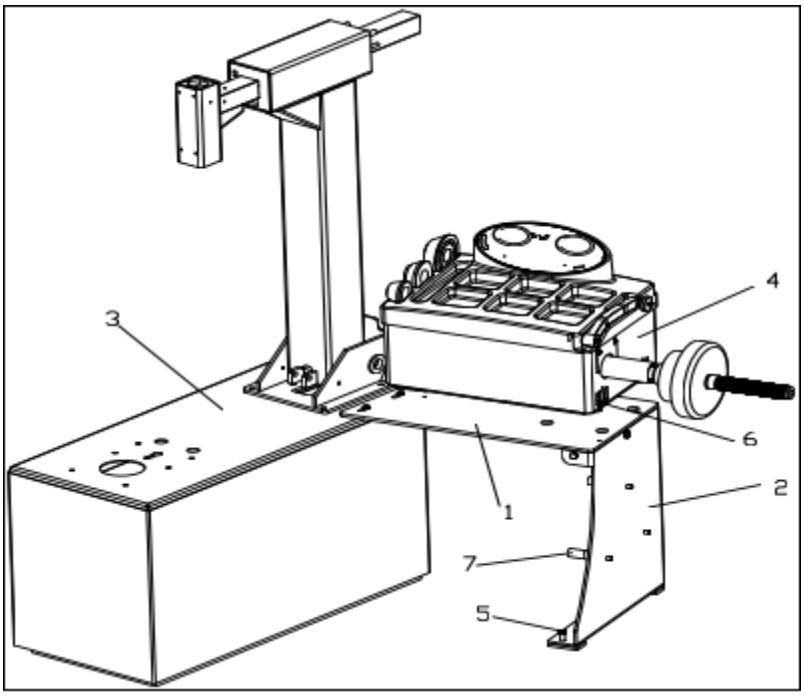
U-2022MS ALL-IN-ONE Tyre Changer & Wheel Balancer



1. As shown in figure, assemble the base plate (1) and the bracket (2) with three pieces M10 bolts, and then fixed the base plate (1) on the tyre changer (3) with two pieces M10 bolts.
2. Adjust the bolt (5) to make the base plate (1) at the horizontal.
3. Put the wheel balancer (4) on the base plate (1), and make the mounting holes aligned. Fix them with 3 pieces M8 bolts
4. Installed the tools hang (7) on the bracket (2).

NO	Parts'Name	Parts' Code	NO	Parts'Name	Parts' Code
1	Base plate	JZ20203100105	5	Bolt	M10*25
2	Bracket	JZ20203100106	6	Bolt	M8*30
3	Tyre changer	U-2022	7	Tools hang	JZ12001800019
4	Wheel balancer	U-110			

TYRE CHANGER

INSTRUCTION & MAINTENANCE MANUAL

We follow the way that wheel moving!

Read this entire manual carefully and completely
before installation or operation of the tire changer

TYRE CHANGER INSTRUCTION MANUAL

INDEX **PAGE**

Tyre Changer

Warning

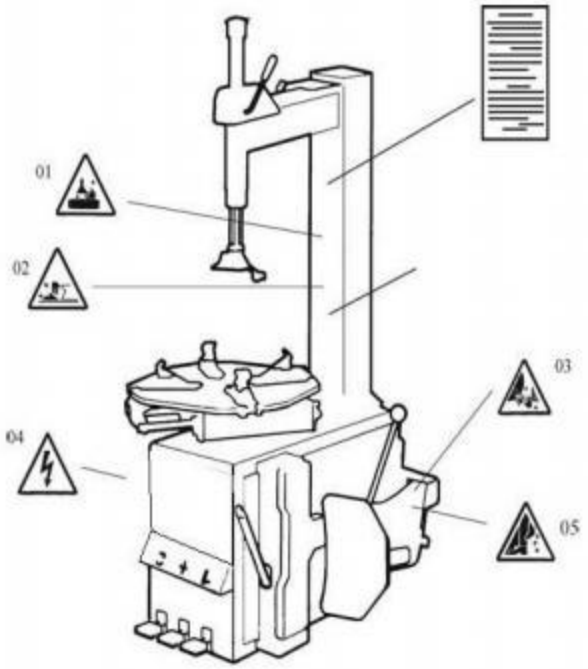
This instruction manual is important for the machine, please read carefully before installation and use; also it is important for safe use and machine maintenance of machine. Please keep this manual properly in order to further maintenance of the machine.

1. Introduction:

Application Range: The semi-automatic tyre changer is especially designed for demounting / mounting tyres from wheel rims.

Caution：Please use the machine only for purpose for which it is designed, don't use it for other purposes.

Manufacturer shall not be liable for any damage or injury caused by failure to comply with these regulations.



Safety regulation: Use of this machine is especially reserved to trained and qualified professional persons, those who already read the introduction manual carefully, or someone have the experience for operating similar machinery. Any changes and beyond the scope of use on this machine without manufacturer's permission or do not according to the manual, may cause the malfunction and damage to machine, manufacturer can cancel warranty coverage for above. If some parts are damaged due to some reason, please replace them according to the spare parts list. (Attention: warranty is one year after manufactures' delivery date; warranty excludes the easy-broken parts).

2. Warning label and sticking position:

01 Don't put hands under the Mounting/demounting head during operation;

02 Don't put hands between the jaws during operation;

03 Don't put hands inside the tyre bead when demounting the tyre;

04 Make sure and to check the system is equipped with a good grounding circuit;

05 Don't put feet between the Bead Breaker shovel and the body during operation;

Security warning labels

Caution:

When the security warning labels are defaced or off, please recovery them in time!

Do not allow to operate when the security warning labels are missed or imperfect. Do not allow to set any objects to obscure the security warning labels.

Clients can self-set the warning labels (as right picture show) at any necessary positions.

3. Technical data

External locking rim dimensions	10~21 ″
Internal locking rim dimensions	12~24 ″
Max. Wheel diameter	1040mm(41 ")
Max. Wheel width	355mm(14 ")
Working Pressure	8-10bar
Power supply	110V (1ph)/ 220V (1ph)/ 380V (3ph)
Optional Motor power	0.75/0.55/1.1 kw
Max. Rotating Torque (Turntable)	1078 Nm
Overall Dimension	96*76*93cm
Noise Level	75dB

Remark:

Rim dimensions defined at above table are based on the iron wheel rims. Aluminum rims are thicker than the iron wheel rims, so here above rim dimensions are just for the reference.

Here above machine versions can be equipped with Rapid Tire Inflation Device (client optional device), IT-suffix version, accessory details can be found at the IT-suffix version exploded drawing.

4. Transport:

When transporting, the machine should be with original package and placed according to the mark on the package. For the already packaged machine should be handled with a corresponding tonnage forklift for loading and unloading. The location to insert the fork feet shown as **Fig 1**

5. Unpacking & Inspection:

Pull out the nail which is nailed on the plate with tip jaw; unpack the carton and plastic cover. Check and make sure all parts shown on the spare parts list are included. If any parts are missing or broken, please do not use the machine and contact the manufacturer or dealer ASAP.

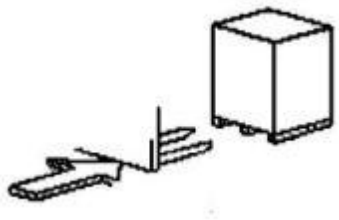


Fig 1

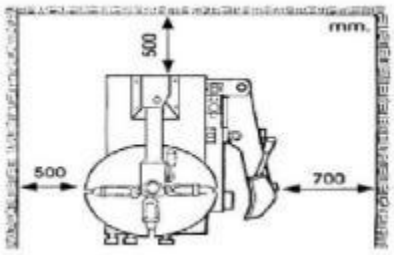


Fig 2

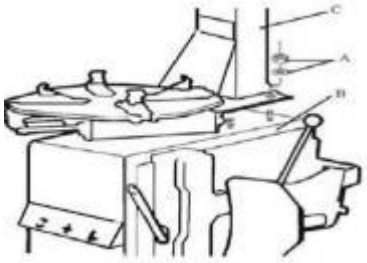


Fig 3

6. Workplace requirements:

Choose workplace in compliance with safety regulations. Connect power supply and air source according to manual and workplace must have good air condition; in order to make the machine run well, its workplace requires at least clear space from each wall shown as **Fig 2**. If installing it outdoor, it must be protected by roof against rain and sunshine.

Warning: the machine with motor must not be operated in explosive atmosphere.

7. Position and installation:

1. Unscrew the nuts at the bottom, position the machine and calibrate it with the horizontal rule. Mount the machine with all the screws and to ensure the machine is stable. Make sure the system is equipped with a good grounding circuit for prevent electric leakage. And have operation range of ground for skid prevention.

2. Unscrew the nut A on the cabinet body B as shown in **Fig 3**.

Lift the column C; mount it on the machine body B by using the nut A through the bolt located on the machine body B. If the column becomes loose after a period of using, tight them immediately. Otherwise the result of damage to the tyre may happen.

Fig 4

8. Electricity and Pneumatic connections:

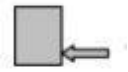
Caution: Before installation and connection, check to be sure that the electricity power supply corresponds to the machine technical data. All the installation of electric and pneumatic devices must be operated by a professional electrician.

Connect the compressed air connector which is on the machine right side with compressed air system. The electric grid that the machine connects to must have fuses protection device and good outer cover grounding protection. Install the leakage automatic air switch on the maim power supply, leakage current is set at 30A

Caution: No power plug for this machine, the user should self-connect one power plug no less than 16A as well as in line with the machine voltage. Or directly connect with the power supply according to the above requirements.

9. Adjusting operation:


Turntable Rotation Pedal (Z)


Bead Breaker Pedal (U)


Jaws open and close Pedal (V)

1) Tread the Turntable Rotation Pedal (Z), Turntable (Y) clockwise rotation; Lift up the Turntable Rotation Pedal (Z), Turntable (Y) counterclockwise rotation.
2) Tread Bead Breaker Pedal (U), Bead Breaker shovel (F) close toward inside; release Bead Breaker Pedal (U), Bead Breaker shovel (F) return to original position.
3) Tread Jaws open and close Pedal (V), four jaws (G) on the turntable open; tread again, four Jaws (G) close. When the pedal is in the middle position, four Jaws stop moving.

Tyre changer operation is consisted of three parts:

1）Breaking the tyre bead

2）Demounting the tyre

3）Mounting the tyre

Caution: Before any operations, don't wear loose clothing and wear protective hat, gloves, and skid-proof shoes. Ensure to exhaust the air in the tyre completely, and remove all the wheel weights from the rim.

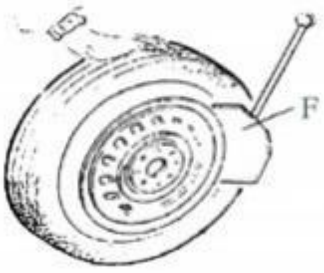


Fig 5

9.1. Breaking the tyre bead：

Ensure to exhaust the air in the tyre completely, place the tyre against the rubber buffer (S). Bring the paddle against the bead about 10mm from the edge of the rim shown as **Fig 5**. Tread Bead breaker Pedal (U) to push paddle into tyre. Repeat the above operations on different positions around the tyre and both sides of tyre until tyre bead is released completely.

9.2. Demounting the tyre :

Ensure to remove all the weights on the wheel rim and to exhaust the air in the tyre completely before this operation. Apply lubricating grease (or similar lubricant) around the tyre bead. Without the lubricant may lead to badly wear and tear on tyre.

