

SPACE ER 200 - ER 220
SPACE ER 150 - ER 160 - ER 165

MANUALE DI ISTRUZIONE
INSTRUCTION MANUAL
BETRIEBSANLEITUNG
MANUEL D'INSTRUCTIONS
MANUAL DE INSTRUCCIONES

**COMPOSIZIONE**

42 pagine (copertine
comprese)
40 pagine numerate

COMPOSITION

42 pages (including
cover pages)
40 numbered pages

ZUSAMMENSETZUNG

42 Seiten (inkl.
Deckblätter)
40 numerierte Seiten

COMPOSITION

42 pages (pages de la
couverture incluses)
40 pages numérotées

COMPOSICIÓN

42 páginas (incluidas
las portadas)
40 páginas numeradas

- Per eventuali chiarimenti interpellare il più vicino rivenditore oppure rivolgersi direttamente a:
- For any further information please contact your local dealer or call:
- Im Zweifelsfall oder bei Rückfragen wenden Sie sich bitte an den nächsten Wiederverkäufer oder direkt an:
- Pour tout renseignement complémentaire s'adresser au revendeur le plus proche ou directement à:
- En caso de dudas, para eventuales aclaraciones, póngase en contacto con el distribuidor más próximo ó diríjase directamente a:

SIMBOLOGIA UTILIZZATA NEL MANUALE
SYMBOLS USED IN THE MANUAL
IN DER BETRIEBSANLEITUNG VERWENDETE ZEICHEN
SYMBOLES UTILISES DANS LA NOTICE
SIMBOLOGÍA UTILIZADA EN EL MANUAL

	SIMBOLI	SYMBOLS	ZEICHEN	SYMBOLES	SÍMBOLOS
	VIETATO!	FORBIDDEN!	VERBOTEN	INTERDIT!	PROHIBIDO!
	Obbligo! Operazioni o interventi da eseguire obbligatoriamente	Mandatory! Operations or jobs to be performed compulsorily	Vorschrift Obligatorisch auszuführende Arbeitsvorgänge oder Eingriffe	Obligation. Opérations ou interventions obligatoires	Obigación. Operaciones o intervenciones que hay que realizar obligatoriamente
	Pericolo! Prestare particolare attenzione	Hazard! Be especially careful	Gefahr! Äusserste Vorsicht ist geboten	Dager! Faire très attention	Peligro! Prestar especial atención
	Movimentazione con carrello elevatore o transpallet	Handle using fork-lift or pallet transfer unit	Transport mit Dabelstapler oder Handgabelhubwagen	Déplacement avec chariot élévateur ou traspalette	Desplazamiento con carretilla elevadora o estibadora
	Attenzione: carichi sospesi	Caution: hanging loads	Achtung: hängende Lasten	Attention: charge suspendue	Atección: cargas suspendidas
	Attenzione: Non sollevare mai la macchina facendo presa sull'albero	Caution: Never lift the machine by means of the shaft	Achtung: Die Maschine nie an der Wuchtwellen anheben.	Attention: ne soulever pas l'équilibreuse en ayant prise sur l'arbre	Atención: no levantar jamás la máquina tomándola por su eje
	Pericolo: scariche elettriche	Shock hazard	Gefahr! elektrische Entladungen	Danger d'électrocution	Peligro de descargas eléctricas
	Indossare guanti da lavoro	Wear work gloves	Der Arbeit angemessene Handschuhe tragen	Porter des gants de travail	Colocarse guantes de trabajo
	Calzare scarpe da lavoro	Wear work shoes	Der Arbeit angemessene Schuhe tragen	Mettre des chaussures de travail	Usar zapatos de trabajo
	Indossare occhiali di sicurezza	Wear safety goggles	Schutzbrille tragen	Porter des lunettes de sécurité	Usar gafas de seguridad

LIST OF CONTENTS

0	INSTRUCTIONS	2
0.1	PRELIMINARY SAFETY INFORMATION	2
1	INTENDED USE	3
2	OPERATOR TRAINING.....	4
2.1	GENERAL PREVENTIVE MEASURES	4
2.2	INDICATION OF OUTSTANDING RISKS	4
3	COMPOSITION OF EQUIPMENT	5
3.1	MODELS ER200 - ER220	5
3.2	MODELS ER150 - ER160 - ER165	6
3.3	SAFETY DEVICES	7
3.4	TECHNICAL DETAILS	7
3.5	OVERALL DIMENSIONS.....	8
3.5.1	Models ER200 - ER220	8
3.5.2	Models ER150 - ER160 - ER165	8
4	TRANSPORT AND INSTALLATION.....	9
4.1	TRANSPORT AND UNPACKING	9
4.2	INSTALLATION	9
4.2.1	Fitting the shaft on the flange.....	10
4.2.2	Fitting the protection guard (mod. ER165 only)	10
4.2.3	Brightness and contrast adjustment.....	11
4.2.4	Power connections.....	11
5	FITTING THE WHEEL ON THE SHAFT.....	12
6	SWITCHING THE MACHINE ON AND OFF	13
7	WHEEL BALANCING	14
7.1	DETERMINATION OF WHEEL DIMENSIONS	14
7.1.1	Manual setting of wheel dimensions for dynamic balancing and ALU 1, 2, 3, 4 functions	14
7.1.2	Wheel dimension manual setting for ALU-S type correction.....	16
7.1.3	Manual setting of wheel dimensions for static correction	17
7.2	USER MANAGEMENT	18
7.3	UNBALANCE MEASUREMENT	19
7.3.1	Dynamic balancing.....	19
7.3.2	Wheel positioning	21
7.4	ALU AND/OR STATIC PROGRAMS.....	22
7.4.1	Static balancing.....	23
7.4.2	ALU-S procedure.....	25
8	WHEEL BALANCING IN MOTORCYCLE MODE.....	27
9	WEIGHTS HIDDEN BEHIND SPOKES MODE.....	28
10	MATCHING PROCEDURE (RIM-TYRE OPTIMISATION).....	31
11	SETUP OF UNITS OF WEIGHT MEASUREMENT AND RIM WIDTH/DIAMETER AND SETTING CAR/MOTORCYCLE MODE.....	34
12	CALIBRATION	36
13	ERROR SIGNALS.....	39
14	MAINTENANCE	39
15	STORAGE AND SCRAPPING	39
16	MACHINE IDENTIFICATION DATA.....	40

0 INSTRUCTIONS

Any damage caused by failure to follow the instructions in this manual or improper machine use shall relieve SPACE s.r.l. of all liability.

0.1 Preliminary safety information

Before starting the machine:

- Read the instructions and the entire manual before using or working on the wheel balancer. This manual represents an integral part of the product and is intended to inform the user on how to use the wheel balancer model ER200, ER220, ER150, ER160 and ER165. Look after the manual for the entire life of the machine. Keep it in an easy to access place and refer to it every time the need arises. All machine operators must be able to read the manual.
- Make sure the power supply is in conformity with the specifications shown on the plate.
- Make sure the machine is properly positioned on the floor.
- Suitably position the machine power cables.

On starting the machine:

- Remove any foreign bodies from the tyre before spinning the wheel.
- Make sure the counterweights are fitted properly before spinning the wheel again.

In emergency conditions and before performing any maintenance:

- Isolate the machine from any power sources by means of the machine master switch.

Work environment and machine cleaning:

- The work environment must be kept clean and dry and must not be exposed to atmospheric agents. It must also be well lit.
- Do not clean the machine using strong jets of water and compressed air.
- To clean plastic panels or tops, use alcohol (always avoid liquids containing solvents).

SPACE s.r.l. shall be entitled to make any changes to the models described in this manual at any time for reasons of a technical and commercial nature

1 INTENDED USE

For models ER220, ER160 and ER165, after manually entering rim data (diameter, distance and width) and having started wheel spin, the stop procedure becomes automatic until the required weight is found.

Wheel spin with wheel balancer mod. ER200 and ER150 is on the other hand manual, consequently stop is also manual by means of the pedal provided.

Numerous reasons exist for wheel unbalance, but this is usually caused by a non-symmetric distribution of the rim fabrication materials, above all of the tyre with respect to the rotation axis and equatorial plane of the wheel, to imperfect mutual rim-tyre positioning and to incorrect wheel centring on the hub.

The purpose of this equipment is to cancel out, or at least reduce to within acceptable limits, the vibrations of the wheel that cause driving problems and damage mechanical parts. The equipment is suitable for all types of vehicle wheels and light commercial vehicles.

This aim can be achieved by fitting counterweights of suitable size and in specific positions to wheels that are not correctly balanced.

A wheel can be considered completely balanced only once it is dynamically balanced, as this also ensures dynamic balancing.

The specifications are indicated in the "TECHNICAL DETAILS" paragraph (para. 3.4 on page 7). As well as standard procedures, 4 options exist for light alloy wheels and the ALU/Special function, which enables the two counterweights to be fitted in the most appropriate positions.

Counterweight positioning is also reduced to a simple procedure. If, when balancing spokes alloy wheels, the external weight becomes visible, a special procedure exists (weights hidden behind spokes mode), which splits the weight in two and positions these behind two spokes. Autotest, auto-calibration and guided calibration of the measuring heads make it possible to always work with perfectly functional machines.

2 OPERATOR TRAINING

The machine must only be used by specifically trained and authorised personnel. To ensure proper machine use and that measurements can be efficiently taken, operators must be correctly trained and acquire the skills consistent with the instructions provided by the manufacturer. In case of any doubts relating to machine use and maintenance, refer to the instruction manual and then, if such doubts persist, contact an authorised after-sales centre or SPACE s.r.l. technical assistance directly.

2.1 General preventive measures



- During operation and maintenance of this machine, always abide by the safety and accident-prevention regulations in force.



- The machine must only be used by adequately trained and authorised persons.



- 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.



- This machine must only be used for the purpose for which it was expressly intended.

SPACE s.r.l. declines all liability for injury or damage to persons animals and things caused by improper machine use.



- Accessories and spare parts must be fitted by persons authorised by SPACE s.r.l. and only original spare parts and accessories must be used.



- Operators should wear suitable protective clothing like gloves, safety



- The machine must only be operated in places where there is no danger of explosions or fire.



- Removal or changes made to safety devices, or warning signals on the machine can cause serious hazards and represents a violation of European safety regulations.



- Before doing any maintenance jobs on the system, always disconnect the power supply.

In case of doubt, do not interpret, but contact SPACE s.r.l. technical assistance in order to obtain instructions suitable for performing operations in total safety.



- Wheel balancer operators must not wear loose clothing, hanging ties, chains or other accessories that could become trapped. Long hair should be properly collected up and tied or protected.



- Do not allow unauthorised personnel to come near the wheel balancer during the cycle.

2.2 Indication of outstanding risks

The machine was designed and manufactured in compliance with applicable regulations. The risks connected to the use of the machine have been eliminated as far as possible. Other outstanding risks are described in this manual; the machine also features self-adhesive pictograms (chap. 3 on page 5) indicating hazard areas. In the event pictograms become illegible, please order them from a dealer or directly from SPACE s.r.l. and replace them. Please refer to Spare Parts manuals.

3 COMPOSITION OF EQUIPMENT

3.1 Models ER200 - ER220



3.2 Models ER150 - ER160 - ER165



	Caution: Never lift the machine by means of the shaft		Wear work shoes
	Shock hazard		Wear work goggles
	Wear work gloves		

3.3 Safety devices



The wheel balancer features a number of safety devices. One of these is located on the rear of the machine (master switch), see chap. 3, page 5. The master switch interrupts power to the machine when turned clockwise.

In the case of model ER165 it is best to close the protection guard before spinning the wheel.

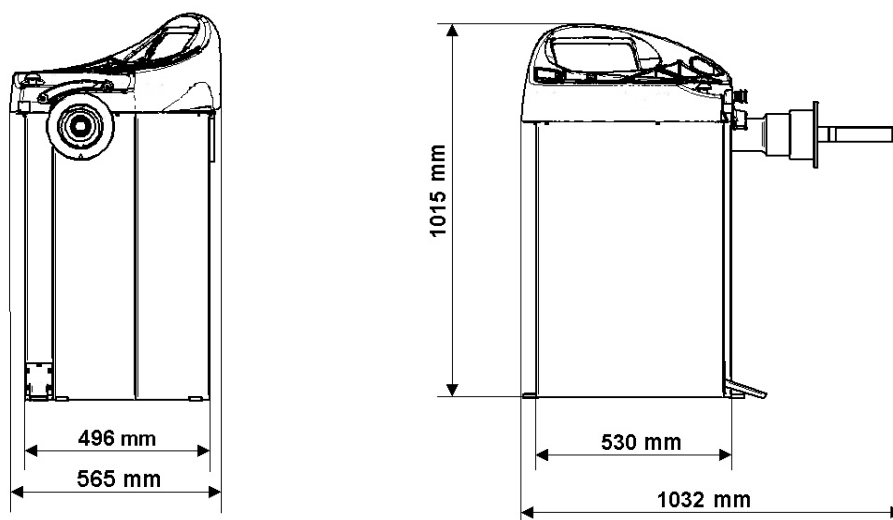
 (key F1 on keyboard) can be pressed if required to manually stop the wheel in case of an emergency.

