

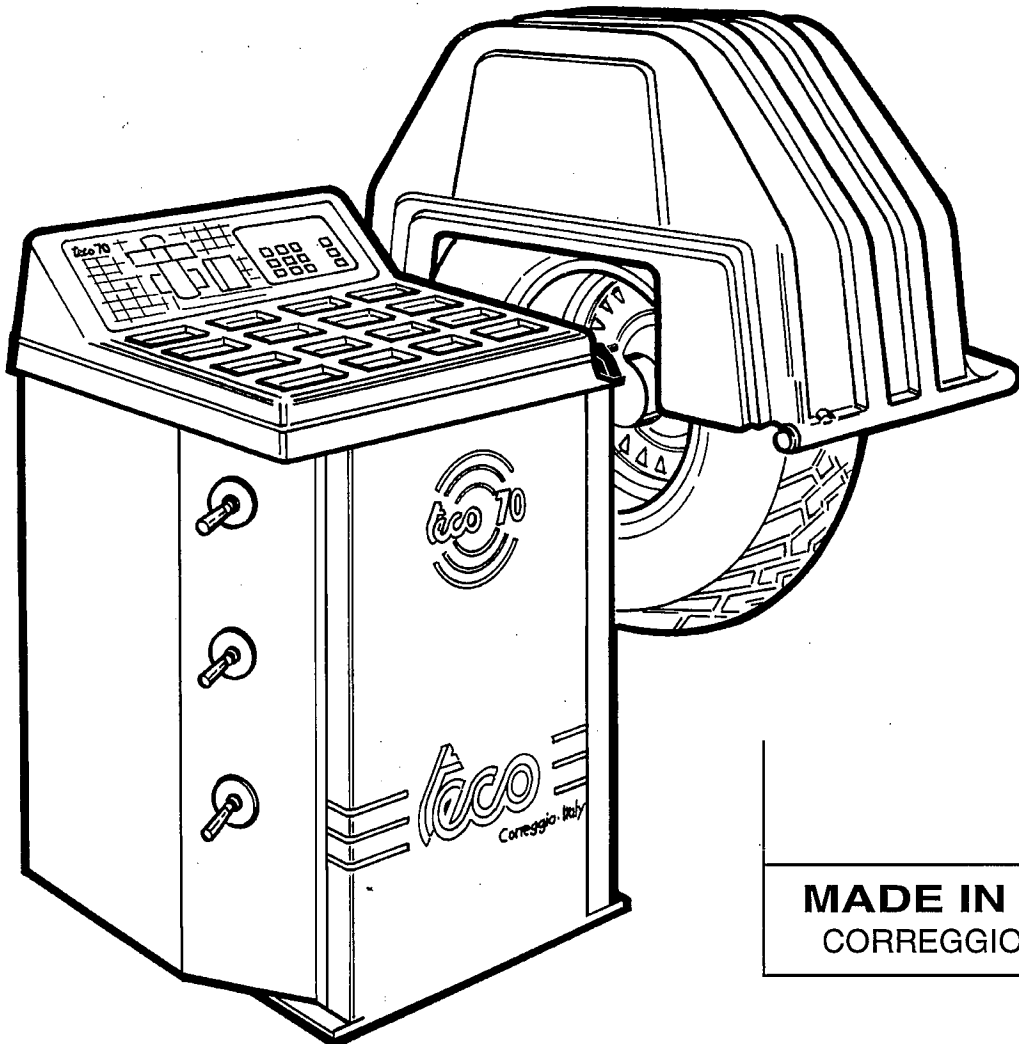


Automotive Equipment

OPERATOR'S MANUAL

WHEEL
BALANCING
MACHINE

TECO 70



MADE IN ITALY
CORREGGIO - R.E.





Automotive Equipment

EC STATEMENT OF CONFORMITY

We

TECO s.r.l. Via Pio La Torre, 10
42015 CORREGGIO (R.E.) - ITALY

do hereby declare that the product:

wheel balancing

mod. TECO 70

serial No.

to which this statement refers, is in conformity with the directive 89/392/EEC, amended with the directives 91/368/EEC, 93/44/EEC, 93/68/EEC, and the directives 86/217/EEC, 87/404/EEC amended with the dir. 93/68/EEC.