Clamp the wheel methods shown as below regarded to the ruled dimension:

a- to clamp the wheel from outside:

Tread the Jaws open and close Pedal (V) halfway down to middle, positioning for the four clamps (G) by reference scale on the Turntable (Y); put the tyre on turntable, hold the rim, and tread the Jaws open and close Pedal (V) until the wheel is secured by the jaws.

b- to clamp the wheel from inside:

Positioning for the four clamps (G) and let them all closed. Put the tyre on the turntable and tread the Jaws open and close Pedal (V) to open the clamps thereby lock the wheel in place.

Caution: Check to make sure the wheel firmly secured by the four jaws before next step.

Lower the Vertical Arm (M) until the Mounting/demounting head (I) rests next to the edge of the rim, flip the Locking Handle to lock the Vertical Arm and Swing Arm in position, and also adjust the Rocker Arm make Mounting/demounting head can raise 2mm-3mm automatically from the edge of the wheel rim. Insert the Lifting Lever (T) between the tyre bead and the front section of the mounting/demounting head (I), and move the tyre above the mounting/demounting head as shown as **Fig 6**.

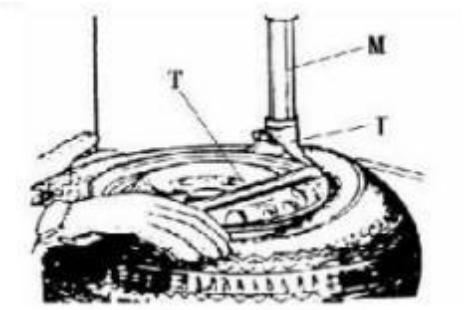


Fig 6

Caution: Chains, bracelets, loose clothes and anything else close to the rotating parts will bring danger to the operator.

With the Lifting Lever held in position, tread the Turntable Rotation Pedal (Z), rotate the Turntable (Y) in a clockwise direction until the tyre is completely separated from the wheel rim.

For the other side tyre demounting, keep using the lifting lever to lift the tyre, make the other side tyre separated from the wheel rim.

9.3. Mounting the tyre :

Caution: Check to make sure that the tyre and the wheel rim are of same size before mounting the tyre.

To avoid any damage on type, lubricate the tyre bead and the wheel rim with the lubrication recommended by manufacturer. Put on the tyre and check the situation.

Caution: When clamp the wheel rim, don't put your hands on the wheel rim to avoid injury during this operation.

Lock the Hexagonal Vertical Mounting Arm, put the tyre on the rim, let the Rocker Arm back to place as demounting the tyre. And let one side of tyre down bead above the rear section of the Mounting/demounting head, the other side under the front section of the Mounting/demounting head. Suppress the trye with hands or help arm, and then spin the turntable for mounting the tyre down bead.

Repeat the above operation for mounting the tyre up bead. **(Fig 7)**

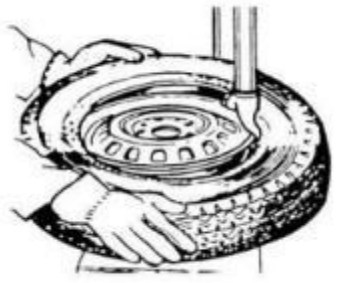


Fig 7

10. Inflating the tire:

Importance: It is very dangerous during inflating operation, take carefully and comply with instruction. When inflating, it will turn to be extremely dangerous if problems happen to tyre or rim. The possible burst force tire goes upward and outward, the big power may cause injury or death of the operator or the people around.

Tyre may burst caused by following:

1) The wheel rim and the tyre are not of the same size;

2) The tyre or the wheel rim is damaged;

3) The pressure of tyre inflation is over the max. pressure recommended by manufacturer;

4) The operator fail to comply with the safety regulation;

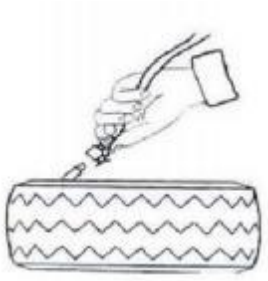


Fig 8

Please operate as follows:

1) Remove the valve cap from the valve stem;

2) Check to make sure the air nozzle is pressed down completely over the threads of the valve stem.

3) Check to make sure that the tyre and the wheel rim are of the same size;

4) Lubricate both the tyre bead and the wheel rim, additional lubrication is required if needed;

Fig 8

5) Inflate the tyre with break, while inflating, check the pressure listed on the pressure gauge, also check whether the bead is fixed or not. Repeat operation above until the bead is secured; you need take special steps when inflating convex rim or double convex rim;

6) Continue inflating and check the air pressure frequently until to reach the required pressure.

Note:

Never exceed the max. inflation pressure given by the tyre manufacturer.

Keep hands and your body away from inflating tyres.

Only specially trained persons are allowed to perform the operations, do not allow other to operate or be near the tyre changer.

11. Moving machine:

Please use forklift to move the machine. Disconnect the tyre changer from the electricity power supply and pneumatic power supply, lift the base board and insert the feet of forklift. Then mount the tyre changer machine to a new position and fix it tightly. **Note: the place chosen for fixing the tyre changer must meet the safety regulation**.

12. Maintenance:

Caution: only the professional persons can do the maintenance. To prolong the machine's life, maintain the machine timely according to the manual. Otherwise, it will impact the reliability of the machine or even cause injury to operator and others nearby.

Caution: before performing any maintenance, disconnect the tyre changer from the electric power supply and pneumatic power supply, and tread the Jaws open and close Pedal or Turntable Rotation Pedal for 3~4 times to evacuate all compressed air from the machine. Damaged parts must be replaced by professional persons with the spare parts provided by manufacturer.

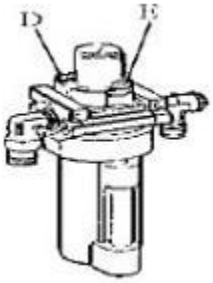


Fig 9

- Clean the machine once every day after work. Clean the dirt on the turntable with diesel oil once per week and lubricate the slides and clamps.
- Following maintenance must be done at least once per month:

Check oil level in Oil Fog Maker, please be filled with SAE30# oil if need. Unscrew with hex wrench (E). Based on connection of compressed air, first to tread Jaws open and close Pedal or Turntable Rotation Pedal 5-6 times, and then check whether oil in Oil Fog Maker drops down a drip of oil. For continuous operation, tread twice every time, drop down a drip of oil, otherwise adjust the screw (D) that controlled oil enter with minus screwdriver. **(Fig 9)**

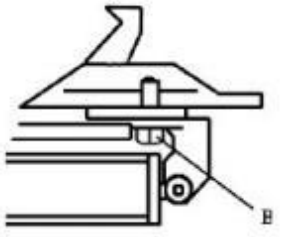


Fig 10

Note: After the first 20 days of use, retighten the jaws with tightening screws (B) on the Turntable (Fig 10)

Caution: please disconnect the machine from electric power supply and pneumatic power supply.

Note: If Hexagonal Vertical Arm not be locked or not meet the requirement that 2-3mm from the bottom of Mounting/demounting head to rim, please adjust Hexagonal Locking Plate, refer to Fig 12 and adjust the (X).

Note: In order to achieve the reliability of jaws and Bead Breaker shovel, operate as follows to keep their valves clean:

1. Remove the left side cover of the machine body by unscrewing the two screws;
2. Loosen the valve Muffler (A) which belong to Jaws open and close Pedal and Bead Breaker Pedal; **(Fig 13)**
3. Clean the silencers with compressed air, please replace it referring to the spare parts list if it is damaged. **(Fig 13)**

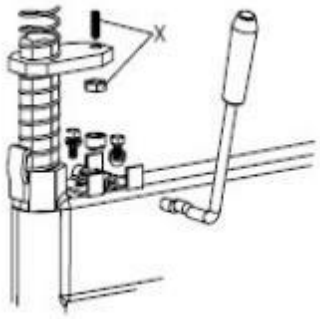


Fig 12

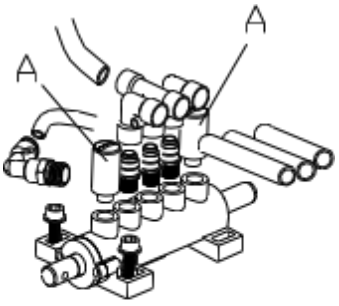
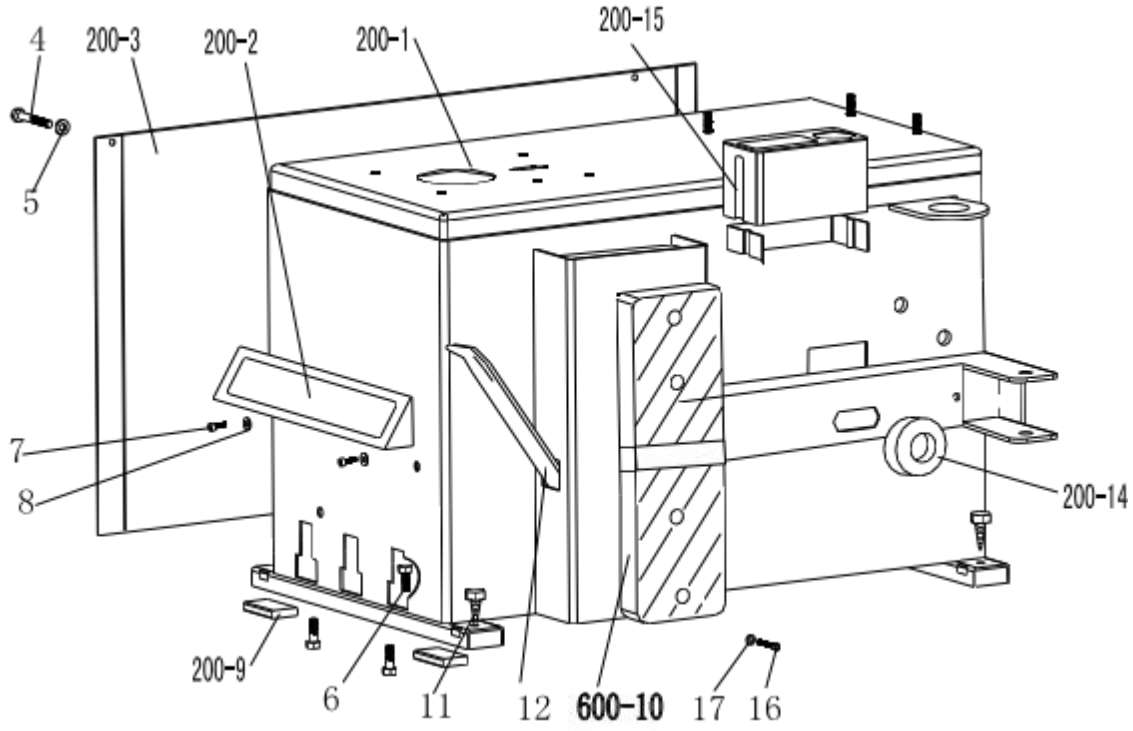


