

**Use, maintenance and spare parts manual for
headlight beam setter**

HL 19D



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1 Information on this manual


1.1 Information for use

Read the manual carefully. Pay particular attention to the first pages, where the safety regulations and liability conditions are indicated. The information contained herein is exclusively for personal protection while using the tool.

While using the device, it is advisable to refer to the pages where the individual operating phases are described, in order to prevent any risks for people and for the tool itself.


The tool can only be used by a technician who has received specific training in the automotive sector. The information and knowledge acquired during training will no longer be indicated or repeated in this user manual.

1.2 Symbols

	<p>WARNING/NOTE</p> <p>This symbol indicates a possibly dangerous situation which, if not avoided, may result in minor injuries or serious injuries.</p> <p>The texts marked with the word "NOTE" contain useful and important information. It is therefore recommended to follow them carefully.</p>
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2 Safety indications

2.1 General safety indications

	<ul style="list-style-type: none">• The diagnostic tool is intended for use on vehicles only. In order to be able to use the tool, the user must have good technical knowledge in the automotive sector and therefore, be familiar with the sources of danger and risks associated with working in the workshop and on the vehicle.• All of the warnings and instructions featured in the various chapters of the user manual applies. It is also necessary to take the precautions and safety measures indicated below. <p>In any case, all of the general provisions of the Labour Inspectorate, of trade associations and of manufacturers of motorised vehicles, all</p> <p>anti-pollution standards as well as all laws, decrees and rules of conduct that the workshop is commonly required to comply with, must always be applied.</p>
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2.2 Safety indications relating to the device



To avoid any incorrect use of the device with consequent injuries to the user or irreparable damage to the tool, comply with the following:

- Make all necessary connections strictly following the instructions in the user guide or user manual.
- Protect the tool from moisture (it is not waterproof).
- Protect the tool from sudden blows (for example falls).
- Do not open the tool. Only technicians authorised by Top Auto can open the tool. The warranty shall be considered void in the event of unauthorised interventions on the tool.
- In the event of malfunctions, contact Top Auto technical staff or a commercial partner immediately.
- Have the lens replaced if it is scratched or damaged
- The image displayed on the control panel may be affected by dirt and scratches. Clean the lens only with a soft cloth with glass cleaner.
- Regularly check the condition of the 9V battery inside the optical box and of the 3 traditional 1.5V AA type batteries of the laser module (check for the presence of leaks/sulphonation).

2.3 Safety indications - Risk of injury



Carrying out work on the vehicle exposes the operator to the risk of suffering injuries caused by the rotating components or by the accidental movement of the vehicle. Therefore, strictly follow these instructions:

- Block the vehicle in such a way as to prevent it from moving.
- If the vehicle features automatic transmission, put the lever in the Parking position (P).
- Never touch moving parts.

2.4 Safety indications relating to the LASER


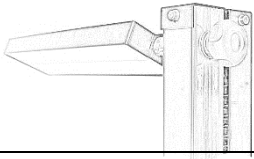

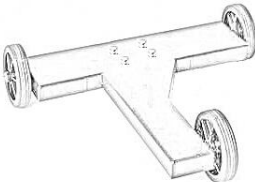







Using the laser exposes the operator to the risk of injuries to the eyes. Therefore, strictly follow these instructions:

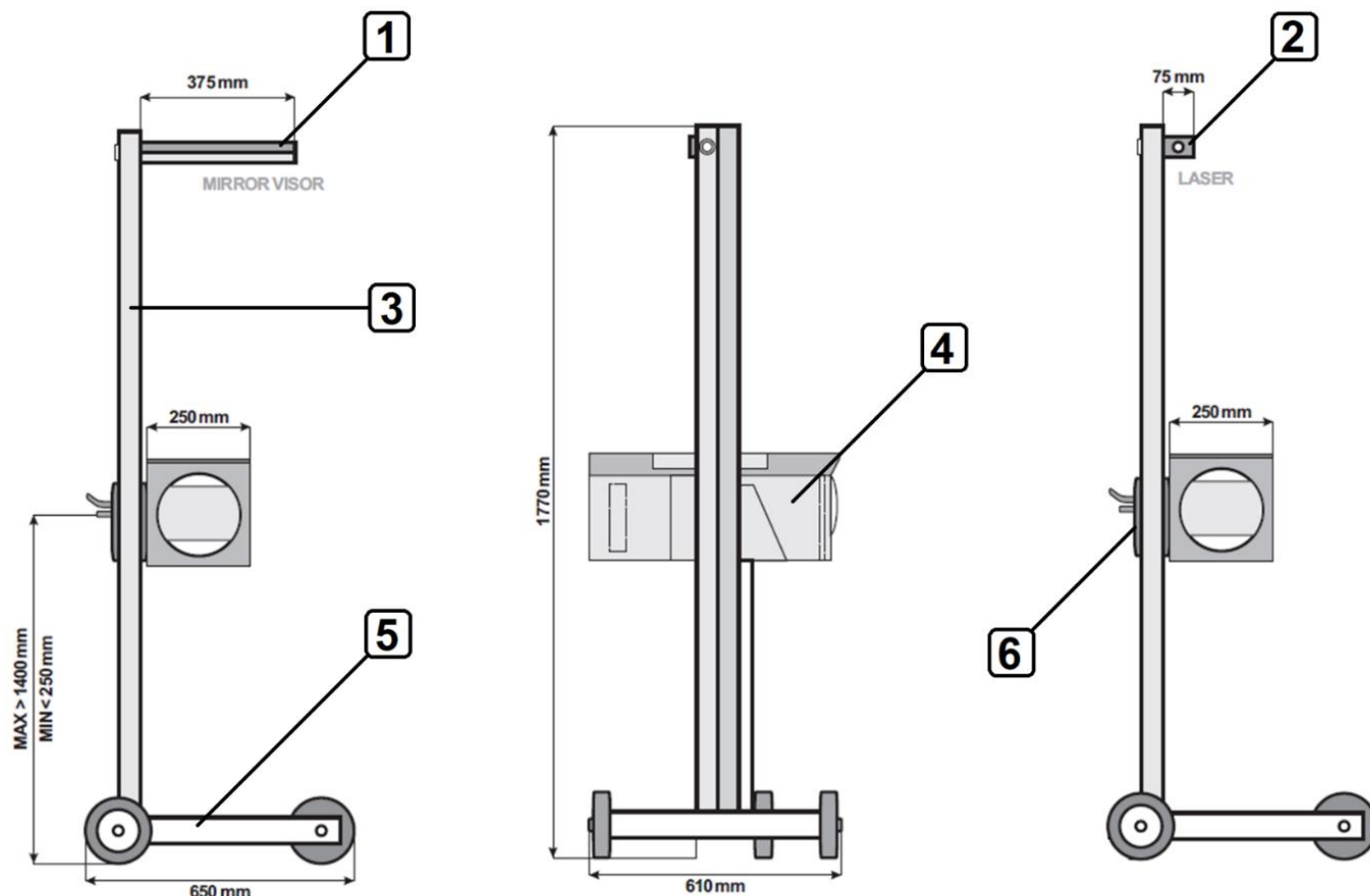
- Never aim the laser beam at people, doors or windows.
- Never look directly into the laser beam.
- Make sure that the workspace is appropriately illuminated.
- Avoid the risk of tripping.
- Protect the mechanical parts from the risk of falling or becoming detached.