3.4 Technical details

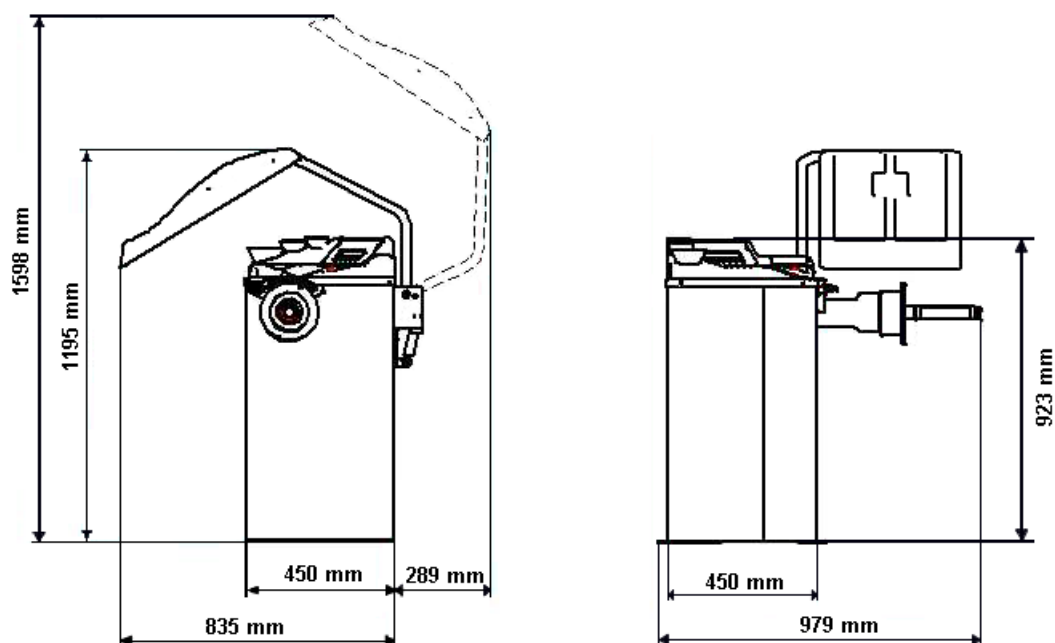
	ER200 ER150	ER220 ER160	ER165
Max wheel weight	65kg	65kg	65kg
Max power absorption	40W	100W	100W
Power supply	230V 50/60Hz 1ph	230V 50/60Hz 1ph	230V 50/60Hz 1ph
Balancing precision	± 1g	± 1g	± 1g
Balancing speed	99 rpm	99 rpm	99 rpm
Min/max rim - machine distance	0÷400mm	0÷400mm	0÷400mm
Rim width setting	1.5" ÷ 22"	1.5" ÷ 22"	1.5" ÷ 22"
Diameter setting	10" ÷ 24"	10" ÷ 24"	10" ÷ 24"
Max wheel diameter inside protection	-	-	1016mm
Max wheel width inside protection	-	-	560mm
Sound emission level	< 70 dB	< 70 dB	< 70 dB
Cycle time	7 sec	7 sec	7 sec
Weight	78kg (ER200) 68kg (ER150)	82kg (ER220) 72kg (ER160)	80kg (ER165)

3.5 Overall dimensions

3.5.1 Models ER200 - ER220



3.5.2 Models ER150 - ER160 - ER165



4 TRANSPORT AND INSTALLATION

4.1 Transport and unpacking



The machine is supplied packed in a box fastened to a pallet to facilitate transport. To transport the machine to the point where it is to be installed, use a lifting and transport mechanism such as a fork-lift truck or lift with forks.

The lifting device must have a lifting capacity equal at least to the weight of the packed machine. During transport, prevent the lifted machine from swinging. The machine must be stored in its packaging, in a dry and ventilated environment (with a temperature between -25° +55°C).

Never overturn or position the packaging horizontally. The pallet must always rest on a flat and solid surface. Do not stack other packages on top of the packaging. Always position so the instructions can be easily read.

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

Make sure you have received all standard parts as previously listed.

The packaging material (plastic bags, polystyrene, nails, screws, wood, etc.) must be collected up and disposed of through authorised channels, except for the pallet, which could be used again for subsequent machine handling.

4.2 Installation



Position the wheel balancer where this is to be used. Never lift the machine by means of the shaft.

Install the machine in a dry, covered and well-lit place, possibly closed or protected against the elements. Before positioning the machine, make sure the place chosen complies with applicable safety regulations and check the minimum distances from walls or other obstacles (see Figure 1).

The position must be such as to allow the operator to see the area around the machine. During operation in fact, the operator must make sure there is no one or nothing in the vicinity of the machine that could represent a hazard.

The characteristics of the machine operating environment must be maintained within the following limits:

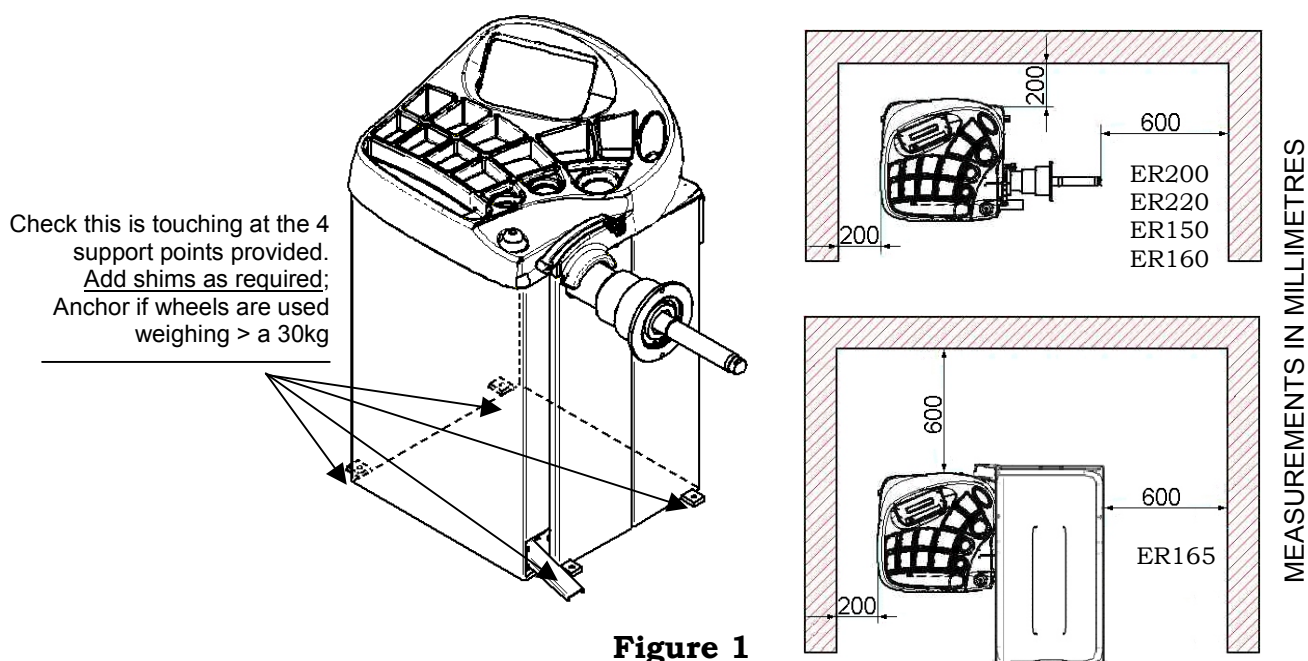
- temperature: 0° + 45° C ; relative humidity: 30 ÷ 90 % (without dew);

The wheel balancer can operate on any solid and flat surface.

Make sure the 4 support points are resting properly on the floor and if necessary shim.

The machine is best secured to the floor at the 4 above anchor points (Figure 1). Anchoring is mandatory if wheels weighing more than 30 kg are used; use floor anchors for M8 x 80 mm screws.

- drill 4 x 10 mm dia. holes opposite the holes in the page;
- fit the anchors and install the machine so this coincides with the holes made and then tighten the screws (torque wrench setting: about 22 Nm).



4.2.1 Fitting the shaft on the flange

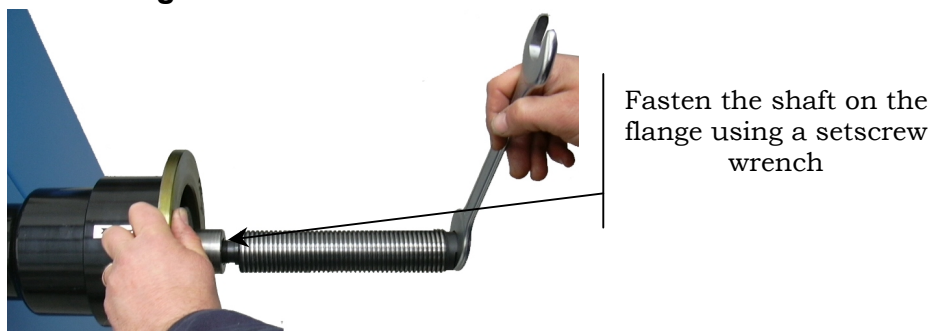


Figure 2

4.2.2 Fitting the protection guard (mod. ER165 only)

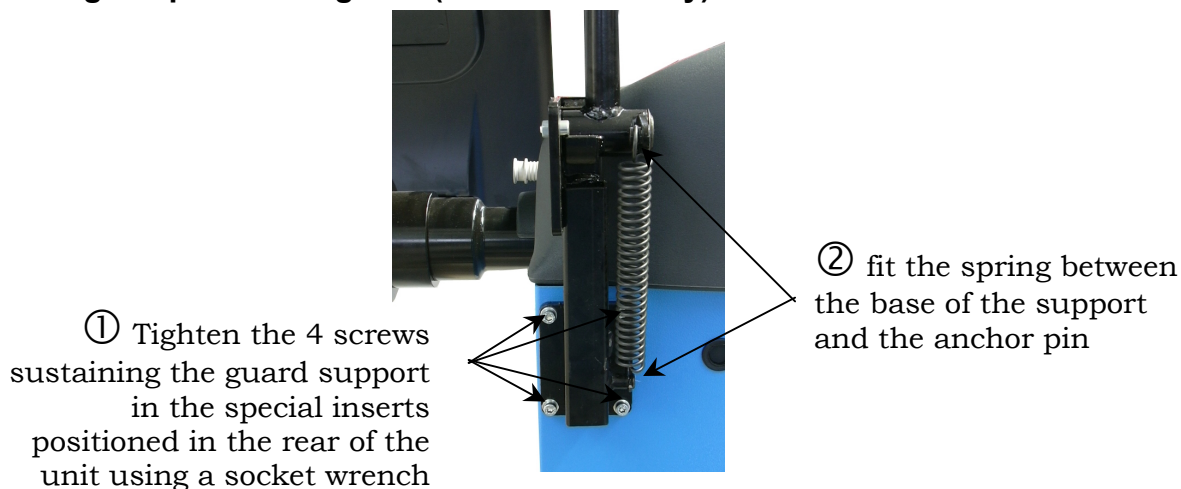


Figure 3

4.2.3 Brightness and contrast adjustment

In the first page of the program press the below indicated keys to adjust brightness and contrast. Such adjustment is identical for all display. See Figure 4. Try to find the best settings, going across the all steps, because the settings can pass through clear, dark and again clear.

NOTE: The settings done remains also after a shut-down.

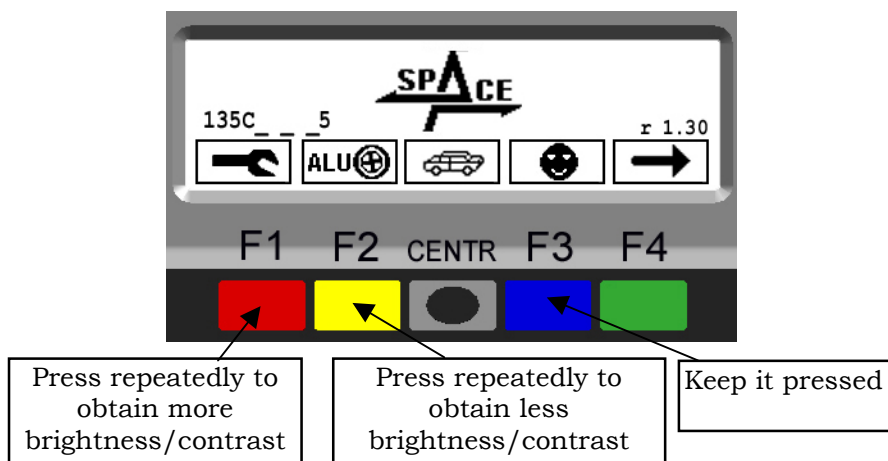


Figure 4

4.2.4 Power connections



Before connecting up the machine, carefully check:

- power line specifications correspond to machine requirements as shown on the machine plate;
- there is an earth lead and this is of suitable size (section greater or same as max section of the power cables).
- that all the component parts of the power line are in good condition;
- that a wall switch exists solely for starting and stopping the machine. This must feature a residual current and thermal magnetic circuit breaker, taking into account the electrical power indicated on the wheel balancer.

Connect the machine up to the mains by means of the 3-pole plug provided (230 V single-phase) through the wall socket.

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.

5 FITTING THE WHEEL ON THE SHAFT

To achieve perfect balancing, the wheel must be carefully and properly fitted on the shaft. 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.

1. Remove any type of foreign body from the wheel: already-existing weights, stones and mud, and make sure the shaft and the rim centring area are clean before fitting the wheel on the shaft.
2. Carefully choose the cone most suitable for the wheel to be balanced. These accessories must be selected according to the shape of the rim. Carefully position the wheel using the cone (otherwise this could seize) until this rests against the support flange.
3. Fit the wheel with the inner side of the rim towards the wheel balancer and against the cone.
4. Fit the protection casing in the locknut and fasten against the wheel.



