USER MANUAL
WB600N

CATALOGUE

1. Introduction

An imbalanced wheel will make the wheel jump and steering wheel wobble while driving. It can baffle the driver to drive, aggrandize the cleft of combine area of steering system, damage the vibration damper and steering parts, and increase the probability of the traffic accidents. A balanced wheel will avoid all these problems.

This equipment adopts the new LSI (Large Scale Integrated circuit) to constitute the hardware system that acquires, processes and calculates information at a high speed. It has various key software of the dynamic balancer automatically, adopts high-definition 15″ LCD, flexible indicator operating function, and has the self-owned intellectual property right.

Read the manual carefully before operating the equipment to ensure normal and safe operation. Dismantling or replacing the parts of equipment should be avoided. When it needs repairing, please contact with technique service department. Before balancing, ensure the wheel fixed on the flange tightly. Operator should wear close-fitting smock to prevent from hanging up. Non-operator does not start the equipment.

No use while beyond the stated function range of manual.

1). Specification and Features

1.1) Specification:

- Max wheel weight: 65kg
- Motor power: 180w
- Power supply: 220v/50Hz
- Balancing precision: ±1g
- Rotating speed: 200r/min
- Position precision: 1.5°
- Cycle time: 8s
- Rim diameter: 10″~24″(256mm～610mm)
- Back spacing: <190mm[1]
- Noise: ＜70dB
- Net weight:
- Dimensions:

1.2) Features:

- Adopt high-definition 19″ LCD, it displays various balancing modes and has flexible indicator operating function.
- Various balancing modes can carry out unbalance block to stick, clamp, or hidden stick etc.
- Input data of rim automatically by measure scale.
- Intelligent self-calibrating and measure scale self-labeling function.
- Self fault diagnosis and protection function.
- Applicable for various rims of steel structure and aluminium structure.

1.3) Working Environment

- Temperature: 5~50℃
- Height above sea level: ≤4000m
- Humidity：≤85%

2). The Constitution of Dynamic Balancer

Two major components of the dynamic balancer are: machine and electricity:

2.1) Machine:

The part of machine consists of support, swing support and main shaft; they are together fixed on the frame.

2.2) Main parts of electricity: (refer to figure 1-1)

[1] Back spacing:the distance from the lateral of the cabinet to the mounting surface of the verifier.

a).The microcomputer system is made up of the LSI such as new high speed ARM CPU system, LCD and keyboard.

b). Automatic measure scale.

c). Testing speed and positioning system consists of gear and opto-electronic coupler.

d). Two-phase asynchronous motor supplies and controlling circuit.

e). Horizontal and vertical pressure sensor.

f). Hood protection.

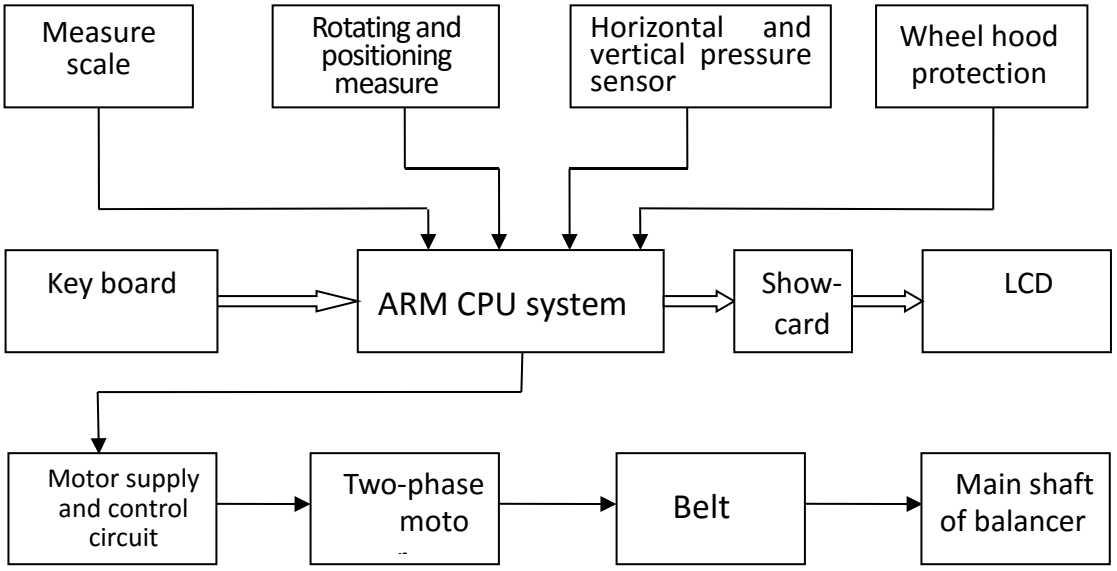


Figure 1-1

2.3)Schematic diagram of electricity part (refer to attached figure 1)

2. Installation of Dynamic Balancer

1).Opening and Checking

Open the package and check whether there are damaged parts. If there are some problems, please do not use the equipment and contact with the supplier.

Standard accessories with equipment are shown as follow:

Screw stud of drive shaft	1
Balancing pliers	1
Allen wrench	1
Measure caliper	1
Locking nut	1
Adapter (cone)	4
Counterweight (100g)	1
LCD support	1
Protection hood (optional)	1

2).Installing machine

2.1) The balancer must be installed on the solid cement or similar ground, unsolidified ground can bring measuring errors.

2.2) There should be 5 ㎡ around the balancer in order to operate conveniently.

2.3) Nail anchor bolts on the base's mounting hole of balancer to fix the balancer.

3).Installing hood

Install the frame of hood on the equipment (optional): plug the pipe of protection hood into the hood shift (behind the cabinet), then fix with M10×65 screws.

4).Installing screw stud of drive shaft

Install screw stud of drive shaft on the main shaft with M10 × 150 socket bolt, then screw down the bolt. (Refer to figure 2-1)

(**Notice:** a wheel can be installed on the main shaft before screwing down, then hold the wheel by hands in order to prevent the main shaft revolving together with the bolt.)

Figure 2-1

5).Installing LCD

Install the LCD on the support with 4 M5 longer screws, and then fix LCD support onto the cover of the cabinet with 2 M5 screws; connect signal line of the LCD with the VGA interface of the cabinet and screw down. Plug power output port (12V) into the LCD.

6).Installing the Wheel

Clean the wheel clear, and no soil left, and demount the added Lead weights on the wheel, and then check whether the air pressure in the tire are conform to the stated value, and check whether the locating surface of the rim and the mounting hole are aeroelastic.

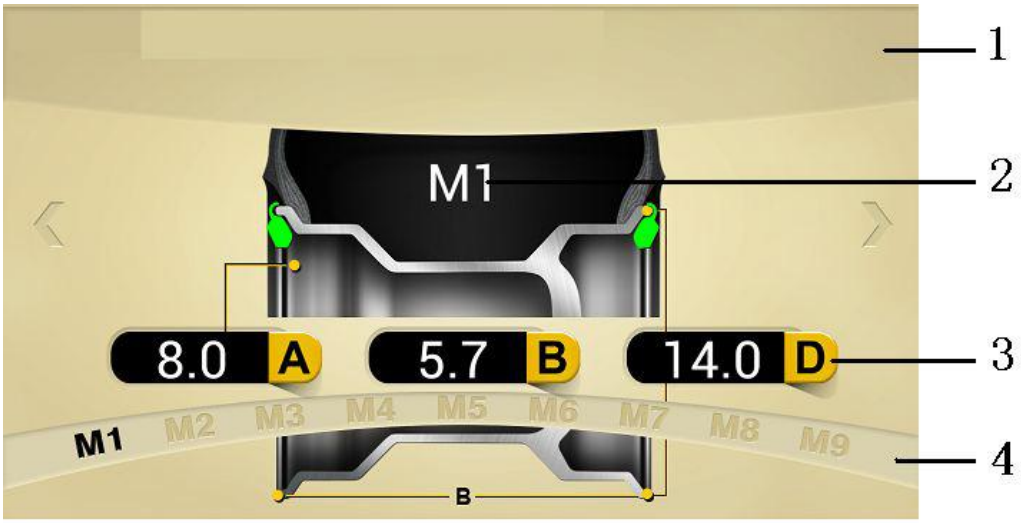
Main shaft - Wheel (installing face of rim forward inside)- Cone (tip pointing to inside) - fast clamp

Main shaft-- spring(it has been already installed when the unit is manufactured), cone(tip point to outside)-- wheel--fast clamp

Notice: do not slip wheel on main shaft to prevent main shaft from scuffing while installating and demounting the wheel.

