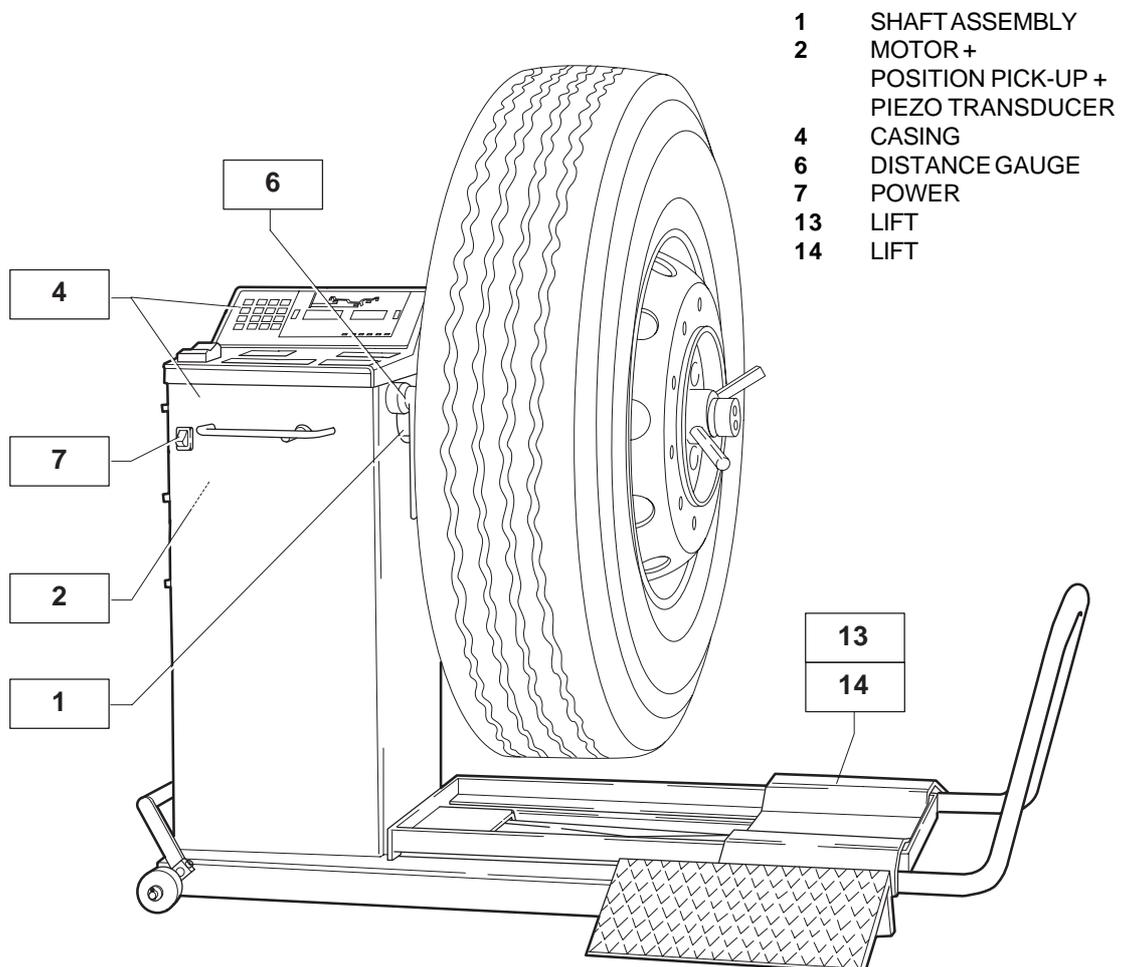


megaspin 450M

Wheel balancer with microprocessor for heavy motor vehicles and cars

N° 0161 - 2001.04

Operating instruction manual



CONTENTS

page

CE DECLARATION OF CONFORMITY

1 - GENERAL	5
1.1 - GENERAL SAFETY REGULATIONS	5
1.1.1 - STANDARD SAFETY DEVICES	5
1.2 - FIELD OF USE	5
1.3 - OVERALL DIMENSIONS	5
1.4 - SPECIFICATION	6
2 - HANDLING AND HOISTING	6
3 - COMMISSIONING	7
3.1 - ANCHORING	7
3.2 - ELECTRICAL CONNECTION	7
3.3 - PNEUMATIC CONNECTION	7
3.4 - ADAPTER MOUNTING	7
3.5 - WHEEL MOUNTING	7
4 - CONTROLS AND COMPONENTS	8
4.1 - MANUAL RIM DISTANCE GAUGE	8
4.2 - CONTROL PANEL AND DISPLAY	8
4.2.1 FUNCTIONS MENU CONTROL	9
5 - INDICATIONS AND USE OF THE BALANCING MACHINE	10
5.1 - DOUBLE OPERATOR PROGRAM	10
5.2 - PRESETTING OF WHEEL DIMENSIONS	10
5.2.1 - STANDARD WHEELS	10
5.2.2 - PRESETTING WITH GAUGE EXTENSION	11
5.3 - RECALCULATION OF THE UNBALANCE	12
5.4 - MEASUREMENT RESULT	12
5.4.1 - MINIMIZATION OF STATIC UNBALANCE	12
5.4.2 - RESOLUTION OF UNBALANCE (SPLIT)	13
5.4.3 - UNBALANCE OPTIMIZATION	14
5.4.4 - ALU AND STATIC MODES	15
6 - SET-UP	16
6.1 - SELF-DIAGNOSTICS	16
6.2 - SELF-CALIBRATION	17
7 - ERRORS	18
7.1 - INCONSISTENT UNBALANCE READINGS	18
8 - ROUTINE MAINTENANCE	18
8.1 - TO REPLACE THE FUSES	18
9 - RECOMMENDED SPARE PARTS LIST	19

