CATALOGUE

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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.

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.

2. Specification and Features

2.1 Specification

- Max wheel weight: 150kg
- Motor power: 0.75kw
- Power supply: 220V /380V
- Rotating speed: 200r/min
- Cycle time: 8s
- Rim diameter: 10〃～30〃
- Rim width: 1.5〃～20〃
- Noise: ＜70dB
- Net weight: 235kg
- Dimensions: 1220mm×960mm×1210mm

2.2 Features

- Adopt 6 LED display, it has flexible indicator operating function.
- Various balancing modes can carry out counterweights to stick, clamp and etc.
- Intelligent self-calibrating.
- Self fault diagnosis and protection function.
- Applicable for various rims of steel structure and duralumin structure.
- Balance car and truck tyres (maximum tyre diameter 1300mm), by pressing key “Z”. Display panel has indicating lights to indicate tyre type. Car is for car tyre and Truck is for truck tyre.
- Equipped with pneumatic lifting device.
- Equipped with pedal braker for stable positioning and convenient adding weights

2.3 Working Environment

- Temperature: 5～50℃;
- Altitude: ≤4000m
- Humidity: ≤85％

3. The Constitution of Dynamic Balancer

Two major components of the dynamic balancer are: mechanic part and electric system

3.1Mechanic part

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

3.2 Electric system

1. The microcomputer system consists of LED display, keyboard, and LSI circuit such as new MCU CPU.
2. Testing speed and positioning system consists of gear and opto-electronic coupler.
3. Two-phase asynchronous motor supplies and controlling circuit.
4. Horizontal and vertical pressure sensor.
5. Hood protection: machine can not start if protection hood is not put down.

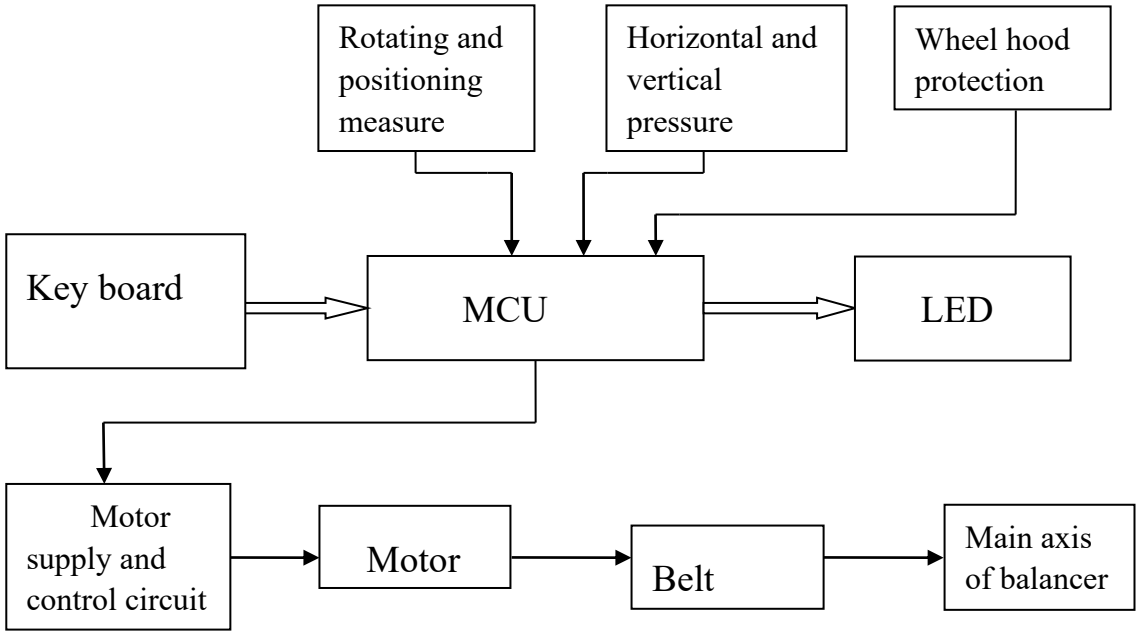


Figure 3-1 electric system

4. Installation of Dynamic Balancer

4.1 Opening and Checking

Open the package and check whether there are damaged parts. If there are any questions, please do not use the equipment and contact the supplier. Equipment standard accessories, please refer to the accessories table.

4.2 Installing machine

4.2.1The balancer must be installed on the solid cement or similar ground. Unsolidified ground can bring measuring errors.

4.2.2 There should be 500mm around the balancer in order to operate conveniently.

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

4.3 Installing hood

If protection hood needs to be installed, insert protection hood bracket to shaft on the back of machine body, and fix it with M16 screws in spare parts box.

