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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

1、 Safety Instructions

- Make certain all operators are properly trained. Improper operations may result in incorrect measurement.
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- If operators violate safety regulations thus damage the machine by dismounting safety devices ,the manufacturer will immediately cease it's safety promise.

2、Product Instruction

2.1 External Structural Drawing

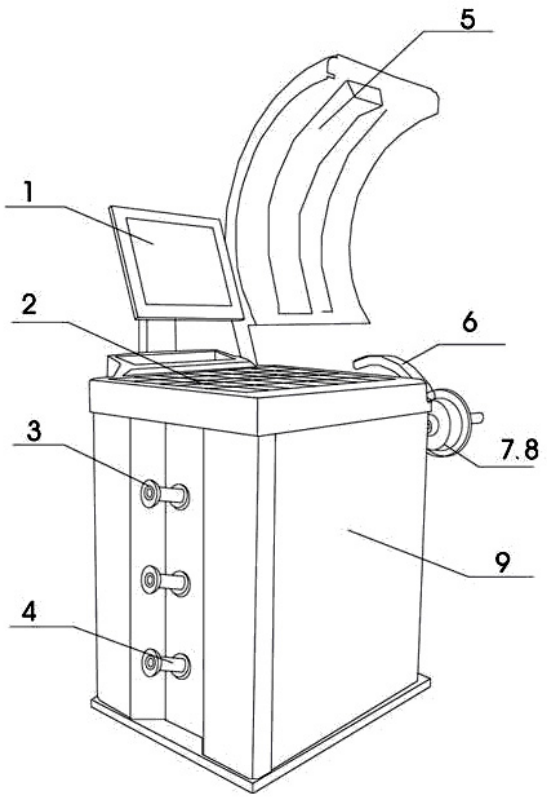


Figure1

1．Operation Panel　　2．Counterweight Container

3．Cone　　4．Cone Arm

5．Safety Guard　　6．Automatic Gauge

7．Shaft　　8．threaded end

9．Balancer Body

2.2 Functions

- Dynamic Mode
- Static Mode
- Standard ALU1, ALU2, ALU3, Mode
- ALUS Mode
- OPT(OPTIMIZATION) mode
- SPLIT or Hidden Weight Function
- Unit Conversion in Different Countries (Areas)

  g / oz,　mm / inch
- Automatic Gauge
- Automatic Sticking Counterweights
- Self-calibration
- Guard Protection
- Self-check Error and Diagnostics

2.3 Specifications

- Single Phase Power Supply: 220V / 50 Hz or 110V / 60 Hz
- Protection Class: IP 54
- Power Consumption: 260w
- Max Rotating Speed: 220 r /min
- Cycle Time: Average 8-12s
- Measurement Ranges:

  Gauge length 10 --- 300mm

  Rim Diameter: 9.5" — 28"

  Wheel Width: 2.5" — 21"

  Wheel Diameter: < 880 mm

- Error: ≤±1g　0.1 oz
- Noise: ≤70dB
- Net Weight: 75kg
- Working Environment: Temperature: -20℃～50℃, Humidity: ≤85%

3、Transportation

The balancer must be transported in the original package and be placed in the specified position.

Use a forklift with corresponding capacity to move the packed machine and the direction of the forklift is shown in figure 2.

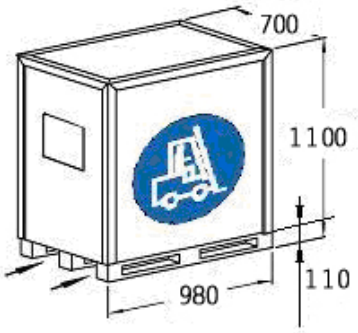


Figure 2

4、Opening Package

- Check the package. If there are some problems, please do not open it, and contact the supplier and the carrier at once.
- Make sure that the package is not damaged and then open the protection carton and plastic bag. Check the accessory case according to the packing list. Check whether the machine surface is in good condition and whether there is loss or damage to the parts.
- Dismount the bolts on the base and make the balancer steadily rest..

  Please do not use the machine and contact the supplier at once if there are some problems.

5、Machine Installation

5.1 Location

- The machine must be located in the working environment described in 2.3 and the ground should be solid.
- Sockets that match the power supply and motor power described in 2.3 are available nearby.
- Space for installing is big enough to meet the needs in figures 3 and 4 and ensures each part of the machine to work normally.
- Put up a shelter if placed outdoors.

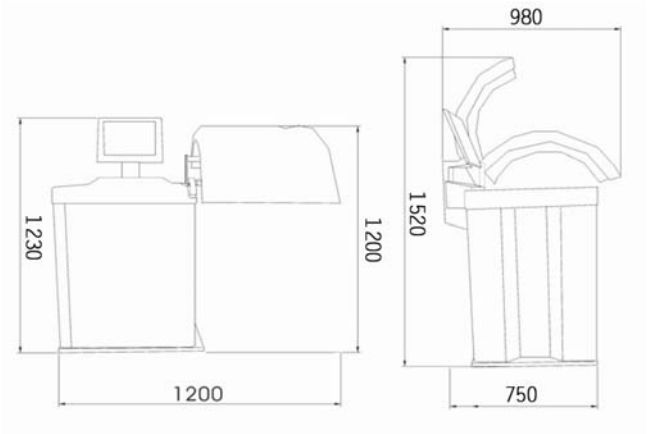


Figure 3

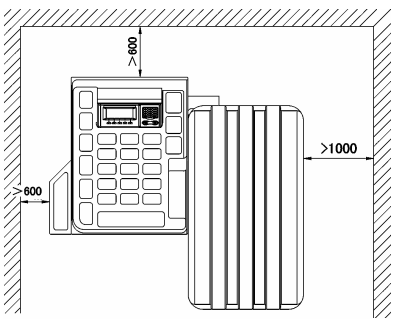
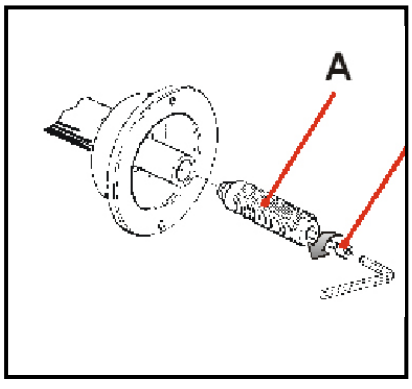


Figure 4



5.2 Installing parts

- Shaft . Take out the threaded end and bolts from the accessory case. Mount them firmly according to figure 5.
- Mount the cone on the corresponding arm.
- Mount the guard according to Appendix I.
- Put the plug in the socket to finish installing the balancer.

6、Control Unit (Figure 6)

A． inside unbalance point
B． inside unbalance display window
C． standard dynamic mode indicator
D． static mode indicator
E． ALU mode indicator
F． ALUS mode indicator
G． OPT indicator
H． sticking and clamping weight position indicator
I． middle static mode display window
J． SPLIT/HIDDEN weight indicator
K． mm/inch indicator
L． motorcycle mode indicator
M． outside unbalance display window
N． outside unbalance point

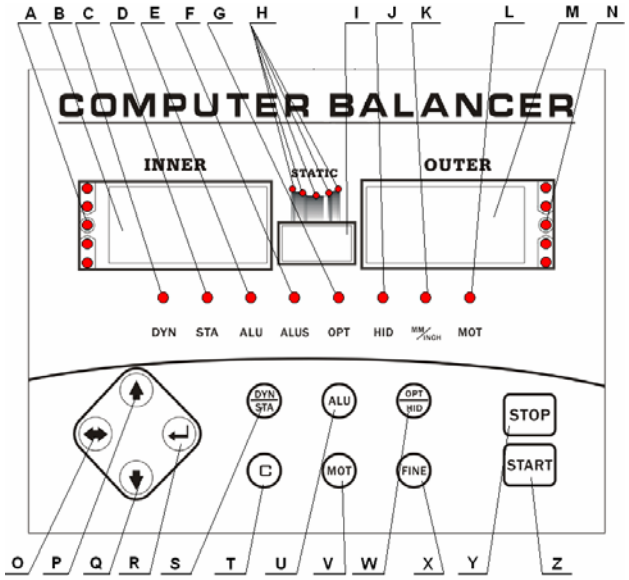


Figure 6

O．size input shift key　　P．+ function key　　Q．— function key
R． Enter key　　S．dynamic/static key　　T．unit shift key
U．ALU mode key　　V．motorcycle mode key　　W．opt/hid key
X．fine display key　　Y．STOP key　　Z．START key

