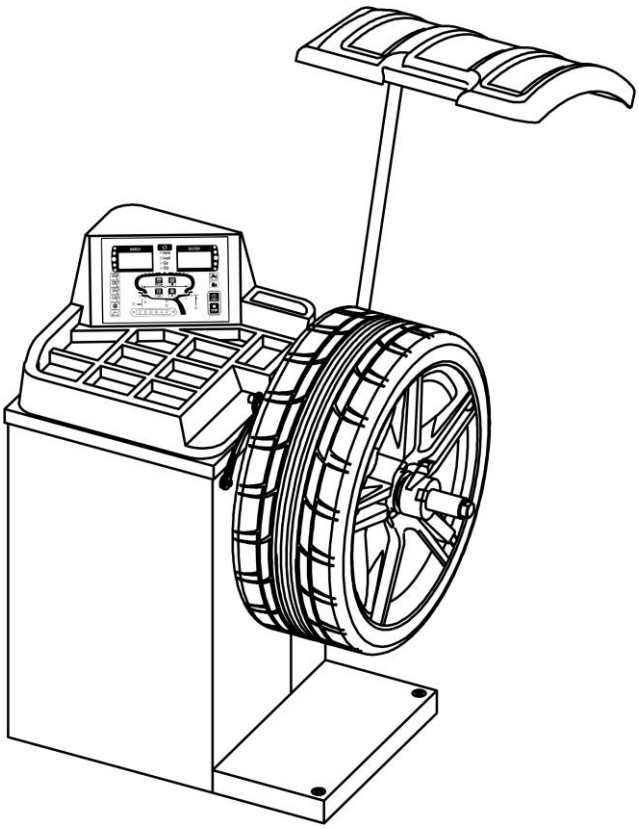


CAE-3016WB; CAE-3036WB

Read the operation manual carefully before operating and keep it at hand for ease of reference. Follow the instruction strictly to achieve the best performance of machine.

Version No.：V 1.0

1. Safety Instruction

1.0 Related safety reminder

Lighting

Keep enough lighting strength in order to use the lift safe. Please provide the 200Lux on site and no additional risk.

Don’ t use this lift outdoor. And if user uses it outdoor, please think about the wind, lightning, rain hazards and so on.

This machine must stand on a level ground except any slope. Please check the level of the machine before using it.

Dismantling and disposal

ENVIRONMENTAL DAMAGE.

Only appropriately trained personnel may dismantle and dispose of the unit.

Dismantling

To dismantle the this product, proceed as follows:

ELECTRICAL HAZARD!

When carrying out any decommissioning and dismantling work on the unit, switch off all power supply connections, ensure they cannot be switched on unintentionally and verify that they have been disconnected. Earth and short-circuit them, and cover or otherwise isolate any neighboring live parts. Failure to do so may lead to serious injuries or death.

HIGH PRESSURE HAZARD.

When carrying out any unit decommissioning and dismantling work, close off and empty all the connection pipes until the pressure is the same as the ambient air pressure. Failure to do so may lead to injury.

PERSONAL INJURY!

Secure the unit against slipping.

The unit is ready for transporting.

It is important that all transport information is observed.

Disposal

A specialist company with the appropriate competence must dispose of the unit and individual components. This technical services department must ensure that:

– the components are separated according to material types

– that the operating materials are sorted and separated according to their properties.

ENVIRONMENTAL DAMAGE.

Dispose of all components and operating materials (such as oil, refrigerant and water-glycol mixture) separately according to material and in line with local laws and environmental regulations.

Regular information

EC Declaration of conformity

The equipment which accompanies this declaration is in conformity

with EU Directive(s):

2006/42/EC Machinery Directive

2014/30/EU Electromagnetic Compatibility Directive

Manufacturer:

Name:

Address:

The undersigned declares that the described products meet the essential requirements of the below mentioned standards as based on above mentioned directives.The item of equipments, which identified below, has been subject to internal manufacturing checks with monitoring of the final assessment by third party.

Noise declaration

Sound power level: L_{WA}<85dB
Accompanied uncertainly K=4 dB
This measurement made in according with EN ISO 3746:2010
Applied operating conditions are:
All the motor is running with normal operation speed.

"The figure quoted are emission levels and are not necessarily safe working levels. Whilst there is a correlation between the emission and exposure levels, this can't be used reliably to determine weather or nor further precautions are required. Factors that influence the actual level of exposure of the workforce include the characteristics of the working room, the other source of noise etc. i.e. the number of the machines and other adjacent processes. Also the permissible exposure level can vary from country to country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk."

1.1 Safety instruction

- The operator of wheel balancer must be trained professionally. Improper operation will lead to wrong measuring results.

- Calibration must be done in strict accordance with this manual. Incorrect calibration will cause the balancer not to work properly.
- Operational environment should conform to regulations of this manual.
- Power supply and air supply must conform to the requirement of this equipment.
- Safety protective cover must be set in the status of effective protection.
- Violating the transport and operation instruction in this manual is strictly prohibited. Manufacturer will not take responsibility for any damage or injury caused by such operation.
- Exceeding the measuring range of the equipment might cause damage and inaccurate measurement.
- If the operator violates the safety regulation and causes damage to the equipment by dismounting the safety device, the manufacturer will stop its safety commitment immediately.

1.2 Safety sign

	The sign of preventing hurting the hand when install and tighten up the steel ring.		The sign of protection that machine will stop working when open protective cover.
	The protection sign of the balance main shaft is prohibited when moving.		Safety earth sign.
	Power connection, electrical switch and other electrical indication sign.		

2. Technical Specification

2.1 Overall appearance

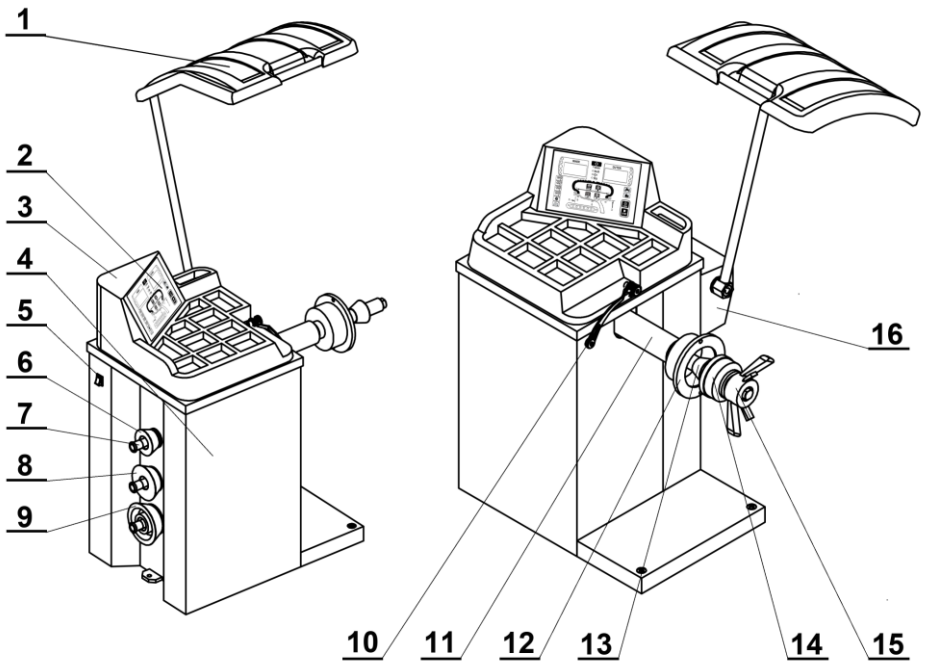


Fig. 1 Appearance Structure

Table1 Appearance structure description

Position	Specific Description	CAE-3016WB	CAE-3036WB
1	Tire protective cover	√	√
2	Control panel	√	√
3	ABS upper cover and weight tray	√	√
4	Box body	√	√
5	Power switch	√	√
6	No.2 taper sleeve	√	√
7	Taper sleeve rod	√	√
8	No.3 taper sleeve	√	√
9	No.4 taper sleeve	√	√
10	Automatic gauge		√
	Manual gauge	√	
11	Balance shaft	√	√
12	Fitting surface flange tray	√	√
13	No.1 taper sleeve	√	√
14	Steel ring protection nylon bowl	√	√
15	Quick nut	√	√
16	Protective cover bag	√	√

2.2 Control panel

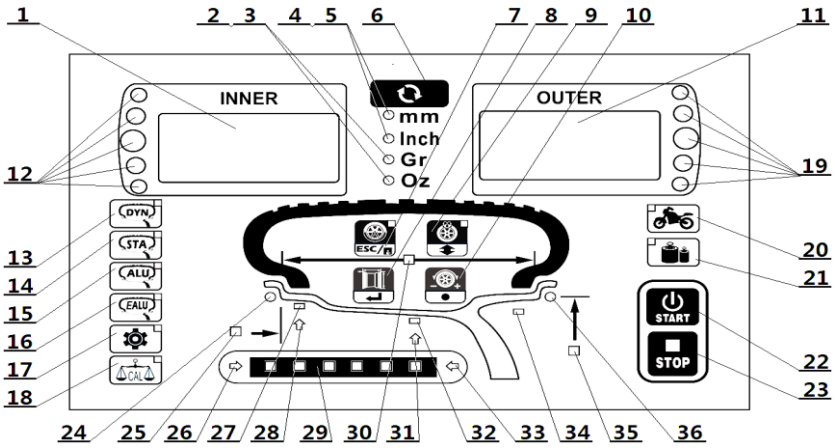


Fig. 2 Display Panel Of Wheel Balancer

Table 2 Control panel function description

Position	Specific description	Position	Specific description
1,11	inner/outer unbalance display window.	2,3	Weight unit：gram/OZ.
4,5	Length unit：mm./in.	6	Weight or length unit shift control key.
7	OPT key in DYN or STA mode/indicator light; back or save key in settings, calibration or data input status.	8	In balancing mode used to start inputting data manually / shift button ; In settings and calibration status used to edit.
9	In ALU and EALU mode (SPL) OPT/indicator light ; In settings, calibration status, it is used to turn page.	10	In setting, calibration and parameter input status, the key matches the roller to realize input status .
12,19	inner/outer unbalance sticking position indicator light.	13	Dynamic balance mode option/indicator light.
14	Static measure mode option key/indicator light.	15	ALU balance measure mode option key/indicator light.
16	EALU measure mode option key/ indicator light.	17	System setting option button/indicator light.
18	Calibration option button/indicator light.	20	Motorcycle balance button/indicator light.
21	Min. Unbalance value check button/indicator light.	22	Start up button.
23	Stop, exit button.	24,36	Inner/Outer unbalance point clamping position indicator light.
27,32,34	In sticking weight on alloy rim mode, it is a light indicating sticking position.	25,30,35	Tire three parameter a,b,d position indicator light.
26,28,31 ,33	Automatic gauge assisted sticking weight position/ direction indicator light.	29	Automatic gauge assisted sticking weight position indicator light/ assisted progress indicator light
23+10	In ALU and EALU mode, weight sticking position 12o' clock / 6 o' clock shift button.	9+10	In motorcycle mode, enter motorcycle accessory to reset operation.
23+21	Turn on and stay accurate display status.		

2.3 Main function

Table 3 Function description of all models

Function description	CAE-3016WB	CAE-3036WB
Standard dynamic balance	√	√
Static mode 1，static mode 2，static mode 3	√	√
ALU1~ALU3 balance mode	√	√
EALU1~EALU2 balance mode	√	√
OPT balance in dynamic and static balance mode	√	√
ALU and EALU mode, weight segment hide SPL function.	√	√
Motorcycle standard dynamic balance	√	√
Motorcycle static balance	√	√
Motorcycle accessory reset function	√	√
Gram/oz, mm./in. shift function	√	√
Automatic gauge (a-d) function		√
Automatic gauge assisting weight sticking function		√
Weight sticking/cleaning position shift function	√	√
Self- calibration function	√	√
The protective cover protection function	√	√
Fault self-inspection and diagnosis function	√	√

2.4 Main technical specification

Table 4 Measurement range

Power voltage(single phase)		220 V / 50 Hz	
		110 V / 60 Hz	
Protection grade		IP 54	
Power consumption		180W	
Max RPM		160 r/min	
Running time		Average 7-11s	
Measurement range	length-a-	10 mm — 350 mm	0.4 "— 13.8"
	Steel rim diameter -d-	254 mm — 813 mm	10.0" —32.0"
	Tire width -b-	38 mm — 636 mm	1.5" — 25.0"
	Tire diameter	≤ 1100 mm	≤ 43.3"
	Tire weight	< 75 kg	< 165 lb
Measurement error		≤ ±1g	0.1 oz
Phase error		≤ ±1°	
Automatic gauge error		±1mm	±0.1"
Equipment net weight		61 kg	180.8 lb
Operation noise		<70dB	
Working environment		Temperature :-20℃～50℃	
		Relative humidity≤85%	

3. Transport and Storage

The wheel balancer must be transported and stored in original package and should be stacked according to the instruction on the package.

Transfer the package with a fork lift as shown in Fig.3.