4.4 Installing screw stud of drive axis

Fasten threaded screw as per following arrow direction（Figure 4-1）。

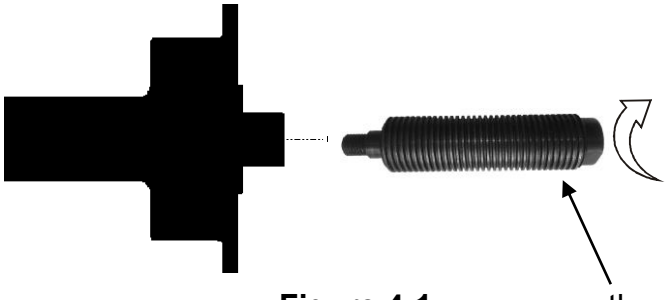


Figure 4-1

5. LED display and function keys

5.1 LED display and key board function introduction

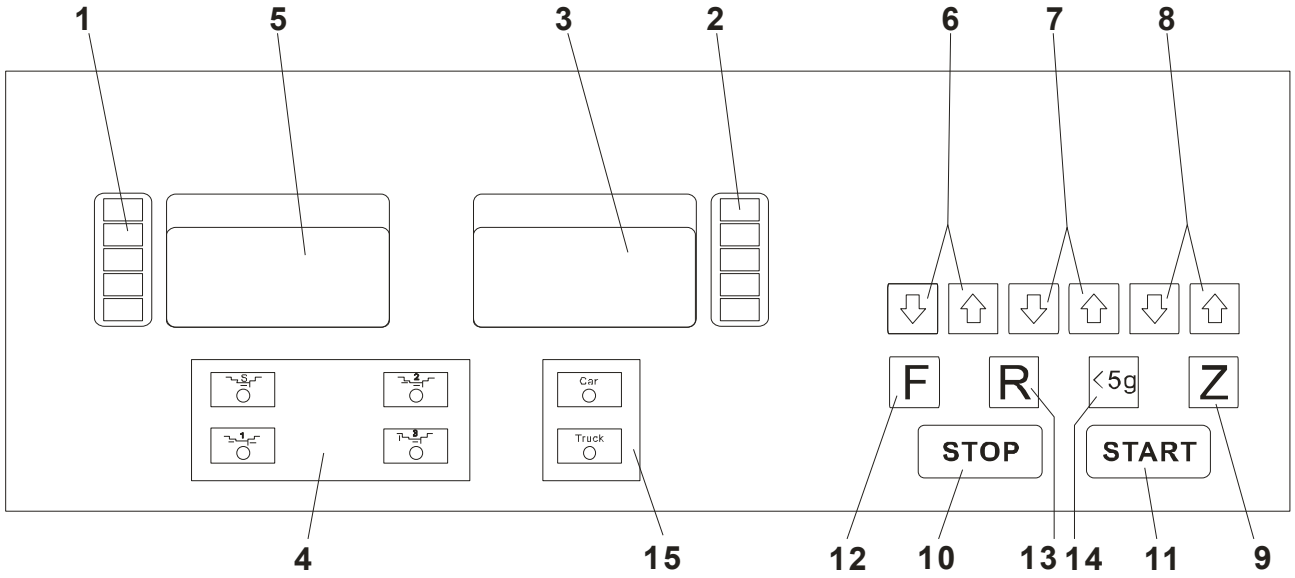


Figure 5-1

1-Digital readout, position of imbalance, inside
2-Digital readout, position of imbalance, outside
3-Digital readout, amount of imbalance, outside
4-Indicator, “ALU” correction mode selected
5-Digital readout, amount of imbalance, inside
6-Push buttons, manual DISTANCE (a) setting
7-Push buttons, manual WIDTH (b) setting
8-Push buttons, manual DIAMETER (d) setting
9-Push button, car tyre and truck tyre shifting
10-Push button, emergency stop setting
11-Push button, machine start
12-Push button, balancing mode shifting
13-Push button, recalculate imbalance value or key for function combination
14-Push button, real imbalance amount displa

NOTE: Only use the fingers to press buttons. Never use the counterweight pincers or other pointed objects to press buttons.

5.2 Combination function keys introduction

[R] + [START]: Push buttons for self-calibration
[R] + [F]: Push buttons for self-checking
[STOP] + [a↓] + [a↑]: Push buttons for shift of gram and ounce
[STOP] + [F]: Push buttons for machine setting

6. Installing and Demounting the Wheel

6.1 Checking the wheel

The wheel must be clean, without sand or dust on it, and remove all the previous counterweights of the wheel. Check the tyre pressure whether up to the rated value. Check whether positioning plane of rim and mounting holes deformed.

6.2 Installing the wheel

6.2.1 Select the most suitable in the tire center hole of the cone;

6.2.2 Figure 6-1, install wheel and cone to main shaft, fasten handles and make sure

cone can press wheel tightly. After fix wheel tightly, balancing operation can be carried out.

6.2.3 Figure 6-2, when balancing truck tyres, install a flange with diameter bigger than rim central hole size, to main shaft, then lift tyre by lifting device, install tyre to main shaft, put on a suitable cone and fasten tyre with quick release nut.

6.3 Demounting the Wheel

6.3.1 Demount the quick clamp

6.3.2 Raise the wheel and then take it down from main axis.



Figure 6-1



Figure 6-2

Note: do not slide wheel on main shaft to prevent main shaft from scuffing while installation and demounting the Wheel

7. The input methods of rim data and the wheel balance operation

7.1 The power-on state of the machine

After the machine is powered on, it starts initialization automatically. The initialization will be completed after two seconds. Then the machine enters normal dynamic (clamp counterweights on the correction plane of the both edged sides of rim) mode automatically (Figure 7-1), ready for input data of rim.

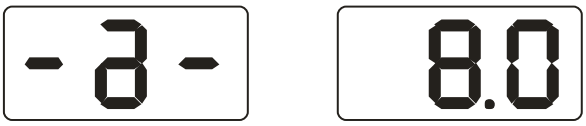


Figure 7-1

7.2 Data of wheel input method and wheel balance operation for normally dynamic balance mode

7.2.1 After the machine is powered on, it enters the normal balance mode

7.2.2 Input data of rim

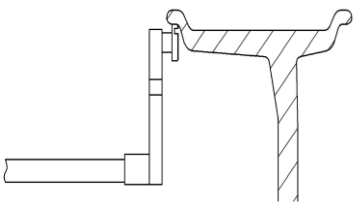


Figure 7-2

Move the measure scale, pull the ruler head to the edge of the rim inside (Figure 7-2), and get the readout of value “a” indicated by ruler, then put ruler back. Press [a↓] or [a↑] to input value “a”.

7.2.3 Input data of rim width

Get the width value indicated on rim or measured by ruler, then press [b↓] or [b↑] key to input value “b”.

7.2.4 Input data of rim diameter.

Get the diameter value indicated on rim or measured by ruler, then press [d↓] or [d↑] key to input value “d”.

7.2.5Normal dynamic balance mode operation process

Input data of rim, lay down protection hood, press START key to make wheel rotate. After stop, both sides LED displays show imbalance weight between both sides.

Slowly rotate wheel. When inside position indicator lights (figure 5-1(1)) are all on, clip corresponding counterweight, showing by left side LED displays, on 12 o’clock position on inside of rim (figure 7-3). Again slowly rotate wheel. When outside position indicator lights (figure 5-1(2)) are all on, clip corresponding counterweight, showing by right side LED displays, on 12 o’clock position on the outside of rim (figure 7-4). Then lay down protection hood and press START key to make wheel rotate. After stop, both side LED displays show “0”. Balance process is completed.

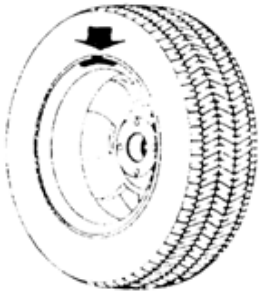


Figure 7-3

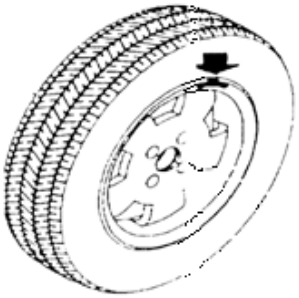


Figure 7-4

7.3 The data input method of ALU-1 mode and balance operation process

Follow **7.2** to input data of rim. Press F key to make ALU-1 indicating light on so as to balance wheel at ALU-1 mode.

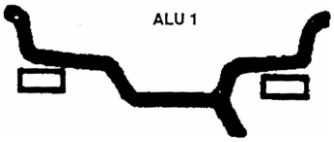


Figure 7-5

Input data of rim, lay down protection hood, press START key, rotate wheel. After stop, both sides LED displays show imbalance weight between both sides. Slowly rotate wheel. When inside position indicator lights (figure 5-1(1)) are all on, clip corresponding counterweight, showing by left side LED displays, on 12 o’clock position on inside of rim (figure 7-5). Again slowly rotate wheel. When outside position indicator lights (figure 5-1(2)) are all on, clip corresponding counterweight, showing by right side LED displays, on 12 o’clock position on the outside of rim (figure 7-5). Then lay down protection hood and press START key to make wheel rotate. After stop, both side LED displays show “0”. Balance process is completed

7.4 The data input method of ALU-2 balance mode and wheel balance operation process

Follow 7.2 to input data of rim, press F key to make ALU-2 indicating light on. Then wheel can be balanced in ALU-2 mode.

