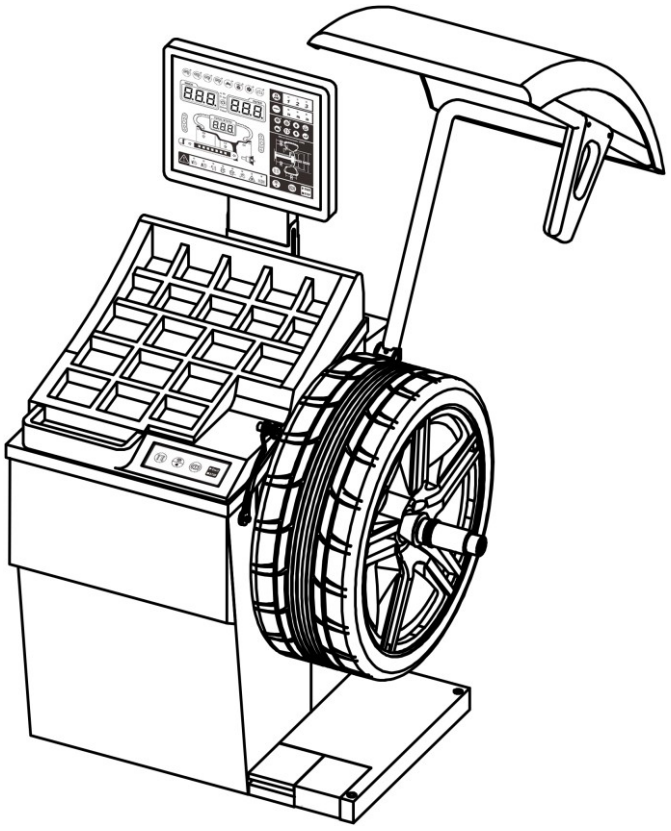


CAE-5039WB

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 Release Date: 20-09-2017

1 Safety Regulations 1

1.0 Relevant Safety Reminders 1

1.1 Safety Instructions 4

1.2 Safety Signs 5

2 Technical Specification 6

2.1 Overall Appearance 6

2.2 Control Panel 7

..... 1

2.3 2

2.4 Main Technical Specification 3

3 Transport and Storage 3

4 Installation 4

4.1 Unpack the Package 4

4.2 Installation Field 4

4.3 Parts Assembly 5

4.3.1 Shaft assembly 5

4.3.2 Guard assembly 5

4.3.3 5

4.4 Power and Air Supply Connection 6

4.4.1Main display control unit installation 6

4.4.2 Power supply connection 6

4.4.3 6

5 Starting to Use 6

5.1 Startup Self-check 6

5.2 Wheel Mounting and Dismounting 6

5.2.1 HW9610 Wheel mounting and dismounting 6

5.2.2 HW9620 Wheel mounting and dismounting 7

5.2.3 Mounting special wheels 8

5.3 Balance Operation 8

5.3.1 Standard Dynamic Balance 9

5.3.2 Static balance 11

5.3.3 OPT function 12

5.3.4 ALU balance 13

5.3.5 EALU balance 15

5.3.6 SPL function 17

5.3.7 Motorcycle balance 19

5.3.8 Rim radial runout and axial runout value measurement mode 20

5.3.9 Multi-user management 21

5.3.10 Balance weight material management 22

5.3.11 Usage of accessories 22

5.3.12 Usage of shortcuts 23

5.3.13 Additional functions 23

6 System Setup 25

6.0 System Settings Navigation 25

6.1.2 Usage information 25

6.1.1 Program information 25

6.1.2 Usage information 25

6.1.3 Error information 25
6.1.4 26
6.2 Wheel Guard Management（Fig.62） 28
6.2.1 Guard effectiveness setting 28
6.2.2 Guard control effectiveness setting 29
6.2.3 29
6.3 Balance Unit Setting（Fig.63） 29
6.3.1 29
6.3.2 29
6.3.3 29
6.3.4 29
6.4 30
6.4.1 Automatic gauge a unit 30
6.4.2 Automatic gauge a resolution 30
6.4.4 Automatic gauge d unit 30
6.4.5 Automatic gauge d resolution 30
6.4.6 Automatic gauge d startup default value 31
6.4.7 Automatic gauge b unit 31
6.4.8 Automatic gauge b resolution 31
6.4.9 Automatic gauge b startup default value 31
6.4.10 Automatic gauge a&d effectiveness setting 31
6.4.11 31
6.5 31

6.5.1 Electric beep setting 31
6.5.2 Electric beep sound setting 31
6.5.3 Sleeping function 31
6.5.4 Laser indicator function setting 32
6.5.5 Automatic gauge a&d lighting control setting 32
6.5.6 Motorcycle assisted function 32
6.5.7 Optimization （OPT）function setting 32
6.5.8 Split mode setting 33
6.5.9 Unbalance position locating and locking function 33
6.6 Accessory Management Function 33
7 Calibration Program 33
7.0 Calibration Program 33
7.1 Weight Calibration 34
7.1.0 Calibration tool 34
7.1.1 Zero calibration 34
7.1.2 Outside standard test weight calibration 35
7.1.3 Inside standard test weight calibration 35
7.2 Balance Shaft Zero Calibration 35
7.2.0 Calibration tool 35
7.2.1 35
7.2.2 Step 2 35
7.3 Gauge a Calibration 36
7.3.0 Calibration tool 36

7.4 36

7.4.0 36

7.4.1 36

7.4.2 Gauge d calibration Step 2 37

7.4.3 Gauge d calibration Step3 37

7.5 37

8 Troubleshooting 38

8.1Common Code Description 38

8.2Prompt Bar and Code Description 39

8.3 Error Code Description and Solutions 40

9 Appendix 41

9.1 Electrical Principle 41

9.1.1 HW9610 principle 41

9.1.1 HW9620 principle 42

9.2 Pneumatic piping principle 43

9.2.1 HW9620principle 43

1 Safety Regulations

1.0 Relevant Safety Reminders

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

– 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

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 Instructions

- The machine should only be used by authorized and properly trained personnel. Improper operation will lead to wrong measuring results.
- Calibration must be done in strict accordance with the 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.
- Wheel guard must be set in the effective protection state.
- Violating the transport and operation instructions 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 fails to follow 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 Signs

	Warning! All switches are powered on!
	Do not apply any force to the balance shaft when moving the machine!
	Mind your hands when installing and tightening the rim!
	The machine will protectively stop working when opening the guard!
	Safely earthed!
	Laser marker is working. Do not look straight at it lest eyes should be hurt.
	No trampling!
	Mount and dismount the wheel with the foot pedal when the wheel guard is open.
	Stop measurement and brake the wheel with the foot pedal when the wheel guard is closed.

2 Technical Specification

2.1 Overall Appearance

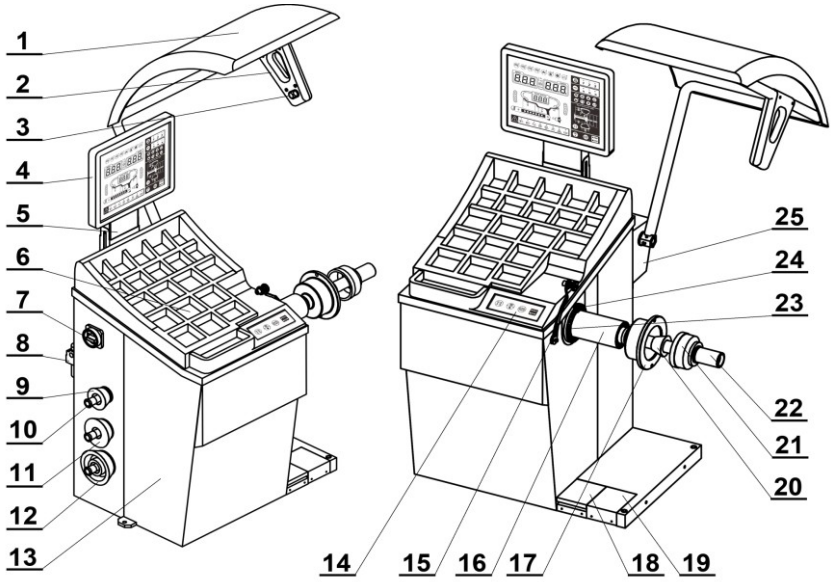


Fig.1 appearance structure

Table 1 appearance structure description

No.	description	CAE-5039TC	CAE-5049TC
1	Wheel guard	√	√
2	Ultrasonic width gauge B holder	√	√
3	Ultrasonic sensor	√	√
4	Main display control unit	√	√
5	Display holder	√	√
6	ABS cover and weight tray	√	√
7	Power switch	√	√
8	Atomized lubricator and oil-water separator		√
9	No.2 taper sleeve	√	√
10	Taper sleeve rod	√	√
11	No.3 taper sleeve	√	√
12	No.4 taper sleeve	√	√
13	Cabinet	√	√
14	Front control panel	√	√
15	Automatic gauge	√	√
16	Balance shaft	√	√
17	Fitting surface flange plate	√	√
18	Foot pedal		√
19	Standby switch	√	√
20	No.1 taper sleeve	√	√
21	Steel ring nylon bowel	√	√
22	Quick change nut/Adaptor	quick change nut	adaptor
23	Sticking weight light	√	√
24	Laser marker	√	√
25	Wheel guard bag	√	√

2.2 Control Panel

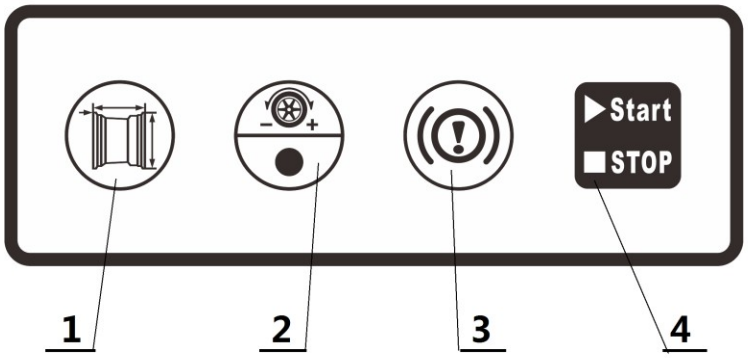


Fig.2 front control panel

Table 2 Front control panel function description

No.	Description	No.	Description
1	Wheel parameter shift button	2	Data input(scrolling forwards and backwards with the wheel) /automatically locating unbalance position button
3	Stop /Lock wheel button	4	Start / Stop

