CEMBER
Er Go Fast Line 100

EN *Use and maintenance manual*

ENGLISH

General Index

1. Foreword

WARNING

THIS MANUAL IS AN INTEGRAL PART OF THE **INSTALLATION** MANUAL WHICH SHOULD BE CONSULTED CONCERNING STARTING AND USING THE MACHINE SAFELY.
READ CAREFULLY BEFORE CONTINUING.

1.1 GENERAL

The machine has been constructed in conformity with the current EC Directives and the technical standards implementing the requirements, as stated in the declaration of conformity issued by the manufacturer and attached to the manual.
This publication, hereinafter simply referred to as **'manual**', contains all the information required to safely use and service the machine referred to in the Declaration of Conformity.
This appliance, hereinafter is generically referred to as '**machine'**.
The manual addresses operators instructed on the precautions to take in relation to the presence of electric current and moving devices.
This publication is intended for all 'users' who as far as within their competence need to and/or are obliged to give instructions to others or operate on the machine themselves.

These persons can be identified as follows:
- operators directly involved in transporting, storing, installing, using and servicing the machine from when it is put on the market until when it is scrapped;
- direct private users.

The original Italian text of this publication constitutes the only reference to resolve any interpretation controversies related to the translation into the European Community languages.
This publication forms an integral part of the machine and must therefore be kept for future reference until final dismantling and scrapping of the machine.

1.2 PURPOSE OF THE MANUAL

This manual, and the installation manual, contains the instructions required to use the machine safely and carry out routine maintenance work.

Any calibrations, adjustments and extraordinary maintenance operations are not considered in this document as they may only be performed by the service engineer who must work on the machine according to the technical and rated characteristics for which it was built.

Though it is fundamental to read this manual, it cannot replace skilled technical staff who must be adequately trained beforehand.
The foreseen use and configurations of the machine are the only ones allowed by the manufacturer; do not attempt to use the machine in a different way.

Any other use or configuration must be agreed in advance with the manufacturer in writing and in this case an annex will be attached to this manual.
For use, the user must also comply with the specific workplace legislation in force in the country where the machine is installed.
The manual also refers to laws, directives, etc., that the user must know and consult in order to accomplish the goals that the manual sets out to achieve.

1.3 WHERE AND HOW TO KEEP THE MANUAL

This manual (and relative attachments) must be kept in a safe and dry place and must always be available for consultation.
Make a copy and keep it in the archive.
When exchanging information with the manufacturer or the technical assistance staff authorised by the former, quote the rating plate information and the serial number of the machine.

This manual must be kept for the entire lifetime of the machine, and if necessary (e.g.: damage making all or some of it illegible, etc.) the user must request another copy exclusively from the manufacturer, quoting the publication code indicated on the cover.

1.4 MANUAL UPGRADES

This manual is an integral part of the machine and reflects the state of the art at the moment it was put on the market. The publication complies with the directives in force on that date; the manual cannot be considered inadequate as a result of regulatory updates or modifications to the machine.

Any manual upgrades that the manufacturer may see fit to send to users will become an integral part of the manual and must be kept together with it.

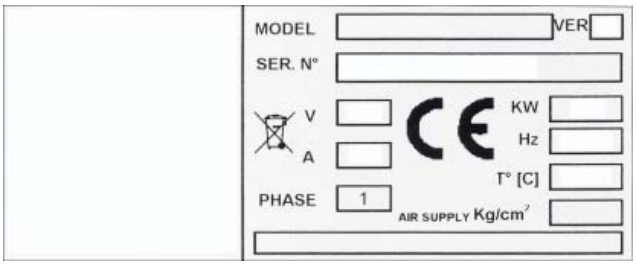
1.5 COLLABORATION WITH USERS

The manufacturer will be pleased to provide its customers with any further information they may require and will consider proposals for improving this manual in order to more fully satisfy the requirements it was written for.
In case of transfer of ownership of the machine, which must always be accompanied by the use and maintenance manual, the original user must inform the manufacturer of the name and address of the new user in order to allow it to send the new user any communications and/or updates deemed to be indispensable.

1.6 MANUFACTURER

The machine identification data is indicated on the plate mounted on the machine.

The plate below is shown for the sake of example.



1.7 MANUFACTURER'S RESPONSIBILITY AND WARRANTY

In order to make use of the manufacturer's warranty, the user must scrupulously observe the precautions contained in the manual, in particular he must:

- never exceed the limits of use of the machine;
- always constantly and carefully clean and service the machine;
- have the machine used by people of proven capacity and attitude, adequately trained for the purpose.

The manufacturer declines all direct and indirect liability caused by:
- use of the machine in a different way from that indicated in this manual
- use of the machine by people who have not read and fully understood the contents of this manual;
- use in breach of specific regulations in force in the country of installation;
- modifications made to the machine, software and operating logic, unless authorised by the manufacturer in writing;
- unauthorised repairs;
- exceptional events.

Transfer of the machine to a third party must also include this manual; failure to include the manual automatically invalidates all the rights of the purchaser, including the terms of warranty, where applicable.
If the machine is transferred to a third party in a country with a different language from the one written in this manual, the original user shall provide a faithful translation of this manual in the language of country in which the machine will operate.

1.7.1 Terms of warranty

The Manufacturer guarantees the machines it manufacturers against all manufacturing or assembly faults for 12 (twelve) months from the date of collection or delivery.

The Manufacturer undertakes to replace or repair any part which it deems to be faulty free of charge at its factory, carriage paid.

If a Manufacturer's repairman (or a person authorised by the same) is required to work at the user's facilities, the relative travel expenses and board and lodging shall be charged to the user.
The free supply of parts under warranty is always subject to the faulty part being inspected by the manufacturer (or a person authorised by the same).

The warranty is not extended following repairs or other work done to the machine.

The warranty does not cover damage to the machine deriving from:

- transport;
- neglect;
- improper use and/or use not in compliance with the instructions in the operating manual
- incorrect electrical connections.

The warranty is invalidated in case of:

- repairs made by people who were not authorised by the manufacturer;
- modifications that were not authorised by the manufacturer;
- use of parts and/or equipment that were not supplied or approved by the manufacturer;
- removal or alteration of the machine identification plate.

1.8 TECHNICAL ASSISTANCE SERVICE

For any technical service operation, contact the manufacturer directly or an authorised dealer always quoting the model, the version and the serial number of the machine.

1.9 COPYRIGHT

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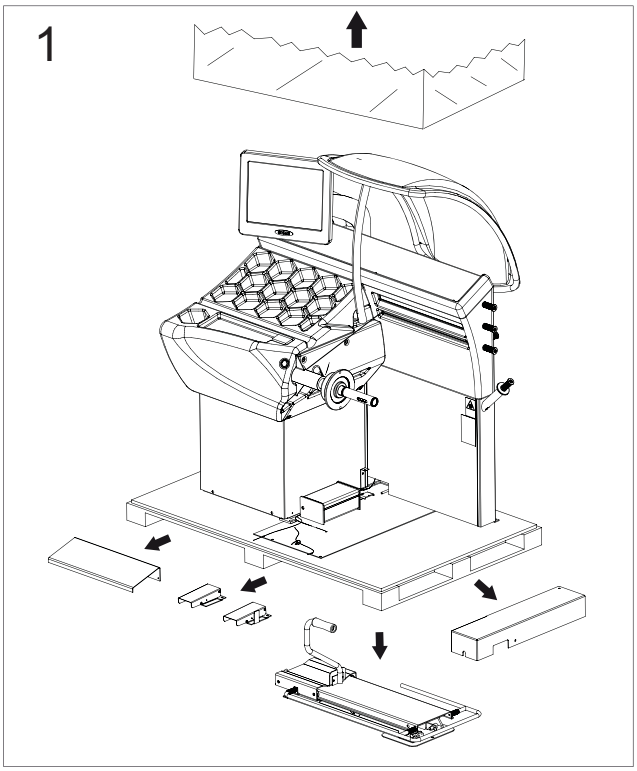
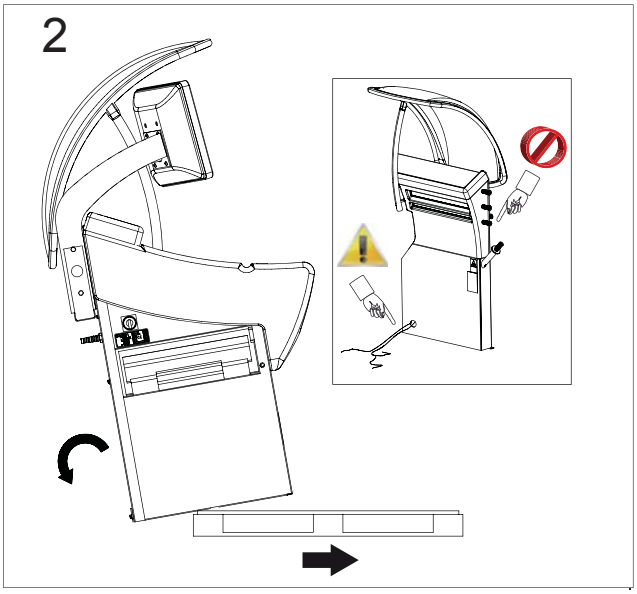
2. Installation

1. Unpack the machine and place the front guard on the ground with the spindle locking/release pedal, the Zero Weight lift and the side guard (1).

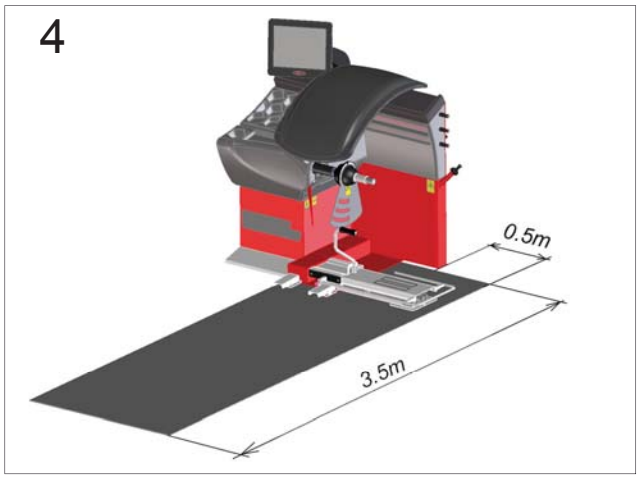


2. Absolutely do not force the side column when unloading the machine from the pallet and be careful with the electrical wiring (2).

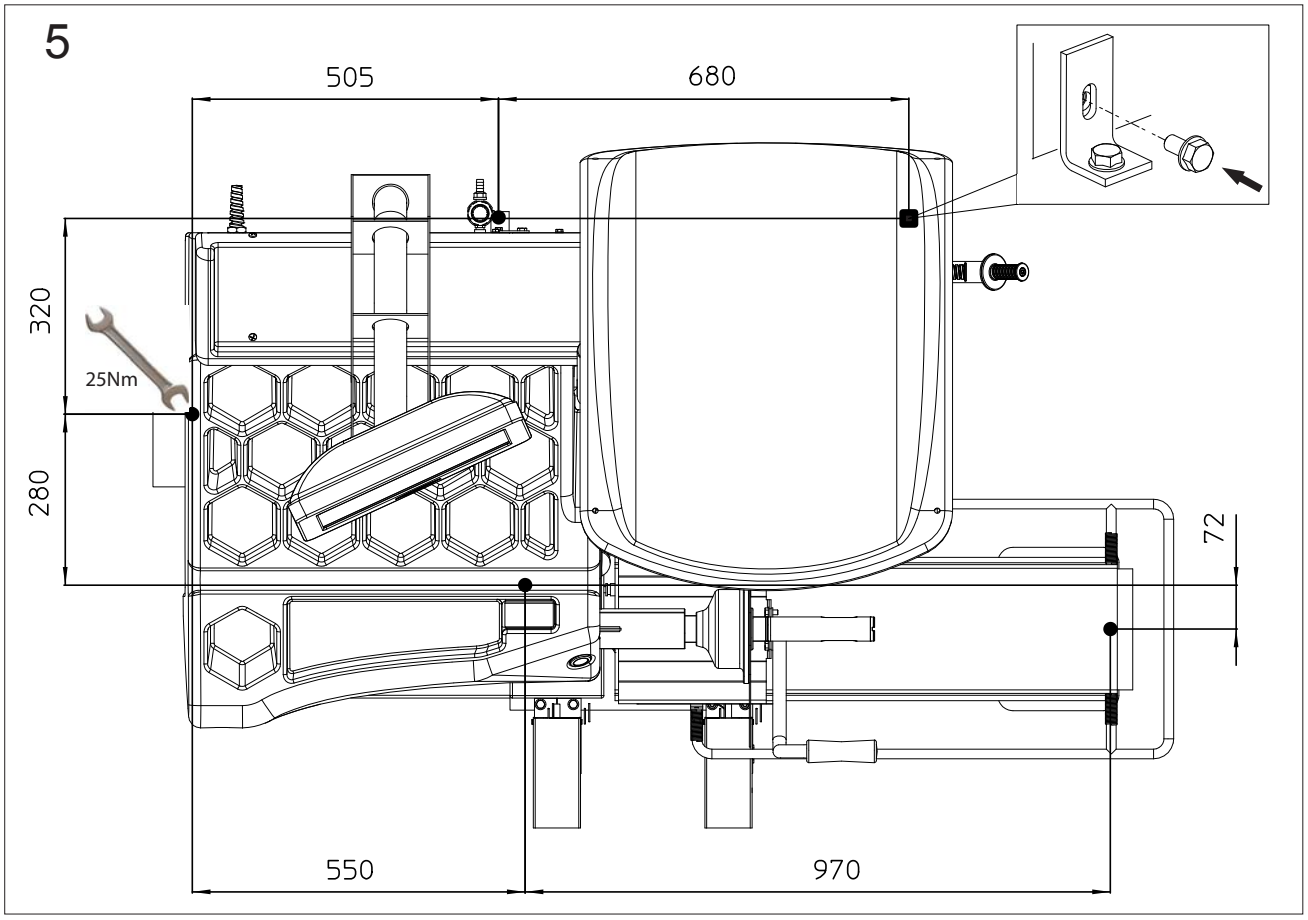


3. Do not install the machine in an area directly exposed to sunlight or where there are reflections from the floor. The machine might malfunction if there is excess light (3).

4. Avoid positioning objects made of a particularly reflecting material in the areas indicated in gray, as they might interfere with laser reading (4).



5. Drill the holes in the floor and fit the expandable bolts provided as indicated in the drawing and tighten them to a torque of 25 Nm. As indicated in the box, in the last phase, fasten the mounting brackets on the side of the column and tighten to a torque of 25Nm (5) using a drill with an 8Ø bit.



6. Position the lift pedal with sheathed cables on the threaded pins and lock with the nuts provided (6).

7. Position the pneumatic locking pedal on the threaded pins and lock with the nuts provided (7).

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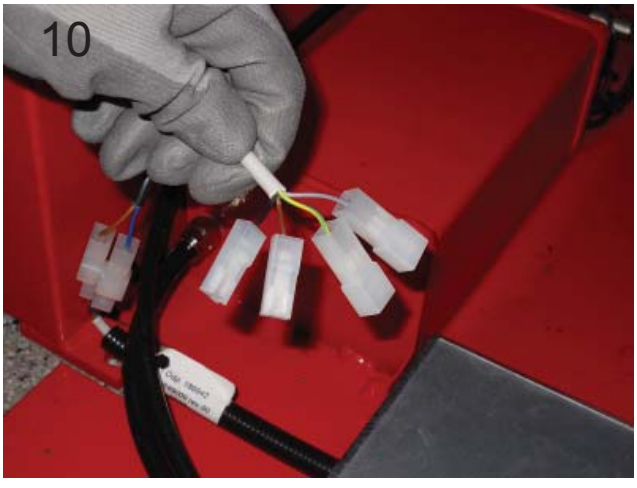
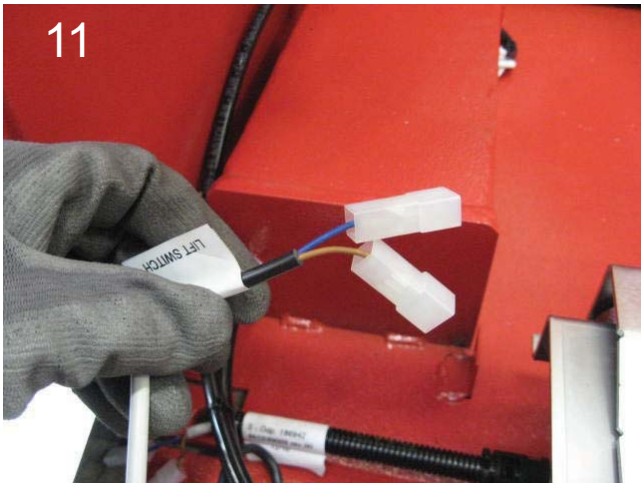
8. Connect the 10Ø polyurethane tube leading from the rear adapter of the cylinder (8) to the tank.