Fig 13

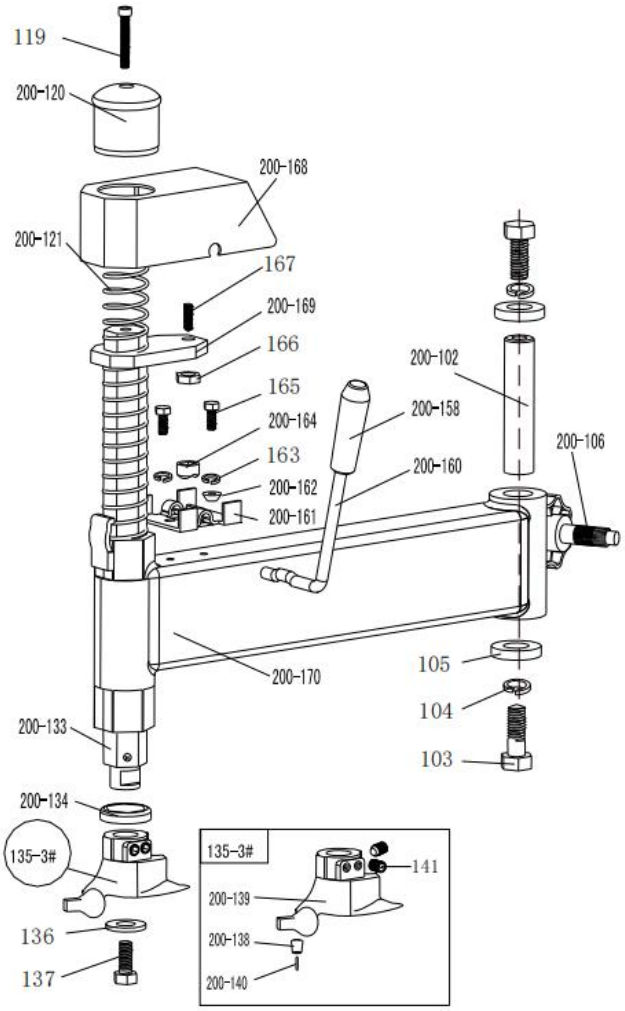
13. Trouble shooting table:

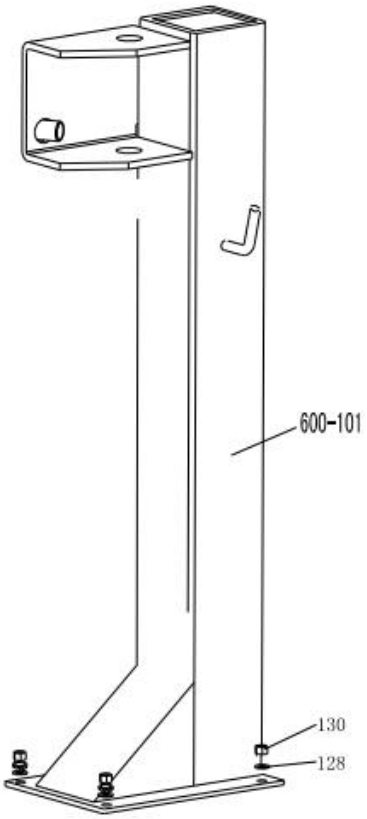
Problem	Reason	Solution
The turntable rotate just in one direction or can't rotate.	Reverse Switch broken	Replace the Reverse Switch
	The Motor's malfunction	Check the motor cable or terminal block wire; Replace the motor if it was broken.
Demount or fix the wheel, the turntable can't lock (spin with wheel); The jaws delay to open/close; The turntable locks the rim incorrectly.	Leakage of Air network	Check all the parts on the air network.
	The clamping cylinder can't work.	Replace the cylinder piston.
	Worn jaws	Replace the jaws.
	Broken washers of the chuck cylinder	Replace it.
The mounting/demounting head always touch the rim during operation.	The locking plate incorrectly adjust or unqualified.	Replace or adjust it.
	Screws on the chuck loose; the Hexagonal Vertical Arm can't be locked by Locking Plate	Tighten the screws; replace the Locking Plate.
The Bead Breaker Pedal and Jaw open and close Pedal can't turn back to the original position.	pedal spring broken	Replace it.
The Bead Breaker shovel operates difficultly.	Jammed silencer	Clean it or replace it.
	The washer on the Bead Breaker cylinder is broken.	Replace it.

14. Exploded drawing:

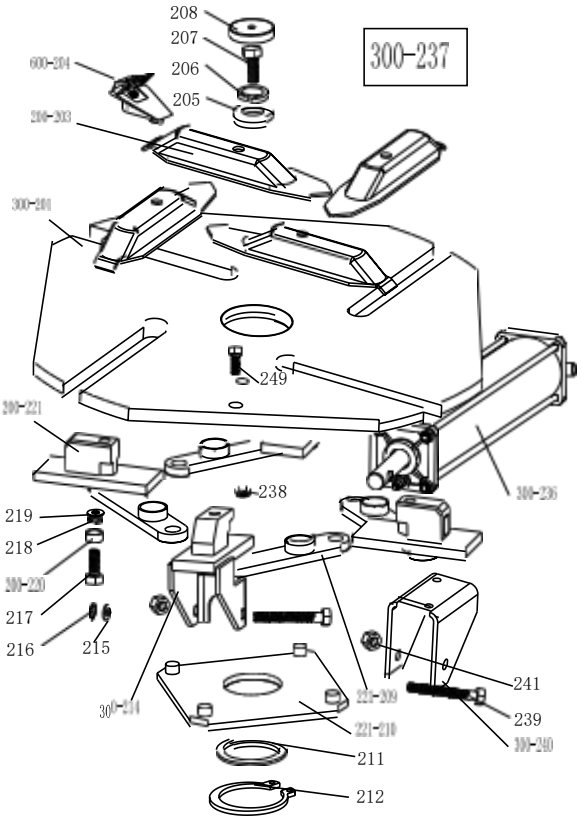


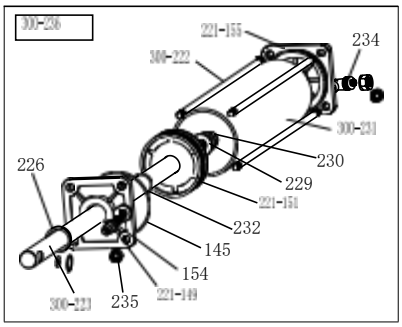
200-1	JZ20200100026	Machine body
200-2	JZ20200900090	Pedal front cover
200-3	JZ20200800016	Left cover
4	FJ22009000085	Hex socket head bolt M6×10
5	FJ15006000095	Flat washer Ø6*14*1.2
6	FJ22012000100	Outer hex bolt M8x25
7	FJ22009000123	Hex socket head bolt M8×20
8	FJ15006000095	Flat washer Ø 6*14*1.2
200-9	JZ20200100081	Rubber foot buffer
600-10	JZ20200100072	Bead breaker buffer
11	FJ19004000005	Grounding screw M6x40
12	JZ11900100004	Lifting lever
200-13	JZ11700200014	Ripping bar
200-14	JZ20200200010	Bead breaker arm rubber
200-15	JZ12000200164	Oil-water box
16	FJ22009000123	Hex socket head bolt M8x20
17	FJ15006000107	Flat washer Ø 8*17*1.5



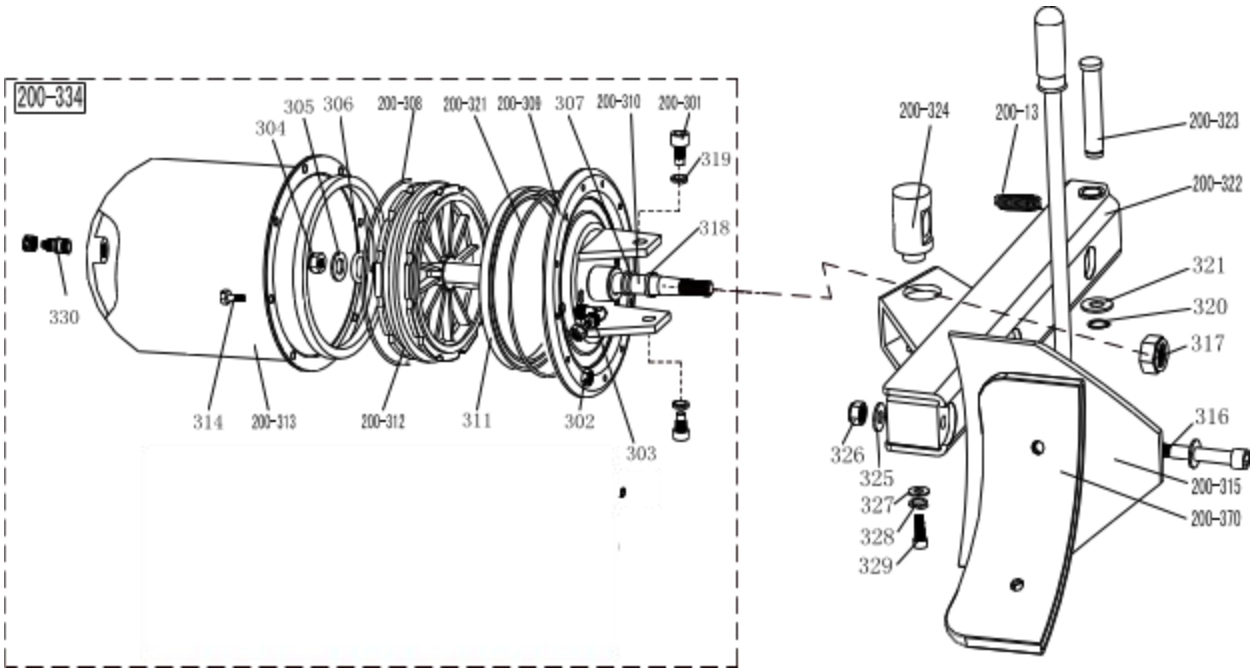


600-101	JZ20200400052	Square column
200-102	JZ20200600004	Swing arm pin
103	FJ22012000047	Outer hex bolt M14x30
104	FJ15004000006	Spring washer Ø14
105	JZ20201400046	Big washer
200-106	JZ12001900002	Column adjust handle
119	FJ22009000016	Hex socket head bolt M10×50
200-120	JZ12000200103	Vertical arm cap 200
200-121	JZ11700300039	Vertical arm spring
128	FJ15006000006	Flat washer Ø10X2
130	FJ21003000001	Self-locking nut M10
200-133	JZ20200700006	Vertical arm 200
200-134	JZ20200700002	Vertical arm washer
136	JZ11801300045	Mount/demount head flat washer
137	FJ22012000010	Outer hex bolt M10×25
135-3#	JZ30204500037	Complete mount/demount head3#
200-138	JZ11801300014	Mount/demount head pulley
200-139		Mount/demount head 3#
200-140	JZ20201000028	Hex round pin
141	FJ19006000007	Hex socket head bolt M12X16
200-158	JZ12000300002	Locking Handle cover
200-160	JZ20200600011	Locking Handle
200-161	JZ20200600013	Locking plate
200-162	JZ20200600006	Locking block cover
163	FJ15004000021	Spring washer Ø8
200-164	JZ20200600005	Eccentric shaft nut
165	FJ22012000100	Outer hex bolt M8×25
166	FJ21011000006	Nut M12X1.75X7
167	FJ19014000004	Hex socket head bolt M12X30
200-168	JZ12000200113	Locking plate cap
200-169	JZ20200600015	Hex locking board 200
200-170	JZ20200600001	Swing arm 470



