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1- GENERAL

1.1 - GENERAL SAFETY REGULATIONS

- The wheel balancing machine should only be used by duly authorized and trained personnel.
- The wheel balancing machine should not be used for purposes other than those described in the instruction manual.
- Under no way should the wheel balancing machine be modified except for those modifications made explicitly by the manufacturer.
- Never remove the safety devices. Any work on the machine should only be carried out by specialist personnel.
- Avoid using strong jets of compressed air for cleaning.
- Use alcohol to clean plastic panels or shelves (AVOID LIQUIDS CONTAINING SOLVENTS).
- Before starting the wheel balancing cycle, make sure that the wheel is securely locked on the adapter.
- The machine operator should avoid wearing clothes with flapping edges. Make sure that unauthorized personnel do not approach the machine during the work cycle.
- Avoid placing objects inside the base as they could impair the correct operation of the machine.

1.1.1 - STANDARD SAFETY DEVICES

- Stop push button for stopping the wheel under emergency conditions.
- Highly shock resistant plastic guard whose shape and size are designed to avoid the danger of counterweights spinning off in any direction except downwards.
- A microswitch will not let the machine start up if the guard is not down and stops the motor whenever the guard is raised.

1.2 - FIELD OF APPLICATION

The machine is designed for balancing wheels of car, light commercial vehicles or motorcycle, weighing less than 65 Kg. It can be operated in the temperature range of 0° to + 45° C.
The following functions are provided: Double operator; ALU-S (automatic only with C61Z); SPLIT; Unbalance optimization; Self diagnostics; Self-calibration

1.3 - OVERALL DIMENSIONS

Fig. 1 (standard guard)

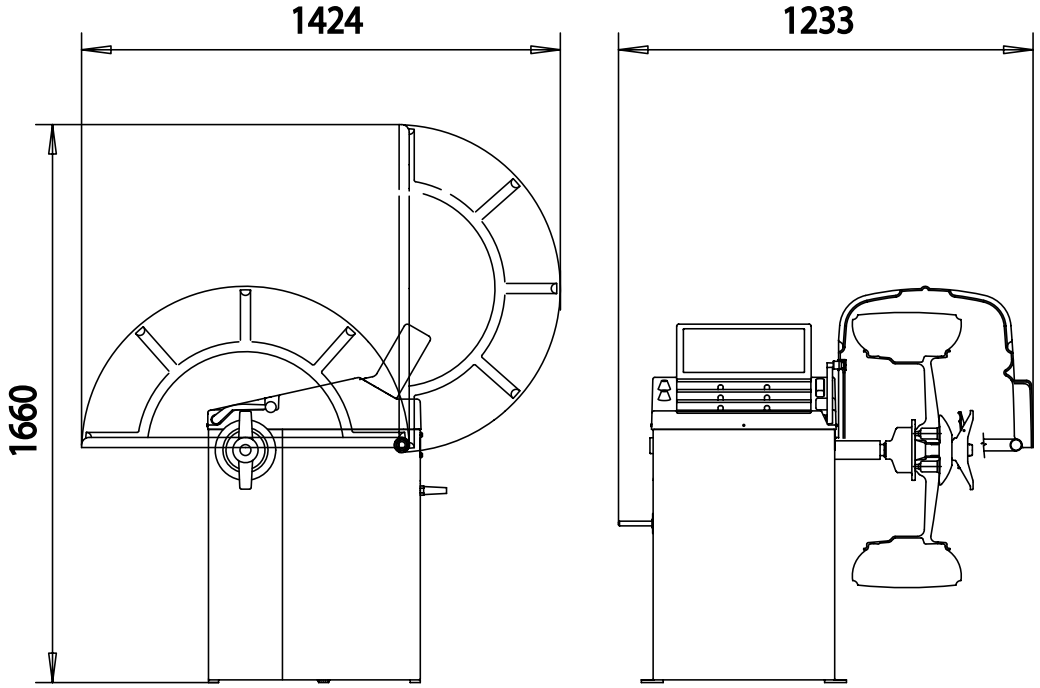
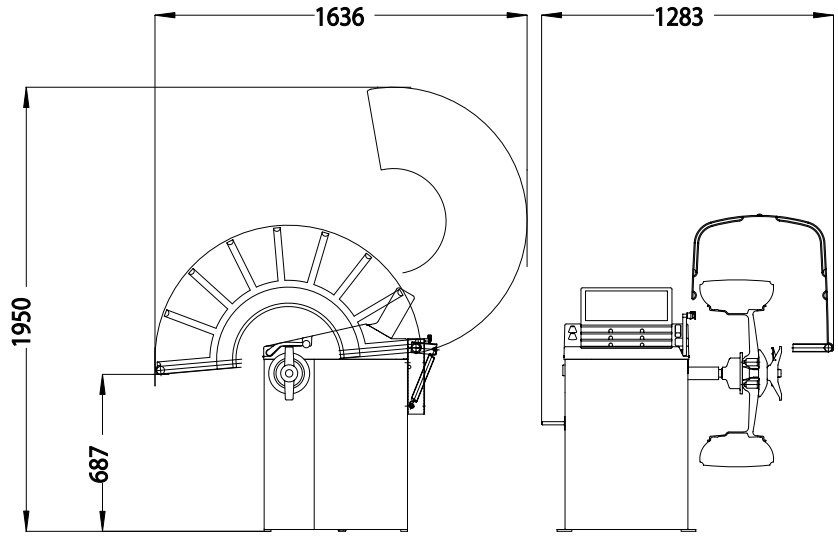


Fig. 1a (42” guard)



1.4 - SPECIFICATION

Weight with guard (excluding adapter)	~ 92Kg.
Single-phase power supply	115 / 230 V 50/60 Hz
Protection class	IP 54
Max. power consumption	1100 W
Balancing speed	180 min^{-1}
Cycle time for average wheel (14 Kg)	6 seconds
Max. resolution of measurement	1 gram
Position resolution	± 1.4 °
Average noise	< 70dB (A)
Rim-machine distance	0 - 265 mm
Rim width setting range	1.5” ÷ 20” or 40 ÷ 510 mm
Diameter setting range	10” ÷ 24” or 265 ÷ 615 mm
Total wheel diameter inside guard	870 mm standard - 1067 mm (42”)
Total wheel width inside guard	430 mm standard - 500 mm (42”)

2 - TRANSPORT, HOISTING

Fig. 2

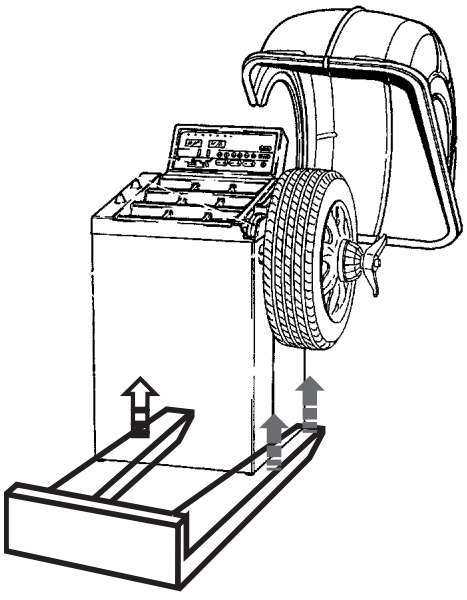
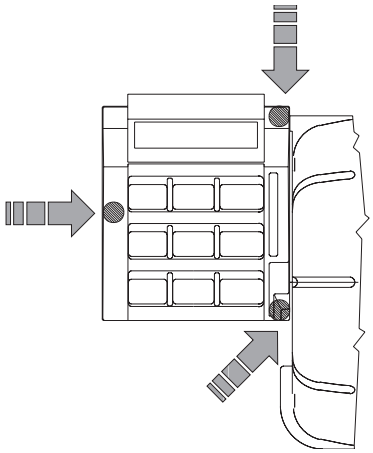


Fig. 2a



NOTE: NEVER USE OTHER POINTS TO HOIST THE MACHINE

3 - START-UP

3.1 - ANCHORING

The machine can operate on any flat non resilient floor.
Make sure that the machine rests solely on the three support points provided (fig.2a).
It is advisable to secure the system to the ground using the specific feet (see fig. 2a) in the event of continual use with wheels weighing over 35 Kg.

3.2 - ELECTRICAL CONNECTION

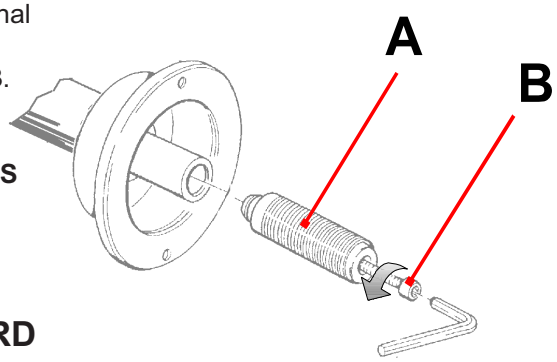
The machine is supplied with a single phase mains cable plus earth (ground).
The supply voltage (and mains frequency) is given on the machine nameplate. It cannot be changed.
Connection to the mains should always be made by expert personnel.
The machine should not be started up without proper earthing.
Connection to the mains should be through a slow acting safety switch rated at 4 A (230V) or 10 A (115V).
See enclosed wiring diagram.

3.3 - ADAPTER MOUNTING

The wheel balancer is supplied complete with cone type adapter for fastening wheels with central bore. Other optional adapters can be mounted:
a) Remove threaded end piece A after backing off screw B.
b) Mount the new adapter (see enclosed brochures).

NOTE: CAREFULLY CLEAN THE COUPLING SURFACES BEFORE PERFORMING ANY OPERATION.

Fig. 3



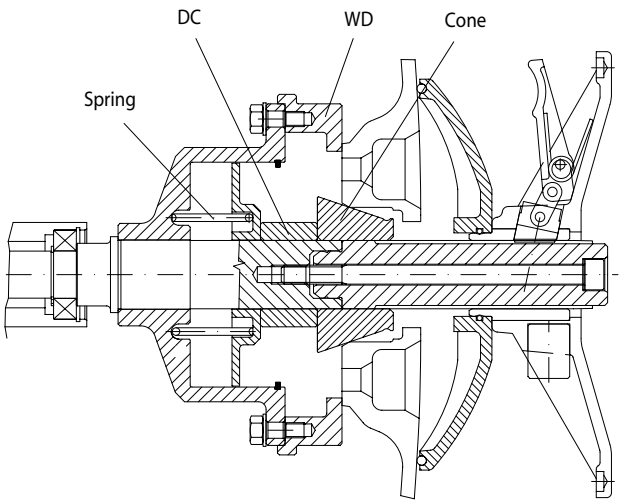
3.4 - FITTING AND ADJUSTING THE GUARD

a) Insert the wheel guard tube in its seat.
b) Fit the mounting bolts and tighten them securely.
The guard closed position can be adjusted by means of relative screw accessible from the rear of the machine. Adjust the angular position of microswitch control.
Correct position is the one which keeps the tube **exactly horizontal with the wheel guard closed (for the standard guard (fig. 1). For the 42" guard, see guard and dimensions in fig. 1A.**

3.5 - SPACER WD

When balancing very wide wheels (9"), there is not enough space to turn the distance gauge. To withdraw the wheel from the machine side, fit spacer WD on the adapter body and secure it with the standard issue nuts. When centring the wheel with the cone on the inside, fit the DC spacer to obtain spring thrust.

Fig.3a



4 - CONTROLS AND COMPONENTS

4.1 - MANUAL DISTANCE MEASUREMENT GAUGE (C 61)

This gauge serves for manual measurement of the distance of the point of application of the counterweight **FI** from the machine.

4.2 - AUTOMATIC DISTANCE AND DIAMETER GAUGE (C 61Z)

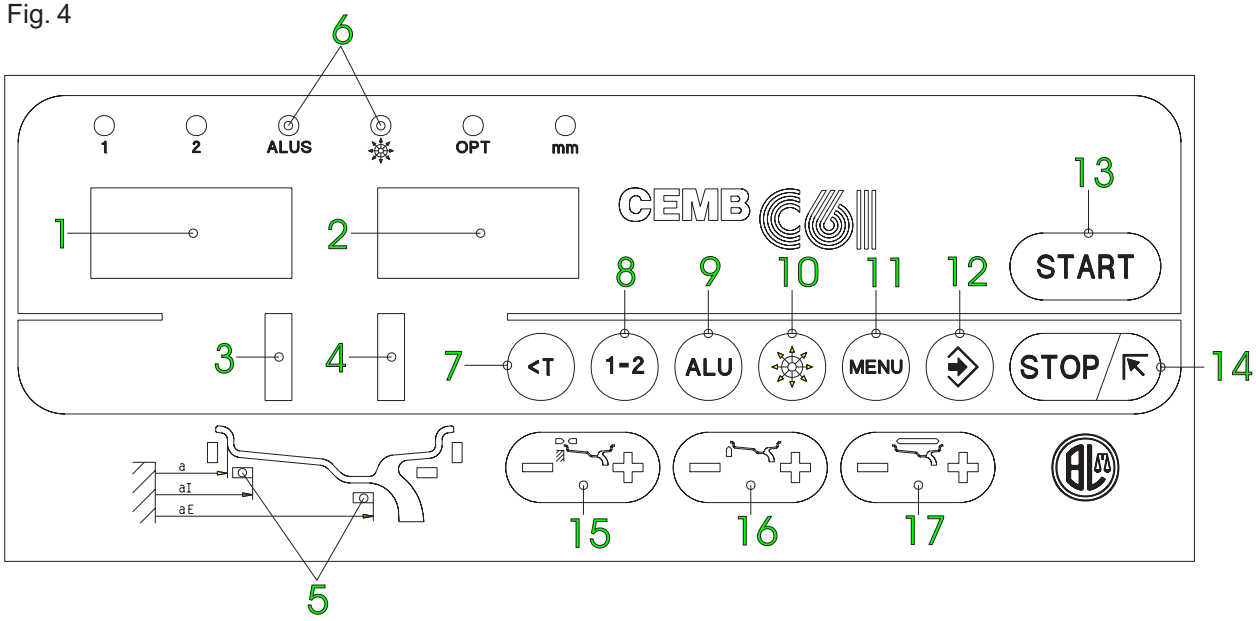
This gauge allow measuring distance of the rim from the machine and the diameter at the point of application of the counterweight. The same gauge can be used to position correctly the counterweights inside the rim, using the specific function (see ***EXACT CORRECTION POSITION INDICATION***), that enables display of the position used for measurement (for calibration, see ***AUTOMATIC PRESETTING (C61 Z)***).
The gauge may only be used with the weight-holder pincer fitted.

4.3 - AUTOMATIC WHEEL POSITIONING

At the end of the run, the wheel is positioned in relation to external or static out-of-balance (when selected).
Positioning is disabled automatically for wheels less than 13” in diameter.
Accuracy is approx. ± 20 degrees for wheels weighing up to 25 Kg.

