SRD-919 Wheel Aligner

Operation Manual

GUILIN SINOMAKE SCI-TECH DEVELOPMENT CO.,LTD.

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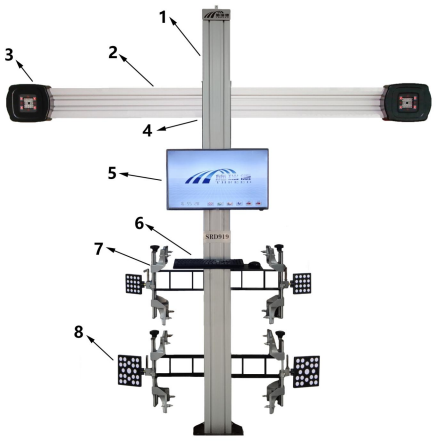
Chapter I Overview

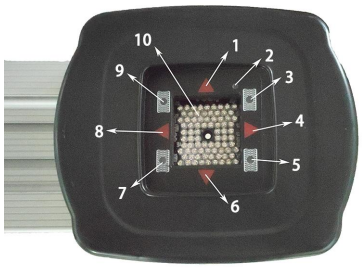
1.1 System composition

This operating manual is suitable for all models of digital imaging 3D four wheel aligner produced by our company. The 3D four wheel aligner is mainly composed of mounting pole assy, camera beam, two camera assys, four targets, four clamps, computer, monitor. The camera is fixed at both ends of the beam and is protected by two protective covers. The computer is placed on the central back of the beam assy. The computer software is installed directly on the hard disk. SRD919 model four wheel alignment machine without cabinet, its accessories are fixed on the mounting pole assy. (as shown as the picture)



1.mounting pole assy
2.camera beam assy
3.camera assy and cover
4. Lifting control device/ computer(on the back)
5.monitor
6. mouse&keyboard
7.clamps
8. targets

The camera cover is equipped with a four wheel aligner special camera, which is used to capture the change of the target image during the four wheel alignment process. The camera cover has a power supply and direction indicator lamp. The details are as follows:



The direction in the figure indicates that arrows 1,4,6, and 8 represent the rotation direction of the target during the four wheel alignment operation. When indicator lights 3,5,7,9 are all red or green, For computer USB 5V power supply, At the same time, the four lights also represent the occlusion of the four targets on the wheel, Green means the target is working properly, Red means the target is blocked, Indicator 3 represents the right front wheel, Indicator 5 represents the right rear wheel, Indicator 7 represents the left rear wheel, The

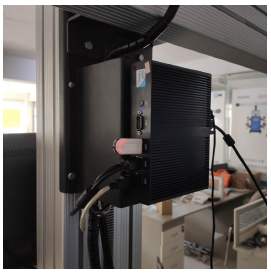
indicator light 9 represents the left front wheel. Indicator 2 indicates that 9 V or 12 V power is working properly, Red light time table 9 V or 12 V power working, When not bright, it means 9 V or 12 V do not work, LED lamp (No .10) outside the lens flashes while the camera is working, If the LED lights don't flicker during the four wheel alignment operation, There is no target image in the camera view field.

If the four direction indicator lights are all on, the computer reads the data and calculates when the four-wheel positioning measurement or steering measurement is carried out, and does not turn the steering wheel or push-pull vehicle at this time.

1.2 Important Tips

The first installation and commissioning of the aligner has been completed before the ex factory. Users only need to install hardware according to the instructions, do not open the camera protection cover, do not arbitrarily change the camera and the relative position of the two cameras, the locator work site should have a stable power supply, and equipped with reliable grounding device, if there is no grounding device, use the grounding bar provided by the equipment supplier. The computer matching the alignment is a special computer. Users should not change their purpose without authorization, and do not install application software independent of positioning.

The mounting pole of the alignment needs to be permanently fixed to the ground. When moving other accessories, make sure that kinds of power lines and signal lines connected to them are reliably connected.



This software is equipped with a special software dongle, the appearance of thedong is similar to a U disk, should be inserted in the computer USD connection, as shown, the customer should properly save the dongle, if the dongle is artificially damaged or lost, You need to buy a new software dongle.

Chapter II system installation

In order to ensure the smooth installation of the aligner and the normal operation after installation, the User should pay attention to the following matters:

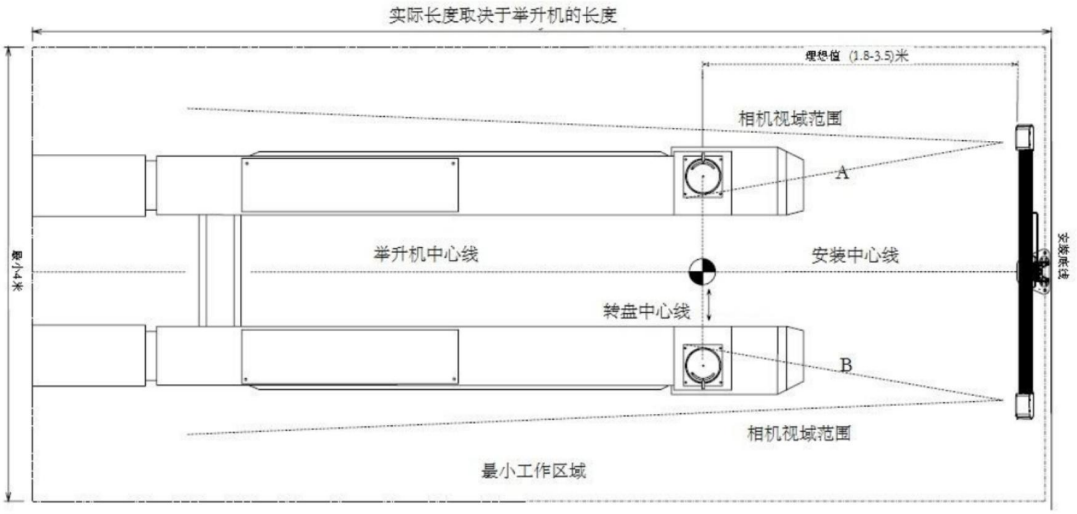
1. standard AC power supply 220 V,50Hz, no power noise to ensure good grounding.
2. The ground should be basically on a horizontal plane to ensure the smooth push and pull of the vehicle, there should be no obstacles in the test range, to ensure that the camera in the whole detection process smoothly illuminated to the target.
3.Avoid the use of large heaters, welding machines, large area emitting light sources, fans and electromagnetic radiation equipment around 3. equipment.