3 Description of the tool

3.1 Details of the supply

QUANTITY	DESCRIPTION	
1	Optical chamber	
1	Mirror visor or LASER (optional)	 or 
1	Base on wheels	
1	Column with sliding system	
1	Accessory kit A to attach the column to the base	<ul style="list-style-type: none"> • 4 screws M8 x 30 • 4 washers 8 x 16 
1	Accessory kit B to attach the optical chamber to the sliding system	<ul style="list-style-type: none"> • 1 snap lever M8 x 20 • 1 screw M8 x 20 • 1 washer 8 x 16 • 1 washer 8 x 24 
1	Accessory kit C to attach the visor to the column	<ul style="list-style-type: none"> • 1 handwheel M10 x 70 • 1 cup spring 10 x 20 • 2 washers 10 x 30 
1	Use and maintenance manual	

3.2 Overview of the tool



Position	Description
1	Mirror visor It allows to make a correct alignment between the tool and the vehicle
2	Laser visor (optional) It allows to make a correct alignment between the tool and the vehicle
3	Column
4	Optical chamber
5	Base on wheels It allows for the tool to be moved
6	Sliding system It allows for the vertical movement of the tool

3.3 Technical characteristics

HEIGHT	166 cm	MINIMUM OPERATING HEIGHT	23 cm
WIDTH	61 cm	MAXIMUM OPERATING HEIGHT	146 cm
LENGTH	65 cm	POWER SUPPLY	9V BATTERY
WEIGHT	30 kg		

The tool is supplied packed in a recycled cardboard box

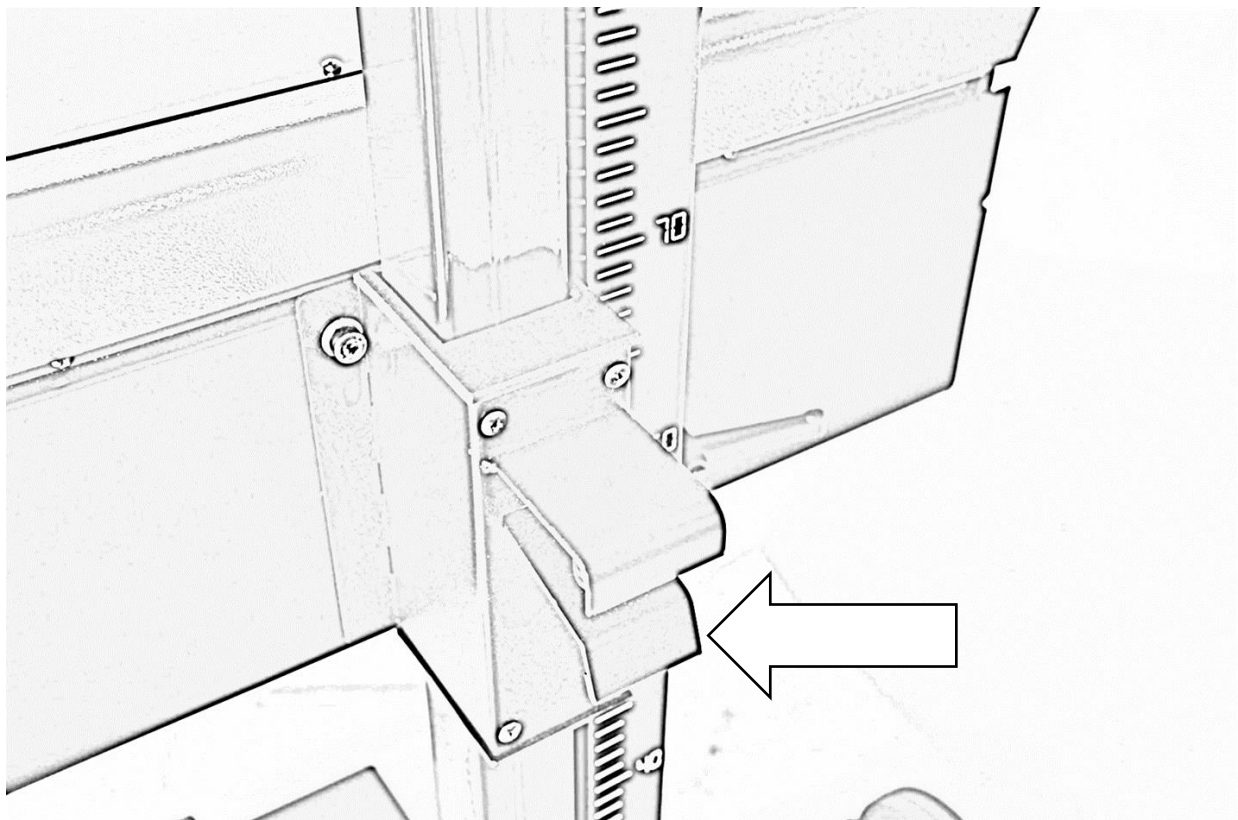
To assemble the tool, see paragraph 4 “**Assembly**”

3.4 Using the sliding system

To adjust the height of the optical chamber, proceed as follows:

1. Hold the optical chamber from below with one hand and the sliding system with the other
2. Press the sliding system lever (see photo below)
3. Move the optical chamber vertically to the desired height
4. Release the sliding system lever

