CORGHI

CE

EM8570 QL RR
EM8570 QL RLR

Cod. 4-104097/A del 03/06

Italiano — Manuale d'uso

English — Operator's manual

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Italiano

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Español

Elaborazione grafica e impaginazione

Ufficio **P**ubblicazioni **T**ecniche

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INTRODUCTION

The purpose of this manual is to provide the owner and operator of this machine with a set of safe and practical instructions for the use and maintenance of the balancing machine.
Follow all of the instructions carefully and your machine will assist you in your work and give long-lasting and efficient service, in keeping with CORGHI traditions.
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 using the machine. Keep this manual and the illustrated material supplied with the machine in a folder near the place of operation, where it is readily accessible for consultation by the machine operator.
The technical documentation supplied is considered an integral part of the machine; in the event of sale all relative documentation must remain with the balancing machine.
The manual is only valid for the machine model and serial number indicated on the nameplate applied to the machine itself.

WARNING

Adhere to the contents of this manual: Corghi declines all liability in the case of actions not specifically described and authorised in this manual.

NOTE
Some of the illustrations in this manual have been taken from photographs of prototypes; the standard production model 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 on the machine. Do not attempt to perform operations unless properly qualified and with suitable experience. In case of need, please contact our nearest authorised Service Centre for assistance.

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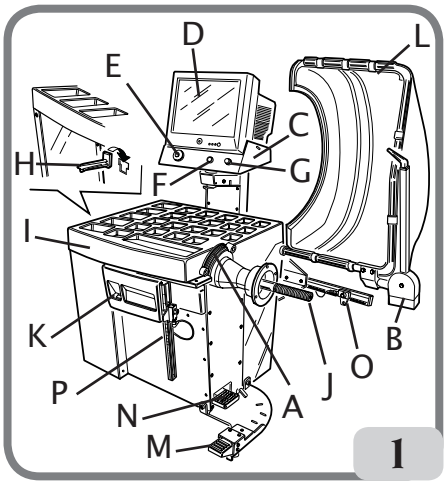
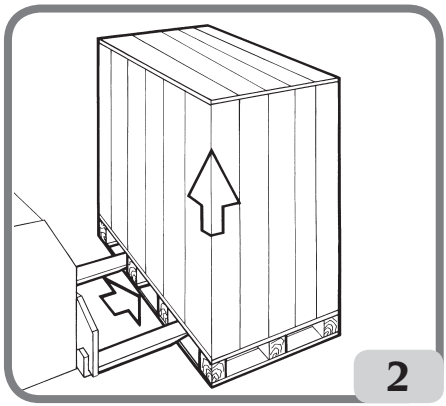
TRANSPORT, STORAGE AND HANDLING

- The balancing machine packaging consists of one wood crate containing:
  - the balancing unit (fig.1) with its head previously assembled;
  - the monitor inside its packaging (D, fig.1), the external arm (B, fig.1), the ultrasonic sensors and their supports (O, P(only available on the RLR series, fig.1);
  - the wheel guard (L, fig.1).



1

- Before installation, the balancing machine must be transported in its original packaging, keeping it in the position marked on the packaging. It can be transported by placing the box on a wheeled trolley or by inserting the forks of a fork-lift truck into the openings in the pallet (fig.2).


2

- Packing dimensions:

Length (mm/in) 1410/56
Depth (mm/in) 1070/42
Height (mm/in) 1240/43
Weight (kg/lb) 270/595
Packaging weight (kg/lb) 70/154

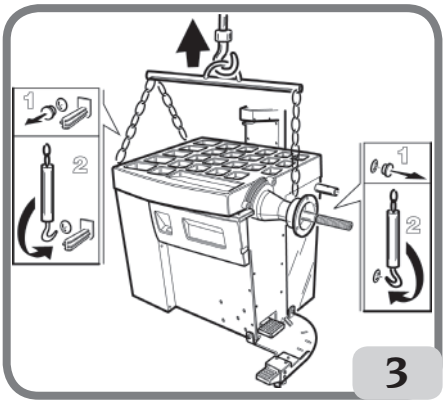
- Ambient conditions in place of storage:
  - relative humidity from 20% to 95%;
  - temperature from -10° to +60°C (14° to 140°F).

ATTENTION

Do not place other items on top of the two packs, as this may result in damage.

After installation, the machine can be moved using the following methods:

- with a crane, using special equipment that holds the machine at the lifting points (fig.3);
- inserting the forks of the lift truck under the machine so that the centre of the forks corresponds approximately to the centre line of the cabinet (fig.4).



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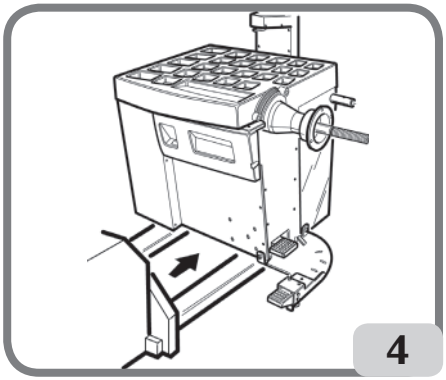
4

WARNING

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

ATTENTION

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

INSTALLATION

WARNING

Carry out the unpacking, assembly and installation operations described in this heading with great care. Failure to observe these instructions may result in damage to the machine and injury to the operator or other persons.
Remove the original packing material, after having positioned it as shown on the outside and **keep intact so that the machine can be safely shipped at a later date if necessary.**

WARNING

The regulations in force concerning safety at work must be complied with when choosing the installation position. In particular, the machine must only be installed and used in protected environments where there is no risk of dripping onto it.

IMPORTANT: for a correct and safe use of the equipment, users must ensure a lighting level of at least 300 lux in the place of usage.
Ambient conditions on the place of operations:
- relative humidity from 30% to 80% (without condensate);
- temperature from 5° to +40°C (40° to 100°F).

WARNING

The machine must not be operated in potentially explosive atmospheres.

If the machine is supplied with a number of separate parts that require assembly, follow the assembly procedures described below.

Fitting the head with the monitor

- Remove the two-hole washer which is attached to the pin hole by untightening its two screws (C, fig.1).
- Fasten the retaining screw (A, fig.5d) firmly to its retaining nut.
- Insert the head pivot pin through the upright bushing (C, fig.5a). The monitor head must be placed so that the KIS knob and the buttons face the operator.
- Insert the ground (yellow-green) cable through the slot where the KIS cable and the START- and STOP button cable (B, fig.5a) already pass through. Then plug the ground cable to its pin-connector being located on the head.
- Check out the head can rotate of an angle of approximately 30°. If so, the retaining screw (A, fig.5d) is inserted correctly in its channel which is present under the head. Check also out the cables are not pressed or placed at an inconvenient location.
- Restrain the pivot pin to its location by tightening the two screws (D,fig.5a) to their two-hole washer.
- Remove the monitor from its packaging. If attached, remove the monitor foot from the monitor base.
- Place the monitor on the head (fig.5c) so that it is approximately centred to the head middle and the screen is aligned to the head front plane (that is the plane hosting the KIS knob and the buttons).
- Set the monitor stopper (E, fig.5b) in slightly contact with the monitor rear, then make it steady by tightening its supplied four screws.
- On the bottom rear side of the upright (F, fig.5d), remove the screws at the corners of the panel so that the inner signal connectors become visible.
- Insert the monitor signal cable in the upright by making it pass through the opening on top of the upright itself.
- When the monitor signal cable reaches the upright bottom, plug it to its signal connector inside the upright (fig.5e).
- Plug the power supply cable to its socket being located to the rear left side of the machine.
- Insert the other end of the monitor power supply cable in the upright through the opening located at the bottom of the upright itself.
- Lift the power supply cable up to the opening at the top of the upright. If necessary, remove the front plate (G, fig.5c) by removing its four

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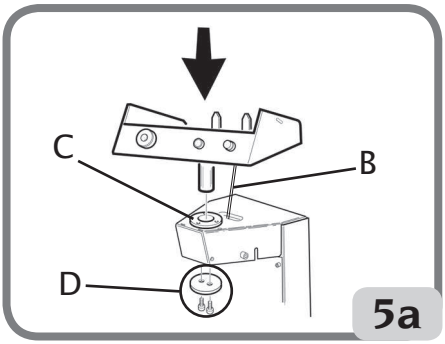
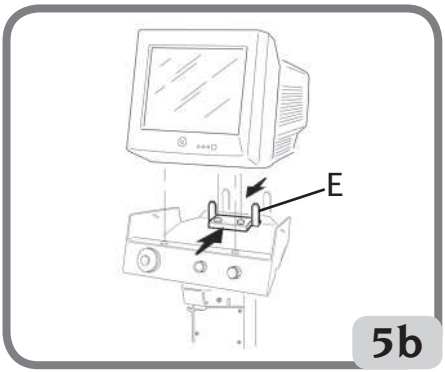
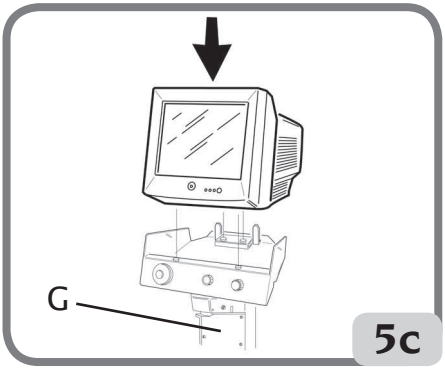
screw at the corner of the plate itself. That should ease the explained procedure.

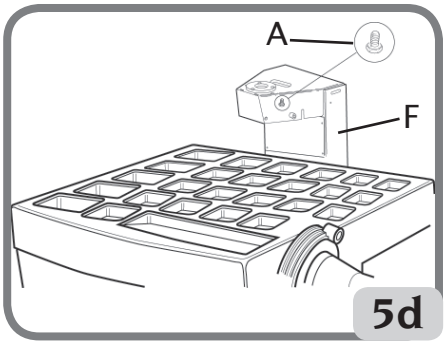
- Connect the power supply cable to its monitor socket.
- Turn the monitor on.

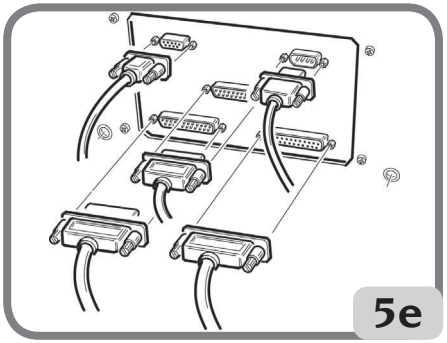
NOTE: If needed adjust the monitor image by selecting the on-screen menus as explained on the monitor user guide. The monitor user guide is provided together with the monitor.

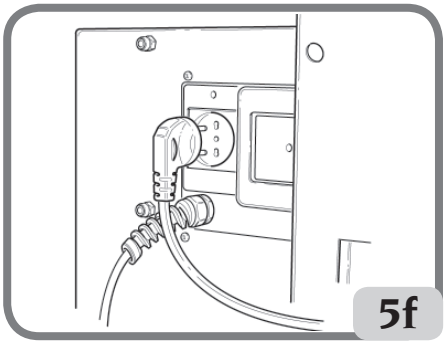






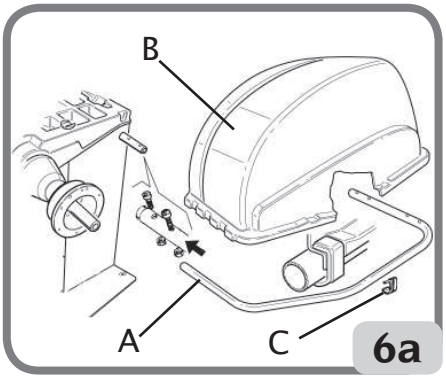






Fitting the guard, the outer sensor and the equipment

- Unscrew the locking nuts of the two screws in the holes of the support pin and remove the screws (fig.6a).
- Fit the guard tube (A, fig.6b) into the support pin, lining up the two sets of holes.
- Fit the two screws into the holes and lock the tube to the support by tightening the relative nuts.
- Fix the external sensor support bracket, keeping the concave part facing upward, on the tube of the guard, using the two screws provided (D, fig.6b).
- Fit the round pin on the sensor body into the hole in the support and fix it with the enclosed snap ring (D, E, F respectively, fig.6b).
- Place the wheel guard (B, fig.6a) on the tube and fix it by snapping the seven clamping elements into their seats (C, fig.6a). Pass the sensor cable through the two rear snap-in clamping elements so that it is concealed from view.
- To complete fixing of the guard to the support tube, use the two safety self-tapping screws on the front and on the rear of the guard.
- Assemble the flange holder pins as shown in fig.1, H.
- After the machine has been assembled, it should be installed in the predefined position, making sure that the surrounding spaces correspond to the minimum values indicated in figures 7.



