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Our company shall not be liable for any damages or problems arising from the use of any options or any consumable products other than those designated as original our company products or approved products by our company.
This manual instruction is suitable for wheel balancer WB-511.
This unit is made for the purpose of persons who have special techniques and certifications.

Safety Instructions

- Make sure all operators are properly trained. Improper operations may result in incorrect measurement.
- Environments should conform to the regulations in this instruction manual.
- Keep the guard in working order.
- Transportation and operations should strictly follow the regulations in this manual; otherwise, the manufacturer will not be responsible for the damage caused by improper transportation or operation.
- To use the equipment beyond its measurement range may cause damage to it and can not ensure precise measurement.
- If operators violate safety regulations thus damage the machine by dismounting safety devices, the manufacturer will immediately cease its safety promise.

Table of Contents

Product Instruction....1

1 External Structural Drawing....1
2. Functions....1
3. Specifications....1
4. Packing List....2

Control Unit....4

Operating Instructions....5

1. Self-check....5
2. Installing Wheel....5
3. Wheel Parameters Input....5
4. Choose balance modes....6
5. Standard Dynamic Mode....7
6. Static Mode....7
7. ALU 1----ALU 3 Modes....8
8. ALU S Mode....9
9. OPT Function....11
10. Motorcycle Mode....12

Setting programs....13

1. System setting....13
2. Calibration programs....14

Error Information and Treatment....16

CE Declaration of Conformity....17

Product Instruction

1 External Structural Drawing

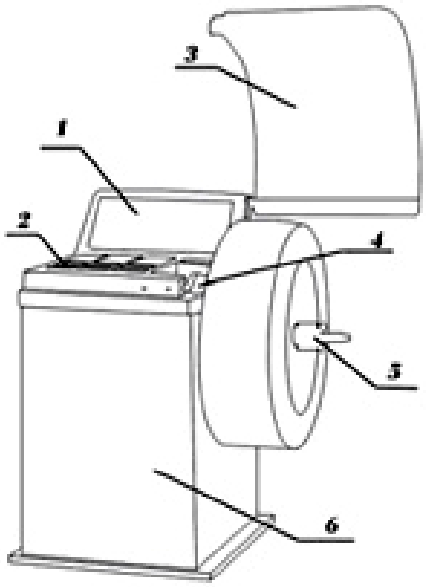


Fig1

1. Operation Panel
2. Counterweight Container
3. Safety Guard
4. Mechanical sensor arm
5. Quick Lock Hub Nut
6. Balancer Body

2. Functions

- Dynamic Mode
- Static Mode
- Standard ALU1, ALU2, ALU3, Mode
- ALUS Mode
- OPT(OPTIMIZATION) mode
- Unit Conversion in Different Countries (Areas): g / oz, mm / inch
- Mechanical sensor arm
- Self-calibration
- Guard Protection
- Self-check Error and Diagnostics

3. Specifications

- Rated voltage: 110V /220V / 380V
- Protection Class: IP 54
- Motor power: 250w
- Max Rotating Speed: 220 r /min
- Cycle Time: Average 6-9s

- Measurement Ranges:

  Gauge length 10 --- 300mm

  Rim Diameter: 10" — 26"

  Rim Width: 1.5" — 20"
- Error: ≤±1g 0.1 oz
- Noise: ≤70dB
- Net Weight: 95kg
- Gross Weight: 116kg
- Working Environment: Temperature: -20℃～50℃, Humidity: ≤85%
- Package dimensions: 900×700×1170mm

4. Packing List

SN	Description	Quantity	Picture
1	Wheel Balancer	1set	
2	Plastic protective cover	1 pc	
3	Operation Manual	1 pc	
4	Caliper	1 pc	
5	Tower spring	1 pc	
6	Cone	4 pc	
7	Flange	1pc	

8	Pliers	1 pc	
9	Thread and bolt	1kit	
10	socket head wrench	1 kit	
11	hanger	3 pc	
12	Standard Weight	1 pc	
13	Quick nut and bowl	1 kit	