7、Operating Instructions

7.1 Self-check

When switched on, the system begins self-check and then enters standard dynamic mode measurement.(refer to figure 7)

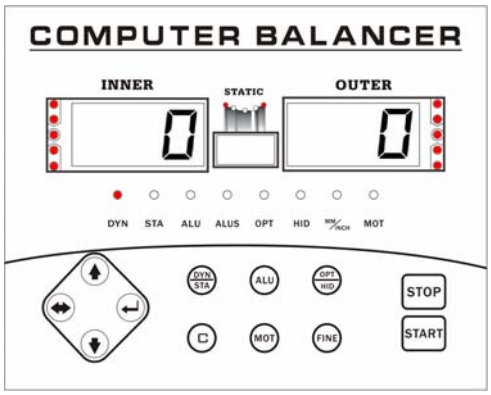


Figure 7

7.2 Installing Wheel

Choose the optimal cone for the center hole and mount it on the balancer (refer to

figures 8 and 9) . The method shown in figure 9 is preferable because it approximates to installing wheel on a real car.

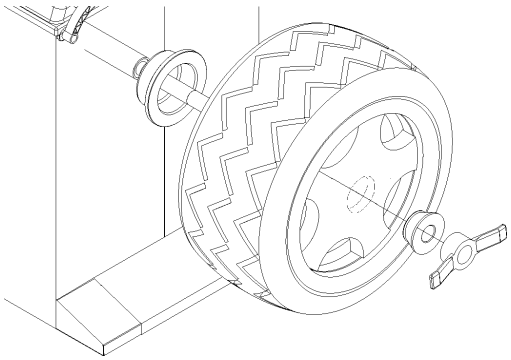


Figure 8

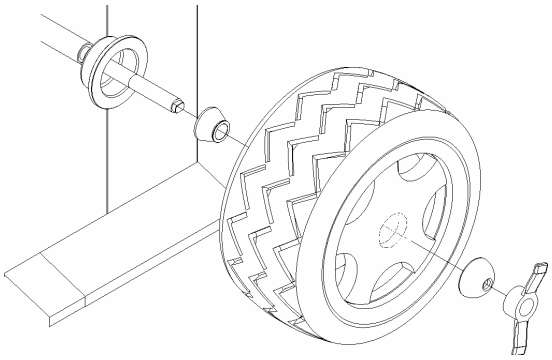


Figure 9

7.3 Wheel Parameters Input

Unlike ALUS which needs 4 parameters, other modes need 3 parameters.

Parameter values are shown in figure 10. (Dynamic and static modes, ALU1-3 mode, motorcycle mode)

Figure 11 (ALUS mode)

Note: Motorcycle tires automatic input parameters also need to install a dedicated extension rod. (refer to Figure 27)

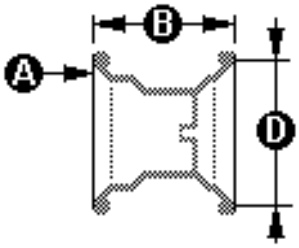


Figure 10

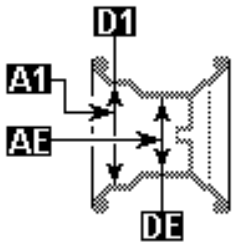


Figure 11

7.3.1 Input 3 Parameters of Wheel with Automatic Gauge

As is shown in figure 13, pull the gauge against the rim keeping it in position for2 seconds, the computer will automatically input A and D values. Press ▲ ▼ to input B value, then press ↵ to exit parameter input.

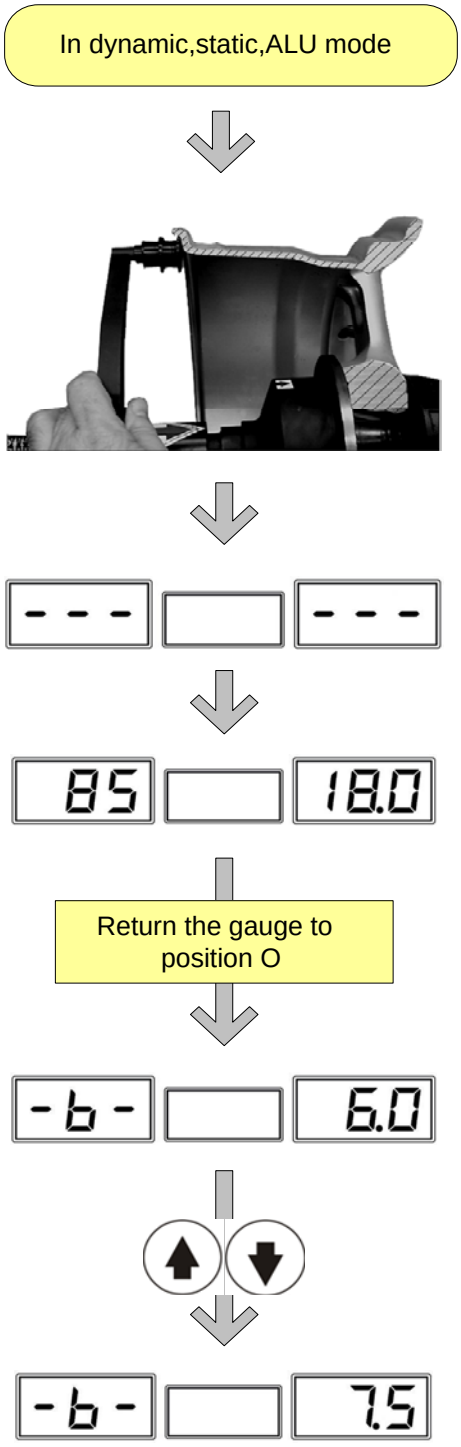


figure13

Pull the gauge against the rim.

Ready for measurement before the gauge is stable,
After the gauge is stable, the computer automatically finish A and D measurement with a "beep".

The inside display window shows wheel distance A value and the outside shows D value of the rim diameter.

After returning the gauge, the balancer automatically goes to the wheel width input state.

Press ▲ ▼ to input wheel width B value, then press ↵ to exit parameter input.

7.3.2 Input 4 Parameters of Type with Automatic Gauge

Input 4 type parameters with automatic gauge as shown in Figure 14.