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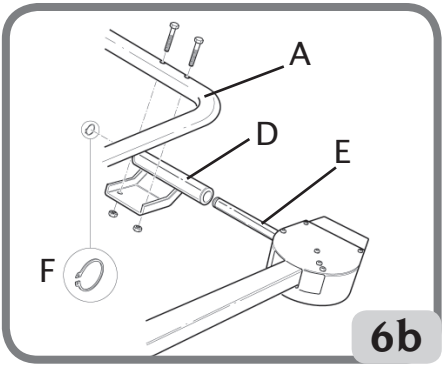

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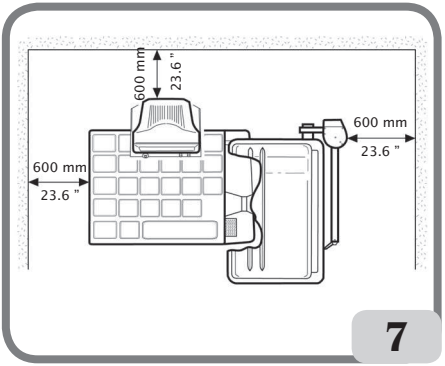

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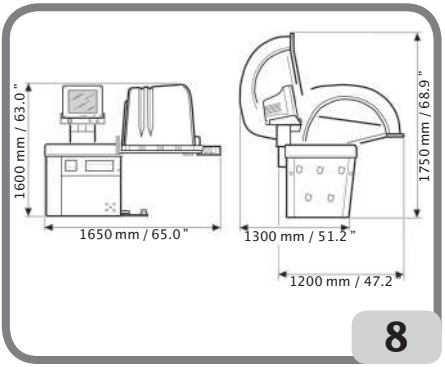

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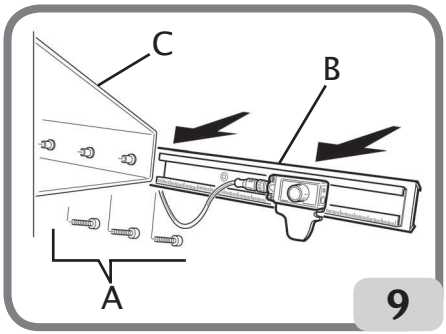
Fitting the ultrasonic sensor and its support

- Remove the device from its protection box and prepare it for fitting.
- Remove the three screws already placed on the metal sheet (A, fig.9).
- Fix the aluminium drawn bar (B, fig.9) to the metal sheet (C, fig.9) by screwing back the three screws aforementioned.
- Connect the ultrasonic sensor to its cable.
- After completing the assembly of the machine, position it at the selected location, taking care that the spaces around it at least ensure the clearances indicated in fig.7.



Main operating parts (fig.1)

A) Automatic diameter and distance measuring arm
B) Automatic width measuring arm
C) Head
D) 17" colour monitor
E) KIS (Knob Input System)
F) START button
G) STOP button
H) Flange holder
I) Weight-holder lid
J) Wheel support shaft
K) Master switch
L) Wheel guard
M) QL control pedal
N) Brake pedal
O) Radial ultrasonic sensor and support
P) Lateral ultrasonic sensor and support

ELECTRICAL HOOK-UP

On request the balancing machine can be set up by the manufacturer to operate with the power supply available in the place of installation. The set-up details for each individual machine are given on the machine data plate and on a special label attached to the power supply connection cable.

WARNING

All operations required for the electrical hook-up of the machine must be carried out exclusively by a qualified electrician.

- The electrical supply must be suitably sized in relation to:
  - absorbed power specifications indicated on the machine dataplate.
  - the distance between the machine and the power supply hook-up point, so that voltage drops under full load do not exceed 4% (10% in the case of start-up) below the rated voltage specified on the dataplate.
- The user must equip the machine with the following:
  - a dedicated power plug in compliance with the relevant electrical safety standards.
  - a suitable circuit-breaker (residual current set to 30 mA) on the mains connection
  - power line fuses in accordance with specifications in the main wiring diagram of this manual.
  - a suitable earthing system installed on the workshop mains line.
- To prevent unauthorised use of the machine, always disconnect the mains 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, install a key-operated switch or suitable lock-out device to restrict machine use exclusively to qualified personnel.

WARNING

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

PNEUMATIC HOOK-UP

WARNING

All operations involved in making the compressed air connections to the machine must only be carried out by qualified staff.

- The connection to the workshop's compressed air system must guarantee a minimum pressure of 8 bar; lower pressures might prevent correct operation of the release cylinder, leading to difficulties in releasing the wheel from the machine shaft.
- The union for connection to the compressed air system is of universal type and thus no special or additional attachments are required. A high pressure rubber hose with inside diameter 6 mm and outside diameter 14 mm must be connected to the toothed union using the hose clamp supplied with the machine.

SAFETY REGULATIONS

WARNING

Failure to observe these instructions and the relative danger warnings can cause serious injury to the operator or other persons.
Do not use the machine until you have read and understood all the danger/warning/attention notices in this manual.

This machine must be used only by qualified and authorised personnel. A qualified operator is construed as a person who has read and understood the manufacturer's instructions, is suitably trained, and is conversant with safety and adjustment procedures to be adhered to during operations. 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 all the instructions on how to use the machine;
- have a thorough knowledge of the capacities and characteristics of the machine;
- keep unauthorised persons well clear of the area of operation;
- make sure that the machine has been installed in compliance with established legislation and standards;
- make sure that all machine operators are suitably trained, that they are capable of using the machine correctly and that they are adequately supervised during work;
- do not touch power lines or the inside of electric motors or other electrical equipment until the power has been disconnected;
- read this manual carefully and learn how to use the machine correctly and safely;
- always keep this manual in a place where it can be readily consulted when working with the machine and do not fail to refer to the manual whenever in need of confirmation or explanations.

WARNING

Do not remove or deface the Safety, Danger or Instruction decals. Replace any missing or illegible Safety, Danger or Instruction decals. Replacement decals can be obtained from your nearest CORGHI 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 up long hair and do not wear loose clothing, ties, necklaces, wristwatches or any other items that may get caught up in the moving parts.

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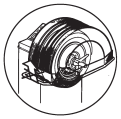
Key to warning and instructions labels

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

Unplug the power supply cable before carrying out maintenance/assistance work on the machine.



Do not lift up the guard when the wheel is turning.

GENERAL CHARACTERISTICS

- Self check-up and automatic calibration during start-up.
- Variable balancing speed (from 70 to 98 rpm depending on wheel type) for:
  - minimising wheel spin times,
  - reducing risk due to rotating parts,
  - increasing energy saving.
- Wheel placed closer towards the operator for an easier placing of the adhesive weights.
- Electronic sensors for measuring wheel distance, diameter and width and for application of the adhesive weights in ALU P programs.
- Automatic wheel stop at the end of the spin.
- Wheel-holder shaft clamping brake, push-button or pedal operated.
- STOP button to stop the machine immediately.
- Side flange holder cabinet.
- Cover with tray to take the weights and the most widely used accessories.
- Mini-anvil for repairing clip weights.
- Automatic launch of balancing procedure by lowering the safety hood.v
- 17" high resolution colour monitor: indispensable for the execution of new programs.
- Very intuitive and easy-to-use graphic unit interface.
- Knob Input System (KIS) for entering data and for program selection.
- Interactive Help on screen.
- Multiple languages.
- Processing unit with several microprocessors (16 bit).
- Imbalance display in grams and ounces.
- Resolution: 1 g (1/10 oz).
- Wide selection of programs.
- Two mode rounding setting for displaying imbalances.
- Types of balancing available:
  - *Standard* dynamic on both rim sides
  - *Alu / Alu p* seven different routines for aluminium rims
  - *Motorcycle dynamic* dynamic on both sides of motorcycle wheels
  - ALU *motorcycle* dynamic on both sides of aluminium motorcycle wheels
  - *Static* on a single position
- ALU-P's **"Mobile planes"** program for using multiple five gram weights, i.e.: available without the need for partial cuts.
- ALU-P's **"Hidden weight"** program for splitting balancing counterweights into two equivalent counterweights to be placed behind the nearest spokes.
- "**Weight division**" motorcycle program for splitting balancing counterweights into two equivalent counterweights to be placed aside the interfering spoke.
- "**OPT flash**" program for removing critical imbalances.
- "**OPT standard**" program for removing critical imbalances (optional).
- Automatic touchless radial and lateral (RLR balancers only) runout during balancing procedure with out-of-range notification.
- Walk-through touchless radial and lateral (optional) runout routine with wheel geometric matching.
- General utility programs:
  - Single component calibration,
  - Main screen personalisation,
  - Partial and total spin counter,
  - Setting of the three most frequently used programs,
  - Service and self-check-up.
- Separate working environments allowing three different operators to work in parallel with no need to set the data again (eccentricity detection exclude).
- Car accessory data bank, specifying the best way of fitting a wheel on the balancing machine.
- RPA (Automatic Wheel Positioning): a routine stopping the wheel in the position where the balancing counterweight has to be applied.

- Visual check: a function allowing a visual check of the roundness of a wheel or rim.
- Quick Lock: automatic wheel clamping.
- Thermal printer for printing imbalance values and wheel-rim eccentricity values.

TECHNICAL SPECIFICATIONS

- Electricity supply rating ..... single-phase 115/208 V ±10%
- Total power ..... 420 W
- Balancing speed..... 70 ÷ 98 rpm
- Maximum imbalance value calculated ..... 999 g (2.2 lb)
- Average spin time (with 5"x14" wheel).....5.5 s
- Shaft diameter.....38 mm
- Work ambient temperature .....5° to 40°C (40° to 100°F)
- Machine dimensions (fig. 8):
  - depth with guard closed .....1200 mm
  - depth with guard open.....1300 mm
  - length with guard .....1650 mm
  - height with guard close .....1600 mm
  - height with guard open .....1750 mm
- Programming parameters:
  - rim width .....from 1.5" to 20"
  - rim diameter .....from 1.0" to 30"
  - Max. wheel/machine distance .....300 mm
  - Max. wheel width (with guard) .....560 mm
  - Max. wheel diameter (with guard) ....920 mm
- Max. wheel weight.....65 kg
- Runout measurement resolution .....0.1 mm
- Shipping weight (without accessories) ....207 kg
- Noise level when running ..... < 70 dB(A)

MACHINE OUTFIT

The following parts are supplied together with the machine:

- Weight clip pliers .....code 900203841
- Threaded hub.....code 900222099
- Flange attachment bolt .....code 900222101
- Caliper for wheel width measurement .....code 900223420
- Weights identification plate....code 900437485
- Hex wrench CH 4 .....code 900600714
- Hex wrench CH 5 .....code 900600674
- Hex wrench CH 6 .....code 900600906
- Hex wrench CH 10 .....code 900600910
- Calibration disk .....code 9005-100026
- Calibration weight .....code 900259719

OPTIONAL ACCESSORIES

Please refer to relevant accessories catalogue.

GENERAL CONDITIONS OF USE

The equipment is intended for professional use only.

WARNING

Only one operator may work on the equipment at a time.

The balancing machines described in this manual must be used exclusively to measure the entity and position of imbalances on motor vehicle wheels, within the limits specified in the technical specifications section. Furthermore, models with motors must be provided with a suitable guard, fitted with a safety device, which must be lowered during the spin operation.

WARNING

All other uses, apart from those described, are to be considered improper and unreasonable.

WARNING

Starting the machine without the wheel clamping equipment is forbidden.

WARNING

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

ATTENTION

Cleaning or washing the machine with compressed air or jets of water is forbidden.

WARNING

Only original CORGHI equipment should be used during operation.

WARNING

Get to know your machine. The best way to

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prevent accidents and obtain top performance from the machine is to ensure that all operators know how the machine works.
Learn the function and location of all the commands.
Carefully check that all commands on the machine are working efficiently.
To avoid accidents and injury, the machine must be installed properly, operated correctly and serviced regularly.

SWITCHING ON THE MACHINE

Switch on the machine using the switch on the front of the body (K, fig.1).
The balancing machine carries out a checking test, and if no anomalies are detected it gives a beep and shows the logo and the personalisation data, after which it awaits input of the geometrical data of the wheel.
The knob of the KIS (**ENTER** key) can be turned to display the video page with the image of the imbalance values (fig.12); the initial active status will be:
- active balancing mode: dynamic (DYN);
- values displayed: 000 000;
- grams displayed in units of 5 (or 1/4 of an ounce);
- sensor value rounding active.

At this point, the user may set the data of the wheel to be balanced or select one of the programs available.

GENERAL NOTES ON THE MAIN MENU

The graphics are based completely on icons (drawings which recall the function of the key) to be selected to activate the respective functions; to aid understanding there is also a status line, at the bottom of the screen, subdivided into three fields:
- description of the meaning of the icon selected (the one surrounded by the yellow frame);
- indication of the machine status (x1 / x5 ; g / oz ; mm/inch);
- indication of the active environment (active program).

All these indications are in the language already selected.

The bottom of the monitor contains the icons (main menu, MM) subdivided into four groups:

- The first group, which consists of three icons, gathers the balancing-related functions.
- The second group, also of three icons, contains the UTILITY programs; in this group the user may enter three UTILITY programs of his choice (the procedures for inserting them are described in the operating procedures). The three icons shown above are simply an example.
- The third group, of two icons, offers the UTILITY functions (additional programs for use of the machine) and the SETTING functions (machine operation setting procedures).
- The fourth group, of just one icon, offers the Help function; if activated, it shows the information needed for work within the active procedure.

To select the desired icon, turn the KIS until the yellow frame surrounds the chosen icon, then press the knob down (Enter).
All the functions which do not appear in the Main Menu are grouped together in submenus (also of icon type) which open when the main icon is selected.
To access a submenu, select the main icon. Once the KIS has been pressed, a series of new icons appear on top of the selected icon. Now turning the KIS selects the icons of the submenu.
Once the submenu has been opened, the Main Menu icon is replaced by the Exit icon, which allows the submenu to be closed without making any selection.
The subdivision and functions of the individual main menu icons are explained below:

Dynamic (standard) balancing program:
recalls the conventional method of balancing a wheel on both sides.

Alloy wheel (ALU) balancing program:
recalls the various procedures for balancing light alloy wheels, known as ALU programs.

ALU 1P balancing program:
provides precise calculation of the balancing weights to be applied on the inner rim disc (adhesive weights).

ALU 2P balancing program:
provides precise calculation of the balancing weights to be applied on the inside of the wheel (clip weights) and the inner rim disc (adhesive weights).

ALU 1 balancing program:
provides statistical calculation of the balancing weights to be applied on the inner rim disc (adhesive weights).

ALU 2 balancing program:
provides statistical calculation of the balancing weights to be applied on the inside of the wheel (clip weights) and the inner rim disc (adhesive weights).

ALU 3 balancing program:
provides statistical calculation of the balancing weights to be applied on the inner part of the inside and outside of the rim (adhesive weights).

ALU 4 balancing program:
provides statistical calculation of the balancing weights to be applied on the inside (clip weights) and on the outside of the inner part (adhesive weights) of the rim.

