SYNCHRO EXCITE

Class & Trend

SERVICE & MAINTENANCE MANUAL

REV. 2.0

TECHNOGYM®
The Wellness Company

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

DANGEROUS VOLTAGES PRESENT

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

Technogym does not guarantee this documentation in any way. Technogym shall not be held responsible for any errors contained in this manual and declines all liability for accidents or damages resulting from the supply, characteristics or use of this manual.

Contents

Page intentionally left blank

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 disassembly 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 SPECIFICATIONS

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 SN, consists of 16 alphanumeric characters arranged as follows:

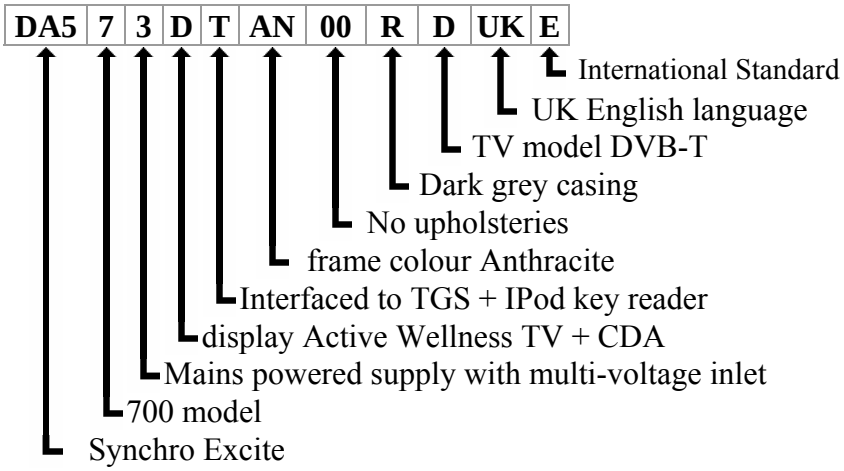
Characters	Description	Key to values
1,2,3	Machine type	**DA5** = Synchro Excite
4	Product version	**5** = 500 model **7** = 700 model
5	Type of power supply	**3** = multi-voltage (110-220) **4** = self-powered
6	Type of Display	**L** = LED Display **D** = Active W-TV + Digital TV
7	Integrated accessories	**N** = none **T** = TGS **I** = iPod **A** = TGS + iPod
8, 9	Colour of the frame	**AL** = Silver (Class) **AN** = Anthracite (Trend)
10, 11	Colour of puddings	**00** = none
12	Guards colour	**0** = none **G** = Flint grey (Class) **R** = Dark grey (Trend)
13	Type of TV model	**0** = none **D** = DVB-T **A** = ATSC **I** = ISDB-T
14,15	Language	**00** = WTV models **BR** = Portuguese **CN** = Chinese **DA** = Danish **DE** = German **ES** = Spanish **FR** = French **IT** = Italian **JP** = Japanese **NL** = Dutch **RU** = Russian **TR** = Turkish **UK** = British English **US** = American English
16	Type of packaging	**I** = Italy **E** = International Standard **S** = Overseas International **U** = Overseas US / JP

In case of overseas delivery, use "S" packaging type to order equipments with European power cord or "U" packaging type to order equipments with US style power cord

For example, a possible product code would be:

DA573DTAN00RDUKE

which is interpreted as follows:



2.2. COLOUR OPTIONS

The following table shows the possible combinations for ordering the line machines:

	CLASS model	*TREND model*
FRAME	**AL**	**AN**
CASING	**G**	**R**

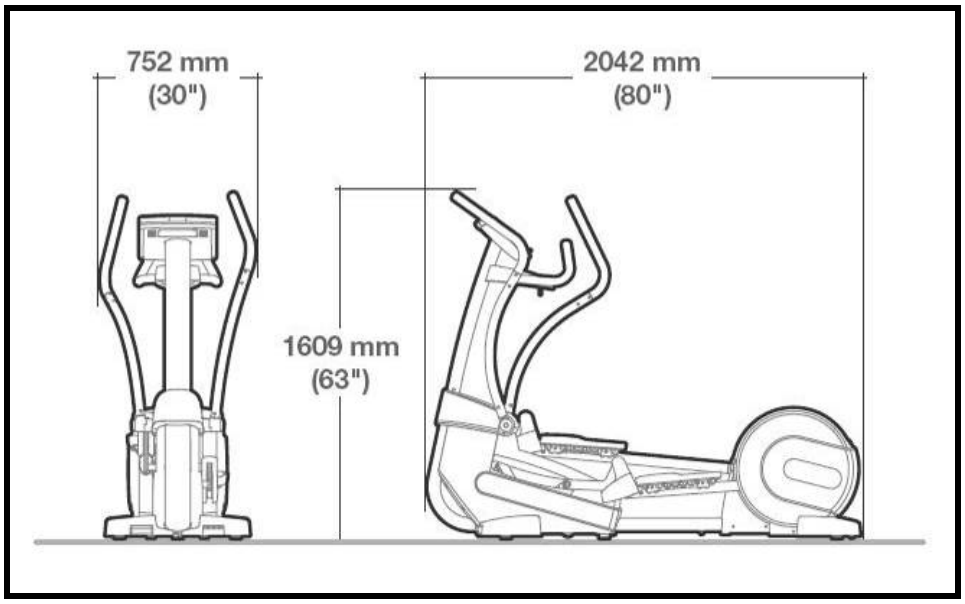
Table 2-1

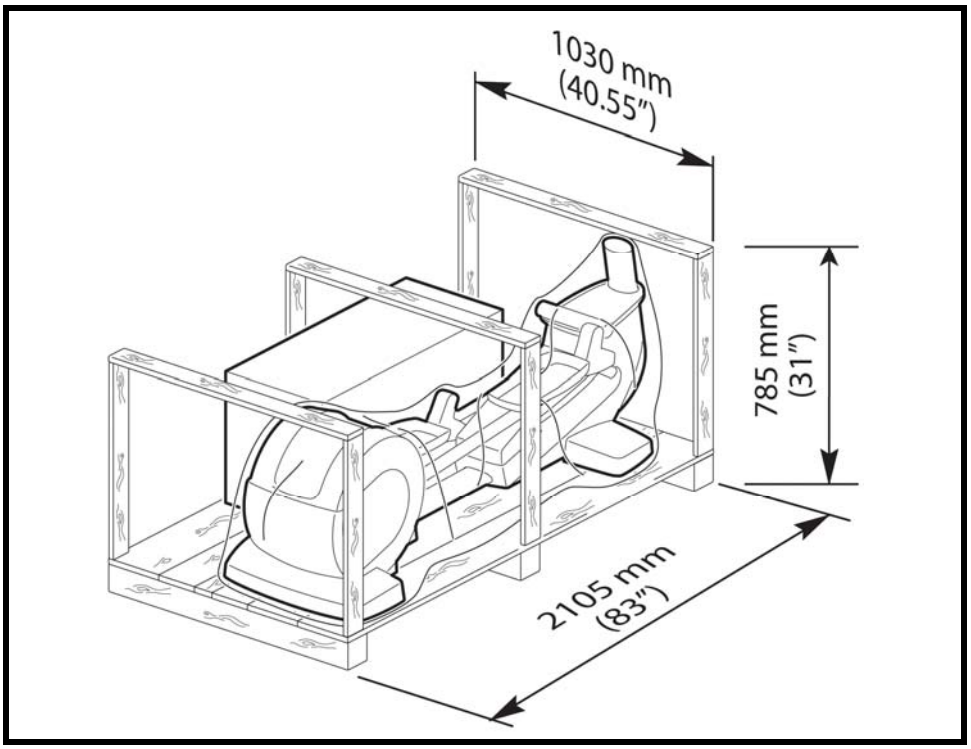
2.3. PRODUCT CHARACTERISTICS

		VERSION			
		500	**500SP**	**700 - 700WTV**	**700SP**
CARACHTERISTICS	**Power requirement:**	*100-230VAC 50/60 Hz*	*Self-powered*	*100-230VAC 50/60 Hz*	*Self-powered*
	Energy Consumption:	*100 VA*	*Self-powered*	*100 VA*	*Self-powered*
	Consumption Stand-by (LED):	*11.3 VA (110 VAC) 21.6 VA (220 VAC)*	*Self-powered*	*11.3 VA (110 VAC) 21.6 VA (220 VAC)*	*Self-powered*
	Consumption Stand-by (WTV):	*43.7 VA (110 VAC) 61.5 VA (220 VAC)*	*Self-powered*	*43.7 VA (110 VAC) 61.5 VA (220 VAC)*	*Self-powered*
	Difficultly levels:	*1 - 25*			
	Resistance (a 120 rpm):	*30-500*	*40-500*	*30-500*	*40-500*
	Max user weight:	*180 Kg – 360 lbs*			
	Sub Maximal Test:	*NO*		*Fitness Test*	
	Fast Track Control:	*NO*		*SI*	
	HR Monitoring:	*Telemetry*		*Double Hand Sensor, Telemetry*	
	Maintenance:	*Maintenance not required, upload Serial software*			
	Goal oriented display	*SI*			
	Coach Calories:	*SI*			
	Language available:	*NO*		*SI*	
	Plug & Play System:	*SI*			
	HR Hand Sensor monitoring:	*NO*		*SI*	
	Total number of programs:	*Quick start Goals (time, distance, calorie) CPR Profiles (6)*		*Quick start Goals (time, distance, calorie) CPR Profiles (6) Custom Training Zone Weight Loss*	

2.4. MECHANICAL CHARACTERISTICS

	VERSION	
	500 – 700 - 700WTV	**500SP – 700SP**
Width	*752 mm – 30”*	
Length	*2042mm – 80”*	
Height	*1609mm – 63”*	
Weight	*148 Kg - 326 lbs*	*150 Kg - 330 lbs*





2.5. AMBIENT SPECIFICATIONS

Temperature	*Operating*	*from 5° to 35° C*
	Storage	*from -10° to 70° C*
Humidity	*Operating*	*from 30% to 80% non-condensing*
	Storage	*from 5% to 85% non-condensing*

2.6. CONFORMITY TO REGULATIONS

The machine conforms to the following standards:

	EUROPA	***USA***
EMI	*EN 55014-1 (2001)* *EN 55014-2 (1998)* *EN 61000-3-2 (2002)* *EN 61000-3-3 (1997)*	*UL 1647*
Safety	*EN 60335-1 (1998)* *EN 957-1 (2000)* *EN 957-9 classe SA (2003)*	
Directives	*73/23/CE* *89/336/CE* *98/37/CE*	

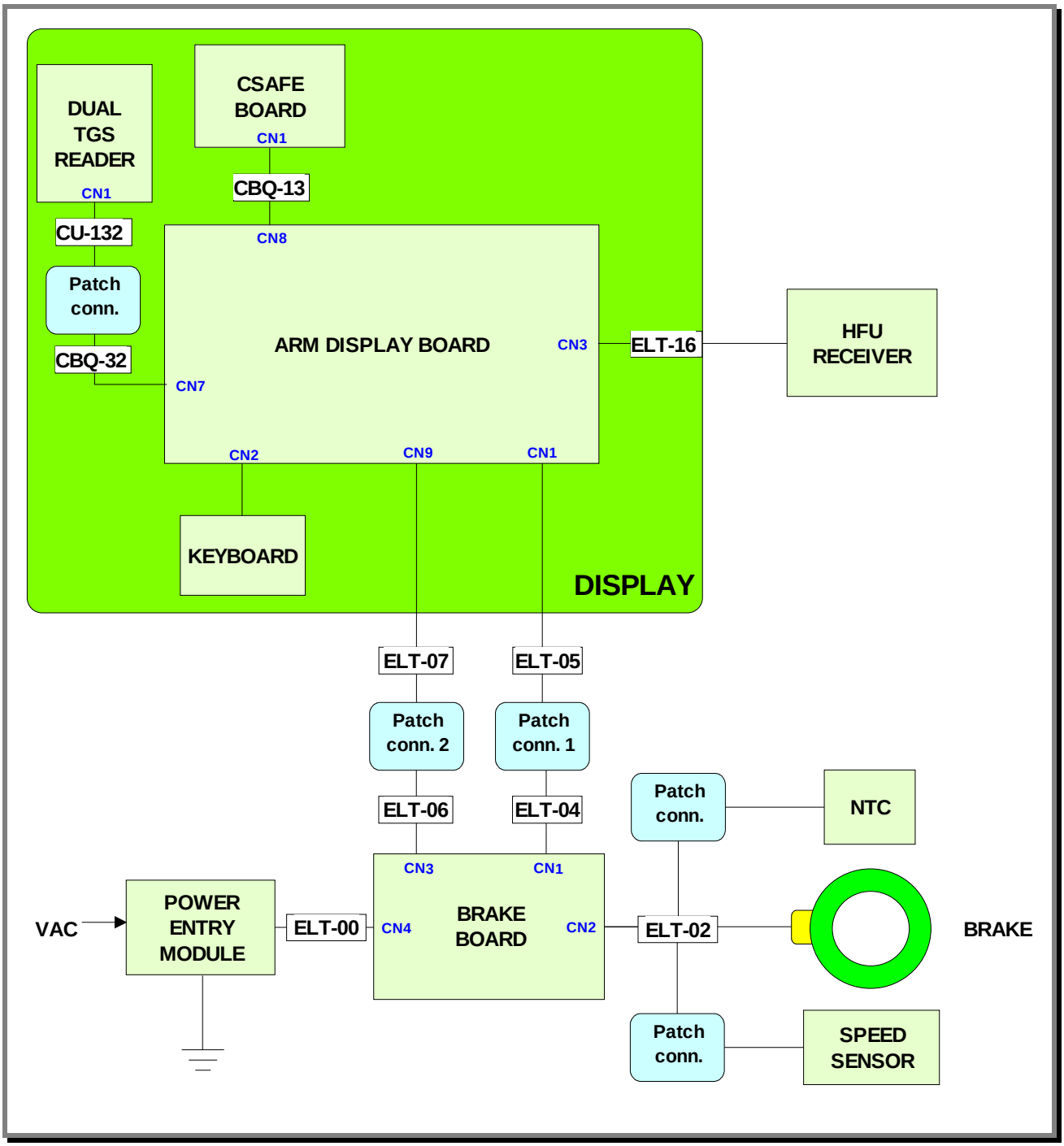
In addition:

- *Electrical isolation class:* ***Class I;***
- *Protection rating:* ***IP21.***

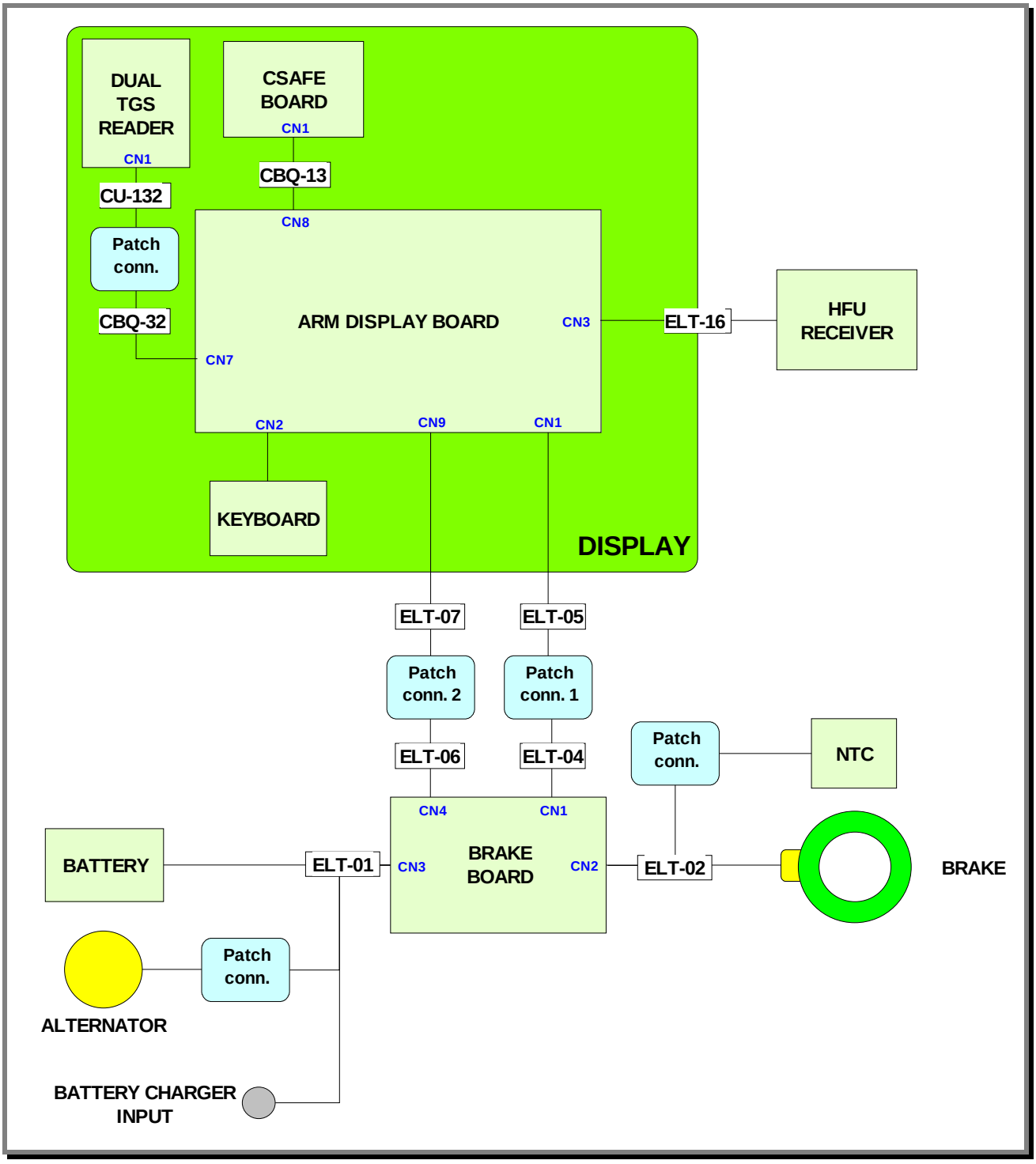
2.7. WIRING DIAGRAMS

2.7.1. 500 MODEL (ARM BOARD)

2.7.1.1. Powered version (500)

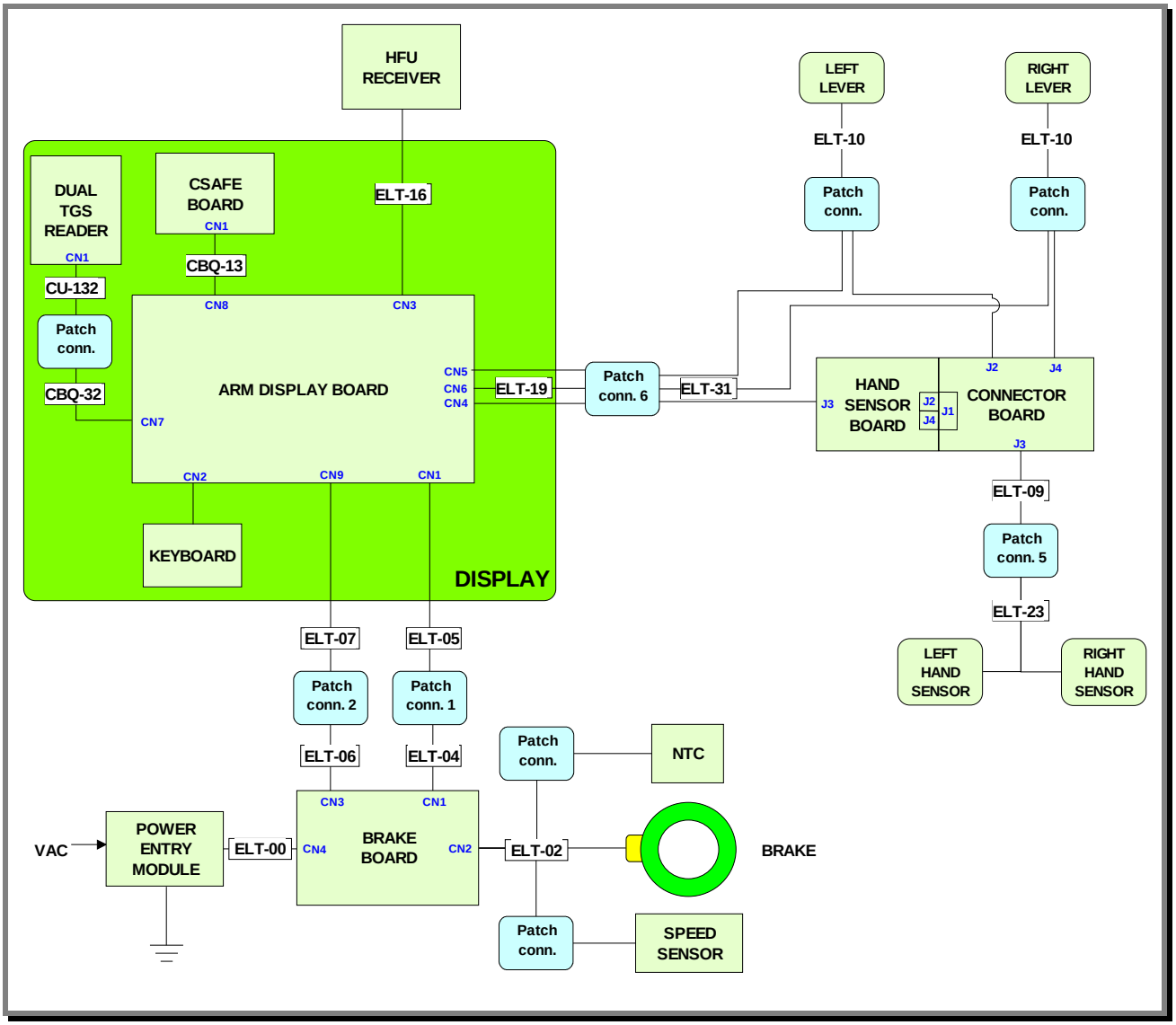


2.7.1.2. Self-Powered version (500SP)

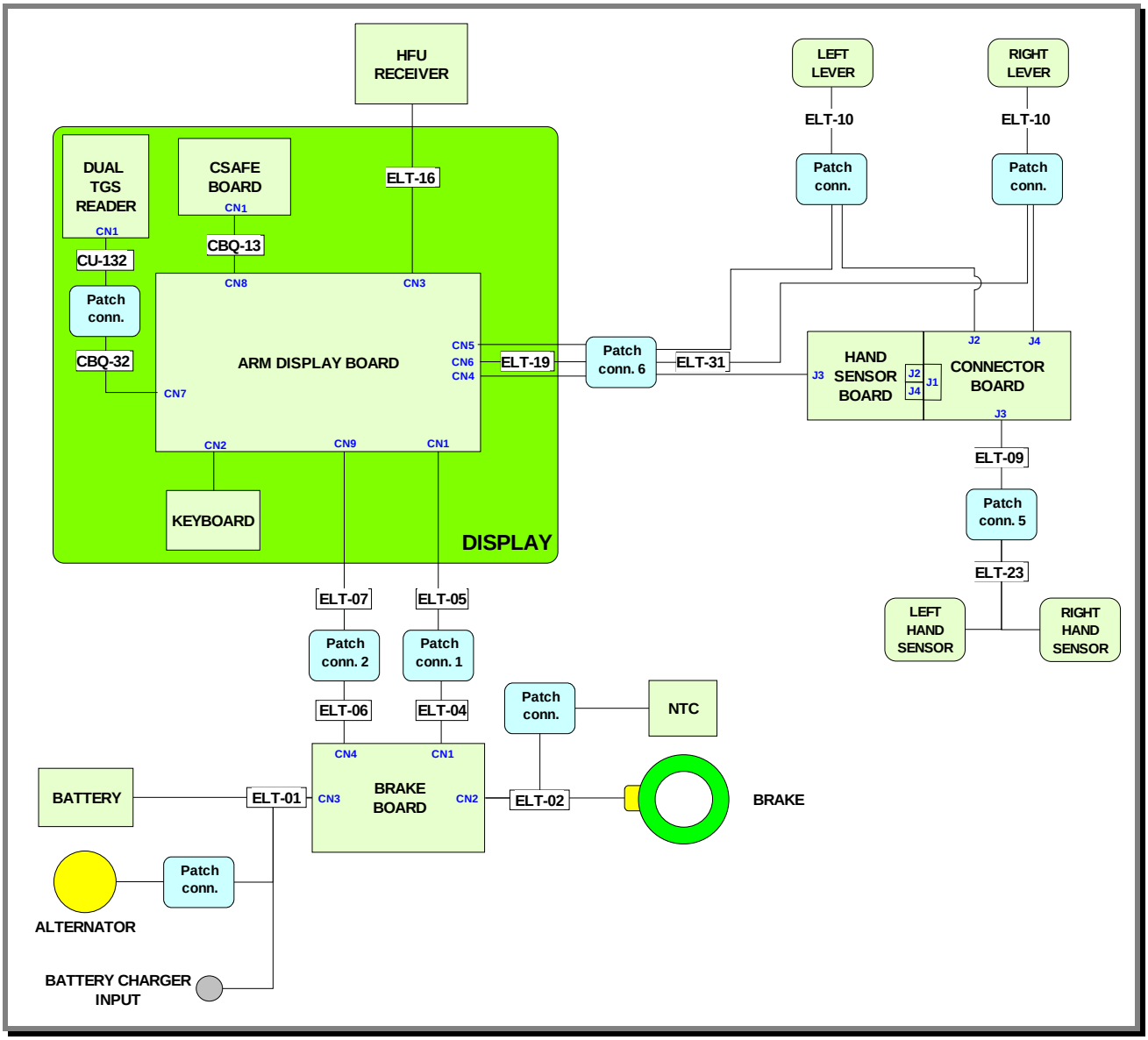


2.7.2. 700 MODEL (ARM BOARD)

2.7.2.1. Powered version (700)

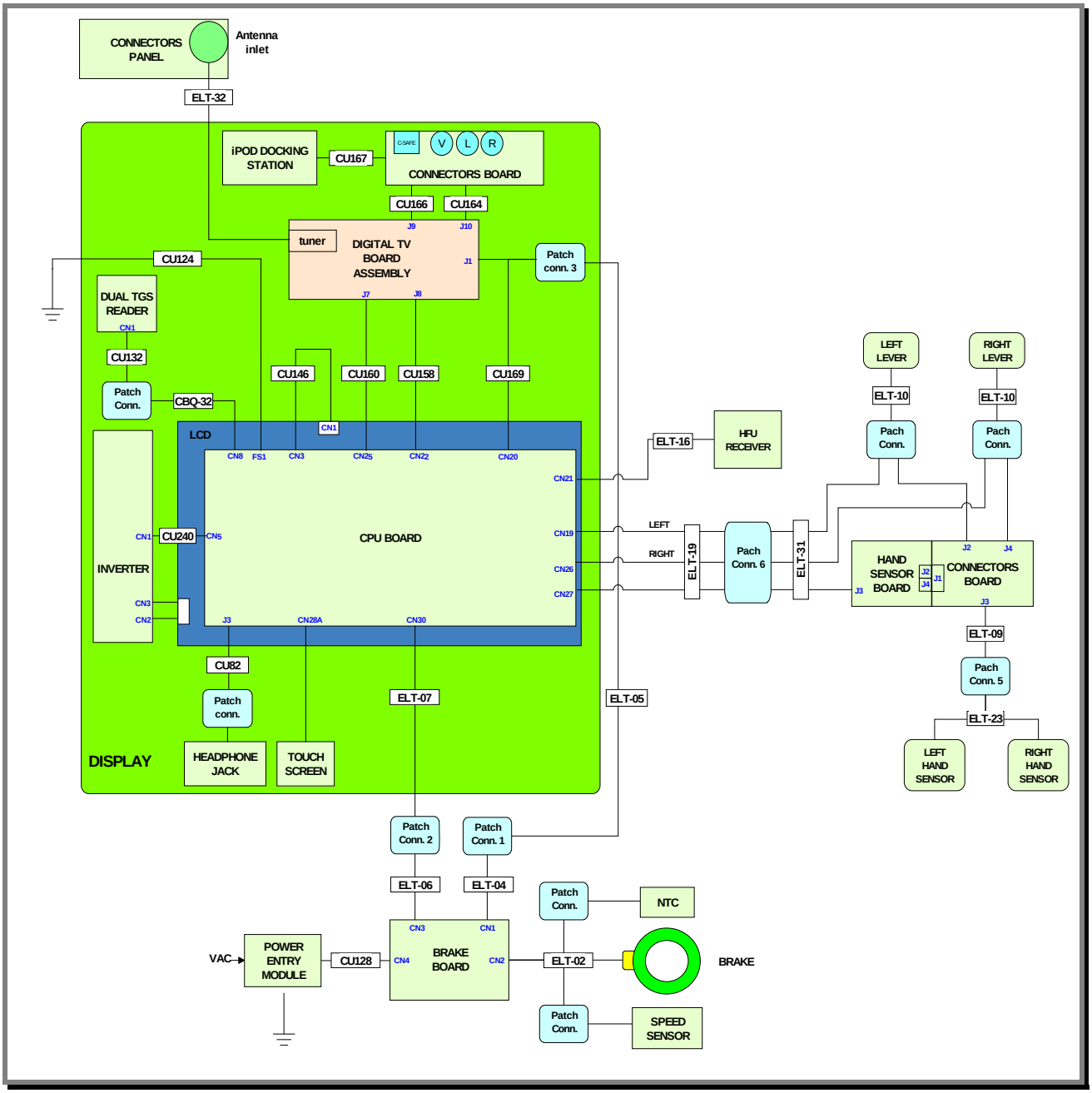


2.7.2.2. Self-Powered version (700SP)



2.7.3. 700 WELLNESS TV MODEL – DIGITAL TV

2.7.3.1. Powerded version (700WTV)



2.8. WIRING

The connectors indicated in the following pages, refer to 700 model's LED Boards, unless otherwise indicated.

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

2.8.1. CBQ CABLES

CBQ-13: CSafe board cable (Display Board – CSafe Board)			
Display Board CN8	**Signal**	**Colour**	**CSafe Board; CN1**
1	*Digital #1*	*Flat cable*	*1*
…	…	…	…
14	*Digital #14*	*Flat cable*	*14*

CBQ-32: TGS Cable (Display/CPU Board – Patch connector)			
Display Board:CN7 CPU Board:CN8	**Signal**	**Colour**	**Patch conn.**
1	*+12 Vdc power supply*	*Rosso*	*8*
3	*Rx*	*Marrone*	*1*
5	*Tx*	*Blu*	*2*
9	*Gnd*	*Nero*	*6*

2.8.2. CB CABLES

CB-9: DVD video input cable (Connectors Board –Input AUX Board)			
Scheda connettori CN1	**Segnale**	**Coloure**	**Scheda input J2**
1	*Color*	*Red*	*1*
2	*left audio IN*	*White*	*2*
3	*Gnd*	***Braid***	*3*
4	*right audio IN*	*Red*	*4*
5	*Gnd*	*Braid*	*5*
6	*video IN*	*Yellow*	*6*
7	*Gnd*	***Braid***	*7*
8	*Switching*	*White*	*8*

2.8.3. CU CABLES

CU132: TGS Cable (Patch conn. – Dual TGS reader)			
Patch conn.	**Signal**	**Colour**	**Dual TGS reader CN1**
1	*+12 Vdc power supply*	*Black*	*1*
8	*Rx*	*Green*	*2*
7	*Tx*	*Black*	*3*
3	*Gnd*	*Black*	*8*

CU158: AUX signals cable (CPU board –Digital TV board)			
CPU board CN22	**Signal**	**Colour**	**Digital TV board J8**
1	*GND video signal*	*Black*	*7*
2	*Video signal*	*White*	*6*
3	*GND Left audio signal*	*Black*	*3*
4	*Left audio signal*	*White*	*2*
5	*Right audio signal*	*White*	*4*
6	*GND right audio signal*	*Black*	*5*

CU160: CSafe – iPod – Video signals cable (CPU board – Digital TV board)			
CPU board CN25	**Signal**	**Colour**	**Digital TV board J7**
1	Power supply +8 Vdc	*Black*	*1*
2	Power supply +8 Vdc	*Black*	*2*
3	Power supply +8 Vdc	*Black*	*3*
6	RX – TX	*Black*	*7*
7	TX – RX	*Black*	*6*
8	CTS	*Black*	*8*
9	Power supply +5 Vdc	*Black*	*9*
10	Power supply +5 Vdc	*Black*	*10*
11	GND DTV board sensing	*Black*	*11*
12	GND “Play” sensing	*Black*	*12*
13	GND	*Black*	*13*
14	GND	*Black*	*14*

CU164: Audio/Video signal cable (Digital TV board – AUX input board)			
Digital TV board J10	**Signal**	**Colour**	**AUX input board**
1	GND video	Black	1
2	Signal video	Black	2
3	GND audio L	Black	3
4	Signal audio L	Black	4
5	Signal audio R	Black	5
6	GND audio R	Black	6
	n.c.	Black	7

CU166: CSafe – iPod – Video signals cable (Digital TV board – AUX input board)			
Digital TV board J9	**Signal**	**Colour**	**AUX input board**
1	Power supply +8 Vdc	Black	1
2	Power supply +8 Vdc	Black	2
3	Power supply +8 Vdc	Black	3
6	RX – TX	Black	7
7	TX – RX	Black	6
8	CTS	Black	8
9	Power supply +5 Vdc	Black	9
10	Power supply +5 Vdc	Black	10
11	GND DTV board sensing	Black	11
12	GND “Play” sensing	Black	12
13	GND	Black	13
14	GND	Black	14
15	n.c.	Black	-

CU167: iPod signals cable (AUX input board – Docking Station)			
AUX input cable	**Signal**	**Colour**	**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	GND video signal	Black	6
10	Video signal	Black	5
11	GND Lef audio signal	Black	4
12	Left audio signal	Black	3
13	Right audio signal	Black	2
14	GND Right audio signal	Black	1

CU169: Display power supply cable (CPU board – Digital TV board – Patch conn.)				
Patch connn.	**Signal**	**Colour**	**CPU board CN20**	**Digital TV board J1**
1	*GND*	*Yellow/Green*	*1*	*-*
2	*GND 12Vdc*	*Black*	*2*	*-*
3	*GND 5Vdc*	*Black*	*-*	*2*
4	*sensing GND 5Vdc*	*Black*	*-*	*4*
5	*n.c.*	*-*	*-*	*-*
6	*+12Vdc*	*Red*	*6*	*-*
7	*+5 Vdc*	*Red*	*-*	*1*
8	*sensing + 5Vdc*	*Red*	*-*	*3*

CU240: LCD inverter power supply cable (CPU Board – Inverter LCD)			
CPU board CN5	**Signal**	**Colour**	**LCD Inverter CN1**
1	*Input voltage + 12 Vdc*	*Black*	*1*
5	*Input voltage + 12 Vdc*	*Black*	*2*
2	*GND*	*Black*	*3*
4	*GND*	*Black*	*4*
3	*Power system return: 5Vdc = ON 0Vdc = OFF*	*Black*	*5*
7	*n.c.*	*Black*	*6*
6	*Lamp control*	*Black*	*7*

2.8.4. ELT CABLES

ELT-00: High voltage cable (Power entry module – Brake board)			
Power entry module	**Signal**	**Colour**	**Brake board CN4**
F	*Line*	*White*	*1*
N	*Neutral*	*Black*	*3*
T	*Earth*	*Green*	*5*

ELT-01: Alternator cable (Brake board – Alternator – Battery – Inlet for battery charging)					
Brake board CN3	**Signal**	**Colour**	**Alternator**	**Battery**	**Battery charging inlet**
1	V+ voltage from alternator	Red	Faston		-
2	V- voltage from alternator	Black	Faston		-
3	RPM signal	White	Faston		
4	V+ voltage from battery charger	Red	-		soldered to internal contact
5	V- voltage from battery charger	Black	-		soldered to external contact
6	Battery V+	Red	-	Faston	-
7	Battery V-	Black	-	Faston	-

ELT-02: Brake supply cable (Brake board – Brake – Speed sensor – NTC)					
Brake board CN2	**Signal**	**Colour**	**Brake**	**Speed sensor**	**NTC**
1	Brake supply +	Brown	Faston	-	-
2	Brake supply -	Blue	Faston	-	-
3	SPM	Grey	-	Faston connected to brown cable	-
4	SPM Reference	Black	-	eyelet	-
5	NTC +	White	-	-	2
6	NTC -	Brown	-	-	1

ELT-04: Power supply cable between upper and lower assemblies (Brake board - Patch connector 1)			
Brake board CN1	**Signal**	**Colour**	**Patch connector 1**
2	Gnd	Blue	2
3	Gnd	Red	3
4	- sensing +5 Vdc digital	Black	4
6	+12 Vdc	White	6
7	+5 Vdc	Green	7
8	+sensing +5 Vdc digital	Orange	8

ELT-05: Power supply cable between upper and lower assemblies (Patch connector 1 - Display Board)			
Patch connector 1	**Signal**	**Colour**	**Display Board CN1**
2	*Gnd*	*Red*	*2*
3	*Gnd*	*White*	*3*
4	*- sensing +5 Vdc digital*	*Green*	*4*
6	*+12 Vdc*	*Black*	*6*
7	*+5 Vdc*	*Blue*	*7*
8	*+sensing +5 Vdc digital*	*Orange*	*8*

ELT-06: Serial communication cable between upper and lower assemblies (Brake board - Patch connector 2)			
Brake board CN4	**Signal**	**Colour**	**Patch connector 2**
1	*Digital Gnd*	*Orange-White*	*1*
2	*Digital Gnd*	*Orange*	*2*
3	*NC*	*Green-White*	*3*
4	*Download*	*Blue*	*4*
5	*Reset*	*Blue-White*	*5*
6	*NC*	*Green*	*6*
7	*485 Tx/Rx +*	*Brown-White*	*7*
8	*485 Tx/Rx -*	*Brown*	*8*

ELT-07: Serial communication cable between upper and lower assemblies (Patch connector 2 - Display Board)			
Patch connector 2	**Signal**	**Colour**	**Display Board CN9**
1	*Digital Gnd*	*Orange-White*	*1*
2	*Digital Gnd*	*Orange*	*2*
3	*NC*	*Green-White*	*3*
4	*Download*	*Blue*	*4*
5	*Reset*	*Blue-White*	*5*
6	*NC*	*Green*	*6*
7	*485 Tx/Rx +*	*Brown-White*	*7*
8	*485 Tx/Rx -*	*Brown*	*8*

ELT-09: Handlebar sensor cable (Connector board - Patch connector 5)			
Connector board J3	**Signal**	**Colour**	**Patch connector 5**
1	*Gnd*	*Braid*	*1*
2	*Sensor signal reference*	*White*	*2*
3	*Left sensor signal*	*Black*	*3*
4	*Gnd*	*Braid*	*4*
5	*Sensor signal reference*	*Green*	*5*
6	*Right sensor signal*	*Red*	*6*

ELT-10: Lever cable (Patch connector – Lever)				
Patch connector	**Signal**	**Colour**	**Lever**	
			Sensor	**Button**
1	*Sensor signal*	*Clear*	*Faston*	*-*
2	*Gnd*	*Braid*	*-*	*-*
3	*Lever button signal*	*Green*	*-*	*2*
4	*Sensor signal reference*	*Black*	*Faston*	*-*
5	*Reference*	*Brown*	*-*	*4*
6	*+ 5Vdc Power supply*	*White*	*-*	*1*

ELT-16: HFU Receiver cable (Display Board – HFU Receiver)			
Display Board CN3	**Signal**	**Colour**	**HFU Receiver**
1	*+5 Vdc power supply*	*White*	*2*
7	*Pulse (beat to beat)*	*Black*	*4*
8	*Gnd*	*Green*	*1*

ELT-19: Hand sensor board cable - Lever buttons (Display Board - Patch connector 6)					
Display Board			**Signal**	**Colour**	**Patch connector 6**
CN4	**CN5**	**CN6**			
1	*-*	*-*	*+ 5Vdc Power supply*	*Red*	*8*
2	*-*	*-*	*NA*	*Green*	*7*
3	*-*	*-*	*NA*	*Orange*	*1*
5	*-*	*-*	*Out pulse*	*Blue*	*3*
6	*-*	*-*	*Reference*	*Black*	*2*
-	*1*	*-*	*+ 5Vdc Power supply*	*White*	*12*
-	*2*	*-*	*Left lever button (-).*	*Green*	*11*
-	*4*	*-*	*Reference*	*Brown*	*10*
-	*-*	*1*	*+ 5Vdc Power supply*	*White*	*6*
-	*-*	*2*	*Right lever button (+).*	*Green*	*5*
-	*-*	*4*	*Reference*	*Brown*	*4*

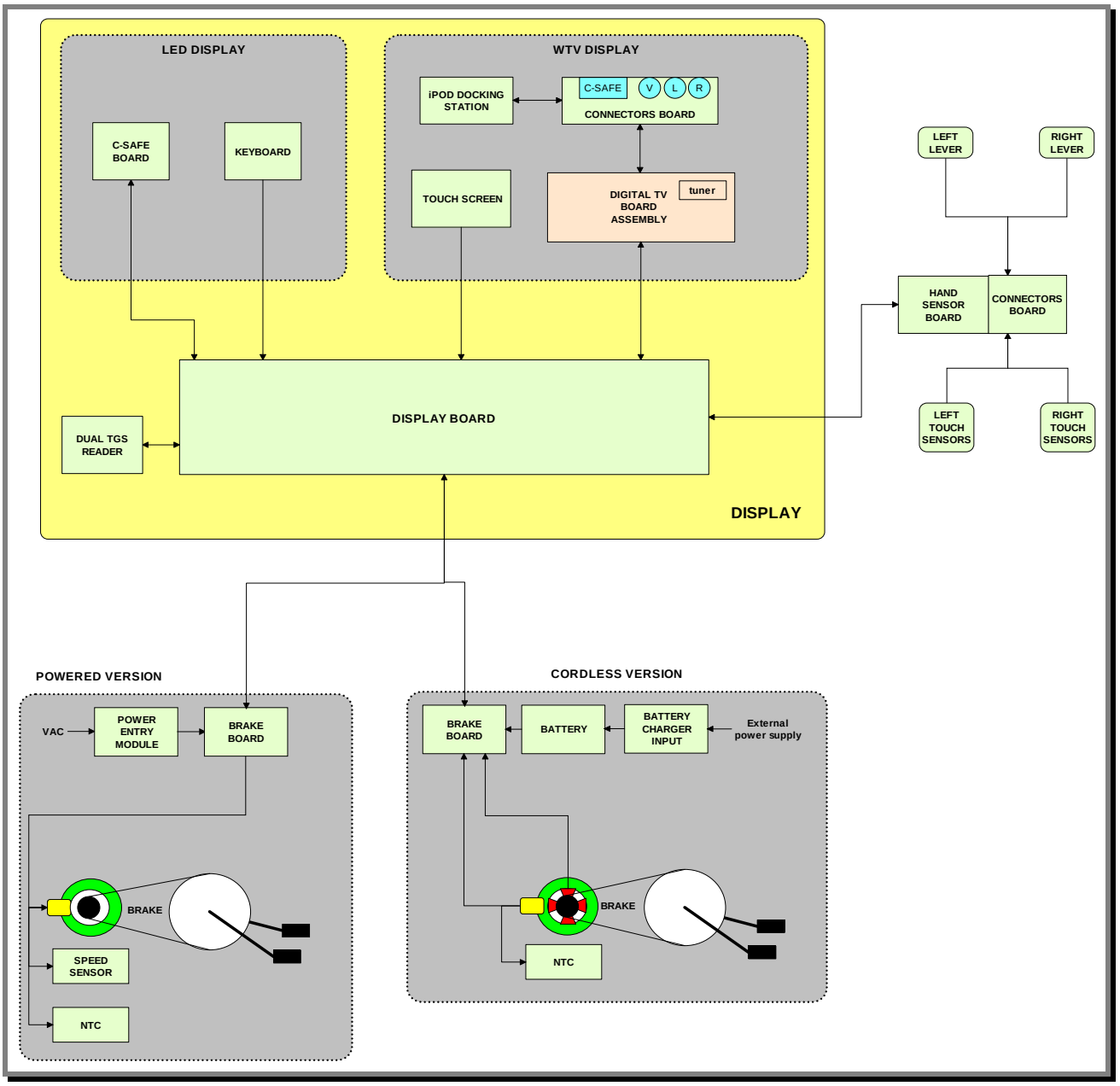
ELT-23: Handlebar sensor cable (Patch connector 5 – Sensors)						
Patch connector	Signal	Colour	Sensors			
			rh 1	rh 2	lh 1	lh 2
1	Gnd	Braid	-	-	-	-
2	Sensor signal reference	Black	-	-	down	down
3	Left sensor signal	White	-	-	up	up
4	Gnd	Braid	-	-	-	-
5	Sensor signal reference	Black	down	down	-	-
6	Right sensor signal	White	up	up	-	-

ELT-31: Hand sensor board cable - Lever buttons (Patch conn. 6 - Hand sensor board - Lever connectors - Connector Board)							
Patch connector 6	Signal	Colour	Hand Sensor Board J3	Lever connector		Connector board	
				RH	LH	J2	J4
8	+ 5Vdc Power supply	Red	4	-	-	-	-
7	NA	Green	1	-	-	-	-
1	NA	Orange	2	-	-	-	-
3	Out pulse	Blue	5	-	-	-	-
2	Reference	Black	3	-	-	-	-
12	+ 5Vdc Power supply	White	-	-	6	-	-
11	Left lever button signal (–)	Brown	-	-	3	-	-
10	Reference	Green	-	-	5	-	-
-	Gnd	Braid	-	-	2	1	-
-	Reference	Black	-	-	4	2	-
-	Left sensor signal	Clear	-	-	1	3	-
6	+ 5Vdc Power supply	White	-	6	-	-	-
5	Right lever button signal (+)	Brown	-	3	-	-	-
4	Reference	Green	-	5	-	-	-
-	Gnd	Braid	-	2	-	-	1
-	Reference	Black	-	4	-	-	2
-	Right sensor signal	White	-	1	-	-	3

3. PRINCIPLES OF OPERATION

3.1. BLOCK DIAGRAM

The machine block diagram is illustrated in the figure below:



3.1.1. LED ARM DISPLAY BOARDS (500 AND 500SP)

The display contains only one board which comprises the CPU, an ARM microprocessor, its logic circuits and a FLASH EPROM containing the operating program for the machine moreover, acts as the interconnection hub for all the components of the display and serves as the point of connection with the brake Board.

The main functions of the board are:

- Manages and process signals from:
  - *Keyboard;*
  - *HR receiver;*
  - *CSafe Board;*
  - *TGS reader (if present).*
- distributes the voltages received from the Brake Board to the display;
- exchanges, via the RS-485 serial link to the Brake Board, the commands for controlling the brake;
- controls the LEDs and the 7-segment displays which provide feedback about the exercise session.

The board includes the following indicator LEDs:

LED name	Colour	Description
LED1	**green**	*if ON the +12 Vdc power supply from the Brake Board correctly reaches the board.*
LED2	**yellow**	*if ON the +5 Vdc power supply from the Brake Board correctly reaches the board.*

3.1.2. LED ARM DISPLAY BOARDS (700 AND 700SP)

The display contains only one board which comprises the CPU, an ARM microprocessor, its logic circuits and a FLASH EPROM containing the operating program for the machine moreover, acts as the interconnection hub for all the components of the display and serves as the point of connection with the Brake Board.

The main functions of the board are:

- Manages and process signals from:
  - *Keyboard;*
  - *HS/HR receiver;*
  - *Touch sensor*
  - *CSafe Board;*
  - *TGS reader (if present).*
- distributes the voltages received from the Brake Board to the display;
- exchanges, via the RS-485 serial link to the Brake Board, the commands for controlling the brake;
- controls the LEDs and the 7-segment displays which provide feedback about the exercise session.

The board includes the following indicator LEDs:

LED name	Colour	Description
LED1	**green**	*if ON the +12 Vdc power supply from the Brake Board correctly reaches the board.*
LED2	**yellow**	*if ON the +5 Vdc power supply from the Brake Board correctly reaches the board.*

3.1.3. WELLNESS TV DISPLAY BOARDS –DIGITAL TV (700WTV)

3.1.3.1. CPU board

The board is called "Unified Board", it is the circuit board which incorporates the CPU, its control logic, the FLASH EPROM containing the operating program of the machine.
It is the circuit board which acts as the interconnection hub for all the components of the display and serves as the point of connection with the digital TV Board and the Brake Board.

The main functions of the board are:

- Manages and process the signal from:
  - *LCD;*
  - *Inverter for LCD;*
  - *Touch screen;*
  - *Headphone jack;*
  - *AUX input Board;*
  - *HS/HR receiver;*
  - *Touch sensors;*
  - *TGS reader (if present);*
  - *iPod docking station (if present).*
- Distributes the voltages received from the Brake Board to the display;
- Exchanges, via the RS-485 serial link to the Brake Board, the commands for controlling the brake;
- Manages the display of images on the LCD.

The board includes the following indicator LED:

LED name	Colour	Description
D41	**green**	*if ON the +12 Vdc supply from the Brake Board correctly reaches the CPU board.*

and a faston:

Nome	Descrizione
J2	*denotes a ground node on the circuit board.*

3.1.3.2. Digital TV board

It's the circuit board which contains the decoder and all the components needed to receive and manage the aerial antenna signal.
Directly to this board it is connected the antenna cable. Here it's signal is amplified, divided between the video and audio signal, codified by the decoder and managed by the tuner which allows to tune the TV and radio channels.
Due to its positioning on the rear display support, just over the AUX input board, it is also used as a "bridge" for the signals between AUX input board and iPod docking station, and CPU board.

