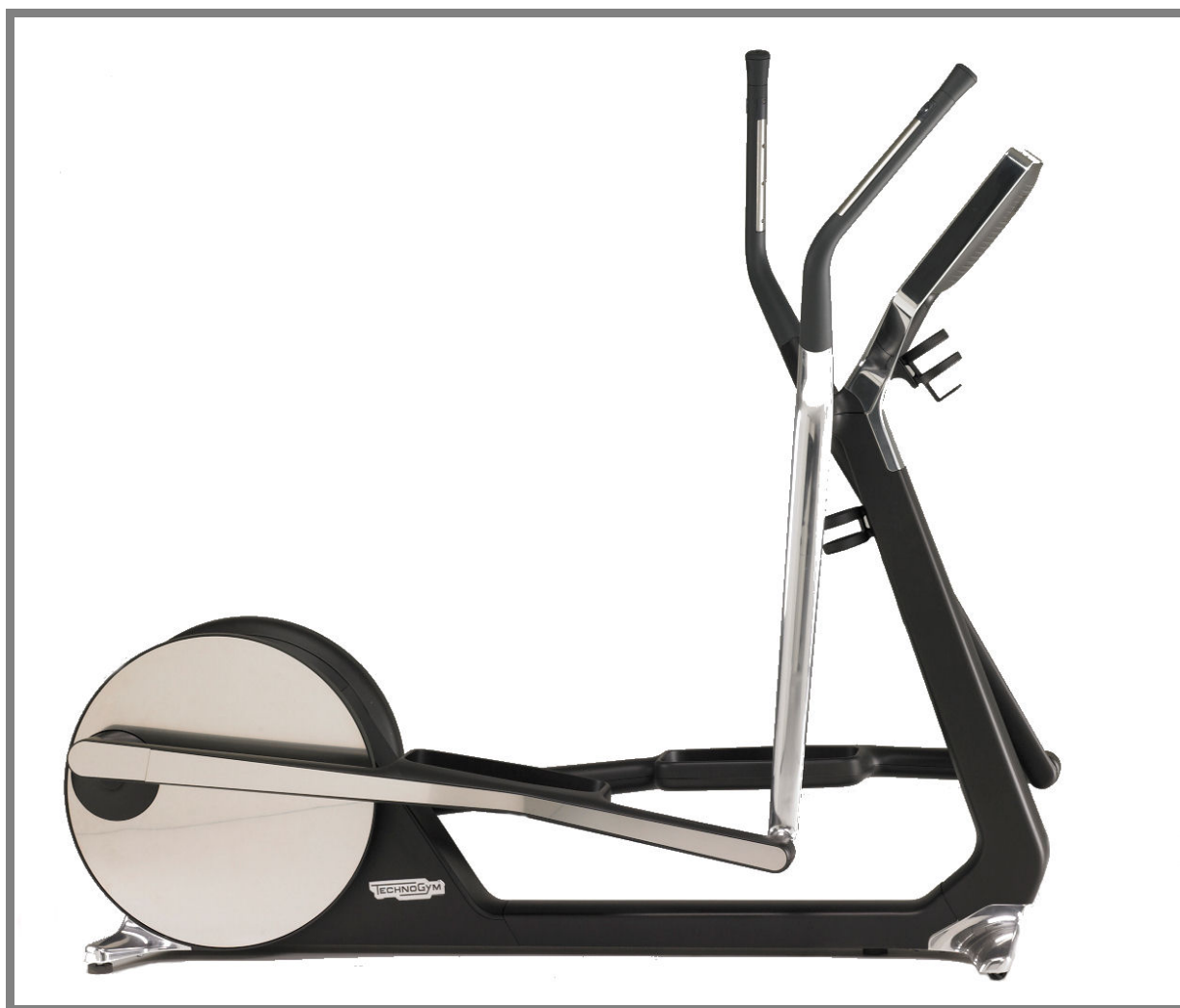


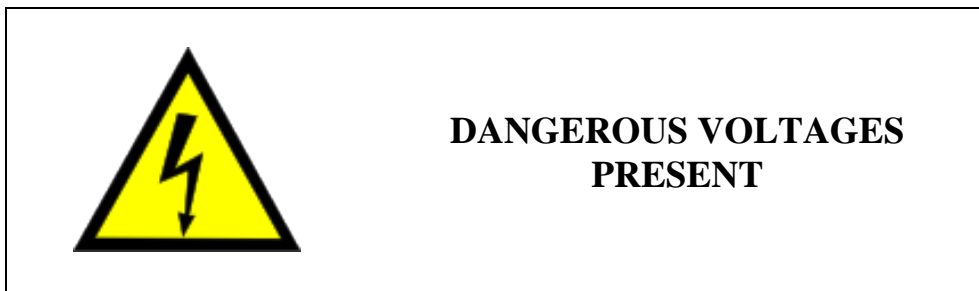
CROSS PERSONAL *SERVICE & MAINTENANCE MANUAL*

REV. 1.1



The information contained in this manual is intended for **QUALIFIED TECHNICIANS** who have completed a specific **TECHNOGYM** training course and are authorized to perform machine start-up and adjustment procedures as well as extraordinary maintenance or repairs which require a thorough knowledge of the machine, its operation, its safety devices and working procedures.

**CAREFULLY READ THE INFORMATION CONTAINED IN
THIS MANUAL BEFORE PERFORMING ANY MAINTENANCE
PROCEDURES ON THE MACHINE**



NOTE:

The information contained in this document is subject to change without notice.

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1. GENERAL NOTICES

1.1. INTRODUCTION

This document is reserved for Technogym Service technicians, and is intended to provide authorized personnel with the necessary information to correctly carry out repairs and maintenance. A thorough knowledge of the technical information contained in this manual is essential for completing the professional training of the operator.

In order to facilitate consultation, the paragraphs are accompanied by schematic drawings which illustrate the procedure being described.

This manual contains notices and symbols which have a specific meanings:



WARNING: non observance may result in accident or injury.



ATTENTION: non observance may cause damage to the machine.



Information about the operation in progress.



Observation about the operation in progress.

1.2. RECOMMENDATIONS

Technogym recommends the following steps for planning repair procedures:

- Carefully evaluate the customer's description of the machine malfunction and ask all the necessary questions to clarify the symptoms of the problem.
- Clearly diagnose the causes of the problem. This manual provides the fundamental theoretical basis, which must then be integrated by personal experience and attendance at the training courses periodically offered by Technogym.
- Rationally plan the repair procedure so as to minimize the downtime necessary for procuring spare parts, preparing tools, etc.
- Access the component to be repaired, avoiding any unnecessary operations. In this regard it will be useful to refer to the disassembling sequence described in this manual.

1.3. GENERAL RULES FOR REPAIR PROCEDURES


1. Always mark any parts or positions which may be confused with each other at the time of reassembly.
2. Use original Technogym spare parts and lubricants of the recommended brands.
3. Use special tools where specified.
4. Consult the Technical Newsletters, which may contain more up-to-date information on adjustments and maintenance than those contained in this manual.
5. Before starting the repair procedure, make sure that the recommended tools are available and in good condition.
6. For the procedures described in this manual, use only the specified tools.

 **The tool sizes quoted in this manual are expressed in mm.**

2. TECHNICAL CHARACTERISTICS


2.1. PRODUCT CODES

The machine codes take into account all the possible variants and options available for the products. The machine code, which does not include the Serial Number, consists of 16 alphanumeric characters arranged as follows:

Characters	Description	key to values
1, 2, 3,	<i>Machine type</i>	D94 = Run Personal
4,	<i>Model</i>	7 = 700
5,	<i>Power supply type</i>	3 = Powered
6,	<i>Display type</i>	Y = VISIOWEB
7,	<i>Accessories</i>	F = Full
8, 9,	<i>Colour of the frame</i>	00 = None
10, 11,	<i>Colour of the upholstery</i>	00 = None
12,	<i>Colour of the guards</i>	R = Renault Grey
13,	<i>TV standard receiver</i>	C = DVB-T A = ATSC I = ISDB-T
14, 15,	<i>Language</i>	00 = Multilanguage
16.	<i>Type of packaging.</i>	A, B, C, D, E, F, G, H, I, J, K, S, U  See the following table.

For example, a possible product code would be:

D9573YF0000RD00E

 all of the machines will be shipped with the specific power cable for the destination country. In particular this means a cable with the standard plug used in the installation country.

This implementation also means a change in the product code. Specifically the last character of the product code will be characterised based on the options shown in the table below:

16th Character Product code	Main country of use	Plug standard	Type of packaging
A	Australia	A S/NZS 3112	Overseas
B	Brazil	NBR 14136	Overseas
C	China	CPC S-CCC	Overseas
D	South Africa	SANS 164-2	Overseas
E	Europe (EC)	EEC 7/16	European
F	USA (UL 250 V)	NEMA 5-15/ NEMA 5-20	Overseas
G	Great Britain	BS1363	European
H	Argentina	IRAM 2073	Overseas
I	Italy	EEC 7/16	Italy
J	Japan	JIS 8303	Overseas
K	Great Britain	BS1363	Overseas
S	Europe (EC)	EEC 7/16	Overseas
U	USA (UL 110 V)	NEMA 6-15/ NEMA 6-20	Overseas

As shown in the table above, the 16th character also identifies the type of packaging depending on the destination country, i.e. D9573YF0000RD00E.

2.2. SERIAL NUMBER STRUCTURE

The *Serial Number*, consists of 14 alphanumeric characters arranged as follows:

Characters	Description	key to values
1,2,3,4,5,6,	<i>Product type,</i>	D957 = Cross Personal
		3 = Powered
		Y = VISIO WEB
7,8,	<i>Year of production,</i>	13 = 2013
9,10,11,12,13,14.	<i>Progressive.</i>	000001

For example, a possible product code would be:

D9573Y13000001

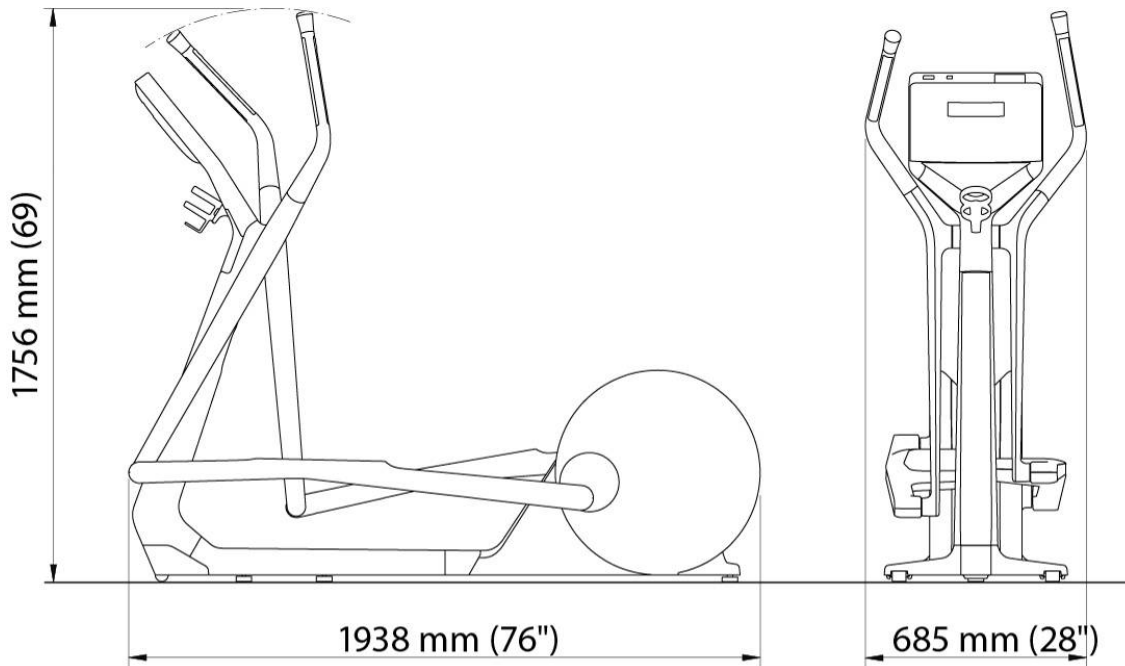
2.3. TECHNICAL SPECIFICATION

SPECIFICATIONS & PERFORMANCE	
Power Supply	100-240 VAC – 50-60 Hz
Energy Consumption	160VA
Stand-By Consumption	47,9 Watt (97 VA)
Resistance	56-436 Watt $\pm 10\%$ (at 70 RPM)
Difficulty Level	1-25
Max user weight	160 Kg – 353 Lbs
Fast Track Control	SI
HR monitoring:	Hand sensor, Telemetry
Goal oriented display	YES
Wellness System:	YES
Total Number of Programs	23 Quick-Start, Goal (Time, Distance, Calories), CPR, Profiles (6 predefined + 12 customizable), Custom, Training Zone, Weight Loss)
Sub-maximal Test:	Fitness test
Available Language	13 Italian, UK English, USA English, German, Spanish, French, Dutch, Portuguese, Japanese, Chinese, Russian, Turkish, Danish

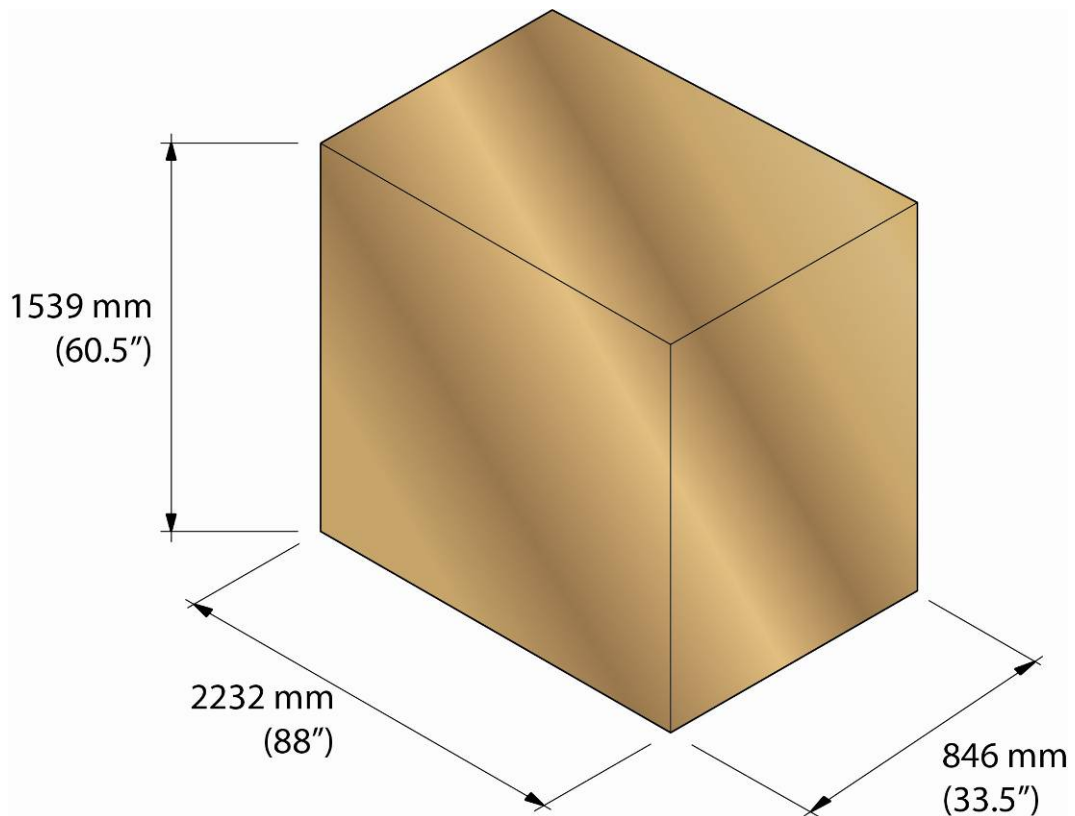
2.4. MECHANICAL CHARACTERISTICS

MECHANICAL CHARACTERISTICS	
Length (mm – in)	1938 mm – 76”
Width (mm – in)	685 mm – 28”
Height (mm – in)	1756 mm – 69”
Weight (Kg – lbs)	145 Kg – 320 lbs

2.5. DIMENSIONS



2.6. PACKING DIMENSIONS EUROPE AND OVERSEAS



2.7. AMBIENT SPECIFICATIONS

Temperature	<i>Operating</i>	<i>from 10° to 25° C</i>
	<i>Storage</i>	<i>from -10 to 70° C</i>
Humidity	<i>Operating</i>	<i>from 20% to 90% non-condensing</i>
	<i>Storage</i>	<i>from 20% to 90% non-condensing</i>

2.8. CONFORMITY TO REGULATIONS

	EUROPE	USA
EMI regulations	EN61000-6-1 (2007) EN61000-6-3 (2007) EN61000-3-2 (2007) EN61000-3-3 (2009)	-
Electrical safety regulations	EN 60335-1 (2008)	UL 1647 FCC 15
Mechanical safety regulations	EN957-1 (2006) EN957-6 (2003)	-
Directives	2006/42/CE 2004/108/CE 2006/95/CE	-

Moreover:

- *Electrical isolation class: **Class I**;*
- *Protection rating: **IP20**.*

2.10. CABLES



The colour of the cables can be changed, refer in particular to the Pin Out.

2.10.1. CBQ CABLES

CBQ32: TGS cable (Patch conn.– CPU Board)			
CPU Board CN19	Signal	Colour	Patch conn.
<i>1</i>	<i>+12 Vdc power supply</i>	<i>Red</i>	<i>8</i>
<i>3</i>	<i>Rx</i>	<i>Brown</i>	<i>1</i>
<i>5</i>	<i>Tx</i>	<i>Blue</i>	<i>2</i>
<i>9</i>	<i>Gnd</i>	<i>Black</i>	<i>6</i>

2.10.2. WB CABLES

WB657: Flat Tuner Board cable (CPU Board –TUNER Board)		
CPU Board J9	Signal	TUNER Board J13
<i>1</i>	<i>Capacitive Signal</i>	<i>flat</i>
<i>...50</i>	<i>Capacitive Signal</i>	<i>flat</i>

2.10.3. CU CABLES

CU132: TGS signal cable (Patch conn. –TGS Dual reader)			
Patch conn.	Signal	Colour	TGS Dual reader CN1
<i>8</i>	<i>+12Vdc power supply</i>	<i>Black</i>	<i>2</i>
<i>1</i>	<i>RX</i>	<i>Green</i>	<i>1</i>
<i>2</i>	<i>TX</i>	<i>Black</i>	<i>4</i>
<i>6</i>	<i>GND</i>	<i>Black</i>	<i>5</i>

CU331: iPod signal cable (CPU Board– Docking Station)			
Scheda CPU CN26	Signal	Colore	Docking Station
1	+V bus USB	Black	14
2	GND bus USB	Black	13
3	TX - RX	Black	11
4	RX – TX	Black	12
5	CTS	Black	10
6	+5Vdc	Black	9
7	GND	Black	8
8	GND	Black	7
9	Video Gnd	Black	6
10	Video signal	Black	5
11	Audio L Gnd	Black	4
12	Audio L signal	Black	3
13	Audio R signal	Black	2
14	Audio R Gnd	Black	1

CU308: User USB port cable (CPU Board –USB Port)			
CPU Board CN14	Signal	Colour	USB Port
1	+5 Vdc	Red	1
2	USB-	White	2
3	USB+	Black	3
4	GND	Green	4
5	Shield	Blue	5

CU611: HS board cable (CPU Board –HS board)			
CPU Board CN24	Signal	Colour	HS board: HD4
1	+5 Vdc power supply	White	2
5	HS cardio signal	Brown	3
6	Gnd	Green	1

CU613: IN/OUT Audio signal
(Amplifier - CPU Board – Headphone Jack)

Amplifier J3	Signal	Colour	Headphone Jack (Display)	Headphone Jack (Frame)	CPU J5
1	Audio IN R	Yellow	2		
2	Audio IN L/Power OFF	White	5		
3	Gnd	Grey	1		
4	Audio OUT L	Brown	4		
5	Audio OUT R	Green	3		
6	Power OFF	Brown		4	
7	Audio OUT R	White			1
8	Audio OUT L/Power OFF	Brown			4
9	Gnd	Green			3
10	Audio IN L/Power OFF	White		5	
11	Audio IN R	Green		2	
12	Gnd	Yellow		1	

CU614: AUX Audio/Video & Antenna signal cable
(CPU Board –AUX connector /Tuner Board – Antenna connector)

CPU Board CN27	Signal	Colour	AUX connector board
1	n.c.	-	1
2	Audio IN LEFT	Black	2
3	Gnd IN LEFT	Black	3
4	Audio IN RIGHT	Black	4
5	Gnd IN RIGHT	Black	5
6	IN Video	Black	6
7	Gnd IN Video	Black	7
8	n.c.	-	8
Tuner J12	Segnale	Colore	Conn. Antenna
J12	Antenna	White	-

CU615: Amplifier power supply cable
(CPU board – Amplifier)

CPU board CN15	Signal	Colour	Amplifier: J5
3	Gnd	White	2
6	+12 Vdc Power supply	Brown	1

CU616: Audio/HS signal Upper levers cable (CPU board– Amplifier – frame speakers – Patch Conn.)									
CPU		HS Receiver	Frame speakers		Ampl.	Signal	Colour	Patch. Conn.2	Patch. Conn.3
CN31	CN29	CN1	DX	SX	J2				
1						+5 Vdc Fast Track +	White	7	
2						Fast Track + Signal	Green	3	
4						Gnd Fast Track +	Brown	6	
	1					+5 Vdc Fast Track -	White		7
	2					Fast Track - Signal	Green		3
	4					Gnd Fast Track -	Brown		6
		1				Left UP HS	White		1
		2				Left DOWN HS	Brown		5
		3				Left HS shield	-		-
		4				Right UP HS	White	1	
		5				Right DOWN HS	Brown	5	
		6				Right HS shield	-	-	
			1		3	Gnd Right	Black	4	
			2		4	OUT R amplified	Red	8	
				1	2	Gnd Left	Black		4
				2	1	OUT L amplified	Red		8

CU617: Total Lever cable (Patch connector 2/3– HS board, Fast Track and Lever Tweeter)					
Patch Connector (2) and (3)	Signal	Colour	RIGHT LEVER LEFT LEVER		
			HS	Fast Track	Tweeter
1	High HS signal	White	Fast-on		
2	Shield	Shield		-	
3	Fast Track signal	Green		2	
4	Gnd. Audio	Black			1
5	Low HS signal	Brown	Fast-on		
6	Gnd. Fast Track	Brown		4	
7	+ 5Vdc Fast Track	White		1	
8	Audio signal	Red			2

CU618: Display Power supply & signals cable (Patch conn. – CPU board – ON/OFF button)					
Patch Conn. CN1	Signal	Colour	CPU CN17	CPU JP10	ON/OFF button
1	485 –signal	Green Twisted cable	6		
2	485 + signal	Yellow Twisted cable	12		
3	Gnd	Black	1		
4	+12Vdc power supply	Red	7		
5	+12Vdc (ON/OFF)	White			1
6	Relay control(ON/OFF)	Brown			2
7	Remote OFF (ON/OFF)	Green			3
8	Gnd (ON/OFF)	Yellow			4
-	Gnd.	Yellow/green	5	Faston	

CU619: Display Power supply & signals cable (Patch conn. – Brake board – Power Supply board)				
Patch Conn. CN1	Signal	Colour	Brake Board CN3	Power supply board P3
1	485 –signal	Green Twisted cable	5	
2	485 + signal	Yellow Twisted cable	1	
3	Gnd	Black	2	
4	+12Vdc power supply	Red	6	
5	+12Vdc (ON/OFF)	White		1
6	Relay control(ON/OFF)	Brown		2
7	Remote OFF (ON/OFF)	Green		3
8	Gnd (ON/OFF)	Yellow		4

CU620: High Voltage cable (Power entry module – Patch connector)			
Power entry module	Signal	Colour	Patch conn.
Faston (F)	Line	Brown	Commercial connector
Faston (N)	Neutral	Blue	
Faston (T)	Earth	Yellow/green	

CU621: High Voltage cable (Patch connector – Power Supply board)			
Patch conn.	Signal	Colour	Power supply Board K1
<i>Commercial connector</i>	<i>Line</i>	<i>Brown</i>	<i>1</i>
	<i>Neutral</i>	<i>Blue</i>	<i>3</i>
	<i>Earth</i>	<i>Yellow/green</i>	<i>5</i>

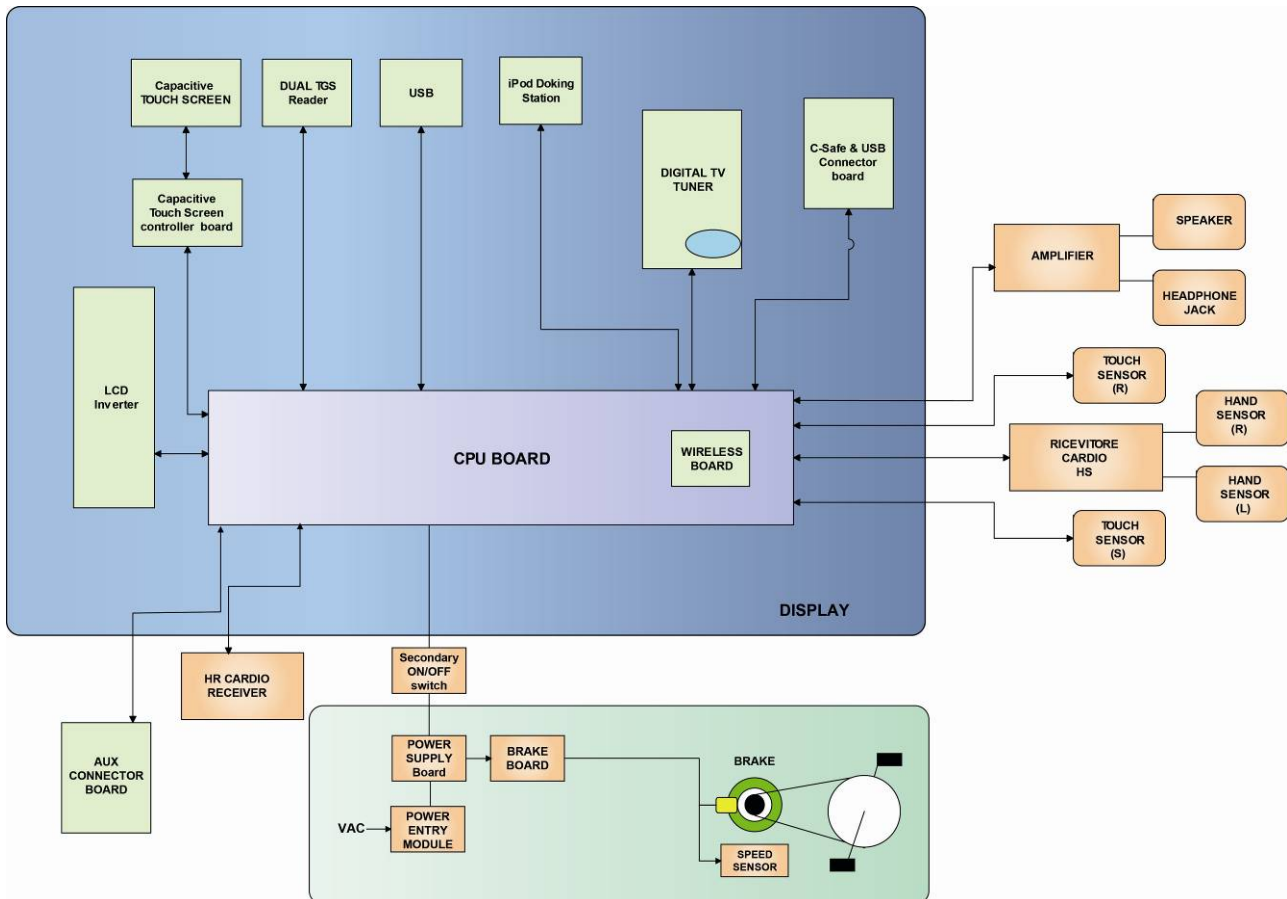
CU622: High Voltage cable (Patch connector – Power Supply board)			
Power supply board P2	Signal	Colour	Brake board CN4
<i>1</i>	<i>Line</i>	<i>Brown</i>	<i>3</i>
<i>5</i>	<i>Neutral</i>	<i>Blue</i>	<i>1</i>
<i>3</i>	<i>Earth</i>	<i>Yellow/green</i>	<i>5</i>

CU623: Cavo Freno (Scheda Freno – Freno – Sensore velocità)				
Scheda Freno CN2	Signal	Colour	Brake	Speed sensor
<i>1</i>	<i>Power Supply Brake +</i>	<i>Brown</i>	<i>Faston</i>	
<i>2</i>	<i>Power Supply Brake -</i>	<i>Blue</i>	<i>Faston</i>	
<i>3</i>	<i>RPM signal</i>	<i>Yellow</i>		<i>Faston</i>
<i>4</i>	<i>Gnd. RPM</i>	<i>Black</i>		<i>eyelet</i>

CU471: HR Cardio Receiver cable (CPU Board – HR Cardio Receiver)			
CPU Board: CN23	Signal	Colour	HR Cardio Receiver: CN1
<i>1</i>	<i>+5 Vdc power supply</i>	<i>White</i>	<i>2</i>
<i>7</i>	<i>Pulse (beat to beat)</i>	<i>Black</i>	<i>4</i>
<i>8</i>	<i>Gnd</i>	<i>Green</i>	<i>1</i>

3. PRINCIPLES OF OPERATION

3.1. BLOCK DIAGRAM



3.2. ELECTRONIC COMPONENTS

3.2.1. CPU BOARD

The Circuit Board includes: a microprocessor, its control logic, a first FLASH EPROM (containing the Operating System), a second FLASH EPROM, partitioned in two sections (HD1 and HD2) the first used for the training program of the machine, for storing video and other information/support material, the second partition for saving messages coming from the COMMUNICATOR and a third FLASH EPROM (HD3) used for a back-up process.

