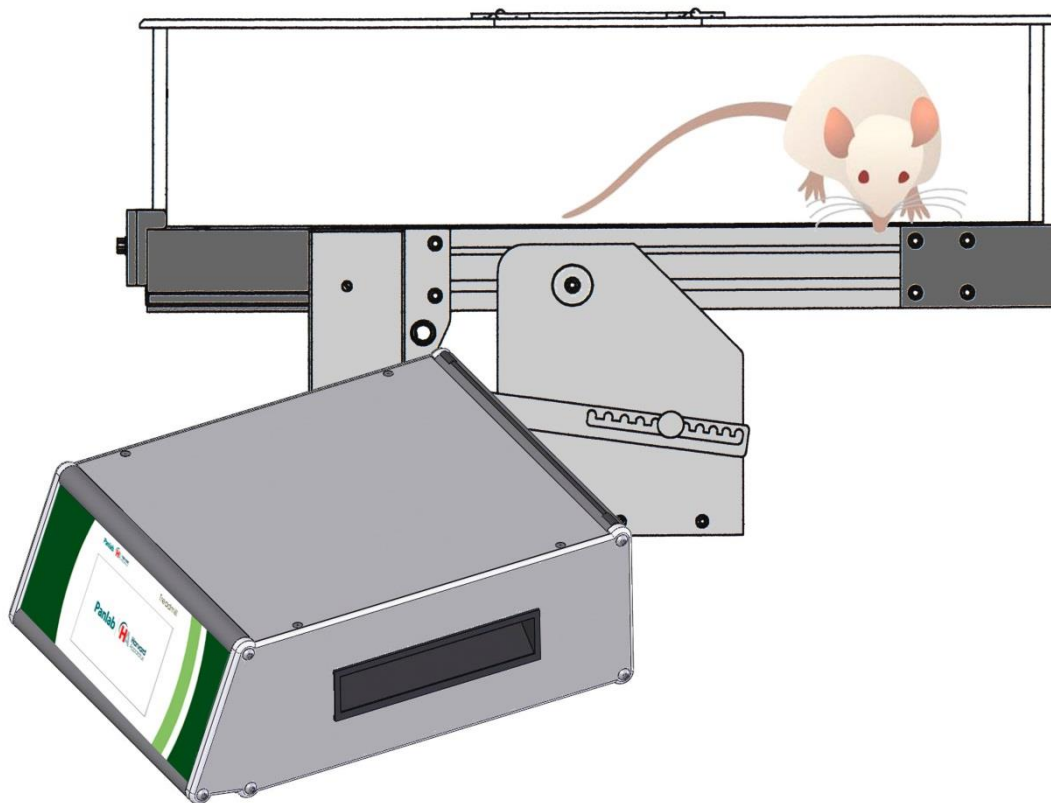


# Hardware User's Manual

---

## Treadmill



### References:

LE8700TS (76-0890)

LE8708TS (76-0891)

LE8715TS (76-0892)

LE8706TS (76-0893)

LE8709TS (76-0894)

LE8710RTS (76-0895)

LE8710MTS (76-0896)

LE8700CTS (76-0897)

### Publication:

PB-MF-MAN-072-REV2.0

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Some symbols may have more than one interpretation by professionals unaccustomed to their usage.








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## 1. SYMBOLS TABLE

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Recognising the symbols used in the manual will help to understand their meaning:

| DESCRIPTION  | SYMBOL   |
|--|--|
| Warning about operations that must not be done because they can damage the equipment       |   |
| Warning about operations that must be done, otherwise the user can be exposed to a hazard. |   |
| Protection terminal ground connection.   |   |
| Warning about a hot surface which temperature may exceed 65°C                              |   |
| Warning about a metal surface that can supply electrical shock when it's touched.          |   |
| Decontamination of equipment prior to disposal at the end of their operative life          |   |
| Waste Electrical and Electronic Equipment Directive (WEEE)                                 |  |

## 2. GOOD LABORATORY PRACTICE

---

Check all units periodically and after periods of storage to ensure they are still fit for purpose. Investigate all failures which may indicate a need for service or repair.

Good laboratory practice recommends that the unit be periodically serviced to ensure the unit is suitable for purpose. You must follow preventive maintenance instructions. In case equipment has to be serviced you can arrange this through your distributor. Prior to Inspection, Servicing, Repair or Return of Laboratory Equipment the unit must be cleaned and decontaminated.

### Decontamination prior to equipment disposal



In use this product may have been in contact with bio hazardous materials and might therefore carry infectious material. Before disposal the unit and accessories should all be thoroughly decontaminated according to your local environmental safety laws.

### 3. UNPACKING AND EQUIPMENT INSTALATION

---



**WARNING:** Failure to follow the instructions in this section may cause equipment faults or injury to the user.


- A. For handling the biggest models of Treadmill, like LE8710TS and LE8715TS as they are heavy enough and the weight is not concentrated two persons are needed. Not following this advice can cause backache.
- B. Inspect the instrument for any signs of damage caused during transit. If any damage is discovered, do not use the instrument and report the problem to your supplier.
- C. Ensure all transport locks are removed before use. The original packing has been especially designed to protect the instrument during transportation. It is therefore recommended to keep the original carton with its foam parts and accessories box for re-use in case of future shipments. Warranty claims are void if improper packing results in damage during transport.
- D. Place the equipment on a flat surface and leave at least 10 cm of free space between the rear panel of the device and the wall. Never place the equipment in zones with vibration or direct sunlight.
- E. Once the equipment is installed in the final place, the main power switch must be easily accessible.
- F. Only use power cords that have been supplied with the equipment. In case that you have to replace them, the spare ones must have the same specs that the original ones.



- G. Make sure that the AC voltage in the electrical network is the same as the voltage selected in the equipment. **Never connect the equipment to a power outlet with voltage outside these limits.**



**WARNING**

For electrical safety reasons you only can connect equipment to power outlets provided with earth connections .

This equipment can be used in installations with category II over-voltage according to the General Safety Rules.

The manufacturer accepts no responsibility for improper use of the equipment or the consequences of use other than that for which it has been designed.

### PC Control

Some of these instruments are designed to be controlled from a PC. To preserve the integrity of the equipment it is essential that the attached PC itself conforms to basic safety and EMC standards and is set up in accordance with the manufacturers' instructions. If in doubt consult the information that came with your PC. In common with all computer operation the following safety precautions are advised.



- WARNING**
- To reduce the chance of eye strain, set up the PC display with the correct viewing position, free from glare and with appropriate brightness and contrast settings
  - To reduce the chance of physical strain, set up the PC display, keyboard and mouse with correct ergonomic positioning, according to your local safety guidelines.

## 4. MAINTENANCE

---



**WARNING:** Failure to follow the instructions in this section may cause equipment fault.

- PRESS KEYS SOFTLY – Lightly pressing the keys is sufficient to activate them.
- Equipment do not require being disinfected, but cleaned for removing urine, faeces and odour. To do so, we recommend using a wet cloth or paper with soap (which has no strong odour). NEVER USE ABRASIVE PRODUCTS OR DISSOLVENTS.
- NEVER pour water or liquids on the equipment.
- Once you have finished using the equipment turn it off with the main switch. Clean and check the equipment so that it is in optimal condition for its next use.



**WARNING:** The electrical grid is under voltage while the Treadmill is in **RUNNING** mode. Any contact with the connectors should be avoided.

- The user is only authorised to replace fuses with the specified type when necessary.

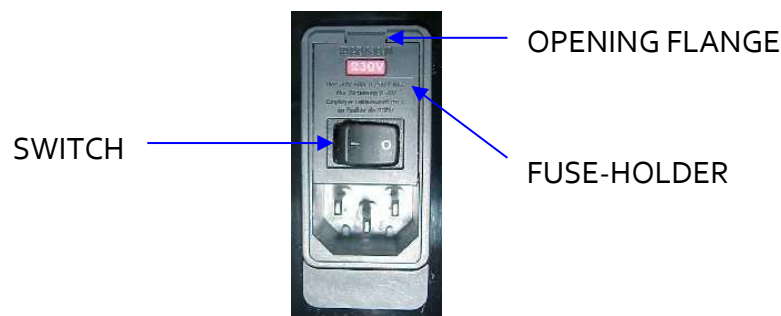


Figure 1. Power inlet, main switch and fuse holder.

### 4.1. FUSE REPLACEMENT OR VOLTAGE SETTING CHANGE

---

In case of an over-voltage or other incident in the AC net making it impossible to turn on the equipment, or if the equipment voltage setting is incorrect, check fuses according to the following procedure.

1 Remove power cord from the power inlet.

2 Open fuse-holder by pulling the flange with a regular screwdriver.



Figure 2. Open fuse-holder door.

3 Extract fuse holder using the screwdriver.

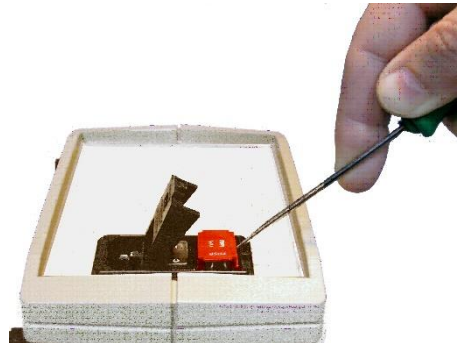


Figure 3. Extract fuse-holder.

4 Replace fuses if necessary. Insert fuses in the fuse-holder in the correct position.



CORRECT



INCORRECT

Figure 4. Fuses position.

5 Insert the fuse-holder again, positioning it according to the voltage in the AC net.



115V POSITION



230V POSITION

Figure 5 Fuse holder position.

6 If the fuses blow again, unplug the equipment and contact technical service.



**For electrical safety reasons, never open the equipment. The power supply has dangerous voltage levels.**

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## 6. INTRODUCTION

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Treadmill are rolling belt commonly used in rodents or rabbits for tests implying a forced exercise training or fatigue: performance assessment, respiratory metabolism studies, study of the effect of exercise on other physiological parameters...).

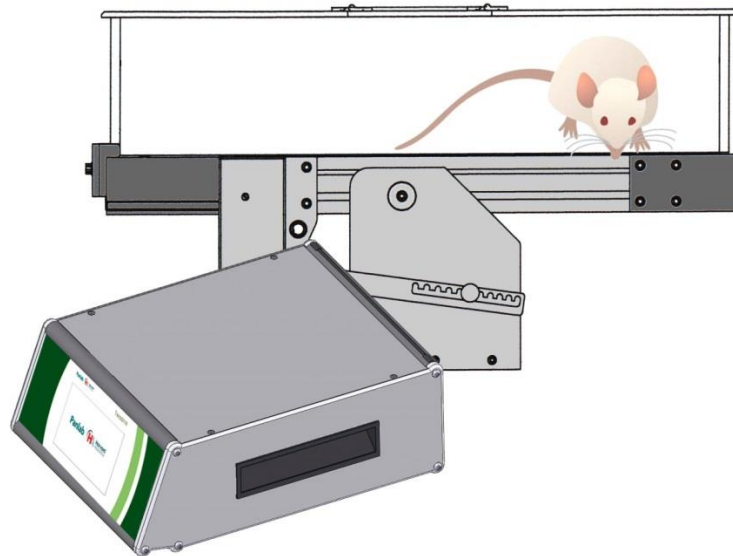


Figure 6. One Lane Treadmill.

An aversive stimulus such as a foot shock can be used for motivating the subject to run on the belt.

As an alternative to the foot shock, an air puff option is also available that can be added to the rat and mouse treadmill models. If you are using this option, please refer to the corresponding Air puff control User's Manual).

There are different models detailed in the following table:

| MODEL      | DESCRIPTION                          | MIN SPEED | MAX SPEED  |
|------------|--------------------------------------|-----------|------------|
| LE 8700TS  | One-lane rat treadmill with shock    | 0.4 cm/s  | 150.0 cm/s |
| LE 8706TS  | Two-lanes rat treadmill with shock   | 0.4 cm/s  | 150.0 cm/s |
| LE 8708TS  | One-lane mouse treadmill with shock  | 0.4 cm/s  | 150.0 cm/s |
| LE 8709TS  | Two-lanes mice treadmill with shock  | 0.4 cm/s  | 150.0 cm/s |
| LE 8710RTS | Five-lanes rats treadmill with shock | 0.4 cm/s  | 150.0 cm/s |
| LE 8710MTS | Five-lanes mice treadmill with shock | 0.4 cm/s  | 150.0 cm/s |
| LE 8715TS  | One-lane rabbit treadmill            | 10.0 cm/s | 80.0 cm/s  |

Each treadmill consists of an exercise belt and a control unit. Optionally, external software can be used for controlling the speed of the belt and for data acquisition. The belts are driven by a motor, the speed of which can be adjusted continuously from 0.4 to 150.0 cm/s (10.0 to 80.0 cm/s in Rabbit Treadmill). Depending on the model it can have one or several lanes, each with its own independently electrified grid.

When the animal is tired and stops running on the belt, it reaches the grid where it receives a foot shock that keeps it running.

The treadmills are provided with a removable tray for collecting defecations or any dirtiness produced during the experiment.

The animal is kept in the lane by a transparent Perspex lid. There are two types of covers:

- a) Open, for conventional Treadmill(s).
- b) Closed (sealed), for calorimetric studies performed with the combination of a Treadmill with the OxyletPro system.

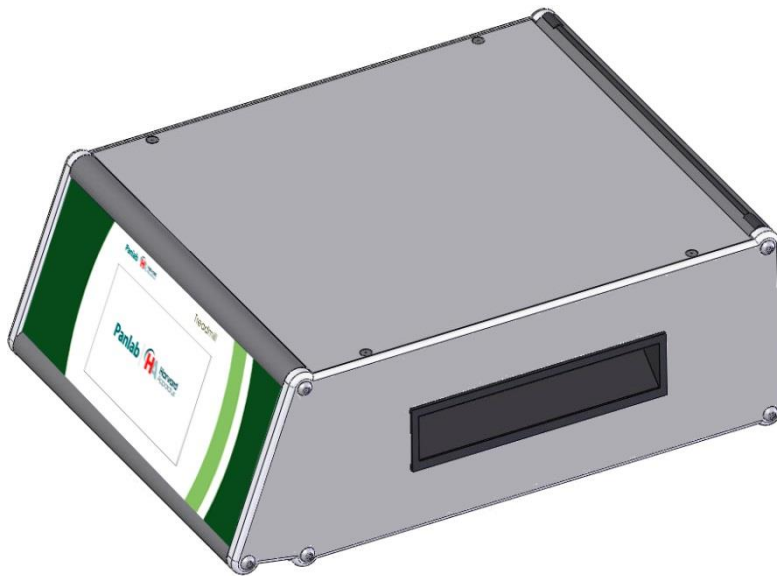
## 7. EQUIPMENT DESCRIPTION

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### 7.1. THE CONTROL UNIT

---

The treadmill is supplied with a control unit. The control units provide settings for the definition of the experimental parameters and for displaying in real-time standards data related with treadmill experiments.



