Step Excite

SERVICE & MAINTENANCE MANUAL

REV. 1.4

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.

Summary

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1. GENERAL NOTICES

1.1. INTRODUCTION

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

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

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

WARNING: non observance may result in accident or injury.

ATTENTION: non observance may cause damage to the machine.

Information about the operation in progress.

OBSERVE: 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.

OBSERVE: The tool sizes quoted in this manual are expressed in mm.

2. TECHNICAL SPECIFICATIONS

2.1. PRODUCT CODES

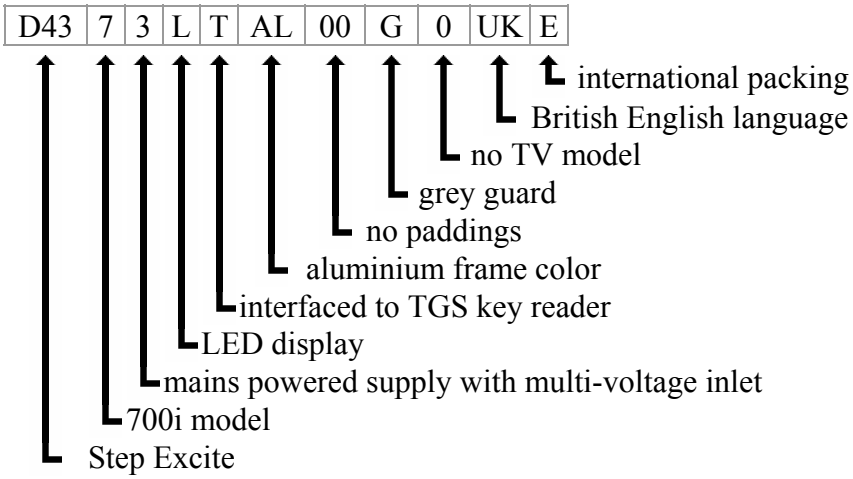
The machine codes take into account all the possible variants and options available for the products. The machine code, which does not include the Serial Number, consists of 16 alphanumeric characters arranged as follows:

Characters	description	key to values
1,2,3	Machine type: Step Excite	**D43**
4	Product version	**5** = Step 500i **7** = Step 700i
5	Type of power supply	**3** = multi-voltage (110-220) **4** = self-powered
6	Type of display	**L** = LED display **E** = Wellness TV
7	Device for downloading data used by the Wellness System	**N** = not available **T** = TGS
8, 9	Color of the frame	**AL** = aluminium
10, 11	Color of the paddings	**00** = none
12	Color of the guards	**G** = grey
13	Type of TV model	**0** = none **1** = Pal B/G **2** = Pal I **3** = Pal N **4** = NTSC M **5** = Secam E/L **6** = Secam D/K **7** = NTSC M44 **8** = Pal D/K **9** = Secam B/G **A** = Secam K1 **B** = Pal M
14,15	Language	**IT** = Italian **DE** = German **FR** = French **US** = American English **NL** = Dutch **BR** = Portuguese **JP** = Japanese **UK** = British English **ES** = Spanish
16	Type of packaging	**I** = Italy **E** = standard international **S** = overseas international **0** = none

For example, the code below:

D4373LTAL00G0UKE

would be interpreted as follows:



2.2. AVAILABLE VERSIONS

There machine is available in 5 versions:

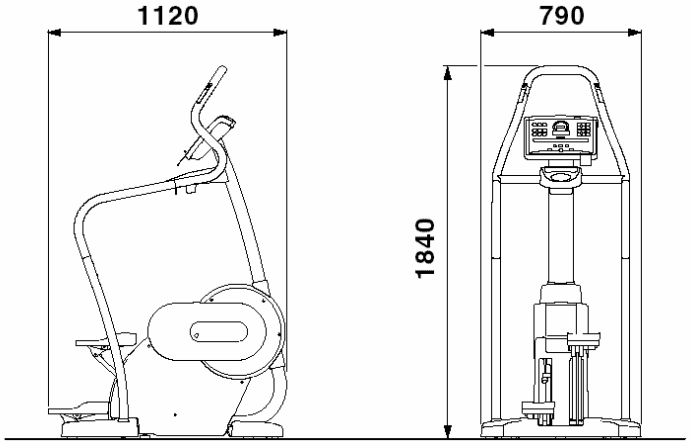
- Step 500i: mains operated machine
- Step 500i SP: self-powered machine
- Step 700i: mains operated machine
- Step 700i SP: self-powered machine
- Step 700i E: mains operated machine with Wellness TV display

all of which have the same structure but are differentiated by certain characteristics.

		VERSION			
		500I	**500I SP**	**700I - 700I E**	**700I SP**
CARATTERISTICA	**Hand sensor**	NO		YES	
	Touch sensor	NO		YES	
	CSafe	YES		YES	
	Cardio receiver	HFU		HFU	
	Training programs	Quick Start Goal CPR		Quick Start Goal 6 profiles CPR Training zone Weight Loss Custom program	
	Test functions	Fitness test		Fitness test	

2.3. MECHANICAL CHARACTERISTICS

	VERSION	
	500i – 700i - 700i E	**500i SP – 700i SP**
Width	79 cm – 31.1 in	
Length	112 cm – 44.1 in	
Height	184 cm – 72.4 in	
Weight	100 kg - 220 lbs	



2.4. ELECTRICAL CHARACTERISTICS

		VERSION	
		500I	**700I – 700I E**
Mains voltage	**Europe / Asia**	90 - 260 VAC	
	USA / Canada	90 - 130 VAC	
Frequency	**Europe / Asia**	50 - 60 Hz	
	USA / Canada		
Consumption	**Europe / Asia**	100 VA	
	USA / Canada		
Fuses	**Europe / Asia**	2 x F 3.15 A	
	USA / Canada		

2.5. CONFORMITY TO REGULATIONS

The machine conforms to the following standards:

	Europe	USA
EMI	EN 55014-1 EN 55014-2 EN 61000-3-2 EN 61000-3-3	UL 1647
Safety	EN 60335-1 EN 957-1 EN 957-8 class SA	
Directives	73/23/CE 89/366/CE 98/37/CE	

In addition:

- Electrical isolation class: **Class I** (mains operated machine)**, Class II** (self powered machine)**;**
- Protection rating: **IP20**.