- EXPLODED WHEEL BALANCER DRAWINGS WITH LIST

1 - GENERAL

1.1 - GENERAL SAFETY REGULATIONS

- The balancing machine should only be used by duly authorized and suitably trained personnel.
- Do not use the machine for purposes other than those specified in the instruction manual.
- The balancing should not be modified in any way whatsoever unless for those modifications explicitly carried out by the manufacturer.
- Never remove the safety devices. Only specialized personnel should be allowed to carry out maintenance operations on the machine.
- Do not use 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 not wear clothes with flapping edges. Make sure that unauthorized personnel do not approach the balancing machine during the work cycle.
- Avoid placing objects in the base as they could impair the correct operation of the balancing machine.

1.1.1 - STANDARD SAFETY DEVICES

- Anti-squash safety tubes on the lift pedestal.

1.2 - FIELD OF USE

The machine is designed for balancing wheels of heavy vehicles and cars up to 200 kg.

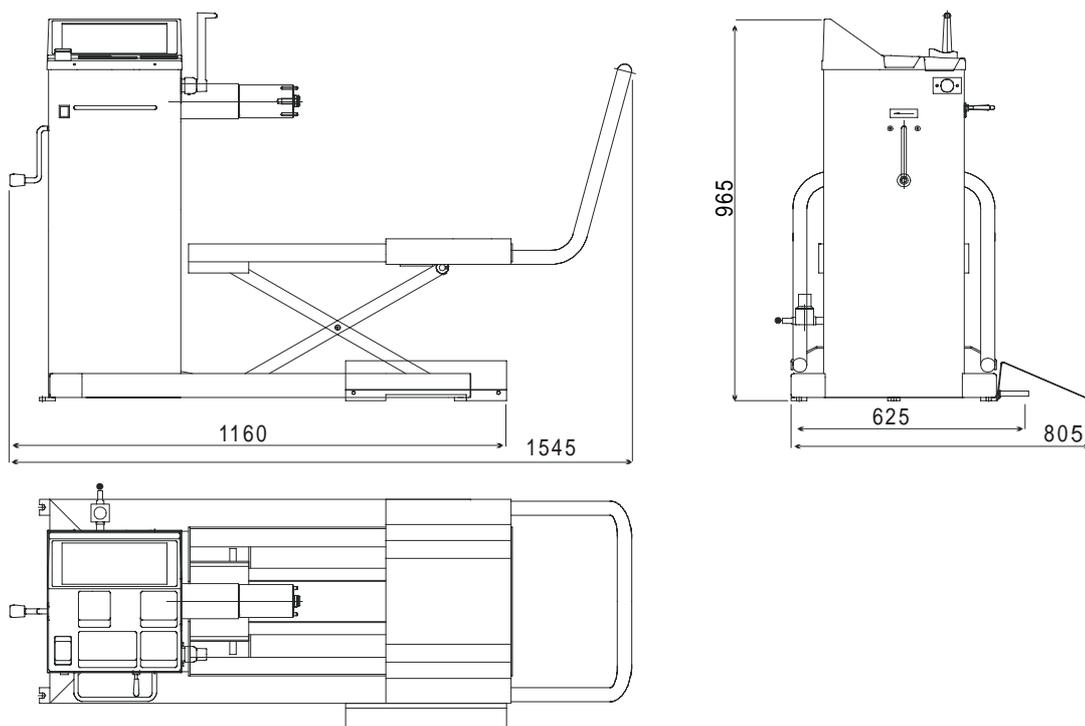
It can be used within an operating temperature range between -10°C and +45° C.

It is provided with the following functions: ALU-M; SPLIT; Unbalance optimization; Self diagnostics; Self-calibration.

Motor spin device.

1.3 - OVERALL DIMENSIONS

Fig.1



1.4 - SPECIFICATION

Single phase power supply	115 - 230 V
Protection class	IP 54
Max. power consumption	1100 W
Balancing speed	72 rpm TRUCK 100 rpm CAR
Cycle time for average wheel (14 kg)	6 seconds
Max. measurement resolution	1 gram
Position resolution	± 1.4°
Average noise level	< 70dB (A)
Rim-machine distance	0 - 300 mm (400 with extension)
Rim width setting range	1.5" to 20" or 40 to 510 mm
Diameter setting range	10" to 26.5" or 265 to 665 mm
Max. wheel diameter	1285 mm

- Provision for setting the balancing machine in car or truck mode

by pressing button  ; LED  lights up when the machine set to car mode.

