



# TW F-50 T

Truck Wheel Balancer

twinbusch.de



## INSTRUCTION & MAINTENANCE MANUAL



Read this entire manual carefully and thoroughly before installation or operation of the wheel balancer.

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# Index

<b>1. Summary of the balancing machine</b> .....	4
<b>A. Brief introduction of appearance</b> .....	4
<b>B. Performance and characteristics</b> .....	5
<b>C. Technical data table</b> .....	6
<b>2. Accessories accompanying machines.</b> .....	6 - 7
<b>3. Use of balancing machine</b> .....	8
<b>A. Attention before using</b> .....	8
<b>B. Introduction of panel</b> .....	9
<b>C. Mount the thread axle to the drive shaft / Fix wheel</b> .....	10
<b>D. Putting through the power and number input</b> .....	11
<b>E. Size input / Balancing examples</b> .....	12
<b>F. Precautions / Balancing experiences / Self correction</b> .....	13- 15
<b>4. Diagnosis of automatic trouble</b> .....	16
<b>5. Options for mode of balancing</b> .....	17
<b>6. Circuit diagram (220 V)</b> .....	18
<b>7. Circuit diagram (400 V)</b> .....	19
<b>8. Exploded drawings</b> .....	20 - 22
<b>9. Spare part list</b> .....	23 - 25
<b>10. Space for notes</b> .....	26
<b>11. EG-declaration</b> .....	27
<b>12. Video link (QR code)</b> .....	28

# 1. Summary of the balancing machine

## A. Brief introduction of appearance



1. Gauge
2. ON/OFF switch
3. Centering cones
4. Storage compartments
5. Display
6. Wheel cover
7. Quick release nut
8. Main shaft
9. Joystick (for pneumatic lift)
10. Wheel slide
11. Foot protection
12. Foot brake

## B. Performance and characteristics

- This machine adopts imported large-scale integrated circuit to make up the microcomputer system with high intelligence and high stability. This machine is equipped with the counterweight optimization procedure.
- Main shaft of balancing adopts imported bearing for transmission, it is processed accurately. It is wear-resisting and low noise.
- The most advanced motor driving system in 21st century in the world with extremely high stability.
- Test function of full-automatic dynamic balance and static balance.
- Functions to balance three kinds of aluminium alloy wheel rim.
- Balance precision is up to  $\pm 1g$ , balance takes at least 8 seconds each time.
- Functions of self correction and full automatic diagnosis.
- With pneumatical lifting device and international standard jig.
- With pedal positioning brake, stable positioning and convenient counterweight.

## C. Technical data table

<b>Scope of application</b>	Garage, transportation company ,Department motorcade, The professional service station of tyre
Width of steel rim	1,5"~20"
Diameter of steel rim	13"~24"
Maximum weight of wheel	150kg
Measurement time	8 seconds each time
Power supply	400 V
Noise level	<70dB
Net Weight	293 kg

## 2. Accessories accompanying machines.

A set of balancing machine and name of all accessories

1. one lead screw connecting with main shaft	6.three cones,(scope is 45mm-190mm)
2.one plastic calliper	7.one nut
3.two bags of lead lump	8.one center wheel with bolt
4.one balance pincers	9.Matching machine outside shaft
5.Catalog,card of warranty, certificate of conformity in one copy.	

Diameter of center holes × bolt holes(□214×8 □221×8






□221×10 □281×10 )

## Delivery contents

Please check all parts of delivery for completeness and damages in transit.  
If something is missing or damaged, please contact the supplier directly.

### Supplied accessories:



Overview of cones	Diameter	Diameter (inside)	Height	Weight
	310 mm	150 mm	70 mm	8.5 kg
	225 mm	150 mm	40 mm	3.5 kg
	75-130 mm	50 mm / 44 mm	60 mm	1.0 kg
	70-130 mm	40 mm	70 mm	3.0 kg
	280 mm	40 mm	80 mm	7.0 kg
	210-220 mm	40 mm	80 mm	5.5 kg
	120-150 mm	40 mm	70 mm	5.0 kg

### 3. Use of balancing machine



#### A. Attention before use

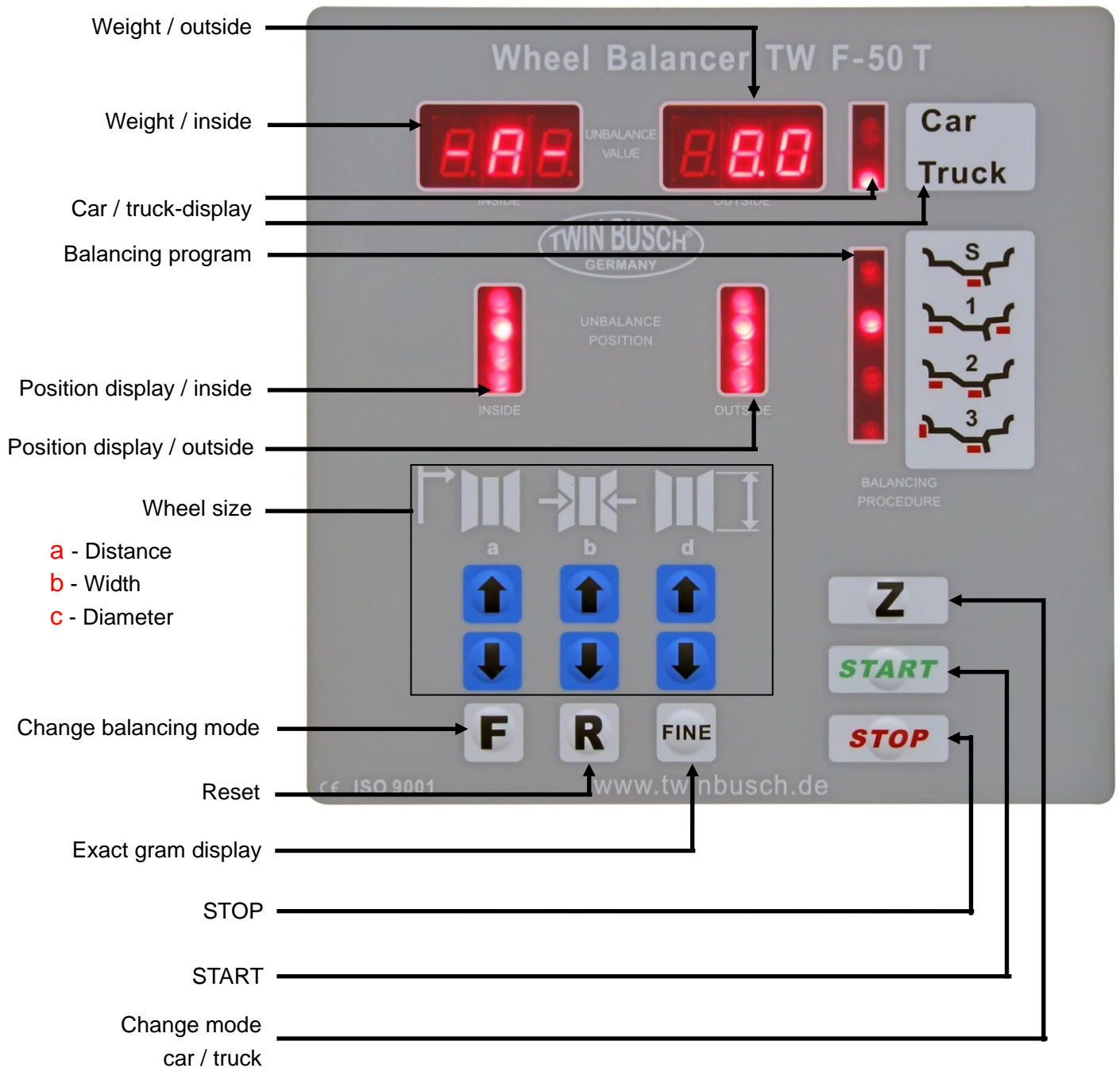
When moving the balancing machine you should only lift the machine chassis and **never** lift the machine by the shaft.