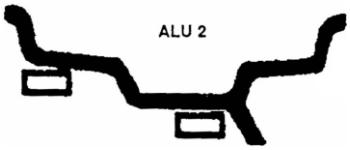


Figure 7-6

Input data of rim, lay down protection hood, press START key, rotate wheel. After stop, both sides LED displays show imbalance weight between both sides. Slowly rotate wheel. When inside position indicator lights (figure 5-1(1)) are all on, clip corresponding counterweight, showing by left side LED displays, on 12 o'clock position on inside of rim (figure 7-6). Again slowly rotate wheel. When outside position indicator lights (figure 5-1(2)) are all on, clip corresponding counterweight, showing by right side LED displays, on 12 o'clock position on the outside of rim (figure 7-6). Then lay down protection hood and press START key to make wheel rotate. After stop, both side LED displays show "0". Balance process is completed

7.5 The data input method of ALU-3 balance mode and wheel balance operation process

Follow 7.2 to input wheel data, press F key to make ALU-3 indicating light on, then wheel can be balanced in ALU-3 mode.

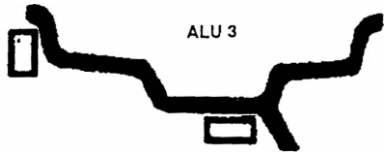


Figure 7-7

Slowly rotate wheel. When inside position indicator lights (figure 5-1(1)) are all on, clip corresponding counterweight, showing by left side LED displays, on 12 o'clock position on inside of rim (figure 7-7). Again slowly rotate wheel. When outside position indicator lights (figure 5-1(2)) are all on, clip corresponding counterweight, showing by right side LED displays, on 12 o'clock position on the outside of rim (figure 7-7). Then lay down protection hood and press START key to make wheel rotate. After stop, both side LED displays show "0". Balance process is completed.

7.6 Static balance (S) operation process

S mode is only suitable for rim, on which counterweight can be clipped on the middle position, such as motorcycle rim.

In the normal mode, measure diameter "d" of the position with counterweight (figure 7-10), then press [d+] or [d-] to input value "d". (Value "a" and value "b" can be random value). Press [F] to enter S mode.

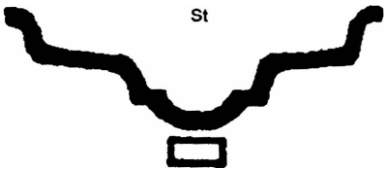


Figure 7-10

Input rim data, lay down protection hood, press START key to make wheel rotate. After stop, left side display shows ST, right side display shows imbalance amount (figure 7-11). Slowly rotate wheel. When inside position indicating lights (figure 5-1(1)) and outside position indicating lights (figure 5-1(2)) are all on, stick corresponding counterweight, showing LED displays, on 12 o'clock position on the rim (figure 7-10). Lay down protection hood, press START key to rotate the wheel. After stop, LED displays show "0". Balance process is completed.

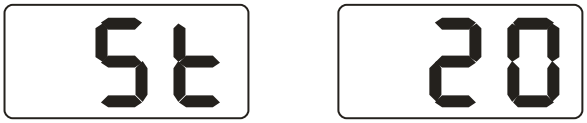


Figure 7-11

7.7 Recalculation function

Before wheel balance testing, sometimes input of current data of rim is forgotten. You can input date of rim after wheel balance testing. No need to press START key. Only press recalculation key (R), system will follow new data of rim to calculate imbalance amount. Press R key against the interface currently showing imbalance value, currently rim data of input can be checked.

8. The Self-calibrating of Dynamic Balancer

The self-calibrating of dynamic balancer has been finished before ex-factory. But the system parameter may vary because of long-distance transportation or long-term use, which may cause error. Therefore, users can make self-calibrating after a period of time.

Process is as follows:

8.1 Power on machine. After the initialization (figure 8-1)，install a middle size and comparatively balanced wheel on which counterweight can be clipped. Then follow step 7.2 input data of rim;

8.2 Press R key and START key, (figure 8-1), lay down protection hood, press START key for next step, press STOP key to exit;



Figure 8-1

8.3 After main shaft stop (figure 8-2), open up protection hood, clip a piece of 100 gram counterweight on anywhere of outside of rim, lay down protection hood, press START key for next step, press STOP key to exit;



Figure 8-2

8.4 After main shaft stop (figure 8-3), Self-calibration is completed. Demount wheel, then balancer is ready to work.



Figure 8-3

NB：In the process of self-calibration, data of rim for input must be correct. 100 gram counterweight must be accurate. Otherwise self-calibration result will be wrong. And wrong self-calibration will make balancer measure precision decline.

9. Gram-Oz conversion operation

This operation for counterweight maund conversion (gram-Oz).

9.1 Press [STOP] key, [a↑] key and [a↓] key, display as per figure 9-1, denoting currently maund is gram;



Figure 9-1

9.2 Press [b↑] key or [b↓] key, display as per figure 9-2, denoting currently maund is Oz;



Figure 9-2

9.3 Press [b↑] key or [b↓] key again to shift maund between gram and Oz;

9.4 Press [a↑] key to save setup and exit. The setup is still remained after power off.

10. Machine settings

10.1 Key-tone function setting

This function can turn on or turn off key-tone. When function is turned on, system will make a sound “di” for every time key press. If the function is turned off, there will be no sound for key press.

Press STOP and F key (figure 10-1), Right side display shows ON, denoting function is on. Right side display shows OFF, denoting function off. Press [b↑] key or [b↓] key to shift between “ON” and “OFF”. Press [a↑] key to save settings and enter next step；



Figure 10-1

10.2 Display monitor brightness settings

This function will allow to set display brightness as per environment and user’s need;

Follow 10.1 to press [a↑] for enter setting (figure 10-2), Right side display shows brightness level. Totally there is 8 levels. Level 1 is dimmest and level 8 is brightest. Default level is 4. Press [b↑] key or [b↓] key to select brightness level. Press [a↑] key to save settings and enter next step;

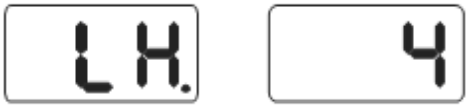


Figure 10-2

10.3 INCH and MM conversion operation

Data on most rims is of INCH unit. If the unit is MM, length unit for system can be set to MM. Before unit setting, if the displayed value is fraction, current unit is INCH. If the displayed value is a whole number, current unit is MM. System default length unit is INCH. Setting of unit will not be maintain remained after power off.

Follow 10.2 to press [a↑] for entering setting (figure 10-3). Right side display shows ON, denoting unit is INCH. Right side display shows OFF, denoting unit is MM. Press [b↑] or [b↓] to shift setting between ON and OFF. Press [a↑] to save setting and exit；

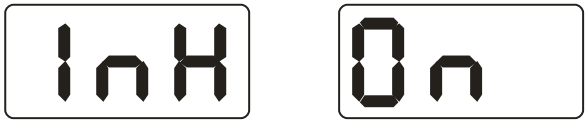


Figure 10-3

11. Machine self test function

This function is for checking whether various input signals are ok or not, and provides gist for error analysis.