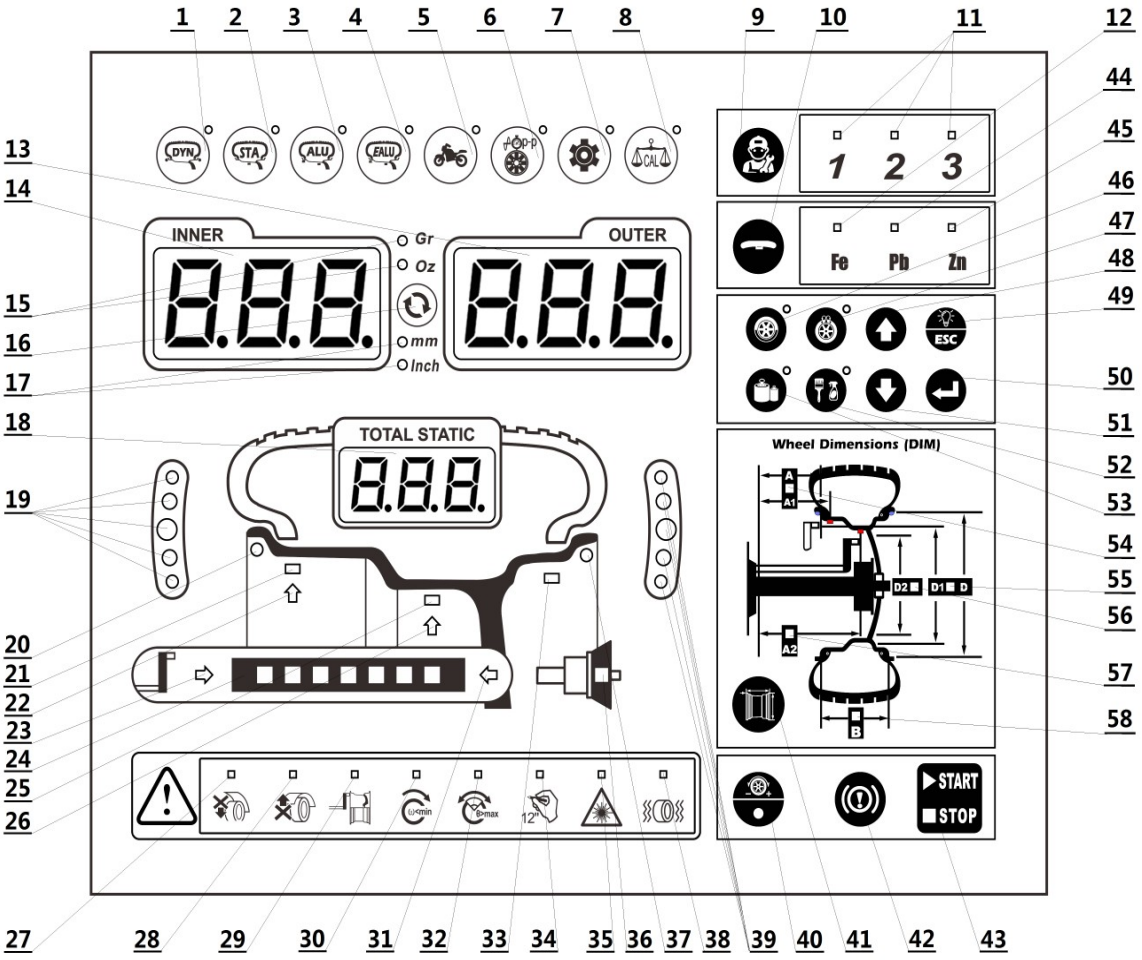


Fig.3 main display control unit

Table 3 display control unit functions

No.	Description	No.	Description
1	Dynamic balance mode option/indicator light	2	Static mode option/indicator light
3	ALU balance mode option/indicator light	4	EALU mode option/ indicator light
5	Motorcycle balance button/indicator light	6	Rim swing and pulsation measurement mode selection/indicator light
7	System settings option button/indicator light	8	Calibration /indicator light
9	Multi users shift button	10	Counterweight type selection button
11	User indicator light	12	Fe counterweight option
13	Outer unbalance display window	14	Inner unbalance display window
15	Weight unit: gram/OZ	16	Weight or length unit shift button
17	Length display unit : mm/inch	18	Static balance value display window/function display window
19	Inner unbalance sticking position indicator light	20	Inner unbalance clamping position indicator light
21	In ALU mode, sticking position 1 indicator light	22	In ALU mode，sticking position 1 arrow indicator light
23	Pull gauge outwards indicator light	24	Automatic gauge assisted sticking weight position indicator light/ assisted progress indicator light
25	In ALU mode, sticking position 2 indicator light	26	In ALU mode，sticking position 2 arrow indicator light
27	State prompt: guard not closed indicator light	28	State prompt: guard not open indicator light
29	Error prompt: automatic gauge AD error indicator light	30	Error prompt: too low rotation speed indicator light
31	Pull gauge backwards indictor light	32	Error prompt: too big split angle indictor light
33	In ALU mode，sticking position 3 indicator light	34	This light indicates marking on the outside of tire at 12 o' clock position
35	State prompt: laser illumination for protection indicator light	36	Accessories application indicator light
37	Outer unbalance clamping weight position indicator light	38	Balancing process disturbance indicator light
39	Outer unbalance sticking weight position indicator light	40	Data input (scrolling forwards and backwards with wheel) /automatically locating unbalance position button
41	Wheel parameter shift button	42	Stop /lock wheel button
43	Start / stop	44	Pb counterweight option
45	Zn counterweight option	46	In dynamic or static mode, (OPT) button/indicator light
47	In ALU and EALU mode, split button/indicator light	48	Up page button / add "1" button。
49	Back，exit / lighting control button	50	Enter button
51	Down page button / minus "1" button。	52	Clean by turning over 180 degrees
53	Min. unbalance value check button/indicator light	54	Wheel parameter a，a1 position indictor light
55	Wheel parameter d，d1 position indicator light	56	Wheel parameter d2 position indicator light
57	Wheel parameter a2 position indicator light	58	Wheel parameter b position indicator light

2.3 Main Functions

Table 4 functions description of all models

Description	CAE-5039WB	CAE-5049WB
Standard dynamic balance	√	√
Static mode1，static mode 2，static mode3	√	√
ALU1~ALU7 balance mode	√	√
EALU1~EALU2 balance mode	√	√
OPT balance in dynamic and static balance mode	√	√
SPL in ALU and EALU mode	√	√
Rim radial runout and axial runout measurement mode	√	√
Motorcycle standard dynamic balance	√	√
Motorcycle standard static balance	√	√
Motorcycle accessory reset function	√	√
Gram/oz, mm./in. shift function	√	√
Automatic gauges (a-d) and lighting function	√	√
Ultrasonic automatic gauge (b) function	√	√
Automatic gauge assisted weight sticking function	√	√
Weight sticking/cleaning position shift function	√	√
12o′ clock weight sticking position laser indicating function	√	√
6o′ clock cleaning sticking position laser indicating function	√	√
Automatic locating and locking function	√	√
Self- calibration function	√	√
Automatically clamp shaft		√
Manually clamp shaft	√	
Guard protection function	√	√
Trouble self check and diagnosis function	√	√

2.4 Main Technical Specification

Table 5 measurement range

Power supply (single phase)		220 V / 50 Hz	
		110 V / 60 Hz	
Air supply: only for DCB-E22		0.45-0.8 MPa	
Protection grade		IP 54	
Power consumption		180W	
Max RPM		160 r/min	
Cycle time		Average 7-11s	
Measurement range	length-a-	10 mm — 350 mm	0.4 "— 13.8"
	rim diameter -d-	254 mm — 813 mm	10.0" —32.0"
	wheel width -b-	38 mm — 636 mm	1.5" — 25.0"
	wheel diameter	≤ 1100 mm	≤ 43.3"
	wheel weight	< 75 kg	< 165 lb
Measurement error		≤ ±1g	0.1 oz
Phase error		≤ ±1°	
Automatic gauge error		±1mm	±0.1"
Net weight		122 kg (E21)	268.9 lb
		136 kg (E22)	299.8 lb
Average noise		<70dB	
Working environment		Temperature -20℃～50℃	
		Relative humidity≤85%	

3 Transport and Storage

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

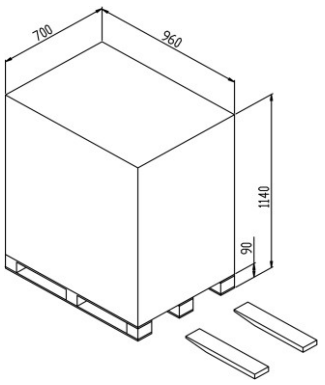


Fig.4 packing and transport

Transfer the package with a fork lift with relevant

capacity as shown in Fig.4.

4 Installation

4.1 Unpack the Package

- Check the package first. If there is any doubt, stop unpacking and contact the supplier and shipping agent immediately.
- If the package is in good condition, open it and check to make sure that each component quantity 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.
- If there is any question, do not use the machine and contact the supplier immediately.

4.2 Installation Field

- The working environment should comply with the requirement in 2.4. The ground should be level and solid without vibration.

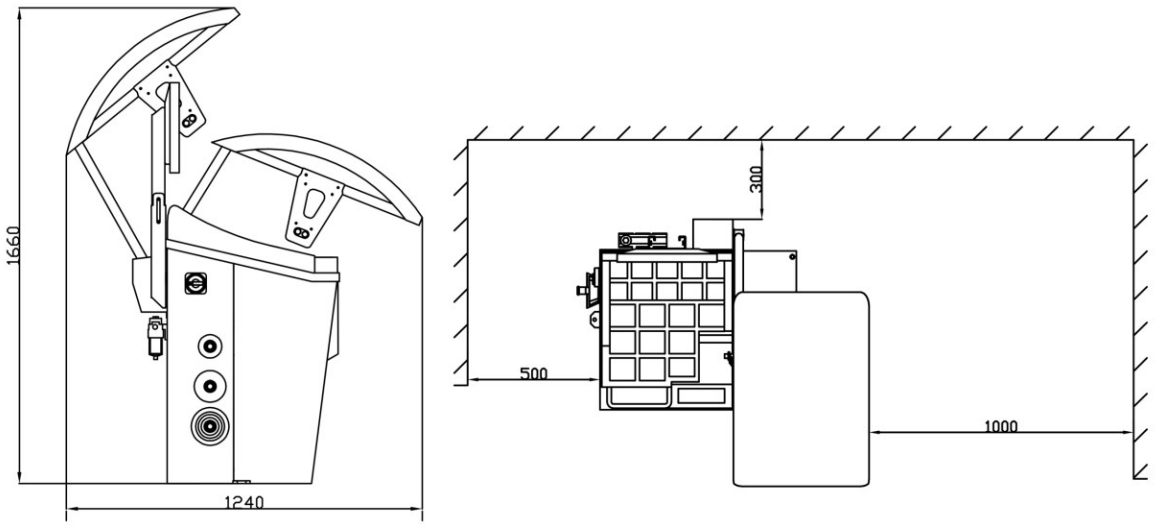


Fig.5 space requirement

- Power sockets should match the power requirements in 2.4. For CAE-5049WB, air supply should be provided too in accordance with requirement in 2.4.

- Space of installation should meet the size requirement described in Fig.5 to make sure that all the components work without any limitation.

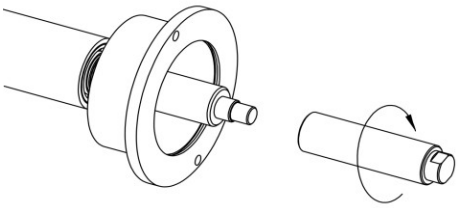


Fig.6 E21 shaft lead screw assembly

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

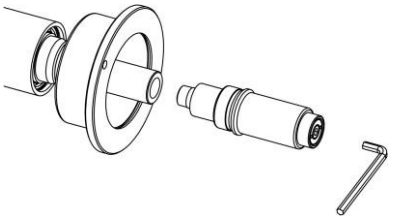


Fig.7 E22 automatic shaft assembly

4.3 Parts Assembly

4.3.1 Shaft assembly

Take out the lead screw parts (Fig.6)or automatic shaft parts (Fig.7) from the accessory box and assemble them as shown in the figures below.

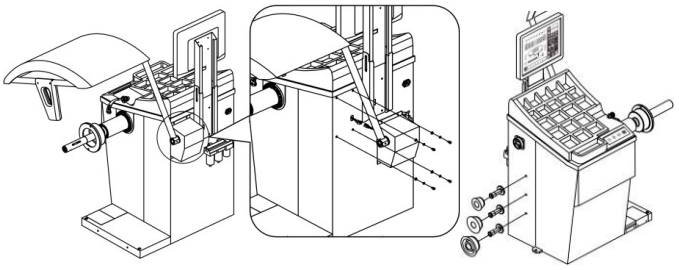


Fig.8 guard , rod sleeve assembly

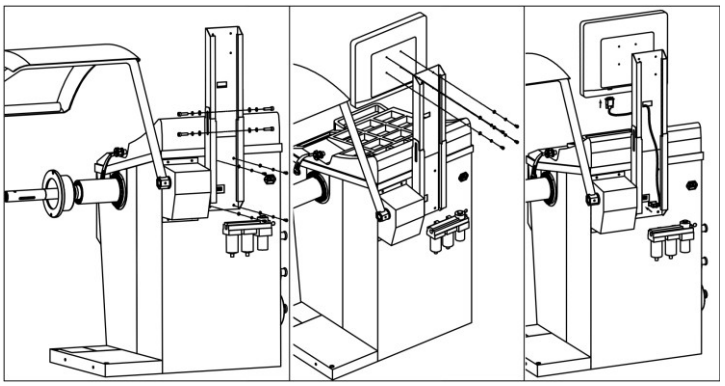


Fig. 9 main display control unit installation

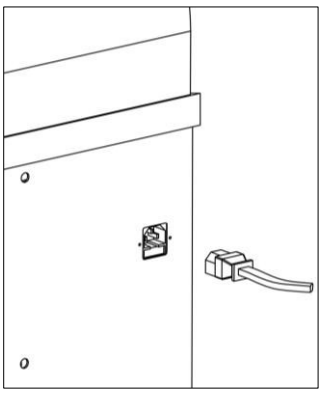
4.3.2 Guard assembly

The guard bag assembly is shown in Fig. 8

Connect the guard switch plug first and then fix the bag in the corresponding position.

4.3.3 Taper sleeve installation

(Fig.8)



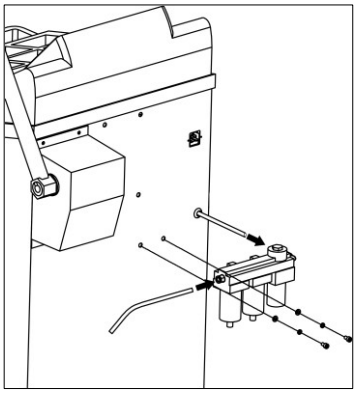


Fig.10 power supply connection Fig.11 air supply connection

4.4 Power and Air Supply Connection

4.4.1Main display control unit installation.

Connect display unit as shown in Fig.9 and then connect the VGA cable.

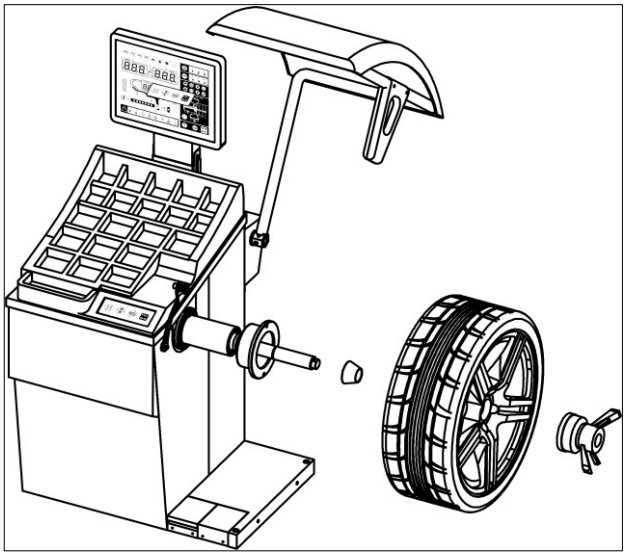
4.4.2 Power supply connection

Refer to Fig. 10 to connect and plug the other end in the power socket.

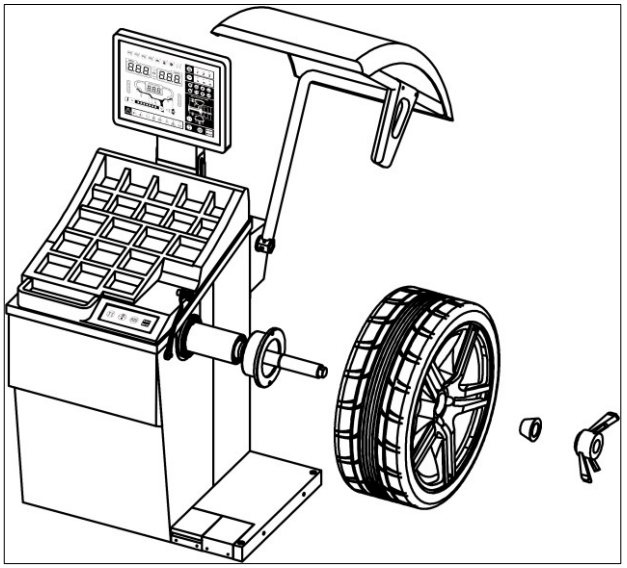
NOTE: The power socket must comply with the local standard and requirement in point 2.4 in this manual.

