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This equipment is intended for use by technical professionals or maintenance personnel.

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Safety Precautions



Warning

- ! This manual is an integral part of the machine. Please read carefully.
- ! Keep the manual for later use when maintaining the machine.
- ! This machine can only be used for the designated purposes. Never use it for any other purpose.
- ! The manufacturer is not held responsible for the damage incurred by improper use or use other than the intended purpose.

Precaution

- ! This equipment must be operated by qualified personnel who have been gone through special training programs. Any modification or change of application range to this machine may cause direct or indirect damages to equipment without obtaining permission from manufacturer or not following the instruction of the manual.
- ! KWB-402 should be installed on the stable ground.
- ! Keep 0.6M distance between the back panel and the wall for good ventilation. Enough room should be left on both sides of KWB-402 for convenient operation.
- ! Do not put KWB-402 in a place with extreme temperature or moisture, or near the heating system, water tap, air-humidifier or furnace.
- ! Do not put KWB-402 near the window with sunlight. Protect the unit with a curtain or shield if necessary.
- ! Keep the machine from dust, ammonia, alcohol, thinner or spraying binder.
- ! People who are not operating the machines should be kept away when it is used.
- ! Use appropriate equipment and tools, protective and safety equipment, including work clothes, blinkers, working boots and so on.
- ! Pay special attention to the safety marks stuck on the machine.
- ! Do not touch or approach the moving parts by hand or body when the machine works.
- ! Do not remove the safety device or keep it from working properly.
- ! When the machine is moved, only exert force on the chassis. Never exert force on the principal shaft under any condition. Please carry and place it with great care.

Description of Safety Signs



- I Do not exert force on the hanging handle to avoid falling of the machine.



- I The wheel protection must be put down before pressing START button of the machine to avoid any injury.