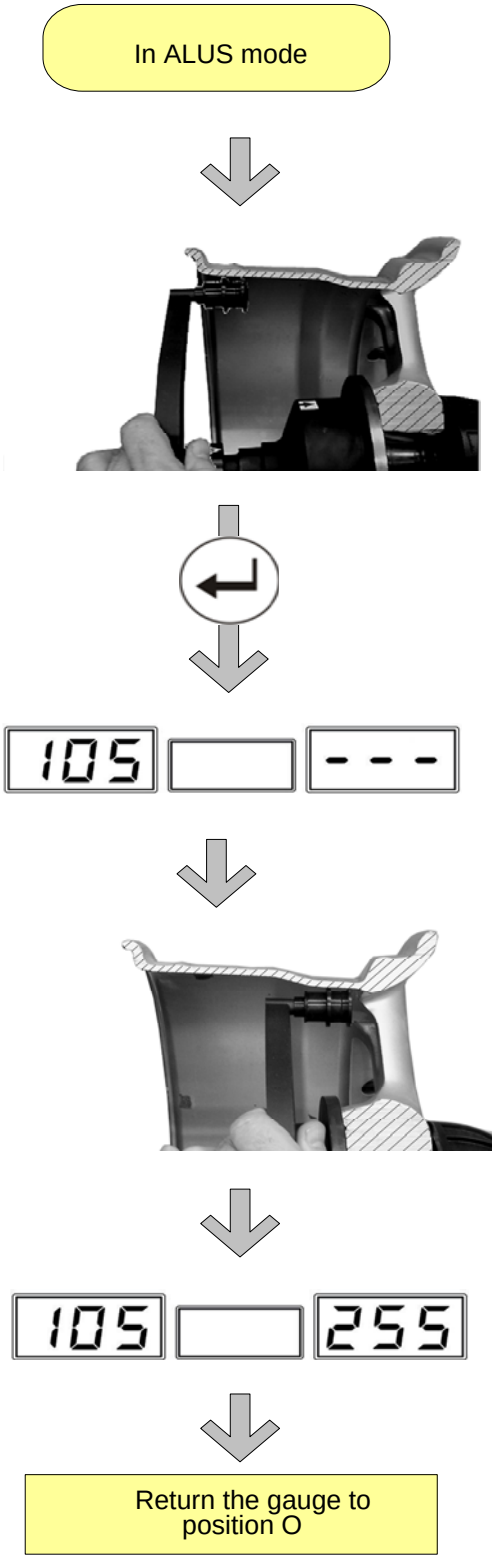


figure14

In ALUS mode, pull the gauge against the chosen correction plane on the inside of the rim, press ↵ to automatically input.

Now A1 value is displayed on the left of the screen

Do not return the gauge and keep pulling the gauge until it is against the chosen correction plane on the outside of the rim, waiting…..

Now AE value is displayed on the right side of the screen.

After the outside measurement, return the gauge to position 0 and ALUS parameters input finished.

7.3.3 Input parameters manually

Users can choose to finish parameters input manually

See figure 15. It is not advisable to input manually if the automatic gauge is enabled.

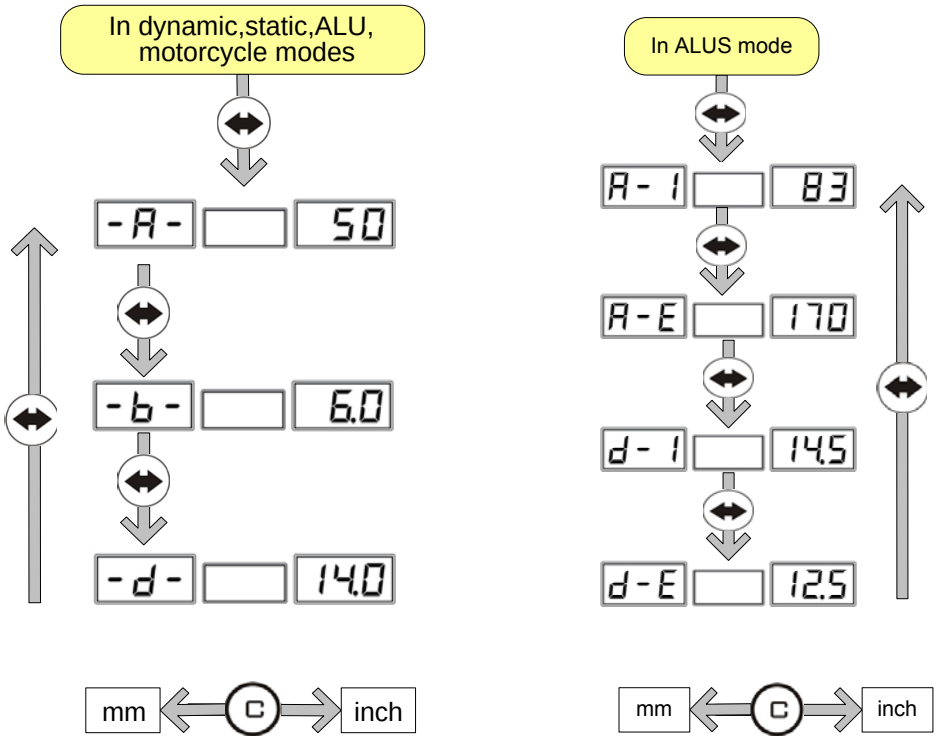


Figure 15

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 ⊂ to convert mm and inch.

7.4 Choose balance modes

The default mode of this equipment is standard dynamic mode. Choose other mode by pressing keys DYN/STA、ALU、MOT. (see figure 16)OPT and Hidden weight modes are two attached modes.

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

Hidden weight mode can be operated by pressing OPT/HID and exit by pressing STOP under ALUS modes. Press STOP can stop measurement during measurement

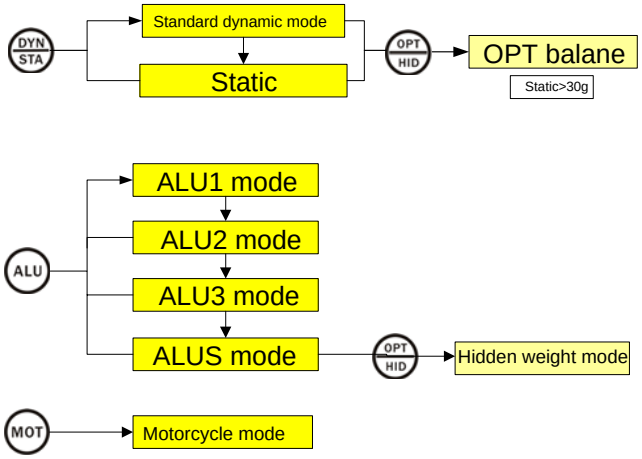


figure16

7.5 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, (see 7.3) after that follow the process of standard dynamic operation in figure 17 .

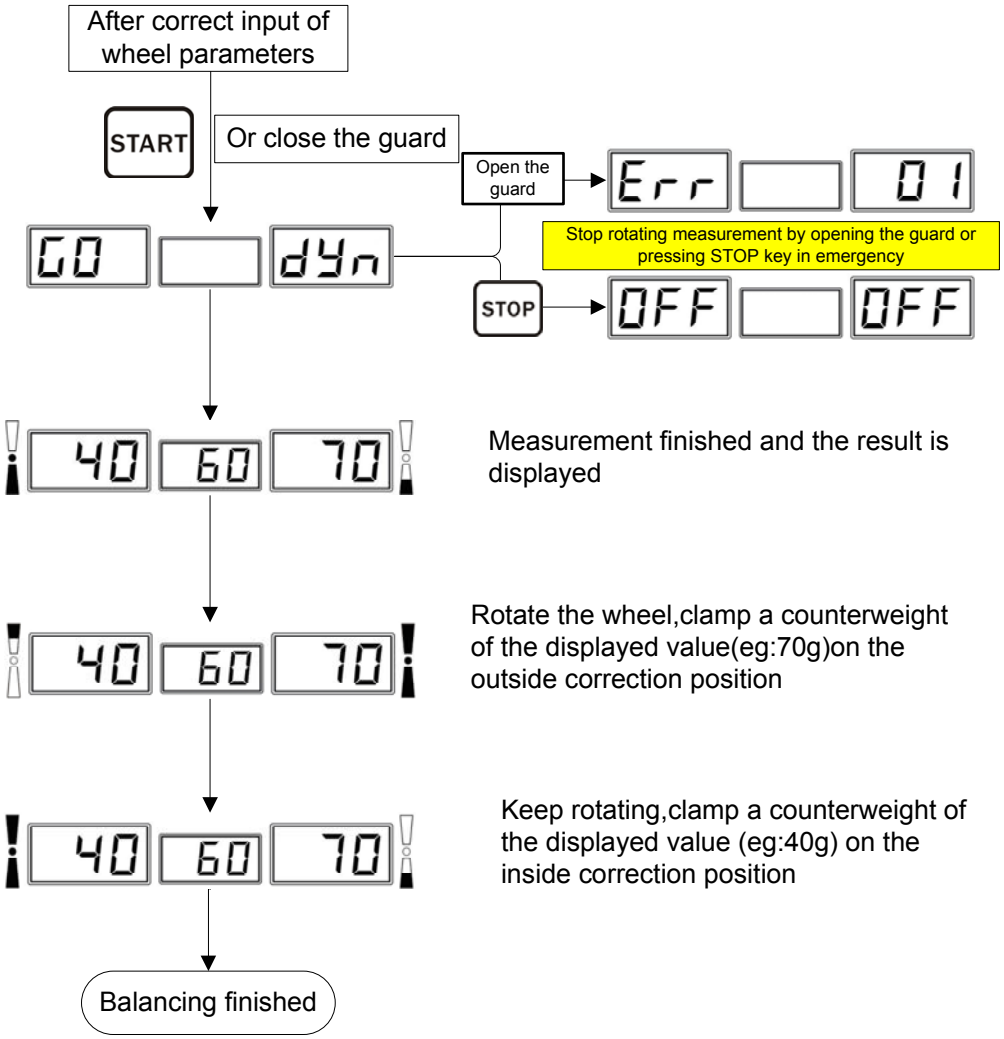


Figure 17

The three values from left to right shown in figure 17 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, 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.