The Balancing machine and pneumatic lifting device must be placed on level ground (should be fixed with expansion screw) an unsteady machine could lead to false measurements. Leave enough space around the balancer for comfort of use.

- The power supply should meet local safety requirements and must be grounded (earth connection is in rear of the machine).
- Balancing machine should not be placed in a damp environment, this could damage the machine.
- Before installing the leading spindle on the shaft, clean the main shaft and leading spindle level with alcohol or petrol first, then connect the leading spindle to the main shaft and fasten with a spanner.
- Before balancing any wheels, choose a suitable cone.  
Then lock the wheel with cone and nut (The inside of the wheel is facing the machine)
- Use the pneumatic lifting system for heavy wheels.
- The external air source connected to pneumatic lifting device must provide a minimum pressure of 0.8 bar



## B. Explanation of panel:

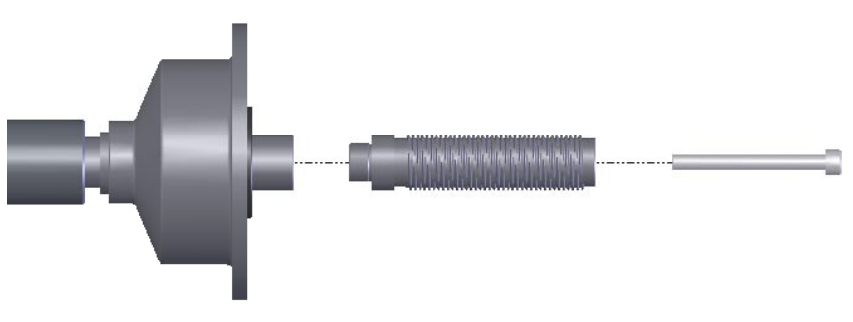


### Key-combinations:

- [R] + [START]: calibration
- [R] + [F]: system check
- [STOP] + [F]: Setting

## C. Mount the threaded axle to the drive shaft

Use the allen screw to attach the threaded shaft to the drive shaft.



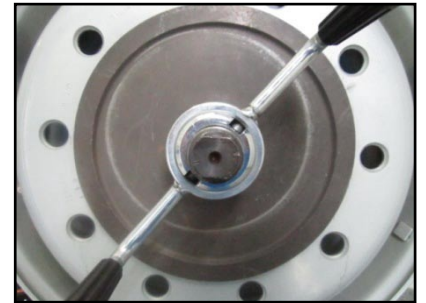
### Fix the wheel

#### Check the wheel

Remove old weights and clean the wheel. Check tire pressure, according to Correct prescribed pressure. Check if the wheel may have a radial run-out.

#### Mounting the wheel

Select the appropriate cone and tighten with the quick release nut.



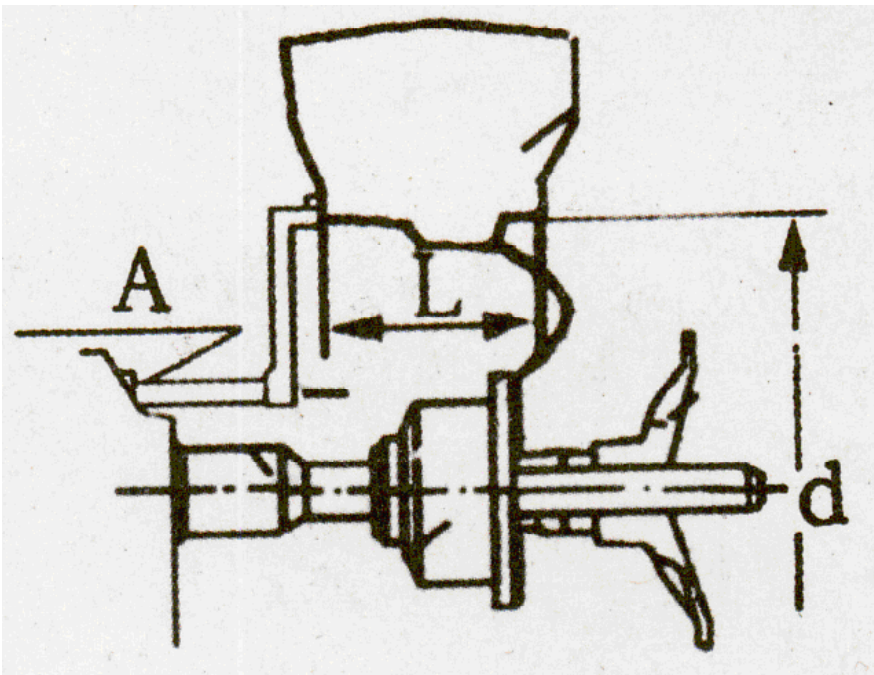
**Use the pneumatic lift  
for heavy wheels.**

## D. Putting through the power and number input

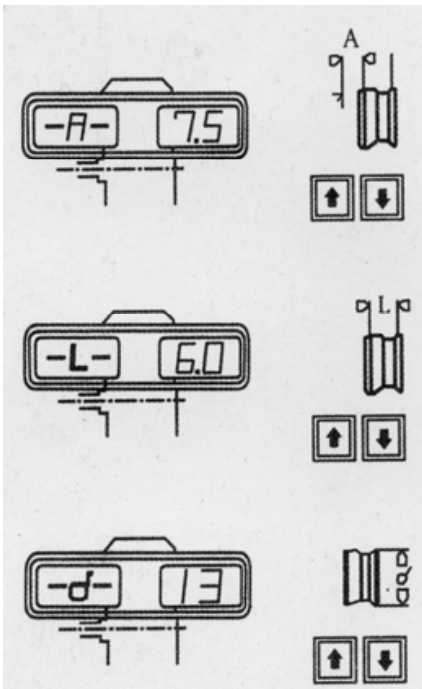
### D.1 Putting through the power

Switching on power, the machine display board shows that it marks "001", in the computer memory, it shows A-8.0 several seconds later which indicates that machine operation is normal.

