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Precautions

- Please read the User's Manual and the Installation and Parts Manual carefully before operating X-712S Wheel Aligner.
- Only the qualified technician can operate the Wheel Aligner.
- The operator must have knowledge of computer application and basic theory of wheel alignment.
- The power voltage of X-712S wheel aligner is of AC220V±10% 50±1Hz / AC110V±10% 60±1Hz（It can be customized according to the requirements of customer）. The 3-terminal socket must be used, and the earth terminal must be well grounded. If the power voltage is not stable, please purchase and use AC voltage stabilizer.
- Before installing the wheel aligner, the lift should be installed at first according to the requirements. Regularly check the lift for fastening and leveling, ensuring the test accuracy and personnel safety; Take away the roadblocks around the lift to prevent influencing operation.
- Don't install X-712S on a vibrated object or an oblique surface. Avoid direct sunlight and moisture.
- Turn off the power after operation. Check all bolts and parts after maintenance, and tighten the slackened bolts and parts in turn for safety.
- Since computer visual technology is used in recognizing the targets mounted on the wheels through the camera with high resolution, it is necessary to keep X-712S wheel aligner away from the outside infrared rays (e.g. sun-lights) from directly lighting to the targets and reflecting to the cameras. It is also necessary to avoid blocking the light way from the targets to the cameras for a long time during the instrument is working.
- The targets of X-712S wheel aligner are the key components for testing. Do not damage their structures when using and storing. Keep the surface of target clean. Please use the soft cloth dipped with an appropriate amount of the neutral detergent or the absolute alcohol to wipe the surface of target lightly if there are some smuts on it.
- When using and storing, please pay much attention to prevent water from entering into the targets.
- The wires inside the post and the lateral beam are connected compactly. Don't move them after first installation.
- The precision position calibration has been performed for the cameras after first installation, the user can not move or wobble the post or lateral beam during or after using it.
- Without approval of the supplier, please do not disassemble the post and the lateral beam in order to avoid damaging the components, influencing the test accuracy and increasing the costs and difficulties of maintenance and repair. For the damage caused by unauthorized disassembling will not be covered by the Warranty.
- The fastening method should be selected correctly and flexibly according to the actual conditions of the rim, the turning force should be equal when fastening, after fastening, please check the wheel clamp again.
- The force should be equal when using each knob, please don't fasten it too tight in order to avoid damaging the locking mechanism or other parts.
- After using, please cut off all power supply timely.
- The cameras of X-712S wheel aligner are the key optical components for testing. Do not impact them when using, keep the surface of the camera lens clean. Please use the lens paper to wipe the surface of the camera lens lightly if there are some smuts on it.

Table of Contents

General Information

Special caution: All the operations mentioned in this manual should be performed by the qualified technical personnel trained by Launch for X-712S Wheel Aligner!

Brief Installation Introduction

This installation manual is only suitable for the installation of X-712S wheel aligner (post type) manufactured by Launch, this type of wheel aligner mainly includes two installation components: the post assembly and the lateral assembly. For easy use and measurement, the following four factors should be taken into consideration during installation:

- Horizontal distance from the center of the turntable on the lift to the post;
- Installation height of camera;
- Distance between left and right camera;
- Camera installation inclination degrees.

The operator must have knowledge of computer application and basic theory of wheel alignment.
The post height of the wheel aligner is 2153mm, and the working height of the lift is between 850~1200mm. Correct installation is very important to the alignment performance and the types of the vehicle that can be aligned, please do read this manual carefully.

Precautions before Installation

Spot Inspection Item Table before Installation must be provided by business personnel before installation. It is convenient for installation engineer to learn beforehand if the spot satisfies the use requirements of the wheel aligner and then select suitable installation position.
Working flow:

- If there is no Spot Inspection Item Table before Installation, please fill out another kind of the table.
- Every measurement must be marked correctly (very important) and confirmed by technical service personnel.
- Solve the problems met in the process of filling out the table first and then perform the installation operation.
- During installation, please abide by the advice and requirements of this manual strictly. Please contact the technical support engineers for help if necessary. To install the wheel aligner together with lift, mark out the spot according to the Spot Inspection Item Table before Installation, install and adjust the lift first and then install the wheel aligner.

Installation Tools

Tools needed in X-712S wheel aligner installation are:

- 5m tapeline, accuracy: 1mm;
- Iron hammer, > 2kg;
- Cable drilling tool, Φ16 drilling bits;
- Monkey wrench, medium size, 20cm;
- Lineation chalk;
- Hexagon ring spanner, M4—M6;
- Cross screw driver, medium size;
- Installation sets (including installation bolts, etc.).

Power Supply Requirement

X-712S wheel aligner is a precise computer system that needs AC220V±10% 50±1Hz / AC110V±10% 60±1Hz power supply. Good ground helps to protect the equipments and persons. If power supply cable needs to be lengthened, its load must not be less than 220V 8A. So in order to protect electronic products such as X-712S Wheel Aligner, it is advisable to use AC power supply voltage stabilizer.
Note:
Installation engineer must confirm that power supply satisfies the above-mentioned requirements before switching the wheel aligner on.

Unpacking

X-712S wheel aligner is packed in two separated boxes: a post/beam wooden box and an accessory carton.

Post/Beam Box

For unpacking of the post/beam box, please take Fig.2.1 as reference. The post assembly, the lateral beam assembly and the computer host box are contained in this wooden box.

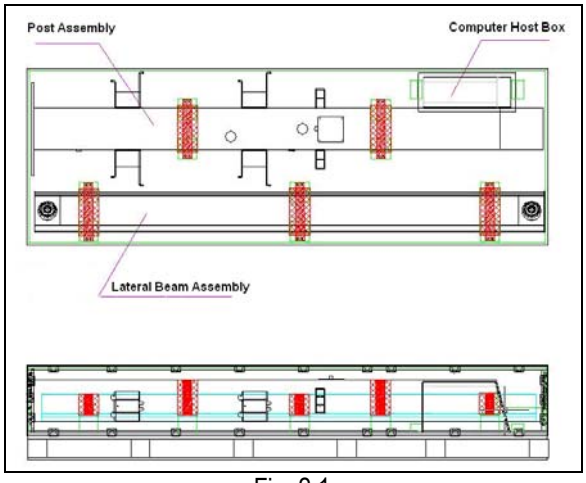


Fig. 2.1

Accessory Carton

Two front targets, two rear targets, two mechanical turntables, printer, four wheel clamps, computer host, monitor, printer box, brake pedal depressor and steering wheel holder, etc. are packed in one package box as shown in Fig. 2.2.

