CATALOGUE

V2014.03

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 Specificatio

- Max wheel weight: 65kg
- Power supply: ～220v 50hz
- Rotating speed: 120r/min
- Cycle time: 8s
- Rim diameter: 10〃～24〃(256mm～610mm)
- Rim width: 1.5〃～20〃(40mm～510mm)
- Noise: 小于 70db
- Net weight: 98Kg
- Dimensions: 960mm×760mm×1160mm

2.2 Features

- Adopt 6 LED display, it has flexible indicator operating function;
- Energy saving, motor free, rotating manually;
- 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.

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

3.1 Mechanic 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）Horizontal and vertical pressure sensor.

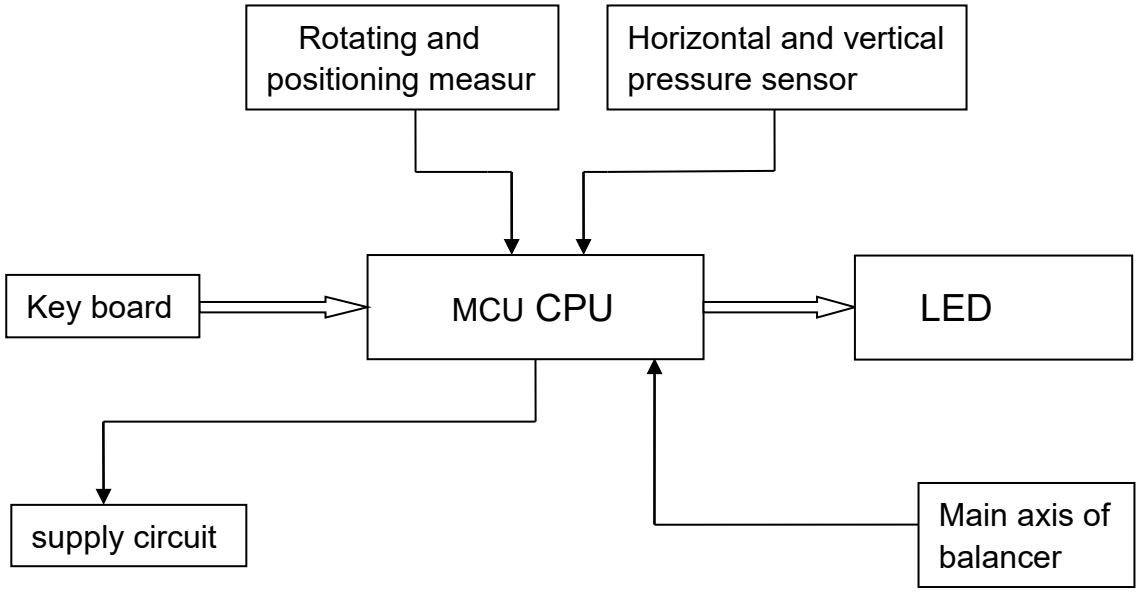


Fig 3-1 electric system

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. Standard accessories with equipment are shown as follows:

Screw stud of drive axis	1
Balancing pliers	1
Allen wrench	1
Measure caliper	1
Quick release nut	1
Adapter (cone)	4
Counter weight (100g)	1

4.2 Installing machine

4.2.1 The 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 screw stud of drive axis

Install screw stud of drive axis on the main axis with M10 × 150 socket bolt, then screw the bolt. (Refer to Fig 4-1)