SHAFT

WHEEL FITTING CONE

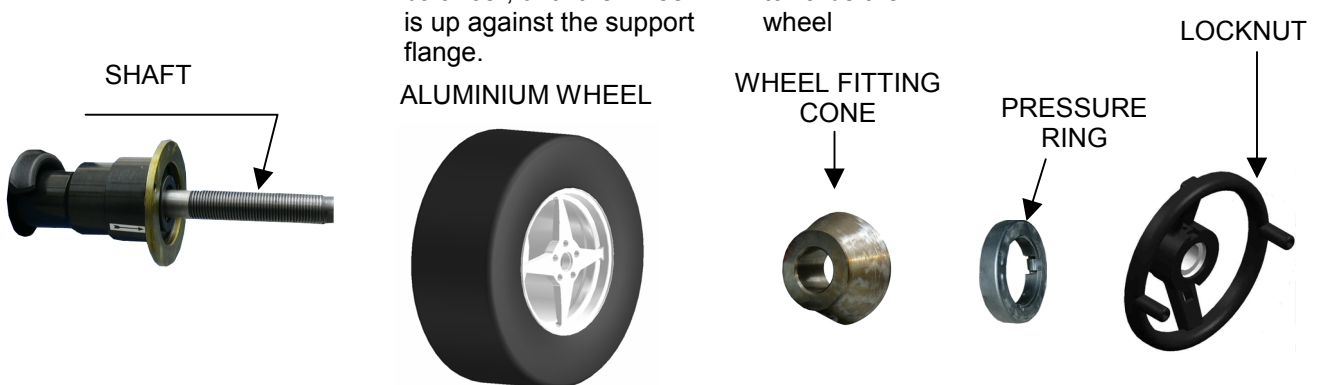
STANDARD WHEEL

LOCKNUT

PROTECTION CAP

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

1. Clean the shaft before fitting the wheel.
2. Fit the wheel with the outside of the rim towards the wheel balancer, until the wheel is up against the support flange.
3. Fit the cone with the narrowest part turned towards the wheel
4. Fit the grip-ring in the locknut and secure the cone.



SHAFT

ALUMINIUM WHEEL

WHEEL FITTING CONE

LOCKNUT

PRESSURE RING

6 SWITCHING THE MACHINE ON AND OFF

The ON/OFF master switch is located on the rear of the machine.

To start the machine and access the program, switch on the system by turning the master switch to ON (I).

Wait a few seconds for the operating program to load and for the first program page to appear on the display screen.

The monitor shows various types of information and presents the user with numerous operation options.

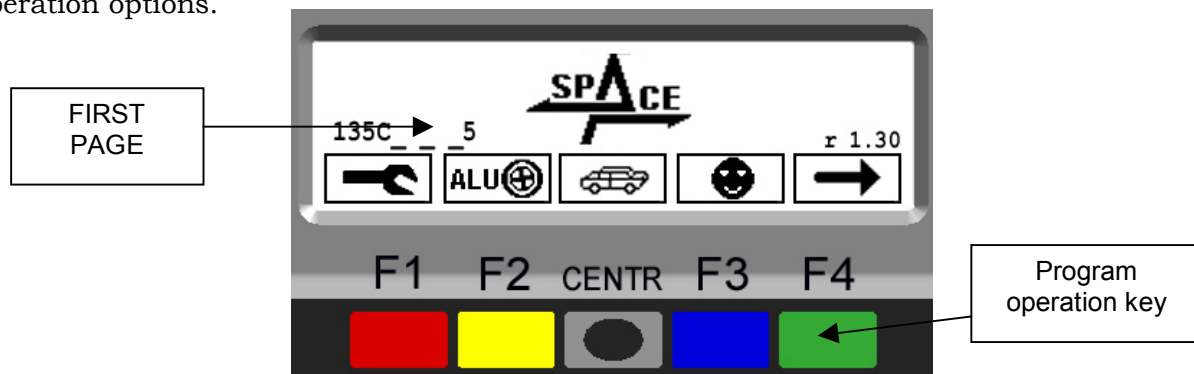
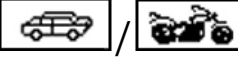
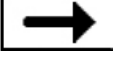


Figure 5

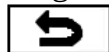
ICON	KEY	DESCRIPTION
	RED (F1)	Displays the program configuration panel
	YELLOW (F2)	Displays the alu correction procedures.
	CENTRE	Displays car or motorcycle mode
	BLUE (F3)	Displays the tests of the different services (4 different services are managed) para. 7.2 on page 18
	GREEN (F4)	The dynamic balancing test starts

By means of the 5 keys located on the display mask (F1-F2-CENTRE-F3-F4) all the machine functions can be used.

During program running, the various display pages show the different keys by means of which the corresponding function can be immediately selected.

Many display pages contain several rows of keys. In this case, the next row of keys can be displayed by means of the key corresponding to the icon .

To go back and display the previous row of keys, press the key corresponding to the icon



or in some cases .

7 WHEEL BALANCING



7.1 Determination of wheel dimensions

7.1.1 Manual setting of wheel dimensions for dynamic balancing and ALU 1, 2, 3, 4 functions

SPACE wheel balancers feature a manual gauge and a graduated scale for determining wheel dimensions (Figure 7 and Figure 8).

The rim distance dimension is always set with "mm" unit of measurement.

The width and diameter dimensions on the other hand can be set in "inches" or "mm". The examples shown in this manual show measurements in "inches". To change the unit of measurement from "inches" to "mm", see chap. 11 on page 34.

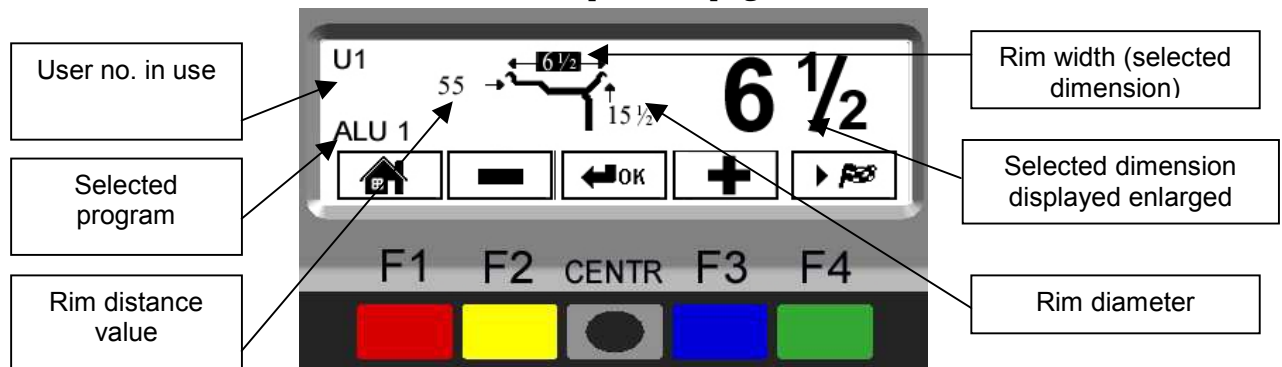


Figure 6

ICON	KEY	DESCRIPTION
	RED (F1)	Return to display previous page
	YELLOW (F2)	Decrease wheel dimension values
	CENTRE	Select and confirm the value to be set
	BLUE (F3)	Increase wheel dimension values
	GREEN (F4)	Perform spin

Press centre key () to select the value to be set.

The display screen will show the selected value on black background and on the right the same value in large characters (Figure 6).

Manually set the width. Generally speaking, the nominal width is indicated on the rim, but it is always a good idea to position the graduated scale on the inner and outer side of the wheel as shown in Figure 7 and determine the measurement to be set.

To enter the wheel width, the operator must select the "PLUS"  or "MINUS"  key until the desired width is achieved.

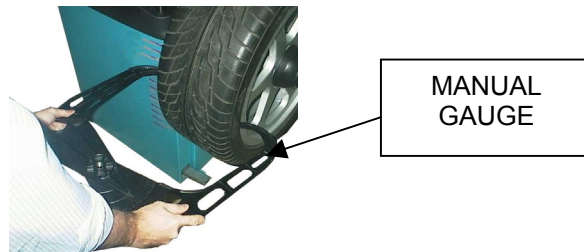


Figure 7

Press the centre key () to select the rim diameter dimension.

Enter the rim diameter by selecting the “PLUS”  or “MINUS”  key until the desired value is achieved.

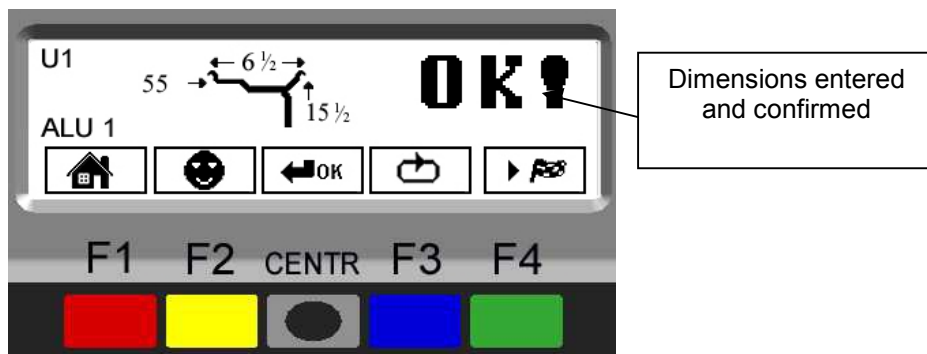
Press the centre key () to select the rim distance dimension

Move the graduated scale from the initial position against the inner edge to measurement position (see Figure 8). Read the value to be set on the rule.

Enter the rim distance by selecting the “PLUS”  or “MINUS”  key until the desired value is achieved.


Figure 8

After setting all the wheel dimensions, press the centre key () again to confirm. The program will show the page in Figure 9.


Figure 9

ICON	KEY	DESCRIPTION
	RED (F1)	Return to display previous page
	YELLOW (F2)	User management (para. 7.2 on page 18)
	CENTRE	Select and confirm the value to be set
	BLUE (F3)	Display the next row of keys
	GREEN (F4)	Perform spin

7.1.2 Wheel dimension manual setting for ALU-S type correction

Select the ALU-S function as described in para. 7.4 on page 22 and press the "CENTRE key" to confirm and enter the measurements.

The display screen will show the page in Figure 10.

Move the graduated scale to the position where the inner weight is to be fitted. Read the value to be set on the scale. Enter the distance by selecting the "PLUS"  or "MINUS"  key until the desired value is achieved.

Press the "CENTRE key" to confirm.

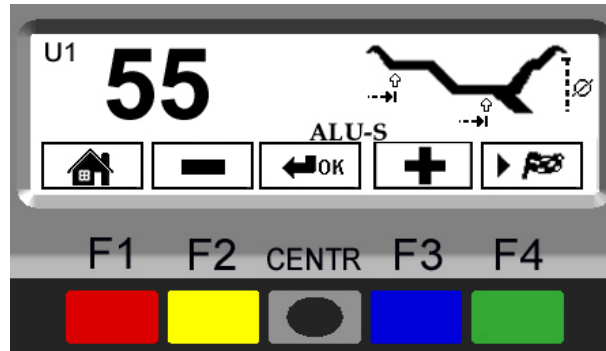


Figure 10

The "acquired dimension" indication is given by the first measurement point indication arrow, which goes from white to black.

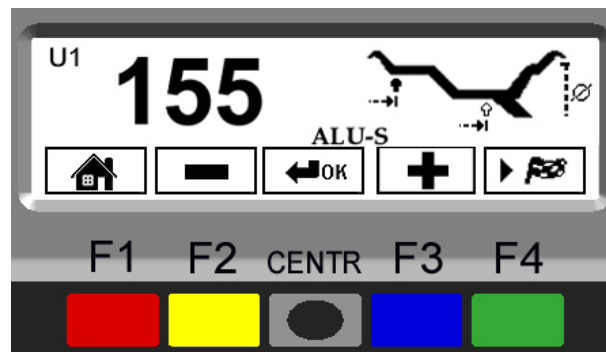


Figure 11

Move the graduated scale to the position where the outer weight is to be fitted (always hidden inside the rim). Read the value to be set on the scale. Enter the distance by selecting the "PLUS"  or "MINUS"  key until the desired value is achieved.

Press the "CENTRE key" to confirm.

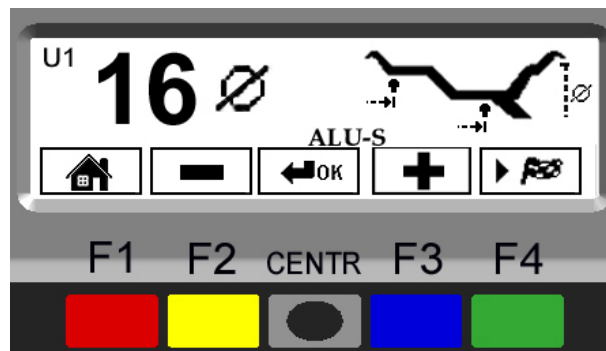


Figure 12

The "acquired dimension" indication is given by the second measurement point indication arrow, which goes from white to black.

Enter the wheel diameter (Figure 12) by selecting the "PLUS"  or "MINUS"  key until the desired value is achieved. Press the "CENTRE key" to confirm. The program will show the page in Figure 13.