The optical chamber is now at the desired height



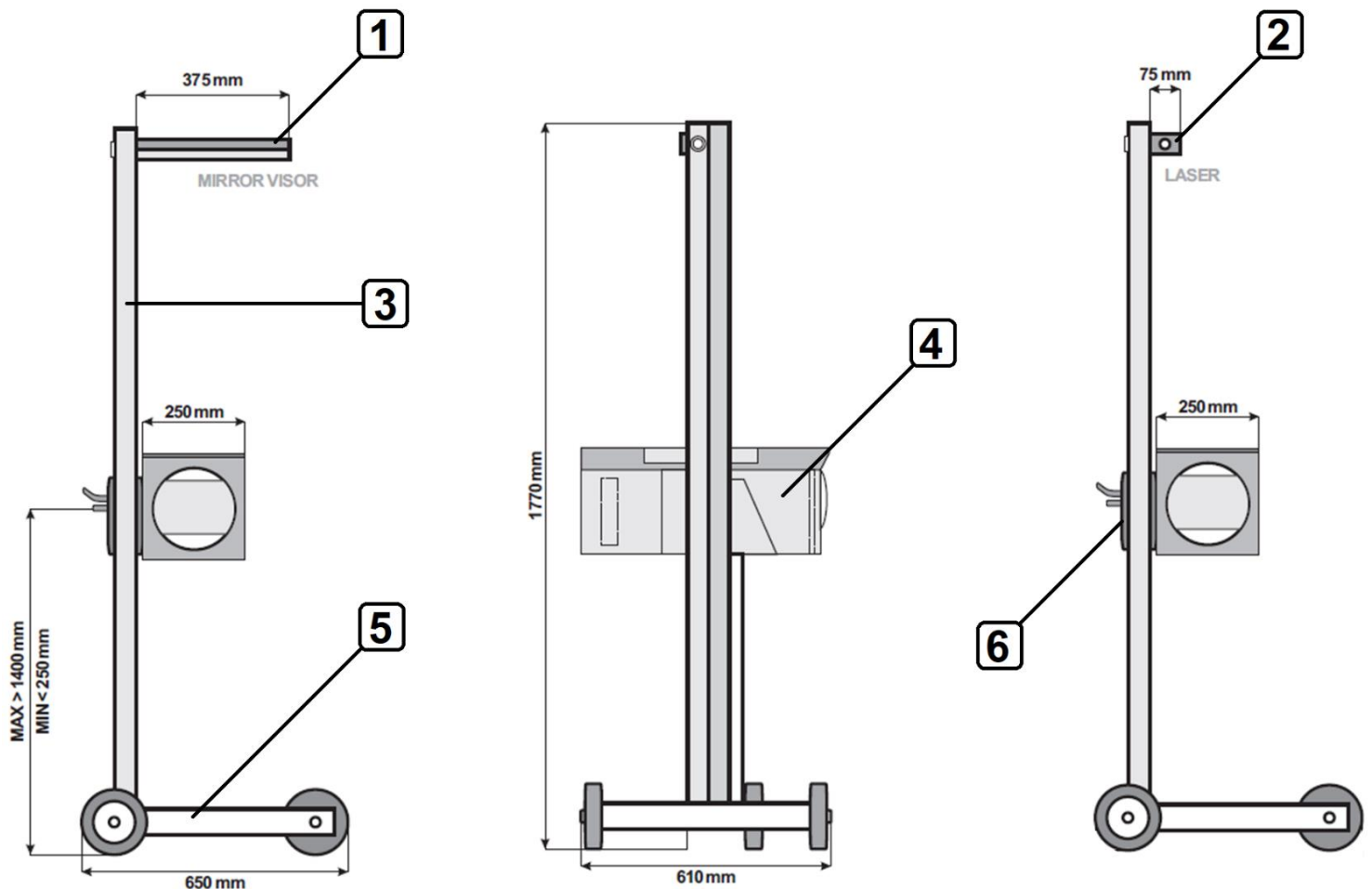
4 Assembly

1. Assemble the column (3) onto the base (5) using accessory kit A. Pay attention to the direction of the sliding system, as shown in the figure below.
2. Attach the optical box (4) to the sliding system (6) using accessory kit B. Use the 8 x 16 washer to secure the screw and the 8 x 24 washer for the snap lever. To attach the snap lever more easily, use a flat-head screwdriver
3. Attach the mirror visor (1) to the column (3) using accessory kit C. The cup spring must be inserted between the washer and the visor. After securing the visor, use an Allen wrench to tighten the screw so as to lock it permanently.



NOTE

The LASER visor (optional) is supplied with its own accessory kit and instructions for installation.



5 ISO 1060 Control Surface

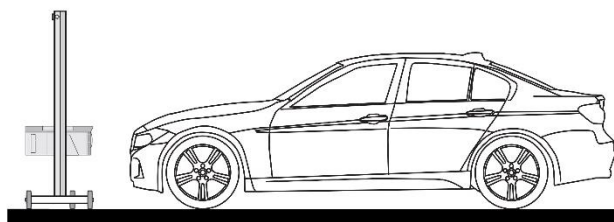
When testing the headlights, the floor must be as level as possible. If this is not possible, the headlight beam setter and the vehicle must at least be on a surface with a uniform difference in height and, in any case, with a slope not exceeding 0.5%.



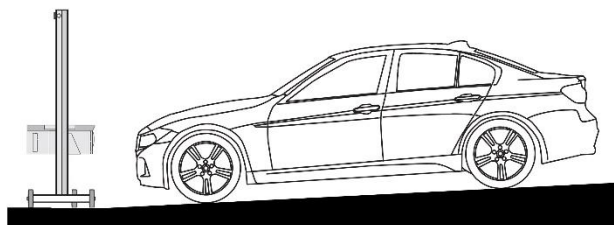
WARNING!!!

The characteristics and the condition of the support surfaces are essential for correct headlight adjustment. It is not recommended to test the headlights on floors that are not perfectly flat and even, as the adjustment may not be accurate.

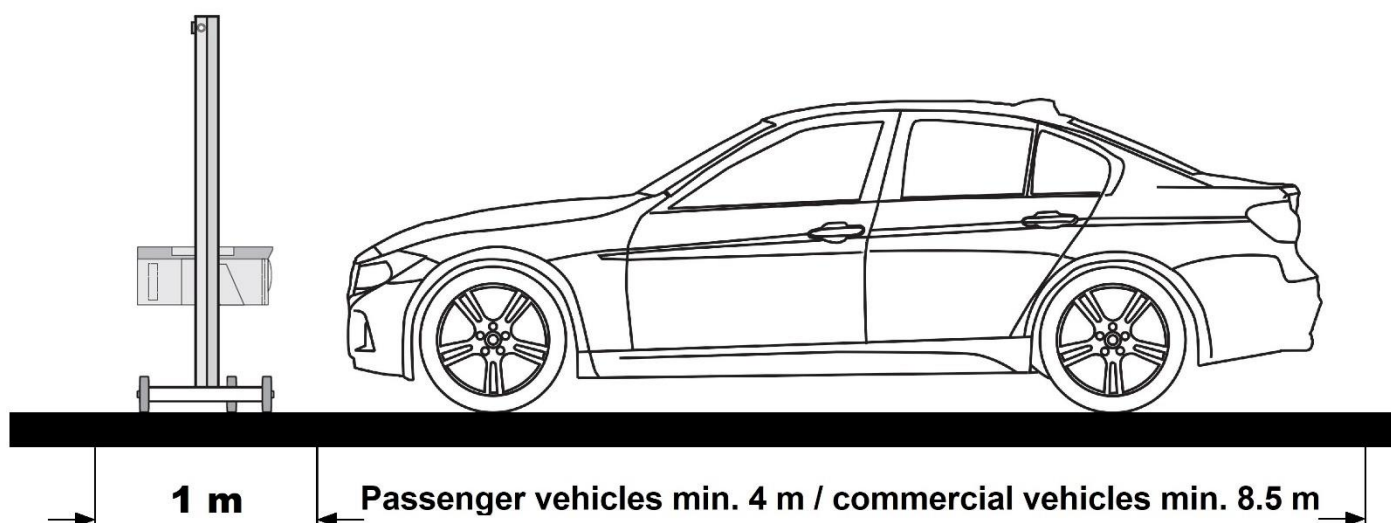
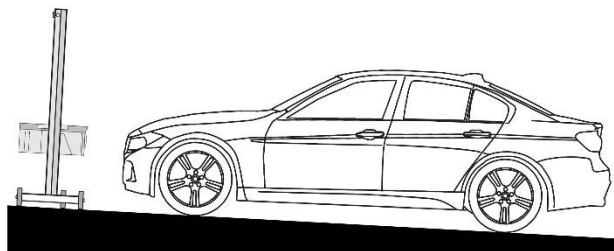
O.K



NOT OK



Max 0.5%



Irregularities in floor
not greater than
 $\leq 0.5 \text{ mm/m}$

Irregularities in floor in
accordance with ISO10604
not greater than $\leq 1 \text{ mm/m}$

6 Preparing the vehicle



NOTE

The tyres must be inflated to the required pressure!