-Unbalance display pitch

Car = 1/5 g (.1/0.25 Oz) Truck = 10/50 g (.25/1 Oz)

When  is pressed, the unbalance is displayed with pitch:

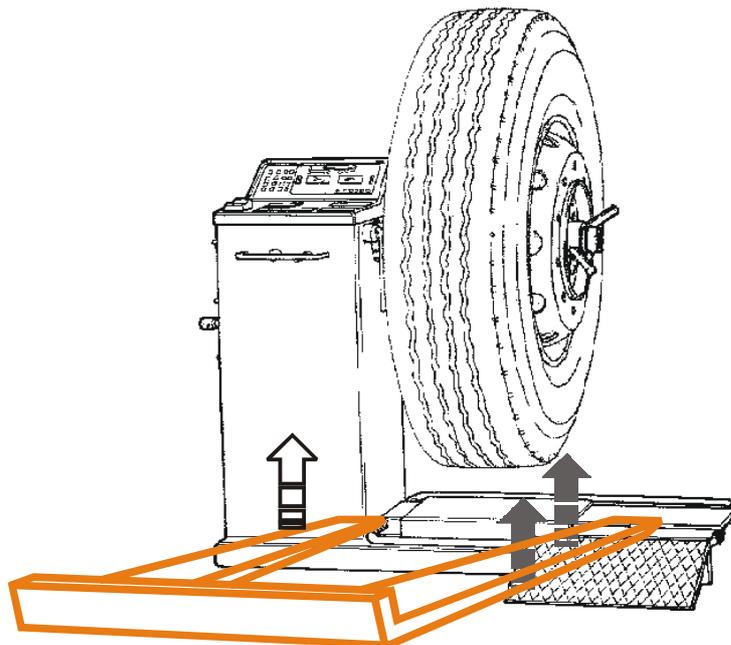
Car = 1 g Truck = 10 g
.1 Oz .25 Oz

- Unbalance display threshold

Car = 5 g (.4 Oz) Truck = 50 g (2 Oz)

2 - HANDLING AND HOISTING

Fig.2



**N.B. NEVER HOIST THE MACHINE USING OTHER LIFTING POINTS
THE BALANCING MACHINE FITS A REMOVABLE DEVICE FOR ITS DISPLACEMENT.**

3 - COMMISSIONING

3.1 - ANCHORING

The machine can operate on any flat non resilient floor. Make sure that the machine rests only on the 3 mounting points provided (fig. 2).

3.2 - ELECTRICAL CONNECTION

The machine is provided with a single phase power supply cable + earth (ground).

The supply voltage (and mains frequency) is given on the machine nameplate. It cannot be changed.

The electrical connection to mains must be made by expert personnel.

The machine must not be started up within proper earthing (grounding).

Connection to the mains should be through a slow acting safety switch rated at 4A (230 V) or 10A (115 V).

See enclosed wiring diagram.

3.3 - PNEUMATIC CONNECTION

Connect the machine to the compressed air main. Do not use the machine if there is no pressure. Max. permissible inlet pressure is 10 kg/cm² (approx. 10 Bar or 145 PSI or 1MPa).

Connection is through the pressure limiting unit at the back of balancing machine. The pneumatic circuit is designed to give the Lift considerable "flexibility" of movement in any position of its stroke; thanks to this the wheel position can be adjusted according to requirements with minimum manual effort.

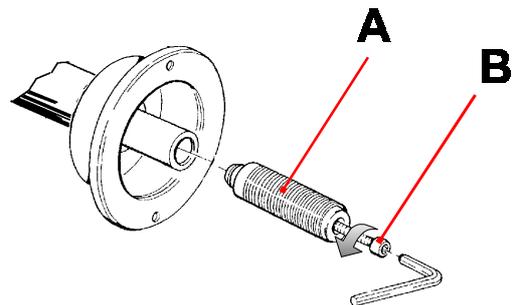
3.4 - ADAPTERS MOUNTING

Fig. 3

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)