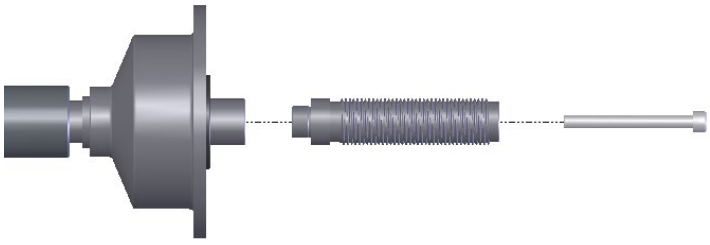


Fig 4-1

5. LED display and function keys

5.1 LED display and key board function introduction

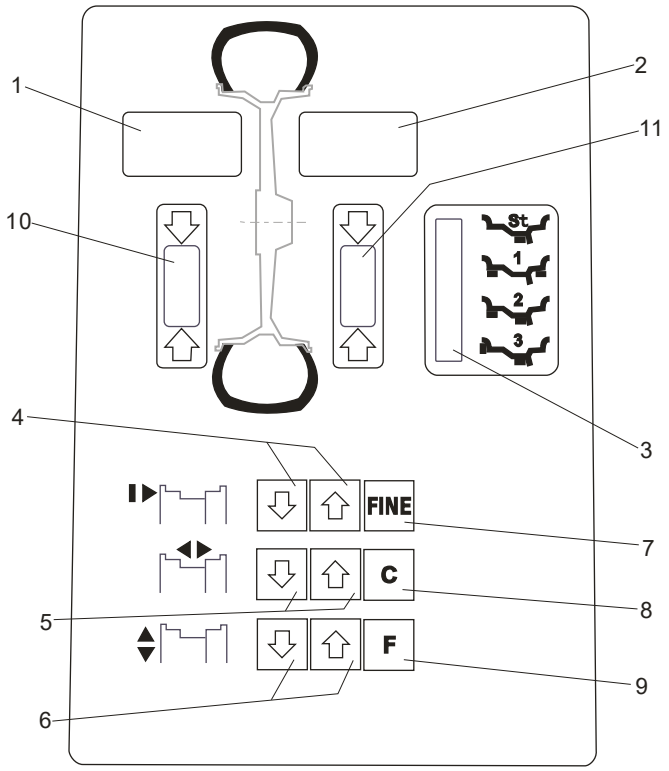


Fig 5-1

1-Digital readout, amount of imbalance, inside
2-Digital readout, amount of imbalance, outside
3-Indicator, correction mode selected
4-Push buttons, manual DISTANCE (a) setting
5-Push buttons, manual WIDTH (b) setting
6-Push buttons, manual DIAMETER (d) setting
7- Push buttons, Display The values below the threshold
8-Push button for recalculation of imbalance amount
9-Push button , selection of mode of correction
10-Digital readout, position of imbalance, inside
11-Digital readout, position of imbalance, outside

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

[FINE]+ [C] self-calibration
[FINE]+ [a↑] + [a↓] shift of gram and ounce
[C] + [F] self-checking
[FINE] + [F] machine setting

The unit of measurement chosen for the unbalance (grams or ounces) are stored in the machine's memory when it is switched off.

If the unit of measurement selected for the width and diameter (mm orinches) is inches, this selection must be repeated every time the machine is started up.

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 optimal cone for the center hole if there is center hole on the rim;

6.2.2 Two ways of installing the wheel: A. positive positioning; B. negative positioning.

6.2.2.1 Positive positioning (refer to Fig 6-1):

Positive positioning is commonly used. It operates easily, and it is applicable for steel and thin duralumin rims with small inner hole.

Installing process: main shaft →install suitable cone (small end towards outside) → install wheel → (installing plane of rim towards inside) → install quick release nut

6.2.2.2 Negative positioning (refer to Fig 6-2):

If rim inner hole is big and biggest cone is adopted, negative position is suitable so that rim can match shaft flange tightly. Installing process: main shaft → install wheel → install suitable cone （ big end towards outside ）→ 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

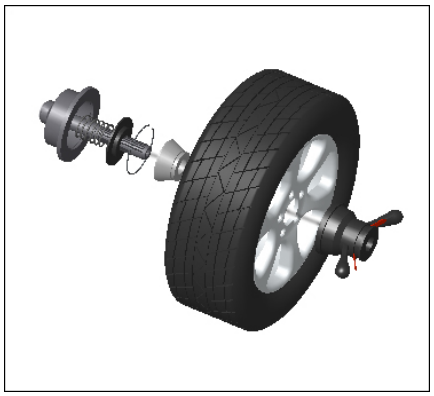


Fig 6-1

Fig 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 (Fig 7-1), ready for input data of rim.