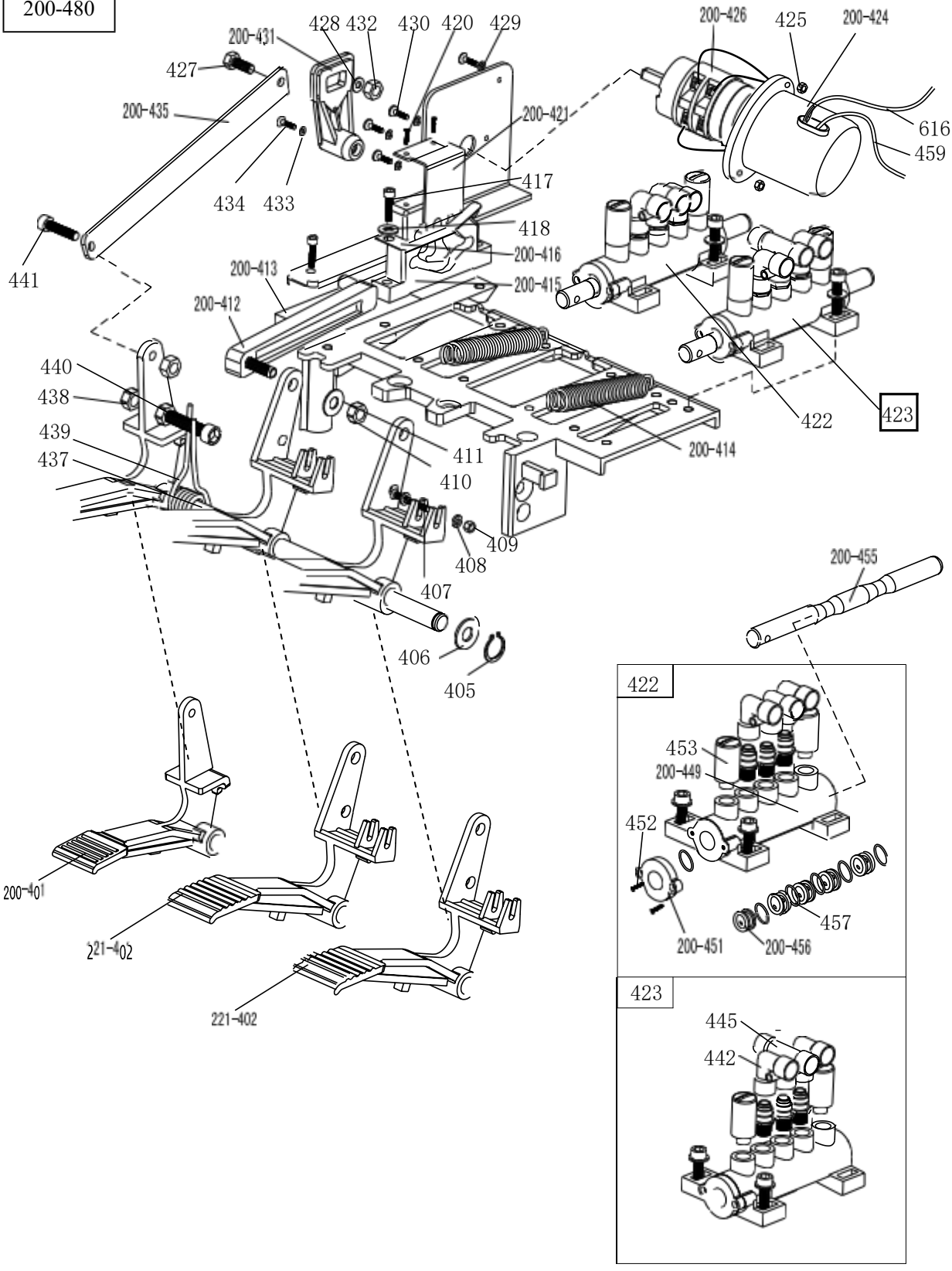


300-201	JZ03001015483	Non-central Turntable assembly
200-203	JZ03001015584	Jaw cap 200
600-204	JZ09001022898	Jaw 600
205	JZ03001015476	Big washer
206	FJ04002003779	Spring washer Ø16
207	FJ04009004828	Outer hex bolt M16×40
208	JZ07001020860	Turntable cap
221-209	JZ03001015611	Connection rod assembly 615
221-210	JZ03001015454	Square turntable 615
211	JZ03001015457	Square turntable washer
212	FJ04001003757	Snap ring Ø65(shaft)
300-214	JZ03001015591	Jaw seat assembly
215	FJ04002003813	Flat washer Ø12X25X2
216	FJ04001003737	Snap ring Ø12(shaft)
217	FJ04009004809	Outer hex bolt M12×80
218	FJ04002003917	Teeth locking washer Ø12x20.5x1
219	FJ04002003814	Flat washer Ø12X30X3
200-220	JZ09001015609	Connection rod nut
200-221	JZ03001015764	Jaw slide guide without pin
600-222	JZ09001022939	Threaded connection rod
600-223	JZ09001022849	Clamping cylinder piston rod
221-149	JZ09001022762	Tilting cylinder cover without handle
154	EQ11006003389	Straight union 1/8"-Ø8
226	FJ08003005391	V- seal 20*28*7.5
145	FJ08001005319	O-seal 68.26*3.53
221-151	JZ09001022766	Titling cylinder piston
229	FJ04002003813	Flat washer Ø12X25X2
230	FJ04008004495	Nut M12X7X1.75
300-231	JZ09001022858	Clamping cylinder barrel
232	FJ08001005151	O-seal 19.6X2.62
221-155	JZ09001022763	Titling cylinder cover with handle
234	EQ11005003366	Union 1/8
235	FJ04008004459	Self-locking nut M8
300-236		Complete clamping cylinder L223
300-237		Complete Non-central Turntable
249	FJ04009004707	Hex socket head bolt M8×25
238	FJ04008004445	Self-locking nut M12
239	FJ04009004809	Hex socket head bolt M12X80
300-240	JZ03001015588	Jaw plate support2
241	B-001-120001-0	Self-locking nutM12



200-13	JZ11700200014	Bead breaker arm spring	317	FJ21012000002	Self-locking nut M16*1.5
200-301	JZ20201900021	Hex socket head bolt M14×30	318	CF03003000006	Guide belt
302	FJ21003000013	Self-locking nut M6	200-370	JZ12000200070	Bead breaker shovel protection cover(optional)
303	EQ11004000009	Union (90°)1/4-Ø8	319	FJ15004000006	Spring washer Ø14
304	FJ21012000002	Nut M16*1.5	320	FJ14004000007	Snap ring Ø16
305	FJ15006000039	Flat washer Ø16*28*2	321		Flat washer
306	FJ29002000056	O-seal Ø 16*2.65	200-321	FJ29002000071	O-seal Ø173.4x5.3
307	FJ29002000095	O-seal Ø 20*2.65	200-322	JZ20200200008	Bead breaker arm 200
200-308	FJ29002000376	O-seal 180x5	200-323	JZ20200200025	Bead breaker pin
200-309	JZ20201900024	Bead breaker cylinder cover assembly	200-324	JZ20201900031	Bead breaker cylinder rotating pin
200-310	JZ12500200008	Bead breaker cylinder piston rod	325	FJ15006000019	Flat washer Ø12*24*2
311	FJ29004000001	V-seal 185X168X11.5	326	FJ21003000002	Self-locking M12
200-312	JZ12500700007	Bead breaker cylinder piston	327	FJ15006000118	Flat washer Ø8*30*3
200-313	JZ12500100007	Bead breaker cylinder barrel	328	FJ15004000021	Spring washer Ø8
314	FJ22009000093	Hex socket head bolt M6×16	329	FJ22012000098	Outer hex bolt M8×20
200-315	JZ20200300019	Bead breaker shovel assembly	330	EQ11005000023	Straight union1/8-Ø8
316	FJ22008000017	Hex socket head bolt M12×90	200-334	JZ30204500092	Complete bead breaker cylinder

200-480


200-431
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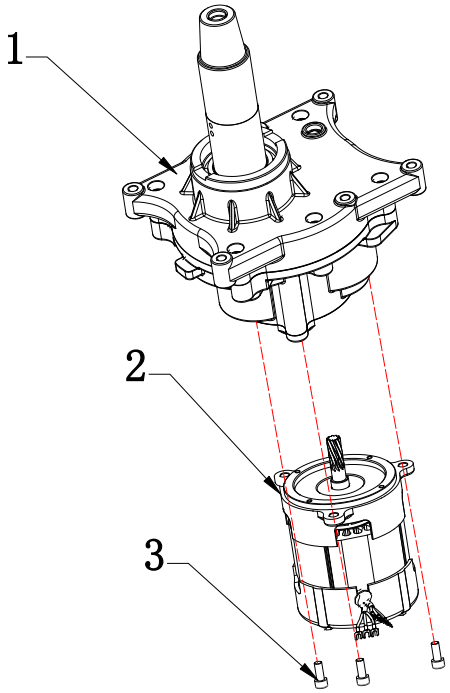
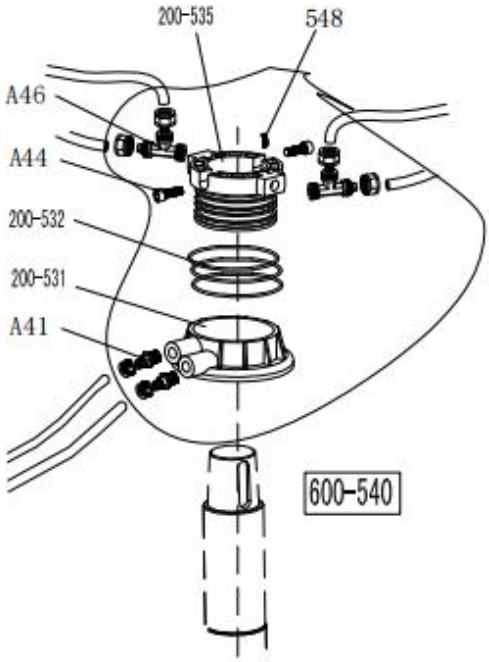
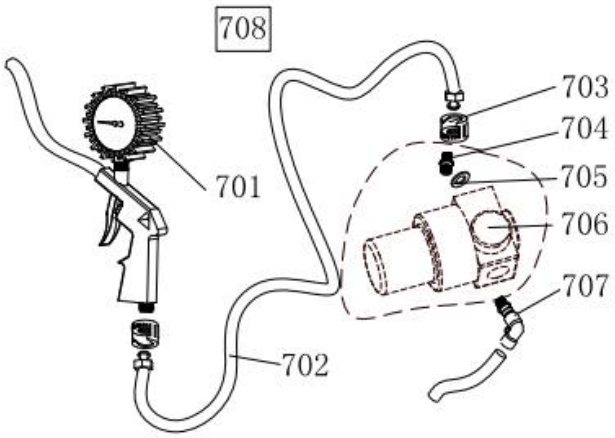
200-401	JZ11801100002	Reverse switch pedal	428	FJ15006000093	Flat washer Ø 6X12X1
221-402	JZ11801100005	5-way valve pedal (right)	429	FJ15006000078	Flat washer Ø 4
405	FJ14004000003	Snap ring Ø12	430	FJ19022000023	Cross-round head screw M4*16
406	FJ15006000019	Flat washer Ø12*24*2	200-431	JZ12001800012	Reverse switch handle
407	FJ19022000026	Cross head screw M4X30	432	FJ21003000013	Self-locking nut M6
408	FJ15006000078	Flat washer Ø 4	433	FJ15006000064	Flat washer Ø3
409	FJ21003000010	Self-locking nut M4	434	FJ19016000045	Cross head screw M3X18
410	FJ21003000014	Self-locking nut M8	200-435	JZ20201200038	Pedal connection rod
411	FJ15006000107	Flat washer Ø8*17*1.5	437	JZ20201200039	Pedal front shaft
200-412	JZ12001800016	Cam connection rod	438	FJ21011000025	Nut M8
200-413	JZ11801100001	Pedal support board	439	JZ11700100003	Pedal twist spring
200-414	JZ11700200015	Pedal Spring	440	FJ22009000132	Hex socket head bolt M8×50
200-415	JZ12001800070	Cam	441	FJ22009000123	Hex socket head bolt M8×20
200-416	JZ20201200011	Cam washer	442	EQ10003000016	Union 1/8- Ø 8
417	FJ22009000097	Hex socket head bolt M6×20	445	EQ10001000024	T-union1/8-2* Ø 8
418	FJ15006000093	Flat washer Ø6*12*1	200-449	JZ12000100007	5-way valve (left)
420	FJ19017000003	Cross head self tapping screw	200-451		5-way valve cover
200-421	JZ20201200040	Cam cover	452	FJ19025000002	cross head screw ST2.9*14
422	JZ30204500269	Complete 5-way valve for clamping cylinder	453	EQ04002000004	Muffler 1/8"
423	JZ30204500270	Complete 5-way valve for bead breaker cylinder	200-455	JZ20201200005	5-way valve rod
200-424	JZ12000200080	Reverse switch cover	200-456	JZ12001800076	5-way valver rod spacer
425	FJ21011000021	Nut M4	457	FJ29002000023	O-seal 12*20*4
200-426	DD12010000001	Reverse switch	459		Power suppler cable
427	FJ22009000097	Hex socket head bolt M6×20	616		Motor cable
			200-480	JZ30204500004	Complete 3-pedals assembly 200