9. Connect the 8Ø polyurethane tube leading from the front adapter of the cylinder (9) to the solenoid valve unit.

10. The four-wire cable has two male Fastons for connection to the lift pedal and two female Fastons for connection to the BP pedal (10).



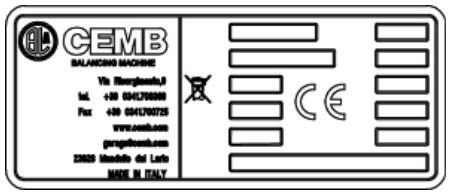
11. The two-wire cable has two male Fastons for connection to the limit microswitch of the lift footboard (11).



12. Refit the covers (12/13).

13. Check that the mains input voltage and frequency parameters are compatible with the data shown on the wheel balancing machine plate (±10%) (14).

14



14. Check proper pneumatic connection; the machine and the lift require at least 8 kg/cm² (~ 0.8 MPa; ~8 BAR; ~115 PSI) (15).

15. Turn on the machine and carry out the following operations:

- Laser calibration (*manually on board*)
- Taper calibration (*manually on board*)
- Machine calibration (*manually on board*)

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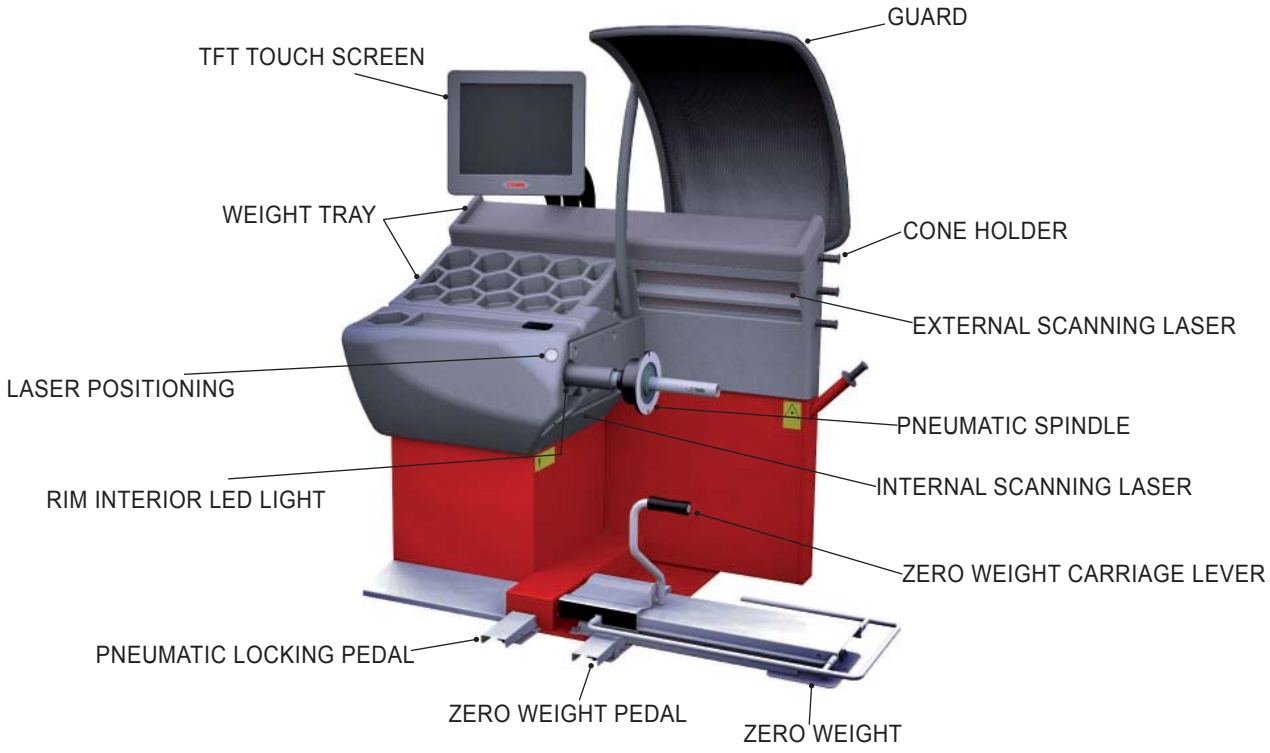
3. Machine description

3.1 MACHINE FUNCTION

The ER100-I is a wheel balancing machine for cars, light commercial vehicles, 4-WDs, motorcycles and scooters that weigh less than 75 kg. It can be operated in a temperature range of 0° to + 45° C.

It can operate only on a flat and non-resilient surface.
Do not mount any wheels other than motorcycle, car or truck wheels on the wheel balancing machine.

Thanks to the new and exclusive VDD (Virtual Direct Drive) system, reliable unbalance measurements can be made in a short time, almost half the cycle time of other wheel balancing machines in this range.



The main features include:

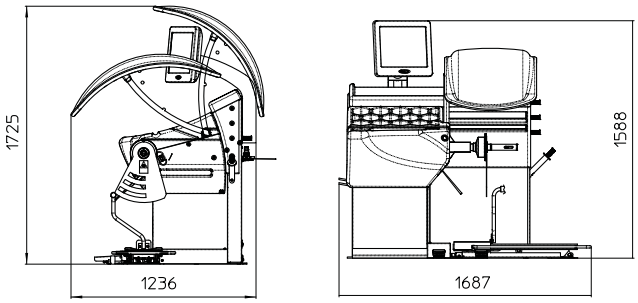
- Automatic dimension measurement
- Inside and outside rim eccentricity measurement
- Automatic minimisation of static unbalance
- Selection of optimal wheel mounting
- Customisable certificate printout
- Machine setting menu
- Unbalance optimisation
- Static program, ALUS; SPLIT; BPC; indication of exact position of the correction weights; self-diagnostics; self-calibration

3.2 TECHNICAL SPECIFICATIONS

The following data refers to the wheel balancing machine in its standard configuration.

Single phase power supply	115 /230 V 50/60 Hz
Protection class	IP 54
Maximum power absorbed	0.65 kW
Balancing speed	100 min^{-1}
Cycle time per wheel	4.7 seconds (5 3/4"x14") 15 Kg
Maximum measurement resolution	1 gram
Position resolution	± 1.4 °
Average noise	< 70 dB(A)
Rim / machine distance	0 - 255 mm
Rim width setting range	1.5"-20" or 40 - 510 mm
Settable diameter	10" ÷ 30" or 265 ÷ 765 mm
Min/max. compressed air pressure	8 ÷ 10 Kg/cm^2
	~ 0.8 ÷ 1 Mpa;
	~ 8 to 10 BAR;
	~ 115 to 145 PSI.
Air consumption for wheel locking/release	4 litres (at 8 kg/cm^2)

3.3 DIMENSIONS AND WEIGHTS

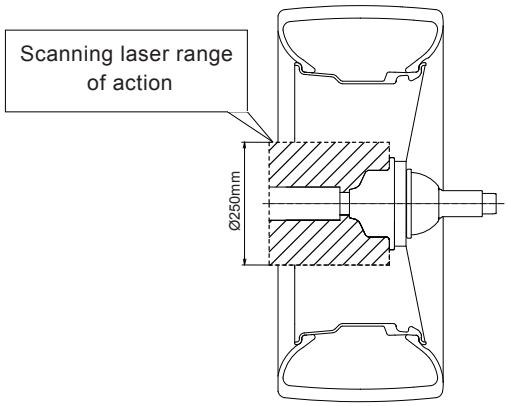


The machine weighs 200 kg.

3.4 WARNINGS

CAUTION:

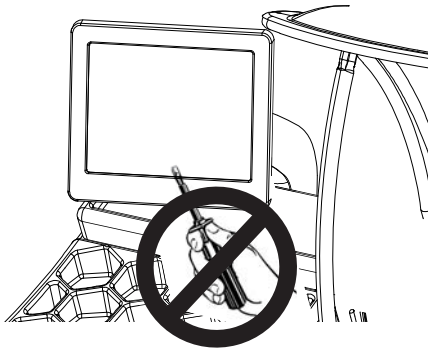
KEEP THE AREA INDICATED IN THE FIGURE FREE OF TOOLS, ADAPTERS, ETC.



The function buttons are selected by pressing on the TOUCH SCREEN.

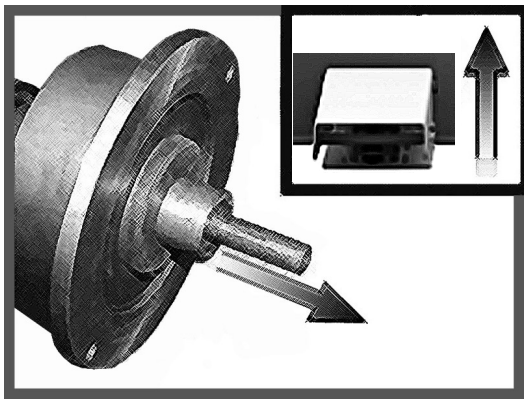
CAUTION:

PRESS THE BUTTONS ONLY WITH YOUR FINGERS.
NEVER USE THE COUNTERWEIGHT GRIPPERS OR OTHER POINTED OBJECTS !

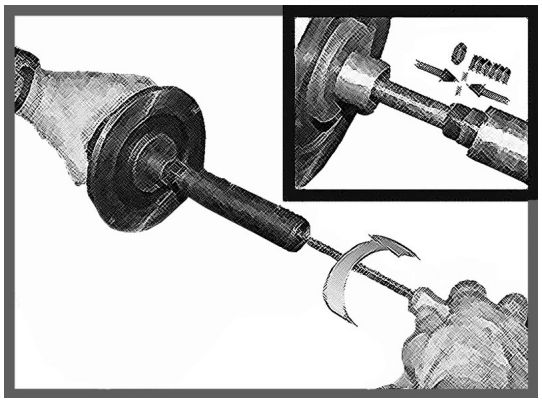


SE2-MOUNTING

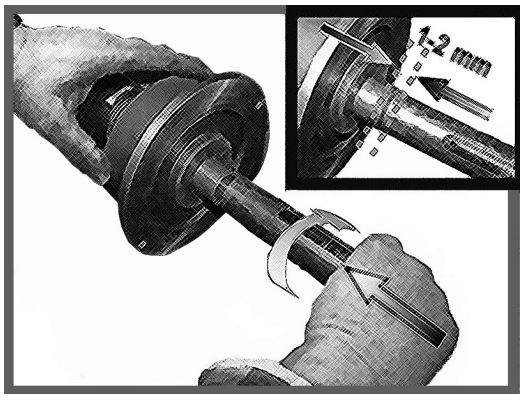
A



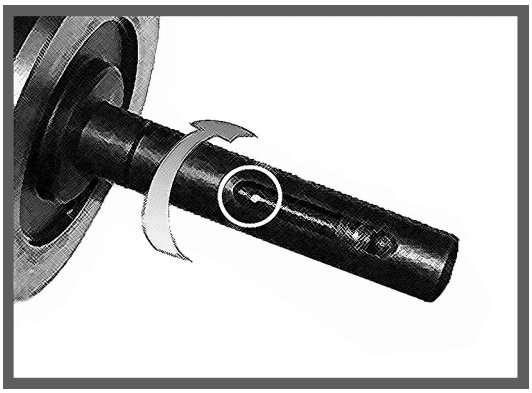
B



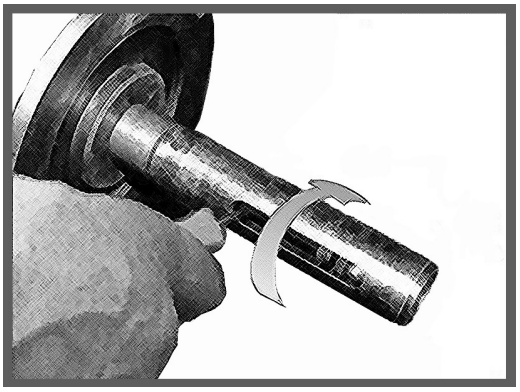
C



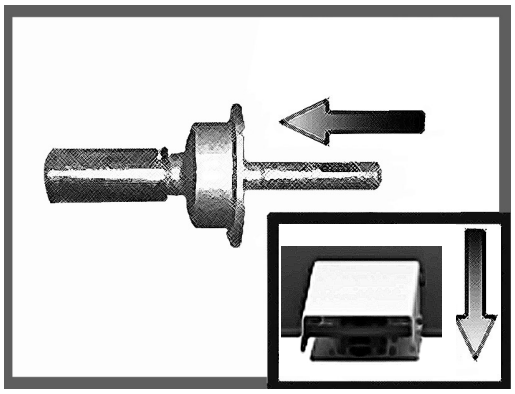
D



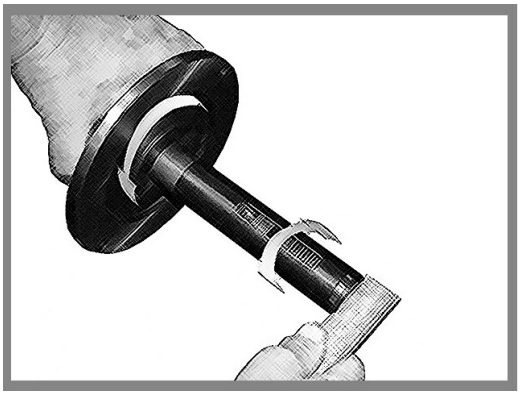
E



F

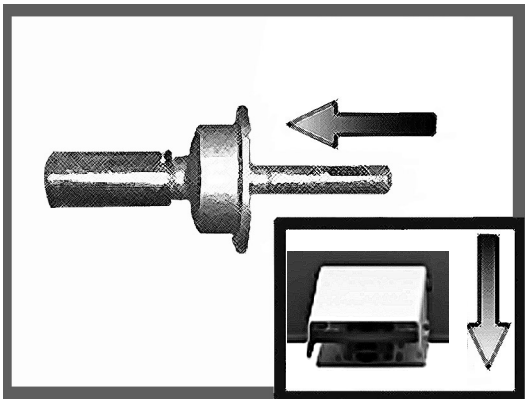


G

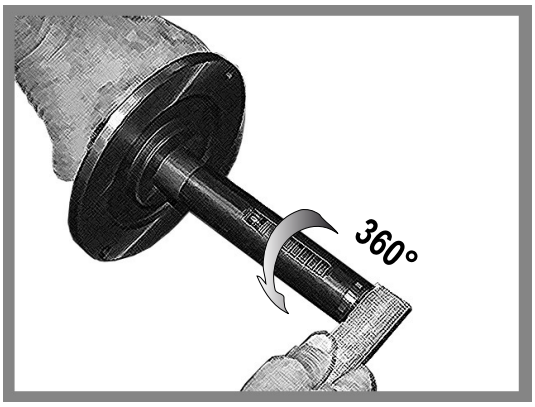


SE2-DISMOUNTING

A

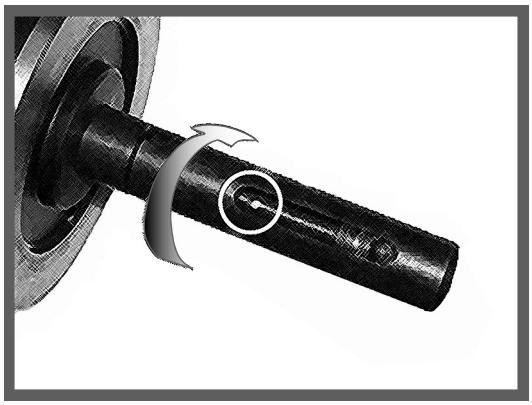


B

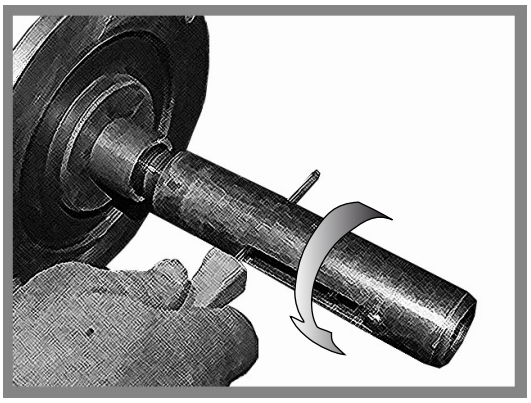


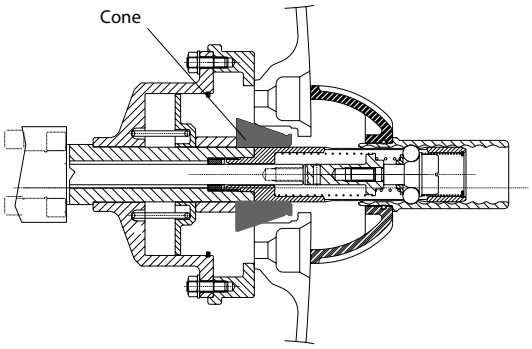
C

D



E





IT

→ Quando possibile, centrare le ruote con cono dall'interno (vedi disegno).
Evitare di usare il manicotto RL con cerchi di ferro.

