CONTENTS

1 - INITIALIZATION OF NEW CPU BOARD

In the case of a new board, proceed as follows:

- switch on the machine and hold the start button down [MENU].
- the wording “INIT NOVRAM” appears.
- press [ENTER] to confirm. ***NOTE: This operation causes the loss of any existing calibration or presetting.***

- Calibrate the machine again in relation to requirements.

1.1 - CHANGING SUPPLY VOLTAGE

(See recommended spare parts lists and power layout diagram)
The megaspin 800 can run on 115 V - 50/60 Hz o 230 V - 50/60 Hz.
To change the supply voltage, proceed as follows:
1) Replace the motor
2) Replace the entire power board or else modify the board as follows:
   A) Replace the capacitor
   B) Replace the transformers

2 - SPECIAL CALIBRATIONS AND FUNCTIONS (see ***MENU ACCESS DIAGRAM***)

To access “Special functions and calibrations”, the password must be entered. Press 1,3,5,7
Any incorrect operation within the functions described below could impair the operation of the wheel balancing machine. Unauthorized use will cause cancellation of the machine warranty.

2.1 - WEIGHT SAVING MANAGEMENT

Press [MENU] + [7] + [2] password [7] + [5] + [3] + [1] to access the panel where you can select what will be shown on the screen: WEIGHT LESS or WEIGHT WIZARD

2.2 - OPTIONS

2.2.1 - ENABLING WIDTH MEASUREMENT (OPTION)

Automatic activation/inactivation of width using the sonar contact device. Select:
- OFF for manual width measurement machines;
- SONAR for automatic width measurement machines.

2.2.2 - ENABLING RUN-OUT MEASUREMENT (OPTION)

This function enables/disenables measurement of the tyre eccentricity during an unbalance measurement run.

2.2.3 - RS232C SERIAL PORT MANAGEMENT (OPTION)

Enables/disenables transmission on the RS232C serial port of unbalanced values and measured stages.

Transmission speed	*= 9600 baud*
Data format	*= 1 bit Start*
	7 bit Data
	1 bit Even parity
	1 bit Stop

At the end of each unbalanced measurement run, the balancing machine activates the RTS signal and then waits for the “$” character to begin data transmission; all functions are blocked until transmission is enabled, at the end of which the RTS signal returns to the standby state.
Data transmitted on the serial line are in ASCII format and separated by the character <cr> (0x0d).

The send sequence is:

- 00000 <cr>
- Value of correction weight on left side <cr>
- Left side correction stage <cr>
- Value of correction weight on right side <cr>
- Right side correction stage <cr>

The first 5 zero-set bytes are the transmission start message. The correction values are expressed in gr in steps of 1 gr. The stage values are expressed in degrees in the range 0 % 359.

2.2.4 - PRINTER MANAGEMENT (OPTION)

Enables/disables the printer and the relevant print options.

2.2.5 - VIDEO INTERFACE

Select “STD”. Incorrect selection results in the images being displayed in very dark or light colours.

2.3 - PRESETTING THE CUSTOMER AND USER NAME

The machine can be customized by presetting:
a) The name appearing on the initial screen (screen-saver).
b) The name of 4 different machine users (USER NAME).
A virtual keyboard appears on the monitor with the set of input characters available.
The Customer’s name consists of three lines, each max. 30 characters.
USER NAME: max. 15 characters.

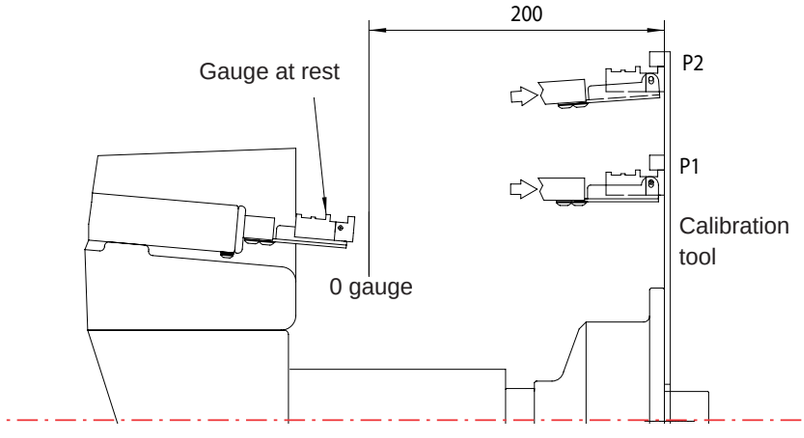
2.4 - CALIBRATIONS

When pressed 6 from the Special Functions menu, access is gained to the Calibration menu.

