

INVENTO

TIP-TOPOL



User's manual

Wheel-alignment XV S300, S400

TIP-TOPOL Sp. z o.o.

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Installation

1. Installation Site

1.1 Equipment Working Environment

1.1.1 Working Conditions

Temperature: $-10^{\circ}\text{C}\sim 45^{\circ}\text{C}$ 。

Relative humidity: $\leq 90\%$ 。

Power: $\text{AC}220\times (1\pm 10\%) \text{ V}$, $50/60\times (1\pm 2\%) \text{ Hz}$ 。

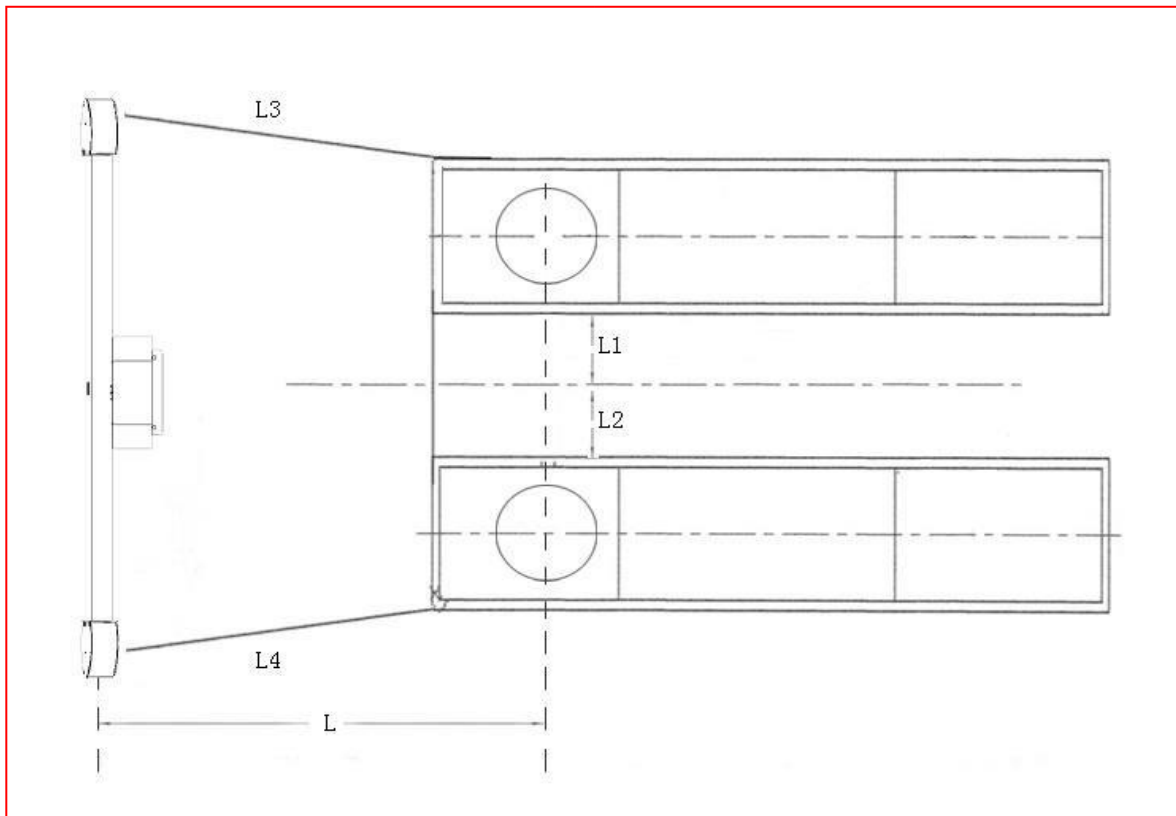
Ambient pressure: $70\text{kPa}\text{---}106\text{kPa}$ 。

1.1.2 Working Requires

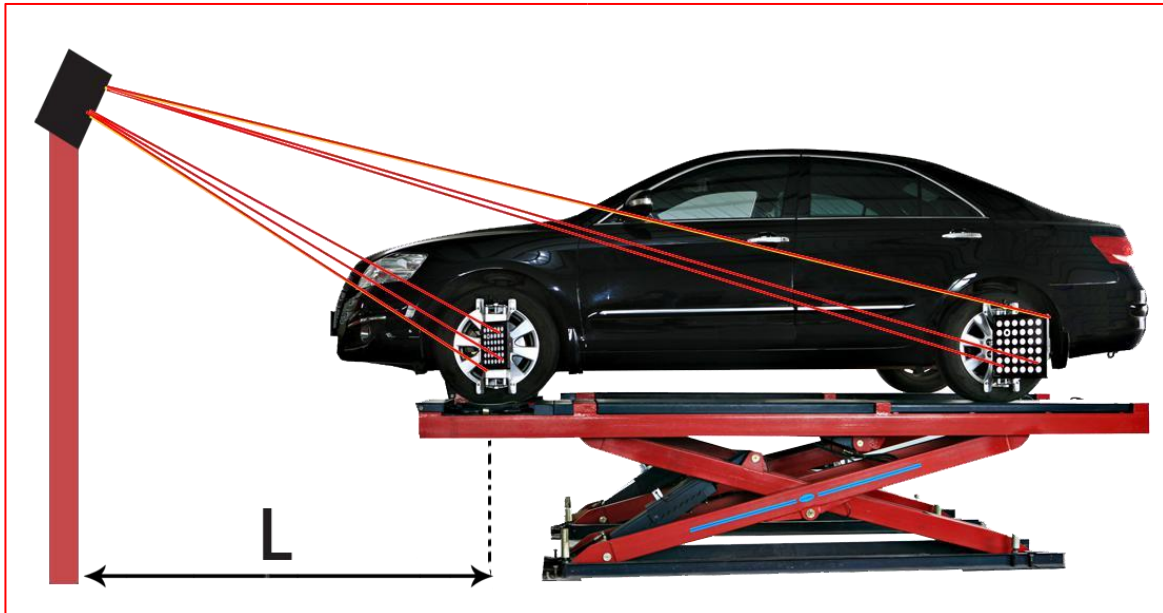
- Do not use the equipment in dusty places. Keep the working area and equipment clean.
- Do not store or use the equipment in places clustered with chemical smoke.
- Do not use the equipment in places with great vibration.
- Avoid strong light interference.
- Use single 220VAC power. Users shall have two-phase three-wire AC power and keep power voltage stable and ground connection reliable.

1.2 Working Space Requirements

The best working zone space of the four-wheel aligner shall be $6800\text{mm}\times 4000\text{mm}\times 3000\text{mm}$, as shown in the following Fig.



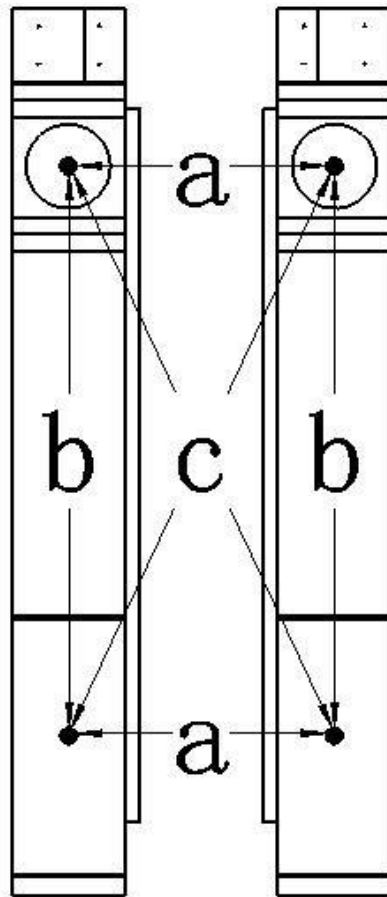
$L=2.0\text{m}-3.0\text{m}$, $L1 = L2$, $L3 = L4$



1.3 Alignment Platform Requirements

1.3.1 The two platforms level requires

Parameter	Best range	Maximum range
a. Level difference between two platforms	$\leq 2\text{mm}$	$\leq 10\text{mm}$
b. Front and Rear level difference in the single platform	$\leq 4\text{mm}$	$\leq 4\text{mm}$
c. Diagonal level difference between two platforms	$\leq 4\text{mm}$	$\leq 10\text{mm}$

**Recommendation platform**

1. Scissor lift: Platform length $\geq 4\text{m}$ (Suitable for required vehicle wheel base)
2. Four Post lift: the distance between two column $\geq 2.7\text{m}$

2. Packing List Checking

2.1 Before installation, please check the goods carefully. See whether the outer package is damaged, the goods is complete or same as the goods list. If anything abnormal occurs, please timely communicate with us for solution.

(Note: the package quantity should be according to the real contract) .



Camera beam



Column



Accessory



Cabinet

Pay attention:

Please make sure all sticker Equipment series number should be same.



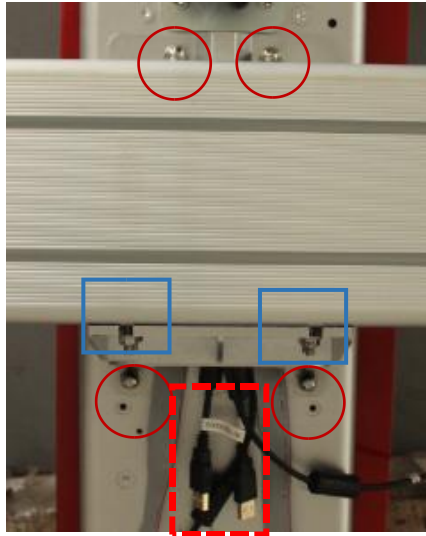
2.2 Remove the packaging

After inspection, open the outer packaging of the equipment in sequence.

3. Assembly of Column and Camera Beam

3.1 After open the case, carry out the Column and placed horizontally with slide rails upwards. Install the beam adapter on the corresponding bolt, then fixed it with nuts or bolts. (Applicable to I & II types as shown in circular)

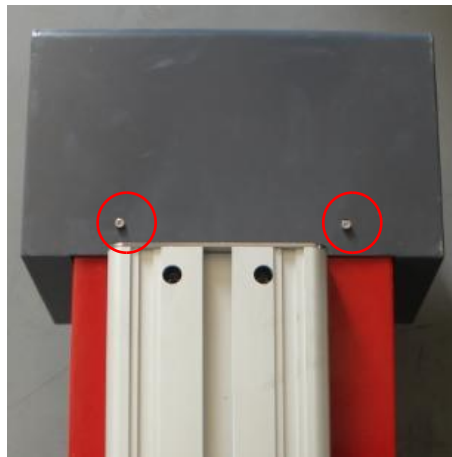
3.2 Put the camera cables, power cables and signal cables through the adapter block, and then fixed beam to it with T-bolts tighten (Applicable to III、IV、V types as shown in square)



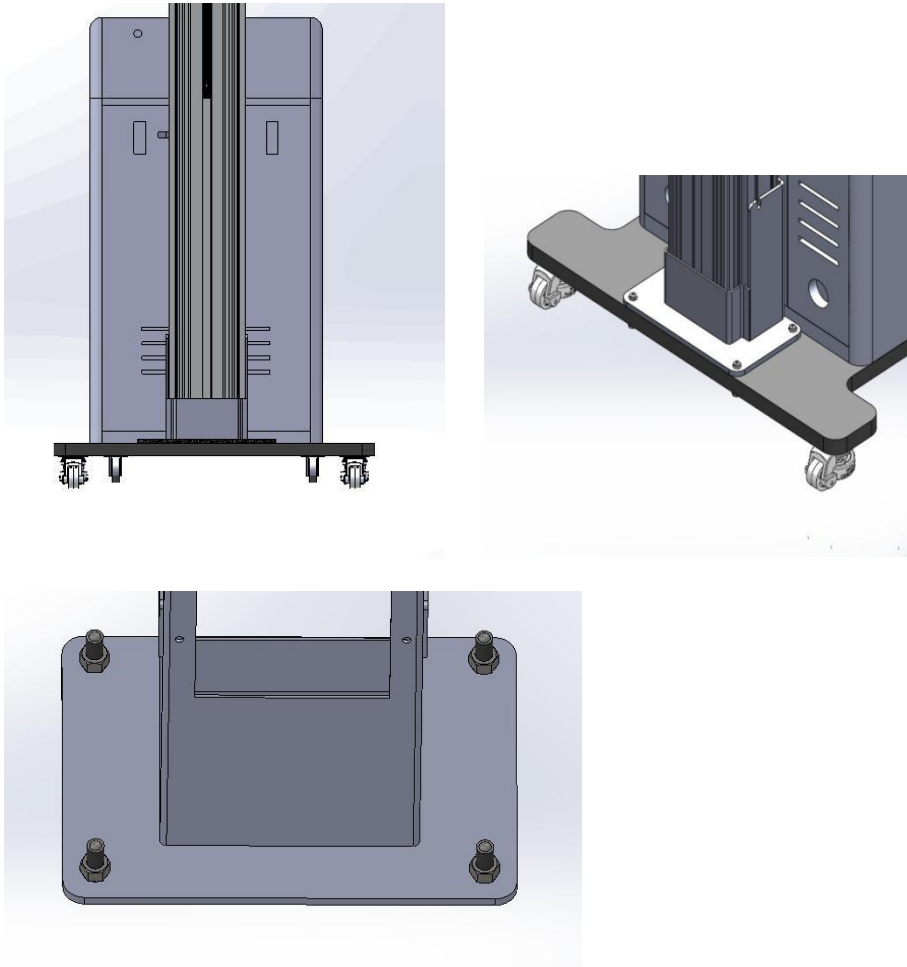
3.3 Before installing the column cap, if it's electrical aluminum column, please make sure the steel wire rope on the guide wheel and remove the bolt to fix the counterweight.