REFERENCE REGULATIONS:

EN 292/1991

EN 60204-1/1992

Correggio 01.01.1995

TECO s.r.l.

BARBETTI ing. MAURO

The form of this statement is in conformity with EN 45014 specifications.

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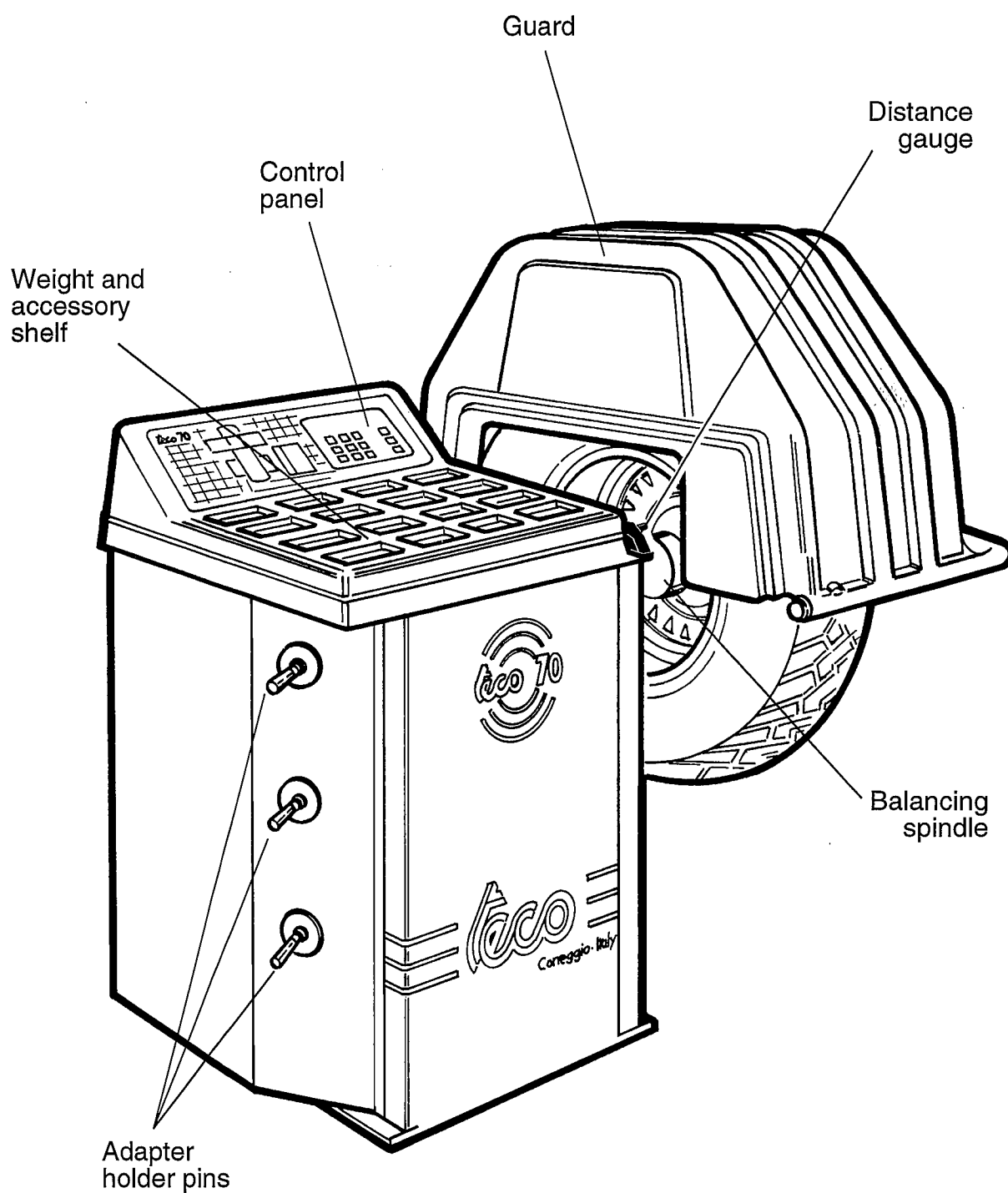
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WHEEL BALANCING MACHINE





1. DESCRIPTION OF THE BALANCING MACHINE

1.1 - GENERAL

The **T 70** is an electronic balancing machine with microprocessor designed for balancing wheels weighing up to 65 kg. The push button controlled calibration system allows a range of adjustment which is also sufficient to cover wheels differing from ordinary ones (motorcycles and racing cars).

