CORGHI

CE

EYELIGHT Plus
DiagnosticLine

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TRANSLATION OF ORIGINAL ITALIAN INSTRUCTIONS

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INTRODUCTION

The purpose of this manual is to provide the owner and operator with effective and safe instructions for the use and maintenance of the equipment.
Follow all the instructions carefully and your machine will assist you in your work and give lasting and efficient service.
The following paragraphs define the levels of danger regarding the machine, associated with the warning captions found in this manual.

DANGER

Refers to immediate danger with the risk of serious injury or death.

WARNING

Dangers or unsafe procedures that can cause serious injury or death.

ATTENTION

Dangers or unsafe procedures that can cause minor injuries or damage to property.

Read these instructions carefully before starting the machine. Keep this manual and all illustrative material supplied with the machine in a folder near it where it is readily accessible for consultation by the operators.
The technical documentation supplied is considered an integral part of the machine; in the event of sale all relative documentation must remain with the machine.
The manual is only valid for the machine model and serial number indicated on the nameplate applied to the machine itself.

WARNING

Comply with the contents of this manual: any uses of the machine that are not specifically described are under the full responsibility of the operator.

Note

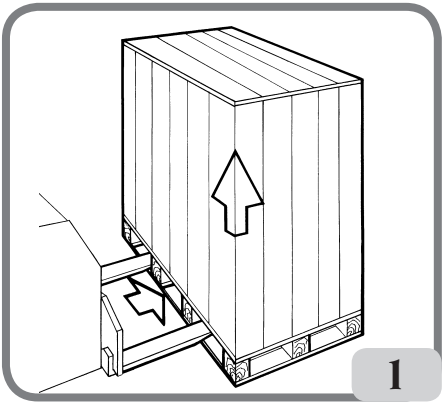
Some of the illustrations contained in this booklet have been taken from pictures of prototypes: standard production machines may differ slightly in certain respects.

These instructions are for the attention of personnel with basic mechanical skills. We have therefore condensed the descriptions of each operation by omitting detailed instructions regarding, for example, how to loosen or tighten the fixing devices. Do not attempt to perform operations unless properly qualified or with suitable experience. If necessary, please contact an authorised Service Centre for assistance.

TRANSPORT, STORAGE AND HANDLING

The basic wheel balancer packaging consists of 1 wooden crate containing:
- Wheel balancer.
- Monitor (in packaging).
- Wheel guard.
- Equipment.

Before installation, the wheel balancer must be shipped in its original packaging, making sure that the machine is maintained in the position indicated on the outer packaging. The machine can be moved by placing the packaging on a wheeled trolley or inserting the forks of a fork lift truck in the relative slots in the pallet (Fig. 1).



- Packaging dimensions:

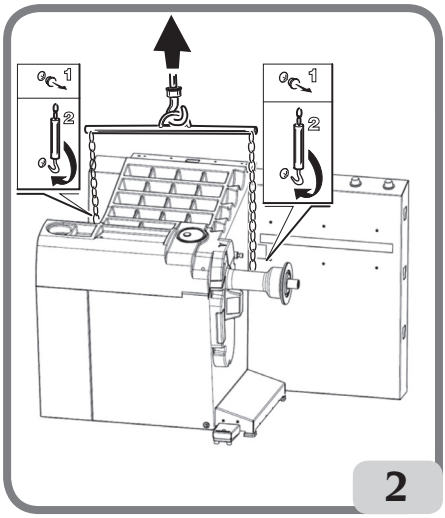
Length (mm/in):..... 1786/70
Depth (mm/in):..... 1148/45
Height (mm/in):.. ..... 1250/49
Weight (kg/lb):.. ..... 240/528
Packaging weight (kg/lb): 43/95

- The machine must be stored in an environment meeting the following requirements:
  • relative humidity ranging from 20% to 95%;
  • temperature ranging from -10° to +60°C.

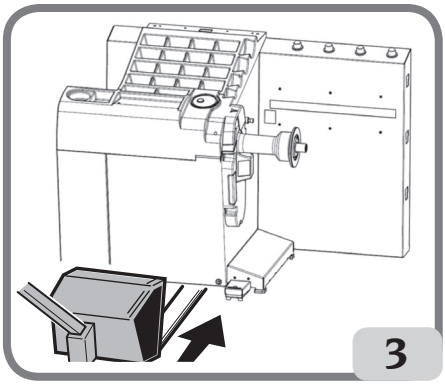
CAUTION

Do not stack more than two packs to avoid damaging them.

The machine may be moved for installation or for subsequent relocation as follows:
- With a crane, using special equipment that holds the machine at the designated lifting points (Fig. 2).



- By inserting the forks of a lift truck under the machine so that the centre of the forks correspond approximately to the centre line of the body (Fig. 3).



WARNING

Always unplug the power supply cable from the socket before moving the machine.

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CAUTION

Never apply force to the wheel spin shaft when moving the machine.

INSTALLATION

WARNING

Carry out the unpacking, assembly and installation operations indicated below with great care. Failure to comply with these instructions could damage the machine and put the operator at risk. Remove the original packing materials after positioning them as indicated on the packaging and keep them intact so that the machine can be safely shipped at a later date if necessary.

WARNING

The place where the machine is to be installed must conform to applicable safety at work regulations.
In particular, the machine must only be installed and used in protected environments where there is no risk of dripping onto it.
The floor must be strong enough to support a load equal to the weight of the equipment plus the maximum load allowed. The support base on the floor and the envisaged fixing means must also be taken into account.

IMPORTANT:
for the correct and safe operation of the machine, the lighting level in the place of use should be at least 300 lux.
Environmental operating conditions must comply with the following requirements:
- Relative humidity ranging from 30% to 80% (without condensation).
- Temperature ranging from 5° to +40°C.

WARNING

The machine must not be operated in potentially explosive atmospheres.

The machine is supplied partially disassembled and is to be assembled according to the procedures described below.

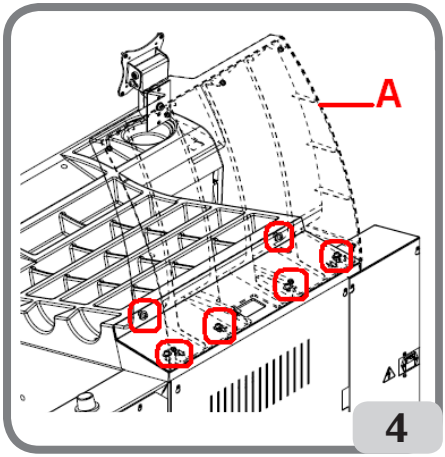
Touchscreen monitor cleaning

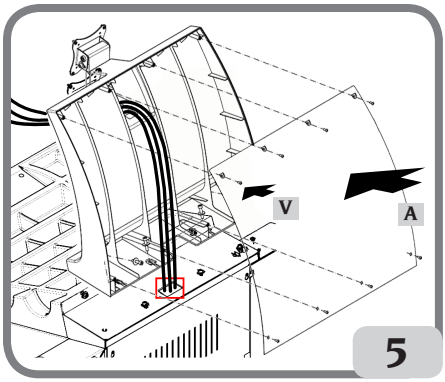
In order to maintain the appearance and perfect working order of the display, regularly clean the screen as follows:
- switch off the machine;
- clean the screen using specific products or a soft damp cloth. You can use a detergent for glass but do not spray the detergent directly on the surface of the display;
- if there is also dust or dirt along the infrared frame of the monitor, it is recommended to blow compressed air along the four sides of the monitor and in the corners, paying particular attention to the lower side where dust tends to settle more;
- switch on the machine and wait, after display of the main logo, for about 30 seconds to allow the monitor to execute auto-calibration.

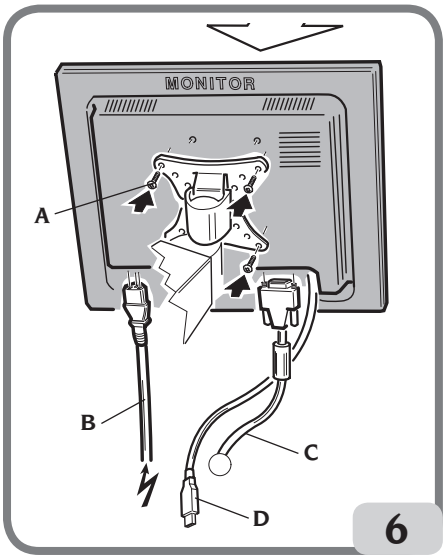

on the machine displays the icon, wait a few seconds for auto-calibration of the monitor to terminate without using it and as soon as possible clean the monitor as indicated in the paragraph “Touchscreen monitor cleaning”

Monitor support and monitor touchscreen assembly

- fix the monitor support (A, fig.4) to the weight tray and to the casing using the six screws supplied with the machine (fig.4);
- insert the monitor’s USB cable, the signal cable and the power supply cable inside the previously mounted support, as shown in figure 5;
- fix the closing plate (A, fig.5) using the eight screws (V, fig.5) supplied with the machine;
- Remove the monitor from its packaging and remove the support base, if necessary.
- Fix the monitor to the wheel balancer support flange using the four screws supplied with the machine (A, fig 6).
- connect the USB, signal and power supply cables to the rear monitor panel (B,C,D, fig. 6).

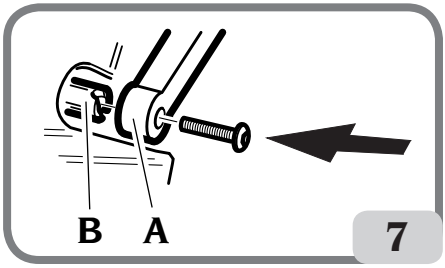




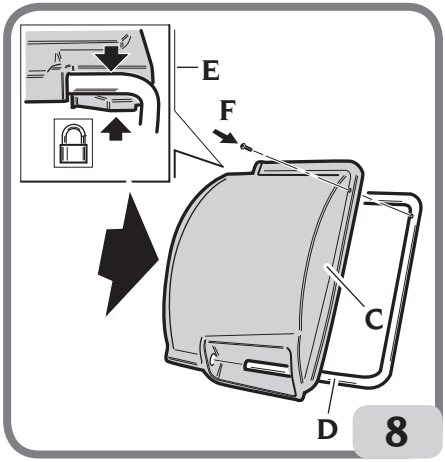


Wheel guard and related support mounting procedure

- Install the bush (A, fig. 7) on the pivot (B, fig. 7). While doing this, ensure that the groove on the pivot is aligned with the pin in the bush;



- Block the bush on the pin using the M12 screw supplied with the machine.
- Insert the metal tube (D, fig.8) into the two plastic guard front holes (C, fig.8);
- Fasten the guard to the rear of the pipe, snap fitting into the relative seat (E, fig. 8);
- Lock the guard by tightening the screw F (fig.8).



