

Wheel Aligner

Operation Manual

(MasterAligner 2009 HD)

Preface

This manual has covered the basic knowledge about installation, adjustment, utilization, maintenance and repair of our wheel aligner, which can help you quickly install and use of our wheel aligner system. Through the study of this manual, you can also obtain some knowledge about the theory of wheel aligning and the positioning operation.

It will make you use the wheel aligner longer and better if you study this manual carefully and strictly observe the operation procedure.

Note: This manual is for those operators who have some degree of mechanical repair ability and computer using, so this manual won't introduce details, such as how to loosen the sensors or how to fix it on to the wheel clamps, how to configure the Microsoft Windows system etc. Don't try to change, move or delete location apparatus or any computer's files and take any uncertain configurations, otherwise it will cause unpredictable results.

If any problem arises, please contact us.

Thank you for purchasing Master Aligner 2009 HD



**Please note: This manual only be used for wheel alignment Version MA
2009 HD**



Safety to use electricity:

- If the equipments have troubleshooting, please do operate after the professional maintain and repair it.
- The supply pressure should be equal with the equipment's rated pressure.
- Keep the equipment dryness and avoid the water.
- Please pull out the power cable when don't use the equipment. It should hold the plug 0to pull out the power cable.
- To guarantee the grounding well.



The life will be dangerous if contact high-pressure!!

Be careful with the electricity. There is high pressure in the trolley (wheel aligner cabinet).

- The usable part in the trolley is keyboard, printer, charger and switch.
- The maintenance of the trolley must be finished by the professionals.
- It must cut the power before maintenance.



Please be careful to protect the eye.

- Please wear the protect glass when work.



The person will be hurt if incorrect cooperation and maintenance.

- The instrument using area don't allow other persons enter casually



Be careful scald:

- Don't contact high temperature exhaust system, engine and radiator
- It must wear glove when working near the high temperature system.



The incorrect use of tools will result in tools destroy or fall off, so that hurt the person.

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Chapter One MA2009 Program Installation

1.1 The install and uninstall of MA 2009 software program

We install the wheel aligner system in the computer already, so please don't modify the computer setting randomly without the professionals instructions, to avoid making the system don't work because of the mistaking operation.

If this is your first time to install the Wheel Alignment Master 2009, please install DXSETUP.exe (DirectX) and dotnetfx.exe (Microsoft .NET Framework 2.0) these two programs, if customer can't install these two programs please contact our company.

Run the wheel alignment master program "XXX-Setup.exe" or "XXX Setup.msi" files, click next to finish the set-up, the implied path is C:\Program Files\MasterAligner 2009 HD. After the install there is a quick start button, and the program has been set auto-start, so the program will run while the pc started.



Note: Normally, the wheel aligner system in the computer already installed, so please don't modify the computer setting randomly without the professionals instructions, to avoid making the system don't work because of the mistaking operation. Besides that, don't uninstall the wheel aligner system randomly, or we do not have any responsibility for it.

Chapter Two MA2009 HD Program

Introduction

2.1 Screen Structure

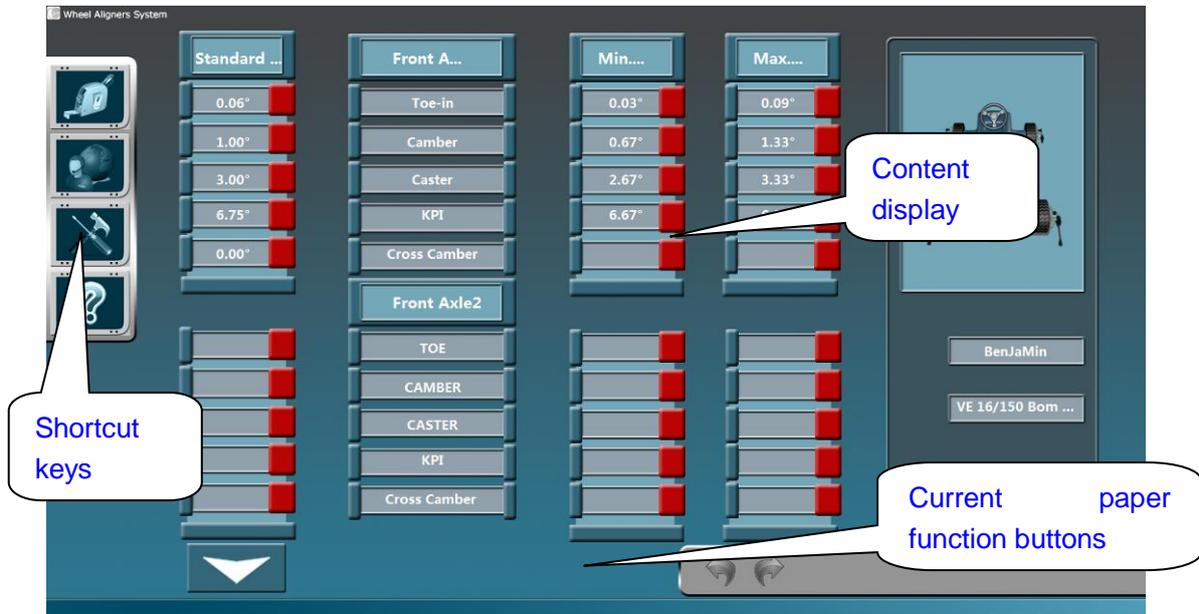


Figure 2-1 Screen Structure

In figure 2-1: The “shortcut keys” listed on the left could control the whole program’s operation procedure, that means the user could press the “shortcut keys” to do the corresponding operation directly. The “current paper function buttons” only could control the corresponding operation that relevant with the current screen.

2.2 Wheel Aligner Operation Procedure Introduction

For finding out and correct the vehicle’s problems before precise wheel aligner measurement, it is quite necessary for the technicians to do the following procedure:

1. Get information from the vehicle owner— ask what happened to the vehicle Before: such as run to one side, shake abrasion. If the vehicle impacted before?
2. Drive the vehicle to verify the vehicle owner’s description. Solve the problems according to the actual situation.
3. Drive the vehicle on the check station, check tyre, chassis suspension (tie rod end, Lower arm ball, balance arm gum cover, steering gear box absorber etc)
4. Check the suspension and steering system thoroughly —many aligning problems due to these parts abrasion or destroy. So it needs to replace these defective parts before wheel aligner adjustment. Check the tyre pressure and loading height.

5. Vehicle parking position—vehicle center coincide with lift center (plate center), front wheel coincide with turntable center.
6. Install wheel clamps and sensor heads. Please see the below photos for Installation reference.
7. Make whole check as the program operation procedure.
8. After wheel aligner system data display, adjust the beyond values according to the standard data. Adjustment sequence as follows:
 - 1) Rear wheel Camber
 - 2) Rear wheel Toe-in
 - 3) Front wheel Caster
 - 4) Front wheel Camber
 - 5) Front wheel Toe-in
9. After whole adjustment, it could make Caster measurement again to verify the adjustment results.
10. Print out customer vehicle's measurement results— printed documents display the results before adjustment and after adjustment. Please save these documents for the future reference.
11. After whole adjustment, it must drive the vehicle to verify the aligning results.
12. Preparation before wheel alignment:

Before aligning, install wheel clamps and sensor heads on the wheels. Pay more attention on sensor heads position, or it will affect the measurement results inaccurate.

Preparation jobs as follows:

- Adjust turntable and tail skid, adjust the lift width according to the Wheelbase and tread.
- Drive the vehicle on the turntable and Slider; make sure the wheel in the middle of turntable and tail skid.
- Pull the hand brake, make the vehicle can't move.
- Unlock the safety pin of turntable and tail skid; make the vehicle under the free station.
- Eye checking, check the wheel and tyre size, tread depth and tyre pressure.
- Check turning device and axle spacing, spring device and shock absorber station.
- Install clamps and sensor heads.
- If necessary, put the weight in the front and rear seats, and boot according to the measurement conditions from manufacturer.
- Release the brake, press down the vehicle body front part and rear part strongly; make sure the absorber spring device revert to middle position.
- Install brake locker, lock the brake pedal.

Chapter Three MA2009 Program Operation

3.1 Program start and shutdown

Program start: Connect power, turn on computer, when the micro screen appears, the MA2009 Wheel Aligner program will start automatically if it installed in the computer already. If the program doesn't start automatically, you could double click the "MA 2009 Wheel Alignment" icon to run the program, or start it from the "start menu" of the computer.

When "Home Screen" appears, which means it could begin to do system setting or vehicle measurement. In figure 3-1.



Figure 3-1 Home Screen

Shortcut keys Introduction:



Align Check: Click this button enter the databank selection and vehicle data searching screen. And then begin the aligning check.



Client Information: Click this button will display the client's information that made alignment before.



System Maintenance: Click this button to do relevant system setting and maintenance.



System Help: Click this button will display the wheel aligner operation manual.



Exit System: Click this button to exit the system.

3.2 Align Check

When click the “Align Check” button, the aligning system begin to check the communication situation between the sensor heads and computer. When the sensor heads communicate with computer, the system will enter the “choose vehicle” screen as figure 3-3. If the sensor heads don’t communicate with computer, the system will appear warning screen as figure 3-2 “Sensor Can Not Be Detected, Would You Like To Enter DEMO Version?”. The system will enter next “choose vehicle” screen if you click “√”; The system will back to home screen if you click “x”.