It is the Circuit Board that connects all components of the display and acts as point of connection to the Brake board.

The main functions of the board are:

- Manages and process signals from and to:
 - Secondary ON/OFF switch;
 - LCD;
 - LCD Inverter;
 - Touch screen control board;
 - Capacitive Touch Screen;
 - TUNER board;
 - C-Safe and USB connector board;
 - Dual TGS reader;
 - User USB port;
 - iPod docking station.
 - Wireless network Board ;
 - LAN network Board (integrated);
 - HR receiver;
 - HS board
 - Touch Sensors;
 - Audio/Video external device Connectors Board,
 - Amplifier board;
 - Headphone Jack.
- Distributes the voltages received from the Brake board;
- Exchanges, via the RS-485 serial link to the Brake board, the operating controls.
- Manage the display of images on the LCD.

The board includes the following indicator LED:

LED name	Colour	Description
LED 1	GREEN	if ON, the +12 Vdc power supply from the Brake board correctly reaches the board.

3.2.1.1. BackUp battery

The CPU board has a battery that act to maintain powered the internal clock when the machine is not connected to a power source.

3.2.2. LCD INVERTER

This device powers the LCD Display lamps. It receives DC power supplies (12 Vdc supply and 3.3Vdc enable signal) from the CPU Board, and generates the AC voltage (380 Vac) needed to power the LCD.

3.2.3. DIGITAL/ANALOG TUNER BOARD

This is the board for receiving and managing the **Audio/Video** signal incoming from the antenna; it receives both digital and analog signals.

It is directly connected to the antenna cable, whose signal is then amplified, split between a video and audio channel, encoded by the decoder and processed by a tuner that permits searching and tuning of both TV and radio channels.

The data is then sent to the **CPU Board** where it is processed and managed in order to correctly display it on the LCD Display.

LED name	Colour	Description
D4	RED	<p><i>ON if the power supply reaches the board.</i></p> <p><i>OFF if the power supply does not reach the board.</i></p> <p>FLASHING:</p> <ul style="list-style-type: none"> ▪ <i>if loading/starting the SW in the first seconds after it switch on;</i> ▪ <i>During the firmware upload;</i> ▪ <i>In case of HW/SW malfunctioning (and it continue to blink).</i>

3.2.4. LAN NETWORK BOARD (INTEGRATED)

The CPU board integrate a **LAN** network (*Local Area Network*) which can be used to connect the VISIO device in a local network. The connection should be realised through a UTP cable, with RJ45 connectors cat.5e/6.

VISIO device is compatible with LAN networks, which have a max. transmission speed between 10 and 100 Mbps.



The integrated network is obligatory in case of use for receiving IPTV stream

3.2.5. WIRELESS NETWORK BOARD (WITHOUT CABLES)

This is a board connected directly to the CPU, which enables the VISIO device to connect to a **WLAN** (wireless local area network) as an alternative to a wired network.

The VISIO device has been constructed to be compatible with **Wi-Fi** technology (and in particular with the IEEE 802.11b/g standard), which offers a theoretical bandwidth capacity of up to 54Mbps over distances dependent on the characteristics of the setting where it is installed.

The typical indoor range is 30 m (open space):

- *Standard: IEEE 802. 11b/g*
- *Frequency band: 2.4GHz*
- *Security protocol: WPA/WPA2 or also less recent ones (e.g. WEP).*

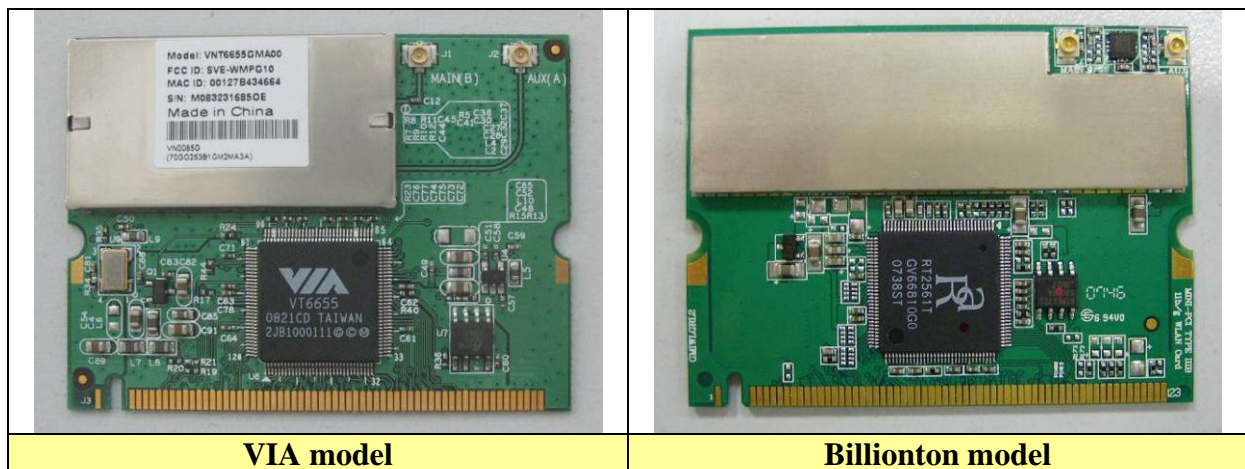


The WLAN connection may not guarantee the same performance as a wired network. The advantage of Wi-Fi is the absence of cables, but this is also a limitation in terms of protection against interference/disturbance, performance (*the stability of service and bandwidth may be intermittent*) and security (*vulnerability to attacks by hackers*). Where possible, it is in any case preferable to use the wired network. The possibility of using Wi Fi also depends greatly on the type of service/application that is to be used in VISIO.

In particular:

- **Technogym Communicator: usable with suitable Wi-Fi network**
- **IPTV: NOT usable with Wi-Fi network; for this application, use of a wired network is essential.**

There are 2 different models of Wi-Fi network board used by Technogym, one produced by VIA and the other by *Billinton*. The 2 boards, are physically different as shown below:



Whenever you replace the board with another that is not the same model, you always have to carry out the “System recovery” procedure using the Recovery USB stick.

3.2.6. AUDIO/VIDEO EXTERNAL DEVICE CONNECTOR BOARD

The board is positioned at the bottom of the lower guard of the equipment and makes available some connectors for connecting Audio / Video source and the external display on the base-band of LCD.

3.2.7. JACK CUFFIE

The machine display has one jack for connecting headphones. The jack is connected on a stereo output of the CPU Board.

3.2.8. SCHEDA C-SAFE (INTEGRATA)

It's a function that allows the connection using a appropriate cable for connecting other devices, such as: external PC suitably, programmed to control the machine (speed, level of difficulty, etc ...)

3.2.9. PORTA USB DI SERVIZIO (INTEGRATA)

It is used to connect USB keys for updates: High Kit, Low Kit, Digital TV Board, Dual TGS reader and the transfer of Radio and TV channels, from one VISIO device to another.

3.2.10. CAPACITIVE TOUCH SCREEN CONTROL BOARD

It's the board that manages the Touch Screen through 2 flat cables and connect it to the CPU board.

The board includes the following 2 LEDs indicator:

LED name	Colour	Description
LED 1	GREEN	<i>It light up when switch ON the machine then immediately turn off; it light up again every time you press on the Touch Screen.</i>
LED 2	RED	<i>If ON the power supply reaches the board. If OFF the power supply does not reach the board.</i>



ATTENTION: If the Green LED blinks continuously without anyone touching the Touch Screen, this might be because the capacitive Touch Screen control board is affected by interference from either the network supplying the machine, or from other outside sources such as: amplifiers, PCs, USB accessories, etc...

3.2.11. POWER SUPPLY BOARD

The Power Supply board isolates the high voltage between the input Module and the Brake Board and is controlled via the infra-red Start switch on the column, which changes the status of the relay switch. It consists of two zones: one dedicated to the switching power supply; the second consists of relay switch dedicated to supplying power to the Brake Board and which consequently powers the equipment.

3.2.12. SECONDARY ON/OFF SWITCH

The Secondary Switch Board contains an (SW) logic which governs the switching ON/OFF of the equipment via a relay switch on the Secondary Switch Power Board (acts as controller). The Board has, in particular, an infra-red transmitter and receiver. The transmitter is always on. When you brush the start switch with your finger, this acts as a mirror for the signal, which is detected by the receiver and switch ON the equipment. To turn OFF the equipment, touch the switch for 3 seconds.

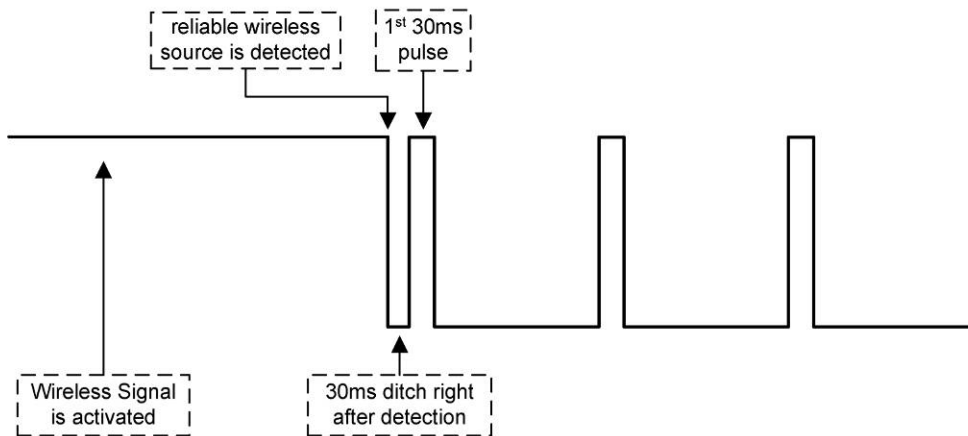
3.2.13. AUDIO AMPLIFIER BOARD

This Board allows the audio signal from the Display to be amplified so that it is played through the loud-speakers on the machine.

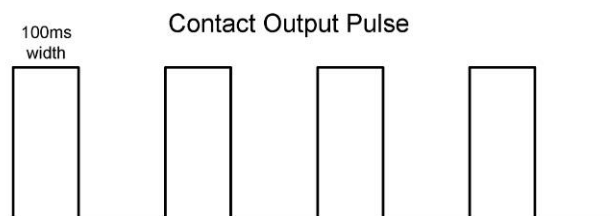
3.2.14. HAND SENSOR BOARD

This is the Board that manages the signal sent by the Hand Sensors, used by the user during training sessions. The Receiver Board receives a power supply of +5Vdc from the Display Board.

The Receiver Board communicates with the Display Board using positive logic procedures. When it is in stand-by, the signal has a +5Vdc value and as soon as it receives a signal indicating the presence of a heart beat, it passes to 0Vdc and then with every heart beat it picks up, it generates an impulse and returns to +5Vdc.



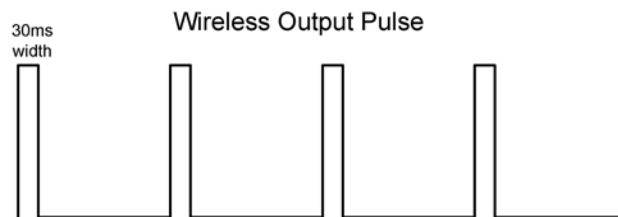
The Display Board receives a signal generated by the Hand Sensors (signal through contact) with an amplitude of 100msec.



3.2.15. CARDIO RECEIVER HR

This is the Board that manages the signal sent by the Telemetric Transmitter (Heart Rate Band), used by the user during training sessions. The Receiver Board receives a power supply of +5Vdc from the Display Board.

The Receiver Board communicates with the Display Board using negative logic procedures. When it is in stand-by, the signal has a +5Vdc value and with every heart beat it picks up, it generates an impulse of +0Vdc with an amplitude of 30msec.



3.2.16. IPOD DOCKING STATION

The Board allows you to connect iPod devices and to control them directly from the VISIO interface.

Connecting with VISIOWEB allows you to: power, recharge and fully control iPod devices.

In the table below, you can see all the compatible iPod (APPLE) models:

Recharging battery	All iPod & iPhone models (exception: iPod shuffle and first generations*)
Play & Control Audio	All iPod & iPhone models (exception: iPod shuffle and first generations*)
Play & Control Video	All iPods starting from iPod 5th generation, all iPod Nano starting from Nano 3G & 4G, all iPod Touch from iPod Touch 1G & 2G, all iPhone from iPhone & iPhone 3G
Nike+Gym	All iPod Nano from iPod Nano 3G, all iPod from Touch 2G all iPhone from iPhone 3GS (for more information: http://www.apple.com/ipod/nike/workout.html)

* The equipment is compatible with all devices which have the standard iPod connector. That means ALL iPod devices EXCEPT the iPod shuffle and EXCEPT the iPod release before July 2004 (1st, 2nd and 3rd generation).

NOTE: In order to have video in iPhone and iPod Touch it is necessary to update the device with the latest firmware via iTunes.

3.2.17. CLIENT USB PORT

This is an additional port which can be installed on the VISIO Display, and makes available a USB port for connecting to external devices. The user can connect USB devices for playing a vast range of multimedia files, including: *mp3, wma, wav, wmv, MPEG2, MPEG4, DivX, XVID jpg*.

3.2.18. DUAL TGS READER

It's the device which allows the machine to interact with the Wellness System.

This board enables the machine to read the user's TGS key for performing workouts programmed with the proper SW of the Wellness System.

With Dual TGS reader it is possible to use both the Botom and the Mifare TGS keys.

3.2.19. BRAKE BOARD

At the moment there are 2 models of Brake board which have to be used on version: **powered** and **self-powered** (500SP/700SP), due to the fact they need different characteristics.

Each brake board consists of:

1. Power supply section which generates the low voltages used by the machine: +5Vdc (only for 700 and 700SP version) and +12Vdc (all version). Depending on the machine version, these voltages will be generated either from the 110VAC or 220VAC mains supply, or from the alternator-battery.
2. Section for RS-485 serial communications with the Display Board for:
 - *commands determining the resistance that is required of the Electromagnetic Brake;*
 - *Electromagnetic Brake error messages;*
 - *commands for modifying the circuit board configuration parameters;*
 - *commands for viewing the errors logged by the circuit board;*
 - *Commands of equipment usage (RPM, WATT, distance, etc...).*
3. Section which generates the current for the brake winding: varying the current produces a proportional variation in the resistance of the brake. The excitation current supplied to the brake is a function of the effort level selected on the display and the RPM value measured by the speed sensor (angular velocity of the brake disk) and is determined by the values stored in the braking table.

The board includes the following indicator 2 LEDs:

LED name	Colour	Description
LED1	GREEN	<i>if ON the board is supplying the brake winding. if BLINKING the Brake Board is in an error condition.</i>
LED2	YELLOW	<i>ON if the Brake Board is powered</i>

3.2.20. ELECTROMAGNETIC BRAKE

This is an eddy current brake, consisting of a flywheel weight and a flat copper disk that rotates in the air gap of a winding. Variations in the winding current produce changes in the magnetic field, which in turn varies the eddy currents induced within the copper disk and hence its resistance to "vertical" movement of the machine.

Two solenoids (*cylindrical-shaped coil composed of a series of very closely wound circular turns of a single strand of conducting material*) connected in series are supplied by an adjustable direct current generator to obtain a magnetic field of varying intensity. The inertia disk (flywheel) rotates between the coils.

As a result of its movement, each sector of the disk is crossed by a magnetic field flux that varies continuously, giving rise to electromotive forces within it that cause induced currents to circulate. These currents flow in a direction which opposes the cause that induced them, i.e. the movement of the disk inside the magnetic field. Consequently, they have a braking effect that slows down the movement of the disk. The braking effect is intensified as the magnetic field strength of the coils increases, and therefore with increasing speed of the disk. This operating principle also means that when the disk is stationary the braking action will be zero.

Unlike the majority of mechanical brakes, which operate by taking advantage of attrition forces, there electromagnetic brake has no parts subject to wear.

The winding resistance is approximately 5Ω Ohm, consequently the brake absorbs a maximum current of 2.2 A.

3.2.21. SPEED SENSOR

This consists of a magnetic induction sensor which detects the heads of the Electromagnetic brake disk fixing screws.

3.2.22. POWER ENTRY MODULE

This is a module consisting of:

- *power inlet socket;*
- *power outlet socket;*
- *fuse-holder for protecting line voltage and neutral with two 3.15A fast-blow fuses.*

It is situated on the side of the rear footboard.



WARNING: The maximum current extractable from the output of power entry module is 7A. This places an upper limit on the number of machines that can be connected together: do not connect more than N°8 equipments with a 220Vac mains supply and N°5 equipments with a 110Vac mains supply. If other types of machines are connected together, the maximum number is determined by their current draw.

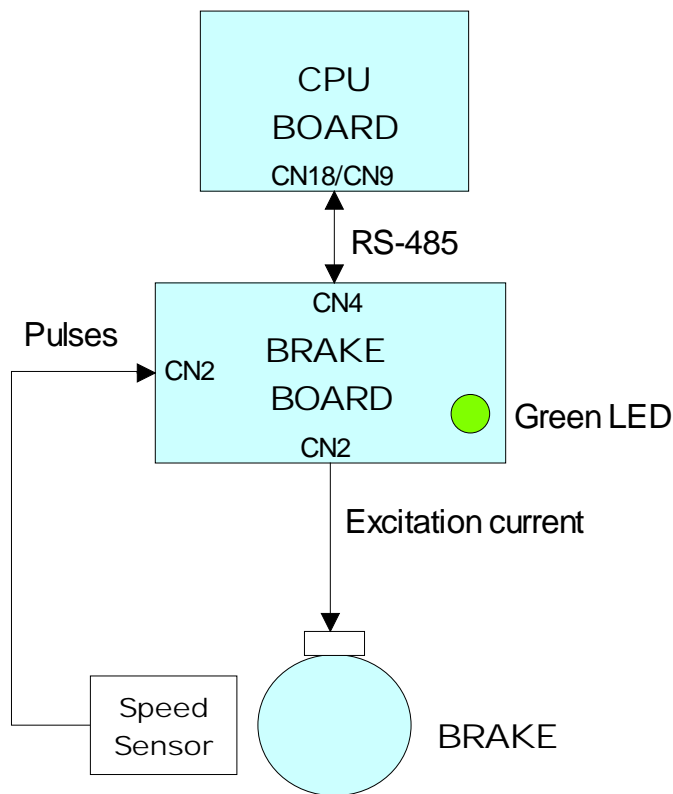
3.3. BRAKE CONTROL

3.3.1. MECHANICS

The motion of the pedals imparts a rotation to the primary shaft via the belts connected to the 2 pedals. The primary shaft is connected to the secondary shaft and so to the brake, by means of a belt. The speed sensor attached to the frame detects the heads of the screws which secure the disk to the flywheel, and generates a signal proportional to the speed.

3.3.2. CONTROLS

The control block diagram is as follows:



To obtain a given exercise effort level, the display board sends the required value of exercise speed in *rpm per minute* to the Brake board via the RS-485 serial link. Based on the commands received the brake board will then apply the appropriate excitation current to the brake winding, which generates an electromagnetic field.



When the brake interface board receives the signal to generate resistance, the green LED illuminates.

The electromagnetic field produced by the winding and the rotation of the disk will induce eddy currents in the disk itself, giving rise to a force that tends to brake its motion. This generates the exercise resistance.

The higher is the value of current generated from the Brake Board on the winding, the greater is the resistance produced. Furthermore, with the same excitement of the brake, the higher is the rotational speed of the disc, the greater is the resistance produced.



Due to the eddy currents, energy is dissipated on the brake disk in the form of heat.



The control on the CURRENT is of type CLOSED LOOP. The Brake Board calculates the current value to send on the winding of the brake, it controls the supply with a special driver circuit, and finally checks the actual presence on the brake circuit through reading and A/D conversion of current signal read.



Control over the Resistance actually present on the pedals (*effective user torque*) is Open Loop. The system (Brake Board) + (brake) provides no adjustment to calibrate the resistance value produced, but only using the braking table stored in the Brake Board. The accuracy of the braking system has a tolerance of $\pm 10\%$.

During the movement, the speed sensor detects the heads of the brake disk fixing screws, and produces a speed feedback signal that is sent to the Brake board. The brake board will adjust s the excitation current of the brake winding so that the speed detected by the speed sensor is equal to the set value.



If the brake board does not receive a speed signal, which indicates that an exercise session is in progress, the machine will not produce any resistance.

During the movement, the brake board monitors for possible malfunctions. The errors which can occur are detailed at paragraph: 6.9. “The Brake Board has detected an error”.

In all that cases, the Brake Board interrupts the supply of current to the brake, the green LED changes from being steadily on to blinking and sends an error message to the Display Board which displays the “THE EQUIPMENT IS BLOCKED CONTACT TECHNOGYM TECHNICAL SUPPORT (X)” where “X” represents the Error Code detected.

3.3.3. THE SIGNALS INVOLVED

The machine uses the following control signals:

- RS-485 Signal**
 This is a digital signal exchanged between the **Brake Board** and the Display Board. There is no provision for monitoring its state.
- Excitation current**
 This is the current generated by the **Brake Board** (*pins 1-2 of connector CN2*) which supplies the brake winding. The current supplied is a function of the adjustment algorithm.
- Pulses**
 This is the signal produced by the speed sensor, and has the waveform shown in the figure below:

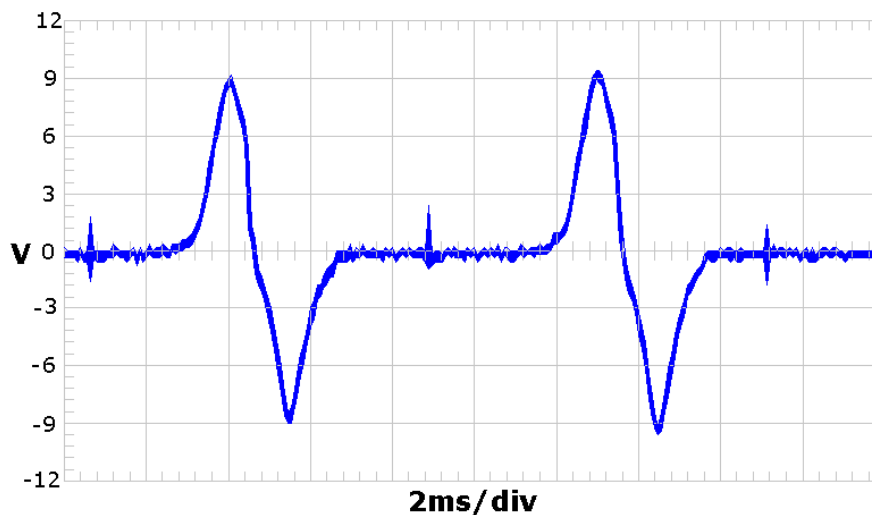


Figure 3.3-1

The signal enters the **Brake Board** (*pins 3-4 on connector CN2*), where it is used to determine the speed value (*RPM*) that is sent to the Display Board via the RS-485 serial link.