After assembling the machine, position it in the selected place and make sure that the spaces surrounding it are at least equal to the ones indicated in Fig. 9

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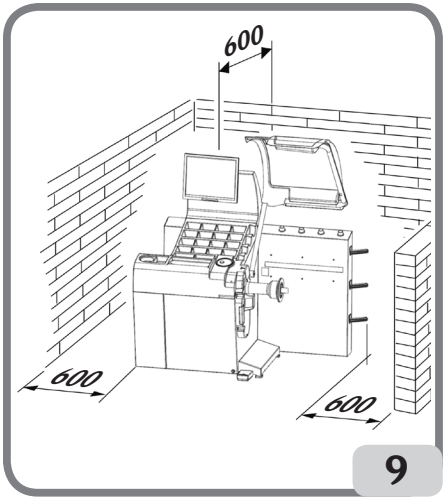
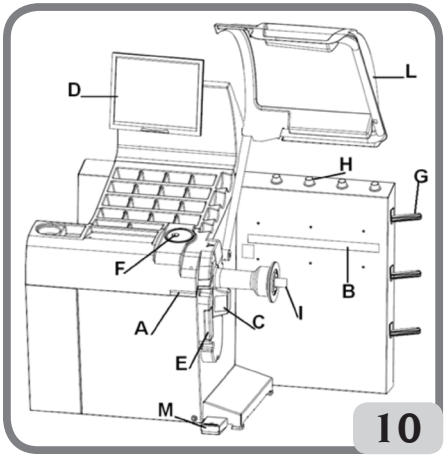


Main working parts (Fig. 10)

A) Internal laser measuring sensor
B) External laser measuring sensor
C) Telecamera
D) Touchscreen LCD monitor
E) LED light
F) Confirmation button
G) Side flange holders
H) Bushing holder
I) Wheel support shaft
L) Wheel guard
M) Control pedal C of the automatic wheel clamping system



ELECTRICAL HOOK-UP

The wheel balancer is set up by the manufacturer to operate with the power supply available in the place of installation. The set-up data for each machine are given on the machine data plate and on a special label attached to the power supply connection cable.

WARNING

Any operations for hooking up to the workshop electrical board must be carried out only by qualified technicians in compliance with the regulations in force, under the responsibility and at the charge of the customer.

The electrical hook-up must be performed according to:

- Absorbed power specifications indicated on the machine data plate.
- The distance between the machine and the electric hook-up point, so that voltage drops under full load do not exceed 4% (10% when starting up) of the rated voltage specified on the data plate.

- The user must:

- Connect the machine to a dedicated electrical power socket equipped with its own differential circuit breaker with a sensitivity ‡ 30mA.
- Power line fuses in accordance with specifications in the main wiring diagram of this manual.
- Provide the workshop electric installation with an efficient grounding circuit.

- To prevent unauthorised use of the machine, always disconnect the power supply plug when the machine is not used (switched off) for extended periods of time.
- If the machine is connected directly to the power supply by means of the main electrical panel and without the use of a plug, a key-operated or padlockable switch must be installed to restrict machine use exclusively to qualified personnel.

WARNING

A good grounding connection is essential for correct operation of the machine. NEVER connect the machine ground wire to a gas pipe, water pipe, telephone cable or any other unsuitable object.

SAFETY REGULATIONS

WARNING

Non-compliance with the instructions and danger warnings can cause serious injuries to the operator or other persons.

Do not operate the machine until you have read and understood all the danger/warning notices in this manual.

In order to operate the machine correctly, it is necessary to be a qualified and authorised operator, able to be trained and to know the safety regulations. Operators are expressly forbidden from using the machine under the influence of alcohol or drugs capable of affecting physical and mental capacity.

The following conditions are essential:

- Read and understand the information and instructions described in this manual.
- Have a thorough knowledge of the features and characteristics of the machine.
- Keep unauthorised persons well clear of the working area.
- Make sure that the machine has been installed in compliance with all relevant standards and regulations in force.
- Make sure that all machine operators are suitably trained, that they are capable of using the machine correctly and safely and that they are adequately supervised during work.
- Do not touch power lines or the inside of electric motors or any other electrical equipment before making sure that they have been powered off.
- Read this booklet carefully and learn how to use the machine correctly and safely.
- Always keep this user manual in a place where it can be readily consulted and do not fail to refer to it.

WARNING

Do not remove or deface the DANGER, WARNING, CAUTION or INSTRUCTION decals. Replace any missing or illegible decals. If one or more decals have been detached or damaged, replacements can be obtained from your nearest authorised dealer.

- When using and carrying out maintenance on the machine, observe the unified industrial accident prevention regulations for high voltage industrial equipment and rotating machinery.
- Any unauthorised alterations made to the machine automatically release the manufacturer from any liability in the case of damage or accidents as a result of such alterations. Specifically, tampering with or removing the machine's safety devices is a breach of the regulations for industrial accident prevention.

WARNING

During work and maintenance operations, always tie back long hair and do not wear loose clothing, ties, necklaces, wristwatches or any other items that may get caught up in the moving parts.

Key to caution and instruction labels

Never use the wheel spin shaft as a lifting point for the machine.

Unplug the power supply plug before performing any maintenance/repair operations on the machine.

Do not lift the guard when the wheel is rotating.

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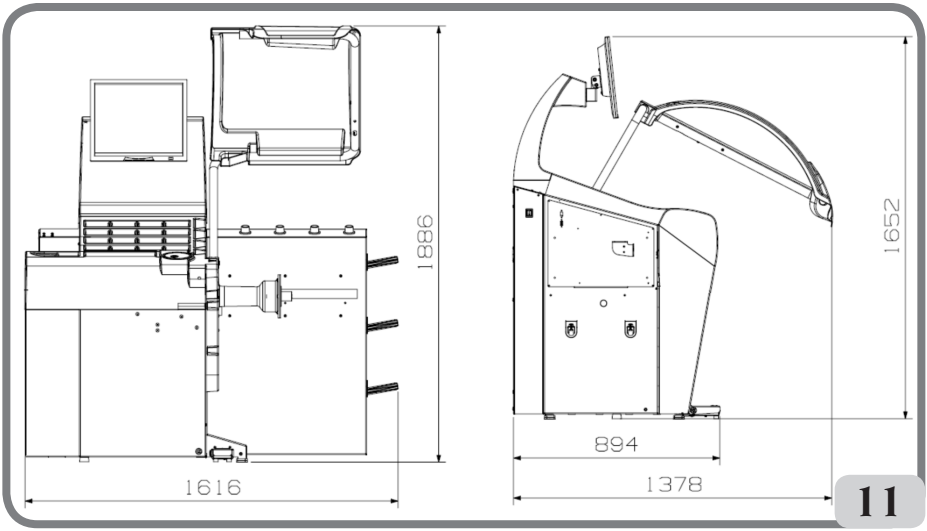
MAIN FEATURES

- Automatic machine self-diagnostics when starting up.
- Variable balancing speed (from 70 to 98 rpm depending on the wheel type) so as to:
  • minimise spin times;
  • reduce risks posed by moving parts;
  • increase energy saving.
- Wheel positioned close to the operator to make the application of adhesive weights easier.
- High-resolution telecamera for automatic recognition of the rim.
- Internal laser measuring sensor for wheel data acquisition.
- External laser measuring sensor for wheel data acquisition.
- LED light for rim lighting and image acquisition.
- Automatic stop of the wheel at the end of the spin.
- Wheel-holder shaft clamping brake (button-operated).
- STOP button to stop the machine immediately.
- automated wheel guard at end of spin when opening;
- Side flange holder.
- Bushing holder.
- Top tray for storing weights and most frequently used accessories.
- Automatic spin of balancing procedure when the guard is lowered.
- High-resolution LCD monitor touchscreen, indispensable aid when executing new programmes.
- User-friendly graphics for fast and effective learning of the machine functions.
- On-screen interactive help.
- Multi-language texts.
- Multi-microprocessor processing unit (32 bit).
- Multiprocessor personal computer for quick data processing.
- Unbalance values displayed in grams or ounces.
- Unbalance measurement accuracy: 1g (1/10 oz).
- Wide selection of programmes.
- Two rounding-off modes to display unbalances.
- Balancing modes available:
  • Standard: dynamic balancing (both sides of rim).
  • Alu: five different methods for alloy rims.
  • Static: on one plane only.
- "Hidden Weight" automatic programme (in ALU 1 and 2) for dividing the outer side balancing adhesive weight into two equal weights positioned behind the rim spokes.
- "Less Weight" programme to obtain optimum balancing of the wheel, reducing the quantity of weight to be applied to a minimum.
- "OPT Flash" programme to minimise wheel unbalance.
- "Runout" programme for measuring radial run-out of a wheel assembly or of a rim at the tyre bead seats;
- "Matching geometrico" (Geometric matching) programme for minimising radial run-out of wheel;
- "iPos" programme for calculating the optimal position of the wheel on the vehicle.
- "3D wheel scanning" programme for a 3D display of the wheel or only the rim;
- "Wheel Diagnosis Procedure" programme for measuring and resolving vehicle side slip problems.
- "AUTOWS" programme for the automatic selection of the optimum balancing programme;
- General utility programmes:
  • unbalance sensitivity calibration;
  • main screen customisation;
  • spin overall and partial number counter;
  • display of service and diagnostics page.
- Independent working environments that allow a maximum of three operators to work in parallel with no need to reset any data.
- RPA: - Automatic wheel positioning in the position where the balancing weight has to be applied.

TECHNICAL DATA

Power supply voltage:	1Ph 115V 50-60Hz 1Ph 230V 50-60Hz
Overall power:	700 W
Balancing speed:	70-85-98 rpm
Maximum unbalance value calculated:	999g
Average spin time (with 5.5"x14" wheel):	7 sec
Unbalance reading resolution:	1 - 5 g
Angle position resolution:	0.7 °
Shaft diameter:	40 mm
Working environment temperature:	5 to 40°C
WINUT Device Operating Frequency:	2.4GHz
Radiofrequency signal maximum power:	100mW
Weight of electrical/electronic components (kg/lb):	21/46



Machine dimensions

- Height with guard closed: ..... 1652 mm
- Height with guard open: ..... 1886 mm
- Width: ..... 1616 mm
- Depth with guard closed: ..... 1378 mm
- Depth with guard open: ..... 894 mm

Working range

automatic rim width: ..... from 1 " to 23 "
manual rim width: ..... from 1.6 " to 23.6 "
automatic rim diameter: ..... from 10 " to 32 "
manual rim diameter: ..... from 2 " to 35 "
maximum wheel distance/automatic machine: .. .. 360 mm
maximum wheel distance/manual machine: .... 1 to 500 mm
Max wheel width (with guard) ..... 560 mm
Max wheel diameter (with guard): ..... 1118 mm
Max wheel weight: ..... 75 kg
Machine weight (without accessories): .... 198 kg
Operating noise level: ..... <70 dB(A)

STANDARD ACCESSORIES

The following parts are supplied together with the machine.

Weight pliers
Calliper for wheel width measurement
Sliding flange holder kit
Calibration weight
Wheel balancer power supply cable
Monitor power supply cable
Kit 4 cones
Wheel fixing cap protection
Wheel spacer
Wheel fixing cap

C VERSION
C hub
C locking device
C hub key

OPTIONAL ACCESSORIES

Please refer to relevant accessories catalogue.

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GENERAL CONDITIONS OF USE

The equipment is intended for professional use only.

WARNING

Only one operator at a time can work with the machine.
The wheel balancers described in this manual must be used **exclusively** to measure the extent and position of car wheel unbalances, within the limits specified in the Technical specification section. Furthermore, models equipped with motors must be provided with a suitable guard, fitted with a safety device, which must be lowered during the spin operation.

WARNING

Any use of the machine other than the described use is to be considered as improper and unreasonable.

CAUTION

Do not start the machine without the wheel locking equipment.

WARNING

Do not use the machine without the guard and do not tamper with the safety device.

CAUTION

Do not clean or wash the wheels mounted on the machine with compressed air or jets of water.

WARNING

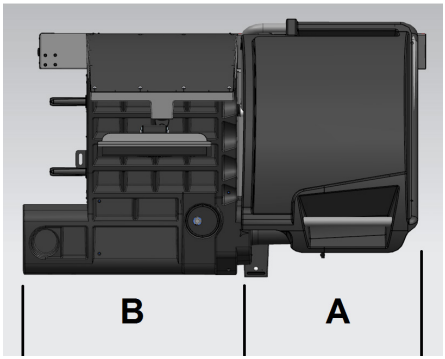
It is advisable to use only original tools for working.

