ISOCONTROL

SERVICE & MAINTENANCE MANUAL

REV. 1.5

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 EVEN WHEN THE MACHINE IS TURNED OFF

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 and use of this manual.

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1. AVVERTENZE GENERALI

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 illustrations highlighting the topic covered.

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

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 CHARACTERISTICS

2.1. MECHANICAL CHARACTERISTICS

These data are not provided, as they are specific to each installation.

2.2. ELECTRICAL CHARACTERISTICS

	EUROPE	US
Power Supply	9-15 Vdc	9-15 Vdc
Maximum Current	0.45 A	0.45 A
Power Supply unit	**IN**: 100-240 VAC / 0.8A / 50Hz **OUT**: 9-15 VAC / 1.5A min.	**IN**: 100-120 VAC / 0.8A / 60Hz **OUT**: 9-15 VAC / 1.5A min.

Use only the power unit supplied by Technogym or an equivalent one, that is with the electrical specifications given in the table and with an LPS (Limited Power Source), NEC:Class 2, bearing the symbol .

2.3. AMBIENT SPECIFICATIONS

Temperature	In operation	10° to 25° C
	In storage	10° to 55° C
Humidity	In operation	30% to 80% non-condensing
	In storage	20% to 90% non-condensing

Equipment not protected against the penetration of moisture. IP 20.

Equipment not suitable for use in the presence of anesthetic mixtures inflammable in air, oxygen or nitrous oxide.

2.4. CONFORMITY TO REGULATIONS

The equipment conforms to the following directives:

	Europe	USA
EMI	EN 55022 EN 55024	FCC 15
Safety	EN 60950	UL 60950
Directive	73/23/CE 89/336/CE	

2.5. PRODUCT CODE

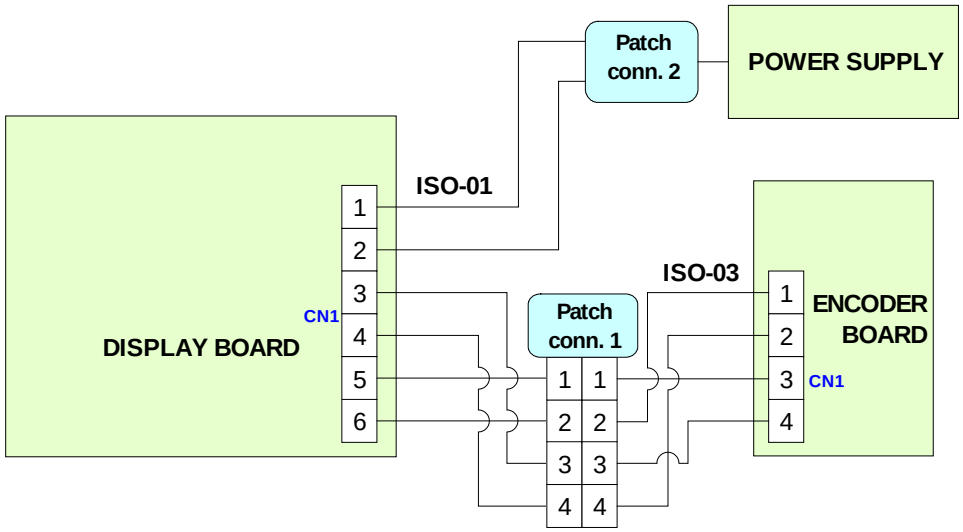
MACHINE	PERSONAL SEL. LUXURY PERFORMANCE BEAUTY	PERSONAL SELECTION CLASSIC CLASSIC SELECTION	ELEMENT & ELEMENT+	SELECTION MED
Abdominal Crunch	EICM908-GD#	EICM908-GG#	EICMA01-GG#	EICC908-GG
Abductor	EICM906-GD#	EICM906-GG#	EICMA01-GG#	EICC906-GG
Adductor	EICM906-GD#	EICM906-GG#	EICMA01-GG#	EICC906-GG
Arm Curl	EICM909-GD#	EICM909-GG#	EICMA01-GG#	/
Arm Extension	EICM909-GD#	EICM909-GG#	EICMA01-GG#	/
Chest Incline	EICM909-GD#	EICM909-GG#	/	/
Chest Press	EICM909-GD#	EICM909-GG#	EICMA01-GG#	EICC909-GG
Delts Machine	EICM904-GD#	EICM904-GG#	/	/
Glute	EICM910-GD#	EICM910-GG#	EICMA01-GG#	EICC910-GG
Lat Machine	EICM907-GD#	EICM907-GG#	EICMA03-GG#	EICC907-GG
Leg Curl	EICM905-GD#	EICM905-GG#	EICMA06-GG#	EICC995-GG
Leg Extension	EICM905-GD#	EICM905-GG#	EICMA04-GG#	EICC995-GG
Leg Press	EICM908-GD#	EICM908-GG#	EICMA05-GG#	EICC994-GG
Low Row	EICM902-GD#	EICM902-GG#	EICMA02-GG#	EICC902-GG
Lower Back	EICM908-GD#	EICM908-GG#	EICMA01-GG#	EICC908-GG
Multi Hip	EICM911-GD#	EICM911-GG#	/	EICC911-GG
Pectoral Machine	EICM909-GD#	EICM909-GG#	EICMA01-GG#	EICC909-GG
Pulldown	EICM901-GD#	EICM901-GG#	/	/
Pulley	EICM910-GD#	EICM910-GG#	/	/
Rotary Calf	EICM908-GD#	EICM908-GG#	/	/
Rotary Torso	EICM910-GD#	EICM910-GG#	/	EICC910-GG
Shoulder Press	EICM909-GD#	EICM909-GG#	EICMA01-GG#	EICC909-GG
Total Abdominal	EICM908-GD#	EICM908-GG#	/	/
Upper Back	EICM903-GD#	EICM903-GG#	/	EICC903-GG
Vertical Traction	EICM909-GD#	EICM909-GG#	EICMA01-GG#	EICC909-GG

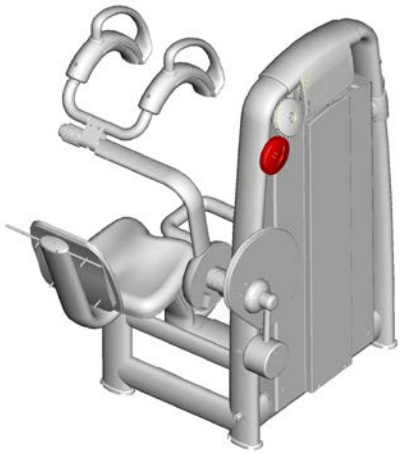
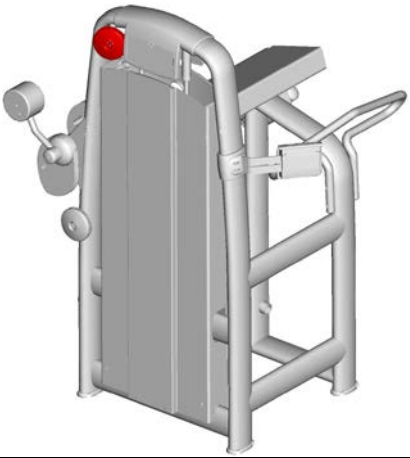
Replace # and complete the code with any language abbreviation from the list below:

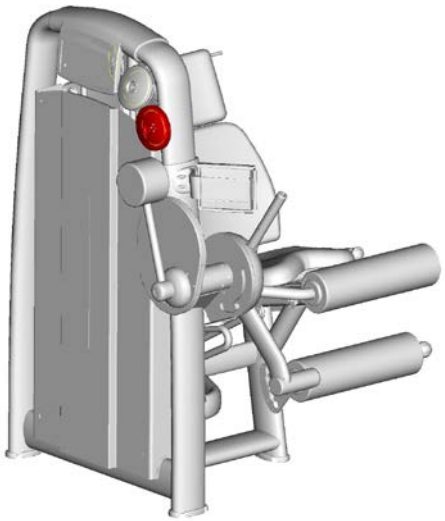
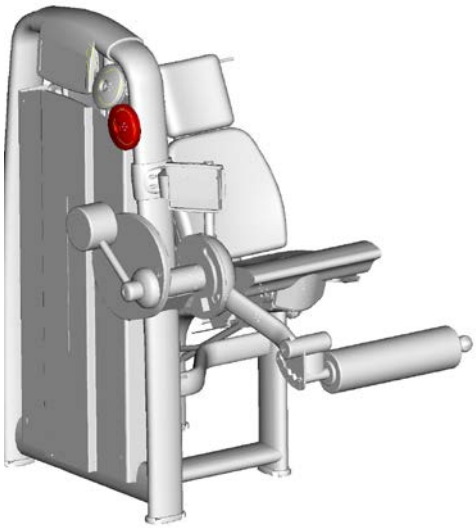
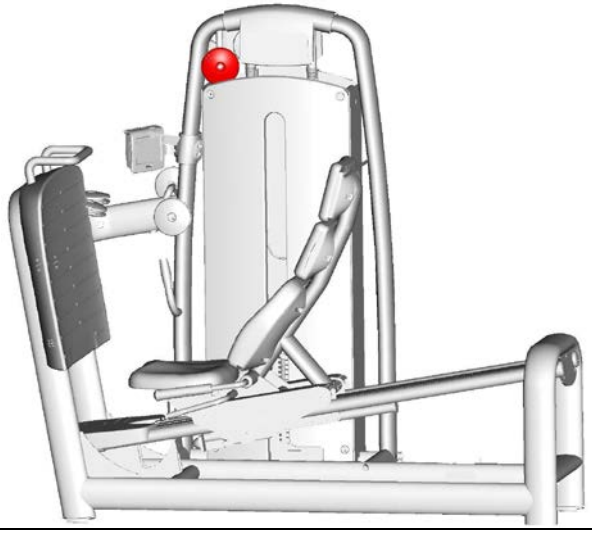
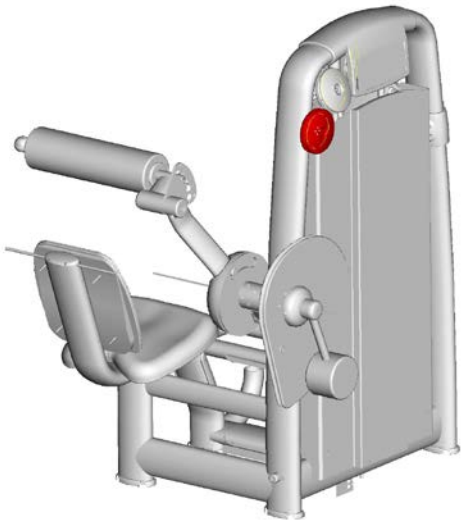
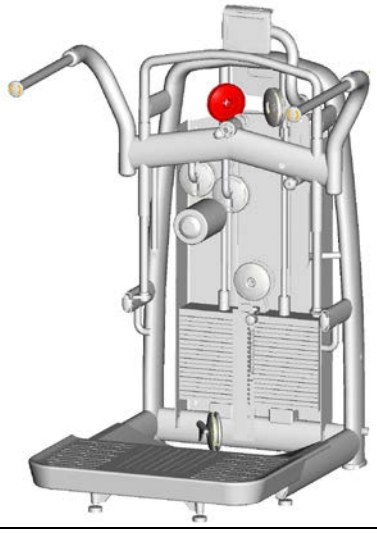
IT	Italian	**FR**	French	**ES**	Spanish
UK	UK English	**DE**	German	**BR**	Portuguese
US	US English	**NL**	Dutch	**JP**	Japanese