This signal can also be measured qualitatively using a multimeter. The voltage measured across the sensor terminals should be 0Vdc when the machine is stopped, and should increase to a few hundred mV during pedal movement: the higher the speed, the higher the measured voltage.



Since on the SP models the speed is calculated on the VAC generated by the alternator, it's not possible to measure or monitoring this signal using a multi meter.

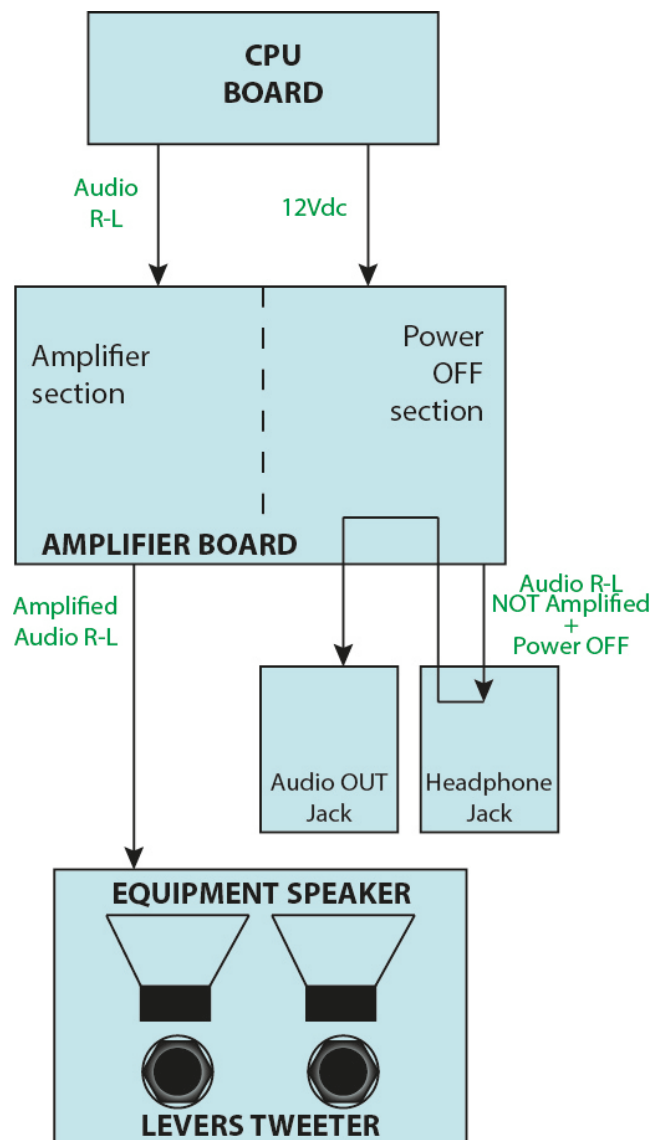
3.4. AUDIO SIGNAL AND AUDIO OUT CONTROL

The equipment provides the following outputs for listening to and playing audio devices:

- Two speakers positioned on the central upright of the frame.
- Two tweeters, on the upper part of the Total levers, one on the right and one on the left.
- One non-amplified audio output jack socket, in the upper/central part of the frame in the area where the Total levers are connected, normally used for connecting headphones.
- One non-amplified audio output jack socket, at the base of the equipment in the power input area, normally used for connection to an external audio system.

3.4.1. CONTROL

The control diagram is as follows:



The audio signal in this equipment is controlled and sent towards the output channels (sockets and speakers) by an amplifier, which, in the case of the sockets, simply channels to signal towards them, or, in the case of the speakers, amplifies the signal before sending it.

The CPU card sends a 12 Vdc signal to the amplifier to power it as well as the audio signal. To avoid creating disturbances for the end user, by reproducing the audio signal from more than one channel, the system permits the signal to be listened to from only one of the 3 channels, with the following order of priority: Headphone jack socket, audio output jack socket, speakers.

In particular, when headphones are connected to the jack socket on the frame immediately under the display, the signal to the output jack socket at the base of the frame is “mechanically” cut off and a signal is sent to switch off the amplifier so that no sound is put out by the speakers (POWER OFF signal interrupted).

In the same way, if an external system is connected to the jack socket at the base of the frame, a signal is sent to switch off the amplifier so that no sound is put out by the speakers (POWER OFF signal interrupted).

If no device is connected to the 2 jack sockets, the audio will be played through the equipments speakers, and the signal will be further amplified than the one sent out by the CPU.

3.4.2. THE SIGNALS INVOLVED

The following signals are involved in the control:

- **Power signal**
This is a 12Vdc signal that the CPU card sends to the amplifier to power it.
- **Audio signal**
This is the signal that includes the two R-L audio channels, sent by the CPU to the amplifier and then to the audio output jack socket or to the speakers.
- **Amplifier Power OFF signal**
This is the signal sent by the two jack sockets to the amplifier, to switch it off, thus avoiding audio reproduction by the equipment's speakers.
It is not an actual separate signal, but uses one of the audio channels output by the jack socket which, when cut off due to connection of a jack into the jack socket, is interpreted by the amplifier as a switch-off signal.

4. ACCESSORIES

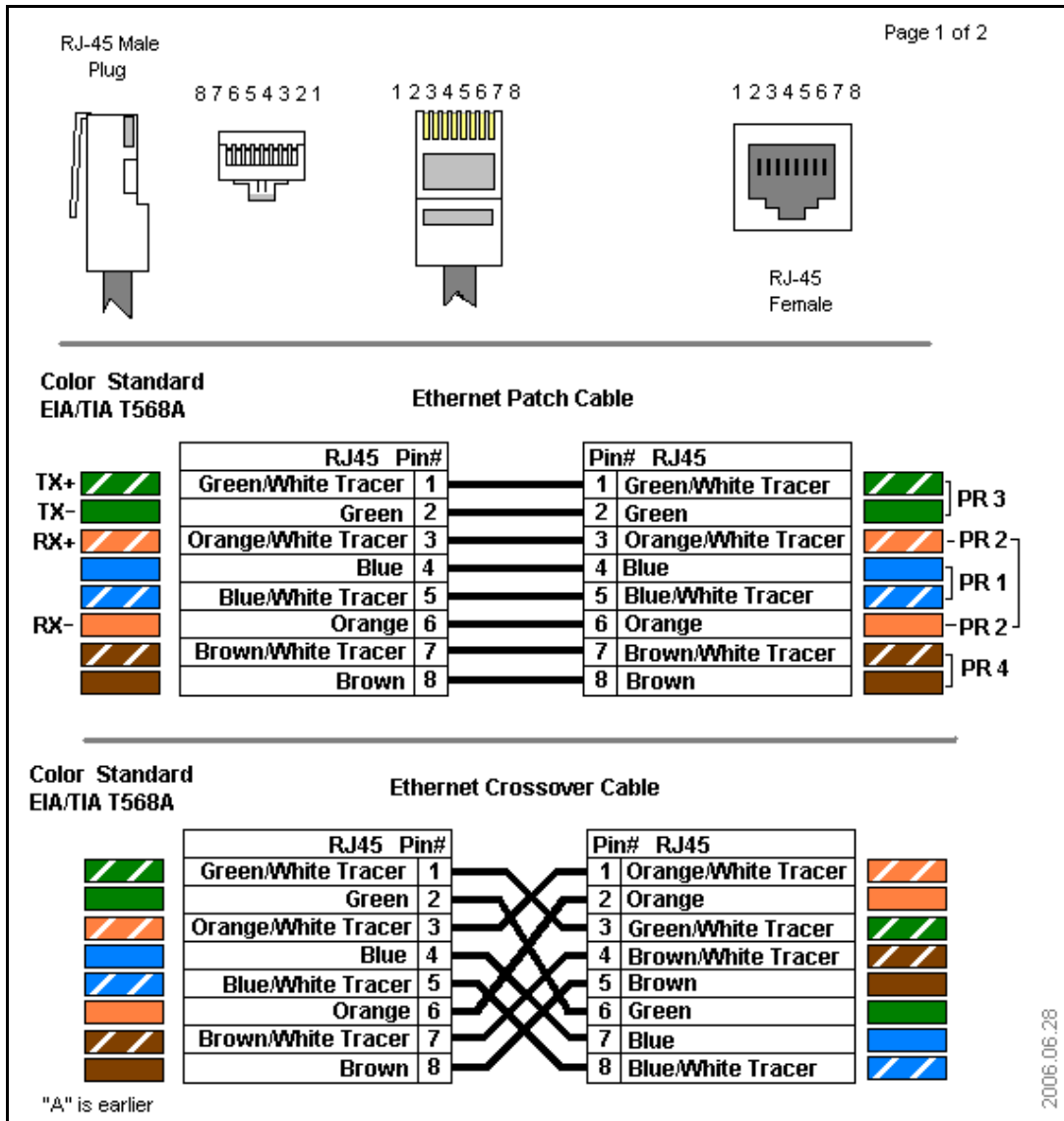
4.1. CARDIO THEATER CONNECTION

The machine can be connected to the Cardio Theater by means of the **RJ45** connector on the C-Safe board. The Cardio Theater unit must be provided with a power cable having the following pin-out:

RJ45 Connector	Signal
5	+5Vdc
7	Ground

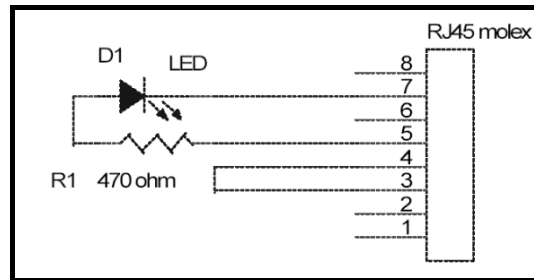


ATTENTION: for the numbering of the pins, on RJ45 connector, please refer to the diagram below:



4.2. MONITOR PLUG FOR C-SAFE PORT

When the plug code **0WC00639AA** is fitted into any one of the C-Safe ports on the machine, the corresponding LED should illuminate to indicate the presence of the 5 Vdc supply on the port. During the C-Safe port test function, the plug connects the transmit channel directly to the receive channel, thereby producing a positive test outcome if the port is functioning correctly.



5. INSTALLATION INSTRUCTIONS

5.1. SPECIFICATIONS AND REQUIREMENTS

For correct machine installation, make sure that:

1. The machine is installed on a level surface that is free of vibrations and has sufficient carrying capacity for the combined weight of the machine and user.
2. The place of installation is free of dust and sand.
3. The place of installation meets the operating temperature and humidity conditions specified in paragraph: 2.7. “Ambient specifications”.
4. The machine is not positioned close to sources of heat, sources of electromagnetic noise (television sets, electrical motors, antennas, high voltage lines, household appliances, etc...) or medical equipment.
5. To eliminate any interference with the cardio receiver, no transmitters should be placed less than 90cm from the display.

5.2. MOVING THE EQUIPMENT

The equipment has two fixed front wheels. To move the equipment, lift it up slightly, as shown in the illustration, and push it forwards and backwards.



Given the weight of the equipment, we recommend 2 person be involved in lifting it.



AVVERTENZA: Lift the equipment by holding onto the frame and not the levers or the control panel. Take great care when moving the equipment and positioning it on the ground, as it may overbalance.

If wheels cannot be used on the floor, move the equipment using standard lifting and transport devices.

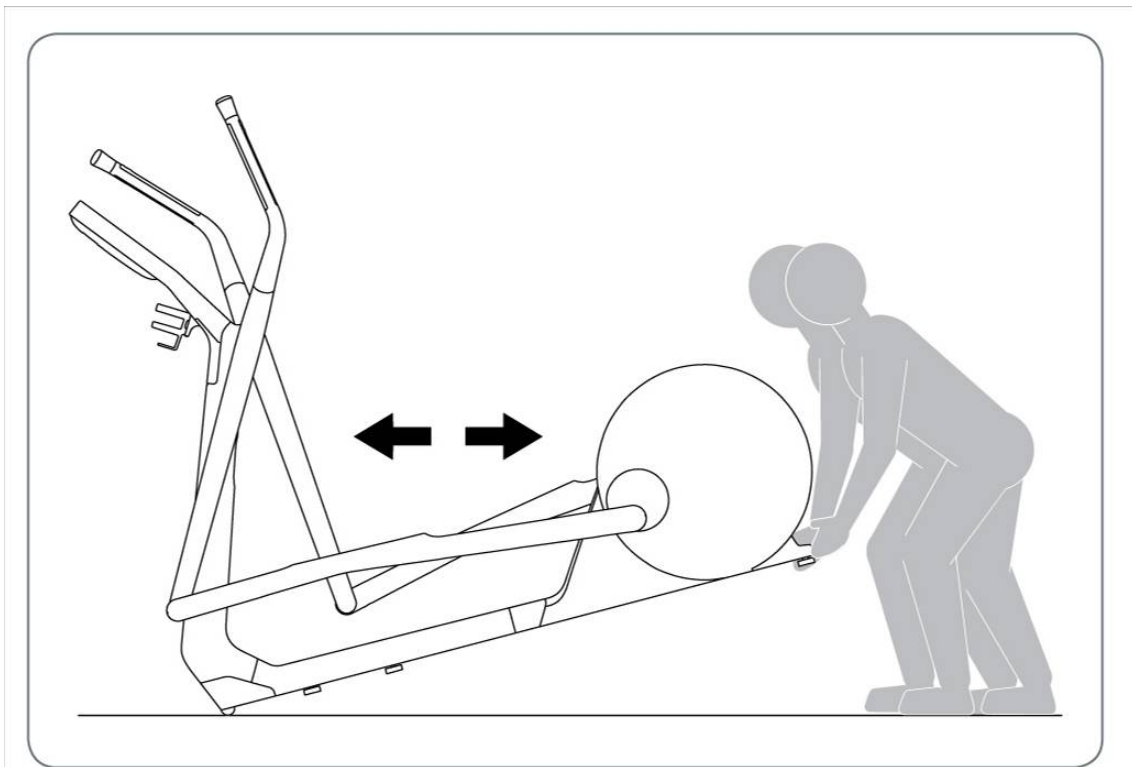


Figure 5.2-1



After every moving, check if the equipment is flat, adjusting the left foot, as indicated at the paragraph: *Errore. L'origine riferimento non è stata trovata.*“*Errore. L'origine riferimento non è stata trovata.*”.

5.3. RECOMMENDED ANTENNA SIGNAL REQUIREMENTS



All the information about the minimum requirements concerning the antenna signal are detailed in the proper manual “Electrical and antenna requirements” you can find and download into the Technogym Direct.

5.4. INSTALLATION

To correctly install the machine, proceed as follows:

1. Ensure that the specifications and requirements for installation have been met (see paragraph: 5.1. “Specifications and requirements”).
2. Position the machine as specified above, on a level surface that is free of vibrations and has sufficient carrying capacity for the combined weight of the machine and user.
3. Depending on the destination country, the machine may be shipped partially disassembled, packed inside a special carton and fixed to a pallet, or fully assembled, wrapped in clear plastic and fixed to a wooden pallet.
Follow the assembly operations described in the instruction sheets supplied with the machines.
4. Connect the mains lead to the power inlet socket on the machine.
5. Place the on/off switch in the 0 position.
6. Plug the mains lead into the wall outlet.
7. Connect the antenna cable to the wall outlet and make sure all the technical requirements are respected according to the specific paragraph of this manual.

5.5. FIRST POWER-ON

After completing the installation procedure, the machine is ready for use.

On power-up the machine performs a *Check-Up* of the High Kit and Low Kit assemblies. After completing the *Check-Up*, the machine enters the *Stand-By* state, awaiting a command from the keyboard.


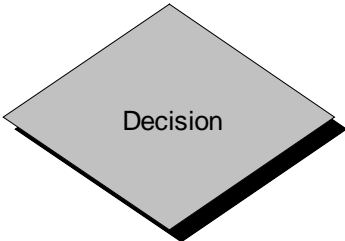

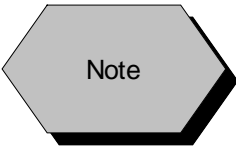


To check the correct operation of the machine:

- *Get on the machine;*
- *Check that exercise resistance varies when the “+” and “-“ effort level keys are pressed, or the touch sensors, and the effort level change from 1 to 25;*
- *Put on the heart rate meter and check that the machine correctly reads the heart rate value;*
- *Grasp the sensors and check that the machine correctly reads the heart rate value;*
- *Carry out the “Touch Screen calibration” procedure described in the relevant paragraph of the User menu.*

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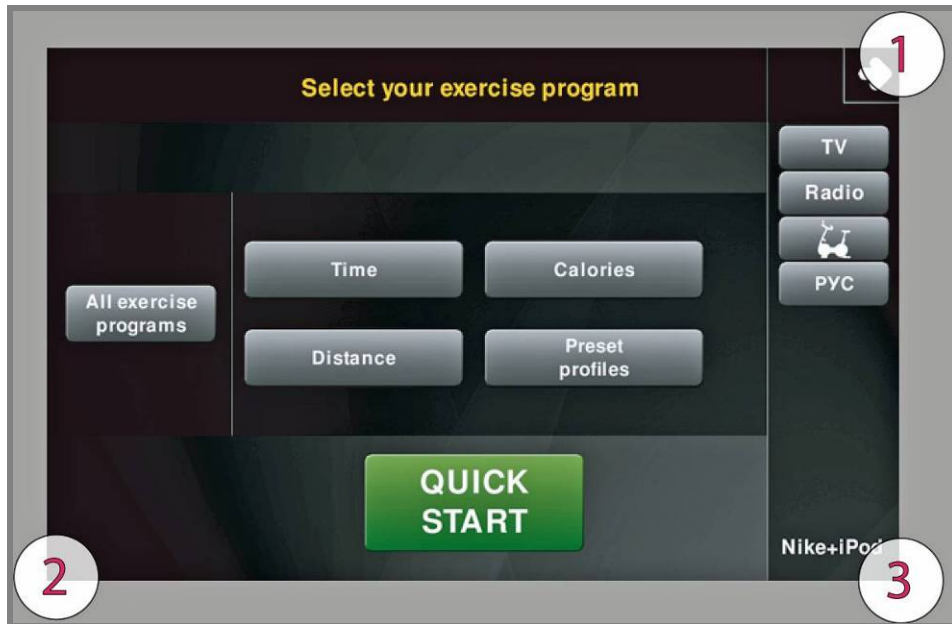
6. TROUBLESHOOTING

The troubleshooting procedures are illustrated by means of flow diagrams. To facilitate interpretation of these diagrams, the following standard box shapes are used:

	<p>This type of box is the START point of the troubleshooting procedure. It typically contains a description of the problem or malfunction.</p>
	<p>This type of box represents a decision point in the troubleshooting procedure. It typically contains a description of the CHECK to be made, with an outcome that is either a positive (YES) or negative (NO) response.</p>
	<p>This type of box is a step in the troubleshooting procedure where an ACTION must be carried out. It typically contains a description of the ACTION necessary to resolve the problem. Therefore, after executing the specified ACTION:</p> <ol style="list-style-type: none"> 1. <i>Check whether the problem has been resolved;</i> 2. <i>If the problem persists, it is recommended to resume the troubleshooting procedure from the point before the action was carried out.</i>
	<p>Clarification of the operation in progress or that will be below</p>
	<p>A <u><i>circled number</i></u> (such as that shown on the left) next to a box of the troubleshooting procedure indicates that more detailed instructions for performing that particular check or action are provided below the flowchart.</p>
	<p>A <u><i>circled letter</i></u> (such as that shown on the left) is used to mark a point in the procedure. Typically, this indicator is used in page changes.</p>

6.1. TROUBLESHOOTING MENU

The procedure is activated by pressing the top right-hand corner, the bottom left-hand corner and the bottom right-hand corner of the screen in that sequence when the equipment is in Stand-By, as shown in the figure below.



A new display will appear from which you can gain access to the various configuration menus, by entering the password on the number keyboard:

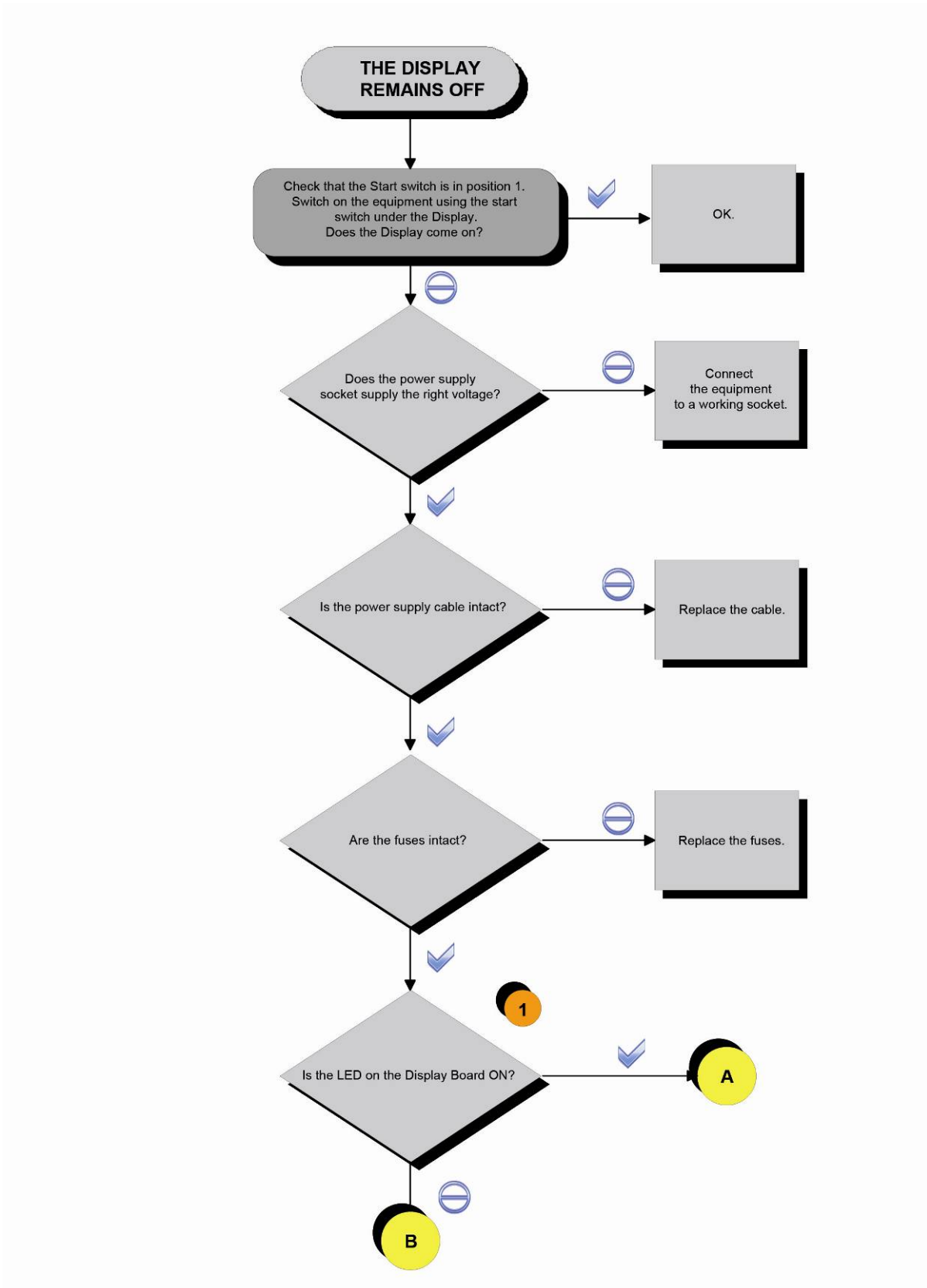
Enter the password **2501** and press the **ENTER** key to confirm or **EXIT** to quit.

By selecting the key which is highlighted in red, you will gain access to the **TROUBLESHOOTING** menu:

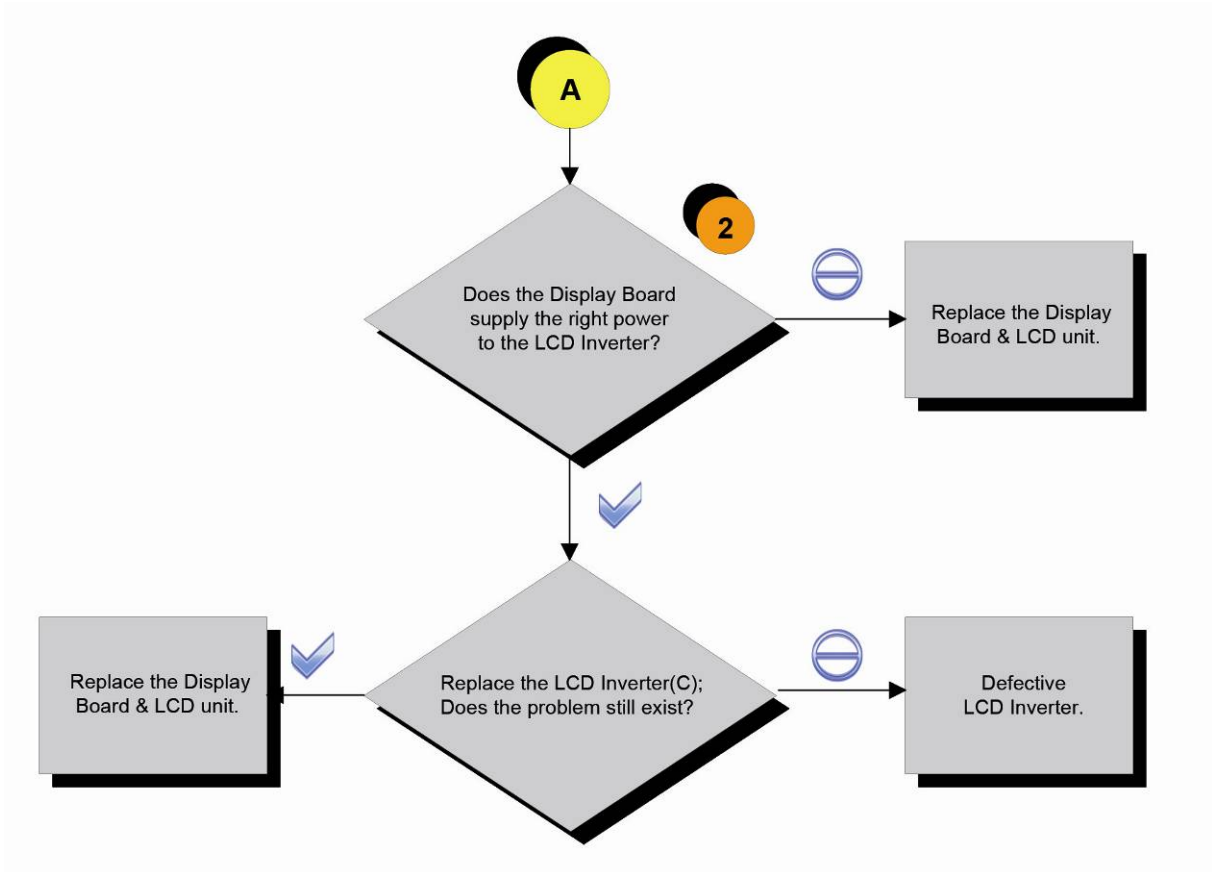


For the following menu, please refer to the relevant chapter in the VISIO manual.