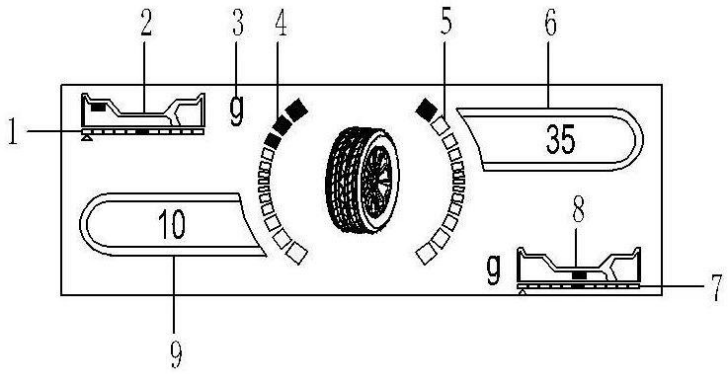
3. The meaning of the icons on the screen

Method of the Model select and Input



1. Words prompt
2. Model indication
3. Input of dimension
4. Model selection

Wheel dynamic test result interface



1.Indicate the unbalance position of inner side
2.Weight paste position
3.Unbalance weight UNIT (g.oz)
4.Inner side unbalance indicate light
5.Outer side unbalance indicate light
6.Outer side unbalance weight
7.Outer side unbalance indicate light
8.Weight paste position
9.inner side unbalance weight

SETTING Menu:

USER Calibration Calibration of scale Weight Unit Display of Min Weight

Measure of width scale Plastic hood setting

Sensor test Language selection Machine info Operation book text prompt Laser positioning calibration (optional)

4.Operation of Keyboard

Direction key

Left Right: Selection Item

Up Down: Adjust value

Other function key

OK: Run and Confirm

Return: Return to previous menu or Stop Runing

START: Function same as OK

STOP:Function same as Return

5.The input way of parameter

Model one: icon(M1), when it has a yellow frame, it means the system is under the balance model of M1, and the choose of the compensating side is shown as the icon, and we can clamp the unbalance block at the compensating side on two sides of the rim.

Model two: icon(M2), the system is under the balance model of M2, and the choose of the compensating side is shown as the icon, and we can stick the unbalance block on the two compensating sides by the inner side of the rim's spoke.

Model three: icon(M3), the system is under the balance model of M3, and the choose of the compensating side is shown as the icon, and we can stick the unbalance block on the two compensating sides by both inner and outer side of the rim's spoke.

Model four: icon(M4), the system is under the balance model of M4, and the choose of the compensating side is shown as the icon, and we can clamp the unbalance block at the side of the compensating side by the inner side of the rim, stick the unbalance block on the compensating side by the outer side of the rim.

Model five: icon(M5), the system is under the balance model of M5, and the choose of the compensating side is shown as the icon, and we can clamp the unbalance block at the side of the compensating side by the inner side of the rim, and stick it to the compensating side by the outer side of the spoke.

Model six: icon(M6), the system is under the balance model of M6, and the choose of the compensating side is shown as the icon, and we can stick the unbalance block to the compensating side by the inner side of the rim's spoke, clamp it at the outer side of the spoke.


Balancer is static balance mode

The process of input parameter value in all kinds of Mode

1.According the outlook of Rim, choose the proper Balance Mode

2.Input the dimension of Rim, under different balance Mode need input different dimension. The dimension of Rim's position according the following pictures

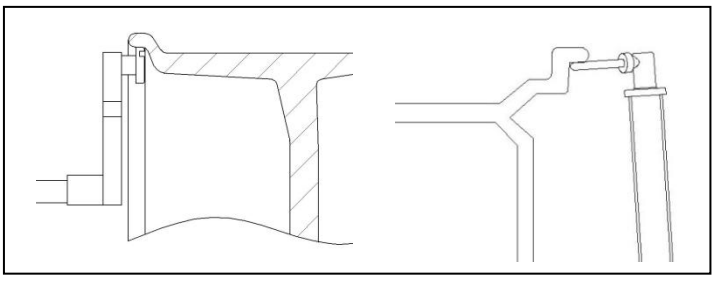
This machine and measuring the A value ,A+ value,D value automatic

The method of how to input A value ,A+ value,D value

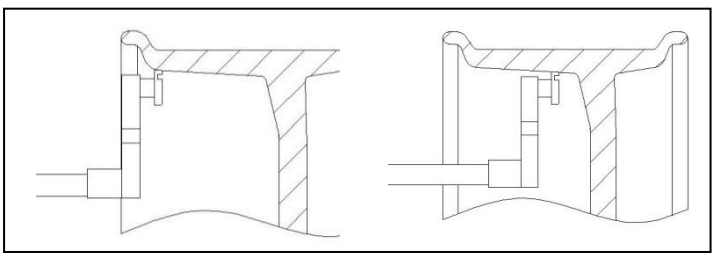
Pull out the scale, machine will measuring A value and D value automatic,pull out the scale to the measuring position and rotate scale head toward to Rim, keep 2 seconds,A value and D value will input automatic.If the balance mode need A+ value,machine will measuring A+ value automatic.Pull out the scale outer unbalance position and keep 2 second,A+ value will input automatic

B value is the width of Rim,after measuring A value,Rotate the width scale toward to outer side of rim, keep 2 second ,B value will input automatic, rotate the width scale back the the home position

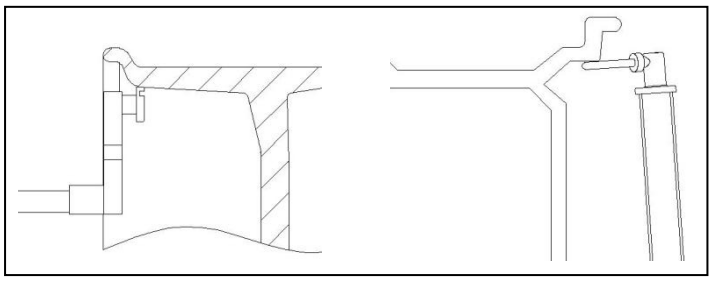
Under each model the Electronic scale's and the wheel-width size ruler's positions for measuring are as following:



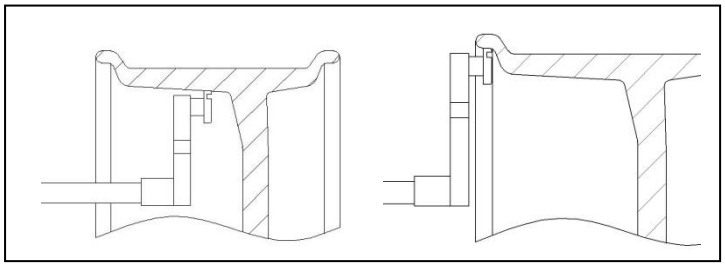
To measure the wheel's parameters under model M1,We should measure the value of the parameters of A and B.



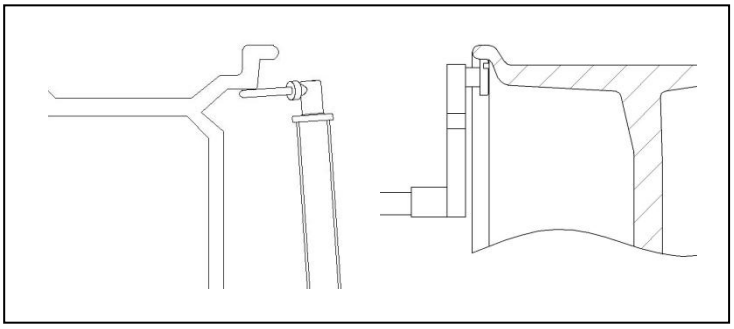
To measure the wheel's parameters under model M2, We should measure the value of the parameters of A and A+.



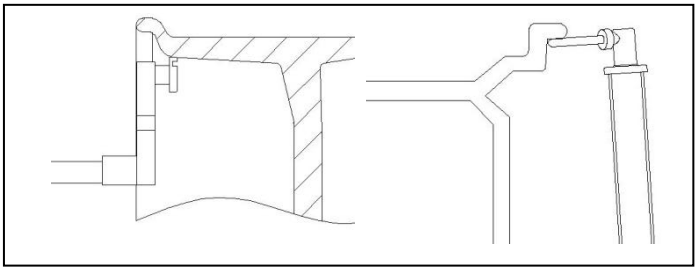
To measure the wheel's parameters under model M3,We should measure the value of the parameters of A and B.



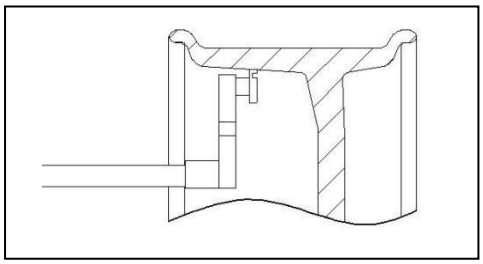
To measure the wheel's parameters under model M4,We should measure the value of the parameters of A and A+.



To measure the wheel's parameters under model M5,We should measure the value of the parameters of A and B.



To measure the wheel's parameters under model M6,We should measure the value of the parameters of A and B.



To measure the wheel’s parameters under the model of static balanced or OPT , we need to measure the value of the parameter A .