The following loads must be on the vehicle:

- Motor vehicles: one person or 75 kg on the driver's seat and no other loads.
- Trucks and other vehicles with one or more axles: no load.
- Single-axe vehicles and tractors and operating machines with one axle (with driver's seat or trailer): one person or 75 kg on the driver's seat.

If there is a hydraulic or pneumatic suspension, the engine must run at medium speed, until the height of the vehicle no longer changes. If there is automatic headlight correction or continuous or two-level adjustment, it is necessary to follow the manufacturer's instructions.



NOTE

National provisions must be complied with in any case.

7 Alignment



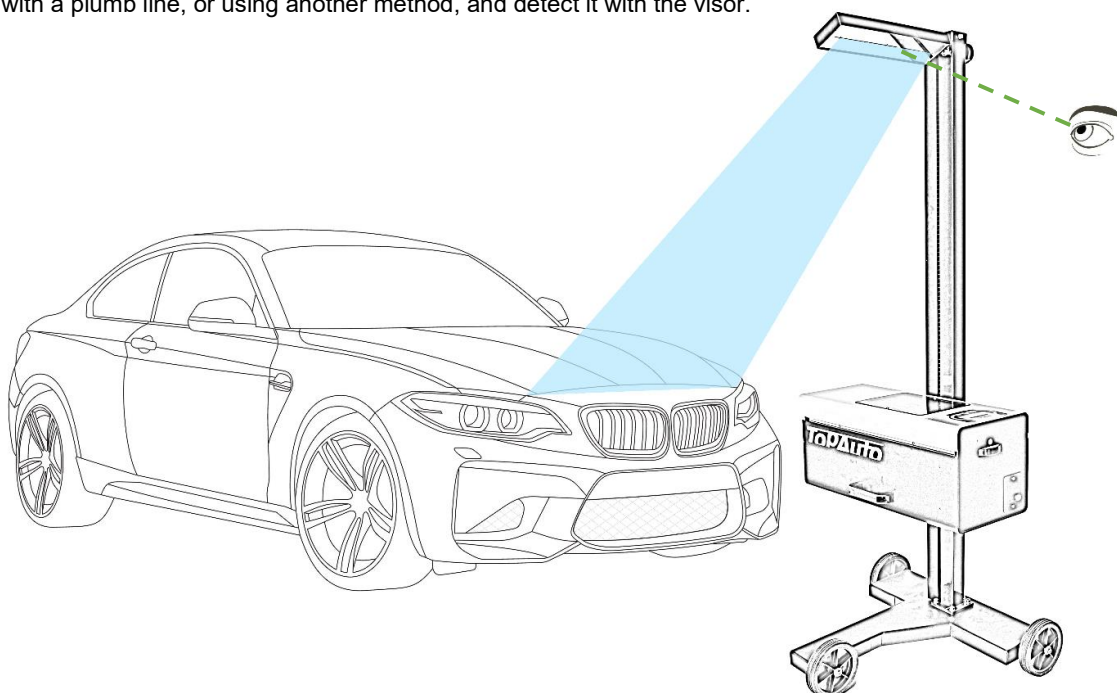
NOTE

Make sure that, once it has been moved in front of each headlight, the headlight beam setter remains parallel to the vehicle, by checking through the visor. The freewheel trolley of the headlight beam setter does not guarantee perfectly linear sliding, which can also be affected by ground imperfections or by the operator's movement.

7.1 Alignment by means of MIRROR visor

Position the optical box with the mirror visor in such a way that the visor line touches two points at the same height, symmetrical with respect to the longitudinal axis of the vehicle.

If you find it difficult to align the device on some trucks or buses with a very curved front, bring the centre of the headlight back on the ground with a plumb line, or using another method, and detect it with the visor.



7.2 Alignment by means of LASER visor (only versions that feature it)

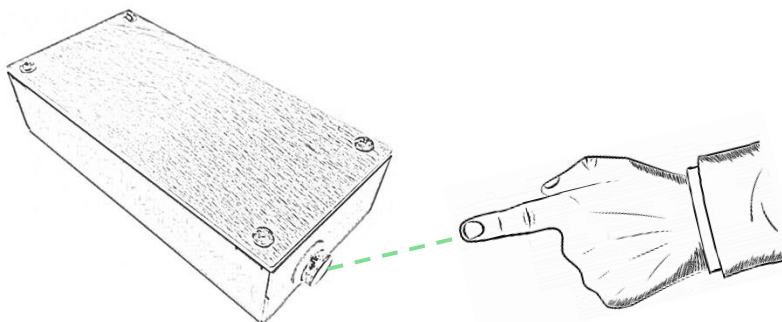


WARNING

Using the laser exposes the operator to the risk of injuries to the eyes. Therefore, strictly follow these instructions:

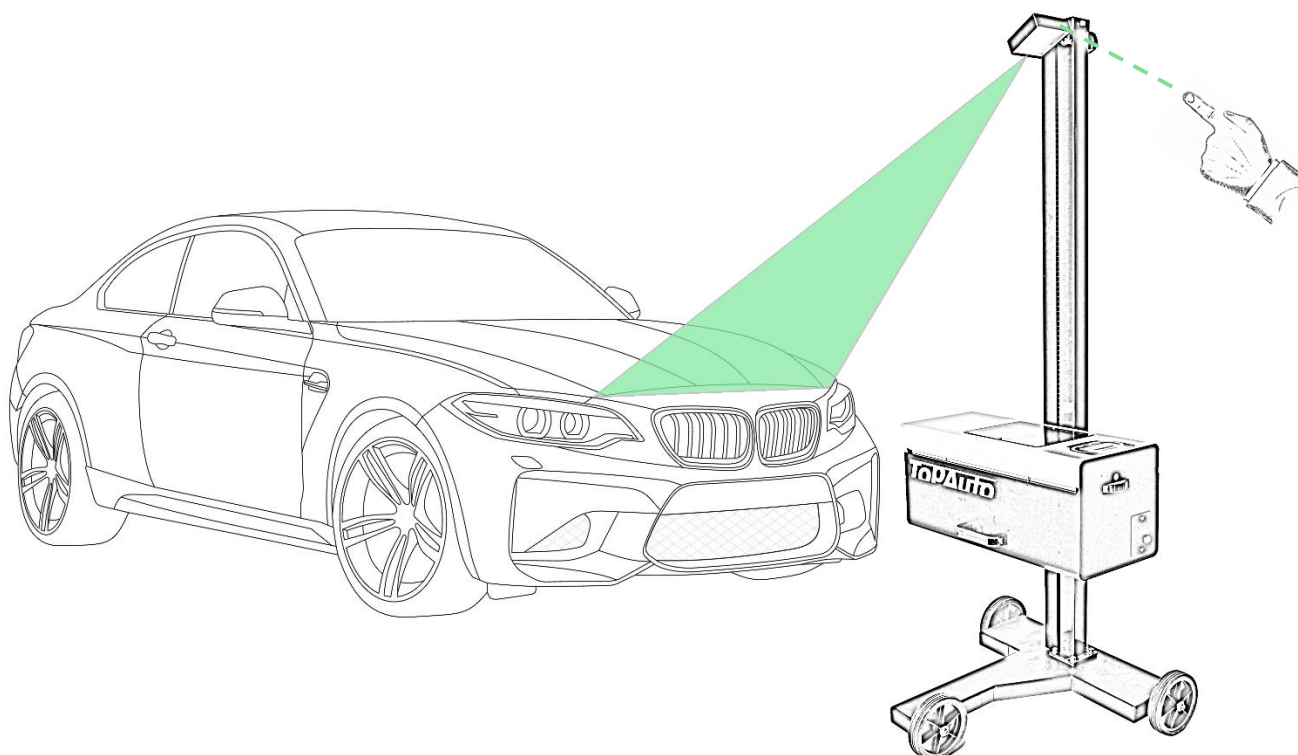
- Never aim the laser beam at people, doors or windows.
- Never look directly into the laser beam.
- Make sure that the workspace is appropriately illuminated.
- Avoid the risk of tripping.
- Protect the mechanical parts from the risk of falling or becoming detached.

