KT - AV533F (android)

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Counterfeitwillinvestigate

Four-whee/ *alignmentmanual*

Preface

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This equipment is for the use of professional technicians or maintenance personnel.

Matters needing attention

The operator of the instrument must pass the training of the company, and can operate after passing the training.

The operator must have some basic knowledge of computer application.

The operator must understand the basic knowledge of four-wheel positioning.

Check whether the power connection line contact is reliable, whether there is damage.

If the power supply voltage is unstable, please equip your own AC regulator.

Check whether the car lift is firm and level regularly to ensure the correct test and the safety of personnel.

Remove obstacles around the car lift so as not to affect the operation.

**Check all loose bolts and parts at the end of service and tighten them up for safety.Four-wheel locator can not be placed on a vibrating object or tilted, should
avoid direct sunlight or humidity.**

Four-wheel locator belongs to precision testing equipment, there are sensitive components, in the process of use should be taken gently, do not throw random, otherwise light will lead to shell deformation, heavy will lead to internal components failure, affect the normal use.

Avoid splashing liquid on the surface of the four-wheel locator, lest liquid enter the system and cause permanent damage.

After use, please cut off all power supplies.

Four-wheel locator is tested through the method of image, do not let the strong light to the sensor interference, and should avoid the object between the

sensor blocking the light.
Excerpt parameters:
Measurement parameters, range and accuracy
1 Total front beam Angle
Measuring range: ± 6 °.
Accuracy: ± 4' in ± 2 ° range, ± 10' in other ranges.
2. Front beam Angle of single wheel
Measuring range: ± 3 °.
Accuracy: ± 2' in ± 2 ° range, ± 5' in other ranges.
3. Wheel camber
Measuring range: ± 10 °.
Accuracy: ± 2' in ± 4 ° range, ± 10' in other ranges.
4 kingpin rear Angle
Measuring range: ± 15 °.
Accuracy: ± 2' in the range of ± 12 °, ± 10' in other ranges.
5 kingpin incliner
Measuring range: ± 20 °.
Accuracy: ± 6' in range of 0 ° -- +18 °, ± 10' in other ranges.
12
6 thrust Angle
Measuring range: ± 6 °.
Accuracy: ± 2' in ± 2 ° range, ± 10' in other ranges.
7 axis Angle
Measuring range: ± 6 °.
Accuracy: ± 2' in ± 2 ° range, ± 10' in other ranges.
8 Indicates value requirements
8.1 Display value resolution
The angular resolution is 1', where the forward beam value is 1' in Angle or 0.1mm in mm.
8.2 Zero drift
Zero drift is not greater than 4' within 30min.
8.3 Indicating value error
The value error is ± 4'.
8.4 Indicate value stability
The indicated stability is ± 2' within 10s.