ALU 5 balancing program:
provides statistical calculation of the balancing weights to be applied on the inner part (adhesive weights) and on the outside (clip weights) of the rim.

Balancing programs for motorcycle wheels:
programs suitable for balancing the wheels of motorcycles.

Dynamic balancing program for motorcycle wheels:
allows balancing of motorcycle wheels using clip weights on both sides.

ALU balancing program for motorcycle wheels:
allows balancing of motorcycle wheels using adhesive weighs on both sides.

Static balancing program:
allows balancing of both motorcycle and car wheels on a single plane.

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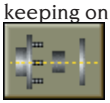
Utility programs:
allows access (by displaying them) to the icons relating to the general utility programs for operation of the machine.

Automatic position search:
brings the wheel into the correct position for application of the weights on both sides in alternation.

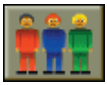
Optimisation:
activates the procedure for optimisation of the rotating weights.

Visual inspection:
this function is active with the guard open and spins the wheel at low speed to allow a visual check on its roundness.

Fine weight:
this function allows the operator to check the balancing results on screen at their highest possible accuracy (“Gr x1” or “Oz 1/10”) just by keeping on pressing the KIS knob.



Data bank:
depending on the type of vehicle chosen, this function displays the types of wheel centring available, while also providing a rating of the centring quality.



Working environments:
allows selection of the active user from the three available. Personalised machine settings are associated to each user.

Wheel spin counter:
displays the total and partial count of the performed wheel spins.

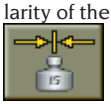
Display other icons:
displays the second series of icons.

- Second series of icons:

Initial imbalance printout:
activates the procedure for printout of the initial and residual imbalance data of one wheel.

Complete printout:
activates the procedure for printout of the initial and residual imbalance data of four wheels.

Wheel runout detection:
activates the procedure for measuring and optimising the roundness and on-shaft-perpendicularity of the wheel.



Imbalance calibration:
activates the program for calibrating the measurements made by the balancing machine.

Sensor calibration:
activates the program which calibrates the width sensor.

Manual input of wheel data:
activates the procedure for manual input of the wheel's dimensional values.

Service programs:
recalls the diagnostics programs, useful for the technical service.

Set-up programs:
allows access, by displaying them, to the icons relating to the programs for setting the balancing machine's operating parameters.

Company data:
activates the procedure for setting the data (name, address, etc.) of the user's company.

Language selection:
activates the icons for entering the language in which the operating messages are displayed.

Imbalance unit of measurement:
activates the icons for selecting the unit of measurement and the rounding with which the imbalance values are to be displayed (grams / ounces).

Automatic position search (RPA):
opens the submenu with the icons which allow activation or deactivation of the automatic wheel position search function at the end of the wheel spin.

Runout automatic acquisition settings:
opens the submenu with two icons which allow activation or deactivation of the automatic runouts measurement of the wheel during wheel balancing.

Modify total spin counter:
reserved for future purposes.

Preferred programs:
activates the procedure for setting of three preferential programs to be placed in the main icon bar.

Help:
recalls the information linked to the current video page to the screen. If an error message is present, the first information recalled relates to the types of error which may occur. The instructions recalled with this icon are an addition to (and not a replacement of) this operator manual to all intents.

The other icons, which belong to their individual programs, will be described directly in the respective operating phases.

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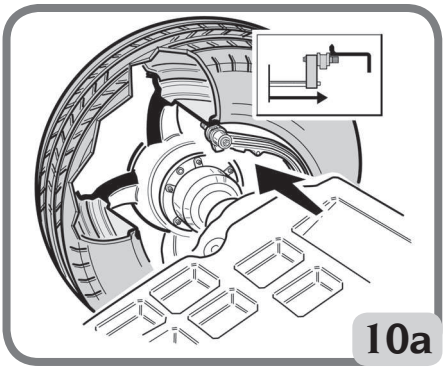
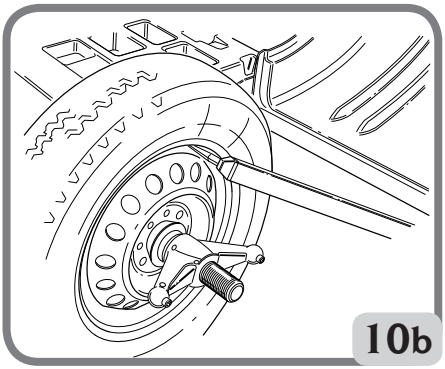
WHEEL DATA INPUT

The machine acquires the diameter, distance and width values automatically.

- Bring the two automatic measuring arms (inner- and outer arm: A, B, fig.1) into contact with the two sides of the rim as shown in fig.10a and fig.10b. The monitor shows the image relating to the geometrical dimensions of the wheel. **IMPORTANT: Take the greatest care to position the arms correctly, in order to obtain an accurate reading of the data.**





- Keep the arms in contact with the rim until the machine has acquired and displayed the wheel diameter, distance and width values.
- Check the values obtained and then return the arms to their rest position.
- If the automatic wheel runout acquisition is active, a window pops-up on screen reminding the operator to place the radial ultrasonic sensor in front of the tread middle. It is absolutely important to set properly the ultrasonic device as suggested on screen before continuing with the balancing phase.
- In case the lateral ultrasonic sensor is present, after a few seconds the screen shows a updated notification of the placement of the lateral ultrasonic sensor in front of the tire shoulder middle. It is absolutely important to set properly the ultrasonic device as suggested on screen before continuing with the balancing phase.

NOTE: Updates of the values on screen for the ultrasonic devices placement may take a few seconds before they get definitive.

- Press the KIS to return to the main menu otherwise press the START key or drop the guard to commence the wheel balancing.

If an incorrect value is acquired during the data reading routine, return their arms to the rest position and then repeat the operation.

It is possible to carry out any data measurements by moving just one arm at a time; in this case, great care must be taken with regard to the data measured because they are affected by those already stored in the memory.

After setting the geometrical dimensions correctly and returning the sensors to their rest position, the screen shows the imbalance values recalculated on the basis of the new dimensions.

IMPORTANT: bear in mind that the wheel's nominal diameter (e.g. 14") refers to the planes on which the tyre bead rests, which are obviously inside the rim. On the other hand, the data measured refer to external planes, so they will be lower than the nominal values because of the thickness of the rim. The correction value therefore refers to a mean rim thickness. This means that the data measured on wheels of different thickness may vary slightly (maximum 2 or 3 tenths of an inch) from the nominal values. This is not an error in the precision of the measuring devices; it simply reflects the real situation.

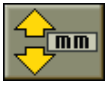
If the automatic measuring arm fails to operate, the geometrical data can be **entered in manual mode** by following the following procedure:

- select the icon in the utility submenu;
- the page for manual setting of the data appears on the screen. It contains the following icons:

Enter width in inches:
enables entering of the rim width in inches.

Enter width in millimetres:
enables entering of the rim width in millimetres.

Enter diameter in inches:
enables entering of the rim diameter in inches.



Enter diameter in millimetres:
enables entering of the rim diameter in millimetres.

Enter distance in millimetres:
enables entering of the distance between the rim and the machine body in millimetres.

Exit:
returns the program to the main menu with the imbalances.

Help:
shows the help information relating to the manual setting of data.

- After selecting one of the parameter-set-up icon, turn the KIS until the desired value appears in the box relating to the value to be entered.
- Press the KIS knob to confirm such a value.
- Select a new icon to set another parameter.
- To stop the manual data setting process, select the Exit icon.

WHEEL SPIN

Wheel spin takes place automatically when the guard is lowered, or can be triggered by pressing the **START** key (coloured green) with the guard already down.
A special safety device stops rotation if the guard is lifted up during the spin; in this case, the **Err Cr** message appears.
During position search, the wheel may spin with the guard raised.

WARNING

Starting the machine without the guard and/or with the safety device incorrectly positioned or tampered with is forbidden.

WARNING

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

WARNING

If, due to a fault on the machine, the wheel keeps spinning permanently, switch off the machine at the master switch or unplug the plug from the power supply panel (emergency stop). Then wait until the wheel stops before raising the guard.

USING THE AUTOMATIC CLAMPING DEVICE

The usage of this balancing machine is very similar with respect to an ordinary balancing machine with fixed threaded hub. Yet the pneumatic system for clamping the wheel on the threaded hub is a standard for this balancer.

Centring with front cone

- Fit the wheel onto the shaft, sliding it on until it rests against the flange.
- Place the most suitable cone on the shaft and fit it into the hole in the centre of the wheel.
- Press the control pedal (M, fig.1) so that the threaded hub moves outward.
- Fit the ring-nut, moving it along the threaded hub until it is touching the cone.
- Release the control pedal so that the threaded hub returns to its rest position, clamping the wheel against the flange.

Centring with rear cone

- Place the cone which provides the best fit for the hole in the centre of the wheel on the shaft.
- Place the wheel on the cone and slide it on until the cone is touching the spring.
- Press the control pedal (M, fig.1) so that the threaded hub moves outward.
- Fit the ring-nut, moving it along the threaded hub until the plastic cap is touching the wheel rim.
- Now apply pressure so that the spring is slightly pre-loaded.
- Release the control pedal so that the threaded hub returns to the rest position, clamping the wheel against the flange.

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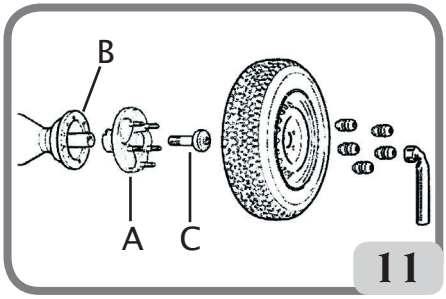
Centring with flanges

Remove the spring retainer plate from the wheel support flange by proceeding as follows:
- Fit the small cone on the balancing machine shaft and screw on the ring-nut so that the spring retainer plate moves inward a few millimetres.
- Applying leverage with a screwdriver fitted into one of the two slots on the flange, then remove the plate retainer snap ring.
- Undo the ring-nut and remove the cone, the plate and the spring.
- Remove the threaded hub and fit the flange (B, fig.11) onto the shaft.
- Tighten the flange by means of the supplied retaining screw (C, fig.11). To ease the procedure press the STOP button.
- Clamp the wheel onto the flange as usual.



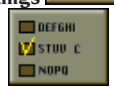
NOTE:
- In the fairly unlikely event that the control valve seizes or a compressed air connection line breaks, the machine is still able to operate like an ordinary balancing machine with fixed threaded hub. **This also allows the machine to be used if there is no compressed air available and/or if the workshop's compressed air supply system breaks down.**
- In case of an operating error (e.g. if the release command is given while the wheel is still turning) the ring-nut ensures that the wheel cannot leave the shaft. In case of an error of this kind, the operator must abort the spin, clamp the wheel again and perform another spin.
- The Quick Lock clamping system ensures virtually complete compatibility with all accessories supplied with balancing machines without automatic clamping devices.

BALANCING PROGRAMS

The balancing programs are divided into groups represented by the first three icons of the main menu:
- standard dynamic balancing
- dynamic balancing of wheels with alloy rims
- dynamic and static balancing of motorcycle wheels.

Before starting a balancing operation, proceed as follows:
- fit the wheel on the hub using the most suitable flange; see the guidelines provided in the data bank ;
- secure the wheel so that no movements are possible during the wheel spin and braking phases;
- remove any balancing weights, stones, dirt or other foreign bodies from the wheel;
- enter the wheel data correctly.

Additionally the automatic wheel eccentricity measurement option may be selected so that the runout is investigated during the balancing procedure. To do so, select the **Runout automatic acquisition settings** 

icon from the **Set-up programs** 

menu. When such a functionality is active, an image on screen pops-up and it is indispensable that **the operator places the ultrasonic sensor opposite to the tread middle each time the wheel is changed.** Automatic wheel eccentricity measurements refers to a certain threshold. In case the wheel eccentricity magnitude exceeds, then a flashing sign on screen notifies the operator the need for additional investigations. On the contrary, if the wheel eccentricity magnitude remains below the threshold level, no alert is notified.

Dynamic balancing (STANDARD)

This balancing procedure is the one normally used and is considered standard by the balancing machine; if a different balancing program is on the screen, select the  **Dynamic (standard) balancing program** icon from the main menu.
The video page relating to this program appears on the screen (fig.12).

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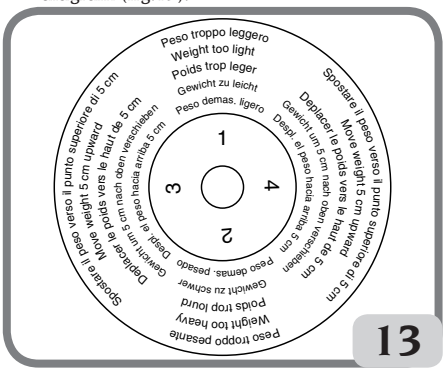
Now proceed as follows:

1. Enter the wheel data correctly.
2. Spin the wheel by pushing down on the guard.

To obtain the highest precision in the results, do not apply any undue stresses to the machine during wheel spin.

3. Wait for the wheel to stop automatically and for the imbalance values calculated to appear.
4. Select the first side to be balanced.
5. Turn the wheel until the central element of the corresponding position indicator illuminates.
6. Apply the balancing weight indicated, in the position on the rim corresponding to 12 o'clock.
7. Repeat the operations listed above for the second side of the wheel.
8. Carry out another wheel spin to check the balancing precision. If this is not considered satisfactory, modify the value and position of the weights applied previously, following the guidance provided by the balance control diagram (fig.13).



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

WARNING

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

For easier application of the balancing weights, the wheel can be braked in three different ways:

- By keeping the wheel in centred position for one second. The brake will be activated immediately with reduced braking force to allow the operator to turn the wheel by hand into the position for application of the other weight.
- By pressing the brake pedal (N, fig.1). The maximum braking force is applied and the wheel is released by pressing the pedal again, by performing a wheel spin or after 30 sec.
- By pressing the STOP key when the wheel is in one of the weight application positions (maximum braking force); the wheel is released by pressing the STOP key again, by performing a wheel spin or after 30 sec.