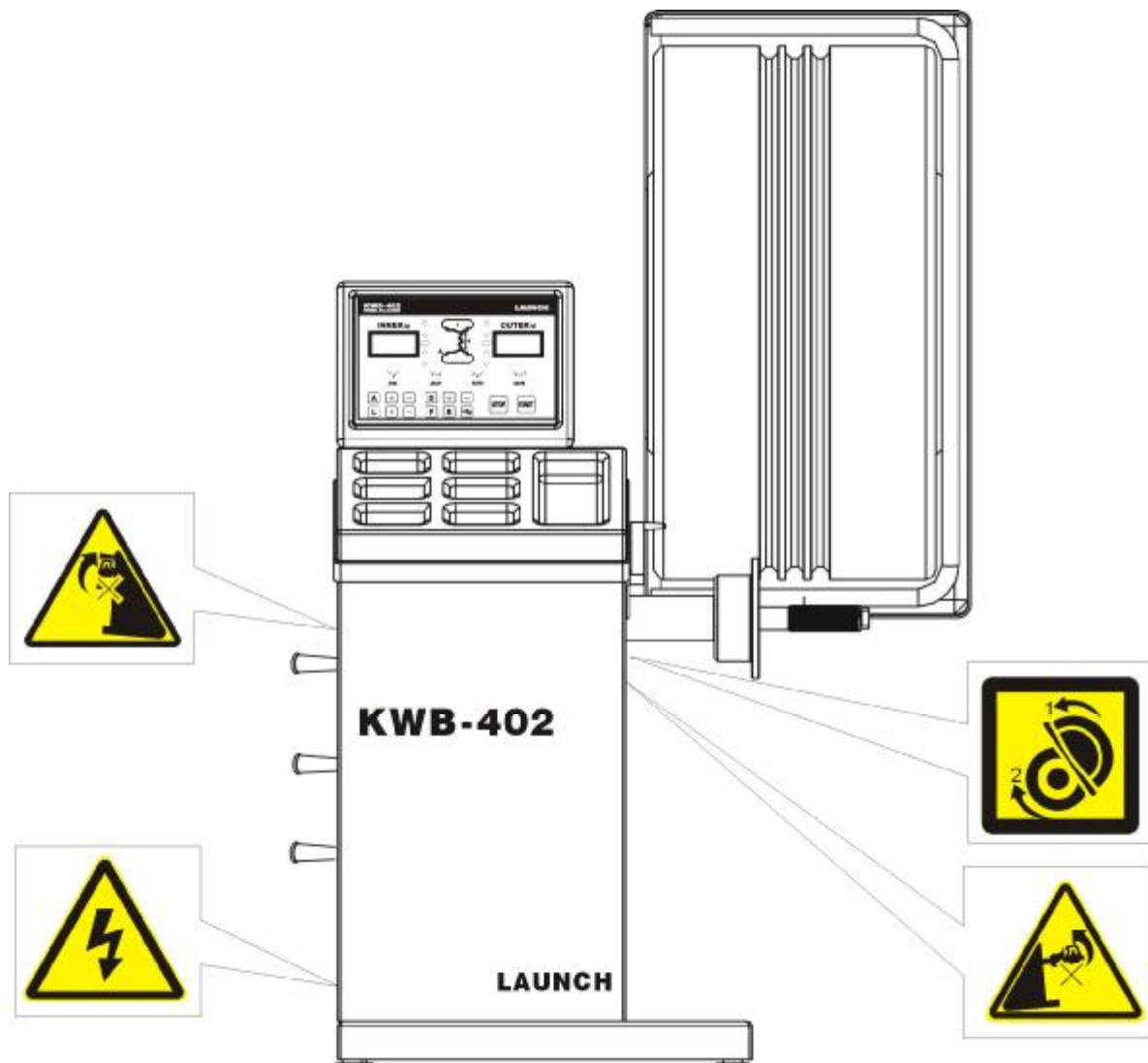


- I High voltage power! Danger!



- I Do not exert force on the balance shaft when the machine is transported.

The Position of Safety Signs



- ⌌ Please replace the safety signs if they get blurred or lost.
- ⌌ When one or more safety signs get lost, don't operate the machine.
- ⌌ The safety signs must be kept within the sight of the operator.

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Chapter 1 Introduction

1.1 Usage

The KWB-402 wheel balancer features compact size, good design, simple operation, strong functions and high measurement precision, which make it ideal equipment for measuring the dynamic balance of the wheel. It can be used for balancing small and medium size tyres. It can also be a great help in car repair garage and tyre shops.

1.2 Features

- I High aptitude, good stability, and high equilibrating precision.
- I The design allows you to operate from several directions; smart outline makes both eyes and minds pleased.
- I Advanced built-in driving system highly increases the measuring accuracy.
- I Standard computation and calibration function eliminate the measurement deviation and ensure the test accuracy.
- I Different balance modes are available to various wheels.
- I Quick and accurate test may reduce your working intensity and improve your working efficiency.
- I Simple operation and easy grasp
- I Extra-large digital display

1.3 Working Principle

Only when CPU performs self-test and displays normal information of all units can the user start the balancing operation. CPU controls the running of principal shaft via driving interface during balancing operation. The imbalanced signal detected by the balance sensor is transmitted to CPU interface through A/D converter. CPU analyzes comprehensively both the imbalance signal and the angle signal of principal shaft, calculates the imbalance value, and then displays the result through LED unit. Man-machine dialogue can be realized through the keyboard and LED unit.

1.4 Background

The imbalance of the wheel causes wobble of the steering wheel, low adhesion, and wheel jumping, which damages the wheel and shocks absorber and turning parts. It also influences the comfort of steering stability and increases fuel consumption, decreasing economic index of the automobile directly. Balancing operation will eliminate these disadvantages and relative loss.

1.5 Technical Data

Sizes

Max Height: 1650mm (65")

Length: 1150mm (45")

Width: 1100mm (43")

Noise

Working noise: <70dB(A)

Measure Index

Balance Cycle: 7s

Balance Accuracy : $\pm 1g$

Electrical Parameters

Motor (Optional)

Voltage: Motors with different voltages for customer choice.

AC110V($\pm 5\%$) 60Hz ($\pm 1Hz$)

Or AC220V($\pm 5\%$) 50Hz ($\pm 1Hz$)

Or AC230V($\pm 5\%$) 60Hz ($\pm 1Hz$)

Motor Power: 0.18kW

Average Rotate Speed: 240r/min

Weight

Net Weight: 108 kg(238 lb)

1.6 Application Scope

Max Wheel Diameter: 610mm (24")
 Max Wheel Width: 508mm (24")
 Max Wheel Weight: 65kg

Rim Diameter: 10" ~23"
 Rim Width: 1.5" ~20"

