

# Hardware User's Manual

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## Rotarod



### References:

LE8205 (76-0770), LE8305 (76-0771), LE8505 (76-0772), LE8355 (76-0773)

### Version:

V20/02/2015

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### Limitation of Liability

PANLAB does not accept responsibility, under any circumstances, for any harm or damage caused directly or indirectly by the incorrect interpretation of what is expressed in the pages of this manual.

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 equipments prior to disposal at the end of their operative life	
Waste Electrical and Electronic Equipment Directive (WEEE)	

## 2. GOOD LABORATORY PRACTICE

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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

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


- A. No special equipment is required for lifting but you should consult your local regulations for safe handling and lifting of the equipment.
- 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.

### **Class A equipment is intended for use in an industrial environment.**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses and can radiate radio frequency energy and if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



- WARNING**

## 4. MAINTENANCE

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**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 does not require being disinfected, but cleaned for removing urine, feces and odor. To do so, we recommend using a wet cloth or paper with soap (which has no strong odor). **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.

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## 5. INTRODUCTION

The LE8205 (76-0770), LE8305 (76-0771), LE8505 (76-0772) and LE8355 (76-0773) ROTAROD units facilitate easy testing of motor activity in rodents. Drug administration, central nervous system damage, disease effects on motor coordination or fatigue can be assessed by measuring the time during which the animal continues walking in a rotating rod.



Figure 1. LE8205 (76-0770) with rod for 5 mice

A central rod (made of Perspex, and knurled to provide adequate grip) divided in sections, rotates at either a constant speed or a steadily accelerating rate (from 4 to 40 rpm in an interval of time ranged from 30 seconds to 10 minutes). The use of acceleration has been reported to produce less variable data.



The ROTAROD can send the information to a PC through its USB cable connection. This makes it possible to store and work with the data independently from the instrument. Simply connect the PC and the ROTAROD with the interconnection cable, and the data generated from the rod will be automatically sent to the PC. Panlab's **Sedacom** software program needs to be installed previously on the PC (must be purchased separately).

The difference between models is:

- LE8205 (76-0770) is designed to work with up to 5 mice.
- LE8305 (76-0771) is designed to work with up to 4 rats.
- LE8355 (76-0773) is a LE8305 modified, higher and with only two lanes for large rats.
- LE8505 (76-0772) is designed to work with up to 4 rats or 4 mice.

## 6. EQUIPMENT DESCRIPTION

### 6.1. FRONT PANEL

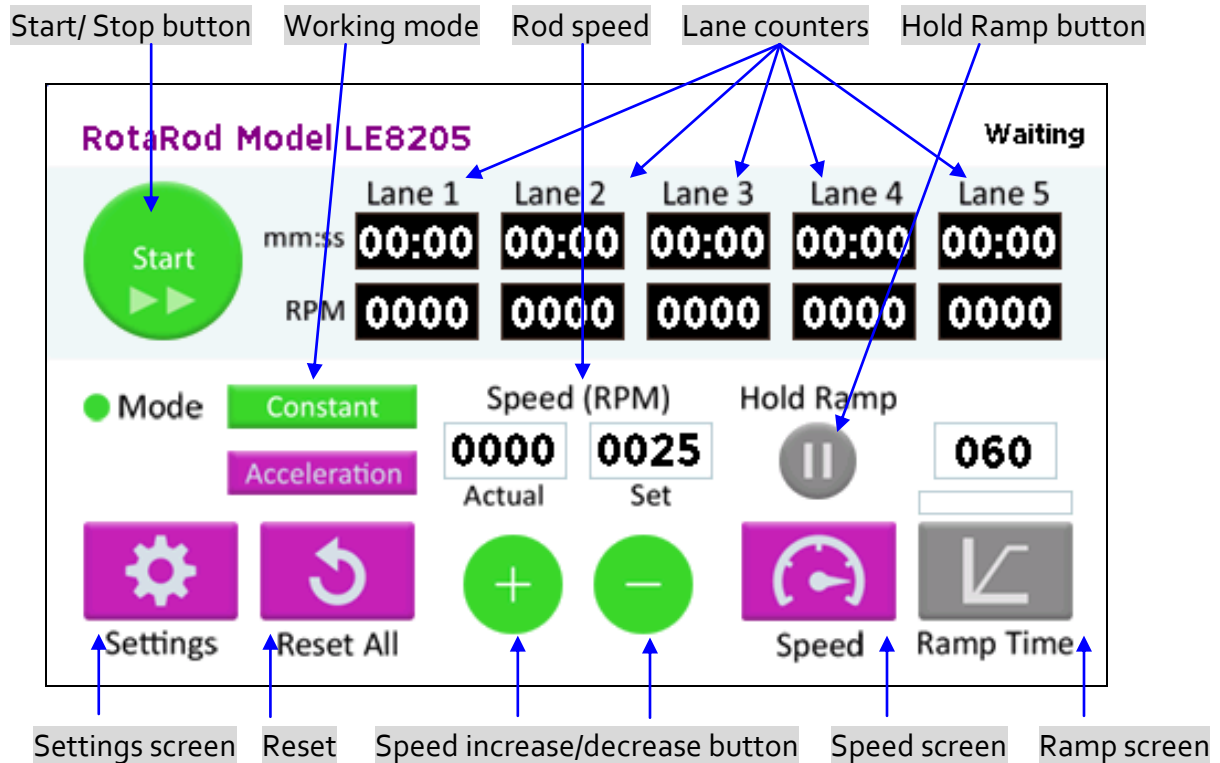


Figure 2. Front Panel

- **Start/Stop button:** to start or stop the experiment.
- **Working mode selector:** to choose the desired working mode, constant or acceleration.
- **Rod speed indicators:** show the current and set rod rotation speed.
- **Lane counters:** depending on the rotarod model, this will be from two to five columns:
  1. The first row displays the time that the animals have been on the rod.
  2. The second row displays the rod speed.
- **Hold ramp button:** functional during the Acceleration working mode:
  1. First press of this button starts the rod acceleration and begins the active lane counters recording.
  2. A second press maintains the current rod speed constant.
- **Settings screen:** Displays the settings screen.

- **Reset button:** Clears the lane counters indicators to zero.
- **Speed increase/decrease button:** Increments/decrements by one unit the rod speed. Applies only to constant speed working mode.
- **Speed screen:** Displays the Set Speed screen. Applies only to constant speed working mode.
- **Ramp screen:** Displays the Set Ramp screen. Applies only to acceleration working mode.

