CORGHI

EM 8540

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Italiano — Manuale d'uso

English — Operator's manual

Français — Manuel d'utilisation

Deutsch — Betriebsanleitung

Español — Manual de uso

Italiano

English

Français

Deutsch

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 to be considered valid for the machine of the model and serial number stated on the nameplate applied to it.

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.

TRANSPORT, STORAGE AND HANDLING

- The basic balancing machine packaging consists of 1 wooden crate containing:
  - the balancing machine (L fig. 4);
  - the head (B, fig. 6), outside sensor and accessories.
  - the support tube and wheel guard (A, B, fig. 7).
- Before installation, the balancing machine must be transported in its original packing, making sure that the machine is maintained in the position indicated on the outer packing. The machine can be moved by placing the packages on trolley with wheels or by inserting the forks of a lift truck in the relative channels in the pallet (fig. 1).
- Packaging dimensions:

Length	Depth	Height	Weight	Packaging weight
(mm)	(mm)	(mm)	(kg)	(kg)
1430	1330	1700	360	100

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

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. 2);
- inserting the forks of a lift truck under the machine so that the centre of the forks correspond approximately to the centre line of the cabinet (fig. 3).

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 correct, safe use of the equipment, users must ensure a lighting level of at least 300 lux in the place of use.
Ambient conditions in place of operation:
- relative humidity from 30% to 80% (without condensate);
- temperature from 0° to +55°C.

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 (fig. 6)

- Make sure that the retainer screw (A fig. 6) is screwed completely in and that the relative lock-nut is tightened.
- Unscrew the four fixing screws and remove the guard plate at the base of the upright (back of machine).
- Insert the wires leading from the head into the slot B (fig. 6).
- Fit the head rotation pin in the bushing C (fig. 6); the head must be positioned so that the control panel is facing towards the front of the machine.
- Check that the head turns freely through about 30°; this means that the rotation stop is fitted correctly into the seat provided in the head; also check that the wires are not crushed or in critical positions.
- Working through the window in the of the upright, pick up the cables inserted previously and connect them to their respective connectors (fig. 6c). To avoid wiring errors, the connectors are of different sizes.
- Connect the ground wire leading from the head to the connection unit tab at the base of the upright.
- Replace the guard plate.
- Secure the head rotation pin in its seat by fitting the washer and the M6 screws (D fig. 6).
- Switch on the machine and check that it is working correctly.

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Fitting the external sensor and guard (fig. 7)

- Unscrew the locking nuts of the two screws in the holes of the support pin and remove the screws.
- Fit the guard tube (A, fig. 7) 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. 7).
- 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, fig. 7).
- Place the wheel guard (B, fig. 7) on the tube and fix it by snapping the seven clamping elements into their seats (C, fig. 7). Pass the sensor cable through the two rear snap-in clamping elements so that it is concealed from view.
- Then connect the sensor cable connector to the socket close to the mains sockets.
- 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 5 flange holder pins as shown in fig. 4b.

After the machine has been assembled it should be installed in the prestabilised position, making sure that the surrounding spaces correspond to the minimum values indicated in figure 9.

Main operational components of the machine (fig. 4a)

A) automatic diameter and distance measuring arm
B) automatic width measuring arm
C) head
D) display panel
E) flange holder
F) weight-holder cover
G) wheel support shaft
H) master switch
I) handling holes
J) wheel guard
K) QL control pedal (optional)
L) automatic brake control

Display panel (fig. 5)

A) inner side display (left-hand)
B) outer side display (right-hand)
C) inner side position indicator
D) outer side position indicator
E) START key
F) STOP key
G) keys and indicator lights for selection of the functions and programs available
H) key for manual input of the wheel data
I) function key
J) indicator light for wheel data setting
K) indicator light for imbalance display status

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.

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COMPRESSED AIR HOOK-UP

(QL VERSION ONLY)

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 compressed air system must ensure a minimum pressure of 8 bar; lower pressures might impair operation of the release cylinder, leading to difficulties in releasing the wheel from the machine.
- The union for connection to the compressed air system is of universal type and therefore no special or additional couplings are required. Fix a pressure-resistant hose having inside diameter 6 mm and outside diameter 14 mm to the notched union using the hose clamp provided 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.

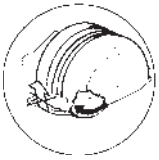
WARNING

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.

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.

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GENERAL CHARACTERISTICS

- Variable balancing speed (from 60 to 98 rpm depending on the wheel):
  - optimises wheel spin times by minimising them;
  - reduces risk due to rotating parts;
  - allows energy saving.
- Wheel placed further forward towards the operator for easier placing of the adhesive weights.
- Automatic sensor for measuring distance and diameter and for adhesive weight application in Alu P programs.
- Automatic width measurement sensor available on request.
- Automatic wheel clamping at the end of the spin.
- Wheel-holder shaft clamping brake, with both automatic and with button and pedal (automatic) operation.
- STOP pushbutton 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 start by pushing down on lowered wheel guard.
- Illuminating digital display unit with double display and graphics of 3D panel.
- Processing unit with several microprocessors (16 bit).
- Resolution: 1 g. (1/10 oz).
- Wide selection of programs so that the machine is easy to use immediately.
- Imbalance display in grams and ounces.
- Imbalance display rounding setting.
- Types of balancing available:
  - *Standard* dynamic on both sides
  - *Alu* / *Alu* P seven different routines for aluminum rims
  - *Motorcycle dynamic* dynamic on both sides of motorcycle wheels
  - ALU *motorcycle* dynamic on both sides of aluminum motorcycle wheels
  - *Static* on a single side.
- "**Mobile planes**" program (in Alu P) for using multiple five gram weights, i.e.: available without the need for partial cuts.
- "**Hidden weight**" program (in Alu P) in order to sub-divide the outer plane balancing adhesive weights into two equal weights positioned behind the rim spokes.
- "**Weight division**" program (motorcycle programs) to divide the weight into two equivalent values to be placed on either side of the spoke.
- "**OPT flash**" program for rapid optimisation of operating noise reduction (also available in standard version).
- "**OPT standard**" program (optional).
- General utility programs:
  - Calibration
  - Servicing
  - Self-diagnostics.
- Three separate working environments, allowing three different operators to work in parallel with no need to set the data again.
- RPA, automatic wheel positioning in the position where the balancing weight has to be applied.

- Visual check; this function allows a visual check on the roundness defects of the wheel and rim.
- Quick Lock, automatic wheel clamping (optional).
- Side cabinet for weights and accessories (optional).

TECHNICAL SPECIFICATIONS

- Electricity supply rating ..... single-phase 100/115/230 V ±10%
- Total power .....300 W
- Balancing speed ..... 60 ÷ 98 rpm
- Maximum imbalance value calculated .....999 grams
- Average spin time (with 5"x14" wheel) ..... 5.5 s
- Shaft diameter ..... 40 mm
- Work ambient temperature ..... from 0 to 50°C
- Machine dimensions (fig. 10):
  - depth with guard closed ..... 1160 mm
  - depth with guard open ..... 1445 mm
  - width with guard ..... 1100 mm
  - height with guard close ..... 1480 mm
  - height with guard open ..... 1710 mm
- Programming parameters:
  - rim width ..... from 1,5" to 20"
  - rim diameter ..... from 1" to 28"
  - Max. wheel/machine distance..... 270 mm
  - Max. wheel width (with guard)..... 510 mm
  - Max. wheel diameter (with guard) ..... 925 mm
- Max. wheel weight .....65 kg
- Shipping weight (without accessories).....207 kg
- Weight of electric/electronic parts .....6,8 kg
- Noise level when running .....< 70 dB(A)

MACHINE OUTFIT

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The following parts are supplied together with the machine:

- Weight clip pliers ..... code 900203841
- Threaded hub.....code 9005-101514
- 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
- 100 gram weight ..... code 900430573
- Automatic calibration disc .....code 9005-100026
- Automatic calibration disc counterweight ..... code 900259719

OPTIONAL ACCESSORIES

Please refer to relevant accessories catalogue.

GENERAL CONDITIONS OF USE

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.

ATTENTION

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 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 (H fig. 4a).
The balancing machine performs a checking test (all the LEDs illuminate), and if no anomalies are detected, a beeper sounds and the cycle status initially active is displayed, as follows:
- 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;
- wheel data set: width = 5.5", diameter = 14", distance = 70 mm.

At this point, the user may set the data of the wheel to be balanced or select one of the programs available.
Note: if at the ignition moment the sensor is not in the rest position, the message "Err10" will be displayed after the starting test; in order to cancel this error, place the sensor in the rest position.

WHEEL DATA INPUT

The machine is designed for automatic input of diameter and distance values, and input of the width using the keyboard.
- Bring the automatic measuring arm (A, fig. 4) into contact with the inside of the rim as shown in fig. 22a. **Take great care to position the arm correctly to ensure an accurate data reading.**
- Keep the arm touching the rim until the machine has acquired the wheel's diameter and distance values. The geometrical data are displayed in sequence:
  - d distance value;
  - di diameter value.

  As a geometrical value is displayed, the corresponding LED on the display panel illuminates.
- Check the values measured and then return the arm to the rest position. The machine now prepares for measurement of the WIDTH.

If an incorrect value has been acquired during the measurement stage, move the arm to the rest position and then repeat the operation.
- Measure the width of the rim using the caliper provided (fig. 12).
- Modify the width value displayed by pressing the  keys, until the number required is set.

The WIDTH can be set in millimetres, or the values already set can be converted from inches to millimetres by pressing the 

key.

Keep the  keys pressed for rapid increase or decrease of the values set previously.

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Entering wheel data for balancing machines with width measuring device (optional)

To load the data automatically, proceed as follows:

- bring the internal automatic data acquisition arm (A, fig. 4) into contact with the inside of the rim (fig. 11a) and at the same time bring the external automatic data acquisition arm (B, fig. 4) into contact with the outside (fig. 11b). **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 the values. The geometrical data are displayed in sequence:
  - d distance value;
  - di diameter value;
  - Lr width value.

  When a geometrical value is displayed, the corresponding LED illuminates on the display panel.
- Check the values measured and then return the arms to the rest position; if an incorrect value is acquired during the measurement procedure, bring the arms to the rest position and repeat the operation.

Entering wheel data in manual mode

If one or both of the automatic acquisition arms fails to operate, all the geometrical data can be entered using the keyboard:

- Press the  key.
- Measure the width of the rim using the caliper provided (fig. 12).
- Modify the width value displayed by pressing the  and  eys until the desired number is set. The value can be set in millimetres or the values already set can be converted from inches to millimetres by pressing the  key.
- Values set previously can be increased or decreased quickly by keeping the  and  keys pressed.
- Press the  key to confirm the previous data and preset the machine for entering of the diameter.
- Read the nominal rim diameter value on the tyre.
- Modify the diameter value displayed by pressing the  and  keys until the number read is set. The diameter can be set in millimetres or the values already set can be converted from inches to millimetres by pressing the  key.