Special functions are also available to cater for wheels of unusual shape and there is provision for optional functions on the balancing machine.

1.2- TECHNICAL DATA

Max wheel weight	65 Kg
Max power consumption	500 W
Standard power supply	220/240 V single phase
Balancing accuracy	1 gr
Balancing speed	200 min ⁻¹
Rim diameter	10" ÷ 24" or from 265 . 615mm
Rim width	1.5" ÷ 20" or from 40 . 510 mm
Cycle time	8 sec
Net weight with guard (and cone adapter)	120 Kg
Overall machine dimensions (with guard)	1200 x 1400 x h = 1670
Sound pressure level in cycle	< 70 d B (A)
Operating temperature range	from 0 to 50° C

1.3 - RECOMMENDATIONS

- Before starting to use the balancing machine, carefully read the operating instruction manual.
- Keep the manual in a safe place for future reference.
- Refrain from removing or modifying machine parts which would impair correct operation. Please get in touch with the Technical Service when needing repairs.
- Do not use strong jets of compressed air for cleaning.
- Use alcohol to clean plastic panels or shelves (AVOID LIQUIDS CONTAINING SOLVENTS).
- Before starting the wheel balancing cycle, make sure that the wheel is securely locked on the adapter.
- The machine operator should not wear clothes with flapping edges; make sure that unauthorized personnel do not approach the machine during the work cycle.
- Avoid placing counterweights or other bodies in the base which could impair the correct operation of the balancing machine.
- The balancing machine should not be used for purposes other than those described in the instruction manual.

1.4 - STANDARD SAFETY DEVICES

- Stop push button for stopping wheel under emergency conditions.
- The safety guard of high impact strength plastic, is with shape and size designed to prevent risk of counterweights from flying out in any direction except towards the floor.
A microswitch prevents starting the machine if the guard is not lowered and it stops the wheel whenever the guard is raised.



2. HOISTING AND INSTALLATION

To hoist the machine, lever the base only with the 3 support points. Under no circumstances, apply force to other points such as the spindle, head or accessory shelf. Check that the balancing machine rests on the floor at the three points. There is no need to anchor the machine to the floor for correct operation.

3 - ELECTRICAL CONNECTION



WARNING: ELECTRICAL CONNECTION MUST BE MADE BY SPECIALIZED PERSONNEL. CONNECTION TO THE SINGLE PHASE MAINS MUST BE BETWEEN PHASE AND NEUTRAL; UNDER NO CIRCUMSTANCES BETWEEN PHASE AND EARTH (GROUND). EARTHING IS ESSENTIAL FOR CORRECT MACHINE OPERATION. **TECO** DECLINES ALL RESPONSABILITY IN THE EVENT OF INCORRECT CONNECTION.

Before connecting the machine to the mains through relative cable, check that the mains voltage matches that shown on the nameplate at the back of the balancing machine. Rating of the electrical connection should be on the basis of the machine electrical power consumption (see nameplate).

- The machine mains supply cable should be fitted with a plug conforming to current regulations.
- It is advisable to provide the machine with its own electrical connection through a suitable circuit breaker.
- When connection is made directly to the main control panel, without using any plug, it is advisable to padlock the main switch of the balancing machine so that its use is limited only to authorized personnel.

4- MOUNTING

4.1 -- FLANGE MOUNTING

Before mounting the adapter on the balancing machine shaft, make sure that the shaft and adapter centering zone be quite clean. Lock the flange on the balancing machine shaft with special spanner.

4.2- WHEEL MOUNTING

The wheels should be fastened using one of the numerous adapters manufactured by **TECO** (see enclosed brochures). Note that an incorrect centering will inevitably produce unbalance.

