USER'S GUIDE

Wheel Balancer

code: P022018

DESCRIPTION OF THE BALANCING MACHINE

GENERAL

The machine is a compute-based wheel balancer with easy operation, accuracy measuring, complete functions, security and reliability.

1．1 FEATURES

－Using imported electronic component and most advanced electric drive system
－High strength plastic hood ,more in line with national security operating procedures
－In an emergency, press “stop” key to stop the machine
－Standard calibration function, keep accuracy of equipment
－Several balance modes, widely used in all kinds of car wheels
－Balancing precision ±1g, with short time.
－Failure diagnosis and self-calibration function

1．2 SAFETY ADVICE

－Only properly authorized and trained personnel can operate the machine
－The operator should not wear a tie, long hair, loose clothes, and when the tire rotates, the operator should stand on the side of the machine, and the non-operator should not approach.
－Please read the instructions carefully before using the balancer. If in doubt, please consult the factory, do not blindly operate, and keep it properly for future reference
－No unauthorized modification of this machine;
－Do not remove the safety device.
－Never lift the machine with rotating shaft when removing，installing and operating the machine，Otherwise, it will cause permanent damage
－Use the stable power supply in unstable power supply area.
－Do not clean the machine by compressed air with exceeded pressure
－Clean the plastic panel and frames with detergent regularly.

－Do not exceed the scope of use of this machine during operation
－All the electrical installations are performed by professional electricians; Pay attention to yellow-green line are ground wire.
－The machine requires reliable grounding; Cut off the power during maintenance
－Before the balancing operation, make sure the wheel is locked onto the shaft safely

1．3 TECHNICAL DATA

Rated power supply：AC220V

Power consumption：≤250W/ working ； ≤15W / wait

Balancing speed：180rpm

Balancing Precision：±1g

Running time：Average, 8s

Measurement error：≤1%

Operation Noise：≤70db

Net weight of machine：118kg

Work environment：

Temperature: 0℃～50℃，Relative humidity≤85%

Above sea level: <1000m

Storage and transportation：

Relative humidity:20%-95%；Temperature:-10℃-+60℃

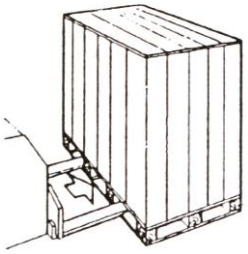
Measuring range：

Rim width	Rim diameter	Wheel weight	Wheel center hole	Wheel limit diameter
1.5—20″	12—24″	≤65kg	＜130mm	800mm

2. Transport and installation

2．1 Transport and installation of overall unit

－Can only lift the chassis of the machine, do not lift the rotating shaft in any cases.



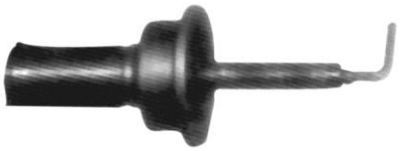
－The balancer must be placed on a solid and steady ground and with a plenty of space around(not less than 500mm)

There are screw holes on the chassis of machine, Fasten the machine on the ground with expansion screws; Rackety fixation can cause measurement error.

2．2 Main shaft installation

Clean up the main shaft and center hole with alcohol or gasoline before installation, fix the adaptor onto main shaft with a spanner.