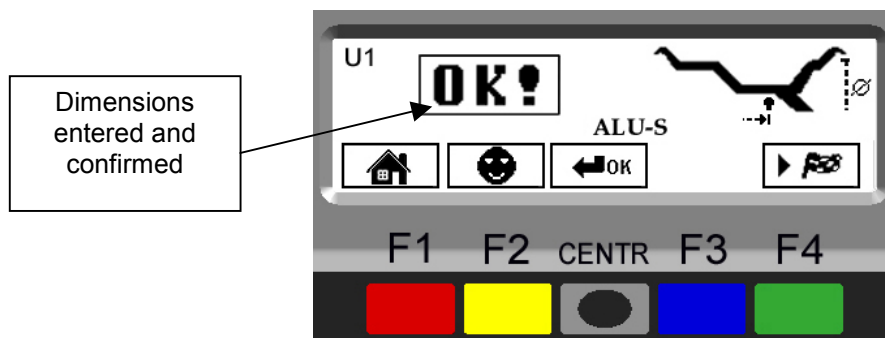


Figure 13

To display all the measurements entered, press the "CENTRE key" several times. Press the "F4 key" to start the spin.

7.1.3 Manual setting of wheel dimensions for static correction

Select the STATIC function as described in para. 7.4 on page 22 and press the "CENTRE key" to confirm and enter the measurements.

The display screen shows Figure 14.

Move the graduated scale to the position where the weight is to be fitted. Read the value to be set on the scale. Enter the distance by selecting the "PLUS"  or "MINUS"  key until the desired value is achieved. Press the "CENTRE key" to confirm.

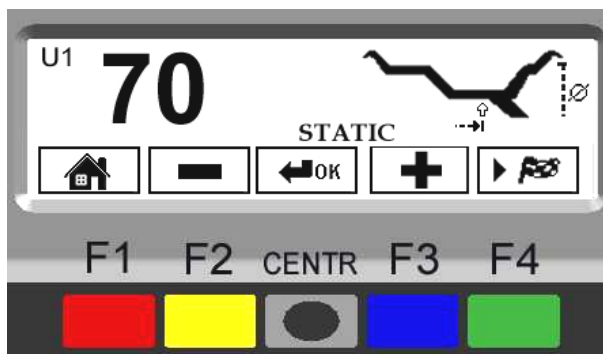


Figure 14

The "dimension acquired" indication is shown by the measurement point indication arrow which goes from white to black.

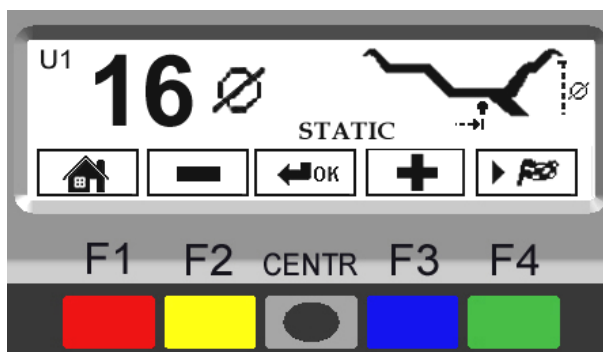


Figure 15

Enter the wheel width diameter (Figure 15), always selecting the “PLUS”  or “MINUS”  key until the desired value is achieved.
Press the “CENTRE key” to confirm.
The display screen will show Figure 16.

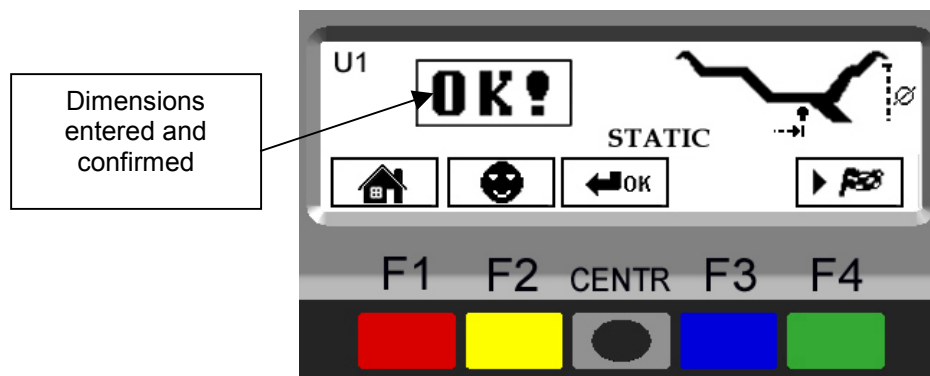


Figure 16

To display all the entered measurements, press the "CENTRE key" several times.
Press the “F4 key” to start the spin.

7.2 User management

To select user management, select the following key on the presentation page (para. 6 on page 13).



SPACE wheel balancers can be used by 4 different users at the same time, by selecting the above indicated key several times, until the desired user is reached.

When the user key is pressed, the current user number appears on the display screen (U1, U2, U3 and U4 in car mode or M1, M2, M3 and M4 in motorcycle mode).

The system stores the data relating to the last performed spin according to the different operators. The desired user can be called every time the program displays the specific key. The measurements stored for each user are lost when the machine is switched off. User management is valid for any wheel balancer function.

IMPORTANT: To enable or disable the "User Control" function, see para. 11 (Figure 44 on page 35). Once this function has been disengaged by pressing the "User key F3" on the presentation page (para. 6 on page 13) on the top left of the monitor, the only used user appears “U” in car mode or “M” in motorcycle mode.

7.3 Unbalance measurement

7.3.1 Dynamic balancing

Dynamic balancing is a procedure that offsets the wheel vibrations using 2 weights on different planes.

To perform a dynamic measurement spin:

Make sure the wheel is clean of any stones and/or mud.

Remove any counterweights.

Fit the wheel and make sure it is fastened properly.

Press the "F4 key"  from the initial program page (see para. 6 page 13).

Enter the wheel measurements (para.7.1 page 14).

In the case of SPACE models ER220/ER160/ER165 press the "F4 key"  to perform a spin. In just a few seconds, the wheel will run at full speed. The wheel balancer display screen shows wheel rotation (Figure 17). At the end of the spin, the wheel will stop automatically, also taking into account the unbalance measured so the external weight fitting position is approx. at 12 'o' clock.

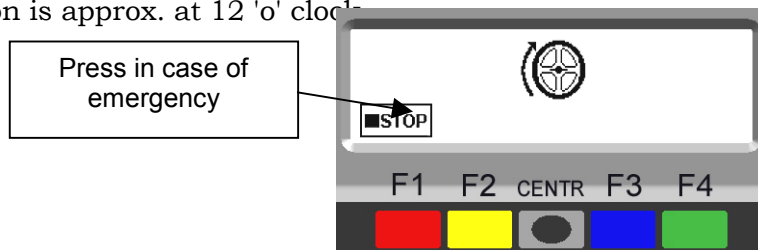


Figure 17

In the case of models ER200 / ER150, spin the wheel manually until full running speed is achieved. This is shown by the filling up of all the notches on the display screen and by the STOP icon which appears on the screen. When the figures appear (see Figure 19) brake the wheel by means of the pedal brake.

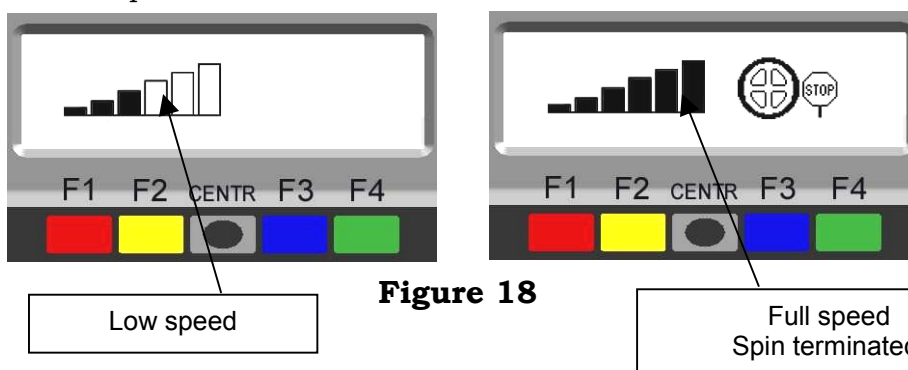
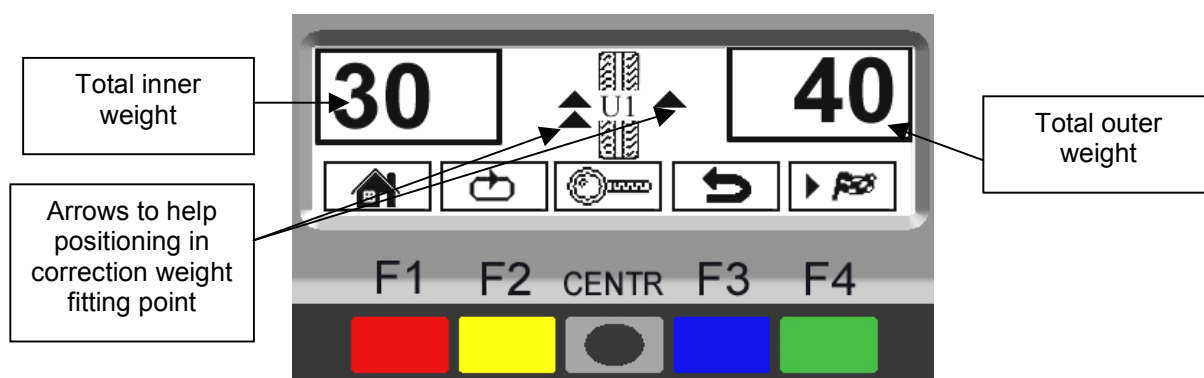


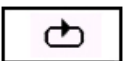
Figure 18

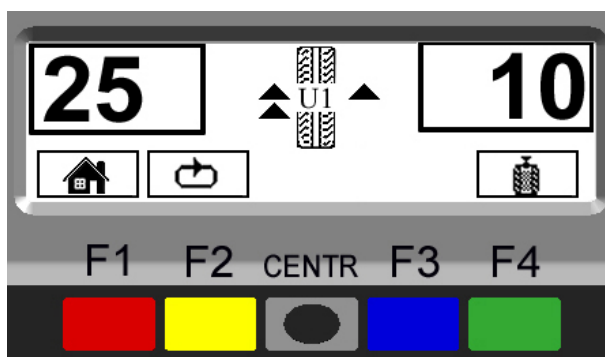
The display unit indicates the direction in which to move the wheel to fit the weights and how much weight is needed to correct the unbalance (Figure 19).

Weight can be determined in "grams" or "ounces"; in this manual examples are shown in grams. To change the unit of measurement from "grams" to "ounces", see chap. 11 on page 34.

Once the unbalance of the inside and outside of the wheel is known, it is possible to proceed with positioning for correction of unbalance (para. 7.3.2 on page 21).


Figure 19

ICON	KEY	DESCRIPTION
	RED (F1)	Return to initial program phase
	YELLOW (F2)	Selected once : Displays the next row of keys (SPLIT and MATCHING function para. 10 on page 31) Selected twice : Displays the next row of keys (static unbalance Figure 20)
	CENTRE	Displays exact unbalance (pitch 1g instead of 5g)
	BLUE (F3)	Displays previous page
	GREEN (F4)	In models ER220 /ER160 /ER165 performs spin

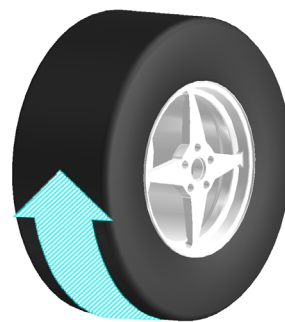
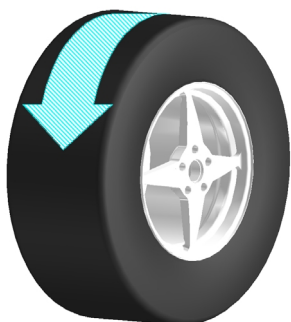

Figure 20

ICON	KEY	DESCRIPTION
	RED (F1)	Return to dynamic balancing (Figure 19)
	YELLOW (F2)	Displays the next row of keys
	GREEN (F4)	Displays the Static balancing (see par. 7.4.1 on page 23)

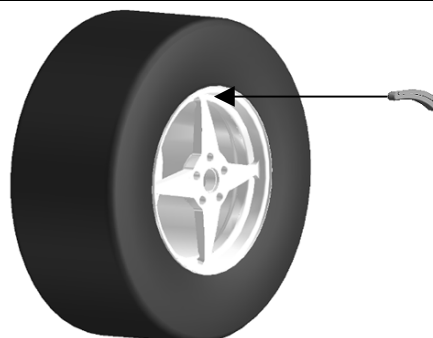
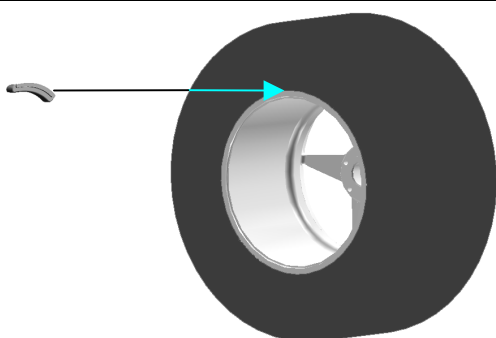
7.3.2 Wheel positioning

The weights must be positioned in the top part on the vertical, at 12 'o' clock, so unbalance is below and the weight fitting point is above.

When the wheel balancer display screen shows  or  this means you are **very far** from the point where the counterweight is to be positioned.
The position of the wheel is over 30° from the exact fitting point.
When the wheel balancer display screen shows  or  this means you are **not far** from the counterweight positioning point.
The position of the wheel is within 30° of the exact fitting point.



When the wheel balancer display screen shows  (inside) and  (outside) the exact position has been reached. The fitting point has been found. Now the unbalance can be corrected by fitting the necessary weight.