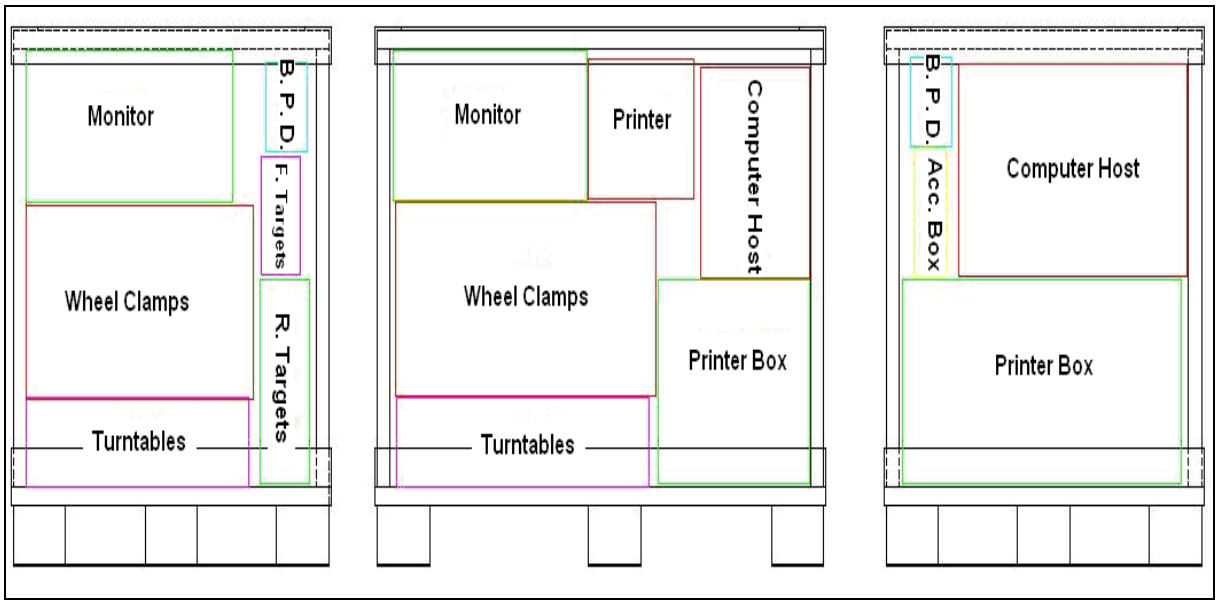

Monitor
B. P. D.
F. Targets
Wheel Clamps
R. Targets
Turntables
Monitor
Printer
Computer Host
Wheel Clamps
Printer Box
Turntables
B. P. D.
Acc. Box
Computer Host
Printer Box

Fig. 2.2

Main Component Structure and Parts List

Complete Set Structure and Components List

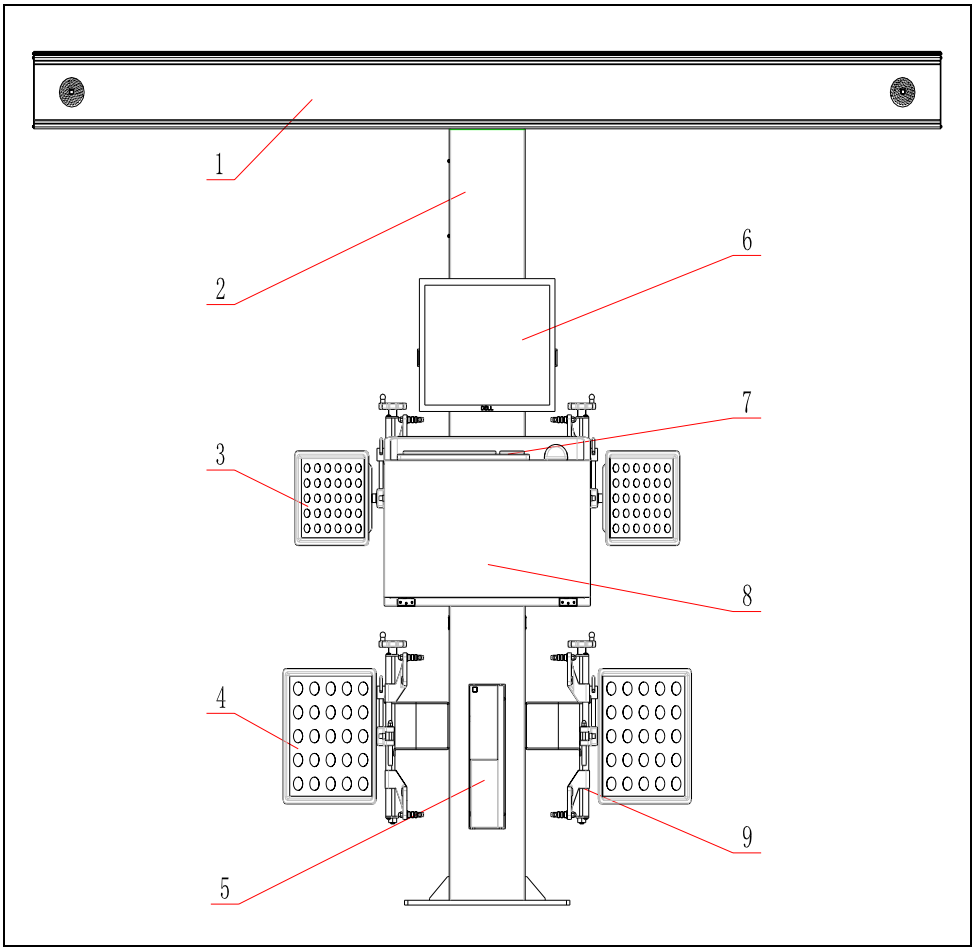


Fig.3.1

Components List *(Note: Take the parking list as the criterion)*

No.	ERP Code	Part Name	Qty
01	206010571	Lateral beam assembly	1
02	206010569	Post assembly	1
03	206010567	Front target assembly	2
04	206010568	Rear target assembly	2
05	108030119	Computer host (Inside the box)	1
06	108020019	Monitor	1
07	108020018	Mouse & Keyboard	1
08	108010037	Printer (Inside the front box)	1
09	103250250	Wheel clamp	4
10	102140017	Sound box	1

Structures of Main Components

Post assembly

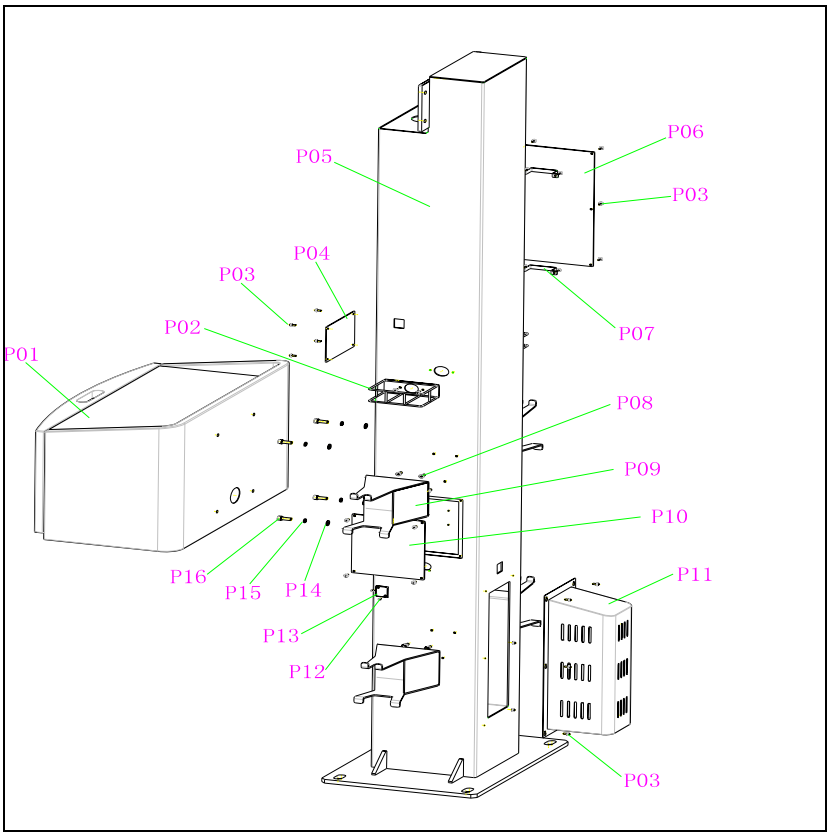


Fig. 3.2

Parts and components list of post assembly:

No.	ERP Code	Part/Component Name	Qty.
P01	103202561	Printer box assembly	1
P02	X103202552	Sound box brackets	2
P03	103010215	Cross recessed pan head screws (with spring washers and plain washers), GB/T9074.4-1988, M4*10	28
P04	X103202547	Monitor fastening plate	1
P05	X103202536	Post welded part	1
P06	X103202551	Installation hole cover plate	1
P07	X103202553	Press plate for strip power socket	2
P08	103010147	Cross recessed pan head screws (with spring washers and plain washers), GB/T9074.4-1988，M6*12	12
P09	X103202549	Wheel clamp hanging brackets	4
P10	X103202548	Computer host support plate	1
P11	X103202546	Computer host box	1
P12	103011045	Cross recessed countersunk head screws, GB/T819.1.-2000，M3*8	4
P13	103202243	Charging socket hole baffle	2
P14	103040118	Plain washer, GB/T97.1-2002, 8	4
P15	103040108	Spring washer, GB/T93-1987, 8	4
P16	103011092	Hexagon socket head screw, GB/T70.1-2000, M8*20	4