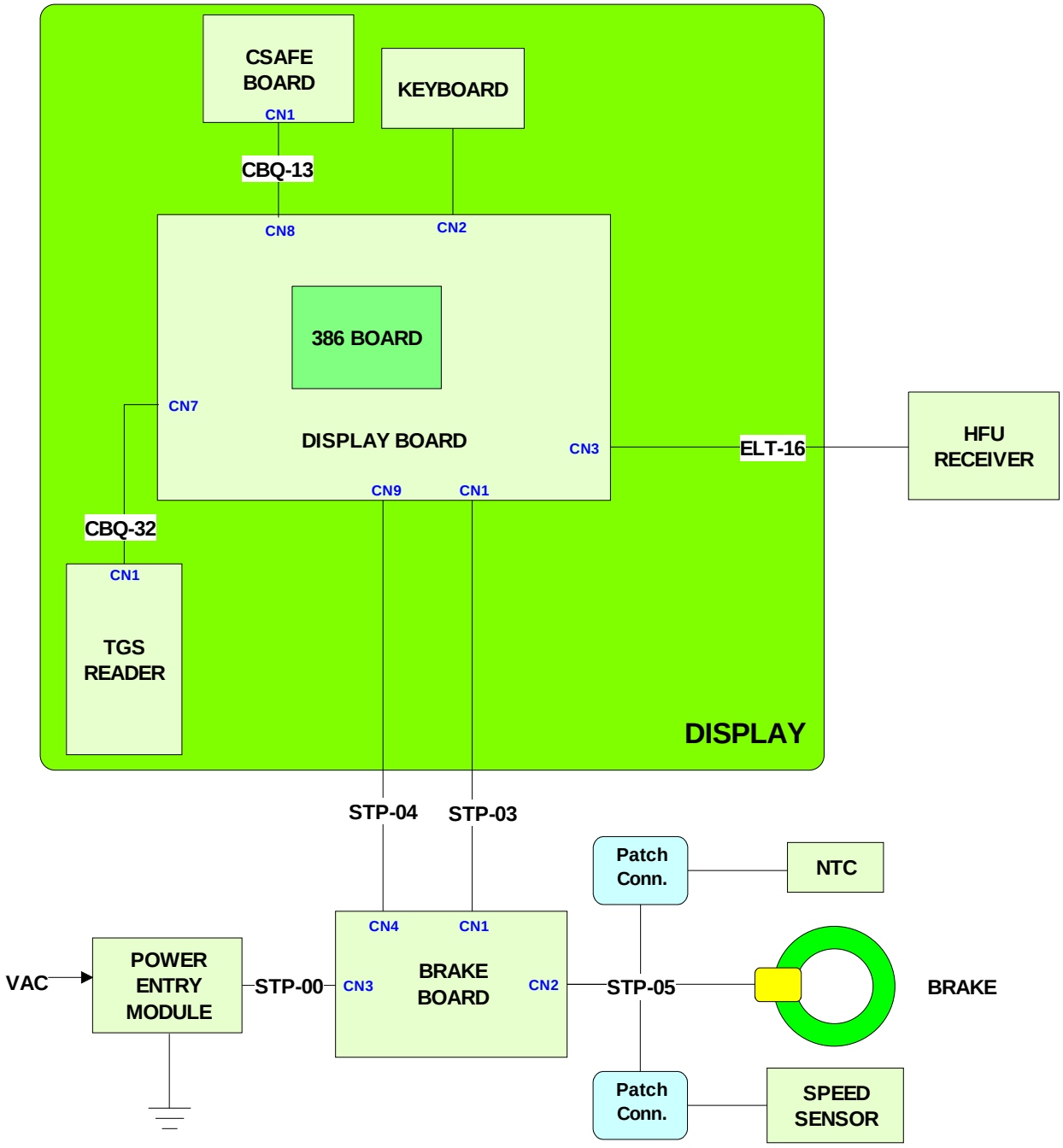
2.6. AMBIENT SPECIFICATIONS

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

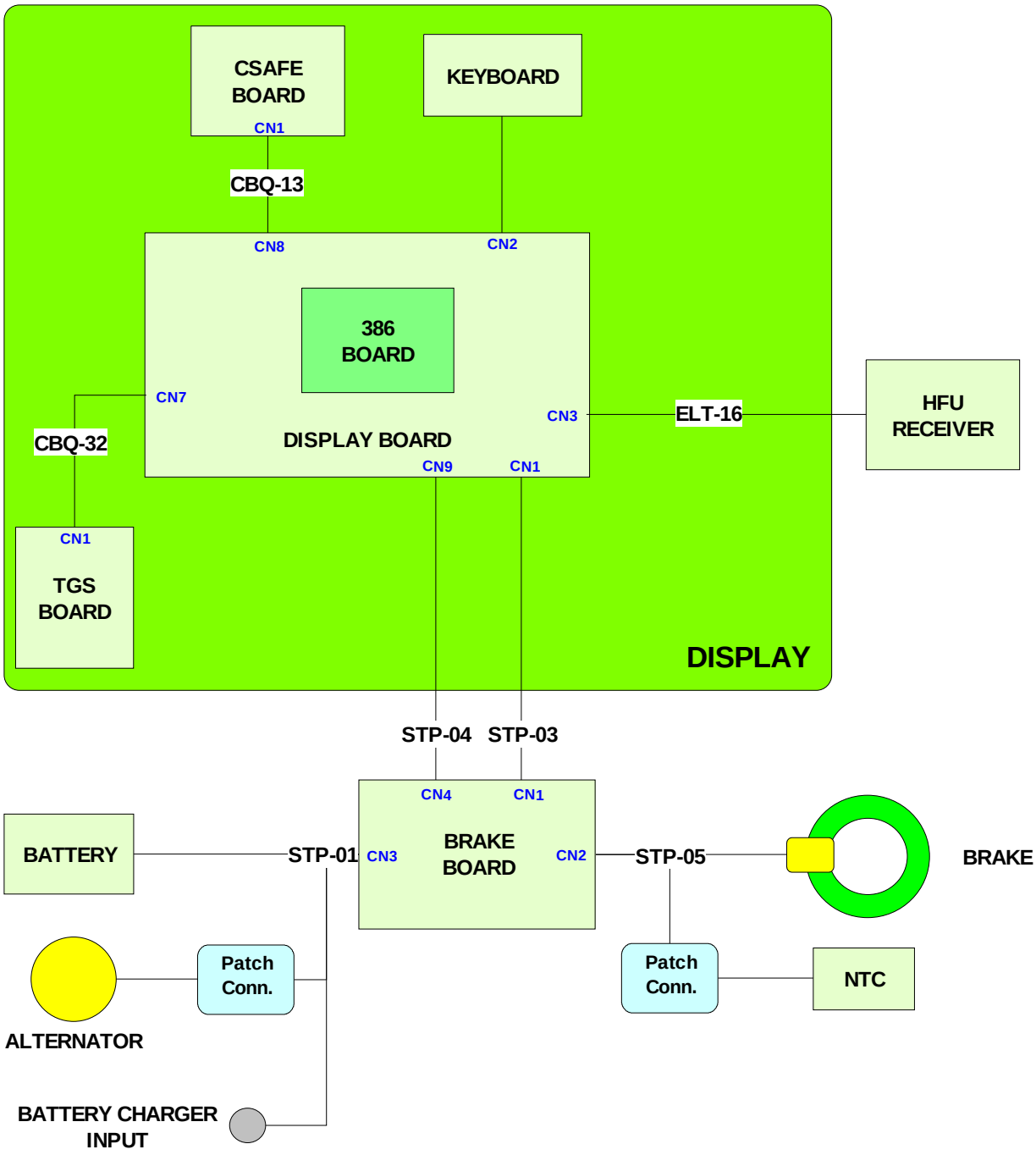
2.7. WIRING DIAGRAMS

2.7.1. 500I MODEL

2.7.1.1. Powered version

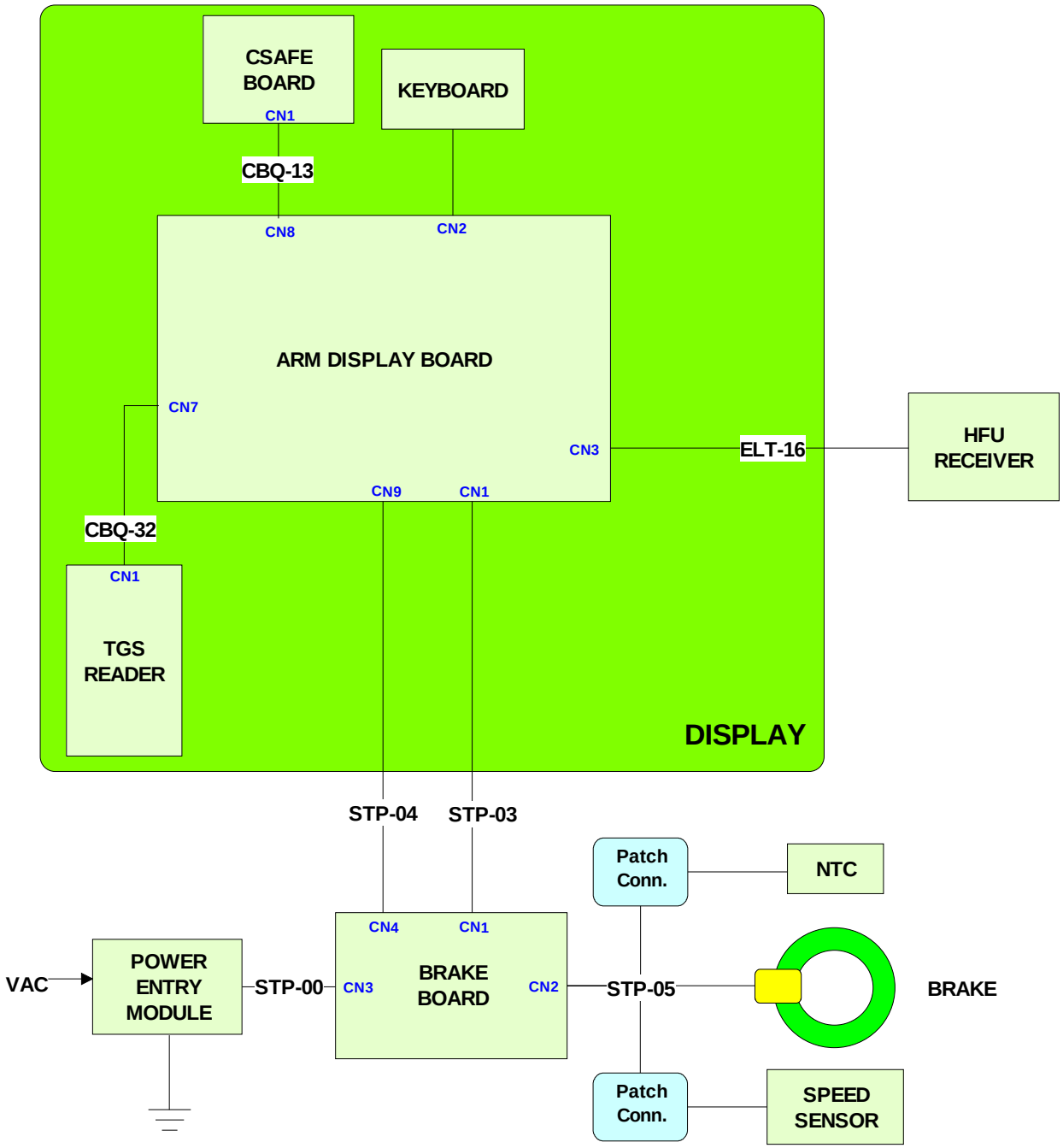


2.7.1.2. Cordless version

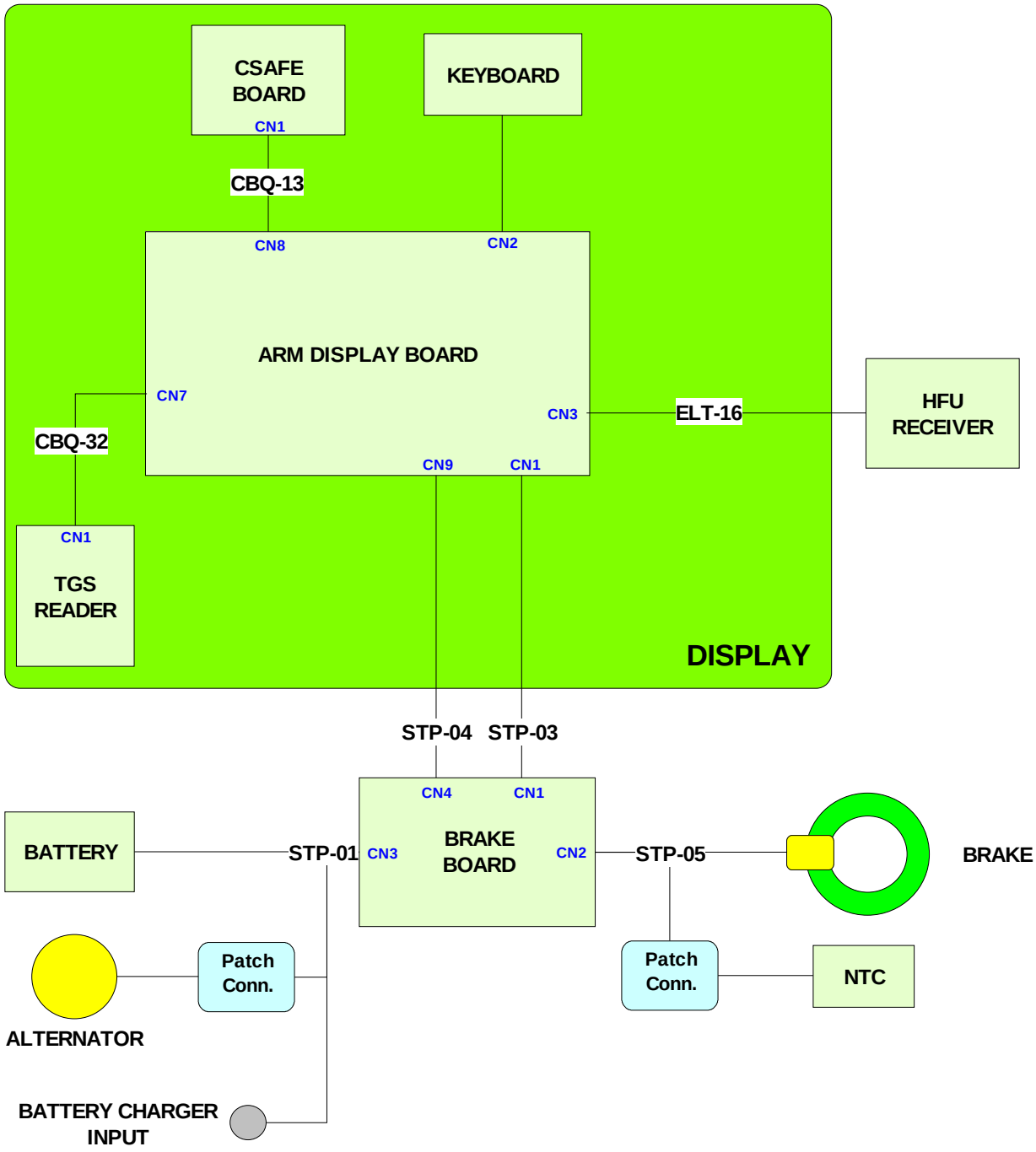


2.7.2. 500I MODEL – ARM BOARD

2.7.2.1. Powered version

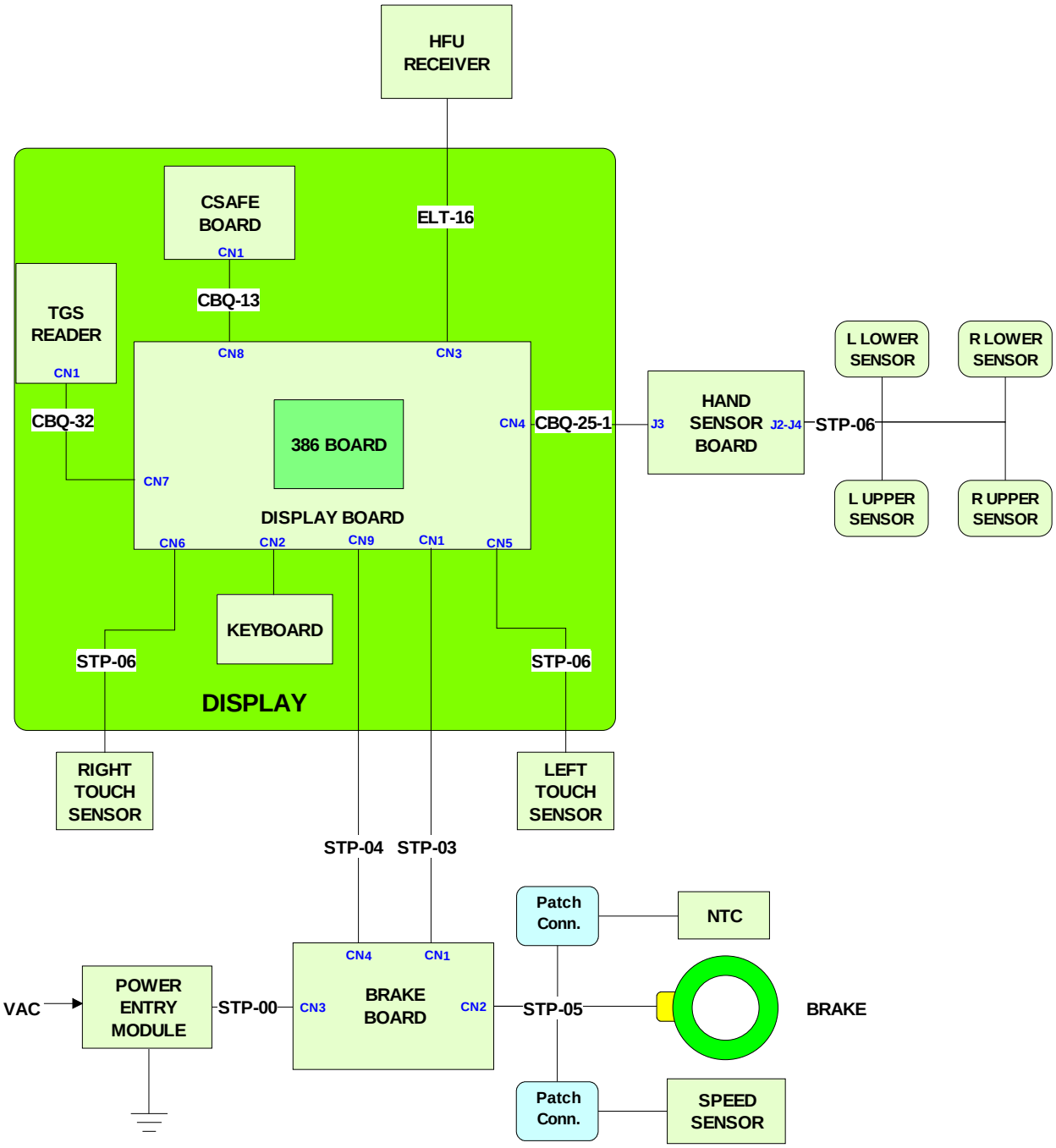


2.7.2.2. Cordless version

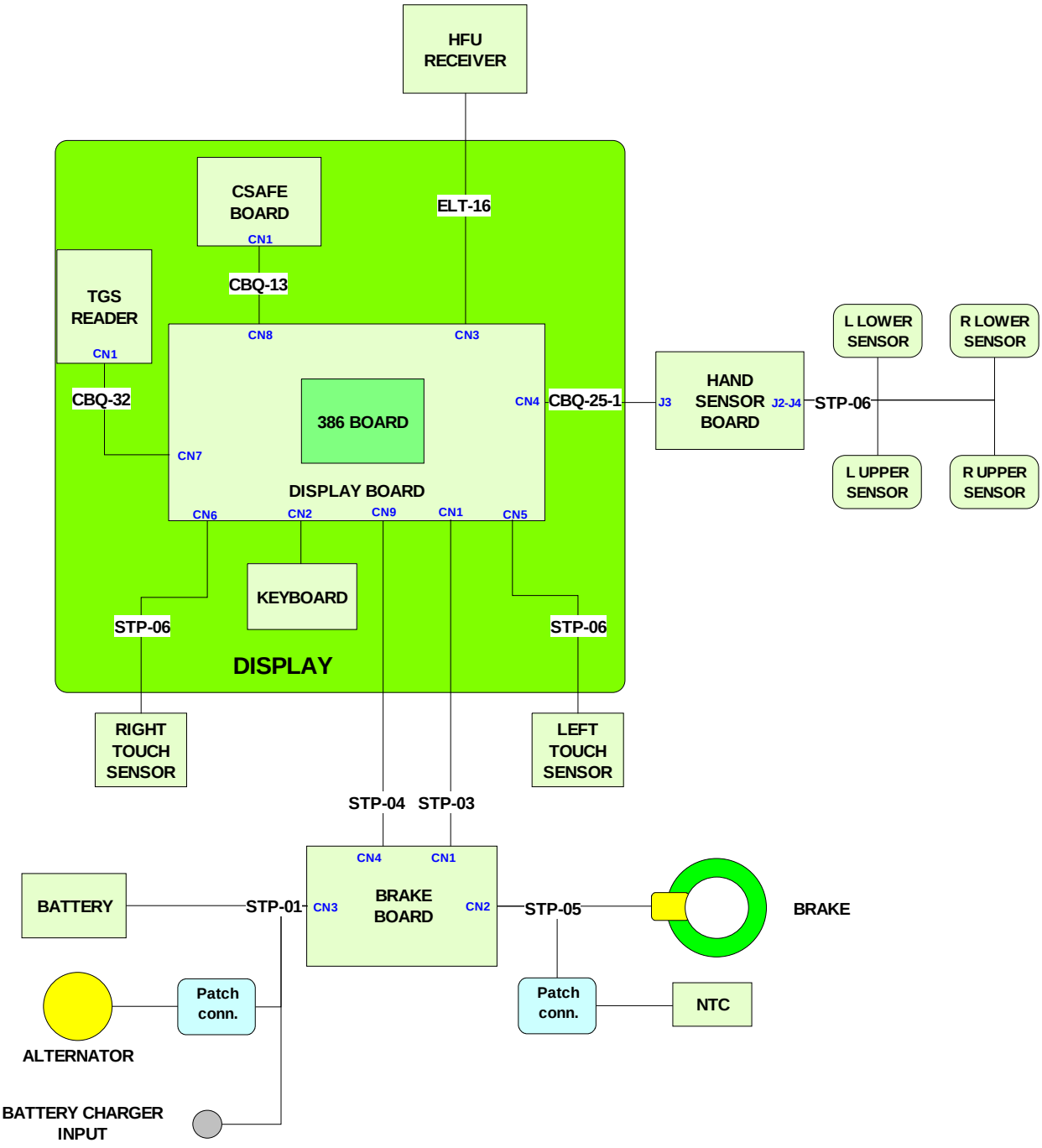


2.7.3. 700I MODEL

2.7.3.1. Powered version

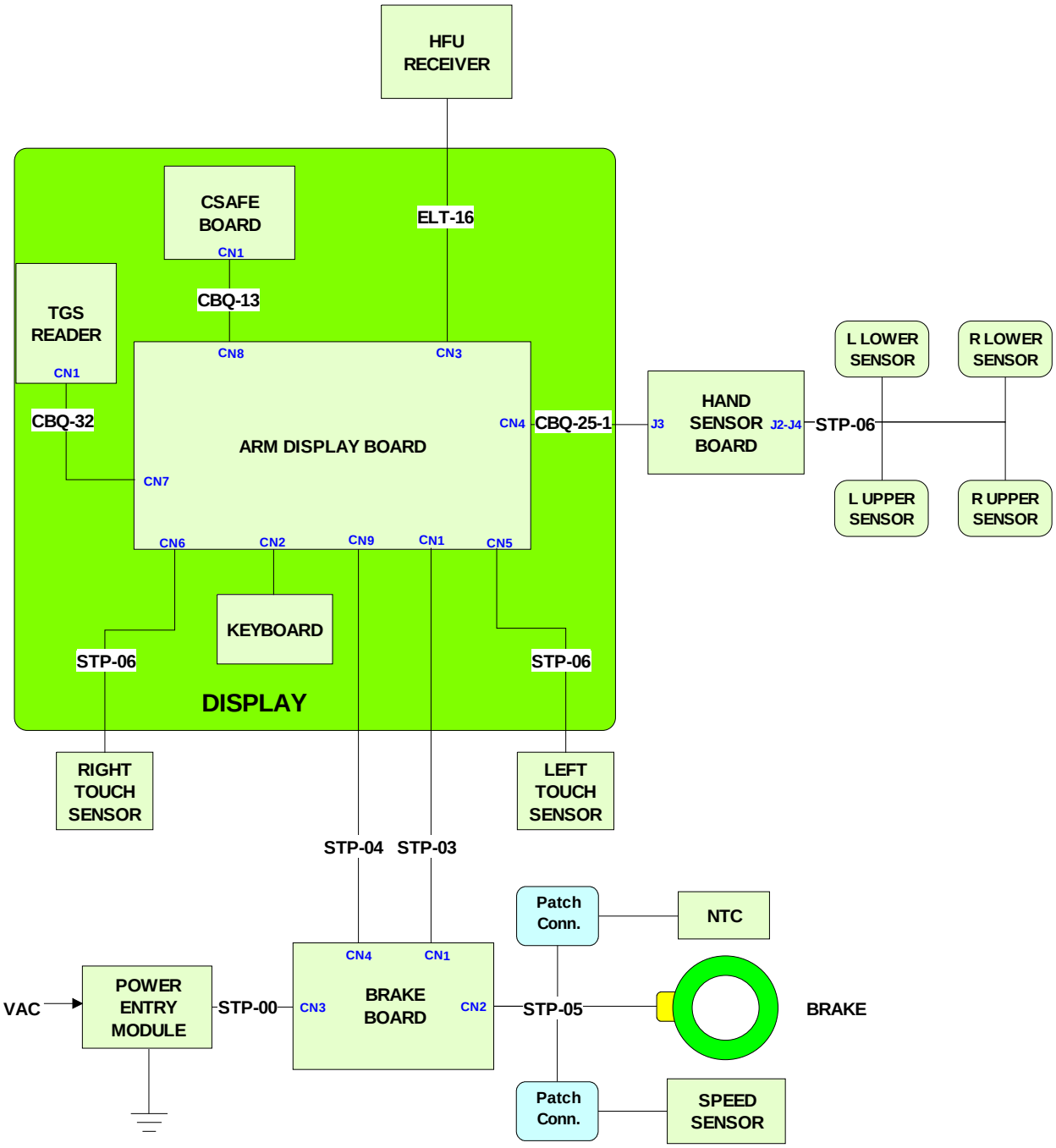


2.7.3.2. Cordless version

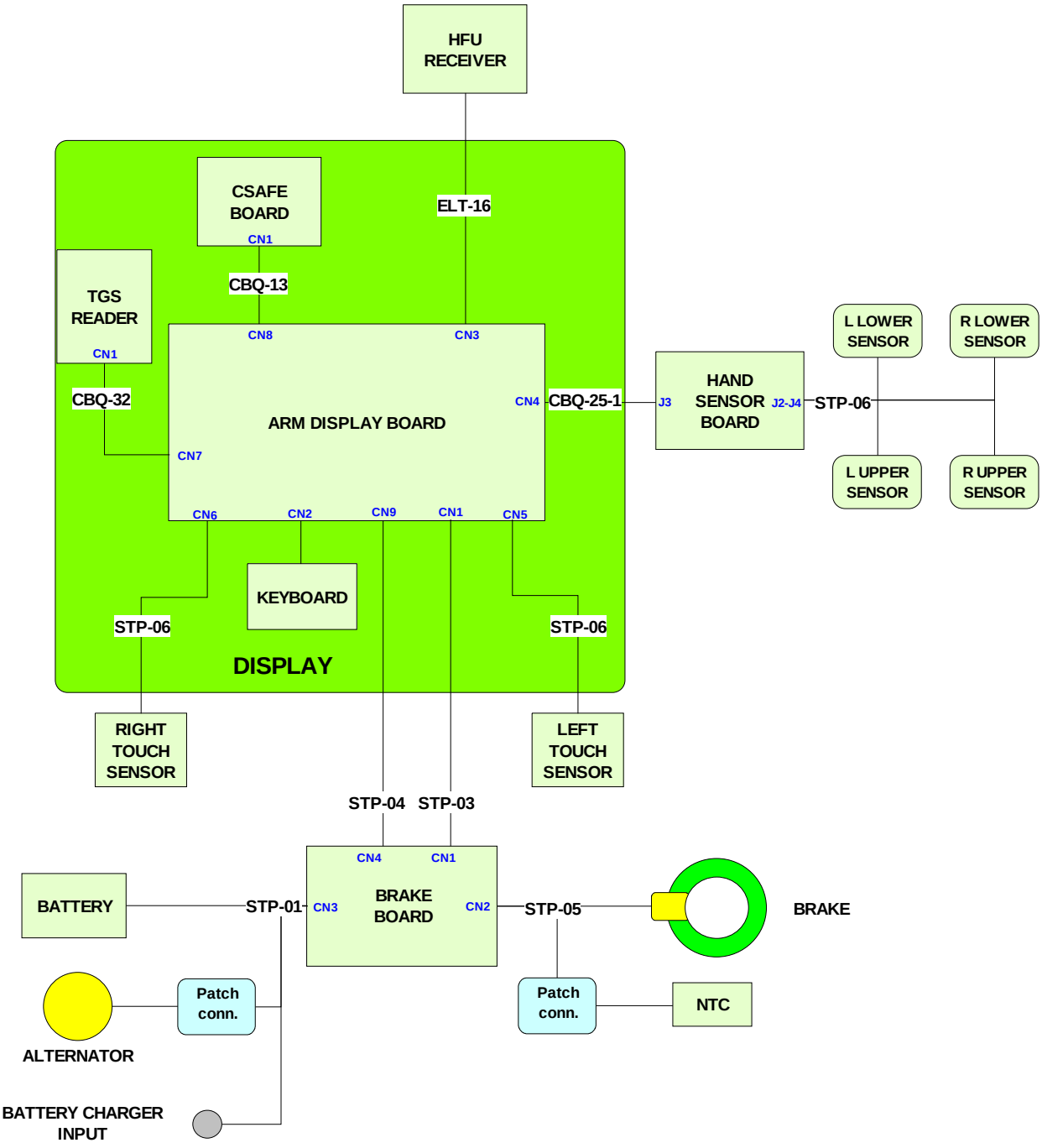


2.7.4. 700I MODEL – ARM BOARD

2.7.4.1. Powered version

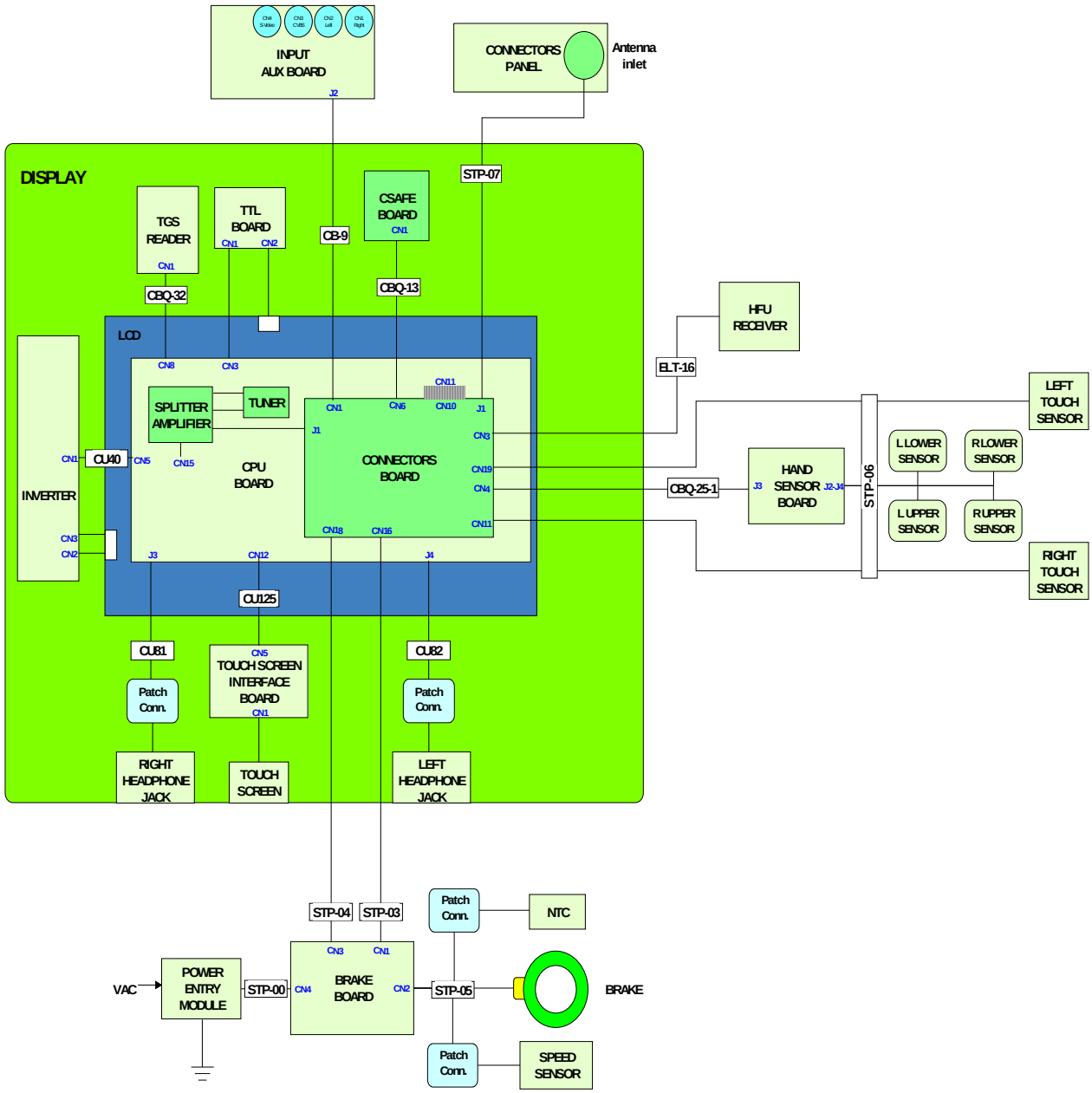


2.7.4.2. Cordless version

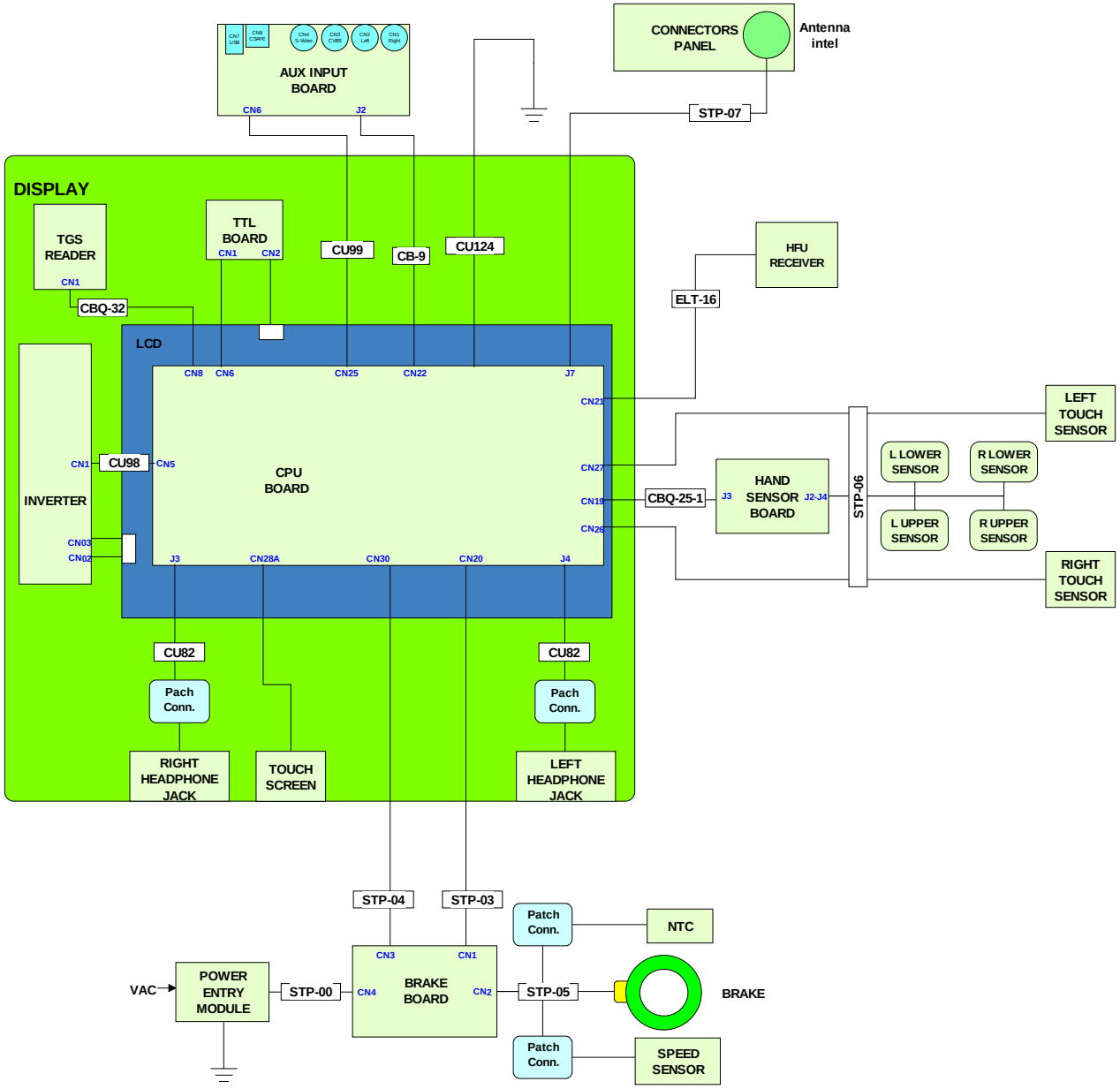


2.7.5. 700IE WTV MODEL

2.7.5.1. Wellness TV Touch screen NCB version



2.7.5.2. Wellness TV Touch screen UB version



2.8. WIRING

CB-9: DVD video input cable Connector board - AUX input board			
Connector board CN1	**Signal**	**Color**	**Input board J1**
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

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

CBQ-25-1: Hand sensor board cable Display Board – Hand Sensor Board			
Display Board CN4	**Signal**	**Color**	**Hand sensor board J3**
1	+5 Vdc power supply	Red	2
5	Pulse out	Blue	3
6	Reference	Black	1

CBQ-32: TGS Cable Display Board – TGS reader			
Display Board CN7	**Signal**	**Color**	**TGS reader; CN1**
1	+12 Vdc power supply	Yellow	1
3	Rx	White	8
5	Tx	Green	7
9	Gnd	Brown	3

CV-302: LCD inverter power supply cable CPU Board - LCD Inverter			
CPU Board CN5	**Signal**	**Color**	**LCD Inverter CN1**
2	Gnd	Black	2
3	+3.3 Vdc power supply	Black	3
4	Gnd	Black	4
5	+12 Vdc power supply	Orange	5

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

STP-00: High voltage cable Power entry module – Brake board			
Power entry module	**Signal**	**Color**	**Brake board CN3**
F	Line	White	1
N	Neutral	Brown	3
T	Earth	Green	5

STP-01: Alternator cable Brake board – Alternator – Battery – Inlet for battery charging					
Brake board CN3	**Signal**	**Color**	**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	-

STP-03: Power supply cable between upper and lower assemblies Brake board - Display Board			
Brake board CN1	**Signal**	**Color**	**Display Board CN1**
2	Gnd	White	2
3	Gnd	Yellow	3
4	- sensing +5 Vdc digital	Pink	4
6	+12 Vdc	Brown	6
7	+5 Vdc	Green	7
8	+sensing +5 Vdc digital	Grey	8

STP-04: Serial communication cable between upper and lower assemblies Brake board - Display Board			
Brake board CN4	**Signal**	**Color**	**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

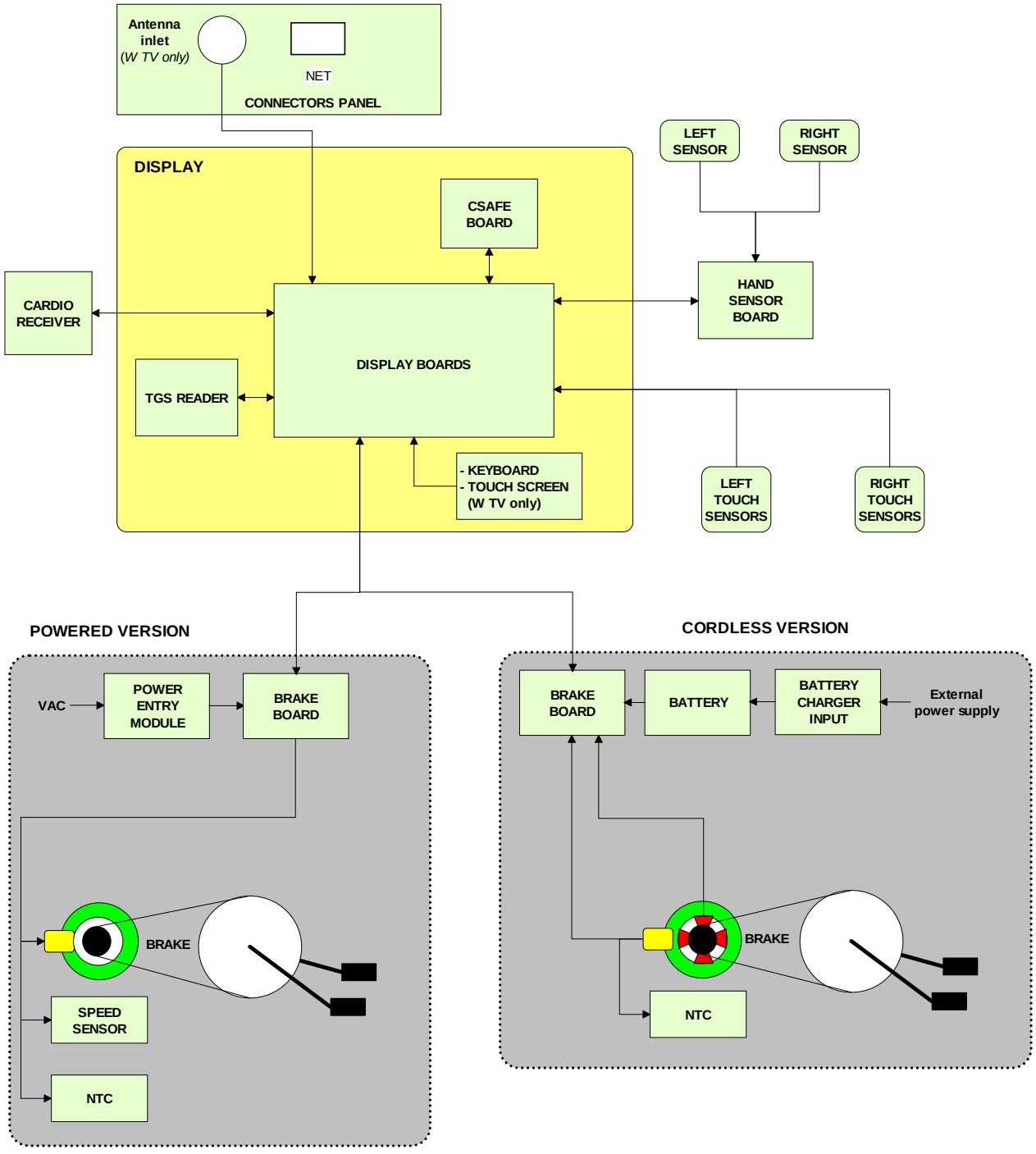
STP-05: Brake supply cable Brake board – Brake – Speed sensor - NTC					
Brake board CN2	**Signal**	**Color**	**Brake**	**Speed sensor**	**NTC**
1	Brake supply +	Brown	Faston	-	-
2	Brake supply -	Blue	Faston	-	-
3	SPM	Grey	-	Faston connected to brown cable	-
4	SPM Reference	Black	-	eyelet	-
5	NTC +	White	-	-	2
6	NTC -	Brown	-	-	1

STP-06: Hand sensor – Touch sensor cable Hand Sensor Board - Sensors				
Hand sensor board	**Signal**	**Color**	**Sensors**	
J2 - J4			**Right**	**Left**
1	Right sensor signal	White	up	-
2	Sensor signal reference	Brown	down	-
3	Gnd	Black	-	-
4	Left sensor signal	White	-	up
5	Sensor signal reference	Brown	-	down
6	Gnd	Yellow/green	-	-
Display board – Touch sensor				
Display board CN5 / CN6	**Signal**	**Color**	**Touch sensor**	
1	+ 5Vdc	White	1	
2	Button	Brown	3	
4	Reference	Green	4	

3. PRINCIPLES OF OPERATION

3.1. BLOCK DIAGRAM

The machine block diagram is illustrated in the figure below:



3.1.1. DISPLAY BOARDS

3.1.1.1. 500i and 500i SP versions

The display comprises the following circuit boards:

- **386 BOARD**
  This is the circuit board which comprises the CPU, a 386 microprocessor, its logic circuits and a FLASH EPROM containing the operating program for the machine.

- **DISPLAY BOARD**
  This is the heart of the display: this board acts as the interconnection hub for all the components of the display, and serves as the point of connection with the electrical box. In fact it:

  > receives commands of the machine program from the 386 Board;
  > sends to the 386 Board the signals received from:

  - Keyboard;
  - Cardio receiver;
  - TGS reader;
  - CSafe Board;

  > 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	Color	Description
DL1	green	if ON the +12 Vdc power supply from the Brake board correctly reaches the board.
DL2	yellow	if ON the +5 Vdc power supply from the Brake board correctly reaches the board.
DL3	green	if ON the +5 Vdc stabilized digital power supply is correctly generated.

  and 2 jumpers:

Jumper Name	Setting	Description
JP1	open	if closed resets the board.
JP2	closed	if closed allows the backup battery to keep the system clock active.

3.1.1.2. 500i ARM and 500i SP ARM models

The display comprises the following circuit boards:

- **ARM DISPLAY BOARD**
  This is the heart of the display: this is the circuit 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 electrical box. In fact it receives and process signals from:

  - Keyboard;
  - Cardio receiver;
  - TGS reader;
  - CSafe Board;

  > 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	Color	Description
LED1	yellow	if ON the +5 Vdc power supply from the Brake board correctly reaches the board.
LED2	green	if ON the +12 Vdc power supply from the Brake board correctly reaches the board.

3.1.1.3. 700i and 700i SP versions

The display comprises the following circuit boards:

- **386 BOARD**
  This is the circuit board which comprises the CPU, a 386 microprocessor, its logic circuits and a FLASH EPROM containing the operating program for the machine.

- **CPU BOARD**
  This is the heart of the display: this board acts as the interconnection hub for all the components of the display, and serves as the point of connection with the electrical box. In fact it:

  > receives commands of the machine program from the 386 Board;
  > sends to the 386 Board the signals received from:

  - Keyboard;
  - Cardio receiver;
  - Hand Sensor Board;
  - TGS reader;
  - CSafe Board;

- Touch sensor.

> distributes to the display the voltages received from the Power Supply Board;
> 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	Color	Description
DL1	green	if ON the +12 Vdc power supply from the Brake board correctly reaches the board.
DL2	yellow	if ON the +5 Vdc power supply from the Brake board correctly reaches the board.
DL3	green	if ON the +5 Vdc stabilized digital power supply is correctly generated.

and 2 jumpers:

Jumper Name	Setting	Description
JP1	open	if closed resets the board.
JP2	closed	if closed allows the backup battery to keep the system clock active.

3.1.1.4. 700i ARM and 700i SP ARM models

The display comprises the following circuit boards:

- **ARM DISPLAY BOARD**
  This is the heart of the display: this is the circuit 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 electrical box. In fact it receives and process signals from:

  - Keyboard;
  - Cardio receiver;
  - TGS reader;
  - CSafe Board;

  > 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	Color	Description
LED1	yellow	if ON the +5 Vdc power supply from the Brake board correctly reaches the board.
LED2	green	if ON the +12 Vdc power supply from the Brake board correctly reaches the board.

3.1.1.5. 700i E Wellness TV Touch screen

The display comprises the following circuit boards:

- **NEW CONNECTOR BOARD NCB**
  This board acts as the interconnection hub for all the components of the display, and serves as the point of connection with the electrical box. It includes connectors for the following:

  > Cardio receiver;
  > Hand Sensor Board;
  > CSafe Board;
  > AUX video input board;
  > Antenna signal;
  > Power supplies from the Brake board;
  > RS-485 serial link with the brake;
  > Touch sensor.

  It has a connector linking it to the CPU board, for transferring the collected signals.

  The board also includes an indicator LED:

LED name	Color	Description
D10	red	if ON the +12 Vdc power supply from the Brake board correctly reaches the board.

  and one Faston:

Name	Description
J2	SHLD: denotes a ground node on the circuit board.

- **CPU BOARD**
  This is the heart of the display: it is the circuit board which incorporates the CPU, a microprocessor, its control logic, the FLASH EPROM containing the operating program of the machine, and the tuner for the audio and video channels. Through the connector board, it receives signals from the various machine components.

  This circuit board is directly connected to:

  > TGS reader;
  > TTL Board;
  > Touch screen;

- Headphone jack;
- Splitter / amplifier;
- LCD power supply inverter.

The principal functions of the board are:

- 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;
- Tunes the audio and video channels;
- Manages the display of images on the LCD.

The board includes the following 2 jumpers:

Jumper Name	Setting	Description
JP1	open	if closed, resets the microprocessor
CN2	open	if closed, enables writing to the flash eprom

and a 3-pin connector (CN18) that can be used for testing the power supplies output by the board: 0 Vdc (ground), 5Vdc and 3.3 Vdc.

3.1.1.6. 700iE Wellness TV Touch screen UB model

The display includes only one board which carry out all the functions previously done by the connectors board and CPU board.

It is the circuit board which incorporates the CPU, its control logic, the FLASH EPROM containing the operating program of the machine, and the tuner for the audio and video channels. Through the connector board, it receives signals from the various machine components.

The main functions of the board are:

- 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;
- Tunes the audio and video channels;
- Manages the display of images on the LCD.
- Acts as the interconnection hub for all the components of the display, and serves as the point of connection with the brake board. It includes connectors for the following:

  - Cardio receiver;
  - Hand sensor board;
  - TGS reader;
  - Touch sensor;
  - Touch screen;
  - Headphone jack;
  - AUX input board;
  - LCD;
  - Power supply inverter for LCD;
  - Antenna signal;

- Voltage received from the brake board;
- RS-485 serial link to the brake board.

The board includes the following indicator LED:

LED name	Color	Description
D41	green	if ON the +12 Vdc supply from the AT driver box, correctly reaches the board.

and a faston:

Name	Description
J2	SHLD: denotes a ground node on the circuit board.

- **SPLITTER / AMPLIFIER;**
  This device amplifies the signal received from the antenna, separating the FM radio channel from the TV channel, which it sends to the tuner.

- **TTL BOARD;**
  This is an RGB buffer board with six bits per color, which interfaces the video signals sent from the CPU board to the LCD.

- **LCD INVERTER**
  This device powers the LCD display segments. 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.

- **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.

- **AUX INPUT BOARD**
  This board provides 3 RC connectors and one mini DIN connector for interfacing external audio visual devices to the machine. An input on this board allows the external source to be displayed on the LCD base band.

- **HEADPHONE JACK**
  The machine display has two jacks for connecting headphones. The two jacks are connected in parallel to a stereo output of the CPU board. In addition to the audio signals, the connector also includes a sense signal for routing the output to either the headphones or external speakers, if the latter are installed. The sense contact is NC and opens when the headphone jack is plugged in.

3.1.2. 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.

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

3.1.3. TGS READER

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

3.1.4. HAND SENSOR BOARD

This is the board which manages the hand sensors, interfacing them with the Display board. It processes the analog signal received from the sensors and outputs one pulse for each heart beat that is detected. The signal level is normally 5 Vdc; it goes to 0 Vdc when the user's hands are placed on the contacts, and a 5 Vdc pulse (having a width of approximately 30 msec) is output at each detected heart beat.

3.1.5. 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.

3.1.6. CONNECTORS PANEL

This is located on the side of the front platform, and provides a connector for the antenna cable (on 700i E model only).

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	Color	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 3.3 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 500i, 700i and 700i E versions.

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

3.1.10. NTC

On the machine there are two NTC thermistors used for monitoring the temperature of the Brake board and the brake winding. The monitoring of these two components makes it possible to reduce the power when a given temperature threshold is reached, or open the circuit and cut off the power altogether if this reduction fails to stop the rise in temperature.

3.1.11. POWER ENTRY MODULE

Only for 500i, 700i and 700i E versions.

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. 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 14 Step Excite machines with a 220 VAC mains supply, or 7 machines with a 110 VAC mains supply.

WARNING: If other types of machines are connected together, the maximum number is determined by their current draw.

3.1.12. ALTERNATOR

Only for 500i SP and 700i SP 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.

3.1.13. BATTERY

Only for 500i SP and 700i SP 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.

3.1.14. EXTERNAL POWER SUPPLY INPUT

Only for 500i SP and 700i SP 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.

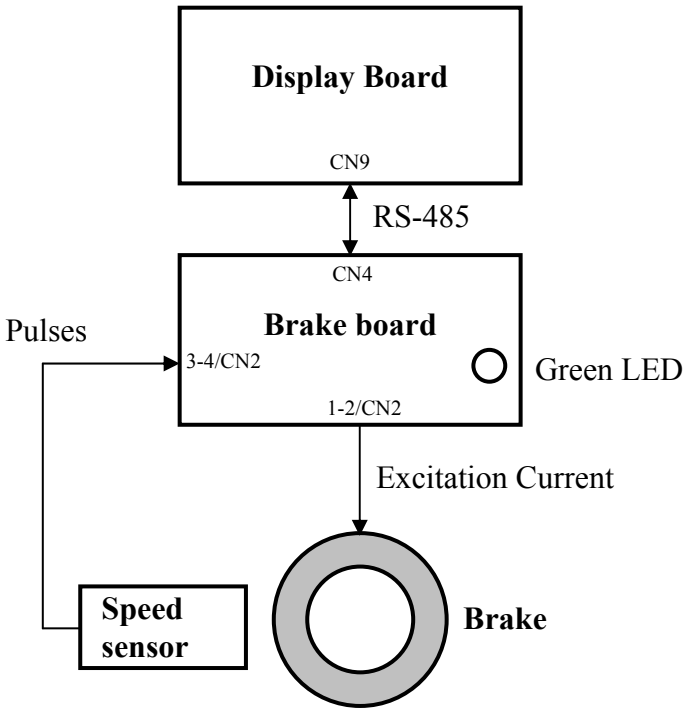
3.2. BRAKE CONTROL

3.2.1. MECHANICS

The motion of the pedals imparts a rotation to the primary shaft via the chain connected to the 2 pedals. This chain actually consists of sections of chain coupled with springs. The primary shaft is connected to the secondary shaft by means of a chain, which is in turn connected 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 exercise speed in step per minute to the Brake board via the RS-485 serial link. Based on the commands received the brake board will then apply the appropriate excitation current to the brake winding, which generates an electromagnetic field.

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

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

A higher brake excitation signal will produce a correspondingly higher exercise resistance.

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

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

NOTE: Closed-loop control.

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.
8	**OVERVOLTAGE:** this condition occurs when the +12 Vdc voltage goes above 13.7 Vdc (only on the 500i, 700i, and 700i E models).

In all the 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” 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:

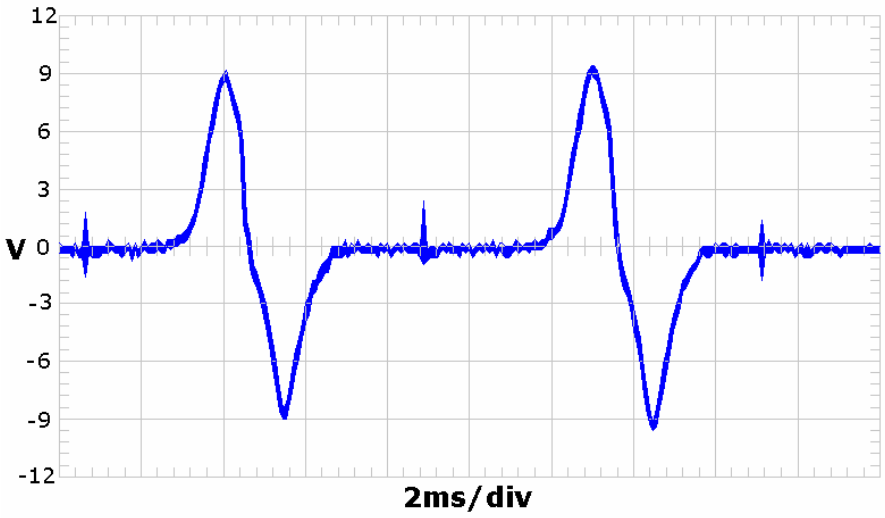


Figure 3.2-1

The signal enters the brake board (pins 3-4 on connector CN2), where it is used to determine the speed value 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.

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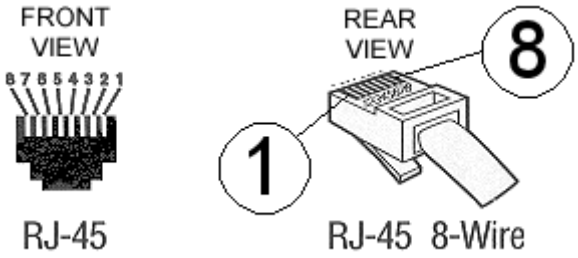
4. ACCESSORIES

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

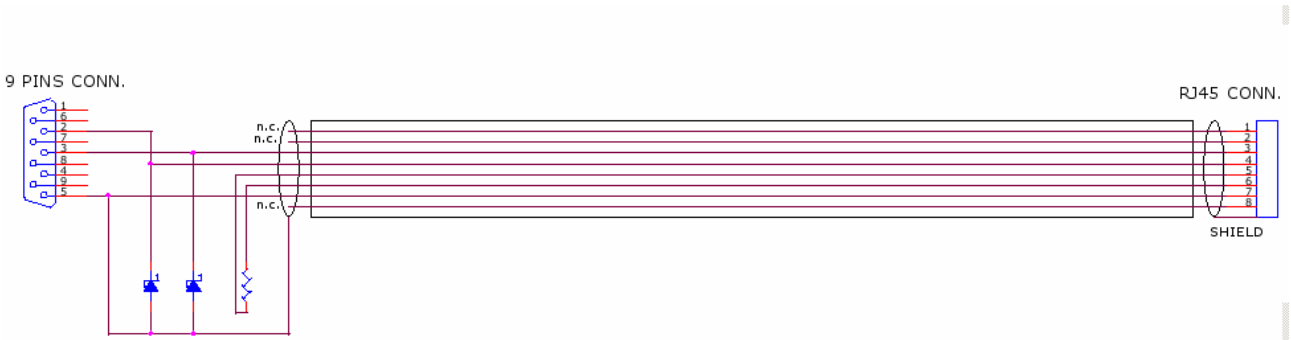
ATTENTION: for the numbering of the pins, on RJ45 connector, please refer to the diagram below:



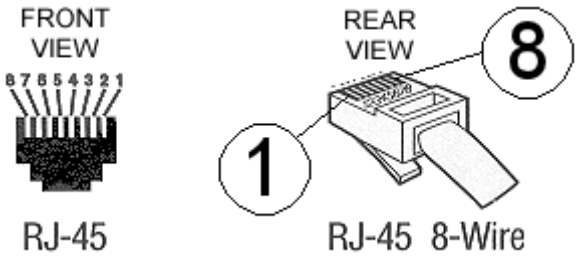
4.2. PC LINK FOR PROGRAMMING

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

The cable to use (code **0WC00434AB**) must be wired as follows:

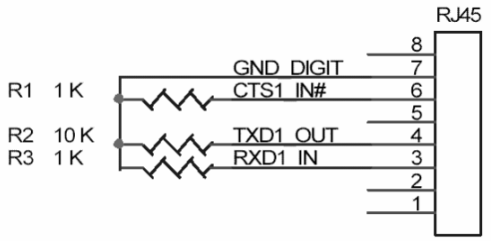


ATTENTION: for the numbering of the pins, on RJ45 connector, please refer to the diagram below:



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 H0002534AA.

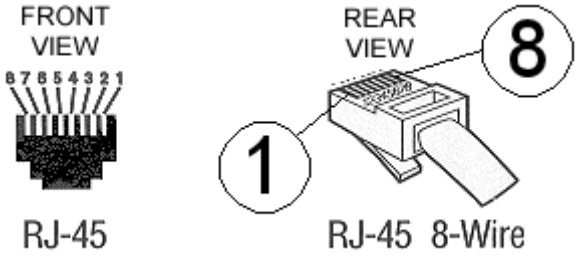
4.3. CABLE FOR EXCHANGING TV CHANNEL TUNING DATA BETWEEN TWO MACHINES

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:

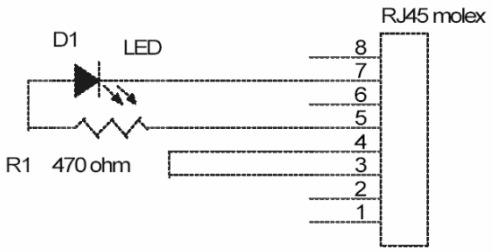
Cable			
CSafe Board; RJ45	**Signal**	**Color**	**CSafe Board; RJ45**
3	Tx	White	4
4	Rx	Brown	3
7	Digital Ground	Green	7
8	Ground Shield	Yellow	8

ATTENTION: 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 version with Wellness TV display. 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 for each machine.

WELLNESS TV UPGRADE KIT	CODE
STEP 700	A0000169AA-#

Where the character '#' must be replaced with the multistandard code matching the TV standard of the country where the machine has to be installed:

Multistandard code	TG code	TV Standard	Countries				
E	1	PAL B/G	Albania	Australia	Austria	Bahrain	Belgium
			Cameroon	Croatia	Cyprus	Czech Rep	Denmark
			Finland	Germany	Ghana	Greece	Hungary
			India	Israel	Italy	Jordan	Kenya
			Luxembourg	Malaysia	Malta	Netherlands	New Zealand
			Nigeria	Norway	Pakistan	Poland	Portugal
			Romania	Singapore	Slovakia	Slovenia	Spain
			Sri Lanka	Sweden	Switzerland	Thailand	Turkey
			United Arab E	Zambia	Zimbabwe		
	2	PAL I	Botswana	Hong Kong	Ireland	South Africa	Seychelles
			UK				
	5	SECAM E/L	France				
	6	SECAM D/K	Bulgaria	Estonia	Ex URSS	Latvia	Lithuania
			Poland	Russia	Ukraine		
	8	PAL D/K	Czech Rep	China	Poland		
	9	SECAM B/G	Saudi Arabia	Iran	Iraq	Morocco	Tunisia
			Syria				
	A	SECAM K1	French Guyana	Guadeloupe	Madagascar	Martinique	New Caledonia
			Senegal	Togo	Zaire		
U	3	PAL N	Argentina	Paraguay	Uruguay		
	4	NTSC	Bahamas	Bermuda	Canada	Chile	Costa Rica
			Guatemala	Japan	Korea	Peru	Philippines
			Taiwan	Trinidad	USA	Venezuela	
	7	NTSC M44	Mexico				
	B	PAL M	Brazil				

Table 4-1

4.5.1. INSTALLATION PROCEDURE

NOTE: It is always advisable, in any case, to upgrade the brake interface board to the latest SW version.

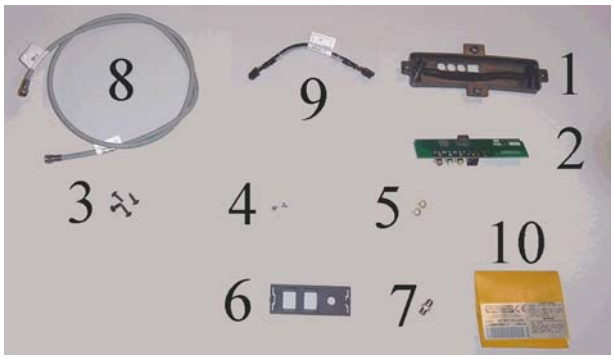


Figure 4.5-1

Figure 4.5-2

The upgrade kit consists of:

(1) External connector board cover plate (cod. **0C000550AB**);
(2) External connector board (cod. **0WQ00115AC**);
(3) Self-tapping screws 5x14 (cod. **0Z775**);
(4) Self-tapping screws 3.5x6 (cod. **0Z7018**);
(5) Washers (cod. **0Z343**);
(6) Connector plate (cod. **0G000353AB**);
(7) Union connector (cod. **0K000303AA**);
(8) STP_07 cable (cod. **0WCU0008AA**);
(9) CB-9 cable (cod. **0WC00447AB**);
(10) Code sticker (cod. **0E109**);

(11) 12-inch LCD display assembly.

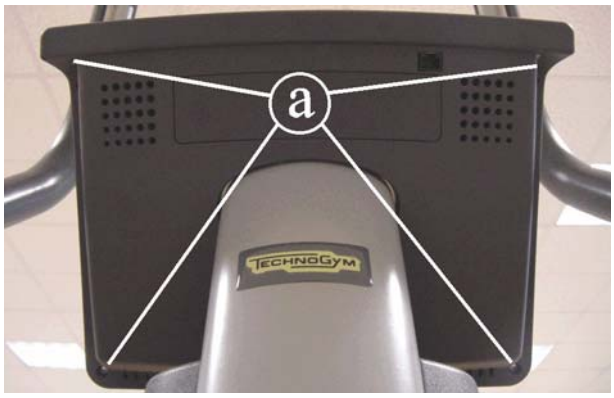


Figure 4.5-3

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

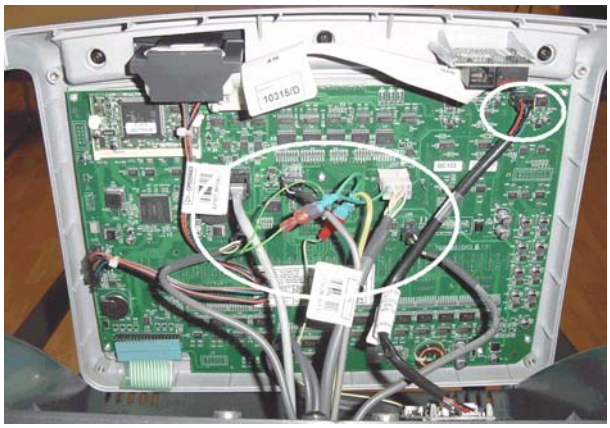


Figure 4.5-4

3. Unplug the connectors indicated in the figure.
4. Remove the display.

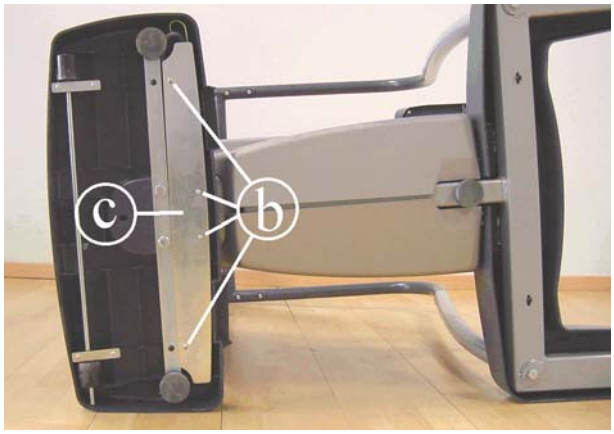


Figure 4.5-5

5. Turn the machine over on one side.
6. Back off the 4 screws **b** using a Phillips screwdriver.
7. Remove the cover **c**.

Continued on following page →

Figure 4.5-6

8. Remove connector plate **d** from the front platform.

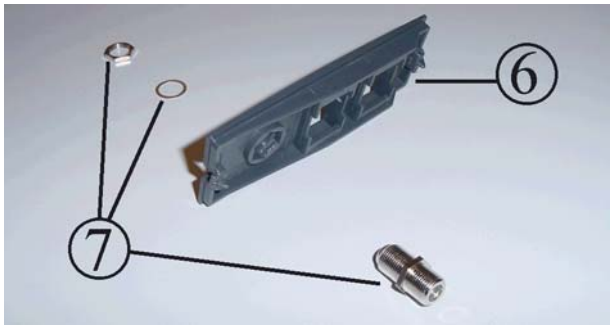


Figure 4.5-7

9. Assemble union connector **7** on connector plate **6**, securing it with its own lock-nut after inserting the washer, as shown in the figure.

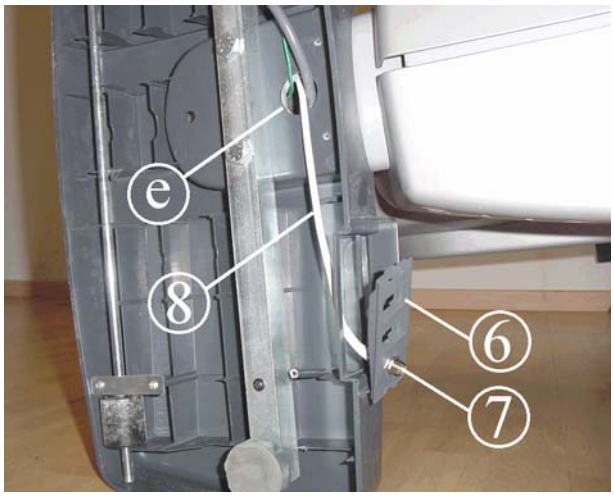


Figure 4.5-8

10. Insert cable **8** (STP_07) into hole **e**, and bring it out from the top of the machine.

If the cable doesn't pass trough the machine frame, use a cable puller.

11. Plug the lower end of cable **8** (STP_07) into union connector **7**, previously assembled on connector plate **6**.
12. Snap connector plate **6** into its seat on the platform.
13. Turn the machine back upright.