## 6.2. REAR PANEL

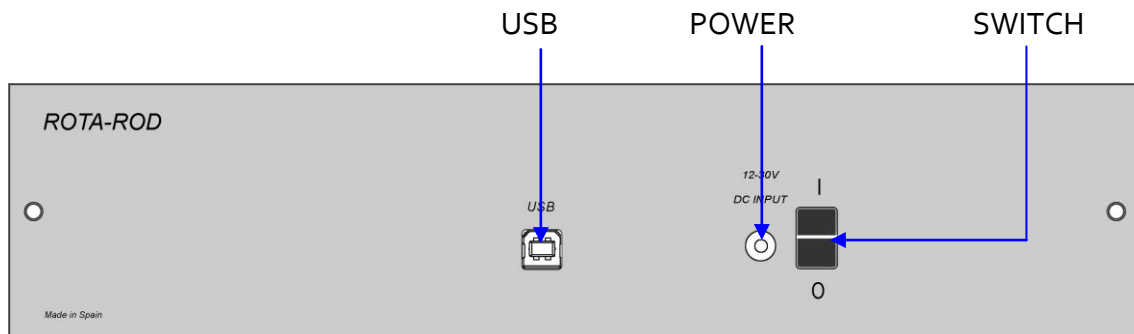


Figure 3. Rear Panel

- **USB:** USB B-type female connector used to connect the Rotarod to a computer Com port. Data is sent to the **Sedacom** software through this connector.
- **POWER:** Male panel jack used to connect the Rotarod to the AC-DC adapter.
- **SWITCH:** Main switch used to turn on and off the Rotarod.

### 6.3. ROTAROD

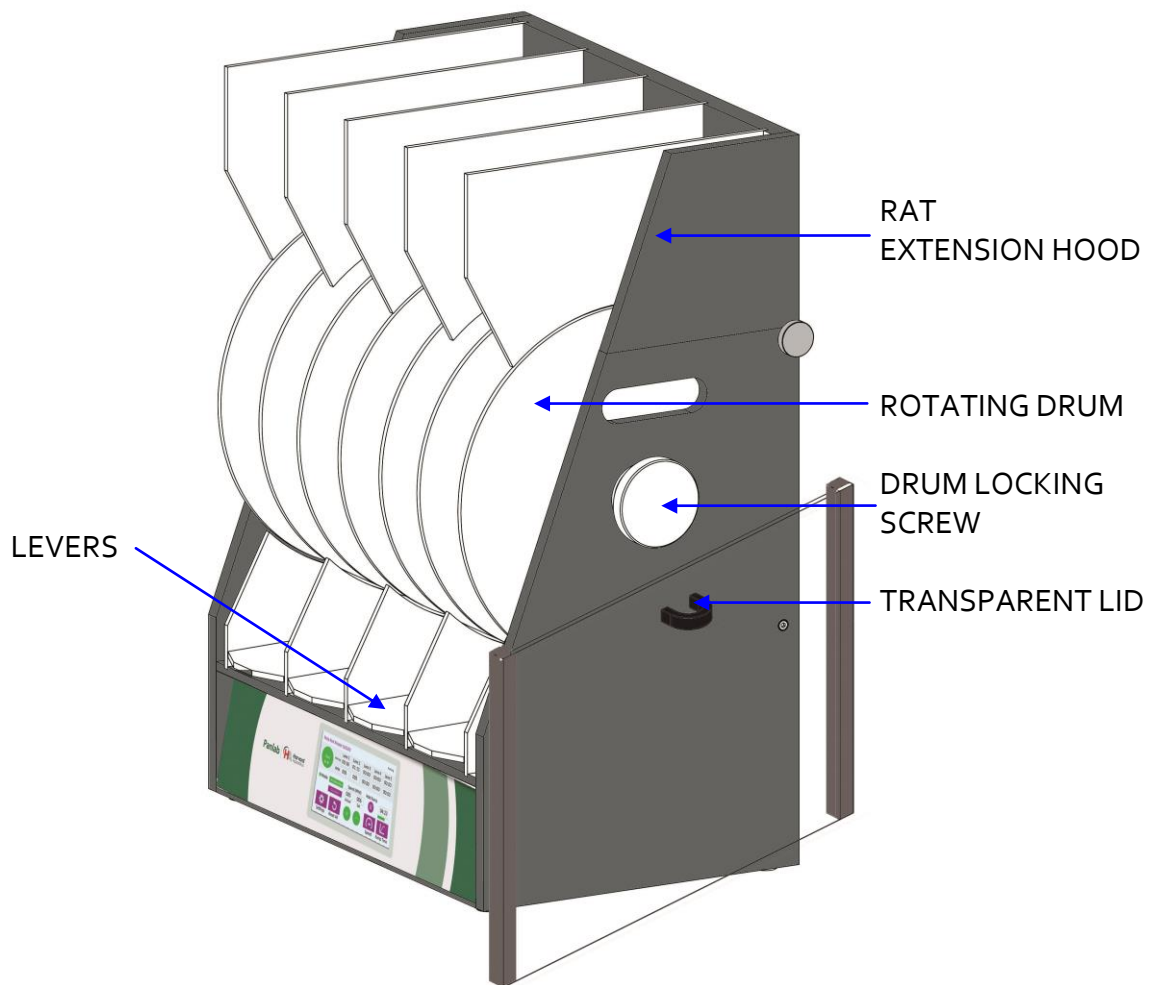


Figure 4. Rotarod main parts

The Rotarod LE8305 (76-0771) and the LE8505 (76-0772) have a turning rod with 4 slots. The LE8205 (76-0770) features 5 slots and the LE8355 (76-0773), 2 slots. Rodents (rats or mice depending of the instrument model) are placed in these slots. There is a transparent lid fixed with magnets to the bottom face of the Rotarod to prevent that any animal falls by the bottom part of the lever.

The 4-slot rat models (LE8305 and LE8505 with rats rod) feature an accessory to increase the height of the walls. This accessory, the extension hood, keeps the rats from accessing neighbouring slots.

When the animal falls from the rod, it depresses the lever trip plate at the bottom. This lever is equipped with a switch that detects time.

A large white plastic screw is mounted on the right side of the unit. It keeps the rod in position.

## 7. EQUIPMENT CONNECTION

The equipment connection is shown in the picture 5.



Figure 5. Equipment connection

The connections and necessary cables are listed in the following table.