**Figure 7. LE8700TS Treadmill control unit.**

The control unit is provided with a touchscreen that provides an easy access to data and panel configuration. The treadmill models with one, two or 5 lanes may display different data.

### 7.1.1. Main screen controls and settings

The main screen provides access to the main controls and settings as well as a data table. The number of columns/lanes display on the data tables will depend on the model of Treadmill used (one/two lane or five lanes treadmill).

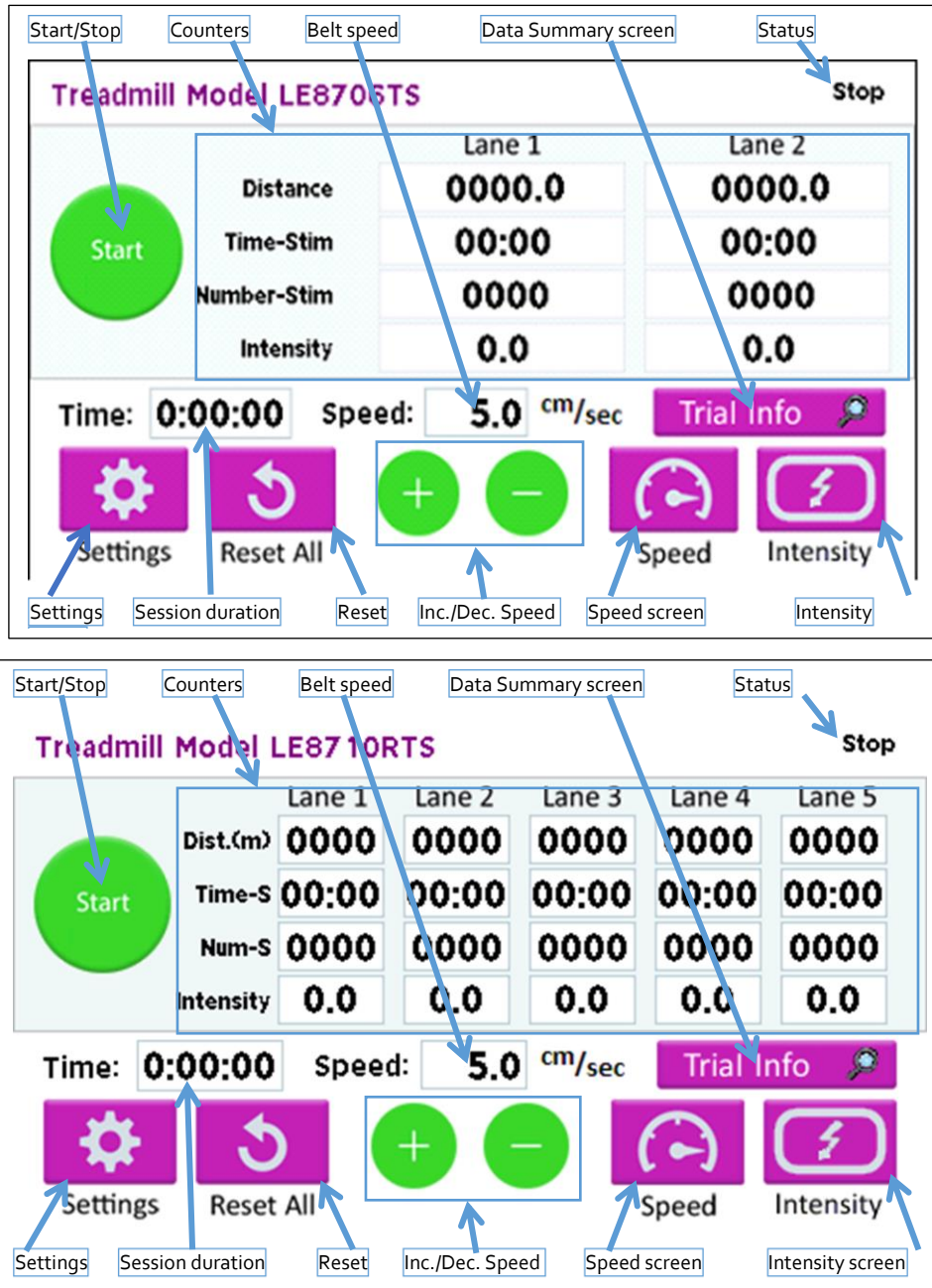


Figure 8. One/Two and Five Lanes Treadmill Control Unit Main Screen.

- **STAR/STOP:** By pressing this button, the belt starts to roll and the word RUNNING is shown in the upper right corner of the display. By pressing the same button again, the belt stops and the word STOP is shown in the upper right corner of the display.

- **SETTINGS:** This button leads to the Settings screen that provides general settings and options like stop conditions, stimulus selection, display backlight, basic grid test, firmware upgrade, system information (see chapter 9.1 to 9.6).
- **RESET:** Counters in the display are reset to zero by pressing this button (experiment time, number of shocks, distance and time shock).
- **BELT SPEED:** Shows the current speed of the belt.
- **INCREMENT/DECREMENT SPEED:** Increase/decrease the belt speed in one speed unit (+/- 0.1 cm/s) from 0.4 cm/s to 150.0 cm/s (10.0 cm/s to 80.0 cm/s in Rabbit Treadmill).
- **SPEED:** This button leads to the Speed screen for belt speed selection (see chapter 9.8).
- **INTENSITY:** This button leads to the Intensity screen that selects the shock intensity of the grid from 0 to 2mA RMS. Below 0.2mA the counters (number of shocks and time shock) will not increase when the animal reaches the grid (see chapter 9.9).
- **TRIAL INFO:** This button brings to the “Data Summary” screen that shows a summary table of the experiment (see chapter 7.1.3).
- **STATUS:** Shows the status of the control unit: Stop or Running

### 7.1.2. Main screen experimental data

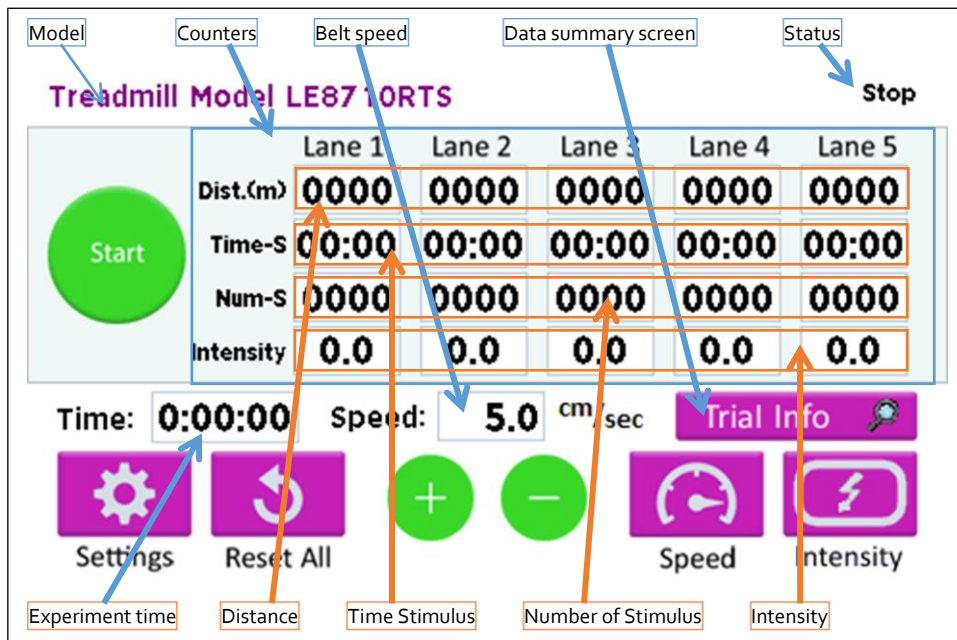


Figure 9. Front panel display.

The front panel displays a data table (counters) where each lane is represented by a column and the data by rows. The upper three rows display lane data (Distance, Time Stimulus, Number of Stimulus), with one kind of data for each lane. The lowest row

displays the selected electrical intensities. The experiment duration, belt speed and the device status are also shown.

- **DISTANCE:** Distance ran by the animal in the current experiment. This counter does not increase while the animal is on the grid, as it is not running.
- **TIME STIMULUS:** Accumulated time of received shock.
- **NUMBER OF STIMULUS:** Number of times that the animal reaches the grid and receives a shock. Two consecutive shocks separated by an interval of time of less than 0.4 sec would be considered as belonging to the same shock episode. In other terms, the stimulus counter value would only increase when there is more than 0.4 sec between 2 consecutive shocks.
- **SPEED:** Selected speed. This value is modified with the up/down SPEED buttons. It can be set from 0.4 cm/s to 150.0 cm/s (10.0 cm/s to 80.0 cm/s in Rabbit Treadmill). Zero value is not allowed.
- **EXPERIMENT TIME:** This counter begins at zero when the START button is pressed and stops when the STOP button is pressed.
- **STATUS:** This label indicates belt status: RUNNING when the belt is running and STOP when the belt is stopped.

### 7.1.3. Trial Info screen

The experimental data summary table provides a short view on how the experiment is going. It also allows checking how the stop conditions are fulfilled.

| Treadmill Model LE87 10RTS |         | Data summary |         |         |         |  |
|----------------------------|---------|--------------|---------|---------|---------|--|
|                            | Lane 1  | Lane 2       | Lane 3  | Lane 4  | Lane 5  |  |
| Trial Duration (h:mm:ss)   | 0:00:00 | 0:00:00      | 0:00:00 | 0:00:00 | 0:00:00 |  |
| Stim. Total Time (mm:ss)   | 00:00   | 00:00        | 00:00   | 00:00   | 00:00   |  |
| Stim. Episode Time (mm:ss) | 00:00   | 00:00        | 00:00   | 00:00   | 00:00   |  |
| Stim. Percentage (%)       | 000     | 000          | 000     | 000     | 000     |  |
| Number Of Stim. (#)        | 0000    | 0000         | 0000    | 0000    | 0000    |  |
| Distance Travelled (m)     | 0000.0  | 0000.0       | 0000.0  | 0000.0  | 0000.0  |  |
| Belt Speed (cm/s)          | 0.0     | 0.0          | 0.0     | 0.0     | 0.0     |  |
| Stop Condition             | STOP    | STOP         | STOP    | STOP    | STOP    |  |

Figure 10. Experimental data summary table

The Data Summary screen shows a data table (counters) where each lane is represented by a column and the counters by a row. Here the data displayed:

- Trial Duration in [h:mm:ss]. Duration of the trial (from Start to Stop)
- Stim. Total Time in [mm:ss]. Total duration of stimulus delivery during the trial.
- Stim Episode Time in [mm:ss]. Duration of the current stimulus episode. This value is reset when the next stimulus is detected.
- Stim. Percentage in [%]. Current percentage of time the subject has received the stimulus: current total duration of stimulus received/trial duration (in %)
- Number of Stim. Number of stimulus received from the beginning of the trial.
- Distance Travelled in [m]. Distance travelled by the subject. This distance is not increased when the animal is detected on the grid.
- Belt Speed in [cm/s]. Current speed of the belt.
- Stop Condition. Name of the condition that led to the end of the trial.

During the experiment the last row (Stop Condition) shows a manual stop button for each lane. These buttons can be pressed at any moment for a manual stop of the execution of the experiment on each lane. When stopped, the values shown on the counter are frozen and no more stimulus is given.

When a session has been stopped by a stop condition, the manual stop button is replaced by a label indicating which stop condition has been reached.



7.1.4. Control unit: rear panel

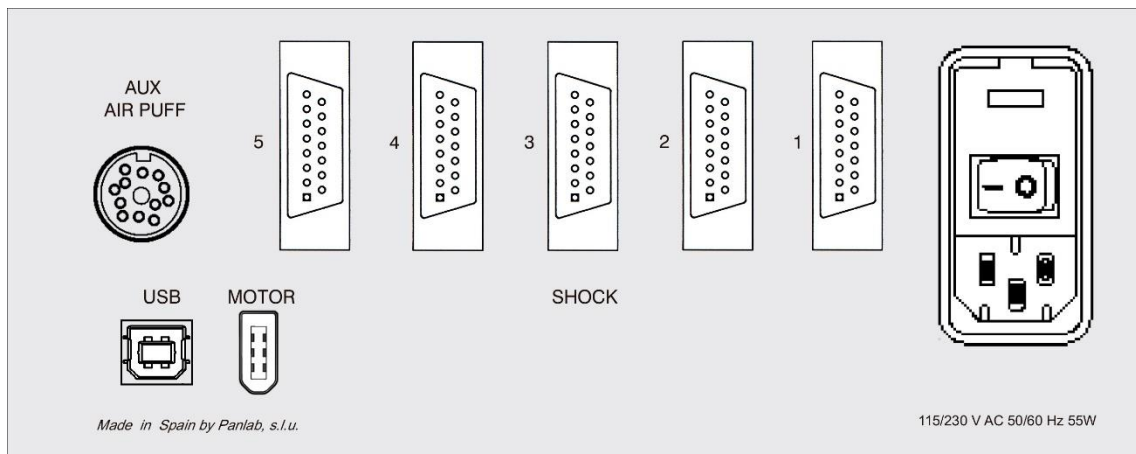
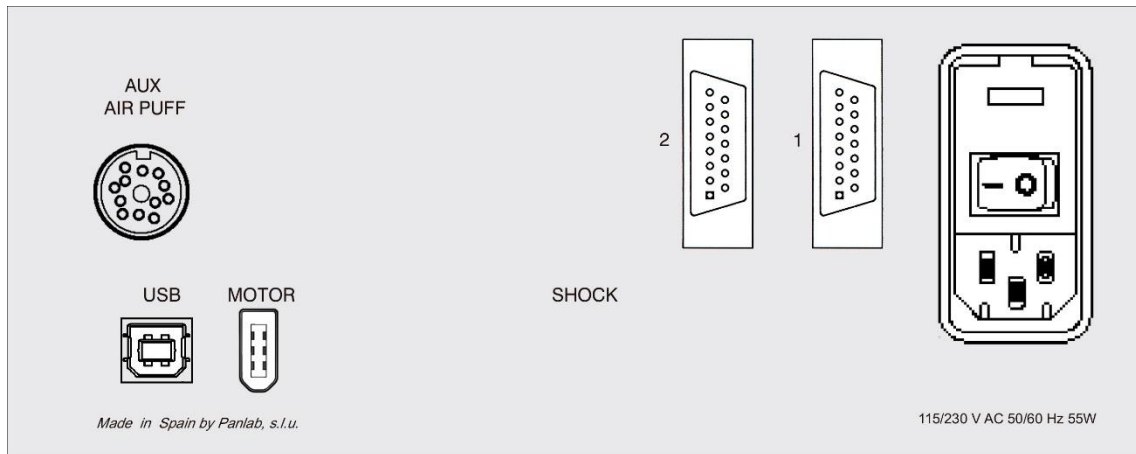
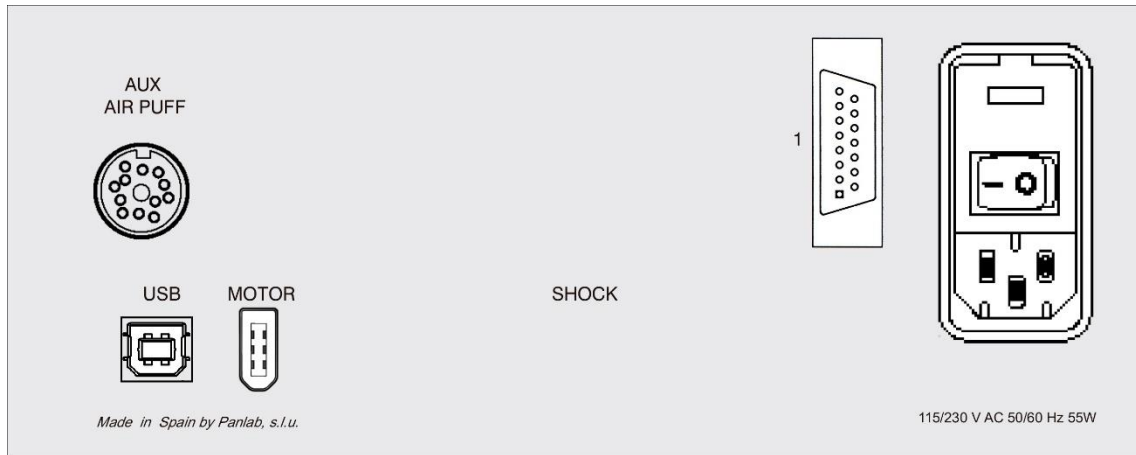


Figure 11. One, Two and Five-lanes control unit: rear panel.

