

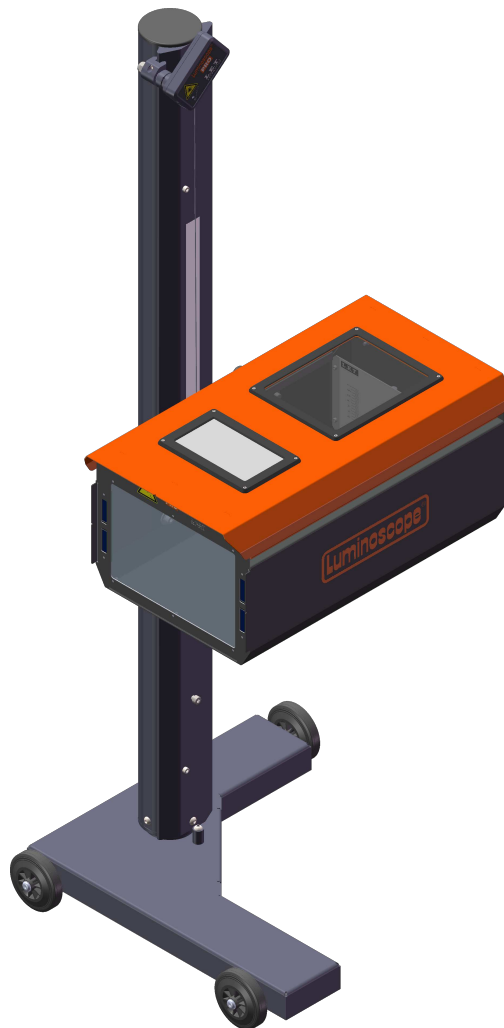
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# Luminoscope® PRO

## SLA 40

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### Quick start guide





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# Considerations

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## Copyright, disclaimer and notes clarification

### Copyright

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### Notes clarification

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LET Automotive products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following icons are displayed to indicate additional information that may have added value to the specific topic or is qualified as a precaution measure. Always pay attention to the included information.



**Warning:** Indicates a potential hazardous situation which, if not taken into account, could result in damage or problematic functioning of the device. In some cases, it could also lead to physical injuries.



**Attention:** Indicates important information of particular interest for an efficient and convenient operation of the product. Not taking this information into account could result in damage on problematic functioning of the device or its intended use.



**Note:** Indicates information of interest for efficient and convenient operation of the product or indicates just additional information on the topic.



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# 1 Regulations

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Read these instructions before using or powering up the Luminoscope® system.

## 1.1 General safety

The Luminoscope® complies with all required safety standards. However, incorrect use can be dangerous. It can cause injury, damage the environment, or affect measurement accuracy.

Follow these rules:

- Only LET Automotive NV service engineers can repair the system or replace parts. Do not open the device or replace parts without authorization.
- Use only original replacement parts and the LET-supplied charger.
- Replace damaged cables or steel wires on the vertical movement immediately.
- Always move the system by using the vertical table handle. Do not pull or push other parts.
- Do not place or hang objects on the system (such as tools or clothing). Use the optional tool-holder accessory for that purpose when required.
- Keep wheels and rails clean. Dirt can cause instability during movement.
- The system is not waterproof and not shock-resistant. Do not expose it to liquids, impacts, or drops.

## 1.2 Laser safety



- The Luminoscope® uses a Class 2M laser.
- Do not look directly into the laser beam.
- Do not use optical instruments to look at the laser beam.
- No special protection is needed during normal operation.

## 1.3 Danger of localized heating



- Risk of localized heating.
- Low-angle sunlight can enter the lens and cause heat inside the optical system. This can damage the device.
- Always use the dust/sun cover whenever the Luminoscope® is not in use.

## 1.4 Environmental regulations



- Do not dispose of the Luminoscope® with household waste.
- Follow local recycling rules.
- Improper disposal of recoverable materials can harm the environment.





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# 2 Basic Principles

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What follows is a general explanation of the principles involved in the design and use of Luminoscope® devices and their environment.

## 2.1 Headlamp criteria

At an international conference in Vienna (1958), the participants agreed on these basic requirements:

- A high beam should illuminate the road in front of the vehicle for at least 100 m (300 ft).
- A low beam should illuminate the road in front of the vehicle for at least 40 m (120 ft) without blinding the oncoming vehicles.