	FROM	TO	CABLE
1	Rotarod USB-B type	PC USB Port	USB Cable
2	AC-DC adapter mains	Mains	Power cord
3	Rotarod power jack	AC-DC adapter	Jack cable

## 8. WORKING WITH THE EQUIPMENT

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Once the equipment is turned on, the start-up screen appears after a few seconds:



Figure 6. Start-up screen

### 8.1. CHANGING SETTINGS

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The following options can be modified through the Settings screen:

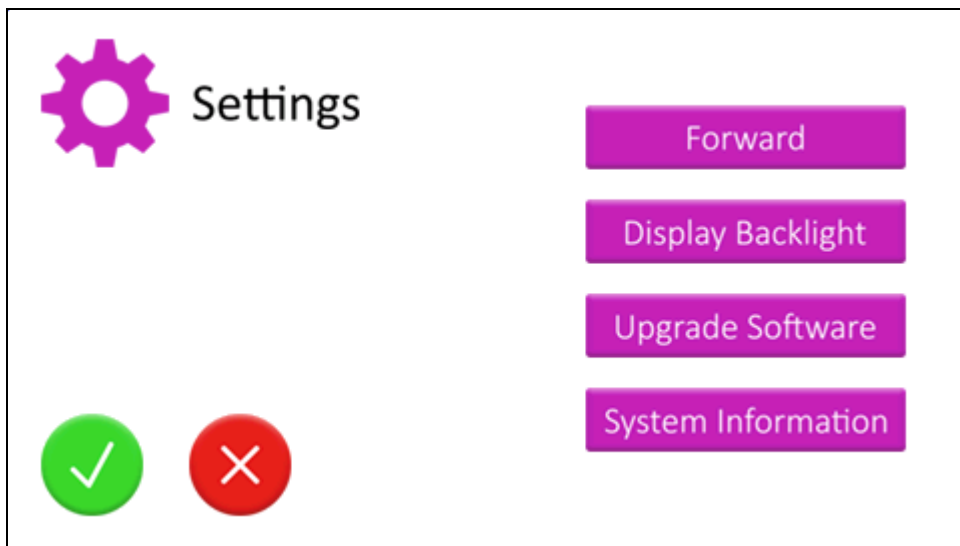


Figure 7. Settings options

- Motor direction: Establishes the rod rolling direction: forward and reversed.
- Display backlight: Establishes the percentage of backlight of the display.

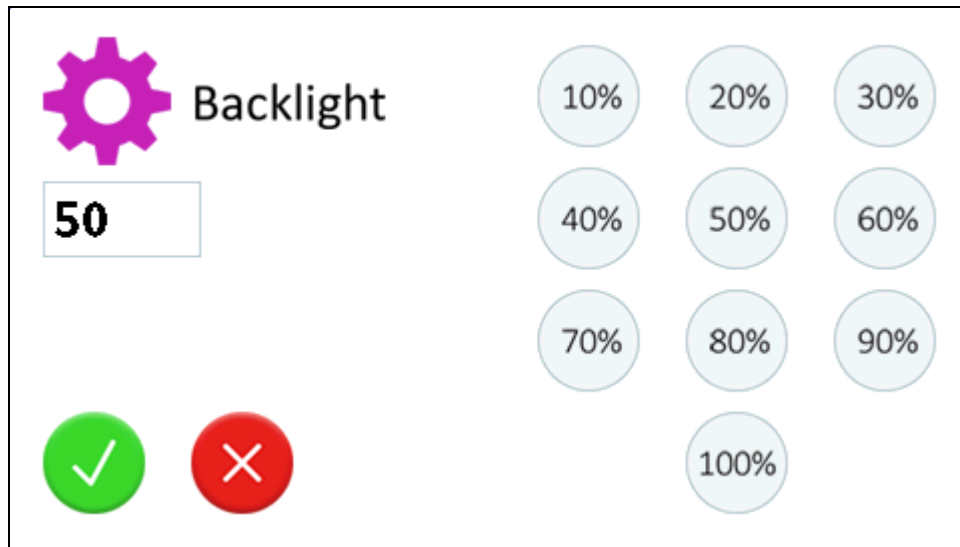


Figure 8. Backlight settings screen

- Upgrade software: Used to update the firmware to the latest version.
- System Information: Displays the Rotarod model type, the firmware version number and serial number of the device.

## 8.2. SELECTION OF THE WORKING MODE

### A) CONSTANT MODE

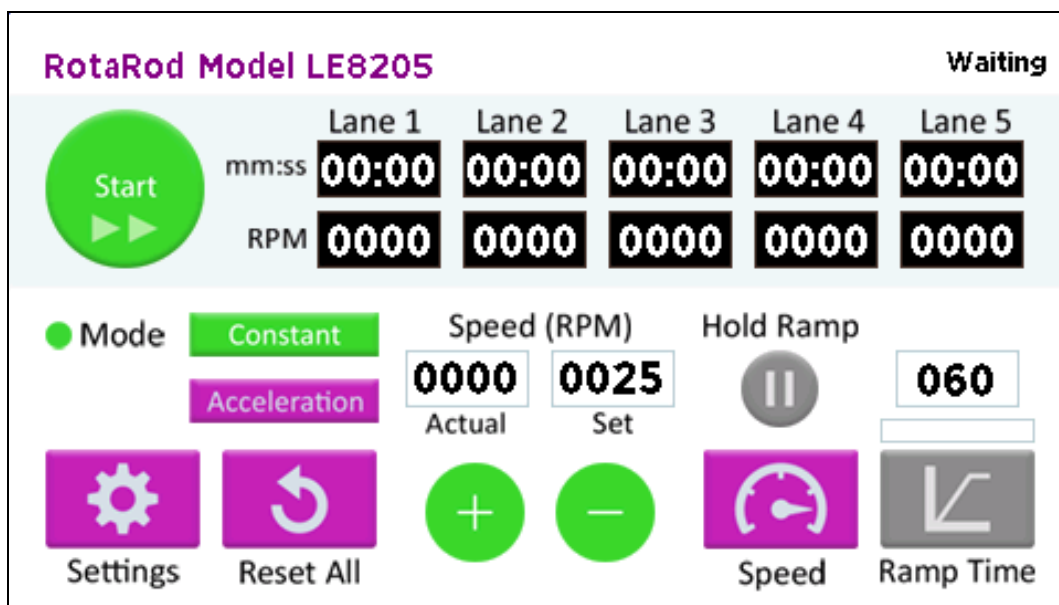


Figure 9. Screen in Constant mode

- The motor works to provide a speed from 4 to 40 rpm, depending on the needs of the user, who can select the speed either before starting the experiment or when it is already underway. The speed is the same for each lane, as there is a single motor driving the single rod on which all the subjects are moving.

- The starting point of the TIMERS is determined when the relevant LEVER is lifted; each TIMER works independently from the others. The end point of each TIMER is determined when the relevant LEVER is lowered.

**B) ACCELERATION MODE**

- The motor increases speed automatically and lineally from 4 up to 40 rpm, thus producing a constant acceleration of the rod. The speed is the same for each lane, as there is a single motor driving the single rod on which all the subjects are moving.
- It is possible to determine the ACCELERATION TIME that the rod will take to achieve the maximum speed. The TIME SLOPE may range from 30 seconds up to 10 minutes.
- Once the maximum has been achieved, the rod continues at this speed.