5. CONTROL PANEL

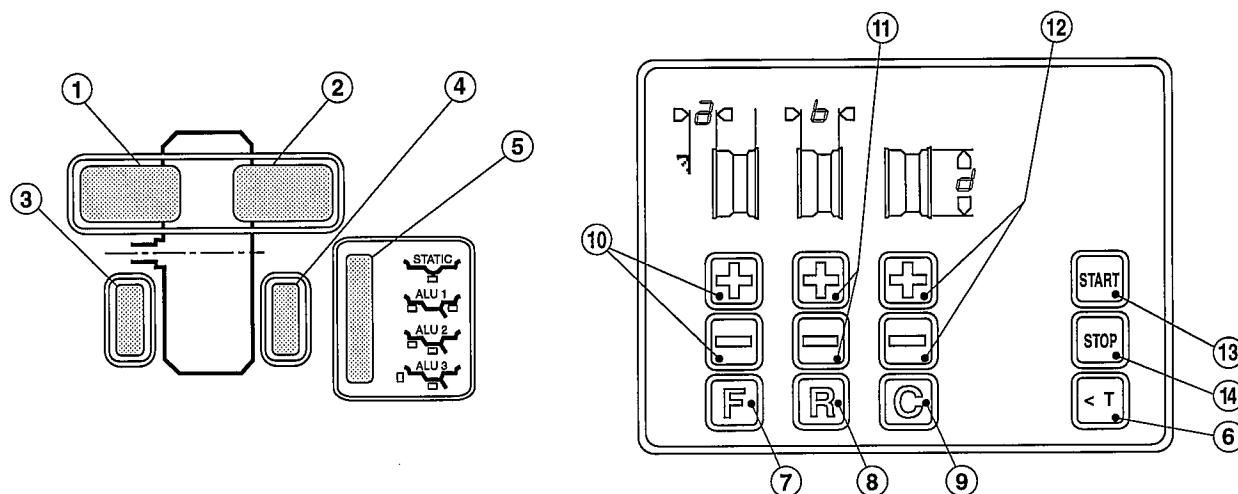


Fig. 1

1. Digital display, AMOUNT OF UNBALANCE, inside
2. Digital display, AMOUNT OF UNBALANCE, outside
3. Indicator, POSITION OF UNBALANCE, inside
4. Indicator, POSITION OF UNBALANCE, outside
5. Indicators, correction mode selected
6. Push button for reading unbalance < 5 g (.3 oz) and optimization
7. Program selection push button
8. Push button for recalculating / self-calibration
9. Push button for selecting g/ounces - mm/inches - self-calibration and optimization
10. Push buttons, manual DISTANCE input
11. Push buttons, manual WIDTH input
12. Push buttons, manual DIAMETER input
13. Cycle start push button
14. Emergency stop push button

NOTE: Only use fingers to press the push buttons. Never use the pliers for weight fixing/removing or any other pointed objects.

6. PRESETTING OF DIMENSIONS



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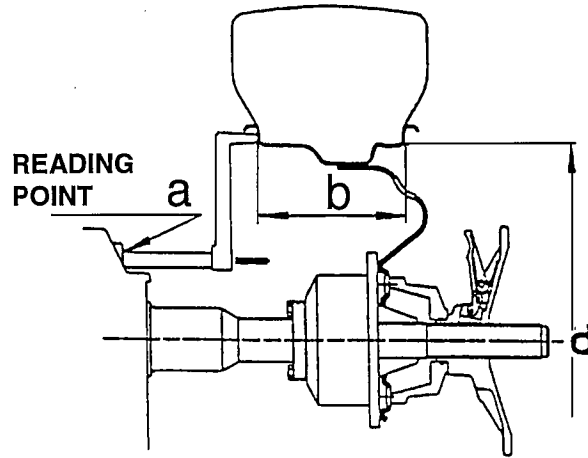
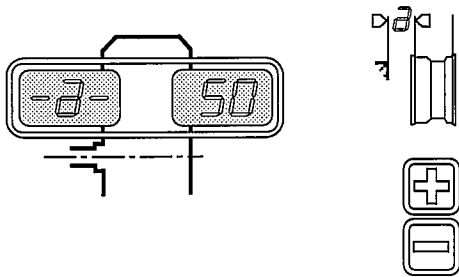