The LASER visor is equipped with a return button to prevent the risk of injuring the operator. To turn on the laser, **press and hold the green button** located at the back of the visor, as shown below:



Position the optical box with the laser visor in such a way that the green laser line touches two points at the same height, symmetrical with respect to the longitudinal axis of the vehicle.

If you find it difficult to align the device on some trucks or buses with a very curved front, bring the centre of the headlight back on the ground with a plumb line, or using another method, and detect it with the visor.



**NOTE**

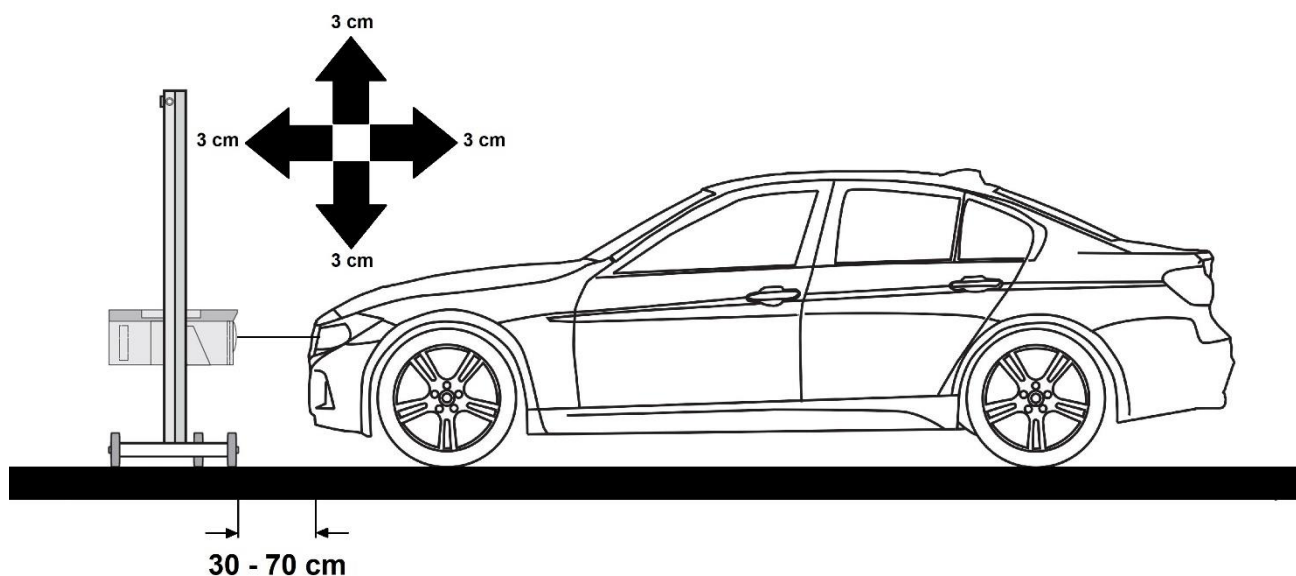
If the headlight beam setter is not equipped with a rail system, **ITS ALIGNMENT WITH THE VEHICLE MUST BE VERIFIED IN FRONT OF EACH HEADLIGHT TO BE CHECKED**

1. Position the headlight beam setter in front of the headlight to be checked.
2. Measure the height of the floor at the centre of the light and move the optical box to the corresponding height, making use of the graduated scale on the pole. The top part of the sliding system must be used as a reference.
(This operation is not performed if the device features a laser pointing system, see para. 7.3)
3. Make sure that the optical box is at the centre of the headlights.

**NOTE**

Maximum height and lateral deviations: 3 cm.

Distance from the front edge of the optical box to the headlight: from 30 to 70 cm.



7.3 Using the LASER pointer (only versions that feature it)

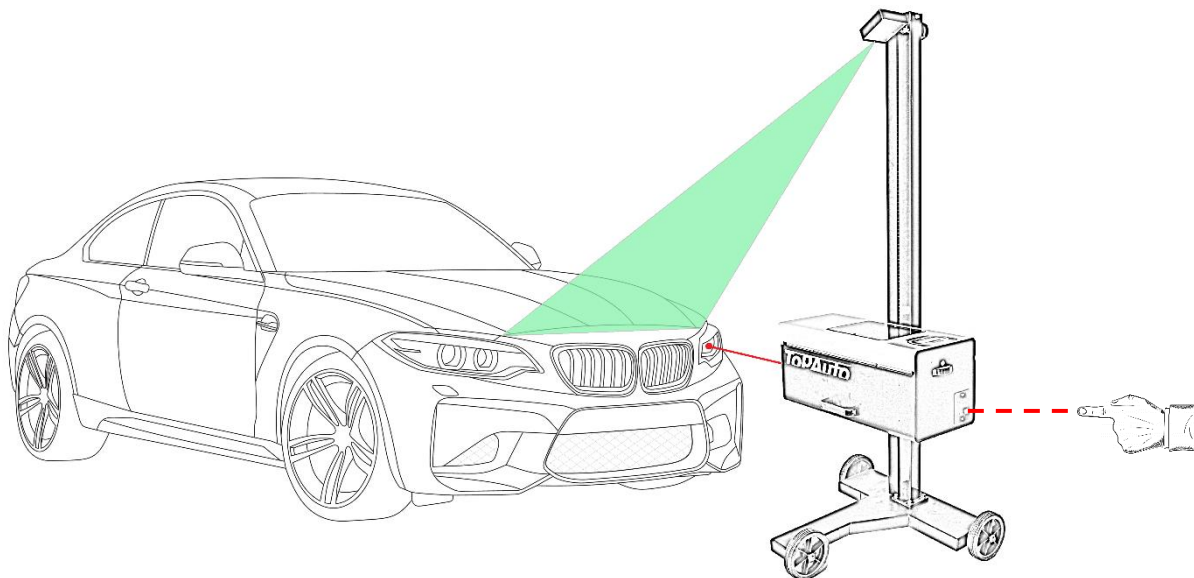


WARNING

Using the laser exposes the operator to the risk of injuries to the eyes. Therefore, strictly follow these instructions:

- Never aim the laser beam at people, doors or windows.
- Never look directly into the laser beam.
- Make sure that the workspace is appropriately illuminated.
- Avoid the risk of tripping.
- Protect the mechanical parts from the risk of falling or becoming detached.

If the device is equipped with the LASER POINTER accessory, it can be used to facilitate the positioning of the device at the centre of the headlight to be checked. After checking the alignment by means of the visor, turn on the pointer by pressing the button behind the optical box. Use the sliding system to move the optical chamber with the laser dot to the centre of the headlight to be checked (see below).