1.7 Working Condition

Working Temperature: 0°C — 50°C
 Transport/store temperature: 0°C — 55°C

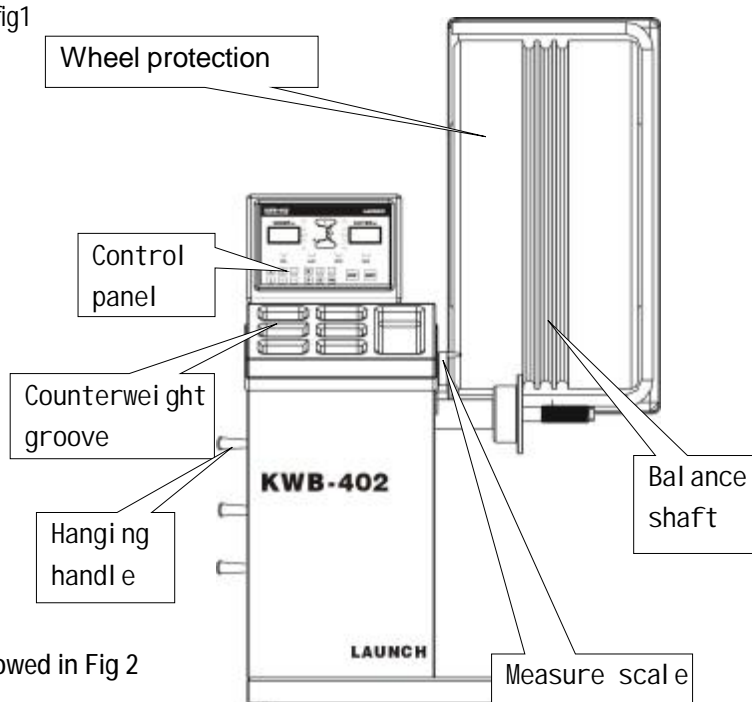
Relative Humidity: ≤85%
 Altitude: less than 1000m

Chapter 2 Equipment Structure

2.1 Main Structure

KWB-402 wheel balancer structure is shown as in fig1

1. Measure scale — For automatic measurement of the installation distance of the wheel (wheel distance in short) and rim diameter, and the accurate position of the sticking balance block.
2. Control panel — For man-machine dialogue.
3. Hanging handle-- For hanging cones and the wheel width scale
4. Counterweight groove — For putting the counterweight.
5. Balance shaft — For supporting the wheel.



Accessories supplied with the machine are showed in Fig 2

No.	Description	Amount
001	Shaft positioning cone	4
002	Guide screw	1
003	Spring	1
004	Locking wing nut assembly	1
005	Width measure scale	1
006	Standard lead weight	1
007	Pliers to attach the balance weight	1
008	Hanging handle	3
009	Wheel protection	1

Standardized elements of balancer are shown in the following figure.

Standardized elements of KWB-402 wheel dynamic balancer



Fig. 2

2.2 Power Supply Control Board

The position of fuse on power supply control board of the KWB-402 is shown as Fig.3.

The parameters of the two fuses F1 and F2 are:

F1: 2A, $\phi 5 \times 20\text{mm}$, 250VAC;