3.1.3.3. LCD Inverter

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

3.1.3.4. Touch screen interface board

This is the board that controls the 4-wire resistive Touch Screen and interfaces the Touch Screen to the CPU Board.

3.1.3.5. AUX input board

It is the circuit Board which allows audio and video external sources to be displayed on the LCD base band. The board manages also the functions of the CSafe Board, detailed in the following pages, and provides 3 RC connectors and the RJ45 connector for the CSafe communication.

3.1.3.6. iPod docking station

It is the device that allows to plug & store iPod models, in a safe docking station and to control it from the ACTIVE Wellness TV interface.
With the docking station, developed for the full compatibility with iPod, it is possible to power, recharge and fully control it from the touch screen of the machine.

In the following table, all the compatible iPod models:

iPod 5st gen. 	*iPod Classic* 	*iPod mini* 
iPod Nano 	*iPod Touch* 	*iPhone* 

3.1.3.7. Headphone jack

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

3.1.4. CSAFE BOARD

This board makes available a communication port, on 1 externally accessible connector, which can be used for interfacing compatible CSafe devices such as the CardioTheater readers. This connector is situated on the back of the display.
On Wellness TV models these functions are carried out by the AUX Input Board.

These connectors can also be interfaced, using a special cable, to an external PC for programming the FLASH EEPROM.

3.1.5. 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 propers SW of the Wellness System.
With Dual TGS reader it is possible to use both the Botom and the Mifare TGS keys.

3.1.6. CARDIO RECEIVER

This board manages the signal received from the telemetric transmitter used by the person exercising. It receives the power supply signal from the display board and outputs a negative logic pulse for every heart beat that is detected: the signal level is normally 5 Vdc, with a pulse at 0 Vdc (having a width of approximately 30 msec) at each heart beat.
The receiver reception area is approximately a circle with a 1 m radius. If there is electromagnetic noise (produced by high voltage lines, radio transmitters, monitors, motors etc.) within this area, the receiver becomes saturated and no longer receives any signal.

3.1.7. BRAKE BOARD

There are 2 versions of the Brake Board, one which is used on the mains powered version and the other on the self-powered version. In either case, the Brake Board consists of:

- Power supply section which generates the low voltages used by the machine: +5 Vdc and +12 Vdc. Depending on the machine version, these voltages will be generated either from the 110 VAC or 220 VAC mains supply, or from the alternator-battery.

- Section for RS-485 serial communications with the Display Board for:

  - *commands determining the resistance that is required of the brake;*
  - *brake error messages;*
  - *commands for modifying the circuit board configuration parameters;*
  - *commands for viewing the errors logged by the circuit board.*

- 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 LEDs:

LED name	Colour	Description
LED1	**green**	*if ON the board is supplying the brake winding.* *if BLINKING the Brake Board is in an error condition.*
LED2	**yellow**	*if ON there is the +5 Vdc supply from the circuit Board.*

3.1.8. BRAKE

This is an eddy current brake, consisting of a flywheel mass and a flat copper disk that rotates in the air gap of a winding. Variations in the winding current produce a change in the resulting field, which consequently varies the eddy currents induced within the copper disk and hence its resistance to movement.

The winding has a resistance of approximately 3.5 Ω(Ohm).

A klixon thermal cut-out, installed directly on the winding, interrupts the circuit whenever it detects a temperature exceeding 140°C.

3.1.9. SPEED SENSOR

Only for 500, 700 and 700WTV versions.

This consists of a magnetic induction sensor which detects the heads of the brake disk fixing screws. On the self-powered machine, the speed sensor is directly built-in on the alternator (see paragraph 3.1.11. “Alternator”).

3.1.10. 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 platform.

WARNING: The power entry module has a maximum current rating of 10 A. This places an upper limit on the number of machines that can be connected together. Therefore, do not connect more than 6 New Bike Excite machines with a 220 VAC mains supply, or 3 machines with a 110 VAC mains supply. If other types of machines are connected together, the maximum number is determined by their current draw.

3.1.11. ALTERNATOR

Only for 500SP and 700SP versions.

The alternator consists of a stator winding whose rotor is put into rotation by the movement of the pedals, generating the voltage necessary for the machine's operation.

Depending on the rate of pedaling and the resulting speed of rotation, it generates an alternating voltage which ranges from approximately 15-17 VAC at about 30-35 RPM to over 40 VAC for higher pedaling speeds.

The alternator has a built-in speed sensor which provides to the Brake Board the speed signal.

3.1.12. BATTERY

Only for 500SP and 700SP versions.

This is a 12 V – 4.5 AH battery which, in the self-powered version, supplies the machine whenever the alternator is unable to produce a sufficient voltage for powering the machine, and for at least 30 seconds after the user has stopped pedaling to allow data to be saved in memory.

The battery can be recharged in 2 ways:

- *during the exercise, through the Brake Board;*
- *in the standby condition, from an external power supply included with the machine, which is able to fully recharge the battery in 8 hours.*

Do not use the machine during recharging with the external power supply.

3.1.13. EXTERNAL POWER SUPPLY INPUT

Only for 500SP and 700SP versions.

This is a socket for plugging in the external power supply that comes with the machine, which can be used to recharge the battery. It is situated on the side of the front platform.

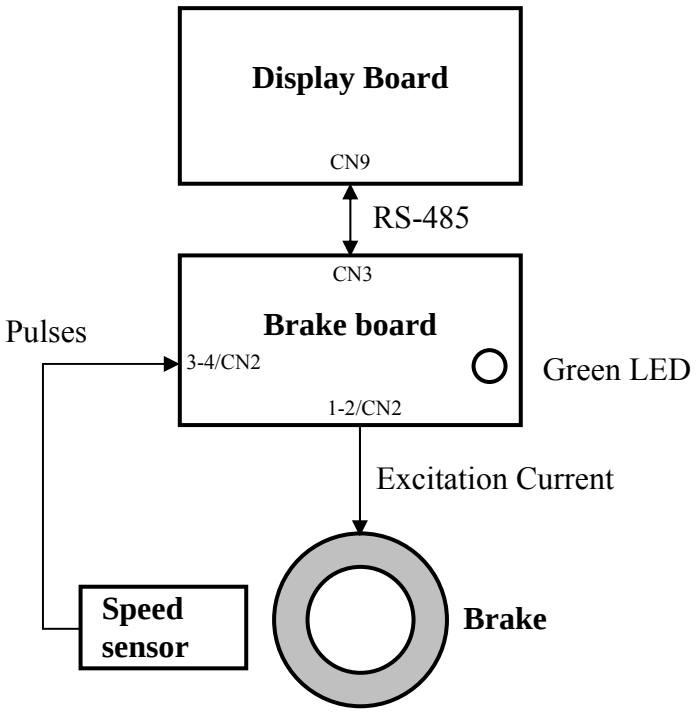
3.2. BRAKE CONTROL

3.2.1. MECHANICS

The motion of the pedals imparts a rotation to the primary shaft via the belts and pulley system.
The primary shaft is connected to the secondary shaft and so to the brake, by means of a belt. The speed sensor (only on mains operated models) 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. On self powered machine, the speed value is detected measuring a phase of the alternator.

3.2.2. CONTROLS

The control block diagram is as follows:



To obtain a given exercise effort level, the Display Board sends the required value of "electrical" resistance to the Brake Board via the RS-485 serial link. Based on the commands received and the feedback signal from the speed sensor, the Brake Board will then apply the appropriate excitation current to the brake winding and generate an electromagnetic field.

The value of the current applied is based on the value of the brake table memorized into the Brake Board.

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.
A higher brake excitation signal will produce a correspondingly higher exercise resistance. In addition, for a given value of brake excitation, a higher speed of disk rotation will produce a correspondingly higher exercise resistance.

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

The Brake Board effects an open loop control of the brake, with no provision for regulating the value of resistance produced but only uses the brake table memorized into the Brake Board. The precision of the braking system has a tolerance of ±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, on the mains operated machines. On the self powered machines, the speed signal comes directly from the measure of an alternator phase.

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:

Error Code	Description
1	**OVERHEATING:** this condition occurs when the temperature detected by the sensor on the circuit board exceeds 90°C.
2	**OVERCURRENT:** this condition occurs when the Brake Board detects an excessive amount of current being sent to the winding.
8	**OVERVOLTAGE:** this condition occurs when the +12 Vdc voltage goes above 13.7 Vdc (only on the 500, 700 and 700WTV models).
16	**SOLENOID OVERHEATING:** this condition occurs when the NTC, connected in series with the solenoid, detects a temperature higher than 140°C and opens the circuit.
32	**EPROM**: SW error on the Brake Board (braking table).
128	**REFERENCE VOLTAGE FAULT:** this error condition occurs when the calibration parameter stored in the Brake Board is incorrect.

In the case of error 128, the machine remains fully functional, but the braking resistance produced will not correspond to the value entered on the display. In all other 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 (COM)" message.

3.2.3. 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:

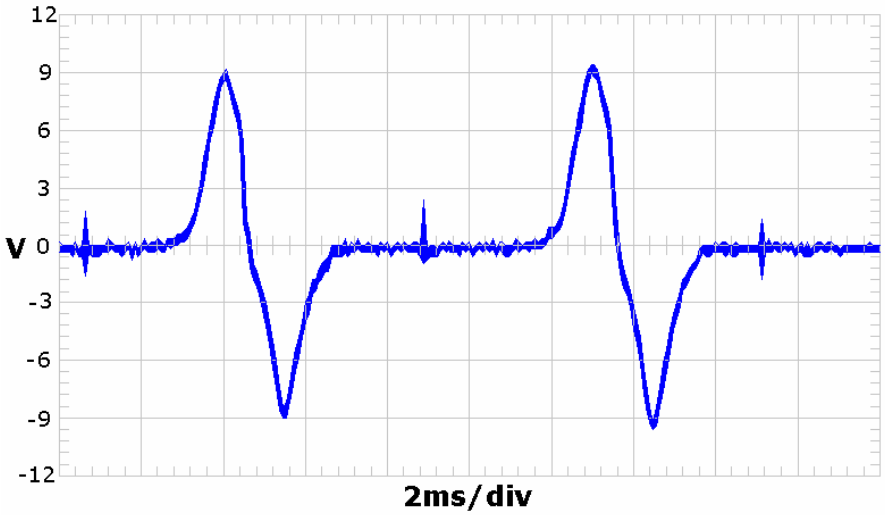


Figure 3.2-1

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 0 Vdc 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.

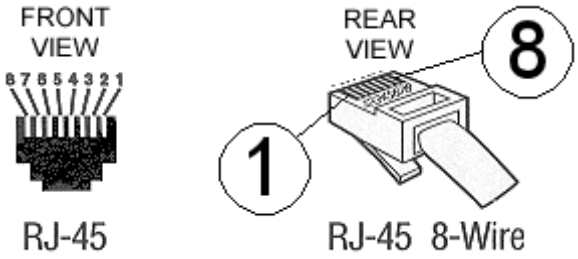
4. ACCESSORIES

4.1. CARDIO THEATER CONNECTION

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

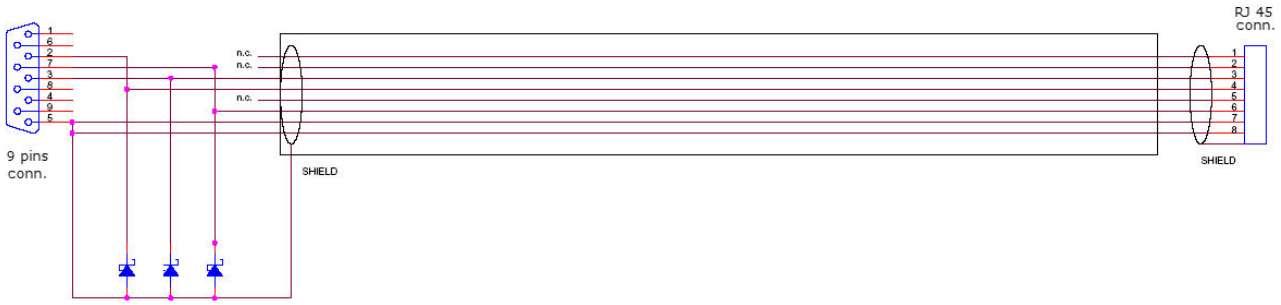
RJ45 Connector	Signal
5	+5 Vdc
7	Ground

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

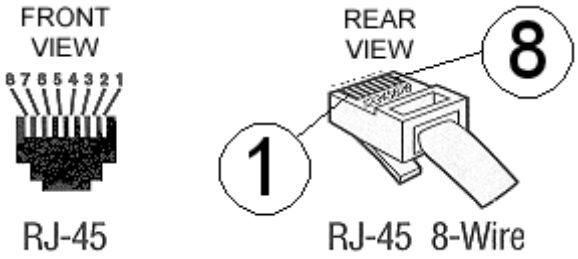


4.2. PC LINK FOR PROGRAMMING

The machine can be connected to a PC for programming by means of the RJ45 connector on the CSafe board.

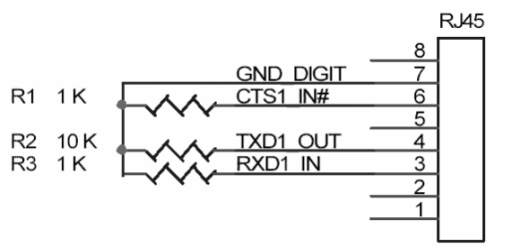


WARNING: for the numbering of the pins, on RJ45 connector, please refer to the diagram below:



When programming the machine sometimes it is necessary to fit plug into the free RJ-45 port on the back of the display, to avoid any type of interference during the operation.

The wiring diagram of the RJ-45 plug is as follows:



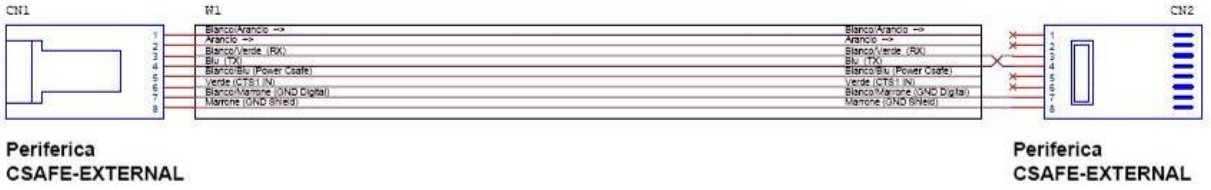
Programming cable and plug can be ordered using the code **H0002534AB**.

4.3. CABLE FOR EXCHANGING TV CHANNEL TUNING DATA BETWEEN TWO MACHINES

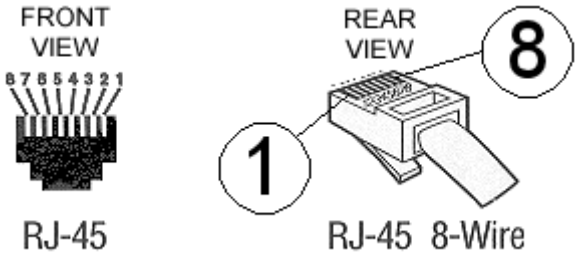
The link for transferring the TV channel tuning data from one machine to the other is effected via a special cable, which plugs into the RJ45 connectors of the CSafe boards.

The cable to use (code **0WC00644AA**) must be wired as follows:

Cable CSafe Periferic			
CSafe Board; RJ45	***Signal***	***Colour***	***CSafe Board; RJ45***
3	*Tx*	*White*	*4*
4	*Rx*	*Brown*	*3*
7	*Digital Ground*	*Green*	*7*
8	*Ground Shield*	*Yellow*	*8*

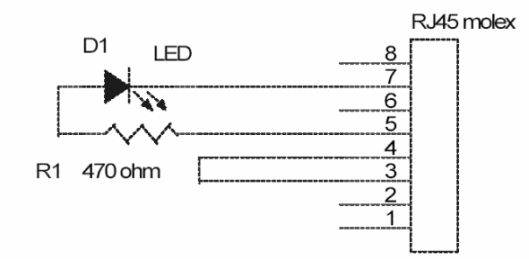


WARNING: for the numbering of the pins, on RJ45 connector, please refer to the diagram below:



4.4. MONITOR PLUG FOR CSAFE PORT

When the plug code **0WC00639AA** is fitted into any one of the CSafe ports on the machine, the corresponding LED should illuminate to indicate the presence of the 5 Vdc supply on the port.
During the CSafe 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.



4.5. WELLNESS TV UPGRADE KIT

There are upgrade kits available for converting Excite machines from the version with traditional LED Display to the Wellness TV Display version with ACTIVE TV interface and integrated digital TV decoder. The kit also includes all the cables and connectors required for the input of the antenna signal.
The table below gives the codes of the kits, to be chosen according to the TV standard used in the installation country.

WELLNESS TV UPGRADE KIT	CODICE
SYNCHRO 700 DVB-T	A0000404-D
SYNCHRO 700 ATSC	A0000404-A
SYNCHRO 700 ISDB-T	A0000404-I

In the following table you can find the list of the analogyc and digital TV standard of the different countries.

COUNTRY	DIGITAL TV	ANALOG TV	COUNTRY	DIGITAL TV	ANALOG TV
ALBANIA	DVB-T	PAL B/G	***LUXEMBOURG***	DVB-T	PAL B/G
ANGOLA	DVB-T	-	***MALAYSIA***	DVB-T	PAL B
AUSTRALIA	DVB-T	PAL B/G	***MALTA***	DVB-T	PAL B/G
AUSTRIA	DVB-T	PAL B/G	***MAURITIUS***	DVB-T	SECAM B
AZERBAIJAN	DVB-T	-	***MEXICO***	ATSC	NTSC M
BAHAMAS	ATSC	NTSC M	***MONACO***	DVB-T	SECAM/PAL L/G
BAHRAIN	DVB-T	PAL B	***MOROCCO***	DVB-T	SECAM B
BELGIUM	DVB-T	PAL B/G	***NETHERLANDS***	DVB-T	PAL B/G
BERMUDA	DVB-T	NTSC M	***NEW ZEALAND***	DVB-T	PAL B/G
BRAZIL	ISDB-T	PAL M	***NIGERIA***	DVB-T	-
BULGARY	DVB-T	SECAM D/K	***NORWAY***	DVB-T	PAL B/G
CANADA	ATSC	NTSC M	***OMAN***	DVB-T	-
COLOMBIA	ATSC	NTSC M	***PHILIPPINES***	DVB-T	NTSC M
CYPRUS	DVB-T	PAL B	***POLAND***	DVB-T	PAL D/K
CZECH REPUBLIC	DVB-T	SECAM/PAL D/K	***PORTUGAL***	DVB-T	PAL B/G
DENMARK	DVB-T	PAL B	***P.R.CHINA***	DVB-T	PAL D/K
EGYPT	DVB-T	SECAM B	***QATAR***	DVB-T	-
FAROE ISLANDS	DVB-T	PAL B	***ROMANIA***	DVB-T	PAL G
FINLAND	DVB-T	PAL B/G	***RUSSIA***	DVB-T	SECAM D/K
FRANCE	DVB-T	SECAM E/L	***SAUDI ARABIA***	DVB-T	SECAM B
GERMANY	DVB-T	PAL B/G	***SERBIA***	DVB-T	-
GHANA	DVB-T	-	***SINGAPORE***	DVB-T	PAL B
GREECE	DVB-T	PAL B/G	***SLOVAKIA***	DVB-T	-
HONG KONG	DVB-T	PAL I	***SLOVENIA***	DVB-T	-
HUNGARY	DVB-T	PAL B/G & D/K	***SOUTH AFRICA***	DVB-T	PAL I
INDIA	DVB-T	PAL B	***SOUTH KOREA***	ATSC	NTSC M
INDONESIA	DVB-T	PAL B	***SPAIN***	DVB-T	PAL B/G
IRAN	DVB-T	SECAM H	***SWEDEN***	DVB-T	PAL B/G
IRELAND	DVB-T	PAL I	***SWITZERLAND***	DVB-T	PAL B/G
ISRAEL	DVB-T	PAL B/G	***SYRIA***	DVB-T	-
ITALY	DVB-T	PAL B/G	***TAIWAN***	DVB-T	NTSC M
JAPAN	ISDB-T	NTSC M	***TUNISIA***	DVB-T	SECAM B
JORDAN	DVB-T	PAL B	***TURKEY***	DVB-T	PAL B
KAZAKHSTAN	DVB-T	-	***U.S.A.***	ATSC	NTSC M
KENYA	DVB-T	PAL B	***UAE***	DVB-T	PAL B/G
LATVIA	DVB-T	-	***UNITED KINGDOM***	DVB-T	PAL I
LEBANON	DVB-T	-	***URUGUAY***	DVB-T	PAL N

LIBYA	DVB-T	-			

Page intentionally left blank

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: 2.5. “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.

Only for the 500, 700 and 700WTV models:

6. The mains voltage must match the value specified on the machine rating plate.
7. The electrical system must be correctly earthed.
8. The wall outlet used should be reserved for the machine and have a rating of at least 100VA.
9. The maximum number of machines connected in cascade should be that indicated in paragraph 3.1.10. “Power entry module”.
10. Position the mains lead of the machine where it will not be underfoot.

5.2. INSTALLATION REQUIREMENTS AND SPECIFICATIONS FOR WELLNESS TV MACHINES

You can find below the data useful for antenna technician, in order to check if the antenna signal is suitable for Excite Wellness TV machines.

THE VALUES IN THE FOLLOWING TABLES MUST BE MEASURED DIRECTLY ON THE ANTENNA INLET CONNECTOR OF THE MACHINE.

ATTENTION: If the machine is not connected to a terrestrial antenna—or if it is but the antenna signal line is interrupted by devices such as TV distribution units, modulators, etc… The machine will not be able to receive a usable antenna signal for radio channel tuning.

RADIO FM SIGNAL: On machines with Digital TV receiver, it is possible only the tuning of the digital band and not the analogue one.

5.2.1. DIGITAL SIGNAL

DVB-T	
Level	***Higher than** -65 dBm **(44 dBµV) (-16 dBmV)***
Quality	***CH B.E.R.** < 10^{-3} **(Channel Bit Error Rate)*** ***Or*** *C/N (Carrier to Noise ratio)* ***Modulation type 16 QAM:** > 13 dB* ***Modulation type 64 QAM:** > 23 dB*

ATSC	
Level	***Higher than** -65 dBm **(44 dBµV) (-16 dBmV)***
Quality	*CH B.E.R.* ***< 10^{-3} (Channel Bit Error Rate)*** ***or*** *C/N (rapporto Carrier to Noise) > 23 dB*

ISDB-T	
Level	*Higher than **-65 dBm** (44 dBµV) (-16 dBmV)*
Quality	***CH B.E.R.** < **10^{-3}** (Channel Bit Error Rate)* *or* ***C/N (rapporto Carrier to Noise)*** *Modulation type 16 QAM: > **13 dB*** *Modulation type 64 QAM: > **23 dB***

Regarding the quality of the signal, it's more relevant the CH.B.E.R. value instead of the C/N.

5.2.2. ANALOGUE SIGNAL

ALL STANDARD	
Level	*Higher than **-50 dBm** (59 dBµV) (-1 dBmV)*
Quality	*S/N (Signal to Noise ratio)* *Higher than +50 dB*

WARNING: If the machine is not connected to a terrestrial antenna--or if it is but the antenna signal line is interrupted by devices such as TV distribution units, modulators, etc.--the machine will not be able to receive a usable antenna signal for radio channel tuning.

5.3. 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.

Only for 500, 700 and 700WTV models.

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.

Only for 700WTV model.

7. Connect the antenna cable to the socket.

5.4. FIRST POWER-ON

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

On the 500, 700 and 700WTV models, simply turn the on/off switch from position 0 to position 1, while on the 500SP and 700SP models it is necessary to get on the machine and start pedaling.

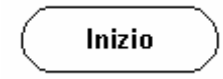
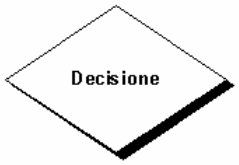
On power-up the machine performs a self-test of the upper and lower assemblies. After completing the self-test, the machine enters the stand by state, awaiting a command from the keyboard.

To check the correct operation of the machine:

- get on the machine;
- start exercising;
- check that the displayed speed varies accordingly;
- check that exercise resistance varies when the "+" and "-" effort level keys are pressed, or the touch sensors on the 700, 700 SP and 700WTV models are pressed, 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;
- only for 700, 700 SP and 700WTV: grasp the sensors and check that the machine correctly reads the heart rate value.
- only for 700WTV: Carry out the procedure described in paragraph: 9.9. "Touch screen calibration".

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:

	This type of box is the START point of the troubleshooting procedure. It typically contains a description of the problem or malfunction.
	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.
	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: 1. *Check whether the problem has been resolved;* 2. *If the problem persists, it is recommended to resume the troubleshooting procedure from the point before the action was carried out.*
	A *circled number* (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.
	A *circled letter* (such as that shown on the left) is used to mark a point in the procedure. Typically, this indicator is used in page changes.

The connectors indicated in the following pages, refer to 700 model's LED Boards, unless otherwise indicated.

6.1. TROUBLESHOOTING SERVICE MENU: ACTIVE WELLNESS TV MODELS

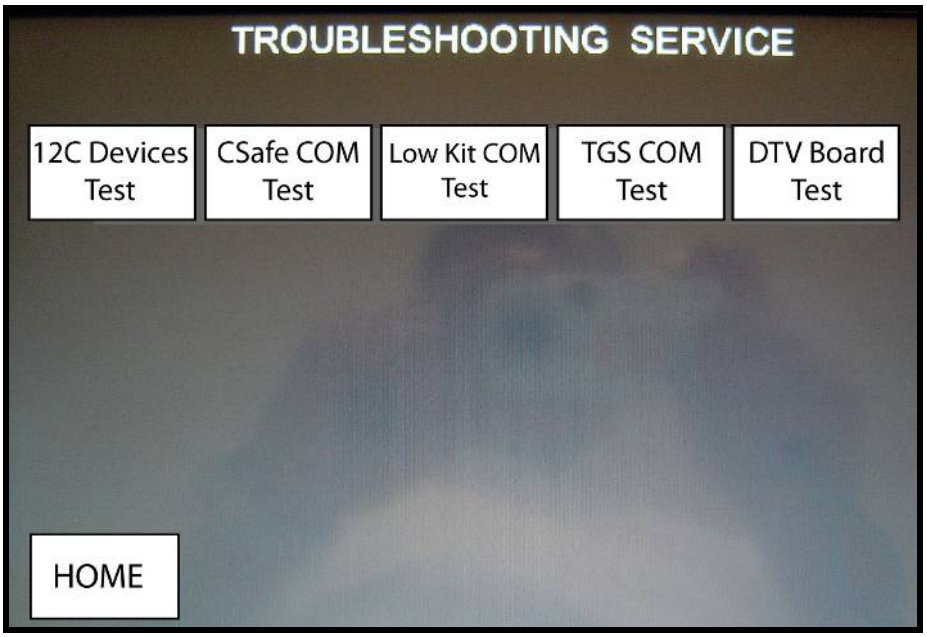
The machine configuration procedure is invoked, when the machine is in standby mode, by pressing the top right hand, the bottom left hand and the bottom right hand corner in sequence, as shown in the picture below.

The machine display will shows a window from where you can access the different configuration menus, using the proper password.

To access the menu, type in the password **2411** and press **ENTER** key to confirm or **BACK** key to back forward.

At this point the machine display will shows the different parameters of the menu. To exit the TROUBLESHOOTING menu press **HOME** key.

Here below have been detailed all the parameters of the menu.



6.1.1. I2C DEVICE TEST

The I2C Device test checks the communication following the 32K and 256K memories. The test can have two outcomes:

- ***"Test Successful":*** *Signifies that data packets were successfully transmitted and received toward the display board.*
- ***"EEPROM Error"****: Signifies that the display board has communication problems with the memories.*

6.1.2. CSAFE COM TEST

The test checks the communication on CSafe ports. The test can have two outcomes:

- ***"Test Successful":*** *This means that the test was completed successfully, i.e. that serial communications on the selected port are correct.*
- ***"Error COM1":*** *This means that the outcome of the test was negative.*

The "CSafe COM test" done on a machine which CSafe port is not plugged with the monitor plug described at chapter 4 of the Service & Maintenance manual.

6.1.3. LOW KIT COM TEST

The test checks the communication with the Low kit. The test can have two outcomes:

- ***"Test Successful":*** *This means that the test was completed successfully, i.e. that serial communications on the selected port are correct.*
- ***"Error COM2":*** *This means that the outcome of the test was negative.*

6.1.4. TGS COM TEST

The test checks the communication with the TGS reader. The test can have two outcomes:

- ***"Test Successful":*** *This means that the test was completed successfully, i.e. that serial communications on the selected port are correct.*
- ***"Error COM3":*** *This means that the outcome of the test was negative.*

The "TGS COM test" done on machine not provided with the key reader gives a fail outcome.

6.1.5. DVT BOARD TEST

It's a command that allows to divert the serial communication, usually between the Digital TV boardand the CPU board, on the external CSafe port.
This function wich allows to connect an external device to the Digital TV board is not used at the moment.

Once the function has been launched it is necessary to switch off and switch on again the machine to reinstate the correct connection.

6.2. SERVICE TROUBLESHOOTING MENU: MODELLI LED

The configuration procedure is invoked when the machine is in standby mode, using a different procedure for the 500 and 700 models.

• Accessing configuration of 500 models

Simultaneously press the **ENTER**, ↑, **CLEAR** keys. The following prompt appears on the display:

ENTER PASSWORD:

To access the procedure, type in the password **2501** which protects against unauthorized access and press "Enter" to confirm. To enter the password, increase or decrease the displayed value using the ↑ and ↓ keys, or use the **+/- GOAL** keys to scroll through and modify the individual digits.
At this point there are two options available:

↑ = Tech Config
↓ = Troubleshooting

Press numeric key ↑ to access the menu for configuring technical parameters; the machine display will begin showing the current configuration, structured as in the diagram below:

• Accessing configuration of 700 models

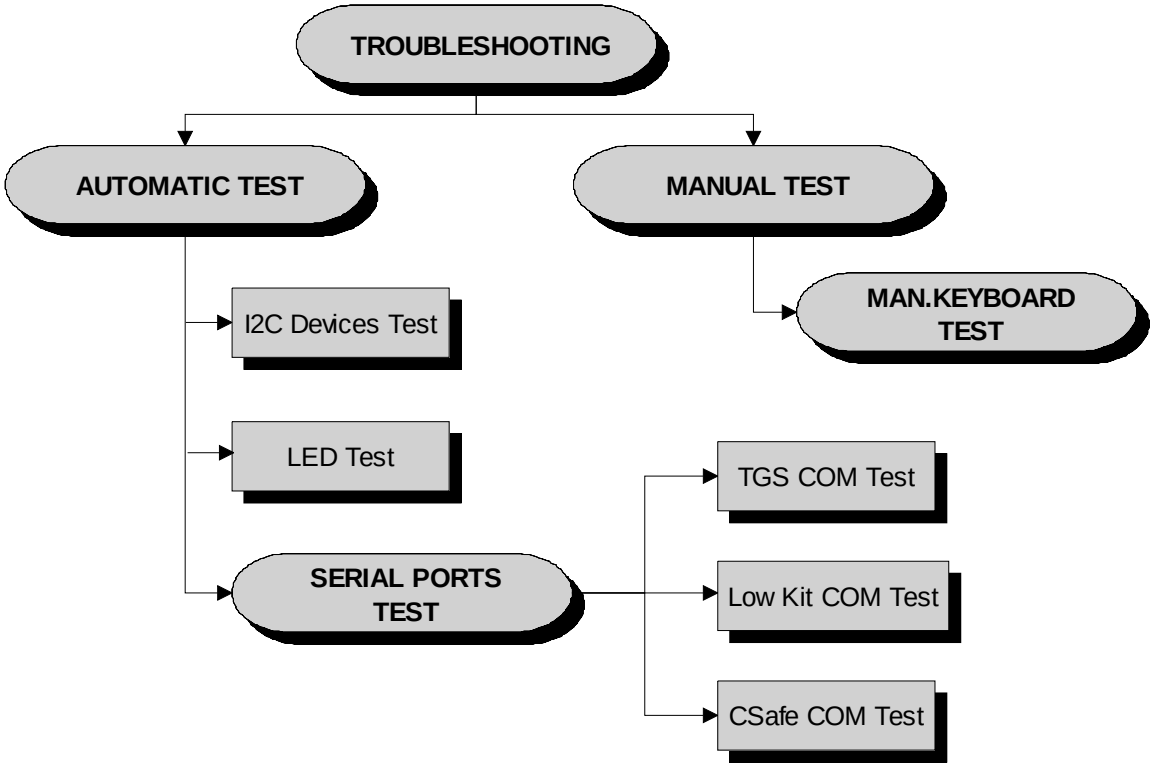
Simultaneously press the keys **369** for 700 LED models, whereas on 700 Wellness TV models the keys **0369** must be pressed one after the other. The following prompt appears on the display:

ENTER PASSWORD:

To access the procedure, type in the password **2501** which protects against unauthorized access and press the "Enter" key to confirm. At this point there are two options available:

1 = Tech Config
2 = Troubleshooting

Press numeric key **1** to access the menu for configuring technical parameters; the machine display will begin showing the current configuration, structured as in the diagram below:



To scroll through the list of available functions, press the + or – effort level keys to display the next or the preceding item; confirm the choice by pressing **ENTER**. To cancel the operation, press the **CLEAR** key for a few seconds.

*The tests are divided into two groups: **Automatic** and **Manual**, and the prompt for a choice appears immediately on accessing the troubleshooting menu.*

6.2.1. AUTOMATIC TEST

The tests grouped under this section conduct checks on the machine's operation in a fully automatic manner. After selecting the desired test using the + and – effort level keys, press **ENTER** to initiate the test and then await the result. Press **ENTER** again to continue, and use the **CLEAR** key to return to the higher menu level, holding it down for a few seconds. The various tests are described below.

6.2.1.1. I2C Devices Test

The I2C Devices test checks the communication following the 32K and 256K. The test can have outcomes:

- ***"Test Successful, press Enter to continue"**: Signifies that the transmission and reception of data packets between the I2C devices and the display board was completed successfully.*
- ***"EEPROM Error, press Enter to continue"**: Signifies that the display board is having problems communicating with its memories.*

6.2.1.2. LED Test

The LED test checks the functioning of the display by lighting all the LEDs in the matrix. It also tests the buzzer by changing the frequency to produce a variation in the tone of the sound.

There is no message displayed concerning the outcome of this test, which must therefore be checked visually.

6.2.1.3. Serial Ports Test

The serial ports test checks the communications on the following interface ports:

- *CSafe COM test;*
- *Low Kit COM test;*
- *TGS COM test.*

Using the + and – effort level keys, select the desired test item and confirm by pressing **ENTER**. The test can have two outcomes:

- ***"Test Successful, press Enter to continue":*** *This means that the test was completed successfully, i.e. that the communications on the selected serial port are functioning correctly.*
- ***"COMx error, press Enter to continue"****: This means that the outcome of the test was negative: the message will specify COM1 in the case of the CSafe COM test, COM2 in the case of communications with the low kit, or COM3 in the case of the TGS COM test.*

The "TGS COM test" done on machine not provided with the key reader gives a fail outcome. The same if the "CSafe COM test" is done on a machine which CSafe port is not plugged with the monitor plug described at paragraph: 4.4. "Monitor plug for CSafe port".

6.2.2. MANUAL TEST

The tests grouped under this section conduct checks on the machine's operation in a fully automatic manner. After selecting the desired test using the + and – effort level keys, press **ENTER** to initiate the test and then await the result. To exit test mode, press and hold down the **CLEAR** key for a few seconds.

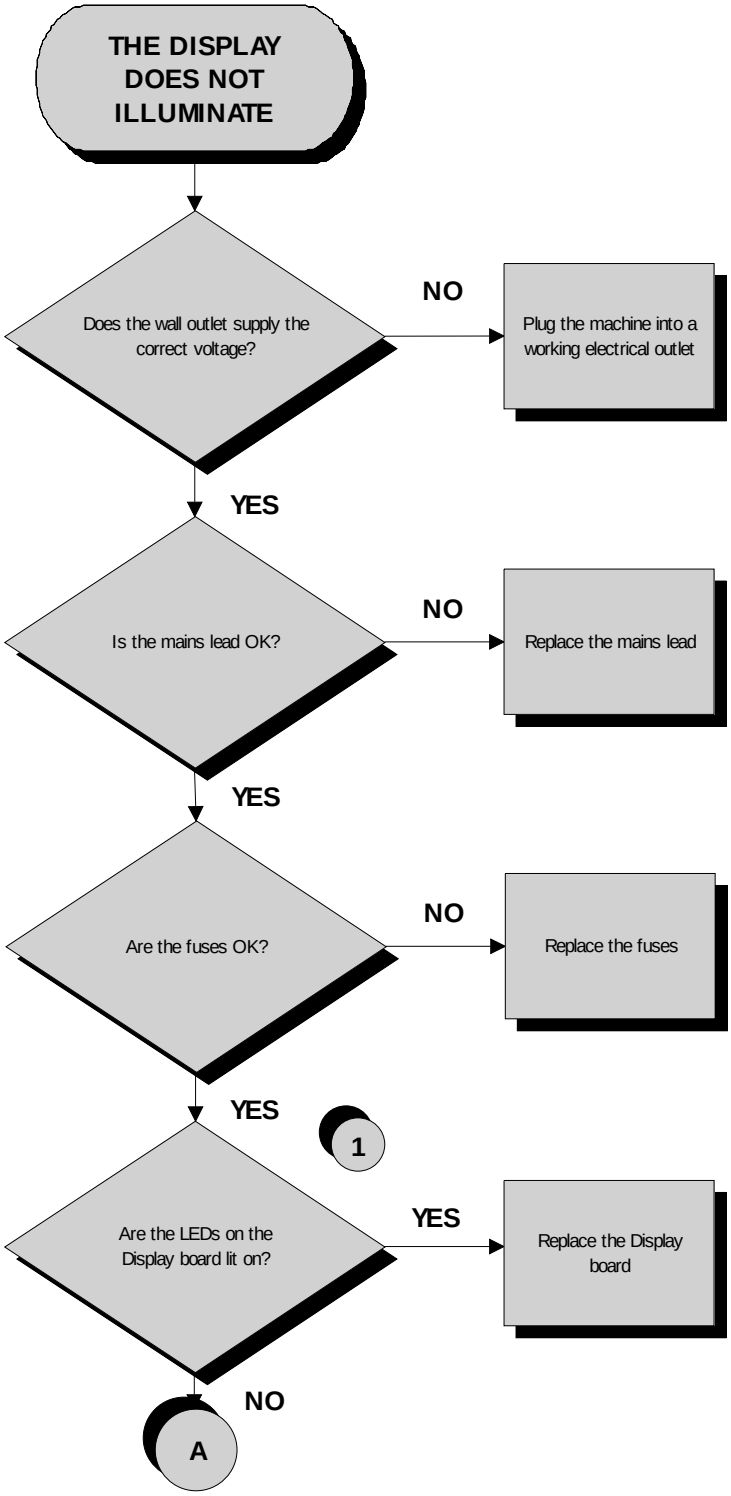
6.2.2.1. Man. Keyboard Test

The manual keyboard test checks the functioning of all the keys on the keyboard. After accessing the test by pressing **ENTER**, the message "**Press all buttons (beep=OK)**" appears on the display. Pressing each key will produce an audible signal; if a key does not produce the beep it means it is not working properly.

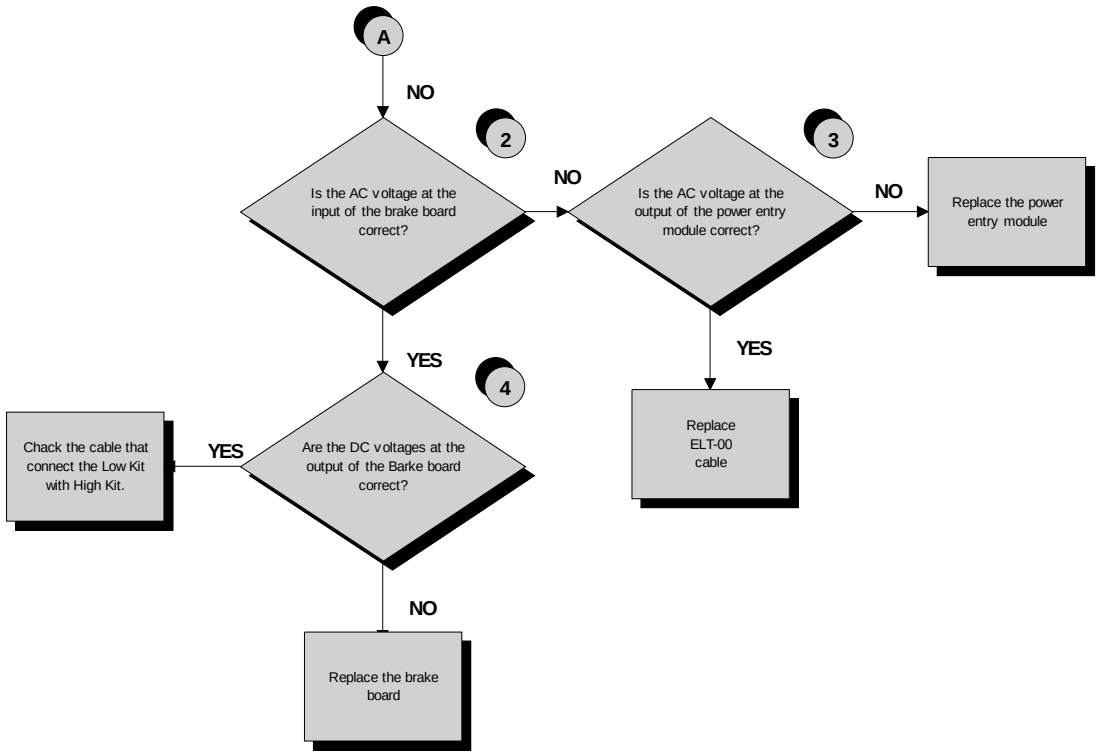
6.3. THE DISPLAY FAILS TO ILLUMINATE

This error occurs when the power supply voltage is not reaching the upper assembly.

6.3.1. 500 AND 700 MODELS



Continued on the 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 **LEDs 1** and **2** (*green and yellow*)**,** of the Display Board, are correctly lit on.

(2) Place the tester probes across pins **3** and **1** of **CN4** connectors on the Brake Board The measured value should be approximately 220 VAC or 110 VAC depending on the mains voltage.

(3) Slightly lift up the fast-on on the machine power entry module. Place the tester probes across the live and neutral pins on the same connector. The measured value should be approximately 220 VAC or 110 VAC depending on the mains voltage.

(4) Using a tester, check that all the output voltages on connector **CN1** of the Brake board. The measured value should be:

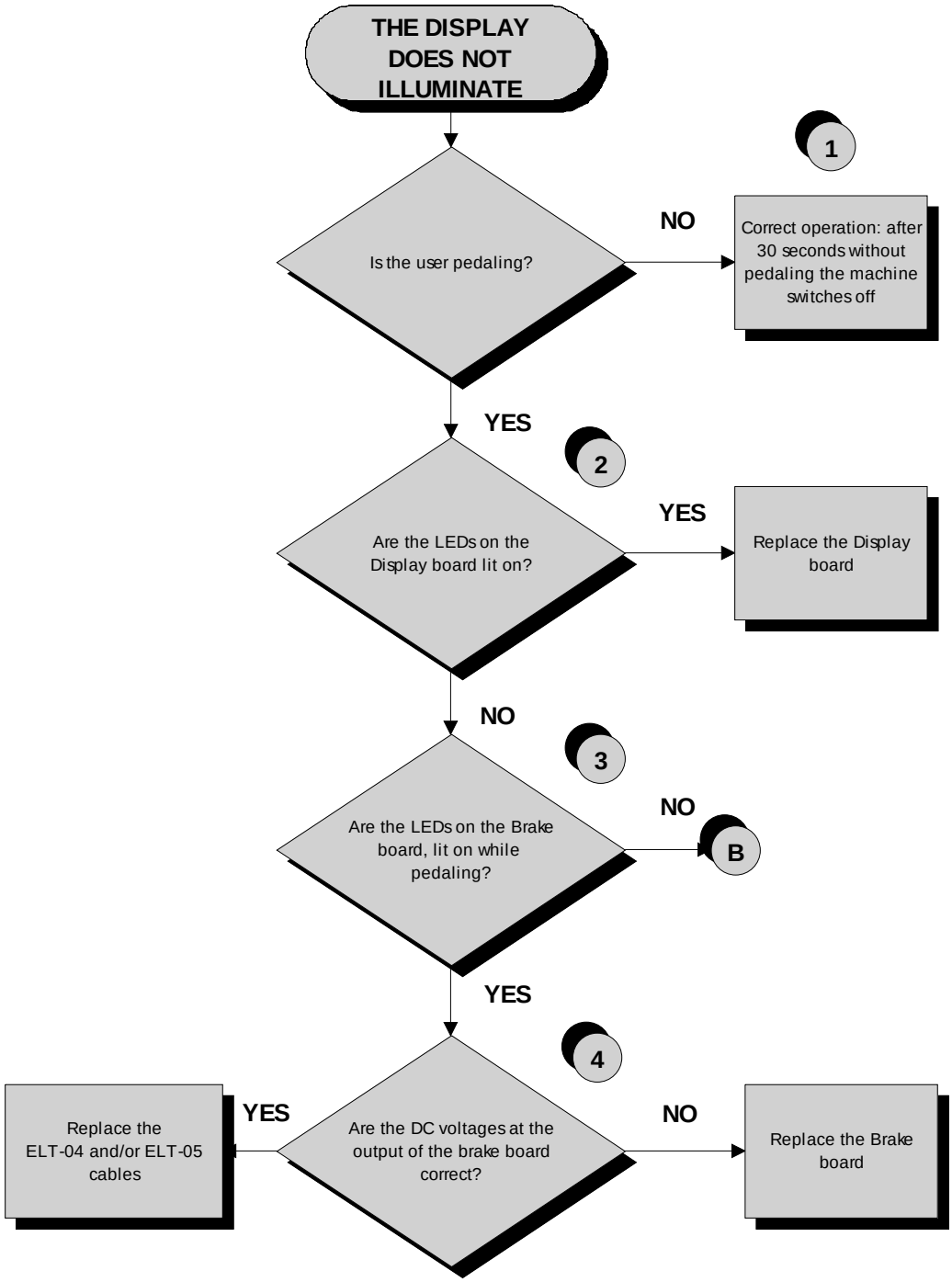
- +12 Vdc between pins **6-2**;
- +5 Vdc between pins **7-3**.

(5) Check the continuity of the signal through **ELT-04** and **ELT-05** cables, which connect the High Kit with Low Kit. Check also they are correctly connected and in a good state of wear, replace if necessary.

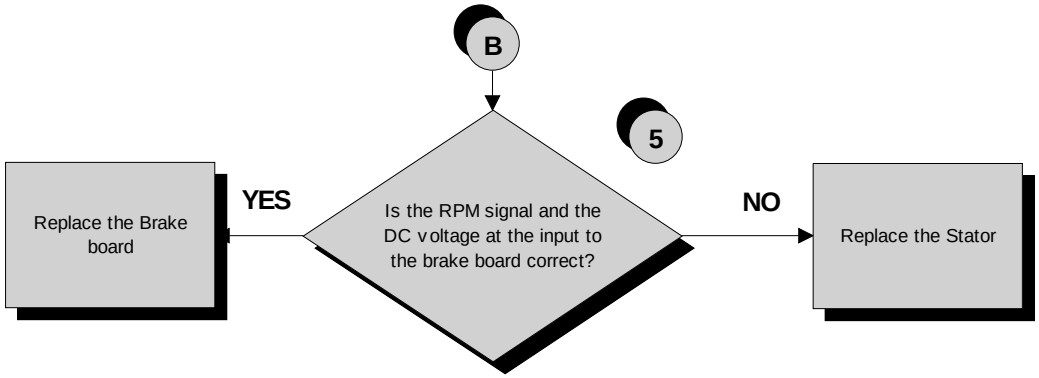
If you replace Display board/Brake board, check that its SW version is updated, otherwise install the last version.

6.3.2. 500SP AND 700SP MODELS

The problem may be caused by the display Board don't receiving the speed signal



Continued on the 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:

To speed up the troubleshooting procedure, check the state of the power indicator LEDs on the various circuit boards.

(1) Check if the machine stays on for 30 seconds after having stopped pedalling. If the machine switches off in few seconds, check if the fuse on the **ELT-01**cable is blown. Than check the battery charge, if it isn't about 12Vdc, recharge the battery for 8 hour with an external power pack, without using the machine.

(2) Check the **LEDs 1** and **2** (*green and yellow*), of the Display Board, are correctly lit on.

(3) Check if the **LEDs 1** and **2** (*green and yellow*) of the Brake Board, are correctly lighting on, as described in paragraph: 3.1.7. "Brake board".