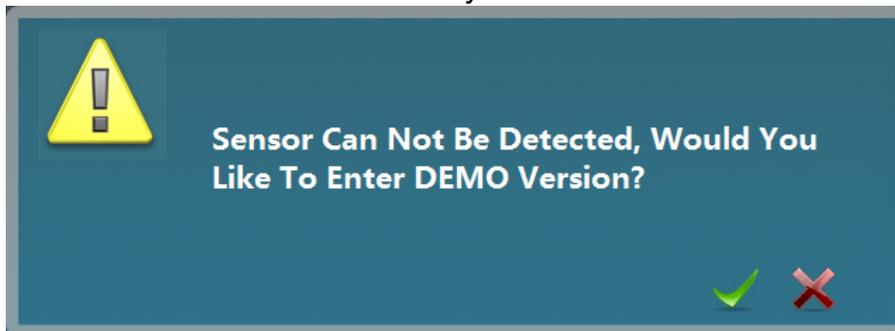


Figure 3-2 Warning Screen

3.2.1 Choose Chassis Type

Because the oversize vehicles have various chassis, it needs to choose the chassis type before aligning. As following figures 3-3:

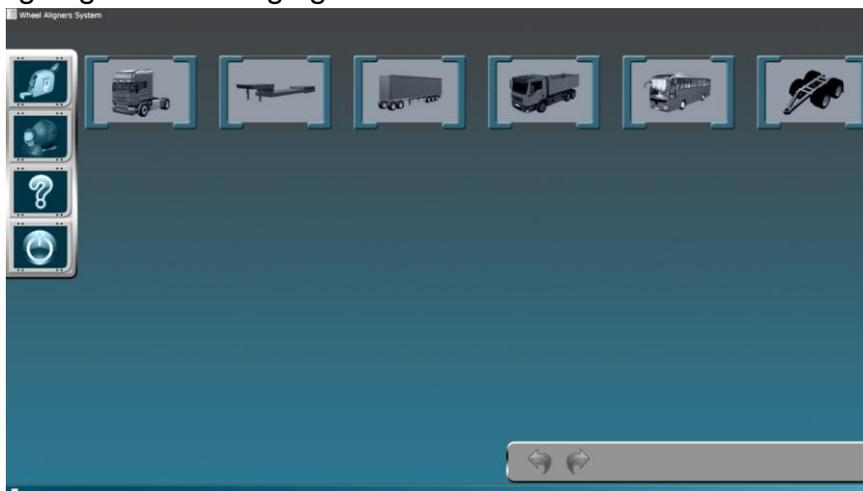


Figure 3-3 Choose Vehicle Chassis Model

Chassis types include:



Tractor



Trailer



Full trailer



Pickup truck



Bus



Trolley

Tractor: please see the chassis type of tractor below figure 3-4

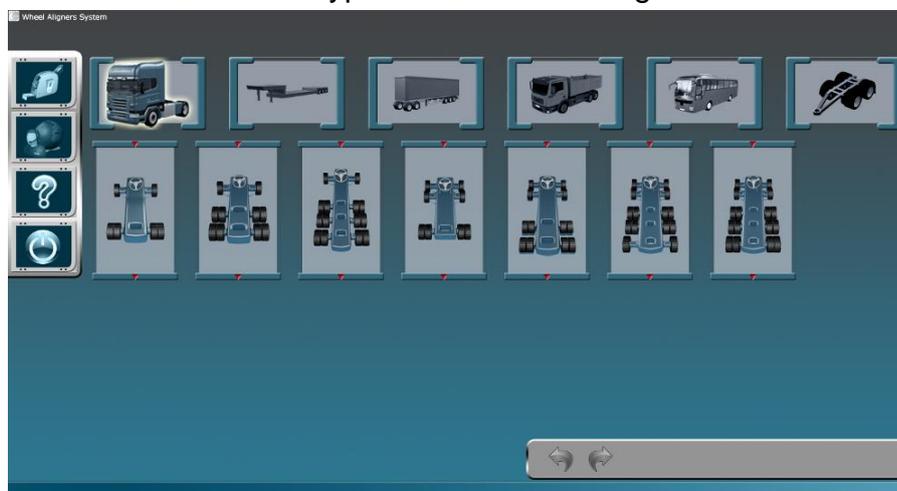


Figure 3-4 Choose Tractor Chassis

Trailer: please see the chassis type of trailer below figure 3-5



Figure 3-5 Choose Trailer Chassis

Full trailer: please see the chassis type of full trailer below figure 3-6



Figure 3-6 Choose Full Trailer Chassis

Pickup truck: please see the chassis type of pickup truck below figure 3-7

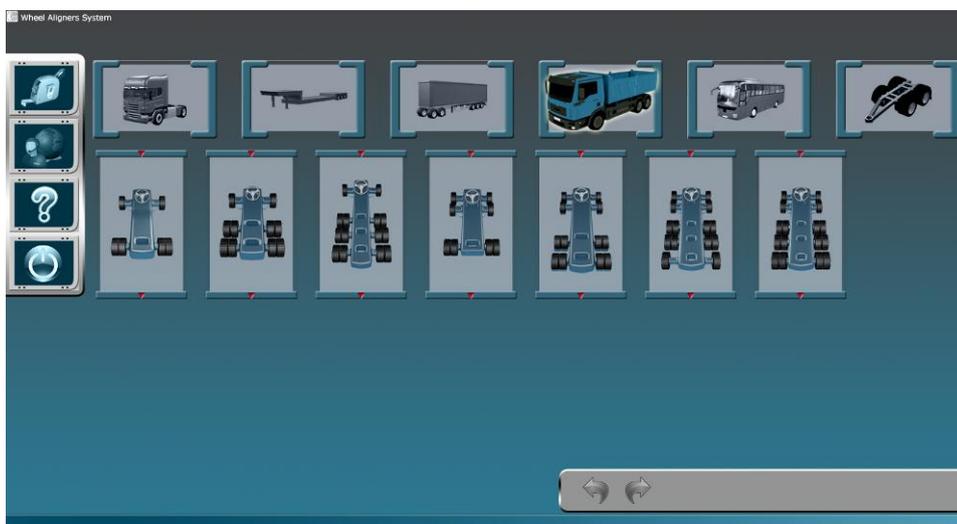


Figure 3-7 Choose Pickup Truck Chassis

Bus: please see the chassis type of bus below figure 3-8

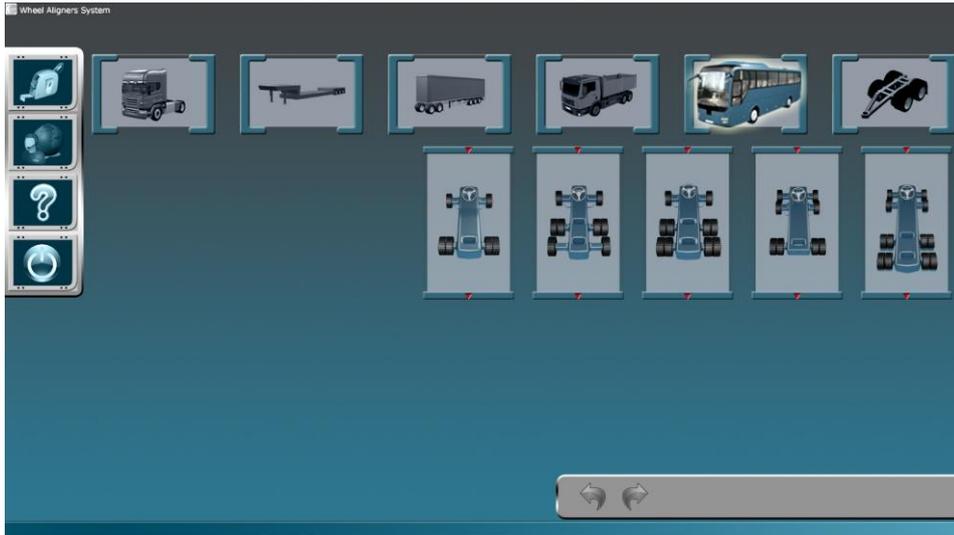


Figure 3-8 Choose Bus Chassis

Trolley: please see the chassis type of trolley below figure 3-9



Figure 3-9 Choose Trolley Chassis

When do wheel alignment for tractor, pickup truck and bus, it need to choose sensor head's original aligning position, and then program enter vehicle data screen; but it doesn't need to choose sensor head's original aligning position for trailer and trolley.

Choose vehicle data

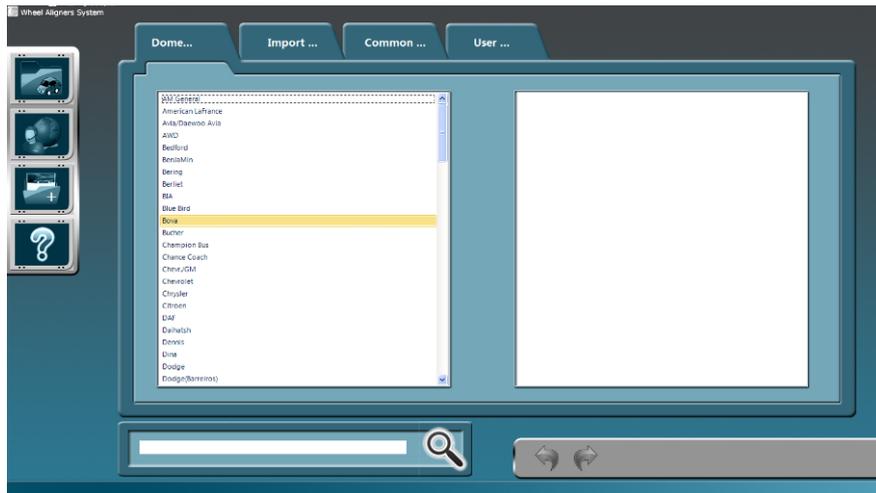


Figure 3-10 Choose Vehicles (first list)

First, choose the vehicle brand on the first list as figure 3-10 above

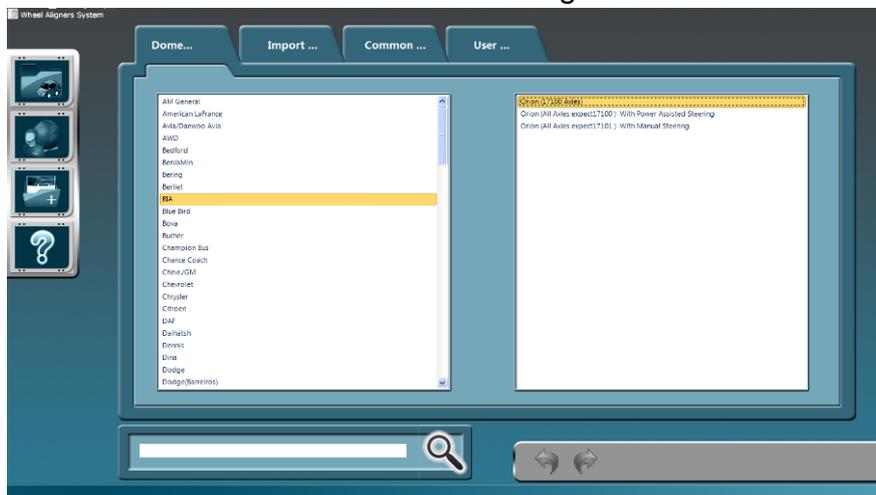


Figure 3-11 Choose Vehicles (second list)

Then, choose the vehicle model from the second list as figure 3-11, double click the selected model or select the model and click next button to enter the vehicle data screen as figure 3-12.