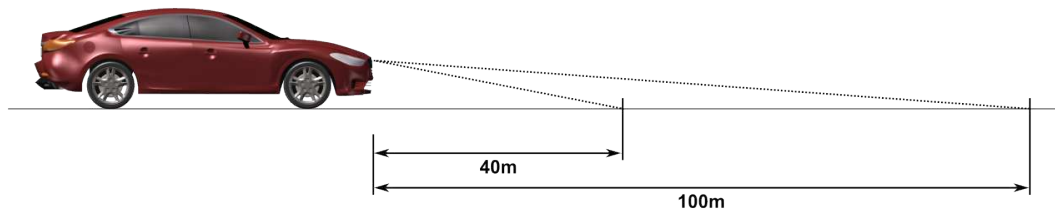


Figure 1: Headlamp criteria

These rules did not include light intensity or glare measurement. As a result, different countries made their own technical standards:

- In Europe, the low beam uses a cut-off line to separate light and dark areas.
- In the United States, the beam must meet intensity requirements at specific points.

## 2.2 Understanding headlamp inclination

To check headlamp inclination, place a white screen 10 meters in front of the vehicle. This is called a 10-meter wall. These are the required steps:

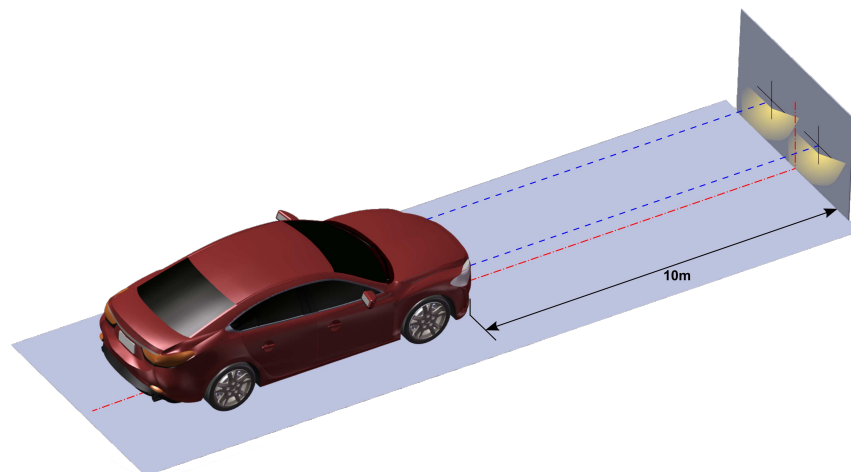


Figure 2: 10-meter wall

- Mark the mounting height of the headlamp on the screen. This is shown as a blue-dashed line.
- The beam cut-off line must go downward with a defined slope to ensure correct headlamp alignment. You can measure this slope as the headlamp inclination.

#### Example

If the cut-off line is 10 cm lower than the headlamp height on the screen, and the screen is 10 meters from the vehicle, then the inclination is:

$$10 \text{ cm} \div 10 \text{ m} = 1\%$$

However, Luminoscope, based on an optical block with a converging lens, offers important advantages over the 10-meter wall:

- Space reduction. Lens enables compact design; 10-meter wall requires the reservation of a large real estate area for the task.
- Efficiency. Lens maintains light intensity, protects from environment; 10m wall suffers from dispersion, environmental interference.
- Versatility. Lens enables diverse optical functions; 10-meter wall is single-purpose

Furthermore, the Luminoscope®'s electronic measurement functionality ensures objective evaluations, unlike subjective live assessments.

## 2.3 Test bay setup

The Luminoscope® simulates long-range headlamp projection inside a compact optical block. It measures the inclination of vehicle headlamps. To get correct results, it is important to set up the Luminoscope® and the floor area where the vehicle will stand correctly. To make an accurate measurement, the optical axis of the Luminoscope® must align with the optical axis of the vehicle headlamps.

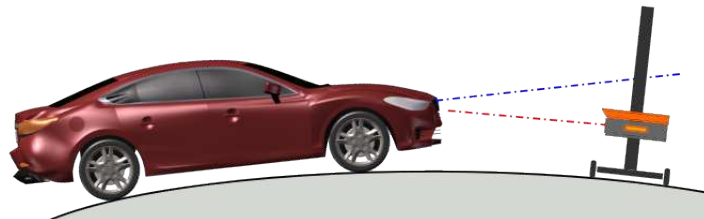


Figure 3: Simulated workshop floor with extreme conditions

In older systems, operators corrected misalignment with mechanical methods. These included adjustable wheels or manual correction of the optical block.