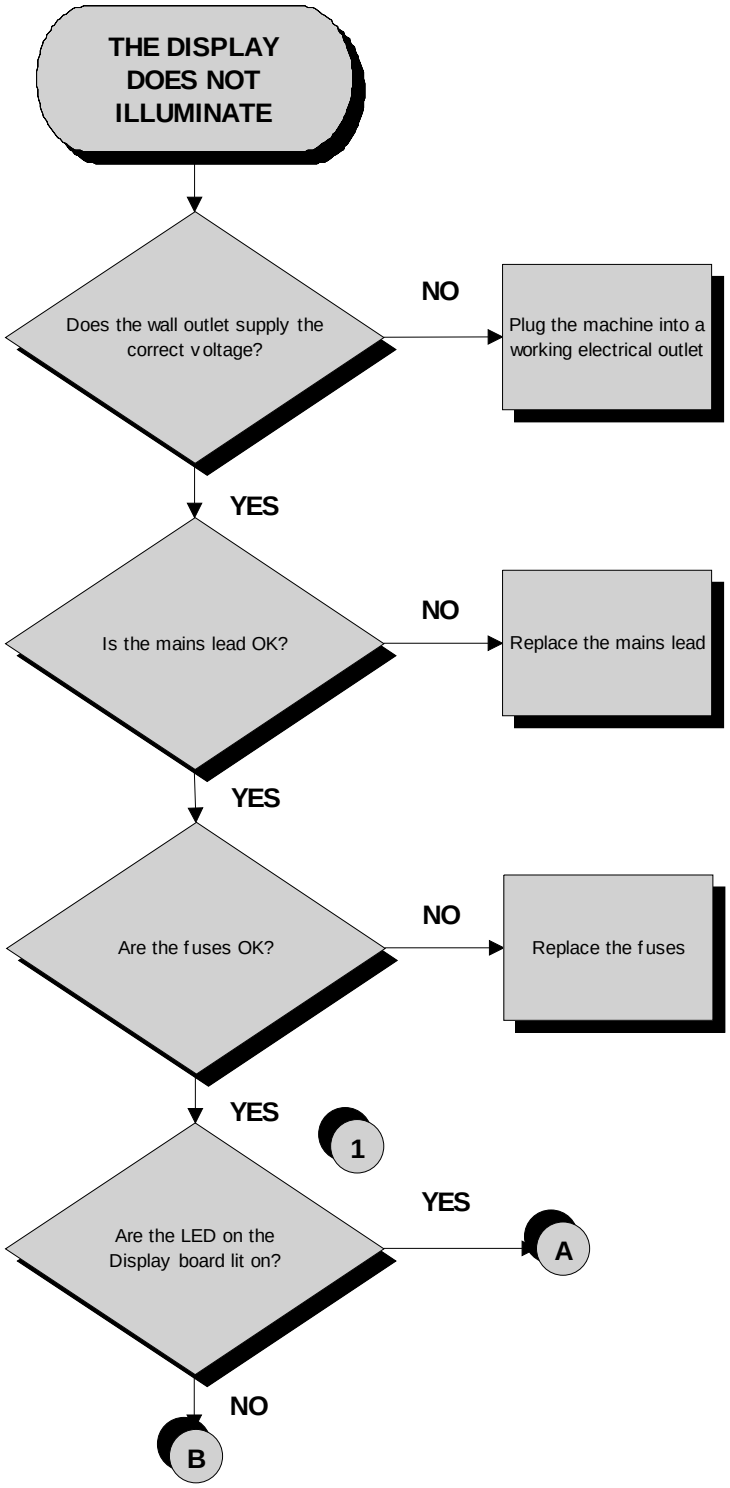
(4) Using a tester, check that all the output voltages on connector **CN1** of the Brake board. The measured value should be:

- +12 Vdc between pins **6-2**;
- +5 Vdc between pins **7-3**.

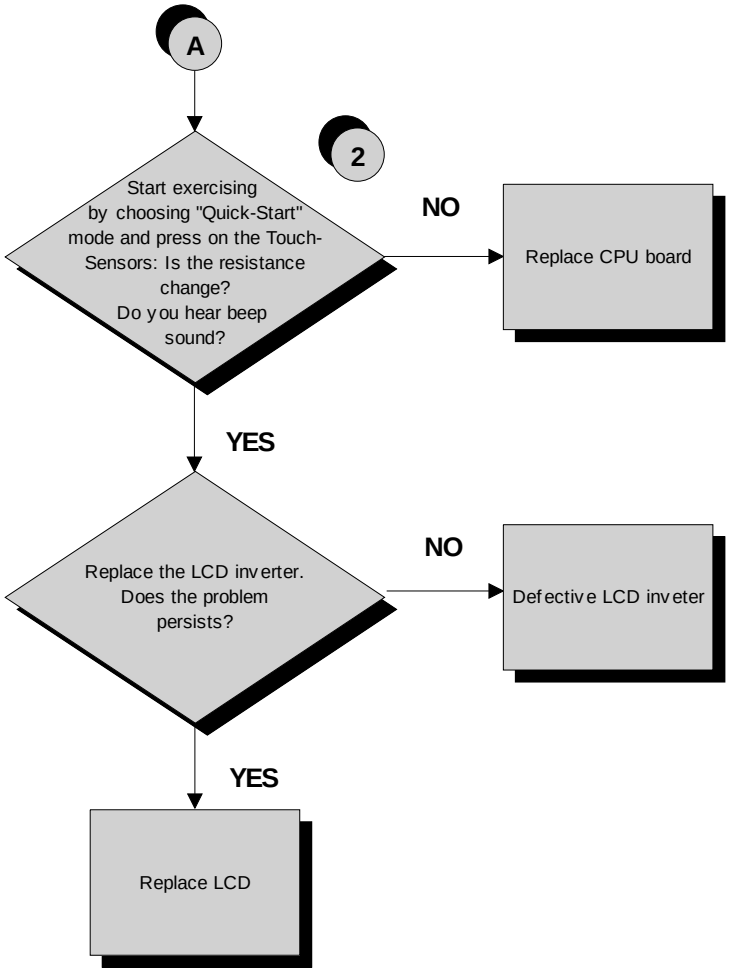
(5) Using a tester, check the voltage on connector **CN3** of the Brake board. The measured value should be 16-19 Vdc, between pins **1** e **2**, nearly at 50 RPM. Use a tester, to estimate the RPM signal on the **CN3** connector of the Brake board. The measured value should be approximately 30 Vac between pin **3** and a ground point.

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

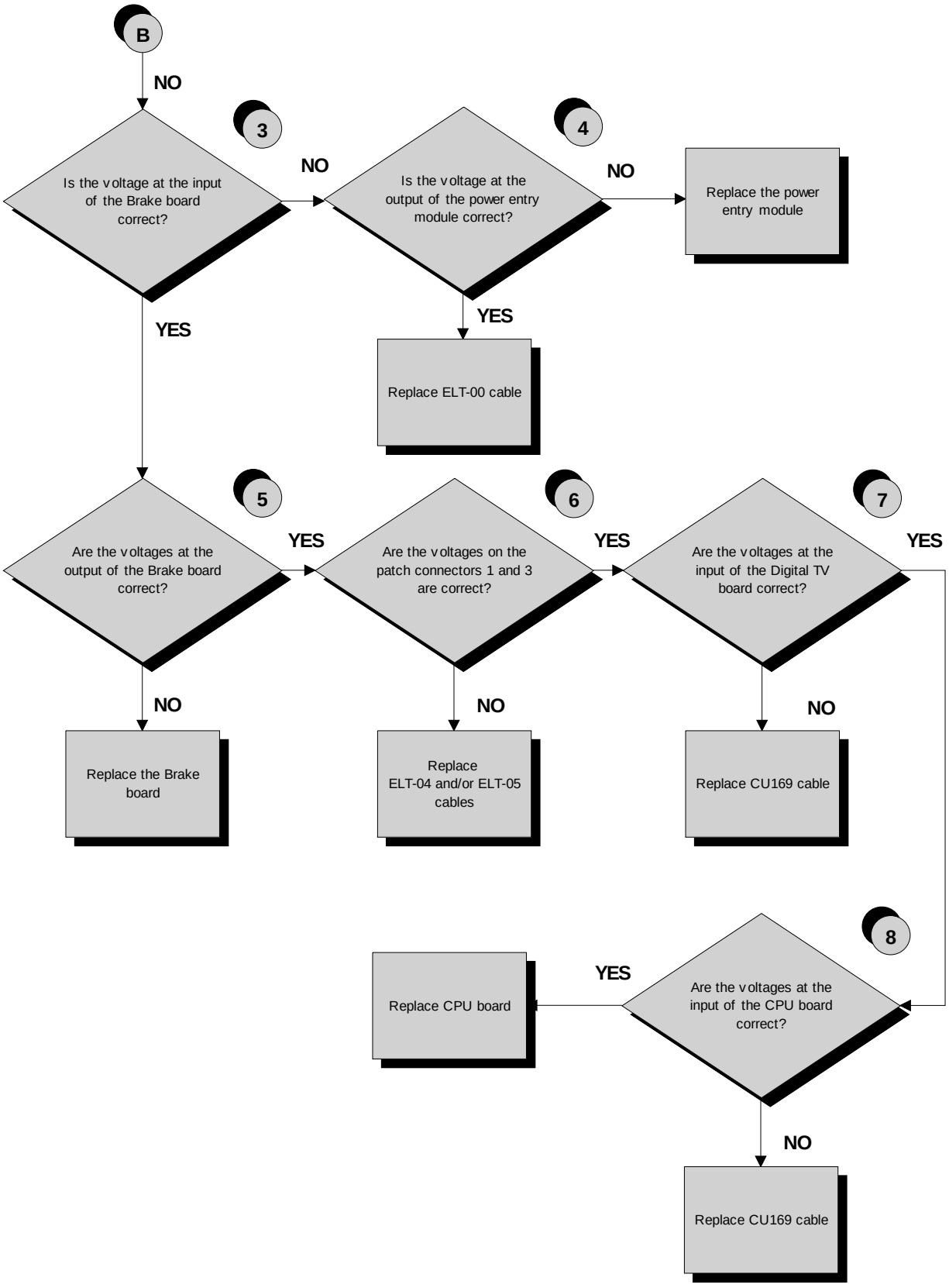
6.3.3. 700WTV WELLNESS TV MODELS



Continued on the following page



Continued on the following page


B
NO
3
Is the voltage at the input of the Brake board correct?
NO
4
Is the voltage at the output of the power entry module correct?
NO
Replace the power entry module
YES
Replace ELT-00 cable
YES
5
Are the voltages at the output of the Brake board correct?
YES
6
Are the voltages on the patch connectors 1 and 3 are correct?
YES
7
Are the voltages at the input of the Digital TV board correct?
YES
NO
Replace the Brake board
NO
Replace ELT-04 and/or ELT-05 cables
NO
Replace CU169 cable
8
YES
Are the voltages at the input of the CPU board correct?
Replace CPU board
NO
Replace CU169 cable

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 **LED D41** (*green*) of the display board, is correctly lit on.

(2) Start exercising in "Quick-Start" mode and check if the resistance change and a beep sound is being produced when you click on the touch sensor buttons.

(3) Place the tester probes across pins **3** and **1** of **CN4** connectors on the Brake board The measured value should be approximately 220 VAC or 110 VAC depending on the mains voltage.

(4) Slightly lift up the fastons on the machine power entry module. Place the tester probes across the live and neutral pins on the same connector. The measured value should be approximately 220 VAC or 110 VAC depending on the mains voltage.

(5) Using a tester, check that all the output voltages on connector **CN1** of the Brake board. The measured value should be:
- +12 Vdc between pins **6-2**;
- +5 Vdc between pins **7-3**.

(6) As for step (**5**) but on patch connectors 1 and 3 of **CU195** cable.

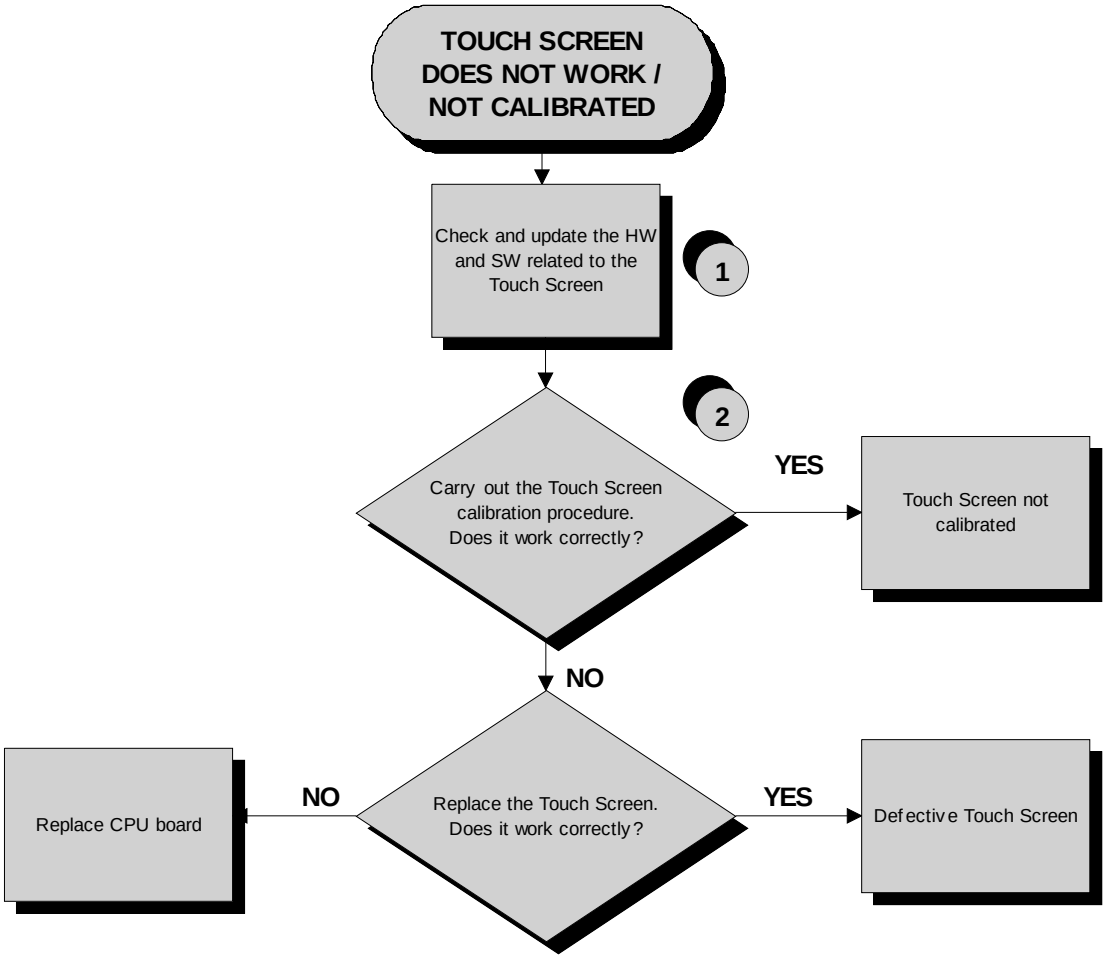
(7) Place the tester probes across pins **1** and **2** of **J1** connectors on the Digital TV board. The measured value should be +5Vdc.

(8) Place the tester probes across pins **2** and **6** of **CN20** connectors on the CPU board. The measured value should be +12Vdc.

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

The TV and RADIO channels is located in the Digital TV in the CPU Board and must necessarily be present. This means that when even one of the two boards will be replaced, should be re-stored channels through search or transferring from another machine via TGS key or cable transfer.

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



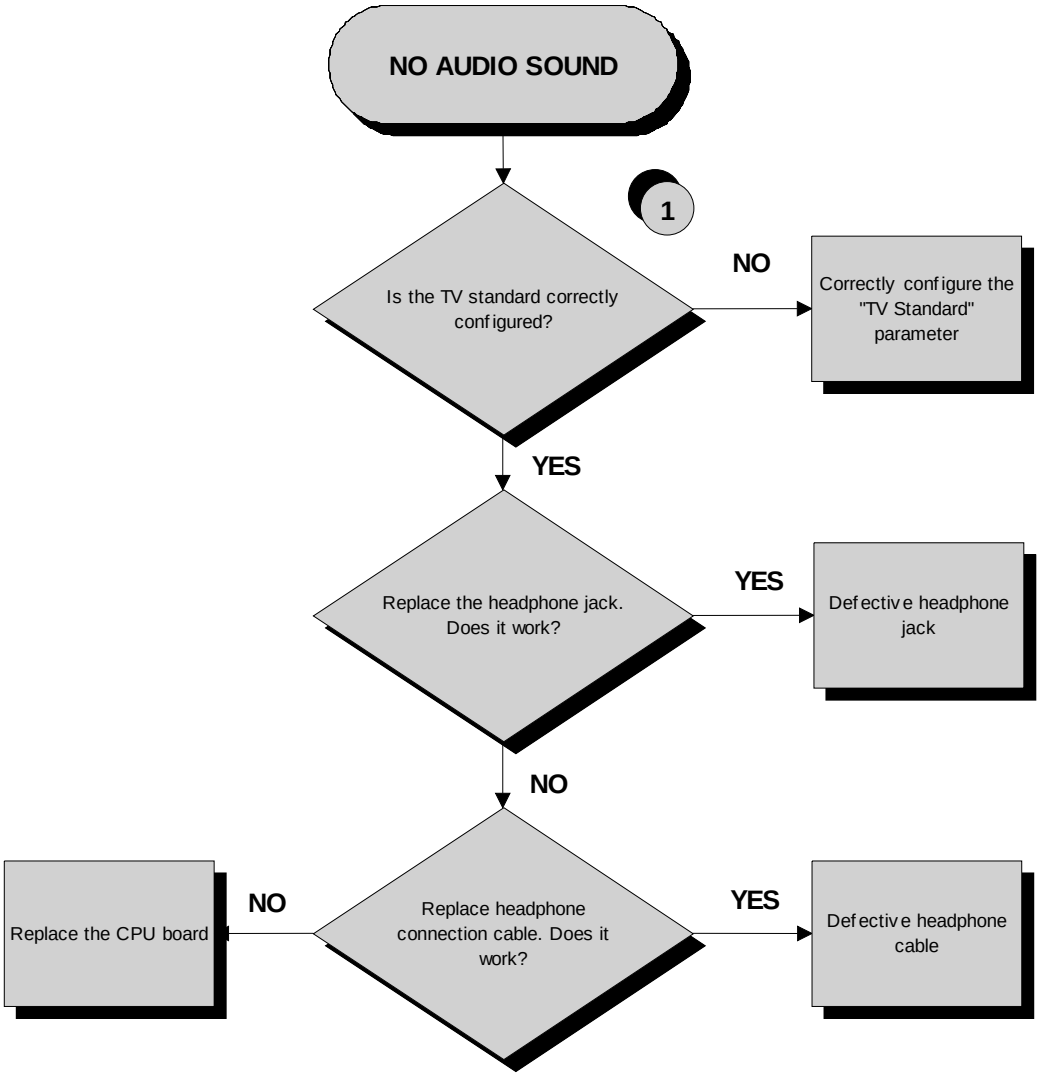
Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

(1) It's recommended to upgrade the HW and SW of machine display to the last version, due to the steady work on the product for its improvement. Please refers to the proper section of the TG Direct web site: "Parts catalogue" and "Product release".

(2) Carry out the Touch Screen calibration procedure as detailed at paragraph 9.9. "Touch screen calibration".

6.5. NO AUDIO SOUND

This error can be due to an incorrect machine configuration, or to problems with the audio circuit.



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) Carry out the configuration procedure as detailed at paragraph 9.5.6. “TV Standard”.

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

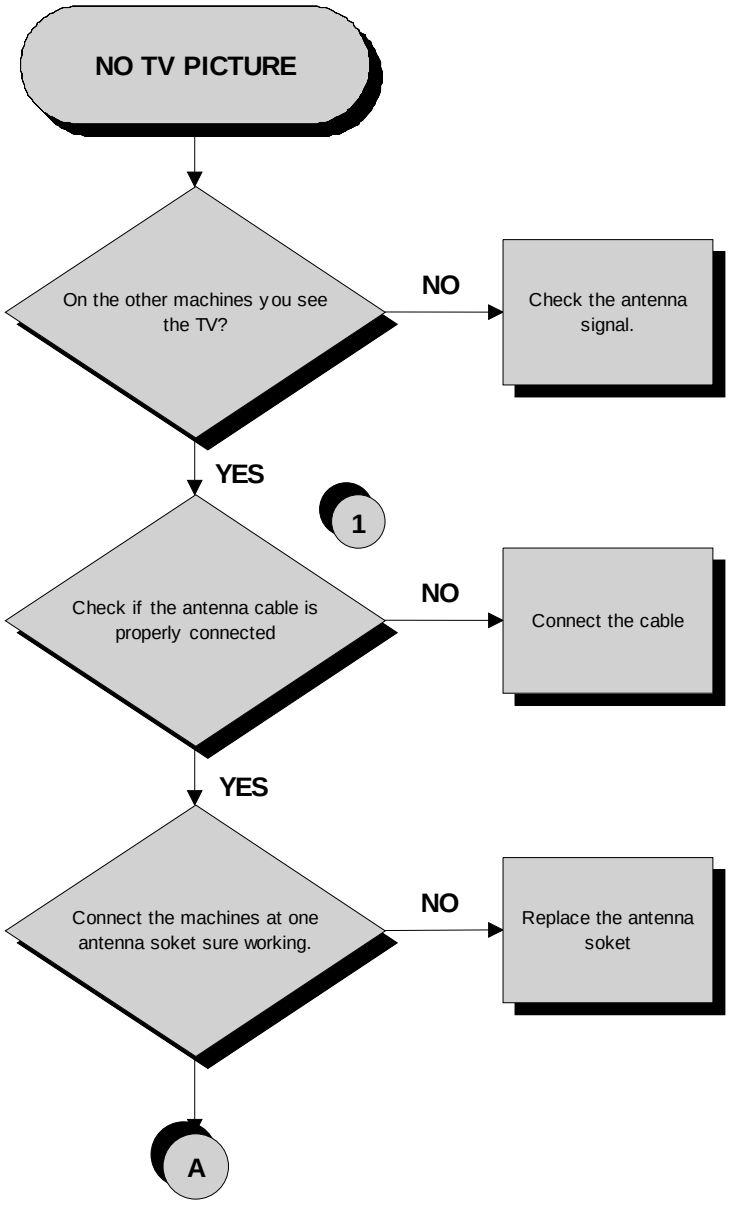
The TV and RADIO channels is located in the Digital TV in the CPU Board and must necessarily be present. This means that when even one of the two boards will be replaced, should be re-stored channels through search or transferring from another machine via TGS key or cable transfer.

6.6. NO TV PICTURE

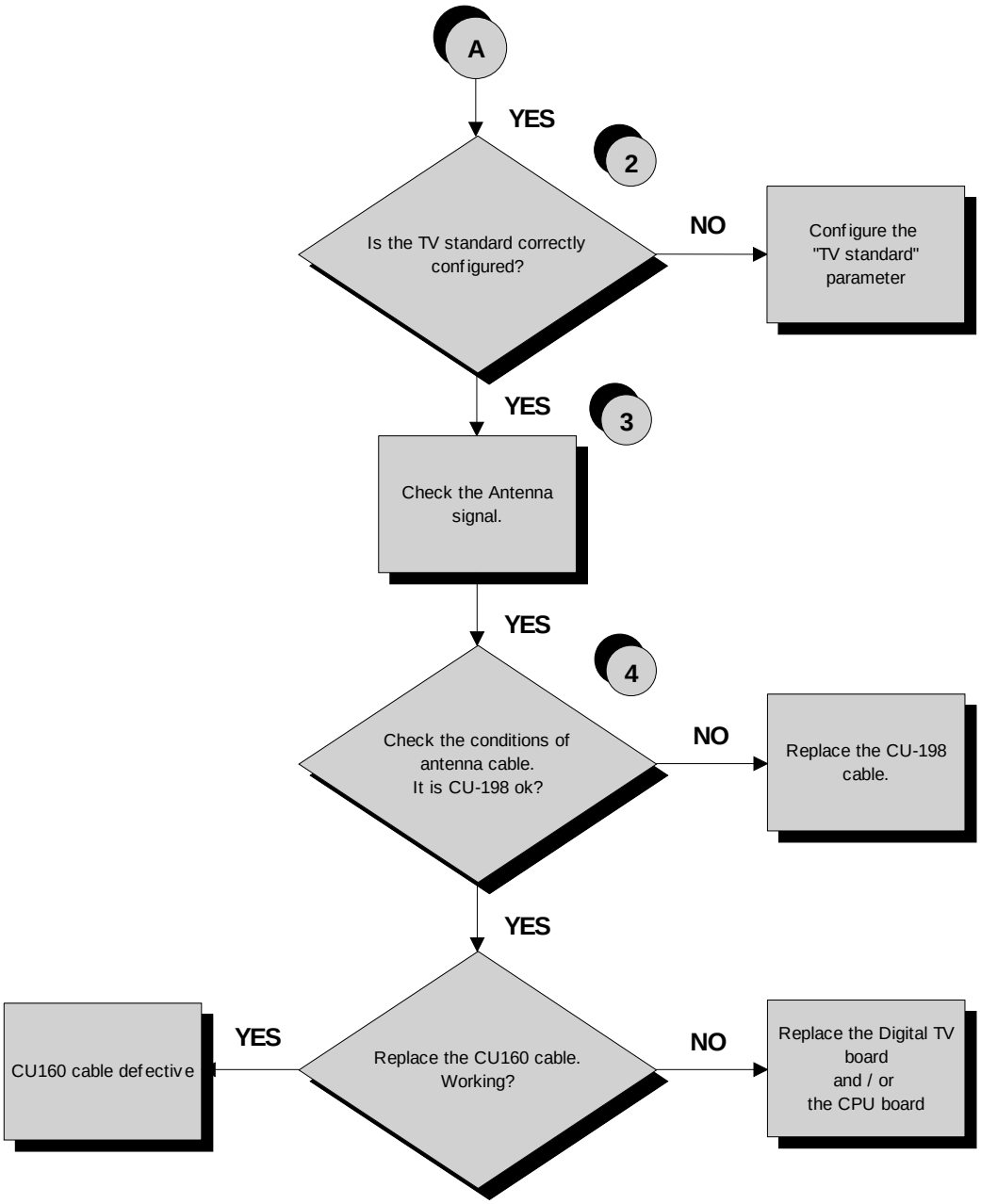
Check that the machine is connected to an antenna signal

This error can be due to an incorrect machine configuration, or to problems with the antenna signal.

<u>ATTENTION - ONLY FOR JAPAN</u>: Before to carry out the following troubleshooting, check that the B-CAS card is correctly inserted on the TV Digital Board.



Continued on the 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 that the antenna cable is correctly connected to the **TUNER** on Digital TV board.

(2) Carry out the configuration procedure as detailed at paragraph 9.5.6. “TV Standard”.

(3) Check that the antenna signal matches with the minimal requested specifications detailed at paragraph: 5.2. “Installation requirements and specifications for Wellness TV machines”.

(4) Check the state of wear of the antenna cable **CU198**, and that it properly works.

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

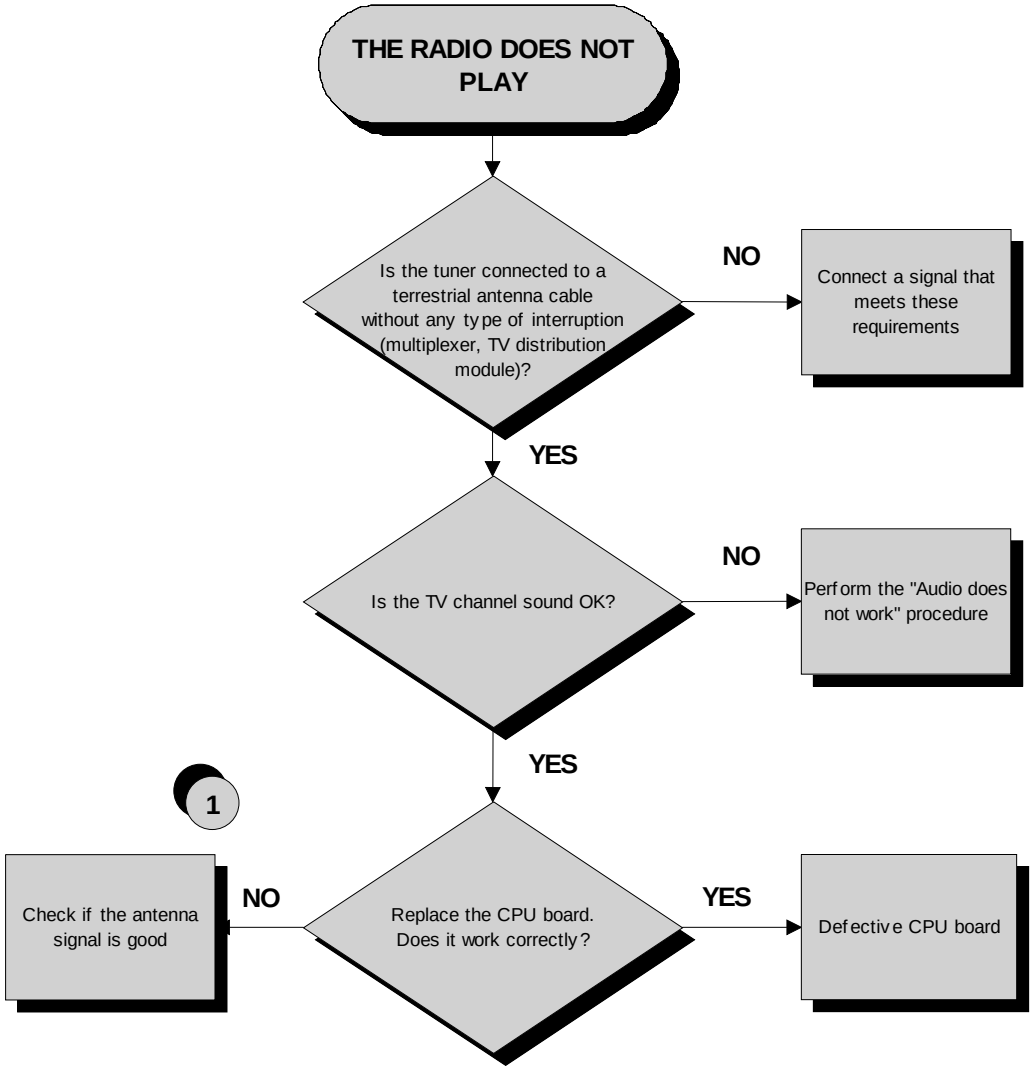
The TV and RADIO channels is located in the Digital TV in the CPU Board and must necessarily be present. This means that when even one of the two boards will be replaced, should be re-stored channels through search or transferring from another machine via TGS key or cable transfer.

6.7. THE RADIO DOES NOT PLAY

With the ANALOGIC signal, the radio signal can only be acquired from an aerial antenna signal. If the machine is connected to a digital source (or to a satellite antenna) it will be impossible to use the radio function.

If ACTIVE Wellness TV interface is installed, check that the parameter: 9.3.17. "Radio" is correctly set.

It is now possible only the tuning of the <u>digital band</u> and not more the analogue one.



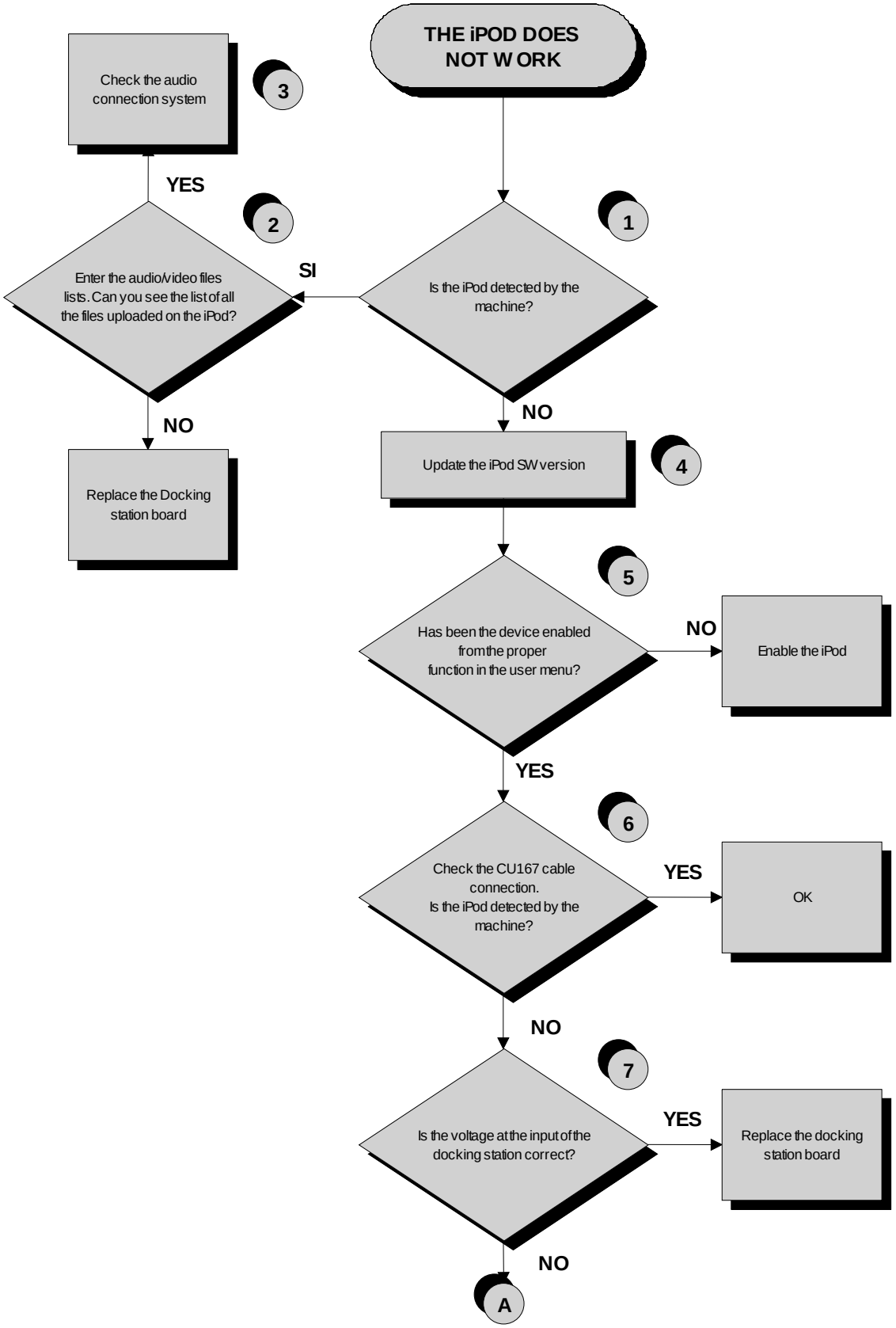
Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

(1) Check that the antenna signal matches with the minimal requested specifications detailed at paragraph: 5.2. “Installation requirements and specifications for Wellness TV machines”.

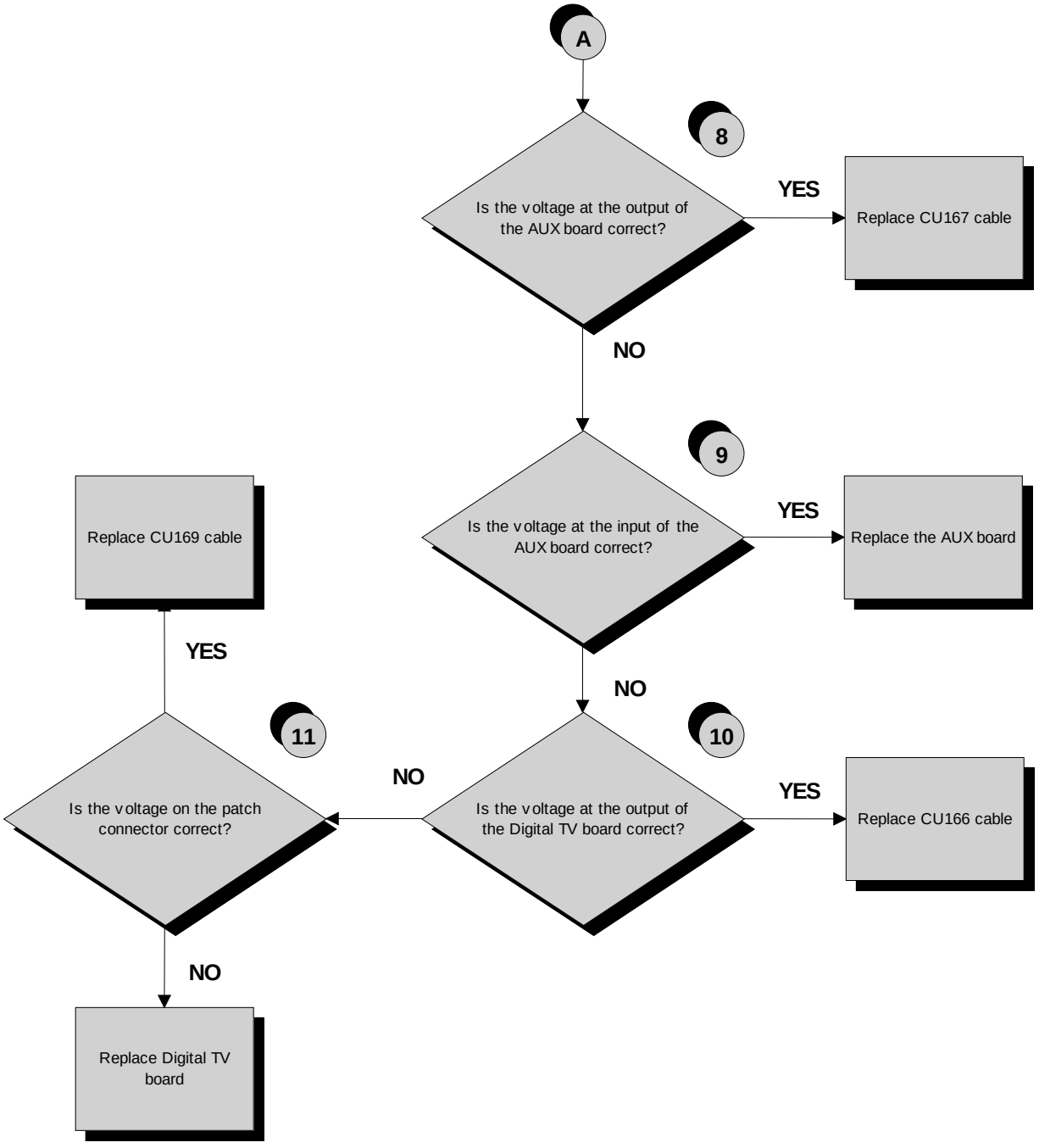
If you replace Display board/Brake board, check that its SW version is updated, otherwise install the last version.

The TV and RADIO channels is located in the Digital TV in the CPU Board and must necessarily be present. This means that when even one of the two boards will be replaced, should be re-stored channels through search or transferring from another machine via TGS key or cable transfer.

6.8. THE IPOD DOES NOT WORK



Continued on the 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 WTV interface.

(3) Carry out the troubleshooting procedure 6.5. "No audio sound".

(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 paragraph 9.3.18. "iPod connection option" in the user menu.

(6) The **CU167** cable has identical connectors on either end then it can sometimes be connected the wrong way round. Check that the connector marked with a blue sign is connected on the AUX connectors board.

(7) Place the tester probes across pins **8-9** of the connector on the docking station board where the **CU167** cable is connected. The measured value should be 5 Vdc.

(8) As for step (7) but across pins **6-7** of the connector on the AUX connectors board where **CU167** is connected.

(9) As for step (7) but across pins **9/10-13** of the connector on the AUX connectors board where **CU166** is connected.

(10) As for step (7) but across pins **9/10-13** of the connector **J9** on the Digital TV board.

(11) Place the tester probes across pins **3-7** on patch connector of **CU169** cable. The measured value should be 5 Vdc.

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

6.9. "THE EQUIPMENT IS LOCKED (COM)" MESSAGE ON DISPLAY

This error message can be caused by loss of communication between the lower and upper assemblies.
The error is displayed by a massage and stored in the "*Errors Log*" section.

To reinstate communications between the lower and upper assemblies:

(1) Check that cables **ELT-06** and **ELT-07** are correct, using the Test Box Excite and replace if necessary;

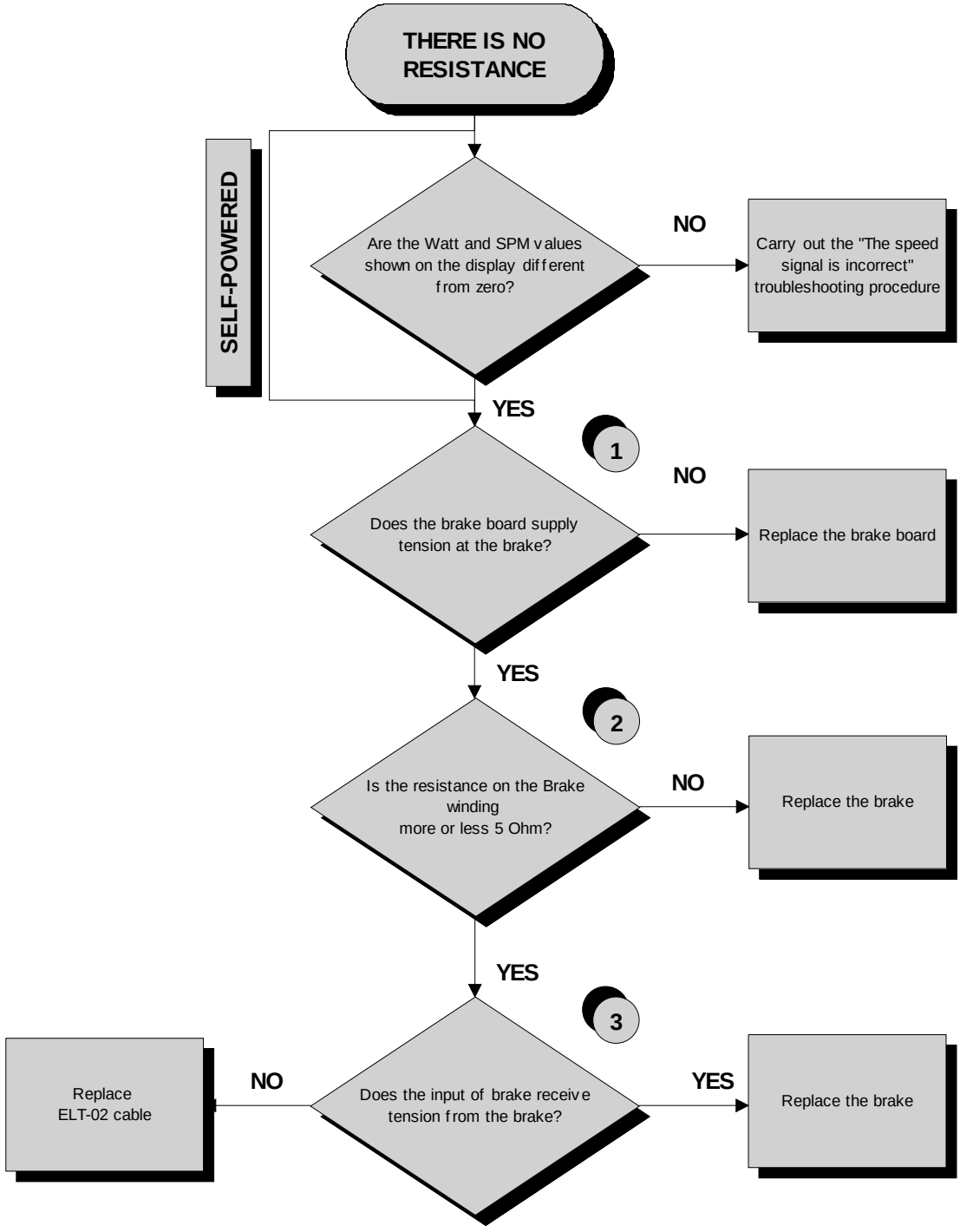
(2) Try replacing the brake board and the display board in turn, and check whether the communication works.

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

6.10. THERE IS NO RESISTANCE

The machine will not produce resistance if:

- *the display board is not receiving a speed signal;*
- *the brake board is not generating current;*
- *the brake is defective.*



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 **1-2** of the connector **CN2** on the brake board and exercise at a speed of 60 RPM. You should measure a Vdc which increases according to the exercise level.

(2) As for step (1) but across the two fast-on at the input of the brake.

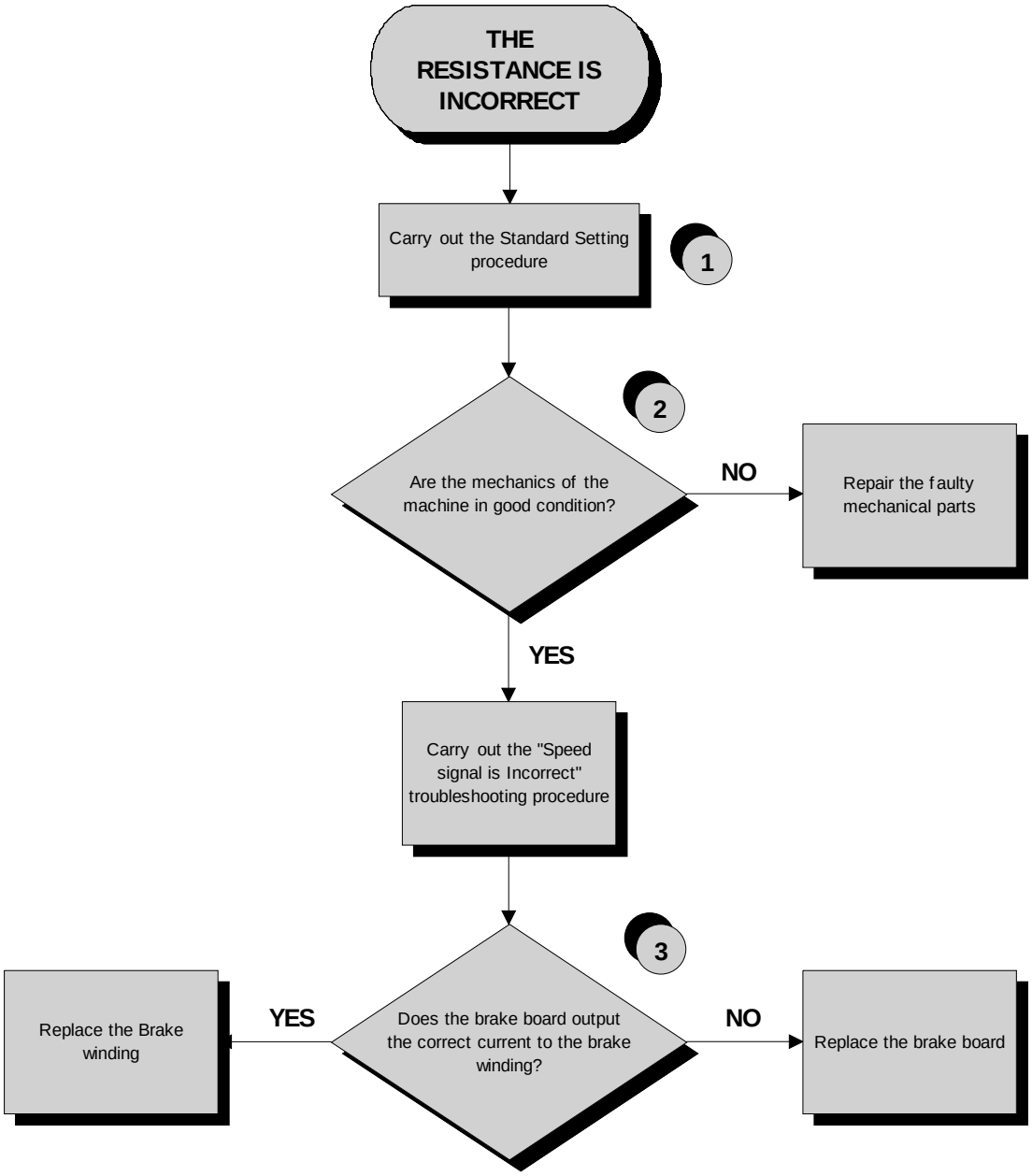
(3) As for step (1) but with everything reconnected, and across the brake winding.

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

6.11. THE RESISTANCE IS INCORRECT

The machine will produce an incorrect resistance if:

- *the mechanical components are not in perfect condition;*
- *the speed measurement is incorrect;*
- *the brake board is defective;*
- *the brake is defective.*



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) Carry out the "Standard Setting" procedure as detailed at paragraph 9.5.5. "Standard settings".

(2) Check that the mechanical system, consisting of the pedals, belt and brake, moves smoothly and without higher than normal friction or resistance.