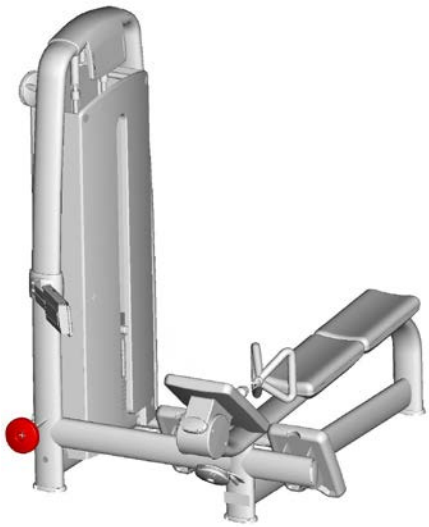
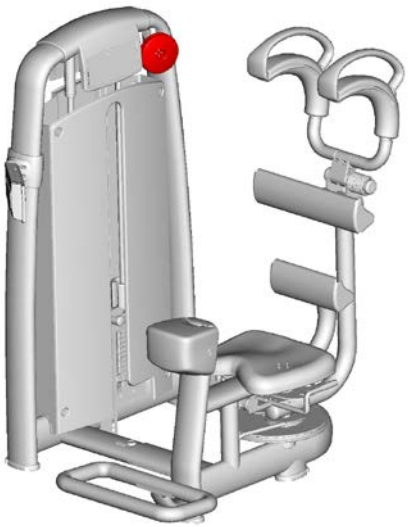
2.6. WIRING DIAGRAM

1 PULLEY
All Element machines, for Selection machines refer to the list below.



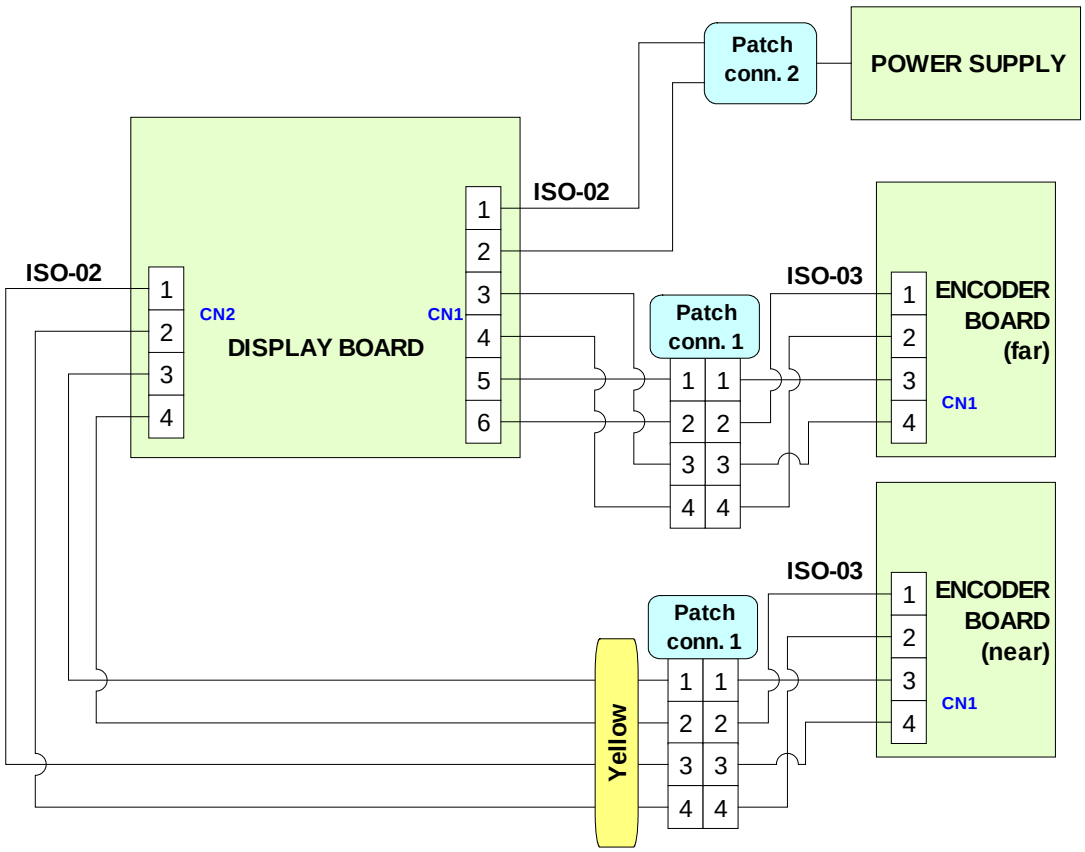
MACHINE WITH ONE PULLEYS TO BE REPLACED	
Abdominal Crunch	**Abductor**
	
Adductor	**Glute**
	

Lat Machine 	**Leg Curl** 
Leg Extension 	**Leg Press** 
Lower Back 	**Multi Hip** 

Pulley 	**Rotary Calf** 
Rotary Torso 	**Total Abdominal** 

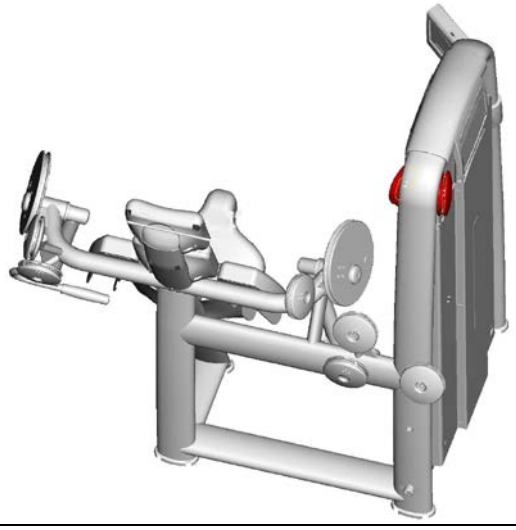
2 PULLEYS

The machine which need to replace 2 pulleys are listed below.

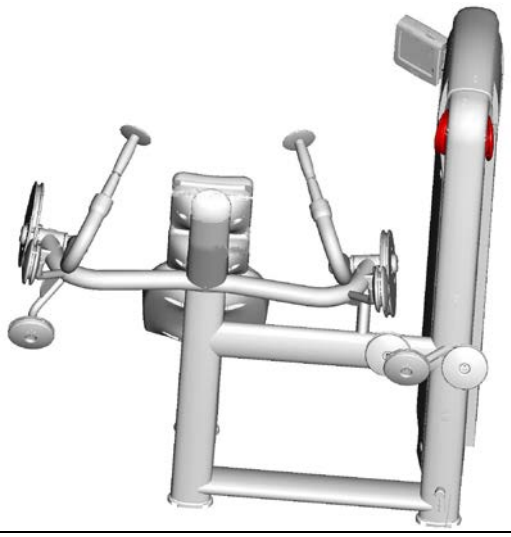


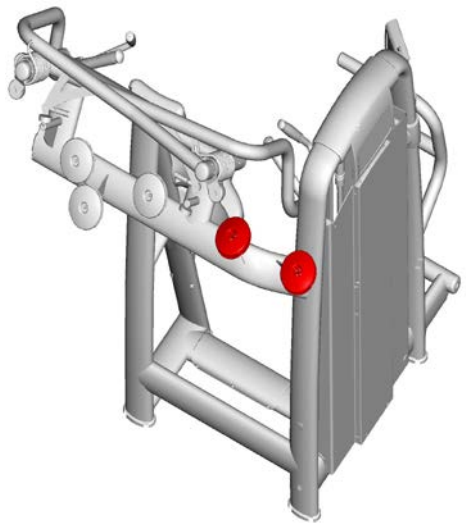
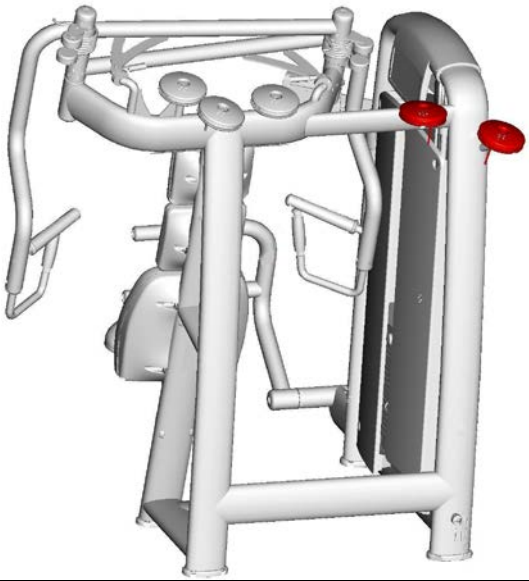
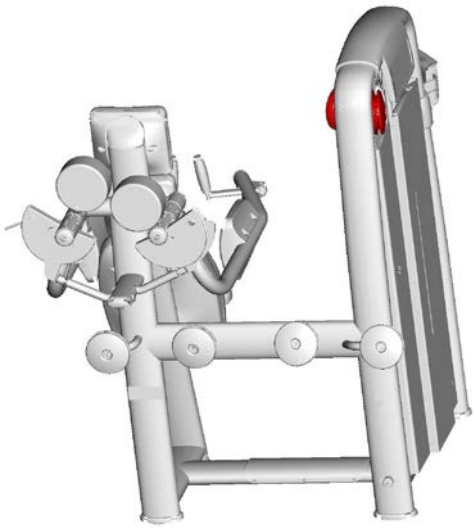
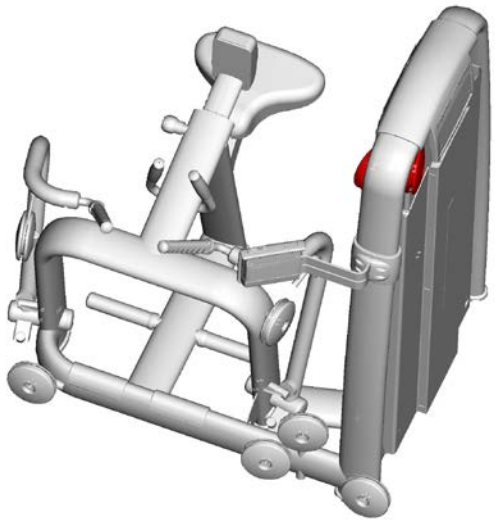
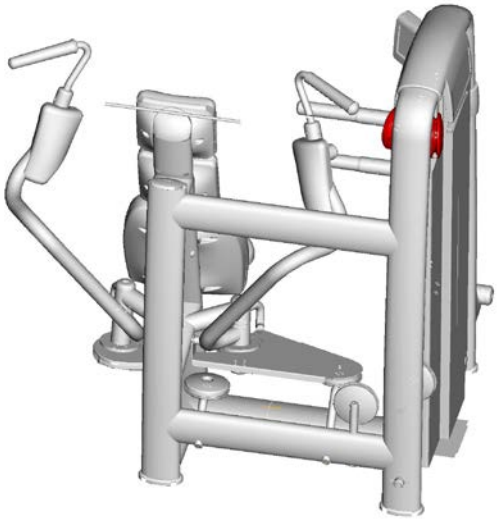
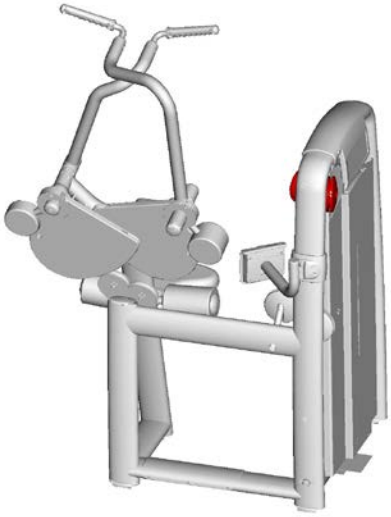
MACHINE WITH TWO PULLEYS TO BE REPLACED