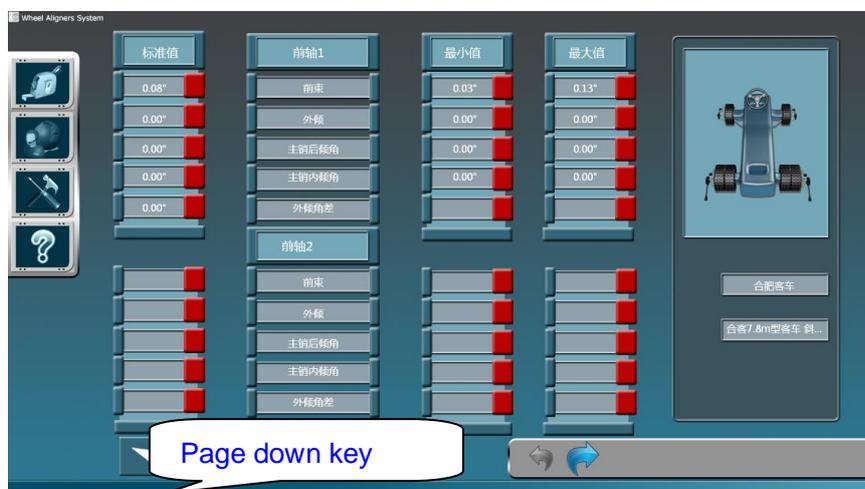


Figure 3-12 Vehicle Data Screen

Click “page down key” to see rear axles data as figure 3-13

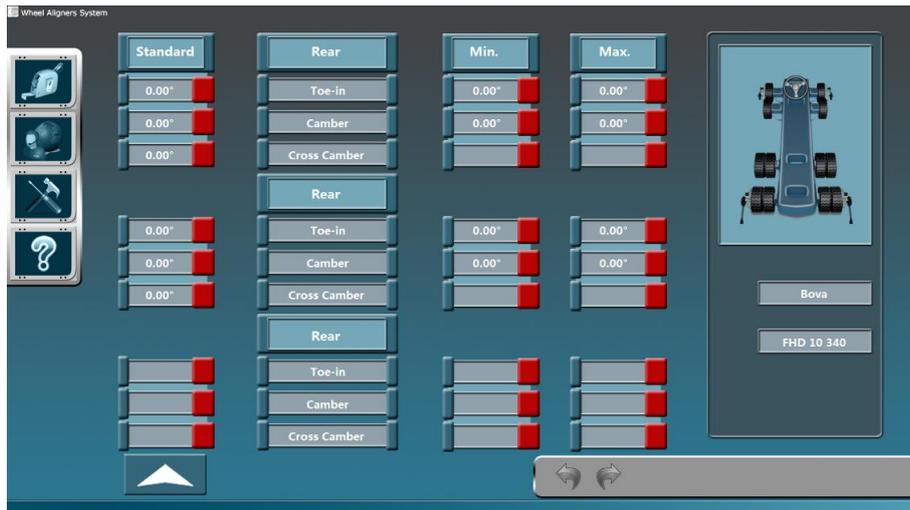


Figure 3-13 Rear Axle Data Screen

3. 2 .2 Full in client information

User could find out vehicle information that tested before in the “client information store” screen. It must input the tested vehicle *license plate number* when input new client information. Press *forward* key enter *run out compensation* screen after client information input. The user also could don’t do any operations on run out compensation screen, press “shortcut keys “on the left list to do other operations directly. At this time, the system doesn’t save measurement results.

If you want to add new client information, fill in the clients’ information and click the Next/forward button to save automatically.

If you want to check the client information (figure 3-14) stored in the system, click the client name in the **client list** on the left, the **detailed information** will display on the right. At this time, the user also could modify client information and click next/forward button to save automatically.

If you want to find out test data made before, click the **Test Time** drop list to choose the time, then click next/forward button will display the test data. Click print button on the upright corner to print the report.

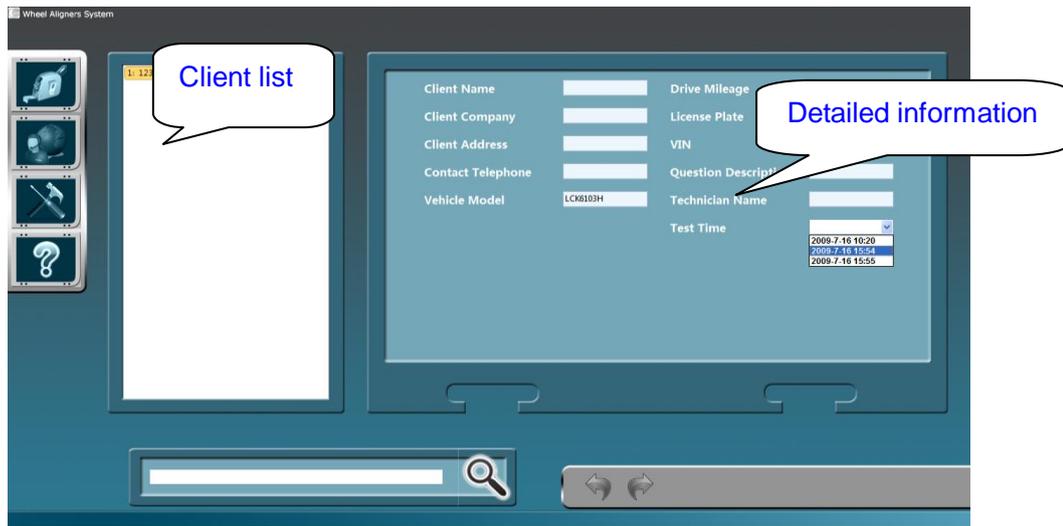


Figure 3-14 Client Information

Standard Data	FrontAxle1	Before Adjustment		After Adjustment	
		Left	Right	Left	Right
0.10° 0.00° 0.20°	Single Toe-in	0.00°	0.00°	0.00°	0.00°
1.09° 0.75° 1.43°	Camber	0.00°	0.00°	0.00°	0.00°
2.50° 2.17° 2.83°	Caster	0.00°	0.00°	0.00°	0.00°
4.09° 3.68° 4.50°	KPI	0.00°	0.00°	0.00°	0.00°
0.00° 0.00° 0.00°	Total Toe-in	0.00°		0.00°	
0.00°	Cross Camb...	0.00°		0.00°	
0.00°	Cross Caster	0.00°		0.00°	

Figure 3-15 Detail Alignment Information

3.2.3 Align Adjustment

Before adjustment, it need to lock the front turntables and rear slide slip table on the both sides of lift, drive the vehicle on the lift, make sure the front wheel stop on the turntable center position, rear wheel on the slide slip. Lift the vehicle up to measurement height, hang on clamps and sensor heads, lock the fixed knob tightly on the clamps, release the level fixed knob on the sensor heads to let sensor heads under free level station, then prepare to do regular test as figure 3-16.

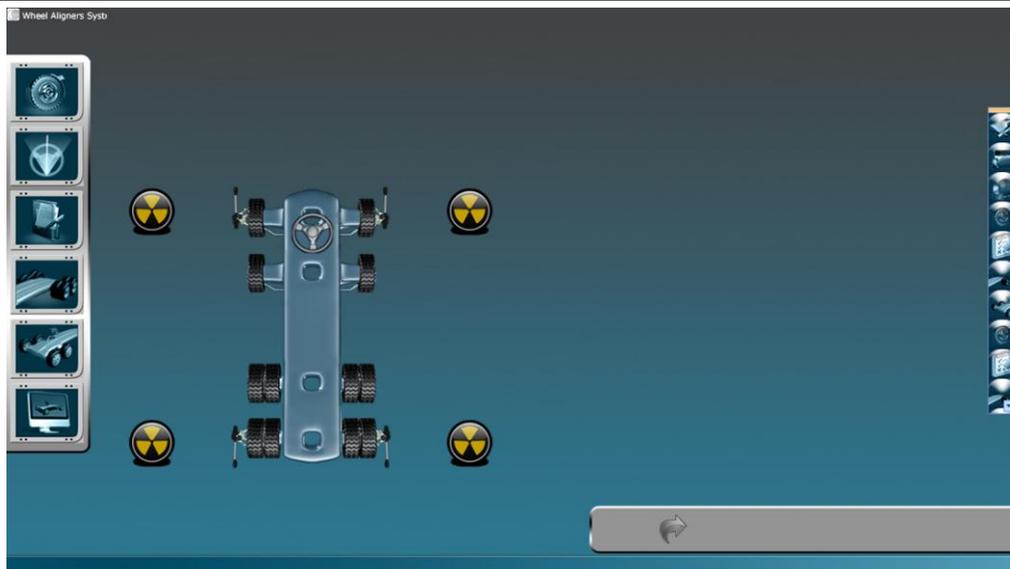


Figure 3-16 Regular Tests



Compensation: Compensate the wheels that hang on sensor heads.



Caster Measurement: Enter Caster measurement functions.



Adjustment Report: Enter adjustment report screen to look over adjustment data.



Present Front Axle Adjustment: Present front axle sensor head adjustment.



Present Rear Axle Adjustment: Present rear axle sensor heads adjustment.



Return: Return to original screen

3.2.3.1 Wheel Compensation (run out)

(ROC Run out Compensation): Due to rim deformation, incorrect clamps installation and other wrong operation reasons, the sensor heads on the wheels will not on the same plane with the wheels. So the Camber and Toe-in measurement will have big errors if doesn't do Wheel Run out Compensation. Thus, Run out Compensation is the important step to guarantee the accurate measurement results before wheel alignment. It takes use of Run out Compensation program to measure the Camber variation during wheel 360 degree turning and calculate the measurement system installation plane to

know the installation error, and then make corresponding run out compensation.

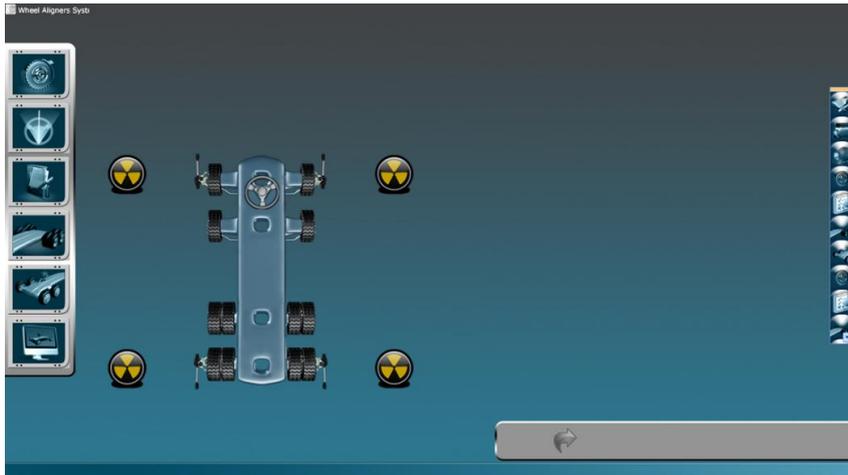


Figure 3-16 Regular Tests

Click this icon  on the side of wheel, run out this wheel, the indication animation (as figure 3-17) appears on the right side, rotate the wheel as the animation indicate direction and position, stop it when rotate to the corresponding position.