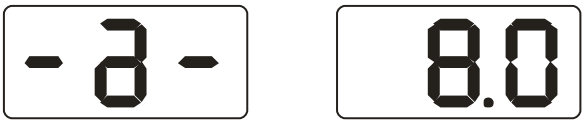


Fig 7-1

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

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

7.2.2 Input data of rim

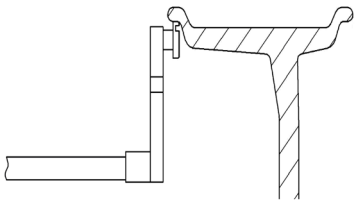


Fig 7-2

Move the measure scale, pull the ruler head to the edge of the rim inside (Fig 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”

7.2.5 Normal dynamic balance mode operation process

Input data of rim, manually rotate wheel, release the wheel when display is off. When LED display shows data, tread braking pedal to stop wheel, Slowly rotate wheel. When inside position indicator lights (Fig5-1(10)) are all on, clip corresponding counterweight, showing by left side LED displays, on 12 o’clock position on inside of rim (Fig 7-3). Again slowly rotate wheel. When outside position indicator lights (Fig 5-1(11) are all on, clip corresponding counterweight, showing by right side LED displays, on 12 o’clock position on the outside of rim (Fig 7-4). Again manually rotate wheel. Release the wheel when display is off. When both sides LED display show data, tread braking pedal to stop wheel. Balance process is completed.

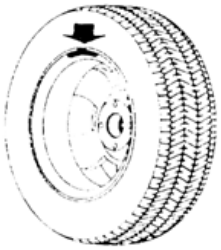


Fig 7-3

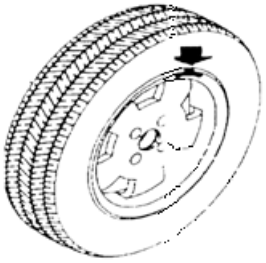


Fig 7-4

7.3 Static balance (ST) operation process

ST 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 (Fig 7-5), then press [d+] or [d-] to input value “d”. (value “a” and value “b” can be random value). Press [F] to enter ST mode.

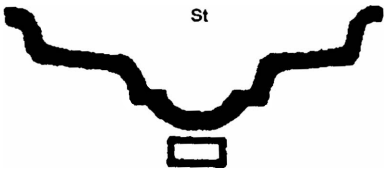


Fig7-5

Input data of rim, manually rotate wheel, release the wheel when display is off. When display shows like Fig 7-6, tread braking pedal to stop wheel, left side display shows ST, right side display shows imbalance amount. Slowly rotate wheel. When inside position indicating lights (Fig 5-1(10)) and outside position indicating lights (Fig 5-1(11)) are all on,

stick corresponding counterweight, showing LED displays, on 12 o'clock position on the rim (Fig 7-5). Again manually rotate wheel. Release the wheel when display is off. When both sides LED display show data, tread braking pedal to stop wheel. Balance process is completed.

Fig 7-6

7.4 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.

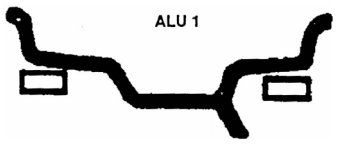


Fig 7-7

Input data of rim, manually rotate wheel, release the wheel when display is off. When display shows data, tread braking pedal to stop wheel, Slowly rotate wheel. When inside position indicator lights (Fig 5-1(10)) are all on, at the 12 o'clock position of rim inside edge , stick counterweight to value shown on the left side display(Fig 7-7 left).Again slowly rotate wheel. When outside position indicator lights (Fig 5-1(11) are all on, at the 12 o' clock position of rim outside edge , stick counterweight to value shown on the left side display(Fig 7-7 right). manually rotate wheel, Release the wheel when display is off. When LED display shows data, tread braking pedal to stop wheel. Balance process is completed.

7.5 The data input method of ALU-2 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.

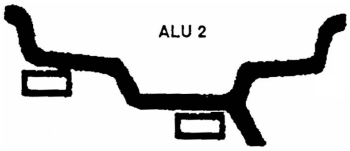


Fig 7-8

Input data of rim, manually rotate wheel, release the wheel when display is off. When display shows data, tread braking pedal to stop wheel, Slowly rotate wheel. When inside position indicator lights (Fig 5-1(10)) are all on, at the 12 o'clock position of rim inside edge , stick counterweight to value shown on the left side display(Fig 7-8 left). Again slowly rotate wheel. When outside position indicator lights (Fig 5-1(11) are all on, at the 12 o' clock position of spoke inside , stick counterweight to value shown on the right side display(Fig 7-8 right). manually rotate whee, Release the wheel when display is off. When LED display shows data, tread braking pedal to stop wheel. Balance process is completed.