8 Checking and/or adjusting the headlights



NOTE

The headlight beam setter allows to check all headlight systems, including DE, FF, LED systems and xenon headlights. The rectangle drawn on the control screen corresponds to the dimensions of the mandatory control surface in accordance with the directives relating to the adjustment of vehicle headlights. After adjusting them, the headlights must be secured to the vehicle in such a way that no involuntary variation occurs. The adjustment of the headlights must always be checked after repairing the vehicle suspension. The same is recommended also after replacing a headlight bulb.

In vehicles with automatic compensation of the inclination of the headlights or of the bodywork according to the load, it is necessary to respect the specific features of these devices according to the manufacturer's instructions.

In vehicles where it is possible to manually adjust the headlights, the device must be in the locking position required for basic adjustment.

For headlights with adjustment devices for 2 positions only, where the locking positions are not marked in a particular way, proceed as follows:

- In vehicles where the light beam rises as the load increases, make the adjustment in the final position

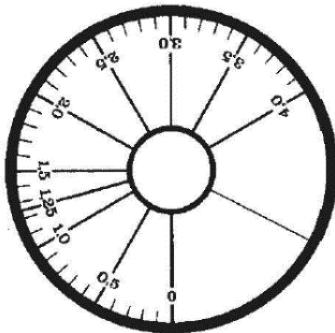
of the device, where the light beam is at the maximum height.

- In vehicles where the light beam drops as the load increases, make the adjustment in the final position of the device, where the light beam is at the minimum height.

8.1 Internal panel

The internal panel moves by means of the graduated wheel situated at the back of the optical box. Depending on the type of vehicle to be controlled, position the wheel on the relative sign as follows:

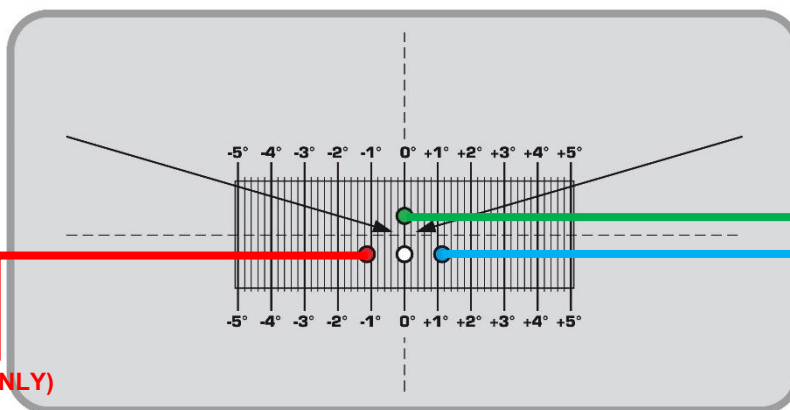
Graduated Wheel



Internal panel

Brightness sensor
LOW BEAM

(LEFT DRIVE VERSIONS ONLY)



Brightness sensor
HIGH BEAM

Brightness sensor
LOW BEAM

WHEEL IN POSITION 1: For vehicles with height from the ground to the centre of the headlights up to 80 cm.

WHEEL IN POSITION 1.5: For vehicles with height from the ground to the centre of the headlights over 80 cm.

On some motor vehicles, the manufacturer may have indicated, near the headlight, the inclination that the lights should have. In this situation, use the manufacturer's indication.

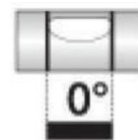
EXAMPLE: 1.2% is printed on the headlight - turn the WHEEL to position 1.2.



NOTE

Before testing the headlights, CAREFULLY CHECK THAT THE SPIRIT LEVEL IN THE OPTICAL CHAMBER IS LEVEL.

If necessary, to level the optical chamber, open the friction lever, move the optical chamber until it is perfectly levelled, then tighten the friction lever again. Proceed to test the headlight.



A) Prepare the headlight beam setter and the vehicle as per previous instructions and turn on the low beam headlights; the headlight projection will appear on the internal panel.

B) Check that it corresponds to the reference line.

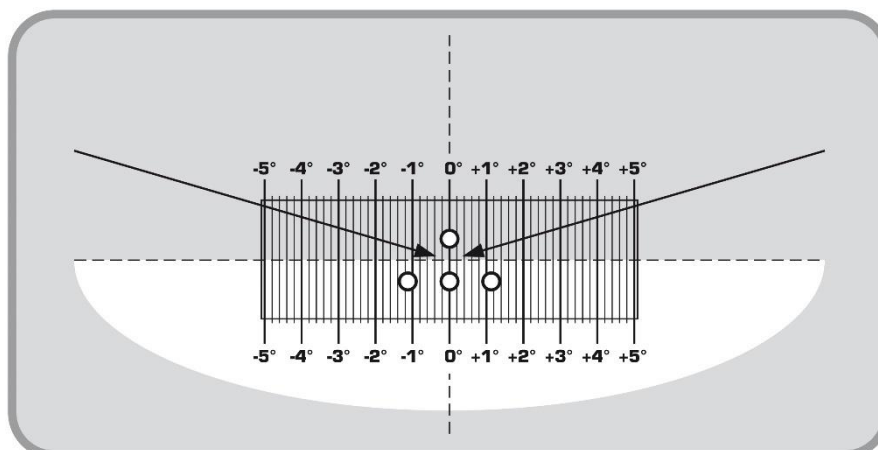
C) If necessary, act on the headlight adjustment system until the desired result is obtained.

8.2 SYMMETRICAL LOW BEAM HEADLIGHTS

Adjust the wheel in the correct position (see paragraph 8.1).

Switch on the low beam headlights: the light/dark limit must cover the entire width of the screen, if possible, horizontally along the reference line. If necessary, correct the headlight adjustment using the adjustment screws.

Example of symmetrical low beam headlight adjustment:



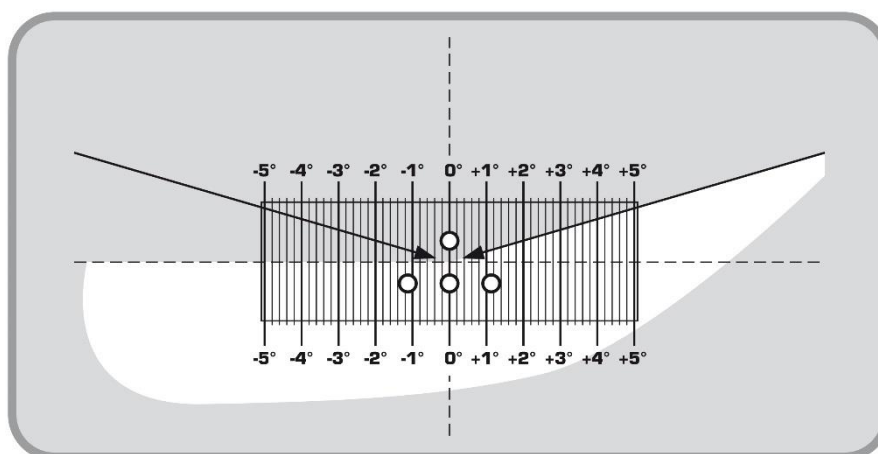
8.3 ASYMMETRICAL LOW BEAM HEADLIGHTS

Adjust the wheel in the correct position (see paragraph 8.1).