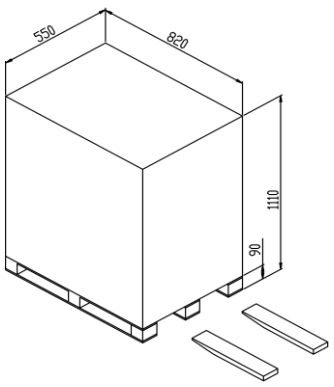


Fig.3 Packing And Transport

4. Machine Installation

4.1 Unpack the package

- Check the package firstly. Stop unpacking and contact the supplier and shipping agent immediately if there are any doubt.
- Open the packing box of confirming the goods package are not damaged. Check to make sure that each component box is in accordance with the packing list. Check the machine and accessories.
- Remove the bolts which fix the bottom of the box and machine. Place the balancer steady.
- Do not use the machine and contact the supplier immediately if there are any questions.

4.2 Installation field

- The working environment should comply with the requirement of 2.4. The ground should be level, solid without other disturbance and vibration.
- There must be a power outlet which matches 2.4 power supply voltage and power.
- Space of installation should meet the requirement described by Fig.4 and its size

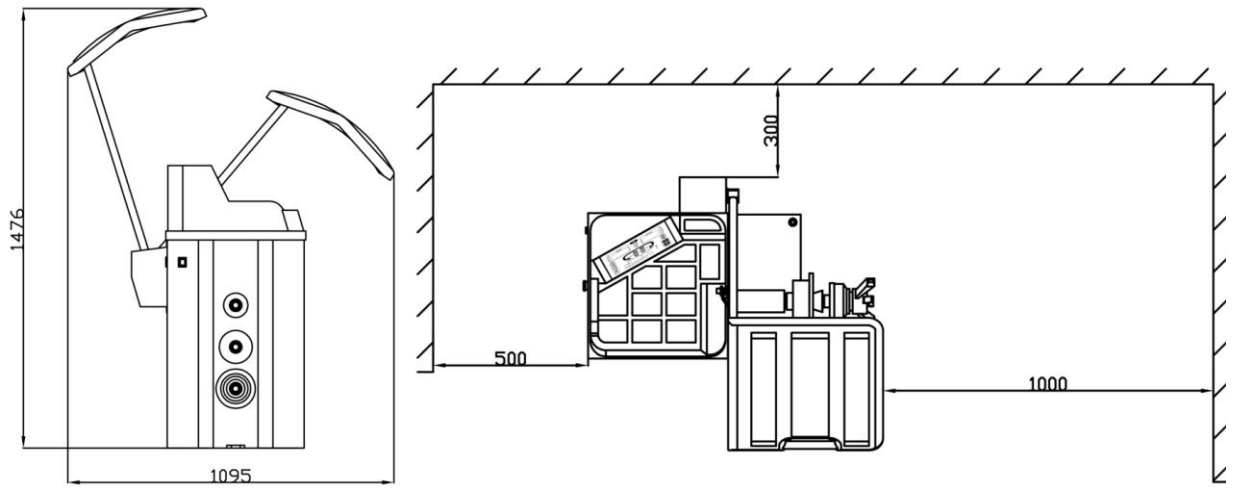


Fig.4 Use Space Requirement

and use space requirement to make sure all the components work without any limitation.

- Balancer must not be exposed to sunshine and rain. A shelter should be built if using it outdoors.

4.3 Parts assembly

4.3.1 Balance shaft assembly

Take out the part of lead screw from accessory box (Fig.5) and assemble as shown in the figure below.

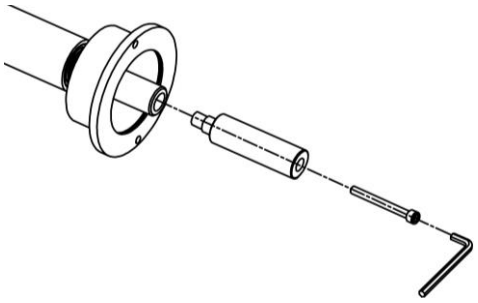


Fig. 5 E01，E02 Shaft Lead Screw Assembly

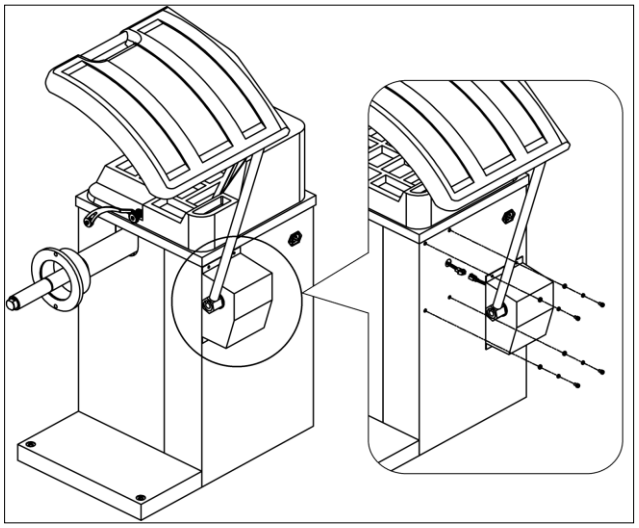


Fig. 6 Assembly of Protective Cover

4.3.2 Protective cover assembly

The protective cover bag assembly shown as (Fig.6)

First insert the protective cover switch to connect the plug and then install the bag in the corresponding position.

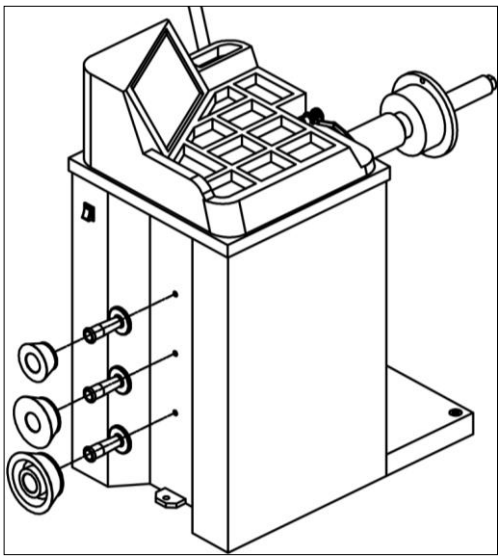


Fig.7 Taper Sleeve Installation

4.3.3 Taper sleeve installation（Fig.7 ）

4.4 Power and air supply connection

4.4.1 Power supply connection

Follow (Fig.8) to install and connect the other end to the power socket.

NOTE: The power socket and power supply must comply with the local standard and requirement in point 2.4 in this manual.

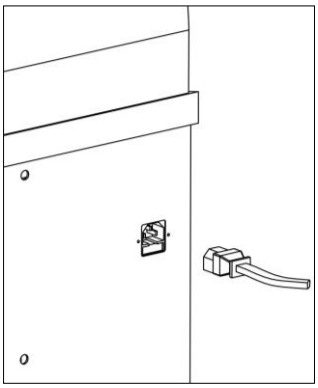
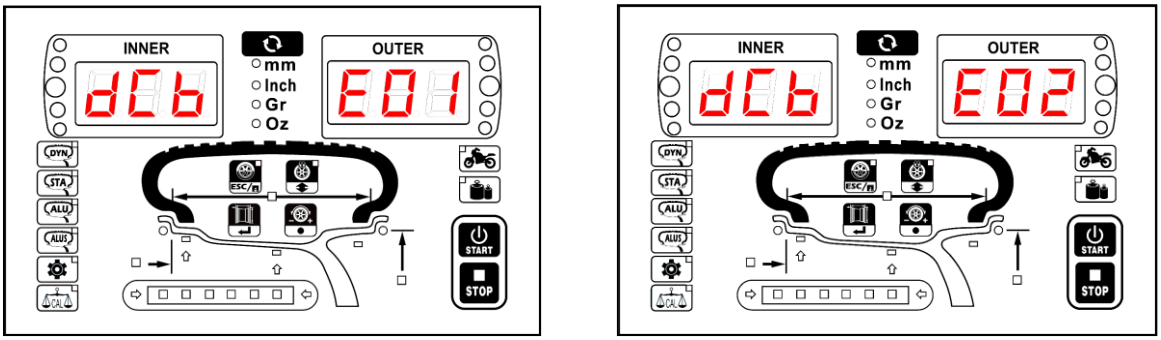


Fig.8 Connecting Air Supply

5. Starting To Use

5.1 Startup self-check

Opening the power switch, after system start self-check(Fig.9), and then enter the



DCB-E01 DCB-E02

Fig.9 Startup Self-Check

preset balance mode. The default mode is dynamic.

5.2 Wheel mounting and dismounting

5.2.1 Common wheel installation

The tire installation is divided into front and reverse assembly. Firstly choose the taper sleeve which matches with the Steel ring aperture to make sure that the center hole of the steel ring is in the range of the cone and then installed by (Fig.10) or reverse installed by (Fig.11). Finally

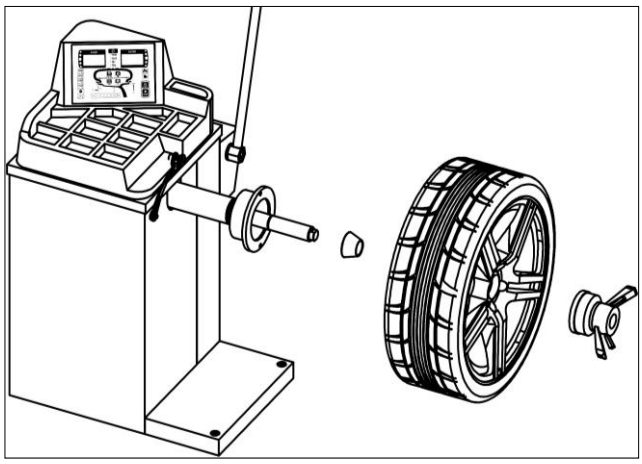


Fig.10 Common Tire Front Assembly

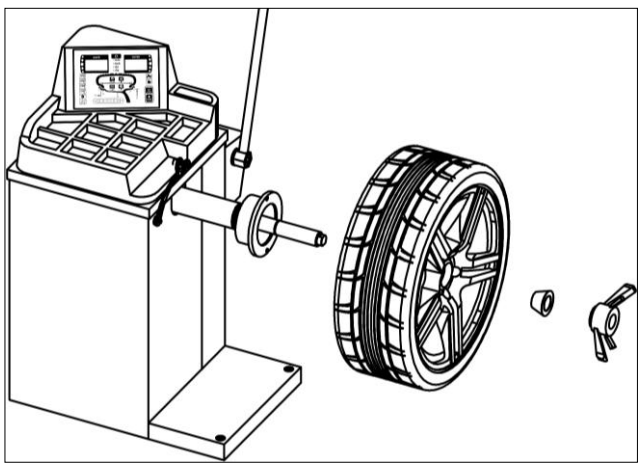


Fig.11 Common Tire Reverse Assembly

tighten the quick nut.

5.2.2 Common wheel disassembly

Screw off quick nut from installed tire, take down tire and taper sleeve to finish disassembly.

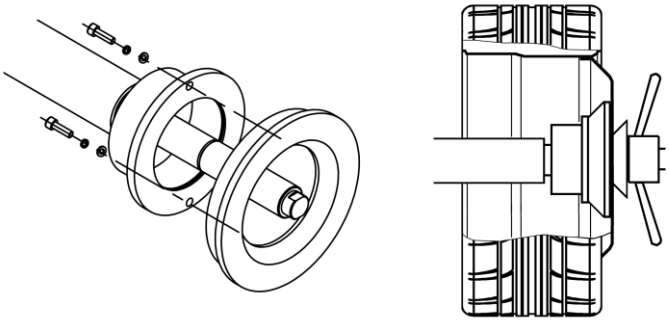


Fig.12 Over-wide Tire Assembly

5.2.3 Installation of special tire

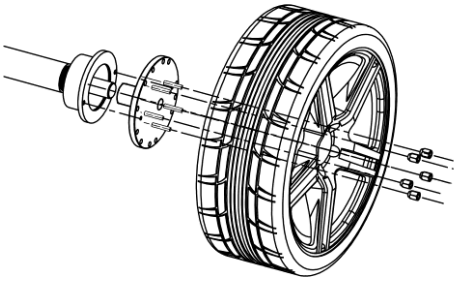


Fig.13 Assembly Without Central Hole Tire

5.2.3.1 Installation of over-wide tire

An optional accessory XSTD-2X named extension flange plate is needed to install over-wide tires. Assemble the flange plate as shown in Fig.12 and then assemble the tire to measure. Extension flange plate can extend the width of measured tire .

5.2.3.2 Installation of without central hole tire

A special spare part XSTD-61 named clamp without central hole (optional) is needed to install the tires without central hole. Install shown as Fig.13.

5.3 Balance operation

Fig.14 shows the operation mode of wheel balancer, the balance mode is selected

by tire type and customer hobby and balancing the tire. The others belong to standard dynamic balance except static balance.

In non-motorcycle balance modes, EALU mode is highly recommended of E02 which is more convenient, faster and precise, and it can be replace traditional ALU mode.

