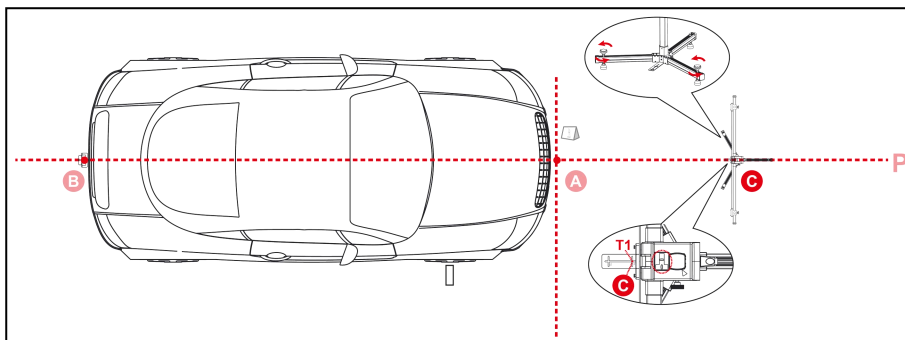


4. Move the five-line laser to point D, so that its vertical laser line passes through point A1, place a cross positioning sticker on its horizontal laser line, mark point C, so that the distance from point C to point D is equal to the distance from point A1 to point A.



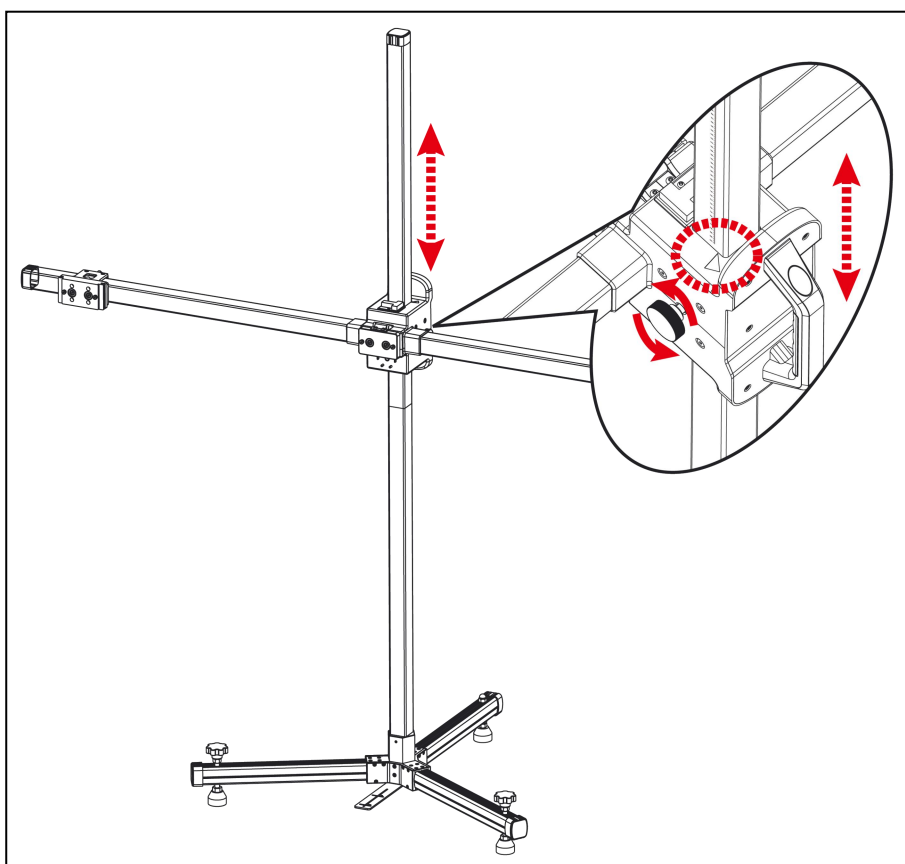
【Step 4】 Place the calibration equipment and adjust it to be parallel to the vehicle

1. Place the equipment so that the T1 position of the base is aligned with point C.
2. Observe the spirit level on the crossbar. If the position is not centered, rotate the bottom knob to adjust until the bubble is in the center.
3. Ensure that the equipment is parallel to the vehicle.



【Step 5】 Set height

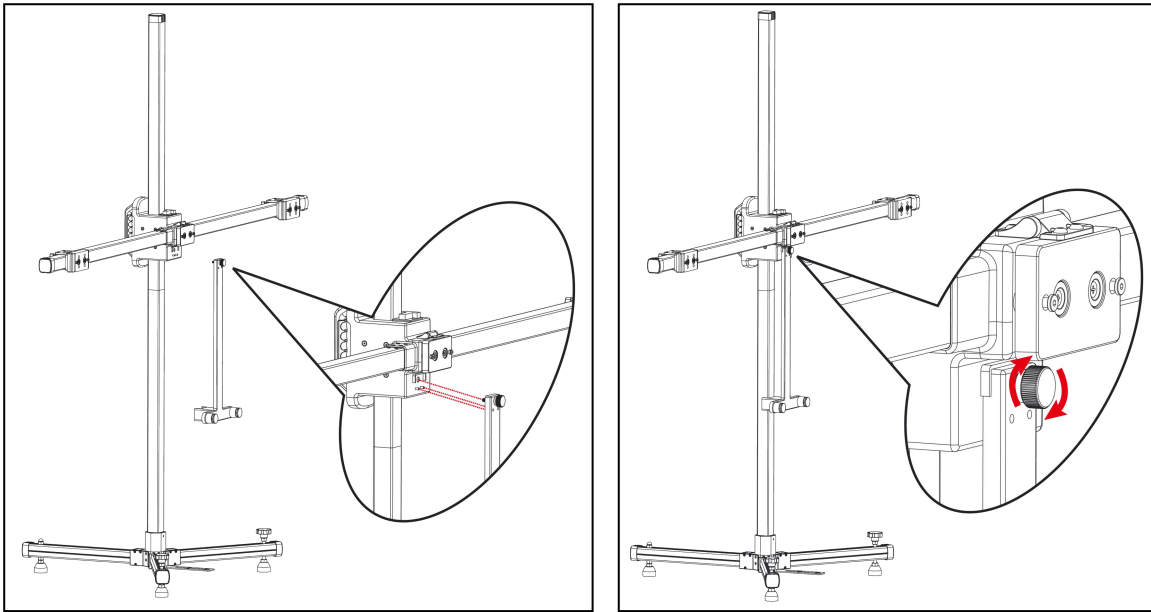
Unlock the fixing knob, move the beam to adjust its height to H (H=the height indicated by the calibration software).