7.6 The data input method of ALU-3 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.

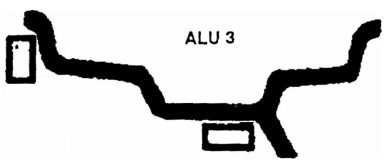


Fig 7-9

Input data of rim, manually rotate wheel, release the wheel when display is off. When display shows data, tread braking pedal to stop wheel, Slowly rotate wheel. When inside position indicator lights (Fig 5-1(10)) are all on, clip corresponding counterweight, showing by left side LED displays, on 12 o'clock position on inside of rim (Fig 7-9 left). Again slowly rotate wheel. When outside position indicator lights (Fig 5-1(11) are all on, at the 12 o' clock position of spoke inside , manually rotate wheel, stick counterweight to value shown on the right side display(Fig 7-9 right), manually rotate whee, Release the wheel when display is off. When LED display shows data, tread braking pedal to stop wheel. Balance process is completed.

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. And now no balancing test is required, Only press recalculation key (C), system will follow new data of rim to calculate imbalance amount. Press C 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 (Fig 7-1),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 [FINE] key and [C] key, (Fig 8-1), manually rotate whee, Release the wheel when display is off.

Fig 8-1

8.3 When display shows like Fig 8-2, tread braking pedal to stop wheel, clip a piece of 100 gram counterweight on anywhere of outside of rim, manually rotate whee, release the wheel when display is off. Then go to next step.

Fig 8-2

8.4 When display shows like Fig 8-3, tread braking pedal to stop wheel, Self-calibration is completed. Demount wheel, then balancer is ready to work.

Fig 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 [a-] or [a+] key，Fig 7-1;

9.2 Press [FINE] and hold, then press [a+] and [a-] keys，weight unit is converted to Oz,again press [FINE]+ [a+]+[a-] keys，weight unit is converted to Gram;

9.3 Repeat 9.2 operation to convert weight unit between Gram and Oz.

10. Machine settings

10.1 Minimum value display settings

After selection of minimum value display, displayed value is Zero when wheel imbalance amount is less than setting value. Press FINE key to show real imbalance amount.

Press [STOP] and [C] key (Fig 10-1), denoting display is Zero when imbalance value is less than 5 gram. Press [b+] key or [b-] key to set minimum value. There are three levels: 5,10 and 15. Press [a+] key to save settings and enter next step;

Fig 10-1

10.2 Key-tone function settings

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.

Follow 10.1 to press [a+] (Fig 10-2). 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;

Fig 10-2

10.3 Display monitor brightness settings

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

Follow 10.2 to press [a+] for enter setting (Fig 10-3), 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;

Fig 10-3

10.4 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 10.3 to press [a+] for entering setting (Fig 10-4). 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.

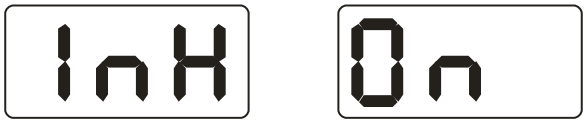


Fig 10-4

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 [C] 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 [C] key to exit. Then display Fig11-1 and enter position sensor checking. Press [C] 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 Fig11-1, 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 [C] key to exit.

Fig 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 (Fig 11-2). Then gently press main shaft. Normally, the values on two sides LEDs will change. Press [a+] or [C] key to exit.

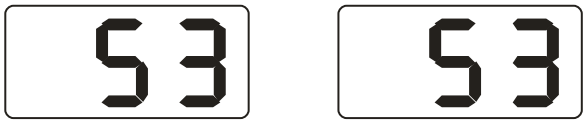


Fig 11-2

12. Safety Protection and Trouble Shooting

12.1 Safety protection

During machine running, tread braking pedal to stop wheel urgently if necessary.

