1297-M054-01

RWB380.3DTECB

INSTRUCTION MANUAL

For spare parts drawings refer to "LIST OF COMPONENTS" section.

• For any further information please contact your local dealer.
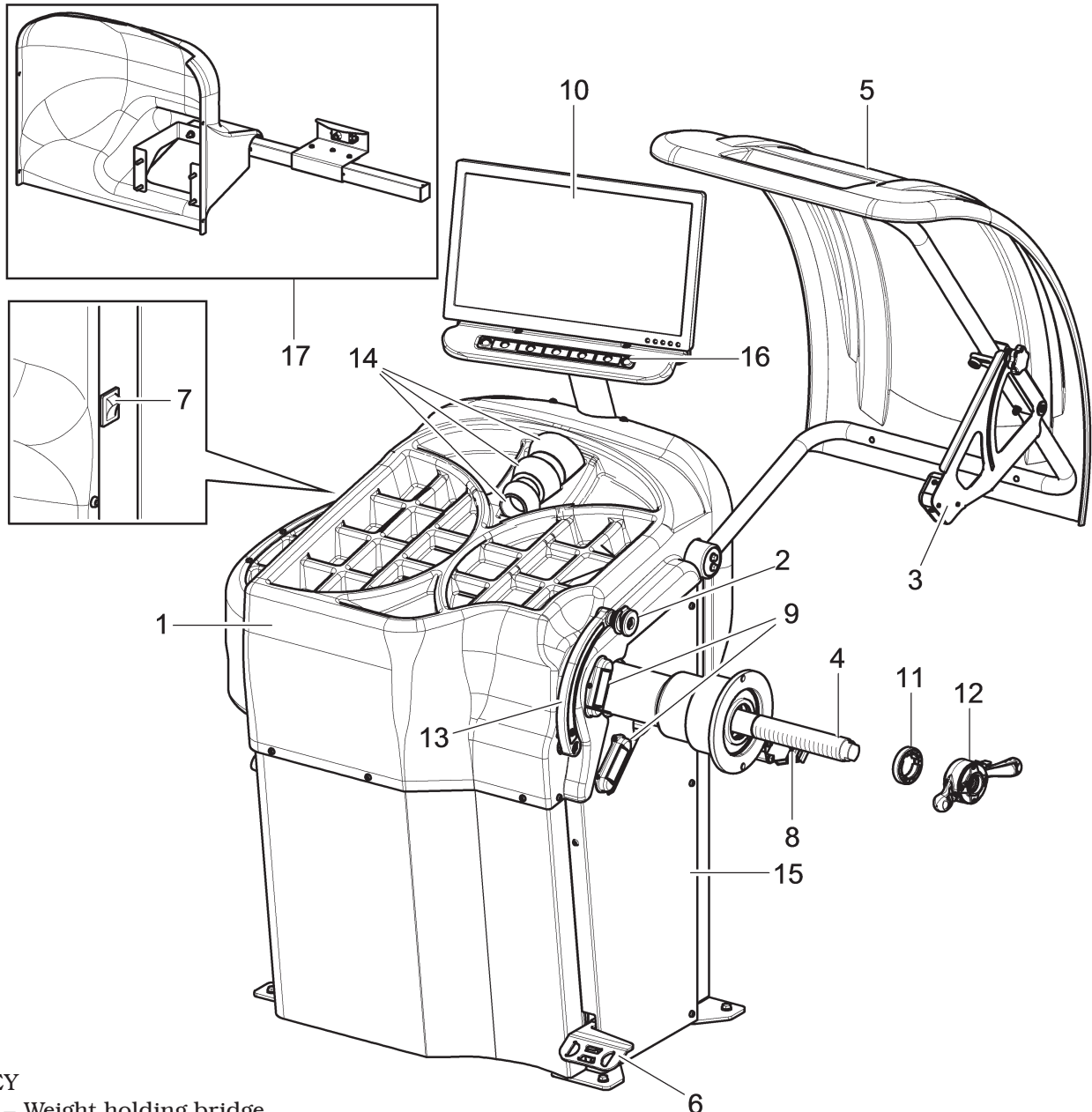
CO11823

1297-M054-01 - Rev. n. 01 (10/2021)

SUMMARY

Fig. 1

KEY
1 – Weight holding bridge
2 – Weight fitting pliers
3 – Ultrasound sensor
4 – Threaded mandrel
5 – Protection guard
6 – Pedal brake
7 – Main switch
8 – Laser sensor
9 – Led light unit
10 – Monitor
11 – Pressure ring
12 – Rapid ring nut
13 – Distance/diameter caliper unit
14 – Cones
15 – Lateral guard
16 – 7-keys keyboard
17 – Tyre outer side electronic RUN-OUT measuring device (optional)

SYMBOLS USED IN THE MANUAL

Symbols	Description	Symbols	Description
	Read instruction manual.		Mandatory. Operations or jobs to be performed compulsorily.
	Wear work gloves.		Danger! Be particularly careful.
	Wear work shoes.		Move with fork lift truck or pallet truck.
	Wear safety goggles.		Lift from above.
	Warning. Be particularly careful (possible material damages).		Attention: never lift the machine by means of the mandrel.
	Note. Indication and/or useful information.		Danger! Laser presence.

INFORMATION PLATE LOCATION TABLE

VS999923190

VS99990758

VS999912940

*

VS999922780

VS999923200

VS999923190

VS999916311

VS99990114
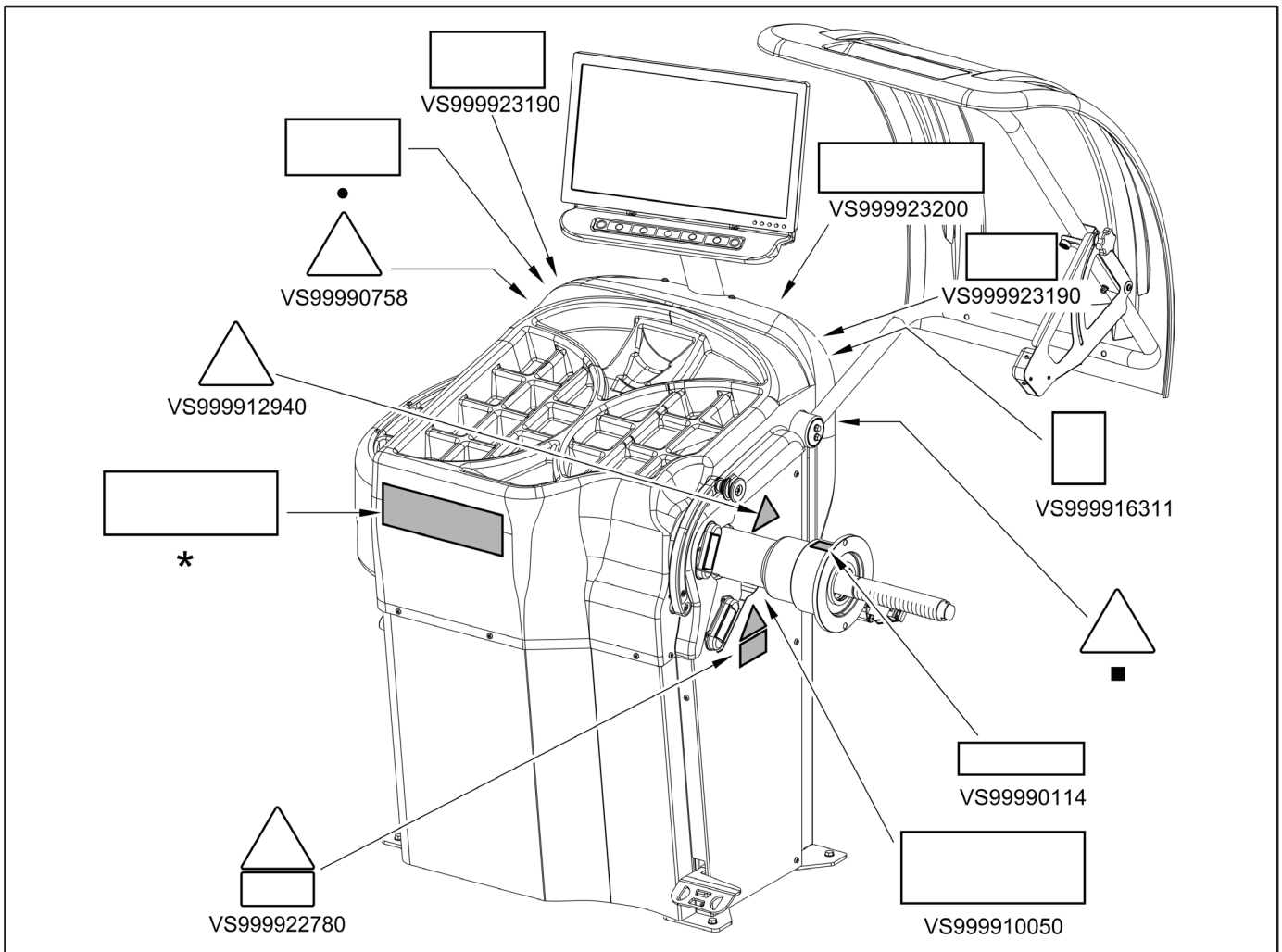
VS999910050

Code numbers of plates	
VS99990114	*Arrow plate*
VS99990758	*Electricity danger plate*
VS999910050	*Protection device use plate*
VS999912940	*Lifting plate*
VS999916311	*Rubbish skip label*
VS999922780	*Laser aperture plate*
VS999923160	*Prop 65 Attention plate*
VS999923190	*Laser classification class 1 plate*
VS999923200	*Laser certification plate*
*	*Machine nameplate*
•	*Serial number plate*
▪	*110V 60 Hz 1 Ph voltage label*

IF ONE OR MORE PLATES DISAPPEAR FROM THE MACHINE OR BECOMES DIFFICULT TO READ. REPLACE IT AND QUOTE ITS/THEIR CODE NUMBER/S WHEN REORDERING.

SOME OF THE PICTURES AND/
OR DISPLAY SCREEN PAGES
PRESENT IN THIS MANUAL HAVE
BEEN OBTAINED FROM PICTURES
OF PROTOTYPES, THEREFORE
THE STANDARD PRODUCTION MA-
CHINES AND ACCESSORIES CAN
BE DIFFERENT IN SOME COMPO-
NENTS/DISPLAY SCREEN PAGES.

1.0 GENERAL INTRODUCTION

**This manual is an integral part of the product and
must be retained for the whole operating life of the
machine.**
Carefully study the warnings and instructions con-
tained in this manual. It contains important instruc-
tions regarding **FUNCTIONING, SAFE USE and
MAINTENANCE.**

KEEP THE MANUAL IN A KNOWN,
EASILY ACCESSIBLE PLACE FOR
ALL ACCESSORY OPERATORS
TO CONSULT IT WHENEVER IN
DOUBT.

THE MANUFACTURER DISCLAIMS
ALL RESPONSIBILITY FOR ANY
DAMAGE OCCURRED WHEN THE
INDICATIONS GIVEN IN THIS
MANUAL ARE NOT RESPECTED:
AS A MATTER OF FACT, THE NON-
COMPLIANCE WITH SUCH INDI-
CATIONS MIGHT LEAD TO EVEN
SERIOUS DANGERS.

1.1 Introduction

Thank you for preferring this wheel balancer. We feel
sure you will not regret your decision.
This machine has been designed for use in profes-
sional workshops and stands out for its reliability
and easy, safe and rapid operation. With just a small
degree of maintenance and care, this wheel balancer
will give you many years of trouble-free service and
lots of satisfaction.

2.0 INTENDED USE

The machines described in this manual and their
different versions, are wheels balancing machines for
car and light transport, projected to be used exclu-
sively to cancel out, or at least reduce to acceptable
limits the vibrations of the wheels, by fitting coun-
terweights of suitable size and in specific positions
to the same wheels that are not correctly balanced.

THIS MACHINE MUST BE USED
STRICTLY FOR THE INTENDED
PURPOSE IT WAS DESIGNED FOR
(AS INDICATED IN THIS MANUAL).

THE MANUFACTURER CANNOT
BE HELD RESPONSIBLE FOR ANY
DAMAGE CAUSED BY IMPROPER,
ERRONEOUS, OR UNACCEPTABLE
USE.

AN INTENSIVE USE OF THE EQUIP-
MENT IN INDUSTRIAL ENVIRON-
MENT IS NOT RECOMMENDED.

2.1 Training of personnel

**The machine may be operated only by suitably
trained and authorized personnel.**

Given the complexity of the operations necessary to
manage the machine and to carry out the operations
safely and efficiently, the personnel must be trained
in such a way that they learn all the information
necessary to operate the machine as intended by the
manufacturer.

A CAREFUL READING OF THIS
INSTRUCTION MANUAL FOR
USE AND MAINTENANCE AND A
SHORT PERIOD OF TRAINING
WITH SKILLED PERSONNEL CAN
BE AN ENOUGH PREVENTIVE
PREPARATION.

3.0 SAFETY DEVICES

> **PERIODICALLY, AT LEAST MONTHLY, CHECK THE INTEGRITY AND THE FUNCTIONALITY OF THE SAFETY AND PROTECTION DEVICES ON THE MACHINE.**

- **Master switch positioned on machine side**

  Its function is to disconnect machine electric supply.

- **Protection guard**

  Its function is to protect the operator from possible projections of materials on the wheel during its spin. Wheel spinning is normally prevented if the wheel protection guard is raised (open). When the protection guard is open, this interrupts the circuit that triggers the motor and automatic start is prevented, including in the case of an error.

  Press [STOP] stop key to stop wheel rotation in emergency conditions.

- **Laser safety**

  This is a Class I/1 (with Class II/2 embedded) laser product which, during normal operation, does not permit human access to laser radiation in excess of Class I/1. This product complies with 21CFR1040.10/.11 and IEC EN60825. The system is fully interlocked to prevent accidental access to laser radiation. Any attempt to defeat the safety interlock elements of this product is a violation of Safety Standards which this product complies with, and the protection provided by the product may be impaired.

> **USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.**

APERTURE
Side of product nearest port (see "Plates location table").
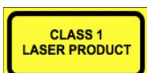
CLASSIFICATION
Rear of product (see "Plates location table").
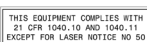
CERTIFICATION
Rear of product (see "Plates location table").

3.1 Residual risks

The machine was subjected to a complete analysis of risks according to reference standard EN ISO 12100. Risks are as reduced as possible in relation with technology and product functionality.

Possible residual risks have been emphasized through pictorial representations and warnings which placing is indicated in " PLATE POSITIONING TABLE" at page 6.

> **THIS DEVICE IS EQUIPPED WITH A LASER, A TOOL THAT USES LASER BEAMS, PROPERLY INTERFACED WITH THE SOFTWARE THE DEVICE IS EQUIPPED WITH. IT ENSURES PRECISION MEASUREMENTS AND INDICATIONS OF THE SHAPE AND SIZE OF THE WHEEL RIM.**
>
> **THIS DEVICE IS EQUIPPED WITH A CLASS 1 LASER PRODUCT.**
>
> **WARNING AND INFORMATION PLATES HAVE BEEN APPLIED OUTSIDE THE DEVICE (AS ILLUSTRATED BELOW), IN ORDER TO INDICATE THE PRESENCE AND EMPLOYMENT OF LASER MEASURING INSTRUMENTS.**
>
> **DO NOT STARE THE LASER BEAM DIRECTLY AT CLOSE RANGE WHILE THE EQUIPMENT IS OPERATING.**

LASER APERTURE

CLASS 1 LASER PRODUCT

THIS EQUIPMENT COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR LASER NOTICE NO 50

4.0 GENERAL SAFETY RULES

- Any tampering with or modification to the machine not previously authorized by the manufacturer exempts the latter from all responsibility for damage caused by or derived from said actions.

- Removing of or tampering with the safety devices or with the warning signals placed on the machine leads to serious dangers and represents a transgression of European safety rules.

- Use of the machine is only permitted in places free from **explosion** or **fire** hazard and in **dry places under cover**.

- Original spare parts and accessories should be used.

> **THE MANUFACTURER CANNOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY IMPROPER, ERRONEOUS, OR UNACCEPTABLE USE.**

- Installation must be conducted only by qualified personnel exactly according to the instructions that are given below.

- Ensure that there are no dangerous situations during the machine operating manoeuvres. Immediately stop the machine if it miss-functions and contact the assistance service of an authorized dealer.

- In emergency situations and before carrying out any maintenance or repairs, disconnect all supplies to the machine by using the main switch, placed on the machine itself, and unplugging the power supply.

- The machine electrical supply system must be equipped with an appropriate earthing, to which the yellow-green machine protection wire must be connected.

- Ensure that the work area around the machine is free of potentially dangerous objects and that there is no oil since this could damage the tyre. Oil on the floor is also a potential danger for the operator.

- UNDER NO CIRCUMSTANCES must the machine be used to spin anything but vehicle wheels. Bad locking can cause rotating parts to come loose, with potential damage to the machine and anything in the vicinity and injury to the operator.

> **OPERATORS MUST WEAR SUITABLE WORK CLOTHES, PROTECTIVE GLASSES AND GLOVES, AGAINST THE DANGER FROM THE SPRAYING OF DANGEROUS DUST, AND POSSIBLY LOWER BACK SUPPORTS FOR THE LIFTING OF HEAVY PARTS. DANGLING OBJECTS LIKE BRACELETS MUST NOT BE WORN, AND LONG HAIR MUST BE TIED UP. FOOTWEAR SHOULD BE ADEQUATE FOR THE TYPE OF OPERATIONS TO BE CARRIED OUT.**

- The machine handles and operating grips must be kept clean and free from oil.

- The workshop must be kept clean and dry. Make sure that the working premises are properly lit.
  The machine can be operated by a single operator. Unauthorized personnel must remain outside the working area, as shown in **Fig. 3.**
  Avoid any hazardous situations. Do not use air-operated or electrical equipment when the shop is damp or the floor slippery and do not expose such tools to atmospheric agents.

- When operating and servicing this machine, carefully follow all applicable safety and accident-prevention precautions.
  The machine must not be operated by untrained personnel.

> **WHEN USING THE MODELS WITH WHEEL PNEUMATIC CLAMPING, DURING MANDREL OPENING/ CLOSING OPERATIONS, BE EXTREMELY CAREFUL AND KEEP YOUR HANDS OR OTHER PARTS OF YOUR BODY AWAY FROM THE MOVING MANDREL.**

5.0 PACKING AND MOBILIZATION FOR TRANSPORT

HAVE THE MACHINE HANDLED BY SKILLED PERSONNEL ONLY.
THE LIFTING EQUIPMENT MUST WITHSTAND A MINIMUM RATED LOAD EQUAL TO THE WEIGHT OF THE PACKED MACHINE (SEE PARAGRAPH "TECHNICAL SPECIFICATIONS").

The machine is packed partially assembled.
Movement must be by pallet-lift or fork-lift trolley.
The fork lifting points are indicated on the packing.

Fig. 2
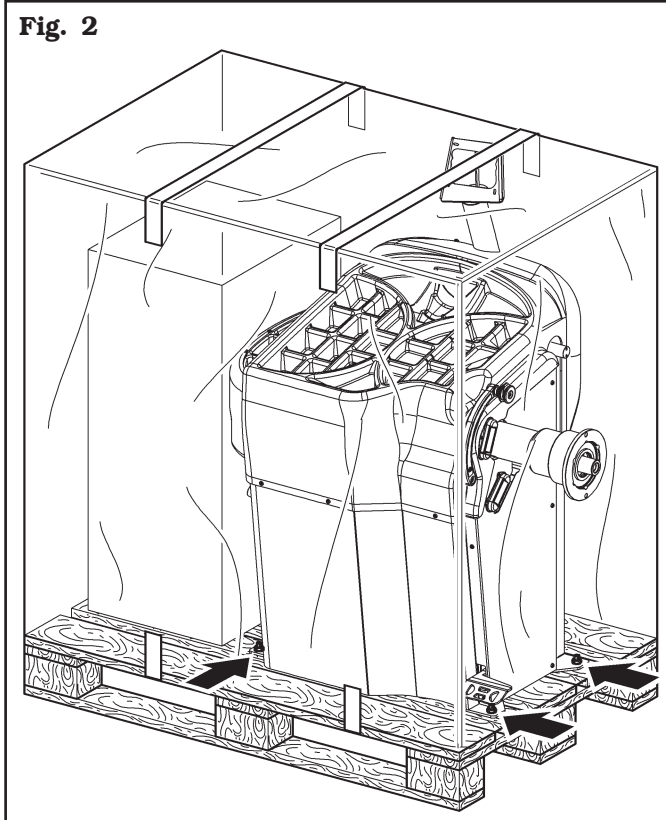
6.0 UNPACKING

DURING UNPACKING, ALWAYS WEAR GLOVES TO PREVENT ANY INJURY CAUSED BY CONTACT WITH PACKAGING MATERIAL (NAILS, ETC.).

The cardboard box is supported with plastic strapping. Cut the strapping with suitable scissors. Use a small knife to cut along the lateral axis of the box and open it like a fan.

It is also possible to unnail the cardboard box from the pallet it is fixed to. After removing the packing, and in the case of the machine packed fully assembled, check that the machine is complete and that there is no visible damage.

If in doubt **do not use the machine** and refer to professionally qualified personnel (to the seller).

The packing (plastic bags, expanded polystyrene, nails, screws, timber, etc.) should not be left within reach of children since it is potentially dangerous. These materials should be deposited in the relevant collection points if they are pollutants or non biodegradable.

THE BOX CONTAINING THE FIXTURES IS CONTAINED IN THE WRAPPING. DO NOT THROW IT AWAY WITH THE PACKING.

7.0 MOBILIZATION

THE LIFTING EQUIPMENT MUST WITHSTAND A MINIMUM RATED LOAD EQUAL TO THE WEIGHT OF THE MACHINE (SEE PARAGRAPH TECHNICAL SPECIFICATIONS). DO NOT ALLOW THE LIFTED MACHINE TO SWING.

NEVER LIFT THE MACHINE BY MEANS OF THE MANDREL.

If the machine has to be moved from its normal work post, the movement must be conducted following the instructions listed below.

- Protect the exposed corners with suitable material (Pluribol/cardboard).
- Do not use metallic cables for lifting.
- Make sure that the electricity supply is not connected.
- Place again the machine onto the original pallet with whom it was delivered.
- Use transpallet or fork-lift for handling.

8.0 WORKING ENVIRONMENT CONDITIONS

The machine must be operated under proper conditions as follows:

- temperature: 0° + 45° C
- relative humidity: 30 - 90% (dew-free)
- atmospheric pressure: 860 - 1060 hPa (mbar).

The use of the machine in ambient conditions other than those specified above is only allowed after prior agreement with and approval of the manufacturer.

8.1 *Working area*

Fig. 3
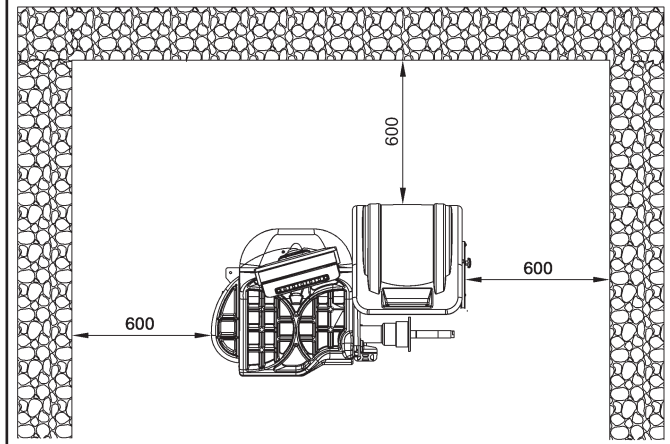
USE THE MACHINE IN A DRY AND ADEQUATELY LIT PLACE, POSSIBLY INDOORS OR ANYWAY IN A ROOFED AREA, THIS PLACE MUST BE IN COMPLIANCE WITH APPLICABLE SAFETY REGULATIONS.