7.6 Static Mode

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

First, choose static mode, then install the Wheel and input parameters, (see 7.3) after that follow the process below.

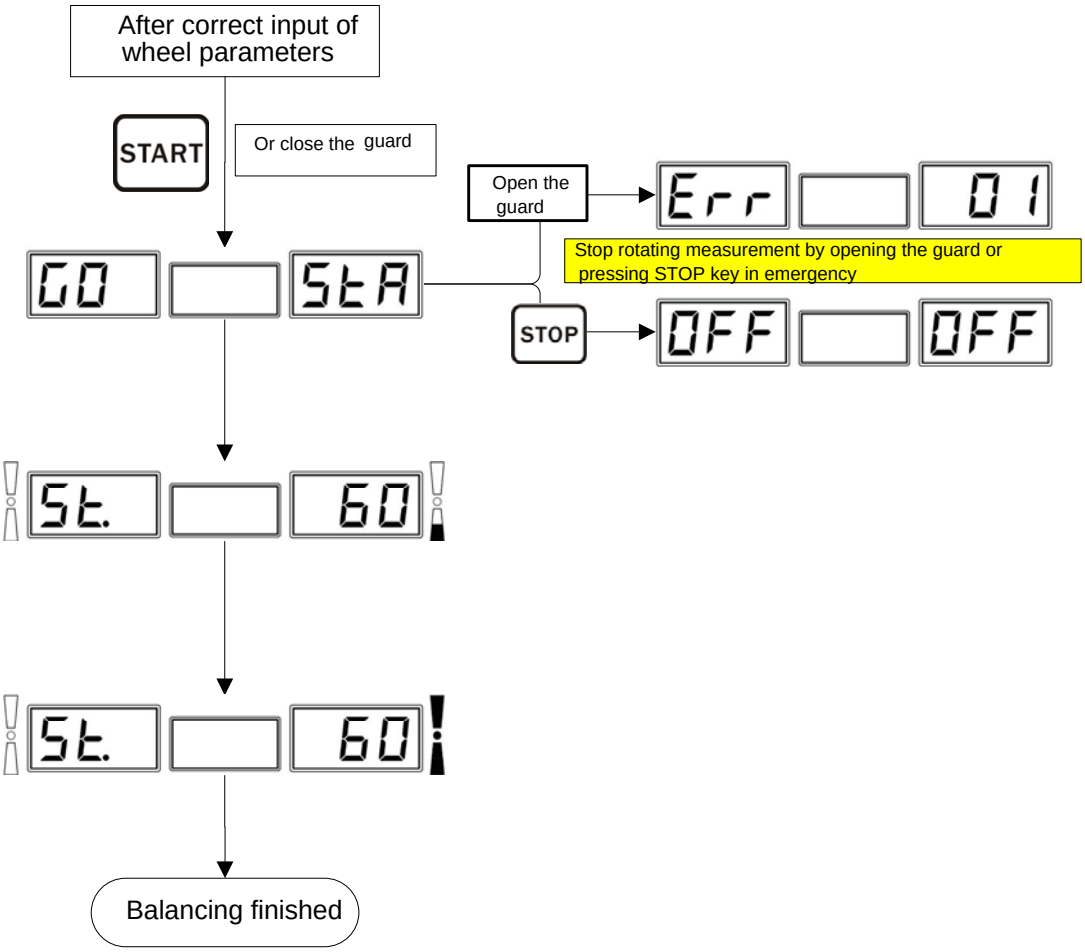


Figure18

7.7ALU1----ALU3 Modes

ALU1-3 mode refer to 3 counterweight sticking modes reduced according to the shapes and sizes of most rims. (refer to figure 19) At 1 o'clock positions clamp counterweights, at 2, 3 and 4 o'clock position, stick counterweights according to figure.20. A special purpose gauge can also be used to assist in sticking counterweights.

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

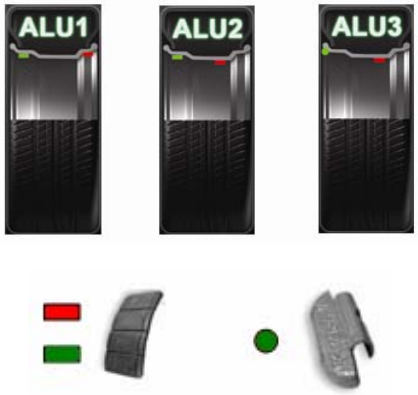


Figure 19

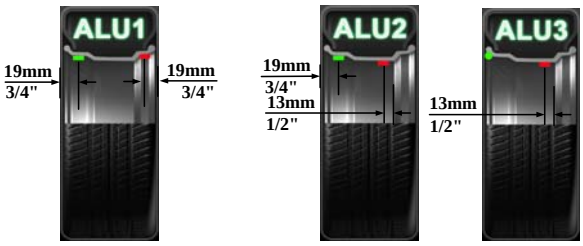


Figure 20

7.8 ALUS Mode

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

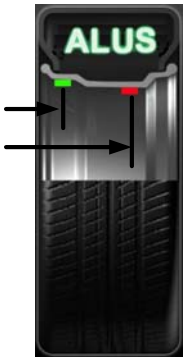


Figure 21

7.8.1 ALUS Correction Plane choosing

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

7.8.2 ALUS Mode Operation

Mount the tyre and collect parameters according to 7.3.2. After collecting, close the guard, press START to measure. The process is the same as that of standard dynamic mode.
See figure 22 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 automatic gauge, so the real correction position is not necessarily at 12 o'clock , in this case, locate the position with the gauge
The inside sticking process is shown in figure 23.