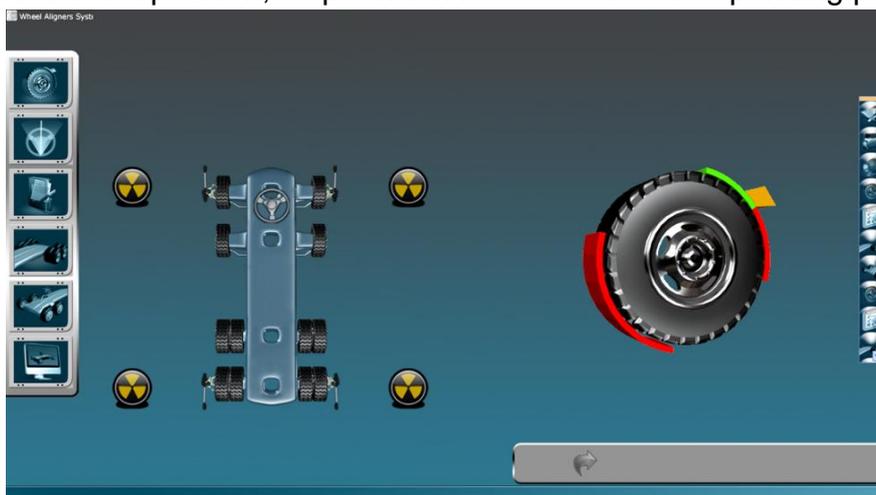


Figure 3-17 Run out Animation

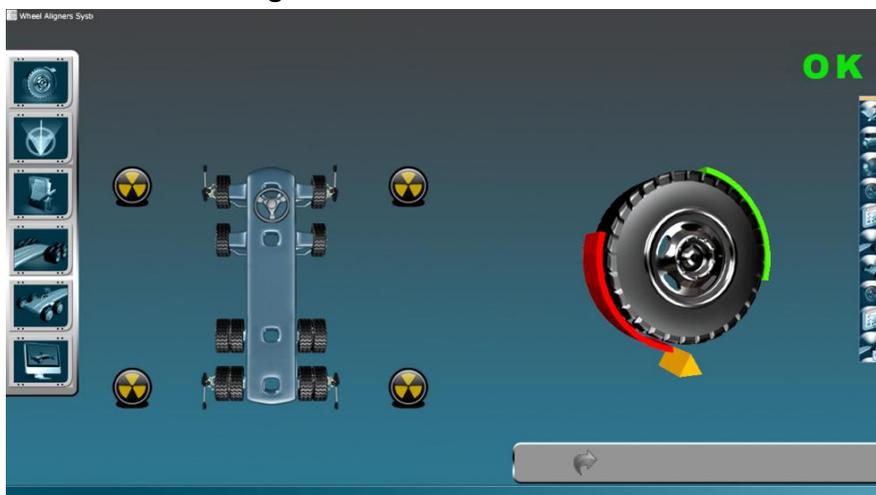


Figure 3-18 Run out Indication "OK"

Click "OK" (as figure 3-18), wait the sensor heads acquire the data and then continue as figure 3-19.



Figure 3-19 Run out Indication "Waiting"

The icon will change like this  after finish the runout, it means this wheel's Run out compensation finished.

Run out Compensation is not the necessary process, it need to do when wheel rim deformation. So click forward button enter Caster measurement screen if it doesn't need to do run out compensation or run out compensation finished.

Note: The wheel must do run out compensation if the wheel or clamps dismount, except use special clamps for the specific vehicle. For the quick clamps(3-point clamps), it also need to do run out compensation.

When do run out compensation, it could use jack or other ways to lift the vehicle, release the braking, let the wheel rotate freely. Make the wheel run out compensation in sequence, each time do one wheel run out compensation, the sequence could be changed. After wheel run out compensation finished, the clamps must keep on the vertical position, don't rotate or touch the clamps to make it deviate position.

Wheel run out compensation is a very important step for accurate wheel alignment.

3.2.3.2 Caster Measurement

After run out compensation, click forward button enter Caster measurement screen. At this time, it need to pull up hand brake, use pedal locker to fix the foot brake, unlock the fixed pin of rear slide slid table and turntable. Shake Front Bumper and Rear Bumper 3 times; make the suspension system under release status. At this time, sensor heads begin to do self-check and wheel alignment system initialization, after the screen appears *center the steering wheel* indication and system enter center steering wheel

screen. There is a steering wheel in the screen, it indicates operator to turn the steering wheel left or right according to steering angles. 4 green spirit bubbles represent 4 sensor heads level status, all green means 4 sensor heads all under level status.

Center Steering Wheel Operation: according to the system icon display, the steering wheel almost centered when the icon in the middle. When the system checks the sensor heads are not level, the icon will become red color, so it needs to do level adjustment.

When steering wheel centered, globular mark will be in the center position.

When the steering wheel centered and sensor heads are level, it will appear "Waiting" in the middle of steering wheel on the screen. The system make self-check for steering wheel and sensor heads, and then enter Caster measurement after self-check.

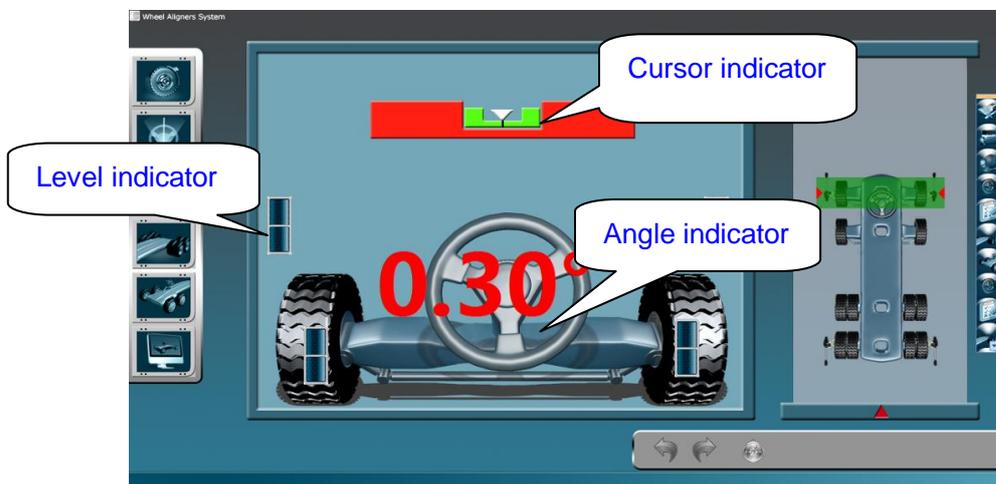


Figure 3-20 Caster Measure Screen

When steering wheel centered and sensor heads in level status, system begins to measure automatically. In figure 3-20: **The detailed operation way:** when system enter "degree" measurement screen, it indicates turn the steering wheel left, the system steering wheel will has arrow indication with steering wheel turning, and also will has turning angle indication(as figure 3-21). When steering wheel turn to the corresponding position, the screen appears "Waiting", wait seconds, the system indicate turn the steering wheel right, when steering wheel turn to the corresponding position, the screen appears "Waiting" again, wait seconds, system indicate to center the steering wheel (turn the steering wheel in the middle position), when appears "Waiting" again, System shows prompt, then click yes enter adjustment report screen.

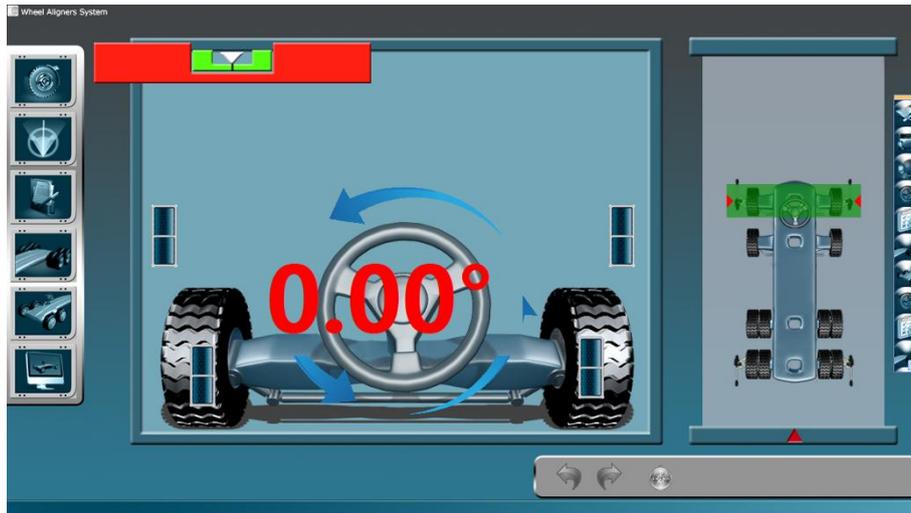


Figure 3-21 Steering Turning Screen

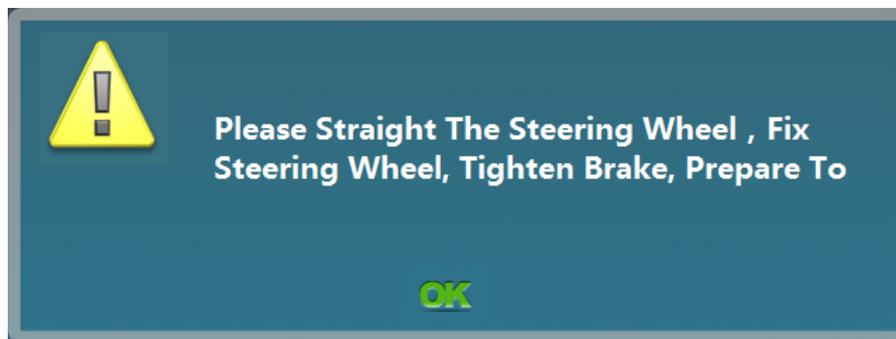


Figure 3-22 Prepare Prompt

Note: when turn the steering wheel; operator must turn it slowly by constant speed, make sure the steering wheel turning speed is the same as turning angles of system Indication. Operator doesn't obstruct Toe-in LED of sensor heads during measurement.

3.2.3.3 Adjustment Report

Vehicle adjustment screen (figure 3-23) divided as left, middle and right 3 parts to display. Left part display "standard data", middle part display "before adjustment data", and right part display "data after adjustment". In the right side vehicle picture, green parts on the axles are the axles displayed on the current paper, it could click corresponding axles to read their axle data, or also could use page up/down button(on the bottom of screen) to read. Gray means the axles been adjusted already; during measurement, Red means the measurement data beyond the standard data scope so that need to adjust, and Green means the measurement data within the scope so that doesn't need to adjust.



Figure 3-23 Vehicle Adjustment Screen

Caster Adjustment

Display left and right Caster. User could adjust Caster according to dynamic data display on the screen. Before Rear Wheel Adjustment, please lock the steering wheel by steering wheel locker, and it must make the steering wheel straight and center before locked. This action could reduce the measurement error.

On the Caster adjustment screen(as figure 3-25), the red color part means the data beyond the standard data scope so that need to adjust. When data display become green color means data correct. Adjustment screen display the measurement values and adjustment information as the form of scale and numbers(as figure 3-24). There are minimum value and maximum value on each scale. The dynamic value displayed in the box is the measured values. Red color means beyond the vehicle manufacturer specialized range and need to adjust, green color means within the specialized range.