2.4.1- GAUGE CALIBRATION

Select the gauge to be calibrated and follow the on-screen instructions.

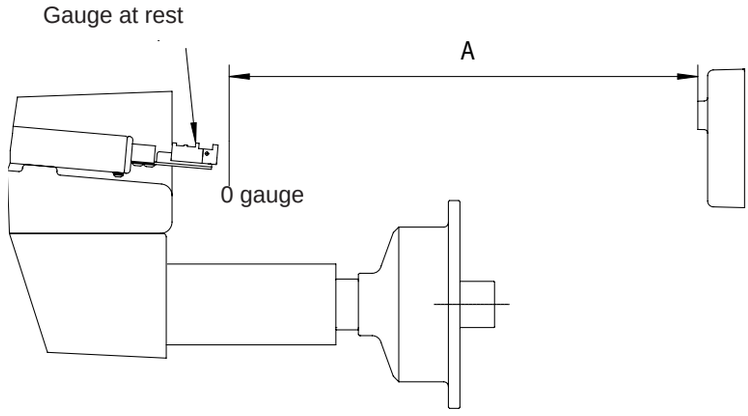
1



The 0 gauge position is defined by a notch clearly visible on the sliding rod.

NOTES FOR WIDTH GAUGE CALIBRATION (SONAR) - AUTO SENSE

The following dimension has to be measured:

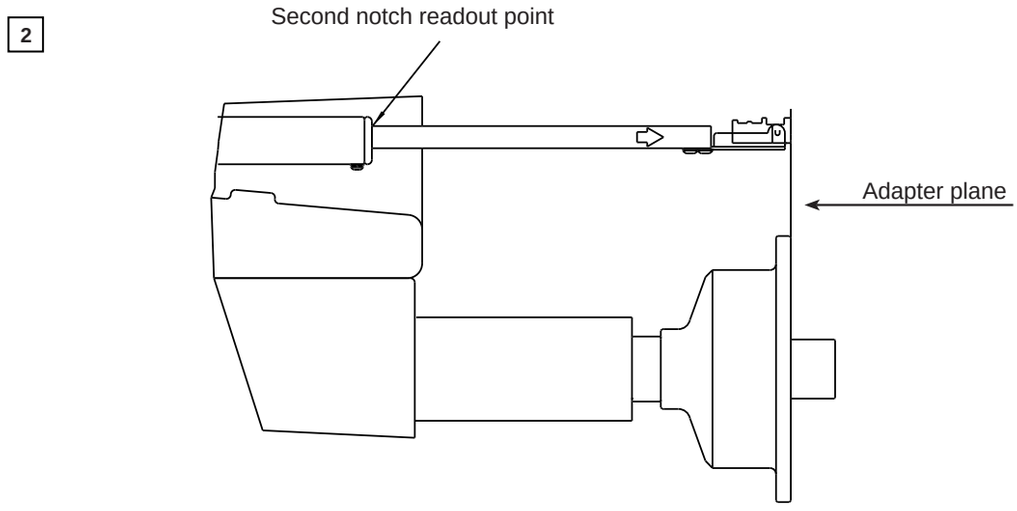


A = Distance 0 gauge to 0 sonar

The gauge “0” position is defi ned by a notch clearly visible on the sliding rod.

2.4.2 - CHECKING THE DISTANCE + DIAMETER GAUGE

Check that the gauge used for measuring the DISTANCE of the wheels indicates the second notch as the measurement of the distance from the adapter plane. The distance should read 200 ±2 mm (Check with "Dimension" in the MENU).



2.4.3 - CALIBRATING THE DISTANCE POTENTIOMETER

- Access the Self-Test Screen (see ***WHEEL BALANCER SELF-TEST*** in ***MENU ACCESS DIAGRAM***).
- Remove the weight shelf.
- Loosen the screws which hold the pulley on the potentiometer shaft.
- With the gauge fully retracted, turn the potentiometer shaft keeping the pulley steady until the reading alongside the wording “DIST” indicates a number between 50 and 100.
- Tighten the lock-nuts to secure the pulley on the shaft.
- Calibrate the distance gauge (see ***CALIBRATIONS***)

2.4.4 - CALIBRATING THE DIAMETER POTENTIOMETER

- Access the Self-Test Screen (see ***WHEEL BALANCER SELF-TEST*** in ***MENU ACCESS DIAGRAM***)
- Remove the weight shelf
- Loosen the screws which hold the pulley on the potentiometer shaft.
- Extract the gauge so far, that its end touches the upper edge of the adapter plane.
- Turn the potentiometer shaft keeping the pulley steady until the reading alongside the wording “DIAM” indicates a number between 0 and 10.
- Mount the weight shelf. Check that, with the gauge at rest, the reading alongside the wording "DIAM" indicates a number between 10 and 50. In case not, re-adjust the value without the weight shelf.
- Tighten the screws to secure the pulley on the shaft.
- Calibrate the diameter gauge (see ***CALIBRATIONS***).