The location of the machine requires a usable space as indicated in **Fig. 3**. The positioning of the machine must be according to the distances shown. From the control position the operator is able to observe all the machine and surrounding area. He must prevent unauthorized personnel or objects that could be dangerous from entering the area.

The machine must be fixed on a flat floor surface, preferably of cement or tiled. Avoid yielding or irregular surfaces.

The base floor must be able to support the loads transmitted during operation.

This surface must have a capacity load of at least 500 kg/m².

The depth of the solid floor must be sufficient to guarantee that the anchoring bolts hold.

8.2 *Lighting*

The machine does not require its own lighting for normal working operations. However, it must be used in an adequately lit environment.

In case of poor lighting use lamps having total power of 800/1200 Watt.

9.0 MACHINE ASSEMBLY

After having freed the various components from the packing check that they are complete, and that there are no anomalies, then comply with the following instructions for the assembly of the components making use of the attached series of illustrations.

9.1 Anchoring system

The packed machine is fixed to the support pallet through the holes prearranged on the frame. Such holes can be used also to fix the machine to the ground, through floor anchor small blocks (excluded from supply). Before carrying out the definiti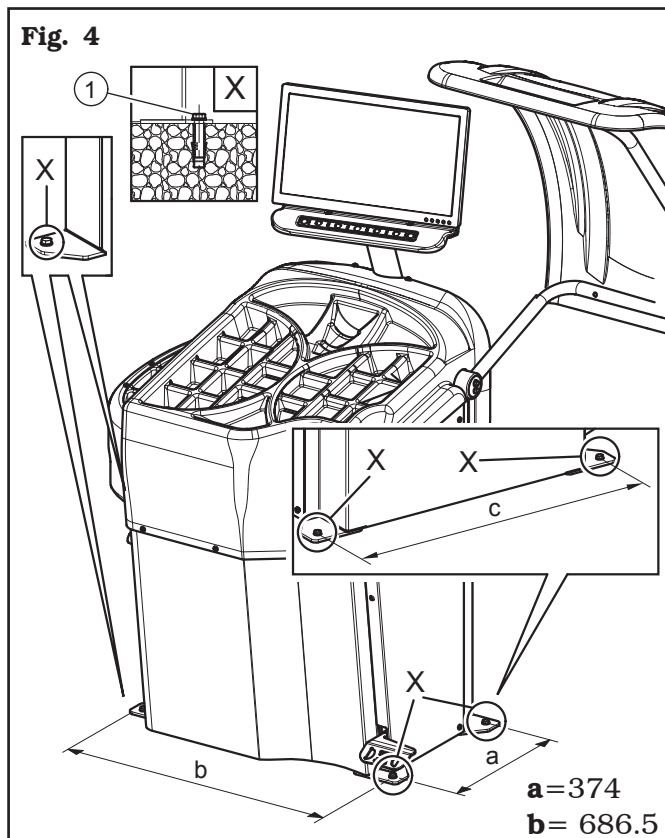ve fixing, check that all the anchor points are laid down flat and correctly in contact with the fixing surface itself. If not so, insert shimming profiles between the machine and the fixing lower surface, as indicated in **Fig. 4**.

> **!** **IN CASE OF WHEEL WEIGHING MORE THAN 30 KG, IT IS COMPULSORY TO FIX TO THE GROUND BY MEANS OF SCREW ANCHORS.**

Fig. 4

a=374
b= 686.5

- Execute 4 holes with 10 mm diameter on the floor by the holes on the bottom floor;
- insert the small blocks (excluded from supply) into the holes;
- fix the machine to the ground with 4 M8x80 mm screws (excluded from supply) (**Fig. 4 ref. 1**) (or with 4 8x80 mm stud bolts (excluded from supply)). Tighten the screws with an approximate tightening torque of 70 Nm.

9.2 Fixtures contained in the packing

The packing case contains also the fixtures box. Check that all the parts listed below are there (see **Fig. 5**).

Code	Description	N.
GAR345	Rapid ring nut + pressure ring	1
GAR111	Cones + protection cup	1
GAR112	D.95-124 cone	1
VS129571492	Manual external data gauge	1
VS1300A004	Weight pliers	1
VS999072	Carriages counterweight	1

Fig. 5
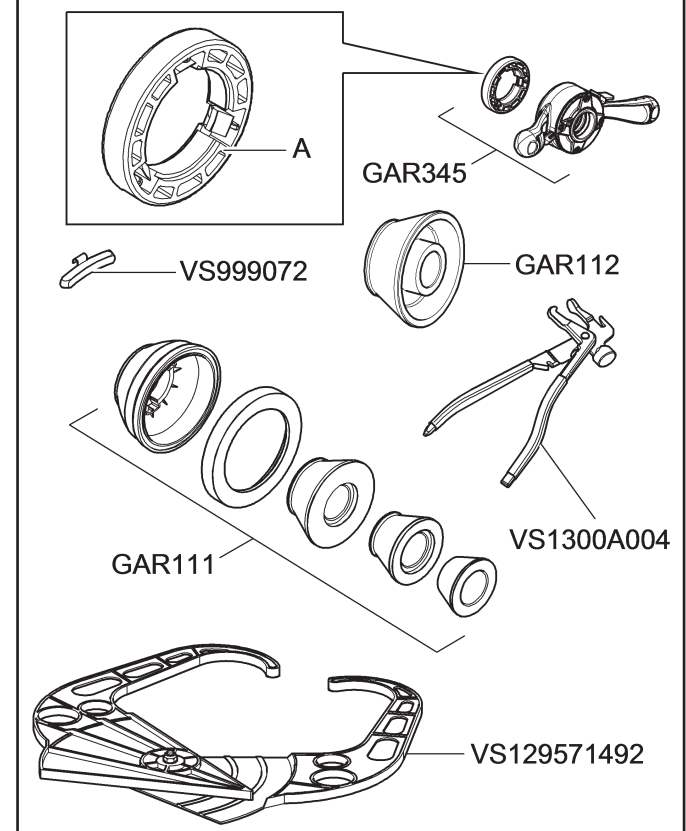
> **!** **THE PRESSURE RING (FIG. 5 REF. A) MUST BE MOUNTED WITH THE TEETH OR DISCHARGE SIDE TOWARDS THE RING-NUT (SEE FIG. 5).**

9.3   Assembly procedures

9.3.1 Fitting the mandrel on the flange

Screw the mandrel with an Allen wrench (**Fig. 6 ref. 1**) on the flange (**Fig. 6 ref. 2**).

Fig. 6
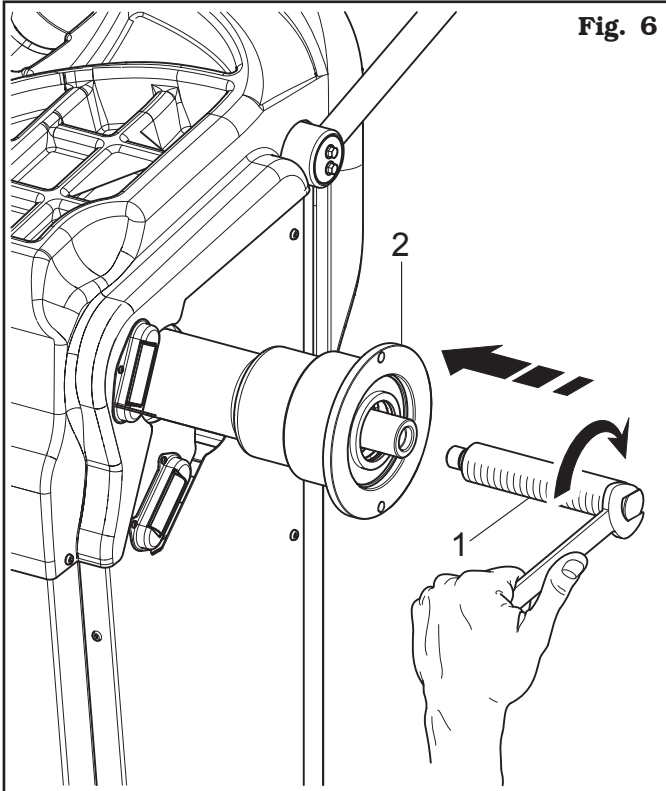
9.3.2 Fitting the protection guard

1. Mount the protection guard (**Fig. 7 ref. 1**) to the support (**Fig. 7 ref. 2**) using the screws (**Fig. 7 ref. 3**), interposing the Belleville washers (**Fig. 7 ref. 4**) and the tab washers (**Fig. 7 ref. 5 - 6**).

2. Tighten the screws (**Fig. 7 ref. 3**) in order to make the guard (**Fig. 7 ref. 1**) lift or lower without bumping against the limit switch. Carry out the adjustment so that it's possible to manually guide the guard both during closing and opening.

> **DURING GUARD'S ASSEMBLY, PAY ATTENTION TO THE MICRO PLACED INSIDE THE MACHINE.**

3. Connect the ultrasound sensor cable (**Fig. 7 ref. 7**) of the automatic width measuring device (**Fig. 7 ref. 9**) to the pre-arranged connector (**Fig. 7 ref. 8**).

4. At the end of the connection, introduce the connectors in wheel cover slot (**Fig. 7 ref. 10**), as illustrated in **Fig. 7**. Eventually, fasten connector's cable (**Fig. 7 ref. 8**) with a clamp (**Fig. 7 ref. 11**).

Fig. 7
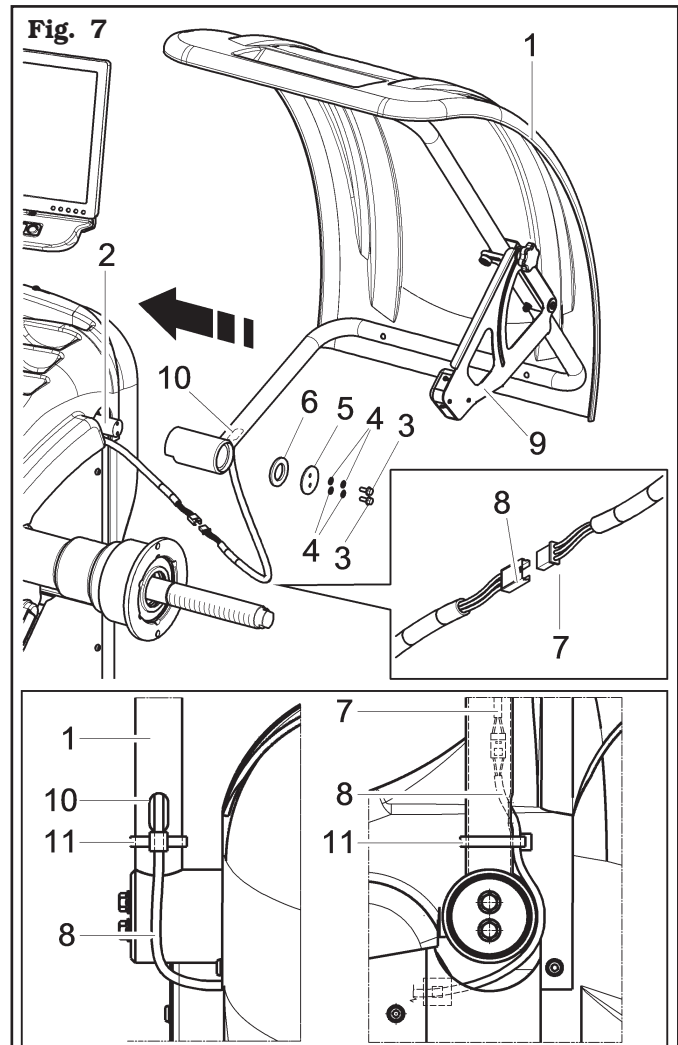
9.3.3 *Monitor fitting*

1. Fit the monitor support plate (**Fig. 8 ref. 1**) to the monitor support (**Fig. 8 ref. 2**) using the washers (**Fig. 8 ref. 3**) and the issued screws (**Fig. 8 ref. 4**).

   Fit the monitor (**Fig. 8 ref. 5**) and the keyboard guard (**Fig. 8 ref. 6**) to the plate (**Fig. 8 ref. 1**) using the washers (**Fig. 8 ref. 7**), screws (**Fig. 8 ref. 8**) and (**Fig. 8 ref. 9**) on issue.

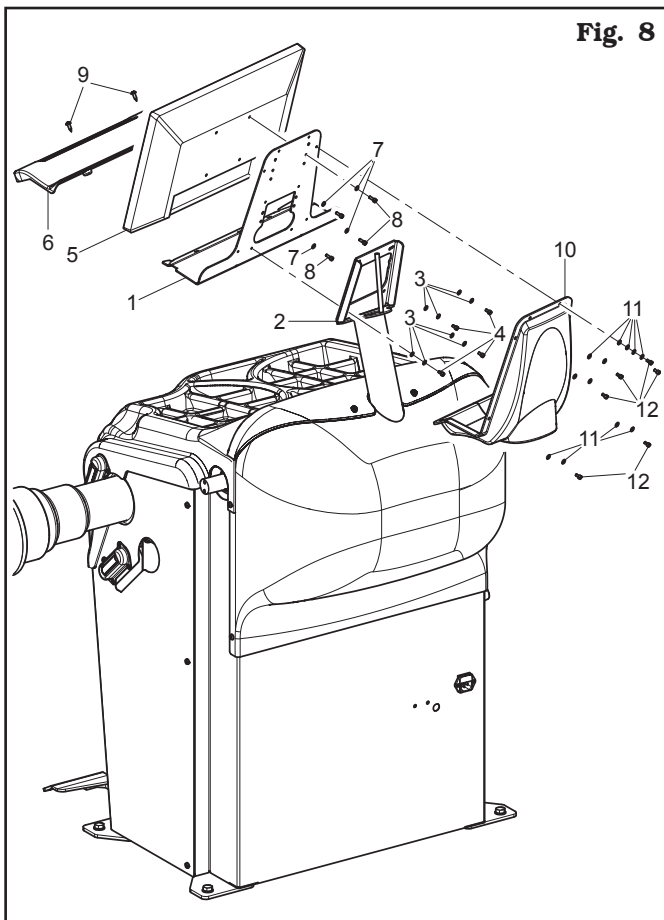   Mount the guard (**Fig. 8 ref. 10**) to the monitor support plate (**Fig. 8 ref. 1**) with the washers (**Fig. 8 ref. 11**) and the screws (**Fig. 8 ref. 12**) supplied.

Fig. 8

10.0 ELECTRICAL CONNECTIONS

⚠ **EVEN THE TINIEST PROCEDURE OF AN ELECTRICAL NATURE MUST BE CARRIED OUT BY PROFESSIONALLY QUALIFIED STAFF.**

⚠ **BEFORE CONNECTING THE MACHINE MAKE SURE THAT:**
- **THE MAIN POWER RATING CORRESPONDS TO THE MACHINE RATING AS SHOWN ON THE MACHINE PLATE;**
- **ALL MAIN POWER COMPONENTS ARE IN GOOD CONDITION;**
- **THE ELECTRICAL SYSTEM IS PROPERLY GROUNDED (GROUND WIRE MUST BE THE SAME CROSS-SECTION AREA AS THE LARGEST POWER SUPPLY CABLES OR GREATER);**
- **MAKE SURE THAT THE ELECTRICAL SYSTEM FEATURES A CUTOUT WITH DIFFERENTIAL PROTECTION SET AT 30 mA.**

Connect the machine up to the mains by means of the 3-pole plug provided (110V single - 1ph - 60Hz).

If the plug provided is not suitable for the wall socket, fit a plug that complies with local and applicable regulations. This operation must be performed by expert and professional personnel.

⚠ **FIT A TYPE-APPROVED (AS REPORTED BEFORE) PLUG TO THE MACHINE CABLE (THE GROUND WIRE IS YELLOW/GREEN AND MUST NEVER BE CONNECTED TO ONE OF THE TWO PHASE LEADS).**

⚠ **MAKE SURE THAT THE ELECTRICAL SYSTEM IS COMPATIBLE WITH THE RATED POWER ABSORPTION SPECIFIED IN THIS MANUAL AND APT TO ENSURE THAT VOLTAGE DROP UNDER FULL LOAD WILL NOT EXCEED 4% OF RATED VOLTAGE (10% UPON START-UP).**

(i) FAILURE TO OBSERVE THE ABOVE INSTRUCTIONS WILL IMMEDIATELY INVALIDATE THE WARRANTY.

10.1 Electrical checks

(!) BEFORE STARTING UP THE WHEEL-BALANCER, BE SURE TO BECOME FAMILIAR WITH THE LOCATION AND OPERATION OF ALL CONTROLS AND CHECK THEIR PROPER OPERATION (SEE PAR. "CONTROLS").

(⚠) CARRY OUT A DAILY CHECK OF MAINTAINED-TYPE CONTROLS CORRECT FUNCTIONING, BEFORE STARTING MACHINE OPERATION.

Once the plug/socket connection has been made, turn on the machine using the master switch (**Fig. 9 ref. 1**).

Fig. 9
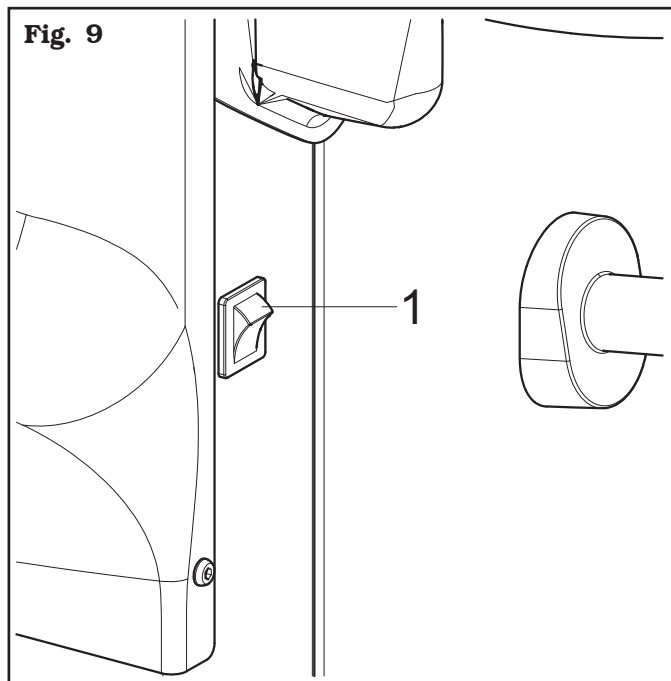
11.0 FITTING THE WHEEL ON THE MANDREL

(✋)

To achieve perfect balancing, the wheel must be carefully and properly fitted on the mandrel. Imperfect centring will inevitably cause unbalances.

(⚠) MOST IMPORTANT IS THAT ORIGINAL CONES AND ACCESSORIES ARE USED MADE SPECIFICALLY FOR USE ON THE WHEEL BALANCER.

Wheel fitting using the cones provided is illustrated below. For alternative fittings, using optional accessories, refer to the special instructions provided separately.

11.1 Wheel assembly

1. Remove any type of foreign body from the wheel (**Fig. 10 ref. 3**): pre-existing weights, stones and mud, and make sure the mandrel (**Fig. 10 ref. 1**) and the rim centring area are clean before fitting the wheel on the mandrel.

2. Carefully choose the cone (**Fig. 10 ref. 2**) most suitable for the wheel to be balanced. These accessories must be selected according to the shape of the rim. Position the wheel (**Fig. 10 ref. 3**), fitting the cone (**Fig. 10 ref. 2**) on the mandrel (**Fig. 10 ref. 1**): be careful (otherwise this could seize) until this rests against the support flange (**Fig. 10 ref. 4**).

3. Fit the wheel with the inner side of the rim towards the wheel balancer and against the cone.

Fig. 10
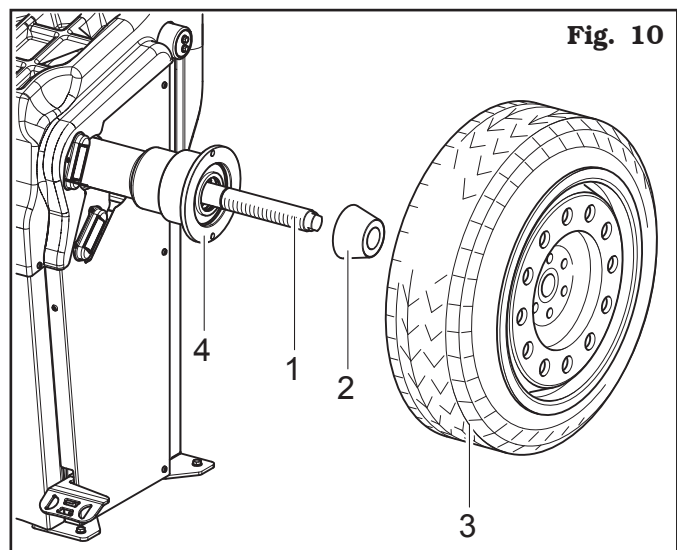
4. Fit the protection cap (**Fig. 11 ref. 1**) in the locknut (**Fig. 11 ref. 2**) and fasten against the wheel.
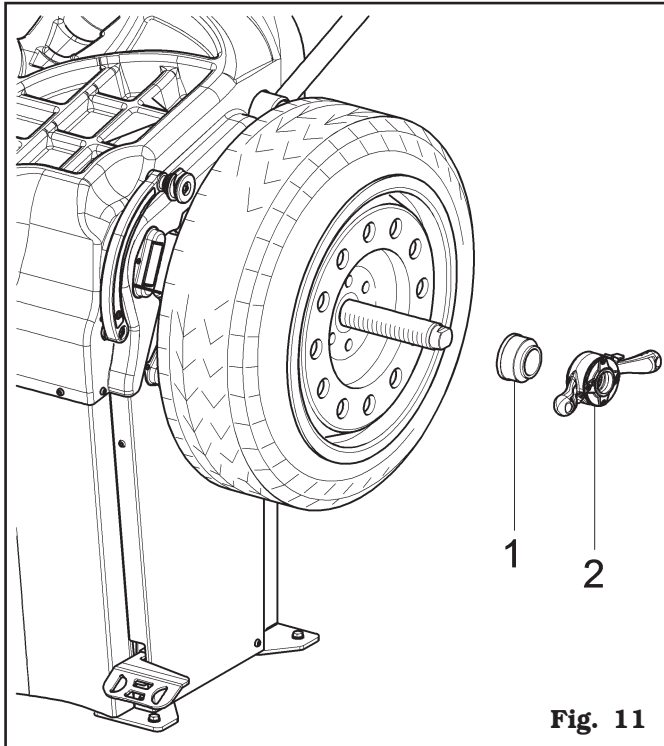

Fig. 11

Some aluminium wheels, with very high centring, must be fitted with the cone outside the wheel.

