TW F - 00

Wheel balancing machine

twinbusch.de

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Read this entire manual carefully before installation or operation of the TW F-00. Follow the instructions strictly.

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TW F-00 WHEEL BALANCING MACHINE

INSTRUCTION MANUAL

INDEX

ATTENTION

This manual is an important part of the product.
The warnings and instructions in this manual provide important information about SAFETY IN USE and MAINTENANCE and should be read and understood very carefully.
KEEP THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE.

Product designation

The wheel balancing machine is designed exclusively for balancing wheels with maximum dimensions defined in the general section of this manual.
During standard maintenance of the apparatus, it is the responsibility of the technician (who should be suitably trained and professionally qualified) to disconnect the main power supply, ensuring that it cannot be accidentally switched on.
This machine should only be used for the purpose for which it was designed. Any other use is to be considered improper and the manufacturer will not take responsibility for any damage caused by improper, incorrect and use.

Training and information for the machine operators

The machine should only be used by specially trained and authorized personnel.
The training and informing of the operating staff should be done so as to enable them to operate the machine as described in the instructions provided by the manufacturer, so that the machine performs in the best possible way and the operations are carried out efficiently and safely.
For any doubts relating to the use, installation and maintenance of the machine, please refer to the instruction manual or if necessary contact the authorized service centers.

Transport and unpacking

Transport the package as seen in (Fig.1).
Once the product has been unpacked, check for damages, and missing parts.

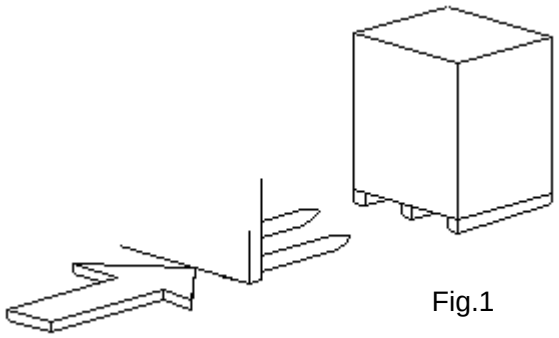


Fig.1

Requirements for installation

The installation site should have the following features:

- Level floor, rigid, preferably concrete or tiled.
- Sufficient lighting (but without dazzling or very bright lights).
- Protected from atmospheric damp conditions.
- Pollution-free area.
- An area with acceptable noise level.
- The work place should not be an area with moving machines (e.g. Fork lift).
- Explosive, corrosive and/or toxic materials should not be stored in the same place.
- From the control position the operator must be able to see the entire apparatus and the surrounding area. Within this area you must prevent access to unauthorized persons and objects that may be a source of danger.

All the installation operations involving connections with the main power supply must be done by professionally qualified people following the instructions in this manual. In case of doubt, consult your authorized service centers.

Safety

Any tampering or alteration of the apparatus which is not authorized by the manufacturer will result in the loss of guaranty.
Removal or tampering with the safety devices is a violation of the safety regulations.
The operator must also observe the following safety procedures:

- Stop the machine immediately in case of irregular functioning and contact the authorized customer service office.
- Check that the working area around the machine is free of potentially dangerous objects and fluids (e.g. oil)
- Protective clothing must be worn at all times. This machine has moving parts! To prevent entanglement all loose clothes, objects, and hair must be protected in a suitable manor. Due to rotation small objects, stones etc. must be removed from the tyre. This will give false readings and could cause injury. Wear protective glasses at all times!

Technical service, repairs and replacement of parts

All repairs and maintenance should be carried out by authorized and professionally qualified personnel.
Disconnect the machine from the main power supply before any maintenance operations.
Use only original spare parts supplied by the manufacturer.
Consult the technical service office if you have any doubt regarding the suitability and conformity to safety regulations of the accessories and spare parts to be used on the machine.
Disregard to these requirements will result in loss of guaranty.

Storage

Should the machine not be used for a longer period of time, disconnect the main power supply, lubricate all moving parts and cover the machine to protect from dust.

Disposal

All waste products should be disposed of in an environmentally friendly manor. Consult your local government for advice on where and how to dispose the different materials.

1.2 Technical Data

Technical data	
Max. Wheel weight	65 kg
Power supply	230 V
Balancing accuracy	1 g
Balancing speed	<200rpm
Rim diameter	10” ～ 24” (254mm ～ 610mm)
Rim width	1.5” ～ 20” (20mm ～ 508mm)
Revolution time	<10 s
Noise level	<70 dB
Net weight (without accessories)	122 kg
Operating temperature range	-5° C ～ 50° C
Overall dimensions (with guard) (L×W×H)	1250 X 1100 X1700
Wheel hub center	40 – 135 mm

1. INSTRCUTIONS FOR USE

3.1 Lifting and Installation

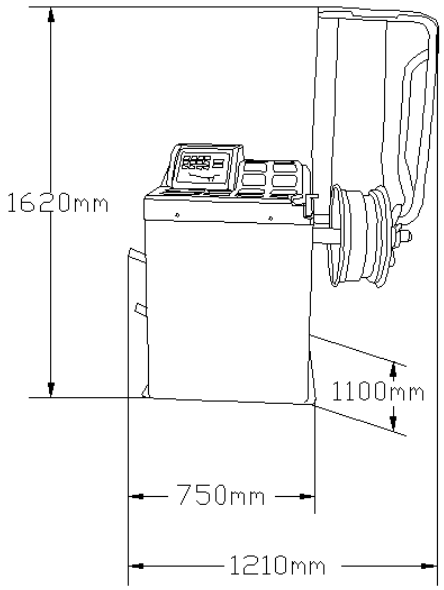
The machine should only be lifted from underneath. Under circumstances should force be applied to other parts, such as the mandrel, the headstock, the casing or the accessories tray.