2.4.5 WIDTH AND RUN-OUT SONARS (OPTION)

- Access the Self-Test Screen (see ***MENU ACCESS DIAGRAM*** in ***WHEEL BALANCER SELF-TEST***)
- Place a flat surface about 12 cm from the width Sonar and check that, alongside the wording “SONAR 1”, there are variations in the number displayed
- If the control, after performing calibration, reveals a measurement inaccuracy greater than ½”, repeat the calibration changing the distance value between the tyre and the sensor (tolerance ± 20 mm on the measurement obtained with a ruler) until a correct width value is obtained.
- Repeat the same operation for the RUN-OUT sonar checking the number in correspondence to the words “SONAR 2”.

2.4.6 - WHEEL BALANCING MACHINE SELF-TEST

An automatic self-diagnostic cycle is provided for easier trouble-shooting. At the end of the self-diagnostic cycle, several parameters are displayed which are useful for the Technical Service Department in order to identify machine faults.

Enables a special encoder test function, reserved for specialised personnel only

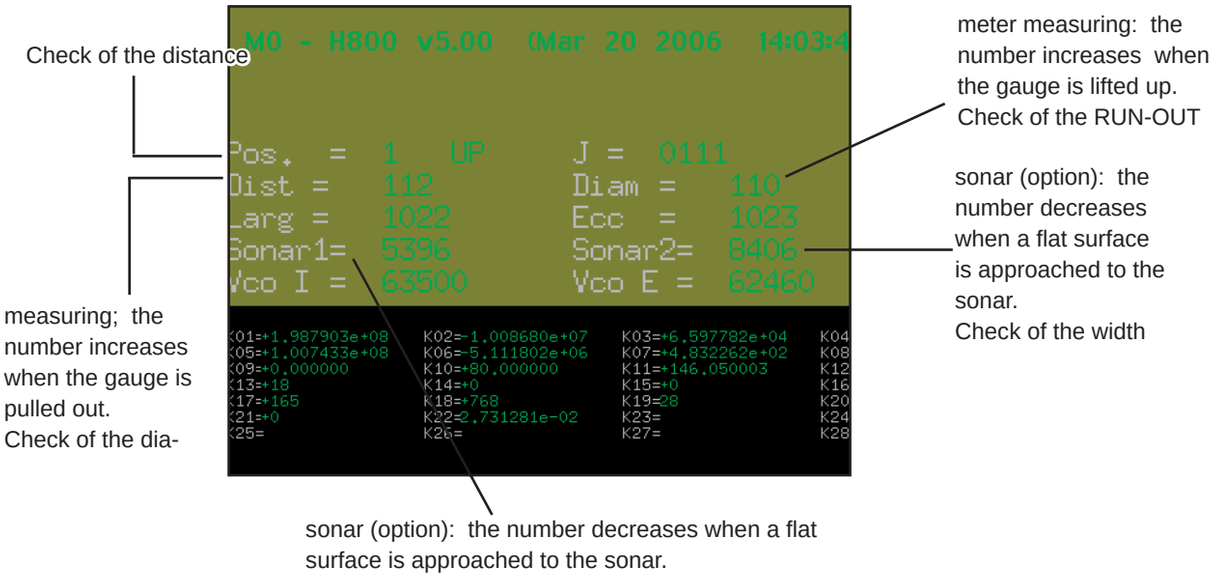
Returns to previous menu

2.4.7 - CHECKING THE SENSORS

When the spindle is rotated:

- the angular position “POS” should vary from 0 to 127;
- the wording **“UP”** should appear when rotated clockwise and **“DOWN”** when rotated in the opposite direction.

Encoder check



In the event of failure or faulty operation of the wheel balancing machine, notify the Technical Service of all the parameters displayed.