4.4 - CONTROL PANEL AND DISPLAY

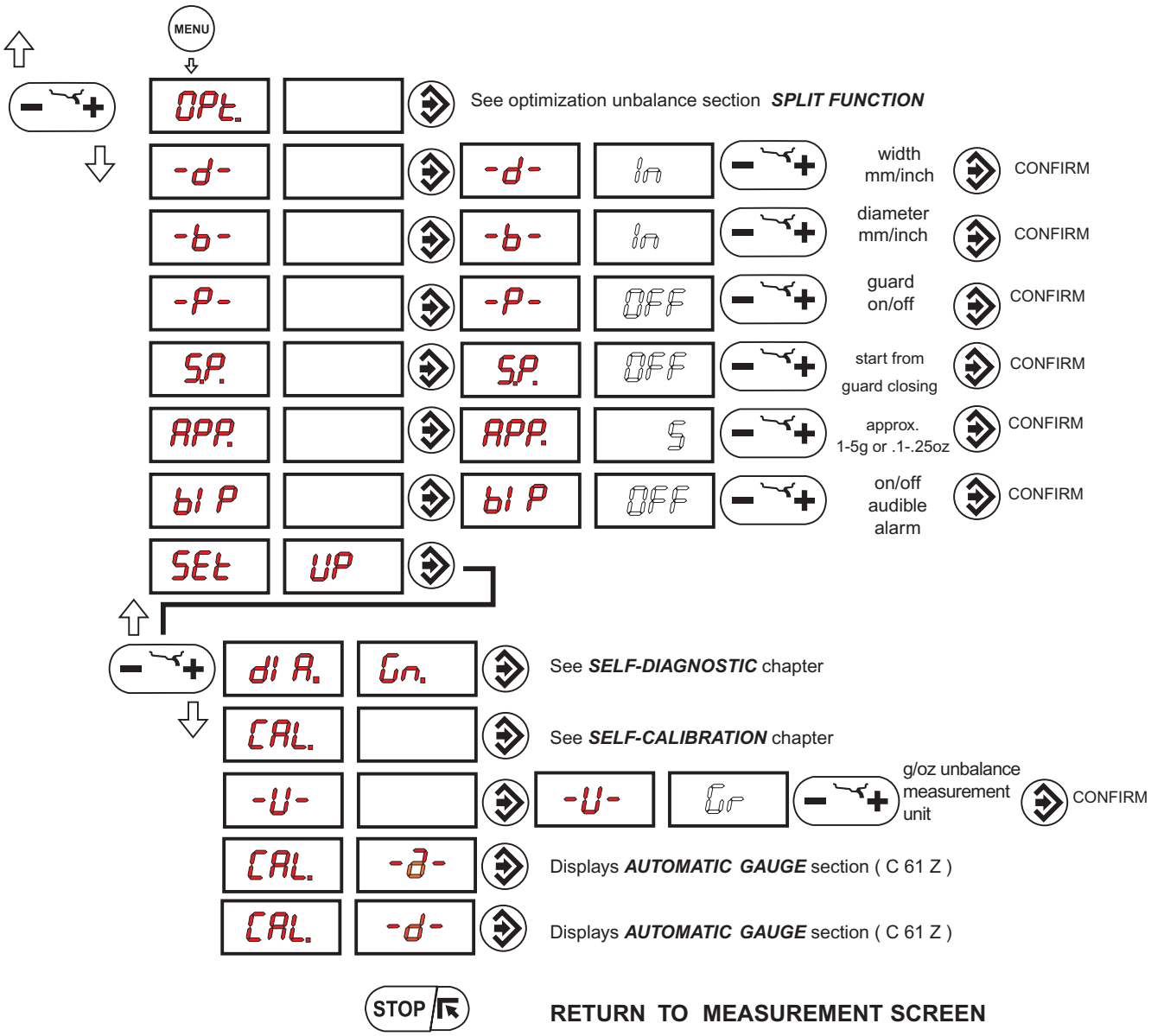
Fig. 4



1-2	Digital readouts, AMOUNT OF UNBALANCE, inside/outside	12	Push button, menu selection confirmation
3-4	Digital readouts, POSITION OF UNBALANCE, inside/outside	13	Push button, cycle start
5	Indicators, correction mode selected	14	Push button, emergency/home
6	Indicators, selection made	15	Push buttons, manual DISTANCE setting
7	Push button, unbalance reading < 5 g (25 oz)	16	Push buttons, manual DIAMETER setting
8	Push button, operator selection	17	Push buttons, manual WIDTH setting
9	Push button, selection of mode of correction		
10	Push button, SPLIT (unbalance resolution)		
11	Push button, FUNCTIONS MENU		

Note: - Press buttons only with your fingers. Never use the counterweight pincers or other pointed objects.
- When the beep signal is enabled (see ***OPERATION FUNCTIONS MENU***) pressing of any push button is accompanied by a “Beep”.

4.4.1 - OPERATION FUNCTIONS MENU



5 -INDICATION AND USE OF THE WHEEL BALANCER

5.1 - DOUBLE OPERATOR PROGRAM

This program allows memorizing the dimensions of two types of wheels. Thus two operators can work simultaneously on two different cars using the same balancing machine. The system memorizes two programs with various preset dimensions.

1 - Press (1-2) to select operator (1 or 2). Selection is confirmed by panel-mounted Led.

2 - Enter the dimensions (see ***PRESETTING OF WHEEL DIMENSIONS***).

3 - START perform balancing as usual

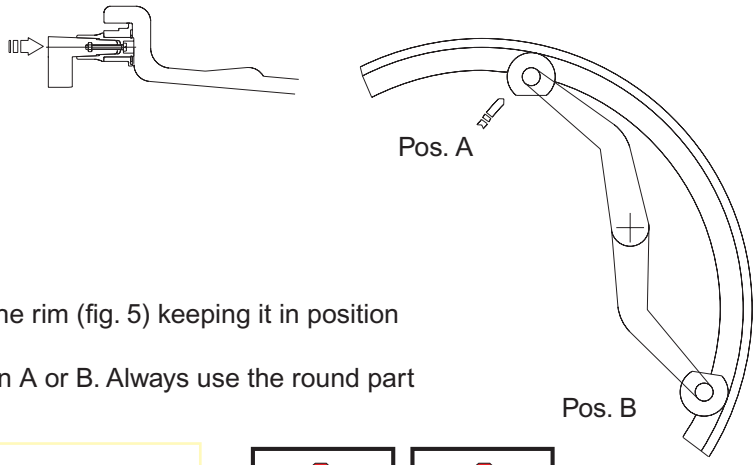
With (1-2) program 1 or 2 is called for subsequent balancing operations without having to newly enter the dimensions.

5.2 PRESETTING OF WHEEL DIMENSIONS

5.2.1 - (Automatic presetting C61Z)

- **Standard wheels** (calibration necessary also for modes ALU 1, 2, 3, 4, Static)

Fig. 5 DISTANCE + DIAMETER

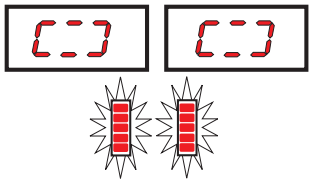


Move the gauge tip into contact against the rim (fig. 5) keeping it in position for at least 2 seconds.

Note: Measurement is identical in position A or B. Always use the round part of the striking block.

Indication of gauge in movement Fig. 5A

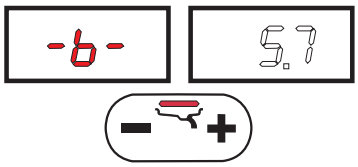
Indication of dimension acquired Fig. 5B



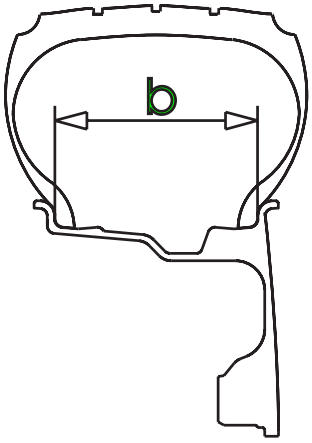
Note: If the acoustic signal is enabled (see ***OPERATION FUNCTIONS MENU***), the acquisition of the dimensions is accompanied by a “beep”

Return the gauge to position 0.
The system automatically switches to WIDTH position.

Fig. 6

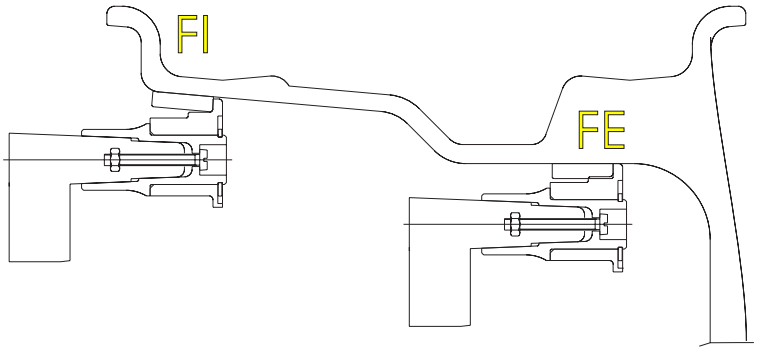


- Set the rated width, which is generally indicated on the rim, or measure width “b” using the compass gauge supplied.



- **Wheel ALU-S** (correction from inside for two balancing planes with direct calibration):

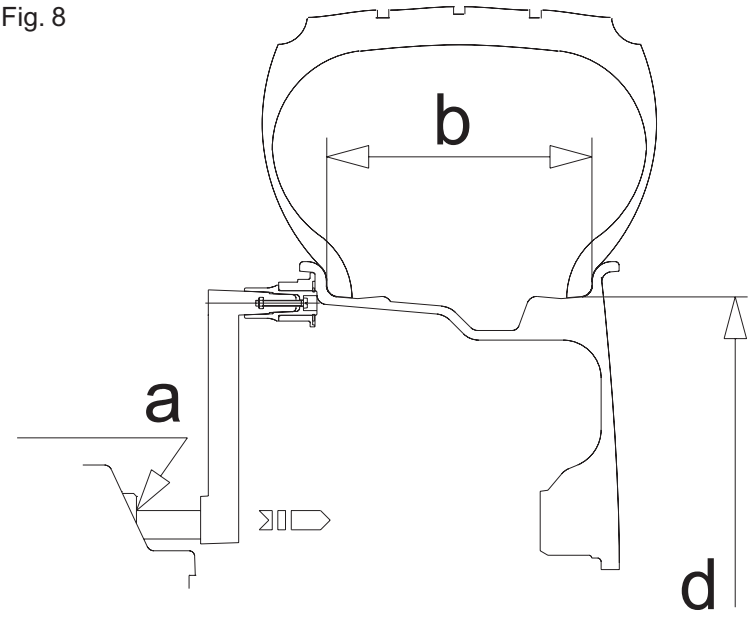
Fig. 7

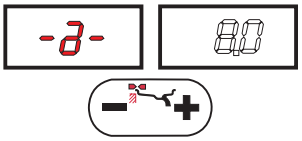


After measurement for inside FI as shown in fig. 7, again remove the gauge in order to memorize the data for the outside FE; keep this position for at least 2 seconds. Measurement can be performed in the position as per Fig. 5/Pos.A or in the position as per Fig . 5/Pos.B.
Manual setting is possible as described below.

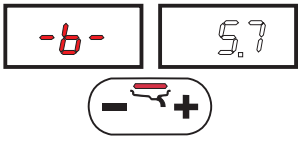
5.2.2 - MANUAL PRESETTING (C61)
- Standard wheels

Fig. 8

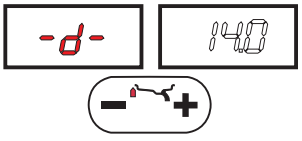




- Preset distance “a” of the inside of the wheel from the machine.



- Set the rated width, which is generally indicated on the rim, or measure width “b” using the compass gauge supplied.

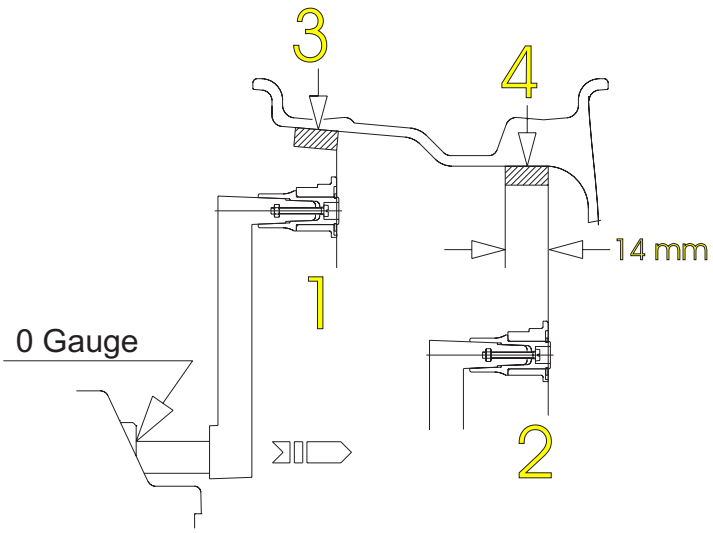


- Preset the nominal diameter “d” indicated on the tyre.

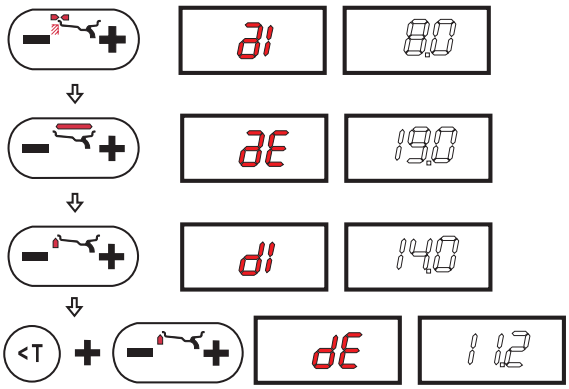
- Wheel ALU-S

- Measure the dimensions as shown in the following diagram.

Fig. 9



PRESETTING:



Note: when dE is not set, dE = 0.8 dI is automatic

5.2.3 - SETTING WITH GAUGE EXTENSION (OPTIONAL C61)

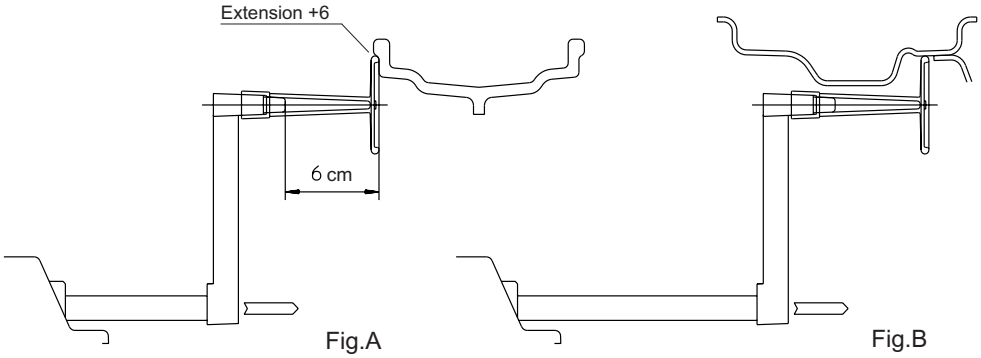


Fig.A Fig.B

The extension increases the by 6 cm the gauge distance measurement field (Fig. A) and allows distance measurement even when the rim has a special profile (Fig . B).

Proceed as indicated below:

- fit the extension on the distance gauge
- Measure the distance as already described.
- Read value “a” on the dial and then reset the gauge to “0” and set by hand the value “a + 6”
- Manually set the diameter and the width.

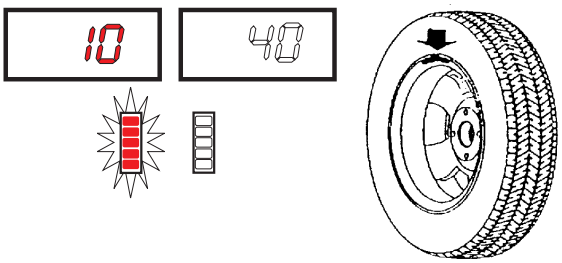
5.3 - RECALCULATION OF THE UNBALANCE

Press STOP after new setting of the measurement.

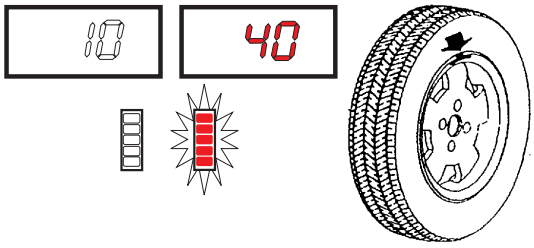
5.4 - MEASUREMENT RESULT

Fig. 10

Inside correction



Outside correction



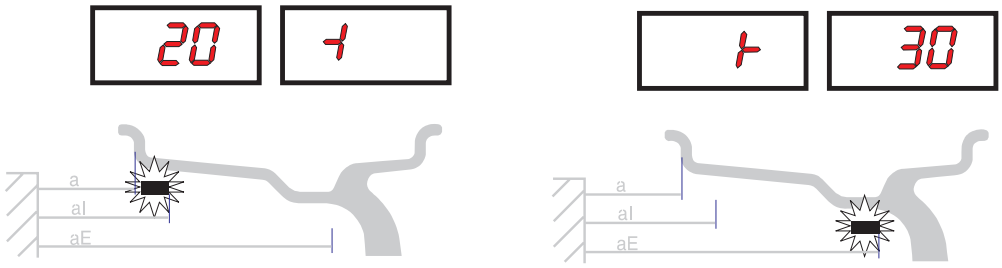
After performing a balancing spin, the amounts of unbalance are shown on the digital readouts. Digital readouts with LED ‘s 3 - 4 lit up indicate the correct angular wheel position to mount the counterweights (12 o’clock position). If the audible alarm is enabled (see ***FUNCTION MENU MANAGEMENT***), the acquisition of the correction position sounds with a “beep” alarm.