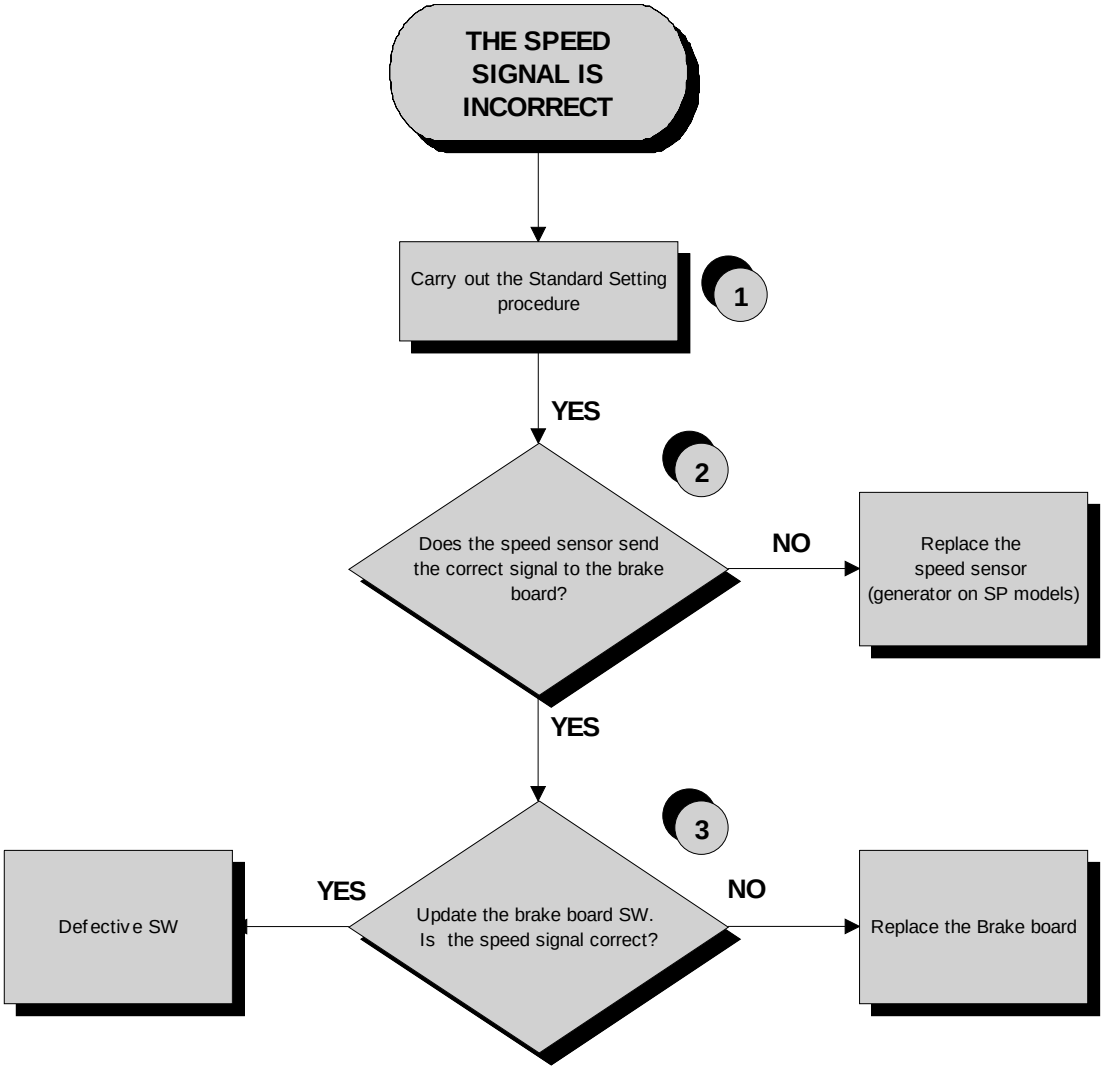
(3) Measure the voltage supplied by the brake board to the winding. In "Quick Start" mode, select the effort level and check that the value is different from 0.

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

6.12. THE SPEED SIGNAL IS INCORRECT

The speed signal is incorrect if:

- *The brake disk is incorrectly fixed to the flywheel;*
- *The speed sensor is defective;*
- *The brake board is defective.*



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) Carry out the "Standard Setting" procedure as detailed at paragraph 9.5.5. "Standard settings".

The speed sensor detects the heads of these bolts.

(2) **Powered models**: Place the tester probes across the terminals of the speed sensor. The measured signal should be that indicated in Figure 3.2-1. In addition, when pedaling at 80 RPM the frequency of the signal should be 136 Hz.

Self-Powered models: Check the signal on **ELT-01** cable. The measured signal should be that indicated in Figure 3.2-1. In addition, when pedaling at 80 RPM the frequency of the signal should be 136 Hz.

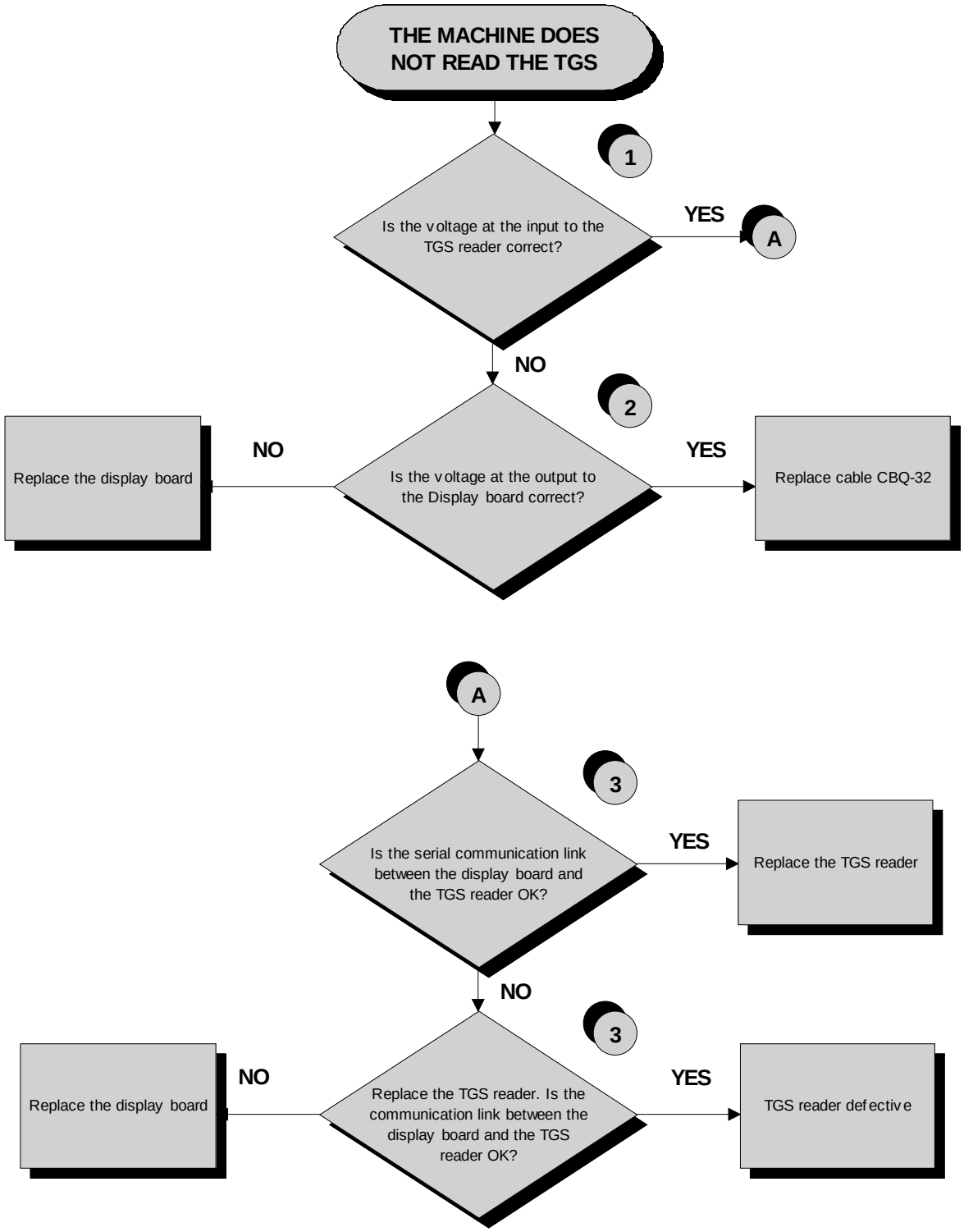
The speed signal can also be observed qualitatively, using a multimeter. The value should be 0 Vdc when the machine is stopped, and gradually increase as the speed increases.

(3) Update the low kit SW uploading both firmware and brake table. At the end carry out the "Default setting" procedure for the low kit parameters.

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

6.13. THE MACHINE DOES NOT READ THE TGS

The machine displays this error if 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 **8** of connector **CN1** of the TGS reader. The measured value should be +12 Vdc.

(2) As for step (1) but across pins **1** and **9** of connector **CN8** on the display board.

(3) Use the serial communications test described at paragraph 6.2.1.3 “Serial Ports Test”.

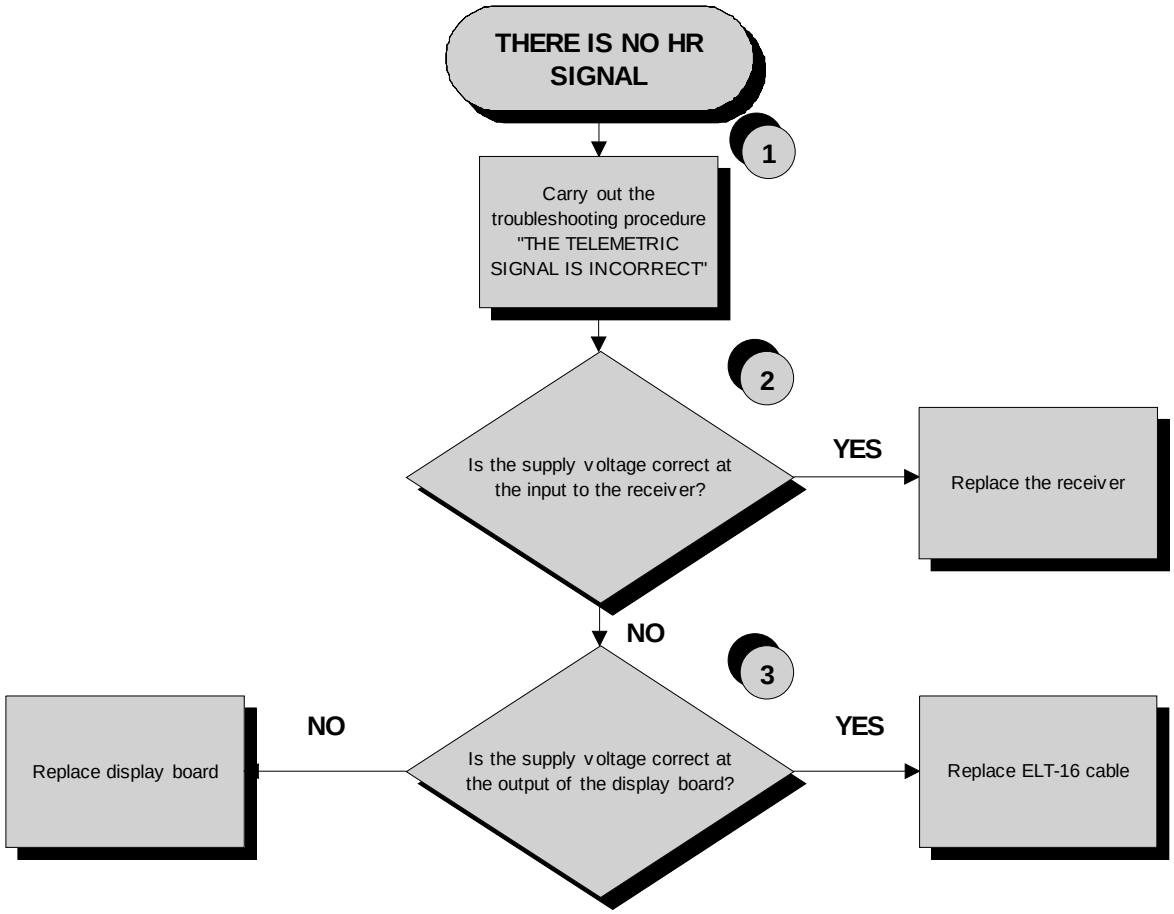
If you replace Display board/Brake board, check that its SW version is updated, otherwise install the last version.

6.14. THERE IS NO HEART RATE SIGNAL

6.14.1. HFU TELEMETRIC RECEIVER

The machine displays this error if:

1. *electromagnetic noise saturate the HR receiver which does not display any value due to a specific SW filter which cut every signal, greater than 220 bpm;*
2. *the receiver is not working properly;*
3. *the receiver 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) Carry out the troubleshooting procedure: 6.15. “The telemetric heart rate signal is incorrect”.

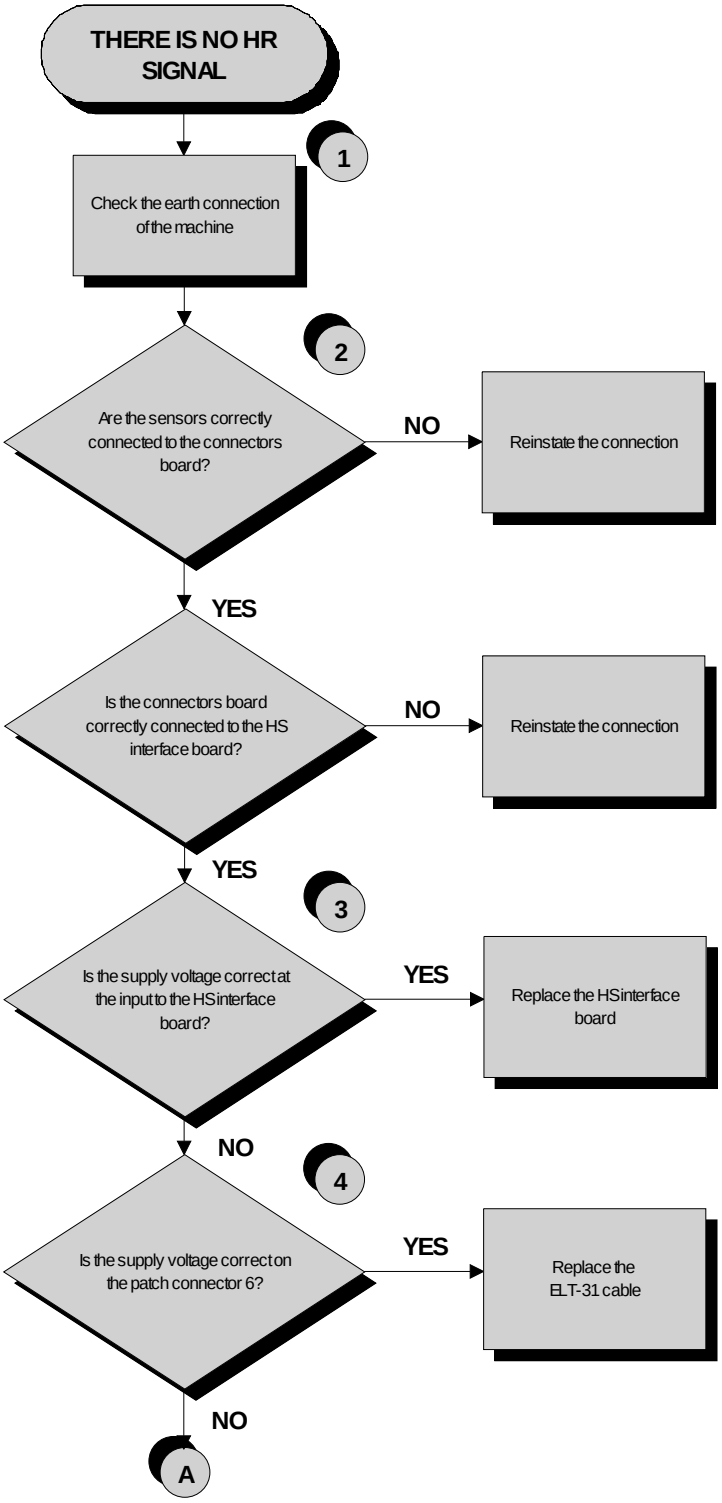
(2) Place the tester probes across pins **1** and **2** of connector **CN1** of the receiver. The measured value should be +5 Vdc.

(3) As for step (2) but across pins **1** and **8** of connector **CN3** on the display board.

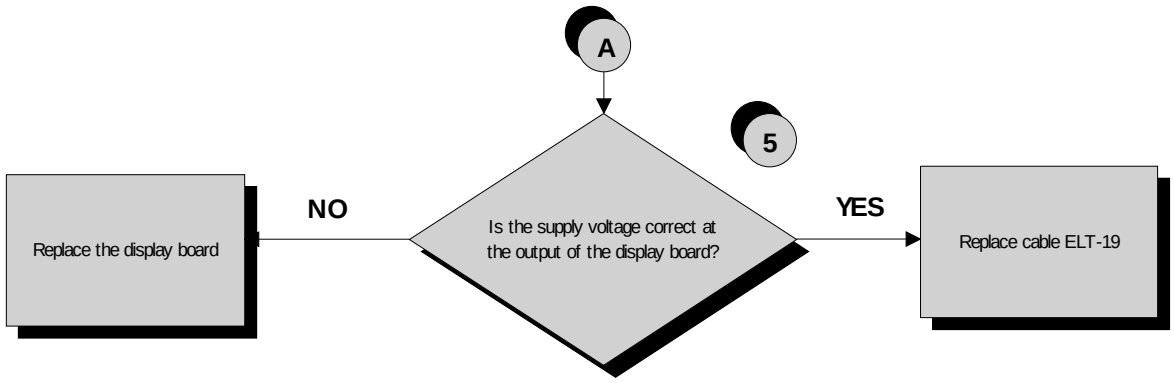
6.14.2. HAND SENSOR

The machine displays this error if the HS interface board is not working, or if it is not supplied by the display board.

For an easier and quicker diagnosis of the problem, we recommend to use the functions of Test Box Excite.



Continued on the 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 earth connection of the machine using a tester to measure the resistance between the ground pin on the power supply cable and the ground node to which the receiver is connected inside the display. The value must be less than 1 Ω (Ohm).

(2) Check the connections, referring to paragraph 2.7. “Wiring diagrams”.

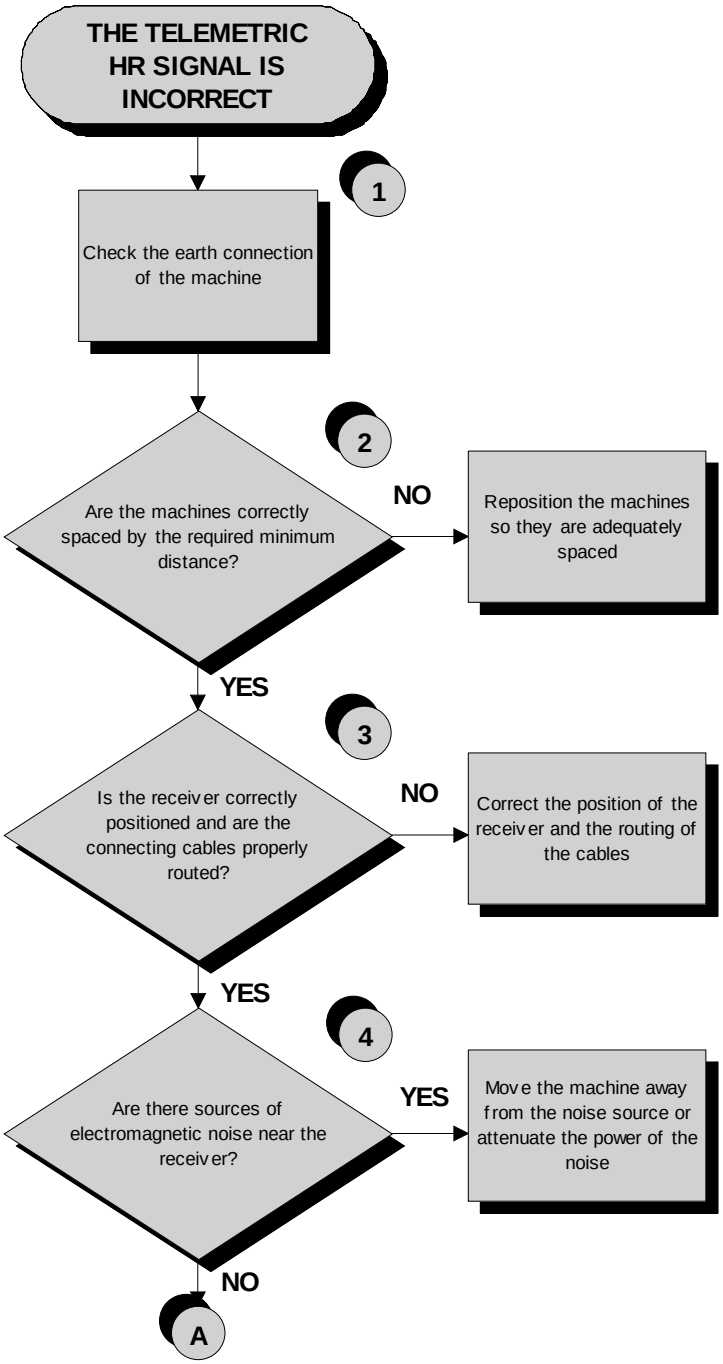
(3) Place the tester probes across pins 2 and 1 of connector J3 on the HS interface board. The measured value should be +5 Vdc.

(4) As for point (2) but on patch connector 6.

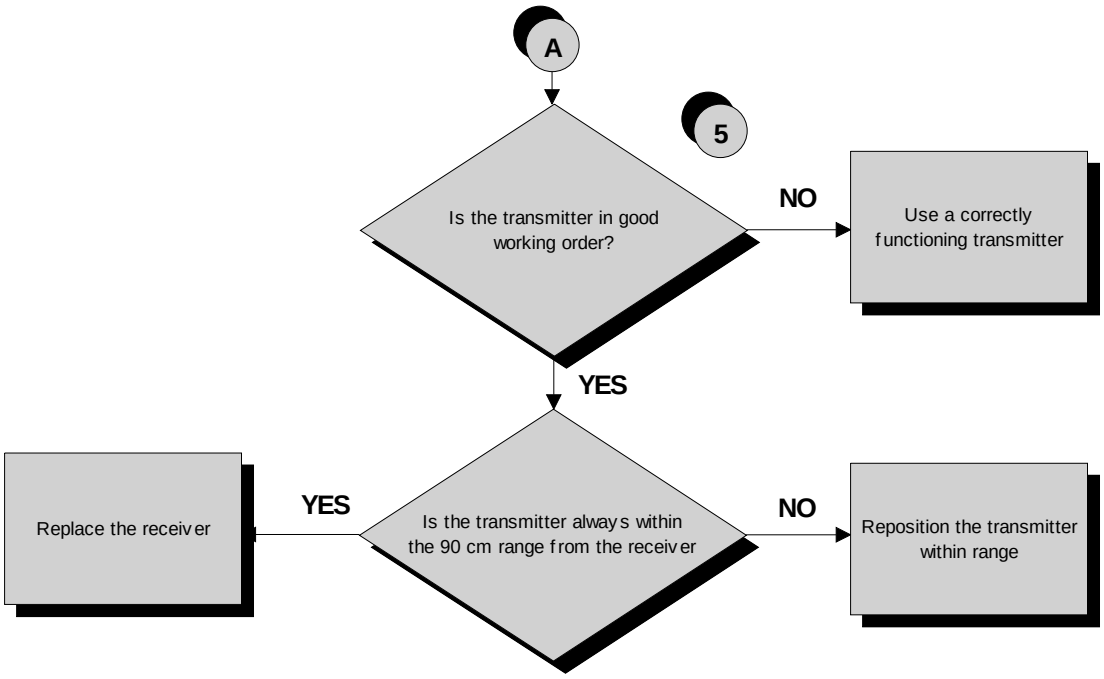
(5) As for step (2) but across pins 1 and 6 of connector CN4 on the display board.

6.15. THE TELEMETRIC HEART RATE SIGNAL IS INCORRECT

The machine displays this error if the receiver is disturbed by sources of electromagnetic noise.



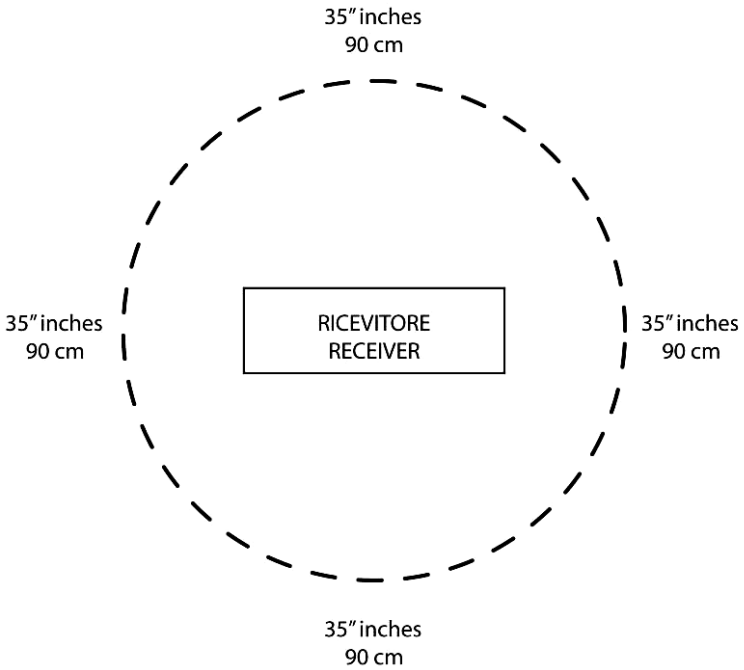
Continued on the following page



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 earthing of the machine using a tester to measure the resistance between the ground pin on the power supply cable and the ground node to which the receiver is connected inside the display. The value must be less than 1 Ω (Ohm).

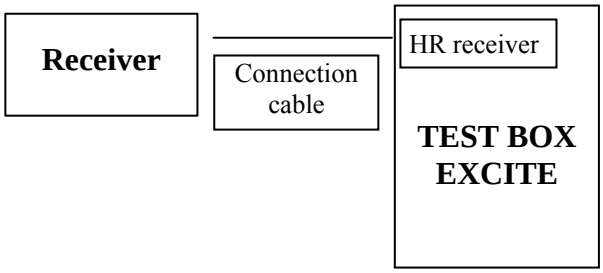
(2) For machine positioning layouts, use the following diagram as a reference.



where the value in the diagram indicates the medium distance for signal reception during the exercise (± 4" inches or 10 cm).

(3) Check that the cardio receiver has been assembled properly as described in the procedure: 7.4. "Cardio receiver" , that is in good condition, work properly and the state of the band (ie battery).

(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 **ELT16** (0WC00518AB), **CBQ28** (0WC00390AC) or **TRM28** (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.

(5) Check the battery power level, using a tester if possible. Otherwise use a receiver or another reference machine to check the operation up to a distance of about 90 cm from the receiver.

7. DISASSEMBLY OF COMPONENTS

7.1. DISPLAY DISASSEMBLY

7.1.1. LED VERSION 500 AND 500SP

Figure 7.1-1

1. Turn off the machine and unplug the mains lead from the wall outlet *(Only for 500).*
2. Back off the 4 screws **(a)** using a medium Phillips screwdriver.

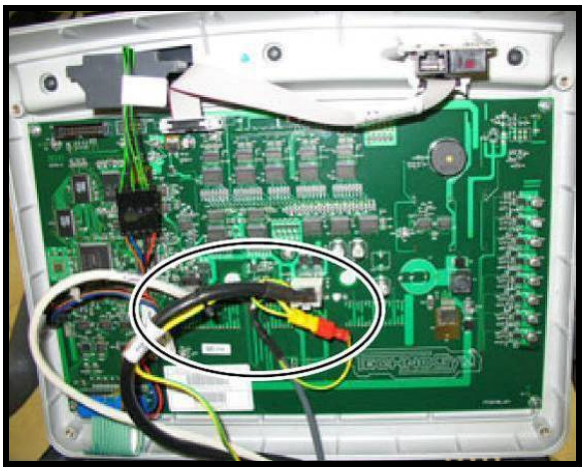


Figure 7.1-2

3. Unplug the connectors as indicated in the figure at left [CN9-CN1-CN3].
4. Remove the display.

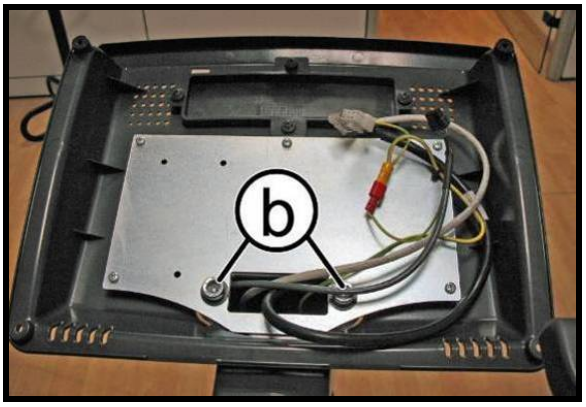


Figure 7.1-3

5. Back off the 2 screws **(b)**, using an 8mm Hex wrench, to remove the rear display support.

To reassemble the display, carry out the above steps in reverse order.

7.1.2. LED VERSION 700 AND 700SP

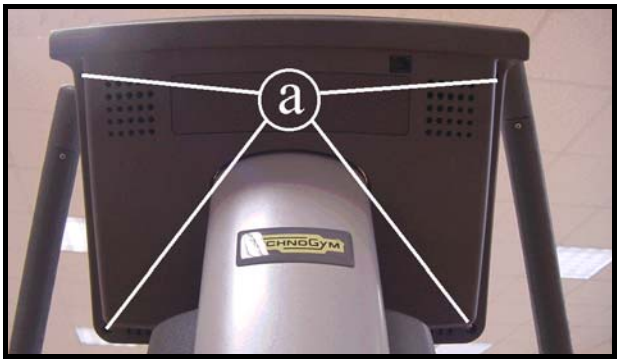


Figure 7.1-4

1. Turn off the machine and unplug the mains lead from the wall outlet *(Only for 700).*
2. Back off the 4 screws **(a)** using a medium Phillips screwdriver.

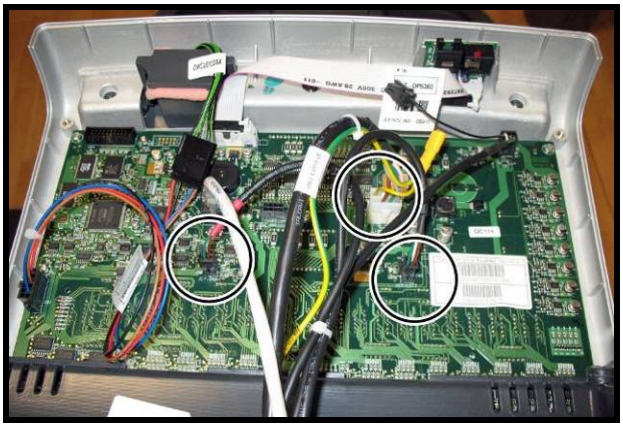


Figure 7.1-5

3. Unplug the connectors as indicated in the figure at left [CN9-CN1-CN6-CN5-CN4].
4. Remove the display.

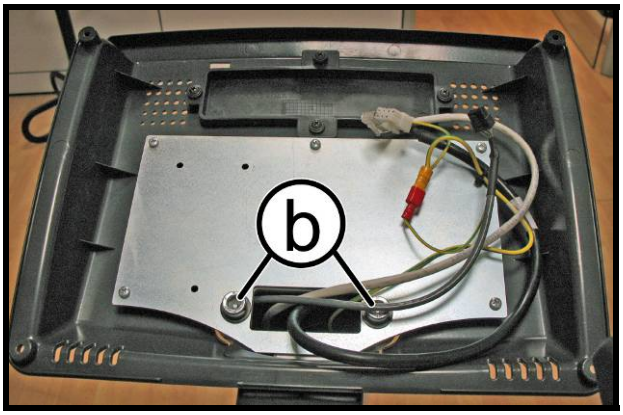


Figure 7.1-6

5. Back off the 2 screws **(b)**, using an 8mm Hex wrench, to remove the rear display support.

To reassemble the display, carry out the above steps in reverse order.

7.1.3. 700WTV VERSION (WELLNESS TV)

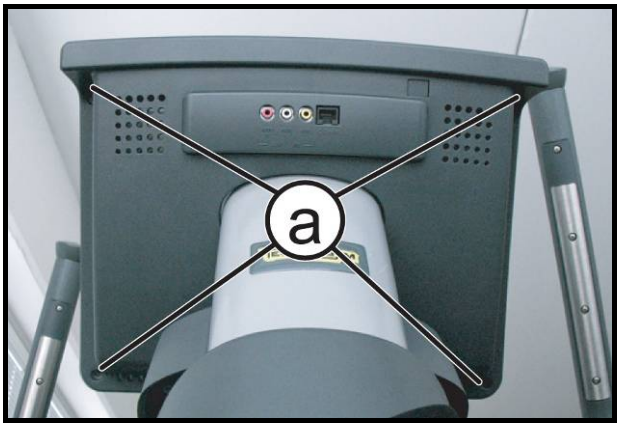


Figure 7.1-7

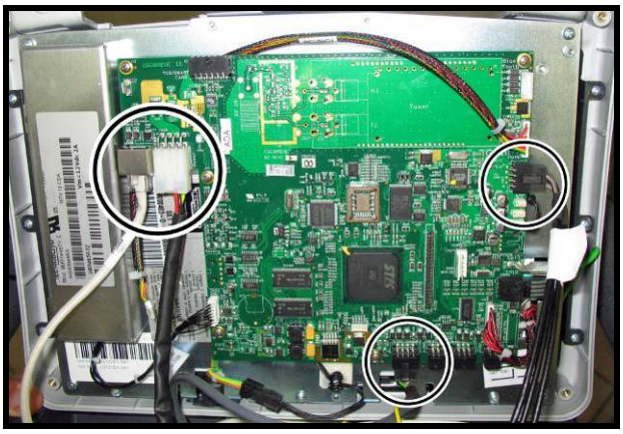


Figure 7.1-8

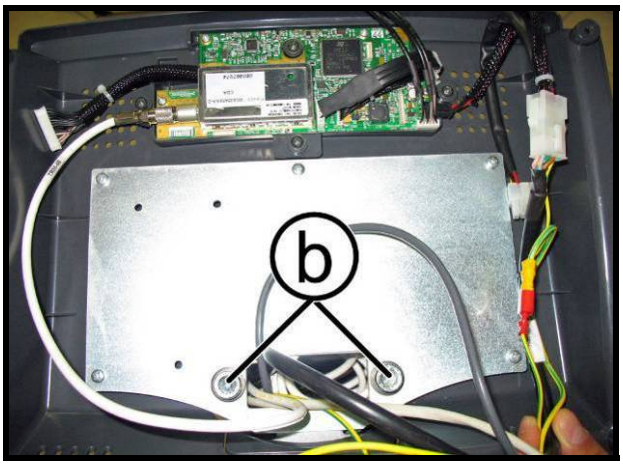


Figure 7.1-9

Turn off the machine and unplug the mains lead from the wall outlet.

1. Back off the 4 screws **(a)** using a medium Phillips screwdriver.

2. Unplug the connectors as indicated in the figure at left [CN30-CN26-CN27-CN19-CN21- CN22-CN25].

3. Remove the display.

4. Back off the 2 screws **(b)**, using an 8mm Hex wrench, to remove the rear display support.

To reassemble the display, carry out the above steps in reverse order.

7.2. DISPLAY BOARDS DISASSEMBLY

7.2.1. 500 AND 500SP VERSION

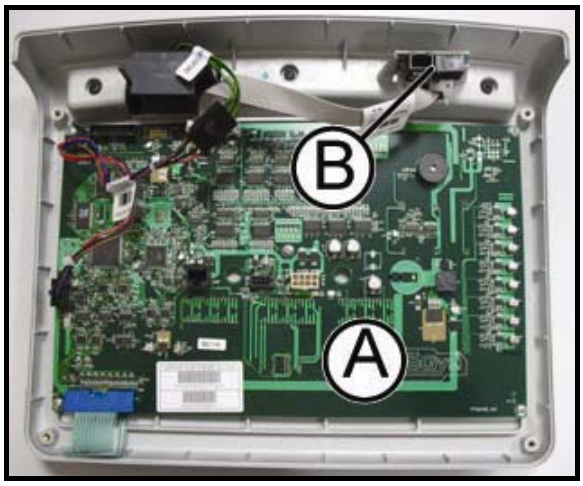


Figure 7.2-1

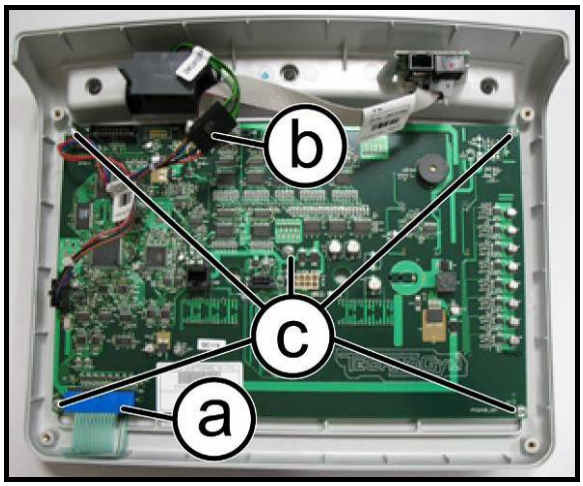


Figure 7.2-2

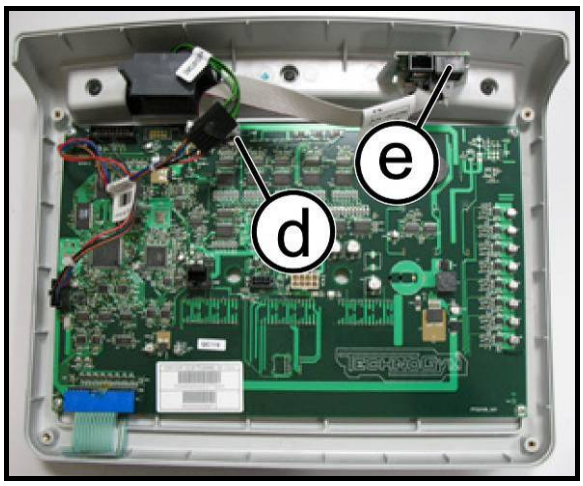


Figure 7.2-3

Carry out the operations described in paragraphs: ***Errore. L'origine riferimento non è stata trovata.****"****Errore. L'origine riferimento non è stata trovata.****".*

Then place the display on a work bench. It is now possible to disassemble its circuit boards:

- *The Display Board* ***(A)****;*
- *The C-Safe Board* ***(B)****.*

Display Board ***(A)****:*

1. Disconnect connectors **(a)** [CN2] of the keyboard and **(b)** [CN8] of the CSafe board from the Display board.
2. Back off the 5 screws **(c)** with a medium Phillips screwdriver.
3. Remove the circuit board.

CSafe Board ***(B)****:*

1. Disconnect connector **(d)** [CN8] of the C-Safe from the Display board**.**
2. Remove the circuit board **(e)**, slipping it off from the top.

Use again the hot glue to fix the connectors, where necessary.

To reassemble the circuit boards, carry out the above steps in reverse order.

7.2.2. 700 AND 700SP LED VERSION

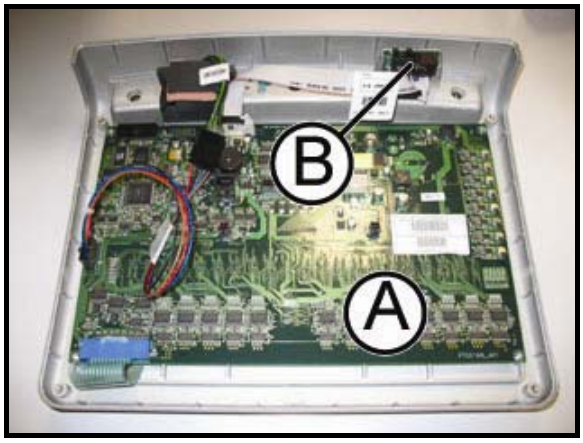


Figure -7.2-4

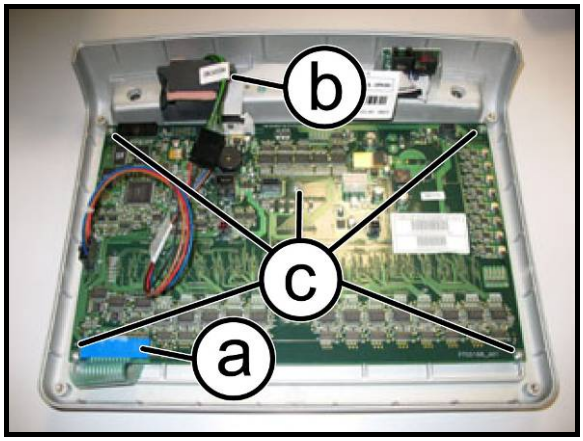


Figure 7.2-5

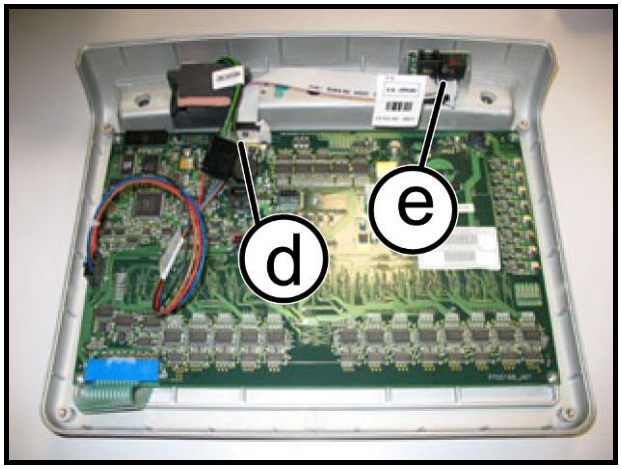


Figure 7.2-6

Carry out the operations described in paragraphs: ***Errore. L'origine riferimento non è stata trovata.****"****Errore. L'origine riferimento non è stata trovata.****".*

Then place the display on a work bench. It is now possible to disassemble its circuit boards:

- *The Display Board* ***(A)****;*
- *The C-Safe Board* ***(B)****.*

Display Board ***(A)****:*

1. Disconnect connectors **(a)** [CN2] of the keyboard and **(b)** [CN8] of the CSafe board from the Display board.
2. Back off the 5 screws **(c)** with a medium Phillips screwdriver.
3. Remove the circuit board.

CSafe Board ***(B)****:*

1. Disconnect connector **(d)** [CN8] of the C-Safe from the Display board**.**
2. Remove the circuit board **(e)**, slipping it off from the top.

Use again the hot glue to fix the connectors, where necessary.

To reassemble the circuit board, carry out the above steps in reverse order

7.2.3. 700WTV VERSION (WELLNESS TV)

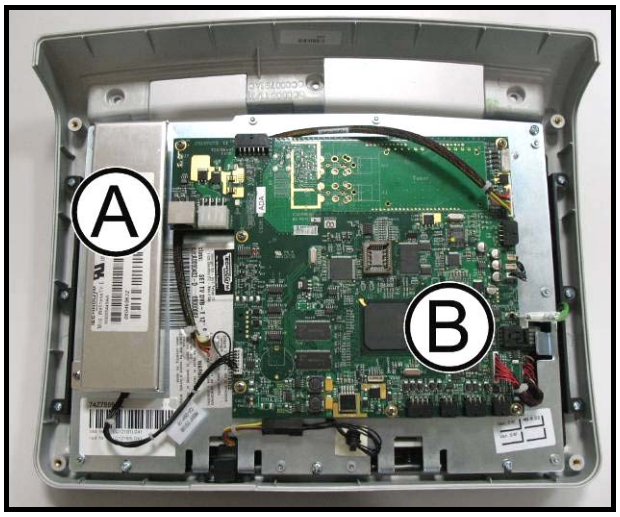


Figure 7.2-7

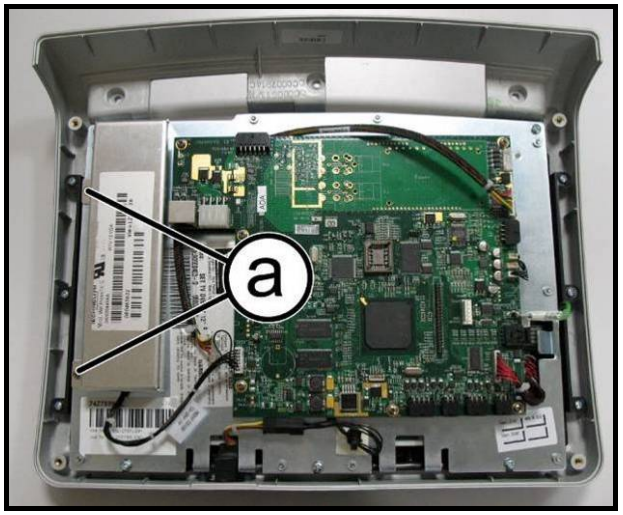


Figure 7.2-8

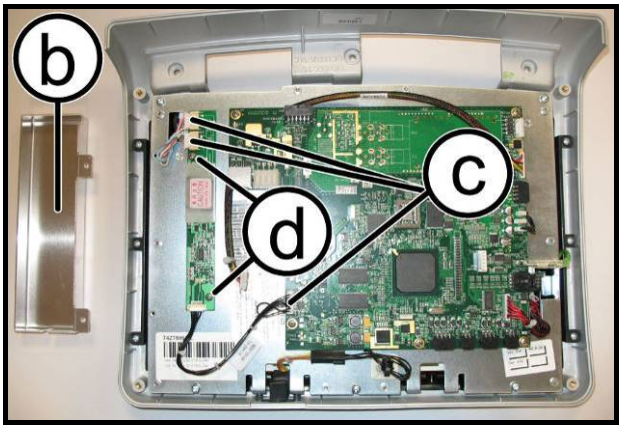


Figure 7.2-9

Carry out the operations described in paragraphs: ***Errore. L'origine riferimento non è stata trovata.****"****Errore. L'origine riferimento non è stata trovata.****".*

Then place the display on a work bench. It is now possible to disassemble its circuit boards:

- *The LCD inverter* ***(A)****,*
- *The CPU Board* ***(B).***

And the circuit boards mounted on the rear display support:

- *Digital TV Board*
- *Input AUX Board*

LCD inverter ***(A):***

1. Back off the 2 screws **(a)** with a medium Phillips screwdriver

2. Remove the covering plate **(b)** of the LCD inverter.

3. Disconnect the connectors **(c)** [CN2 – CN3-CN5].

4. Back off the 2 screws **(d)**, which fix the board to the display plate.

5. Remove the LCD inverter.

Continued on following page →

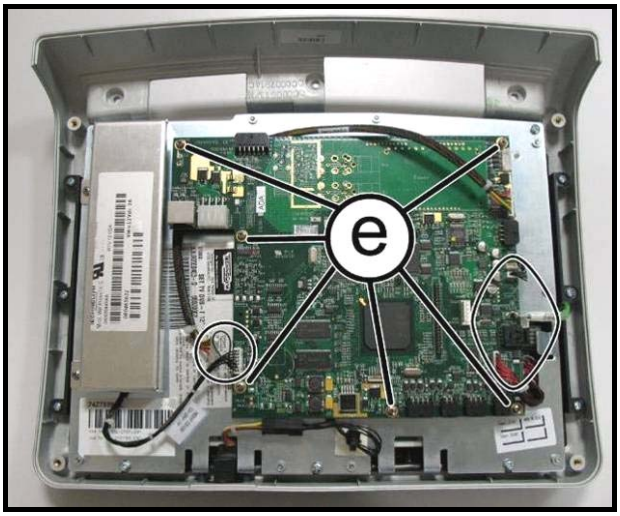


Figure 7.2-10

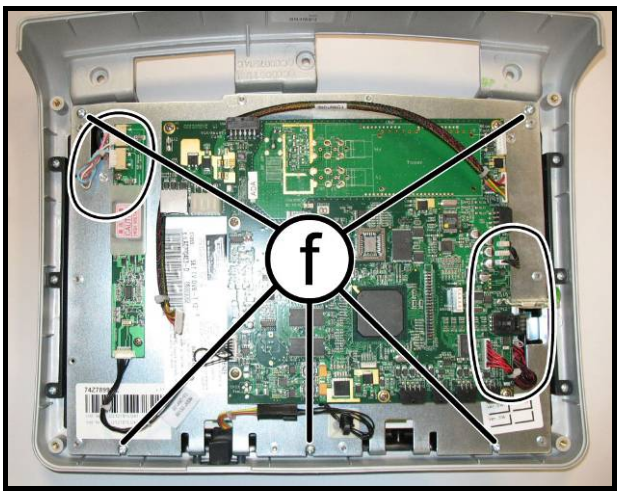


Figure 7.2-11

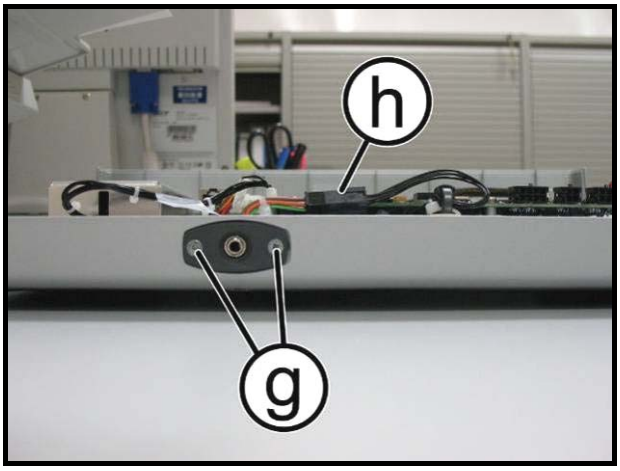


Figure 7.2-12

*CPU Board **(B)**:*

1. Disconnect the cables indicated in the figure, coming from TTL Board [CN3], Touch screen [CN28A], inverter LCD [CN5] and headphone jack [J3].

ATTENTION: to disconnect the cable coming from the touch screen, bend lightly back the protection plate, if necessary.

2. Back off the 6 screws **(e)** with a small Phillips screwdriver.

3. Remove the CPU Board.

To disassemble LCD and Touch Screen:

1. Disconnect the cable's connectors coming from TTL and Touch screen [CN3-CN28A], on CPU Board. On the inverter those direct to the LCD inverter indicated in the figure [CN2-CN3].

