WB-1030
COMPUTERIZED W HEEL BALANCER

OPERATION AND MAINTANCE INSTRUCTION MANUAL

1- DESCRIPTION OF THE BALANCING MACHINE

1.1 GENERAL INFORMATION

The model WB-1030 is an electronic balancing machine with microprocessor designed for balancing wheels weighing up to 143 lbs.

The model WB-1030 is shown with OPTIONAL protective hood.

1.2 TECHNICAL DATA

Max wheel weight é é é é é é é é é é é é é .143 lbs

Rim diameter é é é é é é é é é é é é é é é .10ò--24ò(265---615mm)

Rim width é é é é é é é é é é é é é é é é é 1.5ò--20ò(40---510mm)

Standard power supply é é é é é é é é é é é .110 60Hz.single phase

Max power consumption é é é é é é é é é é ..500 W

Balancing accuracy é é é é é é é é é é é é ...1 gram

Cycle time é é é é é é é é é é é é é é é é é < 10 sec

Net weight ..é é é é é é é é é é é é é é é é .300 lbs

1.3 RECOMMENDATIONS

- **Before starting to use the balancing machine, carefully read the operating instruction manual.**
- **Keep the manual in a safe place for future reference.**
- **Refrain from removing or modifying machine parts which would impair correct operation. Please get in touch with the Technical Service when needing repairs.**
- **Do not use strong jets of compressed air for cleaning.**
- **Use alcohol to clean plastic panels or shelves (AVOID LIQUID CONTAINING SOLVENTS).**
- **Before staring the wheel balancing cycle, make sure that the wheel is securely locked on the adapter.**
- **The machine operator should not wear clothes with flapping edges; make sure that unauthorized personnel do not approach the machine during the work cycle.**
- **Avoid placing counterweights or other items in the base which could impair the correct operation of the balancing machine.**
- **The balancing machine should not be used for purpose other than those described in the instruction manual.**

1.4 STANDARD SAFETY DEVICES

- **Stop push button for stopping wheel under emergency conditions.**
- **Optional Hood**

  The safety guard of high impact strength plastic, is with shape and size designed to prevent risk of counterweights from flying out in any direction except towards floor.

  The micro switch prevents starting the machine if the guard is not lowered and it stops the wheel whenever the guard is raised.

2- HOISTING AND INSTALLATION

To hoist the machine, lever the base only with the 4 support points. Under no circumstance, apply force to other points such as the spindle, head or accessory shelf. Be sure that the balancing machine rests on the floor at all four corners. There is no need to anchor the machine to the floor for correct operation except if four corners are not in level.

3- ELECTRICAL CONNECTION

Warning: **This machine is to be powered by 110V only. Manufacturer declines all responsibility in the event of incorrect connection.**

Before connecting the machine to the mains through relative cable, check that the mains voltage match that shown on the nameplate at the back of this machine. Rating of the electrical connections should be on the basis of the machine electrical power consumption.

- The machine mains supply cable should be fitted with a plug conforming to current regulations if the original one should be changed.
- It is advisable to provide the machine with its own electrical connection through a suitable circuit breaker.

4- MOUNTING

4.1 – THREAD MOUNTING

Before mounting the thread on the balancing machine shaft, make sure that the shaft and the thread centering zone are clean. Lock the thread on the balancing machine shaft with special spanner.

4.2 – GUARD MOUNTING (optional)

Mount the guard on the guard shaft using the bolts and nuts provided. Check the hood switches cable plugs are connected together.

4.3 – WHEEL MOUNTING

The wheel should be fastened using one of the cones and the quick locking handle on the balancing spindle (thread). The plastic handle washer is between the cone and quick locking handle for better. Note that an incorrect centering will inevitably produce unbalance. (See Fig.1)

Mounting sequence: wheel → cone → plastic washer → quick locking handle

(The plastic washer and quick locking handle can be connected together.)