Once the wheel has been correctly positioned, fit the weight indicated by the machine on both sides of the wheel.

After the weights have been fitted, the wheel balancing conditions can be checked by performing a trial wheel spin.

The STANDARD unbalance calculation procedure is now completed.

7.4 ALU and/or STATIC programs

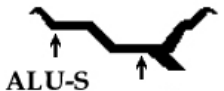
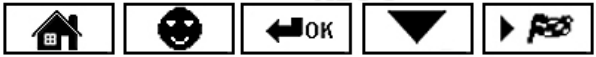
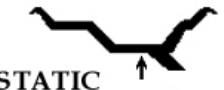
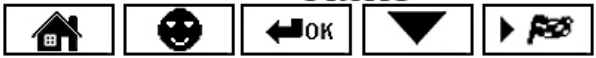
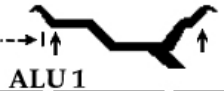
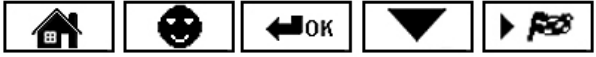
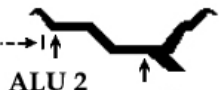
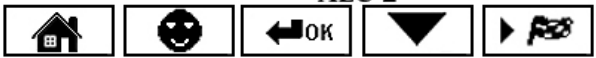
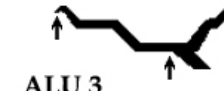
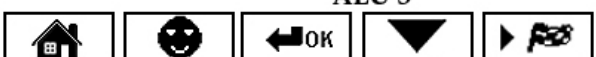
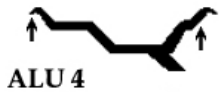
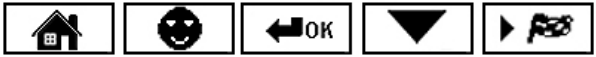
The available functions permit selecting the appropriate weight positions to be placed in positions different to standard (dynamic unbalance).

The ALU programs measure rims by means of data pre-set in the wheel balancer.

The measurements entered by the operator will therefore be automatically corrected by the machine according to the program selected.

From the initial program page (see para. 6 on page 13) press the "F2 key".

The display screen shows a window with possible selection modes. Select the desired function by means of the "F3 key"  and confirm with the "CENTRE key" .

POSSIBLE FUNCTIONS THAT CAN BE SELECTED	DESCRIPTION
U1  	The ALU-S function enables the user to enter 2 different positions for fitting the adhesive weights on the outer and inner side of the rim, so as to select the position of the weights according to specific need. The position of the outer weight is not visible but is hidden inside. Press the "CENTRE key" to confirm. Enter the measurements (par. 7.1.2 on page 16) and proceed as described in para. 7.4.2.
U1  	Static balancing is a procedure that offsets wheel vibrations using a single adhesive weight on a single plane. Press the "CENTRE key" to confirm. Enter the measurements (para. 7.1.3 on page 17) proceed as described in para. 7.4.1 on page 23.
U1  	The ALU 1 function permits balancing wheels with light alloy rims by fitting adhesive weights on the outer and inner sides of the rim. Press the "CENTRE key" to confirm. Enter the measurements normally and proceed as for dynamic unbalance.
U1  	The 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. Press the "CENTRE key" to confirm. Enter the measurements normally and proceed as for dynamic unbalance.
U1  	The 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. Press the "CENTRE key" to confirm. Enter the measurements normally and proceed as for dynamic unbalance.
U1  	The 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. Press the "CENTRE key" to confirm. Enter the measurements normally and proceed as for dynamic unbalance.

For STATIC and ALU-S functions, see para. 7.4.1 and 7.4.2 on pages 23 and 25.
For all the other previously indicated functions, wheel balancing will be done as indicated for dynamic balancing para. 7.3.1 on page 19.
The wheel balancer will automatically correct the measurements entered by the operator according to the selected function.

7.4.1 Static balancing

Make sure the wheel is devoid of any stones and/or mud.

Remove any counterweights.

Fit the wheel and make sure this is fastened properly.

From the first display page press the "F2 key"  to select the type of desired correction; by means of the "F3 key"  display the STATIC function and confirm with the "CENTRE key" .

Enter the measurements as indicated in para.7.1.3 on page 17.

After entering the measurements, perform a wheel spin.

In the ER220 /ER160 /ER165 models, press the "F4 key"  to perform the spin. In just a few seconds, the wheel will turn at full speed. The wheel balancer display screen will indicate wheel rotation (Figure 21). Do not touch the wheel while measurements are being read. At the end of the spin, the wheel will stop automatically, taking into account the unbalance measured so that the outer weight fitting position is approx. at 12 'o' clock.

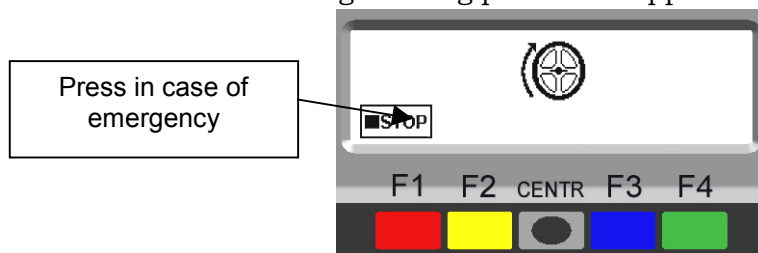


Figure 21

In the models ER200 /ER150 spin the wheel manually until full speed is achieved. This is shown by the filling up of all the notches on the display screen and by the STOP icon appearing on the screen. When the values appear, brake the wheel by means of the pedal brake.

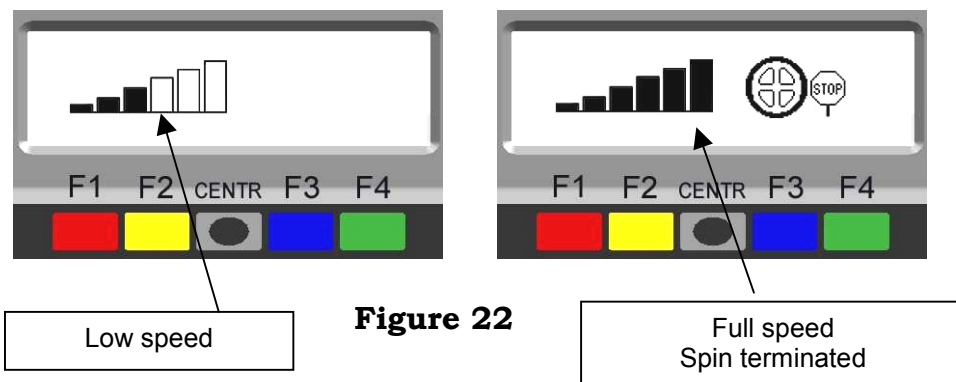
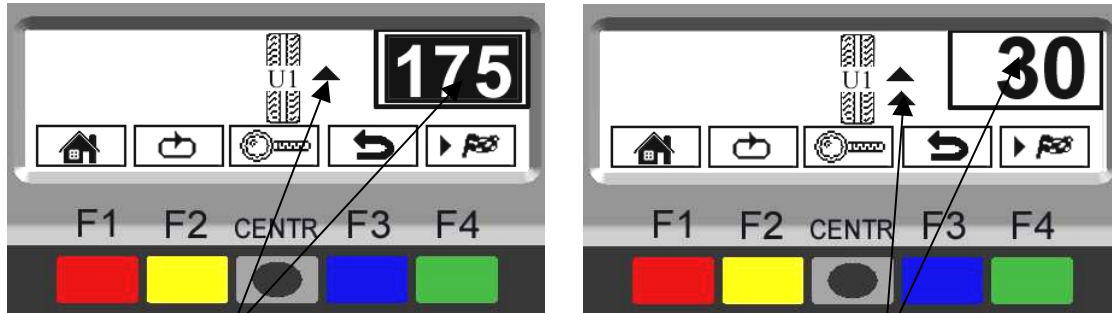


Figure 22

The display screen shows the direction in which to move the wheel to fit the weight and total weight needed to remedy unbalance.

When the wheel has reached weight fitting point (about 12 'o' clock), the display screen shows the distance for correcting unbalance on a black background. When the wheel is far from the weight fitting point, the display screen shows the total weight to be fitted (Figure 23). When the unbalance value is known, proceed with positioning for unbalance correction.



Distance on black background to correct unbalance
Value shown when close to fitting point

Figure 23

Total weight to be fitted.
Value shown when distant from fitting point

ICON	KEY	DESCRIPTION
	RED (F1)	Return to initial program phase
	YELLOW (F2)	Display next row of keys (MATCHING Procedure, mod.ER220/ER160/ER165 only)
	CENTRE	Displays exact unbalance (pitch 1g instead of 5g)
	BLUE (F3)	Displays the previous page
	GREEN	In models ER220 /ER160 /ER165 performs spin

Fit the adhesive weight on the measurement rod as shown in Figure 24.


Figure 24

Read the distance measurement on the measurement rod. Fit the adhesive weight on the outside of the wheel (Figure 25) at the indicated distance (in the example at 175 mm) using a known weight (the example shows 30g). The position of the outer weight is not visible but hidden inside.


Figure 25

Check the wheel balancing conditions, by making a trial spin. The display screen must show an unbalance reset.

The STATIC procedure is now completed.

7.4.2 ALU-S procedure

Make sure the wheel is devoid of any stones and/or mud.

Remove any counterweights.

Fit the wheel and make sure this is fastened properly.

From the initial display page press the "F2 key"  to select the type of desired correction.

Using the "F3 key"  display the ALU-S function and confirm with the "CENTRE key" .

Enter the measurements as indicated in para. 7.1.3 on page 17.

After the measurements have been entered, perform a wheel spin.

In the models ER220 /ER160 /ER165, press the "F4 key"  to perform the spin. In just a few seconds, the wheel will be spinning at operating speed. The display screen shows wheel rotation (Figure 26). Do not touch the wheel while taking measurements. At the end of the spin the wheel will stop automatically, also taking into account the measured unbalance so the external weight fitting point is around 12 'o' clock.

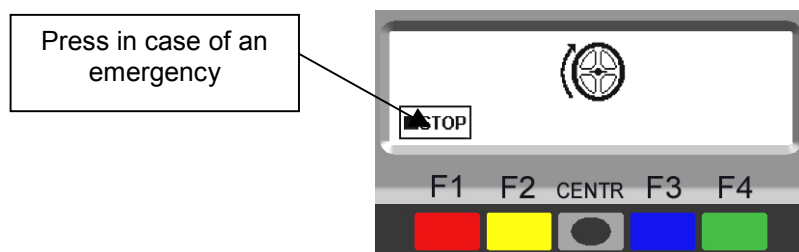


Figure 26

In the models ER200 / ER150 spin the wheel manually until normal speed is achieved. This is shown by the filling up of all the notches on the display screen and by the STOP icon appearing on the screen. When the values appear, brake the wheel by means of the pedal brake.

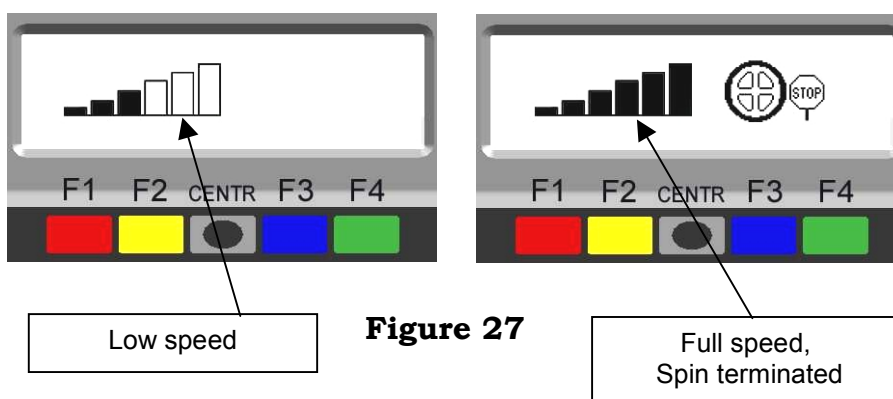
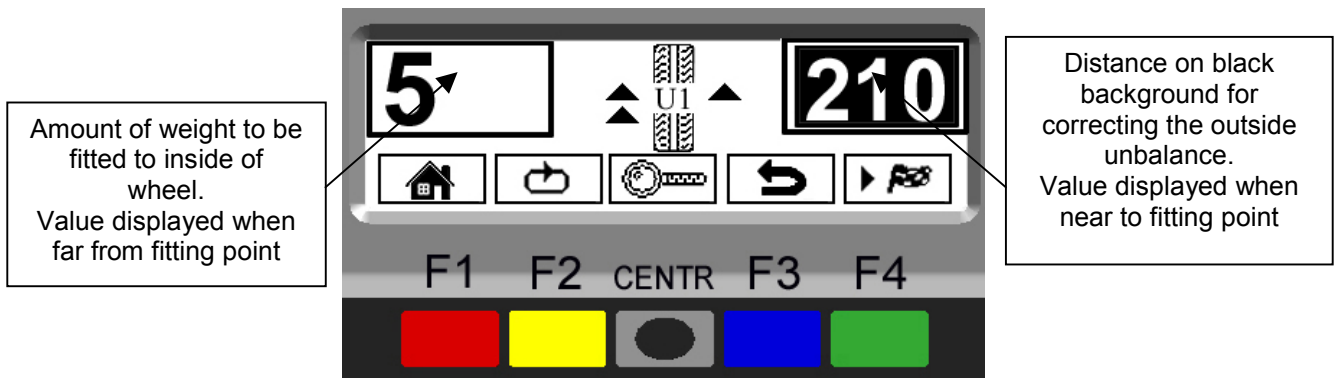


Figure 27

The display screen shows the direction in which to move the wheel to fit the weight and total weight needed to remedy unbalance.