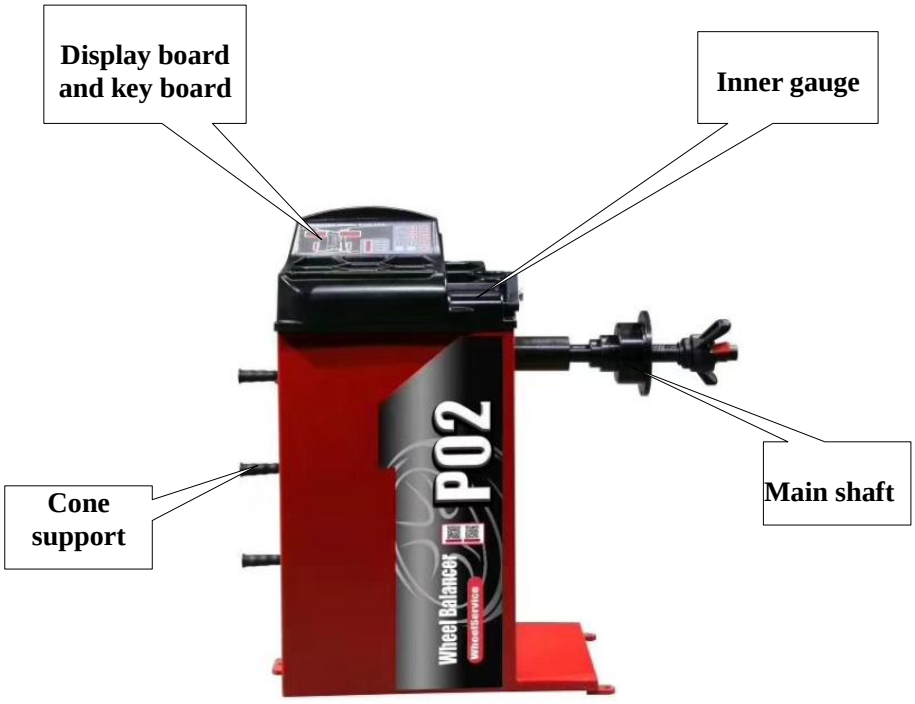
Both main shaft and adaptor has “0” mark separately; Make sure the two “0” mark are a 12 o’clock position, then connect and fix them.



Use hexagonal spanner to fasten M14 bolt，otherwise it’ll cause failure.

三. Balancing machine structure

3.1 Monolithic construction Picture 1



Picture 1.

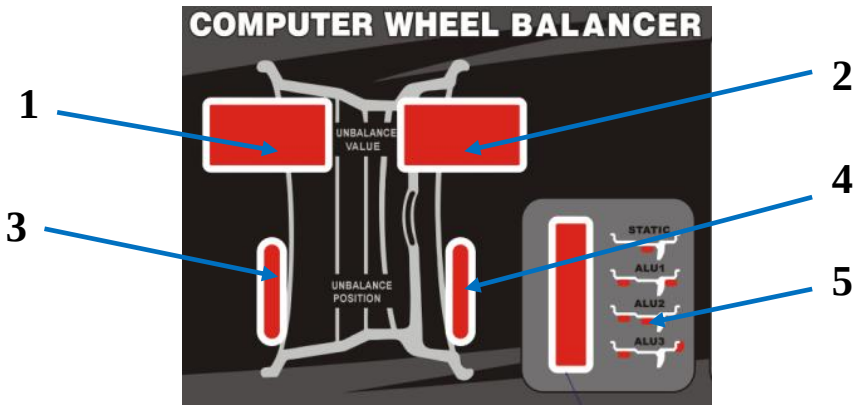
Inner gauge: Measure distance between wheel and machine

Operation display board and key board: Achieve man-machine dialogue

Cone support: Hang cone cover, caliper or other parts

Main shaft: Install unbalanced wheel

3．2 Display board



Picture 2

1—Left display screen, show AMOUNT OF UNBALANCE or basic balance data ,inside, A、L、D

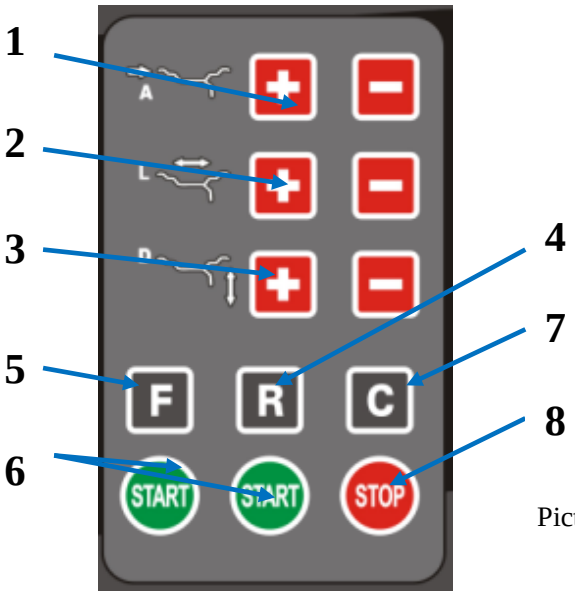
2—Right display screen, AMOUNT OF UNBALANCE or basic balance data, outside

3—Unbalanced position indicator(inside)

4—Unbalanced position indicator(outside)

5—Balance function and mode indicator

3．3 Key board



Picture 3

1---- “A” Manual input A value, press”+” add size; “-” reduce size

2---- “L” Manual input L value, press”+” add size; “-” reduce size

3---- “D” Manual input L value, press”+” add size; “-” reduce size

4---- “R” Adjusting key/ Reset key

5---- “F” Dynamic and static balance conversion key

6---- START

7---- C ,Show ＜5g， show unbalanced exact value

8---- STOP

NOTE:

Only use fingers to press the buttons. Never use the pliers or any other sharp article to press .