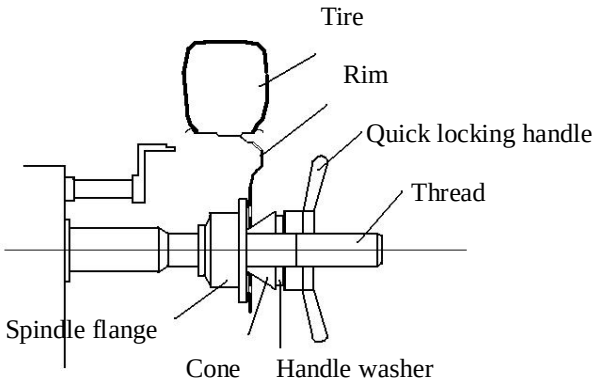


Fig. 1

5- CONTROL PANEL

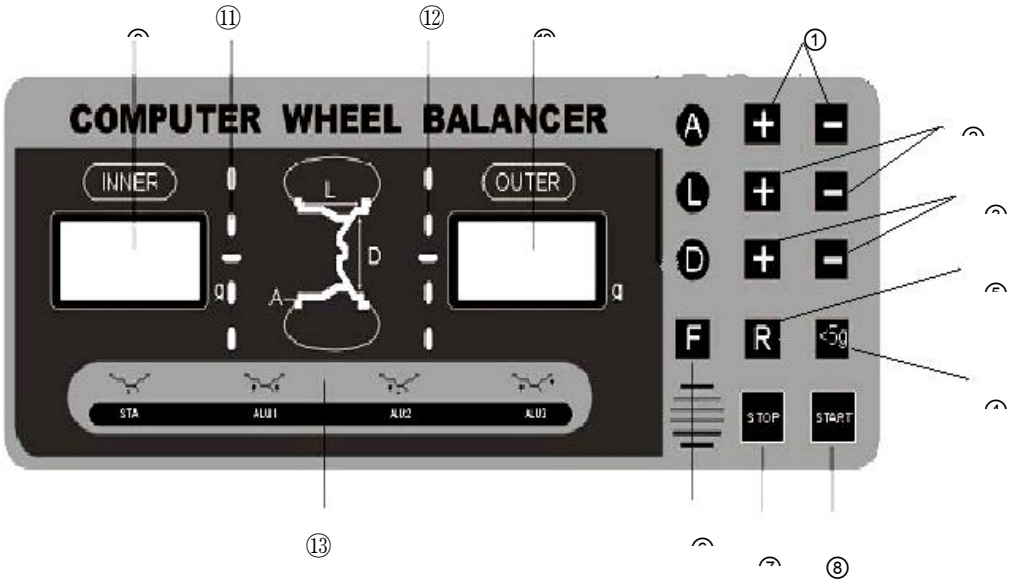


Fig. 2

1. [A+] & [A-], push buttons, manual DISTANCE input.
2. [L+] & [L-], push buttons, manual WIDTH input.
3. [D+] & [D-], push buttons, manual DIAMETER input.
4. [<5], push buttons for reading unbalance < 5 g (< 0.3 oz.)
5. [R], push buttons for recalculation / self-calibration.
6. [F], push buttons, correction-mode selection.
7. [STOP], emergency stop push button.(Select of options.)
8. [START], cycle start push button. (Self-calibration.)
9. Digital display, AMOUNT OF UNBALANCE, inside.
10. Digital display, AMOUNT OF UNBALANCE, outside.
11. Indicator, POSITION OF UNBALANCE, inside.
12. Indicator, POSITION OF UNBALANCE, outside.
13. Indicators, correcting-mode selected

Note: Only use the fingers to press the push button. Never use the pliers for the counterweight or other pointed objects.

6- PRESETTING OF DIMENSIONS

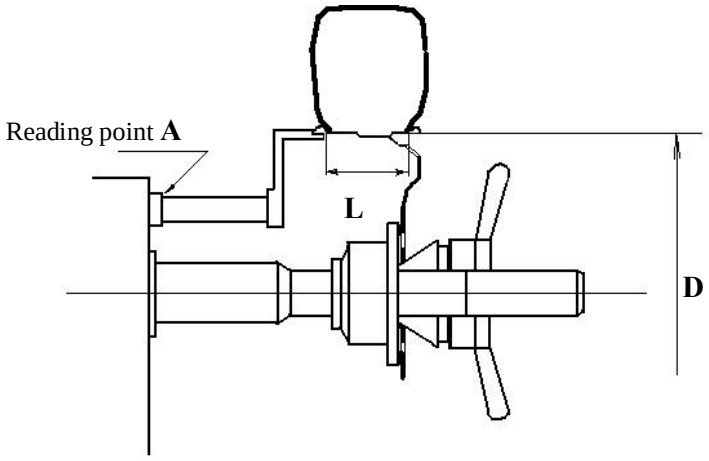


Fig. 3

1. DISTANCE
   Preset distance ñAò on the inside of the wheel from the machine measuring it with the special gauge.(Increment pitch 0.5 cm. Full scale 25 cm)

2. WIDTH
   Preset the normal width which is generally given on the rim, or else measure width ñLò with the caliper gauge (supplied as a standard).
   (Increment pitch: 0.2 for 1/4ò, 0.5 for 1/2ò, 0.7 for 3/4ò)

3. DIAMETER
   Preset the nominal diameter ñDò stamped on the tire.(Increment pitch: 0.5ò)

4. OPTIONS
   PRESETTINGS MEMORIZED ALSO WHEN MACHINE IS SWITCHED OFF:
   [STOP] + [A-] + [A+], (Three push buttons be pressed at the same time.)
   ⇨ UNIT of measurement of unbalance grams / ounces.
   [R] + [STOP], (Two push buttons be pressed at the same time.)
   ⇨ Start with guard closed.
   PRESETTINGS MEMORIZED ALSO WHEN MACHINE IS SWITCHED OFF:
   [STOP] + [L-] or [STOP]+[L+], (Two push buttons be pressed at the same time.)
   ⇨ UNIT of measurement of width mm / inch.
   [STOP] + [D-] or [STOP]+[D+], (Two push buttons be pressed at the same time.)
   ⇨ UNIT of measurement of DIAMETER mm / inch.
   N.B: The unit of width and diameter will be in inch each time machine is switch on.

   DISPLAY OF UNBLANCE:
   [F] ⇨ Normal → Static → Alu1→ Alu2 → Alu3 → Normal

7- WHEEL BALANCING

7.1 MEASUREMENT OF UNBALANCE

1. Turn on the main switch, waiting for the digital display ⑨ & ⑩ to show [ï A-] [8.0].
2. Mount the wheel on the spindle with cone and quick locking handle.
   Note: (1) The cone should be large than the central hole of the rim, but not too much.
   (2) The weight of the wheel should not exceed 143 lbs.
3. Enter the dimensions of the wheel A, L, D manually through the push buttons on the control panel.
4. Close the guard to make a measuring spin. (Press [start] button if the function ñStart with guard closedòis not enabled or the machine is without guard.
5. In a few seconds the wheel is brought up to speed and a new braking; the amounts of unbalance remain memorized on instruments 1 and 2.
6. The digital displays ⑨ & ⑩ show the counterweights to correct the wheel inside and outside.
7. The LED illuminated display ⑪ & ⑫ show the correct angular position where to fit the counterweights (12 oôclock position.)
8. While screens show the counterweights, a light pressing of button [R] will display in sequence the preset dimensions.
9. Turn the wheel until LEDs of indicator ⑫ all lighted, the highest point (12 oôclock) on the rim outside is the position for counterweight.

POSITIONING AND CORRECTION ON THE OURSIDE

Fig. 4

10. Turn the wheel until LEDs of indicator ⑪ all lighted, the highest point (12 oôclock) on the rim inside is the position for counterweight.

POSITIONING AND CORRECTION ON THE INSIDE

Fig. 5

7.2 RECALCULATION OF THE UNBLANCE

- Preset the new dimensions following the procedures described in above.
- Without repeating the spin, press [R] button.
- The new recalculated unbalance values are displayed.

7.3 MINIMIZE STATIC UNBALANCE

When standard commercially available weights with pitch of 5 grams (0.25 oz) every 5 g (0.25 oz), an unbalance of up to 5 g (0.25oz) can remain. The damage of such approximation is conspicuous for the fact that most of the disturbances of the vehicle are caused by static unbalance. The computer indicates automatically the optimum entity of the weights to be applied, by approximating them in ñ intelligentò mode according to their position (Pitch 5 grams (0.25oz).