- **SHOCK:** DB15 female connector used to connect the control unit to the grid in the lane. It transmits the electrical shock to the grid.

- **MOTOR:** FireWire 400 female connector used to connect the control unit to the motor that drives the belt.
- **USB:** Type B USB female connector used to connect the control unit to a USB PC port. With the **SEDACOM** software (not included with the device), the information on the display can be sent to the computer. The SEDACOM software can also be used for controlling the treadmill.
- **AUX AIR-PUFF:** DIN12 female connector used to connect the control unit to the AIR-PUFF control unit (LE8711TS), if any.
- **POWER:** Power inlet, main switch and fuse-holder.

## 7.2. THE TREADMILL BELT

### 7.2.1. General description

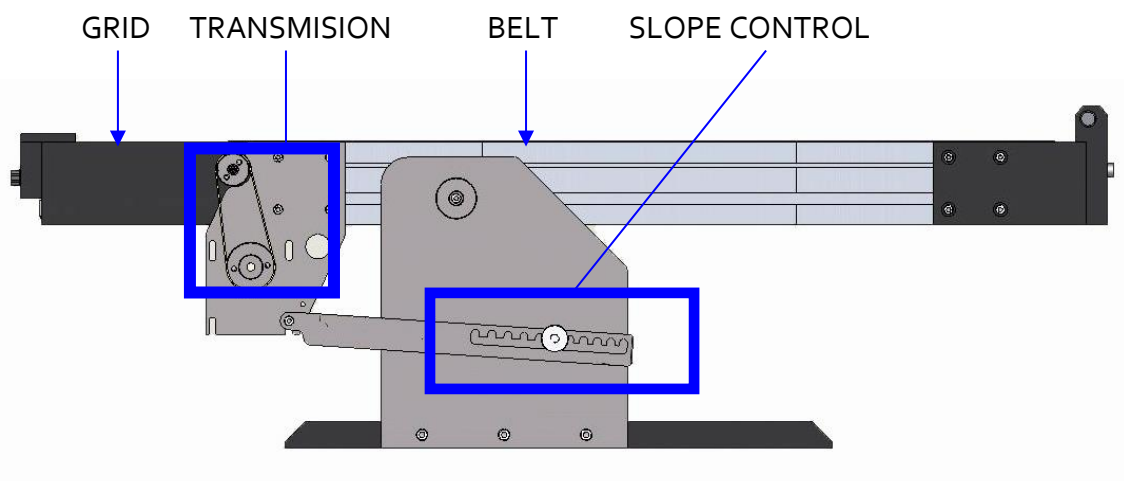


Figure 12. Treadmill belt.

- **GRID:** An electrical grid is placed at the end of each lane. When the animal is detected in the grid (it is, when the animal is not actually running on the belt) it is given an aversive stimulus (electrical shock or air-puff) to encourage it to keep running.
- **TRANSMISION:** The motor axis is connected to a toothed wheel. This wheel drives another one by means of a toothed belt. The latter wheel is connected to the treadmill belt axis to move the surface over which the animal runs.
- **BELT:** Surface over which the animal runs. It is common for all lanes. The lanes are separated by the transparent Perspex cover.
- **SLOPE CONTROL:** This mechanism controls the slope of the belt. The slope can be set from  $-25^{\circ}$  to  $+25^{\circ}$  in  $5^{\circ}$  increments.

7.2.2. General view of the different models

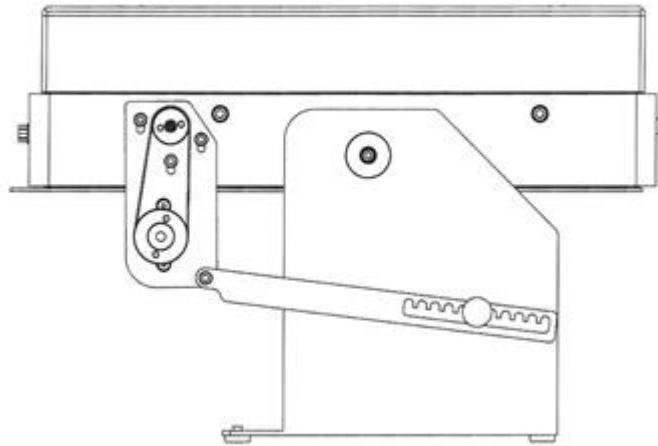


Figure 13. LE8708TS One-lane mouse treadmill with the standard lid

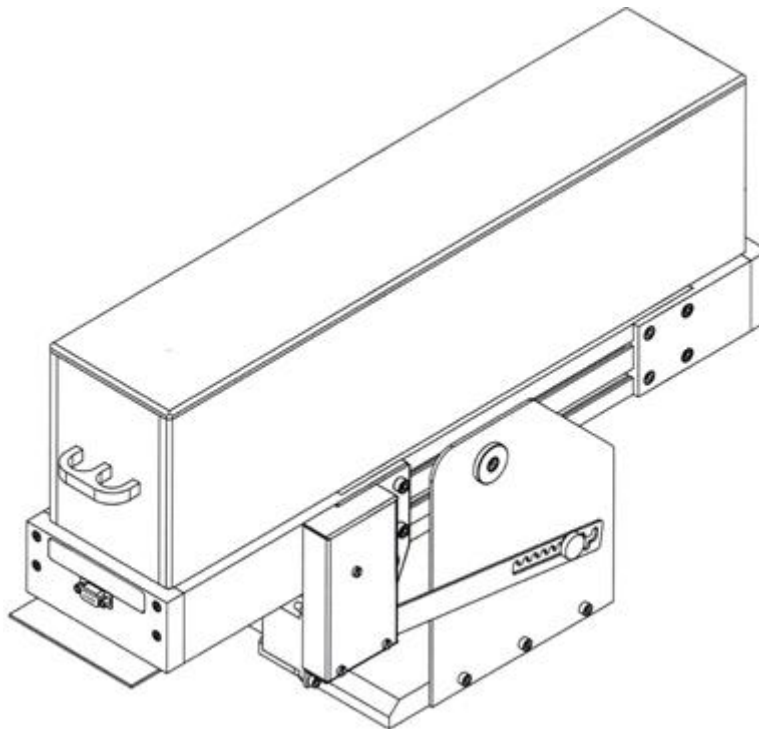


Figure 14. LE8700CTS One-lane rat treadmill.

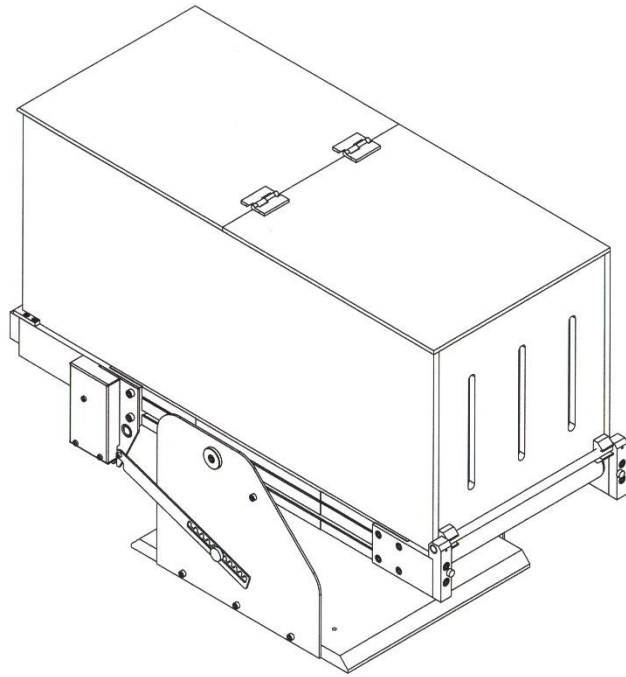


Figure 15. LE8715TS One-lane rabbit treadmill.

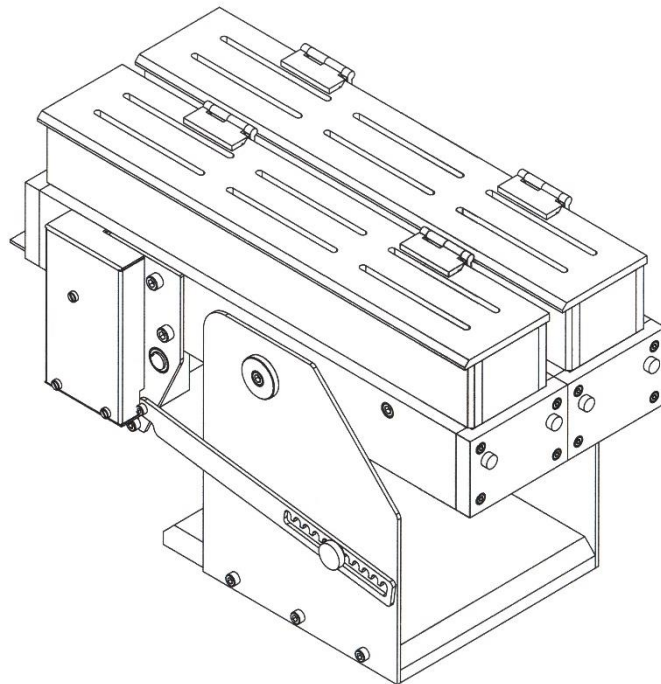


Figure 16. LE8709TS Two-lanes mouse treadmill.

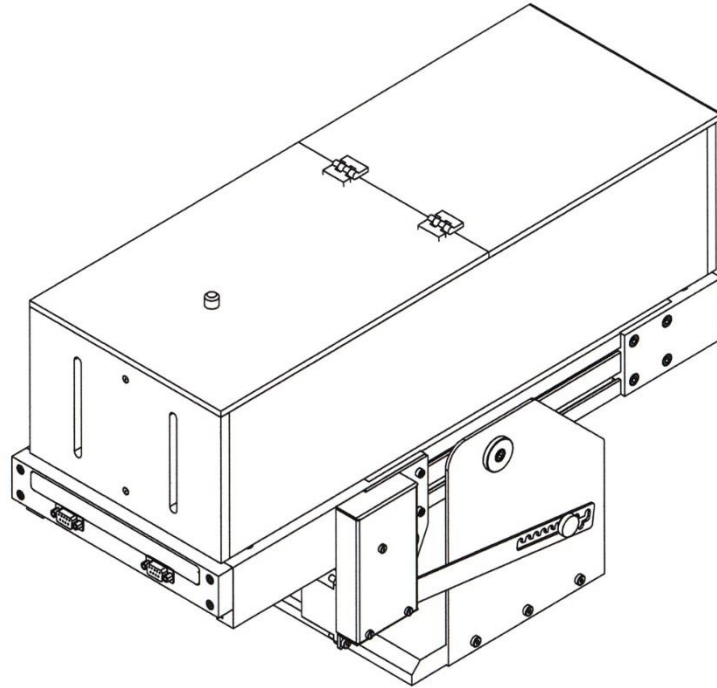


Figure 17. LE8706TS Two-lane rat treadmill.

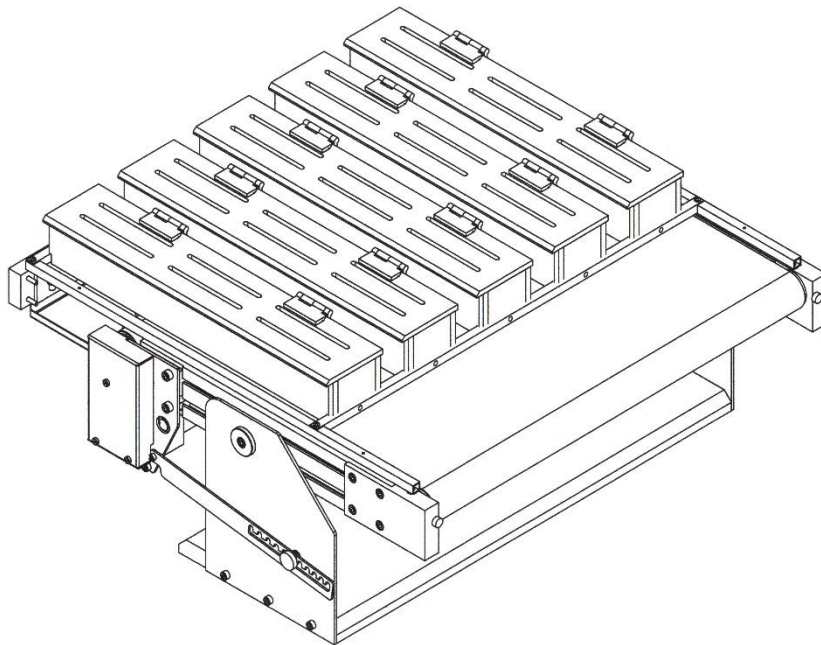


Figure 18. LE8710MTS Five-lanes mouse treadmill.