When the wheel has reached weight fitting point (about 12 'o' clock), the display screen shows the distance for correcting unbalance on a black background. When the wheel is far from the weight fitting point, the display screen shows the total weight to be fitted (Figure 28). When the external and internal unbalance values are known, proceed with positioning for unbalance correction.


Figure 28

ICON	KEY	DESCRIPTION
	RED (F1)	Return to initial program phase
	YELLOW (F2)	Displays next row of keys (MATCHING Procedure, mod.ER220/ER160/ER165 only)
	CENTRE	Displays the exact unbalance (pitch 1g instead of 5g)
	BLUE (F3)	Displays the previous page
	GREEN (F4)	In models ER220/ER160/ER165 performs spin

Fit the adhesive weight in the measurement rod as shown in Figure 29.


Figure 29

Read the external distance measurement on the measurement rod. Fit the adhesive weight on the outside of the wheel (Figure 30) at the distance indicated (in the example at 210 mm) using a known weight value. The position of the external weight is not visible but hidden inside (para. 7.3.2 on page 21)


Figure 30

Read the internal distance measurement on the measurement rod. Fit the adhesive weight on the inside of the wheel (Figure 30) at the distance indicated using a known weight value (in the example 5g). Turn the wheel until the correct point is reached (para. 7.3.2 on page 21)

Check the wheel balance conditions by making a trial spin. The display screen will display an unbalance reset. The ALU-S procedure is now completed.

8 WHEEL BALANCING IN MOTORCYCLE MODE

By enabling the "motor-cycle wheel balancing" function (see Figure 45 on page 35) the SPACE wheel balancers can also balance motorcycle wheels.

From the opening page, press the "centre key" to select car (Figure 31) or motorcycle (Figure 32) balancing mode.

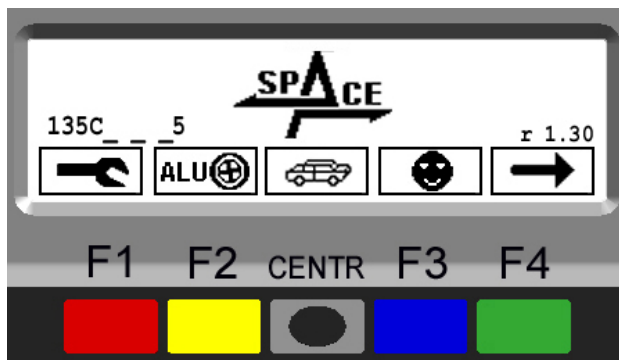


Figure 31

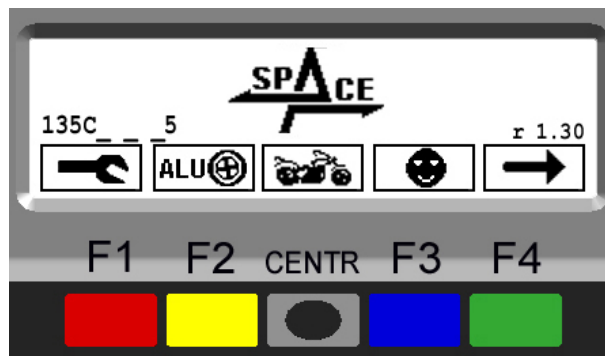


Figure 32

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

To fit the distance extension, the old non-threaded end part of the arm must be removed and the threaded one fitted (see Figure 33). The extension will only have to be screwed up when balancing is performed in "motorcycle" mode.

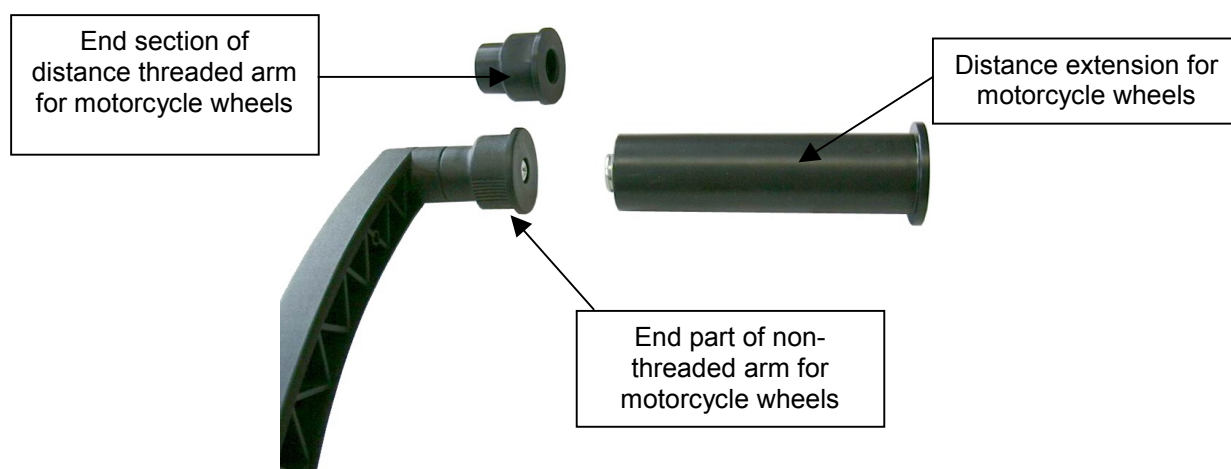


Figure 33

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

By selecting motorcycle, besides dynamic balancing (see para. 6 on page 13) STATIC balancing and/or ALU-S (para. 7.4 on page 22) can also be performed, by pressing the "F2 key" from the opening page.

9 WEIGHTS HIDDEN BEHIND SPOKES MODE

Only for models ER220 / ER160 / ER165

Adhesive correction weight positioning may not look attractive on some types of rims. In this case, the "weights hidden behind spokes" mode can be used. This splits any correction weight on the outer side into two parts to be hidden behind the rim spokes. Can be used in both Static or ALU-S modes.

Proceed to display the static or ALU-S unbalance measurements by performing a spin (Figure 28).

Once the unbalance values have been determined, press the "F2 key" corresponding to the icon . At this point, the next row of keys is displayed on the display screen.

Press the "F3 key" relating to the weights hidden behind spokes mode . The program will display the box in Figure 34.

Move any spoke up to 12 'o' clock (in many cases, the position could already be behind or near one of the spokes) and press the "F4 key" to confirm and continue.

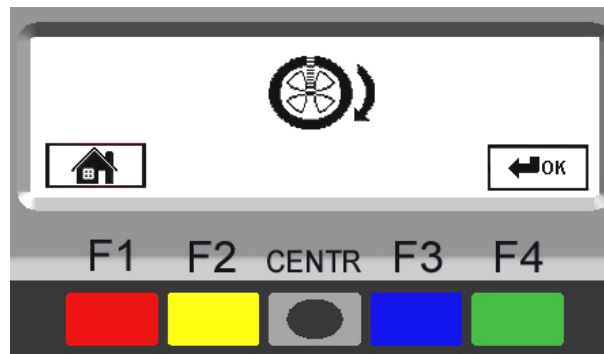


Figure 34

ICON	KEY	DESCRIPTION
	RED (F1)	Return to previous page.
	GREEN (F4)	Confirm spoke positioning at 12 'o' clock

Enter the number of spokes existing on the wheel, using keys F2 and F3 (Figure 35).

A minimum of 3 spokes and a maximum of 12 can be entered.

Press the "F4 key" to confirm and continue.

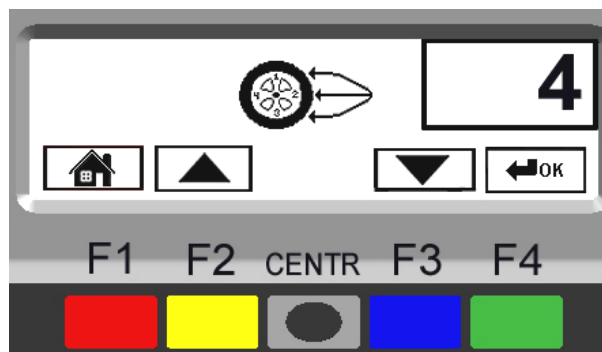
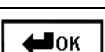


Figure 35

ICON	KEY	DESCRIPTION
	RED (F1)	Return to previous page.
	YELLOW (F2)	Increase number of spokes
	BLUE (F3)	Decrease number of spokes
	GREEN (F4)	Confirm number of spokes

The machine automatically calculates weight position in two parts hidden behind the spokes.

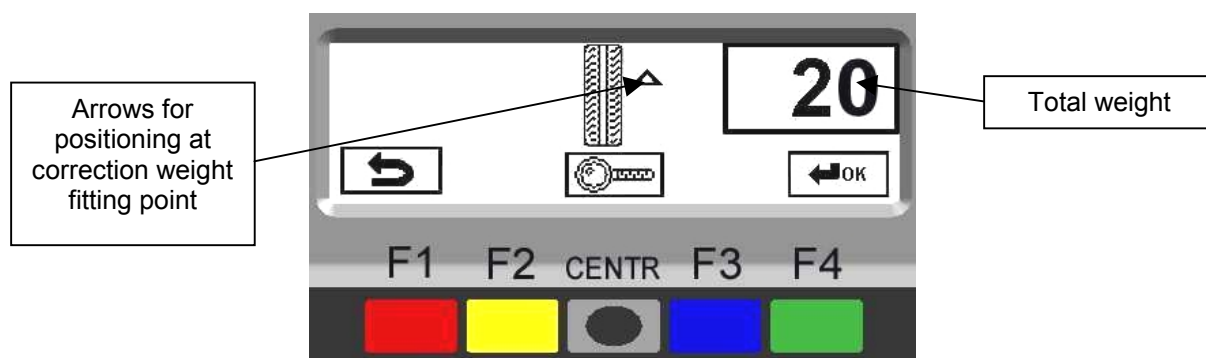


Figure 36

ICON	KEY	DESCRIPTION
	RED (F1)	Return to previous page.
	CENTRE	Display exact unbalance (pitch 1g instead of 5g)
	GREEN (F4)	Confirm and continue second weight positioning

Position the wheel correctly (see para. 7.3.2 on page 21).

Fit the adhesive weight (in the example this is 20g) on the measurement rod as shown in Figure 37.



Figure 37

When the wheel has reached weight fitting point, the display screen shows the distance for correcting unbalance on a black background. When the wheel is far from the weight fitting point, the display screen shows the total weight to be fitted.

Fit the adhesive weight inside the spoke at the point indicated on the display screen (in the example at 207 mm, Figure 38).

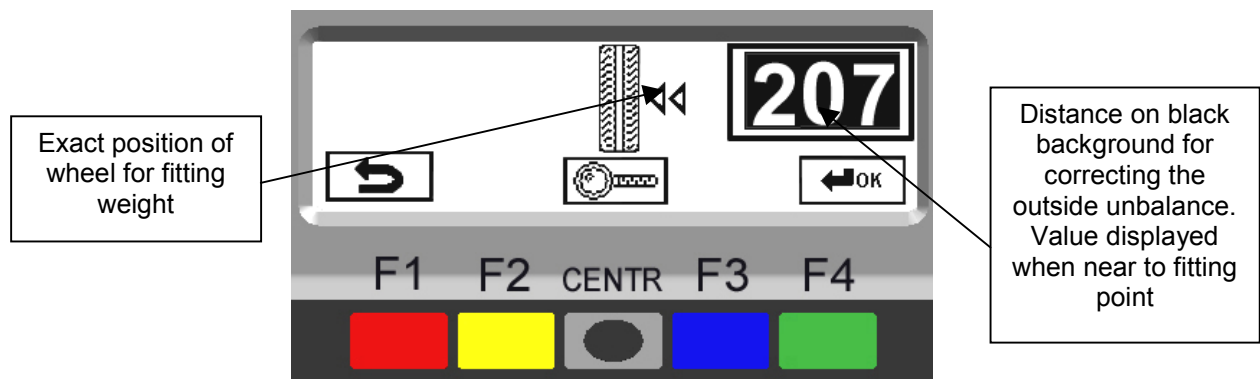


Figure 38

Press the “F4 key” to confirm weight positioning behind the spoke and continue.

The display screen will show the page in Figure 36 for fitting the second weight.

Correctly position the wheel (see para. 7.3.2 on page 21).

Fit the second adhesive weight on the measurement rod as shown in Figure 37.

Fit the adhesive weight inside the spoke at the point indicated on the display screen Figure 38.

Press the “F4 key” to confirm positioning of second weight behind the spoke.

The system displays the initial unbalance situation before performing the RAZ procedure

Perform another trial spin. The display screen will display an unbalance reset.

The RAZ procedure is completed.

10 MATCHING PROCEDURE (Rim-tyre optimisation)

Only for models ER220 / ER160 / ER165

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.

After displaying any unbalance measurement (see example in Figure 19 on page 20) press the key corresponding to the icon . The display screen will show a new key sequence.

Press the key relating to the MATCHING function  (*). The system displays the page in Figure 39. The display screen instructs to perform rim-tyre rotation.