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

Pressing the **STOP** key while the wheel is in motion interrupts the wheel spin before time.

If the "**RPA**" (automatic position centring) program is active, at the end of each balancing wheel spin the machine stops the wheel in the position for application of the weight on the inside; if this balancing weight is equal to zero, the wheel is stopped in the position for the outside. If the **START** key is pressed with the guard raised, automatic search for the second side position begins.
This function is described in greater detail in the AUTOMATIC POSITION SEARCH section.

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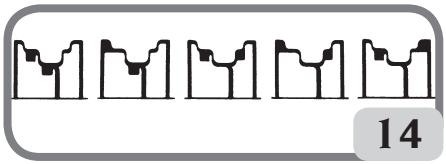
Balancing aluminium (ALU) wheels

To balance aluminium wheels we usually use self-adhesive weights that are positioned differently from the clip weights used in standard balancing (fig. 14).
There are various ALU balancing programs, specially designed to work with rims of this type.
These programs are recalled from the main menu using the  **Alloy wheel (ALU) balancing program** icon, which opens the submenu of seven icons in two groups: ALU P and normal ALU programs.



ALU 1P and ALU 2P programs

These programs are used for maximum precision balancing on light aluminium rims that **require the application of both weights on the same side (inner) in relation to the rim disk.**
This type of balancing procedure is particularly suitable for applying adhesive weights to the rim, since the forward position of the wheel in relation to the machine body gives free access to a large zone on the inside of the rim.

After selecting the  **Alloy wheel (ALU) balancing program** icon, choose one of the two icons relating to the ALU P programs:

 **ALU 1P balancing program** icon or

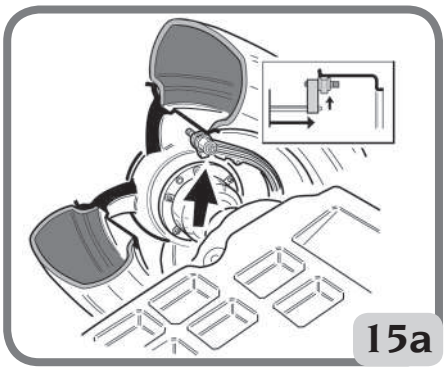
 **ALU 2P balancing program** icon.

The screen shows the video page for measuring imbalances on alloy wheels.

Wheel data acquisition

With this program the real wheel data have to be set **in relation to the real balancing planes** rather than the nominal values (as in standard ALU programs). The balancing planes where the **adhesive** weights will be applied can be selected by the user according to the particular shape of the rim. It should be remembered, however, that in order to reduce the quantity of the weight that is to be applied **it is preferable to select balancing planes that are as far apart as possible:** if the distance between the two planes is less than 37 mm (1.5"), the "Err 5" message will be displayed.

- Bring the weight holder end of the internal automatic sensor arm onto the plane selected for the application of the **inside** weight. In ALU 1P the balancing plane is about 15mm further back (weight centre line) than the point where the measuring head touches the rim (fig.15a). In ALU 2P mode, the reference point is the edge of the rim since a traditional clip weight is used as the inside weight (fig.10a).

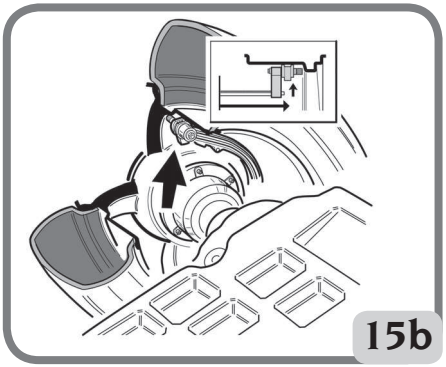


Make absolutely certain that the end of the sensor is positioned in an area free of discontinuity, so that the weight can be applied in the same position.

- Keep the arm in position. After two seconds the machine will emit a beep to confirm that the distance and diameter values have been acquired.
- Move the end of the automatic sensor in correspondence with the plane selected for the application of the outside balancing weight (fig. 15b), in the same manner as described previously for the inside plane.
- Keep the arm in position and wait for the beep of confirmation.
- Return the sensor to its rest position.

If the sensor is returned to its rest position after having only acquired the data for one plane, or if the outside plane data are acquired first, followed

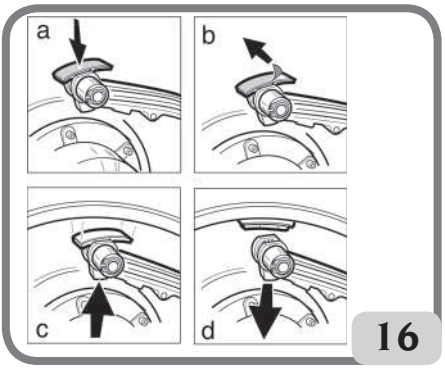
by the inside plane data, the "Err 23" message will appear on the video and the acquired data will not be taken into consideration.
- Carrying out a spin.



Attaching balancing weights
- Select the plane where the first balancing weight is to be applied.
- Rotate the wheel until the central element of the corresponding position indicator is illuminated.

If the balancing weight is a **traditional clip type** (inside plane in ALU 2P), position the balancing weight at **12 o'clock**. If, on the other hand, the weight is an **adhesive type:**
- centre it inside the cavity in the weight holder end of the measuring arm (fig.16a), with the backing paper of the adhesive strip facing up. Now remove the backing paper (fig.16b) and turn the weight holder end so that the adhesive strip is facing towards the inner surface of the rim.
- Move the sensor until the two reference lines (in yellow) in the window provided on the screen overlap.
- Rotate the end of the sensor until the weight adhesive strip is in position in correspondence with the rim surface.
- Press the push button (fig.16c) to eject the weight and make it stick to the rim.
- Return the sensor to its rest position (fig.16d).
- Repeat this process for the application of the second balancing weight.
- Carry out a test spin to check the accuracy of the balancing.

In order to be sure that the weight sticks to the rim, the rim surface must be perfectly clean. If necessary, clean the rim surface with a suitable detergent.
NOTE: On balancing machines intended for the german market, weights fastening should be carried out as follows: apply the adhesive weight manually, by positioning it so that its centre line is 15mm further back than the point where the measuring head touches the rim.



"Mobile planes" program (only available with ALU P programs)

This function is **automatically** activated when an ALU P program is selected.
It modifies the former selected positions for the application of adhesive balancing weights, in order to allow perfect wheel balancing using commercially available adhesive weights in multiples of five grams. The precision of the machine is thereby improved, avoiding rounding or cutting weights in order to come closer to the real imbalance values.
The modified positions, where the adhesive weights are to be applied, are selected by the user according to the instructions supplied by the balancing machine (see ATTACHING BALANCING WEIGHTS section).

"Hidden weight" program (only available with ALU P programs)

This program sub-divides the outside balancing weight into two combining weights, located in a hidden position behind the two spokes on the aluminium rim.
- First select either the ALU 1P or the ALU 2P program; the selection is done by choosing

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the  **Alloy wheel (ALU) balancing program** icon and then  **ALU 1P balancing program** icon or  **ALU 2P balancing program** icon.

- The  **Hidden weight** icon will appear on the icons bar instead of the motorcycle program selection icon.
- When this icon is selected, a window will appear on the screen.
- Turn the KIS to set the number of spokes in the rim to be balanced; the OFF message means that this function is not required.
- Bring a spoke to 12 o'clock and press the KIS knob; the number and position of the spokes have now been stored.
- The imbalance is shown on the monitor, including the two position indicators for the outside plane. The imbalance value shown for this plane refers to the indicator in the centred position condition.

The application of each of the two balancing weights is carried out as described in the ALU P programs "attaching balancing weights" section.
The HIDDEN WEIGHT function combines with the MOBILE PLANES function in order to allow to be used in multiples of 5 grams.

Standard ALU programs (ALU 1, 2, 3, 4, 5)

The ALU standard programs take into account the different positions for the application of the weights (fig.14) and provide correct imbalance values **maintaining unchanged the nominal wheel data input for aluminium rims.**
To activate these programs, proceed as follows :

- select the  **Alloy wheel (ALU) balancing program** icon;
- select one of the following icons:

ALU 1 balancing program:
provides statistical calculation of the balancing weights for application on the inner rim disc, as shown in the relative icon.

ALU 2 balancing program:
provides statistical calculation of the balancing weights for application on the side and on the inner rim disc, as shown in the icon.

ALU 3 balancing program:
provides statistical calculation of the balancing weights for application, as shown in the icon.

ALU 4 balancing program:
provides statistical calculation of the balancing weights for application, as shown in the icon.

ALU 5 balancing program:
provides statistical calculation of the balancing weights for application on the inner rim disc and the outside of the rim, as shown in the icon.

- Once a wheel spin has been performed, when the centred position is reached the screen indicates where the balancing weights have to be placed according to the chosen program.
- Set the wheel **nominal** geometrical data by following the procedures described in the ENTERING THE WHEEL DATA section. If the values of the diameter and distance between the two balancing planes (being recalculated on a statistical basis as from the geometrical data of the wheel) are outside the commonly accepted range stated in the TECHNICAL DATA, the message "Alu Err" is displayed.
- Perform a wheel spin and proceed as described for dynamic balancing.

Some minor residual imbalance may remain at the end of the spin test due to the considerable difference in shape found in rims with the same nominal diameters. To counteract this, change the amount and position of the weights in accordance with the "balance check" diagram (fig.13) until an accurate balance status has been obtained.

Motorcycle wheel balancing

Motorcycle wheels can be balanced in:
- dynamic mode: when the width of the wheel is such (over 3 inches) to generate significant imbalance components which cannot be eliminated with static balancing (the recommended procedure).
- dynamic mode for alloy wheels: a program similar to the ALU programs for car wheels, with the possibility of dividing the weight on one side into two parts when particularly bulky spokes are present.
- static mode: just one balancing weight, perhaps divided into two equal parts on two sides; procedure described in the STATIC BALANCING section.

Motorcycle dynamic program

To balance a motorcycle wheel on two planes (dynamic balancing) using clip weights, proceed as follows:
- fit the motorbike wheel adapter (AUMO) on the balancing machine:
  - insert the two screws provided in the holes on the wheel support flange;
  - tighten the screws onto the adapter, taking care that it is resting correctly on the flange;
  - fit the most suitable pin (this depends on the hole in the centre of the wheel) onto the shaft, after removing the threaded hub;
  - mount the wheel after choosing the centring cones (one for each side of the wheel) and tighten with the ring-nut provided, using the spacers needed to obtain continuity between the clamping cones and the threaded part of the shaft.

IMPORTANT: For accurate measurements, it is essential to fix the wheel to the flange in such a way that no reciprocal movement is possible between the two elements during wheel spin or braking.

- Select the  **Motorcycle wheel balancing programs** icon.
- Select the  **Motorcycle wheel dynamic balancing program** icon: the image relating to this program appears on the screen.
- Fit the extension provided on the internal sensor arm.
- Set the wheel data in the usual way.
- Proceed as described for dynamic balancing.

Motorcycle ALU program

For dynamic balancing of motorcycle wheels with adhesive weights proceed as follows:
- Follow the instructions for installation of the motorcycle wheel adapter given in the MOTORCYCLE DYNAMIC PROGRAM section.
- select the  **Motorcycle wheel balancing programs** icon;
- select the  **Motorcycle wheel ALU balancing program** icon.

When the centred position is reached, the corresponding balancing planes will appear on the rim displayed on screen.
Proceed as described previously for the "**Motorcycle Dynamic**" program.
To obtain the best results, the adhesive weights should be applied with their outermost edge against the edge of the rim.

Weight division program

Some rims have extra wide spokes, close to which adhesive weights cannot be applied; to solve this problem, a program which divides the counterweight into two parts has been provided.
In this case, when the centred position is reached, if it is noted that the balancing weight has to be applied where there is a spoke, proceed as follows:
- remain in centred position state;
- select the  **Divide weight for side** icon (displayed instead of the "select ALU programs" icon);
- turn KIS to select the spoke size in the window which appears; small, medium, large or OFF

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(disables this setting procedure);
- confirm by pressing the KIS;
- apply the two new counterweights in the indicated positions.

The weight division operation can be carried out on both wheel sides.

Static balancing

A wheel can be balanced by applying a single counterweight on one of its sides or in the centre of the well; in this case, the wheel is balanced **statically.** However, there is still the risk of dynamic imbalance, which becomes more significant as the width of the wheel increases.
To balance motorcycle wheels in static mode, proceed as follows:
- follow the instructions for installation of the motorcycle wheel adapter given in the MOTORCYCLE DYNAMIC PROGRAM section.
- select the  **Motorcycle wheel balancing programs** icon;
- select the  **Static balancing program** icon.
  Now the image displayed shows just one position search. Proceed as described previously for the "Motorcycle Dynamic" program; for your information, note that in this balancing mode the width and distance values are of absolutely no importance.
- Apply the balancing weight at 12 o'clock, on the outside, the inside or in the well (this makes no difference at all). If applied in the well, the weight is applied on a diameter smaller than the nominal diameter of the rim, so in order to obtain correct results a value of 2 or 3 inches less than the nominal value must be entered when the diameter is set.

To obtain the best results, divide the weight in two and apply it to both sides of the rim.

This type of balancing can also be carried out on car wheels; in this case, do not follow the instructions for fitting the motorcycle wheel adapter, but use the procedure for fitting a car wheel.

FLASH OPT OPTIMISATION PROGRAM

This program has been made even simpler and faster than other types of Flash OPT program; in most cases, the results obtained can be compared with those of the Standard program described below, using fewer wheel spins and therefore speeding up the procedure.
For guidance on this procedure, refer to the next section, bearing in mind that the flash version of the program must not be accessed until a wheel spin has been performed.
The Flash OPT program automatically skips the first phase with the rim only (OPT 1) and the start of the procedure is indicated by Flash OPT.
The calculations made by this program are based on the imbalance values obtained during the last wheel spin performed; for this reason, the last spin must have been carried out with the wheel on which the quick optimisation procedure is to be used.