The machine should be fixed to the floor, using the three ϕ12 holes on the base of the·machine.

Check that the machine is level and the base rests evenly on the floor.

Dimensions including the guard: 1250X1100X1700mm. (See Fig.2)

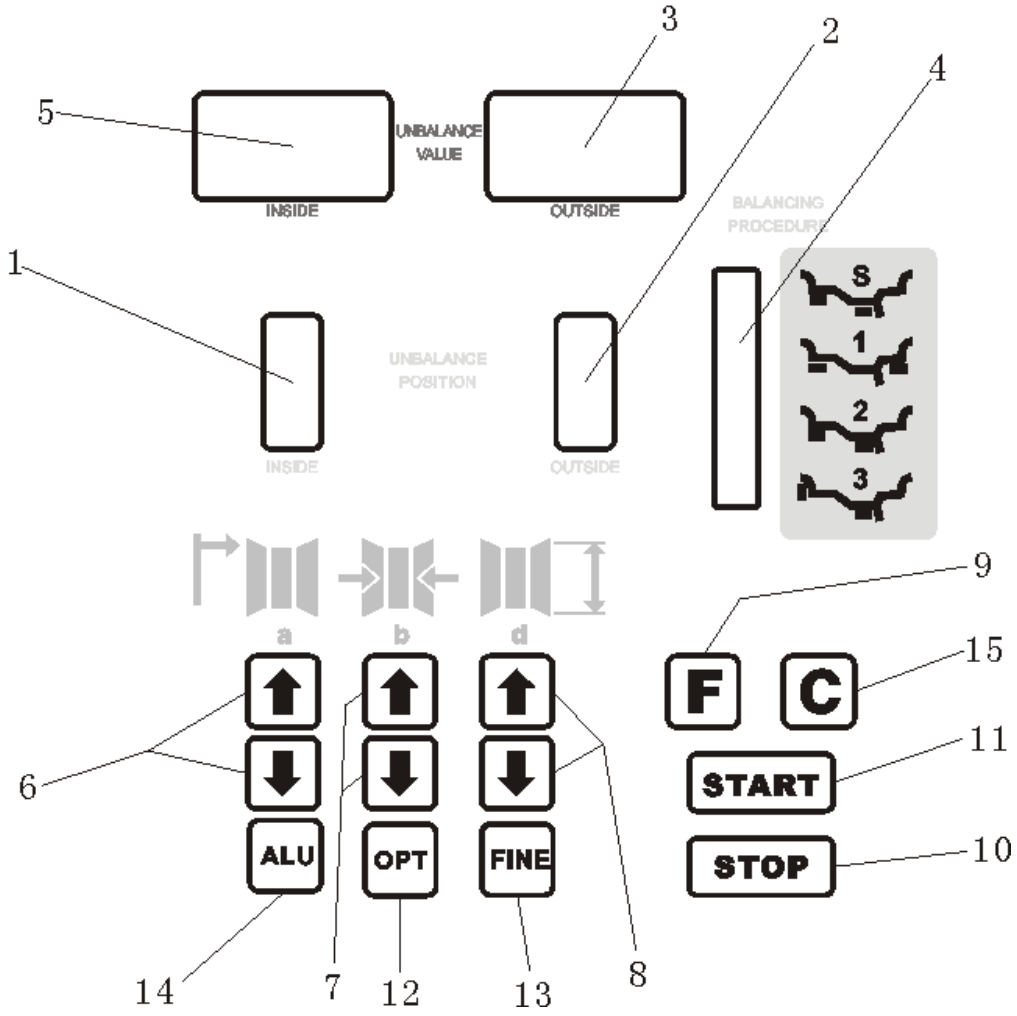
Fig. 2



3.2 Power supply

Before connecting the machine to the main power supply with the cable provided, check that the voltage is the same as shown on the ID plate mounted on the back of the balancing machine.

Standard voltage is 230 V. Maximum electrical power input is 0.6KW.



1. Inner side UNBALANCE POSITION display
2. Outer side UNBALANCE POSITION display
3. Outer side UNBALANCE VALUE digital display
4. Displays showing the type of correction chosen
5. Inner side UNBALANCE VALUE digital display
6. DISTANCE calibration button
7. WIDTH calibration button
8. DIAMETER calibration button
9. Button for selecting g/oz and mm/inches; self-calibrating
10. Emergency stop button
11. Start button
12. Option program
13. Fine adjustment (exact gram) button
14. Wheel type button
15. Cancel button

Never use sharp objects to press the buttons on the display, it is designed to be pressed only by hand.

3.3 Fixing the adapter

Please make sure the shaft is clean and free from obstructions before mounting the wheel.

Check that the tapered cone is the right size for the wheel and make sure it is well centered. Incorrect mounting will result in false readings. Make sure the wheel and tyre are free from dirt, rust and stones. Excessive water will also give false readings. Remove all old weights.

3.4 Mounting the wheel

Check that the wheel is correctly tightened on the shaft (do not over tighten!) loose or not centered wheels will also result in false readings.

3.5 Using the touchpad

The following operations can be carried out using the touchpad:

Varying the distance (dimension “a”)	↑a or ↓a
Varying the width (dimension “b”)	↑b or ↓b
Varying the diameter (dimension: “d”)	↑d or ↓d
Recalculating the values	C
Fine adjustment (exact gram) button	FINE
Static Dynamic	F
ALU Dynamic	ALU
Balancer self-calibrating	F + C
Start by closing the guard	F + STOP
Unbalance measured in gm or oz	F + ↑a + ↓a
Width measured in mm or inches	F + ↑b or F + ↓b
Diameter measured in mm or inches	F + ↑d or F + ↓d
Start button	START
Emergency stop button	STOP

The unit is preprogrammed and must only be changed when using (mm or inches).