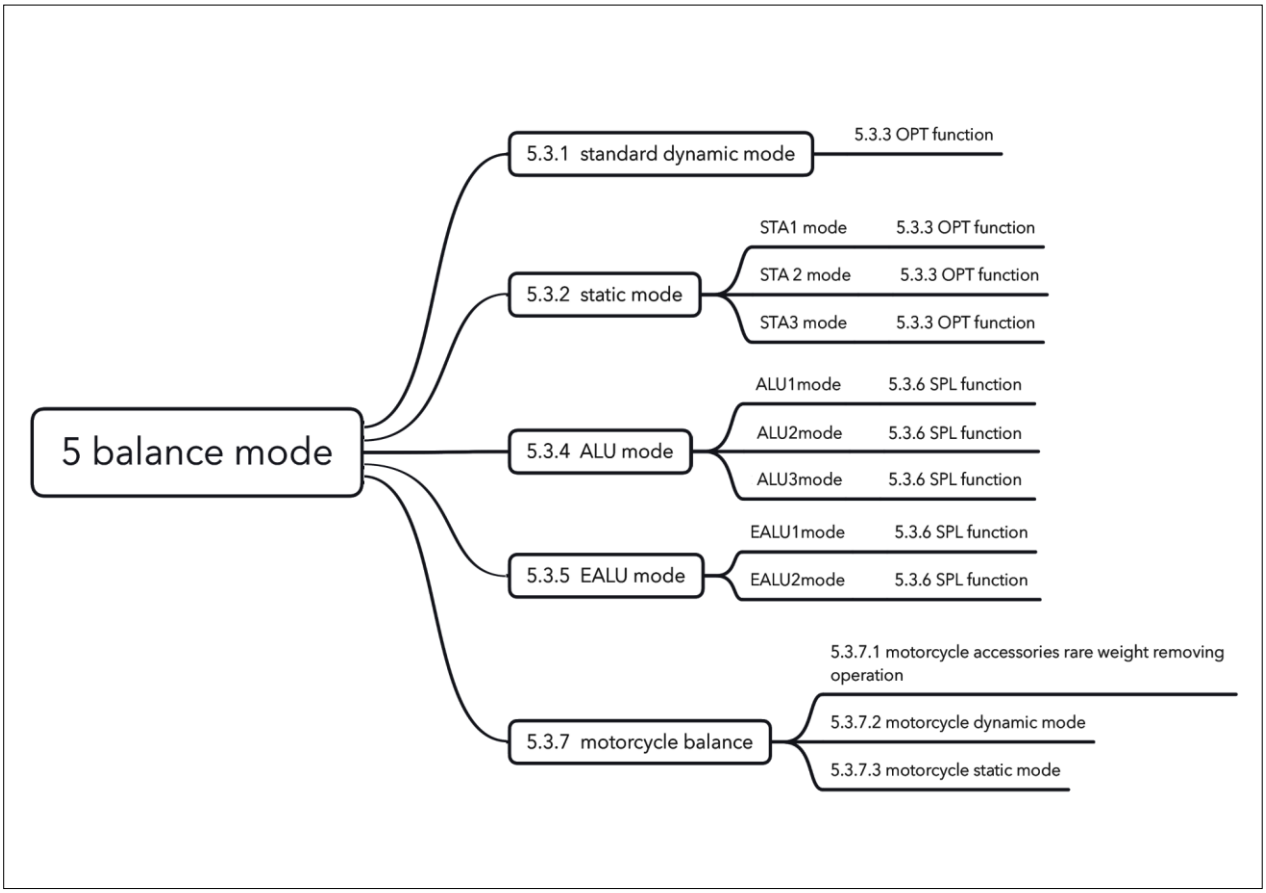


Fig. 14 Balance Mode

5.3.1 Standard dynamic balance

The system default starting model is standard dynamic balance. (Fig.15). In other measure modes, press DYN key to change into standard dynamic mode. Dynamic balance is a vector balance mode, so for the wheel which is smaller than 2.5 inches, instead of dynamic

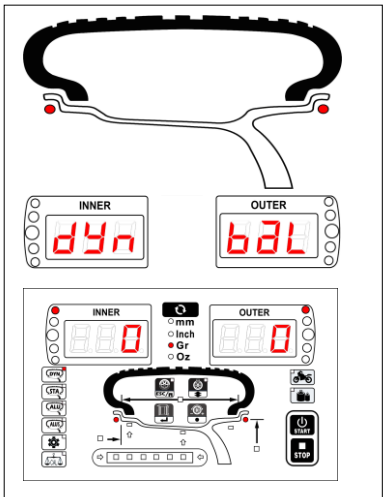


Fig. 15 Dynamic Mode

balance, static balance is recommended.

5.3.1.1 Tire parameter input

The basic parameters of wheel balancer measurement are: tire diameter "d", tire width "b", and tire distance "a" three parameters .

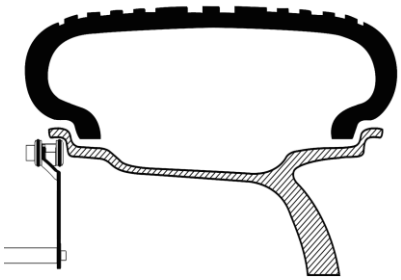


Fig. 16 Measure Tire Parameter

E01 " a "、" d "、" b " three parameters input only be manual manner(Fig.17.1) . E02 " a "、" d " is automatically entered ," b " is entered manually(Fig.17.2).Press button can shift length unit . (mm/Inch)

Pulling gauge measurement by Fig.16, E01 is manually read value a, value d and E02 value ad is automatically read .

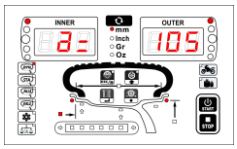
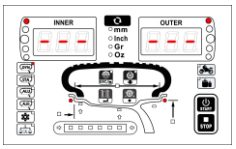
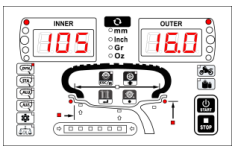
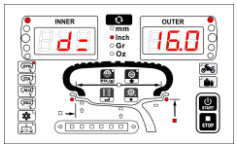
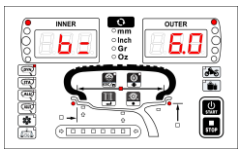
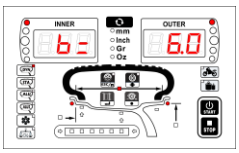
Step	Explain	E01		E02	
1	Parameter " a" input	Press button , shift to "a" input status , press button , rolling wheel input wheelbase forward or backward a = 105 mm		Pull out automatic gauge, measure tire parameter "a" by Fig.16. "d" is a "beep" when data is automatically entered, meanwhile display "a"、"d" data 105 mm and 16.0 Inch. After gauge is returned, it is automatically shift to step 3: parameter "b" input.	 
2	Parameter " d" input	Press button , shift to "d" input status , press button , rolling wheel input wheel diameter forward or backward d = 16.0 Inch			
3	Parameter " b" input	Press button , shift to "b" input status , press button , rolling wheel input wheel width forward or backward b = 6.0 Inch.		Press button , rolling wheel input wheel width forward or backward b = 6.0 Inch.	

Fig. 17 Tire Parameter Input

5.3.1.2 Standard Dynamic Balance

The standard balance measurement and balance operation are guided according to Fig.18.

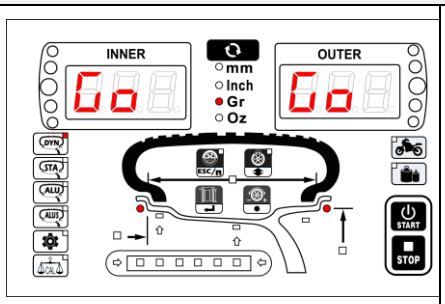
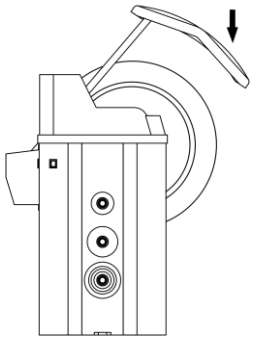
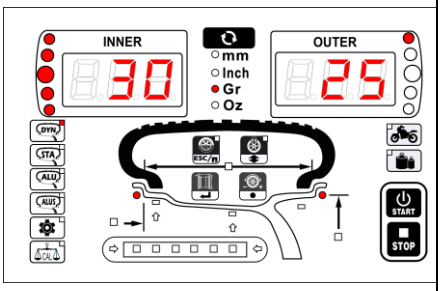
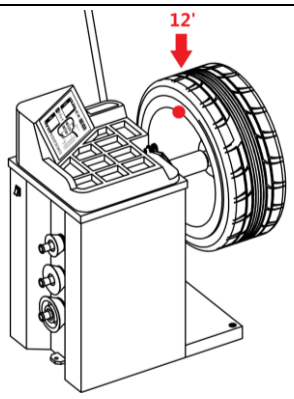
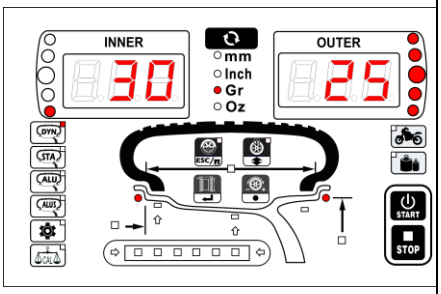
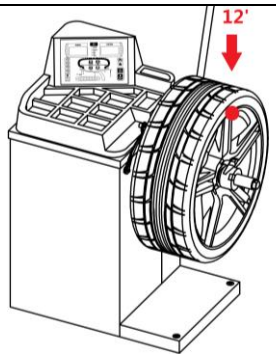
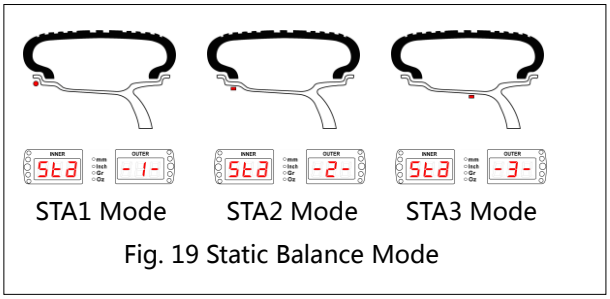
Step	Explain	Operation	
1	Balancing measure： Put down protective cover, the wheel balancer is automatically entered into balance measurement status. ... ... Measurement finished, "beep", enter step 2.		
2	Inner balance： Move tire to inside full brightness, indicating 30g imbalance value on the inner imbalance position, at the moment 12 o'clock position. Take 30g weight put it on the inside 12 o'clock position, to finish inner balance operation.		
3	Outside balance： Move tire to outside full brightness, indicating 25g imbalance value on the outside imbalance position, at the moment 12 o'clock position. Take 25g weight put it on the outside 12 o'clock position, to finish outside balance operation.		

Fig.18 Standard Dynamic Balance Measurement

5.3.2 Static balance

Press STA button to change into STA1 measurement mode under other measurement modes , continuous press STA to change balance mode STA1-STA3(Fig.19). Wheels can achieve moment balance with the rotating shaft



STA1 Mode STA2 Mode STA3 Mode

Fig. 19 Static Balance Mode

through static balance. After standard dynamic balance measurement is finished, shift to static balance, directly balancing operation by skipping the measurement 5.3.2.1.

5.3.2.1 Tire parameter input

The same as chapter 5.3.1.1, input tire three parameters, tire static balance is related to diameter parameter "d", but in order to shift within mode easily, suggest to input all three parameters.

5.3.2.2 Static balance measurement (Taking STA1 as an example)

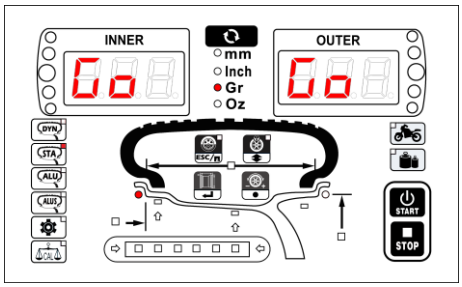
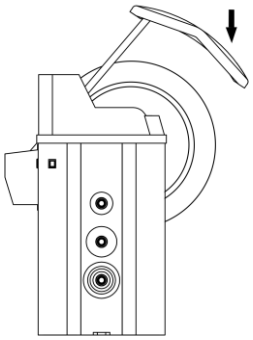
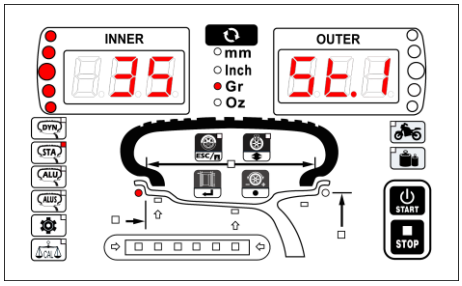
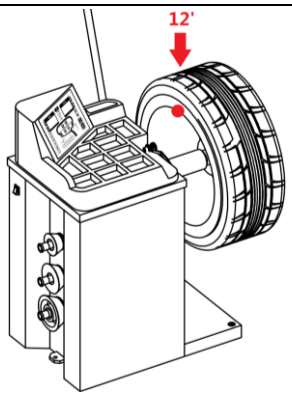
Step	Explain	Operation	
1	Static balance measurement： The wheel balancer will enter static balance measurement status automatically after put down protective cover. ... ... Measurement finished, "beep", enter step 2.		
2	Static balance operation： Move tire to inside full brightness, indicating 35g imbalance value on the static imbalance position, at the moment 12 o'clock position. Take 35g weight put it on the inside 12 o'clock position, to finish static balance operation.		

Fig.20 Static Balance Measurement

5.3.2.3 Difference between static balance STA1, STA2 and STA3

The balance point positions are different. Due to this, STA1 clamps weight on the rim edge, while STA2 and STA3 stick the weight on the inside of the rim. The

unbalance values change with the radius.

