

OPERATING MANUAL

With the rapid development of automobile technology, the continuous improvement of vehicle speed, the actions of rapid acceleration, rapid deceleration, acute steering, emergency braking and other occurred more frequently, the front and rear wheel of car are impacted in the process of driving, which will all affect the trajectory of the rear wheel of the car. To ensure the stability of the straight running of the car, the steering is easy to turn, and reduce the wear degree of tires and its parts, increase the safety of the driving process, we must consider all factors that determine the angle formed by the car wheel and the ground. Therefore, more and more drivers have paid attention to the technical parameters of four wheel positioning. Four wheel positioning also provides favorable conditions for the development of automatic driving technology.

With the rapid development of highways and the increasing number of cars, tires become particularly important, as it goes that "thousands of miles away start from the tire under it. Once the Wheel angle is too big or small, the vehicle will deviate, tire wear, car trembling, high fuel consumption, hanging parts wear, hard to turn steer, wheel steer does not return automatically and so on. Once a car appears such problem, it will not only make the driver uncomfortable, but also very danger. Once such problems occurred, the driver ought to consider to do a four wheel alignment for the car.

To ensure that the safety and stability and service life of a car, each car has some specific angle parameters in the design of its chassis design, that is the positioning angle. Four wheel angle will be changed for many reasons, such as the various part of the chassis become wear in the process of driving, or due to a chassis component is deformed and repairman did not restore the wheel angle to its best driving state after replacing a new chassis accessories. Furthermore, traffic accident or driving on some uneven road will also change the wheel angle, which will also cause car deviate, tire wear, hard to turn steer, car trembling and so on.

Through the accurate measurement by 3D four wheel alignment on the car, and then adjust and repair the car according to the measurement results and the original parameters of the car chassis to make the four wheel angle of the car to restore to its best driving state and standards, to achieve the best driving feeling, that is a complete four wheel positioning of the car.

During the process of testing, adjusting, and problem shooting, we need to understand the usage of the various positioning angle of the chassis, master the knowledge of problems that each angle will cause, and know how to analyze the root cause of vehicle fault, and then according to the measure data of four wheel alignment and the standard data of the car to find out the best drive state. We will encounter various car type and problems when adjusting car wheel, and various methods can be used to solve these problems, but all this is nothing but the four wheel angle, the chassis construction and some repairment knowledge. Therefore, we have to master these knowledge. The following is to explain the instruction of four wheel alignment, and four wheel alignment angles and chassis structure for your reference.

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R500 Manual

I. Driver program installation

1.1Dongle Driver installation

1.2 Video player Driver installation

1.3 Camera Driver installation; (wire)

1.4. Key writing

1.5 .Printer Driver installation;

II..Operation Manual (wireless)

III. Software manual

R800 Manual

I Installation

II. Driver program installation
2.1 Dongle Driver installation
2.2 Video player Driver installation
2.3. Key writing
2.4 . Printer Driver installation;
III Operation Manual
IV. Software manual
FAQ
Wheel alignment maintenance
Data adjusting sequence

Preface

Definition of four wheel alignment:

With the rapid development of automobile technology, the continuous improvement of vehicle speed, the actions of rapid acceleration, rapid deceleration, acute steering, emergency braking and other occurred more frequently, the front and rear wheel of car are impacted in the process of driving, which will all affect the trajectory of the rear wheel of the car. To ensure the stability of the straight running of the car, the steering is easy to turn, and reduce the wear degree of tires and its parts, increase the safety of the driving process, we must consider all factors that determine the angle formed by the car wheel and the ground. Therefore, more and more drivers have paid attention to the technical parameters of four wheel positioning. Nowadays, four wheel positioning refers to in the process of installation the geometric angle and dimensions of the wheel, the suspension system components and the steering system components must meet certain requirements to ensure the stability and safety of the car, and also to reduce tire wear and fuel consumption. Four wheel positioning also provides favorable conditions for the development of automatic driving technology.

Vehicle chassis and tires are particularly important to the stability of the car. Once the chassis and the tire occurs some problem, the vehicle will shiver, floating, tire wear uneven, steering deviation, steering wheel can't be centered, hard to turn steering wheel, abnormal driving condition and others. The symptoms will not only greatly lower the driving experience, but also cause increased fuel consumption, driver's driving fatigue and even serious accident.

We have to know the cause before solving the problem. Car is composed of engines, electrical equipment, body and chassis. Each part is based on the chassis and tires as the bearing platform. Every car before leaving factory was aim to provide the user a comfortable and safe driving experience. Each car has set a corresponding wheel angle to ensure the normal driving of the vehicle before leaving factory which is collectively referred to as four wheel positioning Wheel angle. Four wheel positioning angle, including the toe, camber, the kingpin inclination, thrust angle and so on. Each wheel has its own most appropriate angle according to the original design of its four wheel, its manufacture process and body size and weight, wheelbase wheelbase, etc. The purpose to do four wheel positioning is to through the accurate measurement by 3D four wheel alignment on the car, and then adjust and repair the car according to the measurement results and the original parameters of the car chassis to make the four wheel angle of the car to restore to its best driving state and standards, to achieve the best driving experience. Only when the car wheel positioning data is accurate, can its handling performance and stability be in the best condition, and prolong the tire's lifetime.

The vehicle chassis is composed of transmission system, suspension system, driving system, braking system and steering system. Driving hanging system is classified to various chassis structure according to different car models to ensure the best driving experience. Two most common chassis are double swing arm type and McPherson type. The original positioning parameters will be changed when the car encountered some external impact or its chassis weaved, which will cause some abnormal driving conditions.

The Advantages of Wheel Alignment:

To solve these problems mainly: tire uneven wear, steer wheel can't go back to center, steer wheel hard and heavy to turn, car shivering, floating

- (1) Improve the safety of drive
- (2) Steer wheel in the center when driving in a straight line
- (3) Steer wheel go back to center automatically after turning around
- (4) Reduce fuel consumption
- (5) Reduce tire wear
- (6) Keep driving in a straight line
- (7) Improve the control feel of feeling
- (8) Reduce suspension parts wear

How long and in what condition car need to do wheel alignment:

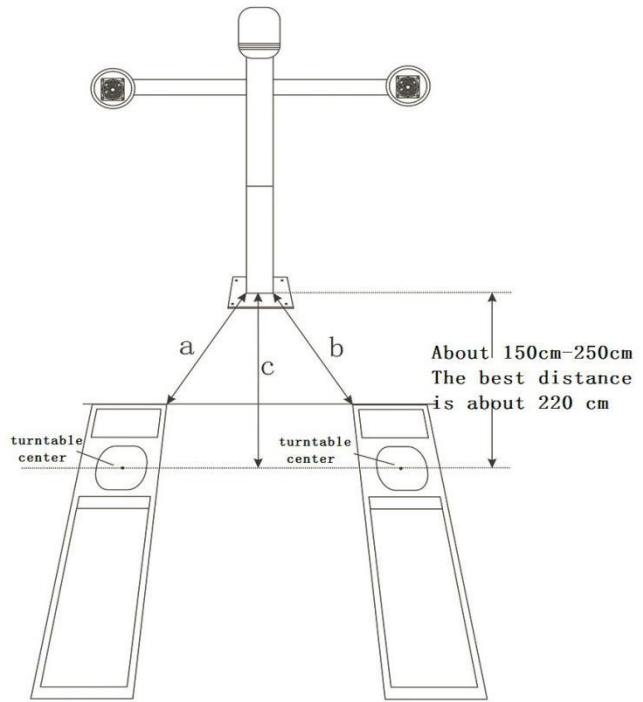
- (1) After drive for 10,000 km or six months
- (2) Vehicle pulls sideways when driving in a straight line
- (3) Hands can't get off the steer wheel when driving in a straight line
- (4) Steer wheel can't get centered itself ,when car runs in a straight line
- (5) Car body goes up and down
- (6) Front or rear wheel wear
- (7) After replacing a new tire
- (8) After a crash accident
- (9) After replacing a new suspension or turning parts
- (10) New car after driving for 3000 km

II. Instruction of Four Wheel Alignment

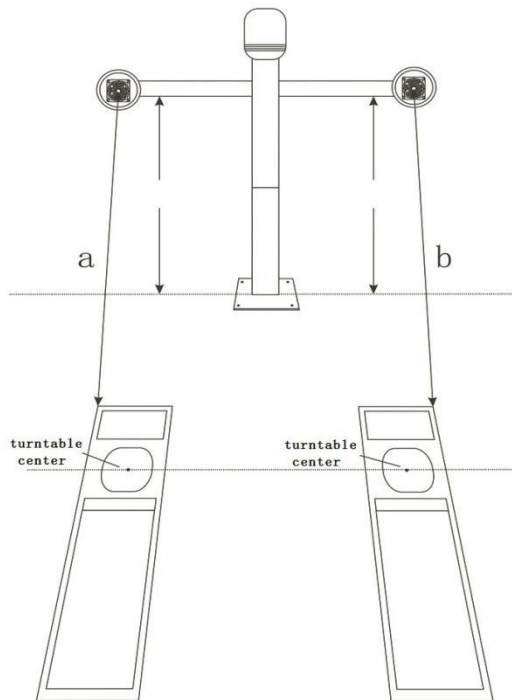
1. Check the large pieces of goods to see whether damaged or not, and then open it and check the items with customer.
2. Install the LOGO hat on the top of the column.
3. Measure the size of the column (picture 1), and then punching a hole to fix the column and adjust the position of the column. ?(And punch the ground hole)
4. Install beam brackets, screen and other brackets, and assemble and adjust the camera beam.
5. Assemble cabinet:
 1. Install four clams and fasten them.
 2. Put the computer host, keyboard, mouse, printer and other accessories into it.
 3. Connect the lines of the various parts and tie it.
 6. Install the screen and connect the lines.
 7. Connect the camera line, and check whether the wiring lines are well connected, and tie it together.
 8. Install clamps, target, the brake fixer, and place on the cabinet rack.
 9. Connect the main power, and measure whether the main power supply voltage has meet the normal working standards or not.
 10. Connect the power, start up the machine and install the printer cartridge.
 11. Start up the computer and check whether the driver is installed properly, and then open the wheel alignment software.
 12. Test the machine by driving the car to experiencing the test equipment, and checking whether the operation is normal or not, such as the data accuracy.

Put camera pillar in front of the car lift. Camera pillar distant to middle of the turntable. (C=220-250cm), Pillar both side distant to front of car lift distant must be same. A=B

Notice: 3D wheel alignment can totally adjust the centre position of the pillar and crossbeam water balance. It's no effect of the data. Pillar distance to turntable mid line distance is about 220cm(as C distance).



Make sure camera crossbeam bothside water balance distance be same. Make sure the distance of each side camera to car lift front be same (A=B) . A slight error does not affect the data.



2.2 Standard Operating Procedures of 3D Four Wheel Alignment

The first step: inquiring and testing

Listen carefully and record the driver's description of the abnormal symptoms of the vehicle. Some abnormal symptoms caused by the four wheel positioning angle can be found through visual inspection, the most obvious symptom is its tires with irregular wear. Listen to the driver's description is very important because some problems can't be found through naked eyes. Drive the car to conduct a test to further confirm the possible fault area. The second step: car chassis and tire inspection and maintenance.

The second step is to carry out a systematic inspection of the components and the vehicle chassis after the inquiring and testing.

Because four wheel positioning alone can't solve all problems if the vehicle parts or tires or others exist problems. Before doing the four wheel position, we should check the tire pressure, tire wear degree, and whether the chassis part is loose or not, and whether there is a gap between the swing arm to the ball joints and plastic parts and so on.

The third step: car wheel deviate.

If the vehicle's wheel is deviated, we should confirm whether this is caused by the vehicle pulls sideways before doing four wheel alignment. The following is the method to do it. (the various parts of the chassis are well preserved):

1. If it is a vacuum tire (radial tire), exchange the front two wheels, and then test the car, if the deviation phenomenon does not exist or deviate to the opposite direction, we can be sure that the

deviation is caused by the tires or its steer rim. One of the main reasons for car deviation is its tires.

The following are some solutions to solve them.

(1) exchange the four wheels until find out a combination to offset the deviation.

(2). remove the two front wheel and install it with the opposite side.

(3) exchange the tires or install it on the opposite side of the tire can significantly reduce or solve the deviation problem. If the effect is not obvious or the tires is slightly deformed you can

also consider to replace new tires.

2. If the deviation direction is still the same after exchanging the tires, you can repeat the above operation on the rear axle; If it is still running in the same direction, you can eliminate the possibility that the deviation is caused by wheel pull sideways. You can only find out the deviation cause by doing four wheel alignment.

Step 4: Perform the four-wheel alignment process and analyze the test results

1. Standard operation process of four wheel alignment (section 2 of the 2 chapter)

2. Data analysis and adjustment

3. Save and record data, and then test the car after wheel alignment

Note: Please check the detail information in the following chapter to know more about standard

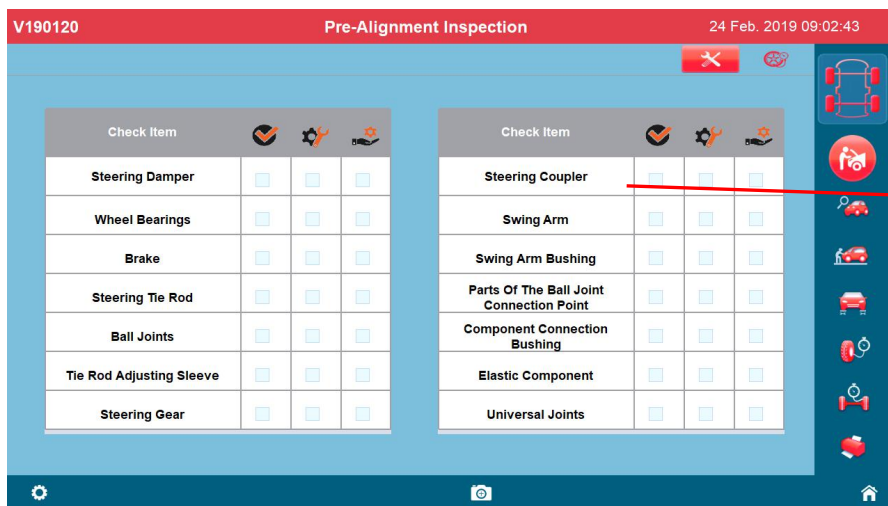
operation process of four wheel alignment and data analysis and adjustment.

2.3 Software manual

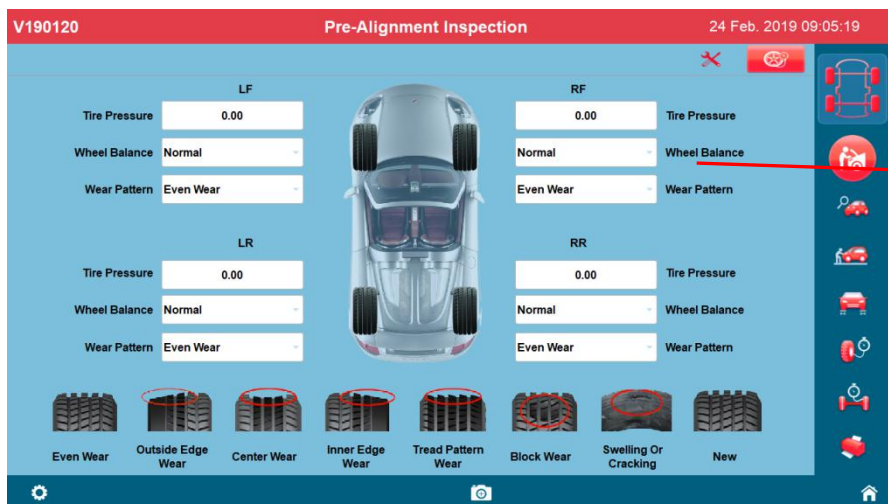
After open the computer, according to the instruction and enter the home interface.

1. Home Page:

Click "Detection" to start the measurement.

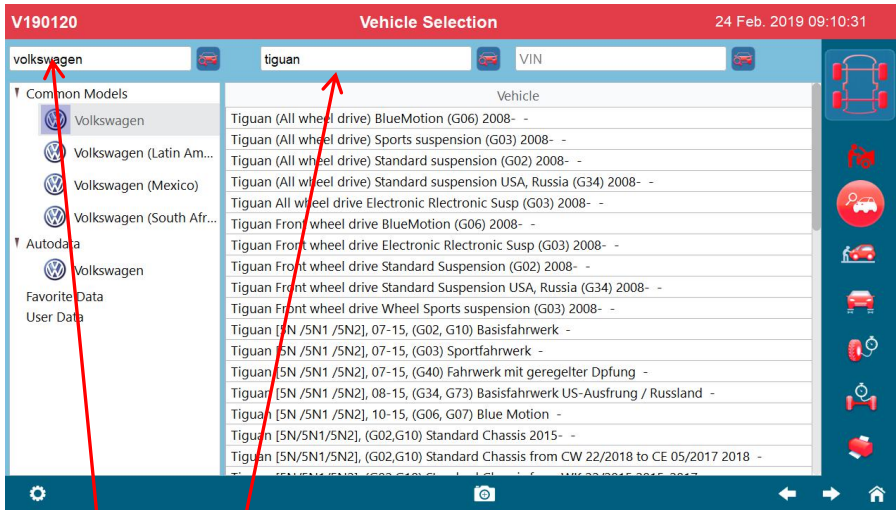


Vehicle chassis inspection



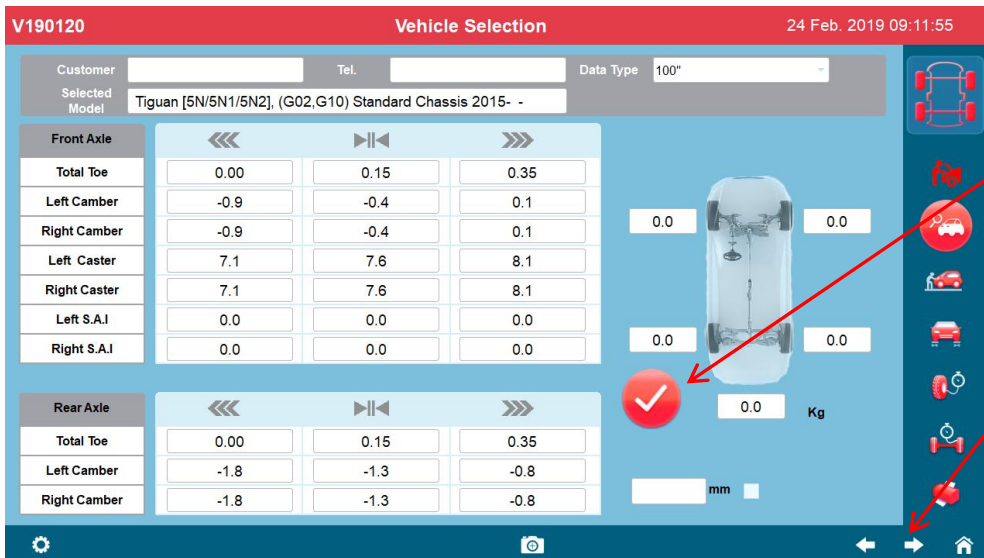
Tire pressure ,
Wheel Balance ,
Wear Pattern
inspection


2.



Choose database according to car's brand and type

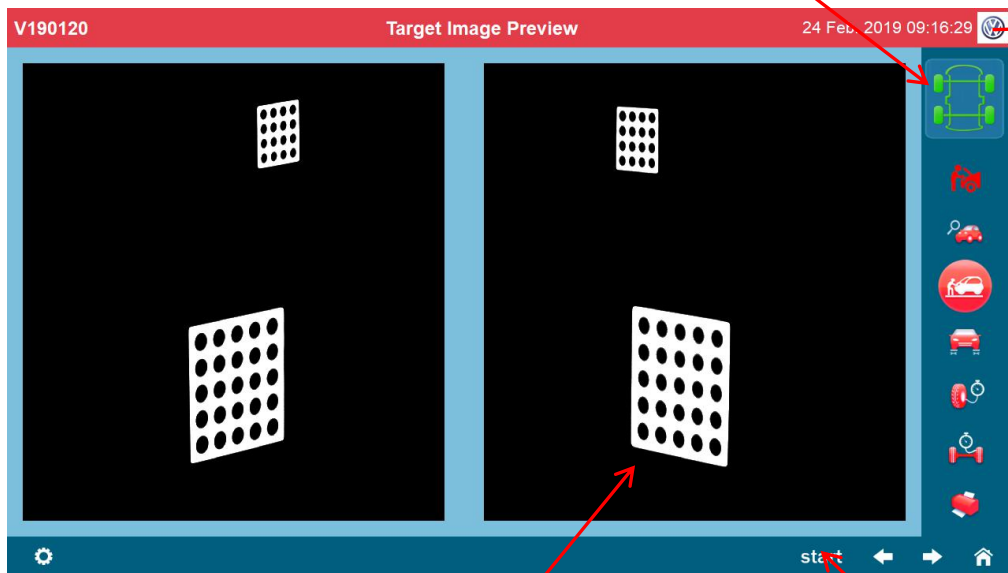
3.



Click "Confirm" Icon,
Then it will shows:

Then click "Go next"
Icon.

The wheel color is red means the target was covered, not working. Green is working

4.



It will show car brand when we finish selection car model ,We can check whether the model we choose is correct or not at any time.

Observe the status of the target plates .

In this page,the best position of the target plates is in the middle of the screen. Otherwise, through change the height of the vehicle to make sure that the target plates' position is in the middle , Observe the definition of black identification circle that on the targets plates ,if it is blurry, please adjust the brightness of infrared lamp.(there are dust on the surface of target plates and dirty camera lens are also the reason that cause the target plates blurry.)

Then, click "Start".

5.

When the data be right, software will show a " Stop"Icon.



Release the handbrake and switch gears to "N". Pushing the car back slowly to the date between 20° - 20.5° .

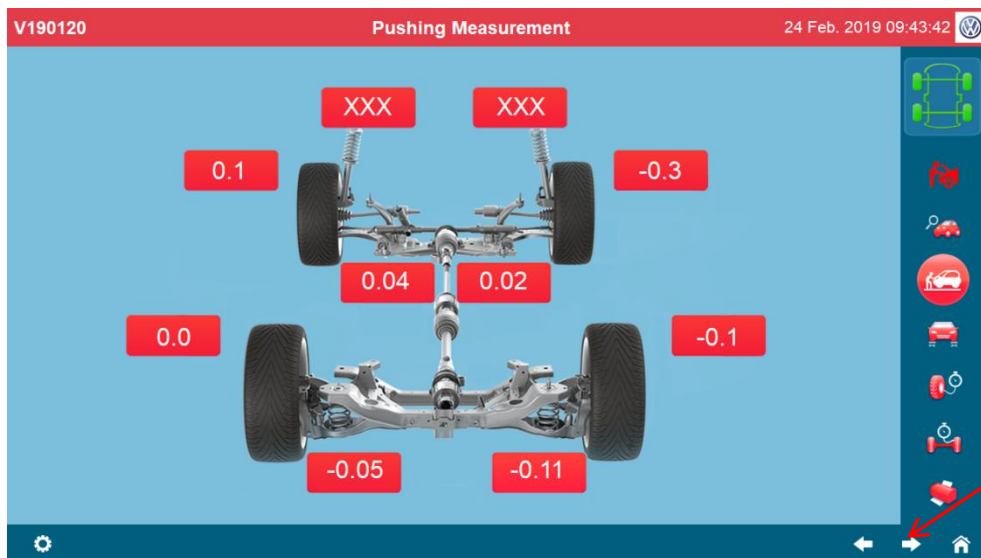
6.



Pushing the car forward slowly to the date between 20° - 20.5° .

When the data be right, software will show a "Stop"Icon.

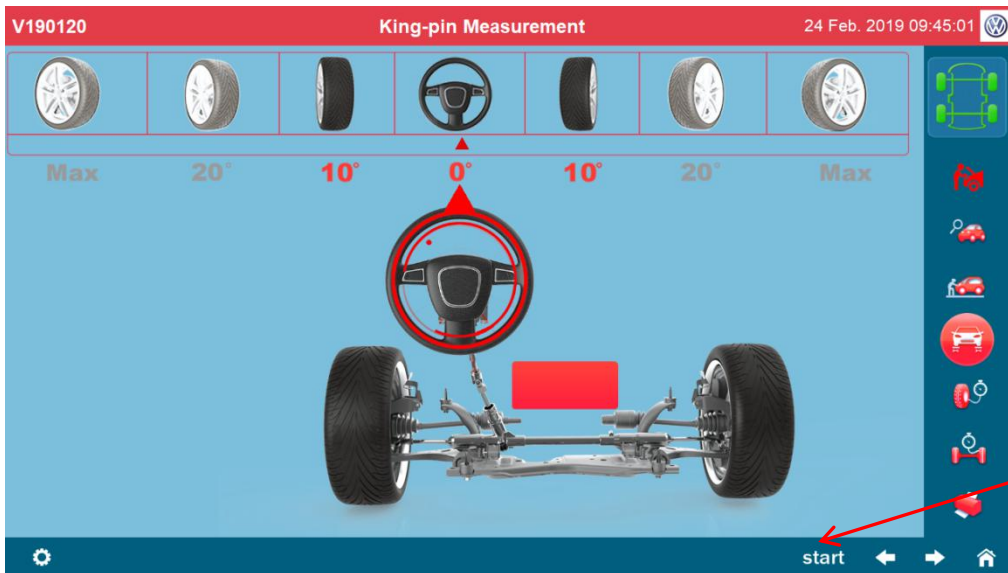
7.



Finish the pushing car measurement, there is a preview for "Camber" and "Toe".

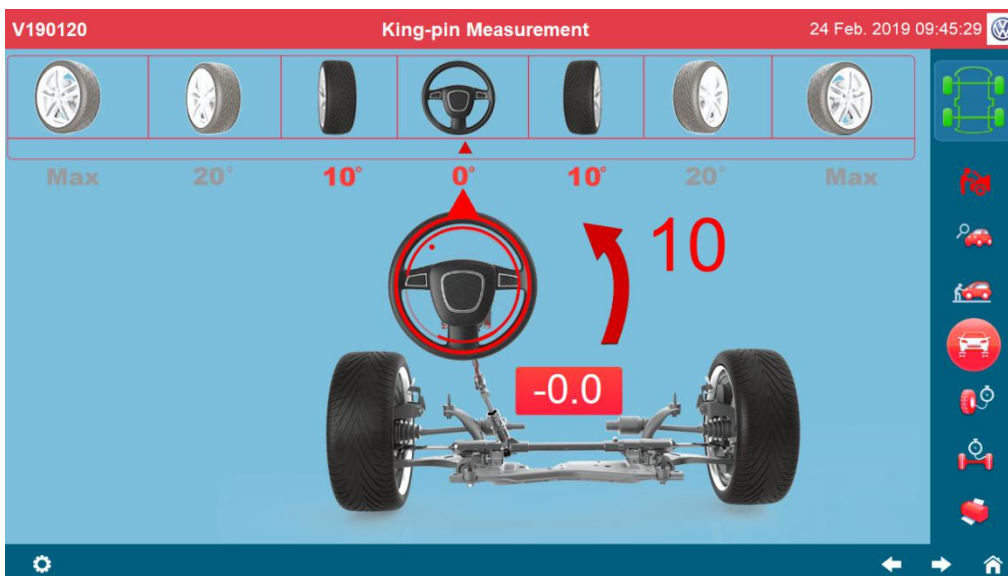
Click to Pin measurement

8.



Click "Start" button.

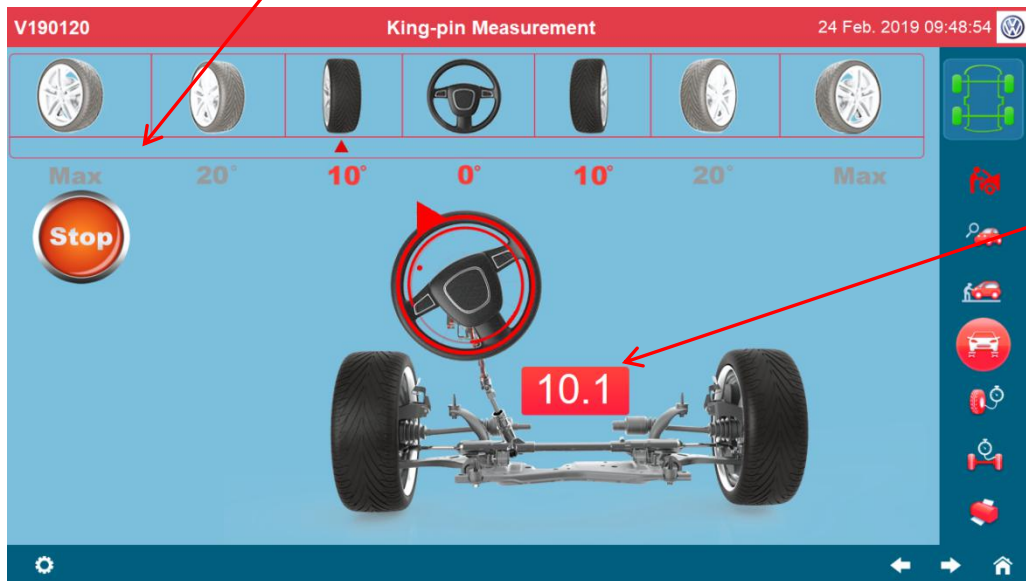
9.



Pull out the pin of turntable, hold the hand brake and hold the brakes with the brake fixer.

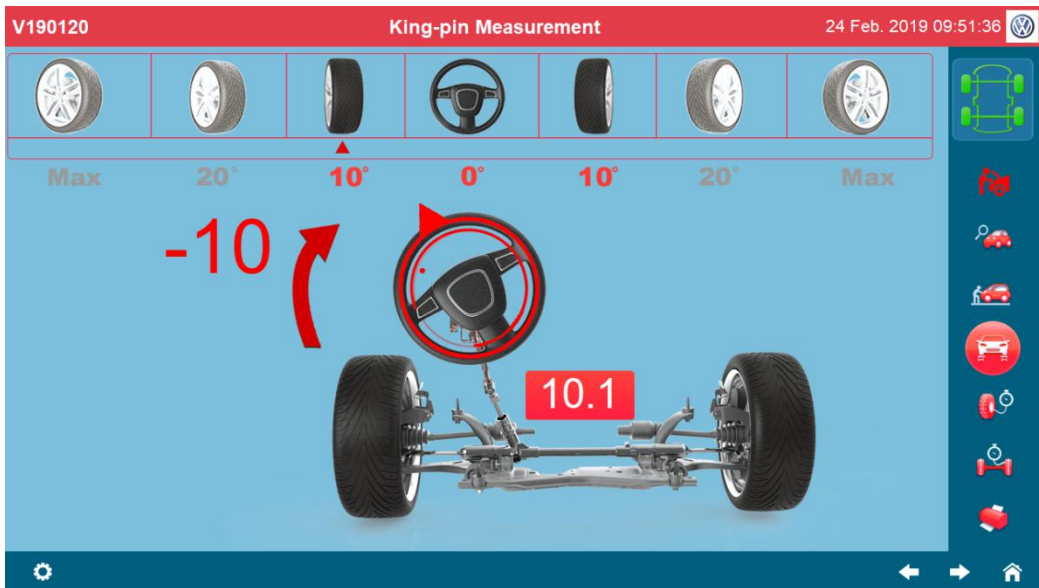
10.

When the data be right, software will show a "Stop" icon.