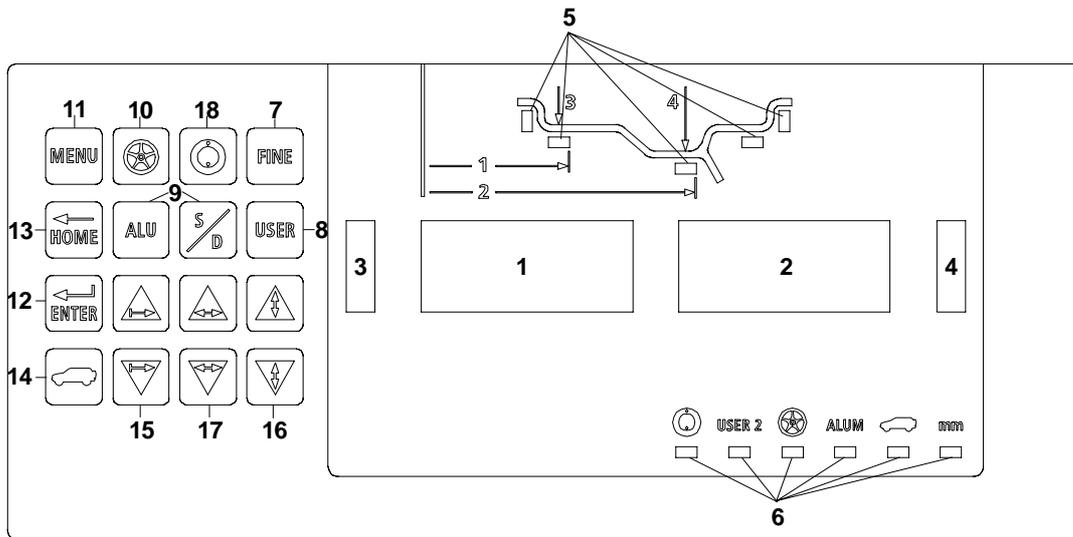
4 - CONTROLS AND COMPONENTS

4.1 - MANUAL RIM DISTANCE GAUGE

Designed for manual measurement of the distance of the point of application of the counterweight from the machine.

4.2 - CONTROL PANEL AND DISPLAY

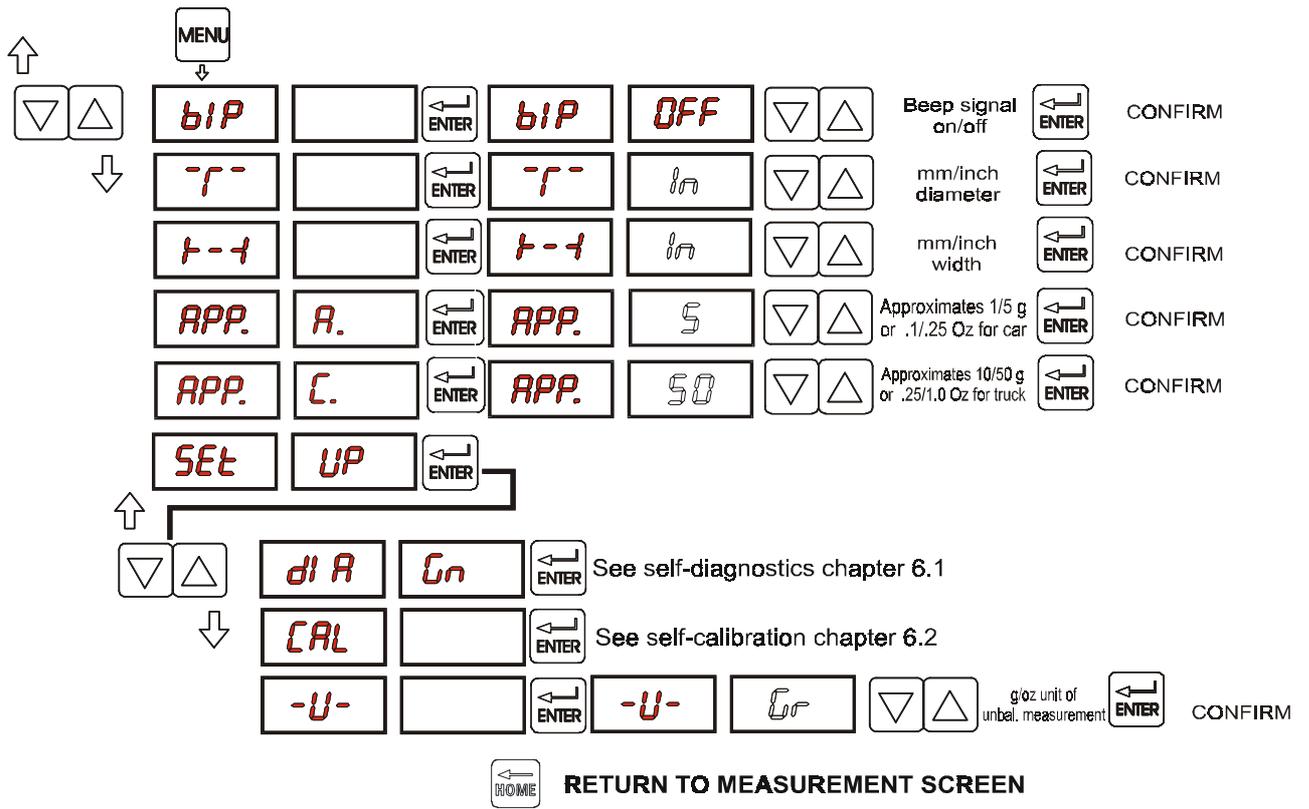
Fig. 4



- 1-2 Digital readouts, AMOUNT OF UNBALANCE on inside/ outside
- 3-4 Indicators, UNBALANCE POSITION on inside/outside
- 5 Indicators, correction mode selected
- 6 Indicators, selection made
- 7 Push button, unbalance reading < 5 g (0.25 oz)
- 8 Push button, operator selection
- 9 Push button, selection of correction mode
- 10 Push button, SPLIT (resolution of unbalance)
- 11 Push button, FUNCTIONS MENU
- 12 Push button, MENU selection confirm
- 13 Home push button
- 14 Push button, car/truck selection
- 15 Push buttons, manual DISTANCE setting
- 16 Push buttons, manual DIAMETER setting
- 17 Push buttons, manual WIDTH setting
- 18 Push button, unbalance optimization control

- N.B.:**
- Only use the fingers to press the push buttons. Never use the counterweight pincers or other pointed objects.
 - When the beep signal is enabled (see section 4.2.1), pressing of any push button is accompanied by a "beep".