WARNING

Get to know your machine: The best way to prevent accidents and obtain top performance from the machine is to ensure that all operators know how the machine works.
Learn the set up of all controls and their functions.
Accurately check for correct functioning of every machine control device. To prevent accidents and personal injury, all the equipment must be correctly installed, correctly operated and correctly serviced.

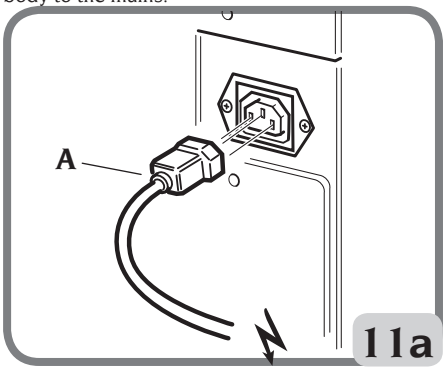
POSITION OF THE OPERATOR

The following figure shows the positions occupied by the operator during the various work phases:
A Mounting / disassembling operations, launch, dimension detection (where provided) and wheel balancing
B Machine programs selection
In this way, the operator is able to perform, monitor and verify the outcome of each wheel balancing and intervene in case of unforeseen events.

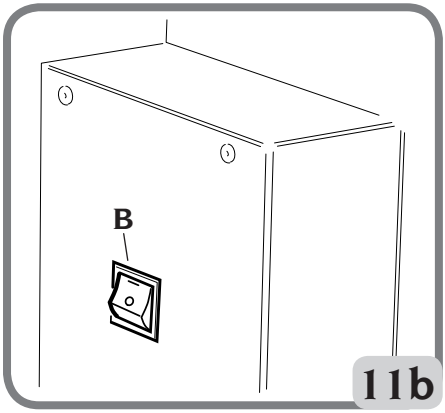


SWITCHING ON THE MACHINE

Connect the power supply cable (A, Fig. 11a) supplied with the machine from the external electrical panel located on the rear side of the wheel balancer body to the mains.



Turn on the machine using the switch located on the left-hand side of the body (B, fig.11b).



At start-up, the wheel balancer performs a series of control tests and displays the message “please wait”. If no anomaly is detected, it displays the customisation data and mark.
Note: if the image is not centred on the LCD monitor, adjust it using the controls located on the front part of the monitor. For further information on the adjustment procedure, refer to the monitor manual provided, which can be found inside the packaging.

DESCRIPTION OF WHEEL BALANCER FUNCTIONS

Graphics are completely icon-based (drawings and symbols that represent the function of the button). If an icon is selected, the relevant function is activated.
At start-up, the wheel balancer displays the main logo which can display the time and/or workshop data (see the Customisation section).

By pressing anywhere on the touchscreen, you can display the main working screen.

Before starting a balancing operation, the following steps must be followed:
- Mount the wheel on the hub using the most suitable centring system.
- Make sure that the wheel is correctly locked to the shaft so that no displacement can occur during the spin and braking phases (ref. section “using the automatic wheel clamping system”);
- Remove any counterweight, pebbles, dirt or other foreign bodies.

BALANCING PROGRAMMES

At start-up, by default, the wheel balancer executes the Dynamic programme which uses clip weights on both sides.
The balancing programmes can be recalled by simply selecting on the touchscreen the icon for the weight according to the type of rim and professional experience:

if the weight to be applied is a spring type
or

if the weight to be applied is adhesive.

Each combination of weights corresponds to a specific balancing programme that will be display in the top part of the screen (e.g.. dynamic, alu1, etc.).

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Note: a different type of weight can also be selected at the end of the dimension measurement and unbalance calculation cycle.

Note: the Static programme, that uses only one weight, is activated by selecting the icon for the desired weight on the touchscreen and disabling the icon that is not required.

POSITION INDICATORS AND ALARM INDICATOR LIGHTS

The wheel balancer has two round indicators for the positioning of unbalances.

Each indicator has a button for changing the unbalance unit of measurement from grams to ounces and vice versa.
By selecting the central part of the indicator, an automatic centred position search starts if the unbalance is higher than zero.

At the end of the dimension and unbalance measurement cycle, warning indicators may come on if the set acceptable tolerances are exceeded (see the "Wheel balancer parameter configuration" section):

1. 

WARNING OPT
This recommends performing the unbalance optimisation procedure. Select the icon to start the unbalance optimisation procedure (see the "Unbalance Optimisation programme" section).

2. WARNING ROD

ROD program disabled, NOT activated

ROD program is activated, it does NOT recommend running the RUNOUT analysis procedure as all detected parameters are within the set threshold.

ROD program is activated and recommends running the RUNOUT analysis procedure. If you select the icon, the measured value of the radial eccentricity of the wheel assembly is displayed

ROD program activated and recommends running the geometric wheel MATCHING procedure. If you select the icon you can make the wheel geometry MATCHING..

3. WARNING TYRE

the ROD program is activated and does NOT recommend displaying tire parameter values as all parameters detected are within the set threshold.

the ROD program is activated and advises the display of tire-acquired parameters. If you select the icon, the measured tread and drift values are displayed..

SPIN TYPE

The working environment has different spin types that the operator can select based on his requirements, i.e.:

- 
wheel unbalance detection and radial run-out acquisition of the complete wheel or wheel rim

- 
wheel unbalance detection and

radial run-out acquisition of the complete wheel and rim

-  in addition to the acquisitions described in the previous methods  the outboard side of the rim is detected, the height of the tread and any wheel drift is measured

By checking this FLAG, the machine cycle time increases as data regarding the geometry of the wheel being examined is acquired.

MAIN CONTROL KEYPAD

The main control keypad has the following buttons:

1. 

Help button

- recalls information on the current video page to the screen. If an error message is displayed, the first piece of information displayed refers to the error list. The instructions called up by this icon integrate (but do not replace) this User Manual.

2. 

Automatic dimensions button

- This enables automatic dimension measurement after which the icon is disabled at the end of the balancing cycle (ie. dimension reading is not repeated until the button is re-enabled).
- This displays the page for manual entry of dimensions if the laser sensors have been disabled (see the "Wheel balancer parameter configuration" section).

3. 

Utility and configuration menu button

- This groups all the machine Utility and Configuration programmes.

4. 

Live button

- This is used to check and/or modify the balancing planes measured by the processing unit.

5. 

Start button

- This starts the unbalance measurement cycle when the guard is lowered.

6. 

Stop button

- This stops the wheel for 50 seconds to allow wheel mounting/demounting or weight application.
- If held down for 3 seconds, it activates the C hub demounting procedure and displays the A 52 message.
- Interrupts the unbalance measuring cycle.
- Raises the wheel guard (L, Fig. 8) and interrupts the unbalance measurement cycle.

SECONDARY CONTROL KEYPAD

The secondary control keypad can be used to quickly modify machine status and consists of the following five buttons:

1. 

enables/disables the Weight Management suite:

- Select this button to activate the Less Weight programme for weight saving consisting of two balancing modes:

optimised mode for fast vehicle wheels;

or 

optimised mode for slow vehicle wheels;

press the button again to deactivate the Weight Management suite.

Wheel balancing is performed using the desired balancing programme. At the end of the spin, if wheel balancing is considered satisfactory, the position indicators will display the icons ✓ and two semicircular indicators for

indicating the residual rotation torque unbalance level (left indicator) and static rotation torque level (right indicator).

2. 

selects the required operator:

- This button can be used to change operator quickly.
- 3 operators can be selected (1, 2 or 3) and named (see the "Customisation" section).
- When a new operator is selected, the machine resets the parameters that were active at the last recall.

The stored parameters are:

- Balancing mode; Dynamic, ALU, etc...
- Wheel dimensions.
- Last phase of OPT.
- General machine settings: grams/ounces, sensitivity x5/x1, etc...

3. 

enables/disables the iPos programme (intelligent positioning):

- Selecting the following button defines the wheel to be analysed:

- 

selects the front left wheel;
- 

selects the front right wheel;
- 

selects the rear right wheel;
- 

selects the rear left wheel;

pressing the button 

again to disable the iPos programme. 

Once the data acquisition procedure is complete, the programme suggests the optimal position of the wheels on the vehicle.

For more detailed information refer to paragraph 3.3 of the "Wheel Diagnosis Programme" suite.

4. 

Enables/disables the unbalance display mode (gx1 or gx5).

- Select this button to display the unbalance mass in grams:

 to the nearest gram or 1/10 of an ounce if the unit of measurement has been set to ounces;

or  to the nearest 5 grams or 1/4 of an ounce if the unit of measurement has been set to ounces.

5. 

print menu:

- Select this button to access the print menu for the programme that is running.

The following is possible in the menu:

- Fill out the empty fields in the report by pressing the text Entry button  .
- Start the print process with the Print button  .
- -from the print menu, the PDF file can be downloaded onto a USB key connected to the machine by pressing the 

button.

If the  image appears on the screen,
insert the USB key.

When a USB key is inserted on the connector at the side of the machine, it is recognised and the following image:

appears on the screen.

Press the "OK" button.

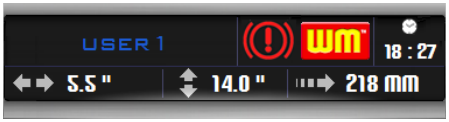
After pressing the button, the following image 

appears on the screen while the file is being saved to the USB key. When the image disappears, you can remove the USB key from the machine.
The file is saved to the USB key with a unique file name, consisting of the total count of spins performed by the machine (e.g. 000014) and, if required, a custom file name entered by the operator (customer name or vehicle license plate number).

By pressing the network button  you can save the report of the measurements made in .pdf format to a network directory.

FEEDBACK WINDOW

The feedback window, as shown in the figure below, displays the following information:



- Name of operator (see the "Customisation" section).
- Time (see "Wheel balancer parameter configuration" section).
- Wheel dimensions during the last spin: white if measured automatically; or yellow if set manually.
- enabling the WM programme.
- the parking brake status (enabled or not enabled).

SHUTTING DOWN

This function starts the shutdown process which protects the Windows operating system installed on the PC and depowers the machine.
Proceed as follows:

- Press the **Enter** button ✔ .
- Wait for the PC to be turned off completely as confirmed by an intermittent beep.
- finally, press the switch located on the left side of the casing (B, fig.11b).

USING THE AUTOMATIC WHEEL CLAMPING SYSTEM C

NOTE:
After every power on, the first time the automatic wheel clamping system is activated using the pedal, the machine will perform a calibration by automatically moving the two ratchets located on the hub towards the outer side. When calibration is complete, the operator can use the machine as described below.
Wheel locking procedure with the automatic C:
Centring with cone at front

- Fit the wheel on the shaft, sliding it into place until it rests against the flange.
- Fit the most suitable cone on the shaft and insert it into the central hole of the wheel.
- Fit the locking device by making it slide on the hub until it comes into contact with the cone.
- Press the control pedal for at least one second.

Centring with cone at rear

- Fit the most suitable cone for the central hole of the wheel on the shaft.
- Fit the wheel onto the cone, sliding it into place until the cone comes into contact with the plate that holds the spring.
- Apply the protective cap to the sleeve.
- Fit the locking device by making it slide on the hub until it comes into contact with the wheel.
- Press the control pedal for at least one second.

Wheel release

- Press the control pedal for at least one second to release the wheel from the flange.