GB

Whenever possible, centre the wheels with the cone from the inside (see the drawing).
Avoid using the RL sleeve with metal rims.

FR

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.

DE

Wenn möglich, die Räder mit Konus von Innen heraus zentrieren (siehe Zeichnung).
Bei Eisenfelgen die Verwendung der Muffe RL vermeiden.

ES

Siempre que sea posible, centrar las ruedas con cono desde dentro (véase dibujo).
Evitar usar el manguito RL con llantas de hierro.

PT

Quando possível, centre as rodas com cone pelo lado de dentro (ver figura).
Evite utilizar a luva RL com jantes de ferro.

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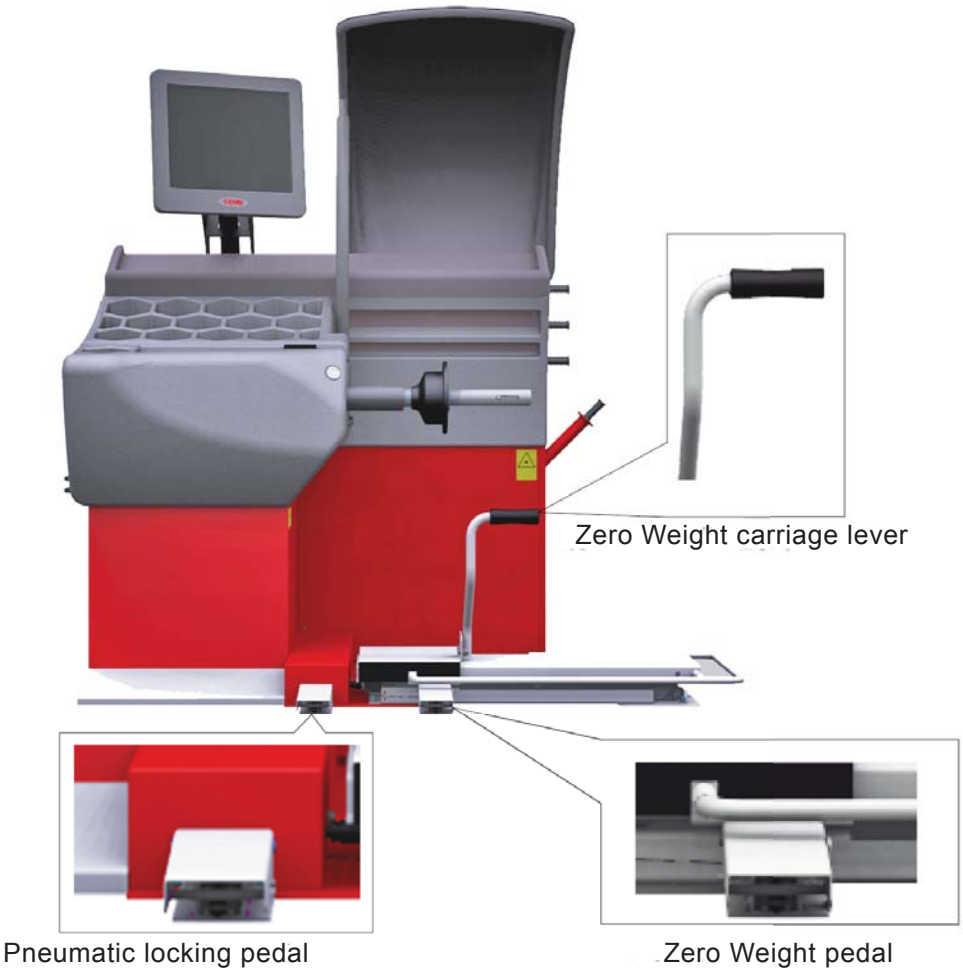
4. Wheel lifting



- Position the wheel on the carriage resting it against the ZERO WEIGHT carriage lever. Check that the pneumatic spindle is enabled for mounting (open); if not, push the pneumatic locking pedal.
- Push the Zero Weight pedal.

CAUTION:

NEVER PUSH THE ZERO WEIGHT PEDAL IF THERE IS ANYONE STANDING IN THE RANGE OF ACTION OF THE LIFT.

CAUTION:

BEFORE PUSHING THE PEDAL TO LIFT A WHEEL, ALWAYS CHECK THAT THE SPINDLE IS OPEN (IF NOT, THE LIFT MIGHT NOT ASCEND OR ASCEND INCORRECTLY).

As soon as the wheel lifts off the ground, it is ready for mounting on the wheel balancing machine at zero weight.

- Position the central hole of the wheel at the height of the spindle and slide the wheel onto the spindle with the aid of the Zero Weight carriage lever.

5. Wheel locking

To lock/release the wheel on the pneumatic spindle, push the pneumatic locking pedal.

IF THE LIFT IS UP AND THE PNEUMATIC LOCKING PEDAL IS PUSHED TO LOCK THE WHEEL ON THE SPINDLE, LIFT DESCENT WILL AUTOMATICALLY BE ENABLED.

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6. Use of the wheel balancing machine

6.1 DIMENSION ACQUISITION

 Acquires the wheel dimensions

 Enables/disables taper and tread measurement

 Return to main screen

 Outside rim eccentricity measurement (use with the rim only)

NEW WHEEL
Press the button  to acquire the dimensions.

Close the guard to perform the balancing spin.

WHEEL THE SAME AS PREVIOUS
Close the guard to perform the balancing spin.
The machine in any case checks the wheel dimensions and if they are different from the previous wheel, automatically measures them again.
With this innovative system you can balance a set of 4-5 wheels measuring the dimensions only once, thus saving a lot of time.

TAPER AND TREAD MEASUREMENT AT THREE POINTS

Press the button  to enable/disable complete taper and tread measurement.

This function uses a special measuring cycle that extends the cycle time by a few seconds.
The setting remains stored even when the wheel balancing machine is turned off.

OUTSIDE RIM ECCENTRICITY MEASUREMENT WITHOUT TYRE

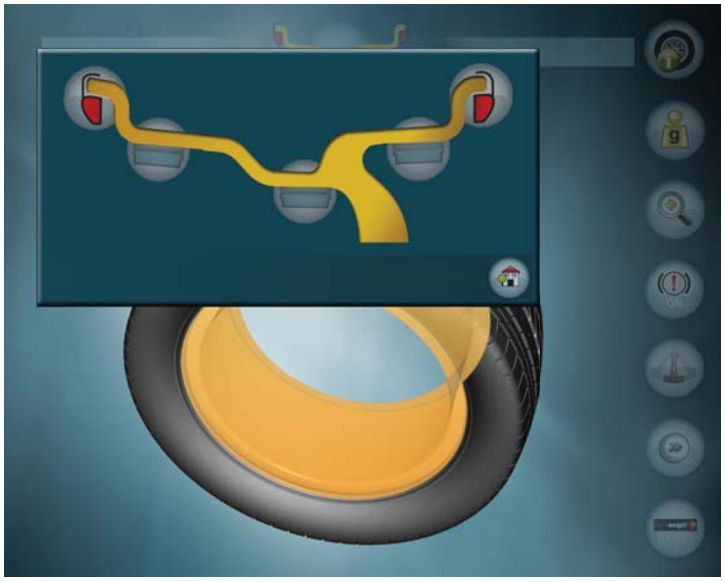
Press the button  (***OUTSIDE RIM RUNOUT***)

CANCEL DIMENSION SETTING

Press the button  .

6.2 CORRECTION MODE SELECTION

Press  from the unbalance measurement screen.



 Goes back to the unbalance measurement screen, automatically recalculating the unbalance values.

Press the weight symbol in the desired correction position.

If doing the unbalance correction in static mode only, press and hold the inside adhesive weight symbol  for more than two seconds.

6.3 UNBALANCE UNIT OF MEASURE selection

Press the button  from the unbalance measurement screen

 Selects grams

 Selects ounces

Allows selecting whether to view the unbalance values expressed in grams or ounces.

6.4 UNBALANCE MEASUREMENT (first set of buttons)

Displays the information screen

Selects unbalance display in g/oz

Displays the threshold

Enables/disables wheel rotation

Splits the unbalance

Displays the second set of buttons

Lift reset with wheel stopped / STOP during spin

To perform an unbalance measurement spin, close the guard.

After performing a balancing spin, the following are displayed:

1. The unbalance values.
   - White: wheel locked in correction position / Internal scanning laser positioned on the side.
   - Light blue: position not reached / Internal scanning laser not positioned.
2. The red weights that indicate the unbalance position.
3. The weight shadows that indicate where the correction weight should be applied: at the top at 12 o'clock or at the point indicated by the internal laser.

IF THE "WHEEL IN POSITION" SOUND IS ENABLED, A SOUND WILL BE EMITTED WHEN THE CORRECTION POSITION HAS BEEN REACHED.

IF THE UNBALANCE IS LESS THAN THE THRESHOLD VALUE SET, **OK** IS DISPLAYED INSTEAD OF THE UNBALANCE VALUE TO INDICATE THAT THE WHEEL IS WITHIN TOLERANCE ON THAT SIDE.

PRESSING THE BUTTON YOU CAN IN ANY CASE VIEW THE RESIDUAL UNBALANCE.

TO RESUME WITH THE DIMENSIONS OF THE WHEEL MOUNTED, OPEN AND CLOSE THE SPINDLE.

6.4.1 Spindle rotation lock/release

The wheel balancing machine automatically locks spindle rotation if there is an unbalance in the correction position on one of the sides. To release rotation, press the button or turn the wheel with force.

If rotation is released and you need to lock it (for example, to facilitate mounting large wheels), press the button .

6.5 UNBALANCE MEASUREMENT (second set of buttons)

Prints the unbalance values

Displays the weight statistics

Menu

Unbalance optimisation

Goes back to the first set of buttons

Lift reset with wheel stopped / STOP during spin

6.6 THRESHOLD DISPLAY

Displays the information screen

Selects unbalance display in g/oz

Displays the approximate values

Enables/disables spindle rotation

Splits the unbalance

Displays the second set of buttons

Lift reset with wheel stopped / STOP during spin

Press  to view the residual unbalance values with an accuracy of 0.5 g. (0.1oz).

Press  to go back to display of the approximate values.

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6.7 UNBALANCE CORRECTION

After an unbalance measurement spin, the weight shadow indicates the correct application point.

6.7.1 Iron rims

Displays the information screen

Selects unbalance display in g/oz

Displays the approximate values

Enables/disables spindle rotation

Unbalance split (not selectable for correction with clip-on weights)

Displays the second set of buttons

Lift reset with wheel stopped / STOP during spin

WEIGHT APPLICATION POSITION

Correction type	Inside	Outside
	Clip-on weight at 12 o'clock	Clip-on weight at 12 o'clock
	Clip-on weight at 12 o'clock	Adhesive weight at 12 o'clock
	Adhesive weight at the point indicated by the internal laser	Clip-on weight at 12 o'clock
	Adhesive weight at the point indicated by the internal laser	Adhesive weight at 12 o'clock
	Adhesive weight at the point indicated by the internal laser	

6.7.2 Aluminium rims

Displays the information screen

Selects unbalance display in g/oz

Displays the approximate values

Enables/disables spindle rotation

Splits the unbalance

Displays the second set of buttons

Lift reset with wheel stopped / STOP during spin

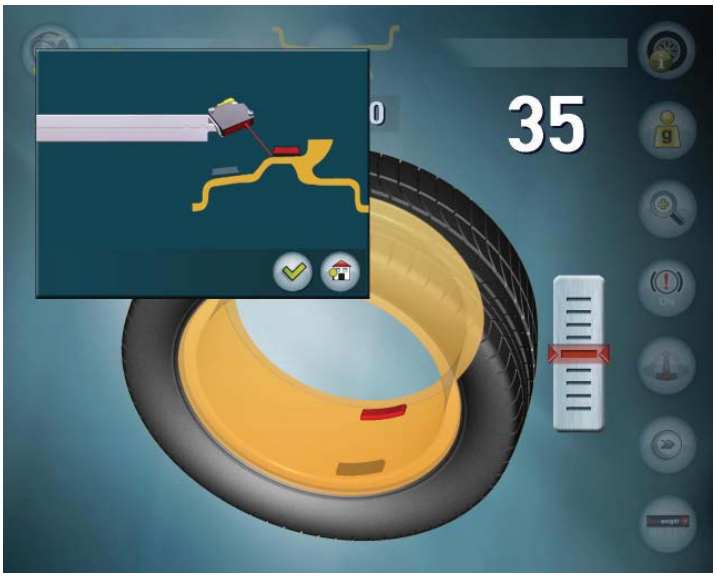
After the spin, the laser indicates the outside correction point; once you have applied the weight, press the “laser positioning” button (☛ ***TECHNICAL DESCRIPTION***) positioned on the weight tray of the wheel balancing machine to move the laser so that it indicates the inside correction position.

The inside unbalance values indicated by the laser are graphically displayed in white.

WEIGHT APPLICATION POSITION

Correction type	Inside	Outside
	Adhesive weight at the point indicated by the internal laser	Adhesive weight at the point indicated by the internal laser
	Clip-on weight at 12 o’clock	Adhesive weight at the point indicated by the internal laser

6.7.3 Change weight application distance



To change the correction positions indicated by the laser and automatically calculated by the machine, operate as follows:

1. Position on the side to be changed by pressing the laser positioning button.
2. Press 
3. Move the wheel by hand to move the laser.
4. When you have reached the desired position, press the button 

To cancel this operation, press the button  : The laser automatically goes back to indicating the correction position previously saved.

6.8 UNBALANCE SPLIT

The split function is enabled for the outside of aluminium rims (☛ ***ALUMINIUM RIMS***) and is used to hide any adhesive unbalance correction weights behind the rim spokes.

