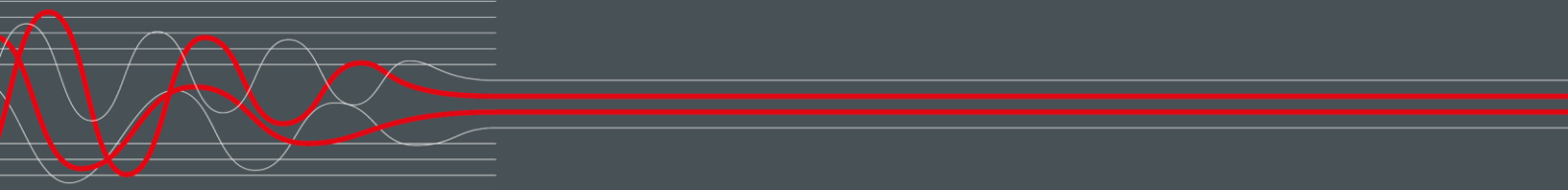
MAHAGROUP

MLT 1000

Headlight Tester

Original Operating Instructions

BA380801-en



BA380801-en
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Manufacturer

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Contents

1 Safety

1.1 Introduction

Thoroughly read this manual before operating the equipment and comply with the instructions. Always display the manual in a conspicuous location.

Personal injury and property damage incurred due to non-compliance with these safety instructions are not covered by the product liability regulations.

1.2 Symbols and Signal Words

1.2.1 Personal Injury

DANGER

indicates an immediate hazard which, if not avoided, will result in death or severe personal injury.

WARNING

indicates a potential hazard which, if not avoided, could result in death or severe personal injury.

CAUTION

indicates a potential hazard which, if not avoided, could result in moderate or minor personal injury.

1.2.2 Property Damage

NOTICE

indicates a potentially harmful situation which, if not avoided, could result in damage to the equipment or surrounding objects.

1.2.3 Information

indicates important information notes.

1.3 Intended Use

This device only serves to check and adjust the alignment of vehicle headlights.

This device cannot be modified without the express, written consent of the manufacturer. Any infringement renders the conformity declaration invalid.

1.4 Requirements on Operating and Service Personnel

WARNING

All persons employed in the operation, maintenance, installation, removal and disposal of the device must

- be at least 18 years old,
- be mentally and physically suited for these activities,
- be demonstrably trained and instructed in writing,
- have read and understood the operating instructions, especially the instructions what to do in the event of defects or malfunctions,
- be on record as having been instructed in safety guidelines,
- have practical experience in working with vehicle lifts and the hazards inherent in such equipment.

1.5 Safety Instructions

NOTICE

- This device must only ever be operated within its performance limits.
- All service work must be performed by service technicians employed by the manufacturer or by authorized service partners.
- Never expose the lens to direct sunlight. The bundling of light may cause fire damage inside the housing.
- Only ever clean the lens with a soft cloth and a glass cleaning agent.

CAUTION

Optional laser alignment unit: Never look into the laser beam (laser class 2M). Comply with work safety and accident prevention directives (H&SW regulations) in respect of laser radiation.