3.6 Calibrating the panel

DIAMETER: adjust the diameter “d“, which is shown on the tire.

WIDTH: adjust the width "b", which is normally shown on the wheel rim, or measure the width “b” with the calipers provided.

DISTANCE: Measure between the machine and the inner lip on the wheel rim and set according to “a” (Fig.4)

3.7 Balancing motorcycle wheels dynamically

- Slip the extension onto the distance gauge.
- Extract the gauge until the extension touches the inner side of the wheel rim.
- Read the value “a” on the scale, set it manually using the button 9, value “a+5” (scale base 25 cm).

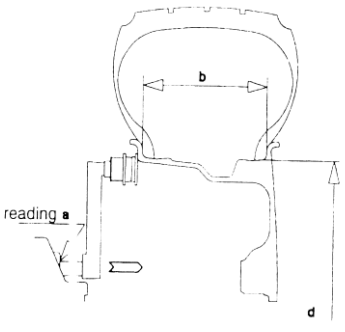


Fig.4

3.8 Wheel balancing

- Close the guard.
- Press the START button.
- The wheel is accelerated automatically to balancing speed and then stopped; displays 3 and 5 show the unbalance values.
- Displays 1 and 2 show the correction position. If all the LEDs are lit, the correction weight must be placed in the middle at the top of the wheel.

IMPORTANT: An unbalance value reading below 10-12 grams (0.4-0.5 oz) is normally sufficient for good balancing.

With this balancing machine, it is easy to balance to a tolerance of only 5 grams (0.2 oz) or less.

Fine adjustment (exact gram) button: **FINE**

To balance a wheel below 5 grams (0.2 oz) can be done (wheels for special uses) by pressing this button with the machine at a standstill whenever necessary

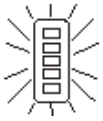
Display 3 and 5 for unbalances below 5 grams (0.2 oz) in normal conditions.

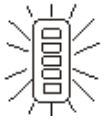
3.9 Self calibration methods

- This is done by fitfing a wheel to the shaft, even one that is not balanced, although it is advisable to use one with “average” dimensions.
- Set the exact dimensions of the wheel fitted.

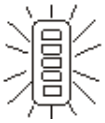
ATTENTION: any error in setting the dimensions will mean that the machine is not correctly calibrated, so all the subsequent measurements will be faulty until the machine is calibrated again with the correct measurements.

- Press F + C. ⇨

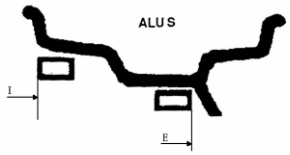




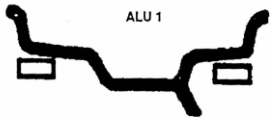
- Until the positioning LED’s stops flashing.



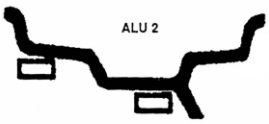
- Press START ⇨



- Add a 100 gram weight on the outside in any angular position.



- Press START . ⇨

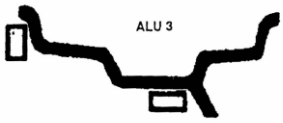


- The machine is calibrated at the end of the cycle. The display reads “END CAL”.

Remove the 100 gram weight from the wheel, which can now be balanced with a further cycle.

The values that the machine records form this self-calibration operation are automatically stored in the memory even when the machine is switched off.

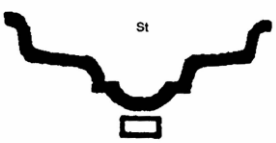
The self-calibration operation can be repeated as often as needed or whenever the correct reading is in doubt.



3.10 STATIC-ALU functions

(For balancing motorcycle wheels, in light alloy or special construction forms) Ref. Fig.6

NORMAL: for balancing steel rim wheels or light alloy by applying weights to the edge of the rim with clips.



ALUS: for balancing special shape wheels

ALU1: for balancing light alloy rims with self adhesive weights on the rim shoulders

ALU2: for balancing wheel rims in light alloy with inner side self adhesive weights. Position of the inner side weight is shown in the diagram

ALU3: for combined balancing: clip-on weight on the inside; hidden self adhesive weight on the outside (Mercedes).

St.: STATIC correction is required for motorcycle wheels or when it is not possible to place the counterweights on both sides of the wheel rim.

- The ALU functions available can be selected at any time to provide a reading, correction weights can be applied to different positions shown in Fig. 6 (normal). Press button ALU to select the desired function. For each function, the microprocessor shows the real values of the compensating weight on the basis of the position of the correction weight.

3.11 Optimizing the unbalance

The optimizing operation enables you to reduce the amount of weight on the wheel when balancing. In many cases, an improvement of the eccentricity can be achieved.

- Press button OPT, the display reads “r.S.”
- Press START , the machine runs a measuring cycle.
- The display gives the instruction to turn the tire on the wheel rim. Make a reference mark on the adapter and wheel rim with chalk, so the tyre can be fitted in the same position.
- Use a tire changer to rotate the tire through 180 on the wheel rim.
- Fit the wheel rim back onto the adapter in the same position as before.
- Press START. The machine runs a second measuring cycle.
- The display now reads as follows: Right hand display: % value (symbol ・) of possible unbalance reduction. Left hand display: Current static unbalance value. This is the value that can be reduced by the figure.
  Manually turn the wheel until the outer LED lights up (display position); mark the top of the tire. Continue the (manual) rotation of the tyre mark the wheel rim where it corresponds to the position indicated by the inner LEDs.
  Optimizing is achieved by turning the tire on the wheel rim again until the two marks line up.
  Press the STOP button to end the optimizing operation and return to normal wheel balancing.