Lateral beam assembly

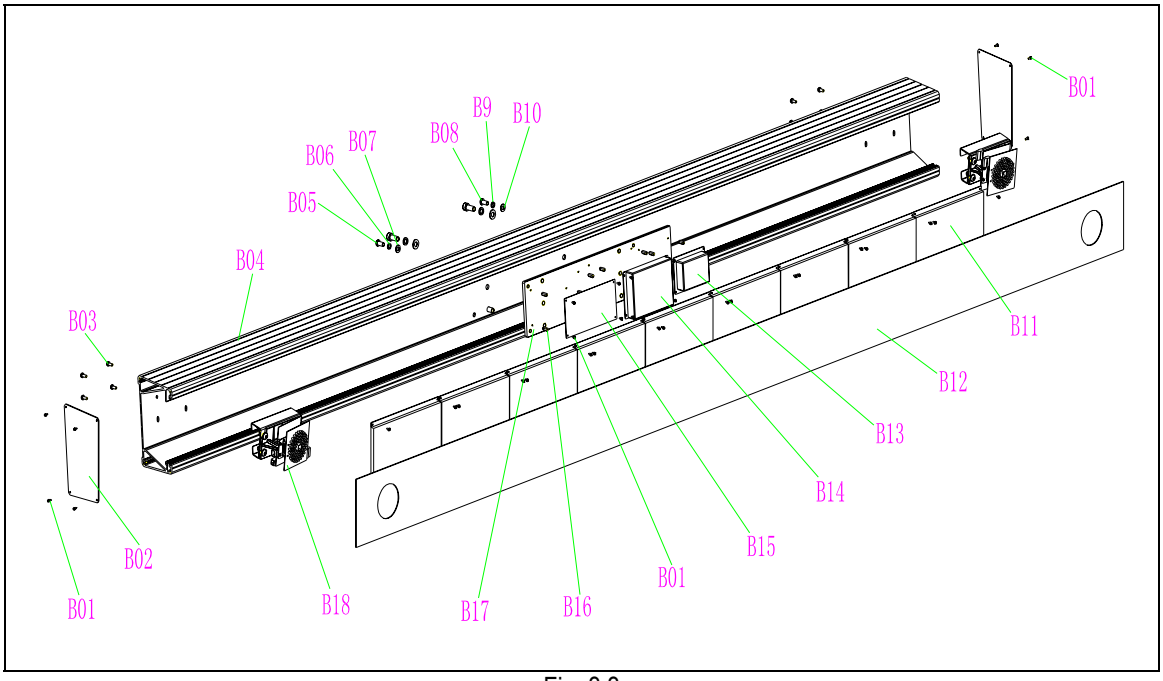


Fig. 3.3

Parts and components list of lateral beam assembly:

No.	ERP Code	Part/Component Name	Qty.
B01	103010081	Cross recessed pan head screws (with spring washers and plain washers), GB/T9074.5-2004, M3*8	34
B02	103202562	Side cover plate for lateral beam	2
B03	103010219	Cross recessed pan head screws (with spring washers and plain washers), GB/T9074.4-1988, M5*15	8
B04	103230254	Lateral beam	1
B05	103011092	Hexagon socket pan head screws, GB/T70.2-2000, M8*20	4
B06	103040108	Spring washer, GB/T93-1987, 8	4
B07	103040118	Plain washer, GB/T97.1-2002, 8	4
B08	103010443	Hexagon socket head screws, GB/T70.1-2000, M10*25	2
B09	103040122	Spring washer, GB/T93-1987,10	2
B10	103040105	Plain washer, GB/T97.1-2002,10	2
B11	205010656	Display panel	9
B12	104040728	Acrylic panel	1
B13	102210129	12V switch power supply	1
B14	102210095	5V switch power supply	1
B15	205010655	Main control panel	1
B16	103010516	Hexagon copper stud	10
B17	X103202550	Inner plate for lateral beam	1
B18	206010476	Camera assembly	2

Camera assembly

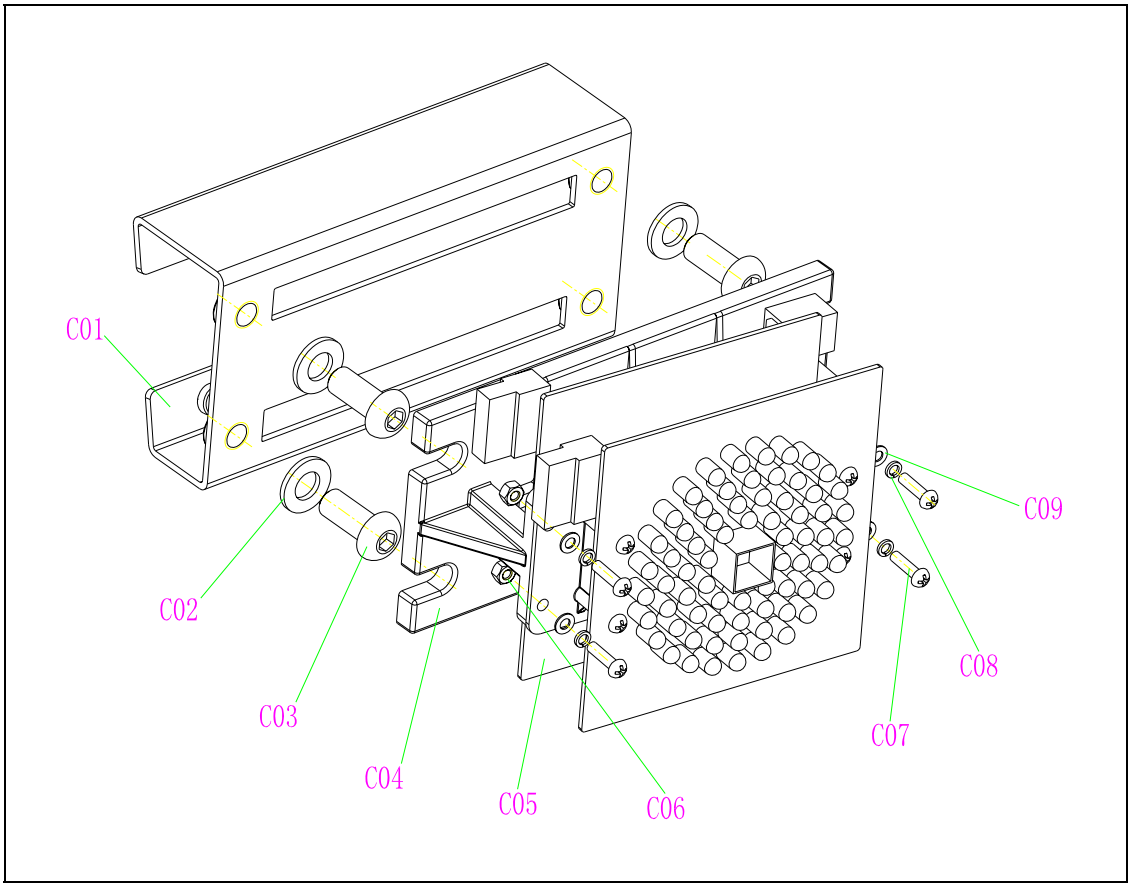


Fig. 3.4

Parts and components list of camera assembly:

No.	ERP Code	Part/Component Name	Qty.
C01	X103203272	Camera bracket	1
C02	103040016	Plain washer, GB/T97.1-2002, 8	4
C03	103011092	Hexagon socket pan head screws, GB/T70.2-2000, M8*20	4
C04	101050117	Aluminium alloy support plate	1
C05	108990014	Camera	1
C06	103030077	Hexagon nut, GB/T6170-2000, M3	4
C07	103010561	Cross recessed pan head screws, GB/T818-2000, M3*12	4
C08	103040009	Spring washer, GB/T93-1987, 3	4
C09	103040016	Plain washer, GB/T97.1-2002, 3	4

Front target assembly

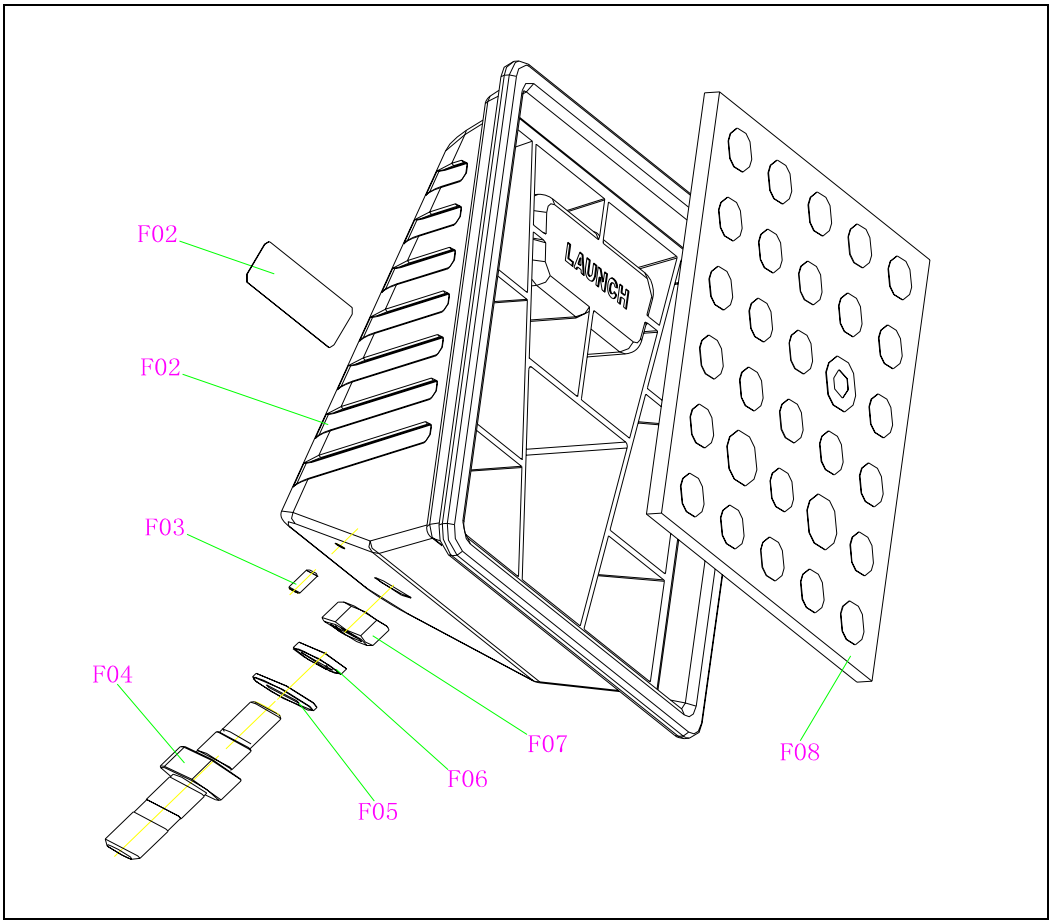


Fig. 3.5

Parts and components list of front target assembly:

No.	ERP Code	Part/Component Name	Qty.
F01	107022380	Target label	1
F02	104011261	Front target casing	1
F03	103010266	Hexagon plane end set screws, GB/T77-2000, M5*12	1
F04	103203283	Target pin shaft	1
F05	103040021	Plain washer, GB/T95-2002, 14	1
F06	103040200	Standard spring washer, GB/T93-1987, 14	1
F07	103030140	Hexagon nut, GB/T6170-2000, M14	1
F08	101050118	Front target pan	1

Rear target assembly

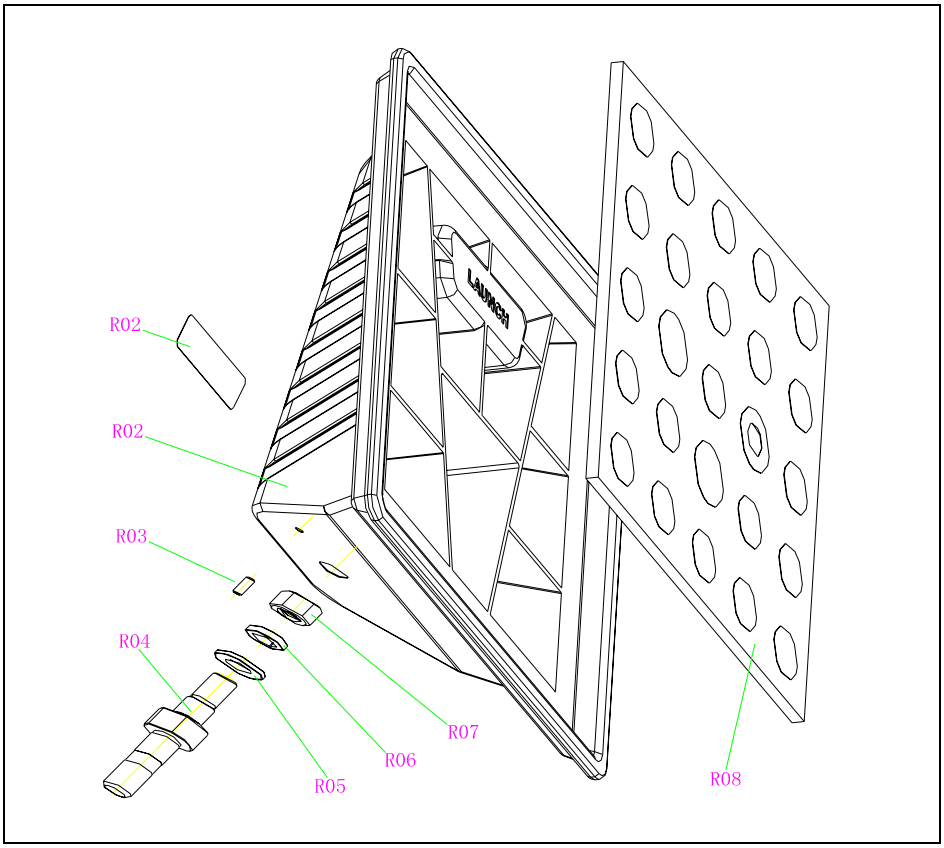


Fig. 3.6

Parts and components list of rear target assembly:

No.	ERP Code	Part/Component Name	Qty.
F01	107022380	Target label	1
F02	104011262	Rear target casing	1
F03	103010266	Hexagon plane end set screws, GB/T77-2000, M5*12	1
F04	103203283	Target pin shaft	1
F05	103040021	Plain washer, GB/T95-2002, 14	1
F06	103040200	Standard spring washer, GB/T93-1987, 14	1
F07	103030140	Hexagon nut, GB/T6170-2000, M14	1
F08	101050119	Rear target pan	1