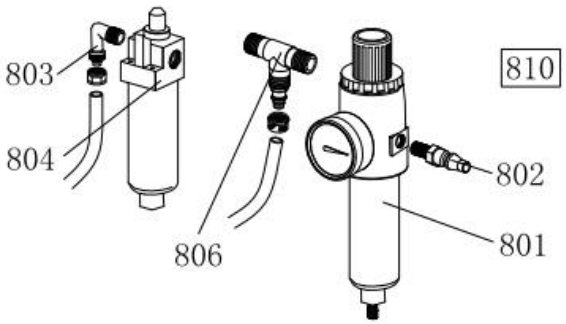
1	JZ30204500067	Complete gear box 220-240V/50HZ/0.37KW/1PH
2	DD01001000055	Motor 220-240V/50HZ/0.37KW/1PH
3	FJ22009000158	hex socket head cap screw M8*25



A04	EQ11002000011	T-union 3* Ø 8
A44	FJ22009000093	Hex socket head bolt M6×16
A46	EQ11002000005	T-union 1/8-2*Ø8
200-531	JZ20201400216	Rotating valve casing
200-532	FJ29002000235	O-seal 59.9X2.62
200-535	JZ20201400215	Rotating valve mandrel
A41	EQ11005000023	Straight union 1/8-Ø8
548	FJ19006000008	Hex socket head bolt M4X6

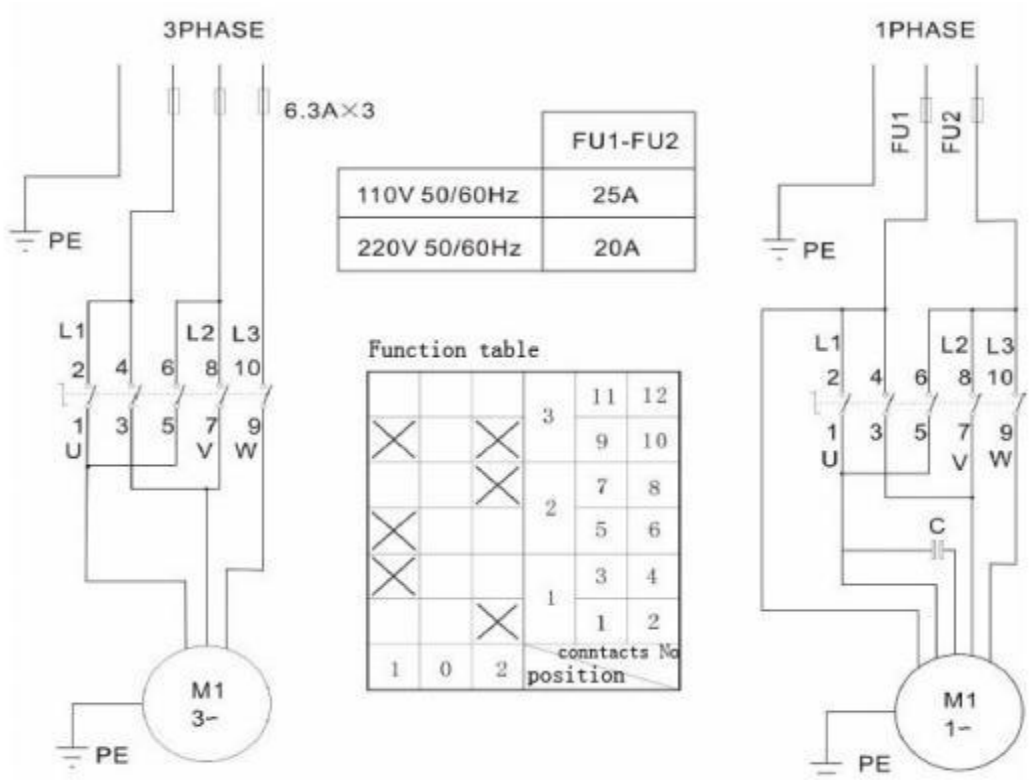


701	EQ05001000001	Inflating gun indicator
702		Rubber connection hose
703	EQ14003000002	Notch nut
704	EQ07004000022	Straight union 1/4-1/4
705	FJ15006000028	Flat washer Ø13
706	EQ03003000003	Pressure adjust valve(optional)
707	EQ10003000009	Quick union 1/4-Ø8

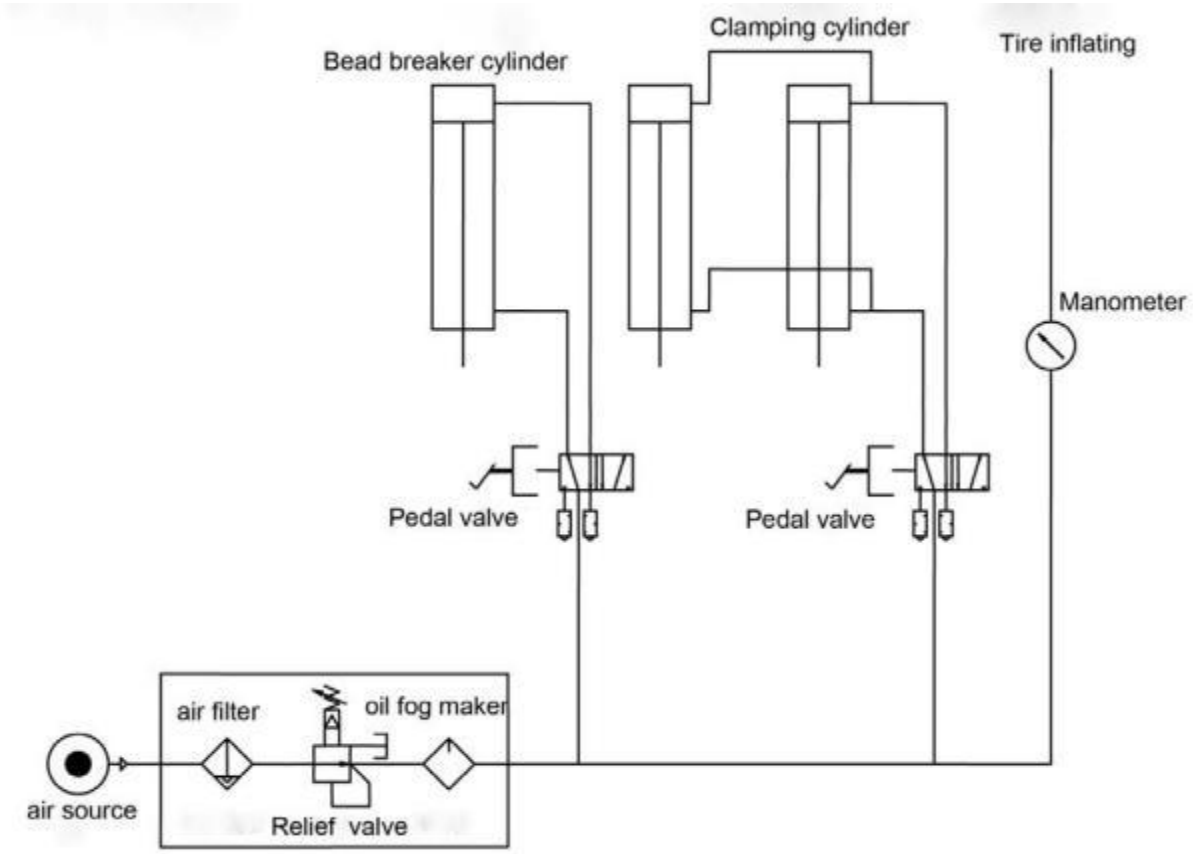


801	EQ03005000002	Relief pressure filter
802	EQ12001000013	Quick nozzle
803	EQ11004000009	Union (90°)
804	EQ03011000001	Oil fog maker
806	EQ11002000013	T-union 2X1/4-φ8

15. Circuit diagram:



16. Pneumatic drawing:



WHEEL BALANCING MACHINE
INSTRUCTION MANUAL
INDEX

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：65kg
- Power supply：DC12V 1A
- Rotating speed：about 120r/min
- Cycle time：8s
- Rim diameter：10〃～24〃(256mm～610mm)
- Rim width：1.5〃～20〃(40mm～510mm)
- Noise：＜70dB
- Net weight：30Kg
- Dimensions：

2.2 Features

- Adopt 6 LED display, it has flexible interface operating function;
- Energy saving, motor free, hand spin;
- Various balancing modes can carry out counterweights to stick, clamp, or hidden stick etc;
- Intelligent self-calibrating;
- Automatic self error diagnosis and protection function;
- Applicable for various rims of steel structure and aluminum alloy structure;

2.3 Working Environment

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

3. The Structure of Dynamic Balancer

Dynamic balancer consists of mechanical section and electrical section:

3.1 Mechanical section

Mechanical section consists of support bracket and rotary main shaft; they are together fixed on the frame.

3.2 Electrical system

（1）The microcomputer system consists of the LSI, new high speed Micro CPU, LED display and keyboard.

（2）Speed testing and positioning system consists of gear and opto-electronic coupler.

