# Instructions for use

# Contents

# Page

1- GENE	ERAL	3
	1.1 - GENERAL SAFETY RECOMMENDATIONS	3
	1.1.1 - STANDARD SAFETY DEVICES	3
	1.2 - FIELD OF APPLICATION	3
	1.3 - OVERALL DIMENSIONS	3
	1.4 - SPECIFICATION	4
2 - HAN	DLING AND HOISTING	4
3 - COM	MISSIONING	5
-	3.1 - ANCHORING	5
	3 2 - ELECTRICAL CONNECTION	5
	3.3 - PNEUMATIC CONNECTION (Versions P)	5
	3 4 - EXTRA SAFETY DEVICES (VERSION P)	5
	3.5 - ADAPTER MOUNTING	5
	SE2 MOUNTING	6
	SE2 DISMOUNTING	7
	3.6 - GUARD MOUNTING AND ADJUSTMENT	8
	3.7 - SPACER WD	8
4 - CON	TROLS AND COMPONENTS	9
	4.1 - BRAKE PEDAL	9
	4.2 - PNEUMATIC LOCKING PEDAL (Version P)	9
	4.3 - AUTOMATIC DISTANCE AND DIAMETER GAUGE	9
	4.4 - AUTOMATIC WIDTH GAUGE (OPTION)	9
	4.5 - AUTOMATIC WHEEL POSITIONING	9
	4.6 - KEYBOARD	10
5 - INDI	CATIONS AND USE OF THE WHEEL BALANCER	11
-	5.1 - INITIAL SCREEN	11
:	5.1.2 - SCREEN-SAVE SCREEN	11
:	5.2 - MENU ACCESS DIAGRAM	12
:	5.3 - PRESETTING OF WHEEL DIMENSIONS	13
:	5.3.1 - AUTOMATIC PRESETTING	13
:	5.3.1.1 - STEEL OR ALUMINUM WHEEL RIMS. SPRUNG COUNTERWEIGHTS	13
:	5.3.1.2 - AUTOMATIC WIDTH MEASUREMENT (OPTIONAL)	14
	5.3.1.3 - ALU AND STATIC MODES	15
:	5.3.1.4 - RIMS WITH INTERNAL COUNTERWEIGHT	16
	5.4 - USER CONTROL	17
	5.4.1 - USER MEMORIZATION	20
	5.4.2 - TO CALL USER	20
:	5.5 - RESULT OF MEASUREMENT	18
	5.5.1 - INDICATION OF EXACT CORRECTION WEIGHT POSITION	19
:	5.5.2 - "SPLIT" CONTROL	20
:	5.5.3 - UNBALANCE OPTIMIZATION	21
:	5.5.4 - TO CANCEL STATIC UNBALANCE	21
:	5.6 - ECCENTRICITY MEASUREMENT (OPTIONAL)	22
6 - SETI	JP	23
	6.1 - LANGUAGE	23
	6.2 - UNIT OF UNBALANCE MEASUREMENT	23
	6.3 - UNBALANCE DISPLAY THRESHOLD	23
	6.4 - UNBALANCE DISPLAY PITCH	23
	6.5 - SPIN WITH GUARD CLOSED	23
	6.6 - SCREEN-SAVER TIME	23
	6.7 - VISUAL ECCENTRICITY CHECK	23
	6.8 - ACOUSTIC SIGNAL	23
	6.9 - ECCENTRICITY MEASUREMENT UNIT	23
	6.10 - FIRST HARMONIC LIMIT	23
	6.11 - MANUAL PRESETTING	24
	6.11.1 - STEEL WHEEL RIMS	24
	6.11.2 - RIMS WITH INTERNAL COUNTERWEIGHTS (ALU S)	25

# WARNING

7 - SPECIAL CALIBRATIONS AND FUNCTIONS	26
7.1 - ENABLING OF WIDTH MEASUREMENT	26
7.2 - ENABLING OF ECCENTRICITY MEASUREMENT (OPTION)	26
7.3 - PRESETTING THE CUSTOMER AND USER NAME	26
7.4 - CALIBRATIONS	
7.4.1 - GAUGE CALIBRATION	
7.4.2 - WHEEL BALANCER CALIBRATION	
7.4.3 - ROOM TEMPERATURE	27
7.4.4 - MACHINE SELF-TEST	27
7.4.4.1 - TO CHECK THE ENCODER	27
7.5 - CONTROL OF SERIAL OUTPUT RS232C (OPTIONAL)	27
8 - ERRORS	28

9 - ROUTINE MAINTENANCE	
9.1 - TO REPLACE THE FUSES	
10 - RECOMMENDED SPARE PARTS LIST	

#### 1 - General

#### 1.1 - General safety recommendations

- The balancing machine should only be used by duly authorized and trained personnel.
- The balancing machine should not be used for purposes other than those described in the instruction manual.
- Under no way should the 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 duly authorized specialist personnel.
- 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 which could impair the correct operation of the balancing machine.