2 Description

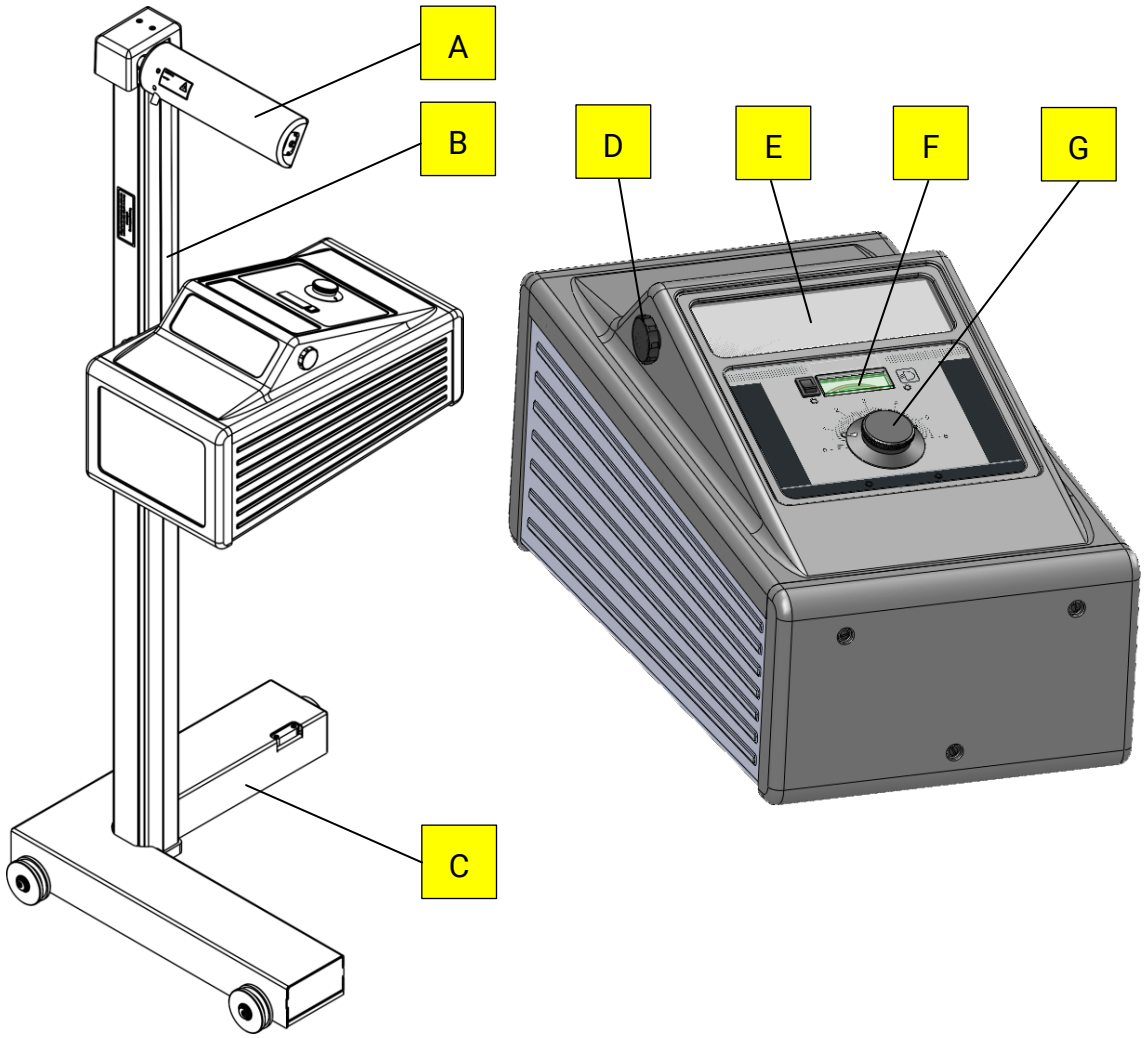
2.1 Requirements for the Place of Installation

Please observe your national guidelines and specifications.

2.2 Technical Data

Measuring range		
below		0…600 mm / 10 m (0…6 %)
left		0…1000 mm / 10 m (0…10 %)
right		0…1000 mm / 10 m (0…10 %)
Adjustment path of lens centre above floor	standard	240…1500 mm
	flat foot	220…1500 mm
Measuring distance		100…500 mm
Intensity		
Light intensity		0…40 000 cd (Candela)
Illuminance		0…64 lx (Lux)
Operating range		
Temperature		+5…+40 °C
Relative humidity		20…80 %
Dimensions (W x H x D)		655 x 1770 x 720 mm
Weight		65 kg
Type approval number		TPN100110934

2.3 Equipment Overview



A	Mirror	The headlight tester is aligned with the vehicle by using the movable alignment mirror. The optional laser aligner is integrated in the mirror holder.
B	Column	The column envelopes a precision profile which carries the slide rails. The counterweight which can be used to set the housing to the desired test height is located in the interior of the column (automatic locking).
C	Carriage (with Spirit Level)	The carriage of the headlight tester either runs on two rails when it is in a fixed location or it is equipped with rubber rollers.
D	Knob for Folding Mirror	The projection screen in the housing can be observed in the folding mirror.
E	Viewing Window	The projection screen in the housing can be viewed through the viewing window.