11.1 LED and indicating light checking

Press R key and F key, all the LEDs and indicating lights will flash in turn. This function

is for checking fault LEDs or indicating lights. Press [STOP] key to exit. Then display figure 11-1 and enter position sensor checking. Press [SATOP] to exit

11.2 Position sensor signal check

This function is for checking whether position sensor, main shaft and main board circuit are ok or not.

As per figure 11-1, slowly rotate main shaft, the displayed value on the right side LEDs should change. Value increases for clockwise turn and decreases for. anticlockwise turn. Normally the value changes from 0 to 63. Press [a↑] key, enter piezoelectric sensor checking. Press [STOP] key to exit.



Figure 11-1

11.3 Piezoelectric sensor signal checking

This function is for checking whether piezoelectric sensor, main board signal processing circuit and power are ok or not.

Follow 11.2 to press [a↑] key for entering (figure 11-2). Then gently press main shaft. Normally, the values on two sides LEDs will change. Press [a↑] key to exit.

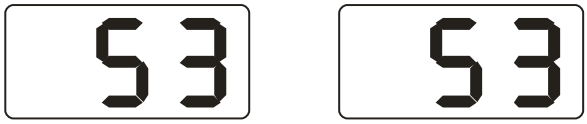


Figure 11-2

12. Safety Protection and Trouble Shooting

12.1 Safety protection

Under the circumstance of operation, if the machine does not operate normally, Press STOP key, the rotating wheel will stop immediately, display OFF.

12.2 Trouble shooting

12.2.1 Press START key, main shaft not rotate, LED display shows Err-1-. Please check motor, power supply board, computer board and cable connections;

12.2.2 Press START key, main shaft rotate, LED display shows Err-1-. Please check position sensor, computer board and cable connections;

12.2.3 If main shaft still rotates for a long time without braking after balance test finish, please check brake resistance, power supply board, computer board and cable connections;

12.2.4 Power on machine and no display, please check whether power swich indicating light is flashing. If not, it is the power supply problem. Otherwise please check the power supply board, computer board and the cable connections;

12.2.5 Usually precision problem is not caused by the balancer machine. It is probably because of wrong wheel installation, or inaccurate counterweight, or inaccurate counterweight of 100 gram for balance self-calibration. Please reserve the original equipped 100 gram counterweight properly, which is for self-calibration only.

12.2.6 Instability and poor repeatability of data are not usually caused by the balancer machine. It is probably because of wrong wheel installation, or not firm or level-off ground. Please fix the machine by anchor bolts. Sometimes no connected earth wire may cause this phenomenon.

12.2.7 If add weights many times, the tire still can not be balanced, it is possible the operator did find the correct unbalanced position and weights were not added on the correct position. Follow the instructions to do the self-calibration once. If still can not solve the problem, check it as following ways: 1)put down the protective cover, start the machine to test the tire; 2)turn the tire slowly by hand, to find the lateral unbalanced position; 3)add a 100g weight on the lateral position of rim(12 o' clock position); start the machine to test the tire, turn the tire by hand slowly, to find the lateral unbalanced position; check if the position of 100g weight is on the position of 6 o' clock(the bottom position); If no, it means the parameters of the machine has changed, please contact the dealer or manufacturer to solve it.

Hint: right method to check precision:

Input right date of wheel(a. b. d value),consult instruction do a self-calibration, press START process balance operation, note down date of first time, clip 100 gram counterweight on the outside edge of wheel(when outside indicator light all on is top zenith position),press START key again process balance operation, this date of outside display addition date of first time, should amount 100±2,manually slowly turn the wheel, when light of outside all on, check 100 gram counterweight whether at 6 o'clock position, if not amount 100 gram or 100 gram counterweight not at 6 o'clock position, indicate balancer precision have problem, if amount is 100 gram, follow same method check inside, check inside whether amount is 100 gram and at 6 o'clock.

13. Maintenanc

13.1 The daily maintenance by non – professionals

Before the maintenance, please switch off the power-supply.

13.1.1 Adjust the tension of the belt.

13.1.1.1 Dismantle the top cover hood;

13.1.1.2 Unscrew motor screw, move the motor till the belt's tension is proper, and emphatically press the belt downwards about 4mm;

13.1.1.3 Screw motor screw and install the top cover hood.

13.1.2 Check whether the wires of electricity part connects are reliable.

13.1.3 Check whether the screw stud of the main shaft is loose.

13.1.3.1 Locking nut can not fix wheel tighten on main shaft.

13.1.3.2 Use hexagonal wrench to tighten the screw stud of the main shaft.

13.2 The maintenance by professionals

The professionals should be from the machine suppliers.

13.2.1 If the imbalance amount of tested wheel has obvious error (amount is too big) and can be improved after self-calibrating, it proves the parameter in the machine has changed and needs professionals to correct it.

13.2.2 The replacing and adjusting for pressure sensor should be operated by professionals as per the following methods:

1. Unscrew the No.1, 2,3,4,5 nuts.
2. Dismantle the sensor and screw stud.
3. Replace No.6, 7 the sensor components.
4. Install the sensor and the screw stud as per Figure 13-1. (Pay attention to the sensor's direction.)

5. Screw No.1 nut emphatically.
6. Screw the No.2 nut to make the main shaft and the flank of cabinet vertical, and then emphatically screw the No.3 nut.
7. Screw the No.4 nut (not so emphatically), then screw No.5 nut.