4.4.3 Air supply connection (Fig.11)

Air supply must comply with the requirement in point 2.4 in this manual. Adjust the air according to Air Treatment FRL Operation Manual.



wheel front direction mounting



wheel reverse direction mounting

Fig.12 E21 wheel mounting

5 Starting to Use

5.1 Startup Self-check

Switch on the balancer, system start self-check and then enter the preset balancing mode. The default mode is dynamic mode.

5.2 Wheel Mounting and Dismounting

matches with the rim hole size to ensure the central hole is within the range of the cone and then mount the wheel as shown in Fig.12. Finally tighten the quick change nut.

Dismount the wheel by screwing off the quick change nut and removing the wheel and sleeve.

5.2.3 Mounting special wheels

5.3 Balance Operation

Fig.16 shows all balance modes, which are available for different wheel types and different customers' preference.

Except static balance, all belong to standard dynamic balance.

In non –motorcycle balance modes, EALU mode is highly recommended as it is much more convenient, faster and precise. It is a good substitute for traditional ALU balance mode.

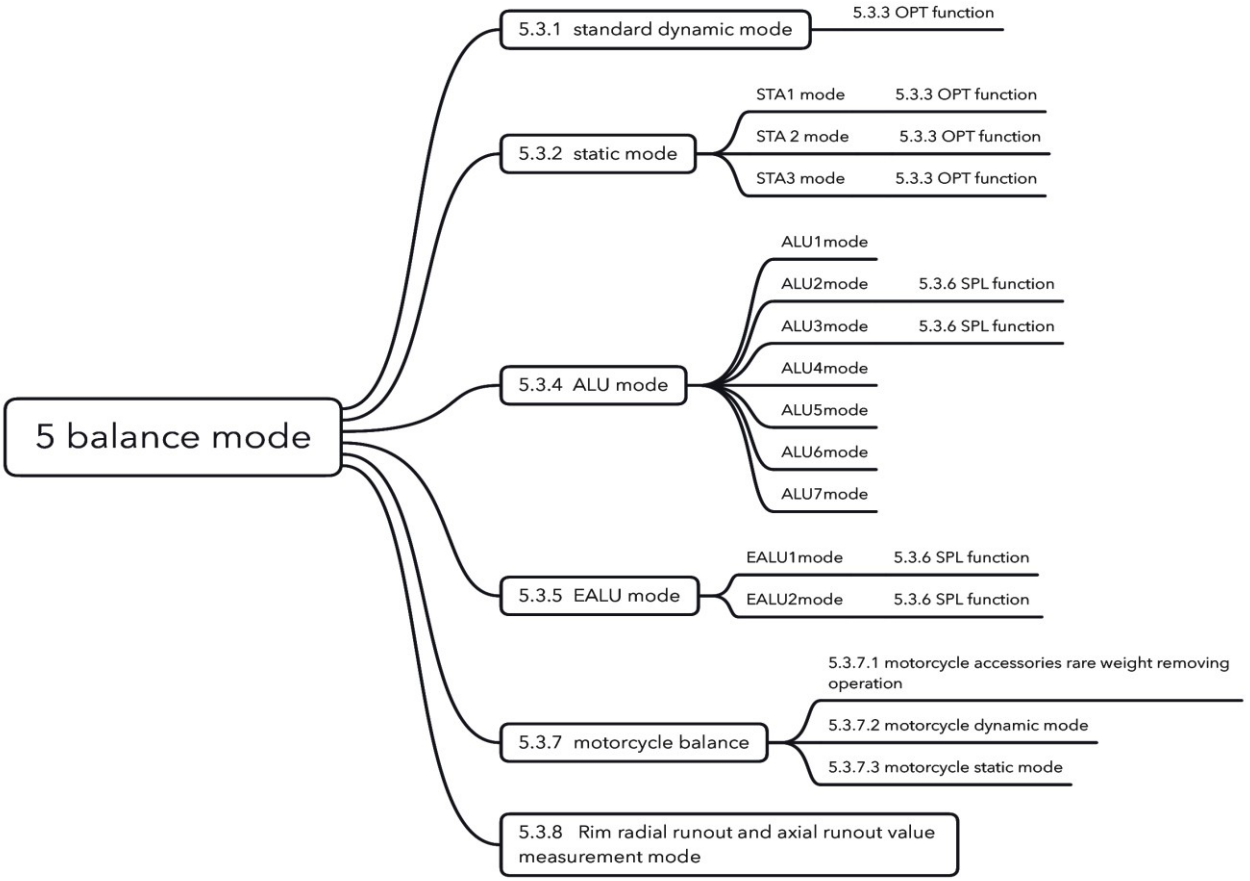
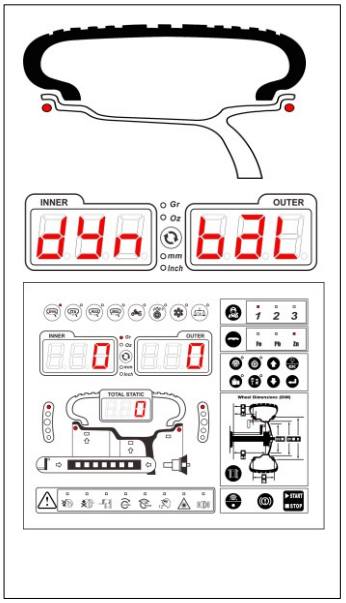


Fig.16 balance mode



5.3.1 Standard Dynamic Balance

The system default starting model is standard dynamic balance. (Fig.17) In other modes, press DYN button to change into dynamic mode.

Dynamic balance is a vector balance mode, so for the wheel, the width of which is smaller than 2.5 inches, instead of dynamic balance, static balance is recommended.

5.3.1.1 Wheel parameter input

Input wheel parameters as shown in Fig.19 manually or automatically. Pull out the automatic gauge(Fig.18) until against the rim edge and then complete input.

Fig.17 dynamic mode

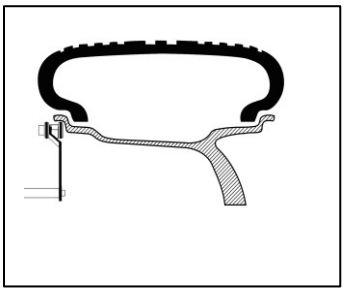


Fig.18measure parameter

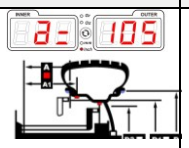
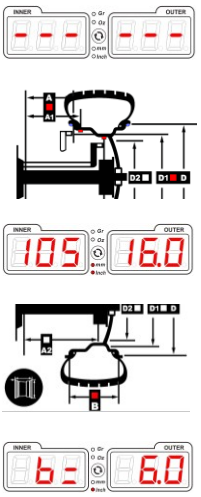
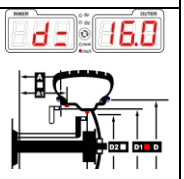
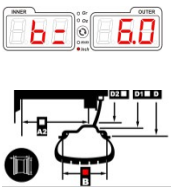
No.	Parameter	Manually input		Input with automatic gauge	
1	" a"	Press button to enter "a" input screen, hold on button, rotate the wheel forwards or backwards to input distance a = 105 mm		Pull out the automatic gauge and measure "a" and "d" according to Fig.18. After input automatically, it beeps one time and meantime displays "a" 105 mm and "d" 16.0 Inch。 Gauge back, it enters Step3 automatically: input "b" . Close the guard, it will automatically measure and input "b" value.	
2	" d"	Press button to enter "d" input screen, hold on button, rotate the wheel forwards or backwards to input diameter d = 16.0 Inch			
3	" b"	Press button to enter "b" input screen, hold on button, rotate the wheel forwards or backward to input width b = 6.0 Inch			

Fig.19 wheel parameter input

5.3.1.2 Standard dynamic balance operation

Refer to Fig.20 for standard dynamic measurement and balance operation.

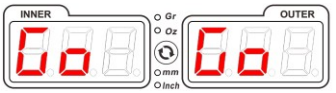
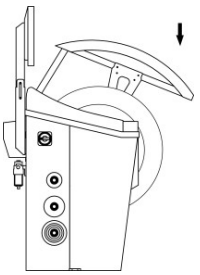
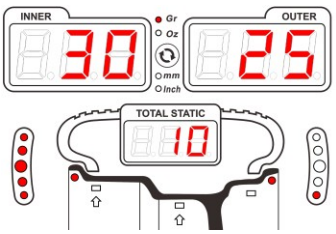
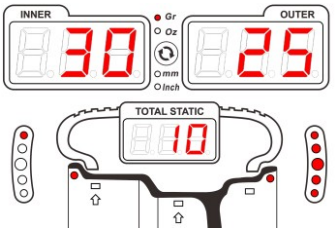
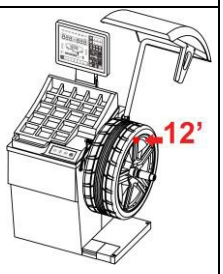
step	illustration	reference pictures	
1	Balance measurement: Close the guard, the balancer automatically enter balance measurement state. ... ... After measurement, it enters step 2 with a beep sound.		
2	Inner balance (big value priority): The wheel automatically stops and locks at the inner position where all indicator lights are on. It means at 12 o' clock position unbalance value is 30g. Take a 30g weight and clamp it on 12 o' clock position. Inner balance operation is completed.		
3	Outer balance: Press to locate outer unbalance position automatically. The wheel stops and locks at the outer position where all indicator lights are on. It means at 12 o' clock position unbalance value is 25g. Take a 25g weight and clamp it on 12 o' clock position. Outer balance operation is completed		

Fig.20 standard dynamic balance measurement

5.3.2 Static balance

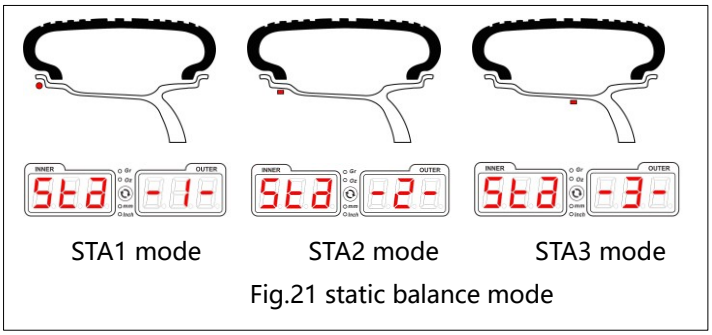


Fig.21 static balance mode

In any other measurement mode, press STA button to change into STA1 measurement mode. Continuously press STA to shift between STA1, STA2 and STA3. Wheels can achieve moment balance with the rotating shaft through static balance. If the balancer changes into static measurement mode after standard dynamic balance measurement, balancing operation can be done directly by skipping the measurement process shown in 5.3.2.1.

5.3.2.1 Wheel parameter input

Same as 5.3.1.1,, input 3 parameters of the wheel. Although Static balance only involves diameter "d, yet 3 parameters are suggested to input in order to make it easy to shift between the different modes.

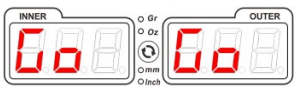
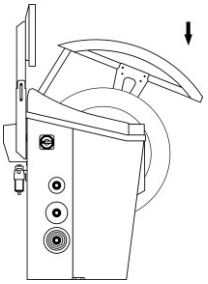
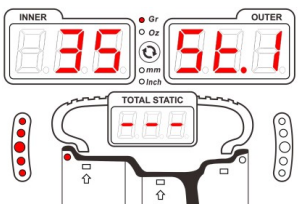
step	illustration	reference pictures	
1	Static balance measurement: Close the guard, the balancer automatically enters static balance measurement state. After measurement, it enters step 2 with a beep sound.		
2	Static balance operation: The wheel automatically locks at the inner position where all indicator lights are on. It means at the 12 o' clock position unbalance value is 35g. Take a 35g weight and clamp it at this position to complete operation.		

Fig.22 static balance measurement

5.3.2.2 Static balance measurement（taking STA1 as example）

5.3.2.3 Difference between STA1, STA2 and STA3

The balance 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.

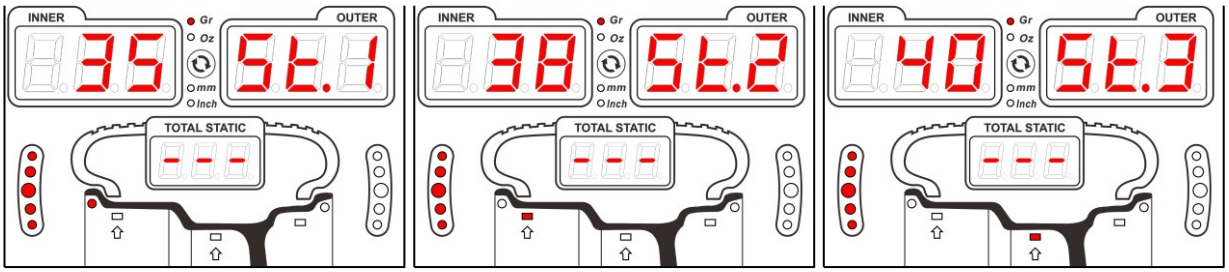


Fig.23　difference between STA1，STA2 and STA3

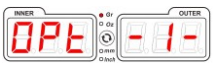
5.3.3　OPT function

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

5.3.3.1　Start OPT

In standard dynamic or static mode, press to start this function. When the total static balance value is less than the set value stated in chapter 6.5.7, 

will appear meaning OPT is needed and automatically returns to the current state. When the condition is allowable, it enters OPT1. The balance position will be unlocked automatically.

5.3.3.2　Step 1 

First, 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 or to enter OPT2.

5.3.2.2 Static balance measurement（taking STA1 as example）

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 or to enter OPT3.