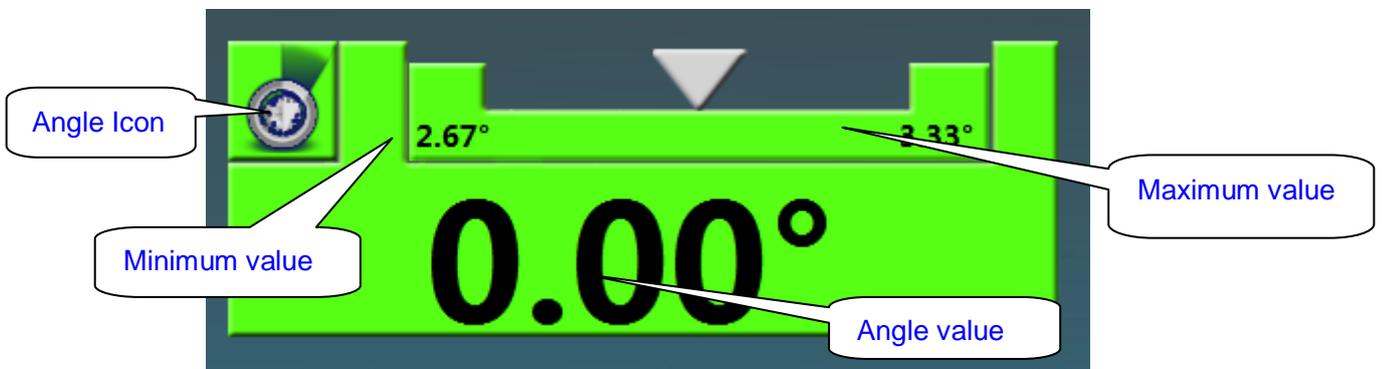


Figure 3-24 Angle Display Control

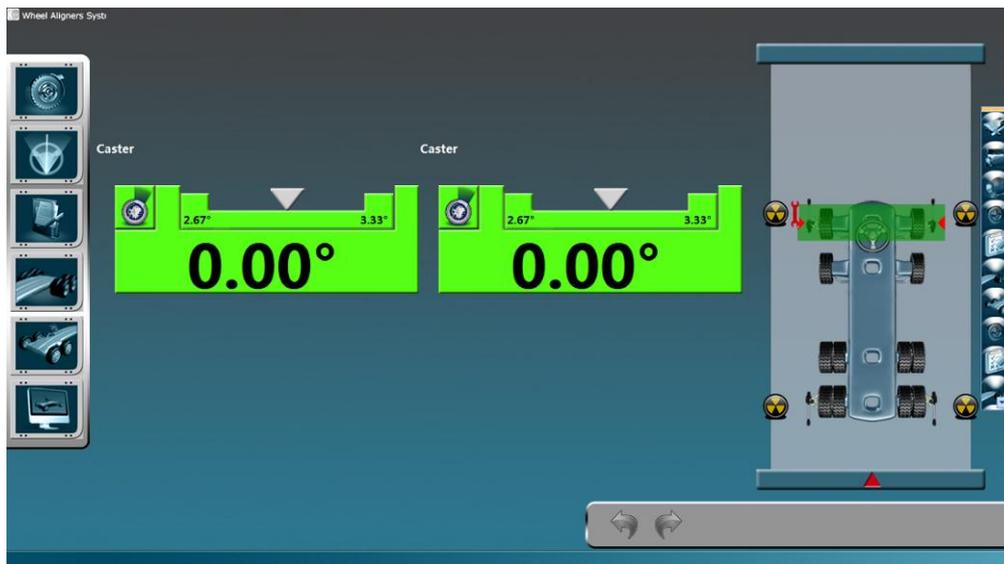


Figure 3-25 Caster Adjustment Screen

Adjustment

After Caster adjustment, press forward button enter rear adjustment screen as figure 3-26. Rear adjustment angles: Camber, Toe-in, Thrust angle.

Screen operation buttons introduction:



Toe-in unit transition—millimeter and degree



Switch from full tolerance and half tolerance.

Note: Full tolerance and half tolerance means values adjustment scope, such as, the original standard value is 0.2, tolerance is 0.4, so its adjustment scope is -0.2—0.6, it means full tolerance; If user choose half tolerance, the tolerance is 0.2, and its adjustment scope is 0—0.4.



Figure 3-26 Present Rear Axle Adjustment Screen

Single click any angle value could enlarge it as full screen as figure 3-27.

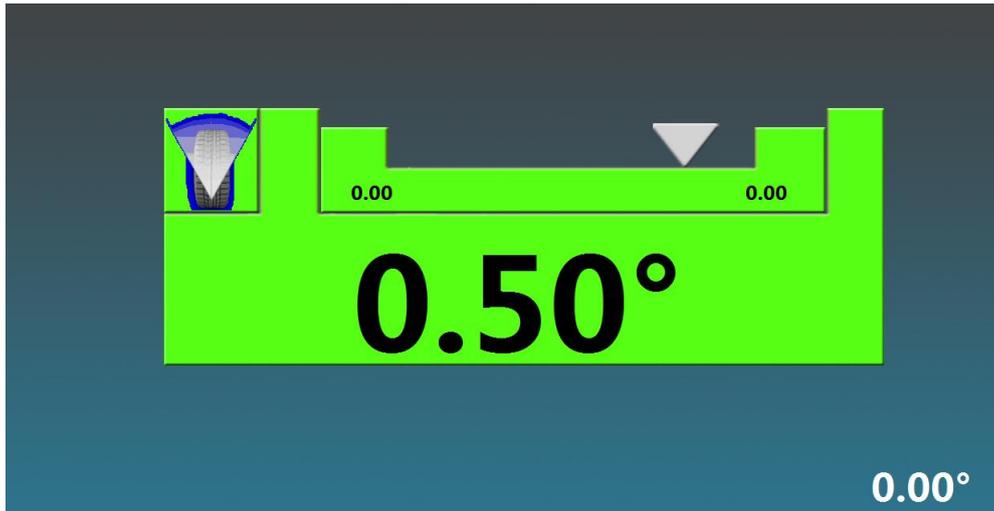


Figure 3-27 Enlarge the Value

Single click any position of enlarged window could back to measurement screen.

3.2.3.4 Front axle adjustment

Enter adjustment report after rear axle adjustment, and then enter front axle adjustment screen(as figure 3-28). Adjust front wheels angles: Camber, Toe-in adjustment screen of front wheel is similar with rear wheel adjustment screen. Camber displays on the top of screen, Total Toe and single Toe displays on the bottom.

When make front wheel adjustment, it need to use steering lock to adjust the steering wheel on the forward status and lock the steering wheel, all the sensor heads must be in level status and locked tightly.

If the previous measurements prove the Caster beyond the vehicle manufacturer's specified values, we need to adjust Caster first.

If the operator adjusts the Caster again after finish Caster measurement, please enter Caster measurement screen to measure Caster again, or it will result in wrong measurement results.



Figure 3-28 Present Front Axle Adjustment Screen

Operation buttons introduction:



Super-low chassis measurement: when sensor heads obstruct by vehicle front surrounding, use this function to make sensor heads downward certain angles to avoid the surrounding parts, finish the measurement.

After front axle adjustment finished, click forward key will appear Steering Wheel position indication as figure 3-29.

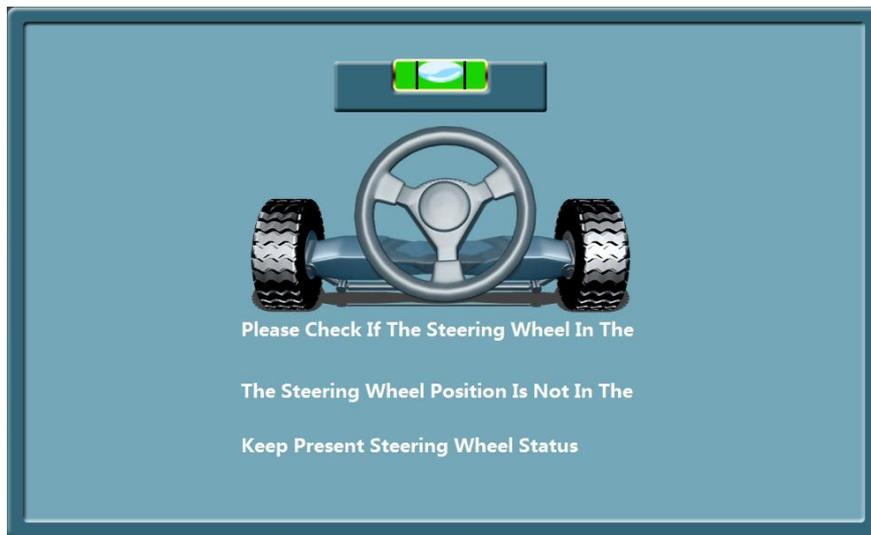


Figure 3-29 Steering Wheel Indication

If the steering wheel is not center/straight, you could choose first item to re-adjust; if dismount the steering wheel to adjust its position manually, choose second item.

After all the axles (sensor heads hang on the axles) adjustment finished, system popup “move the sensor heads” indication, so move the sensor heads according to indication as figure 3-30

After sensor heads moving finished, single click any parts to enter run out compensation function again.

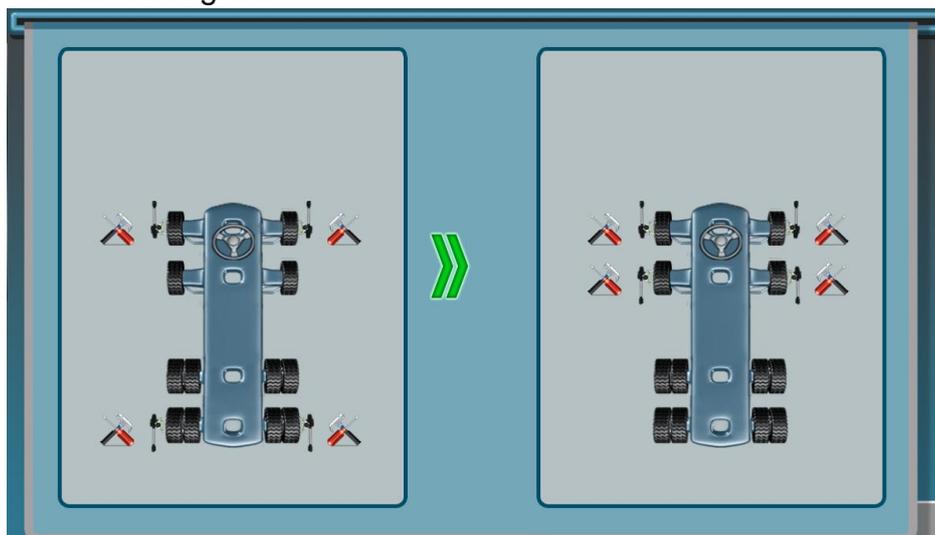


Figure 3-30

3.2.3.5 Double steering adjustment

Common drives of truck includes: 4x2、6x2、6x4、6x6、8x4 etc, the number before "x" means wheels total numbers, the number after "x" means drive axles numbers. Dual-wheel look as one wheel, one axle look as two wheels. Totally divide 2 will calculate the axle and drive axle numbers, such as 8x4, after calculation (divide 2), you will know the vehicle has 4 axles, 2 drive axles.