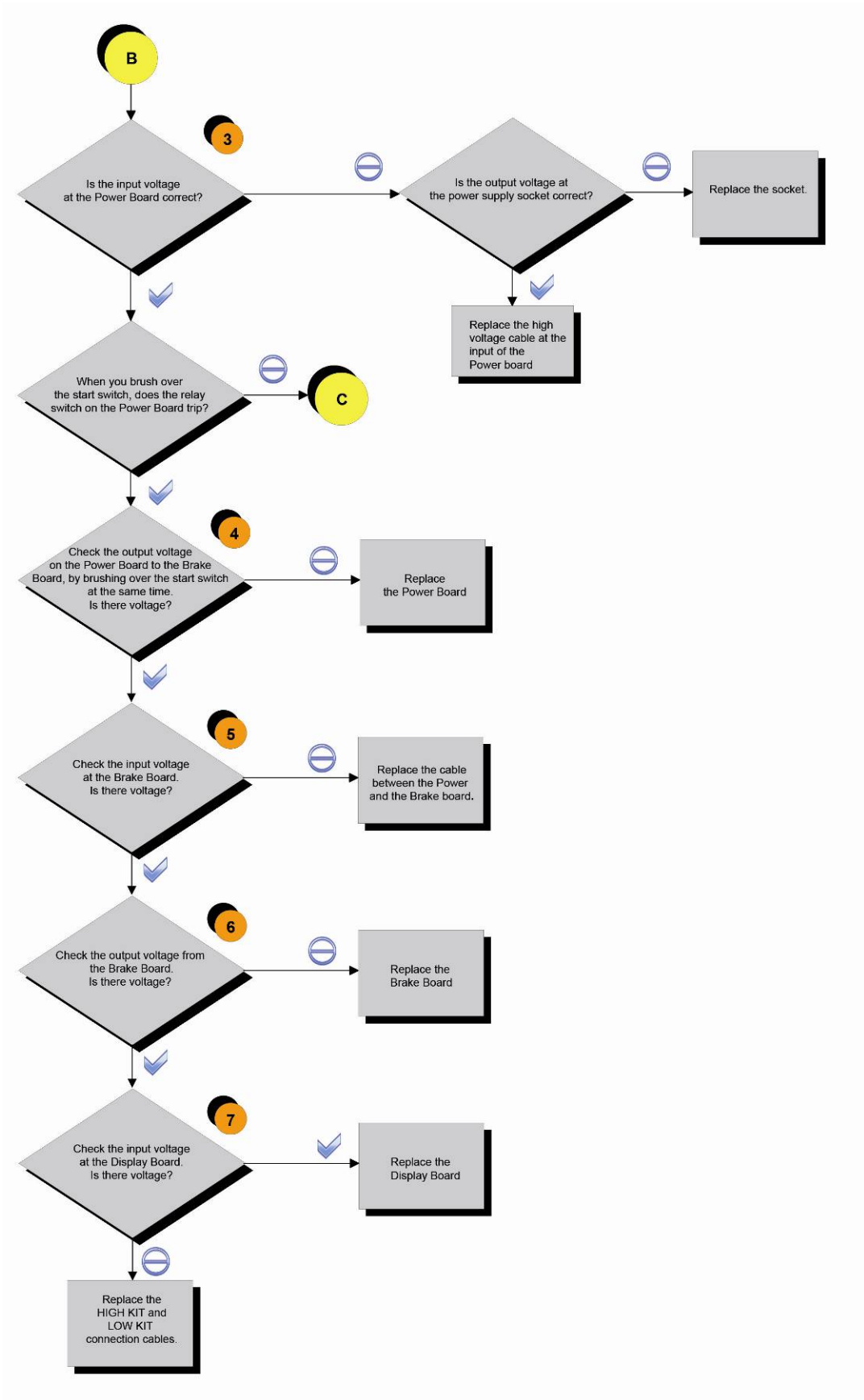
6.2. THE DISPLAY STAYS OFF



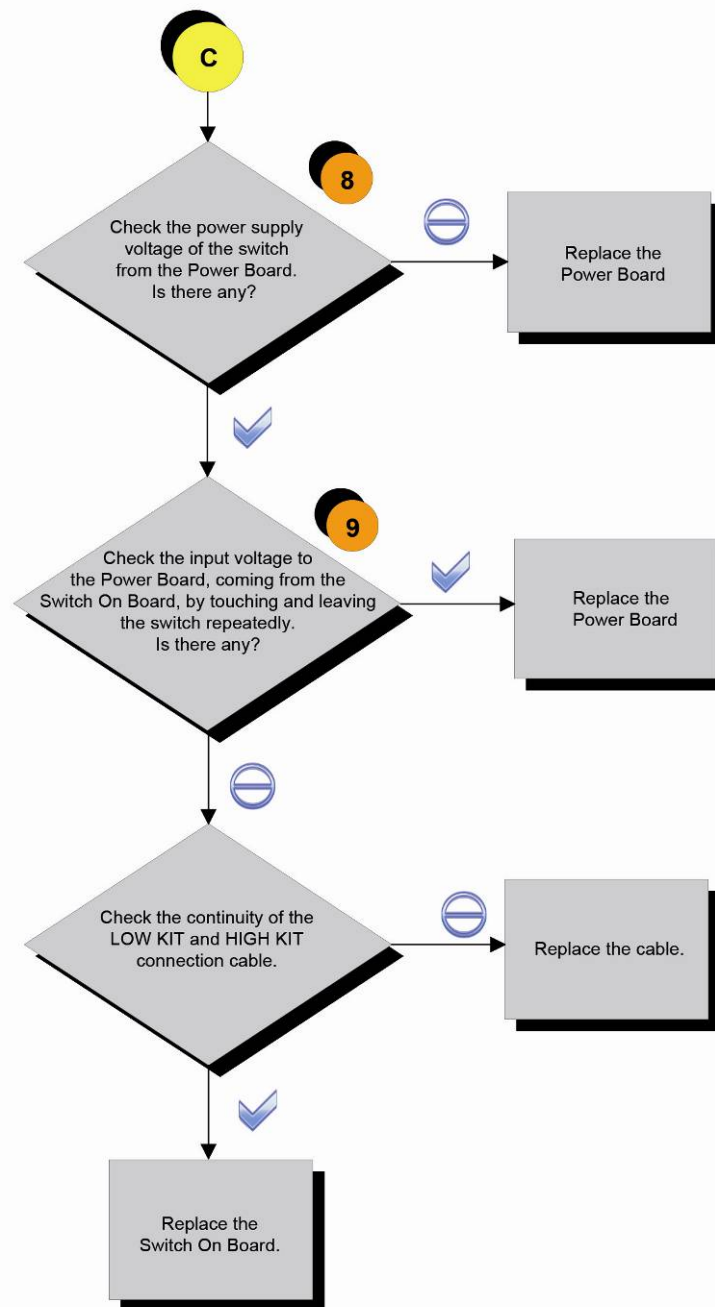
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Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Check that LED 1 (green) is lit on the Display Board.
- (2) Check the voltages between the pins on the CN1 connector and a ground node on the Display. It should measure:
 - +12Vdc on pin 7
 - 0Vdc on pin 6;
 - +4.3Vdc on pin 5;
 - 0Vdc on pin 4;
 - +12Vdc between pins 3;
 - 0Vdc on pin 2.

- (3) Check the 220 Vac voltage on the K1 connector, between PINS 1 and 3.
- (4) Check the 220 Vac voltage on the P2 connector, between PINS 1 and 5.
- (5) Check the 220 Vac or 110 Vac voltage on the CN4 connector of the Brake Board, between PINS 3 and 1.
- (6) Check the +12 Vdc voltage on the CN3 connector of the Brake Board, between PINS 2 and 6.
- (7) Check the +12 Vdc voltage on the CN17 connector of the Brake Board, on PINS 1 and 7.
- (8) Check the +12 Vdc voltage on the P3 connector of the Power Board, on PINS 1 and 4.
- (9) Check the voltage on the P3 connector of the Power Board, on PINS 2 and 4.



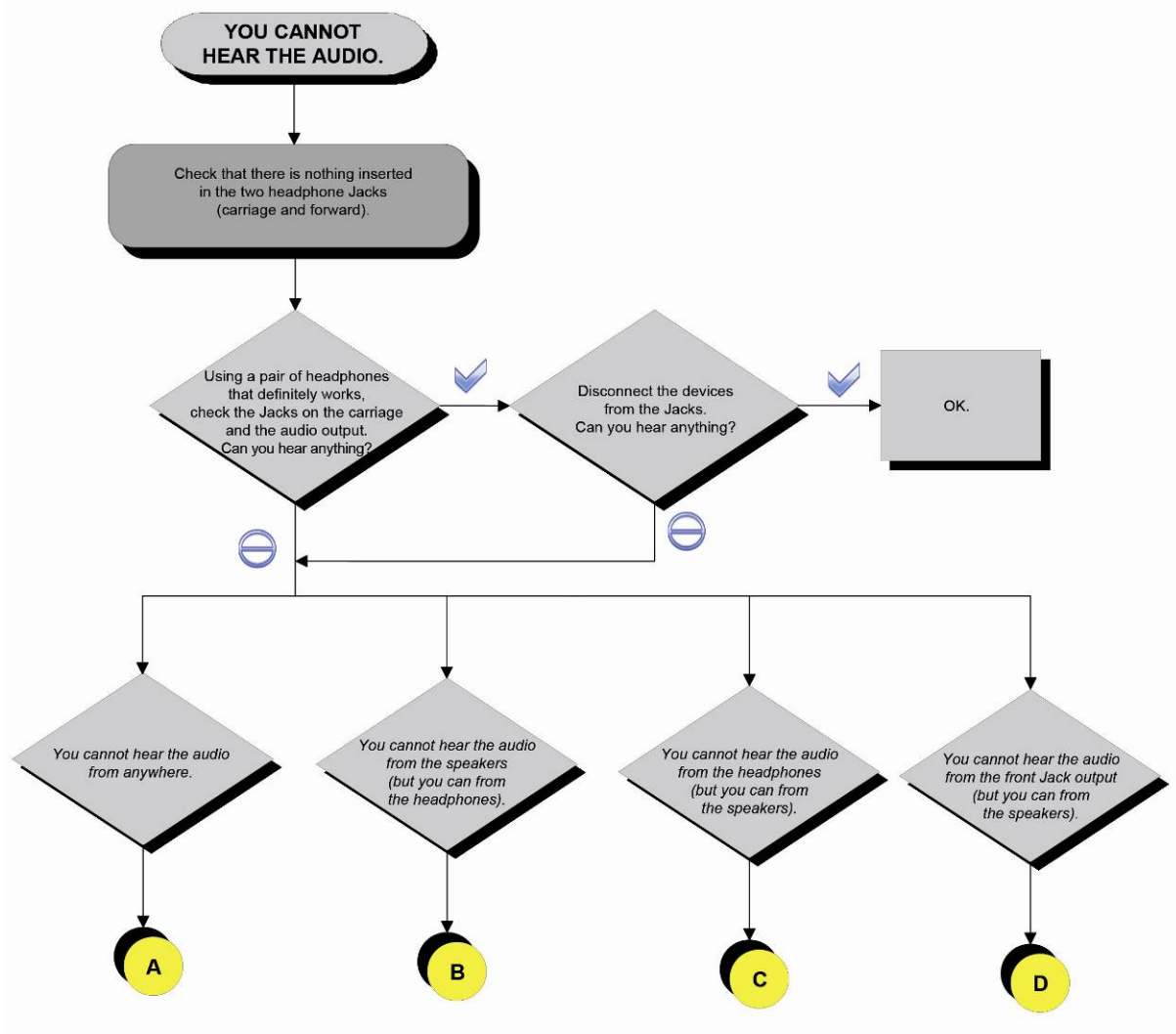
If you replace Display Board and/or Driver, check that its SW version is updated, otherwise install the last version.



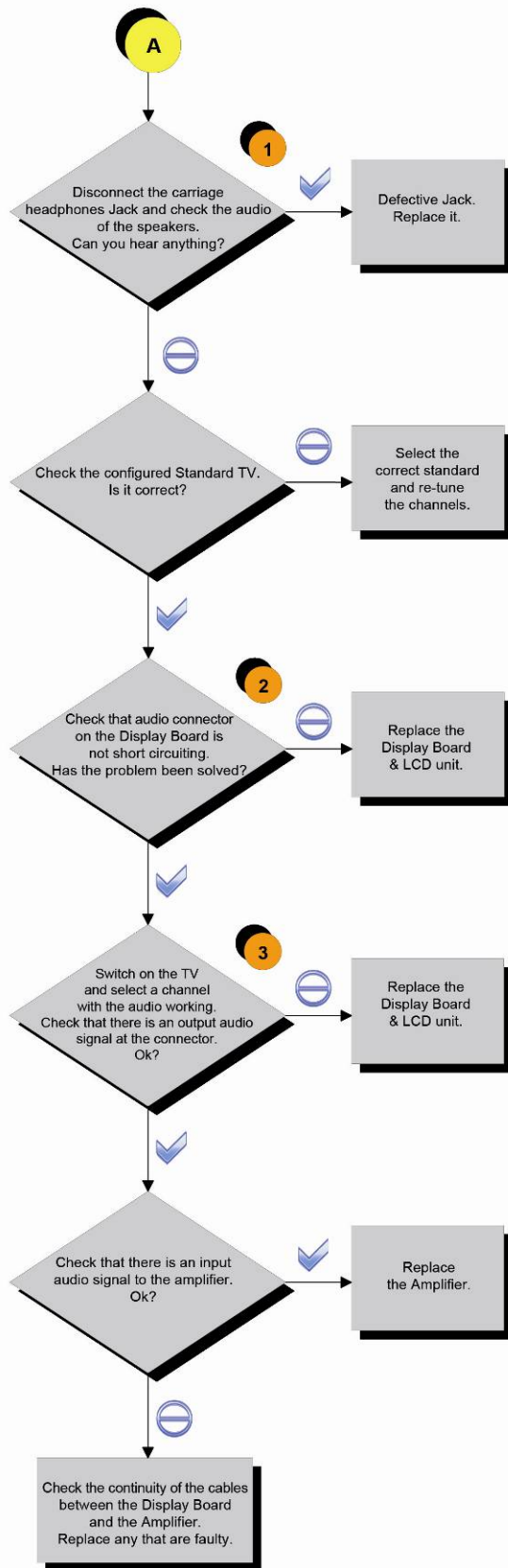
TV and RADIO channels, are only stored in a file in the fixed memory of the board. So the channels will be re-store in case of replacing of the Display Board.

6.3. NO AUDIO SOUND

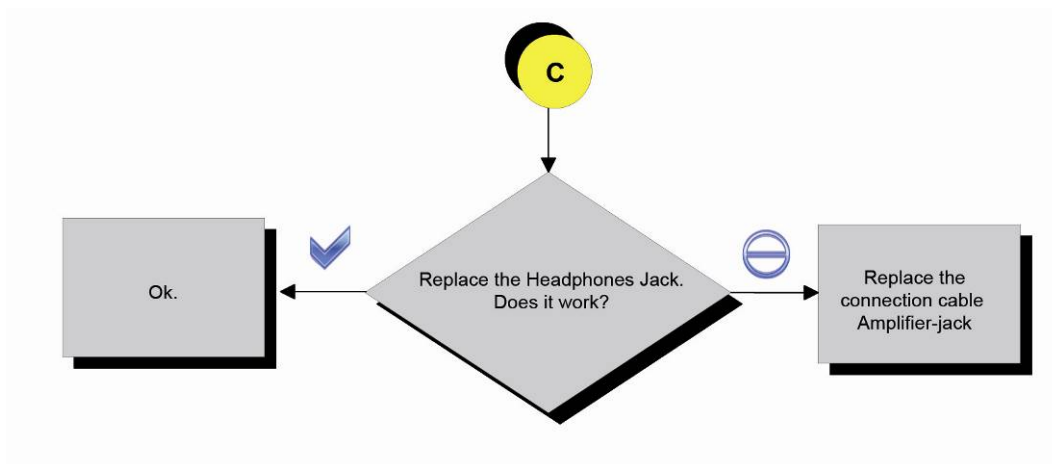
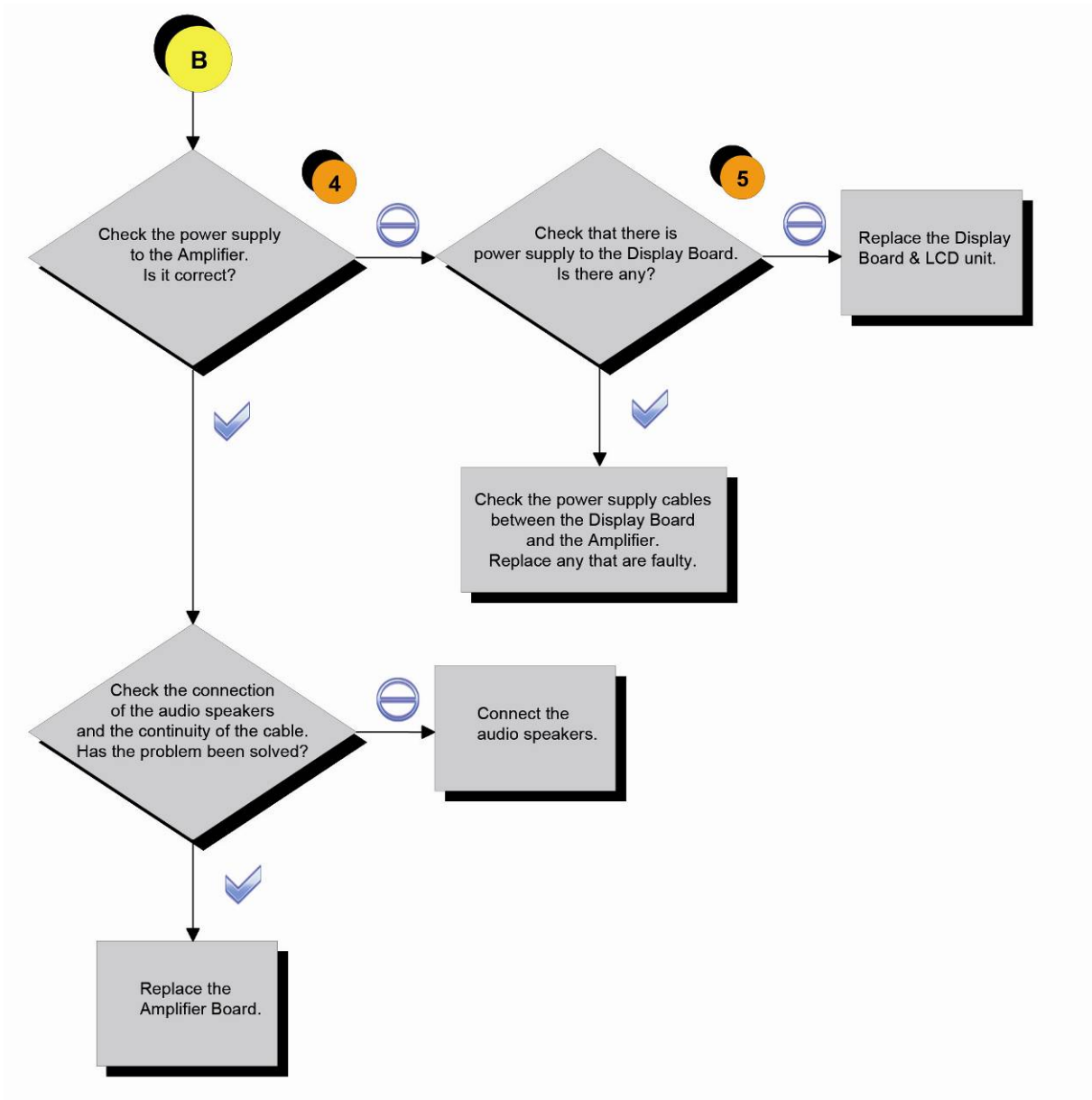
This error is due to the incorrect configuration of the equipment or problems with the audio circuit.



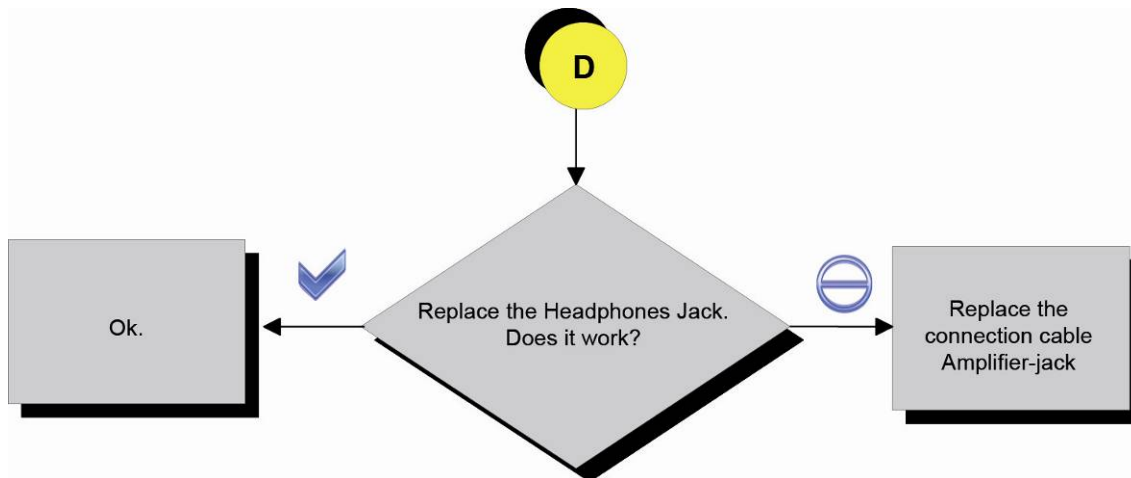
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Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Perform the test by substituting the Jack with a functioning one or disconnect it and short the PINS 4-5 and 3-2 of the Jack connector (carriage side).
- (2) Take the measurement on the J5 Audio OUT connector and check the resistance between the earth node (on the Display) and the 4 PINS on the connector by disconnecting it.



DANGER: Take this measurement with the equipment switched off.

- PIN 1 – earth node = 1 K-Ohm;
- PIN 2 – earth node = 1 Ohm;
- PIN 3 – earth node = 1 Ohm;
- PIN 4 – earth node = 1 K-Ohm;

- (3) Take the following measurements with ALTERNATING current, taking care not to short circuit the PINS during the measurement.

- PIN 1 – earth node = 400 mVac;
- PIN 2 – earth node = 0 mVac;
- PIN 3 – earth node = 0 mVac;
- PIN 4 – earth node = 400 mVac;



WARNING: Turn the volume up to maximum.

- (4) Perform the check on PINS 1 and 2 on the J5 connector and check that there is 12Vdc.
- (5) Check that there is 12 Vdc on PINS 2 and 6 on the CN15 connector of the CU613 cable.

6.4. NO TV PICTURE



For the following menu, please refer to the relevant chapter in the VISIO manual.

6.5. THE TOUCH SCREEN DOES NOT WORK / IT'S NOT CALIBRATED



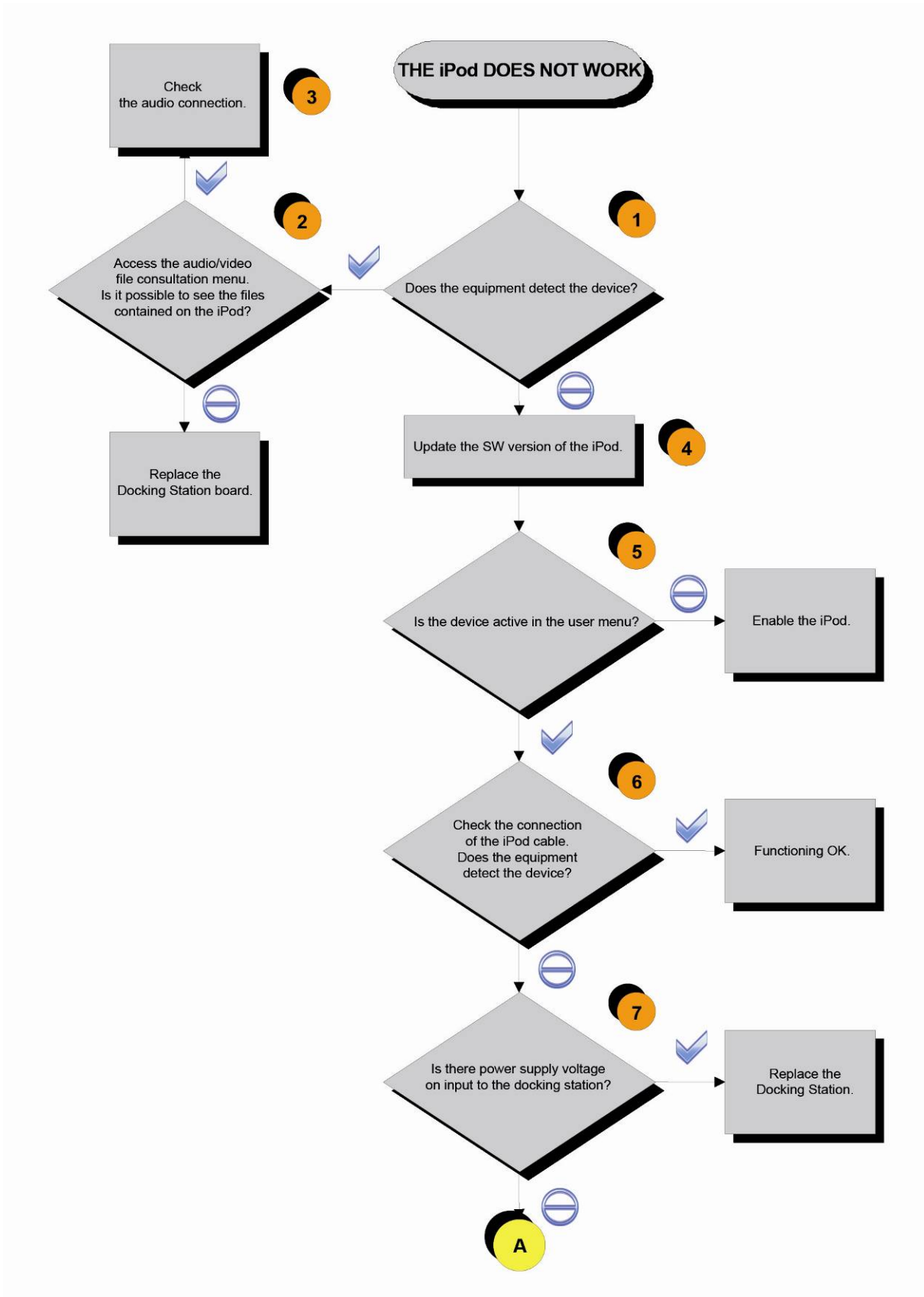
For the following menu, please refer to the relevant chapter in the VISIO manual.