4. space position to meet the aligner installation size requirements.

2.1 Installation of equipment

The installation diagram shows the following problems:

1. Ensure that the installation center line of the mounting pole is consistent with the center line of the hoist.
2. Ensure the beam level.
3. Beam should be installed to ensure that the distance between the two cameras to the center of each turntable A and B are basically the same.
4. Distance from the mounting pole to the center line of the turntable should be between (1.8-3.5) meters, and the best test distance is 2.0 meters.
5. For lifting beam, do not force up and down the beam before electrification to avoid damage to the motor and gearbox.
6. Make sure there are no obstacles within the camera horizon.



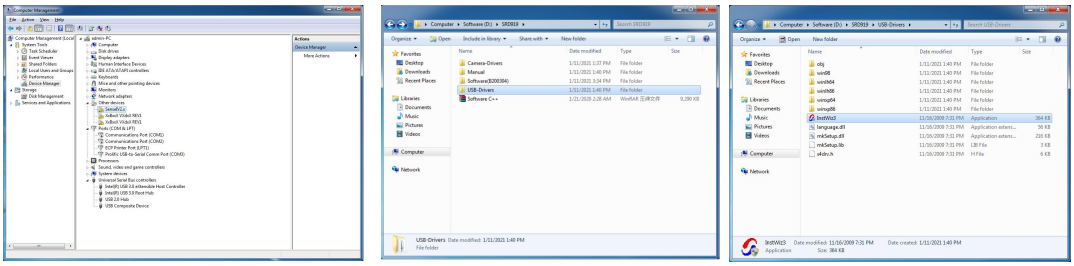
2.2 Installation of the targets and clams, as shown:

front target

rear target

Chapter III Installation of software dongle Driver and Camera Driver

(The process was finished before the machine EX factory,the direction is only just for your reference only.)



The system supported by this software has win7(32 bits/64 bits), win10(32 bits /64 bits), the system and need to install C operating environment to run normally.

3.1 Installation of software dongle driver:

Plug the dongle into any USB port on the computer, find "computer" on the desktop of the computer, right-click "computer ", select" management ", select "device Manager" on the left, An exclamatory (SenseIV2.x) dongle device can be found on the right.

Under the USB-Drivers(dongle driver) folder, double-click InstWiz3.exe to enter the dongle driver installer.

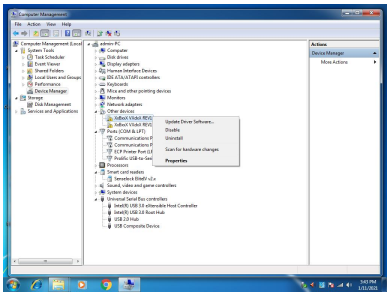
Click next until the installation is complete. If the installation is successful, go back to the device Manager and the previous exclamation mark disappears, indicating that the encrypted dog driver is successfully installed.

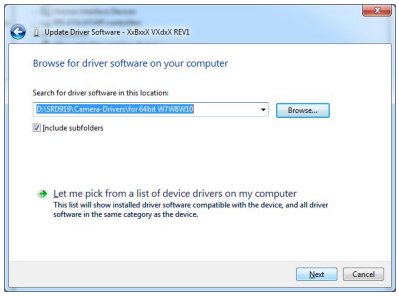
3.2 Camera driver installed

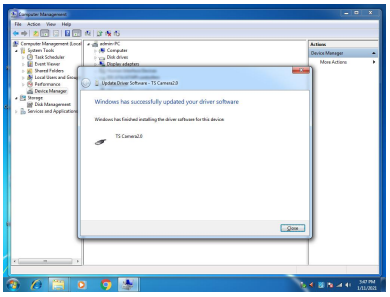
Insert the four wheel aligner USB line (two) into the motherboard USB port of the computer, follow the previous steps of installing the dongle driver, open the device Manager, and you will also see two devices with exclamation points. These are the two cameras of the aligner. You need to install the driver one by one according to the installation process of the dongle driver.

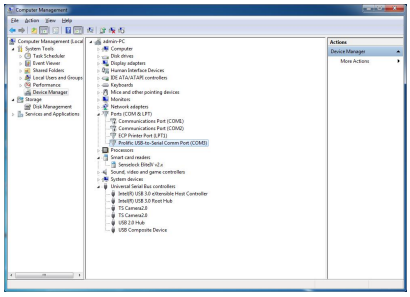
When proceeding to this page, locate the path under our installation package:

Camera-Drivers(camera driver), and then continue until the driver installation is complete. If installed successfully, the exclamation mark will disappear and two TS Camera 2.0"will appear.









Chapter IV　Software operation guidance

4.1 Introduction to the main interface

When the aligner EX from the factory, each computer is pre-installed with alignment software, which saves you the tedious operation of installing software and the driver.

double click the icon  to enter into the software.

Software interface:

1 withdrawal

2 settings

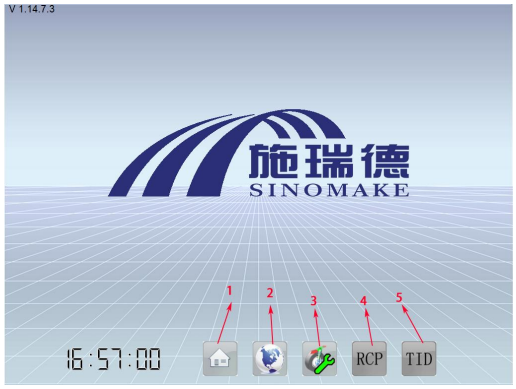
3 user files

4 camera view field

5 vehicle selection (conventional measurement mode)

6 Model selection (quick measurement mode)

quick mode means needn't turn the steering,without measurement of the caster and the KPI.