In the event of unbalance less than the selected threshold value 0, is displayed in place of the unbalance value , with <T it is possible to read the values below the selected threshold gr. by gr.

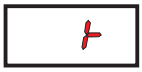
5.4.1 - INDICATION OF EXACT CORRECTION POSITION (C61Z)

In ALU 2, ALU 3 and ALU-S correction mode, it is possible to cancel approximations in the mounting of the counterweights by proceeding as follows:

Fig. 11



- Press button 
- fit the correction weight in the specific seat
- pull out the gauge, bearing in mind that the display shows:

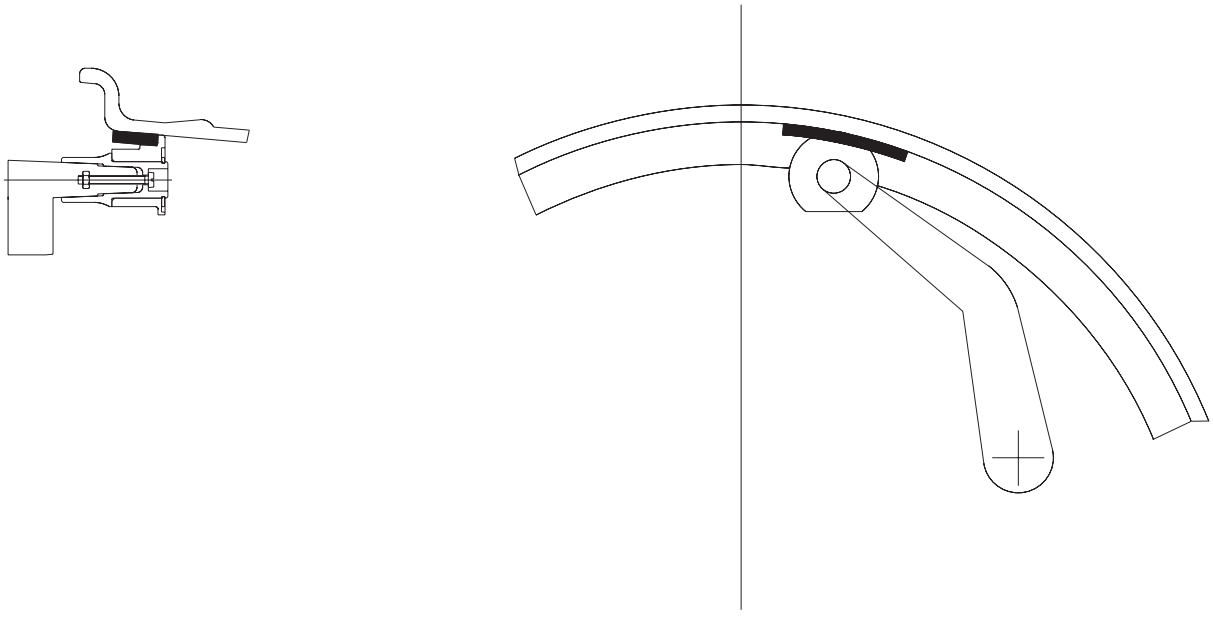
	to indicate that the gauge should be pulled further out
	to indicate that the gauge should be returned to rest position

The left display gives the indications for reaching the position regarding the inside, while the right display that of the outside.

- bring the wheel into correct angular position for the side selected.
- move the gauge so that the Led comes ON at the correction plane.
- rotate the gauge so that the correction weight adheres to the rim.
- The fact that the weight application position is no longer vertical (Fig.12) is automatically compensated.

Note : it is not possible to apply automatically the correction weight in position as per Fig. 5/Pos.B; ALWAYS rotate the gauge into position as per Fig. 5/Pos.A.

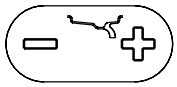
Fig. 12

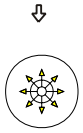


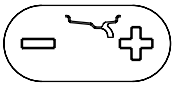
5.4.2 - SPLIT FUNCTION (unbalance spread)

The SPLIT function is used to position the adhesive weights behind the wheel spokes so that they are no longer visible. It is advisable to use this function only in the event of static unbalance or in the ALU S function. Input the wheel dimensions and start the spin. To start the SPLIT function, input the following data:

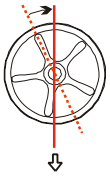
Display example prior to SPLIT function



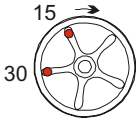




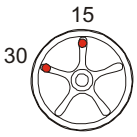
Input the number of spokes (3 ÷ 12)



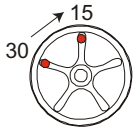
- Move any spoke to the 12 o'clock position



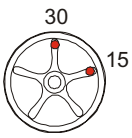
- Place the first Split unbalance in correction position 1



- Correction position 1



- Place the second Split unbalance in correction position 2

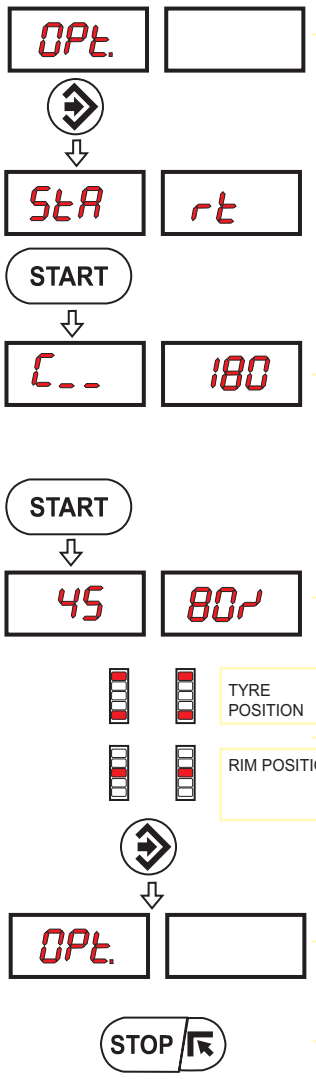


- Correction position 2

To return to normal unbalance display, press the button 

To perform a new spin, subsequently press the button START

5.4.3 - UNBALANCE OPTIMIZATION



- This function serves to reduce the amount of weight to be added in order to balance the wheel
- It is suitable for static unbalance exceeding 30g.
- It improves the residual eccentricity of the tyre.

- Mark with chalk a reference point on the adapter and rim
- With the aid of a tyre remover, turn the tyre on the rim by 180°
- Refit the wheel with the reference mark coinciding between rim and adapter

- RH display: percentage reduction
- LH display: actual static unbalance which can be reduced by rotation

- Mark the two positions (rim and tyre) and turn the tyre on the rim until the positions correspond in order to obtain the optimization on the display

RETURN TO START OF OPTIMIZATION

RETURN TO MEASUREMENT SCREEN

5.4.4 - ALU AND STATIC MODES

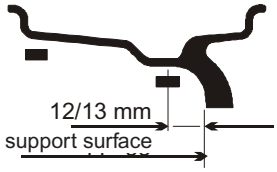
From the measurement screen, press button ALU to select the type required. The 5-Led displays show the position where to apply the weights. If a spin has already been performed, the processor automatically recalculates, for each change of mode, the amounts of unbalance according to the new calculation.

Fig. 13

DYNAMIC — Balancing of steel or light alloy rims with application of clip-on weights on the rim edges.

STATIC — The STATIC mode is necessary for motorcycle wheels or when it is not possible to place the counterweights on both sides of the rim.

ALU - 1 — Balancing light alloy rims by fitting adhesive weights to the shoulders of the rim.

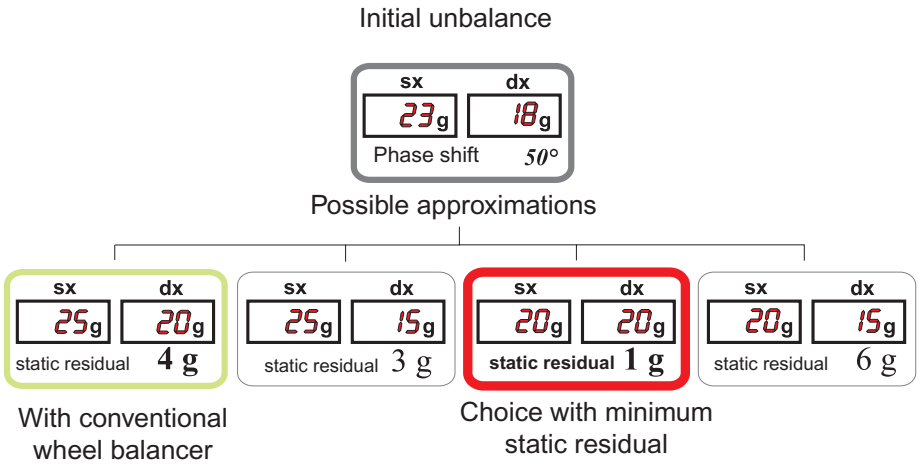


ALU - 2 — Balancing of light alloy rims with hidden application of the outer adhesive weights. Outer weight position is fixed.

ALU - 3 — Combined application: clip-on weight inside and hidden adhesive weight on outside (Mercedes). Outer weight position is the same as ALU-2.

ALU - 4 — Combined application: adhesive weight outside and clip-on weight inside.

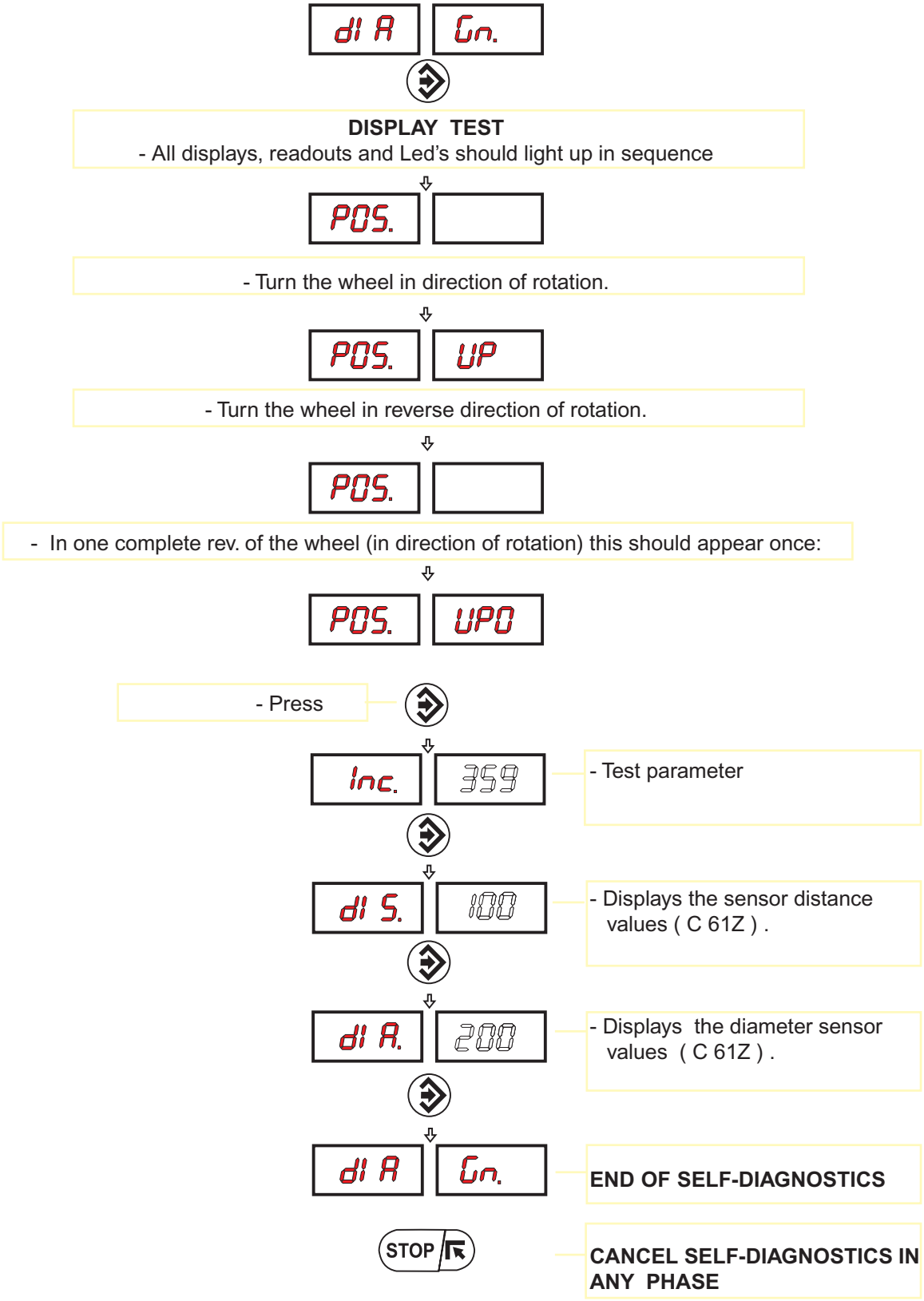
5.4.5 - AUTOMATIC MINIMIZATION OF STATIC UNBALANCE



This program is designed to improve the quality of balancing without any mental effort or loss of time by the operator. In fact by using the normal commercially available weights, with pitch of 5 in every 5 g, and by applying the two counterweights which a conventional wheel balancer rounds to the nearest value, there could be a residual static unbalance of up to 4 g. The damage of such approximation is emphasized by the fact that static unbalance is cause of most of disturbances on the vehicles. This new function, resident in the machine, automatically indicates the optimum entity of the weights to be applied by approximating them in an "intelligent" way according to their position in order to minimize residual static unbalance.

6 - SET UP

6.1 - SELF-DIAGNOSTICS

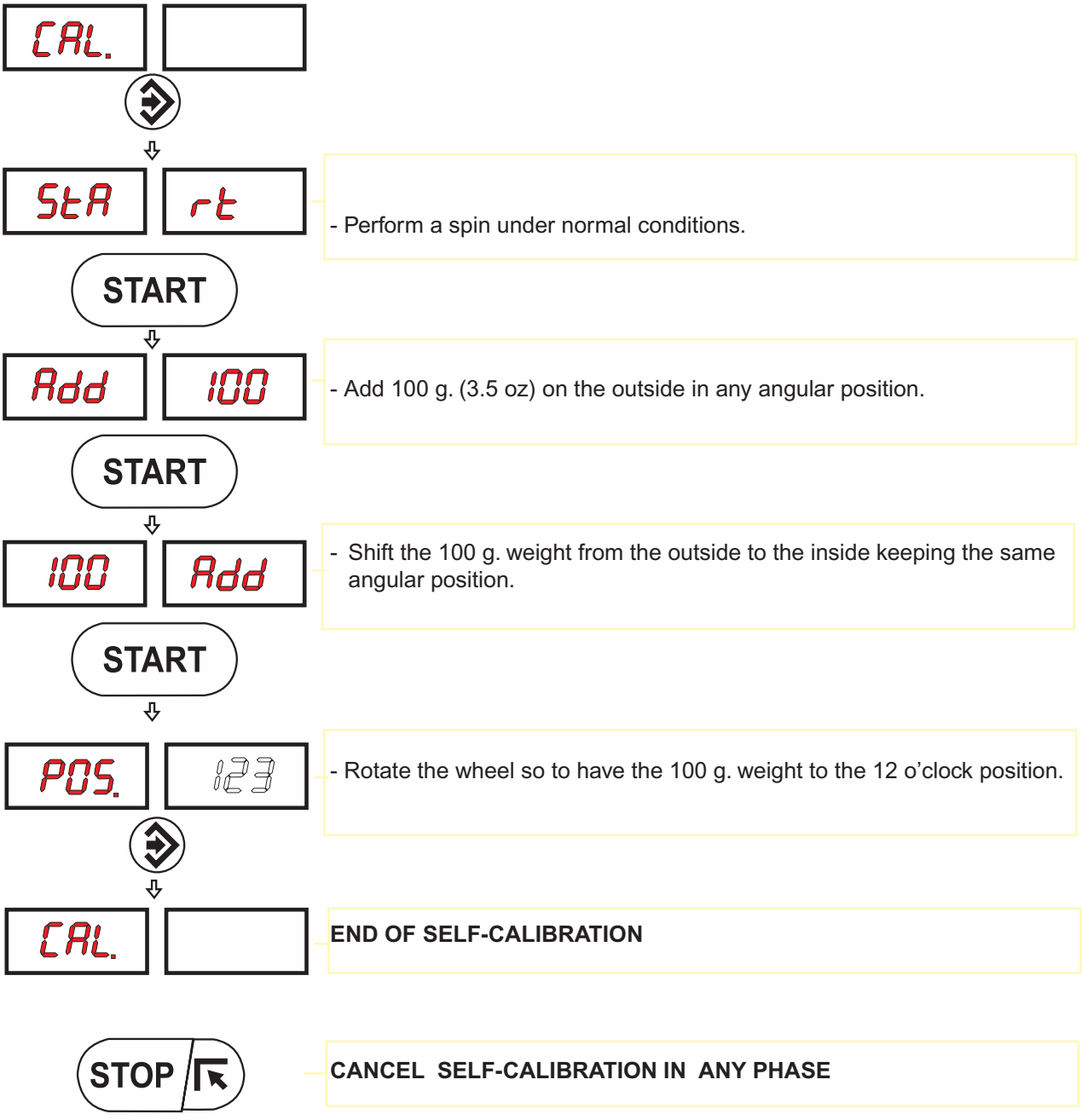


6.2 - SELF-CALIBRATION

For machine self-calibration proceed as follows :

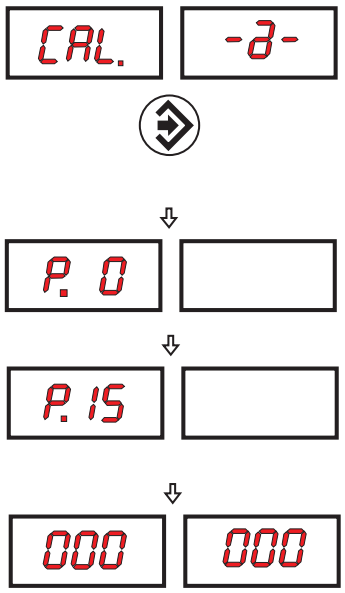
- Fit a metal wheel of average dimensions on the shaft. Example 6” x 14” (± 1”)
- Preset the exact dimensions of the wheel mounted.