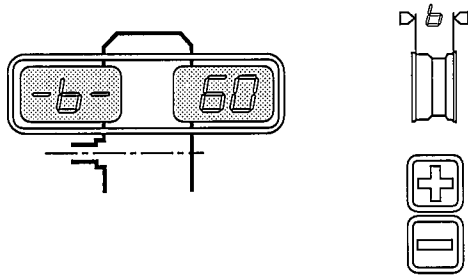
Fig. 2

FIG. 3: DISTANCE



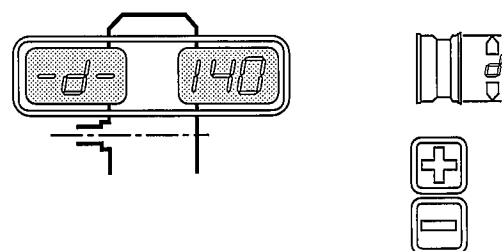
Preset distance "a" on the inside of the wheel from the machine measuring it with the special gauge.
(Increment pitch 0.5 cm. Full scale 25 cm)

FIG. 4: WIDTH



Preset the nominal width which is generally given on the rim, or else measure width "b" with the caliper gauge (supplied as standard).
(Increment pitches:
- unit of measurement mm: 5 mm
- unit of measurement inch: 0.25"
the following is displayed: .2 for 1/4"
.5 for 1/2"
.7 for 3/4")

FIG. 5: DIAMETER



Preset the nominal diameter "d" stamped on the type:
(Increment pitches:
- unit of measurement mm: 12/13 mm
- unit of measurement inch: 0.5)

6.1 - PRESETTING FOR MOTORCYCLE WHEELS



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When the wheel dimensions do not allow normal measurement, proceed as follows:

- Insert the extension on the distance gauge.
- Lift out the gauge until it touches with the extension the inside of the rim.
- Read the value "a" on the scale, then return the gauge to "0" and preset manually the value "a + 10" (full scale 25 cm).
- Manually preset the diameter and width as described in section 6.

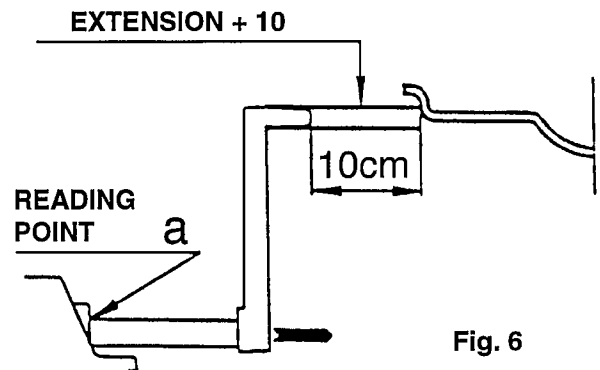
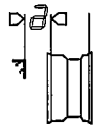
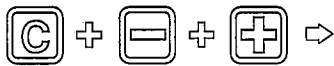


Fig. 6

6.2 OPTIONS



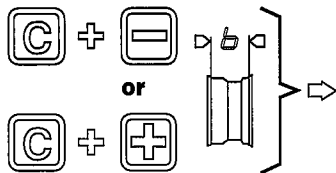
PRESETTINGS MEMORIZED ALSO WHEN MACHINE IS SWITCHED OFF:



- UNIT of measurement of unbalance grams/ounces



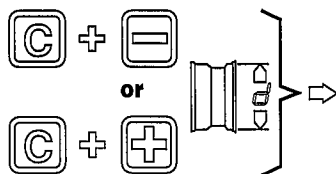
- Start with guard closed



PRESETTINGS LOST WHEN MACHINE IS SWITCHED OFF:

- UNIT of measurement of width mm/inch
(from "PRESETTING OF DIMENSIONS" by selecting WIDTH).

N.B: - In inches each time machine is switched on.



- UNIT of measurement of DIAMETER mm/inch
(from "PRESETTING OF DIMENSIONS" by selecting DIAMETER).

N.B: - In inches each time machine is switched on.