- Press the  key to confirm the previous data and preset the machine for entering of the distance.
- Bring the distance measuring arm into contact with the inside of the rim (fig. 11a).
- Read the distance between the wheel and the cabinet on the rule provided.
- Modify the distance value displayed by pressing the  and  keys until the number read is set.
- On completion, press  o display the imbalance values recalculated on the basis of the new dimensions, or **START** to perform a wheel spin.

DISPLAYING IMBALANCES IN GRAMS / OUNCES

The system is preset to display imbalance values in grams or ounces by keeping the  key pressed for about five seconds.

ROUNDING UP/DOWN

At switch-on, the machine presets to display the imbalance values in steps of five ounces; i.e. with rounding up or down to the nearest multiple of 5 (or in quarters of an ounce if display in ounces is active).
In this condition, the first four grams of imbalance are not displayed since an appropriate threshold, indicated by illumination of the "THR" LED on the display panel, is activated.

The  key can be pressed to eliminate the threshold (the illuminated indication "x5"; "oz/4" goes out) and the imbalance values will be displayed gram by gram (or in tenths of an ounce if display in ounces is active).
The two display modes can be selected in alternation by pressing the same key again.

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WHEEL SPIN

Wheel spin takes place automatically when the guard is lowered, or can be triggered by pressing the **START** key with the guard lowered.
A special safety device stops rotation if the guard is raised during the spin; in this case, the "Err Cr" message appears.
During position search, the wheel can be turned 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 QL AUTOMATIC CLAMPING DEVICE (OPTIONAL)

The procedure for using the machine is very similar to that for an ordinary balancing machine with fixed threaded hub.

Centring with cone at front

- Fit the wheel on the shaft, sliding into place until it rests against the flange.
- Fit the most suitable cone on the shaft and insert it in the hole in the centre of the wheel.
- Press the control pedal (K fig. 4) so that the threaded hub moves outward.
- Fit the ring-nut, running it down the threaded hub until it touches the cone.
- Release the control pedal so that the threaded hub returns to the rest position, clamping the wheel against the flange.

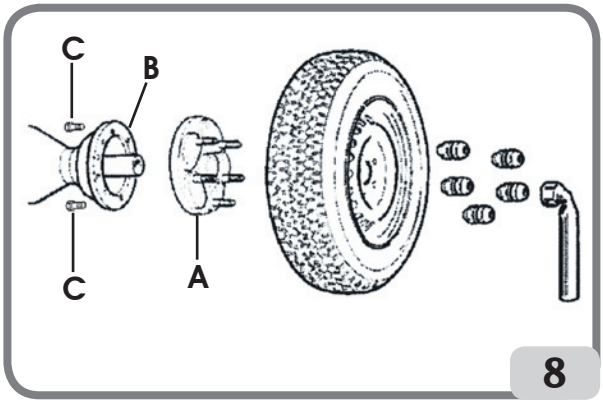
Centring with cone at rear

- Fit the cone best suited to the central hole in the wheel on the shaft.
- Fit the wheel on the cone and push it on until the cone touches the plate taht holds the spring.
- Press the control pedal (K fig. 4) so that the threaded hub moves outward.
- Fit the ring-nut, running it down the threaded hub until the plastic cap touches the rim.
- Apply pressure so that the spring is lightly preloaded.
- Release the control pedal so that the threaded hub returns to the rest position, clamping the wheel against the flange.

Centring with flange

After removing the threaded hub from the wheel holding shaft:

- Fit the flange (A, fig.8) by centering it on the shaft and by carrying it in contact with the wheel supporting flange (B, fig.8).
- Clamp the flange with the two screws (C, fig.8) using the CH 6 key.
- The operation is simple and quick if you just press the STOP button, which activates the blocking brake of the wheel holding shaft.
- Follow the usual procedure to clamp the wheel on the flange.



Notes

- In the fairly unlikely event of a control valve blockage or breakage of a compressed air connection hose, the machine can still be operated like an ordinary balancing machine with fixed threaded hub. **This also allows use of the machine if the compressed air supply fails and/or in case of a breakdown of the workshop compressed air system.**
- In case of an error in the operating procedure, e.g. if the release command is given with the wheel still turning, the ring-nut ensures that the wheel cannot come off the shaft. If a mistake of this kind occurs, abort the wheel spin, clamp the wheel again and perform another spin.
- The Quick Lock clamping system guarantees virtually complete compatibility with all accessories provided for balancing machines without automatic clamping system.

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BALANCING PROGRAMS

Before starting a balancing operation, proceed as follows:
- fit the wheel on the hub using the most suitable flange;
- 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.

Dynamic balancing (standard)

To balance a wheel in dynamic mode, proceed as follows:

- Press the  and  keys until the LED corresponding to the **DYN** program  illuminates.

- Press the  key to confirm the selection.

The program recalls this program automatically at switch-on.
- Enter the wheel data correctly.
- 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.
- Wait for the wheel to stop automatically and for the imbalance values calculated to appear.
- Select the first side to be balanced.
- Turn the wheel until the central element of the corresponding position indicator illuminates.
- Apply the balancing weight indicated, in the position on the rim corresponding to 12 o'clock.
- Repeat the operations listed above for the second side of the wheel.
- 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).

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.

To simplify balancing weight application, the wheel can be kept braked in two ways :
- by pressing the pedal under the base, below the wheel to be balanced;
- by pressing the **STOP** key when the wheel is in one of the weight application positions; the wheel is released by pressing the **STOP** key again, when a wheel spin is triggered, or after about 10 sec.

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

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.

Pressing the **STOP** key while the wheel is in motion interrupts the wheel spin before time.
If the "**RPA**" (position centred) 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.

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.

- Press the  and  keys until the LED corresponding to the **STATIC** program  illuminates;
- press the 

key to confirm the selection;
- set the wheel diameter value (in static mode, there is no need to enter the width and distance values);
- spin the wheel, lowering the guard;
- wait for the wheel to stop automatically and for display of the static imbalance value calculated;
- turn the wheel until the central element of the position indicator illuminates;
- 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;
- carry out a checking wheel spin, following the instructions provided in the dynamic balancing procedure.

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Balancing aluminum (ALU) wheels

To balance aluminum wheels we usually use self-adhesive weights that are positioned differently from the standard balancing (fig. 14).
There are various ALU balancing programs, specially designed to work with rims of this type.

To select the ALU programs:

- press the  and  keys until the LED corresponding to the **ALU** program  illuminates.
- Press the  key as often as necessary to confirm selection of the ALU program desired (the corresponding balancing planes are highlighted on the rim shown on the control panel).

ALU 1P and ALU 2P programs

These programs are used for maximum precision balancing on light aluminum 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 chosen ALU P program, the wheel data have to be acquired.

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 "Alu Err" message will be displayed.

- Move the end of the automatic sensor in correspondence with the plane selected for the application of the inside balancing weight. In Alu 1 P the centre of the cavity on the end of the arm where the adhesive weight for application will be placed is assumed as reference (Fig. 15a). In ALU 2P the reference is the edge of the rim, given that the inside weight is of the traditional spring type (Fig. 11a).
  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 the rest position.

If the sensor is returned to the 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.

- Carry 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 of the **traditional clip type** (inside plane in ALU 2P), position the balancing weight **at 12 o'clock**. If, on the other hand, the weight is of the **adhesive type**:

- position it inside the cavity in the weight holder end of the measuring arm (fig. 16), with the backing paper of the adhesive strip facing up. Then remove the backing paper.
- Move the sensor until it is in the position indicated. In this phase, one display continues to show the imbalance value of the side to be balanced, while the other shows a numerical value updated on the basis of the sensor position, which **becomes zero when the position for application of the weight is reached.**
- 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. 16) to eject the weight and make it stick to the rim.
- Return the sensor to the rest position.
- 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 surface must be perfectly clean. If necessary, clean the rim surface with a suitable detergent.

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

This function is automatically activated when an ALU P program is selected.
It modifies the pre-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).
To avoid excessive and unnecessary delays, the calculations are carried out at the conclusion of the spin, excluding it at the moment of selection of the ALU P programs or after a new acquisition of wheel data. In this event, no imbalance values will be displayed.
Normally the machine modifies the position where the balancing weights are applied according to the criteria pre-established by the program. However, depending on the type of rim and according to the operator's discretion, the intervals within which the machine can modify each balancing plane can be defined. In order to perform this operation, two successive sets of wheel data must be acquired for each of the rim planes (see MEASURING WHEEL DATA section). The range of each interval cannot exceed 20 mm, in order to prevent the re-calculated planes from being positioned in areas of discontinuity on the

rim and the calculation time from increasing excessively. If the second acquisition takes place with the sensor in excess of the maximum range, this acquisition will be taken as a reference to the second plane.

"Hidden weight" program
(only available on demand 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 aluminum rim.

- First select either the ALU 1 P or the ALU 2 P program.
- Press the  and  eys until the LED corresponding to the **FUN** program  illuminates.
- Press the  key to confirm the setting.

This accesses the "**hidden weight**" program, and the message "hid" appears on the left-hand display. If the user attempts to select the program without first having selected an ALU P program, the "Err 26" message appears.

- Press the  and  eys until the number of spokes in the rim appears on the right-hand display.
- Turn the wheel until the centre of one spoke is at 12 o'clock.
- Press  to memorise the data set (number of spokes and angular position). The same key can be pressed again to modify the memorised values.
- Press the  key to exit from the data setting environment and return to the Alu P program selected previously. The **FUN** LED  remains on to indicate that the "hidden weight" program is active.
- OFF can be selected instead of a number of spokes to disable the program selected previously, or to exit without activating it.
- Carry out a wheel spin.

The two imbalance values calculated will appear in alternation on the display relating to the outer side of the wheel, as the angular position of the wheel varies.

Each of the two balancing weights is applied to the outside as described in the "applying the balancing weights" section of the Alu P programs.

The HIDDEN WEIGHT function is combined with the MOBILE PLANES function to allow the use of balancing weights which are 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 aluminum rims.

- Press the  and  keys until the LED corresponding to the ALU program  illuminates.
- Press the  key as often as necessary to confirm selection of the ALU program desired (the corresponding balancing planes are highlighted on the rim shown on the control panel).
- Set the nominal wheel data.

If the values of the diameter and of the distance between the two balance planes re-calculated on a statistical basis starting from the wheel's nominal data are outside the normally accepted interval stated in the "technical data" section, the message "alu Err" is displayed.

- Proceed as described for dynamic balancing.

Some slight 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 counter 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;
- **static mode;** just one balancing weight, perhaps divided into two equal parts on two sides; procedure described in the STATIC BALANCING section.

GB

Weight division program

Some rims have spokes so wide that it is not possible to place adhesive weights next to them; to solve this problem, a program which divides the balancing weight into two parts has been introduced.