5.3.3.3 Step 3

5.3.3.3.1 Doing OPT measurement

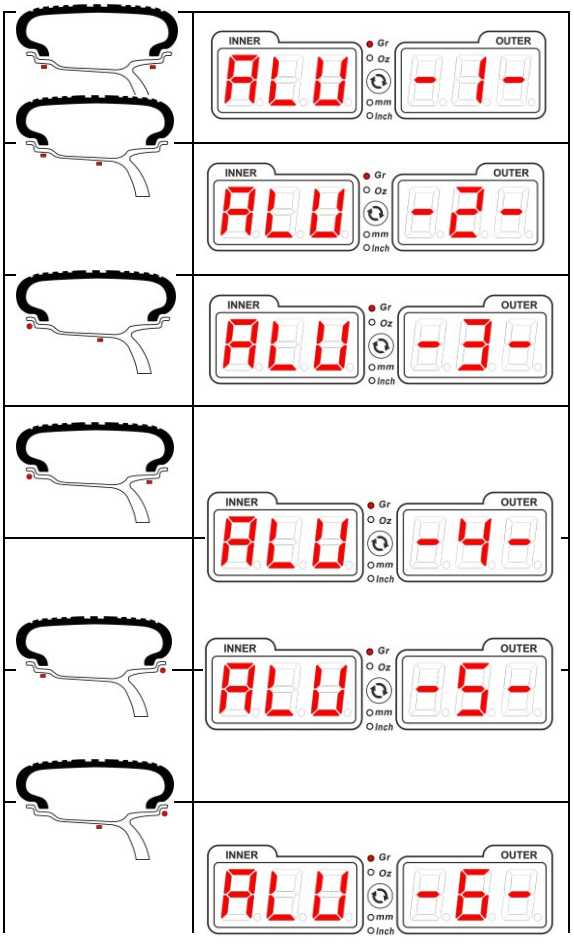
Close the guard, start OPT measurement , When finished, it shows , 15g residual unbalance value (supposed) after OPT. Rotate the wheel till all indicators outside are lighted, , mark the rim at 12 o' clock with a chalk.

5.3.3.3.2 Optimizing rim and tire mounting

Remove the rim from the balancer, with the aid of the changer, refit the rim and tire with the reference mark coinciding. The OPT is finished. Press any button, it shows and goes back to the previous measurement state.

5.3.3.4 Exit OPT

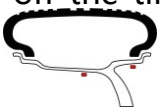
During measurement , OPT can be stopped by pressing or and the balancer goes back to the previous measurement state.



5.3.4 ALU balance

In any other measurement mode, pressing button can change into

Remove the wheel from the balancer, take off the tire from the rim with a tire



ALU1 mode. Keep pressing

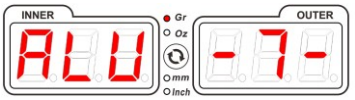


Fig. 24 ALU modes

button can change between ALU1-ALU7 modes（Fig.24）

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

5.3.4.1 Wheel parameter input

Same as Chapter 5.3.1.1，input 3 parameters of the wheel. On the basis of the 3 parameters and the form of the alloy rim,the balancer will automatically calculate the physical size of the corresponding weight sticking position and then perform balancing.

5.3.4.2 ALU balance measurement

Take ALU2 as example and refer to the ALU measurement process shown in Fig.25

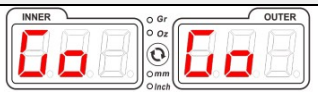
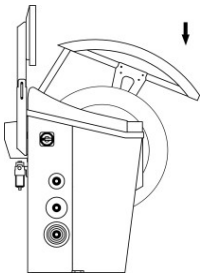
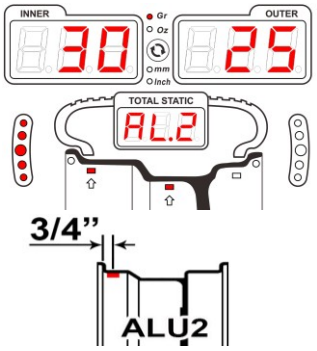
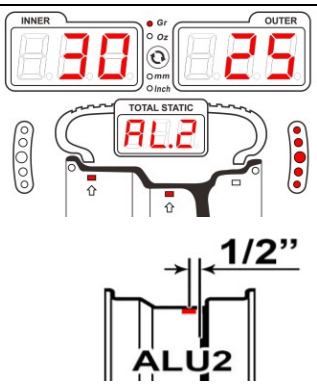
step	illustration	reference pictures	
1	Balance measurement： Close the guard , the balancer automatically enter ALU2 measurement state. ... ... After measurement, it enters step 2 with a beep sound.		
2	Inner balance（big value priority）： The wheel automatically stops and locks at the inner position where all indicator lights are on. It means at 12 o’ clock position unbalance value is 30g. Take a 30g weight and stick it on the position where rim inwards 3/4” and laser mark 12 o’ clock coincide. Inner balance operation is completed.		
3	Outer balance： Press to locate outer unbalance position automatically. The wheel stops and locks at the outer position where all indicator lights are on. It means at 12 o’ clock position unbalance value is 25g. Take a 25g weight and stick it on the position where flange plate inwards 1/2” and laser marked 12 o’ clock coincide. Outer balance operation is completed.		

Fig.25　ALU2 balance operation

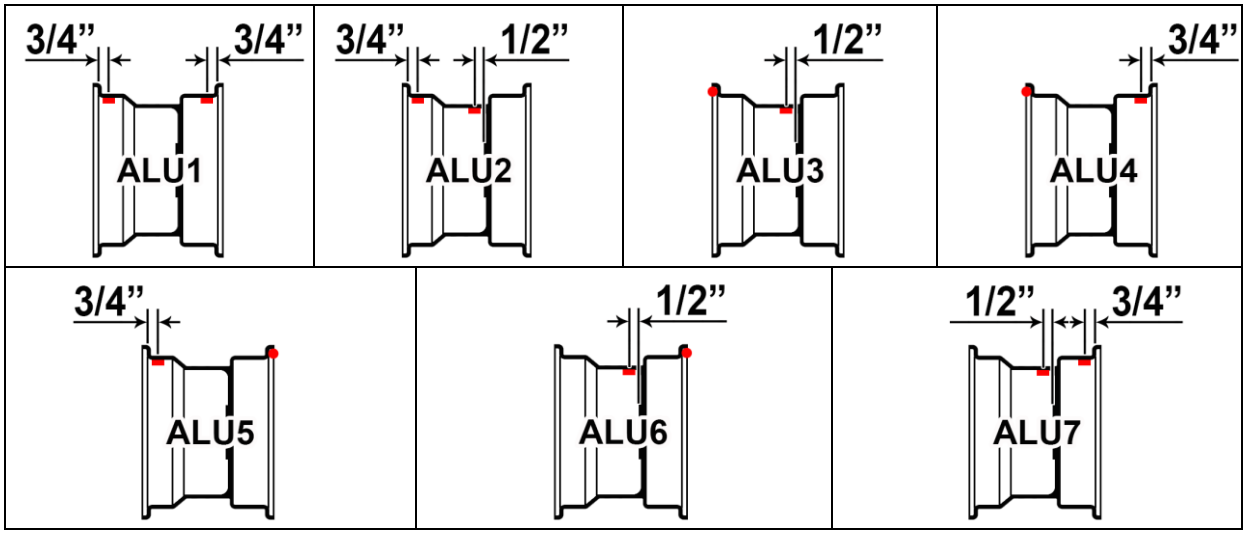


Fig.26 ALU1-7mode weight sticking and clamping position

Where to stick the weight depends on the rim shape. Choose the longer distance surface and then stick or clamp the weight as shown in Fig.26 and then ALU balance is completed.

5.3.5 EALU balance

EALU balance is a highlight of this balancer. It performs precise AlU balancing operation with the aid of automatic gauges. There are two modes: EALU1 and EALU2.

5.3.5.1 Entering EALU mode and wheel parameter input (Fig. 27)

In any measurement mode，pull out the gauge to position 1 and then to position

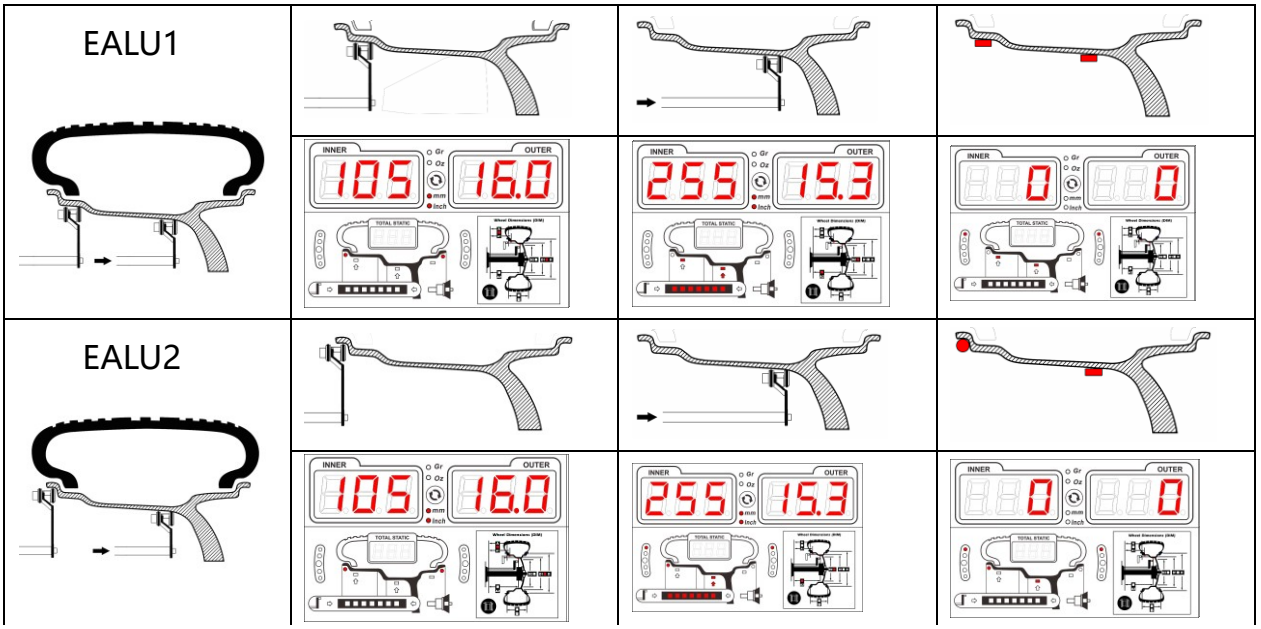


Fig.27 EALU balance measurement mode

2，then gauge back. The balancer will automatically enter the selected mode by calculating the rim structure and measured position.

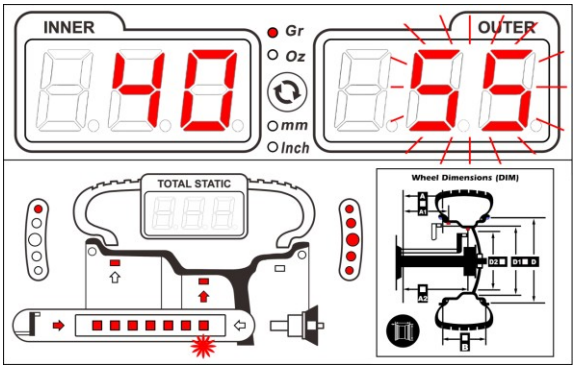


Fig.28 EALU balance measurement

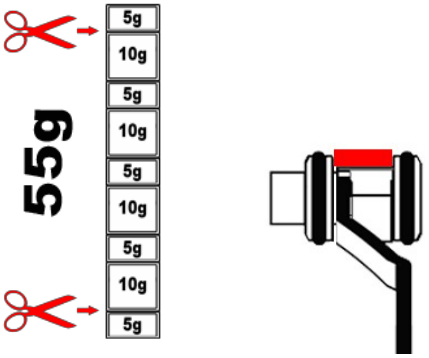


Fig. 29 clip weight on the end of the gauge

5.3.5.2 EALU balance measurement

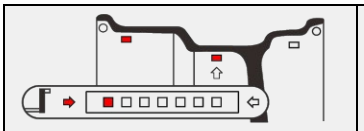
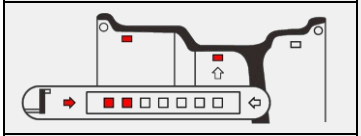
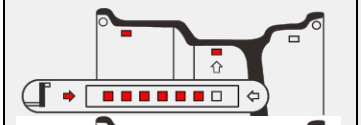
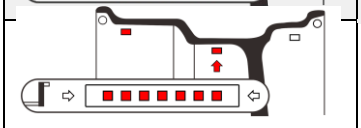
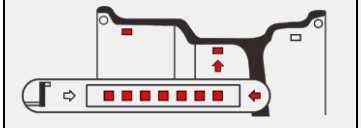
Same as other modes, close the guard to start measurement. When finished (for example EALU1，Fig.28)，it will stop automatically and lock the inner or outer maximum unbalance position.

5.3.5.3 EALU sticking weight operation

5.3.5.3.1 EALU outer sticking weight

At the unbalance position(Fig.28 outer 55g)，the outer reading flashes and meantime the arrow indicates pulling out the gauge. Take a 55g weight，remove the back cover from it and clip it on the end of the gauge with the glue face up（Fig.29）

Pull out the gauge, operate as shown in Fig.30，stick the weight firmly on the indicated position to complete outer weight

	Pull out the gauge in the arrow direction;
	The indicator changes with the length; The beeping becomes nearer and faster as approaching the target.
... ...	
	
	Long beeping means reaching the sticking position
	the beeping becomes nearer and faster as approaching the target.

sticking operation.

