



Keyboard Design
Air Cooling + Dual Channel Heat Dissipation
High End IPS Screen Wheel Balancer
Model: FWB-8833

Product installation, use and maintenance instructions



- First of all, before installation and debugging, we should confirm the integrity of the product to ensure that the product has not been modified.
- The instruction manual is part of the product and should be placed in a place where it can be found at any time for easy reference.
- During the installation process, if the installation warning sign is damaged, contact the manufacturer in time to replace the missing icon.



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1 Summary

1.1 Important note

- **Thank you for purchasing and using this product. Please read this manual carefully before installing and operating the tire balancer to avoid unnecessary losses caused by improper operation. Non-professionals are prohibited from operating this product, and our company will not be liable for any consequences caused by improper installation or operation.**
- **Without the approval of the company, any user shall not change any parts and structure of the machine without permission, otherwise the consequences will be borne by himself.**

1.2 Qualified users

- **Only professionally trained personnel can operate and use the products.**
- **Electrical connections must be made by a regular electrician.**
- **Non-professional and untrained personnel should not approach the product use area.**

1.3 Precautions

- **If the machine's appearance and tool accessories are undamaged, the machine is covered by a one-year warranty. If any damage is found, please contact the dealer to discuss the specific cause. During this period, the dealer will provide free repairs and the manufacturer will supply spare parts free of charge. Additionally, the dealer should ensure that customers receive proper training. If the product is damaged due to improper use by the customer, the customer will be responsible for the costs.**
- **The purpose of this manual is to provide a safe and practical guide for the owner of this machine, so as to facilitate better maintenance and use in the later stage.**

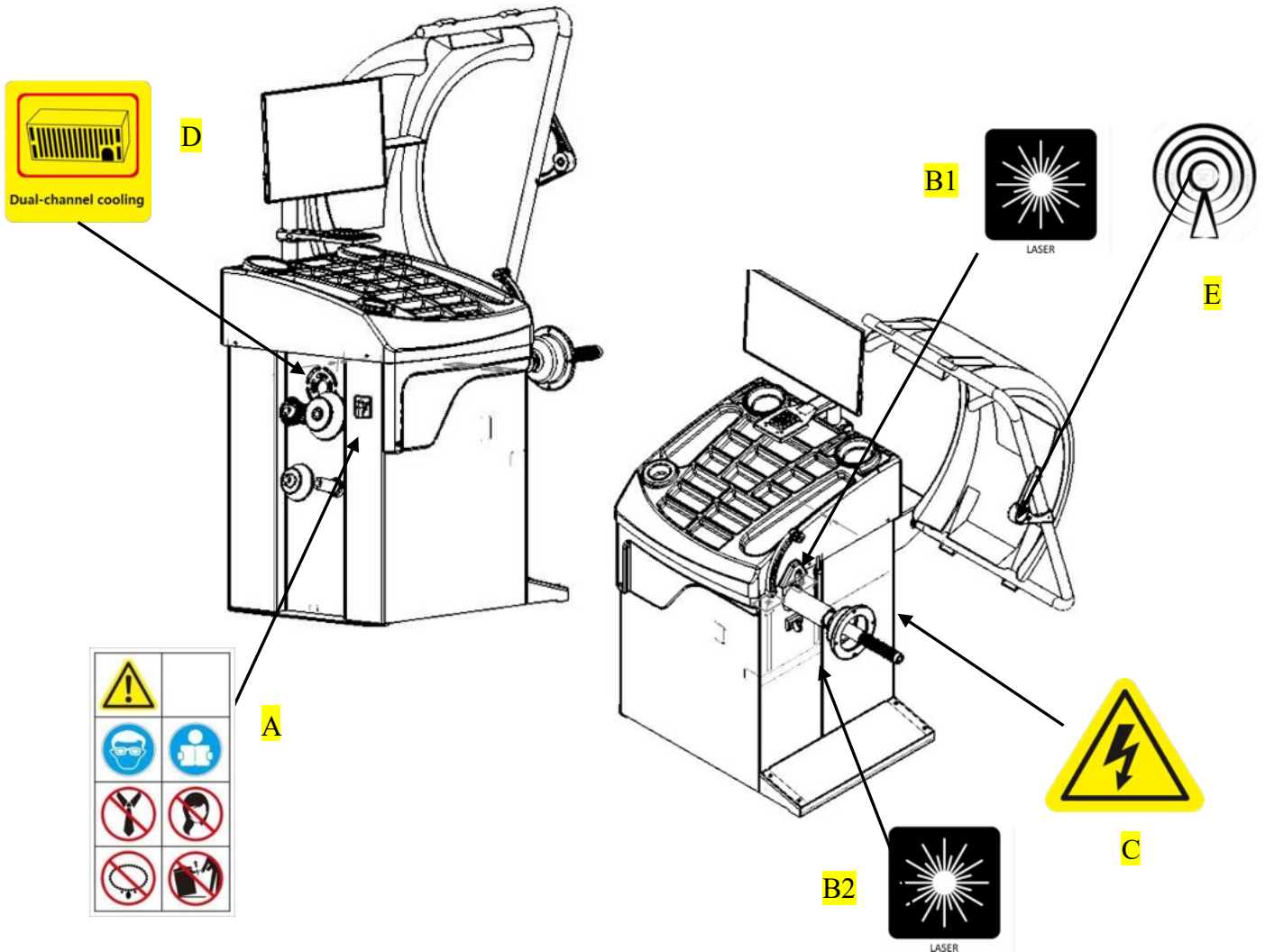
1.4 Why do dynamic balance?

- **If the wheel dynamic balance is not good, it will lead to the vehicle's wheels jumping during driving, steering wheel shaking/vibration, and poor interior riding feeling/trembling. If not handled in time, it may induce other structural parts of the vehicle, thus threatening driving safety. Dynamic balance can effectively avoid such things.**
- **The steering wheel shakes violently at speeds between 90 and 110, but the shaking disappears when the speed is higher than 120 or 130 or even faster, so the vehicle needs to be balanced**
- **The weight distribution of the tire changes due to operations such as tire patching or changing the tire hub or installing a tire pressure monitor, and the dynamic balance test needs to be carried out again**



- **Tire aging or time to deform the hub may destroy the original balance state**
- **The vehicle runs off course or deviates from the normal track / the steering wheel of the vehicle is not controlled by the lane change assist system**
- **Unbalanced dynamic balance not only affects driving comfort (such as bump, steering wheel shaking), but also may aggravate tire/structural wear, shorten the life of the suspension system and increase safety risks. It is necessary to observe the details of the vehicle more often and detect and adjust in time**

1.5 Warning signs



- **Label name:**

A-Operation prohibits wearing warning

B1-Upper laser indication

B2-Lower laser indication

C-220V input voltage indicator

D-Dual channel cooling technology indicator

E-Millimeter-wave radar (distance radar)

1.6 Training

Only professionally trained personnel can operate and use the tire balancer. If you need professional training provided by the manufacturer, we will be happy to help you in this regard.