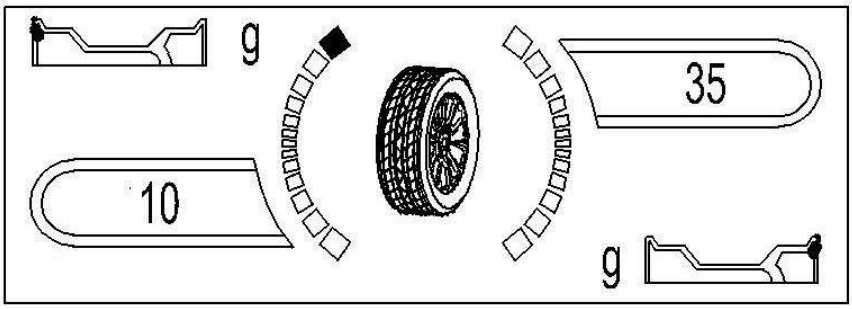
6. The operation of the unit under various models

The operation under the balance model of M1

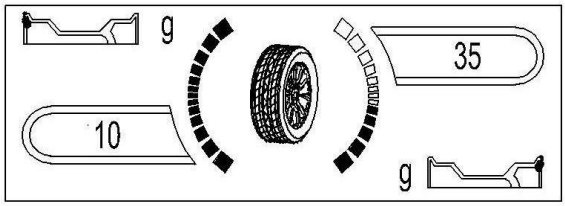
1). Input the value of the wheel’s parameter A, B and D

2). Run the wheel balancer.

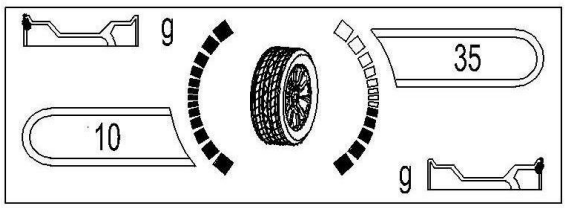
3). After the wheel balancer stops the car, the result will be shown on the screen .



4). Rotate the wheel by hand , and make the position indicating piece by the inner side turn red, and clamp a balance block of the right mass at the 12 point position by the inner side.



5).Rotate the wheel by hand , and make the position indicating piece by the outer side turn red, and clamp a balance block of the right mass at the 12 point position by the outer side.



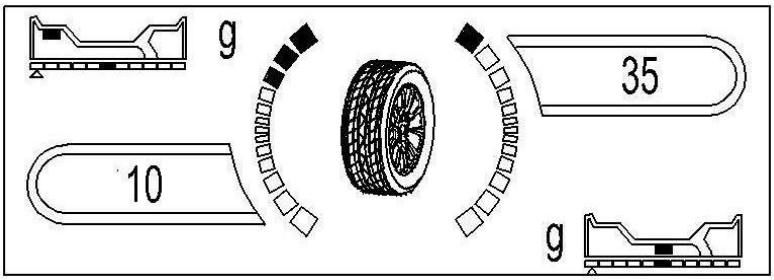
6).After setting the balance block, run the wheel balancer again, and the results will be shown.

The operation under the balance model of M2

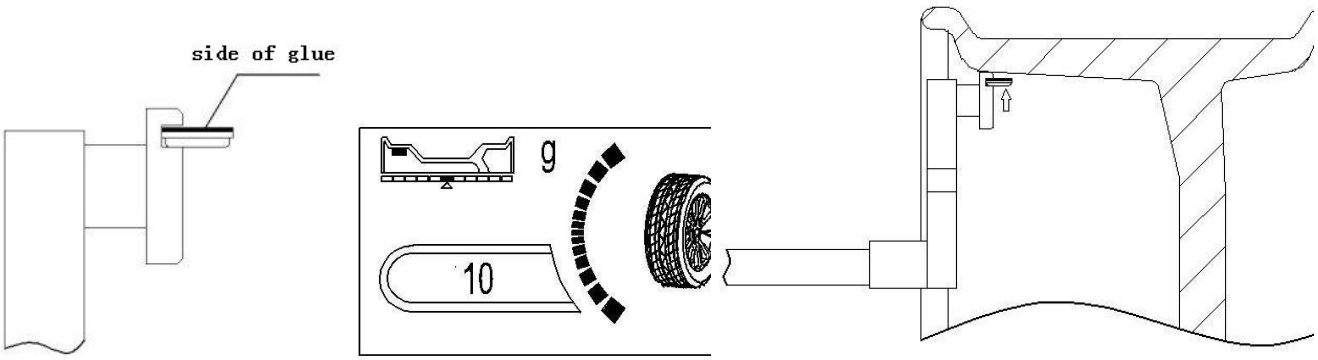
1). Input the value of the wheel's parameters of A, A+.

2). Run the wheel balancer.

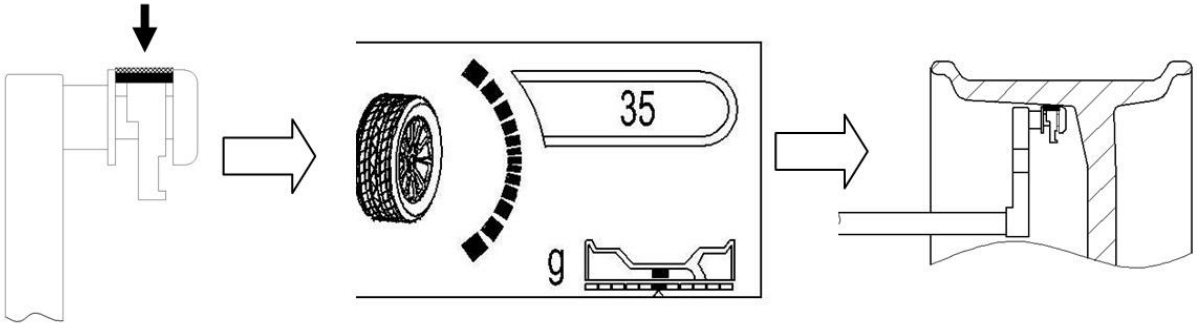
3). After the unit's stopping the car, the screen will show the results.



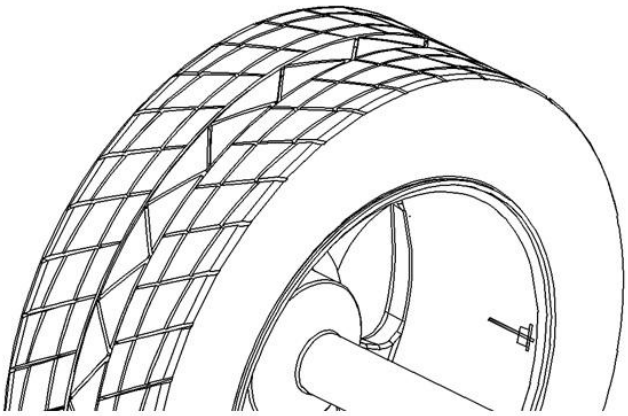
4). Tear down the adhesive tape used to stick the unbalance block by the inner side, and the balance block's plastic surface appears, make the plastic surface face to the upside and pug the middle of the balance block in the horizontal groove on the head of the ruler. rotate the wheel by hand, make the position indicating piece by the inner side turn to be red, and keep the wheel's position, pull out the electronic scale until the sticking position indicating bar upon the mass by the inner side become full, and when the two conditions above are all meets, the buzzer will make noise, rotate the electronic scale, and make the head of it touch the rim, and then press the balance block on the rim of the wheel tightly, then take the electronic scale back.



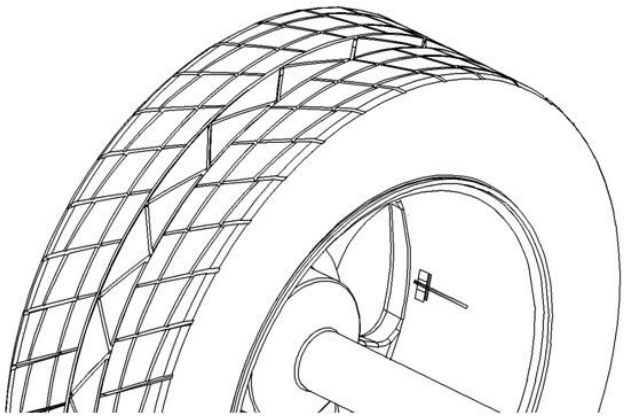
5). Following the sticking method of the unbalance block by the inner side, and when the position indicating piece by the outer side turn red, and also the sticking position indicating bar upon the mass by the outer side become full, we can stick the unbalance block by the outer side to the wheel rim with the electronic scale.



There do not need use electronic scale make the balance weight paste operation while chosen laser positioning scale.Rotate the wheel manually while inside position indicate light all full lighting.Laser line will find out the position where put balance weight for inner side automatically.Also ,while outside position indicate light all full lighting.Laser line will find out the position where put balance weight for outer side automatically. Paste the balance weight for outer side according the laser indicate line.



Inner side balance weight paste

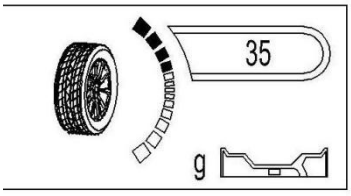


outer side balance weight paste

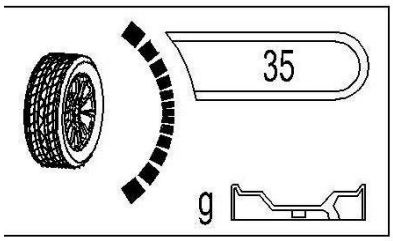
The operation under the balance models of M3—M6:
To operate following the methods under the balance models of M1 and M2.

The operation under the static balance model:

1).input the D value of wheel
2). Run the wheel balancer.
3).After it stops the car, the result will shown on the screen.