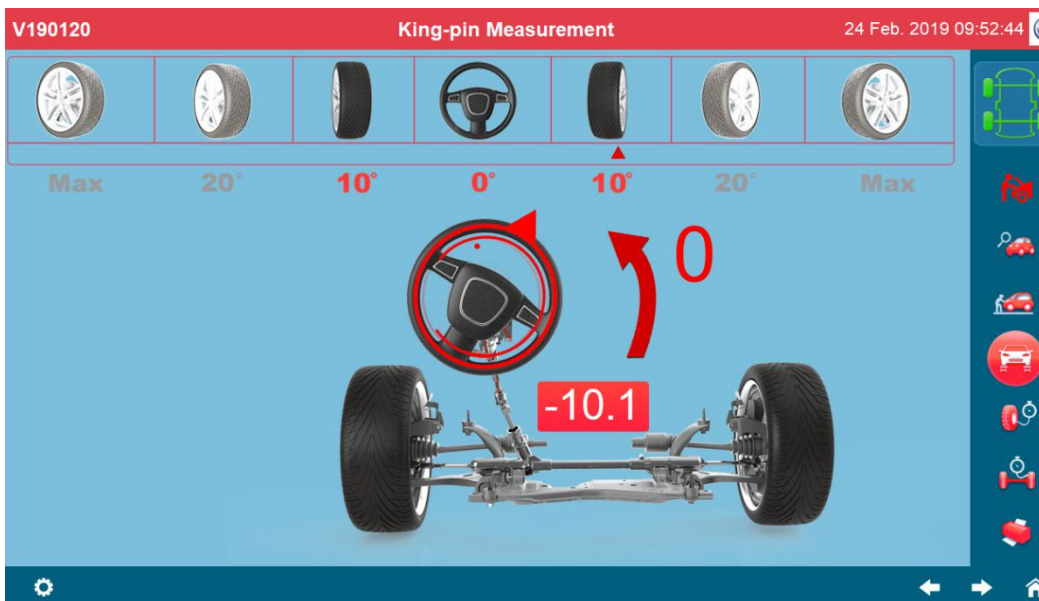
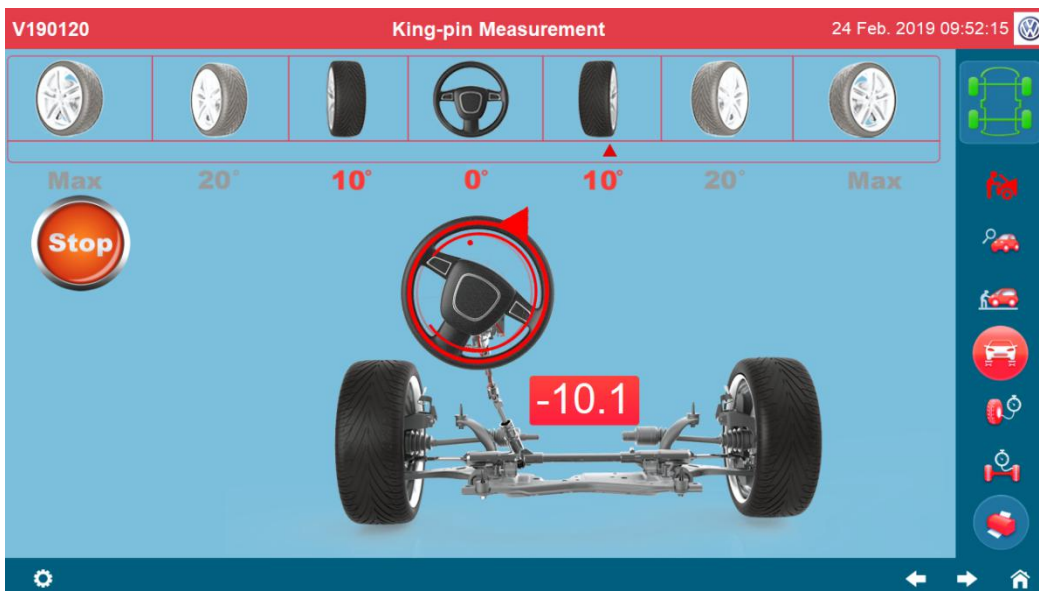


Turn steering wheel left to data between 10° - 10.5° .

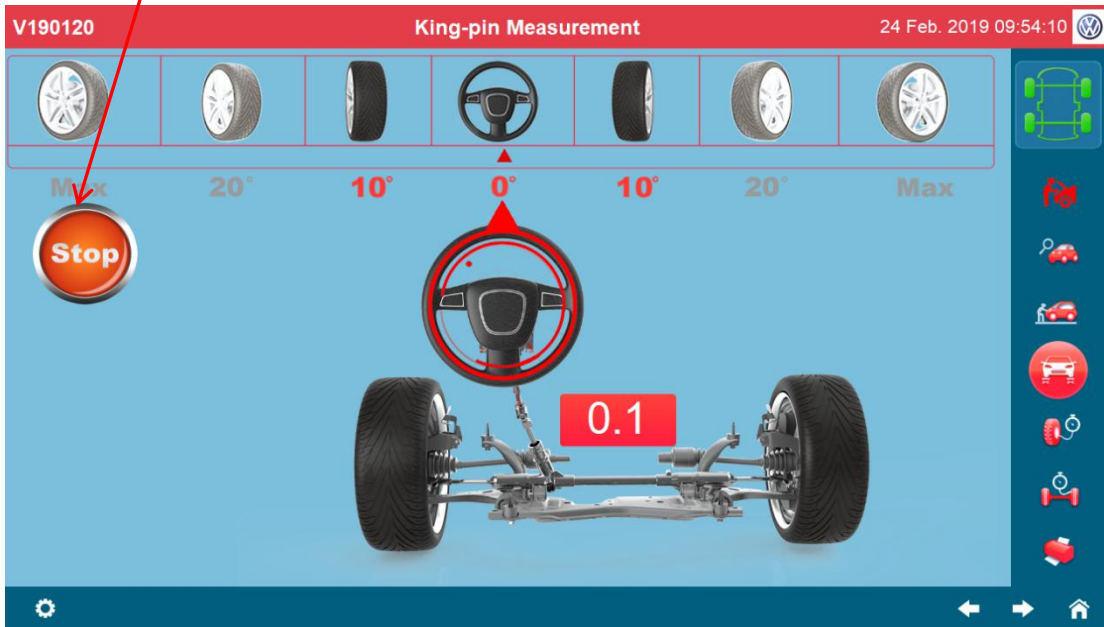
11.



It shows "Stop" and prompt turn right to -10° — -10.5° .Then, turn the steering wheel back to original position 0° - 0.5° . Keep the steering wheel in a horizontal position and fix it with a steering wheel holder.

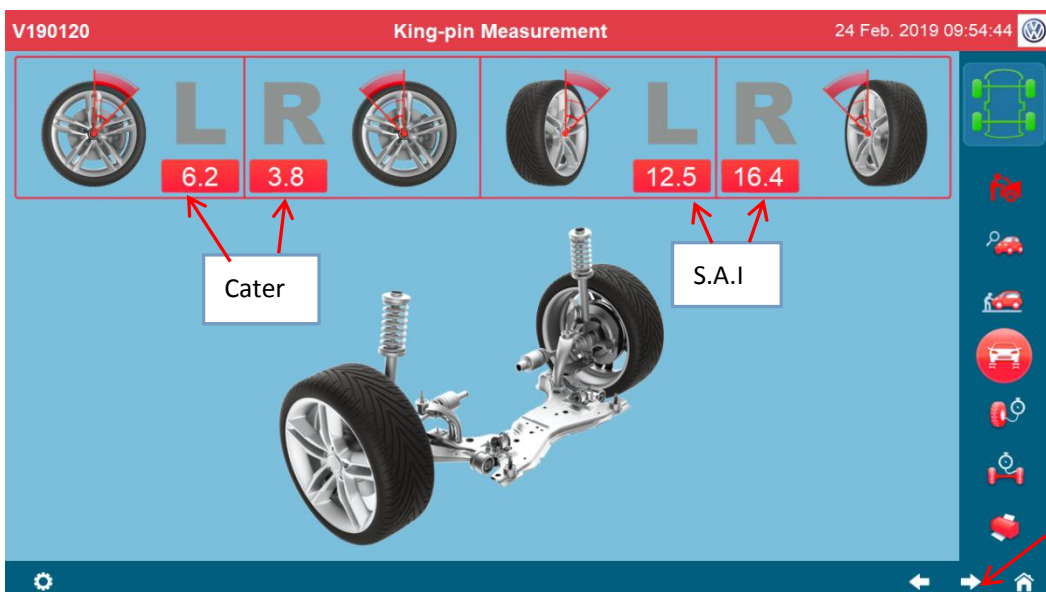


When the data be right, software will show a "Stop" icon.



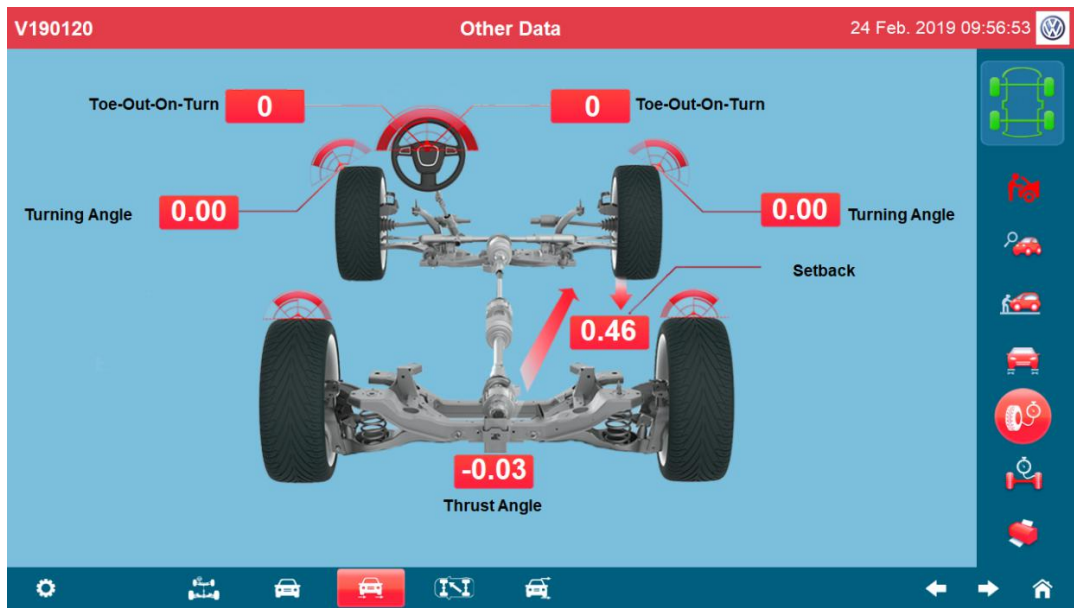
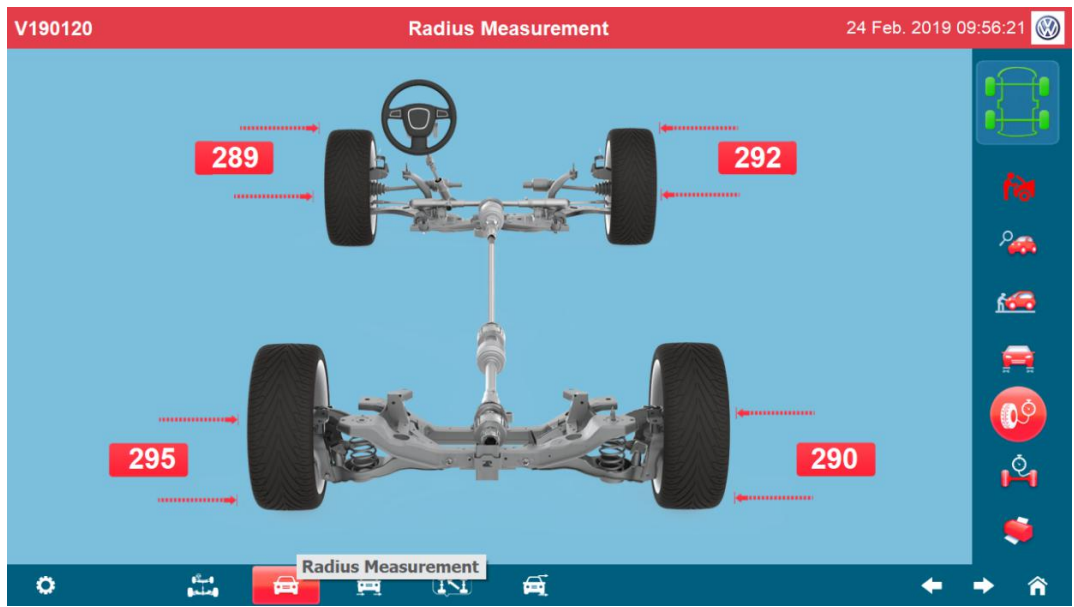
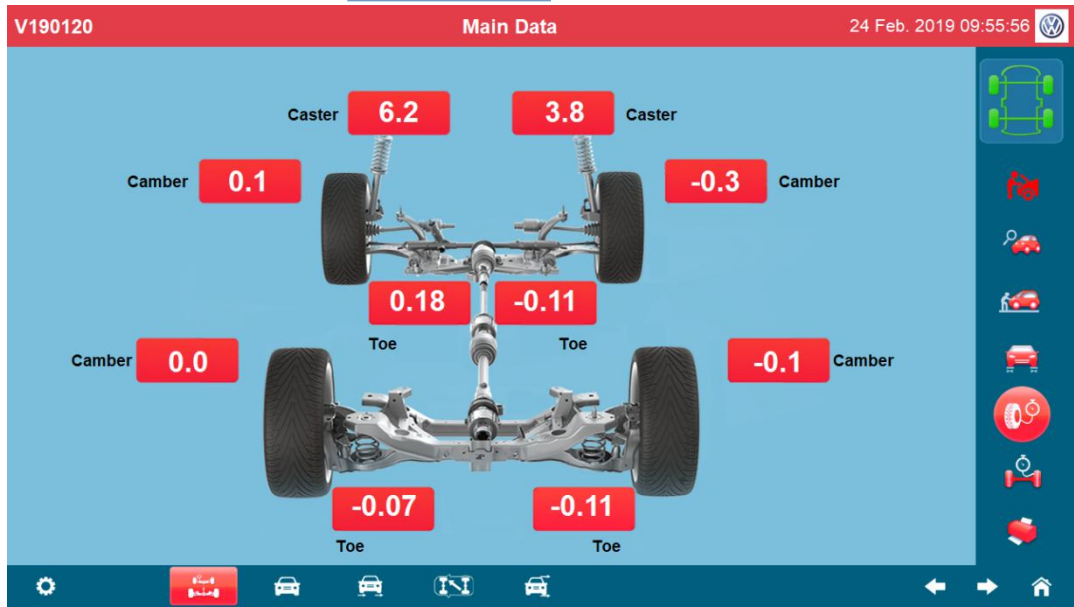
12.

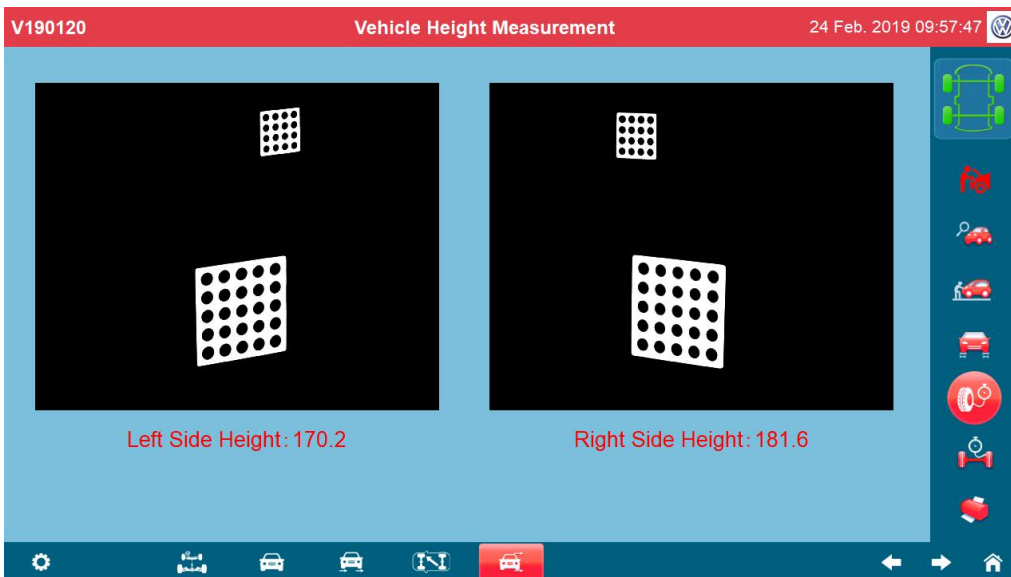
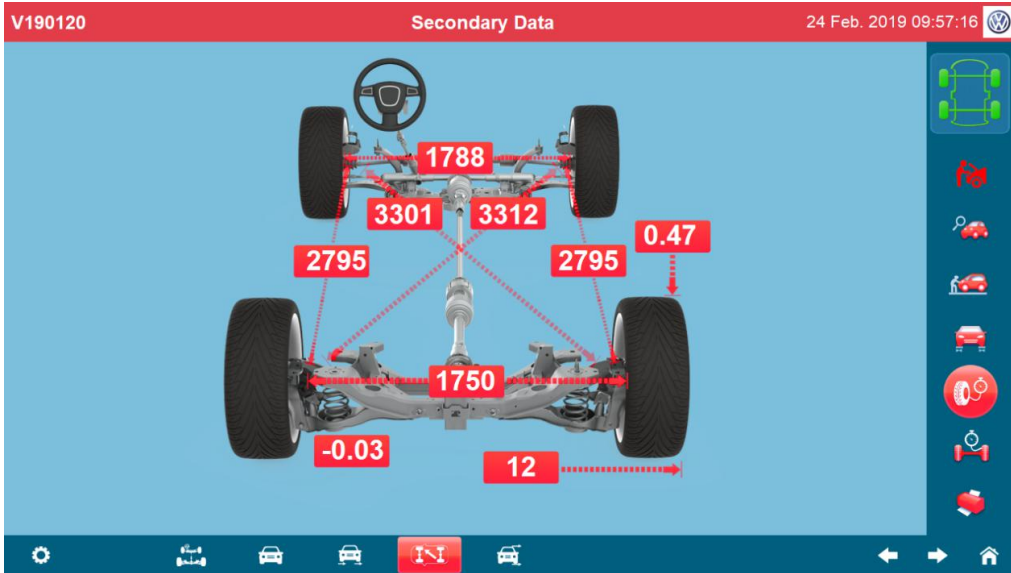
After Pin measurement, here will show "Caster" and "S.A.I" data.



Click to go "Data Browse"

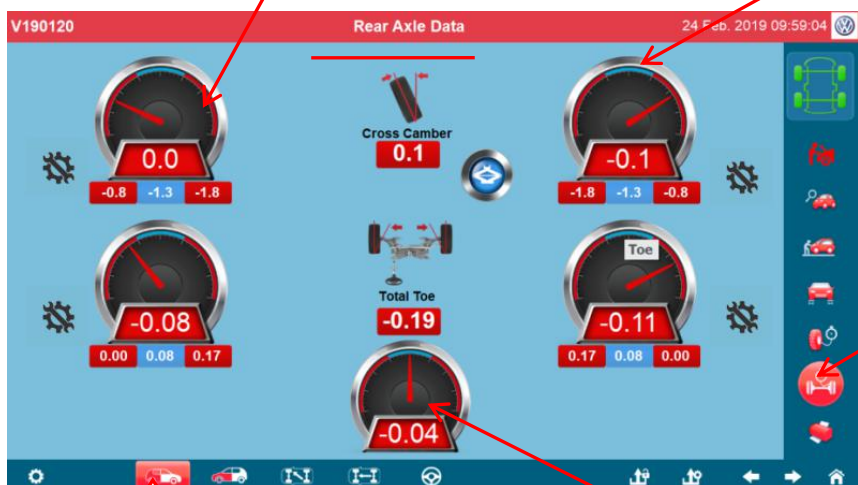
Data Browse





14 The Pin point red area means the data need to be adjusted.

The Pin back to blue area means the data is correct.

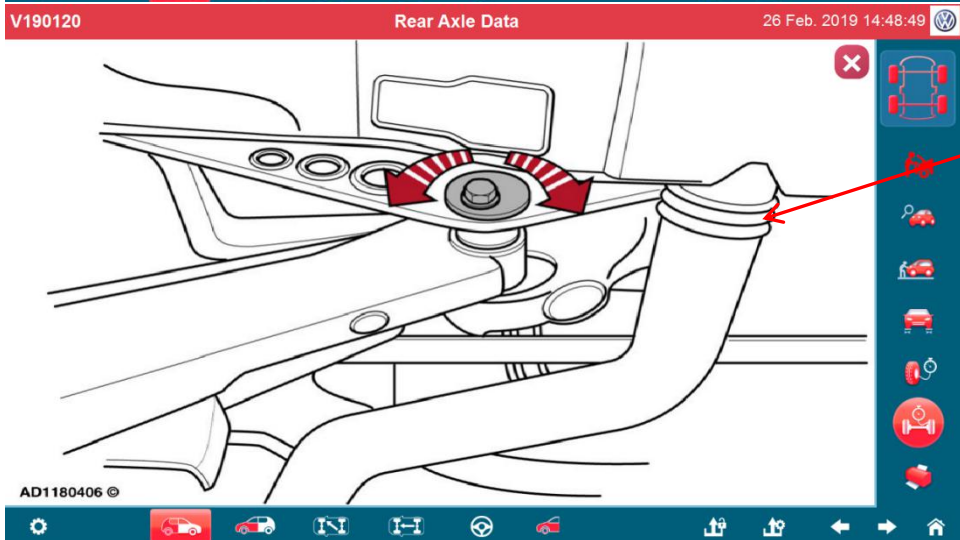


Click to car adjustment

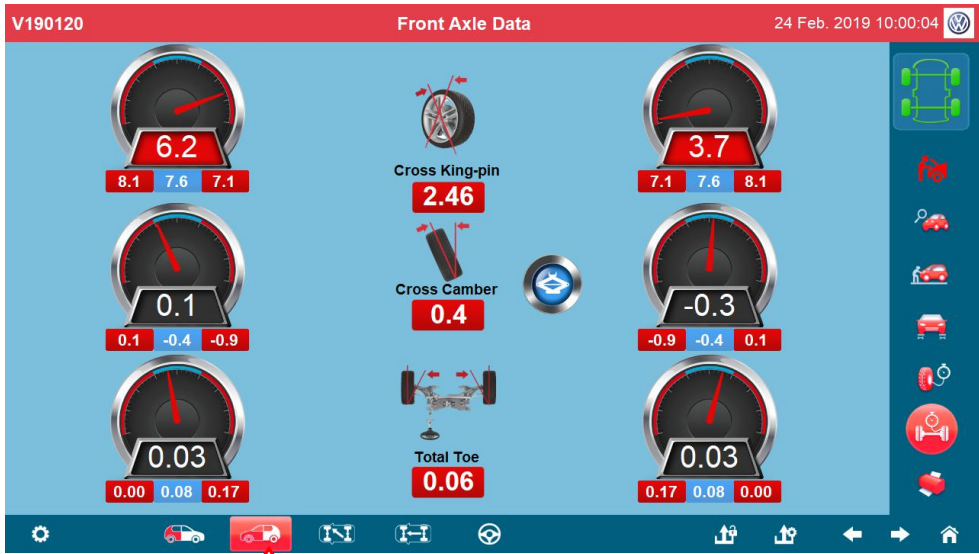
Thrust angle

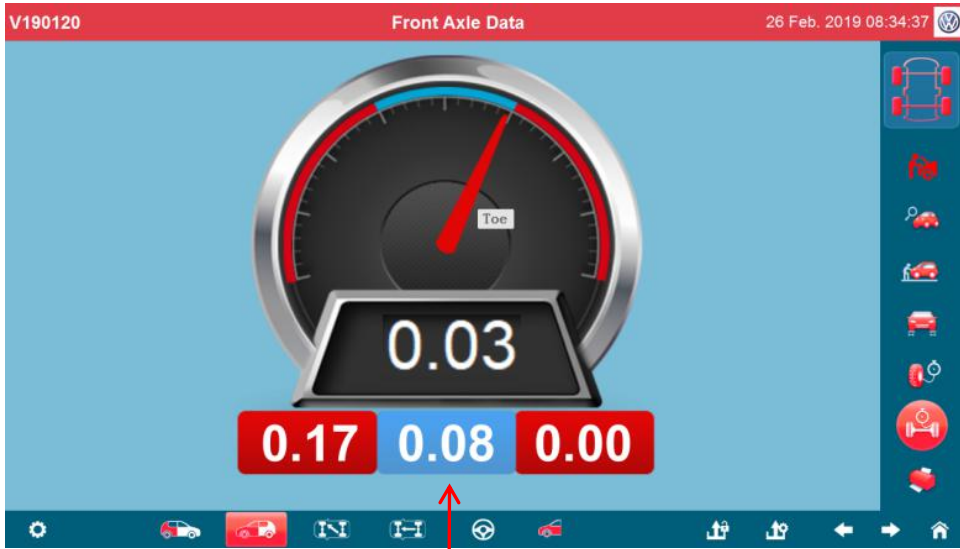


Click this button to show how to adjust car

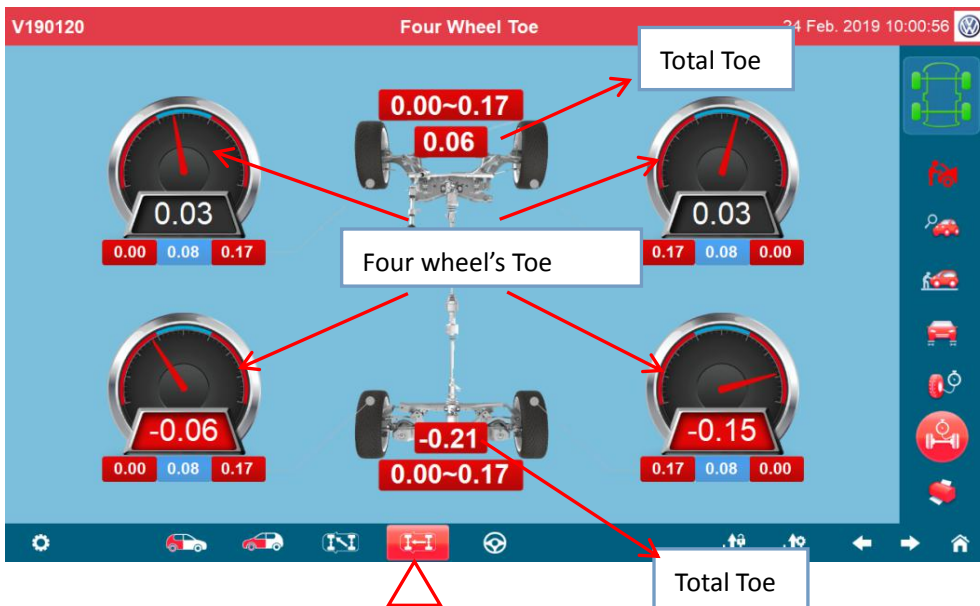
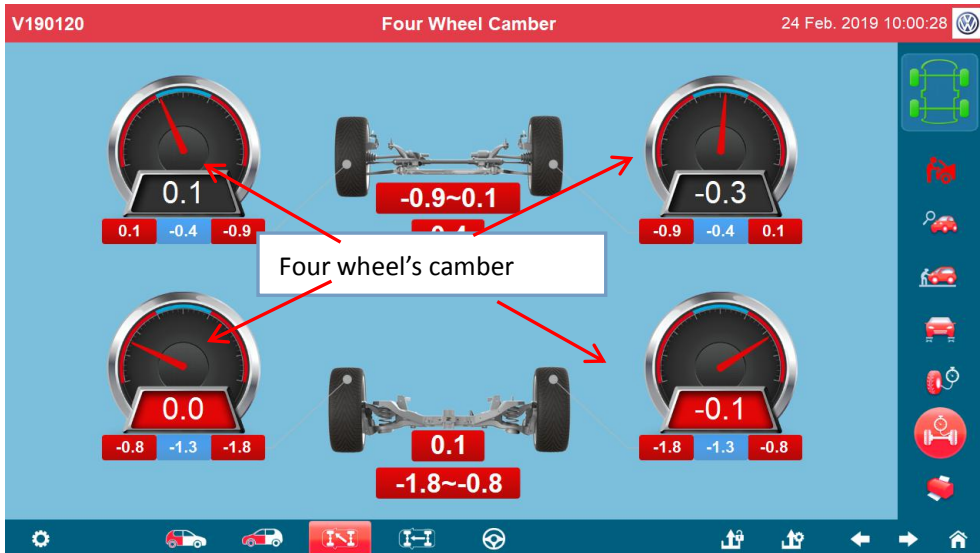


15

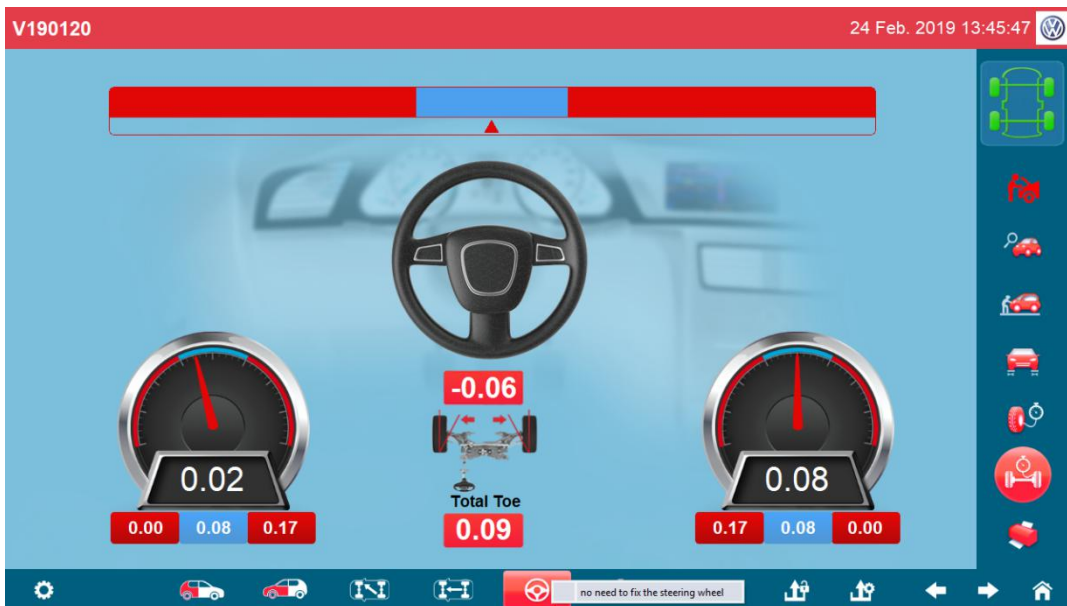
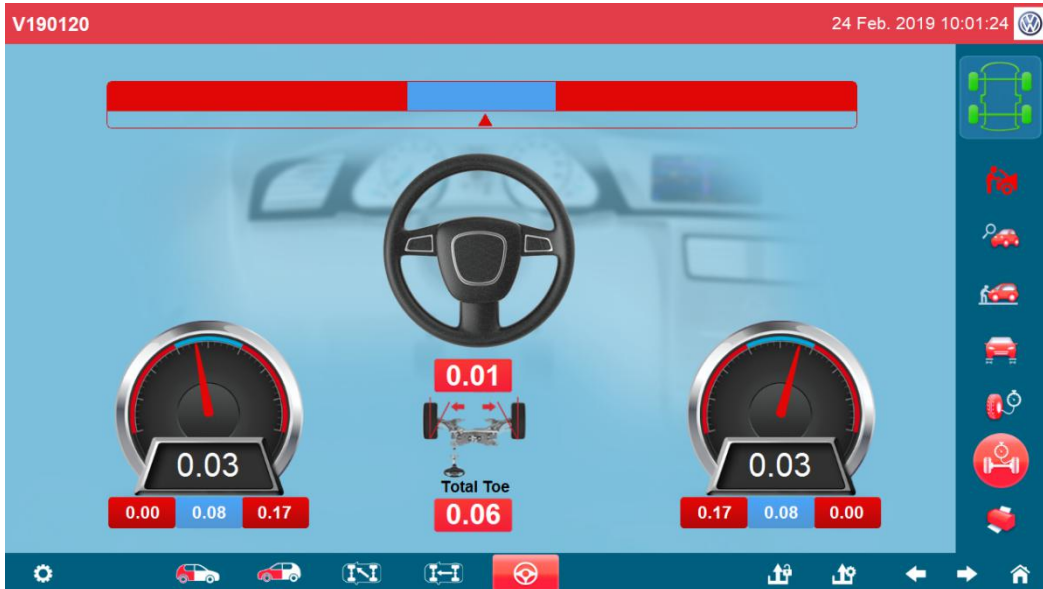




Double-click the corresponding data or occlude the corresponding wheel twice, and the data automatically gets larger




In this page, customer can fast check the steering wheel whether in the center position. If not, to adjust the Toe to make the steering wheel back to center position. When the square icon move to green area, means the steering wheel is in correct



No need fix the steering wheel to adjust Toe

V190120 24 Feb. 2019 13:46:40



Step 1: Start the engine, and straighten the steering wheel.


Follow the prompts and click the "start" button

Start

Settings, Car, Car, Steering, Steering, Start, Home, Back, Forward, Home

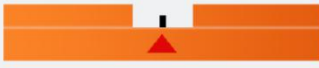
Follow the prompts to adjust car toe

V190120 24 Feb. 2019 13:47:19



Step 2: Adjust the right tie rod to zero and lock it.

-0.00




Follow the prompts and click the "start" button

Start

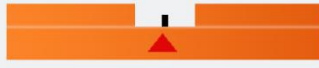
Settings, Car, Car, Steering, Steering, Start, Home, Back, Forward, Home

V190120 24 Feb. 2019 13:47:55



Step 3: Adjust the left tie rod to zero and lock it.