5. Clean the mandrel (**Fig. 12 ref. 1**) before fitting the wheel.
6. Fit the wheel (**Fig. 12 ref. 3**) with the inside of the rim towards the wheel balancer, until the wheel is up against the support flange (**Fig. 12 ref. 2**).
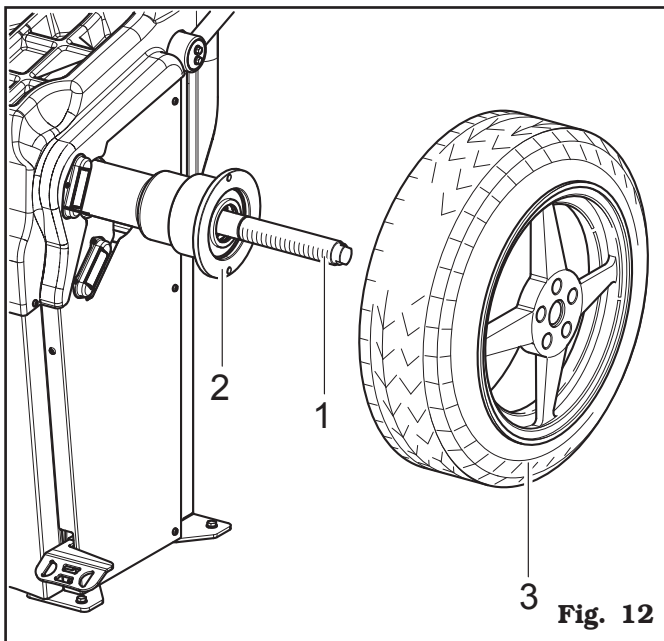

Fig. 12

7. Fit the cone (**Fig. 13 ref. 3**) with the narrowest part turned towards the wheel.
8. Fit the pressure ring (**Fig. 13 ref. 1**) in the nut (**Fig. 13 ref. 2**) and fasten the cone (**Fig. 13 ref. 3**).
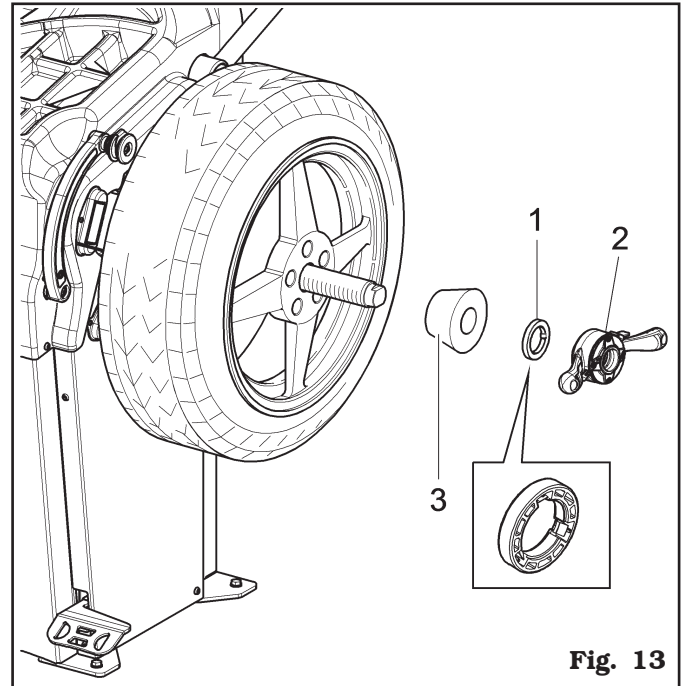

Fig. 13

> **!** THE PRESSURE RING (FIG. 13 REF. 1) MUST BE MOUNTED WITH THE TEETH SIDE TOWARDS THE RING NUT (FIG. 13 REF. 2).

11.2 Ultrasound sensor support adjustment

Ultrasound sensor support (**Fig. 14-15 ref. 1**) must be used in the "fully-lowered" position, as shown in **Fig. 14**.

However with wheels with great diameter, you can set it higher so that the wheel can be mounted easily onto the mandrel (see **Fig. 15**).

In order to carry out the adjustment, just loosen the handwheel (**Fig. 15 ref. 2**) and place the support in the wished position.

At the end tighten the handwheel (**Fig. 15 ref. 2**).

Fig. 14

Fig. 15

For what concerns exceptionally large wheels, sensor support may be moved outside the loading space of the same wheel, so that it can be easily mounted onto the mandrel:

- slacken the handwheels (**Fig. 16 ref. 1**) fixed to the protection guard's tubular and open sensor support (**Fig. 16 ref. 2**) by making it slide in the slot (**Fig. 16 ref. 3**).

- slacken handwheel (**Fig. 16 ref. 4**)and raise sensor support (**Fig. 16 ref. 5**) then move it to the position required, as indicated in **Fig. 17 ref. 1**.

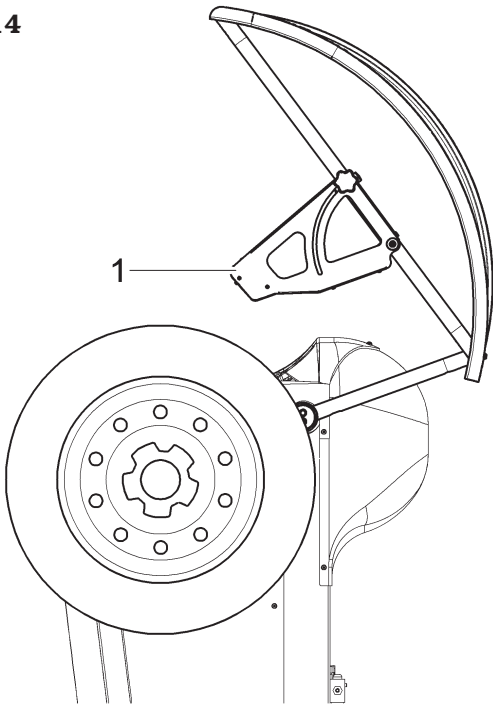At the end tighten the handwheel (**Fig. 17 ref. 2**).

Fig. 16

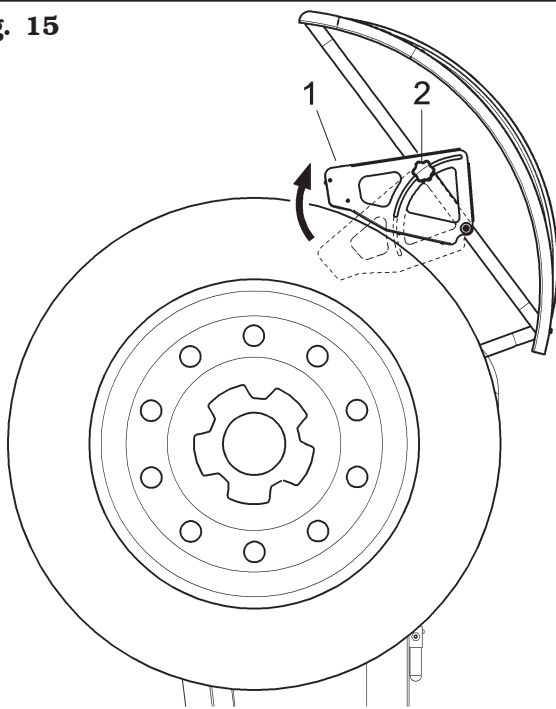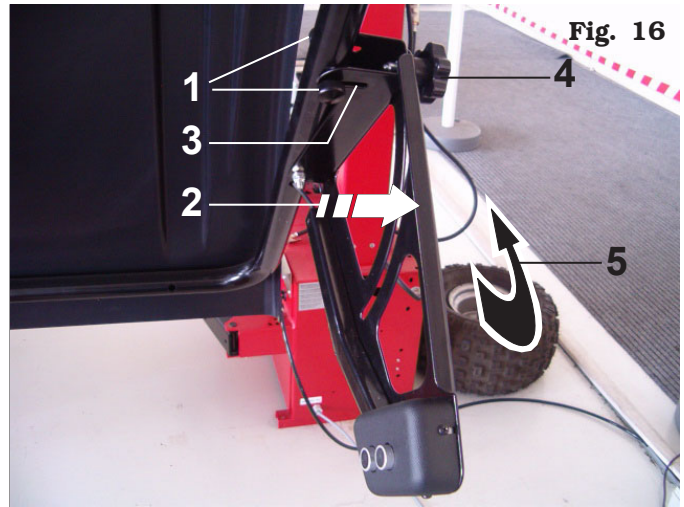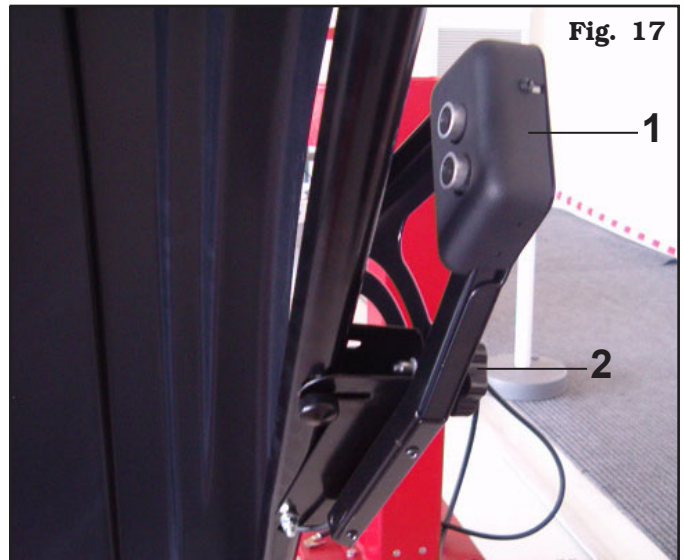Fig. 17

11.3 Correct positioning of tyre outer side Run-out detection device (Optional)

To make sure that the rim/tyre "Run-out" detection is correct, place the device as shown in **Fig. 18**: place the measurement sensor so that it is turned to the tyre centre line.
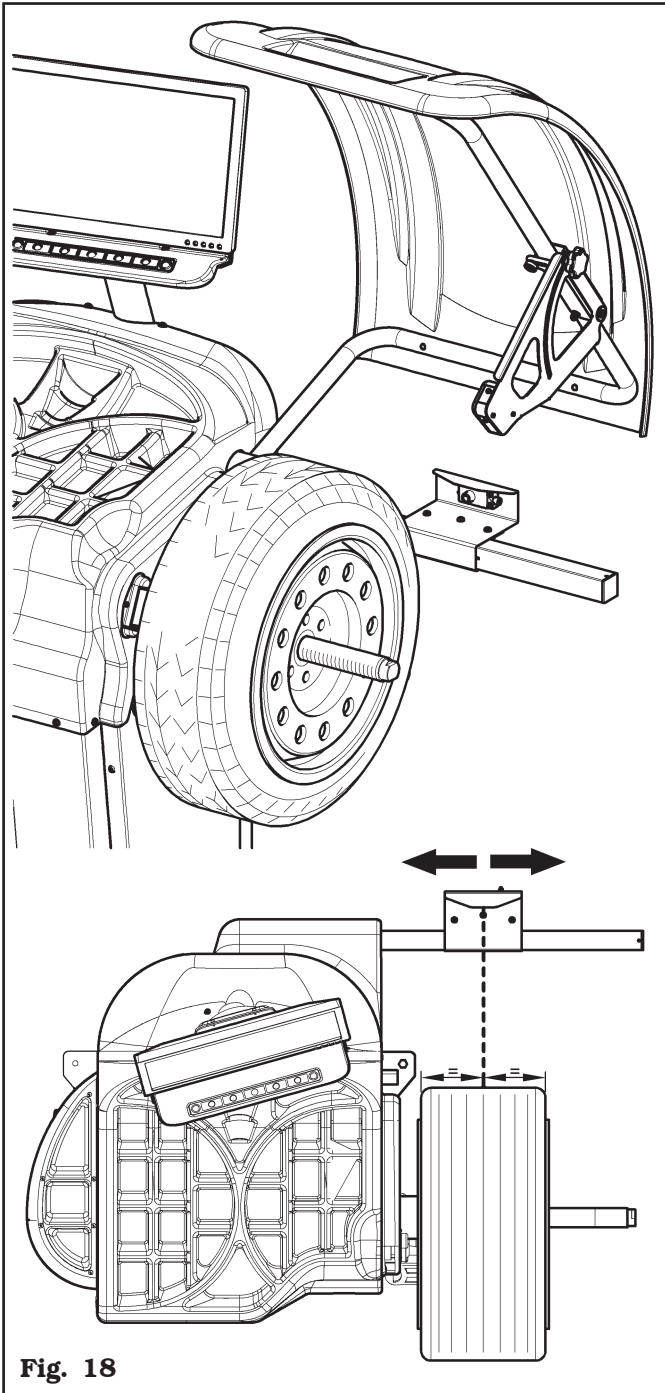
Fig. 18

12.0 CONTROL PANEL

The wheel balancers are equipped with a control panel equipped with a keyboard to interact/operate the controls presented in graphical form on the monitor.
On the monitor are displayed all the instructions for the correct wheel balancing, for example indicating where the operator shall fit adhesive or clip weights and the balancing mode and/or option used, as well as correct wheel rotation for inner/outer weights positioning.

> **ⓘ** TO INTERACT/OPERATE THE CONTROLS GRAPHICALLY DEPICTED ON THE MONITOR, PRESS THE CORRESPONDING KEY ON THE LOWER KEYBOARD.

Fig. 19

KEY
1 – Monitor
2 – Function push button (red)
3 – Function push button (yellow)
4 – Function push button (grey)
5 – Function push button (blue)
6 – Function push button (green)
7 – Previous page push button
8 – Next page/print push button
9 – Push button panel (keyboard with 7 keys)

13.0 WHEEL BALANCING

13.1 Switching the machine on and off

Turn the main switch, on the side of the equipment, to "ON" (**Fig. 9 ref. 1**).

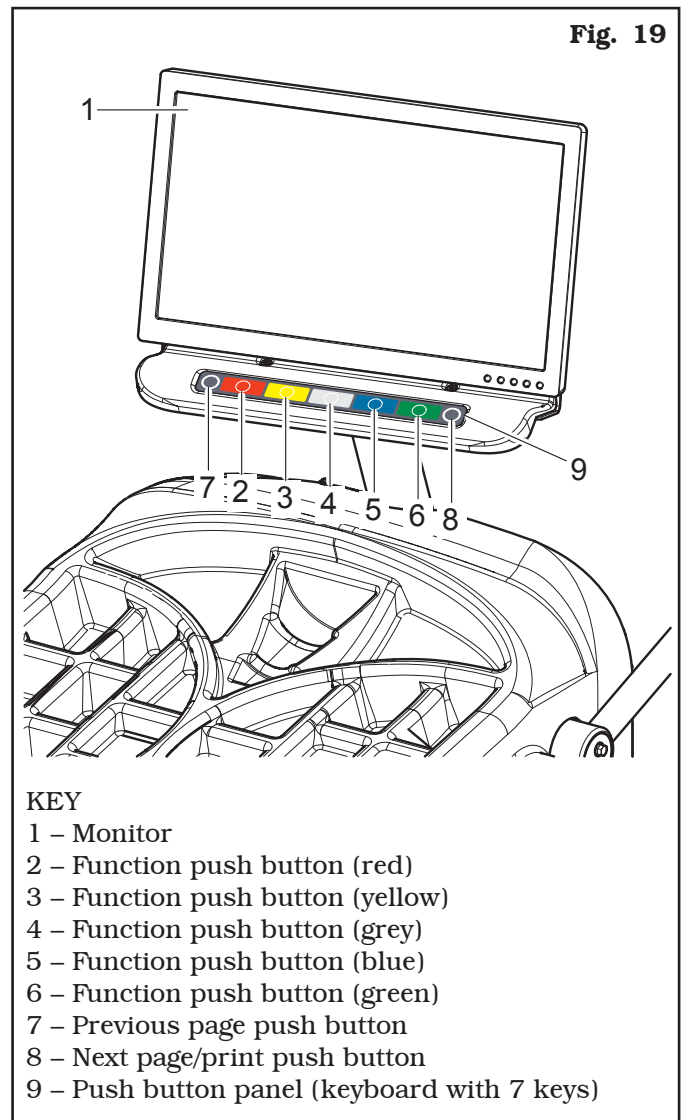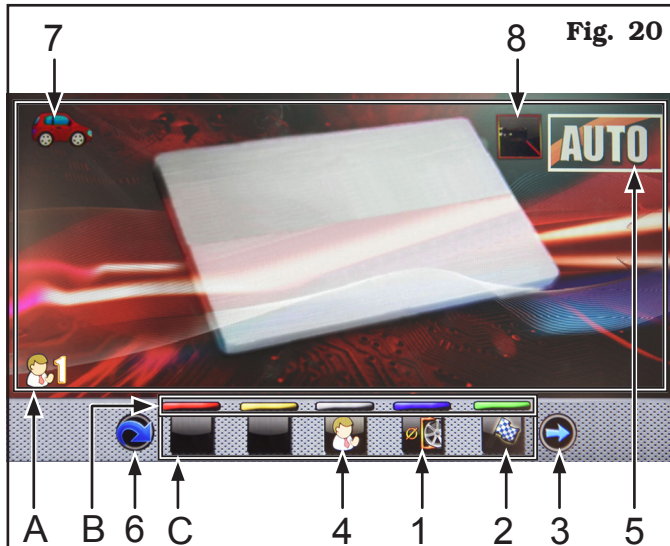Wait a few seconds until the complete loading of the operational program. The equipment is ready to operate when the main screen "Home" appears on the monitor.

> ℹ️ **ALL SCREEN PAGES LISTED IN THE MANUAL, UNLESS OTHERWISE SPECIFIED, DISPLAY THE MEASUREMENTS EXPRESSED IN GRAMS.**


Fig. 20

KEY
A – Displaying operations/information area
B – Colours for identification of the buttons to be used
C – Function icons
1 – Programs and measurements acquisition buttons
2 – Wheel spin push button
3 – Go to next page
4 – User management (if enabled) (user management is not enabled on machine delivery)
5 – Automatic scanning program display area (AUTO/DYN/ALU-S)
6 – Push button for scanning program selection (AUTO/DYN/ALU-S)
7 – Working mode selected (AUTO/MOTO)
8 – Laser working mode

At the bottom of the main screen page and of each screen page described below, there will be coloured rectangles (**Fig. 20 ref. B**) located above function identification icons (**Fig. 20 ref. C**). These functions are activated by pressing the appropriate coloured button on the push-button panel (**Fig. 19 ref. 9**).

By pressing button (**Fig. 20 ref. 3**) a second page is displayed, where You can access "User/Technical assistance" and "Run-out" Menu (see **Fig. 21A**).

Fig. 21A
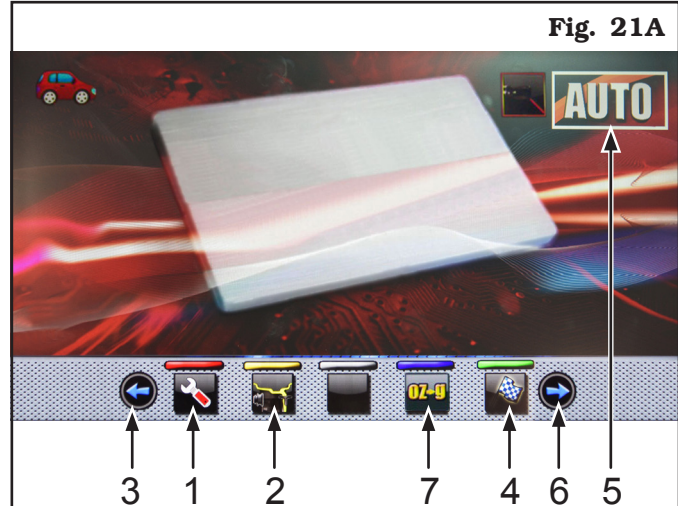
KEY
1 – User Menu/assistance Menu
2 – Run-out Menu
3 – Return to previous page
4 – Wheel spin push button
5 – Automatic scanning program display area (AUTO/DYN/ALU-S)
6 – Go to next page
7 – Unit of measurement modification.
The machine is set to perform the weight measurements in ounces. Press the button 🔲 to set the measurement in grams and on the screen will be displayed the icon 🔲.

Press the button 🔲 to set the measurement in ounces and on the screen will be displayed the icon 🔲.

By pressing button (**Fig. 20 ref. 6**) the third page is displayed, where You can select the type of laser working mode (see **Fig. 21B**).

Fig. 21B

KEY
1 – Push button for selection of laser working mode
2 – Return to previous page

By pressing button (**Fig. 21B ref. 1**) You can cyclically select the following laser working modes:

 Wheel automatic scanning and weight fitting through laser

 Weight fitting through laser

 Laser disabled

In order to turn off the machine, simply press the "OFF" switch (**Fig. 9 ref. 1**).

> **i** WHEN THE EQUIPMENT IS TURNED OFF LOSES ALL THE MEASUREMENTS AND THE STORED DATA (SIZE, SPINS, USERS, ETC …).

13.2 Balancing programs setting

The setting of the balancing programs can be performed in three ways:

- through the machine automatic detection system (rapid setting);

- through "Measurements acquisition" screen page, appearing when the button is pressed (**Fig. 20 ref. 1**) from the main page "Home";

- through the distance-diameter caliper arm (if enabled).

The setting modes are completely different even if they allow to reach the same result (but with different times).

13.2.1 Use of the machine automatic system

The use of the machine automatic system allows the detection of all the wheel measurements and allows to choose the balancing program in a few seconds.
From the "Home" page (**Fig. 20**) (with wheel correctly mounted on the mandrel):

- close the protection guard;

- the wheel starts rotating. At the end of the cycle, the wheel stops in place to apply the first weight.

> **i** THE MACHINE HAS DETERMINED AUTOMATICALLY ALL THE WHEEL MEASUREMENTS AND THE BALANCING PROGRAM THAT SUITS THE BEST THE SCANNED WHEEL.

> **ℹ** IN CASE THE PROGRAM "ALU-S OR "DYN" IS SELECTED FROM "HOME" PAGE THROUGH THE PUSH BUTTON (FIG. 20 REF. 6), THE MACHINE DISPLAYS (AFTER THE WHEEL SCAN) THE WEIGHTS FITTING POINTS, DEPENDING ON THE TYPE OF PROGRAM SELECTED.

If the operator thinks that the program and the weights fitting points are correct, just proceed as described in Par. 13.4.

> **ℹ** ON THE MARKET THERE CAN BE PARTICULARLY COMPLEX TYPES OF RIMS SHAPES AND/ OR PROFILES SO THE MACHINE COULD SUGGEST BALANCING PROGRAMS OR POINTS FOR POSITIONING THE WEIGHTS BEHIND THE SPOKES THAT DO NOT SUIT THE ACTUAL SHAPE OF THE RIM ITSELF. IN THIS CASE PLACE MANUALLY THE LASER TO REASSIGN CORRECTLY THE BALANCING LEVELS AND THE WEIGHTS FITTING POINTS.

In case the operator wants to modify the weight fitting point "wheel outer side", proceed as described hereafter:

- from the page for wheel outer side weight fitting (**Fig. 22**) press "programs and measurements acquisition" push button (**Fig. 22 ref. 1**).

**Fig. 22**
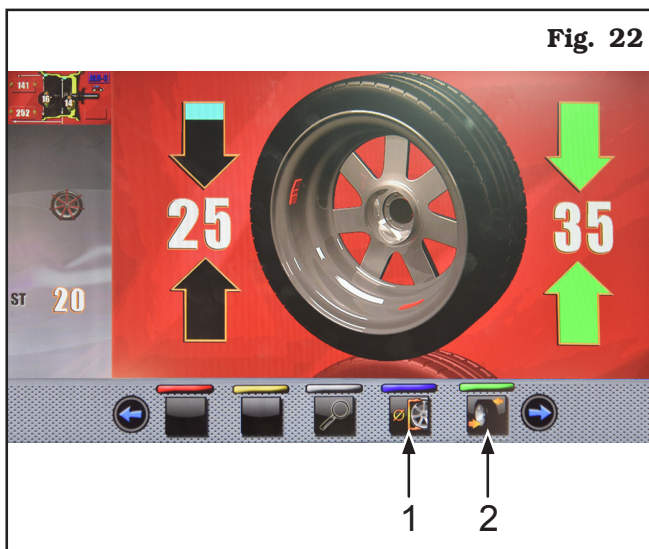
The following screen page is displayed:

Fig. 23

KEY

1 – Decrease of the weight positioning distance from the machine
2 – Increase of the weight positioning distance from the machine
3 – Distance of the point where fitting the adhesive weight on the outside of the wheel (modifiable field coloured in blue)
4 – Rim diameter of the point where fitting the adhesive weight on the outside of the wheel (modifiable field coloured in blue)

> **ℹ** THE PUSH BUTTONS (1-2) ARE ENABLED ONLY FOR THE FITTING OF THE ADHESIVE WEIGHTS.
> NOT ENABLED IN CASE OF CLIP WEIGHTS.