Control Unit

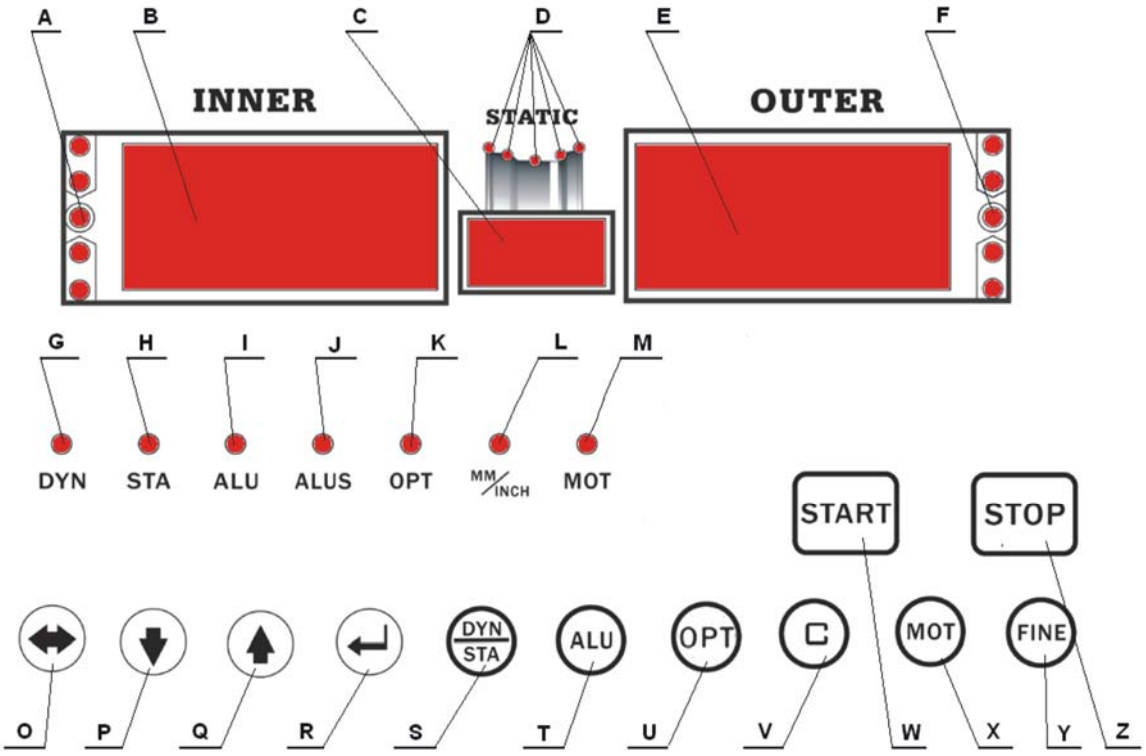


Fig2

A. inside unbalance point
B. inside unbalance display window
C. middle static unbalance display window
D. sticking and clamping weight position indicator
E. outside unbalance display window
F. outside unbalance point
G. standard dynamic mode indicator
H. static mode indicator
I. ALU mode indicator
J. ALUS mode indicator
K. OPT indicator
L. mm/inch indicator
M. Motorcycle mode indicator
. O. Size input shift key
P. function key
Q. ＋function key
R. Enter key
S. Dynamic/Static key
T. ALU mode key
U. OPT key
V. Unit shift key
W. START key
X. Motorcycle mode key
Y. Fine display key
Z. STOP key

Operating Instructions

1. Self-check

When switched on, the system begins self-check and then enters standard dynamic mode measurement (Refer to Fig3).

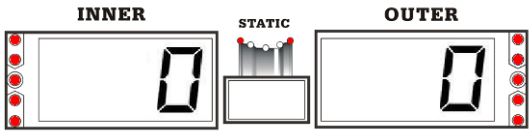


Fig3

2. Installing Wheel

Choose the optimal cone for the center hole and mount it on the balancer. (Refer to Fig4 and 5)

The method shown in figure 5 is preferable because it approximates to installing wheel on a real car.

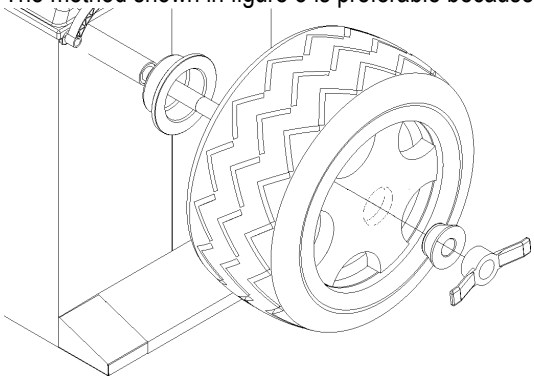


Fig4

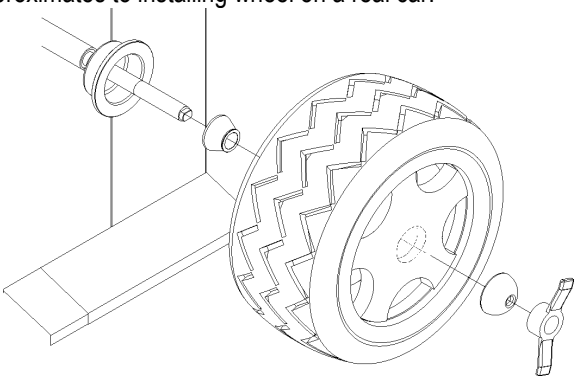


Fig5

3. Wheel Parameters Input

Unlike ALU S which needs 4 parameters, other modes need 3 parameters.

Parameter values are shown in Fig6 (dynamic and static modes, ALU 1-3 mode, motorcycle mode) and Fig7 (ALU S mode).

Users can finish the parameters input manually (Refer toFig8).

Note: Motorcycle tires automatic input parameters also need to install a dedicated extension rod. (Refer to Fig 18)