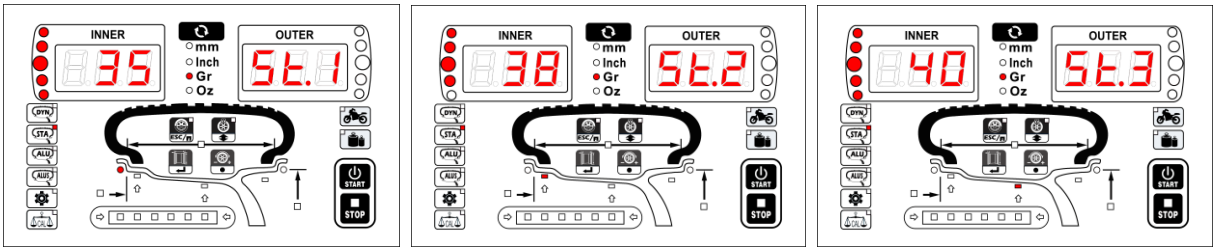
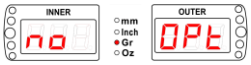


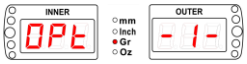
Fig. 21 Difference Between STA1，STA2，STA3

OPT can only be used in standard dynamic mode and static mode. This function is to compensate the imbalance between the wheel and the steel rim so as to reduce the weight to be added as small as possible.

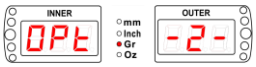
5.3.3.1 Start OPT

In standard dynamic or static mode, press ESC/R to start this function. When the total static balance value is less than the set value stated in chapter 6.7, 

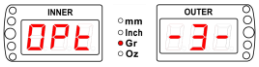
will appear meaning OPT is needed and automatically returns to the current status.

5.3.3.2 Step 1 

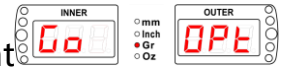
Firstly mark with a chalk a reference point which is corresponding to the valve, then rotate the valve to 12 o’ clock and stay there, press ESC/R or ↵ to enter OPT2.

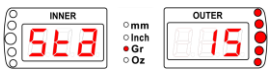
5.3.3.3 Step 2 

Remove the wheel from the balancer, take off the tire from the rim with a tire changer. Mount the rim on the balancer again, rotate the valve to 12 o’ clock again and stay there, press ESC/R or ↵ to enter OPT3.

5.3.3.4 Step 3 

5.3.3.4.1 Doing OPT measurement

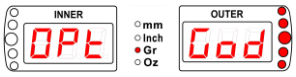
Close the protective cover ,start OPT measurement 

after finished, it shows 15g 

, residual unbalance value (supposed) after OPT .

Rotate the wheel till all indicators outside are lighted, mark the rim at 12 o’ clock with a chalk.

5.3.3.4.2 Optimizing and installing steel rim and cover tire

Dismounting the steel rim , and install the steel rim and outer tire on the premise of the overlap between two marks by tire changer, to finish the OPT operation. Press any keys displaying 

to return previous measurement status.

5.3.3.5 Exit OPT

During measurement，press STOP button can break off OPT operation, go back to the previous measurement status.

5.3.4 ALU balance

In other measurement mode, pressing ALU button can change into ALU1 mode.

Keep pressing ALU button can change between ALU1-ALU3 modes (Fig.22.

After standard dynamic measurement, going directly to ALU mode can skip ALU measurement and performing balancing operation.

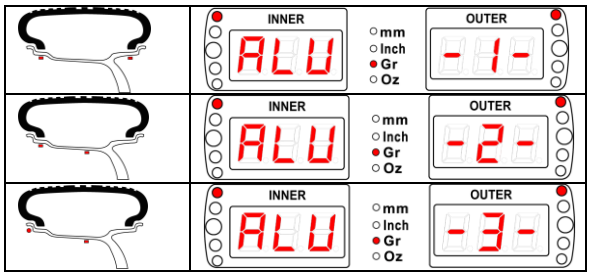


Fig. 22 ALU Mode

5.3.4.1 ALU Tire parameter input

The same as chapter 5.3.1.1, input tire three parameters.

5.3.4.2 ALU balance operation (ALU2 for example)

Operating can follow the guidance of Fig.23.

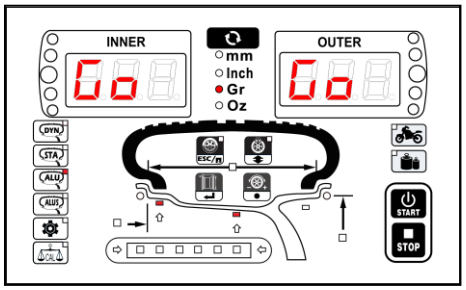
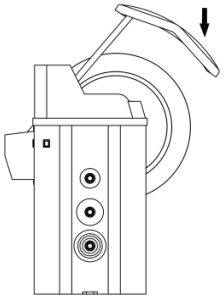
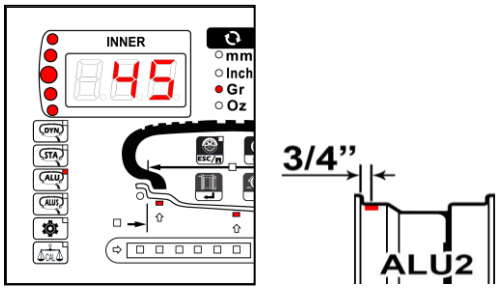
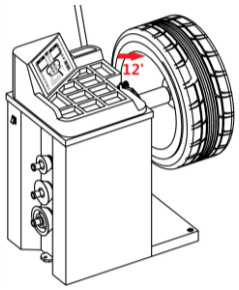
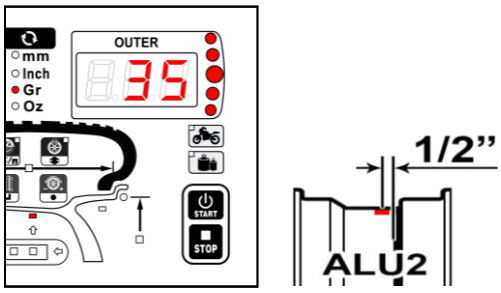
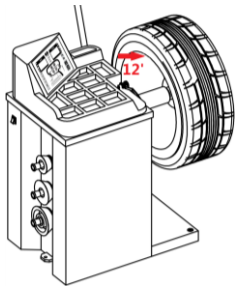
Step	Explain	Operation	
1	Balance measurement: Put down protective cover, the wheel balancer is automatically entered into balance measurement status. ... ... Measurement finished, "beep", enter step 2.		
2	Inner balance: Move tire to inside full brightness, indicating 45g unbalance value on the inner unbalance position, at the moment 12 o'clock position circle to mouth inward "3/4 ". Take 45g weight stick the photo position, to finish inside balance operation.		
3	Outside balance : Move tire to outside full brightness, indicating 35g unbalance value on the outside unbalance position, at the moment 12 o'clock position, flange plate outward "1/2". Take 35g weight stick the photo position, to finish outside balance operation.		

Fig. 23 ALU2 Balance Measurement

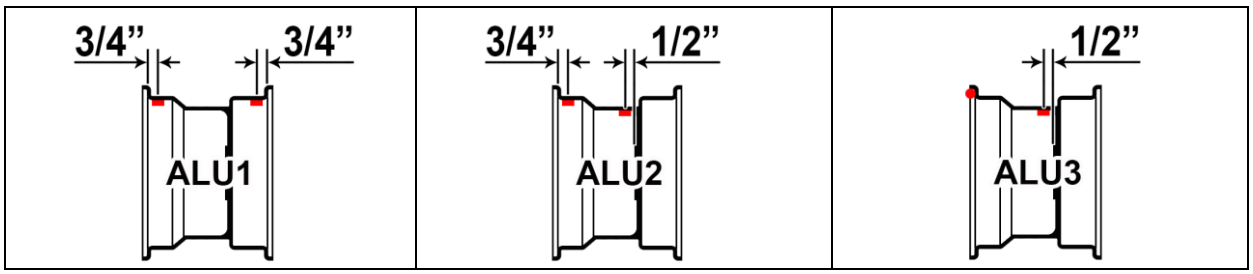


Fig. 24 ALU1-3 Mode Sticking and Clamping Position

Where to stick the weight depends on the rim shape. Choose the longer distance surface to stick and stick or clamp the weight as shown in Fig.24, then ALU balance

is completed.

5.3.5 EALU Balance

EALU balance is a highlight of this equipment among model E02 balancers, It performs precise ALU balancing operation with the aid of automatic gauge. However, the E01 has no advantage of this function as no automatic gauge.

There are two modes: EALU1 and EALU2.

5.3.5.1 Enter EALU mode（E02 model，Fig.25）

In any measurement modes，pull out the gauge to position 1 and then to position 2，then gauge back. The wheel balancer will automatically enter the selected mode by calculating the rim structure and measured position.

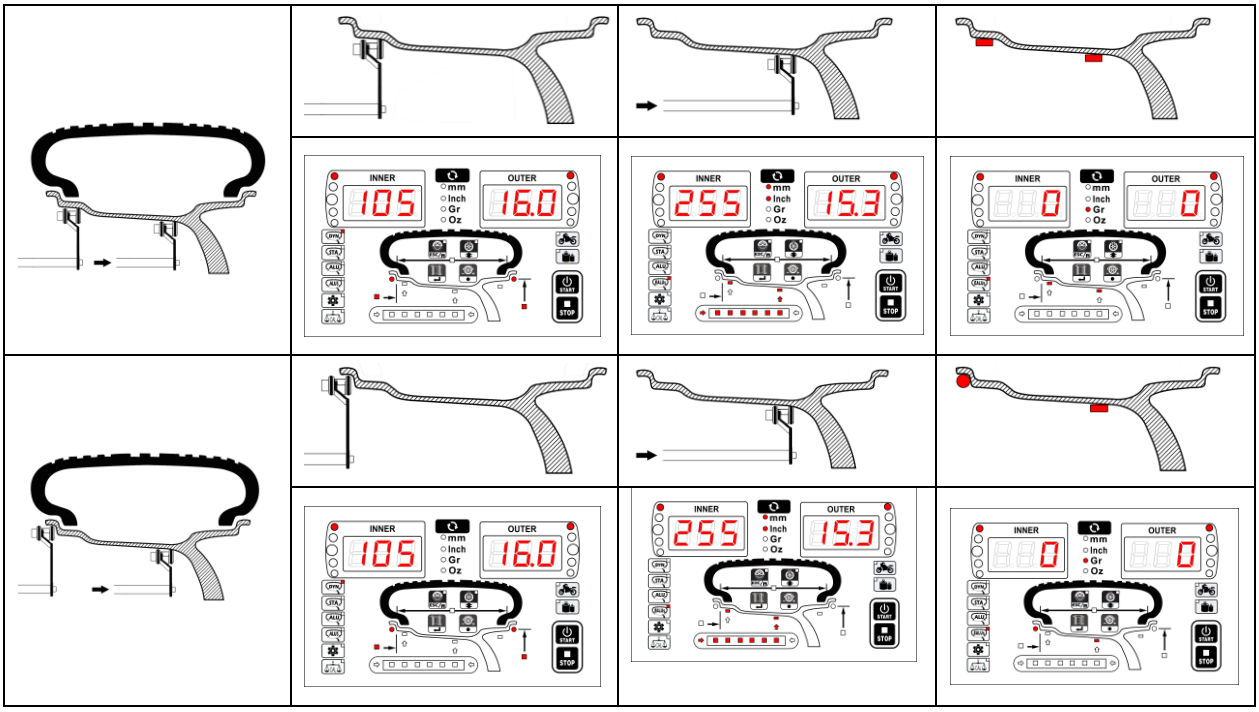


Fig. 25　EALU Balance Measurement Mode

5.3.5.2 EALU balance measurement

Same as other modes, close the protective cover to start balance measurement. To check unbalance point manually after balance finished（For example

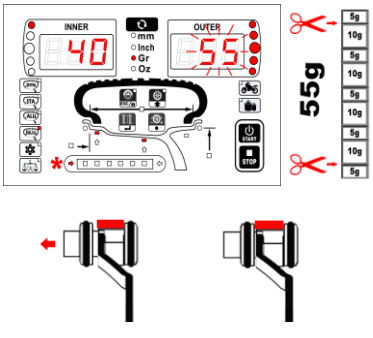


Fig. 26 EALU Balance Measurement

EALU1, Fig.26)

5.3.5.3 EALU sticking weight balance operation

5.3.5.3.1 EALU outer sticking weight balance

At the unbalance position(for example outside 55g) , the outer numerical value flashes and meantime the arrow indicates pulling out the gauge. Take out 55g weight , remove the gum protective film , put the gauge with the glue face up , (Fig.26) .

Pull out the gauge, operate as shown in Fig.27, stick the weight steady on the indicated position to finish sticking weight operation.

