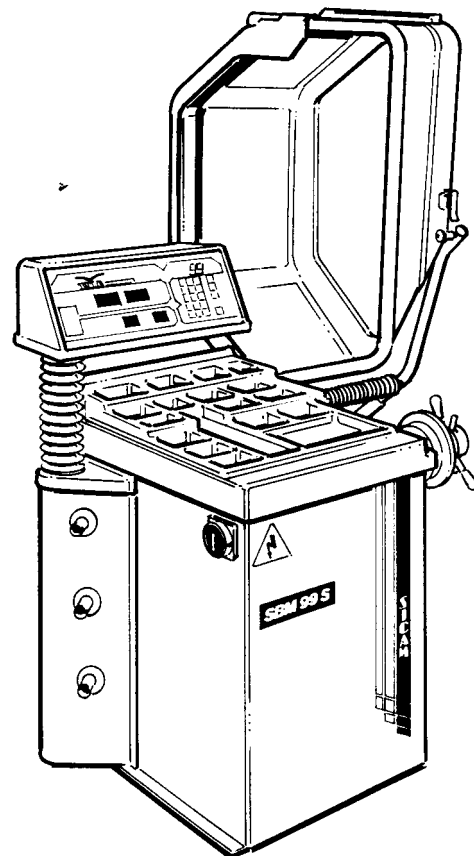


SBM 95



SBM 99S

INSTRUCTIONS MANUAL

Wheel Balancers

SBM 95 -SBM 99S

WARNINGS

The present instructions booklet is an integral part of the product. Carefully study the warnings and instructions contained in it. This information is important for **safe use and maintenance**. Conserve this booklet carefully for further consultation. the wheel balancers.

SBM 95 - SBM 99S

***ARE MACHINES DESIGNED AND CONSTRUCTED
FOR THE BALANCING THE WHEEL OF
MOTOR-CARS,
VANS, AND MOTORCYCLES.***

***THE MACHINES HAVE BEEN DESIGNED TO OPERATE
WITHIN THE LIMITS DESCRIBED IN THIS BOOKLET AND IN
ACCORDANCE WITH THE MAKER'S INSTRUCTIONS.***

The machines must be used only for the functions for which they were expressly designed. Any other use is considered wrong and therefore unacceptable. **The maker cannot be held responsible for eventual damage caused by improper, erroneous, or unacceptable use.**

CONTENTS

	Page
GENERAL WARNINGS AND CONTENTS	3
TECHNICAL CHARACTERISTICS	4-5
ACCESSORIES PROVIDED AND ACCESSORIES ON REQUEST	6
UNPACKING AND LOCATION	7
INSTALLATION	
- Electrical connection.....	8
- Flange installation	9
MALFUNCTIONS: CAUSES AND POSSIBLE REMEDIES	10
INSTRUCTIONS FOR USE	
- Electronic panel (key)	11
- Programming for wheel balancing	12
- Wheel balancing and balancing checks	12
- Programmig for wheel balacing	13
- Basic setting of the wheel balancer	14
- Automatic gauge setting	15
- Programming and fixing adhesive weights with special gauge	16
- Imbalance optimization.....	17
- Special programming.....	18
- Programming for balancing motorcycle wheels.....	18
- Check to carry out skilled personnel.....	19
ROUTINE MAINTENANCE	20
MOVEMENT, STORAGE AND SCRAPPING	20
TECHNICAL ASSISTANCE AND SPARE PARTS.....	21

SBM 95

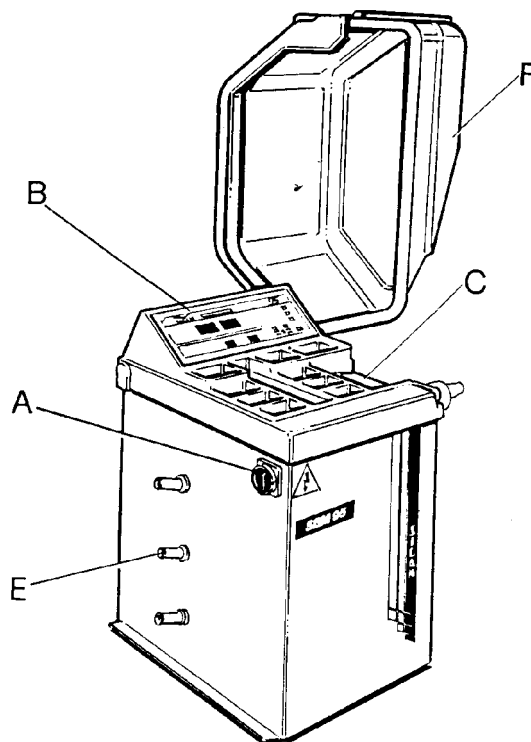


fig.1

SBM 99S

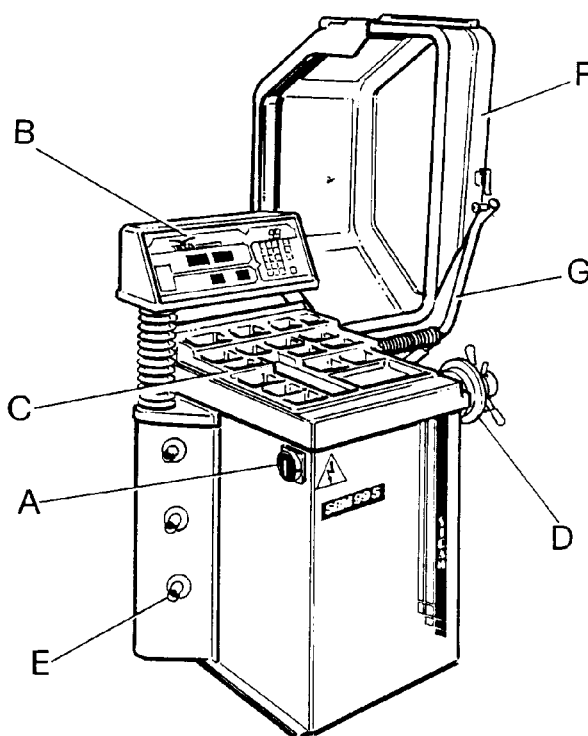


fig.2

KEY

A: Main switch
B: Electronic panel
C: Weights board
D: Flange

E: Flange and accessories holder
F: Wheel protection guard
G: Automatic gauge (SBM 99S version)



TECHNICAL CHARACTERISTICS

The **SBM 95** and **SBM 99S** are high performance machines:

- The use of microprocessors ensures high precision wheel balancing (see pg. 14).
- A system of auto fault-finding and auto setting makes maintenance extremely simple (see pg. 15).
- Operation is with a single automatic cycle which measures the imbalance of the two planes simultaneously, memorizing the weight and the positioning. It has 5 aluminium programmes and a static balancing programme.
- The wheel guard allows the fitting of wheels with an external diameter of up to 900 mm. When the wheel guard is open an electrical switch prevents the machine from starting.
- The SBM 99S has a gauge for the automatic setting of wheel measurements.

TECHNICAL DATA		
	SBM 95	SBM 99S
<u>DIMENSIONS</u>		
Max. height	1800mm.	1800mm.
Depth	1250mm.	1250mm.
Width	850mm.	900mm.
<u>WEIGHT</u>		
Net weight (with guard)	143 kg	172 kg
Gross weight	166 kg	202 kg
<u>ELECTRIC MOTOR</u>		
Power	0.65 kW - 50Hz	0.65 kW - 50Hz
Phases	3 ~	3 ~
Power supply	230-400V	230-400V
(the machines are also available in mono-phase versions)		
Protection	IP 44	IP 44
Balancer speed	450 g/min	450 g/min
Balancing precision	1 grammo	1 grammo
Noise level	75 db	75 db

RANGE OF APPLICATIONS		
	SBM 95	SBM 99S
<p>SBM 95 and SBM 99S are a machines for balancing vehicle tyres of up to 70 kg and motorcycle tyres of up to 20 kg. The operating capacities are as follows:</p>		
Rim width	<u>min/max</u> 1" - 20"	<u>min/max</u> 1" - 20"
Rim diameter	10" - 24"	10" - 24"
Max. wheel diameter	900mm	900mm
Max. wheel weight	70 kg	70 kg