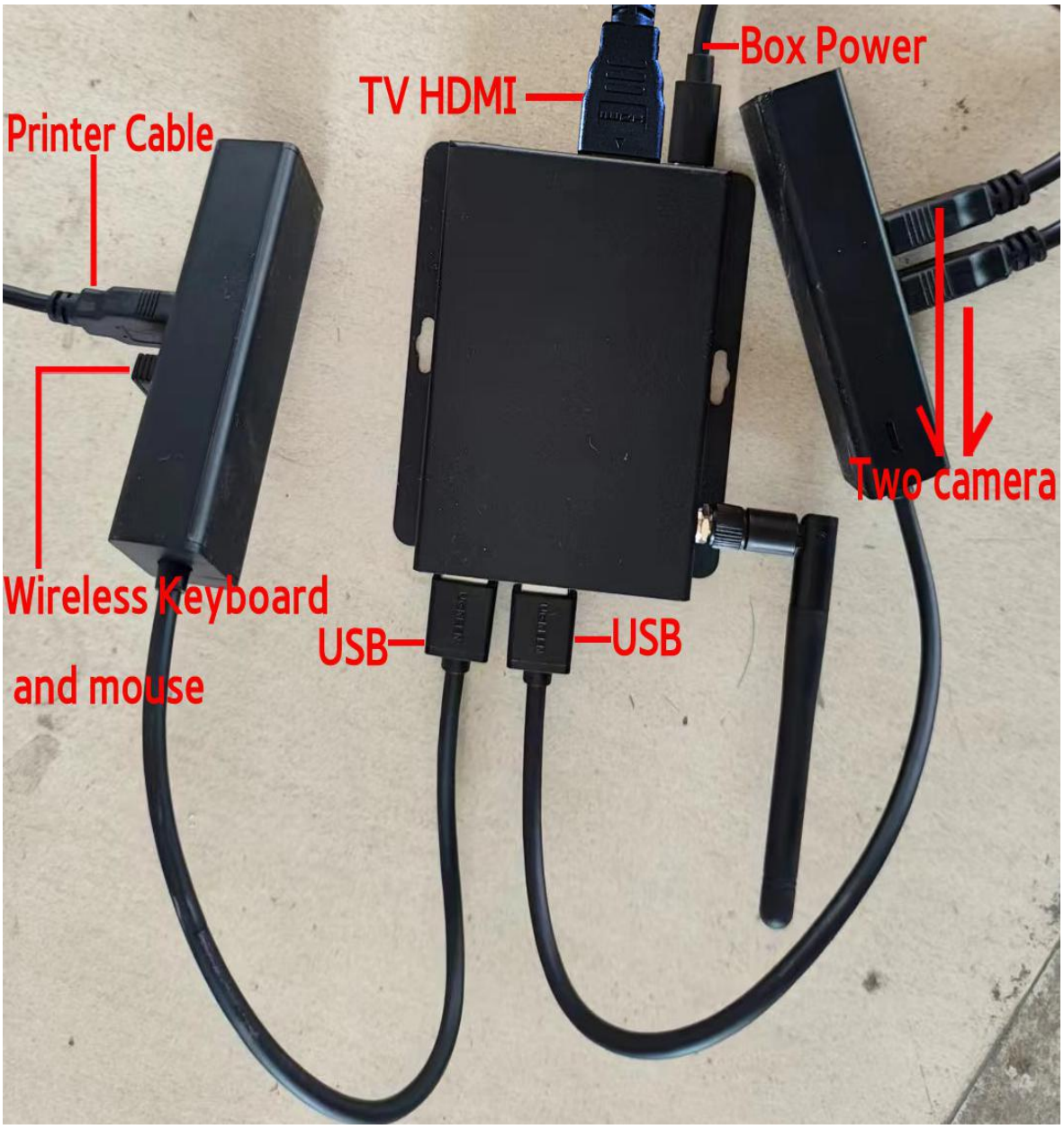
Power Supply
Working Temperature

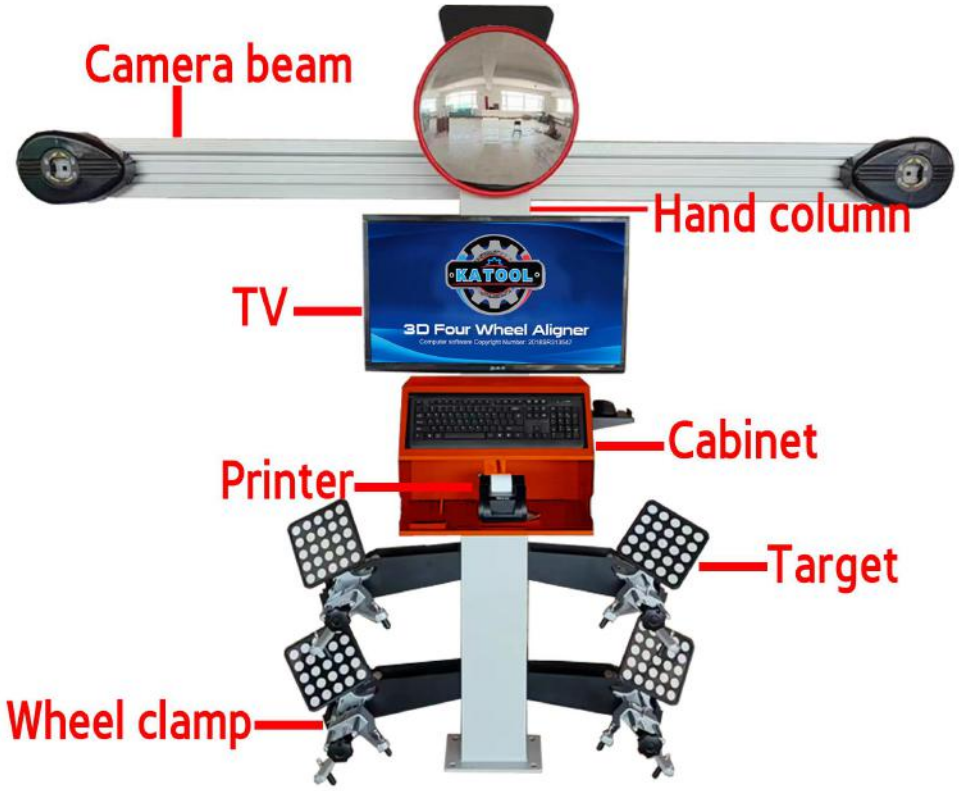
Power Supply	100-240V,50/60 HZ,1 Ph
Working Temperature	41F…104 F(+5℃…+40℃)
Cameras (Total)	2
Tire Diameter	9 27/32-31 1/2 in(250-800 mm)
Wheellbase	62 63/64 -82 43/64 in(1.6-2.1m)
Track Width	70 55/64-177 11/64 in(1.8 -4.5 m)
Warranty	1-Year Limited
Product Weight	264 Ibs(120kg)
Shipping Weight	352 Ibs(160kg)
Shipping Dimensions	29.92x48.03x47.24 in(760x1220x1200mm) 110.24x12.6x15.75 in(2800x320x400mm)

The way the Android box is wired to the transformer:





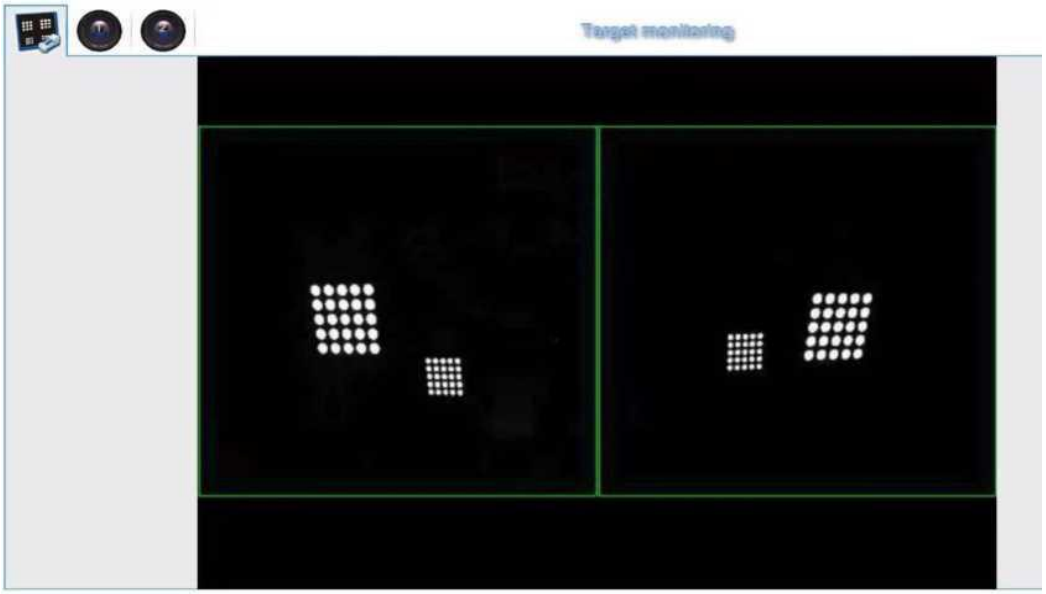




Positioning detection: the whole process is operated by mouse

Select the quick positioning icon on the main interface (as shown below) to enter the positioning and detection interface:

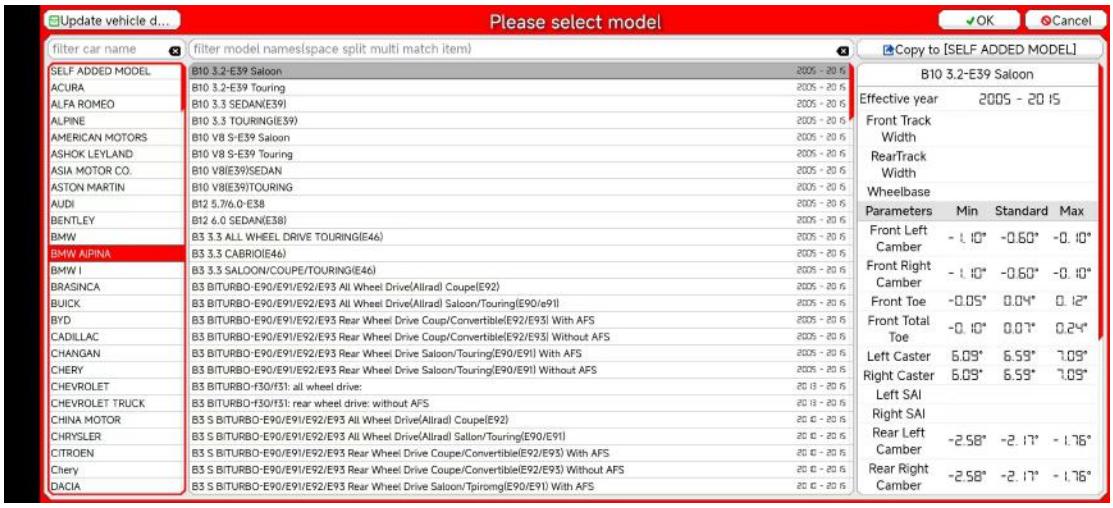




Positioning detection is the main part of this software, including target monitoring, rapid positioning, maintenance data, system setting four steps.
Target monitoring: Target should not be too close to the edge of target monitoring

Rapid positioning

As the first step of positioning detection, it is necessary to introduce standard data for the tested vehicles. Standard data should be introduced from this table for reference in the subsequent testing process. The interface is shown as follows:



Operation method:

Based on the model you are testing, click the corresponding entry directly to introduce this data into subsequent tests.

Note:

1. The process of detection operation does not have to be operated in the default order of the system.

The operator can also jump directly to the test that needs to be done according to the actual need.

Simply select the test action you want from the navigation bar at the top of the page.

2. The table currently provided is the same as the common data in the system management page. You can also add the standard data of the system to this table.

Start location survey

The dynamic test interface is as follows:

Interface description:

A Current position of vehicle.

The car on the interface moves up and down according to the position of the actual vehicle.

B Target collection.

If a target acquisition error, the corresponding target image will appear red.

C Pushing prompt image.

The operator can push according to this image.

As shown, the operator is required to push backward.

D prompt bar.

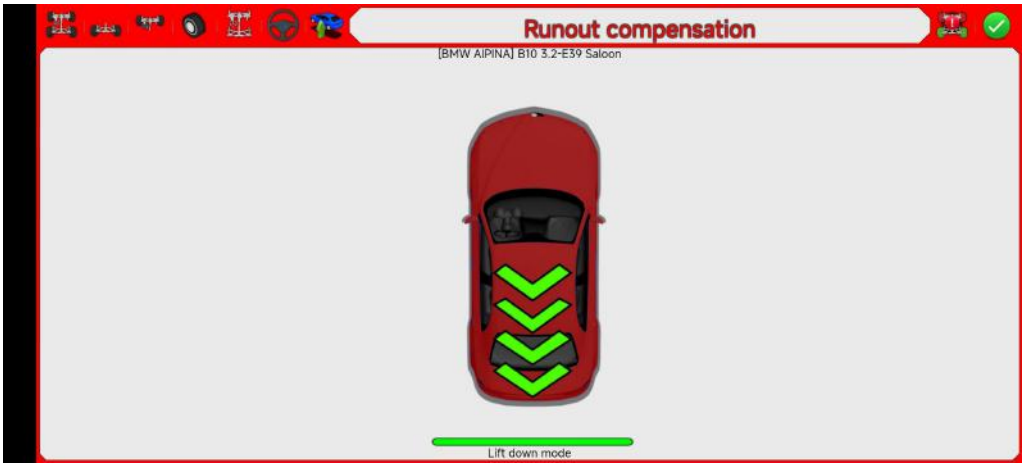
Operation method:

Step 1 After entering the interface, the system will automatically check the installation status of each target

Step 2 If each target has been installed correctly, enter the following interface.

At this point, the user should push backward slowly and evenly.

And then stop.