- Press [<T] button to display actual unbalance (Pitch 1 gram / 0.1oz).
- The instruments show ñ0ò for unbalance less than 5 grams/ 0.25 oz. To display the residual unbalance, press [<T] button.

7.4 STATIC –ALU

The available function shows where to place the corrective weights in positions differing from the normal ones.

- Press [F] button to select the required function.
- The amount of unbalance is displayed correct on the basis of the selected correction position.

Normal:

- Balancing of steel or light alloy rims by applying clip-on weights on the rim edges.

Static:

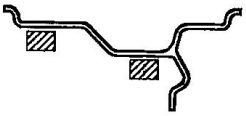
- Static correction is required for motorcycles wheels or when it is not possible to place the counterweights on both sides of the rim.

ALU 1:

- Balancing of light alloy rims with application of adhesive weights on the rim shoulders.

ALU 2:

- Balancing of alloy rims with hidden application of the outer adhesive weight.



ALU 3:

- Combined balancing : clip-on weight on inside; hidden application of the adhesive weight on the outside

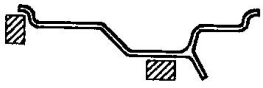


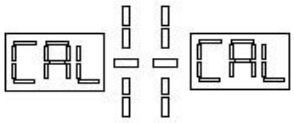
Fig.6

8- SELF CALIBRATION

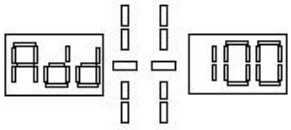
For machine self-calibration, proceed as follows:

- Mount an ñaverageò size wheel on the shaft; better is a balanced one.
- Preset the exact dimensions of the wheel mounted.

Caution!!! Presetting of incorrect dimensions could mean the machine is not correctly calibrated and therefore all subsequent measurements will be incorrect until a new self-calibration is performed with the correct dimensions.

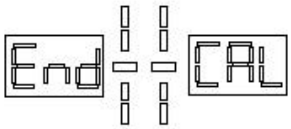
-Press [R] + [START] at the same time ——→ 

until the display and the positioning LEDs pass from flashing to being steady.

-Close the guard ——→ 

Add a weight of 100 grams (3.5 oz) on the outside in any angular position.

(or press the [START] button for model without guard)
It is very important not to touch the wheel during this spin.

-Close the guard and then press [START] button (for model without guard only to press [START]) ——→ 

Machine is calibrated.

Fig. 7

The values measured by the machine with self-calibration cycle are automatically memorized in a special memory which retains them even when the machine is switched off. Hence when the machine is switched on again, it is ready to operate correctly. However, self-calibration can be carried out whenever required or when there is some doubt whether the machine is operating correctly.

If the self-calibration is carried out by mounting on a unbalanced wheel, it is better to balance the this wheel after calibration and then use it (balanced) to do the self-calibration again.

9- ERRORS

Various abnormal conditions can arise during machine operation. If detected by the microprocessor, they appear on the display thus:

DISPLAYS	MEANING
	No rotation signal. Could be caused by faulty position transducer, or something preventing the wheel from turning.
	During the measurement spins, wheel speed had dropped to below min. 60 r.p.m. Repeat the spin. Spin without wheel or only with rim also cause this error.
	Error in mathematical calculations; most probably caused by too high wheel unbalance.
	Rotation of the wheel in opposite direction.
	In guard--starting status, the [START] button is pressed before guard closed
	Fault in memory of the self-calibration values. Repeat the self-calibration
	Error during self-calibration. Could be due to the second spin made without adding reference weight, or else by a break in the transducer cable.

Fig. 8

9.1 ï INCONSISTENT UNBALANCE READINGS

Sometimes after balancing a wheel and removing it from the balancing machine, then again mounting it on the balancing machine, it is found that the wheel is not balanced.

This does not depend on incorrect indication of the machine, but only on a fault mounting of the wheel on the adapter, i.e. in the two mountings, the wheel has assumed a different position with respect to the balancing machine shaft center line. (Loose wheel on shaft).

If the wheel is mounted on the adapter with screws, it could be possible that the screws have not be correctly tightened ï they should be tightened one by one crosswise or else (as often happens) holes have been drilled on the wheel with too wide tolerances.

Small errors up to 10 grams (4 oz) are to be considered normal in wheels locked by a cone; the error is normally greater for wheels locked with screws or studs.

If ,after balancing , when is refitted on the vehicle, it is still out-of-balance, this could be due to unbalance of the car brake drum or very often due to the holes for screw of the rim and drum drilled sometimes with too wide tolerances. In such case a readjustment could be advisable using the balancing machine with wheel mounted.

10-HANDLING OF MACHINE PARAMETERS

NOTE: Only perform this under instruction of service technician.

Press buttons [R] + [START] as in self-calibration. When the LEDs stop flashing, instead of performing the spin, press the following buttons within 5 seconds and in the correct sequence (one by one):
[A-] then [A+] then [F]

After pressing [A-] and [A+], the displays go out. After pressing [F], the current fixed distance value of [dis] appears; It can be modified with [L+] and [L-].

Press [A+] to switch to modify parameter ñIn ñ
The current value (in %) appears on the right display, while the word ñIn ñappears on the left display plus the symbol ñ- ñif the correction is negative or else ñ┤òif it is positive.
Modify with [L+] and [L-].

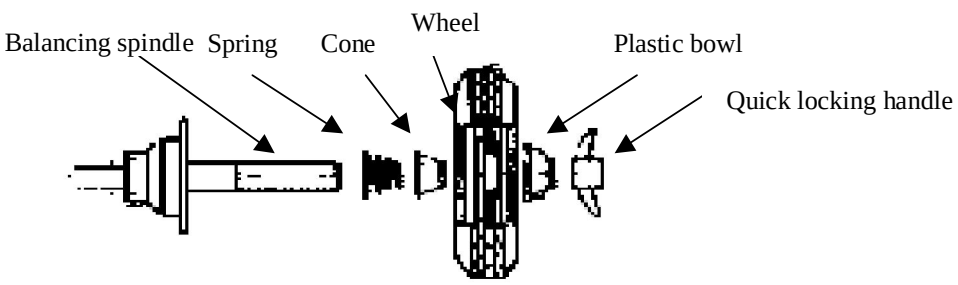
Press [A+]: the value ñSFAòappears on the right display; modify with [L+] and [L-].
To finish, press [A+]

After modifying such values, the machine requires self-calibration again.
N.B.: The values at which the machine is factory set are given on a special nameplate inside the machine.