3.4 FUNCTION CONVERSION COMBINATION KEY

3.4.1 SHUT DOWN AND SAVE AFTER FUNCTIONAL CONVERSION

(STOP）+（A+）+（A-） Gram/ounce conversion key

(STOP）+（L+）+（L-） Inch/millimeter conversion key(width of wheel)

(STOP）+（D+）+（D-） Inch/millimeter conversion key(diameter of wheel)

(STOP）+（R） The switch of protect cover

4. Balancing operation

4．1 Turn on the power，balancer shows code CSA 513;

After two seconds, ”-A- 8.0” is displayed on window, the balancer can proceed normally.

4．2 Mounting wheels

Pre-test preparation :Before wheel balancing, check and clean up dust, mud, metal, stone or other foreign object on the wheel surface; Check if the tire pressure is in line with the specified value; Check if there is deformation of rim locating surface and mounting hole, check if there is any foreign matter inside tire; Take off original weight from the wheel.

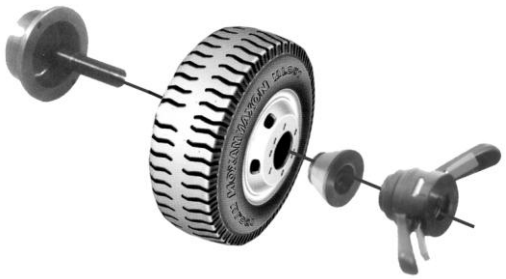
Three forms of mounting wheels:

Front cone mounting;

Back cone mounting;

Special made flange mounting

4.2.1 Front cone mounting



This mounting method is common mode, easy and fast to operate; For original rim and thin aluminum alloy rim; Make sure under situation of small rim deformation

Main shaft-Wheel(rim mounting surface inside)-Cone-Quick lock nut

4.2.2 Back cone mounting

Select this mounting method when the outside deformation of wheel is large ,ensure accurate positioning of inner hole and main shaft. For steel rim, especially for thick aluminum alloy rim, the precision is higher.

Main shaft- Spring-Cone-Wheel-Quick lock nut

4.2.3 Special made flange mounting

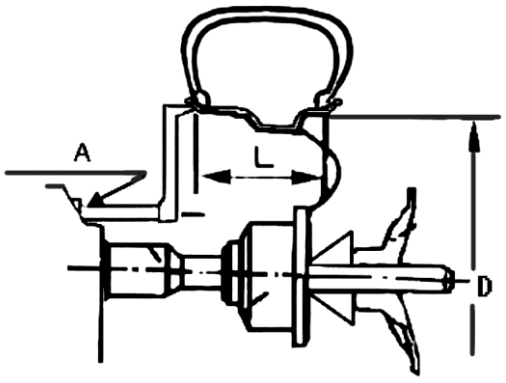
（Optional, need to order additional accessories）

For the tire of 650 type

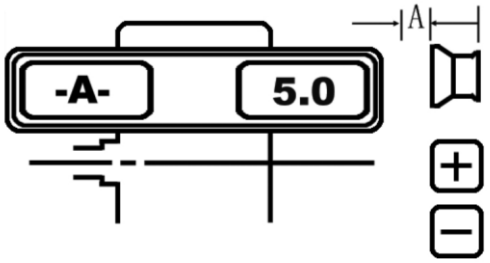
Adaptor-Big flange-Wheel-Large cone-Quick lock nut

The selection of the cone should be adapted to the center hole of the rim, PAY ATTENTION TO its direction, Otherwise, the measurement will be inaccurate

4．3 Dimension input



I Input data “A”(Offset)