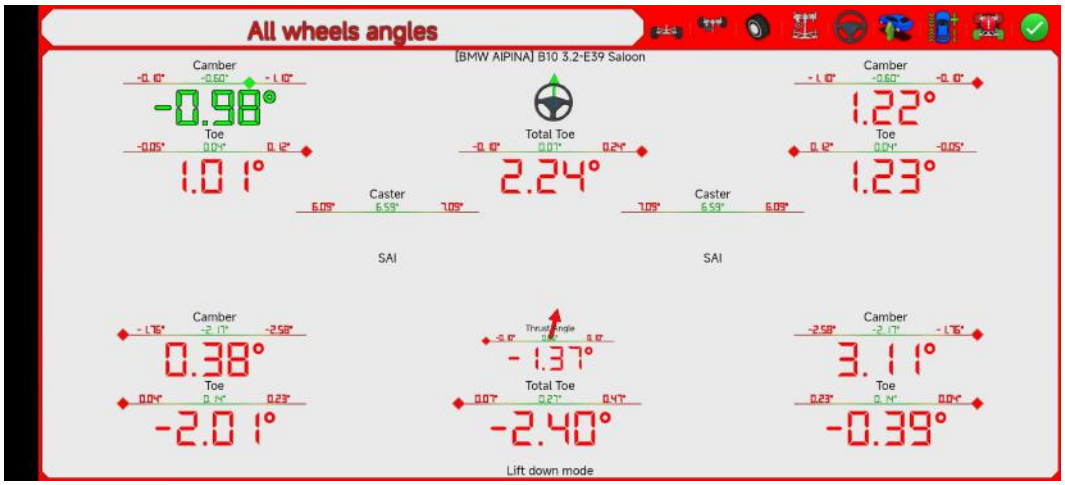
Step 3 When the following interface appears, please pull the car back to its original position slowly and at a constant speed.



Step 4 After pulling back, the system may take a few seconds to calculate. Please wait.



Step 5 If the measurement is successful, the system will automatically jump to the interface of measurement results, otherwise it will prompt to re-measure.

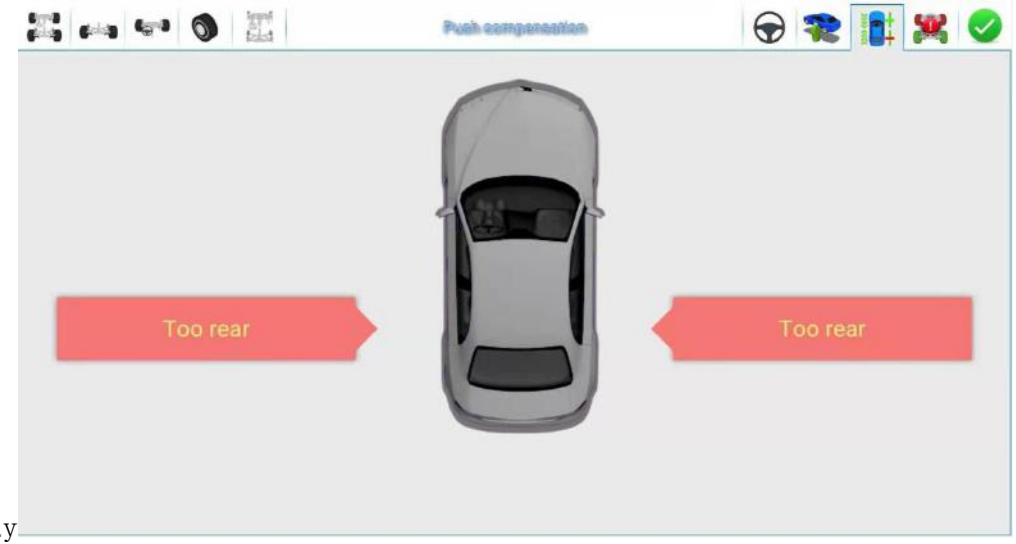


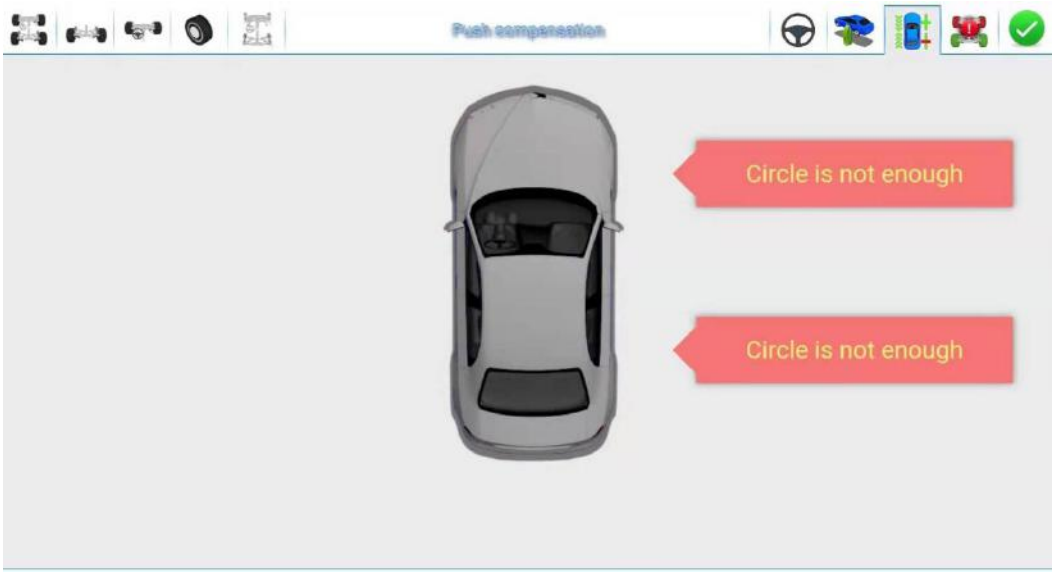
Note:

1. In the measurement process, the objects or people between the camera and the target should be removed to avoid the target being blocked and affecting the measurement results.