Set up button

1： Home

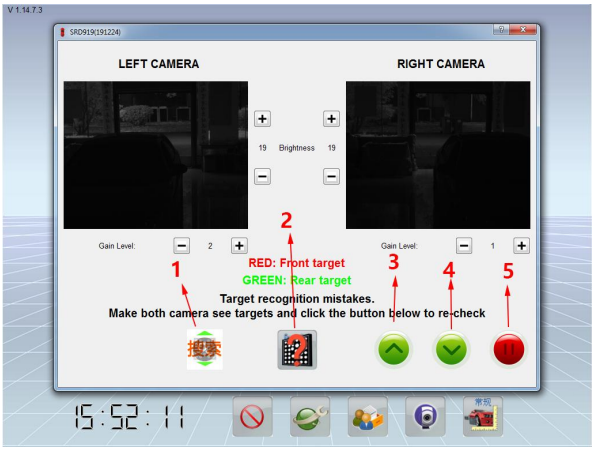
2： Language Selection

3： other settings: car moving distance

4：RCP calibration

5：TID calibration

The language selection menu can select different languages. the settings temporarily provided in the other settings menu for short distance moving car, there are optional: default distance ,3/4 distance ,1/2 distance. When the wheelbase of the vehicle is not too long and the default distance cart can be realized on the lift machine, it is recommended to keep the default distance to get the most accurate measurement value. If the wheelbase of the vehicle is too long or the lifting platform is too short to push back enough distance, you can choose 3/4 distance or 1/2 distance to reduce the distance of the cart.



1. Automatic tracking target
2. Target Identification
3. Manually Control Beam Rise
4. manual control beam down
5. suspension of beam moving

camera view field

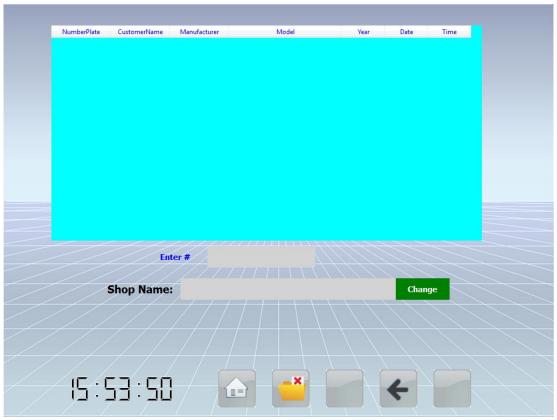
At the first time,the user need to automatically identifies the target disk category. Click the camera view button to pop up the camera view interface. Click the tracking(search) button to automatically search the target, and the camera beam will automatically search down or up until the target is identified. When you're done, you' ll see the "all target recognition success" hint.

At the same time, this page also provides the left and right camera brightness and gain size adjustment button. In general, keep the default brightness and gain size. If the position of the aligner is obviously different from the left and right illumination (may be indoor lighting or external light influence), you can turn the camera brightness slightly dark, with the naked eye to observe the left and right brightness is almost the same bright is ok.

4.2 Shortcuts Introduction

The software has added the shortcut key operation, in the main interface only needs to operate the keyboard to reach the window.

4.3 Software operations



User profile:

1： Home

2： Delete files

4： next step

This page is used to pull out the previous customer's measurement data. Users can enter license plate number search history data (such as 678, which will show all previously tested license plate band 678 data). Click the delete

button below to delete useless historical data (you need to operate the password). Double-click the required historical data to enter the data print page.

1： Home
2： add vehicle models
3： modify vehicle data
4： next step
5： customer information

Vehicle Model selection

After selecting the model from the database list, double-click or click next to continue. In the search bar at the bottom of the database tree, you can enter any continuous field in the model name to search.

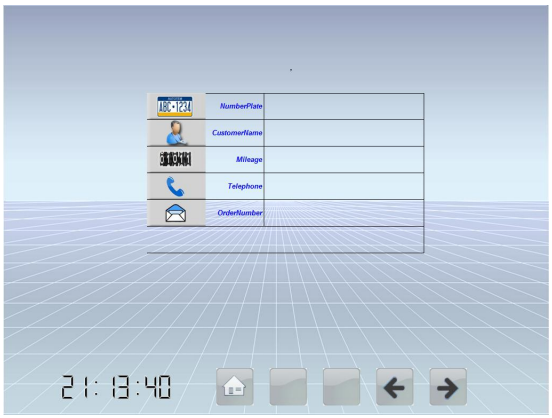
Click button 3 to view or modify standard data (select the model before clicking and open the window as shown).

Double-click the grid containing data, You can enter new data. If a data has no standard value (such as the internal inclination of the main pin in the diagram), The corresponding "minimum "," middle "," maximum" three values must be entered into 0. When entered, Just enter the data on the left, Both the right value and the total value are automatically calculated (for example, the minimum value on the left of the front bundle is 0.1, The minimum value on the right will automatically change to 0.1, The minimum value of the total front bundle automatically becomes 0.2). Except for the front beam, Other angles must be degree in percent, If the standard data obtained are degrees and minutes, You must calculate the conversion before entering it, 1 degree =60 minutes (for example, the user's standard data is 1 degree and 45 minutes, it is not 1.45 degree, You should enter 1.75, Because 45 minutes are equivalent to 0.75 degrees). There are two units in the toe, percentage degree and millimeters, pay attention to the table shows "toe (degree)" or" toe (mm)". If it is percentage degree, please enter degree in percent ,such as 1.75, If it is millimeters,please enter mm value,such as 10.

Click  button can transfer the units of the toe(3 kinds unit:pencent degree, degrees and minutes ,mm).After you input the value, click  to save the value, click  or right upper exit the window,means no save,click  an delete the vehicle data (need password).Click  can add new car's data.

Add a new vehicle data

Adding a new vehicle data is similar to the editing process. The only difference is you need to type in or choose “Manufacture” first, and then type in “Year” and “Model”.