#### 1.1.1 - Standard safety devices

- STOP push button for stopping the wheel under emergency conditions.
- The safety guard of high impact plastic is with shape and size designed to prevent risk of counterweights from flying out in any direction except towards the floor.
- A microswitch prevents starting the machine if the guard is not lowered and stops the wheel whenever the guard is raised.

#### 1.2 - Field of application

The machine is designed for balancing car or motorcycle wheels weighing less than 75 kg.

It can be operated within a temperature range of  $0^{\circ}$  to +45°C.

It can measure the geometric radial run-out of the wheels (optional)

#### 1.3 - Overall dimensions (42")







## 1.4 - Specification

Weight with guard (excluding adapter)	130 Kg
Single phase power supply	115 - 230 V 50-60 Hz
Protection class	IP 54
Max. power consumption	1,1 Kw
Monitor	SVGA 15"
Balancing speed	180 r.p.m.
Cycle time for average wheel (14 kg)	6 seconds
Balancing accuracy	1 gram
Position resolution	± 1.4 °
Average noise level	< 70 dB(A)
Distance rim - machine	0 - 275 mm
Rim width setting range	1.5" ÷ 20" or  40 ÷ 510 mm
Diameter setting range	10" ÷ 26" or 265 ÷ 665 mm
Total wheel diameter within guard	870 mm (standard) - 1067 mm (42")
Total wheel width within guard	430 mm (standard) - 500 mm (42")
Min/max. compressed air pressure	7 ÷ 10 Kg/cm²
	07 ÷ 1 MPa
	7 ÷ 10 BAR
	100 ÷ 145 PSI

# 2 - Handling and hoisting



N.B.: DO NOT HOIST THE MACHINE USING OTHER LIFTING POINTS.

#### 3 - Commissioning

#### 3.1 - Anchoring

The machine can be operated 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 machine to the ground 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 may not be changed.

Connection to the mains should always be made by expert personnel.

The machine should not be started up without proper earth (ground) connection.

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

#### 3.3 - Pneumatic connection (versions P)

For operation of the spindle with pneumatic locking (costant thrust air spring) connect the balancing to the compressed air main. The connection fitting is located at the back of the machine. At least 7 Kg/cm<sup>2</sup> (~ 0.7 MPa; ~ 7 BAR; ~ 100 PSI) pressure is needed for correct operation of the release device.

#### 3.4 - Extra safety devices (version P)

- Wheel always locked even when there is pressure failure during the balancing cycle.

- Always actuate the unlocking control pedal with the machine stationary in order to avoid stress and abnormal wear on the adapter.

#### 3.5 - Adapter mounting

The balancing machine is supplied complete with cone adapter for fastening wheels with central bore. Other optional flanges can be mounted once the terminal part is removed (also see enclosed brochures) **N.B.:** Carefully clean the coupling surfaces before performing any operation

#### DISMOUNTING THREADED END PIECE (standard spindle)



a) Back-off screw B and remove threaded end-piece A.b) Fit the new adapter.

# **SE2-Mounting**















# **SE2-Dismounting**



- Quando possibile, centrare le ruote con cono dall'interno (vedi disegno).
- Evitare di usare il manicotto RL con cerchi di ferro.
- Whenever possible, centre the wheels with the cone from the inside (see the drawing).
- Avoid using the RL sleeve with metal rims.
- Lorsque c'est possible, centrer les roues avec le cône de l'intérieur (voir dessin).
- Eviter d'utiliser le manchon RL avec les jantes en fer.
- Wenn möglich, die R\u00e4der mit Konus von Innen heraus zentrieren (siehe Zeichnung).
  Bei Eisenfelgen die Verwendung der Muffe RL vermeiden.
- Siempre que sea posible, centrar las ruedas con cono desde dentro (véase dibujo).
- Evitar usar el manguito RL con llantas de hierro.

#### 3.6 - Guard mounting and adjustment

a) Fasten the components to the base as illustrated in specific exploded view.

b) The position of the wheel guard when closed can be adjusted with relative screw accessible at the back. Correct position is horizontal with guard closed.