Steering Wheel Holder

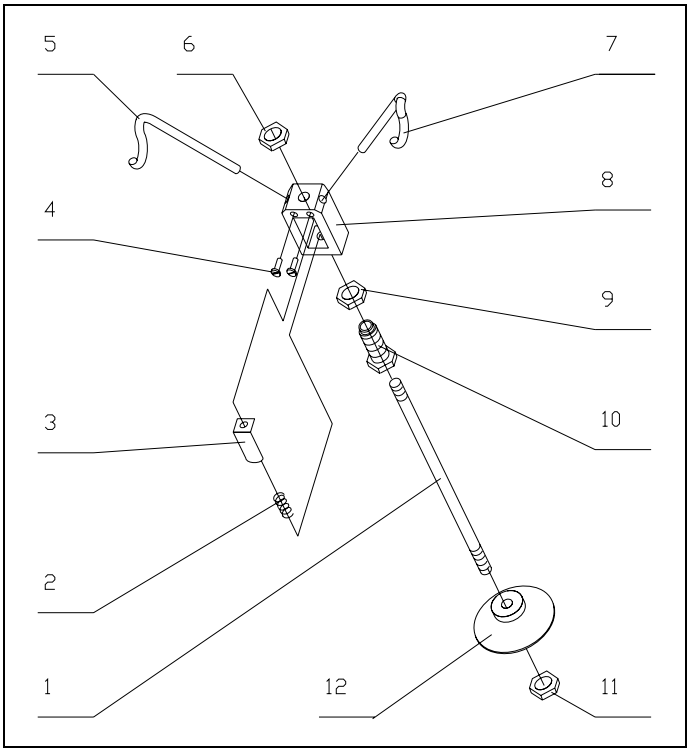


Fig. 3.7

Parts list of steering wheel holder:

No.	Part Name	Quantity
1	Slide bar	1
2	Spring	1
3	Push plate	1
4	Open securing screw	2
5	Left support bar	1
6	Nut M8	1
7	Right support bar	1
8	Support block	1
9	Nut	1
10	Adjusting sleeve	1
11	Nut M8	1
12	Support seat	1

Brake Pedal Depressor

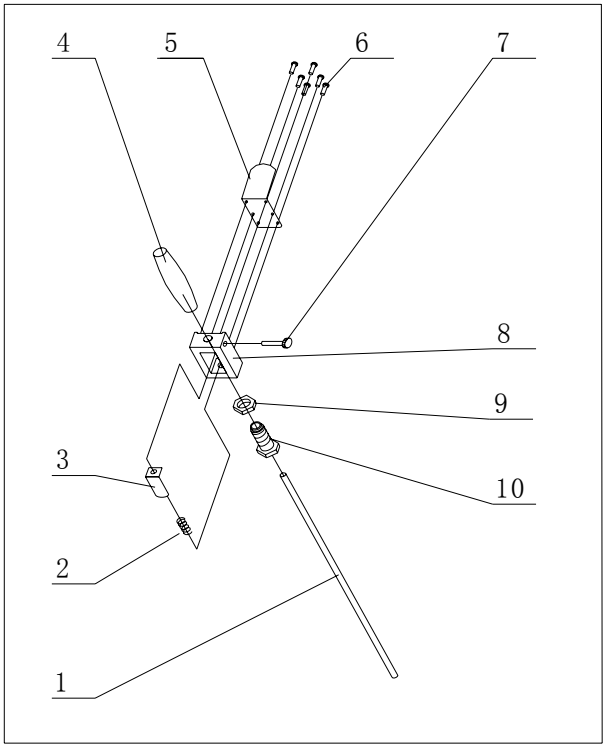


Fig. 3.8

Parts list of brake pedal depressor:

No.	Part name	Quantity
1	Slide bar	1
2	Spring	1
3	Push plate	1
4	Rubber handle	1
5	Support plate	1
6	Slotted pan head set screw	6
7	Knurled screw M6X25	1
8	Support block	1
9	Nut	1
10	Adjusting sleeve	1

Components Structure

Overall Structure

The X-712S wheel aligner mainly consists of computer host, monitor, lateral beam assembly, post assembly, front targets, rear targets, wheel clamps, wheel clamp ties, turntables, steering wheel holder and brake pedal depressor as shown in Fig. 4.1.

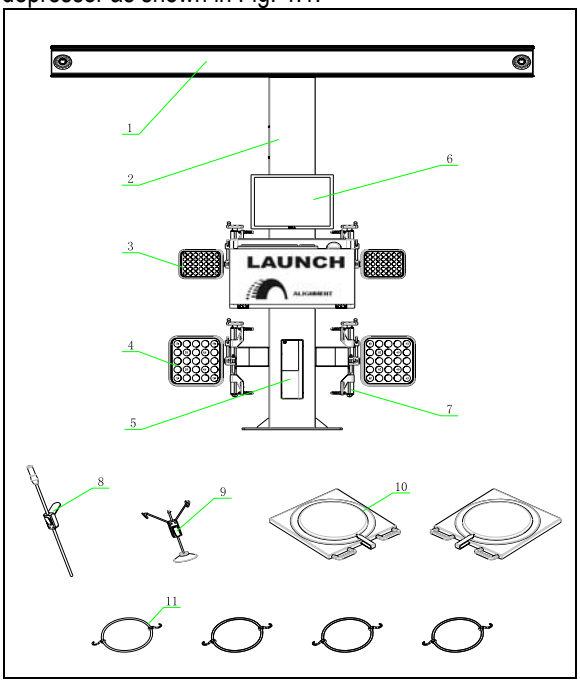


Fig. 4.1 Overall Structure

1. Lateral beam assembly; 2. Post assembly;
3. Front target; 4. Rear target; 5. Computer host front cover; 6. Monitor; 7. Wheel clamp;
8. Brake pedal depressor; 9. Steering wheel holder;
10. Mechanical turntable; 11. Wheel clamp tie.

Post Assembly

X-712S wheel aligner post assembly is an operation control platform. It consists of post, printer box, computer group and power supply assembly, etc. The computer group includes computer host, monitor, keyboard, mouse and printer, etc. The monitor is installed in front of the post, mouse and keyboard are placed on the top of the printer box, the printer is installed inside the printer box, and the computer host is inside the computer host box.

The power supply assembly includes power lead, power socket and the power supply master switch. The power supply master switch is installed at the left side plate of the post, and the power supply socket is inside the lower compartment of the post.

Cameras and Lateral Beam Assembly

X-712S wheel aligner includes 2 CCD cameras, which respectively capture the images from the 4 targets attached on the vehicle wheels. The cameras are mounted inside the lateral beam, one on left side and another on right side. The accurate adjustment for camera has been performed during first installation, so it is not necessary for user to adjust it when using the instrument.

The lateral beam assembly of X-712S wheel aligner mainly consists of two sets of camera assemblies, 9 pieces of LED boards, one switch power supply, one main control board and its signal/power cables.

Note: During or after using, ensure to prevent the post/lateral beam from swaying, otherwise the position of camera will be changed, influencing the accuracy of test result.

Targets and Wheel Clamps

X-712S wheel aligner totally has 4 target-clamp assemblies, which are key components for whole test system, and are the objects monitored by cameras. There are some bull-eye signs on the targets as shown in Fig. 4.2.

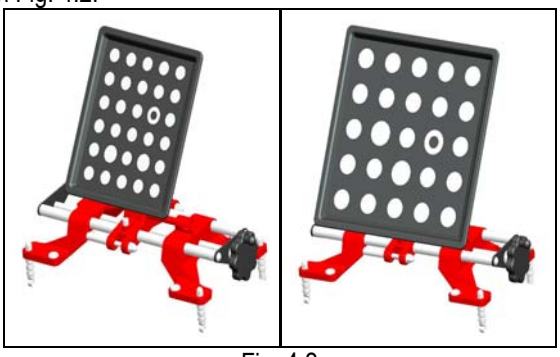


Fig. 4.2

Whether the wheel clamps are fastened correctly or not has the great relations with the test result. Turn the adjusting knob to adjust the span between wheel claws until it is proper, and then attach the clamp to the wheel rim. Adjust the knob to make the wheel clamp fixed on wheel rim tightly. Use the wheel clamp tie to bind the wheel clamp and the wheel rim together.

The installation of wheel clamp is crucial to the test result. The claws should be in even contact with the wheel rim without touching the lead weight.

Avoid hitting during operation. Otherwise, distortion may be caused and the test result may be influenced.