6.6. THE RADIO DOES NOT PLAY

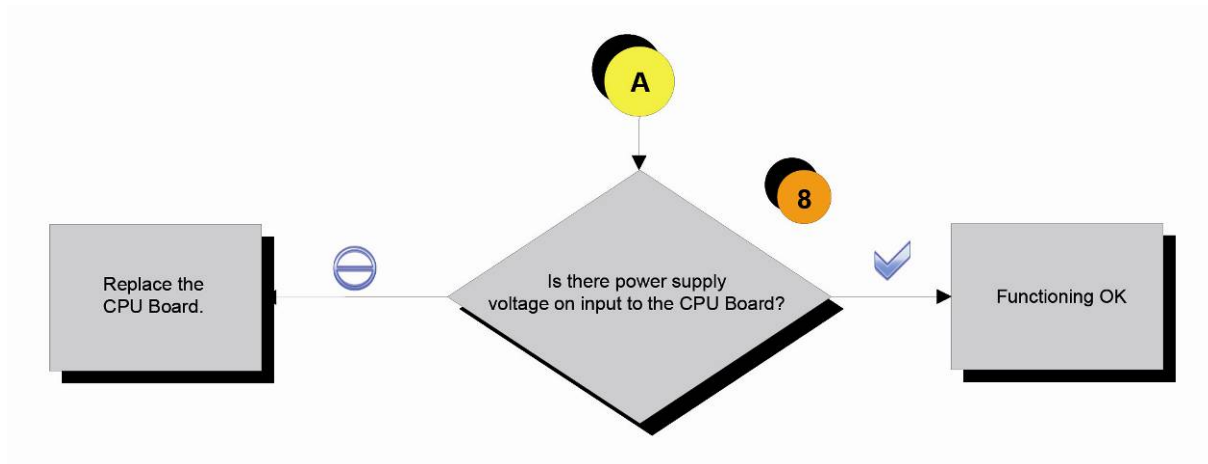


For the following menu, please refer to the relevant chapter in the VISIO manual.

6.7. THE IPOD DOES NOT WORK



Continued on following page...



Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Switch on the machine, connect the iPod on the docking station and check that the device is correctly detected by the machine.
- (2) Check that the audio/video files uploaded in the iPod are visible and selectable through the VISIO interface.
- (3) Carry out the troubleshooting procedure: **Errore. L'origine riferimento non è stata trovata. "Errore. L'origine riferimento non è stata trovata."**
- (4) To update the iPod SW you just need to connect to iTunes and it automatically upgrades to the last version.
- (5) Enable the iPod control as detailed at the relevant paragraph of the User menu.
- (6) The **CU167** cable has identical connectors on either end then it can sometimes be connected the wrong way round.
- (7) Place the tester probes across pins **8** and **9** of the connector on the docking station board where the **CU167** cable is connected. The measured value should be 5Vdc.
- (8) As for step (7) but across pins **6** and **7** of the connector on the Display Board where **CU167** is connected.



If you replace Display Board, check that its SW version is updated, otherwise install the last version.

6.8. “THE EQUIPMENT IS LOCKED (COM)” MESSAGE ON DISPLAY



The (COM) error indicates that there is no communication between the High Kit and the Low Kit. This may occur essentially in the following cases:

- Interruption in communication on the serial line between the Display Board (High Kit) and the Brake Board (Low Kit): communication cabling is defective. Replace cabling;
- The SW of the Brake Board Firmware (FW) and/or the Brake Table is incorrect/corrupt: example where the operator manually loads the FW and chooses the wrong one. The solution is to re-load the Firmware (FW) (an action which is always possible for any brake board);
- The SW of the Display Board is incorrect/corrupt: the High Kit SW has not been upgraded - proceed with upgrading.

The error is displayed with a message on the display and recorded in the “Errors Log” section.

In order to re-instate communication between the High Kit and the Brake Board, proceed as follows:

1. Check that the cables (CU618-CU619) which bring the Serial Communication signals are intact, by using the Test Box Excite and if necessary, replace it.
2. Upgrade the SW on the Brake Board by loading: the Firmware (FW) and the Brake Table and run the Standard Setting.
3. Upgrade the SW on the Display Board.
4. Try and replace the Brake Board and the Display Board one at a time and check whether the serial communication is re-enabled (you can use a standard network cable for the test).



If the Display Board is replaced, check that the upgraded SW version is installed or proceed with the upgrade.



If the Brake Board is replaced, check that the correct SW version is installed or proceed with the upgrading of the Firmware (FW), the Brake Table and the Standard Settings.

6.9. THE BRAKE BOARD HAS DETECTED AN ERROR

When the **Brake Board** detects an error, it blocks by interrupting the power supply and memorizes a numeric code in its memory which identifies the detected error. In addition it sends a signal regarding the status of the error to the DISPLAY Board, via the serial line. When the DISPLAY Board receives this signal, it interrupts the exercise and displays the following message on the screen "THE EQUIPMENT IS BLOCKED".

The errors memorized on the **Brake Board** can be displayed as illustrated in paragraph: Errore. L'origine riferimento non è stata trovata."Errore. L'origine riferimento non è stata trovata."

The following table provides information regarding error codes, meanings and possible solutions:

Error Code	Description	Meaning	Solution
0	<i>Not used.</i>	-	Upgrade the Firmware (FW) on the Brake Board. If the same errors occur after upgrading has been successfully completed, the problem is NOT the Brake Board.
1	<i>Electrical Overtemperature.</i>	Overtemperature error - internal NTC. This error occurs when the temperature measured by the internal NTC probe exceeds 90°C (OLD EFI board), 110°C (NEW EFI board) or 105°C (Laser board). In this case the board passes into fault status and the error is recorded in the error log.	Switch off the equipment and switch it back on again. If the error persists, replace the Brake Board.
2	<i>Trip overcurrent brake kit.</i>	Trip overcurrent error. Equipment that only provides for constant RPM training sessions (e.g. STEP/WAVE) does not perform this control. With equipment that provides various kinds of training, the control for this error is not performed if the selected training is of the constant speed type. The error occurs when the current on the brake suddenly rises. The <i>trip overcurrent</i> condition happens if the level of braking current corresponds to 150% of the maximum value taken from the braking table, for 5 consecutive iterations of the brake control algorithm. In this case the error must be recorded in EEPROM and the equipment must be placed in fault.	Switch off the equipment and switch it back on again. If the error persists, replace the Brake Board.

Continues on the next page...

Error Code	Description	Meaning	Solution
4	<i>Not used.</i>	-	Upgrade the Firmware (FW) on the Brake Board. If the same errors occur after upgrading has been successfully completed, the problem is NOT the Brake Board.
8	<i>Overvoltage</i>	Overvoltage error. The <i>overvoltage</i> error only occurs for powered equipment when the Vout voltage exceeds 14.0V and is memorized in the error log.	The error relates to the Powered EFI board (therefore it is not codified for the Self-Powered EFI board or the Powered Laser board).
16	<i>Opening of Klixon coil.</i>	Error in opening of Klixon coil (or brake circuit in general). This error must be checked with all kinds of brake. If the Klixon is integrated in line on the brake, it means that its opening has taken place. If the brake does not include a Klixon (e.g. a 2 A brake), this means in general that a hardware error has occurred that does not allow the brake to be controlled. After verifying that the braking current is zero against a braking current control other than zero, the control unit goes into fault and saves the event in the error log. The control is performed for any kind of training and only for control duty cycle of the brake above 20%: the error condition is verified if the control provides a positive result for 5 consecutive iterations.	Check that the cabling on the electromagnet is correct.
32	<i>CRC fault on the braking table.</i>	CRC fault error on the braking table. This occurs when the installed braking table has an erroneous CRC. It is saved in the error log. This control is not performed for equipment which only provides for constant RPM training sessions (e.g. STEP/WAVE).	Re-load the braking table.

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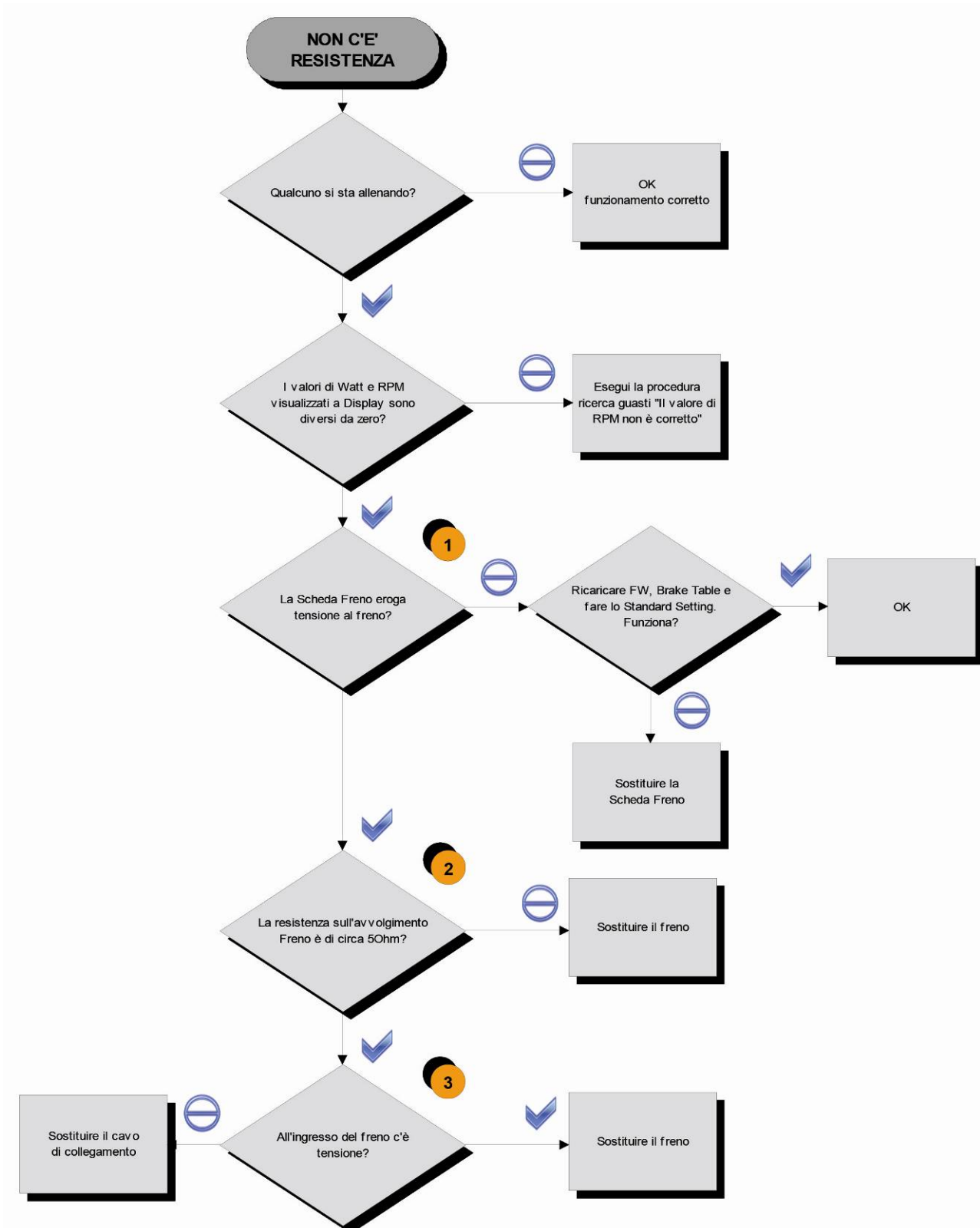
<i>Error Code</i>	<i>Description</i>	<i>Meaning</i>	<i>Solution</i>
64	<i>EEPROM Fault.</i>	Corrupt EEPROM. This happens when the flag relating to the CURRENT zone and the flag relating to the MIRROR zone (in EEPROM) indicate results that are not consistent.	Re-load the braking table.
128	<i>Not used.</i>	-	Upgrade the Firmware (FW) on the Brake Board. If the same errors occur after upgrading has been successfully completed, the problem is NOT the Brake Board.

6.10. THERE IS NO RESISTANCE

The equipment does not produce resistance if:

1. the **Brake Board** does not receive a speed signal: if the equipment is stationary, then this behaviour is correct. If, on the other hand, the equipment is in movement, then there might be a problem with the reading of the RPM by the speed sensor, if it is mains-powered equipment.
2. the **Brake Board** does not generate any current: if the equipment is stationary, then this behaviour is correct. If, on the other hand, the equipment is in movement, then there might be a problem with the reading of the RPM by the speed sensor, if it is mains-powered equipment.
3. the **Brake Board** was not programmed correctly with the sequence of Firmware (FW), Brake Table and Standard Settings;
4. the **Electromagnetic Brake** is faulty;
5. the **Speed Sensor** does not read the RPM correctly: it is faulty or incorrectly assembled (this is only valid for mains-powered boards);

Continues on the next page...



Follow the chart step by step in order to make a correct diagnosis. In particular, pay attention to the checks highlighted in the numbered boxes and listed here below:

- (1) Measure the voltage leaving the Brake Board on pins **1** and **2** of the **CN2** connector by maintaining a constant 60Rpm and increasing the level of difficulty: the Vdc measurement must increase.
- (2) Measure the resistance on the two fastons on input to the Brake, with the equipment stationary.
- (3) Same as point (1) but reconnecting what was disconnected and on the winding of the Electromagnetic Brake.

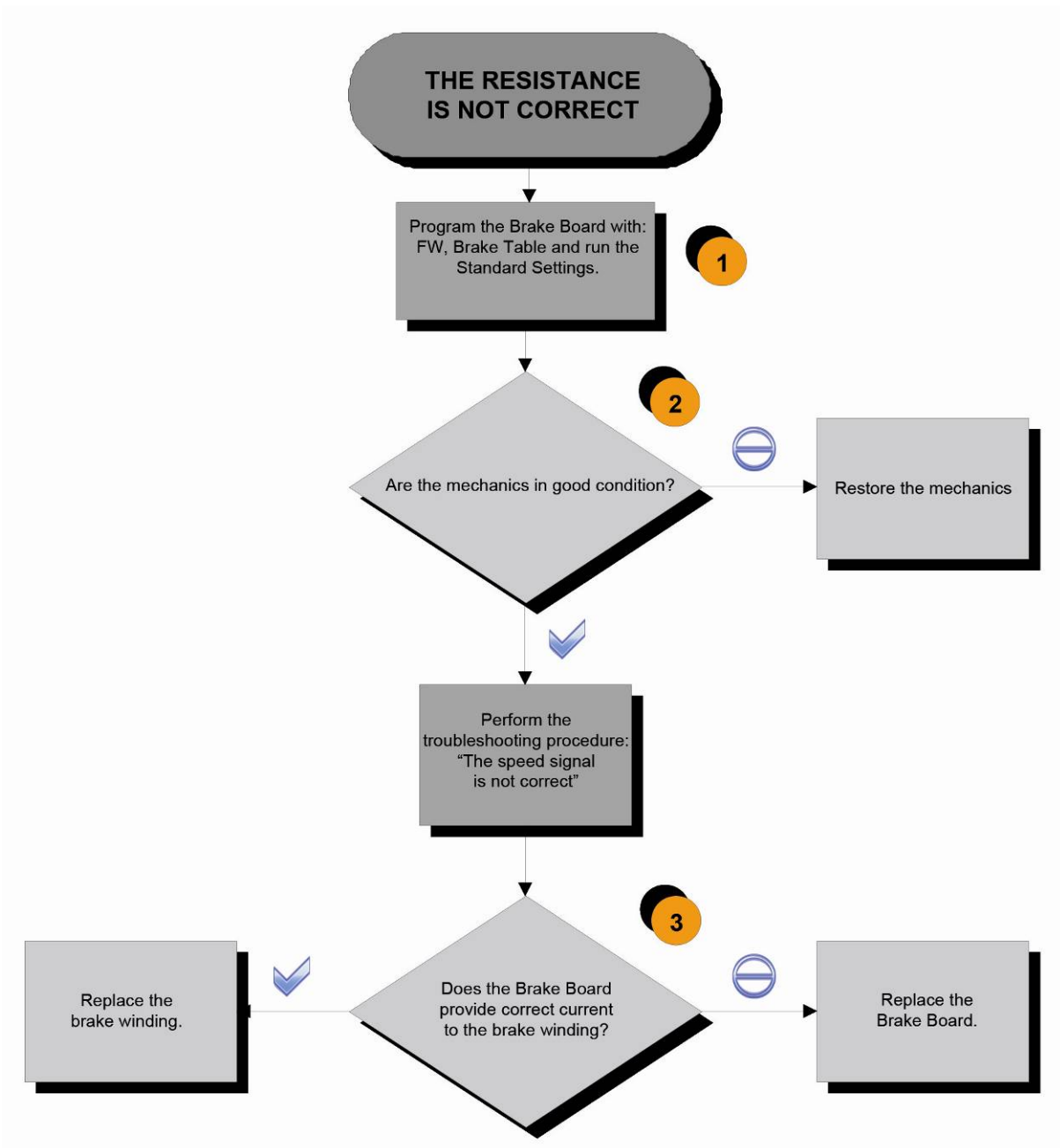


If the Brake Board is replaced, check that the correct SW version is installed or proceed with the upgrading of the Firmware (FW), the Brake Table and the Standard Settings.

6.11. THE RESISTANCE IS NOT CORRECT

The equipment produces an incorrect resistance if:

1. *the **mechanics** are not perfect;*
2. *the **speed** as measured is not correct;*
3. *the **Brake Board** is faulty;*
4. *the **Brake Board** was not programmed correctly with the sequence of:*
 - a. Firmware (FW).
 - b. Brake Table;
 - c. Standard Settings.
5. *the **Electromagnetic Brake** is faulty.*



Follow the chart step by step in order to make a correct diagnosis. In particular, pay attention to the checks highlighted in the numbered boxes and listed here below:

- (1) Carry out the *Standard Settings*, as described in the relevant paragraph of the Service menu.
- (2) Check that the mechanical system consisting of pedals, belt and Brake is fluid and does not provide resistance and friction above the norm.
- (3) Measure the voltage that the Brake Board provides at the winding. In the Rapid Start-up mode, set the level of difficulty and check that the value is different from 0.

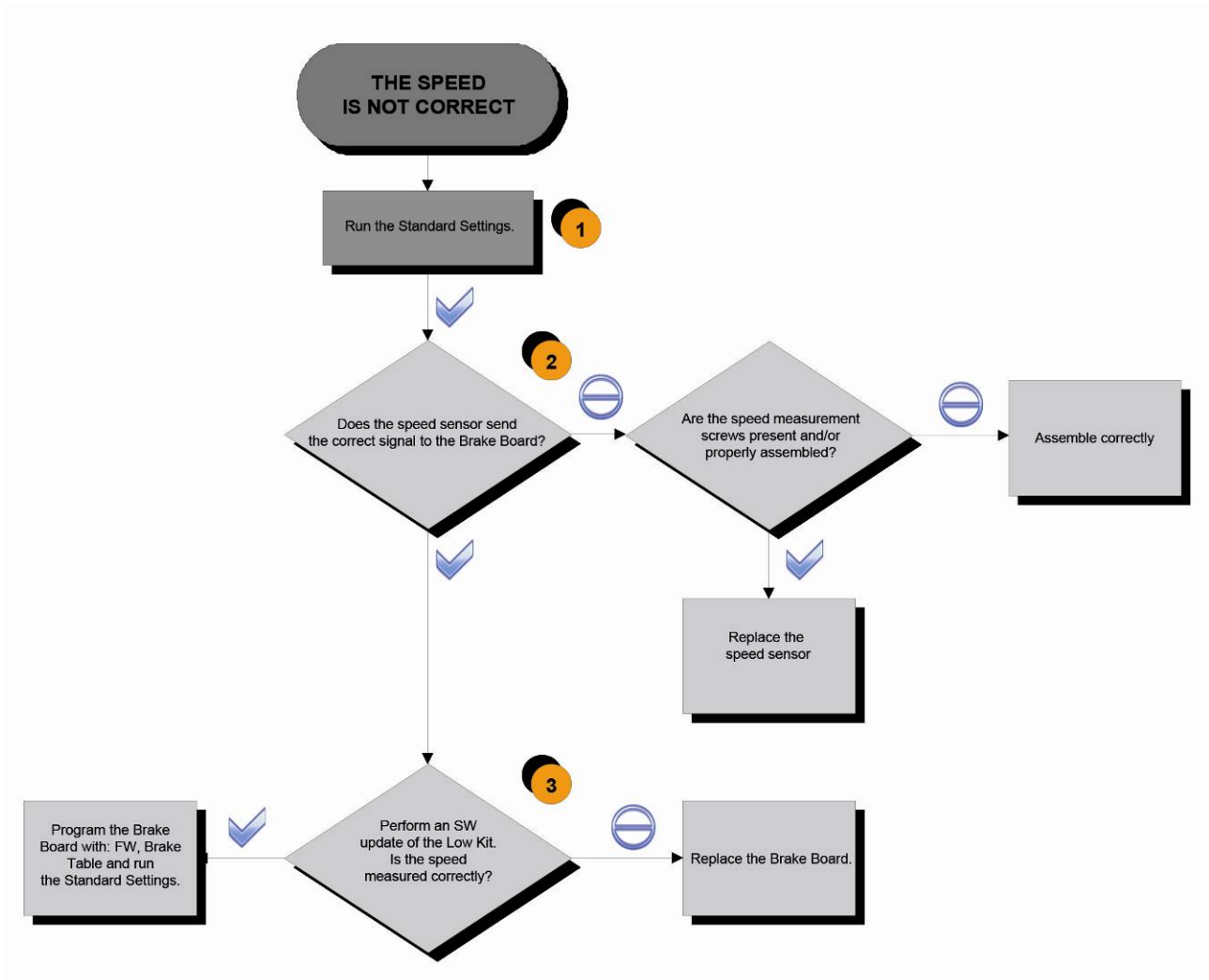


If the Brake Board is replaced, check that the correct SW version is installed or proceed with the upgrading of the Firmware (FW), the Brake Table and the Standard Settings.

6.12. THE SPEED SIGNAL IS NOT CORRECT

The speed signal is not correct if:

1. The disk of the **Electromagnetic Brake** is incorrectly mounted on the flywheel;
2. The special speed **measurement screws** are missing or badly assembled (only for Crossover)
3. The **Speed Sensor** is defective or badly assembled;
4. The **Brake Board** was not programmed correctly with the sequence of:
 - a. Firmware (FW),
 - b. Brake Table;
 - c. Standard Settings.
5. The **Brake Board** is faulty.



Follow the chart step by step in order to make a correct diagnosis. In particular, pay attention to the checks highlighted in the numbered boxes and listed here below:

- (1) Carry out the Standard Settings, as described in the relevant paragraph of the Service menu.
- (2) **Mains-powered equipment:** Insert the tips of the tester on the ends of the speed sensor. If you have an oscilloscope, the signal that should be measured is like the one indicated in *Errore. L'origine riferimento non è stata trovata.*, at about 80rpm user.

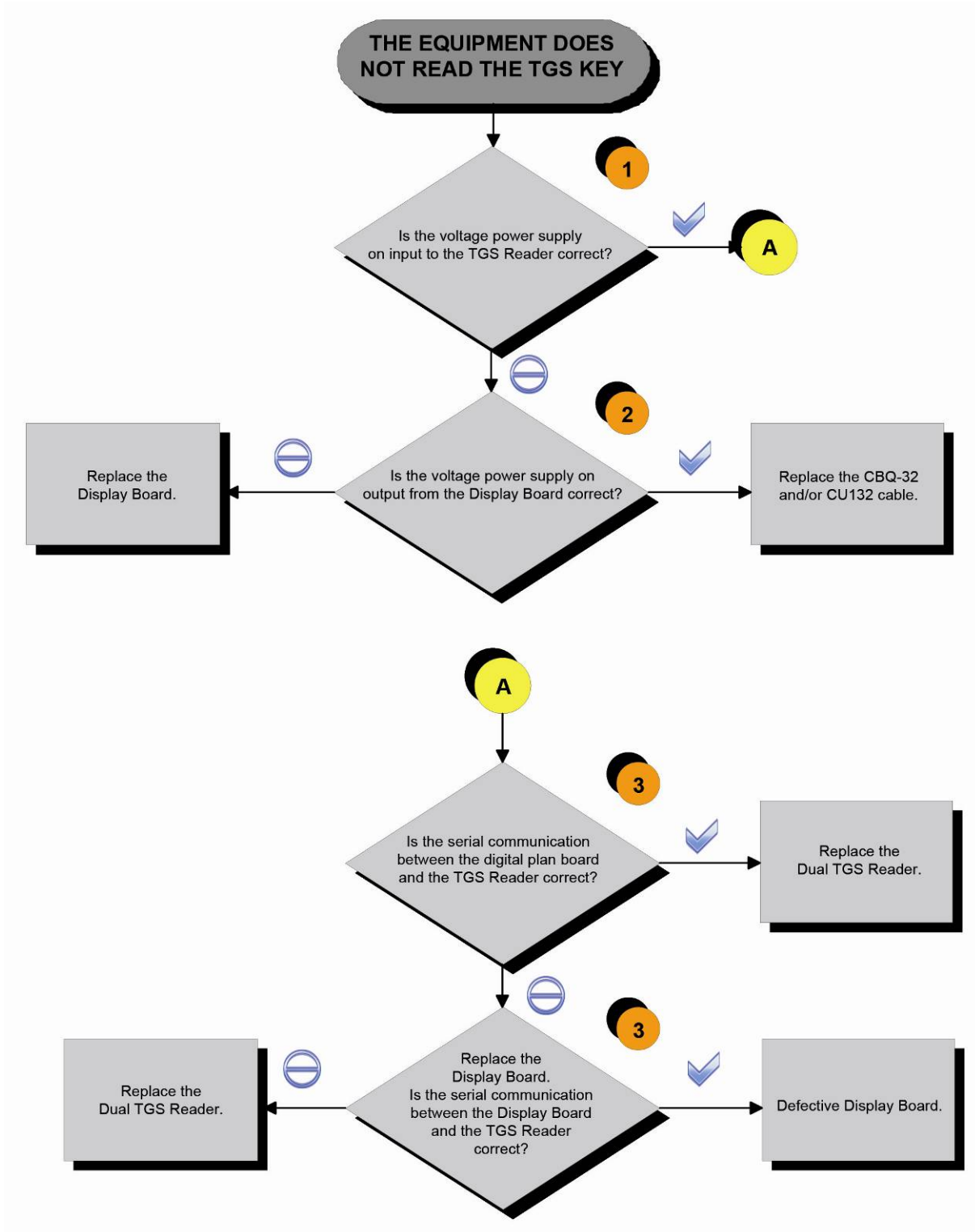


The speed signal can also be measured in a qualitative manner using a multimeter. When the equipment is stationary, you should register a value of 0Vdc, which will tend to grow as the speed increases.