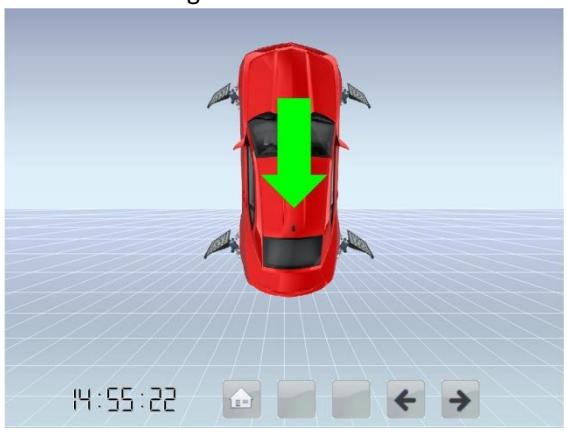
Customer Information

Type in the plate number of vehicle first. If the vehicle has been in the customer database, the other information will show, otherwise, you need to type them in one by one. If you do not type in the plate number, later measurement result will not be saved.

Button 1: Homepage

Button 4: Previous

Button 5: Positioning



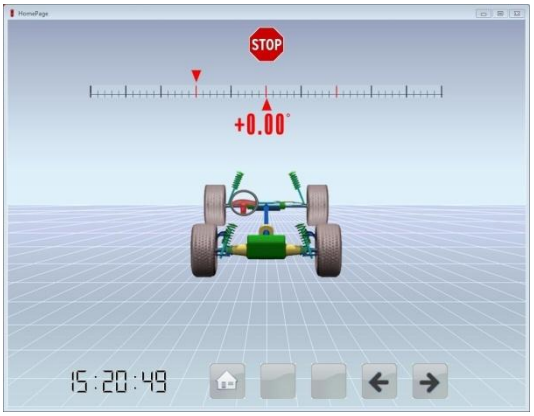
Button 1: Homepage

Button 4: Previous

Button 5: Steering

Positioning

On this page, the red “X” is saying the corresponding target panel is not detected. When all panels are detected, a green arrow appears. The arrow lights around each camera will also instruct you to push forward, backward or stop. Please note that after you finish pushing car, it will go to next page automatically without click “Next” button. If you click “Next” button to force the software go next without pushing car, there will not be any measured value shown in later pages.



Button 1: Homepage
Button 4: Previous
Button 5: Values Before Adjustment

Steering

According to the screen and camera indicator light to turn steering, first turn 10 degrees to the left, then you can choose to turn 20 degrees to the left (measuring the front angle) or 10 degrees to the right (only the main pin). Each time the triangle under the ruler is turn to the triangle on the ruler, repeat several times and prompt back to the middle 0 degree position, the whole process is over. If you manually click on the next jump, the direction process is not completed. (Note: If a quick measurement is selected at the beginning of the measurement, there will be no directional interface)

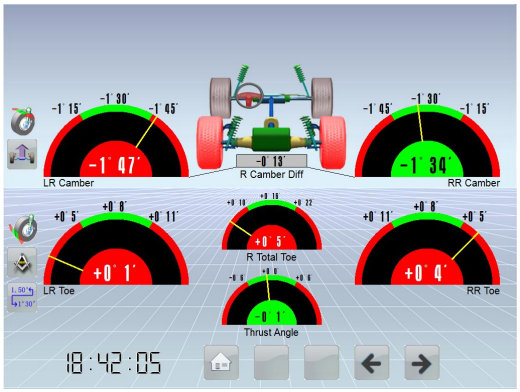
Button 1: Homepage
Button 2: Turn forward angle
Button 3: Chassis data
Button 4: Previous
Button 5: Rear Wheel Adjustment

Values Before Adjustment

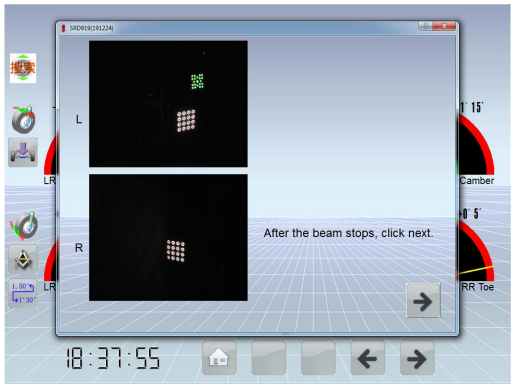
On this page, values of four wheels are printed on screen in three colors. GREEN means the value is between the standard MIN and MAX. RED means it is not. GRAY means either the value is missing (it is not measured or it is not available due to the corresponding target panel not being detected), or the standard MIN or MAX is not recorded in the database. The red arrow shows how closer the value is to the PREF value (0.5*(MIN+MAX)). The two buttons on the left bottom corner can change the value unit between degree and mm, or between degree decimal and degree minute.

If the measured value is within the standard value range, green is displayed. Otherwise red. The upper arrow shows the direction in which the measured value deviates from the intermediate value. If there is no measured value or no standard value, gray is displayed. Click on the left two buttons to switch display units, and the next time you start the software, keep the last set display unit. Click button 2 to view the left and right steering forward (if the steering forward measurement is completed in the previous step), click button 3 to view the body chassis

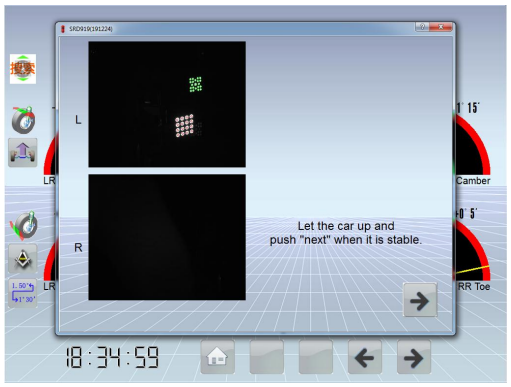
measurement data (if the cart measurement process is completed).



Rear wheel adjustment:
Button 1: Home
Button 4: Next
Button 5: Front wheel adjustment

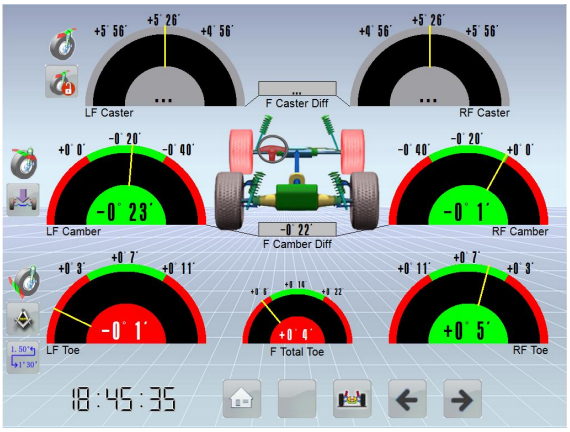


Rear wheel adjusting: before adjusting the vehicle, you need to click  to lock the data .**(this is most important)** ,then lift the vehicle to the adjusting height， after the beam stops,click next  ,then click  button， the beam will automatically up to tracking the targets till identified stop.After the beam stoped,you can operate the adjustment（Notice:Before you adjust the vehicle, you must click the button  before lifting the vehicle, otherwise the data will change during the lifting process, which will affect the alignment.)