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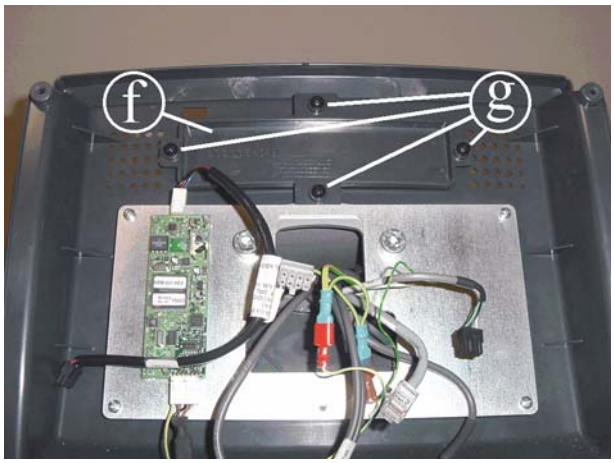

Figure 4.5-9

14. Remove cover plate **f**, backing off the 4 screws **h** using a Phillips screwdriver.

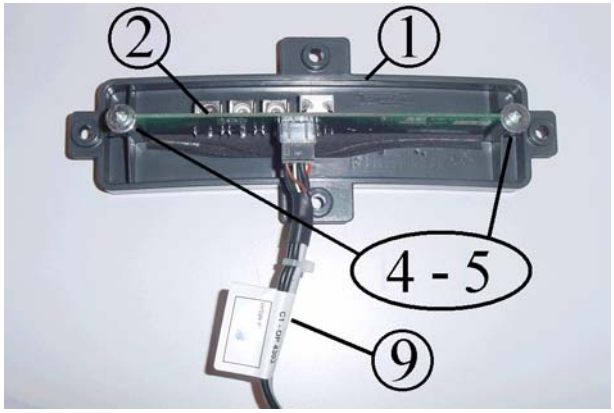

Figure 4.5-10

15. Insert external connector board **2** along the special guides on cover plate **1**, in such a way that the connectors on the board match up with the holes on the cover plate.
16. Secure external connector board **2** with screws and washers **4** and **5**, using a Phillips screwdriver.
17. Connect cable **9** (CB-9) to connector board **2**.

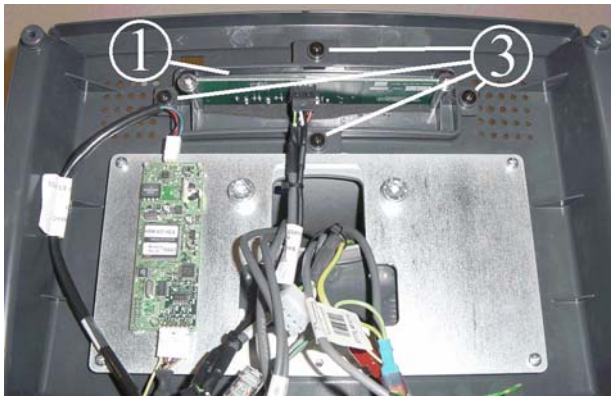

Figure 4.5-11

18. Assemble cover plate **1** inside the rear display housing, using the 4 screws **3** and a Phillips screwdriver.

Continued on following page →

Figure 4.5-12

19. Remove the covering from the LED display, backing off the 3 screws **h** using a medium Phillips screwdriver.
20. Unplug the TGS cable, if present.

Figure 4.5-13

21. Assemble the covering removed previously in step 19 onto the WTV display, and secure using the 3 screws h.
22. Connect the following cables to the WTV display:

    - Cable **8** (STP_07) on connector j1 of the connector board.
    - All the connectors previously disconnected from the display in step 3.
    - The TGS cable, if present, on connector CN8 of the CPU board.

23. Fix the new display on the machine using the 4 screws removed previously in step 2.

Figure 4.5-14

24. Affix the sticker **10** in the position indicated in the figure.
25. Turn on the machine and check that it is working properly.
26. Carry out the Wellness TV configuration and tuning procedure.

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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 2.6. “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 possible interference with the cardio receiver, no transmitters should be placed less than 1 meter from the display.

Only for 500i, 700i and 700i E 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 100 VA.
9. The maximum number of machines connected in cascade should be that indicated in paragraph 3.1.11. “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

1. Ensure that the specifications and requirements for installation have been met (see paragraph 5.1. “Specifications and requirements”).
2. To obtain a good video signal, the S/N ratio at the antenna signal input of a Wellness TV machine should be between 70 and 80 dB.

WARNING: If the machine is not connected to a terrestrial antenna--or if it is but the antenna line is split 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. The machine is shipped fully assembled and packed in a carton fixed to a wooden pallet.

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

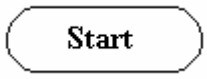
On power-up the machine performs a self-test of the upper and lower assemblies. After completing the self-test, the machine enters the stand by state, awaiting a command from the keyboard.

To check the correct operation of the machine:

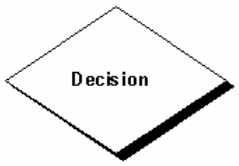
- get on the machine;
- start exercising;
- check that the displayed speed varies accordingly;
- check that exercise resistance varies when the “+” and “-“ effort level keys are pressed, or the touch sensors on the 700i, 700i SP and 700i E models are pressed, and the effort level change from 1 to 25;
- put on the heart rate meter and check that the machine correctly reads the heart rate value;
- only for 700i, 700i SP and 700i E: grasp the sensors and check that the machine correctly reads the heart rate value.
- only for 700i E: Carry out the procedure described in paragraph 9.7. **“**Touch screen calibration”.

6. TROUBLESHOOTING

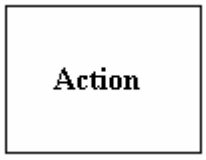
The troubleshooting procedures are illustrated by means of flow diagrams. To facilitate interpretation of these diagrams, the following standard box shapes are used:



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.

6.1. SERVICE TROUBLESHOOTING MENU

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 LED 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**

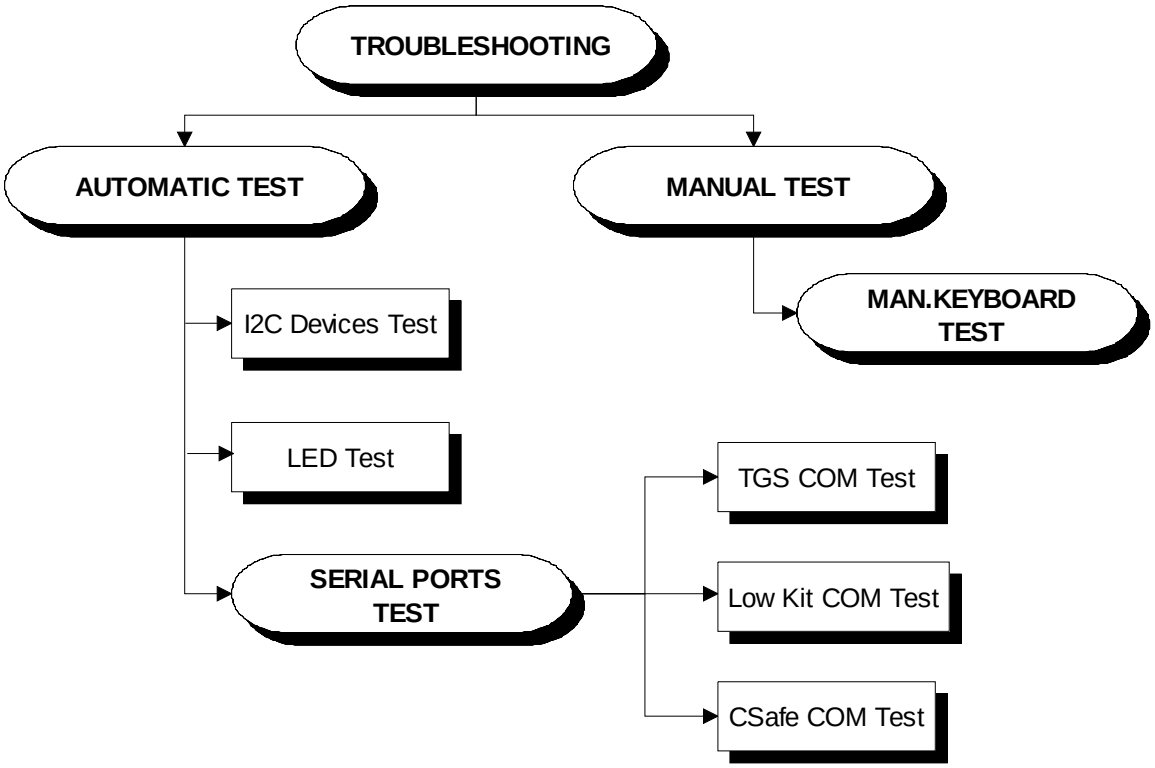
Simultaneously press the keys **369** for 700 LED models, whereas on 700 Wellness TV models the keys **0369** must be pressed one after the other. The following prompt appears on the display:

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.

6.1.1. 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.

6.1.1.1. 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.

6.1.1.2. LED Test (not on 700iE models)

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.

6.1.1.3. 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".

6.1.2. 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.

6.1.2.1. Man. Keyboard Test

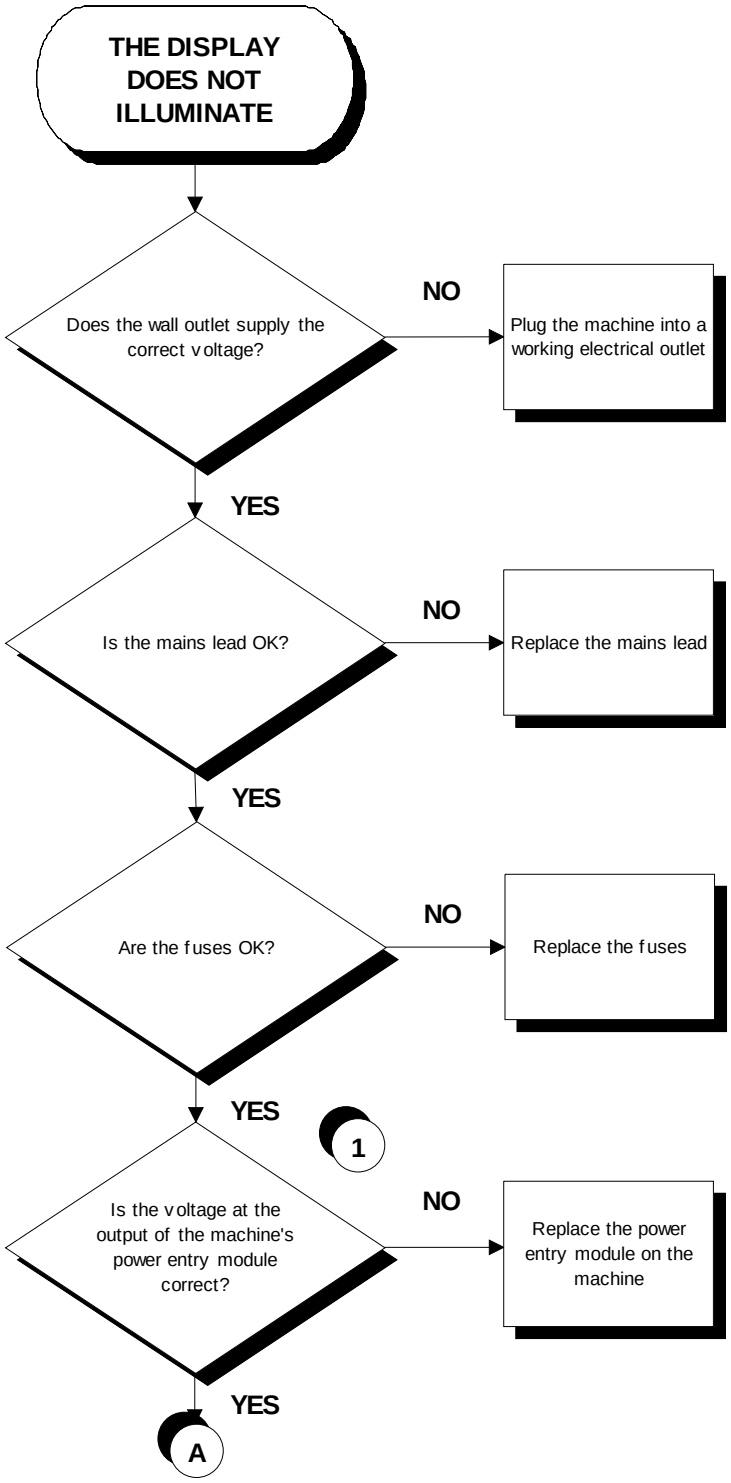
The manual keyboard test checks the functioning of all the keys on the keyboard. After accessing the test by pressing **ENTER**, the message "**Press all buttons (beep=OK)**" appears on the display. Pressing each key will produce an audible signal; if a key does not produce the beep it means it is not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

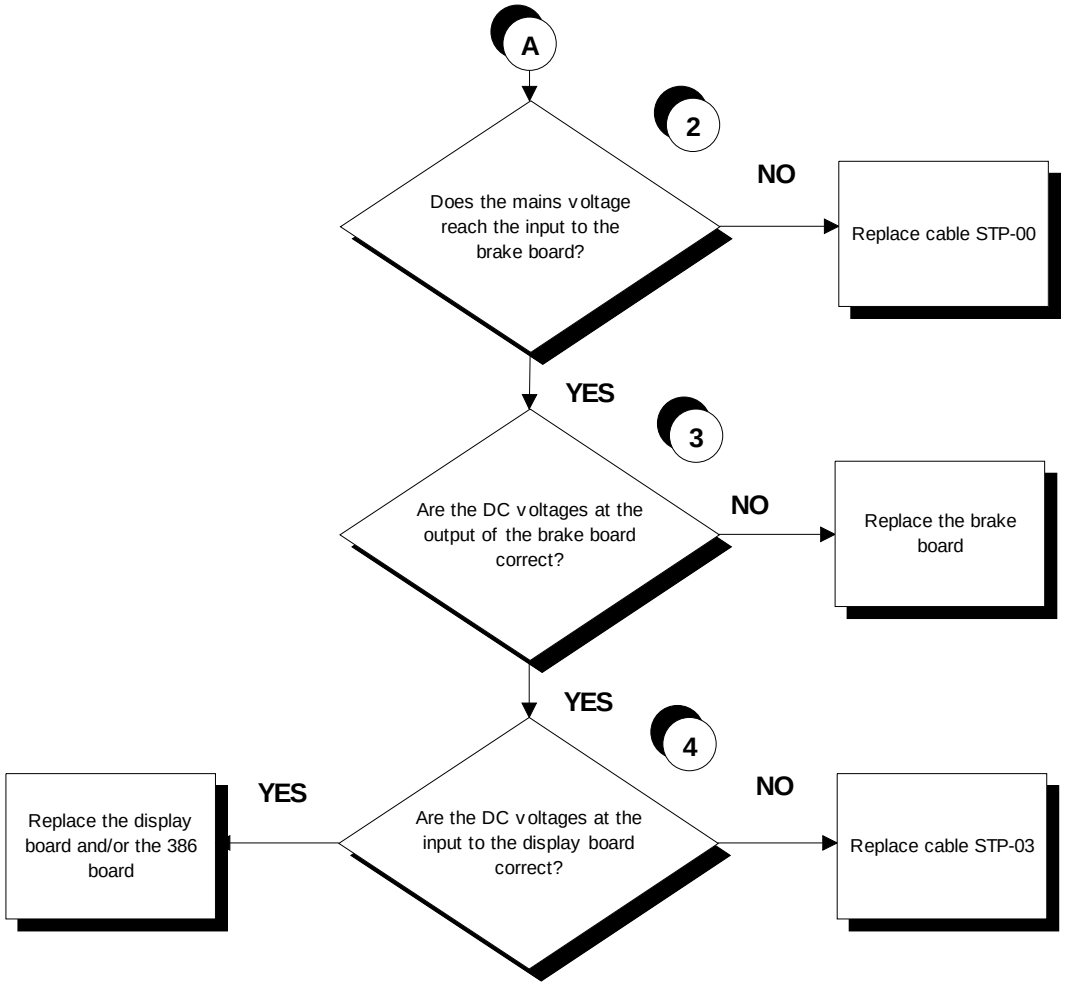
On Wellness TV machines, pressing the keys does not produce an audible signal, but if the key is working correctly it lights up green.

6.2. THE DISPLAY FAILS TO ILLUMINATE

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

6.2.1. 500I AND 700I MODELS





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.

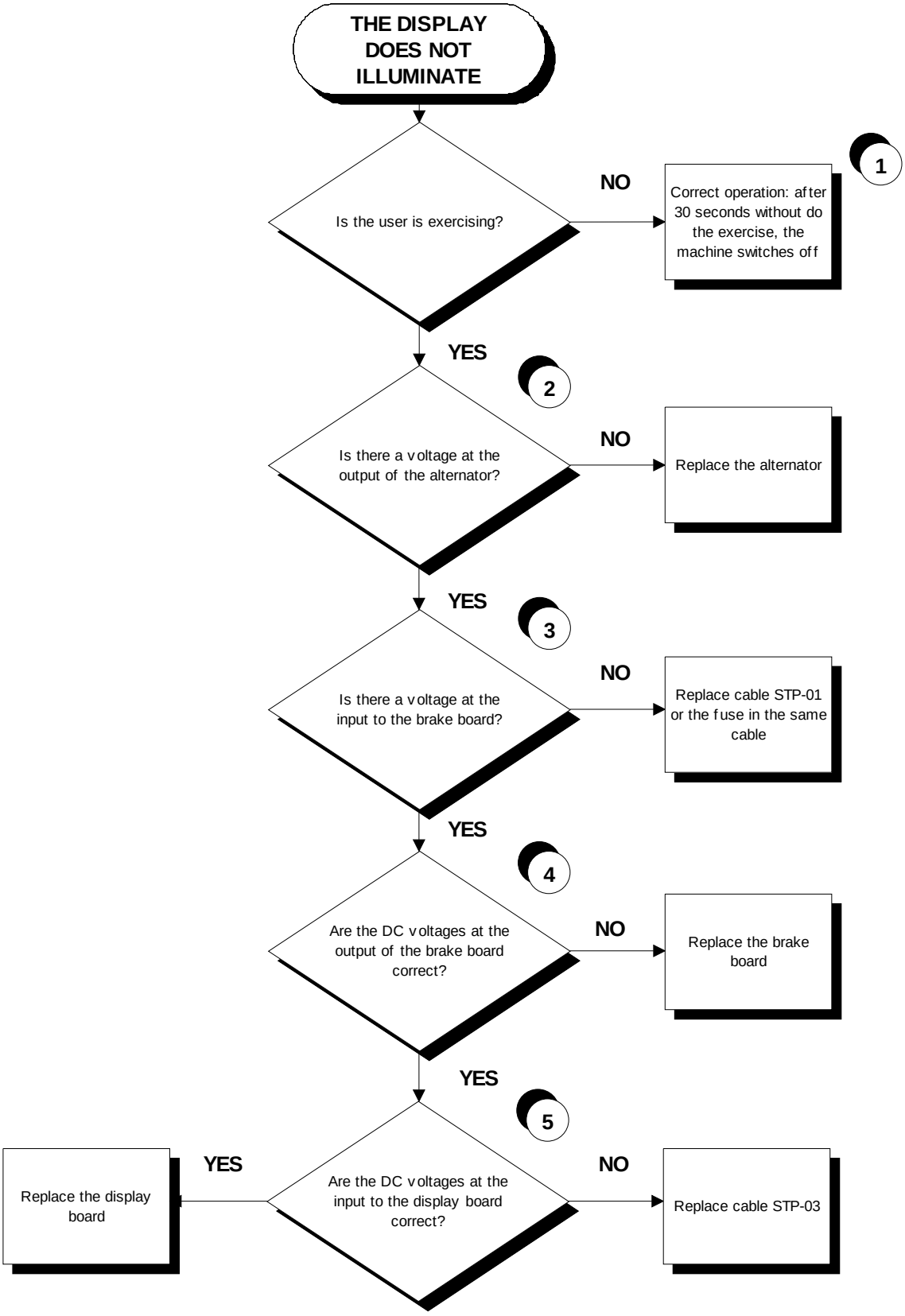
(1) Slightly lift up the fastons on the machine power entry module. Place the tester probes across the live and neutral pins on the same connector. The measured value should be approximately 220 VAC or 110 VAC depending on the mains voltage.

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

(3) Using a tester, check that all the output voltages on connector CN1 of the brake board are correct, referring to paragraph 2.8. “Wiring”.

(4) As for step (3) but on connector CN1 of the display board.

6.2.2. 500I SP AND 700I SP MODELS



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 STP-01 cable is blown.

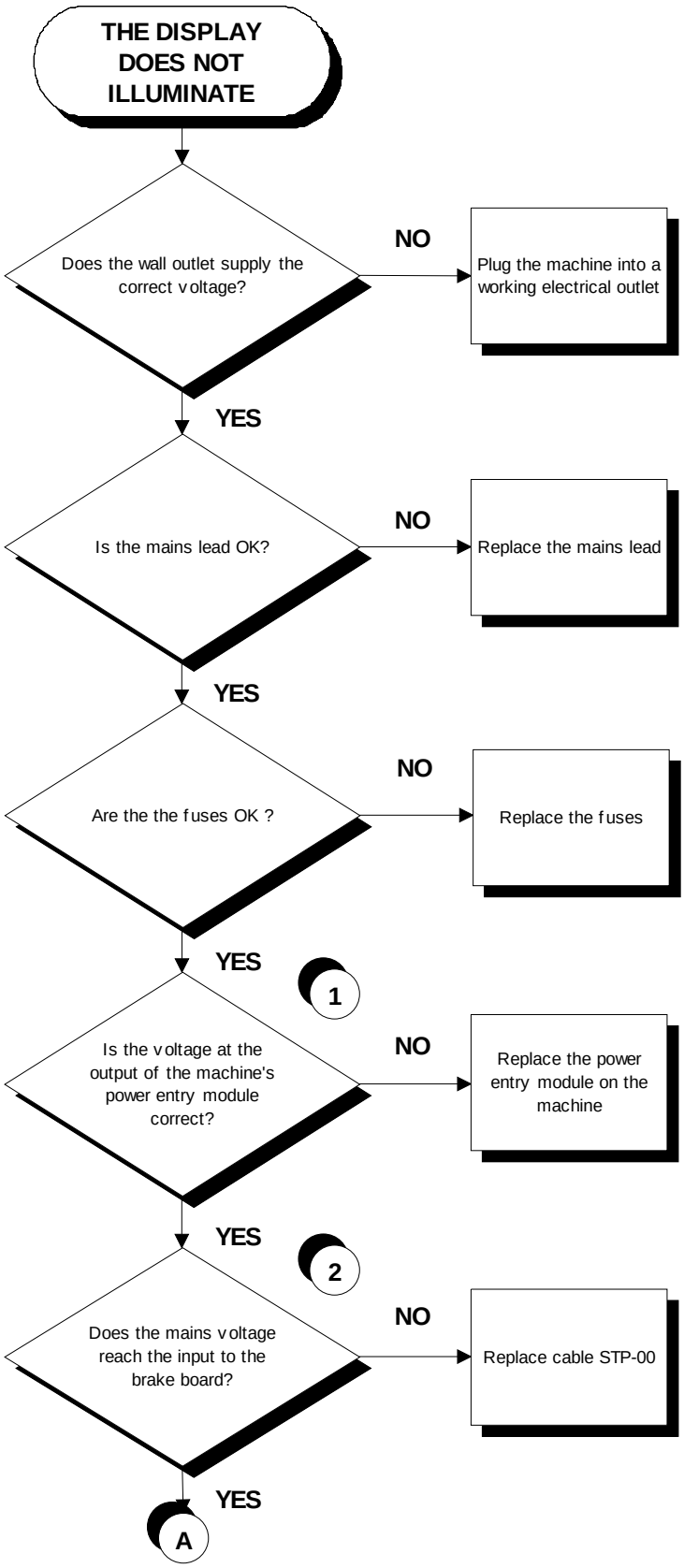
(2) Place the tester probes across the ends of the cable from the alternator. The measured voltage should be approximately 15-17 VDC at a speed of about 30 SPM.

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

(4) Using a tester, check that all the output voltages on connector CN1 of the brake board are correct, referring to paragraph 2.8. “Wiring”.

(5) As for step (4) but on connector CN1 of the display board.

6.2.3. 700I E MODEL WITH WELLNESS TV



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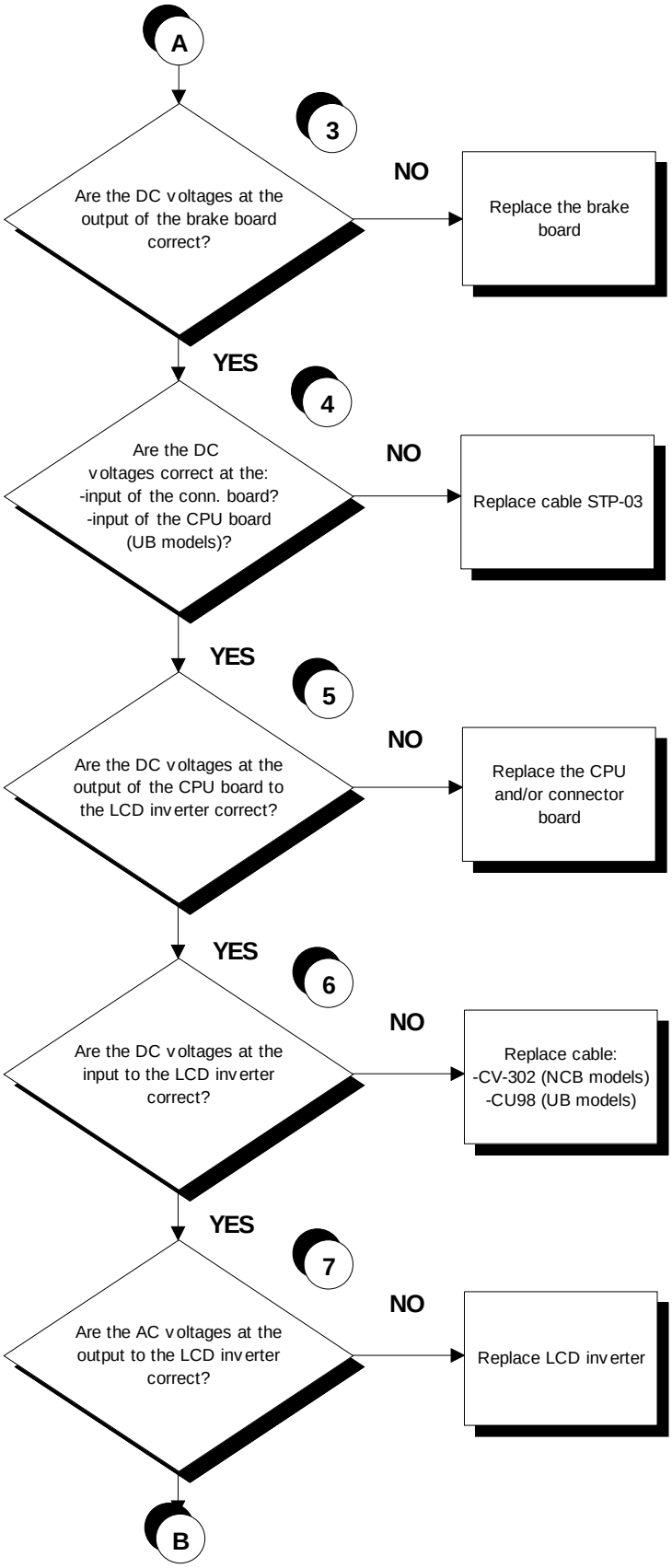
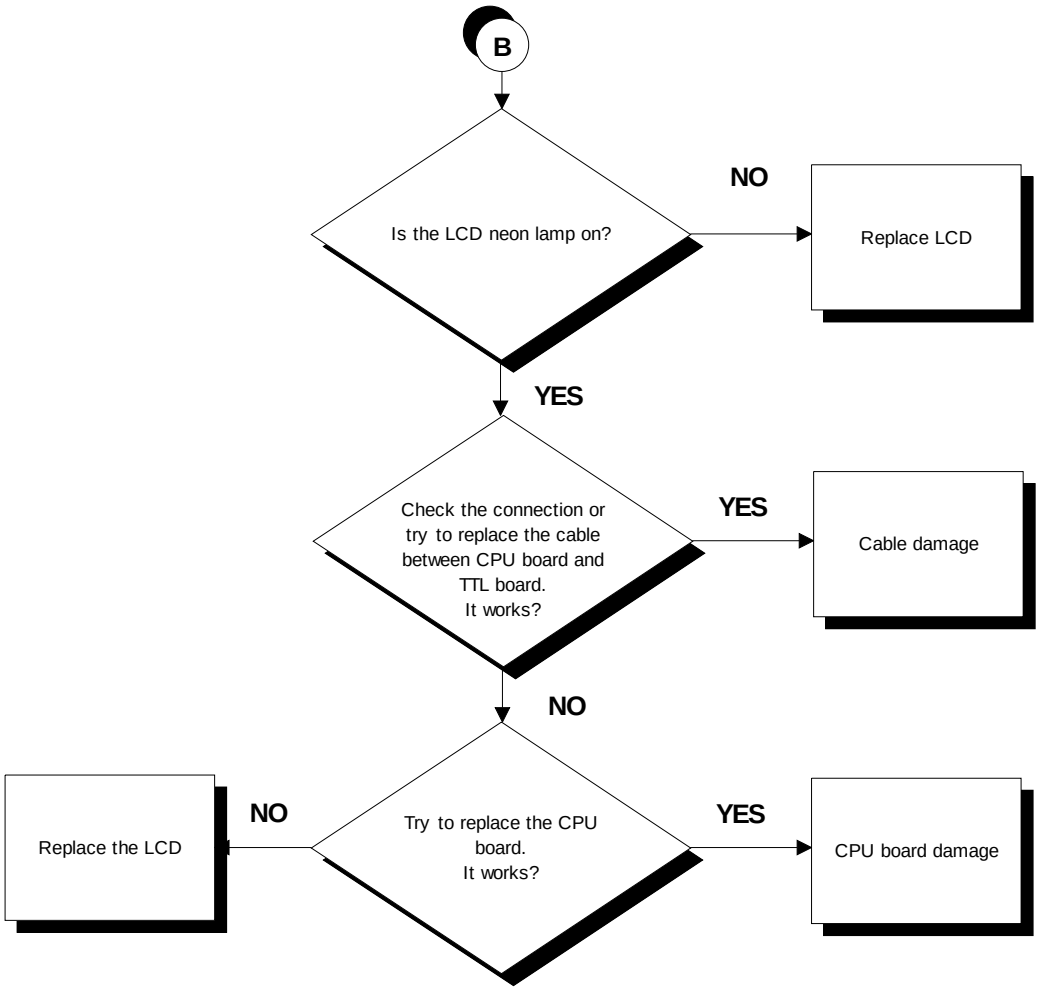


Continued on the following page.



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) Place the tester probes across the ends of the cable coming from the generator. The measured value should be approximately 110 or 220 VAC, depending on the mains voltage.

(2) As for step (1) but across pins 1 and 2 of connector CN3 on the Brake board.

(3) Using a tester, check that all the output voltages on connector CN1 of the brake board are correct, referring to paragraph 2.8. “Wiring”.

(4) As for step (3) but on connector CN16 of the connector board.

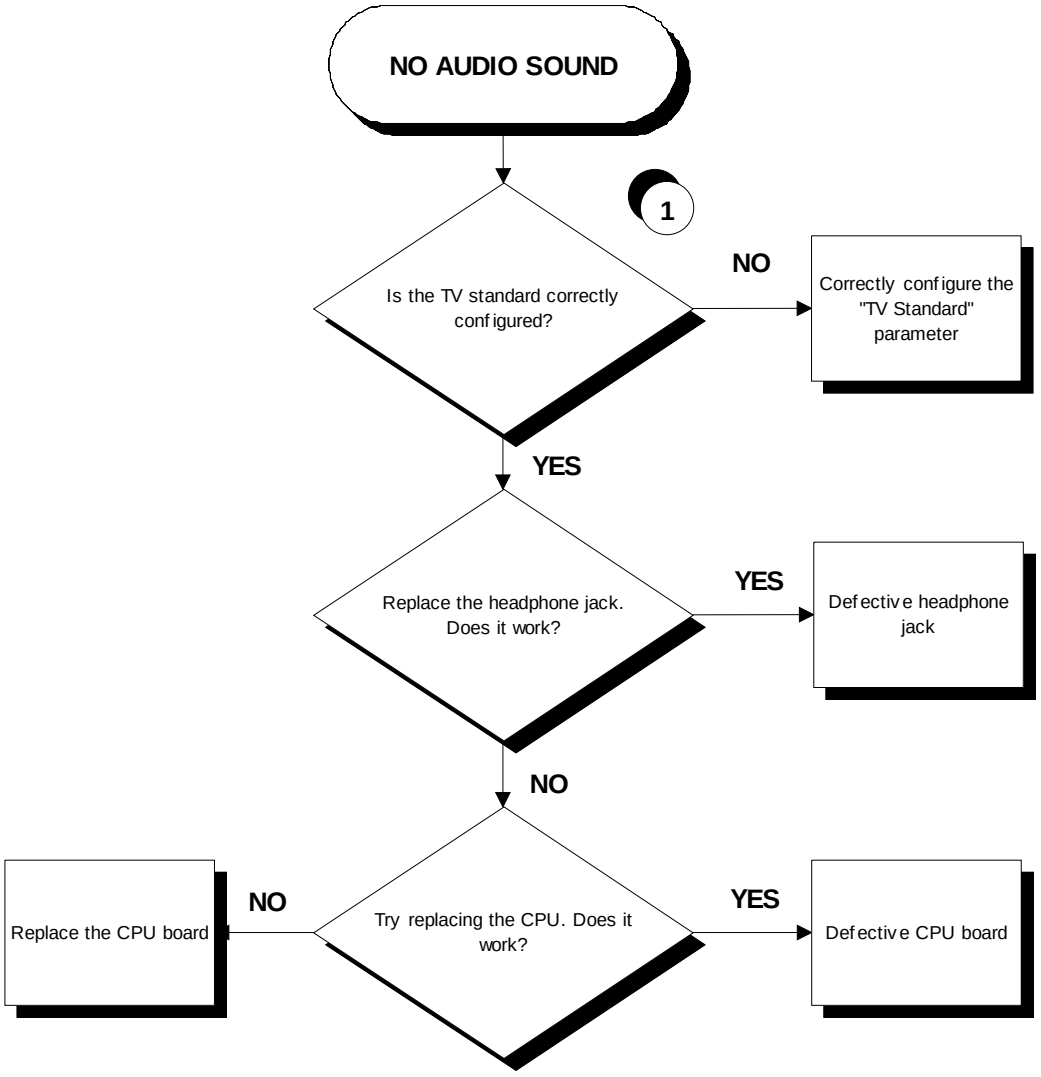
(5) As for step (3) but on connector CN5 of the CPU board.

(6) As for step (3) but on connector CN1 of the LCD inverter.

(7) Place the tester probes across the two pins of connectors CN2 and CN3 on the LCD inverter board. The measured value should be approximately 380 VAC.

6.3. NO AUDIO SOUND

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



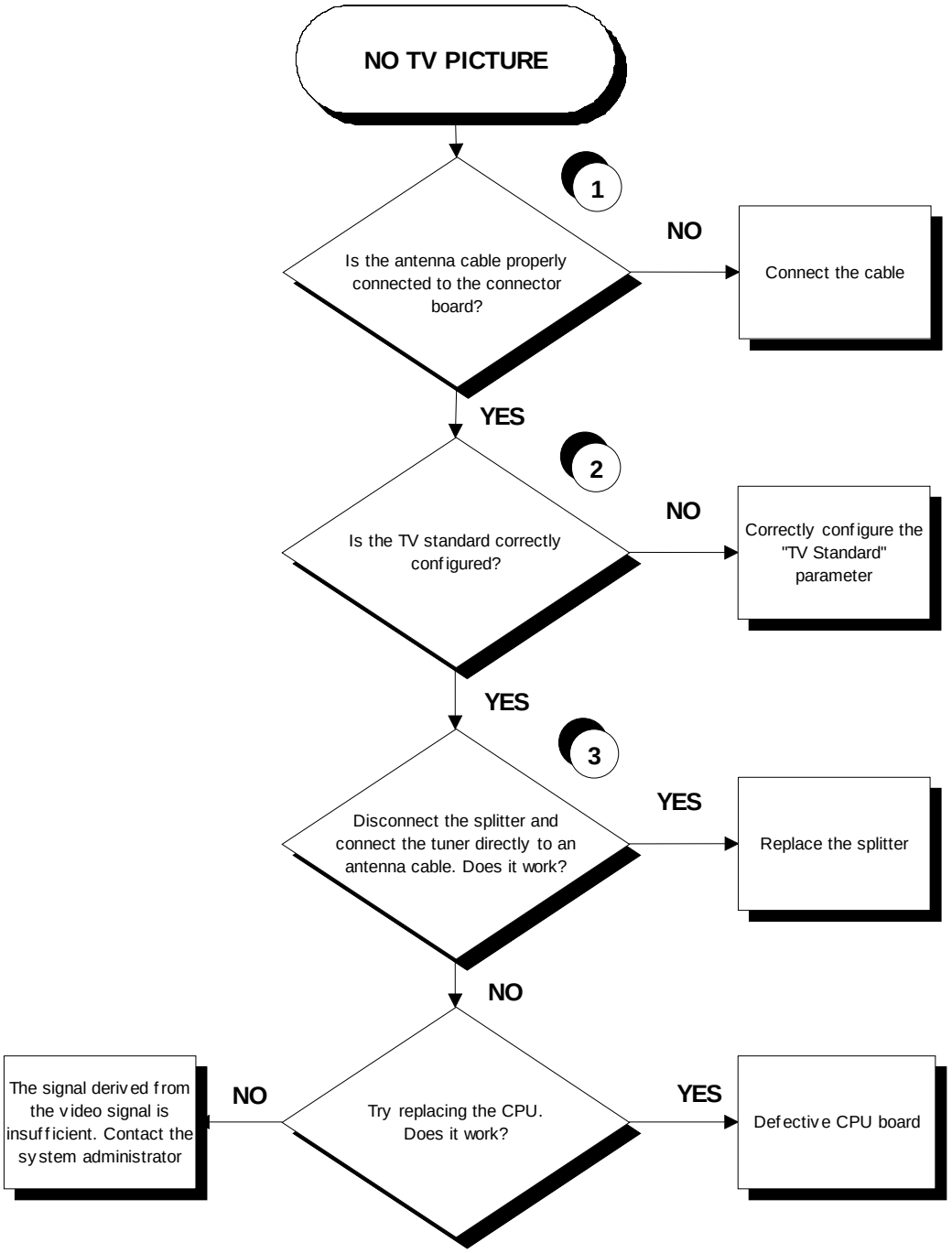
Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

(1) Carry out the configuration procedure described in paragraph 9.3.12. “TV Standard (700i E version only)”.