3.4 Fix the cap to the top of column with the hexagon screws M4*8. (For all types) Note: If the column cap has light wire, before you fix the cap, please firstly insert the light wire connector inside of the cap.



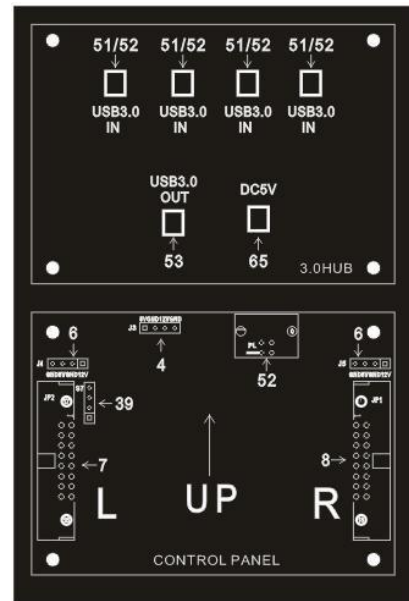
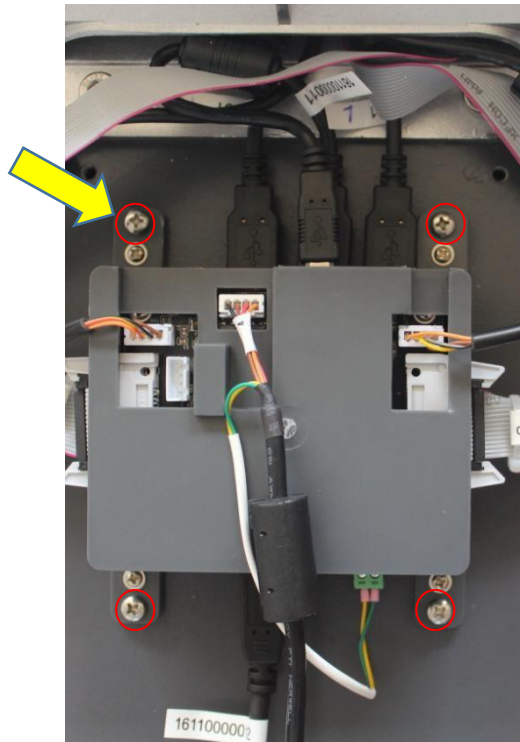
 3.5 Fix the column on the big base with the corresponding bolts. (Applicable to V type) Other type columns are fixed with anchor bolts.



4. Electric Column Connection

4.1 Main board protect box installation

Fix the main board protect box on the column with M4*12 round cap cross bolt on the corresponding position, connect all the wires according to circuit diagram.



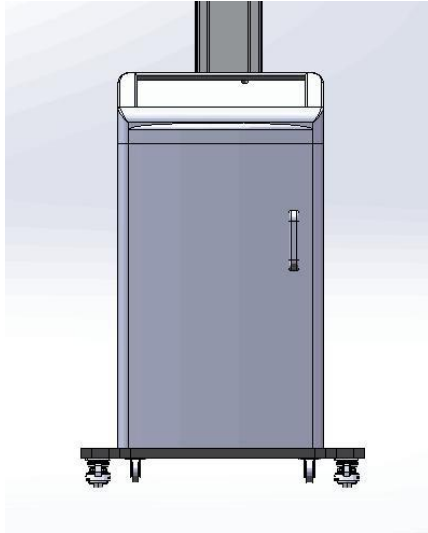
4.2 Without Main board protect box installation

Connect all the wires according to circuit diagram, fix the plastic cover on the post with M5*15 round cap cross bolt on the corresponding position.



5. Cabinet installation

5.1 Put the cabinet near the column,



6. Display device installation

6.1. TV installation

Install TV on the specify position, TV hanging board is adjustable (apply to all types with TV)



Pay attention :
after connect with
power, adjust TV setting
to full screen, please
refer the following
picture :

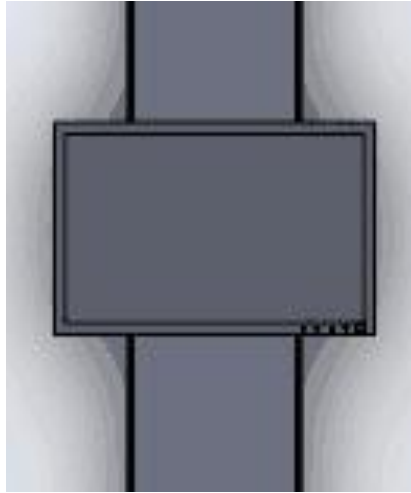


6.2 Monitor installation

Install the monitor in specified position of the column by the connecting board to fix the monitor, as per the figure:

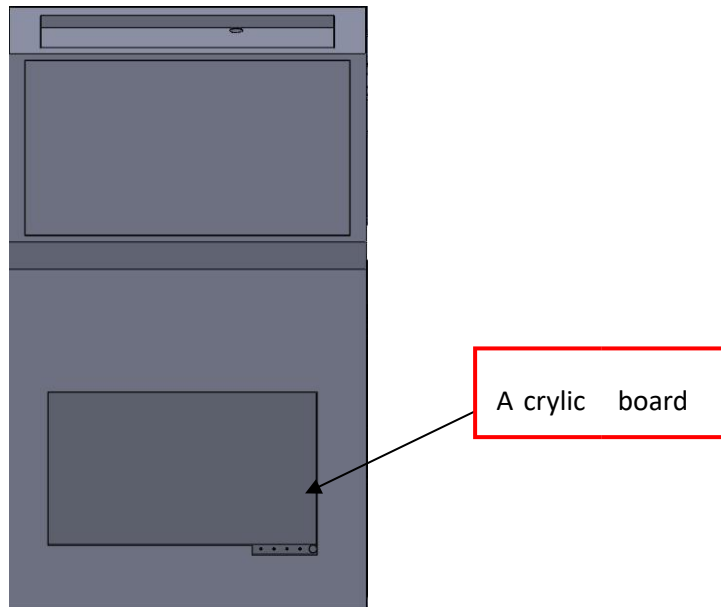


Connecting board



6.3. The Second monitor installation

Tear off the film of the acrylic board in front of the monitor, install the second monitor in the small cabinet's acrylic board and fix it.



7. Printer installation

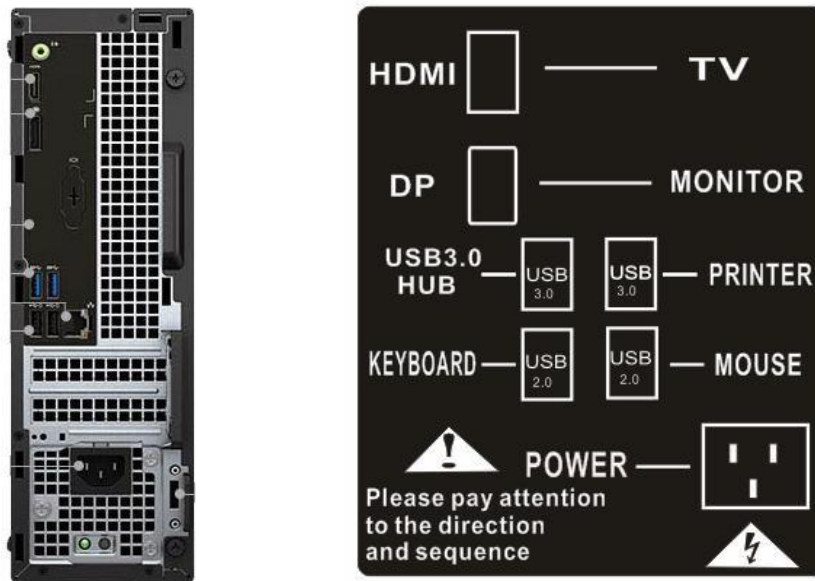
Put the printer in specified position of the cabinet, install and adjust the printer according to the manual that comes with it.

Note: please pay attention to the page size with A4.



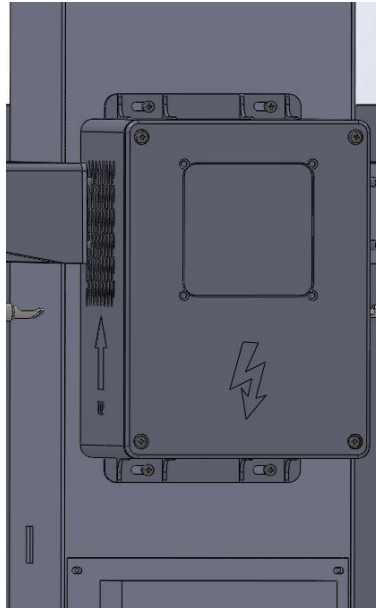
8. Diagram on the PC

Cables and wires connection refers to the below diagram:

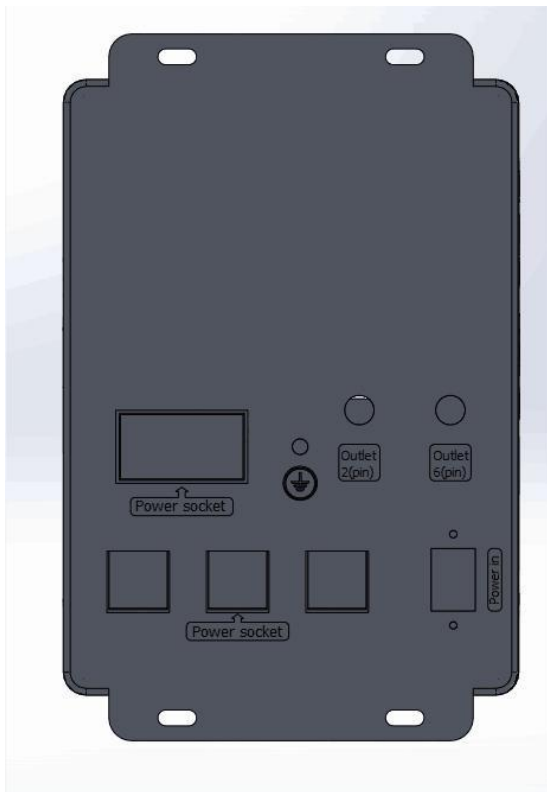


9. Installation of Power Unit

9.1 Install the electronic control box in specified position of the column. (I、III and V Types electronic power boxes are installed in the cabinet before leaving the factory, no need to disassemble again)



9.2 Install the electronic control box according to indication, as per the figure:



MODEL I

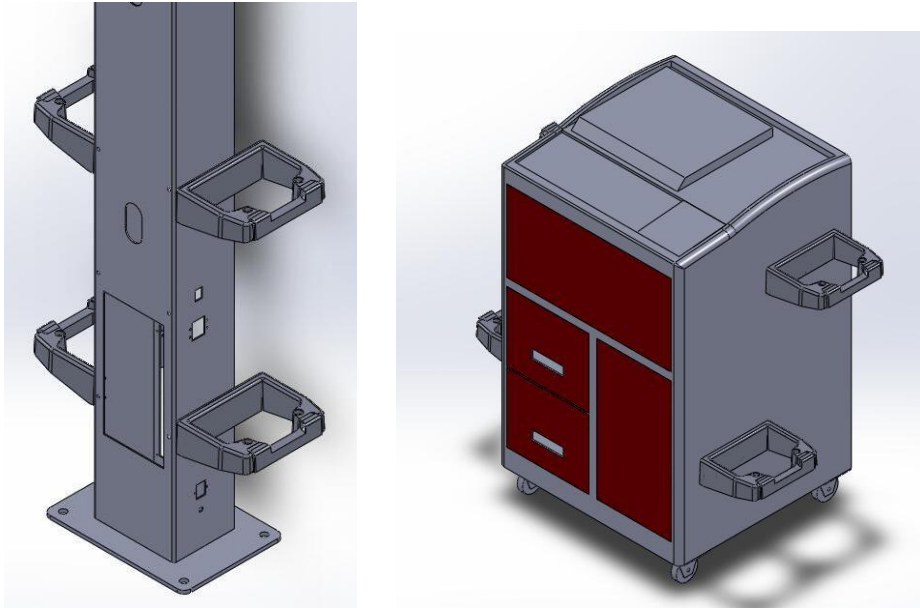


MODEL II

10. Target Clamp Installation

10.1 Four Pins Clamp Holder Installation

Fix the clamp holder to the specified position on column (for II and IV types) or cabinet (for I, III and V types), as below fig.