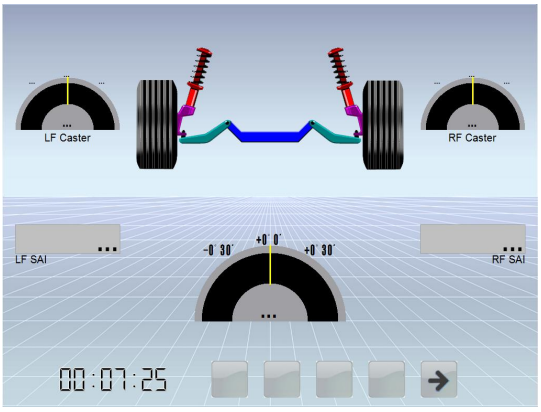


Front wheel adjusting: After finished the rear wheel adjusting， click next  button to enter into front wheel adjusting, repeat the above steps ,then click  button,at this point, the vehicle can be lowered to the ground. All adjusting is over.

The steering holder must be fixed before adjusting of the front wheels

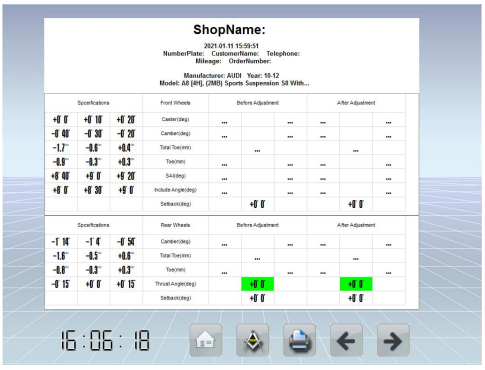


Front wheel adjustment:
Button 1: Back to Home
Button 3: Engine bracket adjustment
Button 4: back to
Button 5: Confirm page after adjustment
The function of the page is almost consistent with the rear wheel adjustment. Click button 3 to enter the engine bracket adjustment page



Engine bracket adjustment: this page indicates that the user moves the engine bracket left or right of some models to adjust the internal inclination of the main pin of the left and right front wheels to the same degree.

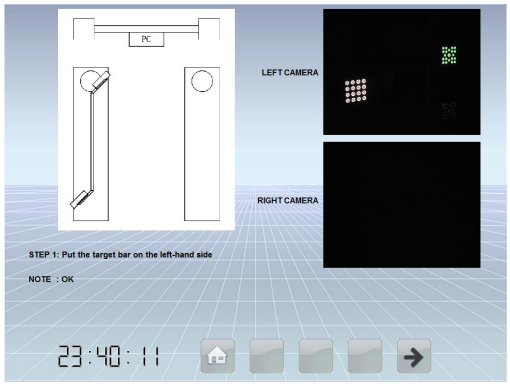
Vehicle data after adjusting:
Button 1: Home
Button 4: last step
Button 5: Go to Print Page
This page displays all angles of the adjusted model data, click button 5 to enter the final print page.



Print page:
Click button 5 , keeps the measured user data in the user file (make sure the license plate number is entered in the previous user file) and returns to the home page. At this point, the whole measurement process is complete.

Chapter V System Maintenance

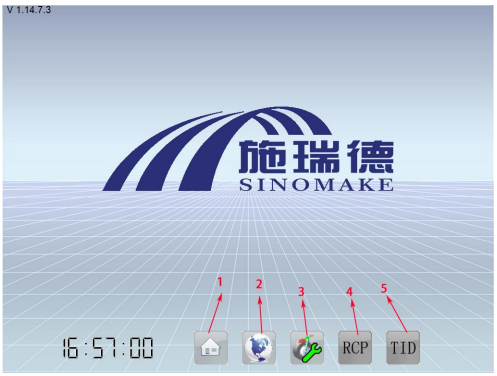
5.1 RCP caliberation



 : Home page

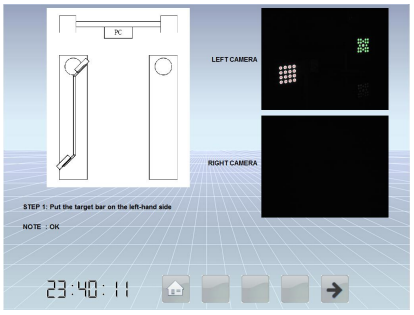
 :next step

一般来说可以把视域宽从左往右等分成 8 份，前后把分别位于第 2 份和地 7 份区域为宜。从第 7 步到第 9 步，需要尽可能地保证靶盘位于两个视域的中心位置。When the camera on the beam is replaced, removed, or moved, RCP calibration is required. In very few cases, The beams are bent by collision, RCP calibration is also needed. A total of nine steps in RCP calibration, The bottom left corner of the page shows what step it is, And what this step requires, What's the problem with the operation, Only if there's no problem with the current operation, The next button is unlocked. On the right side of the page is the view of the left and right cameras, Used to help the calibrator to determine whether the calibration rod is properly placed. From steps 1 to 6, You need to watch the camera's view, Avoid the presence of the front target blocking the rear target.Even if only a small portion of the circle on the rear target is blocked, it is possible to cause inaccuracy of calibration. Generally speaking, the range width can be divided into 8 parts from left to right, front and rear target located into the second and the severn regions are appropriate. From steps 7 to 9, it is necessary to ensure that the target disk is at the center of the two domains as much as possible.