2. Before measurement, the steering wheel must be centered, locked and fixed, so as not to rotate the steering wheel during the process of pushing, which will affect the test results

3. Before pushing the cart, the four target angles should be adjusted to lean 80 degrees forward4, the target Angle is wrong or the target or the camera has gray



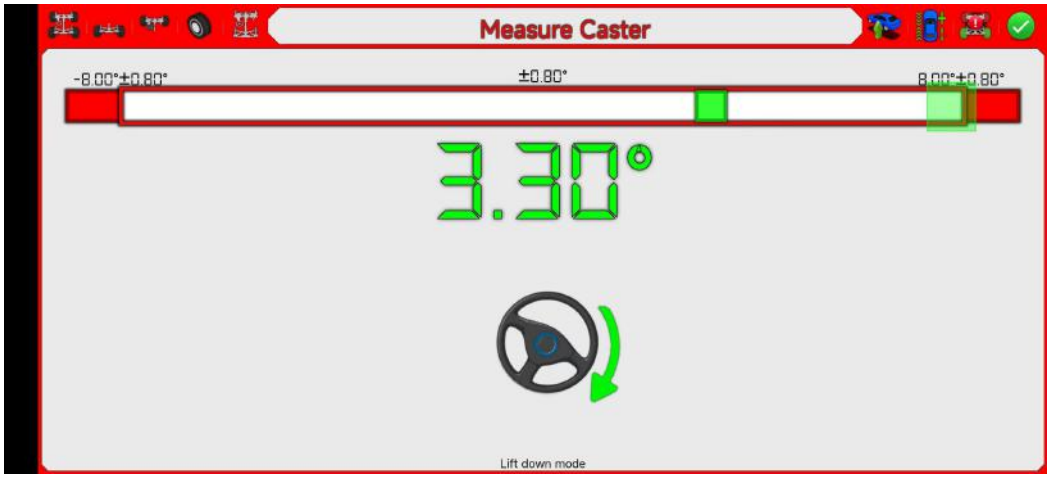


King pin measurement

The kingpin measurements are for the front wheels and include kingpin roll and kingpin roll.

With the kingpin inclination Angle can make the car weight evenly distributed on the bearing, protect the bearing is not damaged, and make the steering force average, steering light.

The existence of the rear Angle of the kingpin can make the intersection point of the steering axis and the road in front of the tire junction, and the road resistance to the tire can be used to keep the car straight forward. The interface is shown in the figure below:



A Scroll bar.

The green box slides left and right as the steering wheel rotates, and turns red when it reaches a critical point, indicating that the operator should turn the steering wheel in reverse.

B Direction of rotation.

Indicates the direction of rotation of steering wheel.

C Target state.

When the target acquisition error occurs, the corresponding wheel will appear red.

The normal color is shown.

D. Current steering Angle.

E Operation tips.

Operation method:

Step 1: When the steering wheel is adjusted to the straight front state, that is, when the two front wheels are equal to the front beam, the small round ball on the operation interface will move to the middle position.

Step 2: Turn the steering wheel more than 8 degrees to the right. When the steering wheel reaches the specified position, the square will change from red to red (when the steering wheel is less than -8 degrees or more than 8 degrees, the ball will be green).

Step 3: Turn left to the steering wheel is less than -8 degrees, and the box changes from red and green to red after reaching the specified position.

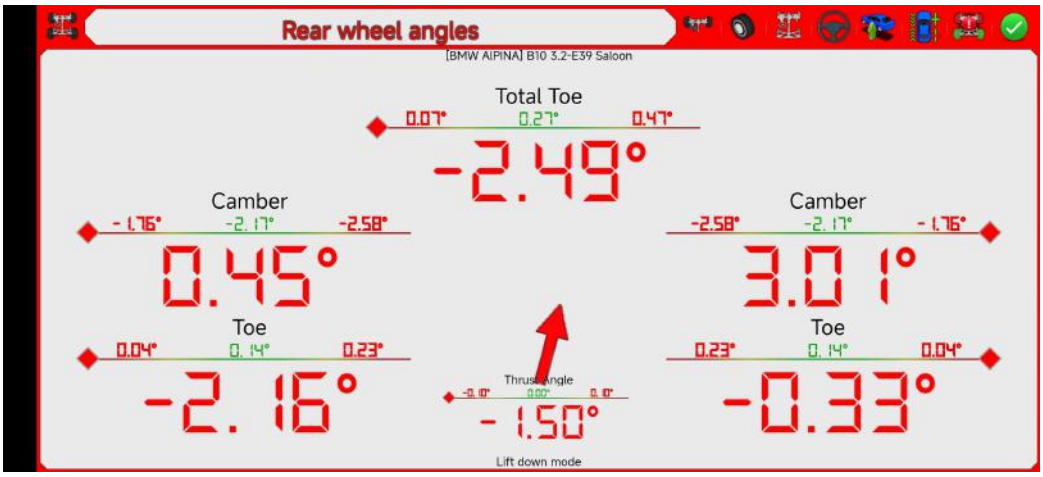
Step 4: Turn the steering wheel to the right, and the main engine beeps three times to complete the measurement when approaching 0 degrees.

If the measurement fails, the system will prompt you to re-measure, otherwise the system will automatically turn to the interface of measurement results.