	REGISTRATION PLATE DATA
<p>N.B. The minimum and maximum measurements above refer either to a dynamic imbalance on the two compensation planes, or to a single static imbalance. The imbalance is shown by a three figure digital read out in grams. If an ounces read-out is required instead of grams, the transformation is made by the micro-processor (see fig. 16 on pg. 11). The angular position is indicated by LEDs.</p>	 <small>S.r.l.</small> Via della Costituzione 49 42015 Correggio (RE) Italy
	Model <input style="width: 80%;" type="text"/>
	<input type="checkbox"/> V <input type="checkbox"/> ~ <input type="checkbox"/> Hz <input type="checkbox"/> A
	<input type="checkbox"/> IP <input type="checkbox"/> max <input type="checkbox"/> kPa <input type="checkbox"/> max <input type="checkbox"/> bar
	<input type="checkbox"/> Kg <input type="checkbox"/> YEAR
	N° MATR  CE

ACCESSORIES SUPPLIED

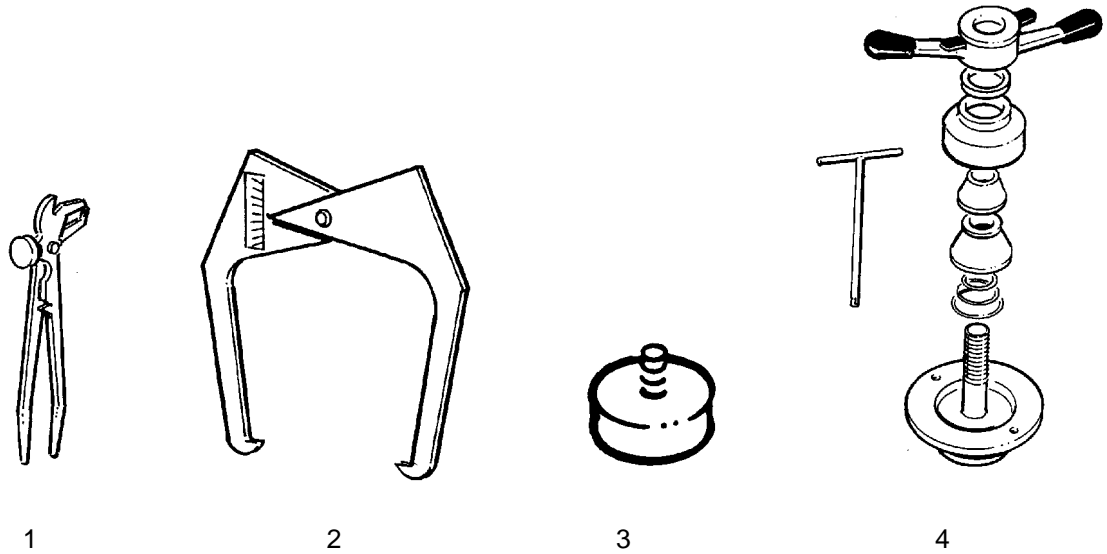


fig.3

Key

1: Counter-weight pliers 2: Width measuring calliper gauge 3: Sample weight for setting 4: Universal adaptor

ACCESSORIES ON REQUEST

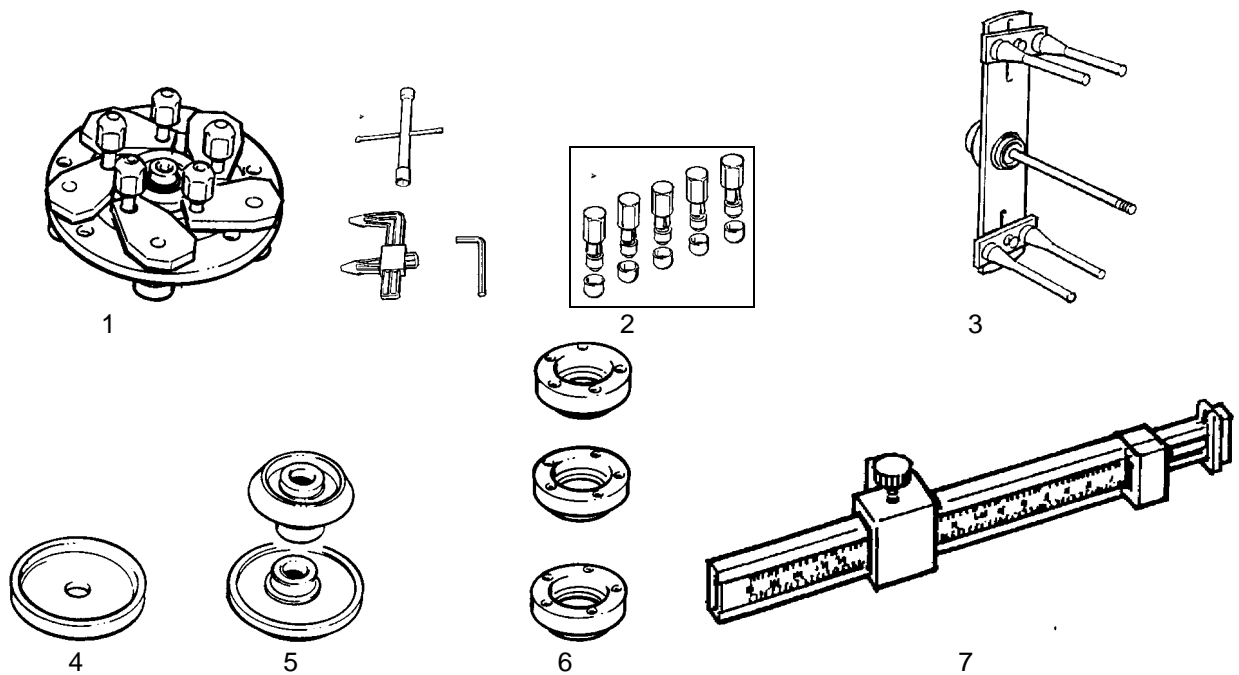


fig.4

Key

1: Standard bolt 3/4/5 hole flange 2: Quick bolts 3: Motorcycle wheel flange 4: Spacer 5: No. III and IV Cone
6: Centring ring for Renault/Citroen/Peugeot 7: Special aluminium rim gauge

UNPACKING

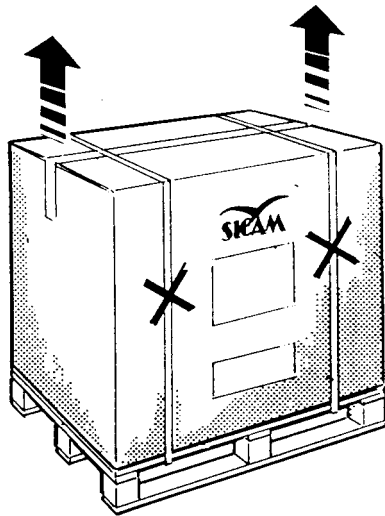


fig.5

SBM95: 166 kg
SBM 99S: 202 kg

- After removing the packing (the straps, seals, cardboard and the pallet as in fig. 5). Check the machine for missing or damaged parts. **If in doubt do not use the machine** and refer to professionally qualified personnel and/or to the seller.
- The packing materials (plastic bags, pluriball, polythene, nails, staples, timber, etc.) must not be left within reach of children since they are potentially dangerous. Deposit the above mentioned materials at the relevant collection points if they are pollutants or are non biodegradable.
- The box containing the **accessories provided** is contained in the packing of the machine.