- c) Check that the microswitch is held down when the guard is closed.
- d) Adjust the angular position of microswitch control.

#### 3.7 - Spacer WD

5

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 spacer DC to obtain spring thrust.



#### 4 - Controls and components

#### 4.1 - Brake pedal



This pedal allows the operator to hold the wheel when fitting the counterweights. It must not be actuated during the measuring cycle.

#### 4.2 - Pneumatic locking pedal (Version P)



This pedal allows releasing the device fastening the wheel on the adapter. Do not actuate this pedal during the machine cycle and/or when adapters other than the standard cone adapter are mounted. The pedal has two stable positions: top, wheel unclamped; bottom, wheel clamped.

#### 4.3 - Automatic distance and diameter gauge

This gauge allows measurement of the distance of the wheel from the machine and the wheel diameter at the point of application of the counterweight.

+

It also allows correct positioning of the counterweights inside rim by using the specific function (see **INDICATION OF EXACT CORRECTION WEIGHT POSITION**) which allows reading, on the monitor, the position used for the measurement inside the rim (For calibration, see **GAUGE CALIBRATION**).

#### 4.4 - Automatic width gauge (option)

Width gauging is through a SONAR device which measures the distance of the wheel without mechanical contact, merely by closing the guard and each time a valid measurement has been made with gauge *DISTANCE AND DIAMETER GAUGE*.

#### 4.5 - Automatic wheel positioning

At the end of the spin, the wheel is positioned according to the unbalance on the outside or else according to the static unbalance (when selected).

Positioning is disabled automatically for wheels less than 13" in diameter.

Accuracy is ± 20 degrees for wheels weighing up to 25 kg.

## 4.6 - Keyboard

8



*NB* : - *Press the buttons with the fingers only: never use the counterweight pincers or other pointed objects.* 

- When the beep signal is enabled (see section ACOUSTIC SEGNAL), pressing of any push button is accompanied by a "beep".

#### 5 - Indications and use of the wheel balancer

The monitor shows several information and suggests various alternative ways of use to the operator. This is done through various "screens".

#### 5.1 - Initial screen



#### **Buttons enabled**



: main functions screen (see MENU ACCESS DIAGRAM)



: type of correction (see ALU AND STATIC MODES)



: balancing spin (see **RESULT OF MEASUREMENT**)

Dimensions gauge: when extracted, the Dimensions screen is selected (see PRESETTING OF WHEEL DIMENSIONS).

If the machine remains on the initial screen for a certain amount of time without being used, the system is automatically switched to a screen-save. Striking of any key, movement of the wheel or distance + diameter gauge will cause automatic switching from the screen-save menu to the initial screen.

From the screen-save, the automatic start actuated by the guard is not available for safety reasons.

#### 5.1.2 - Screen-save screen

**N.B.**: Name of the wheel balancer's owner. Can be preset via the monitor.



#### 5.2 - Menu access diagram



#### 5.3 - Presetting of wheel dimensions

#### 5.3.1 - Automatic presetting



The screen appears upon extracting the distance + diameter gauge.

The indication "dimension acquired" is given by the symbol of the correction weight which changes from blue to red.

#### 5.3.1.1 - Steel or aluminum wheel rims. Sprung counterweights

Using the special handle, move the tip of the gauge against the rim in one of the positions A/B shown in fig. 9. - Hold the gauge still in position for at least 2 seconds.

#### N.B. Always use the round part of the striking surface.





#### 5.3.1.2 - Automatic width measurement (optional)

Gradually lower the guard after carrying out measurement of distance + diameter in automatic mode. If the width measured is incorrect (out of range), the following message appears:

- "Sonar measure is out of range:"
- *"F1 = repeat"*

"F2 = manual set-up"

Press F1 to re-lower the guard and repeat the width measurement. Press F2 to go to the dimensions panel for manual insertion of the width measurement.

The calibration performed as such is necessary for modes AL1,2,3,4,CTS,Static, Dynamic.

Manually presetting is possible by using the push buttons as described in MANUAL PRESETTING.

5

Only for automatic width option:

The key **L.T. (LIGHT TRUCK)** is used to improve the dimensional calibration of large wheels, such as off-road, trucks and wheels protrude significantly from the rim. Press the key **L.T.** after the distance measurement, immediately before lowering the width measurement guard. This option is disengaged at the end of the current width measurement.

#### 5.3.1.3 - Alu and static modes

\_

From the Measurement screen, press button **2**: a window with the possible modes appears. Select the type required through the numeric keys. The return to the Measurement screen with the recalculated values is automatic. The enabled weight application position is always displayed inside the section of the circle.