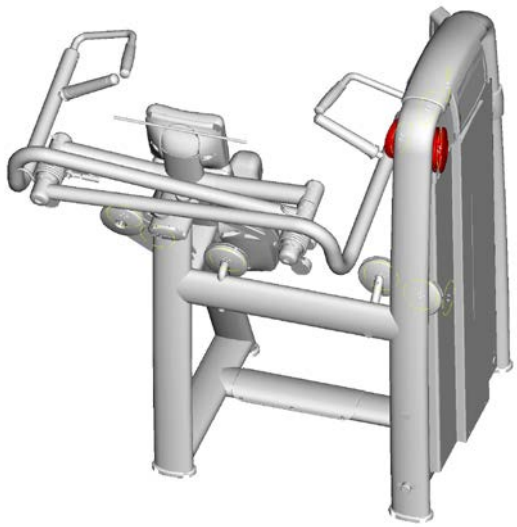
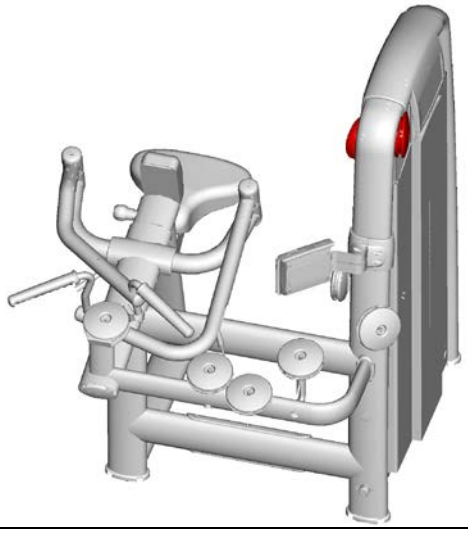
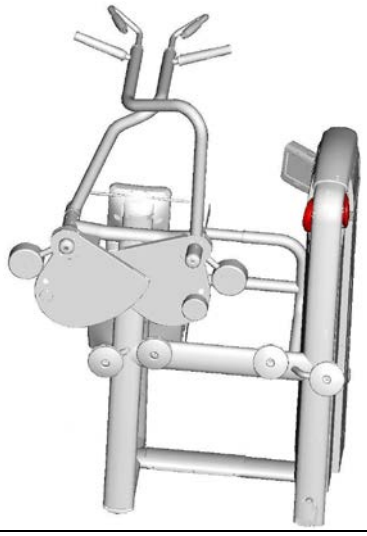
Arm Curl



Arm Extension



Chest Incline 	**Chest Press** 
Delts Machine 	**Low Row** 
Pectoral Machine 	**Pulldown** 

Shoulder Press 	**Upper Back** 
Vertical Traction 	

2.6.1. WIRING

ISO-01: Signal/power supply cable Display board – Patch connectors				
Display board CN1	**Signal**	**Color**	**Patch conn. 2**	**Patch conn. 1**
1	Ground	Black	Faston	-
2	Power supply from power supply (+9 Vdc)	Violet	Faston	-
3	Out 2 (encoder)	White	-	3
4	Ground	Brown	-	4
5	Out 1 (encoder)	Green	-	1
6	Power supply for encoder board (+5 Vdc)	Yellow	-	2

ISO-02: Signal/power supply cable Display board – Patch connectors						
Display board		**Signal**	**Color**	**Patch conn. 2**	**Patch conn. 1 (far)**	**Patch conn. 1 (near)**
CN1	**CN2**					
1		Ground	Black	Faston	-	-
2		Power supply from power supply (+9 Vdc)	Violet	Faston	-	-
3		Out 2 (encoder)	White	-	3	-
4		Ground	Brown	-	4	-
5		Out 1 (encoder)	Green	-	1	-
6		Power supply for encoder board (+5 Vdc)	Yellow	-	2	-
	1	Out 2 (encoder)	Grey	-	-	3
	2	Ground	Pink	-	-	4
	3	Out 1 (encoder)	Blue	-	-	1
	4	Power supply for encoder board (+5 Vdc)	Red	-	-	2

ISO-03: Encoder cable Encoder board – Patch connector			
Encoder board	**Signal**	**Color**	**Patch conn. 1**
1	+5 Vdc	Yellow	2
2	Ground	Brown	4
3	Out 1 (encoder)	Green	1
4	Out 2 (encoder)	White	3

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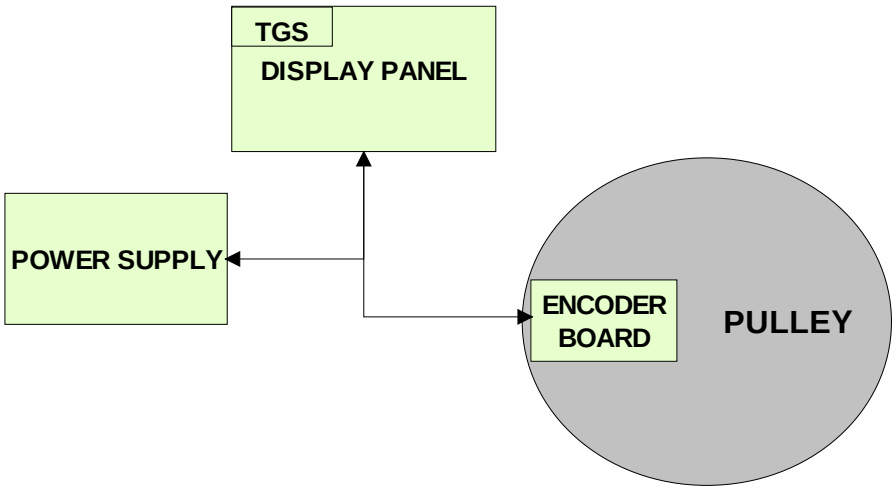
3. PRINCIPLES OF OPERATION

3.1. BLOCK DIAGRAM

The block diagram of the device is illustrated in the figure below:



3.1.1. DISPLAY PANEL

Its individual components are described separately below:

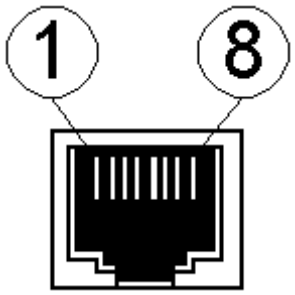
DISPLAY BOARD

This is the heart of the device, from which all of its functions are controlled. It receives information from the user (weight, repetitions, sets, etc...) during set-up of the exercise, and from the TGS key reader. It displays messages and data about the exercise in progress.

The display board is provided with an RJ45 jack which makes available an RS 232 serial port through which the system software can be upgraded. This jack is accessed externally, on the lower part of the display panel, and its pin out is:

Pin	Signal
1-2-5-6-8	NC
3	Rx
4	Tx
7	Ground

ATTENTION: for the numbering of the pins please refer to the diagram below:



The following components are mounted on the display board:

- LED display: used for displaying the ROM arc and other information (scrolling messages, weight, repetitions, sets, etc.)
- Two LEDs for the TGS (green and red): the green LED serves as its power indicator, while the red LED signals that a read or write operation is in progress on the TGS key.
- Two buttons: used for transferring information from the user to the board.
- A green trimmer: used for performing factory adjustments. Its setting should not be changed.
- A buzzer.
- Two connectors (6-pin and 4-pin)
- One RJ45 jack.

On the display board, near the two LEDs, there is the TGS reader circuit, which reads and saves the training session data to and from the TGS key.

TGS KEY READING DEVICE
This is the device into which the TGS key is inserted.

3.1.2. ENCODER BOARD

Detects the movement of the pulley brought about by the displacement of the cable during the exercise, and sends it to the pulse display board.

3.1.3. POWER SUPPLY

Receives the mains voltage at its inputs and outputs the DC supply voltage for the display panel. It receives the 100-240 VAC mains voltage with 50-60 Hz frequency at its inputs and outputs the 9-15 Vdc DC voltage.

It is provided with interchangeable plugs for connecting to the wall outlet. There are 3 different types available:

- Italian plug
- English plug
- US/Japanese plug

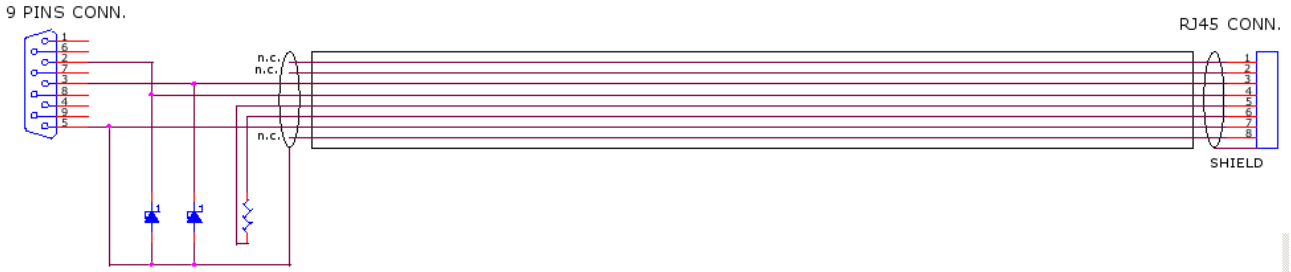
4. ACCESSORI

4.1. SERIAL CABLE FOR PC CONNECTION

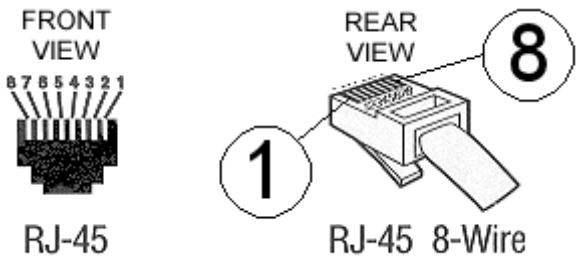
The machine can be connected to a PC for updating the software or configuration parameters by means of the RJ45 jack situated on the lower edge of the display panel.

The cable to use (code **R0002534AC**) must be wired as follows:

PC cable Display – PC			
Display RJ45	**Signal**	**Color**	**PC 9 pin D-connector**
3	Rx	White-green	3
4	Tx	Blue	2
7	Ground	White-brown	5

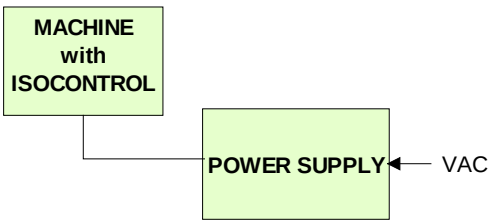


ATTENTION: for the numbering of the pins, on RJ45 connector, please refer to the diagram below:



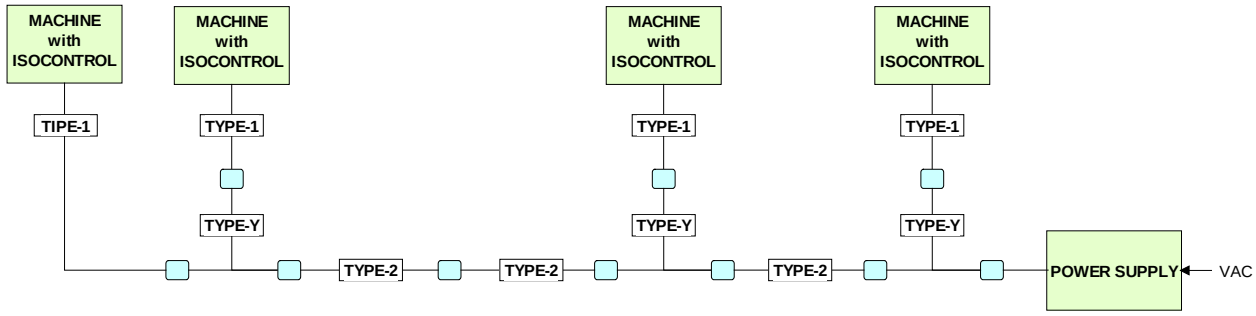
4.2. ELECTRICAL CONNECTION

4.2.1. DIRECT CONNECTION



Description	Code
Power supply	See Exploded diagrams
Italian plug	See Exploded diagrams
English plug	See Exploded diagrams
US/Japanese plug	See Exploded diagrams

4.2.2. DAISY CHAIN



The diagram above is just one example of a possible daisy chain.