LOCATION

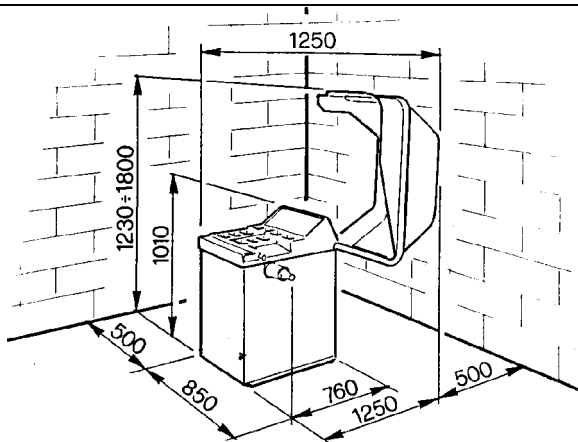


fig.6a

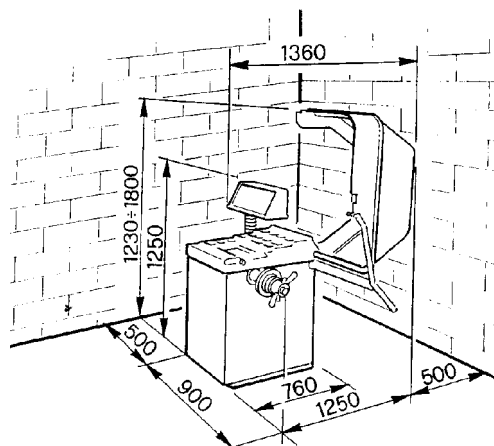


fig.6b

(see figs. 6a-6b)

- The wheel balancer must be positioned on a solid floor of concrete or similar material. A hollow floor could cause errors in the measurements of imbalance.
- OVERALL DIMENSIONS:**
SBM 95: 1800 mm x 1250 mm x 1250 mm
SBM 99S: 1800 mm x 1360 mm x 1250 mm
- SAFE DISTANCE:**
For the safe and ergonomic use of the machine it is advisable to locate it a minimum of 500 mm from the surrounding walls.
- FIXING INSTRUCTIONS:**
The base of the machine has 3 holes for fixing it to the floor. Good fixing is essential for precise and consistent readings.

INSTALLATION

electrical connection and operation checks

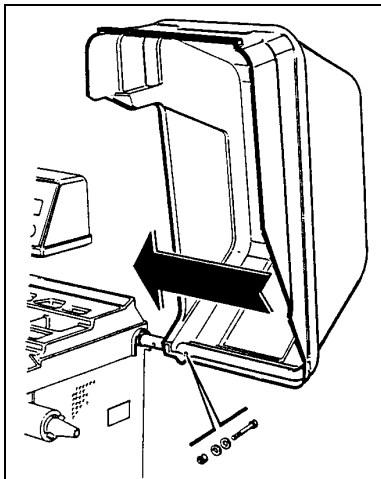


fig.7

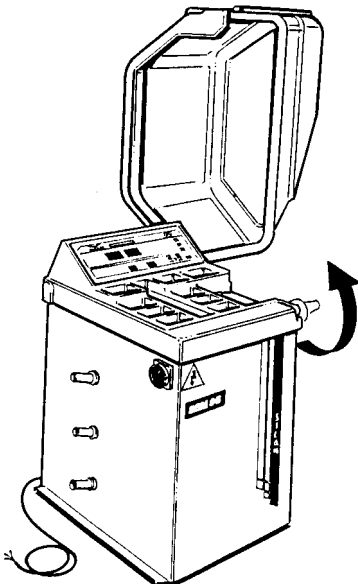


fig.8a

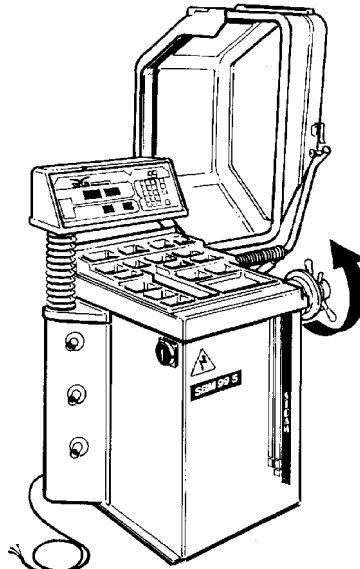


fig.8b

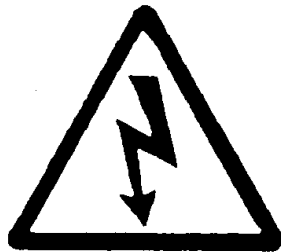


fig. 8c

MOUNTING THE WHEEL GUARD

See fig. 7 and proceed as follows:

1. Insert wheel guard hole onto the pin.
2. Insert the bolt into the hole and tighten the nut.

ELECTRICAL CONNECTION (Fig.8a-8b)



ALL WORK ON THE ELECTRICAL SYSTEM, INCLUDING MINOR OPERATIONS, MUST BE CARRIED OUT BY PROFESSIONALLY QUALIFIED PERSONNEL!

- Check that the mains supply tension is the same as that shown on the registration plate.
- Connect the supply cable to a plug that conforms with European norms or to the norms of the country in which the machine is used.
- The plug must have an earth terminal.
- Check that the earth connection is effective.
- The machine must be connected to the mains through a multipolar isolating switch which conforms with European norms and with contact openings of at least 3 mm.
- When the electrical connection is complete and with the machine switched on, the mounted wheel should rotate in a clockwise direction, as seen from the right hand side of the machine. **The correct direction of rotation is indicated by an arrow on the body of the machine.**
- If the rotation is in the wrong direction, the machine will function only as long as the START button is pushed. In this case exchange the two conductor wires in the connection cable plug.
- If the machine behaves abnormally, immediately switch off the **main switch** and refer to the **fault finding** section in the instructions manual (pg.10).



Always pay careful attention to the **WARNING SIGNS** shown on adhesives applied to the machine.

Fig. 8c tension label - code no. 100789.

If the warning sign disappears or shows signs of deterioration, you are requested to order a replacement from SICAM's "Spare Parts" service, making use of the relevant code number.

THE MAKER DECLINES ALL RESPONSIBILITY FOR THE FAILURE TO OBSERVE THE ABOVE INSTRUCTIONS.

FLANGE INSTALLATION

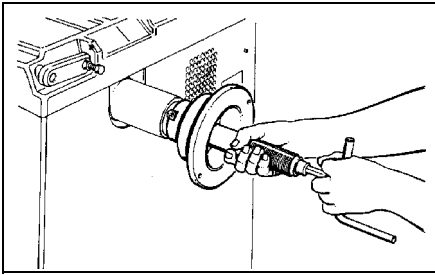


fig.9

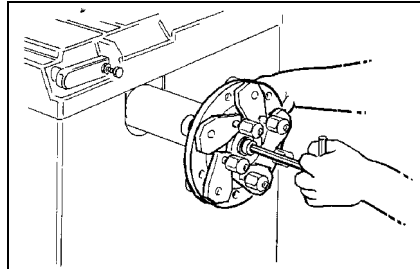


fig.10

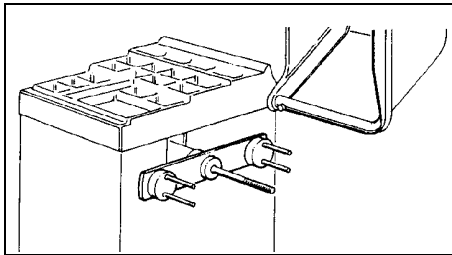


fig.11

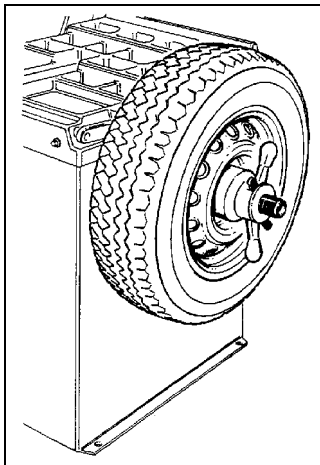


fig.13

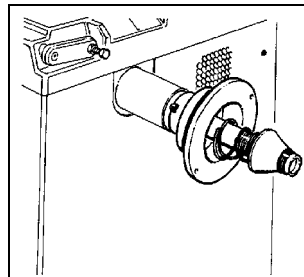


fig.12

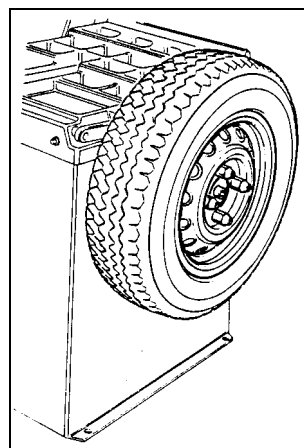


fig.14

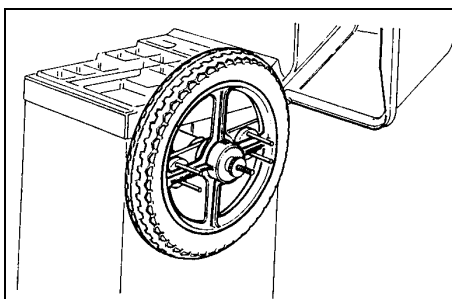


fig.15

FLANGE MOUNTING

Before mounting the flange on the machine it is advisable to clean the machine axle cone and the flange hole.