ATTENTION: to disconnect the cable coming from the touch screen, bend lightly back the protection plate, if necessary.

2. Back off the 5 screws **(f)**, which fix the plate with all the Display Boards, to the front covering.

3. Back off the 2 screws **(g)** which fix the headphone jack at the display with a small Phillips screwdriver.

4. Disconnect the connector **(h)**.

5. Remove the headphone jack from the display housing.

6. Lift up the plate on which all the circuit boards and the LCD are fixed.

Continued on following page →

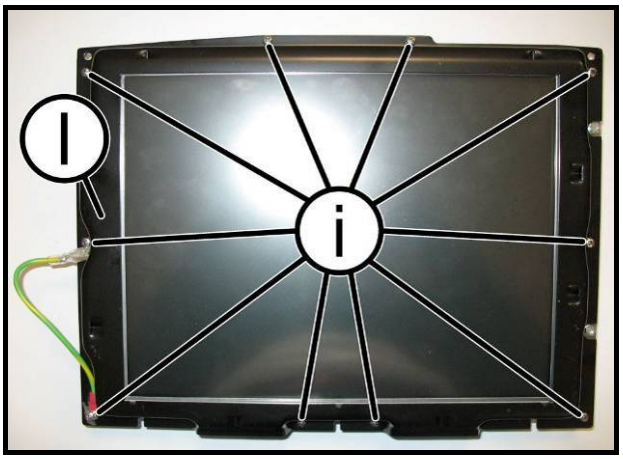


Figure 7.2-13

7. Back off the 10 screws **(i)** using a small Phillips screwdriver.
8. Remove the touch screen protection plate **(l)**.

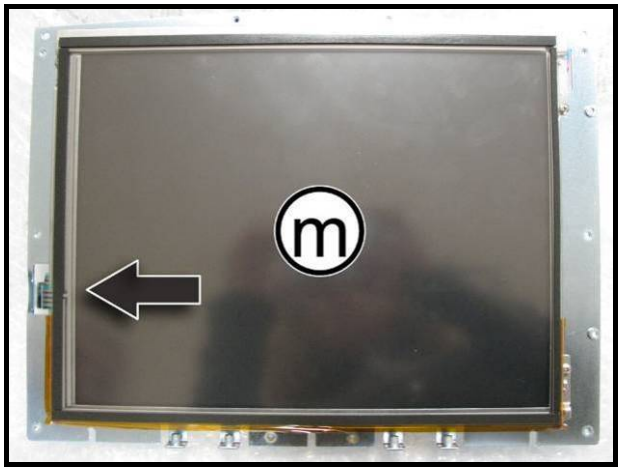


Figure 7.2-14

9. Shift touch screen **(m)** on one side, paying attention to the cable which connect it to the CPU Board.

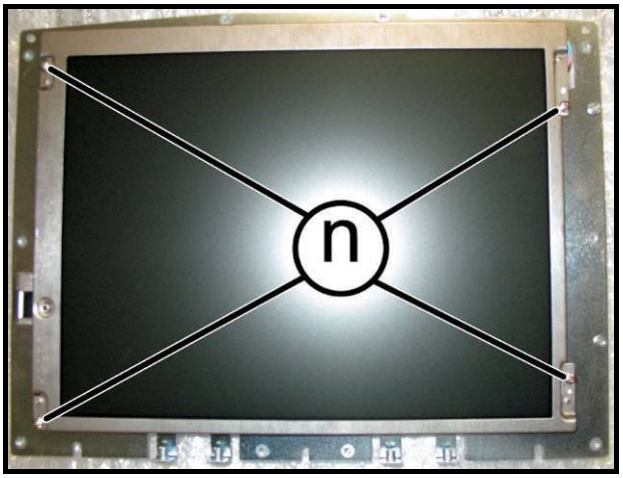


Figure -7.2-15

10. Back off the 4 screws **(n)** using a small Phillips screwdriver.
11. Lift up and remove the LCD.

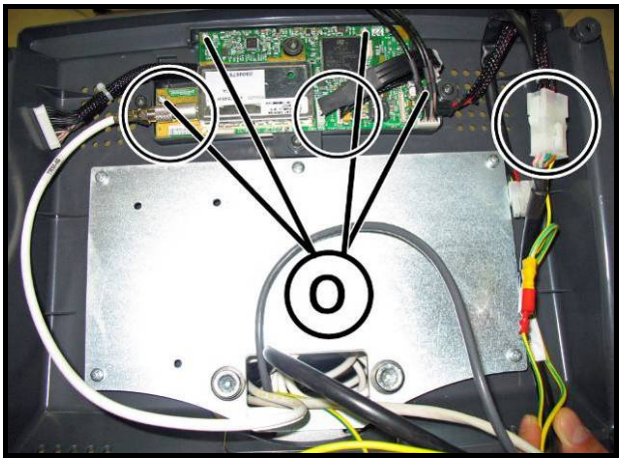


Figure 7.2-16

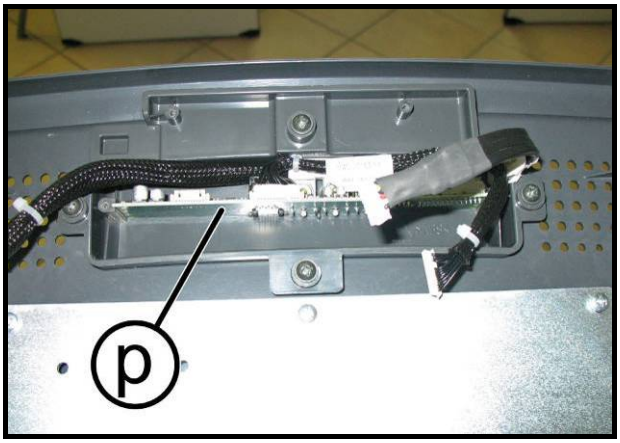


Figure 7.2-17

To disassemble the Digital TV and AUX input Board:

1. Work on the rear display support.
2. Disconnect the cable coming from the Input AUX Board and the antenna cable highlighted in the figure and the power supply cable.
3. Back off the 4 screws **(o)** with a medium Phillips screwdriver.
4. Remove the Digital TV Board.
5. Slip off the AUX Input Board **(p)** from its housing.

ATTENTION: During the reassembly of the Digital TV Board, pay attentions to not squash the cables under it.

To reassemble the circuit boards, carry out the above steps in reverse order.

7.3. 500AND 700 KEYBOARDS AND TOUCH SCREEN DISASSEMBLY

7.3.1. 500 AND 500SP MODELS

Figure 7.3-1

Carry out the operations described in paragraphs: ***Errore. L'origine riferimento non è stata trovata.*** *"****Errore. L'origine riferimento non è stata trovata.****".*

With the Display placed on a work bench:

- Unplug the keyboard connector **(a)** [CN2], shown in the figure.

- Use a sharp tool to lift up and detach a corner of the keyboard.

To assemble a new keyboard, with the display on a work bench:

1. Remove the backing film from the adhesive.
2. Apply the adhesive part, starting from the left and working toward the right, without bending the keyboard.
3. Insert the connector in the special slot on the display and connect it to the display board.
4. Remove the protective film.

Figure 7.3-2

ATTENTION: When reassembling the keyboard, make sure that none of the keys are bent or remain pushed in.

ATTENTION: The keyboard assembly procedure can only be carried out once, because disassembly damages the tracks and keys.

7.3.2. 700 AND 700SP LED VERSION

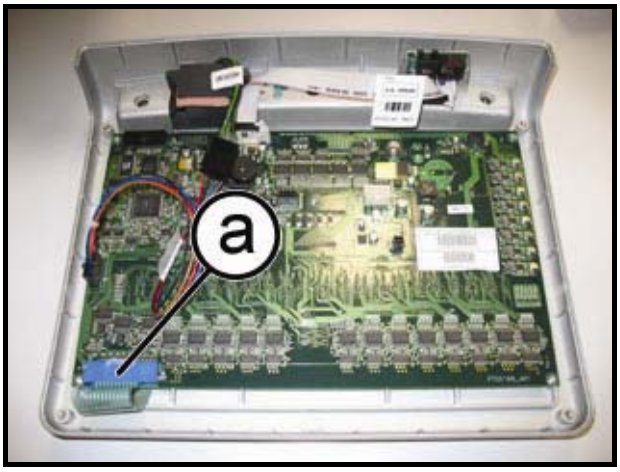


Figure 7.3-3

Figure 7.3-4

Carry out the operations described in paragraphs: ***Errore. L'origine riferimento non è stata trovata.****"****Errore. L'origine riferimento non è stata trovata.****".*

With the Display placed on a work bench:

1. Unplug the keyboard connector **(a)** [CN2] as in the side figure.

2. Use a sharp tool to lift up and detach a corner of the keyboard.

To assemble a new keyboard, with the display on a work bench:

1. Remove the backing film from the adhesive.

2. Apply the adhesive part, starting from the left and working toward the right, without bending the keyboard.

3. Insert the connector in the special slot on the display and connect it to the display board.

4. Remove the protective film.

ATTENTION: When reassembling the keyboard, make sure that none of the keys are bent or remain pushed in.

ATTENTION: The keyboard assembly procedure can only be carried out once, because disassembly damages the tracks and keys.

7.3.3. 700WTV VERSION (WELLNESS TV)

To disassemble the Touch Screen, please refer to the Display Board disassembly procedure: 7.2.3. “700WTV version (Wellness TV)”

7.4. CARDIO RECEIVER DISASSEMBLY

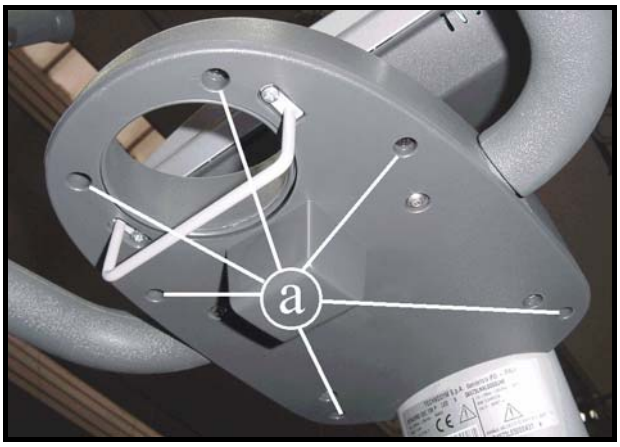


Figure 7.4-1

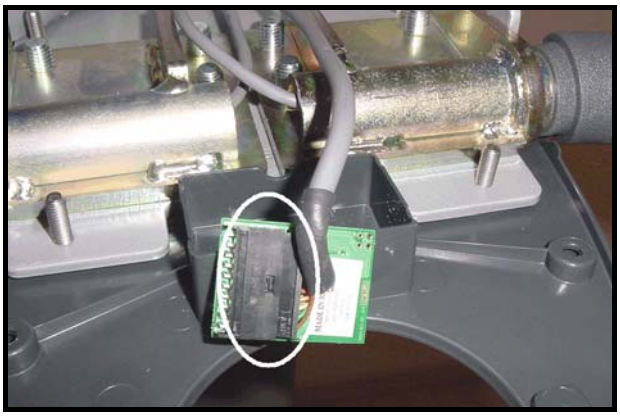


Figure 7.4-2

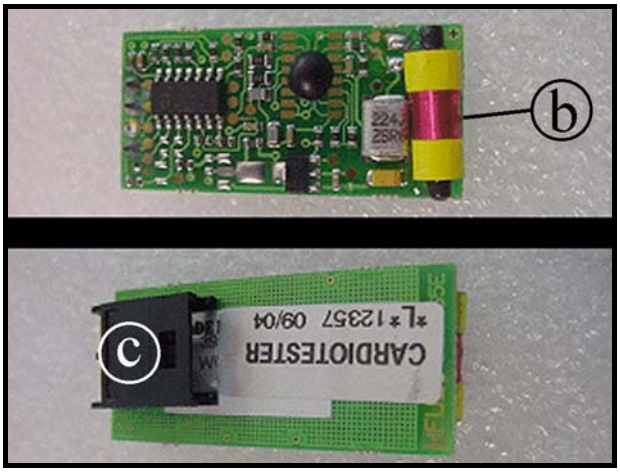


Figure 7.4-3

Turn off the machine and unplug the mains lead from the wall outlet.

1. Back off the 6 screws **(a)** using a medium Phillips screwdriver.
2. Lift up the upper tray bracket.
3. Unplug the connector indicated in the figure.
4. Remove the receiver.

To assemble the new receiver:

1. On the HFU receiver, there are the receiving coil **(b)** and the connector **(c)**.

Continued on following page →

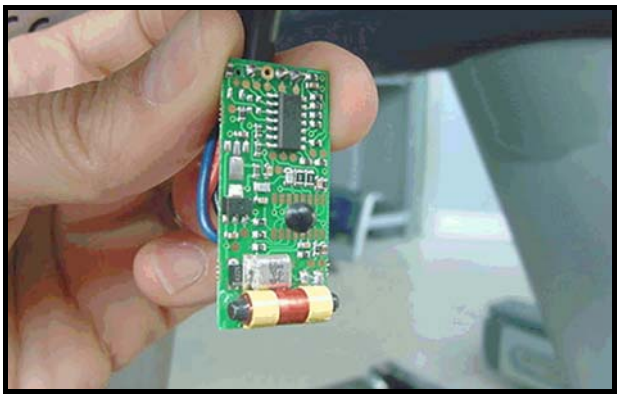


Figure 7.4-4

2. Connect the cable to the cardio receiver and bend the cable on a side of the connector.

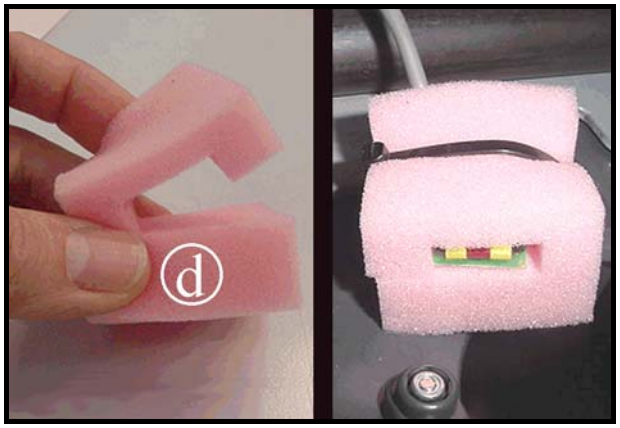


Figure 7.4-5

3. Place the receiver in the sponge **(d)** as shown in the picture to side.

4. Use a cable tie to secure the receiver in the sponge.

ATTENTION: The receiving coil must be oriented upwards and toward the user.

Figure 7.4-6

5. Place on top of the receiver, inside the plastic housing, a thick sponge.

Figure 7.4-7

6. Secure the cardio receiver and the sponges with a sticker.

To reassemble the cardio receiver, carry out the above steps in reverse order.

7.5. FIXED HANDGRIPS DISASSEMBLY

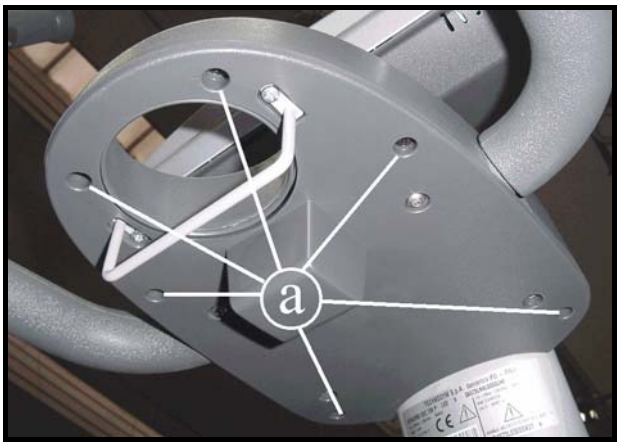


Figure 7.5-1

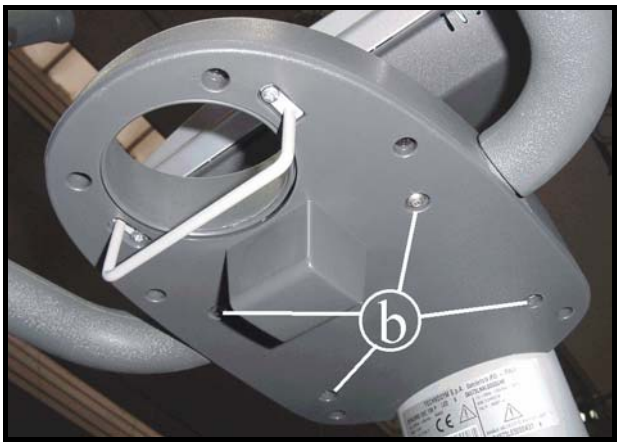


Figure 7.5-2

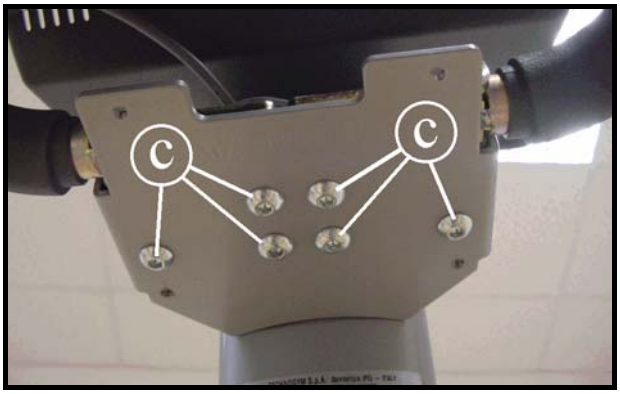


Figure 7.5-3

1. Turn off the machine and unplug the mains lead from the wall outlet.
2. Back off the 6 screws **(a)** using a medium Phillips screwdriver.
3. Remove the upper tray.
4. Back off the 4 screws **(b)** using a 4mm hexagonal wrench.
5. Remove the lower tray bracket.
6. Back off the three screws **(c)** using a 6mm hexagonal wrench (*back off the three screws on the left or right, depending on which handgrip is being disassembled*).
7. Remove the handgrips.

To reassemble the handgrips, carry out the above steps in reverse order.

7.6. HAND SENSOR DISASSEMBLY

Only for versions : 700, 700SP and 700WTV.

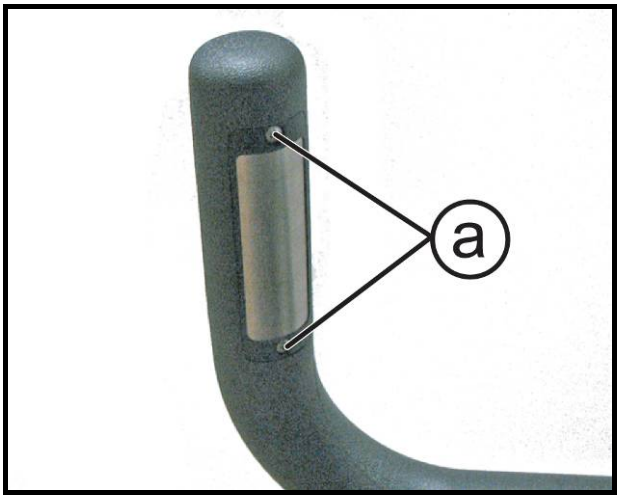


Figure 7.6-1

Figure 7.6-2

Turn off the machine and unplug the mains lead from the wall outlet.

For each handle sensor:

1. Back off the 2 screws **(a)** using a small Phillips screwdriver.

2. Lift up the top sensor.

3. Remove the lower sensor.

4. To disconnect the sensors, unplug the two Fast-on indicated in the figure.

Continued on following page →

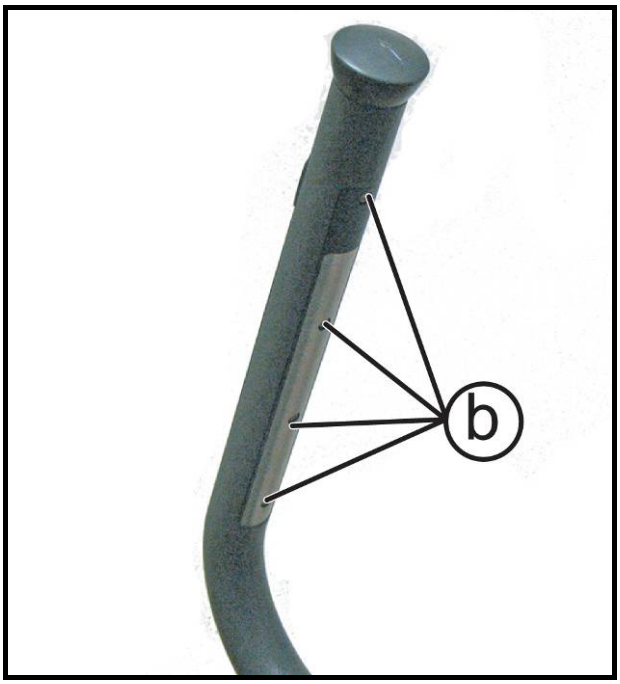


Figure 7.6-3

Figure 7.6-4

<u>For each lever sensor:</u>

1. Back off the 4 screws **(b)** using a small Phillips screwdriver.

2. Lift up the top sensor.

3. Remove the lower sensor.

4. To disconnect the sensors, unplug the two faston and the connector **(c)** of the touch sensor indicated in the figure.

To reassemble the sensors, carry out the above steps in reverse order.

7.7. GUARDS DISASSEMBLY

7.7.1. REAR GUARD

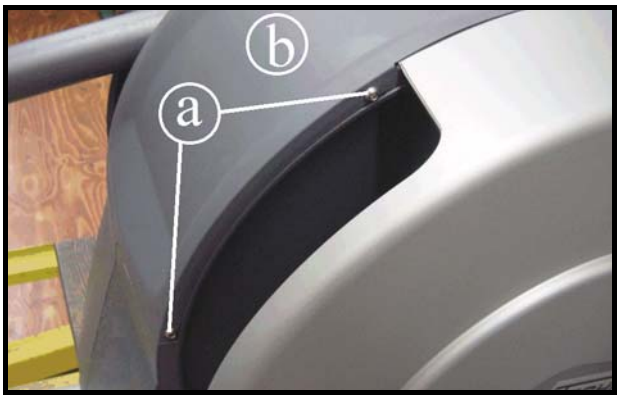


Figure 7.7-1

Figure 7.7-2

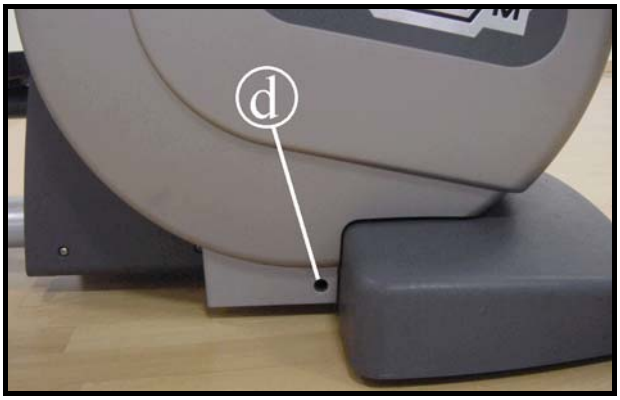


Figure 7.7-3

Turn off the machine and unplug the mains lead from the wall outlet.

1. Back off the screws **(a)**, on both sides of the machine, using a 4mm hexagonal wrench.
2. Remove the top cover **(b)**.
3. Back off the 4 screws **(c)** using an 8mm hexagonal wrench.
4. Back off the screw **(d)**, on both sides of the machine, using a 4mm hexagonal wrench.
5. Remove the rear guard.

Continued on following page →

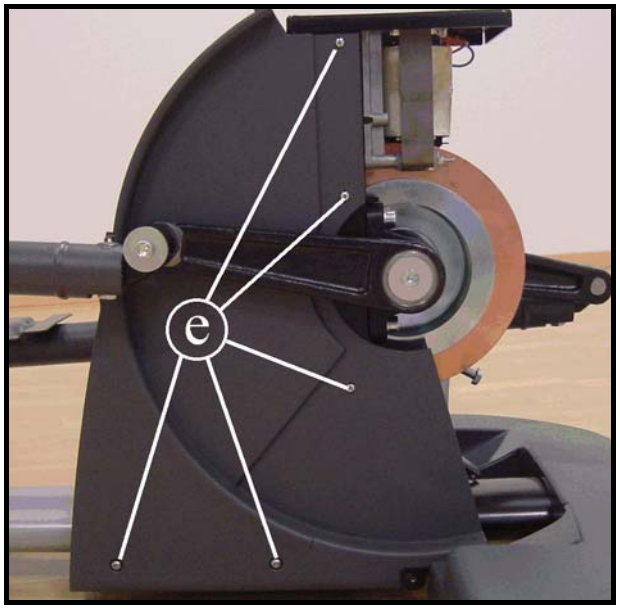


Figure 7.7-4

6. Back off the 5 screws **(e)**, on both sides of the machine, using a medium Phillips screwdriver for the three top screws and a 4mm hexagonal wrench for the two lower ones.

7. Remove the guard.

7.7.2. BRAKE BOX COVER GUARD

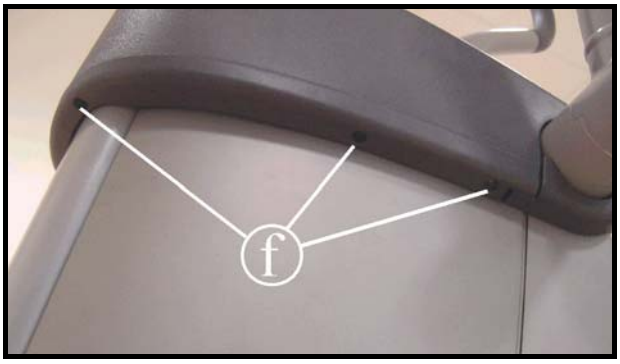


Figure 7.7-5

1. Back off the 3 screws **(f)** on both sides of the machine, using a medium Phillips screwdriver.
2. Lift the top cover along the display column.

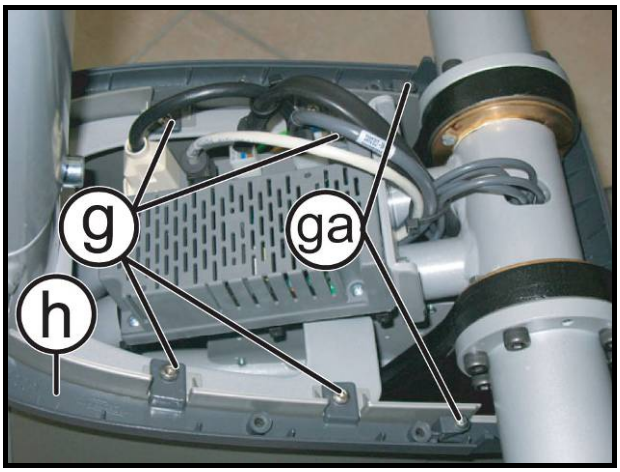


Figure 7.7-6

3. Back off the 4 screws **(g)** using a 4mm hexagonal wrench.
4. Back off the 2 screws **(ga)** using a medium Phillips screwdriver.
5. Remove the front casing **(h)**.

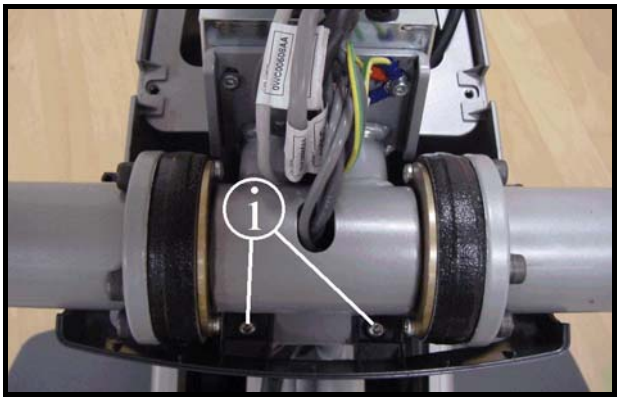


Figure 7.7-7

6. Back off the 2 screws **(i)** using a 4mm hexagonal wrench.
7. Remove the rear frame.

7.7.3. FRONT GUARDS

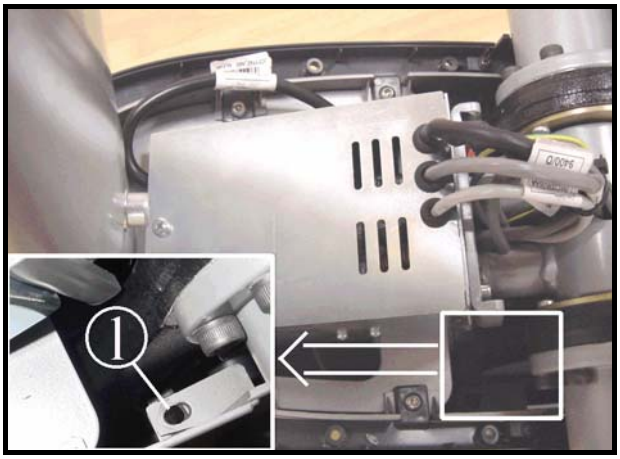


Figure 7.7-8

1. Working inside the front guard, back off the screw **(l)** on each side of the machine, using a Phillips screwdriver.

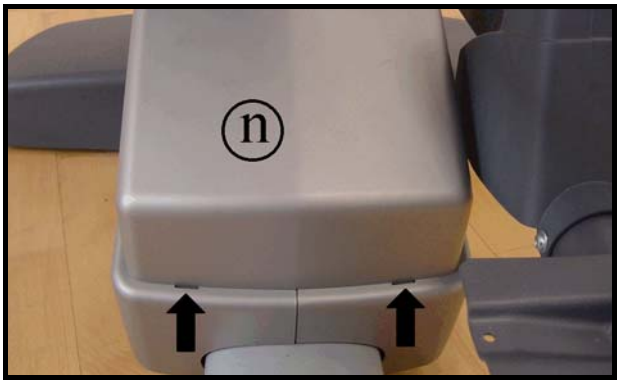


Figure 7.7-9

2. Remove the guard **(n)** by pushing the tabs in the direction indicated by the arrows, and simultaneously lifting it upward.

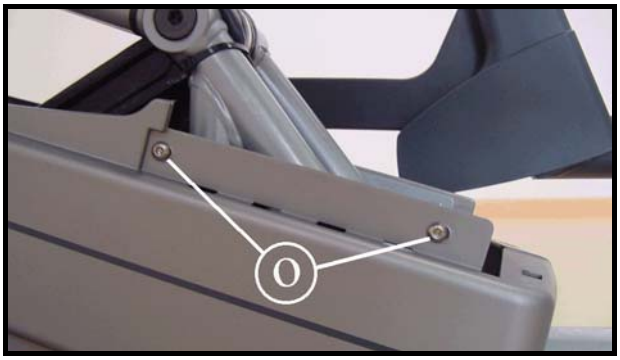


Figure 7.7-10

3. Back off the screws **(o)** on either side of the machine using a 4mm hexagonal wrench.

Continued on following page →

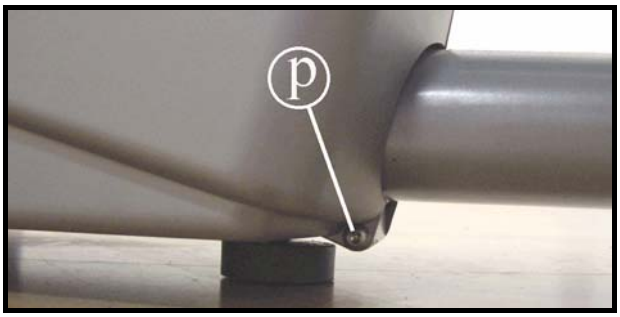


Figure 7.7-11

Figure 7.7-12

4. Back off the screws **(p)** on either side of the machine using a 4mm hexagonal wrench.

5. Back off the 4 screws **(q)** using a 4mm hexagonal wrench.

6. Remove the two front half guards.

To reassemble the guards, carry out the above steps in reverse order.

7.8. BRAKE BOX DISASSEMBLY

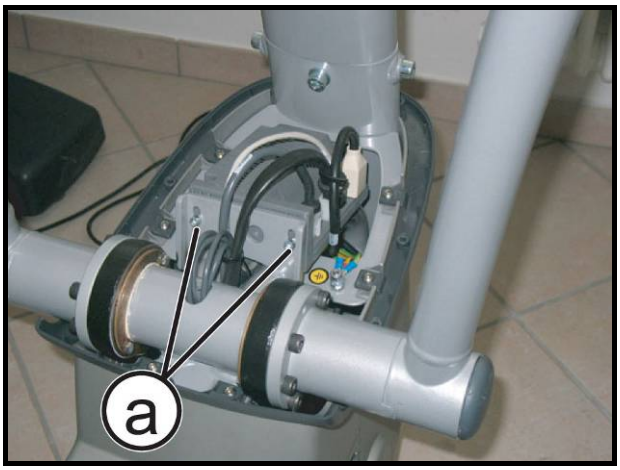


Figure 7.8-1

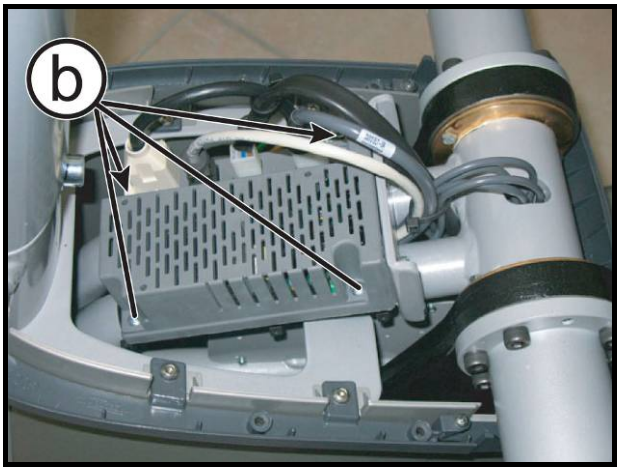


Figure 7.8-2

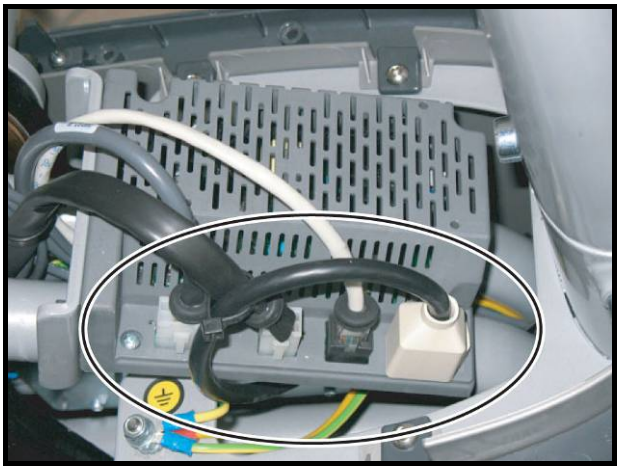


Figure 7.8-3

Carry out steps 1-2 of procedure: 7.7.2. "Brake box cover guard".

1. Back off the 2 screws **(a)** using a 4mm hexagonal wrench.

2. Back off the screw **(b)** using a medium Phillips screwdriver.

3. Remove the cover plate from the electrical box.

4. Unplug the 4 connectors indicated in the figure at left.

5. Remove the electrical box.

To reassemble the electrical box, carry out the above steps in reverse order.

7.9. HAND SENSOR BOARD DISASSEMBLY

Only for version: 700, 700SP and 700WTV.

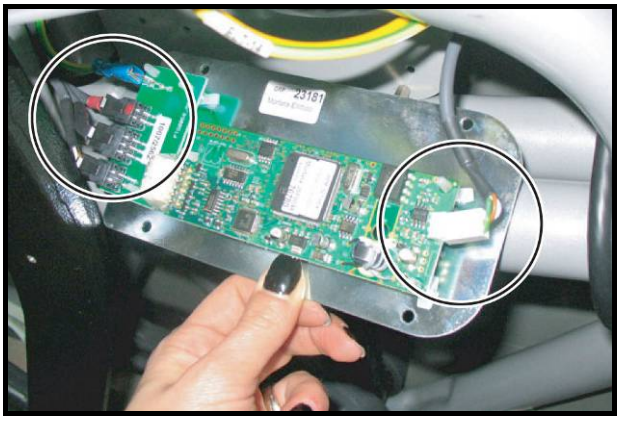


Figure 7.9-1

Carry out the operations described in paragraph: 7.7.2. "Brake box cover guard" and 7.7.3. "Front guards".

1. Back off the 4 screws with a small Phillips screwdriver, that fix the support plate at the frame.
2. Unplug connectors shown in the figure at the side**.**
3. Release the clipsand to remove the board and replace if necessary.

To reassemble the hand sensor board, carry out the above steps in reverse order.

7.10. LONG HANDLEBAR LEVERS DISASSEMBLY

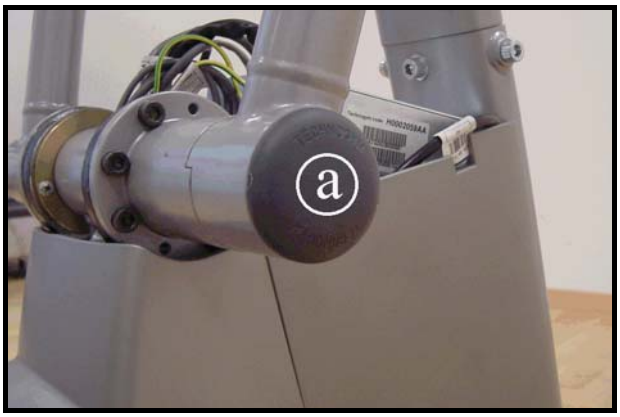


Figure 7.10-1

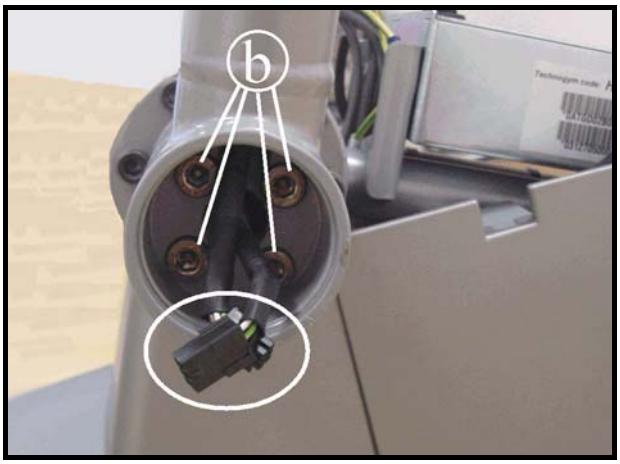


Figure 7.10-2

1. Remove the plastic cap **(a)**, using a screwdriver to force it outward.

2. Unplug the connector indicated in the figure.

3. Back off the 4 screws **(b)** using a 6mm Allen wrench.

4. Pull out the lever from the machine frame.

To reassemble the lever, carry out the above steps in reverse order.

ATTENTION: During reassembly, apply a drop of Loctite thread compound and lock down the screws (b) using a torque wrench setting of 37 Nm.

7.11. PLATFORM LEVER DISASSEMBLY

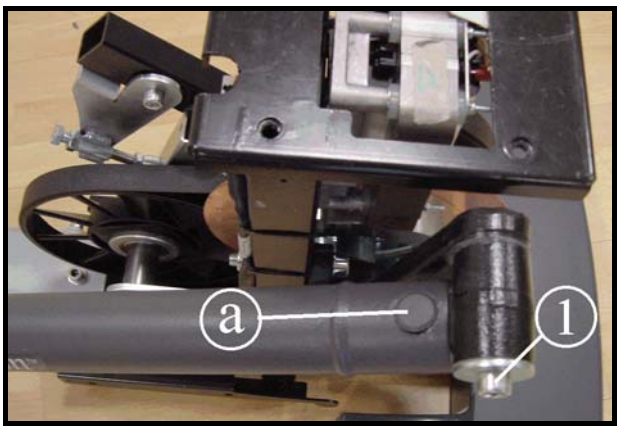


Figure 7.11-1

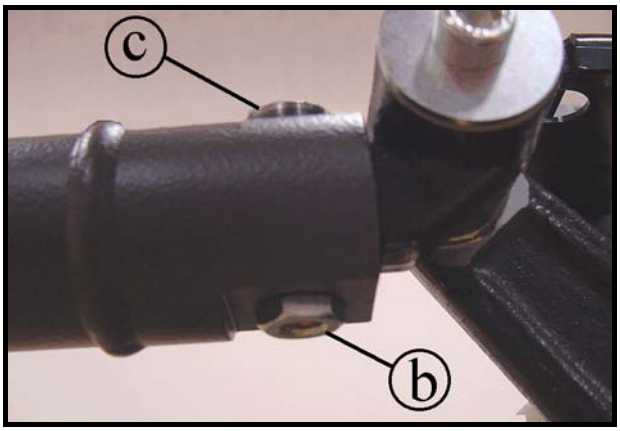


Figure 7.11-2

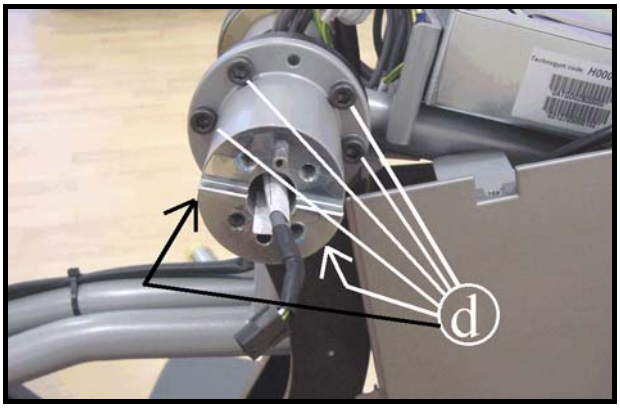


Figure 7.11-3

Carry out the operations described in paragraph: 7.7.2. "Brake box cover guard" and 7.7.3. "Front guards".

1. Remove the cap **(a)**.

ATTENTION: If the screw (1) is backed off, during reassembly, apply a drop of Loctite thread compound and lock down using a torque wrench setting of 44 Nm.

2. Back off the nut **(b)** on the lower part of the lever, using a 17mm hexagonal wrench.

3. Back off the screw **(c)**, using a 8mm hexagonal wrench.

ATTENTION: During reassembly, lock down the screw (c) using a torque wrench setting of 40 Nm, and lock down nut (b) using a setting of 30 Nm.

4. Using a 6mm hexagonal wrench, back off the 6 screws **(d)** securing the bushing assembly that connects to the upper lever.

5. Remove the bushing assembly from the machine frame.

ATTENTION: During reassembly, lock down the screws (d) using a torque wrench setting of 38 Nm.

Continued on following page →

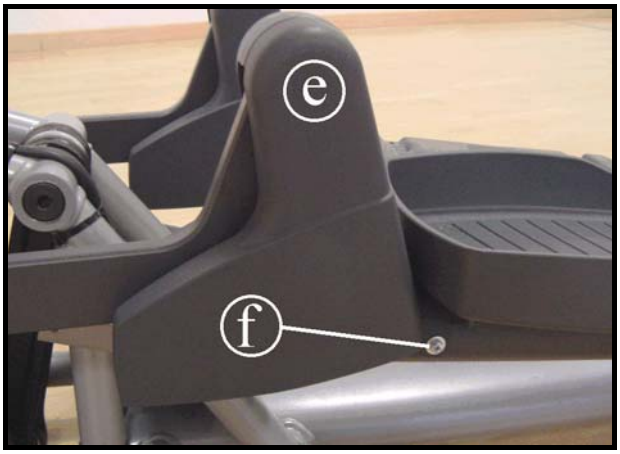


Figure 7.11-4

6. Back off the screws **(f)** (*one is on the opposite side*) using a medium Phillips screwdriver.

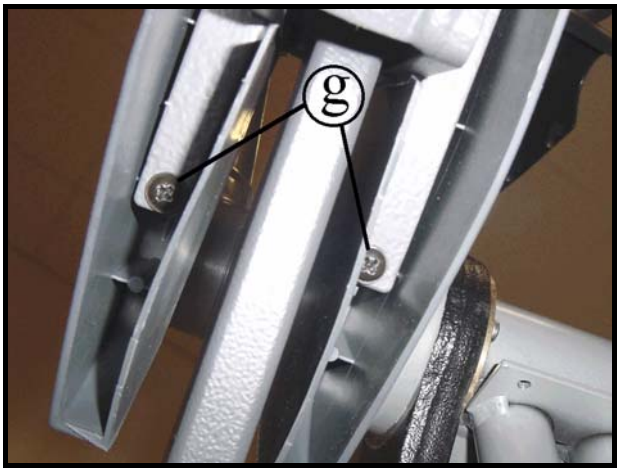


Figure 7.11-5

7. Back off the two screws **(g)** which secure the guard covering the lever, accessing them from below.
8. Remove the guard **(e)**.

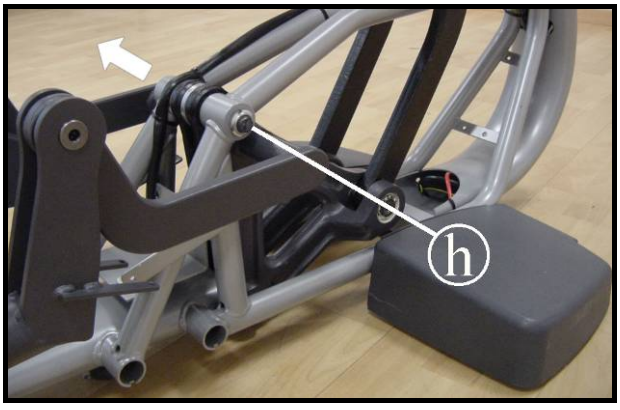


Figure 7.11-6

9. Back off the ring nut **(h)**, using a 17mm ring nut spanner, if necessary holding the pin in place with an 8mm hexagonal wrench.
10. Remove the pin in the direction indicated by the arrow.

Continued on following page →

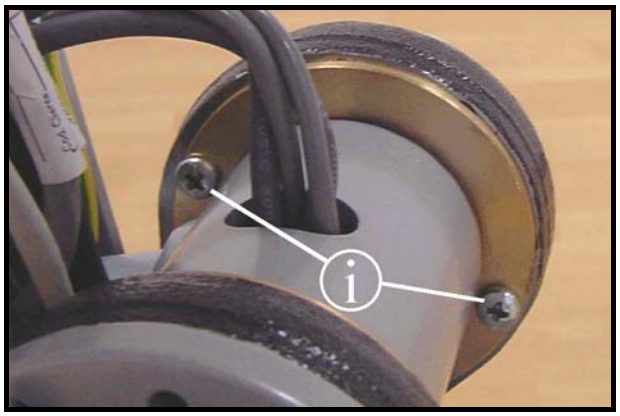


Figure 7.11-7

11. Back off the two screws **i** using a medium Phillips screwdriver, while supporting the lever assembly.

12. Remove the entire lever assembly from the machine.

13. It is now possible to disassemble the various levers and handles, backing off the ring nuts **(l)** and **(m)** with a 20mm and 15mm ring nut spanner respectively, if necessary holding the pins in place with an 8mm hexagonal wrench.

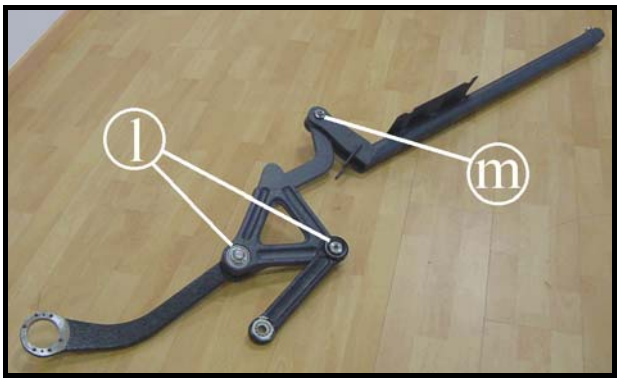


Figure 7.11-8

ATTENTION: During reassembly, lock down the rings (l) using a torque wrench setting of 70 Nm.

ATTENTION: During reassembly, lock down the ring (m) using a torque wrench setting of 50 Nm.

To reassemble the lever, carry out the above steps in reverse order.

7.12. BRAKE WINDING DISASSEMBLY

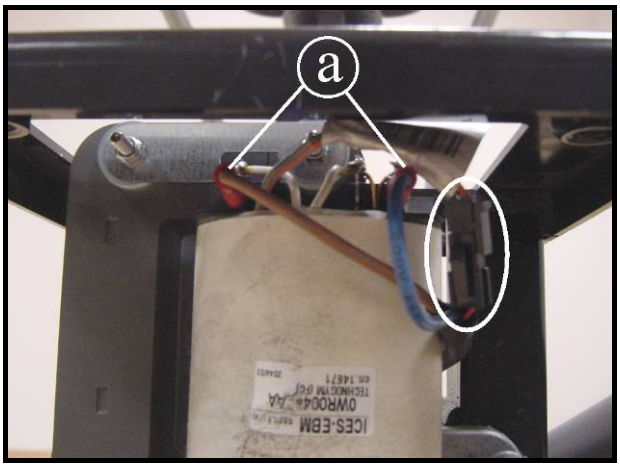


Figure 7.12-1

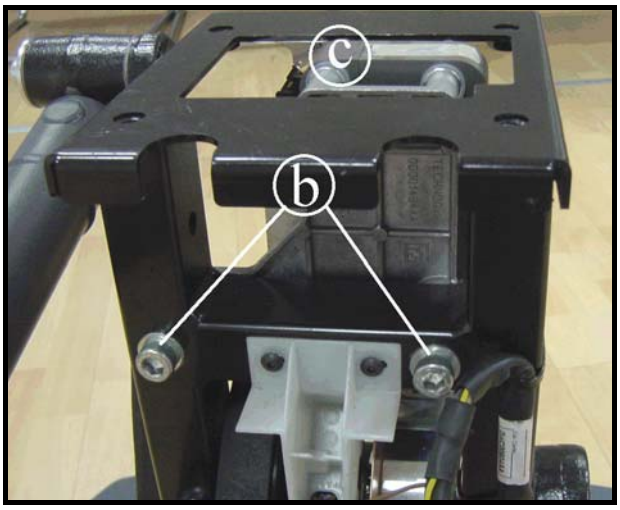


Figure 7.12-2

Carry out the operations described in 7.7. "Guards" for removing the rear guards.