Fig.30 EALU2 sticking optical sound prompt

5.3.5.3.2 EALU inner sticking weight operation

Press  to automatically locate and lock the inner unbalance position. In EALU1 balance mode，inner and outer balance operation are the same. See Fig.31

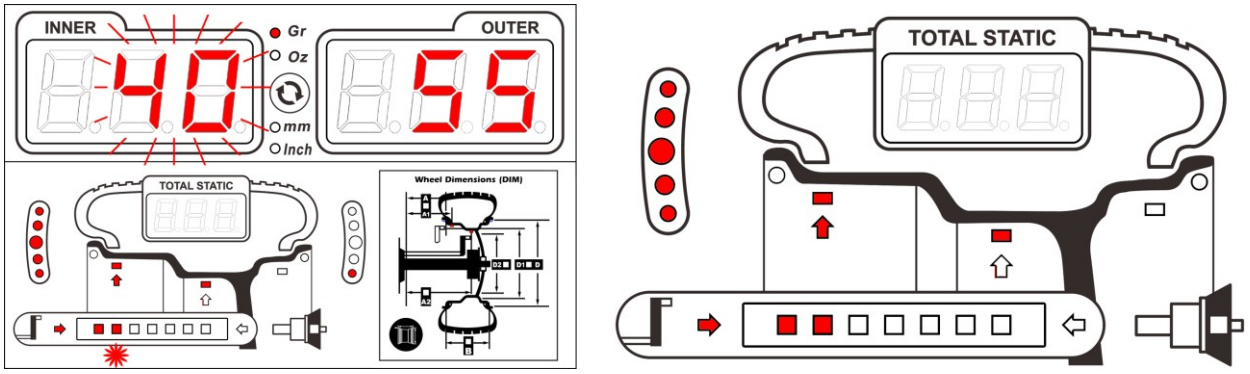


Fig.31　EALU1 inner unbalance position

In EALU2 balance mode，inner is clamping weight operation (see Fig.20.2) . Clamp the weight shown in “INNER” on the position indicated by the laser.

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. It has two modes,SPL1 andSPL2, which can be selected by the settings in chapter 6.5.8. In ALU2,ALU3 and EALU mode, if there is unbalance outside， press  to enter SPL operation. During SPL operation, press  or  can stop it.

5.3.6.1　SPL1 mode

The first step in SPL1 mode is to select the number of spokes.（Fig.32）

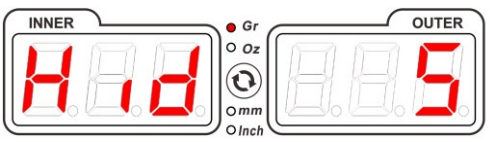


Fig.32 select the number of spokes in SPL1mode

5.3.6.1.1 Select the number of spokes

Press and hold on  button and at the

same time rotate the wheel, the amount of spokes (ranging from 3 to 10)can be input fast（Fig.33）.

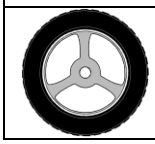
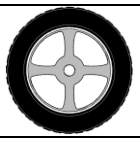
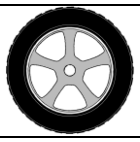
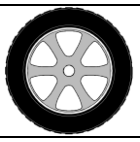
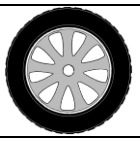
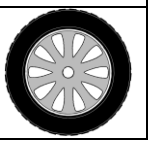
Hid=3	Hid=4	Hid=5	Hid=6	Hid=7	Hid=8	Hid=9	Hid=10
							

Fig.33 Split according to the number of spokes

5.3.6.1.2 Confirm spoke phase

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

Fig.34 confirm the phase

（Fig.34）.

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

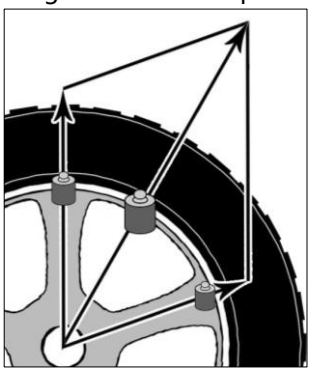


Fig.35 vector split

（Fig.35）.

SPL1 is convenient to do for regularly distributed spokes. However, there is a limitation for other structure spokes. For instance, the spokes in Fig. 36 can only be split in this way. While in Fig.37, neighboring spokes cannot be split.

Fig. 36 SPL1

5.3.6.2 SPL2 mode

SPL2 is a more flexible mode which allows unbalanced

Fig.37 SPL2

neighboring spokes to be split.

5.3.6.2.1 Select the first spoke

Select Spoke1 near the unbalance position（Fig.38）, at 12o' clock press  or  to confirm.

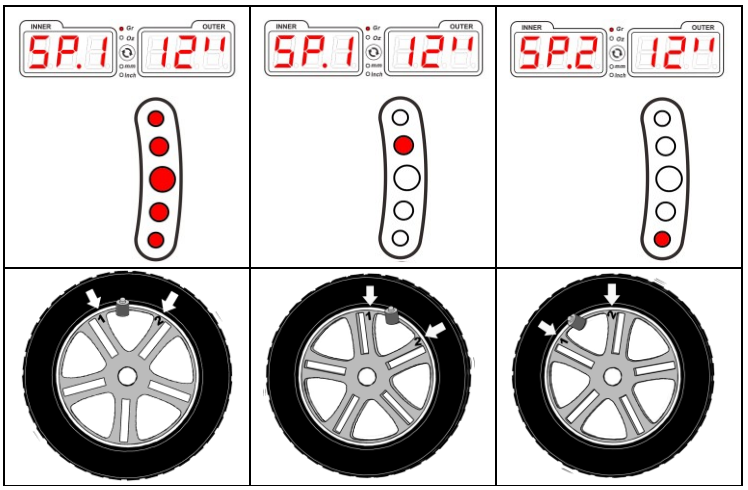


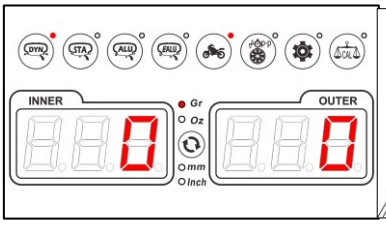
Fig.38 SPL2 split operation

5.3.6.2.2 Select the second spoke

Select Spoke 2 near the unbalance position2 （ Fig.38 ） . At 12 o' clock press  or  to confirm. SPL2 split is finished.

Same as SPL1, two unbalance positions will appear after split and the sticking positions are behind the spokes. The weight and position of the two counterweights are equivalent to the original one weight.（ Fig.35）

5.3.7 Motorcycle balance



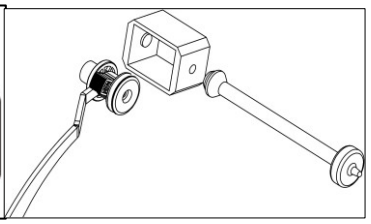


Fig.39 motorcycle balance modeFig.40 extension gauge installation

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.39）

As instructed in Fig.41, install the special clamp and extension gauge.（fig.40）

5.3.7.1 Motorcycle accessory tare weight removing operation

The balancer provides a special motorcycle accessory tare weight removing function, which means removing the tare weight of the accessory to ensure more precise measurement.

Press  to enter tare weight removing operation. (Fig.42) . Close the guard to start tare weight removing operation. When measurement finished, both inner and outer display 0,0 . Tare weight removing is finished.

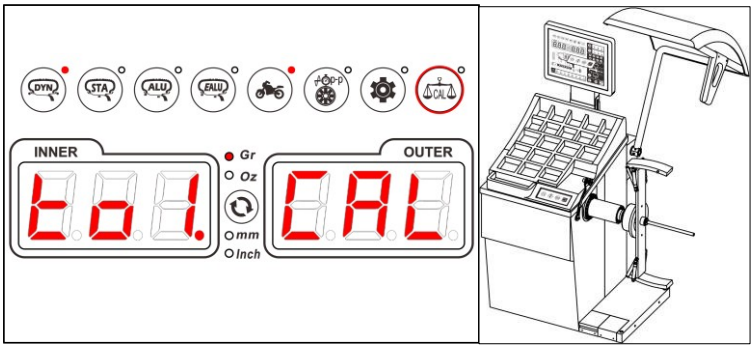


Fig. 42 motorcycle accessory tare weight removing

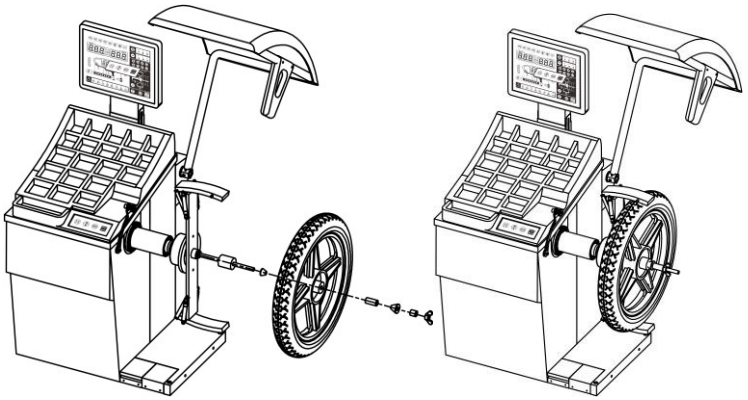


Fig.43 motorcycle special clamp installation

5.3.7.2 Motorcycle dynamic balance operation

Mount the wheel on the balancer as shown in Fig. 43 . The steps of measurement and balancing operation are the same as those of standard dynamic in Chapter 5.3.1.

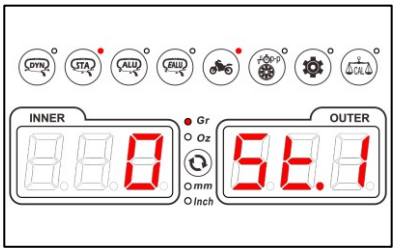


Fig.44 motorcycle static balance measurement

5.3.7.3 Motorcycle static balance operation

In motorcycle balance mode, press  to enter motorcycle static mode. The steps of measurement and balancing operation are the same as those of static balance in Chapter 5.3.2

5.3.8 Rim radial runout and axial runout value measurement mode

This mode is to give the user objective evaluation of the rim condition by checking the rim radial runout and axial runout error and the position of the maximum runout value.

In balance operation mode, press  to enter rim runout values measurement mode (Fig.45).

This operation should be done on the surface of the inner edge of the rim, therefore, the weight clamped inside of the rim should be removed to ensure no barrier on the surface.

During measurement press  or  to stop and go back to the previous measurement mode.

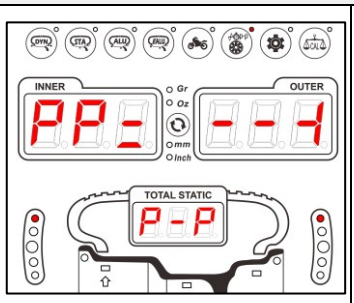
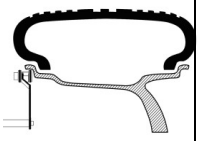
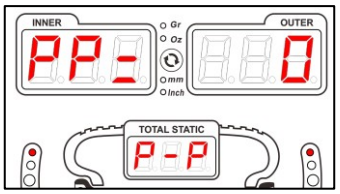
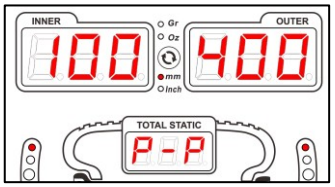
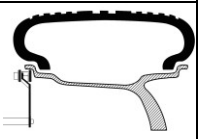
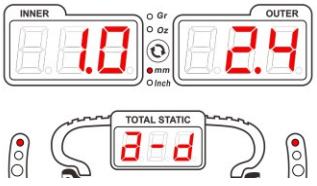
step	illustration	Reference pictures
1	Enter runout value measurement mode (see screen on the right). Use the left hand to pull out the gauge until against the inner wall of the rim edge slot. Hold the O shape ring at the end of the gauge closely against the rim and keep the gauge end rolling in the rim edge slot. When finished, push  with the right hand to enter step 2.	 
2	See the picture on the right. As holding the O shape right closely against the rim with the left hand, push the wheel forward slowly with the right hand to start runout measurement. When the values are displayed on both of the two sides, it means measurement is being done. After one round rotation, measurement is finished and then enter display state（step 3）	   & 
3	The displayed value shows: 1、Max axial runout value is1.0mm。 2、Max radial runout value is 2.4mm。 Push the wheel until all the inner balance positions are illuminated. It means the axial runout at this position is the maximum.。Push the wheel until all the outer balance positions are illuminated, meaning the radial runout at this position is maximum.	

Fig.45 runout values measurement

5.3.9 Multi-user management

This function is for managing different modes and habits used by different users.

Press to choose between user 1 , 2 and 3. (Fig.46), and the result will be saved automatically.

When shifted to the new user ' s mode, the balancer will save all the old user ' s mode then start the new user' s mode, including measurement mode, wheel parameters, unit, weight type , habit and so on.

User 1 status

Fig.46 multi-user management

Meantime the working times of each user can be enquired in the "usage information" in chapter 6.1.2. This function can manage different operators (multi-team), and can manage the balance operation of wheels in different batches and with different parameters (mainly for tire factory)

5.3.10 Balance weight material management

The counterweights made of different materials may have a slight influence on the balancing result due to their gravity and shape. For relatively strict requirement for the result, appropriate material should be selected to ensure the balancing accuracy.

Press to select Fe, Pb, or Zn weight (Fig.47) and the selection will be saved automatically.

Select Fe weight

Fig.47 counterweight material management

5.3.11 Usage of accessories

If accessories management is set in 6.6., in balance mode press to display , and then press to display , at this screen press

to select the accessory to be used, press to return the measurement mode and indicator is illuminated. Mount the accessory corresponding to the number shown in Fig.14. The accessory can ensure the precision of measurement.

5.3.12 Usage of shortcuts

User friendly shortcuts (Fig.48) make it easy to find and operate basic functions.

5.3.13 Additional functions

5.3.13.1 Balance value precisely display function

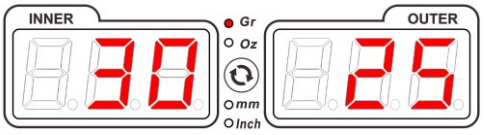
During balancing operation, press and do not loosen the button, "INNER" and "OUTER" will display precise unbalance value. Loosen, it will return to quantifying display status (Fig.49)

If the user wants to keep "precise display state", press and simultaneously.