Bad flange adjustment would influence balancing precision. The illustrations show the flange fixing systems:

- **Fig. 9** shows shows the **cone flange** fixing system.
- **Fig. 10** shows the **universal flange** fixing system
- **Fig. 11** shows the **motorcycle flange** fixing system.

WHEEL ATTACHMENT

CAR WHEEL ATTACHMENT

- **Figs. 12 and 13** show the attachment system for car wheels using the cone flange.
- **Fig. 14** shows the attachment system for car wheels using the universal 3/4/5 hole flange.

MOTORCYCLE WHEEL ATTACHMENT

- **Fig. 15** shows the attachment system for motorcycle wheels using the motorcycle flange.

MALFUNCTIONS: CAUSES AND POSSIBLE REMEDIES

display	malfunctions	causes	possible remedies
The display does not light up	The panel has no power.	<ol style="list-style-type: none"> Lack of external supply or lack of one phase. Fuses F1 - F2 blown in the electrical box. (See electrical circuit diagrams: ref. 931801A - 931701A on pgs. 22-25). Fuses blown on the panel. (See panel lay-out). 	<ol style="list-style-type: none"> Check that all three phases (in the case of three phase supply), or the single phase and neutral, are connected to the balancing machine. Replace fuses F1 and F2. (The re-blowing of the fuses suggests that there is a fault in the electrical system). Replace fuses F3 - F4 - F5. (The re-blowing of the fuses suggests that there is a fault in the electrical system).
E 00	Function non-existent error.	<ol style="list-style-type: none"> Wrong function code entered. 	<ol style="list-style-type: none"> Establish the correct function code in the present Instructions Manual or using help, and enter it.
E 01	The message "E 01" appears when switched on.	<ol style="list-style-type: none"> The electronic panel has lost the settings pre-set during manufacture. 	<ol style="list-style-type: none"> Repeat all the stages for setting the balancing machine.
E 02	The message "E 02" appears when switched on.	<ol style="list-style-type: none"> The electronic panel working memory is faulty. 	<ol style="list-style-type: none"> Replace the electronic panel.
E 03	The motor turns in the reverse direction.	<ol style="list-style-type: none"> The motor supply is inverted 	<ol style="list-style-type: none"> After switching off the main switch, reverse 2 of the supply phases on the balancing machine.
E 04	The motor does not turn (when START is pressed), or the message "E 04" appears after about 20 seconds.	<ol style="list-style-type: none"> Lack of one phase, if the motor is three phase. Relay malfunction in the electrical box. (See electrical circuit diagrams on pgs.22-25). Electronic panel malfunction. the motor is not able to achieve the necessary rotation for good balancing. 	<ol style="list-style-type: none"> Check that all 3 phases are correctly connected. Replace the electrical component. Replace the electronic panel. Check the mains tension, which may be low.
E 05	After the second setting run "E 05" appears on the display.	<ol style="list-style-type: none"> The sample weight was not screwed on. 	<ol style="list-style-type: none"> Re-start the setting cycle from the beginning, or at the end of the first run screw on the sample weight before starting the second.
E 06	The message "E 06" appears when START is pressed.	<ol style="list-style-type: none"> The guard casing has not been lowered. The guard casing micro-switch is broken (see electrical circuit diagram: ref. 931801A - 931701A on pgs. 22-25). 	<ol style="list-style-type: none"> Lower the mounted wheel guard casing. Replace the micro-switch.
E 07	At the end of the first run "E 07" appears on the display.	<ol style="list-style-type: none"> The difference of phase between the two pick-ups is too great. 	<ol style="list-style-type: none"> Replace the pick-ups. If after the substitution the problem is not resolved, replace the electrical panel.
E 08	At the end of the first run "E 08" appears on the display.	<ol style="list-style-type: none"> The left pick-up is defective. 	<ol style="list-style-type: none"> Substitute the left pick-up.
E 09	At the end of the first run "E 09" appears on the display.	<ol style="list-style-type: none"> The right pick-up is defective. 	<ol style="list-style-type: none"> Substitute the right pick-up.
E 10	At the end of the first run "E10" appears on the display.	<ol style="list-style-type: none"> Position gauge fault. Optical-electrical problem. 	<ol style="list-style-type: none"> Replace the optical-electronics.
E 11	At the end of the first run "E11" appears on the display.	<ol style="list-style-type: none"> Movement gauge fault. Problem with the optical-electrical zero point. 	<ol style="list-style-type: none"> Replace the optical-electronics.
E 14	"E14" appears on the display.	<ol style="list-style-type: none"> +5V supply incorrect. 	<ol style="list-style-type: none"> Replace the electrical panel.
E 15	"E15" appears on the display.	<ol style="list-style-type: none"> +8V supply incorrect. 	<ol style="list-style-type: none"> Replace the electrical panel.
E 16	"E16" appears on the display.	<ol style="list-style-type: none"> -12V supply incorrect. 	<ol style="list-style-type: none"> Replace the electrical panel.
E 17	At the end of the first run "E 17" appears on the display.	<ol style="list-style-type: none"> Weight outside the range of adjustment (the weight necessary to balance the wheel is greater than 250 grams). 	<ol style="list-style-type: none"> a) check that the wheel is correctly fitted to the flange. b) look for (equally) the external position, fit a 100 gram weight and run the balancer.
E 18	At the end of the first run "E18" appears on the display.	<ol style="list-style-type: none"> Wheel data not entered. 	<ol style="list-style-type: none"> Enter the wheel data on the keyboard.

Other possible malfunctions are largely technical in nature and must be checked and resolved by PROFESSIONALLY QUALIFIED TECHNICIANS.