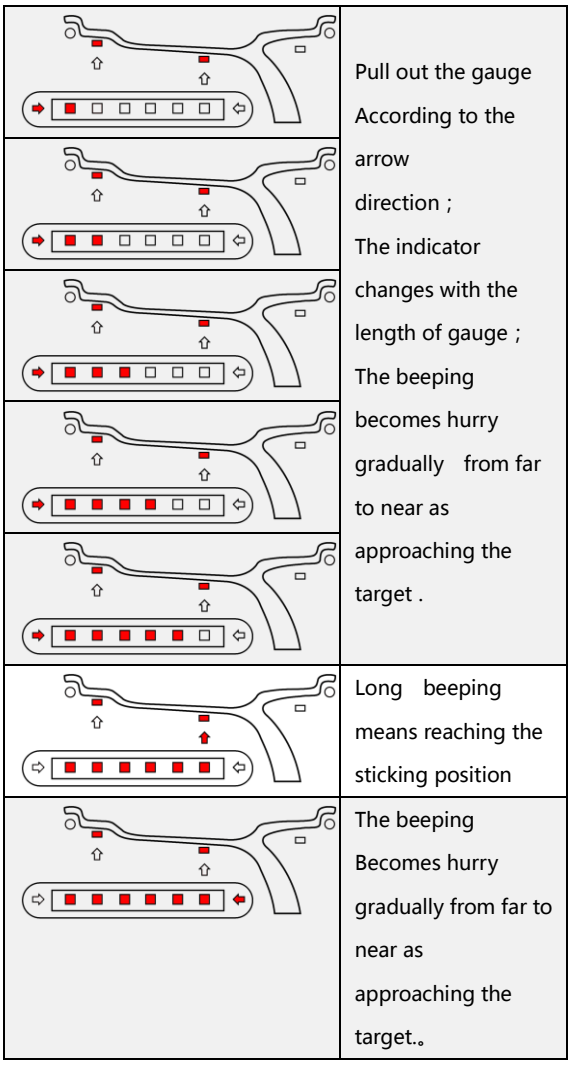


Fig. 27 EALU2 Sticking Position Sound Indication

5.3.5.3.2 EALU inner sticking weight balance

Locate the inner unbalance point manually.

In EALU1 balance mode, inner and outer balance operation are the same. Seeing Fig.28.

In EALU2 balance mode , inside is clamping weight operation (seeing Fig.18.2) . Clamp the weight at 12 o'clock by "INNER" indicated weight.

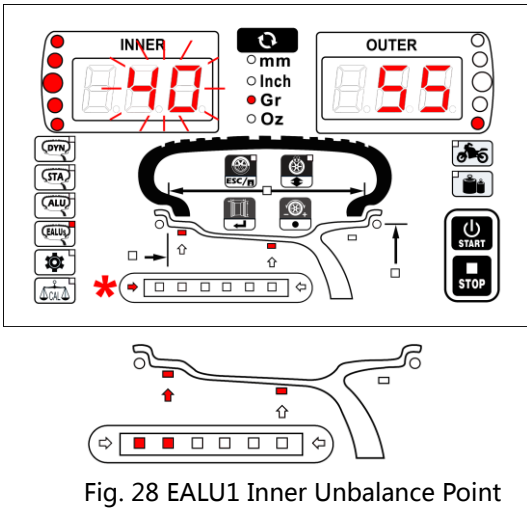


Fig. 28 EALU1 Inner Unbalance Point

5.3.6 SPL function

This function is to split an unbalance weight that needs to be stuck on the outside into 2 equivalent weights and hide them behind the two neighboring spokes so as not to affect the rim appearance. Press button enter SPL operation when there are unbalance values outside under mode of ALU2,ALU3. Press STOP key can finish operation during SPL operation.

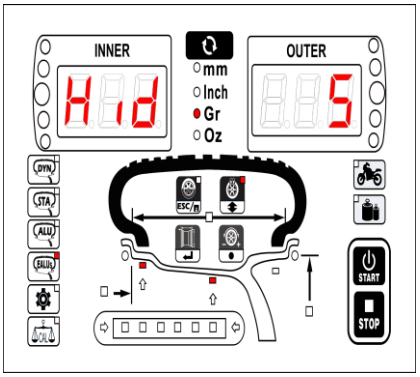


Fig. 29 SPL Mode Select Spoke Amount

5.3.6.1 SPL mode

The first step in SPL1 mode is to select the number of spokes. (Fig.29)

5.3.6.2 Select the number of spokes

Press button and at the same time rotate the Wheel, the number of spokes (ranging 3-10) can be input fast.

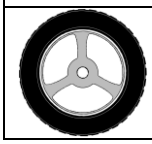
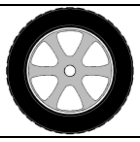
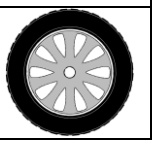
Hid=3	Hid=4	Hid=5	Hid=6	Hid=7	Hid=8	Hid=9	Hid=10
							

Fig. 30 Split According To The Number Of Spokes

5.3.6.3 Confirm spoke phase

Take any spoke as the start one and rotate it to 12 o' clock, press or button to confirm the start point. Split function is finished.

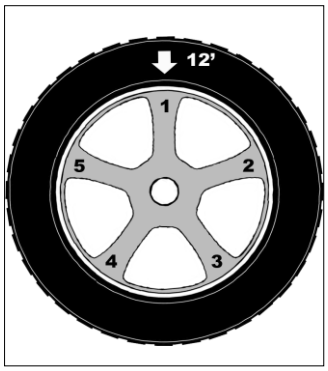


Fig. 31 Confirm Phase Position

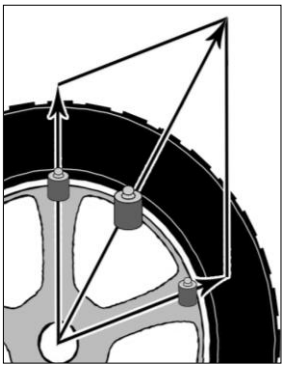


Fig. 32 Vector Split

After split, two unbalance point will appear on the outside (the original unbalance point is just appear behind one spoke is an exception) , both of the sticking position are behind the spokes and the total weight and positions are equivalent

to the original one weight(Fig.32)

5.3.7 Motorcycle balance

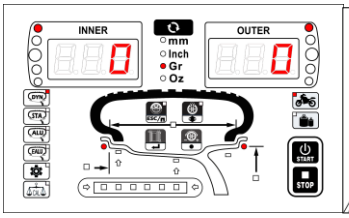


Fig. 33 Motorcycle Balance Mode

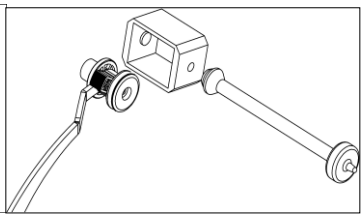


Fig.34 Extension Gauge Installation

Motorcycle balance consists of dynamic and static balance and needs to be performed with special accessories. Press button to enter motorcycle dynamic balance mode. (Fig.33)

As instructed in Fig.34,35 install the special clamp and extension gauge.

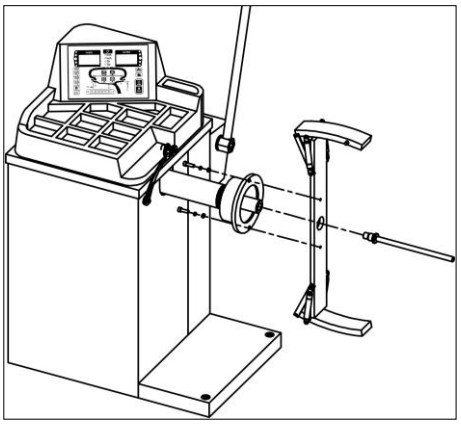


Fig. 35 Motorcycle Special Clamp Installation

5.3.7.1 Motorcycle accessory reset operation

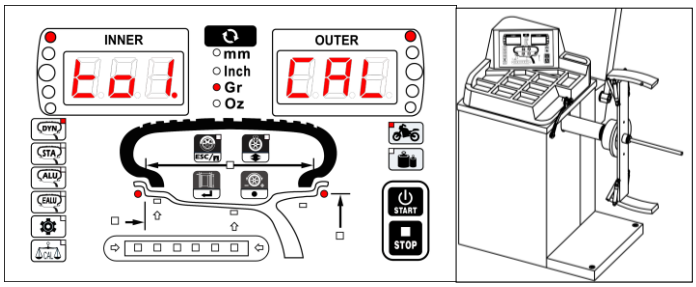


Fig. 36 Motorcycle Accessory Reset

This equipment provides a special accessory reset function, which means removing the tare weight of the accessories to ensure motorcycle balance more precise. Meanwhile press and key to enter motorcycle accessory reset operation (Fig.36). Put down protective cover to start remove the peel operation, measurement finished, both inner and outer display 0, 0, remove the peel operation is finished.

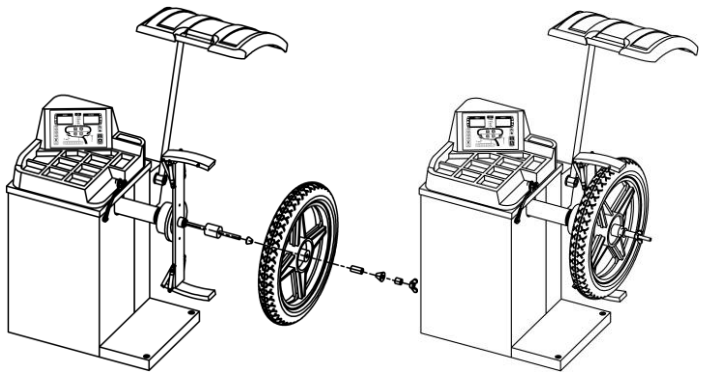


Fig. 37 Motorcycle Special Clamp Installation

5.3.7.2 Motorcycle dynamic balance operation

Mount the tire on the balancer according to Fig.37, pull out measure gauge to

measure parameter of tire size until balance measurement and balance operation is the same as 5.3.1 standard dynamic balance, then follow this step to operate.

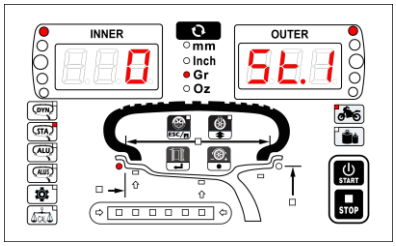
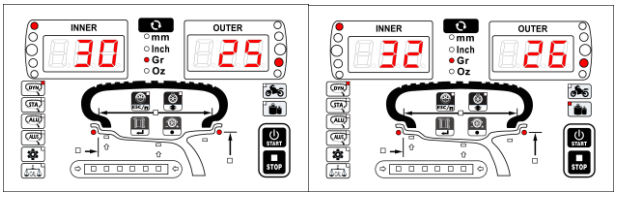


Fig. 38 Motorcycle Static Measurement

5.3.7.3 Motorcycle static balance operation

In motorcycle balance mode, press STA to enter motorcycle static mode (Fig.38), pull out measure gauge to measure parameter of tire size until balance measurement and balance operation is the same as 5.3.2 static balance, then follow this step to operate.



Quantifying Display Status Precise Display Status

Fig.39 Display Precise Value

5.3.8 Additional function

5.3.8.1 Balance value precise display function

During balancing operation，press and do not loosen the button, “INNER” and “OUTER” will display unbalance value. Loosen will return to quantifying display status.

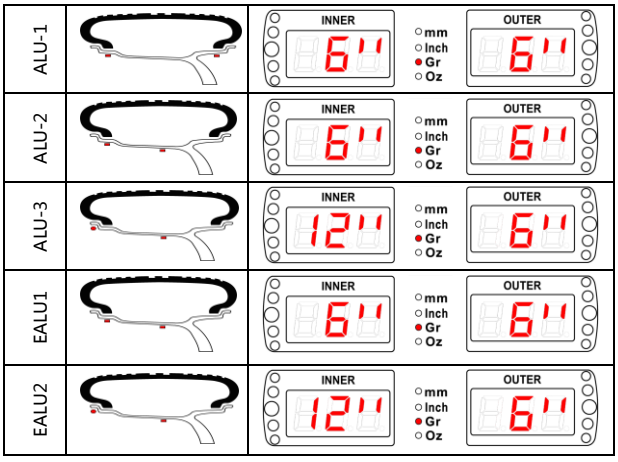


Fig.40 Cleaning Status

If keeping displaying precise status, press STOP and realize.

5.3.8.2 Tire sticking weight cleaning mode

In the sticking weight mode, because the inner surface of hub needs to be cleaned, so providing this cleaning mode to clean the surface of hub convenience. Press STOP and at the same time, the window shows sticking position is 12” or 6” （cleaning） position,（Fig.40）.

5.3.8.3 Sleeping function

This function of set startup and sleeping time can be setted in Chapter 6.5.3. Without any operation during the set sleeping time, the balancer will sleep automatically, meantime, system will release and turn off the main electricity powered parts and display sleeping status. Press any key or any operation will wake up automatically and work again.

5.3.8.4 Precise balance mode and save balance mode

Saving balance mode can be set in 6.3.3. In dynamic balance mode, for precise balance, when inner and outer unbalance value is <5g(the standard), the total static balance value is <5g too, it will show “0” , “0”. Otherwise it will enter static balance mode automatically to display the static unbalance value. Precise balance mode can remove the residual unbalance, improve balance quality. Saving balance mode compare with precise mode, it can be maximize saved balance weight under meeting balance precise requirement, in order to achieve the goal of saving from month to month.

5.3.8.5 Real time unit shift function

When doing unbalance measurement or inputting tire parameter, gram/oz or mm/ inch can be changed between at any time by pressing .

6. System Setup

6.0 System setting navigation (Fig. 42)

Press to enter system setting status, it is menu operation mode. The buttons as shown in Fig.41 are used to edit or save.