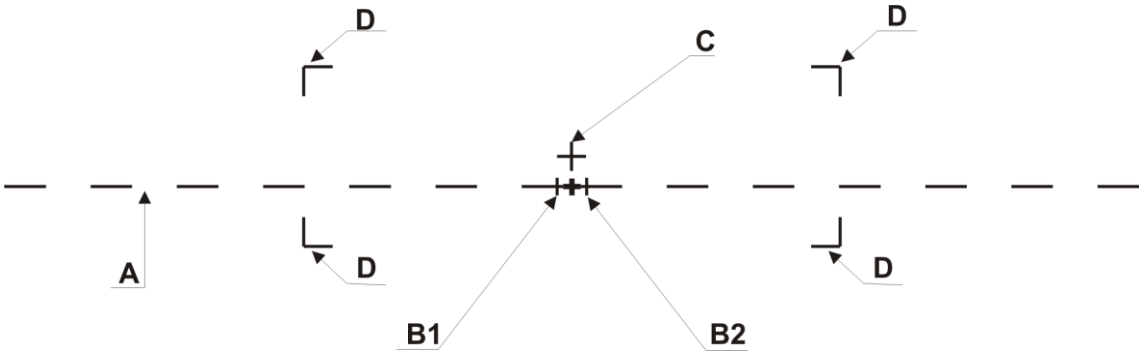
F	Light Measure-ment Unit	The light intensity or illuminance of the headlights can be checked using the light measurement unit.
G	Setting Dial	Use the setting dial to move the projection screen up and down in the housing to achieve the desired inclination value.

2.4 Projection Screen

The projection screen is based on the test condition that the distance between headlight and test surface is 10 m.

Use the folding mirror or the viewing window to observe the projection screen in the housing on which the headlight beam is reproduced.

The image on the projection screen is displayed 20 times smaller than the original.



A Dividing line = Reference axis for light-dark border of low beam

B1 Tolerance mark (left) for inflection point of asymmetrical European low beams

B2 Tolerance mark (right) for inflection point of asymmetrical European low beams

C Central mark = Elementary point for setting the high beams

D The outlined corners indicate the size of the test surface which is binding based on the directives for vehicle headlight settings (e.g. in Germany).

2.5 Setting Wheel

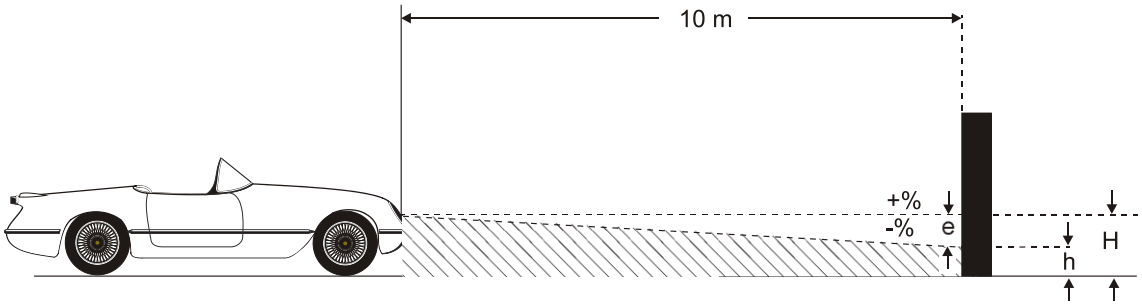
Use the setting wheel to move the projection screen up or down in the housing.

As the inclination of the headlight hot spot in relation to the driving surface is usually expressed in percentage, the setting wheel has a percentage (%) dial.

The inclination values (light-dark border of the vehicle headlights) can be set from 0 to -6 % using the dial.