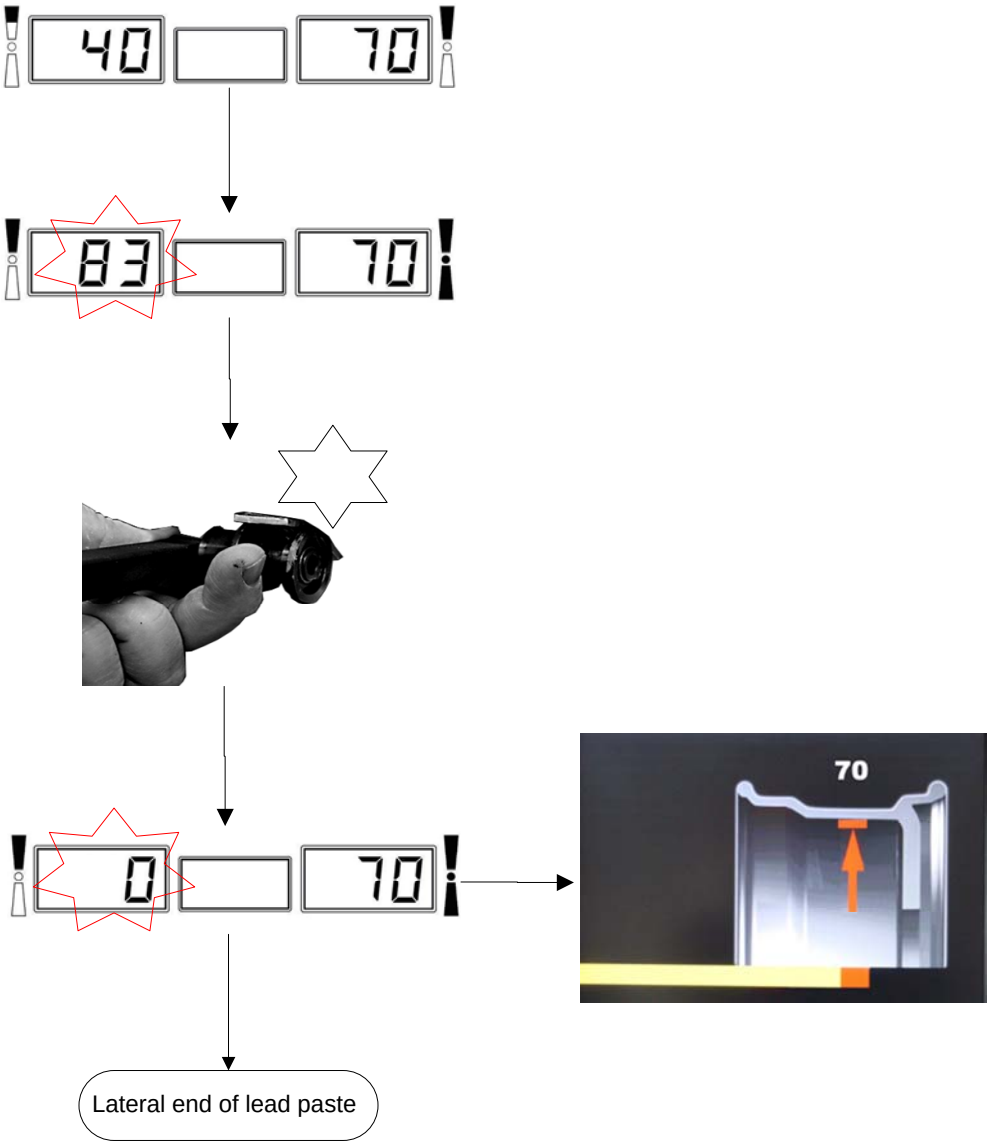
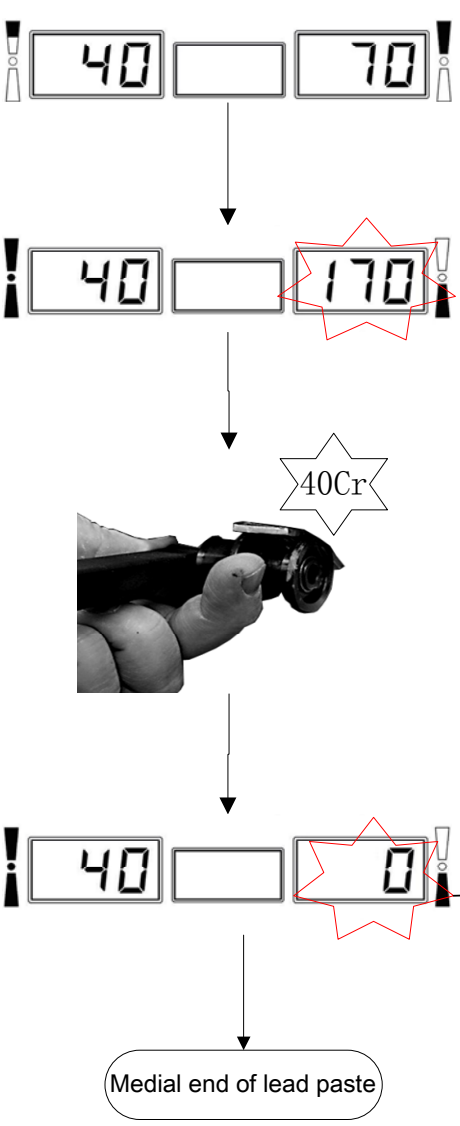


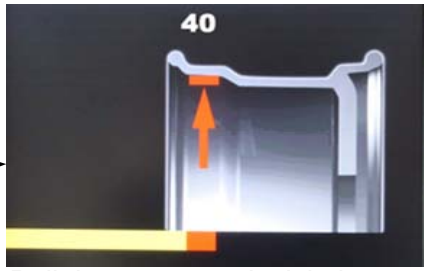
Figure22

Note: The automatic gauge 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 use the brake pedal to locate it at 12 o'clock and do the following operation.



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 gauge tip



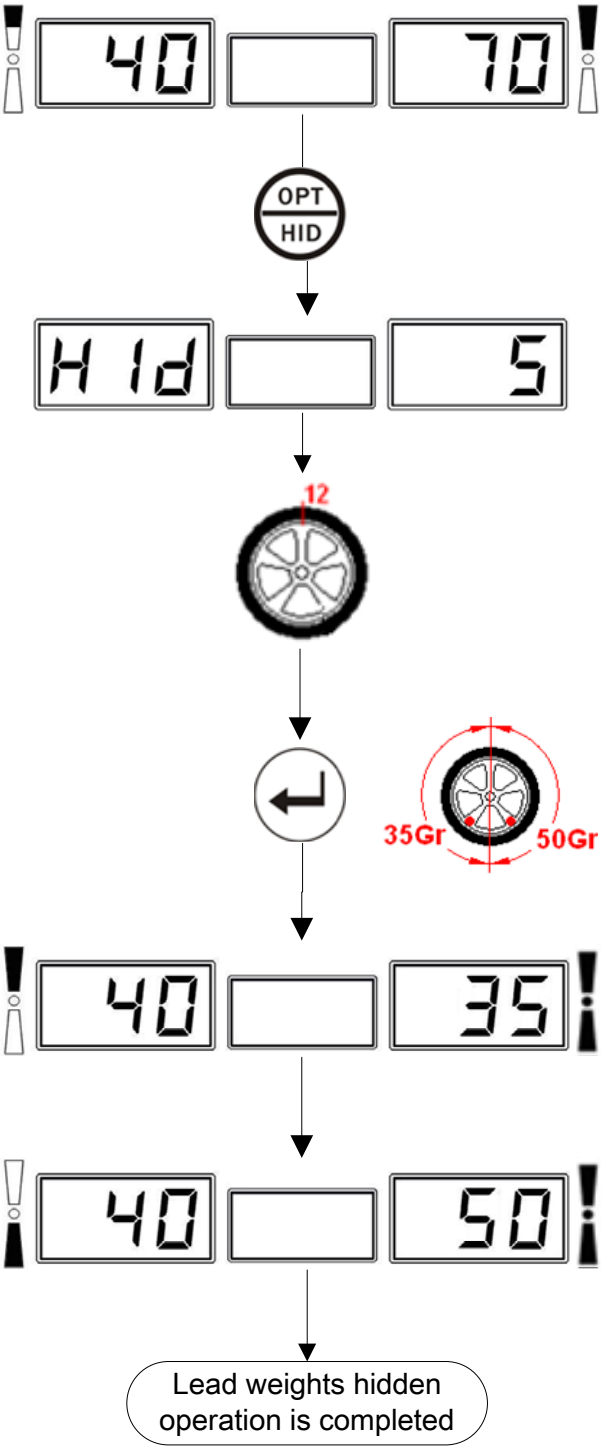
Pull the gauge and stick the counterweight on the exact" 0" distance position shown on the outside display window

Figure 23

7.9 SPLIT Function

This function is used to vector split the unbalance weight between the two spokes on the outside of the wheel into two unbalance value so as to hide the counterweights behind the wheel spokes and makes the wheel look beautiful.

Under ALUS mode press OPT HID key to enter split function. Figure 24 shows the hidden weight procedure.



press ▲ ▼ to choice the number of spokes (3-10)

Rotate any one of the spokes to 12 o' clock

The balancer memorizes the first spoke,Division completed , Two pieces of bar position of the imbalance values were 35 grams, 50 grams.