11-MOUNTING THE WHEEL WITH SPRING

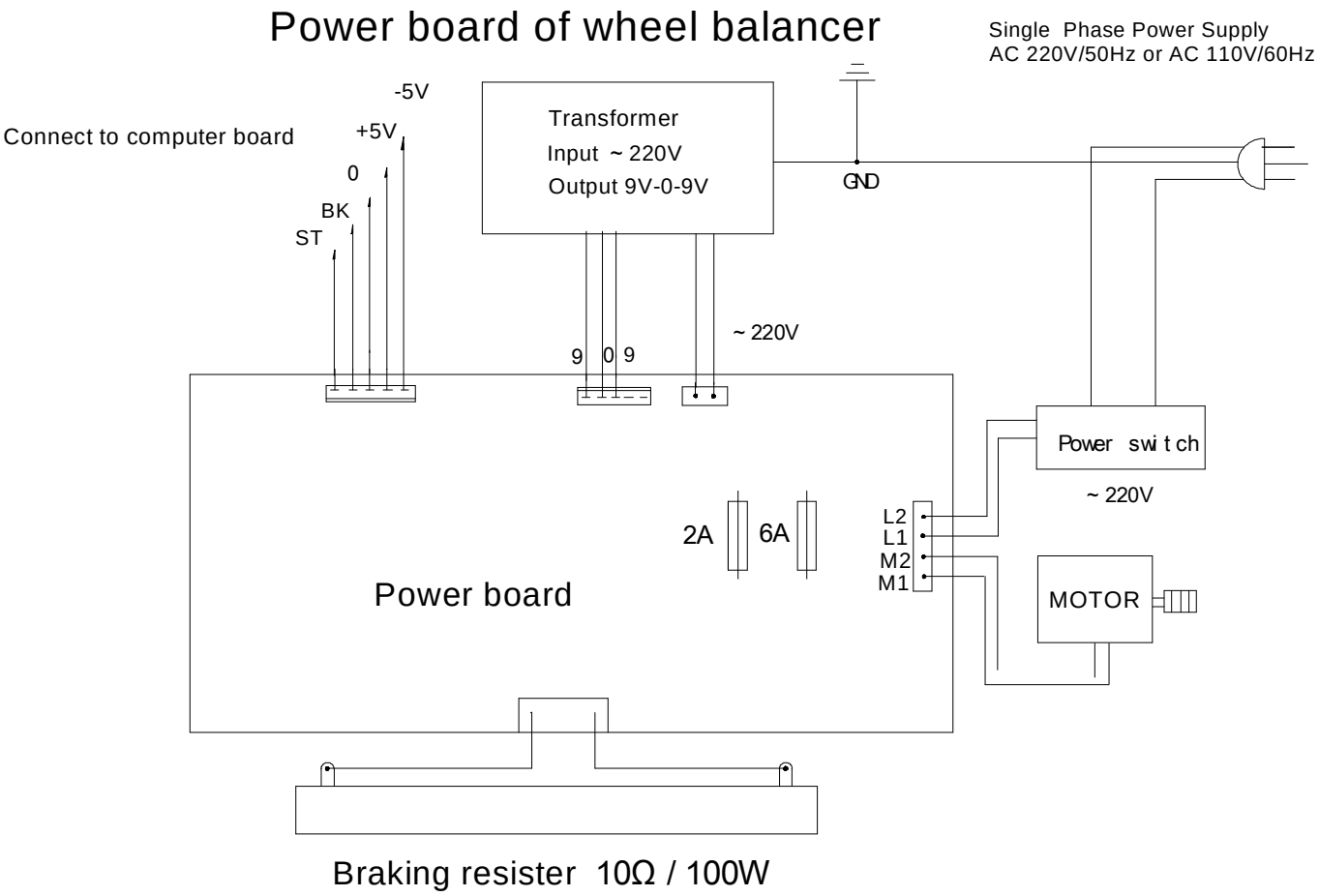
The wheel can be fastened using one of the cones, spring, plastic bowl and the quick locking handle on the balancing spindle in another way. The plastic handle washer is taken off from the quick locking handle. Instead, a plastic bowl is attached to the quick locking handle. Note that an incorrect centering will inevitably produce unbalance. (See Fig.9)