4.2.1 - FUNCTIONS MENU CONTROL



5 - INDICATIONS AND USE OF THE BALANCING MACHINE

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 vehicles using the same balancing machine. The system memorizes two programs with the various preset dimensions.

1 - Press  to select operator (1 or 2). Choice is confirmed by the panel-mounted LED: LED lit up = User 2.

2 - Enter the dimensions (see 5.2).

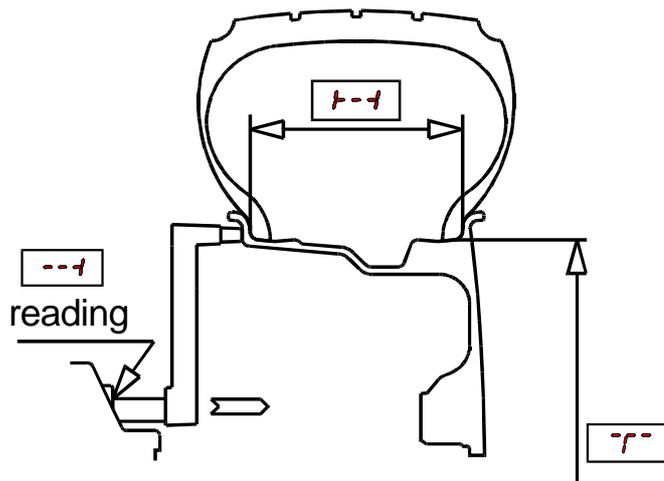
3 - Carry out the balancing normally.

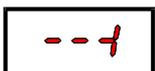
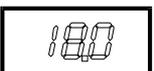
With  call program 1 or 2 for subsequent balancing operations without setting the dimensions again.

5.2 - PRESETTING OF WHEEL DIMENSIONS

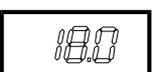
5.2.1 - Standard wheels

Fig. 5

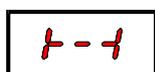
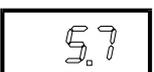


  - Preset distance "a" of the inside of the wheel from the machine.



  - Preset the nominal diameter marked on the tyre.



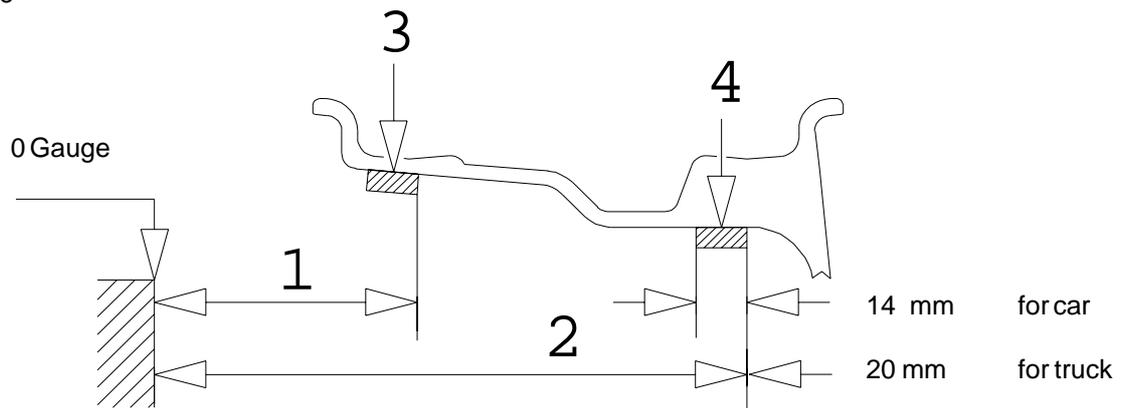
  - Preset the nominal width which is normally stamped on the rim or else measure the width with the calliper gauge (standard accessory).



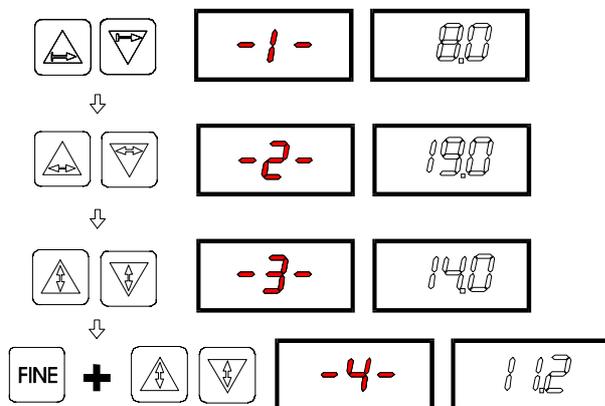
- Wheel ALU-M

- Measure the dimensions according to the diagram given below.