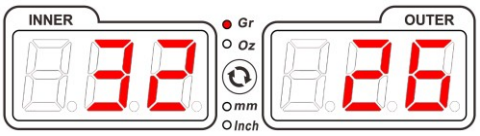
5.3.13.2 Wheel cleaning mode

This cleaning function is designed for weight sticking mode so as to ensure the inner surface of the wheel rim is clean enough to stick the weight on.

Press , the window shows sticking position is 12" or 6" (cleaning) position, (Fig.50) and the laser will indicate the exact position too.



quantifying display state



precise display state

Fig.49 display precise value

5.3.13.3 Lighting function

The equipment has a function to light the weight sticking position and gauge measurement position.

In any measurement mode, switch on or off the lighting power by pressing ESC supply the temporary light. For protection, the light will be off automatically after

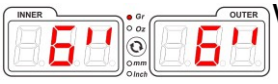
100 seconds.

5.3.13.4 Sleeping function

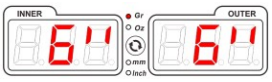
This function can be set as stated in Chapter 6.5.3.Without any operation during the set sleeping time, the balancer will sleep automatically. Meantime, system will release and turn off the main electricity powered parts and display sleeping state. Pressing any key or any operation will wake it up to work again.

5.3.13.5 Precise balance mode and weight -saving balance mode

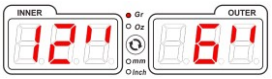
Weight-saving mode can be set in 6.3.3. For precise balance in dynamic balance mode, when inner and outer unbalance value is <5g(the standard) and the total static balance value is <5g too, it will show “0”, “0” , which can be taken as the perfect balance. Precise balance mode can remove the residual unbalance thus improving balance quality.



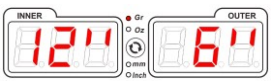
Whereas, weight -saving balance mode,



compared with precise balance mode, can

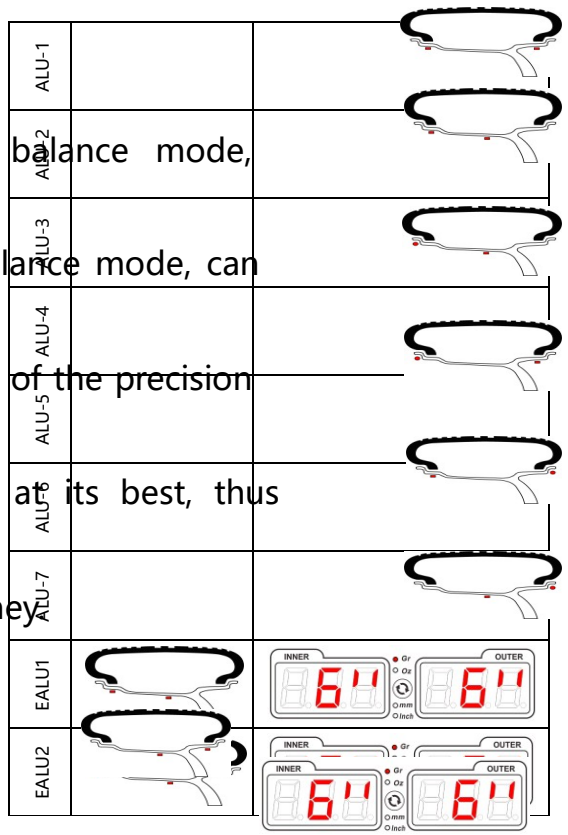


not only meet requirement of the precision



but also save the weight at its best, thus

gradually helping save money.



5.3.13.6 Real time unit shift function

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

Fig.50 Cleaning state

6 System Setup

6.0 System Settings Navigation

In the case that accessory setting is not selected, press to display nO FAL. and then enter system settings state. In the case that accessory setting is selected, first display SEt. FAL., and then press again to enter system settings state, which is designed like a menu. (Fig.52), Edit, exit or save with the buttons shown in Fig.51.

6.1 Information Inquiry (Fig.53)

Save &return	Enter confirmation	addition	minus	Rotate wheel to take readings	
ESC					

Fig.51 control button function

6.1.1 Program information

It provides version number and issue date.

6.1.2 Usage information

It provides the total working times of the equipment and the working times of each one to three users.

6.1.3 Error information

This function is to check the system error through error code to find out where the trouble is. It is blank if no error exists.

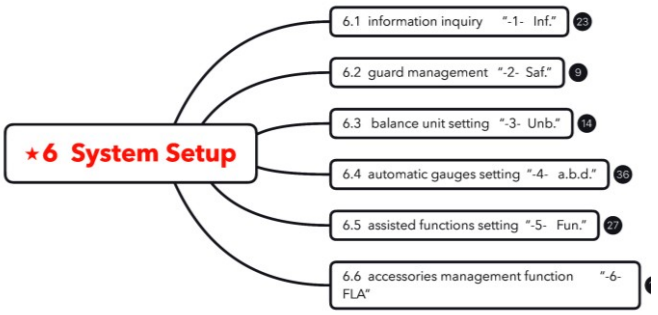


Fig.52 system settings

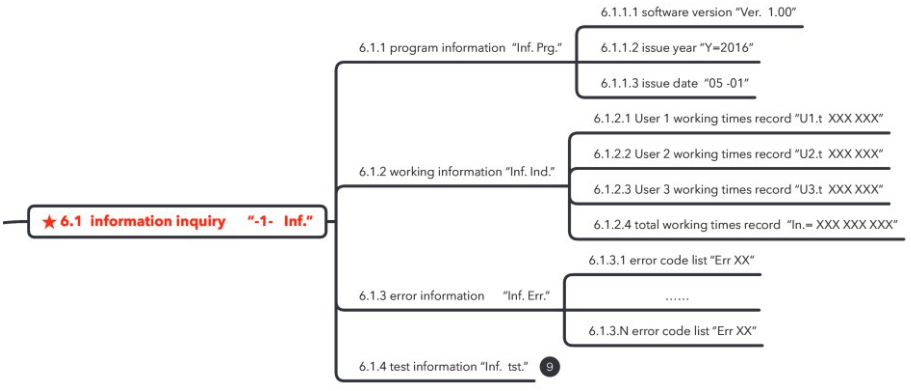


Fig.53 information inquiry

6.1.4 Test information (Fig.54)

It is a built in tool to diagnose the working state of each unit of the balancer.

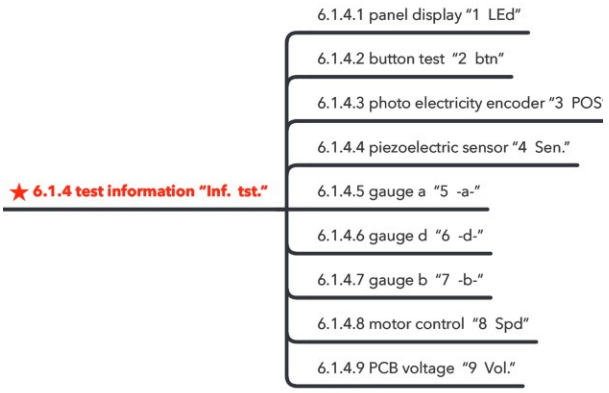


Fig.54 test information

6.1.4.1 Display panel test

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

6.1.4.2 Button and switch test

Entering this setting, hit the buttons on the panel or turn on guard switch and foot pedal switch, their corresponding button and switch icons will be displayed on "INNER" "OUTER" .Exit the button and switch test by pressing START STOP and at the same time.

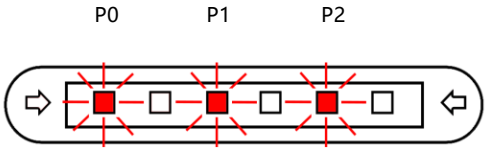


Fig.55 phase test

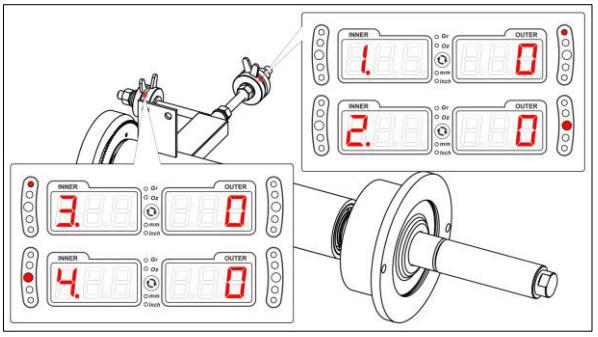
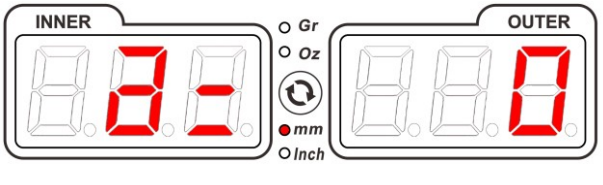


Fig.56 piezoelectric sensor test

6.1.4.3 Photoelectric encoder test

Entering this setting, rotate the wheel, then, "INNER" "OUTER" will display rotating angle POS = 0 ° ~359 °. Meantime P0, P1, P2 indicators show the real time state of the encoder. (Fig.55)



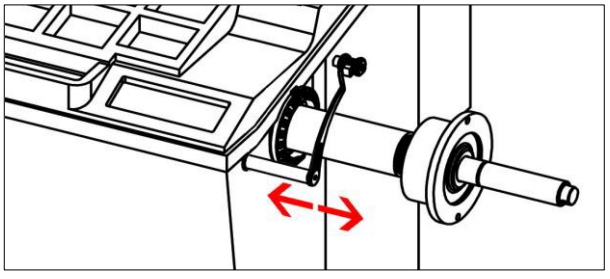


Fig. 57 gauge a test

6.1.4.4 Piezoelectric sensor test

Entering this setting, the corresponding data of different sensors will be

displayed on the screen (Fig.56), Data change between -2048 and +2048 as the pressure changes. Static data is approximate 0. Each sensor has two paths and can be switched by pressing

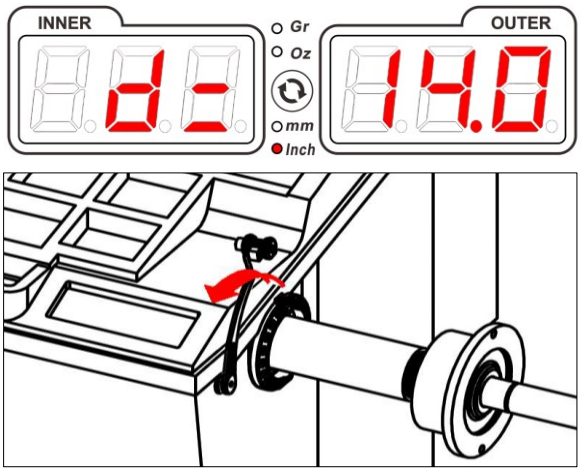


Fig.58 gauge d test

6.1.4.5 Gauge a test

Entering this setting, pull a d, the length pulled out should be the same as the reading ranging a=0~350mm. (Fig.57) . Press to change the length unit.

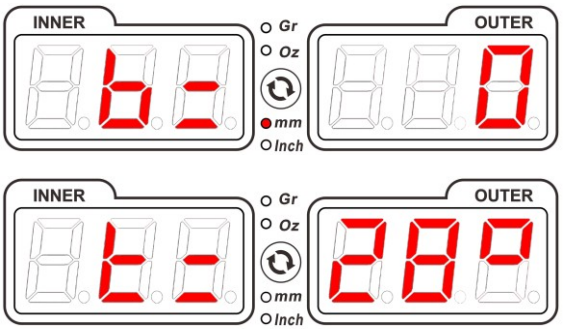


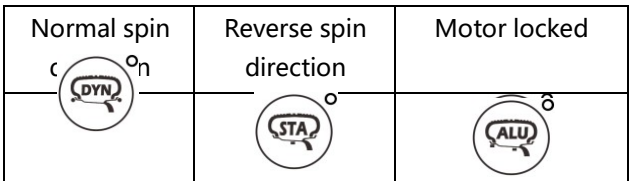
Fig.59 gauge b test

6.1.4.6 Gauge d test

Entering this setting, raising the gauge a d, the corresponding rim diameter will be displayed (Fig.58 d=14.0 Inch)。

Press to shift between diameter and angle.

Press to change the diameter unit.



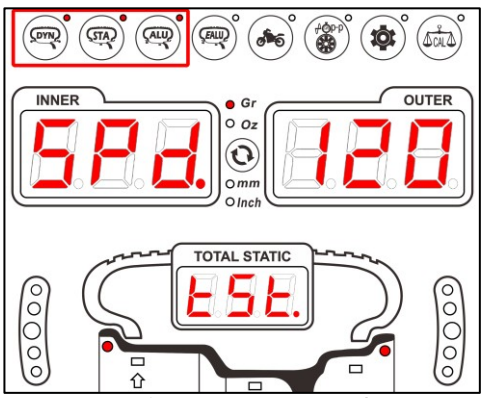


Fig.61 motor control test

6.1.4.7 Gauge b test

Entering this setting, put the hand or an object near the ultrasonic gauge B, the reading on the screen will change with the distance between the object and the ultrasonic probe. (Fig.59)

Press to shift to the temperature compensation test state. The temperature is the room temperature. Press to change the width unit.

6.1.4.8 Motor control

Entering this setting, it shows as Fig.61.Control the motor by pressing and not loosening the corresponding button shown in Fig.60, During rotation "INNER" and "OUTER" windows display the balancing shaft real time speed in the unit r/min.

6.1.4.9 PCB voltage test

Entering this setting, the voltage of all key nodes on the PCB will be displayed.

Refer to Table 6 for the exact voltage range.

Table 6 PCB voltage

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

6.2 Wheel Guard Management (Fig.62)

6.2.1 Guard effectiveness setting

The guard must be set effective to protect the operator according to different local laws.