Centring with flanges
C hub removal

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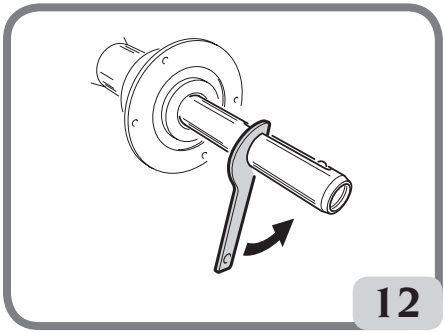
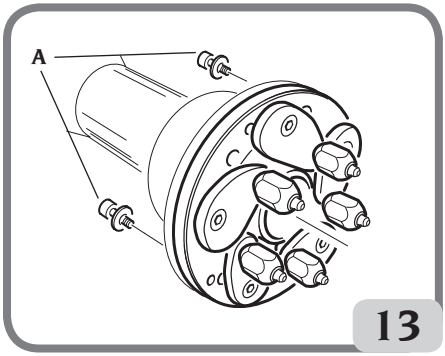
- Hold down the **stop** 

button on the keypad for at least 3 seconds or go to the utility and configuration programmes, then press the icon  to block the wheel-holder shaft and the internal devices.
- Insert the C special key provided with the machine in the C hub hole (Fig. 12).



- Unscrew the C hub completely.
- Mount the flange on the shaft and lock it with the two screws (A, Fig. 13) using the CH 6 wrench.



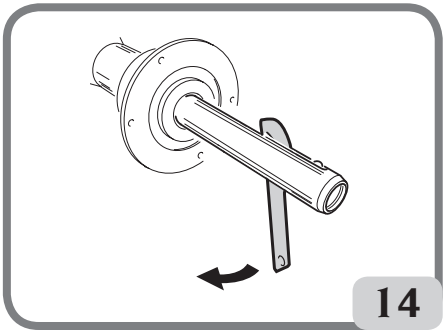
- Lock the wheel onto the flange as usual.

C hub mounting

Proceed as follows to remount the C hub:

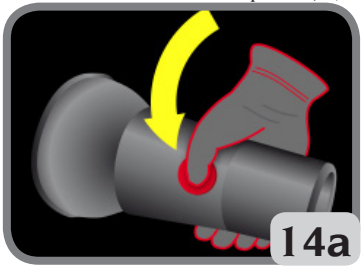
- Hold down the **stop** button 

for at least 3 seconds or go to the utility and configuration programmes, then press the icon  to block the wheel-holder shaft and the internal clutch.
- Screw the C hub manually until it reaches the end position.
- Tighten the C hub by inserting the C special wrench into the C hub hole (Fig. 14).
- To tighten the hub properly, a hammer stroke must be used on the special C key (it is also possible to use the caliper, hammer side, to secure the spring weights).



WINUT DEVICE

The machine can be fitted with the WINUT device - i.e. the activation of the automatic wheel locking device C via the button on the sleeve C (Fig.14a) rather than via the control pedal (M, Fig.10).



This device can also be fitted on other machines, by requesting the relevant accessory.

On the work screen, the machine visualises certain icons relating to the device:

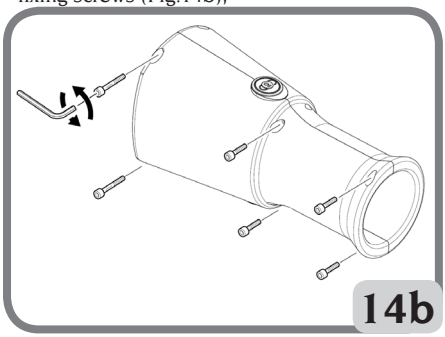
-  : indicates that the machine rec-

ognises the WINUT device;

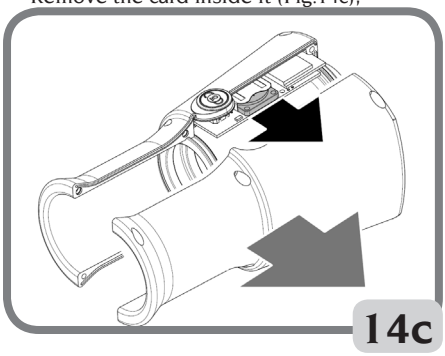
-  : indicates that the battery in the sleeve C is charged;
-  : indicates that the battery in the sleeve C is at roughly the halfway point of its charge level;
-  : indicates that the battery in the sleeve C needs to be replaced.

To replace the battery in the sleeve C, proceed as follows:

- Open the sleeve C by loosening the six M3 fixing screws (Fig.14b);



- - Remove the card inside it (Fig.14c);



- Replace the battery in the sleeve C with a new CR2450 3V;
- Assemble the sleeve C, following the disassembly instructions in reverse order.

WHEEL SPIN AND AUTOMATIC DIMENSION MEASUREMENT

Wheel spin takes place automatically by lowering the guard or pressing the **Start** button 

with the guard lowered. The wheel protection lock is manual, while the opening of the wheel is automatic. The following graphic appears on the screen to alert the operator of the imminent opening of the wheel guard:

A special safety device stops rotation if the guard is raised during the spin; in this case, the **A Cr.** message is displayed.
During the spin, the wheel balancer lights up the inner part of the rim and displays on the screen the assembled wheel by way of a telecamera.
Using a special software, the image of the wheel is acquired and processed to allow the laser sensors to measure the dimensions of the rim for the final calculation of the unbalances.
At the end of the spin, if the AUTOWS function is selected, the machine automatically suggests the optimum balancing programme (DYN, ALU1 or ALU2) in relation to the characteristics of the rim.
At the end of the spin, the rated dimensions of the wheel are displayed in the feedback window, specifically:

- The nominal rim width (only for dyn, sta, alu3, alu4 and alu5 programs).
- The nominal rim diameter.
- The distance from the body to the inner edge of the rim.

Note: at the end of the spin, if the automatic position search function is enabled, the wheel

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may spin with the guard raised.

NOTE

If the width measurement is highlighted in red, it means that one of the automatic control parameters has not been met and it is therefore advisable to check the dimension. Using the touch screen select, if necessary, the feedback window and manually enter the nominal width of the rim, press enter and exit the manual entry mode.

NOTE

If the laser sensors and/or telecamera fails to operate, the geometric data can be entered manually by following the procedure indicated in the “Manual wheel data entry” section. This function is present in the Utility and Configuration programmes.

NOTE

The laser sensors may not measure the rim dimensions correctly on particularly reflective surfaces. In this case enter the geometric data manually following the procedure described in the paragraph “Manual wheel data entry”, which is a function present in the Utility and Configuration programmes. In this circumstance, at the end of the spin, the machine will automatically set up so the diameter can be entered (see figure), whereas the distance and width are present but must be checked for correctness and changed if necessary. The balancing weights must always be applied at 12 o’clock, regardless of the selected programme.

CAUTION

bear in mind that the nominal wheel diameter (e.g. 14”) refers to the planes on which the tyre beads rest which are obviously inside the rim. On the other hand, the data measured refer to external planes, so they will be lower than the rated values because of the thickness of the rim. The correction value therefore refers to an average thickness of the rim. This means that the data measured on wheels with different thicknesses may vary slightly (2 or 3 tenths of an inch maximum) from the rated values. This is not a lack of accuracy of the measuring devices, but reflects reality.

WARNING

Do not operate the machine without the guard and/or if the safety device has been tampered with.

WARNING

Never raise the guard before the wheel has come to a stop.

WARNING

At the end of the spin, the machine will open the wheel guard automatically, therefore do NOT stand in the range of operation of the guard.

WARNING

If the wheel keeps spinning permanently due to a fault on the machine, switch off the machine using the main switch or disconnect the plug from the power supply board (emergency stop) and wait

until the wheel stops before raising the guard.

Dynamic balancing (Dynamic)

This balancing mode is the most commonly used one. If a different balancing programme is running, the programme must be set by selecting the correct icons.
Now proceed as follows:

- Press the **Dimensions** button  to enable automatic dimension measurement. The button remains pressed and the inner light turns red  .
- Spin the wheel by lowering the guard.

To ensure accurate results, do not apply undue stress to the machine during the spin and do not interfere with telecamera and laser sensor scanning.

- Wait for the wheel to stop automatically (the wheel guard will raise up automatically) and the display the imbalances.
  At the end of the run, if the function of the automatic position search function is activated, the wheel may turn upwardly raised.
  At the end of the scanning of the front laser triangulator, the device prepares, when rotating the wheel, at the plane acquired, that is, at the rim of the rim where the spring weight will be applied.

Using buttons  the telecamera can be adapted to ambient lighting conditions. If the automatic capture of the border is NOT corrected, it can be changed within the LIVE environment (to enter the LIVE environment, select the button ). Select one of the two video imbalances Select the horizontal arrow then use one of the three methods below to store the new position by reminding you that the laser point indicates the spring-weight application bar:

1. Turn the wheel clockwise or anticlockwise to change the position of the laser point until the start of rim lights up, then press the **Enter** button ✔ or the button  to memorise it and then the **Exit** button  .
2. Modify the spring weight application board directly on the monitor using your finger  as a slider inside the image, **Enter** button ✔ or the button  to memorise it and then the **Exit** button  .
3. Using the arrows  move millimetre by millimetre to find the border of the rim. When you think you have found the correct position, confirm by pressing the **Enter** button ✔ or the button  to memorise it and then the **Exit** button  .
   If the spring weight plane is selected by pressing  and releasing the button , it is possible to change its position by following the instructions below:

1. Press and hold down the button then turn the wheel clockwise or counterclockwise to change the position of the laser point until it illuminates the edge for applying the spring weight. Release the button  to store the new position and exit the program using the exit button.
   It is also possible to change the rim of the circle in a work environment as well, following the instructions below:

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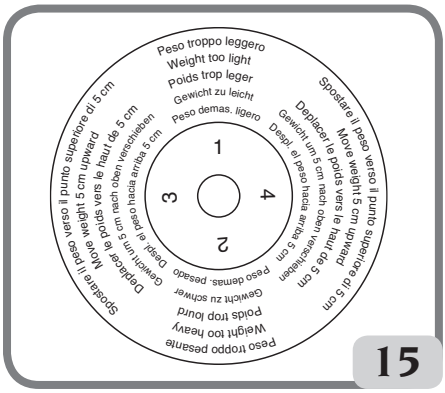
- press and hold the button  then turn the wheel clockwise or counterclockwise to change the position of the laser point until it illuminates the edge for applying the spring weight. Release the button  to store the new position and exit the program.
- Select the first side to be balanced.
- Rotate the wheel until the central element of the corresponding position indicator lights up.
- Apply the indicated balancing weight to the 12 o'clock position on the rim.
- Repeat the operations listed for the second side of the wheel.
- Perform a test spin to check balancing accuracy. If it is not considered satisfactory, change the value and position of the previously applied weights, according to the data indicated in the balancing control diagram (Fig. 15).



Bear in mind that a counterweight positioning error of just a few degrees may lead to a residual unbalance as large as 5-10 grams during the verification phase, especially in the case of large unbalances.

WARNING

Check that the system which fits the weight to the rim is in optimum condition.
A weight which is not fitted properly or correctly may come off as the wheel rotates, thus creating a potential danger.

The wheel can be locked in three ways in order to make the weight application operation easier:
- By keeping the wheel in the centred position for approximately one second. The brake activates automatically with a reduced braking force so as to allow the operator to move the wheel manually until the correct position for the other weight's application is reached.
- By pressing the **Stop** button  when the wheel is in one of the weight application positions and the brake is not on. The wheel is unlocked by pressing the same button again, performing a spin or after 50 seconds.

The shaft locking system can also be useful during installation of special centring accessories.

If the **Stop** button  is pressed while the wheel is rotating, the spin will be prematurely interrupted.

In the version with a motorised wheel guard, pressing the **Stop**  button with the wheel moving will cause the spin to stop prematurely and the wheel guard to open.