Switch on the low beam headlights: in headlights with an asymmetrical low beam, the light/dark limit must be in contact with the reference line. The intersection point between the left part and the right increasing part of the light/dark limit must coincide with the central mark (central cross of the panel). The light core of the light beam is therefore located to the right of the vertical line that crosses the central mark.

To make it easier to detect the intersection point of the centre line of the headlight, cover and uncover it alternately a few times. Finally, check the low beam headlight again.

Example of asymmetrical low beam headlight adjustment:



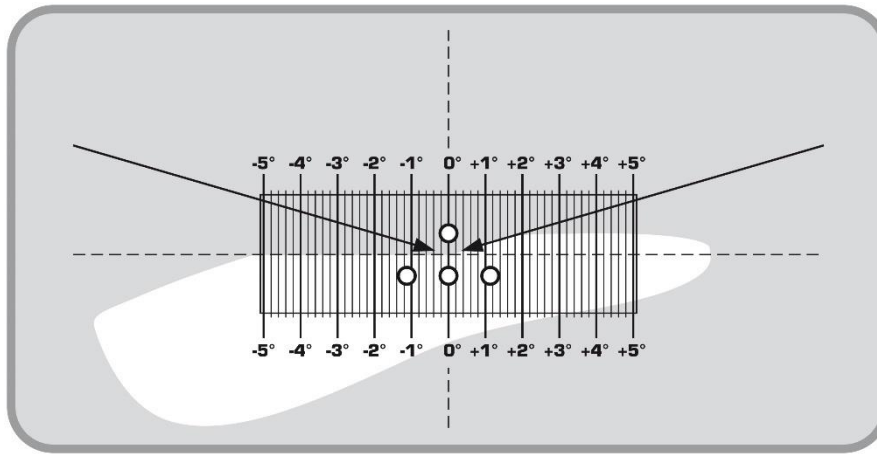
8.4 LED-XENON LOW BEAM HEADLIGHTS

Adjust the wheel in the correct position (see paragraph 8.1).

Switch on the low beam headlights: in headlights with an asymmetrical low beam, the light/dark limit must be in contact with the reference line. The intersection point between the left part and the right increasing part of the light/dark limit must coincide with the central mark (central cross of the panel). The light core of the light beam is therefore located to the right of the vertical line that crosses the central mark.

To make it easier to detect the intersection point of the centre line of the headlight, cover and uncover it alternately a few times. Finally, check the low beam headlight again.

Example of LED-XENON low beam headlight adjustment:



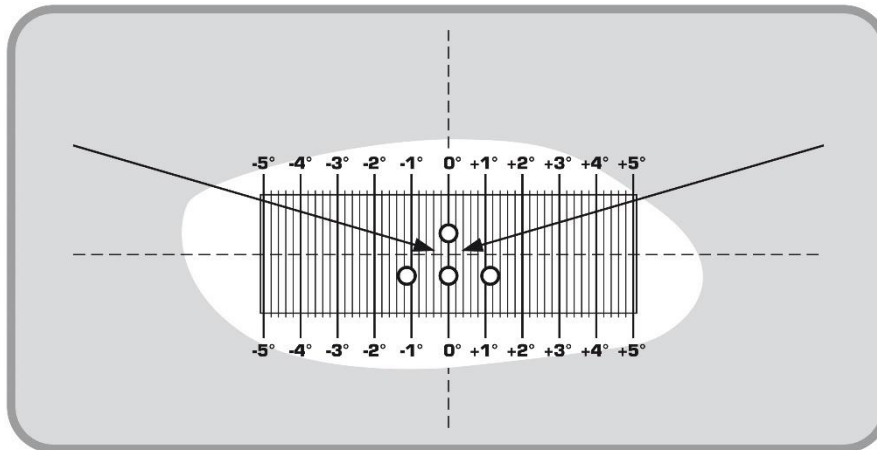
8.5 HIGH BEAM HEADLIGHTS



NOTE

After perfectly adjusting the clear/dark limit of the low beam headlight, the centre of the light beam of the high beam headlight must be on the **HIGH BEAM brightness sensor**

When the high beam headlights are not located on the same plane as the low beam headlights, the high beam headlight test must be performed centring the light beam as shown in the picture:

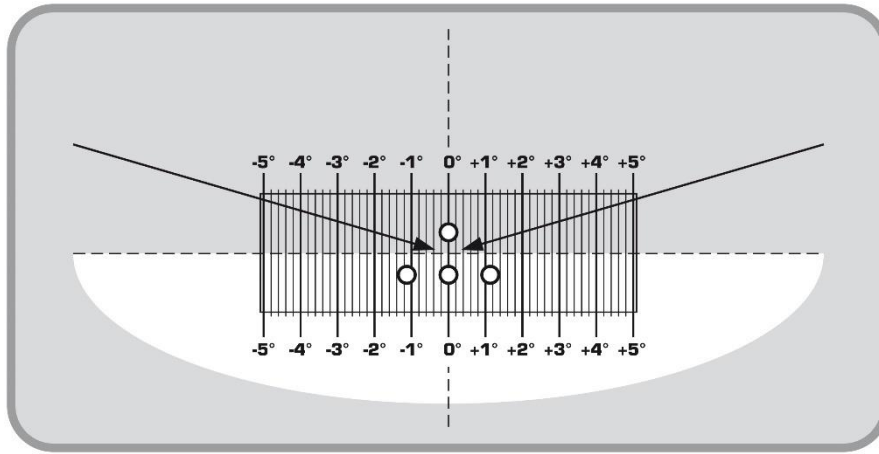


8.6 FOG LIGHTS

Adjust the wheel in the correct position (see paragraph 8.1).

Switch on the fog lights: the light/dark limit must cover the entire width of the screen, if possible, horizontally along the dotted line. If necessary, correct the fog light adjustment using the adjustment system available.

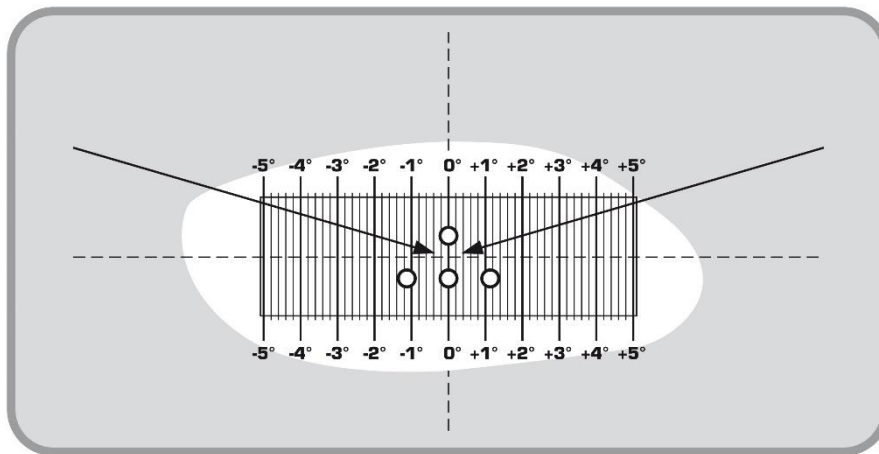
Example of fog light adjustment:



8.7 Special lights for HIGH BEAMS

Switch on the high beam headlights: the centre of the light beam must be on the **HIGH BEAM brightness sensor**; if necessary, correct it using the adjustment system available.