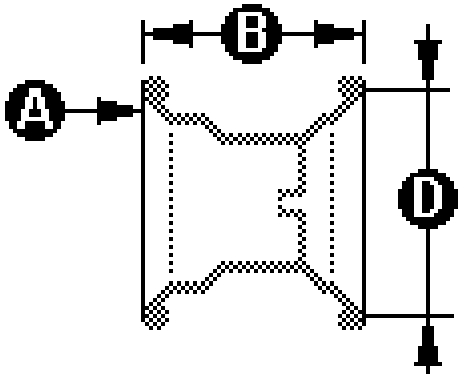


Fig6

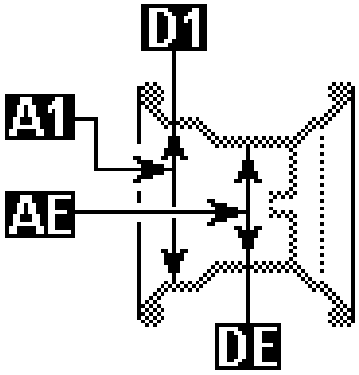


Fig7

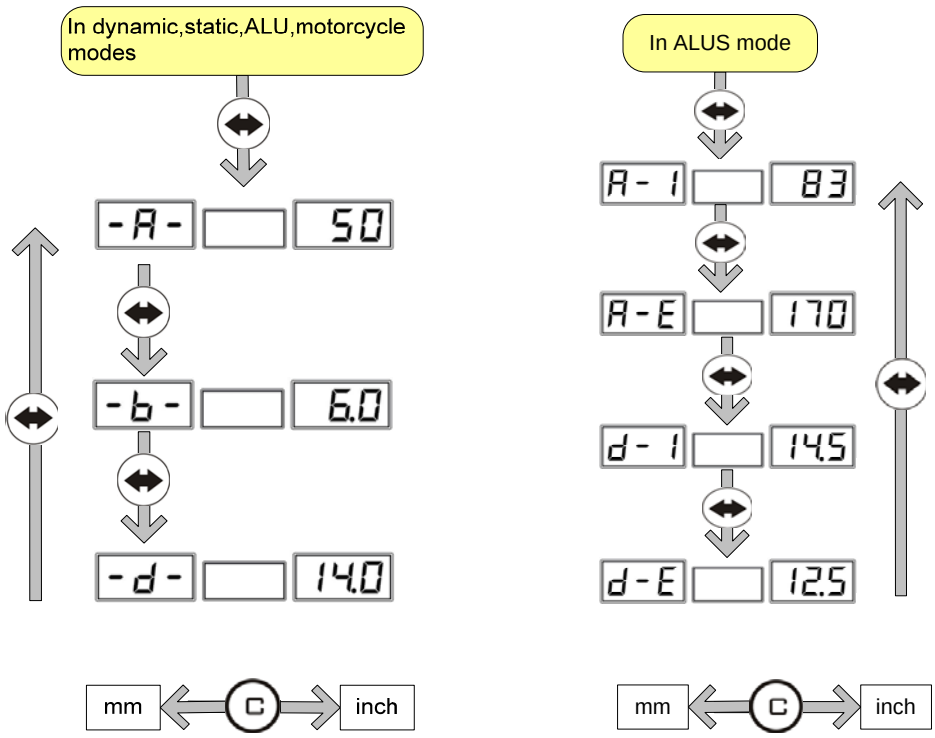


Fig8

Press ⇔ to choose parameter, and press ⇩ ⇧ to modify parameter value. After inputting the parameter press ⇔ to save and enter next parameter input state. In the state of D value input, press C to convert mm and inch.

4. Choose balance modes

The default mode of this equipment is standard dynamic mode. Choose other mode by pressing keys DYN/STA、ALU、MOT (See Fig 9).

OPT mode can be operated by pressing the key OPT under dynamic and static modes.

Press STOP can stop measurement during measurement

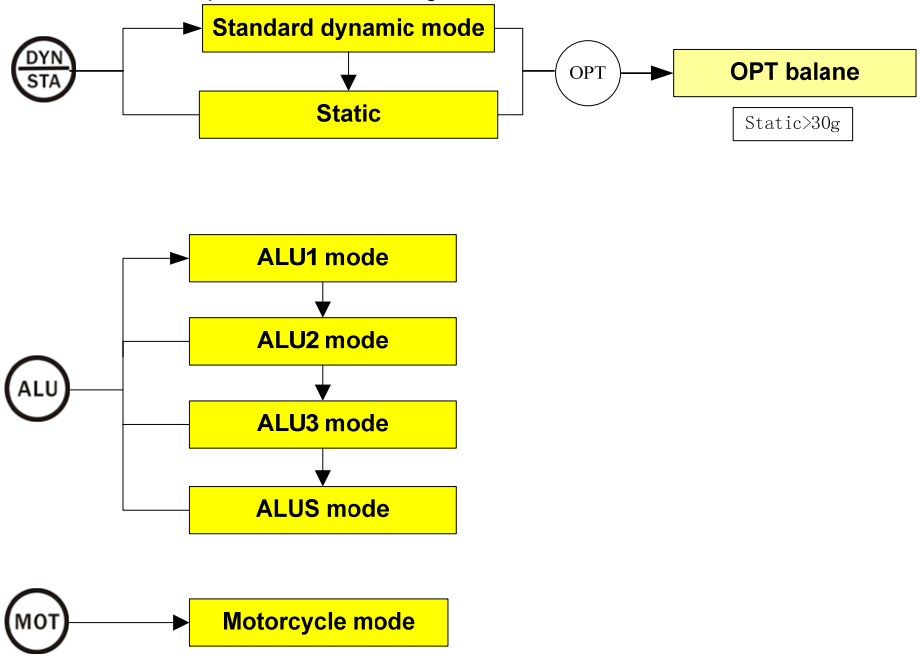


Fig9

5. Standard Dynamic Mode

This function is to test the amount of unbalance on the inside and outside of the rim while a wheel is rotating. Placing counterweight on the tested position of both sides of the rim according to the displayed unbalance value can eliminate unbalance.

First, choose standard dynamic mode, then install the Wheel and input parameters, after that follow the process of standard dynamic operation in Fig10.