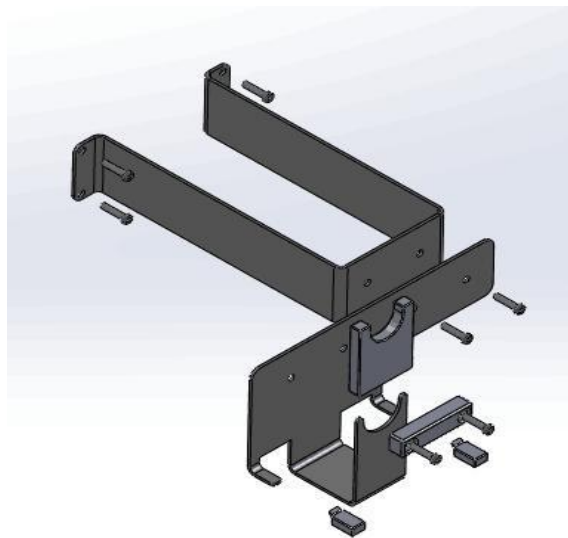
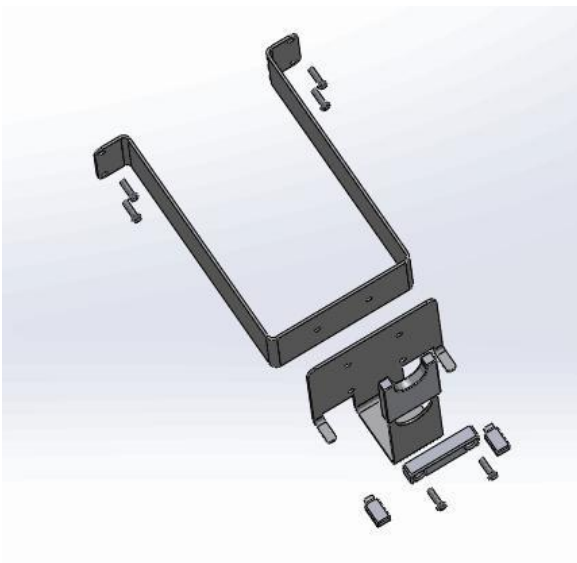
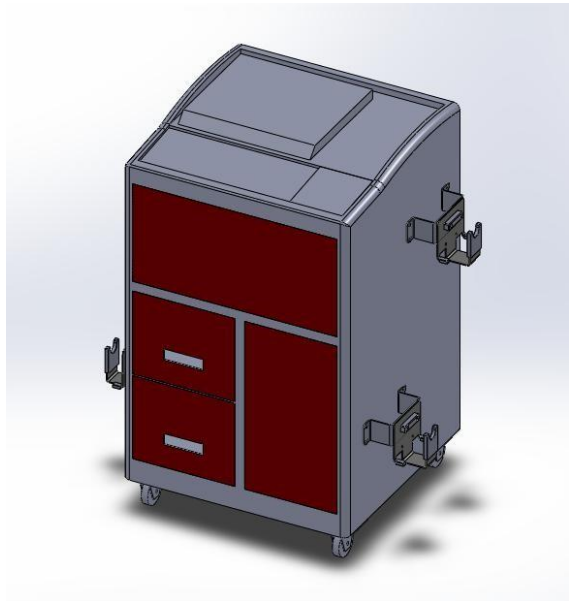
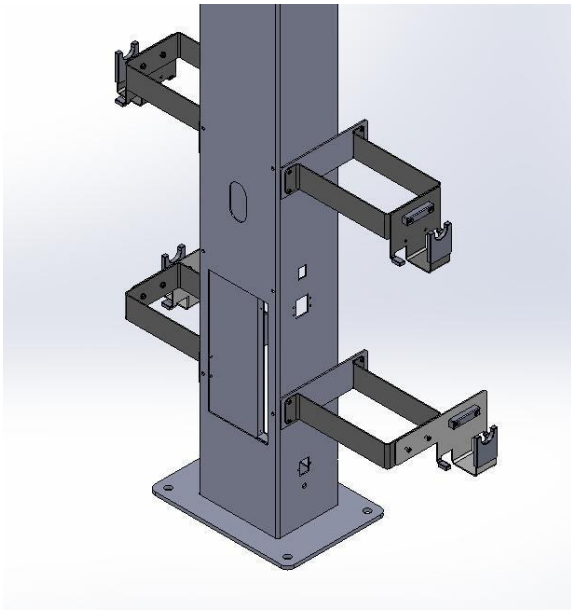
10.2 Three Pins Clamp Installation



Target clamp resemble

(explosive view)

10.3 Three Pins Clamp Holder Installation

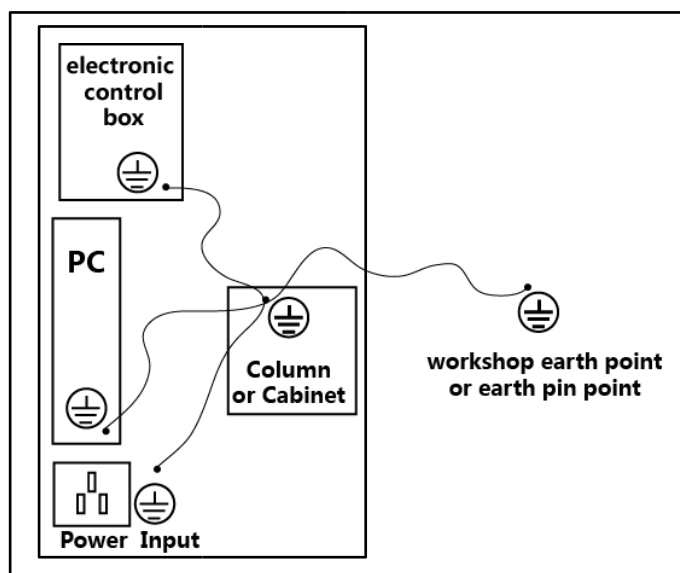


Three Pins Clamp holder resemble
(explosive view)

11. Ground Connection

Connection of ground wire: connect all the ground wires of computer host、 power supply、 electrics control box to ground wire connection port of column or cabinet.

Ground wire connection port is connecting to ground pin by a 10m length ground wire, making sure earth connection reliable and prevent the affection of static. (refer to ground connecting diagram as below)



Pay attention: Please make sure the earth wires connection are connected reliable according to the diagram, otherwise, the cameras working condition will be affected by the static interference.

Standard earth wires connection diagram

Manual

Specific modules & module functions of software

There are two modules in the software, namely measurement and miscellaneous function.

Measurement function: The whole four-wheel alignment measurement is completed in this module. That is to say, you can complete the whole measurement process according to the steps of the program or perform a single project measurement according to the requirements of the client. 2. Miscellaneous function: Some relevant parameters of the equipment.

Software operation instructions

After installation of software, double click the desktop icon to enter the system, and the following interface may appear. The program version and database version are shown on the upper left corner of the interface. After installation of software or data upgrading, you can check whether the software version and database version are correct.



Introduction to buttons:

Exit program;



Software using help;



System setup with all miscellaneous functions completed by this button;



Give up the last measurement data and start a new measurement;

Start a new measurement or continue the previous measurement when opening a new software.



Main Interface

Measurement function



Click the **ENTER** button on the main interface to start a new measurement on the next interface;



Introduction to buttons: Visual field of camera for checking whether the camera works normally or whether the target board is within the visual field of camera;



Add client or select the existing client;



Vehicle condition check for some relevant inspections of vehicle before alignment;



Vehicle model selection for choosing the vehicle type to be aligned;



Compensation measurement of pushing vehicle for the measurement of pushing vehicle; King pin measurement for the measurement of kingpin after pushing vehicle;



Measurement result display interface for specific measurement of front wheel and rear wheel; Extended functions to realize more functional measurements.



Notes: All functions may be skipped to enter the next function directly.



Add Client

Search and addition of client data

Specific operation



Add client: Input the client information and click **ENTER** to save the client data to enter the next vehicle condition inspection interface.



Notes:



The button in the software has the function of saving

information.



Click button to save



the data tacitly, and click or other buttons if the data is not required to save.



Client search: Click the client search button, and the following interface showing all the clients having

the alignment will appear. Select the required client and click button to enter the Add Client Interface where the selected client information will be shown. If there is much client information shown in the historical data of client, you can use the search function. Input the relevant client information which can be any known client

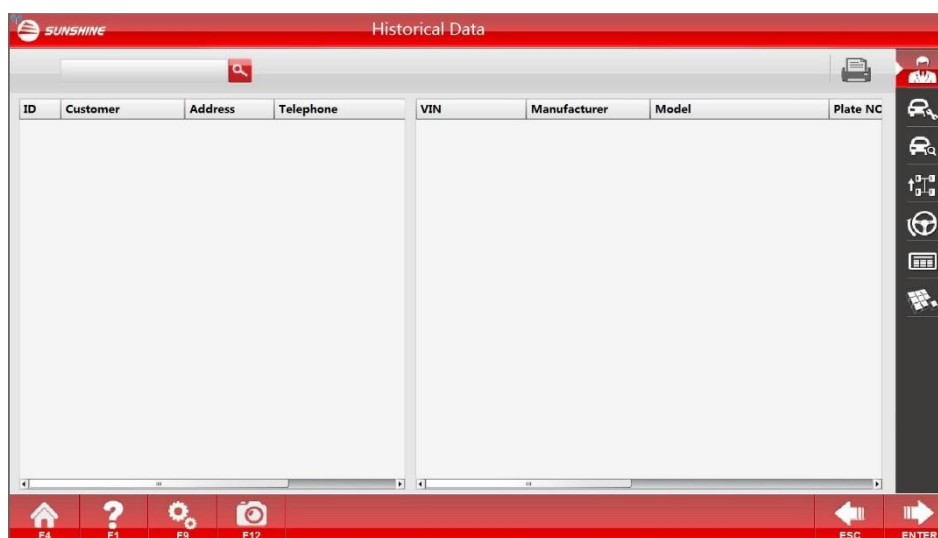


information, such as name, address and

phone, click , and then the found



information will be shown in the left list. Choose the client data to be printed, and click to print the historical data of client.



Historical Data of Client

Vehicle condition inspection

Inspect and record the vehicle condition.

Specific operation



onAdd Client Interfaceor to enterthefollowing interfacedirectly:

The screenshot shows the 'Vehicle Condition Checking' interface with a red header. It contains a table for tire inspection data across four wheels: Left Front, Right Front, Left Rear, and Right Rear. The table has rows for Tire Air Pressure (PSI), Tread Pattern Depth (mm) for Inside, Center, and Outside, Dynamic Balance (Normal), and Wear Condition (Normal Wear). Below the table are eight tire wear icons: Normal Wear, Outside Wear, Middle Wear, Inside Wear, Wave Pattern Wear, Massive Wear, Bubbled or Cracked, and Other Wear. The bottom navigation bar includes F4, F1, F3, F12, ESC, and ENTER buttons.

	Left Front Wheel	Right Front Wheel	Left Rear Wheel	Right Rear Wheel
Tire Air Pressure	PSI	PSI	PSI	PSI
Tread Pattern Depth	Inside mm	mm	mm	mm
	Center mm	mm	mm	mm
	Outside mm	mm	mm	mm
Dynamic Balance	Normal	Normal	Normal	Normal
Wear Condition	Normal Wear	Normal Wear	Normal Wear	Normal Wear

Click

Vehicle Condition Inspection_Tire Inspection

This interface shows tire inspection in the vehicle condition inspection. Please input detailed information according to the specific circumstance of vehicle.