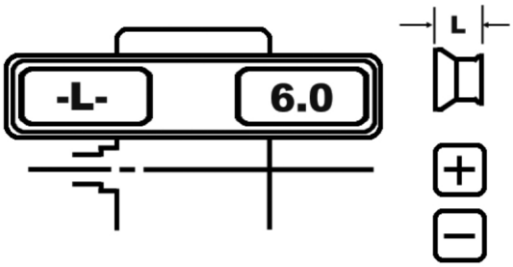
Measuring Offset, “A”

According to size of wheel select value

Press〖＋〗, Increase

Press〖－〗, Decrease

II Input data “L”(Width)



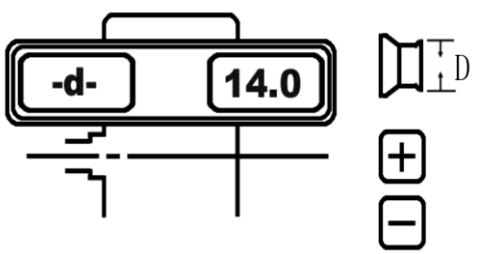
Measuring width with caliper

Press〖＋〗, Increase

Press〖－〗, Decrease

Adjust data till it shows “L”

III Input data “D”(Diameter)



Check diameter size shown on wheel “D”

Press〖＋〗, Increase

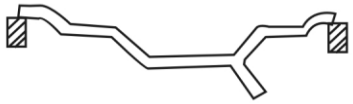
Press〖－〗, Decrease

Adjust data till it shows data “D”

4. 4 Selecting balancing mode

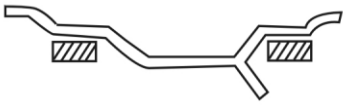
Prior to balancing, a specific FUNCTION must be chosen for each particular wheel. The function settings automatically compensate weight location requirements for a particular wheel type. These settings can be selected by depressing the F button.

Each boot automatically enters the dynamic balance mode, no need to select again.

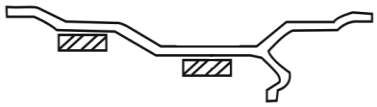


DYNAMIC-For balancing standard steel or alloy wheels using clip-on weights attached to inner and outer wheel edges

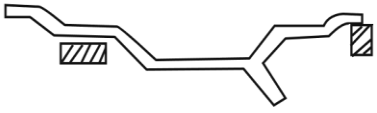
STATIC-This function is used if weights can only be mounted on a single plane of the wheel



ALU1-This function is used if stick-on weights are to be mounted to the inner plane and outer planes of the wheel. For light alloy rim.

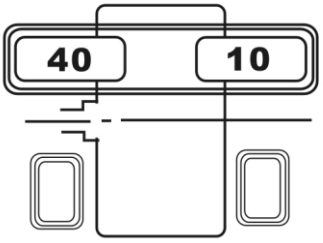


ALU2-This function is used if stick-on/clip on weights are to be mounted the inner edges and stick on weights are to be mounted on the center planes of the wheel



ALU3-This function is used if stick-on weights are to be mounted to the inner plane of the wheel of the wheel and clip-on or stick weights are to be mounted to the outer edge of the wheel

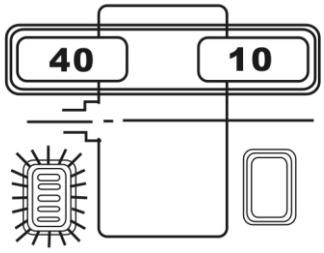
4. 5 Balancing wheel



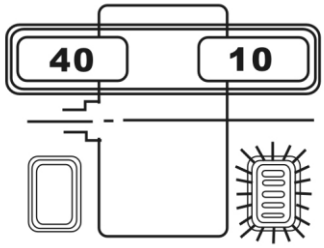
I Press button START，after 8 seconds, automatic brake is shown as below:

40 Inner side unbalanced value

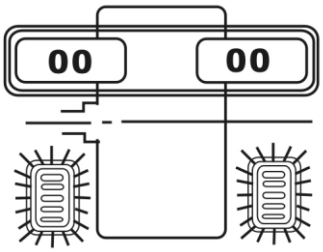
10 Outer side unbalanced value



II Rotate the wheel till inside indicator lights are all on, clip on 40g weights on the position 12 o'clock of inner edge of rim.



III Rotate the wheel till outside indicator lights are all on, clip-on 10g weights on the position 12o'clock of the outer edge of rim.