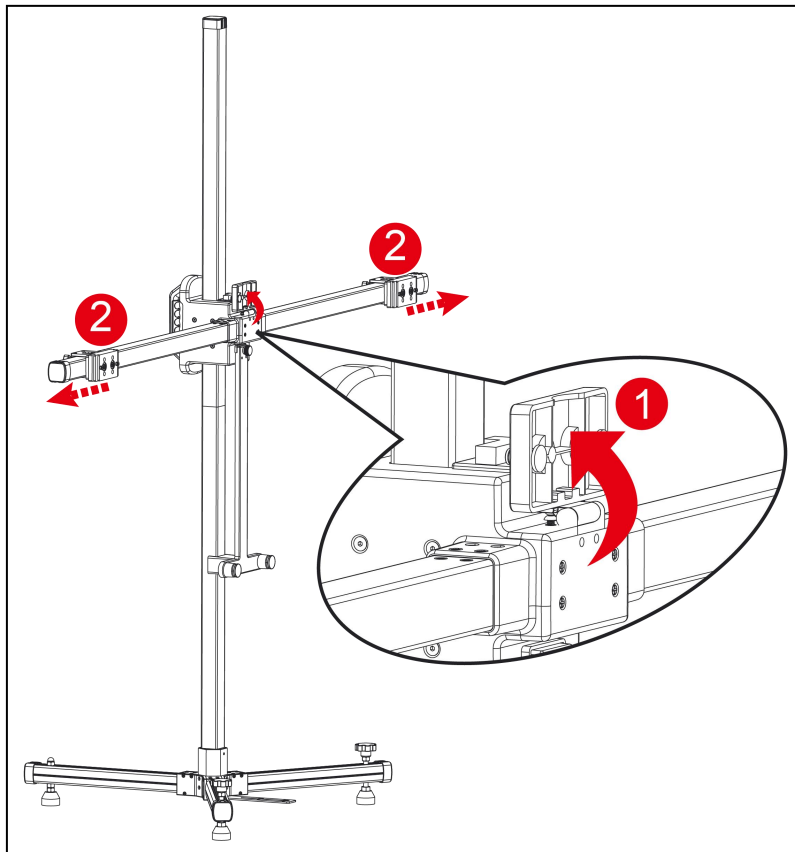
【Step 6】 Select and install the target for corresponding vehicle type

The ADAS ECO calibration equipment provides a variety of front camera calibration targets (optional) for calibrating vehicle cameras. Choose the corresponding target panel according to the vehicle type to be calibrated. Using a large-sized front camera target (such as LAM01-02) as an example, the installation method is as follows:

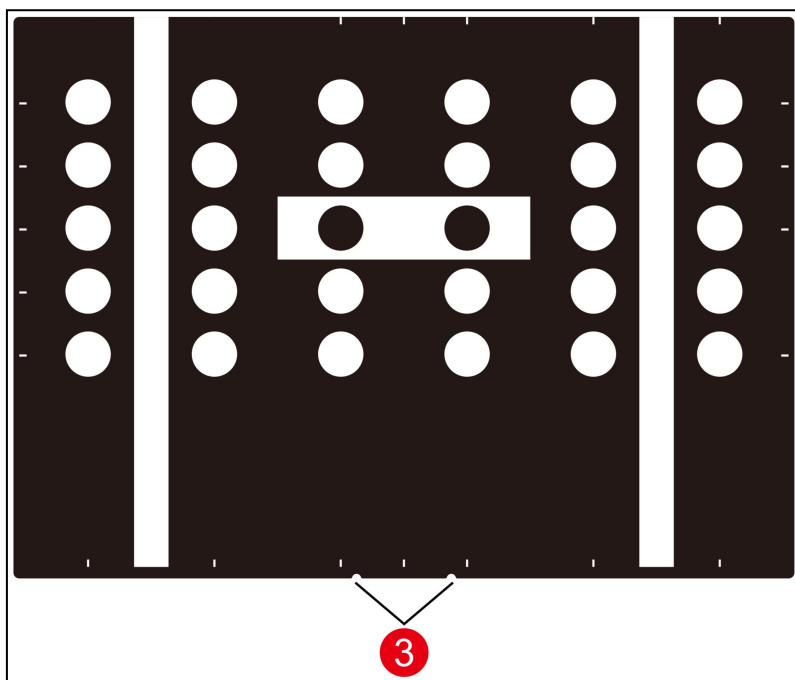
1. Align the mounting holes on the calibration equipment with the large target bracket, tighten the fixing knob to install and secure the target bracket.