Then input set wheel size, see following instruction about input method (note that balancing machine computer automatically sets up dynamic balance each time when turning on computer)



## E.1 Size input



- For example testing luxurious wheel rim of Santana, please see picture on last page , use ruler that this machine has to measure gap size between machine and tyre: A=7.5cm

Press↑, number increases

Press↓, number decreases

- Use calliper that the machine has to measure ty width, see picture L=6.0 inch

Press↑, number increases

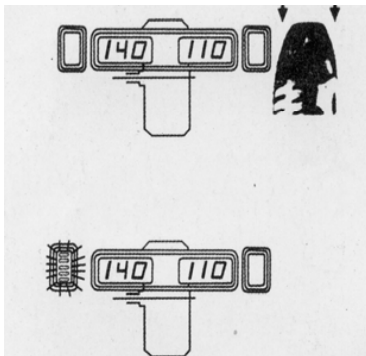
Press↓, number decreases

This size is caliber of tyre which needn't to be measured, see tyre model "185/70

R13" d=13 inch Press↑, number increases

Press↓, number decreases

## E.2 Some examples about balancing

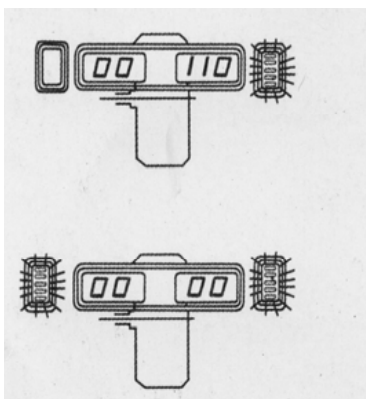


- Press Start key, 8 seconds later, automatic brake shows as pictures:

140 is error value inside tyre

110 is error value outside tyre

- Rotate wheel to make inside indicator lamp be on and vertical over the main shaft, strike 140g lead lump on wheel steel(may use pedal brake to assist making tyre steady) as picture



- At this time inside indicator indicates 00, then rotate wheel to make outside indicator lamp be on and vertical over the main shaft, take away 110g lead lump from wheel steel as picture

- At this time outside indicator also indicates 00, balance is over, unload the tyre.If you test tyre again, you needn't switch off power.

## F.1 Precautions in the process of use and balancing experiences

!Attention: ·When power starts, push the wheel by hands to assist starting which will extend motor's life. Due to balance angle error, please find out by yourself when this machine rotates wheel to find balance point, pay attention which direction is much more accurate when wheel turns inward or outward.

As the balance is over, unload the tyre, pay attention to handling with care , don't strike the main shaft.

While assisting braking , by the time when the display board has data to show , then can step on the pedal brake at the lower right corner of the machine , otherwise diminish the life-span of the machine.

## F.2 Balancing experiences:

As indicated data is less than 50g, lead lump can be struck at the same time on both sides

When number is greater than 50g , producer proposes to balance one side after another, namely one side which balance number is greater is balanced to reach "00" and then another side is balanced to reach " 00 ".

When there is still a small remaining part of lead lump after striking lead lump, it is because there is a error of lead lump position,it can be solved through moving lead lump to direction where there is space.

After "00"-“00” occur, 5,6,7g will occur also by accident, it is thought to normal phenomenon.Precision of this machine is 5g namely it is zero below 4g. Allowed change scope of this machine is 3g, 7 g error will indicate by accident, it will not affect balancing effect of this machine.

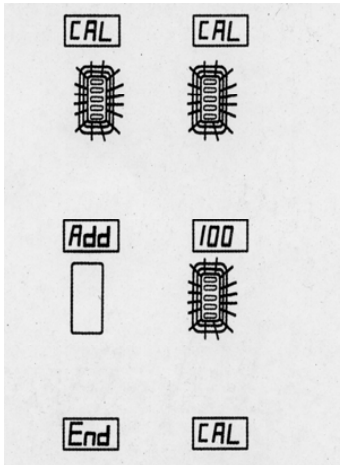
When appearing incorrectly or repeatedly strike but not reach 00, you can self correct the machine (please see the next page for re-storation of standard process)

**Comments:** This experience is only for reference. Hope user can grasp machine performance skillfully for better use.

## F.2 Self correction

Self correction has been finished in the factory. If you use for many years and change part or doubt balance to be a big error, you can self correct it again. (Choose one medium-sized tyre to install on main shaft, unevenness of steel rim on both sides of wheel is relatively slight, only 13 inches and 14 inches). Input correct number of this tyre A, L, D.

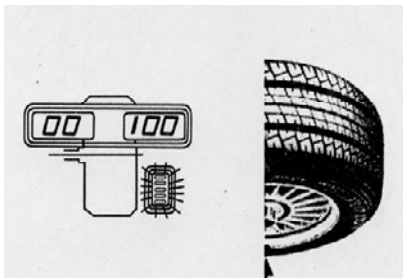
**Attention:** incorrect input of size will lead to that machine can't correctly determine caliber so following measurement will have errors.



- Press R key, at the same time press START key in half a second, display board shows "CAL"- "CAL", indicator lamps are all on. After indicator lamp goes out, then loosen one's grip.

- Press START key, the wheel rotated and brakes automatically, the display board shows ND-CAL, show self correction is over.

- Press START key, the wheel rotated and brakes automatically, the display board shows ND-CAL, show self correction is over.



- Press START key, stop in 8 seconds, show the data, this step is to see directly if self correction is successful and accurate.

- Well-balanced tyre by this machine shows data is "00"- "100" ( $\pm 4g$ ) after self correction. 100g lead lump is rightly under main shaft when outside indicator lamps are all on (4° error is allowed), this proves phase angle is correct.

### Lights are all on when 100g lead lump is rightly under main shaft.

Two key elements to judge if self correction is accurate

1. Accurate number indication
2. Show that phase is right

(namely outside indicator lamps are all on and 100g lead lump is rightly under shaft).

Problems that occur after self correction:

- Number indicated is ok, but phase is inaccurate, deviation is very great.

Trouble: do not reduce after finishing striking the lead lump, usually the store device is damaged. Change it.

- Showing ERR (this machine screen shows Err. -8-)

A .Problems with computer board.

B .The circuit of sensor is broken.

- Number indicated has a big deviation, namely within 10g. (not affect using )

A. Generally use lead lump of 100g inaccurately.

B. The edge outside wheel rim is irregular, can take down the lead lump and strike lead lump again on the opposite side and make comparison through drawing 2 times average.

- Self correction can't be done because of different practices, fingers can slightly give a push.

Time difference between two fingers is half a second.

- Number indicated deviates a lot , changed number is still very big ,generally because the board damage of the computer or the sensor is problematic.