- (3) Perform a Low Kit SW Update, by first loading the **Firmware (FW)** and then the **Brake Table**. At the end of the operation, launch the **Standard Settings**, to update the Low Kit parameters.

6.13. THE MACHINE DOES NOT READ THE TGS KEY

The error is due to the fact the TGS reader is not working properly, or if it is not supplied by the Display Board.



Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Place the tester probes across pins **1** and **3** of connector **CN1** of the TGS reader. The measured value should be +12Vdc.
- (2) As for step (1) but across pins **1** and **9** of connector **CN19** of the Display Board.
- (3) Use the serial communications test described at the relevant paragraph of the troubleshooting menu.



If you replace Display Board, check that its SW version is updated, otherwise install the last version.

6.14. THERE IS NO HEART RATE SIGNAL

6.14.1. HAND SENSOR



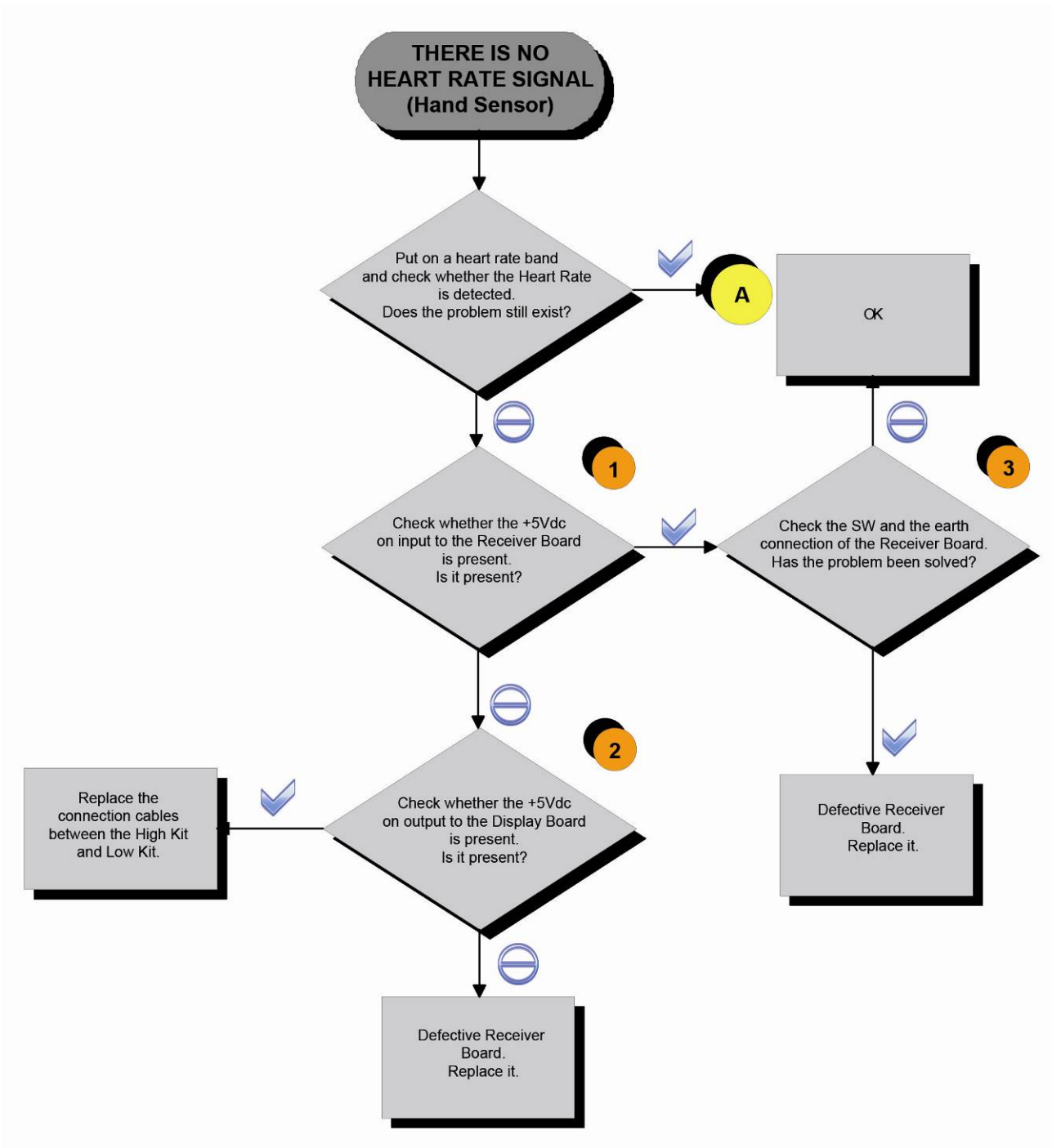
HUMAN BODY “CONTINUITY”: it’s well known that for somebody it’s very difficult, nearly impossible, to measure their HR using the hand sensors. This due to a lot of possible causes which could fake the “quality” of the contact between the human skin and the HS plates, as: hands only just washed or particularly dry, acidity of the skin and/or a particular body fat mass index. For these people it’s suggested to wear the chest belt transmitter.



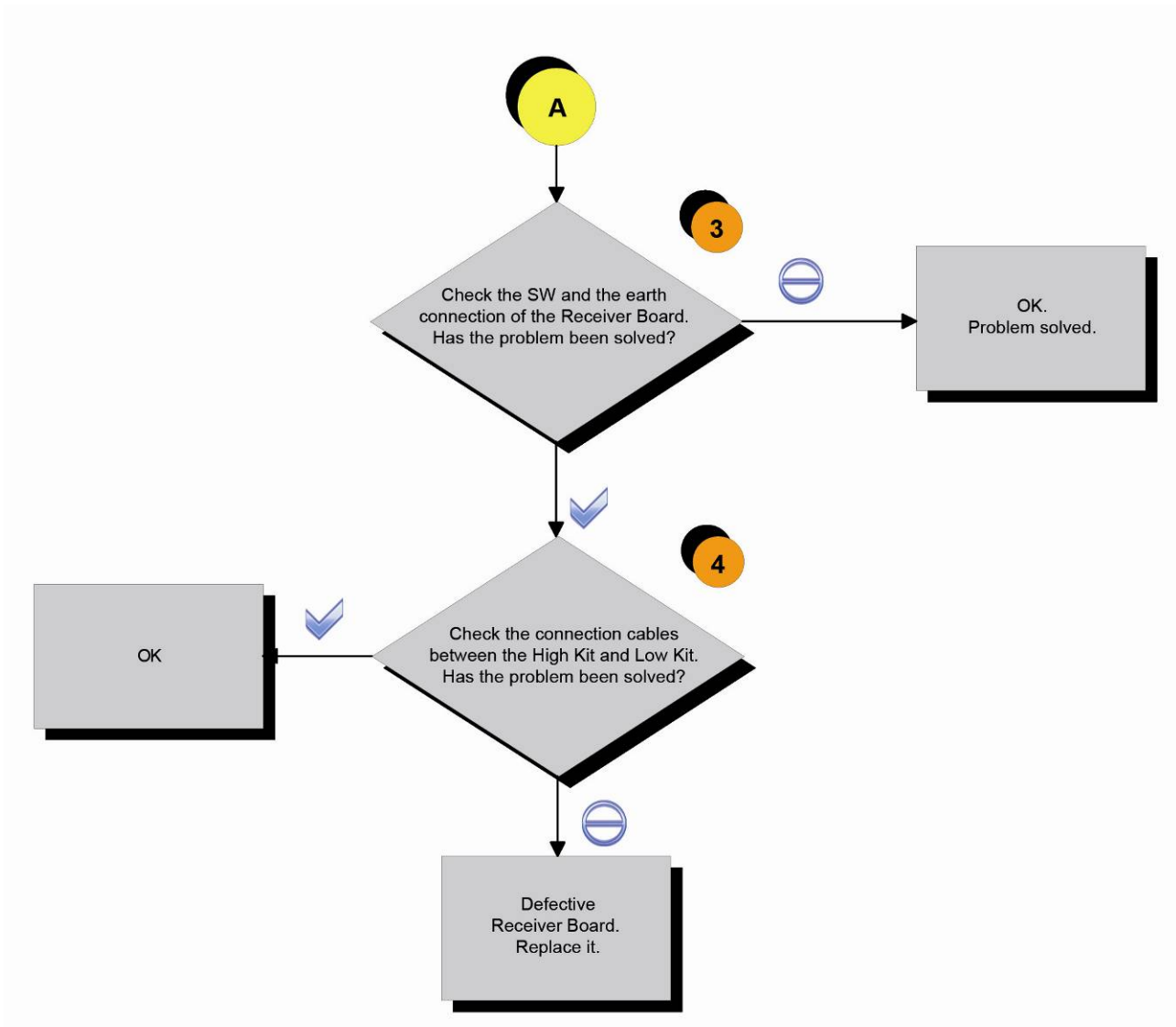
HS CORRECT USE: Grasp both the upper and lower plate avoiding to clench them too hardly. Avoid to wash the hands using soaps that can dry the skin too much.

The machine displays this error if the **HS Receiver** does not work or is not powered by the CPU board:

Continued on following page...



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Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Place the tester probes across pins **1** and **2** of the **HD4** connector of the receiver on **CU611** cable. The measured value should be +5Vdc.
- (2) As at step (1) but on pin **1** and **5** on **CN24** connector of the Display Board.
- (3) Check the correct display SW version, according to the “EXCITE SW SMART TABLE” you can find in **TG Direct** ,“NEWS” section.
Check the grounding of the **Receiver Board**, measuring the resistance value between:
 - a. The ground faston of receiver board and the ground node on the Power supply box of the machine;
 - b. The ground node on the Power supply box of the machine and the main wall socket.

The measured value should be approximately lower than 1Ω (Ohm).

Check finally the grounding of the main wall socket, measuring that the following voltages are present:

P – N (phase – neutral) = 220Vac / 110 Vac
P – G (phase – ground) = 220Vac / 110 Vac
N – G (neutral – ground) = 0 Vac

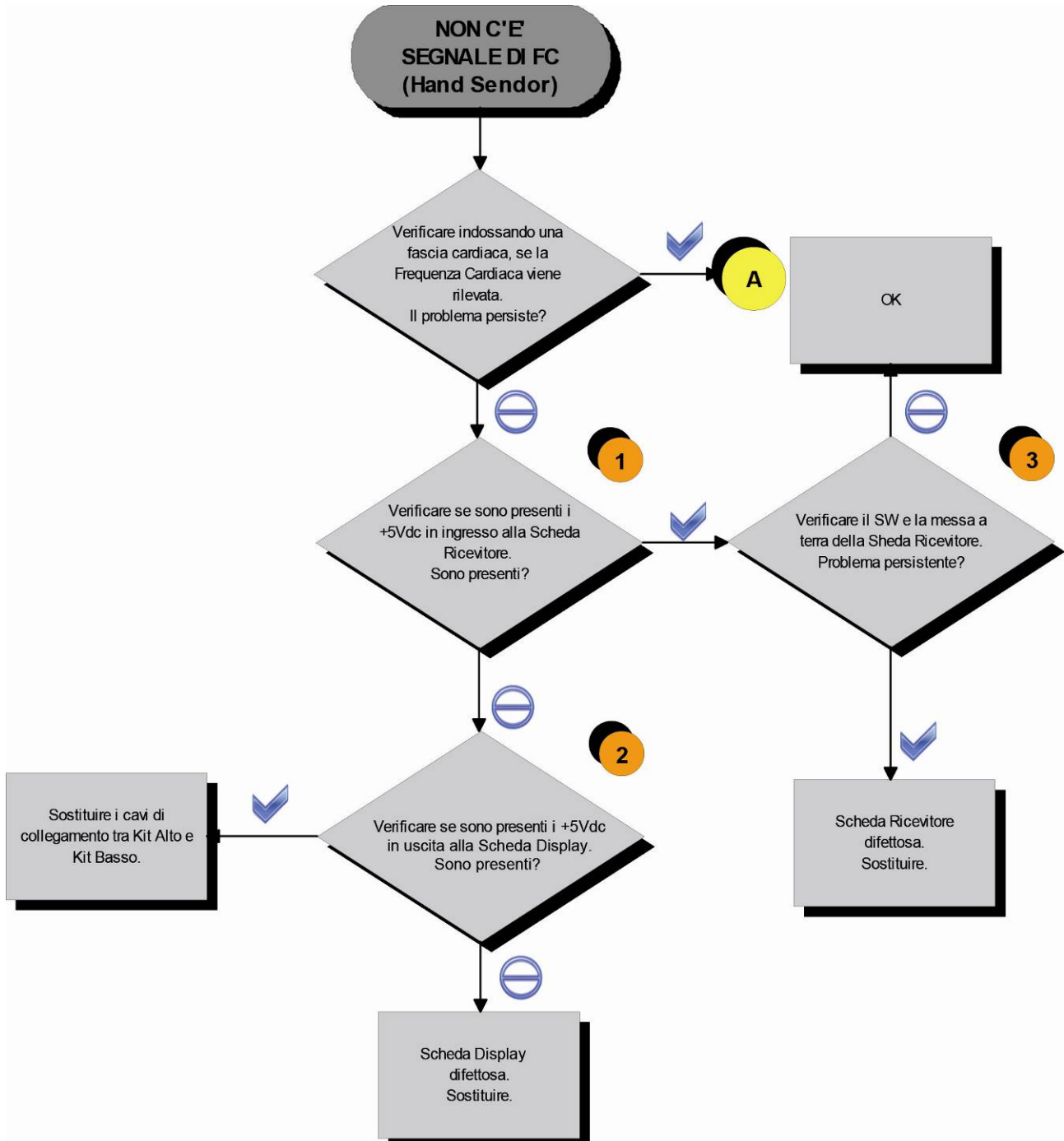
(4) Check that:

- a. *The faston of the cable are well connected to the Hand Sensor plates;*
- b. *The signal continuity of the CU616 cable, which connect the HS plates to the HD3&2 connectors on the receiver, using a tester and referring to the paragraph: 2.10. “Cables”;*
- c. *There is NO continuity between the Hand Sensor plates and the ground faston on the receiver (otherwise the signal are grounded).*

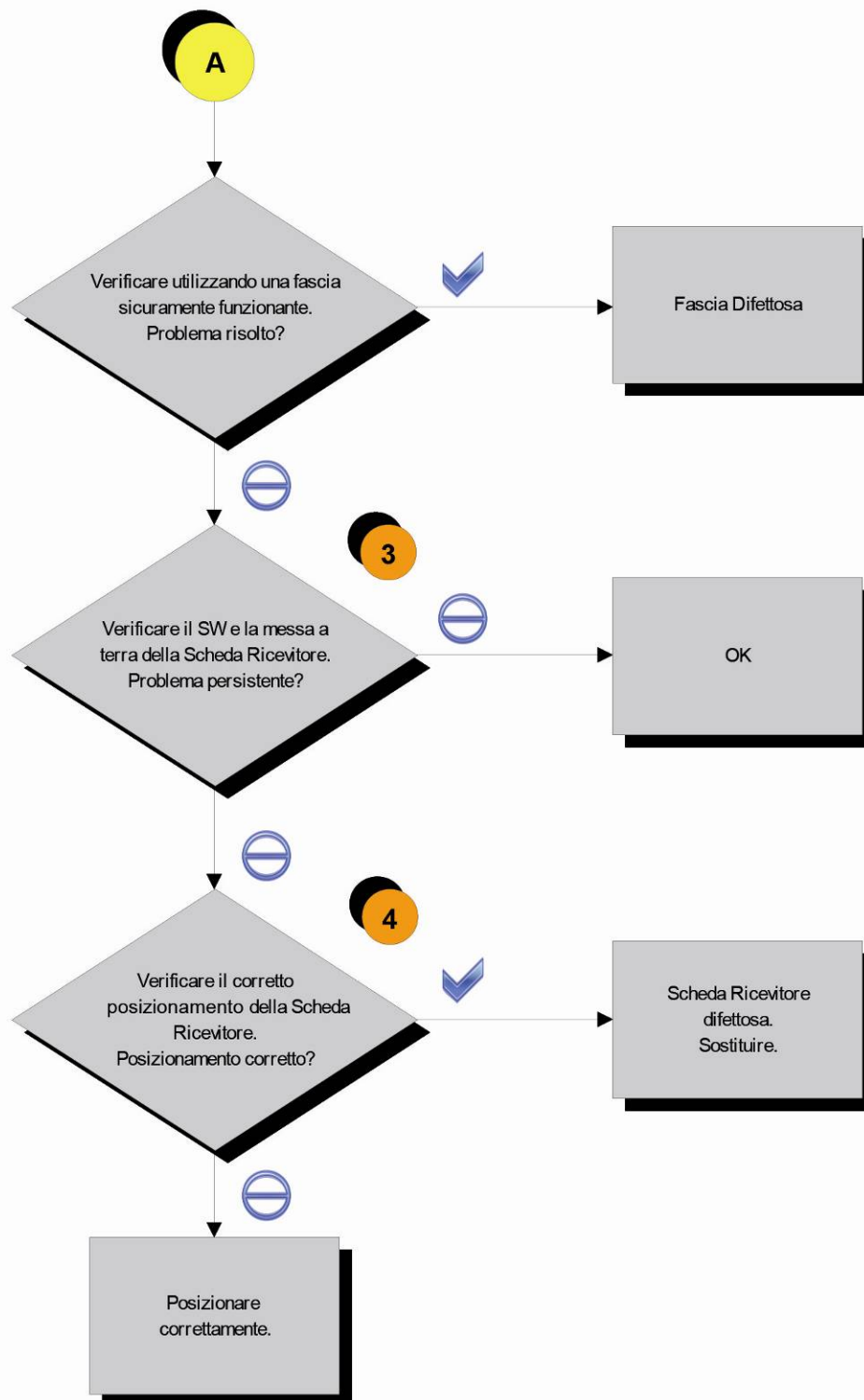
6.14.2. CHEST BELT



CORRECT USE OF THE CHEST BELT: Wear the chest belt taking care the area of contact with the body is humid in order to guarantee it proper works.



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Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Place the tester probes across pins **1** and **2** of **CN1** connector of receiver. The measured value should be +5Vdc.
- (2) As at step (1) but on pin **1** and **8** on **CN23** connector *CPU Board*.
- (3) Check the correct display SW version, according to the “EXCITE SW SMART TABLE” you can find in **TG Direct** section.
Check the grounding of the **HR Receiver Board**, measuring the resistance value between:
 - a. *The Faston on Receiver Board and the ground node on the equipment;*
 - b. *The ground node on the equipment and the main wall socket t.*

The measured value should be approximately lower than 1Ω (Ohm).

Check finally the grounding of the main wall socket, measuring that the following voltages are present:

P – N (phase – neutral) = 220Vac / 110 Vac
P – G (phase – ground) = 220Vac / 110 Vac
N – G (neutral – ground) = 0 Vac

- (4) Check if the receiver has been correctly mounted on the machine.



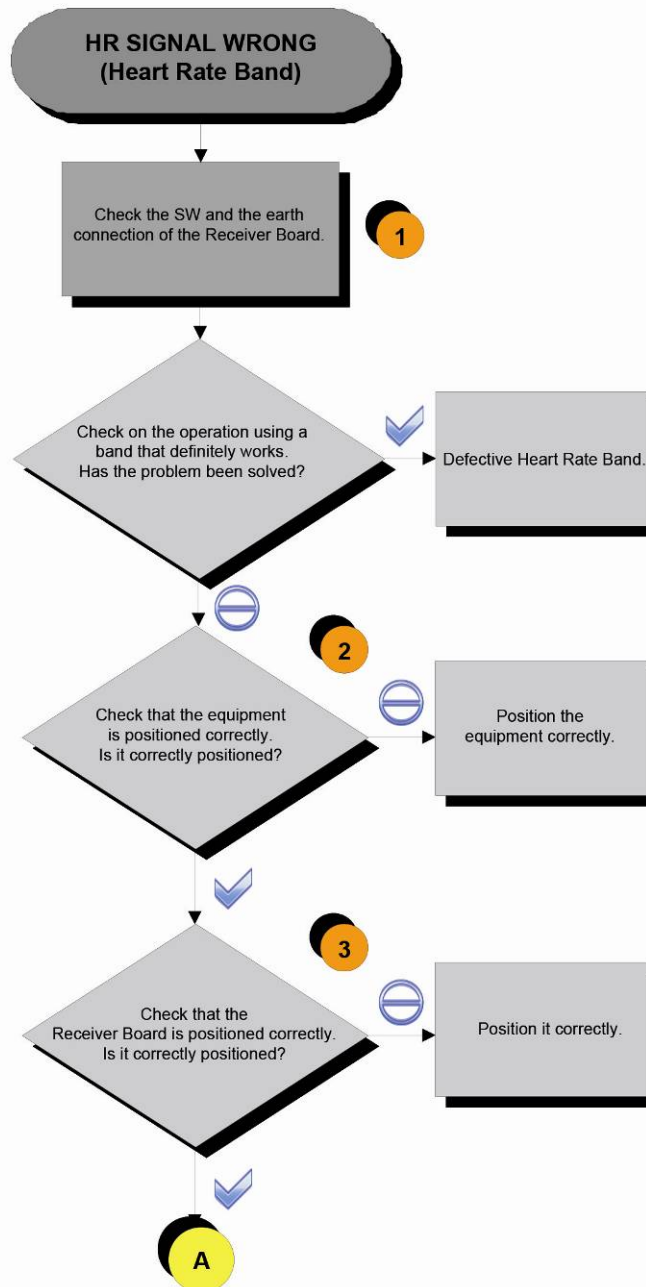
If you replace CPU Board, check that its SW version is updated, otherwise install the last version.

6.15. THE TELEMETRIC HEART RATE SIGNAL IS INCORRECT

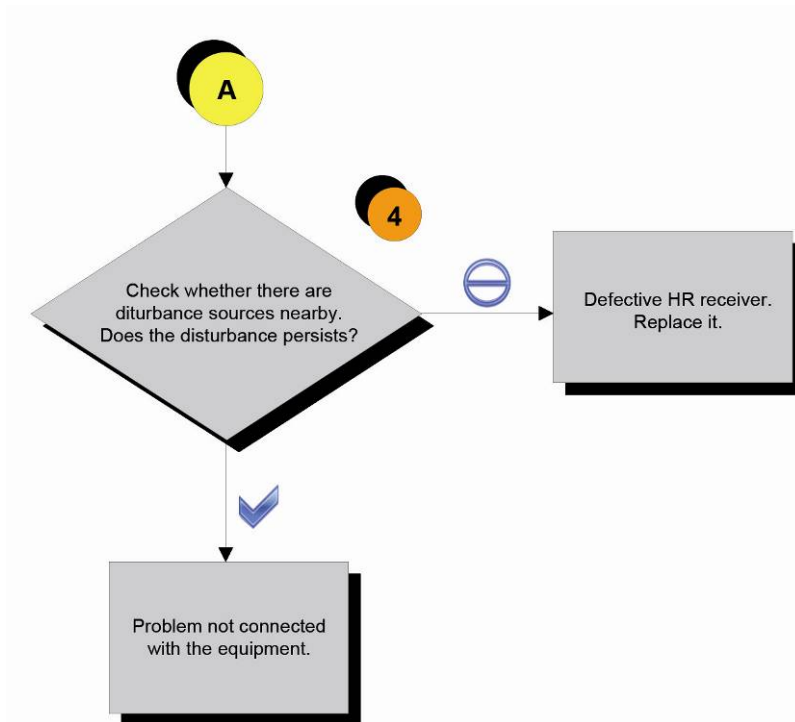
6.15.1. CHEST BELT



CORRECT USE OF THE CHEST BELT: Wear the chest belt taking care the area of contact with the body is humid in order to guarantee it proper works.



Continued on following page...



Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Check the correct display SW version, according to the “EXCITE SW SMART TABLE” you can find in **TG Direct** ,“NEWS” section.
Check the grounding of the **Receiver Board**, measuring the resistance value between:
 - a. The ground faston of receiver board and the ground node on the Power supply box of the machine;
 - b. The ground node on the Power supply box of the machine and the main wall socket.