When set effective, the measurement can be started only when guard is closed. If the guard is opened during measurement, the balancer will be braked and stop

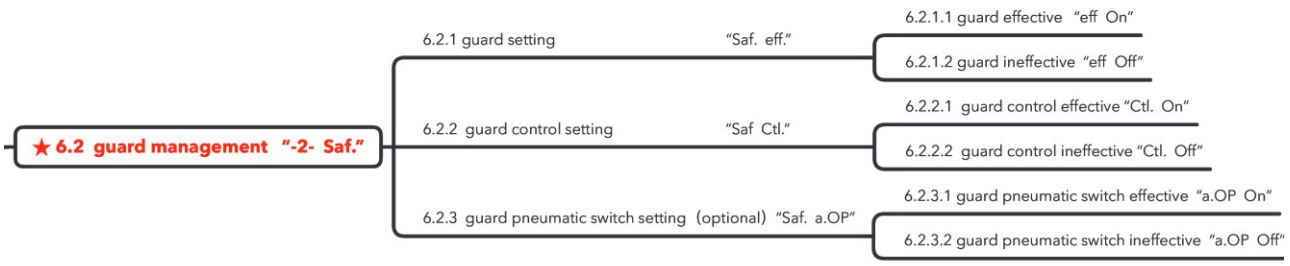


Fig.62 guard management

automatically.

When set ineffective, the items in 6.2.2 and 6.2.3 will not appear. Whether the guard is installed or not will have no influence on the balancer work.

6.2.2 Guard control effectiveness setting

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

6.2.3 Guard pneumatic switch setting (optional)

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

6.3 Balance Unit Setting (Fig.63)

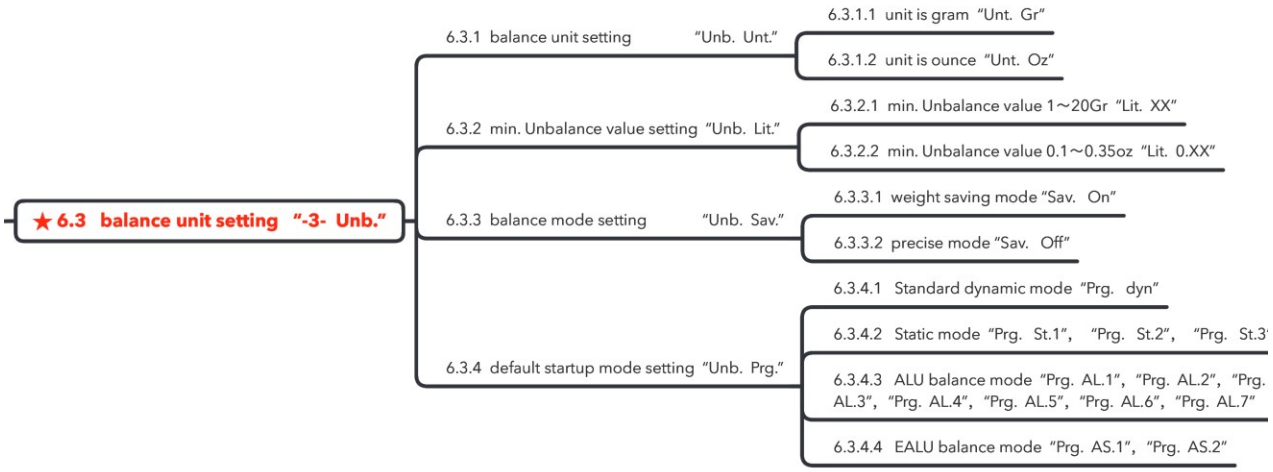


Fig.63 balance unit setting

6.3.1 Default balance unit

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.

6.3.4 Default startup mode setting

The factory default startup mode is standard dynamic balance. (Table.7)

Table 7 startup mode setting

	Mode code						
Standard dynamic balance	“dyn.”						
Static balance 1~3	“St.1”	“St.2”	“St.3”				
ALU balance1~7	“AL.1”	“AL.2”	“AL.3”	“AL.4”	“AL.5”	“AL.6”	“AL.7”
EALU balance 1~2	“EA.1”	“EA.2”					

6.4 Automatic Gauge Setting (Fig.64)

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

The range of this value is 10~350mm. The 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 :

Fig.64 automatic gauge setting

0.1Inch/0.5Inch

6.4.6 Automatic gauge d startup default value

The range of this value is 254~813mm（10 Inch~ 32 Inch）. 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

The range of this value is 38~636mm（1.5 Inch~ 25 Inch）. The default value is 209mm（8.25 Inch）.

6.4.10 Automatic gauge a&d effectiveness setting

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

6.4.11 Automatic gauge b effectiveness setting

This setting is to turn on or off the gauge b effectiveness.

6.5 Assisted Functions Setting（Fig.65）

6.5.1 Electric beep setting

This setting is to turn on or turn off electric beep.

6.5.2 Electric beep sound setting

Turn on/off automatic beep while sticking weight.

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）.

Fig.65 assisted functions setting

6.5.4 Laser indicator function setting

This function is to turn off or on weight clamping or sticking position laser indicator.。

6.5.5 Automatic gauge a&d lighting control setting

This setting is used to turn on or off the light effectiveness.

6.5.6 Motorcycle assisted function

This function is to turn off /on motorcycle accessories balance function.

6.5.7 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 can be done.

6.5.8 Split mode setting

The current split mode can be set as “SPL -1-” or “SPL -2-”.

6.5.9 Unbalance position locating and locking function

Turn on or off automatic locating and locking function

6.6 Accessory Management Function

This function is to manage the accessories used in this equipment（Fig.66）so as to make sure that the accessories sizes do not affect the balance result. Entering this setting, select the number of the corresponding accessory, press to enter, press or press and then at the same time rotate the balancing shaft forward（+） or backward（-） to edit the size of the accessory. Press to save and exit.

Fig.66 assisted functions setting

7 Calibration Program

Press to enter calibration content. Press or and at the same time rotate the balancing shaft forward（+） or backward（-） to select the corresponding calibration item and press to enter.

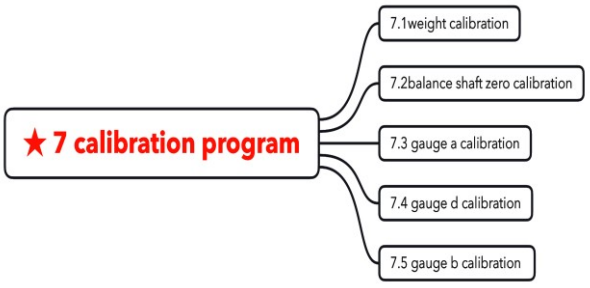
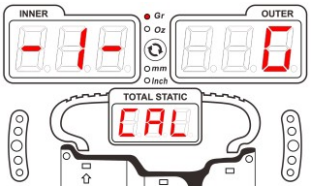
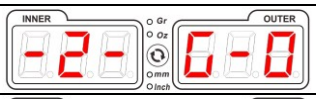
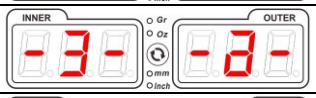
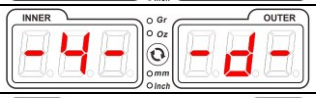
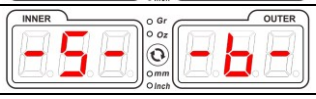


Fig.67 calibration program

See Fig.51 for the button functions.

7.0 Calibration Program（Fig.67，Fig.68）

Table 8 calibration program content

Item	Code	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 calibration and sticking position calibration
☻gauge b calibration		Gauge b zero calibration

7.1 Weight Calibration

7.1.0 Calibration tool

A wheel 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. Firstly, zero calibration.

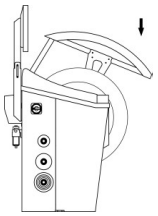
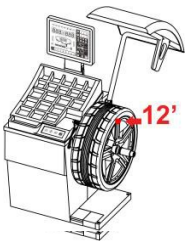
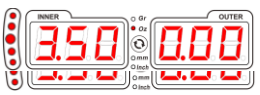
Step	Operation	Display	Unit
Zero wheel calibration			gram
			ounce
Outer test weight calibration			gram
			ounce
Inner test weight calibration			gram
			ounce

Fig.68 weight calibration program

7.1.1 Zero calibration

Mount the wheel on the balancer, close the guard and do zero calibration measurement. (Fig. 68.1) After measurement ,it will automatically turn to outside standard test weight calibration.

7.1.2 Outside standard test weight calibration

As shown in Fig.68.2），clamp a 100 gram standard test weight at 12 o’ clock, close the guard to start calibration measurement. After measurement, it will go directly to inside standard test weight calibration.

7.1.3 Inside standard test weight calibration

Remove the outside standard test weight from outside (Fig.68.3), clamp it at 12 o’ clock inside, close the guard to do calibration measurement. After measurement, weight calibration is finished and system returns to 7.0.

7.2 Balance Shaft Zero Calibration

7.2.0 Calibration tool

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

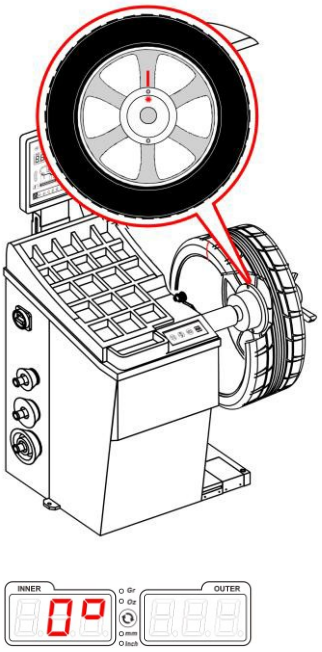


Fig.69 shaft calibration step1

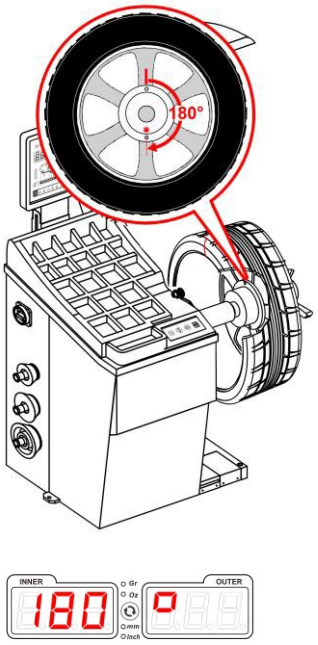


Fig.70shaft calibration step 2

7.2.1 Step 1 (Fig. 69)

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

7.2.2 Step 2 (Fig.70)

Close the guard to start calibration. After measurement, the calibration is completed and system returns to 7.0.

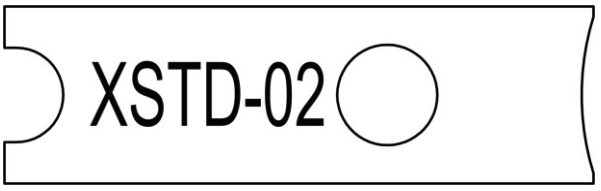


Fig. 72 XSTD-02 caliper

7.3 Gauge a Calibration

7.3.0 Calibration tool

XSTD-02 ,a calibration caliper equipped with the machine (Fig.72) .

Entering gauge a calibration program, firstly return to zero (Fig.71.1), press ↵, it shows "CL.a 100" . Put the calibration caliper between the gauge and the balancer cabinet (71.2) and then press ↵, it shows "a= XXX" which is changing with the gauge pulling (Fig.71.3). Return the gauge to zero and finish gauge a calibration and system goes back to 7.0.

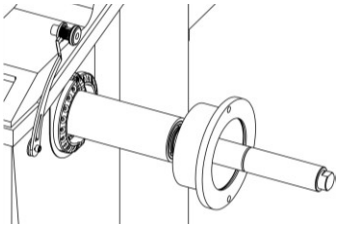
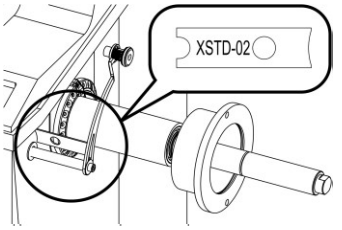
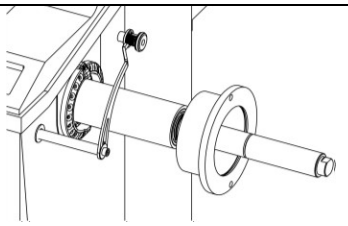
Step	Display	Operation
1		
2		
3		

Fig.71 gauge a calibration

7.4 Gauge d Calibration

7.4.0 Calibration tool

XSTD-02, a calibration caliper equipped with the machine. (Fig.72)

7.4.1 Gauge d calibration Step1

(Fig.73.1)

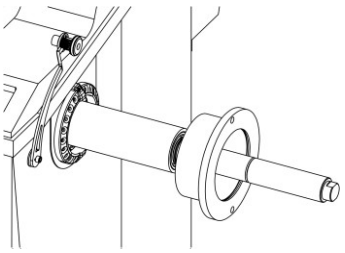
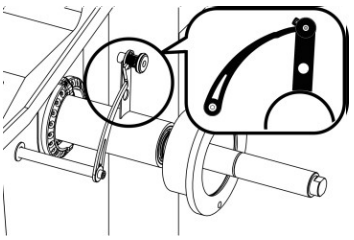
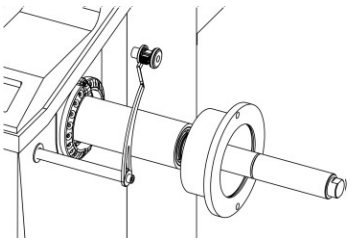
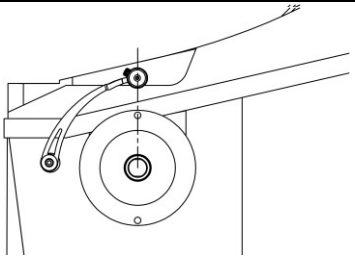
Step	Display	Operation
1		
2		
		
3		

Fig.73 gauge d calibration

Entering d calibration program, firstly return the gauge to zero, it shows “CL.d d0”。

7.4.2 Gauge d calibration Step 2

(Fig.73.2)

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.73.3)

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 system goes back to 7.0.