## 4. Diagnosis of automatic trouble

Code	Meaning	Cause	Solution
<b>Err 1</b>	Main shaft not rotating	<ol style="list-style-type: none"> <li>1. Motor fault</li> <li>2. Position sensor</li> <li>3. Power board</li> <li>4. CPU</li> <li>5. Cable connection</li> </ol>	<ol style="list-style-type: none"> <li>1. Check motor</li> <li>2. Check position sensor</li> <li>3. Check power board</li> <li>4. Change CPU</li> <li>5. Check cable connection</li> </ol>
<b>Err 2</b>	Revolutions less than 60 rpm	<ol style="list-style-type: none"> <li>1. Position sensor</li> <li>2. Wheel loose or too light</li> <li>3. Motor</li> <li>4. V-belt loose</li> <li>5. CPU</li> </ol>	<ol style="list-style-type: none"> <li>1. Check position sensor</li> <li>2. Tighten wheel</li> <li>3. Check motor</li> <li>4. Tension v-belt</li> <li>5. Change CPU</li> </ol>
<b>Err 3</b>	Wrong values	Too high imbalance	Calibration, check CPU
<b>Err 4</b>	Main shaft turning wrong direction	<ol style="list-style-type: none"> <li>1. Position sensor</li> <li>2. CPU</li> </ol>	<ol style="list-style-type: none"> <li>1. check position sensor</li> <li>2. Change CPU</li> </ol>
<b>Err 5</b>	Protective cover	<ol style="list-style-type: none"> <li>1. Cable connection</li> <li>2. CPU</li> </ol>	<ol style="list-style-type: none"> <li>1. Check cable connection</li> <li>2. Change CPU</li> </ol>
<b>Err 6</b>	No sensor signal	<ol style="list-style-type: none"> <li>1. Power board</li> <li>2. CPU</li> </ol>	<ol style="list-style-type: none"> <li>1. Check power board</li> <li>2. Change CPU</li> </ol>
<b>Err 7</b>	Lost memory data	<ol style="list-style-type: none"> <li>1. Wrong calibration</li> <li>2. CPU</li> </ol>	<ol style="list-style-type: none"> <li>1. Calibration</li> <li>2. Check CPU</li> </ol>
<b>Err 8</b>	Calibration memory error	<ol style="list-style-type: none"> <li>1. Forgot 100 gram weight</li> <li>2. Power board</li> <li>3. CPU</li> <li>4. Pressure sensor</li> <li>5. Cable connection</li> </ol>	<ol style="list-style-type: none"> <li>1. Calibrate 100 gram</li> <li>2. Check power board</li> <li>3. Change CPU</li> <li>4. Check pressure sensor</li> <li>5. Check cable connection</li> </ol>

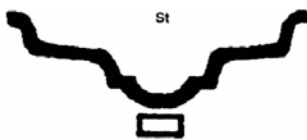


## 5. Options for mode of balancing

### Balancing programs

#### Balancing program features

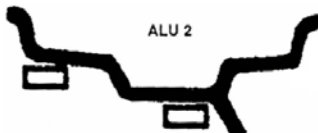
Choose following balancing programs depending to wheel material and rim design pressing **F-key** several times. Active balancing program will be shown at control panel.



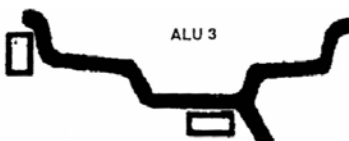
Dynamic balancing: standard, balancing weight fixed for light alloy wheels at rim flange.



Dynamic balancing: standard, dynamic and static balancing, if balancing weights could not be fixed at both sides of rims, f.e. at motor cycle rims.



ALU 1 - balancing of light alloy wheels, if balancing weight should be fixed under tyre seat.



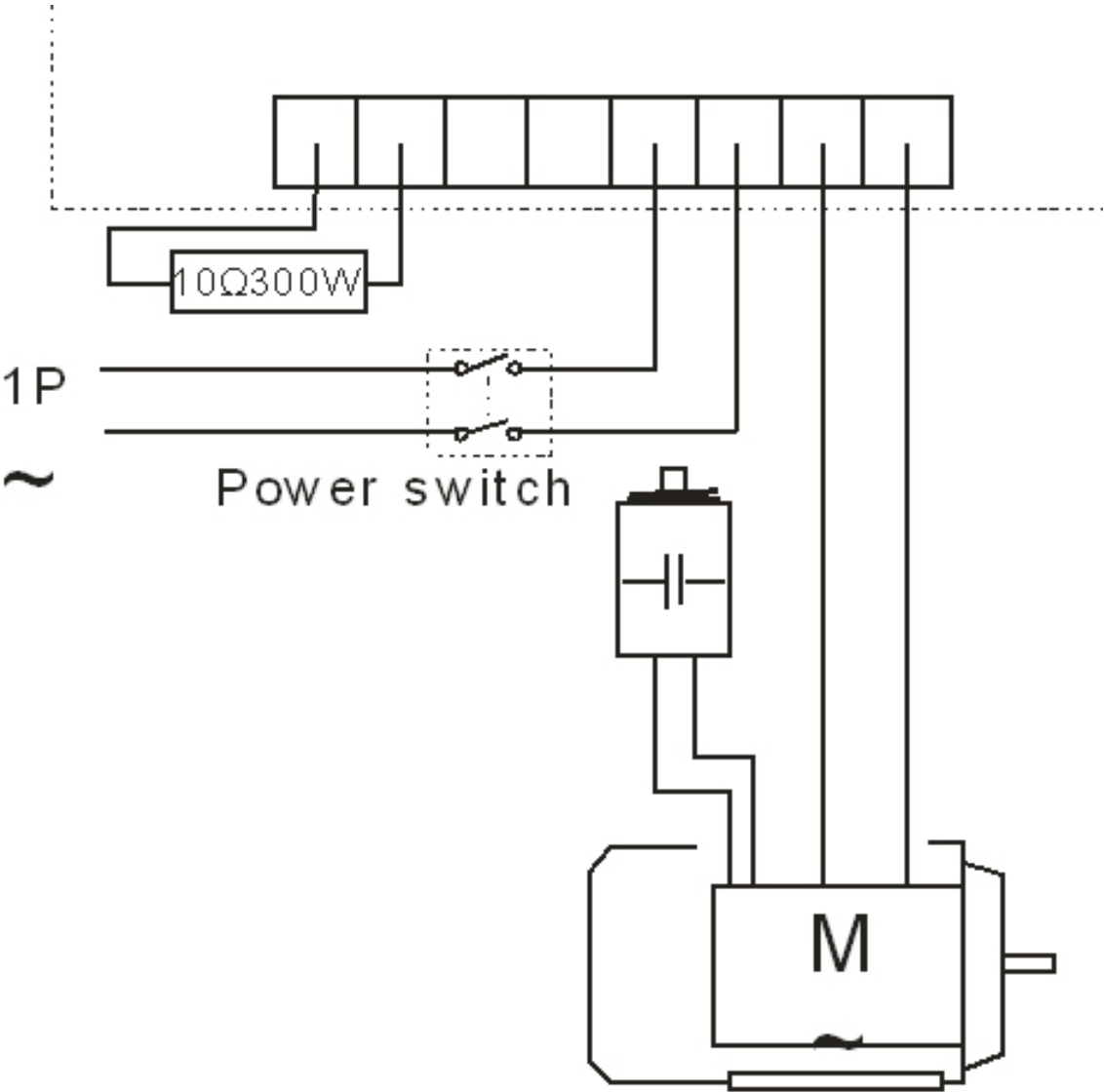
ALU 2 - balancing of light alloy wheels, if balancing weight should be hidden fixed.