1. Unplug the two Faston connectors **(a)** from the winding.
2. Unplug the connector circled in the figure at left.
3. Back off the 2 screws **(b)** using an 8mm hexagonal wrench, supporting the entire brake winding group **(c)**, to avoid damaging the copper disk.
4. Remove the brake winding assembly

To reassemble the brake winding, carry out the above steps in reverse order.

ATTENTION: After completing the reassembly, adjust the position of the winding group as described in paragraph 8.3. "Brake winding position".

7.13. DISASSEMBLING THE BELTS

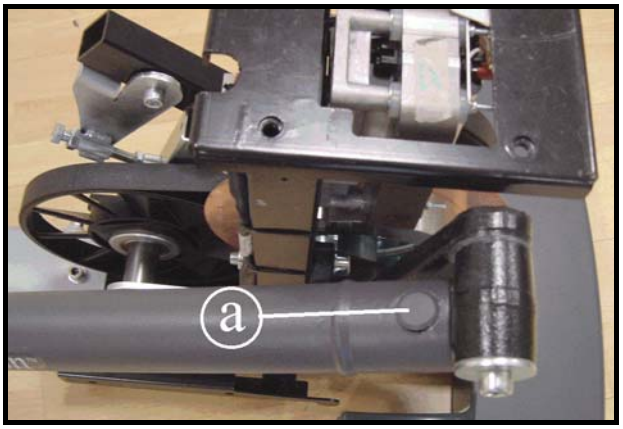


Figure 7.13-1

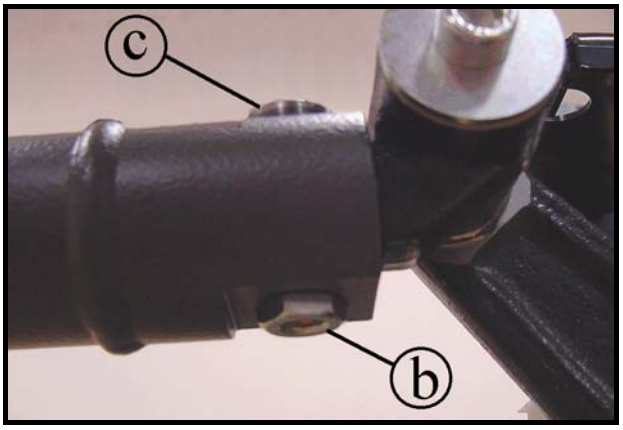


Figure 7.13-2

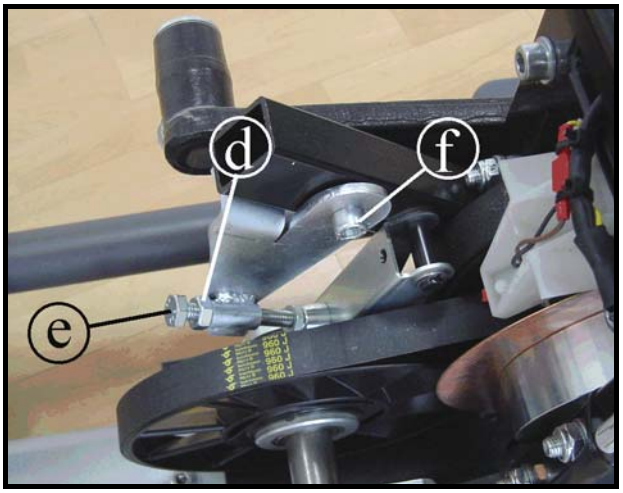


Figure 7.13-3

Carry out the operations described in paragraph: 7.12. "Brake winding disassembly".

1. Remove the cap **(a)**.

2. Back off the nut **(b)** on the lower part of the lever, using a 17mm hexagonal wrench.

3. Back off the screw **(c)**, using a 8mm hexagonal wrench.

4. Back off the lock-nut **(d)** and back off the screw **(e)** of the front tensioning mechanism, using a 17mm wrench.

5. Back off the screw **(f)**, using a 8mm hexagonal wrench.

6. Remove the front tensioning mechanism.

Continued on following page →

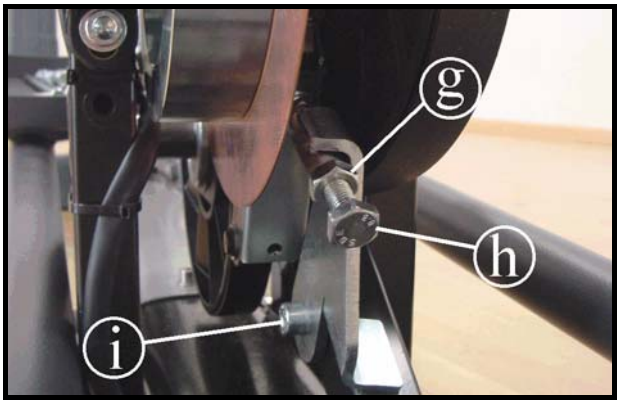


Figure 7.13-4

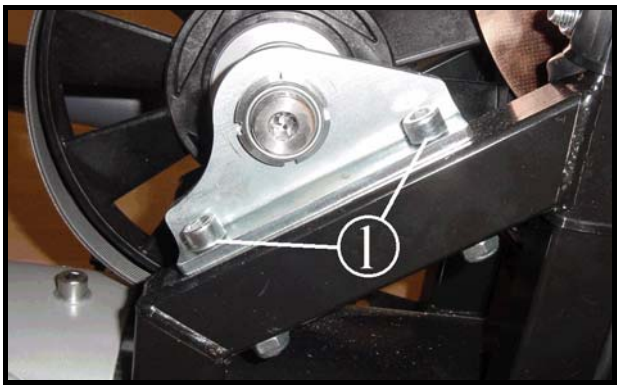


Figure 7.13-5

7. Back off the lock-nut **(g)** and back off the screw **(h)** of the rear tensioning mechanism, using a 17mm wrench.

8. Back off the screw **(i)**, using an 8mm wrench, and remove the rear tensioning mechanism assembly.

9. Back off the screws **(l)** securing the two bridge bearings on which the secondary shaft is assembled, using an 8mm hexagonal wrench for the screws and a 17mm wrench to hold the corresponding nuts in place.

10. Remove the secondary shaft assembly, pulling it out from the belt.

Only for 500SP and 700SP models.

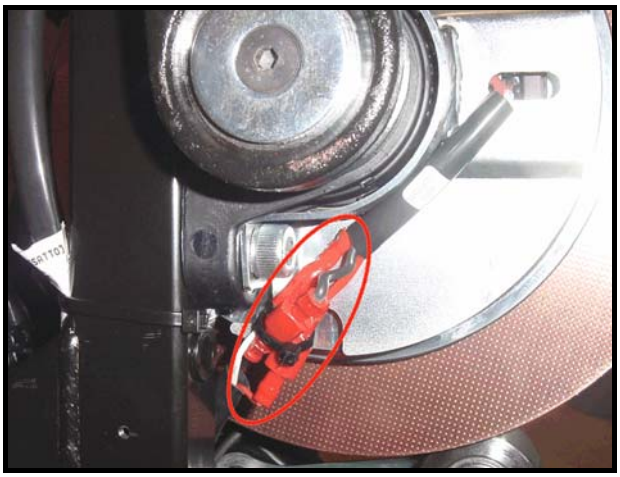


Figure 7.13-6

11. Cut the strip tie and unplug the three faston circled in the figure at left.

Continued on following page →

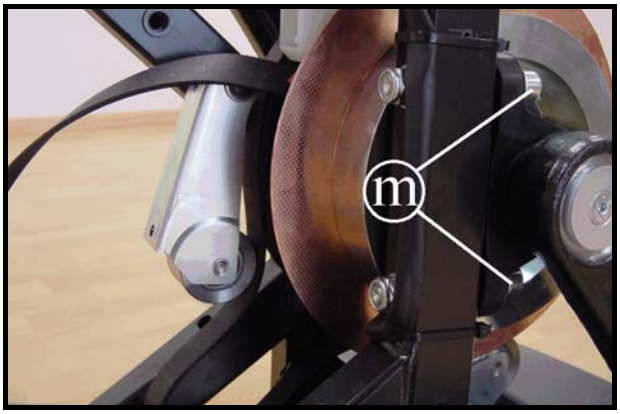


Figure 7.13-7

12. Back off the screws **(m)** securing the two bridge bearings on which the primary shaft is assembled, using an 8mm hexagonal wrench for the screws and a 17mm wrench to hold the corresponding nuts in place.

13. Remove the primary shaft assembly from the machine.

14. Remove the belts.

ATTENTION: During reassembly, lock down the screws "m" using a torque wrench setting of 40 Nm.

To reassemble the belts, follow the above instructions in reverse order.

7.14. PRIMARY SHAFT DISASSEMBLY

7.14.1. POWERED MODELS (500, 700 AND 700WTV)

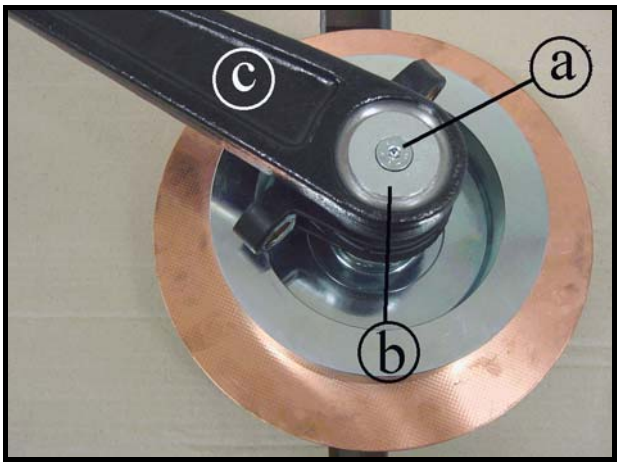


Figure 7.14-1

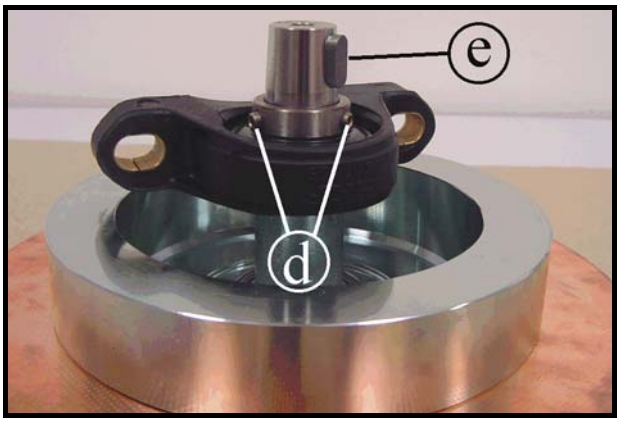


Figure 7.14-2

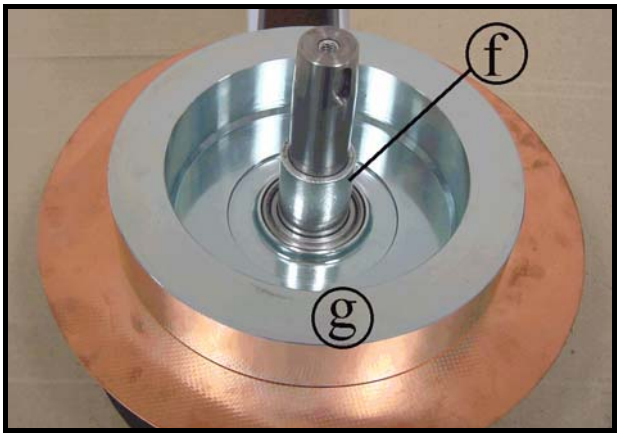


Figure 7.14-3

Carry out the operations described in paragraph 7.13. "Disassembling the belts" as far as step 12.

Place the primary shaft assembly on a work bench:

1. Back off the screw **(a)**, using a 5mm hexagonal wrench, and remove the washer **(b)**.

2. Remove the crank **c** using an extractor tool.

ATTENTION: During reassembly, lock down the screw (a) using a 35-Nm torque wrench, applying a drop of Loctite thread compound.

3. Back off the 2 grub screws **(d)** using a 3mm hexagonal wrench.

4. Remove the key **(e)**.

5. Remove the bearing from the shaft.

6. Remove the spacer **(f)** and the flywheel assembly **(g)** from the shaft.

Continued on following page →

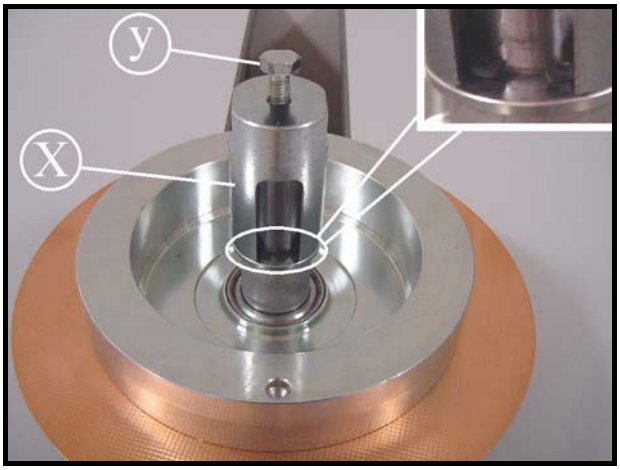


Figure 7.14-4

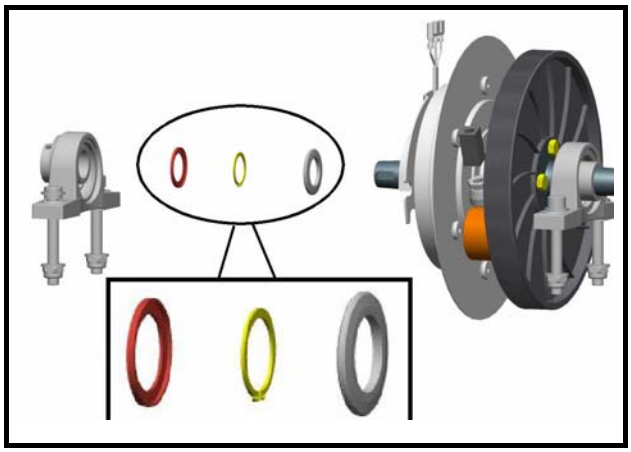


Figure 7.14-1

To disassemble the shaft you need to have the kit ***R0003810AA.***

1. Insert the special tool **x** on the shaft
2. Lock down the screw **y** on the shaft using 13 mm wrench until the pressure is removed from the snap ring.
3. Using the special pliers, remove the snap ring from its seat, sliding it upward.
4. Back off the screw and remove part b.
5. Pull the components out of the assembly.

To reassemble the shaft group, look at the picture at the side and proceed as follows:

1. Place all the components on the shaft, respecting the correct order and the direction of insertion, as shown on the side.
2. Place the spacer, the seeger and the seeger's covering piece.
3. Insert the special tool **(x)** on the shaft, locking down the screw **(y)** until the snap ring seat is completely visible (*as above*).
4. Push the snap ring into its seat with the help of a screwdriver.

It continues at page 7.36 of this procedure.

7.14.2. SELF POWERED MODELS (500SP AND 700SP)

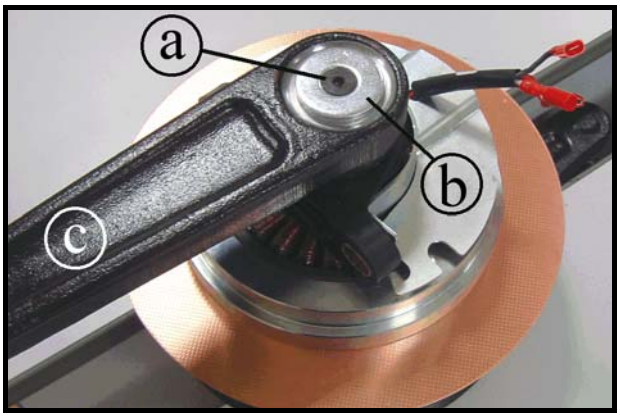


Figure 7.14-5

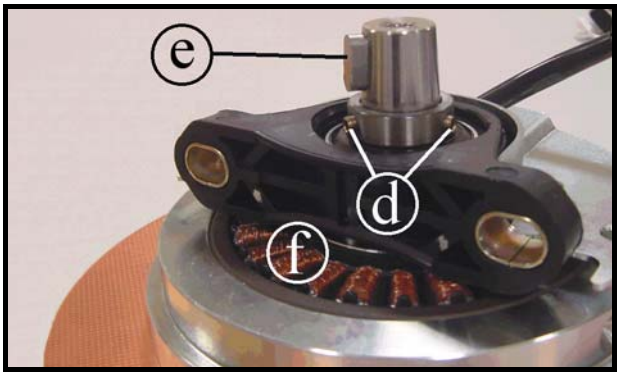


Figure 7.14-6

Figure 7.14-7

Carry out the operations described in paragraph 7.13. "Disassembling the belts" as far as step 12.

Place the primary shaft assembly on a work bench:

1. Back off the screw **(a)**, using a 5mm hexagonal wrench, and remove the washer **(b)**.
2. Remove the crank **c** using an extractor tool.

ATTENTION: During reassembly, lock down the screw (a) using a 35-Nm torque wrench, applying a drop of Loctite thread compound.

3. Back off the 2 grub screws **(d)** using a 3mm hexagonal wrench.
4. Remove the key **(e)**.
5. Remove the bearing from the shaft.
6. Remove the stator assembly **(f)** from the shaft.

*To disassemble the shaft you need to have the kit **R0003810AA**.*

1. Insert the special tool **x** on the shaft
2. Lock down the screw **y** on the shaft using 13 mm wrench until the pressure is removed from the snap ring.
3. Using the special pliers, remove the snap ring from its seat, sliding it upward.
4. Back off the screw and remove part b.
5. Pull the components out of the assembly.

To reassemble, proceed as follows:

1. Take a look at Figure 7.14-5.
2. Position the snap ring on the shaft.
3. Insert the special tool **x** on the shaft, locking down the screw **y** until the snap ring seat is completely visible.
4. Push the snap ring into its seat with the help of a screwdriver.

Segue alla pagina successiva →

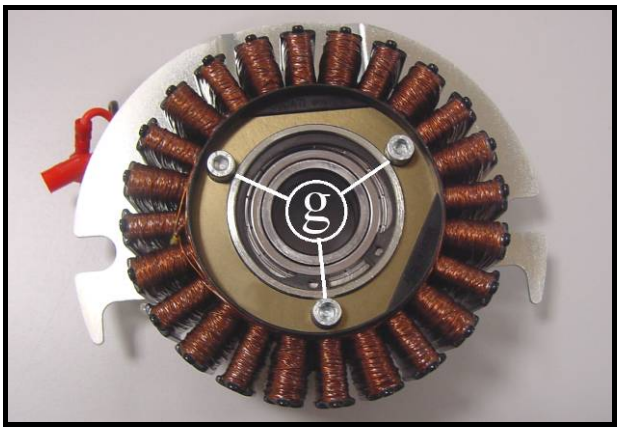


Figure 7.14-8

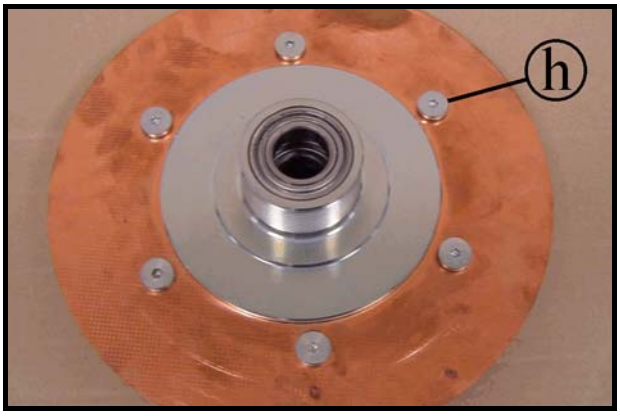


Figure 7.14-9

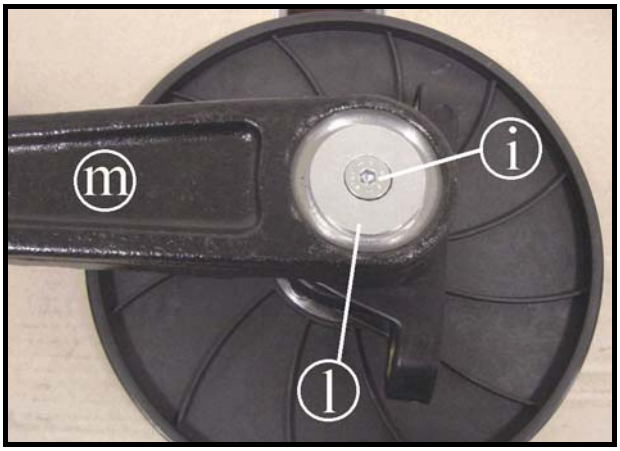


Figure 7.14-10

To disassemble the stator:

1. Back off the three screws **(g)** using a 4mm hexagonal wrench and remove the stator.

It continues at page 7.36 of this procedure.

To disassemble the copper disk:

1. Back off the 6 screws **(h)** using a 4mm hexagonal wrench.

WARNING: Take particular care with the copper disk, as it can bends easily.

ATTENTION: During reassembly, lock down the screws (h) using a torque wrench setting of 6 Nm.

To disassemble the plastic pulley:

1. Back off the screw **(i)**, using a 5mm hexagonal wrench, and remove the washer **(l)**.

2. Remove the crank **(m)** using an extractor tool.

ATTENTION: During reassembly, lock down the screw "i" using a torque wrench setting of 30-Nm, and applying a drop of Loctite red thread compound.

Continued on following page →

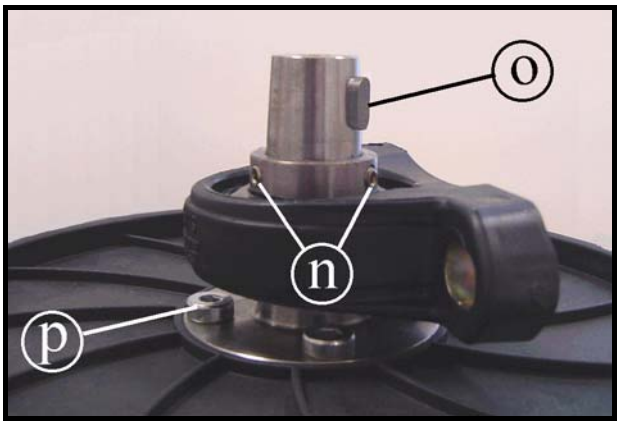


Figure 7.14-11

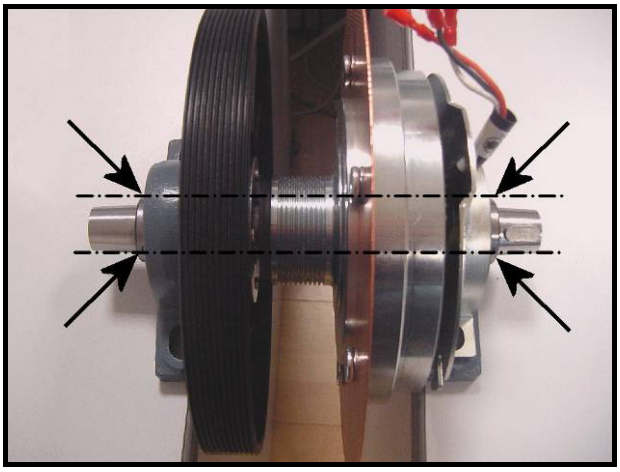


Figure 7.14-12

3. Back off the 2 grub screws **(n)** using a 3mm hexagonal wrench.
4. Remove the key **(o)**.
5. Remove the bearing from the shaft.
6. Back off the 4 screws **(p)** using a 5mm hexagonal wrench, holding the corresponding nuts in place using a 13mm wrench.
7. Remove the pulley from the shaft.

ATTENTION: During reassembly, lock down the screws (p) using a torque wrench setting of 22 Nm.

To reassemble the primary shaft assembly, carry out the above steps in reverse order.

ATTENTION: Screw the grub screws indicated in the picture by the arrows, which are fixing the bearings, keeping them aligned on both the sides of the shaft.

7.15. SECONDARY SHAFT DISASSEMBLY

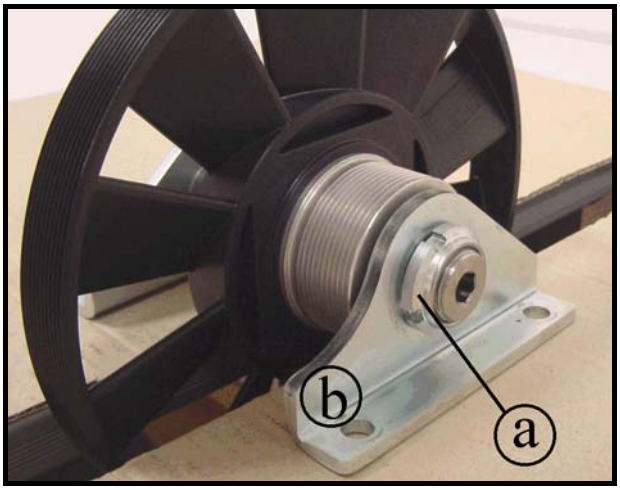


Figure 7.15-1

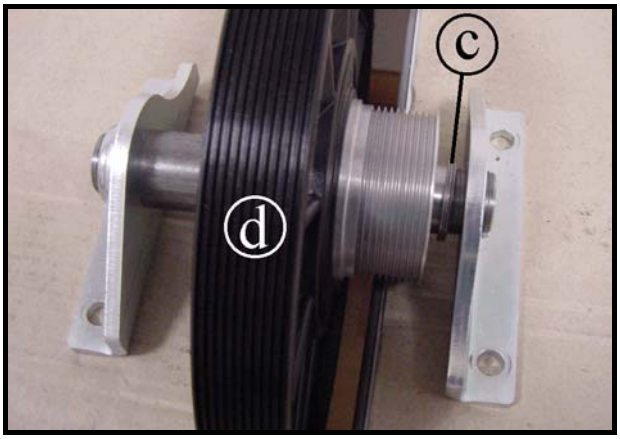


Figure 7.15-2

Carry out the operations described in paragraph 7.13. "Disassembling the belts" as far as step 10.

Place the secondary shaft assembly on a work bench:

1. Back off the ring **(a)** using a 25mm ring nut spanner and remove the support **(b)**.

2. Remove the three spacers **c** and the pulley assembly **(d)**.

To reassemble the secondary shaft assembly, carry out the above steps in reverse order.

7.16. SPEED SENSOR DISASSEMBLY

Only for powered version (500, 700 e 700WTV).

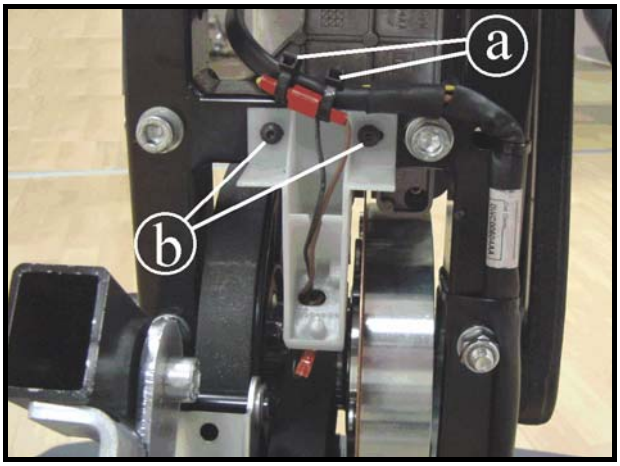


Figure 7.16-1

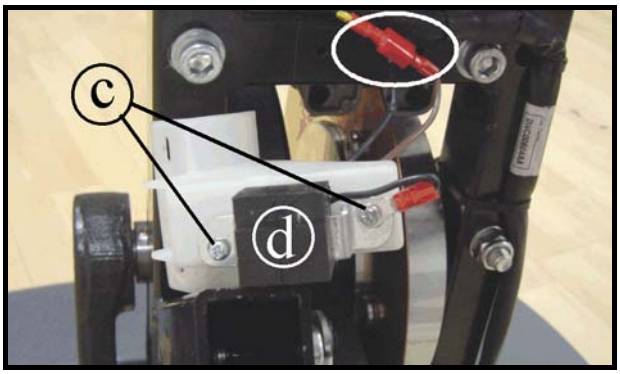


Figure 7.16-2

Carry out the operations described in paragraph 7.7. "Guards" for removing the rear guards.

1. Cut the two cable ties **(a)**.
2. Back off the 2 screws **(b)** using a 3mm hexagonal wrench.
3. Remove the speed sensor and its support.
4. Unplug the Faston indicated in the figure.
5. Back off the two screws **(c)** using a Phillips screwdriver, and remove the sensor **(d)**.

To reassemble the speed sensor, carry out the above steps in reverse order.

ATTENTION: After completing the reassembly, adjust the position of the sensor as described in paragraph 8.2. "Speed sensor position".

7.17. PLATFORMS WITH CSAFE BORAD, CONNECTORS, POWER ENTRY MODULE AND WHEELS DISASSEMBLY

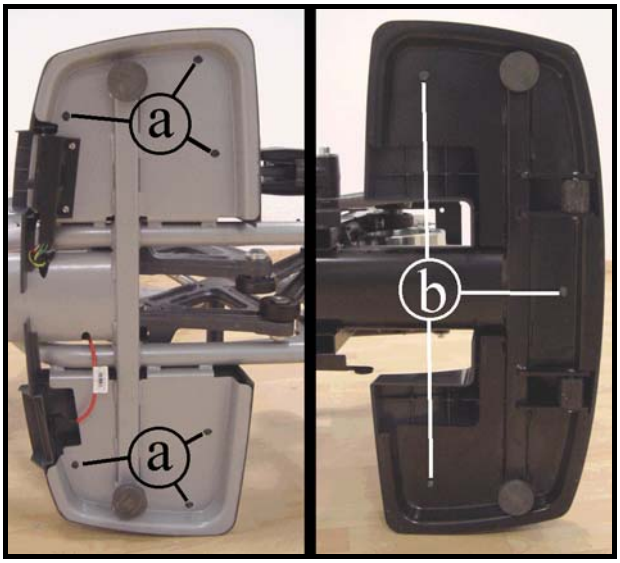


Figure 7.17-1

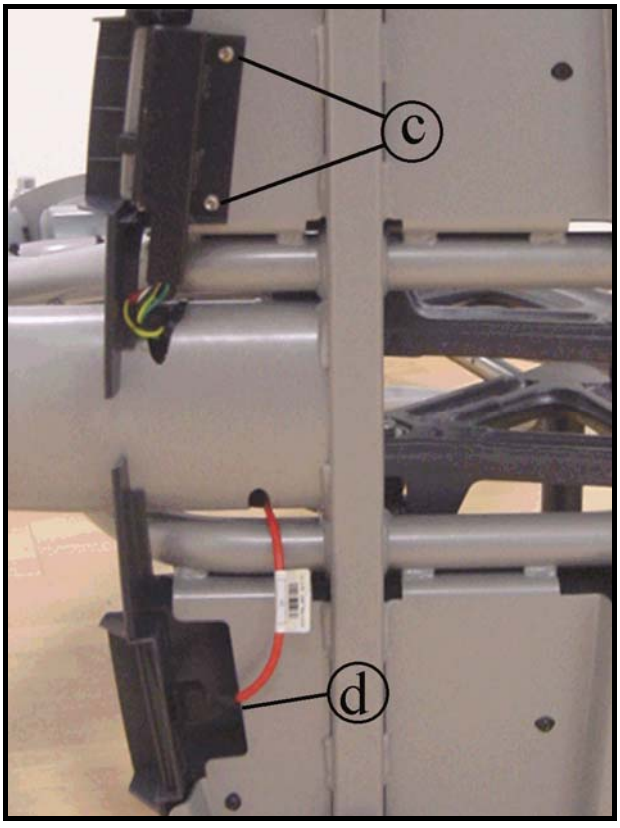


Figure 7.17-2

Carry out the operations described in paragraph 7.7. "Guards" for removing the front guards.

1. To disassemble the plastic covers from the platforms, turn the machine over on one side.

2. Back off the screws **(a)** for the front covers and/or the screws **(b)** for the rear covers.

Underneath the front platforms (at left in the figure) there are housings for:

- *Power entry module (500, 700 and 700WTV) or battery charger socket (500SP and 700SP).*
- *connector of the cable leading to the CSafe board*

At this point it is possible to:

1. Back off the two screws **(c)** using a 4mm hexagonal wrench, and remove the power entry module.

2. Unplug connector **(b)** of the cable leading up to the CSafe board.

Continued on following page →

Figure 7.17-3

<u>Disassembling the wheels:</u>

1. To disassemble the wheels **(e)**, remove the snap ring **(f)** and pull out the pin on which they rotate.

To reassemble the platforms, connectors and wheels, carry out the above steps in reverse order.

7.18. BATTERY DISASSEMBLY

Only for self-powered version (500SP e 700SP).

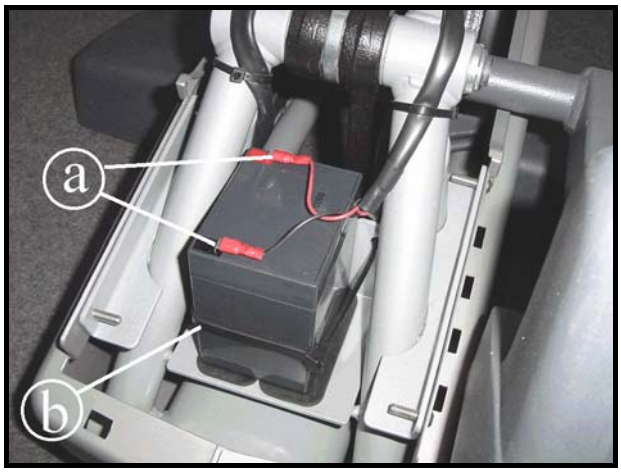


Figure 7.18-1

Carry out the operations described in paragraph: 7.7.3. "Front guard" as far as step 4.

1. Unplug the two faston **(a)**.

2. Cut the strip tie **(b)** and remove the battery.

To reassemble the battery carry out the above steps in reverse order.

8. ADJUSTMENTS

8.1. BELT TENSION

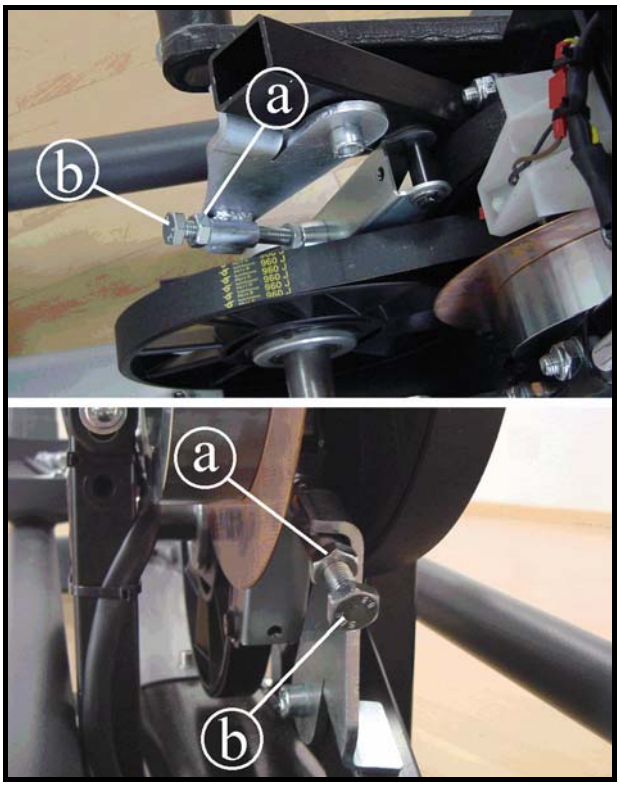


Figure 8.1-1

Carry out the operations described in paragraph 7.7. "Guards" for removing the upper guard.

<u>Working on the front or rear belt tensioning mechanism:</u>

1. Back off the lock-nut **(a)** using a 17mm wrench.
2. Make the adjustment by turning the screw **(b)** with a 17mm wrench.
3. Tighten the lock-nut again.

ATTENTION: The correct belt tension is 200Hz±20Hz.

To reassemble the bel, carry out the above steps in reverse order.

8.2. SPEED SENSOR POSITION

Only for powered version (500, 700 e 700WTV).

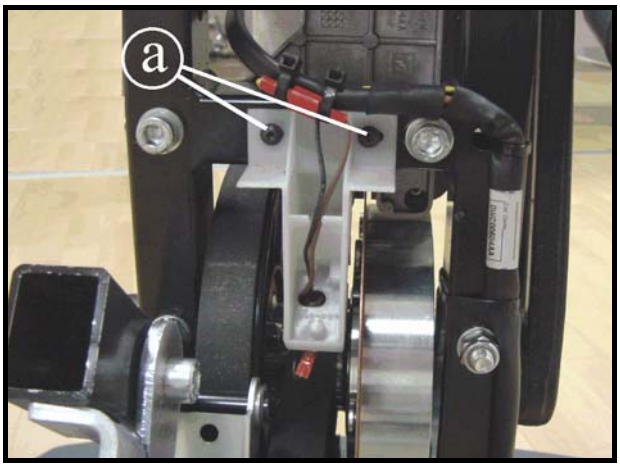


Figure 8.2-1

Carry out the operations described in paragraph 7.7. "Guards" for removing the rear guard.

1. Back off the 2 screws **(a)** and shift the speed sensor support to the side, so that it is **0.7 mm** from the screws on the copper disk.

2. Lock the screws back down.

8.3. BRAKE WINDING POSITION

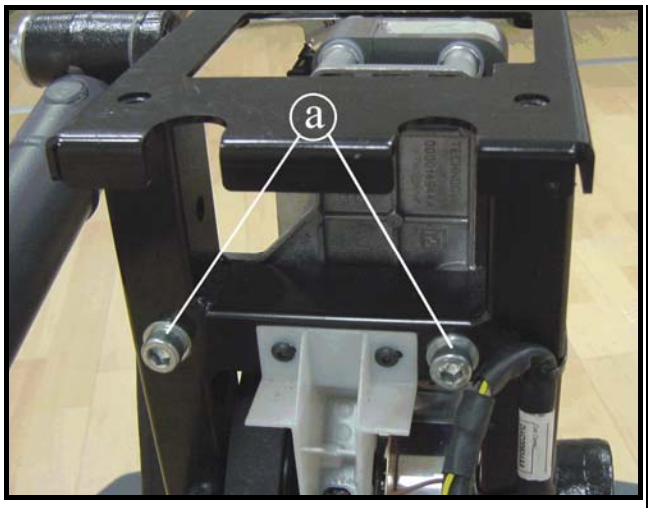


Figure 8.3-1

Carry out the operations described in paragraph: 7.7.1. "Rear guard".

1. Back off the 2 screws **(a)** and position the brake winding support so that it is centred on the copper disk, using a **1mm** thickness gauge.

2. Lock the screws back down.

8.4. THE MACHINE IS NOT FLAT

This problem may be due to the positioning of the machine on a not flat surface. To resolve this problem is necessary to act on foot adjustment.

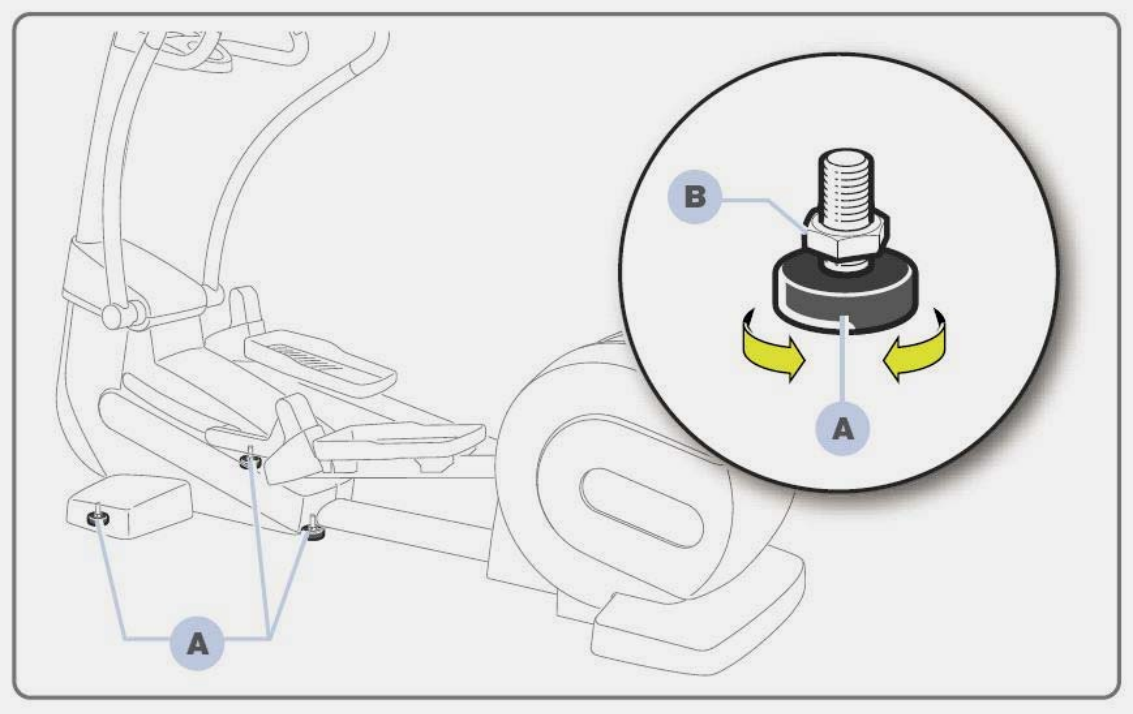


Figure 8.4-1

The equipment is levelled by adjusting the two front feet and the central foot:

1. Screw the foot **(a)** in or out until the frame is in a stable position.
2. Adjustment made to tighten the counter-nut **(b)**.

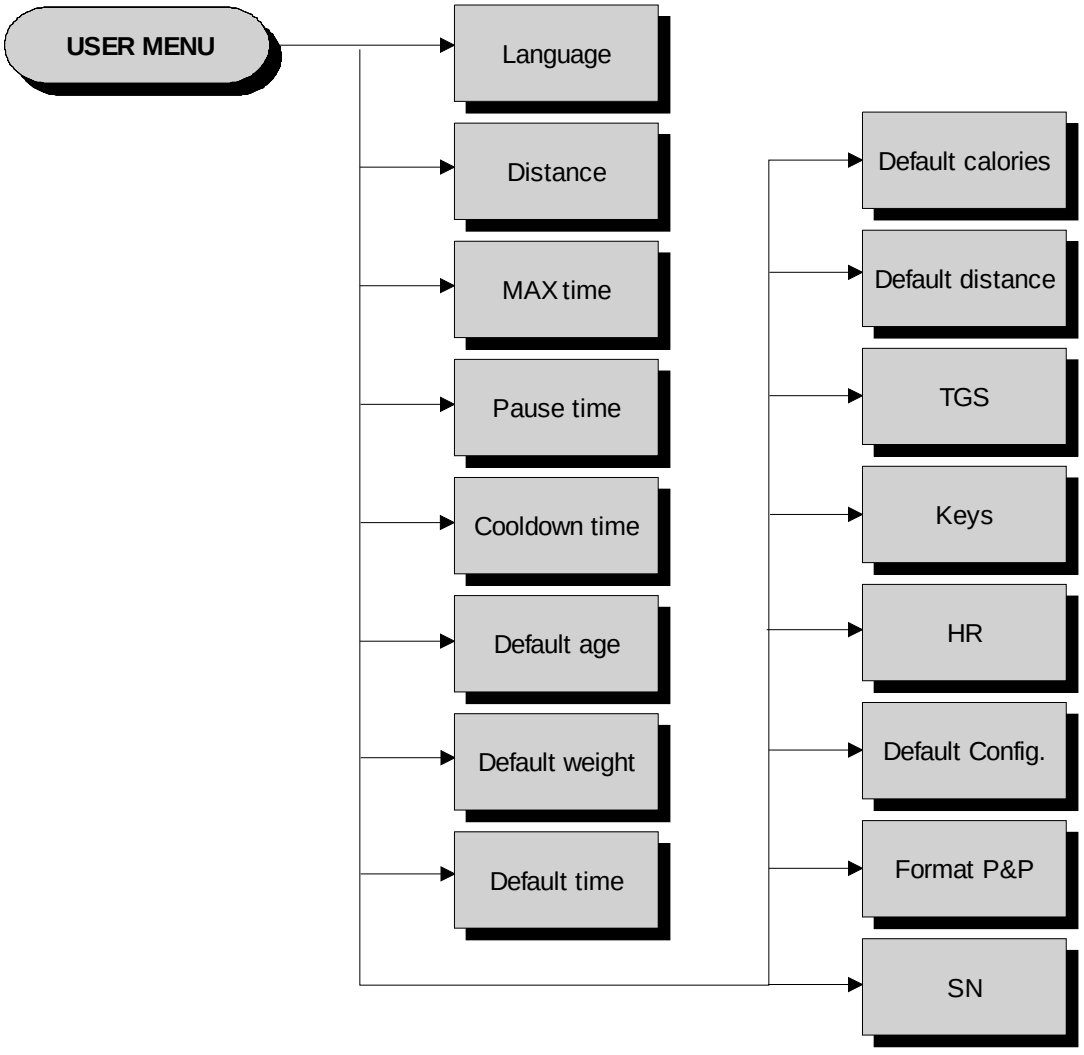
9. MACHINE CONFIGURATION

9.1. USER MENU CONFIGURATION FOR 500 MODELS

The machine configuration procedure is invoked, when the machine is in standby mode, by simultaneously pressing the keys **ENTER**, ↑, **CLEAR**. The following prompt appears on the display:

ENTER PASSWORD:

To access the procedure, type in the password **2406** and press **ENTER** to confirm. To enter the password, increase or decrease the displayed value using the ↑ and ↓ keys, or use the **+/- GOAL** keys to scroll through and modify the individual digits.
At this point the machine display begins showing the current configuration, structured as in the diagram below:



9.1.1. LANGUAGE

After selecting a language from the list of those available, all messages subsequently displayed by the machine will be in the chosen language. To change the selection, when the display shows the current setting:

LANGUAGE : xxx

Press the +/- **GOAL** keys to select the desired language from the available options. Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.1.2. UNITS OF MEASUREMENT

It is possible to choose between EUROPEAN units (kg and km) or IMPERIAL units (pounds and miles). To change the selection, when the display shows the current setting:

UNITS : xxx

Press the +/- **GOAL** keys to select the desired unit of measurement from the options listed in the table below:

UNITS	
KG	*<default>*
POUNDS	

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.1.3. MAXIMUM EXERCISE TIME

It is possible to set a maximum duration for each exercise, ranging from 1 to 9999 minutes. To change the setting, when the display shows the currently selected duration:

MAX. DURATION : xxx

Press the **ENTER** key to change the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the +/- **GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 9999.

9.1.4. PAUSE TIME

It is possible to set a maximum pause time for each exercise, ranging from 10 to 999 seconds. To change the setting, when the display shows the currently selected maximum time:

PAUSE TIME xxx

Press the **ENTER** key to change the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 120.

9.1.5. COOLDOWN TIME

It is possible to set the cooldown time for each exercise, ranging from 5 to 180 seconds. To change the setting, when the display shows the currently selected maximum time:

COOLDOWN TIME xxx

Press the **ENTER** key to change the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 60.

If you are exercising with a TGS key, the cooldown will be stopped if you extract the key.

9.1.6. DEFAULT AGE

It is possible to set the default age for a generic user, ranging from 10 to 99 years. To change the setting, when the display shows the currently selected default age:

DEFAULT AGE xx

Press the **ENTER** key to change the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 30.

9.1.7. DEFAULT WEIGHT

It is possible to set the default weight for a generic user, ranging from 10 to 99 kilograms. To change the setting, when the display shows the currently selected default weight:

DEFAULT WEIGHT KG xx

Press the **ENTER** key to change the parameter: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 70.

9.1.8. DEFAULT DURATION

It is possible to set a maximum duration for the exercise session, with a value ranging from 1 to 999 minutes. To change the setting, when the display shows the current duration:

DEFAULT DURATION MIN. xxx

Press the **ENTER** key to change the parameter: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 15 minutes.

9.1.9. DEFAULT CALORIES

It is possible to set the default calories for an exercise session, with a value ranging from 10 to 999. To change the setting, when the display shows the current value:

DEFAULT CALORIES xxx

Press the **ENTER** key to modify the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 300.

9.1.10. DEFAULT DISTANCE

It is possible to set the default distance for an exercise session, with values ranging from 1 to 999. To change the setting, when the display shows the current value:

DEFAULT DISTANCE KM xxx

Press the **ENTER** key to modify the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the **+** or **–** effort level keys to move to the next or preceding parameter.