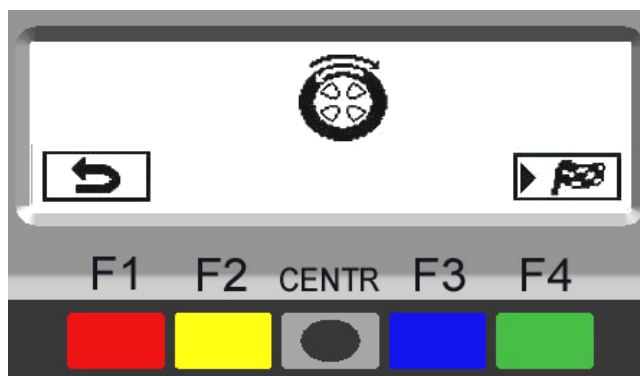
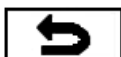
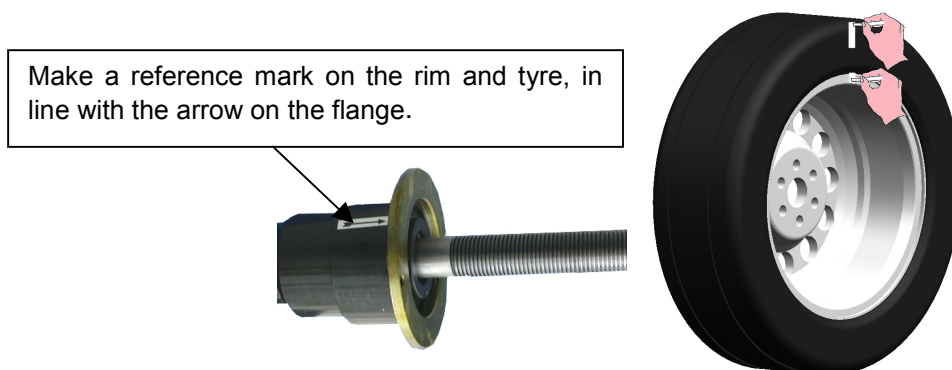


Figure 39

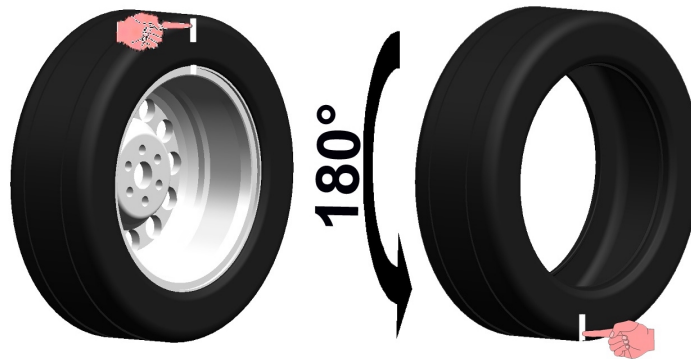
(*) : The MATCHING operation can only be performed if the static unbalance is > 30g. If it is less than this, the key relating to this operation is not displayed.

ICON	KEY	DESCRIPTION
	RED (F1)	Return to page before measurements
	GREEN (F4)	In models ER220/ER160/ER165, performs spin

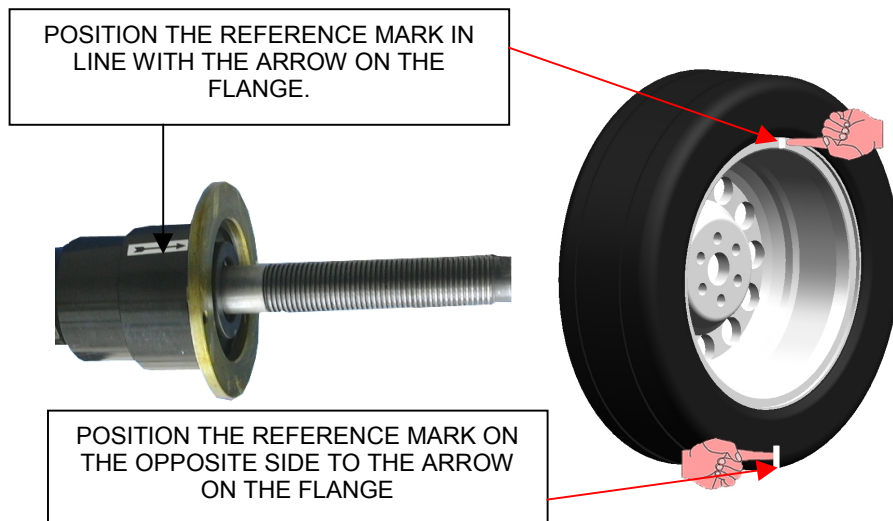
Make a reference mark, using chalk for instance, of the position of the rim and tyre, remaining in line with the arrow on the flange, so as to be able to fit the rim back on in the same position.



Remove the wheel from the wheel balancer. Remove the tyre and turn it on the rim by 180°.



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



Perform the second spin by pressing the “F4 key”. At the end of the spin, the following page appears on the display screen:

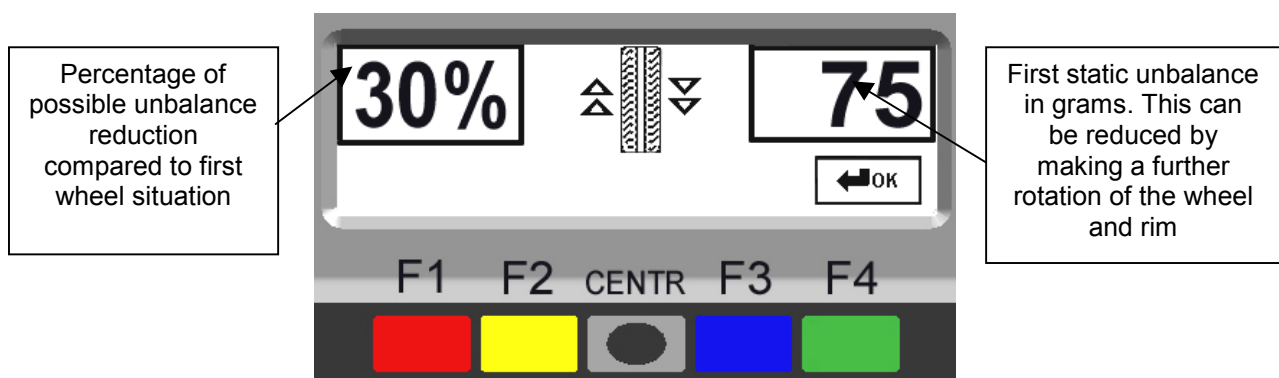
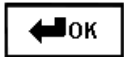


Figure 40

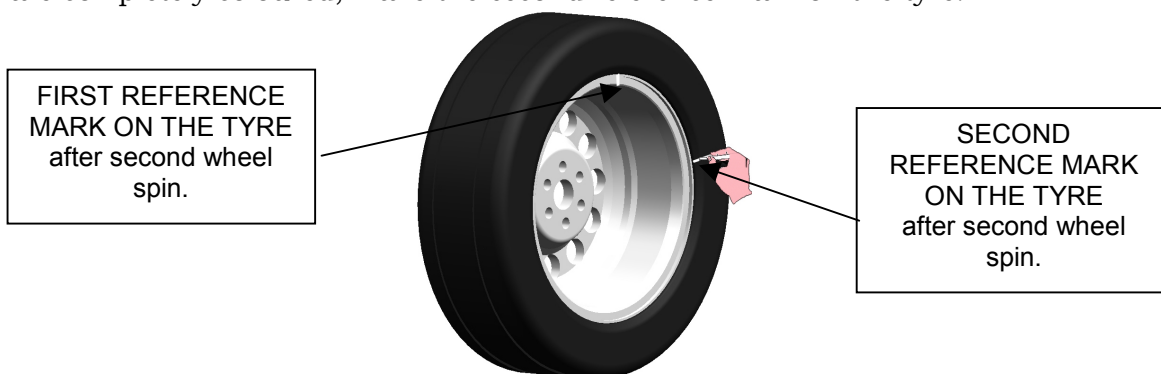
ICON	KEY	DESCRIPTION
	GREEN (F4)	Displays the page with unbalance values again.

Cancel the previously made reference marks.

Position the wheel following the arrows on the display screen. Look at the arrows on the left. When they are fully coloured (see para. 7.3.2 on page 21) make the first reference mark on the rim.



Turn the wheel again until second position is reached. Look at the arrows on the right. When these are completely coloured, make the second reference mark on the tyre.



Remove the wheel from the wheel balancer. Remove the wheel and turn the tyre on the rim so the two points coincide with the wheel when fitted back on the wheel balancer. The two reference marks must be in line with the arrow on the flange.



Press the green key corresponding to icon  on the keyboard. The system will again display the page with previous unbalance values. Now the outstanding minimum unbalance can be corrected using the weights at disposal.

11 SETUP OF UNITS OF WEIGHT MEASUREMENT AND RIM WIDTH/DIAMETER AND SETTING CAR/MOTORCYCLE MODE

The weight determining wheel unbalance can be indicated on the monitor with "gram" or "ounce" measurement unit.

The width and diameter can be indicated in "inches" or "mm"

To change the unit of measurement, press the "F1 key" from the opening presentation page (Figure 5 on page 13); the program will show the following display page:

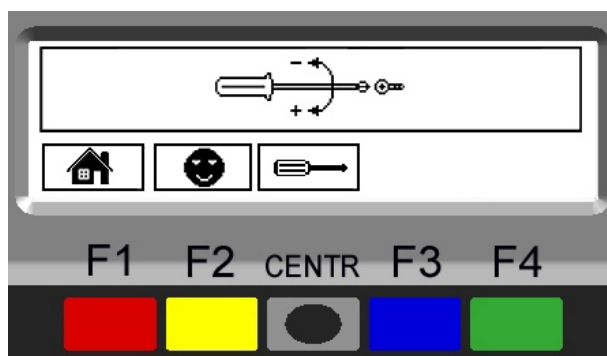
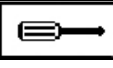


Figure 41

ICON	KEY	DESCRIPTION
	RED (F1)	Return to program opening page
	YELLOW (F2)	Client configuration. Enter the password: F1-F2-CENTR-F3
	CENTRE	For technical assistance only

Press the "F2 key"

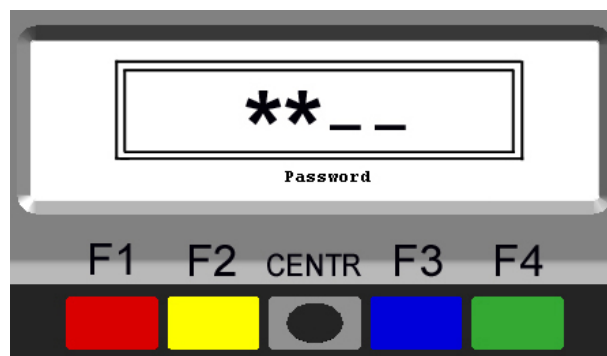


Figure 42

Enter the password **F1-F2-CENTR-F3**, the program will show display page in Figure 43:

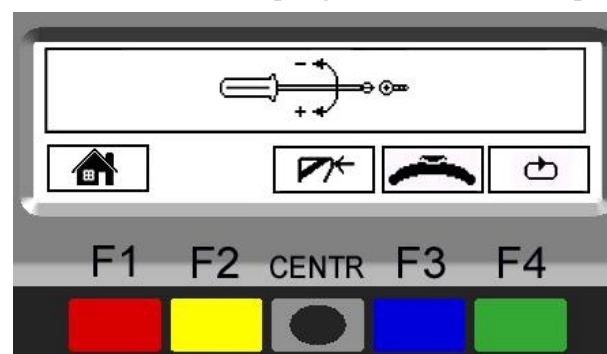


Figure 43

Press the “F4 key” , the program will show the following display page:

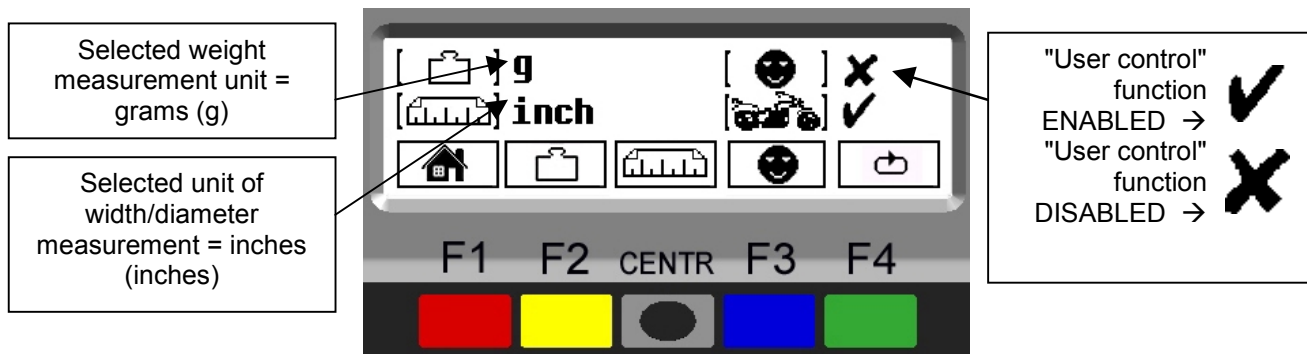
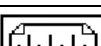


Figure 44

ICON	KEY	DESCRIPTION
	RED (F1)	Return to page in Figure 41.
	YELLOW (F2)	Change unit of weight measurement from grams (g) to ounces (oz) and vice versa
	CENTRE	Change unit of width/diameter measurements from inches (in) to millimetres (mm) and vice versa
	BLUE (F3)	Enable/disable “User control” function (see para. 7.2 on page 18)
	GREEN (F4)	Display subsequent operations

Press the “F2 key”  to change weight unit of measurement from grams to ounces and vice versa. The symbol "g" or "oz" appears on the monitor.