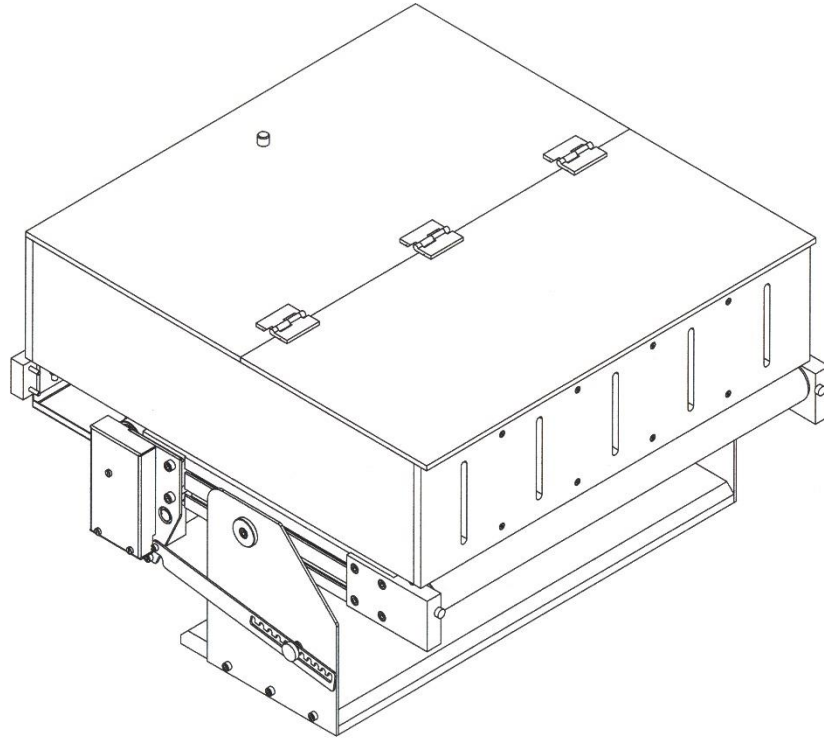


Figure 19. LE8710RTS Five-lane rat treadmill.

## 8. EQUIPMENT CONNECTION

### 8.1. ONE-LANE MOUSE, RAT & RABBIT TREADMILL

Although the schematic belongs to 1 lane rat Treadmill, the connections are identical for the three 1 lane models.

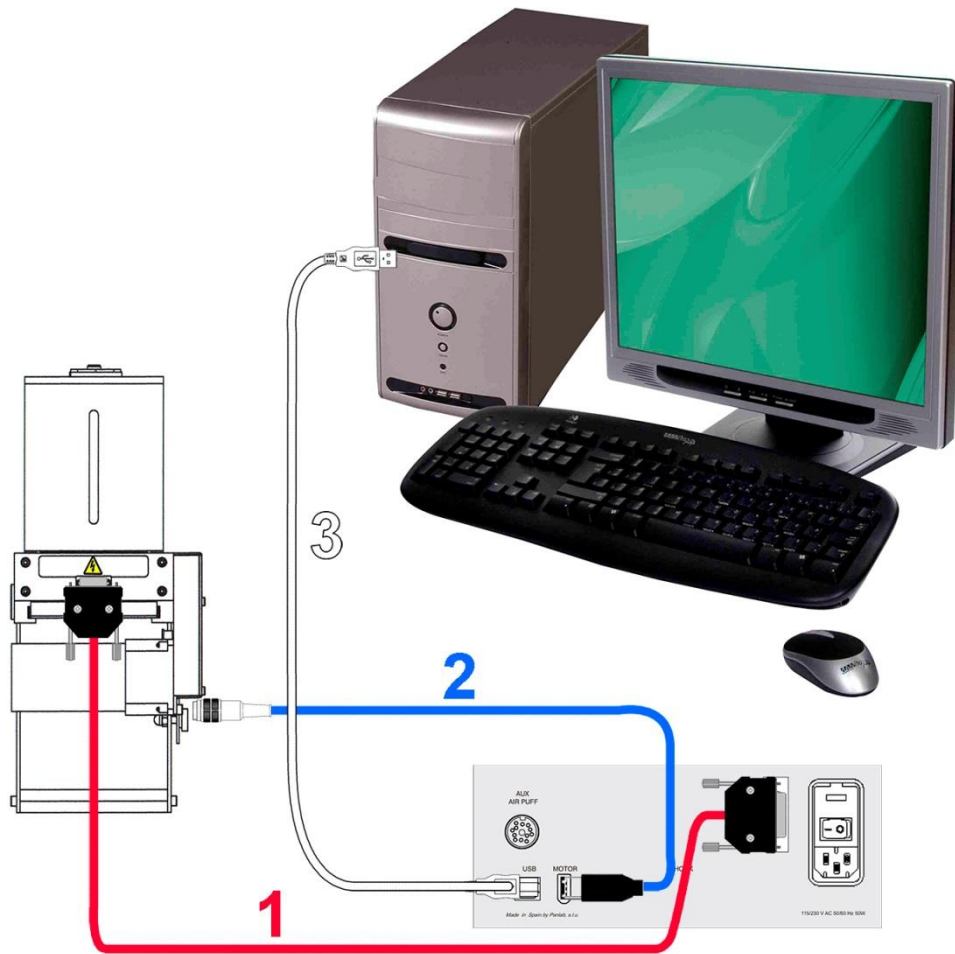


Figure 20. One-lane rat & rabbit treadmill connections.

The necessary connections are listed in the table below:

|   | FROM             | TO             | CABLE                      |
|---|------------------|----------------|----------------------------|
| 1 | LE8700TS SHOCK 1 | Treadmill grid | DB9 to DB15 cable          |
| 2 | LE8700TS Motor   | Motor          | FireWire 400 to DIN7 cable |
| 3 | LE8700TS USB     | PC USB port    | USB cable                  |
|   | LE8700TS Power   | AC power net   | Power cord                 |



## 8.2. TWO-LANES TREADMILL (RAT & MOUSE)

The schematic shows a rat treadmill, but the connections are the same as for a mouse treadmill.

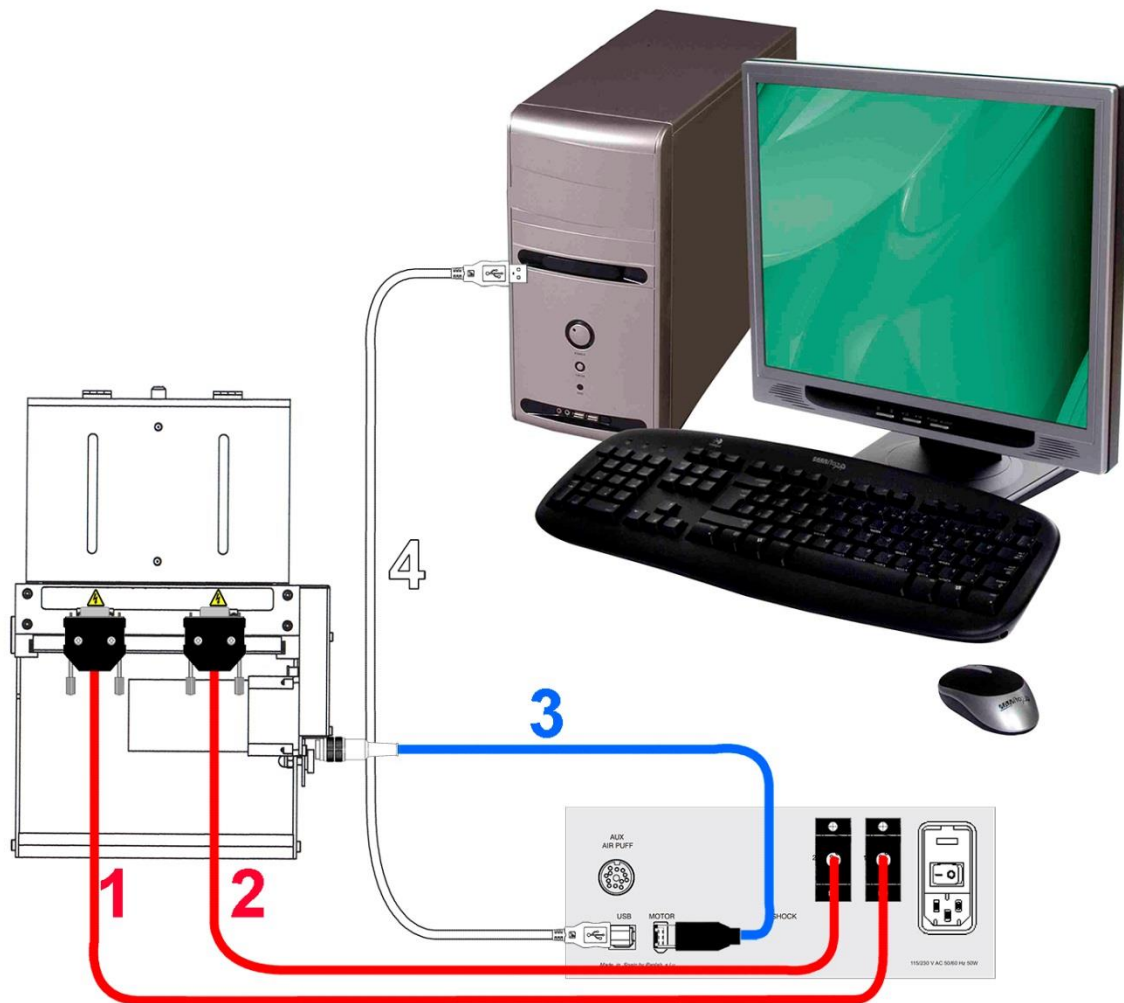


Figure 21. Two-lane treadmill connections.

The necessary connections are listed in the following table:

|   | FROM             | TO               | CABLE                      |
|---|------------------|------------------|----------------------------|
| 1 | LE8700TS SHOCK 1 | Treadmill grid 1 | DB9 to DB15 cable          |
| 2 | LE8700TS SHOCK 2 | Treadmill grid 2 | DB9 to DB15 cable          |
| 3 | LE8700TS Motor   | Motor            | FireWire 400 to DIN7 cable |
| 4 | LE8700TS USB     | PC USB port      | USB cable                  |
|   | LE8700TS Power   | AC power net     | Power cord                 |



### 8.3. FIVE-LANES TREADMILL (RAT & MOUSE)

The schematic shows a rat treadmill, but the connections are the same as for a mouse treadmill.

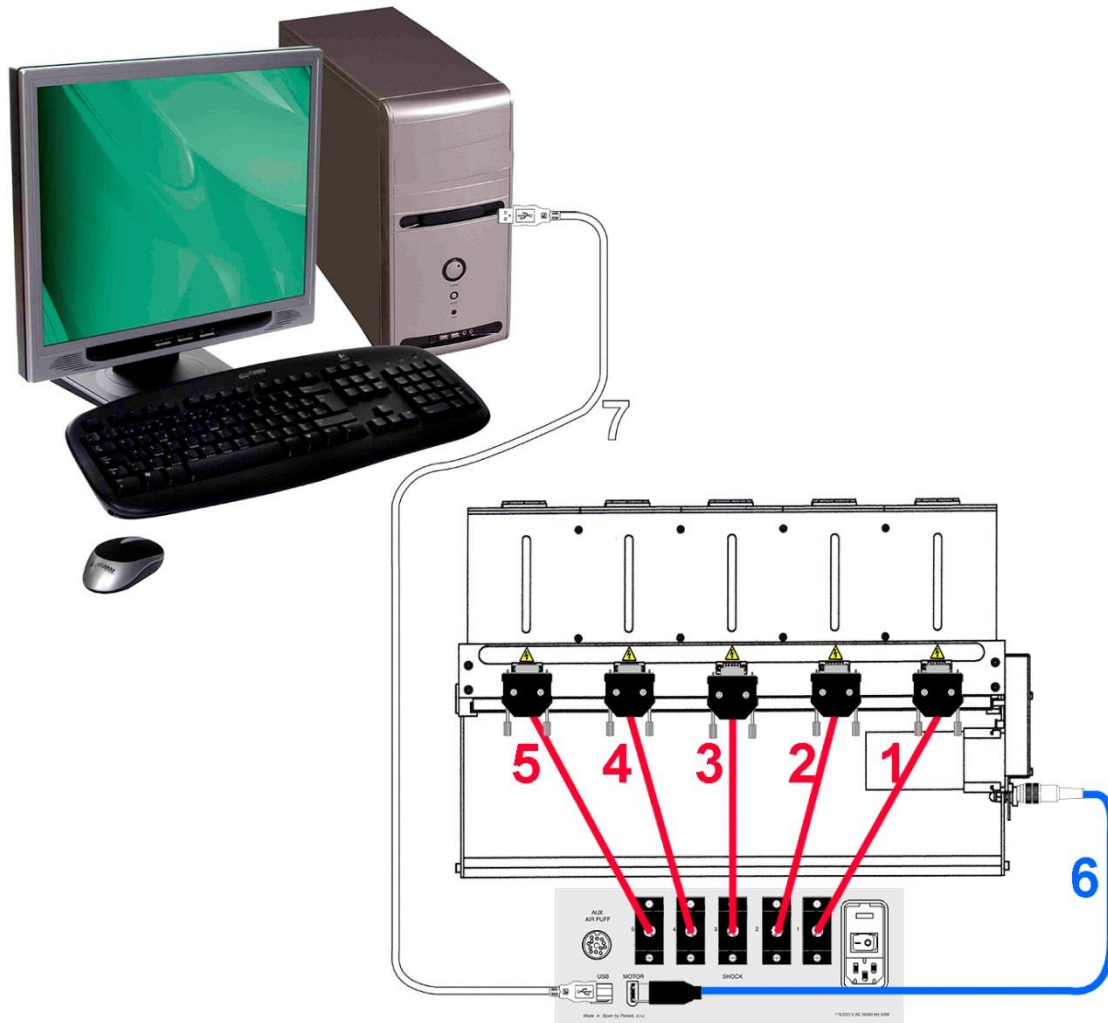


Figure 22. Five-lane treadmill connection.

The necessary connections are listed in the following table:

|   | FROM             | TO               | CABLE                      |
|---|------------------|------------------|----------------------------|
| 1 | LE8700TS SHOCK 1 | Treadmill grid 1 | DB9 to DB15 cable          |
| 2 | LE8700TS SHOCK 2 | Treadmill grid 2 | DB9 to DB15 cable          |
| 3 | LE8700TS SHOCK 3 | Treadmill grid 3 | DB9 to DB15 cable          |
| 4 | LE8700TS SHOCK 4 | Treadmill grid 4 | DB9 to DB15 cable          |
| 5 | LE8700TS SHOCK 5 | Treadmill grid 5 | DB9 to DB15 cable          |
| 6 | LE8700TS Motor   | Motor            | FireWire 400 to DIN7 cable |
| 7 | LE8700TS USB     | PC USB port      | USB cable                  |
|   | LE8700TS Power   | AC power net     | Power cord                 |

### 8.4. ELECTRICAL CONNECTIONS WORKING WITH OXYLETPRO

The following diagram shows the electrical connections for the special airtight treadmill used with the OxyletPro system for respiratory metabolism studies.