In this case, if with the wheel centred it becomes obvious that the balancing weight will have to be placed against a spoke, proceed as follows:

- remain in the centred position;
- press  ;
- use the  and  eys to select the width of the spoke:

- 1 = small
- 2 = medium
- 3 = large
- OFF = deactivates the program

- confirm with the 

key;
- apply the two new balancing weights in the positions indicated.

In "**ALU Moto**" and "**dynamic**" modes it is possible to divide the balancing weights over both sides of the wheel to be balanced.

Motorcycle dynamic program

To balance a motorcycle wheel on two planes (dynamic balancing) using clip weights, proceed as follows:

- fit the motorcycle wheel adapter (AUMO) on the balancing machine as shown in figure 17;
- insert the two screws provided in the holes on the wheel support flange;
- screw 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 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.

- Press the  and  keys until the LED corresponding to the **DM** program  illuminates.
- Press the 

key to confirm the selection.
- Fit the special extension (A fig.17) on the internal measuring arm. Remember to remove this extension before performing the wheel spin.
- Set the wheel data in the usual way.
- Proceed as described for dynamic balancing.

Motorcycle ALU program

For dynamic balancing of motorcycle wheels <u>with adhesive weights</u> proceed as follows:

- press the  and  keys until the LED corresponding to the **DM** program  illuminates.

- Press the 

key twice to select the "**Alu Moto**" program (the corresponding balancing planes are highlighted on the rim shown on the control panel).
- Proceed as described previously for the "**Motorcycle Dynamic**" program. The imbalance values are calculated and displayed bearing in mind the real position in which the weights are to be applied.

To obtain the best results, apply adhesive weights, placing them on the outer edge level with the edge of the rim.

FLASH OPT OPTIMISATION PROGRAM

This program has been made even simpler and faster than other types of OPT program; in most cases, the results obtained can be compared with those of the complete 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 calculations made by this program are based on the imbalance values measured during the last wheel spin performed, which must therefore refer to the wheel to be balanced.

To recall this program proceed as follows:

- Press the  and  keys until the LED corresponding to the **OPT** program  illuminates.
- Press the 

key to confirm the selection.

After the selection has been made, in all cases the machine indicates whether execution of the program is advisable by displaying the message:
- "YES OPT" if it considers execution of the program is advisable;
- "NO OPT" in the opposite case.

Press the  key to exit from the program and return to the DYN environment;

When the procedure is recalled, the left-hand display will show: "OP.1";

- Memorise the 12 o'clock position of the valve by pressing the 

key.
- Continue as described in point OPT 3 of the next section.

GB

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, but it can be reduced by eliminating any mismatch between tyre and rim as much as possible.
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.

To recall this program proceed as follows:

- Press the  and  keys until the LED corresponding to the **OPT** program  illuminates.

- Press the  key to confirm the selection.

After the selection has been made, in all cases the machine indicates whether execution of the program is advisable by displaying the message:

- "YES OPT" if it considers execution of the program is advisable;
- "NO OPT" in the opposite case.

This accesses the first phase of the program as shown on the display.

To exit from the program, press the  key.

OPT 1

- Fit the rim on the machine without the tyre.
- Turn it until the valve (or the relative hole) is in the 12 o'clock position.
- Press the  key.
- Carry out a wheel spin (as shown indicated by the display).

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.
- Press the  key.
- Perform a wheel spin.

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

OPT 3

- Turn the wheel until it is in the position shown by illumination of the central elements of the position indicators.
- Make a chalk mark on the outside wall of the tyre at 12 o'clock.
- Press the 

key.
- Remove the wheel from the balancing 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 balancing machine.
- Turn the wheel until the valve is at 12 o'clock.
- Press the 

key.
- Perform a third wheel spin (second spin in OPT FLASH mode).

Before proceeding with the last stage of the optimisation procedure, a forecast of the improvement that can be achieved can be displayed. If you consider this improvement unsatisfactory or no significant improvement can be obtained, press the  key to exit.

To display the improvement which can be achieved, proceed as follows:

- press the  key once: the display now shows the real imbalance values of the wheel as fitted on the balancing machine;
- press the  key again: the imbalance values shown on the display are the ones which can be achieved by proceeding with the last stage of the optimisation process.
- press the  key again: the machine returns to the last stage of the OPT program.

OPT 4

- Turn the wheel until it is in the position shown by illumination of the central elements of the position indicators.
- 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 other way round, make the two chalk marks on the **inside** of the tyre wall. The user can switch from the "with reversal" to the "without reversal" mode by pressing the 

key.

If the  key is pressed now, the system temporarily exits from the **OPT** program (to return, repeat the initial **OPT** program activation procedure).

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

GB

- Re-fit the complete wheel on the balancing machine.
- Rotate the wheel until the valve (or hole) is at 12 o'clock.
- Press the 

key.
- Carry out a fourth wheel spin (third spin if using a OPT FLASH).

With the completion of the spin, the optimization 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 "OPT ERR" message. This means that the entire procedure should be repeated from the beginning.

Special cases

- If execution of the first spin with rim only is not required, the first phase can be skipped by pressing the 

key immediately after selection of the **OPT** program. The wheel complete with tyre is then placed on the balancing machine, and the phases which follow (2, 3 and 4) are carried out as described previously.
- On completion of the second and third wheel spins, the messages "OUT 1"and "OUT 2" appear on the display respectively. In this case, users are advised to exit from the program by pressing the  key; the values of the weights necessary to balance the wheel will appear on the display. By following this procedure, the user breaks off execution of the program, at the cost of a small reduction in the final results. However, the 

key can be pressed to continue execution of the optimisation procedure.
- On completion of the third wheel spin, the instruction to reverse the direction in which the tyre is fitted on the rim may appear. If the user does not wish to reverse the direction or this is not possible, the 

key can be pressed; the machine will give the instructions for completion of the program without reversal.
- If a different working environment is recalled between one phase of the OPT program and the next, execution restarts from the point where it had been interrupted when the working environment in which the user was working with the OPT function is recalled.

WORKING ENVIRONMENTS

This balancing machine allows three different operatives to work at the same time, since three different working environments are provided.
To recall a working environment, proceed as follows:

- press the  key followed by the  key to recall the "**87**" function program (use the arrow keys to recall this number if necessary);

- press  to confirm the selection;

If the presetting is not confirmed within about three seconds, the system automatically exits from the functions programs environment.
- "OP" (operator) will appear on the left-hand display, with "1" on the right-hand one;

- press the  key to select the operator (1, 2 or 3);

- confirm the selection of the new operator by pressing the  key.

When a new operator is selected, the machine activates the parameters saved previously in that specific working environment.

The parameters which remain in the memory for each working environment are:
- balancing mode: dynamic, alu x, motorcycle, etc.;
- wheel dimensions: distance, diameter and width, or those relating to the active alu program;
- last step in the optimisation procedure (OPT).

N.B.: the optimisation procedure can only be carried out by one operator at a time.

The machine's general settings remain the same for all the working environments: grams/ounces, sensitivity x1/x5, threshold, etc.

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AUTOMATIC POSITION SEARCH (RPA)

When the automatic position search program is active, at the end of each balancing wheel spin the machine stops the wheel in the position for application of the inside weight; if no weight is required, the wheel is stopped in the outside weight application position. Pressing the **START** key with the guard raised activates automatic position search for the other side of the wheel.

To access the automatic position search program, proceed as follows:

- recall the function program N° 87 (Working environments) by pressing the  key and the  key;
- press the  and  keys to preselect function program N° 90 (RPA);
- press  to make the selection.

If the presetting is not confirmed within about three seconds, the system automatically exits from the functions programs environment.

- When this program is selected the system displays:
  - the message RPA on the left-hand display;
  - the message ON or OFF on the right-hand display;
- The  key can be pressed to activate or deactivate automatic search for the weight application position.
- Select:
  - ON to enable automatic position search;
  - OFF to disable automatic position search.
- Confirm the program setting by pressing the  key.

VISUAL CHECK ON ROUNDNESS OF THE WHEEL

This function allows the wheel to be started up at **low speed** with the guard open, so that a visual check can be made on any geometrical irregularities of the rim and wheel.
The visual check function is activated by keeping the START key pressed with the guard raised for at least two seconds.
The START key must then be kept pressed for all the time it takes to make the check on the wheel or rim.
The wheel balancer will stop the wheel as soon as the key is released.

CALIBRATION PROGRAMS

Sensitivity calibration

This must be carried out when the user considers that the calibration is outside the tolerance range, or when the machine itself prompts the procedure by displaying the message “Err CAL”.

- Fit the calibration disc on the balancing machine.
- Press the either of the two  and  keys, and then, within two seconds, the  key. This preselects utility program number 87.
- Press the  and  keys to preselect program number 88.
- Press the  key to confirm.
- If the presetting is not confirmed within about three seconds, the system automatically exits the Utility environment.
- The display shows “d F”.
- Place the internal sensor touching the calibration disc in line with the hole with the blue outline.
- Press the  key to confirm, and then move the internal sensor to the rest position.
- The displays will show “CAL —I”.
- Fit the calibration weight to the outside of the disc (position 1).
- Perform a first spin.
- At the end of the spin the displays will show “CAL —I”.
- Fit the calibration weight to the outside of the disc again, but this time at 180° to the previous position (position 2).
- Perform the second spin.
- At the end of the wheel spin, if the calibration has been carried out successfully the message “END CAL” will be displayed; otherwise, the message “Er3 CAL” will appear for a short time.

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- Press the 

key to exit the calibration function..

NOTES

- On completion of the calibration procedure, remove the calibration weight and remove the automatic calibration disc from the balancing machine.
- The user can interrupt the program at any moment by pressing the 

key.

Possible error messages

- "ER3 GE2" message: Indicates an error in performing the calibration procedure; repeat the calibration.
- "d 216" message: appears if the internal sensor has failed; to continue with calibration, place the internal sensor touching the blue hole on the calibration disc and enter the distance value read on the sensor ruler in manual mode.

THE CALIBRATION PERFORMED IS VALID FOR ANY KIND OF WHEEL!

Sensor calibration

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.

- Press the  and  keys until the dot corresponding to the CAL program lights up.
- Press the 

key to confirm the selection. The message "CAL" appears on the left-hand display, with a flashing "F" on the right-hand display.
- Bring the automatic width sensor arm into contact with the wheel contact flange as shown in fig. 11c.
- Press the 

key to calibrate the potentiometer.

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

Pressing 

exits from the program and aborts the calibration procedure.

Possible error messages

- Message “ERR 10”: indicates that the distance encoder has failed or is incorrectly positioned.
- Message “ERR 11”: indicates that the diameter encoder has failed or is incorrectly positioned.
- Message “ERR 12”: indicates that the width potentiometer has failed or is incorrectly positioned.

ATTENTION

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 balancing machine compensates these differences, so that the values measured are the same as the nominal values, a consolidated reference for the user. Obviously, compensation is carried out with reference to the thickness of a rim used in the calibration procedure, so the data measured later 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 devices; it simply reflects the real situation.