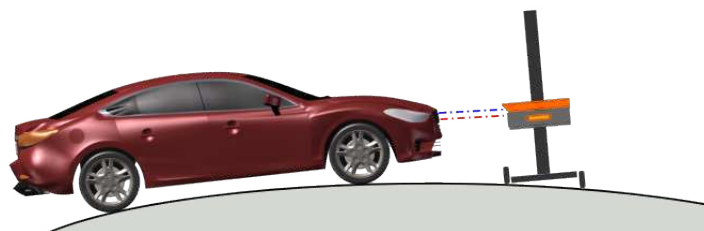


Figure 4: Traditional compensation using eccentric wheels to correct aiming device misalignment caused by floor inclination

Modern Luminoscope® systems use digital compensation. This digital method has two parts:

- Vehicle floor inclination. During setup, the operator measures this manually. The value is saved in the Bay Management section of the Luminoscope® web interface.

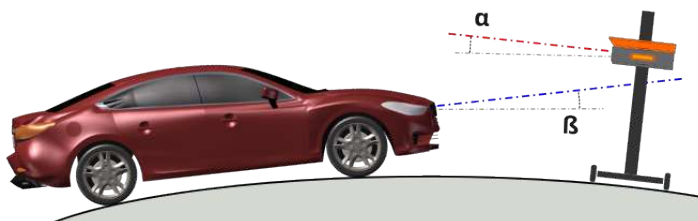


**Note:** Find further instructions here:

<https://qr.luminoscope.be/first-steps-sla40.html>



- Luminoscope® inclination. The system measures this automatically by using the built-in electronic spirit level.



*Figure 5: Detection and compensation of vehicle and optical block slope angles in modern electronic systems*

When both inclination values are available, the Luminoscope® software applies the correct compensation. This process ensures reliable and accurate measurements, even if the workshop floor is not level.



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# 3 Measurement cycle

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## 3.1 Start screen

Different start screens are displayed, depending on system specific configuration.

The most basic screen is the **Program selection** screen. This is the default screen.

Use this screen to select and measure:

- LHD (Left-Hand Drive) headlamps, or
- RHD (Right-Hand Drive) headlamps.

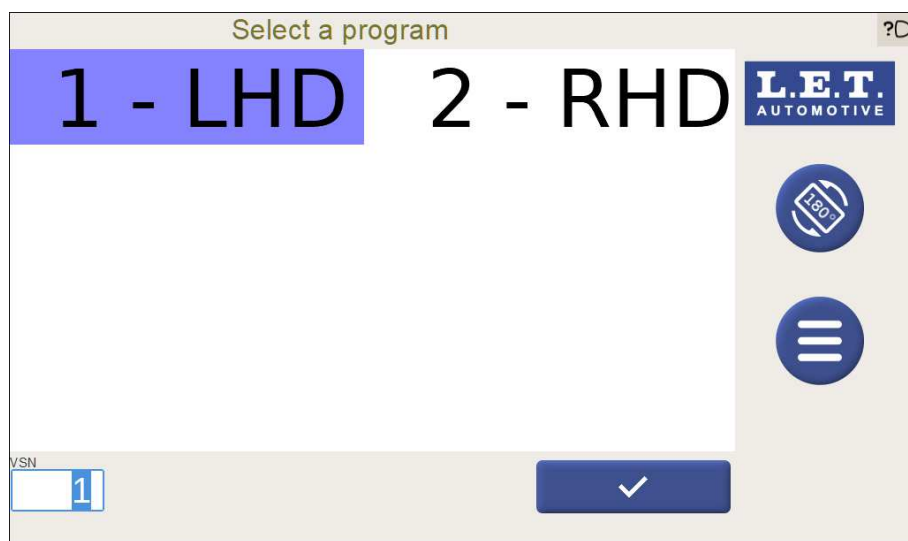


Figure 6: **Program selection** screen

If the system has a country-specific or dealer-specific configuration, the user interface usually displays symbols instead of text.



**Note:** Visit the support portal for the most up-to-date version of the software and complete instructions on system setup.

<https://qr-support.luminoscope.be>



The appearance of the symbols may differ, but their function is mostly equivalent. Symbols identify different headlamp types, however their functionality is identical.

In the standard configuration:

- The screwdriver symbol indicates **Aiming** mode. Use this mode to adjust the headlamp manually.
- The eye symbol indicates **Audit** mode. Use this mode to check if the headlamp alignment meets the Periodic Technical Inspection (PTI) limits.