- Press the arrows or to modify the fitting of the adhesive weight on the wheel outer side (movement of the laser pointer) (blue-highlighted-values). Once the wished position is reached press . When the push button is pressed, the blue highlighted values are updated with the new set position.

> **ℹ** DURING THE MODIFICATION OF THE WEIGHTS FITTING POINT (LASER POINTER MOVEMENT) THE BLUE-HIGHLIGHTED-VALUES ARE NOT UPDATED UNTIL THE BUTTON IS PRESSED .

- Press the ![R] push button to perform the recalculation of the value of the weight to be fitted in the new set position. The screen page in (**Fig. 22**) is displayed again with the updated values.

- In case the operator wants to modify the weight fitting point "wheel outer side", simply press the push button (**Fig. 22 ref. 2**). The wheel, the laser and the screen page are pre-arranged for the application of such weight.
The following screen page is displayed:

Fig. 24

1

- Press the "programs and measurements acquisition" button (**Fig. 24 ref. 1**). The following screen page is displayed:

Fig. 25

1   2

KEY
1 – Distance of the point where fitting the adhesive weight on the inside of the wheel (modifiable field coloured in blue)
2 – Rim diameter of the point where fitting the adhesive weight on the inside of the wheel (modifiable field coloured in blue)

- Proceed as described before for the modification of the weight fitting point "wheel outer side".

- At the end press push button ![snow] and ![R].

> **IN CASE OF BALANCING OF WHEELS HAVING THE SAME CHARACTERISTICS AND DIMENSION SIMPLY:**
> - **GO TO SCREEN PAGE (FIG. 23 OR 23) (SCREEN PAGE DISPLAYING THE MEASUREMENTS ACQUIRED BY THE MACHINE/ MODIFIED BY THE OPERATOR),**
> - **FIT THE WHEELS TO BALANCE ON THE MACHINE,**
> - **START THE DETECTION OF THE UNBALANCE BY CLOSING THE GUARD.**
> **IN THIS WAY THE MACHINE WILL USE THE WEIGHT FITTING MEASUREMENTS IN FIG. 23 OR 23 FOR ALL THE WHEELS TO BE BALANCED.**
> **IF THE MEASUREMENT NEED TO BE RESET, GO TO "HOME" PAGE AND PERFORM THE AUTOMATIC SPIN AS DESCRIBED IN PAR. 13.2.1.**

ⓘ IN CASE THE "WEIGHTS HID-DEN BEHIND SPOKES" OPTION IS ENABLED (AUTOMATIC), THE WHEEL STOPS WITH THE LASER INDICATING THE POSITION OF THE 1ST WEIGHT TO FIT AND ON MONITOR IS DISPLAYED THE NEXT SCREEN PAGE:


AFTER THE FITTING OF THE 1ST WEIGHT BEHIND THE SPOKE,

SIMPLY PRESS THE ▢ BUTTON TO POSITION THE WHEEL AND THE LASER FOR THE FITTING OF THE 2ND WEIGHT.

AT THE END JUST PRESS ▢ TO RETURN TO THE PREVIOUS SCREEN PAGE AND FOR BEING ABLE TO FIT THE FOLLOWING WEIGHT ON THE WHEEL INNER SIDE (POSITION INDICATED BY THE LASER AGAIN) (SEE FIG. 36). AT THE END PERFORM A TESTING SPIN BY CLOSING THE PROTECTION GUARD.

- In case the operator wants to modify the balancing program, push button (**Fig. 20 ref. 6**) can be pressed. AUTO/DYN/ALU-S programs will cyclically alternate each time the button is pressed.
  If the operator wishes to select a further balancing program, from "HOME page", he just has to press push button (**Fig. 20 ref. 1**) to display "Measurements acquisition" page.
  After having made sure scanning program display area (**Fig. 20 ref. 5**) is blue, press push button

 ▢ to display the following program selection screen page:

Use the arrows ▢ and/or ▢ to select the wished mode (blue). In this mode you can select the 11 standard programs (listed above) and special programs (PAX360, PAX420, PAX460, PAX700).

At the end press push button ▢.

- After the balancing program modification, simply

  press ▢ to carry out the recalculation of the weights and the new fitting points.

Proceed as described in Para 13.4.

• **Procedure for electronic automatic RUN-OUT (rim inner side with laser).**
  The electronic RUN-OUT measuring device is useful to check if the rim has some imperfections.

❗ MAKE SURE THE ICON ▢ IN THE OPTIONS MENU IS ENABLED (SEE PAR. 14.1).

In order to display the eccentricity graph/wheel imperfection screen page, proceed as described hereafter:
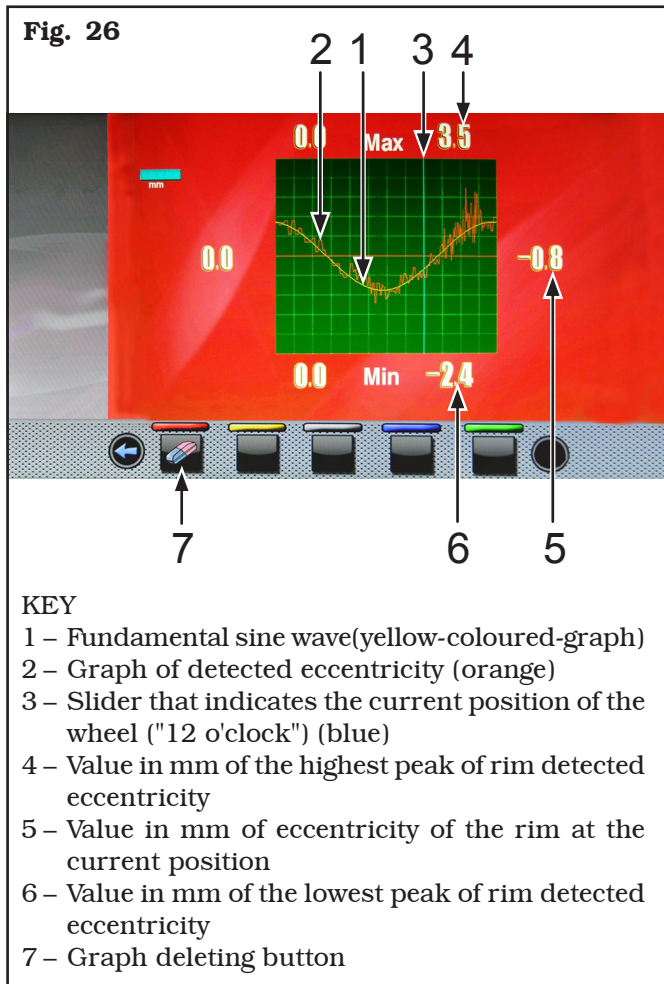
- perform the wheel spin by closing the guard.
  After executing the spin of the tyre with any kind of program, the weights fitting page is displayed.
  Here follows an example of the mentioned page:

By pressing the button [icon] (if on this screen page), it is possible to display the roundness graph reported here as follows.

Fig. 26

KEY
1 – Fundamental sine wave(yellow-coloured-graph)
2 – Graph of detected eccentricity (orange)
3 – Slider that indicates the current position of the wheel ("12 o'clock") (blue)
4 – Value in mm of the highest peak of rim detected eccentricity
5 – Value in mm of eccentricity of the rim at the current position
6 – Value in mm of the lowest peak of rim detected eccentricity
7 – Graph deleting button

The orange graph (**Fig. 26 ref. 2**) represents exactly the geometric shape of the rim. The more the circle is round and linear, the more the graph is flat, unlike the more the circle has deficiencies, the more the graph is large.
You can follow the eccentricity in the graph by manually turning the rim, the blue-coloured-slider (**Fig. 26 ref. 3**), indicates the position of the rim in "12 o'clock" position.
The three numeric values (**Fig. 26 ref. 4-5-6**), expressed in mm, indicate respectively the highest peak, the eccentricity in the current position and rim minimum peak.
The graph can be erased with push button (**Fig. 26 ref. 7**).

13.2.2 Programs setting through "Measurements acquisition" screen page

From the "Home" page, press the [icon] (**Fig. 20 ref. 1**) button to display "Measurements acquisition" screen page below:

[i] **PRESS PUSH BUTTON** [icon] (**FIG. 20 REF. 1**) **TO DISABLE WHEEL BALANCING SELECTION AUTOMATIC FUNCTIONS, DESCRIBED IN PAR. 13.2.1. TO BE ABLE TO REUSE THE AUTOMATIC FUNCTION TO SELECT THE WHEEL BALANCING PROGRAM, IT IS NECESSARY TO RETURN TO "HOME" PAGE, BY PRESSING THE BUTTON** [icon].

After having made sure scanning program display area

(**Fig. 20 ref. 5**) is blue, press push button [icon] to display the following program selection screen page:

Use the arrows [↓] and/or [→] to select the wished mode (blue). In this mode you can select the 11 standard programs (listed above) and special programs (PAX360, PAX420, PAX460, PAX700).

At the end press push button [ok ✓].

> ℹ **AFTER YOU HAVE SELECTED THE DESIRED PROGRAM, CLOSE THE PROTECTION GUARD TO AUTOMATICALLY DETECT THE MEASURES REQUIRED BY THE PROGRAM.**

> ℹ **DURING THE WHEEL MEASUREMENTS DETECTION, THE MACHINE CARRIES OUT SIMULTANEOUSLY THE UNBALANCE MEASUREMENT.**

13.2.3 Programs setting and measurements through distance-diameter caliper arm (if enabled)

- **Enabling of distance-diameter caliper arm**
  From the "Home" page, press the (**Fig. 20 ref. 3**) button to display the second page (**Fig. 21A**). From the second page, press the (**Fig. 21A ref. 6**) button to display the third page (**Fig. 21B**). From the third page, press the (**Fig. 21B ref. 1**) button to display

  the symbol [ ]. The display of such icon confirms the enabling of the distance/diameter caliper for the detection of the measurements.
  The laser device will no longer detect the measurements of the rim but it will only operate on the adhesive weights positioning.
  Press the button (**Fig. 21B ref. 1**) twice, to display

  the icon [ ]. The laser device will be fully disabled.
  To enable again the laser device, press the (**Fig. 21B**

  ref. 1) button until displaying the symbol [ ].

The use of the distance-diameter caliper arm allows the rapid automatic wheel balancing program and the measures entry.

From page "Home":
- bring into contact the weights fitting gripper with the inner part of the rim (1 contact only) to select the program "STATIC" (see **Fig. 27**).

Fig. 27

> ℹ **REPEATEDLY BRINGING THE GAUGE'S ARM (FIG. 28 REF. 1) IN CONTACT WITH THE MANDREL (FIG. 28 REF. 2), THE PROGRAM WILL CYCLE FROM "STATIC" TO "STATIC 1" TO "STATIC 2" RETURNING THEN AT THE BEGINNING.**
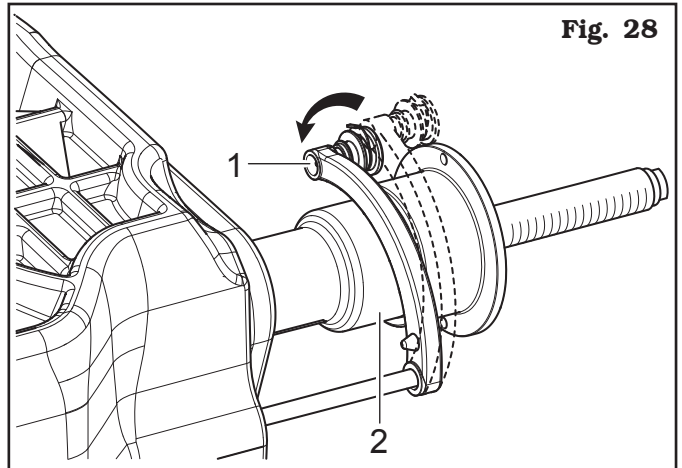

Fig. 28

- bring into contact the weights fitting gripper with the inner part of the rim (2 contact points) (see Fig. **Fig. 27**) to select "ALU-S" program.

> ℹ **REPEATEDLY BRINGING THE CALIPER ARM (FIG. 28 REF. 1) IN CONTACT WITH THE MANDREL (FIG. 28 REF. 2), THE PROGRAM WILL CYCLE FROM "ALU-S" TO "ALU-S1" TO "ALU-S2", RETURNING THEN AT THE BEGINNING.**

ⓘ WHENEVER THE DISTANCE-DI-AMETER CALIPER IS KEPT IN POSITION FOR A FEW SECONDS AGAINST THE RIM (UNTIL THE MACHINE MAKES AN APPROPRI-ATE SOUND NOTIFICATION) , THE POSITION IS STORED AND THE VALUES MEASURED IN THE PRE-ARRANGED FIELDS IN THE SELECTED WHEEL BALANCING PROGRAM ARE LOADED.

- After entering all the required measures, You can spin the wheel by closing the protective guard.

• **Measuring procedure of electronic manual RUN-OUT with distance-diameter caliper arm (function to be enabled - see Par. 14.1 "Options menu").**
The electronic RUN-OUT measuring device is useful to check if the rim has some imperfections. Make

sure icon [icon] in the options menu is enabled (see Par. 14.1).
To access the screen to choose the rim control mode, proceed as follows:

- from the "Home" page, press the button [icon]
(**Fig. 29 re. 1**) and then the button [icon] (see **Fig. 30 ref. 1**).

Fig. 29

1
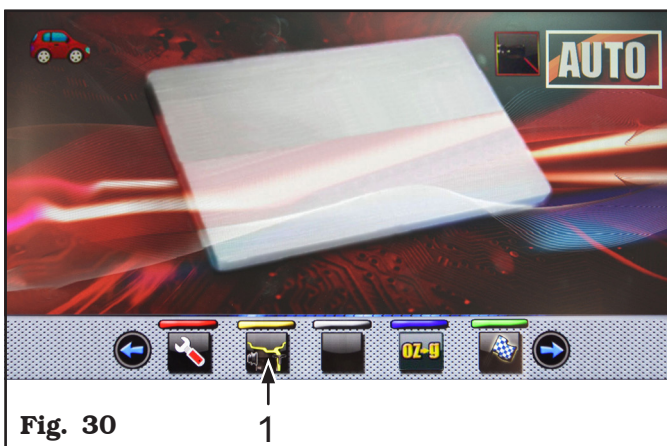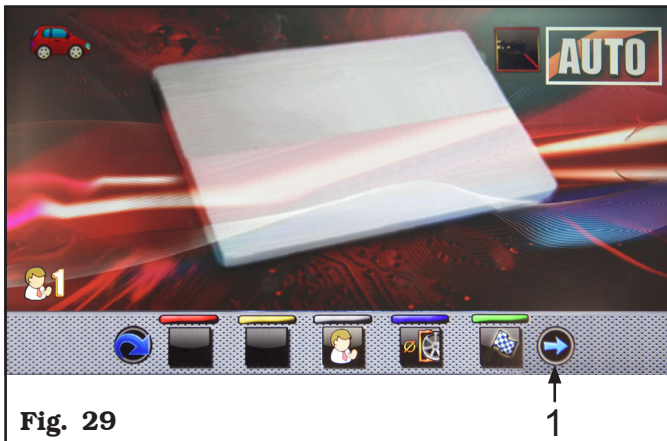
Fig. 30 1
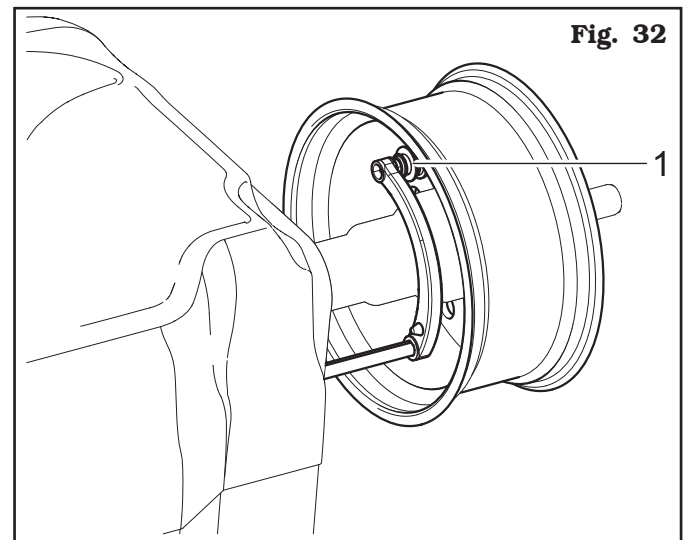
Tyre fault detection (lateral inner side).

From the screen page **Fig. 30** press the button (**Fig. 30 ref. 1**). The screen page below is displayed.
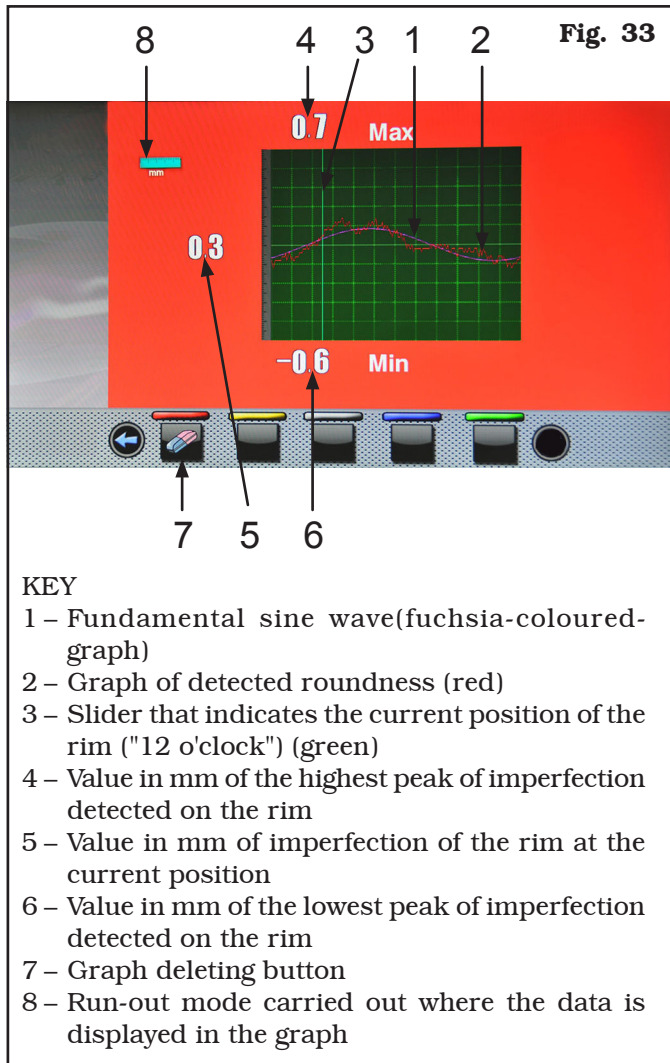
Fig. 31

1
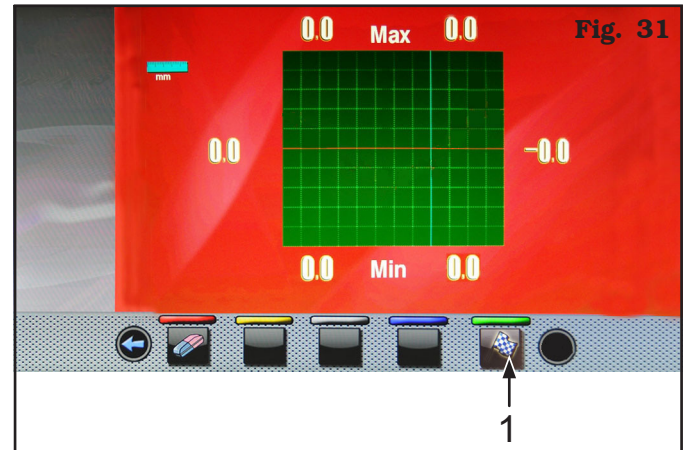
Place the distance-diameter caliper grippers (**Fig. 32 ref. 1**) on the inner side of the rim, as shown in **Fig. 32**.

Press the green button on the monitor [icon] (**Fig. 31 ref. 1**) to start the rim analysis procedure. The circle starts to spin at low speed (30 rpm) and at the end of the measurement the roundness graph appears, as shown in the **Fig. 33**.
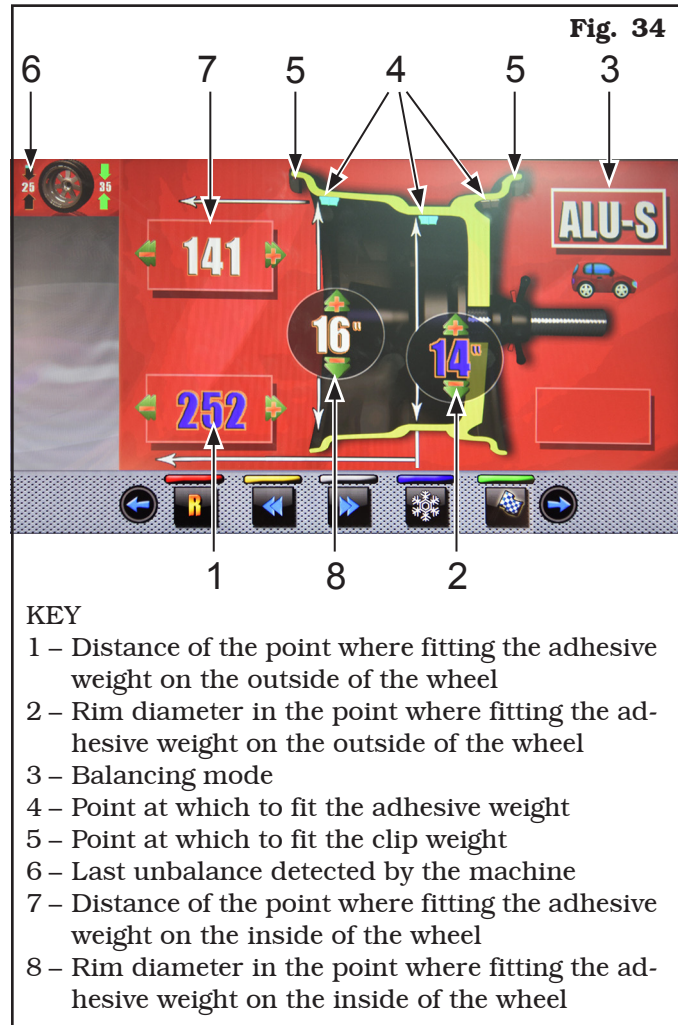
Fig. 32

1

Fig. 33

KEY
1 – Fundamental sine wave(fuchsia-coloured-graph)
2 – Graph of detected roundness (red)
3 – Slider that indicates the current position of the rim ("12 o'clock") (green)
4 – Value in mm of the highest peak of imperfection detected on the rim
5 – Value in mm of imperfection of the rim at the current position
6 – Value in mm of the lowest peak of imperfection detected on the rim
7 – Graph deleting button
8 – Run-out mode carried out where the data is displayed in the graph

The red graph (**Fig. 33 ref. 2**) represents exactly the geometric shape of the rim. The more the circle is round and linear, the more the graph is flat, unlike the more the circle has deficiencies, the more the graph is large.
You can follow the eccentricity in the graph by manually turning the rim, the green-coloured-slider (**Fig. 33 ref. 3**), indicates the position of the rim in "12 o'clock" position.

13.3 Indicative display of points where to detect measures/to fit weight

Depending on the type of program selected,the machine shows on the monitor the guideline points where to apply weights (**Fig. 34 ref. 4-5**).