To split the unbalance measured in two different positions, proceed as follows:

1. Position the outside unbalance in the correction position.
2. Select a spoke close to the position indicated by the laser and press the button 

THE WHITE LINE ON THE RIM INDICATES THE UNBALANCE CORRECTION POSITION NOT SPLIT.

IF THE SYMBOL  APPEARS, IT MEANS THAT YOU CANNOT SELECT THE FIRST SPOKE AT THAT POINT (MAXIMUM DISTANCE **150°**).

3. Turn the wheel in the direction indicated on the screen and select the second spoke by pressing the button 

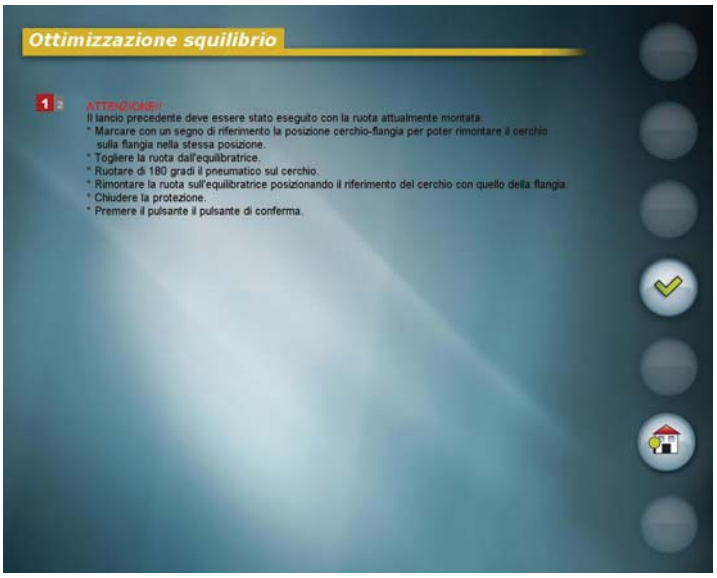
IF THE SYMBOL  APPEARS, IT MEANS THAT YOU CANNOT SELECT THE SECOND SPOKE AT THAT POINT (MINIMUM DISTANCE **18°**, MAXIMUM DISTANCE **120°**).

4. At this stage, two indications appear on the screen for positioning of the unbalance correction weights.

To cancel the split, press the button  :

Any error in this procedure is clearly shown on screen.

6.9 UNBALANCE OPTIMISATION



Confirm

Return to main screen

Press the button  from the second set of buttons on the unbalance measurement screen after performing a balancing spin.

THIS FUNCTION CANNOT BE ACCESSED IF YOU HAVE NOT FIRST PERFORMED A BALANCING SPIN.

The program allows total wheel unbalance to be reduced by compensating, when possible, tyre and rim unbalance values. It requires two spins, rotating the tyre on the rim on the second spin.
At the end of the procedure, mark the rim and tyre positions indicated by the machine with a piece of chalk and re-mount both so that they coincide.

6.10 TYRE SET

Selects any one-way direction of the wheel

Prints the tyre set values

Return to main screen

This function allows balancing the four wheels of a vehicle, plus the spare wheel if necessary, and obtaining information on how to mount them in order to reduce to a minimum the vibrations due to the residual eccentricity of each wheel.

The TYRE SET function can be enabled or disabled from the MENU; to best use this function, proceed as follows:

1. Prepare adhesive symbols to identify the wheels.
2. Mount the first wheel, measure the dimensions, balance it and identify it with the number 1.
3. Dismount the wheel and mount the next one, close the guard and balance the wheel without acquiring the dimensions again.
4. Repeat step 3 for the remaining 3 wheels, plus any spare wheel, each time identifying the wheel with a progressive number from 2 to 5.
5. Each time the spindle is opened, the wheel balancing machine indicates the best way to mount the wheels balanced up to that point. On the left-hand side of the screen, a stylized vehicle is displayed with the four tyres plus the spare wheel; at each spin, the number of the wheel to be mounted in each position is indicated on each of them (right/left front/rear axle).
6. The procedure can be reset by measuring the dimensions like for a new wheel. If the spindle is incorrectly opened, the balancing sequence is interrupted and consequently the end result will be incorrect.
7. To view a summary table with the wheel values, press the button :

Radial runout

Tread measured as one value

Inside residual unbalance

Outside residual unbalance

Static residual unbalance

In the case of directional wheels, i.e. which can be mounted only on the right or only on the left, press the button  to set the direction:

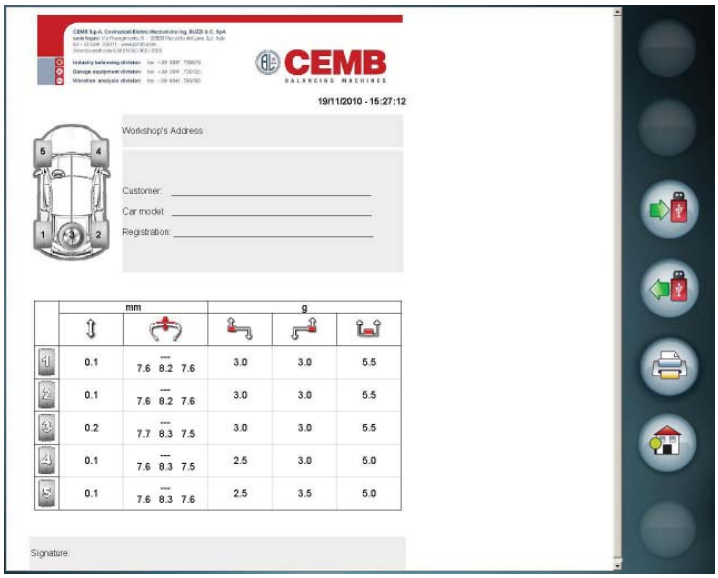
- Left
- Right
- Left/right

The machine changes and immediately displays the new mounting order.

The wheel mounting order is established based on the residual radial eccentricity value of each wheel.

6.10.1 Tyre set value certificate

Press the button  from the tyre set value summary screen.



Saves the certificate to USB key

Loads the certificate from USB key

Prints the unbalance values

Return to main screen

6.10.2 Tyre set certificate customisation

Follow the instructions for customising the balancing certificate (☛ ***BALANCING CERTIFICATE CUSTOMISATION***).
The .htm file to be customised is TyreSet.htm.

ENGLISH

6.11 WEIGHT STATISTICS

No. of daily spins:Indicates the number of spins performed by the machine per day

Total no. of spins: Indicates the number of spins performed by the machine starting from the reset date.
The two tables list all the weights (clip-on and adhesive) used starting from the reset date.

When the RESET STATISTICS button is pressed, a pop-up menu appears that allows selecting which parameters to reset.

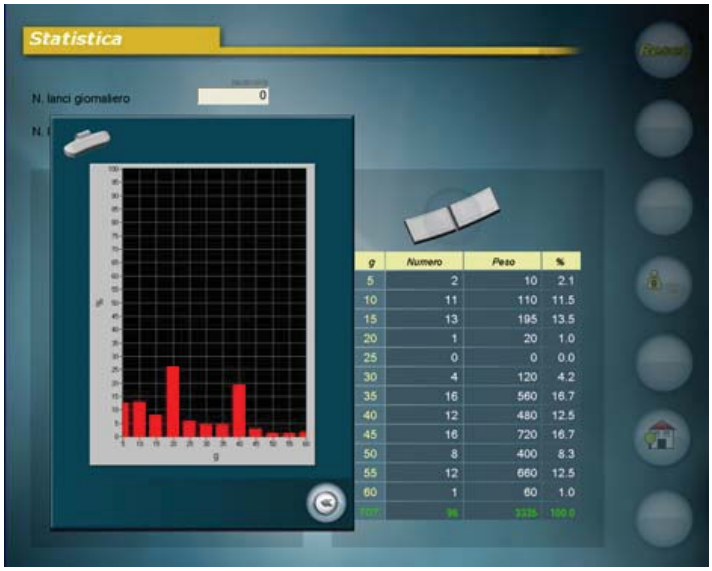
Selects the counter to reset

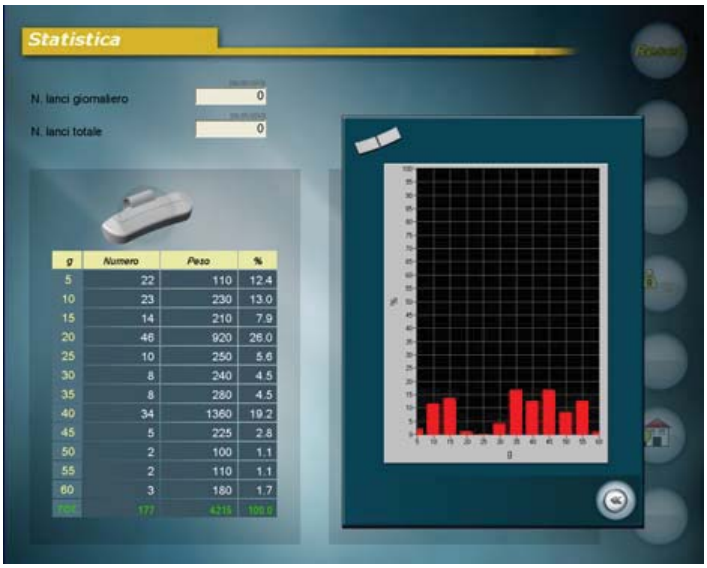
Deselects the counter to reset

Resets the counters selected

Goes back to the measurement screen

Appears if the relative counter is selected to be reset.



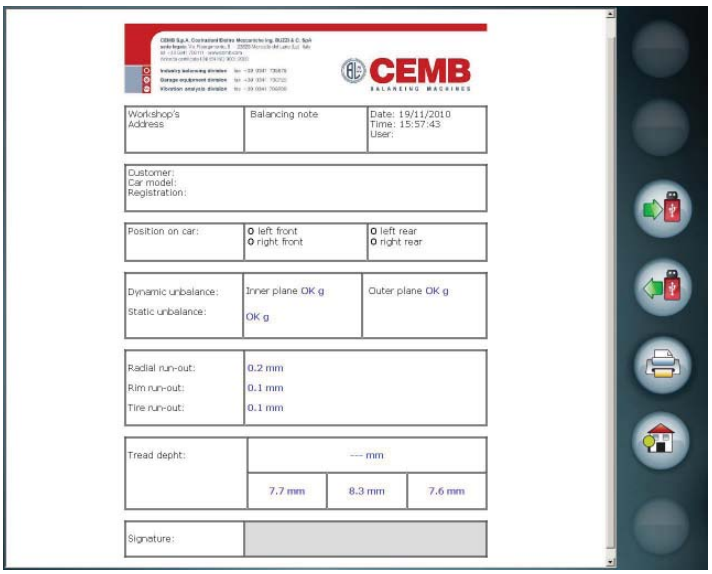


Pressing on the buttons in the table header, graphic display of the statistics of the weights used is enabled, which allows more intuitively understanding the most common types of weight adopted.

ENGLISH

6.12 BALANCING CERTIFICATE PRINTOUT

Press the button  from the second set of buttons on the unbalance measurement screen.



Saves the certificate to USB key

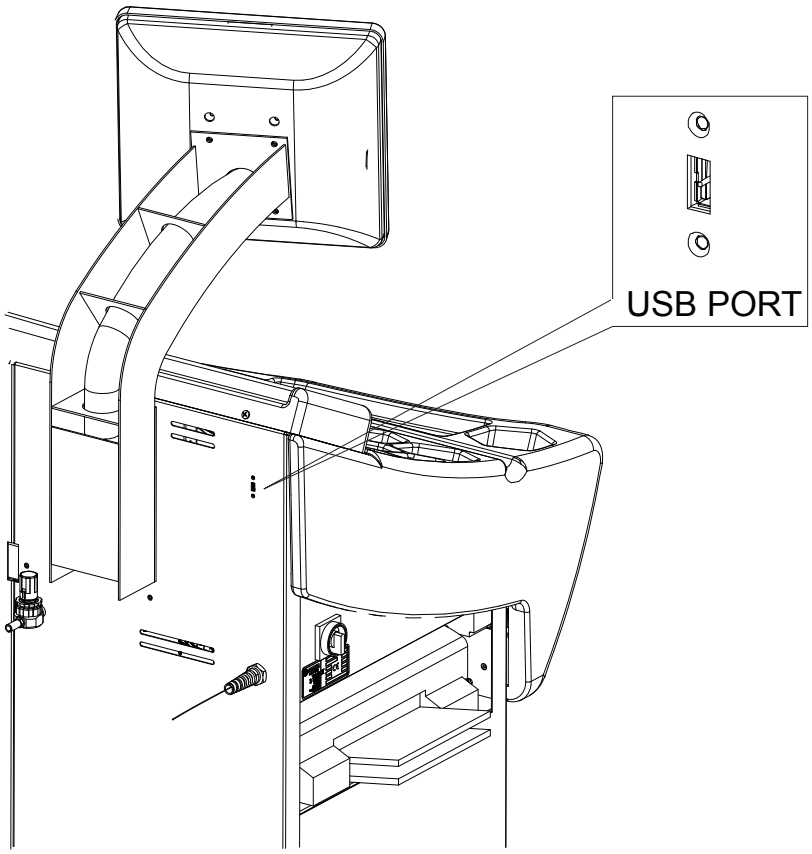
Loads the certificate from USB key

Prints the unbalance values

Return to main screen

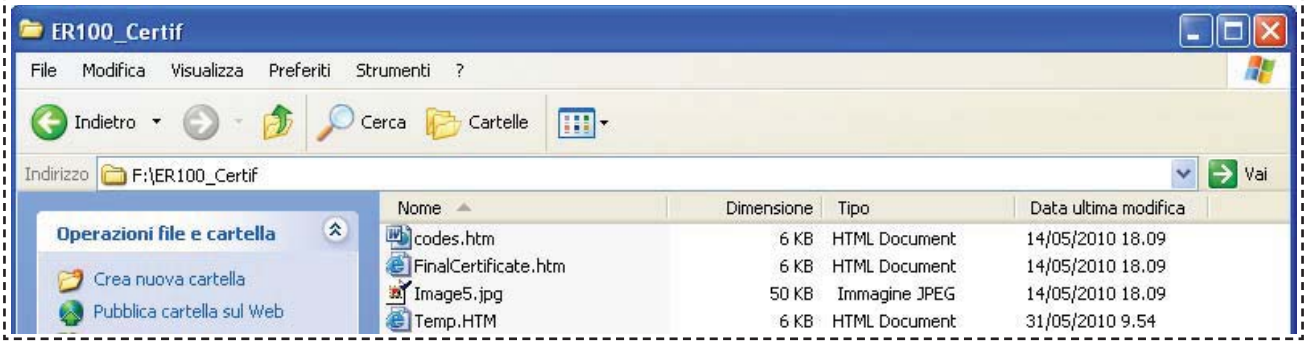
6.12.1 Balancing certificate customisation

Insert a USB key in the port at the rear of the machine.