1 2 3 4 5 6 7	ALU-1	
	STANDARD	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 of light alloy rims with application of adhesive weights on the rim shoulders.
12/13 mm	ALU - 2	Balancing of alloy rims with hidden application of the adhesive weight on the outside. The position of the outside weight is fixed.
resting surface '_	ALU - 3	Combined application: clip-on weight inside and hidden adhesive weight on the outside (Mercedes). Outside weight position is the same as ALU-2.
	ALU - 4	Combined application: clip-on weight the outside and hidden adhesive weight inside
	стѕ	Special balancing with snap-in adhesive weights between the edge of the tyre and rim, for both sides.

#### 5.3.1.4 - Rims with internal counterweight

After measurement made on inside FI, as illustrated in fig. 10, move the gauge out further to memorize the data regarding the outside FE. Select position A or B in fig. 9 as required and hold the position for at least 2 seconds. The counterweight symbols change colour.

When the acoustic beep is enabled (see section *ACOUSTIC SEGNAL*), acquisition of the dimensions is accompanied by a "beep".



#### The following buttons are enabled:

1 / 2 / 3	- User recall/save management
6	- Selection of Manual dimensions setting screen
7 / стор	- Return to Initial screen
START	- Balancing spin

#### 5.4 - User control



The wheel balancer can be used simultaneously by 4 different users who, through a simple sequence, can memorize their work condition and call it when needed. The users' names can be memorized (*PRESETTING THE CUSTOMER AND USER NAME*).

#### 5.4.1 - User memorization

- Preset the dimensions correctly according to the procedures already described in section **PRESETTING OF WHEEL DIMENSIONS.** 



- Press the number corresponding to the required USER. The system returns to the initial screen automatically.

#### 5.4.2 - To call user

- Press

- Perform a measuring spin with any dimensions.
- Press button MENU ; the "MENU" window appears on the screen.
  - : a window appears with the list of available USERS. The current user is displayed in red.

- Press the number corresponding to the required USER. The system automatically returns to the initial screen with recalculation of the unbalance values on the basis of the effective dimensions of the USER called.

N.B. - The dimensions memorized as USER are lost when the machine is switched off.

- The USER control is also valid for the ALU-S dimensions.

- The current USER is always displayed in the Measurement and Dimensions screens.

#### 5.5 - Result of measurement



After performing a balancing spin, the unbalance values are displayed as well as arrows useful for positioning the point of application of the correction weight. After positioning the wheel, apply the weight in the 12 o'clock position. When the acoustic beep is enabled (see section *ACOUSTIC SEGNAL*), reaching of the correction position is indicated by a "beep".

If the unbalance is less than the chosen threshold value, the "OK " message appears instead of the unbalance value to indicate, on that particular side, the wheel is in tolerance; the residual unbalance can be displayed by pressing

button with an accuracy of 0.5 g (0.1 oz).

The following buttons are enabled :



Display of residual unbalance.

Selection of correction mode (DYNAMIC, STATIC, ALU1, ALU2, ALU3, ALU4, CTS). When the mode is changed, the unbalance values are recalculated automatically on the basis of the previous spin (*ALU AND STATIC MODES*).



Eccentricity measurement graph (optional). The symbol above the key turns red if the first harmonic eccentricity exceeds the limit defined by setup parameters (see FIRST HARMONIC LIMIT).

6

Split control for splitting of unbalance over presettable components ("SPLIT" CONTROL). Button only enabled in STATIC or ALU S correction.



MENU

START

Indication of the longitudinal position of the unbalance (INDICATION OF EXACT CORRECTION WEIGHT **POSITION**) is enabled

For selection of special functions

Balancing spin.

**N.B.**: If the machine remains on this screen without being used for more than the time preset in the Setup parameters (6), the screen automatically returns to the screen-save

#### 5.5.1 - Indication of exact correction weight position



It is recommended to always use this function when correcting the unbalance through adhesive weights: ALU S, STATIC, ALU 2, ALU 3.

In all cases this function allows cancelling approximations in the mounting of counterweights with consequent reduction of the residual unbalance

- Press button **7** from the Measurement results screen.

- Pull out the gauge in position A in fig. 9.

- Approach of the weight to the correction position is indicated by a moving coloured arrow [



- When a fixed arrow [

counterweight by turning the pincers until they adhere to the wheel.

- The position for application of the correction weights is automatically rephased according to the position of the distance + diameter gauge (position A in fig. 9).