2 Equipment description

2.1 Product Introduction

- The RTOS real-time operating system specially developed for balancing machine is the most fluid among peers.
- The mechanical keyboard industry pioneered, the operation feel is accurate and smooth, completely solve the traditional film key failure rate high and lagging situation
- **The dual-channel heat dissipation system is the first in the industry, with a unique "air cooling + flow guide" dual-channel architecture to prevent the situation of death and lag caused by overheating. The modular design facilitates later cleaning and extends the circuit life**
- **High sensitivity sensors are used, and the tire is re-dispersed to optimize, and the lead block hiding function is fully available. It takes into account both aesthetics and weight stability, supports dynamic balance verification mode, and ensures that the error remains unchanged when the second assembly is disassembled.**

2.2 Technical parameters

Applicable hub size	< 30 "
Maximum tire diameter	1000mm
Wheel width	80mm-400mm
Maximum tire weight	75kg
Spin velocity	About 200r/min
Supply voltage	110V/220V 50hz/60hz 1ph
Power of motor	0.25KW
Outline dimension	960*820*1280mm
Net weight	118KG
Noise from working conditions	< 45dB (A)

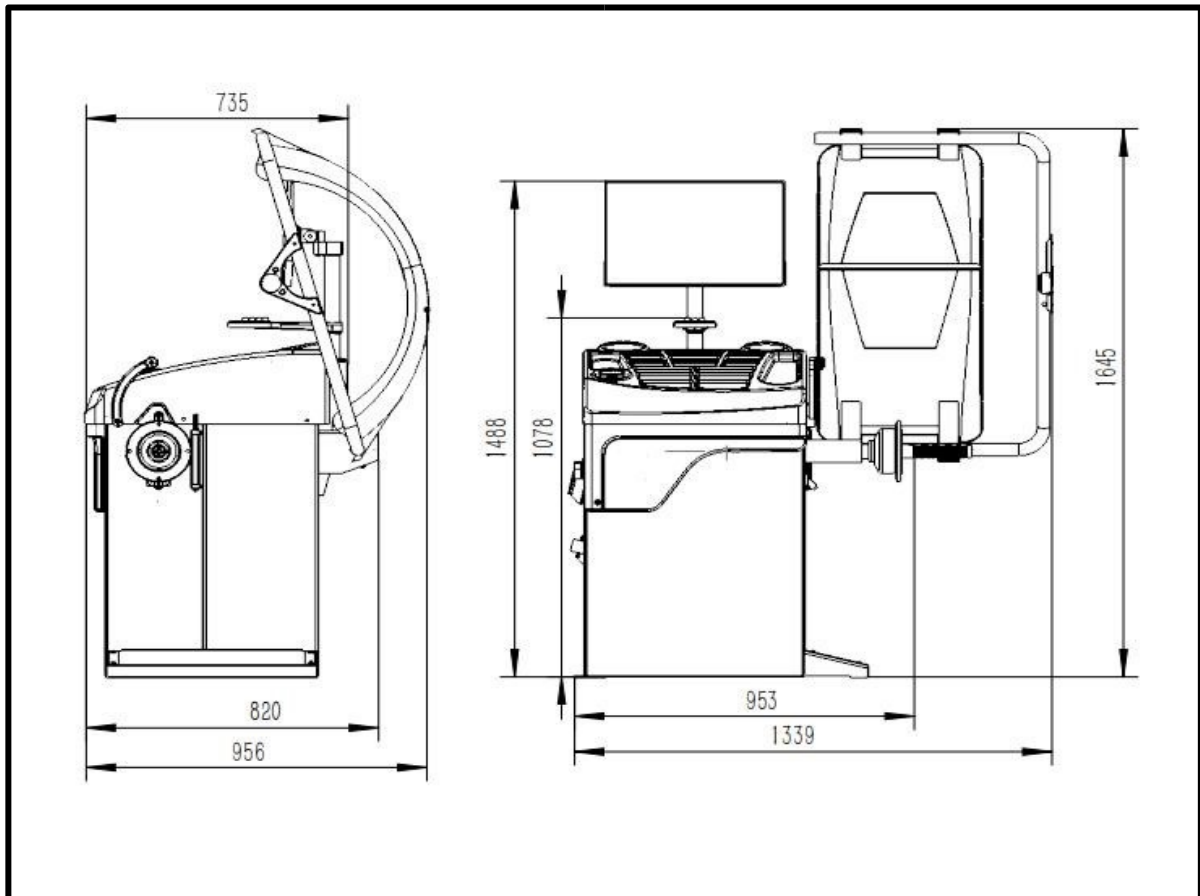
2.3 Transportation

The disassembly and assembly must be transported in the original factory packaging and placed in the position indicated on the packing box. The packaged machine must be moved by a forklift or other tools with the corresponding lifting capacity, and pay attention to the insertion direction of the forklift according to the following figure.

2.4 Equipment installation

- **Machine landing**

This equipment must be installed on a pure flat ground. Inflated or not firm ground may affect the measurement results, and the factory is not responsible for this problem! There should be sufficient operating space around the equipment, and the maximum size of the equipment is shown in Figure ↓

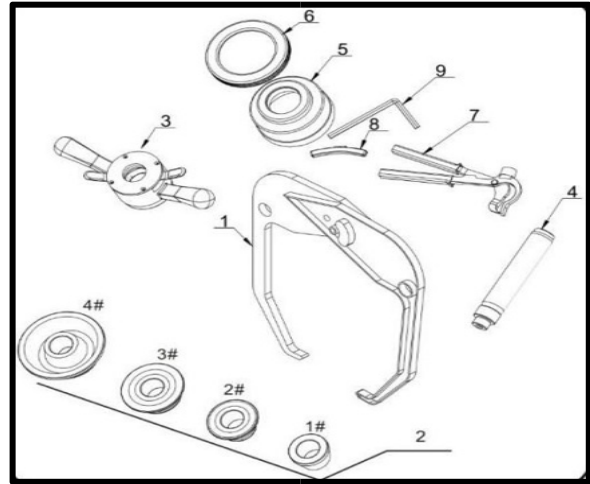




- **Random accessory inspection**

Check whether the accessories are missing or damaged after unpacking. If there is any damage, contact the supplier.