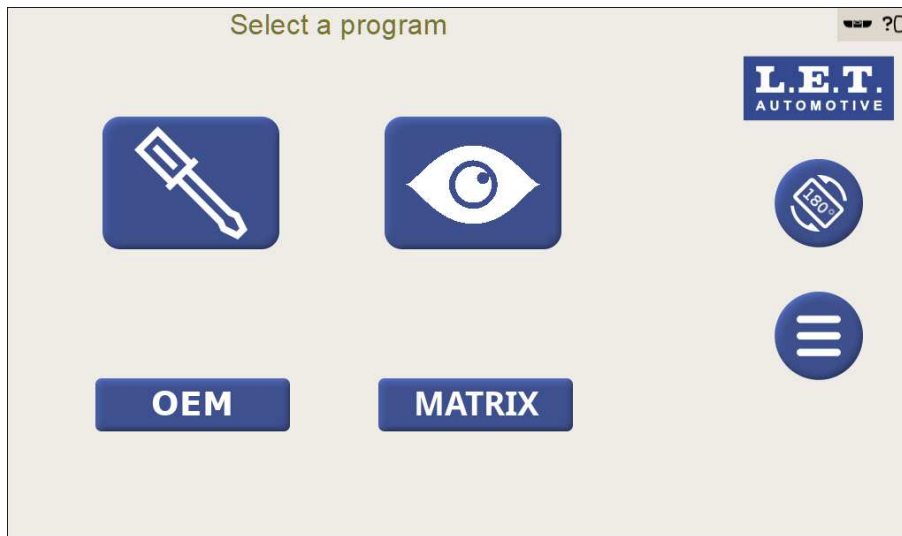


Figure 7: **Screwdriver** screen

In some configurations, the system can show extra buttons:

- The OEM button starts a manufacturer-specific aiming procedure.
- The MATRIX button starts a procedure for advanced matrix headlamp alignment.



**Note:** Find more information on how to work with the SLA 40 here:

<https://qr.luminoscope.be/work-with-sla40.html>



**Note:** Find more information about the Matrix button here:

<https://qr.luminoscope.be/matrix-mode.html>



## 3.2 Testing bay

If the site counts with more than one test bay, and each test bay has a measured floor inclination, the system displays a selection screen.

Use this screen to select the correct test bay for the current measurement.



Figure 8: **Line selection** screen

Use the Luminoscope® web interface to assign each test bay a clear and specific name. This helps the operator to select the correct test bay.

### 3.3 Left/right alignment of the vehicle

In order to measure the headlamp alignment correctly, the Luminoscope® must be aligned with the vehicle before the measurement.

Use a laser as shown below or the optional mirror. Both are installed on top of the Luminoscope® column for this purpose.

Select two symmetrical reference points on the front of the vehicle, as close as possible to the Luminoscope®. For example, use the outer tips of the headlamps.

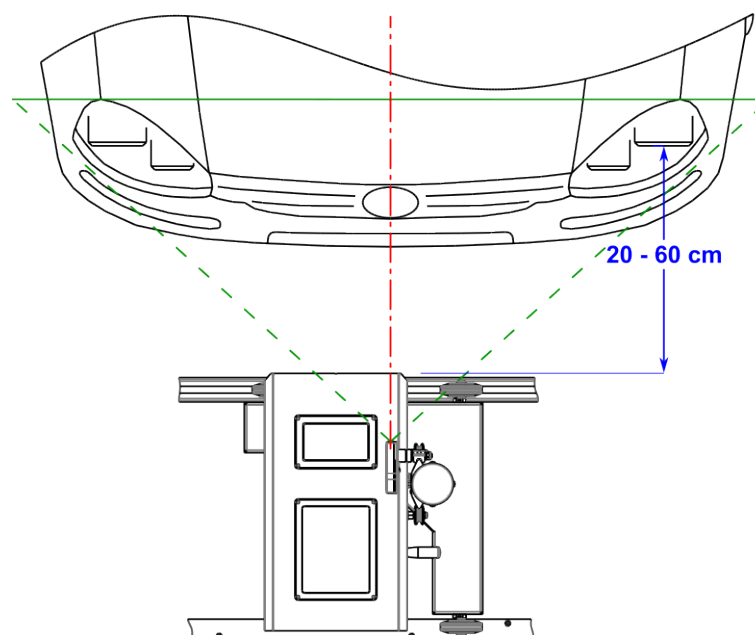


Figure 9: Use of alignment laser to align the Luminoscope® with vehicle longitudinal axis

Rotate the Luminoscope® until the laser line (or mirror line) aligns with both points. When the line matches these points, the Luminoscope® is correctly aligned with the vehicle.