If the automatic position search (RPA) function is active, the machine stops the wheel in the weight application position on the outer side at the end of each balancing spin; if it is equal to zero, the wheel is stopped in the inner side weight application position.

By selecting the central part of one of the unbalance position indicators, an automatic centred position search starts.

Balancing programmes for alloy rims ALU 1 - 2 - 3 - 4 - 5

These programmes are used for maximum precision balancing of light alloy rims.
This type of wheel balancer is particularly suitable for application of adhesive weights on the rim, thanks to the forward position of the wheel in relation to the body, which allows a large zone on the inside of the rim to be accessed freely.
To access one of these programmes, select at least one adhesive weight.

Now proceed as follows:

- Press the **Dimensions** button  to enable automatic dimension measurement. The button remains pressed and the inner light turns red  .
- Spin the wheel by lowering the guard.

- If you want to change any planes of an adhesive weight or a spring weight, select the corresponding imbalance in the LIVE environment (to enter the LIVE environment, select the button ) and then memorise the new position remembering that the laser point indicates the centre of the adhesive weight using one of the 3 methods described below:

1. Turn the wheel clockwise or anticlockwise to change the position of the laser point until the centre of the plane selected for application of the adhesive weight lights up or the edge for applying spring weight; then press the **Enter** button ✔ or the button  to memorise the position and then the **Exit** button  .
2. Modify the center of the chosen plane for the application of the adhesive weight or the edge in the case of spring weight directly on the monitor using your finger as a slider  inside the image, press the **Enter** button ✔ or the button  to memorise it and then the **Exit** button  .
3. Using the arrows  move millimetre by millimetre to find the centre of the plane selected for application of the adhesive weight. When the correct position has been found, confirm by pressing the **Enter** button ✔ or the button  and then the **Exit** button  .

If the plan of an adhesive weight or a spring weight is selected by pressing and releasing the button  , it is possible to change its position by following the instructions below:

1. press and hold down the button  then turn the wheel clockwise or anticlockwise to change the position of the laser point until the centre of the surface selected for the application of the adhesive weight or the edge for applying spring weight is illuminated. Release the button to store the new position. Repeat the procedure to change the second balancing surface if necessary, otherwise exit the programme using the **exit** key  .

Also, it is possible to modify a plan of adhesive weight or the edge of a spring weight even in a working environment following the instructions given below:

- press and hold the button  then turn the wheel clockwise or counterclockwise to change the position of the laser point until it does not illuminate the center of the chosen plane for applying the adhesive weight or the edge for applying the weight to spring. Release the button  to store the new position and exit the program. If the button  is pressed with the machine in Center Position (GREEN COLOR MESSAGE) then you can ONLY change the plane related to this imbalance. While the button  is pressed off the Centered Position, you can repeat the procedure to change the second balancing plane if necessary.

Note: the balancing planes where the **adhesive** weights are to be applied may be selected by the

user according to the specific shape of the rim. However, bear in mind that it is always preferable **to select balancing planes as far apart as possible** in order to reduce the quantity of the weight to be applied; if the distance between the two planes is less than 37 mm (1.5"), the **A 64** message is displayed.

- Select the first side to be balanced.
- Rotate the wheel until the central element of the corresponding position indicator lights up.
- Apply the balancing weight in the position indicated on the screen.
- Repeat the operations listed for the second side of the wheel.

Application of spring balancing weights

- Select the plane where the balancing weight is to be applied.
- Turn the wheel until the central part of the corresponding position indicator lights up or press the centre of the round indicator to start the automatic position search.
- Place the clip weight in the 12 o'clock position.

Application of adhesive balancing weights

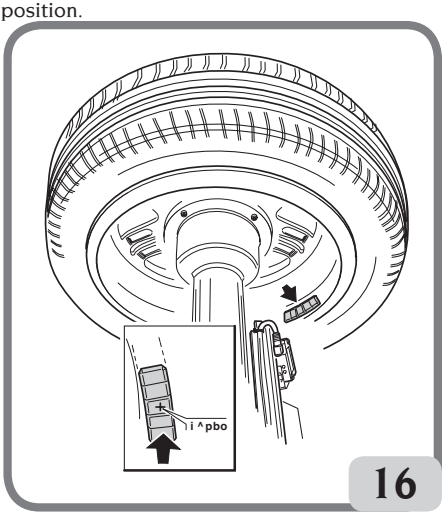
- Select the plane where the balancing weight is to be applied.
- Turn the wheel until the central part of the corresponding position indicator lights up or press the centre of the round indicator to start the automatic position search.
- The internal laser pointer automatically comes out indicating the exact position for applying the adhesive weight.
- in this phase, if the balancing position is NOT correct, it can be changed by pressing and holding down the button  then turning the wheel clockwise or anticlockwise to change the position of the laser point until the centre of the surface selected for the application of the adhesive weight is illuminated. Release the button to store the new position.

  WARNING

  The previously described procedure determines the possible unbalance variation displayed by the machine on both surfaces, therefore it is recommended to apply the weights after the balancing position is changed.
- Apply the adhesive weight as indicated in the figure.

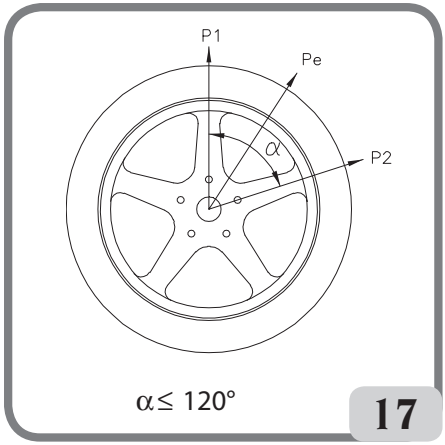
The rim surface must be perfectly clean to make the weight stick efficiently to the rim. If necessary, clean the surface using suitable cleansing products.

Note: the adhesive weights outside the rim folder in the ALU3 and ALU4 balancing programmes should be applied manually in the 12 o' clock position.



"Hidden Weight" automatic programme (available only with ALU1 and ALU2 programmes)

The Hidden Weight programme should be used on alloy rims in conjunction only with the ALU1 or ALU2 programmes when the external weight needs to be hidden behind two spokes for aesthetic reasons. This programme subdivides the outer balancing weight (Pe) into two equal weights (P1 and P2) placed in concealed positions behind two spokes of the alloy rim.



The two weights must be placed within an arc of 120°, including the Pe weight.

To start this programme, proceed as indicated below:

- Select one of the balancing programmes, ALU1 or ALU2.
- Perform a spin.
- At the end of the spin, if there is an unbalance on the outer side (Pe), the machine will display the **Hidden Weight** button  on the main screen.
- Press this button;
- The machine performs a full-speed low speed wheel during which, by means of the front laser triangulator, recognizes the number of spokes in the rim;
- At the end of the video procedure, an image of the imbalance appears with two position indicators for the external side. The unbalance value displayed for this side refers to the indicator in the centered position.
  The application of each of the two balancing weights is carried out as described in the paragraph "Application of balancing weights".
  If the operator wants to change the position of the imbalances automatically calculated by the machine, it is possible to perform the procedure in MANUAL mode by pressing the button  again

CAUTION:

If the machine in automatic mode is not able to recognize the rims of the rim, the program is predefined manually at the end of the cycle. the internal laser pointer will automatically move onto the outer plane (Pe).

- Turn the wheel clockwise until you reach the point where you want to apply the first outer weight (P1) and align the laser point with a spoke.
- press the button  or the button ✔ on the monitor to confirm the operation;
- Turn the wheel anticlockwise until you reach the point where you want to apply the second outer weight (P2) and align the laser point with the second spoke.
- press the button  or the button ✔ on the monitor to confirm the operation;
- When the procedure is completed, the unbalance image is displayed on the screen including two position indicators for the outer side. The unbalance value displayed for this side refers to the indicator in the centred position condition.

Each of the two balancing weights is applied as described in the "Balancing weight application" section.

CAUTION:
If the machine in automatic mode is not able to recognize the rims of the rim, the program is predefined manually at the end of the cycle.

You can quit the Hidden weight procedure at any time by simply pressing the **Exit** button  .

The Hidden weight function can be disabled by pressing the **Hidden Weight.**

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UTILITY AND CONFIGURATION PROGRAMMES

The Utility programmes are all the functions of the machine that are useful for its operation but are not strictly connected to its normal operation.

To display the list of Utility programmes, select the **Utility and Configuration programmes** icon. The programmes in this sub-menu are now available:

1. 

SPIN COUNTER

2. 
SET MANUAL WHEEL DIMENSIONS

3. 
WHEEL DIAGNOSIS PROGRAMME

4. 
UNBALANCE OPTIMISATION PROGRAMME

5. 
CONFIGURATION PROGRAMMES

1. SPIN COUNTER

Three counters are displayed on the screen:

- 

the number of partial spins made since the last manual reset;

- 

the total number of spins performed by the machine since its first start-up;

- 

the number of wheel spins performed since the last sensitivity calibration.

If the Weight Management suite is enabled, the spin counter icon in the Utility programmes menu becomes 

and displays:

- 

the total number of spins performed by the machine since its first start-up;

- 

the number of partial spins made since the last manual reset;

- 

the total weight quantity saved by the machine since its first start-up;

- 
the partial weight quantity saved since the last manual reset;

- two histograms that compare the quantity of weight required if the “Less Weight” programme  (red bar) is not used and the quantity required if the “Less Weight” programme  (green bar) is used for the entire service life of the machine for clip and adhesive weights.

The **Reset** button 

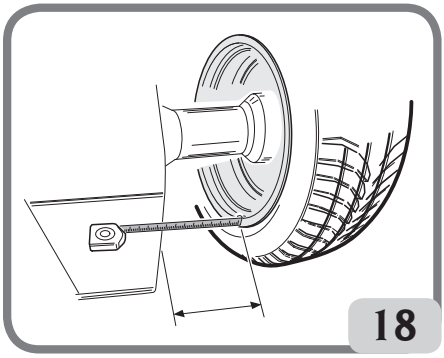
can be used to reset the partial spin counters and the weight quantity saved.

To quit the counter display, press the **Exit** button  .

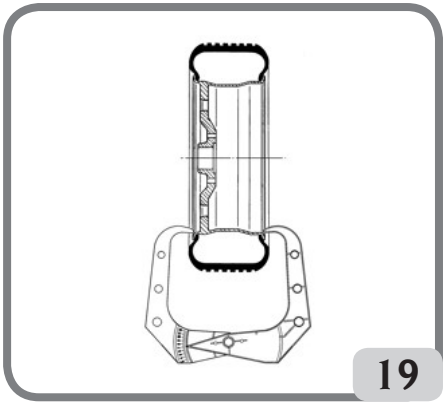
If connected to an approved printer, the **Print menu** secondary control key  can be used to start the print procedure for the Less Weight programme.

2. MANUAL ENTRY OF WHEEL DIMENSIONS
In the event of failure of the internal and/or external laser sensors or incorrect measurement of one of the three working dimensions, **the geometric data can be entered manually** using the following procedure.
A screen is displayed with the default or previously measured wheel dimensions.
Using the number pad, one or more of the wheel dimensions can be changed.

- The wheel balancer prepares for manual entry of the distance.
- Using the number pad, change the distance displayed by entering the distance measured with a tape measure between the right edge of the body and the inner edge of the rim (Fig. 18).



- press the button  on the monitor to confirm and then enter the width value
- Change the displayed value to the value measured using the manual calliper (Fig. 19).



- press the button  on the monitor to confirm and then enter the **diameter** value;
- Change the value of the diameter displayed by entering the value indicated on the tyre using the keypad.
- Press the **Exit**  button to terminate the manual data setting.