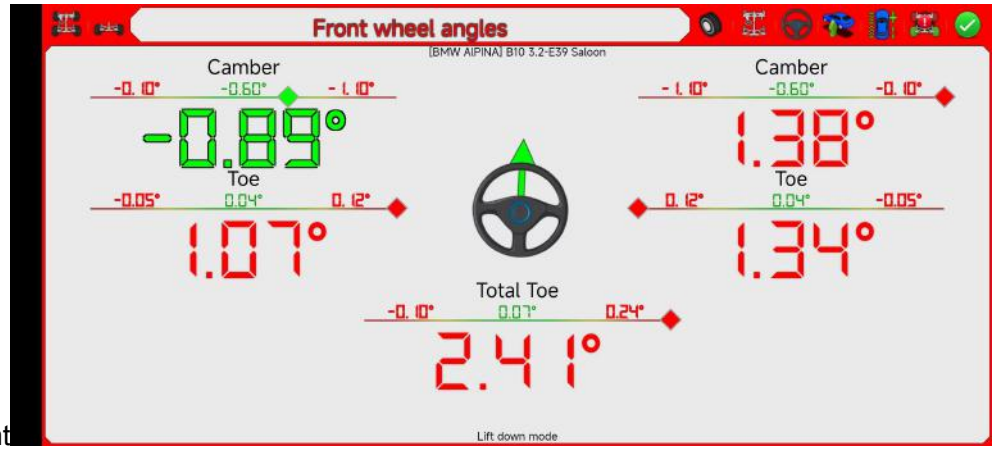
Note:

Before measuring the kingpin, please install the brake plate fixing frame, pull the handbrake, to ensure that the wheel does not roll, and remove the steering wheel fixing frame.

The rear wheels measuring



The front wheel measurement

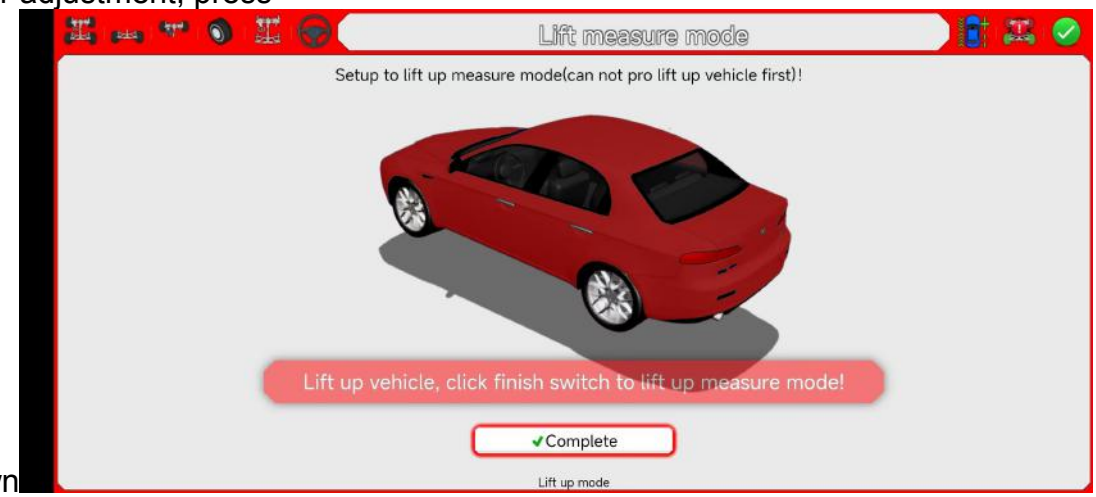


Adjust the back roll: the front of the steering wheel can measure the back Angle, and then like the camber, the need to jacking adjustment is pressed to rise the vehicle.

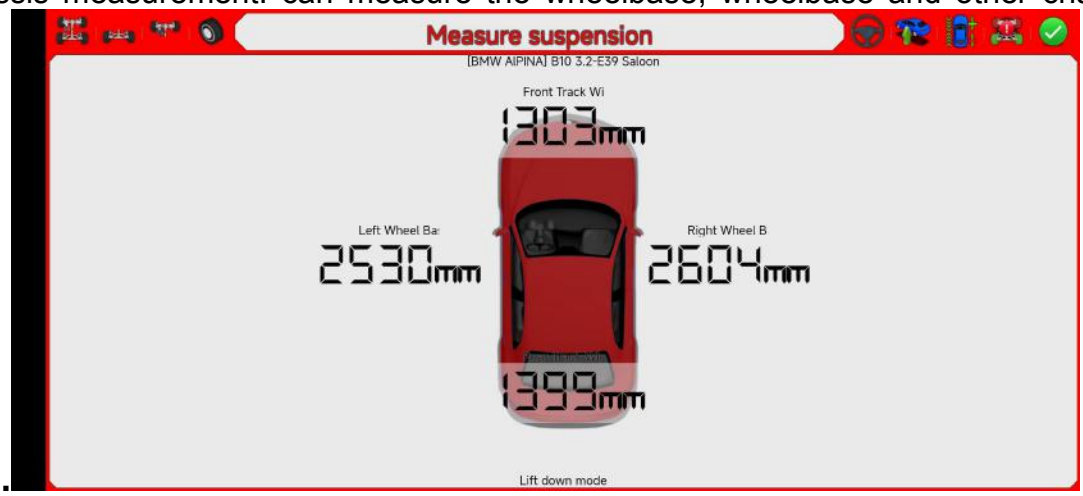


At this time, lift the body, in place, press the completion, you can adjust the wheel.

After adjustment, press down



Chassis measurement: can measure the wheelbase, wheelbase and other chassis **data.**