When the acoustic beep is enabled (see section **ACOUSTIC SIGNAL**), reaching of a fixed arrow [ ], arrow is indicated by a "beep".

11





#### 5.5.2 - "Split" control

The SPLIT function is only possible in the case of static unbalance or ALU-S on the outside. It serves for concealing any stick-on unbalance correction weights behind the rim spokes.

Input		
1 2 3 4 5 6 7	OK	
	MENU ENTER START STOP OK G	

#### TO PRESET THE NUMBER OF RIM SPOKES

6 - From the STATIC or ALU-S measurement screen, press

- a window appears on the display indicating the currently preset number of spokes.
- set the required number of spokes in the range 3 to 12 by pressing



- **ENTER** to confirm the presetting - press
- bring a spoke to the 12 o'clock position.
- ENTER ; the Measurement Screen reappears with the unbalance values already split. - press

The ALU-S unbalance on the inside does not vary while as regards the STATIC and ALU-S unbalance on the outside two weights appears for the same side:

- Gradually turn the wheel until an unbalance value appears.
- Apply an adhesive weight of the value indicated on the screen for the outside or
- STATIC, behind the spoke in the 12 o'clock position.
- Again turn the wheel until a new unbalance value appears.
- Apply an adhesive weight of the value indicated on the screen for the outside or
- STATIC, behind the spoke in the 12 o'clock position.
- Perform a spin to check for correct wheel balancing.



appears at the bottom of the screen.

- When SPLIT is enabled, the icon - When the position repeat function (see INDICATION OF EXACT CORRECTION WEIGHT POSITION) is enabled, the weight application position is re-phased according to the position of the distance + diameter gauge (position A in fig. 9).

N.B. :

#### 5.5.3 - Unbalance optimization



The symbol is displayed automatically for static unbalance exceeding 30 grams (1.1 oz). The program allows reducing the total unbalance of the wheel by compensating, when possible, the unbalance of the tyre with that of the rim. It requires two spins with rotation of the tyre on the rim in the second spin. After performing a spin, press:



and follow the instructions appearing on the monitor.

#### 5.5.4 - To cancel static unbalance

This function can be selected from the Setup screen. It serves for optimizing the residual unbalance by correcting a wheel with standard counterweights in steps of 5 grams (1/4 oz.).

Thanks to this particular function, the position and best correction value are calculated **in order to cancel the static unbalance:** the main cause of the vibrations which can be felt inside the car.

#### 5.6 - Eccentricity measurement (optional)

The much enlarged figures show the outer tyre surface and axis of wheel rotation.

Fig. A shows measurement of the total Peak-to-Peak eccentricity defined as maximum radial deviation of the tyre surface.

Fig. B shows measurement of the eccentricity of the 1st harmonic, i.e. the eccentricity of that circle which "recopies" the tyre shape, by averaging the local deviations of the tyre from the round shape.

Obviously the P.P. measurement is normally greater than that of the 1st harmonic. Tyre manufacturers normally supply two different tolerances for the two eccentricities.

At the end of the balancing spin it is possible to automatically measure the eccentricity of the tyre through the SONAR sensor installed on the guard. The sensor should be positioned by hand in front of the tyre tread.



GRAPH 1 : represents the actual Peak-to-Peak eccentricity.

GRAPH 2 : represents the eccentricity of the 1st harmonic. For a wheel in optimum conditions, such graph should approach a straight line.

When the wheel is moved, the cursor on the screen indicates the actual value, with the phase referred to the eccentricity measurement sensor.

Note : eccentricity measure is valid for tyre with max. 1000 mm Ø".

#### 6 - Setup (See Diagram showing access to the menus)

The Setup screen provides the user with many possibilities required for presetting the machine according to his own requirements. Such settings remain unaltered even when the machine is switched off.

The following buttons are enabled:



#### 6.1 - Language

This function allows selecting the language to be used for displaying descriptive and diagnostic messages regarding machine operation.

#### 6.2 - Unit of unbalance measurement

It is possible to select whether to display the unbalance values expressed in grams or ounces.

#### 6.3 - Unbalance display threshold

This consists of the unbalance threshold below which the wording "OK" appears on the screen at the end of the spin instead of the unbalance; the presettable values vary according to the unit of measurement selected.