DISPLAY MESSAGES

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

Error messages

Err CAL Error in first sensitivity calibration.
The sensitivity calibration procedure should be carried out.

Er3 gE2 Error in performing the calibration procedure.
Repeat the calibration procedure.

Err 4 a) External sensor calibration error.
Perform sensor calibration.

b) External sensor not present: press the  and  keys until the dot corresponding to the CAL program lights up.

Press the key 

to disable sensor control and clear the display of the error..

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

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.
Switch off the machine, return the sensor to its correct position and switch on again.

b) Encoder malfunction. Press the  key to disable the sensors and enter the data useng the keyboard. Call in the technical after-sales service.

Err 11 a) Diameter sensor not in rest (fully retracted) position when machine was switched on.
Switch the machine off, return the sensor to the correct position and switch back on.

b) Diameter sensor failure. Press the  key to disable the sensors and enter the data by hand.
Call the after-sales service.

Err 12 a) Width sensor not in rest position (fully in) when the machine is switched on.
Switch off the machine, return the sensor to the correct position and switch it back on.

b) Failure on the corresponding potentiometer. Press the  key to disable the sensors and enter the data using the keyboard. Call in the technical after-sales service.

Err 20 External sensor not correctly positioned during calibration.
Set it in the position shown and repeat the calibration.

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

Err 25 Program not available on this model.

Err 26 Program only available after selection of ALU 1P / ALU 2P.

Err 27 Wheel spin time too long.

Err 28 Encoder count error. If the error recurs frequently, call in the technical after-sales service.

Err 29 Failure on the wheel spin device. Try moving the wheel by hand; if the fault does not disappear call in the technical after-sales service.

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

Err 31 Optimisation procedure (OPT) already launched by another user.

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

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

Alu Err Dimension setting not correct for an ALU program.
Correct the dimensions set.

OPT Err Error conditoin during execution of the optimisation program.
Repeat the procedure from the beginning.

Err Cr Spin carried out with wheel guard up.
Lower the guard in order to carry out the spin.

Other messages

CAL [GO] Calibration wheel spin.

GO Alu Wheel spin with Alu program selected.

GO d15 Wheel spin with Motorcycle Dynamic program selected.

GO A15 Wheel spin with Motorcycle Alu program selected.

St Wheel spin with Static program selected.

hid n Setting of number of spokes in “hidden weight” program.

CCC CCC Imbalance values greater than 999 grams.

--- --- Balancing machine in standby mode or performing self-calibration of the wheel spin device.

GB

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 specified limits.
When a wheel is perfectly balanced, 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 centreed 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.
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 displays remain off and the master switch light is on)

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 displays remain off and the master switch light is on)

One of the FU1 ÷ FU6 fuses of the transformer has blown.

➥ Replace the blown fuse.

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

➥ Replace the blown fuse.

The dimension values measured 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 sensor has not been calibrated.
➥ Carry out the sensor calibration procedure.

The thickness of the rim is different from that of the wheel used for sensor calibration (if the difference is no more than one inch).
➥ The measurement is correct because it considers the actual diameter for application of the weights. See precautions in the SENSOR CALIBRATION section.

The automatic sensors do not work

Fuses FU2 and FU3 of the power supply adaptor have blown (LEDs L1 and L3 are off and the potentiometer values displayed in Service mode are constantly zero).
➥ Replace the fuses.

I tastatori non erano a riposo all'accensione (Err 10) e si è premuto il tasto  **per inserire i dati geometrici con la tastiera, disabilitando la gestione dei tastatori automatici.**
➥ Switch off the machine, return the sensors to the correct position and switch back on.

The wheel fails to spin when the START control is activated (the machine does not start)

The wheel guard is raised.
➥ Lower the wheel guard (CrErr is displayed).

The FU2 and FU3 power supply fuses have blown (LED lights L1 and L3 are off).
➥ Replace the blown fuses.

The machine displays unsteady 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 the installation and adjust the support feet.

The wheel is not properly clamped.
➥ Tighten the clamping ring-nut firmly.

GB

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 the installation and adjust the support feet.

The wheel is not properly clamped.
➥ Tighten the clamping ring-nut firmly.

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

The wheel data are not correct.

➥ Check that the data corresponds to the dimensions of the wheel and correct, if necessary.

➥ Carry out the wheel-width sensor calibration procedure.

WARNING

The "Spare parts" manual does not authorise the user to work on the machine except for the operations specifically described in the operator's manual, but is intended to enable the user to supply accurate information to the technical service, in order to reduce intervention times.

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.

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 jets of water.

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 centreing precision.

When not in use, store cones and flanges in a place where they are protected from dust and dirt.

Use ethyl alcohol to clean the display panel.

Calibrate the machine at least once every six months.

SCRAPPING

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

ENVIRONMENTAL INFORMATION

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

This product may contain substances that can be hazardous to the environment or to human health if it is not disposed of properly.
We therefore provide you with the following information to prevent releases of these substances and to improve the use of natural resources.

Electrical and electronic equipments should never be disposed of in the usual municipal waste but must be separately collected for their proper treatment.
The crossed-out bin symbol, placed on the product and in this page, remind you of the need to dispose of properly the product at the end of its life.
In this way it is possible to prevent that a not specific treatment of the substances contained in these products, or their improper use, or improper use of their parts may be hazardous to the environment or to human health. Furthermore this helps to recover, recycle and reuse many of the materials used in these products.

For this purpose the electrical and electronic equipment producers and distributors set up proper collection and treatment systems for these products.
At the end of life your product contact your distributor to have information on the collection arrangements.

When buying this new product your distributor will also inform you of the possibility to return free of charge another end of life equipment as long as it is of equivalent type and has fulfilled the same functions as the supplied equipment.

A disposal of the product different from what described above will be liable to the penalties prescribed by the national provisions in the country where the product is disposed of.

We also recommend you to adopt more measures for environment protection: recycling of the internal and external packaging of the product and disposing properly used batteries (if contained in the product).

With your help it is possible to reduce the amount of natural resources used to produce electrical and electronic equipments, to minimize the use of landfills for the disposal of the products and to improve the quality of life by preventing that potentially hazardous substances are released in the environment.

RECOMMENDED FIRE-EXTINGUISHING DEVICES

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

	Dry combustibles	Inflammable liquids	Electrical fires
Water	**YES**	NO	NO
Foam	**YES**	**YES**	NO
Dry chemical	YES*	**YES**	**YES**
CO_2	YES*	**YES**	**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. 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 there 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 components 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.

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 centreing flange is mounted on the balancing machine shaft by means of its central hole.

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

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 limits, 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 pre-defined position. The data can be measured automatically if the sensor is fitted with the relevant measurement transducers.

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 - usually 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 supplied disassembled from the machine.

GENERAL ELECTRIC LAYOUT DIAGRAMS

fig.18

AP1	Power supply and controls board
AP2	Mother board (CPU)
AP3	Keyboard
AP4	Monitor
AP5	Search board
AP6	Printer
AP7	PWM board
AP8	Memory expansion board
AP9	Voice synthesis board
AP10	Display board
AP11	Alphanumeric display piloting board
AP12	Optic sensor board
B1	Speaker
BP1	Internal pick-up
BP2	External pick-up
BR1	Encoder
C1	Capacitor
EV1	Fan
FU..	Fuse
KM1	Remote switch
M1	Motor
QS1	Master switch
QS2	Three-pole reverser
R1	Resistor
RP1	Internal distance potentiometer
RP2	Diameter potentiometer
RP3	External distance potentiometer
RP4	REB potentiometer
RP5	ROD potentiometer
RP6	Voice synthesis volume potentiometer
SA1	Commutatore
SB1	START button
SB2	STOP button
SB3	Brake button
SQ1	Safety guard microswitch
SQ2	START microswitch
SQ3	Brake pedal microswitch
SQ4	Wheel spin device safety microswitch
ST1	Motor overload cutout
TC1	Power supply transformer
V1	Diode
VC1	Diode rectifier
XB1	Connector
XS1	Power supply socket
XT1	Terminal board
YA1	Motor coil
YA2	Brake / motor disconnection coil
YV1	Wheel spin solenoid valve
YV2	Brake solenoid valve
Z1	Mains filter
Z2	Motor filter

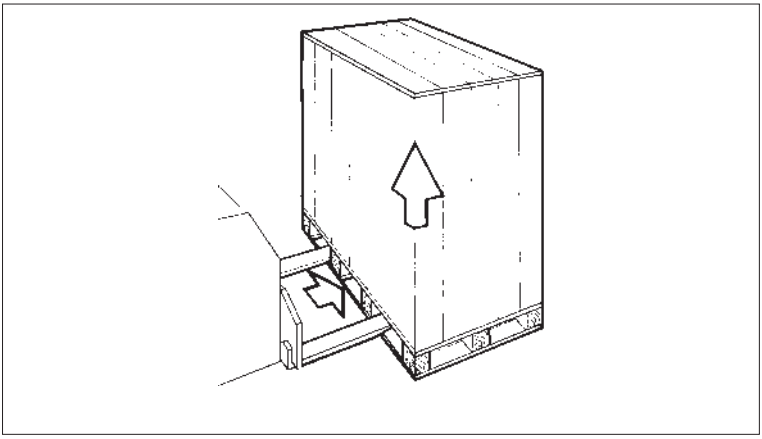
PNEUMATIC SYSTEM DIAGRAM

Fig.19 Code 446428-1

1	Snap coupling
2	Filter-regulator unit 0-10 bar
3	Pressure gauge Ø 40
4	Valve 3/2
5	Silencer filter
6	Reduction union Ø =1.6 mm
7	Single-acting Q.L. device cylinder
8	Valve 3/2
9	Single-acting R.O.D. device cylinder

Note

1



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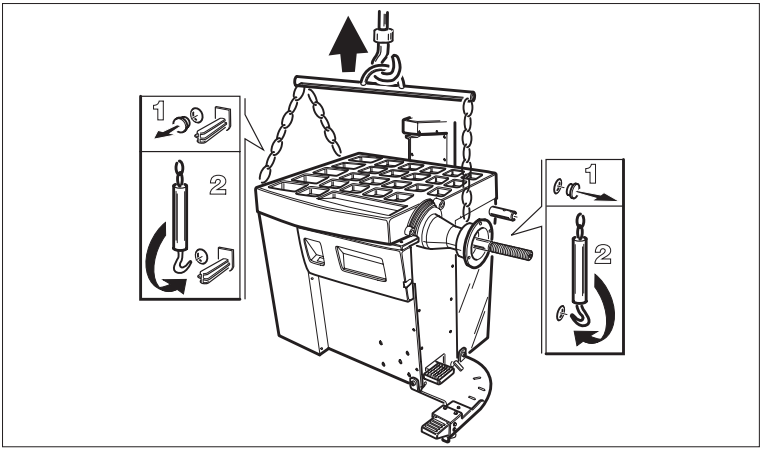