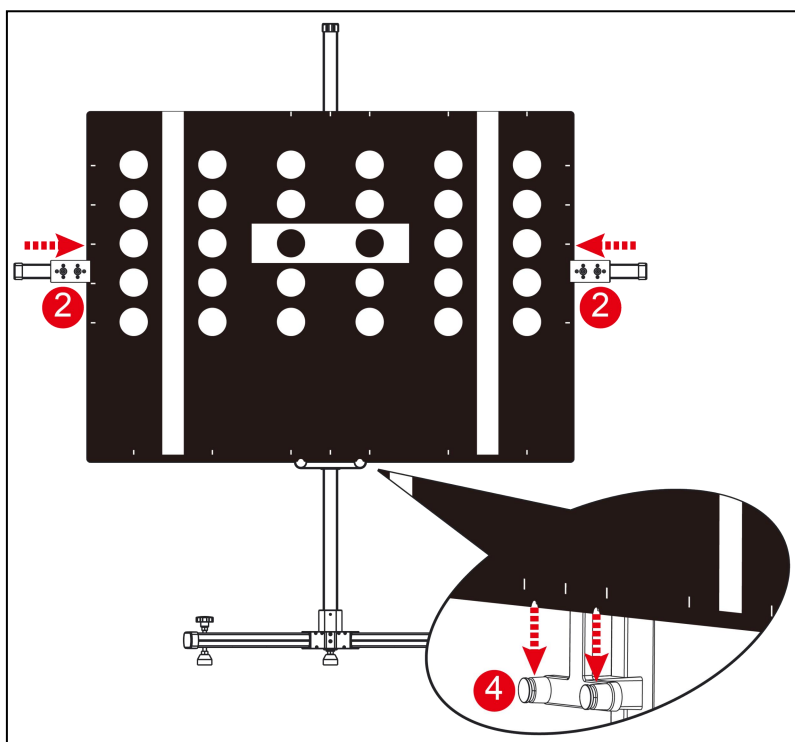
2. Flip the magnetic suction plate ① in the middle to a vertical position, and move the left and right target fixing blocks ② to the sides.



3. Find the mounting holes ③ of the large target, which are usually located in the middle of the bottom of the target.



4. Align the mounting holes of the target with the target positioning seat ④, fix the target in place, and move the left and right target fixing blocks ② until they firmly grip both sides of the target.



 **Note:** For the installation steps of the small-sized front camera target, please refer to the [Small Target Installation Method] at the end of the section.

【Step 7】Execute the calibration function

Follow the software prompts to perform the calibration function, and after calibration is completed, you can save the ADAS report. Please rescan the

system after calibration is complete to confirm that the issue has been resolved.

【Small target installation method】

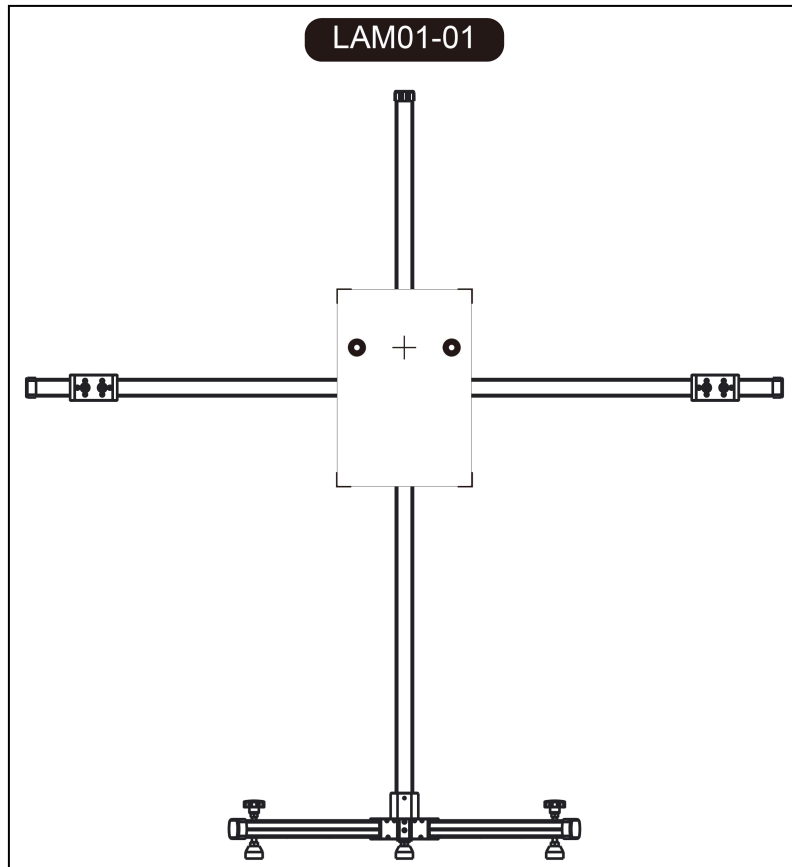
If you are using a small target, install it as follows:

Align the circular holes on the fixing bracket on the back of the target with the hook nails on the target fixing block, hang it on the hook nails, and pull the target downwards to install it in place without shaking.

Installation and use of the small target can be in the following 3 situations:

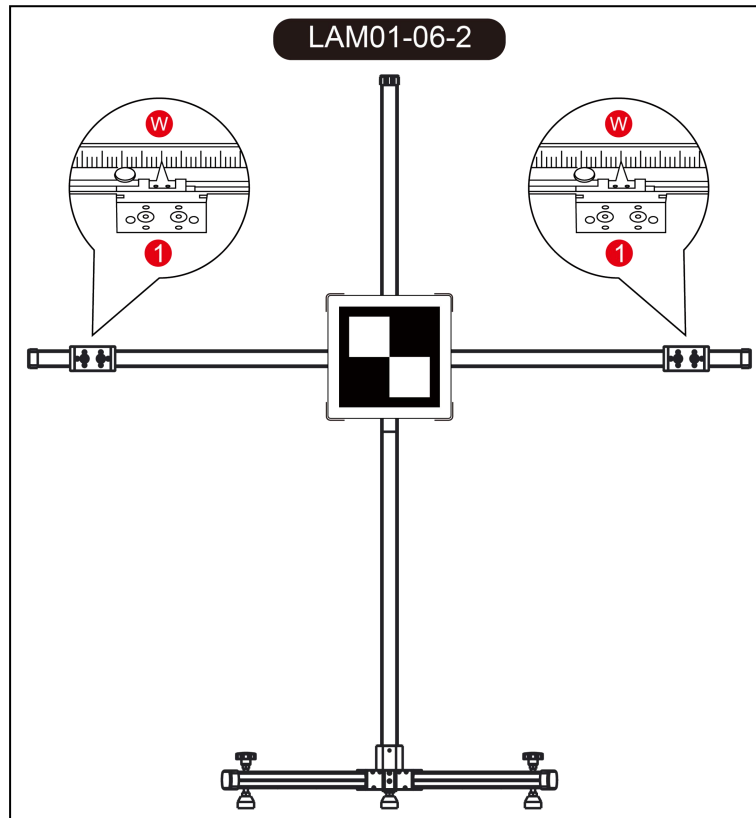
1. Single target, installed on a center target fixing block (e.g. LAM01-01).