IV Press START button, wheel rotate, after it brake automatically, data show 0-0 After balancing, demount the wheel; If don't show 0-0 repeat all above steps until reach 0-0

NOTE

1. When start machine, push the wheel to help start machine then extend motor service life.
2. Check out if input data are correct, press R button then machine do measure data A,L,D automatically.
3. Check if balancing mode could can match rim structure.(See details 4.4 Balance mode selection)
4. Check that lock nut is tightened.
5. After balancing, demount the wheel, take and put it lightly, do not hit the main shaft.
6. When use weight(clip shape),clip the weight the edge of rim, not too loose, not too tightly; After balancing , knock the weight on ground, do not knock on the main shaft in order to avoid damaging the sensor; There is no need any grease on the connection between weight and rim plane, also keep dry.

5. Maintenance and Repair

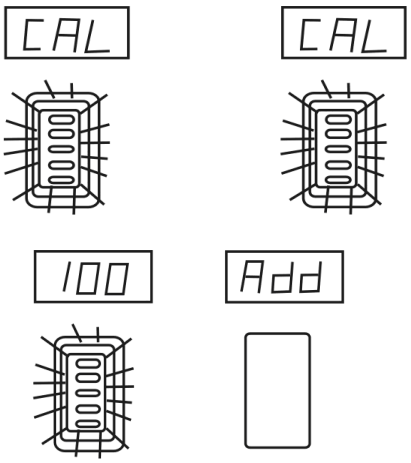
5. 1 Self-Calibration

The self-calibration operation is finished in the manufacturer's plant.

Re self-calibration need to be done when after using many years and replaced spare parts or too much balancing error. Select an medium tire (13 or 14 inch) mount it on main shaft, input correct tire parameter.

Note: select better tire do self-calibration, input correct parameter, otherwise may lead to inaccurate measured value.

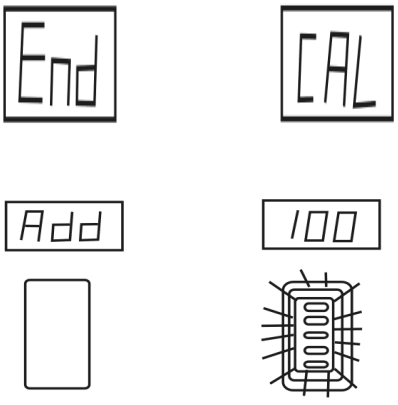
Self-calibration with balanced tire



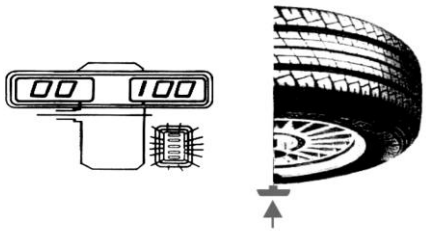
I Press R button, after half-second press START together till show "CAL"—"CAL" and all indicator lights on and flash. Let go after indicator stop flashing.

II Press START button, the wheel rotates several seconds then brake automatically. It shows "100" —"ADD", rotate the wheel till all left indicator lights on, clip-on 100g weight on the position of 12 o'clock on edge of inner rim.

III Press START button, wheel rotates several seconds then stop automatically, show "ADD"— "100" on display screen; clip-on 100g weight on the position of 12 o'clock on edge of outer rim.



Ⅳ Press START button, wheel rotates and stop automatically; Display board shows "END" — "CAL", indicates self-calibration end.



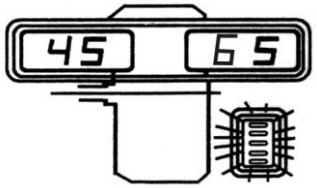
100g铅块位置在轴正下方指示灯全亮

Ⅴ Press START button, after 8 seconds stops then show data; This step is for checking that self-calibration successful and correct or not.

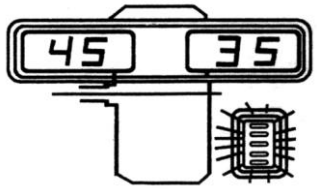
To judge the two elements of self-calibration

1. Accurate display value（show “00” — “100”, ±4g error allowed）
2. Accurate position showing（outer indicator lights all on,100g weight is on the position of 6 o’clock, ±4g error allowed））

Clip on the unbalanced position to make sure parameter is correct, for example:



Ⅵ Find out unbalanced position of outer side of the rim before starting operation of self-calibration, see left drawing: rotates wheel until all indicator lights on; mark on directly above the wheel.