12.2 Trouble shooting

12.2.1 Manually rotate wheel to rated speed, LED display is not off and balancing test is not implemented. Please check computer board, position sensor and relevant cables;

12.2.2 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;

12.2.3 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.

12.2.4 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.

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. Maintenance

13.1 The daily maintenance by non – professionals

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

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

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

13.1.2.1 Locking nut can not fix wheel tighten on main shaft;

13.1.2.2 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 Fig 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.

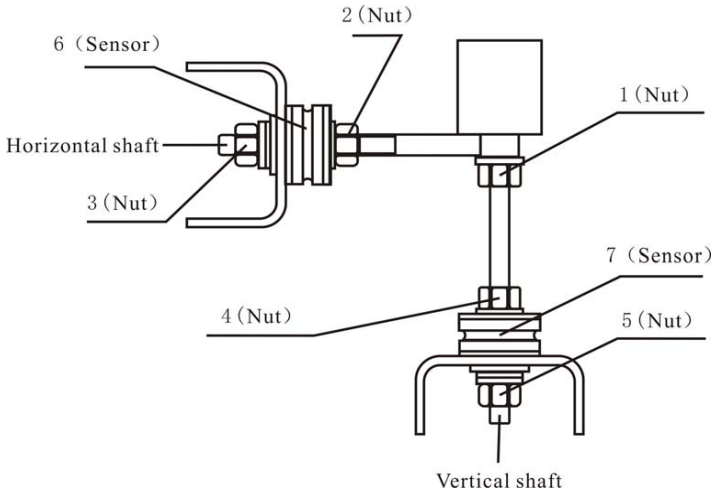


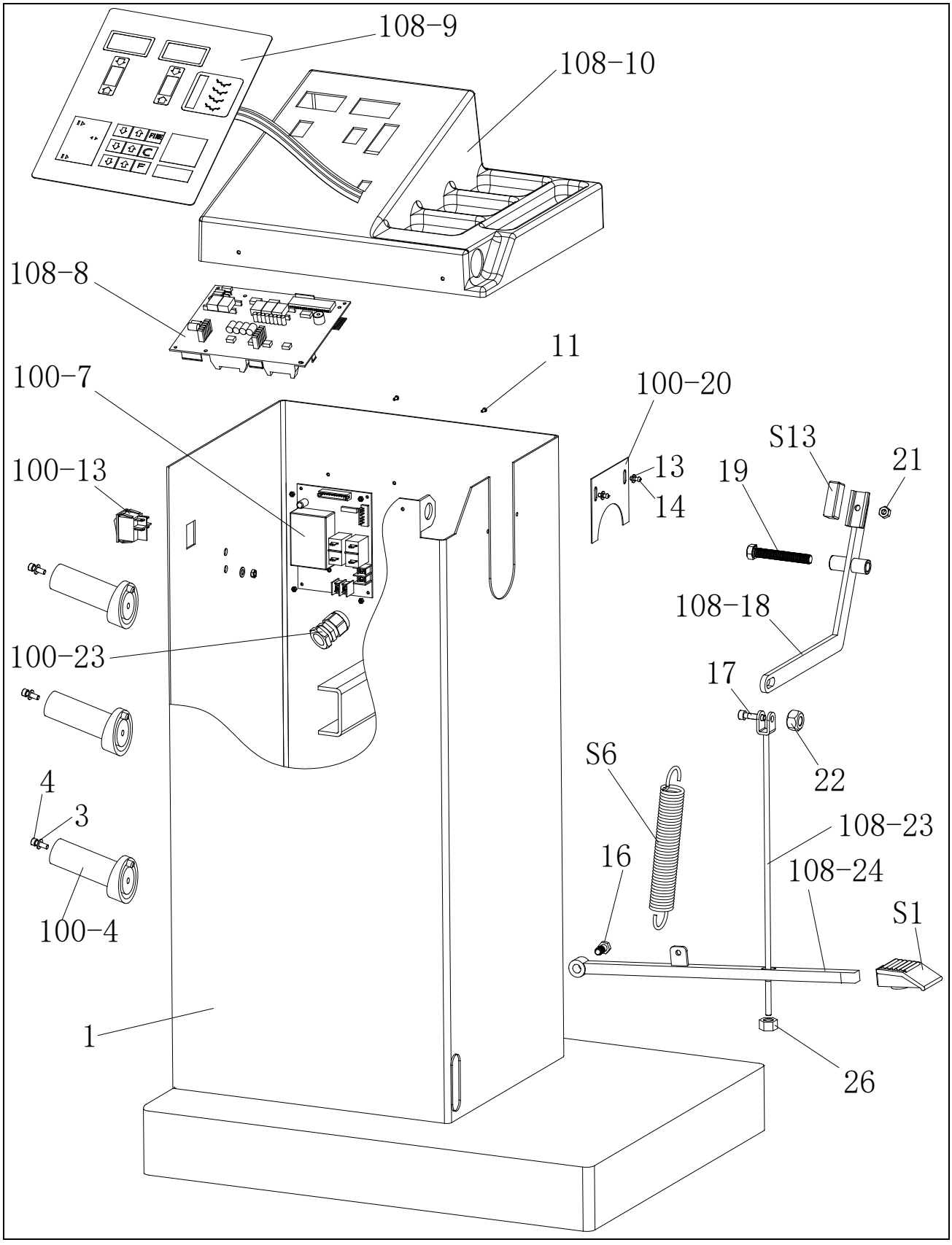
Fig 13-1

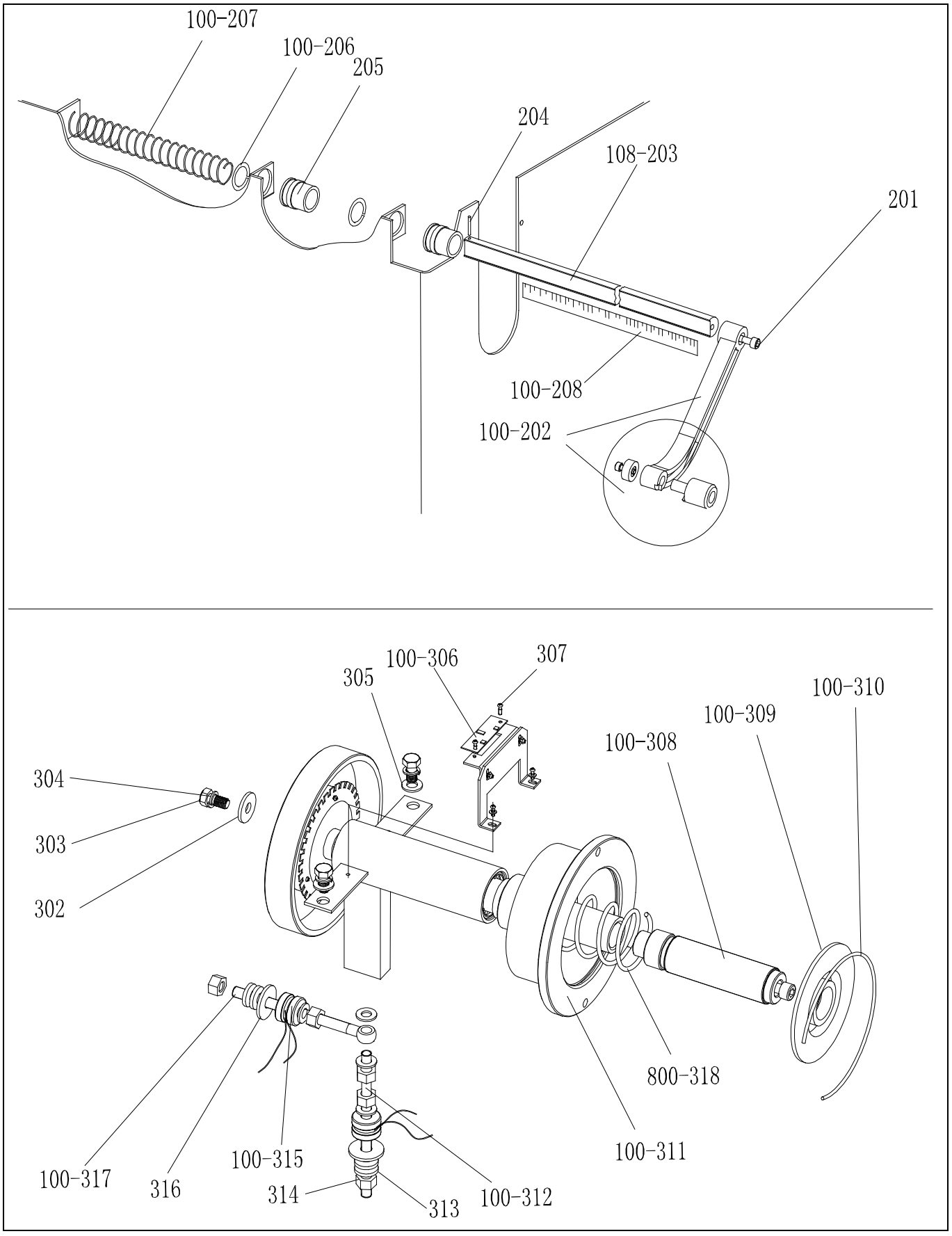
14. Trouble-error code table

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. computer board fault 2.connection-peg untouched	1.change computer board 2.check cable connections