13.2.3 The replacing of circuit board and its components should be operated by professionals.

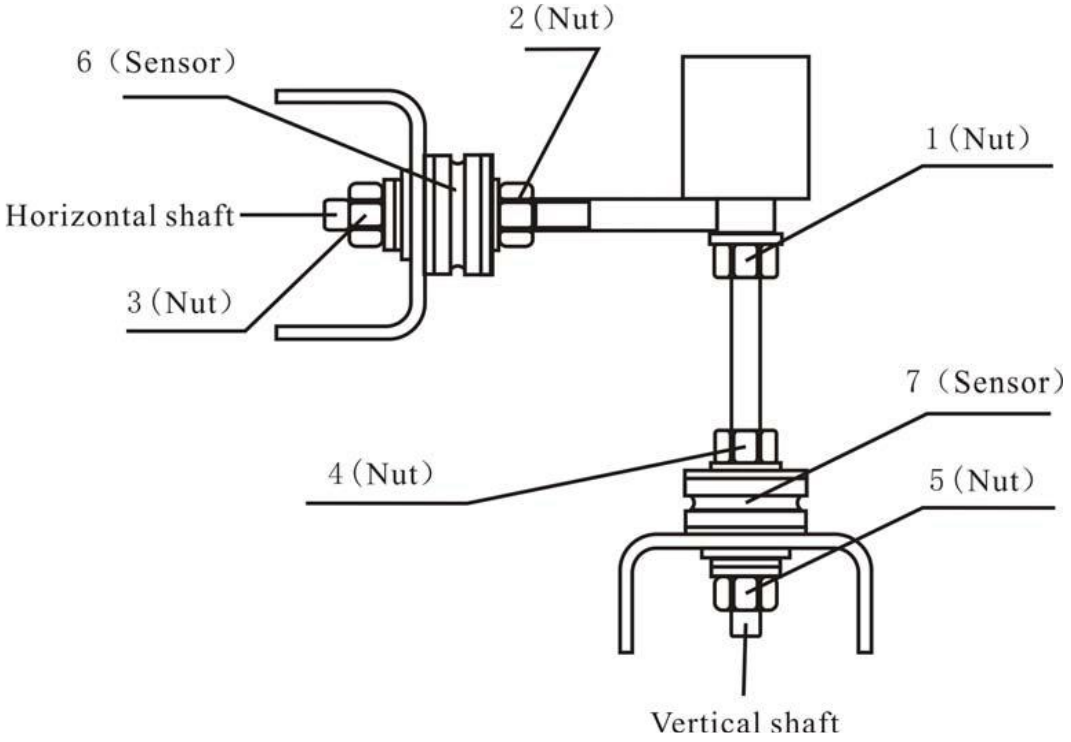
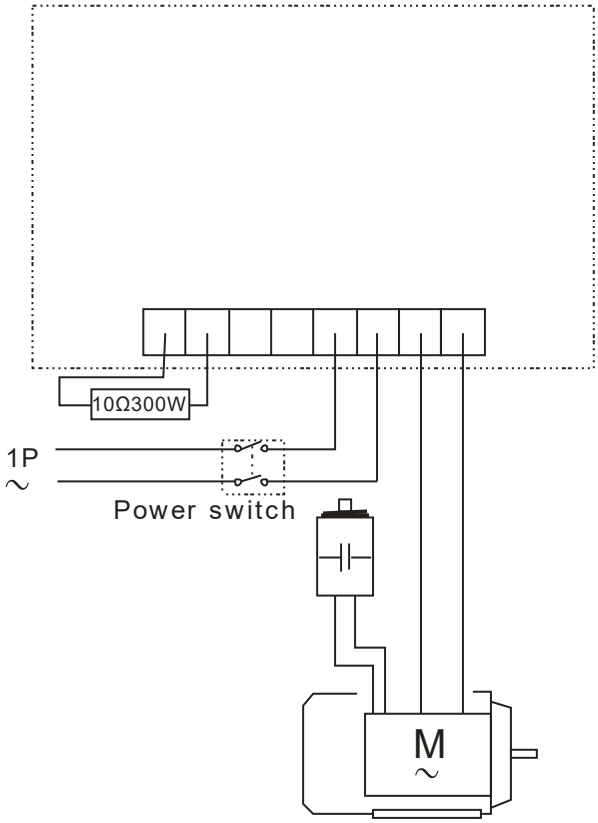