OPT 1

- Turn the wheel until the valve is at 12 o'clock.
- Select the  **Save Valve Position** icon to store the valve position at 12 o'clock.

OPT 2

See OPT3 of the Standard OPT program.

OPT 3

See OPT4 of the Standard OPT program.

OPT OPTIMIZATION PROGRAM (OPTIONAL)

This procedure is used to reduce **road noise** (vibrations) to a minimum. Road noise can still be present even after a very painstaking balancing.
The professional experience of the tyre specialist is extremely important in these cases. If it is decided that this extra step could be helpful to reduce road noise to a minimum, this program

can be selected.
However, the machine indicates whether or not this procedure is recommended by means of a special window which appears when the 

Optimisation icon is selected; the decision is based on the imbalance values obtained during the last wheel spin performed, which must therefore have been carried out with the wheel to be optimised.

To recall this program, proceed as follows:

- select the  **Utility programs** icon;
- select the 

Optimisation icon;

this accesses the first phase of the program.

OPT 1

- Fit **the rim** on the machine without the tyre.
- Turn it until the valve (or hole, although it is preferable to work with the valve already fitted) is at 12 o'clock.
- Select the  **Save Valve Position** icon to store the valve position at 12 o'clock.
- Perform a wheel spin.

At the end of the spin, the system moves on to the second phase of the program.

OPT 2

- Take the rim off the machine.
- Fit the tyre on the rim.
- Fit the complete wheel on the machine.
- Turn it until the valve is at 12 o'clock.
- Select the  **Save Valve Position** icon to store the valve position at 12 o'clock.
- Perform a second wheel spin.

At the end of the spin, the system moves on to the third phase of the program.

OPT 3

Following the instructions on the monitor:

- turn the wheel until the valve is at 6 o'clock (the arrow at the bottom changes from yellow to green);
- make a chalk mark on the outside wall of the tyre at 12 o'clock;
- confirm that the mark has been made by selecting the 

Sign chalk mark icon.

The image on screen now changes.

- Take the wheel off the machine.
- Turn the tyre on the rim until the mark made previously is in line with the valve (rotation through 180°).
- Put the wheel back on the machine.

Then follow the new instructions on the monitor:

- Turn the wheel until the valve is at 12 o'clock.
- Select the  **Save Valve Position** icon to store the valve position at 12 o'clock.
- Perform a third spin.

The system now displays the real imbalance values of the wheel in its current position on the balancing machine.
Bring the wheel into the indicated position. The monitor will display the two imbalance values and the percentage improvement which can be obtained if the user decides to continue with the optimisation procedure.
If the improvement already obtained is not considered sufficient, or if no significant improvements are possible, the user can select the  **Exit** icon and perform a spin to balance the wheel; otherwise, the system moves on to the fourth and final phase of the program.

OPT 4

Follow the instructions on screen:

- Turn the wheel until it is on the position shown by the position indicator ;
- Make a **double chalk mark** on the **outside** wall of the tyre at 12 o'clock. If the screen indicates that the tyre should be mounted on the rim the opposite way, make two chalk marks on the **inside** of the tyre wall.
- Confirm the chalk mark has been drawn on tire by selecting the 

Sign chalk mark icon
- Remove the wheel from the balancing machine.

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- Rotate the tyre (switching around if necessary) on the rim, until the mark made previously corresponds with the valve (rotation through 180°).
- Fit again the complete wheel on the balancing machine.

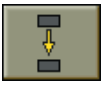
Following the instructions on the right hand part of the screen:

- Rotate the wheel until the valve (or hole) is at 12 o'clock.
- Select the  **Save Valve Position** icon to store the valve position at 12 o'clock.
- Carry out the fourth spin.

With the completion of the fourth spin, the optimisation program has been completed and the weights to be added to balance the wheel will be displayed on the monitor.

If an error has been made that may negatively affect the end result, the machine will indicate this error with the "Err 6" message. This means that the entire procedure should be repeated from the beginning. The error message will disappear when one of the available functions is selected.

Special cases

1. If the user does not wish to perform the spin with rim only, the first phase can be skipped. To do this, after selecting the OPT program, activate the  **Skip first OPT phase** icon. Then fit the wheel complete with tyre on the balancing machine and carry out the left phases (2, 3 and 4) as previously described. The results obtained are less precise than those provided by the complete procedure.
2. At the end of the second or third spin, the screen may show the OUT 1 and OUT 2 messages, respectively. In this case, it is advisable to exit from the program by selecting the  **Exit** icon.
   The values of the needed weights to balance the wheel will appear on the screen. This shortens the procedure, which means doing without a negligible improvement in the final results. In any case it is possible to continue with the optimisation procedure by selecting the  **Proceed OPT procedure** icon.
3. At the end of the third spin, the screen may inform the user that the tyre should be fitted on the rim the other way round. If the user does not wish to do this, or if it is not possible, the  **Disable tyre reversal** icon should be selected. The machine will provide the instructions for the program completion without reversing the tyre.
   The  **Enable tyre reversal** icon reactivates the reversal function.
4. The user can exit from the optimisation procedure at any moment by simply selecting the  **Exit** icon.
5. If a different working environment is recalled between one phase of the OPT procedure and the next one, execution of the OPT procedure restarts from the previous point when the OPT environment is restored. This functionality is called by selecting the  icon.

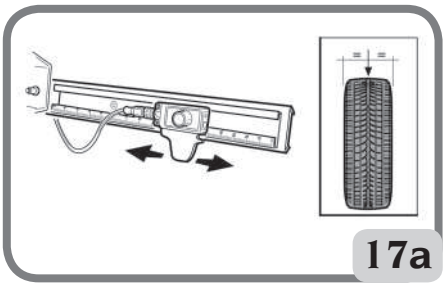
RUNOUT MEASUREMENT PROGRAM

This procedure is used to reduce **road noise** (vibrations) to a minimum when caused by geometrical mismatch. Actually road noise can still be present even after a very painstaking balancing, therefore a possible solution which attempts to minimise such disturbances is to compensate any geometrical mismatch between tyre and rim when present. Accordingly to the model of balancing machine, this functionality returns runout information concerning a radial runout (RR series) or both radial and lateral runouts (RLR series).

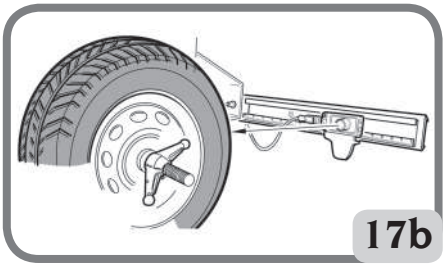
Wheel runout measurement

The goal of this utility is the possibility to check the radial eccentricity (and the lateral wobble if hardware is available) of the whole wheel. In order to perform that, proceed as follows:

- Fit the wheel on the shaft.
- Select the  **Utility programs** icon.
- Select the  **Wheel runout detection** icon.
- Choose between the  **Millimetred measurement** icon and  **Inched measurement** icon to define working length units.
- Place the radial ultrasonic sensor approximately in front of the tire tread middle (fig.17a, fig.17b). To ease the placement, refer to the indication as provided on screen just after wheel size determination or after entering the RUNOUT MEASUREMENT PROGRAM.

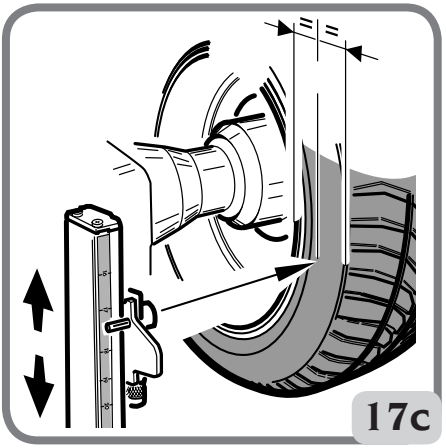


17a



17b

- If available, place the lateral ultrasonic sensor approximately in front of the tire shoulder middle (17c). To ease the placement, refer to the indication as provided on screen just after wheel size determination or after entering the RUNOUT MEASUREMENT PROGRAM.



17c

IMPORTANT: the placement of the lateral ultrasonic sensor must be carried out just after the radial ultrasonic sensor has been placed properly.

NOTE: updates on screen of the values for the placements of the ultrasonic sensors can take a few seconds before becoming definitive.

Such a numeric notification must be pointed out from the reference decal and identified through the notch engraved on the metal handle of the ultrasonic sensor (17d).

IMPORTANT: The ultrasonic sensors cannot be applied to bare rims.

When available, the numeric notification of the placement of the lateral ultrasonic sensor must be pointed out from the reference decal and identified by the pin being fixed through the metal handle of the ultrasonic sensor (17e).

IMPORTANT: the lateral ultrasonic sensor cannot replace the inner arm for measuring the radial runout of inner rims.

IMPORTANT: The indication as provided on screen just after entering the RUNOUT MEASUREMENT PROGRAM refers to the last previous wheel size determination. **If a different wheel needs to get investigated, the operator should repeat wheel size determination for such a wheel.**

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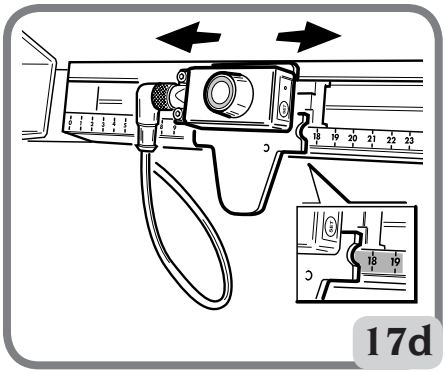
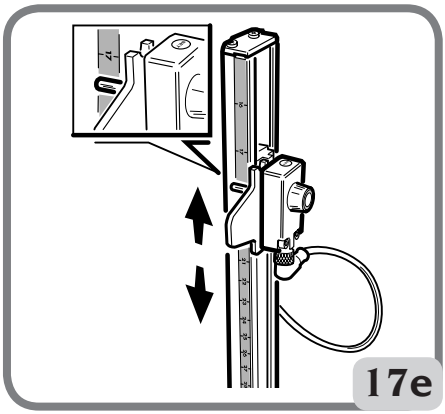
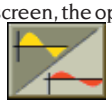




- Confirm ultrasonic sensor placement by selecting the 

Ultrasonic sensor placement icon.
- Press the START button to start detecting the wheel profile. The wheel spins no longer than nine cycles.
-Check out plotted waveforms on screen. Such waveforms differ from their colours:
  - yellow curves represent the wheel runouts,
  - cian curves represent the wheel eccentricities and wobbles and derive from the processing of the former runouts.

  NOTE: The mobile bar on graph represents the machine 12 o'clock vertical axis.
- Keep on investigating the rim contour if eccentricity peak-to-peak values are beyond thresholds (- Runout thresholds equal 1.2mm / 0.045" - numeric values are displayed on a **red** background instead of a green one).
- If required, remove the extension disk (fig.18) for bare rim runout investigations, then draw the internal arm roller in contact with the inner side of the rim (fig.15a). After a three-step-countdown, the wheel starts spinning and rotates no longer than three cycles.
  IMPORTANT: If present, remove all attached counterweights on the way before determining rim runout.
  IMPORTANT: During rim investigation keep the arm roller sufficiently firm against the rim surface.
- Check out plotted waveforms on screen and geometrical matching notification. Matching notification is described as:
  - A YES/NO message advising to or not to continue with the matching procedure.
  - An expected percentage of correction improvement if YES displays.

NOTE: This program for runout measurements is based on two different sessions: the first session concerns wheel investigations, the second session concerns rim investigations. Each session displays on screen its own results in a numeric and graphic manner independently from the concurrent session.
In order to examine the results and the waveforms of a session when the data of the other one are on screen, the operator needs to select and press the  **Graphs Toggle** icon.
- If desired, choose to continue with the geometrical matching by pressing the KIS knob (

Rim-tire geometrical matching icon is automatically highlighted at the end of the rim investigation).
  NOTE: the geometrical matching is based only on the eccentricities related to the rim inner side and the tire.
- If geometrical matching is chosen, store valve position at 12 o'clock by selecting the  **Save Valve Position** icon.
- Rotate the wheel manually until system indicates where to stop.
- Sign a mark on tire with a chalk at 12 o'clock.
- Dismount the wheel from shaft, then make the mark on tire and the valve coincide.
  NOTE: At any time the operator is allowed to start again the procedure from the beginning by

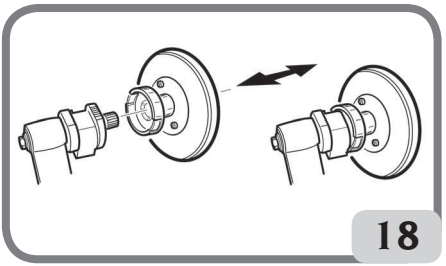
selecting the  **Measurement repeat** icon.

NOTE: At any time the operator is allowed to escape from the procedure by selecting the  **Exit** icon.

Inner rim runout measurement

One of the utility features is the possibility to check (bare) rim inner side runout and eccentricity alone. In order to perform that, proceed as follows:

- Fit the wheel or the bare rim on the shaft.
- Select the  **Utility programs** icon.
- Select the  **Wheel runout detection** icon.
- Choose between the  **Millimetred measurements** icon and  **Inched measurements** icon to define working length units.
- Select the  **Rim runout acquisition** icon.
- If required select the  **Rim internal runout acquisition** icon and remove the extension disk for bare rim runout investigations (fig.18).