Click to enter the alignment inspection in the vehicle condition inspection, as shown in the following interface:

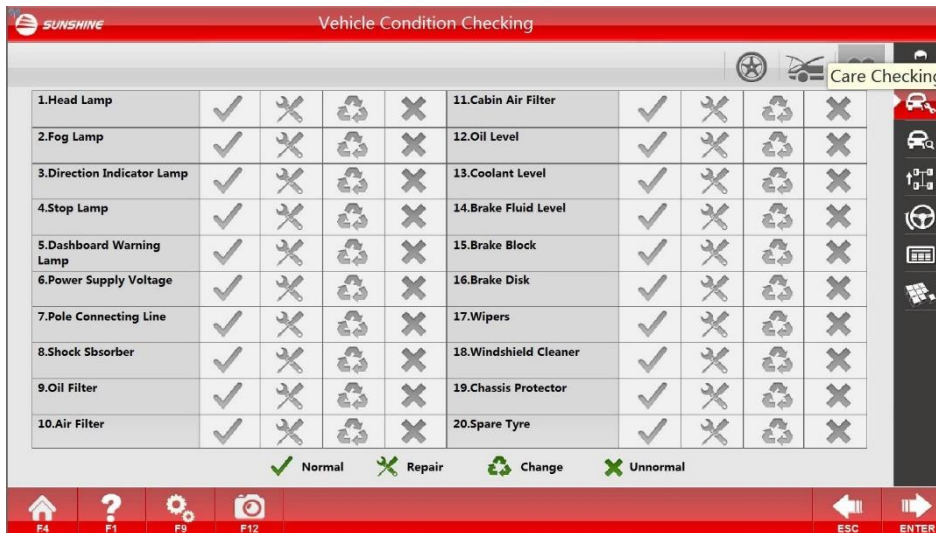
The screenshot shows the 'Vehicle Condition Checking' interface with a red header. It contains a table for alignment inspection data with 14 items. Each item has four status icons: a checkmark (Normal), a wrench (Repair), a recycling symbol (Change), and an X (Unnormal). The bottom navigation bar includes F4, F1, F3, F12, ESC, and ENTER buttons.

Item	Normal	Repair	Change	Unnormal
1.Chassis and Suspension Height	✓	✗	♻️	✗
2.Swing Arm	✓	✗	♻️	✗
3.Swing Arm Liner Bushing	✓	✗	♻️	✗
4.Swing Arm Ball	✓	✗	♻️	✗
5.Bolt Tightening	✓	✗	♻️	✗
6.Wheel Bearing	✓	✗	♻️	✗
7.Shock Absorber	✓	✗	♻️	✗
8.Shock Spring	✓	✗	♻️	✗
9.Strut	✓	✗	♻️	✗
10.Steering Driving Assembly	✓	✗	♻️	✗
11.Steering Rod Ball	✓	✗	♻️	✗
12.Chassis and Suspension Height	✓	✗	♻️	✗
13.Stabilizer Bar Bolt	✓	✗	♻️	✗
14.Isolation Pads and Hinge	✓	✗	♻️	✗

Vehicle Condition Inspection_Alignment Inspection Select detailed information according to the specific condition of vehicle.



Click to enter the additional inspection in the vehicle condition inspection, as shown in the following interface:



Vehicle Condition Inspection_Additional Inspection Select detailed information according to the specific condition of vehicle.

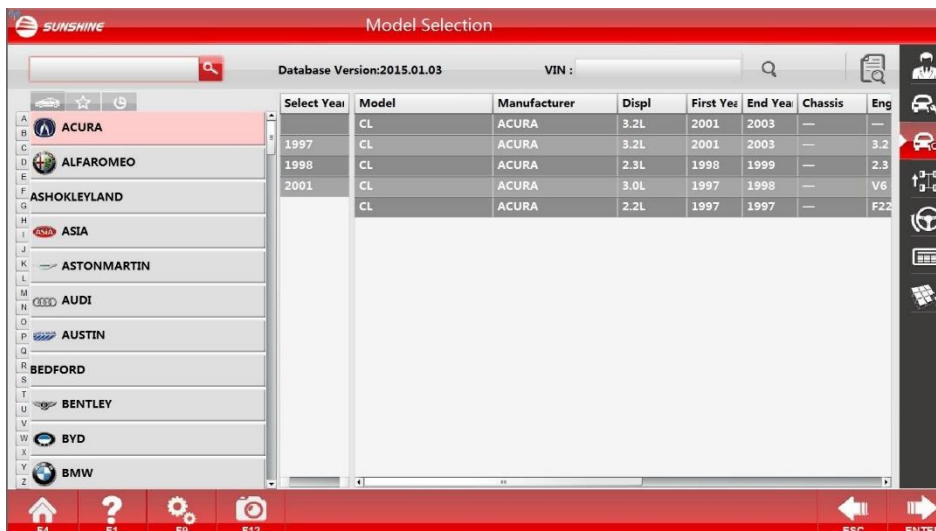
All vehicle condition inspections may be skipped. Click  to save the already done inspections and enter the next step.

3Vehicle model selection

Select the vehicle model to be aligned.

3.3.1.3.2 Specific operation

Click  on Vehicle Condition Inspection Interface or  to enter the following interface directly:



Vehicle Model Selection

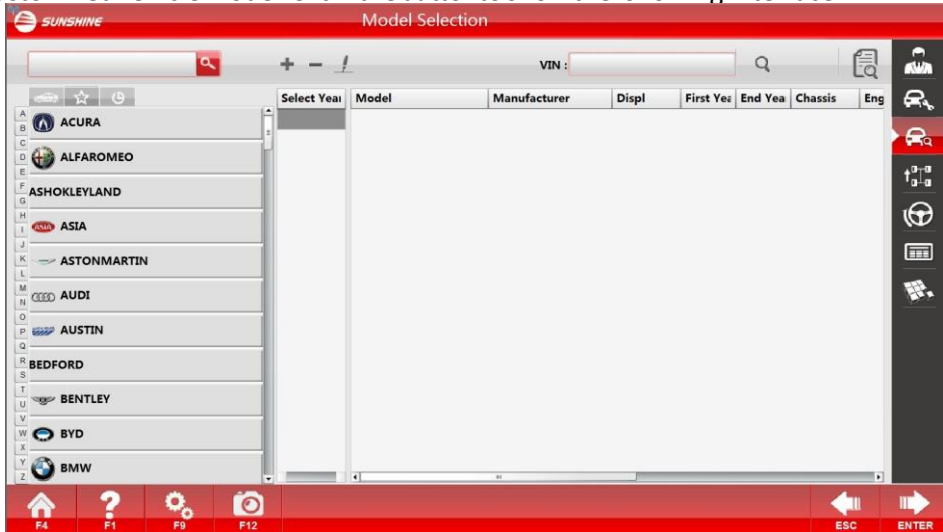
The left side is the brand listbox. Search according to the ranking of brands or click A, B, C, D.....on the left side.



Vehicle model provided by manufacturer: The vehicle model provided by manufacturer shall not be deleted or modified.



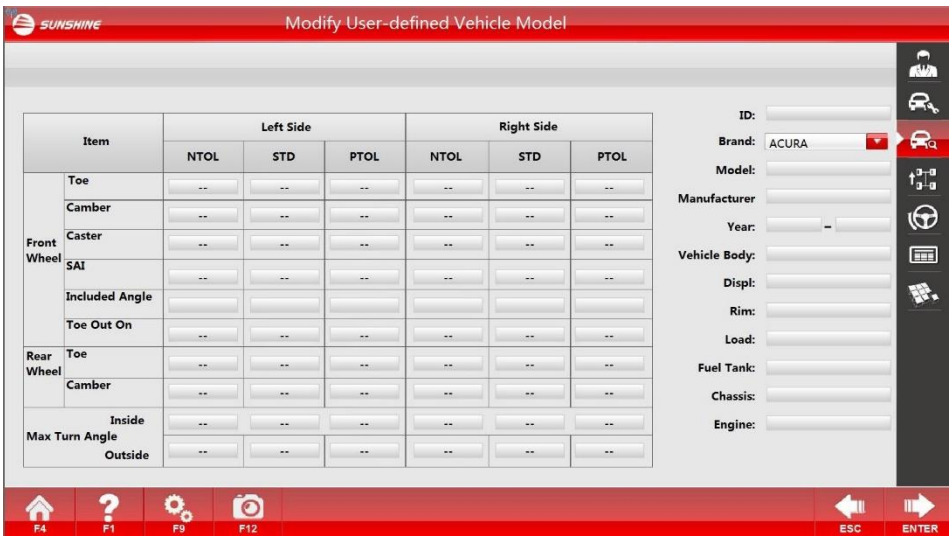
Customized vehicle model: Click the button to show the following interface:



Vehicle Model Selection_Customized Vehicle Model



Click on this interface for adding vehicle model by the client himself, and then the following interface is shown:



Vehicle Model Selection_Edit Customized Vehicle Model

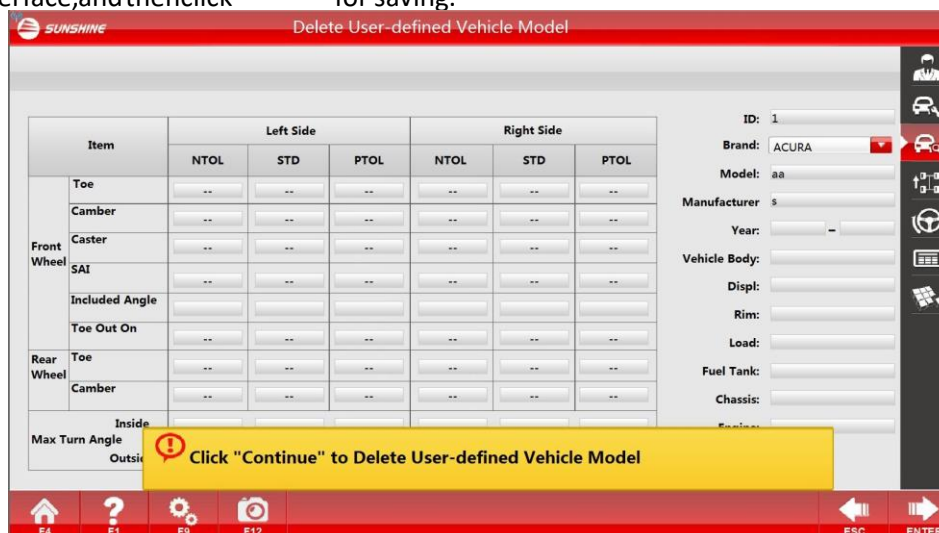
Input the vehicle model information and standard data, and ° may be replaced by blank. After



that, click for saving.

Choose the vehicle model to be deleted in the right listbox, click  for deletion as shown in the

following interface, and then click  for saving.



Item	Left Side			Right Side		
	NTOL	STD	PTOL	NTOL	STD	PTOL
Front Wheel	Toe	..	..	..	..	..
	Camber	..	..	..	..	..
	Caster	..	..	..	..	..
	SAI	..	..	..	..	..
	Included Angle	..	..	..	..	..
Rear Wheel	Toe	..	..	..	..	..
	Camber	..	..	..	..	..
Max Turn Angle	Inside	..	..	..	..	..
	Outside	..	..	..	..	..

Click "Continue" to Delete User-defined Vehicle Model

Form fields on the right: ID: 1, Brand: ACURA, Model: aa, Manufacturer: S, Year: --, Vehicle Body: , Displ: , Rim: , Load: , Fuel Tank: , Chassis: , Engine: .

Bottom bar: F4, F1, F9, F12, ESC, ENTER



Vehicle Model Selection_Delete Customized Vehicle Model



Notes: The data added by the client himself will not support the VIN search function.

Common vehicle model: All vehicle models used by the client are listed here.

On the main interface of the vehicle model selection, click the title in the right listbox, and then a triangle mark



is shown, such as . Click the triangle mark for ascending order or descending order.