Save return	Enter confirmation	Turn page shift	Roller set data
			

Fig.41 Control Button Function

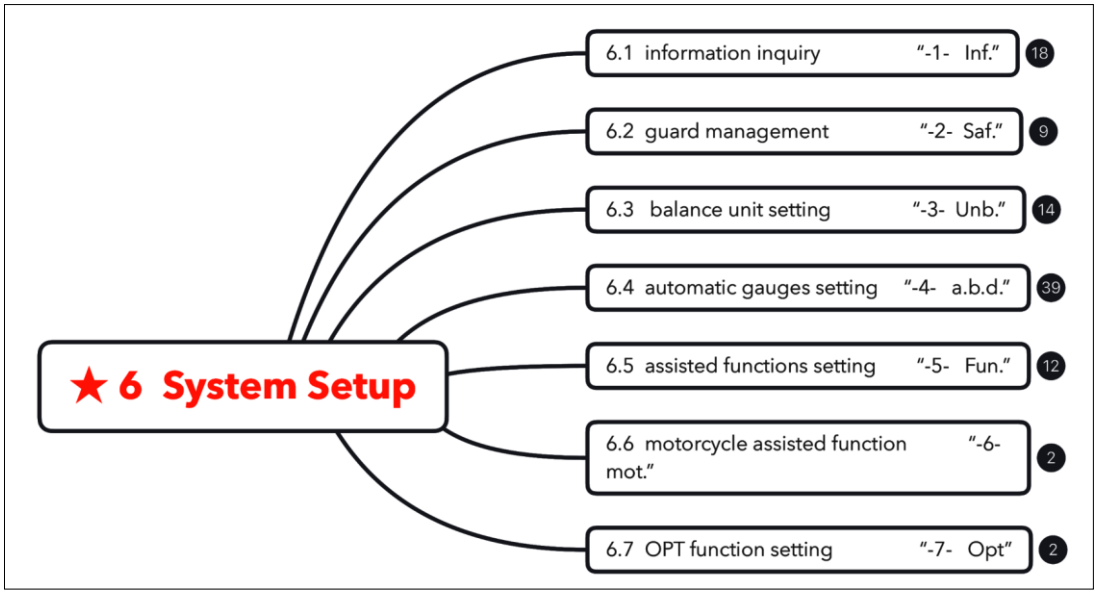


Fig.42 System Setting

6.1 Information inquiry (Fig.43)

6.1.1 Program information

Including version information and issue date.

6.1.2 Usage Information

Including total use times of the equipment and temporary metering times.

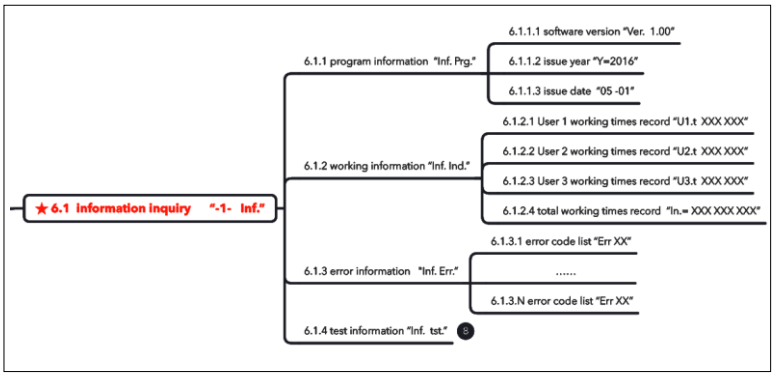


Fig. 43 Information Inquiry

6.1.3 Fault Information

If there is unbreakable fault within the system. You can judge the fault point by inquiring fault code . This is blank if no fault.

6.1.4 Test information (Fig.44)

To diagnose the working status of each unit of the equipment, it is a built-in diagnostic tool of this equipment.

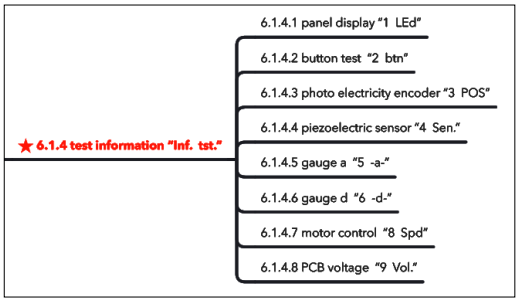


Fig. 44 Test Information

6.1.4.1 Diagnose of panel display unit

Entering real panel, the digital tubes and LED indicator will be lit on one by one with the electric beeping.

6.1.4.2 Key switch test

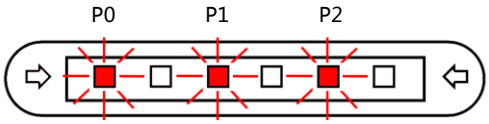


Fig. 45 Phase Test

Entering real panel, the switch protective cover button, and foot pedal switch, "INNER" "OUTER" can display corresponding button and switch serial number. Exit the button switch test by pressing START and STOP and at the same time.

6.1.4.3 Diagnosis of photoelectric encoder

Entering this setting, rotate the tire, then "INNER" "OUTER" will display rotating angle POS = 0°~359°. At the same time, P0, P1, and P2 indicate the real-time status of the encoder. (Fig.45)

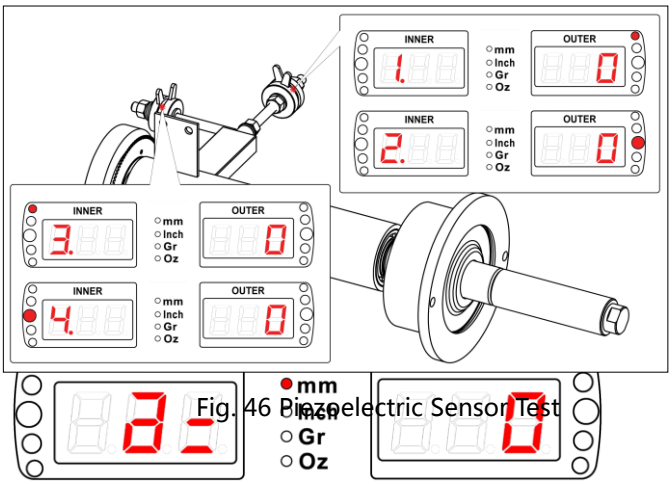


Fig. 46 Piezoelectric Sensor Test

6.1.4.4 Piezoelectric sensor test

Entering this setting, the corresponding data of different sensors will be displayed on the screen (Fig.46). Data changes between -2048 +2048 with pressure. Static data is approximate 0. Each sensor has two paths and converts by pressing .

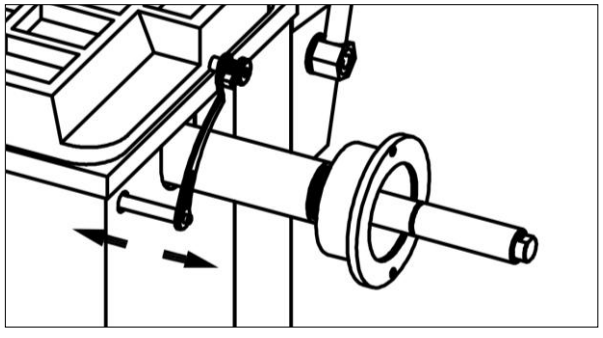
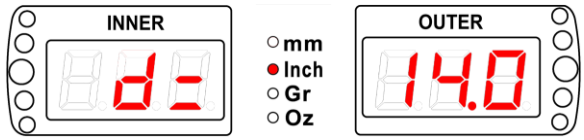


Fig.47 Gauge a Test

6.1.4.5 Gauge a test (E02)

Entering this setting，pull a d, the length pulled out should be the same as the reading ranging a=0~350mm.（Fig.47）. Press to change the length unit.



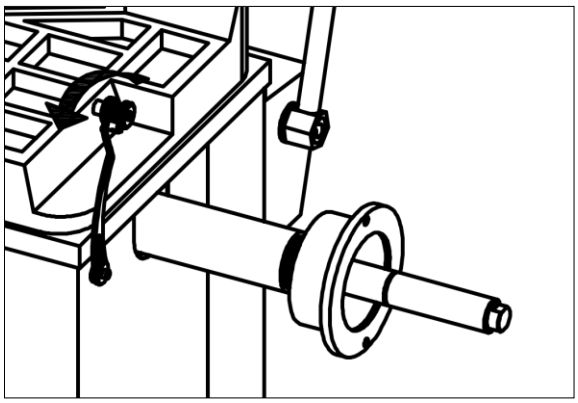


Fig. 48 Gauge d Test

6.1.4.6 Gauge d test (E02)

Entering this setting, raising the gauge ad ,the corresponding steel rim diameter will be displayed（Fig.48 d=14.0 Inch）

Press to shift between diameter and angle. Press to change the diameter unit.

Motor forward turning	Motor backward turning
DYN	STA

Fig.49 Function Of Button

6.1.4.7 Motor control

Entering this setting, it shows as Fig. 50. Control the motor by pressing and not loosening the corresponding button shown in Fig. 49， During rotation “ INNER ” and “ OUTER ” windows display the balancing shaft real time speed with the unit r/min.

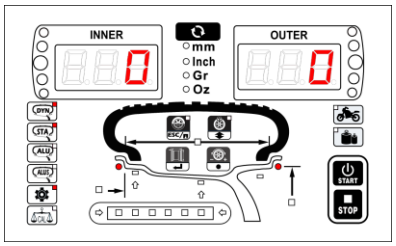


Fig. 50 Function Of Button

6.1.4.8 PCB voltage test

Entering this setting, the voltage of all key nodes on the PCB will be displayed. Refer to Table 5 for the exact voltage range.

Table5 PCB Voltage

Name	+12V	VCC	VDD	AVCC	AVSS	-12V
Code	“V12”	“Vcc”	“Vdd”	“AVc”	“V5”	“V=”
Scope	10.5~13V	4.7~5.3V	3.0~3.4V	4.7~5.3V	-5.3~-4.7V	-13~-10.5V

6.2 Protective cover management

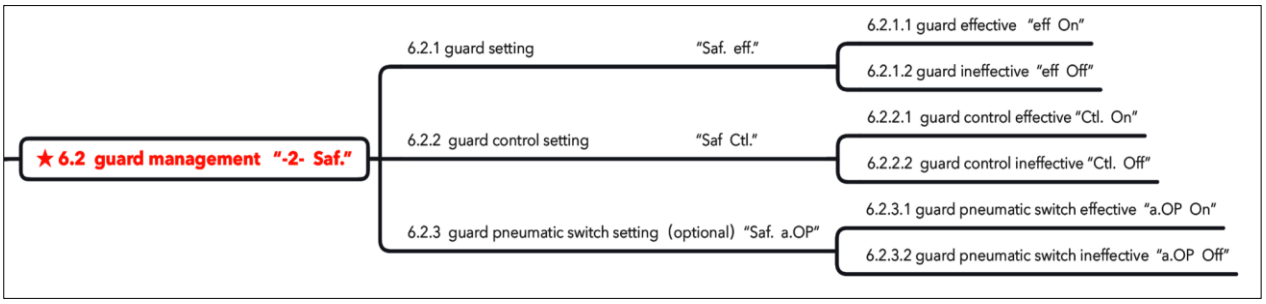


Fig.51 Protective Cover Management

6.2.1 Protective cover effectiveness setting

The protective cover must be set effective to protect the operator safety according to the law of different areas.

When this setting effective, the measurement can be started only when protective cover is closed. If the protective cover is opened during measurement, the balancer will be braked and stop automatically.

When set ineffective, the items in 6.2.2 and 6.2.3 will not appear. Whether the protective cover is installed or not will not influence the balancer work.

6.2.2 Guard control effectiveness setting

When set effective, close the protective cover and at the same time start up protective cover control to start balance measurement.

6.2.3 Protective cover pneumatic switch setting (optional)

When installing this accessory, set it effective. Press START or STOP, the protective cover will automatically close or open. Protective cover can be opened or closed manually too.

6.3 Balance unit setting

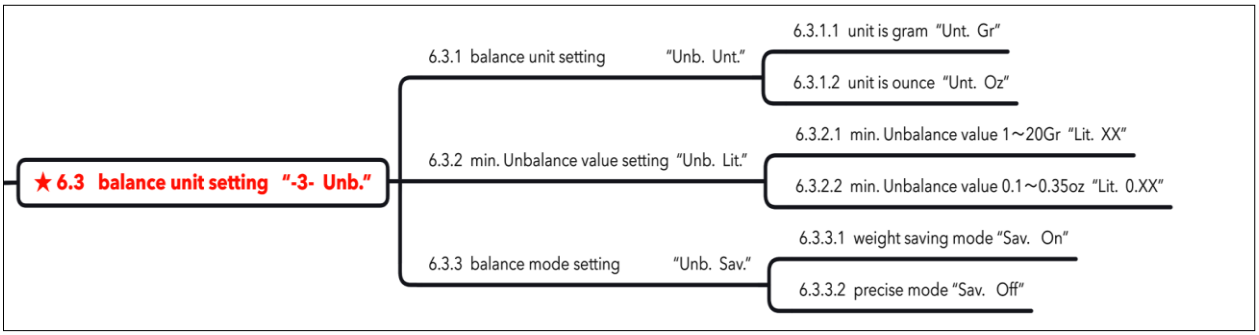


Fig. 52 Balance Unit Setting

6.3.1 Balance value default unit of starting up

Gram or ounce.

6.3.2 Minimum unbalance value setting

The range is 0~50 grams or 0~1.75 oz. Any value less than this is invisible.

6.3.3 Balance mode setting

In this setting "On" means weight-saving mode; "Off" means precise mode.