3 - ASSEMBLY OF THE PIEZO SENSORS

ASSEMBLY INSTRUCTIONS

Problems of excessive compensation and out-of-phase sometimes depend on a fault in the piezo measurers.
To replace them, proceed as follows:

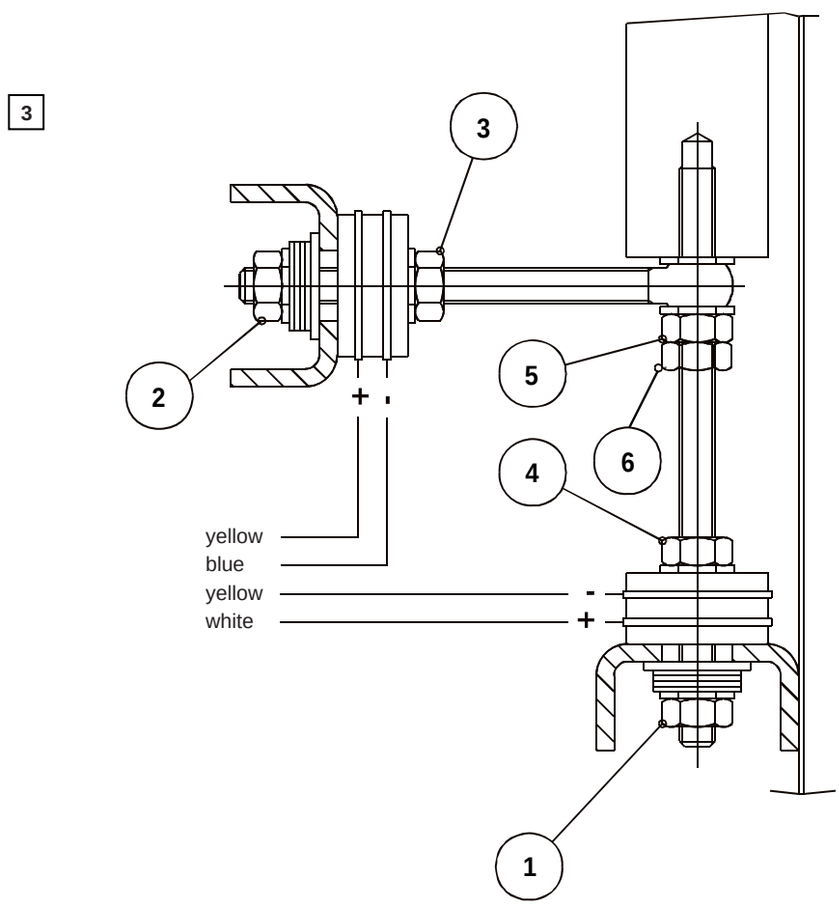
1. Remove the weight shelf.
2. Remove nuts 1 and 2 with relative cup springs and washers.
3. Back-off screws 3, 4, 6 and 5 then disassemble the various parts.
4. Reassemble the various parts without tightening the nuts being careful to follow the correct sequence.

N.B. Mount the piezo units in accordance with the position of the coloured wires shown in the drawing.

5. Keeping the spindle perfectly aligned, tighten the nuts 5 and 6 with a spanner, and nuts 3 and 4 by hand (by half a turn with the spanner if necessary).
6. Refit the washers, cup springs and nuts 1 and 2. Tighten the nuts fully in order to fully regain the elasticity of the cup springs, then loosen them by half a turn. This will automatically ensure correct preloading on the piezo (a torque wrench can be used set to 400 kg. cm.).
7. Cover the piezo units with a generous layer of silicone.

(N.B.: For correct operation, insulation of the piezo crystals should be greater than 2000 Mohm).