4.Rotate the wheel by hand ,to make the position indicating piece by the outer side turn red, and clamp a balance block with the corresponding mass at the 12 point position by the inner side or stick a balance block with the corresponding mass in the middle of the rim.



Pay attention: the results of the unbalance mass shown after the measurement should be divided by 5,(when the mass unit is setted to be oz, the value of the mass being shown should be divided by 0.25oz),so that we can find a balance block with profitable mass, if to find its real unbalance mass, we can find and watch it by pressing the ↓ button.

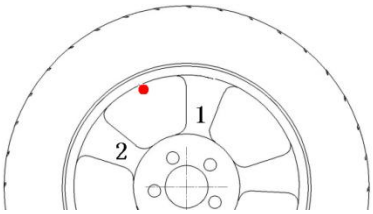
7. The function of the balance block's hidden sticking

The function can divide the unbalance block being between the two spokes into two parts, and make the two parts fall behind the two spokes which are next to each other, so to hide the unbalance block , and not to influnce the beatify of the wheel.

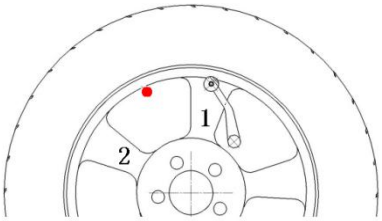
This function is only adopt to the two models of M2, M4 of this unit, and we will show the operating method of the hidden sticking function with the example of the model of M2.

Under the model of M2, Input A、A+、D value,after getting the testing result by running the unit, if the outer sticked balance block fall between the two spokes, then we can use this function. The course is as following:

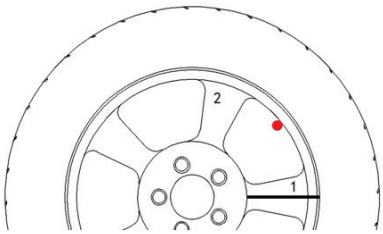
1).After get unbalance results, if the unbalance position is between No.1 and No.2(according the following picture), Can press UP keyboard to enter into this block's hidden sticking function.



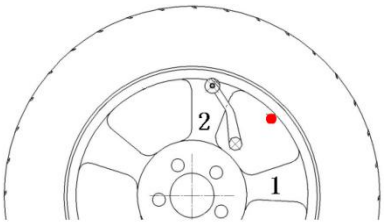
2).pull out the scale, make it connect to the rim, rotate the wheel, make the scale head toward the back of No.1 position, keep wheel steady, pull back scale, and press “OK” keyboard to confirm.



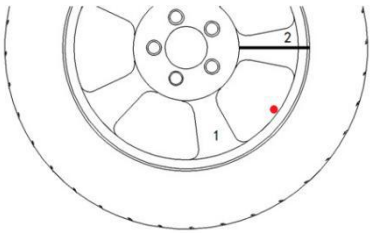
(if choose the balancer with laser positioning function ,please adjust the laser line toward to No.1 position , and press “OK” keyboard to confirm.)



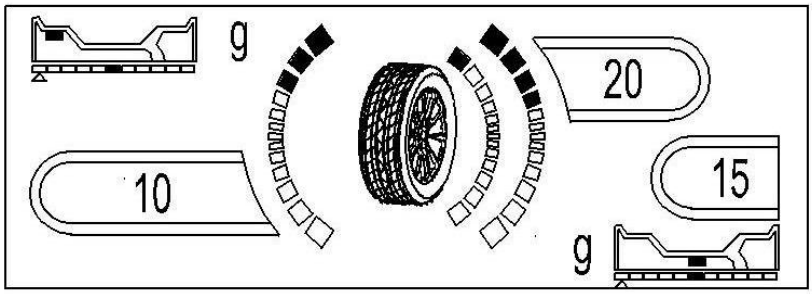
3). pull out the scale, make it connect to the rim, rotate the wheel, make the scale head toward the back of No.2 position, keep wheel steady, pull back scale, and press “OK” keyboard to confirm.



(if choose the balancer with laser positioning function ,please adjust the laser line toward to No.2 position , and press “OK” keyboard to confirm.)



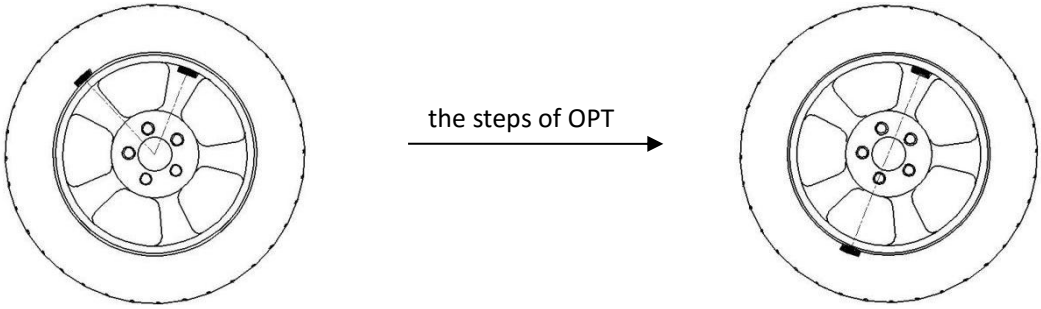
4).Up till now outside unbalance place have been separate into 2 parts which hide behind rim,according step 1 to stick Weight, Use scale find the correct position and stick the inside 1 balance Weight and outside 2 balance weight behind rim. (If the balance have laser positioning function ,please stick balance weight according position of laser line indicate).



5).After stick Weight , press “OK” to run balancer, after wheel rotate, will display test result.

8. The OPT function

When the wheel's static unbalance is too large(over 50g), we can make use of the OPT function. This can make the tire match the position of rim’s static unbalance, to reduce the added unbalance block's mass.



The 1th step:

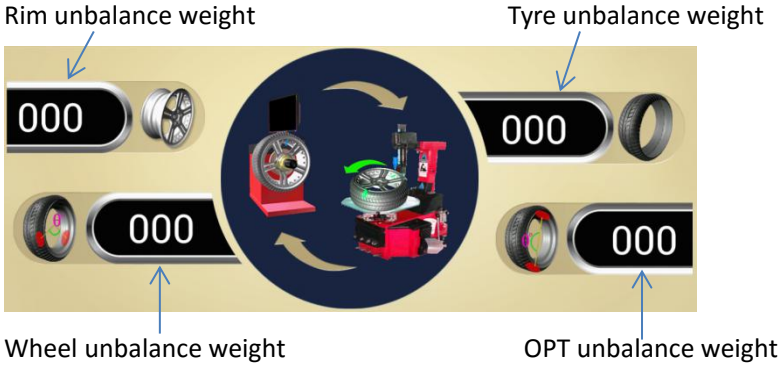
Use UP and Down key to select M9(OPT)mode, Measure and input the wheel’s parameters following the content in section 5, press the “OK” button to enter the OPT model.

The 2th step:

Make the mark on mainshaft and rim, then take the wheel off, install the wheel on tyre changer, demounting tyre and rim, keep rim steady ,and use hand to rotate the tyre 180° ， then inflate the tyre

The 3th step:

Install the wheel on the wheel balance according the Mark, Press OK key to run balance, LCD will display the best unbalance value.



The 4th step:

Rotate the wheel by hand, when inside position indicate all lighting. Make No.1mark on the Top of tyre(12 O’clock

position)

The 5th step:

Rotate the wheel by hand, when inside position indicate all lighting. Make No.2mark on the Top of tyre(12 O'clock position)

The 6th step:

Take off the wheel and install on the tyre changer, make the No.1 mark and No.2 Mark on the same position, then finish OPT function

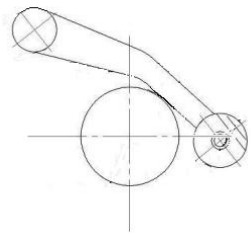
9. The user's self calibration

1).USE UP and Down key to select M9 system Setting Mode, press UP to enter into the Menu
2).Choose the first function,"Use calibration" and set on a well balanced 14"-16" wheel.
3).Input the wheel's parameters correctly following the balance model of M1.
4).Press the OK button to run.
5).After stopping the car, rotate the wheel by hand, when the unbalance position indicating piece turn red, clamp the 100g balance block at the 12 point position by the outer side of the wheel following the prompt on the screen.
6).Press the OK button to run.
7).After stopping the car, take down the 100g balance block, rotate the wheel by hand, when the unbalance position indicating piece turn red, clamp the 100g balance block at the 12 point position by the inner side of the wheel following the prompt on the screen.
8).Press the START button to run, after stopping the car, the screen will prompt whether the self proofreading to be successful, and you can return to the model selecting interface by pressing a any button.