Turntables and Transition Bridges

X-712S wheel aligner has two mechanical turntables (standard configuration, see Fig. 4.3):

Fig 4.3

The turntables are placed at the front wheel positions of the vehicle on the lift.
Use the lock pin to lock the turntable before driving the vehicle on. Pull out the lock pin after the vehicle is stopped and the front wheels are at the centers of the turntables.
While testing, try your best to keep the vehicle front wheels at the centers of the turntables.
Each turntable is equipped with a transition bridge, which is placed between the turntable and lift, to ensure the wheel on the turntable move reposefully.

Steering Wheel Holder

X-712S has a steering wheel holder as shown in Fig.4.4. Use the steering wheel holder to lock the steering wheel according to the tips on the screen.

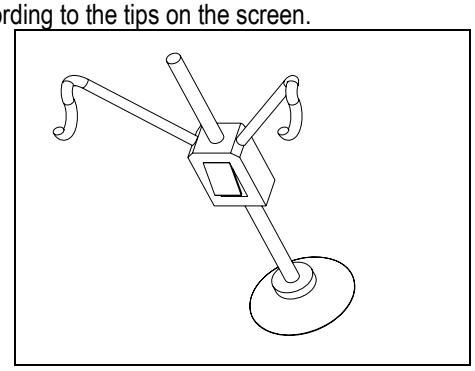


Fig. 4.4

Brake pedal depressor

X-712S has a brake pedal depressor as shown in Fig. 4.5. It is used to hold the vehicle brake pedal down to ensure the vehicle will not move forward and backward during test.

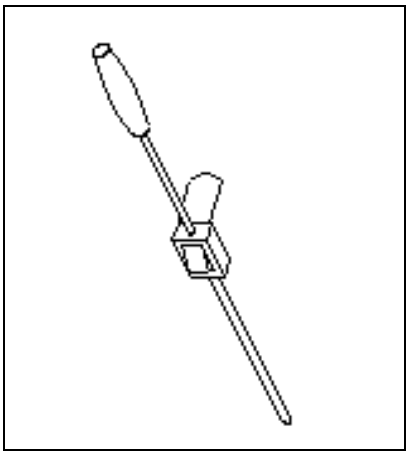


Fig. 4.5

Installation and Adjustment

Professional technical personnel are responsible for the installation and calibration of X-712S Wheel Aligner. Users need not to do these but to provide installation conditions as follows: X-712S wheel aligner is a type of three dimensions infrared image wheel aligner, and it should be used indoors without strong infrared light irradiating directly. So it is best to be installed indoors.

Install X-712S Wheel Aligner

Check One by One if the Spot Meets the Requirements according to Spot Inspection Item Table before Installation

Confirm that the lift has been installed and adjusted well before installing X-712S Wheel Aligner. Generally speaking, the spot which meets the installation requirements for the lift, also can meet the requirements for the ground where the X-712S wheel aligner is installed. If not, in some special cases, it is required to lay a new foundation for X-712S wheel aligner in designated place (poured with more than 200# concrete, 800mmx800mmx400mm); keep the installation plane of the foundation flush to the ground level where the lift is installed, and keep the level degree of the installation plane within 3mm; after the whole foundation is poured well, appropriate maintenance work should be performed, and it can be used after completely concreted and dried.

Install Post Assembly and Lateral Beam Assembly

Stand the post near the installation place, remove the back cover plate of the post; Install the lateral beam on the top of the post as shown in Fig.5.1.

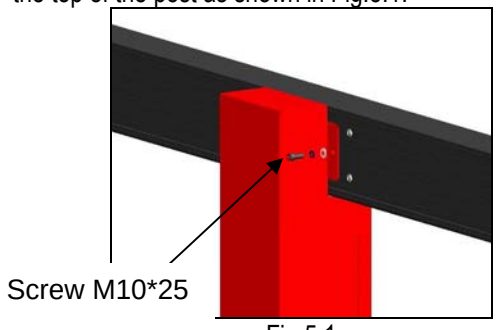
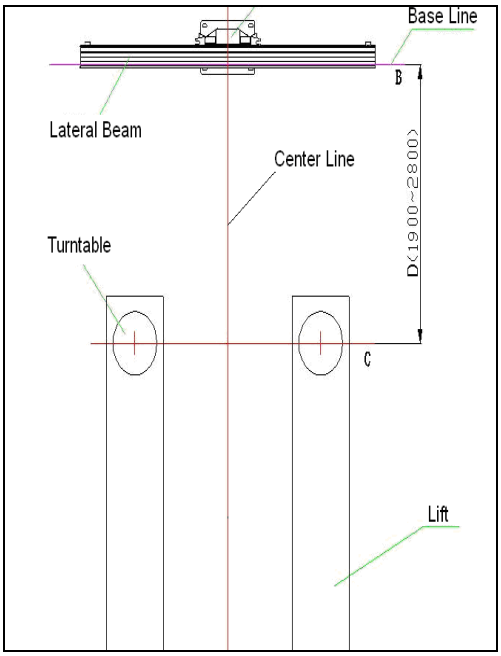


Fig.5.1

Caution: It is required to use inner hexagon spanner when performing the installation operation.

Confirm the Installation Position

The position relationship of post and lift is as shown in Fig.5.2.



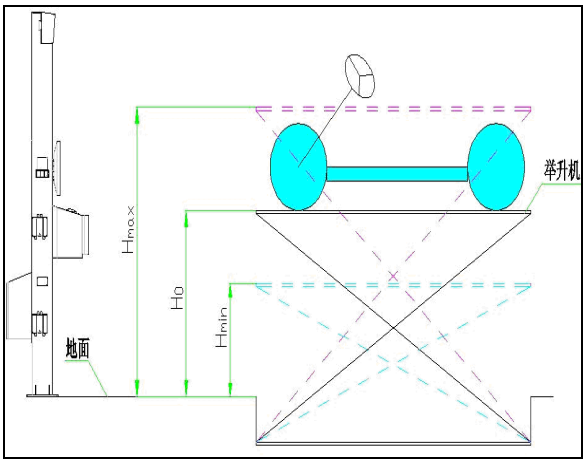


Fig 5.2

1. Confirm the lift height
   For the lift with multi-level height, please select suitable working height (from 850mm to 1200m) for operators to push and pull vehicles conveniently, as well as adjust toe-in and camber, etc. Mark at the corresponding shift positions of the lift as the positioning height when users operate on it each time. The present working height of the lift is of the height between ground and turntable upper end surface center.
2. Confirm the post installation center line
   Obtain two center points by measuring front and rear widths between two lift runway rails. Connect these two points to confirm the center line of the lift, lengthen the line in the direction of post.
3. Confirm the post base line B
   Confirm line B according to the positions of two turntables. Make sure that this base line is parallel to turntable center line and vertical to lift center line. The distance between line B and the turntable center line is 1900～2800mm.

4. Place the post on the ground vertically and drill on the ground by cable drilling tool according to the installation holes on the post pedestals and then install the anchor bolts. During installation make sure that the post is vertical to the ground and the lateral beam is in level status.

Install Printer Box and Monitor Installation Plate

1. Take the printer box from the accessory carton, and then open the door of the printer box, you will see X-712S wheel aligner User's Manual, Installation and Parts Manual and Packing List, etc., inside it. Please keep these materials well.
2. Install the printer box on the post as shown in Fig.5.3.

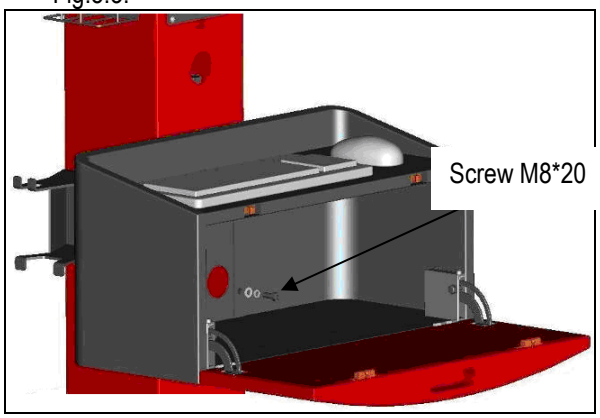


Fig 5.3

Caution: It is required to use inner hexagon spanner when performing the installation operation.