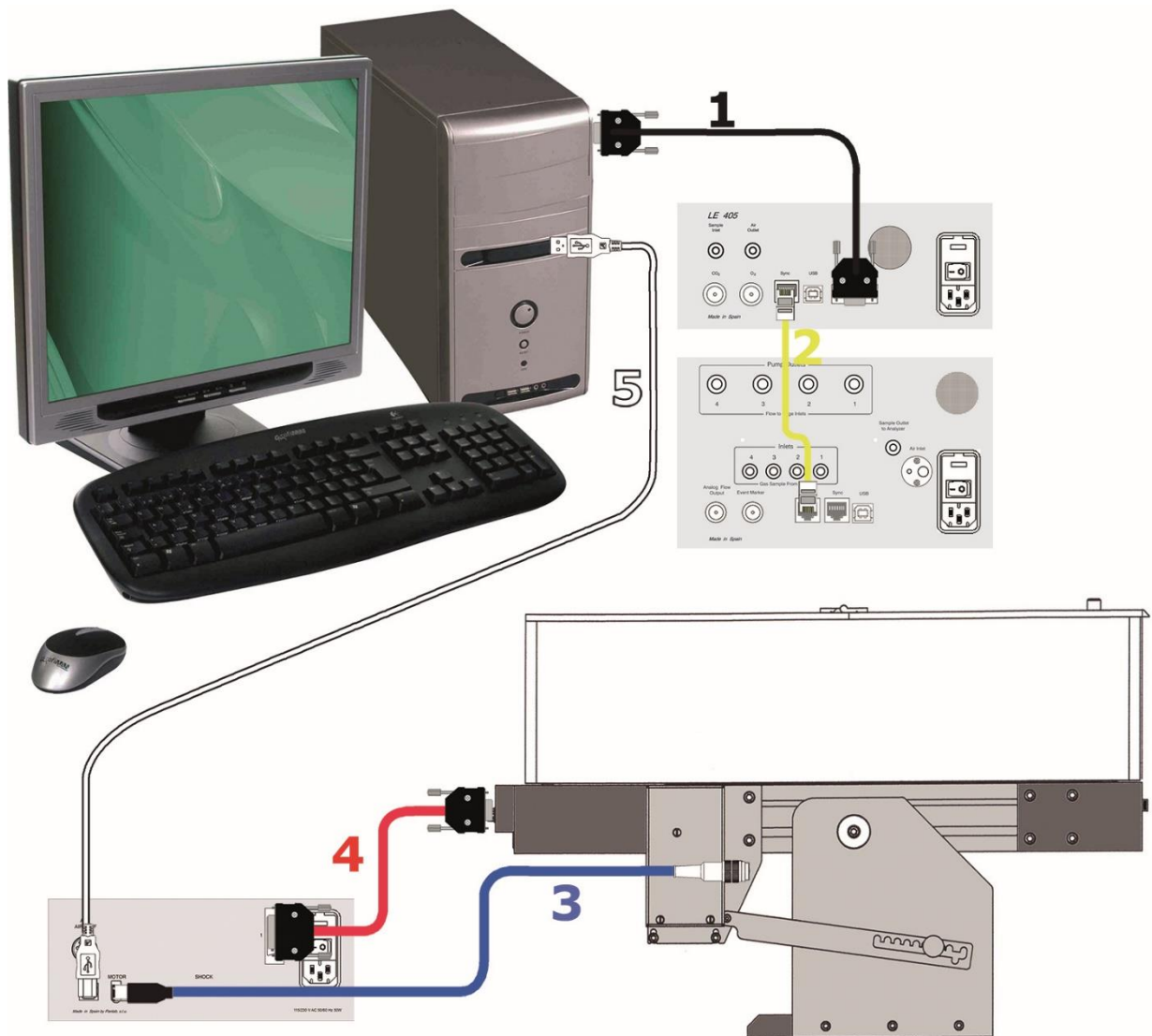


Figure 23. Electrical connections in metabolic measurements.

The following table shows the necessary connections.

|   | FROM           | TO                   | CABLE                      |
|---|----------------|----------------------|----------------------------|
| 1 | LE405 RS-232   | PC serial comm. port | DB9 to DB9 cable           |
| 2 | LE405 Sync     | LE 400X Sync         | telephonic                 |
| 3 | LE8700TS Motor | Motor                | FireWire 400 to DIN7 cable |
| 4 | LE8700TS Shock | Treadmill Grid       | DB15 to DB9 cable          |
| 5 | LE8700TS – USB | PC USB port          | USB cable                  |

## 8.5. PNEUMATIC CONNECTIONS WORKING WITH OXYLETPRO

The diagram below shows the pneumatic connections needed for the special airtight treadmill used with the OxyletPro system for respiratory metabolism studies.

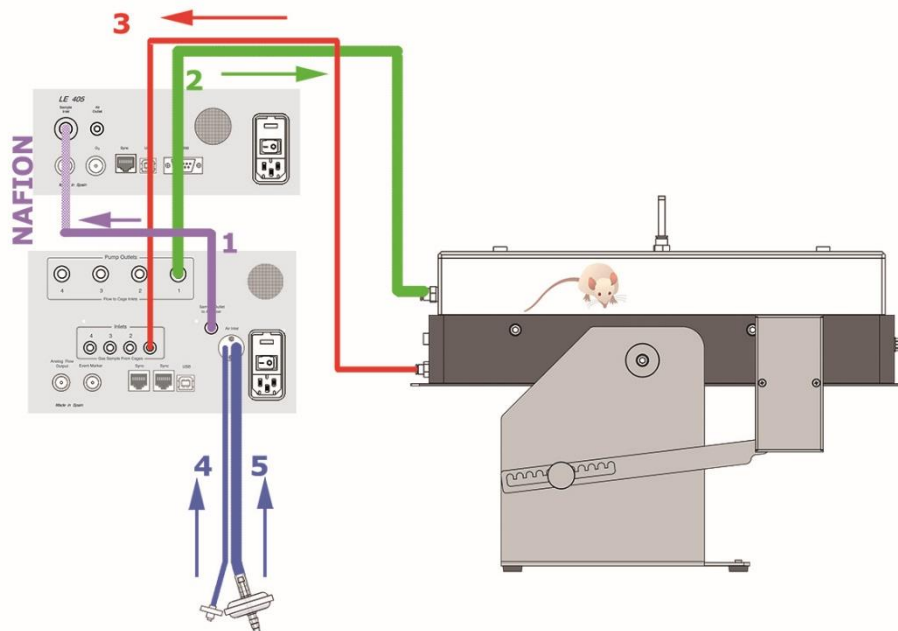


Figure 24. Pneumatic connections for measuring metabolism.

The arrows indicate the direction of airflow.

|   | FROM                 | TO                 | Diameter of Tube |
|---|----------------------|--------------------|------------------|
| 1 | LE400X Sample Outlet | LE405 Sample Inlet | 4mm+Nafion       |
| 2 | LE400X Cage Outlet   | Treadmill Inlet    | 6mm              |
| 3 | Treadmill Outlet     | LE400X Cage Inlet  | 4mm              |
| 4 | Air Inlet            | Room               | 4,5mm            |
| 5 | Air Inlet            | Room               | 9,5mm            |



**WARNING:** The tubes 4 and 5 which respectively are used for sampling the room air and the air inlet to the pump must be placed as far away as possible from the air supply fan outlet to prevent air pollution as electro valves system expels air from cages inside the equipment. Both tubes are linked together and should be placed away from any source of air “pollution”.

By source of air pollution, we refer to changes resulting from the breathing of other animals or of the researcher/facility staff.

## 9. WORKING WITH THE EQUIPMENT

---

Once the equipment is powered on, the splash screen appears for a few seconds and is followed by the main screen.



Figure 25. Splash screen.

### 9.1. EQUIPMENT SETTINGS

---

In the main screen appears, the "Settings" button gives access to the Settings screen.



For the Setting screen, the user can access to some specific configuration options.

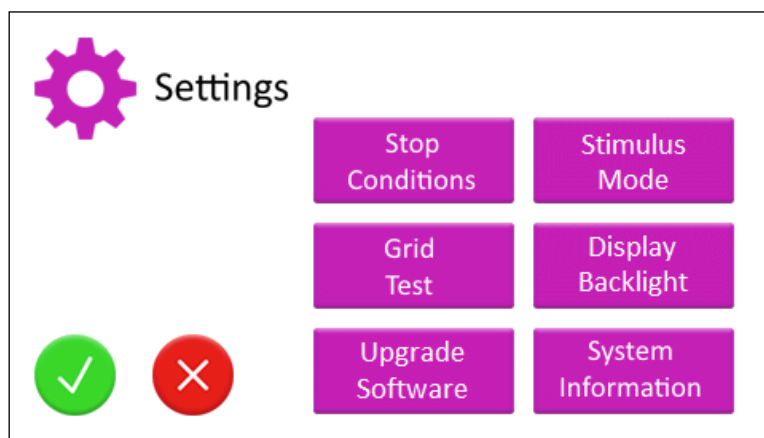


Figure 26. Settings screen.

Once the settings have been made, they are confirmed by pressing the green button "✓".



To reject the selected settings, press the red button "✗".



### 9.2. STIMULUS MODE

Select the type of stimulus used in the experiment: electric shock or air puff. The Electric shock option is selected by default.

To use the air puff, the standard treadmills should be completed with the air puff option (air-puff control unit, pipes and air valves).

The standard treadmill cover should also be provided with holes that allow the connection of the air tubes (except for older models that would need a replacement of the cover).

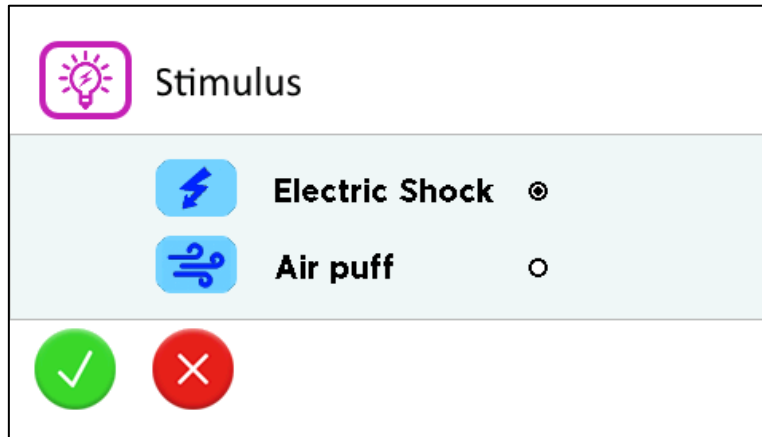


Figure 27. Stimulus selection screen.

Confirm the selection by pressing the green button "✓"  
 Reject the selection by pressing the red button "X".



### 9.3. DISPLAY BACKLIGHT

Set the brightness of the display backlight.

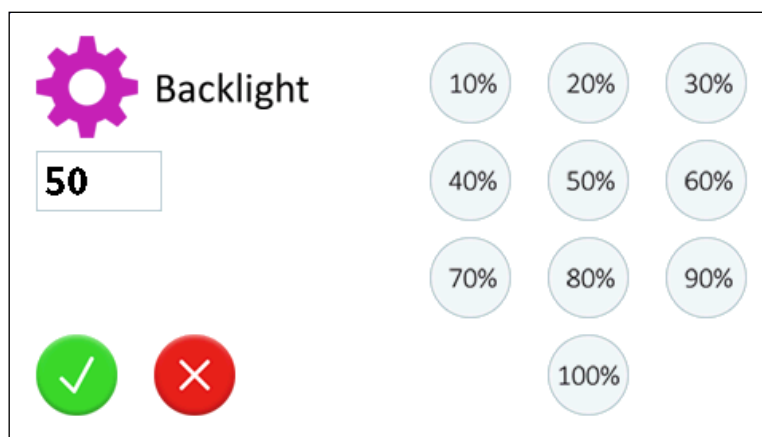


Figure 28. Backlight screen.

Confirm the selection by pressing the green button "✓"  
 Reject the selection by pressing the red button "X".



## 9.4. UPGRADE SOFTWARE

---

This screen indicates the steps to follow for updating the firmware of the control unit of the treadmill. No return of the equipment in the manufacturer's facilities is necessary.

## 9.5. SYSTEM INFORMATION

---

This screen shows information about the treadmill model, firmware version and serial number of the control unit. This information should be provided with any request for support.

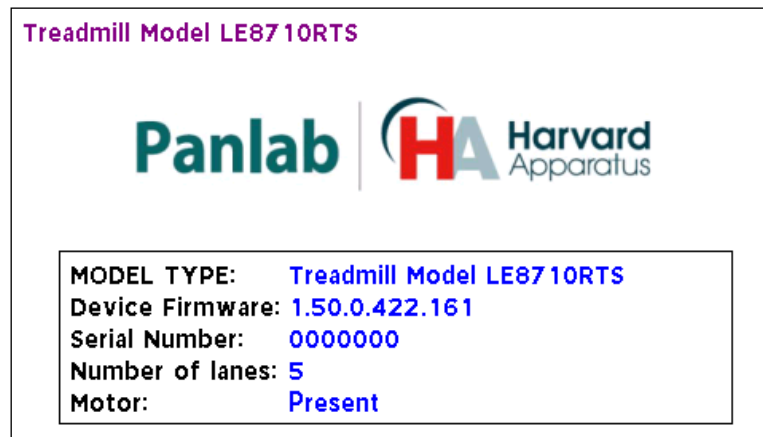


Figure 29. System Information screen.

Touch the screen to come back to the Settings screen.

## 9.6. MANUAL OR AUTOMATIC STOP CONDITIONS

---

The treadmill provides options for the manual or automatic stop of an experimental session.

The manual stop is achieved by pressing the red STOP button available from the main screen or by pressing the individual stop buttons for each lane available from in the data summary screen (see chapter 7.1.3).