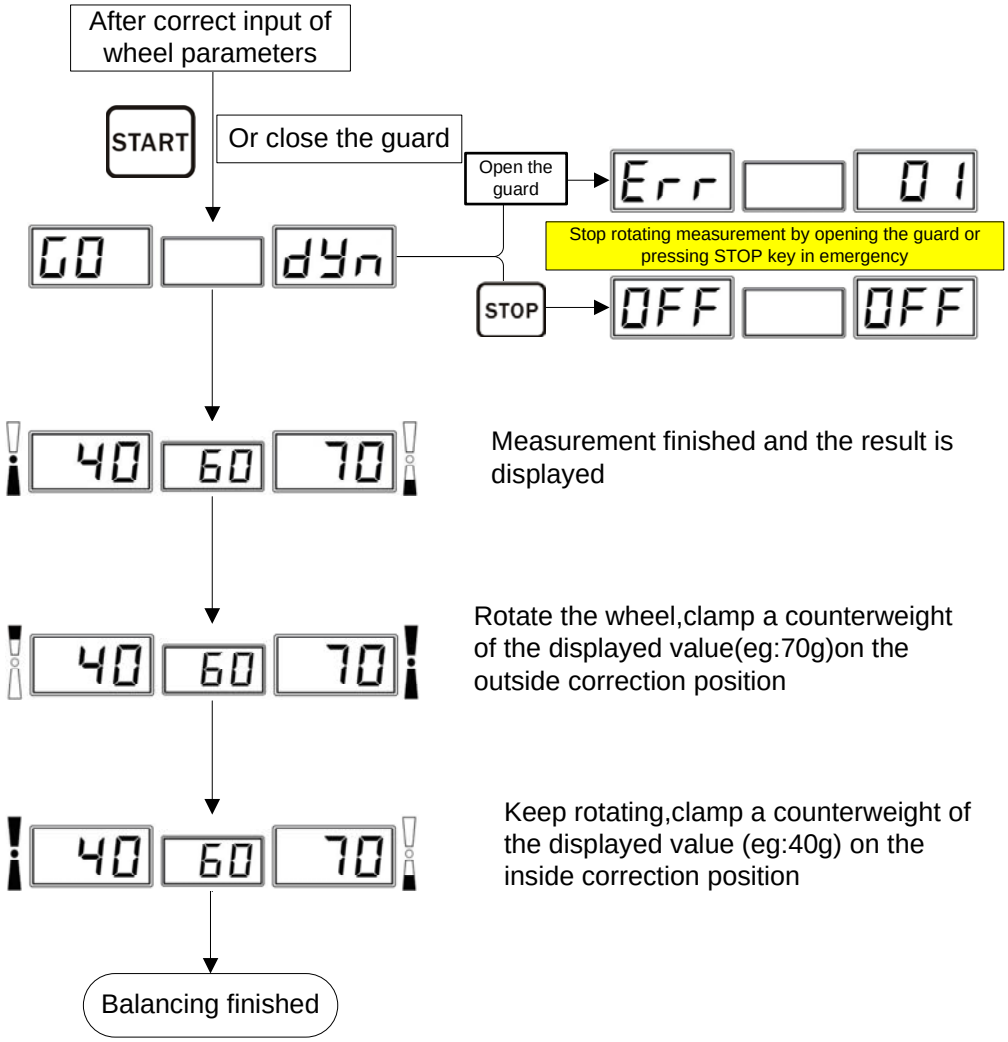


Fig10

The three values from left to right shown in Fig10 are unbalance value of the inside rim, static value and unbalance value of the outside rim respectively. When the left and right unbalance values are 0 and the middle static value is more than 5g, then by pressing FINE key the unbalance values less than 5g after standard dynamic balance will be displayed on the left and right side of the screen. Now it is recommended to do static balance to achieve complete balance.

6. Static Mode

After dynamic mode measurement, you can select static mode directly. The balancer will automatically calculate the result of static mode.

Or first, choose static mode, then install the Wheel and input parameters, after that follow the process below.