Fig. 6



PRESETTING:



N.B.: Do not preset the outer diameter () the system calculates automatically:

- outer diameter () = 0.8 x inner diameter ()

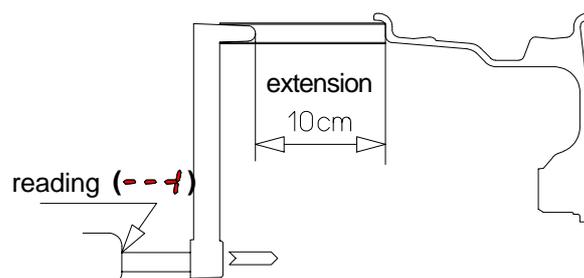
5.2.2 - PRESETTING WITH GAUGE EXTENSION

The extension increases the distance measuring range of the gauge by 10 cm (fig. 6A).

Proceed as follows:

- Insert the extension on the distance gauge.
- Measure the distance as already described in the above procedures.
- After reading value on the scale, return the gauge to 0 and preset the value + 10 in manual mode.
- Preset the diameter and width in manual mode as illustrated in fig. 5

Fig. 6A

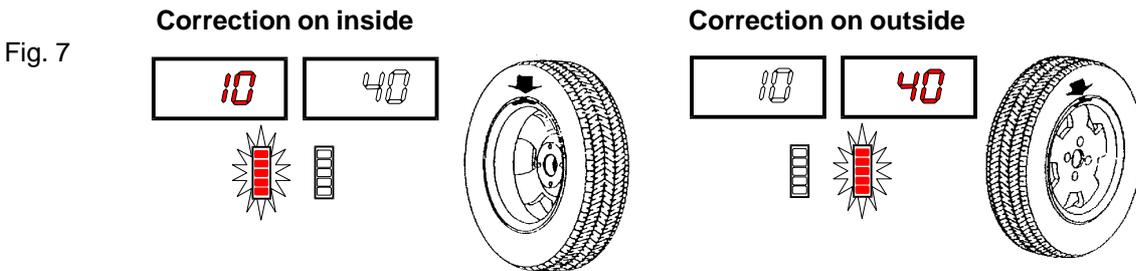


5.3 - RECALCULATION OF THE UNBALANCE

Press  after a new measurement presetting.

5.4 - MEASUREMENT RESULT

To spin the wheel, push the red start button which is located on the left hand side of the machine. release the button after the display disappears!!!

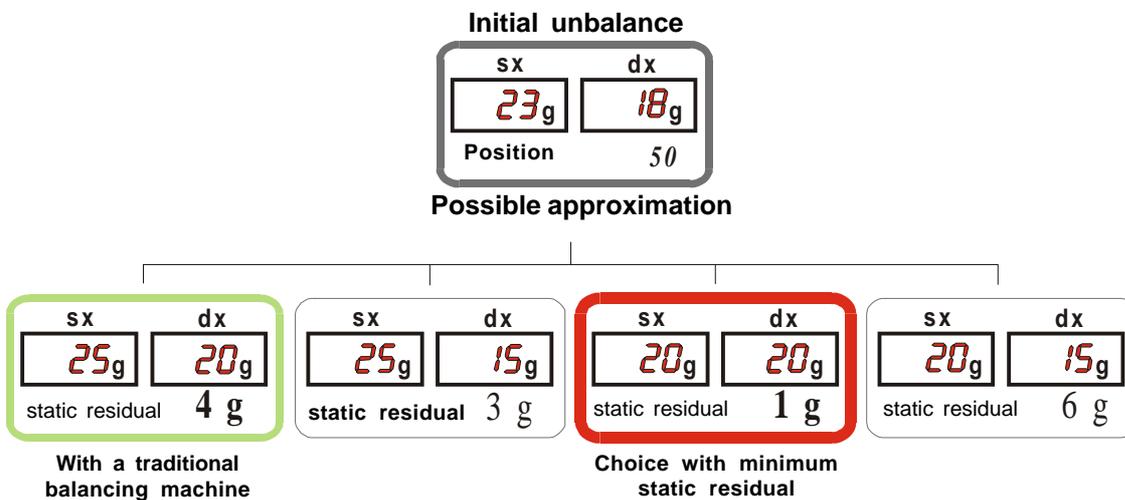


After making a balancing spin, the unbalance values appear on the displays. Displays with LED's 3 -4 lit up indicate correct angular position of the wheel for mounting the counterweights (12 o'clock). When the beep signal is enabled (see section 4.2.1), reaching of the correction position is indicated by a "beep".

5.4.1 - 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 when using the normal commercially available weights, with pitch of 5 in every 5 g (.25 in .25 Oz) and applying the two counterweights which a conventional balancing machine 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 the disturbances on the vehicle. This new function automatically indicates the optimum entity of the weights to be applied by approximating them in an "intelligent" way according to their position. (Pitch 5 grams/0.25 ounce for cars, 50 grams/1 ounces for trucks).