CAUTION!! Presetting of incorrect dimensions would mean that the machine is not correctly calibrated, therefore all subsequent measurements will be incorrect until a new self-calibration is performed with the correct dimensions!!



6.3 - AUTOMATIC GAUGES (C 61 Z)

6.3.1 - DISTANCE GAUGE



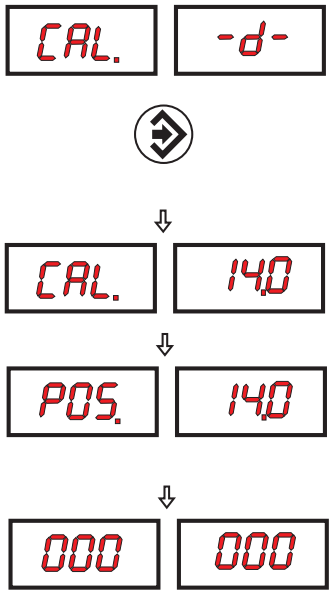
- Place the distance gauge in position 0 and,
  holding it firmly, press

- Move the gauge to position 15 and press

CORRECT CALIBRATION
- Return the gauge to rest position
- The wheel balancer is ready for operation

Note: In the event of errors or faulty operation, this wording appears on the display "CAL." "P.0.": shift the gauge to position 0 and repeat the calibration operation exactly as described above. If the error persists, contact the Technical Service Department. In the event of incorrect input in the rim distance gauge calibration function, press STOP to cancel it.

6.3.2 - DIAMETER GAUGE



- Currently preset diameter
- Set the required machine calibration value (10 ÷ 18")
- Press

- Place the gauge tip in the measurement position (Fig.5/ Pos.A)and, holding it down, press

CORRECT CALIBRATION
- Return the gauge to rest position
- The wheel balancer is ready for operation

In the event of incorrect input in the rim diameter gauge calibration function, press STOP to cancel it.

7 - ERRORS

During machine operation, various causes of faulty operation could occur. If detected by the microprocessor, they appear on the display as follows:

ERROR	MEANING
1	No rotation signal. Could be caused by faulty position transducer, or something preventing the wheel from turning.
2	During the measurement spins, wheel speed had dropped below 60 r.p.m. Verify encoder function (see ***SELF-DIAGNOSTICS***) and repeat the spin.
3	Unbalance too high.
4	Rotation in opposite direction.
5	Guard open before start of spin.
7	Fault in reading the machine calibration parameters. Repeat the self-calibration.
8	Fault in writing the machine calibration parameters. Repeat the self-calibration.
9	General fault in memory of the machine calibration parameters. Contact Technical Service Department.
11	Speed too high during unbalance measurement spins.
12/13/14	Difficulty in reading the analogue signal. Check encoder function (see ***SELF-DIAGNOSTICS***). Contact Technical Service Department.
15/17	Inside/outside analogue signal too high. Contact Technical Service Department.
16/18	Inside/outside analogue signal too low. Contact Technical Service Department.

7.1 - INCONSISTENT UNBALANCE READINGS

Sometimes after balancing a wheel and removing it from the balancing machine, it is found that, upon mounting it on the machine again, the wheel is not balanced.
This does not depend on incorrect indication of the machine, but only on faulty 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 centre line. If the wheel has been mounted on the adapter with screws, it could be possible that the screws have not been correctly tightened, i.e. crosswise one by one, or else (as often occurs) holes have been drilled on the wheel with too wide tolerances.
Small errors, up to 10 grams (0.4 oz) are to be considered normal in wheels locked by a cone; the error is normally greater for wheels fastened with screws or studs.
If, after balancing, the wheel is found to be still unbalanced when refitted on the vehicles, this could be due to the unbalance of the car brake drum or very often due to the holes for the screws on the rim and drum sometimes drilled with too wide tolerances. In such case a readjustment could be advisable using the balancing machine with the wheel mounted. (For example, our models L36, L38/2).

8 - ROUTINE MAINTENANCE

Switch off the machine from the mains before carrying out any operation.

8.1 - REPLACING FUSES

Remove the weight holder shelf to gain access to the power supply board where the fuses are located. If fuses require replacement, use ones of the same current rating.
If the fault persists, contact Technical Service.

NONE OF THE OTHER MACHINE PARTS REQUIRE MAINTENANCE.

9 - RECOMMENDED SPARE PARTS LIST

(For references, see exploded drawings)

CODE	DESCRIPTION
020600503	Bearing 6005 - 2Z Ø 25/47/12
181198630	Spring 19863P
080077007	Rigid belt Poly V - TB2 - 770 - 7 crested
67M38954H	Position pick-up board with cable
05PR34147	LEXAN Panel
182185750	Distance gauge spring C61 Z
181206560	Distance gauge spring C61
67M36950A	Power board
681002000	Fuses DM5x20 - 2A
511231002	Switch KL 1002 + Q555
86SC52468	Computer board C61Z
86SB36752	Cable, automatic distance gauge C61 Z
86SB36751	Cable, automatic diameter gauge C61 Z
86SB34144	Cable with standard microswitch protection
86SB38585	Cable with 42” microswitch protection

SPECIAL PARTS FOR 230 V MACHINE

501054213	Single phase motor BIMA 220-240V/50-60 Hz - 0.18Kw 63/B3-4p.
86SZ37439	Complete power board
611000314	Braking transformer 30 VA 230 - 0/50
568001458	Capacitor 10MF 450V Faston screw M8
611000308	Power transformer 30 VA 230 - 9/9

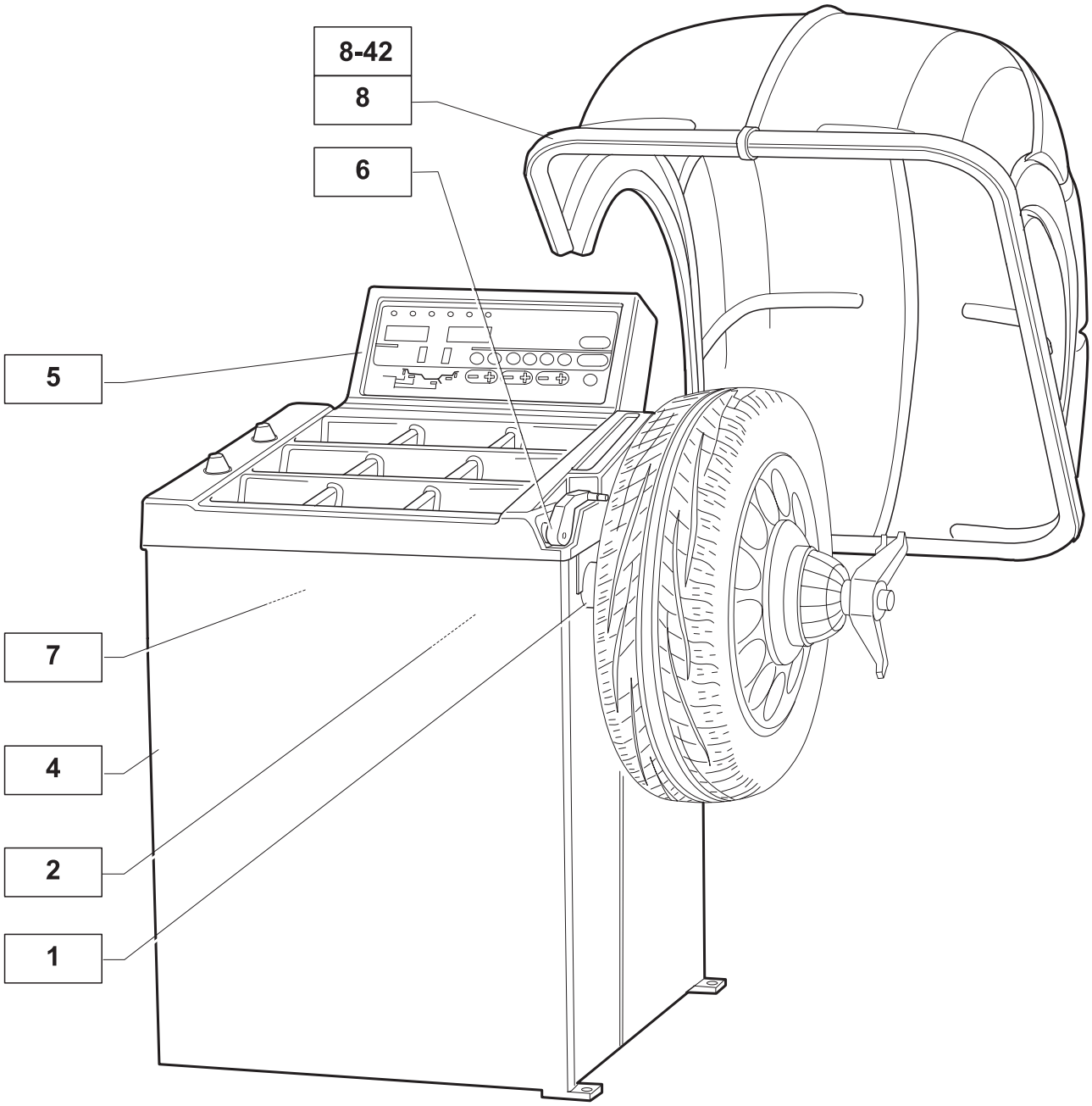
SPECIAL PARTS FOR 115 V MACHINES

502054114	Single phase motor BIMA 110-115V/50-60 Hz - 0.18Kw 63/B3 - 4p.
86SZ37440	Complete power board
611000313	Braking transformer 30 VA 115 - 0/25
568002557	Capacitor 25MF 450V FASTON vite/screw M8
611000307	Power transformer 30 VA 115 - 9/9

SPECIFIC SPARE PARTS - CSA STANDARDS

502054117	Single phase motor 4 poles 63/B3 0.18 Kw 115 50/60 Hz
67M36950C	Power board (CSA)
568002540	Capacitor 25MF (CSA)
611000301	Power transformer 30 VA
611000310	Braking transformer 30 VA
681002001	Fuse 5x20 GMA 2A (CSA)

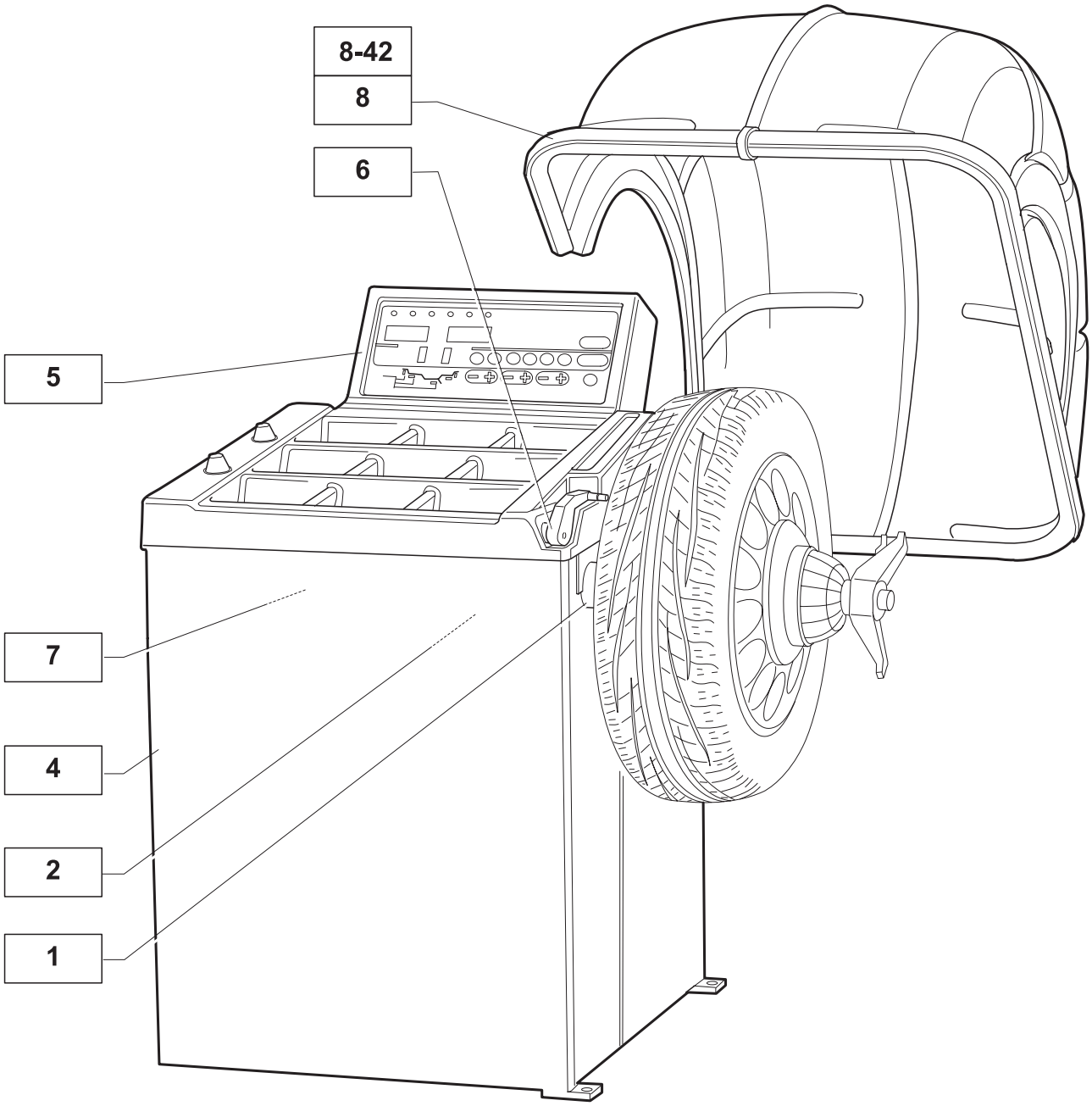
C61 (E) - C61Z (D)



D0112-1	0109-1	**1**	**MANDRINO**	**SHAFT ASSEMBLY**
D0111-2	0112-2	**2**	**MOTORE+DATORE DI FASE+ TRASDUTTORI PIEZO**	**MOTOR+POSITION PICK-UP+ PIEZO TRANSDUCER**
D0184-4	0184-4	**4**	**BASAMENTO**	**CASING**
D0184-5	0184-5	**5**	**BASAMENTO**	**CASING**
D0184-0185-6	0184-0185-6	**6**	**CALIBRO DISTANZA "C61"+ CALIBRO AUTOMATICO "C61Z"**	**"C61" DISTANCE GAUGE+ "C61Z" AUTOMATIC GAUGE**
D0184-7	0220-7	**7**	**POTENZA**	**POWER UNIT**
D0118-8	0184-8	**8**	**PROTEZIONE RUOTA**	**WHEEL GUARD**
D0118-8-42	0184-8-42	**8-42**	**PROTEZIONE RUOTA 42"**	**42" WHEEL GUARD**