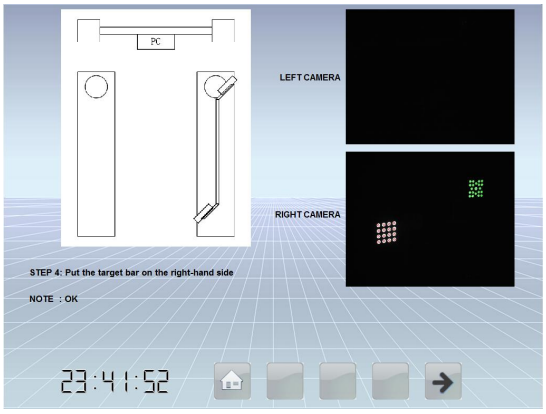
Click RCP button to enter into RCP caliberation process

Step 1 to Step 3



Place the calibration bar at the left camera. Make the front and rear target basically in the camera field of view, observe the lower left prompt, adjust the front and rear position until the display "distance is appropriate "(you can also observe the camera indicator arrow, the upward arrow is too far, need to move in a bit; The downward arrow is too close and a little farther; the four arrows are all bright to indicate the appropriate distance). Click next to step 2, just move the calibration rod slightly to change its position, then click next to step 3, and then move to step 4 after the same operation.

Step 4 to Step 6

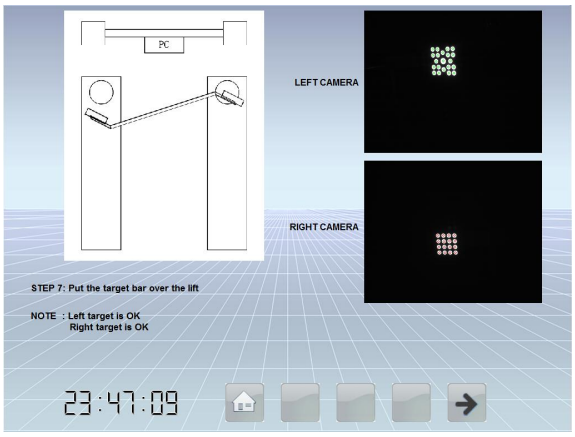


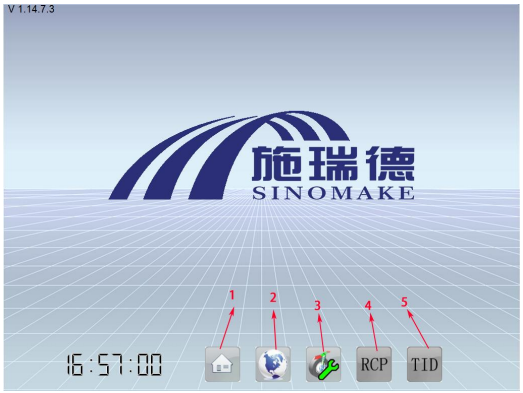
Place the calibration bar at the right camera.

So that the front and rear target in the camera field of view is basically in the following camera field of view position. Then follow the first three steps for steps 4 to 6.

Cross the calibration rod on the lift, step 7 to step 9.

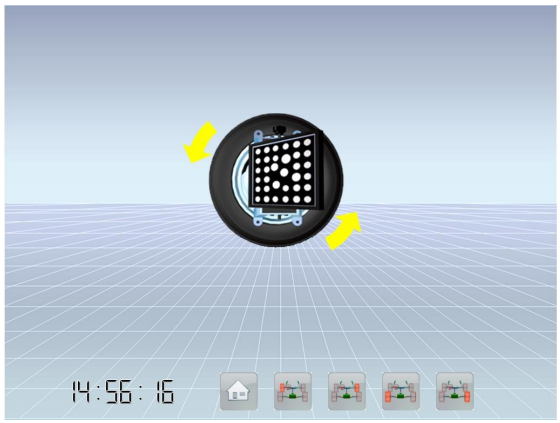
Moving the calibration bar backward, observing the lower left hint, adjusting the position of the left and right target to the suitable postion, click the next step to step 9. Click next to complete RCP calibration





5.2 TID Caliberation

Click TID to enter into TID caliberation process



TID calibration

1： Home

2： left front wheel

3： right front wheel

4： left rear wheel

5： right rear wheel

TID calibration is required when the target plate is first mounted on the fixture or removed and reinstalled. For most users, after TID calibration, as long as the target plate is no longer unloaded, there is no need for repeated TID calibration. The object of TID calibration is a separate fixture. If the user only moves the fixture corresponding to the left front wheel, then he only needs to re-calibrate the left front wheel TID. When you do TID calibration, the car need to be lift, so that its wheels can be suspended, and then click on the corresponding wheel button below (left front wheel, right front wheel, left rear wheel, right rear wheel). If the camera detects the corresponding target board, the screen and camera indicator light plate will appear in the direction of rotation (usually first direction after). As prompted to turn the wheel backward about 20 degrees, the screen and camera will prompt to change the direction of rotation to forward, continue to rotate forward about 40 degrees according to the prompt, will prompt to rotate backward, and after completion will prompt "the TID calibration is OK".

Chapter VI Frequent problem solution

1.While openning the software, appear "ERROR"

★Check and Solution：

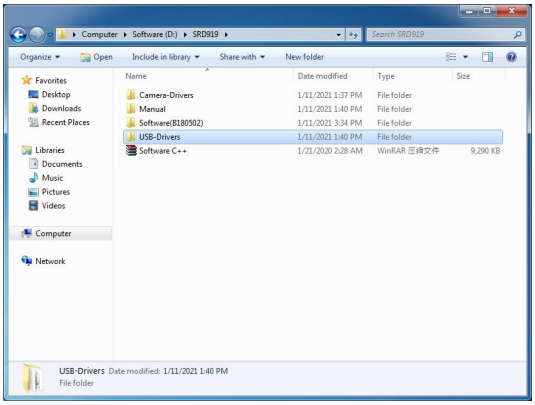
1)Check the dongle whether it is correctly inserted into the computer and the red light is on (if not, please contact the dealer or manufacturer)

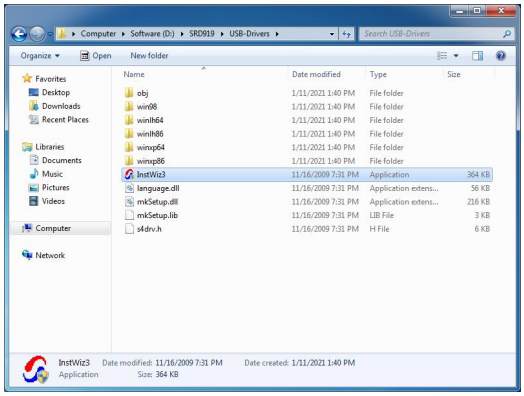
2)Check the dongle driver installed correctly or not.