0.06



Follow the prompts and click the "start" button

Start

Settings, Car, Car, Steering, Steering, Start, Home, Back, Forward, Home

V190120 24 Feb. 2019 13:50:24

0.00

Step 3: Adjust the left tie rod to zero and lock it.

Follow the prompts and click the "start" button

Start

V190120 24 Feb. 2019 13:58:27

0.01

Total Toe

0.08

0.04

0.04

V190120 Front Axle Data 26 Feb. 2019 09:05:17

0.1

0.0

Camber

0.03

0.03

Total Toe

0.00

Two wheel alignment function ,you only need install two front wheel target

16.

Input measurement information, specially "Plate No."

V190120 Data Report 24 Feb. 2019 10:03:35

Customer: [] License No.: AAAAA Date: 24 Feb. 2019 Technician: []
Tel.: [] Mileage: [] ID.: [] Order No.: (20190224100203)

Front Axle	Std. Data			Measurement Data	Adjustment Data
Left Camber	-0.9	-0.4	0.1	0.1	0.1
Right Camber	-0.9	-0.4	0.1		
Left Caster	7.1	7.6	8.1		
Right Caster	7.1	7.6	8.1		
Left S.A.I	0.0	0.0	0.0		
Right S.A.I	0.0	0.0	0.0		
Total Toe	0.00	0.15	0.35		

Rear Axle	Std. Data			Measurement Data	Adjustment Data
Left Camber	-1.8	-1.3	-0.8	0.0	0.0
Right Camber	-1.8	-1.3	-0.8	-0.1	-0.1
Total Toe	0.00	0.15	0.35	-0.16	-0.18

Toe-Out-On-Turn: Left 0.13, Right 0.09
Turning Angle: Left 0.00, Right 0.00

Information Tips: Save Success [Confirm]

3D Model: 1788, 2795, 2796, 0.47, 1750, -0.04, 14, Included Angle: Left 12.6, Right 16.1

2. Click "Storage"

3. Print the data report.

17

V190120 Data Report 25 Feb. 2019 23:23:29

Customer: [] License No.: [] Date: 25 Feb. 2019 Technician: []
Tel.: [] Mileage: 0 ID.: [] Order No.: (20190225232223)

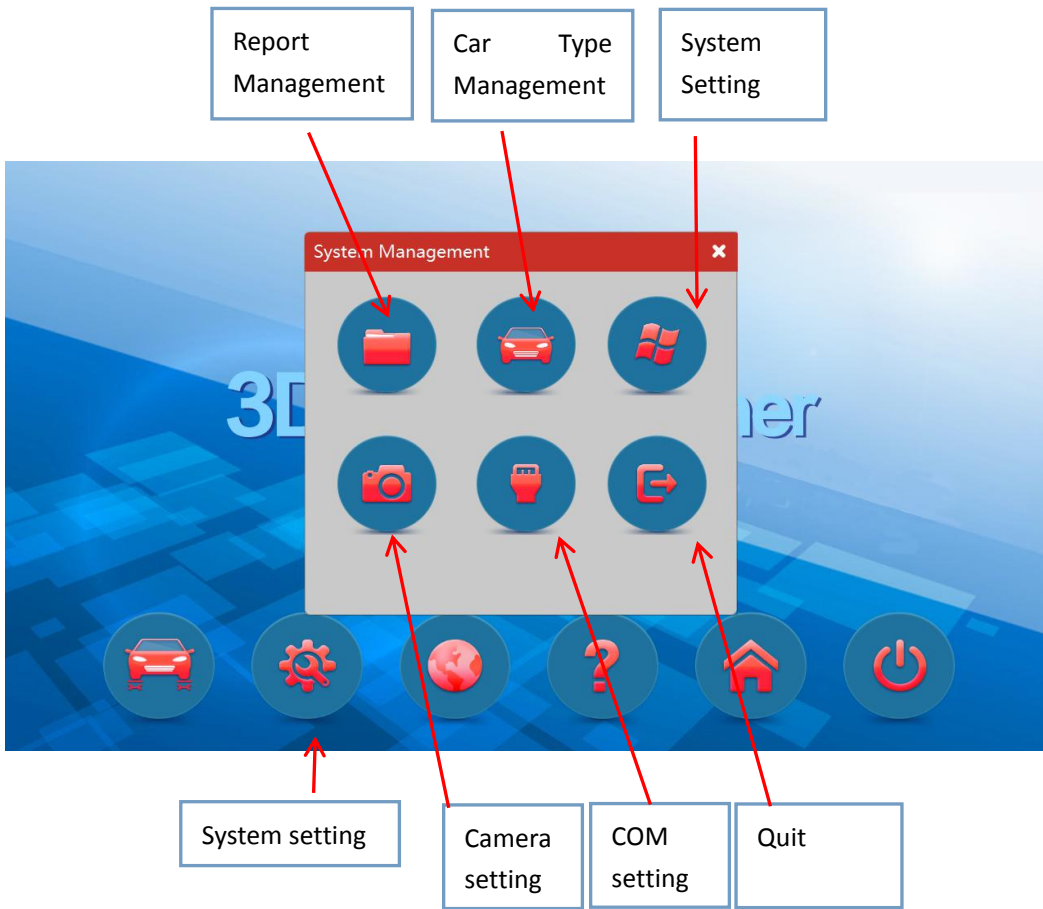
Front Axle	Std. Data			Measurement Data	Adjustment Data
Left Camber	-0.9	-0.4	0.1		
Right Camber	-0.9	-0.4	0.1		
Left Caster	7.1	7.6	8.1		
Right Caster	7.1	7.6	8.1		
Left S.A.I	0.0	0.0	0.0		
Right S.A.I	0.0	0.0	0.0		
Total Toe	0.00	0.15	0.35		

Rear Axle	Std. Data			Measurement Data	Adjustment Data
Left Camber	-1.8	-1.3	-0.8		
Right Camber	-1.8	-1.3	-0.8		
Total Toe	0.00	0.15	0.35		

Toe-Out-On-Turn: Left 0.00, Right 0.00
Turning Angle: Left 0.00, Right 0.00

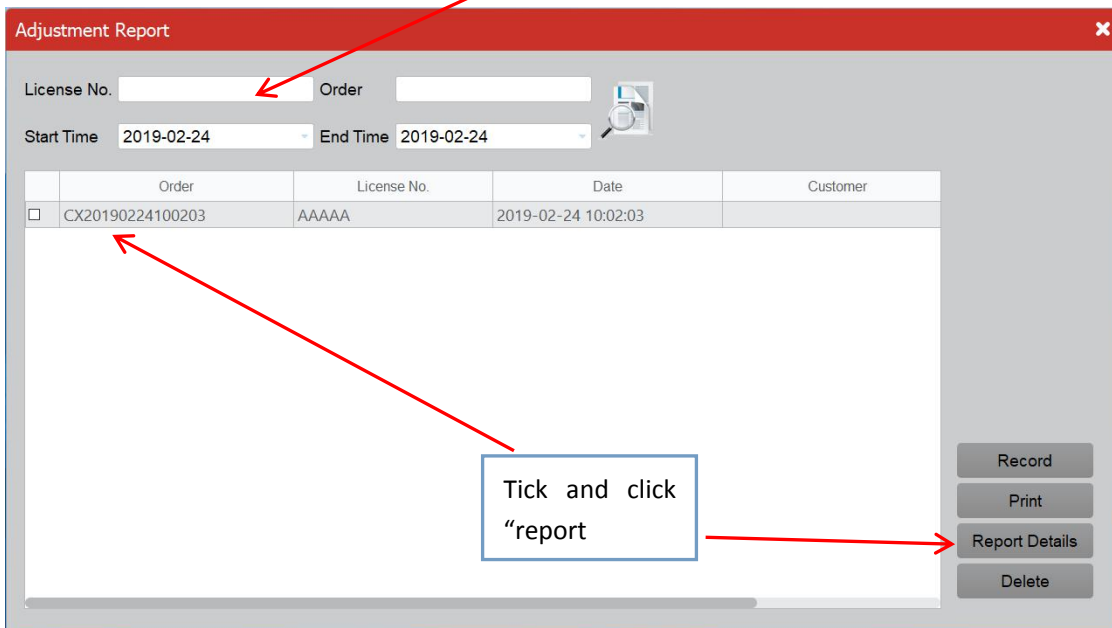
Company Info. dialog: Company Name: ABC, Company Tel.: 0, Company Add.: 0, Remarks: 0, Company E-mail: 0, Software ID: 1818629744, Buttons: Decode, Modify, Cancel

Click here to input host information.



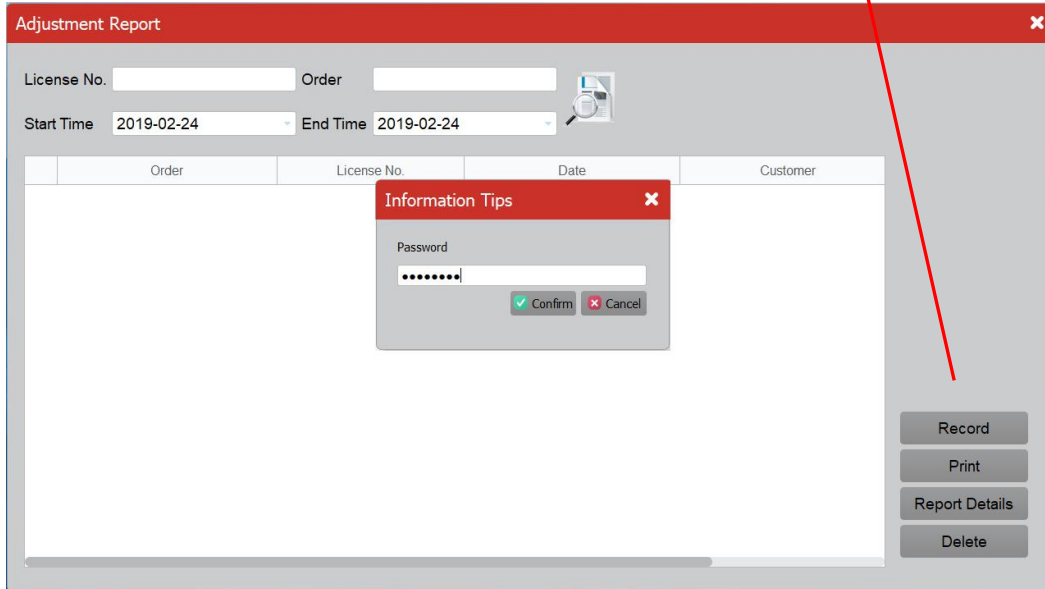
20. Report Management

All information that be stored can be recheck here.

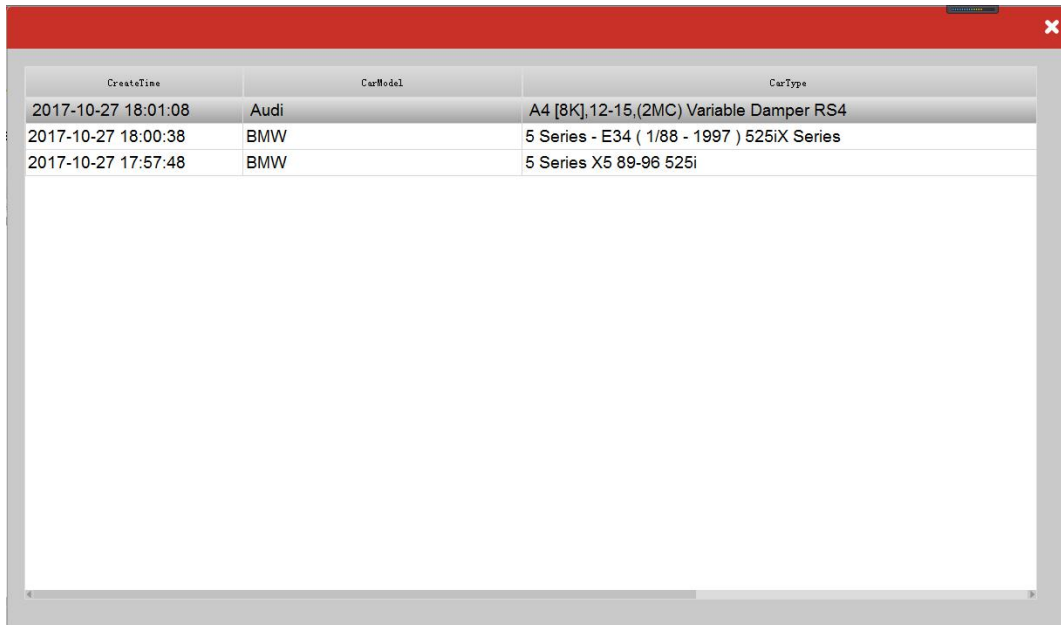


Report record search

Click Record, Enter password 20170711, you can check all the model record.



The screenshot shows the 'Adjustment Report' window. At the top, there are input fields for 'License No.' and 'Order', and dropdown menus for 'Start Time' (2019-02-24) and 'End Time' (2019-02-24). Below these is a table with columns: Order, License No., Date, and Customer. An 'Information Tips' dialog box is open, asking for a 'Password' (masked with dots) and providing 'Confirm' and 'Cancel' buttons. On the right side of the window, there are four buttons: 'Record', 'Print', 'Report Details', and 'Delete'. A red arrow points from the text above to the 'Record' button.

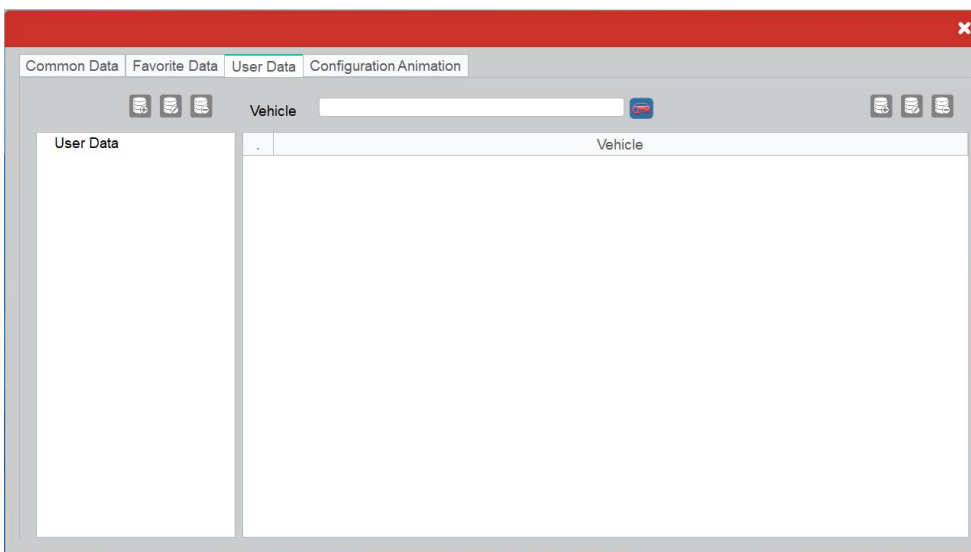
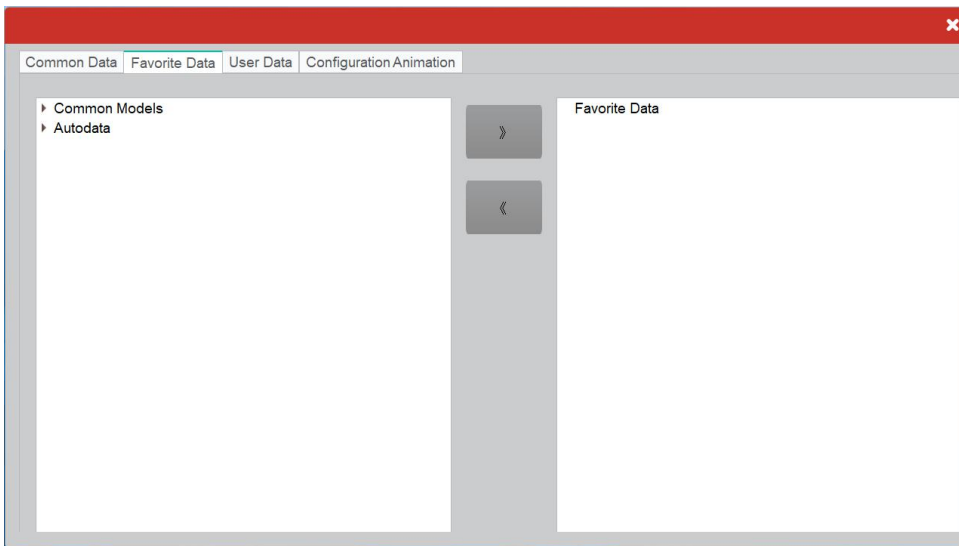
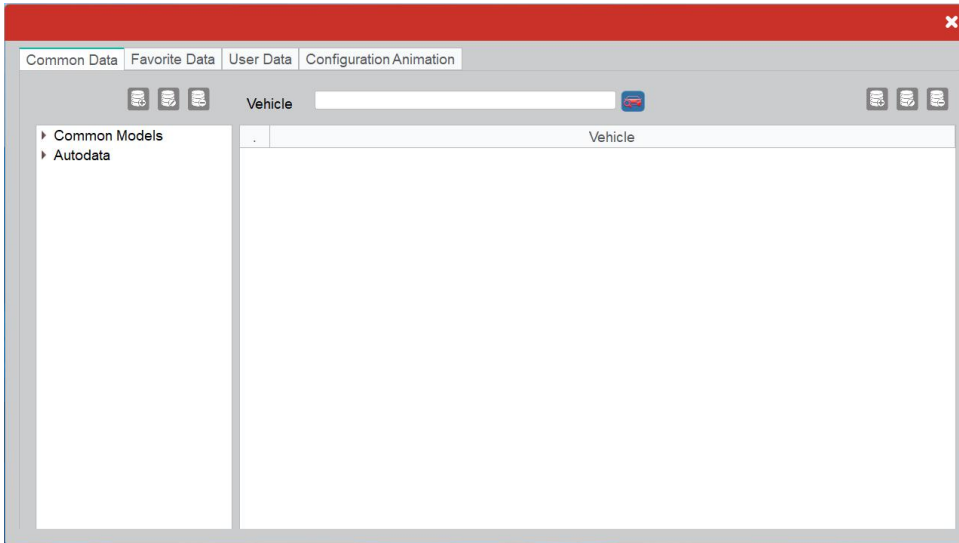


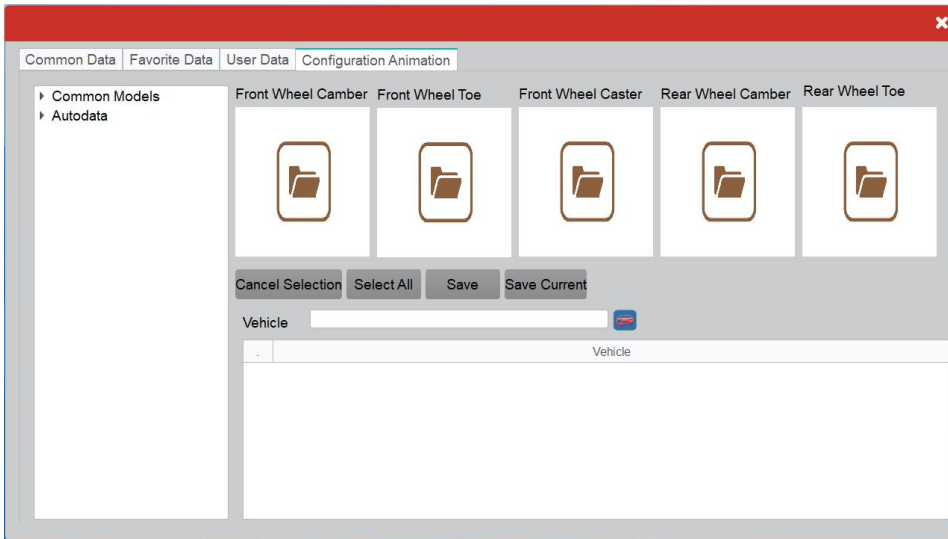
The screenshot shows the 'Adjustment Report' window displaying a table of records. The table has three columns: 'CreateTime', 'CarModel', and 'CarType'. The data is as follows:

CreateTime	CarModel	CarType
2017-10-27 18:01:08	Audi	A4 [8K],12-15,(2MC) Variable Damper RS4
2017-10-27 18:00:38	BMW	5 Series - E34 (1/88 - 1997) 525iX Series
2017-10-27 17:57:48	BMW	5 Series X5 89-96 525i

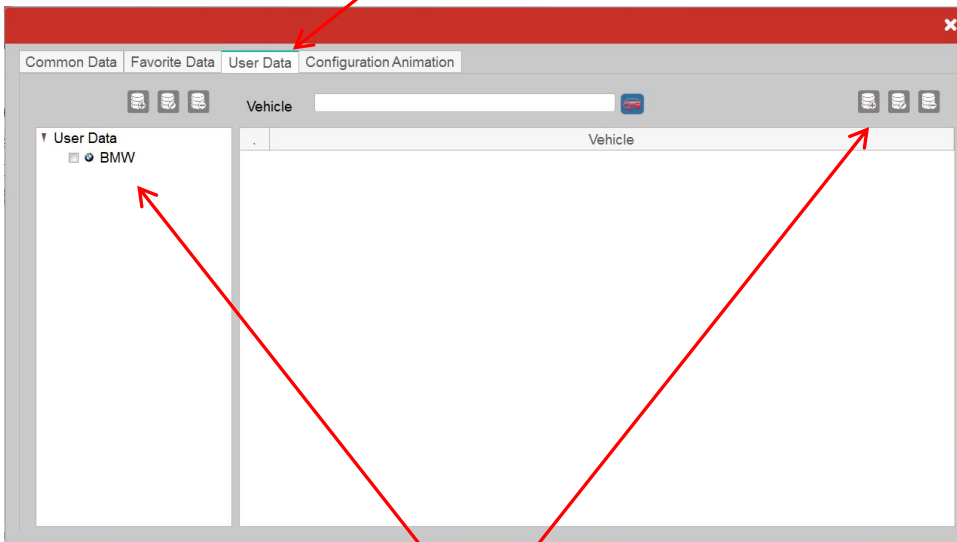
21. Car type management.

In this page, customer can adding, modify and delete database.





1. Switch to User Data



2. Select car brand and click "+" here

Basic Info.		Left			Right		
		Min	Std. Data	Max	Min	Std. Data	Max
Front Axle Data	Total Toe	0.07	0.27	0.47			
	Camber	-0.70	-0.20	0.30	-0.70	-0.20	0.30
	Caster	0.00	0.00	0.00	0.00	0.00	0.00
	SAI	0.00	0.00	0.00	0.00	0.00	0.00
	Included Angle	0.00	0.00	0.00	0.00	0.00	0.00
	Toe-Out-On-Turn	0.00	0.00	0.00	0.00	0.00	0.00
Rear Axle Data	Total Toe	0.10	0.30	0.50			
	Camber	-1.90	-1.50	-1.10	-1.90	-1.50	-1.10
Turning Angle	Inside	0.00	0.00	0.00	0.00	0.00	0.00
	Outside	0.00	0.00	0.00	0.00	0.00	0.00

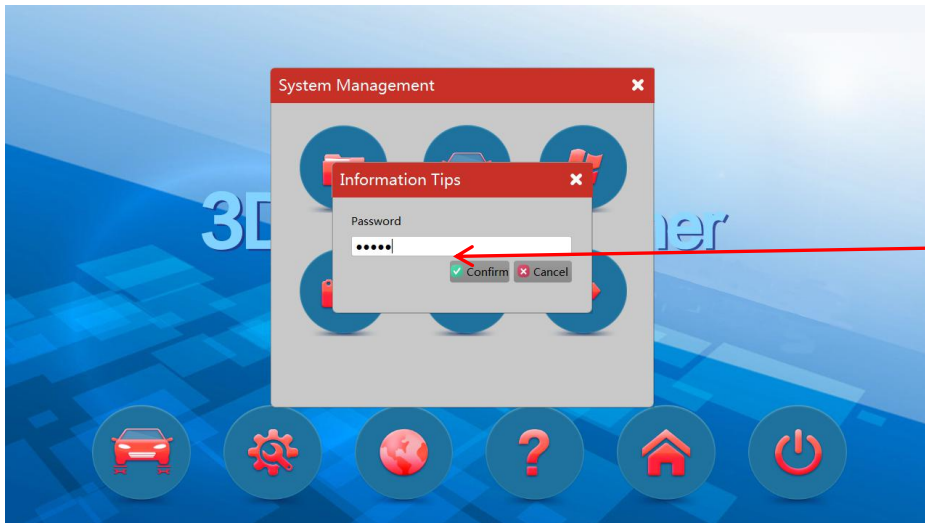
ID	<input type="text"/>
Model	BMW
Vehicle	1Series-E81(2007)With A
Manufacturer	<input type="text"/>
Date	<input type="text"/> - <input type="text"/>
Body	<input type="text"/>
Displacement	<input type="text"/>
Rim	<input type="text"/>
Counterweight	<input type="text"/>
Fuel Consumption	<input type="text"/>
Under Car	<input type="text"/>
Engine	<input type="text"/>

100" 60"

2. Input car model here

3. Input car data, then confirm.

22. System Setting

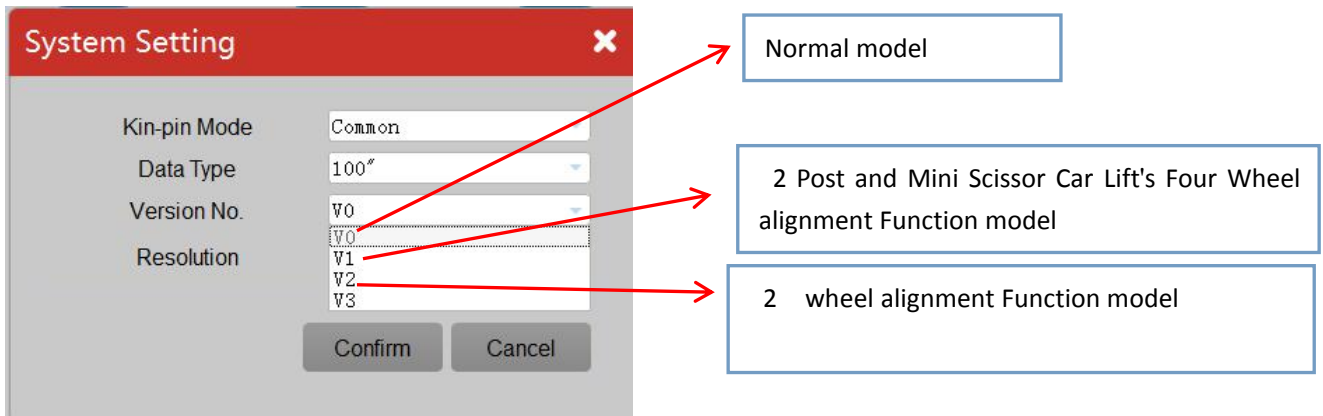


The password is 12345

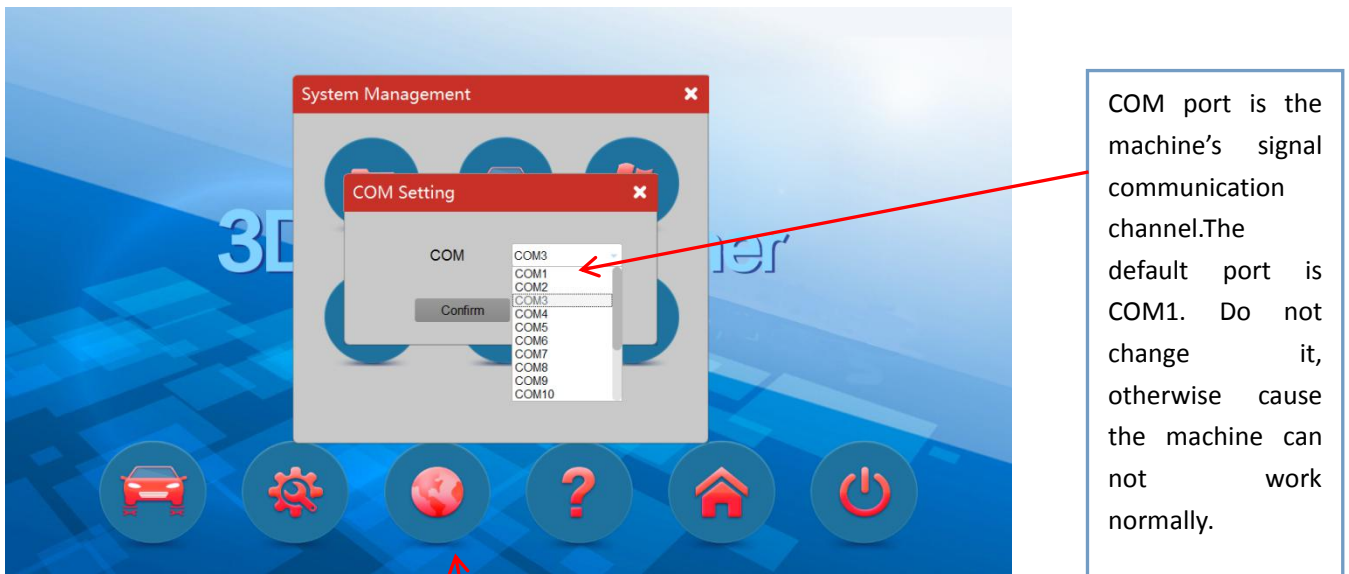
Kin-pin Mode	Common
Data Type	Common
Version No.	Special
Resolution	1280*720

Change Caster mode

Change data units type.