*** Particolari reperibili in commercio** *** Parts on the market**

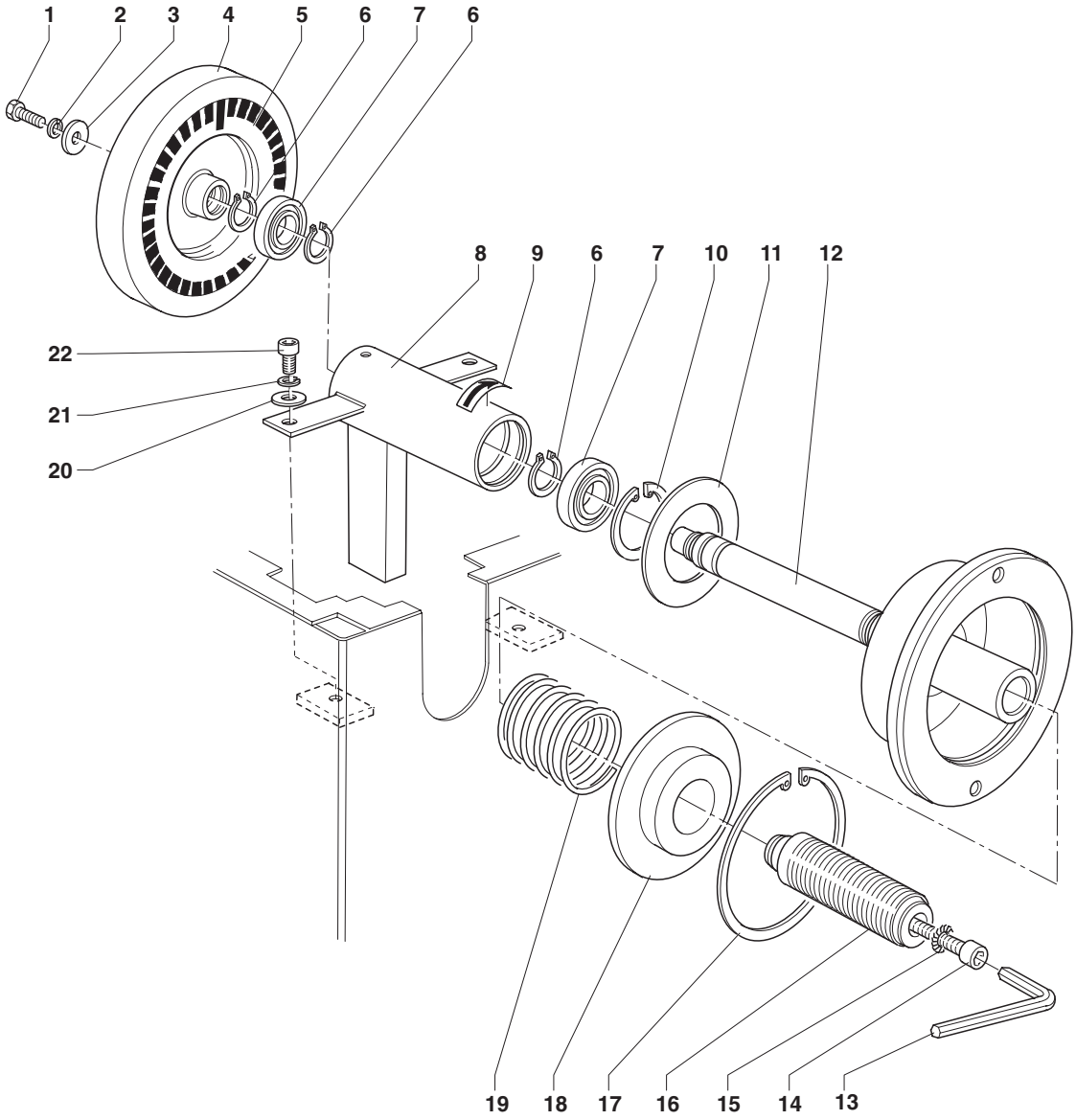
C61 (E) - C61Z (D)



D0112-1	0109-1	**1**	**DORN**	**BROCHE**	**MANDRIL**
D0111-2	0112-2	**2**	**MOTOR+PHASENGEBER+ PIEZOGEBER**	**MOTEUR+DONNEUR DE PHASE+ TRANSDUCTEURS PIEZO**	**MOTOR+CAPTADOR DE FASE+ TRANSDUCTORES PIEZOELECTRICOS**
D0184-4	0184-4	**4**	**SOCKEL**	**BASE**	**BASE**
D0184-5	0184-5	**5**	**SOCKEL**	**BASE**	**BASE**
D0184-0185-6	0184-0185-6	**6**	**ABSTAND MESSLEHRE “C61”+ AUT. MESSLEHRE “C61Z”**	**CALIBRE DISTANCE “C61”+ CALIBRE AUTOMATIQUE “C61Z”**	**CALIBRE DISTANCIA “C61”+ CALIBRE AUTOMATICO “C61Z”**
D0184-7	0220-7	**7**	**NETZEINHEIT**	**PUISSANCE**	**POTENCIA**
D0118-8	0184-8	**8**	**RADSCHUTZVERKLEIDUNG**	**PROTECTION ROUE**	**PROTECCION RUEDA**
D0118-8-42	0184-8-42	**8-42**	**RADSCHUTZVERKLEIDUNG 42”**	**PROTECTION ROUE 42”**	**PROTECCION RUEDA 42”**

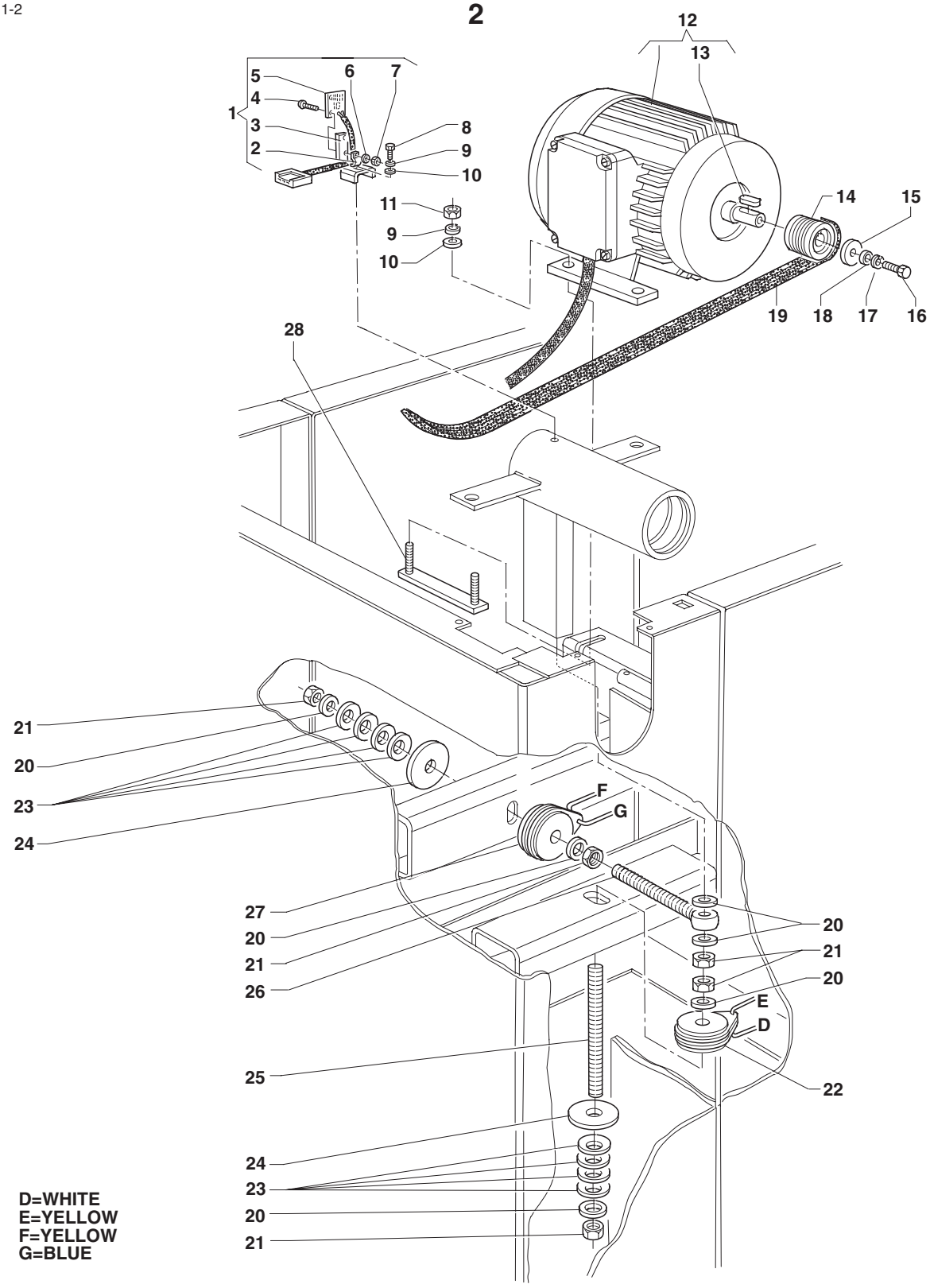
*** Handelsübliche Teile** *** Pièces se trouvant dans le commerce** *** Piezas que se encuentran en el mercado**

1



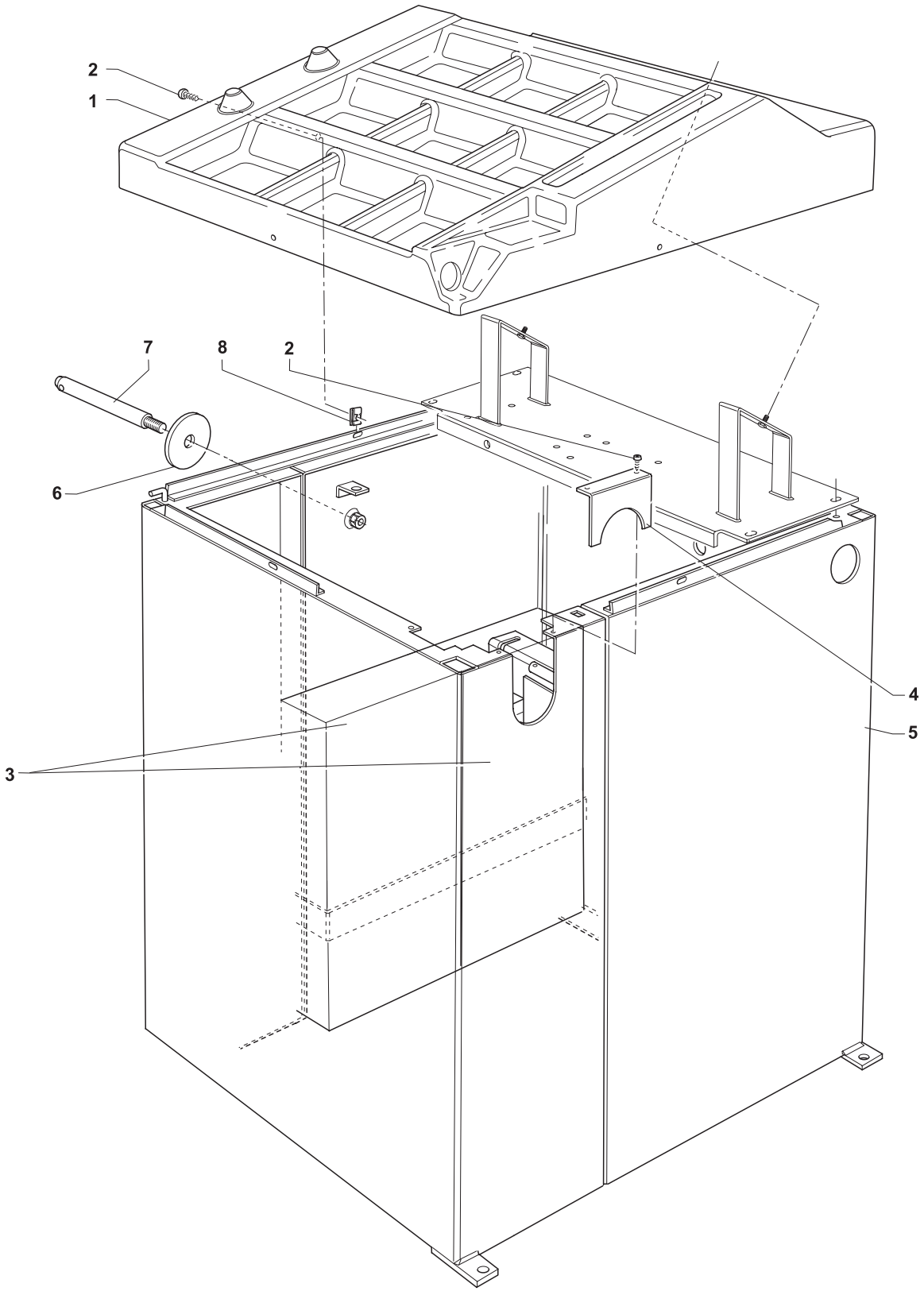
N.	CODE	DATA	N.	CODE	DATA	N.	CODE	DATA
1	311225120	*	11	04FM40630		20	326035009	*
2	325046010	*	12	42FM36931	**Ø 36**	21	325046008	*
3	326035011	*	13	114008002	*	22	312120093	*
4	42FM39093		14	312120137	*			
5	04FM38621		15	325047011	*			
6	341000025	*	16	940103565	**Ø 36 standard**			
7	020600503	*	16	42FM51717	**Ø 36 L = 185**			
8	42FM36929		17	344200118	*			
9	040010101		18	42FP41056				
10	342000047	*	19	181198630				

2



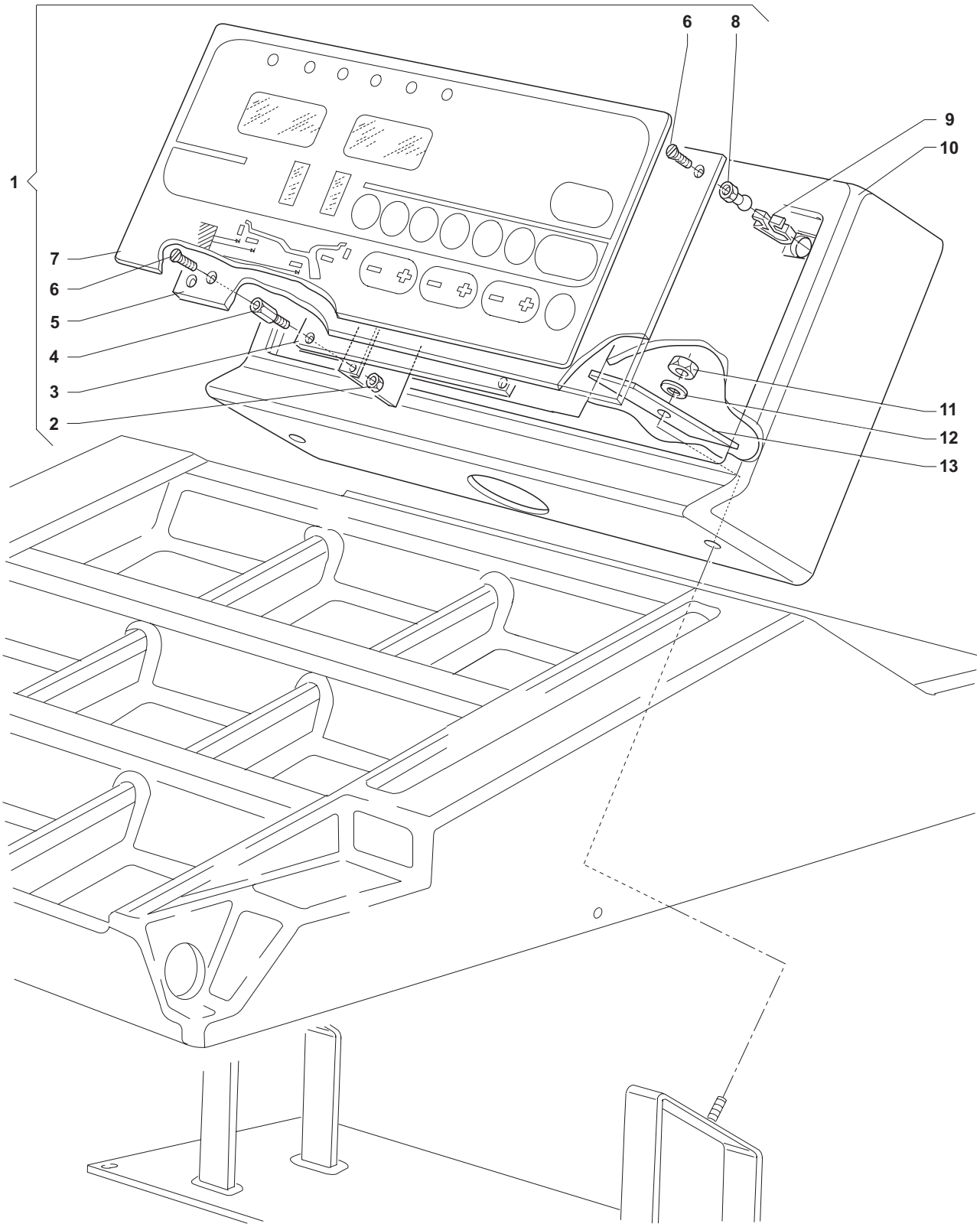
N.	CODE	DATA	N.	CODE	DATA	N.	CODE	DATA
1	86SD40154	**BP**	10	325035006	*	19	080077007	
1	86SD40731		11	321232006	*	20	325035010	*
2	420610639		12	501054213	**230V/50-60 Hz**	21	321212010	*
3	42SD37841	**BP**	12	502054114	**115V/50-60 Hz**	22	940701232	
3	42SD36228		12	502054117	**115V/50-60 Hz- CSA**	23	345122515	
4	314231018	*	13	348016015	*	24	326035011	*
5	67M38954H		14	071024009		25	105110165	
6	325035003	*	15	325035007	*	26	105114744	
7	321232003	*	16	311220036	*	27	940701233	
8	311220072	*	17	325046004	*	28	42FG42391	
9	325046006	*	18	325035004	*			