#### 6.4 - Unbalance display pitch

This represents the display pitch of the unbalance and varies according to the unit of measurement selected. The selection "5 g" (1/4 oz) enables display of the correction values on both sides such as to bring the static unbalance to 0 (theoretical). It is recommended to preset this function as standard use of the machine as it improves the balancing quality. The computer makes a complex calculation which allows cancelling the residual static unbalance by varying the value and position of the counterweights fixed in steps of 5 grams (1/4 oz).

#### 6.5 - Spin with guard closed

When "ON" is selected the automatic start of the spin is enabled upon closing the guard.

#### 6.6 - Screen-saver time

When the machine remains unused for longer than the time preset with this function, the processor automatically returns to the Initial screen. Preset the time in seconds.

#### 6.7 - Visual eccentricity check

At the end of wheel acceleration, as soon as the motor is disengaged, the guard can be opened for visual control of any wheel eccentricity as the rotation speed gradually drops.

Do not strike the wheel during the entire deceleration stage; to brake the wheel, close the guard. However, avoid using the brake as far as possible because this may compromise unbalance measurements. The unbalance values measured are only displayed when the wheel has come to a standstill.

This function is active for only one machine run.

#### 6.8 - Acoustic signal

When "ON" is selected, an acoustic signal (beep) is given in the following cases:

- when any button is pressed;
- when dimensions are acquired in automatic mode
- upon reaching the correct angular weight application position, in the Measurements screen;

- upon reaching the correct weight application distance, in the Position repeat screen.

#### 6.9 - Eccentricity measurement unit

It is possible to select display of eccentricity measurements in mm or inches.

#### 6.10 - First harmonic limit

This is the first harmonic limit beyond which more detailed analysis of eccentricity is advisable. In the event of first harmonic eccentricity higher than the set limit, the symbol above the button for input in the eccentricity control panel



) turns red (recommended limit 1.2 mm/0.05 inch).

#### 6.11 - Manual presetting (Use only in special cases or for checking)



6.11.1 - Steel wheel rims (use for setting dimensions in AUTOCALIBRATION)

If necessary, the dimensions can be inserted or edited in manual mode as follows:



Definition of dimensions:



= DIAMETER : Preset the nominal diameter stamped on the rim.

= WIDTH : Preset the nominal width indicated on the rim.



= DISTANCE : Set the wheel-machine distance in mm, and check with the special gauge as described in fig. 12.





#### 6.11.2 - Rims with internal counterweights (ALU S)



Also in the ALUS correction mode, the dimensions can be entered or edited manually. Use the buttons indicated on the monitor and follow the screen indicated by the graphics. To access the Manual presetting screen for ALUS dimensions, press:

#### 1) CURRENT SETTING TYPE OF CORRECTION = ALUS



+ **b** or else **b** from the Dimensions screen in automatic mode (can be reached by pulling out the distance + diameter gauge).

#### 2) CURRENT SETTING TYPE OF CORRECTION ≠ ALUS



12a

For a clearer understanding of what is displayed by the graphics, consult the following scheme:



- To return to the presetting screen for standard wheel dimensions, press button





#### 7 - Special calibrations and functions (See ACCESS DIAGRAM)

Any incorrect operation within the functions described below could impair the operation of the wheel balancing machine. Unauthorized use will cause cancellation of the warranty on the machine.

#### 7.1 - Enabling of width measurement (optional)

This function enables/disables automatic width measurement with SONAR; select "OFF" under normal conditions and "SONAR" if the machine has provision for automatic width measurement.

#### 7.2 - Enabling of eccentricity measurement

Enables/disables measurement of the tyre eccentricity during an unbalance measurement spin.

#### 7.3 - Presetting the customer and user name

The machine can be customized by presetting:

a) The name appearing on the Initial screen (screen-save).

b) The name of 4 different machine users ( USER NAME).

An "ideal" keyboard appears on the monitor with the set of characters available for composition of the wordings. The Customer's name consists of three lines, each max. 30 characters.

The USER NAME consists of a wording max. 15 characters.

#### 7.4 - Calibrations

When **b** is pressed from the Special Functions menu, access is gained to the Calibration menu.

#### 7.4.1 - Gauge calibration

Select the gauge to be calibrated and follow the instructions appearing on the monitor.

N.B.:

- In the width gauge calibration it is necessary to enter two dimensions which can be measured as follows:

#### A - GAUGE "ZERO" DISTANCE SONAR "ZERO" DISTANCE



#### 7.4.2 - Wheel balancer calibration

For calibration of the machine, proceed as follows:

- Use a medium-sized metal wheel. Example: 6" x 14" (± 1")
- Preset the wheel dimensions with GREAT CARE.
- Follow the instructions appearing on the monitor.