Mount the target on the center target fixing block, and it is required that the magnetic suction plate of the target fixing block is not flipped up.

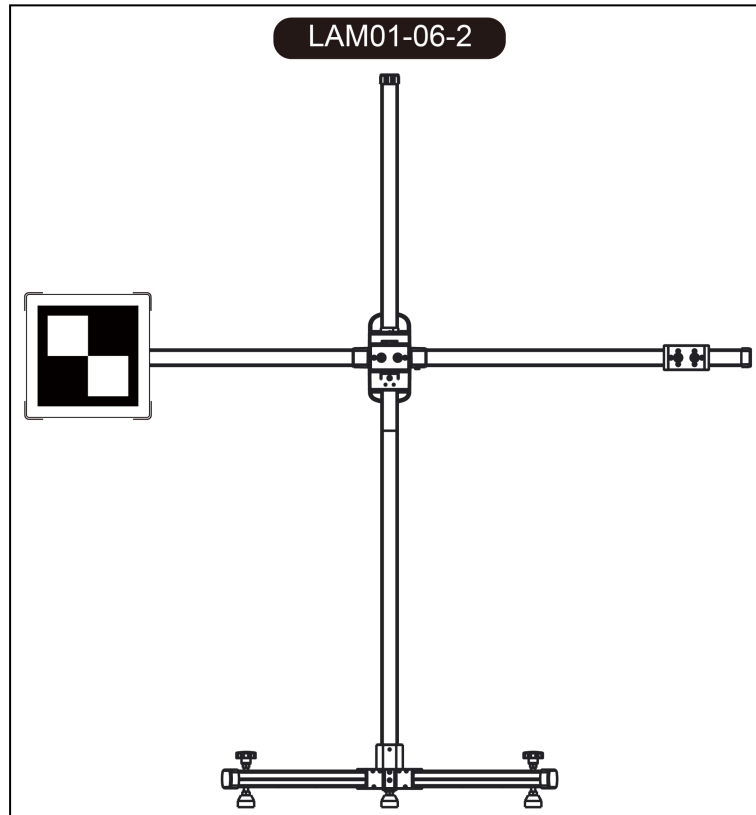


2. Single target, installed in multiple positions (e.g. LAM01-06-2)

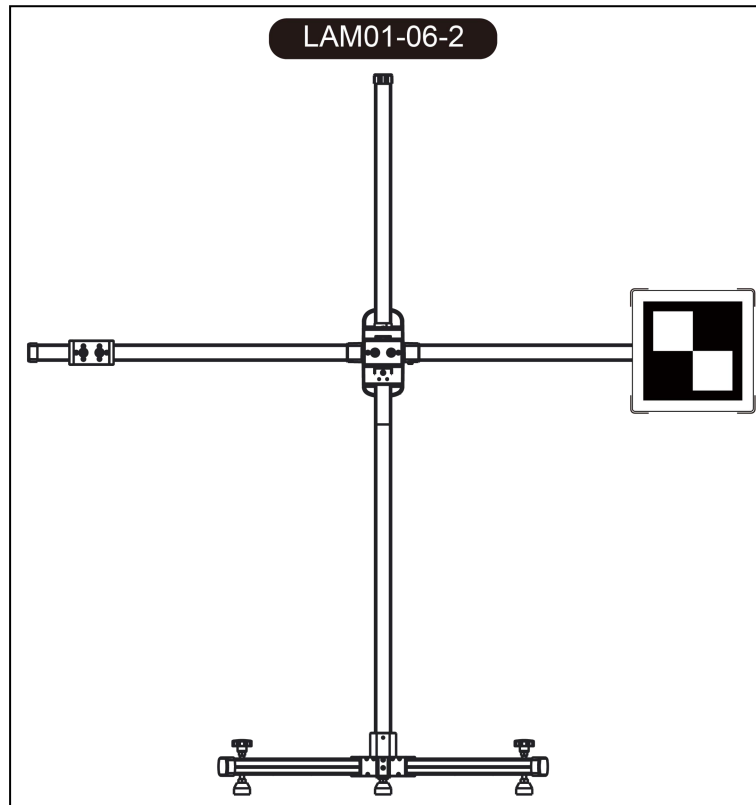
- 1) Move the left and right target fixing blocks ① to position W on the scale, where W is the scale indicated by the software.
- 2) Install the target on the center target fixing block and perform calibration.