4



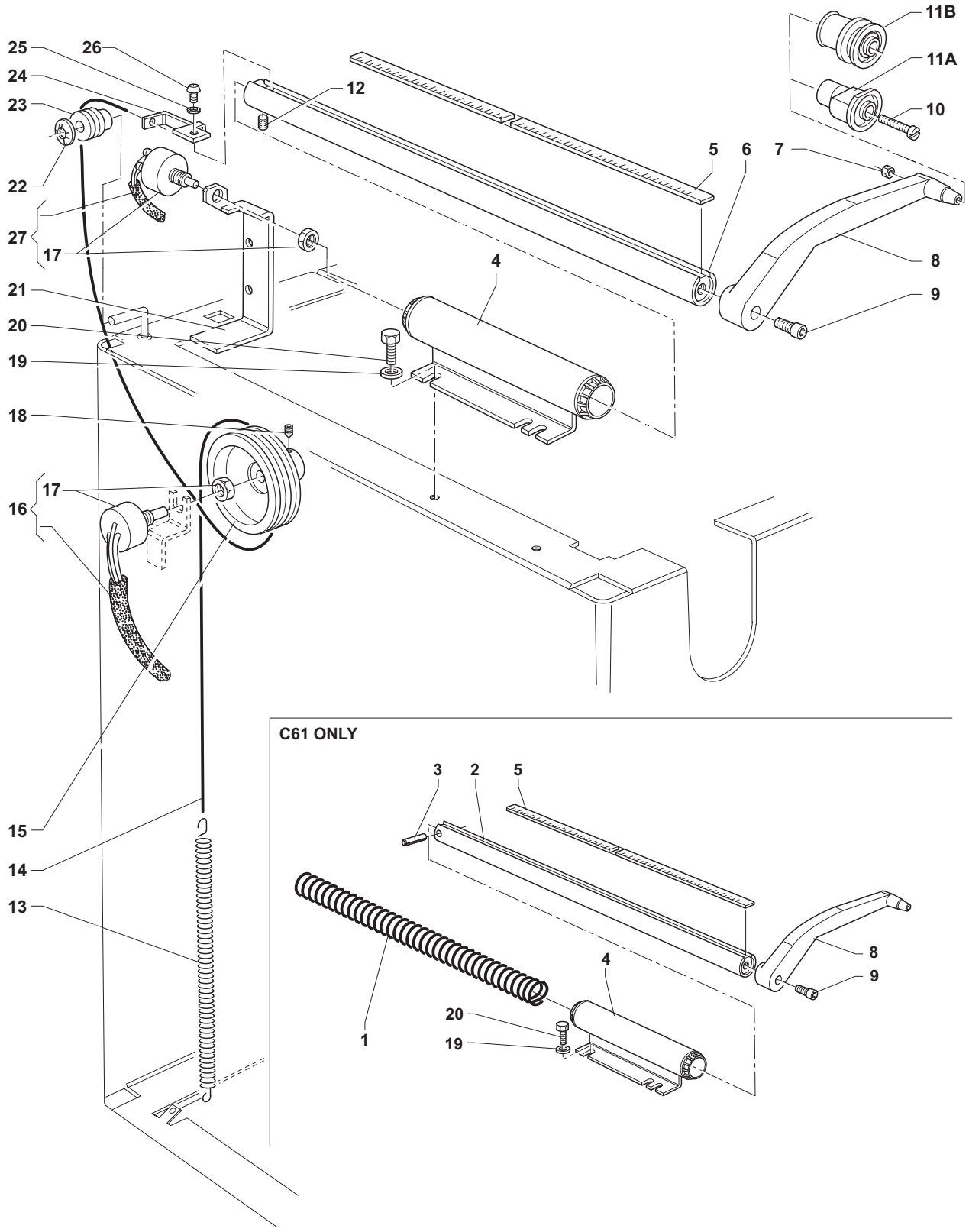
N.	CODE	DATA	N.	CODE	DATA	N.	CODE	DATA
1	14FB33185							
2	314931069	*						
3	301100007							
4	42FB33514							
5	42FB52275							
6	140212960							
7	105132900							
8	329007041	*						

5



N.	CODE	DATA	N.	CODE	DATA	N.	CODE	DATA
1	86PR52467		11	321232006	*			
2	321232003	*	12	325046006	*			
3	86SC52468		13	42FB35204				
4	527034980	*						
5	42PR34148							
6	315231015	*						
7	05PR34147							
8	329007663	*						
9	329004434	*						
10	143298321							

6



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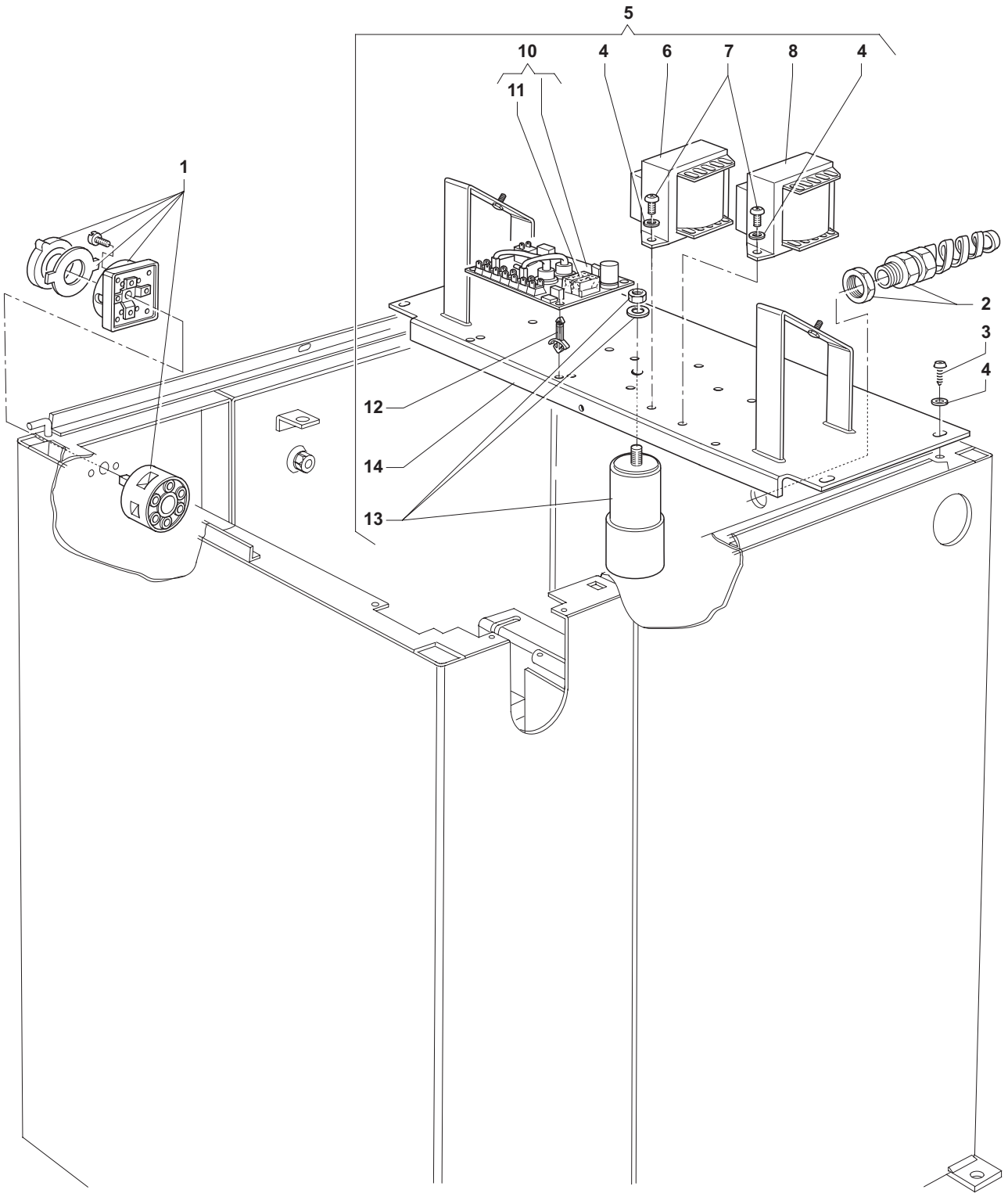
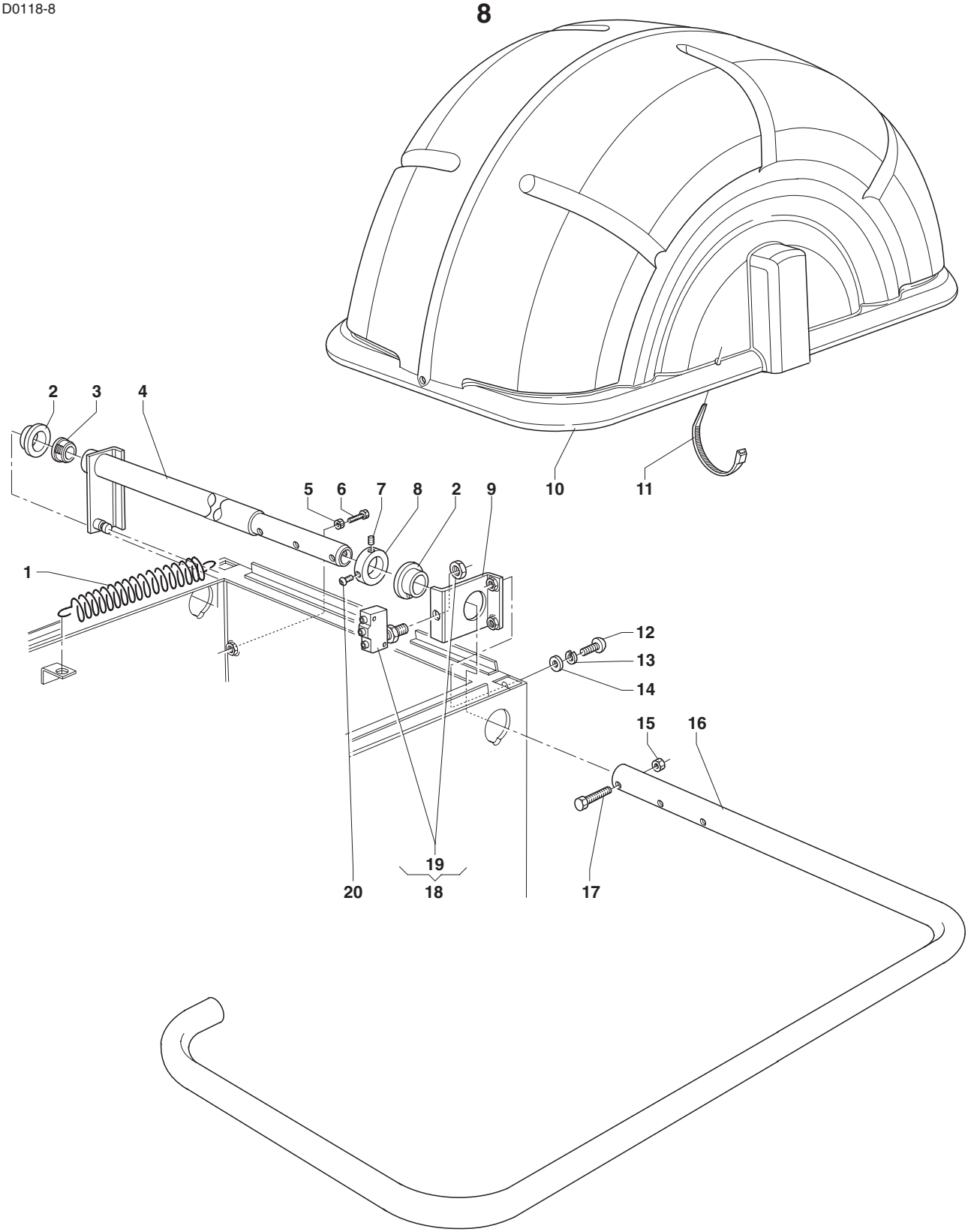
1	181206560		11A	42FC42063		20	311220071	*
2	42FC35790		11B	940014067		21	42FC40276	*
3	335310040	*	12	319216065	*	22	344200060	*
4	42FB49858		13	182185750		23	217021283	
5	040142902		14	523000018		24	42FC40278	
6	42FC33189		15	217025965		25	325035003	*
7	321232003	*	16	86SB36752		26	314231018	*
8	21FC47315		17	588020312		27	86SB36751	
9	312120071	*	18	319216034	*			
10	314231023	*	19	325046006	*			