F2: 7A, $\phi 5 \times 20\text{mm}$, 250VAC。

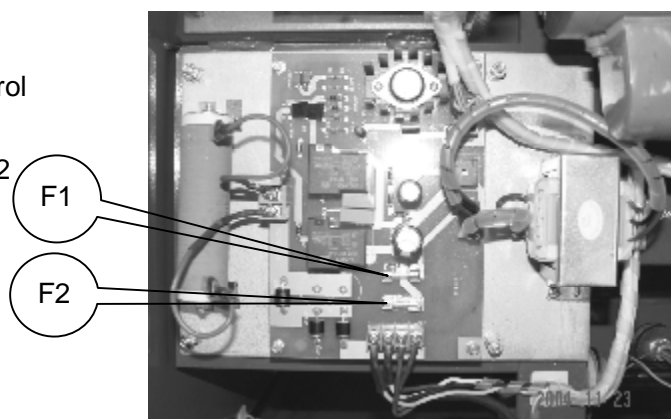


Fig.3

2.3 Control Panel

The control panel of KWB-402 is as shown in Fig. 4

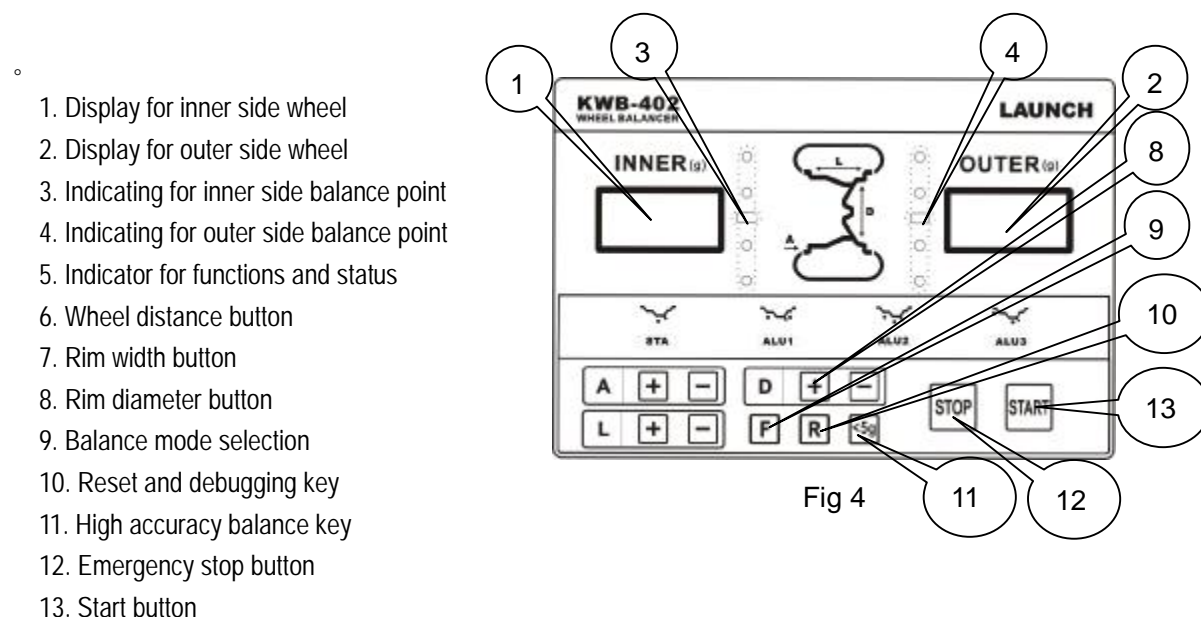


Fig 4

Chapter 3 Operating Instruction



Attention:

The equipment can only be operated by qualified personnel with special training. Use appropriate tools, protective and safety equipment, wearing protective work clothes, such as blinkers, and working boots.

3.1 Switch on the Machine



Fig.5

- I Turn on the power supply switch on the left side of the machine (Fig. 5). The display for inner side wheel on the control panel shows "801". Soon, it changes to "A" and "8.0". After the self-checking, the machine enters the Dynamic Balance status that is the default setting.

3.2 Selection Function

Press[F] key to select required balance modes.

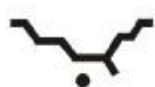


Fig.6

- I When this indicator light illuminates (Fig. 6), the machine is on function of static balance, suitable for motorcycle wheel or wheels that the balance weight cannot be attached on.



- I When this indicator light illuminates (Fig. 7), this function is suitable for the alloyed wheel that the balance weight can be stuck on its shoulders.

ALU1

Fig.7



- I When this indicator light illuminates (Fig.8), this function is suitable for the alloyed wheel that the balance weight can be stuck on outer side concealment.

ALU2

Fig8



- I When this indicator light illuminates (Fig. 9), the balance weight can be stuck on the inner side of the rim or be clipped on the outer side of the rim.

ALU3

Fig 9

- I When all the four indicators are off, it is on the standard balance mode which is default setting by the computer when turning on the machine.

3.3 Wheel Mounting



Attention:

- Ø The max weight of the wheel cannot exceed 75kg.
- Ø Remove any counterweight and other foreign body from the wheel before mounting it avoiding any danger. When remove the counterweight, the demounting/mounting pliers supplied with the machine should be used (Fig. 10).
- Ø Clean the contact surfaces between the shaft and the conical casing with alcohol or gasoline before mounting the wheel to avoid any influences on installation accuracy.

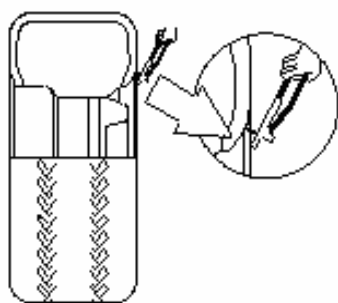


Fig. 10

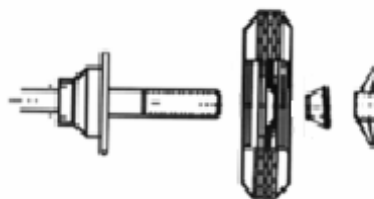
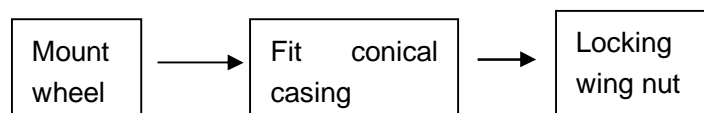


Fig. 11

Mounting Method 1

It is suitable for the wheel that can be positioned with its center hole.