1. Width measuring ruler
2. 1-4 cones
3. Quick nut
4. Screw rod 36MM
5. Reverse positioning of the cup
6. Reverse positioning rubber pad
7. Balance hammer
8. 100g lead
9. Hex key

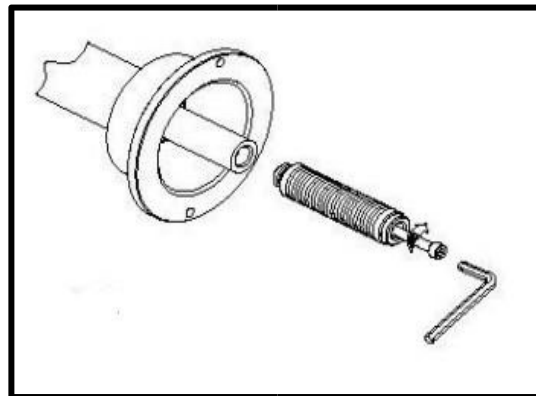


- **Equipment fixation**

After the machine is fixed, you can choose to use the foot screw to reinforce the machine. If the ground is stable, you can choose not to add the foot screw!

- **Screw installation**

Fix the screw rod to the spindle, then align the screw hole and tighten the screw rod as shown in Figure ↓



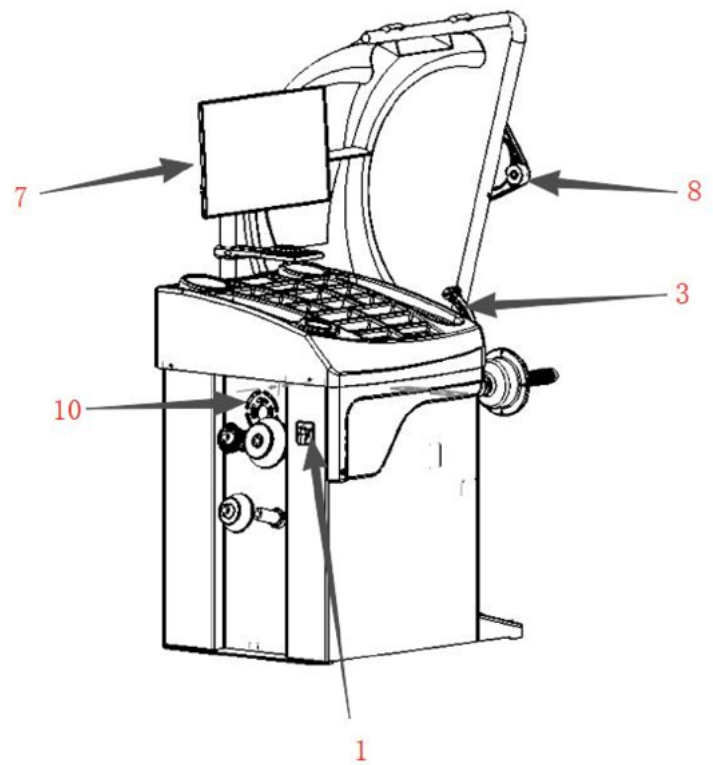
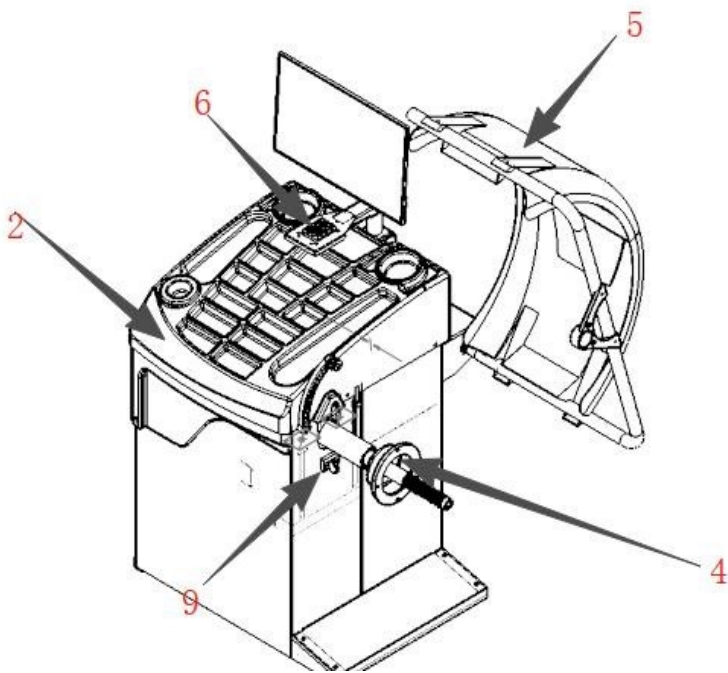
Note: When installing or removing the wheel, do not let the hub center and the screw rod have too much contact, so as to avoid bumps. It is recommended to use the tire lifting vehicle as an auxiliary tool.

3 Equipment function details

1. Turn on the switch



2. Lead block cover
3. Caput ulnare
4. Balance shaft
5. Tire cover
6. Mechanical Keyboard
7. IPS LCD
8. Millimeter wave distance radar
9. Laser guidance
10. Dual channel heat dissipation port





- RTOS operation interface

Dynamic balance interface:

To enter the dynamic balance interface, select this icon, as shown in Figure ↓.* (Press L5 directly from the control keyboard to enter)



Enter the dynamic balance interface:



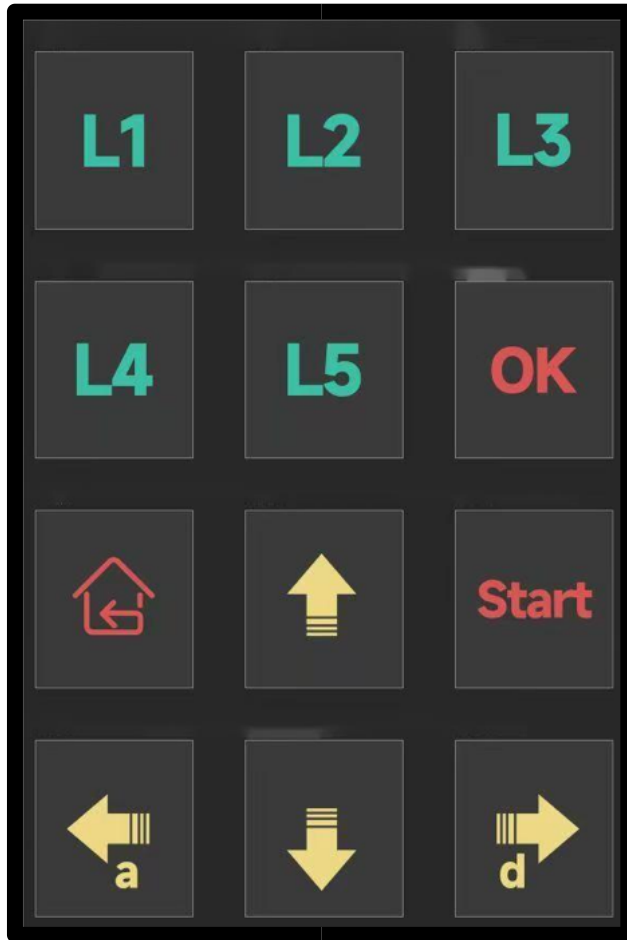


1. Inner tire imbalance
 2. The imbalance on the outside of the tire
 3. Inner unbalanced position guide bar
 4. Lateral unbalanced position guide bar
 5. Operation tips
 6. Supported functions in this mode
- Main function interface:



- ① Return key (corresponding to the return key on a mechanical keyboard)
 - ② Select the L1-L5 mode keyboard, which has L1-L5 corresponding keys. Select the mode according to your actual needs!
 - ③ The function interface corresponds to the function introduction
 - ④ L1-Enter the unbalance optimization function (if the tire weight is more than 60 grams and cannot be made uneven at one time, consider the unbalance optimization function)
 - ⑤ L2-Enter the self-diagnosis function (the health status of the hardware can be observed according to the display situation of the interface)
 - ⑥ L3-Enter the Settings mode (individual functions of language units are enabled)
- 4.L4-Enter correction mode

- Mechanical keyboard (industry first) as shown in Figure ↓



- Analysis of various balance modes

icon	Mode introduction	Paste direction
	1. DYN mode is the standard mode 2. Tires are mostly of the iron ring type 3. The balance weights need to be struck on both sides	1. It's at 12 o'clock 2. Position according to the graphic guide
	1. Apply lead blocks on the inside and outside (outside of spokes) (laser bright)	1. It's in the direction of 6 o'clock
	1. Insert lead blocks on the inside and attach lead blocks on the outside (laser is brighter on the inside and laser is brighter on the outside)	1. The outer side is at the 6 o'clock direction 2. The inside is at 12 o'clock 3. Position according to the graphic guide

	1. Insert lead blocks on the inside and attach lead blocks on the outside (outside of the spokes) (laser lights up on the inside and laser lights up on the outside)	1. It's in the direction of 6 o'clock 2. Position according to the graphic guide
	1. Place lead blocks on the outside and inside (laser light on the outside and inside)	1. The outer side is at the 6 o'clock direction 2. The inside is at 12 o'clock 3. Paste according to the graphic guide
	1. Static mode 2. Balance the motorcycle tire (laser on)	1. It's at 12 o'clock 2. Paste according to the graphic guide 3. Position according to the graphic guide
	1. Inner and outer side any lead block mode (lower laser on) When the lower laser is turned off, press the pull head to attach the lead block. In this mode, the outer side can hide the lead block	1. Both sides are at 6 o'clock 2. Paste according to the graphic guide 3. Position according to the graphic guide

4 Operation of the balancing machine

4.1 Installation of wheels (installation)

- You can judge whether the front and back of the hub are used with a positive or reverse installation card
(Check the back of the cone to see if the machining surface fits with the cone) as shown in Figure A
- If it fits, check whether the front center port plane and the quick nut cup plane are compatible. If both conditions are met, reverse installation can be performed. If none of the reverse installation conditions are met, A.B.C, there is also a case where the cone does not fit (large vibration) and reverse installation is not suitable
(Positive look at whether the contact surface of the hub center port coincides with the hub plane) as shown in Figure B
- If the flat surface of the quick nut cup is not in line with the hub center mounting surface (not in line as shown in Figure C), then forward mounting is required! as shown in the figure D



- Operators can judge the loading method according to the actual situation. Some specific hubs can choose to use the reverse loading method, but it does not mean that it is suitable for all hubs. The loading method should be selected according to their own experience. If the loading method is not correct and the data is not accurate, the manufacturer will not take responsibility!



graph A



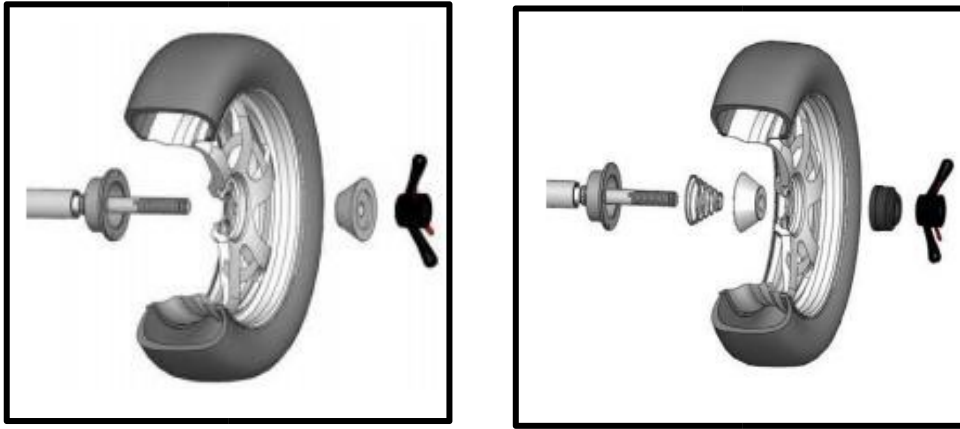
graph B



graph C

graph D

- Forward and reverse loading as shown in Figure ↓

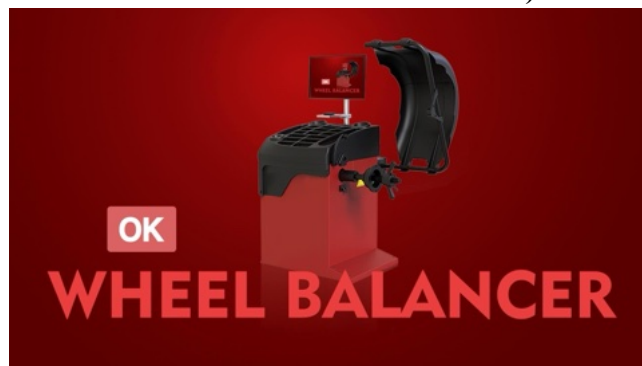


Note: When installing or removing the wheel, do not let the hub center and the screw rod have too much contact, so as to avoid bumps. It is recommended to use the tire lifting vehicle as an auxiliary tool.