ALU 3 - inner balancing weight with clip, outer balancing weight hidden.

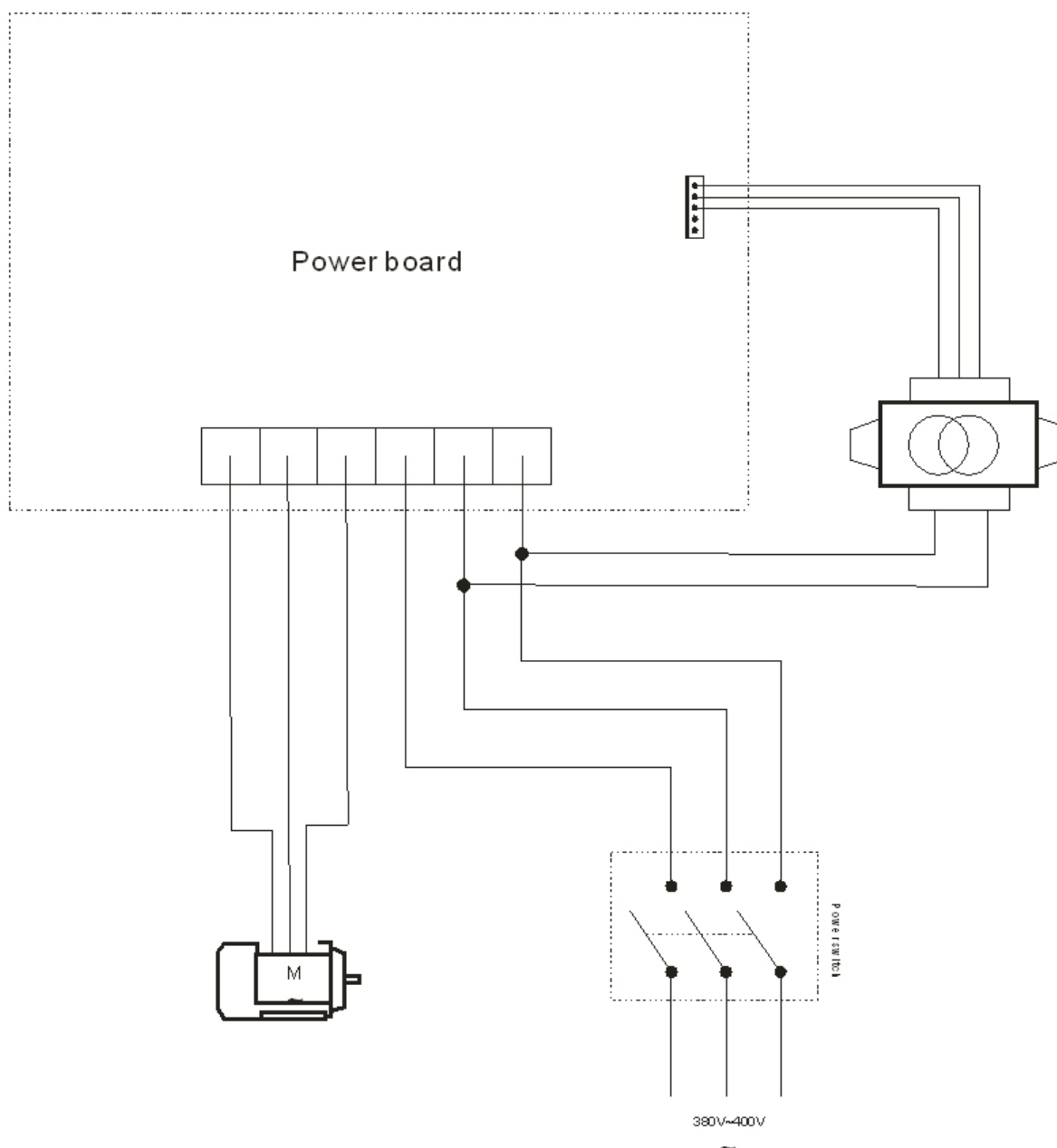
#### **ATTENTION!**

Power-on sets dynamic balancing.