（3）Horizontal and vertical pressure sensor

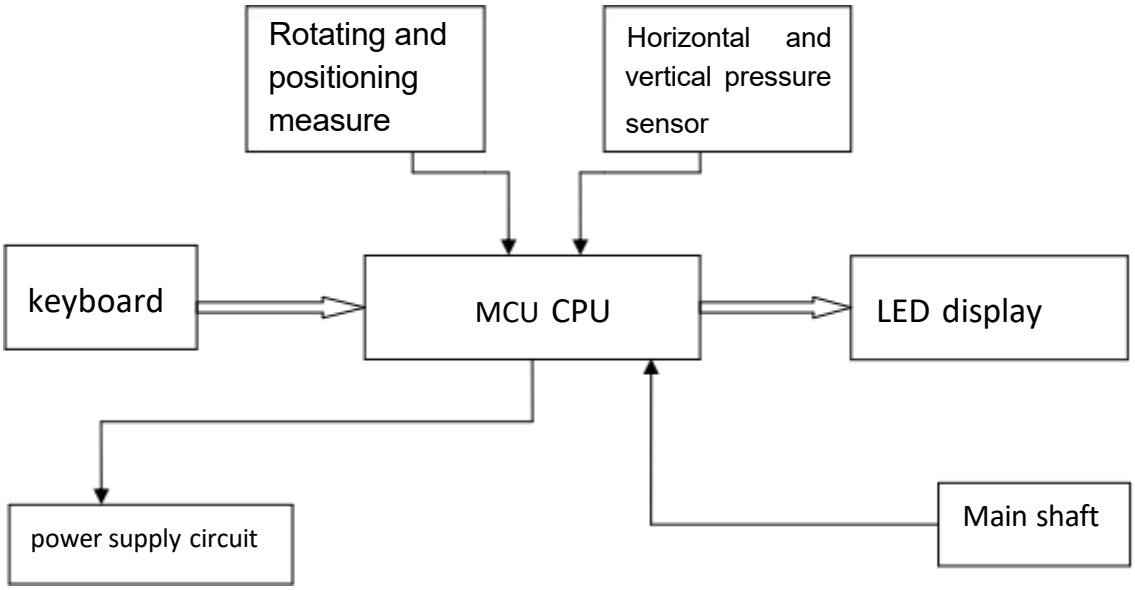


Fig 3-1 Electric system figure

4. Installation of Dynamic Balancer

4.1 Opening and Checking

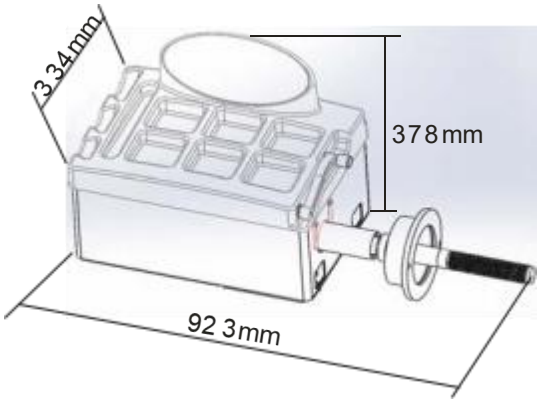
Open the package and check whether there are damaged parts. If there are some problems, please do not use the equipment and contact with the supplier. Standard accessories with equipment are shown as follow:

Screw stud of drive axis	1
Balancing pliers	1
Allen wrench	1
Measure caliper	1
Quick release nut	1
Cone	3
Counterweight (100g)	1

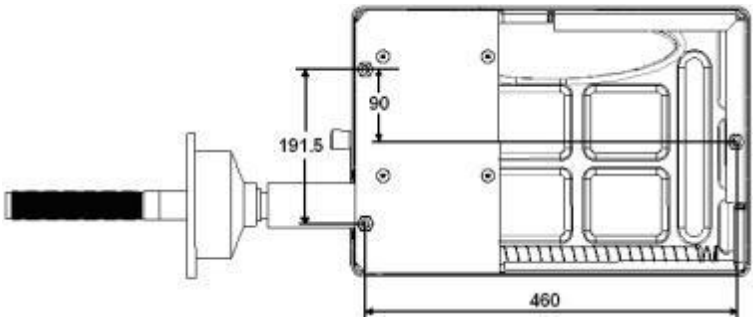
4.2 Installing machine

4.2.1The balancer must be installed on firm platform which is more than 60CM high and fixed with 3pcs M8 screws

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



Overall size



Installation holes position (bottom view)

4.3 Installing screw rod

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

Fig 4-1

5. LED display control panel and function keys

5.1 Introduction of display control panel

Fig 5-1is figure of keyboard and display， introduction is as follows:

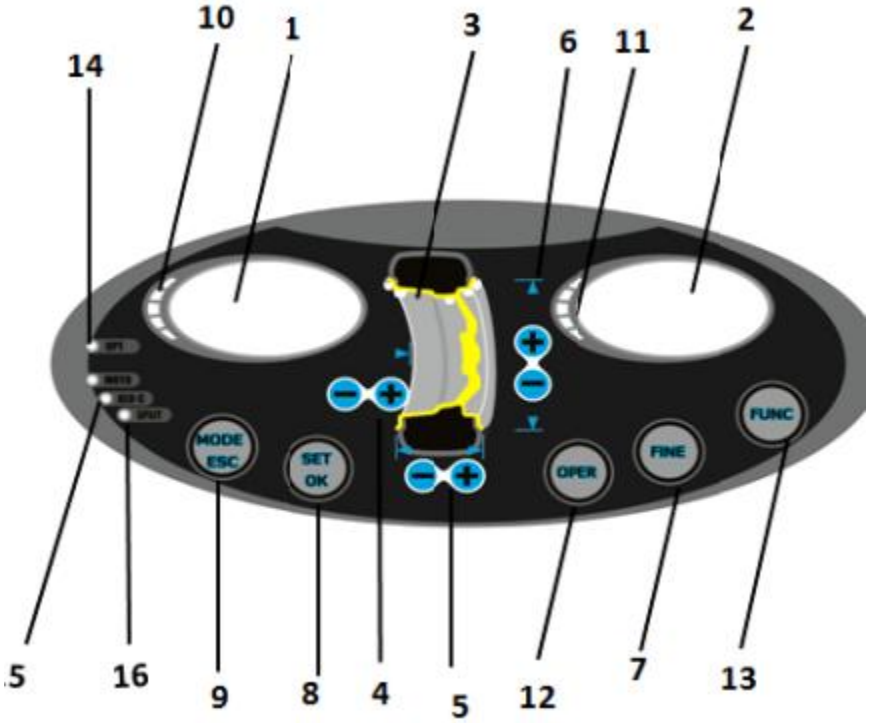


Fig 5-1

1- Digital readout, amount of imbalance, inside
2- Digital readout, amount of imbalance, outside
3- Balancing mode
4- Push buttons, manual DISTANCE setting
5- Push buttons, manual WIDTH setting
6- Push buttons, manual DIAMETER setting
7- Show real imbalance amount (less than 5gram), function key ①gram/ounce ②mm/inch ③self-calibration
8- Push button, re-calculation
9- Function key of selecting balancing mode
10- Show imbalance position of outside
11- Show imbalance position of inside

12- Push button, optimization of unbalance
13- Split function
14- Indication of optimization
15- Indication of ALU-S mode
16- Indication of split

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

5.2 Main keys and keys combination function：

[a↑] or [a↓] input distance (code 4)
[b↑] or [b↓] input rim width (code 5)
[d↑] or [d↓] input rim diameter (code 6)
[SET] re-calculation
[FINE] Show real imbalance amount
[MODE] Function key of selecting balancing mode
[FINE]+ [SET] Self-calibration
[FINE]+ [a↑] + [a↓] conversion between gram and ounce
[SET] + [MODE] Self-testing
[FINE] + [MODE] Machine setting

NOTE:

1. After selection of gram or ounce , setting can remain after machine power off

2、Choose unit of mm for rim width and diameter, setting can not remain after machine power off

6. Installation and Demounting of the Wheel

6.1 Checking the wheel

The wheel must be clean, none sand or dust on it, and remove all the primal counterweights of the wheel. Check the tyre pressure whether up to the rated value. Check positioning plane of rim and mounting holes whether deformed.

6.2 Installing the wheel

6.2.1 Select the optimal cone for the center hole when 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 various rims of common steel structure and thin duralumin structure.

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

Negative positioning is used to ensure the inner hole of steel rim and main axis is positioning accurately when the outside of wheel deforming. Apply for all the steel rims, thick steel rims especially.

6.2.3 Install wheel and cone on main axis. Ensure the cone can clamp the wheel before screwing handle. Wheel can rotate after screwing down

6.3 Demounting the Wheel

6.3.1 Demount the handle and cone.

6.3.2 Put the wheel up, and then take it down from main axis.

Fig 6-1

Fig 6-2

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

7. The input methods of data of rim and balancing operation

7.1 The power-on state of the machine

After the power-on of the machine, it starts initialization automatically. The initialization will be finished after two seconds. The machine enters normal dynamic balancing mode(clamp counterweights on the both rim edge) automatically, as in Fig 7-1, ready for input data of rim

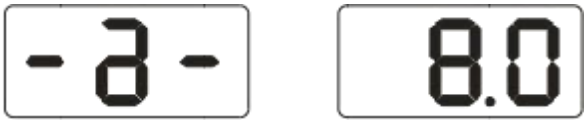


Fig 7-1

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

7.2.1After power is on, machine enters normal balancing mode, as below figure

7.2.2Input rim data：

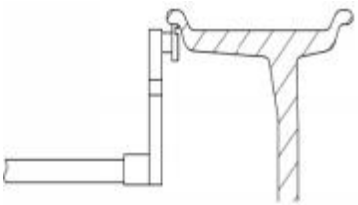


Fig 7-2

Move scale to make handle head touch rim edge inner position as Fig 7-2, get value a, put back scale. Push [a-] or [a+] to input a value

7.2.3Input rim width

Get rim width data showing on rim , or measure rim width by caliper, push [b-] or [b+] to input b value

7.2.4Input rim diameter

Get rim diameter data showing on rim , or measure rim diameter by caliper, push [d-] or [d+] to input d value

7.2.5 Balancing operation against normal dynamic balancing mode

Input rim data, manually rotate wheel, when display shows “RUN ---”, move hand away to let wheel rotate. When display shows “STOP”， wheel stops and display shows data.

Slowly rotate wheel, when inside position indication LEDs all light, （Fig 5-1（10））, at the 12 o'clock position of rim inside , clamp weights equal to value shown on the left side display（Fig 7-3）。Then slowly rotate wheel, when outside position indication LEDs all light, （Fig 5-1（11））, at the 12 o'clock position of rim outside , clamp weights t equal to value shown on the right side display（Fig 7-4）. Rotate wheel by hand again, move hand away when display is off. When both side display are on, wheel stops and balancing is completed.

Fig 7-3

Fig 7-4

7.3 Static (ST) balancing mode data input method and balancing operation

（ST）mode is suitable for rims on which weights only can be sticked at middle position, such as motorcycle rims.

Under normal mode, measure diameter d value (Fig 7-5)，press [d-] or [d+] to input d value.（a value and b value can be any value ）. Press [MODE] key to make ST mode indication light on, enter static （ST）balancing mode, mode indication as following figure.

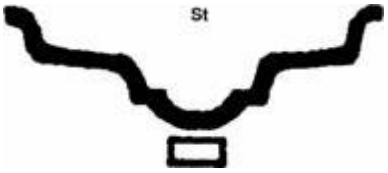


Fig 7-5

Input rim data, manually rotate wheel, when display shows "RUN ---", move hand away to let wheel rotate. Then right display shows ST and left display shows static imbalance amount as Fig 7-6. After wheel stops rotating, slowly rotate wheel, when inside position indication LEDs （Fig 5-1（10））and outside position indication LEDs （Fig 5-1（11））all light，stick weights equal to value shown on the left side display, at the 12 o'clock position of middle rim (Fig 7-5). Again manually rotate wheel, when display shows "RUN ---", move hand away to let wheel rotate. When both side display are on, wheel stops and balancing is completed.