Mounting sequence: Spring→Cone→Wheel→Plastic bowl→Quick locking handle



12-CONNECTING OF POWER BOARD

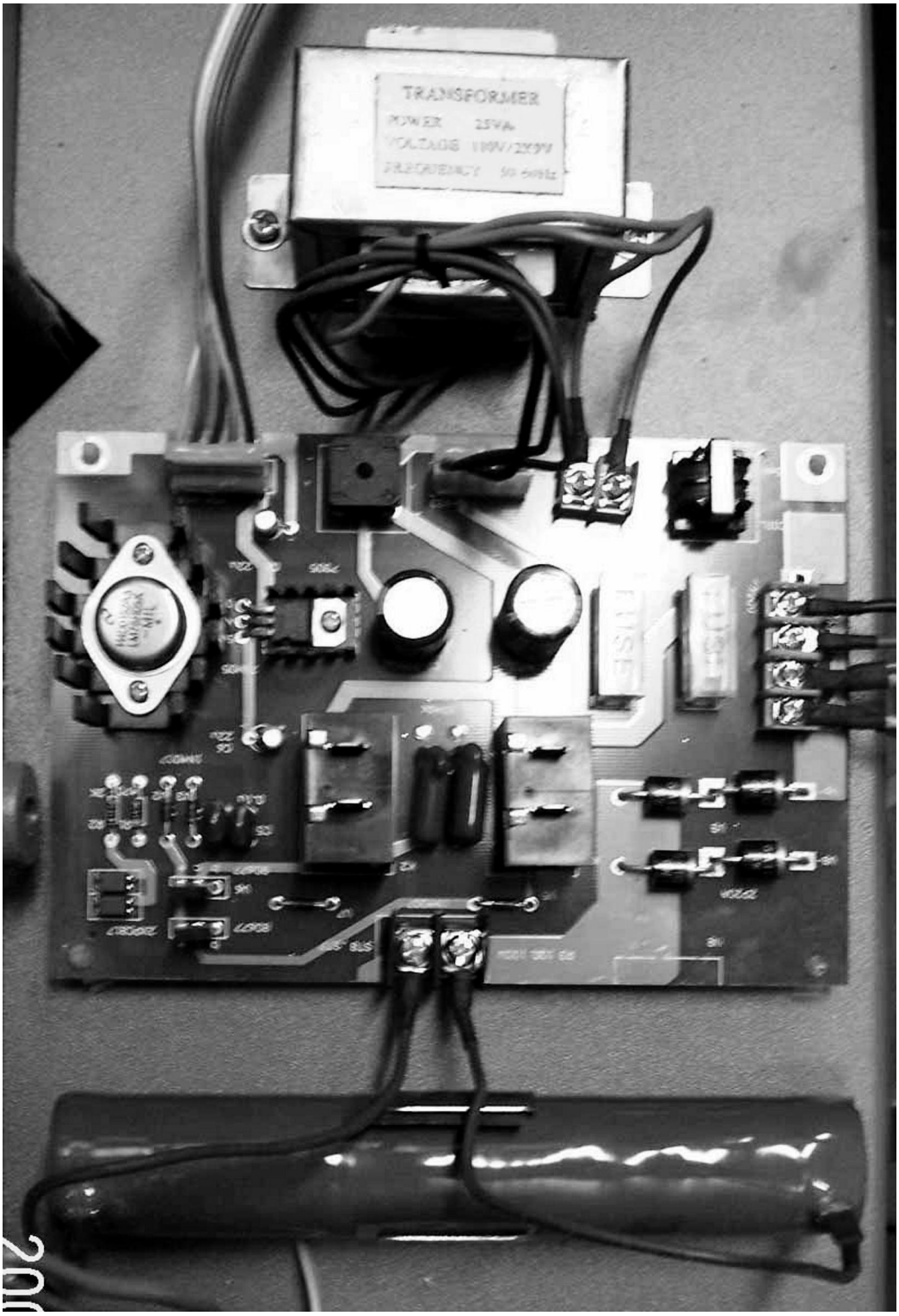
12.1 - DRAWING



CAUTION:

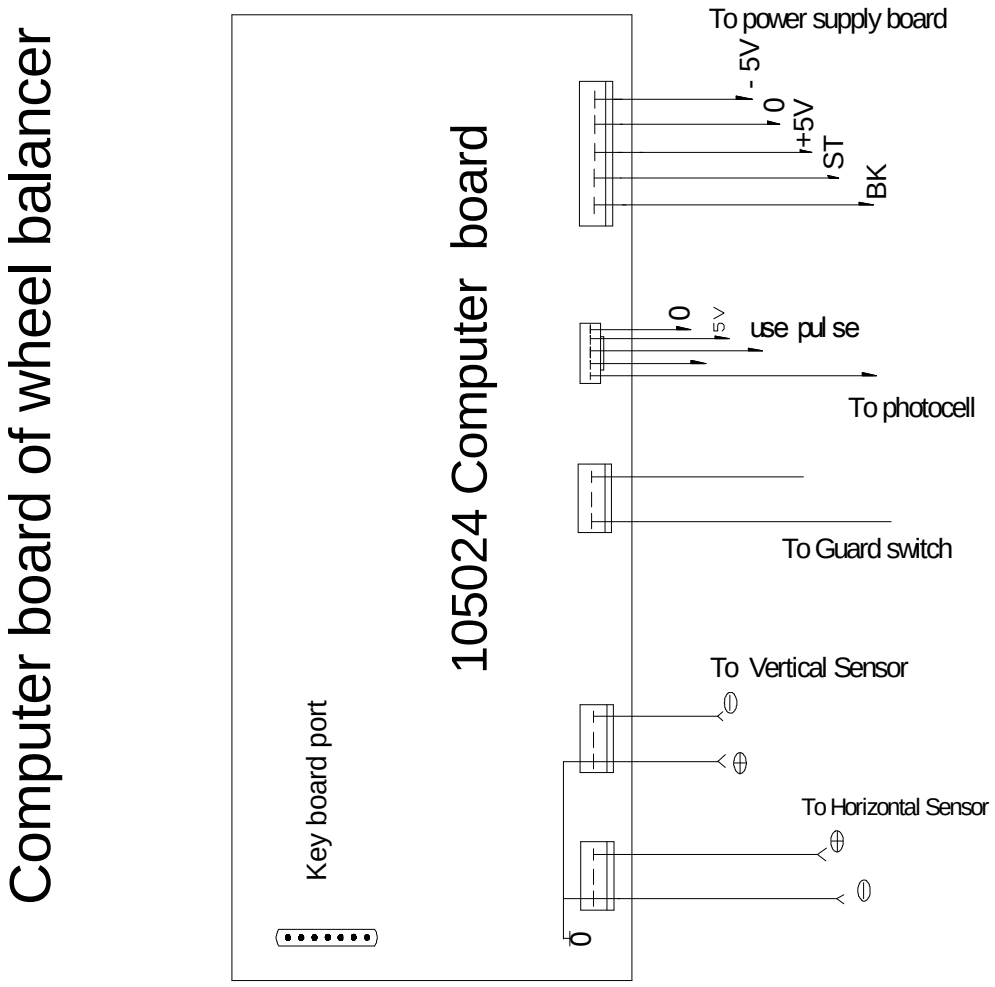
The power supply is single phase. The voltage depends on the version. It may be 220V/ 50Hz, or 110V/60Hz. Please carefully check the nameplate and the warning on the back of the machine near the power cable before connecting!!!