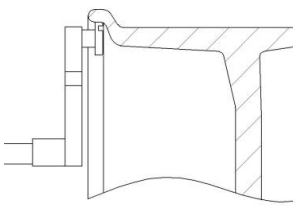
10. The Calibration with Pull foot

1).Install on wheel on the balancer. .USE UP and Down key to select M9 system Setting Mode, press UP to enter into the Menu, choose the second function "scale calibration"

2). Pull out the scale to 0cm position, press "OK " key to confirm
3). Pull out the scale to 15cm position and make the scale head toward to mainshaft, press "OK " key to confirm
4). Pull out the scale and make the scale head toward to mainshaft, press "OK " key to confirm



5).On the left side of Lcd show "d16", use UP and Down key to adjust the diameter of wheel, pull out the scale and rotate the scale toward to the edge of rim(according the following picture), press "OK " key to confirm



6).The Calibration finish, press LEFT key return

11.The Calibration for wheel-width size ruler

1).Install one wheel on the balancer. .USE UP and Down key to select M9 system Setting Mode, press UP to enter into the Menu, choose the third function ”width scale calibration” press “OK” to confirm

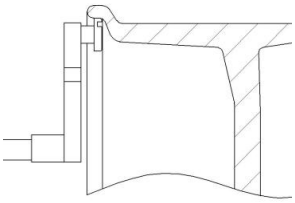
2).Press up and down key to input the B value of wheel. According the following picture,Pull the scale till to the inner side of rim. At the same time make the wheel width scale contact to the outside of rim. Keeping for 2 second, Screen will prompt wheel width value is collecting successful.

3).press the "OK" button to return.

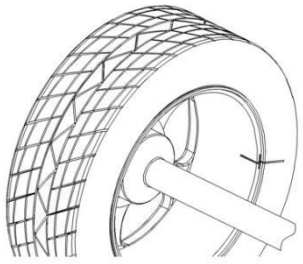
12.The Calibration for Laser positioning (optional)

1).Install one wheel on the balancer. .USE UP and Down key to select M9 system Setting Mode, press UP to enter into the Menu, choose the second page of Menu selecting ”Laser positioning calibration” press “OK” to confirm.

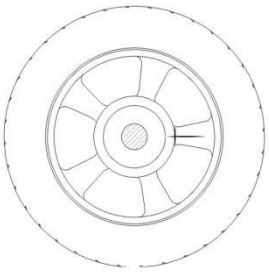
2).User electronic scale measuring D value, about 2 second D value will be measuring successful.



3).After D value measuring successful, laser indicate line will rotate toward the edge of rim, press UP and Down key can adjust the thickness of laser line.press LEFT and RIGHT key can adjust the angle of laser line. Adjust the laser line toward the edge of inside rim. According the following picture ,and Press OK key to confirm.



4).Rotate the laser line toward to the edge of Matcher, adjusting the laser line position by press LEFT and RIGHT key. When the laser line match to edge of Matcher, according the following picture , press OK key to confirm



5).Laser positioning function is successful , press Return key to return

13.The setting of the system

Enter the system setting menu, and the menu also has another three setting item, as following:

Press UP and Down key to make the setting of g and oz

Press UP and Down key to make the setting of Unbalance weight hide,

Press UP and Down key to make the setting of Protection hood,

Sensor fuction checking,press OK key to enter in to Sensor fuction checking,can checking if all sensor working properly

Language select, Press OK key to enter into this function ,Press direction key to select language

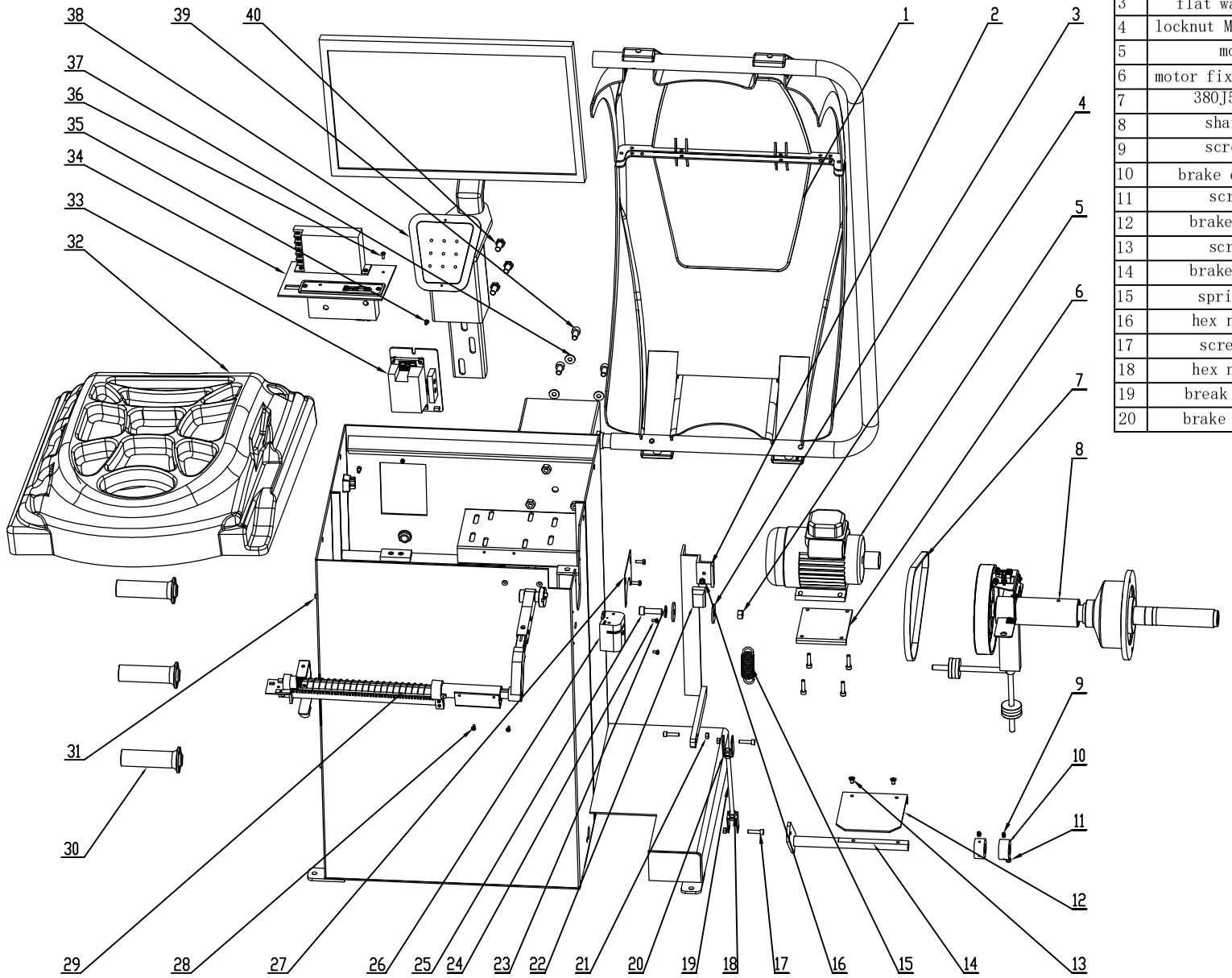
Operation book , press OK key to checking operation book

Texts prompt switch, press UP and DOWN key to setting

14. Trouble shooting for Balancer

the appearance	the analyze
Nothing appears on the screen after the machine is turned on.	1. the switch of the power is broken. 2. the signal line from the LCD to the computer board dosen't connect well, you should check the line connected end. 3. the LCD panel is broken 4. the power board is broken
When the machine is turned on, the screen displays normally, but motor do not rotate	1. Do not pull down wheel protection hood(there have prompt on screen) 2. 3 cable of motor do not connect well with relay 3. Computer board lose control to relay, change computer board 4. Relay broken, change power board 5. Motor broken
After being started, the motor rotates fast, and not break.	1. the position sensor fall in touch of the computor board, and the connecting line should be checked. 2. the signal of the position sensor is not normal,and you should adjust the height of the position sensor a bit, (after the adjustment, rotate the wheel by hand, and check whether the sensor touches the Tooth plate, so that not to let the Optocoupler on the position sensor get broken. 3. the Optocoupler on the position sensor gets broken, you should change the sensor.
Balancer calibration failure	1. Do not stick 100g balance weight 2. Pressure sensor cable broken