Vehicle model search: Input the vehicle model to be searched on the upper left, Click  to search Vehicle model search by Vin code: Input the 17-digit vin code of the vehicle or scan the vin code by a code

sanner, and click  to find the corresponding vehicle code of the vin code. If some vehicle have one dimensional code rather than vin code, please print the corresponding one dimensional code of the vin code and paste it on the auto for directly finding the vehicle model by scanning the code. After inputting the vin code,

click  to print it.



to enter the Standard Data Interface as follows:

Item	Left Side			Right Side		
	NTOL	STD	PTOL	NTOL	STD	PTOL
Front Wheel	Toe	0°6'	0°0'	0°6'	0°0'	0°6'
	Camber	1°0'	0°0'	1°0'	0°0'	1°0'
	Caster	1°0'	2°48'	1°0'	1°0'	2°48'
	SAI	--	--	--	--	--
	Included Angle	--	--	--	--	--
	Toe Out On	--	--	--	--	--
Rear Wheel	Toe	0°6'	0°0'	0°6'	0°0'	0°6'
	Camber	1°0'	-0°30'	1°0'	1°0'	-0°30'
	Max Turn Angle Inside	--	--	--	--	--
	Max Turn Angle Outside	--	--	--	--	--

Standard data: Click

Standard Data

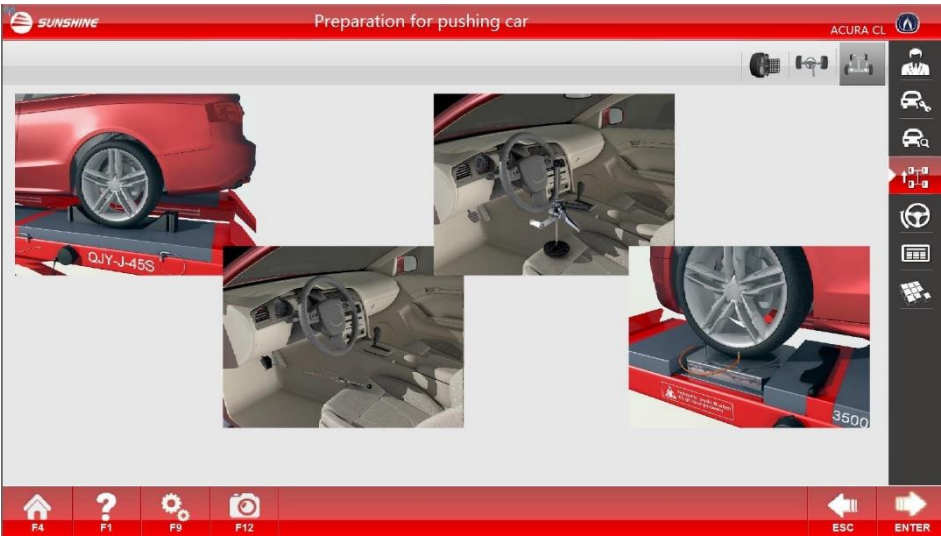
The standard data showing the vehicle model is based on degree at a ratio of 60 tacitly. If it is required to convert the unit into mm, you should input the tire specification of both the front and the rear wheel to get a more precise data. When the ratio is 60, it will display 0°45'. When the ratio is converted into 100, it will display 0.75°.

Compensation measurement of pushing vehicle

By pushing the vehicle front and back, the vehicle data is available from the measurement result.

Specific operation

Click  on Vehicle Model Selection Interface or  to enter the following interface directly:



Compensation Measurement of Pushing Vehicle



: Four-wheel measurement (tacit alignment mode)

The first step:

Play the animated cartoon to make preparation for pushing the vehicle, conduct the corresponding specific operation to ensure the turntable is bolted, put the transition gasket, stop the vehicle to the designated position, loose the brake fixer, lock the steering wheel fixer, and place a cushion against the rear wheel of the vehicle to

keep the vehicle stable. Afterwards, click  to start the measurement.



Compensation for Pushing Four Wheels of Vehicle_1

The second step

Remove the gasket. Following the arrow prompt, push the vehicle backwards firstly until the arrow turns green (as shown in Fig. 3-8), and then place a gasket to keep the vehicle stable to wait for the direction change of arrow; when the arrow reverses, push the vehicle to the position where the arrow turns green (as shown in Fig. 3-9) according to the tips, and then place a gasket to keep the vehicle stable to wait for the completion of the measurement. Notes: Such situations in the Compensation for Pushing Four Wheels of Vehicle_4 may appear in the process of measurement: 1. Wheel is shielded; 2. Shake exists in the process of pushing vehicle; 3. The vehicle is being pushed; 4. The vehicle is pushed out and needs pushing back; 5. The vehicle stops stably for waiting.



Compensation for Pushing Four Wheels of Vehicle_2



Compensation for Pushing Four Wheels of Vehicle_3



Compensation for Pushing Four Wheels of Vehicle_4 The third step

If the wheel shakes abnormally during the measurement, then enter the interface of Compensation for Pushing

Four Wheels of Vehicle_5. The part marked with a yellow triangle indicates the specific shaking wheel. Click



to go back to the Compensation for Pushing Four Wheels of Vehicle_1 for re-measurement, and click

to ignore the shaking and start the king pin measurement.

Notes: If abnormal shaking occurs, check whether the clamp of the calibration plate of corresponding wheel is loose or not. Adjust and re-measure. If directly return to the first step, there may be large deviation in the measurement data.



: Single-wheel measurement

By lifting the vehicle, respectively rotate the four wheels to measure the vehicle data. Land vehicle, and read the data from the measurement result.

The first step

Click the [Single-wheel Measurement] button in preparation for pushing vehicle compensation to enter the Single-wheel Measurement Interface.



Single-wheel Measurement_1

The second step



Lift the vehicle as instructed, and click **ENTER** to enter the wheel measurement selection interface.



Single-wheel Measurement_2

The third step

Rotate corresponding wheels, and make the surface of its target board towards the camera and perpendicular to the ground. Select the wheel to be measured on the upper right corner of the above Fig, and then enter the single-wheel measurement interface; as the interface instructs, first rotate the wheel backwards, then forwards until the completion of measurement. Return to the wheel measurement selection interface (Single-wheel Measurement_2). The fourth step

When the measurement of the four wheels is completed, the single-wheel compensation is completed.



Notes: Only when the four-wheel alignment measurement is carried out by the pushing action due to ground restriction or other reasons can the function be used. Moreover, the single-wheel measurement function can be completed only when the integrated four-wheel measurement is completed. If the integrated single-wheel measurement or four-wheel measurement has been done, but the target board of an individual wheel deviates, the individual wheel can be measured by the single-wheel measurement function.

Measurement preparation interface;



: **Double-wheel measurement**

The measurement is based on the two target boards of the front wheels, and the measurement method is similar to the four-wheel measurement.

King pin measurement

Function

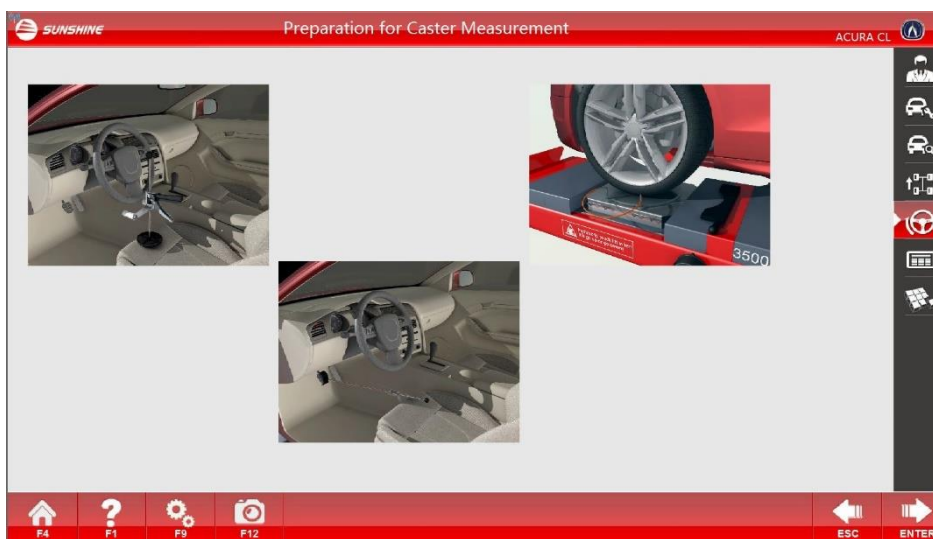
By turning left and right, measure the data of king pin, toe-out and max. steering angle of the vehicle. The data can be read from the measurement result.

Specific operation

Click  on measurement of compensation for pushing vehicle interface or  to enter the following interface directly:

The first step

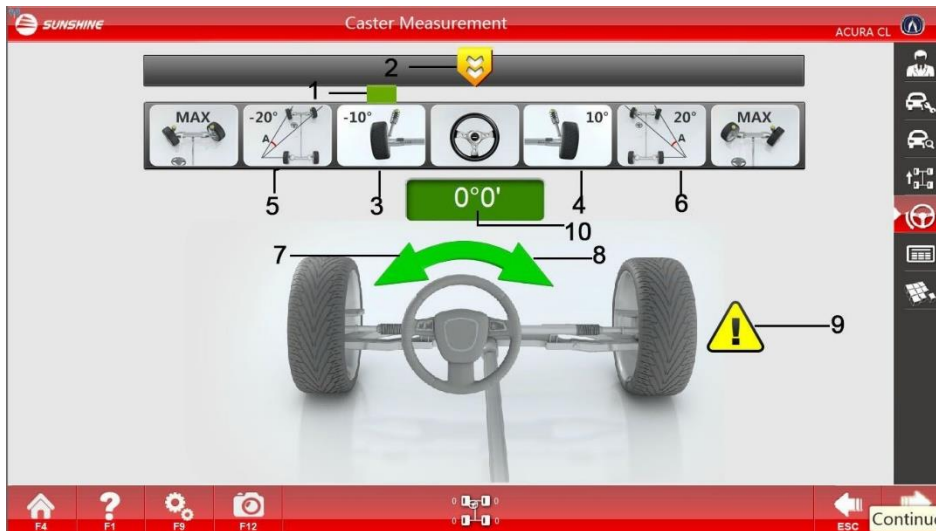
Ensure that the turntable is bolted, stop the vehicle to a specified position, and place a cushion against the rear wheel of the vehicle to keep the vehicle stable to enter the king pin measurement interface.



The second step

As shown in the animated cartoon on the preparation interface, brake the vehicle stably, remove the bolt of

turntable, install the brake holder, and click  to start the measurement, as shown in the Fig. The numbers in the Fig. represents: ①Attribute block for the item to be measured at present ②Slide block for direction and angle ③④ King pin measurement position ⑤⑥ Measurement position of toe-out angle ⑦ indicating to turn left ⑧Indicating to turn right ⑨The wheel is covered ⑩Reading the angle of steering wheel



The third step

The measurement can be done by five steps. As shown in the king pin measurement interface, turn left to ③, stabilize and wait after the corresponding picture changes to green; next, turn left to ⑤ and then go on turning left until the steering wheel doesn't move, stabilize and wait until the picture turns green; turn right, stabilize and wait; turn right to ④, stabilize and wait; then turn right to ⑥, stabilize and wait; go on turning right until the steering wheel doesn't move, stabilize and wait until the photo turns green; at last, turn to the middle and the angle stays within $\pm 0^{\circ}6'$. Avoid the camera passage and finish the measurement, and automatically enter the Measurement Result Interface. If the wheel shakes, enter the Re-measurement Interface.



Click  to go back to **King Pin Measurement_1** for re-measurement and click  to ignore shaking.



Notes: As is shown in **King Pin Measurement_1** of the measurement interface, after the measurement of ③ or ④, ⑦⑧ will occur at the same time. Now, turn to another

direction and omit the measurement of ⑤⑥. If abnormal shaking occurs, check whether the fixture of calibration plate of corresponding wheel is loose or not, the brake is tight or not. Adjust them and re-measure. If directly return to the first step, there may be large deviation in measurement data.

Measurement result

Check the measurement data of the vehicle with the function of real-time adjustment.