3.12 Inconstant unbalance readings

When a wheel has been balanced and removed from the balancing machine and then rebalanced and shows different readings. This is not a sign that the machine is defect, this means that the wheel was wrongly fitted was and not in the centre.

If the wheel is fitted to the adapter with bolts, use the crossover system, gradually tighten to ensure that the wheel is centered.

If the wheel is found to be still unbalanced when it is fitted to the vehicle after balancing, this is more likely a problem with the vehicle itself.

4. STANDARD MAINTENANCE

Switch off the machine's power supply before executing any maintenance operations.

4.1 Adjusting the belt pulley

1. Slightly loosen the four screws that support the motor and move the motor to adjust the belt tension.
2. Tighten the four motor screws carefully, check that the belt does not play and doesn't touch the casing when in movement.

4.2 Computer board replacement

Machine parameters input:

When the computer board is to be replaced, it is necessary to insert the machine parameters.

To perform this operation, act as follows: push buttons [F] + [C] to execute the self-calibration; When the position LEDs stop flashing push the following buttons within 5 seconds with the sequence: [↓ **a**] **+**[↑ **a**]**+** [**F**]**.**

After pushing [↓ **a**] and [↑ **a**], the displays turn off, and after pushing [F] the present value of fixed distance "DF" appears: adjust by [↑ **b**] and [↓ **b**].

Press to pass [↑ **a**] to the adjustment of the "I" value.

On the right display you can see the present value (in %) and on the left the "I" writing and the symbol "-" if the correction is negative, or "+" if it is positive. adjust by [↑ **b**] and [↓ **b**].

By pushing button [↑ **a**] on the right display , the "S " value appears:

to adjust it, push buttons [↑ **b**] and [↓ **b**], to finish, press [↑ **a**].

Configuration basic values: See sticker next to the power board.

After having modified the machine parameters, execute the self-calibration.

NOTE: The factory settings can be found on the data info plate inside the machine for calibration reference.

5. TROUBLE SHOOTING

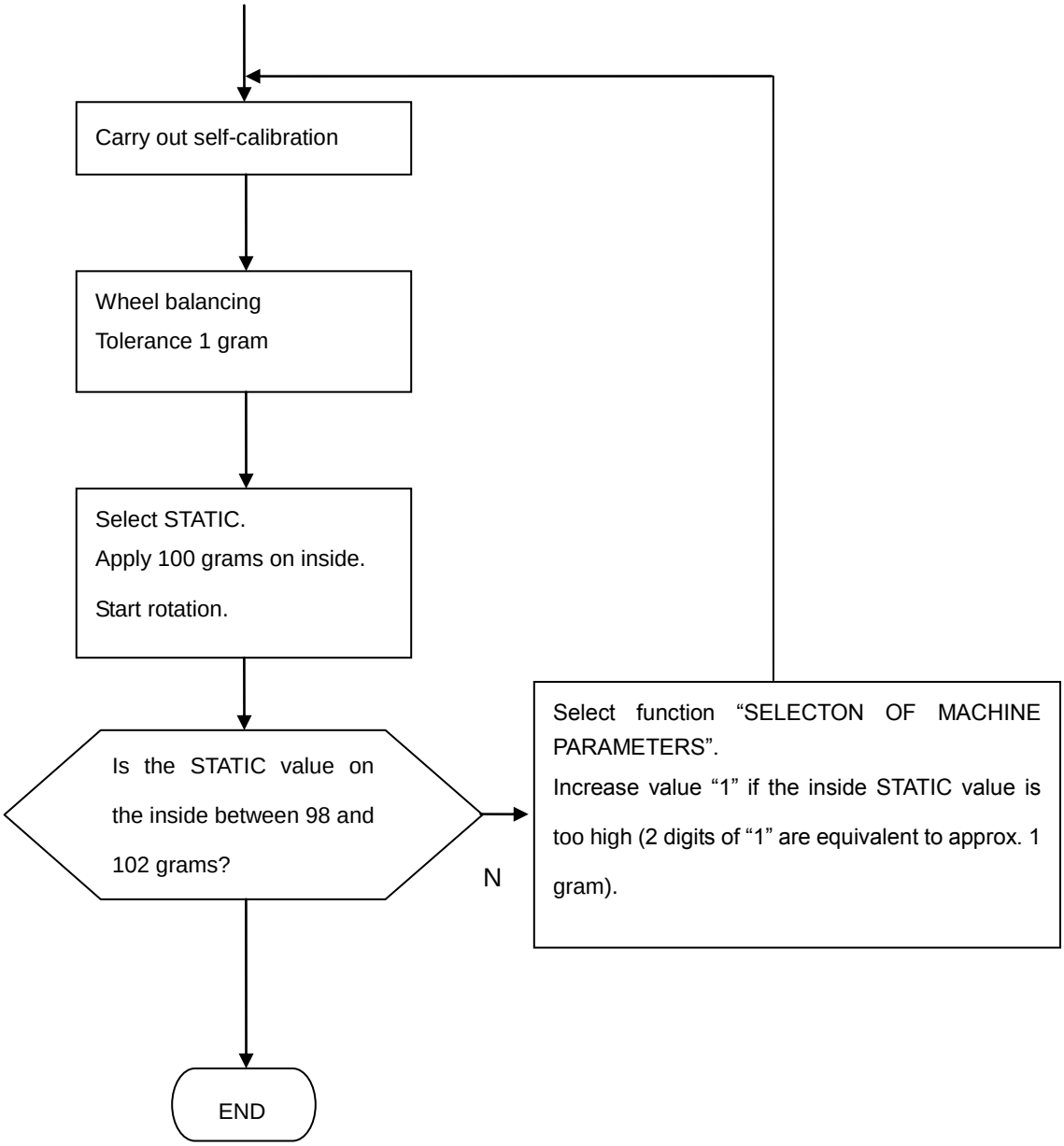
TROUBLE-ERROR CODE	CAUSE	REMEDY
ERR. 1: Lack of wheel phase signal	a) Faulty position transducer b) Motor is not running c) Rotation hindrance d) Loose or broken driving belt	a) Restore the transducer efficiency b) Start the motor c) Remove the hindrance d) Tighten or replace the belt
ERR.2: The rotation is lower than 60/min	a) Interruption in rotation unit b) Loose driving belt c) No tire mounted or lower rotary speed	a) Check and eliminate the cause of breaking b) Tighten or replace the belt c) Mount adequate tire
ERR.3: Miscalculation	a) Incorrect self-calibration b) Too high unbalance c) Faulty memory card	a) Repeat the self-calibration b) Check the correct wheel centering on the spindle c) Replace the board
ERR.4: Wrong rotation direction	a) Wrong motor connection	a) Reverse the connection in the motor terminal board
ERR.5: Open protection before beginning launch	a) Open protection b) Faulty protection switch	a) Close the protection b) Replace the switch
ERR.7: Card faulty operation	a) Incorrect self-calibration b) Faulty computer board	a) Repeat the self-calibration b) Replace the board
ERR.8: Self-calibration memory fault	a) Second launch carried out without adding the reference weight b) Interrupted detectors cable	a) Add the reference weight during the second launch b) Restore the connection