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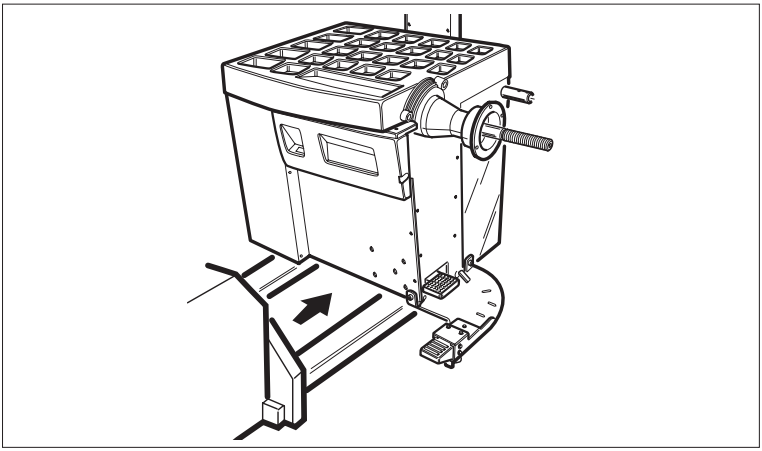

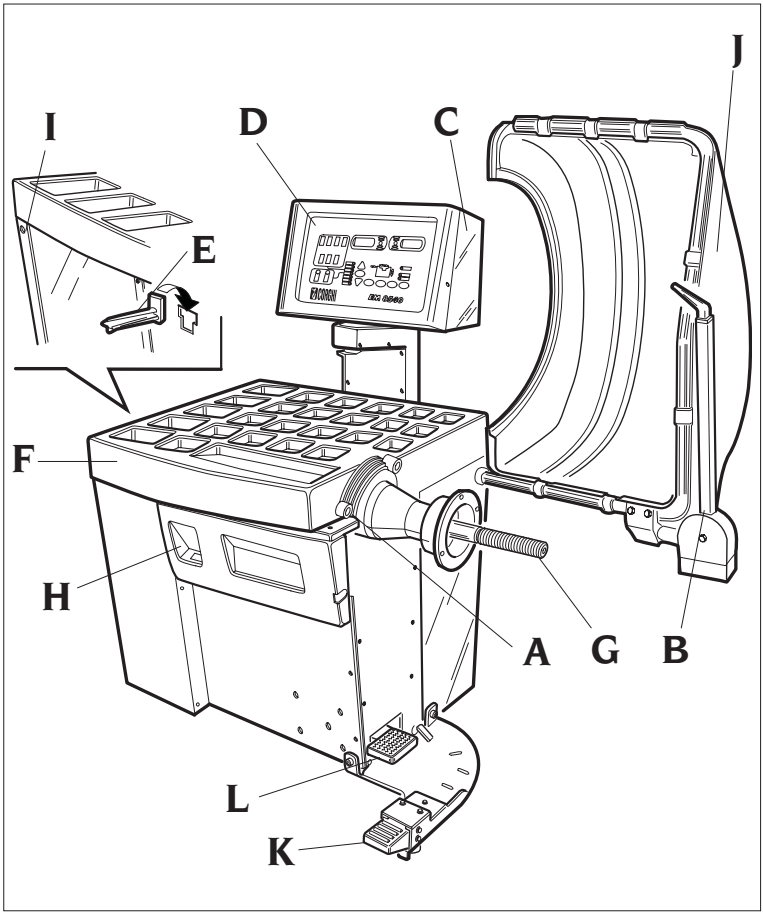

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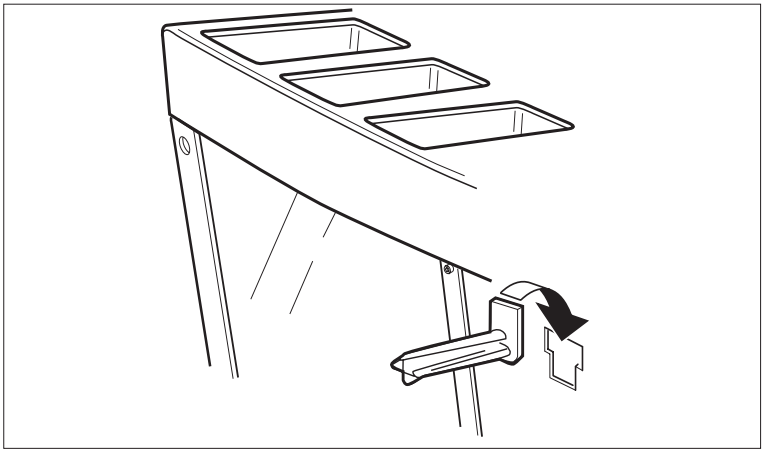

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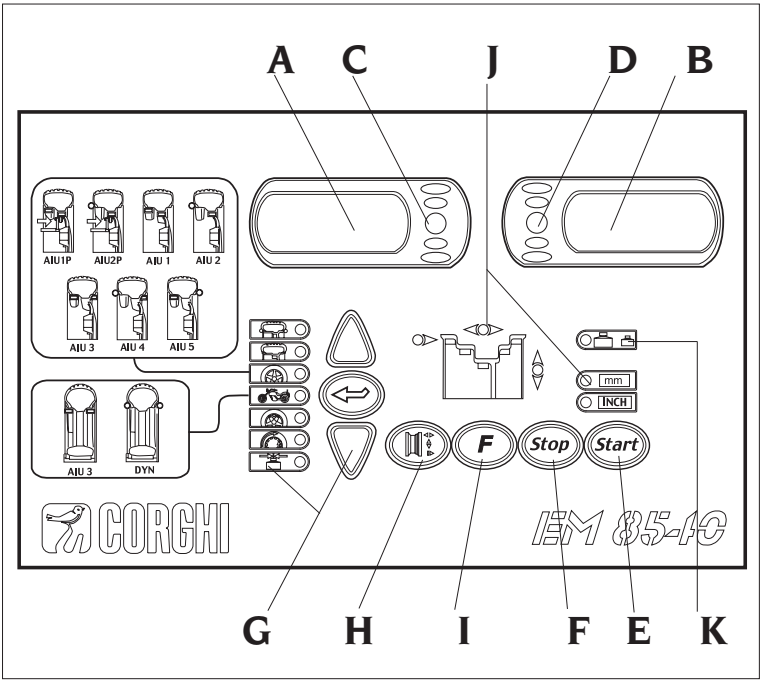
A
C
J
D
B
AIU1P
AIU2P
AIU 1
AIU 2
AIU 3
AIU 4
AIU 5
AIU 3
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mm
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Stop
Start
CORGHI
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I
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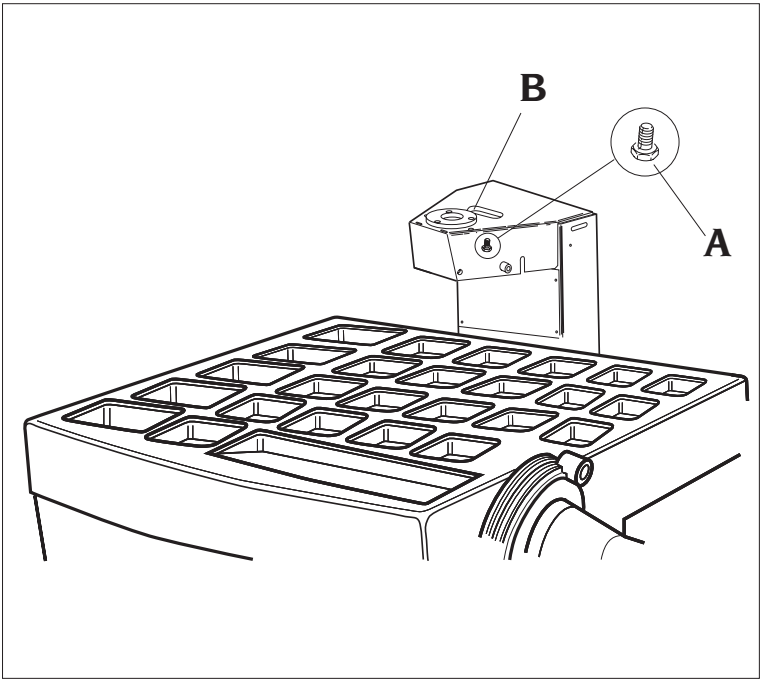
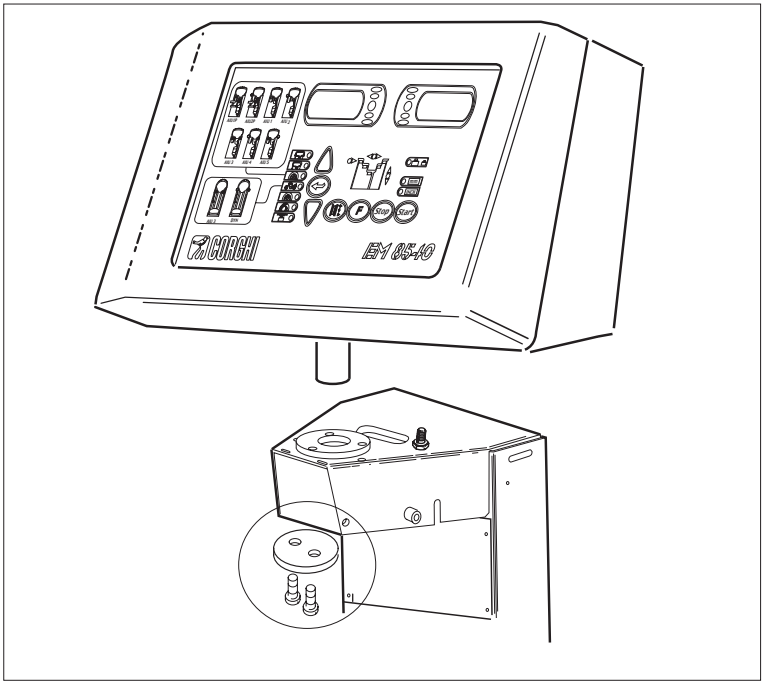
E
K