8. Reassemble the various parts.
9. Again carry out the automatic calibration.

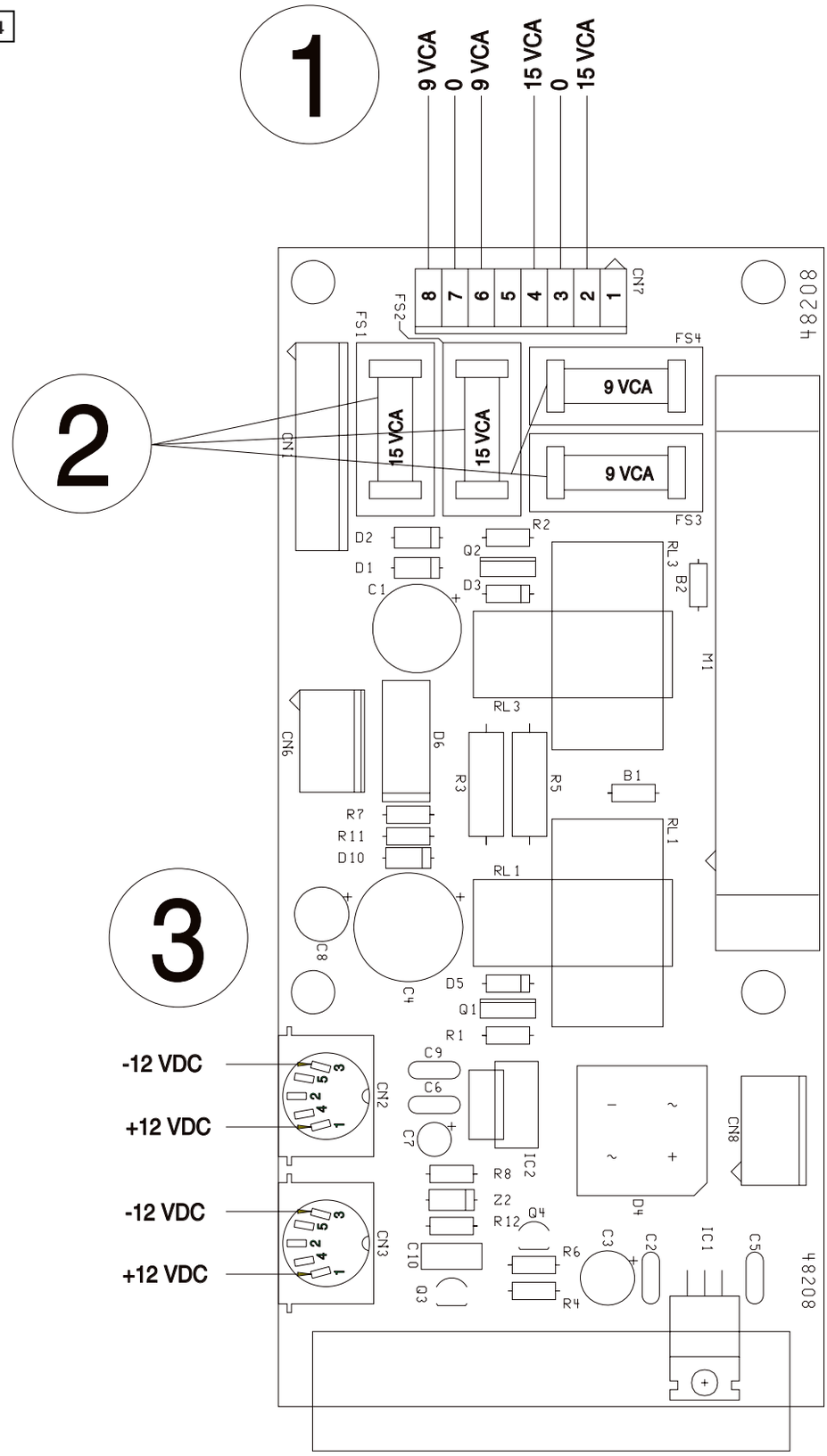


4 - LOGIC TROUBLE SHOOTING SEQUENCE

Controls on 2 relay / 2 sonar power board

1) transformer output on CN7
2) fuses FS1 - FS2 - FS3 - FS4
3) SONAR Power supply