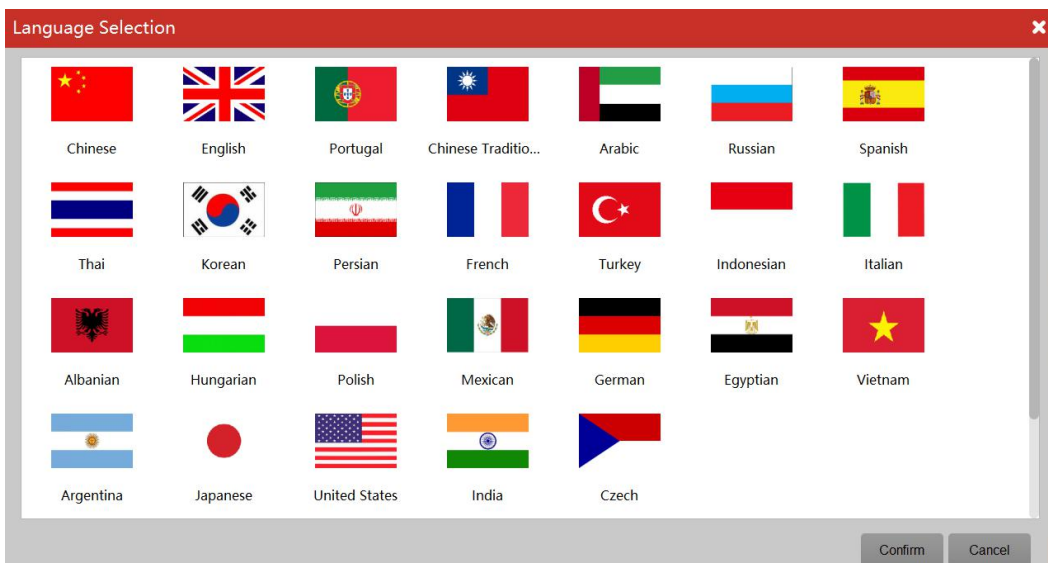


23. COM setting



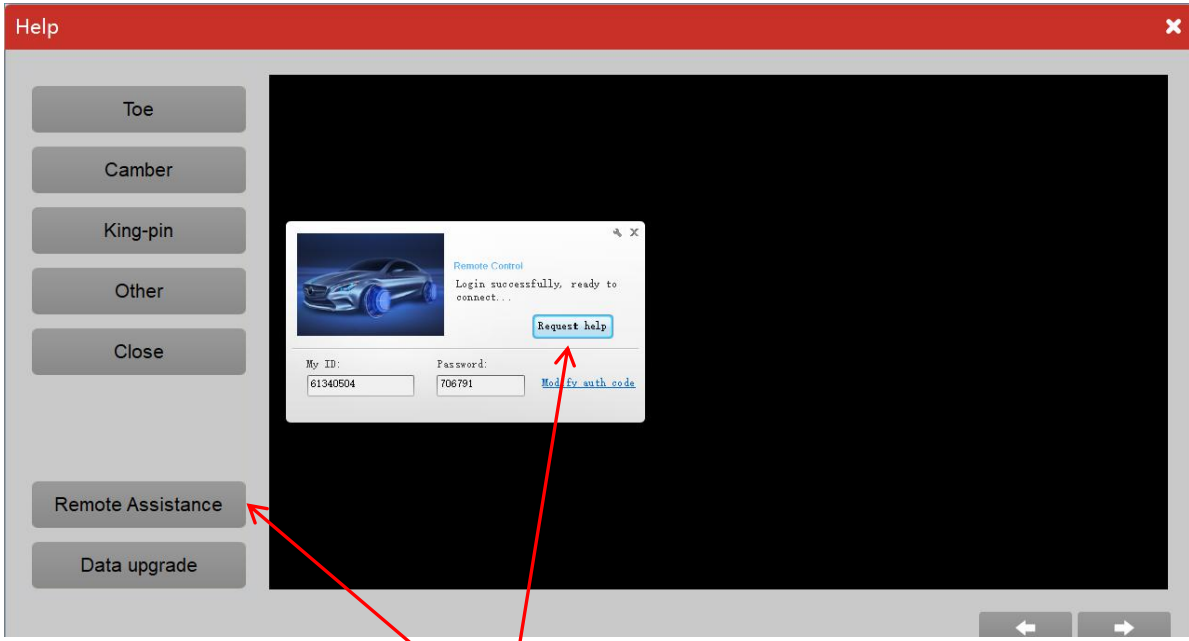
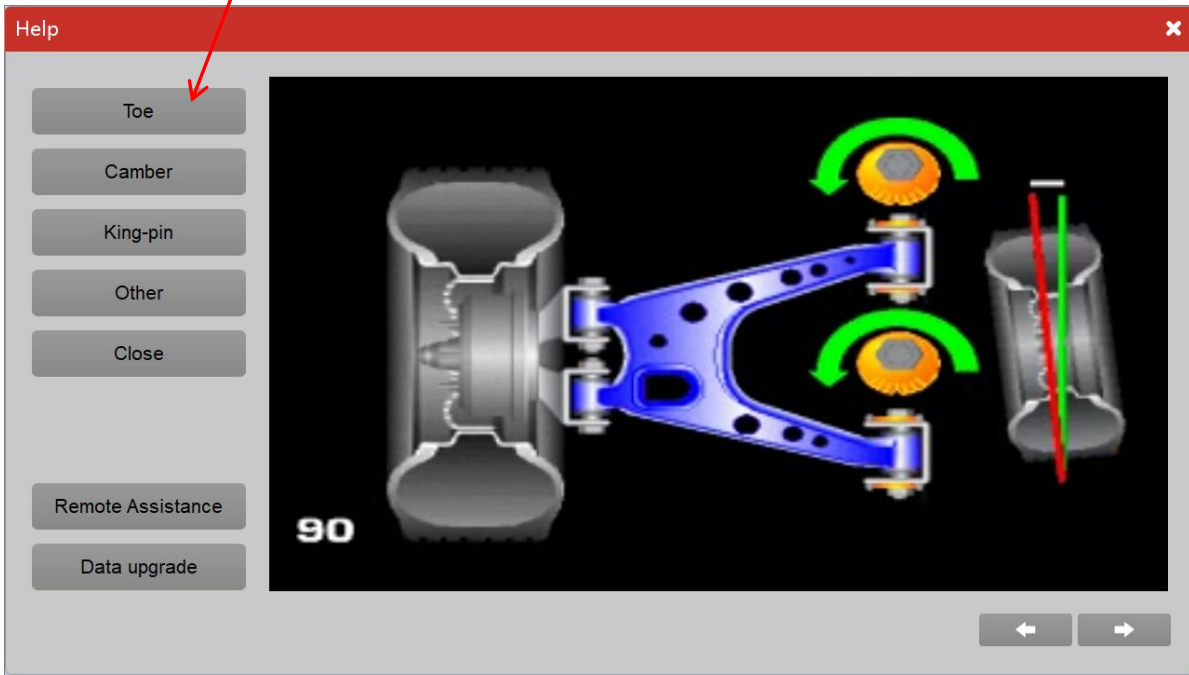
Language option.

24

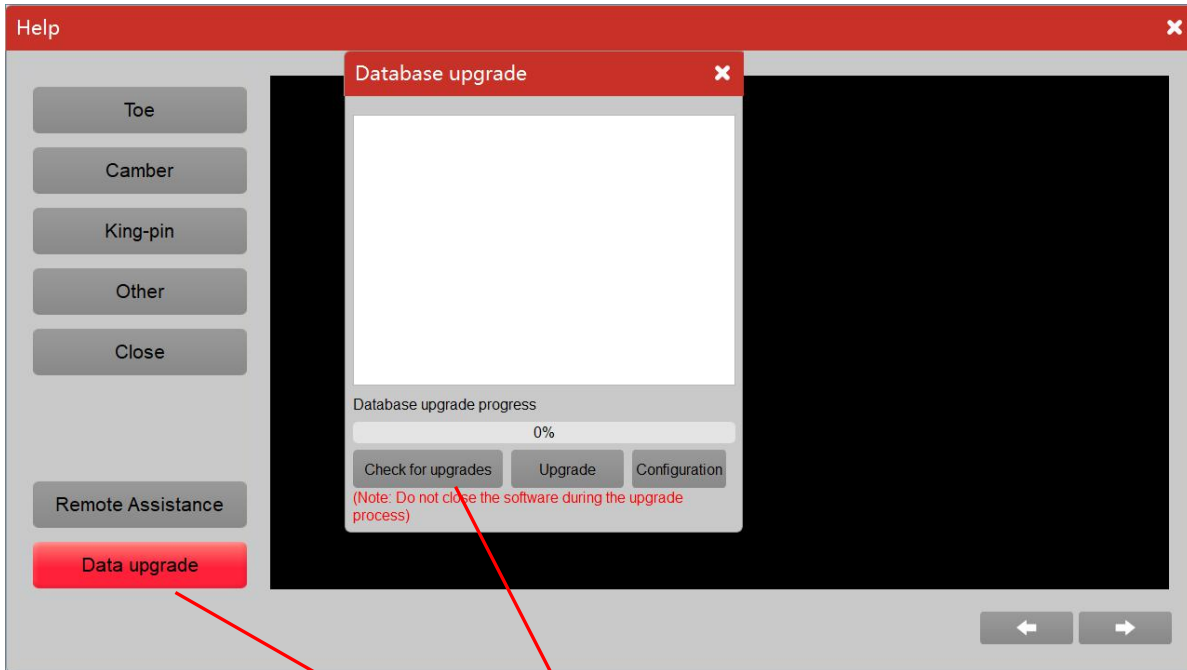


25.

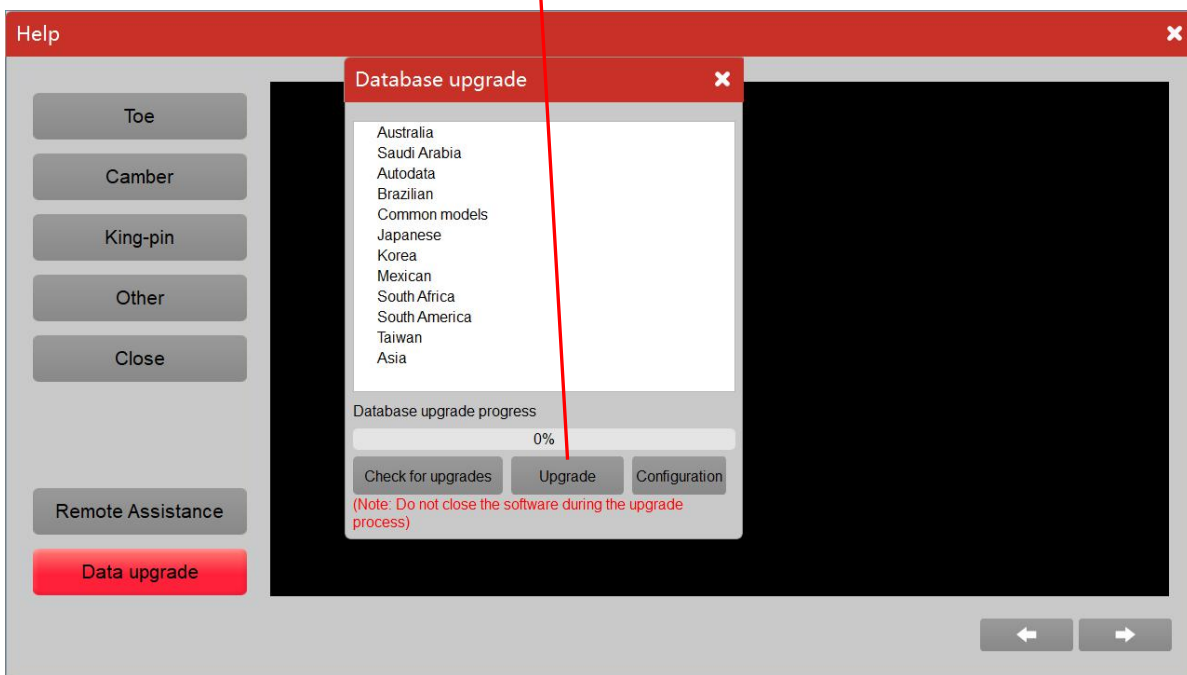
Data adjustment animation



Remote Assistance

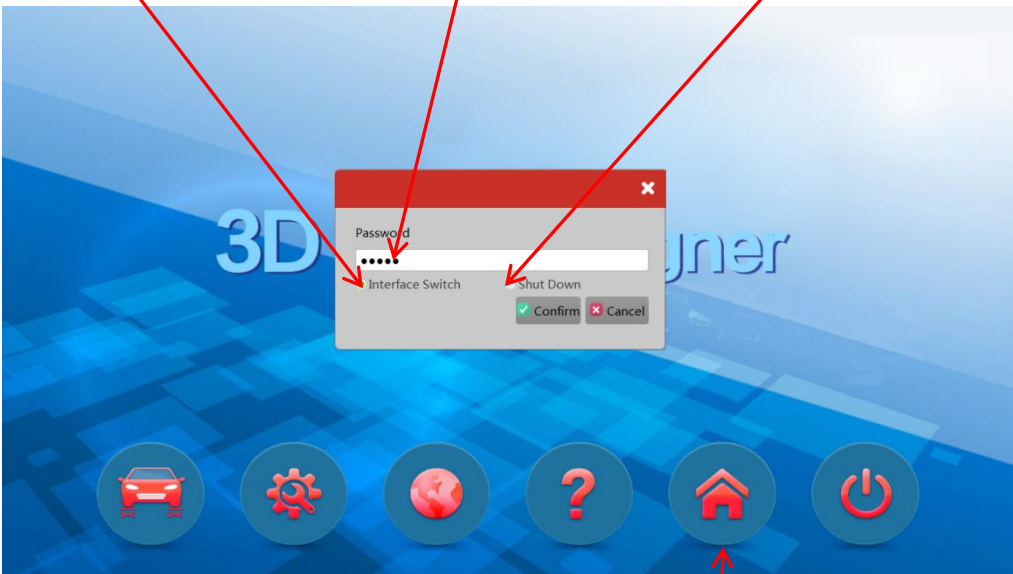


Data upgrade



26.

Back to desktop.
Password:12345
Shut down the computer



Click here to close software.

27

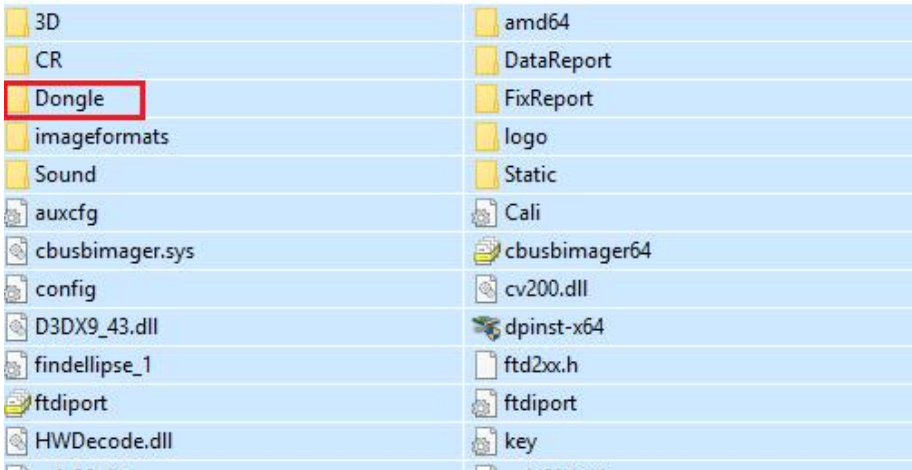


Click here to shutdown the computer directly.

III. Driver program installation

3.1 Dongle Driver installation

(1). Enter wheel alignment software folder, find “Dongle” file:

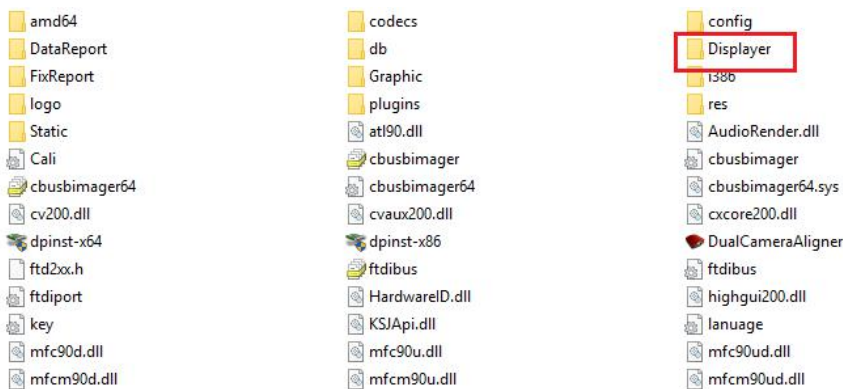


(2). Open file and find “Dongle installation” , open it to finish installation:

名称	修改日期	类型	大小
Driver Delete	2012/6/11 12:03	Windows 批处理...	1 KB
Driver Installation	2012/6/11 12:03	Windows 批处理...	1 KB
haspdinst	2012/10/12 16:10	应用程序	14,560 KB
readme	2012/10/12 19:17	360 se HTML Do...	14 KB

3.2. Displayer Driver installation

(1) .Enter wheel alignment software folder, find “Displayer” file:



(2).Open file , click it to finish installation:

名称	修改日期	类型	大小
K-Lite_Codec_Pack_965_Mega	2013/1/16 12:07	应用程序	23,819 KB

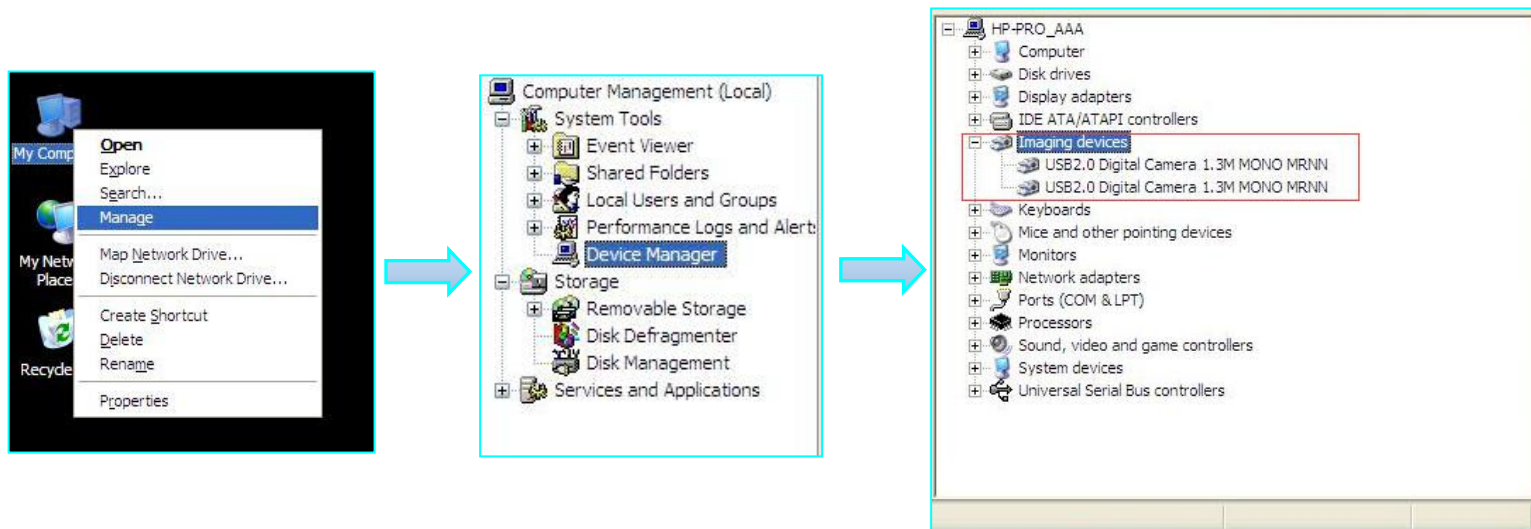
3.3Camera Driver installation;



If camera driver program not be installed, camera will not working and in wheel alignment software, there are no target images shows in screen.

There will be a prompt **“Need two cameras, pls”** when open the wheel alignment software.



Right click “My computer”— “Manage” — “Device manager” — “Imaging device”.



In “Imaging device” there are two cameras drivers shows(in above picture). if there is a warning marker “  in front of the camera driver:  USB2.0 Digital Camera 1.3M MONO MRNN

It means that driver program is not installed succeed. Customer needs to right click both of camera driver “USB2.0...” to reset it.

There is a warning marker or no shows camera driver all are incorrect, need to reset.

3.4 Printer Driver installation;

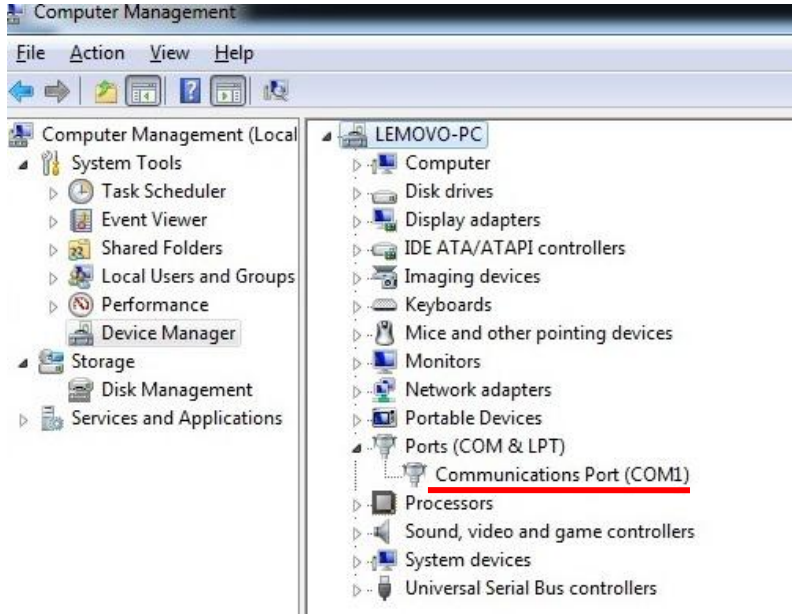
In control panel, find “Printers and Faxes”, go inside and finish installation.

3.5 Com port setting

Open computer management-Device Manager-Ports(COM & LPT),Set the correct com number in the software package -MyInit and software application.

For example I:

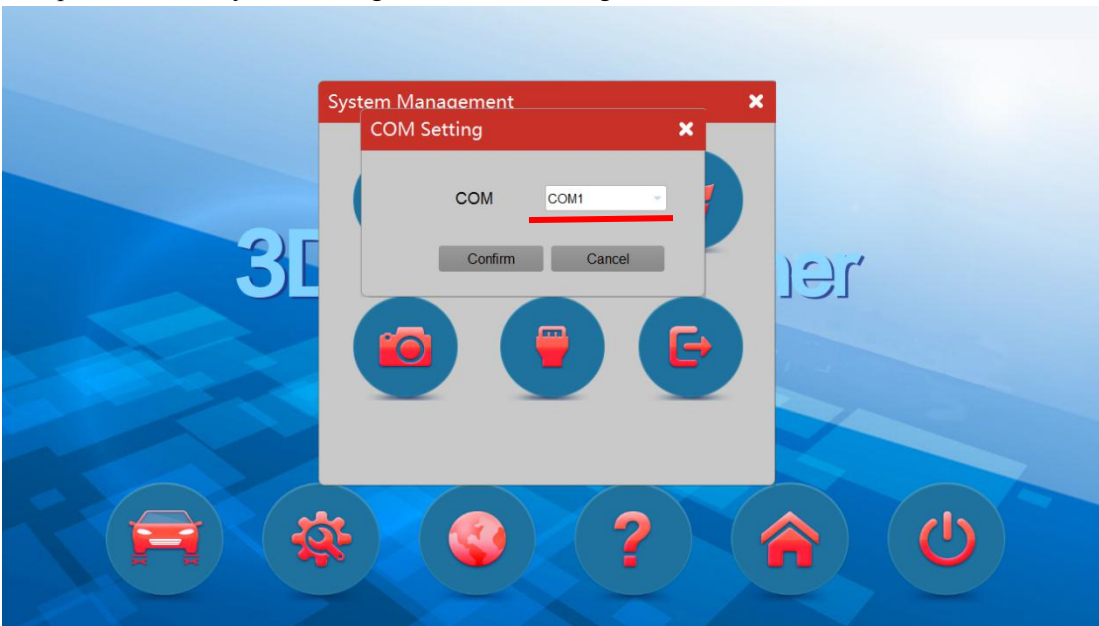
(1).Open computer management-Device Manager-Ports(COM & LPT), show 



(2). Open software package, find MyInit ,Set Com=1


```
MyInit - Notepad
File Edit Format View Help
Synamo_c=154.10
Synamo_d=164.09
[SYSTEMSET]
Com=1
PWML=11
PWR=11
[SETTING]
DJ=1
Precision=30
[BIAS]
Bias=0.03
[DISTANCE]
Flag=1
Camber_fl=0
Camber_fr=0
Camber_rl=0
Camber_rr=0
Toe_fl=0
Toe_fr=0
Toe_rl=0
Toe_rr=0
LZJ14=3
RZJ23=0
LLJ12=0
RLJ43=0
LR13=0
LR24=0
[ADJUST]
Flqs=0.0000
Frqs=0.0000
[SYSTEM]
COM=1
PWML=11
PWR=11
TUBE=1
```

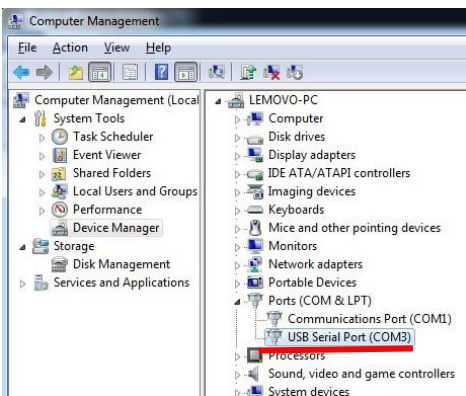
(3).Open software -System Management-COM Setting,set com 1.



For example II.

① Open computer management-Device Manager-Ports(COM & LPT),for

example  USB Serial Port (COM3)



②. Open software package, find MyInit ,Set Com=3.

```
MyInit - Notepad
File Edit Format View Help
Synamo_c=154.10
Synamo_d=164.09

[SYSTEMSET]
Com=3
PWML=11
PWMR=11

[SETTING]
DJ=1
Precision=30

[BIAS]
Bias=0.03

[DISTANCE]
Flag=1
Camber_fl=0
Camber_fr=0
Camber_rl=0
Camber_rr=0
Toe_fl=0
Toe_fr=0
Toe_rl=0
Toe_rr=0
LZJ14=3
RZJ23=0
LLJ12=0
RLJ43=0
LR13=0
LR24=0

[ADJUST]
FlQs=0.0000
FrQs=0.0000
[SYSTEM]
COM=3
PWML=11
PWMR=11
TUBE=1
```

③. Open software -System Management-COM Setting,set com 3.



IV.Key writing

“Key” file is used to protect computer hard disk. It will need to be reset when the hard disk to be changed or computer be changed.

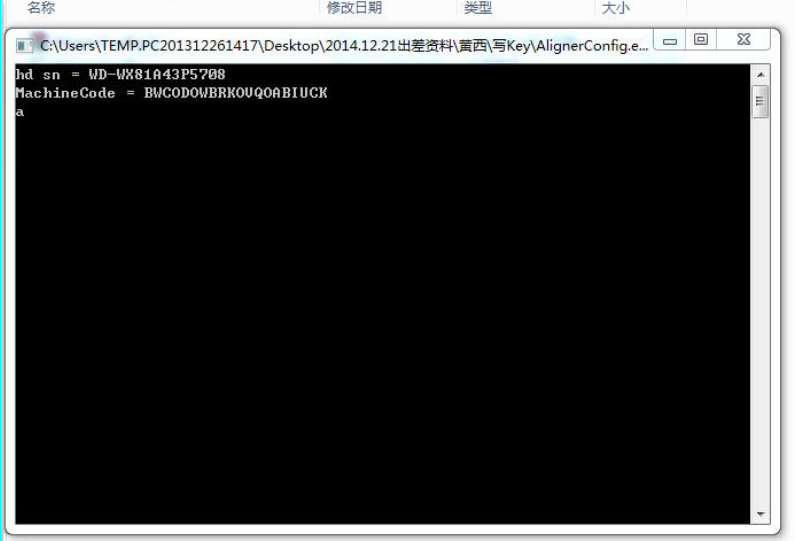


The “Key writing” program mustn’t be placed into the Wheel alignment software folder (D disk). It can be placed in desktop or other disk.

1. Open program, double click “Aligner config”

名称	修改日期	类型	大小
 AlignerConfig(1)	2013/1/16 9:21	WinRAR ZIP 压缩...	8 KB
 AlignerConfig	2012/12/30 21:41	应用程序	16 KB

2. After clicked, there is a automatically new interface showed, and then close this new interface.



```
hd sn = WD-WX81A43P5708
MachineCode = BWCODOWBRKOUQOABIUCK
a
```

修改日期: 2012/12/30 21:41 创建日期: 2014/12/21 13:38
大小: 15.5 KB

3. After closed, there are two new files: "Config" and "Key". Send this two files back to authorizer. And also send the Camera, computer and Target ID number to authorizer

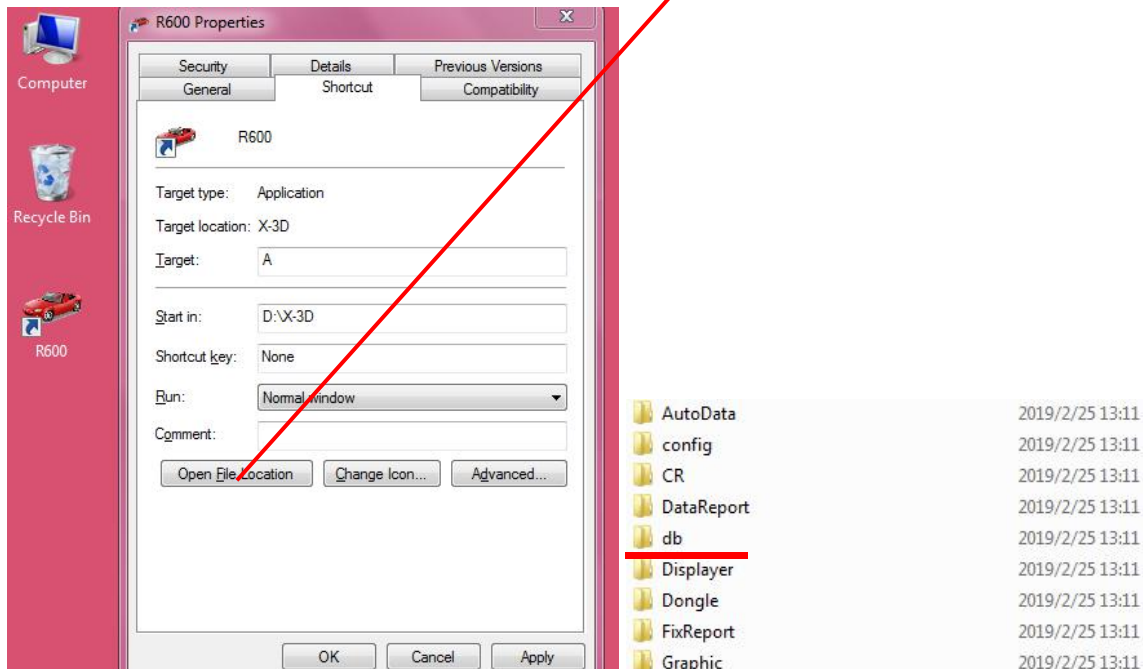
名称	修改日期	类型	大小
AlignerConfig(1)	2013/1/16 9:21	WinRAR ZIP 压缩...	8 KB
AlignerConfig	2012/12/30 21:41	应用程序	16 KB
config	2014/12/21 15:47	配置设置	1 KB
key	2014/12/21 15:47	配置设置	1 KB

4. After authorizer inspected, a new "key" file will be sent back. Customer put the new "Key" file into wheel alignment software folder and replace the original one.

5. "Key" Writing was finished.

V. Database Update

1. Close the software.
2. Open “My computer” → D disk → Open software program files → Find the “db” file. (Picture 1.1)



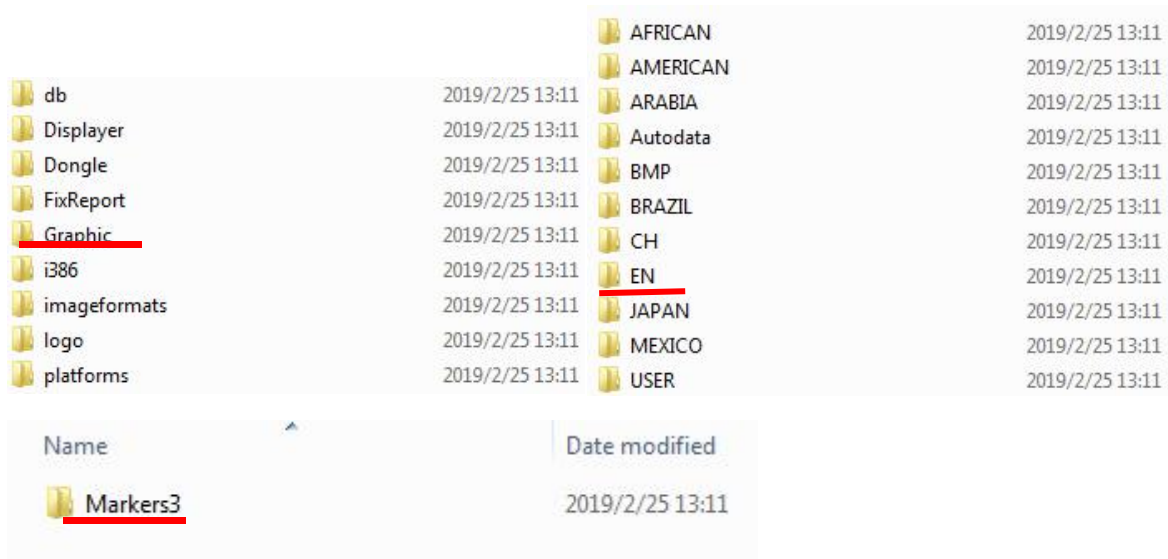
(Picture 1.1)

3. Open “db” files → find the “ car_type_en ” file → remove away the “ car_type_en ” program → Paste new “ car_type_en ” file here. . (Picture 2.1)

Name	Date modified	Type	Size
car_type	2019/2/25 10:21	Data Base File	7,202 KB
car_type_arabia	2019/2/25 10:21	Data Base File	781 KB
car_type_auto	2019/2/25 10:21	Data Base File	4,972 KB
car_type_brazil	2019/2/25 10:21	Data Base File	1,564 KB
car_type_collection	2019/2/25 10:21	Data Base File	10 KB
<u>car_type_en</u>	2019/2/25 10:21	Data Base File	31,954 KB
car_type_japan	2019/2/25 10:21	Data Base File	2,382 KB
car_type_mexico	2019/2/25 10:21	Data Base File	925 KB
car_type_south_african	2019/2/25 10:21	Data Base File	1,969 KB
car_type_south_american	2019/2/25 10:21	Data Base File	2,010 KB
car_type_user	2019/2/25 10:21	Data Base File	10 KB
rb_order.rfg	2019/2/25 10:21	RFG File	20 KB
rb_user.rfg	2019/2/25 10:26	RFG File	10 KB

(Picture 2.1)

3. With the same instruction, also change **“Graphic”** file. Open **“My computer”** → **D disk** → Open software program files → Find the **“Graphic”** → **“EN”** → **“Markers”** file, remove away the **“Markers”** program → Paste new **“Markers”** file here. . (Picture 3.1)



(Picture 3.1)

4. Finish → Restart software.

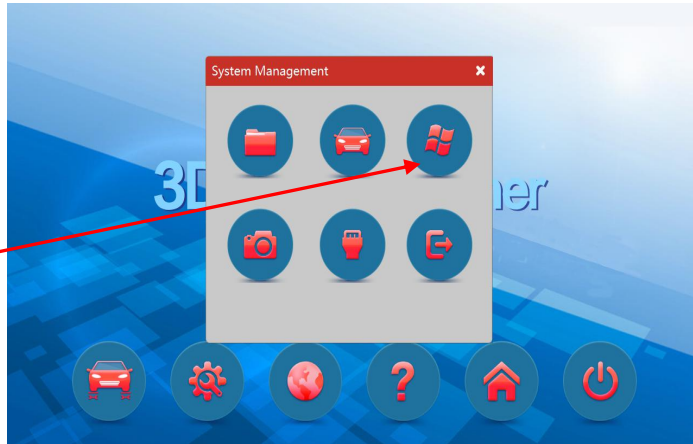


With the same instruction, also upgrade  database.