100g铅块位置在轴正下方指示灯全亮

Ⅶ Self-calibration procedure since the beginning 5.1 I to Ⅴ, clip-on 100g weight on the marked position, then check out the result, see left drawing:

Ⅷ Inner and outer side calibration method are same.

Trouble shooting for the self-calibration

Error Description	Reason Analysis	Solutions
Display E-rr-8-	1.Didn't clip-on the 100g weight when do calibration 2.The electric lead wire of the pressure sensor is broken 3.Computer board failure.	1. Perform calibration with 100g of standard weight 2.Check the connection wire and Connect it 3.Change a new computer board.
The self-calibration performed by using a wheel has a too big unbalanced value	1.The wheel has a big error value 2.Three memory parameters chaos	1.Find a standard wheel, better be balanced. 2.After revising and do self-calibration
100g values are not correct, position of weight isn't directly below, need more weights to balance the wheel	1.The wheel is not standard or has foreign matters 2.Merry dis, SFA data didn't set well 3.Display value is astable	1.Replace another wheel to try a again 2.Do re-calibrate 3.Trouble shoot comply with instruction of fault assembly

Contact the professional if above methods do not work.

Note: After changing computer board, phase sensor or pressure sensor, there must have do the self-calibration; When replacing computer board, parameters should be re-set according to the parameter values in the machine or parameter of original board. For setting methods details, see 5.2, do self-calibration after revising.

5．2 Wheel balancer common fault assembly

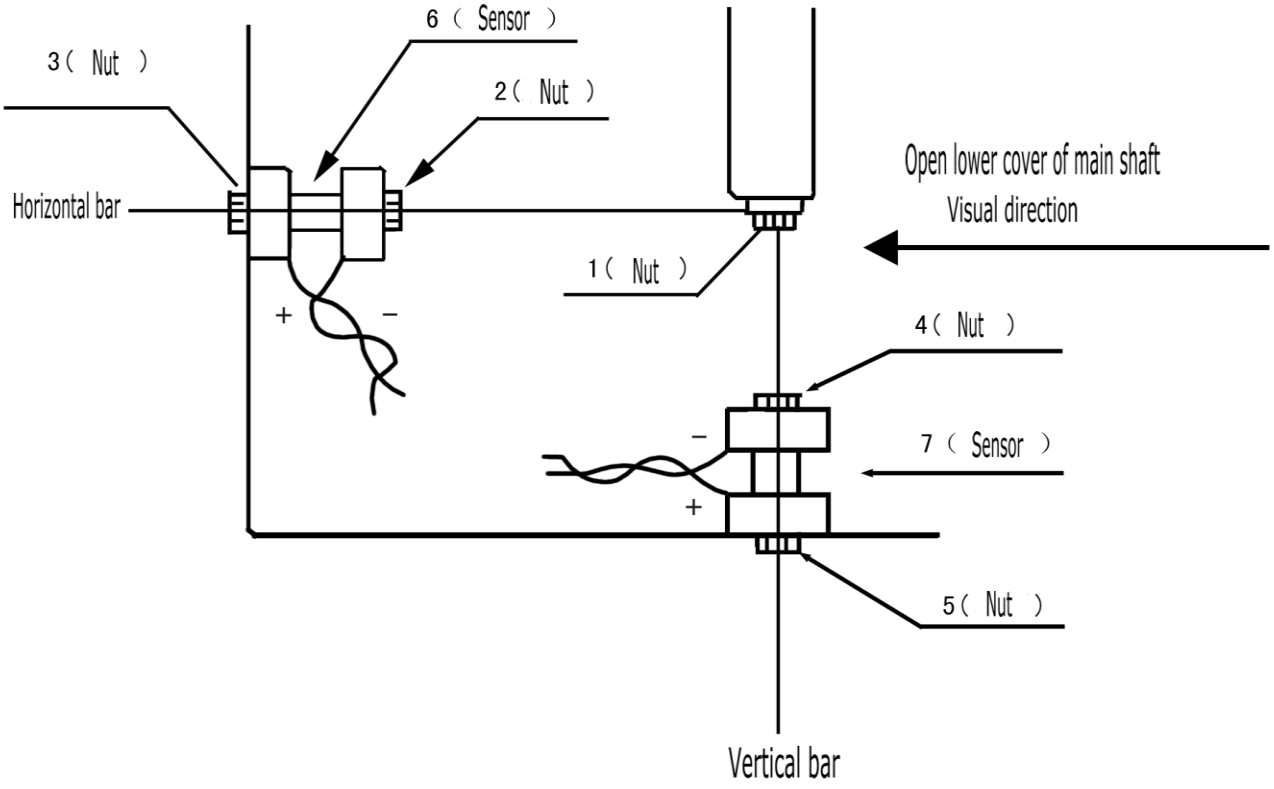
Error Description	Reason Analysis	Solutions
Boot not display	1.Check out external circuit 2.Switch broken	1.Check with multimeter 2.Replace switch