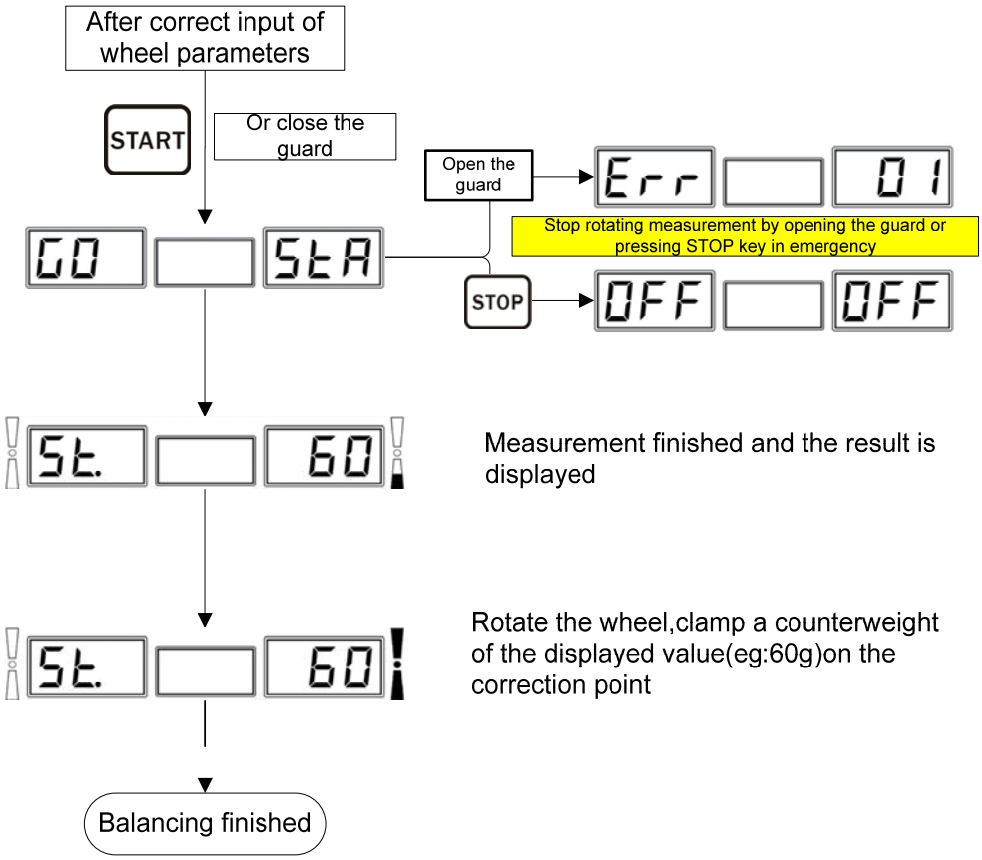


Fig11

7. ALU 1----ALU 3 Modes

ALU1-3 mode refers to 3 counterweight sticking modes reduced according to the shapes and sizes of most rims. (Refer to Fig12)

A special purpose gauge can be used to assist in sticking counterweights in Fig 13.

The measurement processes of ALU1-3 are the same as that of standard dynamic mode.

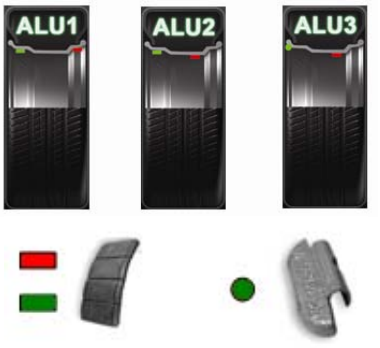


Fig12

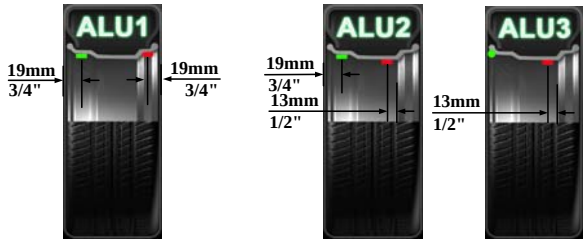


Fig13

8. ALU S Mode

This mode can input the precise size of the correction plane with the aid of mechanical sensor arm. It compensates for ALU1-3 and is more accurate than the traditional ALU mode. It is easier and faster to use as well.

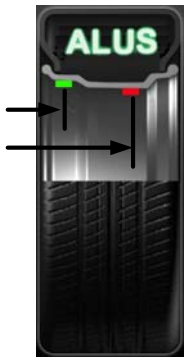


Fig14

1) ALU S Correction Plane choosing

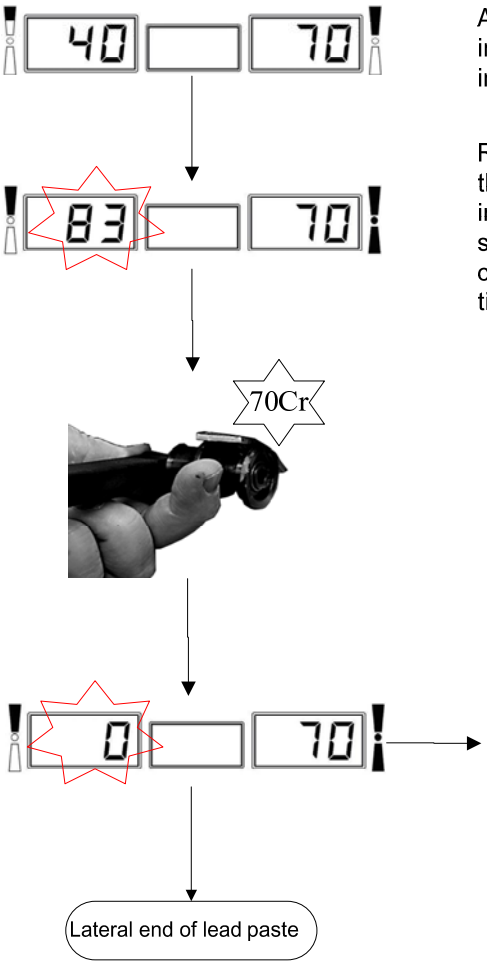
ALUS has to choose two proper correction planes on both sides of rim. Clean the position to be used to get ready for being stuck.

2) ALU S Mode Operation

Mount the wheel and collect parameters. After collecting, close the guard, press START to measure. The process is the same as that of standard dynamic mode.

See Fig15 for the outside sticking process. After measurement, rotate the wheel to the outside correction plane position according to the figure. The position is calculated automatically by the parameters collected by mechanical sensor arm, so the real correction position is not necessarily at 12 o'clock, in this case, locate the position with the mechanical sensor arm

The inside sticking process is shown in Fig16.