#### 7.4.3 - Ambient temperature

Ambient temperature is important for correct use of the sonars. Set the average temperature of the area where the wheel balancer is installed.

#### 7.4.4 - Machine self-test

An automatic self-diagnostics cycle is provided for easier trouble shooting. At the end of the self-diagnostics cycle, several parameters are displayed which are useful for the Technical Service Department in order to identify machine faults.



Return to previous menu.

#### 7.4.4.1 - To check the encoder

When the spindle is rotated:

- the angular position "POS" should vary from 0 to 128;
- the wording "UP" should appear when rotated clockwise and "DOWN" when rotated in the opposite direction.



In the event of failure or faulty operation of the wheel balancing machine, notify the Technical Service of all the parameters displayed.

#### 7.5 - Control of serial output RS232C (optional)

Enables/disables sending of unbalance values and phases measured to serial output RS232C.

Transmission speed	= 9600 baud
Data format	= 1 bit Start
	7 bit Data
	1 bit Even parity
	1 bit Stop

At the end of each unbalance measuring spin, the balancing machine enables the RTS signal and then remains in wait for the "\$" character in order to transmit the data; all functions remain on hold until the transmission is enabled, at the end of which the RTS signal is given in the inactive status.

Data transmitted via serial line are in ASCII format and are separated between each other with the <cr> character (0x0d).

#### Send sequence is as follows:

- 00000 <cr>

- Correction weight, left side <cr>
- Correction phase, left side <cr>
- Correction weight, right side <cr>
- Correction phase, right side <cr>

The first 5 bytes at zero represent the transmission start message. The correction values are expressed in grams with steps of 0.1 gram.

The phase values are expressed in degrees in the range 0% 359 (See specific computer board on exploded drawings).



ERRORS	CAUSES CON	TROLS
Err. 1	No rotation signal.	<ol> <li>Verify belt tautness.</li> <li>Verify the function of the phase pick-up board and, in particular, the reset signal.</li> <li>Replace the phase pick-up board.</li> <li>Replace the computer board.</li> </ol>
Err. 2	Speed too low during detection. During unbalance measurement rotation, wheel speed is less than 42 rpm.	<ol> <li>Make sure that a vehicle wheel is mounted on the wheel balancer.</li> <li>Verify belt tautness.</li> <li>Verify the function of the phase pick-up board and, in particular, the reset signal.</li> <li>Replace the computer board.</li> </ol>
Err. 3	Unbalance too high.	<ol> <li>Verify wheel dimension settings.</li> <li>Check detection unit connections.</li> <li>Perform machine calibration.</li> <li>Mount a wheel with more or less known unbalance (less than 100 grammes) and verify the response of the machine.</li> <li>Replace the computer board.</li> </ol>
Err. 4	Rotation in opposite direction. After pressing [START], the wheel begins to rotate in the opposite direction (anticlockwise).	<ol> <li>Verify the connection of the UP/DOWN – RESET signals on the phase pick-up board.</li> </ol>
Err. 5	Guard open The [START] pushbutton was pressed without first closing the guard.	<ol> <li>Reset the error by pressing pushbutton [7]=End.</li> <li>Close the guard.</li> <li>Verify the function of the protection uSwitch.</li> <li>Press the [START] pushbutton.</li> </ol>
Err. 7 / Err. 8	NOVRAM parameter read error	<ol> <li>Repeat machine calibration</li> <li>Shut down the machine.</li> <li>Wait for a minimum time of ~ 1 Min.</li> <li>Re-start the machine and verify correct operation.</li> <li>Replace the computer board.</li> </ol>
Err. 9	NOVRAM parameter write error.	Replace the computer board.
Err. 11	Speed too high error. During unbalance measurement rotation, wheel speed is more than 270 rpm.	<ol> <li>Check if there is any damage or dirt on the timing disc.</li> <li>Verify the function of the phase pick-up board and, in particular, the reset signal.</li> <li>Replace the computer board.</li> </ol>
Err. 12	Unbalance measuring cycle error.	<ol> <li>Verify phase pick-up board function.</li> <li>Verify correct motor operation.</li> <li>Verify belt tautness.</li> <li>Replace the computer board.</li> </ol>
Err.13/ Err.14/ Err.15/ Err.16/ Err.17/ Err.18	Unbalance measurement error.	<ol> <li>Verify phase pick-up board function.</li> <li>Check detection unit connections.</li> <li>Verify machine earth/ground connection.</li> <li>Mount a wheel with more or less known unbalance (less than 100 grammes) and verify the response of the machine.</li> <li>Replace the computer board.</li> </ol>