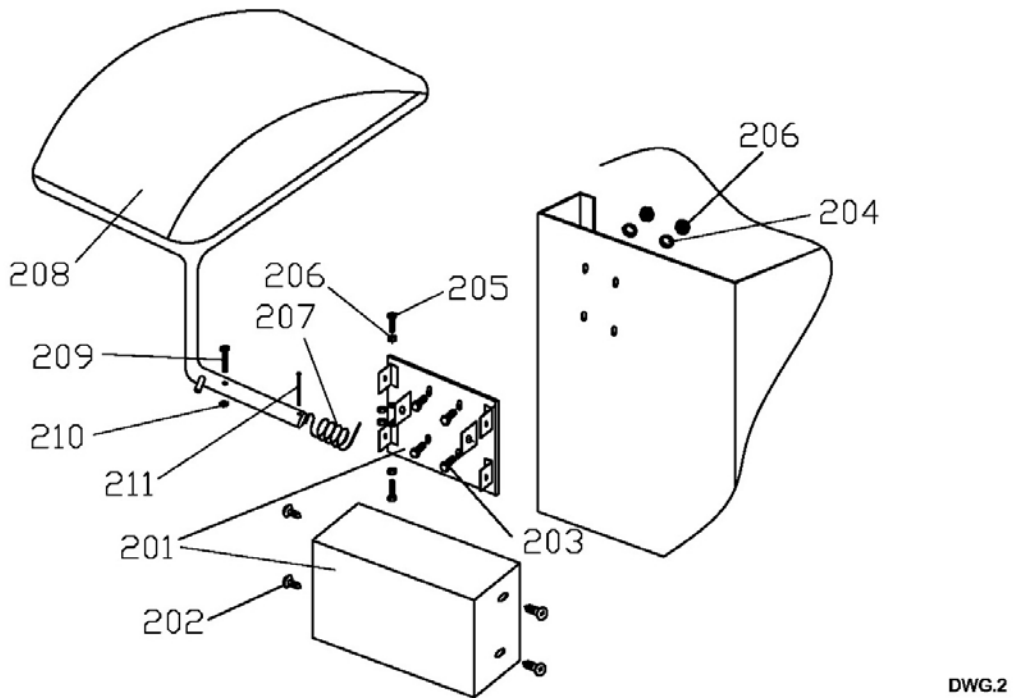
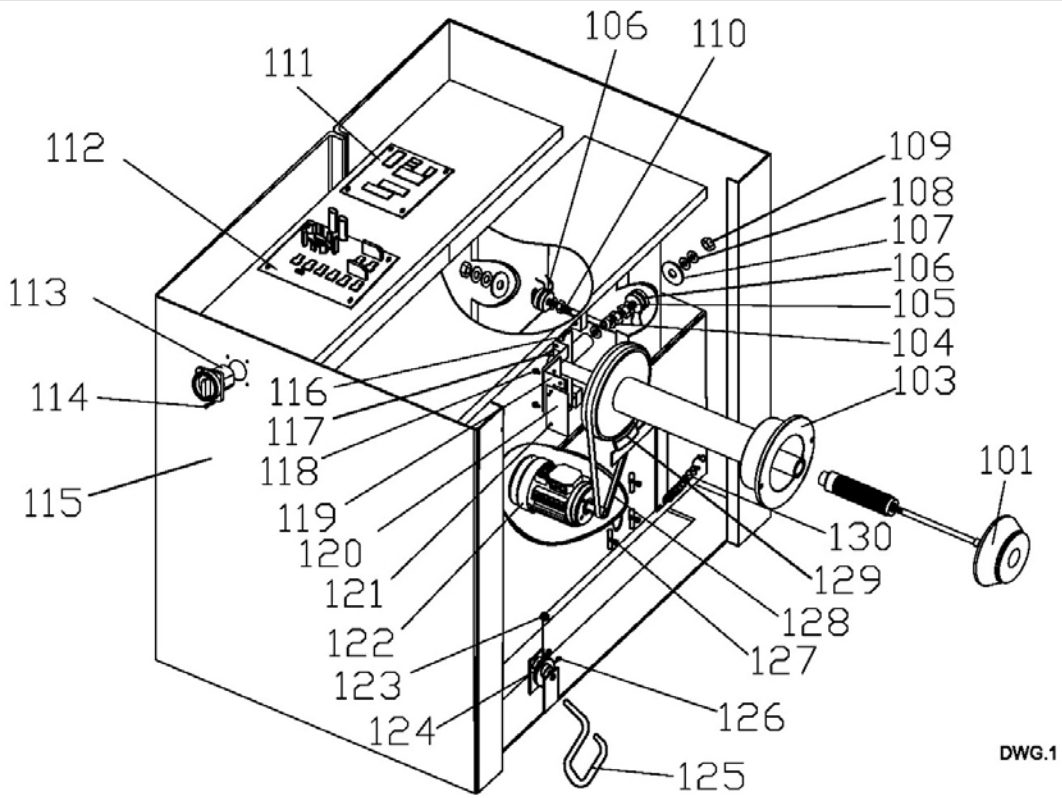
# 6. Circuit diagram (220 V)

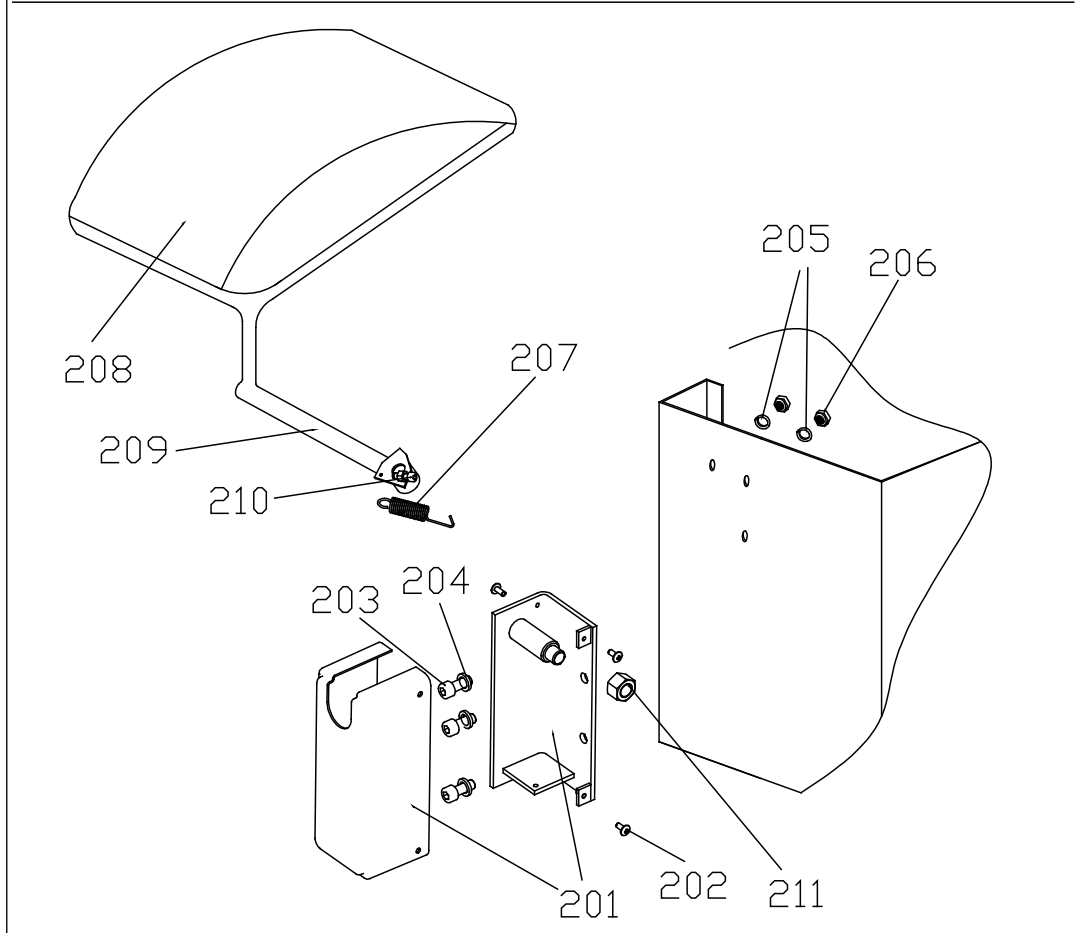
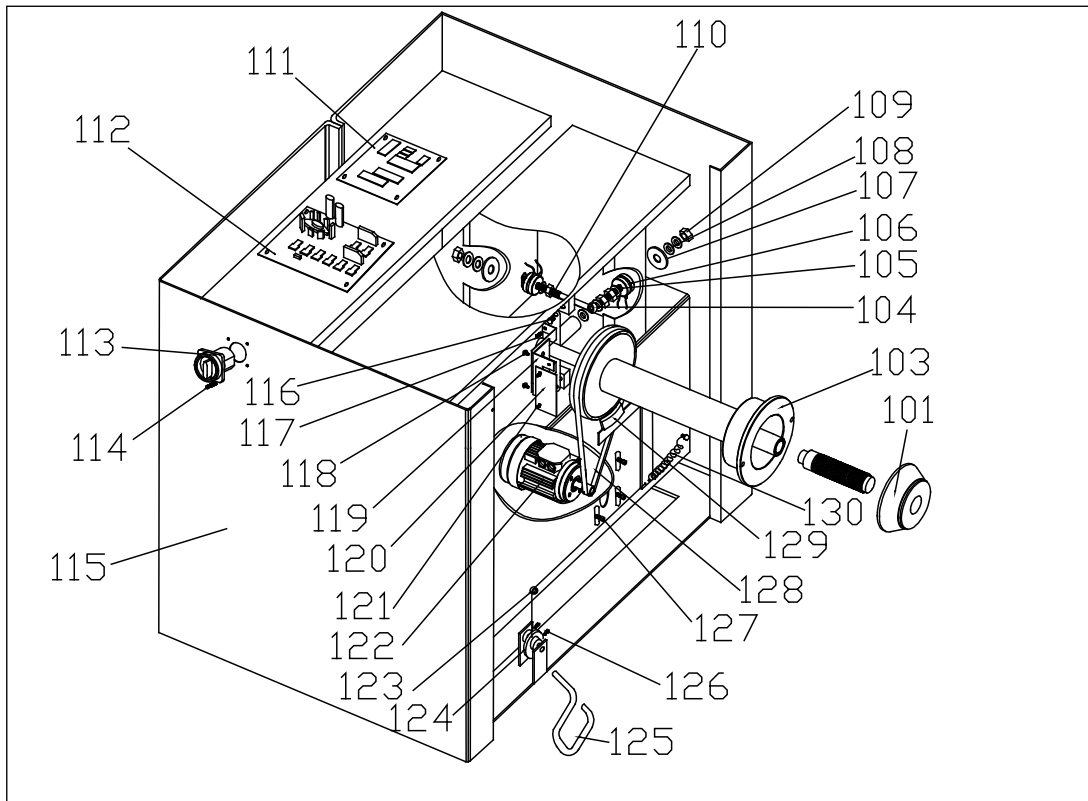