6-LOGIC TROUBLE SHOOTING SEQUENCE

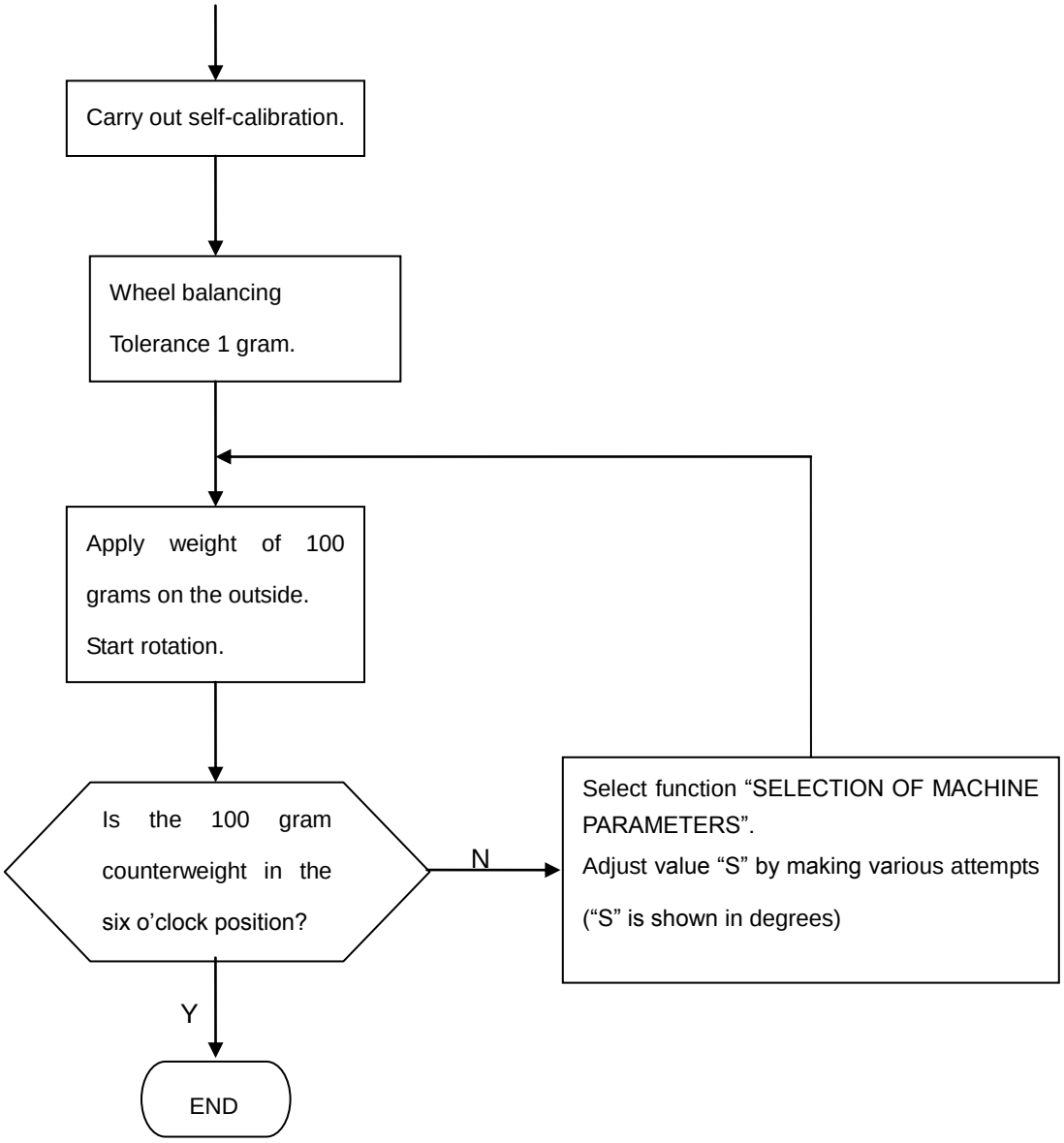
N.B. Before carrying out any test disconnect braking resistor R on the contractor. Reconnect R only at calibration of testing. When the power or computer board requires replacement, repeat the self-calibration of the balancing machine.