4.2 Start dynamic balance

- ① First, switch the power supply 0-1
- ② Wait 2-6 seconds to enter the protection interface as shown in Figure ↓, Press OK on the keyboard to enter the main interface of the system (as shown in Figure ↓)

(Enter the protection interface if the balancer is not used)



- ③ There are two ways to enter the balance interface. The first is to directly use the ruler when you fully understand the various balance modes, as shown in Figure ↓

(automatically jump to the balance interface)

In the second case, if you do not know the balance mode, you need to press the L5 key to enter the balance interface. There is a mode guide at the top of the screen, guiding you to operate as shown in Figure ↓



4

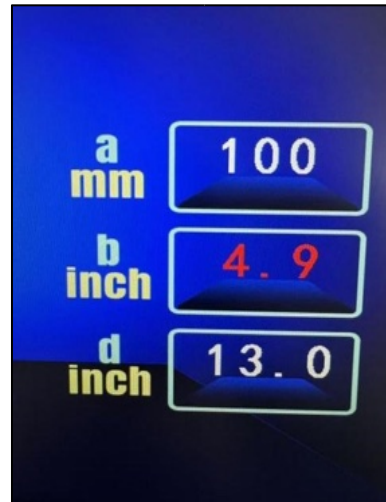
The DYN default mode is displayed regardless of how the operator enters the balance interface (DYN default mode), a b d values. Most tires in the DYN mode have rims

- 1) The first data a value is measured according to the position of the ruler indicated on the picture, and the measurement method is shown in Figure ↓

A value is the distance from the 0 point of the pull scale to the measurement surface. This is the default distance of the balancing system and does not need to be adjusted (this data does not need to be modified)

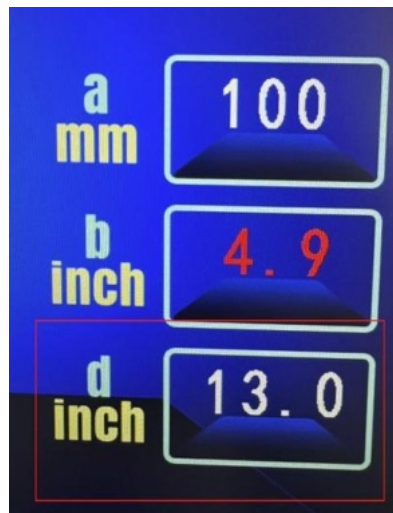


- 2) The second data b value (hub width) is measured as shown in Figure ↓



B value data can be read directly from the machine or manually modified by referring to the measurement data in Figure 1 above

3) The third data d value (hub diameter) is shown in Figure ↓



The diameter data can be read directly from the machine and is usually accurate. If it is not accurate, the data can be manually modified. For example, if the demonstration hub is 13 inches, it can be modified to 13.0 (inches)

The three values of abd can be modified by ↑ ↓ to switch between the three values of abd, and the adjustment of abd values can be switched through ←→.

5) Remove the protective cover and rotate the tire into the interface as shown in Figure ↓



If there is a problem, you can lift the protection to find or press the return key to stop the operation (as shown in the right icon of Figure ↑)

Wait for the tire to stop rotating and lift the hood to see the inner and outer imbalance values



The first pause point is on the inside, and then it is recommended to press the L2 button and then cut back to L1 (to the first pause point) to ensure the accuracy of the paste position. Then tap the inner imbalance point first. The inner test imbalance point is displayed as 20 grams, and the screen will show OK below the imbalance value. Tap the 20-gram lead block as shown in Figure ↓ (left)

After the first pause point is pasted, prepare the second pause point by pressing L2 button. The OK will appear below the unbalanced value on the screen. Tap the 20g lead block on the outside as shown in Figure ↓ (right)



Then pull down the protective cover and complete the dynamic balance after the tire stops as shown in Figure ↓



Zero the inside and outside to end the dynamic balance

- ⑥ ALU-1, ALU-2, ALU-3, ALU-4 and ALU-5 are the same as the DYN mode measurement method, but the attachment position and attachment method are different. Pay attention to the interface icon. If it is vertical, it is tapping lead blocks; if it is horizontal, it is pasting lead blocks (observe whether the red rectangle is vertical or horizontal)
- ⑦ ALU-S mode demonstration: First pull the ruler to the first point and pause for three seconds until the second point, as shown in Figure ↓. After the machine reads the tire value, retract the ruler (if it is not fully retracted, the screen will light up red) and the next step cannot be performed!



After the retracting ruler, the corresponding value will appear in the screen value box Take 18-inch tires as an example (note that the ae value on the screen should not be greater than the ai value, and the de value should not be greater than the di value. If this happens, please recalibrate)



Then the protective cover system drops to the dynamic interface of tire rotation as shown in Figure ↓



If there is a problem during the rotation, press the return key to introduce the operation. When the motor stops rotating, it will automatically find a point. The first pause point is on the inside. Then it is recommended to press the L2 key and then cut back to L1 (to the first pause point) to ensure the accuracy of the pasting position.

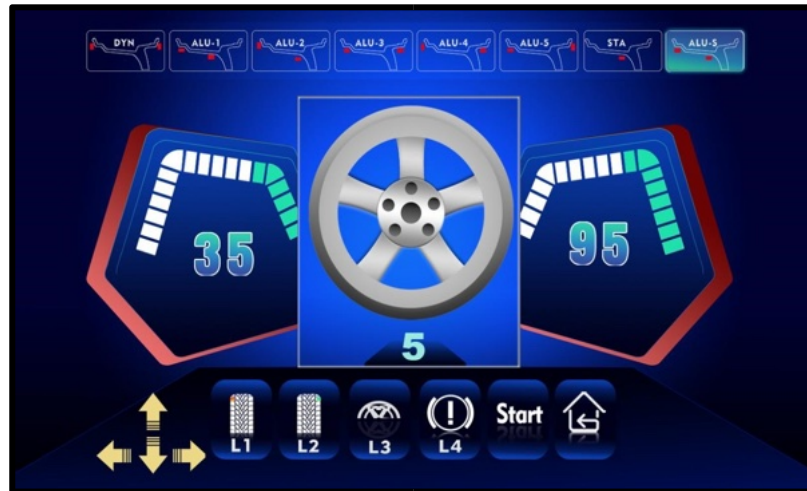
Then tap the inner imbalance point first. The inner test imbalance point is displayed as 20 grams, and the screen will show OK below the imbalance value. Paste a 15-gram lead block as shown in Figure ↓ (left)

After the first pause point is pasted, prepare the second pause point by pressing L2 button. The OK will appear below the unbalanced value on the screen. Paste a 20g lead block on the outside as shown in Figure ↓ (right)



(If OK flashes below the unbalanced value, it is the insertion point of the other side (if OK flashes below the unbalanced value, it is the insertion point of the other side)

⑧ Operation mode of ALU-S balanced hub spokes segmentation and hiding lead block: Press L3 key to execute the operation as shown in Figure ↓



First select a hub spoke punch (12 o'clock direction) as shown in Figure ↓



Continue to press the L3 key to activate the next step! See Figure ↓



Press L2 to perform the outer point finding. The first pause point is attached according to the screen prompt. Then press L2 to the second pause point, press the start button and stop the operation when it is flat.