6.4. 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.



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 connector J1 on the connector board.

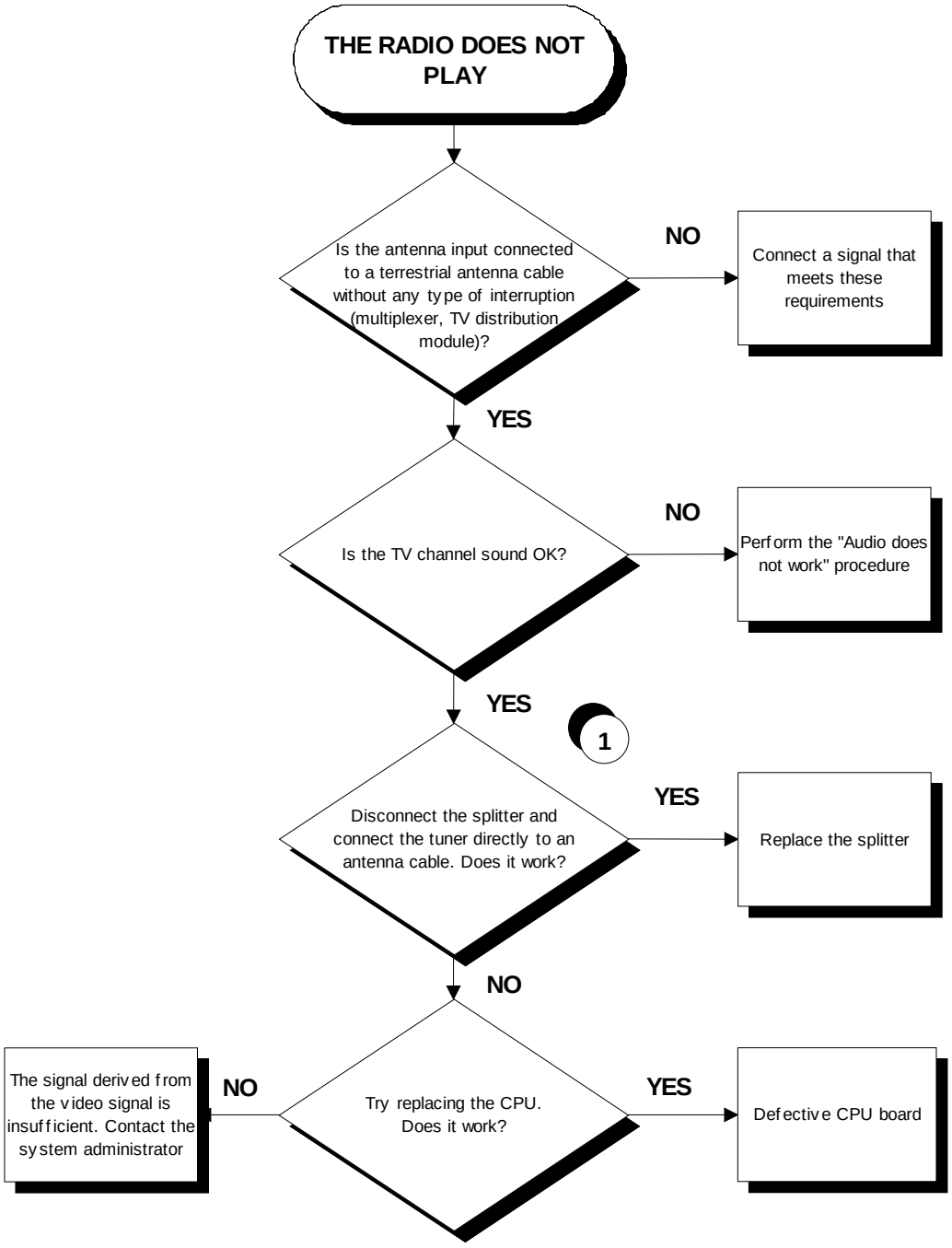
(2) Carry out the configuration procedure described in paragraph 9.3.12. "TV Standard (700i E version only)".

(3) For models with European electronics, unplug the antenna cable from the connector board and plug it into the tuner; while for models with US electronics, plug the external antenna cable into the tuner.

6.5. THE RADIO DOES NOT PLAY

The radio signal can only be acquired from an analog antenna signal. If the machine is connected to a digital source it will be impossible to use the radio function.

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



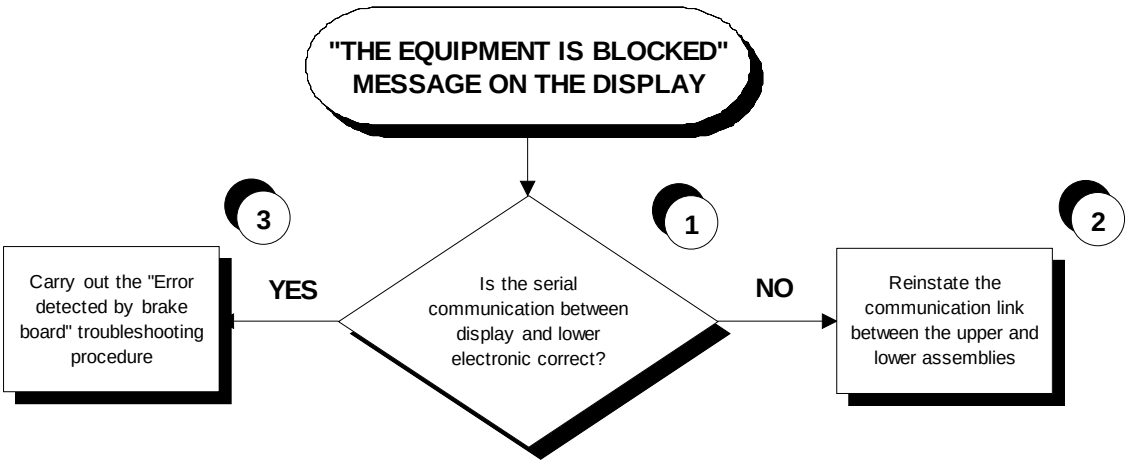
Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

(1) After disconnecting the splitter from the tuner, procure a female RC connector and a copper wire about 1.5 m long. Connect the copper wire to the tuner through the RC connector, so that it serves as an antenna.

6.6. "THE EQUIPMENT IS BLOCKED" MESSAGE ON DISPLAY

This error message can be caused by:

- loss of communication between the lower and upper assemblies;
- the brake board has detected an error condition, causing it to generate an alarm and store the error code in memory.



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) Use the serial communications test described in paragraph 6.1.1.3 "Serial Ports Test".

(2) To reinstate communications between the lower and upper assemblies:

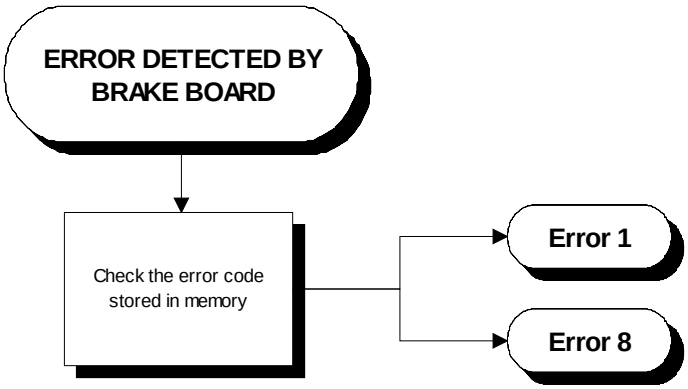
- check that cable STP-04 is correct using the Test Box Excite;
- try replacing the brake board and the display board in turn, and check whether the communication works.

(3) Check whether the brake interface board is in an error condition, by accessing the "Low kit fault code" function in the "Low kit menu" described in paragraph 9.3.6.2 "Low Kit fault code".
If the displayed parameter value is "0", there is no error condition.

6.7. ERROR DETECTED BY BRAKE BOARD

When the brake board detects an error, it stops and interrupts the power supply to the brake winding, writes a code identifying the fault condition to the error history log and sends an error status signal to the display board. When this error signal is received by the display board, it interrupts the exercise and shows the "THE EQUIPMENT IS BLOCKED" message on the display.

The errors logged by the brake board can also be viewed from the machine keyboard as described in paragraph 9.3.4. "Errors log" or in paragraph 9.3.6.2 "Low Kit fault code".



The following paragraphs describe the troubleshooting procedures for these cases.

6.7.1. BRAKE BOARD ERROR 1

This code indicates an overheating error: this condition occurs when the temperature detected by the sensor on the circuit board exceeds 90°C.

Try switching the machine off for 1 hour. If it resumes working correctly, the machine probably overheated as a result of intensive use. If, on the other hand, the error persists, it is necessary to replace the Brake board.

6.7.2. BRAKE BOARD ERROR 8

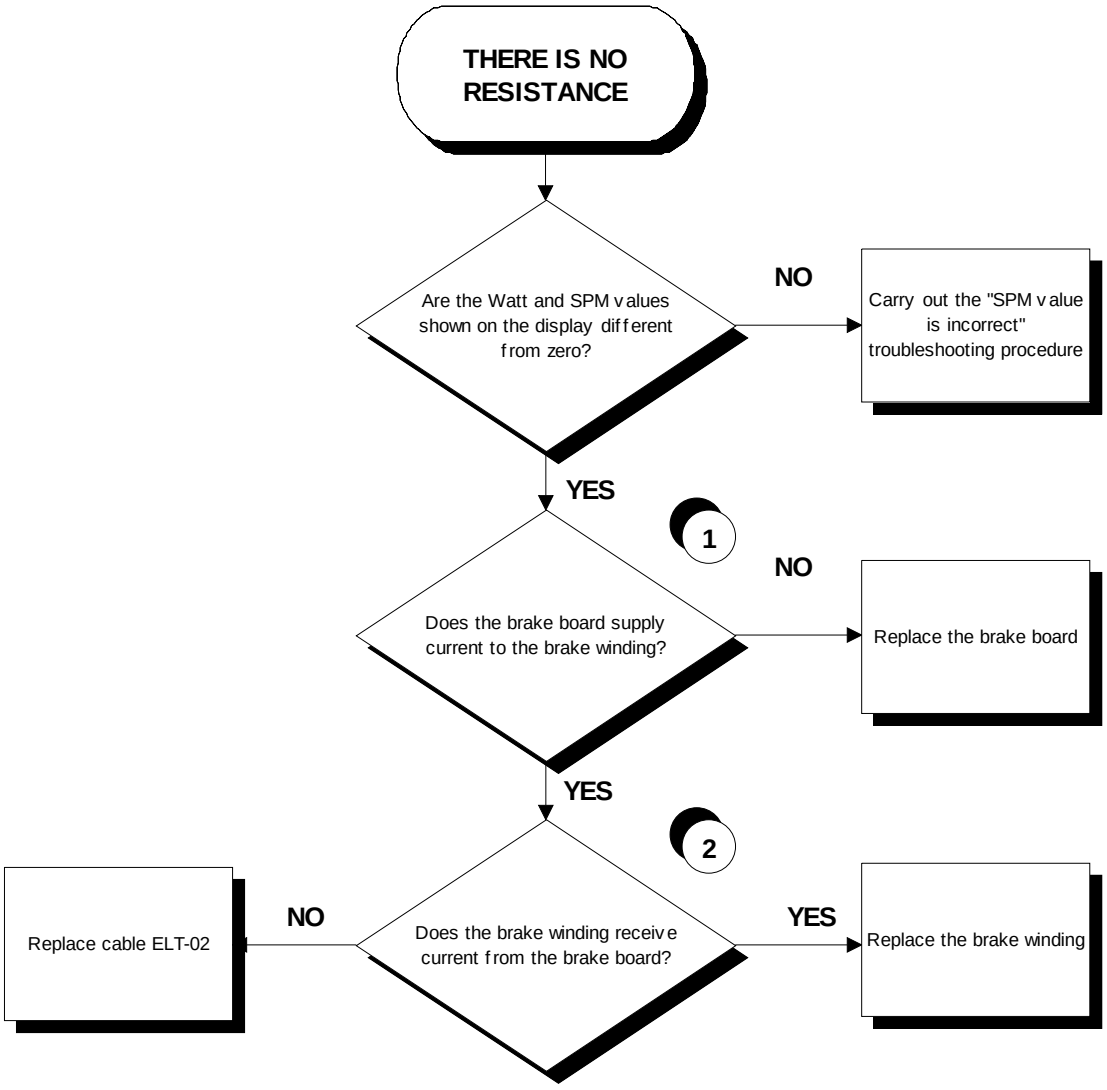
This code indicates an overvoltage error: this condition occurs when the +12 Vdc voltage exceeds 13.7 Vdc.

This error is caused by surges in the voltage output by the power supply section of the Brake board, as a result of defective components. If the error persists or recurs frequently, replace the Brake board.

6.8. 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:

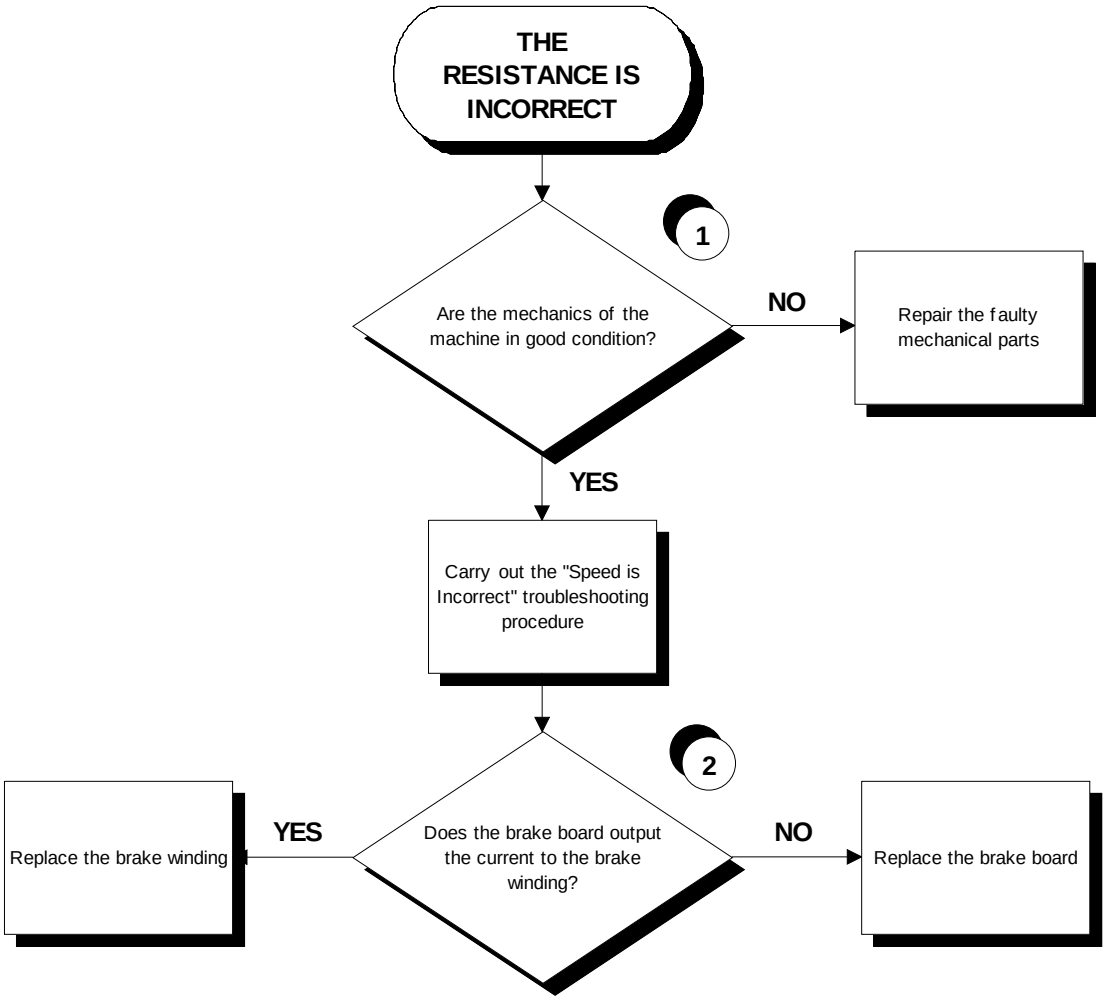
(1) Disconnect the brake winding and measure the current output by the brake board with a load of at least 5 Ohm and 80 Watts. The value should be different from 0 A.

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

6.9. 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:

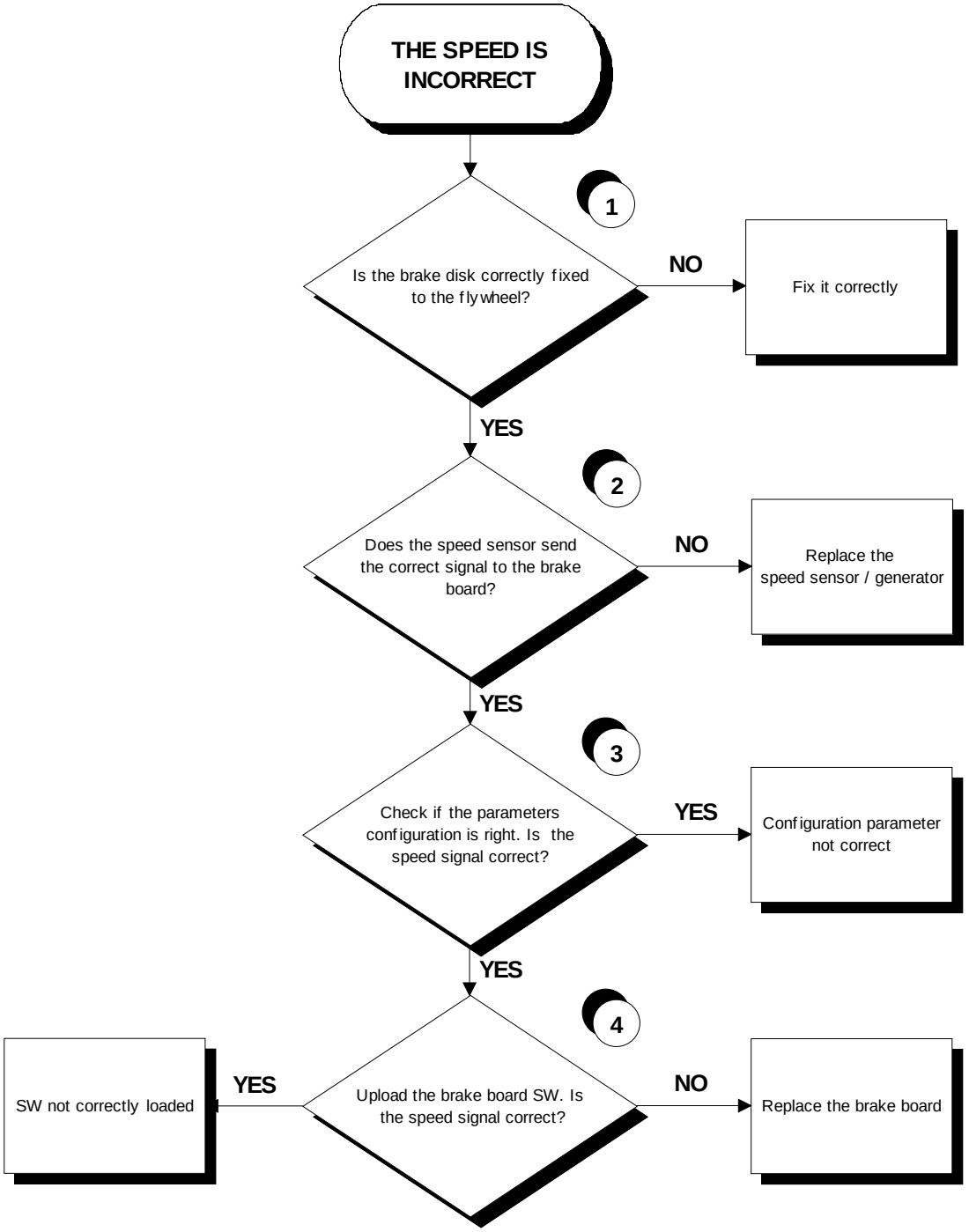
(1) Check that the mechanical system, consisting of the pedals, belt and brake, moves smoothly and without higher than normal friction or resistance.

(2) Measure the voltage supplied by the brake interface board to the winding. In QUICK START mode, select the effort level and check that the value is different from 0.

6.10. 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) Check that the 6 screws fixing the disk brake to the flywheel are all locked down.

The speed sensor detects the heads of these screws.

(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 SPM the frequency of the signal should be 136 Hz.

Self-Powered models: Check the signal on the STP-01 cable referring to paragraph 2.8. "Wiring". The measured signal should be that indicated in Figure 3.2-1. In addition, when pedaling at 80 SPM the frequency of the signal should be 136 Hz.

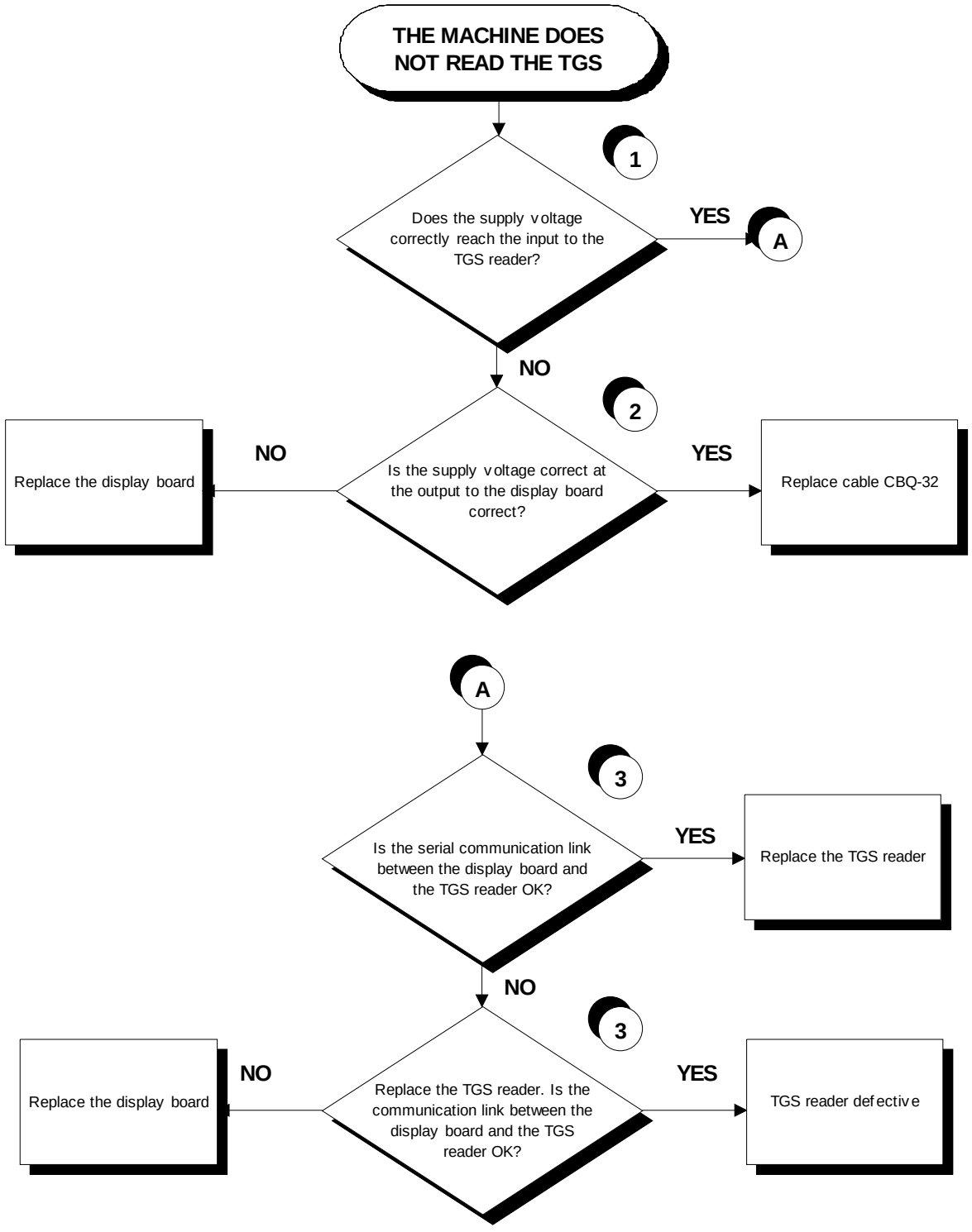
The speed signal can also be observed qualitatively, using a multimeter. The value should be 0 Vdc when the machine is stopped, and gradually increase as the speed increases.

(3) Launch the default setting for the low kit parameters.

(4) Update the low kit SW uploading both firmware and brake table. At the end launch the default setting for the low kit parameters.

6.11. 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 3 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 CN7 on the display board.

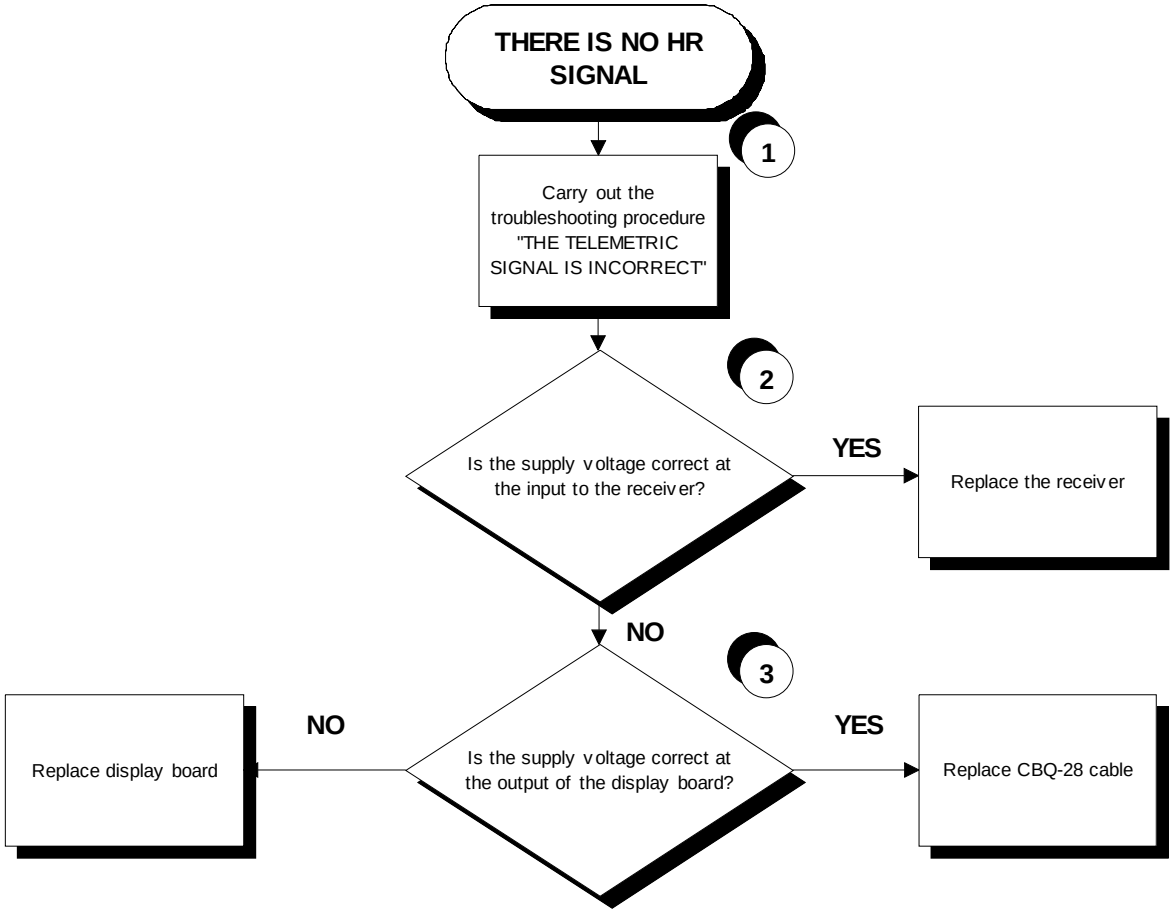
(3) Use the serial communications test described in paragraph 6.1.1.3 “Serial Ports Test”.

6.12. THERE IS NO HEART SIGNAL

6.12.1. 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 6.13. “The telemetric heart rate signal is incorrect”.

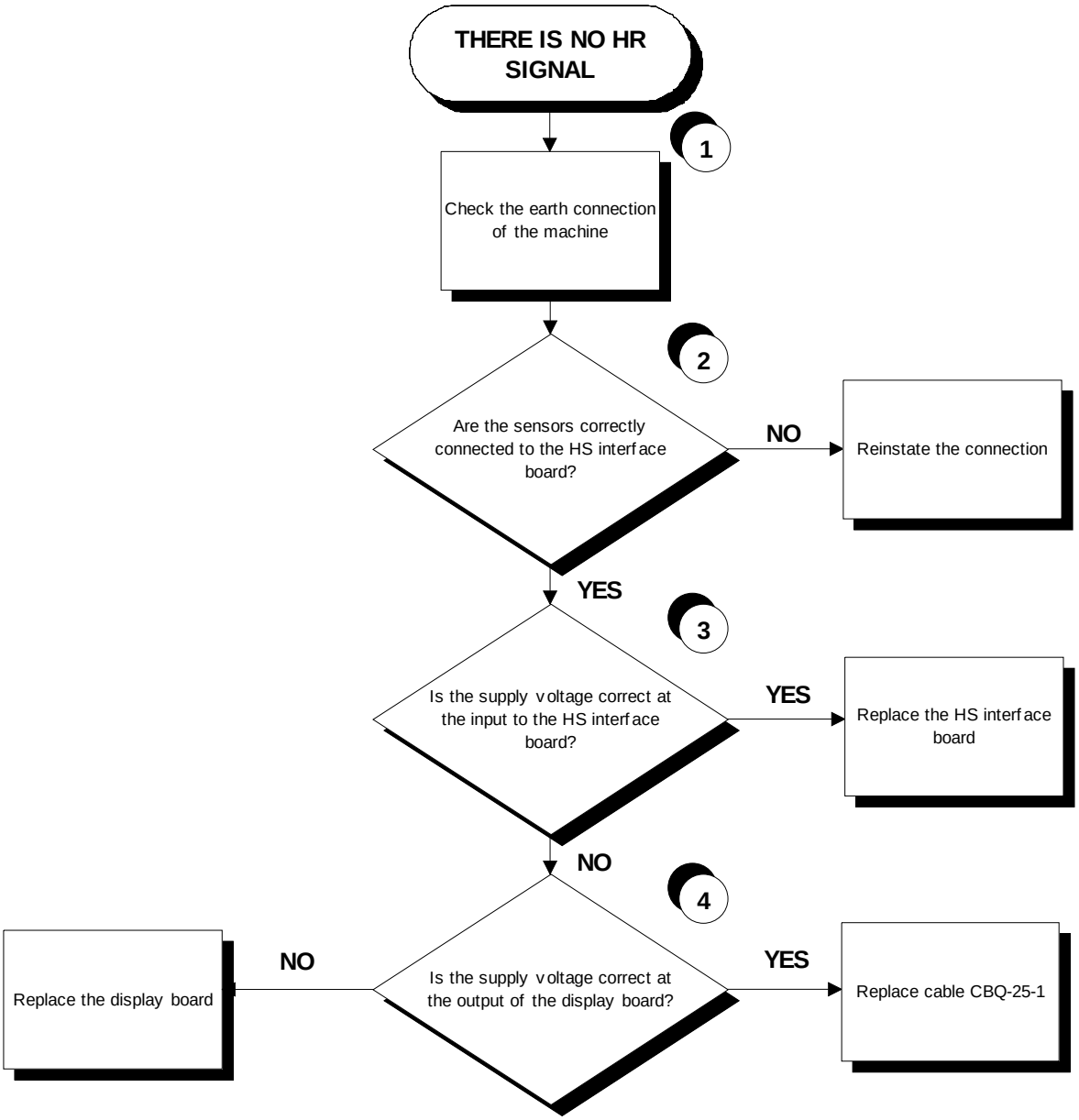
(2) Place the tester probes across pins 1 and 3 of connector CN1 of the receiver. The measured value should be +5 Vdc.

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

6.12.2. 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.



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 Ohm.

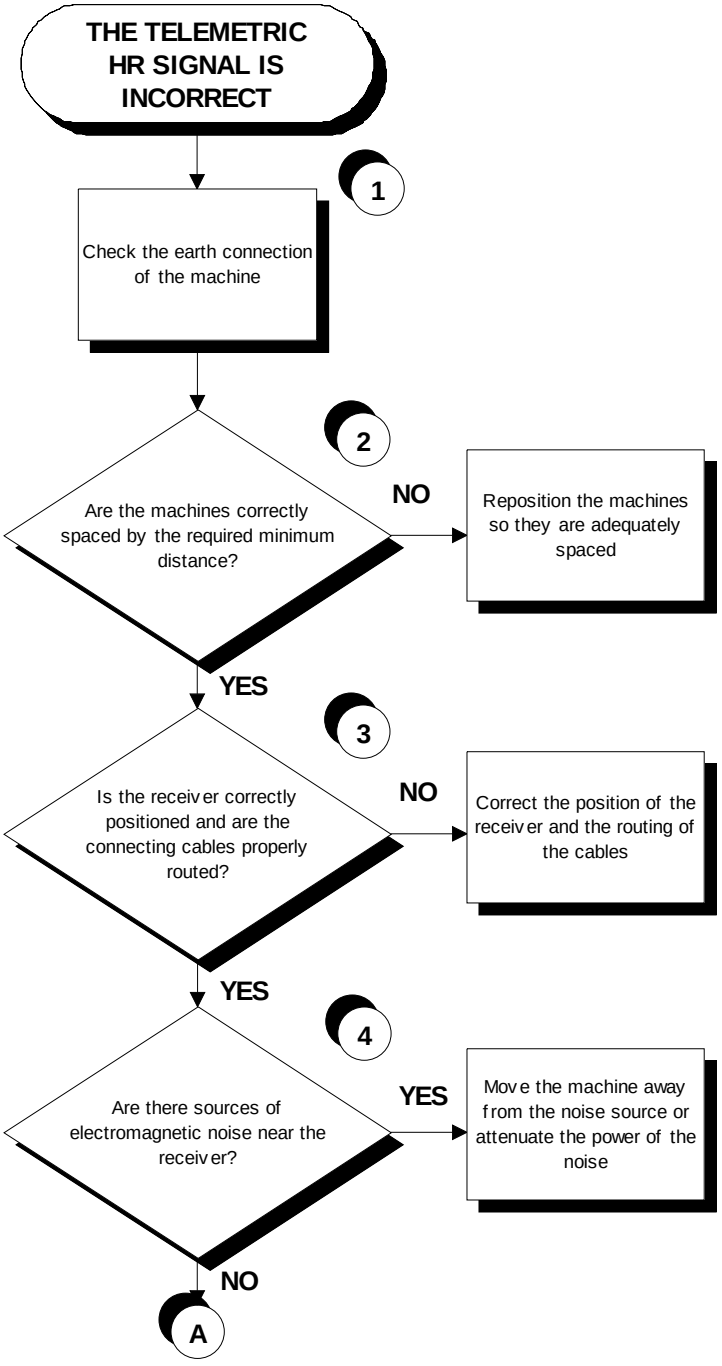
(2) Check the connections, referring to paragraph 2.8. “Wiring”.

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

6.13. THE TELEMETRIC HEART RATE SIGNAL IS INCORRECT

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



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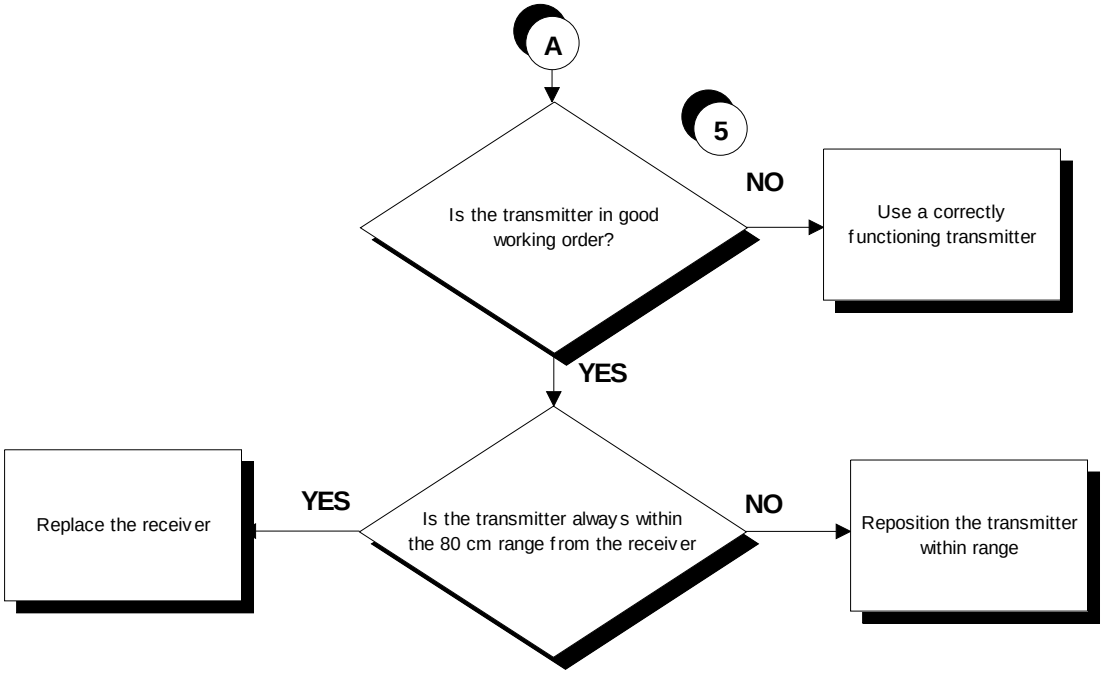
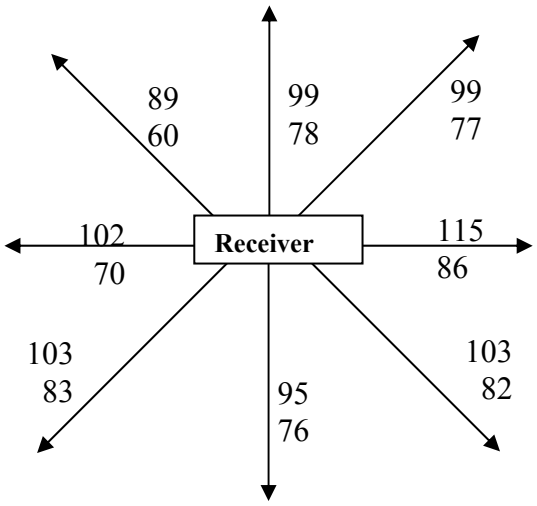


Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

(1) Check 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 Ohm.