N.B. When the computer board is replaced , preset the machine parameters indicated on relative nameplate.

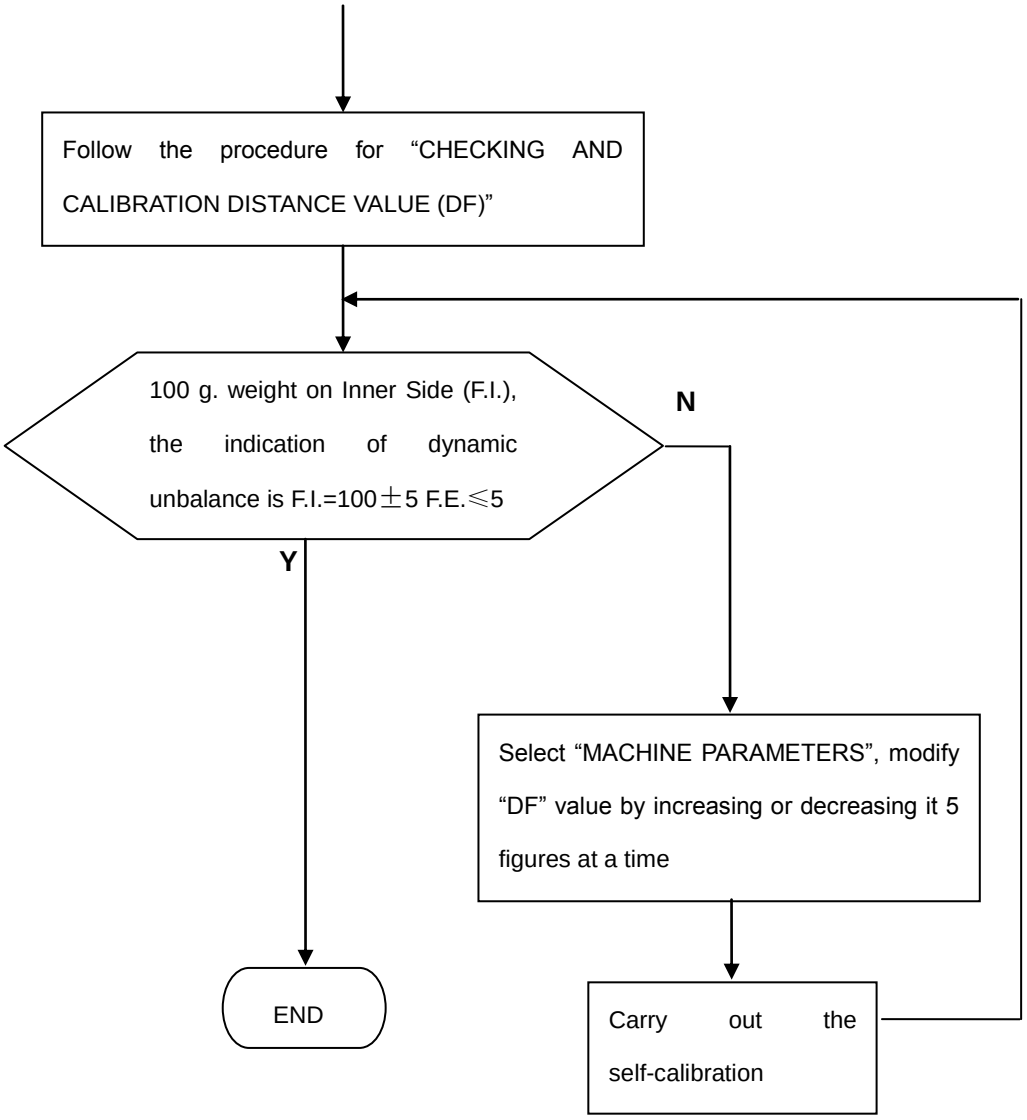
6.1-CHECKING AND SETTING OF STATIC VALUE (STI)