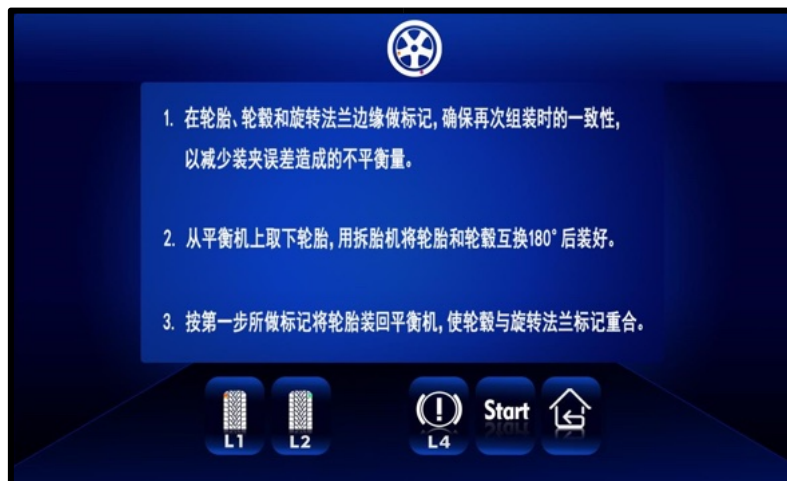
- ⑨ If the inner and outer values are greater than 60, some operators will choose to flatten once or multiple times. Obviously, this operation mode is not correct. It is recommended to choose our unbalanced optimization function. First, enter the main interface of the system and press L1 key to perform the operation as shown in Figure ↓



Then follow the instructions to rotate the balance machine as shown in Figure ↓



After rotation, enter the OPT prompt interface and follow the screen prompts to perform the next step operation as shown in Figure ↓



After the above operation instructions are completed, proceed to the next step as shown in Figure ↓



Then press the shield (if the tire shield has already fallen, press Start) to start the balancer and enter the next interface

as shown in the figure ↓



Follow the hint to mark the lightest point of the hub as shown in Figure ↓



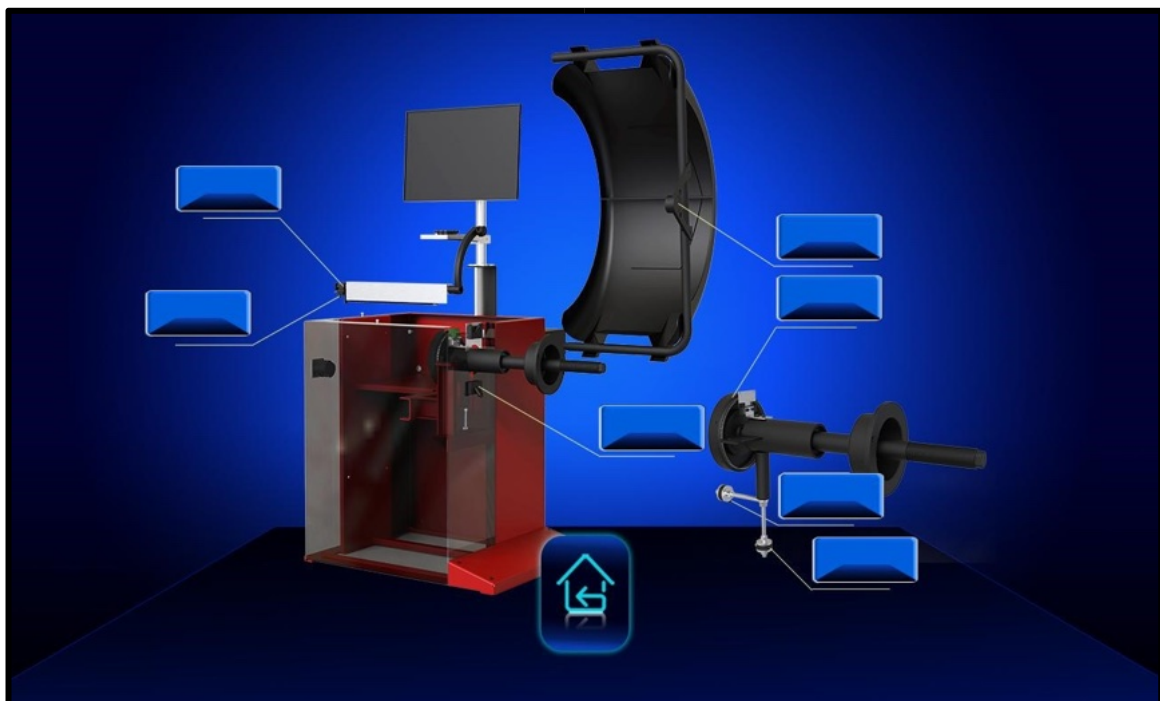
Press the L2 key and follow the prompt to mark the most important tire as shown in Figure





Finally, remove the tire from the dynamic balance machine, and coincide the lightest point of the hub with the most important point of the tire to complete the unbalance optimization function!

- ⑩ On the self-diagnosis interface, press the L2 key to enter the main system interface and jump to the self-diagnosis interface as shown in Figure ↓



order number	Names of various hardware	Normal function values and operation reference
1	Photoelectric panel	Turn the spindle 0-512/256

2	Pressure sensor (dynamic balance) X	Apply pressure to the spindle with your hand in the range of 4X-4X to 6X-6X
3	Pressure sensor (static balance) Y	Apply pressure to the spindle with your hand in the range of 4X-4X to 6X-6X
4	Millimeter-wave radar (width distance)	The window value is in the range of 20-600. Slowly lower the protective cover to observe the change of the value
5	Diameter sensor	The window value is in the range of 327-330. Turn the ruler in another direction and observe the change of the value
6	Distance to the sensor	The window value is in the range of 327-330, and the value will change when the pull rod is pulled out
7	laser	The laser lamp constant observation indicates whether the direction is correct

⑪ System Settings Press the L3 button to enter the main interface of the system and jump to the system Settings interface as shown in Figure ↓

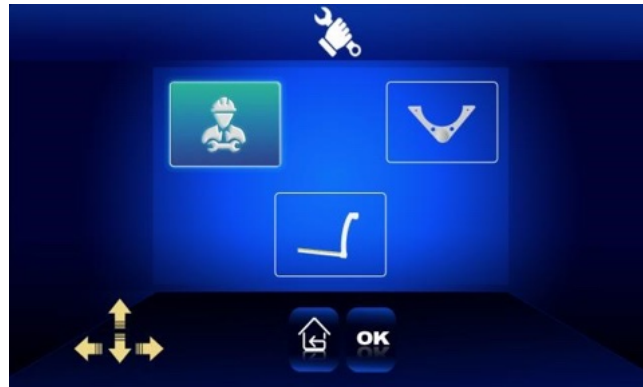


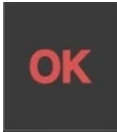
Follow the icon to complete the content you need to set ↑