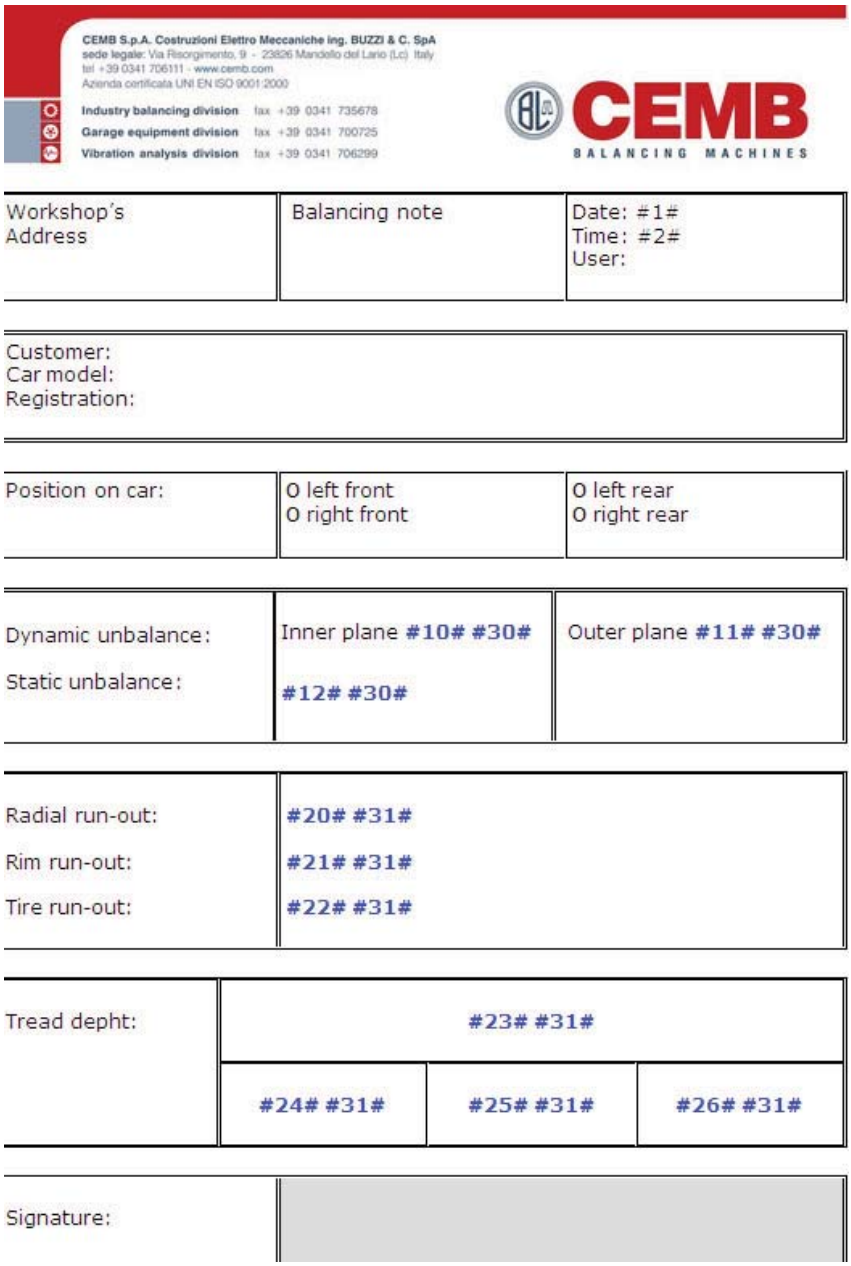
Press  to save the certificate management files to the USB key.

A folder called "ER100_Certif" is created on the key containing all the files to be edited to customise the balancing certificate:



ENGLISH

File to be customised using an HTML editor (FinalCertificate.htm):



CEMB S.p.A. Costruzioni Elettro Meccaniche ing. BUZZI & C. SpA
sede legale: Via Risorgimento, 9 - 23826 Mandello del Lario (Lc) Italy
tel +39 0341 706111 - www.cemb.com
Azienda certificata UNI EN ISO 9001:2000
Industry balancing division fax +39 0341 735678
Garage equipment division fax +39 0341 700725
Vibration analysis division fax +39 0341 706299

CEMB BALANCING MACHINES

Workshop's Address	Balancing note	Date: #1# Time: #2# User:

Customer: Car model: Registration:

Position on car:	O left front O right front	O left rear O right rear

Dynamic unbalance: Static unbalance:	Inner plane #10# #30# #12# #30#	Outer plane #11# #30#

Radial run-out:	#20# #31#
Rim run-out:	#21# #31#
Tire run-out:	#22# #31#

Tread depht:	#23# #31#		
	#24# #31#	#25# #31#	#26# #31#

Signature:	

Balancing certificate logo: 1241 × 278 pixel. It can be replaced with a personalised logo.

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CEMB BALANCING MACHINES

Use the following codes to insert the possible printable values in the balancing certificate.

Field	
	Generic
#1#	Date
#2#	Time
	Actual unbalances values
#10#	Internal unbalance valueP2
#11#	External unbalance value
#12#	Static unbalance value
	Run-out
#20#	Radial run-out value
#21#	Rim run-out value
#22#	Tyre run-out value
#23#	Tyre tread depht.
	Units
#30#	Unbalance unit measure (g/oz)
#31#	Run-out unit measure (mm/")
	Tire set
#40#	Radial run-out value for wheel nr.1
#41#	Tyre tread depht. for wheel nr.1
#42#	Internal unbalance value for wheel nr.1
#43#	External unbalance value for wheel nr.1
#44#	Static unbalance value for wheel nr.1
#45#	Radial run-out value for wheel nr.2
#46#	Tyre tread depht. for wheel nr.2
#47#	Internal unbalance value for wheel nr.2
#48#	External unbalance value for wheel nr.2
#49#	Static unbalance value for wheel nr.2
#50#	Radial run-out value for wheel nr.3
#51#	Tyre tread depht. for wheel nr.3
#52#	Internal unbalance value for wheel nr.3
#53#	External unbalance value for wheel nr.3
#54#	Static unbalance value for wheel nr.3
#55#	Radial run-out value for wheel nr.4
#56#	Tyre tread depht. for wheel nr.4
#57#	Internal unbalance value for wheel nr.4
#58#	External unbalance value for wheel nr.4
#59#	Static unbalance value for wheel nr.4
#60#	Radial run-out value for wheel nr.5
#61#	Tyre tread depht. for wheel nr.5
#62#	Internal unbalance value for wheel nr.5
#63#	External unbalance value for wheel nr.5
#64#	Static unbalance value for wheel nr.5

Edit the Finalcertificate.htm file based on your needs and save it to the USB key.

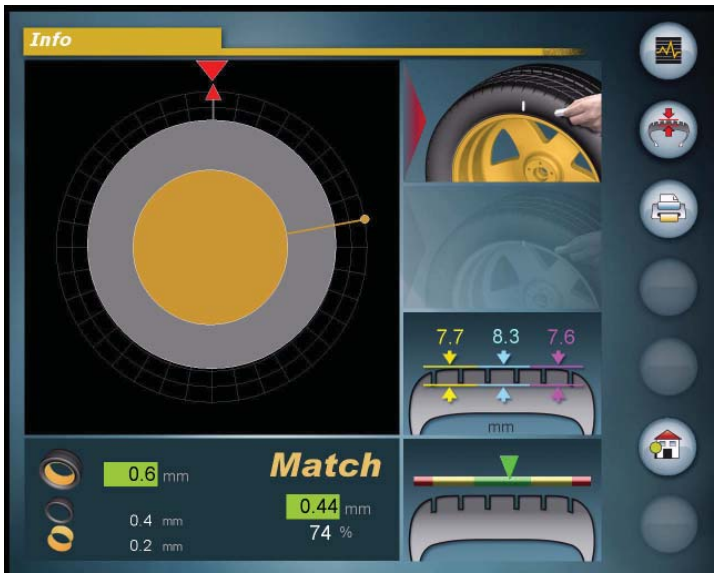
Insert the key in the machine and press  to reload the customised balancing certificate.

6.13 SCREENSAVER

If the machine is not used and remains on the initial screen for longer than the time settable from the menu, the screensaver is automatically activated. Pressing on the screen at any point or moving the wheel, the main screen will automatically be activated. Automatic start-up operated by the protection system is not available from the screensaver for safety reasons.

6.14 WHEEL ANALYSIS

Press the button  from the first set of buttons on the measurement screen.



Goes to the peak/peak and first harmonic graph screen

Goes to the tread analysis screen

Prints the information screen

Return to main screen

This screen shows all the data read in the various unbalance measurement and wheel analysis phases.
For more information, refer to the paragraphs ☛ ***6.14.1 RUNOUT, 6.14.2 TREAD, 6.14.3 TAPER*** .

The button  is displayed with a red I when:

- The first harmonic of the wheel runout exceeds the limit set in the setup parameters.
- The tread value is less than the limit set in the setup parameters.
- The wheel taper value is considered critical (indicator on yellow level) or unacceptable (indicator on red level).

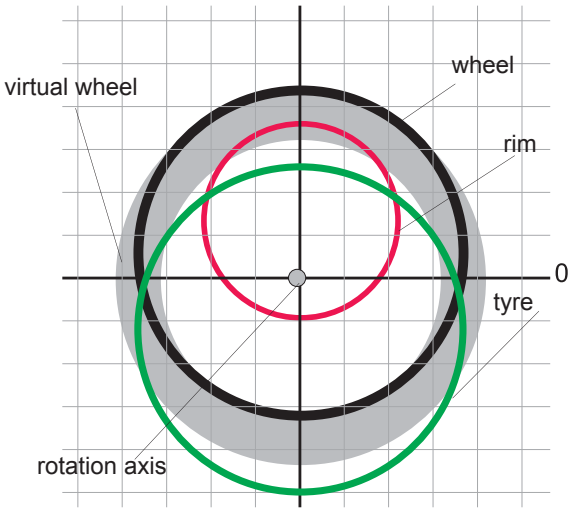
ENGLISH

6.14.1 Runout

6.14.1.1 When and why TO USE MATCHING

The software associated with the eccentricity measurement is a powerful tool to determine the need to perform the relative rotation between the wheel and the rim in order to reduce the eccentricity to within acceptable limits. The criterion used is based on the fact that a rim with acceptable tolerance, mounted with acceptable tyre, can statistically generate an unacceptable total eccentricity that can be improved by matching.
ER 100 is capable of automatically measuring the eccentricity of both the tyre and the rim from the inside. The latter measurement generally corresponds to the rim eccentricity in the tyre fitting area.

THE RIM CAN BE MEASURED MORE ACCURATELY USING THE SPECIFIC PROGRAM WITHOUT THE TYRE.

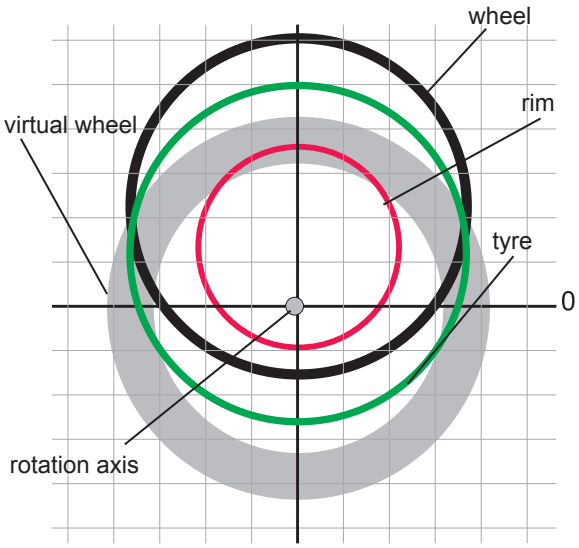


Tyre - 0.6 mm

Wheel + 0,3 mm

The eccentricity of the single elements is compensated.
The wheel is acceptable.

Example 1



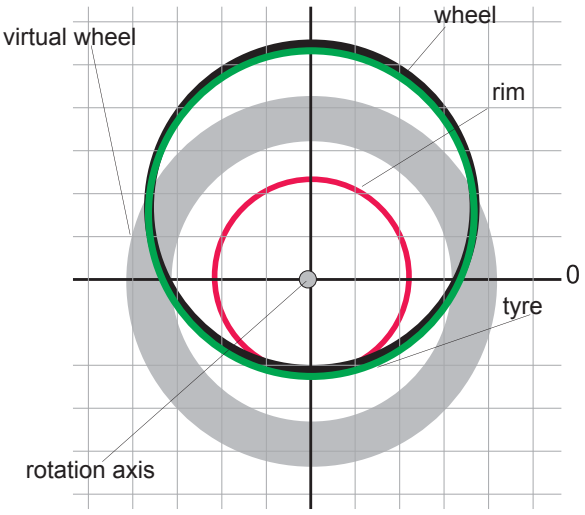
Rim + 0.8 mm
Tyre + 0.6 mm
Wheel + 1.3 mm

The wheel eccentricityis excessive because an acceptable rim or tyre has randomly been positioned in an "unfortunate" position".

SOLUTION: turn the tyre on the rim by 180°

RESULT: wheel eccentricity 0.3 – 0.4 mm (in tolerance)
Rim + 0.8 mm

Example 3



Rim - 0 mm
Tyre + 1,2 mm

Wheel + 1.2 mm

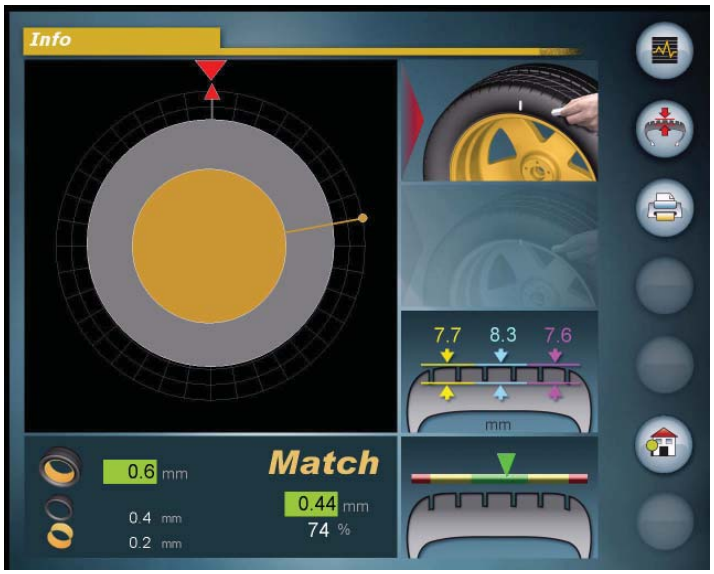
The wheel eccentricity cannot be compensated by the rotation because the rim is perfect!

SOLUTION: turn the tyre on the rim by 180°

RESULT: No improvement.

ENGLISH

6.14.1.2 Matching



Goes to the peak/peak and first harmonic graph screen.

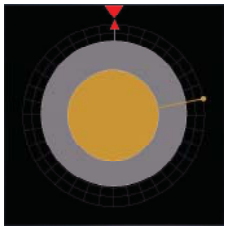
Goes to the tread analysis screen

Prints the information screen

Return to main screen

The rim and wheel runout measurements are automatically made during the unbalance measurement cycle and no extra time is required.
The purpose of these measurements is to check whether it is possible to reduce the total wheel runout by turning only the tyre on the rim.

The information shown on the screen is:



Grey rim: outer tyre surface
Yellow rim: rim surface
—● : Tyre runout position (moved by turning the wheel)
—●: Rim runout position (moved by turning the wheel)

When highlighted:
indicates that the tyre needs to be marked with a piece of chalk at the top at 12 o'clock.

When highlighted:
indicates that the rim needs to marked with a piece of chalk at the top at 12 o'clock.

Wheel runout (rim plus tyre):

GREEN background: value less than the first harmonic limit set in wheel runout set-up.
RED background: value out of tolerance because greater than the first harmonic limit set in wheel runout setup.

Tyre runout

Rim runout

Estimated residual wheel runout after matching:

GREEN background: after matching, the runout will be in tolerance (with respect to the first harmonic correction limit value set in wheel runout setup).

RED background: after matching, the runout will be out of tolerance (with respect to the first harmonic correction limit value set in wheel runout setup), therefore, the eccentricity problem cannot be improved with matching.

Estimated percentage gain relating to reduction of the first harmonic value obtained after matching.