INSTRUCTIONS FOR USE

ELECTRONIC PANEL

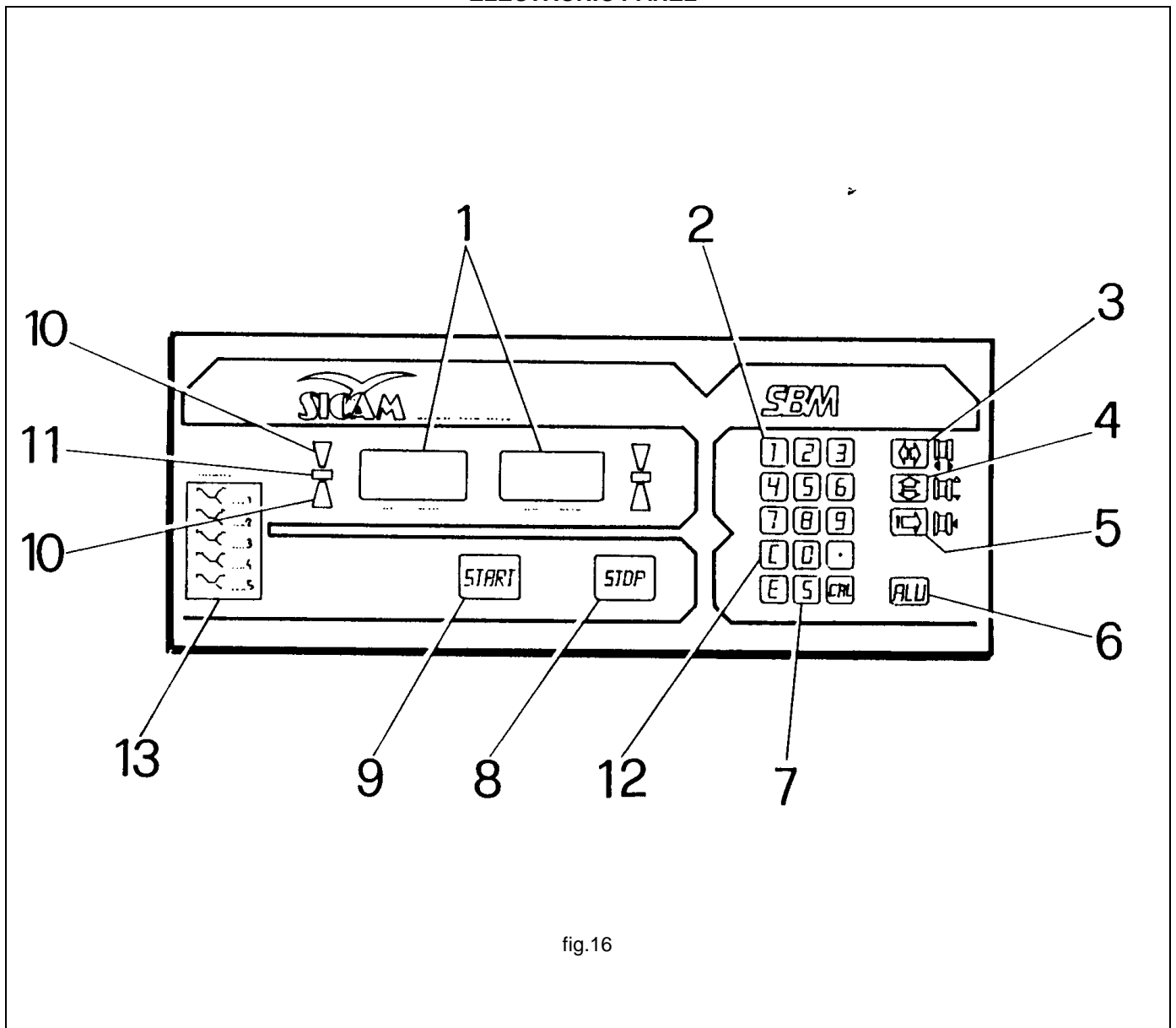


fig.16

KEY

- | | |
|--------------------------------------------|----------------------------------------|
| 1. Data displays | 7. Static programme selector key |
| 2. Programming keyboard | 8. STOP key |
| 3. Rim width regulator key | 9. START key |
| 4. Rim diameter regulator key | 10. LED imbalance direction indicators |
| 5. Rim compensation distance regulator key | 11. Point of imbalance (LED) |
| 6. Aluminium programme selector key | 12. C Key - conduct coded functions |
| | 13. Type of function ALU |

WHEEL BALANCING

Switch on the machine with the main switch (see fig. 1 and fig. 2 on pg. 4).

- The displays (**fig. 16**) read "0". Close the wheel protector guard and push the **START** button (**9, fig. 16**) to start the measuring cycle.
- After starting the read-outs disappear with the exception of a central segment of the display.
- The degree and location of the imbalance are measured simultaneously and are displayed separately.
- When the measurements are complete the wheel brakes automatically until it stops.
- The wheel guard must not be opened before stopping. In an emergency the **STOP** button (**8, fig. 16**) shuts down the machine.
- The LED arrows (**10, fig. 16**) indicate the direction in which the wheel has to be rotated to reach the position for balancing (separate arrows for each side of the wheel).
- The wheel has to be rotated by hand until the **LED** (**11, fig. 16**) lights up.
- Next the balancing weight required is fixed on the respective sides of the wheel in a top perpendicular position (at 12 o'clock) on the main axle.
- After fixing the counter-weights in the compensating positions, start the machine to check that the wheel balance has been corrected.

WHEEL BALANCING CHECKS

Two check procedures are required to ensure that the balancing procedure is carried out perfectly.

CHECKING THE CORRECT FUNCTIONING OF THE BALANCING PROCEDURE.

- The two sides of a wheel are balanced according to the instructions.
- Then an imbalance is artificially created by adding a 50g weight on one of the two sides. The machine should now indicate exactly this imbalance giving both the weight and the position.
- There might also be a reading for the other side to a max. 5g.
- To check the imbalance indicator LED the wheel is rotated until the imbalance position is reached and indicated by the machine. In this position the test weight should be positioned vertically under the axle (at 6 o'clock).
- If there is a clearly visible angular deviation then the indicator LEDs have to be corrected.
- If there is an unacceptable deviation for the readings on the side of the wheel with the test weight, or if the imbalance indicated for the other side is excessive, then the machine has to be re-calibrated.

CENTRING PRECISION (balancing quality)

For this test the same wheel balanced in the previous test procedure can be used.

- Remove the test weight. Then release the wheel from the adapting device, rotate it about 35° and then re-lock it.
- In a test cycle the reading should not exceed a max. imbalance of 10g on each side (15g in the case of particularly heavy wheels). This error is due to the rim centring tolerance.
- Precise centring is essential both for this test and for normal balancing procedures.
- If a large imbalance emerges from this test it is necessary to check for excessive wear, for play, or for dirt in the parts used to centre the wheel.

PROGRAMMING FOR WHEEL BALANCING

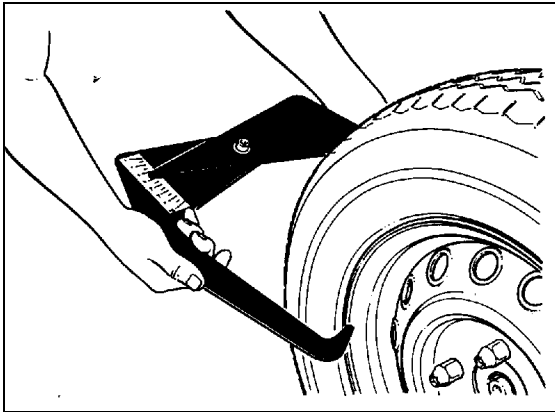
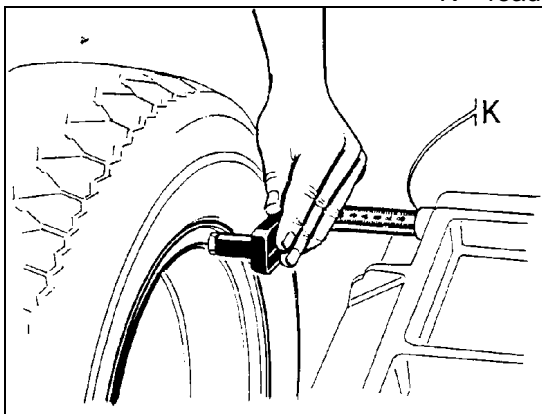


fig17



K = reading point

fig.18

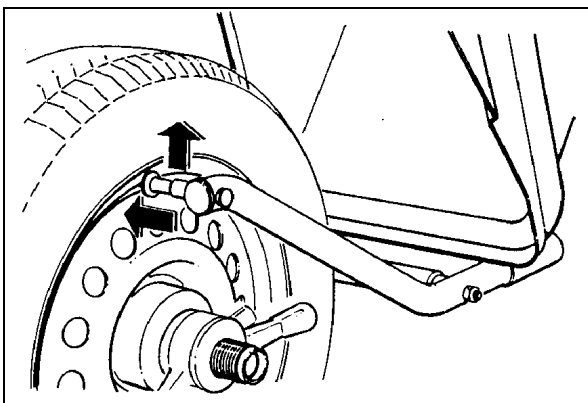


fig.19

PROGRAMMING WITH MANUAL GAUGE

Set the figures of the width, diameter, and rim compensation distance of the wheel which is to be balanced, on the control panel. The width is measured using the calliper gauge supplied with the machine (**fig. 17**). The diameter of the rim is read on the tyre, and the rim compensation distance is measured with the gauge cursor on the machine (**fig. 18**). The compensation distance figure to be set is read on the scale.

If only the static imbalance is to be determined, as with motorcycle wheels, only the rim diameter has to be set on the programmer (2), (**see fig. 15**). The other two readings can be set at any figure.

PROGRAMMING WITH AUTOMATIC GAUGE

Programming is effected by positioning the internal gauge (**fig. 18**) and the external gauge (**fig. 19**) against the rim and waiting for the confirmation "beep". The figures to programme (distance, width and diameter) are automatically inserted into the panel. It is a single operation - extremely fast and completely error free.