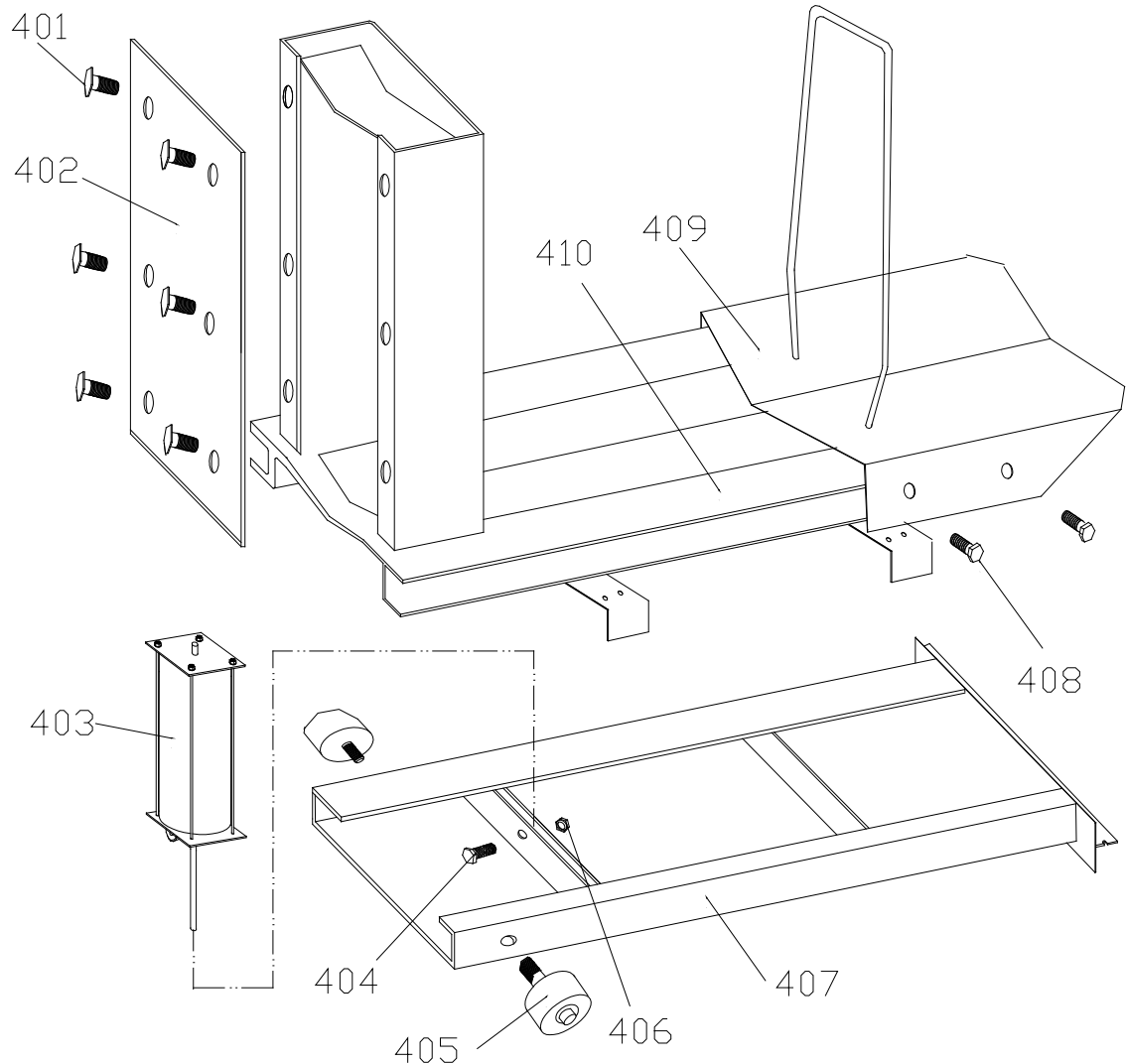
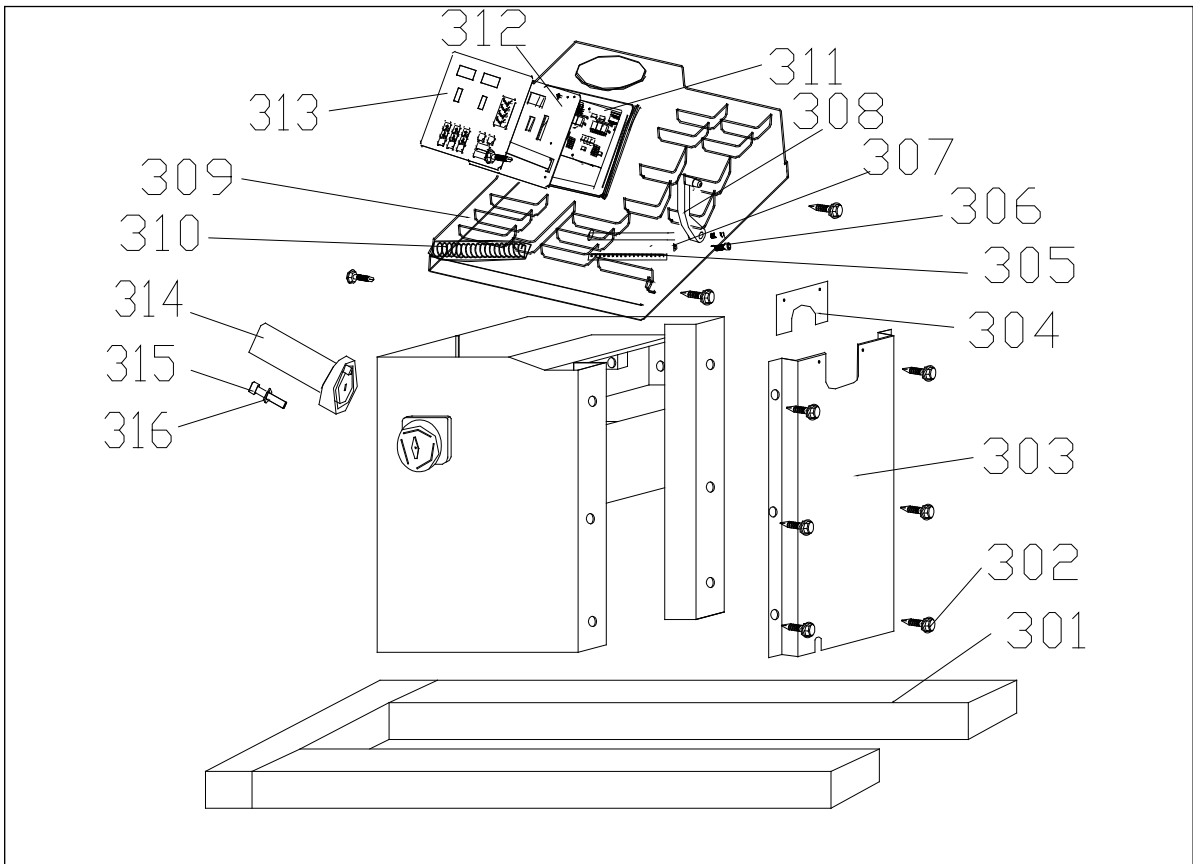
## 7. Circuit diagram (400 V)