6a


B
A



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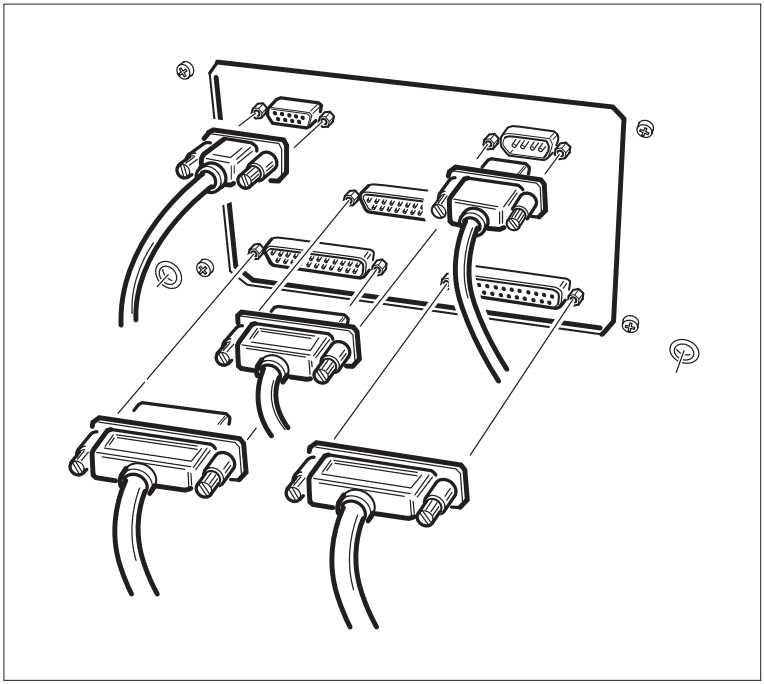

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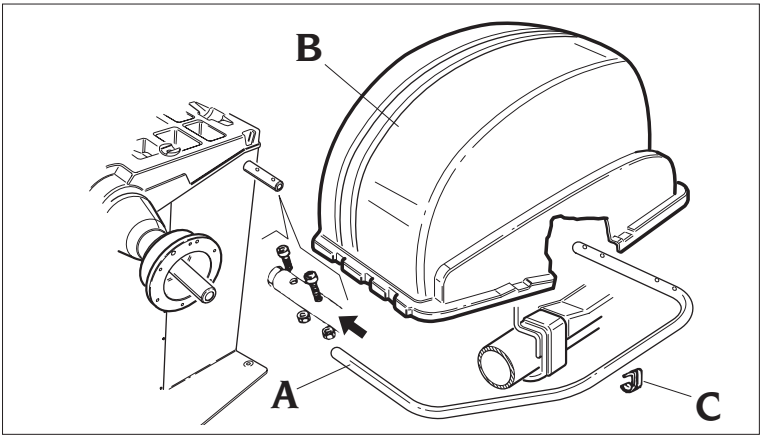

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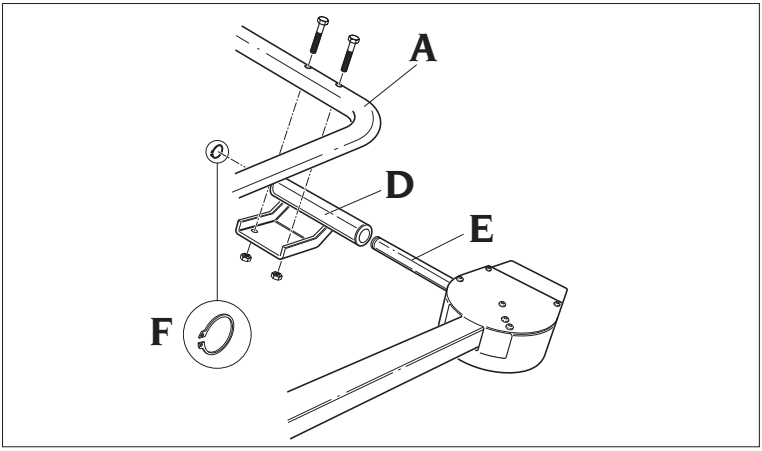

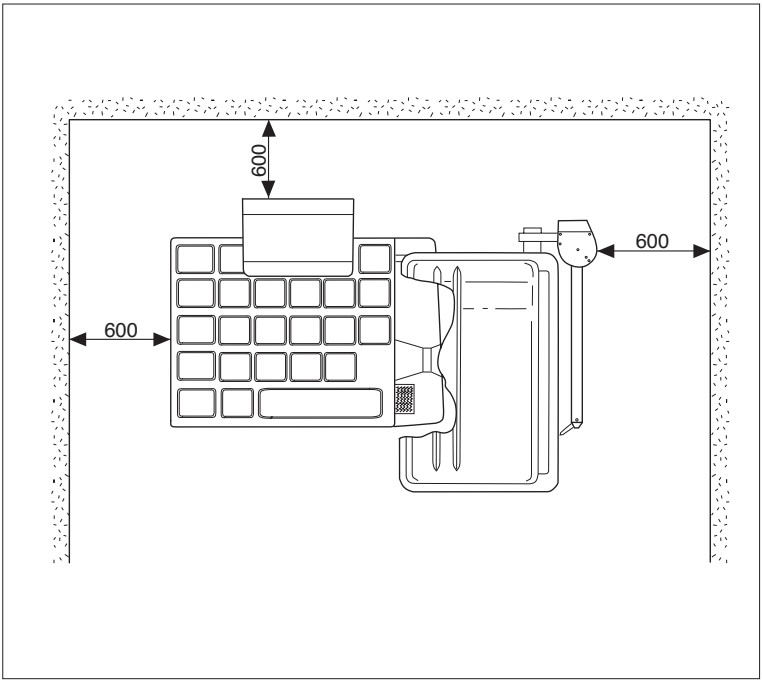

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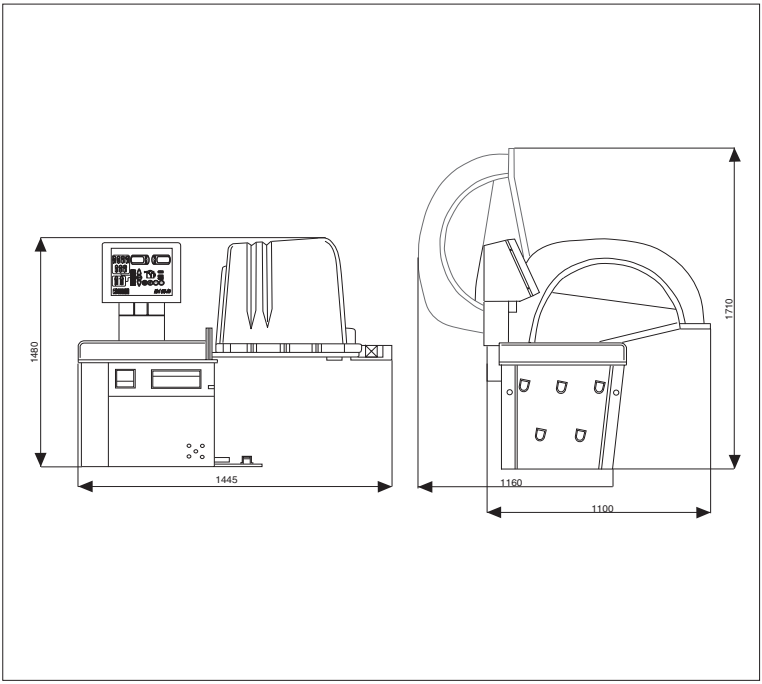

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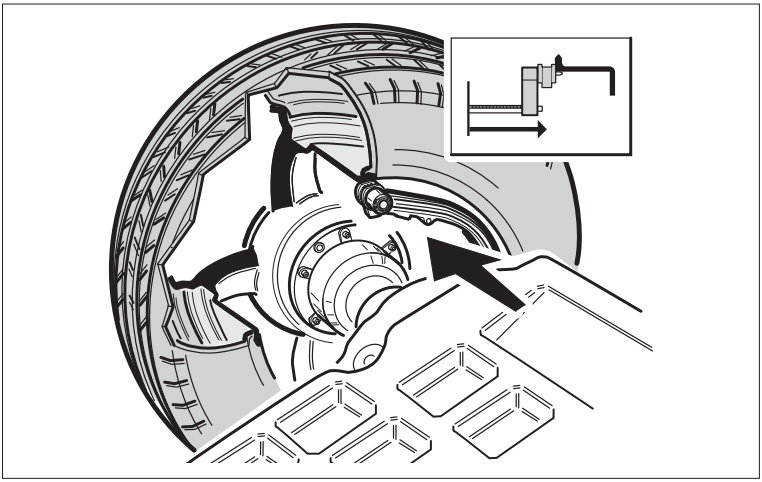

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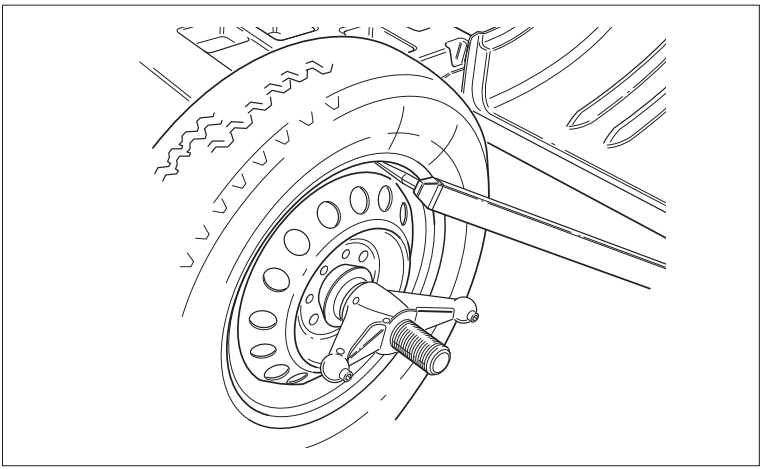

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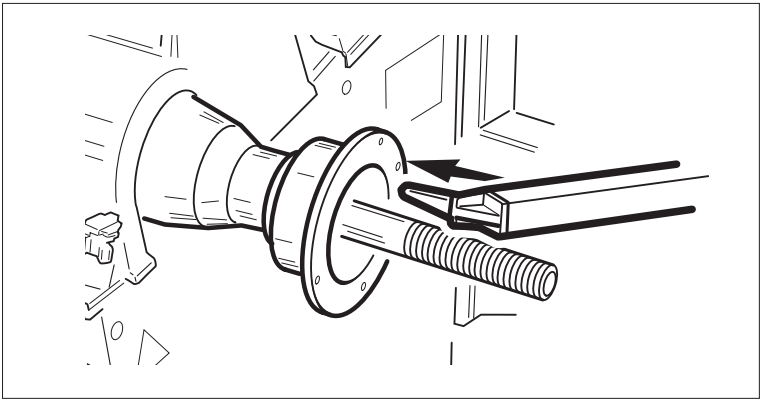