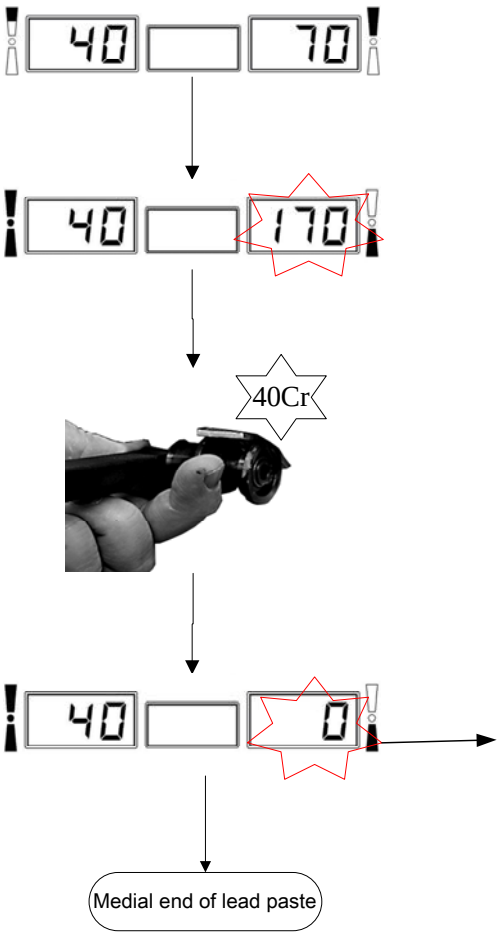


ALU were shown around the inside and outside the imbalance value.

Rotate the wheel, when it comes to the outside correction position the inside display window twinkles to show the distance between the correction point and the sensor arm tip

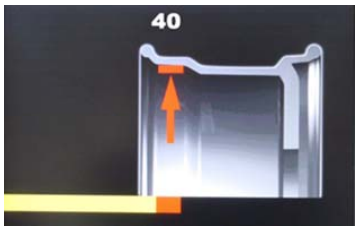
Pull the sensor arm and stick the counterweight on the exact "0" distance position shown on the inside display window

Fig15



Left and right were displayed inside and outside of the imbalance value ALU

Rotate the wheel, when it comes to the inside correction position, the outside display window twinkles to show the distance between the correction position and the sensor arm tip



Pull the sensor arm and stick the counterweight on the exact" 0" distance position shown on the outside display window

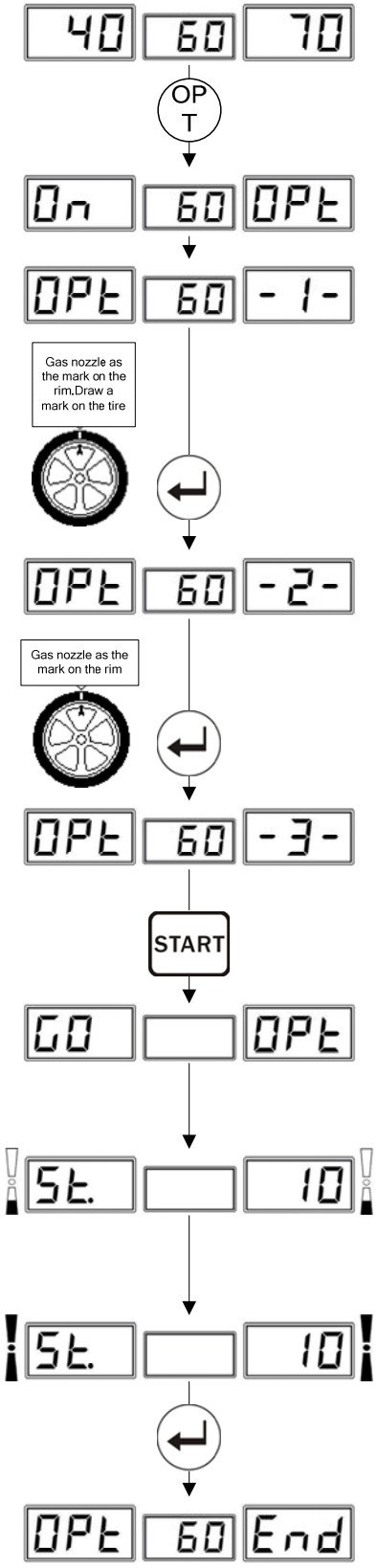
Fig16

Note: The KWB-511 mechanical sensor arm can only locate the 12 o'clock position, it will return to the measurement interface if at any other position. So it is better to locate it at 12 o'clock and do the following operation.

9. OPT Function

OPT function is used to determine the best mating of tire and rim. When doing dynamic and static modes, if the static mode value is greater than OPT value (implied 30g), then it's better to start optimization.

When optimization is asked, press OPT key to operate according to the following table. When optimization is not needed, display "OFFOPT" and exit OPT operation.



Press OPT key to start

Step1

Rotate the gas nozzle to 12 o'clock.

Press ENTER key to memorize the point .Mark with a chalk a reference mark on the tire

Step2

Remove the wheel from the balancer using a tire changer. Align the nozzle and the mark by rotating the tire on the rim by 180 degrees.

Step3

Replace the wheel on the balancer and rotate the gas nozzle to 12 o'clock again. Press "ENTER" key to memorize

Step4

Press START key to start OPT measurement.

After measurement, mark with chalk again on the tire the marked point indicated on the screen.

Using the changer to assemble until the new mark and the gas nozzle coincide. Now the value displayed is the rest value after optimization .On this point add 10g counterweight.

Press ENTER to end optimization

10. Motorcycle Mode

Motorcycle mode is the same as standard dynamic mode except that it needs special motorcycle fixtures and extending arms.