BASIC SETTING OF THE WHEEL BALANCER

- 1 - Mount the cone flange solidly on the axis.
- 2 - Press C 7 2 E
- 3 - The display shows C A L 1
- 4 - Run the machine
- 5 - When the flange has stopped turning the display shows C A L 2
- 6 - Fix the wheel sample weight on the outside of the cone (fig. 20)

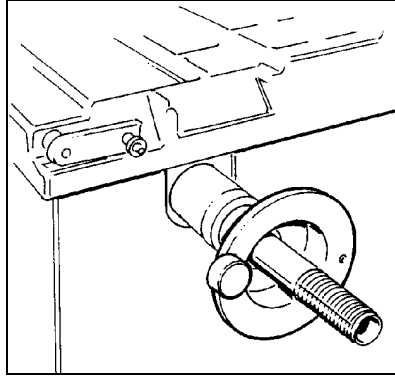


fig.20

- 7 - Run the machine
- 8 - When the flange has stopped turning the display shows O O
- 9 - Press C A L 5 2 6 E to memorize the data
- 10 - Remove the weight from the cone
- 11 - Mount a wheel in good condition of either 13" or 14" on the cone flange and fix it tightly. Remove any weights that might already be on the wheel
- 12 - Enter the wheel data as follows:
 - a) Press 3 (fig. 16) and set the wheel width in inches (ex. 6.0", 5.5" etc.), then press E
 - b) Press 4 (fig. 16) and set the diameter of the wheel in inches (ex. 13" or 14"), then press E
 - c) Press 5 (fig. 16) and set the distance in mm of the wheel from the body of the machine (ex. 80 mm, 65 mm etc.). this distance is shown on the graduated scale (fig. 18), then press E
- 13 - Press S T O P
- 14 - Press C 7 2 E 1 9 E
- 15 - The display shows C A L 4
- 16 - Run the machine
- 17 - When the wheel has stopped turning the display shows C A L 5
- 18 - Press 1 O O E (fig. 16) (if the weight is of 80g, press 8 0 E)
- 19 - The display shows C A L 6
- 20 - Fix the 100g weight on the inside of the rim
- 21 - Run the machine
- 22 - When the wheel has stopped turning the display shows C A L 7
- 23 - Remove the weight from the inside of the rim and fit it in an outside opposite position (in a symetrically opposite position)
- 24 - Run the machine
- 25 - When the wheel has stopped turning the display shows O O
- 26 - Press S T O P C A L 5 2 6 E to memorize the data

At this point the setting procedure has been correctly completed (and it is not necessary to repeat it).

AUTOMATIC GAUGE SETTING

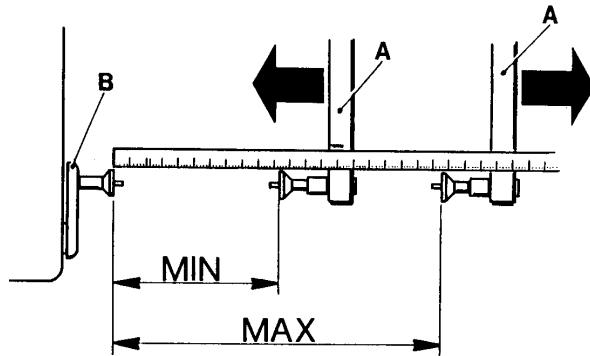


fig.21

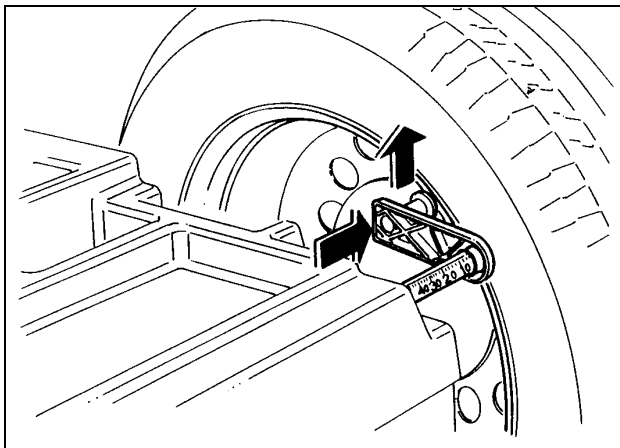


fig.22

Pressing "**C 3 2 E**" gives access to the automatic calibration gauge.

"D 1" appears on the left-hand display.

Move the millimetre slider B to the rest position. On the keyboard set the the number read on the millimetre rule.

N.B. each notch = 1mm.

The value to set in D1 is 2 (the fixed figure given by the maker).

The measurement will appear on the right-hand display. Check that the cursor B is in the rest position, and press "**E**".

On the left-hand display "**D 2**" appears.

Move the millimetre slider B to the maximum open position and enter the reading on the keyboard, then holding it in position, press "**E**". Then return it to the rest position.

The left display will now show "**L 1**".

Move cursor A to the maximum open position and measure the distance (with the ruler) between the millimetre cursor and the external cursor (**see fig. 21**). keeping the stamped marks aligned. Key the figure in mm on the keyboard and the measurement will appear on the right-hand display. Maintaining this position, press "**E**".

Now "**L 2**" will appear on the left-hand display.

Move the exterior cursor A to the minimum open position, and keeping it aligned, measure the distance between the two stamped marks. Key the measurement on the keyboard and the measurement will appear on the right-hand display. Keeping it in position, press "**E**".

Now on the left-hand display "**ALT**" (height) appears.

Mount a wheel on the machine (if possible 13" - 14"). Move the millimetre cursor with the stamped mark onto the rim (**see fig. 21**). and enter the height in inches of the wheel mounted on the keyboard. Holding it in this position, press "**E**".

To store the settings press "**STOP CAL 5 2 6 E**", and wait for the "Beep" signal.

PROGRAMMING AND FIXING ADHESIVE WEIGHTS WITH SPECIAL GAUGE

For aluminium and light alloy rims

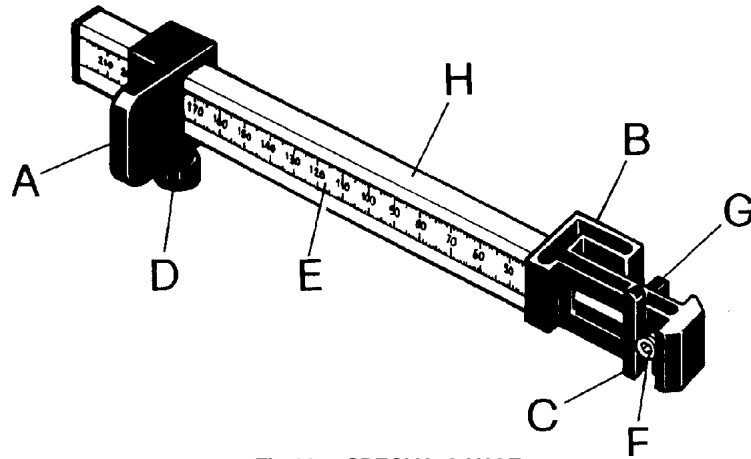


Fig.22a : SPECIAL GAUGE

A: BOTTOM GAUGE SLIDE
B: WEIGHT POSITION GAUGE HEAD
C: EXTERNAL JAWS

D: SCREW KNOB
E: MILLIMETRE PLATE
F: EXTRUDER

G: INTERNAL JAWS FOR WEIGHT FIXING
H: HANDLE WITH PLATE SEAT

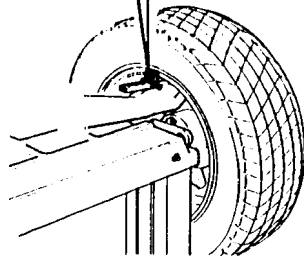
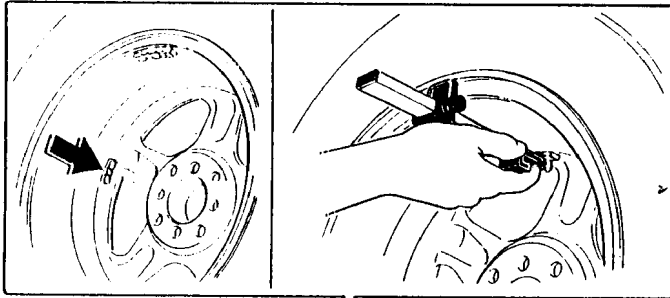


fig.22b

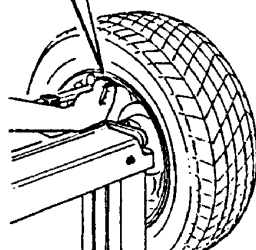
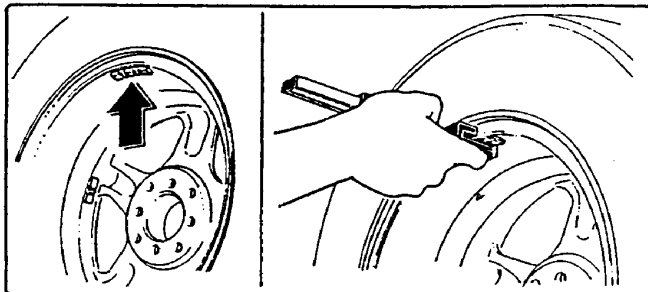


fig.22c

PROGRAMMING AND FIXING ADHESIVE WEIGHTS ON ALUMINIUM AND LIGHT ALLOY RIMS.