2.6 Definition of Technical Terms

2.6.1 Pitch Angle

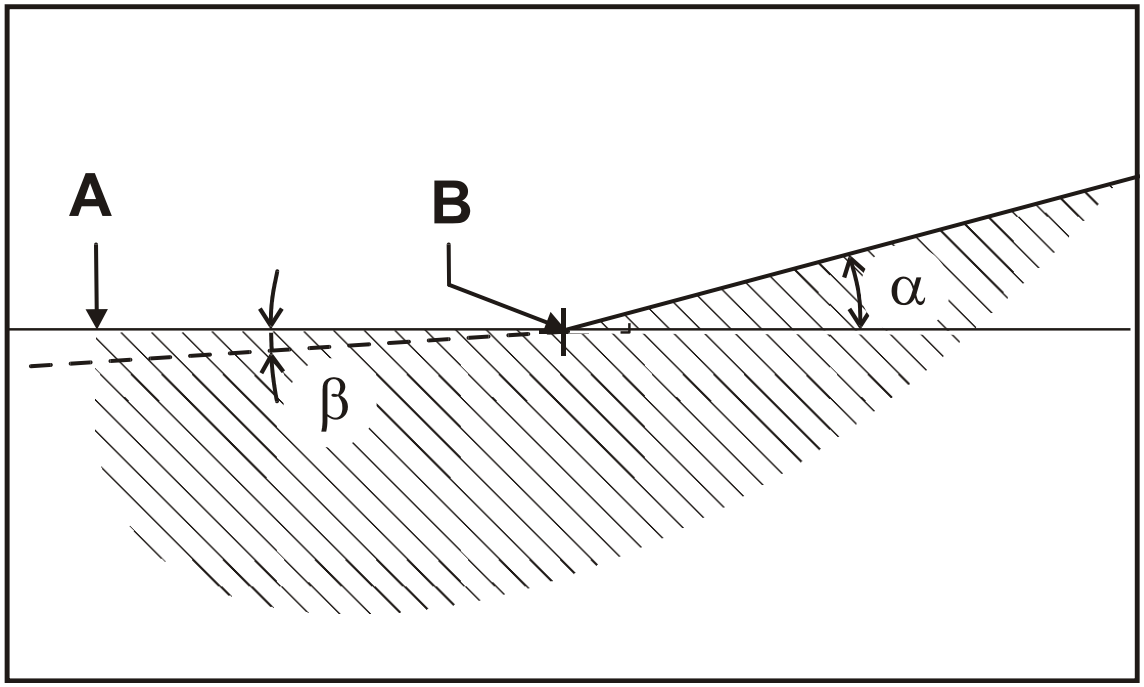


Angle of inclination of light-dark limit against the test surface.

The inclination of headlight lighting bundle against the test surface is expressed as a percentage, using 10 m as a reference parameter:

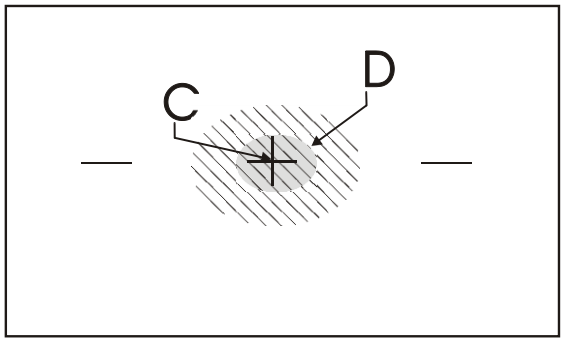
$$\frac{H-h}{1000} \text{ X } 100$$

2.6.2 Low Beam



A	**Light-dark limit** Boundary for light distribution between ‘top dark’ and ‘bottom light’ for low-beam lights.
B	**Inflection point** Synonymous with the light-dark limit for asymmetric low-beam lighting. The deviation of the inflection point is expressed in %. 10 meters is used as the reference dimension.
α	**Yaw angle** Angle between the inflection point on the rising component of the light-dark limit and the horizontal line for asymmetric low-beam light.
β	**Rolling angle** Angle between the left component of the light-dark limit and the horizontal, usually 0°.

2.6.3 High Beam



C	**Central mark** From the central mark, the deviation of hot-spot is specified in X and Y directions.
D	**Hot spot** Center of light beam for high-beam. The deviation of hot spot from central mark is expressed in %.10 meters is used as the reference dimension.

3 Operation

3.1 Aligning

When using guide rails, position the device centrally in front of the vehicle.

Without guide rails, the device must be adjusted in front of each headlight. Please observe your national guidelines and specifications.

The device is correctly aligned when two symmetrical reference points on the front of the vehicle are located on the black line of the alignment mirror.