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

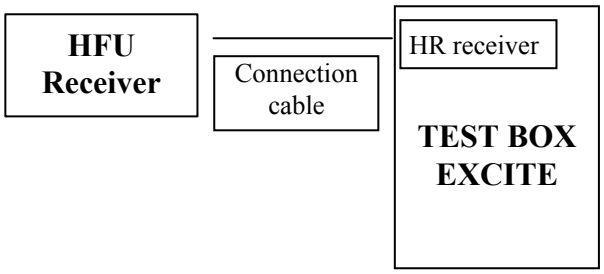


where:

1. The distances are in centimeters.
2. The smaller number indicates the maximum locking distance for signal reception at the start of the exercise.
3. The higher number indicates the maximum reception distance during the exercise.

(3) Check that the cardio receiver has been assembled properly as described in the procedure 7.4. "Disassembling the cardio receiver".

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



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

(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 80 cm from the receiver.

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7. DISASSEMBLY OF COMPONENTS

7.1. DISASSEMBLING THE DISPLAY

7.1.1. 700I AND 700I SP LED VERSION

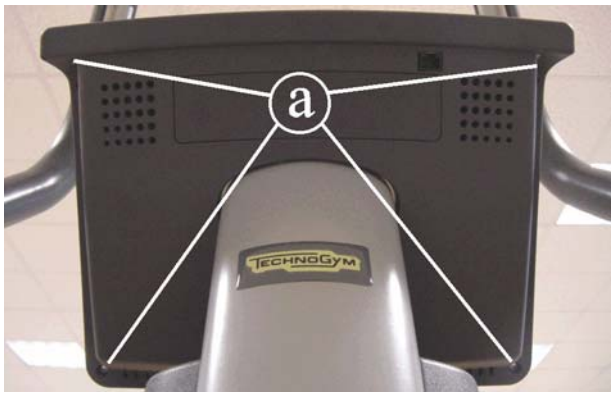

Figure 7.1-1

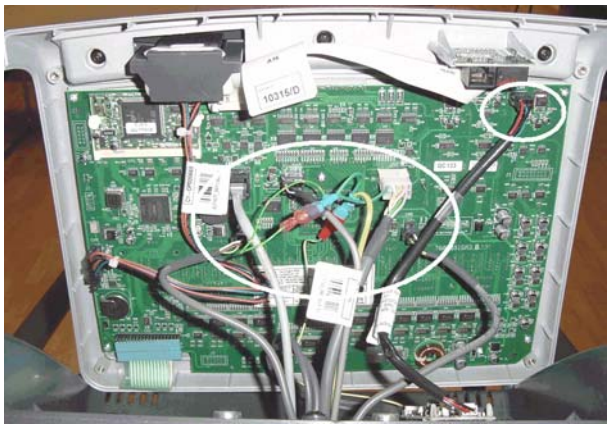

Figure 7.1-2

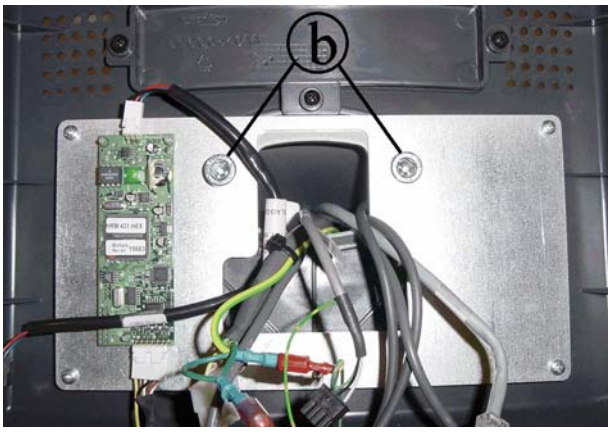

Figure 7.1-3

1. Turn off the machine and unplug the mains lead from the wall outlet.
2. Back off the 4 screws **a** using a medium Phillips screwdriver.
3. Unplug the connectors indicated in the figure at left.
4. Remove the display.
5. Back off the 2 screws **b**, using an 8-mm hex wrench, to remove the rear display support.

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

7.1.2. 700I E WELLNESS TV TOUCH SCREEN VERSION

Figure 7.1-4

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

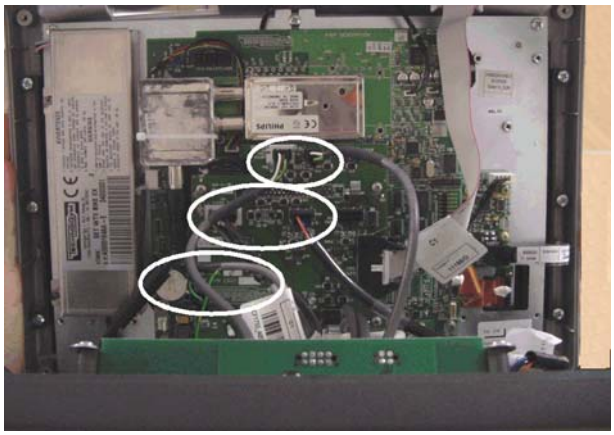

Figure 7.1-5

3. Unplug the cables indicated in the figure from the connector board and the CSafe board.
4. Remove the display.

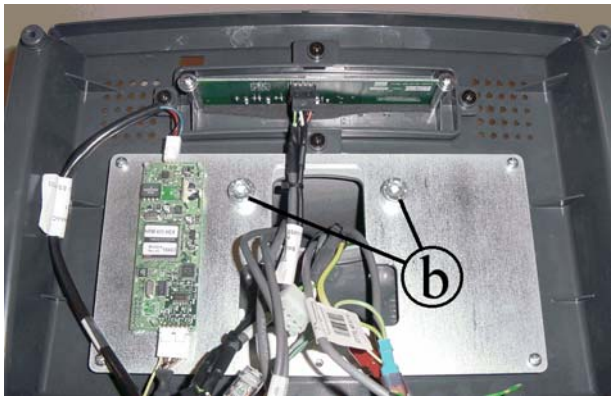

Figure 7.1-6

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

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

7.1.3. 500I AND 500I SP VERSION

Figure 7.1-7

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

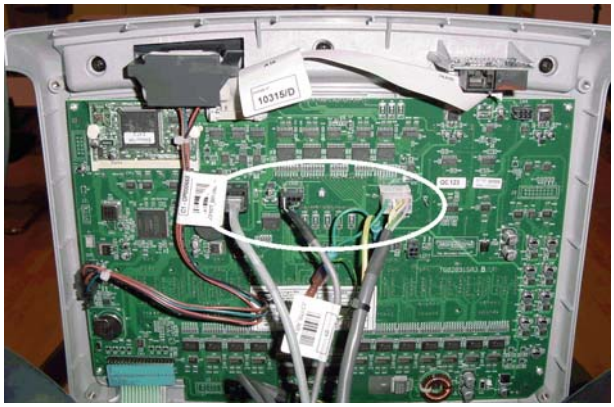

Figure 7.1-8

3. Unplug the connectors indicated in the figure at left.
4. Remove the display.

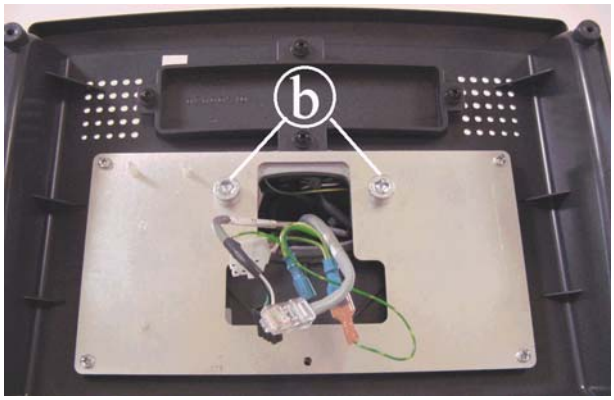

Figure 7.1-9

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

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

7.2. DISASSEMBLING THE CIRCUIT BOARDS FROM THE DISPLAY

7.2.1. 700I AND 700I SP LED VERSION

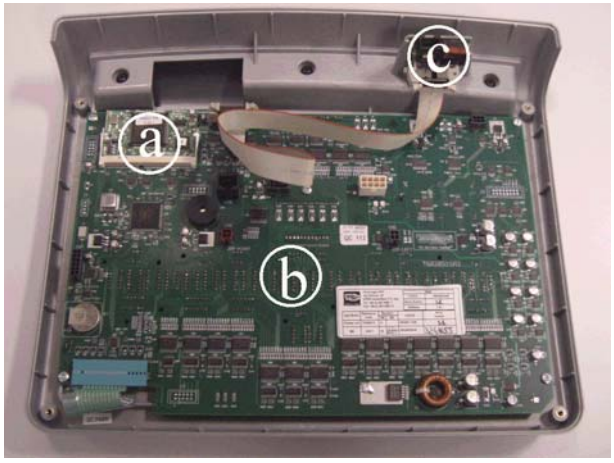

Figure 7.2-1

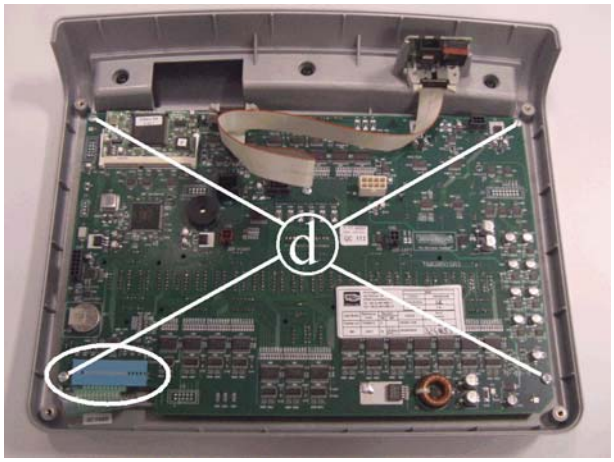

Figure 7.2-2

Figure 7.2-3

Carry out the procedure described in paragraph 7.1. “Disassembling the display”.

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

- The 386 board **a**;
- The display board **b**;
- The CSafe board **c**.

386 board **a**:

1. Remove the hot glue and release the fixing tabs. The board will lift up slightly.
2. Extract it from the connector on the display board.

display board **b**:

1. Unplug the keyboard connector indicated in the figure.
2. Back off the 5 screws **d** using a medium Phillips screwdriver.
3. Remove the circuit board.

CSafe board **c**:

1. Unplug the connector indicated in the figure.
2. Remove the circuit board from the top.

Continued on following page →

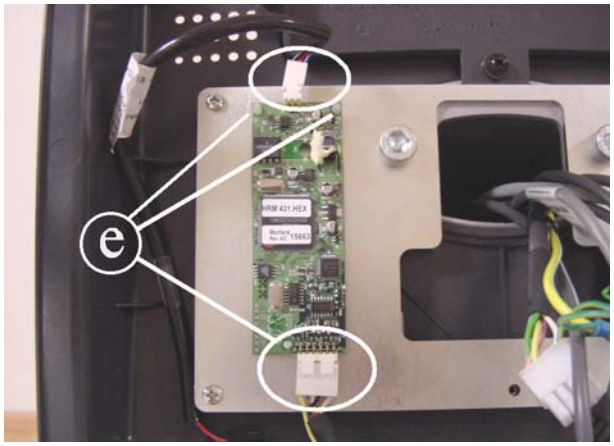

Figure 7.2-4

To remove the hand sensor board:

1. Unplug the 2 connectors indicated in the figure.
2. Release the 3 clips **e** and remove the hand sensor board.

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

7.2.2. 700I E WELLNESS TV TOUCH SCREEN VERSION

7.2.2.1. NCB models

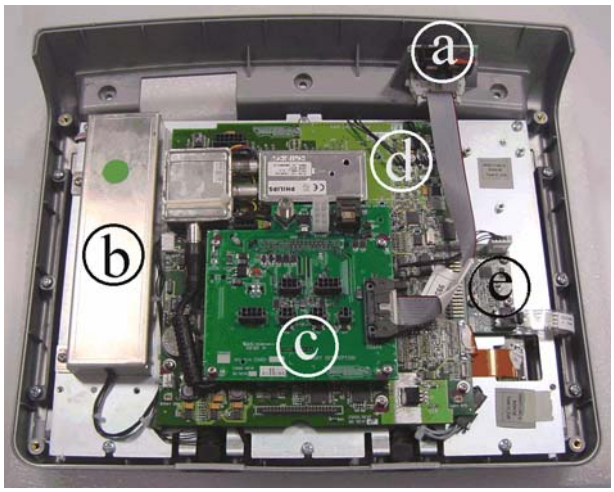

Figure 7.2-5

Carry out the procedure described in paragraph 7.1. "Disassembling the display".

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

- The CSafe board **a**.
- The LCD inverter **b**;
- The connector board **c**;
- The CPU board **d**;
- The Touch Screen interface board **e**.

Figure 7.2-6

CSafe Board **a**:

1. Unplug connector **f** from the CSafe board.
2. Remove the circuit board from the top.

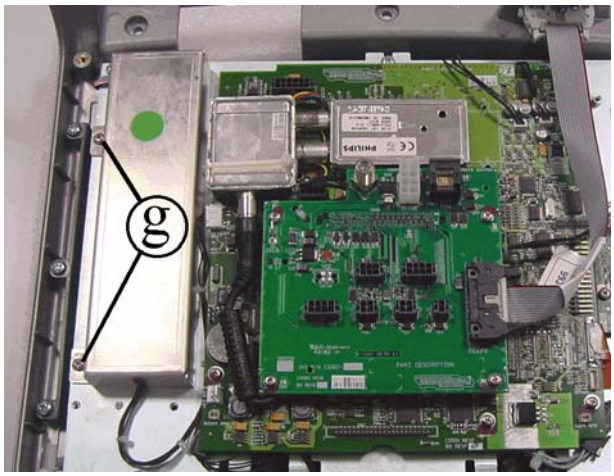

Figure 7.2-7

LCD inverter **b**:

1. Back off the two screws **g** using a Phillips screwdriver.
2. Raise the inverter cover plate.

Continued on following page →

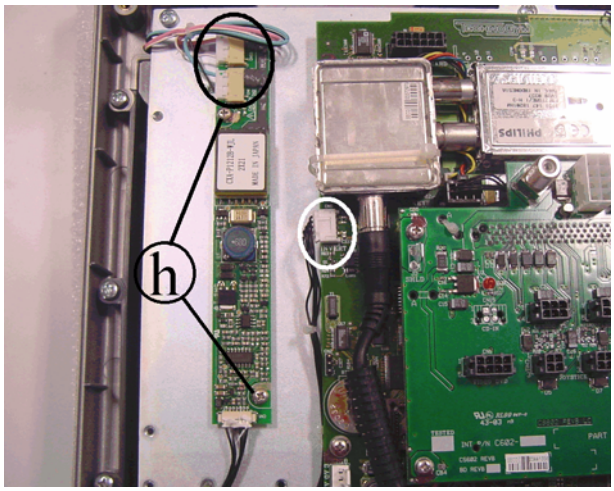

Figure 7.2-8

1. Unplug the connectors indicated in the figure.
2. Back off the two screws **h** securing the board to the plate of the display.
3. Remove the LCD inverter.

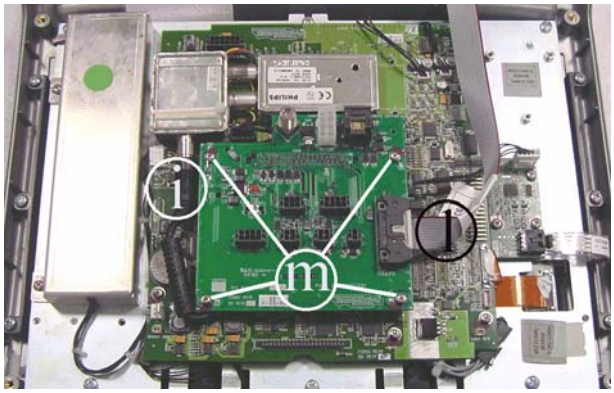

Figure 7.2-9

Connector board **c**:

1. Unplug connectors **i** and **l**.
2. Back off the screws **m** using a medium Phillips screwdriver.
3. Remove the circuit board from the display, taking care not to damage the connector that attaches it to the CPU board.

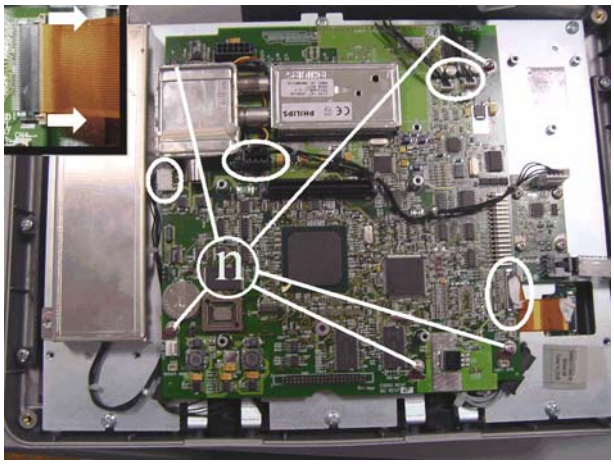

Figure 7.2-10

CPU Board **d:**

1. Disassemble the connector board.
2. Unplug the cables indicated in the figure, coming from the TTL board, LCD inverter, touch screen and headphone jack.
3. To unplug the cable from the TTL board, open the connector on the CPU as shown in the close-up at the top left, and remove the cable.
4. Back off the 5 screws **n** using a small Phillips screwdriver.
5. Remove the CPU board.

Continued on following page →

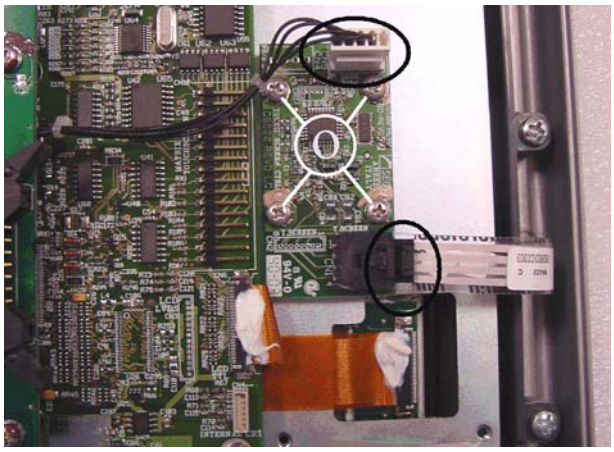

Figure 7.2-11

Touch screen interface board **e**:

1. Unplug the cables on connectors CN1 and CN5, indicated in the figure, coming from the touch screen and CPU respectively.
2. Back off the screws **o** using a small Phillips screwdriver.
3. Remove the circuit board from the display.

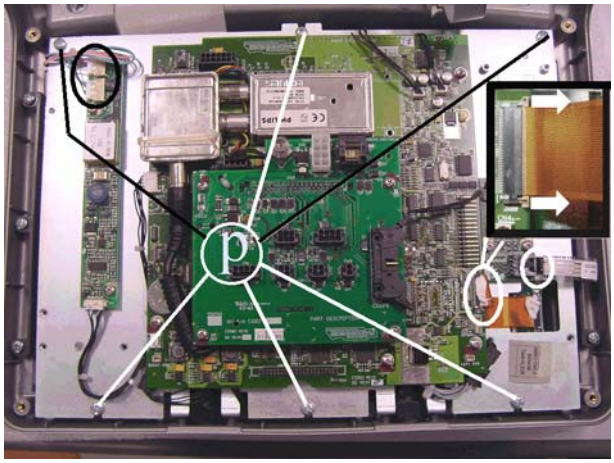

Figure 7.2-12

To disassemble the LCD:

1. Unplug the connectors of the cables leading from the touch screen to the touch screen interface board, to the TTL board and to the LCD (on the inverter) indicated in the figure.
2. Back off the 6 screws **p** securing the plate and all the display boards to the front cover.
3. To unplug the cable from the TTL board, open the connector on the CPU as illustrated in the close-up at left, and remove the cable.

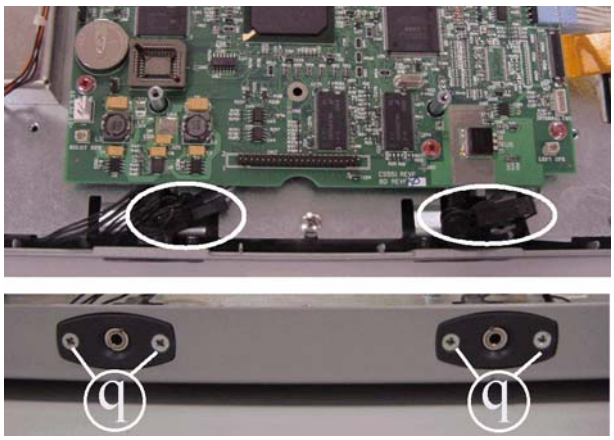

Figure 7.2-13

4. Back off the 2 screws **q** securing the headphone jack to the display, using a small Phillips screwdriver.
5. Unplug the connectors indicated in the figure.
6. Remove the two headphone jacks from the display housing.
7. Lift up the plate to which all the circuit boards and the LCD are fixed.

Continued on page 7.11 →

7.2.2.2. UB models

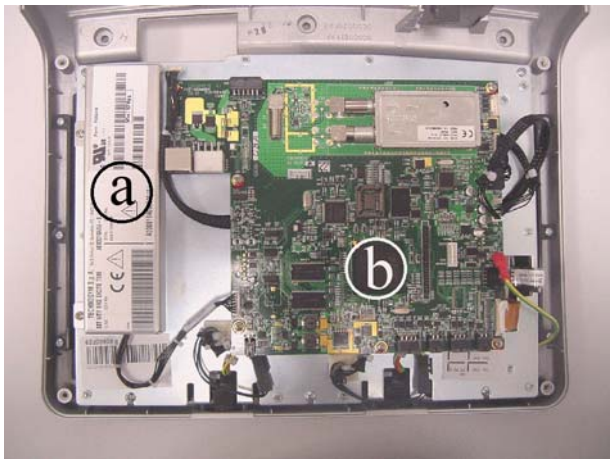

Figure 7.2-14

Carry out the procedure described in paragraph 7.1. “Disassembling the display”.

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**.

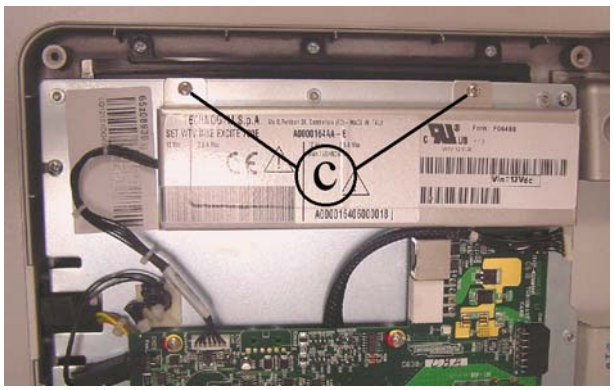

Figure 7.2-15

LCD inverter **b**:

1. Back off the two screws **c** using a Phillips screwdriver.
2. Raise the inverter cover plate.

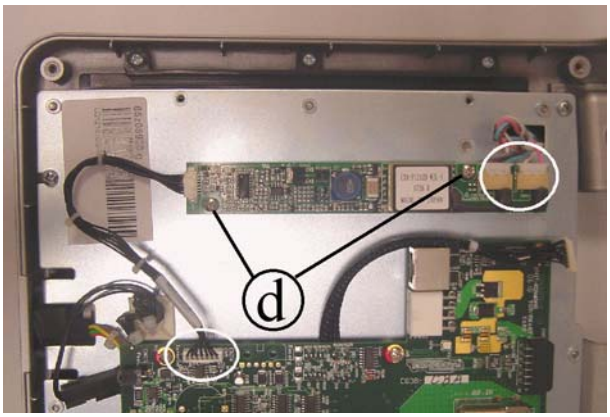

Figure 7.2-16

3. Unplug the connectors indicated in the figure.
4. Back off the two screws **d** securing the board to the plate of the display.
5. Remove the LCD inverter.

Continued on following page →

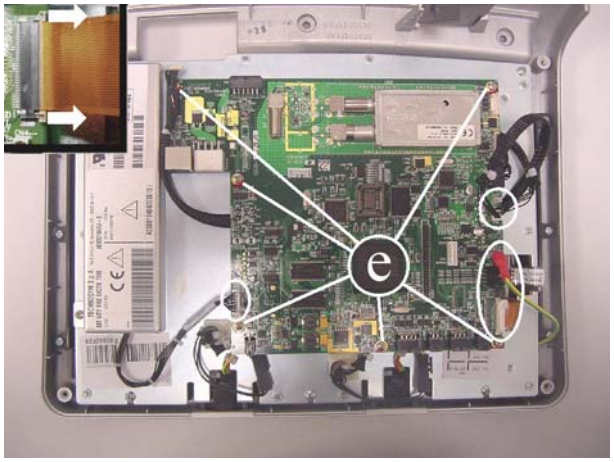

Figure 7.2-17

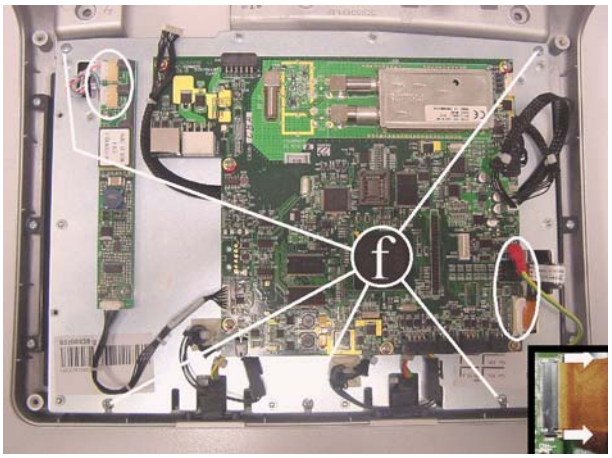

Figure 7.2-18

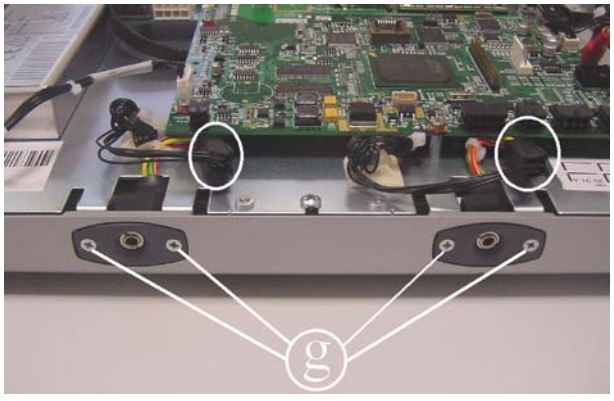

Figure 7.2-19

CPU Board **b:**

1. Disassemble the connector board.
2. Unplug the cables indicated in the figure, coming from the TTL board, LCD inverter and headphone jack.

To unplug the cable from the TTL board, open the connector on the CPU as shown in the close-up at the top left, and remove the cable.

3. Back off the 5 screws **n** using a small Phillips screwdriver.
4. Remove the CPU board.

To disassemble the LCD:

1. Unplug the connectors of the cables leading from the touch screen, to the TTL board and to the LCD (on the inverter) indicated in the figure.

To unplug the cable from the TTL board, open the connector on the CPU as shown in the close-up at left and remove the cable.

2. Back off the 5 screws **f** securing the plate and all the display boards to the front cover.
3. Back off the screws **g** securing the headphone jack to the display, using a small Phillips screwdriver.
4. Unplug the connectors indicated in the figure.
5. Remove the two headphone jacks from the display housing.
6. Lift up the plate to which all the circuit boards and the LCD are fixed.

Continued on following page →

Figure 7.2-20

7. Back off the 10 screws **r** using a small Phillips screwdriver.
8. Remove the touch screen protection plate.

Figure 7.2-21

9. Shift on one side, the touch screen **s** paying attention to its cable.
10. Back off the 4 screws **t** using a small Phillips screwdriver.
11. Lift up and remove the LCD.

Figure 7.2-22

To disassemble the AUX input board:

1. Work on the rear display support.
2. Back off the 2 screws **s** using a small Phillips screwdriver.
3. Remove the board from its housing.

Continued on following page →

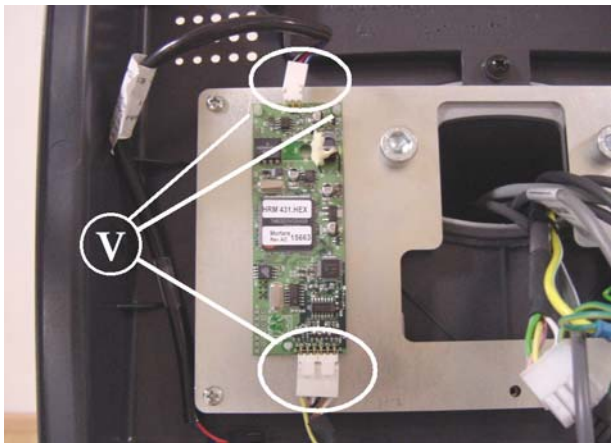

Figure 7.2-23

To remove the hand sensor board:

1. Unplug the 2 connectors indicated in the figure.
2. Release the 3 clips **t** and remove the hand sensor board.

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

7.2.3. 500I AND 500I SP VERSION

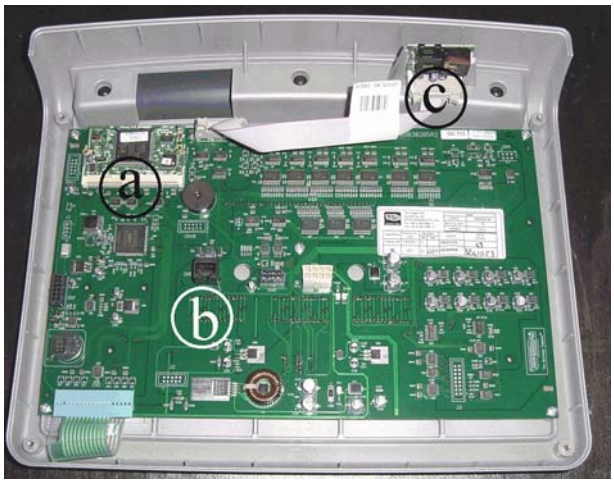

Figure 7.2-24

Carry out the procedure described in paragraph 7.1. “Disassembling the display”.

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

- The 386 board **a**;
- The display board **b**;
- The CSafe board **c**.

Figure 7.2-25

386 board **a**:

1. Release the fixing tabs The circuit board will lift up slightly.
2. Remove it from the connector on the display board.

display board **b**:

1. Unplug the keyboard connector indicated in the figure.
2. Back off the 5 screws **d** using a medium Phillips screwdriver.
3. Remove the circuit board.

Figure 7.2-26

CSafe board **c**:

1. Unplug the connector indicated in the figure.
2. Remove the circuit board from the top.

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

7.3. DISASSEMBLING THE KEYBOARD

7.3.1. 700I AND 700I SP LED VERSION

Figure 7.3-1

Carry out the procedure described in paragraph 7.1. “Disassembling the display”.

1. Unplug the keyboard connector shown in the figure.

With the display placed on a work bench:

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

Figure 7.3-2

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.

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

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

7.3.2. 700IE TOUCH SCREEN WELLNESS TV VERSION

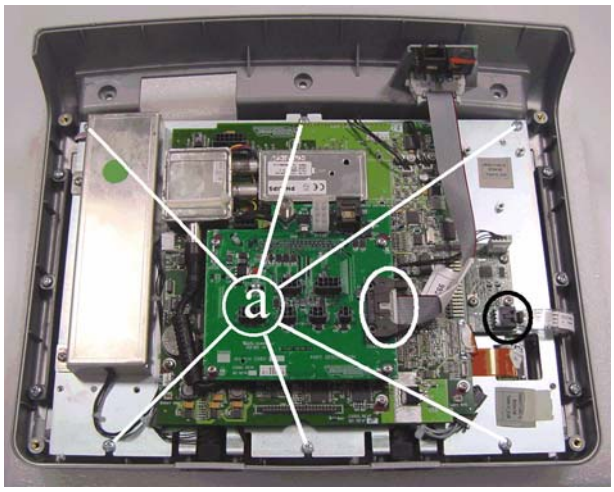

Figure 7.3-3

Carry out the procedure described in paragraph 7.1. “Disassembling the display”.

1. Unplug the connectors from the touch screen and CSafe board, indicated in the figure.
2. Back off the 6 screws **a** which secure the plate and all the display circuit boards to the front cover.

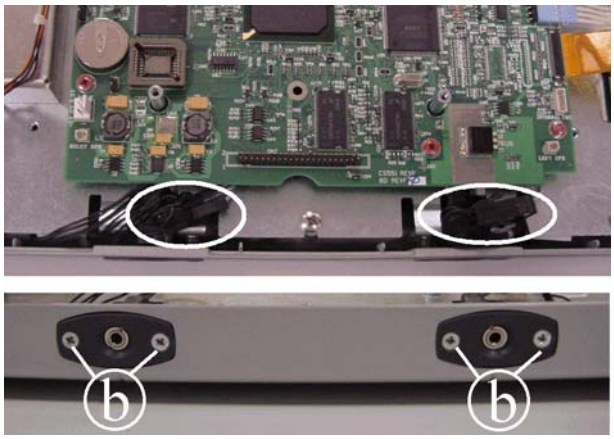

Figure 7.3-4

3. Back off the 2 screws **b** securing the headphone jack to the display, using a small Phillips screwdriver.
4. Unplug the connectors indicated in the figure.
5. Remove the two headphone jacks from the display housing.
6. Lift up the plate to which all the circuit boards and the LCD are fixed.

Figure 7.3-5

7. Back off the 10 screws **c** securing the touch screen protection plate, using a small Phillips screwdriver.

Continued on following page →

Figure 7.3-6

8. Lift up and replace the touch screen **d**.

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

7.3.3. 500I AND 500I SP VERSION

Figure 7.3-7

Carry out the procedure described in paragraph 7.1. “Disassembling the display”.

1. Unplug the keyboard connector indicated in the figure.

With the display placed on a work bench:

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

Figure 7.3-8

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.

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

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

7.4. DISASSEMBLING THE CARDIO RECEIVER

Figure 7.4-1

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. Lift up the upper tray bracket.

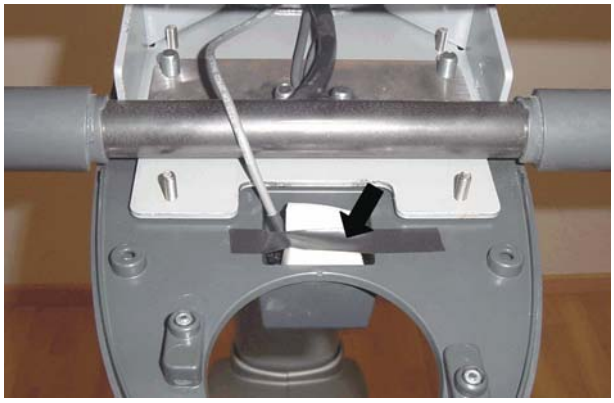

Figure 7.4-2

4. Remove the adhesive tape.
5. Remove the cardio receiver from the sponges.

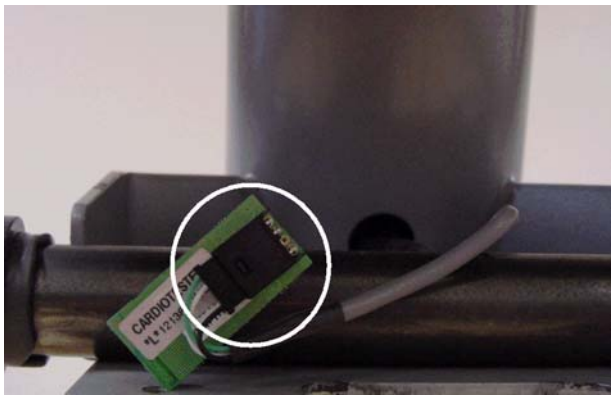

Figure 7.4-3

6. Unplug the connector indicated in the figure.
7. Remove the receiver.

Continued on following page →

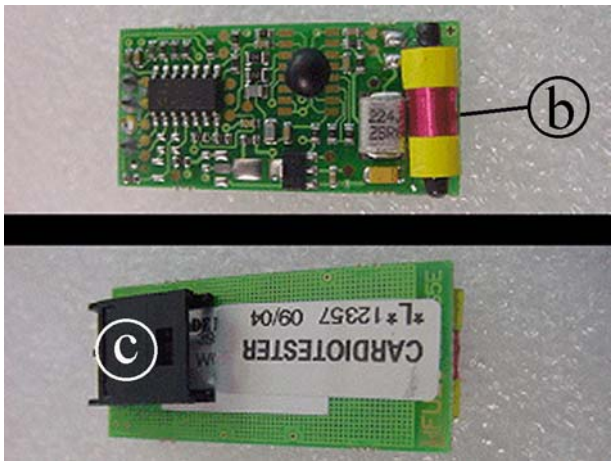

Figure 7.4-4

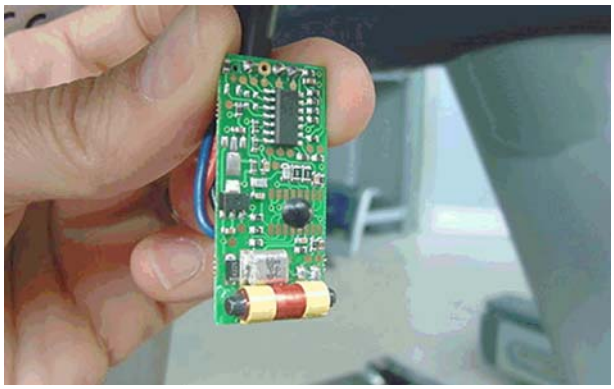

Figure 7.4-5

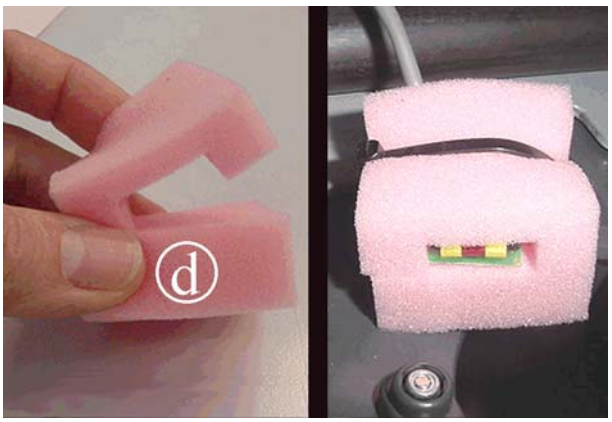

Figure 7.4-6

To assemble the new receiver:

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

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

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.

the receiving coil must be oriented upwards and toward the user.