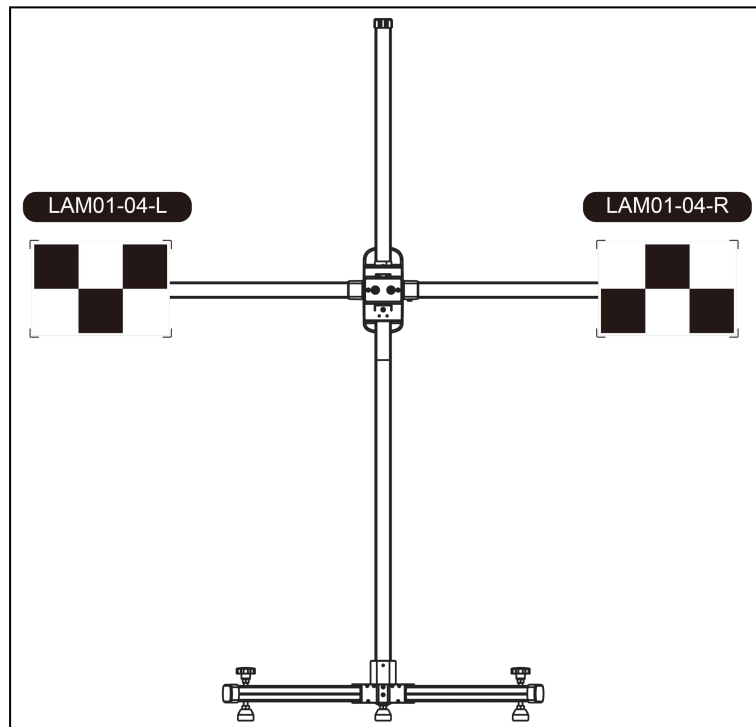
- 3) After calibration, remove the target and install it on the left target fixing block, then perform calibration.



- 4) After calibration, remove the target and install it on the right target fixing block, then perform calibration.



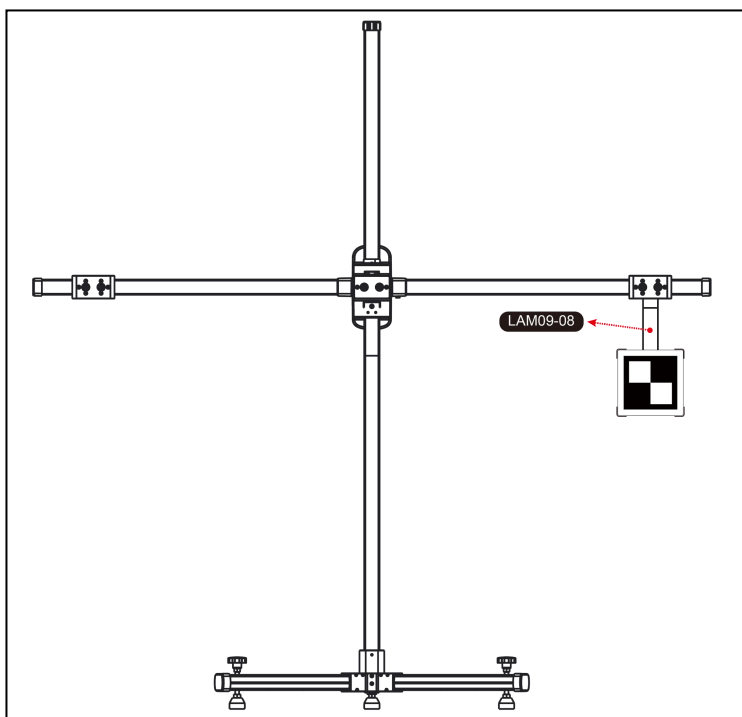
3. Two targets, installed on the left and right target fixing blocks (e.g. LAM01-04-L/LAM01-04-R).
 - 1) Move the left and right target fixing blocks ① to position W on the scale, where W is the scale indicated by the software.
 - 2) Install the left and right targets on the left and right target fixing blocks, respectively.



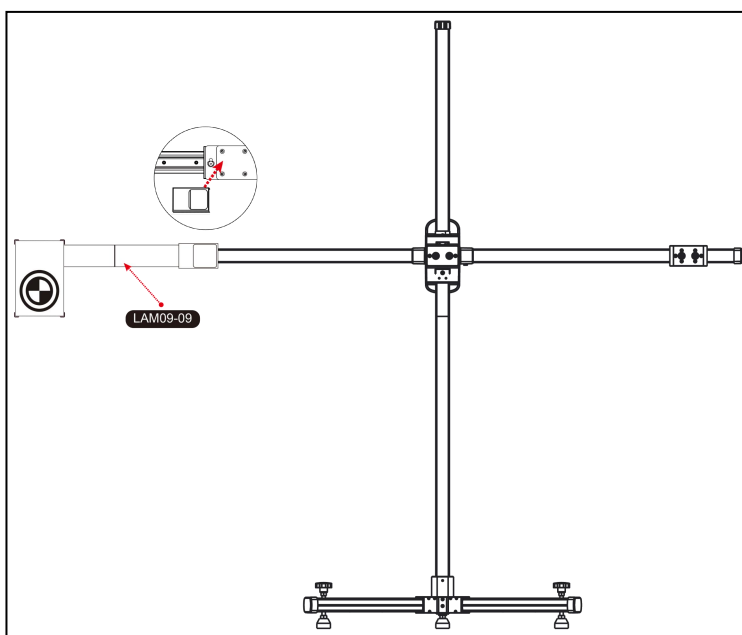
When the horizontal width or minimum height of the main frame cannot meet the calibration requirements of the vehicle, target extension rods need

to be used to expand support.

- 1) When the minimum height cannot be met, use the target extension rod LAM09-08. Install it on the target fixing block (same as the installation method for the small target), and then install the target on the extension rod.



- 2) When the horizontal width cannot be met, use the target extension rod LAM09-09. Install it on the target fixing block, then use the locking device to ensure the target extension rod is securely installed, and then install the target on the extension rod.



3.2.2 Calibrating the Rear Camera & AVM Camera

When calibrating the rear camera or AVM camera, there is no need to use the ADAS ECO calibration tool, just select the corresponding rear view or surround view calibration targets of vehicle model, and place the targets on the corresponding position according to the software prompts.

3.3 Calibrating the Radar Sensor

The ADAS ECO calibration tool provides a variety of radar sensor calibration targets (optional), which are used for the calibration of ADAS radar sensor. When using ADAS ECO to perform calibration for vehicle radar sensors, generally you need to follow the steps below (take ACC radar as an example):

Note: The accessories and calibration targets mentioned below, such as the plumb line LAM09-06, laser reflector LAM09-03, auxiliary mirror LAM09-04, mounting plate, ACC radar reflector plate, etc., are optional.