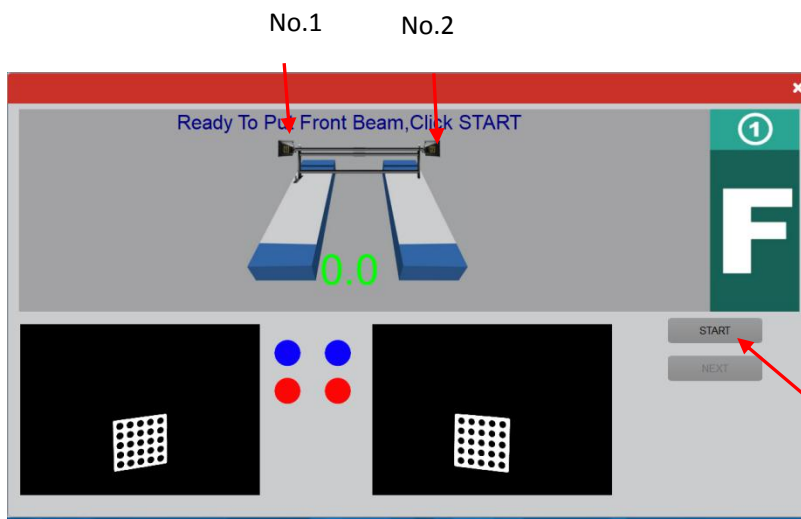
VI. Calibration

Firstly, open the software file "myroadbuck", and then confirm C0, Cef0, C1 and Cef1 in the "config" file are the camera beam parameters for calibration. C0 and Cef0 are the parameters of the left camera, C1 and Cef1 are the parameters of right camera.

1. Click "Calibration" icon to enter calibration software.



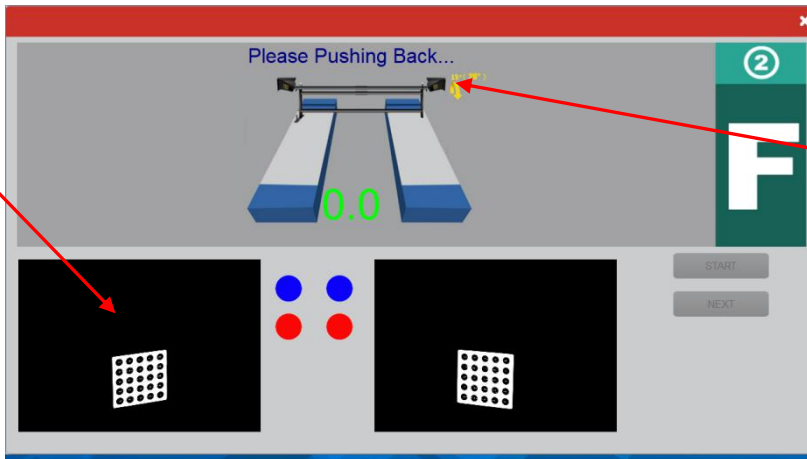
2. Input keyword: roadbuck.



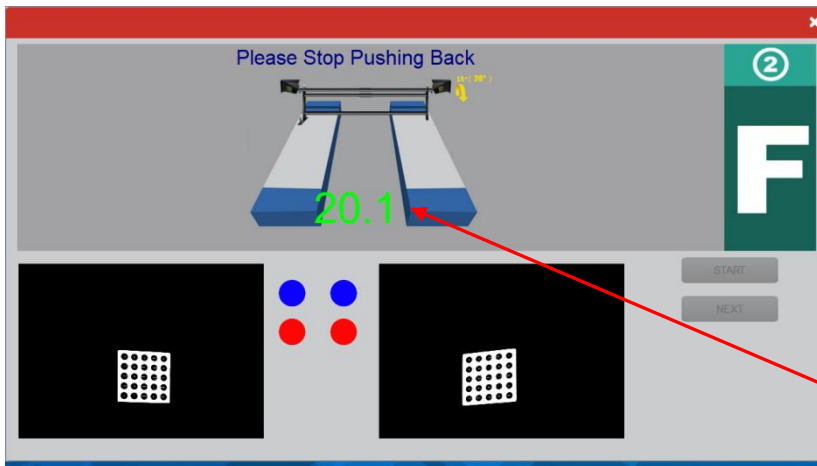
3. To install the front wheel target on the calibration bar. Left: No.1 ; Right: No.2

4. Click "START" to start to run the software.

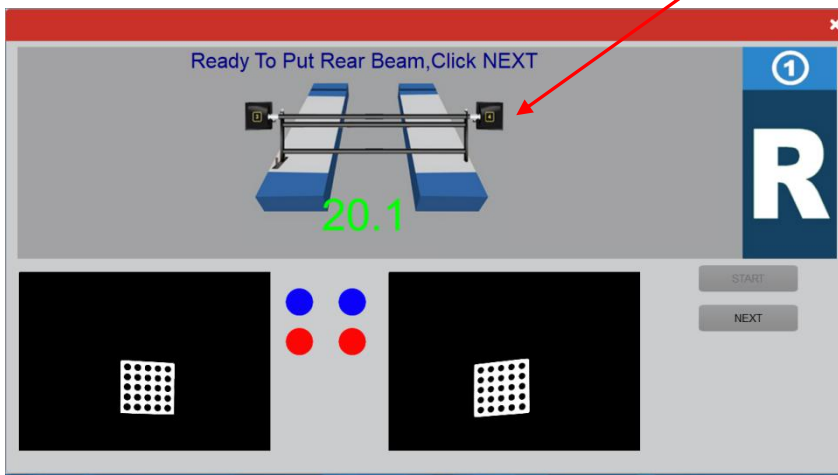
5. Check the four target plates images on the screen and to make sure that the images are clear.

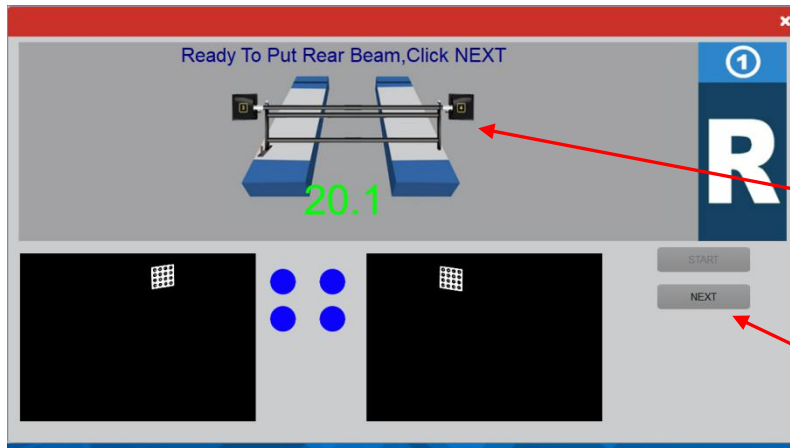


6. According to prompt, turn the Calibration bar back 20.0° - 20.5° .

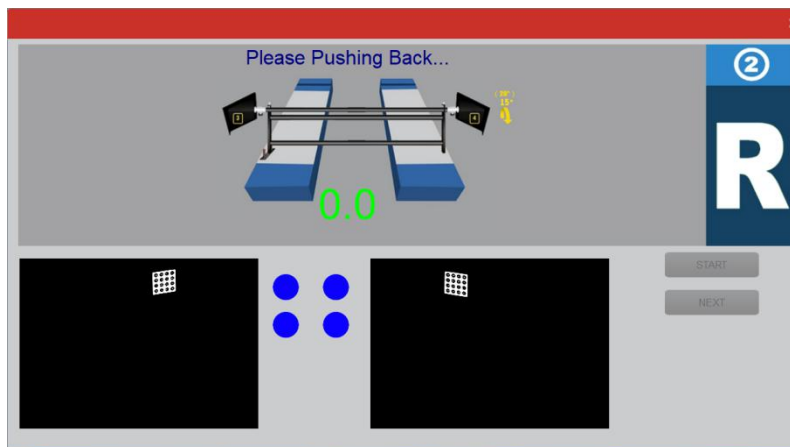


7. It will enter next step. When turn the Calibration bar back to 20.0° - 20.5° .

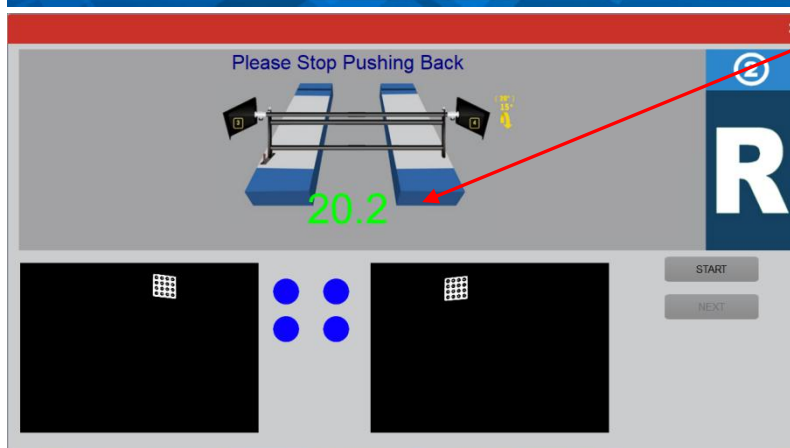




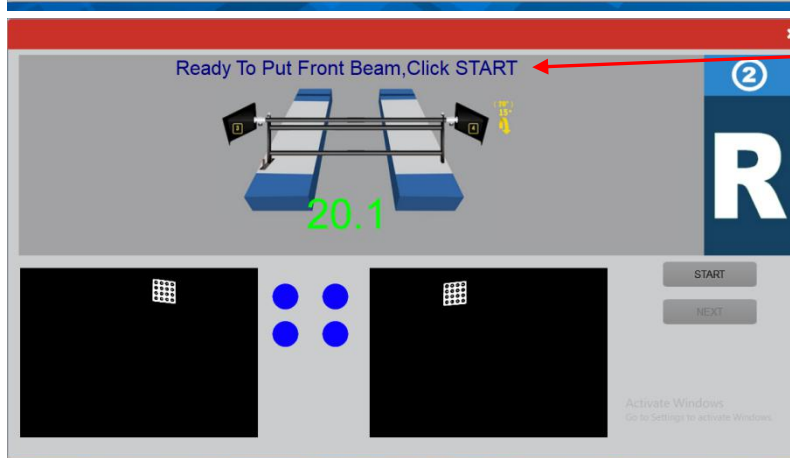
8. According to prompt, put calibration bar to rear wheel position and install the rear wheel target on the calibration bar. Left: No.3 ; Right: No.4



9. And then, click "Next" button to enter next step.

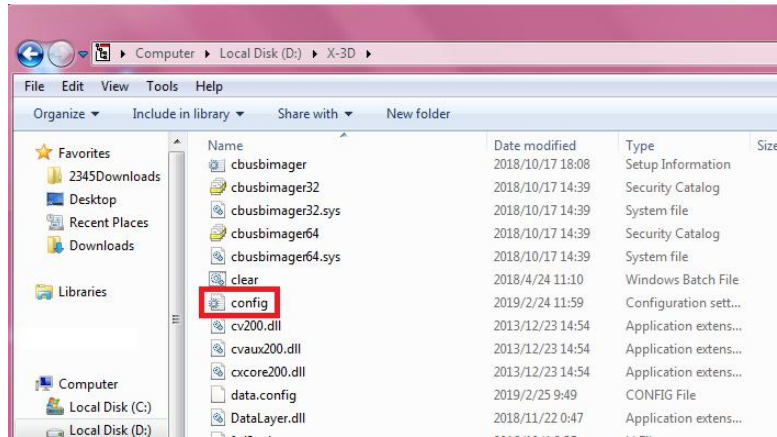


10. According to prompt, turn the Calibration pole back with 20.0° - 20.5° .



11. It will finish first calibration When turn the Calibration bar back to 20.0° - 20.5° .

17. After closed the software, find the “config” file , copy it to another disk or desktop. Setting up a new folder to store it.

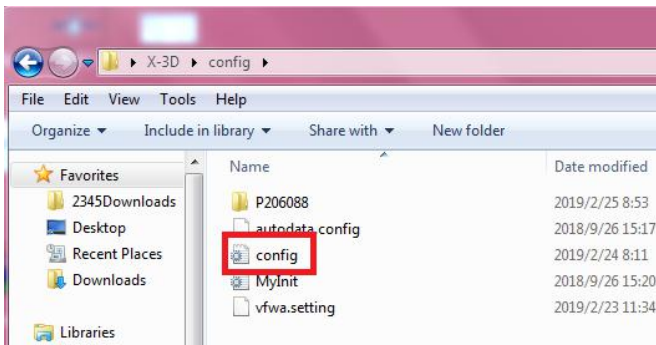
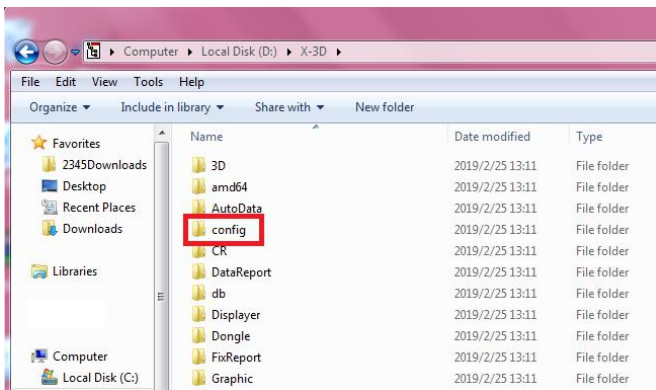


18. Authorizer prompt: User needs at least repeat three times calibration testing. Every time finished the calibration, copy the “config” file to another place, setting up a new folder to store. After Completed three times calibration testing, send this three “config.ini” folder to the authorizer.

After authorizer inspected, a new “config”file will be sent back. Customer needs to put the new “config”file into wheel alignment software folder and replace the original one.

Calibration is finished.

Notice:In case of an error in the calibration process, we can recalibrate using the config file stored in the config folder in the software package.At the same time, we can store the calibrated data in the config folder in favour of future services.



VII .other

[7.1].Computer,Camera beam,Target tag explanation

<p>V30 WHEEL ALGNER INF ORMATON</p> <p>1. PC ID: <u>P203247</u></p> <p>2. ID: <u>J02828 T24</u></p> <p>3. CAMERA ID: L <u>CS107162</u> F130 X4.0 : R <u>CS107163</u></p> <p>4. TARGER DISK: <u>TD113846</u> <u>TD113847</u> <u>TD113848</u> ④ <u>TD113849</u></p>
--

1、 PC :Means PC Identify number P203247:computer number

2、 J02828 Dongle number T24 24 Shows dongle series

Now we have this series: T5、 T6、 T12、 T18、 T23、 T24

3、 CAMERA ID: L: Left camera ID R: Right camera ID

F:Square Crossbeam Y:Roundness Crossbeam

130: shows1.3 million pixels

500: shows 5.0 million pixels

X:Small lens D: Big lens

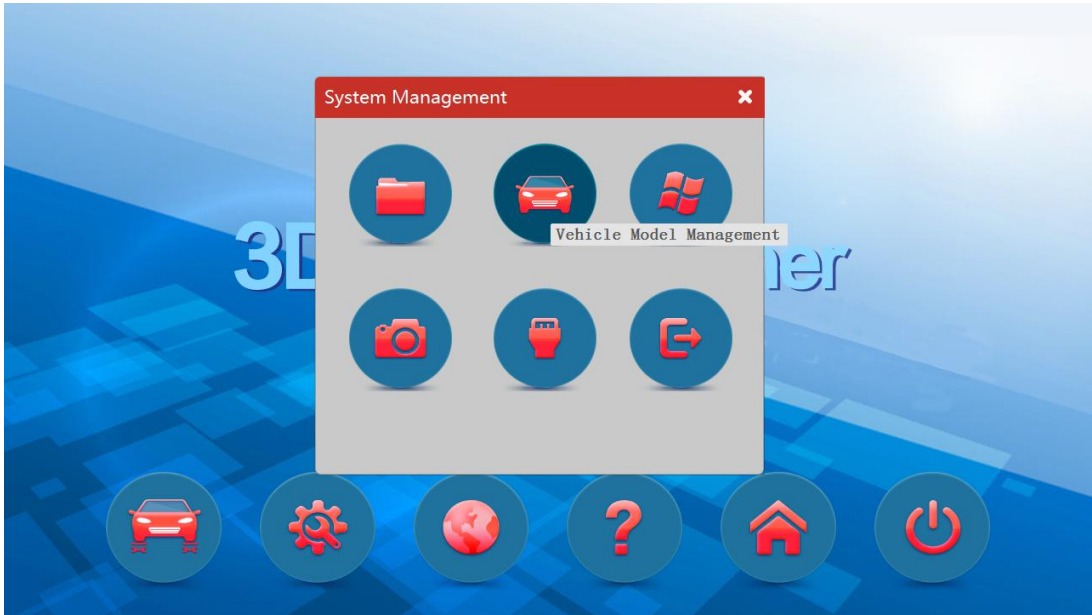
2.0、 3.0、 4.0 camera connect port

4、 TARGER DISK: TD

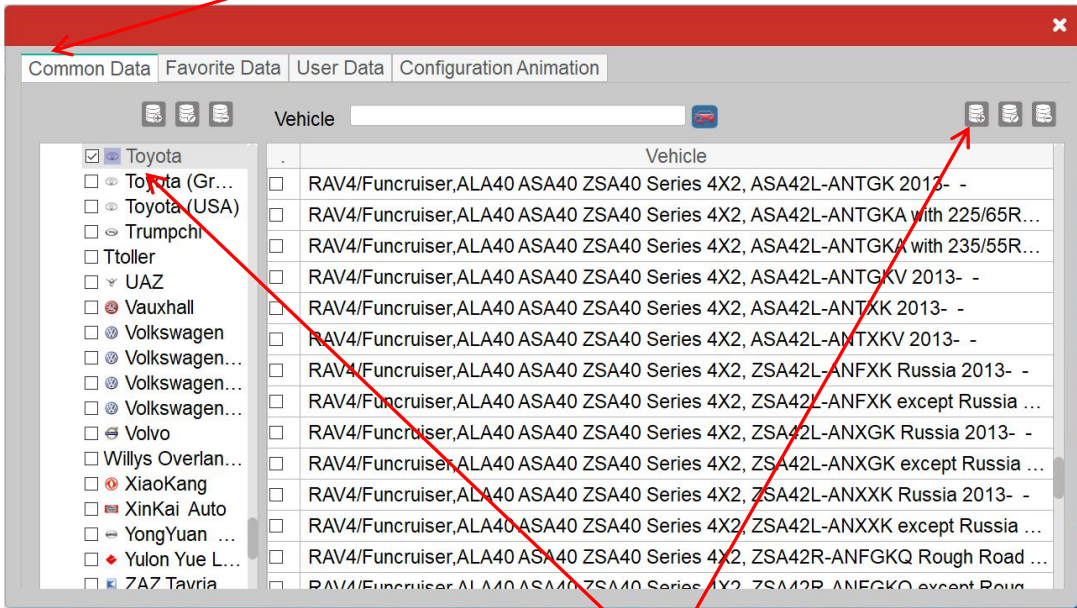
①:front left ②: front right ③: rear left ④: rear right

[7.2].Common Database Operation Manual:

1 .Open the software- Vehicle Wheel Management.



2. Open common data.



3. Select the car brand and click the "+" button.

Basic Info.		Left			Right		
		Min	Std. Data	Max	Min	Std. Data	Max
Front Axle Data	Total Toe	-0.07	0.10	0.27			
	Camber	-0.90	-0.15	0.60	-0.90	-0.15	0.60
	Caster	4.98	5.73	6.48	4.98	5.73	6.48
	SAI	10.85	11.35	11.85	10.85	11.35	11.85
	Included Angle	0.00	0.00	0.00	0.00	0.00	0.00
Rear Axle Data	Toe-Out-On-Turn	0.00	0.00	0.00	0.00	0.00	0.00
	Total Toe	0.01	0.18	0.35			
Turning Angle	Camber	-1.82	-1.07	-0.32	-1.82	-1.07	-0.32
	Inside	0.00	0.00	0.00	0.00	0.00	0.00
	Outside	0.00	0.00	0.00	0.00	0.00	0.00

ID	<input type="text"/>
Model	Toyota
Vehicle	RAV4/Funcruiser,ALA
Manufacturer	<input type="text"/>
Date	-
Body	<input type="text"/>
Displacement	<input type="text"/>
Rim	<input type="text"/>
Interweight	<input type="text"/>
Fuel consumption	<input type="text"/>
Under Car	<input type="text"/>
Engine	<input type="text"/>

100" 60"

4. Enter the car model here

5. Enter vehicle data, then click confirm.

6. Open software -Four Wheel Measure-Vehicle Selection-Common models, you can see car model which you add.

V2.1.31.19.1 Vehicle Selection 14 Sept. 2019 17:41:15

TOYOTA (2, ASA42L-ANTGKV 2013- VIN

Common models	Vehicle
<ul style="list-style-type: none"> Toyota Toyota (Great ...) Toyota (USA) Japanese <ul style="list-style-type: none"> Toyota Brazilian <ul style="list-style-type: none"> TOYOTA Mexican <ul style="list-style-type: none"> TOYOTA South Africa <ul style="list-style-type: none"> TOYOTA (IN) TOYOTA 1 	RAV4/Funcruiser,ALA40 ASA40 ZSA40 Series 4X2, ASA42L-ANTGKV 2013-

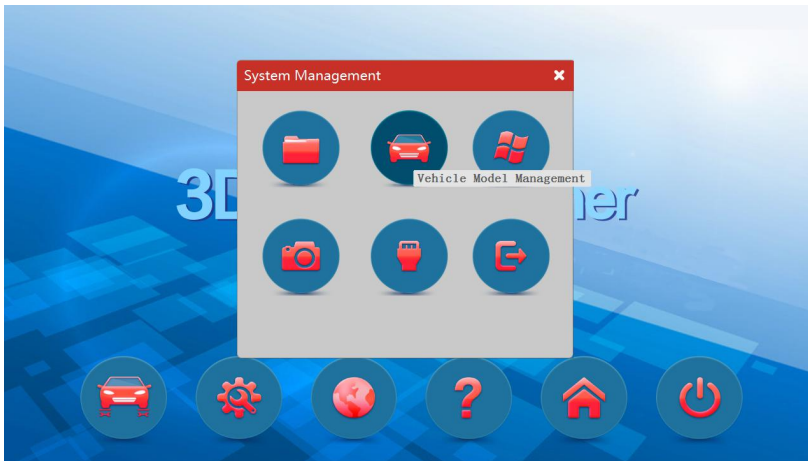
[7.3]General Database Operation Manual


FOREWORD:

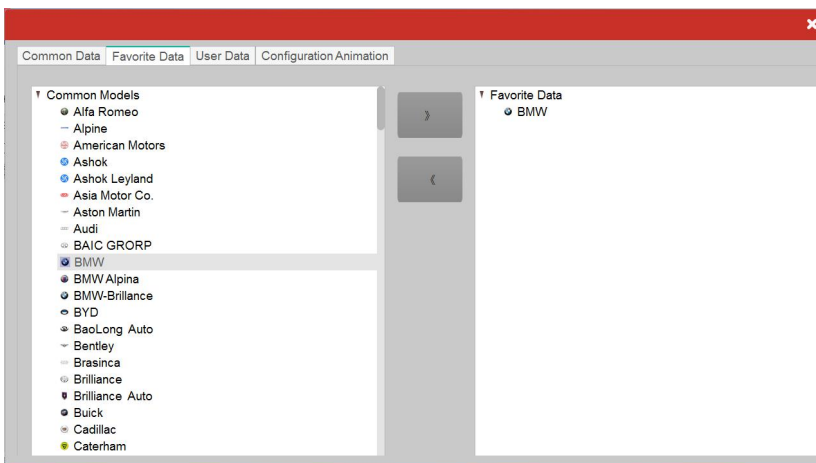
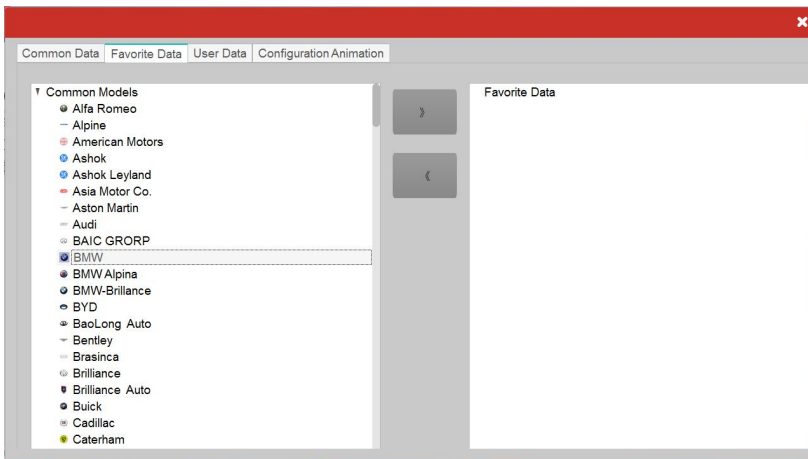
Customers can create their own common model database to make the operation more efficient, convenient.

General Database Operation Manual

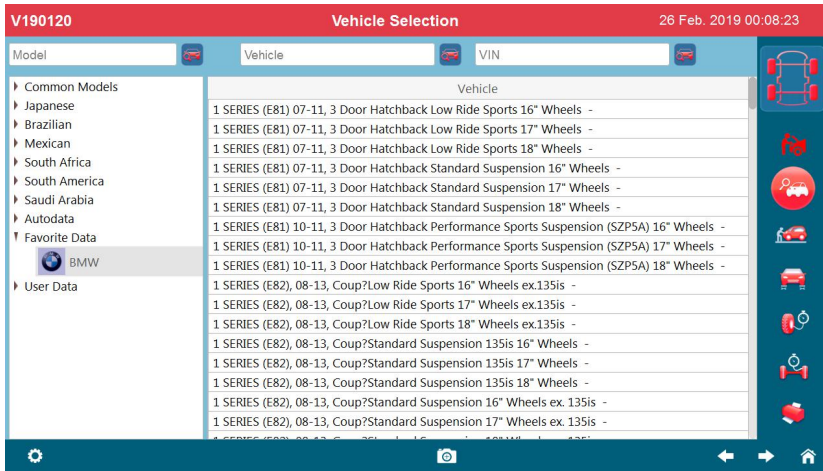
2 Open the software- Vehicle Wheel Management.



3 select the brand which you want to add , click .



3.Open software -Four Wheel Measure-Vehicle Selection-Favorite Data ,you can see car brand which you add .



[7.4]. User Database Operation Manual

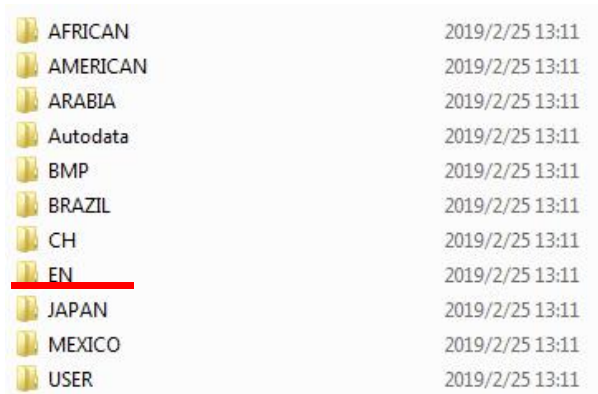
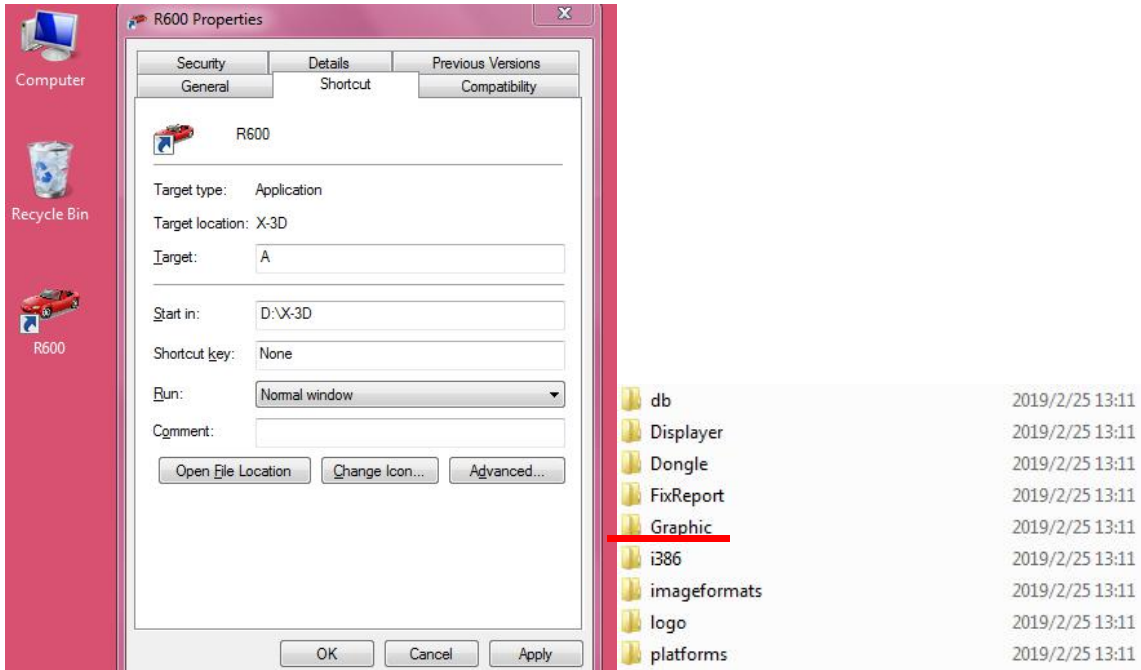
FOREWORD:

Customers can create their own additive model database, User database can avoid the customer common model car data loss after updating the database.

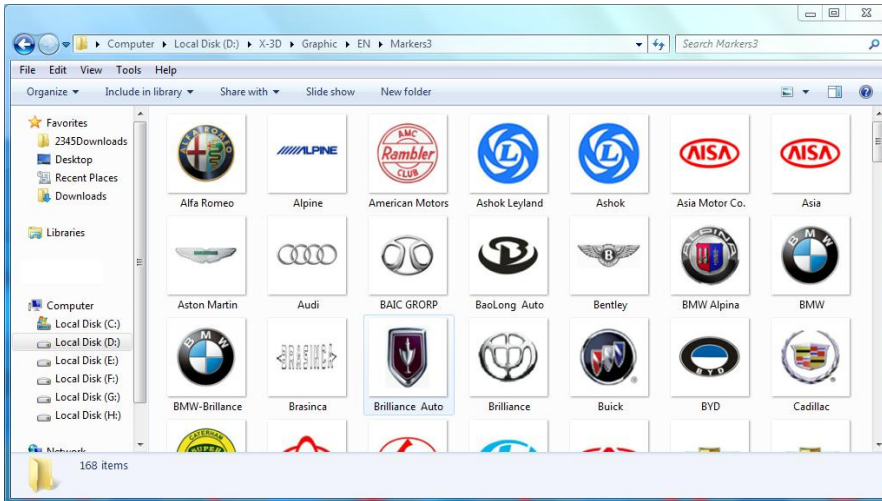
User Database Operation Manual

1. Open "My computer" → D disk → Open software package files → Find the "Graphic" → "EN" → "Marker3" file, to copy car brand maker which you want to add .