Err 2	The rotation speed low	1. position sensor fault 2. wheel not impacting or weight too light 3. computer board fault	1. change position sensor 2.repeat impacting wheel 3. 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 23. 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

15. Exploded drawings




100-207
100-206
205
204
108-203
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100-208
100-202
100-306
307
305
100-310
100-309
100-308
304
303
302
800-318
100-317
316
100-315
314
313
100-312
100-311

16. Spare parts list

No.	Code	Description	Qt.		No.	Code	Description	Qt.
1	PX-102-010000-0	Body	1		201	B-010-060161-0	Screw	1
100-4	P-000-001001-0	Tools hang	3		100-202	P-100-160000-0	Handle Bar	1
3	B-040-050000-1	Washer	3		108-203	P-102-090000-0	Rim distance gauge	1
4	B-024-050251-0	Screw	3		204	B-061-004030-0	Pin	1
100-23	S-025-000135-0	Cable circlip	1		205	P-100-170000-0	Plastic Bush	2
100-13	S-060-000210-0	Power switch	1		100-206	P-100-520000-0	Seeger Ring	2
100-7	PZ-000-020822-0	Power board	1		100-207	P-100-210000-0	Spring	1
108-8	PZ-000-010108-0	Computer board	1		100-208	Y-004-000070-0	Graduated Strip	1
108-9	S-115-001-020-0	Key board	1					
108-10	P-102-190000-0	Head with tools-tray	1		302	B-040-103030-1	Washer	1
11	B-024-050161-1	Screw	4		303	B-014-100251-0	Screw	3
100-20	PX-100-110000-0	Plate	1		304	B-050-100000-0	Washer	3
13	B-040-050000-1	Washer	2		305	B-040-102020-1	Washer	6
14	B-024-050061-0	Screw	2		100-306	PZ-000-040100-0	Position Pick-up Board	1
S6	C-200-380000-0	Spring	1		307	B-024-030061-0	Screw	4
16	B-014-100251-0	Screw	1		100-308		Thread	1
17	B-010-060301-0	Screw	1		100-309	P-100-420000-0	Plastic Lid	1
108-18	PX-102-030000-0	Brake lever	1		100-310	P-100-340000-0	Spring	1
19		Screw	1		100-311	S-100-000010-0	Complete Shaft	1
S13	P-000-002001-1	Brake pad	1		100-312	P-100-080000-0	Screw	1
21	B-004-060001-1	Nut	1		313	B-048-102330-1	Washer	4
22	B-001-060001-0	Nut	1		314	B-004-100001-2	Nut	5
108-23	PX-100-020400-0	Connecting rod	1		100-315	S-131-000010-0	Sensor Assembly	2
108-24	PX-102-010000-0	Foot lever	1		316	B-040-124030-1	Washer	2
S1	C-221-640000-A	Rubber cover	1		100-317	P-100-070000-0	Screw	1
26	B-001-060001-0	Nut	1		800-318	P-100-350000-0	Spring	1