When the trucks drive on the highway, tire burst probability of guide pulley is higher than rear tires. Double front axles design could control the vehicle if the tire burst suddenly, and the driver has enough time to deal with the emergency, so that improve the vehicle's safety performance. Additionally, the self-weight of double front axles is less than double rear axles, so it also reduces the fuel consumption and price.

But double front steering axles, single rear drive axle design of tractor make the single rear drive axle afford bigger loading, so the rear tires abrade seriously, and middle axle also will have tire abrasion phenomena.

Thus, the aligning for double steering wheels is more important.

The following figure 3-31 is double steering second axle Camber adjustment screen:

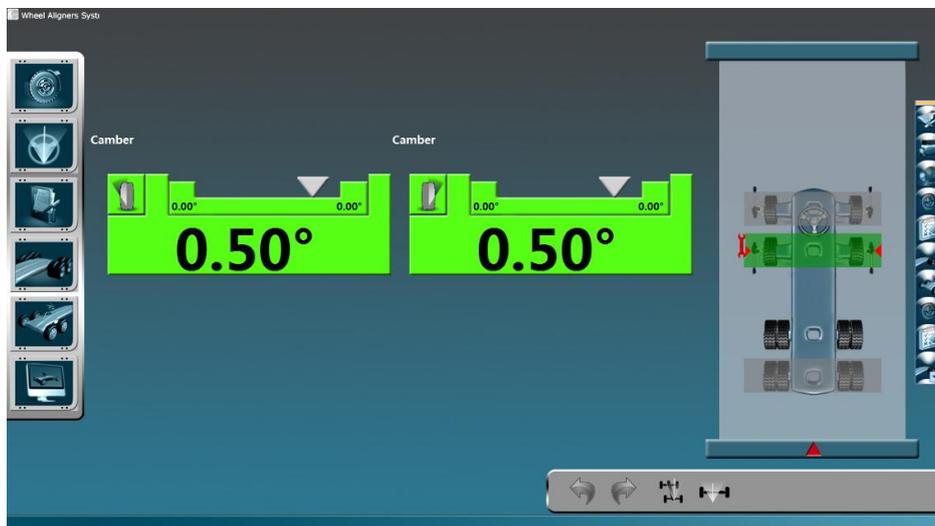


Figure 3-31 Double Steering Second Axle Camber Adjustment

The importance of second front axle is: make two front axles parallel under condition of Toe correct. Front axle adjustment functions see following figure 3-32 as reference, the upper parts is front first axle Toe, below is front second axle Toe, look at first axle Toe for reference when adjust second axle, when left and right single Toe almost same, front two axles parallel. After adjustment, move the sensor heads to do the same adjust procedure.



Figure 3-32 Double Steering Adjustment

After all axles adjustment finished, enter “after adjustment report” screen as figure 3-33.



Report print: print the “after adjustment report”



Add client information: if you doesn't fill in client's information, the measurement results will default as not saved; if you need to save the measurement results, please use this function to supplement client information, if you have filled in client information before measurement, you could use this function to modify client information.



Figure 3-33 After Adjustment Report

Click forward popup the following indication as figure 3-34, click “√” back to Main screen.

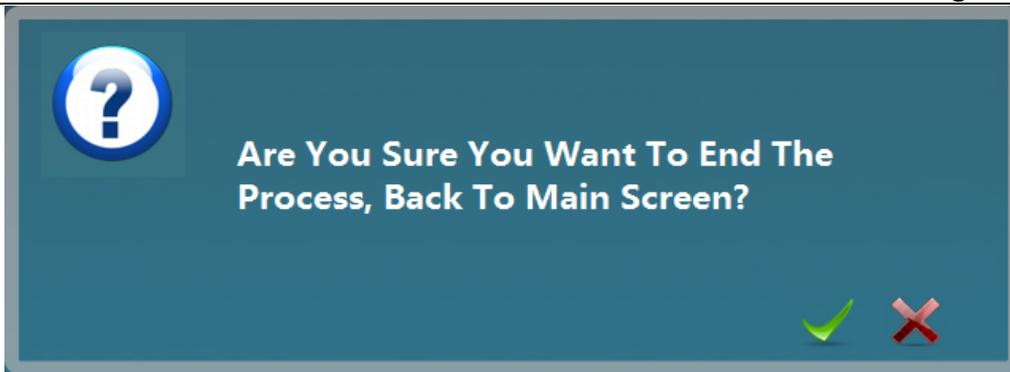


Figure 3-34 Back Indication

3.2.3.6 Trailer Measurement

After chassis model selection and client information fill in, enter trailer aligning function. Trailer aligning benchmarking stand function as following figure 3-35: Red Cross indicate benchmarking stand position, after benchmarking stand installed successfully, rotate the benchmarking stand according to Cross indication position till right-up corner appears "OK", at this time, benchmarking stand perpendicular to vehicle body center. Then click to enter run out compensation screen.

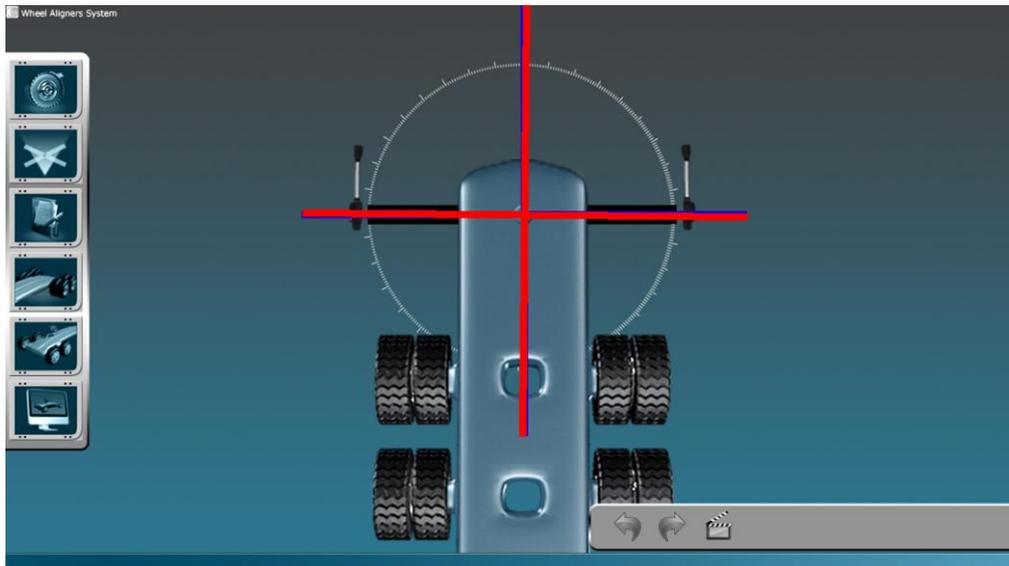


Figure 3-35 Benchmarking Stand Position

Trailer run out compensation operation is the same as tractor(as figure 3-36), enter adjustment report screen after run out compensation.



Figure 3-36 Trailer Run out Compensation

Adjustment report

There are not standard data for trailer, on the left of adjustment report is “before adjustment data”, on the right of adjustment report is “after adjustment data”, if the axle isn’t adjusted, the data is ZERO. Click print button to print this report, and click forward to enter adjustment screen after look at adjustment data.



Figure 3-37 Trailer Adjustment Report

Trailer adjustment screen

Trailer adjustment screen (as figure 3-38) functions are the same as Pickup truck adjustment screen, display the angles include Camber, Toe and Thrust angle. After axle adjustment finished, click forward to enter sensor heads moving indication screen, moving the sensor heads on the corresponding axles according to screen indication(as figure 3-39), click any place to enter next axle adjustment.



Figure 3-38 Trailer Adjustment Screen

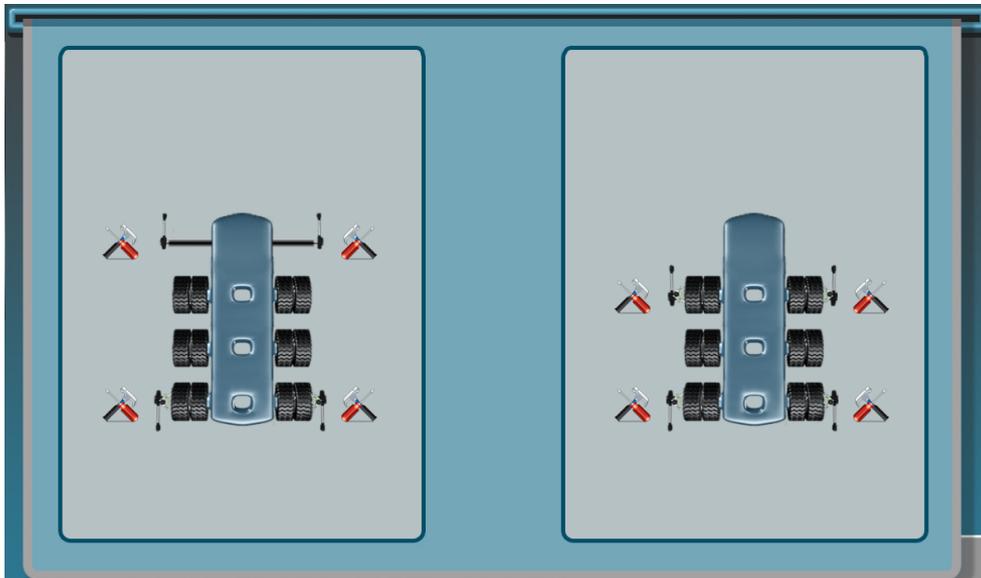


Figure 3-39 Sensor Move Screen



Figure 3-40 Trailer Adjustment Screen

After all the axles adjustment finished, click forward popup the following indication(as figure 3-41),click “√” back to home screen.

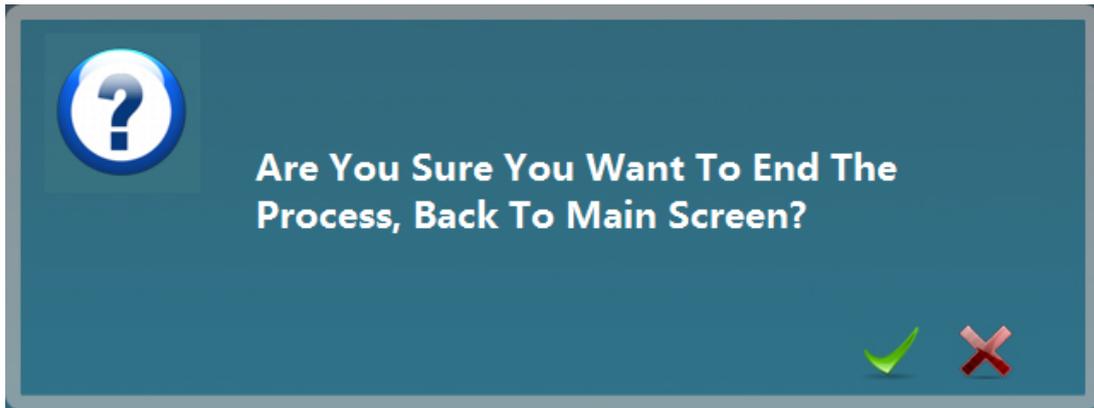


Figure 3-41 Back Prompt

3.3 System Maintenance

On the home screen, press the third shortcut key “System Maintenance” button, input password “**12345678**” enter system maintenance screen as the figure 3-42.