A **SPECIAL GAUGE** is supplied on request for programming (ALU) and for fixing adhesive weights on aluminium and light alloy rims.

This gauge, functioning only in the system ALU 2 and 3, allows the determination with the maximum of precision (and according to the form of the rim) the exact position for the positioning of adhesive weights.

Refer to figures 21 a, b, c, and proceed as follows:

- Set the machine on the **ALU 2** program
- Position the gauge with the base (A) on the inside edge of the rim.
- Slide the base A on the millimetre cursor (E) to position the outside jaws (C) to the best position required for the fixing of the weight.
- Fix the base (A) with the screw knob (D).
- Read the measurement in mm. and enter it on the keyboard as rim width.
- Run a balancing cycle. The weight values will be displayed (internal and external).
- Move the wheel into position and mount the weight (given on the display as **external**) on the outside jaws (C).
- Move the base (A) to the edge of the rim (12 o'clock) and fix the weight with the extruder (F) (see fig. 22b).
- Move the wheel into position and mount the weight (given on the display as **internal**) on the inside jaws (G).
- Move the gauge head (B) to the edge of the rim and fix the weight with the extruder (F) (see fig. 22c).

N.B. For the **ALU 3** program the outside procedure remains the same; for the internal fix the spring weight on the edge of the rim.

IMBALANCE OPTIMIZATION

To start the imbalance reduction process press the **ALU** key repeatedly until the left display reads "**oPt**". Press the **E** key to enter optimization: the display "**oPt 1**" appears.

Stage 1: Press the **START** key for the first test run with the wheel to be optimized: at the end of the run the display reads "**oPt 2**".

Stage 2: Turn the wheel by hand and move the valve to a 12 o'clock position. With the wheel in this position, press the **E** key to memorize the reference position of the wheel for the first test run. Now the display reads "**oPt 3**". Mark a reference point on the tyre at the valve position.

Stage 3: Remove the rim from the flange and rotate the tyre on the rim 180 degrees (the mark made previously can be used - move it to the position exactly opposite the valve). Remount the rim on the flange and reposition the valve at 12 o'clock. Keeping the wheel in this position, press the **E** key to memorize the new position of the rim on the flange: the display now reads "**oPt 4**".

Stage 4: Press the **START** key to run another cycle. At the end of the cycle the display reads "**oPt 5**".

Important: to get the best possible results from the imbalance reduction process, it is necessary to carry out the above operations with the utmost precision.

When the **STOP** key is pressed at the end of the second run, the following information is given:

- left display: figures for the *present static imbalance* of the wheel;
- right display: figures for the *minimum residual imbalance* that it is possible to obtain with the recommended imbalance reduction.

These figures are useful for deciding whether it is worthwhile going on with the imbalance reduction process (for the same reason, after the first run it is possible, by pressing the **STOP** key, to read the static imbalance of the wheel on the left display in order to check whether it is really worthwhile continuing with the reduction operations).

Stage 5: To continue the imbalance reduction process, rotate the wheel by hand until the positioning led's on the display move to the centre, and mark the tyre at the top point (in the position where a weight is normally fixed). To reduce the imbalance, remove the rim from the flange and rotate the tyre on the rim until the new mark coincides with the valve.

Refit the rim to the flange and position the valve at 12 o'clock. Holding the wheel still in this position, press the **E** key to memorize the new position of the rim on the flange: the display now reads "**oPt 6**".

Stage 6: Press the **START** key for a test run. At the end of the test run the wheel imbalance is automatically compared with the figures of minimum residual imbalance. If the difference between these two figures is less than the maximum permitted tolerance, the display shows "**oPt YES**". Pressing the **STOP** key it is also possible to display the new static imbalance figures in order to check the effectiveness of the operation just carried out.

Stage 7: If the first reduction is not satisfactory, the display shows "**oPt 7**". In this case it is possible to continue the reduction process by repeating the operations starting from *stage 5*.

When it is no longer possible to further reduce the imbalance the process ends:

- if the operation has been completed successfully and the display shows **oPt YES**;
- if it has not been successful the display shows **oPt Err**, indicating that it is necessary to repeat the entire procedure from the beginning.

At the end of the optimization process, press the **E** key to return to measurement of wheel imbalance. The display reads "0 0".

Pressing the **ALU** key at any time interrupts the imbalance reduction process and the system returns to measuring wheel imbalance.

SPECIAL PROGRAMMING

1G OR 5G INTERVAL DISPLAY

The weight display can be in intervals of fives or in ones. If the display is already in fives, press "C 2 1 E" to change to ones. If the display is already in ones, press "C 2 1 E" to change to fives.

To memorize the interval setting, press "STOP CAL 5 2 6 E".

ENABLING AND DISABLING GAUGE SETTINGS

If the machine has already been calibrated, there is the possibility to enable or disable the automatic gauge function. If the automatic gauge is active, it is de-activated by pressing "C 2 3 5 E", and reactivated in the same way. To store the selection press "STOP CAL 5 2 6 E".

SILENT FUNCTION

To de-activate the "Beep" that sounds when keys are pressed and at other times, press "C 1 6 E". It is re-activated in the same way.

To store the selection press "STOP CAL 5 2 6 E".

HOW TO ENTER MEASUREMENTS IN mm

No special operations are required for this. Simply enter the readings in mm as they appear on the wheel.

SWITCH ON BY LOWERING THE GUARD

To start the machine simply by lowering the guard, press buttons "C 1 5 E". To change back to operation only via the control panel, repeat the operation.

To store the selection press "STOP CAL 5 2 6 E".

WEIGHT DISPLAY IN GRAMS OR OUNCES

To change the display from grams to ounces, press "C 2 0 E". To change the display from ounces to grams, press "C 1 8 E". To store the selection press "STOP CAL 5 2 6 E".

ZEROING SMALL WEIGHTS IN GRAMS

To zero small weights in grams (2 - 3 g) press "C 7 E". The present zeroing figure setting is displayed to the left of the display. To change the figure, simply enter the new one (max. 1 figure after the decimal point), and press button "E" to confirm the figure. To store the setting press "STOP CAL 5 2 6 E".

PROGRAMMING FOR BALANCING MOTORCYCLE WHEELS

STATIC

- Set the width and diameter figures on the front panel (even if the wheel balancer has automatic gauges - with static, balancing measurements must be set manually).
- The rim width measurement is made using the gauge supplied with the machine.
- The rim diameter measurement is taken from the tire.
- After running the measuring cycle, fit a weight as indicated on the central part of the rim width.

DINAMIC

- For the dynamic balancing of motorcycle wheels follow the programming instructions for normal wheel balancing.

CHECKS TO CARRY OUT BY SKILLED PERSONNEL

TEMPORARY BALANCING OF A WHEEL

When balancing a wheel without weights for the purpose of testing the balancing machine, press "O 7 5 E" and then start up normally. In this way the balancing machine registers the imbalance figures and cancels them. This function cannot be memorized and is cancelled as soon as the machine is switched off, or by pressing "C 5 3 O E".

+5 V. TENSION DISPLAY

To display this tension press the buttons "C 2 E" and "t2" appears on the left display and on the right the figure, which should be between 4.9 and 5.1.

+8 V. TENSION DISPLAY

To display this tension press the buttons "C 3 E" and "t3" appears on the left display and on the right the figure, which should be between 7.7 and 8.3.

-12 V. TENSION DISPLAY

To display this tension press the buttons "C 4 E" and "t4" appears on the left display and on the right the figure, which should be between 11.8 and 12.2.