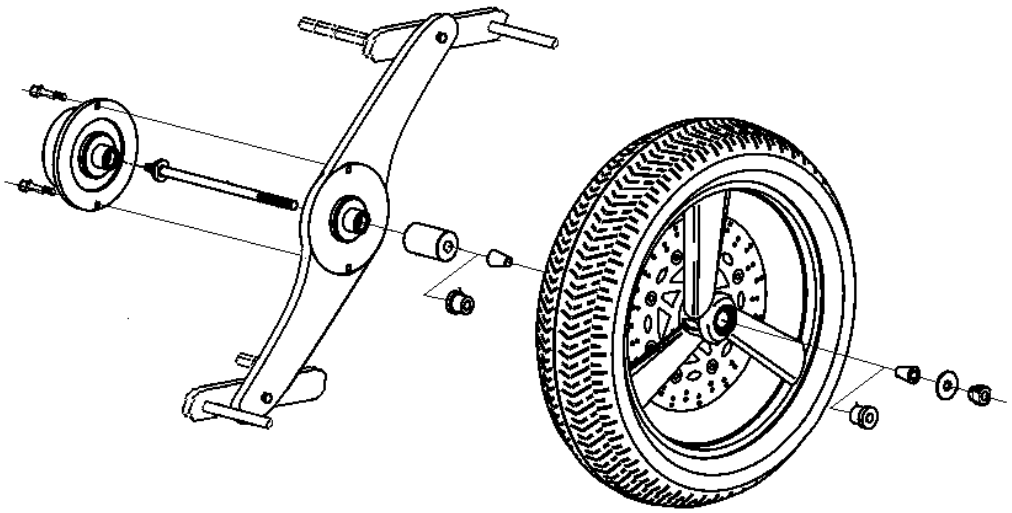


Fig17

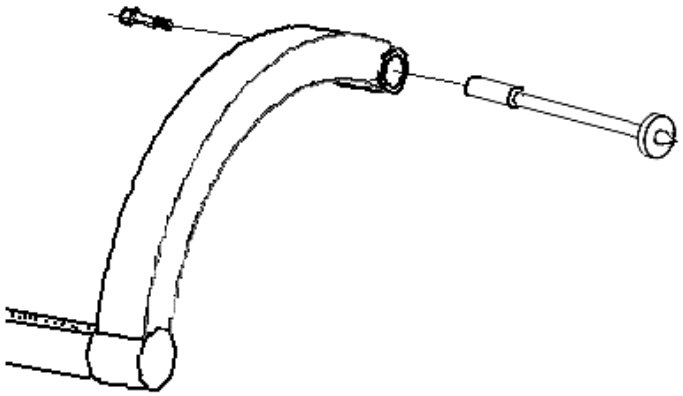


Fig18

Setting programs

1. System setting

System setting (refer to Fig19) is used to set options, such as the application control state, the commonly used units of this equipment and so on.

Ways to enter: In any mode, press SET to enter.

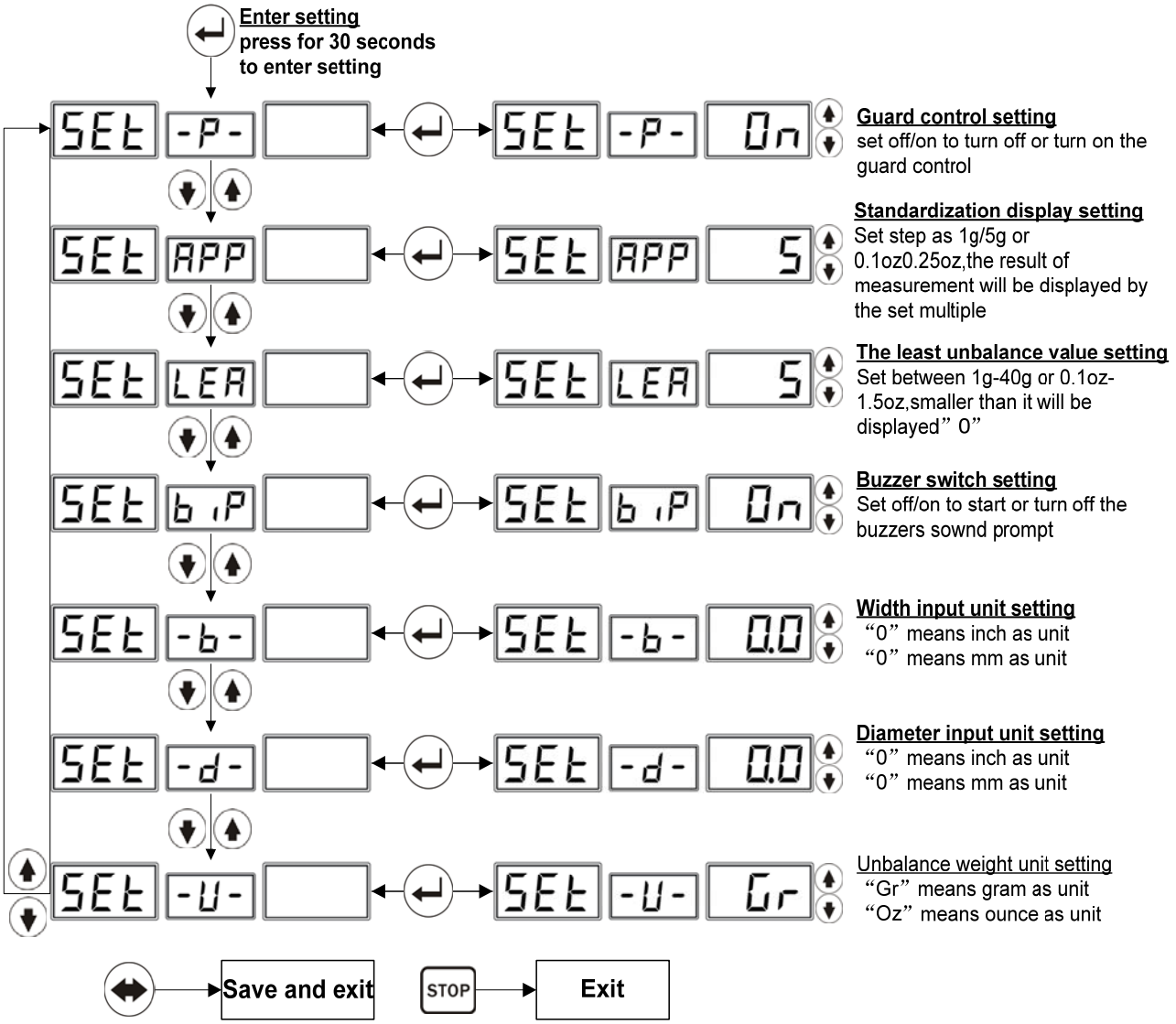
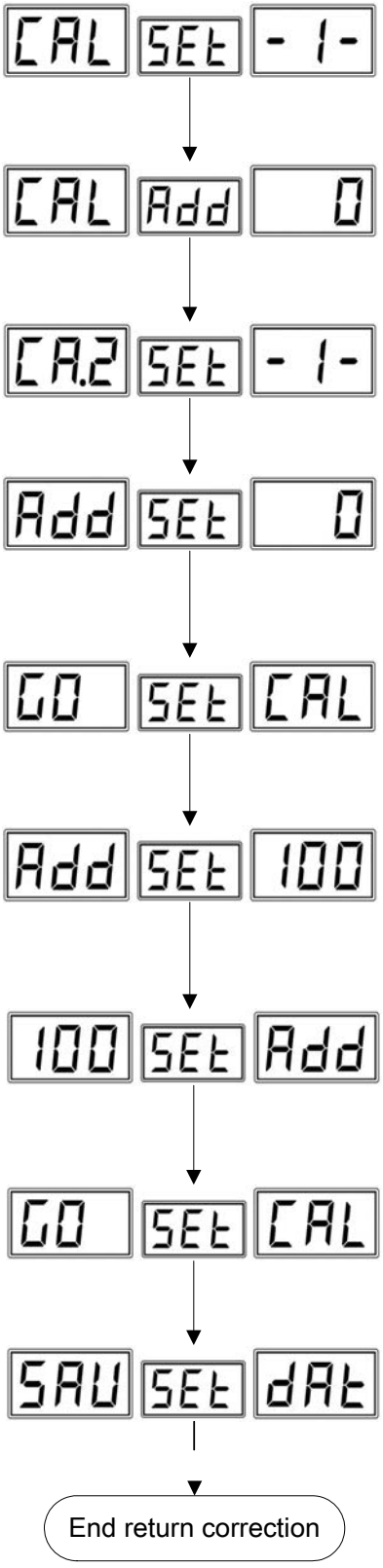