Description	Code
Power supply	See Exploded diagrams
Cable (Type 1)	See Exploded diagrams
Cable (Type 2)	See Exploded diagrams
Cable (Type Y)	See Exploded diagrams

When making a daisy chain:

- **It is possible to connect a maximum of 5 machines together;**
- **The length of the cables between the power supply and the last machine equipped with an Isocontrol must not exceed 20 meters.**
- **It is possible to use two Type 2 cables as an extension.**

5. INSTALLATION INSTRUCTIONS

5.1. SPECIFICATIONS AND REQUIREMENTS

To install the machine correctly, make sure that:

1. The machine is installed on a flat and steady surface able to bear its own weight as well as the user's weight.
2. The environment is dust or sand free.
3. The environment meets the operating temperature and humidity conditions specified in paragraph 0
4. The machine must not be located near any sources of heat, electromagnetic interference (TV sets, electric motors, antennas, high voltage lines, household appliances etc…) or medical equipment.
5. The machine must be securely grounded.
6. The power entry must be located in a place where the plugging and unplugging can be done easily and safely. The power entry is reserved to the machine and supplies at least 60 W power.
7. The machine allows other units to be connected in cascade To ensure a correct link, follow the recommendations given in paragraph 4.2.2. "Daisy chain".
8. Place the machine power cable so that people do not trip over it

5.2. INSTALLATION

For the correct installation of the device, always refer to the installation manual supplied together with the Isocontrol.

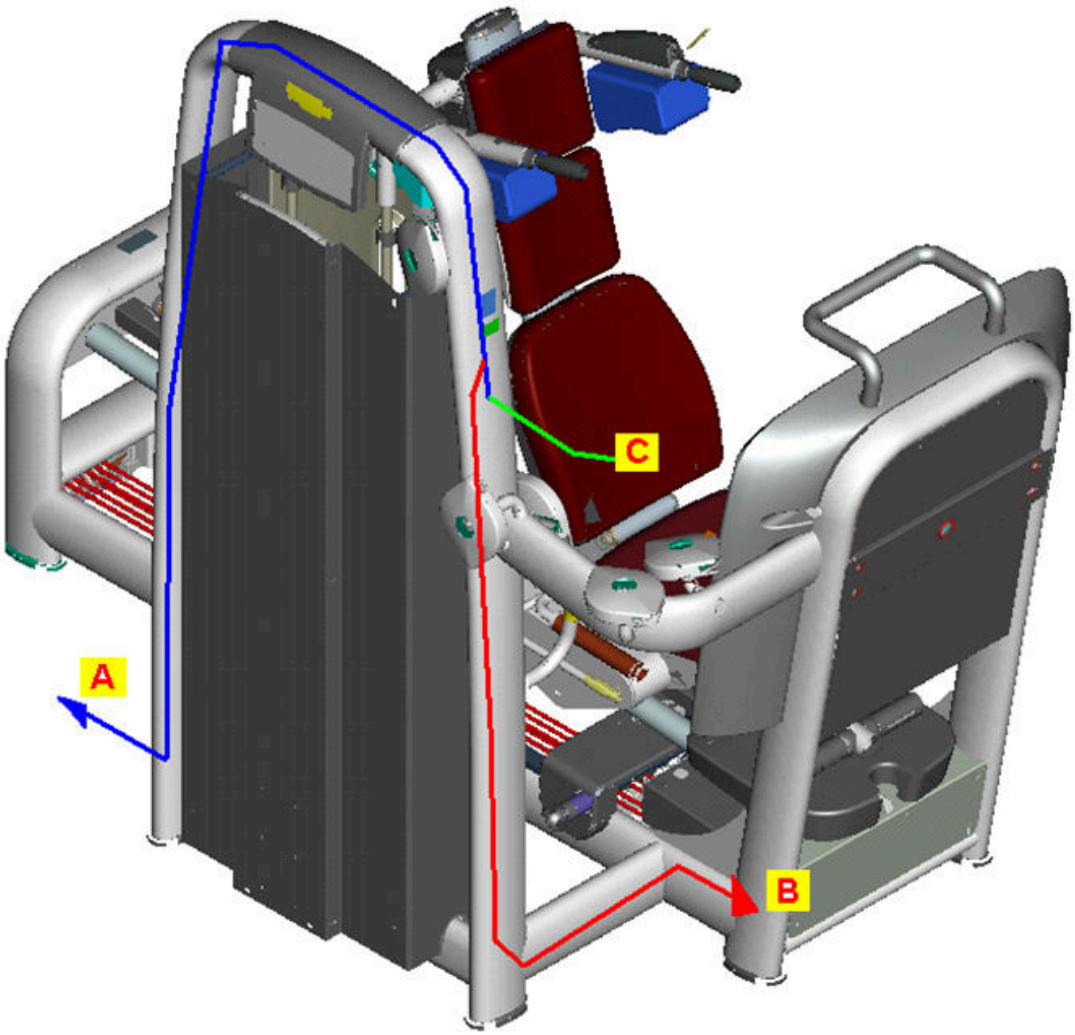
5.3. SELECTION MED

The installation procedure for this device on the Selection MED Line, is absolutely the same as on the Personal Selection standard.
The only equipment which differs comparing to the standard line one is the Leg Press. For this purpose you can find below the main step for the installation.

5.3.1. LEG PRESS SELECTION MED INSTALLATION

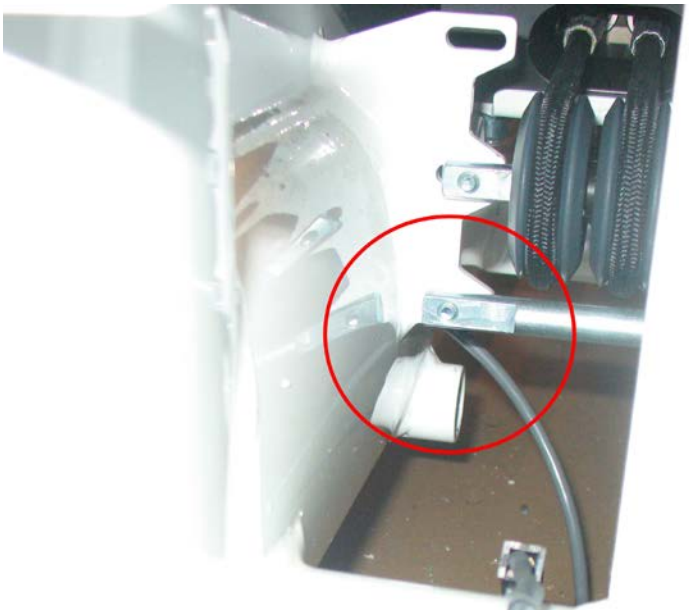
Here following the main steps of the installation procedure.

1. Insert the wiring provided in the kit into the frame. The cable has a "Y" shape with 3 connectors: one is the power supply input jack (the power supply input jack have to be disassembled before pass the cable into the frame), one is the end to connect the display group and one is the end to connect the encoder group.
   To correctly insert and pass it into the frame, please read carefully the notes and refer to the following picture.

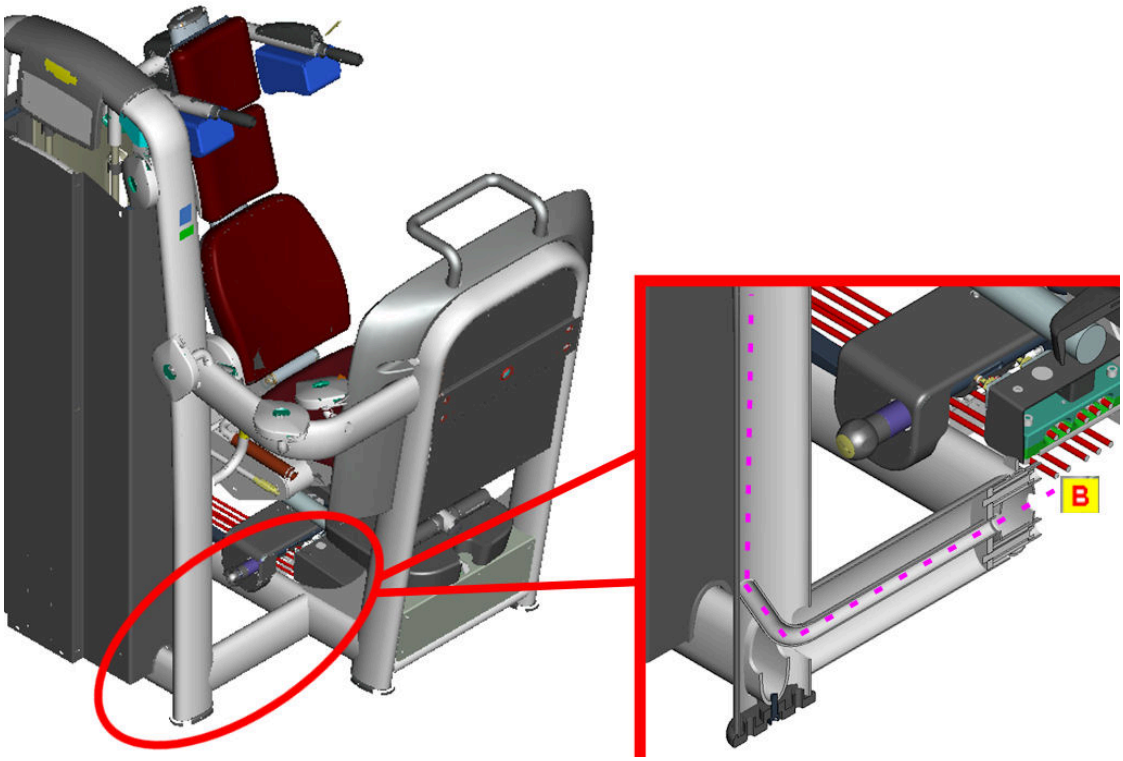


   a. Insert a fish tape in the hole on the bottom side of the frame (ref. **A**), where it will be fixed the power supply input jack and pull it out from the hole (ref. **C**), where it will be fixed the display group.

b. Insert a fish tape in the hole on the bottom side of the carriage frame (ref. **B**), where it will be connect the encoder group and pull it out from the the hole (ref. **C**), where it will be fixed the display group.

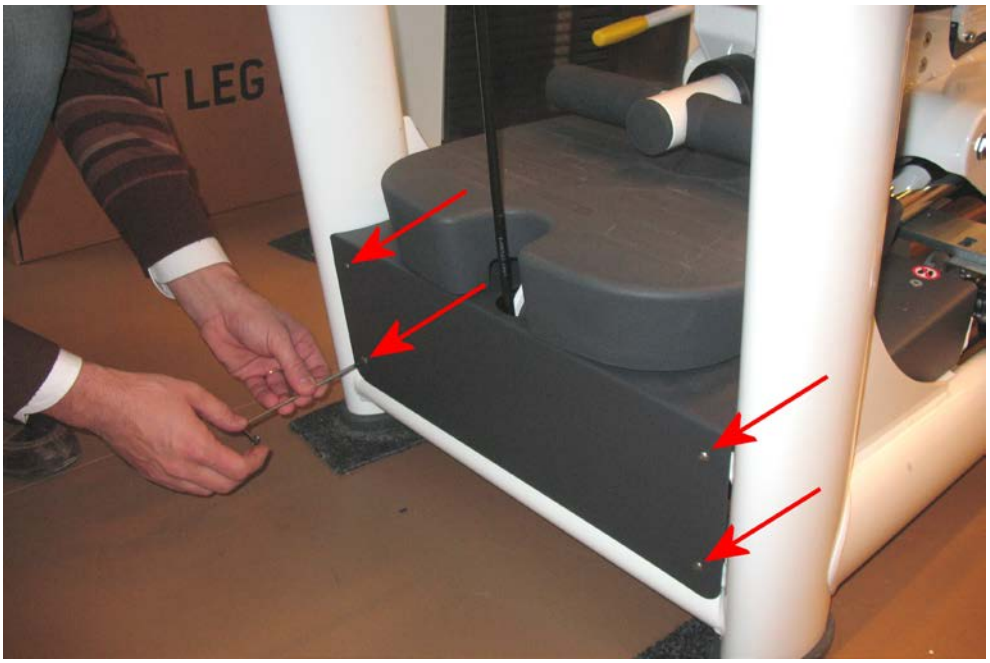


IMPORTANT: it's very important to insert the fish tape starting from "**B**" to "**C**" due to the specific shape of the frame, that will not allow to do this job in the reverse way. *You can notice that in the drawing of the picture below.*