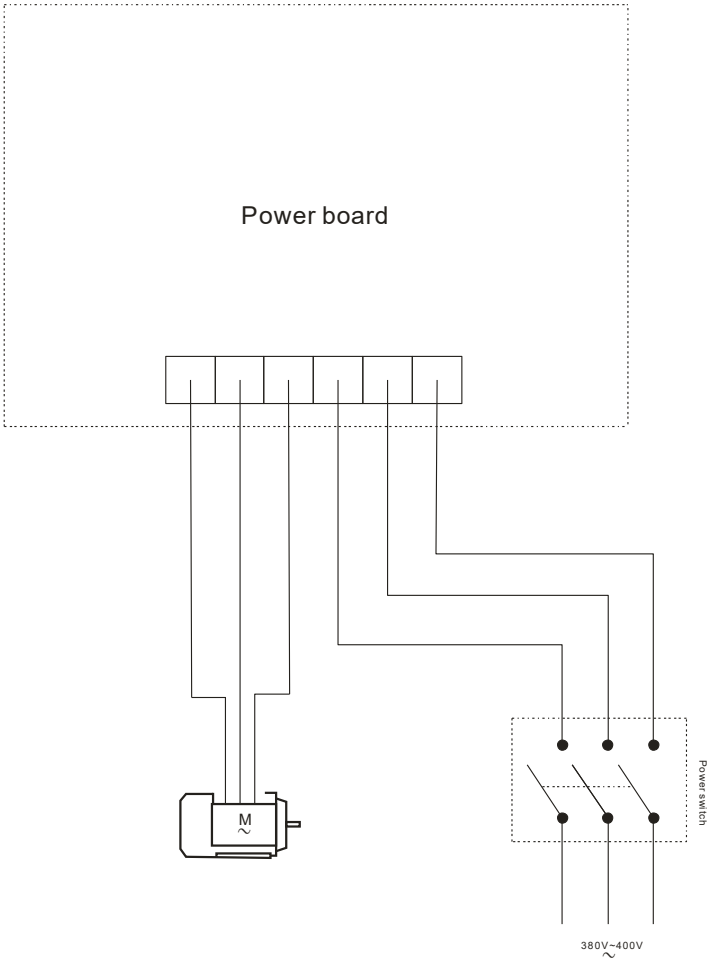
Figure 13-1

14. Power supply layout diagram

14.1 220V layout diagram



14.2 380V layout diagram

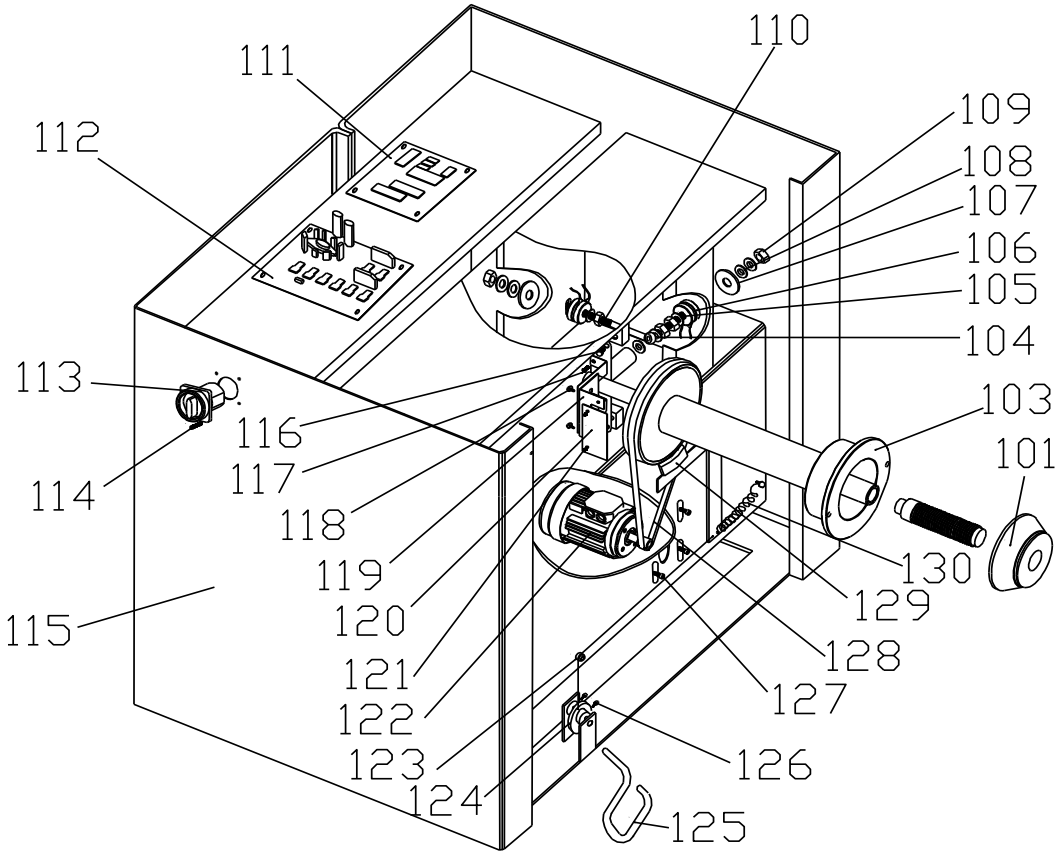


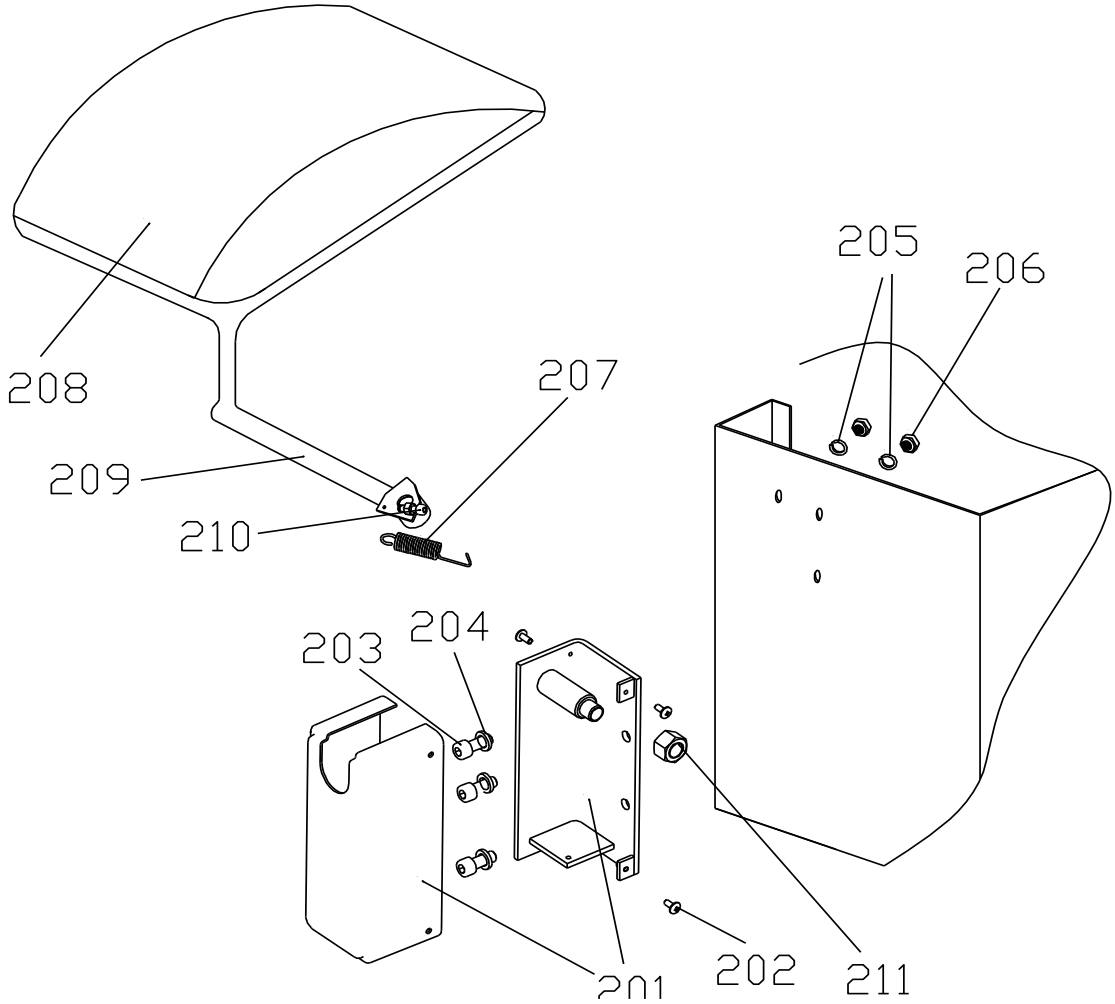
15. Trouble-error code table

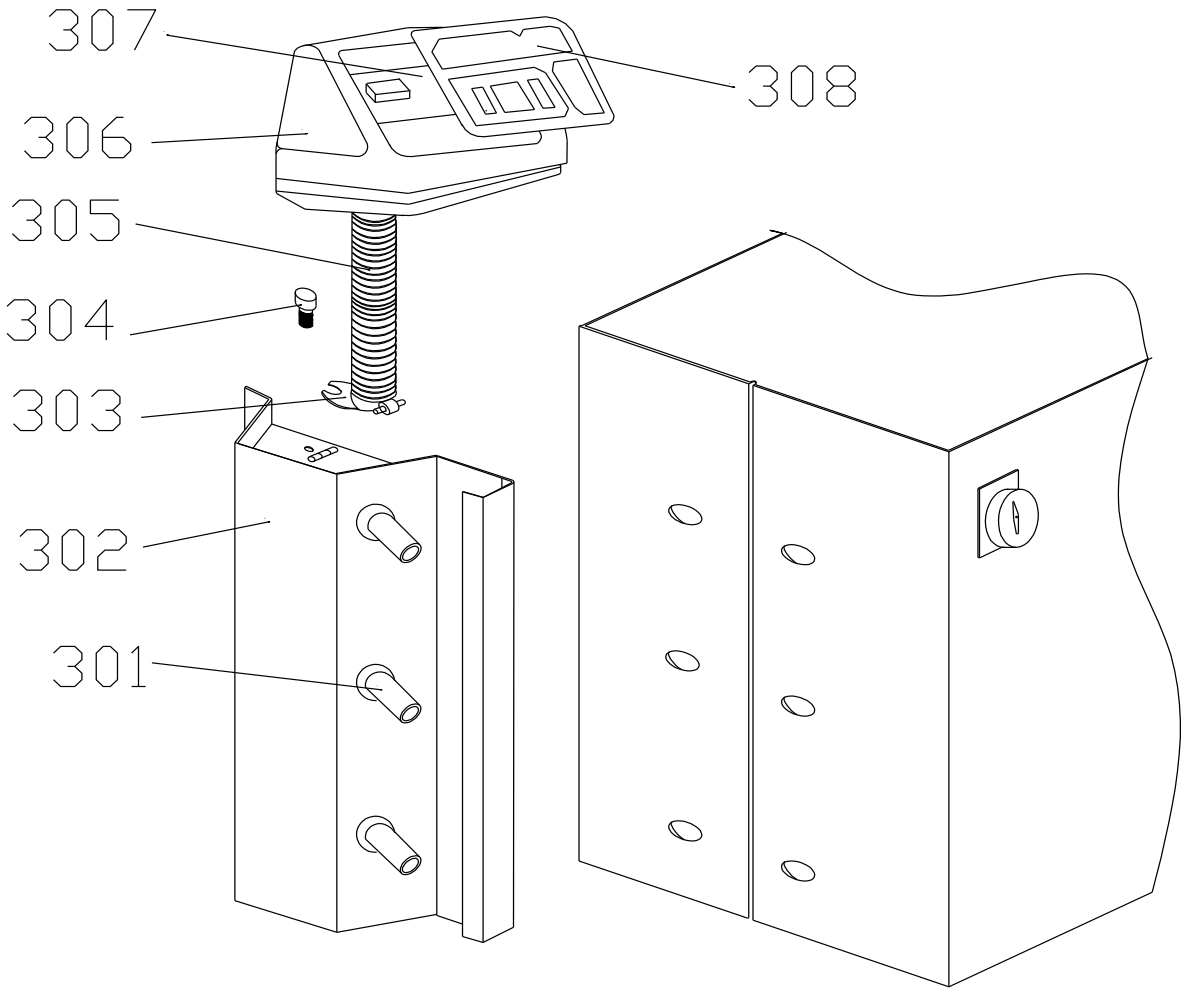
When balancer displays hint of error, please refer to below table to shoot troubles:

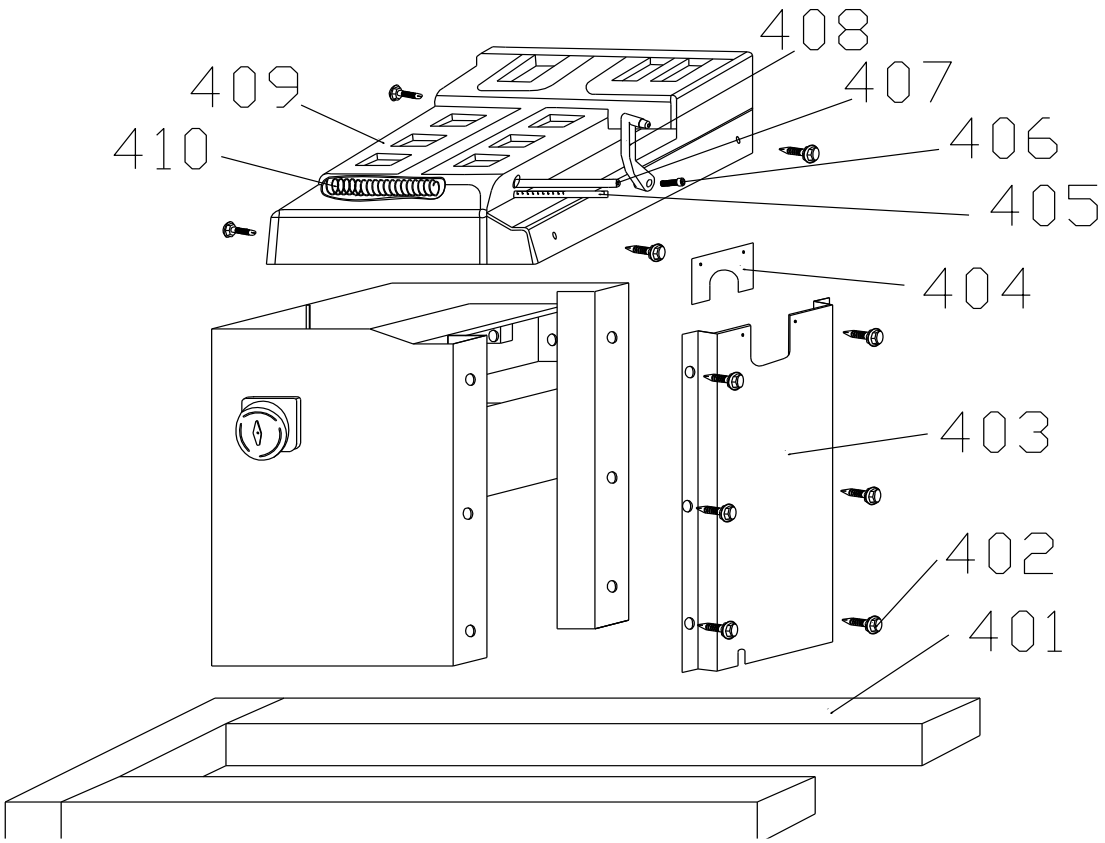
Code	meanings	cause	remedy
Err 1	Main shaft not rotate or have no rotate signal	1.motor fault 2.position sensor fault 3.power supply board fault 4.computer board fault 5.connection-peg untouched	1.change motor 2.change position sensor 3.change power supply board 4.change computer board 5.check cable connections
Err 2	The rotation speed low	1. position sensor fault 2. wheel not installed tightly or wheel too light 3. motor fault 4. driving belt too loose or too tight 5. computer board fault	1. change position sensor 2. re-install wheel tightly 3. change motor 4.adjust driving belt elasticity 5. change computer board
Err 3	Miscalculation	imbalance amount beyond calculation range	Repeat self-calibration or change computer board
Err 4	Main shaft rotation backwards	1. position sensor fault 2. computer board fault	1. change position sensor 2. change computer board
Err 6	Sensor signal transact circuit not work	1. power supply board fault 2. computer board fault	1.change power supply board 2. change computer board
Err 7	Lose data of interior	1. self-calibration failure 2. computer board fault	1. Repeat the self-calibration 2. change computer board
Err 8	Self-calibration memory failure	1. not clip 100 gram on the rim when self-calibration 2. power supply board fault 3. computer board fault 4. press sensor fault 5. connection-peg untouched	1.follow right method to repeat self-calibration 2.change power supply board 3. change computer board 4.change press sensor 5.check cable connection