The automatic stop is achieved by defining stop conditions. The following stop conditions are available:

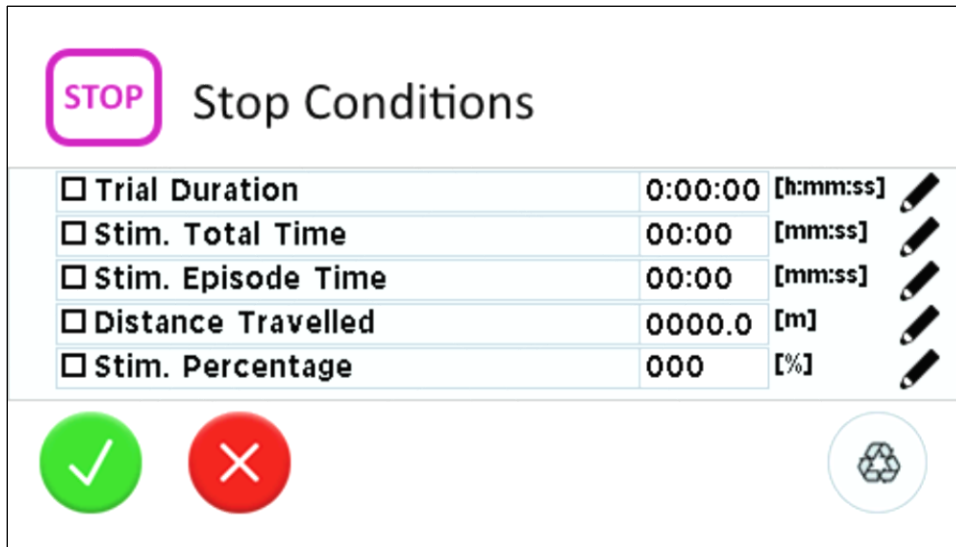




Figure 30. Stop Conditions screen.

1. Trial duration: the session stops after the user's selected Trial Duration (in [h:mm:ss]) has elapsed.
2. Stim. Total Time: the session stops after the user's selected Stimulus Total Time (in [mm:ss]) has been reached.
3. Stim. Episode Time: the session stops after the duration of a user's specific Stimulus Episode Time (in [mm:ss]) has been reached. For instance, if this value is 3s, this means that the session will stop when a stimulus episode of 3s has been detected.
4. Distance Travelled: the session stops when the distance travelled reaches the user's selected distance (in [m]). In case of a treadmill with several lanes the belt will still roll until the last subject reaches this condition.
5. Stim. Percentage: the session stops when the stimulus time percentage over the session duration reaches the user's selected percentage in [%].

To activate a stop condition, press the checkbox  on the left side of its label.

To edit the stop condition, press the pen  on the right side of the text box where the current value of the parameter is shown.

To reset the stop conditions to its default value, that is, with all the conditions unchecked and the parameters zero, press the "Reset" button at the bottom right of the screen. 

Confirm the selection by pressing the green button "

Reject the selection by pressing the red button ".

The stop conditions defined will be applied to the next session.

### 9.6.1. Trial Duration

To enter the duration of the experiment, use the numeric keypad. For example, to set a time of 2 minutes and 30 seconds, press the keys "2", "3", "0" in that order. It is not necessary to enter the time separator ":", this is automatically considered.

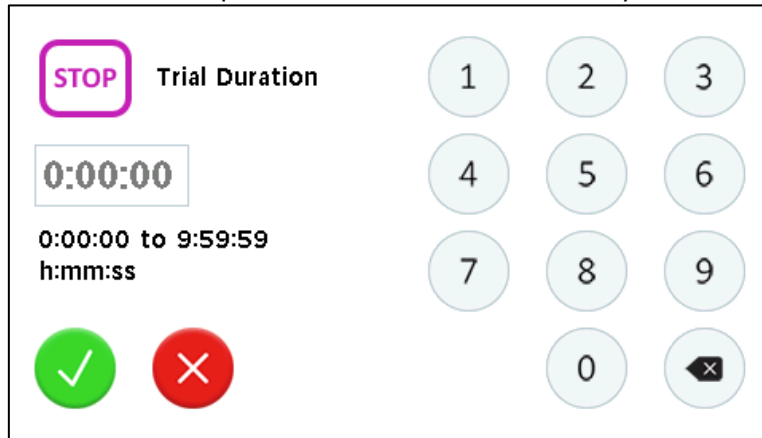


Figure 31. Trial Duration screen.

Confirm the selection by pressing the green button "✓"  
 Reject the selection by pressing the red button "X".  
 Use the Black left arrow button to delete the last entered number.



### 9.6.2. Stimulus Total Time

To enter the Stimulus Total Time, use the numeric keypad.



Figure 32. Stimulus Total Time screen.

Confirm the selection by pressing the green button "✓"  
 Reject the selection by pressing the red button "X".  
 Use the Black left arrow button to delete the last entered number.





### 9.6.3. Stimulus Episode Time

To enter the Stimulus Episode Time, use the numeric keypad.



Figure 33. Stimulus Episode Time screen.

Confirm the selection by pressing the green button "✓"  
 Reject the selection by pressing the red button "X".  
 Use the Black left arrow button to delete the last entered number.



### 9.6.4. Distance Travelled

To enter the Distance Travelled use the numeric keypad.

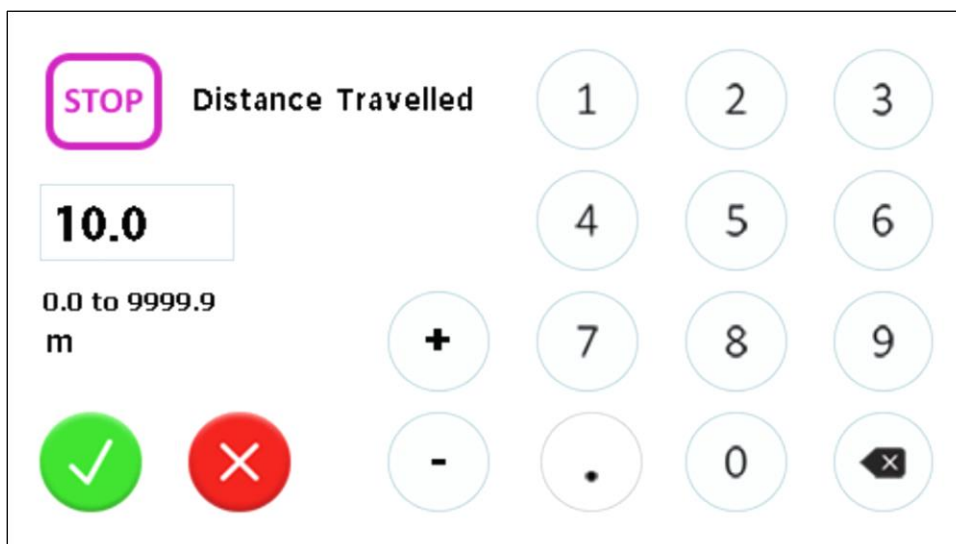


Figure 34. Distance Travelled screen.

Use the "+" and "-" buttons to increase or decrease the value by an increment/decrement value of 1 m.  
 Confirm the selection by pressing the green button "✓"  
 Reject the selection by pressing the red button "X".  
 Use the Black left arrow button to delete the last entered number.



### 9.6.5. Stimulus Percentage

To enter the Stimulus Percentage, use the numeric keypad.

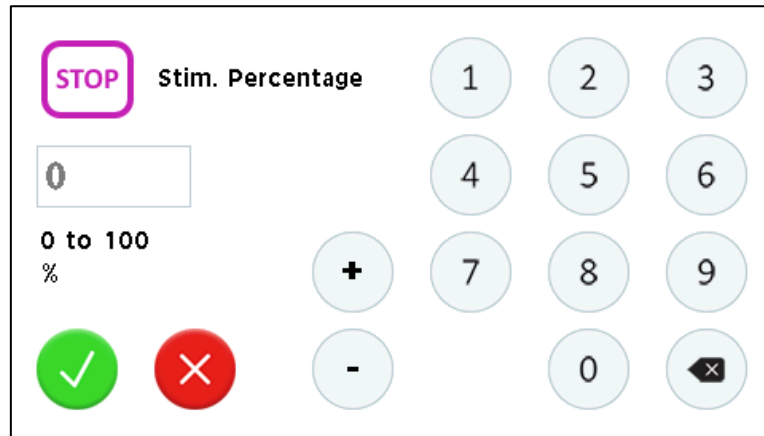


Figure 35. Stimulus Percentage screen.

Use the "+" and "-" button to increase or decrease the value by an increment/decrement value of 1.  
 Confirm the selection by pressing the green button "✓"  
 Reject the selection by pressing the red button "X".  
 Use the Black left arrow button to delete the last entered number.



## 9.7. GRID TEST

The Treadmill control unit is provided with an option for testing the grids before the experiment.

It is important that the grids are perfectly clean before starting an experiment. If the grids become dirty (dried urine, feces, soap residues or whatever deposit...) this dirtiness can make contact between two bars, closing the electrical circuit causing a counting of shock even when the animal is running on the belt. This may lead to incorrect data.

The grid test allows detecting if a dirtiness is creating a bridge between 2 grid bars that might impair a good detection of the animal and the delivery of the stimulus.

To perform the grid test, go to the "Settings" screen and click the "Grid Test" button. The "Grid Size Selection" screen will be displayed. Select "Rats" or "Mice" depending on the treadmill size you actually have. The "Grid Test" screen will be displayed.

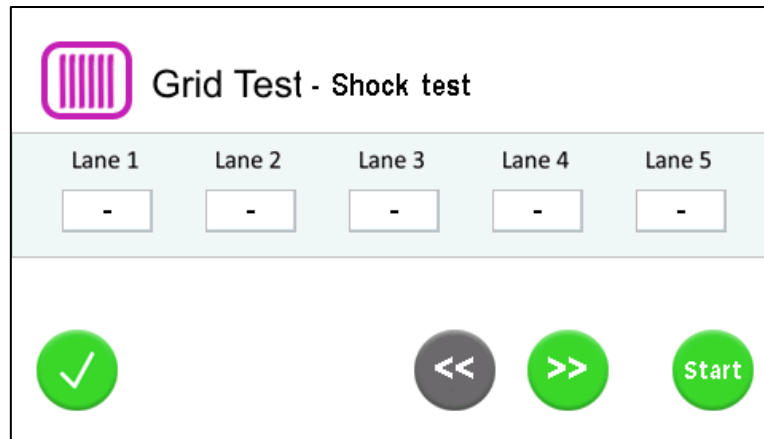


Figure 36. Grid Test - Shock screen.

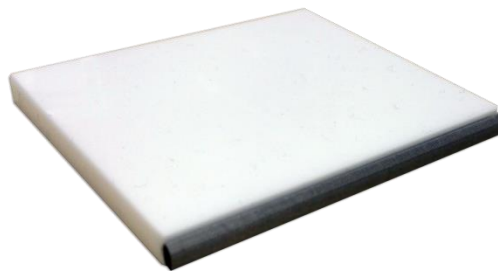
There are two types of test: short circuit test and cleaning test.

To select the type of test to be performed press selection keys <</>>.



### 9.7.1. Short Circuit Test

The short circuit test is for checking whether all the bars of the grid can conduct the current. During this test the sponge accessory provided with the system would be needed.



To perform this test, the next steps should be followed:

1. Turn off the control unit. Check that all the cables are properly connected, both to the control unit and the electrical grid(s).
2. Turn on the control unit. Select the Grid Test screen.

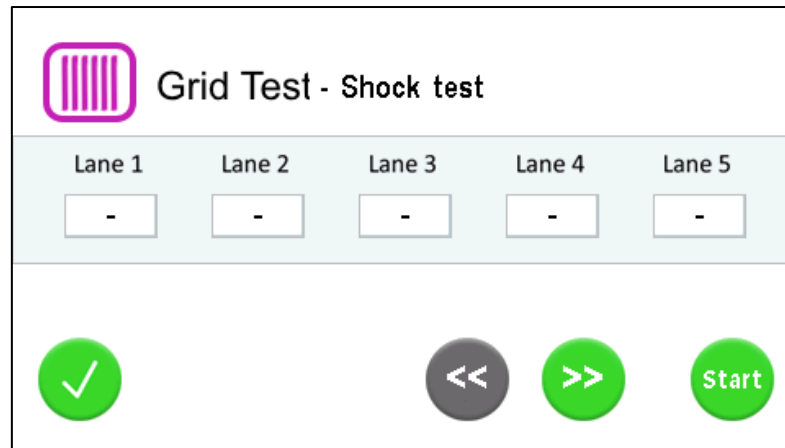
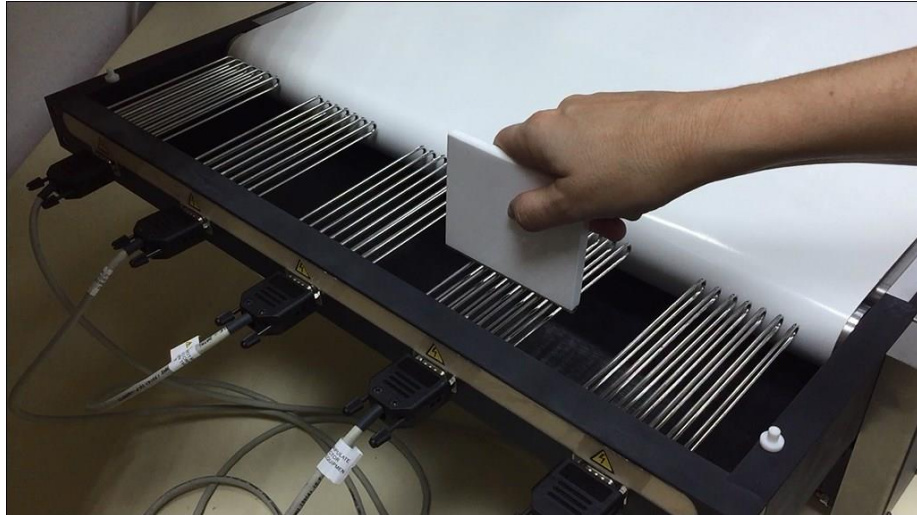


Figure 37. Grid Test - Shock screen.

3. Press the "Start" button.
4. A Warning message will appear. To exit from the Warning message and begin the test, touch the warning message screen.
5. Put the conductive part of the sponge accessory vertically on the grid of the Treadmill (or on one grid whether this is a 2-lanes or 5-lanes treadmill), and keep it down slightly until the word "PASS" is shown on the screen for the lane corresponding to the tested grid.



6. Move to the next grid until all the lanes have been tested.





7. If all lanes successfully pass the test, the test will stop automatically. If not, press the "Stop" button to end the test.
8. Check the results.