12.2 - PICTURE OF POWER BOARD

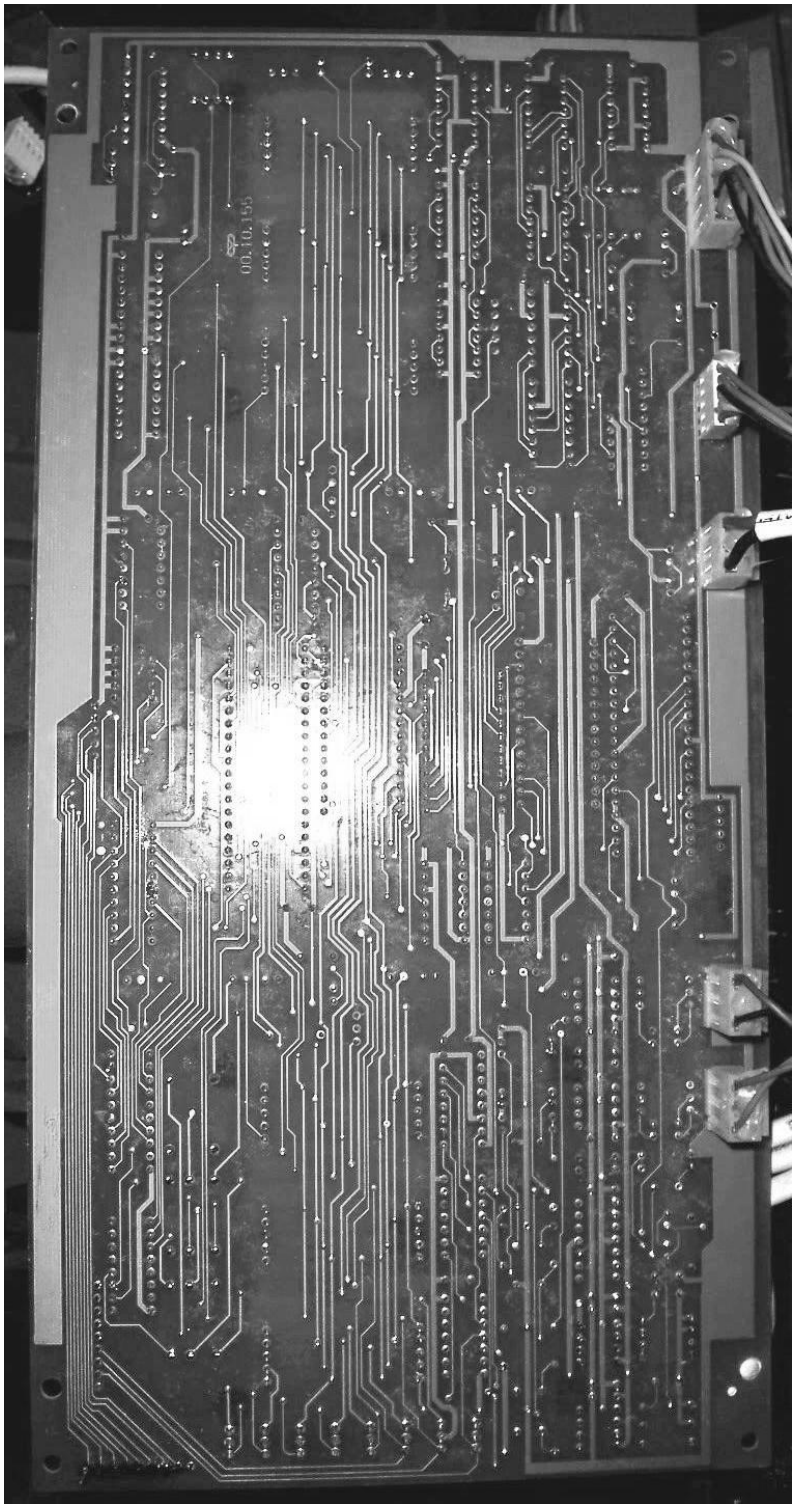


13-CONNECTION OF THE COMPUTER BOARD

13.1 ï DRAWING



13.2 ï Picture of computer board



14-ROUTINE MAINTAINCE

Warning! Before carrying out any operation, disconnect the machine from the power.

14.1- ADJUSTMENT OF THE DRIVING BELT TENSION

1. Remove the weight tray and the side plates on the body.
2. Slightly loosen the four screws fastening the motor mounting bracket and move the entire assembly until the correct belt tension is reached.
3. Carefully tighten the four screws. Check that when the belt is running, there is no side deviation owing to faulty pulley alignment.

14 .2- TO REPLACE THE FUSES

Remove the weight tray to gain access to the power supply board and the two fuses mounted on this board. If the fuses require replacement, use ones of the same current ratings. If the failure persists, contact the Technical Service department.

15-TROUBLE SHOOTING

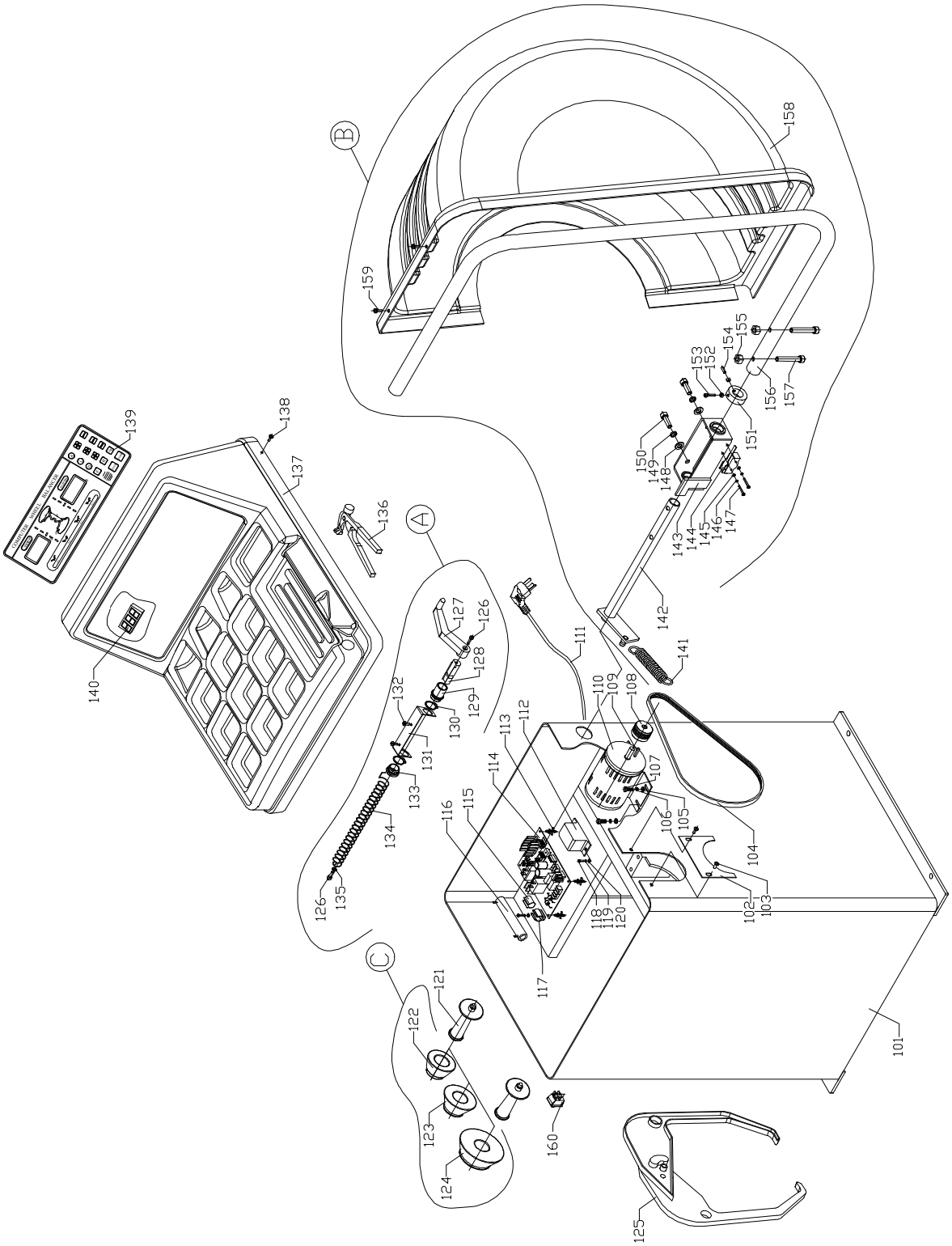
General information:

It is suggested that before do anything to the machine, **check the power supply first**. This machine shall run under its rated power supply voltage. **Secondly, check every connection** of the cable / wire inside the machine before trying to change any part of the machine.

1. No display on the screen after power on.
   - Check the fuses on the power board. If broken, replace them.
   - Check the input and output voltage of the transformer.
   - Ask the Service Engineer for detail checking.
2. The display is normal, but the wheel dimention inputing buttons do not work.
   - Check the three **MACHINE PARAMETERS.** If need, change them back to the original specification.
   - Change with a new key board panel.
3. After the guard closed, the spindle does not run.
   - Check the guard switch cable, the plugs shall be connected.
   - Check the settings for the guard. ([R]+[STOP])
4. The spindle runs slowly (error 2 maybe occurs), brakes slowly.
   - Check the belt of the motor
5. No brakes.
   - Check the braking resister. If broken, change with a new one.
6. Small quantity of weight reading always remains
   - Check inside of the tire. No moving parts shall be there.
7. Need more than one piece of weight to balance one side of the wheel
   - The position of balancing weight should be right as described in **7.10**
   - Check the three **MACHINE PARAMETERS.** Do self-calibration once.

16-PARTS CODE

105024/105024C	Fig. A	0100	CABIN



105024/105024C	Fig. A	0100	CABIN

No.	PART CODE	DESCRIPTION	QTY	NOTE
101	1050240101	Cabin	1	
102	1050240102	Frame cover	1	
103	1050240103	Screw	2	M5*10
104	1050240104	Belt	1	
105	1050240105	Flat washer	4	8
106	1050240106	Spring washer	4	8
107	1050240107	Bolt	4	M8*25
108	1050240108	Pulley	1	
109	1050240109	Retaining pin	1	
110	1050240110	Motor	1	110/220V 50/60HZ
111	1050240111	Power cable	1	
112	1050240112	Transformer	1	
113	1050240113	Nylon spacer	4	
114	1050240114	Power board	1	
115	1050240115	Insulated paper	1	
116	1050240116	Resistor	1	
117	1050240117	Clip	1	
118	1050240118	Screw	3	M4*10
119	1050240119	Spring washer	3	4

120	1050240120	Flat washer	3	4
121	1050240121	Handle	2	
122	1050240122	Cone 1#	1	
123	1050240123	Cone 2#	1	
124	1050240124	Cone 3#	1	
125	1050240125	Rim width gauge	1	Caliper
126	1050240126	Interior hex screw	1	M6*16
127	1050240127	Distance gauge index	1	
128	1050240128	Scale rod	1	
129	1050240129	Scale guide	1	
130	1050240130	Circlip	2	
131	1050240131	Scale support	1	
132	1050240132	Screw	2	M5*12
133	1050240133	Scale end guide	1	
134	1050240134	Spring	1	
135	1050240135	Flat washer	1	6
136	1050240136	Pliers / hammer	1	