Rotate tires, When the rotation to the unbalanced point, posted 35g counterweigh in the first spokes inside.

Rotate tires, When the rotation to the unbalanced point, posted 50g counterweigh in the second spokes inside.

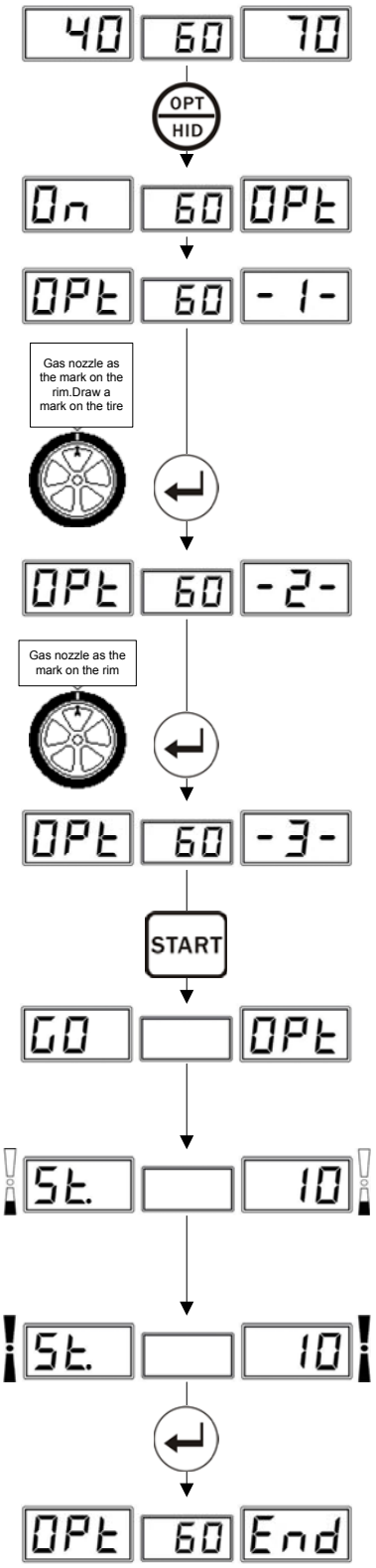
Figure 24

7.10 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), the system will start optimization.

When optimization is possible, press OPT/HID key to operate according to figure 25.

When optimization is not possible, display "OFFOPT" and exit OPT operation.



Press OPT key to start

Step 1

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.

Step 2

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

Step 3

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

Step 4

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 EMTER to end optimization.

Figure 25

7.11 Motorcycle Mode

Motorcycle mode is the same as standard dynamic mode except that it needs special motorcycle fixtures and extending arms.（see7.5）

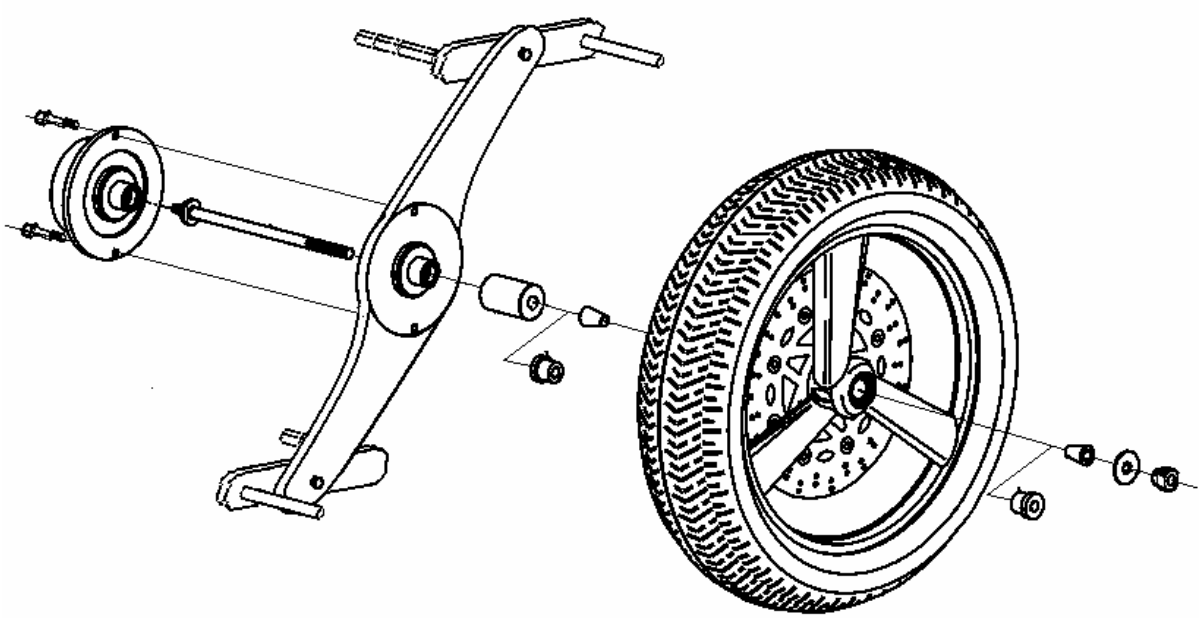


Figure 26

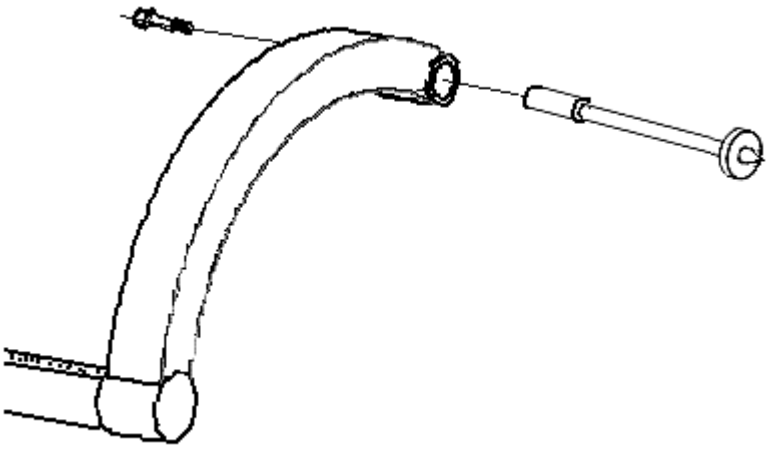


Figure 27

7.12 System setting

System setting (refer to figure 28) 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.