Note: When dimensions are set manually, clip or adhesive weights must be applied manually in the 12 o'clock position.

3. Suite WHEEL DIAGNOSIS PROGRAMME

3.1. Radial and lateral runout measurement
This function is used to determine the causes of disturbance (vibration) generated by geometric deformation of the rim and/or tyre, which may still persist even after a thorough balancing procedure.The machine indicates that the procedure needs to be performed by displaying the following war-ning light 

. The operator can decide to perform the procedure whenever considered necessary.
To do this, perform a spin.

If a wheel assembly is mounted, the following icons are displayed on the screen at the end of the spin indicating:

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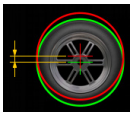
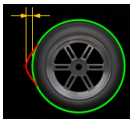
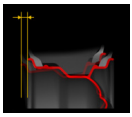
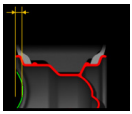
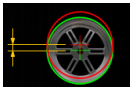
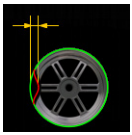
- 
the radial run-out of the wheel (1st harmonic);

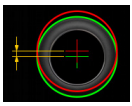
- 
the radial run-out of the wheel peak-to-peak;

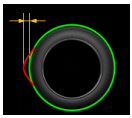
- 
the lateral run-out of the wheel (1st harmonic);

- 
the lateral run-out of the wheel peak-to-peak;

- 
the radial run-out of the rim (1st harmonic);

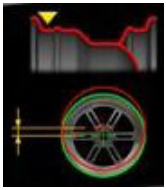
- 
the radial run-out of the rim peak-to-peak;

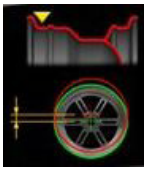
- 
the radial run-out of the tyre (1st harmonic);

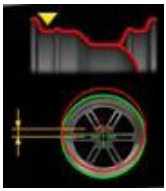
- 
the radial run-out of the tyre peak-to-peak;

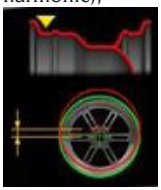
- the wave forms show the progress of the wheel runout.

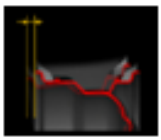
If a rim is mounted, the following icons are displayed at the end of the spin indicating:

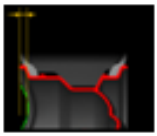
- 
the radial run-out of the inner tyre bead (1st harmonic);

- 
the radial run-out of the inner tyre bead (peak-peak);

- 
the radial run-out of the outer tyre bead (1st harmonic);

- 
the radial run-out of the outer tyre bead (peak-peak);

- 
the lateral run-out of the rim (1st harmonic);

- 
the lateral run-out of the rim (peak-to-peak).

Note: The vertical mobile bar that appears in the graphs shows the vertical axis at 12 o'clock.

The parameters shown above can be displayed with different types of units of measure, ie:

- mm (press the button 

)
- inch (press the button 

)
- force (press the button 

). If this video configuration is selected, the GRFV Geometric Radial Force Variation will be indicated at the radial eccentricity detected value or GLFV Geometry Lateral Force Variation at the detected lateral eccentricity value.
When the N key is pressed, the machine displays the icon on the video 

.
Press the LOAD INDEX icon and enter the indicated load index on the tire using the keypad 

and press the key 
.

NOTE

The values expressed in N (Newton) do not derive from a simulation of the wheel load properties or the simulation of the road behavior of the vehicle. There is no simulation of the tread of the wheel tread for which the measurement does not detect any structural defects in the tire.
The values are derived from a conversion, by means of appropriate mathematical formulas, of the values expressed in mm to values expressed in Newton (N, force measure) according to the geometric data of the wheel and its loading index.
Acceptance thresholds, although expressed in N, are however related to the values calculated in millimeters / inches.

IMPORTANT: If present, all the adhesive weights fixed to the inner surface of the rim and arranged along the laser sensor scanning area must be removed before determining the runout measurement cycle.

If a wheel assembly is mounted where geometric deformation has been found in both the rim and tyre, the effects of this on the wheel assembly may be minimised by compensating the deformation of the rim with the deformation of the tyre.

Notification of Geometric matching is given with an end of measurement cycle message with one of the following indications:

- Matching not recommended 
- Matching recommended 
If you want to perform Geometric matching, select the **ROD Matching** icon 
.
- move the valve to 12 o'clock and press the button 
or the button 
on the monitor;
- Turn the wheel until the machine indicates where to stop.
- make a chalk mark on the tyre at 12 o'clock, then press the button 
or the button 
on the monitor;
- Remove the wheel from the hub, then match the mark on the tyre with the position of the valve.

Note: The operator can repeat the runout measurement procedure at any time by selecting the **Start** button 

.

Note: The operator can quit the procedure at any time by selecting the **Exit** button 
.

Note: The laser sensors may not measure rim defectiveness correctly on particularly reflective surfaces. In this case repeat the measurement performing a new spin. If the problem persists

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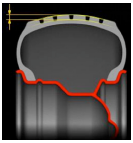
abort the measurement.

3.2. Measurement of tyre tread height and wheel side slip

This function in the Runout programme allows you to measure tyre tread height and wheel side slip as well as wheel runout.

To start the procedure, first select the 

button, set it to ON, then perform a spin.
At the end of the spin, in addition to the run-out icons and graphs, the following icons will also be displayed on the screen:

- 
average height of tread;

- 
wheel side slip.

If the measured values exceed acceptable limits, the values will be displayed in red.

3.3. iPos programme (intelligent positioning)

After checking the status of each wheel, the wheel balancer uses this programme to automatically suggest the optimal positioning of the wheel on the vehicle, selecting one of the following criteria indicated below:

- Tread wear.
- Tyre side slip.
- Radial run-out.
- Wheel unbalances.

To start the programme, proceed as follows:

1. From the main operating screen, select the icon 

, an image of the vehicle is now displayed at the centre of the main balancing screen.
To select the wheel to be checked, press directly on the wheel itself on the image on the screen:

- 

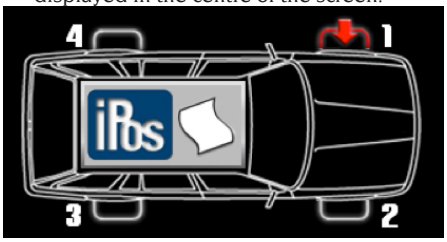
if the front left wheel is to be analysed;
- 

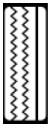
if the front right wheel is to be analysed;
- 

if the rear right wheel is to be analysed;
- 

if the rear left wheel is to be analysed;

2. An image of the vehicle is now displayed at the centre of the main balancing screen, indicating the wheel to be analysed with the following symbol  .
3. Mark the number that identifies the wheel on the external side of the tyre.
4. Perform a spin to start the in-depth analysis of the wheel. The spin cycle will take longer than a normal balancing cycle.
5. The analysed wheel is now displayed with the following symbol  .
6. Repeat the operations described from point 1 to 4 for the vehicle's other three wheels.
7. Once all data has been saved access the programme for optimising the wheel position on the vehicle by selecting the vehicle image displayed in the centre of the screen.



8. Now the following measurements are shown in the windows for all four wheels:
 tread wear
 tyre side slip
 radial run-out of the wheel.
9. To correctly calculate the wheel positions select the type of tyre used using the arrows, if necessary, from among the four available types:
 symmetric
 directional
 asymmetric
 asymmetric directional
10. Mount the wheels as shown in the image located to the right of the screen. Otherwise, if the criterion selected automatically by the programme is not the one required, use the secondary control key to manually select the

more suitable criterion, according to your own experience, from among the following:

 calculates the optimal wheel position based on tread wear;

 calculates the optimal wheel position based on the drift angles (side slip);

 calculates the optimal wheel position based on radial eccentricity;

 calculates the optimal wheel position based on unbalances;

11. Mount the wheels as shown in the image located to the right of the screen.

If connected to an approved printer, the **Print menu**  secondary control key can be used to start the print procedure for the iPos programme.

To exit the programme without deleting the measurements that were made, press **Exit**  .

To delete the displayed data and exit the programme press **Delete**  then **Save**  buttons.

To deactivate the iPos programme from the main operating screen, select  .

3.4. 3D wheel scanning programme

This programme is used to display the wheel or the rim mounted on the wheel balancer in 3D, therefore any deformations that are present can be seen and measured.

The operator is able to change two parameters related to scanning in the wheel balancer parameter configuration, i.e.:

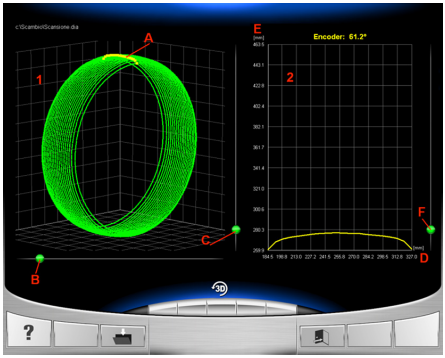
- wheel or rim rotational speed (from a minimum of 30rpm to a maximum of 70rpm);
- the steps made by the rear motor (from a minimum of 1 step to a maximum of 5 steps).

Based on any changes made to the parameters indicated above, the resolution of the scan will change, that is it will be increased (and therefore more precise) with the minimum speed and steps and decreased (and therefore less precise) with the maximum speed and steps.

Proceed as follows to perform the scan:

- Wait for the wheel balancer;
- start the RUN-OUT programme  ;
- perform a spin, with automatic measurement of the dimensions  and wait for the end of the measuring cycle (measurement cycle also includes the RUN-OUT measurement or perform a spin with acquisition of the wheel dimensions in the working environment and then enter the ROD programme)
- now press the button  (always in the run-out environment) and wait for the end of the external last scanning cycle.

When pressing the button  the machine displays the points acquired of the complete wheel or only the rim being examined.



Some indications follow as to what functions are available with this programme:

1: 3D graphic of the complete wheel or only the rim (in the figure, a 3D scan of a complete wheel);

A: the yellow line indicates the position of the wheel/rim mounted on the wheel balancer at 12 o'clock;

B: cursor to rotate graphic 1 360°;

C: cursor to zoom graphic 1;

2: complete wheel/rim profile graph;

D: horizontal axis of the abscissae that indicates the distance with respect to the casing edge;

E: vertical axis of the ordinates that indicates the radius with respect to the shaft assembly axis;

F: cursor for icon profile graphic zoom 

: reset graphic factory settings.

4. UNBALANCE OPTIMISATION

This procedure reduces the total wheel unbalance by compensating for the tyre unbalance with the rim unbalance, if possible.
The machine indicates that the procedure needs to be performed by displaying the following warning light 

. The operator can decide to perform the procedure whenever considered necessary.

The calculations performed by this programme are based on the unbalance values measured during the last spin performed which must therefore refer to the wheel being serviced.

OPT 1

- Move the valve to the 12 o'clock position.
- press the button  or the button ✔ on the monitor to confirm the operation;

OPT 2

- Place the wheel in the 6 o'clock position as indicated on the screen. If the RPA function is enabled, the wheel is automatically placed in position.
- Mark the 12 o'clock position on the outer side of the tyre.
- press the button  or the button ✔ on the monitor to confirm the operation;

OPT 3

- Remove the wheel from the wheel balancer and using the tyre changer, line up the mark on the tyre with the valve.
- Remount the wheel on the wheel balancer.
- press the button  or the button ✔ on the monitor to confirm the operation;

OPT 4

- Move the valve to the 12 o'clock position.
- press the button  or the button ✔ on the monitor to confirm the operation;

OPT 5

- Perform a spin by lowering the guard.