Continued on following page →

Figure 7.4-7

5. Place the sponge and the receiver in the plastic housing as shown in the picture.

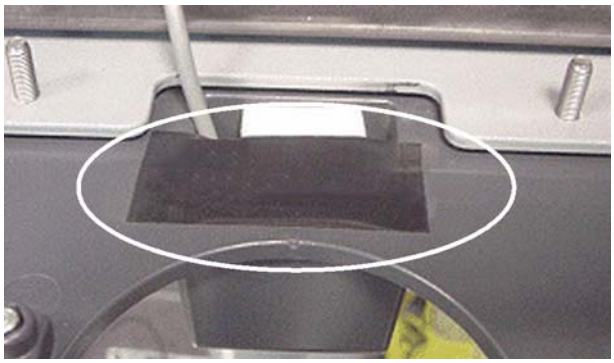

Figure 7.4-8

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

7.5. DISASSEMBLING THE HANDLEBAR

Figure 7.5-1

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.

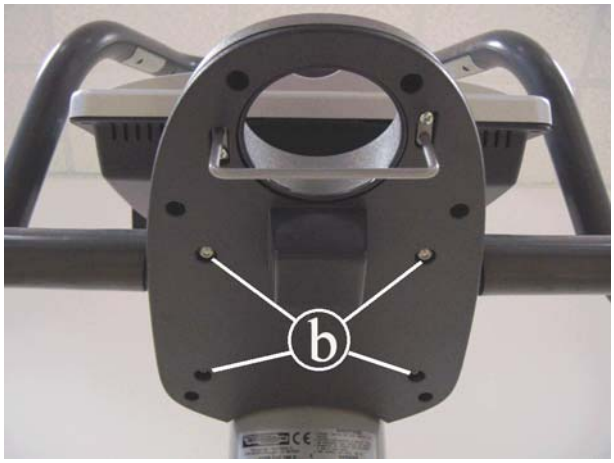

Figure 7.5-2

4. Back off the 4 screws **b** using a 4-mm hex wrench.
5. Remove the lower tray bracket.

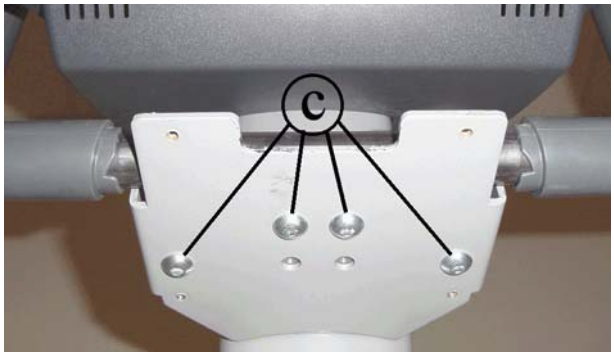

Figure 7.5-3

6. Back off the 4 screws **c** using a 6-mm hex wrench.

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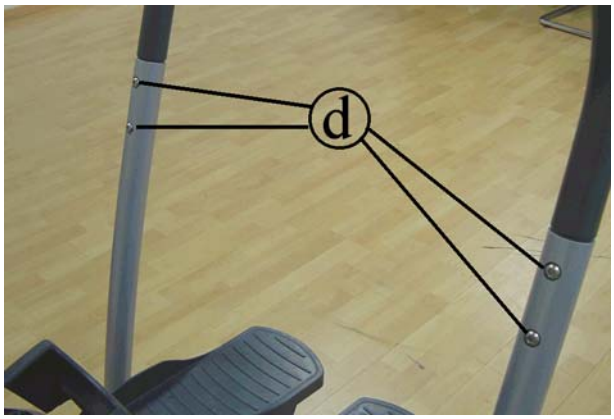

Figure 7.5-4

7. Back off the 4 screws **d** using a 5-mm hex wrench.
8. Remove the handgrips.

During reassembly, lock down the screws "d" using a torque wrench setting of 30 Nm.

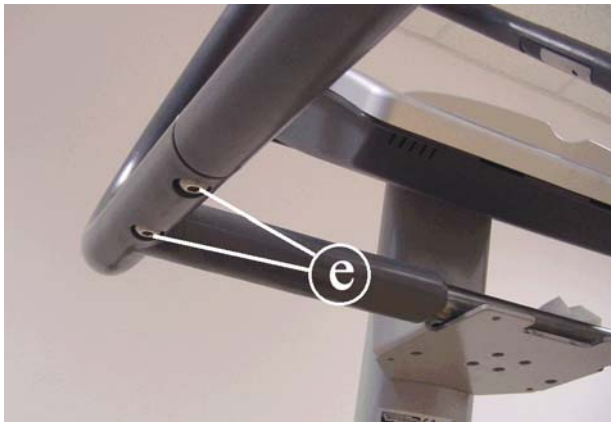

Figure 7.5-5

To disassemble all parts of the handlebar:

1. Back off the 2 screws **e** using a 6-mm hex wrench.

During reassembly, lock down the screws "e" using a torque wrench setting of 30 Nm.

Figure 7.5-6

It is now possible to separate the two side handlebars **f** and the upper central one **g.**

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

7.6. DISASSEMBLING THE SENSOR

Only for 700i, 700i SP and 700i E versions.

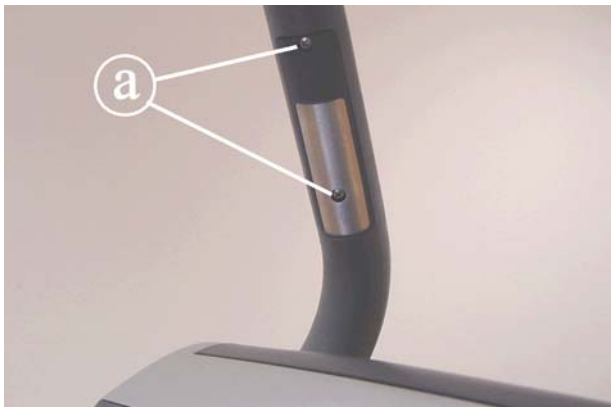

Figure 7.6-1

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

For each sensor:

1. Back off the 2 screws **a** using a medium Phillips screwdriver.

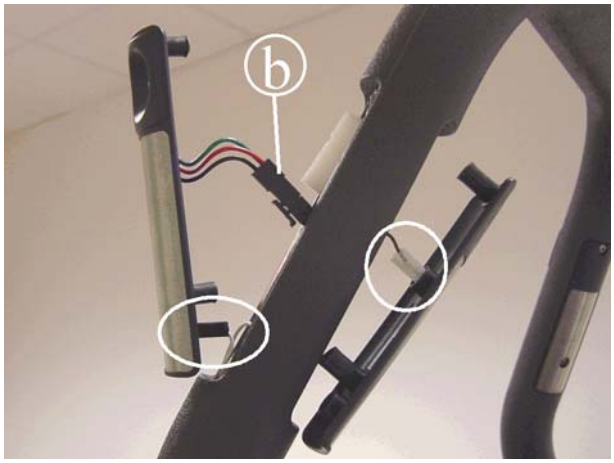

Figure 7.6-2

2. Lift up the top sensor.
3. Remove the lower sensor.
4. To remove the sensors, unplug the two faston and the connector **b** of the touch sensor indicated in the figure.

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

7.7. DISASSEMBLING THE GUARDS

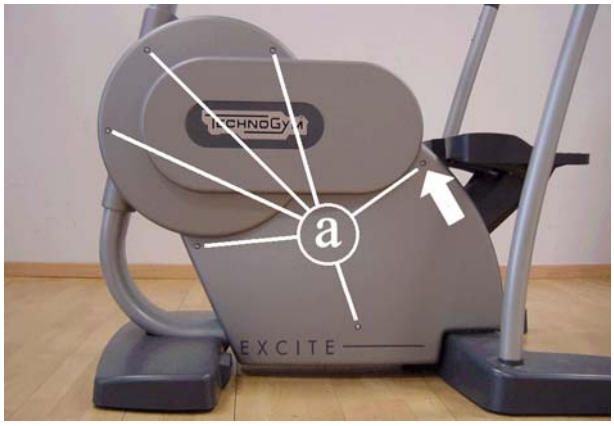

Figure 7.7-1

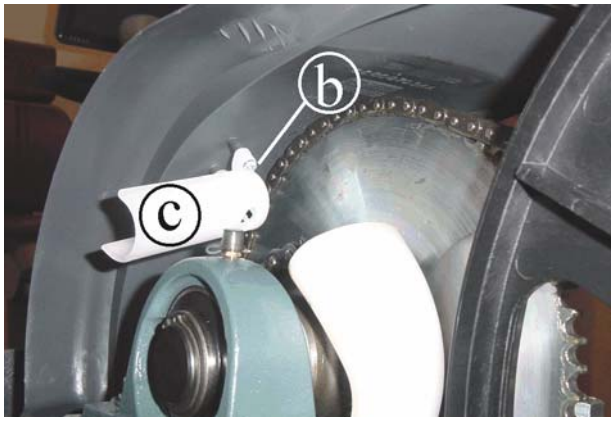

Figure 7.7-2

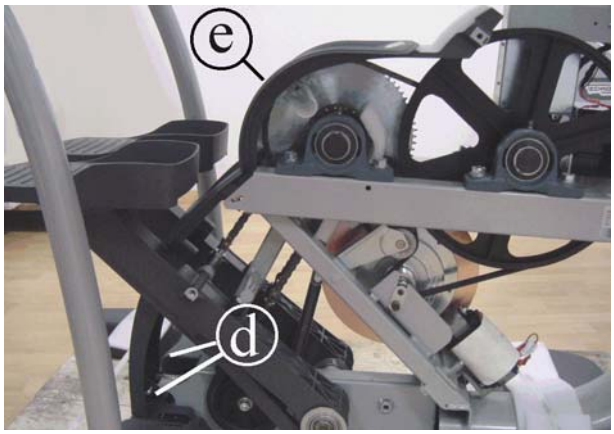

Figure 7.7-3

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 4-mm hex wrench.

During reassembly, insert the longer screw in the position indicated by the arrow.

During reassembly, lock down the screws "a" using a torque wrench setting of 2 Nm.

2. Remove the lateral guards.

To disassemble the drip flat **c**:

3. Back off the screw **b**, using a small Phillips screwdriver.
4. Remove the drip flat **c**.

5. Back off the 2 screws **d** using an 4-mm hex wrench.
6. Lower the pedals and pull out guard **e** from the top.

Continued on following page →

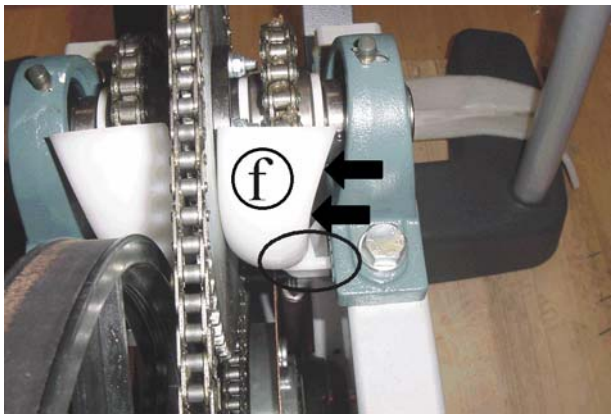

Figure 7.7-4

To disassemble the drip flat **f**:

7. Push the drip flat **f** toward the crown wheel as far as the plastic pin, highlighted in the figure, comes out of the machine frame.

8. Remove the drip flat from the top.

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

7.8. DISASSEMBLING THE ELECTRICAL BOX

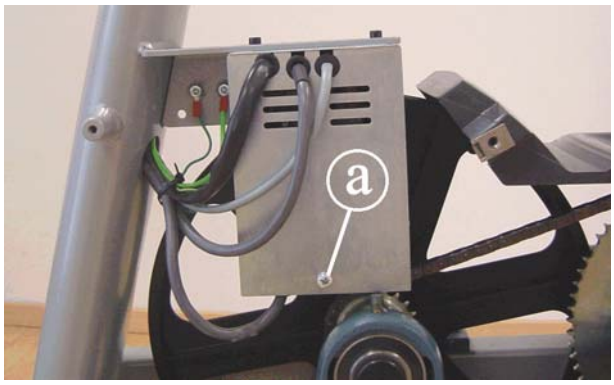

Figure 7.8-1

1. Carry out steps 1-2 of procedure 7.7. “Disassembling the guards”.

2. Back off the screw **a** using a medium Phillips screwdriver.
3. Remove the cover plate from the electrical box.

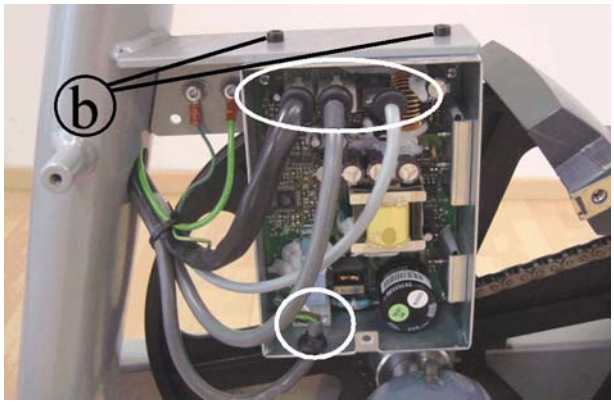

Figure 7.8-2

4. Unplug the 4 connectors indicated in the figure at left.
5. Back off the 2 screws **b** using an 4-mm hex wrench.
6. Remove the electrical box.

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

7.9. DISASSEMBLING THE PEDALS

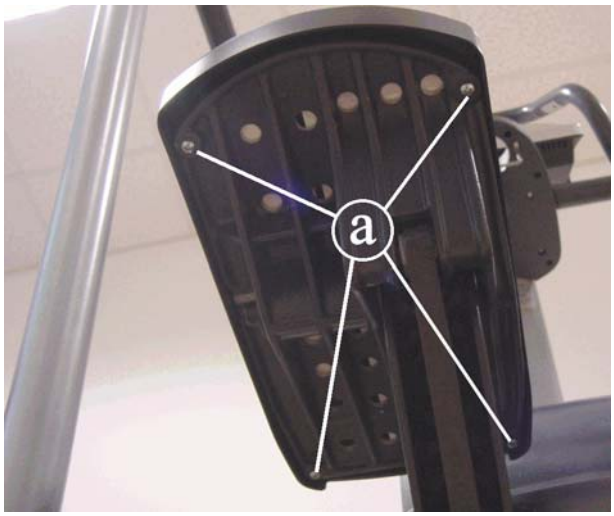

Figure 7.9-1

1. Back off the 4 screws **a** using a medium Phillips screwdriver.
2. Remove the pedal.

During reassembly, lock down the screws "a" using a torque wrench setting of 2.5 Nm.

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

During reassembly check that the adhesive tape is present between the plastic pedal and the metal plate.

7.10. DISASSEMBLING THE PEDAL LEVERS

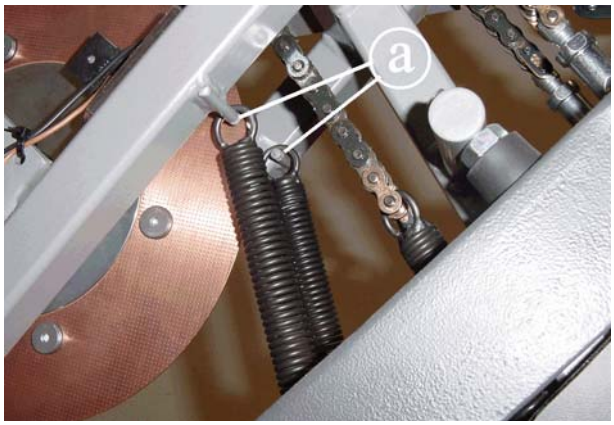

Figure 7.10-1

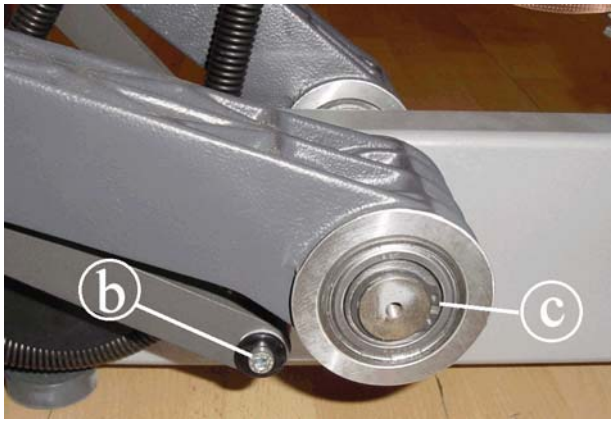

Figure 7.10-2

Figure 7.10-3

Carry out the operations described in paragraphs 7.7. “Disassembling the guards”

3. Remove the spring from the pins **a**.

4. Back off the screw **b** on the lower part of the lever, using a 5-mm hex wrench.
5. Back off the snap ring **c**, using the proper pliers.

6. Using an 8-mm hex wrench, back off the screw **d** securing the joint connected to the chain onto the machine frame.

When reassembling the joint, remember to re-insert the two washers, fitting the plastic one first, and then the metal one.

During reassembly, lock down the screw “d” using a torque wrench setting of 45 Nm.

7. Remove the lever by pulling it outwards.

Continued on following page →

Figure 7.10-4

Figure 7.10-5

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

Before re-inserting the lever on the pins as shown in the figure, remember to insert the lock washer "e".

To re-insert the lever, align the inner spacer, indicated by the arrows in the photo, as this will otherwise impede assembly.

7.11. DISASSEMBLING THE BRAKE WINDING

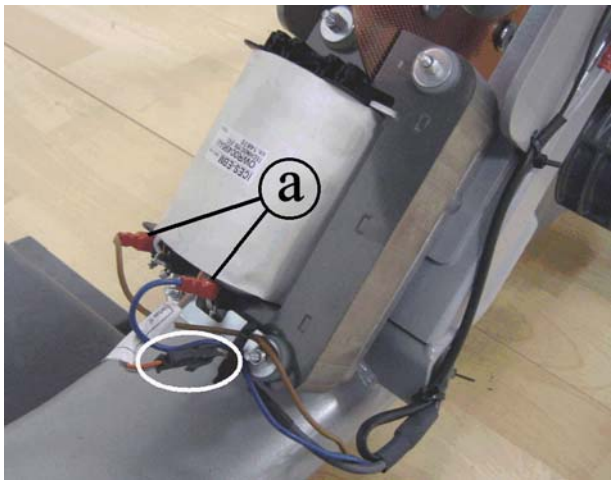

Figure 7.11-1

Carry out the operations described in 7.7. "Disassembling the 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.

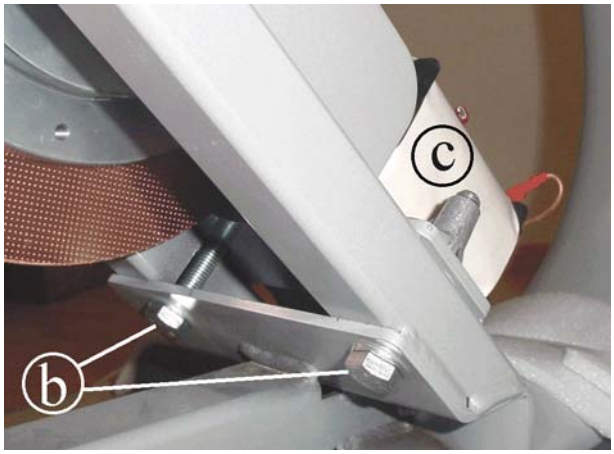

Figure 7.11-2

3. Back off the 2 screws **b** using an 17-mm 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.

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

7.12. DISASSEMBLING THE FLYWHEEL ASSEMBLY

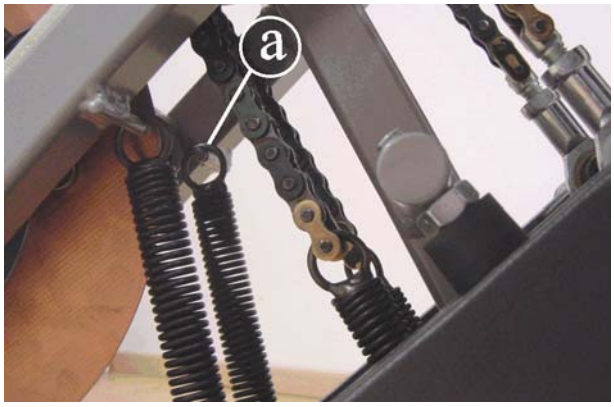

Figure 7.12-1

Carry out the operations described in paragraphs 7.7. **"**Disassembling the guards" and 7.11. "Disassembling the brake winding".

1. Remove the spring from the pin **a** on the frame of the machine.

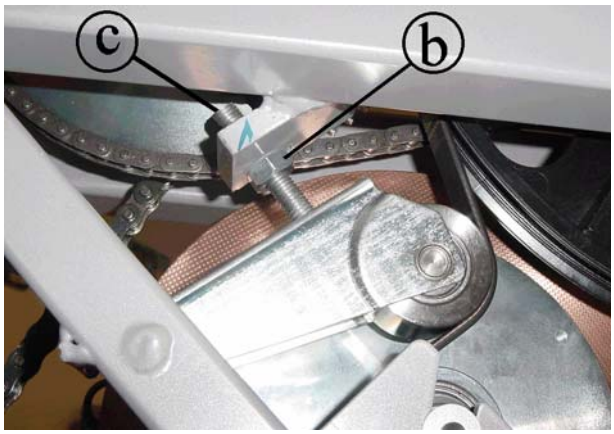

Figure 7.12-2

2. Back off the nut **b** of the belt tensioning mechanism, using a 17-mm hex wrench.
3. Back off the grub screw **c**, using a 5-mm hex wrench, in order to decrease the tension of the belt.

POWERED MODELS 500I, 700I AND 700I E

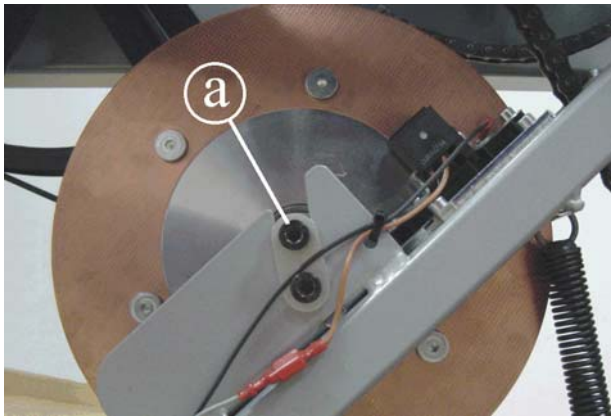

Figure 7.12-3

On the left side of the machine:

1. Back off the screw **a**, using a 6-mm hex wrench.

During reassembly, lock down the screw "a" using a torque wrench setting of 25 Nm.

Continued on following page →

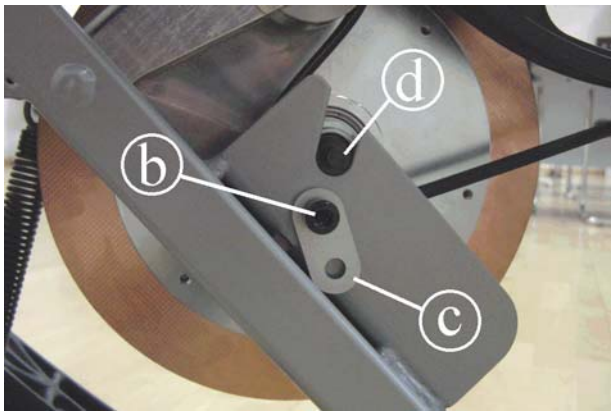

Figure 7.12-4

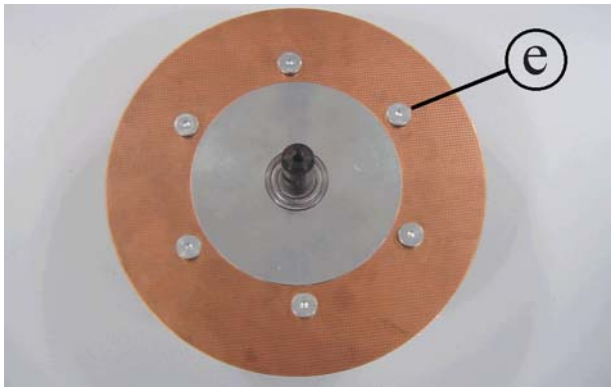

Figure 7.12-5

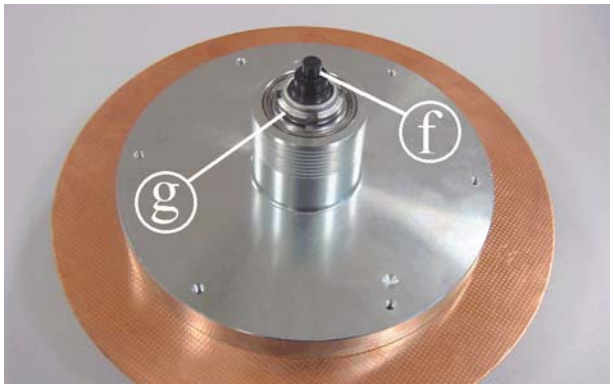

Figure 7.12-6

On the right side of the machine:

2. Back off the screw **d** using a 6-mm hex wrench and release the pin **d** from the plate **c**, as shown in the figure.
3. Remove the winding assembly, taking care not to damage the copper disk.

To disassemble the copper disk:

1. Back off the 6 screws **e** using a 4-mm hex wrench.

Take particular care with the copper disk, as it bends easily and may then cause problems after reassembly, by brushing against the winding block.

During reassembly, lock down the screws "e" using a torque wrench setting of 6 Nm.

To disassemble the pin **f**:

1. Back off the ring **g** using a 17-mm ring nut spanner, locking down the pin **f** with a 15-mm wrench from the opposite side

To reassemble the flywheel assembly, follow the above instructions in reverse order.

After completing the reassembly, adjust the tension of the belt as described in paragraph 8.1. "Belt tension" position of the winding group as described in paragraph 8.3. "Brake winding position".

SELF POWERED MODELS 500I, 700I AND 700I E

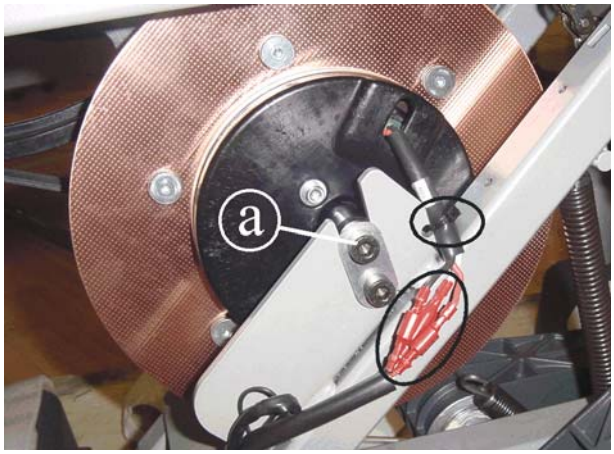

Figure 7.12-7

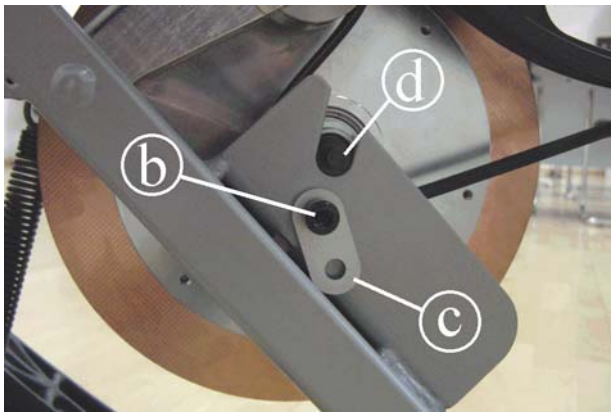

Figure 7.12-8

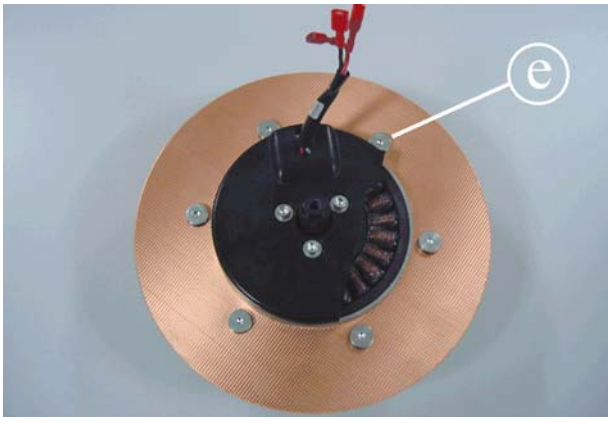

Figure 7.12-9

On the left side of the machine:

1. Back off the screw **a**, using a 6-mm hex wrench.
2. Cut the cable tie and unplug the connectors shown in the picture to side.

During reassembly, lock down the screw "a" using a torque wrench setting of 25 Nm.

On the right side of the machine:

3. Back off the screw **b** using a 6-mm hex wrench and release the pin **d** from the plate **c**, as shown in the figure.
4. Remove the winding assembly, taking care not to damage the copper disk.

To disassemble the copper disk:

1. Back off the 6 screws **e** using a 4-mm hex wrench.

Take particular care with the copper disk, as it bends easily and may then cause problems after reassembly, by brushing against the winding block.

During reassembly, lock down the screws "e" using a torque wrench setting of 6 Nm.

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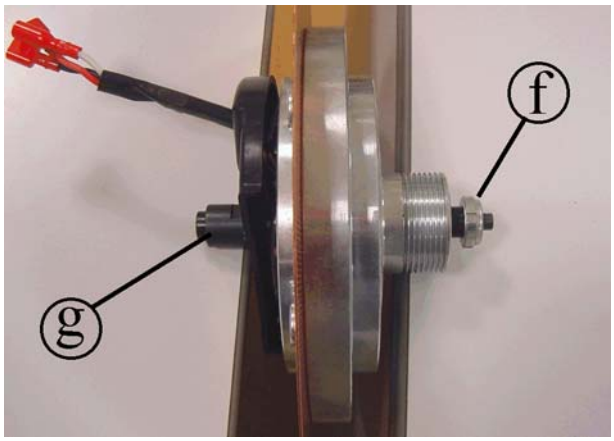

Figure 7.12-10

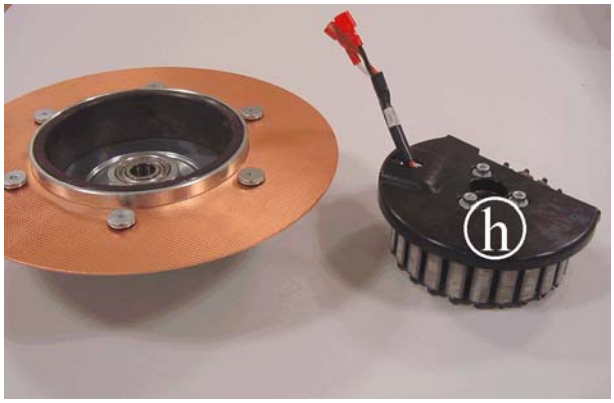

Figure 7.12-11

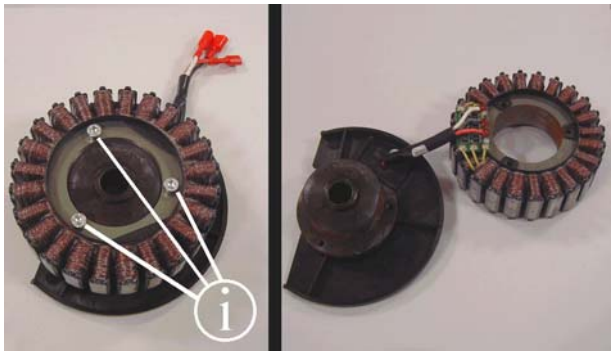

Figure 7.12-12

To disassemble the stator assembly:

1. Back off the ring **g** using a 17-mm ring nut spanner, locking down the pin **f** with a 15-mm wrench from the opposite side

2. Remove the stator **h**, from flywheel assembly.

3. Back off the 3 screws **i** using a 4-mm hex wrench and separate the winding from the plastic protection.

To reassemble the flywheel assembly, follow the above instructions in reverse order.

After completing the reassembly, adjust the tension of the belt as described in paragraph 8.1. "Belt tension" position of the winding group as described in paragraph 8.3. "Brake winding position".

7.13. DISASSEMBLING THE BELT

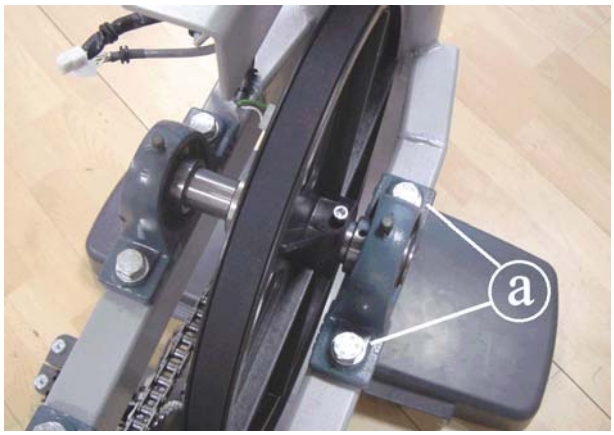

Figure 7.13-1

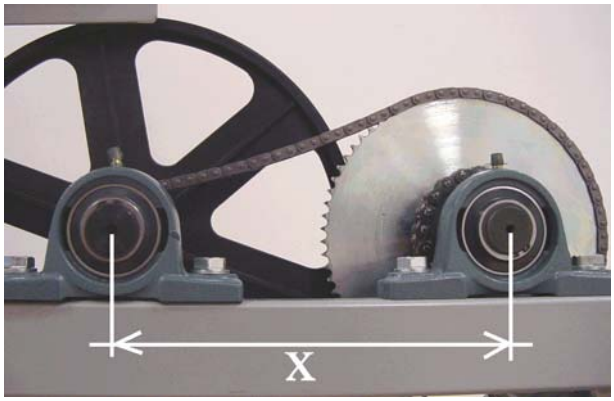

Figure 7.13-2

Carry out the operations described in paragraphs 7.11. “Disassembling the brake winding”, 7.11. “Disassembling the brake winding” and 7.12. “Disassembling the flywheel assembly”.

1. Use a permanent marker to make reference marks on the right side of the bridge bearing and on the machine frame, to assist in subsequent reassembly.
2. Back off the 2 screws **a** using a 19-mm wrench.
3. Remove the belt by lifting the right part of the bearing.

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

To reassemble the bearing, use the reference marks made previously and check that the centre distance "x" between the primary and secondary shafts is 25.6 cm on both the right and left hand side.

Check that, after completing the reassembly, the chain is not too tensioned.

7.14. DISASSEMBLING THE PRIMARY SHAFT ASSEMBLY

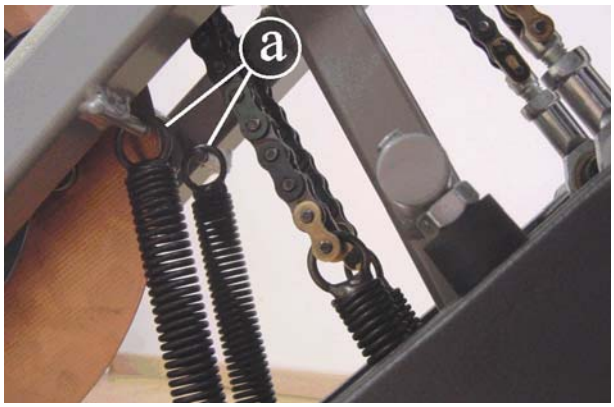

Figure 7.14-1

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

1. Remove the spring from the pin **a** on the frame of the machine.

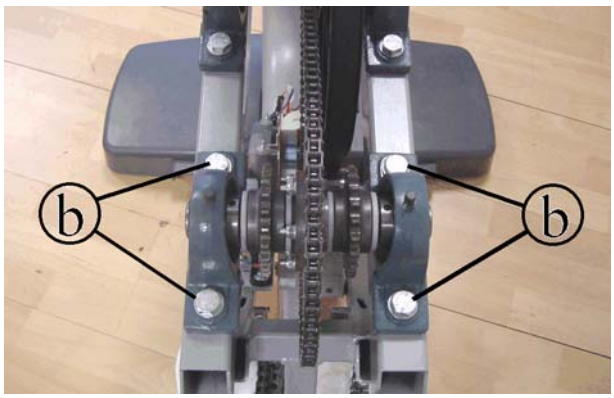

Figure 7.14-2

2. Back off the 4 screws **b** using a 19-mm wrench.
3. Remove the primary shaft assembly from the chain and place it on a work bench.