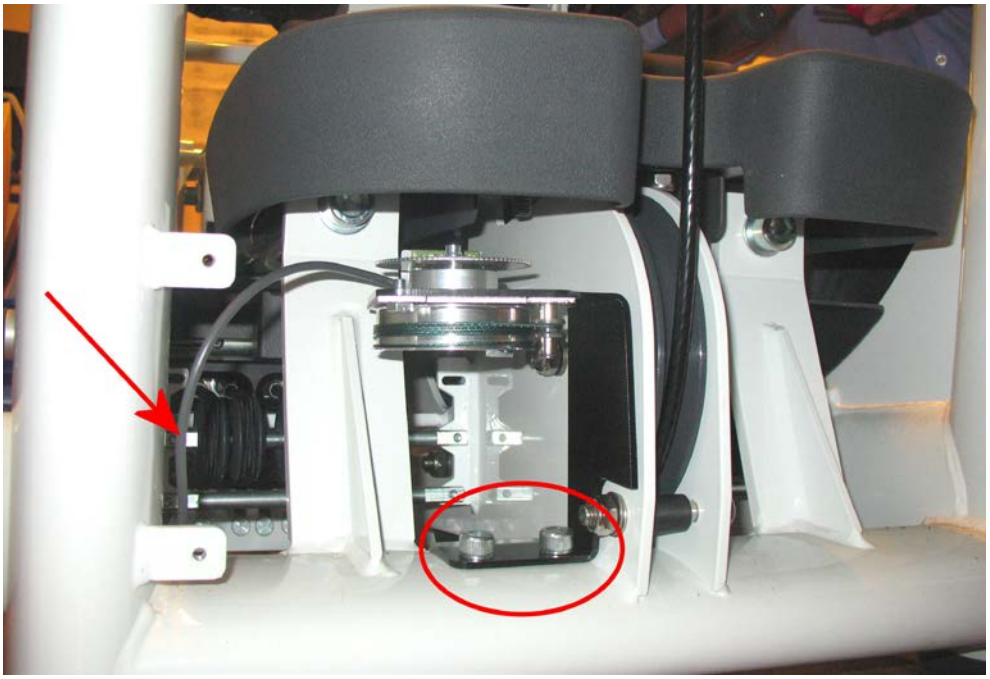


c. Connect the "power supply end" of the signal cable (round connector) to the fish tapes coming from "**A**"; connect the "encoder end" of the signal cable (small flat connector) to the fish tapes coming from "**B**".

2. Fix the power supply input jack on the frame, in position "**A**".
3. Mount the display group and its bracket in position "**C**". Remember to connect flat connector of the signal cable on the rear of the display (like on the standard Selection Leg Press).
4. Move on the front frame of the carriage side to mount the encoder group.
   a. Unscrew the 4 screws indicated in the following picture and remove the front protection plate.

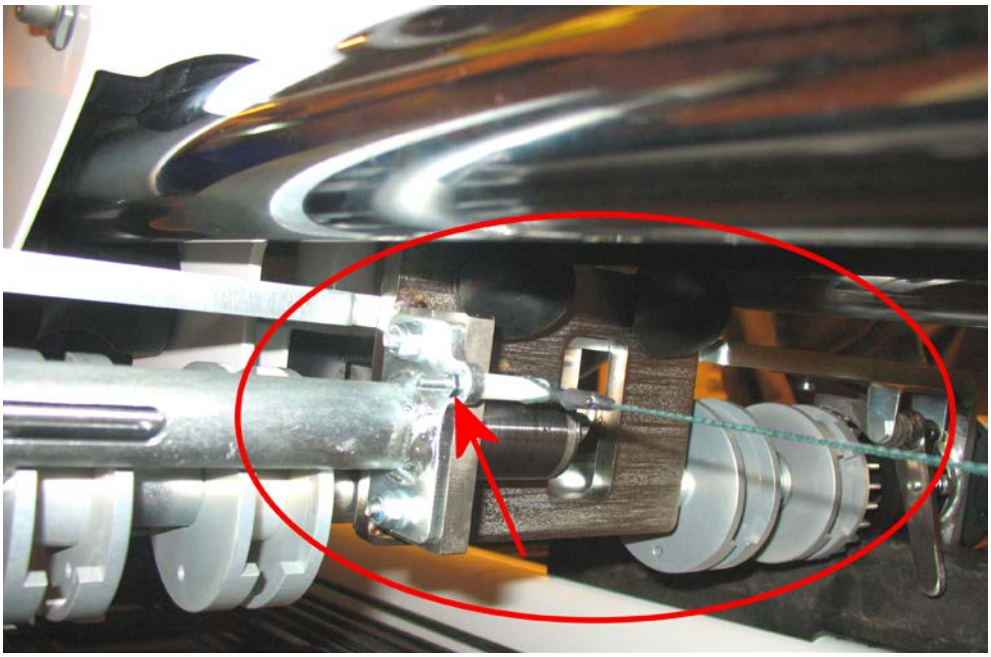


   b. Mount the encoder group fixing it using the 2 bolts circled below.



   c. Connect the connectors coming from the encoder group, indicated by the arrow, to the end of the cable coming from the frame, through the hole "**B**".

d. Fix the pin where it is hooked the encoder cable, in the lower side of the carriage frame using the proper nut. See the detail in the below picture.



e. Mount the protection plate removed at step “a” again.

5. Connect the device to the mains lead using the proper power supply.
6. Start the exercise and check that everything works properly.

5.4. FIRST POWER-ON

After completing the installation procedure, the machine is ready to be powered up. Proceed as follows to switch on the machine:

1. Connect the mains lead to the power inlet socket on the machine.

2. Plug the mains lead into the wall outlet. The machine will automatically switch on; there is no need to press any button. On power up the machine sounds a beep, the edges of the display blink and the following details scroll through in sequence:

   - name of the machine on which the device is installed,
   - the software version,
   - the boot version,
   - version number of the integrated TGS reader,
   - language.

   At the end, the machine enters the stand by state, awaiting a command from the keyboard. During this phase the stand by messages scroll through the display.

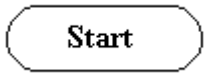
3. At this point carry out the machine configuration procedure as described in chapter 9. “Machine configuration”.

4. To check that the machine is working properly:

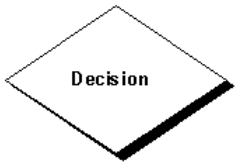
   - get on the machine;
   - insert a TGS key and check that the system is able to read it;
   - perform an exercise and check that the system detects the ROM and correctly acquires the repetitions.

6. TROUBLESHOOTING

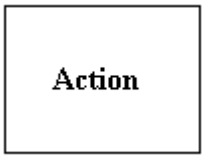
The troubleshooting procedures are shown in the form of flow charts. In order to facilitate consultation, the following standard box shapes are used.



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 can be 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 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 highlight a point in the procedure. Typically, this indicator is used in page changes.

6.1. TEST PROCEDURE

6.1.1. LED TEST

To carry out the test:

1. Access the service menu as described in paragraph 9.1. “Service menu configuration”.
2. Wait for the menu to reach the function at paragraph 9.1.8. “LED Test”.
3. Perform the check as instructed in the above-mentioned paragraph.

If the outcome of the test is not as expected, replace the display board.

6.1.2. ENCODER TEST

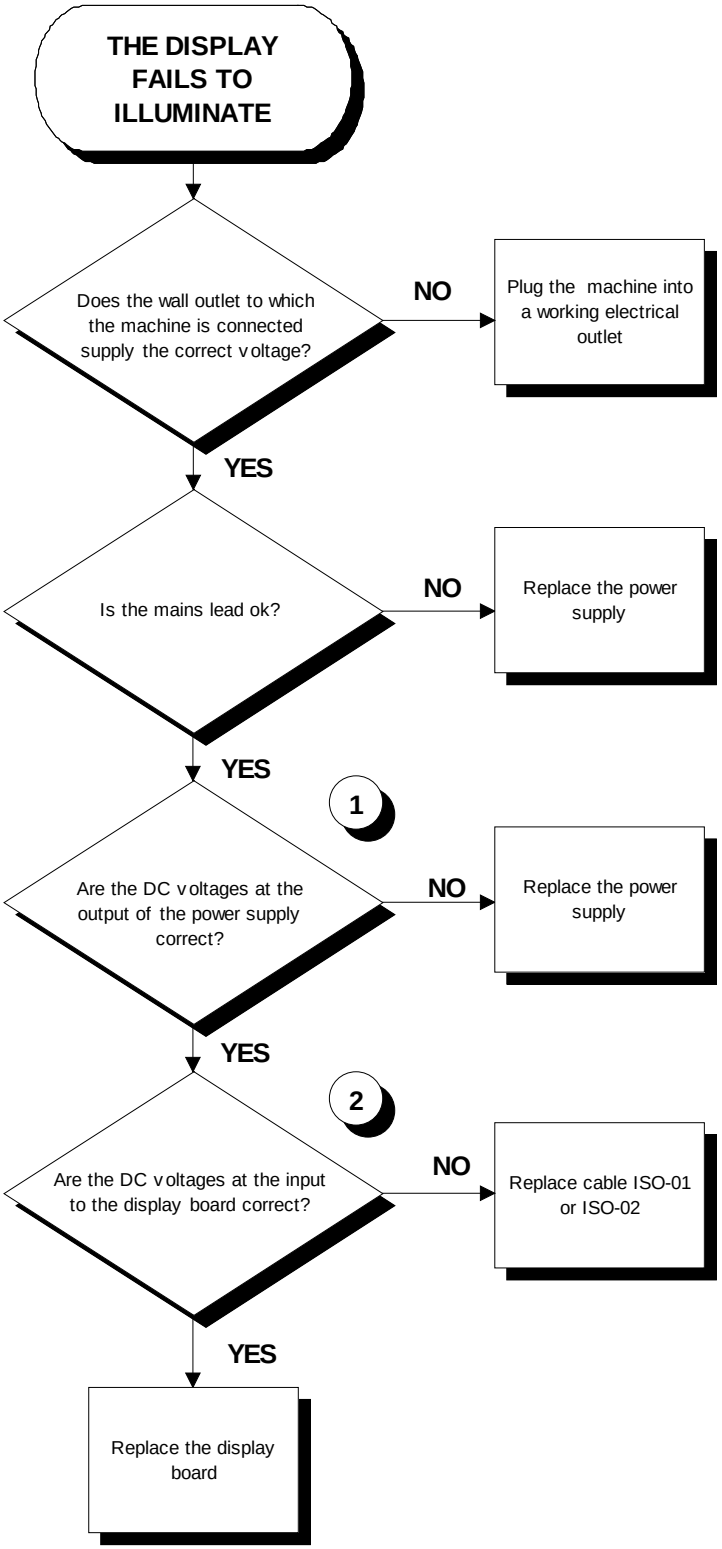
To carry out the test:

1. Access the service menu as described in paragraph 9.1. “Service menu configuration”.
2. Wait for the menu to reach the “Encoder test” function of paragraph 9.1.9.
3. Perform the test as instructed in the above-mentioned paragraph.

If the outcome of the test is not as expected, carry out the troubleshooting procedure described in paragraph 6.3. “The ROM is not read or is read incorrectly”.

6.2. THE DISPLAY FAILS TO ILLUMINATE

The problem may be due to absence of the power supply or to a malfunction of the display board.