If significant improvements cannot be obtained, the message "OUT" is displayed at the end of the spin. In this case, we recommend quitting the procedure by pressing the **Exit** button 
The operator can decide to continue by pressing the button  or the button ✔ on the monitor.

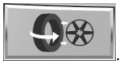
OPT 6

Now, the real unbalance values of the wheel as it is mounted on the wheel balancer are displayed.

- Place the wheel in the position indicated on the screen. If the RPA function is enabled, the wheel is automatically placed in position.

- The unbalances and percentual improvement which can be obtained if the user decides to continue the optimisation procedure appear in the window.

If the improvement is considered insufficient, press the **Exit** button  .

- Make a double mark of the tyre in 12 o'clock on the outer side position if direction in which the tyre is fitted on the rim is not pointed out, on the inner side position if the direction is pointed out. If you do not wish to invert the direction, press the Enable/disable **tyre inversion** button  .
- press the button  or the button  on the monitor to confirm the operation;

OPT 7

- Remove the wheel from the wheel balan-cer.
- Rotate the tyre (inverting if necessary) on the rim until the double chalk mark lines up with the valve.
- Remount the wheel on the wheel balancer.
- press the button  or the button  on the monitor to confirm the operation;
- Perform a spin by lowering the guard.

When the spin is over the optimisation programme has been completed and the weights to be applied to balance the wheel are displayed.

Special cases

- If an error is made that affects the final result, the machine signals this with an E 6 message.
- A different working environment can be re-called between one phase of the programme and another by pressing the **Temporary exit** button  without losing the saved data. When returning to the optimisation environment, the programme starts up again from the point where it was interrupted.
- You can quit the optimisation procedure at any time by simply pressing the **Exit**  button.

5. AUTOMATIC CLAMPING SYSTEM HUB REMOVAL/MOUNTING METHOD

By selecting this setting, the machine is set up for the removal and mounting of the hub using the automatic clamping system as described in the chapter "USING THE AUTOMATIC WHEEL CLAMPING SYSTEM".
During this setting, the message A 52 will be shown on the display. This method lasts 30 seconds, but the operator can stop it at any moment by pressing the STOP button.

6. CONFIGURATION PROGRAMMES

The Configuration programmes are those functions that are intended for customising the machine's operation and are normally executed when the machine is installed.
Select the **Configuration programme** icon,  to access the following programmes:

6.1  customisation;

6.2  wheel balancer parameter configuration;

6.3  sensitivity calibration;

6.4  service.

6.1. Personalisation

This programme enables the user to customise the initial screen by entering workshop information (name, city, road, telephone number, etc..) and name three operators by displaying them in the feedback window.
A mask for setting the data is displayed on the screen, consisting of:

- 4 lines for inserting the workshop information;
- 3 lines for inserting the operators' names;
- a keypad for setting characters.

To save the set data, select the **Save** button  .

To quit the programme, select the **Exit** button  .

Note
Each line for storing the workshop data consists of a maximum of 28 characters.
Each line for storing the operators' names consists of a maximum of 14 characters.

Note: If connected to a printer, the stored customisation data will be printed in the relative reports.

6.2. Wheel balancer parameter configuration
Modifications to factory settings normally are not required. However, if necessary, the machine status and/or the operating mode can be modified. Each parameter can be modified using the arrow keys  .

The parameters that can be modified are:

1. Language:
- to set the preferred language

2. Clock:
- to set the current time
3. Year:
- to set the current year

4. Month:
- to set the current month

5. Day:
- to set the current date

6. Timeout screensaver:
- to set the waiting time before the main logo is displayed

7. Radial runout threshold (1st harmonic):
- to set the threshold that displays the measured value in red
8. Radial runout threshold peak-to-peak:
- to set the threshold that displays the measured value in red

9. Lateral runout threshold (1st harmonic):
- to set the threshold that displays the measured value in red

10. Lateral runout threshold peak-to-peak:
- to set the threshold that displays the measured value in red

11. Tread height threshold:
- to set the threshold that displays the measured value in red

12. Wheel side slip threshold:
- to set the threshold that displays the measured value in red

13. DIAGNOSIS CYCLE:
- to activate the eventual diagnosis of the wheel:
OFF diagnostic cycle disabled
1 - FAST acquisition of radial eccentricity of the complete wheel
2 - FULL radial eccentricity acquisition of the complete wheel and rim
3 - PRO Including radial eccentricity of the complete wheel and rim in addition to the outboard rim of the rim, tread height and possible wheel drift

14. OPT warning:
- to display the alarm indicator light in the main working screen

15. Disable laser:
- to disable the lasers when faulty. If disabled, the dimensions must be set manually and the weights applied in the 12 o'clock position

16. Automatic position search (RPA):
- to enable automatic position search at the end of the spin (YES enabled – NO disabled)

17. measures dimensions with release of the automatic clamping system:
- to set the automatic measurement of the dimensions every time the automatic clamping system is activated (YES active – NO deactivated)

18. Hidden Weight automatic
- to activate Hidden Program in automatic mode (YES active - NO disabled)
If the program is disabled, it is possible to run the Hidden Weight program in manual mode.

19. automatic weight selection (AUTOWS):
- configures automatic selection of balancing programme in relation to the characteristics of the rim (ALU1, ALU1 programme enabled - ALU2, ALU2 programme enabled - OFF, disabled)

20. enables/disables rim search:
- if enabled, the machine recognises automatically, during the spin with dimension acquisition, if a complete wheel is present or only the rim (YES active – NO deactivated).

21. 3D scanning speed
- used to change the wheel (or only rim) spin speed while performing a 3D scanning programme (range from 30rpm to 70rpm).

22. 3D scanning motor step
- used to change the motor steps while performing a 3D scanning programme between one position and the next (range from 1 to 5).

23. Opening/closing emergency system C (wheel locking device)
- to enable the opening / closing system emergency C to suit your needs (SI active - NO off)
- When the program is running you can open and close, the device C in case of failure of the control pedal C (M, Figure 10) or the device WINUT. Press the key  to perform the opening and closing of the automatic locking device C present in the screen working.

24. Advantage weight
It is possible to select the width of the adhesive weight used to balance the wheels from a minimum of 15mm to a maximum of 40mm.

25 cycle time
It is possible to change the launch cycle time, namely:
- STANDARD factory setting
- FAST reduced cycle time of about 2 seconds from the factory setting.

26. tyre diagnosis
It is possible to modify the tire diagnosis, namely:
- NORMAL to scan on a larger surface of the tire
- FAST factory setting where scanning is faster.

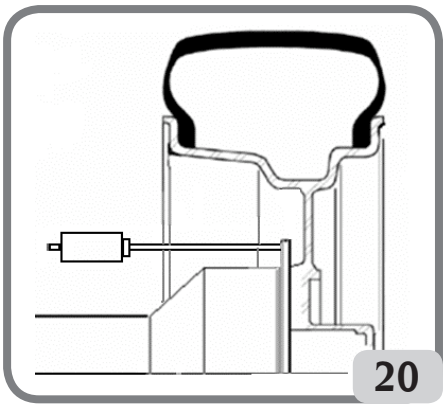
27. Set factory data:
- to reset the initial machine configuration Machine calibrations are not modified.

To save the new settings, press the **Save**  button and press the **Exit** button  to go back to the main working screen.

6.3. Unbalance sensitivity calibration
This procedure should be performed whenever calibration appears to be out of the tolerance range or when the machine requires this procedure to be performed by displaying the E 1 error message.

Calibrate as follows:

- select the sensitivity calibration icon in the configuration programme menu;
- Fit a wheel of average dimensions (diameter no less than 14") and preferably with a small imbalance only on the wheel balancer.
- perform a spin;
- At the end of the spin, fix the calibration weight supplied with the machine on the shaft assembly bell as indicated in figure 20.


20

- perform a second spin;
- At the end of the spin, change the position of the calibration weight on the shaft assembly bell as indicated in figure 21

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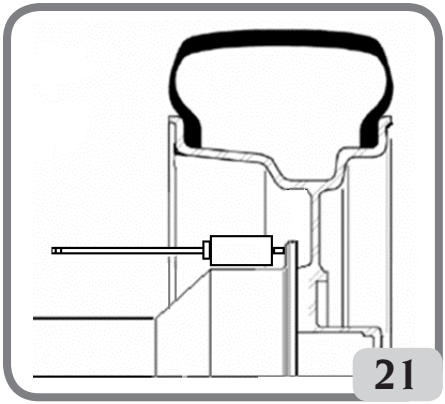


- Perform a third spin. This last calibration phase consists of three consecutive spins executed automatically.

If the calibration has been successful, a permission acoustic signal goes off at the end of the spin; otherwise, the E 2 message is temporarily displayed.

Notes:

- Once the procedure is finished, remove the calibration weight.
- Press the key to interrupt the calibration procedure at any time.
- This calibration is valid for any kind of wheel.

6.4. Service

This programme displays some data that are used to test machine operation and to detect the malfunctioning of some devices. Since these data are not useful for the operator, it is recommended that only technical support technicians consult them.

ERROR MESSAGES

The machine can recognise a certain number of malfunction conditions and signals them by displaying the relevant messages.

– A – Notice messages

A 3

wheel not suitable for performing the sensitivity calibration, use a wheel of average dimensions (typically 5.5"X14") or larger but with a weight that does not exceed 40 kg.

A 7

The machine is temporarily not enabled to select the programme requested. Perform a spin, then repeat the request.

A 25

Programme not available.

A 31

Optimisation procedure (OPT) already launched by another user.

A 51

Spin with automatic wheel clamping system open or incorrect wheel clamping. Repeat the locking operation.

A 52

Hub mounting/demounting procedure started automatic wheel clamping system. The procedure stops automatically after 30 seconds. Press the Stop button to interrupt the procedure.

A 60

Incorrect rim spoke storage procedure.
Carefully follow the instructions on the screen or those in the Hidden weight section.

A 61

Incorrect automatic wheel width measurement. Repeat the spin with automatic dimension acquisition. If the problem persists, enter the correct rim width value manually.

A 62

Incorrect automatic wheel width measurement. Repeat the spin with automatic dimension acquisition. If the problem persists, enter the correct rim width value manually.

A 63

Incorrectly measured wheel dimensions. Repeat the spin. If the error persists, set the dimensions manually.

A 64

Incorrect plane acquisition point setting. Repeat manual positioning of planes.

A 65

Wheel dimensions error. Repeat the spin. If the error persists, set the dimensions manually.

A 66

Obstacle detected or wheel diameter less than 10" during internal measuring sensor movement. Repeat the spin or insert the dimensions manually.

A 99

Incorrect calibration phase. Repeat the spin, following the procedure described in this manual.

A Stp

Wheel stop during the spin phase.

A Cr

Spin performed with the guard raised. Lower the guard to perform the spin.

– E – Error Messages

E 1
Error condition on unbalance sensitivity calibration. Perform the sensitivity calibration procedure.
E 2
Error condition on sensitivity calibration.
Repeat the sensitivity calibration, paying attention to the first spin, which must be performed with the wheel like the subsequent spins.
Take particular care NOT to knock the machine during calibration.
E 3 I/E 2/3
Error condition at the end of sensitivity calibration.
Repeat the calibration, if the message persists perform the following checks:
- Correct sensitivity calibration procedure;
- Correct fastening and position of the calibration weight;
- Mechanical and geometric condition of the calibration weight;
- Geometry of the wheel used.