Fig 7-6

7.4 ALU-1mode data input method and balancing operation

Follow 7.2 to input rim data, press [MODE] key, mode indication as below figure, then

enter ALU-1 mode to balance wheel

Input rim data, manually rotate wheel, when display shows “RUN ---”, move hand away to let wheel rotate. When display shows “STOP”, wheel stops and display shows data. Slowly rotate wheel, when inside position indication LEDs all light, （Fig 5-1（10））, at the 12 o’clock position of rim inside edge , stick weights equal to value shown on the left side display（Fig 7-7 left）。Then slowly rotate wheel, when outside position indication LEDs all light,（Fig 5-1（ 11））, at the 12 o’clock position of rim outside edge , stick weights equal to value shown on the right side display（Fig 7-7 right）. Rotate wheel by hand again, when display shows “RUN ---”, move hand away to let wheel rotate. When both side display are on, wheel stops and balancing is completed.

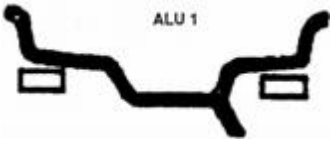


Fig 7-7

7.5 ALU-2 mode data input method and balancing operation

Follow 7.2 to input rim data, press [MODE] key, mode indication as below figure, then enter ALU-2 mode to balance wheel

Input rim data, manually rotate wheel, when display shows “RUN ---”, move hand away to let wheel rotate. When display shows “STOP”, wheel stops and display shows data. Slowly rotate wheel, when inside position indication LEDs all light, （Fig 5-1（10））, at the 12 o’clock position of rim inside edge , stick weights equal to value shown on the left side display（Fig 7-8 left）。Then slowly rotate wheel, when outside position indication LEDs all light,（Fig 5-1（ 11））, at the 12 o’clock position of rim inside , stick weights equal to value shown on the right side display（Fig 7-8 right）. Rotate wheel by hand again, when display shows “RUN ---”, move hand away to let wheel rotate. When both side display are on, wheel stops and balancing is completed

Fig 7-8

7.6 ALU-3 mode data input method and balancing operation

Follow 7.2 to input rim data, press [MODE] key, mode indication as below figure, then enter ALU-3 mode to balance wheel

Input rim data, manually rotate wheel, when display shows “RUN ---”, move hand away to let wheel rotate. When display shows “STOP”, wheel stops and display shows data. Slowly rotate wheel, when inside position indication LEDs all light, （Fig 5-1（10））, at the 12 o’clock position of rim inside edge , clamp weights equal to value shown on the left side display（Fig 7-9 left）。Then slowly rotate wheel, when outside position indication LEDs all light,（Fig 5-1（ 11））, at the 12 o’clock position of rim inside , stick weights equal to value shown on the right side display（Fig 7-9 right）. Rotate wheel by hand again, when display shows “RUN ---”, move hand away to let wheel rotate. When both side display are on, wheel stops and balancing is completed

Fig 7-9

7.7 ALU-S mode data input method and balancing operation

Above three ALU modes may not be suitable for all structure rims. Balancing performance is not good under above three ALU modes for some rims. Then ALU-S mode can be adopted. Input rim data method as follows:

Press [MODE] key, to make ALU-S mode indication light on. Mode indication as following figure :

As per Fig 7-8 or Fig 7-9, move scale to rim inside (aI position), measure rim inner distance (aI) value, press [a-] or [a+] to input aI value

Move scale further inside to aE position, measure distance aE value, press [b-] or [b+]to input aE value

Measure rim diameter at aI position, press [d-] or [d+] to input dI value

Measure rim diameter at aE position, press [FINE] and [d-] or [d+] to input dE value

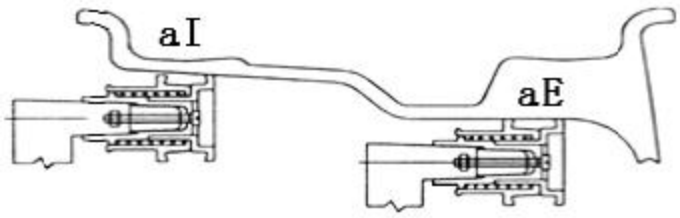


Fig 7-8

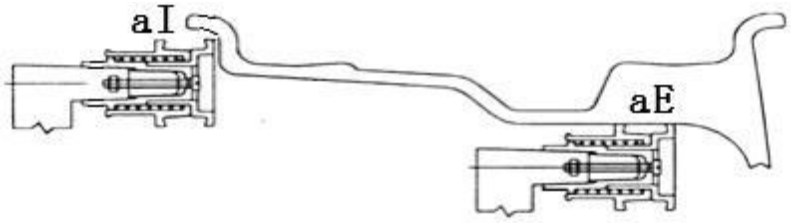


Fig 7-9

Input rim data, manually rotate wheel, when display shows “RUN ---”, move hand away to let wheel rotate. When display shows “STOP”, wheel stops and display shows data. Slowly rotate wheel, when inside position indication LEDs all light, （Fig 5-1（10））, at the 12 o’clock position of rim inside aI position, stick weights equal to value shown on the left side display. Then slowly rotate wheel, when outside position indication LEDs all light,（Fig 5-1（11））, at the 12 o’clock position of rim outside aE position, stick weights equal to value shown on the right side display. Rotate wheel by hand again, when display shows “RUN ---”, move hand away to let wheel rotate. When both side display show 0, balancing is completed

7.8 Counterweight split and Hidden-Stick Mode

This mode can split counterweights between two spokes into two section counterweight and the two section counterweights may be sticked behind two adjacent spokes so that counterweights are hidden . This mode is based on ALU-S mode.

Follow 7.7 operation, if outer side counterweight sticking position is not behind spokes, and user needs to hide counterweight behind spokes, user can operate as follows:

Press [FUNC] key, SPLIT indicator light（Fig 5-1（16））is on, spoke numbers inputting interface appears（Fig 7-10）. Press b+ or b- key to input spoke numbers, press [FUNC] key;

Fig 7-10

Slowly rotate wheel, make one piece spoke vertical upwards, press [FUNC] key

Slowly rotate wheel, find two imbalance positions following the imbalance position indication light, stick counterweights equal to two sections value at 12 o’clock position behind spokes. Quickly rotate wheel to balance wheel. Counterweights split and hidden operation is completed.

7.9 Recalculation

Before wheel balance testing, sometimes operator may forget input current data of rim. Data can be inputted after wheel balance testing. Then it is not necessary to make balancing test again. Operator only needs to press [SET] key, system can re-calculate imbalance value with new data. Under interface showing imbalance value, press [SET] key to check current inputted data of rim

8. Imbalance optimize

If wheel imbalance value over 30 gram, system will be display “OPT”, indicate to carry out

imbalance optimize

Imbalance optimize have two operation method:

8.1 Already display balance value

If already finish balance testing, when you need process imbalance optimize, press OPT key, display Fig 8-1;

Fig 8-1

Use chalk mark a reference point on the flange and rim and tyre, use tyre changer to exchange rim and tyre by 180°

Re-install wheel on the balancer and make sure mark of reference point between the flange and rim must be on the same position. Quickly rotate wheel to balance wheel, after rotation stop, display Fig 8-2;

Fig 8-2

As per above Fig 8-2, left display shows percent of optimize. If before optimize static value is 40 gram, optimized percent is 85%, so after optimize static value only 6 gram remain (15%×40gram=6gram);

Slowly rotate wheel by hand, when both end sides two of position indicator light flash (Fig 8-3)，use chalk to make a mark on the tyre

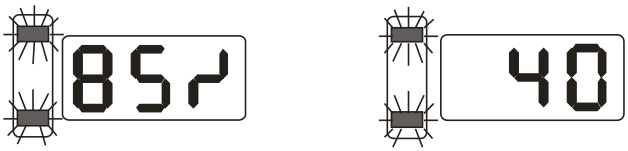


Fig 8-3

Slowly rotate wheel by hand again, when both side middle position indicator light flash (Fig 8-4)，use chalk to make a mark on the rim

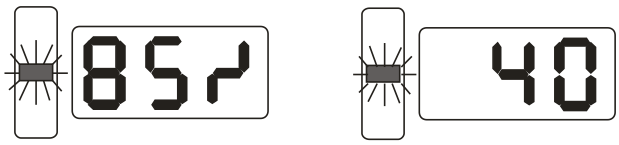


Fig 8-4

Demount wheel from balancer, use tyre changer to demount tyre from rim. Remount tyre on rim to make tyre and rim marks at same position. Optimize complete.

8.2 After power on and before balancing, also may process imbalance optimize directly

Turn on the power, install wheel, press OPT key, left side display shows OPT, quickly rotate wheel for balance testing. When rotation stops, display shows Fig 8-1, follow 8.1 operation. Press [SET] key to stop operation

9. Self-calibrating of Dynamic Balancer

The self-calibrating of dynamic balancer was 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.

9.1 After the power-on of the machine, the initialization is finished (Fig 7-1), install a middle size balanced rim which can be clamped with counterweight, follow 7.2 to input data of rim;

9.2 Press [FINE] + [SET] key (Fig 9-1), manually rotate wheel, when display is off , move hand away to let wheel rotate. When display shows “REDUCE”, it means rotary speed is too faster now. When rotary speed reaches normal speed, display shows “RUN ---”. When display shows “STOP” , wheel stops rotating, display is as Fig 8-2 .Press [SET] key to exit;

Fig 9-1

9.3 As per Fig 9-2, clamp a 100 gram counterweight on anywhere of outside of rim, manually rotate wheel, when display is off, move hands away to enter next step, Press [SET] key to exit;

Fig 9-2

9.4 As per Fig 9-3, wheel stops rotating, calibration ends. Demount tyre, now balancer is ready to work.

Fig 9-3

NOTE：when you doing self-calibration, input date of rim must be correct,100 gram counterweight must be correct, otherwise self-calibration result will be wrong, wrong self-calibration will be make balancer measure precision decline.

10. Gram-Oz conversion operation

This operation for counterweight weight unit conversion (gram-Oz)

10.1 Press [a-] or [a+] key，Fig 7-1；

10.2 Press [FINE] and hold it，then press [a+] and [a-] keys，weight unit is converted to Oz

10.3 Again press [FINE]+ [a+]+[a-] keys，weight unit is converted to Gram

10.4 Repeat 10.3 operation to convert weight unit between Gram and Oz

11. Other function settings

11.1 Minimum value display settings

Select minimum display value, if wheel imbalance value is less than setting value, displayed result will be 0. Press FINE key, real imbalance value can be shown.

Press [FINE] + [MODE] keys, show Fig11-1 which means if imbalance value is less than 5 gram, displayed result will be 0, press [b-] or [b+] key to set minimum display value： 5,10 or15. Press [a+] key to save current setting and enter next step.

Fig 11-1

11.2 Key-tone clue on function settings

This function can turn on or off key-tone. When turn on this function, every time press key, system will emit a “di” tone. When turn off this function, press key and there is no tone

Follow 10.1 and press [a+] key to enter，show Fig 11-2，right side display shows ON, means the function has been turned on. Display showing OFF means the function has been turned off. Press [b-] or [b+] key to shift function between “ON” and “OFF”. Press [a+] key to save current setting and enter next step.

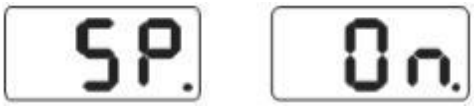


Fig 11-2

11.3 Display monitor brightness settings

This function is for setting display brightness according working environment and user need

Follow 10.2 and press [a+] key to enter, show Fig 11-3, right side display shows brightness level. Totally 8 levels. Level 1 means dimmest display. Level 8 means brightest display. Default level is 4 . Press [b-] or [b+] key, to change levels. Press [a+] key to save current setting and enter next step .