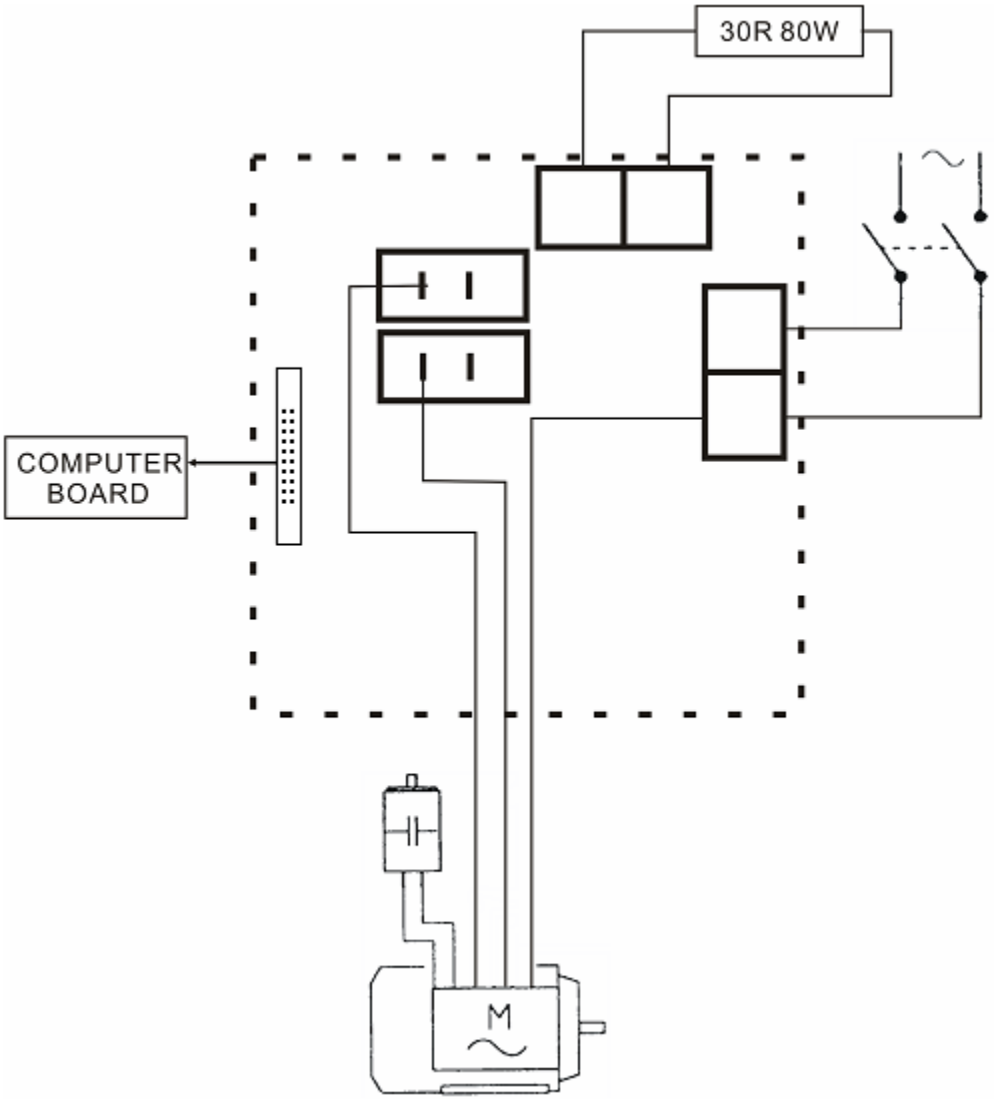
6.2- CHECKING AND SETTING THE BALANCING POSITION



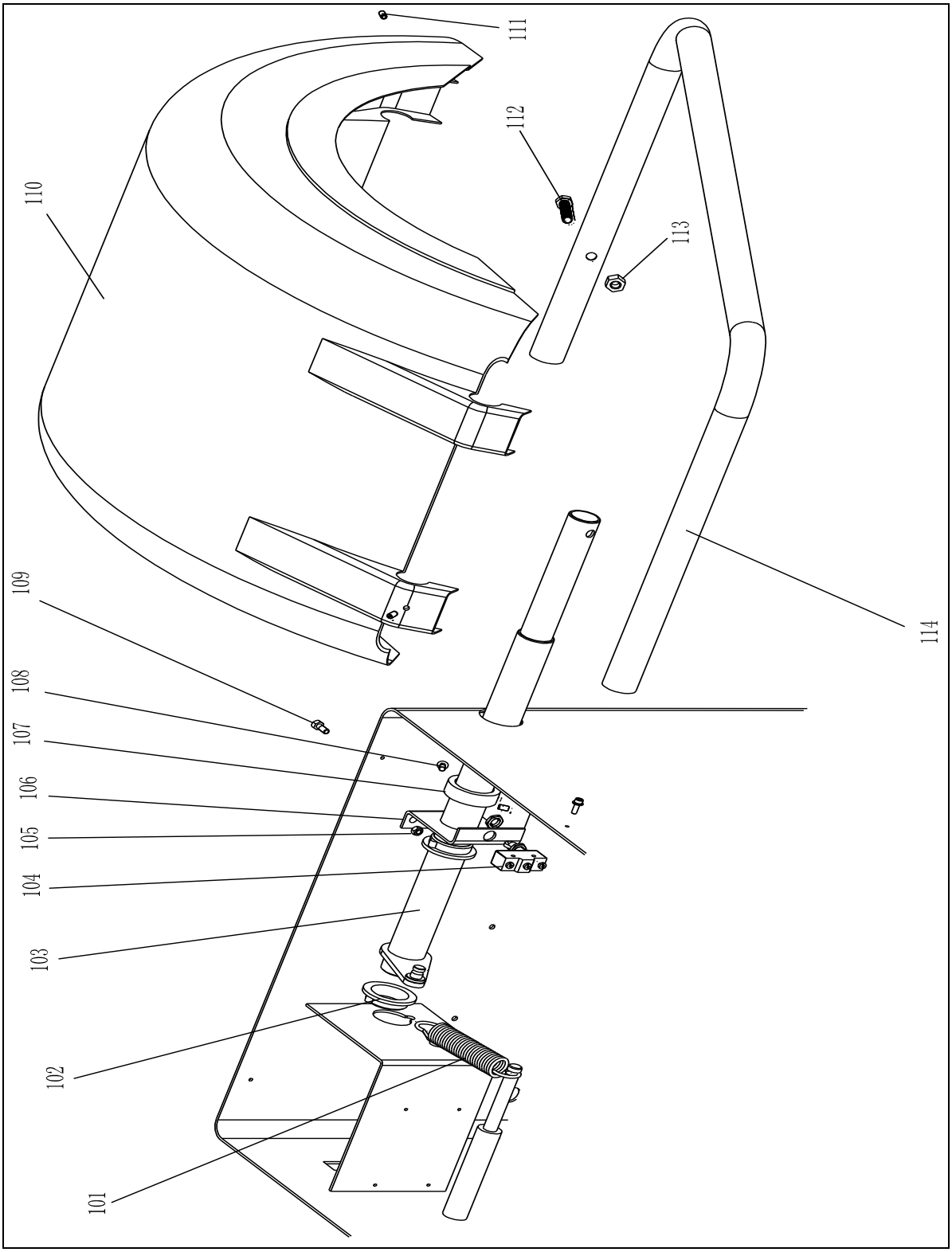
6.3- CHECKING AND CALIBRATING THE FIXED DISTANCE VALUE (DF)