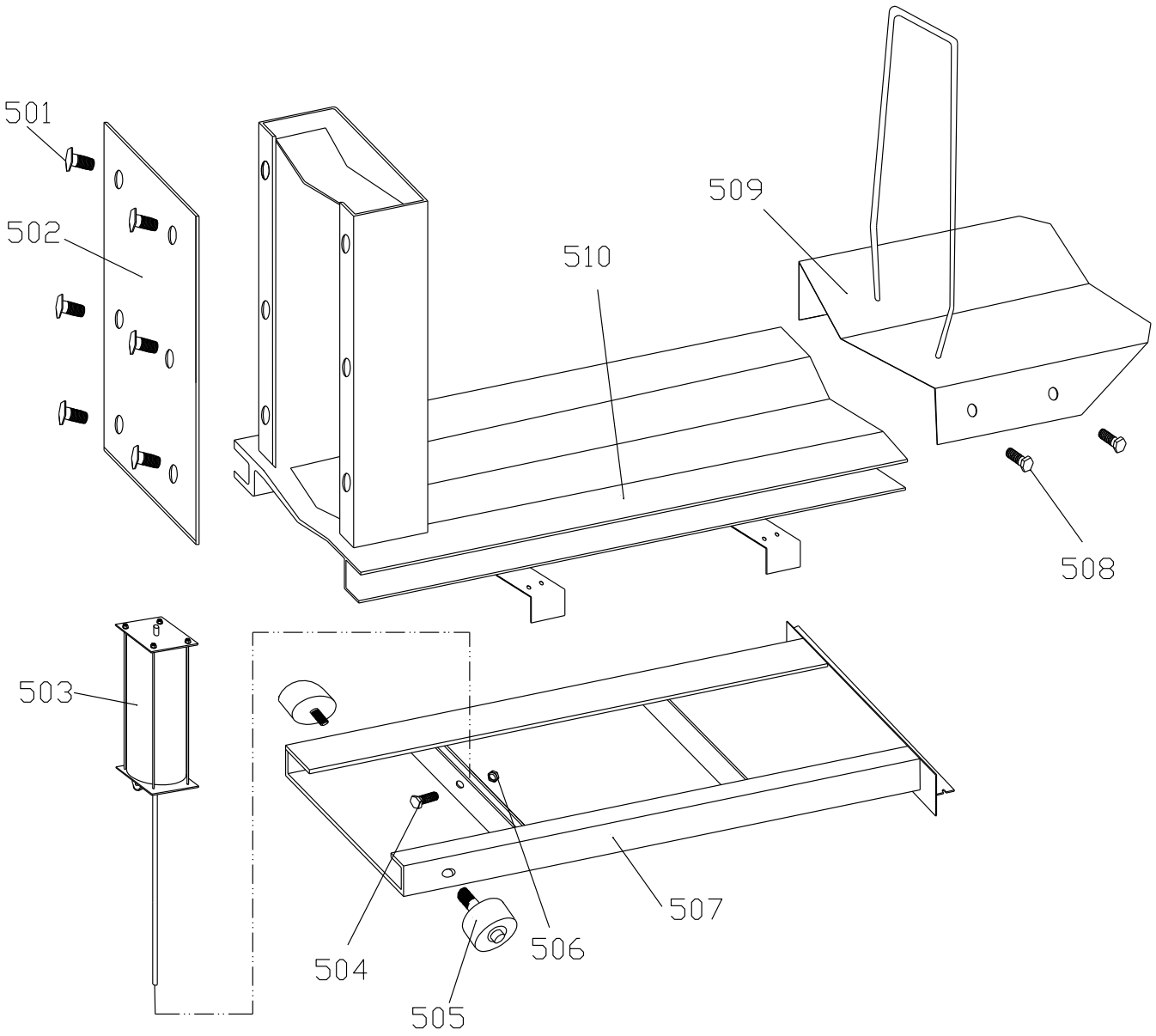
16. Exploded drawings






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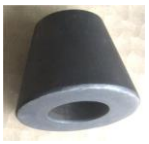
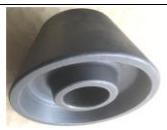

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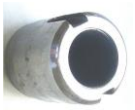

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17. Spare parts list

NO.	Code	Description		NO.	Code	Description
101		Set of cones		207	MM17005000005	Spring
103	MM17005000010	Bearing		208	JZ12000200168	Plastic cover
104	FJ15006000020	Washer		209	JZ20202800028	Support
105	MM17005000064	Through bolt (H)		210	FJ22009000017	Screw
106	MM17005000063	Sensor assembly		211	FJ21011000013	Nut
107	FJ15003000001	Washer				
108	FJ15001000002	Butterfly washer		301	MM17005000029	Tools hang
109	FJ21003000002	Nut		302	MM17005000059	Box
110	JZ20204600007	Through bolt (V)		303	MM17005000023	Support
111	JZ12300100102	Computer board		304	FJ22009000003	Screw
112	JZ12300200022	Power board		305	MM17005000024	Nylon knot
113	DD12009000002	Switch		306	MM17005000022	Plastic cover
114	FJ19022000026	Screw		307	JZ12300900004	Display board
115		Body		308	JZ12300500070	Key board
116	FJ22012000010	Screw				
117	FJ19022000018	Screw		401	MM17005000061	Pedestal
118	FJ19022000034	Screw		402	FJ22009000093	Screw
119	JZ20204600013	Support		403	MM17005000060	Big plate
120	JZ12300100126	Position Pick-up Board		404	MM17005000062	Small plate
121	FJ19022000016	Screw		405	JZ20205100025	Graduated strip
122		Motor		406	FJ22009000093	Screw
123	JZ12001800071	Idler pulley		407	MM17005000040	Rim gauge
124		Rotate pulley		408	MM17005000041	Handle bar
125	MM17005000032	pedal		409	JZ12001800117	Head with tools-tray
126	FJ22009000093	Screw		410	JZ11700200027	Spring
127	FJ22009000097	Screw				
128	FJ05001000001	Belt		501	FJ22012000095	Screw
129	JZ20202900079	Brake patch		502	MM17005000090	Cover board
130	JZ11700200015	Spring		503	MM17005000069	Cylinder casing
				504	FJ22012000014	Screw
201		Cover		505	MM17005000088	Pulley
202	FJ19016000014	Screw		506	FJ21011000005	Nut
203	FJ22012000095	Screw		507		Lift pedestal
204	FJ15006000107	Washer		508	FJ22012000012	Screw
205	FJ22012000100	Washer		509	MM17005000086	Move board
206	FJ21011000025	Nut		510	MM17005000091	Lift desk

Accessories list

Code	Description	Qty.	Photo
MM17005000018	CENTRING CONE	1	
MM17005000019	CENTRING CONE	1	
MM17005000014	LARGE SPACING RING	1	
MM17005000015	LARGE SPACING RING	1	
MM17005000012	CONE(OPTIONAL)	1	
MM17005000013	CONE	1	
MM17005000011	CONE	1	
	CONE	1	
	THREADED SHAFT	1	
MM17005000049	COUNTER WEIGHT	1	
JZ20204800001	COUNTER WEIGHT	1	
MM17005000016	COUNTER WEIGHT	1	
MM17005000045	COUNTER WEIGHT	1	

MM17005000046	COUNTER WEIGHT	1	
MM17005000047	COUNTER WEIGHT	1	
MM17005000048	COUNTER WEIGHT	1	
MM17005000037	CALIPER	1	
JZ11801300051	PLIER	1	
MM17005000053	LOCKING NUT	1	
MM17005000054	HANDLE	1	