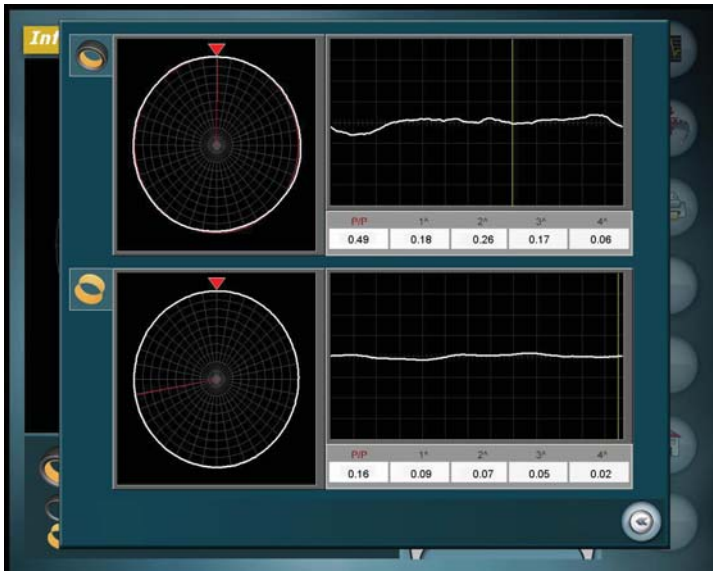
6.14.1.2.1 When to perform matching

It is advisable to perform matching if the wheel runout value is displayed on a red background and the residual wheel runout value is displayed in the Match box on a green background.

6.14.1.2.2 How to perform matching

- Turn the wheel and mark the tyre and the rim with a piece of chalk at the two points indicated in the graph.
- Turn the tyre on the rim until the two marks coincide.

6.14.1.3 Peak/peak and first harmonic graphs



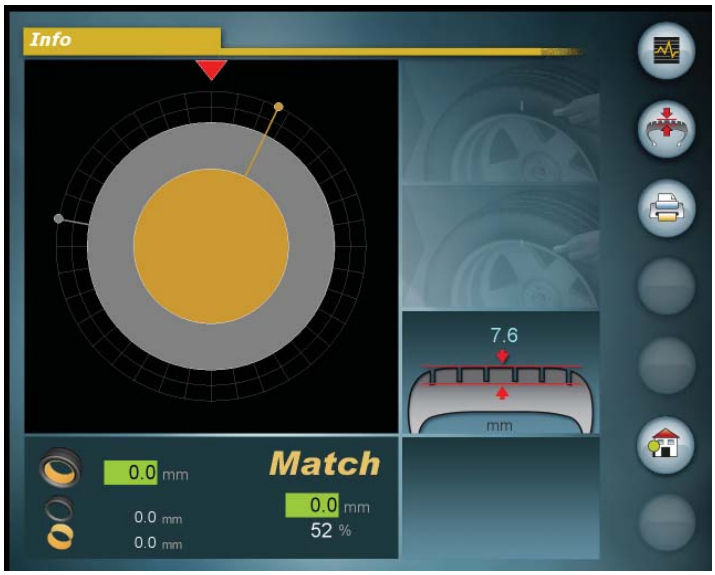
Goes back to the runout/matching analysis screen

Displays the peak/peak, 1st, 2nd, 3rd, 4th harmonic graphs and values of the tyre and the rim.
Pressing on the graphs you can enlarge them to better highlight any wheel and rim defects.

YOU CAN DISABLE THE WHEEL OR RIM ECCENTRICITY MEASUREMENT FROM GENERAL SETUP.

ENGLISH

6.14.2 Tread



Goes to the peak/peak and first harmonic graph screen.

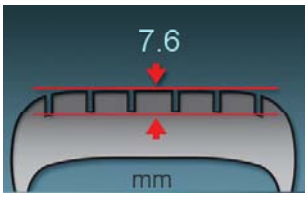
Goes to the tread analysis screen

Prints the information screen

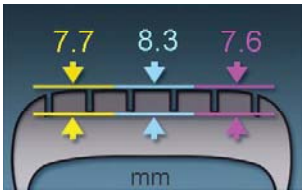
Return to main screen

Tread analysis can be performed

1. During the balancing cycle to obtain an average value measured over the whole tyre width.
   No extra time is required.



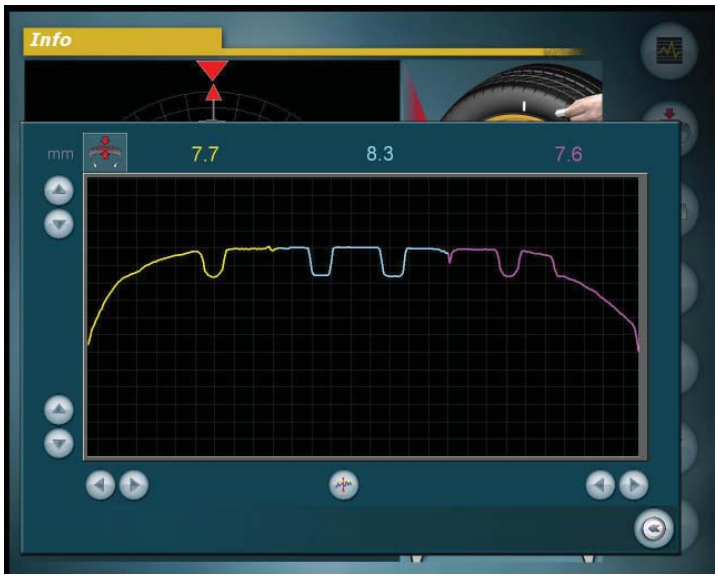
2. Enable a special measuring cycle using the button  to obtain the tread value for the three different areas: inside edge, centre and outside edge of the tyre.
   The cycle time is slightly longer.



By law (to be verified for each country) the minimum tread thickness must be 1.6mm at each point.
It is quite normal for tyres to wear irregularly and that the pivot pins wear more on one side.
By means of tread analysis at several points, you can measure the tyre tread depth with adequate accuracy on the edges and in the centre.

ENGLISH

For detailed tread analysis, press the button  *:*



 Increases the scale

 Decreases the scale

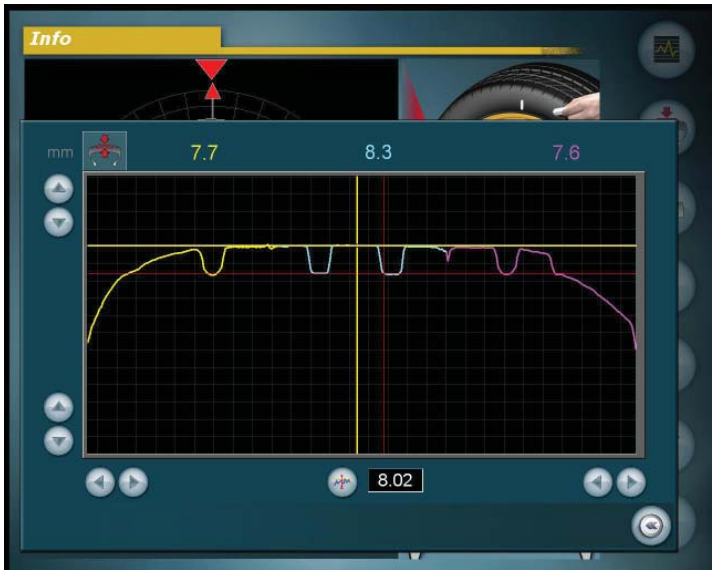
 Increases the scale

 Decreases the scale

 Enables cursor display for tread measurement

 Goes back to the information screen

When pressing the button  two cursors are displayed (one red and one yellow) and a black window that shows the difference in millimetres measured between the two cursors.



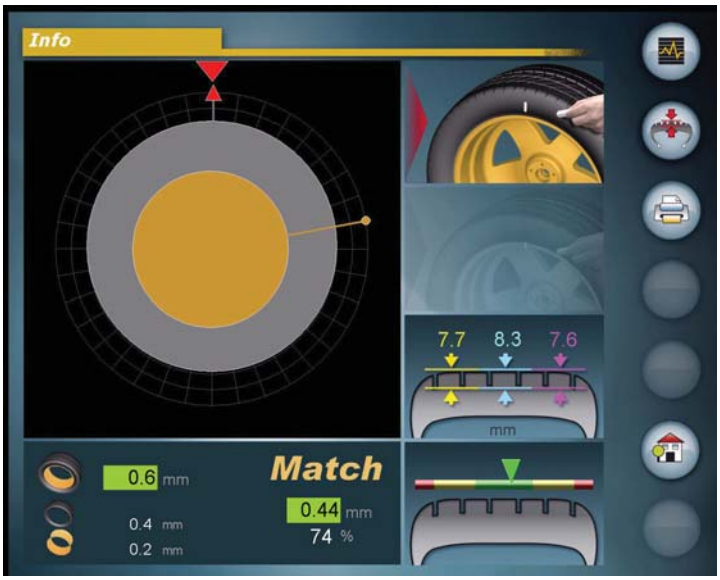
 Dragging the cursors with your finger, you can move them to another point of the tread.

 Goes back to the information screen

8.02 Indicates the distance between the two cursors.

ENGLISH

6.14.3 Taper



Goes to the peak/peak and first harmonic graph screen.

Goes to the tread analysis screen

Prints the information screen

Return to main screen

Examination of the wheel taper requires a special measuring cycle to be enabled using the button  and requires a slightly longer cycle time.

After the measurement, you obtain:

GREEN indicator: wheel NOT TAPERED and in good conditions

YELLOW indicator: wheel SLIGHTLY TAPERED

to the right 

or to the left 

as indicated in the graph:
it is advisable to check the wheel soon.

RED indicator: TAPERED wheel

to the right 

or to the left 

as indicated in the graph.

Check the taper of the wheel to be mounted on the same axle, assess if there is any toe-inor replace the wheel.

The wheel taper measurement is important to solve any vehicle drift problems. Wheels tapered in the same direction and mounted on the same axle might lead to the vehicle having problems in maintaining the trajectory on a straight line.

6.15 OUTSIDE RIM RUNOUT

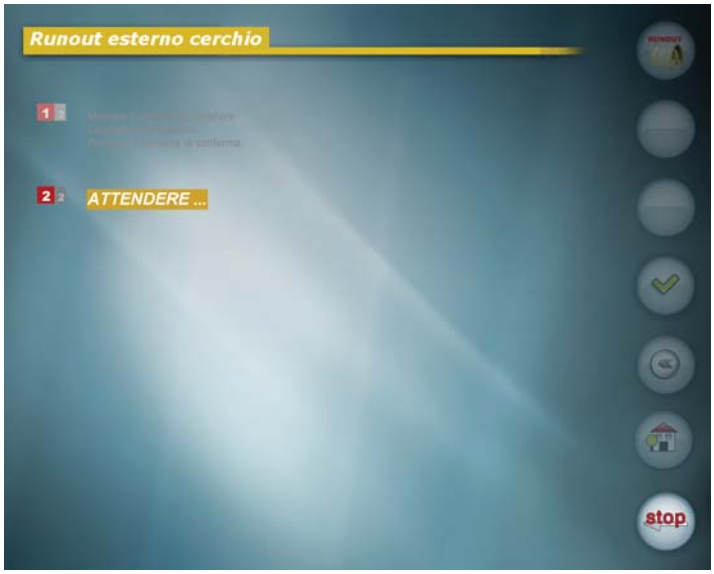
Press the button  after closing the spindle.

Confirm

Goes back to the measurement screen

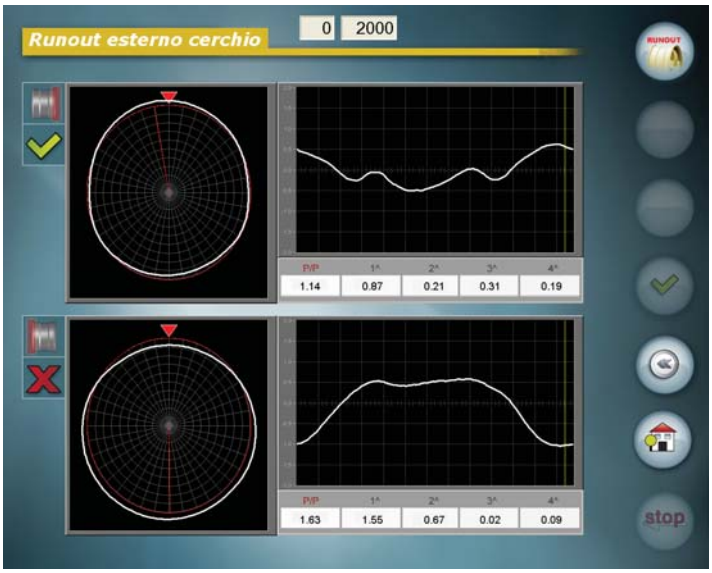
Return to main screen

Close the guard and press the button 



ENGLISH

The machine automatically reads the rim dimensions and performs a spin.
During rotation the outside eccentricity measurement is executed on the inner and outer edges of the rim in the positions laid down by the international standards.
When complete, a screen with the graphs of the values just measured is displayed.



Repeats the outside rim eccentricity measurement

Goes back to the measurement screen

Return to main screen

Identifies the rim outside

Identifies the rim inside

Outside rim runout within tolerance

Outside rim runout out of tolerance

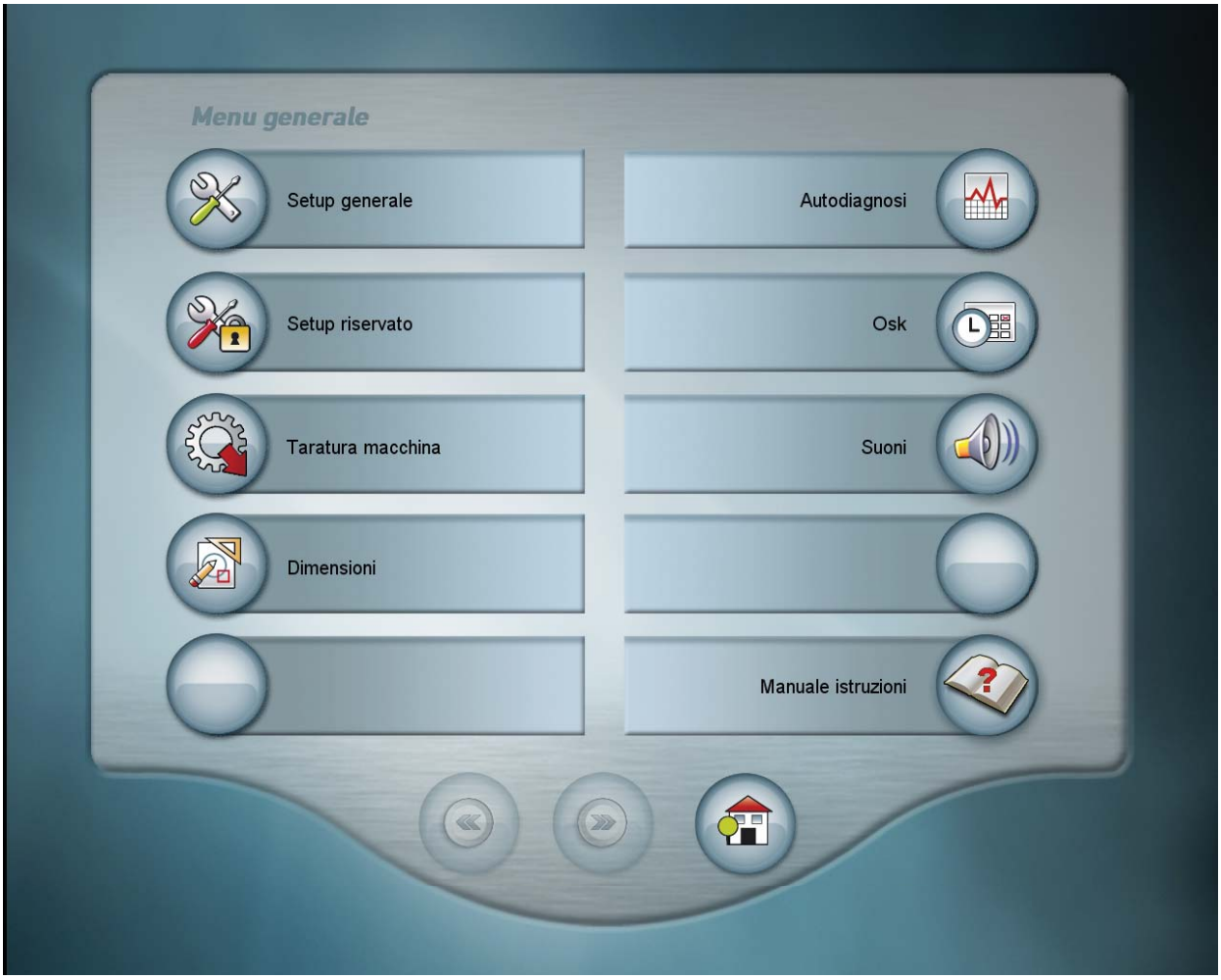
*The outside rim runout measured on the edges of the rim is deemed within tolerance if both the first harmonic and the peak/peak values measured are less than the limits set in **OUTSIDE RIM RUNOUT** setup*

ENGLISH

7 Setup

7.1 MENU

Press the button  from the measurement screen (second set of buttons)



ENGLISH

7.2 GENERAL SETUP

Gives the user the possibility of setting the machine according to need. All the settings remain unaltered even when the machine is turned off.