(Picture 1.1)



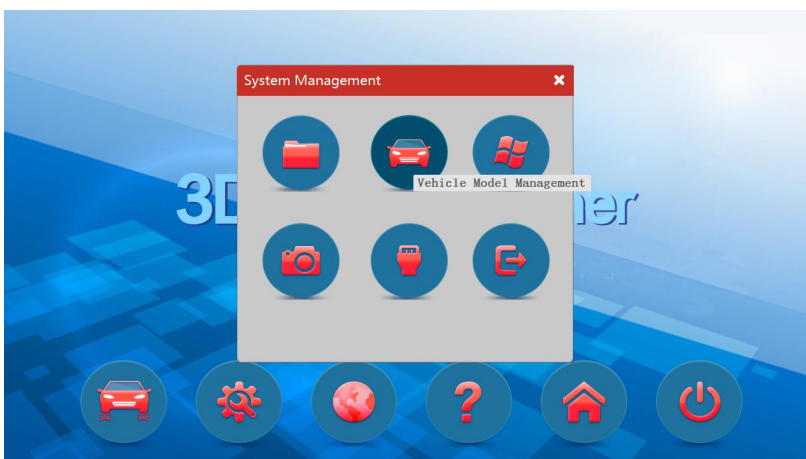
(Picture 3.1)

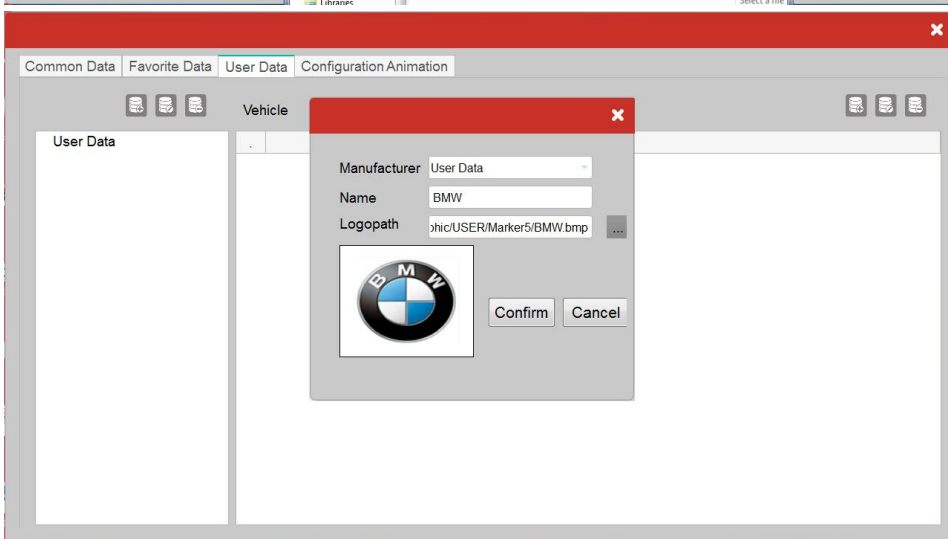
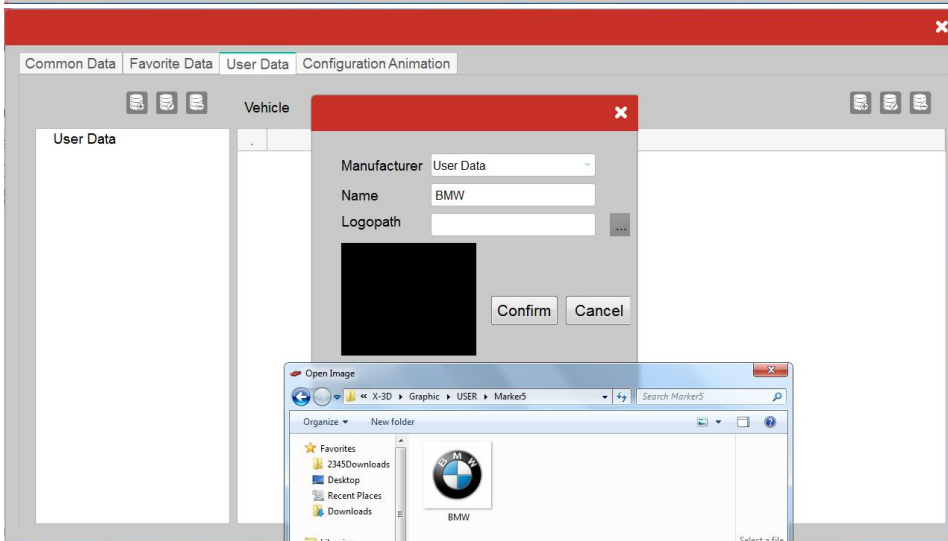
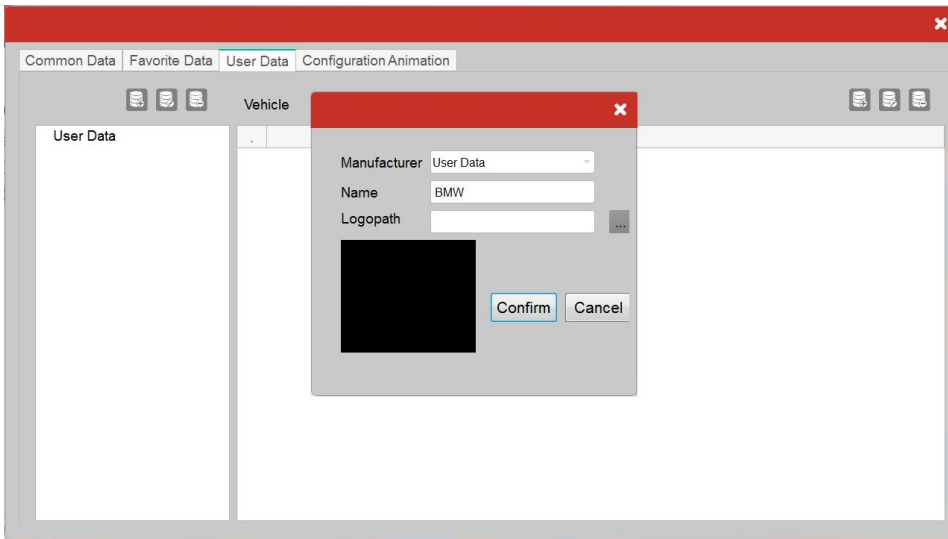


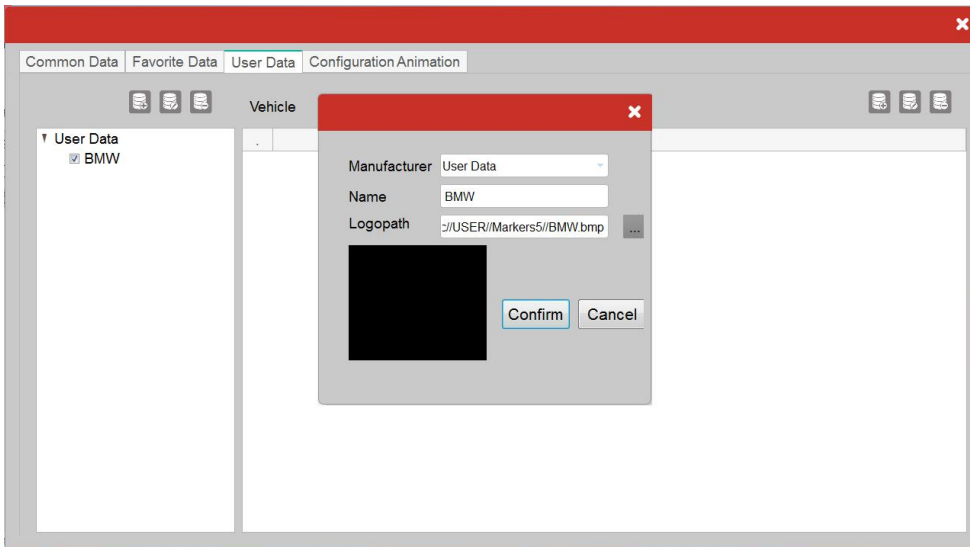
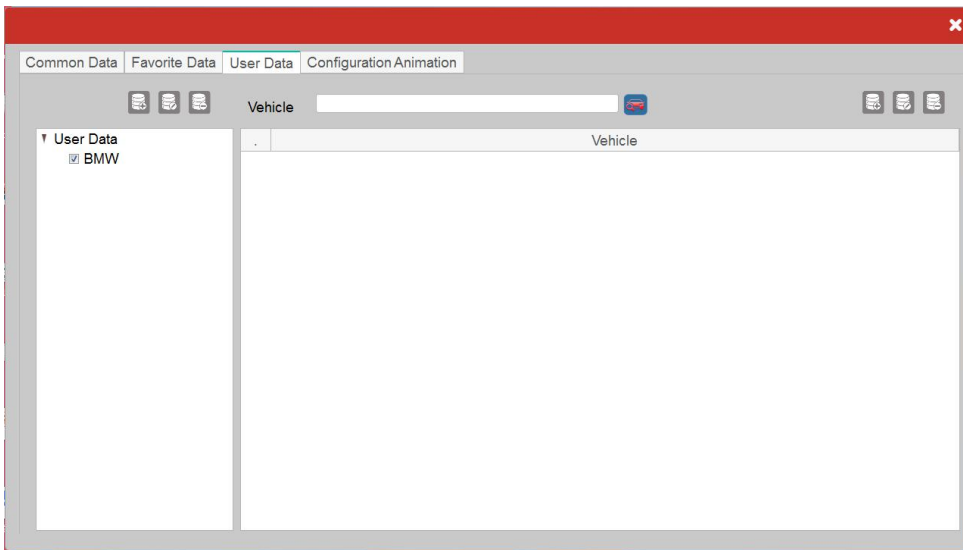
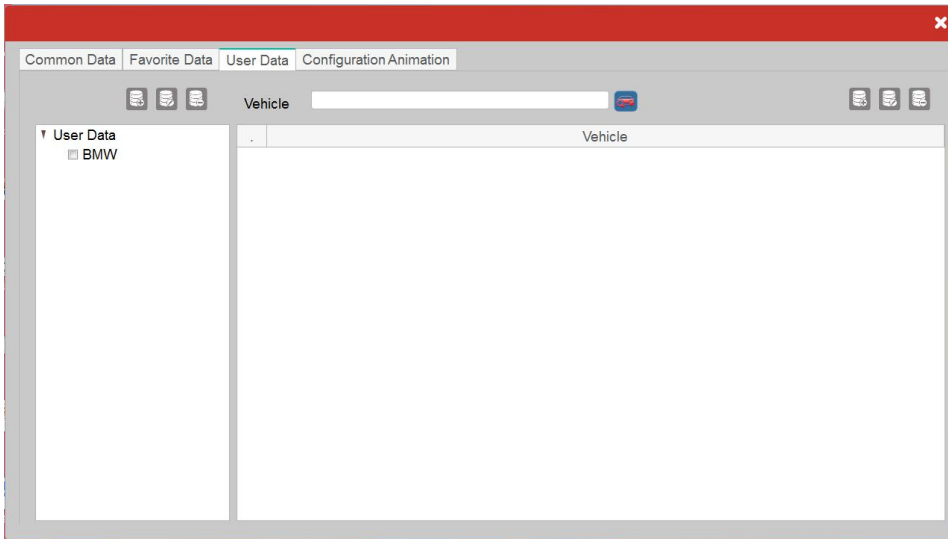
2. Open **“My computer”** → **D disk** → Open software package files → Find the **“Graphic”** → **“USER”** → **“Markers5”** file, to paste car brand maker which you want to add to here . (Picture 1.1)

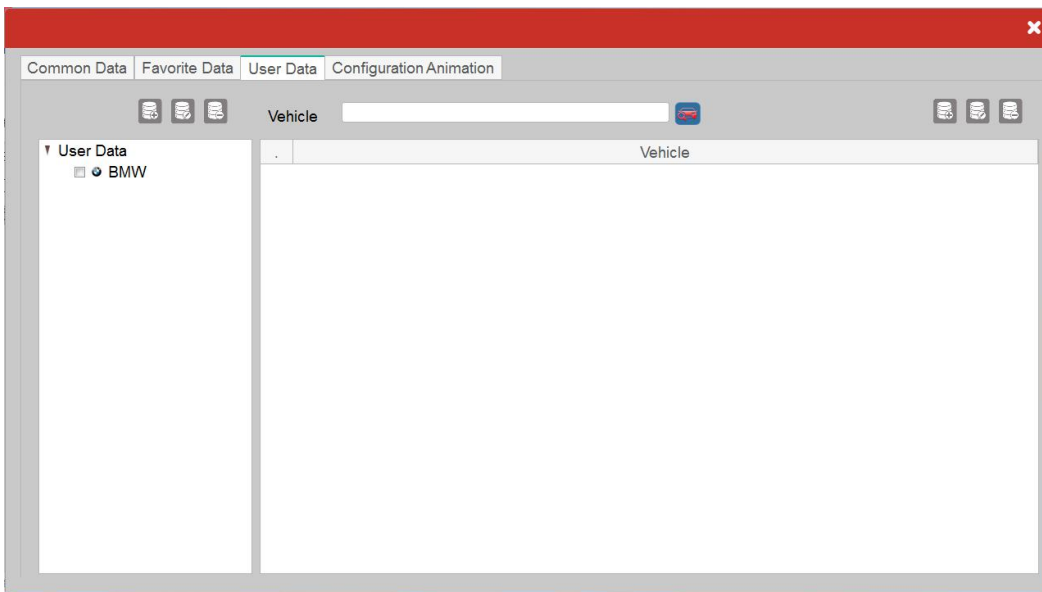
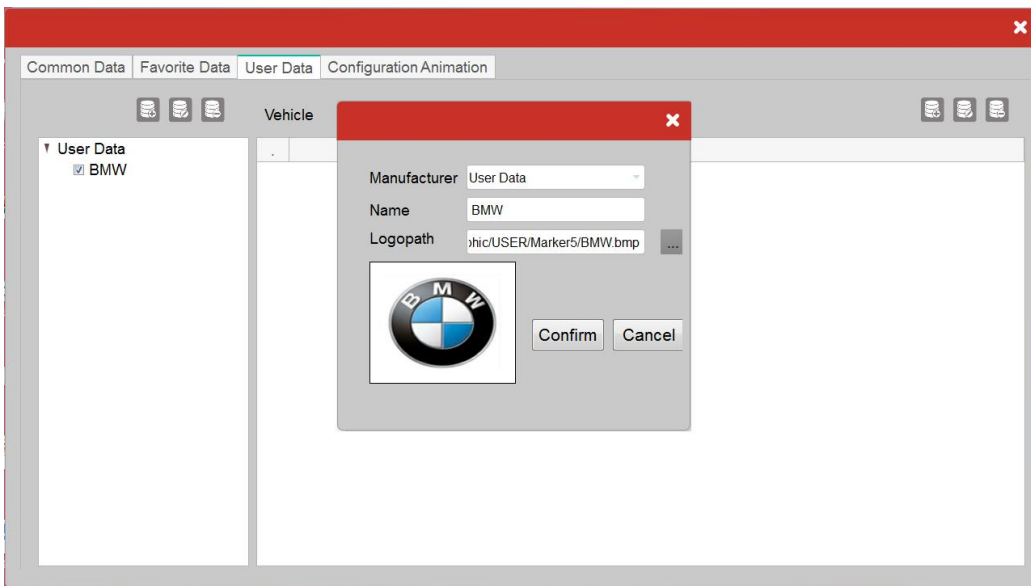
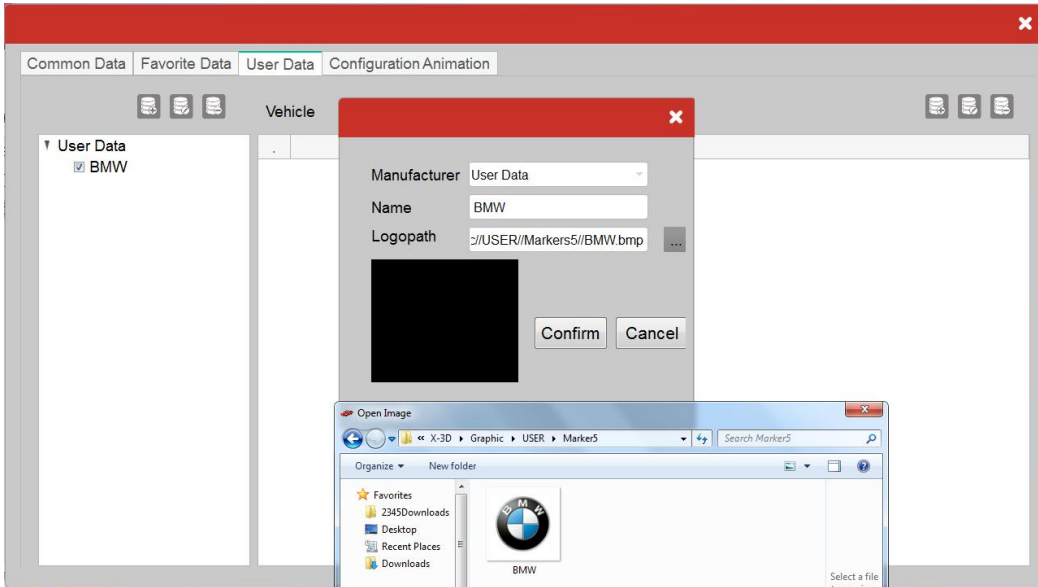


3. Open the software- Vehicle Wheel Management.

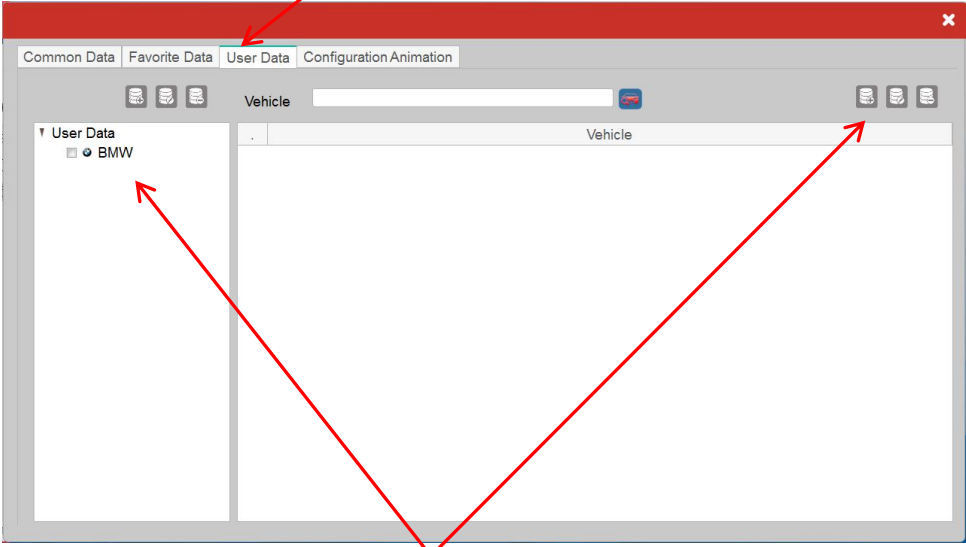




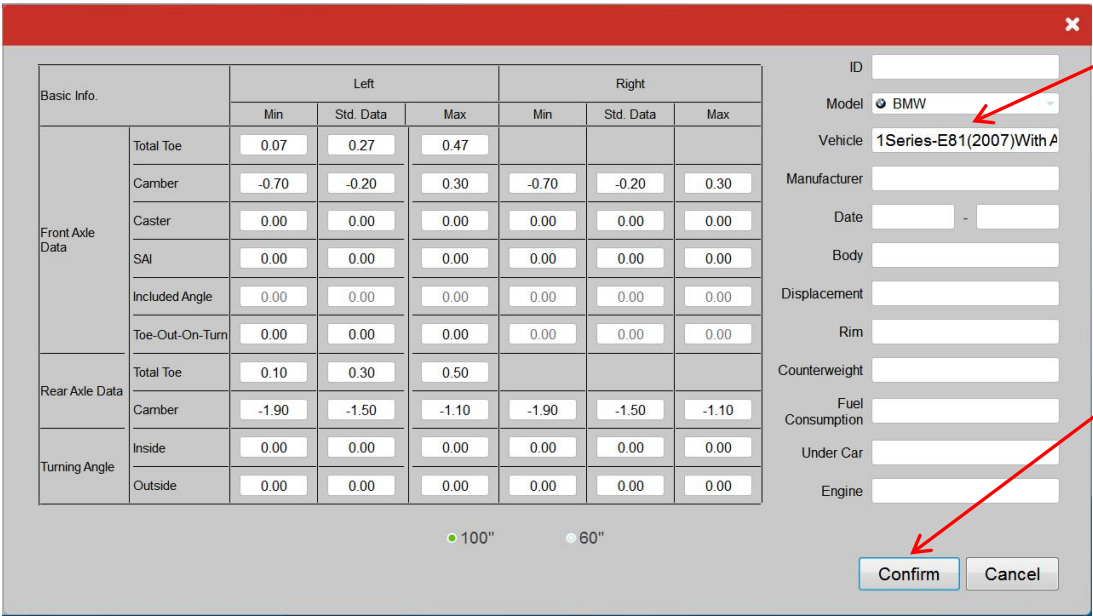




1. Switch to User Date



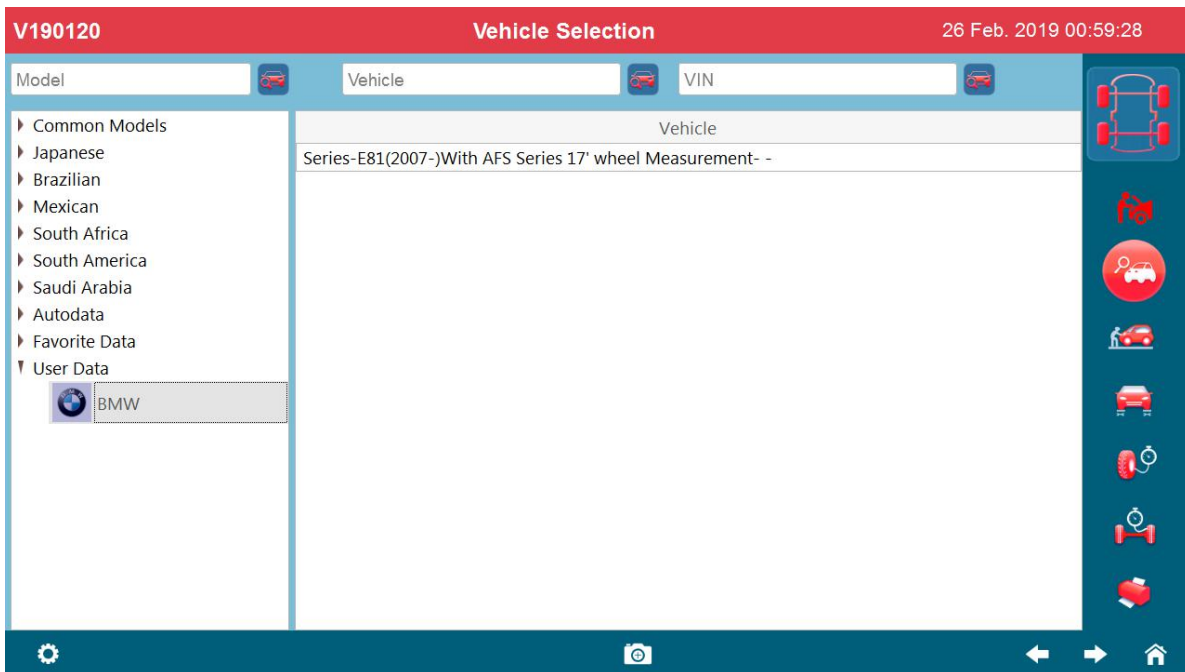
2. Select car brand and click "+" here



3. Input car model here

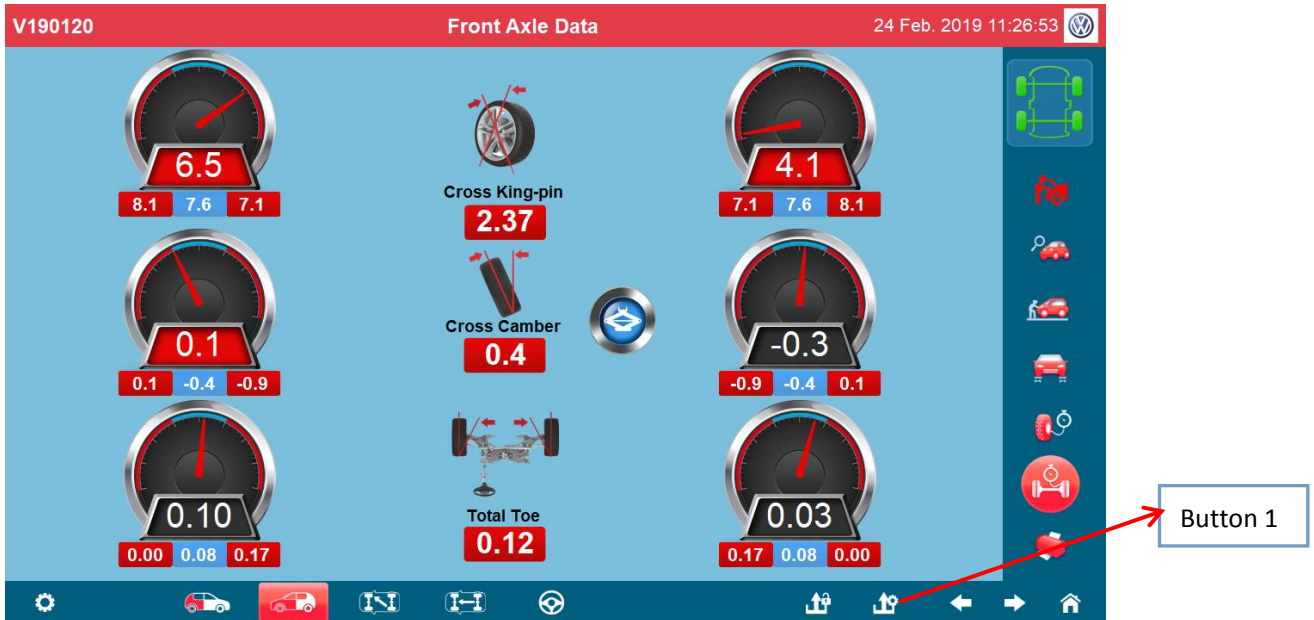
4. Input car data, then confirm.

3. Open software -Four Wheel Measure-Vehicle Selection-User Data ,you can see car model which you add .

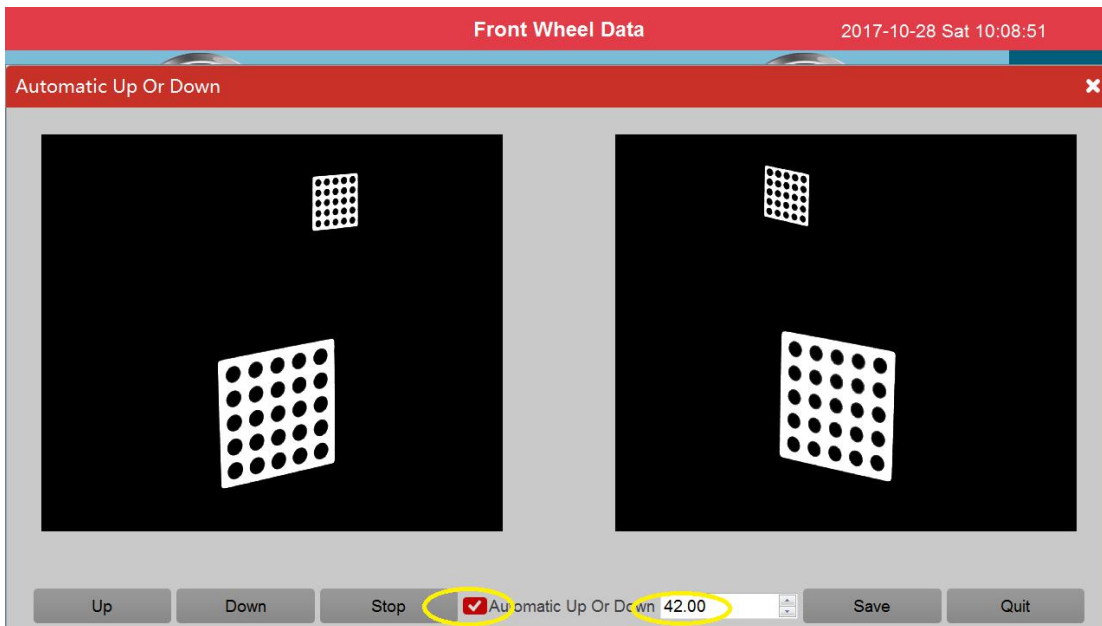


[7.5] automatic tracking interface setting

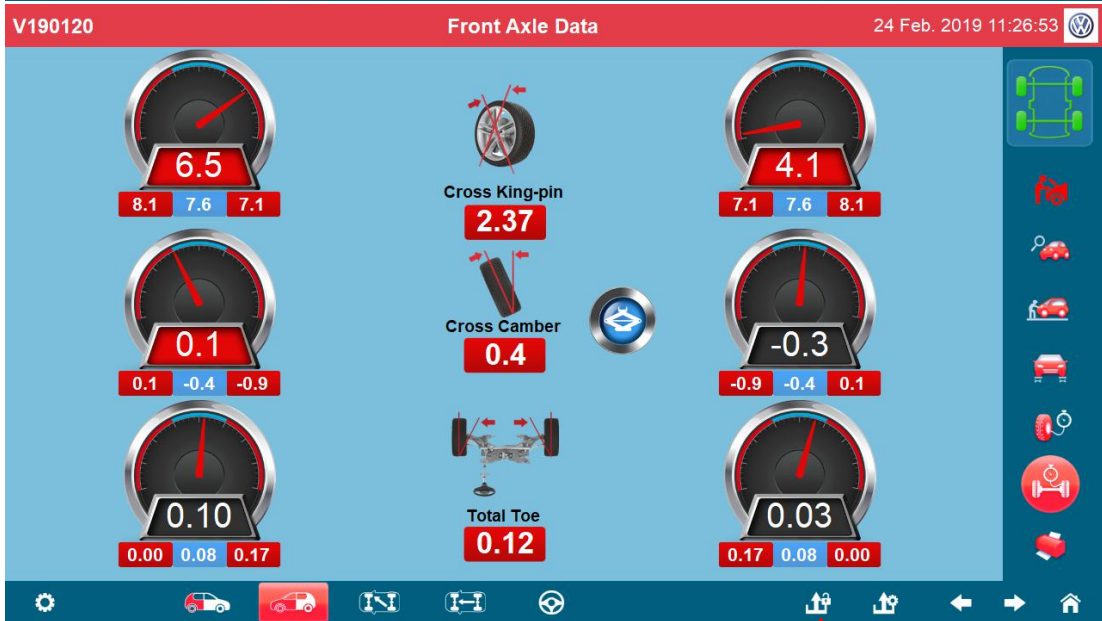
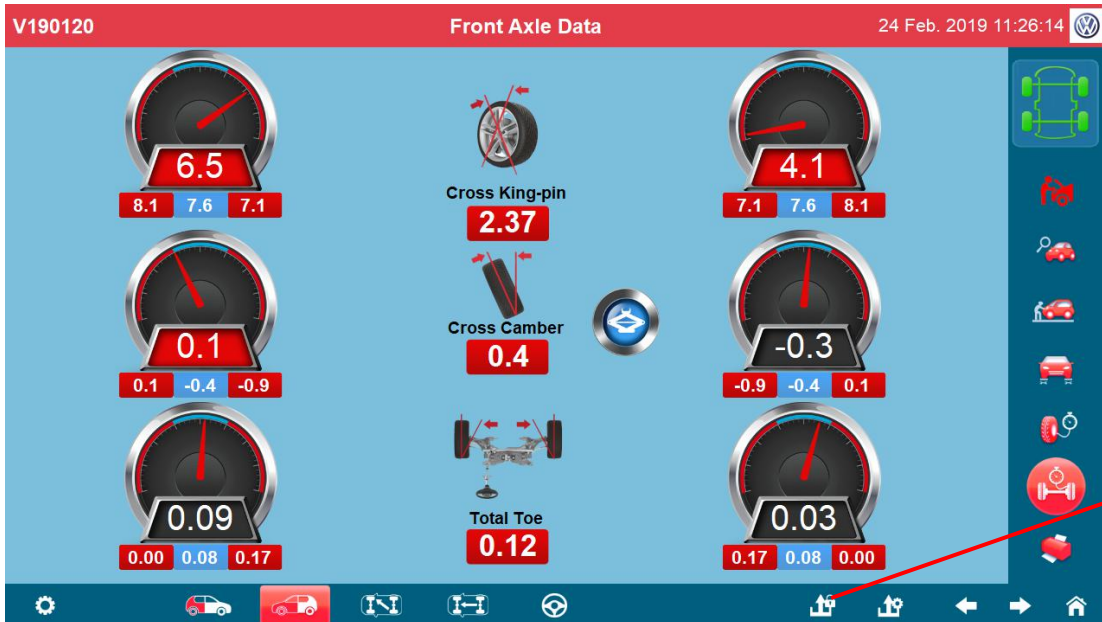
1. Enter the software and open the front wheel data interface, click button 1, the automatic Settings, and then enter the automatic Settings interface



2. Using the handle control button to control the camera beam and adjust the target image to the middle of the screen. Set the parameter to 42 (adjustable according to the actual situation), save, and then exit to the front wheel data interface. Remark: click "√" on the front of the "automatic up and down".