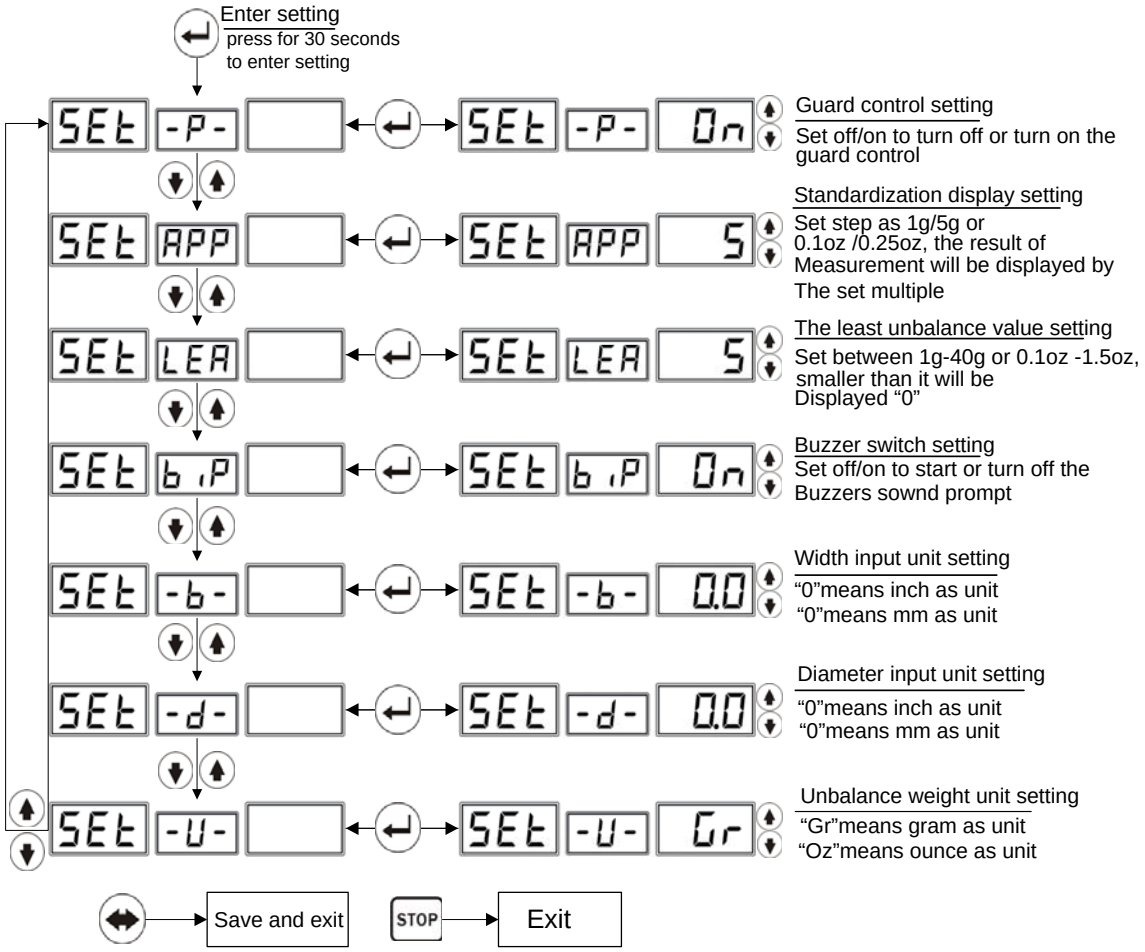


Figure28

7.13 Calibration programs

It is used to initialize the new machine and remove the old equipments' measurement errors caused by total loss from use , parts ageing and replacing, or strong impact.

Calibration procedures include unbalance calibration and automatic gauge calibration.

Press STOP or ⇔ key to exit calibration program.

7.13.1 Unbalance Calibration

Choose a wheel with small unbalanced value and install it on the balancer. Input the wheel parameters then calibrate it as shown in figure 29.

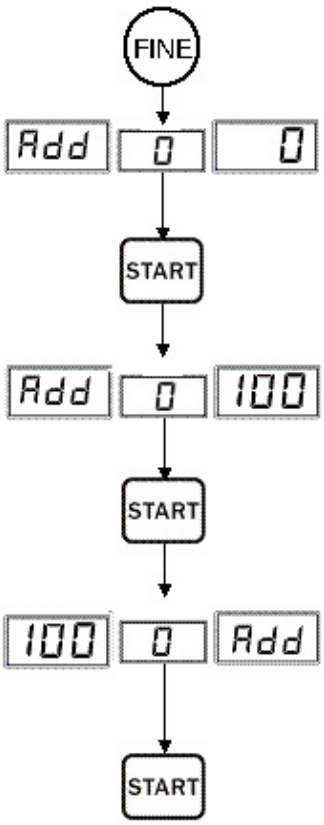


figure 29

Press button " FINE" 3 seconds show Add,0,0,then lose hand

Press START the first time ,rotating machine

At 12 o'clock position of outside wheel strike 100g weights (outside 5 indicator lights all brighten)

Press again START the second time ,rotating machine

At 12 o'clock position of inside wheel strike 100g weights (inside 5 indicator lights all brighten)

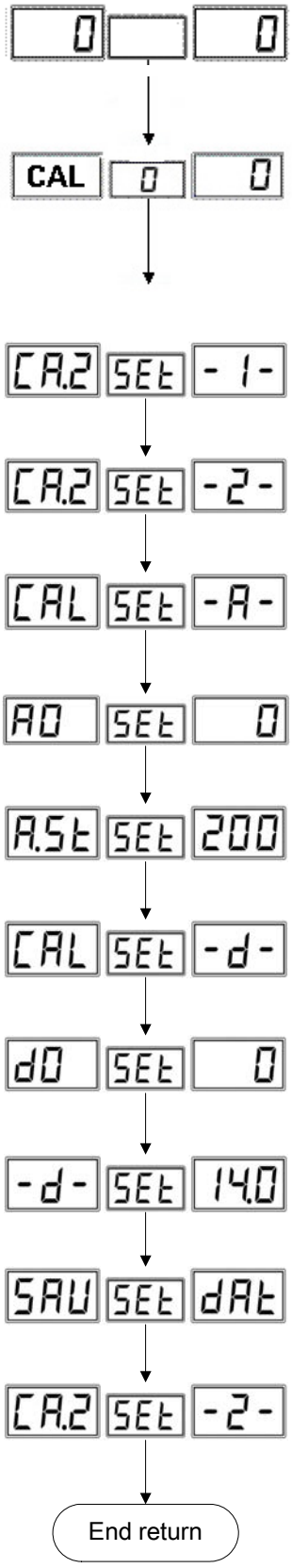
The third time ,rotating machine ,calibration complete

automatically preserve the result after finishing measure automatically return back original state after finishing measure

press  key ,end operation .

7.13.2 Automatic Gauge Calibration

It is used to initialize the new machine and remove the old equipments' measurement errors caused by total loss from use , parts ageing and replacing, or strong impact. The procedure is shown in figure 30



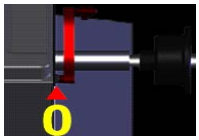
Press the FINE 3 seconds show CAL,0,0,then lose hand

Press ▲ select "2" into the automatic gauge calibration

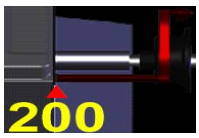
Press ↵ into A foot correction

Press ↵

The automatic gauge leaning against the original position without moving.
press ↵

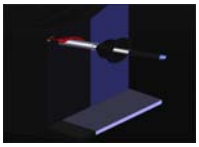


The automatic gauge pulled 200mm without moving. Press ↵ ,A foot correction over, and into the D-foot correction

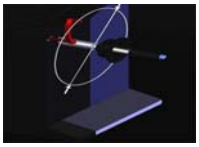


Press ↵

Take the measurement scale to balance shafts, press ↵



The measurement scale feet first touched the rim edge, press ▲ ▼ enter rim diameter



Press ↵ ,out of the warning tone, save and exit.

Press ↵ ,out of the warning tone, exit.