PICK-UP TENSION DISPLAY

To display the tension read in the last measurement, press "C6 E" and on the left display the internal pick-up reading appears and on the right the outer pick-up. The correct functioning of the pick-ups can be checked as follows: the voltage of the inner pick-up should always be smaller than the external pick-up reading. The ratio between the external and internal pick-up readings should never exceed 3.5 and should never be less than 1.5.

PICK-UP PHASE DISPLAY

To display the phase of the last measurement, press "C 1 7 E" and the internal pick-up reading appears on the left-hand display, and on the right the external reading. The correct functioning of the pick-up can be checked as follows: start up with only the flange with the sample weight fitted. The difference between the two angles should be 180° ($0 - 180^\circ \pm 1^\circ$)

N.B. CHECKS ONLY FOR MACHINES WITH AUTOMATIC GAUGE

HEIGHT POTENTIOMETER TENSION DISPLAY

To display the height potentiometer tension, press "C 1 1 E" and on the left display "ALT" appears while on the right the tension corresponding to the position of the gauge (for example 2.4).

WIDTH POTENTIOMETER TENSION DISPLAY

To display width potentiometer tension, press "C 1 2 E" and on the left display "LAR" appears while on the right the tension corresponding to the position of the gauge (for example 3.2).

COMPENSATION DISTANCE POTENTIOMETER TENSION DISPLAY

To display compensation distance potentiometer tension, press "C 1 3 E" and on the left display "DIS" appears while on the right the tension corresponding to the position of the gauge (for example 1.8).

CONCERNING THE ACCURACY OF THE POTENTIOMETERS

With the codes C11 - C12 - C13 the various potentiometer readings are displayed. To assess the accuracy of these the following rules should be kept in mind:

1. Changing the mechanical position of the potentiometer should change the corresponding tension. More precisely, this should increase when the compensation distance and height measurements increase, but for width, the tension increases when width decreases.
- 2) The tension readings obtained with C11 - C12 - C13 should never be 0.0 or 5.0 (with an accuracy of ± 0.1). because this would mean that there was a short circuit caused by a broken or detached wire.

MEMORIZING DATA

It must be remembered that any setting operation or function modification must be memorized before starting a new work cycle. This is done by pressing "STOP - CAL - 5 2 6 E".


CHECKING MOTOR ROTATION SPEED

To check motor rotation in revolutions per minute, press "C 5 E" and then "START". The r.p.m. for the first minute will be displayed on the right. The minimum acceptable figure is 445 r.p.m and the maximum 455 r.p.m.

ROUTINE MAINTENANCE

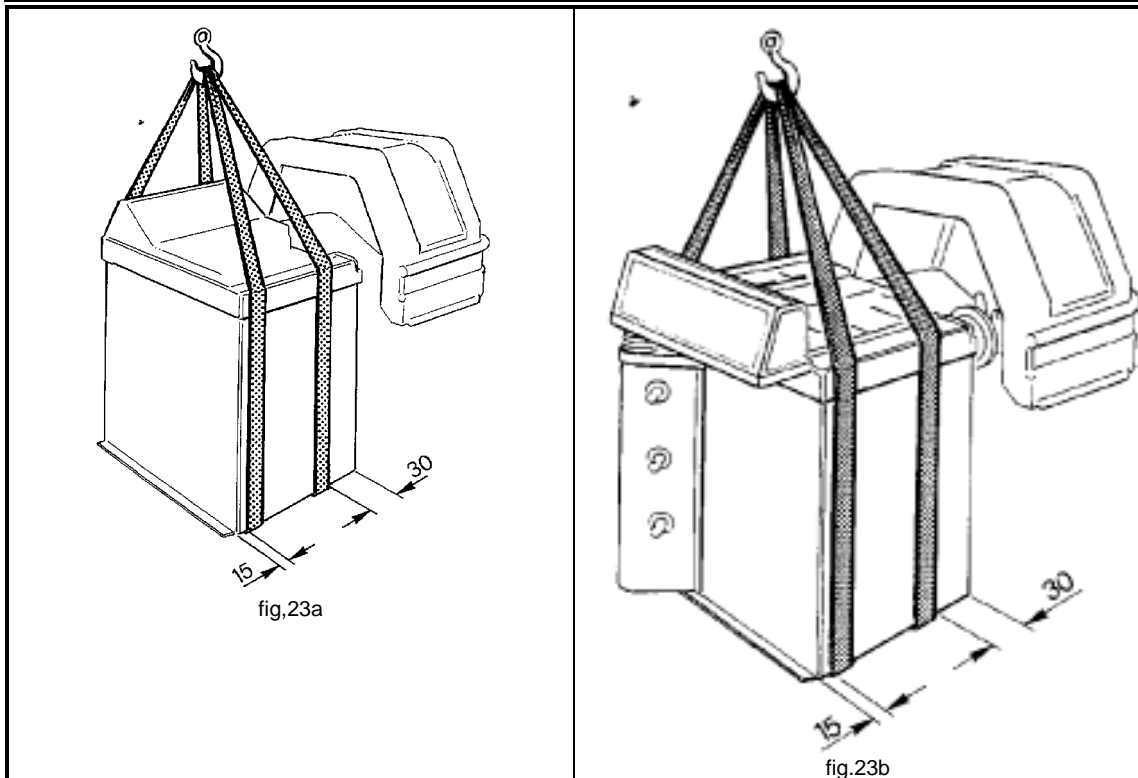
machine cleaning and maintenance by the user


To guarantee the efficiency and correct functioning of the machine it is essential to clean it and to conduct periodic **routine maintenance**. The operations of routine maintenance must be carried out by the user according to the maker's instructions given below:

 Before proceeding to any cleaning or maintenance operations **remove the plug from the electrical socket**.

MECHANICAL PARTS: The cone adaptor device and the fixing devices must be kept clean, and lightly lubricated with non corrosive oil even when not in use. The accuracy of balancing depends to a large extent upon their condition.

TRANSPORT AND MOVEMENT



 Whenever it is necessary to move or transport the machine take all the necessary precautions! For the methods of harnessing and lifting the machine, refer to the instructions in figs. 23a (**SBM95**) and 23b (**SBM 99S**).

STORAGE AND SCRAPPING

PERIODS OF INACTIVITY	PERMANENT STORAGE	SCRAPPING
<p>Whenever it is decided to temporarily store the machine, and during periods in which the machine is not in use, remove the plug from the electrical supply.</p>	<p>If it is decided that this machine is no longer to be used, it is advisable to make it inoperative by removing the electrical cable after having disconnected the plug from the supply.</p>	<p>Since the tyre changing machine is considered as special refuse, it should be dismantled into homogeneous parts and disposed of according to the laws in force.</p>

TECHNICAL ASSISTANCE AND SPARE PARTS

■ FOR ANY MACHINE MALFUNCTIONS CONSULT THE SECTION: "MALFUNCTIONS: CAUSES AND POSSIBLE REMEDIES" (PG. 10). ANY OTHER MALFUNCTIONS MUST BE CHECKED BY PROFESSIONALLY QUALIFIED PERSONNEL.

■ IN ALL CASES CONTACT THE ASSISTANCE SERVICE OF A SICAM EQUIPMENT AUTHORIZED RETAILER. FOR PROMPT ASSISTANCE IT IS IMPORTANT, AT THE TIME OF THE CALL, TO SPECIFY THE MACHINE MODEL, THE PRODUCTION NO. (FOUND ON THE REGISTRATION PLATE), AND THE TYPE OF MALFUNCTION.



WARNING !

**ANY WORK ON THE ELECTRICAL, HYDRAULIC,
OR PNEUMATIC SYSTEMS MUST BE CARRIED OUT ONLY BY
PROFESSIONALLY QUALIFIED
PERSONNEL.**

■ THE EXPLODED DRAWINGS ON THE FOLLOWING PAGES SHOW THE COMPONENT PARTS OF THE THE BASIC MACHINE, SPECIAL VERSIONS, AND ACCESSORY PARTS.



WARNING

**SPARE PARTS MUST BE ORDERED
EXCLUSIVELY
FROM SICAM EQUIPMENT AUTHORIZED RETAILERS.**

**THE MAKER DENIES TO ALL RESPONSIBILITY
FOR DAMAGE RESULTING FROM THE MALFUNCTIONING
OF NON-ORIGINAL SUBSTITUTED PARTS.**