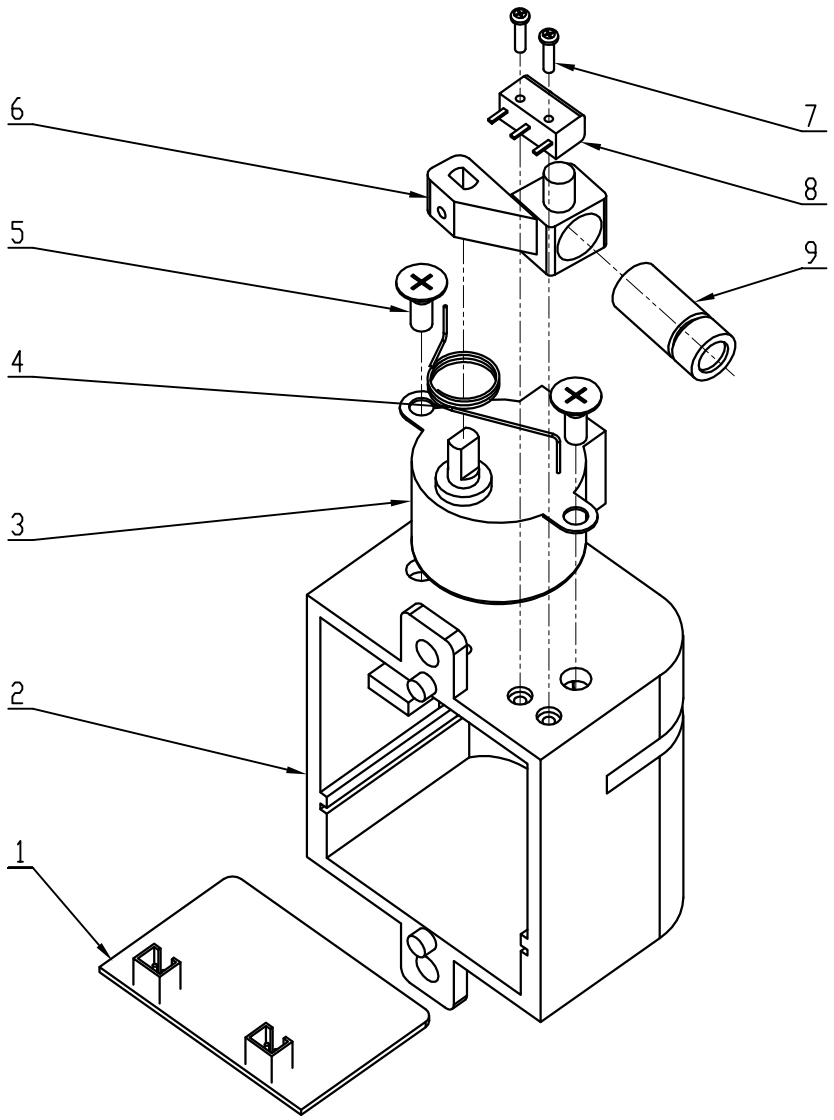
	3. Pressure sensor broken
Electronic scale value error	1.checking the connection cable 2. Potentiometer broken ,change Potentiometer 3. Remake calibration for scale
Unbalance weight value error	1. Input wrong dimension of wheel 2. Use the Balanced 14 or 15inch wheel to make test. Stick 100g balance weight to test , compare the test result, if the result is more or less than real weight 10 percent ,please remake the Calibration
Repeat test result is different more than 5g	1. There have Foreign Matter on wheel, or tyre air pressure is low 2. Quick nut is not tight 3. Ground is not flat, balancer body shaking , use The anchor bolts to lock balancer to ground 4. If need can use the Balanced 14 or 15inch wheel to make test.
Test result display 0-0	1.Minimum display weight setting to big, adjust Minimum display weight till 5g 2.Pressure sensor cable broken



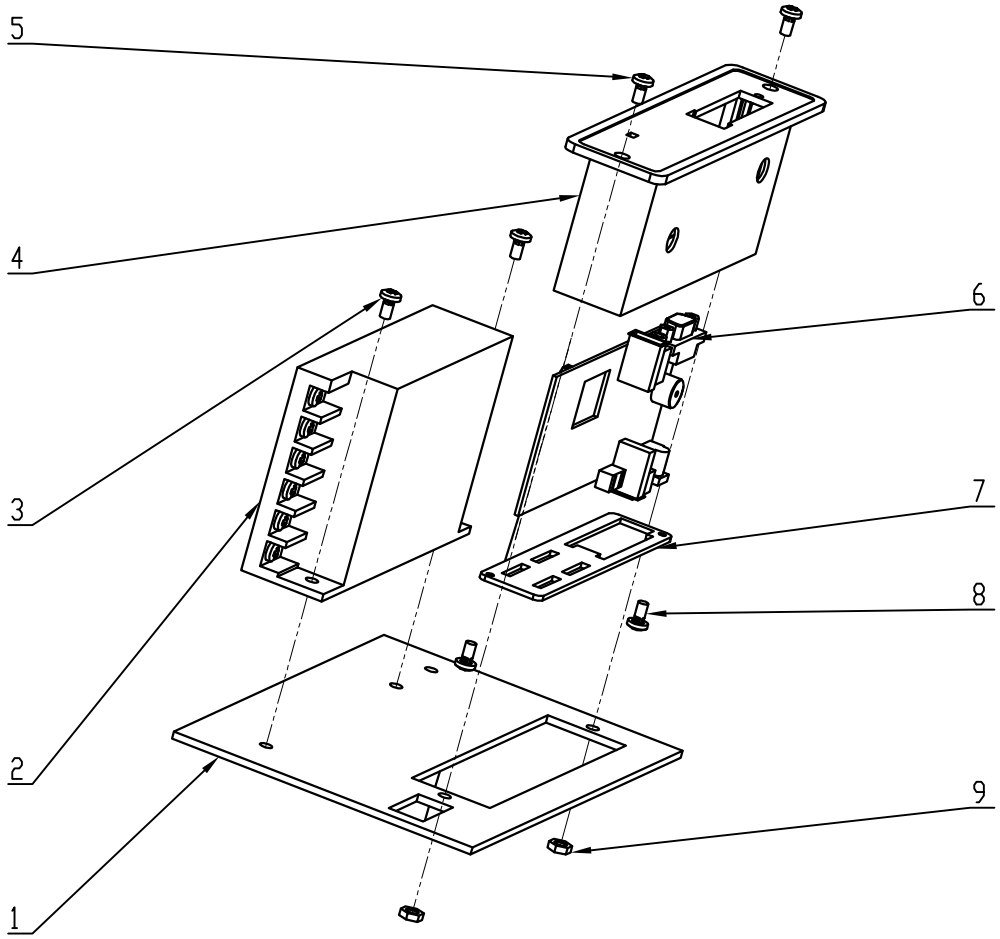
No.	Name	Qty	No.	Name	Qty
1	wheel cover assembly	1	21	hex nut M6	7
2	brake arm	1	22	break block	1
3	flat washer	2	23	gasket	2
4	locknut M10	1	24	screw M4x10	2
5	motor	1	25	screw M10	1
6	motor fixed frame	1	26	laser assembly	1
7	380J5belt	1	27	plate	1
8	shaft	1	28	srew M5x15	4
9	screw	2	29	electric ruler	1
10	brake cover	2	30	handle	3
11	screw	2	31	body	1
12	brake pedal-1	1	32	weight cover	1
13	screw	2	33	power board	1
14	brake pedal-2	1	34	display assembly	1
15	spring	1	35	screw M5x15	1
16	hex nut M4	1	36	screw M5x15	1
17	screw M6	3	37	flat washer	3
18	hex nut M8	4	38	display board	1
19	break frame-1	1	39	screw	3
20	brake frame-2	2	40	screw M10X20	3

PIC.1

PIC.2

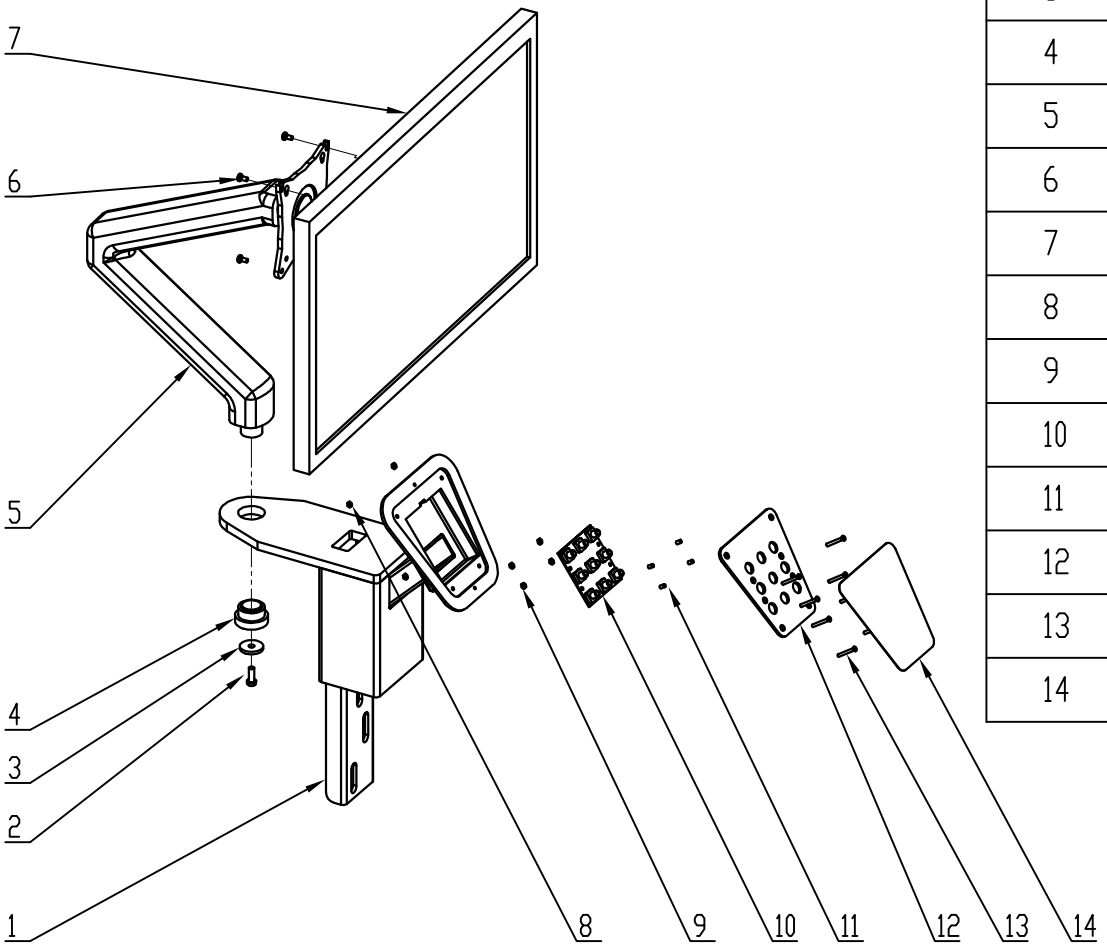


No.	Name	Qty
1	stepper motor driven board	1
2	laser cover	1
3	stepper motor	1
4	spring	1
5	screw ST3.5×10	2
6	install base	1
7	screw ST2.3×10	2
8	limit switch	1
9	laser light	1