Fig. 34

KEY
1 – Distance of the point where fitting the adhesive weight on the outside of the wheel
2 – Rim diameter in the point where fitting the adhesive weight on the outside of the wheel
3 – Balancing mode
4 – Point at which to fit the adhesive weight
5 – Point at which to fit the clip weight
6 – Last unbalance detected by the machine
7 – Distance of the point where fitting the adhesive weight on the inside of the wheel
8 – Rim diameter in the point where fitting the adhesive weight on the inside of the wheel

13.3.1 Weights positioning

The monitor displays when it is absolutely necessary that the weight is applied at "12 o'clock" position. Pay particular attention to the content of the weights identification icons since if the following words H 12 are displayed, then the icon corresponding weight has to be applied at "12 o'clock" position (typical of ALU-S1, ALU-S2 programs).

13.4 Wheel balancing screen page description

After executing the spin of the wheel, the monitor displays a series of important information that helps the operator in his operations and subsequent choices.
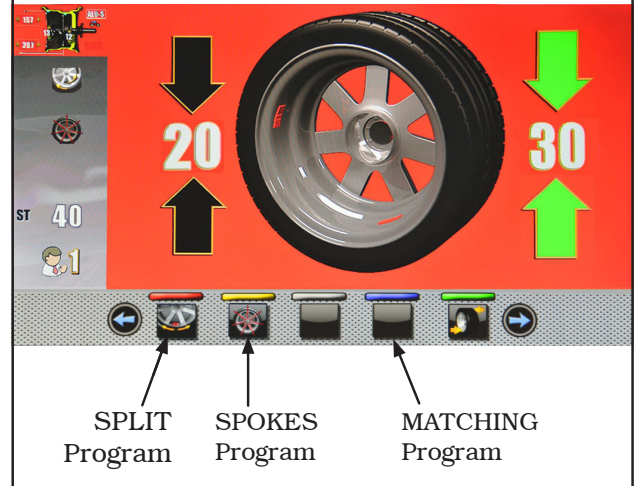
Fig. 35A
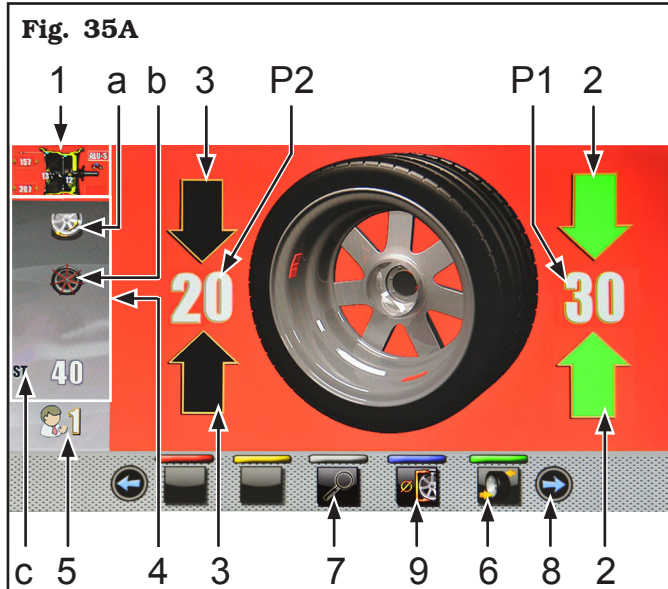
KEY
1 – Measures used by the program to perform the spin and detect the values in P1 - P2
P1 – Weight to be fitted on rim outer side
P2 – Weight to be fitted on rim inner side
2 – Wheel placed to fit the weight on wheel outer side (arrows both green)
3 – Wheel not placed to fit the weight on wheel inner side (blue/black arrows)
4 – Wheel balancing suggestions
4a – MATCHING Program
4b – SPLIT Program (Clip weights program) or SPOKES Program (program with adhesive weights)
4c – STATIC Program (•)
5 – N° user (if selected)
6 – Wheel repositioning button for weights fitting
7 – Display of the weight with the maximum resolution of 1 g / 0,05 oz

7a –Display of the weights in grams

7b –Display of the weights in ounces/grams

8 – By pressing the button you will see the following page where you can select one of the programs suggested by the machine.
9 – Programs and measurements acquisition buttons

(•) If you choose the "STATIC" program, the machine will be set for this program (see Par. 13.5.1), and you can no longer go back to this screen page.

Fig. 35B

SPLIT Program   SPOKES Program   MATCHING Program

i   **IF THE GUARD AND REPOSITIONING FUNCTION ARE DISABLED, ON THE BUTTON (Fig. 35A ref. 6), YOU WILL SEE ICON WHICH ALLOWS THE WHEEL SPIN WITHOUT RETURNING TO THE PREVIOUS PAGE. THE POSITIONING OF THE WHEEL FOR THE APPLICATION OF THE WEIGHTS MUST BE DONE MANUALLY.**

7a–Display of the weights in GRAMS
Set the unit of measurement for weights display to GRAMS (see Par. 14.1 "Options menu").

On the following screen page:

press the button to display the weight with maximum resolution (1g) to be fitted on the wheel, expressed in grams.

The following screen will appear on the monitor:

Press again the button ⬛ to display the approximated weight to be fitted to the wheel, expressed in grams.

7b – Display of the weights in OUNCES/GRAMS
Set the unit of measurement for weights display to OUNCES/GRAMS ⬛ **(see Par. 14.1 "Options menu").**
On the following screen page:

press the button ⬛ to display the weight with maximum resolution (0.05 oz) to be fitted on the wheel, expressed in ounces.

The following screen will appear on the monitor:

Press the button **OZ→g** to set the display of the weights to be fitted on the wheel in grams. The following screen will appear on the monitor:

Press the button ⬛ to display the weight with maximum resolution (1g) to be fitted on the wheel, expressed in grams. The following screen will appear on the monitor:

Press the button **g→OZ** to set the display of the weights to be fitted again in ounces. The following screen will appear on the monitor:

13.4.1 Balancing mode

The machine allows to perform the balancing (adhesive weights fitting) in two different ways:

- using the laser pointer;

- using the distance-diameter caliper arm with weights fitting grippers;

• **Weights fitting with laser pointer**.

> ***i*** ON DELIVERY, THE MACHINE IS CONFIGURED WITH THE CORRESPONDING OPTION SELECTED.

At the end of the spin, on the rim is displayed a laser pointer indicating the exact point where the adhesive weight has to be applied.

> **!** THE ADHESIVE WEIGHT HAS TO BE APPLIED FROM THE POINT HIGHLIGHTED BY THE POINTER TOWARDS THE INSIDE OF THE RIM, AND ITS CENTRE LINE MUST BE RIGHT BY THE SAME POINTER (SEE FIG. 36).
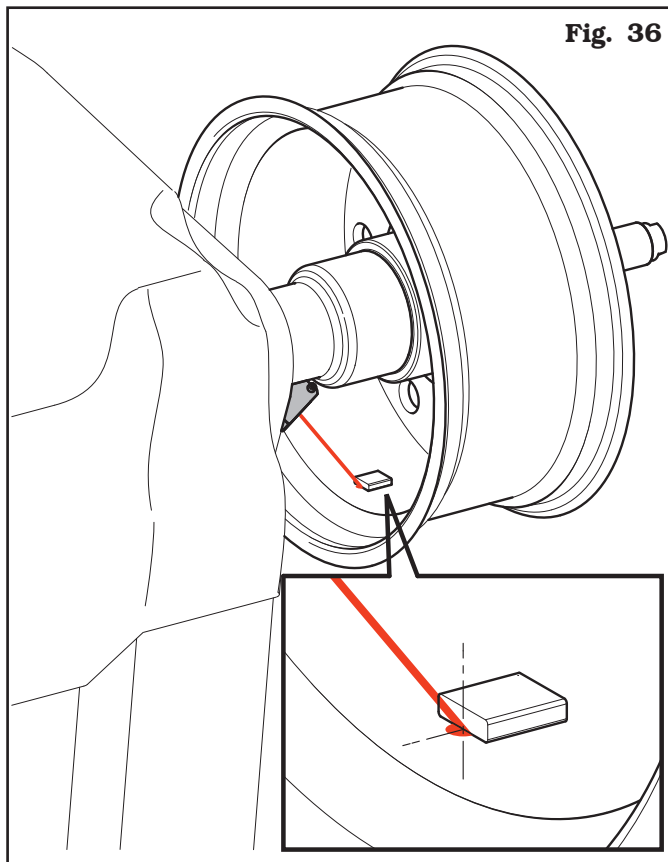
Fig. 36

In case the operator thinks that the point marked by the laser is not correct, you can modify it by proceeding as described hereafter:

- from the page for wheel outer side weight fitting (**Fig. 37**) press "programs and measurements acquisition" push button (**Fig. 37 ref. 1**).
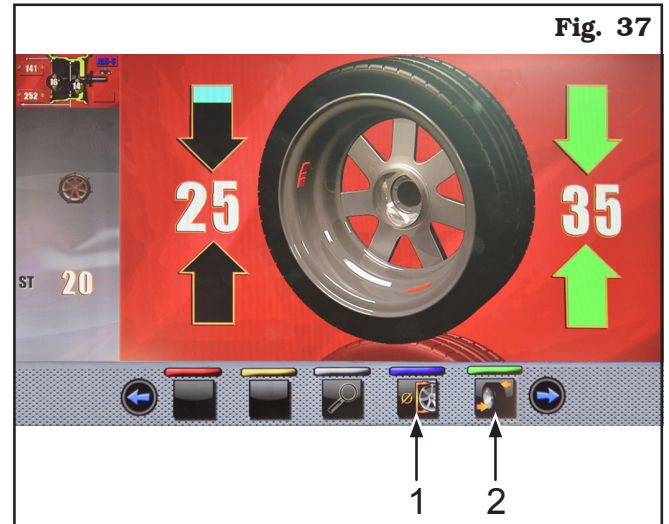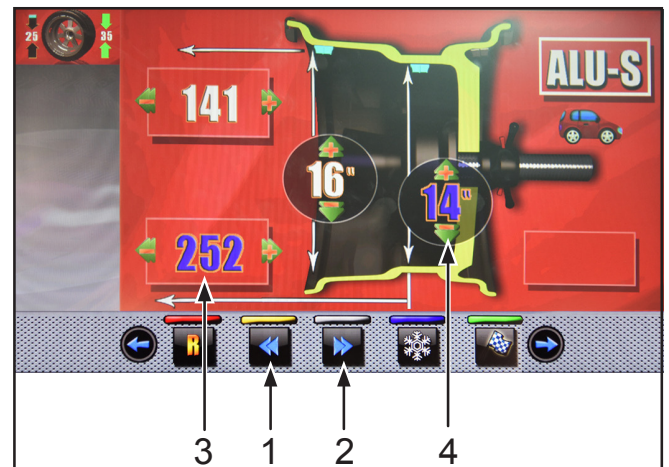

Fig. 37

The following screen page is displayed:

KEY

1 – Decrease of the weight positioning distance from the machine

2 – Increase of the weight positioning distance from the machine

3 – Distance of the point where fitting the adhesive weight on the outside of the wheel (modifiable field coloured in blue)

4 – Rim diameter of the point where fitting the adhesive weight on the outside of the wheel (modifiable field coloured in blue)

> ***i*** THE PUSH BUTTONS (1-2) ARE ENABLED ONLY FOR THE FITTING OF THE ADHESIVE WEIGHTS.
> NOT ENABLED IN CASE OF CLIP WEIGHTS.

- Press the arrows [«] or [»] to modify the fitting of the adhesive weight on the wheel outer side (movement of the laser pointer) (blue-highlighted-values). Once the wished position is reached press [❄]. When the push button [❄] is pressed, the blue highlighted values are updated with the new set position.

> **i** DURING THE MODIFICATION OF THE WEIGHTS FITTING POINT (LASER POINTER MOVEMENT) THE BLUE-HIGHLIGHTED-VALUES ARE NOT UPDATED UNTIL THE [❄] BUTTON IS PRESSED [❄].

- Press the [R] push button to perform the recalculation of the value of the weight to be fitted in the new set position. The screen page in (**Fig. 37**) is displayed again with the updated values.

- In case the operator wants to modify the weight fitting point "wheel outer side", simply press the push button (**Fig. 37 ref. 2**). The wheel, the laser and the screen page are pre-arranged for the application of such weight.
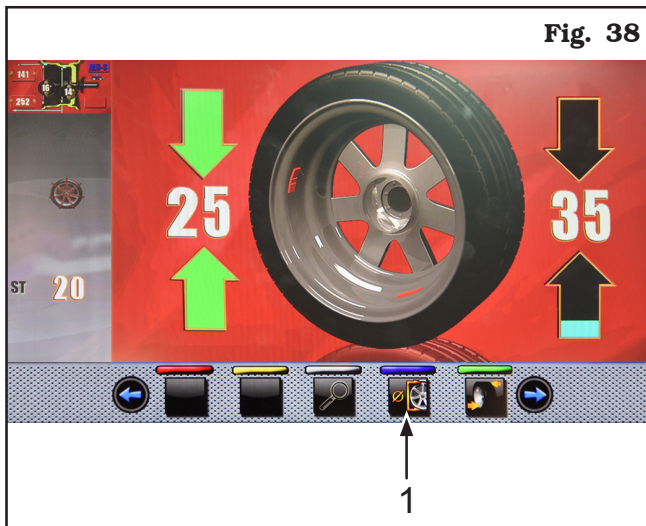 The following screen page is displayed:

Fig. 38

- Press the "programs and measurements acquisition" button (**Fig. 38 ref. 1**). The following screen page is displayed:
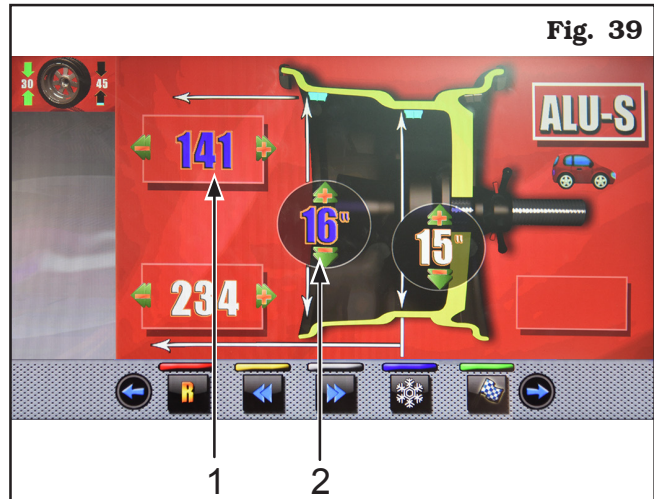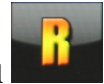

Fig. 39

KEY
1 – Distance of the point where fitting the adhesive weight on the inside of the wheel (modifiable field coloured in blue)
2 – Rim diameter of the point where fitting the adhesive weight on the inside of the wheel (modifiable field coloured in blue)

- Proceed as described before for the modification of the weight fitting point "wheel outer side".

- At the end press push button [❄] and [R].

• **Weights fitting with distance-diameter caliper arm and grippers (only with disabled laser pointer).**
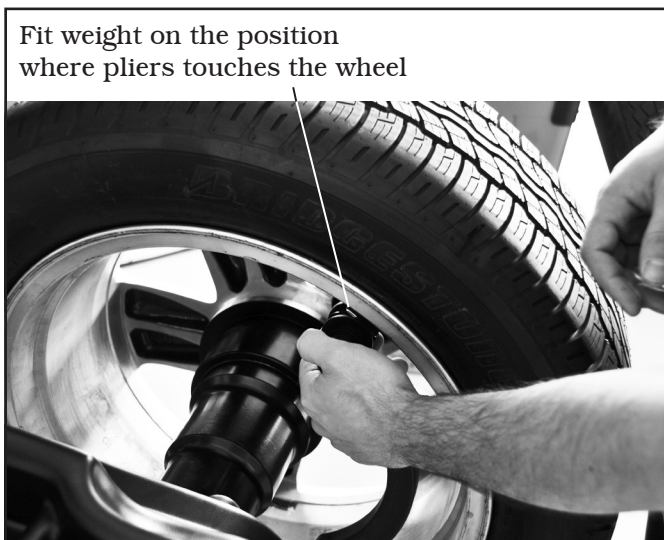 1. Place the adhesive weight on the arm grippers.

Fit the adhesive weight in the pliers of the gauge rod

2. Pull out the gauge until the arrows (**Fig. 40 ref. 1**) both turn green.

Fig. 40
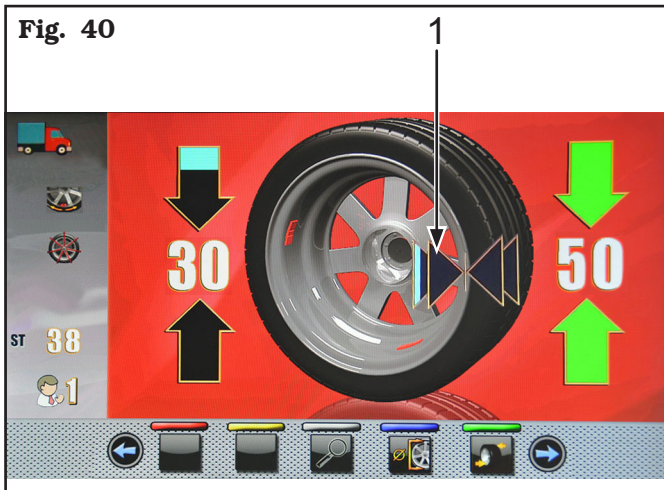
3. Rotate the gauge arm until the weight touches the rim.

Fit weight on the position where pliers touches the wheel

4. Bring the distance-diameter caliper arm in resting position, after having led it towards the mandrel to unlock it from the position of weight application.

5. Press the button to change the weight fitting side.

6. Proceed in the same way as described in points 1-2-3.

⚠ **BEFORE REMOVING THE DIAMETER-DISTANCE CALIPER, PRESS THE BRAKE PEDAL AND HOLD IT DOWN UNTIL THE WEIGHT HAS NOT BEEN APPLIED, ENSURING IN THIS WAY THAT, DURING THESE PHASES, THE WHEEL CAN NOT ROTATE.**

13.5 Standard balancing programs

13.5.1 Static

The STATIC program permits balancing wheels by fitting adhesive weights on the outer and inner sides of the rim. Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4.

At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.
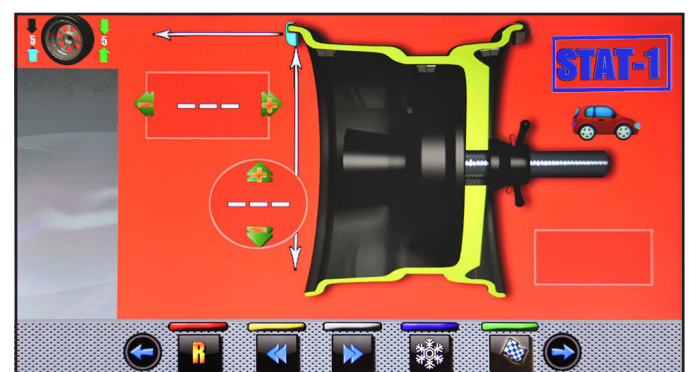

The procedure has now been completed.

13.5.2 Static-1

STATIC 1 function is a procedure that offsets wheel vibrations using a single weight with clip on a single plane positioned exactly at "12 o'clock".

Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4 "Dynamic balancing" (only for wheel inner side).

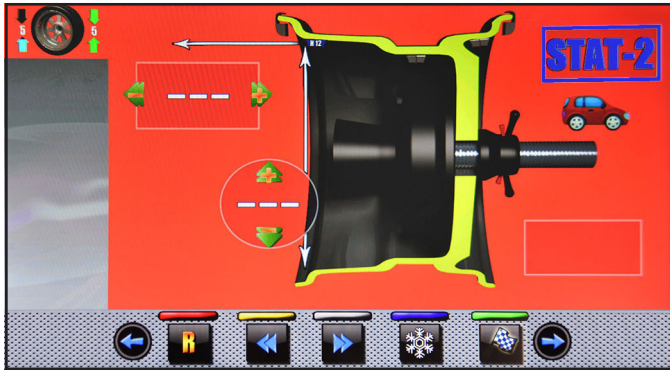At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.

The procedure has now been completed.

13.5.3 Static-2

STATIC 2 function is a procedure that offsets wheel vibrations using a single adhesive weight on a single plane positioned exactly at "12 o'clock".
Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4 "Dynamic balancing" (only for wheel inner side).
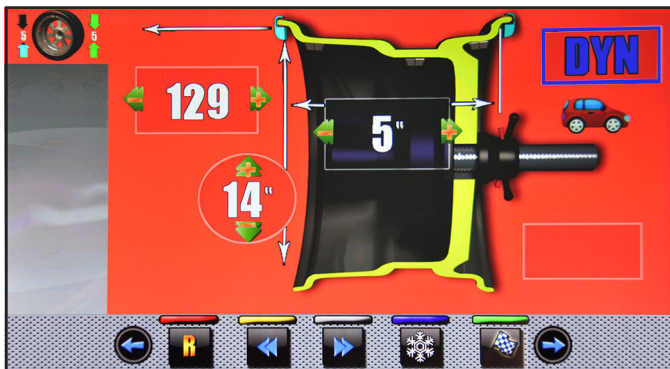At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.

The procedure has now been completed.

13.5.4 Dynamic

The DYNAMIC program allows the wheels balancing by fitting two clip adhesive weights: one on the outside and one on the inside rim. Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4.
At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.

The procedure has now been completed.

13.5.5 ALU-S

ALU-S program permits balancing wheels by two fitting adhesive weights on the outer and inner sides of the rim. Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4.
At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.
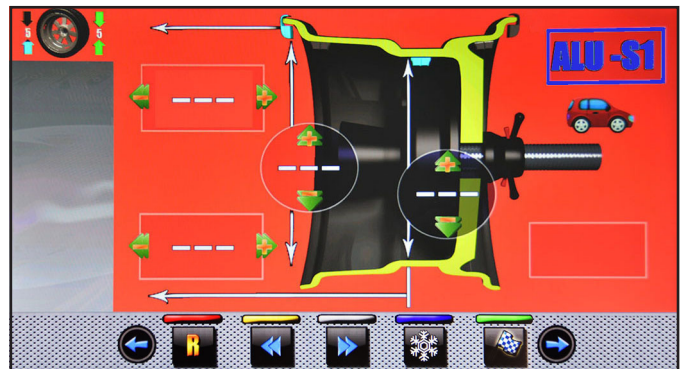

The procedure has now been completed.

13.5.6 ALU-S1

ALU-S1 function permits balancing wheels with light alloy rims by fitting adhesive weights on the outer side and weight with clip on inner side of wheel (at "12 o'clock").
Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4 (the inner weight is with clip).
At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.
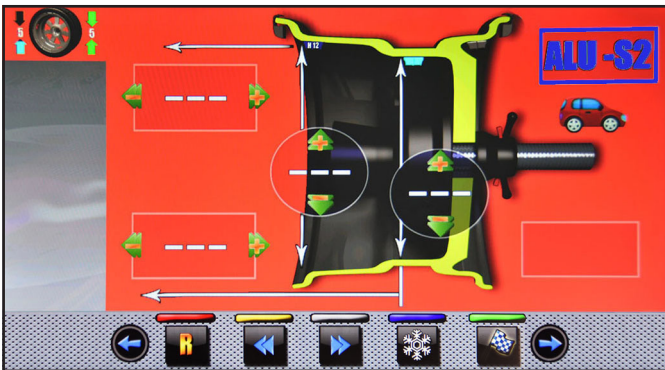

The procedure has now been completed.

13.5.7 ALU-S2

ALU-S2 function permits balancing wheels with light alloy rims by fitting two adhesive weights: one on the outer and one on inner sides of the rim (the inner weight is at "12 o' clock").

Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4.

At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.
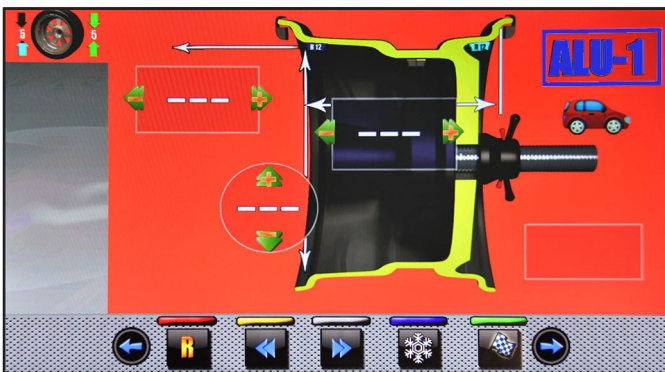

The procedure has now been completed.

13.5.8 ALU-1

ALU-1 function permits balancing wheels with light alloy rims by fitting adhesive weights on the outer and inner sides of the rim at "12 o'clock".

Enter the measurements (see Par. 13.2.1) and proceed as described in Par. 13.4.

At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.
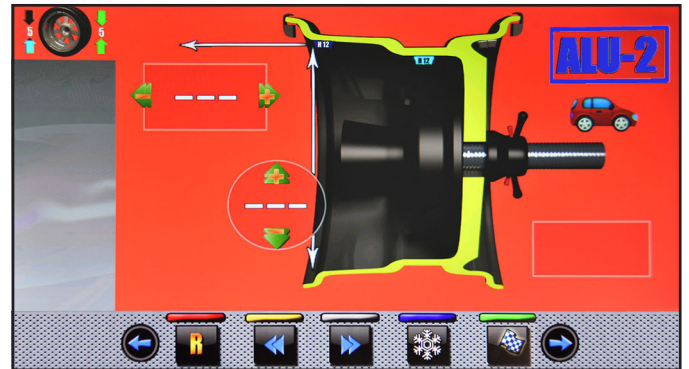

The procedure has now been completed.

13.5.9 ALU-2

ALU-2 function balances wheels with light alloy rims by fitting adhesive weights on the outside and inside of the rim. The position of the outer weight is not visible but hidden inside. Enter the measurements (see Par. 13.2.1) and proceed as for dynamic unbalance.

At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.
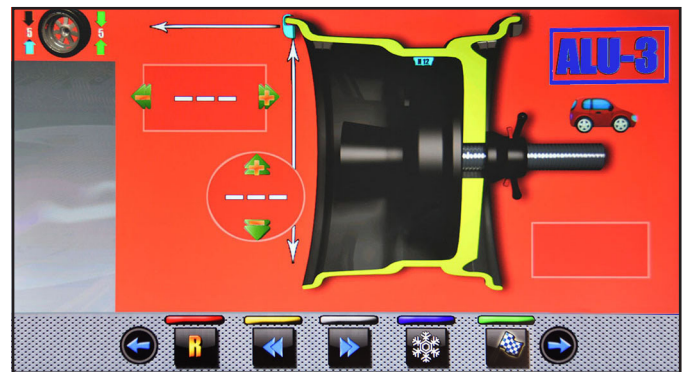

The procedure has now been completed.

13.5.10 ALU-3

ALU-3 function is a procedure that uses mixed weights to offset wheel unbalance: weight with clip on inner side of wheel, adhesive weight on outer side, not visible because inside the rim.

Enter the measurements (see Par. 13.2.1) and proceed as for dynamic unbalance.

At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.
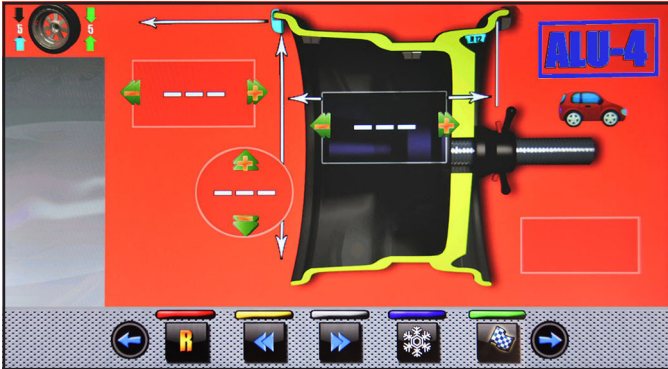

The procedure has now been completed.

13.5.11 ALU-4

ALU-4 function is a procedure that uses mixed weights to offset wheel unbalance: weight with clip on inner side of wheel, adhesive weight on outer side.

Enter the measurements (see Par. 13.2.1) and proceed as for dynamic unbalance.

At the end of the procedure, the wheel balancing conditions can be checked by performing a trial spin.

The procedure has now been completed.

13.6 Optional balancing programs

13.6.1 SPLIT mode

Split procedure proves useful when the dynamic unbalance of a wheel is fairly high and the weight to be fitted is not available, for instance a 100 g weight. It's possible then to correct the unbalance dividing the amount of weight into two weights of smaller size.

Split procedure eliminates errors by using "DYNAMIC" program, for example by manually fitting two 50 g weights close to one another, instead of only a 100 gr one.

For example:

100 g WEIGHT
TO BE FITTED TO CORRECT
UNBALANCE

TWO SMALLER WEIGHTS (50g)
FITTED MANUALLY

TWO SMALLER WEIGHTS (55g)
USING SPLIT PROCEDURE

Proceed to "DYNAMIC" unbalance measurement displaying by performing a standard wheel spin.

Once detected the unbalance values, verify that the machine displays the ability to use the "SPLIT" option

(**Fig. 35A ref. 4a**). Press on the button [icon] on the second page (**Fig. 35B ref. 1**), to select directly the procedure "SPLIT" and on the monitor will be displayed the following screen where you will need to enter the value of the weights to be applied.

Press on the relative value to select the external weight to be edited (the field will turn blue).

- Press the push button [icon] to shift among the field to modify.

- Press [icon] or [icon] to modify the highlighted value.

> *i* **THE BLUE VALUE INDICATES WHICH VALUE IS ACTIVE AND YOU ARE EDITING.**

> *i* **THE HIGHER THE CHOSEN WEIGHTS VALUE IS, THE MORE THEY WILL BE SPACED.**

After choosing the value of the weights to be fitted,

press button [icon] to position the wheel for the application of the 1st clip weight.

> *i* **THE TWO GREEN ARROWS INDICATE THAT THE WHEEL IS PROPERLY POSITIONED FOR THE APPLICATION OF THE 1ST WEIGHT.**
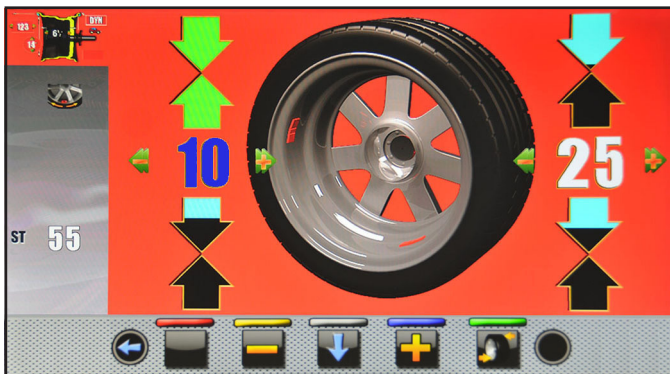
Fit the clip weight of the chosen value at "12 o'clock"

on the outside of the wheel. Press again button [icon] to position the wheel for the fitting of the 2nd clip weight.

Fit the clip weight of the chosen value at "12 o'clock" on the outside of the wheel.

Press again button to position the wheel for weight positioning inside the wheel.


Repeat the above steps for the weights to be fitted inside the wheel.
At the end perform again a checking spin to see that you have applied the weights correctly.

13.6.2 Weights hidden behind spokes mode

Adhesive correction weight positioning may not look attractive on some types of rims. In this case, "weights hidden behind spokes" mode can be used: it splits any correction weight on the outer side into two parts to be hidden behind rim spokes. It can be used in both ALU-S or STATIC modes.
To set these modes, consult Par. 14.1.
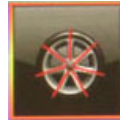
 It AUTOMATICALLY enables weights hidden behind spokes mode (disabled on machine delivery).

After the scanning, the machine places the wheel for the fitting of the weight behind the first spoke (spokes position detected by the scan).

 It SEMIAUTOMATICALLY enables weights hidden behind spokes mode (enabled on machine delivery).

After the scanning, the machine places the wheel for the fitting of the weight on the outer side, in the point indicated by the chosen program. In case the "weights hidden behind spokes" button is pushed, the machine places the wheel for the fitting of the weight behind the first spoke (spokes position detected by the scan).

 It MANUALLY enables weights hidden behind spokes mode (disabled on machine delivery).

Display the ALU-S or STATIC, unbalance measurements, by performing a standard wheel spin.
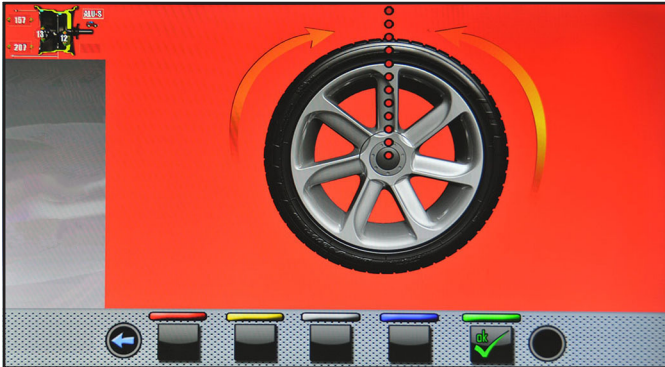

Once detected the unbalance values, verify that the machine displays the ability to use the "spokes" options (**Fig. 35A ref. 4b**).

Press on the button on the second page (**Fig. 35B ref. 2**), to select directly the procedure "Weights hidden behind spokes".
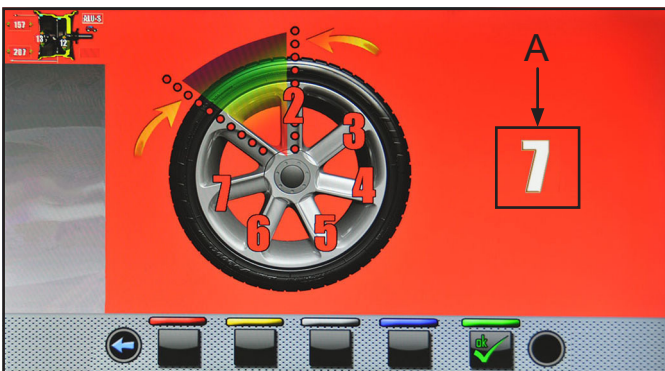
The following screen will appear on the monitor:

Bring any spoke upwards at "12 o'clock" position and press the button [ok] to confirm and continue.

Lead to "12 hours" the SECOND spoke. The machine will automatically calculate the total number of spokes. If the value shown on the screen (A) is correct, press the button [ok].

The machine automatically calculates weight position in two positions hidden behind the spokes. The monitor shows the amount of weight to be applied behind the FIRST spoke and the rim will reach the position to apply the FIRST weight.

The laser pointer will mark the position where to fit the FIRST weight. After carrying out the fitting press the button [ ] to confirm that they have applied the FIRST weight and to automatically position the wheel for the fitting of the SECOND weight.

The monitor shows the amount of weight to be applied behind the SECOND spoke.

Using as reference the laser pointer, fit the SECOND weight in the position shown by the machine, as done for the first weight.

Press the button [ ] to confirm that you have applied the SECOND weight and get back to the initial situation of unbalance, before performing the "weights hidden behind the spokes" procedure

Perform another test spin. The "weights hidden behind spokes" procedure is completed.

Complete the operation by adding an additional weight inside the rim as required by the selected mode (ALU-S or STATIC).

> ℹ️ ON THE MARKET THERE CAN BE PARTICULARLY COMPLEX TYPES OF RIMS SHAPES AND/OR PROFILES SO THE MACHINE COULD SUGGEST BALANCING PROGRAMS OR POINTS FOR POSITIONING THE WEIGHTS BEHIND THE SPOKES THAT DO NOT SUIT THE ACTUAL SHAPE OF THE RIM ITSELF. IN THIS CASE PLACE MANUALLY THE LASER TO REASSIGN CORRECTLY THE BALANCING LEVELS AND THE WEIGHTS FITTING POINTS.

13.6.3 matching mode

The Matching procedure offsets strong unbalance, reducing the weight quantity to be fitted on the wheel to achieve balancing. This procedure permits reducing unbalance as much as possible by offsetting the tyre unbalance with that of the rim in any used program.

Proceed to unbalance measurement displaying by performing a standard wheel spin.

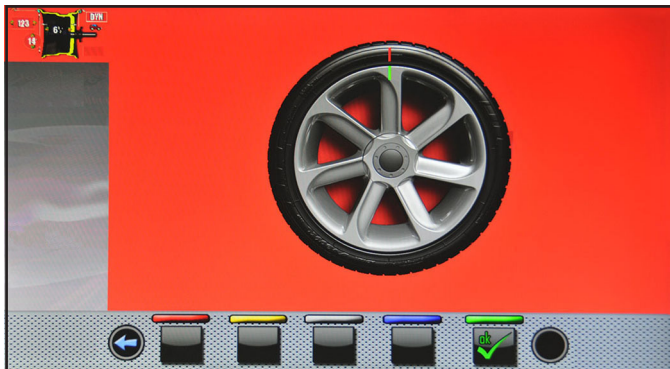⚠ THE MATCHING PROCEDURE CAN BE CARRIED OUT ONLY IF THE STATIC UNBALANCE IS > 30 G.

Once detected the unbalance values, verify that the machine displays the ability to use the "matching" option (**Fig. 35A ref. 4a**).

Press on the button ▨ on the second page (**Fig. 35B ref. 1**) to select directly the procedure "MATCHING".
On the monitor the next screen page will be displayed:

STEP 1. Move the slider on the flange to the "12 o'clock" position. Make a reference mark, using chalk for instance, on the rim and tyre, in line with the arrow on the flange, so as to be able to fit the rim back on in the same position on the machine.

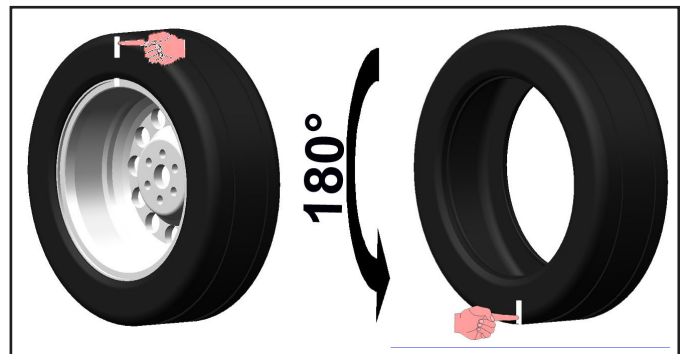Make a reference mark on the rim and tyre, in line with the arrow on the flange
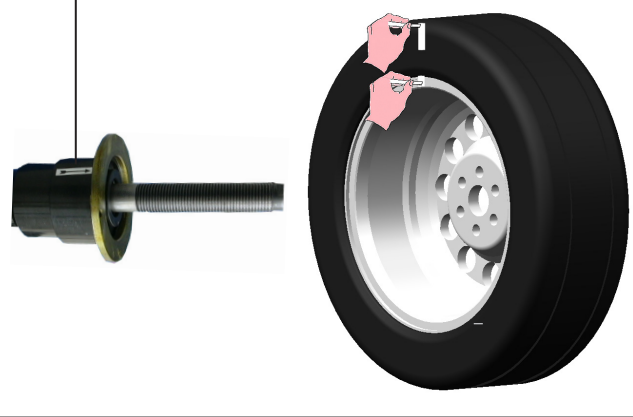
Press button ▨ to confirm that step 1 has been completed.
On the display the next screen page will be displayed:
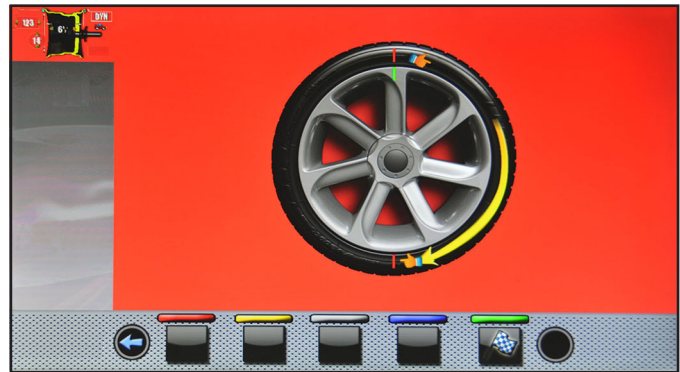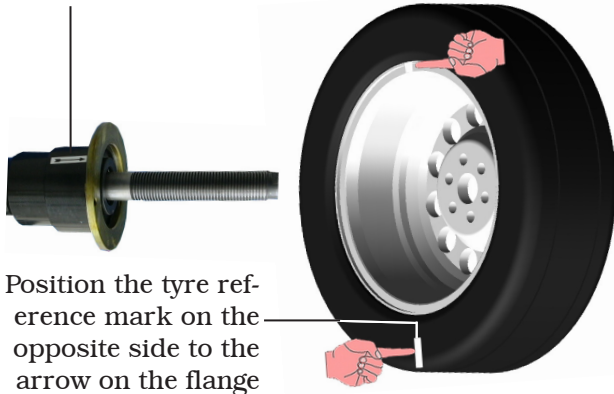

STEP 2. Remove the wheel from the wheel balancer. Remove the tyre and turn it on the rim through 180°.

Fit the wheel back on the wheel balancer, positioning the reference mark on the rim in line with the arrow on the flange.

Position the reference mark on the rim in line with the arrow on the flange

Position the tyre reference mark on the opposite side to the arrow on the flange

Press button to confirm that step 2 has been completed.

On the display the next screen page will be displayed suggesting to perform a spin of the wheel.

After having fitted wheel back in position, close the protection guard to make an automatic wheel spin.

At the end of the spin the monitor will display the following screen:
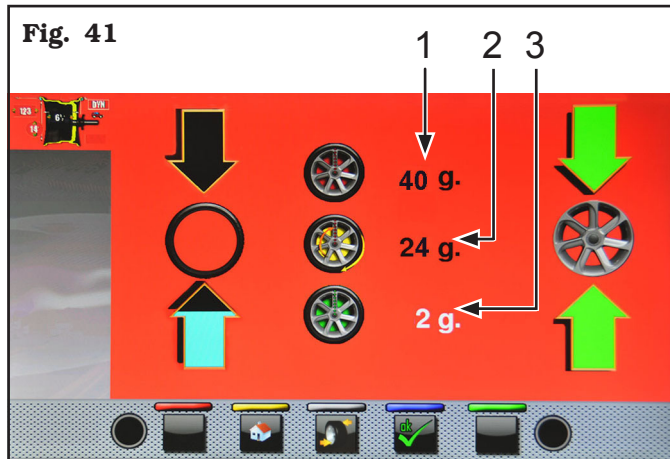
Fig. 41

In this screen you will see the dynamic unbalance that the wheel had before performing the operation (**Fig. 41 ref. 1**), the dynamic unbalance after having rotated the tyre through 180° compared to the rim (**Fig. 41 ref. 2**) and the unbalance which can be obtained following the directions of the machine (**Fig. 41 ref. 3**).

STEP 3. If the value of possible unbalance reduction is high, you can proceed as follows:

- Cancel the previously made reference marks. Put new signs, as described below.

- Press the button to bring the wheel into position.

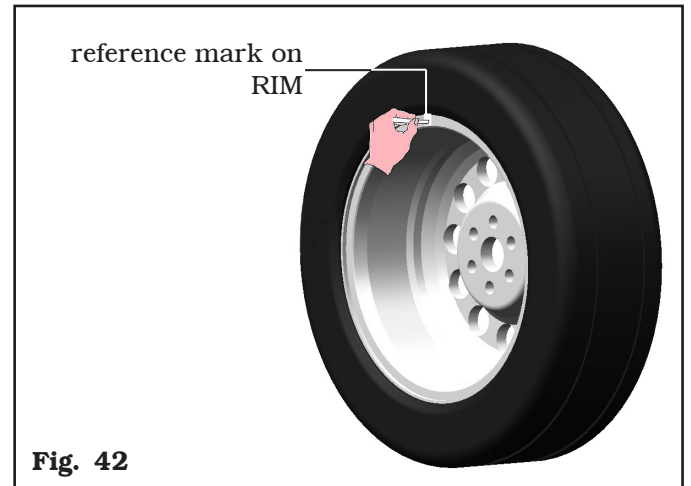Make the reference mark on RIM at "12 o'clock" (see **Fig. 42**).

reference mark on RIM

Fig. 42

- Press the button to bring the wheel into position.

Mark the reference mark on the TIRE at "12 o'clock" position.

Press button to confirm that step 3 has been completed.

STEP 4. Remove the wheel from the wheel balancer. Dismount and remount the tyre on the rim so as to bring the two reference marks (rim and tyre) to coincide. Refit the wheel on the balancer (see **Fig. 43**) with the two reference marks next to the arrow on the flange.

Fig. 43

reference mark on TYRE and reference mark on RIM shall coincide
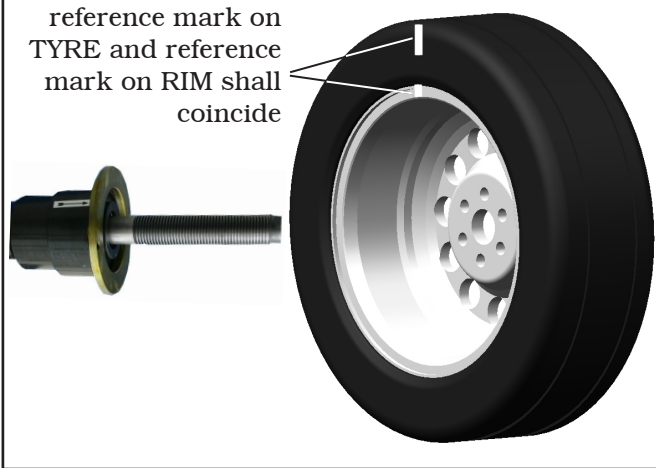
Press button to confirm that step 4 has been completed.
Perform another spin closing the protection guard, to check the expected unbalance reduction and correct any residual unbalance, as described in Chap. 13.4.1.

13.7   *Special balancing programs*

13.7.1 *Pax*

PAX mode is a special procedure specially devised to balance wheels using the "PAX System ®". 2 adhesive weights on different planes are used on rim inner side.

To launch a PAX measurement, proceed as follows:

- Make sure there are no stones and/or mud on the wheel. Remove any counterweights. Fit the wheel and make sure it is properly fastened (see Chap. 11).

- from the "HOME page", press push button (**Fig. 20 ref. 1**) to display "Measurements acquisition" page. After having made sure scanning program display area (**Fig. 20 ref. 5**) is blue, press push button

 to display the following program selection screen page:

Use arrows and/or to select PAX mode desired.

At the end press push button .
The machine will be configured as follows to perform the measurement and on the video screen will appear the indication of the specific measures of the selected wheel type.

- Close the protection guard to perform the automatic wheel spin.

In just a few seconds, the wheel runs at normal speed and the monitor shows wheel rotation.
After the spin, the wheel stops automatically, taking into account the measured unbalance so that the fitting position of the weight will be at "12 o'clock".
The monitor show the weight required to correct the unbalance.
Open the protection guard and proceed to fit the adhesive weight as shown for the ALU-S mode (see Par. 13.5.5).