**Note:** Find more information on how to work with the SLA 40 here:

<https://qr.luminoscope.be/work-with-sla40.html>



### 3.4 Beam selection

Use this screen to select the corresponding beam for aiming or inspection.

- The first row selects the left and right low beams.
- The second row selects the left and right high beams.
- The third row select the left and right fog beams.

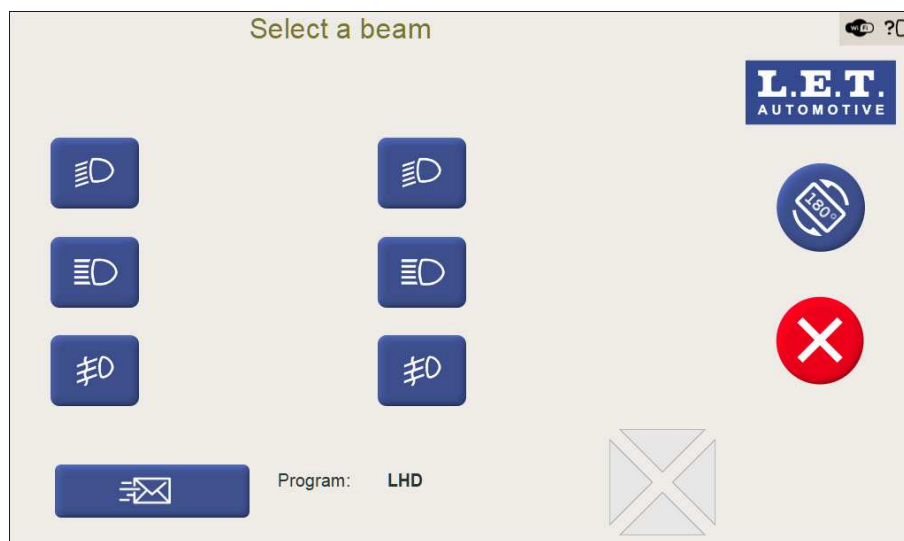


Figure 10: **Beam selection** screen

To start the measurement or inspection, tap on the corresponding beam.

### 3.5 Inclination selection

The method for selecting the headlamp inclination depends on your configuration.

In most cases, the correct inclination is based on the installation height of the headlamps. For this reason, a screen with height selection zones is often used.

This screen links the headlamp inclination to the installation height of the vehicle's headlamps. The values can follow ECE regulations or national regulations.



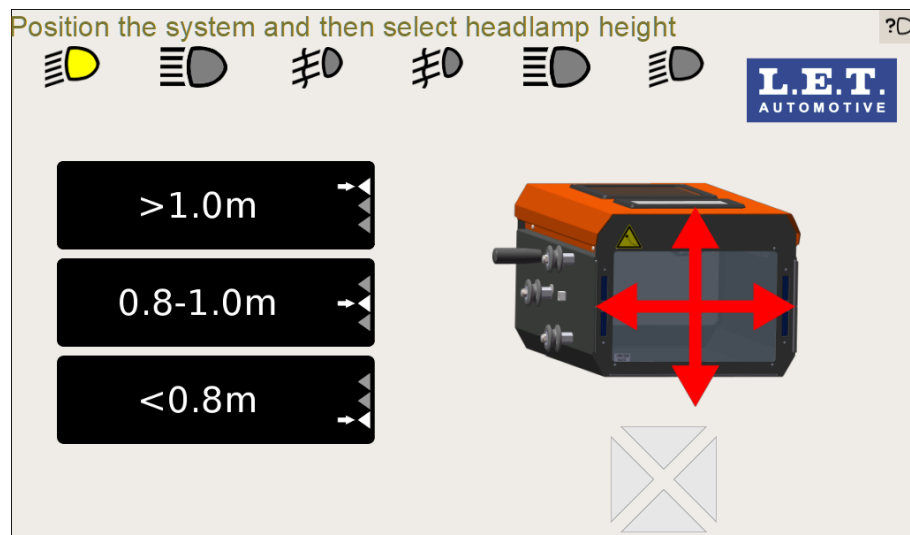


Figure 11: Vertical target modification screen

In some systems, the inclination directly is set in the user interface. In this case, select an exact value for the inclination, usually provided by the headlamp manufacturer. This method is commonly used in Germany.