The measured value should be approximately lower than 1Ω (Ohm).
Check finally the grounding of the main wall socket, measuring that the following voltages are present:

P – N (phase – neutral) = 220Vac / 110 Vac
P – G (phase – ground) = 220Vac / 110 Vac
N – G (neutral – ground) = 0 Vac

- (2) Take care of the following diagram to correctly position the machines:

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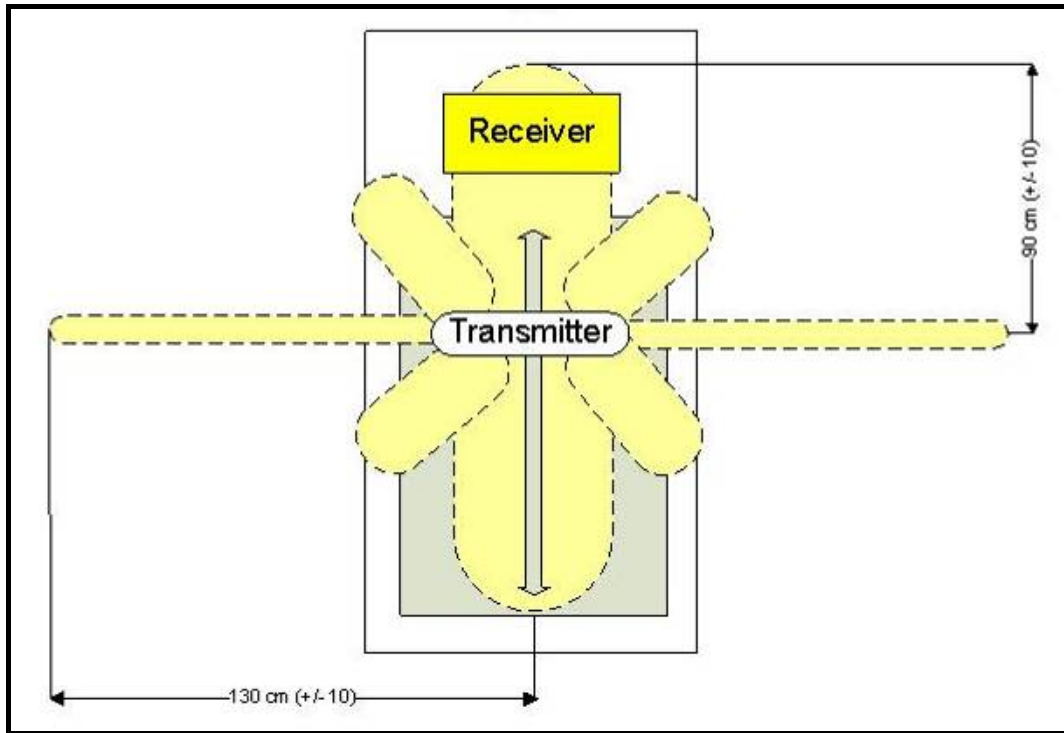


Figure 6-1



The active area of the transmitter is wider on the lateral side (130 cm) instead of the front or the back side (90cm). Take care of the following diagram:

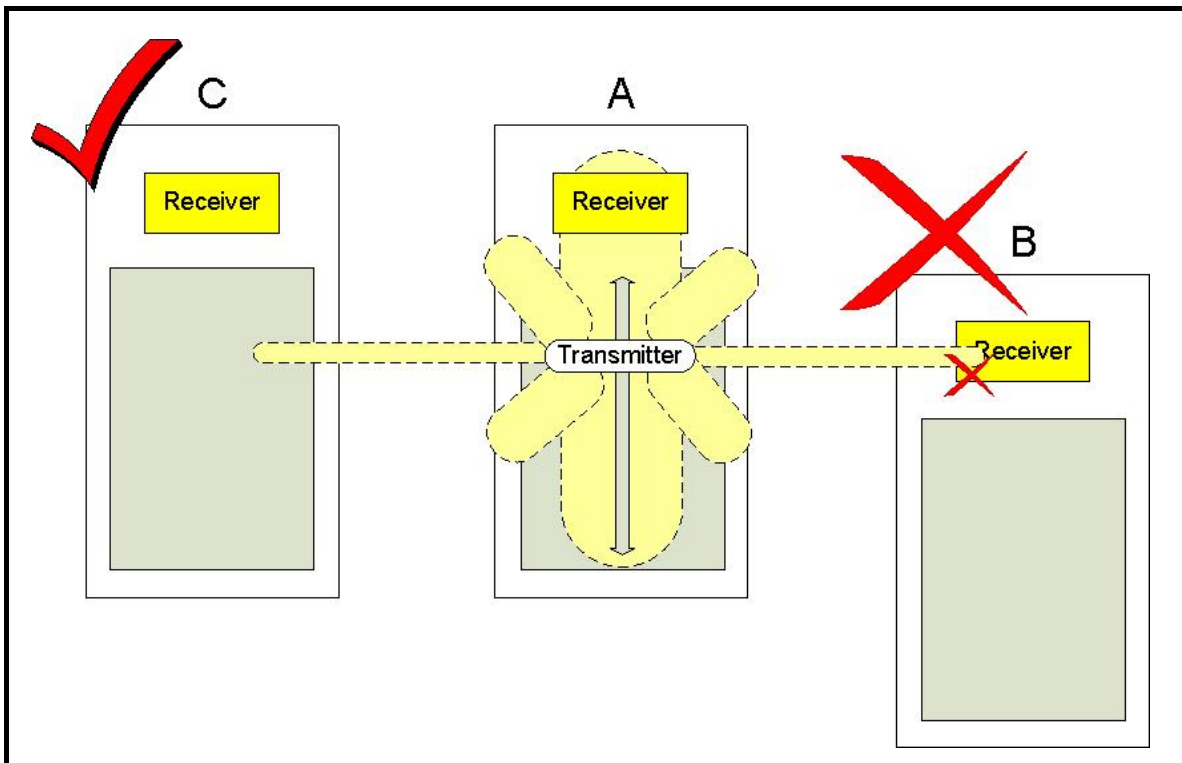
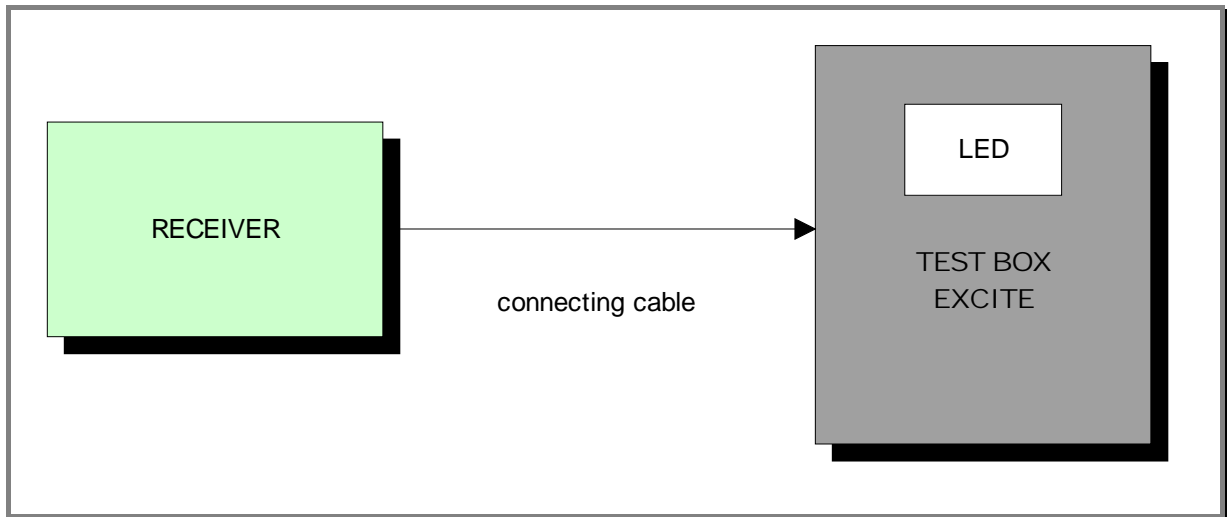


Figure 6-2

- (3) Check if the receiver has been correctly mounted on the machine.
- (4) To check for electromagnetic noise near the machine, use Test Box Excite as detailed here below. You can use one of the following cables **ELT-16** (0WC00518AB), **CBQ-28** (0WC00390AC) or **TRM-28** (0WC00336AC) as connection cable.



The circuit lights the LED for each heart beat and/or disturbance received: in this way it is possible to determine whether there is any interference, and identify its sources.

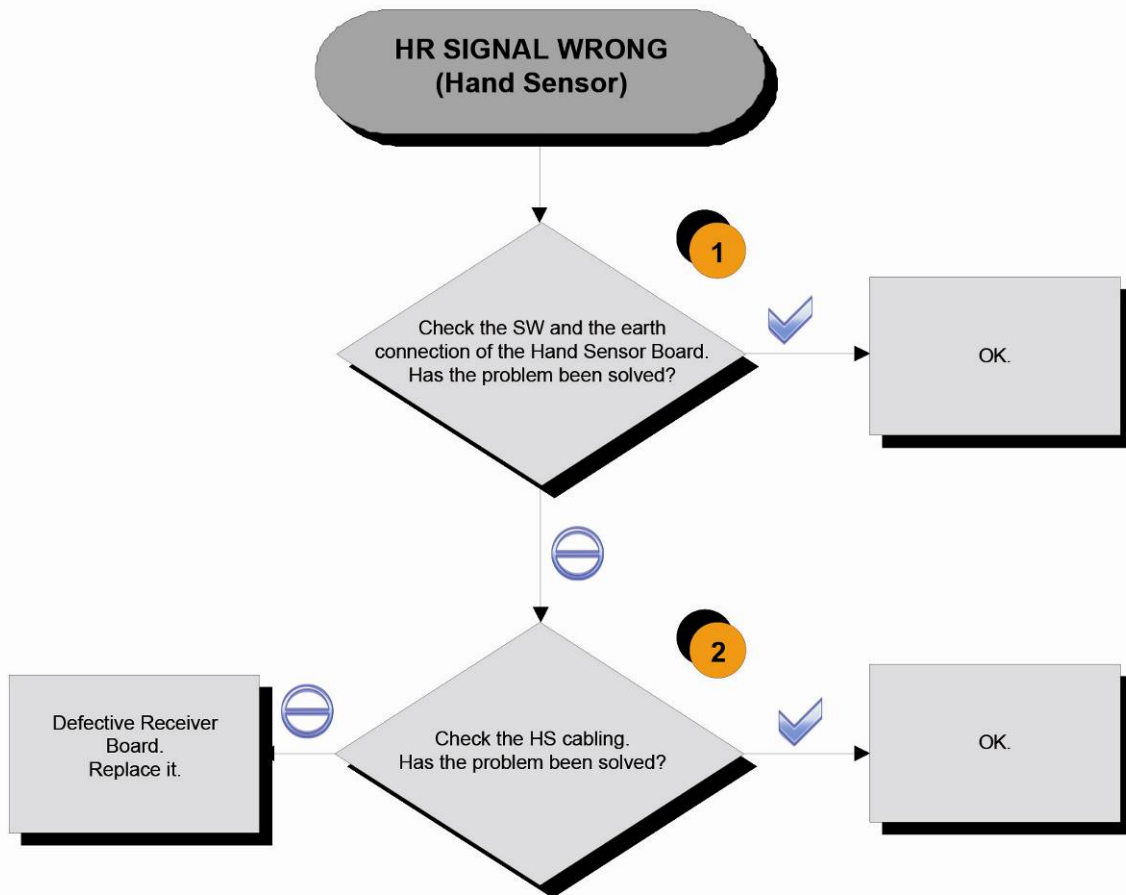
6.15.2. HAND SENSOR



HUMAN BODY “CONTINUITY”: it’s well known that for somebody it’s very difficult, nearly impossible, to measure their HR using the hand sensors. This due to a lot of possible causes which could fake the “quality” of the contact between the human skin and the HS plates, as: hands only just washed or particularly dry, acidity of the skin and/or a particular body fat mass index. For these people it’s suggested to wear the chest belt transmitter.



HS CORRECT USE: Grasp both the upper and lower plate avoiding to clench them too hardly. Avoid to wash the hands using soaps that can dry the skin too much.



Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

- (1) Check the correct display SW version, according to the “EXCITE SW SMART TABLE” you can find in **TG Direct** ,“NEWS” section.
Check the grounding of the **Receiver Board**, measuring the resistance value between:

- a. *The ground faston of receiver board and the ground node on the Power supply box of the machine;*
- b. *The ground node on the Power supply box of the machine and the main wall socket.*

The measured value should be approximately lower than 1Ω (Ohm).

Check finally the grounding of the main wall socket, measuring that the following voltages are present:

P – N (phase – neutral) = 220Vac / 110 Vac
P – G (phase – ground) = 220Vac / 110 Vac
N – G (neutral – ground) = 0 Vac

(2) Check that:

- a. *The faston of the cable are well connected to the Hand Sensor plates;*
- b. *The signal continuity of the CU616 cable which connect the Hand Sensor plates to the HD3&2 connectors on the receiver, referring to the paragraph: 2.10. “Cables”;*
- c. *There is NO continuity between the HS plates and the ground faston on the receiver (otherwise the signal are grounded).*

7. PART DISASSEMBLY

7.1. DISASSEMBLY OF THE REAR DISPLAY COVER

OPERATION	DESCRIPTION
Disassembly of the rear display cover	<ol style="list-style-type: none">1. Switch off the equipment and disconnect the power supply plug from the wall socket.2. Remove the CSafe and USB connectors from the rear of the display.3. Remove the screw under the cover that you have removed, using a Phillips screwdriver.4. Remove the rear display cover (assembly with Fast Milano fastener).

7.2. DISMANTLING THE WHOLE DISPLAY

OPERATION	DESCRIPTION
<p>Dismantling the whole Display</p>	<ol style="list-style-type: none"> 1. Switch off the equipment and disconnect the power supply plug from the wall socket. 2. Remove the “Rear display cover”. 3. Disconnect the following cables from the CPU: mains power and related earth, aerial, AUX, HS, Fast Track, HR, audio OUT, amplifier power, LAN inputs. 4. Loosen the 3 screws on the lower cover “forks”, onto which the HR receiver and the HS card are slotted, using a 4 mm hex key (the central 3 of the 5 present). <p>NOTE: during reassembly, reposition the HR receiver and the HS card exactly as they were before.</p> <ol style="list-style-type: none"> 5. Loosen the 3 screws anchoring the client TGS/USB support plate, using a Phillips screwdriver. 6. Remove the iPod docking station panel. 7. Unscrew the 4 screws anchoring the display board support plate (2 on the right side and 2 on the left side), using a 5 mm hex key. Remove the display unit. <p>NOTE: during reassembly, push the display unit upwards before tightening the 4 screws.</p>
<p>Dismantling the Cardio Receiver</p>	<ol style="list-style-type: none"> 1. Switch off the equipment and disconnect the power supply plug from the wall socket. 2. Remove the “Rear display cover”. 3. Loosen the 3 screws on the lower cover “forks”, onto which the HR receiver and the HS card are slotted, using a 4 mm hex key (the central 3 of the 5 present). 4. Remove the HR receiver and the HS card from the lower cover. <p>NOTE: during reassembly, reposition the HR receiver and the HS card exactly as they were before.</p>

7.3. DISMANTLING THE TOUCH SCREEN

OPERATION	DESCRIPTION
<p>Dismantling the Touch Screen</p>	<ol style="list-style-type: none"> 1. Switch off the equipment and disconnect the power supply plug from the wall socket. 2. Remove the “<i>Rear display cover</i>”. 3. Disconnect and remove the Touch Screen interface card. (flat cable + USB cable + 2 screws, using a Phillips screwdriver). 4. Unscrew the 4 screws anchoring the screen+TS assembly to the display plate, using a 4 mm hex key (like the one under the TS interface card). 5. Remove the front screen+TS assembly, from the front.

7.4. DISMANTLING THE DISPLAY BOARDS

OPERATION	DESCRIPTION
<p>Dismantling the Display Boards</p>	<ol style="list-style-type: none"> 1. Switch off the equipment and disconnect the power supply plug from the wall socket. 2. Remove the “<i>Rear display cover</i>”. 3. Disconnect the following cables from the CPU: iPod docking station and AUX inputs. 4. Remove the plastic grille protecting the display boards. 8 screws, using a Phillips screwdriver. <p>NOTE: Be careful with the WiFi card aerial cables attached to the plastic grille, disconnect them from the WiFi card.</p> <ol style="list-style-type: none"> 5. You can now remove: <ul style="list-style-type: none"> • LCD Inverter; • WiFi card; • Tuner card.

7.5. DISMANTLING THE SECONDARY ON SWITCH CARD

OPERATION	DESCRIPTION
<p>Dismantling the secondary ON switch card</p>	<ol style="list-style-type: none"> 1. Switch off the equipment and disconnect the power supply plug from the wall socket. 2. Remove the “Rear display cover”. 3. Remove the HR/HS receivers support cover 4. Remove the front plastic angle pieces, under the polished aluminium display frame. 5. Remove the rear plastic angle pieces, under the polished aluminium display frame. 2 screws, using a Phillips screwdriver. 6. Remove the plastic “V” guard under the display. 7. Remove the polished aluminium “V” guard. 3 screws, using a 4 mm hex key. 8. Remove the aluminium water bottle holder. 6 screws, using a 4 mm hex key. 9. It is now possible to remove the secondary ON button card. 4 screws, using a Phillips screwdriver.

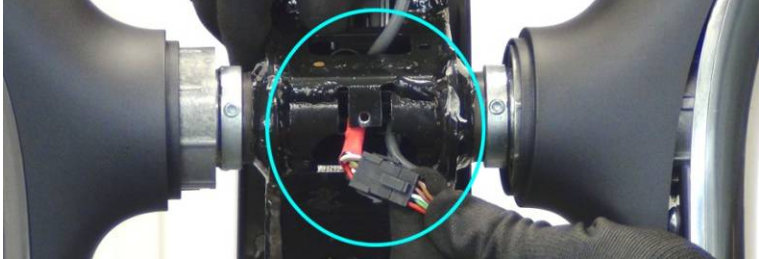
7.6. DISMANTLING THE FRONT GUARDS

OPERATION	DESCRIPTION
<p>Dismantling the front guards</p>	<ol style="list-style-type: none"> 1. Switch off the equipment and disconnect the power supply plug from the wall socket. 2. Remove the front column guard (assembly with Fast Milano fastener). 3. Remove the headphone connector support on the central frame, using a 2.5 mm hex key. 4. Remove the upper central guard, on the lever connection shaft. 5. Remove the side column guard (assembly with Fast Milano fastener).

7.7. DISMANTLING THE AMPLIFIER/SPEAKERS

OPERATION	DESCRIPTION
<p>Dismantling the Amplifier/speakers</p>	<ol style="list-style-type: none"> 1. Remove the “<i>Front guards</i>”. 2. Remove the guards covering the speakers on the column. 2 screws, using a 3 mm hex key. 3. Remove the speakers. 2 screws each, using a 3 mm hex key. 4. Remove the amplifier. 2 screws, using a Phillips screwdriver.

7.8. DISMANTLING THE TOTAL LEVERS


OPERATION	DESCRIPTION
<p>Dismantling the Total Levers</p>	<ol style="list-style-type: none"> 1. Remove the “<i>Front guards</i>”. 2. Remove the screws anchoring the internal plastic lever guard (platform lever connection area), using a 2.5 mm hex key. 3. Separate the internal lever guard (assembly with Fast Milano fastener). 4. Unscrew the nut anchoring the Total lever to the platform lever. 17 mm bush <p>NOTE: during reassembly, tighten using a 44Nm/33lb.ft torque spanner</p> <ol style="list-style-type: none"> 5. Remove the headphone jack socket on the central frame. 6. Slide out the lever cable connector from the slot in the frame of the central headphone jack socket housing (see photo below).  <ol style="list-style-type: none"> 7. Loosen the 2 grub screws anchoring the Total lever to the frame pin, using a 3 mm hex key. <p>NOTE: during reassembly, place a couple of drops of Loctite threadlocker on the grub screws.</p> <ol style="list-style-type: none"> 8. Slide the lever off sideways. <p>NOTE: Take care not to pinch the cable when reassembling.</p>

OPERATION	DESCRIPTION
<p>Dismantling the upper part of the Total Lever</p>	<ol style="list-style-type: none"> 1. Open the Total Lever internal guard, referring to the related dismantling procedure. 2. Unscrew the 4 screws anchoring the upper part, using a 5 mm hex key. 3. Remove the upper lever.


7.9. DISMANTLING THE TWEETER FROM THE TOTAL LEVER

OPERATION	DESCRIPTION
Dismantling the tweeter from the Total Lever	<ol style="list-style-type: none"><li data-bbox="544 465 1442 539">1. Remove the top end cap from the Total lever and the tweeter cover. Unscrew the screws, using a 2.5 mm hex key.<li data-bbox="544 539 1442 613">2. Unscrew the 2 screws anchoring the tweeter support, using a Phillips screwdriver.<li data-bbox="544 613 1442 651">3. Remove the tweeter.

7.10. DISMANTLING THE PLATFORM LEVER

OPERATION	DESCRIPTION
<p>Dismantling the Platform Lever</p>	<ol style="list-style-type: none"> 1. Unscrew the screws in the lower-rear platform lever area (see photo below), using a 4 mm hex key.  <ol style="list-style-type: none"> 2. Remove the end part of the chrome-plated lever guard. 3. Unscrew the screw anchoring the platform lever to the crank, using a 5 mm hex key. <p>NOTE: during reassembly, tighten using a 23Nm/17lbf.ft torque spanner</p> <ol style="list-style-type: none"> 4. Disconnect the lever from the crank. 5. Disconnect the platform lever from the Total lever. (see procedure for dismantling the “<i>Total Lever</i>”). 6. Remove the lower lever guard. 11 screws in the lower part of the lever, using a Phillips screwdriver. 7. Remove the upper platform lever guard. 5 screws with washers in the lower part of the lever, using a Phillips screwdriver. <p><u>Removing the hub.</u></p> <ol style="list-style-type: none"> 8. Unscrew the hub assembly anchor nut, using a 13 mm spanner. 9. Unscrew the hub assembly anchor screws, using a 5 mm hex key. 10. Screw in an M10 bolt on the screw side and use it to take out the hub anchor pin.

7.11. DISMANTLING THE MECHANICS/CRANK ASSEMBLY

OPERATION	DESCRIPTION
<p>Dismantling the Mechanics/Crank assembly</p>	<ol style="list-style-type: none"> 1. Disconnect the platform lever from the crank (see “Platform Lever” dismantling procedure. 2. Remove the crank guard cover. 3. Unscrew the 2 screws anchoring the round "mirror-finish" guard to the frame, using a 4 mm hex key. 4. Unscrew the crank anchor screws, using a 5 mm hex key. 5. If necessary, use an extractor to remove the crank. 6. Unscrew the 5 screws on the coupling, using a 5 mm hex key. Use 3 of the 5 screws as an extractor, by screwing them into the empty holes of the coupling. <p>NOTE: tighten the screws to 16 Nm/12 lbf.ft. torque Tighten the screws using a “star” sequence several times to gradually achieve the right torque for all the screws (see “star” sequence below).</p> <div style="text-align: center;">  </div> <ol style="list-style-type: none"> 7. Disconnect the timing lever from the frame, using a 5 mm hex key and a 13 mm spanner. 8. Remove the whole Lever Assembly. <p>NOTE: during reassembly, perform the “Mechanics/Crank assembling timing procedure”.</p>

7.12. DISMANTLING THE CRANK ASSEMBLY BELT

OPERATION	DESCRIPTION
<p>Dismantling the Crank assembly belt</p>	<ol style="list-style-type: none"> 1. Dismantle the “<i>Mechanics/crank assembly</i>”. 2. Slacken the belt tension by turning the belt stretcher eccentric anchor screw, using a 5 mm hex key. 3. Remove the belt. <p>NOTE: during reassembly, perform the “<i>Mechanics/Crank assembling shaping procedure</i>”.</p>

7.13. DISASSEMBLY OF THE REAR GUARDS

OPERATION	DESCRIPTION
<p>Disassembly of the rear guards</p>	<ol style="list-style-type: none"> 1. Disconnect the platform lever from the crank (see “<i>Platform Lever</i>” dismantling procedure. 2. Remove the crank guard cover. 3. Unscrew the 2 screws anchoring the round "mirror-finish" guard to the frame, using a 4 mm hex key. 4. Remove the lower central tunnel (assembly with Fast Milano fastener). 5. Remove the central (front) guard covering the mechanics. 1 screw, using a 4 mm hex key + Fast Milano fastener. 6. Remove the central (rear) guard covering the mechanics (assembly with Fast Milano fastener). <p><u>On the right-hand side of the equipment.</u></p> <ol style="list-style-type: none"> 7. Unscrew the screw anchoring the side guard covering the mechanics to the central tunnel frame, using a 4 mm hex key. 8. Unscrew the 11 screws anchoring the side guard covering the assembly to the frame, using a 4 mm hex key and remove it. <p><u>On the left-hand side of the equipment.</u></p> <ol style="list-style-type: none"> 9. Unscrew the screw anchoring the side guard covering the mechanics to the central tunnel frame, using a 4 mm hex key. 10. Unscrew the 10 screws anchoring the side guard covering the assembly to the frame, using a 4 mm hex key and remove it.