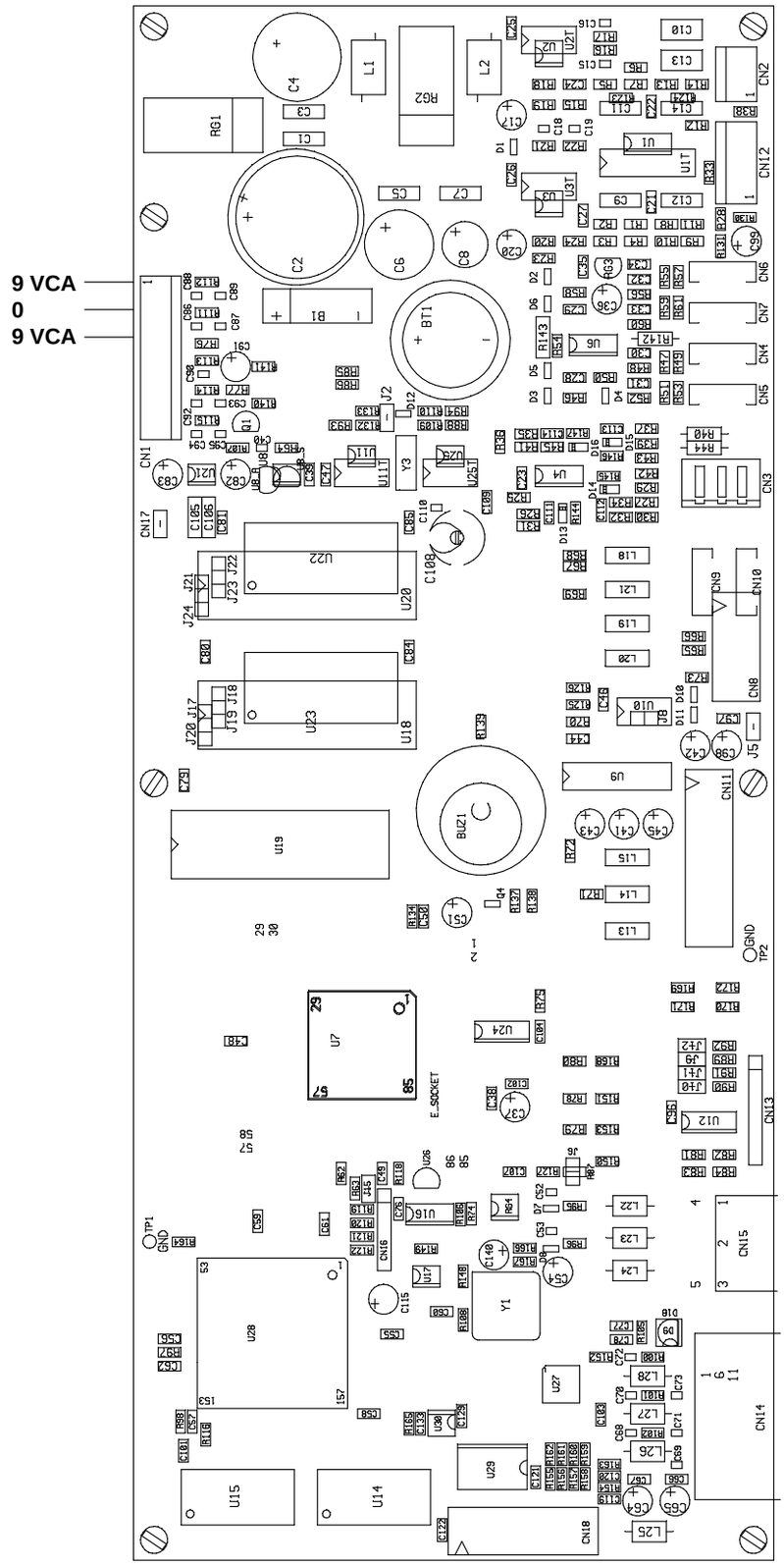
4



Tests on computer board - See figure 5

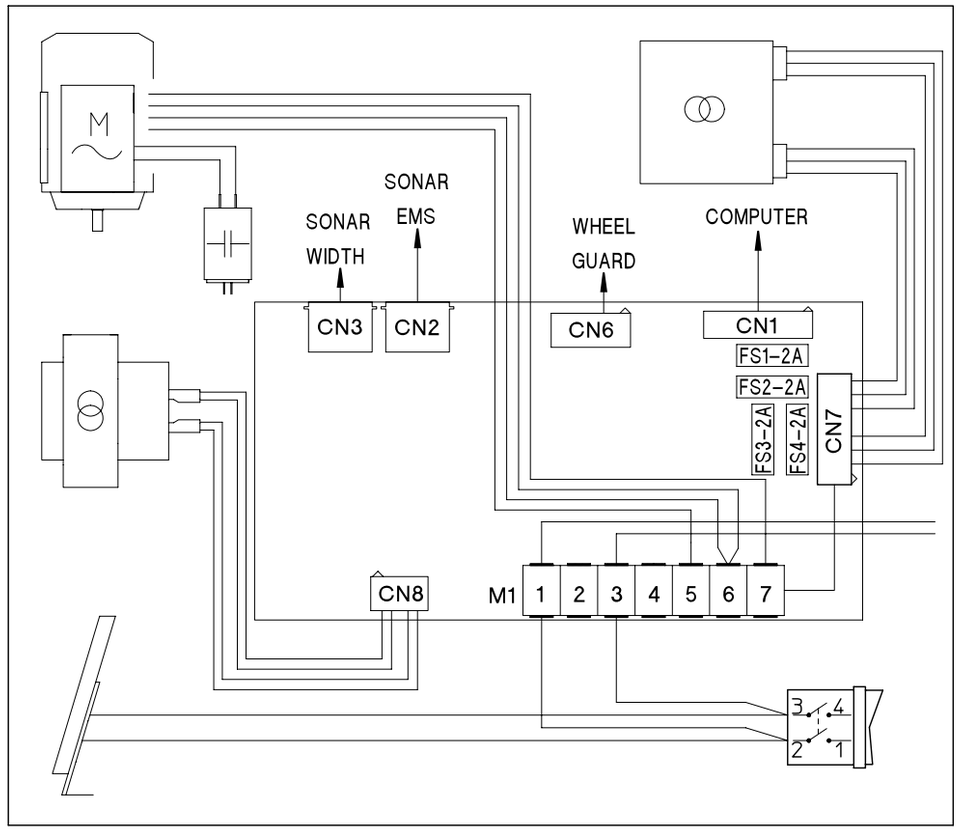
1) 9 - 0 - 9 VAC on CN1
2) +5/-5 on L1 - L2
3) Machine SELF TEST controls (***WHEEL BALANCER SELF TEST***)
   - encoder (optoelectronic)
   - distance gauge
   - diameter gauge
   - width sonar ca. 65000, should decrease when it reflects)
   - RUN-OUT sonar ca. 65000, should decrease when it reflects)