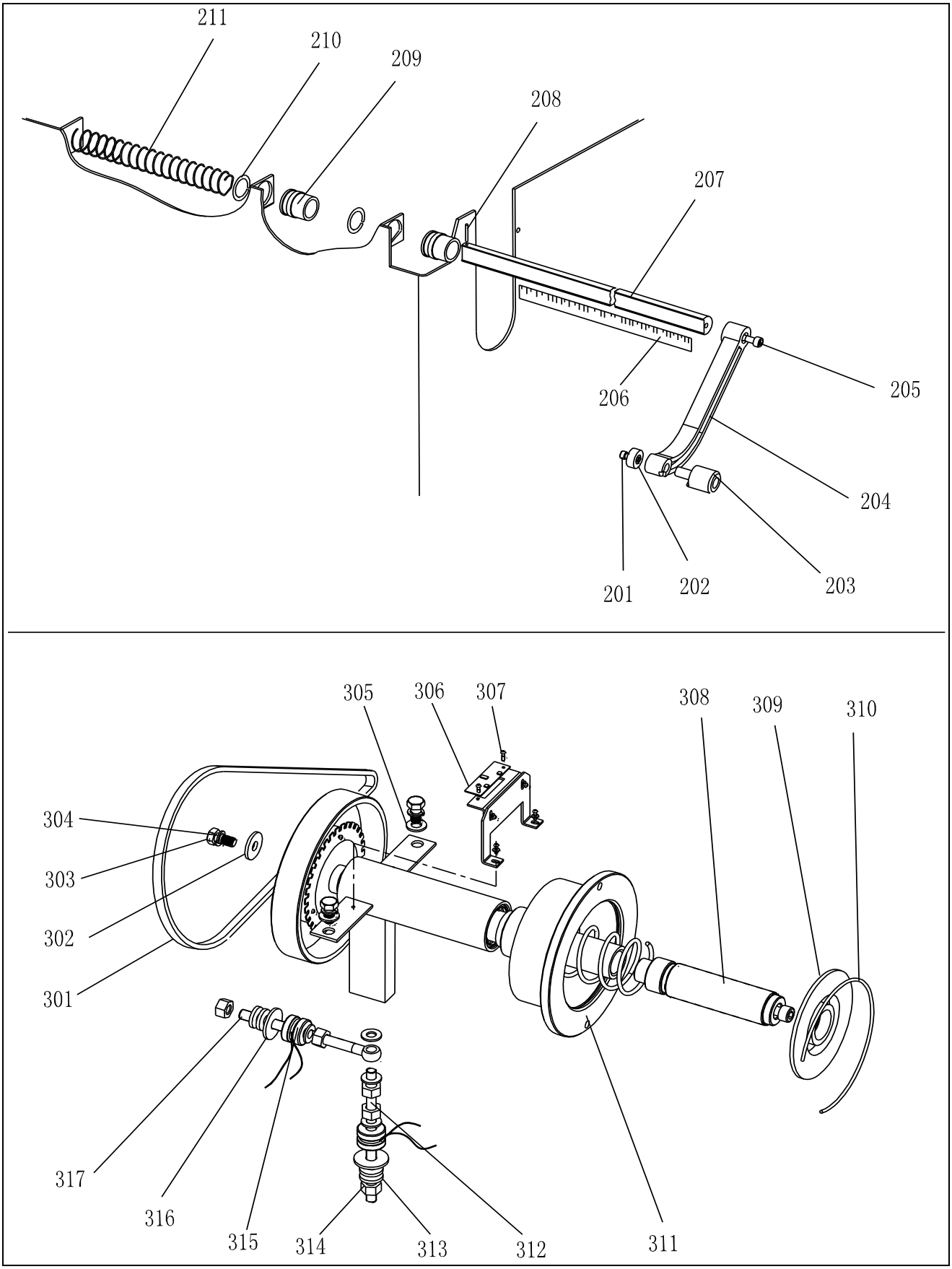


7- POWER SUPPLY CIRCUIT DIAGRAM
(220 V CONNECTION)



WHEEL BALANCER EXPLOSION DIAGRAM





Space for notes:

EG-declaration of conformity

CE

TWIN BUSCH GERMANY

The company

Twin Busch GmbH | Amperestr. 1 | D-64625 Bensheim

declares hereby, that the **wheel balancer**

TW F-00, TW F-22, TW F-150, TW F-50T

serial no.

in the configuration placed on the market by us, meets the relevant safety and health requirements, as required by the following EC directive(s) in it's/their current version(s).

EG-directive(s)

2006/42/EC machines
2004/108/EC EMC directive

Applied harmonized standards and regulations

EN60204-1:2006+A1:2009 part 1, EN 61000-6-2:2005 part 6-2, EN 61000-6-4:2007 part 6-4, EN 61000-3-2:2006+A1:2009+A2:2009 part 3-2, EN 61000-3-3:2008 part 3-3

CE Certificate

CE-C-0928-11-66-01-8B

date of issue:	09.10.2013
place of issue:	London
technical file no.:	TF-C-0928-11-66-01-8A

Certification body

CCQS UK Ltd.,
Level 7, Westgate House, Westgate Road,
London W5 1YY UK
Notified Body Appointment No. 1105

Any alteration to the equipment, improper use or installation void this declaration.

Authorized person to compile technical documentation is: Michael Glade (adress as below)

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Authorized signatory: Michael Glade
Bensheim, 09.12.14 Qualitätsmanagement

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