13.8 Recalculation Function

After making a spin, the wheel automatically stops, indicating the weight/s to be fitted and its/their position. In case the operator does not want the type of wheel balance proposed by the machine (program type, weights size, etc ...), proceed with the re-calculation of the wheel balancing without rerunning the spin of the wheel.

To do this, proceed as described below:

- press the button [icon] to return to the measures detection/program selection page;
- select a new balancing program as indicated in Par. 13.2.2;

- press button [R icon] to perform the re-calculation. The monitor will display the weights and the positions in which they will be applied.

If also in this case the operator should decide to further modify the balancing program, it is sufficient to proceed as described above without having to spin the wheel.

13.9 Procedures for electronic RUN-OUT measuring (tyre outer side) (Optional)

The GAR338 RUN-OUT electronic measuring device (wheel roundness) is useful to check any roundness defects in the wheel-tyre (ex: ovality and/or off-centre as to the rim).

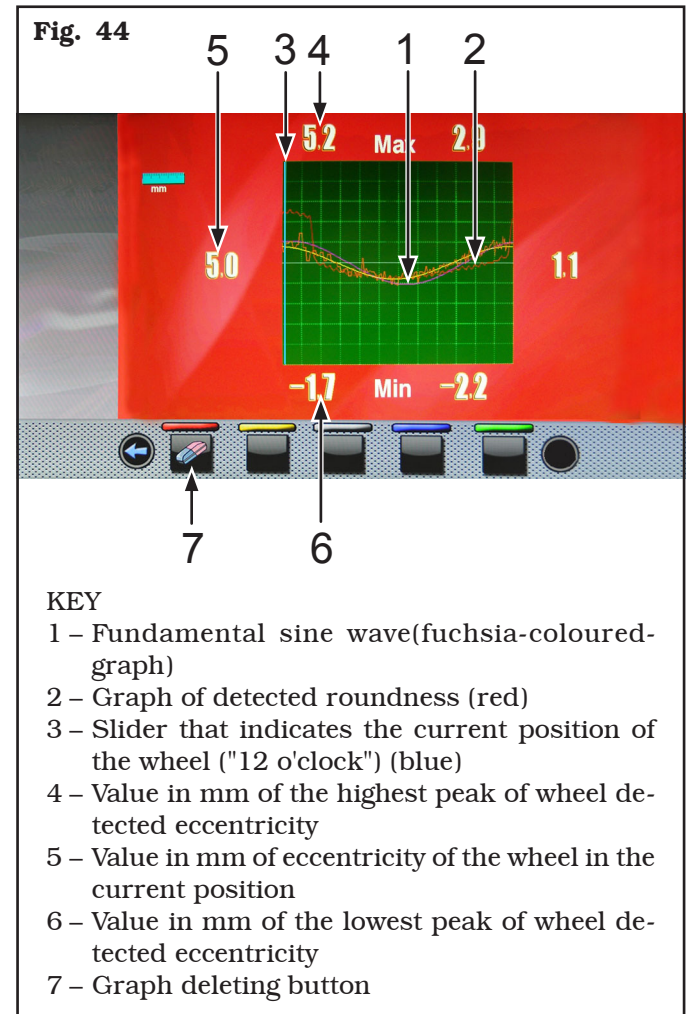> [!] **MAKE SURE THE ICON** [icon] **IN THE OPTIONS MENU IS ENABLED (SEE PAR. 14.1).**

In order to display the tyre ovality screen page, proceed as described hereafter:

- perform the wheel spin by closing the guard.

After executing the spin of the tyre with any kind of program, the weights fitting page is displayed.
Here follows an example of the mentioned page:

By pressing the button [icon] (if on this screen page), it is possible to display the ovality graph reported here as follows.

Fig. 44

KEY
1 – Fundamental sine wave(fuchsia-coloured-graph)
2 – Graph of detected roundness (red)
3 – Slider that indicates the current position of the wheel ("12 o'clock") (blue)
4 – Value in mm of the highest peak of wheel detected eccentricity
5 – Value in mm of eccentricity of the wheel in the current position
6 – Value in mm of the lowest peak of wheel detected eccentricity
7 – Graph deleting button

The red graph (**Fig. 44 ref. 2**) represents exactly the geometric shape of the wheel. The more the wheel is round, the more the graph will come out flat, otherwise, the more the wheel is ovalized, the more the graph will come out wide.

You can follow the tyre ovality in the graph by turning the wheel, the blue-coloured-slider (**Fig. 44 ref. 3**), indicates the current position of the tyre in "12 o'clock" position.

The three numeric values (**Fig. 44 ref. 4-5-6**), expressed in mm, indicate respectively the highest peak, the ovality in the current position and tyre minimum peak.

The graph can be erased with push button (**Fig. 44 ref. 7**).

13.10 Motorbike mode wheel balancing through distance-diameter caliper arm (if enabled)

By enabling "motorbike wheel balancing" function, the wheel balancers can also balance motorbike wheels. Before detecting the wheel sizes (see Par. 13.2.2), select motorcycle wheel balancing mode proceeding as described below:

press button [⊘🛞] and then button [🏍]. On the

screen that appears, press the button [➡] to switch to programs and measurements acquisition selection screen below.
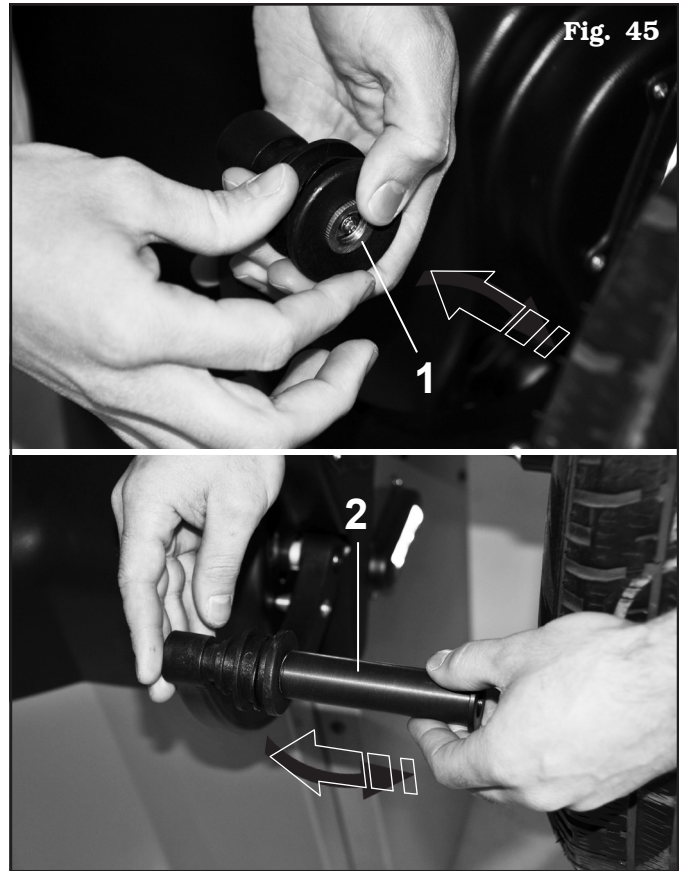
Use arrows [⬇] and/or [➡] to select the mode desired.

At the end press push button [ok✓].

The machine will be configured as follows to perform the measurement in the desired mode and on the screen will appear an indication showing the measures that will be acquired.

The "motorcycle" mode automatically recalculates the wheel distance measurement, increasing this by the length of the optional extension GAR181 A1.

To fit the extension (**Fig. 45 ref. 2**), first press the threaded ring nut (**Fig. 45 ref. 1**) in the hole provided and then screw the plastic terminal (see **Fig. 45**).

> **(!) THE EXTENSION WILL ONLY HAVE TO BE SCREWED UP WHEN BALANCING IS PERFORMED IN "MOTORBIKE" MODE.**

Fig. 45

Balancing procedures are identical for both modes (car/motorbike).

By selecting motorbike mode, besides DYNAMIC balancing (see Par. 13.5.4) STATIC balancing and/or ALU-S (Par. 13.5.1 and/or 13.5.5) can also be performed.
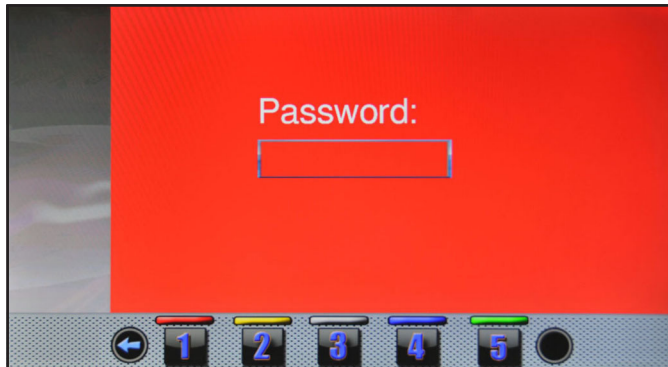
14.0 USER MENU (OPTIONS AND CALIBRATION)

From the main page "Home" press the button

to move to the next screen page and the button
to access the user menu. On the monitor, the following screen appears where you can enter the password.

The user login password is: **1234**.
After entering the correct password you will see the following screen:

Fig. 46

KEY
1 – Options menu push button
2 – Calibrations menu push button

14.1 Options menu

Press the button (**Fig. 46 ref. 1**), to display the monitor screen to enable/disable options as shown below:

To enable / disable individual functions simply high-

light the icon using the buttons and/or

and press the button .

Pressing the button may involve, besides, the change in the unit of measure from "mm" to "inch" and vice versa (where applicable) or access to a sub-screen for values settings values (see Par. 14.1.1 or 14.1.2). After you select/deselect the desired options, exit the

menu by pressing push button .

List of available options

Enable/disable the protection guard/spin (enabled on machine delivery).
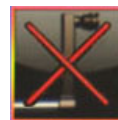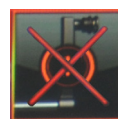
Enable/disable the distance/diameter detection caliper (disabled on machine delivery).

Enable/disable the display of static threshold after each spin (enabled on machine delivery).

It allows you to set the thresholds for each of the balancing mode weights (see Par. 14.1.1).

Enable/disable the lock function for caliper arm in position (disabled on machine delivery).

Enable/lower/disable the weights+ultrasound sensor laser positioning/scanning function (enabled on machine delivery).
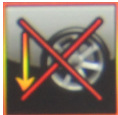
It allows you to change the unit of measurement of the weights from ounces/grams to grams and vice versa.

It allows you to enable/disable the width function (enabled on machine delivery).

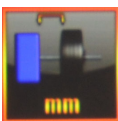Enable/disable the ECO-WEIGHT function (enabled by default).

Enable/disable the positioning of weights at "6 o'clock" (disabled on machine delivery).

Enable/disable the pneumatic brake after the spin (disabled on machine delivery).

It enables the weights hidden behind spokes mode in automatic.
After the scanning, the machine places the wheel for the fitting of the weight behind the first spoke (spokes position detected by the scan) (disabled on machine delivery).
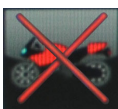
It allows you to change the unit of measure of the distance of the weights fitting point from mm to inches and vice versa.
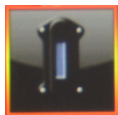
Enable/disable the led light (enabled if mounted on the machine).

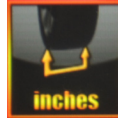Enable/disable the dynamic residues in the ECO-WEIGHT function (enabled by default).

Enable/disable the functions of motorbike balancing (disabled on machine delivery).
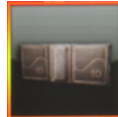
Enable/disable the encoder mounted on the spin motor (enabled on machine delivery).
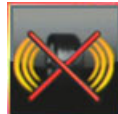
Enable/disable the automatic RUN-OUT function (GAR338 optional, see Par. 13.9) (disabled on machine delivery).
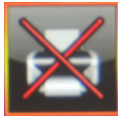
It allows you to change the unit of measurement of the rims width from mm to inches and vice versa.

It allows you to set the size values of weights (see Par. 14.1.2).

Enable/disable manual RUN-OUT functions (inside rim with distance/diameter caliper) (disabled on machine delivery).

Enable/disable machine print functions (disabled on machine delivery).

It allows to select cyclically DYN and ALU-S modes, by pressing the button AUTO from the "HOME" page (enabled on machine delivery).

Press the icon to display the icon , which allows to select cyclically DYN, ALU-S, ALU-S1 and STAT modes by pressing the button AUTO from the "HOME" page (disabled on machine delivery).
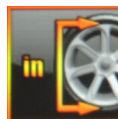
It allows you to change the unit of measurement of the rim diameter from mm to inches and vice versa.
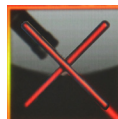
Enable/disable weights' positioning laser pointer function (disabled on machine delivery).
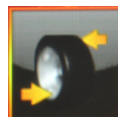
Enable/disable the repositioning of the wheel at the end of the spin (enabled on machine delivery).
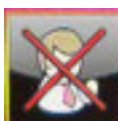
Enable/disable user function (disabled on machine delivery).

Enable/disable the function of weights positioning laser wheel inner/outer side at 12 o'clock (disabled on machine delivery).

14.1.1 Lower weight limit

Correction weight below a certain limit is normally shown equal to zero. This limit can be set from 50 g to 2 g (from 2.00 oz to 0.05 oz).

At the end of the spin however, by pressing the button

, the weight can be displayed with max resolution of 1 g (0.05 oz), not considering the set lower limit.

> ℹ **LOWER LIMIT'S FACTORY SETTING FOR DYNAMIC WHEEL BALANCING MODE IS 5 g (0.25 oz). THE LOWER LIMIT FOR ALL THE OTHER MODES IS SET AT 7 g (0.35 oz).**

	Default values		Work range	
	g	oz	g	oz
1 — DYN OK	5	0.25	2 ÷ 50	0.05 ÷ 2.00
2 — STAT ALU OK	7	0.35	2 ÷ 50	0.05 ÷ 2.00
3 —	5	0.25	2 ÷ 50	0.05 ÷ 2.00
	100	100	0 - 50 - 100 150 - 200	0 - 50 - 100 150 - 200
	%		%	

KEY

1 – Lower weight limit in the DYNAMIC program to display "OK" (default value 5 g (0.25 oz))

2 – Lower weight limit in the ALU-STATIC program to display "OK" (default value 7 g (0.35 oz))

3 – Weights display resolution (default value 5 g (0.25 oz))

- Press the push button to shift among the field to modify.

- Press or to modify the highlighted value.

> ℹ **THE BLUE-COLOURED-VALUE IS THE ACTIVE FIELD AND THE MODIFIABLE ONE.**

14.1.2 Setting adhesive weight dimensions and static threshold percentage

To ensure the balancing machine precisely calculates the dimensions and total adhesive weights, set the height (thickness) and width of the adhesive weights at your disposal (see **Fig. 47**).

Fig. 47
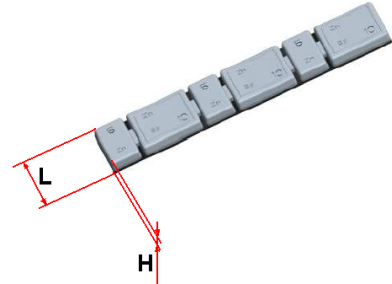
To carry out this setting, press the icon . You will see the following screen:

KEY

1 – Weights thickness (height) (default value 4 mm)

2 – Weights width (default value 19 mm)

From this screen page, change the size values of weights:

- Press the push button to shift among the field to modify.

- Press or to modify the highlighted value.

> ℹ **THE BLUE-COLOURED-VALUE IS THE ACTIVE FIELD AND THE MODIFIABLE ONE.**

14.1.3 User management

The "User Management" function is disabled on machine delivery. To enable it, proceed as described in Para 14.1. After enabling, the icon will be displayed on every page (**Fig. 48 ref. 1**).
The wheel balancers can be used simultaneously by 4 different users.

Fig. 48

Press button [icon], shown on the monitor (**Fig. 48 ref. 2**) to display the screen page below:

KEY

A – Program used in the last carried out spin

B – Acquired measurements for the last carried out spin
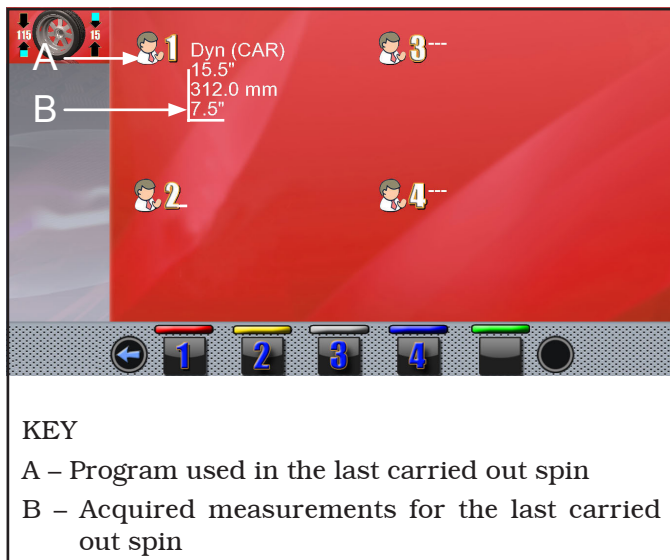
Press any of the available numbers on the buttons at the bottom of the page to select the corresponding user. The system stores the data relating to the last performed spin according to the different operators. You can recall the desired user each time the program displays the specific button (**Fig. 48 ref. 2**). The measurements stored for each user are lost when the machine is switched off.
User management is valid for any wheel balancer function.

> **ⓘ** TO ENABLE OR DISABLE "USER MANAGEMENT" FUNCTION, SEE PARAGRAPH 14.1. IF THE FUNCTION IS DEACTIVATED, THE BUTTON [icon] IS DISPLAYED.

14.2   Machine calibrations

Press the button [icon] (**Fig. 46 ref. 2**) to display the following screen page on monitor:

Fig. 49

KEY

1 – Mandrel "0" (zero) calibration

2 – Weight measurement sensors calibration

3 – Gauge calibration

14.2.1 Mandrel "0" (zero) calibration

Press the button (**Fig. 49 ref. 1**) to display the following screen page on the monitor:

After making sure that the spindle is unloaded (no wheel or mounted accessories), press the button

and close the guard. The mandrel will rotate for a few minutes until you see the screen below:
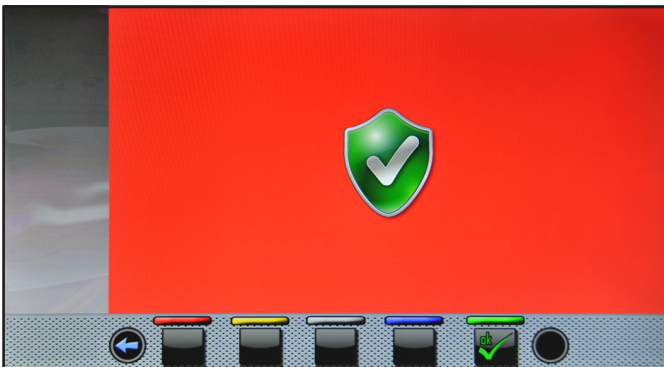
At this point the machine has all its measuring fields.

Press button to return to calibrations screen page.

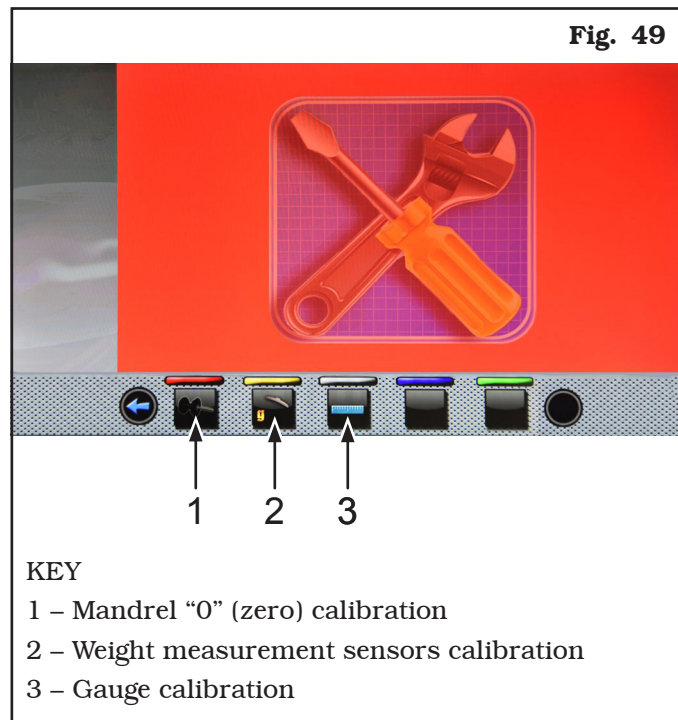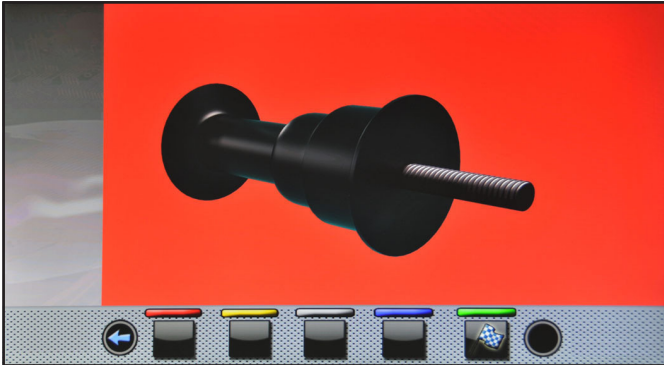### 14.2.2 Weight measurement sensors calibration

- Mount a balanced wheel with iron rim onto the mandrel.
- Detect iron rim-wheel measurements with the laser, through "DYN" mode.
- Enter calibration screen page by pressing button (**Fig. 49 ref. 2**).

> **❗ PERFORM "0" MANDREL CALIBRATION PROCEDURE DESCRIBED IN PAR. 14.2.1 (WITH WHEEL MOUNTED).**

- Press the button (**Fig. 49 ref. 2**) to display the following screen page on the monitor:
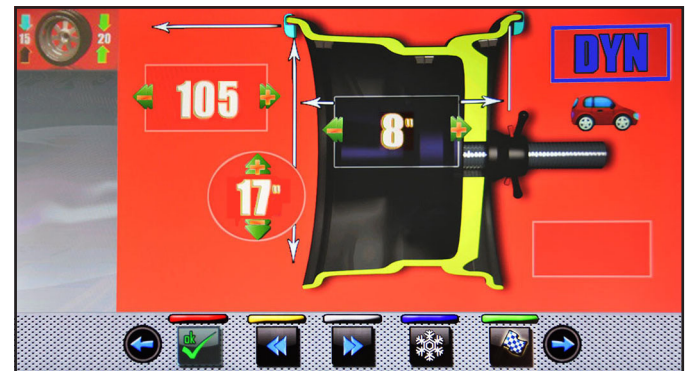
- Press button if measurements are correct.
- Close the protection carter to start the dimensions detecting procedure of the rim mounted on the mandrel and perform the 1st spin of the wheel without weights.
- At the end, on the monitor will appear the following screen, saying that you should apply a weight of 100 g to the "12 o'clock" outer rim.
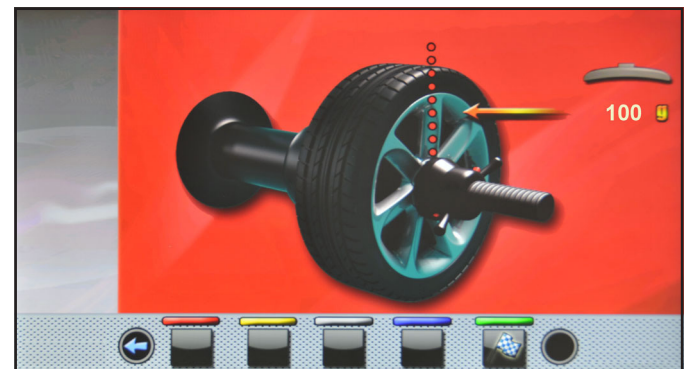
> **ⓘ APPLY THE WEIGHT AT A POINT IN WHICH BOTH SIDES OF THE RIM THERE IS THE POSSIBILITY OF APPLYING A CLIP WEIGHT OF 100 g.**

- Apply the weight and position it perfectly to the "12 o'clock".