Err. 20	The wheel comes to a halt before completing positioning correctly.	<ol> <li>Make sure that the wheel to be balanced is at least 10" in diameter.</li> <li>Verify the correct setting of wheel dimensions on screen.</li> <li>Verify belt tautness.</li> <li>For wheels less than 12" in diameter wheels: disenable the eccentricity measurement procedure.</li> </ol>
Err.40/ Err.41/ Err.42/ Err.43	Eccentricity graph plotting procedure error.	Perform a new eccentricity measurement.
Err.45/ Err.46/ Err.47/ Err.48	Eccentricity graph value display readout error.	Perform a new eccentricity measurement.
Err.50/ Err.51/ Err.52/ Err.53	Eccentricity graph current value cursor plotting procedure error.	Perform a new eccentricity measurement.
Err.54	Sonar readout error. Sonar value readout impossible.	<ol> <li>Position the eccentricity measurement sonar correctly before performing the measurement.</li> <li>Check eccentricity sonar connections.</li> <li>Check the power supplies on the power card.</li> <li>Replace the eccentricity measurement sonar.</li> <li>Make sure that the wheel does not halt before completing at least 4/5 revolutions after the first braking impulse.</li> <li>Verify belt tautness.</li> <li>Replace the computer board.</li> </ol>
Err.55	Sonar readout error. Sonar values are insufficient for correct measurement of eccentricity.	<ol> <li>Position the eccentricity measurement sonar correctly before performing the measurement.</li> <li>Make sure that the wheel does not halt before completing at least 4/5 revolutions after the first braking impulse.</li> <li>Verify belt tautness.</li> <li>Mount a wheel of medium dimensions (14"x5 <sup>3</sup>/<sub>4</sub>") and perform an eccentricity measurement . If in these conditions error 55 no longer occurs, this means that the wheel inertia causing the problem is such as to half the wheel before having acquired the minimum number of values necessary for reliable eccentricity measurement.</li> </ol>

### 9 - Routine maintenance

#### 9.1 - To replace the fuses

Remove the weight holder shelf to gain access to the power supply board where the 4 fuses are located (see Exploded Drawings). 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.

# 10 - Recommended spare parts list (For further details, see exploded drawings)

CODE	DESCRIPTION	
020600503	Bearing 6005-2Z Ø 25/47/12	
181198630	Spring 19863P	
080077007	Rigid belt - Poly V - TB2 - 770 - 7 Vee's	
67M38954H	Position pick-up board with cable	
182245870	Spring, brake lever 24587P	
05PR61835	Control panel	
182185750	Spring, distance gauge	
67M48208A	Power board with 2 relays	
681002000	Fuses DM 5x20 - 2A	
511242101	Oscillating switch 16A	
86SC61890	PC board (standard)	
86SB36752	Cable, automatic rim distance gauge	
86SB36751	Cable, automatic diameter gauge	
86SB40113	Cable with microswitch protection, 42" guard	
86SB34144	Cable with microswitch protection, standard guard	
SPECIAL PARTS FOR 230V MACHINES		
50FG55641	Single phase motor 230V/50-60 Hz -0.18Kw 63/B3 - 4p HB63D-4	
86SZ52433	Complete power board	
611000314	Braking transformer 30VA 230 - 0/50	
568001458	Capacitor 14MF 450 V FASTON screw M8	
611035188	Power transformer 40VA 230	
SPECIAL PARTS FOR 115V MACHINES		
50FG55643	Single phase motor 115V/50-60Hz- 0.18Kw - 63/ B3 - 4p HB63D-4	
86SZ52434	Complete power board	
611000313	Braking transformer 30VA 115-0/30	
568002557	Capacitor 25MF 450V FASTON screw M8	
611035187	Power transformer 40VA 115	
SPECIAL PARTS FOR OPTION "SONAR EMS"		
86SB43702	Sonar	
SPECIAL PARTS FOR SPINDLE SE		
020600702	Bearing 6007 - LLB/2AV1 (Ø 35/62x14)	
020600703	Bearing 6007 - 2Z Ø 35/62x14	
18FP29329	Air spring 115 kg. stroke 75 mm.	
16FB42177	Coil valve	
18FB42639	Spring, pneumatic pedal	
SPECIAL PARTS FOR OPTION "SONAR V	NIDTH"	
86SB35179	WIDTH sonar (STANDARD protection)	
86SB45568	WIDTH sonar (42" protection)	