DISPLAY OF UNBALANCE:

→ Dynamic → Static → Alu 1 → Alu 2 → Alu3 → Dynamic

7. WHEEL BALANCING

7.1 MEASUREMENT OF UNBALANCE

- To make a measuring spin, close the guard (press **START** if the function "Start with guard closed" is not enabled (see section 6.3).

In a few seconds the wheel is brought up to speed and a new braking; the amounts of unbalance remain memorized on instruments 1 and 2.

- The illuminated LED displays show the correct angular position where to fit the counterweights (12 O'clock-position).


- In this screen, a light pressing of key  will display in sequence the preset dimensions.

Fig. 7: POSITIONING AND CORRECTION ON THE OUTSIDE




Fig. 8: POSITIONING AND CORRECTION ON THE INSIDE



7.2 RECALCULATION OF THE UNBALANCE

- Preset the new dimensions following the procedures described above.

- Without repeating the spin, press 

- The new recalculated unbalance values are displayed.

7.3 MINIMIZE STATIC UNBALANCE

- When standard commercially available weights with pitch of 5 every 5 g, an unbalance of up to 4 g can remain. The damage of such approximation is conspicuous for the fact that most of the disturbances of the vehicle are caused by static unbalance. The computer indicates automatically the optimum entity of the weights to be applied, by approximating them in "intelligent" mode according to their position (Pitch 5 grams 0.25 oz).

- Press to display actual unbalance (Pitch 1 gram/0.1 oz)

- The instruments show "0" for unbalance less than 5 grams/0.4 oz; to display the residual unbalance,

press

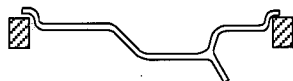
7.4 STATIC - ALU

The available functions show where to place the corrective weights in positions differing from the normal ones.

- Press to select the required function (see 6.3).

- The amounts of unbalance are displayed correct on the basis of the selected correction position.

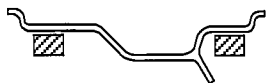
Fig. 9



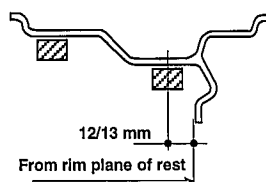
Normal - Balancing of steel or light alloy rims by applying clip-on weights on the rim edges.



Static - STATIC correction is required for motorcycle wheels or when it is not possible to place the counterweights on both sides of the rim.



ALU 1 - Balancing of light alloy rims with application of adhesive weights on the rim shoulders.



ALU 2 - Balancing of alloy rims with hidden application of the outer adhesive weight. Position of the outer weight is the one shown in the figure.




ALU 3 - Combined balancing: clip-on weight on inside; hidden application of the adhesive weight on the outside (Mercedes).
(Position of the outer weight as in ALU2)

8. OPTIMIZATION OF UNBALANCE

- This function serves to reduce the amount of weight to be added to the wheel to balance it.
- It is advisable for static unbalance exceeding 30 grams.
- In many cases an improvement of the residual eccentricity of the tyre can be achieved.
- The operations listed below should be carried out with great care in order to obtain the best possible results.

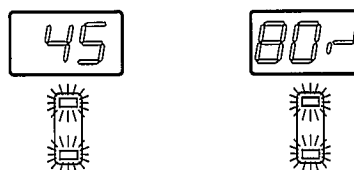
Press **C + < T** → (Press STOP if the function is to be deleted)

Press START → - The display requests rotation of the rim-tyre. Mark with chalk a reference sign on the adapter and rim in order that the rim can be remounted in the same position on the machine (Use index on the spindle).
 - With the aid of a tyre remover, turn the tyre on the rim by 180°.
 - Refit the rim on the flange in the previous position.

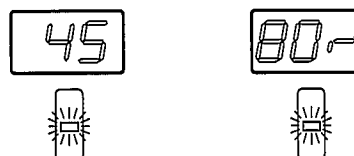
Press START → **Right display:** value % (symbol ) of possible reduction of the unbalance referred to the current wheel situation.

Left display: current static unbalance value in grams. It is the value which can be reduced by a wheel-rim rotation.

Turn the wheel until the outer LED's light up:
mark the **tyre** at top point
(12 o'clock position).



Likewise mark the **rim** in
correspondence to the position
indicated by the inner LED's.