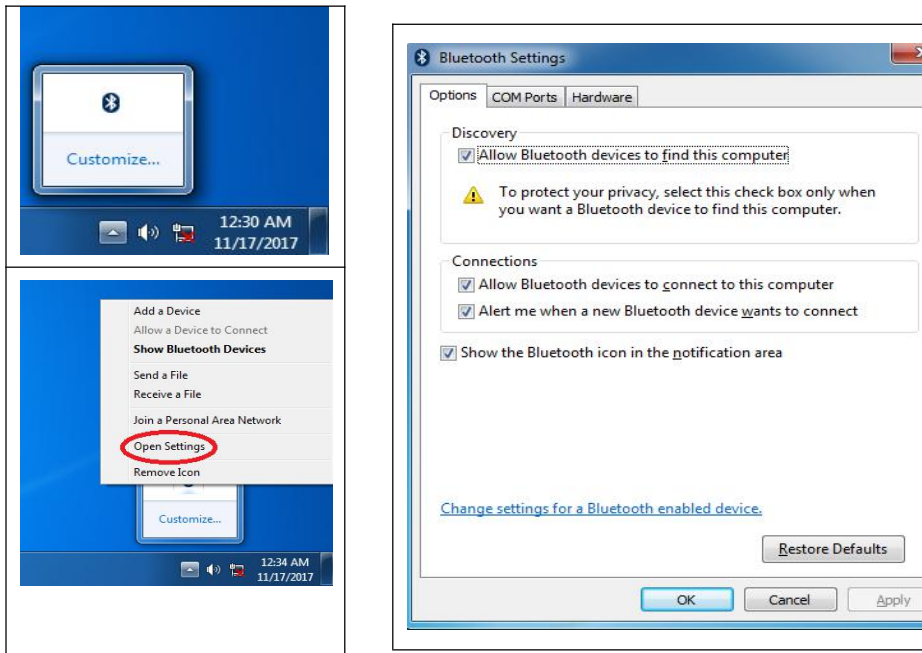


3. Click 2 to unlock.

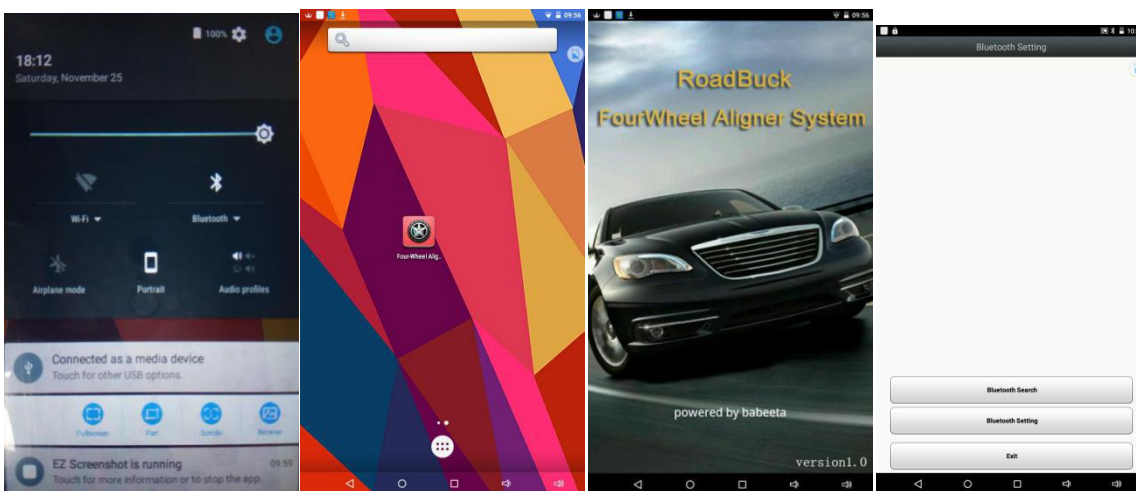


[7. 6]How to connect the tablet and the computer

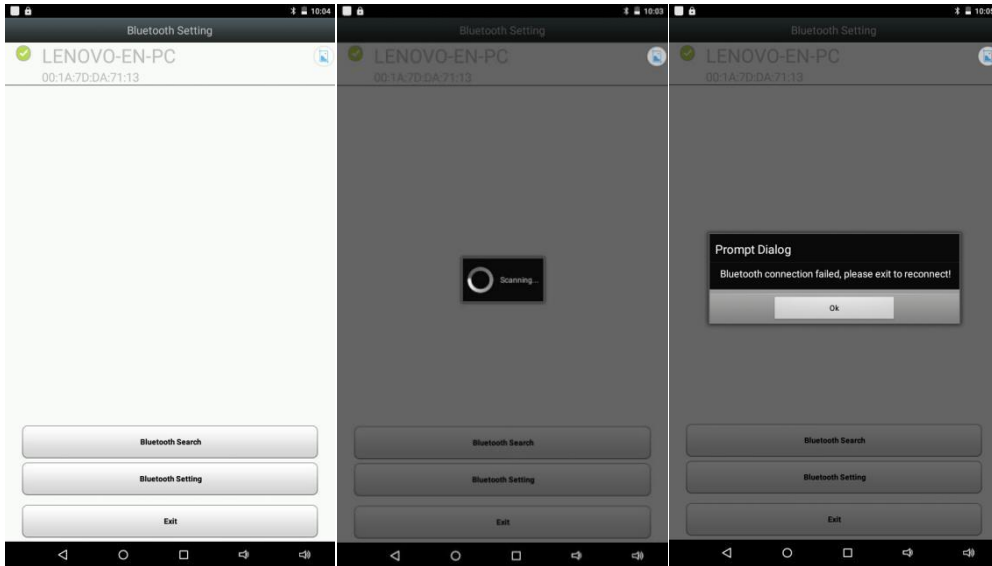
1. Install the Bluetooth receiver on the computer, and then select and click the Bluetooth icon to enter the Settings screen, choose all the options “√”, and then open the software on the computer.



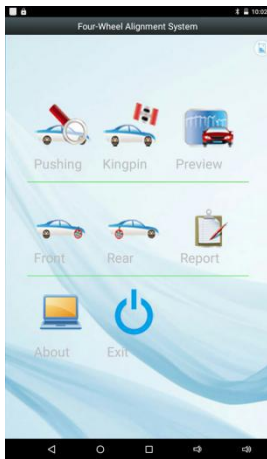
2. Connect the Bluetooth of the tablet, and activate the wheel alignment software in the tablet, and then click to search the Bluetooth.



3. When the tablet computer shows the name of the computer, choose to set the Bluetooth, and then it will show the Bluetooth connection failed to connect the dialog box, please exit the wheel alignment software to re-enter.

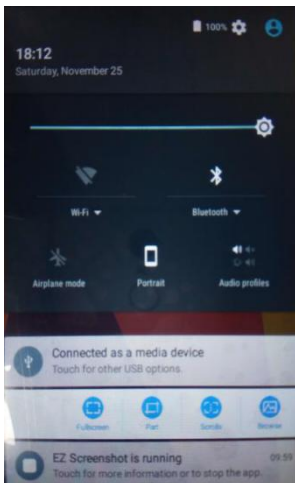


4. Re-enter the wheel alignment software and then when it pops up the following interface, it means the Bluetooth has successfully connected.



Android phones can be installed with four-wheel locator software for remote control of the computer.

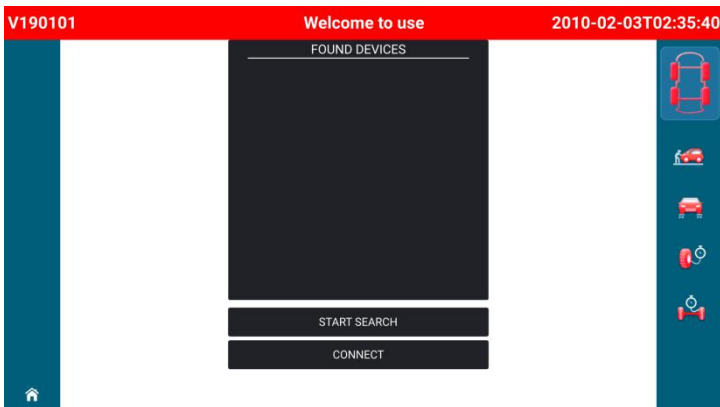
1. Open Android phones Bluetooth.



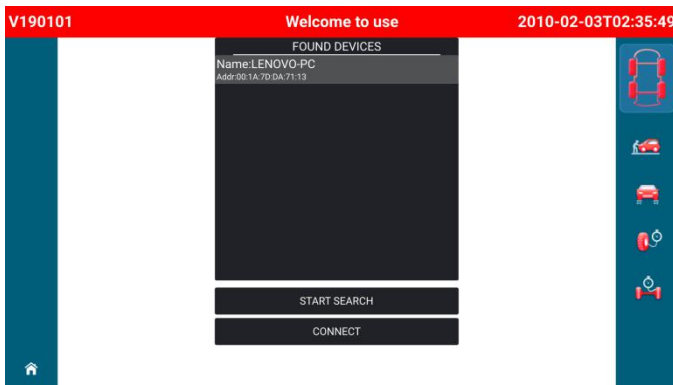
2. Open software which is installed on the Android phones.



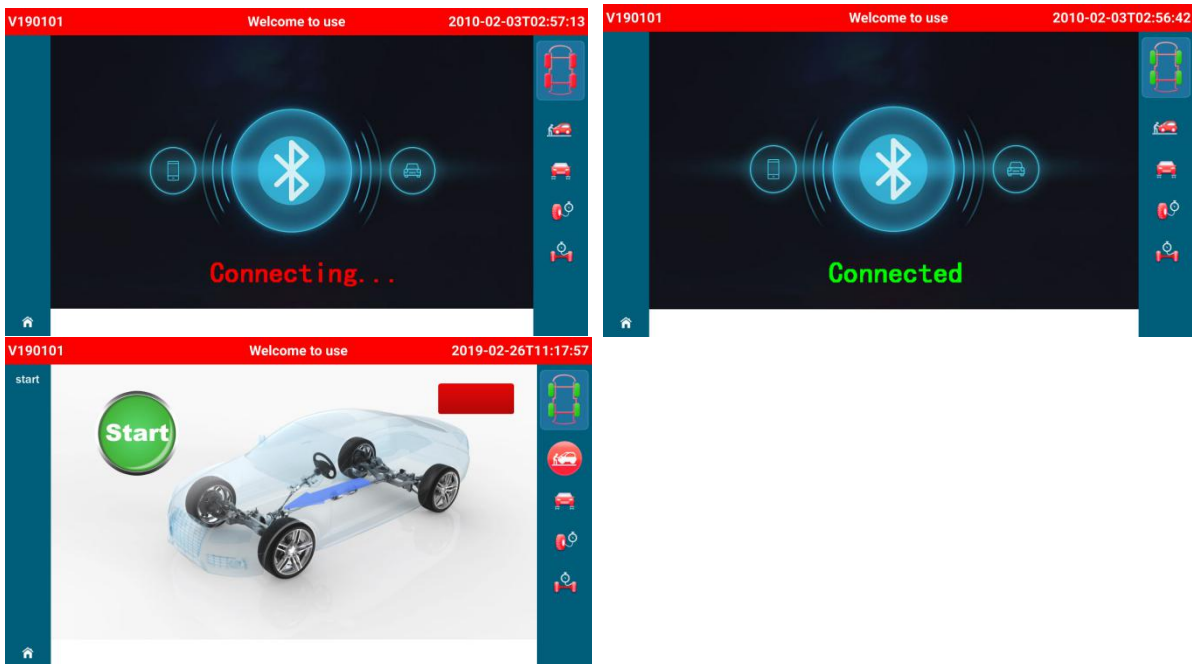
3. Click "START SEARCH".



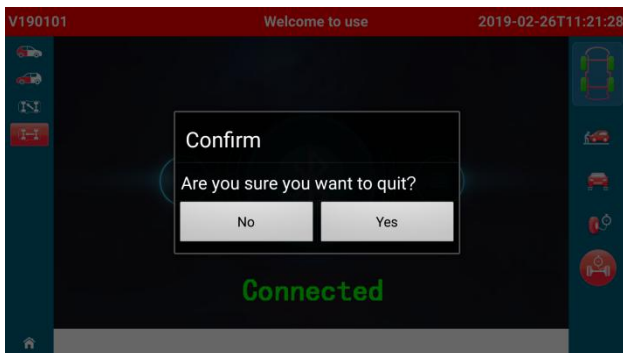
4. Select wheel alignment computer which you need to connect.



4. Click "CONNECT".

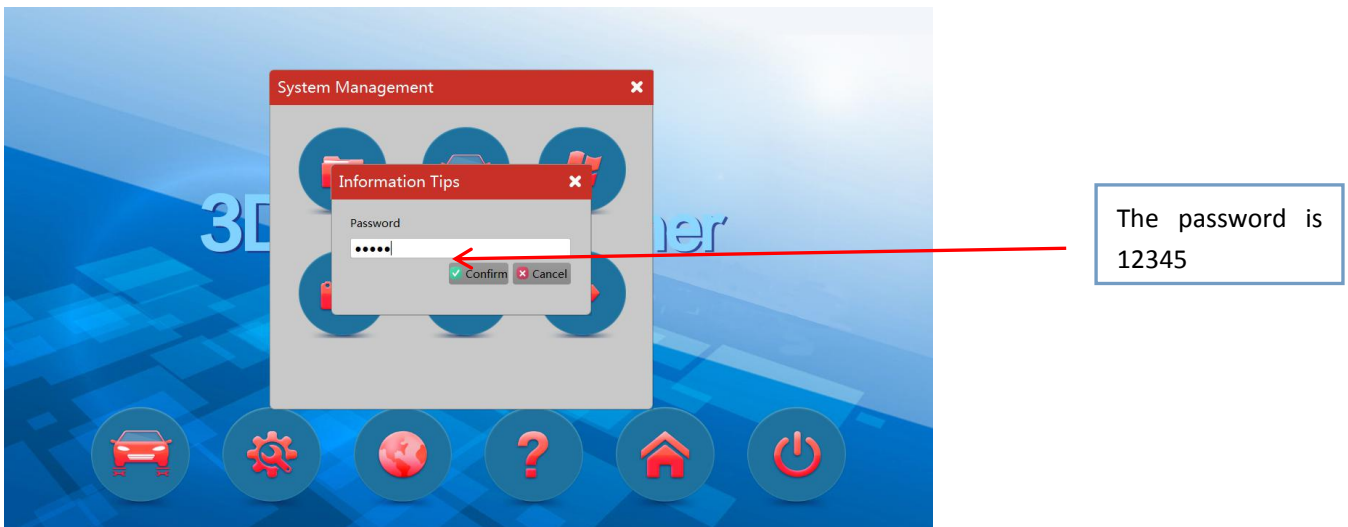


Press the return button on your phone to exit the software.

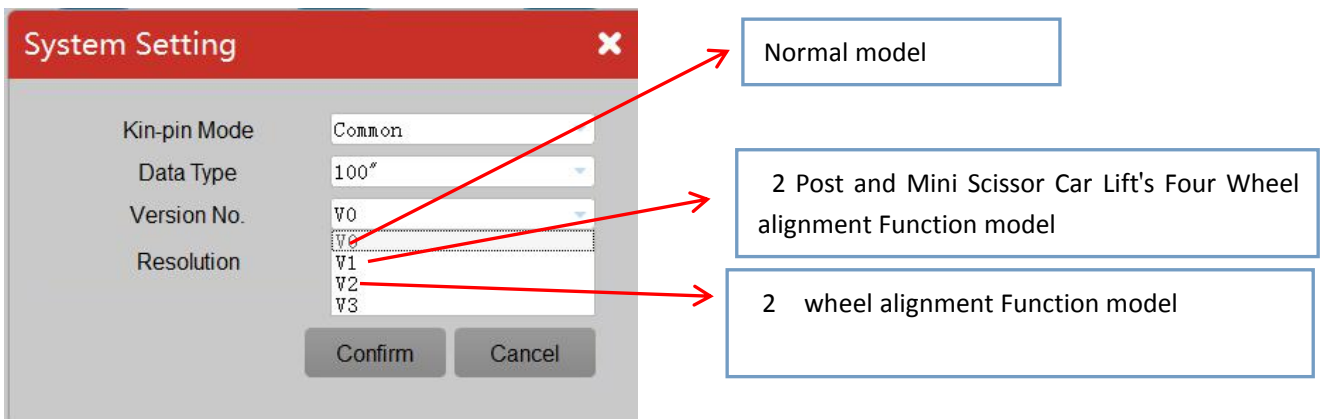


[7.7]Wheel alignment mode setting of 2 post & small scissor lift

1. Open the software - system management - system setting, input the password:12345



2. Choose mode V1 in the system setting(V0 is the normal mode).click “confirm”



3. Click “Caster measure”, showing the picture below means successful setting.

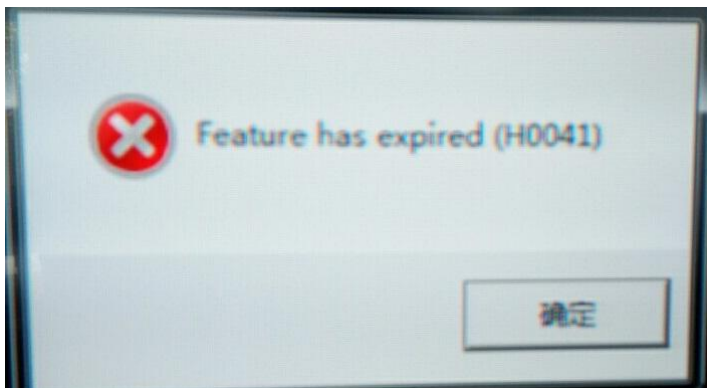


Matters need attention:

Hold both the hand and foot brakes after clicking “Caster measure”, then lift the car and lock when seeing Fig.3. Next, do caster measurement as normal.

[7.8] Software registration

You need to register, when the software pops up the following dialog box.


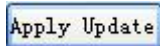


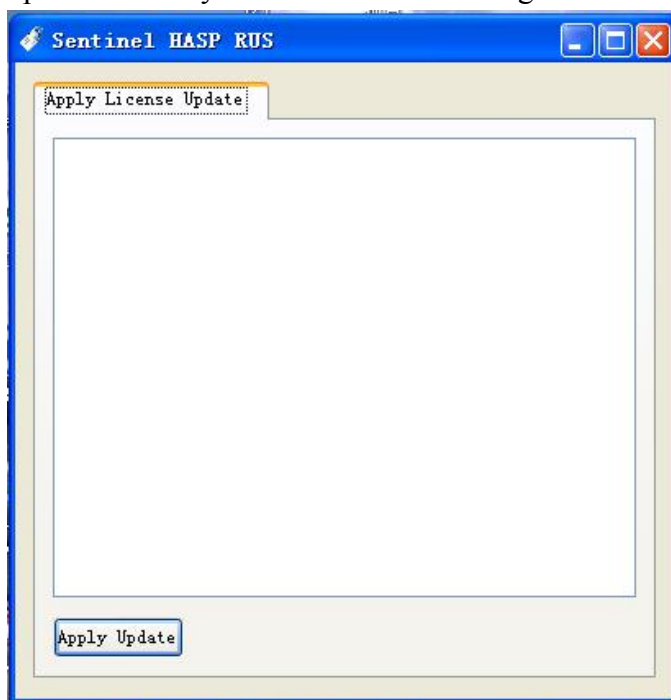
Solution:

1. I will send you a document start with a capital J; do not open it directly, first find a computer that can surf the Internet, and prepare a USB flash drive, and copy this file to the USB drive.

2. Insert the USB into the computer for four wheel alignment, and then click right-hand

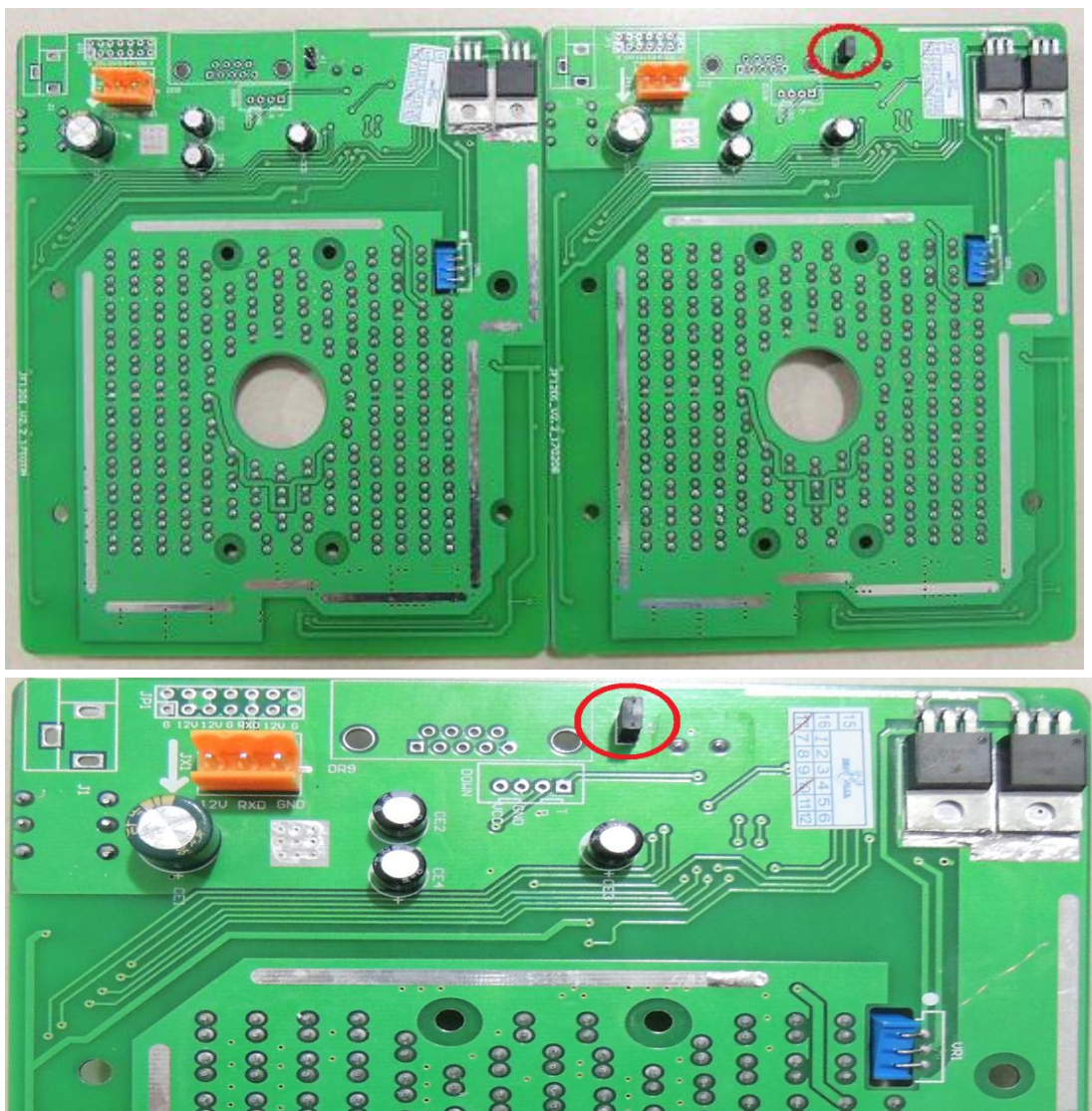


button to copy the file start with a  , Then open D disc of the computer, paste it in the blanks at the bottom, then double click to open, and an English dialog box will appear, and then double click the small English box at the lower left  . Then you can open it correctly. Shown as the following:



[7.9] LED board Troubleshooting

The LED board is divided into two halves by the jump button, without button jump it means left, otherwise, right. As shown below:



Two types of the power supply:

1. Directly supplied by the computer.
2. supplied by DC input.

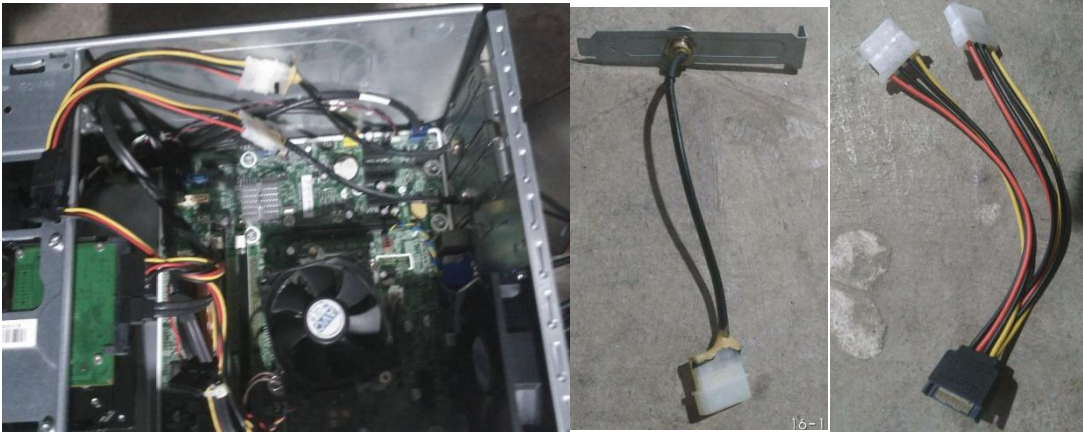
The LED board faults are usually either power supply or communication com fault, if neither, then the fault comes from the LED board itself.

Judgement of LED board power supply fault:

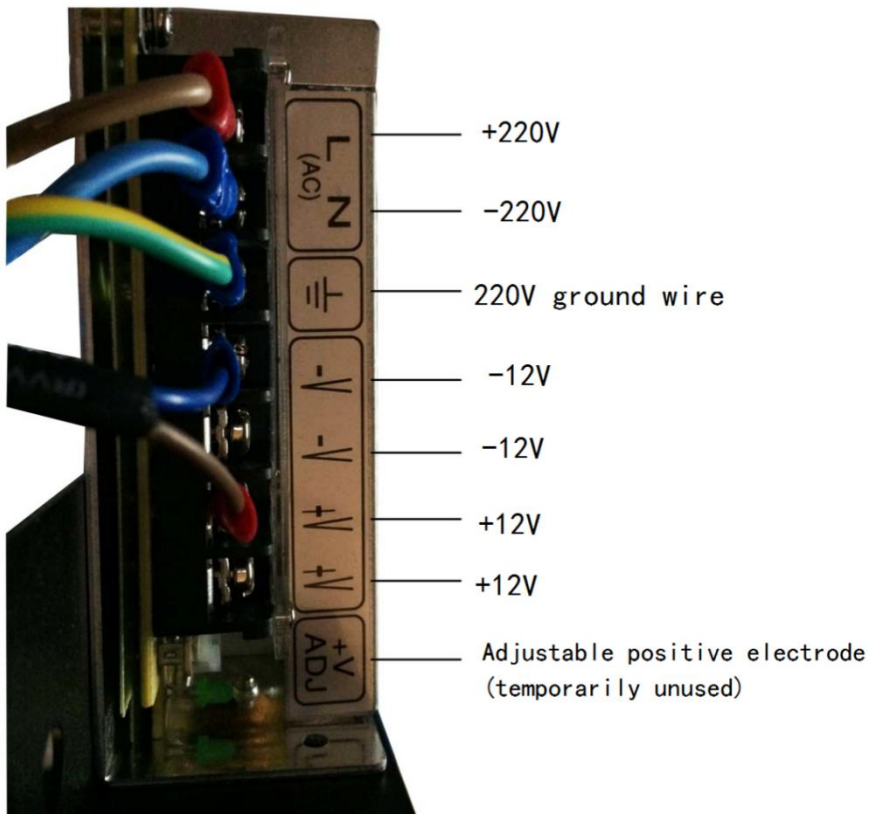
If the guide light on the LED board is on, it means the power supply is normal. If not, then it means something is wrong with the power supply system. For the device which is supplied by the computer directly, check the wires of the hardware to see if loosen or broken;

For the DC input device, check if the independent power wires are connected wrongly, can check by the universal meter.

Main components of the hardware wires:



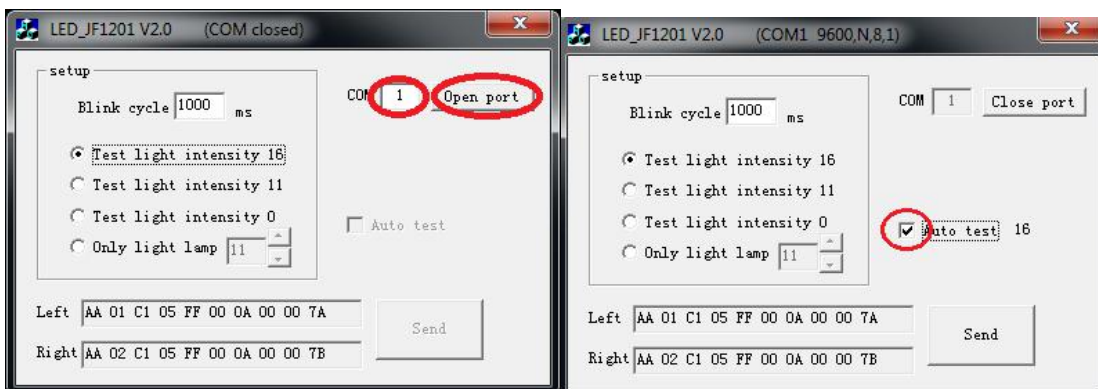
Instruction of the independent power wires connection



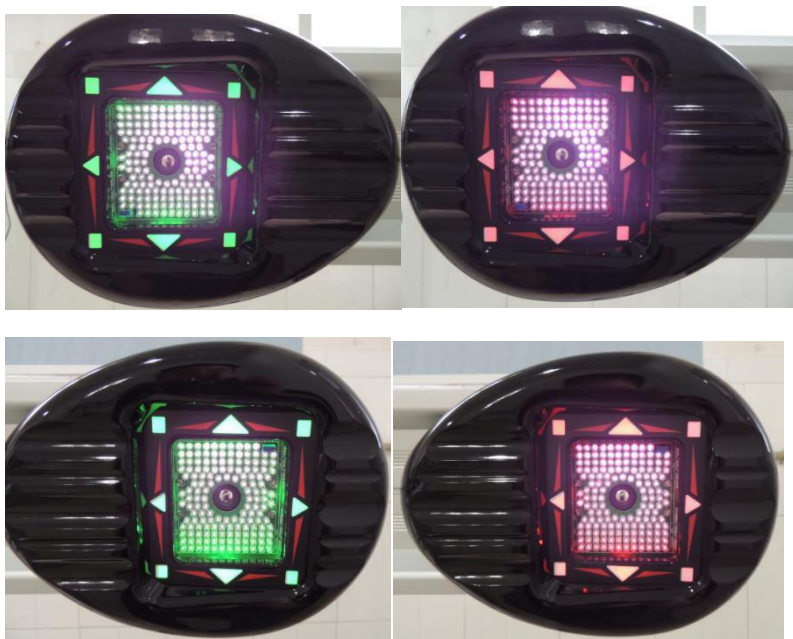
[7.10]Communication com fault detection

Determine if there is a problem with the communication com by the “com port detection” software.

1. Double click “com port detection” on the screen, choose the corresponding com, and click the “Open port” button, then choose “Auto test”.

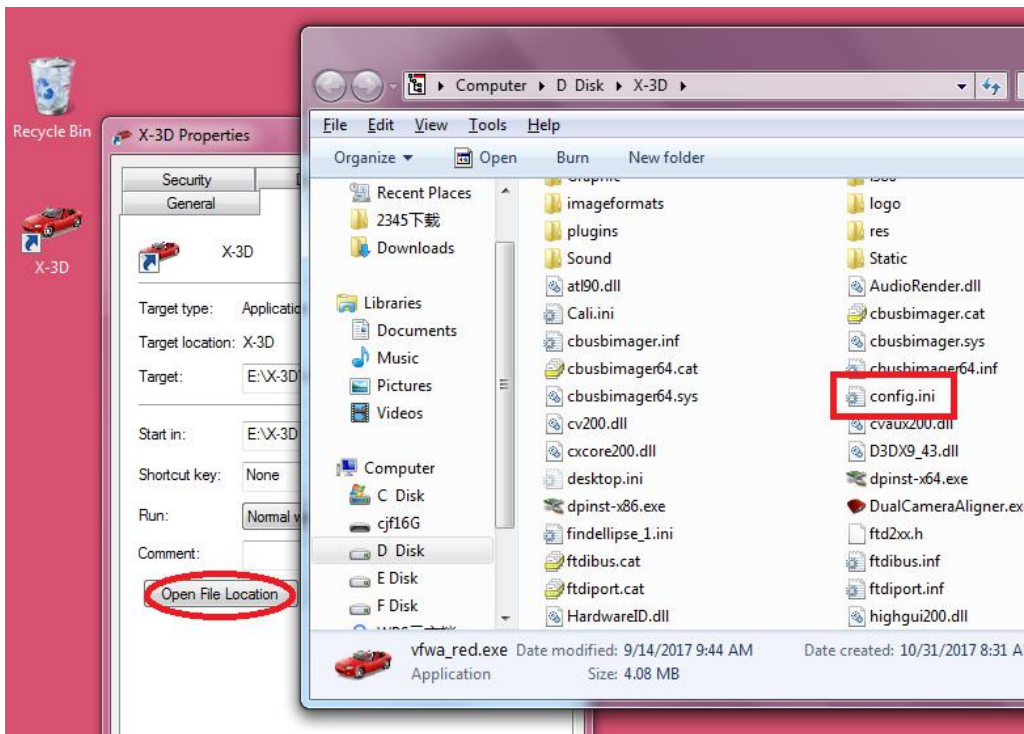


1 As shown on the picture, if all of the lights are normal on, then it means the com is normal; otherwise, it means the problem comes from the com.