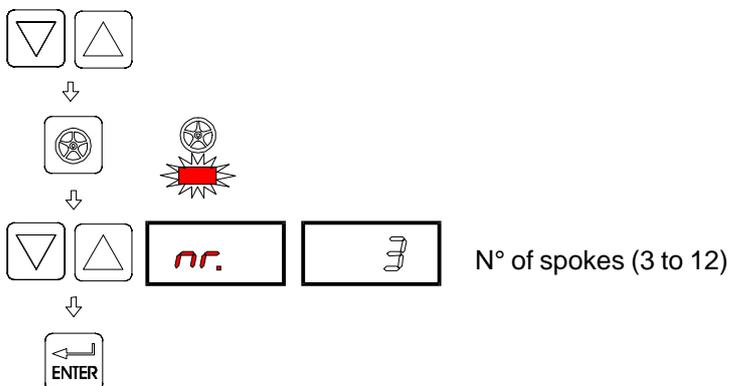
- Press  to display the actual unbalance (Pitch 1 gram/0.1 ounce).
 - The instruments indicate "0" for unbalance less than 5 grams/0.4 for cars and 50 grams/2 ounces for trucks;
- to display the residual unbalance press .



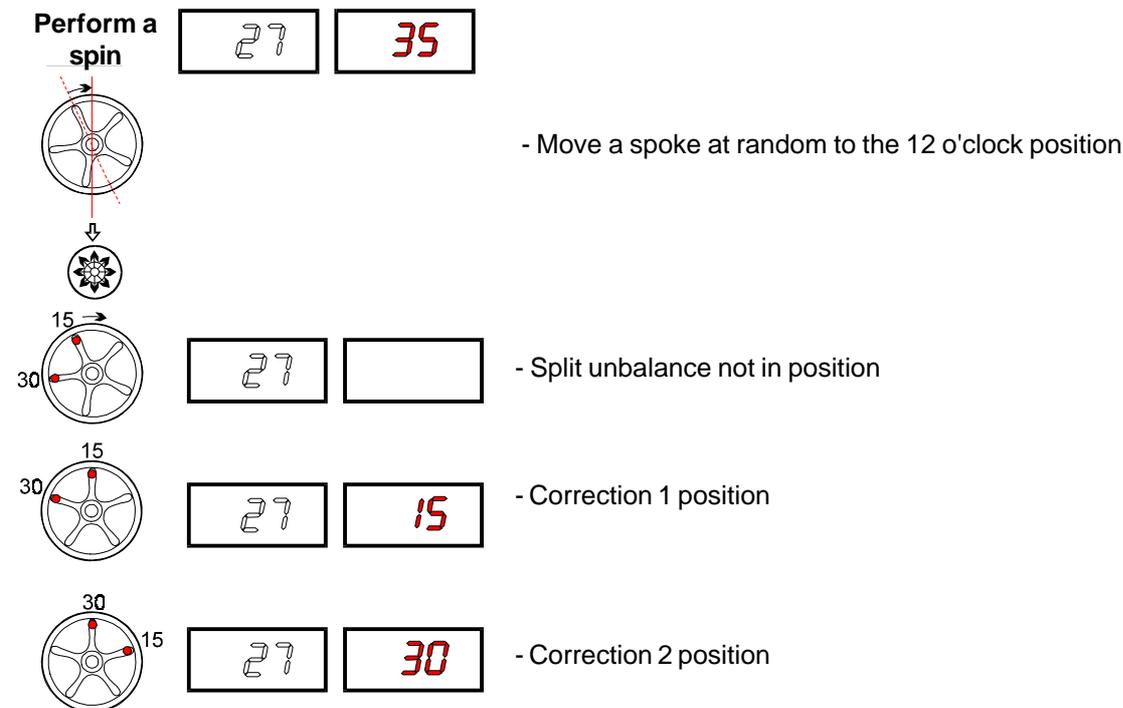
5.4.2 - RESOLUTION OF UNBALANCE (SPLIT)

SPLIT only has meaning in the case of static unbalance or ALU-S on outside. It serves for hiding any stick-on unbalance correction weights behind the rim spokes.

PRESETTING:



- RISULTS :

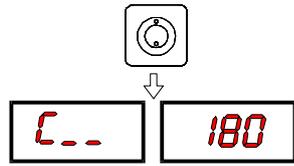


To return to normal display of the unbalance, perform a new manual spin or else press button

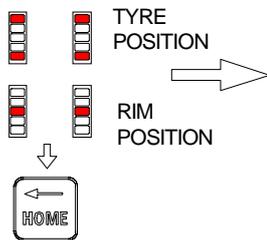


5.4.3 - UNBALANCE OPTIMIZATION

- 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 30 g (1.Oz) in the case of cars or 300 g (10.5 Oz) in the case of trucks
- It improves the residual eccentricity of the tyre.



Perform a spin



A)

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

- Right display: percentage reduction.
- Left display: actual static unbalance in grams which can be reduced with the rotation.
- Mark the two positions, of the rim and tyre, and turn the tyre on the rim until the positions coincide in order to obtain the optimization indicated on the display.

RETURN TO THE MEASUREMENT SCREEN

If, before pressing button  , a spin had not already been performed, the machine will request one to be carried out as follows:



Perform a spin

The procedure is resumed from point **A)**

5.4.4 - ALU AND STATIC MODES

From the Measurement screen, press button  or  to select the required type. LED displays 5 indicate the prescribed position for application of the weights. If a spin has already been made, each time the mode is changed, the processor automatically recalculates the unbalance values on the basis of the new setting.