- I Fit the wheel onto the balance shaft close up the flange(Fig.11).
- I Select a right size conical casing, and then tighten the wheel with a locking wing nut.



Mounting Method 2

This method is suitable for the wheel to be positioned with its central hole, especially when the central position surface cannot be correctly positioned due to deformation.

- I Fit a conical spring, then select a right size conical casing and fit it onto the balance shaft in reverse. See Fig.12.

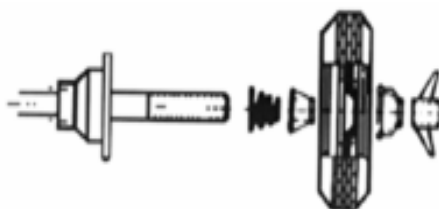
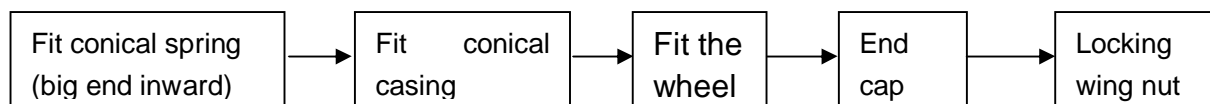


Fig. 12

- I Fit a matching end cap (optional) onto the locking wing nut.
- I Fit the wheel onto the conical casing and fasten it with a end cap and a locking wing nut.



3.4 Inputting Wheel Data

It is important for operator to know how to input data correctly because the wrong data input may directly influence the test result of next step.

- I A value Input: Pull out the measure scale into contact with the inside wall of the wheel rim, check the relative value (Fig. 13). Press [+] and [-] buttons next to A button to input the measured value until the correct number is shown. [+] to raise; [-] to lower Thus, the left display shows "A".

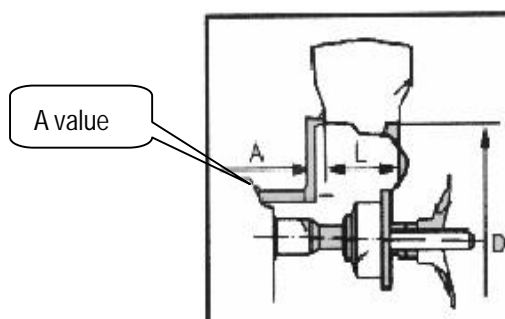


Fig. 13

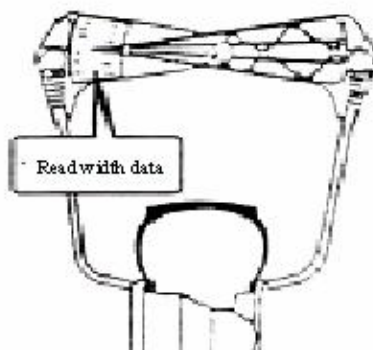


Fig.14

- I L value input. Use the width scale that is an accessory to measure width of the rim (Fig. 14). Press [+] and [-] buttons next to L button until the correct number is shown. Thus, the left display shows "L".

- I D value Input. Find and read the diameter, "d" value, on the tyre. Press [+] and [-] buttons next to D button until the correct number is shown. Thus, the left display shows "D".

**Attention:**

When inputting wheel data, wheel width and wheel diameter is in English system under default state of balancer. By simultaneously pressing [STOP] button and [-] beside corresponding value, it will be converted into metric system. Then press [STOP] and [+] beside corresponding value, it will be restored to English system.

3.5 Operating Function

**Attention:**

- Ø Make sure to put down the wheel protection before pressing [START] for safety operation.
- Ø Do not raise the wheel protection when the wheel is rotating. If abnormal situation occurs, press [STOP] first, then turn off the power. Don't raise wheel cover until the wheel stops.
- Ø Do not touch the machine during a wheel spin. Otherwise, the balance effect will be influenced.(fig.14)

Mount the wheel, select the balance mode and confirm that value A, L and D are correct. Do balance operation as follows:

1. Put down the wheel protection and press [START] key to carry out a wheel spin (fig.15). Seven seconds later, the machine stops automatically.



Attention:

Ø This step can also be operated like this: put down the wheel protection to start a wheel spin automatically, then keep pressing [STOP] and [R] for 3 seconds.