⑫ Self-calibration, enter the main interface of the system. Press L4 button to jump to (self-calibration interface) as shown in Figure ↓



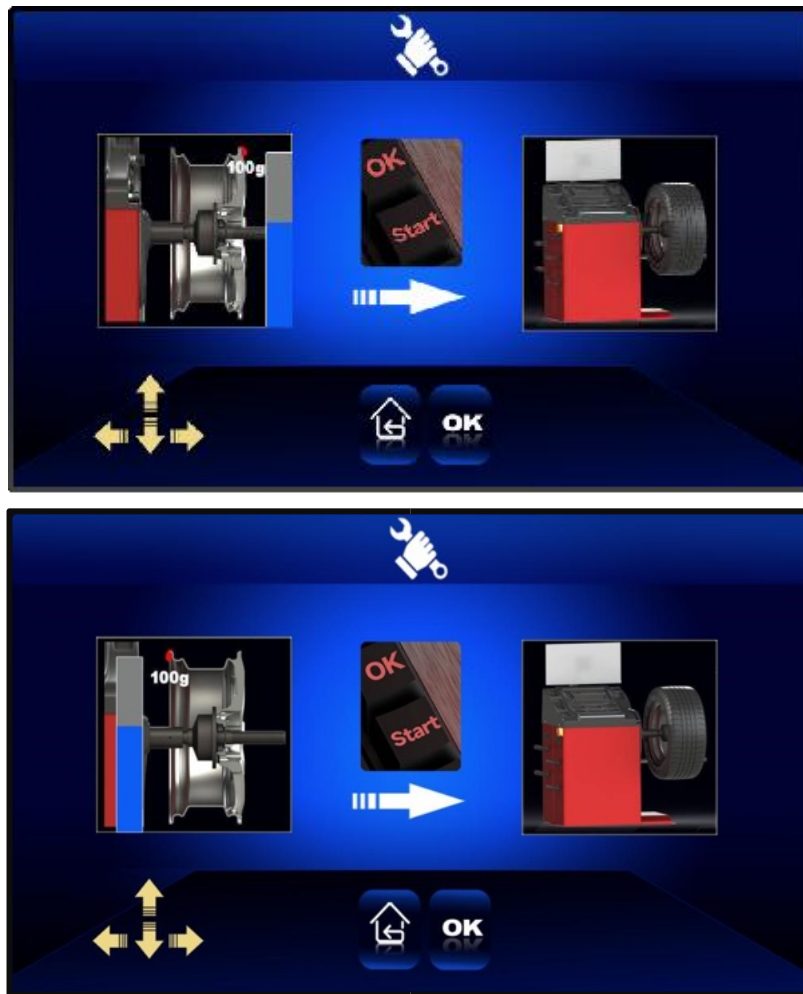
According to the picture guide, the first icon is tire self-calibration (you need to prepare a 15-inch rim), and follow the instructions to complete the operation as shown in Figure ↓



Press  to enter

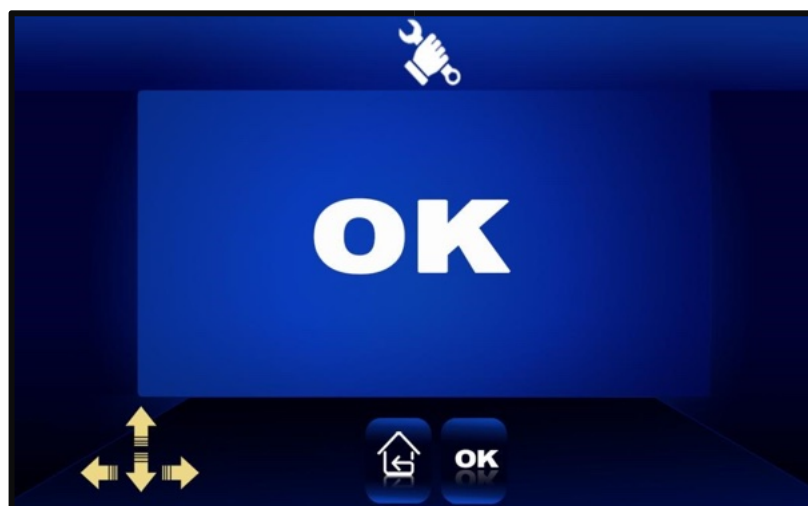


Follow the prompts to complete the next step, and then press OK to enter the next step as shown in Figure ↓

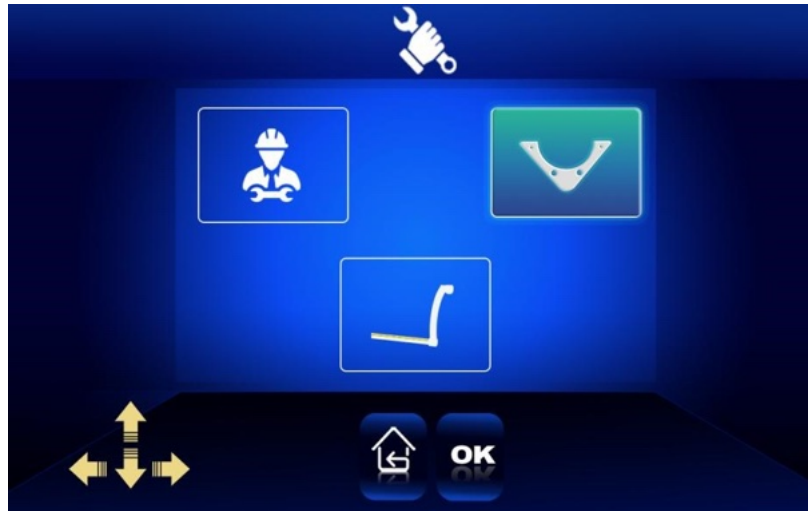


According to the above inner and outer side prompts, tap the lead block on the 12 o'clock direction spoke indicator light to fill all the lights and press the OK key for the next step!

Or press the L2 key to save as shown in Figure ↓ to complete the operation!