18

- Draw the inner arm roller in contact with the inner side of the rim as if for measuring the rim diameter. After a three-step-countdown, the wheel starts spinning and rotates no longer than three cycles.
  IMPORTANT: If present, remove all attached counterweights on the way before determining rim runout.
  IMPORTANT: During rim investigation keep the arm roller sufficiently firm against the rim surface.
- Check out plotted waveforms on screen. Such waveforms differ from their colours:
  - yellow curves represent the wheel runouts,
  - cian curves represent the wheel eccentricities and wobbles and derive from the processing of the former runouts.

  NOTE: The mobile bar on graph represents the machine 12 o'clock vertical axis.

Outer rim runout measurement

One of the utility features is the possibility to check bare rim outer side runout and eccentricity alone.
In order to perform that, proceed as follows:

- Fit the bare rim on the shaft.
- Select the  **Utility programs** icon.
- Select the  **Wheel runout detection** icon.
- Choose between the  **Millimetred**

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measurements icon and 

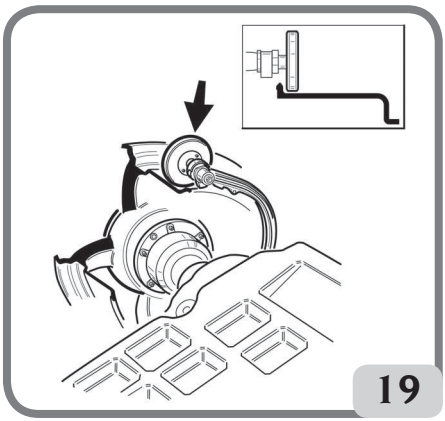
Inched measurements icon to define working length units.

- Select the  **Rim profile acquisition** icon.

- If required select the 

Rim external runout acquisition icon and add-on the extension disk for bead runout investigations (fig.18).
IMPORTANT: When mounting the extension disk to the inner arm head, be sure to make the disk notch and the arm head notch overlap.
- Draw the extension roller in contact with the outer side of the rim (namely the bead channel, fig.19). After a three-stage-countdown, the wheel starts spinning and rotates no longer than three cycles.
IMPORTANT: During rim investigation keep the extension disk sufficiently firm against the rim surface.
- Check out plotted waveforms on screen. Such waveforms differ from their colours:
- yellow curves represent the wheel runouts,
- cian curves represent the wheel eccentricities and wobbles and derive from the processing of the former runouts.

NOTE: The mobile bar on graph represents the machine 12 o'clock vertical axis.



AUTOMATIC WHEEL RUNOUT ACQUISITION

This feature can be set for running in background during any balancing cycle. This basically means that the operator can get notified of possible wheel troubles at the end of the balancing process and that further and more detailed wheel eccentricity and wobble investigations are advised.
In order to enable/disable such a feature, proceed as follows:

- Select the 

Setup programs icon.

- Select the 

Runout automatic acquisition settings icon. By doing so, two more icons pop up on screen:

Enable automatic runout acquisition icon.

Disable automatic runout acquisition icon.

After enabling the automatic wheel runout acquisition a small indicator appears on screen which indicates whether the wheel (and the wobble too when available) exceeded the specified threshold(s)  .

NOTE: The appearance of the blinking sign  together with the aforementioned indicator means that the measured eccentricity (or the wobble if available) is out of range.
IMPORTANT: The ultrasonic sensor(s) cannot be applied to measure runouts for bare rims.
IMPORTANT: For retrieving meaningful data, the ultrasonic sensor(s) must be placed opposite to the tread middle for radial runout investigations (and tire side middle for lateral runout investigations). To ease the placement(s), refer to the numeric indication(s) as provided on screen just after wheel size determination.
IMPORTANT: the placement of the lateral ultrasonic sensor must be carried out just after the radial ultrasonic sensor has been plavced.

IMPORTANT: The numeric indication(s) as provided on screen refers to the last previous wheel size determination. **If a different wheel needs to get investigated, the operator should repeat wheel size determination.**

NOTE: The indicator turns like the one in figure  if the balancing machine features the lateral ultrasonic sensor as well.

After disabling the automatic wheel runout acquisition, such an indicator disappears from screen.

UTILITY PROGRAMS

Utility programs identify all functions of the balancing machine which are useful for its operation but not closely linked to ordinary use.

To display the list (menu) of utility programs, simply select the  **Utility programs icon**; the icons belonging to the popped-up submenu are now accessible.

Recall other icons

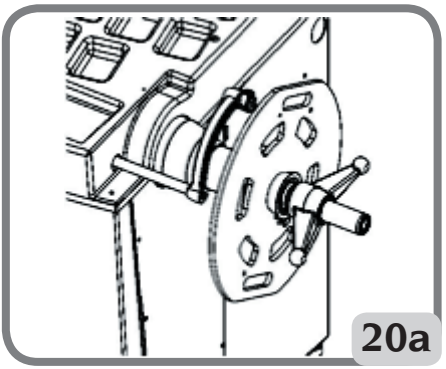
The utility programs feature a large number of functions, and therefore, for reasons of clarity, the icons have been divided into two groups, displayed separately. The  **Display other icons** icon is used to alternately display the two groups of icons.

Imbalance calibration

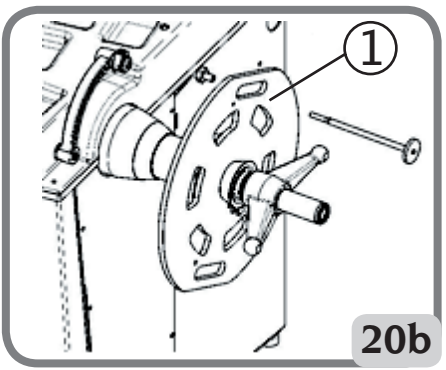
This program should be run whenever the settings appear to be out of tolerance or when the machine requests self-calibration spontaneously by displaying the "Err 1" message.

In order to calibrate machine sensitivity, select the  **Utility programs icon**, then:

- Choose the  **Imbalance calibration** icon;
- Fit simulation disk on shaft.
- Lodge the internal arm roller through the blue hole on the disk (Fig. 20a).
- Press the KIS knob to confirm and place again the internal arm at its rest position.
- Fit the add-on weight bar in the hole at position 1 (as shown on screen) and let it point to rightward (Fig. 20b).
- Launch the first spin by dropping the hood.
- Fit the add-on weight bar in the hole at position 2 (180 degrees with respect to hole at position 1, as shown on screen) and let it point to rightward (Fig. 20c).
- Launch the second and last spin by dropping the hood. An **OK** message appears on screen if everything went through correctly, otherwise an **ERR** notifications displays.
- To end the calibration process press the KIS knob.



20a



20b

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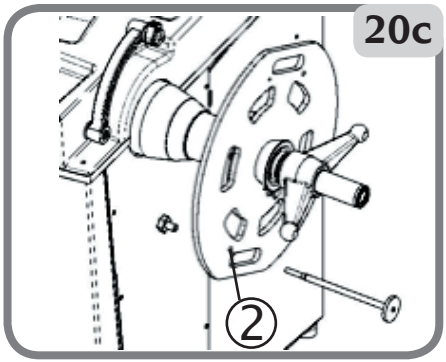
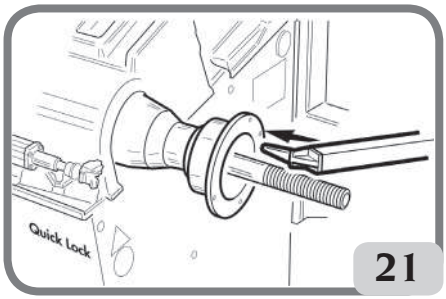
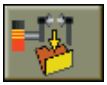


Calibrating the sensor

This procedure is used to calibrate the potentiometer of the width sensor. It must be carried out when the machine requests it by displaying the "Err 4" message, or when a difference between the rim width measured and the actual width is noticed.
In order to calibrate the width sensor, select the  **Utility programs** icon, then:

- Choose the  **Sensor calibration** icon.
- Bring the automatic width sensor arm into contact with the wheel contact flange as shown in fig. 21.



- Select the  **Confirm sensor calibration** icon to confirm the sensor position;
- Bring the arm back to its rest position.

If the calibration has been carried out successfully, a confirmation message will be displayed. If the message "Err 20" appears, the sensor is not positioned correctly during the calibration procedure. Position it correctly, as already described, and repeat the procedure.

Select the  **Exit** icon to exit the program and abort the calibration procedure.

Spin counter

After obtaining the utility menu on the display, proceed as follows:

- Select the  **Wheel spin counter** icon.

A small window will be displayed on the centre of the screen showing the values of two counters:

- the first value shows the number of spins carried out since the machine was last switched on (when the machine is switched off, this value gets reset);
- the second value shows the number of spins that the machine has carried out in its entire operational lifetime.

To make the counters disappear, press the KIS knob (the  **Exit** icon is the only one active).

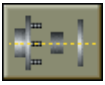
Service

When entering the service page the machine displays all data representing the machine parameters and status, so that the technical assistance personnel may identify any malfunctioning on the machine devices. Those data are not intended for ordinary operators. To get to the service page, select the  **Service programs** icon.

Vehicle data bank

The machine controls a data bank with which it is capable of indicating the best centring values for clamping each wheel to the shaft.
This function is extremely useful as the use of the appropriate accessories for centring the wheel is the most important factor for accurate

wheel balancing.
After having visualized the utility menu on the display, proceed as follows:

- Select the  **Data bank** icon.
  A list of car manufactures will appear on screen. Select the name corresponding with the vehicle that requires wheel balancing.
- Turn the KIS knob to select the desired manufacture.
- Select "**another page**" to display more car manufactures.
- Select "**exit**" to leave the program.

After selecting the appropriate car makers, choose the model of vehicle by following the same procedure.
Once the vehicle has also been selected, the screen shows a page comprising:

- The name of the vehicle.
- The optimum centring mode for that type of wheel.
- The diameter of the wheel's central hole.
- The number of holes for fixing the wheel to the vehicle and the diameter on which these holes are located.

Two more icons (in addition to the usual **Exit** and **Help** icons) are also present whose functions are:

Display another centring type:
recall other centring modes. The system is able to indicate up to three types of centring for every single wheel, together with their degrees of efficiency.

Select new vehicle:
recalls the list of car makers to allow a new selection to be made.
To exit from the data bank program, select the  **Exit** icon.

Automatic position search (RPA)

It is possible to switch from one centred position to the next one by selecting the  **Automatic position search** icon; whenever this icon is selected, the system switches from the centred position of one side to the one of the other side.
This function is only active if it got enabled in the settings.

Visual check

This function allows the wheel to be spun at **low speed** with the guard open. This allows visual checking for any geometrical irregularities in the rim and wheel.
After displaying the list of utility programs:

- Select the  **Display other icons** icon;
- Select the  **Visual inspection** icon and keep the KIS knob pressed as long as it takes to inspect the wheel. When the KIS knob is released, the wheel shaft locking device will be automatically activated.

Working environments

This balancing machine allows three different operators to work at the same time, thanks to its three different working environments.

- To recall a working environment, select the  **Working environments** icon after displaying the list of utility programs.
- A submenu appears on the right, displaying three different working environments (operator 1, 2, 3). The yellow selection rectangle is located on the current operator.
- Turn the KIS knob to move the selection rectangle onto the desired operator and press it to validate the selection.

When a new operator is requested, the machine restores the parameters active at the time of the latest recall.

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The parameters which can be saved are:
- Balancing mode: dynamic, ALU, motorbike, etc...
- Wheel dimensions: distance, diameter and width or those relating to the ALU active.
- OPT: last OPT passage.

The general machine settings remain the same throughout all the working environments: grams/ounces, sensitivity x5/x1, millimetres/inches, threshold, etc...

Initial imbalance printout

Activated by means of the  **Initial imbalance printout** icon. It prints out the values of the unbalances after last spin. The program is normally disabled. To enable this operation, it is necessary to connect the print unit (accessory on demand).

Complete printout

Activated by means of the  **Complete printout** icon. It prints out the values of the unbalances and correction counterweights of the whole wheel set. The program is normally disabled. To enable this operation, it is necessary to connect the print unit (accessory on demand).

Runout printout

Activated by means of the  **Runout printout** icon. It prints out the values of the last eccentricity investigation(s). The program is normally disabled. To enable this operation, it is necessary to connect the print unit (accessory on demand).

SETTINGS

With the term "settings programs" every function aiming to personalise the machine functionality is intended. Usually such settings programs are run during machine installation.
To display the list (menu) of setting programs, simply select the  **Set-up programs** icon. Ahead are found the icons belonging to this menu.

Personalisation

This program allows the user to memorise a number of desired data such as: company name, city, street, telephone number, advertisements, and more.
The data will then be displayed on the main menu page and on each printout.
After displaying the list of setting programs:
- Select the  **Company data** icon.
- The screen displays a page where the data can be set, comprising:
  - five lines on which the data can be typed (on the upper-left corner of the screen);
  - a keyboard for setting the characters;
  - six icons for the commands;
  - an "exit from program" icon;
  - a Help icon.
- Turn the KIS knob to select the character to be typed.
- Confirm the selection by pressing the KIS knob.

The command icons are:

Move to next line:
used to shift the cursor onto the line after the current line.
If there is already a word on the new writing line, it will automatically be deleted.

Move to previous line:
used to shift the cursor onto the line before the current line. If there is already a word on the new writing line, it will automatically be deleted.

Delete last character entered:
moves the cursor one place leftward, deleting the encountered character.

Set upper/lower case:
selects upper and lower case characters alternately.

Enable printer drawing/next printer drawing:
enables or shows the sequence of drawings which can be reproduced in printouts (one drawing at a time).

Disable drawing in printout:
aborts selected drawing in the current printout.

The data set are stored when the user exits the program, i.e. when the  **Exit** icon is selected.
Users are advised to type their name and surname on the first line, the city on the second line, the street on the third line and the telephone number(s) on the fourth line. Last they may leave advertisements on the last two lines.