E 6
Error condition when executing optimisation programme. Repeat the procedure from the beginning.
E 8
Printer out of service or not connected.
E 10
Internal measuring sensor not in the rest position.
E 11
Internal measuring sensor motor steps counting error.
E 12L
Faulty sensor external detector; enter the value of the wheel width in manual mode.
If the error occurs again, call for assistance.
E 12M
External detector not in rest position.
If the error occurs again, call for assistance.
E 13
External measuring sensor motor steps counting error.
E 27
Excessive braking time. If the problem persists, call in the technical support centre.
E 28
Encoder counting error. If the error occurs frequently, call the technical support centre.
E 30
Spin device failure. Switch off the machine and call in the technical support centre.
E 32
The wheel balancer was jolted during the reading phase. Repeat the spin.
E 50
Automatic wheel clamping system failure.
Restart the wheel balancer.
If the error persists, request servicing.
E 99M
Serial communication error on the MBUGRF card between the control unit and the graphic module.
If the error persists, request the technical support.
E 99A
Serial communication error between the MBUGRF card and the Acq-Mux card.
If the error persists, request the technical support.
E F0
Swinging unit encoder error.
CCC - CCC
Unbalance values greater than 999 grams.

CHECK FOR CORRECT FUNCTIONING OF BALANCING ACCESSORIES

Checking balancing accessories allows the operator to make sure that wear has not altered the mechanical specifications of flanges, cones, etc. beyond the specified limits.
A perfectly balanced wheel, which has been disassembled and reassembled in a different position, should not show an unbalance value greater than 10 grams.
When a higher unbalance is found, check all the accessories carefully and replace the components that are not in perfect condition (e.g. showing dents, abnormal wear, flange unbalance, etc.).
Anyhow it is necessary to bear in mind that, if the cone is used to centre the wheel, satisfactory balancing results cannot be achieved if the central hole of the wheel is out-of-round or incorrectly centred; better results can be achieved by centring the wheel using the securing holes.
Bear in mind that any re-centring error made when the wheel is mounted on the car can be removed only removed with an "on-the-vehicle balancing" of the wheel, using an on-the-vehicle wheel balancer to complement the work of the wheel balancer.

MAINTENANCE

WARNING

The manufacturer declines all responsibility for claims resulting from the use of non-original spare parts or accessories.

WARNING

Unplug the machine from the power supply and make sure that all moving parts have been locked before performing any adjustment or maintenance operation.
Do not remove or modify any part of the machine (except for service interventions).

CAUTION

Keep the work area clean.
Never use compressed air and/or jets of water to remove dirt or residues from the machine.
Take all possible measures to prevent dust from building up or raising during cleaning operations.
Keep the wheel balancer shaft, the securing ring nut, the centring cones and flange clean. These components can be cleaned using a brush previously dripped in environmentally friendly solvents.
Handle cones and flanges carefully so as to avoid accidental dropping and subsequent damage that would affect centring accuracy.
After use, store cones and flanges in a place where they are suitably protected from dust and dirt.
If necessary, use ethyl alcohol to clean the display panel.
Perform the calibration procedure at least once every six months.

INFORMATION REGARDING MACHINE DEMOLITION

If the machine is to be scrapped, remove all electrical, electronic, plastic and metal parts and dispose of them separately in accordance with current provisions as prescribed by law.

ENVIRONMENTAL INFORMATION

The following disposal procedure shall be exclusively applied to the machines having the crossed-out bin symbol on their data plate

This product may contain substances that can be hazardous to the environment and to human health if it is not disposed of properly.
The following information is therefore provided to prevent the release of these substances and to improve the use of natural resources.

Electrical and electronic equipment must never be disposed of in the usual municipal waste but must be separately collected for their proper treatment.
The crossed-out bin symbol, placed on the product and on this page, reminds the user that the product must be disposed of properly at the end of its life.
In this way it is possible to prevent that a non specific treatment of the substances contained in these products, or their improper use, or improper use of their parts may be hazardous to the environment or to human health. Furthermore, this helps to recover, recycle and reuse many of the materials contained in these products.

Electrical and electronic manufacturers and distributors set up proper collection and treatment systems for these products for this purpose.
Contact your local distributor to obtain information on the collection procedures at the end of the life of your product.

When purchasing this product, your distributor will also inform you of the possibility to return another end-of-life piece of equipment free of charge as long as it is of equivalent type and had the same functions as the purchased product.

Any disposal of the product performed in a different way from that described above will be liable to the penalties provided for by the national regulations in force in the country where the product is disposed of.

Further measures for environmental protection are recommended: recycling of the internal and

external packaging of the product and proper disposal of used batteries (only if contained in the product).

Your help is crucial in reducing the amount of natural resources used for manufacturing electrical and electronic equipment, minimise the use of landfills for product disposal and improve the quality of life, preventing potentially hazardous substances from being released in the environment.

FIRE-EXTINGUISHING MATERIALS TO BE USED

Consult the following table to choose the most suitable fire extinguisher.

Dry materials	
Water	**YES**
Foam	**YES**
Powder	YES*
CO2	YES*
Flammable liquids	
Water	NO
Foam	**YES**
Powder	**YES**
CO2	**YES**
Electrical equipment	
Water	NO
Foam	NO
Powder	**YES**
CO2	**YES**

YES** Use only if more appropriate extinguishers are not at hand and when the fire is small.

WARNING

The indications in this table are of a general nature. They are designed as a guideline for the user. The applications of each type of extinguisher will be illustrated fully by the respective manufacturers on request.

GLOSSARY

Here is a brief description of some technical terms used in this manual.

UNBALANCE CALIBRATION
This procedure calculates suitable correction coefficients starting from known operating conditions. It improves the machine accuracy by correcting to a certain extent the calculation errors that may result from the alteration of the machine's features over the course of time.

CENTRING
Procedure for positioning the wheel on the wheel balancer shaft to ensure that the shaft axis corresponds to the wheel rotation axis.

BALANCING CYCLE
Sequence of operations to be performed by the user and the machine from the beginning of the spin until the wheel is braked to a stop after calculating the unbalance values.

CONE
Conical element with a central hole which, when inserted on the wheel balancer shaft, is used to centre the wheels having central holes with a diameter ranging between maximum and minimum values.

RUNOUT
This is represented by a sinusoidal wave form having a specific width, which indicates geometric deformations in the radial direction. Since tyres and rims are never perfectly round, there is always a certain amount of runout (or radial runout first harmonic) for the wheel (or assembly). If the runout width is greater than a specified threshold, vibrations may be generating while driving the vehicle even after an accurate balancing was performed.
The speed at which these vibrations may be generated depends on the structural features of the vehicle. Generally speaking, this (critical) speed is about 120-130 Km/h for common passenger vehicles.

DYNAMIC BALANCING
Procedure for unbalance compensation by applying two weights, one on each of the two wheel sides.

STATIC BALANCING
Procedure for correcting only the static element of the unbalance, by applying only one weight, usually at the centre of the rim well. Accuracy increases as the width of the wheel decreases.

RIM SUPPORT FLANGE
(of the wheel balancer)

Circular crown-shaped disk against which the disk of the wheel mounted on the wheel balancer rests. Also used for keeping the wheel perfectly perpendicular to its rotation axis.

FLANGE (adapter - centring accessory)
Device for supporting and centring the wheel. Also used for keeping the wheel perfectly perpendicular to its rotation axis.
It is mounted on the wheel balancer shaft.

LOCKING DEVICE
Wheel clamping device on the wheel balancer only used for versions with the automatic wheel clamping system.

ICON
Symbol displayed on the screen illustrating a button, indicating the graphic representation of a control.

iPos
Intelligent Positioning acronym.

SPIN
Procedure starting from the action that causes the wheel to rotate and the subsequent rotation of the wheel.

OPT
Optimisation abbreviation.

ROD
Acronym of Run Out Detection.

RPA
Acronym of Ricerca Posizione Automatica (Automatic Position Search).

RUNOUT
Indicates the non-perfect radial and/or lateral geometry of the wheel.

WOBBLE
It is represented by a sinusoidal wave form having a specific width, which indicates geometrical deformations in the rotation axis direction.
Wobble (lateral runout first harmonic) may depend on the fact that the tyre or rim is subject to wear or geometric-mechanical deformations, or the wheel (or assembly) has not been mounted correctly on the threaded hub.

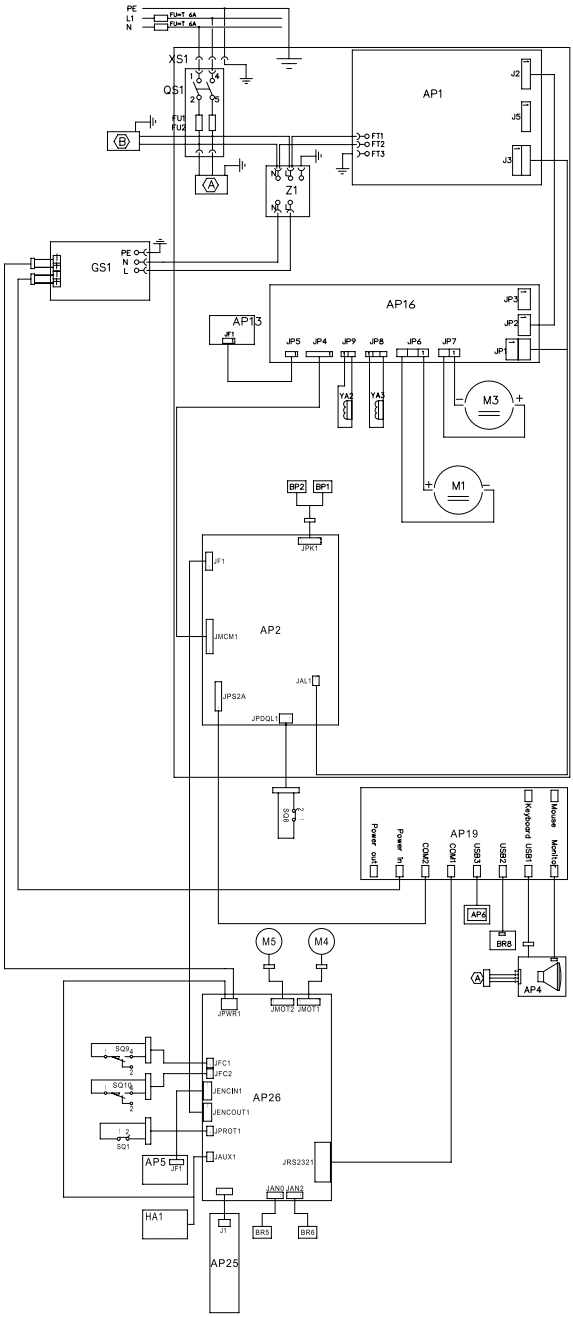
UNBALANCE
Uneven distribution of the wheel mass that generates centrifugal forces during rotation.

ELECTRICAL SYSTEM GENERAL DIAGRAM

KEY

AP1	Power supply unit card
AP2	Mother board (CPU)
AP4	Monitor
AP5	Search card
AP13	Encoder card
AP16	MCM card
AP19	Personal computer
AP25	FLASH-DRV card
AP26	ACQ-MUX card
BP1	Internal Pick-up
BP2	External Pick-up
BR5	Internal laser sensor
BR6	External laser sensor
BR8	Telecamera
FU	Fuse
GS1	Power supply
HA1	Electromagnet
M1	Motor
M3	Automatic wheel clamping system motor
M4	Internal measuring sensor step-by-step motor
M5	External measuring sensor step-by-step motor
QS1	Master switch
SQ1	Safety guard micro-switch
SQ8	Automatic wheel clamping system micro-switch
SQ9	Internal measuring sensor micro-switch
SQ10	External measuring sensor micro-switch
XS1	Power supply plug
YA2	Brake / motor disconnection coil
YA3	Clutch
Z1	Mains filter

ELECTRICAL SYSTEM GENERAL DIAGRAM



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