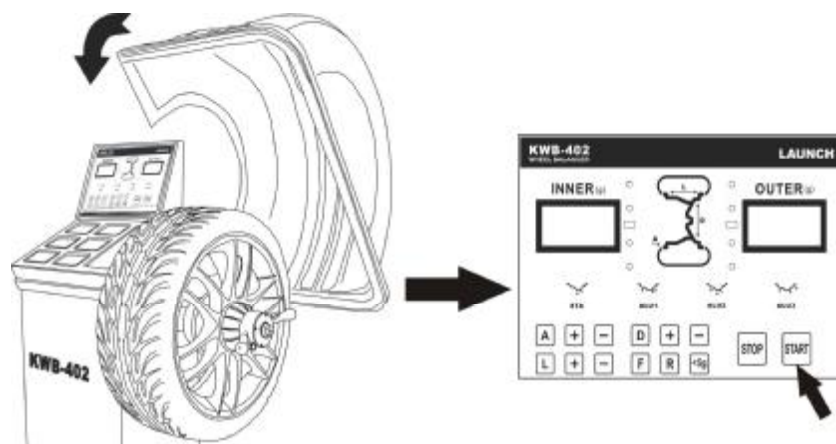


Fig 15

2. Display imbalance value. When the machine stops, the numbers showed on the displays are imbalanced values (the machine default unit is gram, it can be converted to ounce according to customer's requirement. This can be realized by simultaneously press [STOP] and [+], [-] beside A). The left display shows the imbalanced value on the inner side of the wheel while the right one shows the imbalanced value on the outer side of the rim. (For static balance, only the right display shows the imbalanced value).

3. Rotate the wheel by hand, and the position indicators flash continuously. When all indicators in one group illuminate, the 12 o'clock position of the rim is the imbalanced point (Fig. 16). The left position indicators are corresponding with the inner side of the rim while the right position indicators are for the outer side.

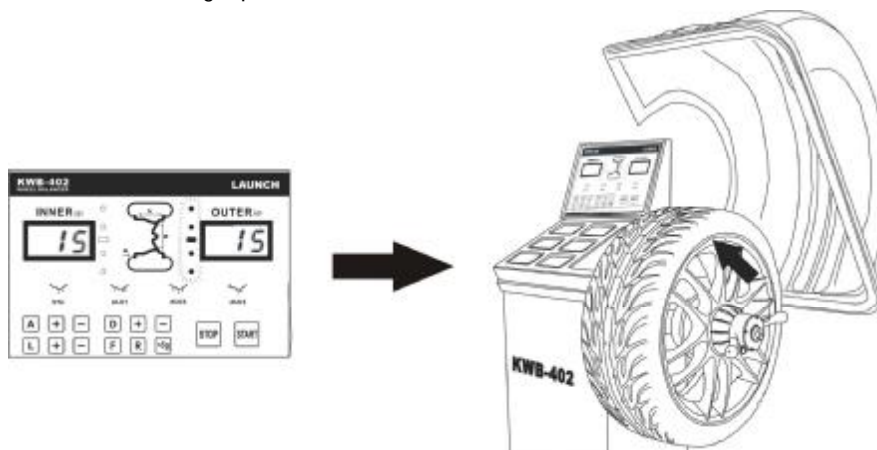


Fig.16

4. Attach the relative counterweight according to the displayed value on the imbalanced point of the rim. The mounting methods are as follows. Fig. 17 shows how to attach pothook-style balance weight, and the Fig. 18 shows how to attach stick-on balance weight.

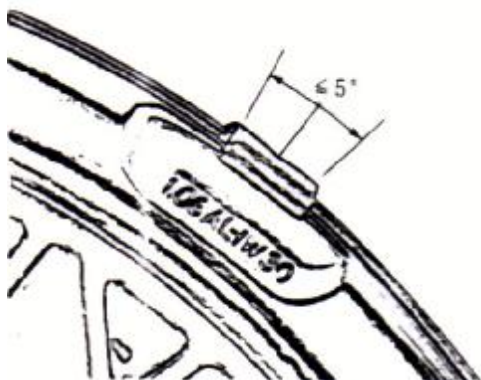


Fig.17

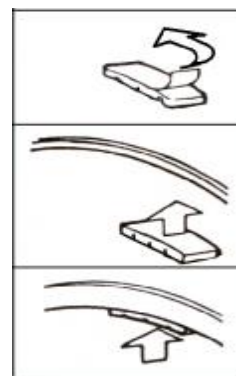


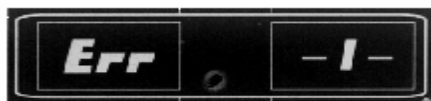
Fig.18

5. Repeat above steps until that "00" is showed on both displays.
6. Remove the wheel from the balance shaft and the operation is over.