Specific operation:

Click  on king pin measurement interface or  to enter the following interface directly:



Measurement Result

-  Standard data: It shows the standard data of the measured vehicle;
-  Lift-up measurement: Measure the lift-up vehicle;
-  Save before adjustment: Save the data before adjustment;
-  Save after adjustment: Save the data after adjustment;
-  Print: Print the measurement data;
-  Rear-wheel adjustment: Real-time adjustment of rear wheel;
-  Front-wheel adjustment: Real-time adjustment of front wheel;
-  King pin adjustment: Real-time adjustment of king pin;
-  All measured alignment data are shown on the interface of measurement result. Put the mouse on the photo near the measurement data, and the name of the measurement item will appear; The base background of the

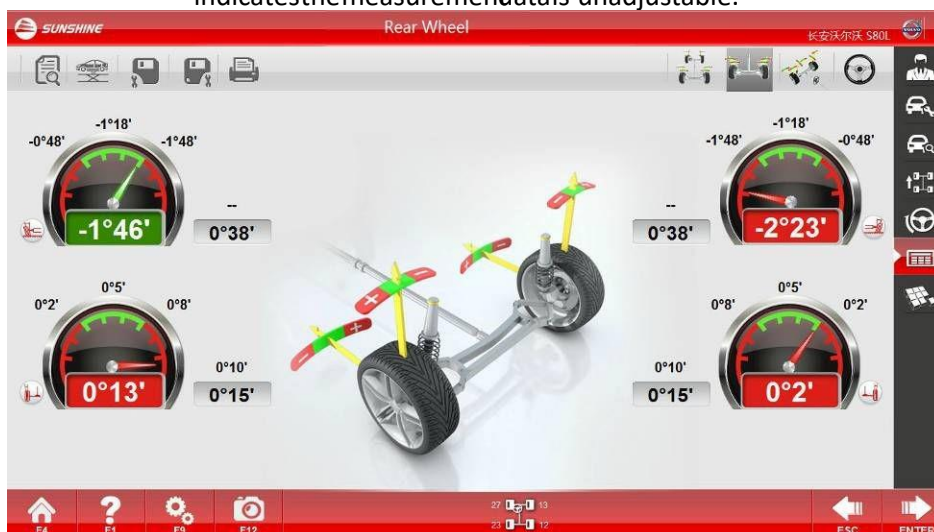
measurement data has different colors, in which green **3°4'** indicates the measurement data is

and

in the standard scope, red **-0°11'** indicates the measurement data is beyond the standard scope,

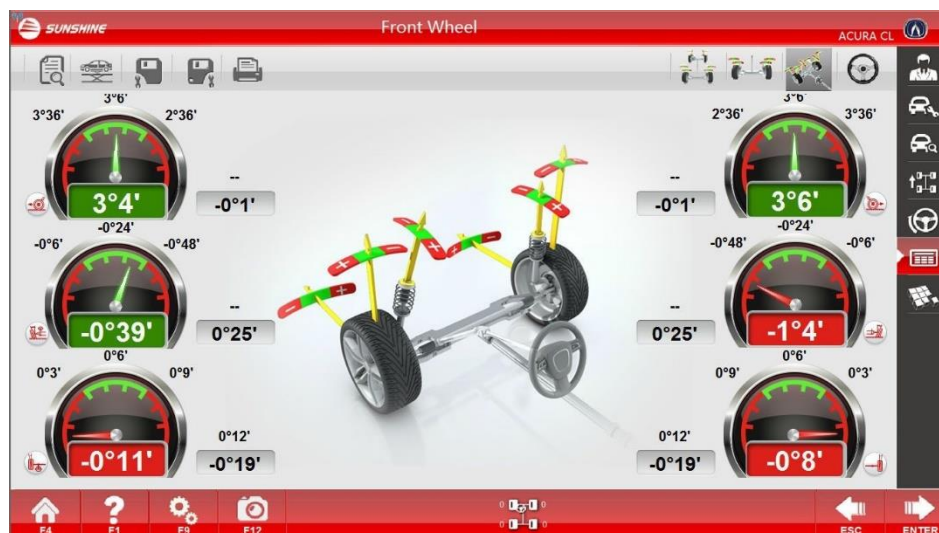
13°3'

indicates the measurement data is unadjustable.

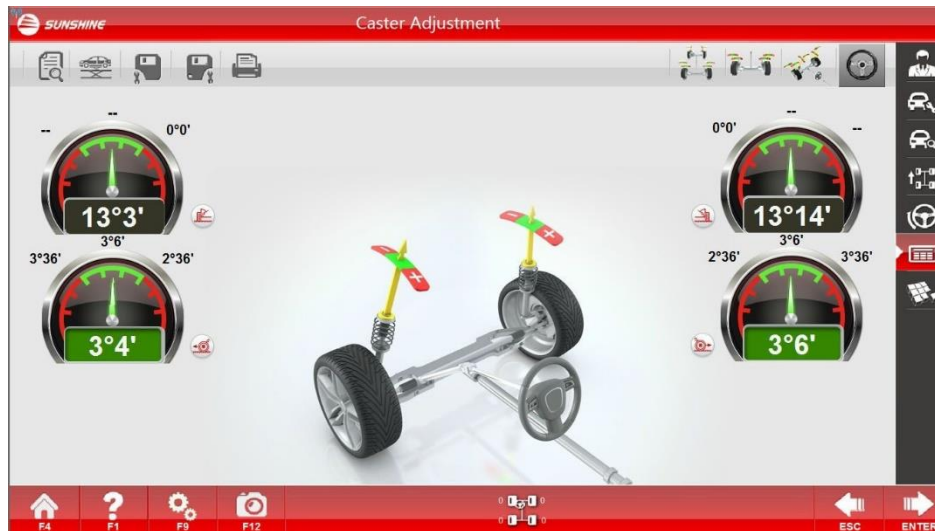


gray

Rear-wheel Measurement



Front-wheel Measurement



Caster Measurement

1

2

3D Wheel Alignment Test Report

Customer : -

Operator :

KM/Miles : 0

Telephone :

Repair Order: 4

Date : 01/04/15 09:02:18

Plate NO. : -

VIN :

Model :

Item		Before	NTOL	STD	PTOL	After
Body Height	Front Left	0mm	--	--	--	0mm
	Front Right	0mm	--	--	--	0mm
	Rear Left	0mm	--	--	--	0mm
Wheel Track	Front Left	0mm	--	--	--	0mm
	Front Wheel	0mm	--	0mm	--	0mm
Ade Distance	Left	0mm	--	0mm	--	0mm
	Right	0mm	--	0mm	--	0mm
Front Wheel	Toe	Total	0°0'	0°0'	0°0'	--
		Left	0°0'	0°0'	0°0'	0°0'
		Right	0°0'	0°0'	0°0'	0°0'
	Camber	Left	0°0'	0°0'	0°0'	0°0'
		Right	0°0'	0°0'	0°0'	0°0'
	Caster	Left	0°0'	0°0'	0°0'	0°0'
		Right	0°0'	0°0'	0°0'	0°0'
	SAI	Left	0°0'	0°0'	0°0'	0°0'
		Right	0°0'	0°0'	0°0'	0°0'
	Toe Out On Turns	Left	0°0'	0°0'	0°0'	0°0'
		Right	0°0'	0°0'	0°0'	0°0'
	Max Turn Angle	Left Outside	0°0'	0°0'	0°0'	0°0'
Right Inside		0°0'	0°0'	0°0'	0°0'	
Setback	Left Outside	0°0'	0°0'	0°0'	0°0'	
	Right Outside	0°0'	0°0'	0°0'	0°0'	
Rear Wheel	Toe	Total	0°0'	--	--	--
		Left	0°0'	0°0'	0°0'	0°0'
		Right	0°0'	0°0'	0°0'	0°0'
	Camber	Left	0°0'	0°0'	0°0'	0°0'
		Right	0°0'	0°0'	0°0'	0°0'
	Setback	0°0'	--	--	--	
Thrust Angle	0°0'	--	--	--		

Ebermayer & Egger GmbH

Contact:c222

Address:a555

Telephone:333sdsd

Fax:f444

1 2 [Save] [X]

3D Wheel Alignment Test Report

Customer : - Telephone :
Operator : Repair Order: 4
KM/Miles : 0 Date : 01/04/15 09:02:18

Plate NO. : - VIN : Model :

Alignment Checking					
		Left Front Wheel	Right Front Wheel	Left Rear Wheel	Right Rear Wheel
Tire Air Pressure	Left Front Wheel	0PSI	0PSI	0PSI	0PSI
	Right Front Wheel	0mm	0mm	0mm	0mm
	Left Rear Wheel	0mm	0mm	0mm	0mm
Tread Pattern Depth	Inside	0mm	0mm	0mm	0mm
	Center	0mm	0mm	0mm	0mm
	Outside	0mm	0mm	0mm	0mm
Wear Condition	Normal Wear	Normal	Normal	Normal	Normal
	Dynamic Balance	Normal	Normal	Normal	Normal
Care Checking					
Item		Item		Item	
1 Head Lamp	--	11 Cabin Air Filter	--	20 Spare Tyre	--
2 Fog Lamp	--	12 Oil Level	--		
3 Direction Indicator Lamp	--	13 Coolant Level	--		
4 Stop Lamp	--	14 Brake Fluid Level	--		
5 Dashboard Warning Lamp	--	15 Brake Block	--		
6 Power Supply Voltage	--	16 Brake Disk	--		
7 Pole Connecting Line	--	17 Wipers	--		
8 Shock Absorber	--	18 Windshield Cleaner	--		
9 Oil Filter	--	19 Chassis Protector	--		
10 Air Filter	--				

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Address:a555 Fax:f444

Print the Report_Alignment Data Print the Report_2 Vehicle Condition Data

Notes: The [Save] button before measurement should be used after finishing four-wheel and king pin measurement. It is not allowed to use it after vehicle adjustment; otherwise, the measurement data before adjustment will be overwritten. To enter the Measurement Result Interface, if the steering wheel angle exceeds $\pm 12'$, it is required to enter the Steering Wheel Adjustment Interface first. After adjusting the steering wheel, it will automatically enter the Measurement Result Interface. Or click [Enter] to enter the Measurement Result Interface directly without adjustment.

Extended functions

Click  on measurement result interface or  to enter the following interface directly:



Extended Functions

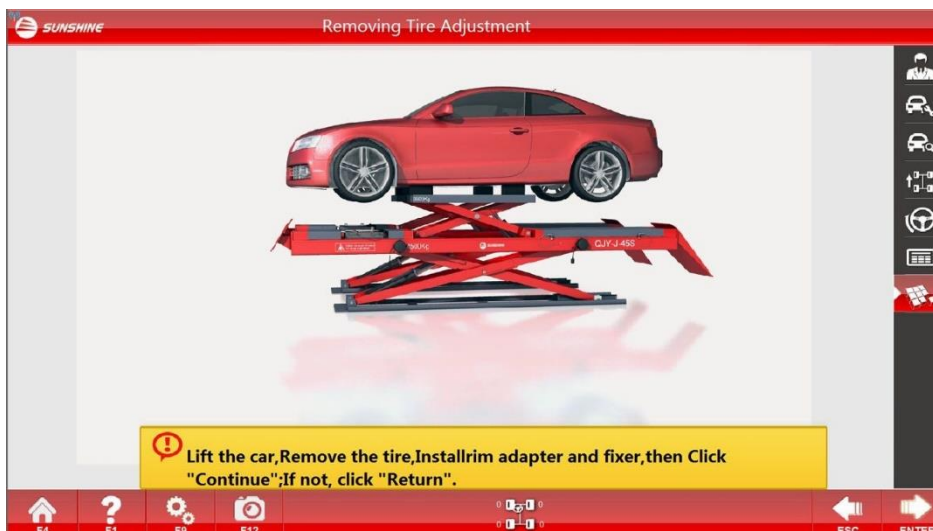


Tire-dismounting Adjustment:

It is matched with special rim adapter to realize the real-time displaying of the angle variation when dismounting the tire and adjusting the camber angle.

Rim adapter: It is a kind of target disk connection device for tire-free installation after the tires are dismounted.