5



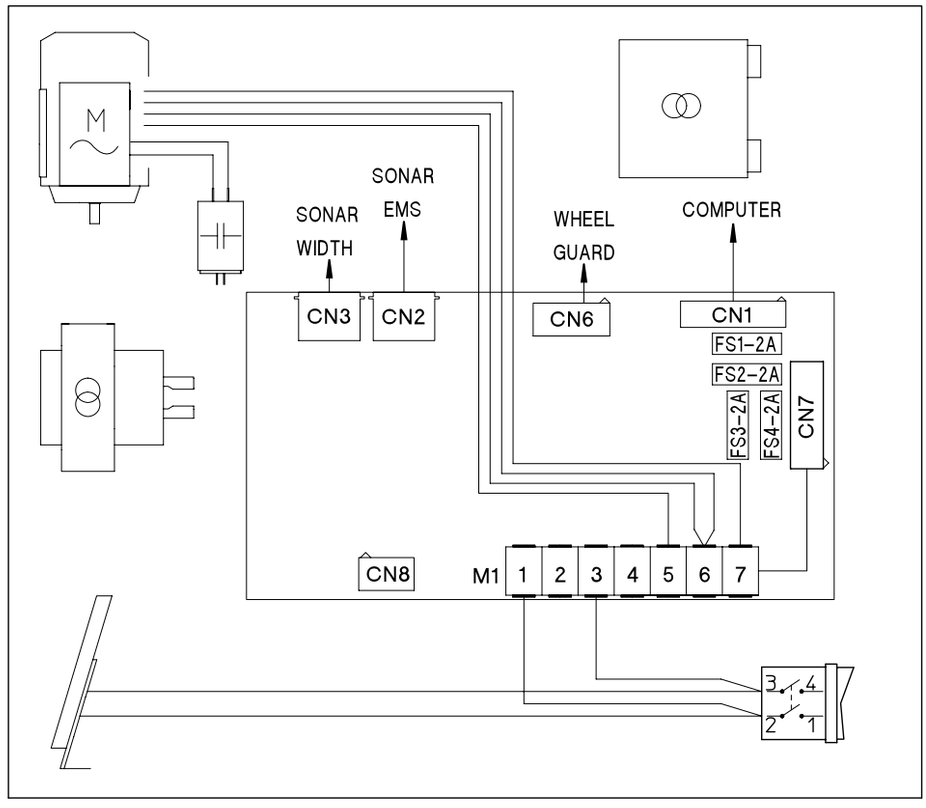
5 - POWER SUPPLY LAYOUT DIAGRAM

6



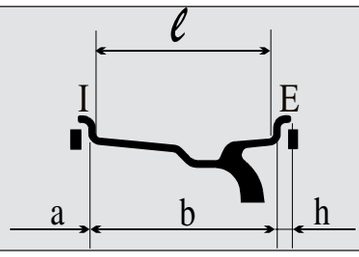
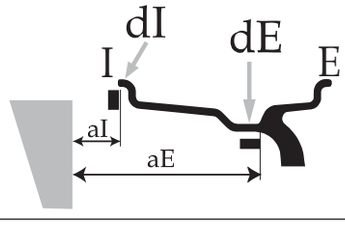
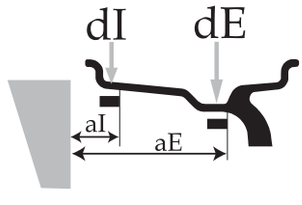
6 - REPLACING THE POWER BOARD (check voltage)