Fig 11-3

11.4 INCH and MM conversion operation

Most rims has sizes unit INCH. If the unit is MM, system unit can be set to MM. If value has decimal, current unit is INCH. If value has no decimal , current unit is MM. This setting does not retain when machine is power off. System default unit is INCH

Follow 10.3, press [a+] key to enter (Fig 11-4), right side display shows ON, means unit is INCH,shows OFF, means unit is MM. Press [b-] or [b+] key, to shift “ON” and “OFF”. Press [a+] key to save current setting and exit.

Fig 11-4

12. Machine self test function

This function is for checking whether all inputted signals are normal and supports trouble analyses.

12.1 LED and indicator light check

Press [SET] + [MODE] keys，indicator light and LEDs light. This function can check whether LEDs or indicator light are damaged. Checking ends and display shows Fig 11-1. Enter position sensor signal check. Press [SET] key to exit.

12.2 Position sensor signal check

This function can check whether position sensor, main shaft, main board circuit are with

error. As per Fig 12-1, slowly rotate main shaft, value shown in right side display changes accordingly . Rotate clockwise, value increases ; Rotate anticlockwise, value decreases. Normally, value changes among 0-63 . Press [a+] key to enter press sensor signal check. Press [SET] key to exit.

Fig 12-1

12.3 Press sensor signal check

This function can check whether press sensor , main board signal circuit and power board are with error.

Follow 12.2 and press [a+] key to enter (Fig12-2). Then lightly press main shaft, if normally, values shown on display should be changed. Press [a+] or [SET] key to exit.

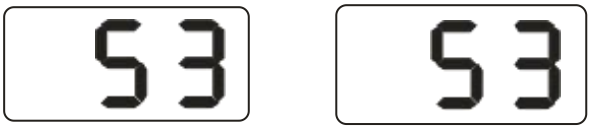


Fig 12-2

13. Trouble shooting

13.1 Manually rotate wheel to rating speed, LEDs are not off and balancing test is going on. Computer board, position sensor and cables should be checked.

13.2 After machine power on, there is no display. Check power switch indicator light. If light is off, power supply gets problem. Otherwise, check power board, computer board and cables.

13.3 Inaccuracy of precision normally is not caused by balancer. It may be caused by wrong wheel installation, inaccurate counterweight or inaccurate 100g weight. The original 100g weight must be kept properly for self-calibration only

13.4 Unstable data and poor repeatability of data normally are not caused by balancer. It may be caused by wrong wheel installation or unstable installation of machine. Machine should be well fixed on ground by bolt.

Hint: check precision right method:

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

14. Maintenance

14.1 The daily maintenance of non- professionals

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

13.1.1 Check whether the wire of electricity part connects reliably.

13.1.2 Check whether the pressed screw of the main axis is loose

13.1.2.1 Locking nut can not fix wheel tighten on main-axis

13.1.2.2 Use hexagonal wrench to tighten the pressed screw of the main-axis.

14.2 The maintenance of professionals

The maintenance of professionals can only be carried out by the professionals from the factory

14.2.1 If the imbalance value of tested wheel has obvious errors and does not improve after self-calibrating, this proves the parameter in the machine has altered, so the user should ask for professionals

14.2.2 The replacing and adjustment of pressure sensor should be operated according to the following methods, and the operation should be carried out by professionals

The steps are as follows:

1. Unlash the No.1, 2,3,4,5 nuts.
2. Dismantle the sensor and nut.
3. Replace No.6, 7 the sensor organ.
4. Install the sensor and the nut according to the Fig 14-1. (Pay attention to the sensor's direction.)
5. Tighten No.1 nut emphatically.
6. Tighten the No.2 nut to make the main axis and the flank of cabinet, and then emphatically tighten the No.3 nut.
7. Tighten the No.4 nut (not too emphatically), then tighten No.5 nut.

14.2.3 The replacing of circuit board and the organ on it should be carried out by professionals

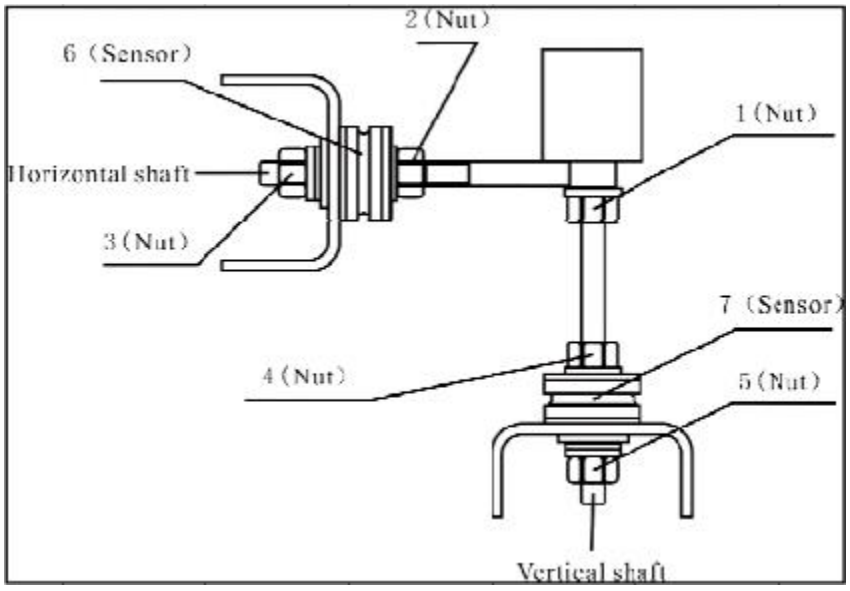


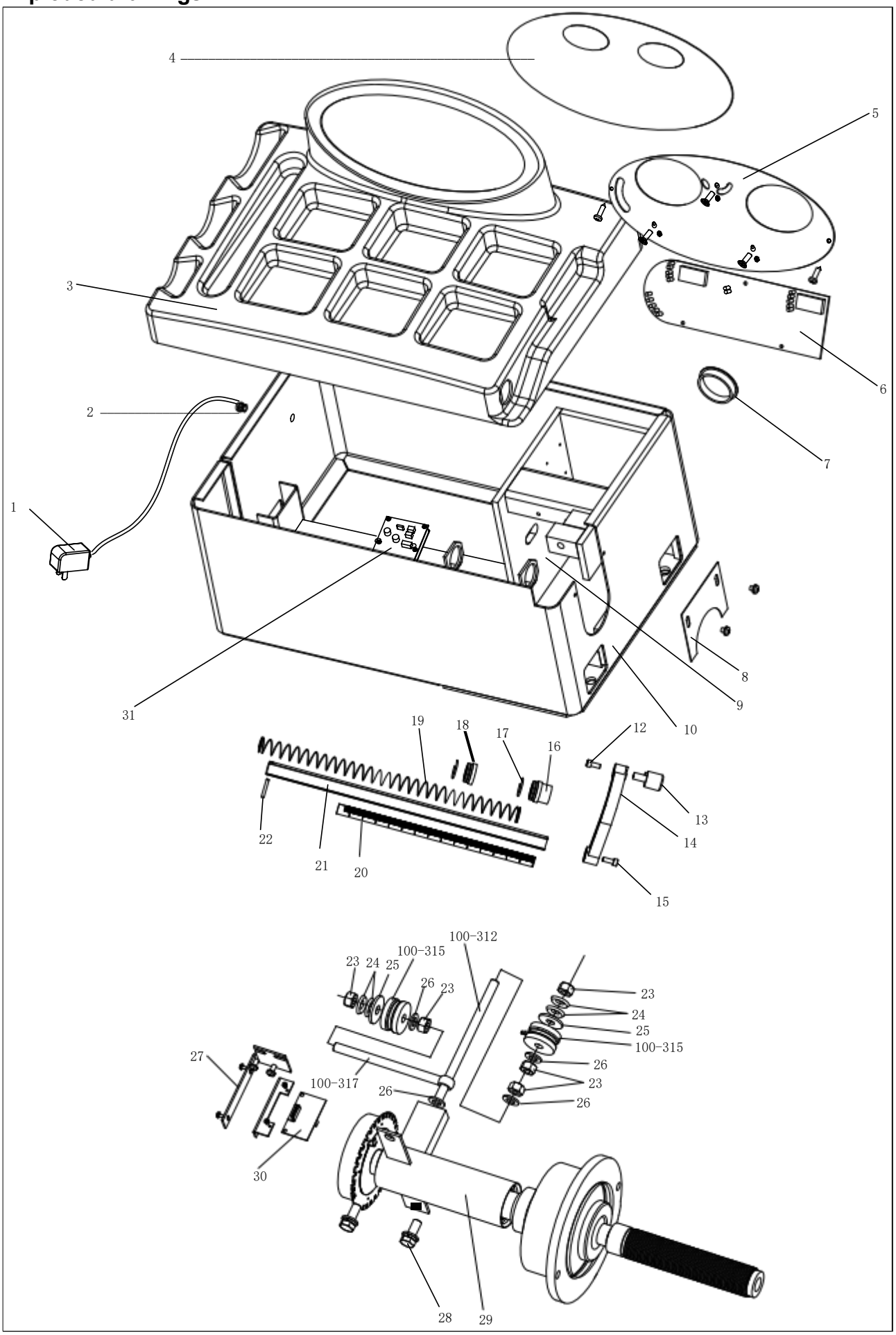
Fig14-1

15. Trouble-error code list

When balancer display hint of error, can follow consult below list to remove the trouble:

Code	meanings	cause	remedy
Err 1	principal axis not spin or have not spin signal	1. computer board fault 2.connection-peg untouched	1.change computer board 2.check cable connections
Err 2	The rotation speed is 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	too high imbalance	Repeat the self-calibration or change computer board
Err 4	principal axis wrong rotation direction	1. position sensor fault 2. computer board fault	1. change position sensor 2. change computer board
Err 6	Sensor signal transact circuit not working	1. power supply board fault 2. computer board fault	1. change power supply board 2. change computer board
Err 7	Lose date of interior	1. Incorrect self-calibration 2. computer board fault	1. Repeat the self-calibration 2. change computer board
Err 8	Self-calibration memory fault	1. not put 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 repeat self-calibration 2. change power supply board 3. change computer board 4.change press sensor 5.check cable connection

16. Exploded drawings



17. Spare parts list

No.	Code	Description	Qt.		No.	Code	Description	Qt.
1	DD06003000001	Power Adapter	1		18	JZ12001800080	Plastic bush	1
2		Power Interface	1		19	JZ11700200027	Spring	1
3	JZ12001800097	Head with tools-tray	1		20	JZ20205100025	Graduated strip	1
4	JZ12300500063	Key board	1		21	JZ20205100016	Rim distance gauge	1
5		Key fixed plate	1		22	FJ26005000002	Pin	1
6	JZ12300100088	Computer board	1		23	FJ21010000003	Nut	5
7	CF03001000008	Plastic cover	1		24	FJ15001000001	Washer	4
8	JZ20202500081	Plate	1		25	FJ15003000001	Washer	1
9	JZ20202500080	Mounting base	1		26	FJ15006000006	Washer	6
10	JZ20202500066	Chassis	1		27	JZ20203000096	Support	1
					28	FJ22012000010	Screw	2
12	FJ19018000006	Screw	1		29	JZ30303600054	Complete Shaft	1
13	JZ12000200129	Head	1		30	JZ12300100127	Position Pick-up Board	1
14	JZ12001800021	Handle	1		31	JZ12300200010	Power Board	1
15	FJ22009000093	Screw	1		100-312	JZ20204600008	Screw	1
16	JZ12001800081	Plastic bush	1		100-315	DD18010000003	Sensor Assembly	2
17	JZ11700400026	Spring	1		100-317	JZ20204600006	Screw	1