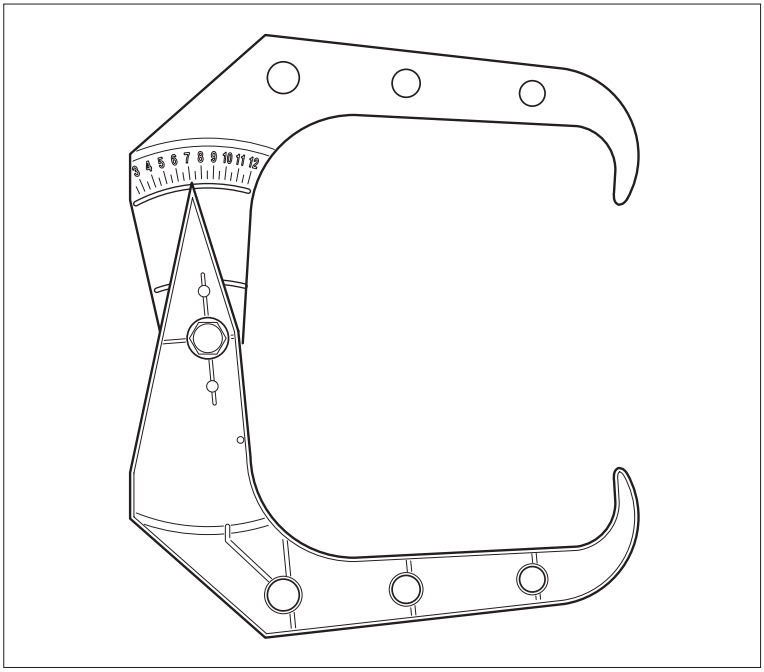
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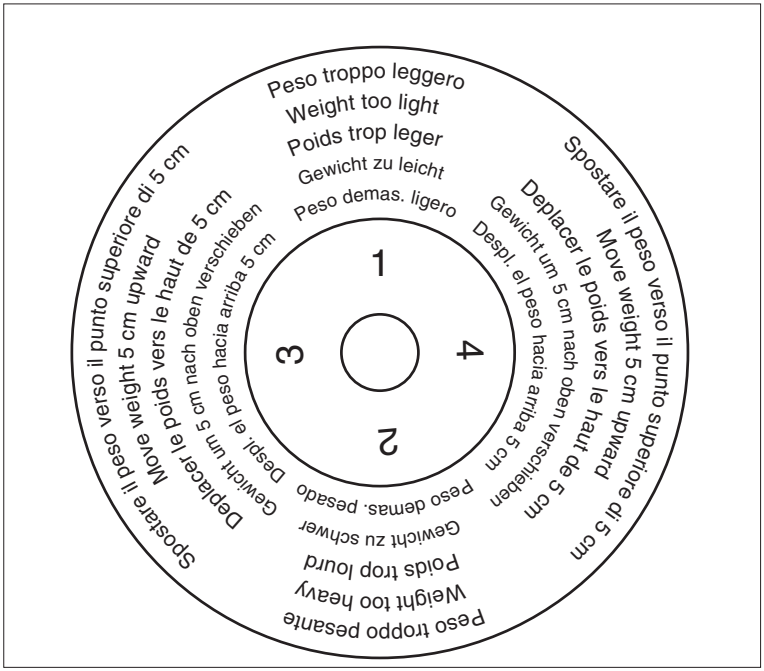
Peso troppo leggero
Weight too light
Poids trop leger
Gewicht zu leicht
Peso demas. ligero
Spostare il peso verso il punto superiore di 5 cm
Move weight 5 cm upward
Deplacer le poids vers le haut de 5 cm
Gewicht um 5 cm nach oben verschieben
Despl. el peso hacia arriba 5 cm
Peso troppo pesante
Weight too heavy
Poids trop lourd
Gewicht zu schwer
Peso demas. pesado
Spostare il peso verso il punto superiore di 5 cm
Move weight 5 cm upward
Deplacer le poids vers le haut de 5 cm
Gewicht um 5 cm nach oben verschieben
Despl. el peso hacia arriba 5 cm
1
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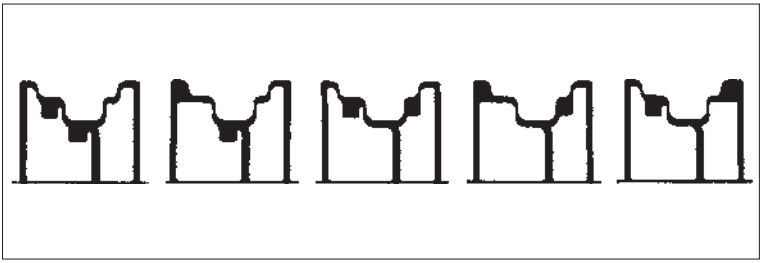

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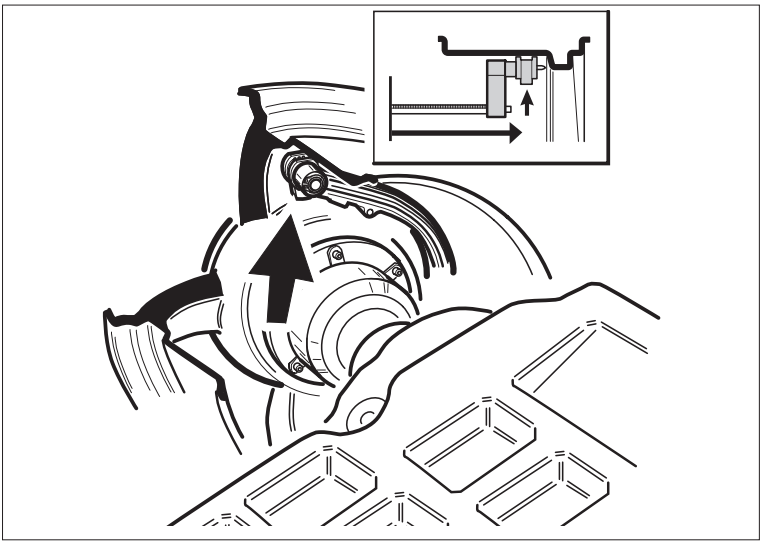

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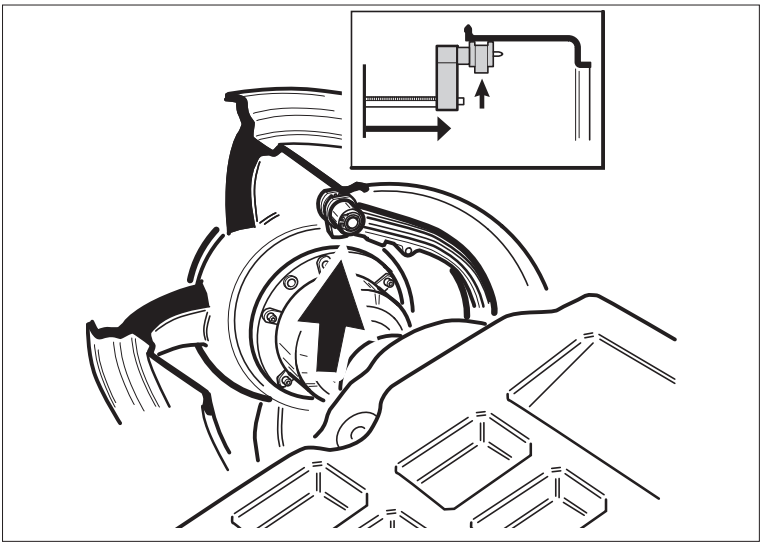

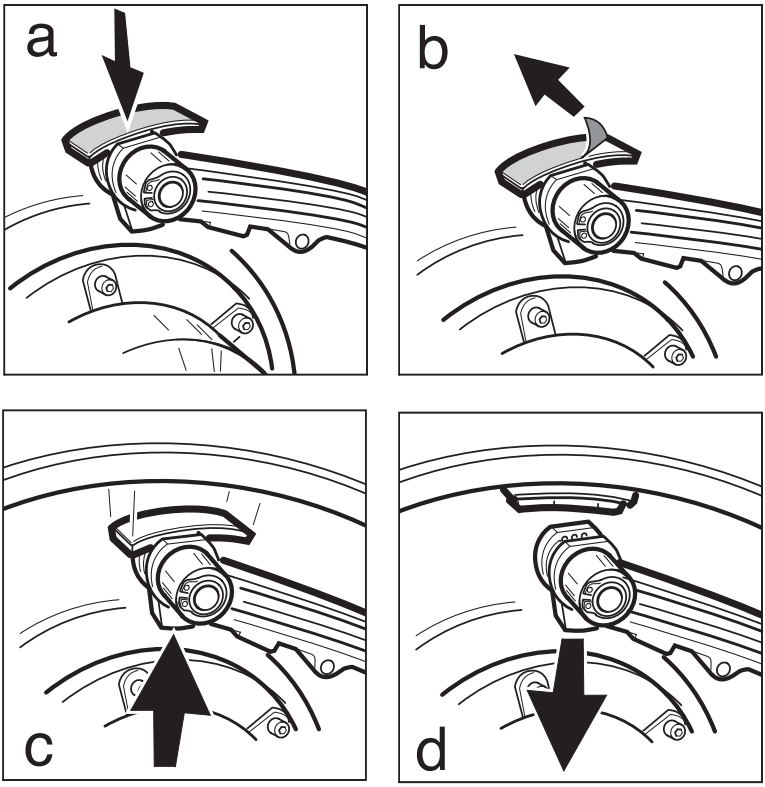

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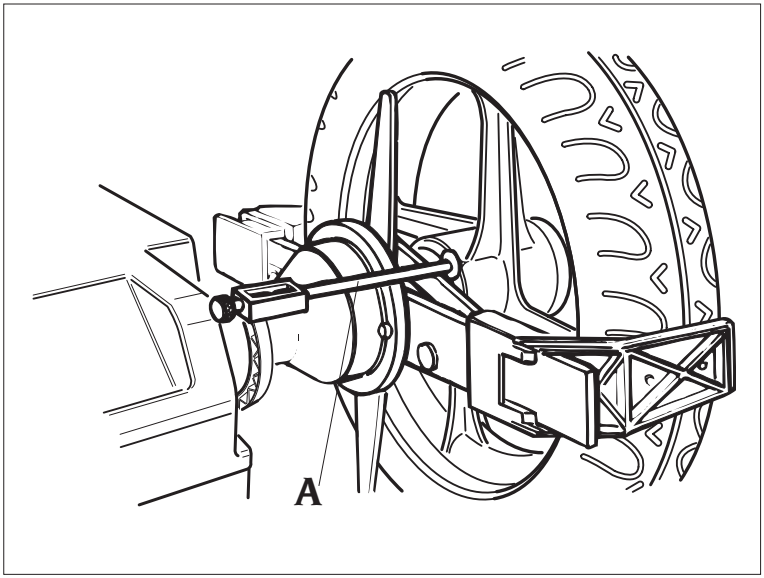