7.2.1 General setup 1/3

Decreases the value

Increases the value

Confirms the default parameters

Goes back to the main menu screen

Goes to the setup screen 2/3

Return to main screen

Language: allows selecting the language to be used to display the descriptive and diagnostic messagesrelating to machine operation.

Screensaver (min.): allows selecting when the screensaver will be activated after the machine has not been used for a certain time.

Screensaver type: allows customising the screensaver with any kind of image in .jpg format. (☞ ***SCREENSAVER CUSTOMISATION***)

Linear unit of measure: selects the unit of measure (mm/inch)

Correction method: allows selecting from 3 correction methods: STANDARD, EXTERNAL PLANES, BPC

STANDARD — The wheel balancing machine considers the unbalance within tolerance when the value of each single plane is lower than the tolerance set.

EXTERNAL PLANES — The unbalance is considered within tolerance when the weight recalculated on the external planes (clip-on weight) is lower than the tolerance set.

BPC (Best Possible Correction) Provides the best possible solution for reduction of vibrations noticeable in the vehicle.

Many elements affect the vibration perceived in the vehicle due to wheel unbalances:

- *Residual static unbalance*
- *Residual dynamic (or torque) unbalance*
- *Wheel weight (the heavier the wheel, the less the unbalance will make it vibrate)*
- *Wheel diameter (on which the application radiuses of the counterweights depend)*

Comparison between conventional balancing and the BPC method

CONVENTIONAL BALANCING:

- Given a set tolerance of 5g, a wheel is considered balanced also with a residual unbalance of 4.9g per plane in approximately the same angular position. This means that a static unbalance of 9.8 grams is tolerated, even though the static unbalance is deemed the main cause of vibrations noticeable by the driver.
- The balancing tolerance for all wheel types, not taking any unbalance of 10g into account, produces different vibrations on a 13” or a 22" wheel. The residual vibrations are inversely proportional to the wheel weight.
- The angular position of the residual unbalances is not taken into account.

BALANCING USING THE BPC METHOD:

- With this method, the balancing tolerance value is reprocessed based on the wheel dimensions and the permissible residual static and torque unbalances, which are numerically different (greater torque unbalance than static unbalance is permitted).
- The tolerance no longer refers to the correction planes but is UNIQUE and indicates the residual vibration limit value permissible on the wheel.
- An indicator on the screen provides information on the residual vibration obtained after balancing with respect to the maximum tolerable vibration.
- Bymeans of complex mathematical calculations, it indicates how many and where correction weights should be added for the best possible reduction of the vibrations noticeable by the driver. This means that the customer receives the best possible service.

No alternative method can be more accurate, using moderate weights with steps of 5g.

ER100 also measures by HOW MUCH the “noticeable vibration” in the vehicle has been reduced with respect to the conventional method, indicating the percentage reduction, i.e. by how much it has improved with respect to conventional machines.

Less vibration, more satisfied customers!

Display pitch: This represents the unbalance display pitch and varies based on the unit of measure selected. Selecting 5g (1/4 oz) enables display of the correction values on the two sides such as to set the static unbalance value to 0 (theoretical).

It is advisable to set this function for normal 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 the position of the counterweights fixed in steps of 5 grams (1/4 oz).

Tolerance: This is the unbalance threshold below which OK appears on the screen instead of the unbalance value at the end of the spin.

Default parameter setting: Resets the default machine settings.

ENGLISH

7.2.1.1 Screensaver customisation

From the General Setup screen, select CUSTOMISED SCREENSAVER and press the button 

Saves the current screensaver to the USB key. The directory ER100_Screensave is created on the key containing the file screensave.jpg; replace this file with the desired image, keeping the same name and the same format (.jpg)

Loads the customised screensaver to the machine.

Goes directly to the screensaver screen.

Goes back to the general setup screen

7.2.2 General setup 2/3

Decreases the value

Increases the value

Confirms the default parameters

Goes back to the setup screen 1/3

Goes to the setup screen 3/3

Return to main screen

Static unbalace always present: Enables/disables temporary display of the unbalance on the correction planes selected and the STATIC unbalance

Wheel locking: Enables/disables wheel locking in the correction position

Wheel runout: Enables/disables wheel eccentricity measurement

Rim runout: Enables/disables rim eccentricity measurement

Runout diagnosis: Enables/disables display of the runout values on the unbalance measurement screen

Lift: Enables/disables the lift

Printer: Enables/disables the printer

Tyre set: Enables/disables the tyre set function

Default parameter setting: Resets the default machine settings

ENGLISH

7.2.3 General setup 3/3

Decreases the value

Increases the value

Confirms the default parameters

Goes back to the setup screen 2/3

Return to main screen

Rim interior light: Enables/disables a light to come on when the wheel is in the correction position

Anticipated laser movement: Enables/disables anticipated laser movement as soon as you start closing the guard.

If disabled, the lasers start measuring the wheel dimensions only after having completely closed the guard.

Vibration reduction display: Enables/disables display of the vibration reduction percentage of the BPC method with respect to the conventional method.
Functions only if the BPC method is enabled.

Default parameter setting: Resets the default machine settings.

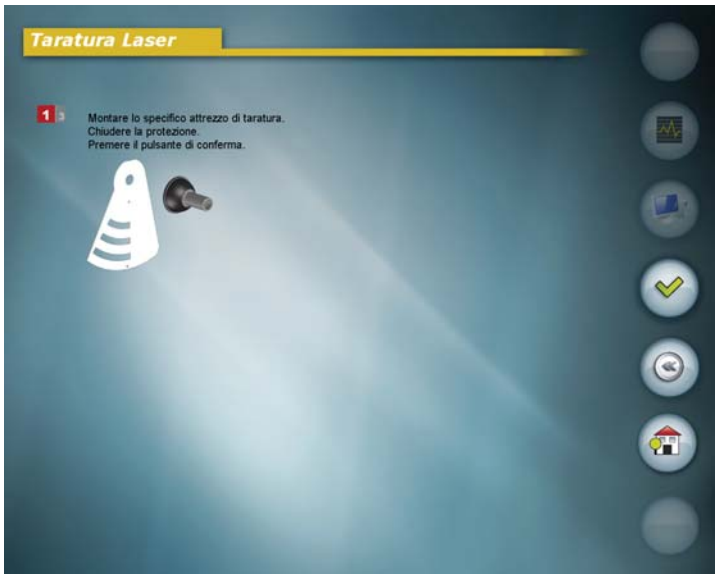
7.3 RESERVED SETUP

Access to this screen is password protected [1 - 3 - 5 - 7].

INCORRECTLY CARRYING OUT THE RESERVED SETUP PROCEDURES MIGHT CAUSE SERIOUS PROBLEMS WITH WHEEL BALANCING AND DIAGNOSIS.

ENGLISH

7.3.1 LASER calibration



Displays the laser calibration graph

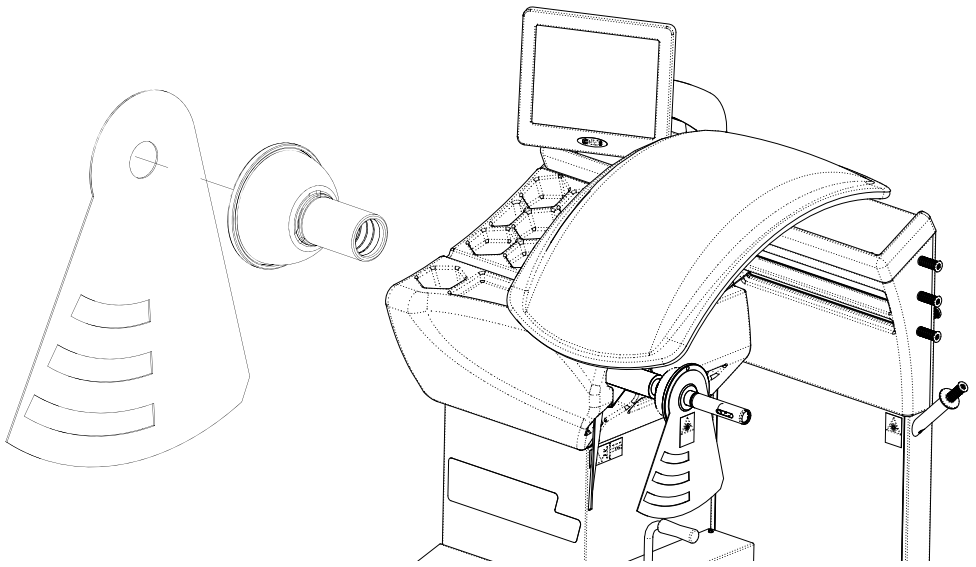
Saves the laser calibration values

Confirm

Goes back to the measurement screen

Return to main screen

1. Open the spindle and fit the specific calibration tool as shown in the figure.



THE TOOL CANNOT BE FITTED IN A POSITION DIFFERENT FROM THAT INDICATED IN THE FIGURE.
ALWAYS FIT THE CAP ON THE COLLAR.
DO NOT PERFORM A BALANCING SPIN WITH THE CALIBRATION TOOL FITTED.

1. Close the spindle and the guard and press the confirm button.
2. View the graph of the values read (only if necessary to check details).
3. Save the calibration
4. Press  to exit from the screen.

7.3.2 Spindle reset

Resets the spindle reset values.

Displays the spindle reset values saved

Saves the spindle reset values.

Confirm

Goes back to the measurement screen

Return to main screen

1. Lock the spindle without a wheel or tools. Close the guard and press the button 
2. View the spindle reset values just read (if necessary).
3. Save the spindle reset values.
4. Press  to exit from the screen.

ENGLISH

7.3.3 Taper calibration

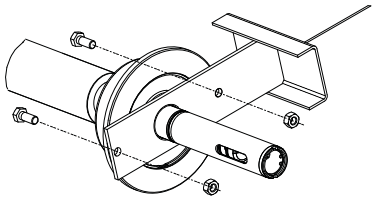
Saves the calibration

Confirm

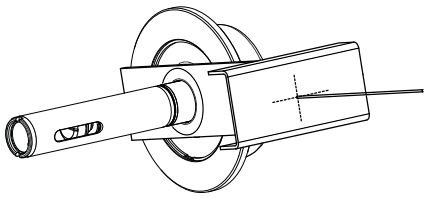
Goes back to the reserved setup screen

Return to main screen

1. Open the spindle and fit the calibration tool fastening it to the adapter with the screw and nut provided.



2. Position the tool in such a way that the laser crosses its central part during normal reading movement.



3. Close the guard and press the button
4. When prompted on the screen, remove the tool and then fit it on the other side.

DO NOT OPEN THE SPINDLE.

5. When reading is complete, remove the calibration tool.

DANGER! DO NOT PERFORM A SPIN WITH THE TOOL FITTED!

6. Save the calibration.
7. Press to go back to the main screen.

7.3.4 Correction weights


Decreases the value


Increases the value


Displays a calculator to enter values directly


Confirms the default parameters


Goes back to the reserved setup screen


Return to main screen

Correctly set the length of the correction weights in order to improve the balancing quality.

Default parameter setting: Resets the default machine settings.

The zinc weights used for balancing generally become very long as the weight increases; in this condition the weight can no longer be considered concentrated at the barycentre and the effect, for example, is a weight of only 47 instead of 50 grams.

Correctly setting the length of the correction weights allows the wheel balancing machine to automatically compensate for the fact that all the weight cannot be applied at one point.

TO OBTAIN THE BEST RESULTS, ALWAYS USE WEIGHTS OF THE SAME MANUFACTURER.

7.3.5 Wheel runout

Decreases the value

Increases the value

Confirms the default parameters

Goes back to the reserved setup screen

Return to main screen

Wheel first harmonic limit: Represents the first harmonic limit beyond which it is considered appropriate to turn the tyre on the rim by 180°. Recommended limit = 1.2 mm.

Rim first harmonic limit: Represents the first harmonic limit of the rim below which it is not considered appropriate to turn the tyre on the rim.
Recommended limit = 0.3 mm.

Minimum correction limit: Represents the minimum correction limit obtainable below which it is not considered appropriate to turn the tyre on the rim. Recommended limit = 0.8 mm.

Default parameter setting: Resets the default machine settings.

7.3.6 Outside rim runout

Decreases the value

Increases the value

Confirms the default parameters

Goes back to the reserved setup screen

Return to main screen

Outside rimrunout: Enables/disables the outside rim runout measurement function

Inside first harmonic limit: Represents the threshold beyond which the first harmonic value read for the rim inside is not considered acceptable.

Outside first harmonic limit: Represents the threshold beyond which the first harmonic value read for the rim outside is not considered acceptable.

Inside peak/peak limit: Represents the threshold beyond which the peak/peak value read for the rim inside is not considered acceptable.

Outside peak/peak limit: Represents the threshold beyond which the peak/peak value read for the rim outside is not considered acceptable.

Default parameter setting: Resets the default machine settings.

ENGLISH

7.3.7. Tread

Decreases the value

Increases the value

Confirm

Goes back to the reserved setup screen

Return to main screen

Tread limit: Represents the threshold beyond which the tread is no longer acceptable.

Default parameter setting: Resets the default machine settings.

7.3.8 Firmware upgrade

Allows updating the board firmware.

Confirms access to the function

Goes back to the reserved setup screen

1. Press the Confirm button

Browse folders

Goes back to the reserved setup screen

Starts the firmware upgrade

2. Press the Browse Folders button to select the new firmware.
3. Select the file .BL5 and press the button start
4. When the operation is complete, press to exit the function.

7.3.9 Factory setting

Confirms loading of the factory settings

Goes back to the reserved setup screen

Return to main screen

Resets all the default machine settings.

ENGLISH

7.4 MACHINE CALIBRATION

Saves the calibration values

Confirm

Goes back to the setup screen

Return to main screen

1. Dismount any wheel from the wheel balancing machine, close the spindle and the guard and press the button 
2. Open the guard, fit the calibration tool on the outside of the adapter (as shown in the figure), close the guard and press 

3. Open the guard, fit the calibration tool on the inside of the adapter (as shown in the figure) in the same hole used for the previous spin, close the guard and press 

4. Move the tool to the top at 12 o'clock and press the button 
5. Press the button  .

REMOVE THE CALIBRATION TOOL; PERFORMING A BALANCING SPIN WITH THE CALIBRATION TOOL FITTED ON THE INSIDE MIGHT CAUSE SERIOUS DAMAGE TO THE INTERNAL LASER.