7



7 - WHEEL MEASUREMENT AND PRESETTINGS OF THE BALANCING MACHINE

The ever-increasing need for more accurate calibration and use of the ALU functions means that it is important to establish how to measure the rims and how the wheel balancing machine interprets the preset data. Hence a description is now given of how to modify the preset dimensions automatically in order to obtain the distances of the correction planes which are defined as through planes for the centres of gravity of the corrective weights.
We can consider a typical rim: size "ℓ" in terms of width indicated by the rim manufacturer differs from the distance measurement between the correction planes for rim thickness and physical dimensions of the counterweight, whose centre of gravity is located at distance "h" from the rest point of the edge of the rim. The balancing machine automatically corrects the measurements preset by adding 2 x h = 6 mm to the measurement. Measurement "b" made with the gauge is generally more accurate even if very similar to the measurement "ℓ" known to the rim user. The two measurements differ only by the thickness of the sheet metal, usually about 2 mm per side. Such insignificant differences mean that accurate calibration can be obtained whether inner rim width "ℓ" or outer width "b" is preset. It is a good rule to add 1/4 inch to the value given by the manufacturer. As regards the ALU functions, the machine performs the following calculations in addition to systematic correction of the centre of gravity of the counterweight as seen above.

	***NOTE***: *I = INSIDE* *E = OUTSIDE*
	**ALU 1** a = a preset + ¾" b = b preset -1 ½" d = d preset - 1"
	**ALU 2** a = a preset b = b preset - ¾" dI = d preset dE = d preset - 1"
	**ALU 3M** a = aI preset - 3 mm b = aE - aI dI = d preset dE= d preset
	**ALU M / PAX** a = aI preset -10 mm b = aE - aI dI = d preset dE= d preset

8 - FUNCTION AND PRECISION CHECK

If faults or inaccuracies are encountered which are not readily identified, it may be useful to perform the function and precision check:

PRELIMINARY CONTROLS

· Carefully clean the flange and cones.
· Spring cover sliding.
· Shaft terminal locking.

CHECKING THE SENSORS

For monitor-balancers see ***CHECKING THE SENSORS***, for digitalbalancers ***AUTODIAGNOSTICS*** :

· POS = (monitor-balancers) from 0 to 127 turning the shaft by hand. Clockwise: UP; anticlockwise: DOWN.
(digital-balancers) UP clockwise / blank anticlockwise / 0 on reset .
· DIST = smaller than 1000 when the distance gauge is fully extracted.
· DIA = smaller than 1000 when the diameter gauge is fully up.
· Sonar 1 = (monitor) Width. From 65000 to 3000 when approaching a target. Effective field between 40 and 10 cm.
· Sonar 2 = (monitor) RUN-OUT. From 65000 to 3000 when approaching a target.

GAUGE CALIBRATION (use a wheel with steel rim of average dimensions e.g. 6”x14” ± 1”)

For monitor-balancers see ***CALIBRATIONS***, for digital-balancers ***CALIBRATION OF THE AUTOMATIC GAUGES***

· DISTANCE/DIAMETER/WIDTH:

Calibrate the gauges and check their precision. To obtain precise width measurements, it is essential to have the correct indication of the distance measurement.

Tolerances. DIST.= 5 mm DIAM.= ± ½” WIDTH= ± ¼”

· SONAR WIDTH (monitor-balancers):

1. Measure the distance between the outer weight clIp surface and the Sonar workhead with the distance gauge in the position 0, reading it on the graduated band using a standard ruler.
2. Mount a medium-sized steel wheel; carefully measure the width using a conventional gauge or by setting the rated measurement marked on the rim plus ¼”
3. Select “Calibration" followed by "Width" in the menu.

Set the distance measured at Step 1)

Set the distance between the outermost point of the tyre and the sensor workhead and perform calibration.

Make sure that calibration is correct and also correct the distance value if necessary (+/- 20 mm) until a precise width indication is obtained. Calibration has to be performed every time the distance value is changed.

WHEEL BALANCING MACHINE CALIBRATION

See Instructions for use manual for monitor-balancers ***WHEEL BALANCER MACHINE SELF CALIBRATION***, for digital balancers ***SELF-CALIBRATION***:

· Use the same wheel as for gauge calibration
· Set precise measurements (input by hand if necessary).
· Perform self-calibration.

TO CHECK MACHINE CALIBRATION

1. After self-calibration, perform 10 runs without releasing the wheel and measure MAX oscillations

FI (Inner side)= FE (Outer side)= (tolerance ± 2 g)

2. When the wheel is perfectly balanced, apply 100 g first to FE and then to FI. Measure the values

FI= FE= POS E= FI= FE= POS I=

(Tol. 3%)

CHECKING THE FLANGE

When the wheel is perfectly balanced, tip over by 180° and measure the unbalanced values

MAX ERR =

For these checks, it is advisable to use a sample wheel whose max unbalance errors due to centering are well known (generally less than 10 g for steel wheels).