### 9.7.2. Cleaning Test

The cleaning test is done for checking whether there is some dirtiness detected on the grid that may create a bridge between 2 bars. To perform this test, follow these steps:

1. On the Grid Test screen, press the ">>" button to select the Cleaning Test.

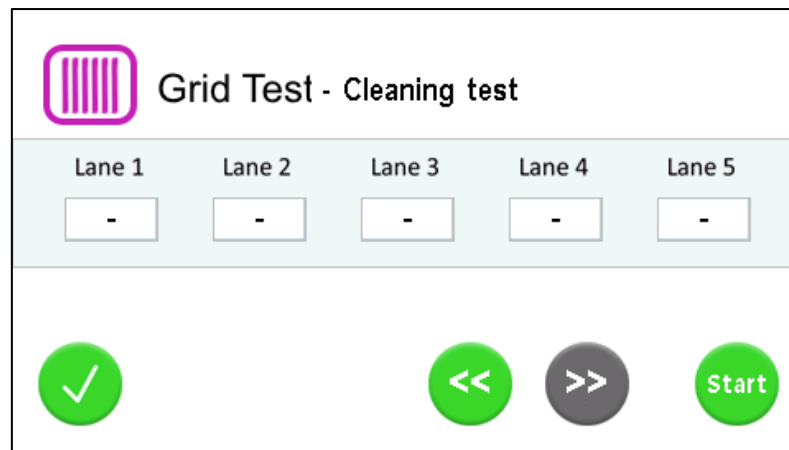


Figure 38. Grid Test - Cleaning screen.

2. Press the "Start" button.
3. A Warning message will appear. To exit from the Warning message and begin the test, touch the warning message screen.
4. Wait until all the lanes have been checked.
5. If all lanes successfully pass the test, the test will stop automatically.



6. If not, a warning message will be displayed indicating that the test has not been successful.
7. Touch the screen for exiting from the Warning message and see the result.

### 9-7-3. Interpretation of results

The reliability of the experiment can only be ensured if the grid test has been executed before running the experiment and had shown successful result.

If the tests fail on one grid, the cleaning of the grids should check to ensure they are free of any dirtiness or residue.

To prevent the accumulation of dirtiness, it is recommended thoroughly cleaning the grids after each experimental session.

## 9.8. SPEED SETTINGS

---

The Treadmill control unit allows setting the belt speed using a numeric keypad.

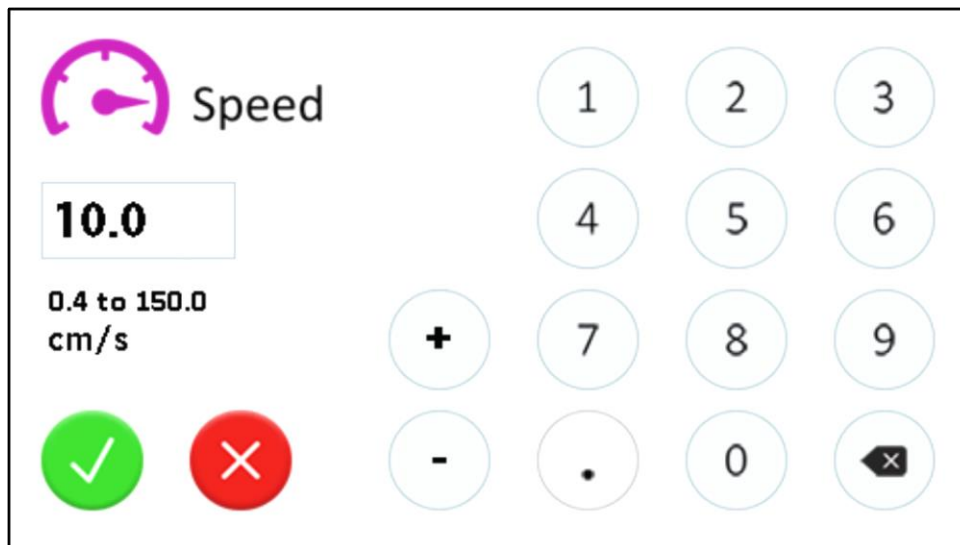


Figure 39. Speed screen

Press the digits of the desired speed and finally press the green OK button to confirm the edition, or press the red CANCEL button to dismiss the edition.



The up/down buttons can be used to change the value in increments/decrements of 0.1 cm/s.



Use the button "Backspace" to delete the last digit entered.



The speed applied is a fixed basal speed that can be changed manually by the experimenter during the experimental session by using the buttons available from the main screen.

To implement protocols with automatic changes of the speed, the use of the software **SEDACOM** is needed.

### 9.9. INTENSITY SETTINGS

The Treadmill control unit allows setting the intensity of the shock independently in each lane through the "Intensity" screen.

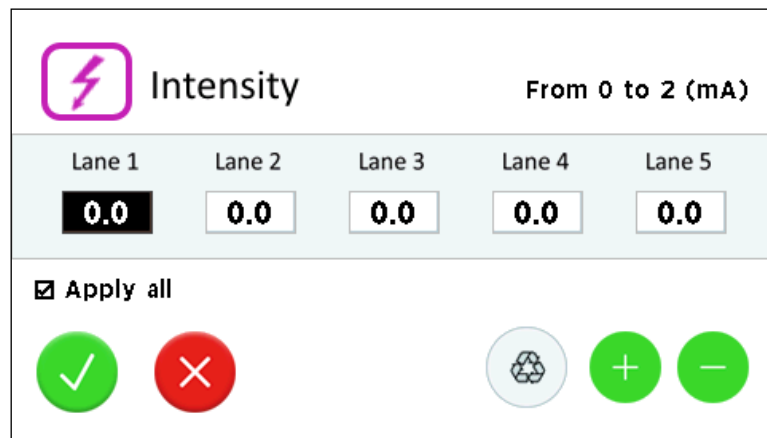






Figure 40. Intensity screen

In order to change the intensity on a lane follow the next steps:

1. Uncheck the "Apply All" checkbox.
2. Select the cell of the lane you want to change. The selected cell is highlighted.
3. Press and keep pressed the increment/decrement button until the intensity has reached the desired value. 
4. Press the green OK button to confirm the settings. 
5. Or press the red Cancel button to reject the settings. 

In order to set all the intensities to zero mA press the Reset button. 



**WARNING:** A minimum current of 0.2 mA is needed to detect the animal on the grid. If the selected INTENSITY is lower than 0.2 mA, the counters NUMB-S and TIME-S of the display will no count any shock.



## 10. EQUIPMENT SET-UP

---

The procedure to set up the instrument is outlined below:

- 1 Set the SPEED and INTENSITY to the minimum using the Speed / Intensity settings screen (see chapters 9.8 y 9.9).



- 2 Place the animal(s) in their lane(s).

- 3 Press the START button to start the Running mode.



- 4 Adjust the SPEED to the desired value.



- 5 Adjust the intensity to a level at which the animal notices the shock.



- 6 After a short time for the animal to adapt to the belt and when all the animals are out of the grid, press the RESET ALL button to reset all the counters.



- 7 Once the trial time has finished or once the desired DISTANCE has been run, press the STOP button to activate STOP mode.



If automatic stop conditions have been defined, the system will stop automatically when the first condition is met (see chapter 9.6)

Once the SPEED and INTENSITY are set, you can be faster on the trial process:

- 1 Press START button.



- 2 Place one animal in each lane.

- 3 Press RESET ALL button.



- 4 Once the trial TIME or DISTANCE have finished press the STOP button.





**WARNING:** A minimum current of 0.2 mA is needed to detect the animal on the grid. If the selected INTENSITY is lower than 0.2 mA, the counters NUMB-S and TIME-S of the display will no count any shock.

### 10.1. ALIGNMENT OF THE TREADMILL BELT

---

The alignment of the treadmill belt is critical for ensuring a reliable execution of the selected speed.

The belt movement is supported by two rollers: the rear or drive roller and the front one.

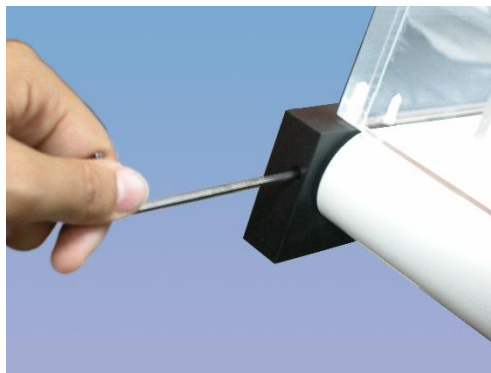


Figure 41. Allen screws.

The treadmill has a tightening system which makes it possible to adjust the lateral movement of the belt: the 2 Allen-head screws at the sides (see Figure 41. Allen screws.). Turning the screw clockwise increases the tension on the side where the screw is installed and turning it counter-clockwise decreases the tension of the belt on the side where the screw is installed.

For example, if the belt has moved to the left (as seen from the front) tension on the left side must be increased, or tension on the right side decreased to centre the belt again. The two screws can be adjusted until the desired position is attained. These adjustments should be made for high belt speeds.



**WARNING:** When working with closed Treadmills for metabolic measures, centring holes are covered to prevent entry of air from the outside. Once the treadmill belt is centred you should cover again these holes.

## 10.2. SLOPE SETTINGS

---

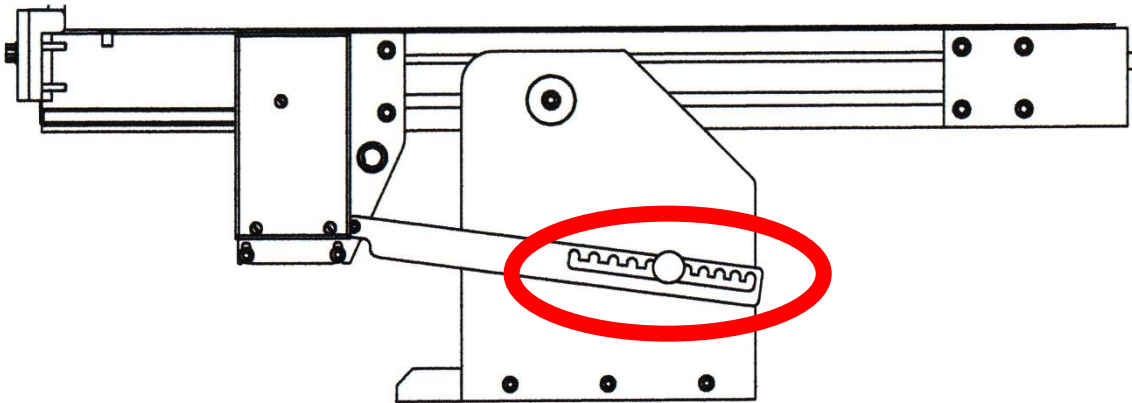


Figure 42. Slope control mechanism.

The treadmill slope can be easily modified with the slope mechanism. It allows positive and negative slope settings from  $-25^{\circ}$  to  $+25^{\circ}$  in increments of  $5^{\circ}$ .

Proceed as follows to adjust the belt slope:

1. Partially unscrew the fixing screw.
2. Move the slope lever up slightly to free it.
3. Set the belt to the necessary inclination.
4. Move the slope lever down to block the slope.
5. Tighten the fixing screw again to block the mechanism.

## 10.3. MAINTENANCE

---

The cleaning of the treadmill, especially the grid, is critical for ensuring the reliability of the experiment (see next chapter).

All the other parts of the treadmill should be cleaned with alcohol-free detergents or derived products to avoid damaging its acrylic parts.

The rollers do not need to be greased or oiled as they are mounted on protected self-lubricating rollers. Nevertheless, areas where there may be friction should always be kept clean (using a paintbrush or a brush).

## 10.4. GRID CLEANING

---

The grid should be cleaned after each experiment. When there is dirtiness on the grid making a bridge between 2 bars, leading to the erroneous counting of shock when the animal is running on the belt (meaning when the animal is not on the grid).

In order to clean the grids, water and soap should be used. The grids should be dried before the used of the treadmill for the experiment. Grids sets can be unscrewed from treadmill body for a more efficient cleaning, or a wet brush can be used instead.

Special care must be taken in cleaning the plastic between grids, because urine residues there may create a bridge between the bars.

#### **10.5. CLEANING THE BELT**

---

After each experimental session the belt should be cleaned with a damp cloth to remove any traces of urine and faeces.

#### **10.6. CLEANING THE PERSPEX COVER**

---

To clean the Perspex/acrylic cover you can use a slightly wet cloth and then dry it with a dry cloth. If the cover is too dirty, a cloth soaked in a soapy solution can be used to clean it. Afterwards remove the foam with a wet cloth and finally dry it with a dry cloth.



**WARNING:** Never use alcohol or alcohol-based detergents to clean Perspex/acrylic parts. With the contact with alcohol some cracks may appear in the transparent plastic. This damage is not covered by the warranty.

#### **10.7. TRAY CLEANING**

---

The tray can be extracted from its guides for cleaning. Remove the excrements and clean it with water and foam. Dry it with a dry cloth and insert it again in place.

In metabolic treadmills the tray covers all the bottom part of the treadmill and is fixed with rubber magnet bands.

#### **10.8. BELT REPLACEMENT**

---

It is not very usual to have to replace the belt of the treadmill. If that were necessary, consult our technician support for details on the procedure. It is usually necessary to return the equipment at our facility since this operation would need the intervention of a specialist.

## 11. TRANSMISION OF DATA TO A PC (SEDACOM)

---

The purchase of the **Sedacom** software is needed for transferring the data to a computer (please contact your local sales delegate for more information). The **Sedacom** software reference is composed by a USB Flash key containing the software Installer, a License for use and **Sedacom** User's Manual). Follow the next instructions:

- Please refer to the **Sedacom** User's Manual for instructions on how to install and use the software with the present device.
- A USB communication cable (provided with the present device) is needed for the connection of the present device to the computer in which the **Sedacom** software is installed. Please refer to the present User's Manual chapter 8 for instructions on how to connect this cable to the device.



**WARNING:** Keep the USB cable in a safe place if you are not using the Secacom software with the treadmill. You will need it if you want to use the equipment with the PC software in the future. If this cable is lost, you should buy a new one to your local supplier, in order to be able to use the equipment with the PC software. The warranty period of the cable is the same than the one of the associated equipment.