Chapter 4 Troubleshooting

4.1 Error Messages of Self-diagnosis

Error messages of self-diagnosis are showed below.



Failures of the phase generator or the power supply board.



Low rotating speed or no wheel mounted on the machine (with tyre)



The imbalance value is too big. Change another wheel to test.



Errors with power supply or position sensor



The wheel protection is not put down.



Damages of the memory or losses of the signal



Wrong calibration program or damages of the computer board or the sensor

4.2 Frequent Errors and Solution

Phenomenon	Cause	Solution
No display when turn on the machine.	<ol style="list-style-type: none"> 1. Check whether the outer power supply is normal. 2. Failures of the computer board 	<ol style="list-style-type: none"> 1. Check the outer power supply. 2. Replace the computer board.
Normal display but failures of [START] button, and A, L and D inputting keys.	<ol style="list-style-type: none"> 1. Touch switches are not sensitive. 2. Machine dies. 	<ol style="list-style-type: none"> 1. Open the cover and insert the pins of touch switches tightly. 2. Restart the machine.
Normal display but unable to stop after start, with wrong imbalance value.	<ol style="list-style-type: none"> 1. Loose connection between the computer board and the power supply board. 2. Failures of the computer board 	<ol style="list-style-type: none"> 1. Tighten the connection between the computer board and the power supply. 2. Replace the computer board.
Slow start, bad brake, and inaccurate imbalanced value	The driving belt becomes loose.	Replace the driving belt or adjust tension of the V belt.
Normal work but with inaccurate imbalance value	<ol style="list-style-type: none"> 1. Calibrated value changes. 2. The body is not stable. 3. Influences of cones or locking wing nuts. 4. The wheel is not mounted tightly. 5. Unstable power supply. 6. Big fluctuation of power voltage. 7. Failures of the phase generator and its circuit. 	<ol style="list-style-type: none"> 1. Re-calibrate it according to the User's manual. 2. Solve failures according to check result. 3. If the failure still exists, replace the computer board. 4. Re-fasten locking wing nuts.



Attention:

If the problems can not be fixed through above solutions, please contact the technical support.

Chapter 5 Maintenance



Attention:

Only the specialized technician can do the maintenance. Before any maintenance is performed, disconnect the power and keep the plug within the sight of the maintenance personnel.

To keep the wheel balancer in good condition and to prolong its work life, it is necessary to do regular maintenance according to the instructions of this manual. Otherwise, the normal operation and reliability of the machine will be influenced, or personal injury would be caused.

- ! Keep the machine and working area clean, prevent dust entering the moving parts.
- ! Keep the balance shaft clean (clean with diesel oil or alcohol) and lubricated.
- ! Regularly calibrate the machine. See *Installation and Parts Manual* for details.
- ! Regularly check and adjust the tension of the belt.
- ! Check all connecting parts and bolts regularly and tighten them if necessary.