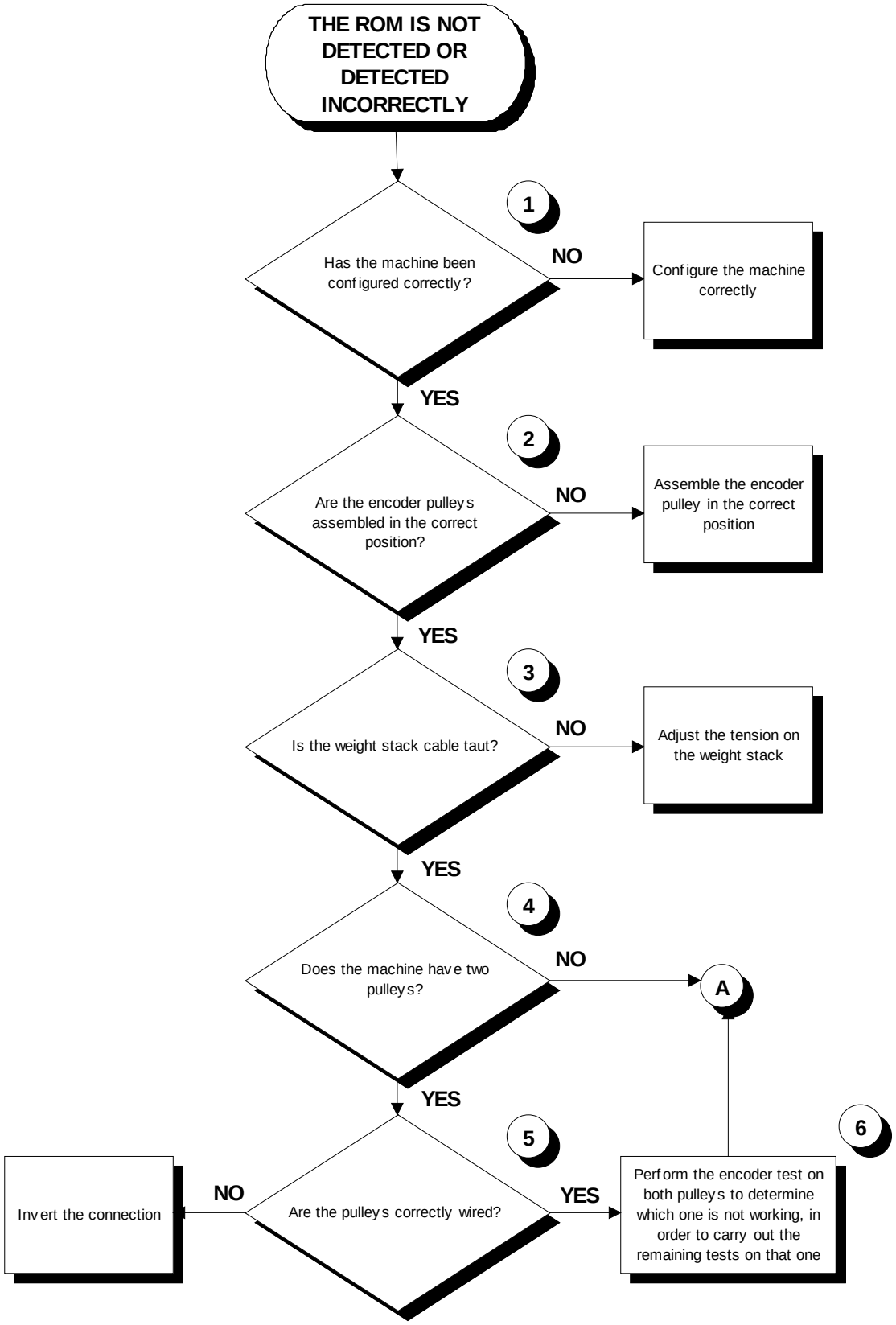
Follow the procedure step by step to correctly diagnose the problem. Take particular care with the checks highlighted by circled numbers, which are described in detail below:

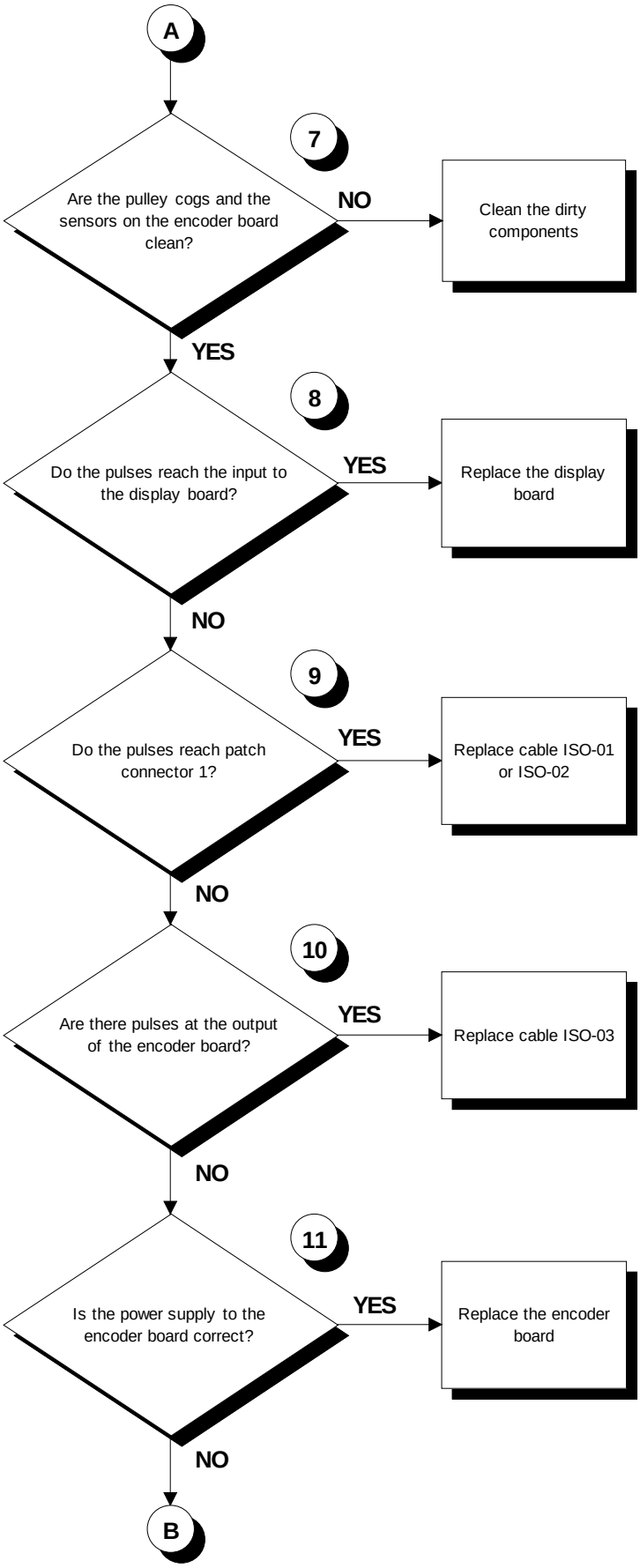
(1) Connect the power supply jack to patch connector 2 and place the tester probes across the fastons on the back of the connector itself. The measured value should be approximately 9 Vdc.

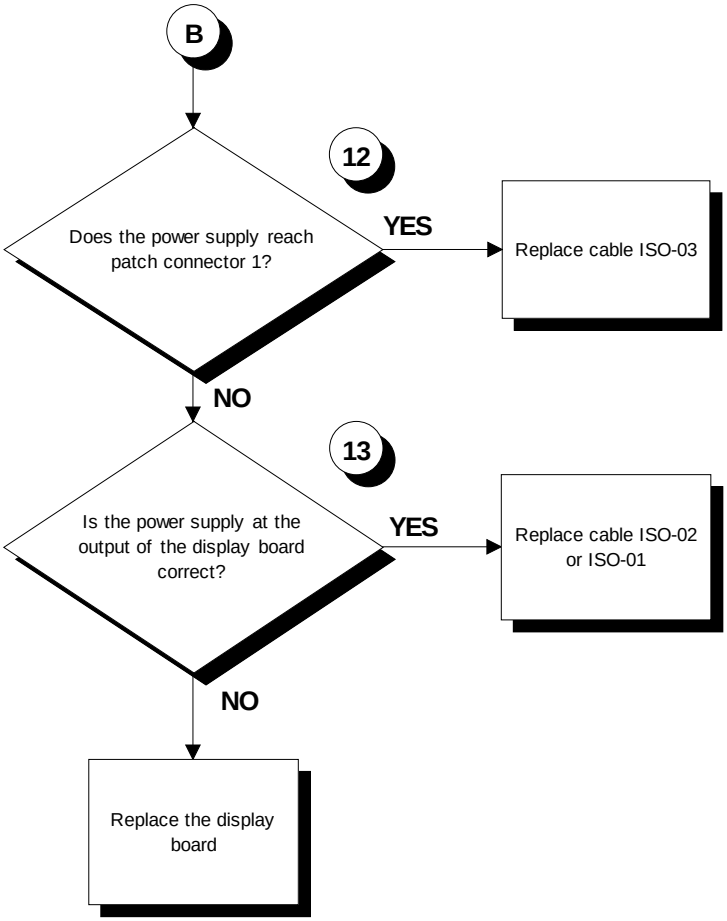
(2) Place the tester probes across pins 1 and 2 of connector CN1 on the display board.

6.3. THE ROM IS NOT READ OR IS READ INCORRECTLY

This error can be caused by an incorrect machine configuration, or problems with the encoder signal.




A
7
Are the pulley cogs and the sensors on the encoder board clean?
NO
Clean the dirty components
YES
8
Do the pulses reach the input to the display board?
YES
Replace the display board
NO
9
Do the pulses reach patch connector 1?
YES
Replace cable ISO-01 or ISO-02
NO
10
Are there pulses at the output of the encoder board?
YES
Replace cable ISO-03
NO
11
Is the power supply to the encoder board correct?
YES
Replace the encoder board
NO
B



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) Refer to paragraph 9.1.1. “Machine code”

(2) Element machines are equipped with one encoder pulley, placed in the central upper side of the weight stack. For Selection machines consult paragraph **Errore. L'origine riferimento non è stata trovata.** “**Errore. L'origine riferimento non è stata trovata.**”.

(3) Check that the weight stack cable tension is correct and that it does not come away from the pulley when the pulley is not turned.

(4) Element machines are equipped with one encoder pulley; for Selection machines consult paragraph **Errore. L'origine riferimento non è stata trovata.** “**Errore. L'origine riferimento non è stata trovata.**”.

(5) Check that the connector with the yellow marking is connected to the pulley on the side nearest to the user when in the exercise position.

Perform the test as described in paragraph 0 “
(6) **Machines with 2 encoder boards**. ”.

(7) Make sure there is no dirt, dust or other extraneous matter between the pulley cogs or on the sensors of the encoder board.

(8) Place the tester probes:

- Across pins 5 and 4 of connector CN1 (or across pins 3 and 2 of connector CN2, if testing the near encoder board) of the display board. The measured value should be approximately 0.9 or 4.8 Vdc when the pulley is stationary, and approximately 2.3 Vdc when the pulley is turning.
- Across pins 3 and 4 of connector CN1 (or across pins 4 and 2 of connector CN2, if testing the near encoder board) of the encoder board. The measured value should be approximately 0.9 or 4.8 Vdc when the pulley is stationary, and approximately 3.3 Vdc when the pulley is moving.

(9) As in step (8) but:

- across pins 1 and 4 of patch connector 1.
- across pins 3 and 4 of patch connector 1.

(10) As for step (8) but:

- across pins 3 and 2 of connector CN1 on the encoder board.
- across pins 4 and 2 of connector CN1 on the encoder board.

(11) Place the tester probes across pins 1 and 1 of connector CN1 on the encoder board. The measured value should be approximately 4.8 Vdc.

(12) As for step (11) but across pins 2 and 4 of patch connector 1.

(13) As for step (11) but across pins 6 and 4 (or across pins 4 and 2 of connector CN2, if testing the near encoder board) of connector CN1 of the display board.

6.4. THE MACHINE DOES NOT READ THE TGS

If the machine fails to read the TGS or the green LED of the reader is off when the machine is in stand by, replace the display board.

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7. DISASSEMBLY OF COMPONENTS

7.1. DISASSEMBLING THE DISPLAY

Figure 7.1-1

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

Support the display panel before backing off the last screw.

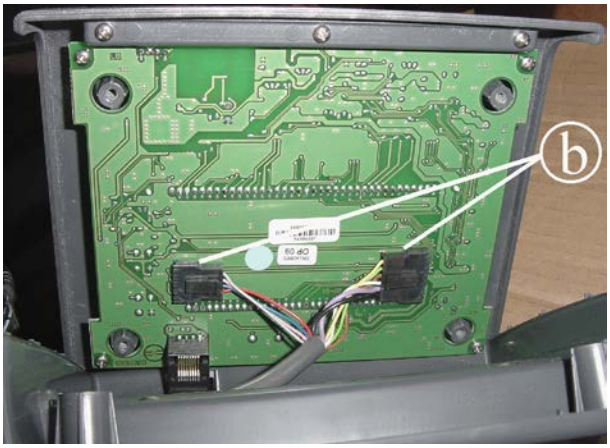

Figure 7.1-2

3. Unplug the connectors on the display board.
4. Remove the display panel.

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

7.2. DISASSEMBLING THE DISPLAY COMPONENTS

Figure 7.2-1

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

With the display placed on a work bench:

1. Back off the 4 screws **a** using a medium Philips screwdriver.

During removal of the board, be careful not to damage the LEDs.