Step 1. Identify point A and point B

Step 2. User laser to connect points A and B to determine the centerline P of the car

Step 3. Identify point C

Step 4. Secure the mounting plate and place the calibration equipment

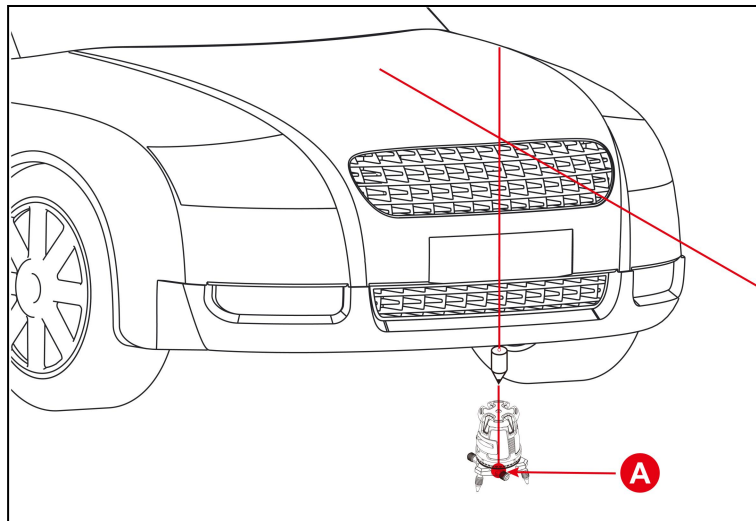
Step 5. Install the ACC radar reflector plate and adjust the horizontal position

Step 6. Execute the calibration function

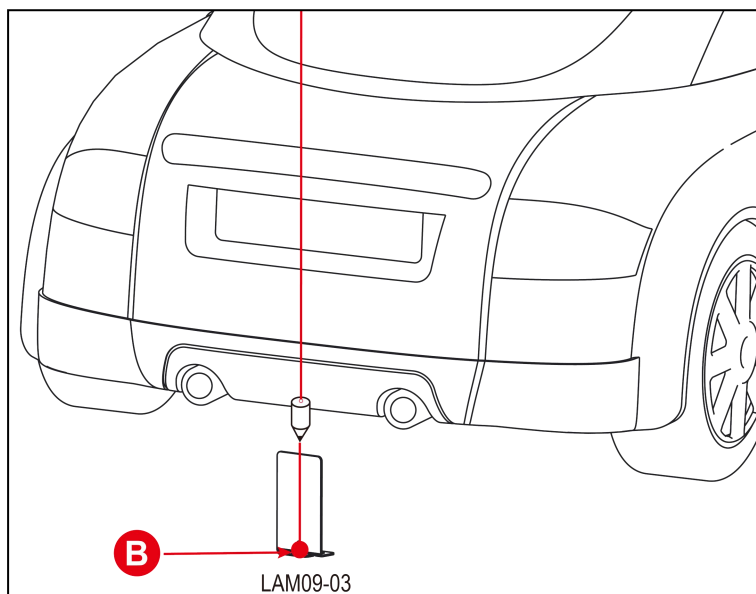
The following is a detailed introduction of the operation steps for calibrating the radar to the center position of the vehicle.

【Step 1】 Identify point A and point B

1. Place the plumb line LAM09-06 in the center of the car's logo on the front of the car, naturally hanging down to the ground, and place a cross positioning sticker at the contact point between the plumb line and the ground, which is point A. Place a five-line laser at point A.



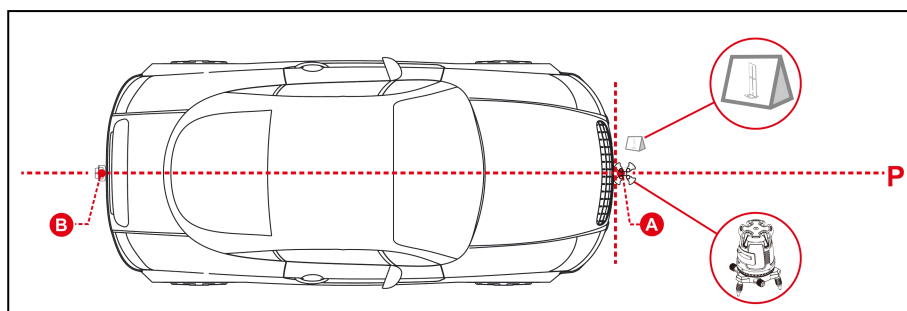
2. Place the plumb line LAM09-06 in the center of the car's logo on the rear of the car, naturally hanging down to the ground, and place a cross positioning sticker at the contact point between the plumb line and the ground, which is point B. Place the laser reflector LAM09-03 at point B.



【Step 2】 User laser to connect points A and B to determine the centerline P of the car

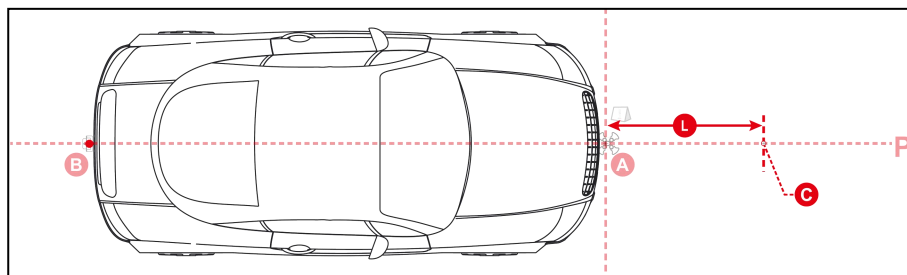
1. Place the auxiliary mirror LAM09-04 in front of the car. Adjust the five-line laser to be horizontal, turn on its power switch to activate the laser beam.
2. Adjust the five-line laser so that the vertical laser beam is projected onto the central axis (reflective strip) of the laser reflector LAM09-03.