Display normally after boot, but doesn't start and have hum. Err1 Displayed	1.Motor capacitor failure	1.Replace capacitor
Err1 Displayed	1.No start and no brake	1.Check photoelectric board, computer board, power board
Err2 Displayed	1.Non install wheel 2.Only install rim, with no tire 3.The main shaft and adaptor didn't connect tightly with each other 4.Wheel installation failure, unlocked tightly 5.Motor belt too loose or too tight.	1.Install a wheel on the shaft 2.Install a rim with tire 3.Re-check and tighten mounting bolts 4.Choose suitable cone and install correctly. 5.Adjust the belt
Err3 Displayed	Unbalanced value of wheel is too large	Change the wheel to test or do self-calibration if necessary
Err4 Displayed	Wheel rotates clockwise, photoelectric sensor got problem	Readjust position or replace a new one
Err5 Displayed	Protective cover isn't closed	Close the protective cover
Err7 Displayed	Stored data missed	Input stored data, redo self-calibration

Only display 00-00, no other value display	1.The sensor leading wire cut off or bad connection 2.Stored data missed	1.Reconnect the wire of sensor 2. Redo self-calibration
The variation range of each rotation value is more than 5 g	1.Tire with foreign body or rim center mounting surface deformed 2.Pressure sensor got damp, or quick nut isn't locked tightly 3.External power supply is low; Adaptor isn't locked tightly	1.Change another wheel 2.Dry the sensor and readjust it. 3.Hit the food screw
A range of tens of grams per rotation	1.Tire with foreign body or too much unbalanced value 2.Pressure sensor failure 3.Low voltage of external power supply	1.Change another wheel 2.Check out pressure sensor and connect wire 3.Check out or install an manostat
No shutdown exceed 10 seconds	1.Bad grounding of external power supply 2. Interference	1.Check out external circuit or try to electrify in another place 2. After shutdown, restart
Balance value isn't accurate, interference at the left and right and very difficult to balance to 00	1.Pressure sensor got damp or damaged 2.Program is chaos	1.Readjust, dry and calibrate or replace a new one 2.Re calibrate
Don't brake after showing value	1.Brake system failure 2.External interference	1.Replace power board 2.Restart the machine
Second balance value exceed 10g	1.Internal hole of wheel is irregular 2.Improper installation of adaptor	1.Replace another wheel 2. Re check surface of installation and test
Self-calibration display Err8	Not plus 100g self-calibration weights Pressure sensor leading wire is break Computer board is breakdown Power supply board is breakdown	
Show hundreds of grams of error value	1.Stored value parameter is chaos 2.Error value is too big	1.Redo self-calibration 2.Replace the wheel to test

Contact professional if above methods do not work.