7.3. DISASSEMBLING THE ENCODER BOARD ON SELECTION MACHINES

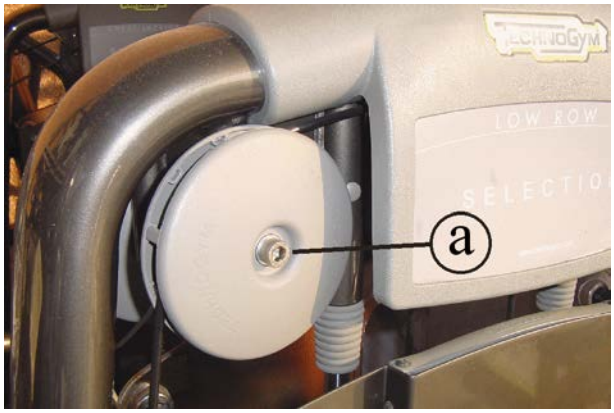

Figure 7.3-1

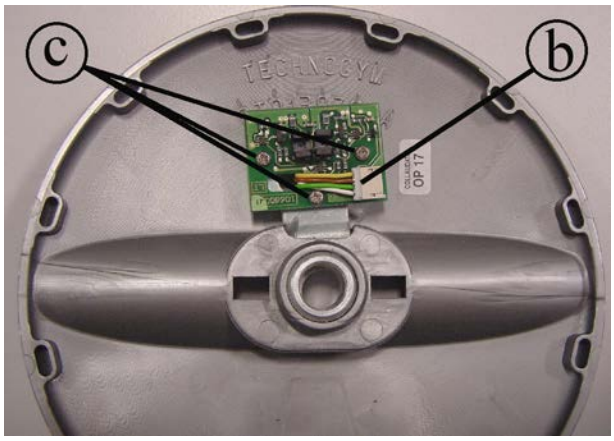

Figure 7.3-2

1. Disconnect the cable (ISO-03) which comes out from behind the pulley and goes into the hole in the frame.
2. Back off the screw **a** on the pulley. Remove the front housing, the cogged pulley and the rear housing comprising the encoder board.

To identify which pulleys incorporate the encoder board, refer to paragraph Errore. L'origine riferimento non è stata trovata. **"**Errore. L'origine riferimento non è stata trovata.**".**

3. Unplug the connector **b** from the encoder board.
4. Back off the 3 screws **c** which are securing the encoder board.

To reassemble the encoder board, follow the above steps in reverse order.

During assembly:

- **Take care to assemble the pulley so that its cogged circumference faces toward the rear housing, and the encoder is fitted securely inside.**
- **Do over-tighten the pulley fixing screw.**

7.4. DISASSEMBLING THE ENCODER BOARD ON ELEMENT MACHINES

Figura 7.4-1

1. Back off the screws **a**, using a 4-mm hex wrench.
2. Remove the front casing.
3. Disassemble the rear casing, carrying out the procedure here above, on the rear side of the machine.

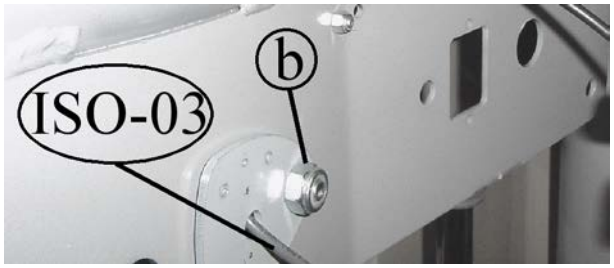

Figura 7.4-2

4. Disconnect the cable (ISO-03).
5. Remove the plate which hold the encoder using an 8-mm hex wrench and a 17-mm wrench for the nut **b**.

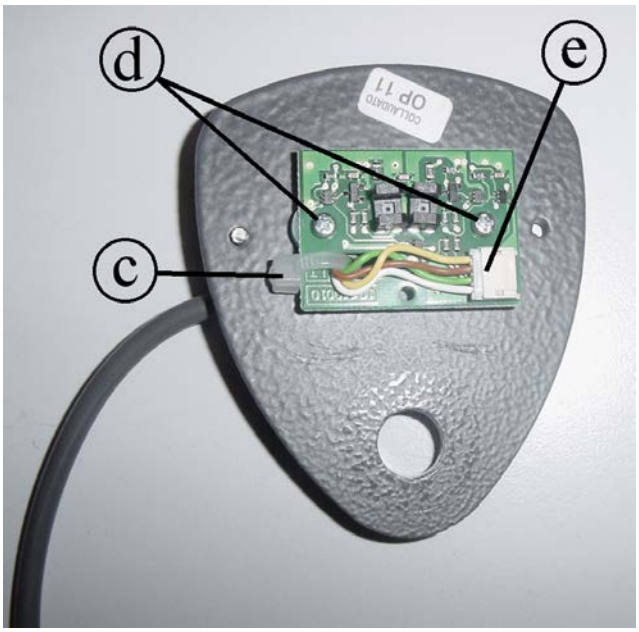

Figura 7.4-3

6. Cut the cable tie **c**.
7. Unplug the connector **c** from the encoder board.
8. Back off the 2 screws **d** which are securing the encoder board.

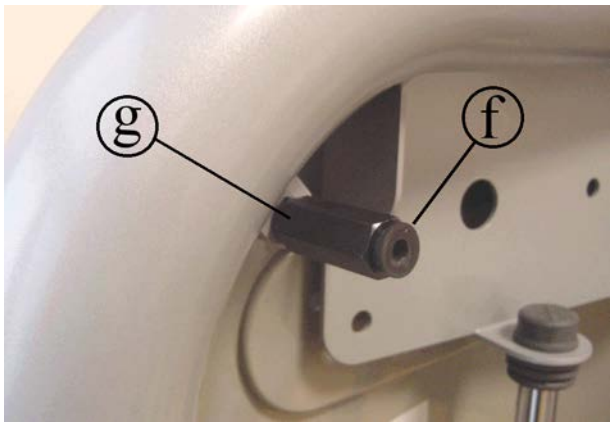

Figura 7.4-4

To reassemble the encoder board, follow the above steps in reverse order.

During assembly:

- **Check all the plastic bushing "f" with threaded piece, are correctly inserted inside the support "g".**
- **Use a cable tie where previously esed.**

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8. ADJUSTMENTS

The product does not require any adjustments.

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9. MACHINE CONFIGURATION

9.1. SERVICE MENU CONFIGURATION

The configuration procedure is invoked, when the device is in standby mode, by:

1. Simultaneously pressing the "+" and "-" keys for a few seconds.
2. Enter the password "**2501**" which protects against unauthorized access. Use the "+" e "-" keys to bring up the first digit on the display, then wait for the cursor to advance to the next digit. Continue in the same way for all the digits of the password.
3. The various functions of the service menu will then sequentially appear on the display.

9.1.1. MACHINE CODE

This function selects the machine on which the Isocontrol is installed. The display scrolls the MACHINE CODE message followed by:

The available options are listed in the table below:

MACHINE	Selection	Element	Element+	Selection MED
ABDOMINAL CRUNCH	182	229	289	349
ABDUCTOR	179	226	286	346
ADDUCTOR	180	227	287	347
ARM CURL	183	230	290	/
ARM EXTENSION	184	231	291	/
CHEST INCLINE	190	/	/	/
CHEST PRESS	171	220	281	339
DELTS	192	/	/	/
GLUTE	185	232	292	350
LAT MACHINE	176	245	295	343
LEG CURL	174	223	284	342
LEG EXTENSION	172	221	282	340
LEG PRESS	173	222	283	341
LOW ROW	193	234	294	354
LOWER BACK	181	228	288	348
MULTI HIP	186	/	/	351
PECTORAL	188	233	293	352
PULL DOWN	191	/	/	/
PULLEY	195	/	/	/
ROTARY CALF	175	/	/	/
ROTARY TORSO	189	/	/	353
SHOULDER PRESS	170	219	280	338
TOTAL ABDOMINAL	216	/	/	/
UPPER BACK	177	/	/	344
VERTICAL TRACTION	178	225	285	345

Use the "+" and "-" keys to bring up the number of the desired machine on the display. After configuring the machine, wait 5 seconds for the system to automatically advance to the next function.

To save the machine configuration, see paragraph 9.1.10. "Saving the configuration"; to exit without saving the changes made, disconnect the power supply form the machine.

9.1.2. ROM RANGE

This function sets up the value in cm of the default ROM amplitude which is used, prior to acquisition of the user's actual ROM, to correctly fill in the ROM LED arc on the display. The display scrolls the ROM RANGE message followed by:

These distances are factory configured as detailed in the table below:

ATTREZZO	Selection	Element	Element+	Selection MED
ABDOMINAL CRUNCH	15	15	15	15
ABDUCTOR	16	12	12	16
ADDUCTOR	16	12	12	16
ARM CURL	32	31	31	/
ARM EXTENSION	35	31	31	/
CHEST INCLINE	27	/	/	/
CHEST PRESS	32	32	32	32
DELTS	17	/	/	/
GLUTE	36	36	36	36
LAT MACHINE	50	50	50	50
LEG CURL	41	41	41	41
LEG EXTENSION	37	37	37	37
LEG PRESS	28	17	17	28
LOW ROW	20	20	20	20
LOWER BACK	27	27	27	27
MULTI HIP	16	/	/	16
PECTORAL	20	20	20	20
PULL DOWN	31	/	/	/
PULLEY	34	/	/	/
ROTARY CALF	40	/	/	/
ROTARY TORSO	13	/	/	13
SHOULDER PRESS	33	28	28	33
TOTAL ABDOMINAL	16	/	/	/
UPPER BACK	34	/	/	34
VERTICAL TRACTION	30	30	30	30

Use the "+" and "-" keys to bring up the desired value on the display. After reaching the desired value, wait 5 seconds for the system to automatically advance to the next function.

To save the changes made see paragraph 9.1.10. "Saving the configuration", to exit without saving any changes disconnect the power supply form the machine.

9.1.3. START POSITION

This function sets up the distance in cm which the weight stack must move from its rest zone to enter the exercise zone, which varies depending on the mechanics of the individual machine. Typically, this displacement is performed using the machine easy-start lever. On the display, the START POSITION message is followed by:

These distances are factory configured as indicated in the table below:

ATTREZZO	Selection	Element	Element+	Selection MED
ABDOMINAL CRUNCH	4	4	4	4
ABDUCTOR	1	1	1	1
ADDUCTOR	1	1	1	1
ARM CURL	2	2	2	/
ARM EXTENSION	2	2	2	/
CHEST INCLINE	5	/	/	/
CHEST PRESS	2	2	2	2
DELTS	2	/	/	/
GLUTE	2	2	2	2
LAT MACHINE	23	23	23	23
LEG CURL	2	2	2	2
LEG EXTENSION	2	2	2	2
LEG PRESS	2	2	2	2
LOW ROW	2	2	2	2
LOWER BACK	2	2	2	2
MULTI HIP	2	/	/	2
PECTORAL	5	5	5	5
PULL DOWN	4	/	/	/
PULLEY	2	/	/	/
ROTARY CALF	4	/	/	/
ROTARY TORSO	2	/	/	2
SHOULDER PRESS	2	2	2	2
TOTAL ABDOMINAL	2	/	/	/
UPPER BACK	8	/	/	8
VERTICAL TRACTION	2	2	2	2

Use the “+” and “-” keys to bring up the desired value on the display. After reaching the desired value, wait 5 seconds for the system to automatically advance to the next function.