6.4 Gauge Setting (Fig.53)

6.4.1 Automatic gauge a unit

mm/Inch.

6.4.2 Automatic gauge a resolution

Metric system : 1mm/5mm

British system : 0.1Inch/0.2Inch

6.4.3 Automatic gauge a startup default value

Gauge a starting up

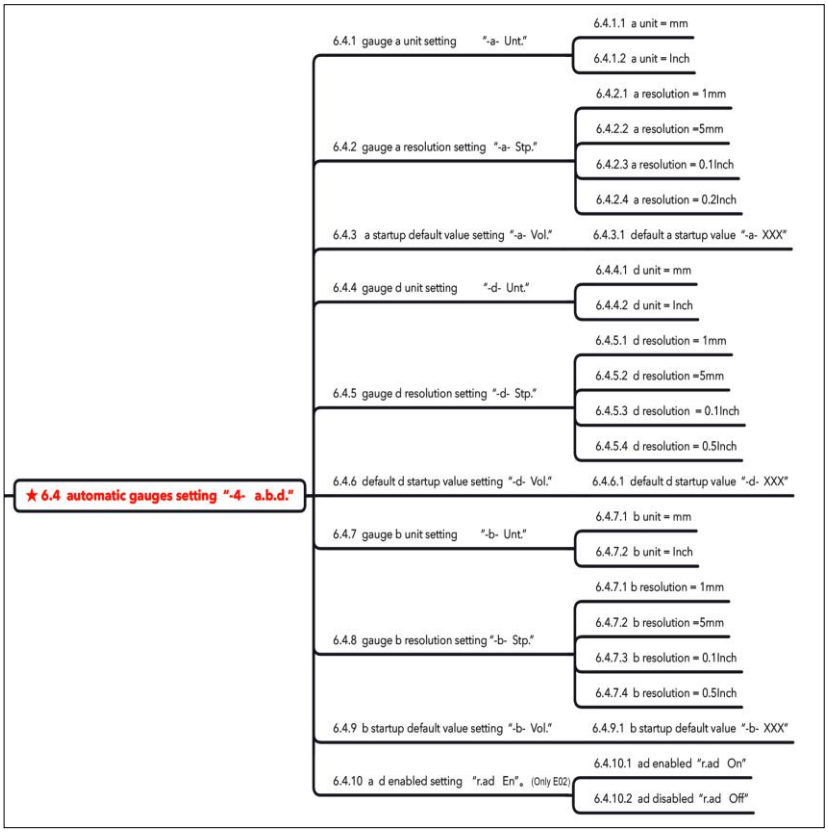


Fig.53 Automatically Gauge Setting

default value can be setted here, the range of default value is 10~350mm. Default value is 115mm.

6.4.4 Automatic gauge d unit

mm/Inch.

6.4.5 Automatic gauge d resolution

Metric system：1mm/5mm

British system：0.1Inch/0.5Inch

6.4.6 Automatic gauge d startup default value

Gauge d starting up default value can be setted here, the range of default value is 254~813mm（10Inch~32Inch）. The default value is 572mm（22.5 Inch）.

6.4.7 Automatic gauge b unit

mm/Inch.

6.4.8 Automatic gauge b resolution

Metric system：1mm/5mm

British system：0.1Inch/0.5Inch

6.4.9 Automatic gauge b startup default value

Gauge b starting up default value can be setted here, the range of default value is 38~636mm（1.5 Inch~ 25 Inch）. The default value is 209mm（8.25 Inch）.

6.4.10 Automatic gauge ad effectiveness setting(E02)

Automatic gauge a and d are assembled together. This setting can turn on or off the ad at the same time. This function is used to turn it off when the automatic gauge has error and then input the ad values manually.

6.5 Assisted function setting (Fig.61)

6.5.1 Electric beep setting

On / off electric beep.

6.5.2 Electric beep sound setting

Turn on / off automatic beep while sticking weight.

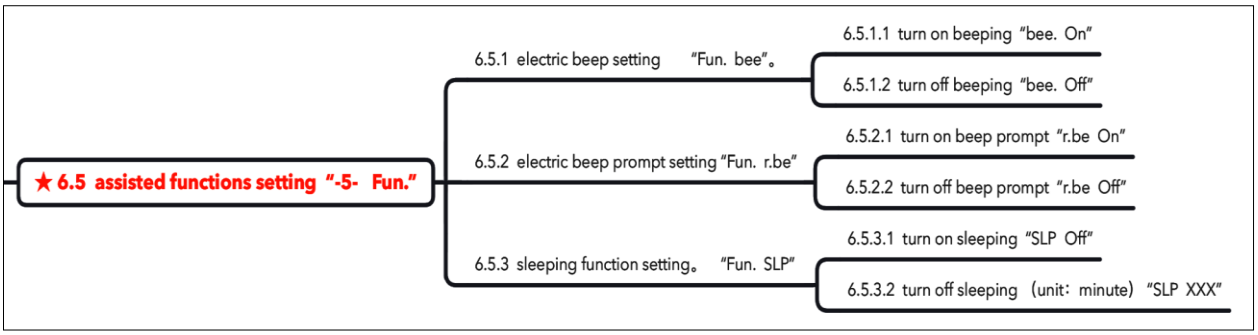


Fig.54 Assisted Function Setting

6.5.3 Sleeping function

Entering the setting, set sleeping off or on or set sleeping time with the roller. （5min，10min，15min，20min，25min，30min，40min，50min，60min，90min，120min）.

6.6 Motorcycle assisted function

Off /on motorcycle accessories balance function.

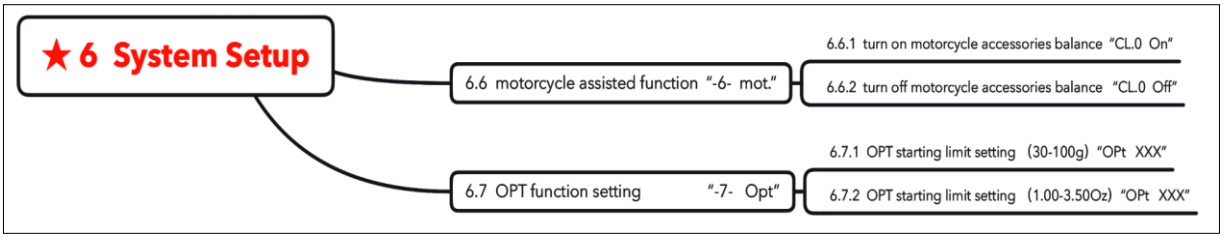


Fig.55 Function Setting

6.7 Optimization （OPT） function setting

This function is to set the minimum value for doing OPT. The range is 30gram~100gram（1.00~3.50OZ）. When the maximum static balance value is over this value, OPT operation can be done.

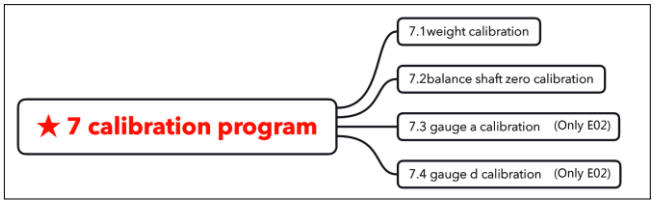


Fig.56 Calibration Program

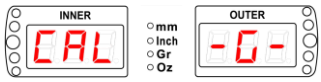
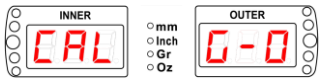
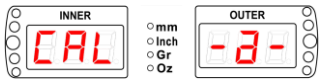
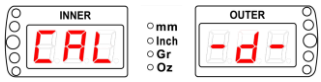
7. Calibration Program

Press CAL to enter calibration content (Table6)

Press button or roller to select the corresponding calibration items, then press to enter. See Fig.41 for button function.

7.0 Calibration program (Fig.56)

Table 6 Calibration Program Content

Calibration Content	Code	Calibration Content
☻Weight calibration		Calibrate the balance value with standard weight
☻Balance shaft zero calibration		Calibrate the unbalance value of shaft
☻Gauge a calibration		Gauge a zero calibration
☻Gauge d calibration		Gauge d zero and sticking weight position calibration

7.1 Weight calibration

7.1.0 Calibration tool

A tire with steel rim (14~17inch suggested) and a 100g (3.50oz) standard weight supplied with the balancer. Entering weight calibration, follow the 3 steps in 7.1.1~7.1.3. Zero calibration firstly.

7.1.1 Zero calibration

Mount the tire on the balancer, put down the protective cover and do zero calibration measurement. After measurement, it will go to outside standard test weight calibration automatically (Fig.57.1).

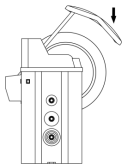
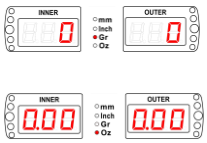
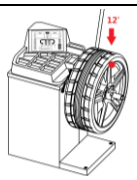
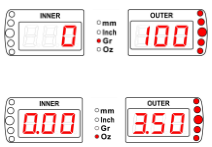
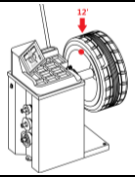
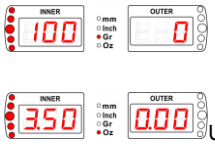
Step	Operation	Display
Zero wheel calibration		 Unit :gram Unit :ounce
Outer weight calibration		 Unit :gram Unit :ounce
Inner weight calibration		 Unit :gram Unit : ounce

Fig.57 Weight Calibration Program

7.1.2 Outside weight calibration

As shown in Fig. 57.2, clamp a 100 gram standard test weight at 12 o' clock, close the protective cover

to start calibration measurement. After measurement, it will go directly to inside standard test weight calibration.

7.1.3 Inside weight calibration

Remove the outside standard test weight from outside (Fig. 57.3), clamp it at 12 O’ clock inside and do calibration measurement put down protective cover. After measurement, weight calibration is finished and return to 7.0 program content.

7.2 Balance shaft zero calibration

7.2.0 Calibration tool

A tire with steel rim (14~17 inch suggested) . Two steps are as below.

7.2.1 Shaft calibration step 1 (Fig.58)

Mount the tire and mark the inner rim and balance shaft. Close the protective cover to start shaft calibration measurement. After measurement loosen the tire and turn the corresponding position of wheel and shaft by 180 degrees, then fix it again.

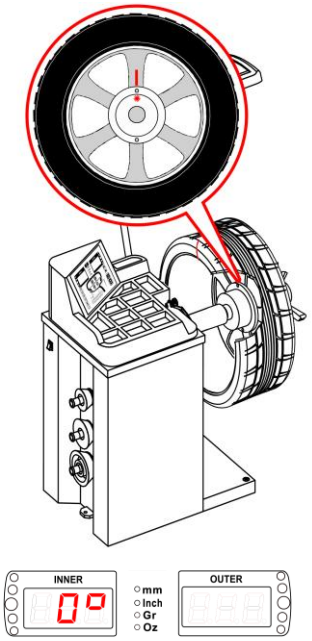


Fig.58 Shaft Calibration step 1

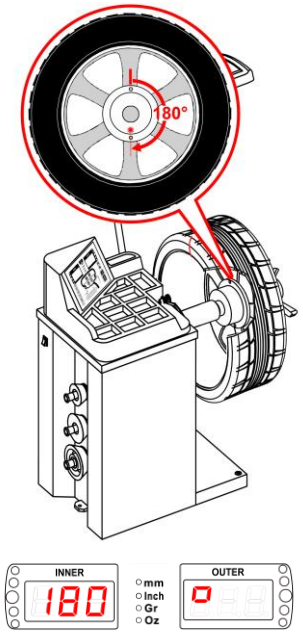


Fig.59 Shaft Calibration Step 2

7.2.2 Shaft calibration step 2

(Fig.59)

Close the guard to start shaft calibration. After measurement, the calibration is completed and return to 7.0 program content.

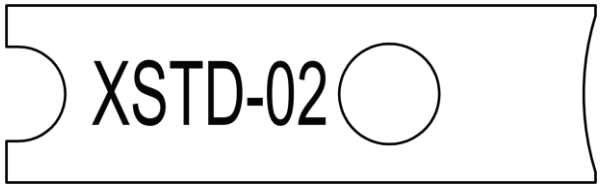


Fig. 60 XSTD-02 Caliper

7.3 Gauge a calibration

7.3.0 Calibration tool

XSTD-02 , a calibration caliper equipped with the machine (Fig.60) .

Entering gauge a calibration program, firstly return to zero (Fig.61.1), press button, display “CL.a 100” .Put the calibration caliper between the gauge and the balancer cabinet (61.2) and then press , it shows “a= XXX” which is changing with the gauge pulling.

(Fig.61.3). Return the gauge to zero and finish a calibration and goes back to 7.0 calibration program content.

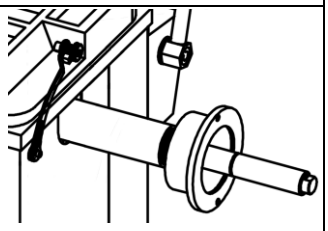
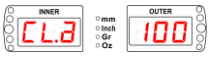
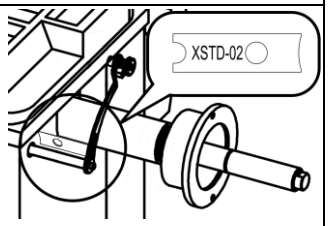
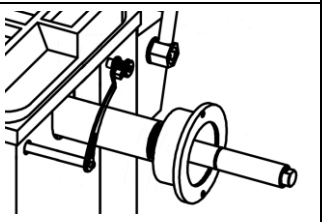
Step	Display	Operation
1		
2		
3		

Fig. 61 Gauge a Calibration

7.4 Gauge d calibration

7.4.0 Calibration tool

XSTD-02, a calibration caliper equipped

with the machine (Fig.60) .