Fig. 8

Button  ® DYNAMIC ® STATIC ® DYNAMIC



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

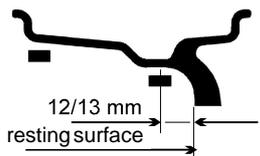


STATIC The STATIC mode is required for motor cycle wheels or when it is not possible to place counterweights on both sides of the rim.

Button  ® ALU M ® ALU 1® ALU 2® ALU 3® ALU 4® ALU M



ALU - 1 Balancing of light alloy rims with application of adhesive weights on the rim shoulders.



ALU - 2 Balancing of light alloy rims with hidden application of the outer adhesive weight. 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.

N.B.: ALU1/2/3/4 are not available for machine set to truck mode.

6 - SET-UP

6.1 - SELF-DIAGNOSTICS

DISPLAY TEST

- All LED's and displays should light up in sequence.

- Turn the wheel in direction of rotation.
this appears:

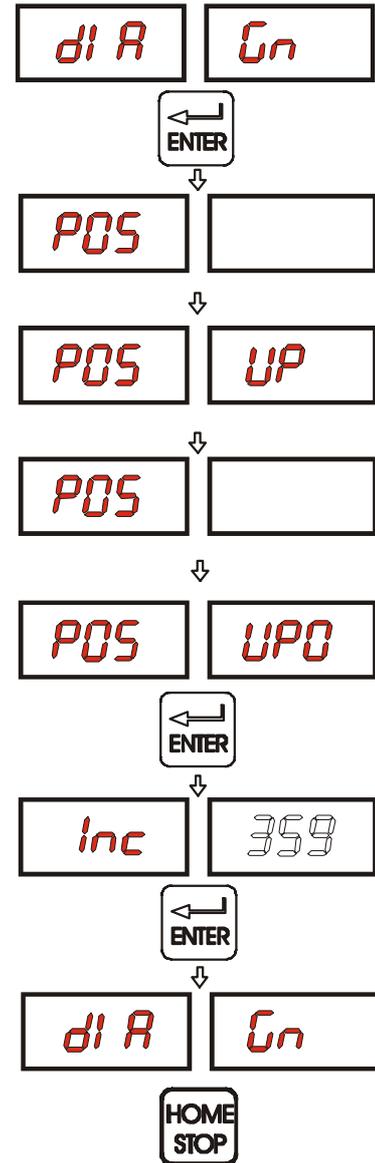
- Turn the wheel in reverse direction of rotation.
this appears:

- In one complete rev. of the wheel (in direction of rotation),
the following should appear once:

- Test parameter

END OF SELF-DIAGNOSTICS

CANCEL SELF-DIAGNOSTICS IN ANY PHASE



6.2 - SELF-CALIBRATION

For self-calibration of the machine, proceed as follows:

- Mount any wheel on the shaft, even if not balanced; better still if of an "average" size **(see N.B.)**.
- 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!

CAL



StA rt



Add 100

Perform a spin

100 Add

Perform a spin

POS 123



CAL



- Perform a spin under normal conditions

- Add a reference weight on the outside in any position.
Reference weight = 100 g (3.5 oz) for car
350 g (12.0 oz) for truck

- Shift the reference weight from the outside to the inside keeping the position unaltered

- Move the reference weight to 12 o'clock position

END OF SELF-DIAGNOSTICS

CANCEL SELF-CALIBRATION IN ANY PHASE

N.B.: It is highly important not to knock the wheel during the spins when in self-calibration. It is advisable to perform the calibration with the balancing machine set to car mode and with a wheel 14/15" in diameter.

7 - ERRORS

Various abnormal conditions can arise during machine operation. When detected by the microprocessor, they appear on the monitor as:



ERROR	MEANING
1	No signal of rotation. Could be caused by faulty position transducer or by something preventing the wheel from turning.
2	During the measurement spins, wheel speed had dropped to below 42 r.p.m. Repeat the spin.
3	Too high value of unbalance.
4	Direction of rotation incorrect.
7	Fault in reading of machine calibration parameters. Repeat the self-calibration.
8	Fault in writing of machine calibration parameters. Repeat the self-calibration.
9	General fault in memory of machine calibration parameters. Contact CEMB Technical Service.
11	Speed too high during unbalance measuring revs.
12/13/14	Difficulty in reading analog signal. Contact CEMB Technical Service.
15/17	Analog signal inside/outside too high. Contact CEMB Technical Service.
16/18	Analog signal inside/outside too low. Contact CEMB Technical Service.

7.1 - INCONSISTENT UNBALANCE READINGS

Sometimes after balancing a wheel and removing it from the balancing machine, it is found that, upon mounting the wheel 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 out-of-balance when refitted on the vehicle, 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.

8 - ROUTINE MAINTENANCE

Before carrying out any operation, disconnect the machine from the mains.

8.1 - TO REPLACE THE FUSES

Remove the weight shelf in order to gain access to the power supply cable on the computer board on which the fuses are installed.

If the fuses need replacement, use ones of the same current rating (2A).

If the fault persists, contact the Technical Service Department.

NONE OF THE OTHER MACHINE PARTS REQUIRE MAINTENANCE.