Press the “CENTR key”  to change the width and diameter unit of measurements from inches to millimetres and vice versa. The symbol "in" or "mm" appears on the monitor.

After setting the required measurement unit, to engage or disengage the motorcycle wheel balancing mode, press the “F4 key” . The program will show the following display page:

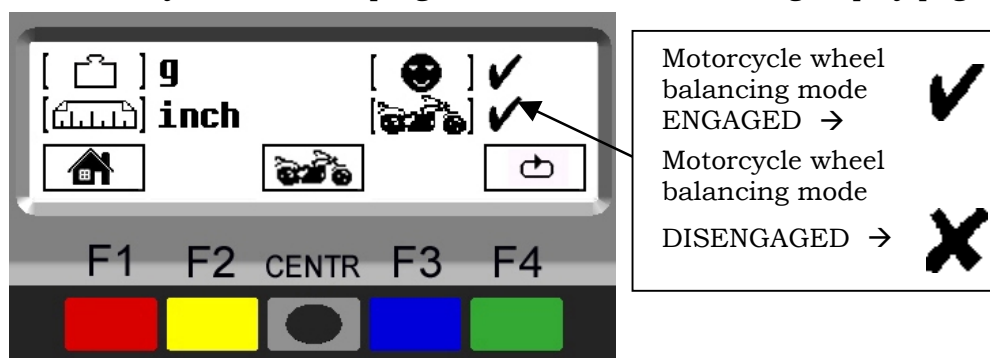


Figure 45

ICON	KEY	DESCRIPTION
	RED (F1)	Return to page in Figure 41.
	CENTRE	Engage/disengage motorcycle wheel balancing mode.
	GREEN (F4)	Display subsequent operations

Press the “CENTR key”  to engage or disengage motorcycle wheel balancing mode. All the settings of the measurement unit are stored even after the machine is switched off.

12 CALIBRATION

From the opening program presentation page (Figure 5 on page 13) press the “F1 key”; the program shows the following page:

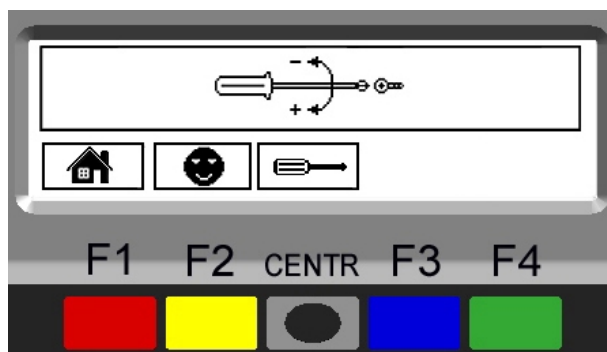
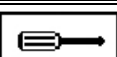


Figure 46

ICON	KEY	DESCRIPTION
	RED (F1)	Return to program opening page
	YELLOW (F2)	Client configuration. Enter the password: F1-F2-CENTR-F3
	CENTRE	Technical assistance only

Press the “F2 key” , enter the password **F1-F2-CENTR-F3**, the program displays the following page:

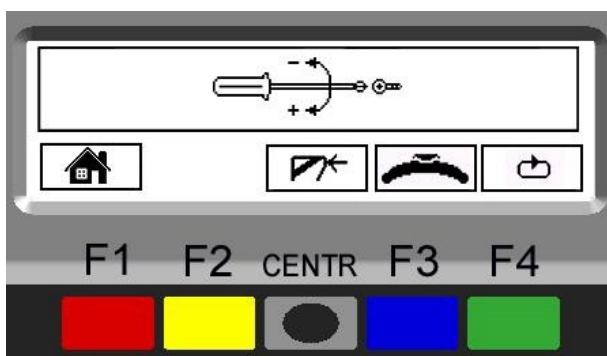
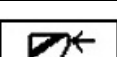
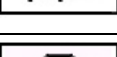


Figure 47

ICON	KEY	DESCRIPTION
	RED (F1)	Return to previous page
	CENTRE	"Zero chucking-table" setting with empty shaft This operation must necessarily be performed after setting the weight sensor machine calibration.
	BLUE (F3)	Perform weight sensor machine calibration
	GREEN (F4)	Displays unit of measurement, resolution, and car/motorcycle mode setting operations (chap. 11 page 34)

Fit a wheel of medium size, possibly balanced ($\phi = 13 \div 14"$, $L = 4 \div 5"$).
From the calibration page menu (see Figure 46) press the weight sensor calibration "F3 key";
the program will display the following page:

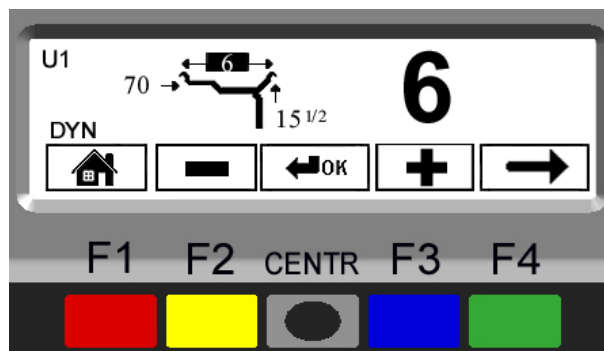


Figure 48

Carefully enter distance, diameter and wheel width measurements, pressing the "CENTRE key" to select each measurement and confirm.

Select the "MINUS"  or "PLUS"  key to enter the desired values.
Press the "F4 key" to continue. The program will show the following page:

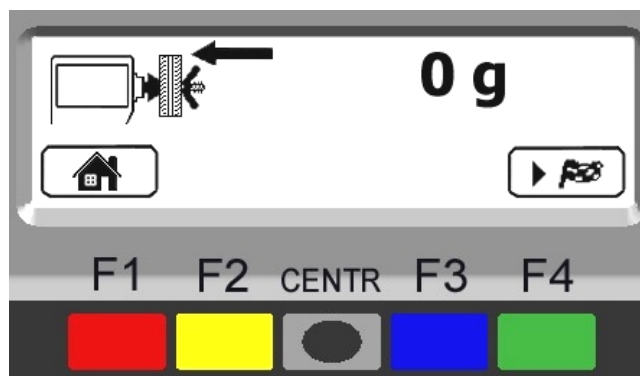


Figure 49

ICON	KEY	DESCRIPTION
	RED (F1)	Return to previous page
	GREEN (F4)	In models ER220/ER160/ER165 performs wheel spin

As Figure 49 shows, press the "F4 key" to perform a wheel spin without adding weights (in the case of models ER220/ER160/ER165).

In the case of models ER200/ER150, turn the wheel manually until normal speed is achieved.

After performing the spin, the program shows Figure 50:

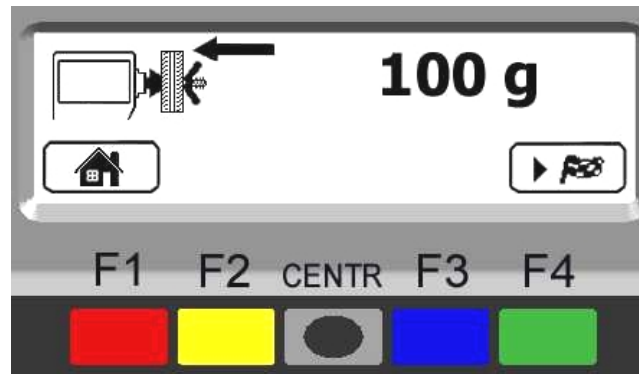


Figure 50

Fit 100g on the outside of the wheel, positioning the weight at 12 'o' clock.

In the case of models ER220 /ER160 /ER165, perform the spin by pressing the “F4 key”.

In the case of models ER200 /ER150, turn the wheel manually until normal speed is achieved.

At the end of the spin, remove the 100g weight from the outside and fit this inside the wheel, as shown in Figure 51.

IMPORTANT: Fit 100g on the inside of the wheel in the same position of the weight outside, positioning it **high up on the vertical**.

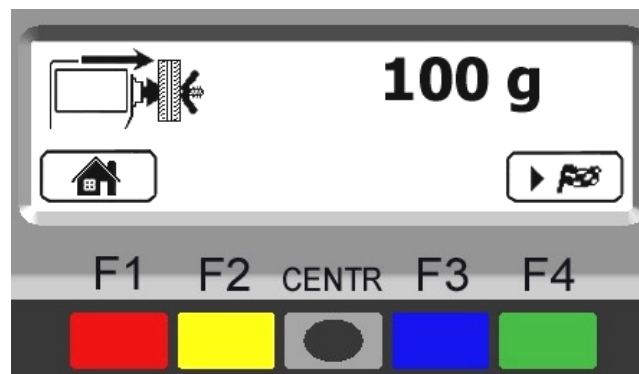


Figure 51

At the end of the spin, remove the 100g weight from the inside and confirm by means of the “CENTRE key”

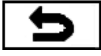


Figure 52

Machine calibration is over. The program shows Figure 46. Press the “F1 key” to return to the initial program page.

13 ERROR SIGNALS

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

F1/  to return to the previous program phase after remedying the fault. Below is a troubleshooting chart.

ERROR CODE	CAUSE
2 No rotation signal	May be due to faulty position transducer or transducer not fitted correctly. Or else the motor is faulty or has not started because something is preventing its rotation.
3 Excessive weight value in wheel balancer calibration	During the calibration procedure, the machine detects excessive weight. The weight may not have been fitted properly; the data acquisition or measurement sensor may be faulty.
8 Insufficient weight value in wheel balancer calibration	During the calibration procedure, the machine detects insufficient weight. The weight may not have been fitted properly; the data acquisition or measurement sensor may be faulty.
9 Calibration spin not completed	During the calibration procedure, the spin is not completed because the (STOP) key has been pressed.

14 MAINTENANCE

IMPORTANT!: Before doing any maintenance job, the machine will have to be disconnected from the power mains.



To clean plastic panels or surfaces use alcohol (AVOID USING LIQUIDS CONTAINING SOLVENTS).

The DISPLAY SCREEN must be cleaned with a dry cloth; if it is very dirty, clean with a damp cloth and then dry.

Do not spray the alcohol directly on the control panel and do not clean using strong jets of compressed air.

Do not use pneumatic or power tools in damp or slippery environments and do not leave these exposed to the elements.

15 STORAGE AND SCRAPPING



Storage - If the machine has to be stored for a long period of time, disconnect all supply lines and protect the display screen, which could be damaged by excessive dust.

Grease any parts liable to be damaged by dryness.

Scrapping - If the machine is to be no longer used, it must be made inoperative:

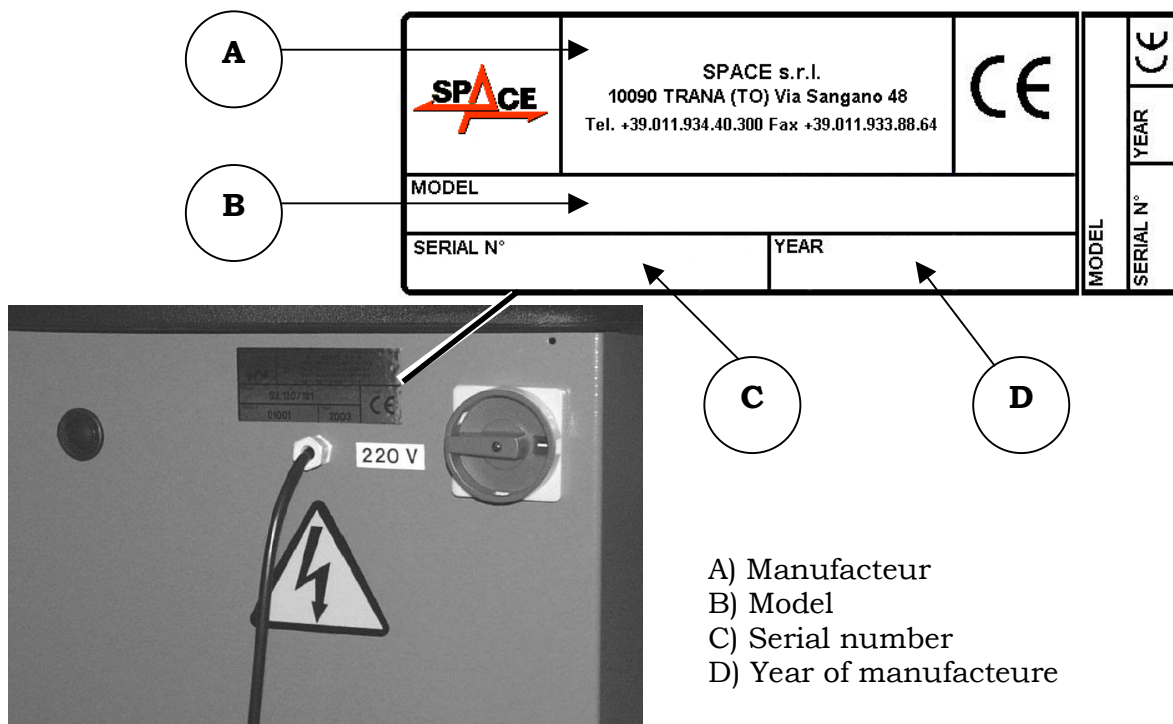
All those parts that could represent a potential hazard risk must be correctly disposed of.

Dispose of parts according to category.

Scrap as iron scrap through authorised channels.

Parts considered as special waste must be removed and split up according to type and then disposed of through authorised channels according to applicable regulations.

16 MACHINE IDENTIFICATION DATA



CAUTION: Do not tamper with, carve, change or remove the identification plate; do not cover it with panels, etc., since it must always be visible.

Said plate must always be kept clean.

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