### 3.6 Position Check



**Note:** Use the following video to extend your background information.

<https://qr.luminoscope.be/position-check.html>



Before the measurement starts, the position check uses black arrows to guide the operator to the correct position in front of the headlamp.

- If all arrows are black, the Luminoscope® does not receive enough light. This means the Luminoscope® is not yet positioned in front of the headlamp.
- As soon as the optical block receives sufficient light, the arrows begin to guide the operator towards the correct alignment.
- When all arrows are blank, the Luminoscope® is at the correct position. The system will then automatically start the measurement.

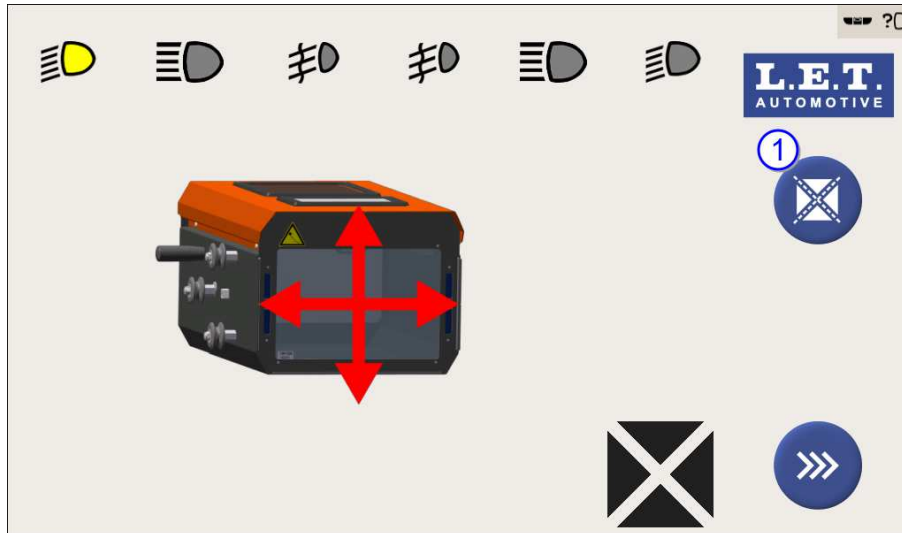


Figure 12: **Position Check** screen

If *Position Check* can't reach an optimal position, the operator has to complete the alignment operation manually.

The operator positions the Luminoscope® in front of the headlamp by moving the optical block vertically and horizontally (without rotating the stand) and by simultaneously checking the beam projection on the white internal projection screen.

When the beam projection looks centered, tap on the **Skip Position Check** button 1 to start the headlamp measurement.

### 3.7 Beam measurement

When the Luminoscope® is in the correct position, either by using the position check or by placing it manually in front of the headlamp, the system starts the beam measurement.

Typical measurement screens are shown in the next figures.

During the measurement:

- A red cross marks the key point detected by the algorithm:
  - For low beam: the kink point (cut-off step)

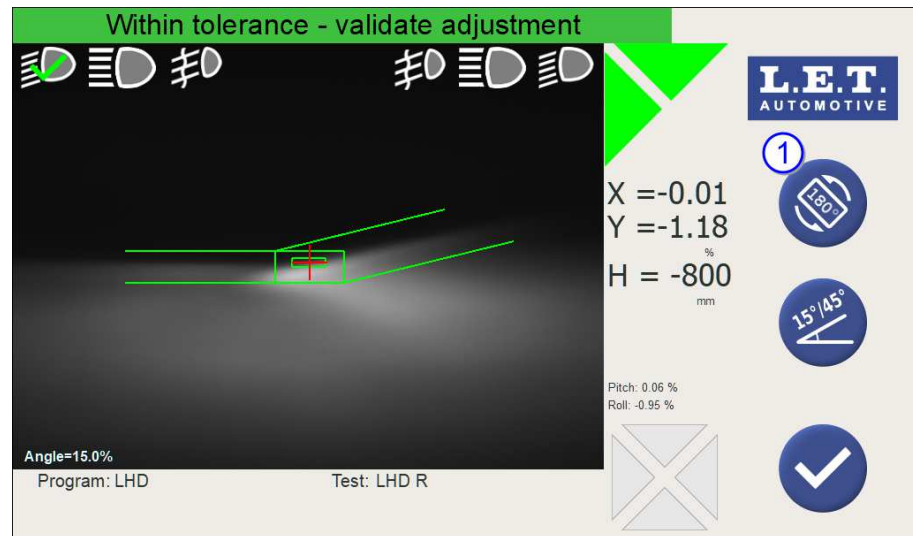


Figure 13: LHD low beam measurement

- For high beam: the hotspot (maximum intensity)