According to the picture, the second icon is radar calibration. Complete the operation according to the prompt as shown in Figure ↓



Press  to enter

This function is set to a fixed size at the factory. If necessary, you can follow the prompts to perform the next step as shown in Figure ↓

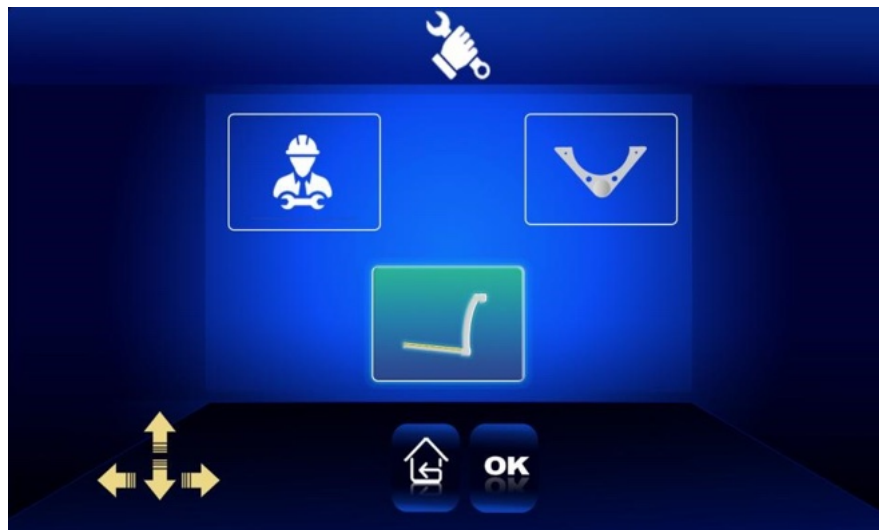


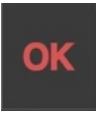
Press  to proceed



Complete the millimeter wave radar calibration and press L2 key to save

According to the picture, the third icon is calibrating the ruler. Complete the operation according to the prompt as shown in Figure ↓

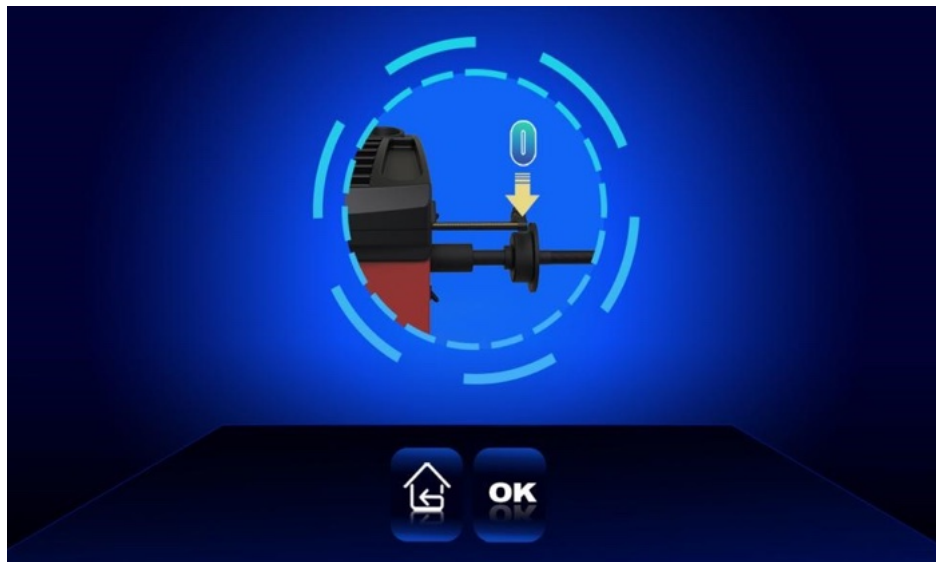


Press  to enter

To calibrate the ruler, follow the steps as shown in Figure ↓ (Step 1)



Align the ruler head to the edge of the flange outside the shaft as shown in Figure ↓ (Step 2)



Measurement method calibration It is recommended that you use the measurement method you usually use for the first measurement point calibration and follow the instructions on the screen below. As shown in Figure ↓ (enter the actual steel ring size in inches)



Press the L2 save key, and then press the return key to return to the main screen to complete the caliper calibration



⑬ Analysis of common fault codes

Fault code	Cause
? -0-	forced outage
? -1-	The rotation signal is missing
? -2-	The speed is too slow
? -3-	The imbalance is too great
? -4-	Motor reversed



? -5-	The tire cover did not fall off
? -6-	The circuit board is faulty
? -7-	Internal procedure parameter read/write error
? -8-	Self-calibration failed

⑭ **Correct definition of secondary disassembly**

In the operation of tire balancer, the correct definition and core requirements of "secondary loading" (or secondary disassembly and repeated installation) are as follows:

● **Proper definition**

-Secondary mounting refers to the process of *reinstalling and rebalancing*** a tire after it has been balanced for the first time on a balancing machine, due to the need for adjustment (such as replacing the counterweight, cleaning the hub, changing the position of the tire, etc.). Its core goal is:**

-Maintain or restore the accuracy of the initial balance and avoid introducing new unbalance due to disassembly operations.

-Verify the stability of the balance results to ensure the dynamic balance of the tire in actual driving.

● **Key steps to correct operation**

(1) Marking after the first balance

-Relative position of the tire and hub: mark with a marker where the side of the tire is aligned with the edge of the hub (e.g., valve stem position).

-Weight block position record: Record the installation position (inner/outer) and weight (grams) of the weight block at the first balance.

(2) Preparation before secondary loading

-Clean the contact surface: remove rust, oil or debris on the hub center hole and balance machine spindle sleeve to ensure that there is no eccentricity during installation.

-Check the hub/tire condition: eliminate potential problems such as hub deformation and tire lip damage.

(3) Secondary loading operation

-Strict positioning mark: reinstall the tire on the hub at the position of the first mark to ensure that the relative Angle is consistent.



-Restore the counterweight: if the counterweight is not adjusted after the first balance, the counterweight should be reinstalled in the original position (if removed, it should be completely restored).

-Use the same taper sleeve/folder: Ensure that the hub is positioned on the spindle in the same way as the first time (avoid center deviation caused by changing the taper sleeve).

(4) Revalidate balance

-Even if the balance is strictly in place, it is recommended to restart the balance machine test to confirm whether the residual imbalance is within the allowable range (usually car tires require less than 5g).

-If the value deviation is large, check whether the card is in place or whether there is hidden damage to the tire/hub.

● Factors affecting the accuracy of secondary loading

-Hub center hole and spindle fit clearance: too large clearance will lead to eccentric installation.

-Wear of cone sleeve or jaw: wear of equipment parts will introduce clamping error. - Operational norm: violent disassembly or failure to mark the position will directly destroy the balance.

● Industry standard recommendations

-SO 19499 and other standards require that the tire balancer should have the stability of repeated loading (generally allowed error $\pm 3g$).

-High performance vehicles (such as racing cars) or high speed tires ($> 200km/h$) require mandatory secondary verification balance.

Sum up :

The correct definition of a second tire installation is "the process of repeatedly installing tires and verifying balance consistency under marked alignment and standardized operations". The core lies in:

- ① Marking the position * $\rightarrow$ Keep the relative position of the tire and hub;**
- ② Clean and restore $\rightarrow$ eliminate the interference factors of loading cards;**
- ③ Revalidation to ensure reliable balance results.**

In practical application, even strict operation may still have subtle differences, so secondary verification is a necessary step!