When working in this mode, two states and one optional state exist:

- WAITING:

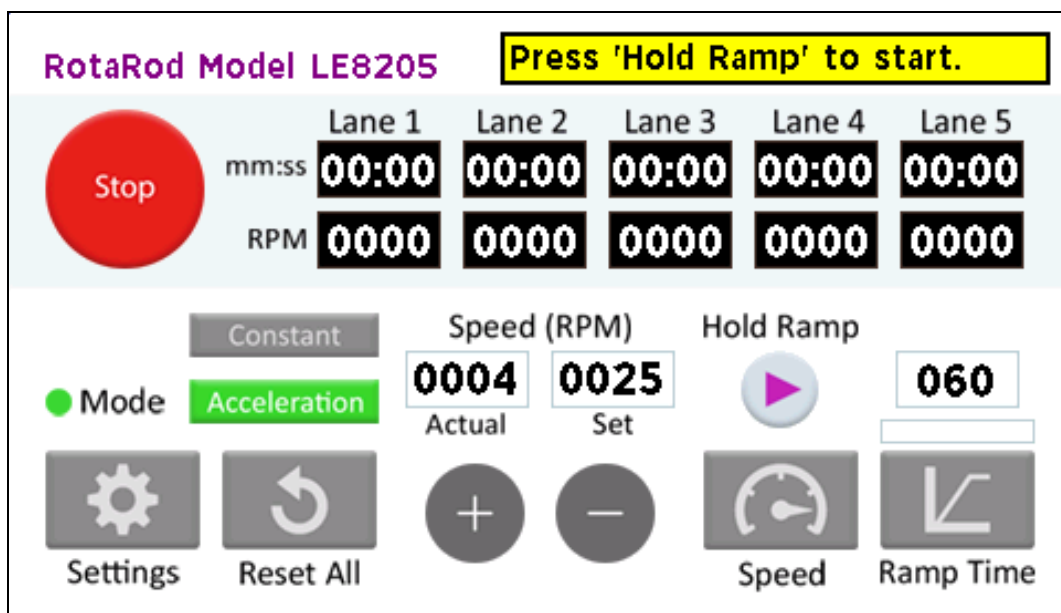


Figure 10. Screen in acceleration mode waiting

- This is the first state after pressing the Start button in this mode.
- This is the preparation state of the instrument in order to place the subjects in their respective slot on the rod. The speed of the rod for this phase of preparation is the minimum, 4 rpm.
- Levers must be lifted to be ready to begin the experiment.



– ACCELERATION:

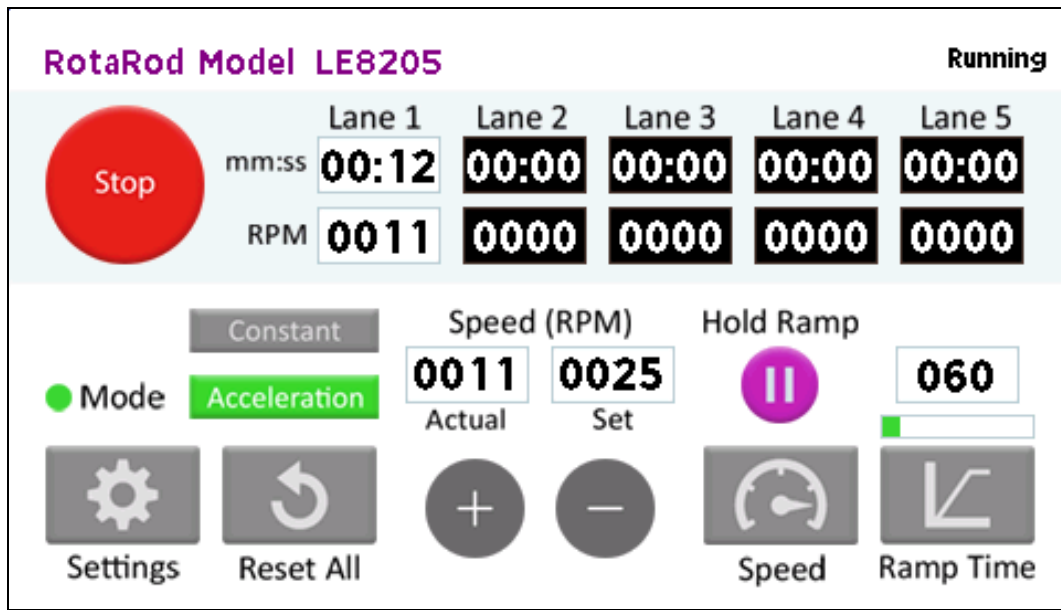


Figure 11. Screen in acceleration mode running

- This is the second state after pressing the Hold Ramp button in this mode.
- The motor ramps from 4 to 40 rpm, following the predetermined SLOPE TIME once the Hold Ramp button has been pressed.
- After the ramp is initiated, the ACCELERATION TIME cannot be changed.
- The TIMER counters corresponding to the raised LEVERS, begin recording the time after the Hold Ramp button is pressed.
- Once the relevant LEVER is depressed, the TIMER will show the total rotating time as the end point for that subject on that particular trial.
- When the last subject falls from the rod, the instrument automatically enters the STOP state.

– ACCELERATION-CONSTANT:

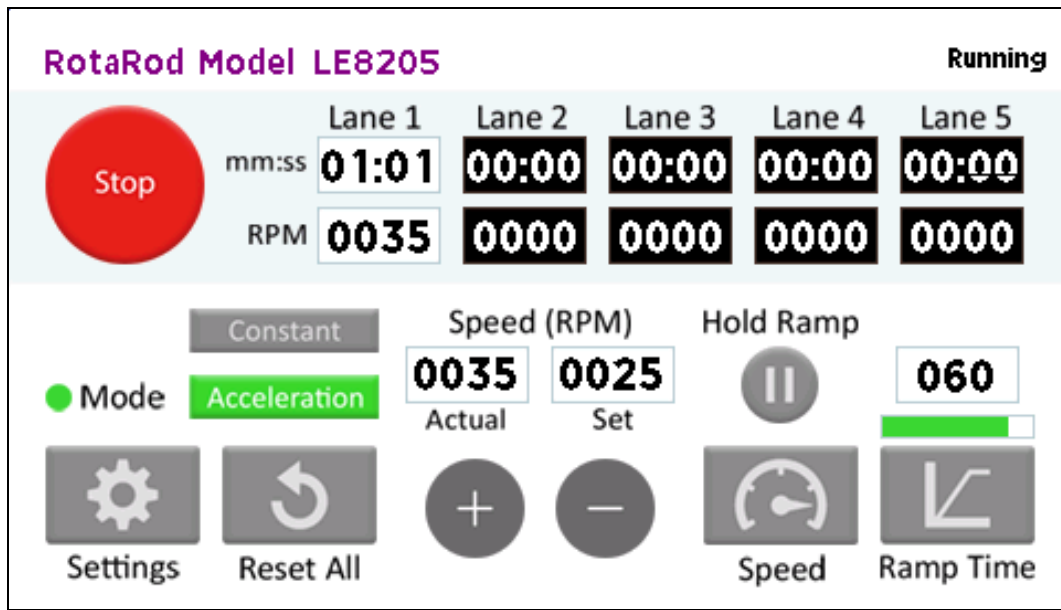


Figure 12. Screen in acceleration-constant mode running

- This is the third optional state reached after pressing the Hold Ramp button again in this mode.
- The motor stops the acceleration and keeps running constantly in the current rod speed.
- The TIMERS counters corresponding to the raised LEVERS, continue incrementing.
- The end point of each TIMER is marked when the relevant LEVER is lowered.
- When the last subject falls from the rod, the instrument automatically enters into the STOP state.

### 8.3. PREPARING THE INSTRUMENT

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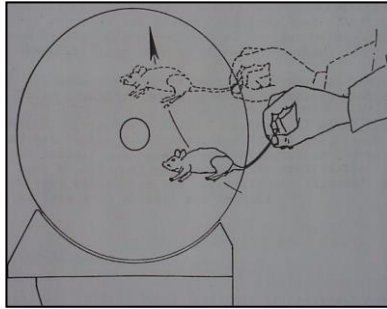


Figure 13. Placing the animal in the roll

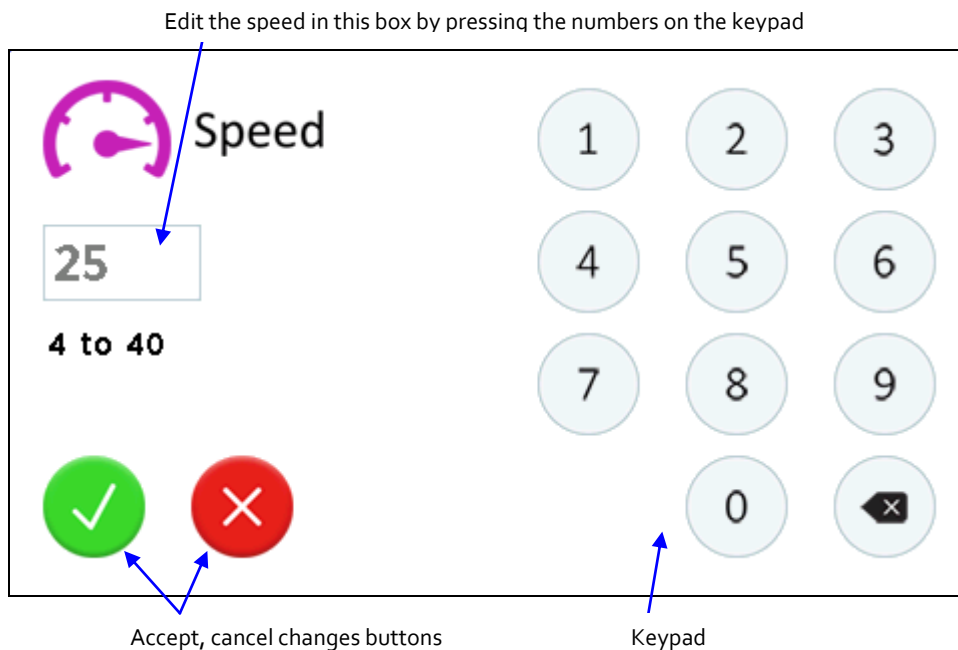
- Holding the animal by its tail, swing them up from a position lower than the rod, so that they find themselves walking inside.
- It is advisable to set the cylinder in motion before placing the animals on the rod. Otherwise, by the time the last animal has been seated in position, the first animal may be facing the wrong direction.
- It is also advisable to let the animal familiarize with the rod by having them walk at minimum speed for a few moments.

## 8.4. CONDUCTING EXPERIMENTS

- 1) Turn on the instrument using the POWER switch.
- 2) Lower the LEVERS, this will prevent the timer counters from beginning.
- 3) Select the desired working mode.

### a) CONSTANT

- 1) Establish the desired initial rod speed using the "+", "-" or "Speed" buttons. The rod will not begin rotating until the "Start" button is pressed.



**Figure 14. Set rod speed screen**

- 2) Press the "Start" button and this will initiate the rod rotation at the set speed in step 1.
- 3) If any LEVER remains in the raised position, the message "Place all levers down" will be shown on the display until all the LEVERS are in depressed position.
- 4) Place the animals in their respective lanes on the rod, as shown in Section 8.3.
- 5) Manually lift the LEVERS to activate the relevant counters for the lanes that will be used in that trial.
- 6) Use the "+", "-" or "Speed" buttons to modify the desired rod speed.

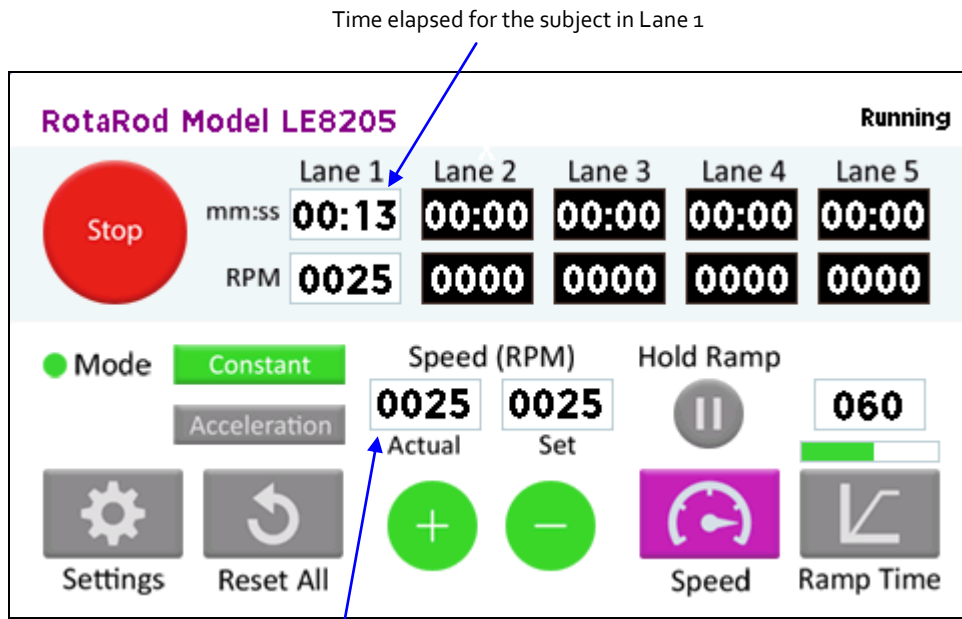


Figure 15. Display running in Constant mode

**b) ACCELERATION**

- 1) The DISPLAY will indicate that the unit remains in WAITING mode. Now select the RAMP TIME using the "Ramp Time" (the acceleration is automatically calculated from this time to reach max rotation speed).