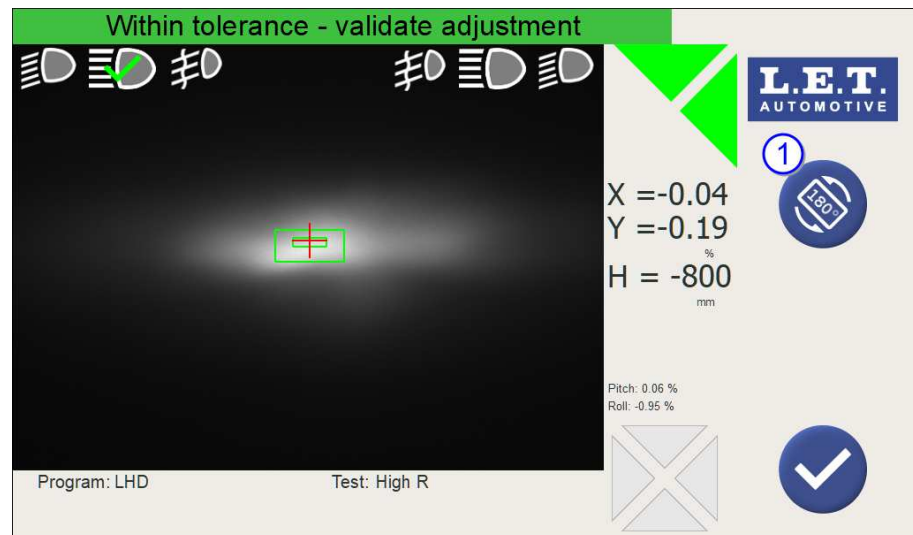


Figure 14: High beam measurement

- For fog beam: the horizontal cut-off line

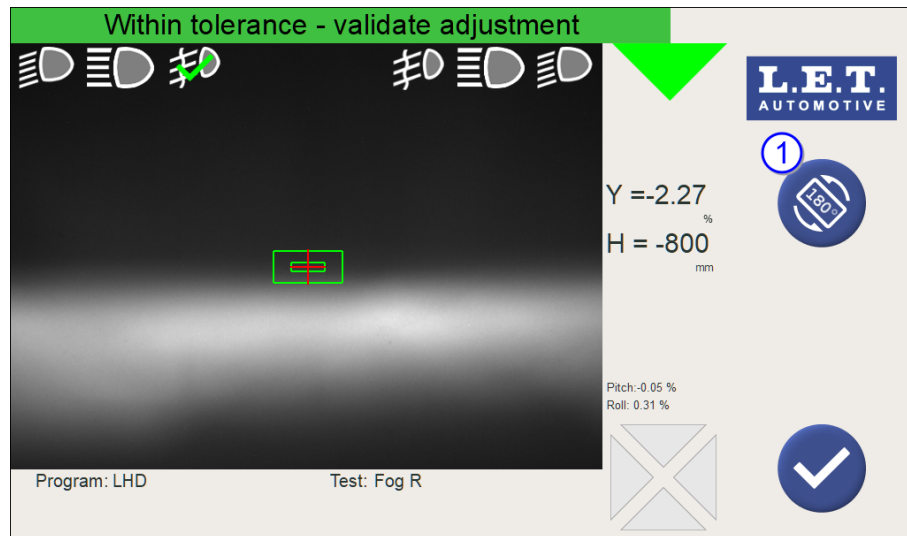


Figure 15: Fog beam measurement

- The system also displays the X and Y coordinates of the red cross on the right side of the screen (except for the fog beam):
  - X = horizontal position (left/right)
  - Y = vertical position (inclination)
- A target box appears on the screen:
  - If the red cross is outside the tolerance, the box is red.
  - If the red cross is within tolerance, the box is green.

#### Purpose of the target box

- In **aiming** mode: adjust the headlamp until the red cross moves inside the target box. The box will turn green when the cross is correctly positioned.
 

To improve visibility during adjustment, rotate the screen by pressing the **Rotate screen** button 1. This helps when the operator is standing in front of the Luminoscope® while aiming.
- In **audit** mode: the system checks if the red cross is already inside the green box. If so, the headlamp passes the inspection. In **audit** mode, keep the screen in the default orientation.