To save the changes made see paragraph 9.1.10. “Saving the configuration”, to exit without saving any changes disconnect the power supply form the machine.

9.1.4. PACER SPEED

This function is used for calibrating the pacer speed. On the display, the PACER POSITION message is followed by:

Enter the desired pacer speed, i.e. the time recommended for performing the exercise, in 100s of a millisecond; the value should be between 10 and 50. Recommended values for the individual machines are as follows:

ATTREZZO	Selection	Element	Element+	Selection MED
ABDOMINAL CRUNCH	12	12	12	12
ABDUCTOR	10	10	10	10
ADDUCTOR	10	10	10	10
ARM CURL	12	12	12	/
ARM EXTENSION	12	12	12	/
CHEST INCLINE	12	/	/	/
CHEST PRESS	12	12	12	12
DELTS	12	/	/	/
GLUTE	12	12	12	12
LAT MACHINE	16	16	16	16
LEG CURL	12	12	12	12
LEG EXTENSION	12	12	12	12
LEG PRESS	12	12	12	12
LOW ROW	12	12	12	12
LOWER BACK	12	12	12	12
MULTI HIP	12	/	/	12
PECTORAL	12	12	12	12
PULL DOWN	12	/	/	/
PULLEY	12	/	/	/
ROTARY CALF	12	/	/	/
ROTARY TORSO	12	/	/	12
SHOULDER PRESS	12	12	12	12
TOTAL ABDOMINAL	12	/	/	/
UPPER BACK	12	/	/	12
VERTICAL TRACTION	12	12	12	12

Use the “+” and “-” keys to bring up the desired value on the display. After reaching the desired value, wait 5 seconds for the system to automatically advance to the next function.

To save the changes made see paragraph 9.1.10. “Saving the configuration”, to exit without saving any changes disconnect the power supply form the machine.

9.1.5. TIME-OUT DI ATTESA DEL CAMBIO LATO

This function is used to change side on the machines with just one arm:

On the display, the TIMEOUT CHANGE SIDE message is followed by:

Enter the maximum time, in seconds, than the machine waits, for change the exercise side by customer, before the machine reverts to stand-by mode. The value should be between 0 and 60. Recommended values for the individual machines are as follows:

ATTREZZO	Selection	Element	Element+	Selection MED
ABDOMINAL CRUNCH	0	0	0	0
ABDUCTOR	0	0	0	0
ADDUCTOR	0	0	0	0
ARM CURL	0	0	0	/
ARM EXTENSION	0	0	0	/
CHEST INCLINE	0	/	/	/
CHEST PRESS	0	0	0	0
DELTS	0	/	/	/
GLUTE	20	20	20	20
LAT MACHINE	0	0	0	0
LEG CURL	0	0	0	0
LEG EXTENSION	0	0	0	0
LEG PRESS	0	0	0	0
LOW ROW	0	0	0	0
LOWER BACK	0	0	0	0
MULTI HIP	20	/	/	20
PECTORAL	0	0	0	0
PULL DOWN	0	/	/	/
PULLEY	0	/	/	/
ROTARY CALF	0	/	/	/
ROTARY TORSO	20	/	/	20
SHOULDER PRESS	0	0	0	0
TOTAL ABDOMINAL	0	/	/	/
UPPER BACK	0	/	/	0
VERTICAL TRACTION	0	0	0	0

Use the “+” and “-” keys to bring up the desired value on the display. After reaching the desired value, wait 5 seconds for the system to automatically advance to the next function.

To save the changes made see paragraph 9.1.10. “Saving the configuration”, to exit without saving any changes disconnect the power supply form the machine.

9.1.6. ENABLING TGS MESSAGES

This function is used for disabling messages relating to the TGS key, for installations in gyms that do not use the Wellness System. On the display, the TGS REQUEST message is followed by:

The options are:

- **1** to enable
- **0** to disable

By default this parameter is set to "**1**", so that the function is disabled.

Use the "+" and "-" keys to bring up the desired value on the display. After reaching the desired value, wait 5 seconds for the system to automatically advance to the next function.

To save the changes made see paragraph 9.1.10. "Saving the configuration", to exit without saving any changes disconnect the power supply form the machine.

9.1.7. MACHINE SETTINGS

The function allows the acquisition of the "**MACHINE SETTINGS**" during the first workout session. On the display, the MACHINE SETTINGS message is followed by:

The options are:

- **1** function enabled;
- **0** function disabled.

By default this parameter is set to "**0**", so that the function is disabled.

Use the "+" and "-" keys to bring up the desired value on the display. After reaching the desired value, wait 5 seconds for the system to automatically advance to the next function.

To save the changes made see paragraph 9.1.10. "Saving the configuration", to exit without saving any changes disconnect the power supply form the machine.

9.1.8. LED TEST

This function is used for checking the operation of all the LEDs on the display.
There is no message displayed concerning the outcome of this test, which the user must ascertain visually.

Wait 5 seconds for the system to automatically advance to the next function.

9.1.9. ENCODER TEST

This function is used for checking that the encoder correctly detects the pulley movement. To carry out the test:

Machines with 1 encoder board.

1. Perform a single repetition and check that the displacement of the weight stack in millimeters is correctly shown on the display.

The displayed value should increase when the weight stack is lifted and, conversely, decrease when the weight stack is lowered.

2. Check that the displayed value returns to 0 when the weight stack is returned to the rest position.
3. Repeat the operations of steps 1 and 2, varying the weight and speed of execution of the exercise.

Machines with 2 encoder boards.

1. Using only one lever at a time, perform a single repetition and check that the displacement of the weight stack in millimeters is correctly shown on the display.

The displayed value should increase when the weight stack is lifted and, conversely, decrease when the weight stack is lowered.

2. Check that the displayed value returns to 0 when the weight stack is returned to the rest position.
3. Repeat the operations of steps 1 and 2, varying the load and speed of execution of the exercise.
4. Repeat the operations of steps 1, 2 and 3, using the other lever.

9.1.10. SAVING THE CONFIGURATION

To exit the menu saving the changes made:

1. Wait for the last menu function to appear (Encoder test). The display should show the message: 0 mm.
2. Simultaneously pressing the “+” and “-” keys for a few seconds.
3. The display will revert to the stand by state.

9.2. USER MENU CONFIGURATION

It is possible to modify the stand by messages (up to a maximum of 3) and the following three parameters:

- Units of measurement (imperial or metric)
- Number of repetitions used for defining the ROM value specific to the user
- Duration (in seconds) of weight stack inactivity in rest position before a set is considered complete.

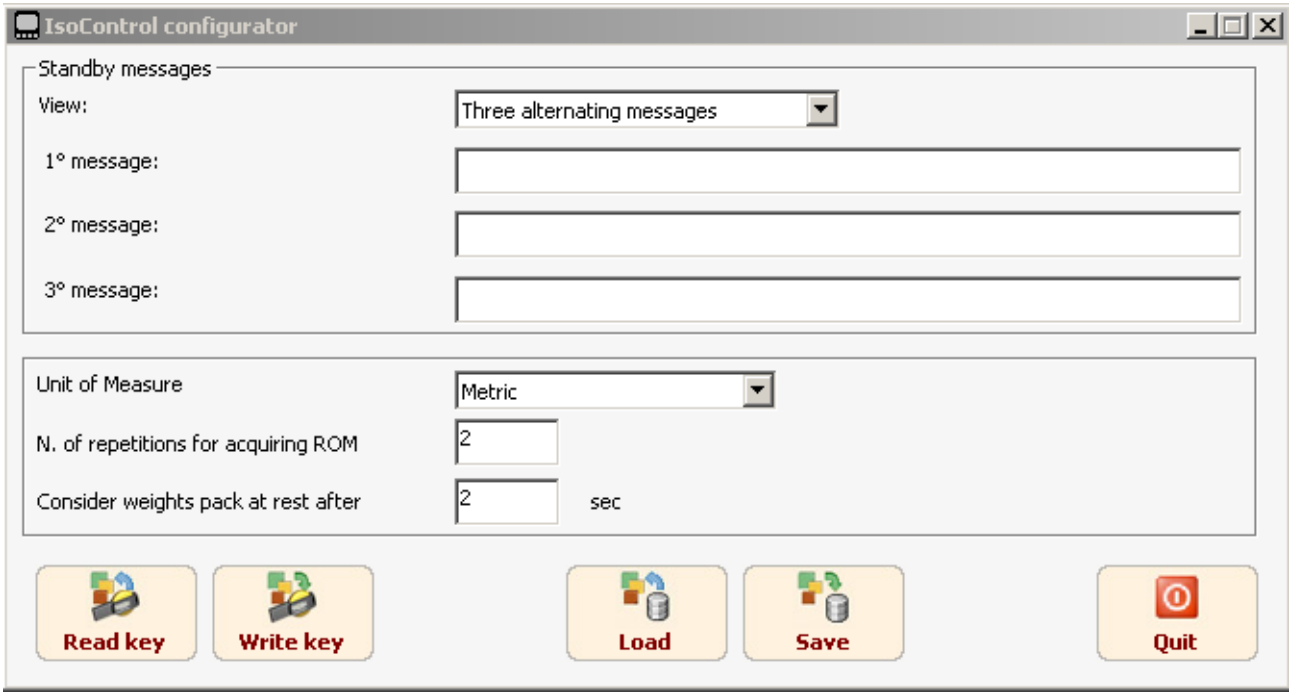
To modify the stand by messages and the three configuration parameters, it is necessary to use a specially configured TGS key (see paragraph 9.2.1. “Configuring the TGS key”).

1. Insert the specially configured TGS key into the reader.
2. Press the “+” key to confirm and safe the data, or press the “-” key to cancel the operation.
3. At the end, the machine enters the stand by state.

Remove the TGS key from the reader only after the "remove TGS key" has appeared on the display.

9.2.1. CONFIGURING THE TGS KEY

To configure the TGS key, start the IsoControl Configurator application included in the Wellness System 5.0. The following window appears on start-up:



For further information on the configuration, consult the Trainer Help 5.0. facility.

9.3. LANGUAGE

Changing the language requires overwriting the software with a new language version via the RJ45 connector. There are 9 different software versions available:

IT	Italian
UK	UK English
US	US English
FR	French
DE	German
NL	Dutch
ES	Spanish
BR	Portuguese
JP	Japanese

On power up the machine displays the currently active language.

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10. SCHEDULED MAINTENANCE

To keep the machine in perfect working order and prevent the risk of malfunction, it is necessary to perform the scheduled maintenance operations described below. There are 2 basic types of maintenance operations:

- External cleaning operations;
- Special maintenance operations.

The prescribed frequency differs for each type of operation. The following paragraphs detail the recommended procedures.

10.1. EXTERNAL CLEANING OPERATIONS

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

The external cleaning operations involve simple cleaning for the purposes of general hygiene. These should be performed **at least once a week**.

For external cleaning, proceed as follows:

10.1.1. SETTING UP THE OPERATION

1. Unplug the mains lead from the wall outlet.

10.1.2. CLEANING OPERATIONS

1. Using a cloth moistened with a neutral detergent (non acidic), clean the display.

Never spray the cleaning product directly on the machine.

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

10.2. SPECIAL 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 special maintenance procedures involve checking the operation, wear and tension of the mechanical components so as to ensure perfect and safe operation of the machine. It is recommended to carry out these operations **at least once every 6 months**.

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

10.2.1. SETTING UP THE OPERATION

1. Unplug the mains lead from the wall outlet.
2. Open the machine guards.

10.2.2. CLEANING OPERATIONS

1. Use a vacuum cleaner to clean the part inside the guards.

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

10.2.3. 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 conductors.

   Repair and/or replace any non-conforming cables.

10.2.4. CHECKING THE DISPLAY

1. Check the operation of two keys on the keyboard.
2. Check the operation of the LED display, executing the “LED Test” (see paragraph 6.1.1.).

10.2.5. FUNCTIONAL CHECK OF COMPONENTS

1. Using the machine test programs, check the functioning of the various components:

   - Display board (see paragraph 6.1.1. “LED Test”);
   - Encoder board (see paragraph 6.1.2. “Encoder test”).

   Repair and/or replace any components that are not working correctly.

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