The default value of this parameter is 10.

9.1.11. ENABLE TGS

It is possible to enable or disable the use of the TGS reader. To change the selection, when the display shows the current setting:

TGS : xxx

Press the **+/- GOAL** keys to select the desired option out of those listed in the table below:

TGS	
ENABLED	<*default*>
DISABLED	

Press **ENTER** to confirm the operation, use the **+** or – effort level keys to move to the next or preceding parameter.

9.1.12. ENABLE KEYBOARD

It is possible to disable the keyboard so that the machine can only be used with the TGS. To change the selection, when the display shows the current setting:

KEYS : xxx

Press the **+/- GOAL** keys to select the desired option out of those listed in the table below:

KEYS	
ENABLED	<*default*>
DISABLED	

Press **ENTER** to confirm the operation, use the **+** or – effort level keys to move to the next or preceding parameter.

9.1.13. MODIFIABLE TARGET FREQUENCIES

It is possible to enable or disable modification of the target heart rate during a constant heart rate exercise. To change the selection, when the display shows the current setting:

HR : xxx

Press the **+/- GOAL** number keys to select the desired option out of those listed in the table below:

HR
MODIFIABLE <*default*>
NON MODIFIABLE

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.1.14. RESETTING PARAMETERS TO DEFAULT VALUES

It is possible to reset the user menu parameters to their default values. To select the function, when the display shows:

DEFAULT CONFIG.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter. If the **ENTER** key is pressed the display will show:

CONFIRM ?

press **ENTER** to confirm, or cancel by pressing the **CLEAR** key for a few seconds.

9.1.15. FORMAT P&P KEY

This function formats a TGS key for Plug&Play mode operation. To select the function, when the display shows:

FORMAT P&P

Press **ENTER** to confirm. At the end of the formatting procedure, hold down the **CLEAR** key for a few seconds to exit. The **CLEAR** key can be pressed at any time to interrupt the procedure and revert to standby mode.

9.1.16. SN

This parameter shows the serial number of the machine.

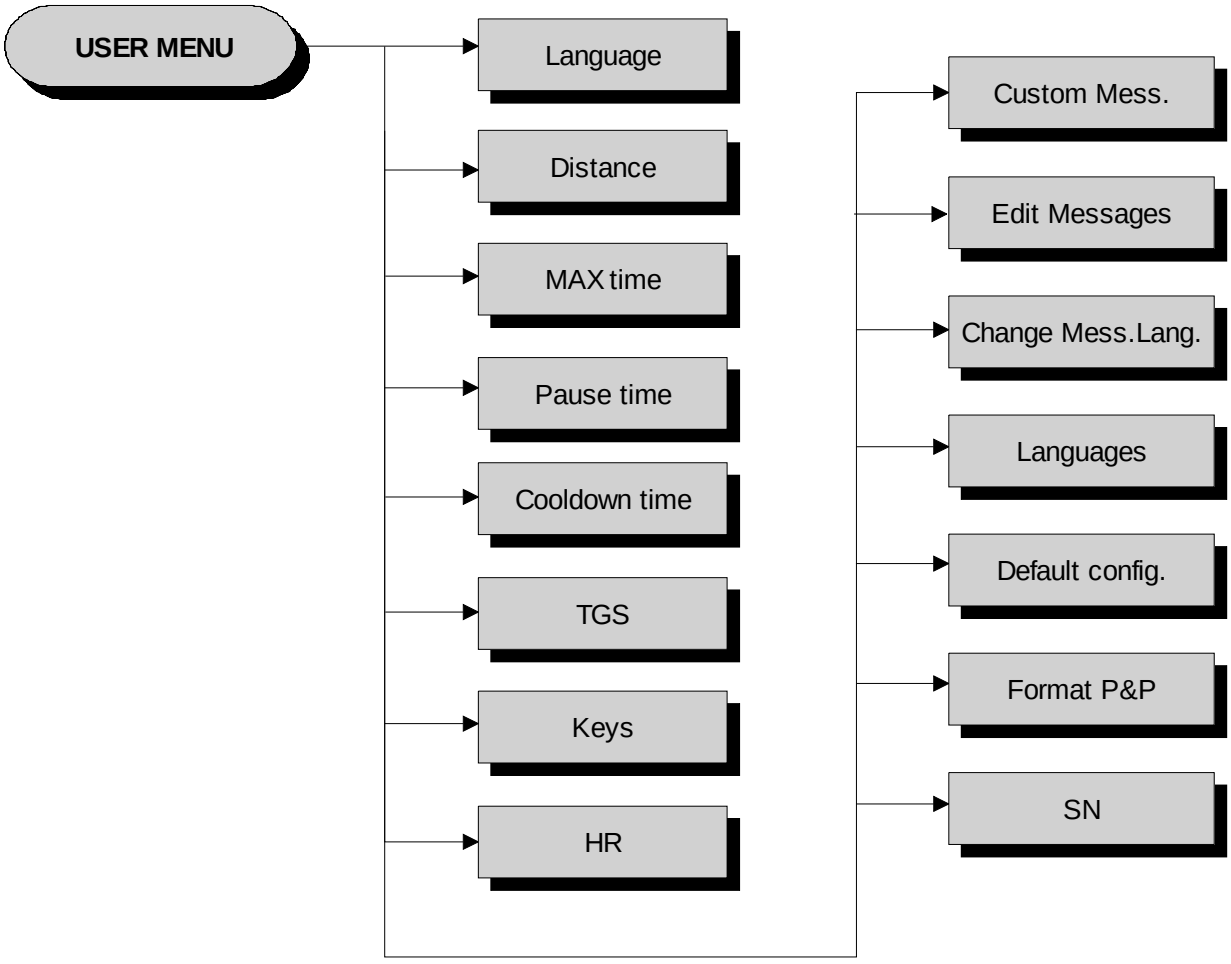
SN:xxxxx

9.2. USER MENU CONFIGURATION FOR 700 MODELS

The machine configuration procedure is invoked, when the machine is in standby mode, by simultaneously pressing the keys **369**, whereas on 700 Wellness TV models the keys **0369** must be pressed one after the other. The following prompt appears on the display:

ENTER PASSWORD:

To access the procedure, type in the password **2406** and press **ENTER** to confirm. At this point the machine display begins showing the current configuration, structured as in the diagram below:



9.2.1. LANGUAGE

After selecting a language from the list of those available, all messages subsequently displayed by the machine will be in the chosen language. To change the selection, when the display shows the current setting:

LANGUAGE : xxx

Press the +/- **GOAL** keys to select the desired language from the options available. Press **ENTER** to confirm the choice, use the + or – effort level keys to move to the next or previous parameter.

9.2.2. DISTANCE

It is possible to choose between EUROPEAN units (kg and km) or IMPERIAL units (pounds and miles). To change the selection, when the display shows the current setting:

DISTANCE : xxx

Press the **+/- GOAL** keys to select the desired unit of measurement from the options listed in the table below:

DISTANCE	
KM	<*default*>
MLS	

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.2.3. MAXIMUM EXCERCISE TIME

It is possible to set a maximum duration for the exercise in minutes, with a value ranging from 1 to 9999. To change the setting, when the display shows the current maximum exercise time:

MAX TIME: xxx

Press the **ENTER** key to modify the value: when the current parameter value starts to blink, press the **CLEAR** key to erase the current value and then use the number keys to enter the desired new value.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 9999.

9.2.4. PAUSE TIME

It is possible to set a maximum pause time for each exercise in seconds, with values ranging from 10 to 999. To change the setting, when the display shows the current maximum time:

PAUSE TIME : xxx

Press the **ENTER** key to modify the value: when the current parameter value starts to blink, press the **CLEAR** key to erase the current value and then use the number keys to enter the desired new value.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 60.

9.2.5. COOLDOWN TIME

It is possible to set the cooldown time for each exercise, ranging from 5 to 180 seconds. To change the setting, when the display shows the currently selected maximum time:

COOLDOWN TIME xxx

Press the **ENTER** key to change the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 60.

If you are exercising with a TGS key, the cooldown will be stopped if you extract the key.

9.2.6. ENABLE TGS

It is possible to enable or disable the use of the TGS reader. To change the selection, when the display shows the current setting:

TGS : xxx

Press the **+/- GOAL** keys to select the desired option out of those listed in the table below:

TGS	
ENABLED	<*default*>
DISABLED	

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.2.7. ENABLE KEYBOARD

It is possible to disable the keyboard so that the machine can only be used with the TGS. To change the selection, when the display shows the current setting:

KEYS : xxx

Press the +/- **GOAL** keys to select the desired option out of those listed in the table below:

KEYS	
ENABLED	<*default*>
DISABLED	

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.2.8. MODIFIABLE TARGET HEART RATE

It is possible to enable or disable modification of the target heart rate during a constant heart rate exercise. To change the selection, when the display shows the current setting:

HR : xxx

Press the +/- **GOAL** number keys to select the desired option out of those listed in the table below:

HR	
MODIFIABLE	<*default*>
NOT MODIFIABLE	

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.2.9. ENABLE CUSTOM MESSAGES

It is possible to configure whether a custom message is displayed when the machine is in the standby state. To change the selection, when the display shows the current setting:

CUSTOM MESS. : xxx

Press the +/- **GOAL** number keys to select the desired option out of those listed in the table below:

CUSTOM MESS.	
YES	<*default*>
NO	

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.2.10. EDIT CUSTOM MESSAGES

It is possible to modify the custom messages; press **ENTER** to invoke a submenu which displays the first custom message, then use the **+/-** effort level keys to move to the other messages. Press the **ENTER** key again to begin editing a message, or hold down the **CLEAR** key for a few seconds to return to the upper menu level. While editing a message, move the cursor using **+/- GOAL**, select the desired letter using the +/- effort level keys and use **CLEAR** to enter a blank space character.

Press **ENTER** to save the modified message, or hold down the **CLEAR** key to cancel and return to the upper menu level.

9.2.11. CHANGE MESSAGGES LANGUAGES

It is also possible to display the custom standby messages in the language selected with the preceding parameter. To extend the language setting to the predefined custom standby messages, when the LED display is showing the current selection:

CHANGE MESS. LANGUAGE

Press **ENTER** to confirm the operation, use the **+** or – effort level keys to move to the next or preceding parameter.

9.2.12. ENABLE MULTI-LANGUAGE MODE

The machine can be configured to allow selection of the language at each session. To change the selection, when the display shows the current setting:

LANGUAGE : xxx

Press the **+/- GOAL** number keys to select the desired option out of those listed in the table below:

LANGUAGE	
FIXED	<*default*>
OPTIONAL	

Press **ENTER** to confirm the operation, use the **+** or – effort level keys to move to the next or preceding parameter.

9.2.13. RESETTING PARAMETERS TO DEFAULT VALUES

It is possible to reset the user menu parameters to their default values. To select the function, when the display shows:

DEFAULT CONFIG.

Press **ENTER** to confirm the operation, use the **+** or – effort level keys to move to the next or preceding parameter. If the **ENTER** key is pressed the LED matrix will show:

CONFIRM ?

press **ENTER** to confirm, or cancel by pressing the **CLEAR** key for a few seconds.

9.2.14. FORMAT P&P

This function formats a TGS key for Plug&Play mode operation. To select the function, when the display shows:

FORMAT P&P

press **ENTER** to confirm, or cancel by pressing the **CLEAR** key for a few seconds.

At the end of the configuration procedure, hold down the **CLEAR** key for a few seconds to exit. The **CLEAR** key can be pressed at any time to interrupt the procedure and revert to standby mode.

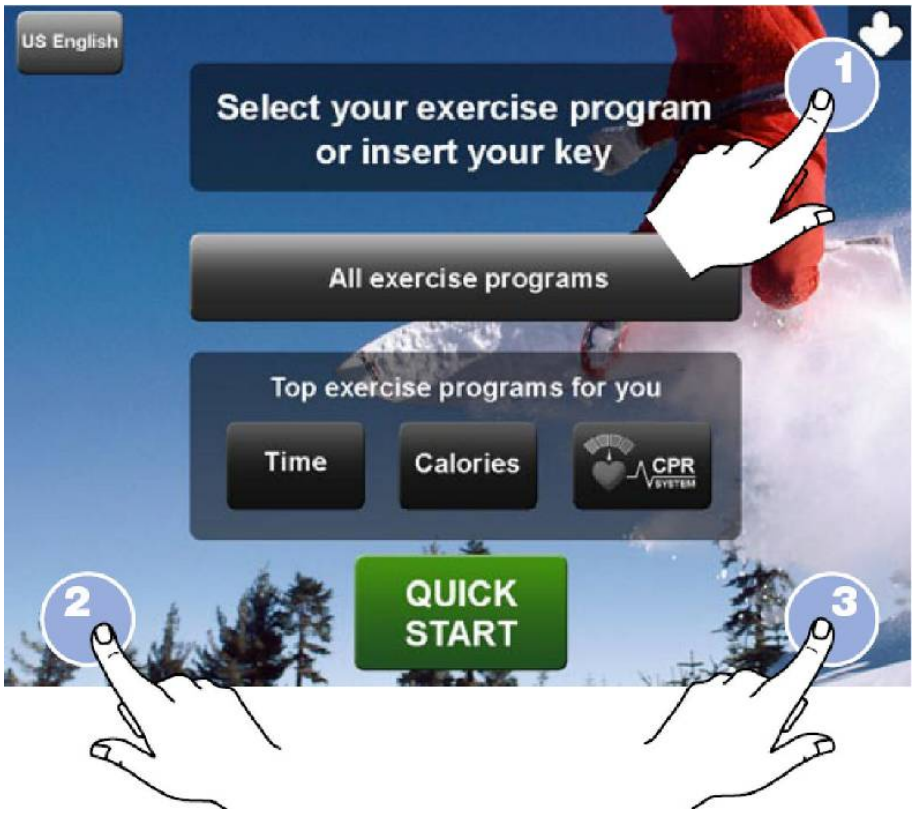
9.2.15. SN

This parameter shows the serial number of the machine.

SN:xxxx

9.3. USER MENU CONFIGURATION FOR 700 WTV MODELS

The machine configuration procedure is invoked, when the machine is in standby mode, by pressing the top right hand, the bottom left hand and the bottom right hand corner in sequence, as shown in the picture below.

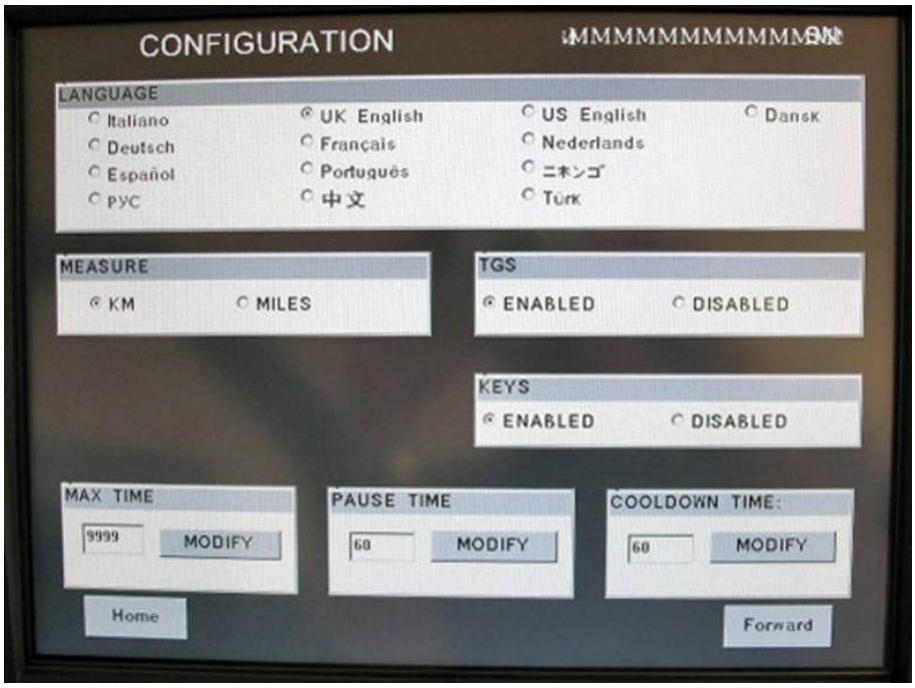


The machine display will shows a window from where you can access the different configuration menus, using the proper password.

To access the menu, type in the password **2406** and press **ENTER** key to confirm or **BACK** key to back forward.
At this point the machine display will shows the different parameters of the menu, collected in different pages, which can be scrolled with the **FORWARD** and **BACK** keys.
To exit the configuration press **HOME** key.

Pressing "HOME" in any page, all changes made up to that moment are saved; you cannot exit without saving. In case of errors the initial Technogym settings can be restored using the "DEFAULT CONFIG." parameter.

Here below have been detailed all the parameters of the menu.



9.3.1. SN

In the top right hand corner of the windows it is displayed the SN of the machine, loaded at the end of the production line.

9.3.2. LANGUAGE

After selecting a language from the list of those available, all messages subsequently displayed by the machine will be in the chosen language. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.3. MEASURE

It is possible to choose between EUROPEAN units (kg and km) or IMPERIAL units (pounds and miles). To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

MEASURE	
KM	*<default>*
MILES	

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.4. ENABLE TGS

It is possible to enable or disable the use of the TGS reader. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

TGS	
ENABLED	<*default*>
DISABLED	

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.5. KEYS

It is possible to disable the keyboard so that the machine can only be used with the TGS. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

KEYS	
ENABLED	<*default*>
DISABLED	

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.6. MAXIMUM EXCERCISE TIME

It is possible to set a maximum duration for the exercise in minutes, with a value ranging from 1 to 9999. To change the setting, press the **MODIFY** key and insert the value using the numeric keyboard. Press **ENTER** key to confirm or **BACK** key to back forward.

The default value of this parameter is 9999.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.7. PAUSE TIME

It is possible to set a maximum pause time for each exercise in seconds, with values ranging from 10 to 999. To change the setting, press the **MODIFY** key and insert the value using the numeric keyboard. Press **ENTER** key to confirm or **BACK** key to back forward.

The default value of this parameter is 60.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

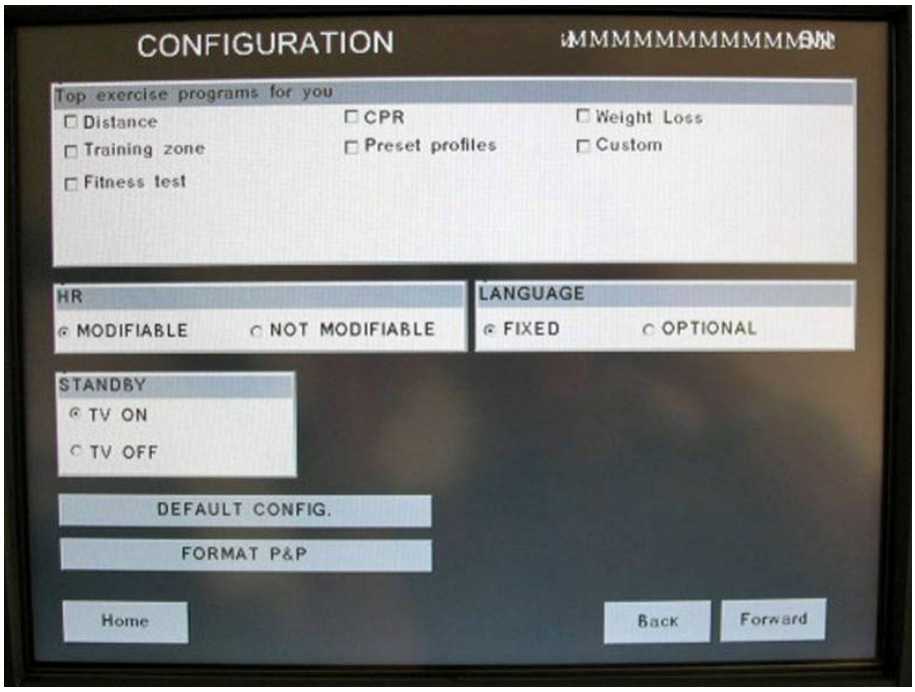
9.3.8. COOLDOWN TIME

It is possible to set the cooldown time for each exercise, ranging from 5 to 180 seconds. To change the setting, when the display shows the currently selected maximum time:
Press the **ENTER** key to change the value: The current parameter value starts to blink on the display; use the ↑ and ↓ keys to increase or decrease the value, or use the **+/- GOAL** keys to scroll through and modify the individual digits.

Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

The default value of this parameter is 60.

If you are exercising with a TGS key, the cooldown will be stopped if you extract the key.



9.3.9. TOP EXERCISE PROGRAMS FOR YOU SHORTCUT

It is possible to choose 2 extra training programs, from the list of those available, which will be displayed in the main page with the fixed ones “TIME” and “CALORIES”. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

TOP EXERCISE PROGRAMS FOR YOU
Distance
Training zone
Fitness test
Custom speed
CPR
Preset profiles
Weight loss

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.10. MODIFIABLE TARGET HEART RATE

It is possible to enable or disable modification of the target heart rate during a constant heart rate exercise. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

HR
MODIFIABLE <*default*>
NOT MODIFIABLE

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.11. STANDBY

It is possible to enable or disable the TV screen during the standby mode. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

STANDBY
TV ON <*default*>
TV OFF

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.12. LANGUAGE

The machine can be configured to allow selection of the language at each session. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

LANGUAGE	
FIXED	<*default*>
OPTIONAL	

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.13. DEFAULT CONFIG

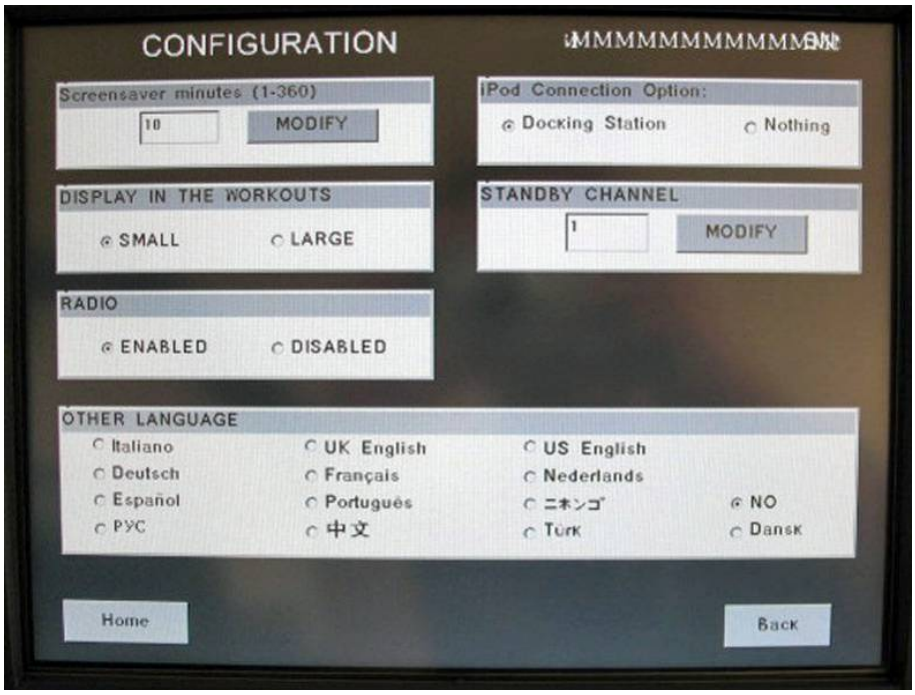
It is possible to reset the user menu parameters to their default values. To select the function, press on "**DEFAULT CONFIG**" key.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.14. FORMAT P&P

This function formats a TGS key for Plug&Play mode operation. To select the function, press "**FORMAT P&P**" key.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.



9.3.15. SCREEN SAVER MINUTES

It is possible to configure the amount of time, in minutes, the machine will wait before activating the screen saver, with values ranging from 10 to 360.
To change the setting, press the **MODIFY** key and insert the value using the numeric keyboard. Press **ENTER** key to confirm or **BACK** key to back forward.

The default value of this parameter is 10.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.16. DISPLAY IN THE WORKOUT

It is possible to configure the size of the exercise data during the workout. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

DISPLAY IN THE WORKOUT	
SMALL	*<default>*
LARGE	

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.17. RADIO

It is possible to enable or disable the radio function on the machine. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

RADIO	
YES	<*default*>
NO	

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.18. IPOD CONNECTION OPTION

It is possible to set the machine for controlling the iPod through the display. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

IPOD CONNECTION OPTION	
DOCKING STATION	<*default*>
NOTHING	

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.19. STANDBY CHANNEL

It is possible to set the channel which is displayed on the TV, when the TV is in standby. To change the setting, press the **MODIFY** key and insert the value using the numeric keyboard. Press **ENTER** key to confirm or **BACK** key to back forward.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.3.20. OTHER LANGUAGE

It is possible to set a shortcut for a second language different from the one set at “LANGUAGE” parameter, displayed in the top left hand corner of the main page.
To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.4. SERVICE MENU CONFIGURATION FOR 500 AND 700 LED MODELS

The configuration procedure is invoked when the machine is in standby mode, using a different procedure for the 500 and 700 models.

- **Accessing configuration of 500 models**

Simultaneously press the **ENTER**, ↑, **CLEAR** keys. The following prompt appears on the display:

ENTER PASSWORD:

To access the procedure, type in the password **2501** which protects against unauthorized access and press "Enter" to confirm. To enter the password, increase or decrease the displayed value using the ↑ and ↓ keys, or use the **+/- GOAL** keys to scroll through and modify the individual digits.
At this point there are two options available:

↑ = Tech Config
↓ = Troubleshooting

Press numeric key ↑ to access the menu for configuring technical parameters; the machine display will begin showing the current configuration, structured as in the diagram below:

- **Accessing configuration of 700 models**

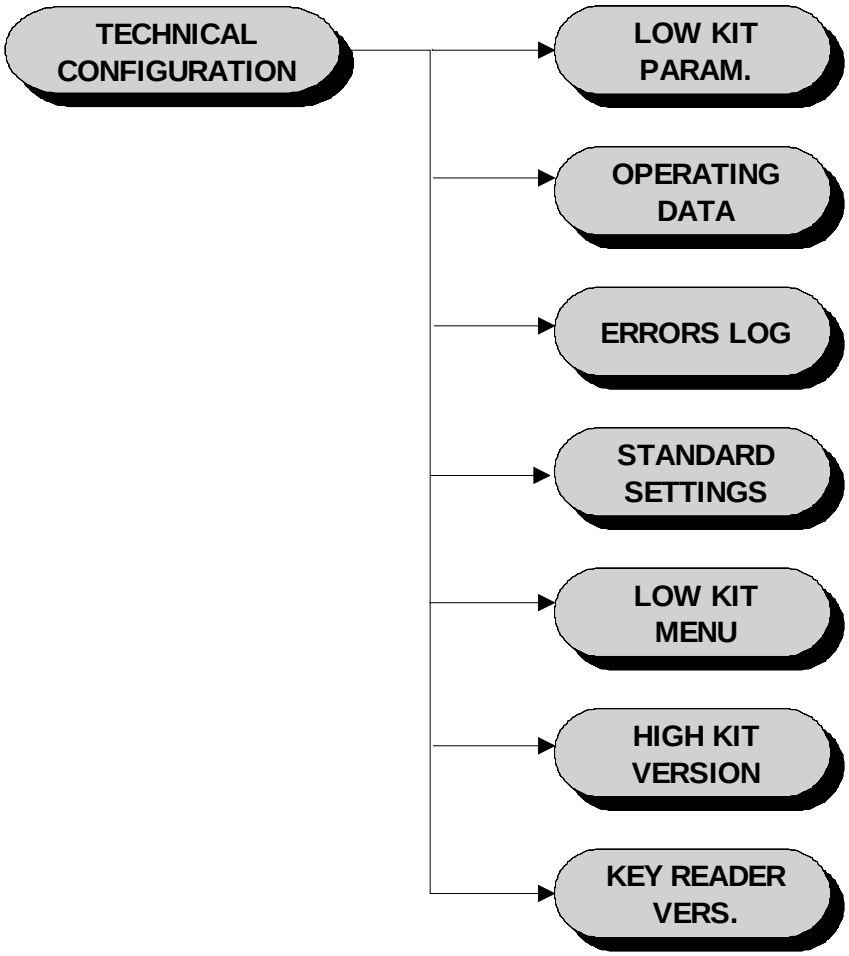
Simultaneously press the keys **369** for 700 LED models, whereas on 700 Wellness TV models the keys **0369** must be pressed one after the other. The following prompt appears on the display:

ENTER PASSWORD:

To access the procedure, type in the password **2501** which protects against unauthorized access and press the "Enter" key to confirm. At this point there are two options available:

1 = Tech Config
2 = Troubleshooting

Press numeric key **1** to access the menu for configuring technical parameters; the machine display will begin showing the current configuration, structured as in the diagram below:



To scroll through the list of parameters, press the + or – effort level keys to display the next or the preceding item.

To modify a parameter value, it is necessary to press the **ENTER** key: when the current parameter value starts to blink, press the **CLEAR** key to erase the current value and then use the number keys to enter the desired new value. Save the changes made by pressing the **ENTER** key.

To cancel the operation, press the **CLEAR** key for a few seconds.

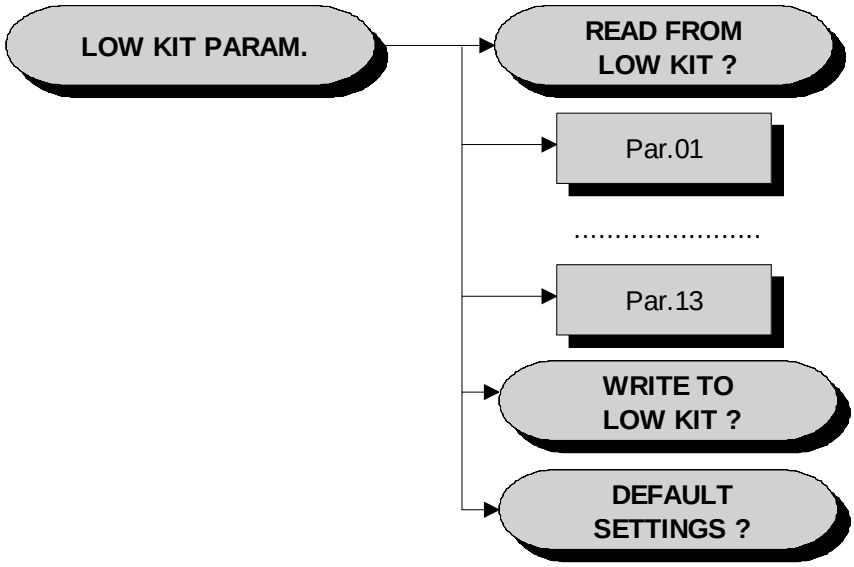
The various parameters are described below.

9.4.1. LOW KIT PARAMETER

This function provides access to parameters used for modifying certain settings of the lower assembly. To access this menu, when the display shows:

LOW KIT PARAM.

press **ENTER**. This function is structured as follows:



In addition to the 13 configuration parameters, this function also includes the 3 sub-functions described below:

9.4.1.1. Read from low kit

To read the parameter values from the low kit memory and view them on the display, scroll using the +/- keys until the display shows:

READ FROM LOW KIT ?

press **ENTER** to read the errors from the low kit, and return to the upper menu level by pressing **CLEAR** for a few seconds.

9.4.1.2. Write to low kit

To write the values of the currently displayed parameters to the low kit, scroll using the +/- keys until the display shows:

WRITE TO LOW KIT ?

press **ENTER** to write the parameters to the low kit, and return to the upper menu level by pressing **CLEAR** for a few seconds.

9.4.1.3. Default Setting

To load the default parameter values, scroll using the +/- effort level keys until the display shows:

DEFAULT SETTING ?

press **ENTER** to write the default values to the low kit, and return to the upper menu level by pressing **CLEAR** for a few seconds.

To write these parameters to the low kit, use the "Write to low kit" function.

9.4.1.4. Table of configuration parameters

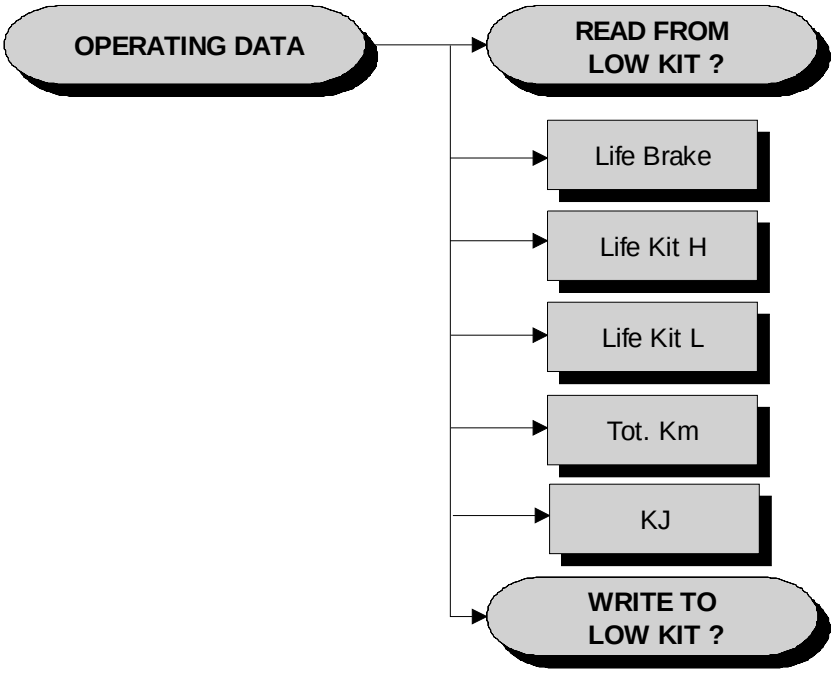
Parameter	Description	Defaultvalues
Par 01	Transmission ratio	141
Par 02	Speed ratio (integer part)	1
Par 03	Minimum braking current (standby pos.) [mA]	0
Par 04	Maximum continuous power [W]	200
Par 05	Machine torque correction coefficient (constant torque)	100
Par 06	User friction torque	60
Par 07	Maximum coil temperature [°C]	125
Par 08	Minimum revolutions [RPM]	35
Par 09	RPM integration scale	1
Par 10	Filter threshold [RPM]	75
Par 11	Speed ratio (decimal part)	60
Par 12	User friction torque delta	10
Par 13	NOT USED	0

9.4.2. OPERATING DATA

This function makes it possible to access the machine usage data stored in the low kit. To access this menu, when the display shows:

OPERATING DATA

press **ENTER**. This function is structured as follows:



In addition to the machine usage data, this function also includes the 2 sub-functions described below:

9.4.2.1. Read from low kit

To read the parameter values from the low kit memory and view them on the display, scroll using the +/- keys until the display shows:

READ FROM LOW KIT ?

press **ENTER** to read the errors from the low kit, and return to the upper menu level by pressing **CLEAR** for a few seconds.

9.4.2.2. Write to low kit

To write the values of the currently displayed parameters to the low kit, scroll using the +/- keys until the display shows:

WRITE TO LOW KIT ?

press **ENTER** to write the new data to the low kit, and return to the upper menu level by pressing **CLEAR** for a few seconds.

9.4.2.3. Machine usage data

The machine usage data on the display is updated every 10 minutes. This means that, whenever the machine is switched off, any data modified after the last memory update will be lost.

MESSAGE ON DISPLAY	DESCRIPTION
Life Brake:	*Minutes x 10 of operation of the brake*
Life Kit H:	*Minutes x 10 of operation of the upper assembly*
Life Kit L:	*Minutes x 10 of operation of the lower assembly*
Tot. Km:	*Total km traveled*
KJ	*Total KJ during exercise*

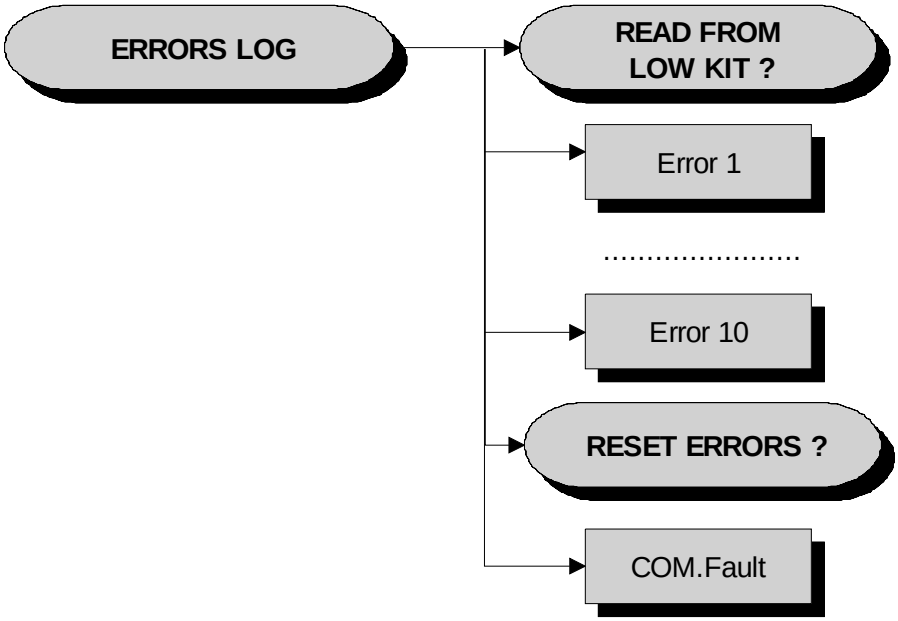
By selecting one of the items in the above table it is possible to modify its content, but only after having cleared its value. When the **ENTER** key is pressed the message "Reset life..." appears, followed by the name of the selected item; pressing **ENTER** again resets the value of the selected item, while pressing **CLEAR** reverts to the preceding value.

9.4.3. ERRORS LOG

This function accesses the machine's error history log. To access this menu, when the display shows:

ERRORS LOG

press **ENTER**. This function is structured as follows:



In addition to the error history log, this function also includes the 3 sub-functions described below:

9.4.3.1. Read from low kit

To read the errors stored in low kit memory and view them on the display, scroll using the +/- keys until the display shows:

READ FROM LOW KIT ?

press **ENTER** to read the errors from the low kit, and return to the upper menu level by pressing **CLEAR** for a few seconds.

9.4.3.2. Reset Errors

To clear the error history in both the low and high kit memory, scroll using the +/- keys until the display shows:

RESET ERRORS ?

press **ENTER** to clear the error history logs, and return to the upper menu level by pressing **CLEAR** for a few seconds.

9.4.3.3. COM.Fault

This is a counter that display the number of errors in serial communication between the upper and the lower kit. This counter increase each time a communication fault is detected. Scroll using the +/- keys until the display shows:

COM.FAULT X

To reset it press **ENTER**, the LED display shows:

RESET COM.FAULT?

press **ENTER** to reset and return to the upper menu level by pressing **CLEAR** for a few seconds.

9.4.3.4. View Errors

For every error generated by the machine, the error history log records the information in the table below:

- *Counter*
- *Error code*
- *Current when the error occurred*
- *Distance in km when the error occurred*

The correspondence between error codes and descriptions is given in the table below:

Error Code	Description
1	**OVERHEATING:** this condition occurs when the temperature detected by the sensor on the circuit board exceeds 90°C.
2	**OVERCURRENT:** this condition occurs when the Brake board detects an excessive amount of current being sent to the winding.
8	**OVERVOLTAGE:** this condition occurs when the +12 Vdc voltage goes above 13.7 Vdc (only on the 500, 700, and 700WTV models).
16	**SOLENOID OVERHEATING:** this condition occurs when the NTC, connected in series with the solenoid, detects a temperature higher than 140°C and opens the circuit.
32	**EPROM**: SW error on the Brake board (braking table).
128	**REFERENCE VOLTAGE FAULT:** this error condition occurs when the calibration parameter stored in the Brake board is incorrect.

Use the + effort level key to advance to the next error, otherwise the message with the details of the current error will continue to reappear.

9.4.4. STANDARD SETTINGS

This function clears the operating data of the machine and simultaneously resets the brake board parameters to their default values. To access this menu, when the display shows:

STANDARD SETTINGS ?

press **ENTER**, the following message appears:

CONFIRM ?

Press **ENTER** again to reset all parameters to their default values, or return to the upper menu level by pressing **CLEAR** for a few seconds.

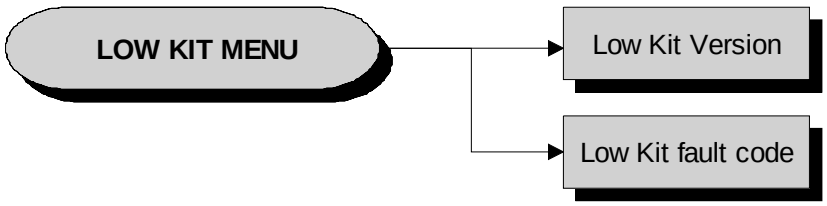
This function does not alter the language and the TV standard setting.

9.4.5. LOW KIT MENU

This function directly accesses the firmware of the brake board. To access this menu, when the display shows:

LOW KIT MENU

press **ENTER**. This function is structured as follows:



9.4.5.1. Low kit version

This function displays the brake board firmware version. To access this menu, when the display shows:

LOW KIT VERSION

press **ENTER**, the following message appears:

H:x L:x B:x

Which identifies the firmware version.

9.4.5.2. Low Kit fault code

This function displays the error code that is blocking the low kit. To access this menu, when the display shows:

LOW KIT FAULT CODE

press **ENTER**, the following message appears:

FAULT=XX

In case of FAULT=00, the board is not in an error condition.

9.4.6. HIGH KIT VERSION

This function displays the SW version of the display. To do this, when the display shows:

HIGH KIT VERSION

press **ENTER**, the message that identifies the SW version, will appear.

9.4.7. BOOT VERSION

This function displays the BOOT version. To do this, when the display shows:

BOOT VERSION

press **ENTER** to display the message which identifies the BOOT version.

9.4.8. KEY READER VERSION

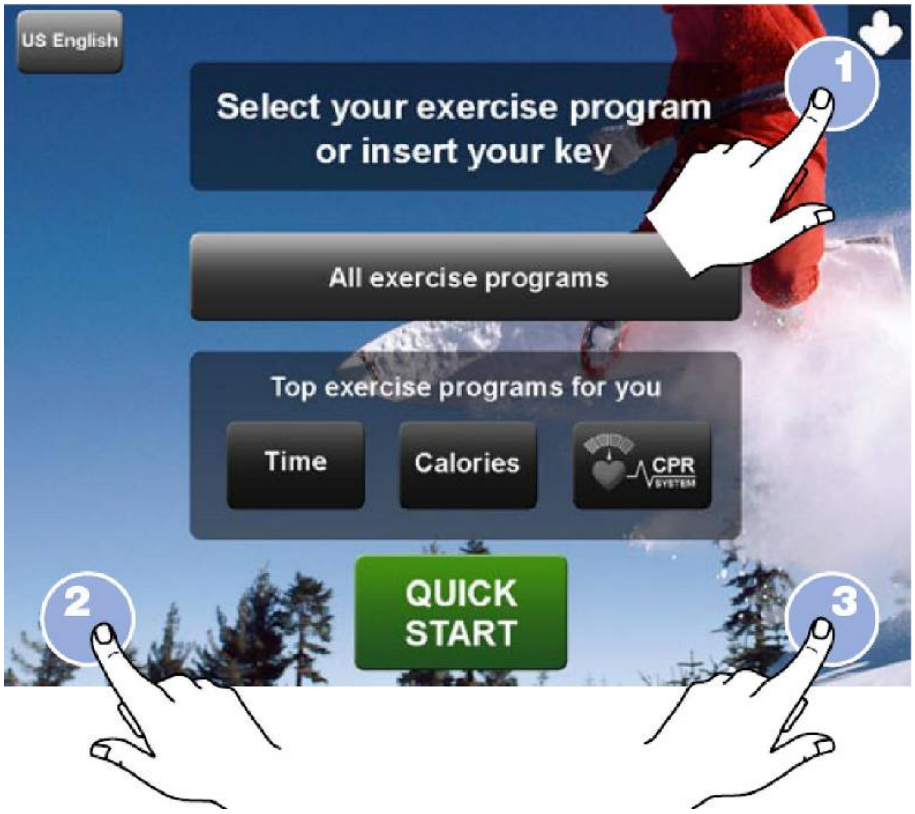
This function displays the KEY READER VERSION. To do this, when the display shows:

KEY READER VERSION

press **ENTER** to display the message which identifies the KEY READER version.

9.5. SERVICE MENU CONFIGURATION 700 WTV MODELS

The machine configuration procedure is invoked, when the machine is in standby mode, by pressing the top right hand, the bottom left hand and the bottom right hand corner in sequence, as shown in the picture below.

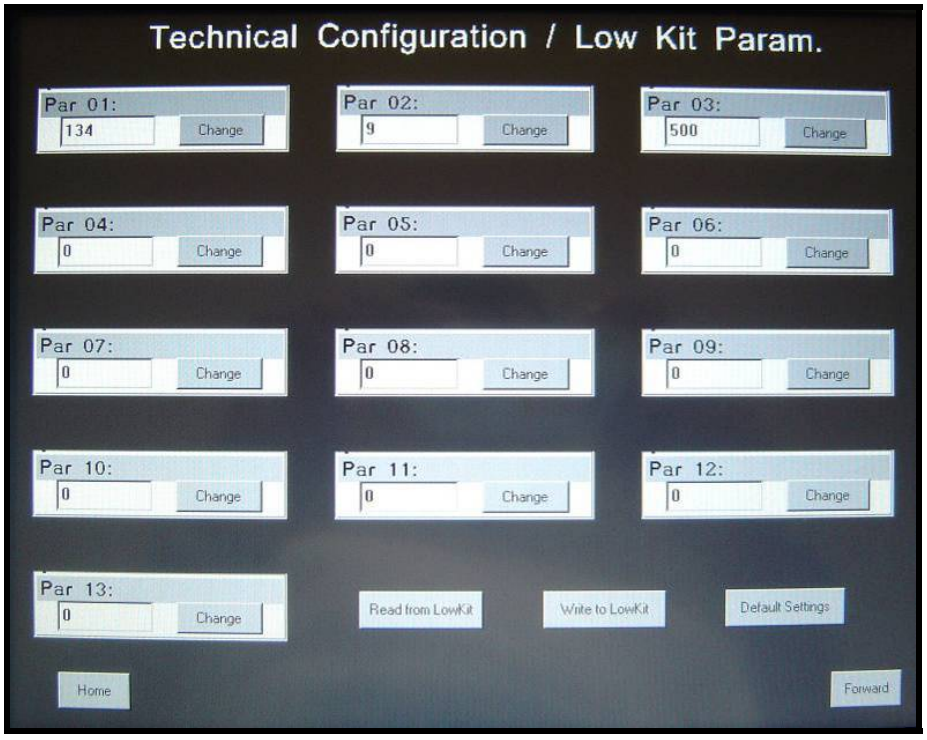


The machine display will shows a window from where you can access the different configuration menus, using the proper password.

To access the menu, type in the password **2501** and press **ENTER** key to confirm or **BACK** key to back forward.
At this point the machine display will shows the different parameters of the menu, collected in different pages, which can be scrolled with the **FORWARD** and **BACK** keys.
To exit the configuration press **HOME** key.

Pressing "HOME" in any page, all changes made up to that moment are saved; you cannot exit without saving. In case of errors the initial Technogym settings can be restored using the "STANDARD SETTINGS." parameter.

Here below have been detailed all the parameters of the menu.



9.5.1. LOW KIT PARAMETER

This function provides access to parameters used for modifying certain settings of the lower assembly. To access this menu, when the display shows:

In addition to the 13 configuration parameters, this function also includes the 3 sub-functions described below:

9.5.1.1. Read from low kit

To read the parameter values from the low kit memory and view them on the display, press **READ FROM LOW KIT** key.

9.5.1.2. Write to low kit

To write the values of the currently displayed parameters to the low kit, press **WRITE TO LOW KIT** key.

9.5.1.3. Default Setting

To load the default parameter values, press **DEFAULT SETTING** key.

9.5.1.4. Table of configuration parameters

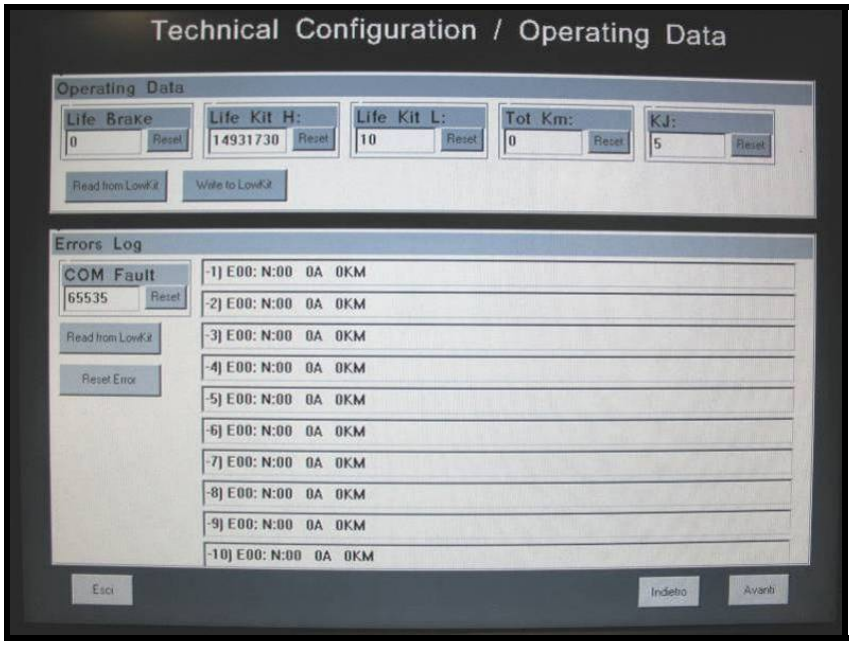
To correctly display the parameter values, you need to load them from the low kit, using the "Read from low kit" function.