7.5 Gauge b calibration

Entering this setting, put a dam board at the place 300mmb from gauge b (Fig.74.1), press↵;

Move the dam board to the place 100mm from gauge b (Fig.74.2), press ↵ gauge b calibration is finished and system goes back to 7.0.

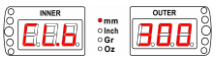
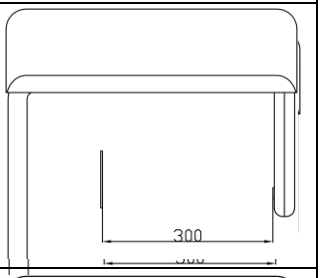
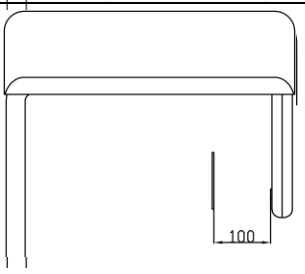
Step	Display	Operation
1		
2		

Fig.70 b calibration

8 Troubleshooting

8.1Common Code Description

See Table 9 for common code description of the equipment.

Table 9 common code description

No.	Code	Meaning	No.	Code	Meaning
1	"Off Off"	Press it to stop in case of emergency	2	"Go Go"	Measuring..
3	"--- --|"	The automatic shaft is dismounting the wheel	4	"|-- ---"	The automatic shaft is mounting the wheel
5	" - - "	Sleeping status	6	"a= xxx"	Input a
7	"d= xxx"	Input d	8	"b= xxx"	Input b
9	"a1= xxx"	Input a1	10	"a2= xxx"	Input a2
11	"d1= xxx"	Input d1	12	"d2= xxx"	Input d2
13	" 6" "	Cleaning position at 6 o' clock	14	" 12" "	Operate at 12 o' clock position
15	"CAL -G-"	Weight calibration	16	"CAL G-0"	Zero shaft calibration
17	"CAL -a-"	Gauge a calibration	18	"CL.a a0"	Gauge a at 0 position
19	"CL.a 100"	Gauge a at 100mm position	20	"CAL -d-"	Gauge d calibration
21	"CL.d d0"	Gauge d at 0 position	22	"CL.d d1"	Gauge d 1 position
23	"CL.d 0°"	Gauge d head at 0 position	24	"CAL -b-"	Gauge b calibration
25	"CL.b xxx"	Gauge b at xxx mm position	26	"Spd xxx"	Speed xxx r/min
27	"tst"	Testing...	28	"no FLA"	No accessory setting
29	"Set FLA"	Set accessory number	30	"-x- yyy"	Accessory xis set as yyy mm
31	"no. -1-" ~ "no. -5-"	Set accessories 1~5	32	"FLA -1-" ~ "FLA -5-"	Select accessories1~5
33	" Opt "	Optimized operation	34	" SPL "	Split operation
35	" Hid "	The number of spokes in SPL1 mode	36	" SP.1 "	The first spoke in SPL2 mode
37	" SP.2 "	The second spoke in SPL2 mode	38	" tol. CAL "	Motorcycle accessory tare weight removing operation
39	" dyn bal "	Dynamic balance	40	"St.1" ~ "St. 3"	Static balance1~static balance3
41	"ALU -1-" ~ "ALU -7-"	ALU balance mode 1~7	42	"AL.S -1-" ~ "AL.S -2-"	EALU mode1~2
43	"P_P --|"	Ready for runout measurement	44	"P_P 0"	Start runout measurement
45	a_d	Runout result display			

8.2Prompt Bar and Code Description

See Table 10 for meanings of icons in the prompt bar

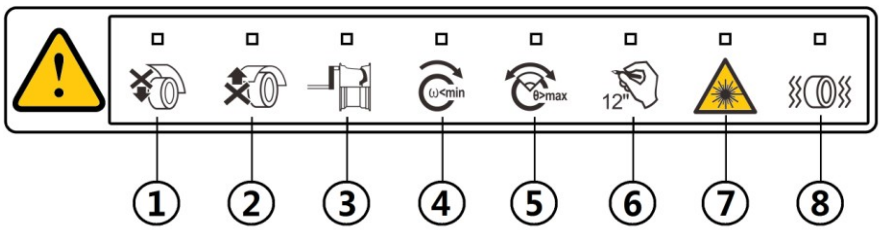


Fig.75 prompt information

Table10 prompt information meaning

No.	Meaning	No.	Meaning
1	Guard is not closed when using startup button control	2	Measurement is protectively interrupted because the wheel guard is opened.
3	Gauge AD error	4	Measurement is interrupted because of low rotation speed.
5	Angles are not well split	6	Need to mark at 12 o’ clock position of the rim
7	Safety prompt for laser indicator working	8	Unreliable measurement due to external factors

8.3 Error Code Description and Solutions

Table 11 error code description and solutions

No.	Code	Error	Solution
1	"Err 00"	Lift car does return to place	Lower the lift car down on the ground.
2	"Err 01"	Wheel guard is not closed when pressing startup button	Close the guard. If error still exists, it means guard switch is wrong . Referring to chapter 6.2.1, turn off the guard effectiveness. After replacing the guard switch, turn it on again
3	"Err 02"	Spinning speed does not reach the standard	Refer to chapter 6.1.4.8 to check motor spinning; Check power board if motor is disabled; If motor is enabled but shaft does not spin, check whether the belt is off or break; If it spins but speed is abnormal, 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	Turn off and restart the machine. If error still exists, refer to 6.1.4.5 to check gauge a. If it is abnormal, contact service people; turn off a&d function as instructed in 6.4.10 and input a&d value manually before service.,
5	"Err 11"	Gauge a is not calibrated	Refer to 7.3 to calibrate it.
6	"Err 12"	Gauge a has not returned zero	Pull it back to zero.
7	"Err 15"	Gauge d disabled	Turn off and restart the machine. If error still exists, refer to 6.1.4.6 to check gauge d. If it 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 is not calibrated	Refer to 7.4 to calibrate it.
9	"Err 20"	Gauge b disabled	Turn off and restart the machine. If error still exists, refer to6.1.4.7 to check b. If b is abnormal, check whether the connection is off or not (Fig.8). Contact service if not dealt with properly; turn off b function as instructed in 6.4.11 and input b value manually before service.
10	"Err 21"	Gauge b is not calibrated.	Refer to 7.5 to calibrate it.
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 error	Contact the after sales service.

9 Appendix

9.1Electrical Principle

9.1.1E21principle

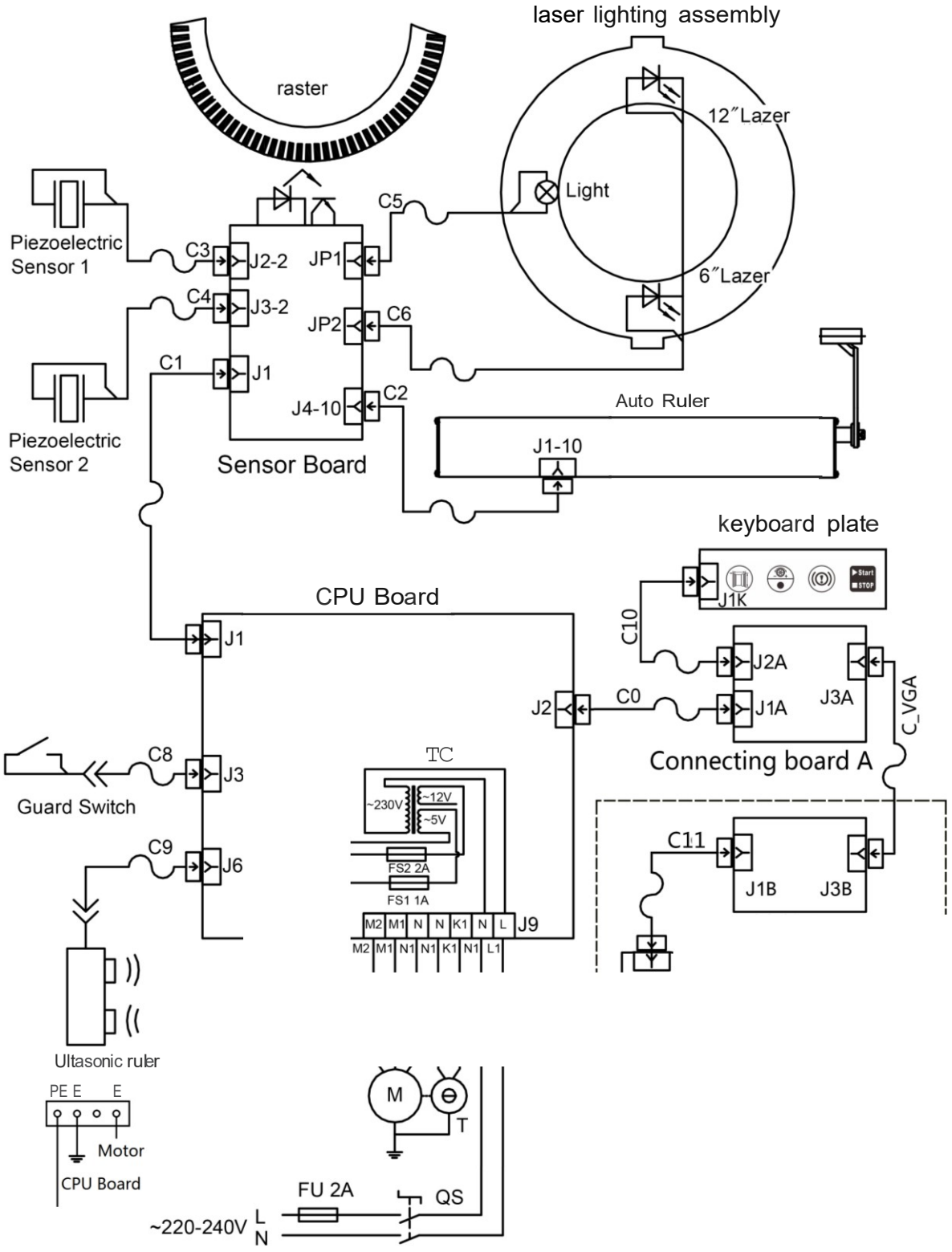
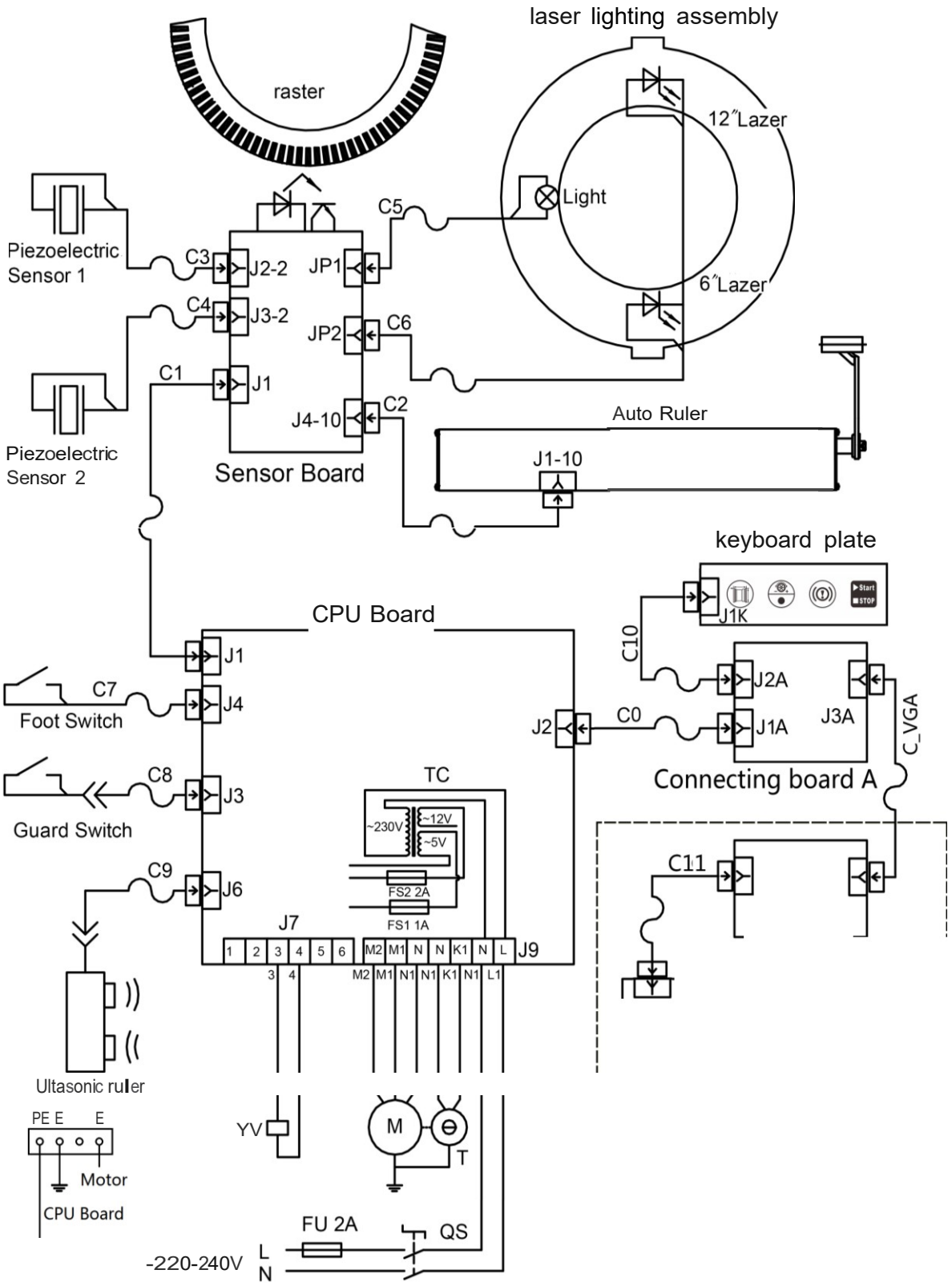


Fig. 76

9.1.1 E22 principle



9.2 Pneumatic piping principle

9.2.1 E22 principle

Pneumatic unlock mechanism