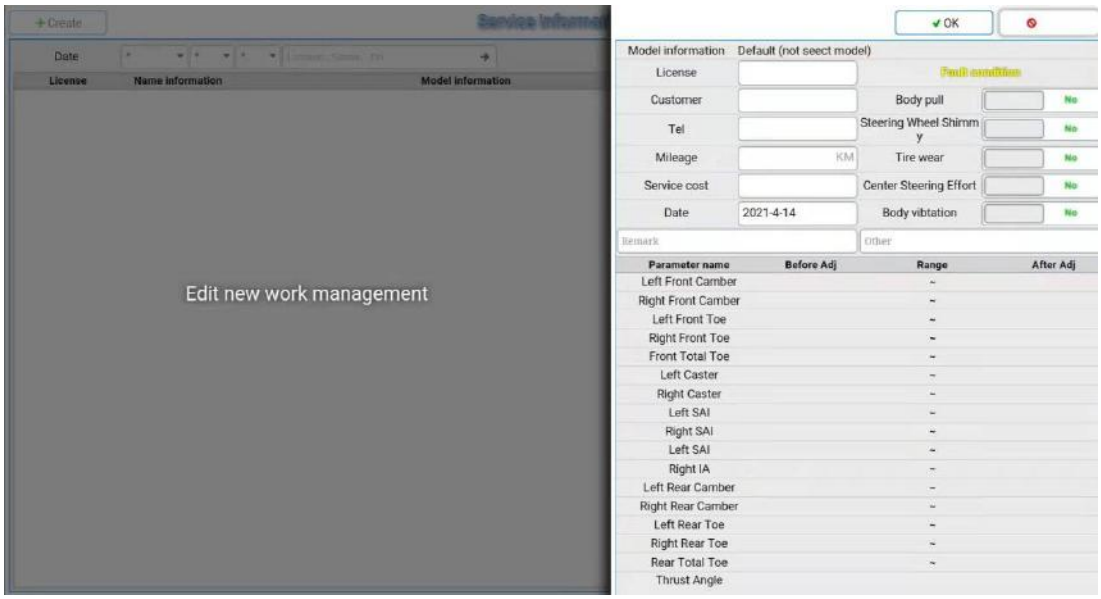


Fault detection



New Maintenance Record

After the detection operation is completed, enter the interface, the system automatically import the detection data, import the user's information by looking up the license plate number, complete the operation and record the cause of the failure.



System Settings

Select the system setting icon on the main interface to enter the system management interface, as shown in the figure below:

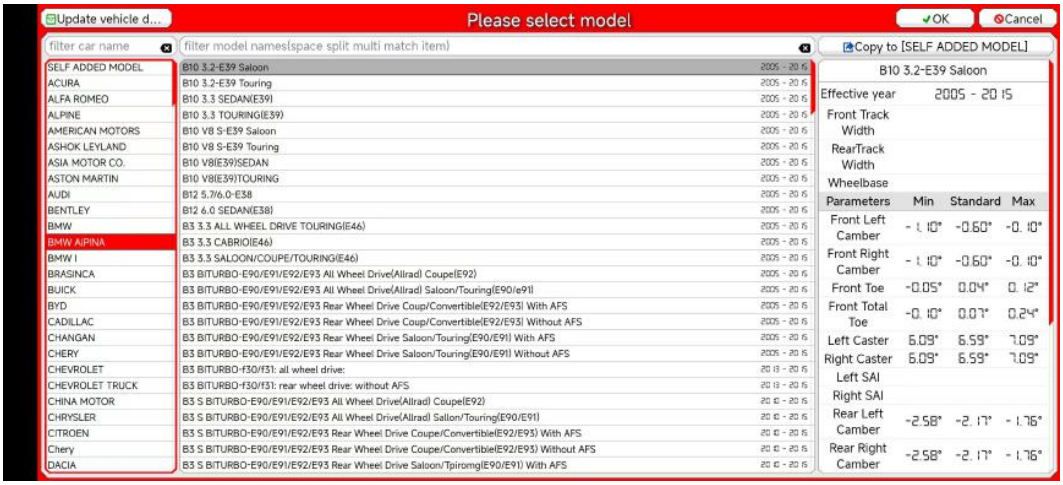


Through the system management can carry out a full range of management and maintenance of the system operation, which provides a number of functional options.

Standard data view

This page provides the parameter information of each model of car factory setting.

The database contains the information of various series of products produced by many manufacturers at home and abroad during the production period, and the contents of the database can be timely updated through the operation of system upgrade. The interface is shown as follows:



Directly click on the manufacturer and select the corresponding model.

This system provides the function of printing information, in order to facilitate the operator in the process of operation can be convenient to check the data.

Note: there is another non-cart wheel compensation method: lift wheel compensation, which is to rotate each tire to compensate after lifting the car. This is also for customers who do not want to push or do not

have room to operate.



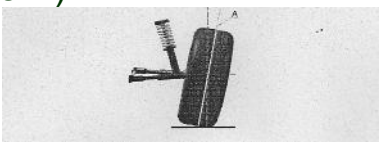




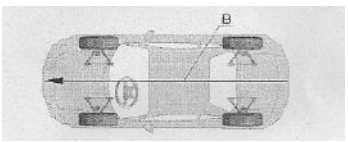
Go back to the main menu and reenter by clicking "My Application" to find the wheel location program with the tire logo。

3. Generalization of four-wheel alignment

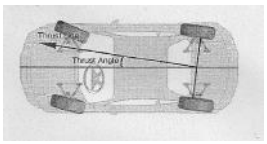
1.1 Center line of a tire: is a line that is the contact between a tire and the ground. (line A)



3.2 center line of a car: is a line that bisects the front axle and the rear axle, also called geometric center line. (line B)



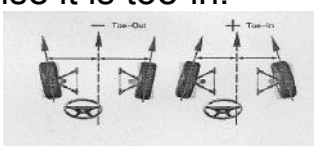
3.3 thrust line: is a line that bisects toe of the rear wheel, and the angle between thrust line and center line of the car is thrust angle.



3.4 toe:

The toe of the front wheels is the angle between thrust line and center line of a tire, but the toe of the rear wheels is the angle between center line of the car and that of a tire.

If center line of a tire deviated from thrust or center line of the car, then it is toe-out, otherwise it is toe-in.



3.4.1 Function of toe is to reduce wear of tires and friction of rolling

3.4.2 Problems of toe

3.4.2.1 toe-in is too big

A: the outside of tires wear fast

- For radial tire, the condition of wear is like that caused by big camber.
- The shape of wear is like saw tooth or blocks.
- If caressing tires from outside to inside, you can feel the inside tire is sharp.