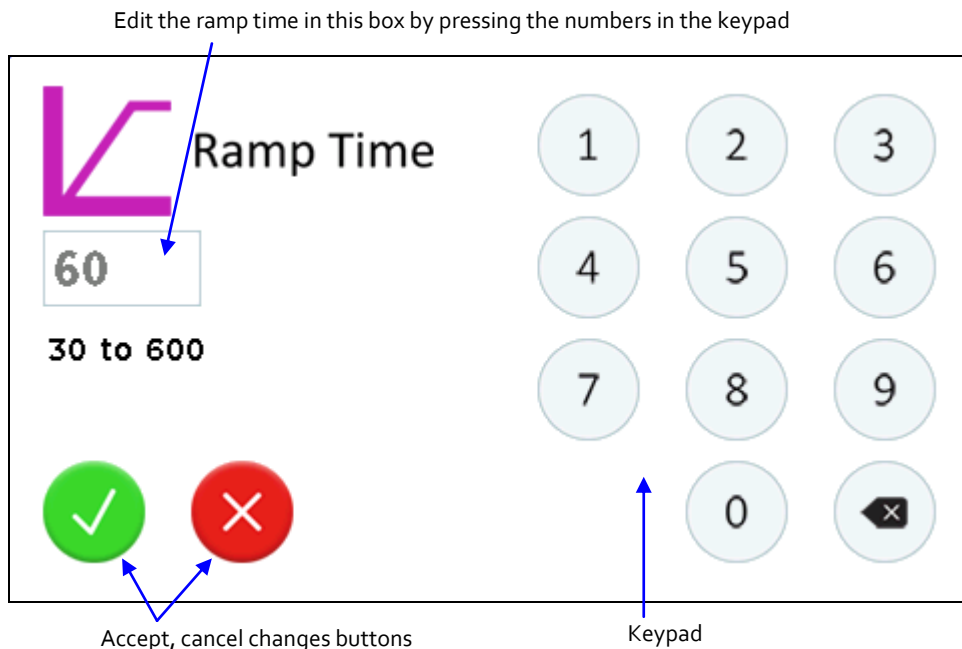
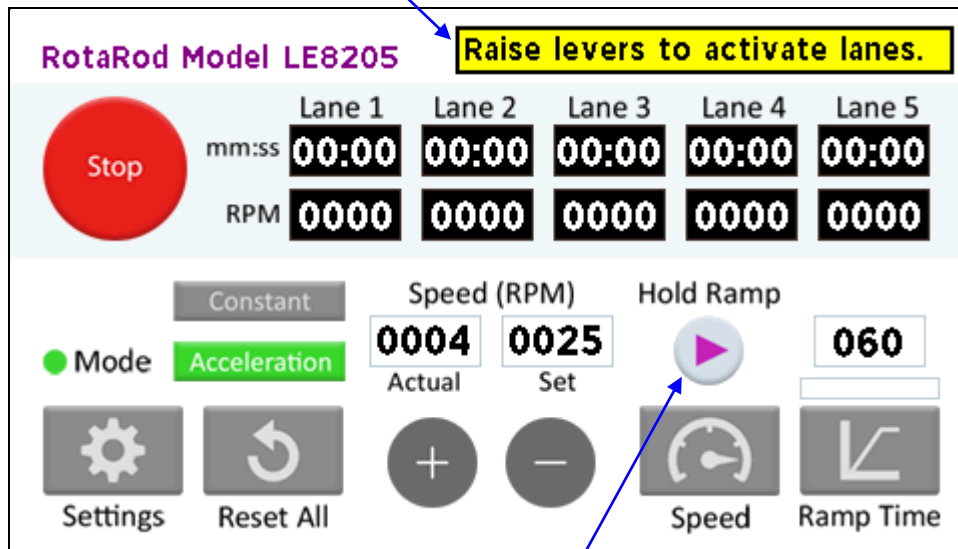


Figure 16. Set ramp time screen

- 2) Press the "Start" button to initiate the rod rotating at the initial constant speed, 4 rpm.

- 3) Place the animals in their respective lanes on the rod, as shown in Section 8.3.
- 4) Manually lift the LEVERS for the respective lanes that will be used. If there are no LEVER lifted when the "Hold Ramp" button is pressed in the next step, the display will show the message "Raise levers to activate lanes" until at least one LEVER is lifted.

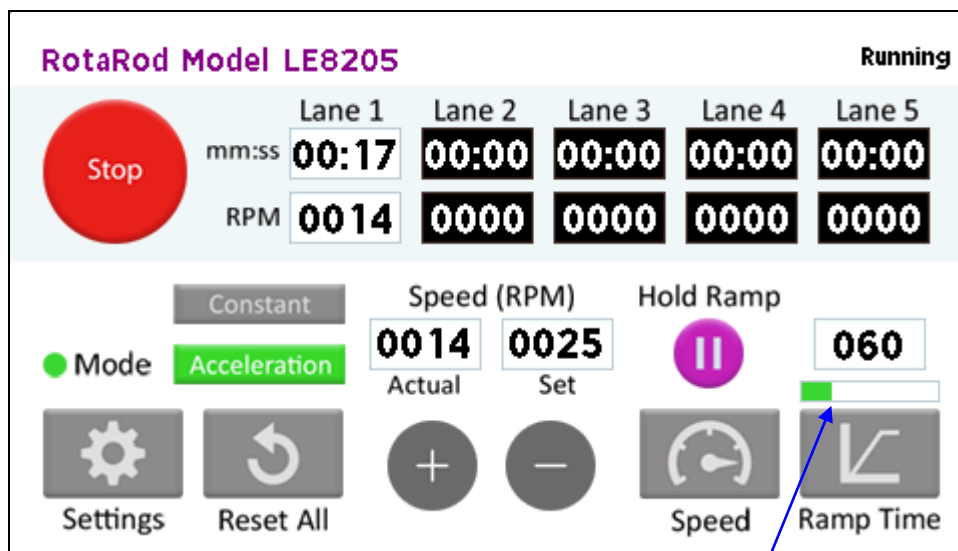
Warning message is shown



Press this button to start ramping

Figure 17. Display waiting for activating levers in accelerated mode

- 5) Press the "Hold Ramp" button. The lifted lane counters start counting time and the ramp starts accelerating the rod rotation.