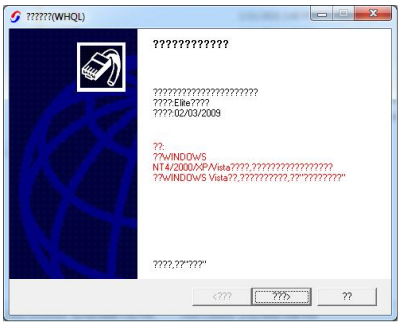
3)Confirm you click multiple times to open the software, if any, restart your computer.

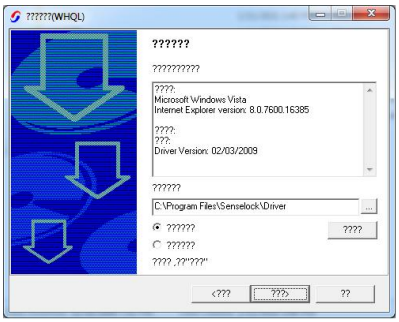
Software dongle drive installation method：

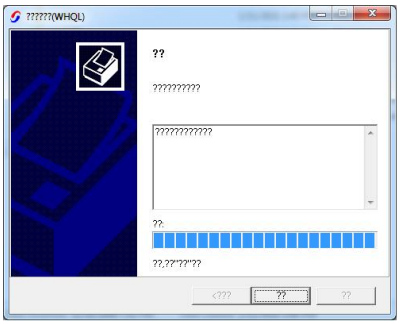
The software dongle driver is installed in the computer "D" disk by default. After entering the D disk, double-click into the" Sinomake four wheel aligner software and installation operation "folder, and double-click into the" USB-Drivers(software dongle driver)" folder. Double-click run InstWiz3", and select always install this software. Here is the following illustration:

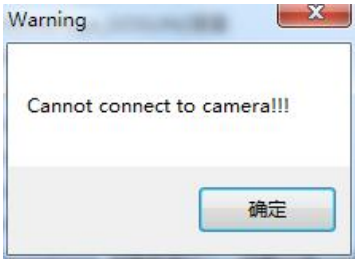








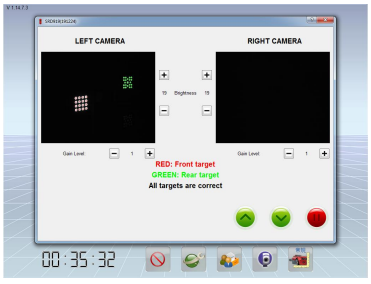




2.No image of a unilateral camera has the following:

1)Run the software see “Warning” and 2 windows.

2)After entering into the software, click  button，checking the camera view field：

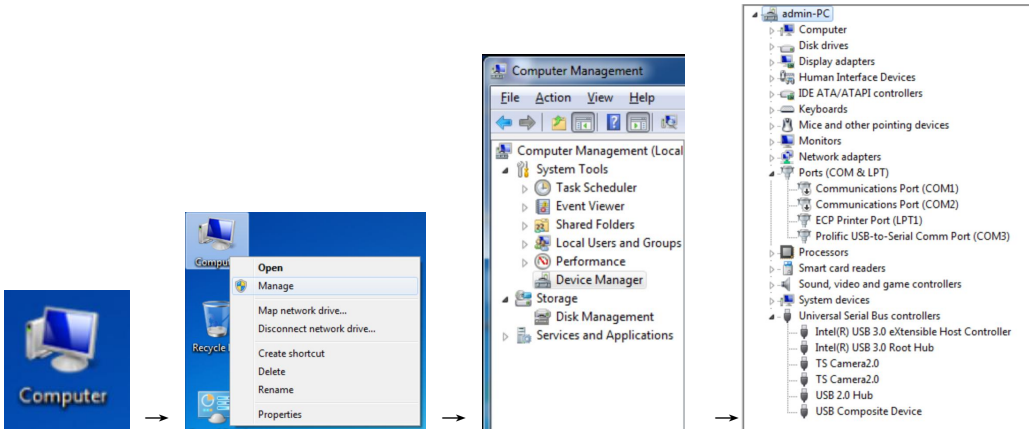


★Checking and Solution：

1) Checking the camera driver.

Check camera driver process: right click mouse button desktop computer icon, click manage to enter; click device Manager on the left, double-click Universal Serial bus Controller; see two TS Camera 2.0" drives means normal. (If there is "unknown equipment" or "unknown device"

means sth wrong with one or two of the camera.) The operation diagram is as follows:



2) Check whether the camera USB connection socket is connected to the computer properly; whether the camera power cable is normal.

3) Check whether the USB cable is workable.

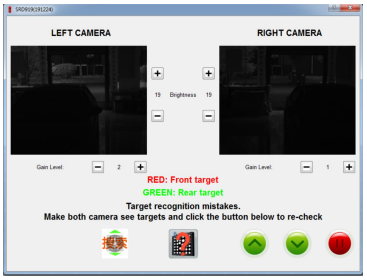
4) Remove the camera cover and use a multimeter (DC voltage V gear) to measure the camera LED strobe board voltage. Usually the normal voltage is range from 3.4V to 3.8V.If the voltage is normal, maybe the camera LED strobe board was demaged.You can replace the strobe without do any other caliberation.

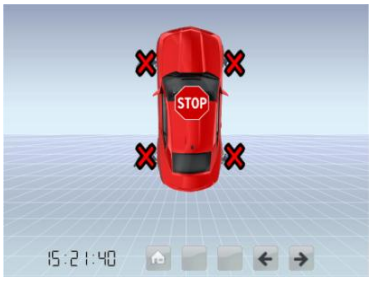
If the voltage is abnormal, maybe the camera board is demaged,for this condition,maybe you have to change the camera (please contact the dealer or manufacturer).