3.1.1 Laser Alignment Unit (Option)

The optional unit is integrated into the mirror holder. The device is correctly aligned when the laser pointer is parallel to two symmetrical reference points on the front of the vehicle.

Observe manufacturer's instructions according to workshop manual.

CAUTION

Never look into the laser beam (laser class 2M). Comply with work safety and accident prevention directives (H&SW regulations) in respect of laser radiation.

The AA Mignon batteries powering the laser are located in the alignment unit and can be easily replaced.

3.2 Setting the Headlights

1 Switch on the headlights.

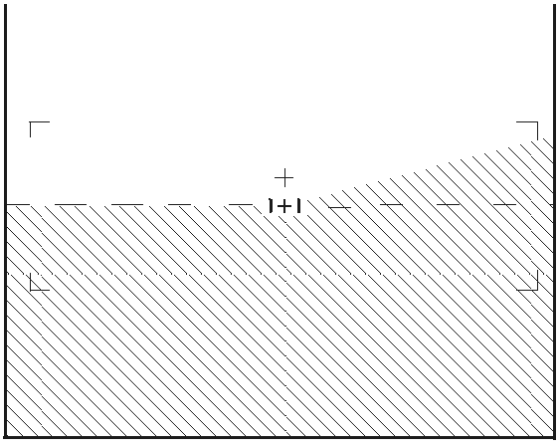
2 Set the projection screen to the required inclination value using the setting dial.

3 The headlights should be tested individually, the other(s) should be turned off or covered if necessary.

4 Observe the projection screen. If the headlight setting is checked through the folding mirror, note that all screen markings are displayed mirror-inverted.

5 Adjust the headlights until they match the applicable statutory directives.

Example: When setting the low beam, the dividing line is the reference line for the inclination point of the light-dark border.



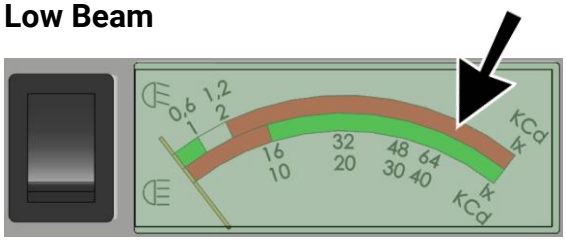
3.3 Measuring the Luminous Intensity / Illuminance

Light intensity or illuminance of low and high beams is indicated in Lux (lx) and Kilocandela (kCd) by the light measuring unit.

Adhere to the following rules in order to get correct test results:

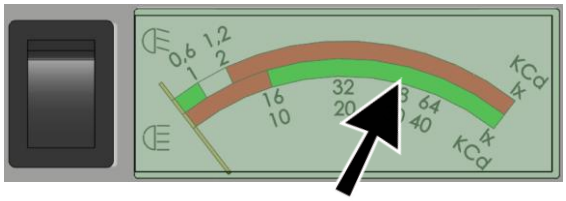
- The headlight tester must be aligned with the headlight
- The headlights must be set correctly
- The vehicle battery must be fully charged
- The vehicle engine should be idling at an average RPM

3.3.1 Low Beam



1 Switch on the low beams.
2 Position the toggle switch to low beam position (upwards).
3 Set the projection screen using the dial so that the dividing line lies on the light-dark border.
4 Read the value: The incoming light is extrapolated to 25 m and can be read off the upper scale.

3.3.2 High Beam



1 Switch on the low beams.
2 Set the projection screen using the dial so that the dividing line lies on the light-dark border of the low beams.
3 Switch on the high beams.
4 Position the toggle switch to high beam position (downwards).
5 Read the value: The incoming light is extrapolated to 25 m and can be read off the lower scale.

4 Maintenance

This headlight tester is an optical measuring device and must therefore be handled accordingly (i.e. with care).

The lens needs to be wiped regularly with a clean cloth and commercial glass cleaner. In all other respects, this is a zero-maintenance device.

5 Disposal

If you want to dispose of the equipment, please contact your MAHA dealer or the following address, indicating equipment type, date of purchase and serial number:

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Hoyen 20 | 87490 Haldenwang | Germany

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Alternatively, you may take the equipment to a specialised waste management plant to ensure that all components and operating liquids are properly disposed of.

Notes

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