Fig19

2. Calibration programs

Press the FINE and Enter buttonÿinto the calibration procedure.

Choose a wheel with small unbalanced value and install it on the balancer. Input the wheel parameters then calibrate it as shown in Fig20.



Press ↵ go to next step

Press the FINE ↵ button , into the calibration procedure.

Press ↵ start unbalance correction

Press START calibration of rotation for the first time

End rotation, prompt placing a counterweight of 100g at 12 o'clock outside of rim.

Press START calibration of rotation for the second time

End rotation, prompt placing a counterweight of 100g at 12 o'clock inside of rim.

Press START complete correction of unbalance

End correction, automatic storage calibration results and return to the original state.

Fig20

Error Information and Treatment

It provides the error diagnostics and prompting information of this equipment. Users can judge and deal with problems according to the prompting information and the solutions given in the following form.

prompting information	meaning of the information	solutions
CCC CCC	The result of measurement is beyond the range.	
OFF OFF	System gives the prompt when the STOP key is interrupted accidentally	
Err 01	When the guard is set enabled, press START key without closing it or open the guard artificially while the wheel is in rotating measurement. In either of these two cases, the balancer gives the prompt	Close the guard, or turn off the guard function option in setting items. However, because the laws and regulations of safety protection in different countries are not completely the same, we suggest not turning off the guard function option.
Err 02	Prompt is given and measurement is stopped when rotating speed is too low to meet the basic measurement needs,	Problems of the electrical motor shaft or the transmission belts. Check and adjust. Too light load also results in this phenomenon, so please adjust the load weight.
Err 03	The measurement rotation is in wrong direction. This usually will appear in the three-phase motor control balancer due to sequence errors	Adjust the sequence of the three-phase power.
ERR 10	Gauge error	Turn off the machine, return the gauge to position 0, and then restart it. If the error still exists, calibrate the gauge following "Calibration programs"
ERR CAL	The machine is not calibrated.	Users calibrate the machine following "Setting programs"
ERS CAL	Factory maintenance error.	Contact the manufacturer.

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PROTEC electronic product 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 PROTEC shall not be liable for any consequential or incidental damages. Final determination of defects shall be made by PROTEC in accordance with procedures established by PROTEC. No agent, employee, or representative of PROTEC has any authority to bind PROTEC to any affirmation, representation, or warranty concerning PROTEC automotive meters, except as stated herein.

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

1. Quantity
2. Part number
3. Item description

Customer Service

If you have any questions on the operation of the unit, please call: +1-905-569-8878

If your unit requires repair service, return it to the manufacturer with a copy of the sales receipt and a note describing the problem. If the unit is determined to be in warranty, it will be repaired or replaced at no charge. If the unit is determined to be out of warranty, it will be repaired for a nominal service charge plus return freight. Send the unit pre-paid to: Protec Equipment Canada

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Ontario, Canada L5L 1J9