NO.	Name	Qty
1	install panel	1
2	power board	1
3	screw M5×20	2
4	display board install panel	1
5	screw M5×20	2
6	display board	1
7	cover	1
8	screw ST3.3×15	2
9	nut M5	2

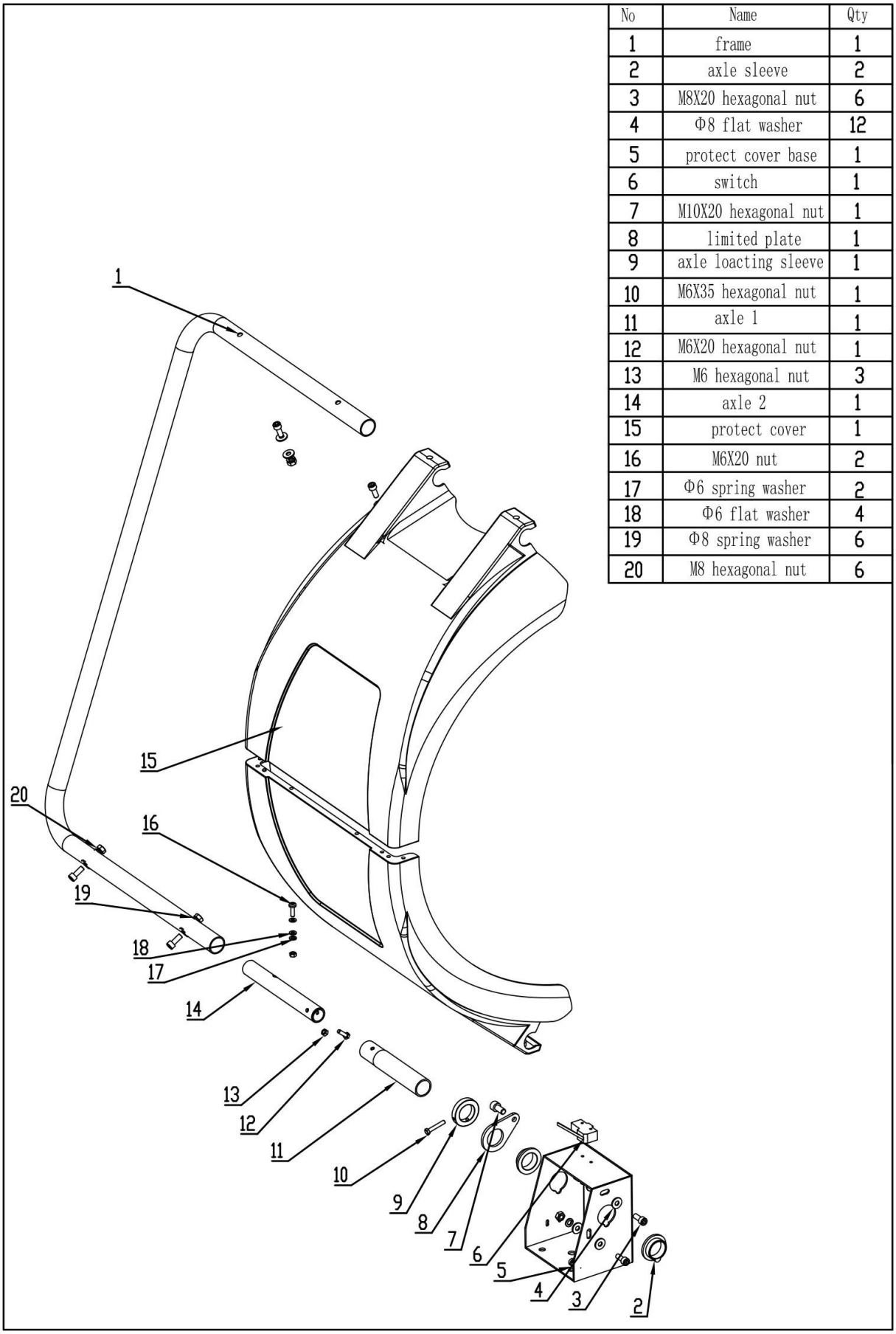
PIC.3



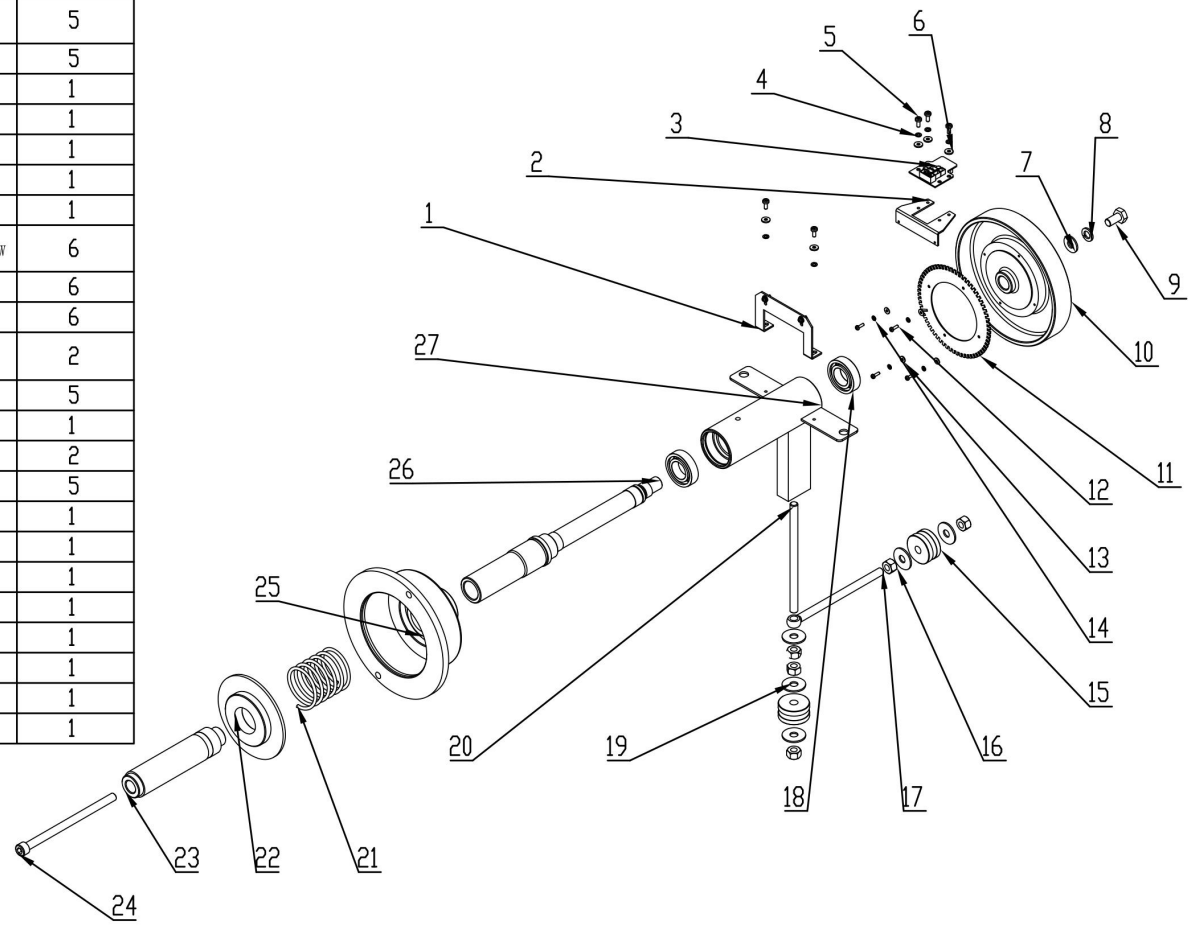
No.	Name	Qry
1	Monitor mounting base	1
2	screw M6×20	1
3	washer ø6	1
4	mounting bracket socket	1
5	LCD Bracket	1
6	screw M4×10	4
7	LCD display	1
8	nut M3	4
9	nut M3	4
10	key board	1
11	key	4
12	keypad mounting plate	1
13	screw M3×25	8
14	mask	1