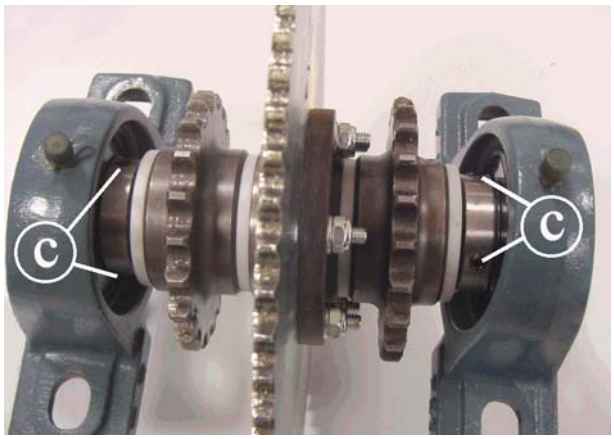

Figure 7.14-3

4. Back off the 2 grub screw **c** in the internal side of the bearing using a 3-mm hex wrench.

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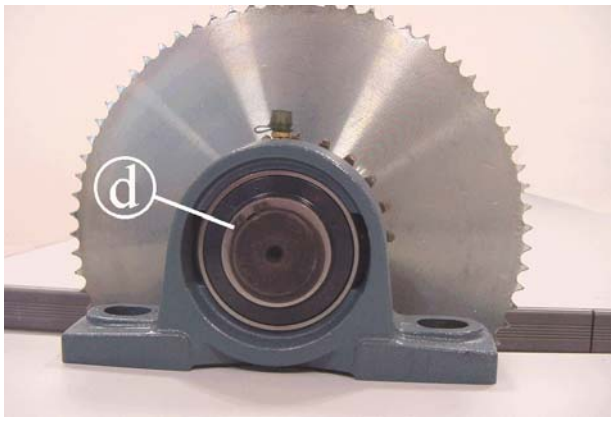

Figure 7.14-4

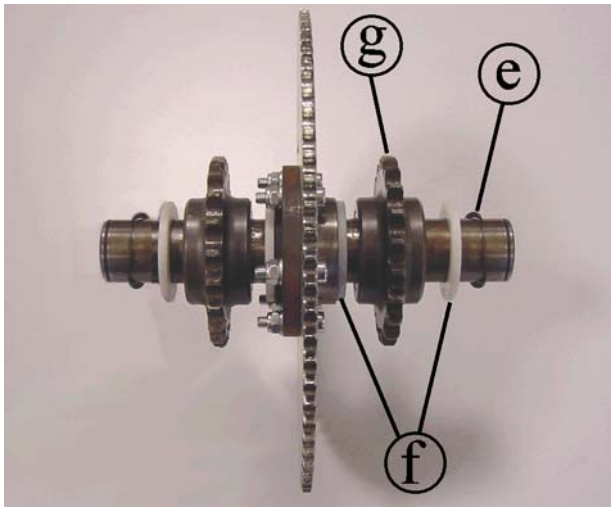

Figure 7.14-5

Figure 7.14-6

5. Remove the seeger **d** using the proper pliers, on both side of the bearing.

6. Remove from the shaft the corrugated compensation washer **e**, the plastic washers **f** and the free wheel **g**.

During reassembly, proceed in the order illustrated in the figure and take care to observe the correct orientation of the free wheel.

To remove the crown wheel:

1. Back off the 6 screws **h** using a 5-mm hex wrench, locking down the nut on the opposite side of the wheel by using a 10-mm wrench.

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

During reassembly, clamp the bearing on the shaft, up against the seeger by locking down the grub screws "c".

After completing the reassembly, carry out the adjustment procedure described in paragraph 8.4. "Align the chain connecting the primary and secondary shafts" and 8.5. "Tension the chain connecting the primary and secondary shafts".

7.15. DISASSEMBLING THE SECONDARY SHAFT ASSEMBLY

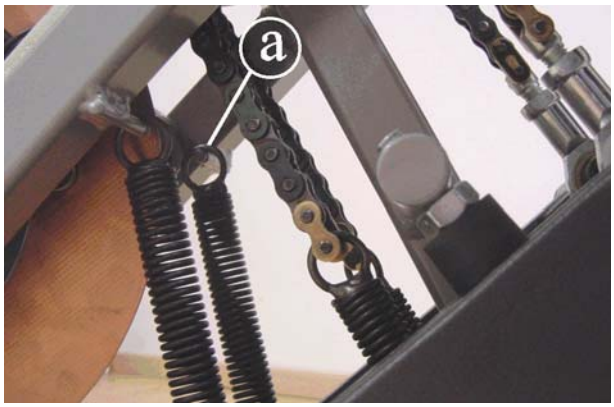

Figure 7.15-1

Carry out the operations described in paragraphs 7.7. “Disassembling the guards” e 7.8. “Disassembling the electrical box”.

1. Remove the spring from the pin **a** on the frame of the machine.

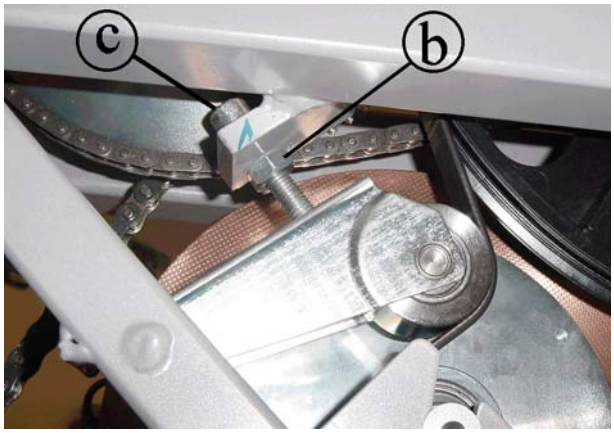

Figure 7.15-2

2. Back off the nut **b** of the belt tensioning mechanism, using a 17-mm wrench.
3. Back off the screw **c**, using a 5-mm hex wrench.

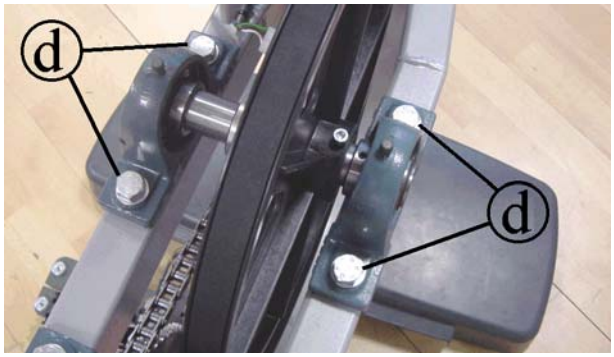

Figure 7.15-3

4. Back off the 4 screws **d** using a 19-mm wrench.
5. Remove the secondary shaft assembly from the chain and belt, and place it on a work bench.

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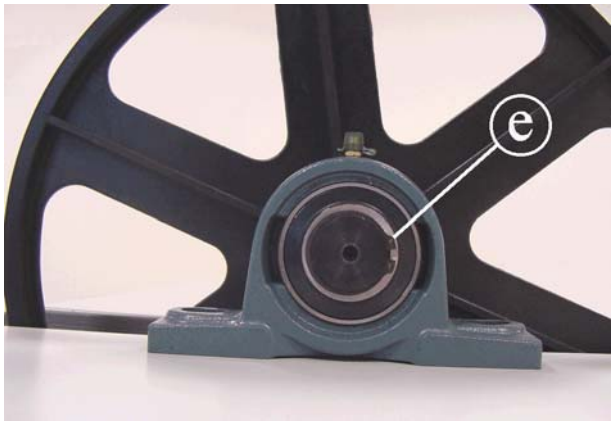

Figure 7.15-4

Disassemble the right or left bearing, depending on whether the pulley or sprocket is to be removed:

6. Remove the seeger **e** using the proper pliers.

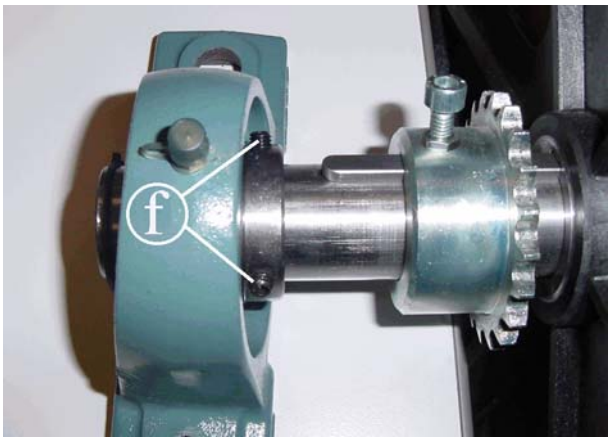

Figure 7.15-5

7. Back off the 2 grub screw **f** in the internal side of the bearing using a 3-mm hex wrench.
8. Remove the bearing from the shaft.

9. Back off the screw **g** using a 5-mm hex wrench and its counter nut **h**.
10. Remove the pinion / pulley from the shaft.

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

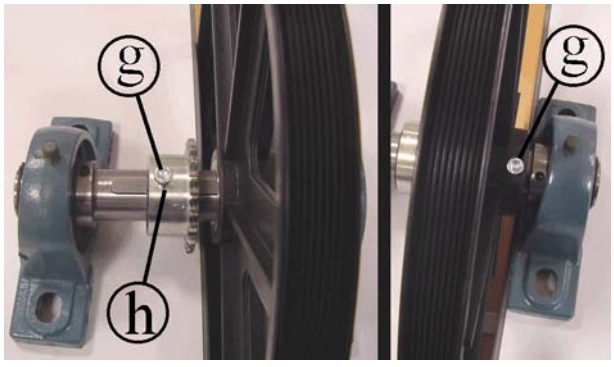

Figure 7.15-6

During reassembly, clamp the bearing on the shaft, up against the seeger by locking down the grub screws "f".

After completing the reassembly, carry out the adjustment procedures described in paragraphs 8.1. "Belt tension", 8.4. "Align the chain connecting the primary and secondary shafts", 8.5. "Tension the chain connecting the primary and secondary shafts" and 8.6. "Align the pulley and belt".

7.16. DISASSEMBLING THE SPEED SENSOR

Only for 500i, 700i and 700i E versions.

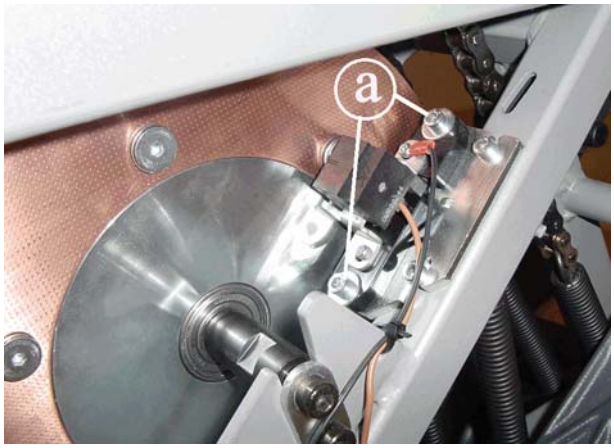

Figure 7.16-1

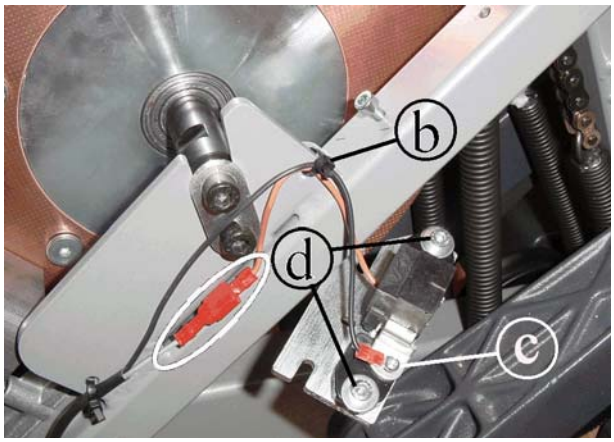

Figure 7.16-2

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

1. Back off the 2 screws **a** using a 4-mm hex wrench.
2. Remove the speed sensor and its support.

3. Cut the cable tie **b**.
4. Unplug the faston indicated in the figure.
5. Back off the screw **c** using a small Phillips screwdriver and remove the eyelet.
6. Back off the 2 screws **d** using a Phillips screwdriver, and remove the sensor.

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

After completing the reassembly, adjust the position of the sensor as described in paragraph 8.2. “Speed sensor position”.

7.17. DISASSEMBLING THE POWER ENTRY MODULE AND THE WHEELS

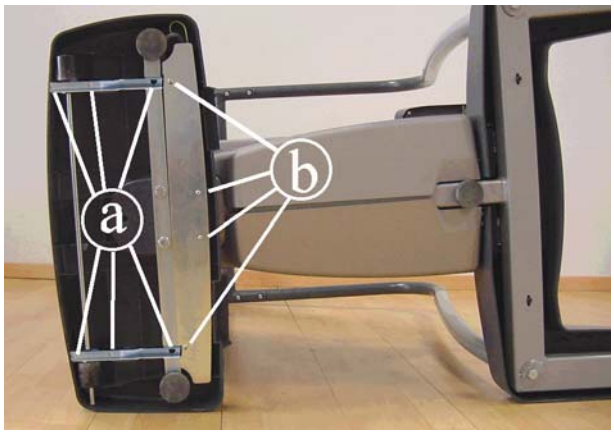

Figure 7.17-1

Turn the machine over on one side.

To remove the wheels:

1. Back off the screws **a** using a small Phillips screwdriver.
2. Remove the wheels group.

To remove the power entry module:

1. Back off the screws **b** using a small Phillips screwdriver.
2. Remove the power entry module plate covering.

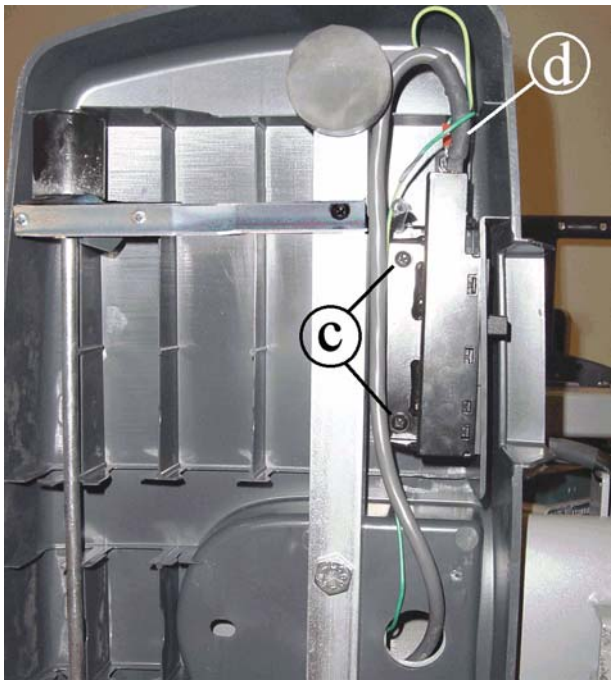

Figure 7.17-2

3. Back off the two screws **c** using a medium Phillips screwdriver and remove the power entry module.
4. Disconnect the cable **d** from the power entry module.
5. Remove the power entry module.

7.18. DISASSEMBLING THE PLATFORMS

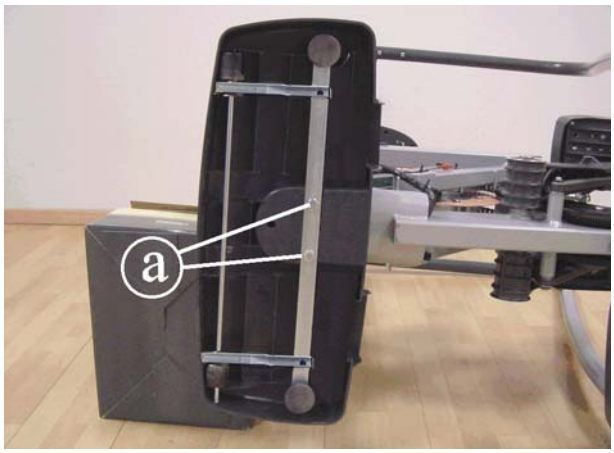

Figure 7.18-1

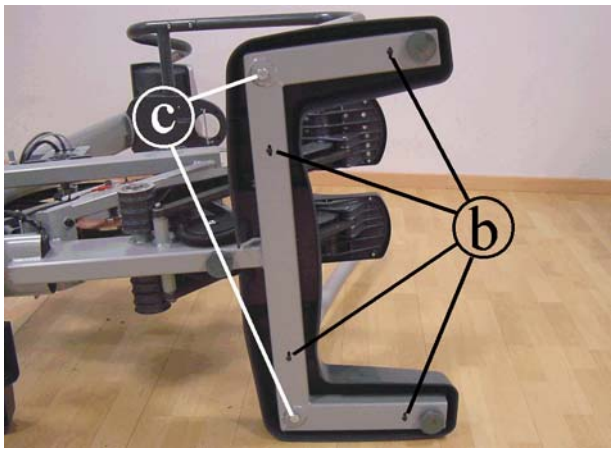

Figure 7.18-2

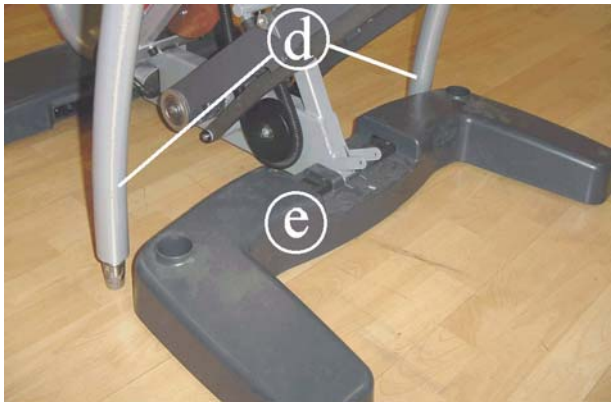

Figure 7.18-3

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

To disassemble the front platform:

1. Turn the machine over on one side, resting the frame on a box to keep the platform raised off the ground.
2. Carry out the operations described in paragraph 7.17. “Disassembling the power entry module and the wheels”, to remove the power entry module.
3. Back off the 2 screws **e** using a 17-mm wrench and remove the front platform.

To disassemble the rear platform:

1. Turn the machine over on one side:
2. Back off the 4 screws **b**, using a medium Phillips screwdriver.
3. Back off the 2 screws **c** using a 17-mm wrench, and remove the rear platform.

4. Replace the machine in its working position.
5. Carry out the operations described in paragraph 7.5. “Disassembling the handlebar” up to step 6.
6. Remove the handlebars **d** from the top.
7. Remove the rear platform **e**.

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

7.19. DISASSEMBLING THE BATTERY

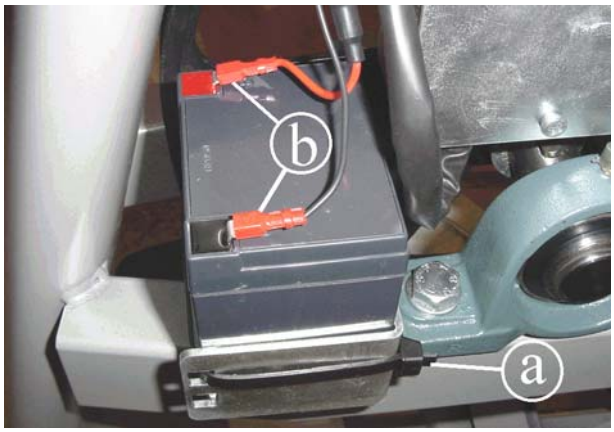

Figure 7.19-1

Carry out the operations described in paragraph 7.7. **"**Disassembling the guards**"**.

1. Cut the strip tie **a**.
2. Unplug the two faston **b** and remove the battery.

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

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8. ADJUSTMENTS

8.1. BELT TENSION

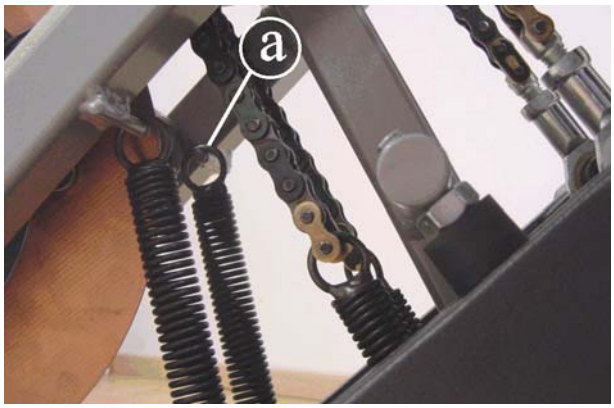

Figure 8.1-1

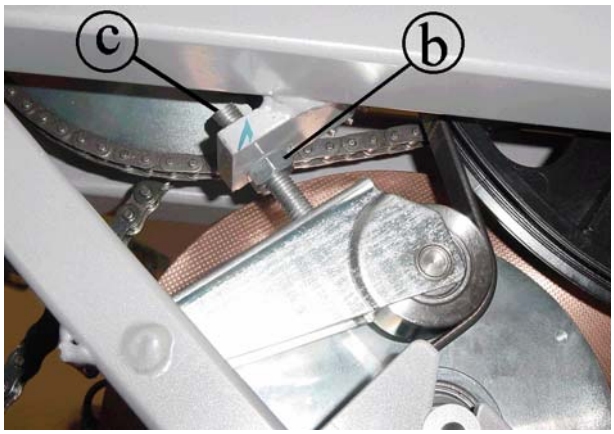

Figure 8.1-2

Carry out the operations described in paragraph 7.7. “Disassembling the guards” for removing the upper guard.

1. Remove the spring from the pin **a** on the frame of the machine.

Working on the belt tensioning mechanism:

2. Back off the lock-nut **b** using a 17-mm wrench.
3. Make the adjustment by turning the screw **c** with a 5-mm hex wrench.
4. Tighten the lock-nut again.

The correct belt tension is 29 Kg.

If a new belt is used, after having tensioned it according the above procedure, it is recommended to exercise for a minute , in order to “pull” the belt. Then check again the tension value.

8.2. SPEED SENSOR POSITION

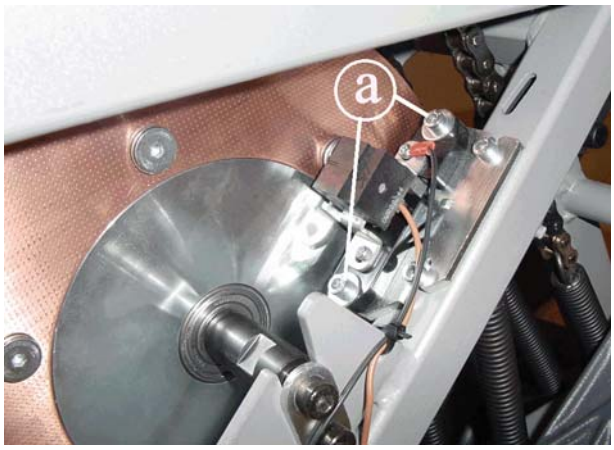

Figure 8.2-1

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

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

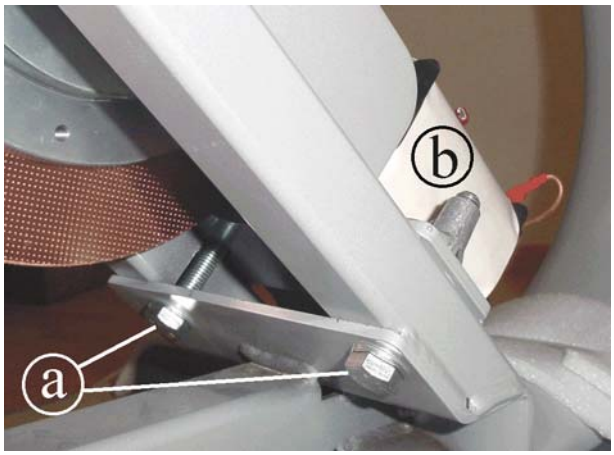

Figure 8.3-1

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

1. Back off the 2 screws **a** and position the brake winding support **b** so that it is centered on the copper disk, using a 1-mm thickness gauge.
2. Lock the screws back down.

8.4. ALIGN THE CHAIN CONNECTING THE PRIMARY AND SECONDARY SHAFTS

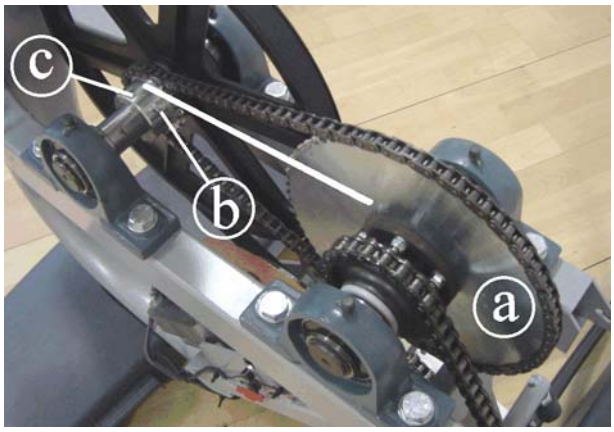

Figure 8.4-1

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

1. Back off the screw **b**, using a 5-mm hex wrench.
2. Align the sprocket **c** with the sprocket **a** using a straight reference rod.
3. Lock the screws **b** back down.

8.5. TENSION THE CHAIN CONNECTING THE PRIMARY AND SECONDARY SHAFTS

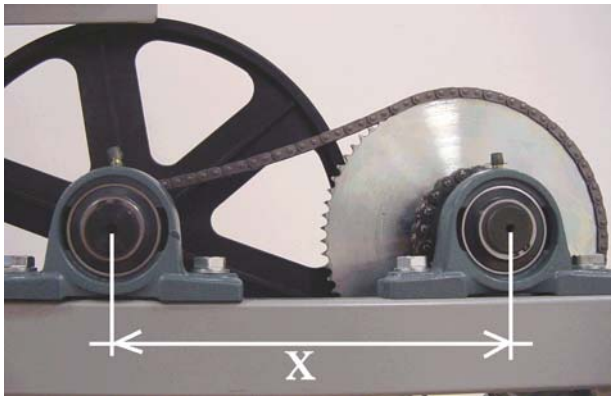

Figure 8.5-1

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

1. In order to adjust the chain tension, check that the centre distance “**x**” between the primary and secondary shafts is 25.6 cm on both the right and left hand side.

After completing the procedure, check the alignment of the chain and the belt, as described in the previous procedures.

8.6. ALIGN THE PULLEY AND BELT

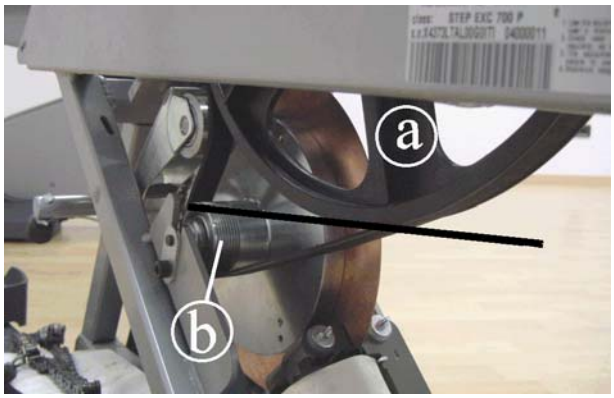

Figure 8.6-1

Carry out the operations described in paragraph 7.7. “Disassembling the guards”.

1. Back off the screw securing pulley **a** on the secondary shaft, using a 5-mm hex wrench.
2. Align the pulley **a** with the pulley **b** using a straight reference rod.
3. Lock down the screw securing pulley **a**.

8.7. LEVELLING

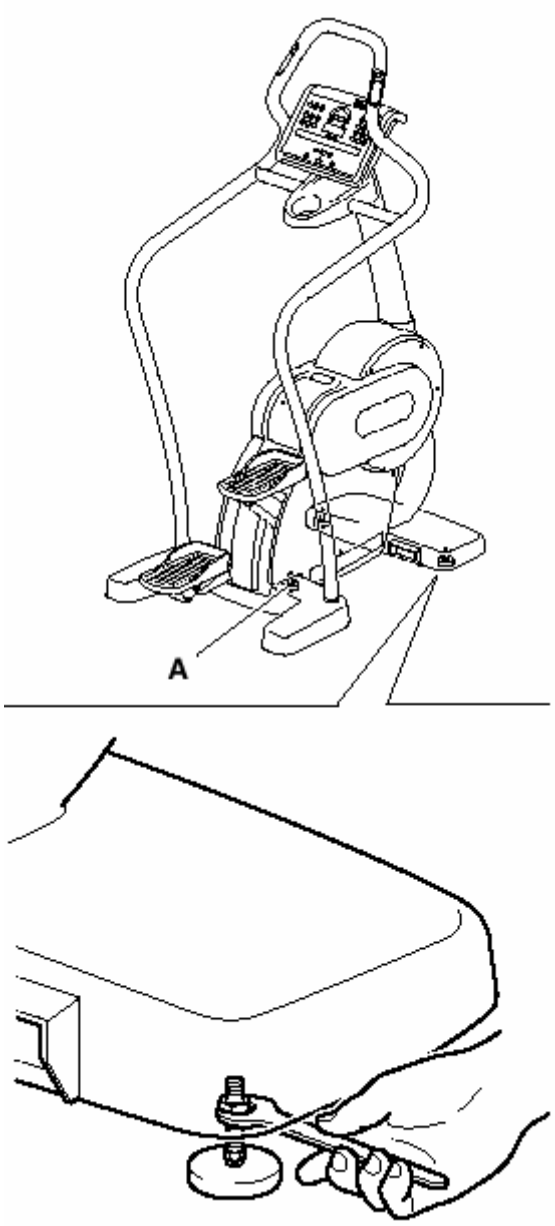

Figure 8.7-1

Carry out the procedure below, working on the two front feet and on the center foot **A**.

1. Back off the lock-nuts and screw or unscrew the two front feet until the frame is in a stable position.
2. Tighten the lock-nuts.
3. Back off the lock-nut and unscrew the center foot **A** until it rests on the floor.
4. Tighten the lock-nut.

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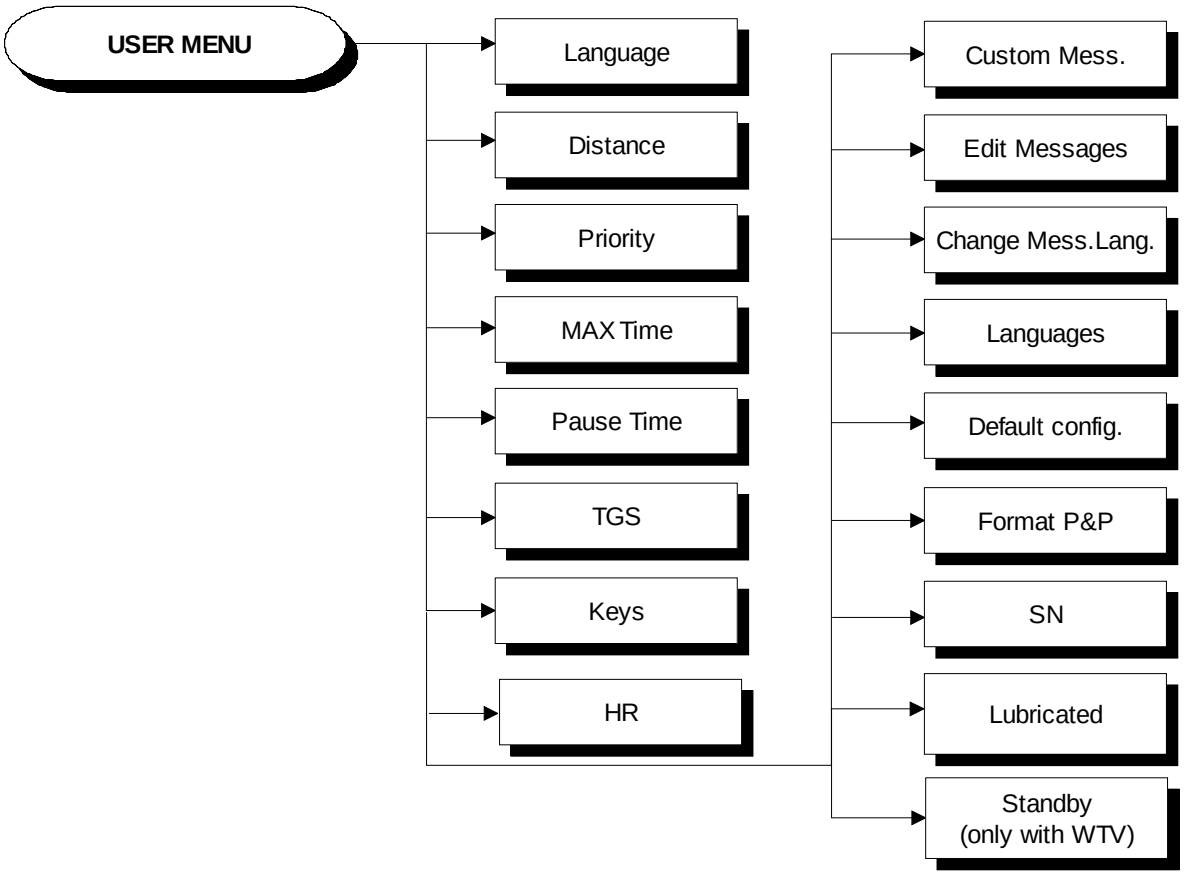
9. MACHINE CONFIGURATION

9.1. USER MENU CONFIGURATION FOR 700 MODELS

The configuration procedure is invoked when the machine is in standby mode by simultaneously pressing 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 LED 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:



9.1.1. 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 options available. Press **ENTER** to confirm the choice, use the + or – effort level keys to move to the next or previous parameter.

9.1.2. 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.

9.1.3. PRIORITY SETTING

If signals are available from both the chest band and hand sensors, this parameter determines which is the preferential source for displaying the heart rate value. Obviously, if only one of these two signals is available, it will be used even if not configured as the preferential heart rate source. To change the selection, when the display shows the current setting:

PRIORITY : xxx

Press the **+/- GOAL** keys to select the preferential source from those listed in the table below:

PRIORITY	
BAND	<*default*>
HANDS	

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

9.1.4. 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.

9.1.5. 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.

9.1.6. 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.

9.1.7. 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.

9.1.8. 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.

9.1.9. 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.

9.1.10. 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.

9.1.11. 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.

9.1.12. 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.

9.1.13. 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.

9.1.14. 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.

9.1.15. SN

This parameter shows the serial number of the machine.

9.1.16. LUBRICATED

This parameter tracks the lubrication status of the pedal chains. The default value is "YES". Whenever a certain number of floors have been climbed, the machine switches to "awaiting lubrication" mode, signaled on the display by the message "LUBRICATE THE CHAINS, THEN PRESS A KEY", and the parameter value changes to "NO". When the parameter shows:

LUBRICATED: NO

Press the **+/- GOAL** number keys to select "YES" then carry out the procedure 10.4. "Lubrication of the pedals chains".

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

9.1.17. STANDBY

It is possible, on the Wellness TV models, to set the standby screen. To change the selection, when the display shows the current setting:

STANDBY : xxx

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

STANDBY	
TV	*<default>*
STD.DISPLAY	

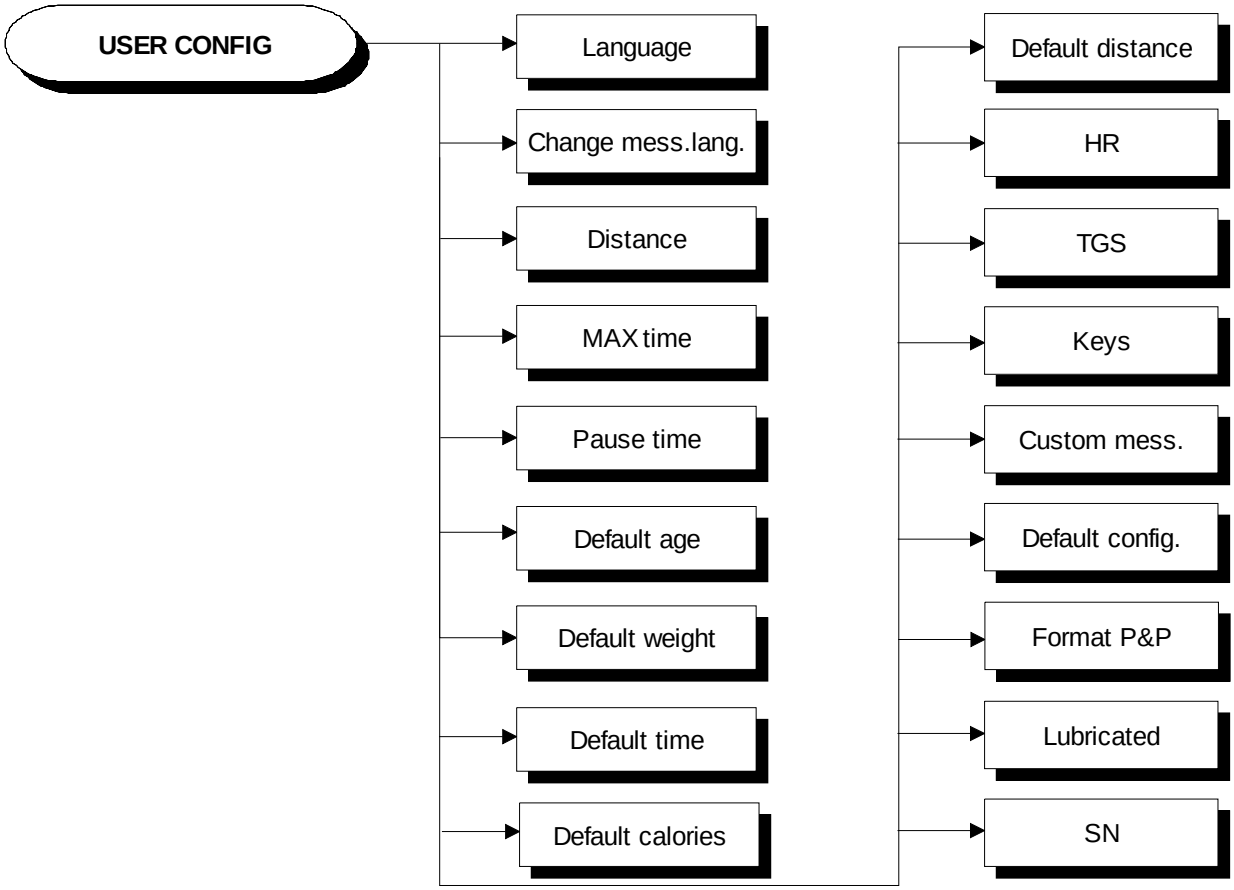
Press **ENTER** to confirm the operation, use the + or – effort level keys to move to the next or preceding parameter.

9.2. 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:



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

9.2.2. CHANGE MESSAGE LANGUAGE

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 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.

9.2.3. 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.

9.2.4. 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.

9.2.5. 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.

9.2.6. 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.

9.2.7. 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.

9.2.8. 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.

9.2.9. 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.

9.2.10. 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.

9.2.11. 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.

9.2.12. 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.

9.2.13. 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.