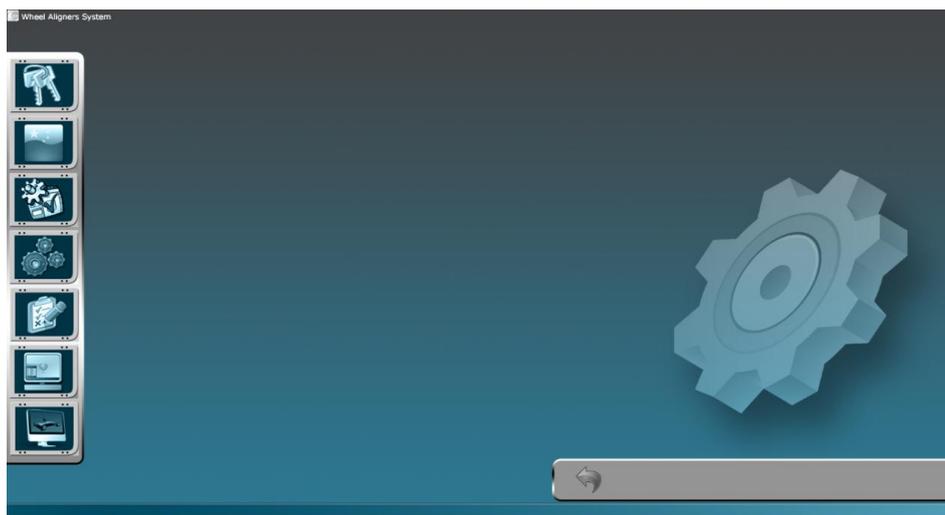


Figure 3-42 Maintenance Screen

In the figure 3-41 system maintenance screen include: Password Modification, Language Modification, System Setting, Sensor Heads Diagnose Data Maintenance and Sensor Heads Calibration.

The detailed functions will be introduced below:

Shortcut keys Introduction:



Password Modification



Language Selection

-  **System Setting**
-  **Sensor Heads Diagnose**
-  **Data Maintenance**
-  **Sensor Heads Calibration**
-  **Return**

**Note: Only the professional technician could do the setting.
 Only the correct setting could guarantee the accurate measurement results.
 Please read the below content seriously before setting.**

3.3.1 Password Modification

Click shortcut key "password modification" on System Maintenance screen, input the original password first, and then input new password, and then input new password again to confirm, click "√" to save modification. As below figure 3-43:

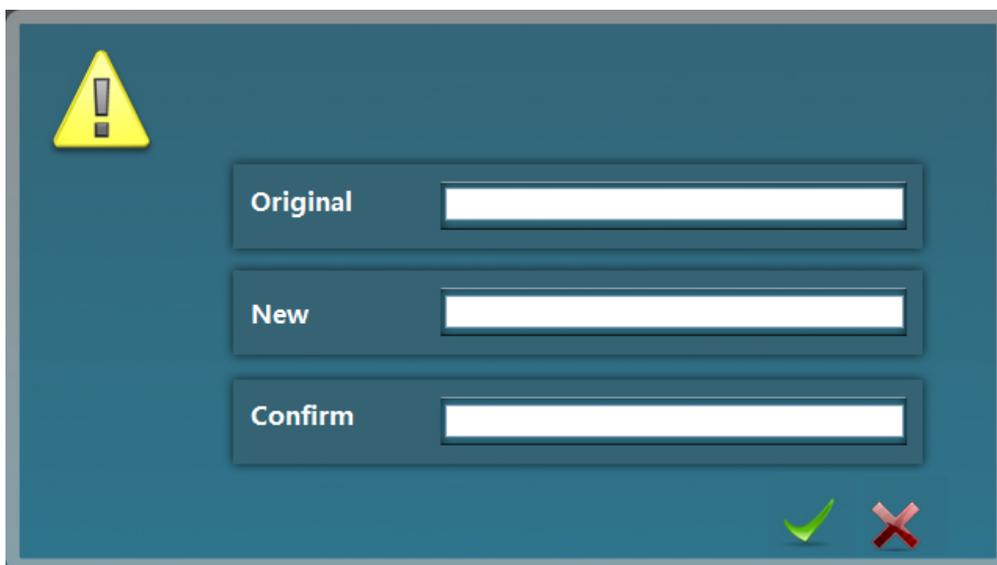


Figure 3-43 Password Modification

3.3.2 Language Selection

Click shortcut key "language selection" on System Maintenance screen to choose the

language.

User only need to click the flag to choose the corresponding language, the system will save it automatically, click “back” key to do the operation by selected language. As figure 3-44



Figure 3-44 Language Selection

3.3.3 System Setting

Click shortcut key”system setting” on System Maintenance screen to set the system. Click the setting item and click “save” is ok. As figure 3-45.

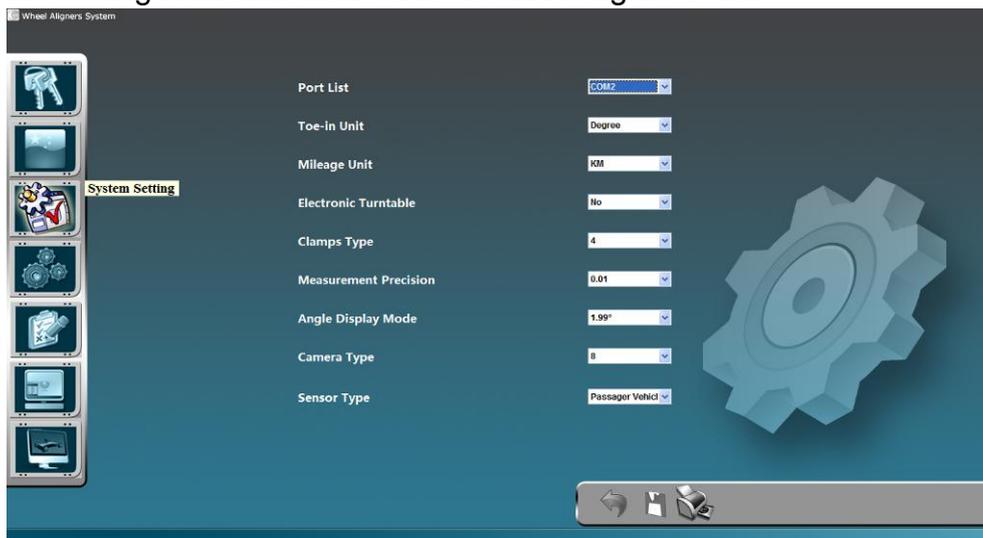


Figure 3-45 System Setting

The setting items introduction:

- Port list☐☐ : display all the ports of this computer, COM1\COM2\COM3... ..
- Toe-in unit: Degree、MM
- Driving mileage unit: KM、Mile
- Electronic turntable: Yes、No
- Clamps model: general clamps(4 point)、quick clamps(3 point)
- Measurement precision: 0.01、0.02、0.05、0.1
- Angle display format: 1.99°、1°99'
- Box model: 8 degree、20 degree
- Sensor Heads model: Passenger Vehicle 、 Commercial Vehicle

Note: on system setting screen, user choose the corresponding item, then press “save” button to save. Such as: when user wants to set Port, it only needs to click Port List to choose the port.

Operation buttons introduction:



Save Setting: Save the current setting after setting finished,click will popup the following indication, click “√” to save as figure 3-46.

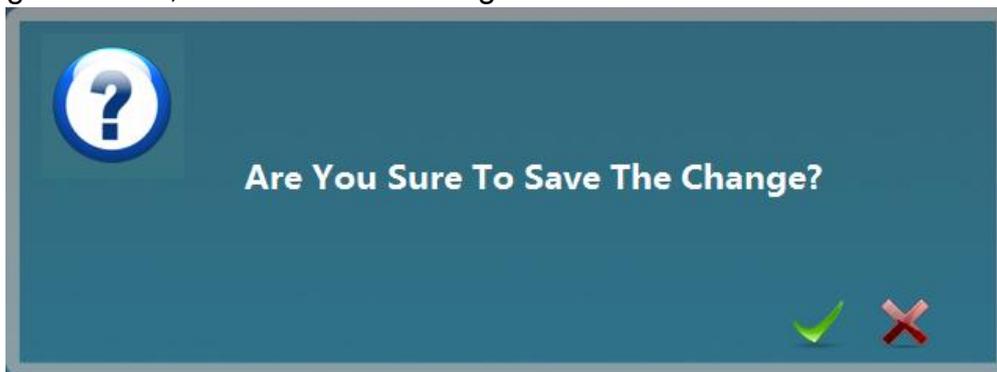


Figure 3-46 Change Confirmation



On the system setting screen, click “Print Information” button to do print setting, input corresponding company name, address and telephone, these information will displayed on the vehicle measurement report. As figure 3-47:

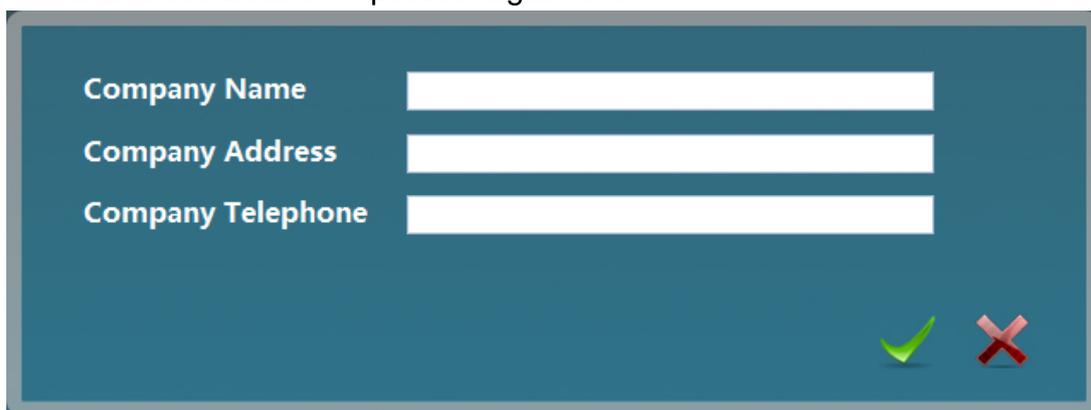


Figure 3-47 Information Input

3.3.4 Sensor Heads Diagnose

Click shortcut key “sensor heads diagnose” on System Maintenance screen to diagnose the sensor heads. As figure 3-48, it mainly checks the sensor heads functions situation. Such as: sensor heads position, press-key performance, communication signal,

battery voltage and Level, Camber, Toe-in, Axle displayed situation on sensor heads.