- Press the button ![icon] and close the guard to perform the 2nd spin of the wheel (100 g weight placed on the outside of the wheel).

- At the end the following screen will appear on the monitor, suggesting to remove the weight of 100 g previously applied on the outer side and apply it on the inside of the rim.
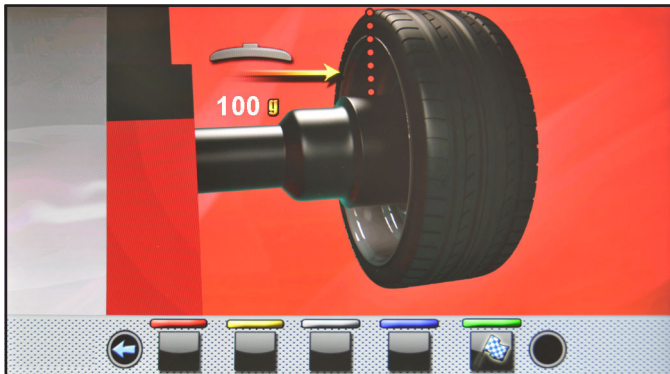
- Turn manually the wheel until you have the weight of 100 g on the outer side at "12 o'clock".

- Press the brake pedal and hold it down during the whole the following operation to avoid unexpected rotation of the spindle.

- Remove the weight from 100 g from the outside of the wheel and apply it on the inner side at "12 o'clock".

- Close the guard to perform the 3rd spin of the wheel (100 g weight placed on the inside wheel).

At the end of the rotation, the video screen below will be displayed to indicate that the operation is finished.
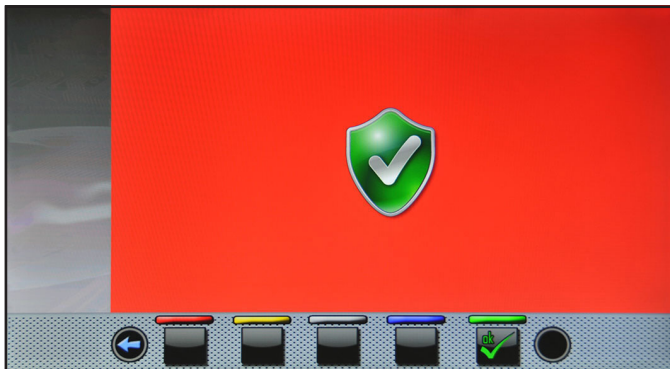
WHEN THE OPERATION IS CONCLUDED, REMOVE THE WHEEL FROM THE MANDREL AND PERFORM A COMPLETE CALIBRATION PROCEDURE "0" MANDREL AS DESCRIBED IN PAR. 14.2.1.

14.2.3 Gauge calibration

Press the button ![icon] (**Fig. 49 ref. 3**) to display the following screen page on the monitor:

KEY
1 – Distance-diameter caliper calibration
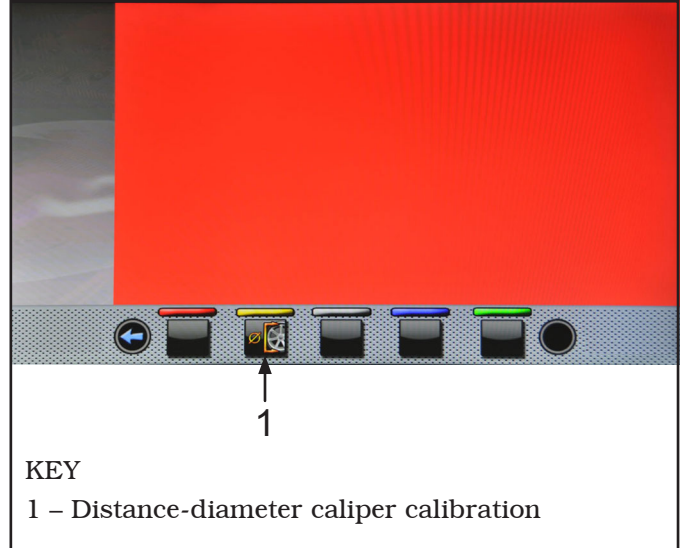
Distance-diameter caliper calibration

Press the button ![icon] to display the following screen page on the monitor:

Place the gauge (**Fig. 50 ref. 1**) on the mandrel flange (**Fig. 50 ref. 2**).

Fig. 50
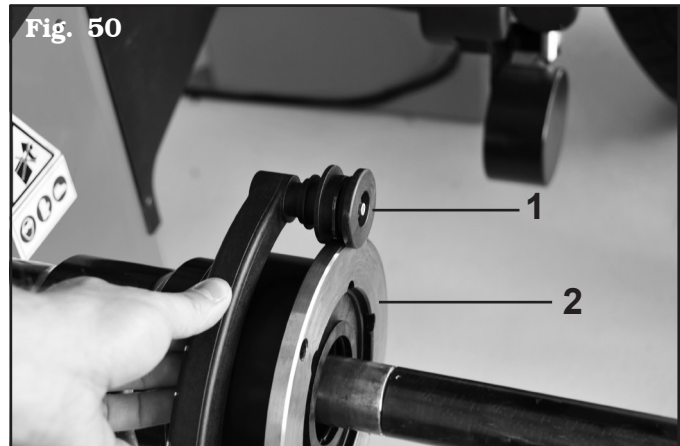
The following screen will appear on the monitor to indicate the measured values:

Fig. 51

2   1

256   256
250
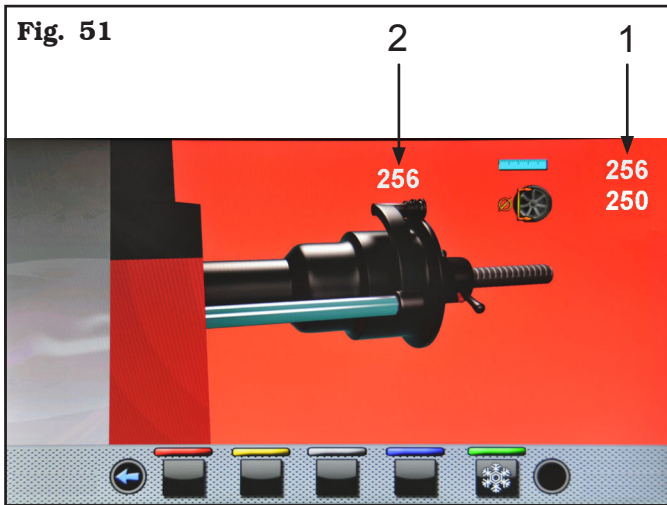
- The value next to the symbol "scale" (**Fig. 51 ref. 1**) must be equal to the value positioned above the gauge (**Fig. 51 ref. 2**) ± 1 mm.

- Press push button

    The following screen will appear on the monitor:

244
1651

- Place the gauge as shown in the following figure:
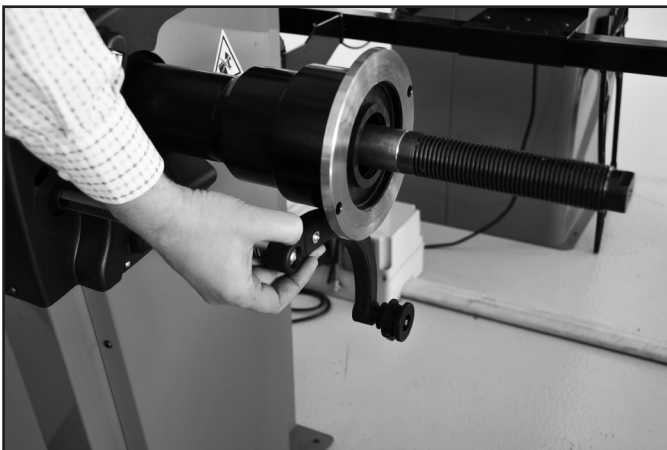
- Press push button . Wait a few seconds until you see the following screen:

182
1847
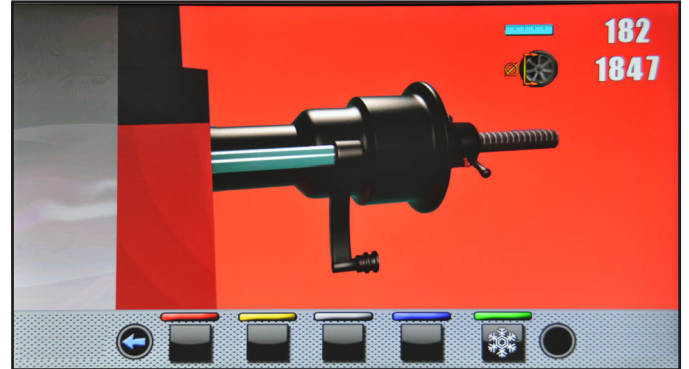
- Place the gauge against the mandrel in the lower part of the it but on a smaller diameter than before as indicated on the image on the monitor.

- Press push button

    On the monitor the next screen page will be displayed:

381
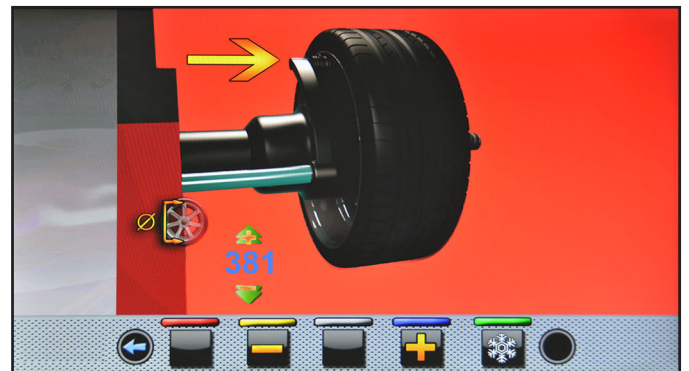
Measure the exact diameter of a rim (see **Fig. 52**) and place it on the screen on the monitor by pressing the

or buttons.

Fig. 52

- Fit the measured wheel on the balancer and lock it on the mandrel.
- Turn the gauge ferrule (**Fig. 53 ref. 1**) on the inner edge of the wheel upwards (see **Fig. 53**).

Fig. 53

- Press button ❄ to end the operation. On the monitor the next screen page will be displayed:
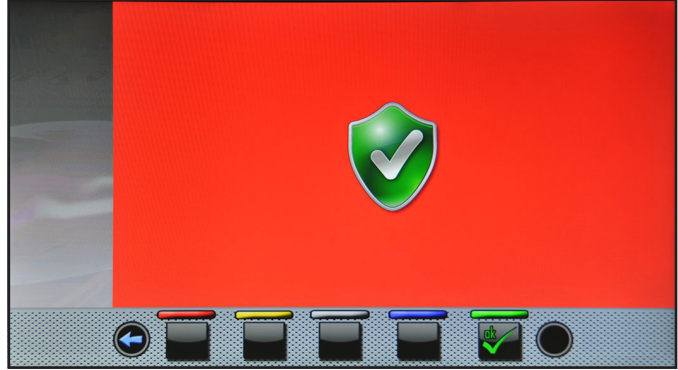
The calibration of the distance-diameter caliper is finished.

15.0 ERROR SIGNALS

During wheel balancer operation, if wrong commands are given by the operator or device faults occur, an error code may appear on the monitor screen.

Below is a troubleshooting chart.

Error code	Description
2	Planned wheel speed not reached
3	Calibration overcoming
4	Wheel speed stability out of tolerance
5	Encoder calibration error
6	Encoder samples not sufficient
7	Mandrel calibration error
8	Piezo calibration values out of tolerance
9	Wheel rotations not completed
10	Pneumatic mandrel open
11	Incorrect gain calibration
12	Distance-diameter caliper value not detected
13	Distance-diameter caliper value not detected
14	Firmware error
15	Runout samples not sufficient
17	External data gauge enabled
27	Rotate the wheel to make a complete rotation
28	Piezo calibration error
29	Distance out of tolerance level
31	Distance caliper detected
32	Parameters format incompatible

16.0 ROUTINE MAINTENANCE

⚠ **BEFORE CARRYING OUT ANY ROUTINE MAINTENANCE OR ADJUSTMENT PROCEDURE, POSITION THE MAIN SWITCH "0", DISCONNECT THE MACHINE FROM THE ELECTRICITY SUPPLY USING THE SOCKET/PLUG COMBINATION AND CHECK THAT ALL MOBILE PARTS ARE AT A STANDSTILL.**

❗ **BEFORE EXECUTING ANY MAINTENANCE OPERATION, MAKE SURE THERE ARE NO WHEELS LOCKED ONTO THE MANDREL.**

To guarantee the efficiency and correct functioning of the machine, it is essential to carry out daily or weekly cleaning and weekly routine maintenance, as described below.

Cleaning and routine maintenance must be conducted by authorized personnel and according to the instructions given below.

• Remove deposits of tyre powder and other waste materials with a vacuum cleaner.

DO NOT BLOW IT WITH COMPRESSED AIR.

• Do not use solvents to clean the pressure regulator.

❗ **ANY DAMAGE TO THE MACHINE DEVICES RESULTING FROM THE USE OF LUBRICANTS OTHER THAN THOSE RECOMMENDED IN THIS MANUAL WILL RELEASE THE MANUFACTURER FROM ANY LIABILITY!!**

17.0 TECHNICAL DATA

Wheel max. weight (Kg): **80**
Max. absorbed voltage (W):................................**200**
Power supply:.................................**110V 60Hz 1 Ph**
Balancing precision (g): .... **± 1**
Balancing precision (oz): ....**± 0.05**
Balancing speed (rpm): ....**< 100**
Rim width
setting (inches): .... **1,5" ÷ 22"**
Rim diameter setting (inches):.................. **10" ÷ 30"**
Max wheel diameter inside protection (inches):... **44"**
Max wheel width inside protection (mm):............**560**
Sound emission level (dBA):............................. **<70**
Cycle time (sec): **6**
Weight (Kg): **145**

17.1   Dimensions

Fig. 54
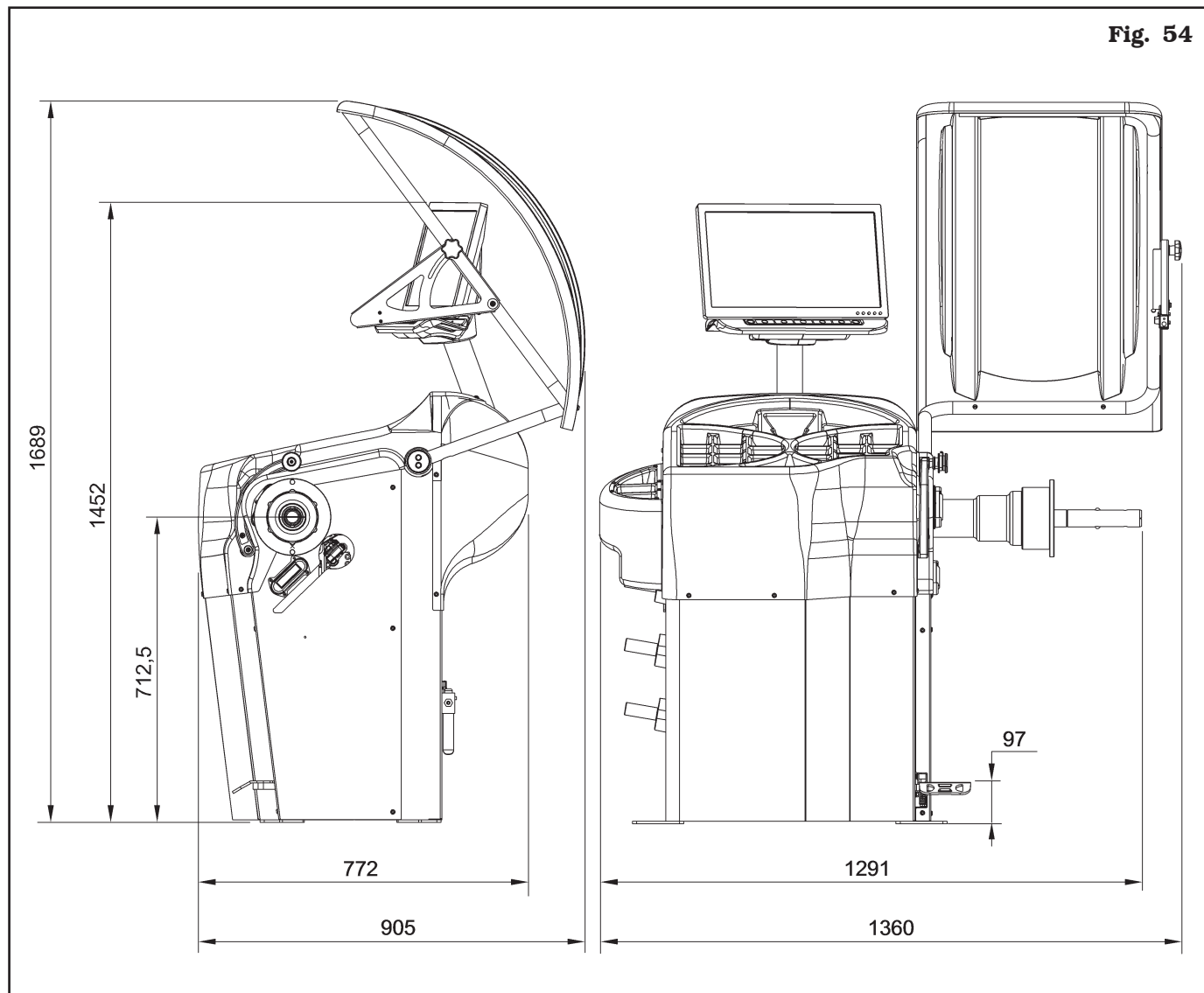
18.0 STORING

If storing for long periods disconnect the main power supply and take measures to protect the machine from dust build-up. Lubricate parts that could be damaged from drying out.

19.0 SCRAPPING

When the decision is taken not to make further use of the machine, it is advisable to make it inoperative by removing the connection pressure hoses. The machine is to be considered as special waste and should be dismantled into homogeneous parts. Dispose of it in accordance with current legislation.

Instructions for the correct management of waste from electric and electronic equipment (WEEE) according to the Italian legislative decree 49/14 and subsequent amendments.

In order to inform the users on the correct way to dispose the product (as required by the article 26, paragraph 1 of the Italian legislative decree 49/14 and subsequent amendments), we communicate what follows: the meaning of the crossed dustbin symbol reported on the equipment indicates that the product must not be thrown among the undifferentiated rubbish (that is to say together with the "mixed urban waste"), but it has to be managed separately, to let the WEEE go through special operations for their reuse or treatment, in order to remove and dispose safely the waste that could be dangerous for the environment and to extract and recycle the raw materials to be reused.

Fig. 55

20.0 REGISTRATION PLATE DATA

MODEL

SERIAL N°   YEAR   CE
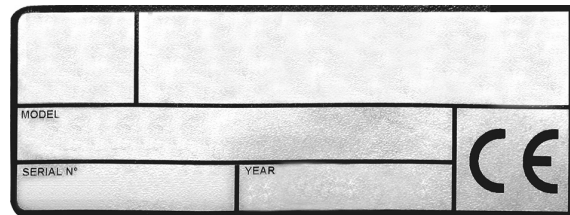
The validity of the Conformity Declaration enclosed to this manual is also extended to products and/or devices the machine model object of the Conformity Declaration can be equipped with.

> **ATTENTION: TAMPERING WITH, CARVING, CHANGING ANYHOW OR EVEN REMOVING MACHINE IDENTIFICATION PLATE IS ABSOLUTELY FORBIDDEN; DO NOT COVER IT WITH TEMPORARY PANELS, ETC., SINCE IT MUST ALWAYS BE VISIBLE.**

Said plate must always be kept clean from grease residues or filth generally.

WARNING: Should the plate be accidentally damaged (removed from the machine, damaged or even partially illegible) inform immediately the manufacturer.

21.0 FUNCTIONAL DIAGRAMS

Here follows a list of the machine functional diagrams.

AUTOMATIC WIDTH

LASER SCAN

ACTUATOR VERSION

A (VS129720941R)				B (VS129720942)			
JP7	YELLOW GREY	JP7	WHITE GREEN		BLACK RED		
JP9	WHITE GREEN	JP9	YELLOW BROWN				
JP8	BROWN PINK	JP8					
JP3	+ 24V -	JP3	+ 24V -				

RUN-OUT

BLUE
BROWN
BLACK

110V / 60Hz
UL/CSA

yellow/green
black
white
white
black

220V / 50Hz
IEC

JP6
WHITE
GREEN
YELLOW
JP1
BROWN
YELLOW
GREY
JP2
PINK + GREEN
JP5

JP4
CAN-L BROWN
CAN-H BLUE

PNEUMATIC SELF-CENTERING CHUCK
EV-C
EV-O

SERIES

VARGM19TS
POWER SUPPLY
MONITOR
TOUCH

HDMI-DVI
HDMI-HDMI
USB-USB
(monitor equipment)

VARGTASTIERA

KIT
PRINTER

MICRO
PEDAL
MICRO
GUARD

black 90W red
M

CALIPER
DISTANCE
CALIPER
DIAMETER
DISC
ENCODER
PIEZO
FRONT
PIEZO
REAR
LED LIGHT

LASER 12 O'CLOCK
electric diagram

JP3
JP2
RED
BLACK

LASER
OUTSIDE
LASER
INSIDE

JP6
EXTERIOR LASER
INTERIOR LASER
JP5

CAN-H
BLUE
CAN-L
BROWN
JP3

KEY
 1 – Power supply cable
 2 – Net filter
 3 – Fuse
 4 – Cable from switch to filter to transformer
 5 – Tilting switch
 6 – Fuse
 7 – Transformer
 8 – Electronic kit
 9 – Power board kit UL/CSA with connectors
10 – Monitor SBC kit
11 – Laser unit actuator
12 – DSE Triangulation lasers (FDA certified machines only)
13 – Ultrasound sensor board
14 – Serial width board cable assembly
15 – Serial extension cable assembly
16 – CAN BUS long extension cable with connectors
17 – Mobile laser supply cable assembly with connectors
18 – Motor 90W with UL/CSA encoder
19 – Motor encoder cable
20 – Motor support ground cable
21 – Supply cable with connectors
22 – Cable
23 – Buffered encoder board
24 – Piezo with front cable
25 – Piezo with cable
26 – LED light with connectors
27 – EV-O/EV-C chuck cable with connectors
28 – Mounting SV5
29 – Cable with connectors for pedal micro
30 – Limit switch
31 – Cable wheel micro protection with connectors
32 – Limit switch
33 – Potentiometer with cable
34 – Cable
35 – HDMI - DVI cable
36 – Push-button panel with 7 keys cables
37 – 7-keys keyboard
38 – Monitor cable transformer diagram
39 – Monitor 22"
40 – Touch screen monitor 19"
41 – Cable from transformer to power supply
42 – Cable for connection USB/A -USB/B
43 – HDMI - HDMI cable
44 – Ultrasounds sensor extension cable (for GAR338)
45 – Run-out board (for GAR338)
46 – Calibrated ultrasound sensor
47 – Electric diagram GAR334, GAR335
48 – Printer kit
49 – Power supply cable USA plug
50 – Net filter
51 – UL/CSA fuse
52 – Wiring harness from net filter to UL/CSA transformer
53 – UL/CSA fuse