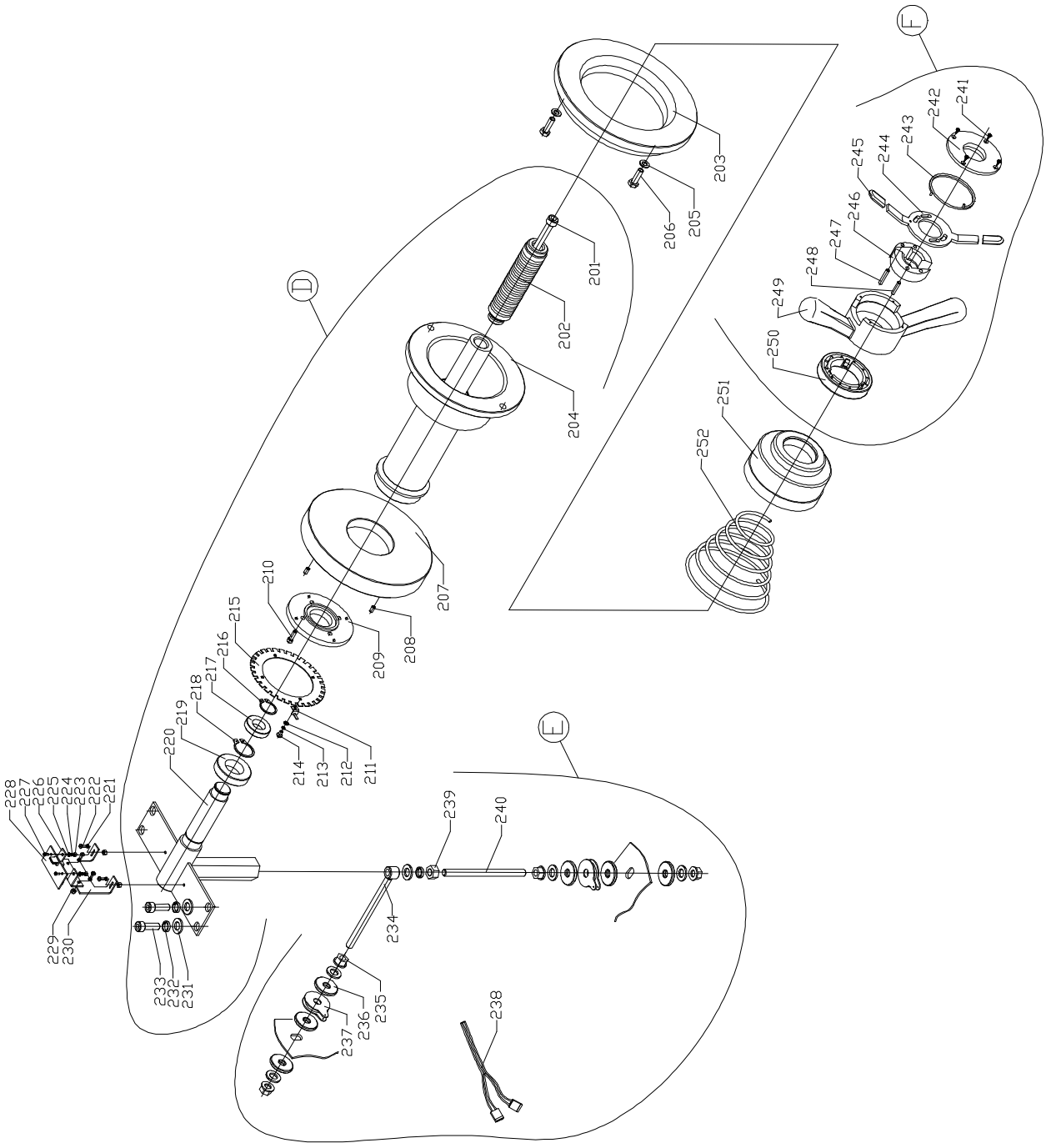
105024/105024C	Fig. A	0100	CABIN

No.	PART CODE	DESCRIPTION	QTY	NOTE
137	1050240137	Weight-tray	1	

138	1050240138	Screw	4	M5*12
139	1050240139	Key panel	1	
140	1050240140	Computer board	1	
141	1050240141	Spring	1	
142	1050240142	Tube for guard	1	
143	1050240143	Support	1	
144	1050240144	Microswitch	1	
145	1050240145	Washer	2	4
146	1050240146	Spring washer	2	10
147	1050240147	Screw	2	M4*30
148	1050240148	Flat washer	2	10
149	1050240149	Spring washer	2	10
150	1050240150	Screw	2	M10*20
151	1050240151	Frame lock ring	1	
152	1050240152	Nut	2	M6
153	1050240153	Screw	1	M6*40
154	1050240154	Screw	1	
155	1050240155	Nut	2	M10
156	1050240156	Tube frame	1	
157	1050240157	Bolt	2	M10*50
158	1050240158	Guard	1	
159	1050240159	Self tapping screw	2	M5*12

160	1050240160	Main switch	1	
A	1050240161	Distance gauge assembly	1	Kit
B	1050240162	Guard assembly	1	Kit
C	1050240163	Corn assembly	1	Kit of three

105024/105024C	Fig. A	0100	CABIN



105024/105024C	Fig. B	0200	AXLE

No.	PART CODE	DESCRIPTION	QUANTITY	NOTE
201	1050240201	Interior hex screw	1	M10*60
202	1050240202	Thread rod	1	
203	1050240203	Flange	1	
204	1050240204	Main shaft	1	
205	1050240205	Washer	2	8
206	1050240206	Bolt	2	M8*25
207	1050240207	Pulley	1	
208	1050240208	Screw	2	M5*10
209	1050240209	Bearing cover	1	
210	1050240210	Screw	4	M5*10
211	1050240211	Zero point index	1	
212	1050240212	Spring washer	4	4
213	1050240213	Washer	4	4
214	1050240214	Screw	4	M4*8
215	1050240215	Phase disk	1	
216	1050240216	Circlip	1	25
217	1050240217	Bearing	1	6005Z
218	1050240218	Circlip	1	
219	1050240219	Bearing	1	6006Z
220	1050240220	Spindle	1	
221	1050240221	Plasetic washer	4	5
222	1050240222	Screw	4	M5*12
223	1050240223	Nut	2	M3
224	1050240224	Spring washer	2	3
225	1050240225	Washer	2	3
226	1050240226	Adjustable plank	1	
227	1050240227	Screw	2	M3*8
228	1050240228	Photo cell board	1	
229	1050240229	Nut	2	M5
230	1050240230	Support plank	1	
231	1050240231	Washer	9	10
232	1050240232	Spring washer	5	10
233	1050240233	Screw	4	M10*20
234	1050240234	Eye rod	1	
235	1050240235	Nut	4	M10

105024/105024C	Fig. B	0200	AXLE

No.	PART CODE	DESCRIPTION	QUANTITY	NOTE
236	1050240236	Washer	4	
237	1050240237	Piezo sensor	2	
238	1050240238	Cable of sensor	1	
239	1050240239	Nut	1	M10
240	1050240240	Thread rod	1	
241	1050240241	Self tapping screw	4	
242	1050240242	Cover	1	
243	1050240243	Spring	1	
244	1050240244	Locking plank	1	
245	1050240245	Plastic cover	2	
246	1050240246	Locking teeth	1	Pair
247	1050240247	Pin	1	Ø5*35
248	1050240248	Pin	1	Ø5*20
249	1050240249	Handle body	1	
250	1050240250	Plastic washer	1	
251	1050240251	Plastic bowl	1	
252	1050240252	Corn spring	1	
D	1050240253	Main shaft assembly	1	Kit
E	1050240254	Sensor assembly	1	Kit
F	1050240255	Quick locking handle assembly	1	Kit