 **Note:** If the vehicle chassis is too low for the laser to pass through, please swap the position of the five-line laser with the laser reflector LAM09-03.

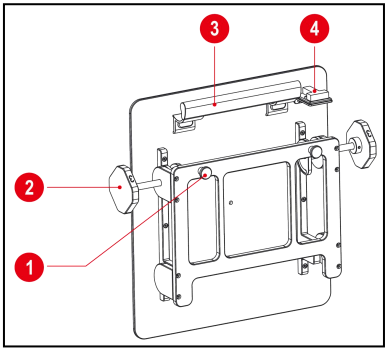


【Step 3】 Identify point C

Place the cross positioning sticker on the centerline P, mark point C, and make the distance from point C to point A equal to L (L = the distance prompted by the calibration software).

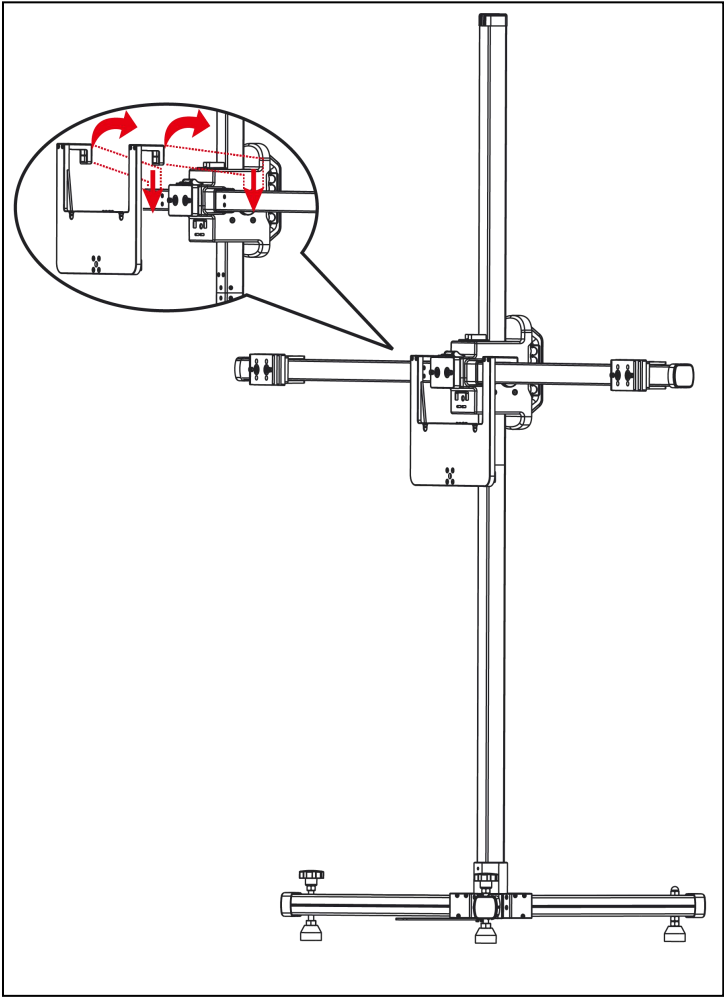


【Step 4】 Secure the mounting plate and place the calibration equipment

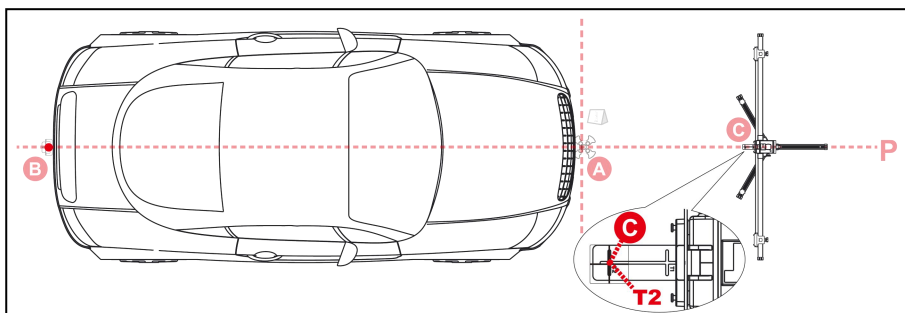


No.	Specific description
1	Positioning hook nail Used for hanging the ACC radar reflector on the mounting plate.
2	Level knob Used for adjusting the angle of the ACC radar reflector plate.
3	Handle
4	Spirit level

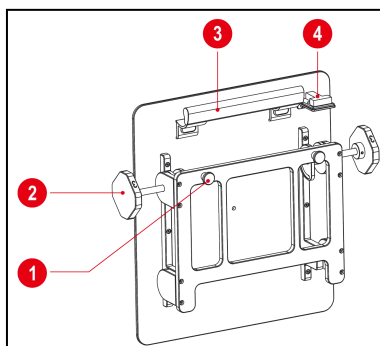
1. Install the mounting plate LAE09-10 on the beam as shown in the following figure.



- Place the equipment so that the base is aligned with point C.