6. Structure and adjusting steps of pressure Sensor



1. Lose Nut No.2,No.3,No.4,No.5

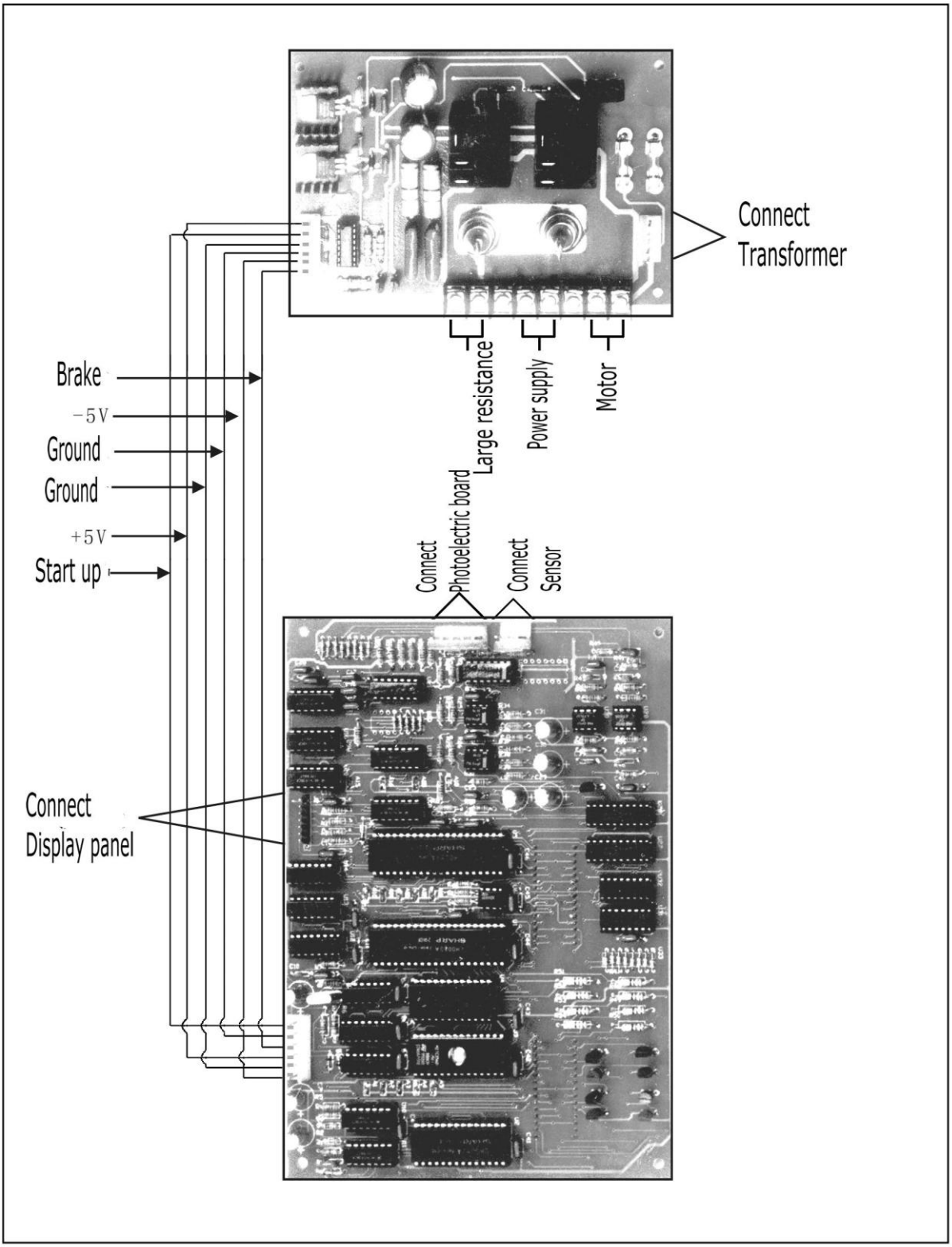
2. Lose Nut No.1, demount horizontal bar and vertical bar

3.Dry Sensor parts,No.6 and No.7

4.Tighten Nut No.4 with little force; Tighten Nut No.5 tightly

5.Tighten Nut No.2 with little force; Tighten Nut No.3 tightly.

7. Power wiring diagram-220V



8.Wheel balancer spare parts list

No.	Part No.	Description	Specification	Quantity
1	05020010008	Small cone	CB70-07-03	1
2	05020010010	Cone 2	L718-07-02	1
3	05020010011	Cone 3	L718-07-03	1
4	05020010012	Cone 4	L718-07-04	1
5	020101001	Reserve bowl ring		1
6	020601001	Reserve bowl		1
7	020601002	Small reserve bowl		1
8	020601086	Quick nut 38mm		1
9	022102001	Spanner	12mm	1
10	022102005	Balance hammer		1
11	020701019	Spring φ38		1
12	022102006	Weight	100g	1
13	020601004	Caliper		1