After completing the aiming, press **OK** button to confirm the result. In **audit** mode, the system stops the measurement automatically when it finds a stable red cross key point.



**Tip:** To improve visibility during adjustment, rotate the screen by pressing the Rotate screen button 1. This helps when the operator is standing in front of the Luminoscope® while aiming



**Note:** For more advanced measurement functions and options, refer to the full user manual:

<https://qr-support.luminoscope.be>



## 3.8 Results overview

After all headlamp measurements are complete, the system displays the results on the overview screen.

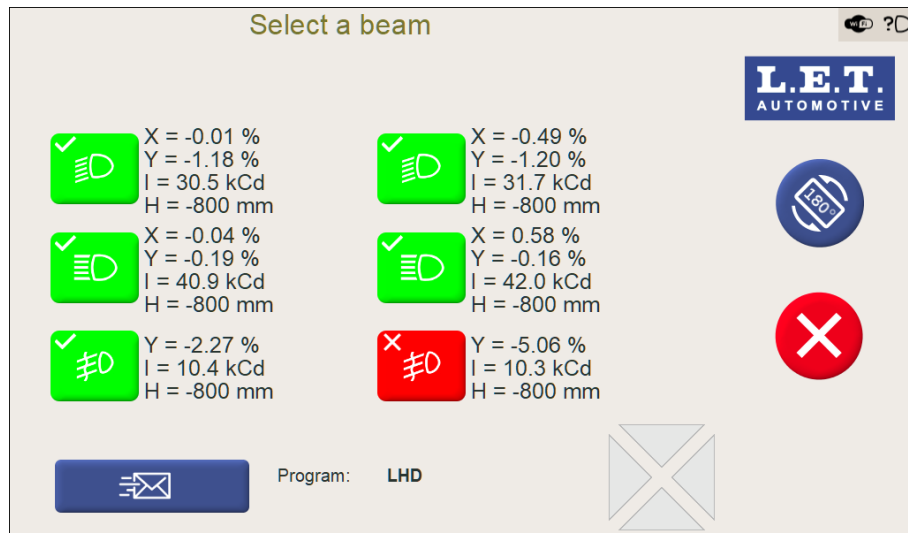




Figure 16: Results overview in **Beam selection** screen

To send the results by email, the operator, after pressing the envelope button, enters the vehicle license plate number via the user interface.



**Note:** Check the detailed video in the portal on the topic and adjust the email settings accordingly.

<https://qr.luminoscope.be/get-results.html>



The system logs the results and sends them to the predefined email address.



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# 4 Preventive maintenance

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Regular maintenance is essential to keep the Luminoscope® system, the peripheral equipment (if applicable) and the work environment safe and reliable. It helps to eliminate workplace hazards. Lack of maintenance or inadequate maintenance can lead to dangerous situations, accidents and health problems.

It is important that a planned maintenance program is in place and that all maintenance work is risk assessed before beginning the task.

## 4.1 Daily maintenance

The following tasks should be performed every day or at the beginning of any working shift.

### 4.1.1 DR rail obstruction control

In order to ensure a smooth lateral movement of the appliance, the rails should be in a proper status.

1. Check visually the status of the rails. Look for any sign of wearing, strain or warp.
2. Immediately remove any obstruction in the U-profile of the rail, preventing the smooth movement of the base and/or wheels.  
Use a hard brush or a vacuum cleaner.

### 4.1.2 SR rail obstruction control

In order to ensure a smooth lateral movement of the appliance, the rail and/or the floor surface of the device standing area should be in a proper status.



**Note:** Depending on the Luminoscope® configuration, it may be guided on a single rail (SR = Single Rail). This chapter is only applicable for such systems.

1. Check visually the status of the rail. Look for any sign of wearing, strain or warp.
2. Immediately remove any obstruction on the rail, preventing the smooth movement of the base and/or wheels.  
Use a hard brush or a vacuum cleaner.

### 4.1.3 Floor obstruction control

In order to ensure a smooth lateral movement of the appliance, the floor surface of the device standing area should be in a proper status.



**Note:** Depending on the Luminoscope® configuration, it may be guided on the floor (NR = No Rail). This chapter is only applicable for such systems.

1. Check visually the status of the floor surface of the device standing area.
2. Immediately remove any obstruction on the floor surface of the device standing area, preventing the smooth movement of the base and/or wheels.  
Use a hard brush or a vacuum cleaner.



## Personal notes

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