Sometimes,your working shop power is not stable,lead to the camera input power is not normal,you have to keep your outer working power is 220V 50Hz,not too high or too low.

3. No images on either side of the camera view field.

After you open the softwarae， click  button， check the camera view field：

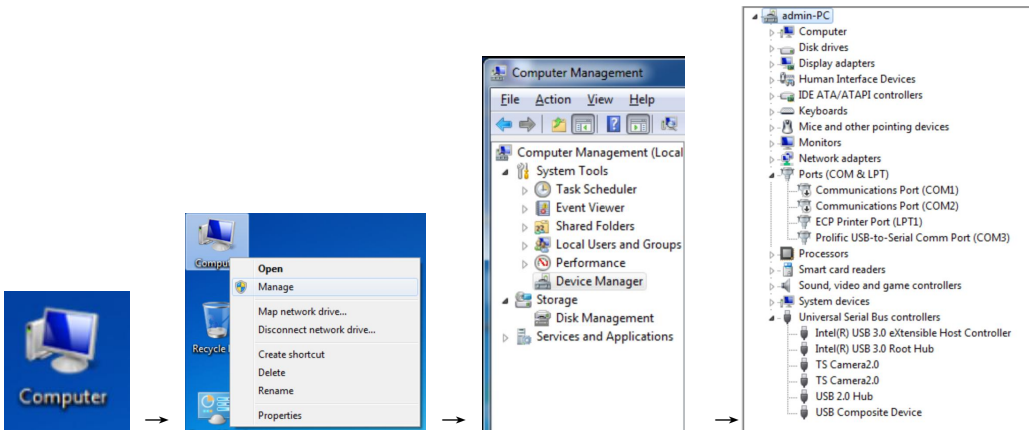




★Checking and Solution：

1) Checking the camera driver.

Check camera driver process: right click mouse button desktop computer icon, click manage to enter; click device Manager on the left, double-click Universal Serial bus Controller; see two TS Camera 2.0" drives means normal. (If there is "unknown equipment" or "unknown device" means sth wrong with one or two of the camera.) The operation diagram is as follows:



2) Check whether the camera USB connection socket is connected to the computer properly; whether the camera power cable is normal.

3) Check whether the USB cable is workable.

4) Remove the camera cover and use a multimeter (DC voltage V gear) to measure the camera LED strobe board voltage. Usually the normal voltage is range from 3.4V to 3.8V.If the voltage is normal, maybe the camera LED strobe board was demaged.You can replace the strobe without do any other caliberation.

If the voltage is abnormal, maybe the camera board is demaged,for this condition,maybe you have to change the camera (please contact the dealer or manufacturer).

Sometimes,your working shop power is not stable,lead to the camera input power is not normal,you have to keep your outer working power is 220V 50Hz,not too high or too low.

4.The pushing car interface is not workable.

★Checking and Solution：

1) Check the whether camera driver exist.

2) No target clamped on the wheel?

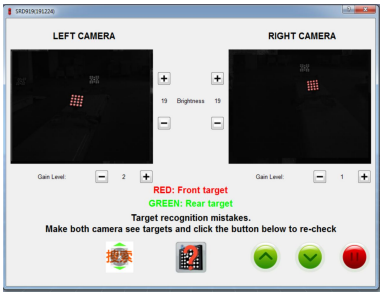
3)camera USB cable connect to the computer USB socket?

4)Check the whether there is some static electricity on the USB end. Extract the USB cable from the computer,waiting for 15 seconds,and touch the USB end with your finger,then plug into the computer's USB connector again.One by one repeat the operation,it could release the static electricity.

5)Check the camera input power.

6)Check whether there is block between the camera and the targets?

5. Front targets could be identified,but the rear targets couldn't be identified.

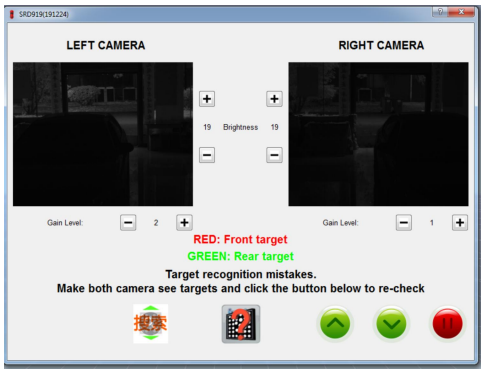


★Checking and Solution：

1) Checking whether the distance between the camera and front wheel is within standard range

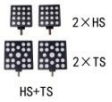
(1.5 m~3 m),the best distance is about 2m.

2) Generally default brightness is "9", gain is "1", you can adjust the brightness and gain properly, it is guaranteed to identify the target, Do not maximize brightness and gain at the same time, which is likely to damage the camera panel)



SINOMAKE 3D WHEEL ALIGNER PART LIST

Model： SRD919/909

No.	Part description	Qty	unit	Remark	Picture
1	Camera beam assy	1	set		
2	software dongle	1	pc	in the target carton	
3	target	1	set	4pcs （2HS+2TS）	
4	camera power supplier(9V)	1	pc	in the target carton	
5	Motor power supplier(12V)	1	pc	in the target carton	
6	mounting pole assy	1	set	lower hanger fixed on the pole of 42cm (from the ground),upper hanger fixed on 94cm	
7	clamp	1	set	4 pcs	
8	turntable	1	set	2pcs+2bridge +2 wheel chock	
9	steering holder	1	pc		
10	brake lock	1	pc		
11	computer	1	pc	fixed on the back of the moving devise	

12	Mouse and keyboard	1	set		
13	monitor	1	pc		
14	Electrical grounding bar	1	pc		
15	screw and nuts	1	set		
16	operation manual	1	set	document in the D disc of the computer	

GUILIN SINOMAKE SCI-TECH DEVELOPMENT CO.,LTD.
No.101,University Park,Guimo Ave.,Qixing District,Guilin,Guangxi,China.541004
Cell/Wechat/Whatsapp/Skype:+86 18978669838
http://www.sinomake.com
http://www.glsrd.com
http://www.4wheelaligner.com
QQ:357746638
Email: tony@sinomake.com or toursafe@163.com