Click [Tire-dismounting Adjustment] button to enter the Tire-dismounting Adjustment Interface:



Removing Tire Adjustment_1

Lift the vehicle, and dismount the tires according to the tips, install the rim adapter and the clamps, and

click  after the operation is completed to enter the Rear-wheel Adjustment Interface (rear-wheel

measurement); afterwards, click  to enter the Front-wheel Adjustment Interface (front-wheel measurement); and return to Interface 3-15 after the calculation is completed. The front-wheel adjustment or rear-wheel adjustment can be carried out according to the position of the tire to be adjusted. After the

adjustments completed, click  again to enter the following interface:



Removing Tire Adjustment_2

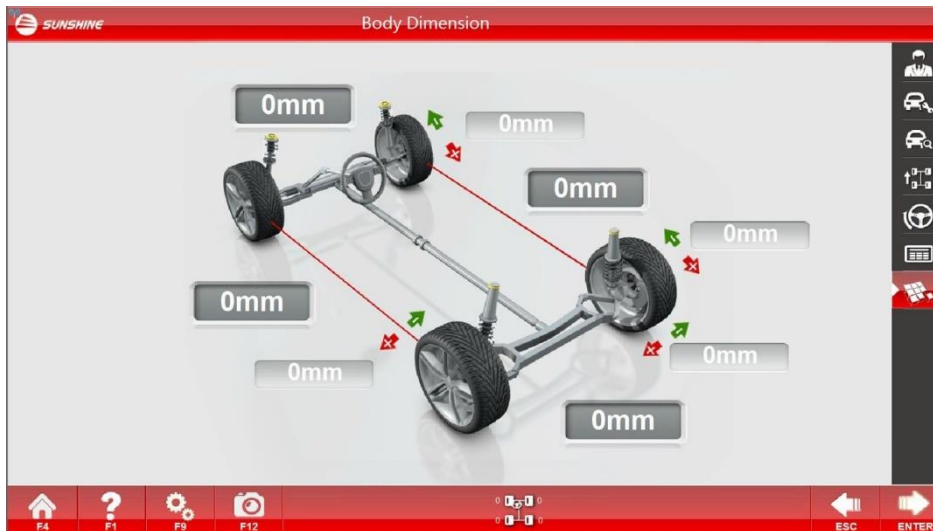
Carry out the operation according to the tips.



Vehicle Dimension

Measure the tread, wheelbase and the like of the vehicle.

Click the [Vehicle Dimension] button to enter the Vehicle Dimension Interface after the measurement of compensation for pushing vehicle, then the data will be shown.



Body Dimension

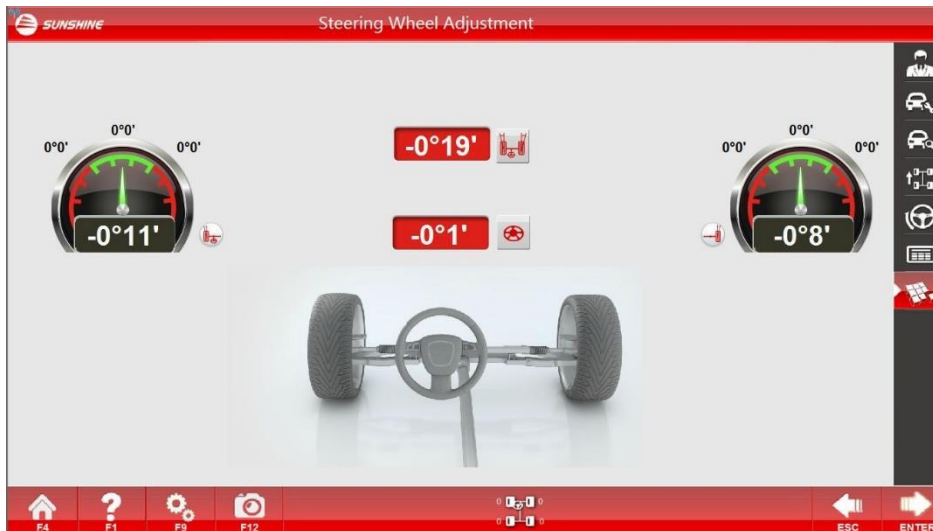
Click  to return to the Extended Functions Interface and save the data, and click  to return to

the Extended Functions Interface without saving the data.



Steering Wheel Adjustment

Keep the steering wheel straight according to the actual situation of the vehicle, and click the [Steering Wheel Adjustment] button to display the following Fig.:



Steering Wheel Adjustment

There are angle value of the steering wheel and the toe-in values of the left and right front wheels in the interface. Adjust the toe-in value to the normal range according to the tips of the computer, and finished the process till the angle value of the steering wheel is 0.



Engine Bracket Adjustment

As for the vehicle with the function, by the movement of the engine bracket to adjust corresponding angles, the function can guide the movement direction required by the engine bracket and display the measurement value of the steering axis inclination.

Click the [**Engine Bracket Adjustment**] button, and the following Fig. will be displayed:



Engine Bay Adjustment_1

Brake the vehicle stably, remove the bolt of the turntable, click  according to the tips, and then the following Fig. will be displayed:



Engine Bay Adjustment_2

Adjust the king pin to make the difference between the left and right steering axis inclination angle within the

reasonable scope. After the adjustment is completed, click , and then the following Fig will be displayed to set down the vehicle.



Engine Bay Adjustment_3



Toe-in curvature Measurement

The toe-in constant value of the vehicles (such as Passat B5 and Audi A6) with this function, namely the difference between the toe-in value after the suspension is lifting up by 60mm and the normal toe-in value can be measured.

Click the [**Toe-in curvature Measurement**] button, and the following Fig. will be displayed:



Toe curvature Measurement_1

Install the B5 tools according to the tips to lift up the vehicle body by 60mm, and click  after completion to enter the next interface:



Toe curvature Measurement_2

to set down the vehicle according to the tips.

Toe-in Lock Adjustment

As for some vehicle, for the convenience of adjusting the toe-in, it requires to carry out the adjustment after turning the steering wheel to an extreme position. This function is to lock the toe-in value, and turn the steering wheel to a proper position for the convenience of adjusting the toe-in.

Click the [**Toe-in lock Adjustment**] button, and the following Fig. will be displayed:



Lock Toe Adjustment_1

Keep the steering wheel straight according to the tips, and click  after completion to enter the next interface:



Lock Toe Adjustment_2

After adjusting the steering wheel to a position that is convenient to adjust the toe-in, click



Lock Toe Adjustment_3

Carry out the adjustment in the interface, and click  after the adjustment is completed.

After the adjustment is completed, turn the steering wheel to the straight position, and click



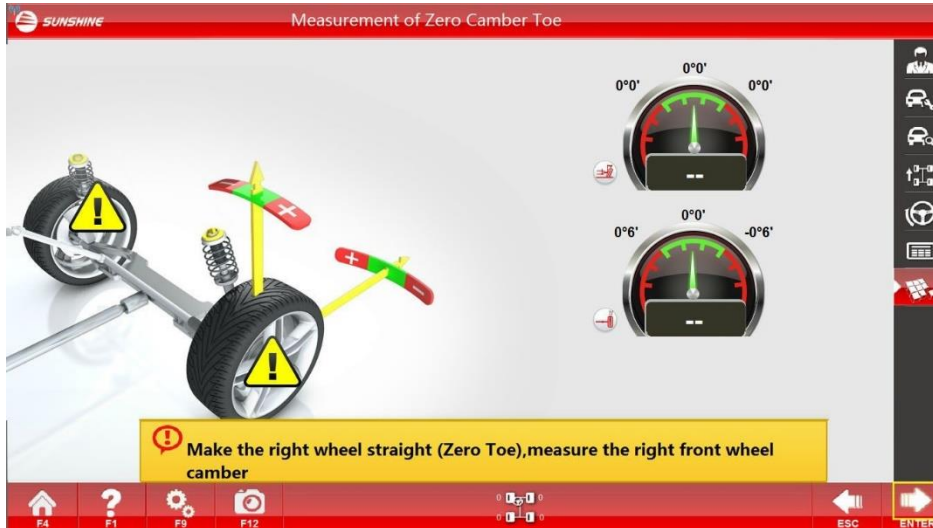
to complete the adjustment.



Zero Toe-in Camber Measurement

When the toe-in is zero, the camber value of the wheel will be displayed. The function is suitable for the vehicles with large kingpin caster angle.

Click the [**Zero Toe-in Camber Measurement**] button, and then the following Fig. will be displayed:



Zero Camber Toe Measurement_1



Zero Camber Toe Measurement _2

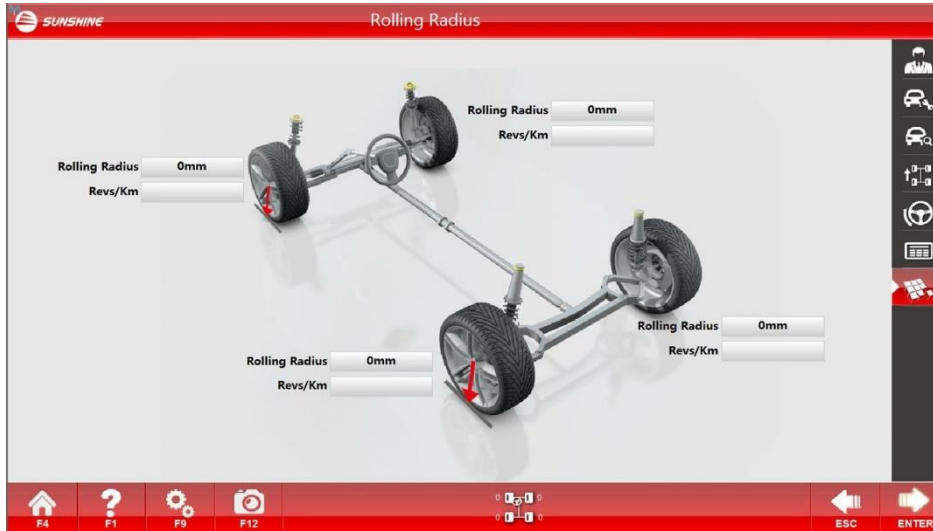
Then, adjust the other front wheel to the zero toe-in position, and measure the camber of the front wheel.



Rolling Radius

To measure if the tire size of the vehicle are matched. When the alignment process is completed, the rolling radius of each wheel can be displayed to remind the operator if the wheel models are matched or problems such as unequal wheel pressure or serious tire wear.

Click the [**Rolling Radius**] button, and then the following Fig. will be displayed:



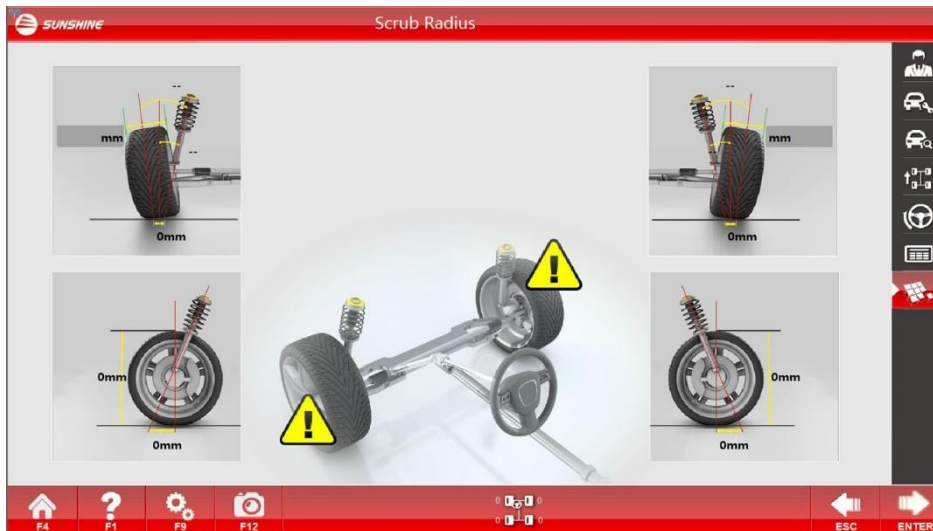
Rolling Radius



Tire Scrub Radius

It aims to accurately measure the offset value of the front wheel, and to display the measurement value of the included angle, the steering axis inclination angle and the wheel camber. Definition of the tire scrub radius: also named as offset distance, is the distance from the intersection point between the tire center line and the ground to the intersection point between the kingpin extension line and the ground (as is shown in the following Fig.). If the intersection point between the kingpin extension line and the ground is inside the intersection point between the center line of the tire and the ground, it is called as positive offset; otherwise, it is called as negative offset. It is required to alter the width data of the tire according to the real width of the tire, and carry out the push vehicle measurement again after the alteration.