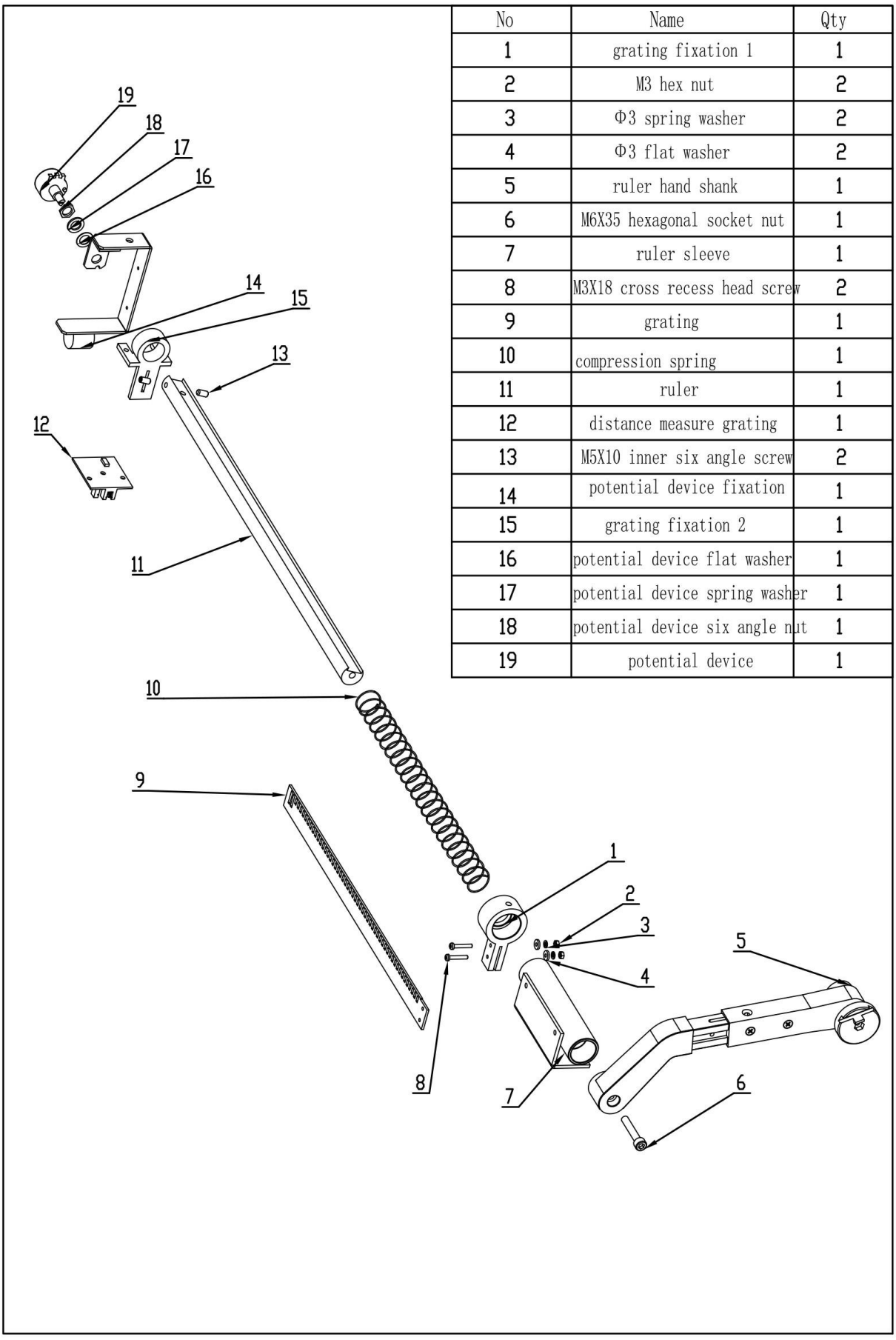
PIC.4

No	Name	Qty
1	frame	1
2	axle sleeve	2
3	M8X20 hexagonal nut	6
4	Φ8 flat washer	12
5	protect cover base	1
6	switch	1
7	M10X20 hexagonal nut	1
8	limited plate	1
9	axle loacting sleeve	1
10	M6X35 hexagonal nut	1
11	axle 1	1
12	M6X20 hexagonal nut	1
13	M6 hexagonal nut	3
14	axle 2	1
15	protect cover	1
16	M6X20 nut	2
17	Φ6 spring washer	2
18	Φ6 flat washer	4
19	Φ8 spring washer	6
20	M8 hexagonal nut	6

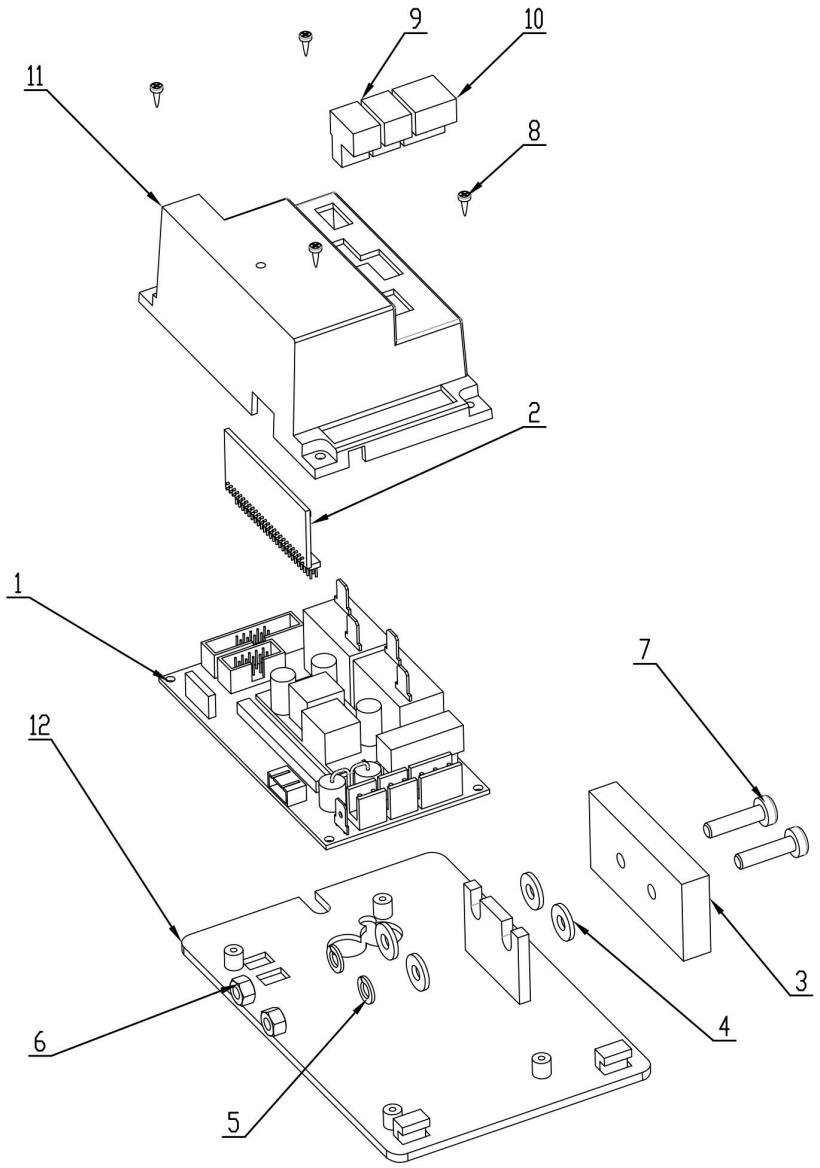


No	Name	Qty
1	grating plate undercarriage	1
2	grating plate grounding	1
3	grating electic board	1
4	Φ4 spring washer	5
5	M4X10 cross recess head screw	5
6	Φ4 flat washer	5
7	Φ10 flat washer	1
8	Φ10 spring washer	1
9	M10X20 hex bolts	1
10	belt pulley	1
11	fluted disc	1
12	M3X10 cross recess head screw	6
13	Φ3 flat washer	6
14	Φ3 spring washer	6
15	electric sensor	2
16	M10 hex nut	5
17	slipknot bolts	1
18	bearing 47X25X12	2
19	ϕ10 big plain washer	5
20	screw	1
21	spring	1
22	spring bearer plate	1
23	T36 forcing spindle	1
24	M10X160 soket head cap screw	1
25	matching disc	1
26	main shaft	1
27	axle sleeve	1





No	Name	Qty
1	grating fixation 1	1
2	M3 hex nut	2
3	Φ3 spring washer	2
4	Φ3 flat washer	2
5	ruler hand shank	1
6	M6X35 hexagonal socket nut	1
7	ruler sleeve	1
8	M3X18 cross recess head screw	2
9	grating	1
10	compression spring	1
11	ruler	1
12	distance measure grating	1
13	M5X10 inner six angle screw	2
14	potential device fixation	1
15	grating fixation 2	1
16	potential device flat washer	1
17	potential device spring washer	1
18	potential device six angle nut	1
19	potential device	1



No	Name	Qty
1	Electric power board	1
2	CPU	1
3	Brake resistance	1
4	Φ5 flat washer	4
5	Φ5 spring washer	2
6	M5 hexagonal nut	2
7	M5x20 cross recess head screw	2
8	ST2.5X7 self threading pin	4
9	PCB terminal head-2	2
10	PCB terminal head-3	1
11	Electric power board protect	1
12	Electric power board plastic bracket	1