9.2.14. 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.

9.2.15. 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.

9.2.16. 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.

9.2.17. LUBRICATED

This parameter tracks the lubrication status of the pedal chains. The default value is "YES". Whenever a certain number of floors have been climbed, the machine switches to "awaiting lubrication" mode, signaled on the display by the message "LUBRICATE THE CHAINS, THEN PRESS A KEY", and the parameter value changes to "NO". When the parameter shows:

LUBRICATED: NO

Press the **+/- GOAL** number keys to select "YES" then carry out the procedure 10.4. "Lubrication of the pedals chains".

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

9.2.18. SN

This parameter shows the serial number of the machine.

9.3. SERVICE MENU CONFIGURATION

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:

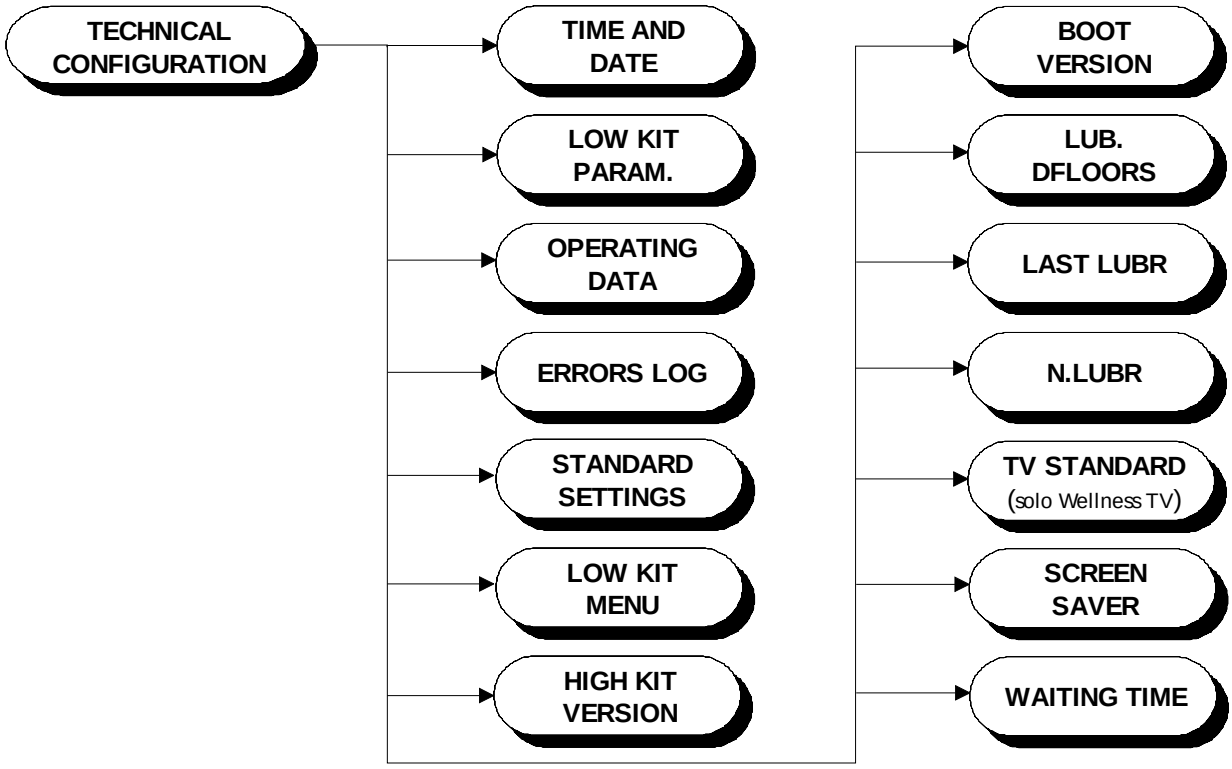
ENTER PASSWORD:

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:

- **Configuration**



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. Press **ENTER** to save the changes made.

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

The various parameters are described below.

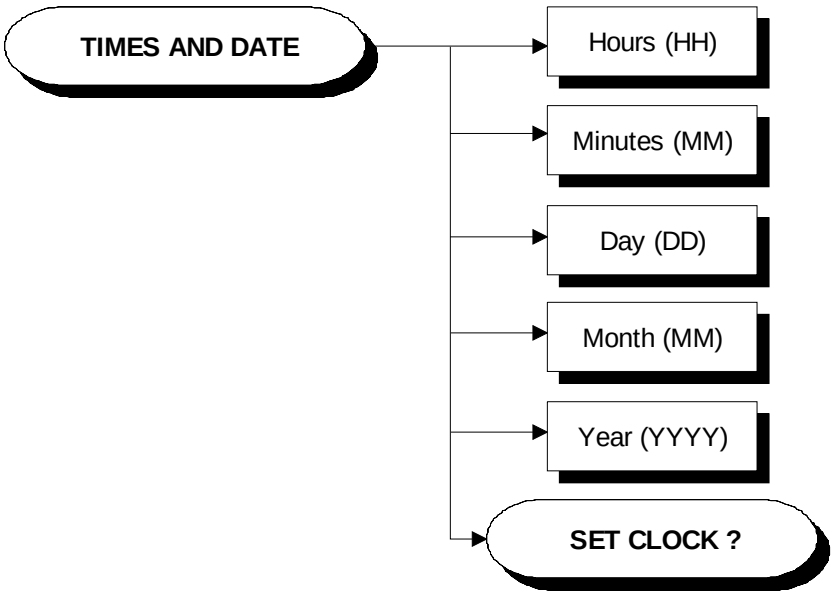
9.3.1. TIME AND DATE

This function is not available for ARM display board models.

This function sets the internal clock of the lower assembly. To access this menu, when the LED display shows:

TIME AND DATE

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



9.3.1.1. Hour

This parameter sets the hour of the internal clock.

9.3.1.2. Minutes

This parameter sets the minutes of the internal clock.

9.3.1.3. Day

This parameter sets the date of the internal clock.

9.3.1.4. Month

This parameter sets the month of the internal clock.

9.3.1.5. Year

This parameter sets the year of the internal clock.

9.3.1.6. Set Clock

This item is used for programming the internal clock chip with the values entered previously. To do this, when the display shows:

SET CLOCK

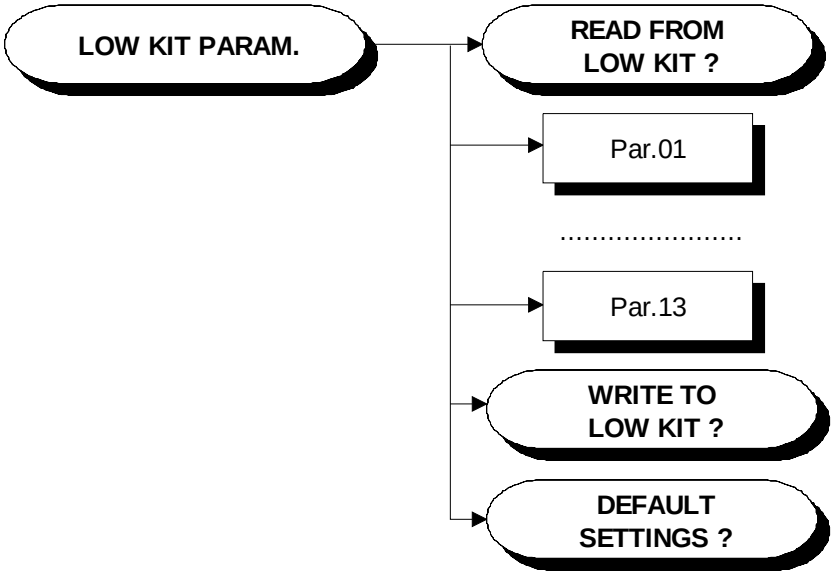
press the **ENTER** key.

9.3.2. 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:

9.3.2.1. 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.

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

9.3.2.3. Default □ravell

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.

9.3.2.4. Table of configuration parameters

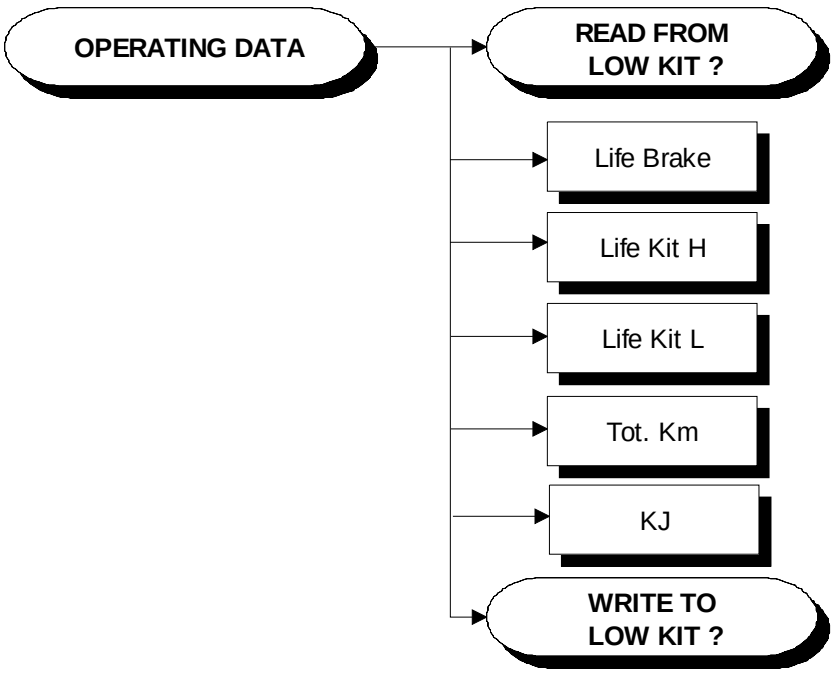
Display parameter	Description	Default value
Par 01	Transmission ratio	4601
Par 02	Coefficient for workload display (cents)	100
Par 03	Minimum brake RPM	400
Par 04	Minimum loading current for the battery (mA)	400
Par 05	-	0
Par 06	-	0
Par 07	-	0
Par 08	-	0
Par 09	-	0
Par 10	-	0
Par 11	-	0
Par 12	-	0
Par 13	-	0

9.3.3. 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:

9.3.3.1. 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.

9.3.3.2. 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.

9.3.3.3. 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

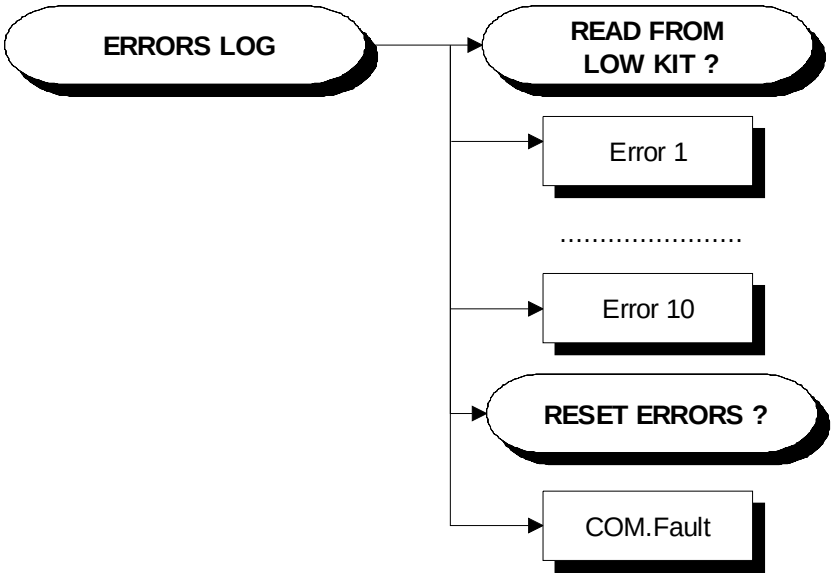
By selecting one of the items in the above table it is possible to modify its content, but only after having cleared its value. When the **ENTER** key is pressed the message “Reset life...” appears, followed by the name of the selected item; pressing **ENTER** again resets the value of the selected item,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

9.3.4. 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:

9.3.4.1. 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.

9.3.4.2. 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.

9.3.4.3. 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.

9.3.4.4. View Errors

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

- Counter
- Error code
- date (dd-mm-yyyy – hh:mm) **(NOT present on ARM display board models)**
- 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.
8	**OVERVOLTAGE:** this condition occurs when the +12 Vdc voltage goes above 13.7 Vdc (only on the 500i, 700i and 700i Emodels).

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.

9.3.5. 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.

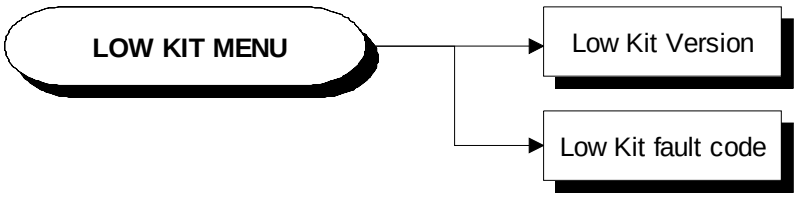
This function does not alter the language and the TV standard setting.

9.3.6. 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:



9.3.6.1. 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.

9.3.6.2. 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.

9.3.7. 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.

9.3.8. 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.

9.3.9. FLOORS CLIMBED BETWEEN SUCCESSIVE LUBRICATIONS

This parameter defines the number of floors climbed, to be multiplied by ten, before the chains need to be lubricated again. To change the selection, when the display shows the current setting:

LUB. Dfloors: XXX

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. Press **ENTER** to confirm the selection, use the + or – speed keys to move to the next or preceding parameter.

The default value of this parameter is 16000.

9.3.10. LAST LUBRICATION

This parameter displays the number of floors climbed since the chain was last lubricated. The display shows:

LAST LUBR: XXX

At the moment when the value of the parameter in user menu 9.1.16. “Lubricated” is changed to “YES” after lubricating the chain, this parameter acquires the value of the distance travelled item in the “Operating data”.
Use the + or – speed keys to move to the next or preceding parameter.

9.3.11. LUBRICATION NUMBER

This parameter displays the number of lubrication operations performed. The display shows:

N.LUBRIF: XXX

At the moment when the value of the parameter in user menu 9.1.16. “Lubricated” is changed to “YES” after lubricating the chain, this parameter is incremented by one unit.
Use the + or – speed keys to move to the next or preceding parameter.

9.3.12. TV STANDARD (700I E VERSION ONLY)

This function displays the television standard selected on the machine. To change the selection, when the display shows the current setting:

TV STANDARD: XXX

Press the **+/- GOAL** keys to select the desired setting from the available options. Press **ENTER** to confirm the selection, use the + or – speed keys to move to the next or preceding parameter. The available choices are:

PAL B/G	SECAM E/L	SECAM B/G
PAL I	SECAM D/K	SECAM K1
PAL N	NTSC M44	PAL M
NTSC M	PAL D/K	

This must be selected based on the country where the machine is installed, according to the following table.

Multistandard Code	TG Code	TV Standard	Countries				
E	1	PAL B/G	Albania	Australia	Austria	Bahrain	Belgium
			Cameroon	Croatia	Cyprus	Czech Rep	Denmark
			Finland	Germany	Ghana	Greece	Hungary
			India	Israel	Italy	Jordan	Kenya
			Luxembourg	Malaysia	Malta	Netherlands	New Zealand
			Nigeria	Norway	Pakistan	Poland	Portugal
			Romania	Singapore	Slovakia	Slovenia	Spain
			Sri Lanka	Sweden	Switzerland	Thailand	Turkey
			United Arab E	Zambia	Zimbabwe		
	2	PAL I	Botswana	Hong Kong	Ireland	South Africa	Seychelles
			UK				
	5	SECAM E/L	France				
	6	SECAM D/K	Bulgaria	Estonia	Ex URSS	Latvia	Lithuania
			Poland	Russia	Ukraine		
	8	PAL D/K	Czech Rep	China	Poland		
	9	SECAM B/G	Saudi Arabia	Iran	Iraq	Morocco	Tunisia
			Syria				
	A	SECAM K1	French Guyana	Guadeloupe	Madagascar	Martinique	New Caledonia
			Senegal	Togo	Zaire		
U	3	PAL N	Argentina	Paraguay	Uruguay		
	4	NTSC	Bahamas	Bermuda	Canada	Chile	Costa Rica
			Guatemala	Japan	Korea	Peru	Philippines
			Taiwan	Trinidad	USA	Venezuela	
	7	NTSC M44	Mexico				
	B	PAL M	Brazil				

9.3.13. SCREEN SAVER

This function allows the user to configure the screen saver function for either a "**Message**" or "**Darkness**"; choosing the former will activate a scrolling message in full-screen TV mode, while the latter will display a completely dark screen.
To change the selection when the LED matrix shows the current setting:

SCREEN SAVER: XXX

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

The alternatives are:

MESSAGE	<*default*>
DARKNESS	

9.3.14. WAITING TIME

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 9999. To change the setting, when the LED matrix shows the current time:

WAITING TIME : xxx

Press the **ENTER** key to change the parameter: the current value of the parameter will start to blink, at this point press the **CLEAR** key to erase the current value and then enter one digit at a time using the ↑ and ↓ keys to change the value and the +/- **GOAL** keys to scroll to the next character.

Press **ENTER** to confirm the changes made, and use the + or – speed keys to move to the next or preceding parameter.

The default value of this parameter is 10.

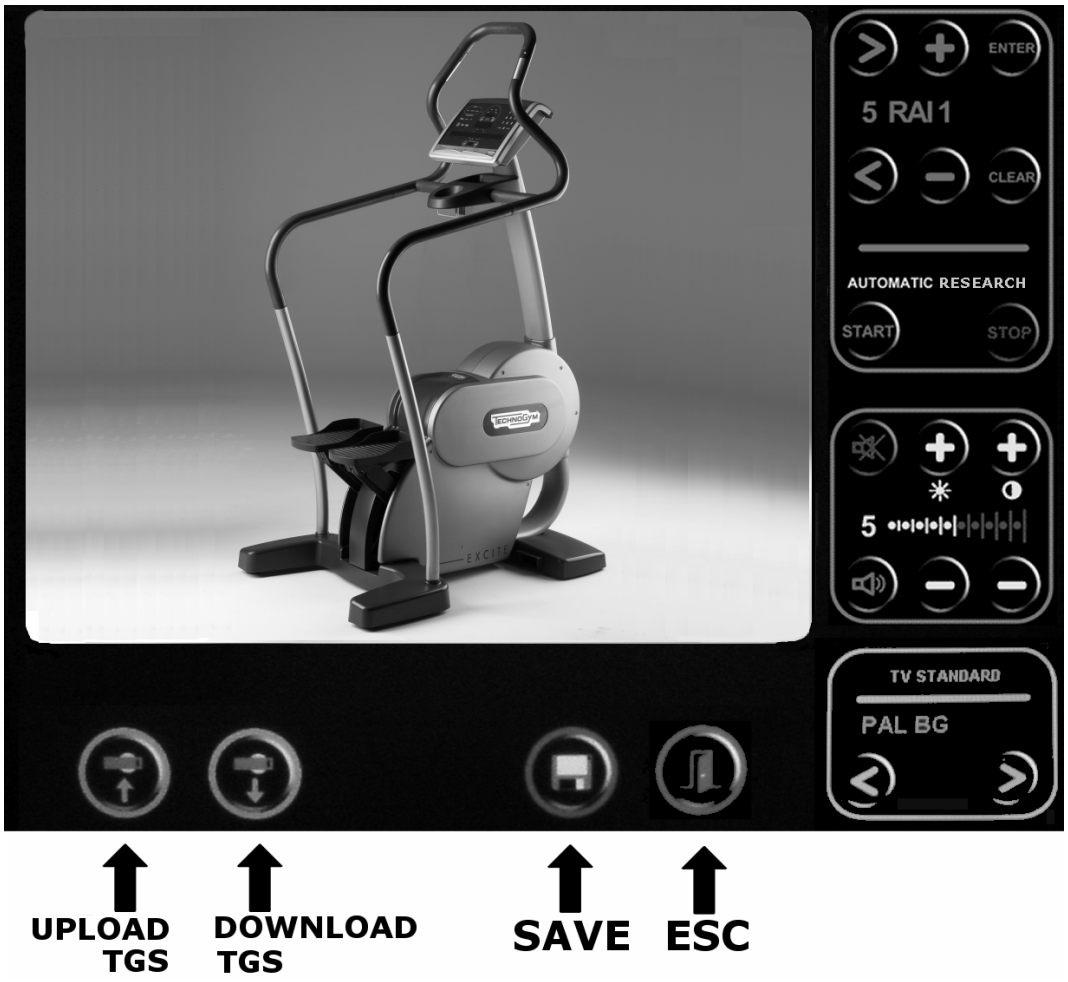
9.4. TV MENU CONFIGURATION FOR 700I E MODELS

9.4.1. TUNING TV CHANNELS

To access the TV channel tuning procedure, press the **0369** keys when the machine is in stand by mode, the keys must be pressed one after the other. The following message appears on the LCD display:

ENTER PASSWORD:

To access the procedure, type in the password **2407** and press **ENTER** to confirm. At this point the machine display will show the following:



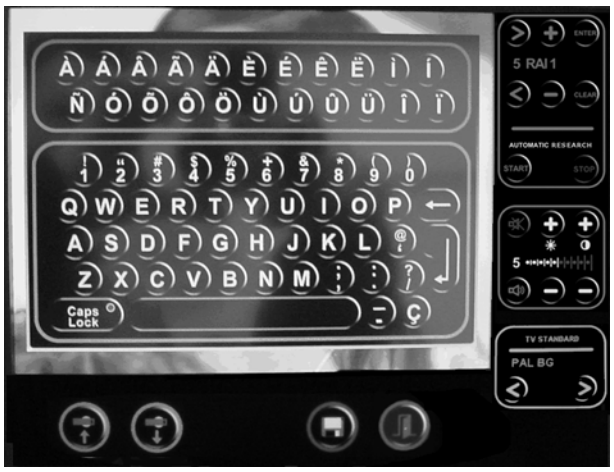
To tune a channel, use the keypad in the figure below:

MANUAL PROCEDURE

1. Select the desired channel using the < and > keys.
2. Select the correct television standard for the country of installation, choosing between all the available options, using the < and > keys in the proper menu.
3. Press ENTER; the frequency shown alongside the selected channel will turn yellow.
4. Use the + and - keys to scan through the frequencies.
5. The available range of frequencies is divided into sub-bands, press the CLEAR key to skip back to the start of the preceding sub-band.
6. After finding the desired signal, press the ENTER key again.
7. Go to step n°10.

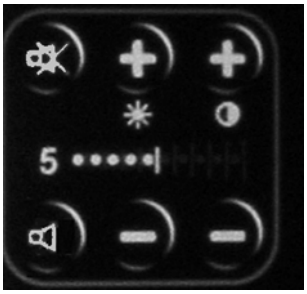
AUTOMATIC PROCEDURE

1. Select the correct television standard for the country of installation, choosing between all the available options, using the < and > keys in the proper menu.
2. Press the START button to initiate automatic scanning of the video bands. During this stage, the channels found will be collected in a temporary listing.
3. The "WAIT..." message appears along the top of the display.
4. Wait for the automatic search to finish, or interrupt it by pressing the STOP key.
5. Use the + and - buttons to select the desired channel (the display shows the frequency) out of those found during the automatic search. Its image will appear on the display.
6. Press ENTER to confirm.
7. Use the < and > buttons to select the number (from 1 to 40) to assign to the channel.
8. Press ENTER to confirm the choice.
9. Go to step n°10.



10. An alphanumeric keyboard will appears on the display.
11. Enter the desired name using the available characters (10 characters max).
12. Press the ENTER (↵) key: The name of the channel will turn blue.
13. At this point the tuning procedure is complete. Repeat the above steps for each desired channel.
14. Before exiting the tuning menu, press the "SAVE" key. Press ENTER to confirm, or cancel by pressing the CLEAR key.
15. Exit with the “EXIT” key.

9.4.2. WELLNESS TV ADJUSTMENTS



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

1. Increase or reduce the brightness of the LCD.
2. Increase or reduce the contrast of the LCD.

3. Before exiting the adjustments menu, press the “SAVE” key. Press ENTER to confirm, or cancel by pressing the CLEAR key.
4. Exit with the “EXIT” key.

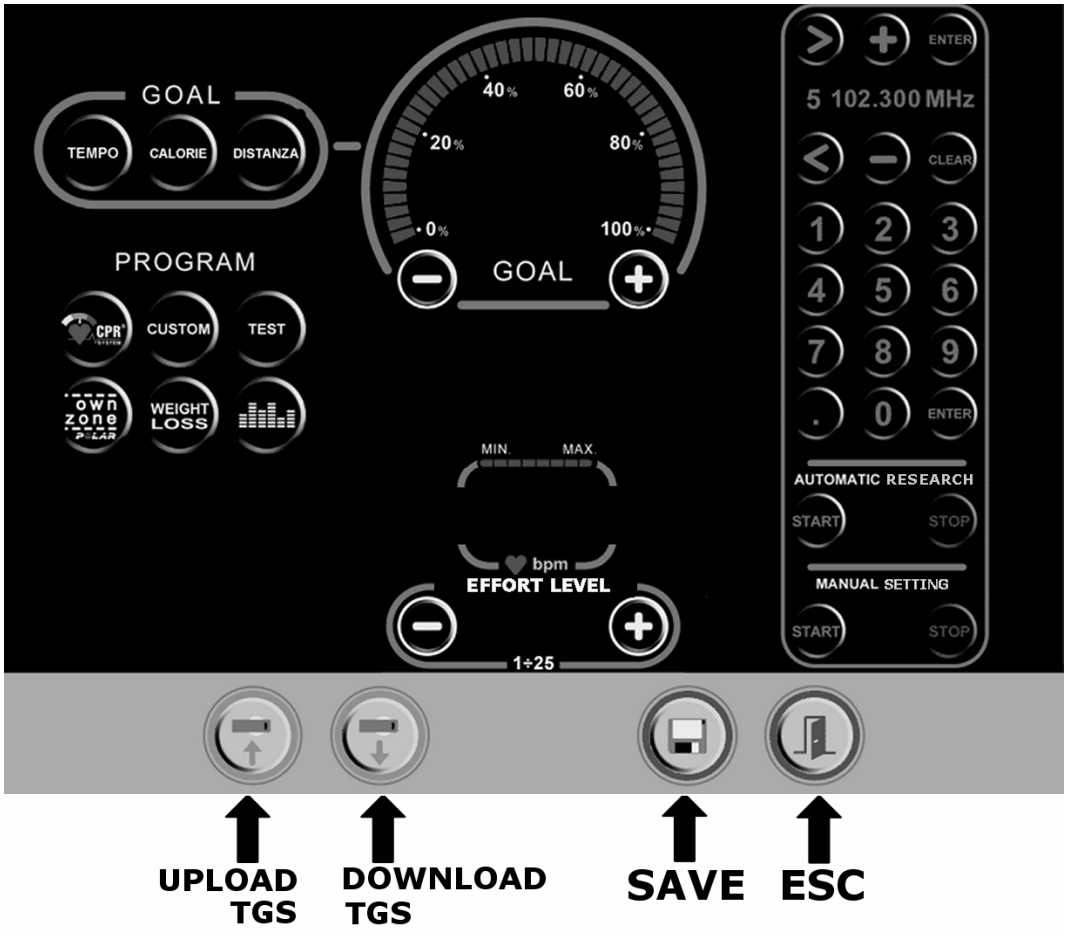
9.5. RADIO MENU CONFIGURATION FOR 700I E MODELS

9.5.1. TUNING RADIO CHANNELS

To access the Radio channel tuning procedure, press the **0369** keys when the machine is in stand by mode, the keys must be pressed one after the other. The following message appears on the LCD display:

ENTER PASSWORD:

To access the procedure, type in the password **2408** and press **ENTER** to confirm. At this point the machine display will show the following:



It is possible to tune the channels either manually, by selecting the individual frequencies, or by automatic scanning of the FM band.

9.5.1.1. Procedure for manually entering radio channel frequencies

1. Press the START button underneath the "MANUAL SETTING" label.
2. Use the < and > buttons to select the number assigned to the channel whose frequency is being entered.
3. Select the frequency of the desired radio station, entering a value between 87.500 and 108.000 MHz, using the numeric keypad.

Frequency values expressed in KHz, that is to say without a decimal point, our outside the range of the FM band (87.500 – 108.000 MHz), will not be accepted by the system.

4. Press:
   - the CLEAR key: to erase the entered frequency value
   - the ENTER key: to confirm the entered frequency value.
5. Repeat the above steps for each desired channel.
6. Before exiting the tuning menu, press the "SAVE" key. Press ENTER to confirm, or cancel by pressing the CLEAR key.
7. Press the STOP button underneath the "MANUAL SETTING" label to exit this tuning mode.
8. Exit with the "EXIT" key.

9.5.1.2. Automatic radio channel tuning procedure

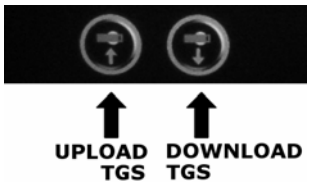
1. Press the START button underneath the “AUTOMATIC SEARCH” label to initiate automatic scanning of the FM radio band (88 – 108 MHz). During this stage, the channels found will be collected in a temporary listing.
2. The "WAIT..." message appears along the top of the display.
3. Wait for the automatic search to finish, or interrupt it by pressing the STOP key.
4. Use + and - buttons to select the desired channel (the display shows the frequency) out of those found during the automatic search. The selected radio station can be heard on the headphones.
5. Press ENTER to confirm the choice.
6. Use the < and > keys to select the number to assign to the channel.
7. Press ENTER to confirm the choice.
8. Repeat the above steps for each desired channel.
9. Before exiting the tuning menu, press the "SAVE" key. Press ENTER to confirm, or cancel by pressing the CLEAR key.
10. Press the STOP button underneath the "MANUAL SETTING" label to exit this tuning mode.
11. Exit with the "EXIT" key.

9.6. TRANSFERRING THE TUNING DATA

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

NOTE: it is not possible to transfer data from a machine using a multistandard SW (i.e. a machine which SW allows to watch channels of different TV standard) to a machine using a monostandard one (i.e. a machine which SW allows to watch channels of 1 standard only).

9.6.1. USING THE TGS



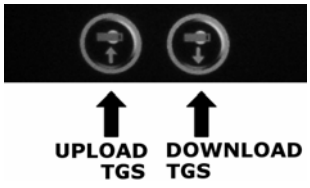
On the already tuned machine:

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 "UPLOAD TGS" button, this will cause all the channel configuration data to be saved to the key.
4. Exit the menu by pressing the "ESC" 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 "DOWNLOAD TGS" button.
4. Save the data uploaded to the machine by pressing "SAVE".
5. Exit the menu by pressing the "ESC" key.

9.6.2. USING THE CONNECTING CABLE



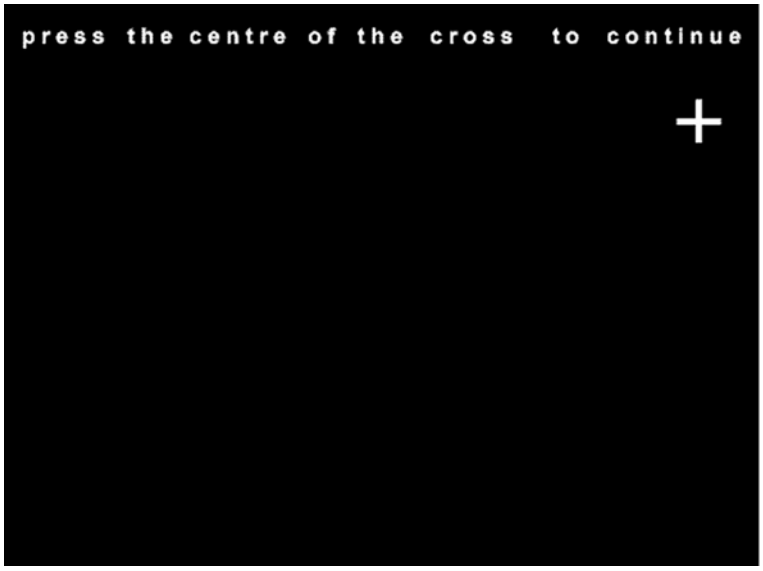
1. Connect the two machines together using the cable described in paragraph 4.3. "Cable for exchanging TV channel tuning data between two machines".
2. On both machines, enter the configuration menu of the channels that need to be tuned.
3. Press the "WRITE TO UPLOAD TGS" button on the already tuned machine.
4. Store the data transferred on the machine being tuned by pressing "SAVE".
5. Exit the menu on both machines by pressing "ESC".

9.7. TOUCH SCREEN CALIBRATION

To access the calibration procedure, press the **0369** keys when the machine is in stand by, the keys must be pressed one after the other. The following message appears on the LCD display:

ENTER PASSWORD:

To access the procedure, type in the password **2409** and press **ENTER** to confirm. At this point the machine display will appear as follows, with the message **"To calibrate tap the 3 crosses which appear in sequence"** scrolling once along the top, followed by the message **"Tap the centre of the cross to continue the calibration, or tap any other point to cancel and exit"** until the user either initiates the procedure or exits:



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 with the TV in full screen mode.

10. 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.

10.1. DAILY MAINTENANCE OPERATIONS

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:

10.1.1. SETTING UP THE OPERATION

Only for 500i, 700i and 700i E models.

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

10.1.2. EXTERNAL CLEANING OPERATIONS

1. Using a cloth moistened with Clean Well, 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.

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

10.2. MONTHLY MAINTENANCE OPERATIONS

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:

10.2.1. CLEANING OPERATIONS

1. Use a vacuum cleaner to clean the interior, paying particular attention to the brake.

WARNING: when carrying out these operations, be careful not to damage the cables.

10.2.2. LUBRICATION

1. Check the lubrication of the pedal chains and lubricate with chain spray grease that comes with the service box, as detailed in paragraph 10.4. "Lubrication of the pedals chains", if necessary.
2. After lubricating them, move the pedals up and down a few times.

10.2.3. CHECKING THE STATE OF WEAR OF THE PEDAL CHAINS

1. Check the state wear of the pedal chains, inspecting their entire length and in particular the coupling with the primary shaft sprocket wheels. If any anomalies are found (links that are jammed and/or have excessive play), call in the authorized Technogym Technical Service.

10.2.4. CHECKING THE AMOUNT OF PLAY ON THE BALL JOINTS

1. Check the amount of play on the ball joints, taking a pedal in one hand and moving it. If any anomalies are found call in the authorized Technogym Technical Service.

10.2.5. 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.

10.2.6. CHECKING THE OPERATION OF THE HAND SENSOR RECEIVER

Only for 700i, 700i SP and 700i E 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.

10.3. 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:

10.3.1. CARRYING OUT THE MONTHLY MAINTENANCE PROCEDURE

1. Carry out the procedure described in paragraph 10.2. “Monthly maintenance operations”.

10.3.2. SETTING UP THE OPERATION

Only for 500i, 700i and 700i E models.

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

10.3.3. CHECKING THE WORKING CONDITIONS

Only for 500i, 700i and 700i E models.

1. Using a multimeter, check that the machine earth node is correctly connected to earth.

10.3.4. CHECKING THE WEAR OF RUBBER PARTS

1. Check the state of wear of the rubber components. Replace if there are evident signs of wear.

10.3.5. CHECKING THE BELT

1. Check the state of wear of the belt, 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.

10.3.6. CHECKING THE CHAINS

1. Check the state of wear of the pedal chains and primary shaft chain, in particular checking for any links that are jammed and/or have excessive play. Replace if it shows evident signs of wear.
2. Check the tension of the primary shaft chain. Adjust the tension if necessary.
3. Lubricate the pedal chains and the primary shaft chain with chain spray grease that comes with the service box. After lubricating, move the pedals up and down a few times.

10.3.7. CHECKING THE WEAR OF THE PULLEYS

1. Check the state of wear of the pulleys. Replace if they show evident signs of wear.

10.3.8. CHECKING THE PLAY OF THE LEVER AND PEDAL GROUP

1. Choose a manual training session with difficulty level 1. Step onto the pedals and start using the machine, moving the weight of your body backward and forward, to the right and left. Check whether the lever and pedal group follows these shifts in body weight with an excessive amount of play. If this is the case, replace the lever or pedal group.

10.3.9. 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.

10.3.10. 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 500i, 700i and 700i E models.**

2. Check the condition of the fuses using a tester.

10.4. LUBRICATION OF THE PEDALS CHAINS

This operation should be carried out whenever the following message appears on the display "LUBRICATES THE CHAINS, THEN PRESSES A KEY TO CONTINUE".

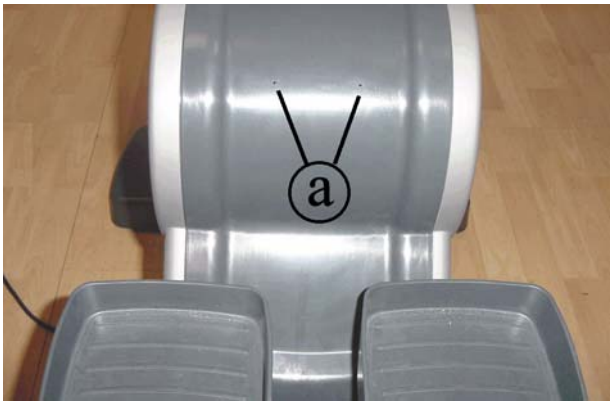


Figure 10.4-1

WARNING: to carry out this operation, use only the lubricating oil supplied with the machine.

1. Insert the sprayer tube all the way into one of the two holes **a** and spray the oil.
2. Using one foot, slowly push down the pedal corresponding to the hole and continue spraying.
3. Remove the sprayer tube and slowly allow the pedal to come up.

Repeat the operations on both pedals of the machine.

After carrying out the above-described operations, change the value of the parameter described in paragraph 9.1.16. "Lubricated".

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11. APPENDIX

11.1. UPDATING THE SW

To update the machine SW it is necessary to change the contents of the FLASH EPROM on the 386 board 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.

11.2. 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;
- 13-mm wrench;
- 17-mm wrench;
- 3-mm Allen T-wrench;
- 4-mm Allen T-wrench;
- 5-mm Allen T-wrench;
- 6-mm Allen T-wrench;
- 8-mm Allen T-wrench;
- Snap ring pliers;
- 17-mm ring nut spanner
- Torque wrench;
- Flatness comparator.

- PC equipped with Service Excite Loader

ATTENTION: The tool sizes are expressed in mm.

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