6. Press  to exit from the screen.

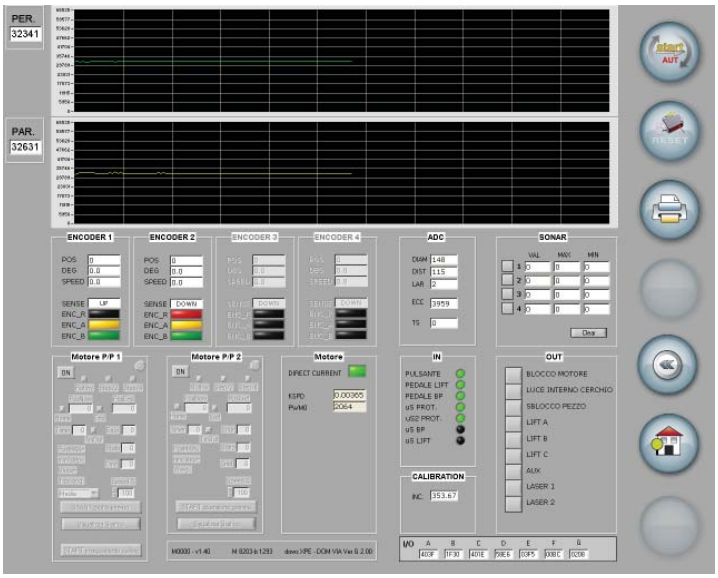
7.5 DIMENSIONS

Allows accessing the manual wheel dimension setting screen.

TEST SCREEN RESERVED FOR EXPERTS.
USE ONLY IN SPECIFIC CASES.

ENGLISH

7.6 SELF-DIAGNOSTICS



Diagnosis parameter printout useful for Technical Service.

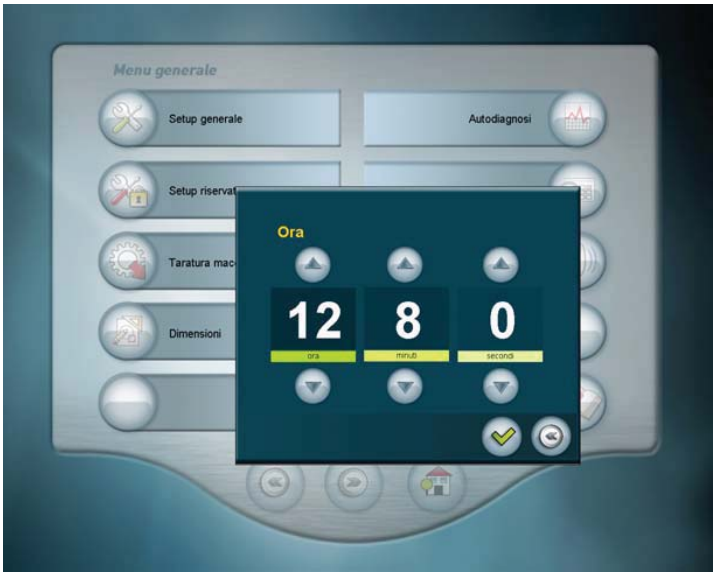
Goes back to the main menu screen

Return to main screen

Displays a screen containing numerous test parameters useful for the maintenance technician.

7.7 OSK

Allows correctly setting the date and time.



Increases the value

Decreases the value

Confirm

Goes back to the main menu screen

Press the button  to go to time setting.

Increases the value

Decreases the value

Confirms and goes back to the main menu screen

Goes back to the main menu screen

7.8 SOUNDS

 Decreases the value

 Increases the value

 Confirms the default parameters

 Goes back to the main menu screen

 Return to main screen

Introduction: Enables/disables an introduction sound during machine power on.

Touch buttons: Enables and selects/disables the sound emitted when pressing any button

SEVERAL TYPES OF SOUND ARE AVAILABLE; SELECT THE ONE YOU LIKE THE MOST.

Wheel in position: Enables/disables the sound emitted when the wheel is in the correction position

Default parameter setting: resets the default machine settings.

ENGLISH

8. Diagnostics

WARNING

THE INFORMATION IN THE **POSSIBLE REMEDY** COLUMN REQUIRES WORK TO BE PERFORMED BY SPECIALIST TECHNICIANS OR OTHER AUTHORISED PEOPLE WHO MUST ALWAYS WORK USING THE PERSONAL PROTECTIVE EQUIPMENT INDICATED IN THE **INSTALLATION** MANUAL. IN SOME CASES, THIS WORK CAN BE PERFORMED BY A NORMAL OPERATOR.

SOFTWARE ERRORS	CAUSE	POSSIBLE REMEDY
Black	The wheel balancing machine does not switch on.	1. Check the machine is properly connected to the mains power supply. 2. Check the fuses on the power board and replace if necessary. 3. Check display functioning. 4. Replace the PC.
Err. 1	STOP button pressed with the motor running.	1. Reset the error. 2. Repeat the spin.
Err. 2	Speed too low during measurement. During the unbalance measurement spins, the wheel speed dropped to below 42 rpm.	1. Make sure that a vehicle wheel is mounted on the wheel balancing machine. 2. Use the self-diagnostics function to check the encoder. 3. Disconnect the measuring head connector from the board and perform a spin (if there is no error, replace the measuring heads) 4. Replace the computer board.
Err. 3	Unbalance too high.	1. Check the wheel dimensions setting. 2. Check the detection unit connections. 3. Run the machine calibration function. 4. Mount a wheel with a more or less known unbalance (definitely less than 100 grams) and check the response of the machine. 5. Replace the computer board.
Err. 5	Guard open. Guard opening during the measuring cycle	1. Reset the error 2. Check functioning of the protection switch 3. Close the guard.
Err. 6	Spindle open Spin enabled without first having closed the spindle.	1. Reset the error 2. Close the spindle 3. Lower the guard
Err. 8	Error in transfer of the outside profile measurement data from the computer board to the PC.	1. Repeat the outside profile measurement. 2. Replace the computer board.
Err. 9	Error in transfer of the inside profile measurement data from the computer board to the PC.	1. Repeat the inside profile measurement. 2. Replace the computer board.
Err. 10	The inside adhesive weight distance is greater than the outside adhesive weight distance.	1. Repeat the wheel dimension measurement. 2. Repeat the laser calibration function. 3. Replace the computer board.
Err. 11	Speed too high error. During unbalance measurement rotation, wheel speed is more than 270 rpm.	1. Use the self-diagnostics function to check the encoder. 2. Replace the computer board.
Err.15	Error. Dimensions stored invalid	1. Repeat the wheel dimension measurement. 2. Use the self-diagnostics function to check proper functioning of the lasers. 3. Replace the computer board
Err. 16	Internal laser position error during the machine calibration function.	1. Check that the internal laser is in the rest position. 2. Use the self-diagnostics function to check proper functioning of the internal laser. 3. Check proper functioning of the switch that detects the internal laser in rest position. 4. Access the machine calibration function with the laser only

Err. 20	Message management error (incorrect or no translations)	1. Change the language, selectable in Setup. 2. Contact Technical Service to find out if the on-screen messages can be updated in the various languages.
Err.21	Date and time setting error	1. Repeat the date and time setting function. 2. Check that you have set numbers compatible with the date and time format.
Err. 31/ Err. 32/ Err. 33/ Err. 34/ Err. 39/ Err. 42	Firmware upgrade management error.	1. Check that you have loaded a file with extension BI5. 2. Repeat the firmware upgrade function.
Err.50	Error in eccentricity measurement using the external laser	1. Check that you have correctly mounted the wheel or rim. 2. Repeat the eccentricity measurement function.
Err.51	Error in eccentricity measurement using the internal laser	1. Check that you have correctly mounted the wheel or rim. 2. Repeat the eccentricity measurement function.
Err.70	Error. Lift down and does not ascend.	1. Use the self-diagnostics function to check proper functioning of the lift. 2. Check proper functioning of the switch that detects the lift in rest position.
Err.71	Error. Lift up and does not descend.	1. Use the self-diagnostics function to check proper functioning of the lift. 2. Check proper functioning of the switch that detects the lift in rest position.
Err.72	Error. Lift up during unbalance, eccentricity and taper measurement	1. Lower the lift before starting any measuring cycle
Err. 121/122 Err. 123/124 Err. 125/126 Err. 127/128 Err. 129/130 Err. 131/132 Err. 133	Internal laser motor control error.	1. Reset the wheel balancing machine. 2. Contact Technical Service.
Err. 141/142 Err. 143/144 Err. 145/146 Err. 147/148 Err. 149/150 Err. 151/152 Err. 153	External laser motor control error.	1. Resetthe wheel balancing machine. 2. Contact Technical Service.
Err.201	Laser calibration file write error	1. Repeat the laser calibration function.
Err.202	Laser calibration incorrect or inexistent	1. Repeat the laser calibration function.
Err.203	Error in reading the laser calibration tool.	1. Check that you have correctly fitted the laser calibration tool. 2. Check that the laser light spot is able to read the calibration tool. 3. Repeat the laser calibration function.
Err. 204/ Err. 205/ Err. 208/ Err. 209	Error in the data read for laser calibration.	1. Repeat the laser calibration function.
Err. 206	External laser read error (during calibration).	1. Check that the external laser light spot is able to read the spindle and the calibration tool. 2. Repeat the laser calibration function.
Err. 207	External laser read error (during calibration).	1. Check that you have correctly fitted the calibration tool. 2. Check that there are no objects that may interfere with calibration tool reading. 3. Repeat the laser calibration function.
Err. 211/ Err. 212/ Err. 213/ Err. 214	External laser read error	1. Check that the light spot is visible on the wheel to be measured. 2. Check that you have correctly mounted the wheel to be balanced. 3. Check that there are no objects other than the wheel in the laser measuring range. 4. Repeat the dimension measurement.

Err. 221/ Err. 222/ Err. 223/ Err. 224/ Err. 225	Internal laser read error	1. Check that the light spot is visible on the wheel to be measured. 2. Check that you have correctly mounted the wheel to be balanced. 3. Check that there are no objects other than the wheel in the laser measuring range. 4. Repeat the dimension measurement.
HARDWARE ERRORS	**CAUSE**	**CHECKS**
Err.2	Hardware error from acquisition board.	---
Code 21	Error. Guard open during measurement.	1. Repeat the measurement keeping the guard closed until the end of the spin.
Code 22	STOP during a measuring cycle.	1. Repeat the measuring cycle avoiding to press the STOP button unless for an emergency.
Code 23	Error. Lift position during the measuring cycle.	1. Enable the measuring cycle only when the lift is in rest position. 2. Do not move the lift during the measuring cycle.
Code 24	Pneumatic spindle released during the measuring cycle.	1. Lock the wheel before starting the measuring cycle. 2. Do not move the lift during the measuring cycle.
Code 25	Rotation start timeout.	1. Check that there are no obstructions to normal wheel rotation. 2. Use the self-diagnostics function to check the encoder. 3. Use the self-diagnostics function to check proper functioning of the electromagnetic switch. 4. Check functioning of the power board relay
Code 26	Wheel braking timeout	1. Check functioning of the power board relay
Code 27	Inverse rotation.	1. Use the self-diagnostics function to check the encoder. 2. Check functioning of the power board relay
Code 28	Unbalance measurement timeout.	1. Repeat the unbalance measuring cycle. 2. Contact Technical Service.
Code 29	Eccentricity measurement timeout.	1. Repeat the eccentricity measuring cycle. 2. Contact Technical Service.
ERRORS HARDWARE TYPE	**CAUSE**	**CHECKS**
Err.3	Software error from acquisition board.	---
Code: all	Configuration parameter setting errors from the PC to the computer board.	1. Turn the wheel balancing machine off and on again. 2. Contact Technical Service.
ERRORS HARDWARE TYPE	**CAUSE**	**CHECKS**
Err.128	Ethernet error.	---
Code: all	Communication errors via Ethernet between the PC and the acquisition board.	1. Turn the wheel balancing machine off and on again. 2. Check the Ethernet connection cables between the PC and the acquisition board. 3. Replace the acquisition board.

9. Maintenance

9.1 GENERAL

CAUTION

BEFORE PERFORMING ANY MAINTENANCE OPERATIONS, MAKE SURE THE MACHINE HAS BEEN DISCONNECTED FROM THE MAINS POWER SUPPLY. ALWAYS USE THE PERSONAL PROTECTIVE EQUIPMENT INDICATED IN THE INSTALLATION MANUAL.

9.1.1 Introductory notes

This machine has been designed so as not to require routine maintenance, apart from accurate periodic cleaning. It is important to keep the machine perfectly clean in order to prevent dust or impurities from compromising the operation of the balancer.

WARNING

THE PEOPLE RESPONSIBLE FOR CLEANING THE AREA WHERE THE MACHINE IS INSTALLED MUST WEAR PERSONAL PROTECTIVE EQUIPMENT IN ORDER TO WORK IN SAFETY AND ACCORDING TO THE CURRENT OCCUPATIONAL HEATH AND SAFETY REGULATIONS.

As extraordinary maintenance must be performed by service staff or, in any case, by specifically authorised and trained people, is not dealt with in this manual.

9.1.2 Safety rules

Performing specialist activities on the equipment, particularly if the guards need to be dismounted, exposes people to serious danger due to the presence of potentially live parts.

The rules shown below must be scrupulously followed.

People must always use the Personal Protective Equipment indicated in the Installation Manual. During activities, unauthorised people may not access the equipment and WORK IN PROGRESS signs will be erected in the department in such a way that they are visible from every place of access.

Specialist staff must be authorised and especially trained concerning the dangers that may arise during operation and the correct methods for avoiding them.
They must always work with great care and pay full attention.

If, exceptionally, the staff removes the guards to carry out a particular specialist technical maintenance, inspection or repair job, they are required to put them back after work.

After work, staff must make sure that foreign objects, in particular mechanical pieces, tools or devices used during the operative procedure that could cause damage or malfunctions are not left inside the balancer.

For safety, before starting work, maintenance, inspection and repair staff must disconnect all power sources and take all the necessary preventive safety measures.

As well as operating frequencies, the operations described below indicate the qualifications that staff must possess in order to perform the operation.

9.1.3 Replacing fuses

Some protection fuses are located on the power board (see wiring diagrams) accessible by dismantling the weight shelf). If fuses require replacement, use ones with an identical current intensity.

ENGLISH

10. Disposal

CAUTION

THE INSTRUCTIONS IN THIS CHAPTER ARE INDICATIVE. REFER TO THE REGULATIONS IN FORCE IN THE COUNTRY WHERE THE EQUIPMENT IS USED.

10.1 DISPOSING OF THE BALANCER

The balancer must be disposed of after dismounting the various parts.

For disposal operations, as well as wearing the Personal Protective Equipment indicated in the INSTALLATION MANUAL, refer to the instructions and diagrams in this manual. If necessary, request specific information from the manufacturer.

Once you have removed the various parts and components, separate them into the different types of materials according to the differentiated waste disposal regulations in force in the country where the machine is dismantled.

If the various components must be stored before being taken to the dump, make sure to keep them in a safe place protected from atmospheric agents in order to prevent them from contaminating the ground and the water table.

10.2 DISPOSING OF ELECTRONICS COMPONENTS

Community directive 2002/96/EC, assimilated in Italy with legislative decree n° 151 of 25th July 2005, requires electrical and electronic equipment manufacturers and users to comply with a number of obligations concerning the collection, treatment, recovery and disposal of this waste.

Please scrupulously comply with these waste disposal regulations.
Remember that abusive dumping of this waste leads to the application of the administrative penalties established by current law.

11. Spare parts

11.1 IDENTIFICATION AND ORDERING METHOD

The various parts can be identified using the explodeddrawings, the electrical drawings and diagrams in the machine technical file which is archived by the Manufacturer to which a request can be made.

For off-the-shelf parts, the technical manuals or the supplier's original documents can be provided if the Manufacturer deems this to be useful.

If not supplied, this documentation is also included in the machine Technical File, archived by the Manufacturer, as regards by Ministerial Decree 98/37/EC.
In this case, contact the Technical Service to identify the required piece.

If the required pieces are not in any position or they cannot be identified, contact the Technical Service, specifying the type of machine, its serial number and year of construction.

This information is indicated on the machine identification plate.

12. Attached documentation

If not supplied, this documentation is included in the Technical File of the machine, archived by the Manufacturer.

In this case, contact the Technical Service for detailed information concerning the machine.