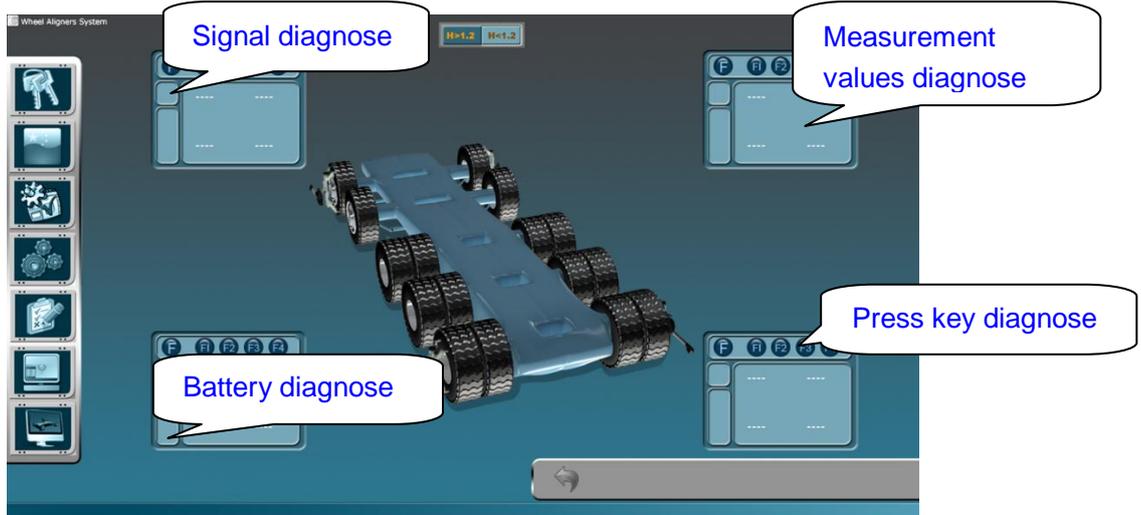


Figure 3-48 Sensor Heads Diagnose

3.3.5 Data Maintenance

Click shortcut key "data maintenance" on System Maintenance screen to do data maintenance. As figure 3-49: there are 6 items to maintain: client data maintenance, client data backup, vehicle data maintenance, vehicle data backup, vehicle data upgrade and system setting backup.

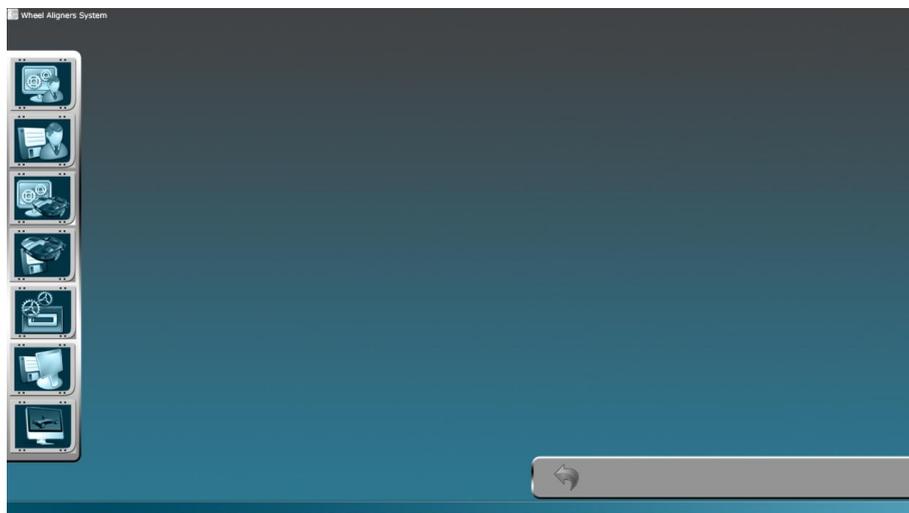


Figure 3-49 Data Maintenance Screen

Shortcut keys Introduction:



Client Data Maintenance

-  **Client Data Backup**
-  **Vehicle Data Maintenance**
-  **Vehicle Data Backup**
-  **Vehicle Data Upgrade**
-  **System Setting Backup**
-  **Return**

3.3.5.1 Client Data Maintenance

Click shortcut key” client data maintenance” enter the screen as figure 3-50: user could search, modify, save and delete the client information that made wheel alignment before.

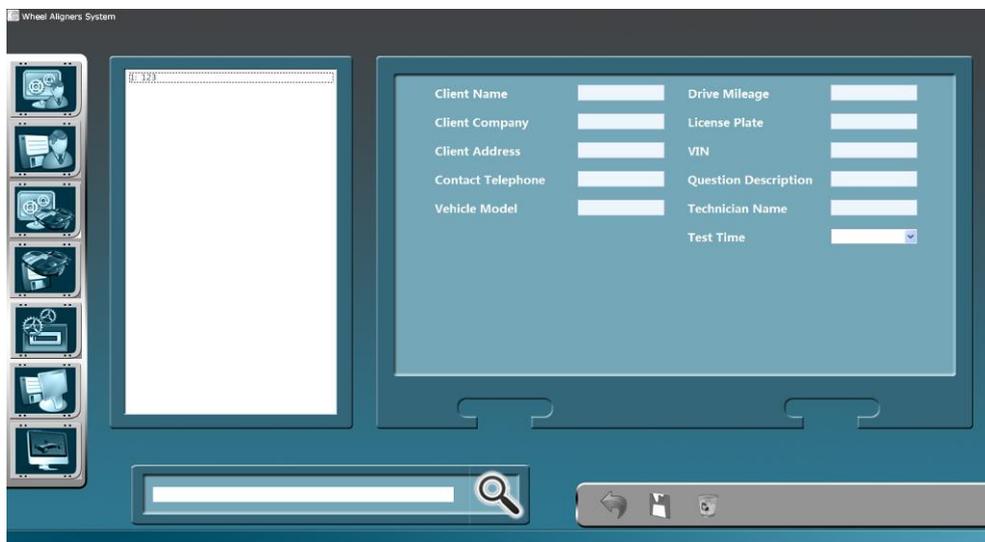


Figure 3-50 Client Data Maintenance

 **Information Store**

 **Information Delete**

3.3.5.2 Data Backup

Click shortcut key "data backup" enter the screen as figure 3-51: after client information backup, even the computer system has something wrong to affect the wheel aligner system, it also could restore them and can't lost. After choose the backup and restore path, click the corresponding backup and restore button, the system will indicate if the operation succeed. If system indicates "error", please repeat the operation.

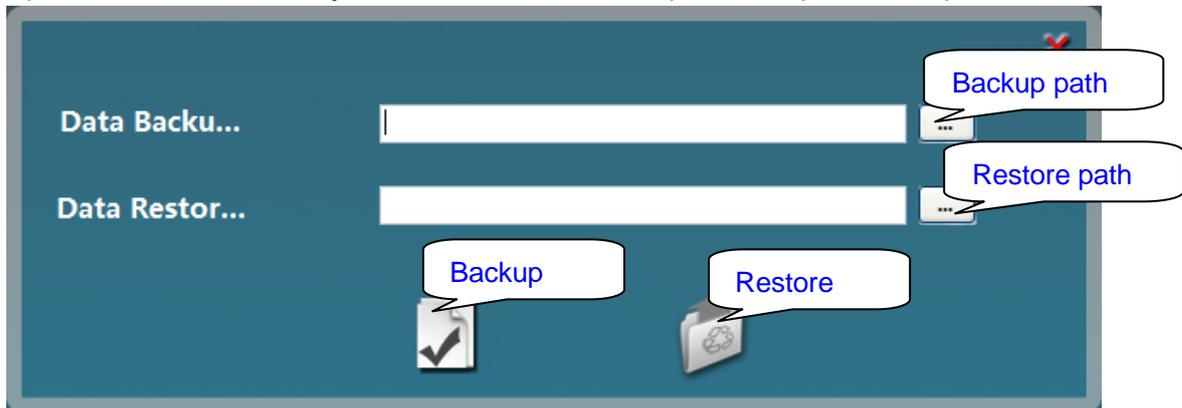


Figure 3-51 Data Backup And Restore

3.3.5.3 Vehicle Data Upgrade

Click shortcut key "vehicle data upgrade" enter the screen as figure 3-52: click upgrade path selection button, find the vehicle upgrade file (VehicleData.dat), click "√" to upgrade the vehicle data successfully.

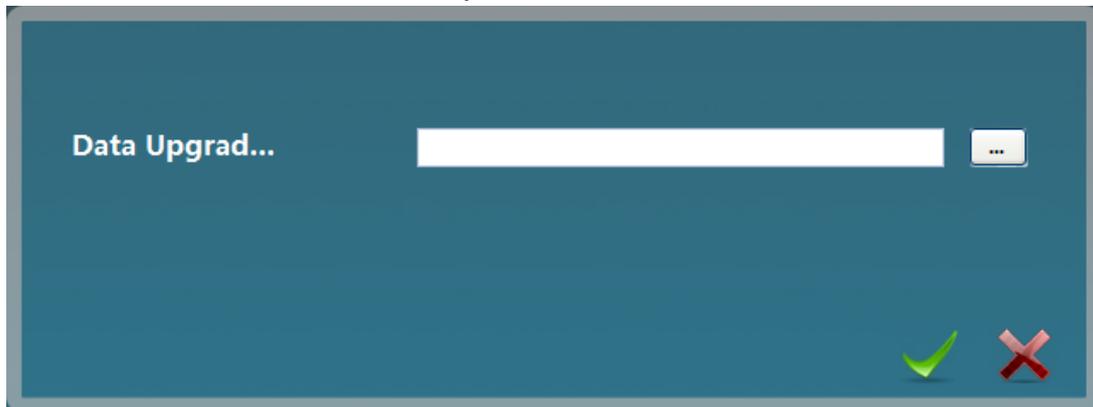


Figure 3-52 Data Upgrade

3.3.6 System Help

Click shortcut key "system help" on the home screen, the system will popup Operation Manual for reading.

Chapter Four Special Instruction

The very important notices during wheel alignment procedure:

- Wheel alignment must be done on the specified place.
- Sensor heads must be level during measurement.
- Sensor heads will turn off automatically if there is no communication signal between sensor heads and computer PC.
- Clamps must completely contact with wheel rim.
- Make sure the cameras clean.
- Make sure the tire don't afford lateral pressure during adjustment, it must extract lock pin of slide slip table after adjustment.
- It must test run the vehicle after adjustment.

Essentials of test run:

- 1) Low speed (50-60KM/h) , observe if run to one side, if the steering wheel straight and center.
- 2) Middle speed (80-100KM/h) , observe if the steering wheel shake, if it shake at some speed, and will not shake when the speed adding, it probably due to bad wheel balance.
- 3) High speed (120-160KM/h), check if the Toe-in is correct. If front Toe-in values bigger or smaller, the steering wheel will shake when drive at high speed; if rear Toe-in values bigger or smaller, the rear wheel will drift when drive at high speed.