Click the [**Tire Scrub Radius**] button, and then the following Fig. will be displayed:



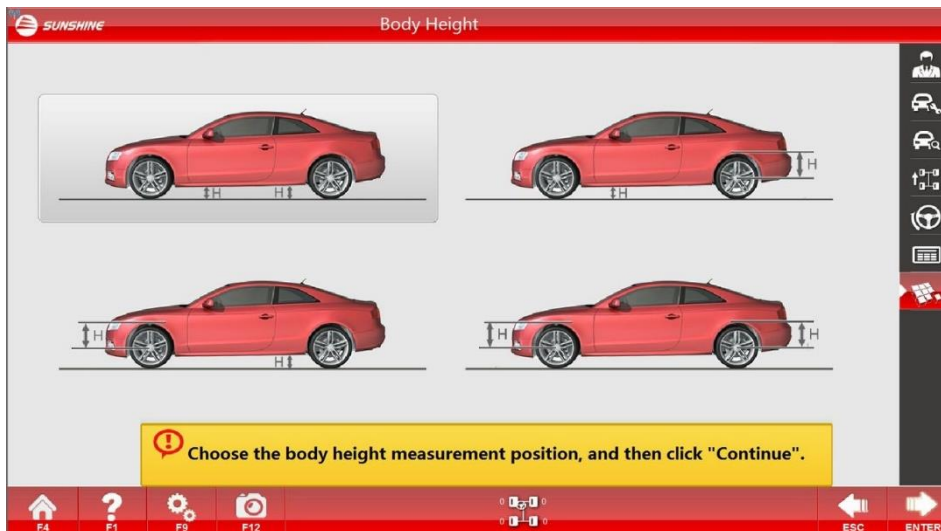
Tire Scrub Radius



Vehicle Height

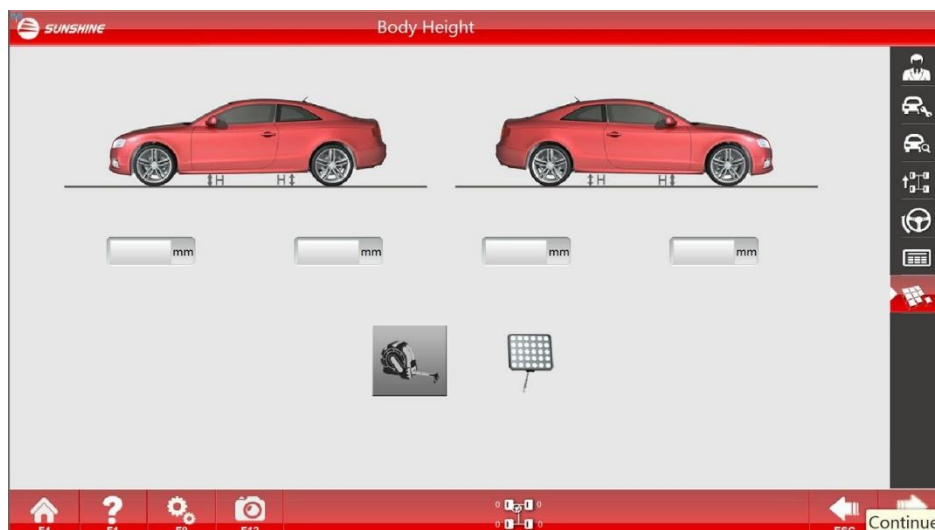
To accurately measure the height of the vehicle body, if you select the special target disk measurement, just point the special target disk pointer at the position to measure the vehicle. Function: As for the vehicles with adjustable suspension height, the adjustment can be carried out according to the measurement result; and as for the vehicles with air suspensions, suitable standard alignment data can be selected according to the measurement result.

Click the [**Vehicle Height**] button, and then the following Fig. will be displayed:



Body Height_1

In this interface, select the position need to measure the vehicle height, and click  to enter the next interface:



Body Height_2 Select the measurement method to carry out the measurement.

Auxiliary function

Click the [System



on any interface, and then the following interface will be displayed:



Setup]

button

System Settings

Parameter setup  :

As for relevant setup of the equipment model, configuration, password, etc., click the [Parameter Setup] button to enter the Parameter Setup Interface, as shown in the following Fig.:



Parameter Settings

The content of the equipment setup has been set up before ex-work. No recommendation of alteration is made for users. Password setup can be altered as required by the users.

The angle unit can adopt degree or point; the toe-in can adopt the same displaying way as that of the camber or mm, but when mm is adopted for displaying, the tire diameter shall be altered according to the actual situation of the tire, otherwise, there will be errors in the measurement results.

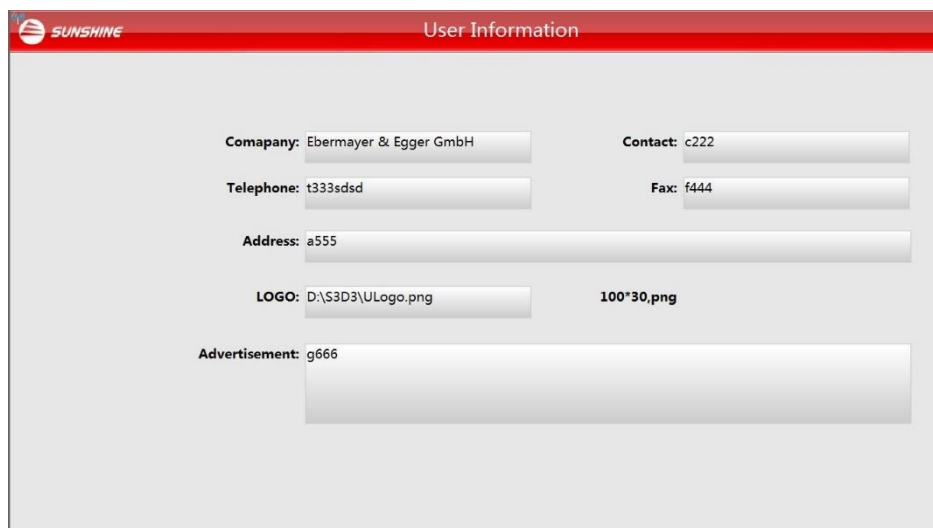


Click  to save the modified information, and click  to exit the Parameter Setup Interface without saving the modified information.



User's information

Record the detailed information of the automobile maintenance company which buys the equipment so that the users need vehicle alignment can contact the automobile maintenance company. Click the user's information and then the user's information entry interface will be displayed:

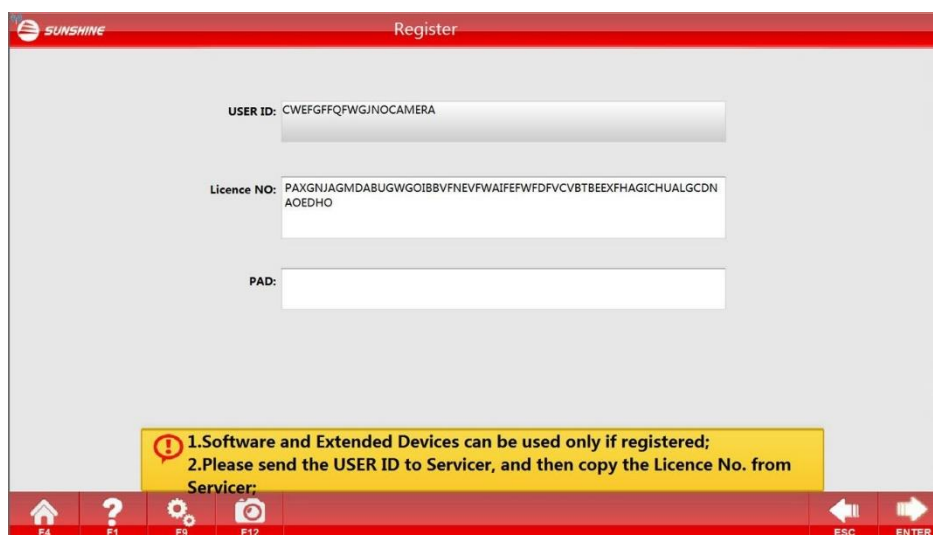


User Information

After the completion of input, click  to save the modified information, or click  to exit without saving the modified information.

Registration

The function shall be used after the software installation for the first time or reinstallation of the operation system. Click the [Registration] button, as shown in the following Fig.:



Registration

Send the User ID to the equipment supplier to get the license number, and then click  to save the



modified information after input, or click  to exit the Registration Interface without saving the modified information.

If the software can be normally applied, please do not operation the interface to avoid the software locking due to mal-operation.

The functions of client management and vehicle model management are same to the previous ones.

It is not recommended for the user to independently operate the equipment calibration and examination functions, so it is not introduced here.

Application Precautions & Maintenance of Four-wheelAligner

Read this chapter to acknowledge the following:

1. Application precautions for each part of 3D aligner;
2. Maintenance, fault diagnosis & troubleshooting of aligner. **4.1 Application precautions & maintenance of target disk**

Keep the surface of target disk clean. Use soft dry cloth to wipe it and avoid surface scratch.

The relative fixed position between the target disk and pylon is prohibited to be altered.

Keep the surface of the target disk clean. Use soft dry cloth to wipe it and avoid surface scratch.

 Use the target disk with the handle gently. Don't touch the surface of the pattern and avoid water and oil.

Oil permeation will affect the use.



Application precautions & maintenance of computer

Please do not switch on the power switch or reset switch in the operation state of the computer, otherwise, it is possible to damage the software and hardware systems;

All defaults are set according to the hardware features and functional requirements of the computer by the Company. Please do not modify any settings in BIOS of the operation system to avoid any impacts on the normal operation of the computer;

Do not use the computer for any non-four-wheel alignment operation, such as watching VCD, listening CD or playing games to avoid the improper software installation, which may result in operation system failure or system breakdown due to virus strikes; if system expansion is required, please contact the manufacturer in time;

Hot plugging of serial port equipment, parallel port equipment, keyboard or other I/O equipment shall be prohibited; and

It is required to keep the computer clean and avoid any impacts of static electricity on the hardware equipment.



Notes: Please well keep the instructions attached, driver (disc) and warranty card of the computer!

Pylon maintenance

The mechanical part is an integral part of the four-wheel aligner. It needs to ensure the integrity and flexibility of the pylon. Therefore, following points shall be guaranteed during usage:

- A. The pylon shall not be damaged, broken or deformed;
- B. If the top of the pylon has serious wearing, please timely replace it to avoid scratching the wheel rim;
- C. Regularly lubricate the screw rod and sliding bar to ensure the flexibility. (Fig. 4-2);
- D. Regularly fasten each connecting bolt.
- E. Handle with the pylon lightly. If unused, put it on the bracket and keep it well to avoid damage which may influence measuring accuracy and equipment life.



Fig. 4-2 Pylon

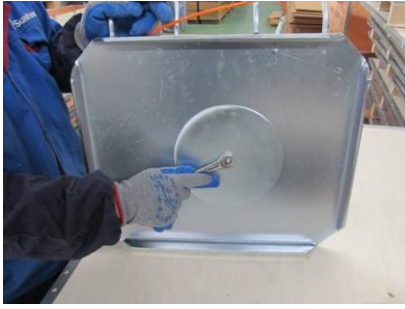
Turntable maintenance

The maintenance of turntable mainly includes periodic cleaning, lubrication and fastening treatment.

Method: Turn over the turntable with the upper wall facing adown; disassemble the fixing bolt; remove the finger, grillage frame and foot wall respectively; clean the upper wall and foot wall, grinding shelf and ball bearing; install all parts in sequence after the ball bearing is covered with lubricating grease; and then fasten the erection bolt (Fig. 4-3). If the finger is loose, the fastening bolt must be fastened (Fig. 4-4). Before the vehicle is driven onto the alignment platform, the turntable lock pin shall be inserted. Before the front wheel moves away from the turntable, the vehicle shall be slowly pushed down from the platform to prevent the upper wall structure being damaged.



(Appearance of the Cast Iron Turntable) (Two-part Disassembly of Cast Iron Turntable)



(Disassembly of Steel Plate Turntable)



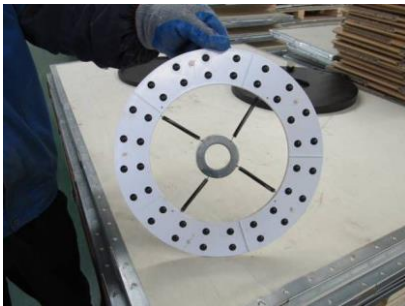
(Appearance of Steel Plate Turntable)



(Two-part Disassembly of Steel Plate Turntable)



(Steel Plate Turntable Roto)



(The retainer needs regular cleaning or replacement, as shown in the Fig.)



High-end Alloy Turntable



Speical Transition Block

Column body maintenance

The column body of the lifting column requires regular cleaning and lubricating.



Notes: Under normal service condition, users may call us to consult any faults related to the equipment or our company may appoint personnel to deal with the faults. The so-called faults under normal service condition refer to the natural damages occurring under normal service condition without any deliberate faults or negligence of general users: i.e., unnatural wear and tear caused not due to mis-operation by users, dismantling by users or overhaul.