3. Remove the installation plate from monitor bracket (The installation plate itself is equipped with 4 cross recessed countersunk head screws M4*8). Install the plate on the monitor fixing plate mounted on the front middle end surface of the post as shown in Fig.5.4.

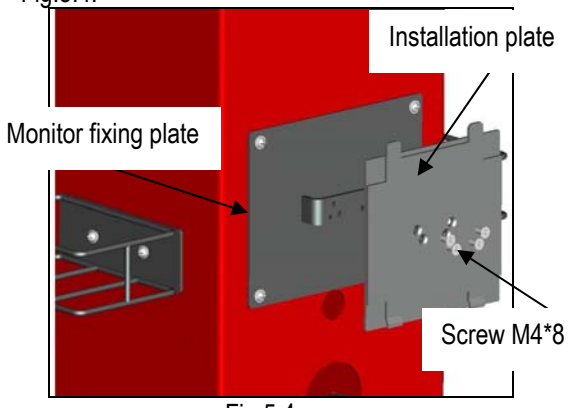


Fig 5.4

*Caution: Please directly use those 4 screws M4*8 removed from the installation plate when performing the installation operation.*

Cable Wiring and Others

1. Place printer, keyboard and mouse on the proper positions of the printer box and connect the corresponding cables.
2. Place the computer host on the computer host support plate, install the monitor on the installation plate, and put the sound boxes on the sound box brackets respectively, and then connect the corresponding cables.
3. Connect the data cable from the lateral beam to the computer host, and plug each power plug onto the strip power socket inside the lower compartment of the post.
4. Inside the post compartment, there is an array of cable fixing lugs on left/right side plate respectively. Hold the data cables and the power cables with cable-locking clamps and then fix them on the lugs respectively.
5. At last, reinstall the post back cover plate and the computer host box respectively.

Adjust the Computer Host

1. Adjust the computer host before operating X-712S Wheel Aligner.
2. Connect the main power cable to the power socket (220V AC), press down the indicator switch in the middle of the left side plate of the post to power the main unit.
3. Press down the power supply switch to start the computer. The system will automatically enter software operating system.
4. Press down the power supply switch of the printer. Print the test page to see if it is normal.
5. The adjustment for the computer host is successful if all the above steps are normal. Exit X-712S wheel aligner software operating system and the computer will automatically shut down.

Calibration for Installation

Note: Under normal circumstances, please do not perform the calibrating operations. The "front left, rear left, front right, rear right" mentioned in this manual refers the orientation when the driver faces to the cameras.

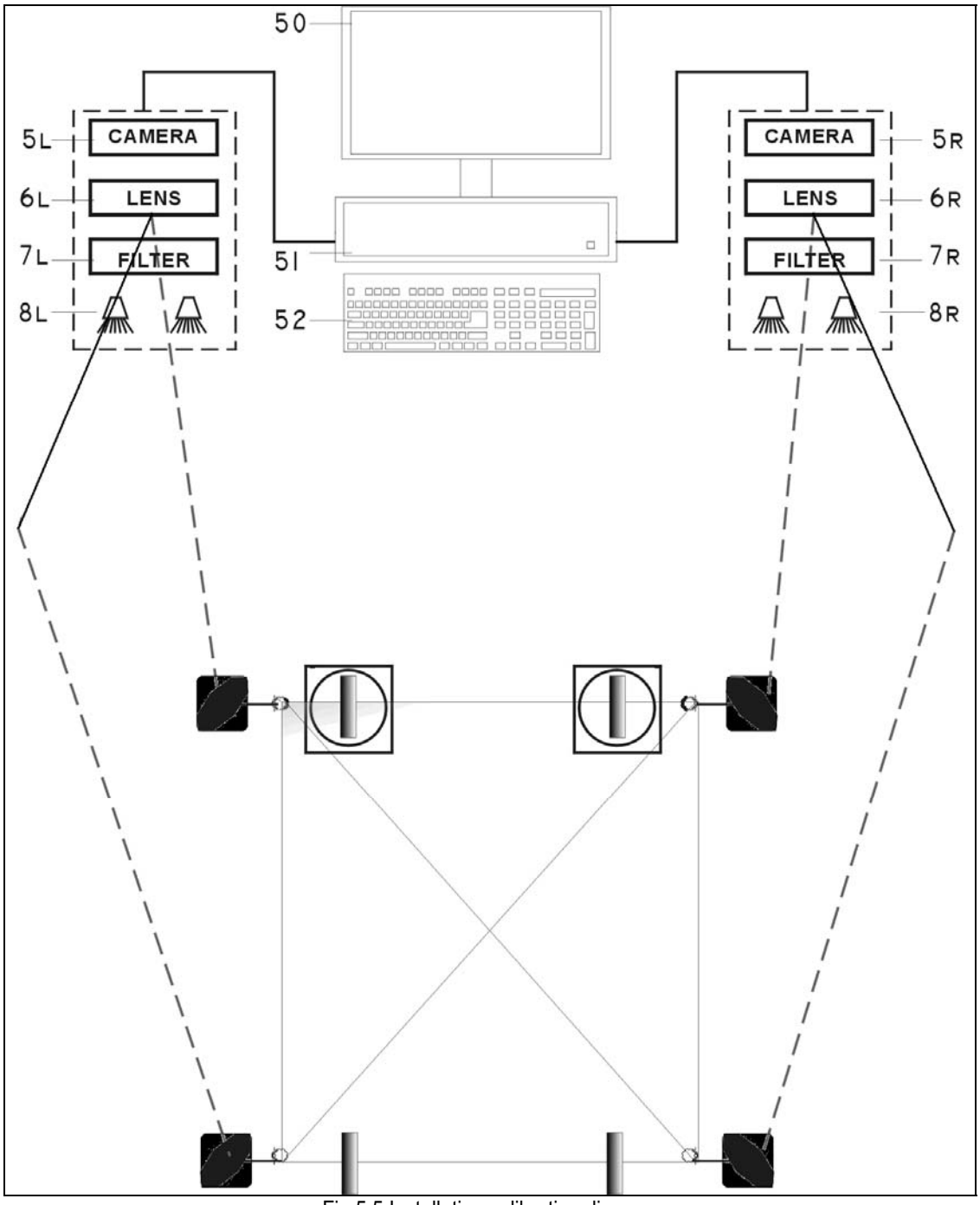


Fig 5.5 Installation calibration diagram

Camera Calibration

Click the [Camera Calibration] icon, the system will enter the interface as shown in Fig.5.6.

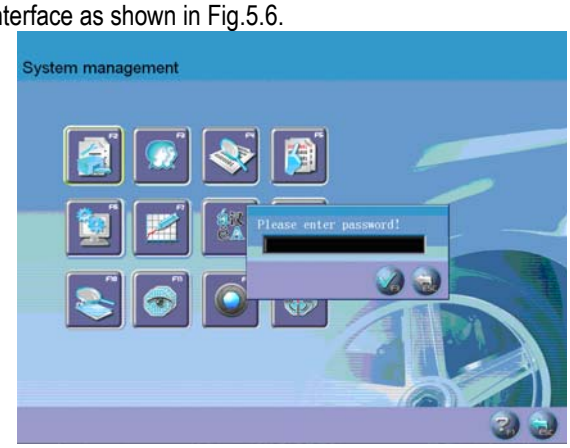


Fig.5.6

Enter the password (Note: the password is provided by LAUNCH), and click [OK] button, the interface is as shown in Fig.5.7.