## 8. Exploded drawings







## 8. Spare part list

NO.	Code	Description	Qty.	NO.	Code	Description	Qty.
101	S-100-085000-0	Set of cones	4	206	B-004-080001-0	Nut	8
103	S-100-000020-0	Complete Shaft	1	207	P-850-330000-0	Spring	1
104	B-040-123030-1	Washer	4	208	P-850-200000-0	Plastic cover	1
105	P-850-080000-0	Through bolt (H)	1	209	PX-850-200200-0	Support	1
106	S-131-000020-0	Sensor assembly	2	210	B-010-100551-0	Screw	1
107	B-040-124030-1	Washer	2	211	B-004-160001-0	Nut	1
108	B-048-122830-1	Butterfly washer	4				
109	B-004-120001-2	Nut	5	301	PX-850-010000-10	Pedestal	1
110	P-850-070000-0	Through bolt (V)	1	302	B-010-060161-0	Screw	10
111	PZ-000-010850-0	Computer board	1	303	PX-850-014000-0	Big plate	1
112	PZ-000-020850-0	Power board	1	304	PX-850-110000-0	Small plate	1
113	S-060-000200-0	Switch	1	305	Y-004-000070-0	Graduated strip	1
114	B-024-040301-0	Screw	4	306	B-010-060161-0	Screw	1
115	PX-850-010000-0	Body	1	307	PZ-100-090000-0	Rim gauge	1
116	B-014-100251-0	Screw	5	308	P-100-160000-0	Handle bar	1
117	B-024-040101-0	Screw	2	309	P-850-190000-0	Head with tools-tray	1
118	B-024-040081-0	Screw	2	310	P-100-210000-0	Spring	1
119	P-850-220000-0	Support	1	311	PZ-000-010850-0	Display board	1
120	PZ-000-040100-0	Position Pick-up Board	1	312	PX-850-100000-0	Display fixed plate	1
121	B-024-030081-0	Screw	2	313	S-115-008500-0	Key board	1
122	S-051-220050-0	Motor	1	314	P-000-001001-0	Tools hang	1
123	P-120-260000-0	Idler pulley	1	315	B-024-050251-0	Screw	3
124	PZ-850-020800-0	Rotate pulley	1	316	B-040-050000-1	Washer	3
125	PX-850-020400-0	pedal	1				
126	B-010-060161-0	Screw	2	401	B-014-080151-0	Screw	6
127	B-010-060201-0	Screw	4	402	PX-850-500100-0	Cover board	1
128	S-042-000370-0	Belt	1	403	PW-150-085000-0	Cylinder casing	1
129	P-000-002001-0	Brake patch	1	404	B-014-100351-0	Screw	1
130	C-200-380000-0	Spring	1	405	PZ-850-500500-0	Pulley	2
				406	B-004-100001-0	Nut	1
201	P-850-030000-0	Cover	1	407	PX-850-500700-0	Lift pedestal	1
202	B-017-040121-0	Screw	4	408	B-014-100301-0	Screw	4
203	B-014-080151-0	Screw	4	409	PX-850-500900-0	Move board	1
204	B-040-081715-1	Washer	4	410	PX-850-501000-0	Lift desk	1
205	B-014-080251-0	Washer	2				

## 9. Spare part list

Code	Bezeichnung	Menge	Bild
W-070-000101-1	Centring cone for truck 1#	1	
W-070-000101-2	Centring cone for truck 2#	1	
W-070-000007-1	LARGE SPACING RING (match Large cone for truck1#&2#)	1	
W-070-000007-2	LARGE SPACING RING( match Large cone for truck 3#)	1	
W-070-000101-3	Large cone for truck 2# (optional)	1	
W-070-000101-4	Large cone for truck 3#	1	
W-070-000101-5	Large cone for truck 1#	1	
W-070-000101-6	Large cone for truck 4#	1	
W-070-000115-0	THREADED SHAFT for truck	1	
W-070-000008-1	COUNTER WEIGHT 50g	1	
S-110-001000-0	COUNTER WEIGHT 100g	1	



W-070-000008-2	COUNTER WEIGHT 100g	1	
W-070-000008-3	COUNTER WEIGHT 150g	1	
W-070-000008-4	COUNTER WEIGHT 200g	1	
W-070-000008-5	COUNTER WEIGHT 250g	1	
W-070-000008-6	COUNTER WEIGHT 300g	1	
Y-032-020850-0	MANUAL	1	
W-070-000000-7	CALIPER	1	
S-108-000010-0	PLIER	1	
W-070-000103-1	LOCKING NUT	1	
W-070-000000-5	HANDLE	1	

**Space for notes:**



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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## 12. Video link

Look at our videos!

A helpful addition to the manual.

*Just scan QR-Code or copy this link:*



<http://www.youtube.com/watch?v=6lgYXi5gOc4>



Official Youtube Channel  
Twin Busch Germany





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