- Make the two points coincide.
- In the example given, an 80% reduction of the static unbalance of 45 grams is obtained with a residue of about 9 grams.



9. SELF-CALIBRATION

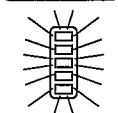
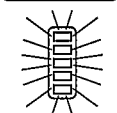
For machine self-calibration, proceed as follows:

- Mount any wheel on the shaft, even if not balanced; better still if of an "average" size.
- Preset the exact dimensions of the wheel mounted.



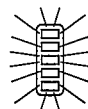
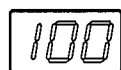
CAUTION!! PRESETTING OF INCORRECT DIMENSIONS COULD MEAN THE MACHINE IS NOT CORRECTLY CALIBRATED AND THEREFORE ALL SUBSEQUENT MEASUREMENTS WILL BE INCORRECT UNTIL A NEW SELF-CALIBRATION IS PERFORMED WITH THE CORRECT DIMENSIONS!!

Press  +  →   until the positioning LED's pass from flashing to being steady.



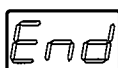
Press **START** →

It is very important not to knock the wheel during this spin.



Add a weight of 100 grams (3.5 oz) on the outside in any angular position.

Press **START** →



- MACHINE CALIBRATED

- Remove the master weight from the wheel and balance the wheel according to the previously described procedures.

The values measured by the machine with this self-calibration cycle are automatically memorized in a special memory which retains them even when the machine is switched off. Hence when the machine is switched on again, it is ready to operate correctly. However, self-calibration can be carried out whenever required or when there is some doubt whether the machine is operating correctly.

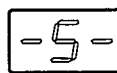


10. ERRORS

Various abnormal conditions can arise during machine operation. If detected by the microprocessor, they appear on the display, thus:



ERROR



MEANING

- 1 No rotation signal. Could be caused by faulty position transducer, or something preventing the wheel from turning.
- 2 During the measurement spins, wheel speed had dropped to below minimum 60 r.p.m. Repeat the spin.
- 3 Error in mathematical calculations; most probably caused by too high wheel unbalance.
- 4 Rotation in opposite direction.
- 5 Guard open before start of the spin.
- 7 Fault in memory of the self-calibration values. Repeat the self-calibration
- 8 Error during self-calibration. Could be due to the second spin made without adding reference weight, or else by a break in the transducer cable.

10.1- INCONSISTENT UNBALANCE READINGS

Sometimes after balancing a wheel and removing it from the balancing machine, then again mounting it on the balancing machine, it is found that the wheel is not balanced.

This does not depend on incorrect indication of the machine, but only on a faulty mounting of the wheel on the adapter, i.e. in the two mountings, the wheel has assumed a different position with respect to the balancing machine shaft centre line.

If the wheel is mounted on the adapter with screws, it could be possible that the screws have not be correctly tightened - they should be tightened one by one crosswise or else (as often happens) holes have been drilled on the wheel with too wide tolerances.

Small errors, up to 10 grams (4 oz) are to be considered normal in wheels locked by a cone; the error is normally greater for wheels locked with screws or studs.

If, after balancing, when the wheel is refitted on the vehicle, it is still out-of-balance, this could be due to unbalance of the car brake drum or very often due to the holes for the screws of the rim and drum drilled sometimes with too wide tolerances. In such case a readjustment could be advisable using the balancing machine with the wheel mounted.



11. ROUTINE MAINTENANCE

(Non specialized personnel)

Warning! Before carrying out any operation, disconnect the machine from the mains.

11.1 - ADJUSTMENT OF THE DRIVING BELT TENSION

1. Remove the following in sequence: gauge index, measuring panel, head and weight holder shelf. Be careful not to tear away the electrical connections.
2. Slightly loosen the four screws fastening the motor mounting bracket and move the entire assembly until the correct belt tension is reached.
3. Carefully tighten the four screws. Check that when the belt is running, there is no side deviation owing to faulty pulley alignment.

11.2 - TO REPLACE THE FUSES

Remove the weight holder shelf to gain access to the power supply PC board and the two fuses mounted on this board. If the fuses require replacement, use ones of the same current rating. If the failure persists, contact the Technical Service Department.