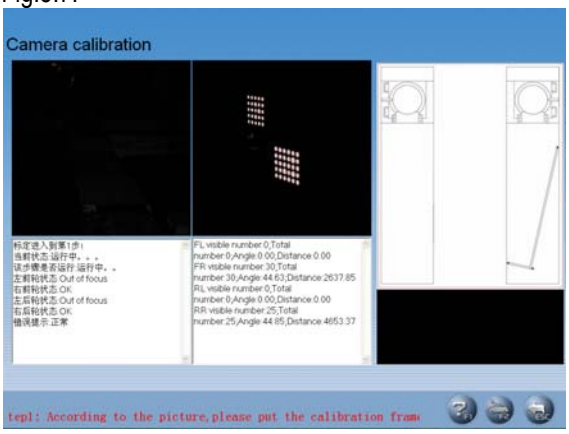


Fig.5.7

According to the prompts on the interface, put the calibration frame on the right-side slide board of the lift. Click [OK] icon, the next interface is as shown in Fig.5.8.

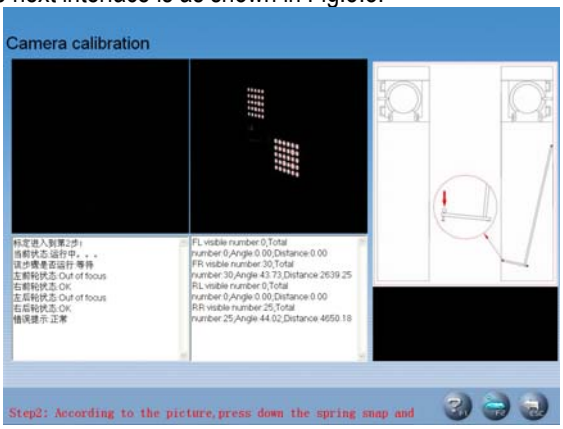


Fig.5.8

According to the prompts on the interface, please press down the spring snap, and then click [OK] icon. The next interface is as shown in Fig.5.9.

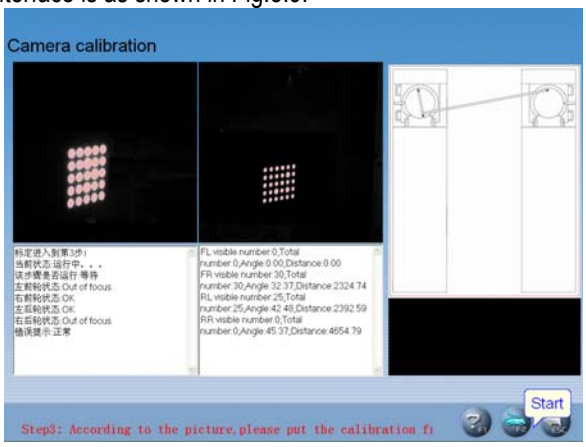


Fig.5.9

According the prompts on the interface, unlock the spring snap, and simultaneously put the calibration frame on the left and right turntables. Click [OK] icon, the next interface is as shown in Fig.5.10.

Fig.5.10

According to the prompts on the interface, move the calibration frame back by 600mm, and then click [OK] icon, the next interface is as shown in Fig.5.11.

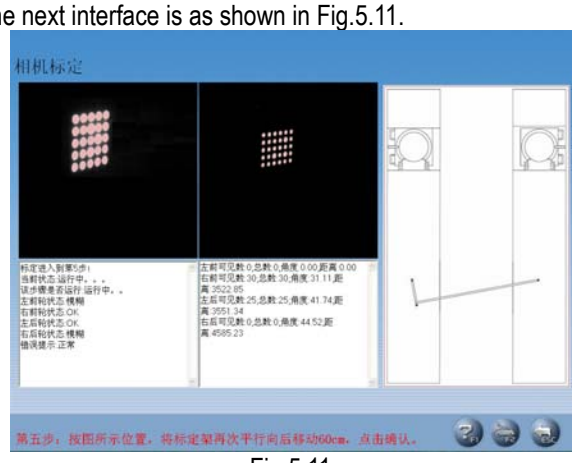


Fig.5.11

According to the prompts on the interface, once more, move

back the calibration frame by another 600mm, and then click [OK] icon, the next interface is as shown in Fig.5.12.

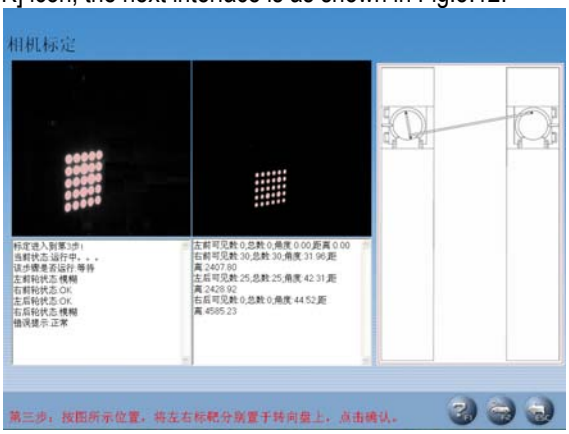


Fig.5.12

According to the prompts on the interface, move the calibration frame back by 1200mm to the turntables, and click [OK] icon, the next interface is as shown in Fig.5.13

Fig.5.13

According to the prompts on the interface, put the calibration frame on the left-side slide board of the lift, and then click [OK] button to confirm, the next interface is as shown in Fig.5.14.

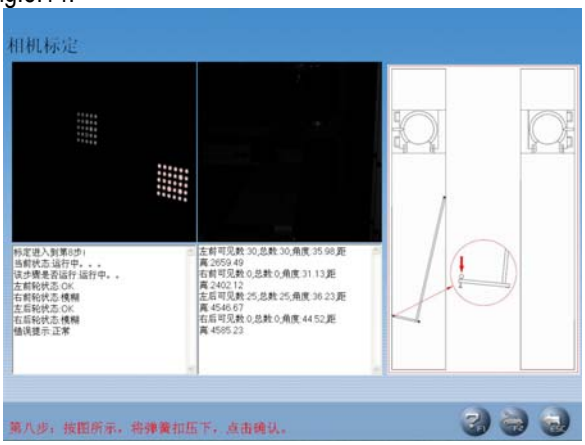


Fig.5.14

According to the prompts on the interface, press down the spring snap, and then click [OK] button to confirm, the whole calibration process is finished. Click [RETURN] button, you can exit from the system.

Note:
It is not necessary to perform the calibrating operation during equipment first installation. Generally speaking, only in following two cases is the calibrating operation performed:

1. *The camera is adjusted or moved;*
2. *The target is changed.*

Please do not perform the calibrating operation in normal test operation process.

Target Calibration

(Cannot be used)

Precautions and Solutions

Common Problems and solutions in Installation

The screen displays the prompt of "Illegal user" when you run the software, how to handle it?
At first examine if the soft dog is installed properly or in poor contact. Then check if the serial number and user's password provided are correct. If necessary, contact the technical service section of our company for verification.

The screen displays no image when you run the software and select "Target Monitoring", how to handle it?
First check if cable connection of video camera and illumination is right and the illuminating lamp is lightened. Secondly, check the light path. Sway a target near the camera lens and observe if there is an image appears.

Precautions

- Calibration for installation is the base of X-712S Wheel Aligner, so every step of operations must be performed very careful. Otherwise, test precision and equipment usage will be affected.
- After calibration for installation, the post/lateral beam and cameras are not permitted to move and adjust.
- Keep targets clean.
- The filter of camera is a special optical device, so it must be kept clean and cleaned with soft lens tissue when dirty. Avoid crushing the filter and moving the camera.

Spot Inspection Item Table before Installation

For X-712S Wheel Aligner

Inspection Item	Installation Requirement	Actual Measurement Value	Evaluation Comments
Post installation height (vertical distance from ground to post top)	2153mm		
Height of positioning platform (vertical distance from ground to turntable top)	AH=850~1200mm		
Post base distance (horizontal distance from turntable center to post installation base)	AB=1900~2800mm		
Height difference between the front and the rear of positioning platform	<5mm		
Power supply Requirement	AC220 or 110V 8A		