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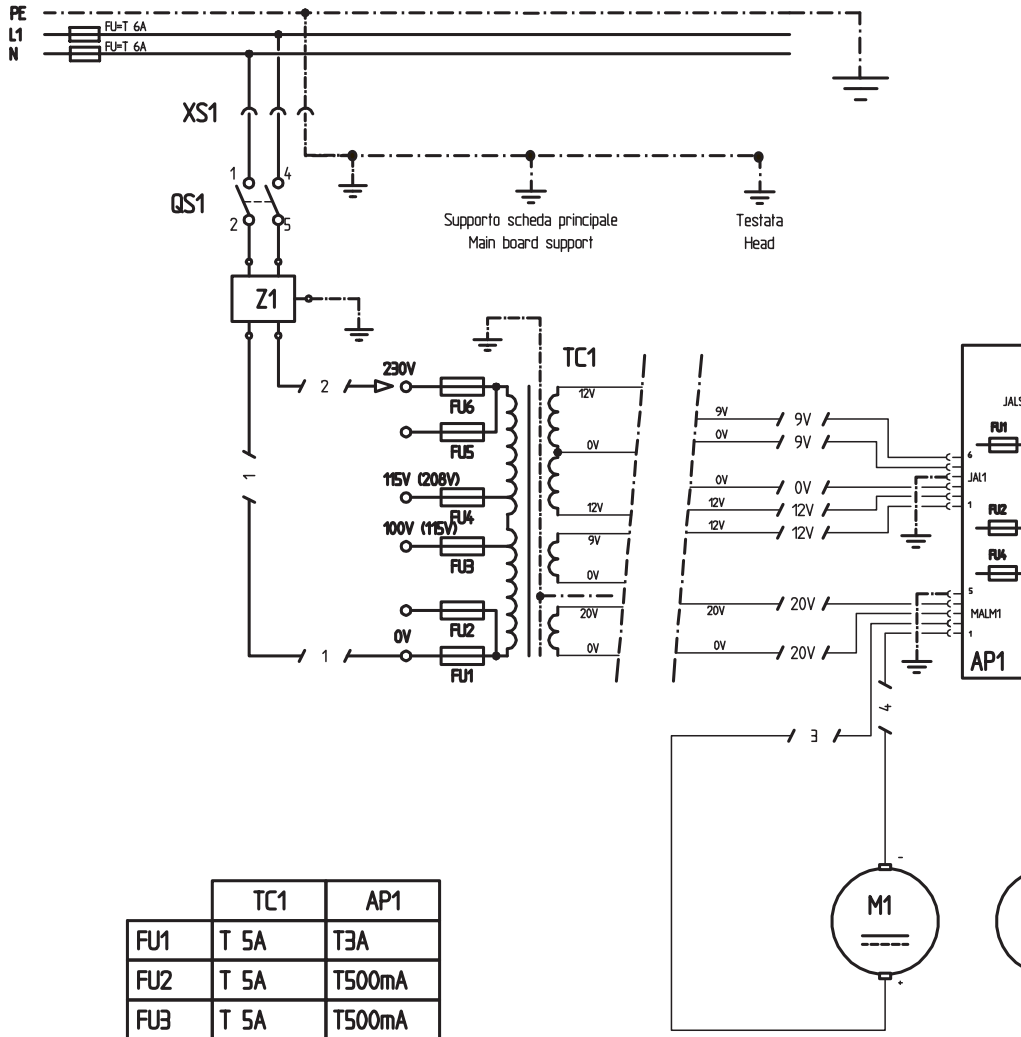
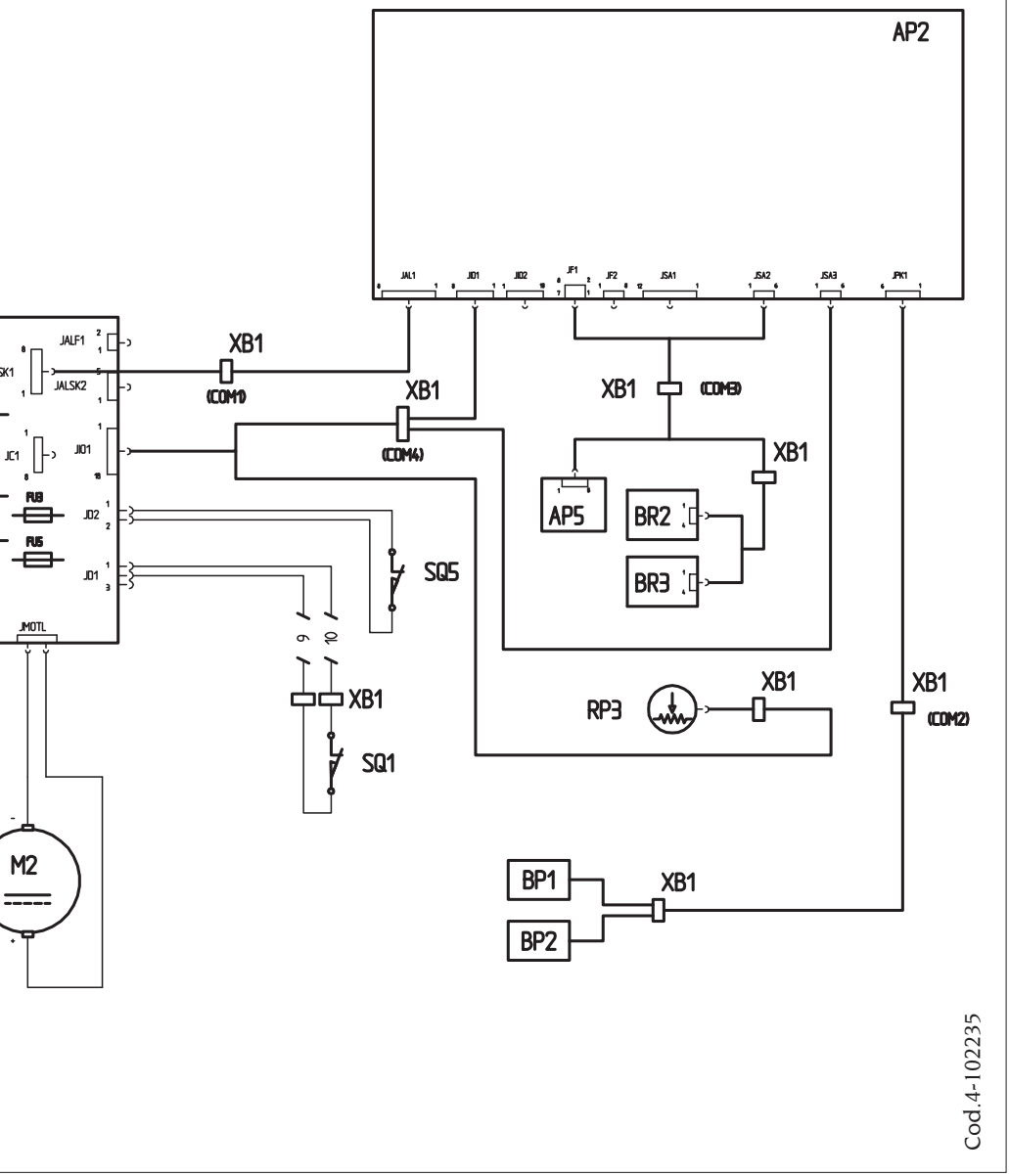


	TC1	AP1
FU1	T 5A	T3A
FU2	T 5A	T500mA
FU3	T 5A	T500mA
FU4	T 3.15A	T 20A
FU5	T 3.15A	F8A
FU6	T 3.15A	-


AP2
JAL1
JID1
JID2
JF1
JF2
JSA1
JSA2
JSA3
JPK1
JALF1
JALSK2
JID1
JID2
JID1
JMOTL
FU8
FU5
XB1
(COM1)
XB1
(COM4)
XB1
(COM3)
XB1
AP5
BR2
BR3
SQ5
9
10
XB1
SQ1
RP3
XB1
XB1
(COM2)
M2
BP1
BP2
XB1

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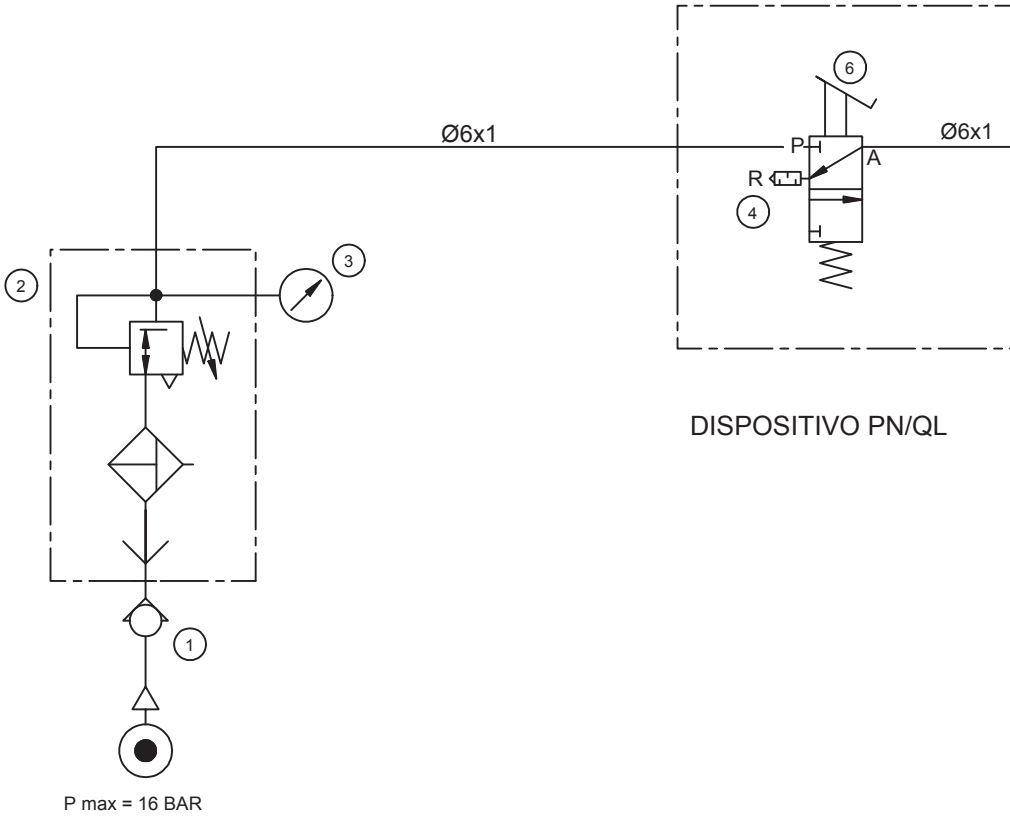
19



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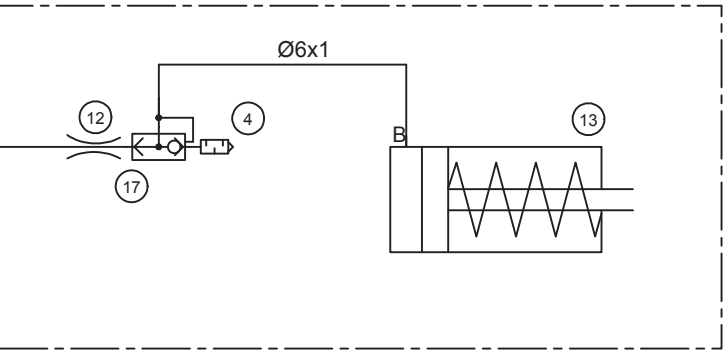

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