Chapter 6 Storage and Scrapping

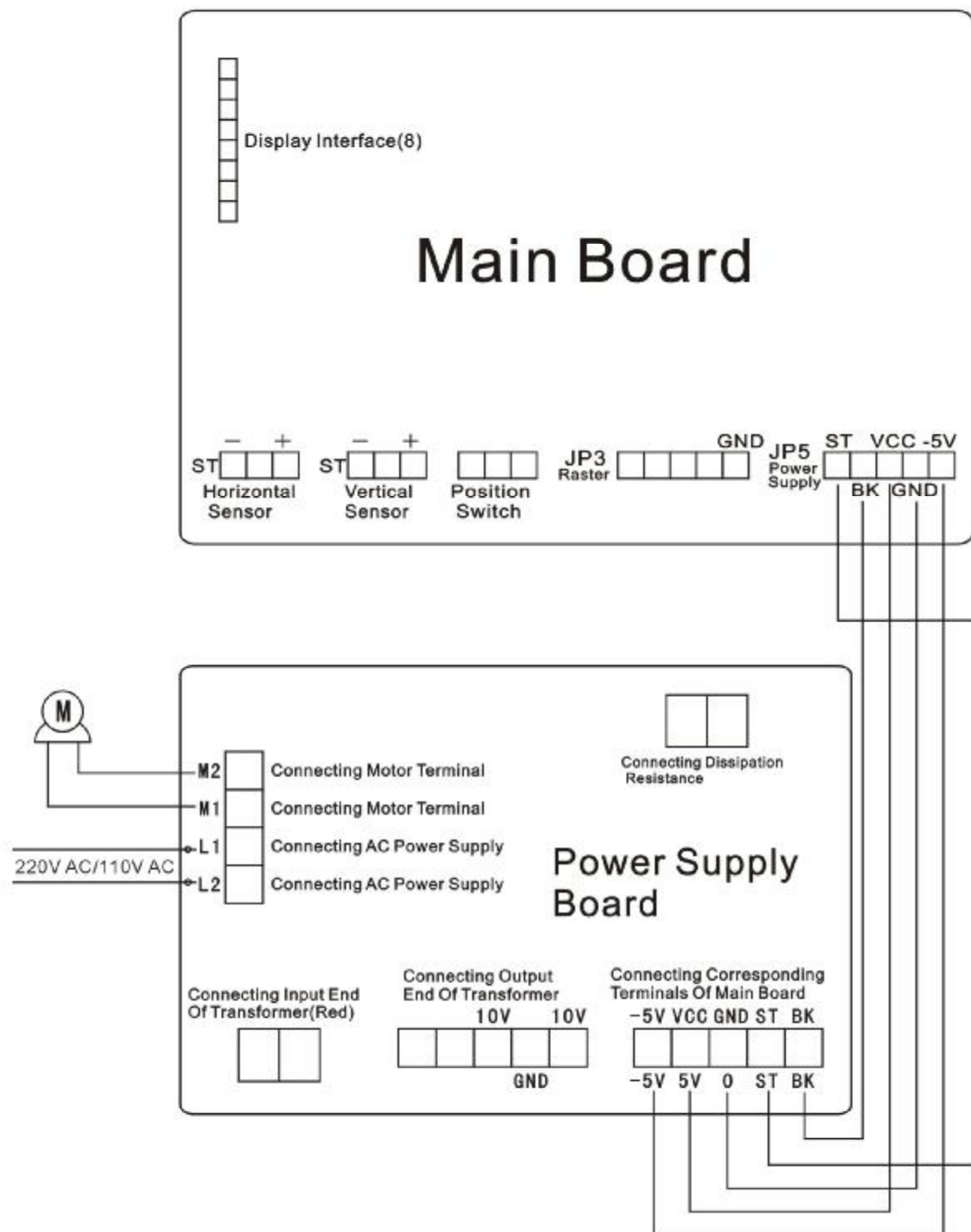
6.1 Storage

When the equipment needs to be stored for a long extended period of time:

- ! Disconnect the power.
- ! Lubricate all the parts that need to be lubricated: main shaft and etc.
- ! Protect the machine with plastic cover against dust.

6.2 Scrapping

When the equipment can no longer be used, disconnect the power and dispose it in accordance with the local law and regulations.



KWB-402 Circuit Diagram

Warranty

THIS WARRANTY IS EXPRESSLY LIMITED TO PERSONS WHO PURCHASE LAUNCH PRODUCTS FOR PURPOSES OF RESALE OR USE IN THE ORDINARY COURSE OF THE BUYER'S BUSINESS.

LAUNCH products is warranted against defects in materials and workmanship for one year (12 months) from date of delivery to the user. This warranty does not cover any part that has been abused, altered, used for a purpose other than for which it was intended, or used in a manner inconsistent with instructions regarding use. The exclusive remedy for any automotive meter found to be defective is repair or replacement, and LAUNCH shall not be liable for any consequential or incidental damages. Final determination of defects shall be made by LAUNCH in accordance with procedures established by LAUNCH. No agent, employee, or representative of LAUNCH has any authority to bind LAUNCH to any affirmation, representation, or warranty concerning LAUNCH products.

Declaration

The above warranty is able to replace any warranty in other forms.

Order Information

Replaceable and optional parts can be ordered directly from your LAUNCH authorized supplier. Your order should include the following information:

1. Quantity
2. Part code
3. Item description

Customer Service

If you have any questions on the operation of the machine, please contact us:

Tel: 86-755-82401306 or 86-755-82269604

If your machine requires repair service, return it to the manufacturer with the sales invoice, the warranty sheet, the quality certificate and a note describing the problem. If the machine is determined to be in warranty, LAUNCH will repair or replace at no charge, also repay the transport fee to the customer. If the machine is determined to be out of warranty, it will be repaired for a nominal service charge plus return freight. Our address is as follows:

Attn: Overseas Department
LAUNCH TECH. CO., LTD.
Xinyang Building, Bagua 4th Road,
Shenzhen, Guangdong Province,
P. R. China
P.C.: 518029