7.14. DISMANTLING THE BRAKE BELT

OPERATION	DESCRIPTION
<p>Dismantling the Brake Belt</p>	<p><u>On the right-hand side of the equipment</u></p> <ol style="list-style-type: none"> 1. Disconnect the platform lever from the crank (see “<i>Platform Lever</i>” dismantling procedure). 2. Remove the crank guard cover. 3. Unscrew the 2 screws anchoring the round "mirror-finish" guard to the frame, using a 4 mm hex key. 4. Using a tape measure, take the reference measurement for the position of the screw of the belt tensioner, and then use it to readjust the belt tension during reassembly. 5. Slacken the belt tension. <p>NOTE: during reassembly, perform the “Belt tension adjustment” procedure.</p> <ol style="list-style-type: none"> 6. Mark the position of the timing lever on the frame. 7. Unscrew the screw anchoring the shaping lever, using a 5 mm hex key and a 13 mm spanner. <p>NOTE: during reassembly, perform the “Mechanics/Crank assembling shaping procedure”.</p>

7.15. DISMANTLING THE BRAKE BELT PULLEY

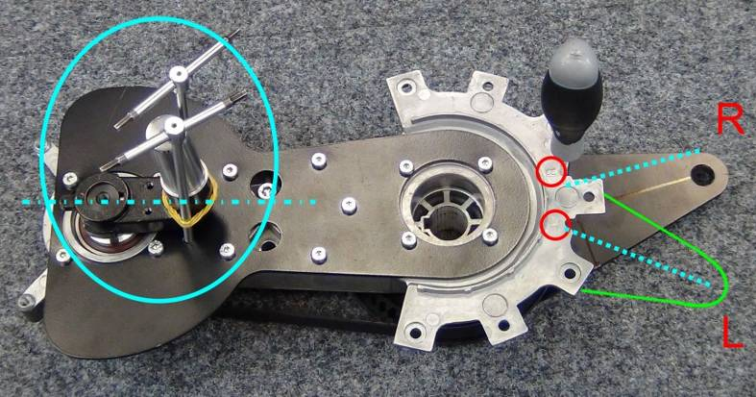
OPERATION	DESCRIPTION
<p>Dismantling the Brake Belt Pulley</p>	<ol style="list-style-type: none"> 1. Remove the right-hand “<i>Mechanics/crank assembly</i>”. 2. Remove spline from the shaft. 3. Remove the spacer. 4. Remove the pulley. 4 screws, using a 13 mm spanner

7.16. DISMANTLING THE LOW KIT, POWER CARD, BRAKE AND FLYWHEEL

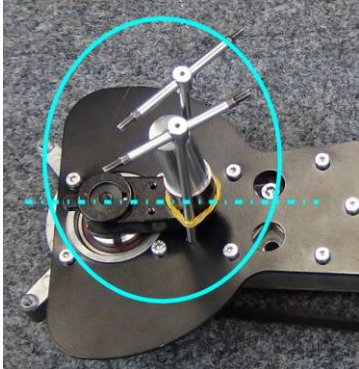
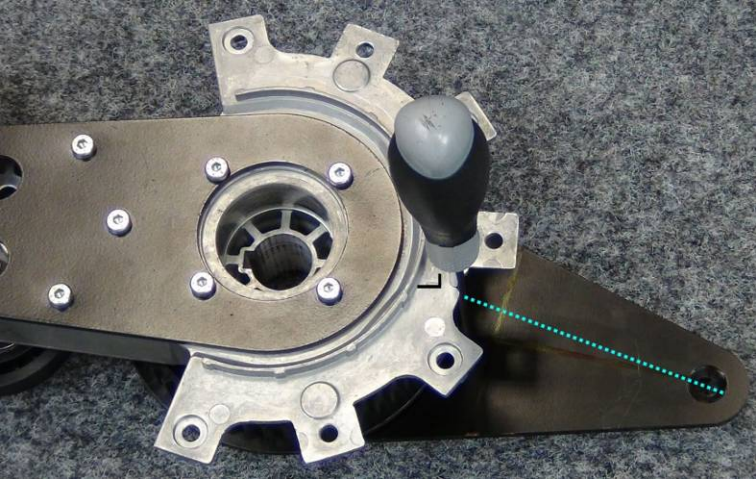
OPERATION	DESCRIPTION
<p>Dismantling the Low Kit, Power Card, Brake and Flywheel</p>	<p><u>On the left-hand side of the equipment</u></p> <ol style="list-style-type: none"> 1. Disconnect the platform lever from the crank (see “<i>Platform Lever</i>” dismantling procedure). 2. Remove the crank guard cover. 3. Unscrew the 2 screws anchoring the round "mirror-finish" guard to the frame, using a 4 mm hex key. 4. Remove the side guard covering the mechanics assembly (see “<i>Rear guard</i>” dismantling procedure). 5. It is now possible to remove the Low Kit, the Power Card and the Brake. <p><u>Removing the flywheel.</u></p> <ol style="list-style-type: none"> 6. Unscrew the M20 ring anchoring the flywheel to the secondary shaft. 7. Remove the flywheel.

8. ADJUSTMENTS

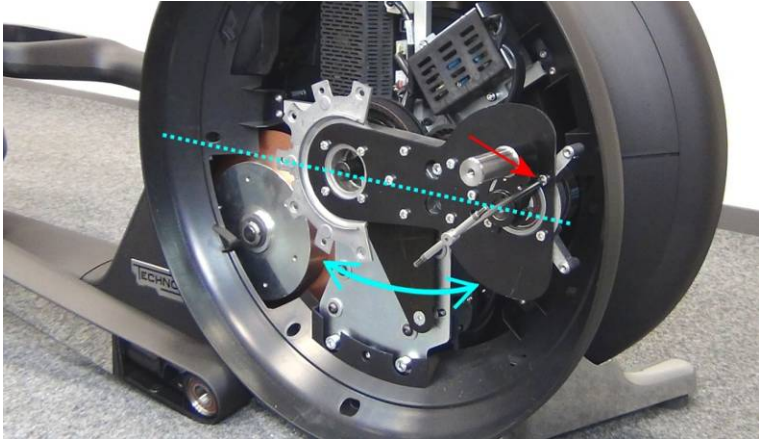
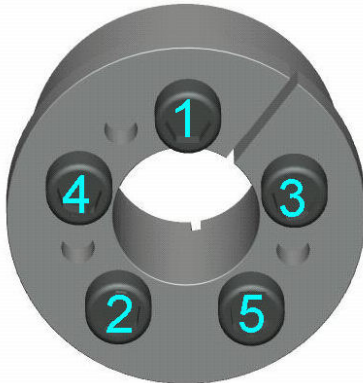
8.1. MECHANICS/CRANK ASSEMBLY SHAPING

OPERATION	DESCRIPTION
<p>Mechanics/Crank assembly Shaping</p>	<p>NOTE_1: The procedure described below differs according to whether it is performed on the right-hand or the left-hand assembly.</p>  <p>Note that the references for the right-hand “R” and left-hand “L” configuration are stamped on the aluminium block (in the red circle in the illustration above).</p> <p>NOTE_2: Before performing the following procedure, check that the crank is fitted.</p> <p>NOTE_3: If the timing belt of the mechanics/crank assembly has not been removed, timing only requires repositioning of the timing lever in the previous position (previously marked on the frame) otherwise follow the instructions below.</p> <ol style="list-style-type: none"> 1. Remove the belt from the positive drive pulley.

Continued on the next page...

OPERATION	DESCRIPTION
<p>Mechanics/Crank assembly Timing</p>	<p>2. Position the crank midway between the two holes on the support plate and block it in place by inserting two keys into the holes (see detail circled in blue in the illustration below).</p>  <p>3. Position the timing lever at the centre of the “R” or “L” reference, on the aluminium block, depending on the side on which the mechanics/crank assembly is to be installed (the installation shows timing for the left-hand side).</p>  <p>4. After correctly positioning the crank and the timing lever, insert the belt onto the pulleys, maintaining the timing.</p> <p>5. Refit the assembly on the equipment and tighten the shrink disk.</p>


Continued on the next page...

OPERATION	DESCRIPTION
<p>Mechanics/Crank assembly Timing</p>	<p>6. Anchor the timing lever, positioning the assembly as shown in the illustration below.</p>  <ul style="list-style-type: none"> • Position the assembly so that the lever/crank assembly is parallel to the floor. • Move the timing lever either to the right or to the left as indicated by the blue arrow until the crank rests against a key, positioned as illustrated. <p>7. Tighten the shrink disk screws.</p> <p>NOTE: tighten the screws to 16 Nm/12 lbf.ft. torque Tighten the screws using a “star” sequence several times to gradually achieve the right torque for all the screws (see “star” sequence below).</p> 

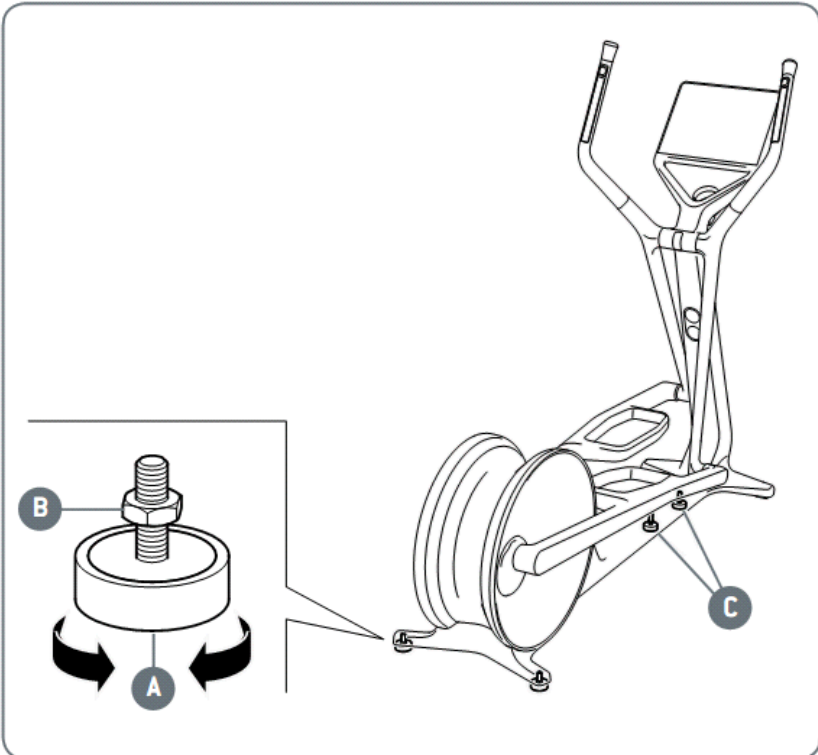


The procedure described above can be viewed in the films showing dismantling of the “Mechanics/Crank assembly” and the “Crank assembly belt”.

8.2. BRAKE BELT TENSION

OPERATION	DESCRIPTION
<p>Brake belt tension</p>	<div data-bbox="632 385 1394 945" data-label="Image"> </div> <p><u>When adjusting tension of a used belt:</u></p> <ol style="list-style-type: none"> 1. Note the distance “X” measurement before slackening the belt tension, as show in the illustration. 2. Unscrew the nut (a) using an 17 mm spanner. 3. Adjust the tension by turning the screw (b) using a 5 mm hex key. <p><u>When adjusting tension of a new belt:</u></p> <ol style="list-style-type: none"> 1. Adjust the tension of the belt on the longest branch, indicated by the yellow arrow, as indicated in the note below: <p> WARNING: The right tension must be 160Hz±10Hz.</p> <ol style="list-style-type: none"> 2. Tighten the nut (a) once again.

8.3. LEVELLING

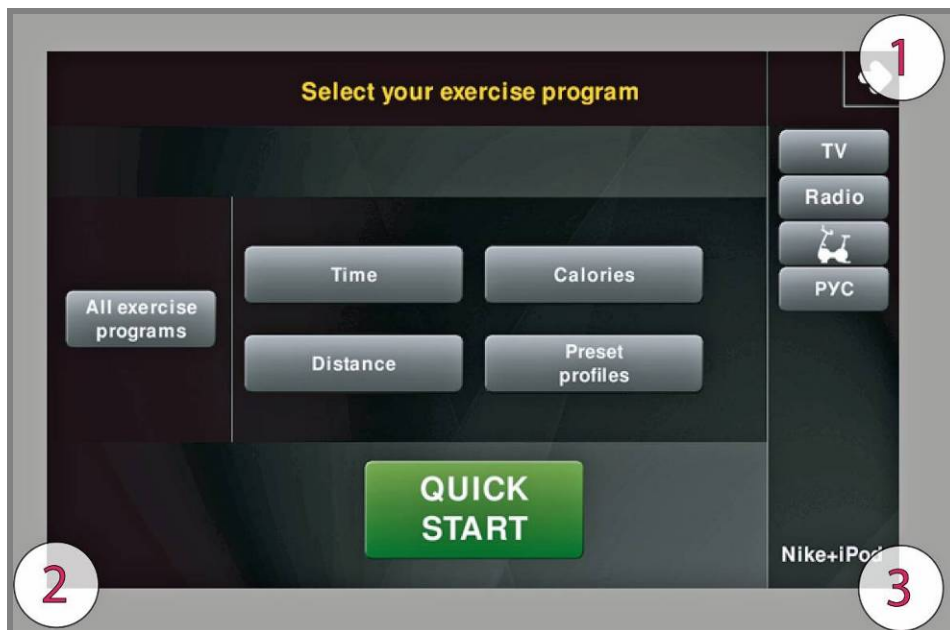
OPERATION	DESCRIPTION
<p>The machine is not flat</p>	<ol style="list-style-type: none"> 1. Check that all the feet touch the floor. If they do not, level the equipment. 2. Adjust the two back feet first. Loosen the lock nut (B). Screw or unscrew the foot (A) until the frame is stable. After adjusting, tighten the lock nut (B). 3. Once the back feet have been adjusted, adjust the two central feet (C). Loosen the lock nut (B), unscrew each central foot until it touches the floor, then tighten the lock nut. 

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9. EQUIPMENT CONFIGURATION

9.1. CONFIG.: VISIO - VISIOWEB USER MENÙ

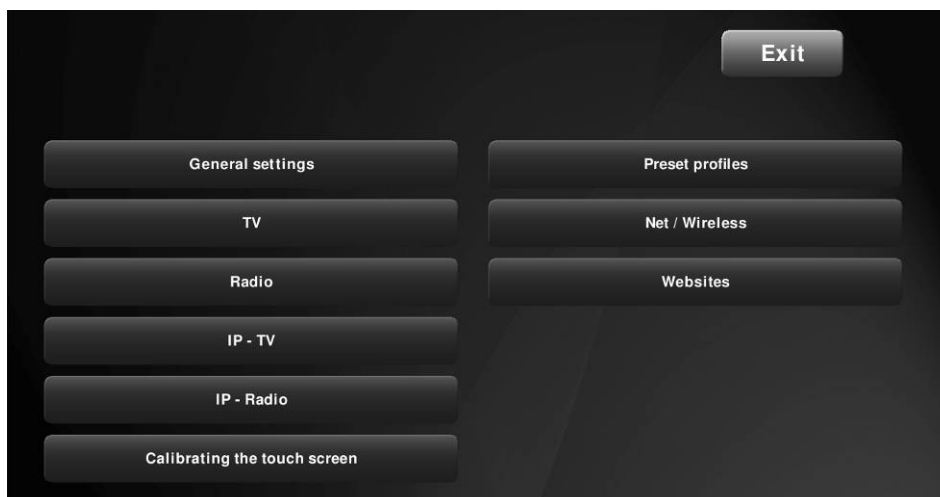
The procedure is activated by pressing the top right-hand corner, the bottom left-hand corner and the bottom right-hand corner of the screen in that sequence, in Stand-By, as shown in the figure below:



A new display will appear from which you can gain access to the various configuration menus, by entering the password on the number keyboard:

Enter the password **2406** and press the **ENTER** key to confirm or **EXIT** to quit.

A menu will then appear which will provide access to the following sub-menus:

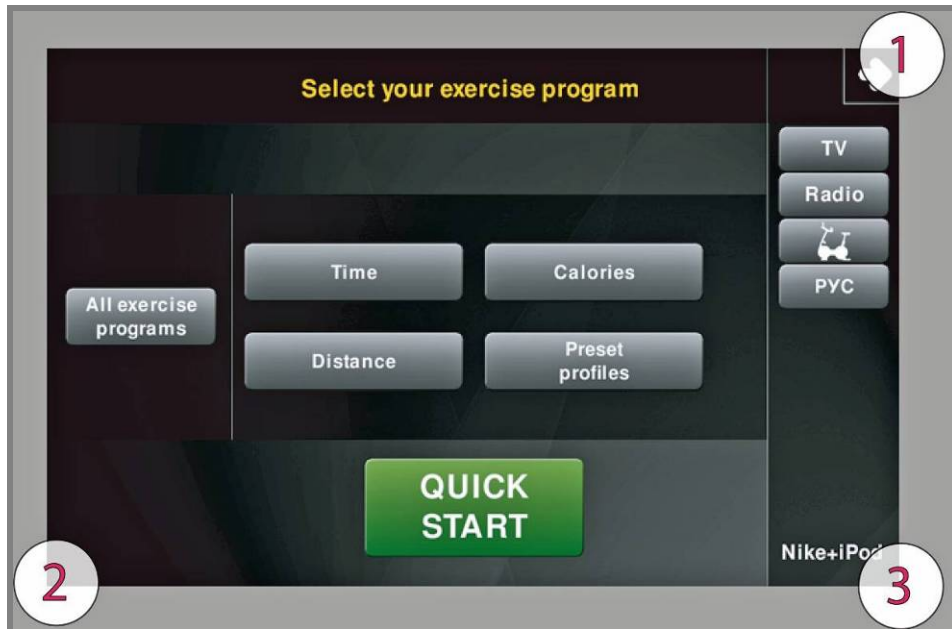




For the following menu, please refer to the relevant chapter in the VISIO manual.

9.2. SERVICE MENU CONFIG.: VISIO - VISIOWEB

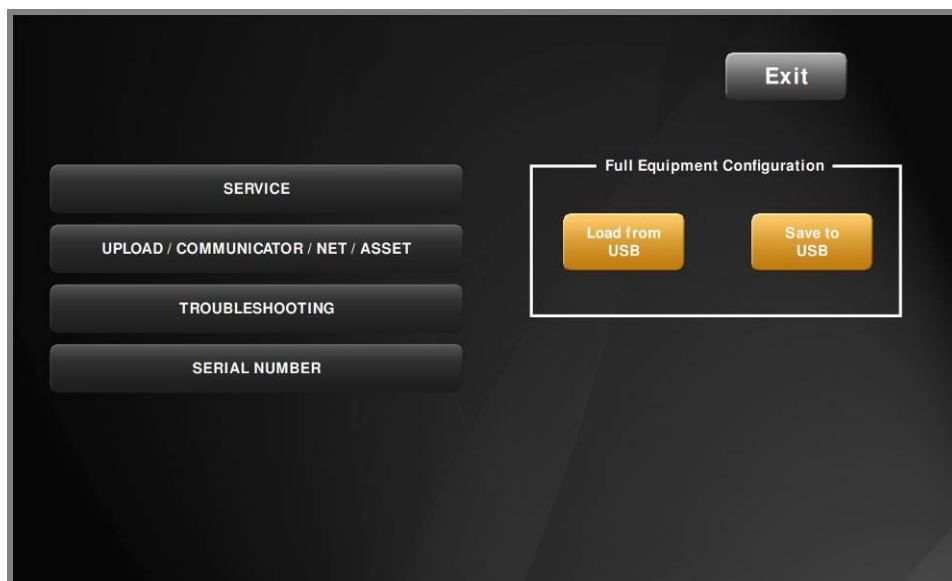
The procedure is activated by pressing the top right-hand corner, the bottom left-hand corner and the bottom right-hand corner of the screen in that sequence, in Stand-By, as shown in the figure below:



A new display will appear from which you can gain access to the various configuration menus, by entering the password on the number keyboard:

Enter the password **2501** and press the **ENTER** key to confirm or **EXIT** to quit.

A menu will then appear which will provide access to the following sub-menus:



For the following menu, please refer to the relevant chapter in the VISIO manual.

9.2.1.1. Table of configuration parameters



To correctly display the parameter values, you need to load them from the low kit, using the “Read from low kit” function.



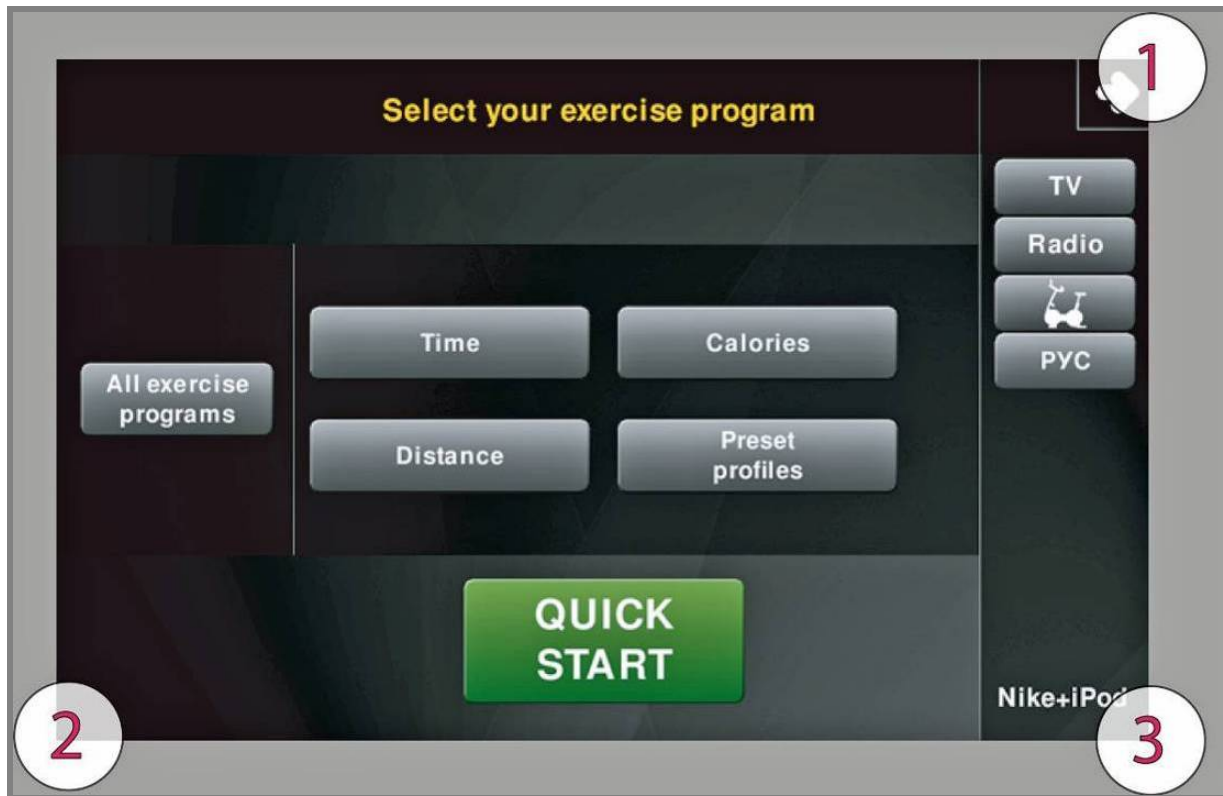
After any changes to the parameter values, you need to save them in the low kit using the “Write to low kit” function

<i>Id (Par.)</i>	<i>Units</i>	<i>Name</i>	<i>Description</i>	<i>Value</i>
1	decimal	[Rt]	Transmission Ratio	134
2		[Rvel]	Speed ratio	1
3	mA	[Im]	Minimum braking	0
4	W	[Pmc]	Constant maximum power	200
5	in cents	[Km]	Power factor correction (constant torque)	100
6	0.1N	[Ca]	User friction torque	75
7	°C	[Tea]	Maximum temperature on the coil	125
8	User rpm	[RPMmin]	Minimum user SPM (start cut braking ramp)	35
9	Type/sec	[RpmF1]	Flywheel target RPM speed in standby (and power-on speed for self powered)	1
10	User rpm	[RpmF2]	Rpm filter threshold	75
11		[Rvel]	Speed ratio (decimal part)	60
12	0.1N	[D_Ca]	User delta friction torque	2
13	-	-	Enable flag for registers at address ≥ 100	1

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10. UPDATING THE SW

The procedure is activated by pressing the top right-hand corner, the bottom left-hand corner and the bottom right-hand corner of the screen in that sequence when the equipment is in Stand-By, as shown in the figure below.



A new display will appear from which you can gain access to the various configuration menus, by entering the password on the number keyboard:

In order to access the menu, enter the password **2502** and press the **ENTER** key in order to confirm, **ESCI** in order to quit.



For the following menu, please refer to the relevant chapter in the **VISIO** manual.

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11. SCHEDULED MAINTENANCE

To keep the machine in perfect working order and forestall possible problems, it is necessary to carry out the planned maintenance operations described below. These operations are essentially grouped according to the type of action and the technical skills needed perform them:

<i>ROUTINE maintenance</i>	<i>SPECIAL maintenance</i>
<p><i>ROUTINE maintenance operations can be carried out by the machine owner and do not require any special technical skills; they consist in simple external cleaning for the purposes of general hygiene.</i></p> <p>☛ Refer to the USER manual.</p>	<p><i>SPECIAL maintenance operations may only be carried out by a Qualified Technician specifically trained by Technogym and authorized to perform machine adjustment and start-up operations, repairs and maintenance, and checks on the functioning and wear of mechanical components, in order to ensure correct and safe operation of the machine.</i></p> <p>☛ Refer to the TECHNICAL SERVICE manual.</p>
<p><u>ROUTINE MAINTENANCE.</u> No special training.</p>	<p><u>SPECIAL MAINTENANCE:</u> Qualified technician authorized by Technogym, and maintenance provided for in the <u>Scheduled maintenance contract.</u></p>

☛ Refer to the SCHEDULED MAINTENANCE manual, that can be downloaded from TG DIRECT.


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12. APPENDIX

12.1. MENU PASSWORD TABLE

The configuration menus available and their corresponding access passwords are shown below:

PASSWORD LIST			
Assistenza Service	2501 VisioWEB	Configurazione tecnica; Technical configuration;	LED VISIO
		Upload/ Network page;	VISIO
		Scrivi il Serial Number; Write Serial Number;	VISIO
		Accesso ambiente Windows; Windows screen;	VISIO
		Selezione tipo macchina; Machine type selection;	VISIO
		Troubleshooting;	LED VISIO
		Utente User	2406 VisioWEB
Configurazione IP- Radio; IP-Radio configuration;	VISIO		
Configurazione Utente + letture Serial Number; User Configuration + Serial number reading;	LED VISIO		
Sintonizzazione canali Analogici e Digitalli TV; Analog and Digital TV channels tuning;	VISIO		
Sintonizzazione canali Analogici e Digitalli Radio; Analog and Digital Radio channels tuning;	VISIO		
Calibrazione Touch Screen; Touch Screen calibration;	VISIO		
Menù personalizzazione profile utente; Training profile menù (to add and customize personal profiles);	LED VISIO		
Configurazione Network; Network configuration;	VISIO		
Configurazione VISIOWEB Bookmarks; VISIOWEB Bookmarks configuration;	-		

 The menus **NOT** detailed in this manual, are described in the VISIO/VISIOWEB manual, since they refer to the device on the machine.

12.2. REQUIRED TOOLS

The following tools are required for carrying out the various disassembly, adjustment and maintenance action on the machine:

- *Small Phillips screwdriver;*
- *Medium Phillips screwdriver;*
- *Small flat Phillips screwdriver;*
- *Medium flat Phillips screwdriver;*
- *13mm wrench;*
- *17mm wrench;*
- *17mm socket wrench;*
- *Socket wrench for M20 ringnut;*
- *2.5mm Allen-T wrench;*
- *3mm Allen-T wrench;*
- *4mm Allen -T wrench;*
- *5mm Allen -T wrench;*
- *Torque wrench,*
- *Bearing extractor;*
- *Scissors.*

 **You can order a complete set of hexagonal wrenches consisting of 7 pieces: 2, 2.5, 3, 4, 5, 6 and 8 mm. The code to be used is R0003677AA.**

- *Excite Test box (cod.H0003180AA-UK).*



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