Figure 30

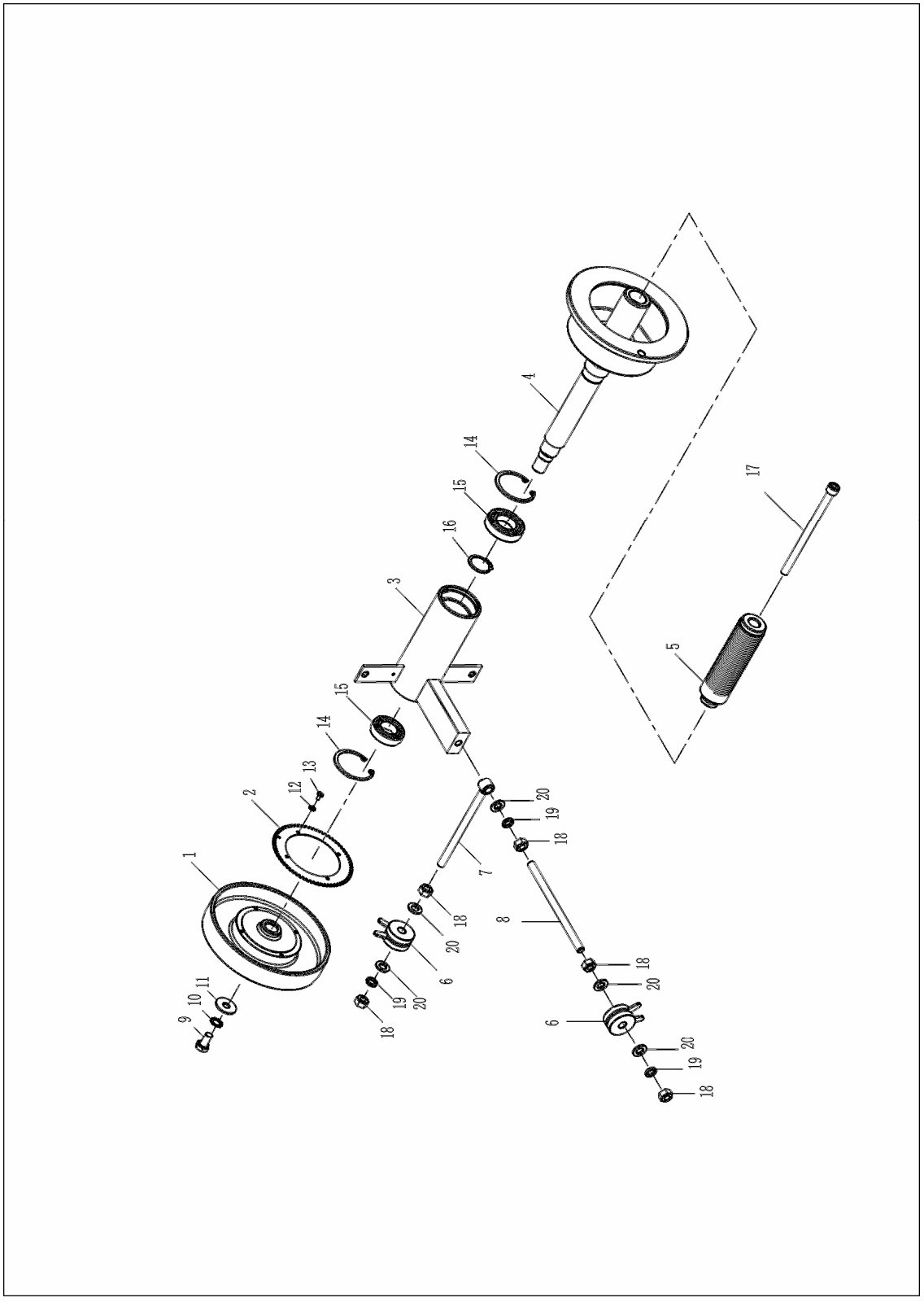
8 Error Information and Treatment

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

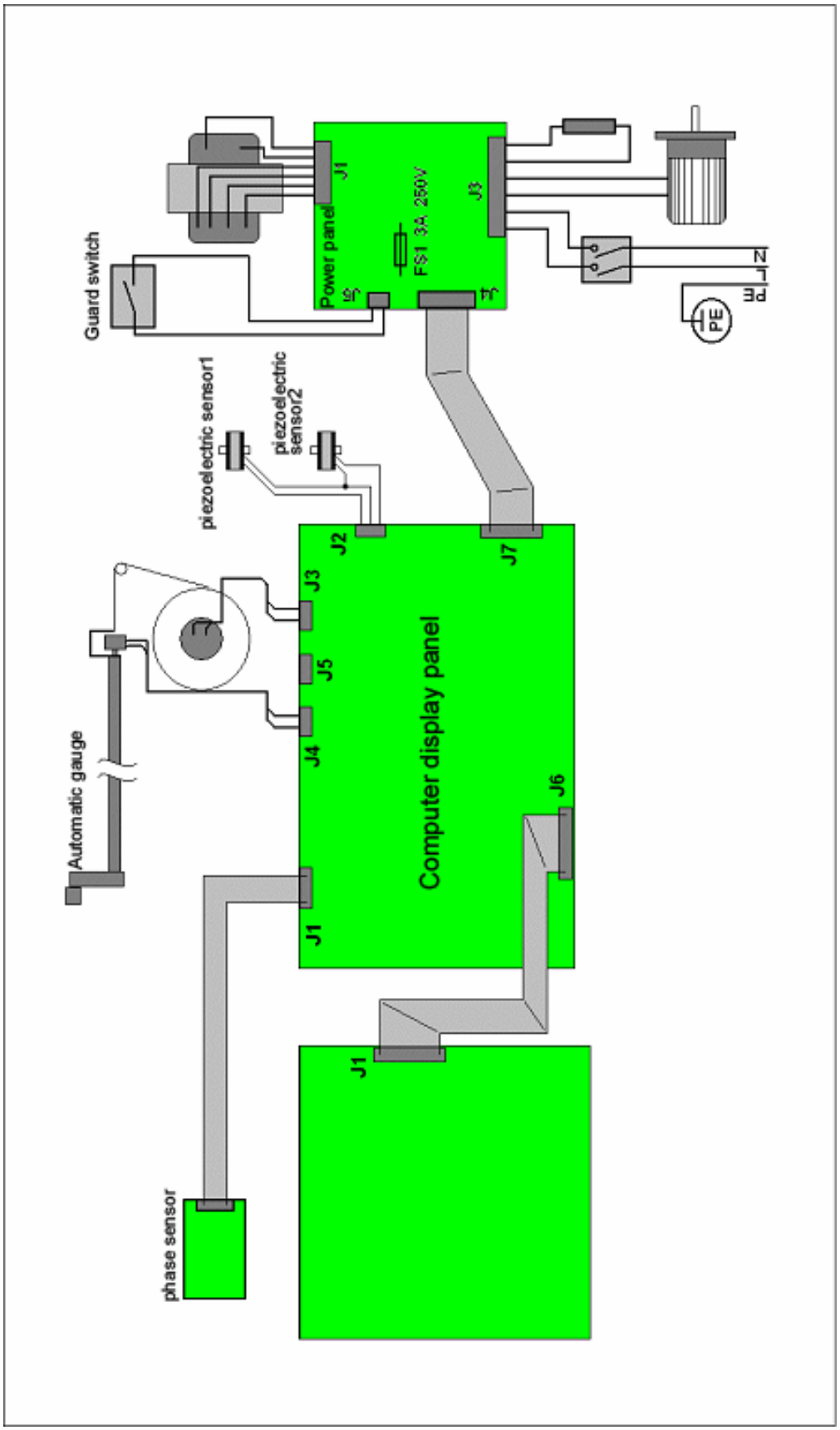
following form.

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 is braked suddenly and 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 7.13.2
ERR CAL	The machine is not calibrated.	Users calibrate the machine following 7.13
ERS CAL	Factory maintenance error.	Contact the manufacturer.

Appendix I



Appendix II


Power panel
J1
FS1 3A 250V
J3
J5
J4
Guard switch
N
L
PE
piezoelectric sensor1
piezoelectric sensor2
J2
J7
Computer display panel
J3
J5
J4
J6
Automatic gauge
J1
J1
phase sensor

CERTIFICATE

TÜVRheinland®

of Conformity
EC Council Directive 2006/42/EC
Machinery

Registration No.: AM 50174682 0001

Report No.: 16700486 002

Holder: Tongda Auto Maintenance Equipment Co., Ltd.
No. 6 High-Tech Development District, Yingkou,
Liaoning 115004
P.R. China

Product: Wheel balancer
(Wheel Balancer)

Identification:

Type Designation: S2000-1 CB-80 CB-1200D CB-500
CB-530 CB-550 CB-V890 CB-800
CBL-860 CB-580 CB-1280

Serial No.: Engineering Sample

Remark: Refer to test report 16700486 002 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. This is to certify that the tested sample is in conformity with all provision of Annex I of Council Directive 2006/42/EC, referred to as the Machinery Directive. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex II of the Directive.

TÜV Rheinland LGA Products GmbH TÜVRheinland® Zertifizierungsstelle

Certification Body

Date 03.02.2010

Dipl.-Ing. J. Hoehne

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

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.

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.

Disclaimer

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Order Information

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

5-2410 Dunwin Drive, Mississauga,
Ontario, Canada L5L 1J9