B: steering is unstable

- Poor performance of going straight
- Dither of tires

3.4.2.2 Ways to solve the problem:

A: for toe of the front wheel: adjust track rod

B: for toe of the rear wheel: original adjusters, eccentric concave wheels, eccentric bolts, eccentric bushings and long hole spacers.

3.5 camber angle

It is the angle between center line of a tire and vertical flat of the car. If the inclination is toward outside, then the angle is a positive number, otherwise it is a negative number.

3.5.1 Functions of camber angle are adjusting the load of the car to the center of tires, eliminating off-tracking and reduce wear of tires.

3.5.2 Problems of camber angle

3.5.2.1 The effect of a big positive camber angle

- the outside of a tire is worn
- The wear of components of suspended system is accelerated
- Direction of off-tracking is towards the side with bigger positive amber

3.5.2.2 the effect of a big negative camber angle

- the inside of a tire is worn
- The wear of components of suspended system is accelerated
- Direction of off-tracking is towards the side with smaller negative amber

3.5.3 case

If camber of the front left wheel is 1.0°， and the camber of the front right wheel is 0.5°, and then the direction of off-tracking is towards the left because there is an error between these two wheels.

3.5.4 ways to solve the problem

spacers, eccentric concave wheels, long holes, ball head rotary, prop rotary, wedge-shape spacers, adjustment of bearing bracket, eccentric bolts, eccentric bushing, set over ball head.

3.6 set-back

Set-back is the angle between the center line that divides the front wheels or the rear wheels and the vertical of thrust

3.6.1 Causes of set-back.

- The design of producer to offset the effect of road bumps
- Result of impact

3.6.2 Problems of set-back

Set-back will lead to the off-tracking of the car, and the direction is towards a smaller.

3.7 kingpin caster

It is watched from the side of the car. The link of upper ball head or the top of the support and lower ball head is kingpin and plumb line. When the upper ball head is behind the plumb line, it is positive caster, otherwise it is negative caster.

3.7.1 functions of kingpin caster

Kingpin caster affects the stability of veer and returnable ability of steering wheel.

3.7.2 Problems of kingpin caster

A: if the caster is too small, instability is caused, such as poor returnable ability of steering wheel and the float of car when the speed is high. It should be paid attention when the car is on the high way.

B: off-tracking caused by dissymmetry of caster: if the caster of two wheels is unequal, and then the direction of off-tracking is towards a small one.

3.7.3 Case

If the caster of the left front wheel is +0.5°, and the caster of the right front wheel is +1.5°， and then the direction of off-tracking is towards the left.

3.7.4 Adjustment of kingpin caster

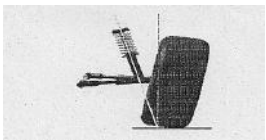
Spacers, eccentric concave wheels, long holes, prop rotary, strut, movement of engine bracket, eccentric ball head.

3.8 kingpin inclination

It is watched from the front of the car. The link of upper ball head or the top of the support and lower ball head is kingpin and plumb line. If the upper ball head is inside, and then it is a positive, or it is a negative one.

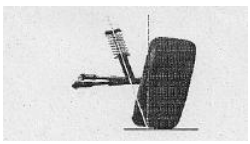
3.8.1 Functions of kingpin inclination

It is the angle that caused by the inclination of the front axle. A proper inclination makes the steer of the car easier, and reduces the impact from ground. Besides, it helps the front wheels return automatically. And the angle is bigger, the effect is bigger. However it takes more efforts to turn and the wear of tires is heavier, vice versa.



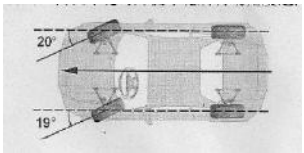
3.9 included angle

Included angle refers to the angle that between the center line of tires and the axle of kingpin caster, that is to say, it is the sum of camber and kingpin inclination.



3.10 20° top-out on turns

20° top-out on turns refers to the difference of the turning angle of the inside and outside tires when the car is turning.



4.1 thrust angle

Thrust angle refers to the angle that is between the center line of the car and thrust line. When on the left of the center line of the car, the angle is positive, otherwise it is negative.

Thrust angle lead to the trail of car incline to one side. Thus the front wheels have to move toward the same direction. So it is necessary to adjust toe and if the toe of the rear wheels can be adjusted, thrust angle should be adjusted to near zero.

The direction of thrust line is the actual direction of the car, and it is determined by the toe of the rear wheel. If the direction of thrust line is different from the center line of the car the imbalance of the steering wheel will be caused. Meanwhile, the rear wheels will not follow the front wheels, and this phenomenon is called “lateral moving”. In order to keep the car move ahead straightly, the steering wheel has to lean to one side. It is the reason of imbalance of steering wheel.

4.1.1 Causes of thrust angle

- The emergence of set-back
- The imbalance of the rear toe

4.1.2 Problems caused by thrust angle

- Wear of tires
- Maladjustment of steering wheel
- Off-tracking
- The skew of the car when driven forward
- The skew of steering wheel

4.1.3 Ways to solve the problem

- The original regulators
- Install wedge-shape spacers between wheel axle and tires
- Concave wheel or other after installation regulator

Packing list

KT-AV533F

Serial number	Name	Quantity
1	Column	1
2	Camera beam (Contains data lines and transformers)	1
3	Wheel clamp	1*4
4	The target	1*4
5	Corner plate (Contains two stop blocks and two transition blocks)	1*2
6	Steering wheel locked	1
7	Pendant	1*4
8	Fixed screw	A set of
9	Display	1
10	Android box	1
11	Wireless mouse and keyboard	A set of
12	HDMI cable	1
13	U disk data	1
14	Mirror	1
15	Cabinet	1
16	Power line	1
17	1--4 USB Lines	2
18	Printer	1
19	Operation manual	1