## 12. TROUBLESHOOTING

This table features instructions to solve the most frequent problems.

| PROBLEM   | SOLUTION   |
|---|--|
| The equipment does not start up.  | <ul style="list-style-type: none"> <li>• Ensure that the voltage of mains is the same than the one selected in the fuse holder.</li> <li>• Check the condition of the fuses.</li> </ul>  |
| The animal does not receive shock.  | <ul style="list-style-type: none"> <li>• Check that the DB9 to DB15 cables are connected between the grids and the control unit.</li> <li>• Check that the INTENSITY knob in the control unit is set to a value higher than 0.2 mA.</li> <li>• Check that the grid is clean (urine and excrements can conduct current).</li> <li>• Check that control unit is in RUNNING mode.</li> <li>• When you operate the device with the program <b>Sedacom</b> and the modes are <b>PC Single Mode</b> or <b>Protocol</b> check if you have checked the checkbox <b>Shock</b>.</li> </ul> |
| Shock counters count although the animal has not reached to the grid.           | <ul style="list-style-type: none"> <li>• Make sure the grid is clean (urine and faeces can carry the current), performing the Grid Test.</li> <li>• Disconnect the DB9-DB15 cable from the grid and put the controller in RUNNING mode, if the problem persists this means a malfunction in the control unit, if the problem goes away it is dirtiness on the grid or a cable failure.</li> </ul>  |
| When the animal reaches the grid does not increment counters NUMB-S and TIME-S. | <ul style="list-style-type: none"> <li>• Ensure that DB15-DB9 cables are connecting the grids and the control unit.</li> <li>• Ensure that the selected intensity is greater than 0.2 mA; below this value the counters will not count.</li> <li>• When you operate the device with the program <b>Sedacom</b> and the modes are <b>PC Single Mode</b> or <b>Protocol</b> check if you have checked the checkbox <b>Shock</b>.</li> </ul>  |

| PROBLEM   | SOLUTION   |
|---|--|
| The belt moves to one side                                | <ul style="list-style-type: none"> <li>Align the belt as explained in section 10.1.</li> </ul>   |
| The belt does not run.                                    | <ul style="list-style-type: none"> <li>Make sure the motor cable is connected.</li> <li>Make sure the device is in <b>RUNNING</b> mode.</li> <li>If the belt does not run at low speed, but starts to run when speed increases, this means that the belt is too tight. Loosen it and align it as explained in section 10.1.</li> </ul> |
| At low speeds the belt does not run uniformly.            | <ul style="list-style-type: none"> <li>The belt is too tight. Loosen it and align it as explained in section 10.1.</li> </ul>  |
| At high speeds the belt is slow.                          | <ul style="list-style-type: none"> <li>Possibly the motor or the control unit are damaged. Contact the technical service for repair.</li> </ul>  |
| The belt hits some of the grids.                          | <ul style="list-style-type: none"> <li>Remnants of dirtiness (excrements) have been attached to the drive roller and produce a lifting of the belt that makes it hitting the grid. Loosen the belt with the tension screws and clean the dirtiness under it and in the transmission rollers.</li> </ul>                                |
| The buttons <b>STOP/RUN</b> and <b>RESET</b> do not work. | <ul style="list-style-type: none"> <li>When you operate the device with the software <b>Sedacom</b> and the modes are <b>PC Single Mode</b> or <b>Protocol</b> these buttons are disabled.</li> <li>If not contact with technical service in order to solve the problem.</li> </ul>  |

### 13. PREVENTIVE MAINTENANCE

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|                                   | EXPERIMENT                          | MONTHLY                             | BIANUAL                             |
|-----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| GRID CLEANING                     | <input checked="" type="checkbox"/> |                                     |                                     |
| BELT CLEANING                     | <input checked="" type="checkbox"/> |                                     |                                     |
| PERSPEX COVER CLEANING            | <input checked="" type="checkbox"/> |                                     |                                     |
| TRAY CLEANING                     | <input checked="" type="checkbox"/> |                                     |                                     |
| BELT CENTERING <sup>1</sup>       |                                     | <input checked="" type="checkbox"/> |                                     |
| GENERAL MAINTENANCE<br>IN FACTORY |                                     |                                     | <input checked="" type="checkbox"/> |

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<sup>1</sup> If the belt moves to one side, it will be necessary to center it immediately.



## 14. SPECIFICATIONS

|  |  |
|--|--|
| <p><b>POWER SUPPLY</b></p> <p>Input voltage:<br/>Frequency:<br/>Fuse:<br/>Maximum Power:<br/>Conducted Noise:</p>                            | <p>115 /230V~<br/>50/60 Hz<br/>2 fuses 5mm*20mm 2A 250V Fast<br/>55W<br/>EN55022 / CISPR22 / CISPR16 class B</p>   |
| <p><b>ENVIRONMENTAL CONDITIONS</b></p> <p>Operating temperature:<br/>Operating Relative Humidity:<br/>Storage temperature:</p>               | <p>10°C to +40°C<br/>0% to 85% RH, non-condensing<br/>0°C to +50°C, non-condensing</p>   |
| <p><b>COMUNICATIONS OUTPUT</b></p> <p>Standard Interface:<br/>Connector:</p>   | <p>USB 2.0<br/>USB-B female connector</p>  |
| <p><b>DISPLAY COUNTERS:</b></p> <p>DISTANCE:<br/>SHOCK-TIME:<br/>NUMBER OF SHOCKS:<br/>EXPERIMENT TIME:</p>                                  | <p>0 to 9999 m in steps of 1 m<br/>0 to 9999s in steps of 1s<br/>0 to 9999 in steps of 1<br/>0 to 9 hours 59 min 59 sec.</p>   |
| <p><b>BELT:</b></p> <p>SIZE (length x width):<br/>Mouse:<br/>Rat (1, 2, 5 lanes):<br/>Rabbit:<br/>SPEED:<br/>Rats and Mice:<br/>Rabbits:</p> | <p>685 mm, 48 mm<br/>926 mm, [98 mm, 198 mm, 510 mm]<br/>1326 mm, 294 mm<br/>0.4 to 150.0 cm/s in steps of 0.1 cm/s<br/>10.0 to 80.0 cm/s in steps of 0.1 cm/s</p>   |
| <p><b>LANES/CORRIDORS (Internal):</b></p> <p>Length x Width x Height:<br/>Mouse:<br/>Rat:<br/>Rabbit:</p>                                    | <p>376 mm, 52 mm, 50 mm<br/>532 mm, 102 mm, 144 mm<br/>726 mm, 304 mm, 310 mm</p>  |
| <p><b>SUBJECT MAXIMAL WEIGHT (rat treadmills)</b></p>  | <p>The weight of the rats that can be used in the rat treadmills is limited more by the size of the lanes/corridors provided by the lid/cover than by the potency of the motor.<br/>Globally, the rat treadmills are optimal for an animal weight lower than 350 g. For animal with higher weight, please consult our experts.</p> |
| <p><b>MOTOR</b></p> <p>Type:<br/>Torque:</p>   | <p>Two phases brushless stepper motor.<br/>95 N·cm</p>   |

|   |  |
|---|--|
| <p>SHOCK</p> <p>Waveform</p> <p>Phases</p> <p>Intensity</p> <p>Impedance</p>  | <p>Rectangular waveform with 8ms amplitude</p> <p>Six sequential channels at 20Hz</p> <p>Adjustable from 0 to 2mA RMS</p> <p>160kΩ</p> |
| <p>TREADMILL MECHANICAL KIT:</p> <p>WEIGHT:</p> <p>    Mouse one lane:</p> <p>    Rat one lane:</p> <p>    Rabbit 1 lane:</p> <p>    Mouse two lanes:</p> <p>    Rat two lanes:</p> <p>    Mouse five lanes:</p> <p>    Rat five lanes:</p> | <p>5 kg</p> <p>12 kg</p> <p>31 kg</p> <p>11 kg</p> <p>15 kg</p> <p>23 kg</p> <p>26 kg</p>  |
| <p>DIMENSIONS</p> <p>Width x Deep x Height:</p> <p>    Control unit:</p> <p>Weight:</p> <p>    1 lane control unit:</p> <p>    2 lanes control unit:</p> <p>    5 lanes control unit:</p>   | <p>232mm * 295mm * 110mm</p> <p>3.6 kg</p> <p>3.7 kg</p> <p>3,9 kg</p>   |

**DECLARACIÓN DE CONFORMIDAD**  
**DECLARATION OF CONFORMITY**  
**DECLARATION DE CONFORMITÉ**

Nombre del fabricante: **Panlab s.l.u.**  
 Manufacturer's name: [www.panlab.com](http://www.panlab.com)  
 Nom du fabricant: [info@panlab.com](mailto:info@panlab.com)

Dirección del fabricante: **Energía, 112**  
 Manufacturer's address: **08940 Cornellà de Llobregat**  
 Adresse du fabricant: **Barcelona SPAIN**

Declara bajo su responsabilidad que el producto: **Treadmill Touchscreen Control Unit**  
 Declares under his responsibility that the product:  
 Déclare sous sa responsabilité que le produit:

Marca / Brand / Marque: **PANLAB**

Modelo / Model / Modèle: **LE8700TS, LE8706TS, LE8708TS, LE8709TS,  
LE8710TS, LE 8715TS**

Cumple los requisitos esenciales establecidos por la Unión Europea en las directivas siguientes:  
 Fulfils the essential requirements established by The European Union in the following directives:  
 Remplit les exigences essentielles établies pour l'Union Européenne selon les directives suivantes:

|                   |  |
|-------------------|--|
| <b>2014/35/EC</b> | Directiva de baja tensión / Low Voltage / Basse tension  |
| <b>2014/30/EC</b> | Directiva EMC / EMC Directive / Directive CEM  |
| <b>2012/19/EU</b> | La Directiva de Residuos de Aparatos Eléctricos y Electrónicos (WEEE) / The Waste Electrical and Electronic Equipment Directive (WEEE) / Les déchets d'équipements électriques et électroniques (WEEE)   |
| <b>2011/65/EU</b> | Restricción de ciertas Sustancias Peligrosas en aparatos eléctricos y electrónicos (ROHS) / Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (ROHS) / Restriction de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques (ROHS) |
| <b>2006/42/EC</b> | Directiva mecánica / Machinery directive / Directive mécanique   |

Para su evaluación se han aplicado las normas armonizadas siguientes:  
 For its evaluation, the following harmonized standards were applied:  
 Pour son évaluation, nous avons appliqué les normes harmonisées suivantes:

|                                |                               |
|--------------------------------|-------------------------------|
| Seguridad / Safety / Sécurité: | <b>EN61010-1:2011</b>         |
| EMC:                           | <b>EN61326-1:2012 Class B</b> |
| FCC:                           | <b>FCC47CFR 15B Class B</b>   |
| Safety of machinery:           | <b>EN ISO 12100:2010</b>      |

En consecuencia, este producto puede incorporar el marcado CE y FCC:  
 Consequently, this product can incorporate the CE and FCC marking:  
 En conséquence, ce produit peut incorporer le marquage CE et FCC:



En representación del fabricante:  
 Manufacturer's representative: **Carme Canalís**  
 En représentation du fabricant: **General Manager**  
**Panlab s.l.u., a division of Harvard BioScience**

Cornellà de Llobregat, Spain  
 05/07/2016

**(GB) Note on environmental protection:**



After the implementation of the European Directive 2002/96/EU in the national legal system, the following applies:

Electrical and electronic devices may not be disposed of with domestic waste. Consumers are obliged by law to return electrical and electronic devices at the end of their service lives to the public collecting points set up for this purpose or point of sale. Details to this are defined by the national law of the respective country. This symbol on the product, the instruction manual or the package indicates that a product is subject to these regulations. By recycling, reusing the materials or other forms of utilising old devices, you are making an important contribution to protecting our environment.

**(E) Nota sobre la protección medioambiental:**



Después de la puesta en marcha de la directiva Europea 2002/96/EU en el sistema legislativo nacional, Se aplicara lo siguiente:

Los aparatos eléctricos y electrónicos, así como pilas y baterías, no se deben tirar a la basura doméstica. El usuario está legalmente obligado a llevar los aparatos eléctricos y electrónicos, así como pilas y baterías, al final de su vida útil a los puntos de recogida municipales o devolverlos al lugar donde los adquirió. Los detalles quedaran definidos por la ley de cada país. El símbolo en el producto, en las instrucciones de uso o en el embalaje hace referencia a ello. Gracias al reciclaje, a la reutilización de materiales i a otras formas de reciclaje de aparatos usados, usted contribuirá de forma importante a la protección de nuestro medio ambiente.

**(F) Remarques concernant la protection de l'environnement :**



Conformément à la directive européenne 2002/96/CE, et afin d'atteindre un certain nombre d'objectifs en matière de protection de l'environnement, les règles suivantes doivent être appliquées.

Elles concernent les déchets d'équipement électriques et électroniques. Le pictogramme "picto" présent sur le produit, son manuel d'utilisation ou son emballage indique que le produit est soumis à cette réglementation. Le consommateur doit retourner le produit usager aux points de collecte prévus à cet effet. Il peut aussi le remettre à un revendeur. En permettant enfin le recyclage des produits, le consommateur contribuera à la protection de notre environnement. C'est un acte écologique.

**(D) Hinweis zum Umweltschutz:**



Ab dem Zeitpunkt der Umsetzung der europäischen Richtlinie 2002/96/EU in nationales Recht gilt folgendes:

Elektrische und elektronische Geräte dürfen nicht mit dem Hausmüll entsorgt werden. Der Verbraucher ist gesetzlich verpflichtet, elektrische und elektronische Geräte am Ende ihrer Lebensdauer an den dafür eingerichteten, öffentlichen Sammelstellen oder an die Verkaufsstelle zurückzugeben. Einzelheiten dazu regelt das jeweilige Landesrecht. Das Symbol auf dem Produkt, der Gebrauchsanleitung oder der Verpackung weist auf diese Bestimmungen hin. Mit der Wiederverwertung, der stofflichen Verwertung oder anderer Formen der Verwertung von Altgeräten leisten Sie einen wichtigen Beitrag zum Schutz unserer Umwelt.

**(I) Informazioni per protezione ambientale:**



Dopo l'implementazione della Direttiva Europea 2002/96/EU nel sistema legale nazionale, ci sono le seguenti applicazioni:

I dispositivi elettrici ed elettronici non devono essere considerati rifiuti domestici. I consumatori sono obbligati dalla legge a restituire i dispositivi elettrici ed elettronici alla fine della loro vita utile ai punti di raccolta collerici preposti per questo scopo o nei punti vendita. Dettagli di quanto riportato sono definiti dalle leggi nazionali di ogni stato. Questo simbolo sul prodotto, sul manuale d'istruzioni o sull'imballo indicano che questo prodotto è soggetto a queste regole. Dal riciclo, e re-utilizzo del material o altre forme di utilizzo di dispositivi obsoleti, voi renderete un importante contributo alla protezione dell'ambiente.

**(P) Nota em Protecção Ambiental:**



Após a implementação da directiva comunitária 2002/96/EU no sistema legal nacional, o seguinte aplica-se:

Todos os aparelhos eléctricos e electrónicos não podem ser despejados juntamente com o lixo doméstico. Consumidores estão obrigados por lei a colocar os aparelhos eléctricos e electrónicos sem uso em locais públicos específicos para este efeito ou no ponto de venda. Os detalhes para este processo são definidos por lei pelos respectivos países. Este símbolo no produto, o manual de instruções ou a embalagem indicam que o produto está sujeito a estes regulamentos. Reciclando, reutilizando os materiais dos seus velhos aparelhos, esta a fazer uma enorme contribuição para a protecção do ambiente.