Current ramping progress bar

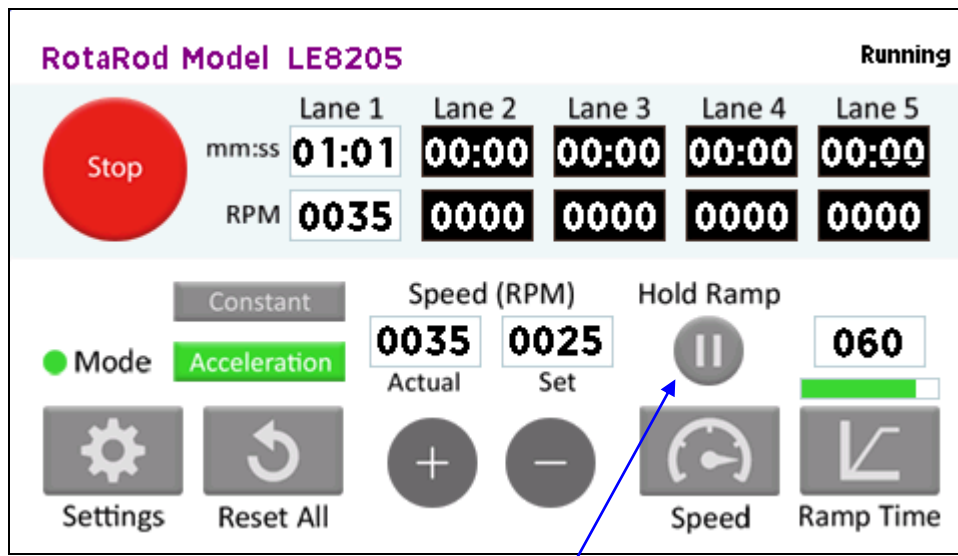
Figure 18. Display running in accelerated mode

- 6) When the last subject falls from the rod, the instrument automatically enters the STOP state.

- 7) If the START/STOP BUTTON is pressed again, it will interrupt the experiment, halting the acceleration process. The display will continue to show the last time at any of the subjects fell from the rod.

c) **ACCELERATION-CONSTANT**

- 1) Begin the experiment in Acceleration mode following the steps 1) to 5) as described above.
- 2) When the ramp speed reaches the desired value, press the "Hold Ramp" button.



Press this button to enter in Accelerated-constant mode.

Figure 19. Display running in Accelerated-constant mode

- 3) The rod will continue running at the desired constant speed.
- 4) The TIME counters will stop when the respective animal falls from the rod and depresses the respective lever.
- 5) When the last subject falls from the rod and depresses the lever, the instrument automatically enters the STOP state.
- 6) If the START/STOP BUTTON is pressed again, it will interrupt the experiment, halting the acceleration process. The display will continue to show the last time at which any of the subjects fell from the rod.

## 9. TRANSFERING DATA TO A PC (SEDACOM)

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

- Please refer to the **Sedacom** User's Manual for instructions about how to install and use the software with the present device.
- An USB communication cable (provided with the present device) is needed for connecting the present device to the computer in which the **Sedacom** software is installed. Please refer to the present User's Manual chapter 7 for instructions on how to connect this cable to the device.



## 10. MAINTENANCE

### 10.1. REMOVING PARTS

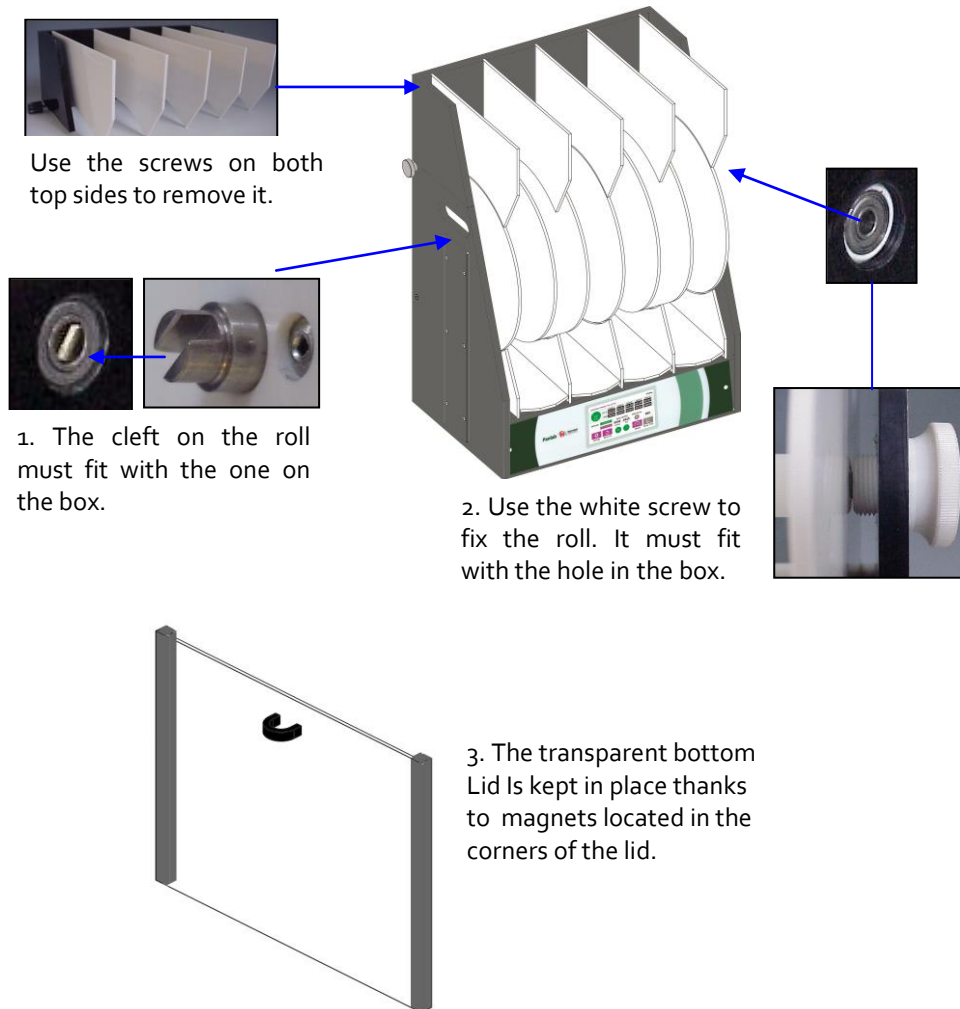


Figure 20. Maintenance

### USB communication cable

The USB communication cable provided with the device is used for any connection of the device with associated software (**Sedacom**, etc.). Even when the device is used without software in first instance it is to be preserved and kept in a secure place, in case the need of using the system with software arises in the future. In this last case, if the user lost the cable, a new one should be purchased to his local sales delegate, ref. CONRS232). The warranty duration of this cable is the same than the warranty duration of the device.