Language

The balancing machine features many different languages for the display of guidelines and messages to be printed on screen.
After selecting the settings programs menu, proceed as follows:

- Select the  **Language setting** icon.
- The screen shows a list of flags such as  for English,  for German,  for Italian.
- Select the flag corresponding to the desired language; as an additional help for the operator, the name of the highlighted language is printed on the bottom-right corner of the screen.
- Press the KIS knob to activate a language.

To exit from this program just select the desired language, after which the image of the imbalances appears again on screen.

The  **Display other icons** icon allows a new group of icons to be recalled on screen.

Imbalance display in grams/ounces

This program sets the unit of measurement (either grams or ounces) and the rounding (either x1, x5, x1/4 or x1/10) with which the imbalance values are displayed.
After the list of setting programs gets scrolled-out, proceed as follows:

- Select the  **Imbalance unit of measurement** icon.

The following icons appear on the screen:

Set grams x1; displays the imbalance values gram by gram.

Set grams x5; displays the imbalance values 5 grams by 5 grams.

Set tenths of an ounce; displays the imbalance values in steps of one tenth of an ounce.

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Set quarters of an ounce; displays the imbalance values in steps of a quarter of an ounce.

- Select the display mode desired and press the KIS knob.

After the selection, the new setting is saved and the image of the imbalances appears again on screen.

Automatic position search setting

Enables/disables and sets automatic positioning of the wheel at the end of the spin.
After displaying the list of setting programs, proceed as follows:

- Select the 

Set automatic position search (RPA) icon.

The following icons appear on screen:

Set RPA; enables the rapid wheel positioning procedure;

Disable RPA; disables the wheel positioning procedure.

- Select the desired setting and press the KIS knob.

After the selection, the new setting is stored and the image of the imbalances reappears on screen.

Setting preferential programs

This function allows the user to set three icons of his choice in the main icons bar.
After displaying the list of setting programs, proceed as follows:

- Select the  **Preferred programs** icon.
- The screen shows the list of all utility program icons (see this chapter for a function explanation of each icon).
- Select the three icons in the same order they are wished to appear on the icon bar, from left to right on screen.
- The system exits from the program on selection of the third icon.

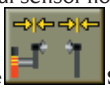
To exit from the program without changing the current settings, select the  **Exit** icon.

ERROR MESSAGES

The machine can recognize a certain number of incorrect operations and will signal them with appropriate error messages on screen.

Err 1 Error during imbalance calibration.
The imbalance calibration procedure should be carried out.

Err 3 GE2: Error during the sensor calibration procedure.
Repeat the sensor calibration procedure.

Err 4 a) External sensor calibration error.
Perform sensor calibration.
b) External sensor not present.
Select the  **Sensor calibration** icon (from the Utility programs menu) twice to disable sensor control and clear the display of the error.

Err 5 Incorrect wheel data for aluminium wheel balancing program.
Correct the dimensions set.

Err 6 Error made during the OPT procedure (optimisation).
Repeat the procedure from the beginning.

Err 7 The machine is temporarily unable to select the program requested.
Carry out a spin and repeat the request.

Err 8 Printer out of service/printer not present/printer failure.

Err 9 Imbalance value exceeds 999 grams.
Reduce the imbalance and repeat the spin.

Err 10 a) Internal distance sensor not in rest position (completely in) when the machine is switched on.

Return the sensor to its correct rest position.
b) Distance sensor failure.
Select the  **Manual input of wheel data** icon to disable all sensors and enter the data by hand. Call in the after-sales service.

Err 11 a) Diameter sensor not in rest (fully retracted) position when the machine switched on.
Return the sensor to its correct rest position.
b) Diameter sensor failure.
Select the  **Manual input of wheel data** icon to disable all sensors and enter the data by hand. Call in the after-sales service.

Err 12 a) Width sensor not in rest (fully retracted) position when the machine switched on.
Switch the machine off, return the sensor to its correct rest position and switch back on.
b) External sensor not present.
Select the  **Sensor Calibration** icon (from the **Utility programs** menu) to disable sensor control and clear the display from the error message.
c) Corresponding potentiometer has failed: Select the  **Sensor Calibration** icon (from the **Utility programs** menu) to disable sensor control and clear the display from the error message. Call in the after-sales service.

Err 20 External sensor not correctly positioned during calibration.
Set sensor in its correct calibration position and repeat calibration.

Err 23 Incomplete or incorrect entered during ALU P acquisition process.
Repeat acquisition process correctly.

Err 25 Program not available on this model.

Err 27 Wheel did not stop within the maximum allowed time.
If this message appears frequently contact your service centre.

Err 28 Encoder error.
If this message appears frequently contact your service centre.

Err 29 Wheel spin device malfunction.
Switch the machine off and back on. If the trouble persists call in the after-sales service.

Err 30 Failure on wheel spin device.
Switch off the machine and call in the after-sales service.

Err 31 Optimisation procedure already started by another user.

Err 32 The machine has been jolted during the reading stage.
Repeat the wheel spin.

Err Cr Wheel spin performed with guard raised.
Lower the guard to perform the spin.

Err Stp Wheel stop during spin.
Check that the locking ring nut has been screwed down properly.

CCC This message appears when the unbalance values are excessive, or when the balancing machine has been jolted during the reading stage.

BALANCING ACCESSORY AVAILABILITY STATUS

This check allows the user to make sure that wear has not altered the mechanical specifications of flanges, cones, etc., beyond the defined specifications.
The test is carried out with a perfectly balanced wheel (to zero without the threshold and showing the first gram). When this wheel is mounted on the balancing machine, removed and remounted in a different position, the imbalance weight should not be more than 10 grams.
If the imbalance is higher, check all the accessories with care and replace any that show dents, abnormal wear, bent flanges, etc.
Always remember that if you are using a cone to centre the wheel on the shaft, you will never obtain good results if the hole in the rim is not perfect, i.e.: off-centre or out-of-round. Results are always better when the wheel is centred with the rim holes.
It should be remembered that any difference between the way the wheel is mounted on the vehicle and the way it is mounted on the balancing machine will undoubtedly generate a certain degree of imbalance.

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This can only be eliminated with "on vehicle balancing", using a finishing balancing machine to complement the work on the bench balancing machine.

TROUBLESHOOTING

Listed below are faults that the user can remedy if the cause is found to be among those indicated. Any other defect or malfunction will require the attention of a qualified technician: contact your nearest Corghi service centre.

The machine fails to switch on (the monitor remains off and there is no light showing at the main switch)

No power at the socket.

Check the mains power is present.
Check the electrical power circuit installed in the workshop.

Defective machine plug.

Check that the plug is undamaged.

The machine fails to switch on (the monitor remains off even with the light showing at the main switch)

One of the FU1 ÷ FU6 fuses of the transformer has melted down.

Replace the melted fuse.

The FU1 power supply fuse has melted down (LED L2 and L5 are off).

Replace the melted fuse.

The monitor has not been switched on (only after installation).

Switch on the monitor by pressing the push button on the monitor front panel (behind the black frame on the front level window).

The monitor power supply connector (located on the rear part of the monitor) has not been correctly inserted.

Check that the connector is inserted correctly.

The diameter and width values acquired with the automatic sensors do not correspond to the nominal values of the rims

The sensors have not been correctly positioned during measurement.

Bring the sensors to the position shown in fig.11 and follow the instructions in the ENTERING WHEEL DATA section.

The outer sensor not been calibrated.

Carry out the sensor calibration procedure.

The automatic sensors do not work

Fuses FU2 and FU3 of the power supply adaptor have melted down (LEDs L1 and L3 are off and the sensors values displayed in Service mode are constantly zero).

Replace the fuses.

The sensors were not in the rest position at switch-on (Err 10) and the manual data entering icon has been selected, disabling control of the automatic sensors.

Switch the machine off, bring its sensors into their correct rest positions and switch the machine back on.

The wheel fails to spin when the START button is pressed (the machine does not start)

The wheel guard is raised.

Lower the wheel guard ("Err Cr" is displayed).

The FU2, FU3 and FU4 power supply fuses have melted down (LED lights L1 and L3 are off).

Replace the blown fuses.

The machine displays non-repetitive imbalance values

The machine has been jolted during the spin.

Repeat the spin, taking care not to disturb the machine while measuring is in progress.

The machine is not soundly installed on the flooring.

Check that the supporting surface is firm and stable.

The wheel is not properly clamped.

Tighten the clamping ring-nut firmly.

Several spins are required in order to balance a wheel

The machine has been jolted during the spin.
Repeat the spin, taking care not to disturb the machine while measuring is in progress.

The machine is not soundly installed on the flooring.
Check that the supporting surface is firm and stable.

The wheel is not properly clamped.
Tighten the clamping ring-nut firmly.
Verify the wheel centring tools are appropriate and original.

The machine is not correctly calibrated.
Carry out the sensitivity calibration procedure.

The geometrical data are not correct.
Check that the data corresponds to the dimensions of the wheel and correct, if necessary.
Perform the width sensor calibration procedure.

Runout measurements seem to be erroneous

The ultrasonic sensor returns void values.
Check the ultrasonic sensor cable is properly and firmly connected.

The ultrasonic sensor is not placed correctly in front of the tread middle (or the shoulder middle).
Shift the ultrasonic sensor at the right place.

Ultrasonic sensor readings do not cover the whole value range.
Call in after-sales support.

Rim runout measurements are not precise, repetitive or smooth.
Keep internal arm roller steadier and tighter to the rim during measurements.
Remove inner weights before launching the measurement procedure.

MAINTENANCE

WARNING

CORGHI declines all liability for claims deriving from the use on non-original spares or accessories.

WARNING

Before carrying out any adjustments or performing maintenance operations, disconnect the electrical power supply from the machine and make sure that all moving parts are suitably immobilized.

WARNING

Do not remove or modify any parts of the machine except in the event of service interventions.

ATTENTION

Keep the work area clean.
Do not clean the machine with compressed air or water jets.
When cleaning the area take steps to avoid raising dust as far as possible.

- Keep the balancing machine shaft, the clamping ring-nut, the cones and the centring flanges clean. Clean using a brush dipped in environmentally friendly solvents.
- Handle cones and flanges with care to avoid the risk of dropping them and causing damage that would affect centring precision.
- When not in use, store cones and flanges in a place where they are protected from dust and dirt.
- Use ethyl alcohol to polish the monitor screen.

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- Calibrate the machine at least once every six months.
- Check at the end of every month that the machine is calibrated correctly, and if necessary perform the sensitivity calibration procedure.

SCRAPPING

If the machine is to be scrapped, remove all electrical, electronic, and plastic components and dispose of them separately, as provided for by local legislation.

RECOMMENDED FIRE-EXTINGUISHING DEVICES

When choosing the most suitable fire extinguisher consult the following table:

	Dry materials
Water	**YES**
Foam	**YES**
Dry chemical	YES*
CO2	YES*
	Inflammable liquids
Water	NO
Foam	**YES**
Dry chemical	**YES**
CO2	**YES**
	Electrical fires
Water	NO
Foam	NO
Dry chemical	**YES**
CO2	**YES**

YES* U*se only if more appropriate extinguishers are not on hand and when the fire is small.*

WARNING

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

GLOSSARY

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

BALANCING CYCLE
Sequence of operations performed by the user and the machine, starting from the beginning of the wheel spin to the time that the wheel is braked to a standstill, after the unbalancing signals have been acquired and the relative values calculated.

CALIBRATION
See SELF-CALIBRATION

CENTRING
Procedure for positioning the wheel on the spin shaft with the aim of ensuring that the rotation axis of the wheel is aligned with the centre of the shaft.

CONE
Conical component with centre hole which, when inserted on the spin shaft, serves to centre wheels with centre holes whose diameter is between maximum and minimum values.

DYNAMIC BALANCING
Operation in which imbalance is corrected by the application of two weights, one on each side of the wheel.

ECCENTRICITY
It is represented by a sine wave having a certain magnitude which is an indication of the wheel abnormalities along a radial direction. Since a rim and a tire are never perfectly round, an eccentricity component (also known as radial runout first harmonic) exists. In case such an eccentricity component possesses a magnitude beyond a certain threshold, vibrations can be generated when driving a vehicle even if the wheel has been perfectly balanced. The speed for which vibrations come out depends on many vehicle characteristics. In general, such a critical speed equals 120-130 km/h (75-80 mph) for most of the passenger vehicles.

FLANGE (Balancing machine)
Disk that mates with the disk of the wheel mounted on the balancing machine. The flange also serves to keep the wheel perfectly perpendicular to its axis of rotation.

FLANGE (Centring accessory)
Device serving to support and centre the wheel. Also keeps the wheel perfectly perpendicular to its axis of rotation. The centring flange is mounted on the balancing machine shaft by means of its

central hole.

ICON
Video representation of a key with graphics indicating the relative command.

IMBALANCE
Non-uniform distribution of the wheel mass that results in the generation of centrifugal forces during rotation.

OPT
Abbreviation standing for Optimisation.

ROD
Acronym standing for RunOut Detection.

RPA
Abbreviation standing for Ricerca Posizione Automatica (Automatic Position Search).

RUNOUT
It is an indicator of the wheel imperfections along radial and lateral directions.

SELF-CALIBRATION
A procedure whereby suitable correction coefficients are calculated by starting from known operating conditions. Self-calibration improves the measurement precision of the machine by correcting, within specifications, calculation errors that may arise due to alteration of the machine's characteristics over the course of time.

SENSOR (Measuring arm)
Mobile mechanical element that measures geometric data (distance, diameter, width) when placed in contact with the rim in a predefined position. The data can be measured automatically if the sensor is fitted with the relevant measurement transducer.

SENSOR (Ultrasonic -)
Electronic component that measures wheel geometric roundness or perpendicularity to its rotation axis when the wheel is mounted on the shaft. Such an analysis is performed by means of transmissions and receptions of arrays of ultrasonic sound waves. Together with the information collected by the inner arm, the retrieved data by the ultrasonic sensor are indispensable for geometric matching between tire and rim.

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

SPINNER
Device for clamping the wheel to the balancing machine. The spinner features elements for engaging to the threaded hub, and lateral pins that are used to tighten it.