To change the setting, press the **CHANGE** key and insert the value using the numeric keyboard. Press **ENTER** key to confirm or **BACK** key to back forward.

After any changes to the parameter values, you need to load them in the low kit using the "Write to low kit" function.

Parameter	Description	Default values
Par 01	Transmission ratio	141
Par 02	Speed ratio (integer part)	1
Par 03	Minimum braking current (standby pos.) [mA]	0
Par 04	Maximum continuous power [W]	200
Par 05	Machine torque correction coefficient (constant torque)	100
Par 06	User friction torque	60
Par 07	Maximum coil temperature [°C]	125
Par 08	Minimum revolutions [RPM]	35
Par 09	RPM integration scale	1
Par 10	Filter threshold [RPM]	75
Par 11	Speed ratio (decimal part)	60
Par 12	User friction torque delta	10
Par 13	NOT USED	0

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.



9.5.2. OPERATING DATA

This function makes it possible to access the machine usage data stored in the low kit.

In addition to the machine usage data, this function also includes the 2 sub-functions described below:

9.5.2.1. Read from low kit

To read the parameter values from the low kit memory and view them on the display, press **READ FROM LOW KIT** key.

9.5.2.2. Write to low kit

To write the values of the currently displayed parameters to the low kit, press **WRITE TO LOW KIT** key.

The machine usage data on the display is updated every 10 minutes. This means that, whenever the machine is switched off, any data modified after the last memory update will be lost.

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

MESSAGE ON DISPLAY	DESCRIPTION
Life Brake:	Minutes x 10 of operation of the brake
Life Kit H:	Minutes x 10 of operation of the upper assembly
Life Kit L:	Minutes x 10 of operation of the lower assembly
Tot. Km:	Total km traveled
KJ	Total KJ during exercise

By pressing the **RESET** key on the side of the value, it is possible to reset the value of the selected item.

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.5.3. ERRORS LOG

This function accesses the machine's error history log.

In addition to the error history log, this function also includes the 3 sub-functions described below:

9.5.3.1. Read from low kit

To read the parameter values from the low kit memory and view them on the display, press **READ FROM LOW KIT** key.

9.5.3.2. Reset Errors

To clear the error history in both the low and high kit memory, press **RESET ERRORS** key.

9.5.3.3. COM.Fault

This is a counter that display the number of errors in serial communication between the upper and the lower kit. This counter increase each time a communication fault is detected.

To reset this counter, press **RESET** key on the side of the value.

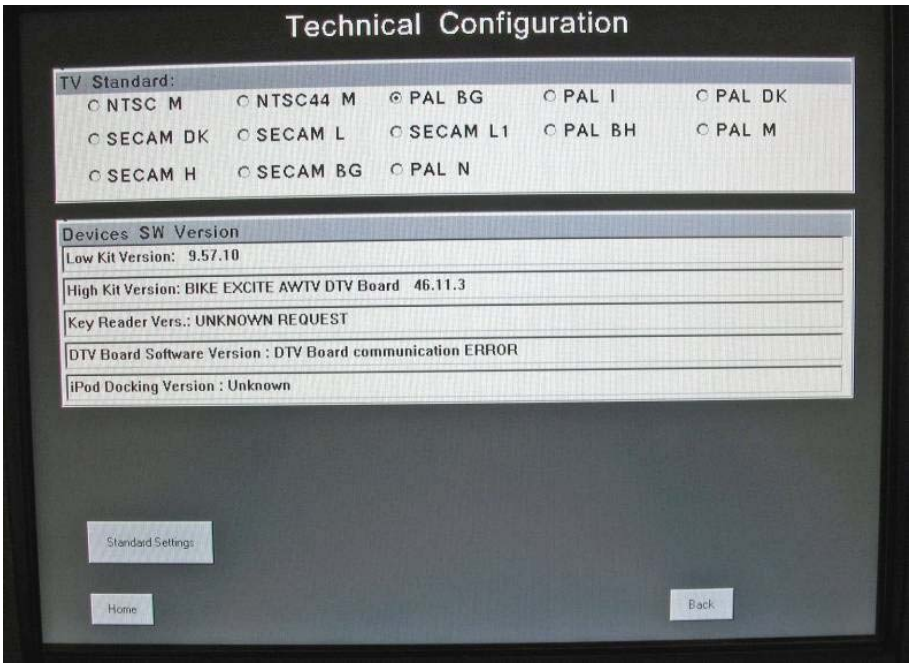
To correctly display the parameter values, you need to load them from the low kit, using the "Read from low kit" function.

For every error generated by the machine, the error history log records the information in the table below:

- *Counter*
- *Error code*
- *Current when the error occurred*
- *Distance in km when the error occurred*

The correspondence between error codes and descriptions is given in the "Service & maintenance manual".

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.



9.5.4. SW VERSION DEVICES

This function allows to display:

- *the low kit SW version (H:x L:x B:x);*
- *the display SW version;*
- *the key reader SW version;*
- *the Digital TV board SW version;*
- *the iPod docking station SW version;*

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.5.5. STANDARD SETTINGS

This function allows you to reset the usage data of the machine and simultaneously set the default values of the parameters of the inverter. To make the restoration of values, press the **STANDARD SETTINGS** button

This function does not change the language and standard television set.

9.5.6. TV STANDARD

This function allows to display/configure the TV Standard on the machine. To change the selection, select the desired option among the ones in the list, directly touching on the Touch Screen.

NTSC M	*NTSC44 M*	*PAL B/G*	*PAL I*	*PAL D/K*
SECAM D/K	*SECAM L*	*SECAM L1*	*PAL B/H*	*PAL M*
SECAM H	*SECAM B/G*	*PAL N*		

Selected as a function of the country where the machine is installed according to the following table:

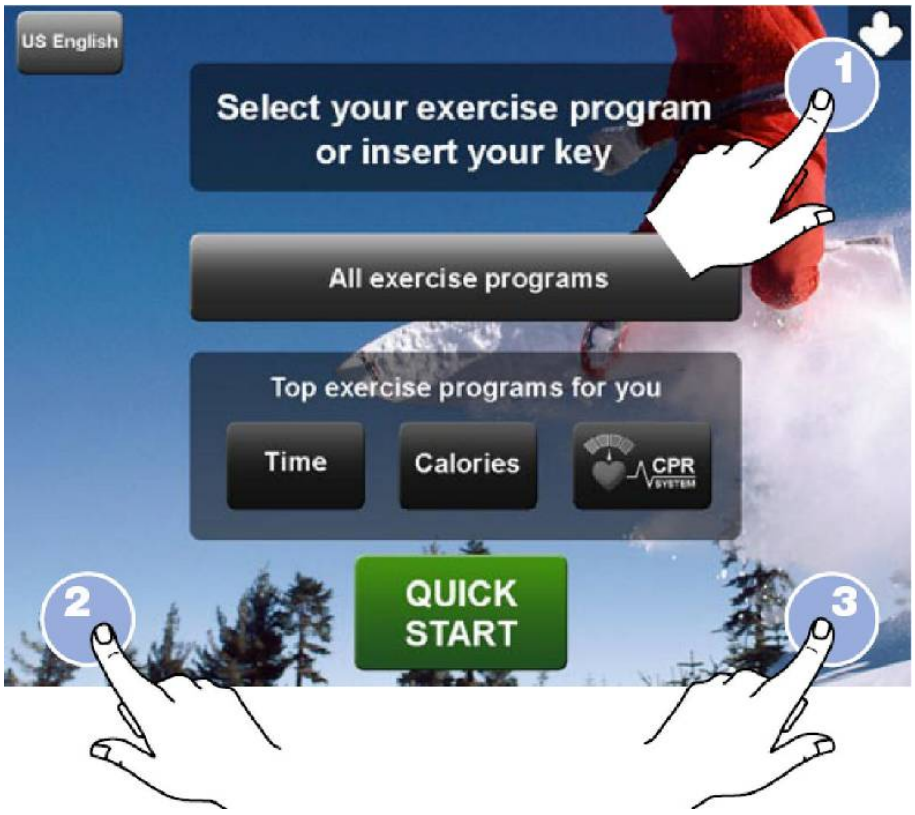
COUNTRY	Digital TV	Analogue TV	COUNTRY	Digital TV	Analogue TV
ALBANIA	DVB-T	PAL B/G	***LUXEMBOURG***	DVB-T	PAL B/G
ANGOLA	DVB-T	-	***MALAYSIA***	DVB-T	PAL B
AUSTRALIA	DVB-T	PAL B/G	***MALTA***	DVB-T	PAL B/G
AUSTRIA	DVB-T	PAL B/G	***MAURITIUS***	DVB-T	SECAM B
AZERBAIJAN	DVB-T	-	***MEXICO***	ATSC	NTSC M
BAHAMAS	ATSC	NTSC M	***MONACO***	DVB-T	SECAM/PAL L/G
BAHRAIN	DVB-T	PAL B	***MOROCCO***	DVB-T	SECAM B
BELGIUM	DVB-T	PAL B/G	***NETHERLANDS***	DVB-T	PAL B/G
BERMUDA	DVB-T	NTSC M	***NEW ZEALAND***	DVB-T	PAL B/G
BRAZIL	ISDB-T	PAL M	***NIGERIA***	DVB-T	-
BULGARY	DVB-T	SECAM D/K	***NORWAY***	DVB-T	PAL B/G
CANADA	ATSC	NTSC M	***OMAN***	DVB-T	-
COLOMBIA	ATSC	NTSC M	***PHILIPPINES***	DVB-T	NTSC M
CYPRUS	DVB-T	PAL B	***POLAND***	DVB-T	PAL D/K
CZECH REPUBLIC	DVB-T	SECAM/PAL D/K	***PORTUGAL***	DVB-T	PAL B/G
DENMARK	DVB-T	PAL B	***P.R.CHINA***	DVB-T	PAL D/K
EGYPT	DVB-T	SECAM B	***QATAR***	DVB-T	-
FAROE ISLANDS	DVB-T	PAL B	***ROMANIA***	DVB-T	PAL G
FINLAND	DVB-T	PAL B/G	***RUSSIA***	DVB-T	SECAM D/K
FRANCE	DVB-T	SECAM E/L	***SAUDI ARABIA***	DVB-T	SECAM B
GERMANY	DVB-T	PAL B/G	***SERBIA***	DVB-T	-
GHANA	DVB-T	-	***SINGAPORE***	DVB-T	PAL B
GREECE	DVB-T	PAL B/G	***SLOVAKIA***	DVB-T	-
HONG KONG	DVB-T	PAL I	***SLOVENIA***	DVB-T	-
HUNGARY	DVB-T	PAL B/G & D/K	***SOUTH AFRICA***	DVB-T	PAL I
INDIA	DVB-T	PAL B	***SOUTH KOREA***	ATSC	NTSC M
INDONESIA	DVB-T	PAL B	***SPAIN***	DVB-T	PAL B/G
IRAN	DVB-T	SECAM H	***SWEDEN***	DVB-T	PAL B/G
IRELAND	DVB-T	PAL I	***SWITZERLAND***	DVB-T	PAL B/G
ISRAEL	DVB-T	PAL B/G	***SYRIA***	DVB-T	-
ITALY	DVB-T	PAL B/G	***TAIWAN***	DVB-T	NTSC M
JAPAN	ISDB-T	NTSC M	***TUNISIA***	DVB-T	SECAM B
JORDAN	DVB-T	PAL B	***TURKEY***	DVB-T	PAL B
KAZAKHSTAN	DVB-T	-	***U.S.A.***	ATSC	NTSC M
KENYA	DVB-T	PAL B	***UAE***	DVB-T	PAL B/G
LATVIA	DVB-T	-	***UNITED KINGDOM***	DVB-T	PAL I
LEBANON	DVB-T	-	***URUGUAY***	DVB-T	PAL N
LIBYA	DVB-T	-			

Press **HOME** to confirm and save, **FORWARD** or **BACK** to scroll the pages.

9.6. TV MENU CONFIGURATION FOR 700WTV MODELS

9.6.1. TUNING TV CHANNELS

The machine configuration procedure is invoked, when the machine is in standby mode, by pressing the top right hand, the bottom left hand and the bottom right hand corner in sequence, as shown in the picture below.

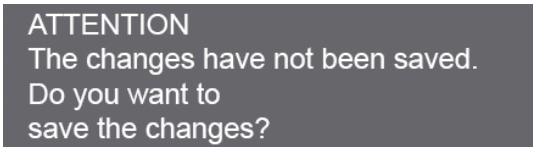


The machine display will shows a window from where you can access the different configuration menus, using the proper password.

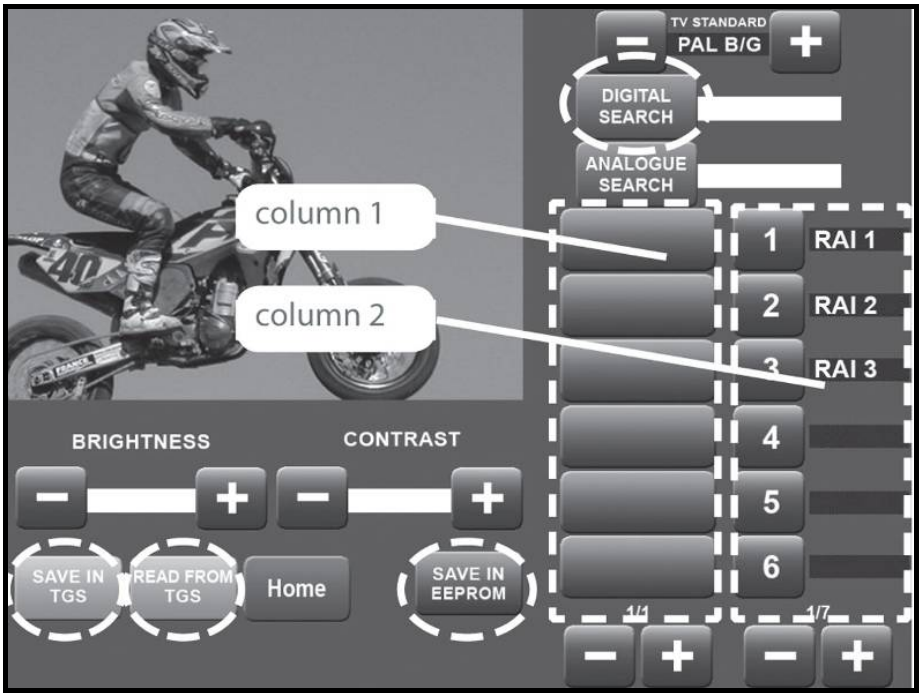
To access the menu, type in the password **2407** and press **ENTER** key to confirm or **BACK** key to back forward.

At this point the partial screen TV is displayed on the machine display, as shown in the picture below.

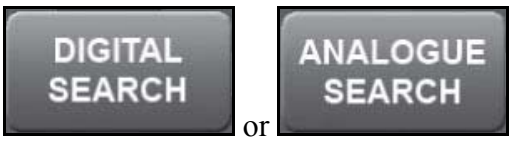
To permanently save the changes which are going to be made in this page, press "SAVE IN EEPROM" key. To go back to the home page press "HOME" key and the configuration will be available until the machine is restarted. This is why the following confirmation message is displayed:



Press “YES” to save the changes permanently or “NO” to continue.



It is possible to search TV channels on the digital or on the analogue band, by pressing on the proper buttons:



The default TV standard is the one set at paragraph :9.5.6. “TV Standard”, of the service menu.

It is anyway possible to store channels transmitted with different TV standard, changing this parameter, using keys + and – , in the proper menu 

.

A. <u>To tune and memorise Digital TV channels, proceed as follow</u>

1. Press DIGITAL SEARCH. In this phase, a temporary list of TV channels found, will be stored and visualized in *column 1*.
2. Wait the search stops or stop it by pressing STOP SEARCH key. The channels found in the meantime can be memorised.
3. Use the  keys under the list of channels in *column 1*, to scroll through the pages with the channels found during the search, while use the  keys under the list of numbers in *column 2*, to scroll through the pages with the numbers and names associated to the channels.
4. Once you have found a channel to memorise, select it in *column 1*, then press the number that you want to associate it with, in *column 2*.

   If a channel has already been memorised under that number, the old channel will be overwritten with the new one.
5. Repeat the procedure above for each channel you want to memorise.
6. In this way the channels will remain in the memory until the equipment is switched off (*RAM memory*); to permanently memorise the changes (*in EPROM*) press SAVE IN EPROM key.
7. Exit with “HOME” key.

Up to 190 TV channels can be memorised, a further channel is reserved for the A/V signals from DVD player, VHS or from the game console.

B. To tune and memorise Analogue TV channels, proceed as follow

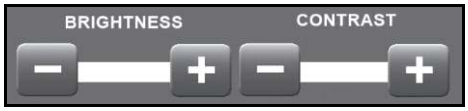
1. Press ANALOGUE SEARCH. In this phase, a temporary list of TV channels found, will be stored and visualized in *column 1*.
2. Wait the search stops or stop it by pressing STOP SEARCH key. The channels found in the meantime can be memorised.
3. Use the  keys under the list of channels in *column 1*, to scroll through the pages with the channels found during the search, while use the  keys under the list of numbers in *column 2*, to scroll through the pages with the numbers and names associated to the channels.
4. Select the channel frequency between the ones visualized in *column 1* (it will be displayed), then press the number that you want to associate it with, in *column 2*.
5. An alphanumeric keypad is displayed, to associate a name to the memorised channel.
6. Press the ENTER (↵) key: the keypad will disappear and the name will be displayed next to the number.

   If a channel has already been memorised under that number, the old channel will be overwritten with the new one.
7. Repeat the procedure above for each channel you want to memorise.
8. In this way the channels will remain in the memory until the equipment is switched off (*RAM memory*); to permanently memorise the changes (*in EPROM*) press SAVE IN EPROM key.
9. Exit with "HOME" key.

To transfer TV channels tuning data from a machine to another one, please refer to paragraph 9.8. "Transferring the tuning data"

WARNING: If there are problems with the digital signal reception, check the aerial antenna connection.

9.6.2. WELLNESS TV ADJUSTMENTS



The keys in the figure at left can perform certain adjustments on the Wellness TV. In particular, it is possible to:

- *Increase or reduce the brightness of the LCD.*
- *Increase or reduce the contrast of the LCD.*

Then:

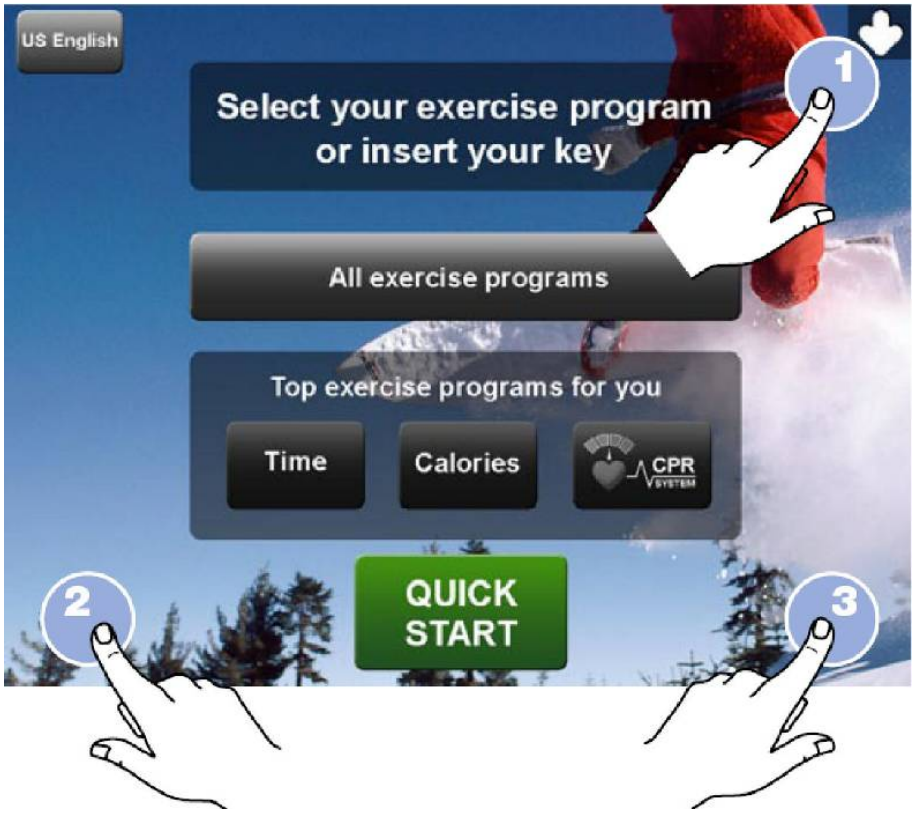
1. Press the "**SAVE IN EEPROM**" key to permanently save the configuration.

2. Exit with the "**HOME**" key.

9.7. RADIO MENU CONFIGURATION FOR 700WTV MODELS

9.7.1. TUNING RADIO CHANNELS

The machine configuration procedure is invoked, when the machine is in standby mode, by pressing the top right hand, the bottom left hand and the bottom right hand corner in sequence, as shown in the picture below.

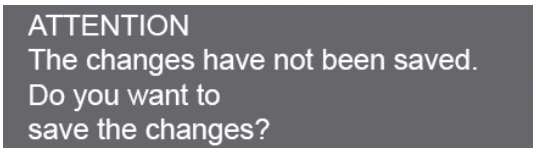


The machine display will shows a window from where you can access the different configuration menus, using the proper password.

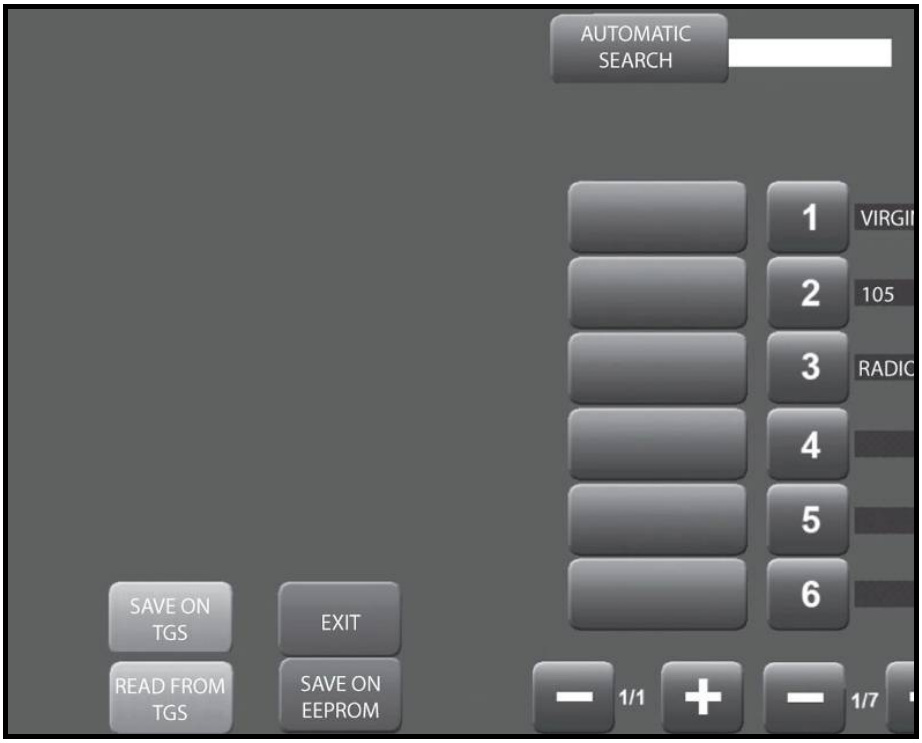
To access the menu, type in the password **2408** and press **ENTER** key to confirm or **BACK** key to back forward.

At this point the partial screen TV is displayed on the machine display, as shown in the picture below.

To permanently save the changes which are going to be made in this page, press "SAVE IN EEPROM" key. To go back to the home page press "HOME" key and the configuration will be available until the machine is restarted. This is why the following confirmation message is displayed:



Press “YES” to save the changes permanently or “NO” to continue.



To tune and memorise radio channels, proceed as follow:

It is now possible only the tuning of the digital band and not more the analogue one.

1. Press AUTOMATIC SEARCH. In this phase, a temporary list of TV channels found, will be stored and visualized in *column 1*. In *column 2* there are the number of the channels.
2. Wait the search stops or stop it by pressing STOP SEARCH key. The channels found in the meantime can be memorised.
3. Use the  keys under the list of channels in *column 1*, to scroll through the pages with the channels found during the search, while use the  keys under the list of numbers in *column 2*, to scroll through the pages with the numbers and names associated to the channels.
4. Once you have found a channel to memorise, select it in *column 1*, then press the number that you want to associate it with, in *column 2*.

   If a channel has already been memorised under that number, the old channel will be overwritten with the new one.
5. Repeat the procedure above for each channel you want to memorise.
6. In this way the channels will remain in the memory until the equipment is switched off (*RAM memory*); to permanently memorise the changes (*in EPROM*) press SAVE IN EPROM key.
7. Exit with “HOME” key.

9.8. TRANSFERRING THE TUNING DATA

The TV and radio channel tuning data can be transferred from one machine to the other in 2 ways:

- *using a TGS key;*
- *connecting two machines using a CSafe connection (recommended mode).*

NOTE: In this way the channels will remain in the memory until the equipment is switched off (RAM memory); to permanently memorise the changes (in EPROM) press SAVE IN EPROM key.

9.8.1. USING THE TGS KEY

On the already tuned machine:

1. Enter the configuration menu of the channels that are to be transferred.
2. Insert the TGS key into the reader on the machine;
3. Press the "**SAVE IN TGS**" button, this will cause all the channel configuration data to be saved to the key.

Up to 45 channels can be memorised in the TGS key; if there are more channels to be memorised, a message indicates the number of TGS keys required. The TGS keys must be inserted one at the time as requested by the messages, until all the channels have been memorised.

4. Exit the menu by pressing the "**HOME**" key.

On the machine to be tuned:

1. Enter the configuration menu of the channels that need to be tuned.
2. Insert the TGS key to which the tuning data was saved.
3. Press the "**READ TGS**" button.
4. Save the data uploaded to the machine by pressing "**SAVE IN EEPROM**".
5. Exit the menu by pressing the "**HOME**" key.

9.8.2. CONNECTING TWO MACHINES USING A CSAFE CONNECTION (METHOD RECOMMENDED)

Disable the TGS reader (if present on the machine) through the proper function in the User Menu: 9.3.4. "Enable TGS" before to carry out the following procedure.

1. Connect the two machines together using the proper cable described at paragraph 4.3. "Cable for exchanging TV channel tuning data between two machines".

2. On both machines, enter the configuration menu of the channels that need to be tuned.

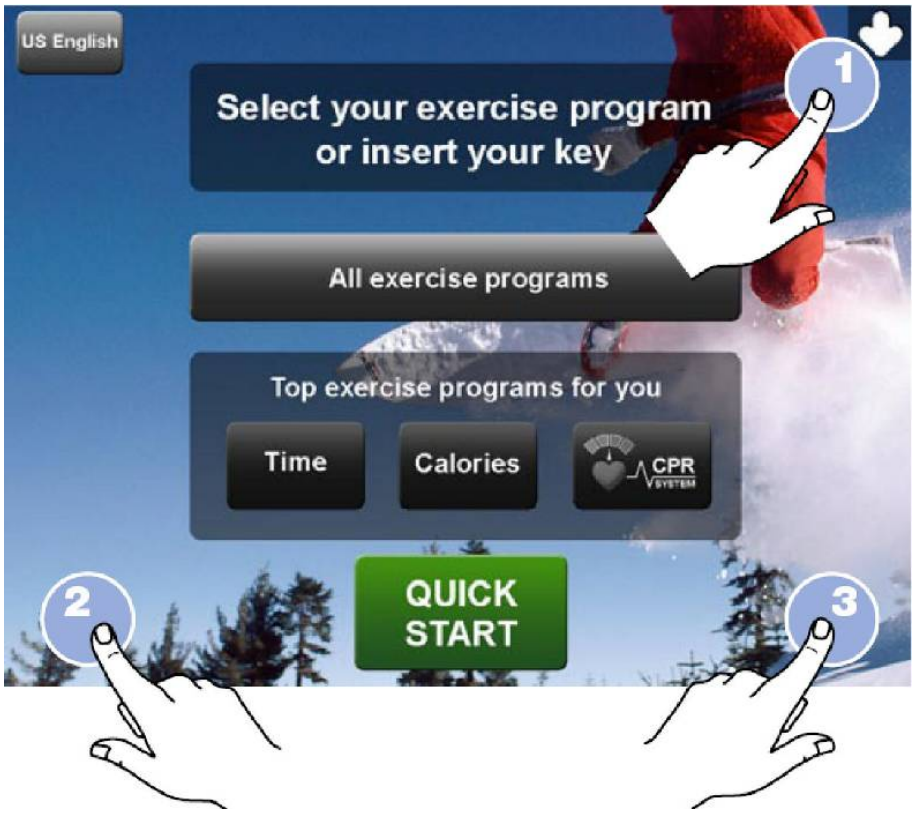
3. Press the "**READ FROM TGS**" on the machine to be tuned the channels, appears on the machine the written "**WAITING**", move on the machine from which you want to transfer channels and press the "**SAVE IN TGS**" button on the already tuned machine.

4. Store the data transferred on the machine being tuned by pressing "**SAVE IN EEPROM**".

5. Exit the menu on both machines by pressing "**HOME**".

9.9. TOUCH SCREEN CALIBRATION

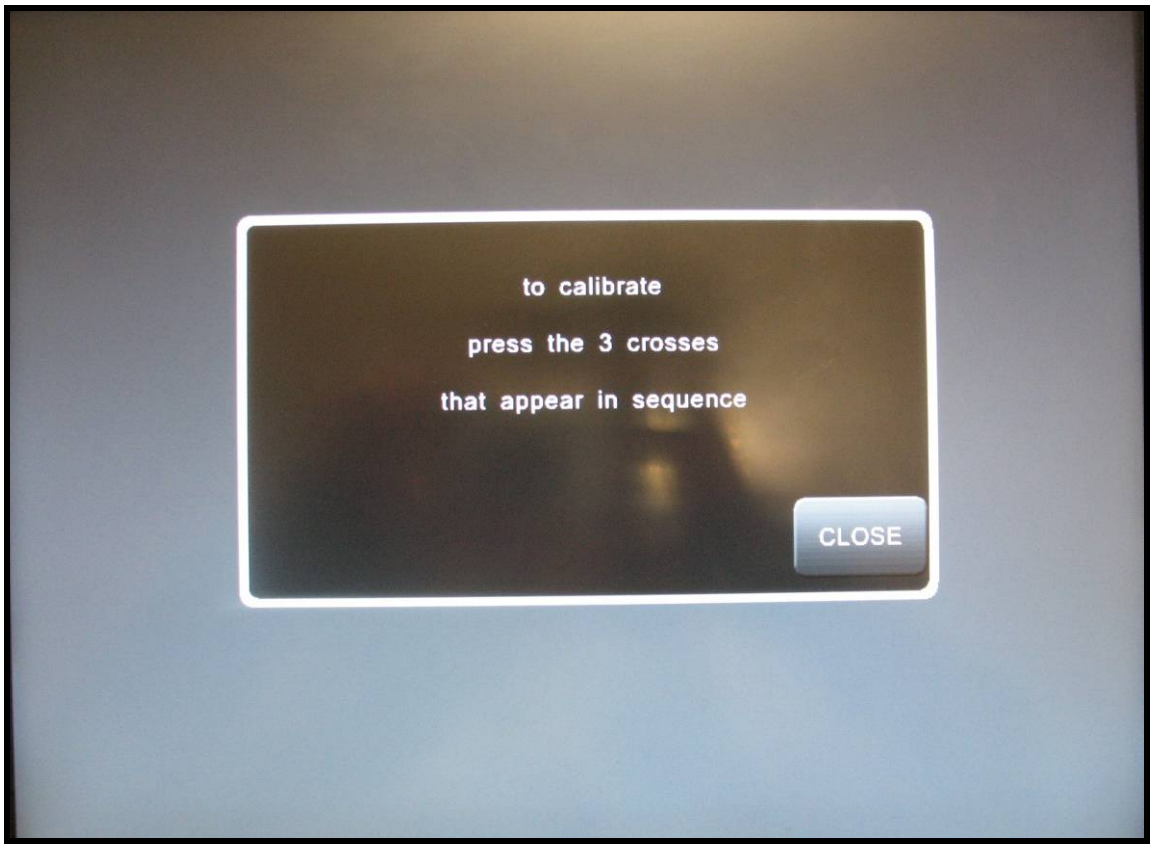
The machine configuration procedure is invoked, when the machine is in standby mode, by pressing the top right hand, the bottom left hand and the bottom right hand corner in sequence, as shown in the picture below.

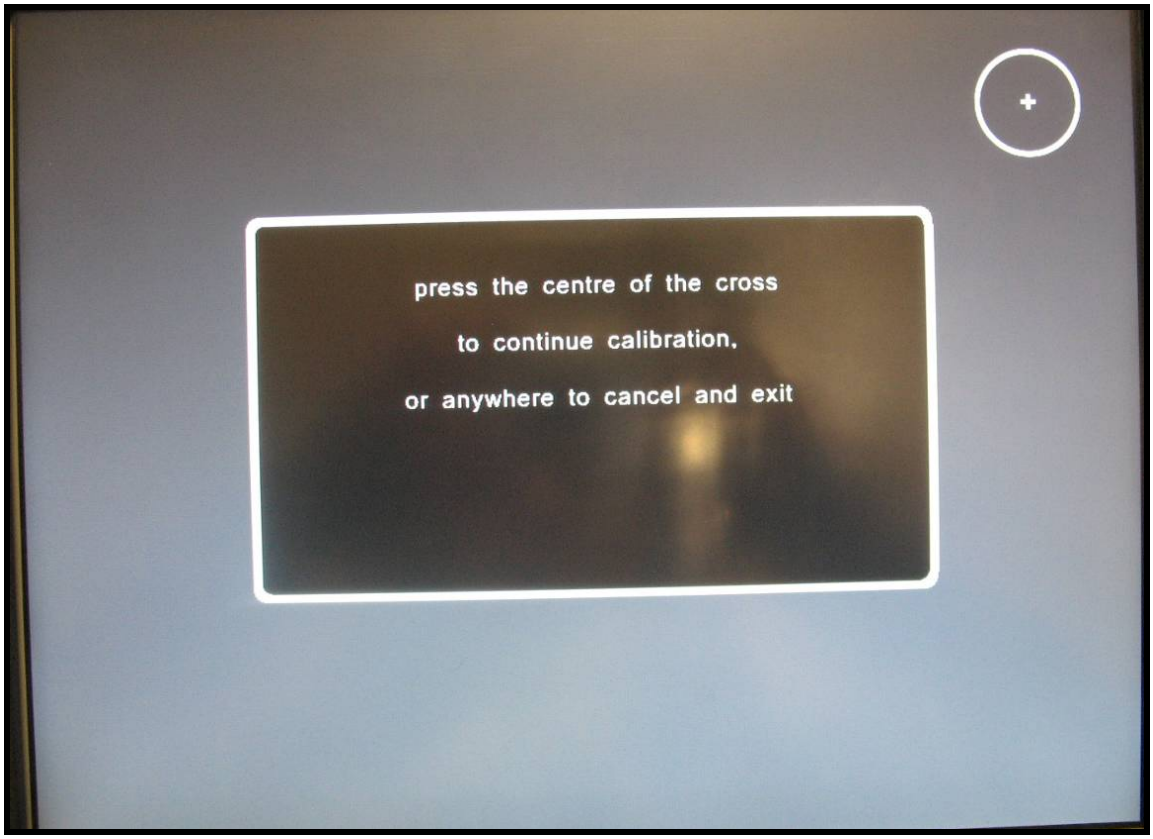


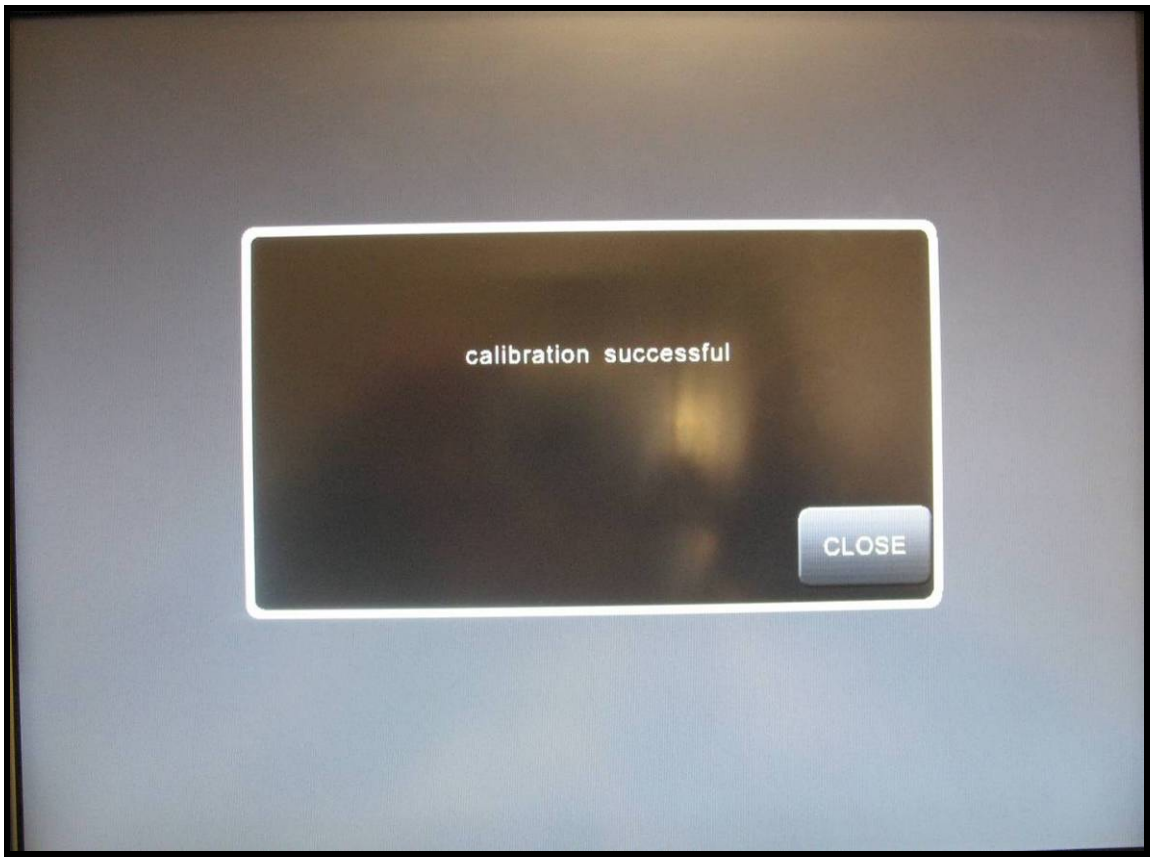
The machine display will shows a window from where you can access the different configuration menus, using the proper password.

To access the menu, type in the password **2409** and press **ENTER** key to confirm or **BACK** key to back forward.

At this point the following screenshot appears on the display:







Tap the centre of the + which appears on the screen, using an object that is pointed but not sharp.

The procedure must be repeated three times, with the + appearing in three different positions.
At the end, the message **"Calibration successful"** will appear if the procedure was correctly carried out, or **"Calibration incomplete"** if the procedure was not completed properly, after which the machine reverts to standby mode.

During the machine power-up sequence, while the message showing the installed software version is scrolling, pressing any point on the touch-screen for more than 6 seconds will automatically invoke the calibration procedure as soon as the software version display finishes. Upon exiting the calibration procedure (successfully or unsuccessfully), the machine automatically reverts to the standby state.

Page intentionally left blank

10. FUNCTIONAL TEST MD MODELS

Every time maintenance and/or repairs are performed on a machine, it is necessary to carry out a series of **mechanical** and **electrical tests** to ensure:

- *that the medical device is working properly;*
- *that the medical device is working safely;*
- *that the exercises are performed according to the biomedical specifications for which the medical device was designed.*

Technogym® ensures its own safety standards by means of the following tools and activities:

- *ISO 9001/2000 certification of the company;*
- *certification of the device in compliance with medical regulations 60601-1 and 60601-1-2;*
- *electrical testing of each device manufactured, according to the provisions of the aforementioned standards;*
- *training of technical staff who perform technical service;*
- *use of checked and tested original Technogym® spare parts for all service operations.*

10.1. ELECTRICAL SAFETY TEST

Based on the risk analysis carried out by the After Sale department regarding installation and technical service, it is still necessary to use a tester to perform a safety test on the grounding ring.
This test must ensure a continuous earth connection (resistance less than 4 Ohm) between the grounding pole of the mains lead (connected to the machine) and the 6 points listed below:

- *water bottle holding screw;*
- *pedal lever fastening screw (on both sides);*
- *guards fastening screw (on both sides).*

For more complete explanations, see the boxes in the figure below.

First of all, check the resistance on the tester probes is approximately 0Ω.

10.2. MECHANICAL SAFETY TESTS

10.2.1. CHECKING THE ASSEMBLY OF THE TRANSMISSION AND LEVERS SYSTEMS

Check the correct assembly of the: levers, footboards and brake components. In particular, make sure that:

- The *bearings have been correctly mounted.*
- *The footboard levers have been correctly mounted and aligned. Try to exercise on the machine and check the movement is smoothly and do not produce noise;*
- *The hand levers have been correctly mounted and aligned. Try to exercise on the machine and check the movement is smoothly and do not produce noise;*
- *The drive-belt is in good condition and correctly assembled on the pulleys. That the drive-belt and pulleys do not produce any unusual noise when the user pedals, even at a high effort level.*
- *The brake winding components are correctly assembled. That the pedaling action is always smooth and silent,* even at high effort level.

10.2.2. CHECKING THE ASSEMBLY OF THE GUARDS

Check the assembly of the machine guards, making sure that:

- *They are all in place and correctly secured so that no parts of the machine are left exposed that may cause injury to the user.*

10.3. START-UP CHECK

Following installation and after every technical intervention on the machine, plug it into a power outlet, set the power switch to ON.

On power-up the machine performs a self test of the upper and lower assemblies. At the end of this the machine goes into standby, awaiting a keyboard command.

To check the correct operation of the machine:

- *get on the machine;*
- *begin exercising;*
- *check that the displayed speed varies accordingly;*
- *check that the exercise resistance varies when the "+" and "-" keys and the touch sensor are pressed 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.*

10.4. LIST OF CRITICAL SPARE PARTS

Technogym medical devices are identified by "Serial N" plates that allow them to be tracked throughout the useful life-span of the device. Just as for products, there is also a list of so-called "critical" components which, through the Serial N, must be guaranteed as traceable.

The list of these critical components is shown in the table below.

CODE	*COMPONENT*
R0004475AB	*Brake board*
0WR00496AA	Solenoid assembly
W0003778AA	*Display board 500*
W0003767AA	*Display board 700*
0WQ00060AA	*C-Safe board*
0WR00678AA	*Hand sensor board*
0WR00285	*HFU receiver*
0WT005AA	*Schurter socket*
-	Display program – SW version
-	Brake board program – SW version

If a critical component listed in this table is replaced during a repair, maintenance or refurbishment, this fact must be noted in the "**Service report**" by recording the tracking information for the new component.

11. SCHEDULED MAINTENANCE

To keep the machine in perfect working order and forestall possible problems it is necessary to carry out the scheduled maintenance operations described below. The maintenance operations can essentially be classified according to the frequency with which they need to be performed:

- ***Daily** maintenance operations;*
- ***Monthly** maintenance operations;*
- ***Twice-yearly** maintenance operations.*

The operations require different levels of operator qualification. The following paragraphs describe the recommended procedures.

11.1. DAILY MAINTENANCE OPERATIONS

ATTENTION: These operations can be carried out by the machine owner and do not require any special skills.

*The **daily** machine maintenance consists of simple external cleaning, for the purposes of general hygiene.*

For the daily maintenance of the machine, proceed as follows:

11.1.1. SETTING UP THE OPERATION

Only for 500, 700 and 700WTV models.

1. Turn off the machine by placing the switch in position 0 (OFF).
2. Unplug the mains lead from the wall outlet.

11.1.2. EXTERNAL CLEANING OPERATIONS

1. Using a cloth moistened with a neutral detergent (non acidic), clean the entire machine, taking care not to rub too vigorously, especially on the keys of the display.

Never spray the cleaning product directly on the machine.

ATTENTION: do not use alcohol, petrol or other chemical products.

11.2. MONTHLY MAINTENANCE OPERATIONS

ATTENTION: These operations can be carried out by the machine owner and do not require any special skills.

*The **monthly** maintenance operations consist of simple checks on the machine's operation and state of wear, to ensure its safe and correct functioning.*

For the monthly maintenance of the machine, proceed as follows:

11.2.1. CHECKING THE OPERATION OF THE CARDIOTESTER RECEIVER

1. Using a separate heart rate monitor, put on the transmitter band and check that the machine and the separate monitor both measure the same heart rate, and that when the band is disconnected the machine does not receive any signal.
2. Using a heart rate frequency simulator, check that the machine detects variations in the heart rate.

11.2.2. CHECKING THE OPERATION OF THE HAND SENSOR RECEIVER

Only for 700, 700 SP and 700WTV models.

1. Using a separate heart rate monitor, grasp the hand sensors and check that the machine and the separate monitor both measure the same heart rate, and that when the sensors are released the machine does not receive any signal.

11.3. TWICE-YEARLY MAINTENANCE OPERATIONS

These operations can only be carried out by a qualified technician specifically trained by Technogym and authorized to carry out machine installation and adjustments, as well as special maintenance operations or repairs which require special knowledge of the machine, its operation, safety systems and working procedures.

*The **twice-yearly** maintenance operations involve checking the functioning, wear and tension of the mechanical components so as to ensure the correct and safe operation of the machine.*

For the twice-yearly maintenance of the machine, proceed as follows:

11.3.1. CARRYING OUT THE MONTHLY MAINTENANCE PROCEDURE

1. Carry out the procedure described in paragraph 11.2. “Monthly maintenance operations”.

11.3.2. SETTING UP THE OPERATION

Only for 500, 700 and 700WTV models.

1. Turn off the machine by placing the switch in position 0 (OFF).
2. Unplug the mains lead from the wall outlet.

11.3.3. CLEANING OPERATIONS

1. Use a vacuum cleaner to clean the interior, paying particular attention to the brake.

ATTENTION: when carrying out these operations, be careful not to damage the cables.

11.3.4. CHECKING THE WORKING CONDITIONS

Only for 500, 700 and 700WTV models.

1. Using a multimeter, check that the machine earth node is correctly connected to earth.

11.3.5. CHECKING THE WEAR OF RUBBER PARTS

1. Check the state of wear of the rubber components. Replace if there are evident signs of wear.

11.3.6. CHECKING THE BELTS

1. Check the state of wear of the belts, using the pulley to turn it by hand, paying special attention to the edges and the inner part. Replace if there are evident signs of wear.
2. Also check the tension of the belts.

11.3.7. CHECKING THE DISPLAY

1. Check the operation of all the keys on the keyboard.
2. Check the operation of all the LEDs and the buzzer.

11.3.8. CHECKING THE WIRING AND CONNECTIONS

1. Check the condition of all the cables:

   - *External conditions;*
   - *Possible rusting of the connectors;*
   - *Electrical continuity of the individual wires;*
   - *Isolation of the individual wires toward ground.*

   Repair and/or replace any non-conforming wires.

Only for 500, 700 and 700WTV models.

2. Check the condition of the fuses using a tester.

12. APPENDIX

12.1. UPDATING THE SW

To update the machine SW it is necessary to change the contents of the FLASH EPROM on the 386 or ARM board by means of an external PC connected to the CSAFE port on the machine, situated on the lower part of the display panel.

The PC can only update the FLASH EPROM during machine power up, before the self-test sequence begins.

After the Display SW update it is necessary to restore all the parameters to the default values following the detailed instructions provided in paragraph: 9.2.13. "Resetting parameters to default values".

After the lower electronic SW update it is necessary to restore all the parameters to the default values following the detailed instructions provided in paragraph: 9.5.1.3 "Default Setting".

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;*
- *Big Phillips screwdriver;*
- *7mm wrench;*
- *15mm wrench;*
- *17mm wrench;*
- *3mm hexagonal wrench;*
- *4mm hexagonal wrench;*
- *5mm hexagonal wrench*
- *6mm hexagonal wrench;*
- *8mm hexagonal wrench*
- *13mm socket wrench;*
- *Snap ring pliers;*
- *Bicycle pedal extractor;*
- *Torque wrench;*
- *Flatness comparator.*

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.

- *PC equipped with Service Excite Loader*
- *Serial communication cables for Excite Loader (cod.**R0002534AB**);*
- *Excite Test box (cod.**H0003180AA-UK**).*
- *Clean Well bottle (cod.**0V000356AA**).*

TECHNOGYM S.p.A.
Via G. Perticari, 20
47035 Gambettola (FC)
ITALIA
Tel.: +39-0547-650638
Fax: +39-0547-650150
e-mail: service@technogym.com

0SM00583AA-UK