## 10.2. CLEANING THE UNIT

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**WARNING:** Do not use organic solvents to clean the unit, as they may damage the Perspex sheets or crack the acrylic front panel of the liquid crystal display.

A dampen cloth and water can be used to clean the equipment and then a dry cloth should be used to dry it.

## 10.3. LEVERS FORCE ADJUSTMENT

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On the back of the levers there is a screw that is used for adjusting the strength of the levers. If screwed (clockwise), the separation between the lever and the magnet that holds the lever will increase. This will decrease the attraction and the lever will be more sensitive to detection of fall. If on the contrary, it is unscrewed (counter clockwise) the distance to the magnet that holds it will decrease, which will result in an increase of the strength of the lever and less sensitivity to detect a fall from the rod.

## 11. TROUBLESHOOTING

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This table provides instruction to solve the most frequent problems.

PROBLEM	SOLUTION
The display shows the message "Place all levers down"	<ul style="list-style-type: none"> <li>• Check that all levers are down.</li> <li>• If all levers are down check that there is not any lever pusher blocked. If so clean it according to our recommended cleaning instructions (Section 10.2).</li> <li>• Contact technical service if problem still persists.</li> </ul>
The rod does not turn.	<ul style="list-style-type: none"> <li>• Check that the rod is properly positioned with the groove coupled to the transmission.</li> <li>• Contact with technical service if problem still persists.</li> </ul>
In Acceleration mode when pressing the "Hold Ramp" button the display shows the message "Raise levers to activate lanes"	<ul style="list-style-type: none"> <li>• Lift one or more levers and press "Hold Ramp" button again.</li> <li>• Check that levers are correctly placed.</li> <li>• Check that any lever pusher is blocked. If so clean according to our recommended cleaning instructions (Section 10.2).</li> <li>• Contact with technical service if problem still persists.</li> </ul>

## 12. PREVENTIVE MAINTENANCE


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	EXPERIMENT	4 MONTHS
LEVERS CLEANING	<input checked="" type="checkbox"/>	
ROD CLEANING	<input checked="" type="checkbox"/>	
PLATFORM CLEANING	<input checked="" type="checkbox"/>	
TRANSPARENT BOTTOM LID CLEANING	<input checked="" type="checkbox"/>	
LEVERS STRENGTH ADJUSTMENT <sup>1</sup>		<input checked="" type="checkbox"/>

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<sup>1</sup>If levers fall with same force adjustment is not necessary.

### 13. SPECIFICATIONS

<b>AC TO DC ADAPTER</b> Input voltage: Frequency: Output voltage: Max. output current: Polarity:	100-240V~ 50-60 Hz 30V= 1,666A 																																																
<b>ENVIRONMENTAL CONDITIONS</b> Operating temperature: Operating relative humidity: Storage temperature:	10°C to +40°C 0% to 85% RH, non-condensing 0°C to +50°C, non-condensing																																																
<b>COMMUNICATIONS OUTPUT</b> Standard Interface: Connector:	USB USB-B type																																																
<b>SPEED</b> Range Resolution	4 to 40 RPM 1 RPM																																																
<b>ACCELERATION</b> Slope from 4 RPM to 40 RPM	30 s to 10 min																																																
<b>MODES</b> Constant Acceleration Acceleration-Constant	Constant speed Constant acceleration 1 <sup>st</sup> constant acceleration then constant speed																																																
<b>DIMENSIONS/WEIGHT</b>																																																	
<table border="1"> <thead> <tr> <th>Model</th> <th>Total size (mm)</th> <th>Fall height (mm)</th> <th>Lane Width (mm)</th> <th>Drum Ø (mm)</th> <th>Rod Ø (mm)</th> <th>Hood Height (mm)</th> <th>Weight (Kg)</th> </tr> </thead> <tbody> <tr> <td>LE8205 - mice</td> <td>390 x 250 x 400</td> <td>200</td> <td>50</td> <td>250</td> <td>30</td> <td>NA</td> <td>10</td> </tr> <tr> <td>LE8305 – rat, with hood</td> <td>390 x 250 x 505</td> <td>215</td> <td>75</td> <td>250</td> <td>60</td> <td>130</td> <td>12.5</td> </tr> <tr> <td>LE8505 – mice</td> <td>390 x 250 x 400</td> <td>200</td> <td>50</td> <td>250</td> <td>30</td> <td>NA</td> <td>10</td> </tr> <tr> <td>LE8505 – rat, with hood</td> <td>390 x 250 x 505</td> <td>215</td> <td>75</td> <td>250</td> <td>60</td> <td>130</td> <td>12.5</td> </tr> <tr> <td>LE8355 - rat, with hood</td> <td>390 x 250 x 754</td> <td>470</td> <td>153</td> <td>250</td> <td>80</td> <td>130</td> <td>13.8</td> </tr> </tbody> </table>		Model	Total size (mm)	Fall height (mm)	Lane Width (mm)	Drum Ø (mm)	Rod Ø (mm)	Hood Height (mm)	Weight (Kg)	LE8205 - mice	390 x 250 x 400	200	50	250	30	NA	10	LE8305 – rat, with hood	390 x 250 x 505	215	75	250	60	130	12.5	LE8505 – mice	390 x 250 x 400	200	50	250	30	NA	10	LE8505 – rat, with hood	390 x 250 x 505	215	75	250	60	130	12.5	LE8355 - rat, with hood	390 x 250 x 754	470	153	250	80	130	13.8
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**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: **o8940 Cornellà de Llobregat**  
 Adresse du fabricant: **Barcelona SPAIN**

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

Marca / Brand / Marque: **PANLAB**

Modelo / Model / Modèle: **LE8205 (76-0770), (LE8305) 76-0771, LE8505 (76-0772)**

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>2006/95/EC</b>	Directiva de baja tensión / Low Voltage / Basse tension
<b>2004/108/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 A<sup>1</sup></b>
FCC:	<b>FCC47CFR 15B Class A</b>
Safety of machinery:	<b>EN ISO 12100:2010</b>

<sup>1</sup>This equipment complies with the limits for class A equipment in accordance with CISPR 11 definition and is classed as a Class A digital device, pursuant to CFR Title 47 part 15 of the FCC Rules and is intended to be used in an industrial environment.

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



04/06/2014

**(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 collettivi 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.