STATIC BALANCING
In static balancing only the static component of the imbalance is corrected. This is achieved by fitting a single weight being usually placed at the centre of the rim channel. The accuracy of this system increases as the width of the wheel decreases.

THREADED HUB
Threaded part of the shaft that is engaged with the spinner to clamp the wheel. This component is delivered disassembled from the machine.

WOBBLE
It is represented by a sine wave having a certain magnitude which is an indication of the wheel abnormalities along the wheel rotation axis.
The existence of such a wobbling component (also known as lateral runout first harmonic) may be related to either side rubber or rim metal wear, mechanical-geometrical deformations, a not correct mount on the threaded hub.

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GENERAL ELECTRIC LAYOUT DIAGRAMS

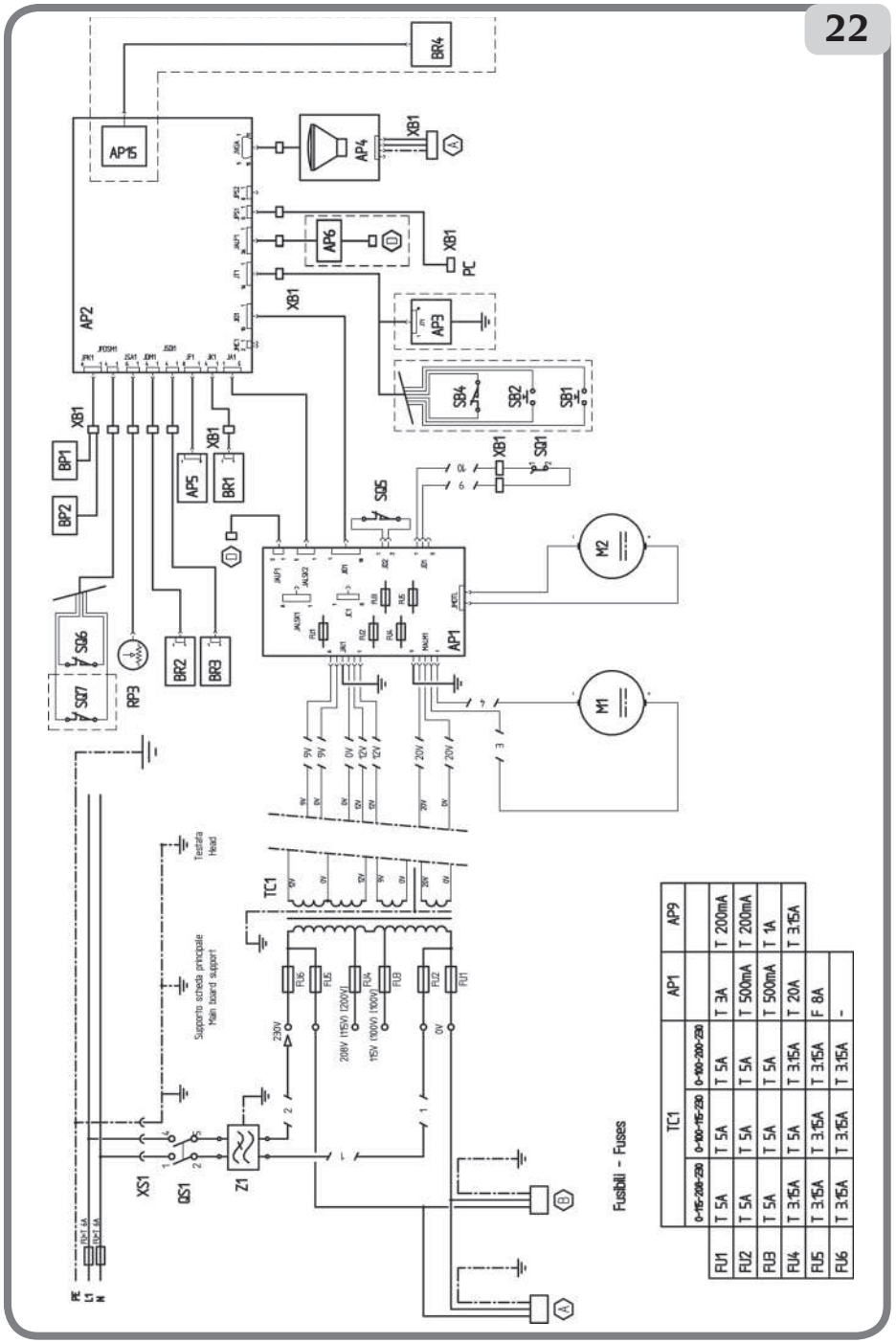
Fig.22 Code 4-103294

AP1	Power supply and controls board
AP2	Mother board (CPU)
AP3	Keyboard (Not available)
AP4	Monitor
AP5	Search board
AP6	Printer (Optional)
AP15	Interface board
BP1	Internal pick-up
BP2	External pick-up
BR1	Encoder
BR2	Diameter encoder
BR3	Internal distance encoder
BR4	Radial ultrasonic device
BR5	Lateral ultrasonic device (optional)
FU#	Fuse (# from 1 to 4)
M1	Motor
M2	Electric piston motor (Also called actuator)
QS1	Master switch
RP3	External distance potentiometer
SB1	START button
SB2	STOP button
SB4	ENTER button
SQ1	Safety guard microswitch
SQ5	STOP microswitch
SQ6	Diameter sensor rest position microswitch
SQ7	Distance sensor rest position microswitch
TC1	Power supply transformer
XB1	Connector
XS1	Power supply socket
Z1	Main filter

PNEUMATIC SYSTEM DIAGRAM

Fig.23 Code 4-101297_1

1	Snap coupling
2	Filter-regulator unit 0-10 bar
3	Pressure gauge Ø 40
4	Silencer filter
6	Valve Q.L. device
12	Reduction union Ø =1.6 mm
13	Single-acting Q.L. device cylinder
17	Rapid discharge valve



	TC1			AP1	AP9
	0-115-208-230	0-100-115-230	0-100-200-230		
FU1	T 5A	T 5A	T 5A	T 3A	T 200mA
FU2	T 5A	T 5A	T 5A	T 500mA	T 200mA
FU3	T 5A	T 5A	T 5A	T 500mA	T 1A
FU4	T 3.15A	T 5A	T 3.15A	T 20A	T 3.15A
FU5	T 3.15A	T 3.15A	T 3.15A	F 8A	
FU6	T 3.15A	T 3.15A	T 3.15A	-	

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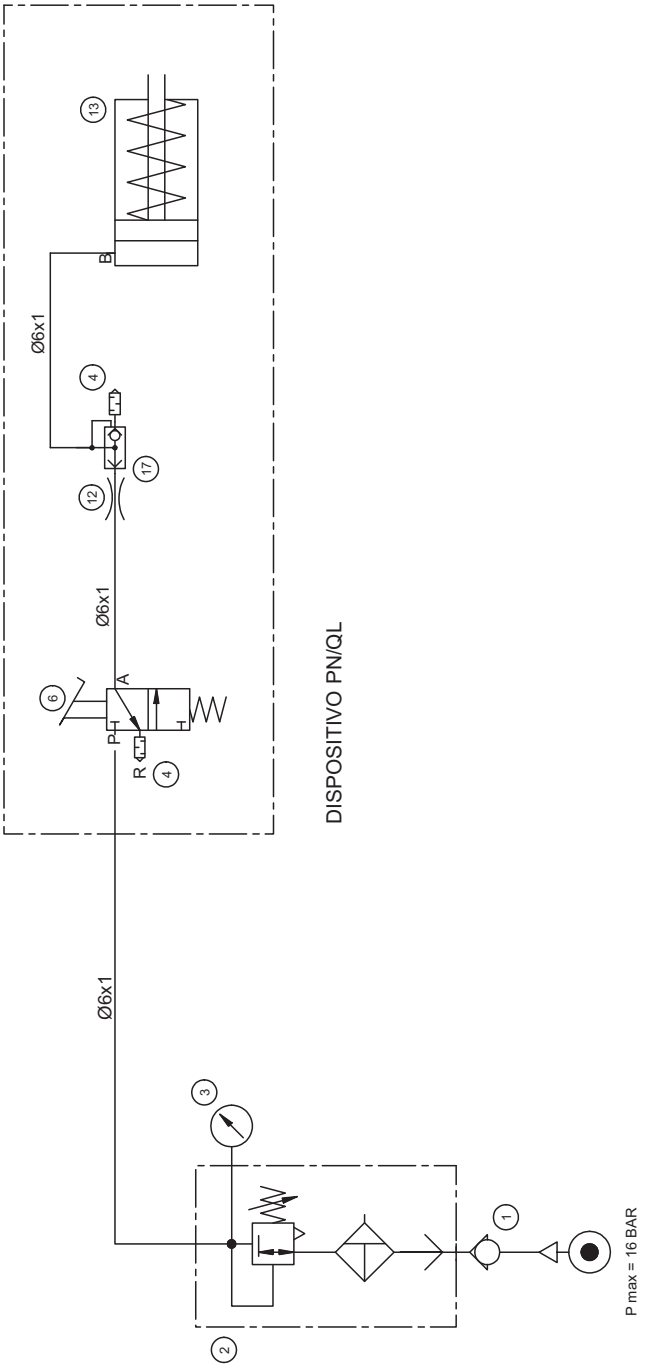
DISPOSITIVO PN/QL
Ø6x1
Ø6x1
Ø6x1
P max = 16 BAR
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Notes

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Notes

EC statement of conformity

We, **CORGHI S.p.A.**, Strada Statale 468 n°9, Correggio (RE), ITALY, do hereby declare, that the product

EM 8570 wheel balancer

to which this statement refers, conforms to the following standards or to other regulatory documents:

EN 292 of 09/91

according to directives:
- 98/37/EC;
- 89/336/EEC amended with directives 92/31/EEC

Correggio, 06 / 06 / 05 .....

CORGHI S.p.A.
G. Corghi

IMPORTANT: The EC Conformity Declaration is cancelled if the machine is not used exclusively with CORGHI original accessories and/or in observance of the instructions contained in the user's manual.

The form of this statement conforms to EN 45014 specifications.

Déclaration CE de conformité

Nous, **CORGHI S.p.A.**, Strada Statale 468 n° 9, Correggio (RE) ITALY, déclarons que le matériel

équilibreuse **EM 8570**

objet de cette déclaration est conforme aux normes et/aux documents légaux suivants:

EN 292 du 09/91

Sur la base de ce qui est prévu par les directives:
- 98/37/CE;
- 89/336/CEE modifié par la directive 92/31/CEE.

Correggio, 06 / 06 / 05 .....

CORGHI S.p.A.
G. Corghi

IMPORTANT : La déclaration CE de conformité est considérée comme nulle et non avenue dans le cas où la machine ne serait pas utilisée exclusivement avec des accessoires originaux CORGHI et/ou, dans tous les cas, conformément aux indications contenues dans le Manuel d'utilisation.

Le modèle de la présente déclaration est conforme à ce qui est prévu par la EN 45014.

CE - Konformitätserklärung

CORGHI S.p.A., Strada Statale 468 Nr. 9, Correggio (RE), ITALY, erklärt hiermit, daß das Produkt

Auswuchtmaschine **EM 8570**

worauf sich die vorliegende Erklärung bezieht, den Anforderungen folgender Normen und/oder normativer Dokumente entspricht:

EN 292 vom 09.91

auf Grundlage der Vorgaben durch die Richtlinien:
- 98/37/CE;
- 89/336/EWG mit Änderung durch die Richtlinien 92/31/EWG.

Correggio, 06 / 06 / 05 .....

CORGHI S.p.A.
G. Corghi

WICHTIG: Die CE-Konformitätserklärung verliert ihre Gültigkeit, falls die Maschine nicht ausschließlich mit CORGHI-Originalzubehör und/oder unter Mißachtung der in der Betriebsanleitung aufgeführten Gebrauchsanweisungen verwendet wird.

Das Modell der vorliegenden Erklärung entspricht den Anforderungen der in EN 45014 aufgeführten Vorgaben.

Declaración CE de conformidad

La mercantil CORGHI S.p.A. abajo firmante, con sede en Strada Statale 468 n° 9, Correggio (RE), ITALY, declara que el producto:

equilibradora **EM 8570**

al cual se refiere la presente declaración, se conforma a las siguientes normas y/o documentos normativos

EN 292 de 09/91

en base a lo contemplado en las Directivas:
- 98/37/CE;
- 89/336/CEE, modificada por la Directiva 92/31/CEE.

Correggio, 06 / 06 / 05 .....

CORGHI S.p.A.
G. Corghi

IMPORTANTE: La declaración de conformidad CE deja de tener validez en el caso en que la máquina no sea utilizada exclusivamente con accesorios originales CORGHI y/o, en cualquier caso, con arreglo a las indicaciones contenidas en el Manual de Empleo.

El modelo de la presente declaración se conforma a lo dispuesto en la EN 45014.

Dichiarazione CE di conformità

Noi **CORGHI S.p.A.**, Strada Statale 468 n°9, Correggio (RE), ITALY, dichiariamo che il prodotto

equilibratrice **EM 8570**

al quale questa dichiarazione si riferisce è conforme alle seguenti norme e/o documenti normativi:

EN 292 del 09/91

in base a quanto previsto dalle direttive:
- 98/37/CE;
- 89/336/CEE modificata con la direttiva 92/31/CEE.

Correggio, 06 / 06 / 05

.....

CORGHI S.p.A.
G. Corghi

IMPORTANTE: La dichiarazione CE di conformità decade nel caso in cui la macchina non venga utilizzata unicamente con accessori originali CORGHI e/o comunque in osservanza delle indicazioni contenute nel Manuale d'uso.

Il modello della presente dichiarazione è conforme a quanto previsto nella EN 45014.

SPAZIO RISERVATO ALLA TARGHETTA DATI MACCHINA

UPT Cod. 4-1040097/A - 03/06

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