[7.11] How to adjust the camera parameters

1. Open the X-3D folder where the software location, find config folder, size 2KB, change the camera adjustment parameters 25,15, the bigger the number, the picture will be brighter .

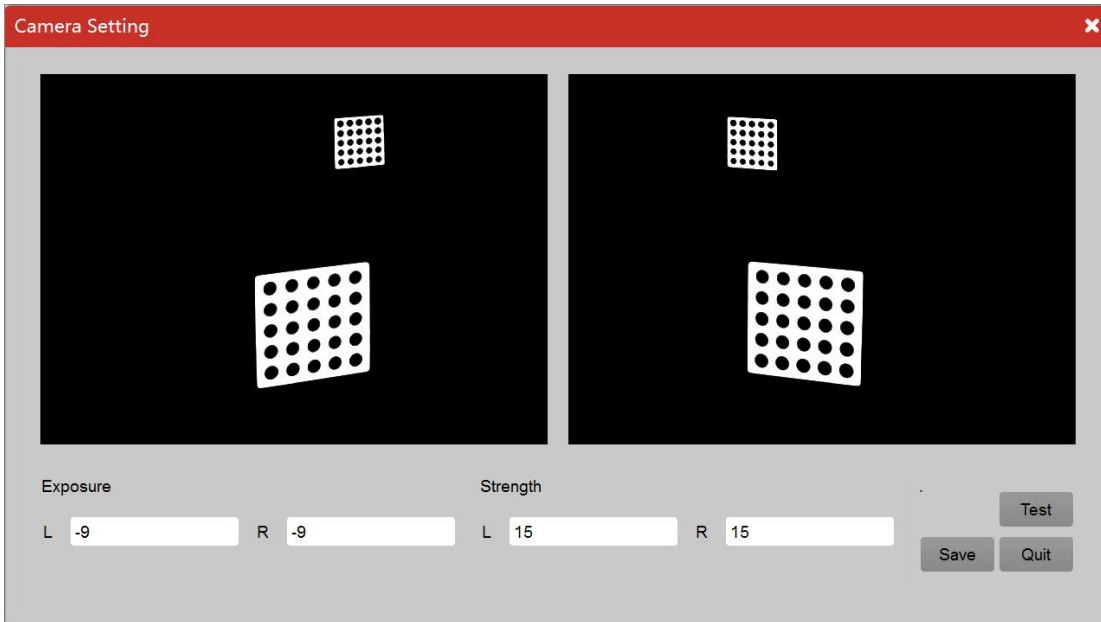


```

File Edit Format View Help
[Board]
Ba=5, 5, 38. 50000000, 200. 00000000, -0. 81087834, 0. 01656903, 0. 58498013, 72. 62501526, 83. 64060211, 0. 00010042
Bb=5, 5, 38. 50000000, 200. 00000000, 0. 81674582, 0. 00022913, 0. 57699758, 78. 64071655, 76. 06250000, 0. 00001221
Bc=6, 6, 48. 00000000, 200. 00000000, -0. 82514310, -0. 00530224, 0. 56489879, 124. 14079285, 115. 54679108, 0. 00019903
Bd=6, 6, 48. 00000000, 200. 00000000, 0. 82272297, 0. 00452888, 0. 56842458, 116. 32829285, 120. 85946655, -0. 00007720
[Settings]
Hflag=1
PushParam=20. 0, 0. 01, 11, 1, 0. 02, 0. 02
[Camera]
Param0=25 80, -9, 15 80, 128, 0, 1024, 1024
Param1=25 80, -9, 15 80, 128, 0, 1024, 1024
CamDist=2410. 0
Extime0=5. 0
Extime1=5. 0
R10=0. 99364936, 0. 00737201, 0. 11227930, -0. 00703876, 0. 99996954, -0. 00336412, -0. 11230069, 0. 00255244, 0. 99367100
T10=-2405. 96142578, 25. 03657150, 142. 78036499
RH10=0. 99369329, 0. 00181302, 0. 11211772, -0. 00148200, 0. 99999428, -0. 00303569, -0. 11212258, 0. 00285039, 0. 99369031
TH10=-2406. 11132813, 9. 62098312, 139. 79272461
C0=3356. 99169922, 0. 00000000, 522. 28454590, 0. 00000000, 3357. 47583008, 487. 57492065, 0. 00000000, 0. 00000000, 1. 00000000
Cef0=-0. 25285259, 0. 25681189, 0. 00116294, -0. 00001671
C1=3356. 01049805, 0. 00000000, 561. 07104492, 0. 00000000, 3356. 42456055, 479. 83184814, 0. 00000000, 0. 00000000, 1. 00000000
Cef1=-0. 24481426, 0. 04497740, 0. 00258107, 0. 00085394

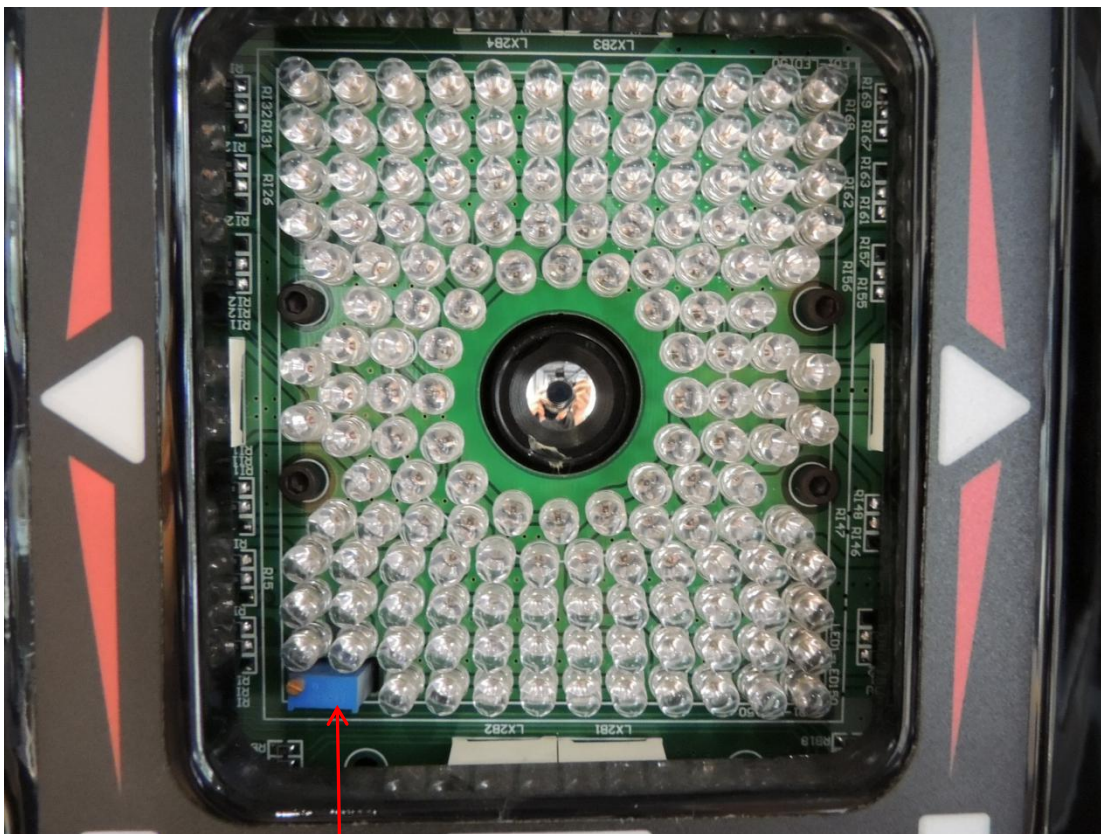
```

2. Set -9 for the camera exposure parameters of the camera(cannot be changed), and 15 for camera parameters (the bigger the number, the brighter the picture).



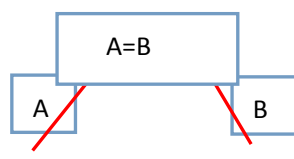
[7.12] How to adjust the brightness of LED board

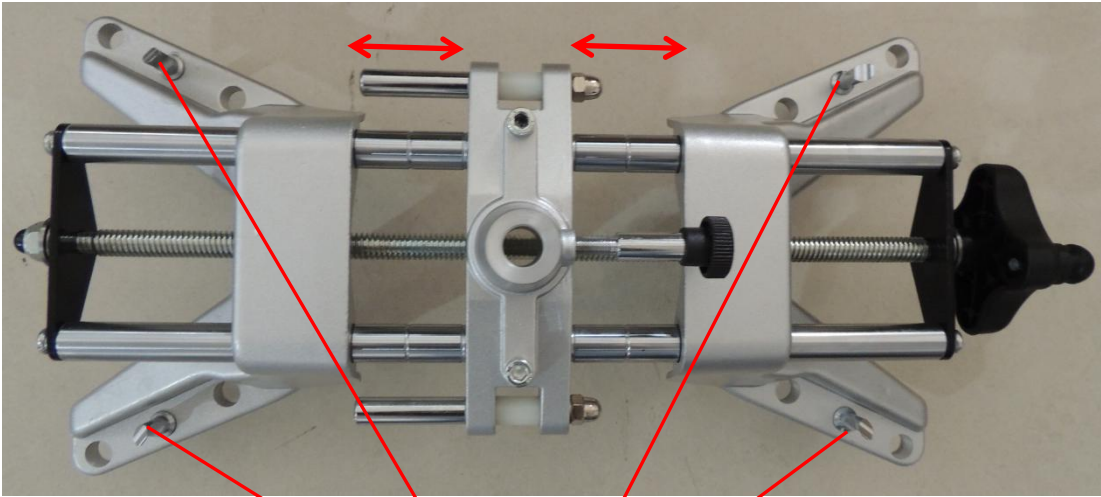
1. Adjust the resistor on the LED board to change the brightness of the LED board.



Adjust the resistor on the LED board to change the brightness of the LED board, turn to the clockwise, it will become darker, and vice versa.

Before sale to customer we will test all the clamps by a high accuracy machine, make sure the observed value error very low.





Four clamps hand must be same position in the middle or outside.

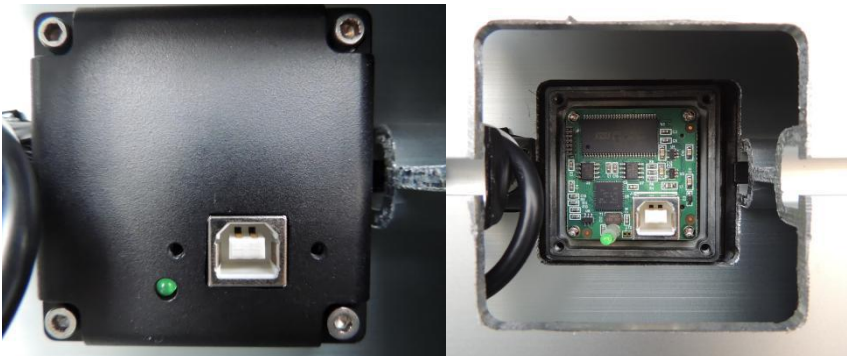
Target cling the clamps



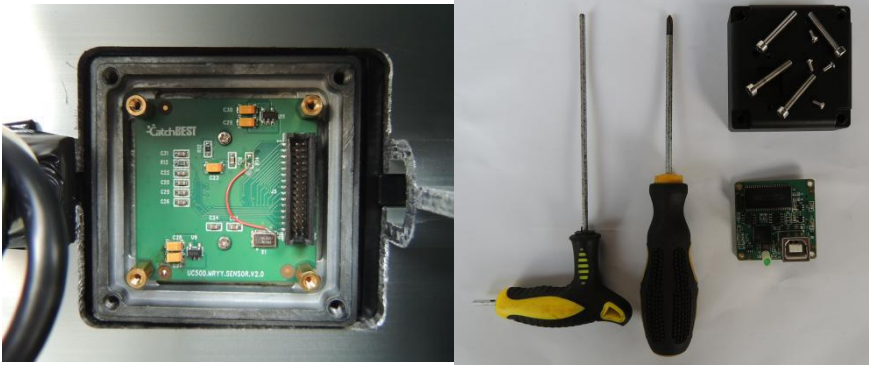
Four clamps hand catch cling the wheel

[7.14].Change the backboard of the camera

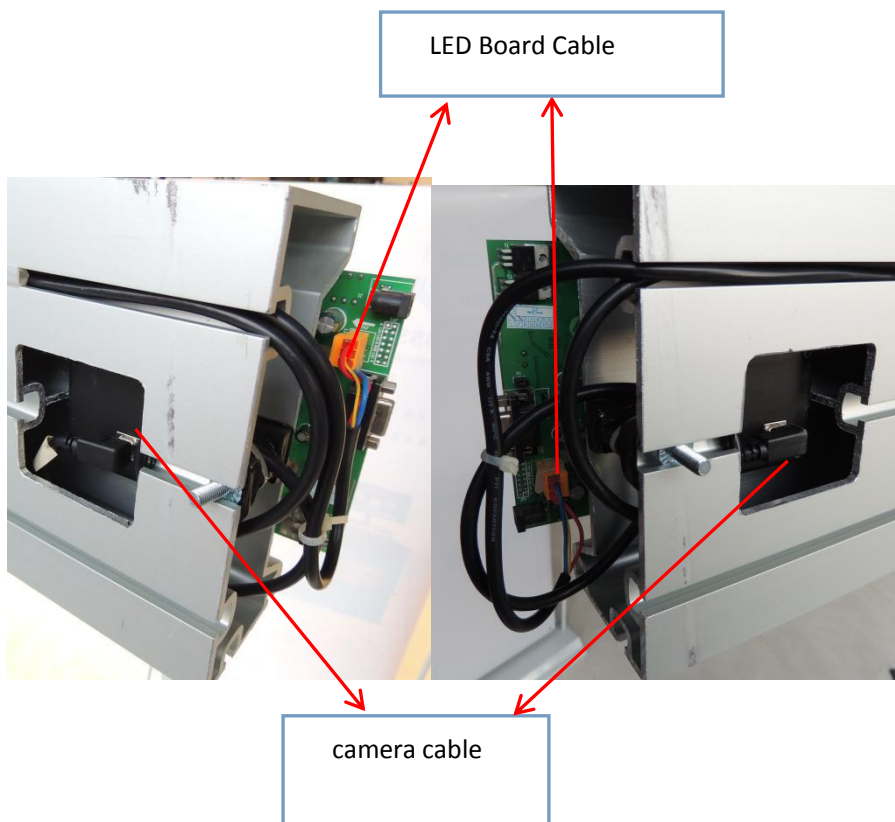
1. Take down the camera back cover and the backboard.



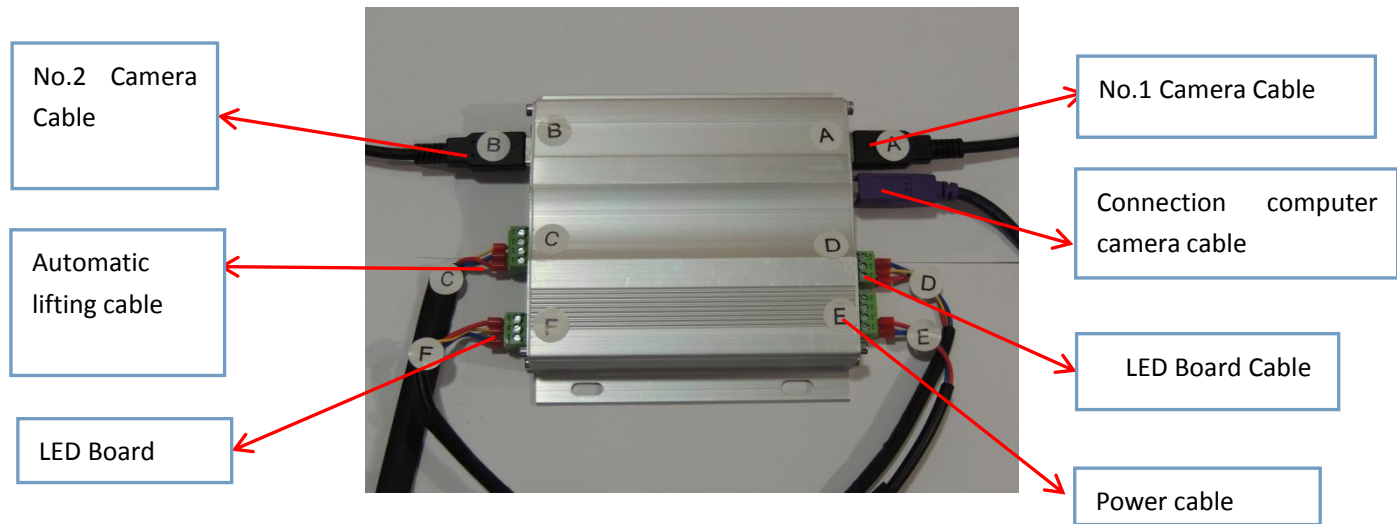
2. Set up the new camera backboard to original position)



[7.15].LED board and camera wiring diagram



[7.16].Hub wiring diagram



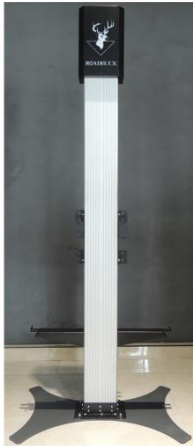
[7.17].G681 installation steps



1. Install the cap on the stand column and then fix the column with expansion screw on the floor.



2. Install two racks on the downside for clamps (about 50cm high)



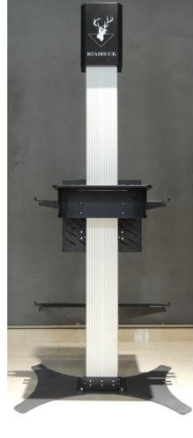
3. Install a rack for cabinet which can also be used to hold the printer (about 90cm high)



4. Install a support bracket for cabinet



5. Install a support bracket for printer



6. Install two racks on the upperside for clamps



7. Install a rack for the small screen



8. Install a support bracket for the 32" LCD

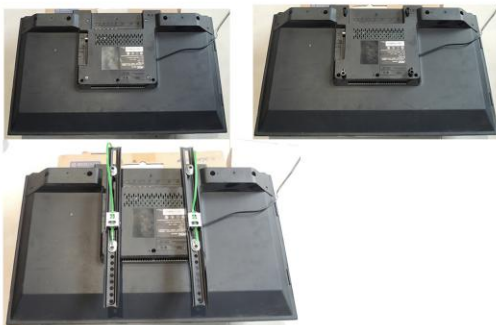


9. Install a support bracket for the cross beam



10. Install the cross beam

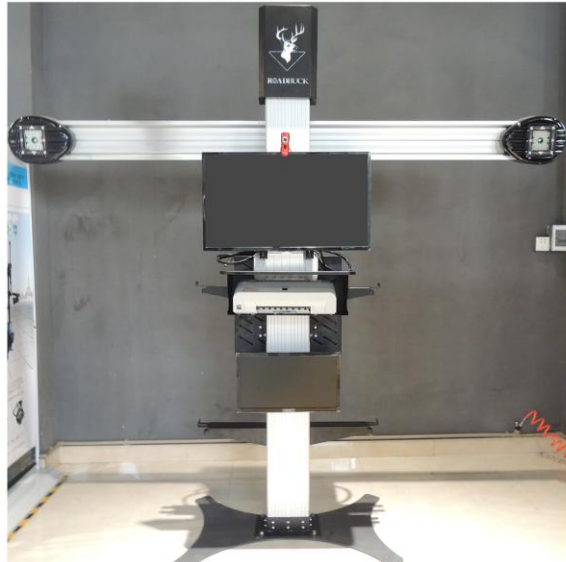
11. Install a rack for the 32" LCD (fix the rack with screen after well-placed it)



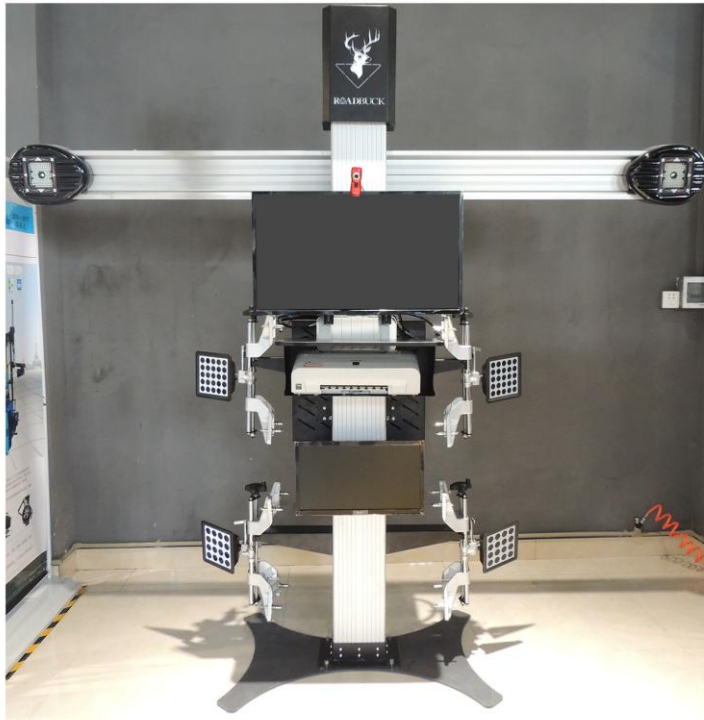
12. Install the 32" LCD and camera



13. Install the printer

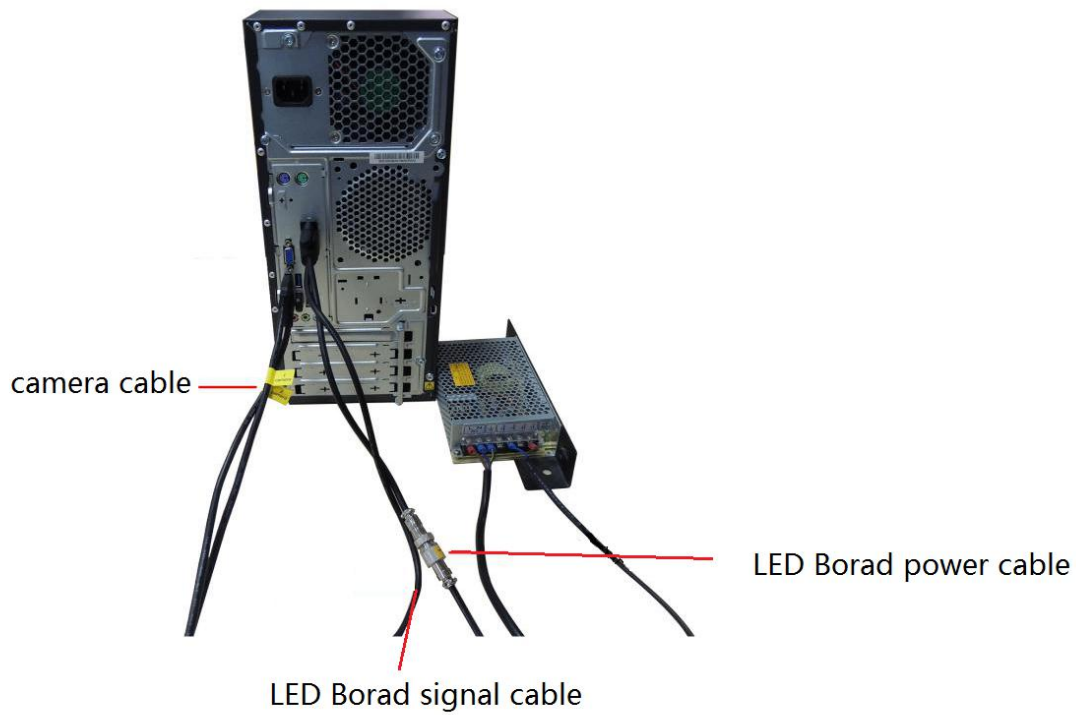
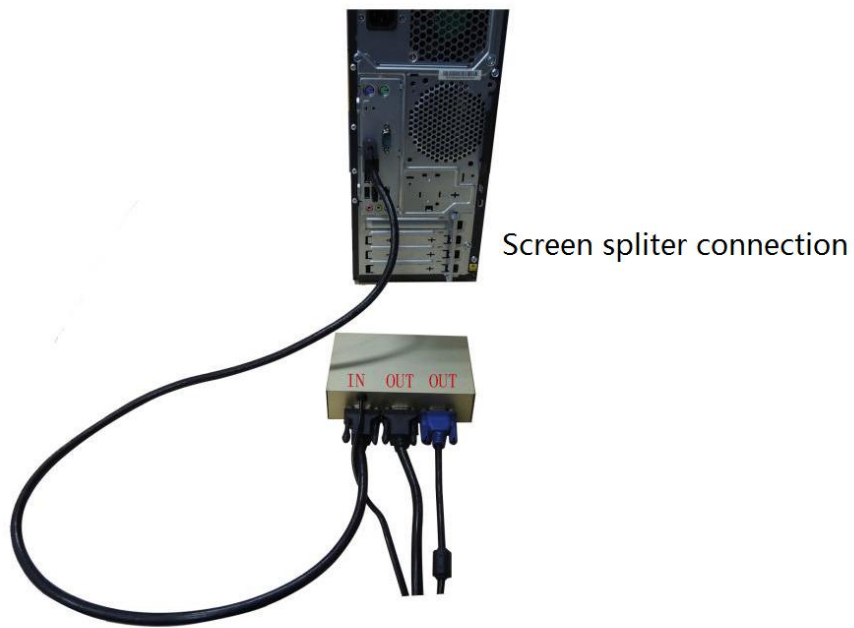


14. Install the small screen

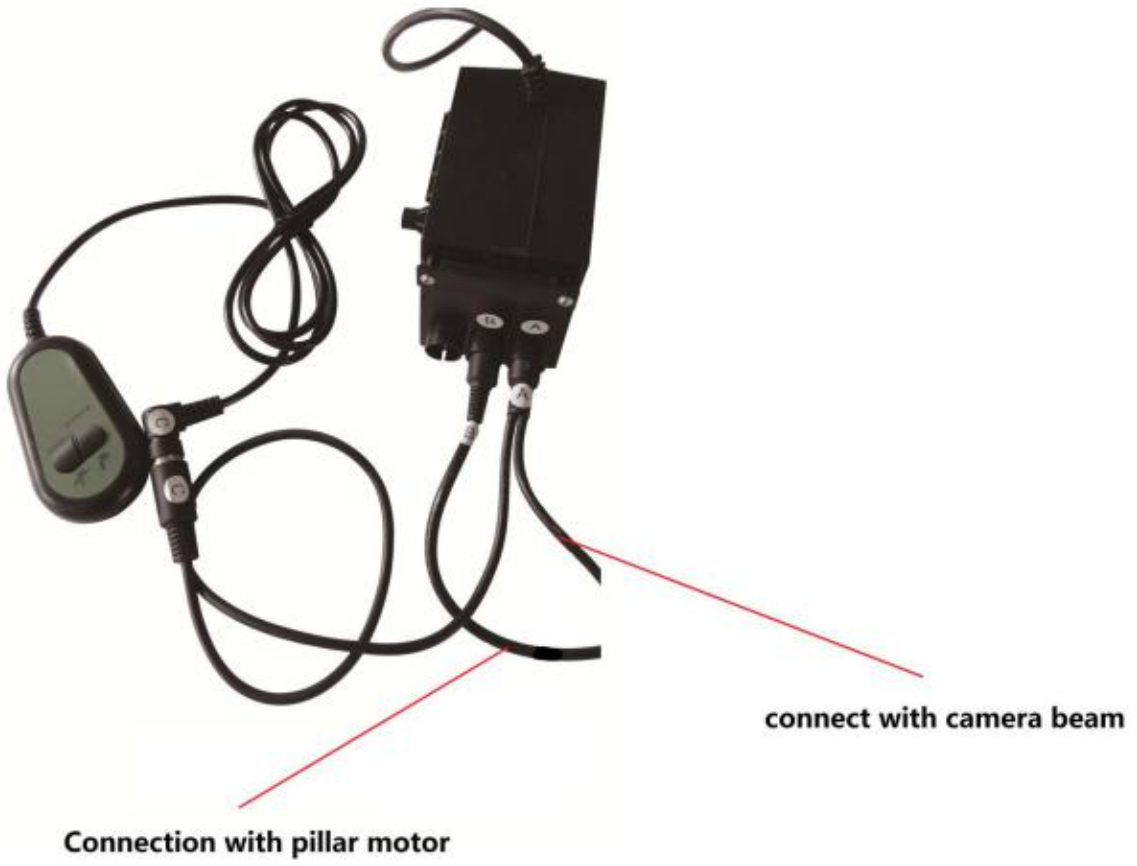


15. Install the clamps and targets

[7.18].G681 partial wiring diagram



[7.19].Automatic lifting wiring diagram



[7.20].Large cabinet installation steps



1. Install four casters on the base respectively



4. Install the cabinet's side panels on both sides



5. Install the cabinet rack on the left side of the panel (about 10 cm to the bottom)



6. Install the corresponding holes in the middle of the fixer of the side plate



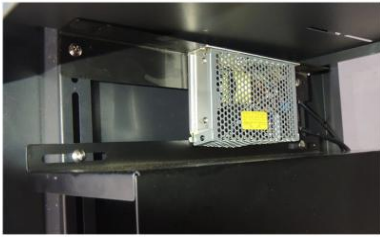
7. Install a support bracket for printer



8. Install a support structure on the top side



9. Install a supporting structure on the backside



10. Install the standalone power inside the cabinet (between the cabinet rack and the printer bracket)



11. Install the plate on the top side

12. Install the two door plate respectively



13. Install the back shroud



14. Install the screen fixer and mouse holder



15. Install the clamps bracket

FAQ

1. “NEED TWO CAMERAS” error

- (1). To check whether there is a installation in camera or camera driver.
- (2). Open several wheel alignment system software, need to closed until there is only one is worked.

2. “SENTINEL KEY NOT FOUND (H0007)” error

Dongle not be connected or the model of dongle is not match to computer.

3. “SENTINEL KEY NOT FOUND (H0031)” error

Wheel alignment system don't work, reset system software or relative configuration files.

4. ”SENTINEL KEY NOT FOUND (H0041)” error

Dongle is overdue, need to register again.

5. “ILLEGAL USER,REGISTER PLEASE” error

“Key” program is incorrect or there is no “Key” in software. In this case, software also can work, but the measurement data is very big.

Wheel alignment maintenance

1. Camera Lens

- If there is a little dust on the camera lens, it is best to blow it instead of wipe it.
- Special camera lens paper are needed when the camera lens were stained with some oil.

2. Target disks

- If there is a little dust on the target disks,it is best to blow it instead of wipe it.
- If there is too much dust on the target disk,using a cotton cloth wipe it gently.

3. Regular maintenance

- Before using large power equipment, should first turn off the device to prevent electric shock, power supply voltage to maintain in the range of $220 + / - 5\%$.
- The machine is particular for wheel aligner, please do not use it for other equipment.
- The camera is high precision measuring instrument, move it carefully.
- Unplug is prohibited when the machine is working, Otherwise it will damage the system.
- It is forbidden to illegally computer shutdown,not able to open and close the power switch frequently in a short time.
- Machine should be placed in a cool and dry place, And to keep it clean.
- Do not let the camera face to the sunlight, otherwise the camera can not work normally and will get a wrong data.
- Wheel alignment computer can not be connect with internet, in case of virus.
- If the computer have to connect a USB flash, please make ensure the U flash is safety and then connecting.

Data adjusting sequence

Four wheel angle adjusting sequence: Rear camber — Rear Toe — Front wheel Caster — Front wheel camber — Front wheel Toe.



If there are some angle can not be adjusted, which can be omitted. But follow this sequence, four wheels can get a better comprehensive adjusting.