7.4.1Gauge d calibration Step1 (Fig. 62.1)

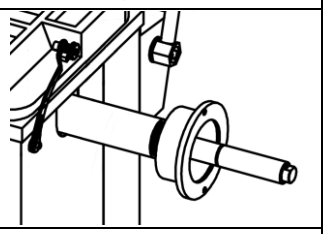
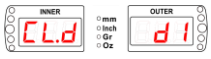
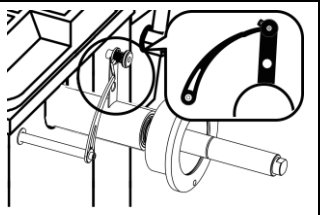
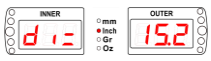
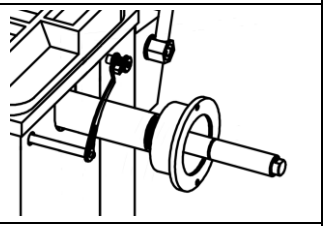
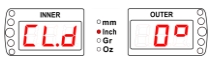
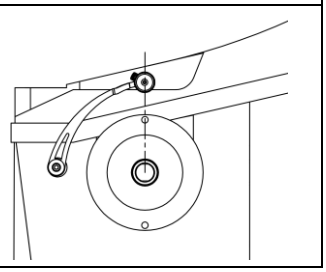
Setp	Display	Opearation
1		
2		
		
3		

Fig.62 Gauge d Calibration

Entering d calibration program, firstly return the gauge to zero (Fig.62.1), it shows “CL. d d0” .

7.4.2 Gauge d calibration Step 2 (Fig 62.2)

Press , it shows "CL. d d1". Put

the calibration caliper between the gauge and the balance shaft and then press , it shows "d= X.XX" which is changing with the gauge pulling.

7.4.3 Gauge d calibration Step3 (Fig. 62.3)

Press, laser indicator lights up. Make the gauge head at the same line with the laser indicator and then press, gauge d calibration is finished and goes back to 7.0 calibration program content.

8 Fault And Solution

8.1 Common code description

Table 7 Common Code Description

No.	Code	Description	Solution
1	“Err 00”	Lift car does return to place	Put down the tire life on the ground.
2	“Err 01”	Protective cover is open when pressing startup button	Close the protective cover. If error still exists, it means protective cover switch goes wrong . Refer to chapter 6.2.1, turn off the protective cover effective. After replacing the guard switch, turn it on again.
3	“Err 02”	Spinning speed does not reach the standard	Refer to chapter 6.1.3.8 to check motor spinning ; Check power board if motor is disabled ; Motor is enabled but shaft does not spin, check whether the belt is off or break ; If spinning normally but speed is not high, check the optical electricity encoder ; If speed display is normal but by eye less than 150r/min, check the power supply is 60Hz or 50Hz. Contact the manufacturer for correctness.
4	“Err 10”	Gauge A disabled	Power off and restart the machine. If error still exists, refer to 6.1.3.5 to check a. If a is abnormal, contact service people; turn off ad function as instructed in 6.4.10 and input a value manually before service.
5	“Err 11”	Gauge A has not been calibrated	Refer to 7.3 to calibrate it.
6	“Err 12”	Gauge A has not return to zero	Pull back a to the zero.
7	“Err 15”	Gauge D disabled	Power off and restart the machine. If error still exists, refer to 6.1.3.6 to check d. If d is abnormal, contact service people; turn off ad function as instructed in 6.4.10 and input ad value manually before service.
8	“Err 16”	Gauge D has not been calibrated	Refer to 7.4 to do calibration.
9	“Err 20”	Gauge B disabled	Power off and restart the machine. If error still exists, refer to6.1.3.7 to check b. If b is abnormal, check whether the connection is off or not (Fig.7). Contact service if not dealt with properly ; turn off b function as instructed in 6.4.12 and input b value manually before service.
10	“Err 21”	Gauge B has not been calibrated.	Refer to 7.5 to do calibration.
11	“Err CAL”	Factory settings has not been done.	Contact the manufacturer for instruction.
12	“Err Dat”	Gauge calibration process is wrong.	It means wrong operation during the calibration. Refer to Chapter 7 for correct calibration operation.
13	“ Err SYS ”	System fault	Contact the after sales service.

8.2 Fault code description and solution (Table 8)

Table 8 Fault Code and Solution

No.	Code	Description	No.	Code	Description
1	"Off Off"	Emergency stop with button	2	"Go Go"	measuring
3	" - - "	Sleeping status	4	"a= xxx"	Input a status
5	"d= xxx"	Input parameter status	6	"b= xxx"	Input b status
7	"a1= xxx"	Input a1 status	8	"a2= xxx"	Input a2 status
9	"d1= xxx"	Input d1 status	10	"d2= xxx"	Input d2 status
11	" 6" "	Cleaning position at 6 o' clock	12	" 12" "	At 12 o' clock position operation
13	" Opt "	Optimizing operation	14	" SPL "	Split operation
15	" Hid "	Spoke amount in SPL1 mode	16	" tol. CAL "	Motorcycle accessory tare weight removing operation
	" dyn bal "	Dynamic balance	18	"St.1" ~ "St. 3"	Static balance 1~Static balance 3
19	"ALU -1-" ~ "ALU -3-"	ALU balance mode 1~3	20	"EAL -1-" ~ "EAL -2-"	EALU mode 1~2

9. Appendix

9.1 E01 Electrical theory

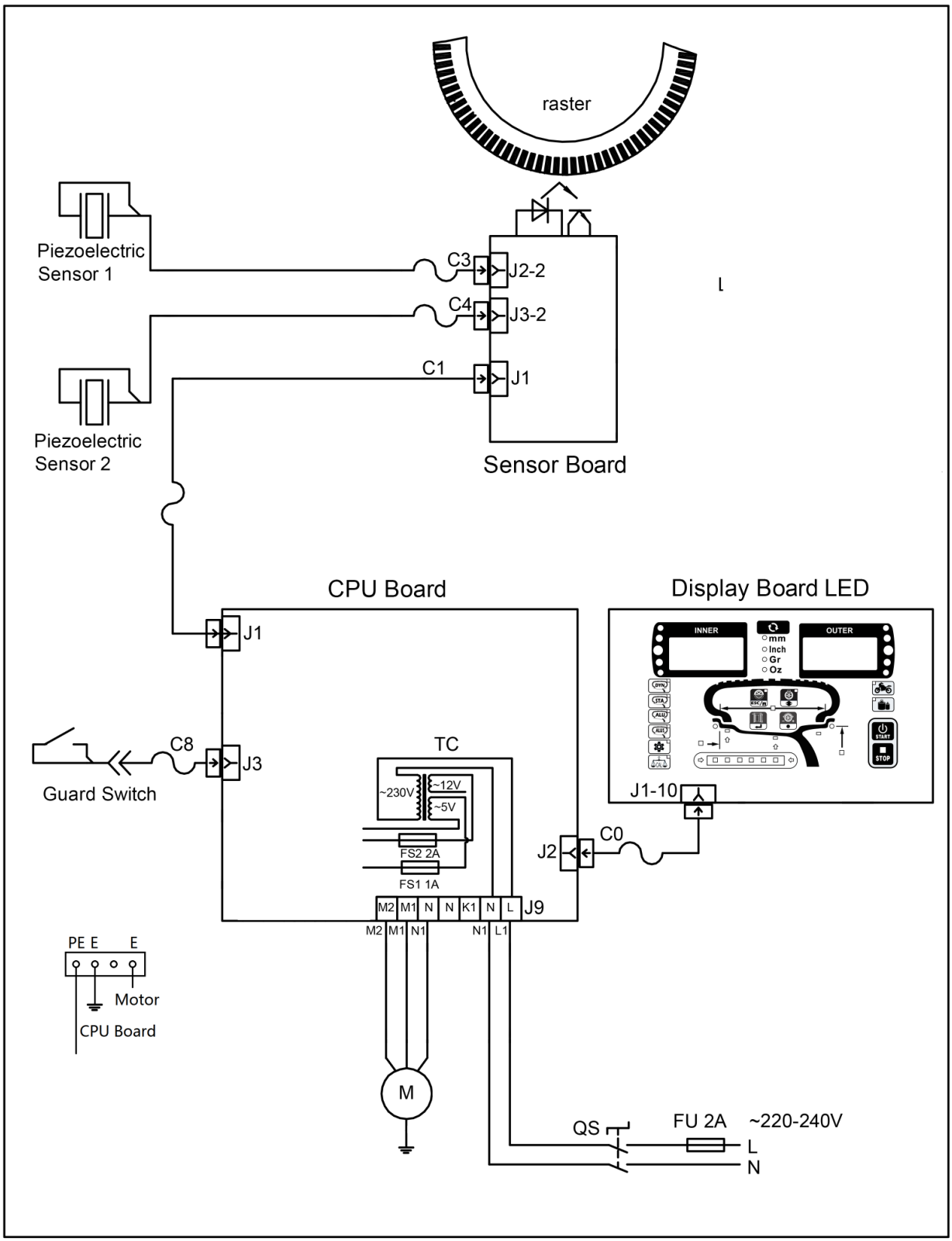


Fig.63 E01 Electrical Theory

9.1 E02 Electrical theory

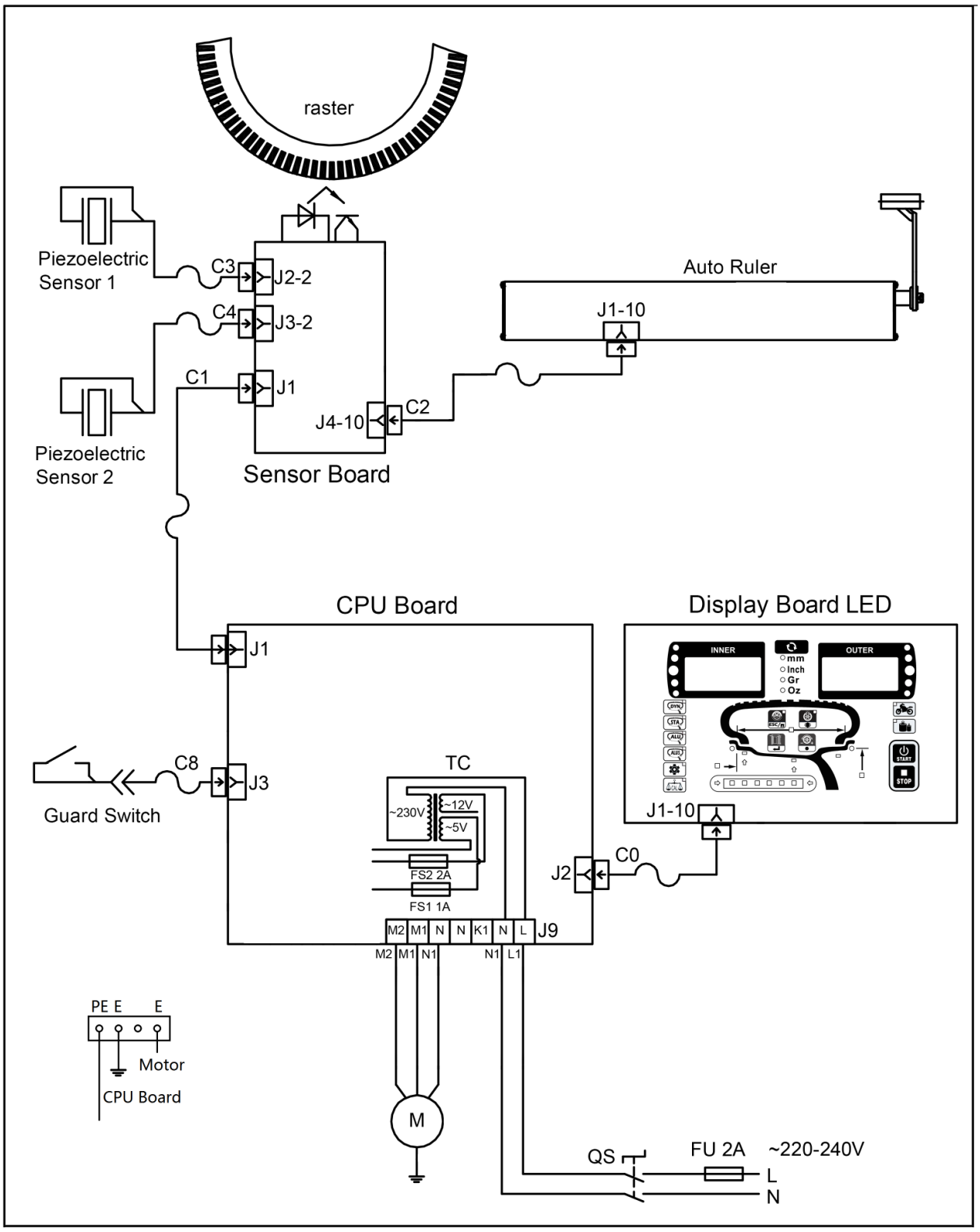


Fig.64 E02 Electrical Theory