7



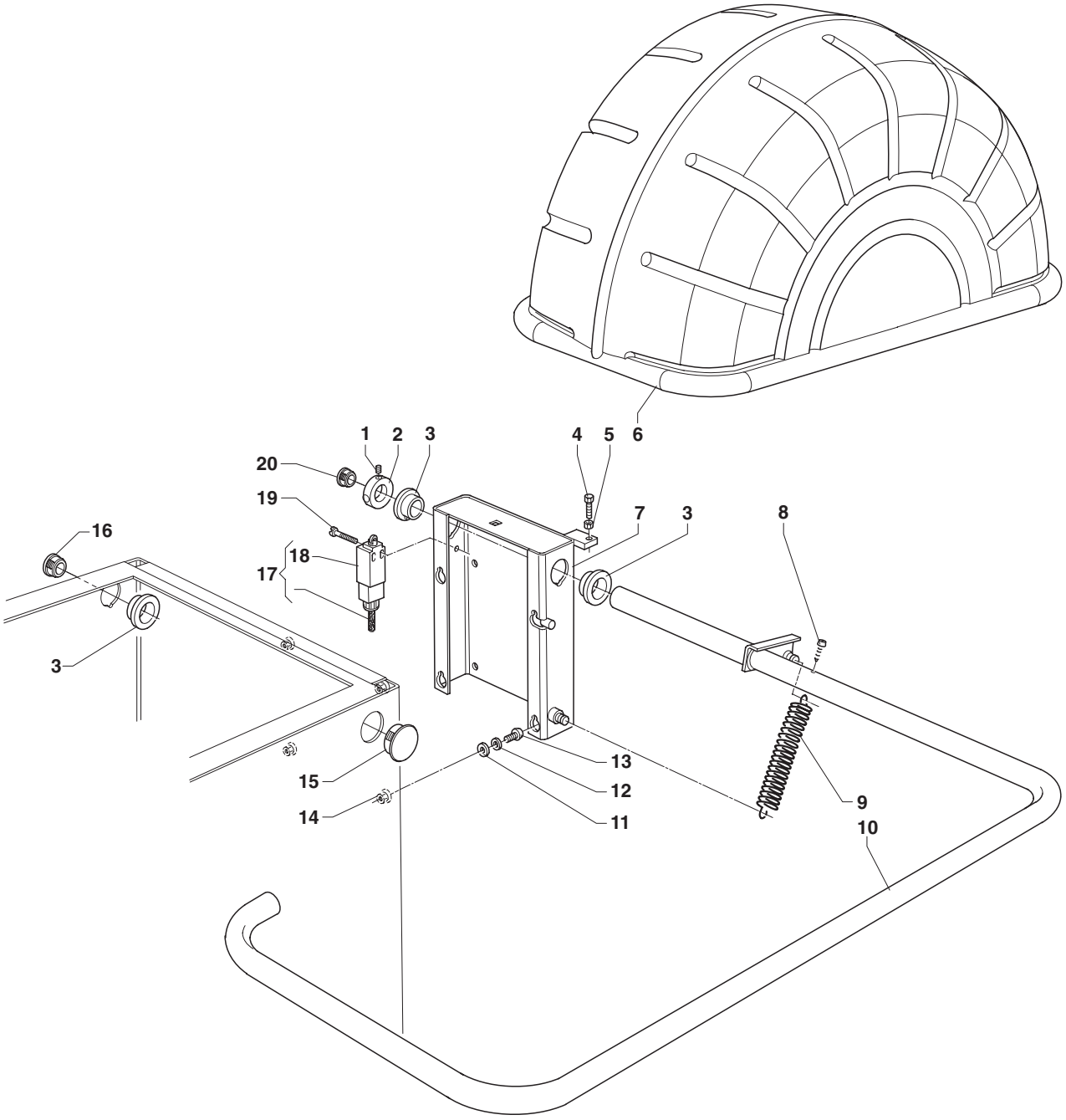
N.	CODE	DATA	N.	CODE	DATA	N.	CODE	DATA
1	511231002		7	317232034	*	13	568002557	**25MF (115V)**
2	526003246	*	8	611000308	**30VA (230V)**	13	568002540	**25MF (115V - CSA)**
3	314931069	*	8	611000307	**30VA (115V)**	14	42SZ37405	*
4	325035004	*	8	611000301	**CSA**			
5	86SZ37439	**230V**	10	67M36950A				
5	86SZ37440	**115V**	10	67M36950C	**CSA**			
5	86SZ42334	**115V - CSA**	11	681002000	*			
6	611000314	**30VA (230V)**	11	681002001	**CSA**			
6	611000313	**30VA (115V)**	12	527006175	*			
6	611000310	**CSA**	13	568001458	**14MF (230V)**			

8



N.	CODE	DATA	N.	CODE	DATA	N.	CODE	DATA
1	182099630		11	523031916	*			
2	217019275		12	317224093	*			
3	213011873	*	13	325046008	*			
4	42FW33192		14	325035008	*			
5	321232008	*	15	321212010	*			
6	311220099	*	16	42FW32988				
7	319216068	*	17	311120124	*			
8	42FW32989		18	86SB34144				
9	42FW33191		19	517141308				
10	14FW32049		20	317224068	*			

8-42



N.	CODE	DATA	N.	CODE	DATA	N.	CODE	DATA
1	319216068	*	11	325035008	*			
2	42FW32989		12	325046008	*			
3	217019275		13	314231085	*			
4	311220096	*	14	200000018	*			
5	321232008	*	15	213017503	*			
6	14FW37704		16	213000351	*			
7	42FW38965		17	86SB38585				
8	314931069	*	18	517140515				
9	18FW44391		19	314231042	*			
10	42FW44500		20	213011873	*			

INDEX page

SPECIAL MAINTENANCE
(for specialized personnel only)

1 - TO CHANGE SUPPLY VOLTAGE

(See recommended spare parts lists and power layout diagram)

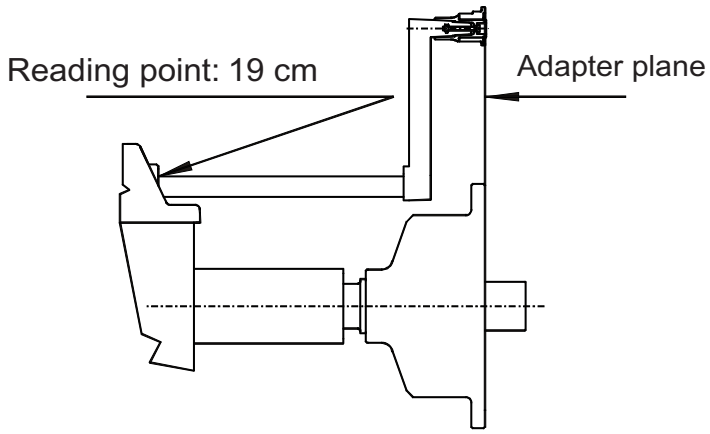
The wheel balancer can operate at 115 V - 50/60 Hz or 230V - 50/60Hz.
To change the supply voltage, proceed as follows:
1) Replace the motor.
2) Replace the entire power board or else modify the board as follows:
   A) Replace the capacitor
   B) Replace the two transformers.

2 - CHECKING OF THE DISTANCE GAUGE

2.2 - C61 Z

Check that the ruler used for measuring the DISTANCE of the wheels reads 19 cm as measurement of the distance from the adapter plane. If the graduated scale is changed, position it with the line indicating 19 cm at the fixed limit (reading point) when the gauge tip coincides with the adapter plane.

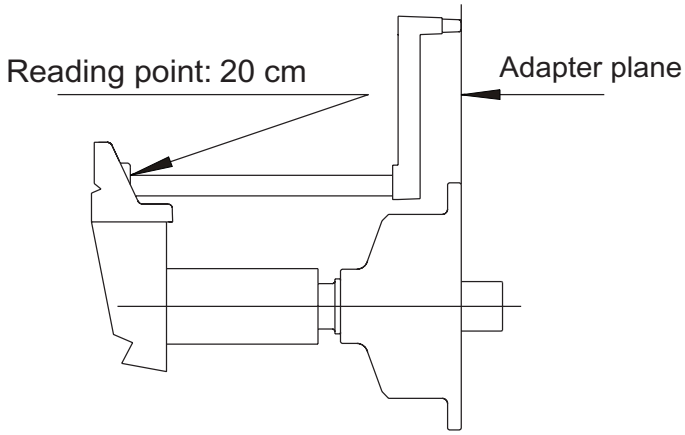
Fig. 1



2.3 - C61

Check that the ruler used for measuring the DISTANCE of the wheels reads 20 cm as measurement of the distance from the adapter plane. If the graduated scale is changed, position it with the line indicating 20 at the fixed limit (reading point) when the gauge tip coincides with the adapter plane.

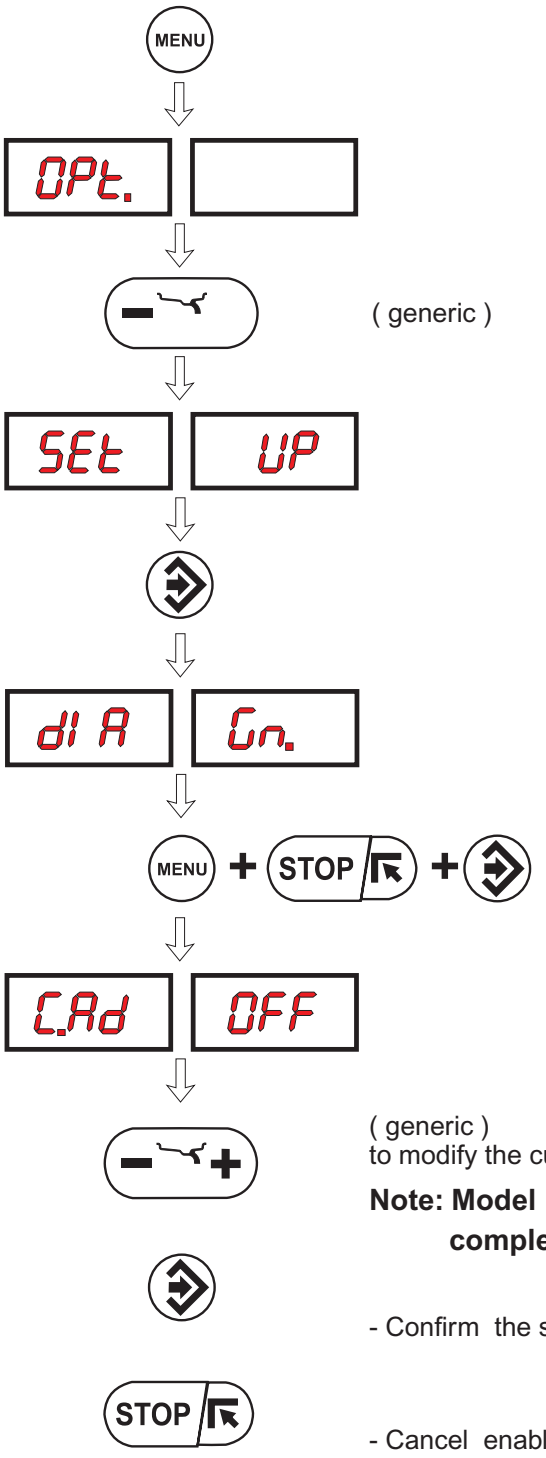
Fig. 1a



3 - GAUGE MANAGEMENT

3.1 - GAUGE ENABLE

Automatic measurement of the distance and wheel diameter is possible only with C61Z wheel balancing systems and must be enabled as follows:



(generic)

- to be pressed in sequence and within 5 seconds after pressing MENU

(generic)
to modify the current status from ON to OFF or vice versa

Note: Model C61: always set to OFF , otherwise functions are completely blocked.

- Confirm the selection.

- Cancel enabling in any phase.

3.2 - CALIBRATING THE DISTANCE POTENTIOMETER

- Remove the weight shelf and refit the tip on the gauge rod.
- Unscrew the lock-nuts securing the pulley to the potentiometer shaft;
- From FUNCTION MENU MANAGEMENT → SET UP → SELF-DIAGNOSTICS
- Scroll to the point where the LH display has the wording **[diS.]** while on RH display right shows a number which varies as the distance gauge is moved, providing a reference for potentiometer calibration
- with the gauge fully retracted, turn the potentiometer shaft keeping the pulley steady until the reading indicates a number between 50 and 100.
- Tighten the lock-nuts to secure the pulley on the shaft.
- Carry out the DISTANCE GAUGE SET UP .

3.3 - CALIBRATING THE DIAMETER POTENTIOMETER

- After ***DIAMETER POTENTIOMETER CALIBRATION*** press 
- The wording **[dIA]** appears on the left display, a number which varies when the gauge is turned appears on the right display and represents a reference for calibrating the potentiometer.
- Remove the diameter potentiometer from the gauge rod after backing off relative set screw.
- Slightly pull out the gauge rod and rest its stop on the machine shaft in external position near the base.
- Turn the potentiometer shaft until a number between 50 and 100 is read, then place it back in its correct working position.
- Lock the potentiometer with the relative screw.
- Carry out the DISTANCE GAUGE SET UP.

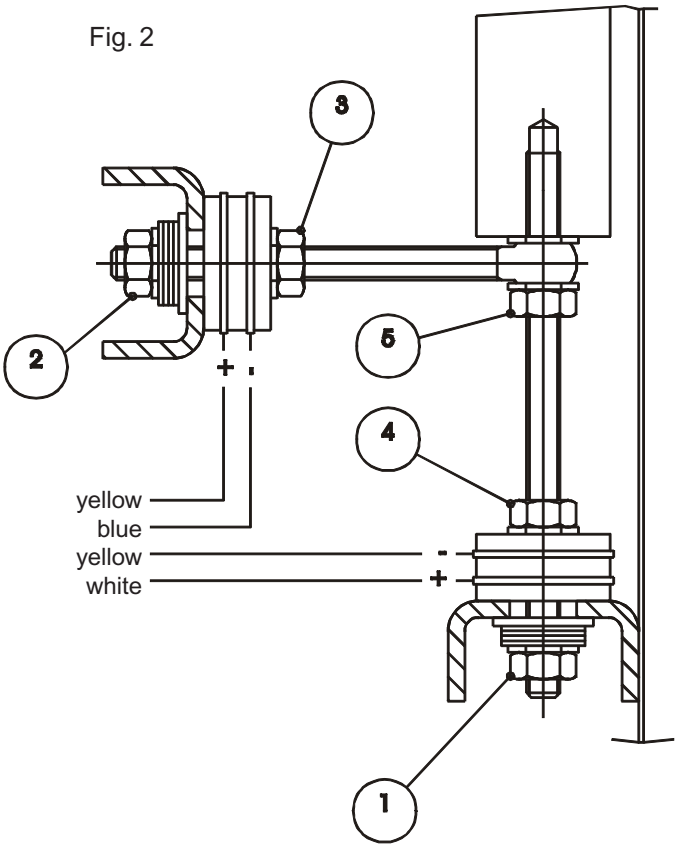
4 - ASSEMBLY OF THE PIEZO MEASURERS

Problems of excessive compensation and out-of-phase sometimes depend on a fault in the piezo measurers.

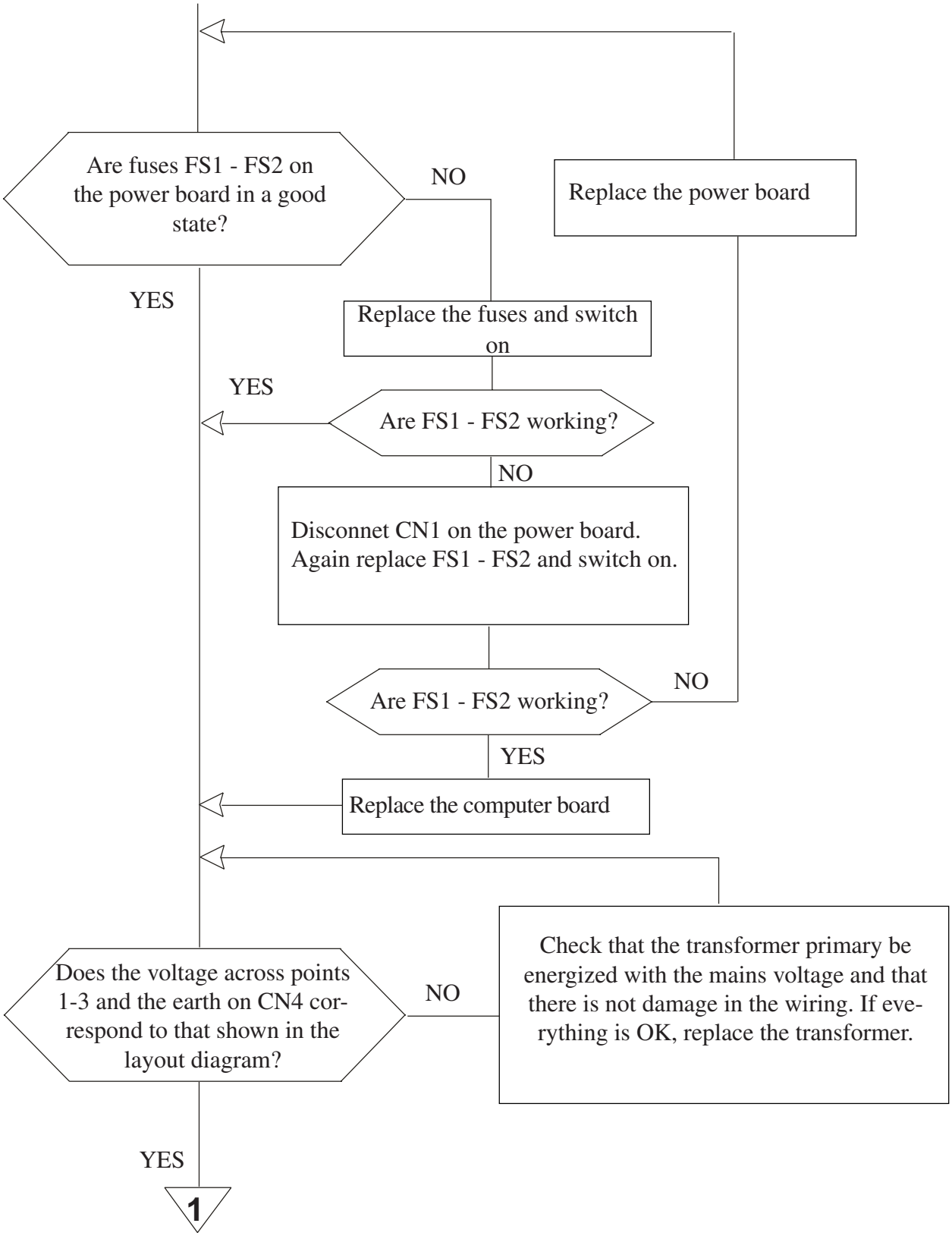
To replace them, proceed as follows:

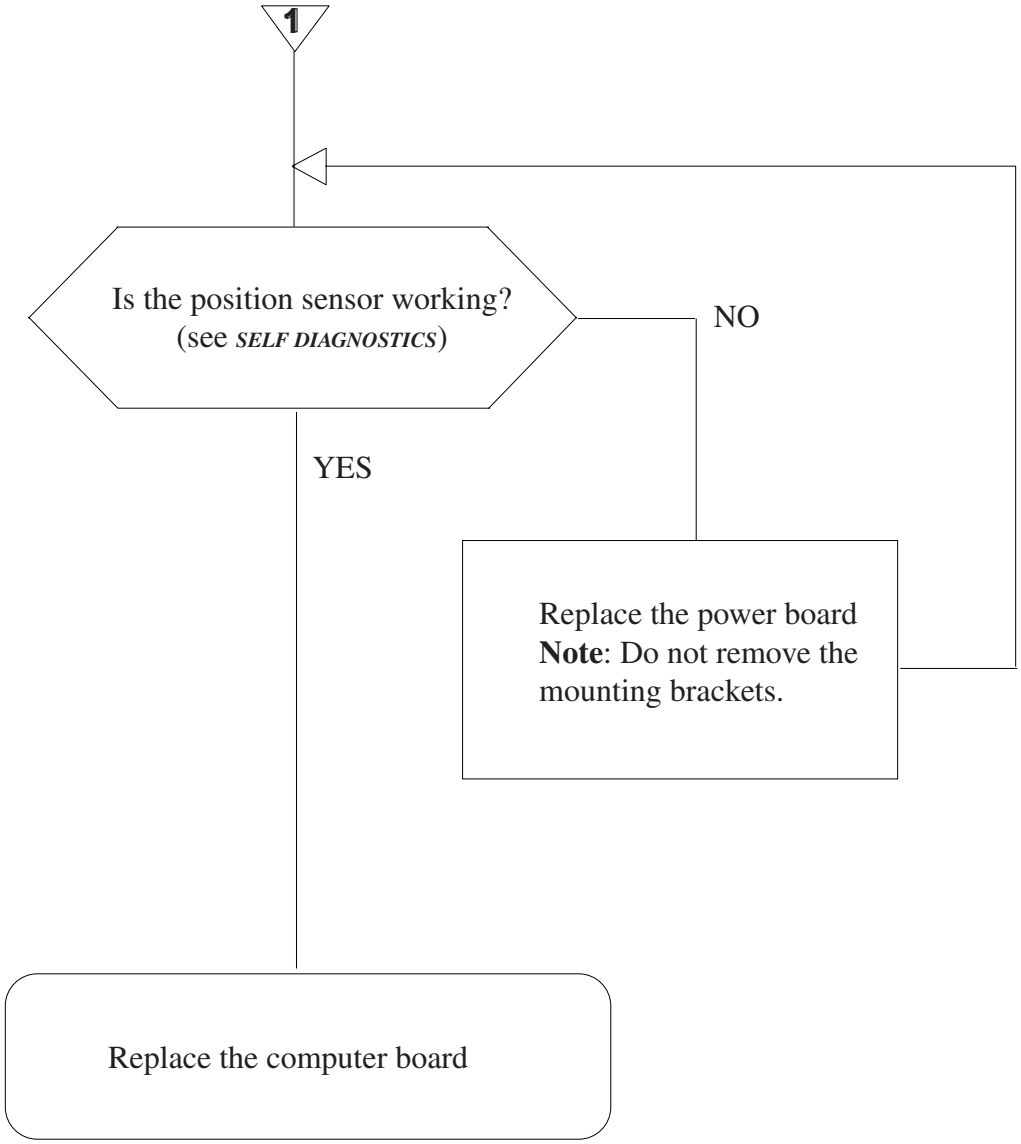
1. Remove the weight shelf.
2. Remove nuts 1 and 2 with relative cup springs and washers.
3. Back-off screws 3, 4 and 5 then disassemble the various parts.
4. Reassemble the various parts in the correct sequence without tightening the nuts.
Note: Mount the piezo units in accordance with the position of the coloured wires shown in the drawing.
5. Keeping the spindle perfectly aligned, tighten nut 5 with a spanner, and nuts 3 and 4 by hand (by half a turn with the spanner if necessary).
6. Refit the washers, cup springs and nuts 1 and 2. Tighten the nuts fully in order to fully regain the elasticity of the cup springs, then loosen them by half a turn. This will automatically ensure correct preloading on the piezo (a torque wrench can be used set to 400 kg.cm).
7. Cover the piezo units with a generous layer of silicone.
(**Note:** For correct operation, insulation of the piezo crystals should be grater than 50 Mohm).
8. Reassemble the various parts.
9. Again carry out the automatic calibration.

Fig. 2



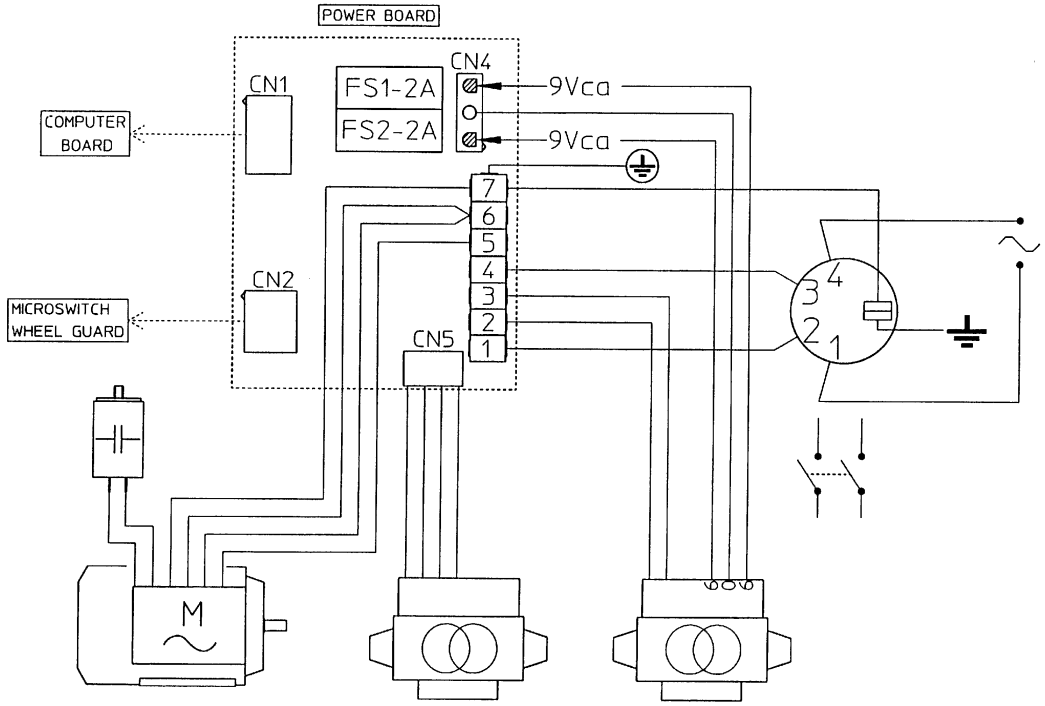
5 - LOGIC TROUBLE SHOOTING SEQUENCE




1
Is the position sensor working?
(see SELF DIAGNOSTICS)
NO
YES
Replace the power board
Note: Do not remove the
mounting brackets.
Replace the computer board

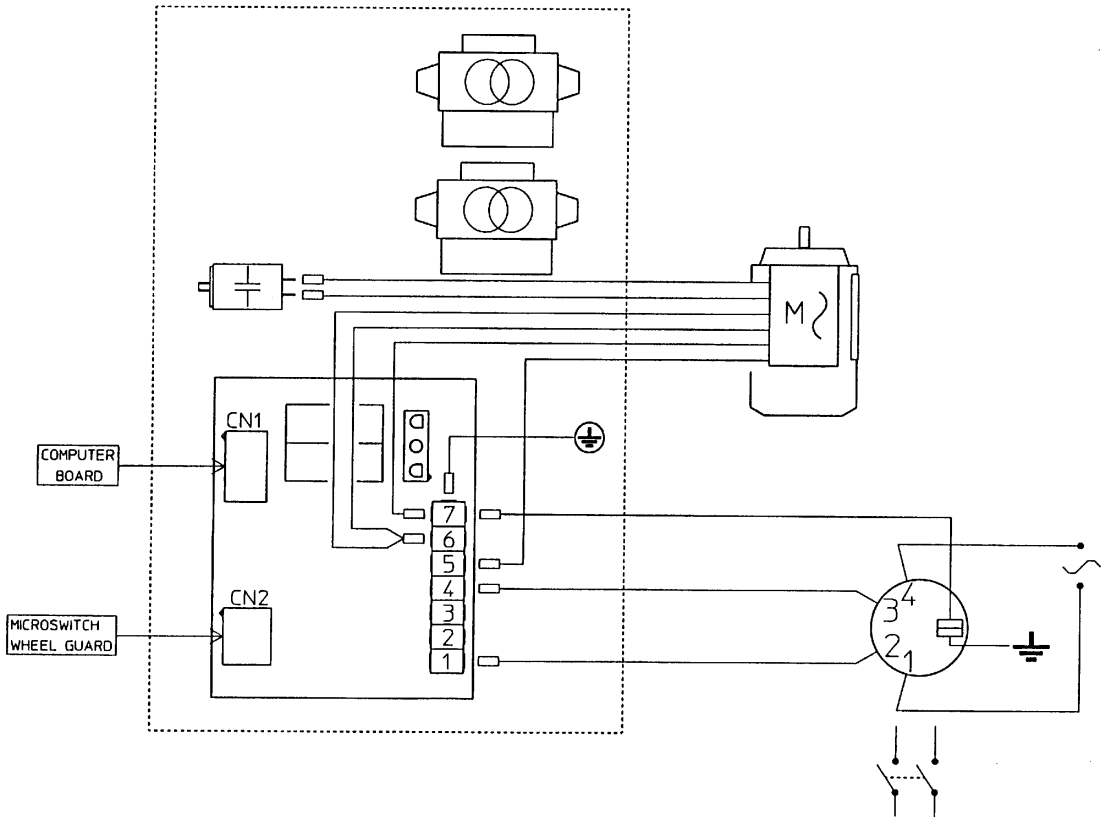
6 - POWER SUPPLY LAYOUT DIAGRAM

Fig.3



7 - REPLACING THE POWER BOARD

Fig.4



8 - TO CHECK MACHINE CALIBRATION

1) Mount an average size iron wheel and carefully preset the Distance / Diameter / Width.
2) Make 10 consecutive measuring spins and determine the repeatability error (normally ± 1 g.; acceptable ± 2 g.).
3) Balance the wheel as best as possible.
4) Apply 100 g. on the outside; the following should be true:

F.E. = 100 ± 5 F.I. ≤ 5 gr Weight F.E. position = 6 o'clock

5) move the 100 g. weight from the outside and apply it to the Inside; the following should be true:

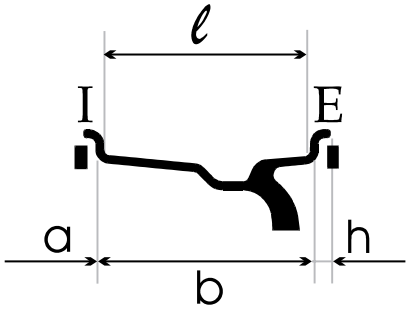
F.I. = 100 ± 5 F.E. ≤ 5 gr Weight F.I. position = 6 o'clock

6) If the values are out of tolerance, proceed to a self-calibration and repeat points 3), 4), 5).

9 - WHEEL MEASUREMENT AND PRESETTINGS ON THE BALANCING MACHINE

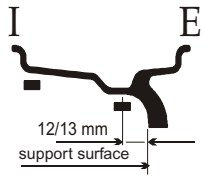
The ever-increasing need for more accurate calibration and use of the ALU functions means that it is important to establish how to measure the rims and how the wheel balancing machine interprets the preset data. Hence a description is now given of how to modify the preset dimensions automatically in order to obtain the distances of the correction planes which are defined as through-passing planes for the centres of gravity of the corrective weights.

Let's consider a typical rim: the size "ℓ" in terms of width indicated by the rim manufacturer differs from the distance measurement between the correction planes for rim thickness and physical dimensions of the counterweight, whose centre of gravity is located at distance "h" from the rest point of the edge of the rim. The wheel balancing machine automatically corrects the measurement preset by adding 2 x h = 6 mm to the measurement. Measurement "b" made with the gauge is generally more accurate even if very similar to the measurement "ℓ" known to the rim user. The two measurements differ only by the thickness of the sheet metal, usually about 2 mm per side. Such insignificant distance means that an accurate calibration can be obtained regardless of whether the inner rim with "ℓ" or outer width "b" is preset. It is a good rule to add 1/4 inch to the value given by the manufacturer. As regards the ALU functions, the machine performs the following approximations in addition to systematic correction of the centre of gravity of the counterweight as seen above.

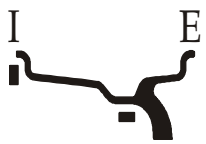


***NOTE** : I = INSIDE*
E = OUTSIDE

ALU 1
a = a preset +¾"
b = b preset -1 ½"
d = d preset - 1"

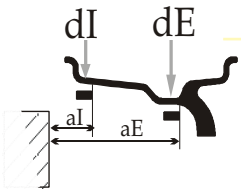


ALU 2
a = a preset +¾"
b = distance of adapter surface -½" -a
dI = d preset - 1"
dE = d preset - 2 ½"



ALU 3
a = a preset
b = distance of adapter surface -½" -a
dI = d preset
dE = d preset - 2 ½"

ALU 4
a = a preset
b = b preset -¾"
dI = d preset
dE = d preset - 1"



ALU - S
a = aI preset -7 mm
b = aE - aI
dI = d preset
dE = dI . 0.8

10 - FUNCTION AND PRECISION CHECK

If faults or inaccuracies are encountered which are not readily identified, it may be useful to perform the function and precision check.

PRELIMINARY CONTROLS

- Carefully clean the flange and cones
- Spring cover sliding
- Shaft terminal locking

ENCODER CHECK (see *SELF-DIAGNOSTICS*)

- **POS =** (monitor) from 0 to 127 turning the shaft by hand. Clockwise: UP; anticlockwise: DOWN.
  (digital) UP clockwise / blank anticlockwise / 0 on reset
- **DIST =** between 50 and 1000 when the distance gauge is fully extracted (C61 Z)
- **DIA =** between 50 and 1000 when the diameter gauge is fully open (C61 Z)

(C61 Z) GAUGE CALIBRATION
(use a metal wheel of average dimensions e.g. 6”x14” ± 1”)

– see *SELF-DIAGNOSTICS* and *GAUGE MANAGEMENT* –

- **DIST./DIAM.:**

Calibrate the gauges and check their precision.
Tolerances. DIST.= 5 mm DIAM.= ± ½”

WHEEL BALANCING MACHINE CALIBRATION (see *SELF-CALIBRATION*)

- Use the wheel utilised for gauge calibration
- Set precise measurements (input by hand if necessary)
- Perform self-calibration

MACHINE CALIBRATION CHECK (see *Section 8 MAINTENANCE*)

1. After self-calibration, perform 10 runs without releasing the wheel and measure MAX oscillations
FI= FE= (Tol. +/- 2 gr)

2. When the wheel is perfectly balanced, apply 100 gr. first to FE and then to FI. Measure the values
FI= FE= POS E= FI= FE= POS I=
(Tol. 3%)

CHECKING THE FLANGE

When the wheel is perfectly balanced, tip over by 180° and measure the unbalanced values
MAX ERR =
Above all for this check, it is advisable to use a sample wheel with known max. unbalanced errors caused by centering which, for metal wheels, are less than 10 gr.