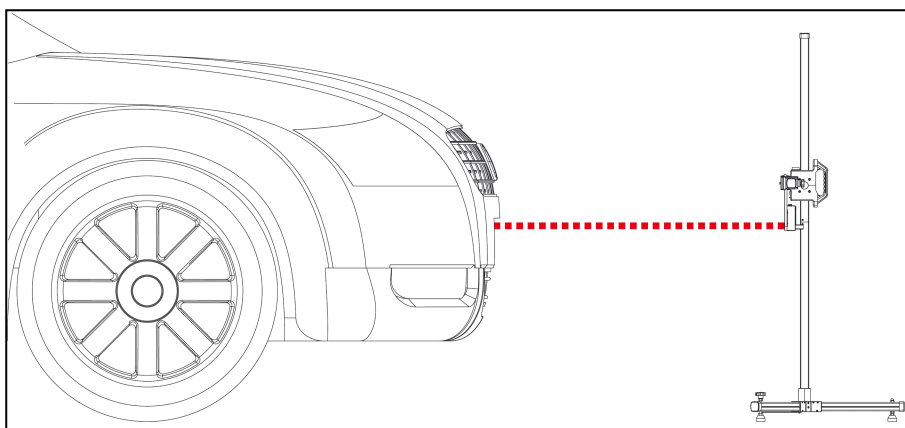


【Step 5】 Install the ACC radar reflector plate and adjust the horizontal position



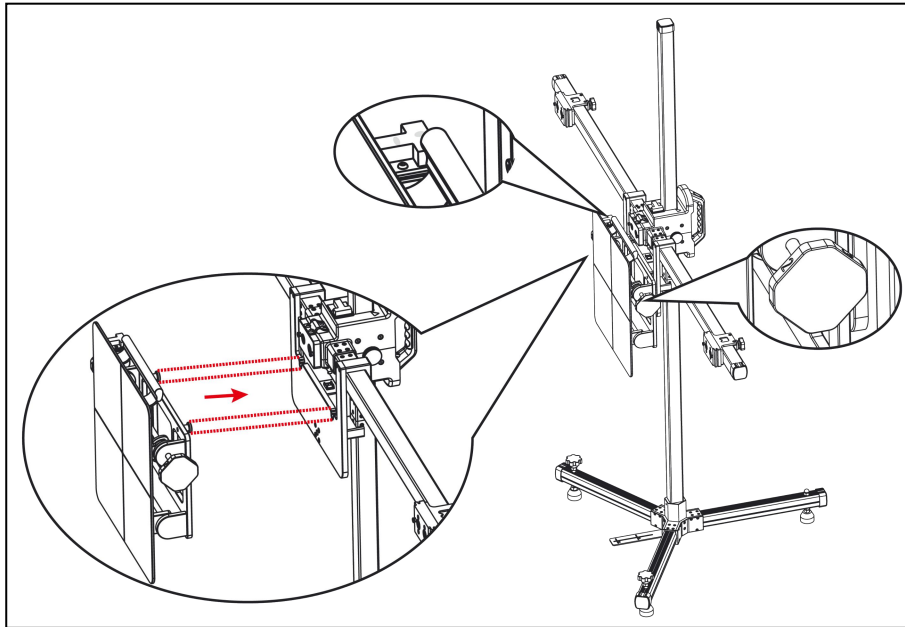
No.	Specific description
1	Positioning hook nail Used for hanging the ACC radar reflector on the mounting plate.
2	Level knob Used for adjusting the angle of the ACC radar reflector plate.
3	Handle
4	Spirit level

- Turn on the mounting plate laser line.
- Adjust and fix the height of the equipment so that the laser point shines on the center position of the radar sensor.



- Install the ACC radar reflector plate LAM05-02.
- Adjust the position of the ACC radar reflector plate LAM05-02 to position 2.

5. Observe the spirit level on the ACC radar reflector plate①, if adjustment is necessary, adjust the base knob② to center the spirit level.



【Step 6】 Execute the calibration function

Follow the software prompts to perform the radar calibration, and after calibration is completed, you can save the ADAS report. Please rescan the system after calibration is complete to confirm that the issue has been resolved.

4. Service and Maintenance

- Be careful when operating each accessory of the ADAS calibration tool.
- Use acid- and resin-free grease or oil to wipe the movable components regularly.
- Clean the ADAS calibration tool regularly with a mild detergent.
- If you use a standard household cleaner, spray it on a damp towel.
- If any component is damaged, please use the original replacement component to replace it immediately.

Warranty

THIS WARRANTY IS EXPRESSLY LIMITED TO PERSONS WHO PURCHASE SMARTSAFE PRODUCTS FOR PURPOSES OF RESALE OR USE IN THE ORDINARY COURSE OF THE BUYER'S BUSINESS.

SMARTSAFE product is warranted against defects in materials and workmanship for one year from date of delivery to the user.

This warranty does not cover any part that has been abused, altered, used for a purpose other than for which it was intended, or used in a manner inconsistent with instructions regarding use. The exclusive remedy for any automotive meter found to be defective is repair or replacement, and SMARTSAFE shall not be liable for any consequential or incidental damages.

Final determination of defects shall be made by SMARTSAFE in accordance with procedures established by SMARTSAFE. No agent, employee, or representative of SMARTSAFE has any authority to bind SMARTSAFE to any affirmation, representation, or warranty concerning SMARTSAFE automotive meters, except as stated herein.

Disclaimer

The above warranty is in lieu of any other warranty, expressed or implied, including any warranty of merchantability or fitness for a particular purpose.

Purchase Order

Replaceable and optional parts can be ordered directly from your SMARTSAFE authorized tool supplier. Your order should include the following information:

Order quantity

Part number

Part name

Customer Service Center

For any problem met during the operation, please call +86-0755-89589810.

If the device needs to be repaired, please send it back to SmartSafe, and attach the Warranty Card, Product Qualification Certificate, Purchase Invoice and problem description. SmartSafe will maintain and repair the device for free when it is within warranty period. If it is out of warranty, SmartSafe will charge the repair cost and return freight.

SmartSafe address:

3310, Building 11, Tian'an Cloud Park, Bantian Street, Longgang District, Shenzhen, Guangdong, China

SmartSafe Website: www.newsmartsafe.com

Statement:

SMARTSAFE reserves the rights to make any change to product designs and specifications without notice. The actual object may differ a little from the descriptions in the manual in physical appearance, color and configuration. We have tried our best to make the descriptions and illustrations in the manual as accurate as possible, and defects are inevitable, if you have any question, please contact local dealer or after-sale service center of SMARTSAFE, SMARTSAFE does not bear any responsibility arising from misunderstandings.