Example of special high beam light adjustment:



NOTE

In the case of separate high beam modules (e.g. in combination with bi-xenon headlights), the high beam headlight must be adjusted according to the instructions of the manufacturer of the vehicle, as there may be different possibilities.

9 Using the Digital Luxmeter

After adjusting the headlights, the digital luxmeter can be used to check whether the maximum permitted high beam value of the low beam headlight has been exceeded and whether the minimum lighting power of the high beam headlight and/or whether the maximum power has been exceeded.

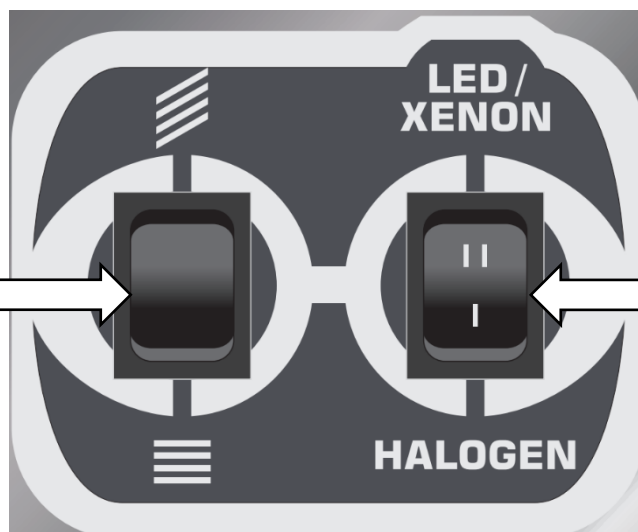
9.1 HALOGEN - LED/XENON headlight test settings (only versions that feature it)

If the device is equipped with the LX accessory for reading the light intensity of LED and XENON headlights, follow the instructions below to correctly set the buttons before proceeding with the reading:

By means of this button, select the type of headlight to be tested:

LOW BEAM

HIGH BEAM



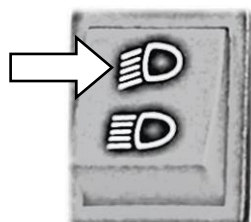
By means of this button select the type of the light:

LED/XENON

HALOGEN

9.2 LOW BEAM headlight test

Press the key with the low beam symbol to measure the light intensity (see below)



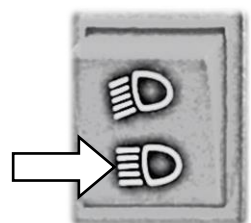
LOW BEAM HEADLIGHT LIMITS

3.7 - 90 Klux/1m



9.3 HIGH BEAM headlight test

Press the key with the high beam symbol to measure the light intensity (see below)



HIGH BEAM HEADLIGHT LIMITS

20 – 150 Klux/1m



NOTE

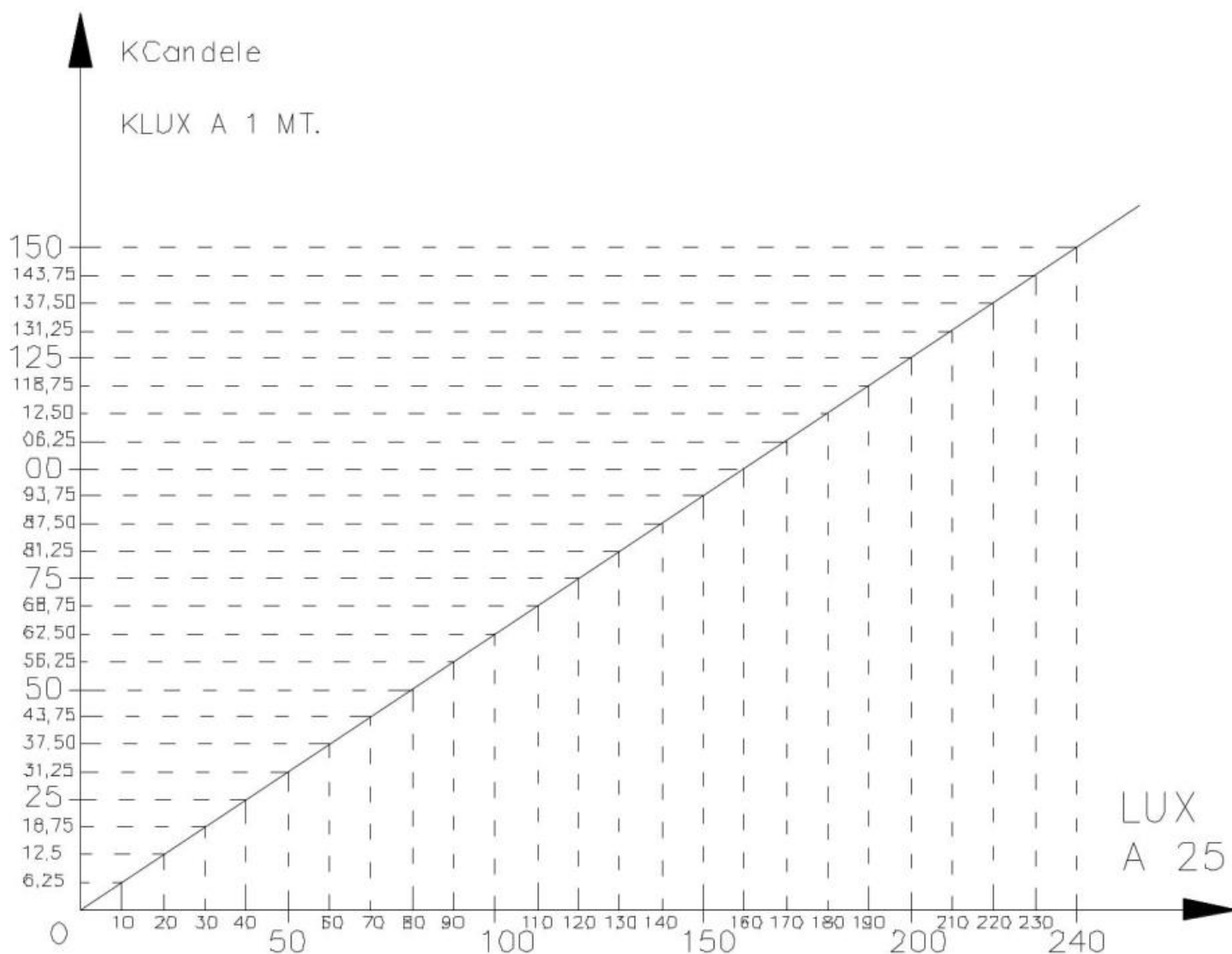
The brightness values for headlights combined with several built-in modules must be evaluated according to the instructions of the manufacturer of the vehicle due to the **different** adjustment possibilities.

Before checking the brightness values, visually check the headlights.

Failure to reach the values indicated able may be caused by the following errors:

ERROR	CAUSE
The battery voltage drops considerably	Low battery, faulty alternator
Considerable difference between battery voltage and bulb voltage	Poor power connections, poor line or insufficient section sizing, poor ground connections, faulty switch contacts, oxidised or rusty connectors on the fuses
The reflectors are steamed up or corroded	Water seepage in the headlight due to leaks caused by deformation of the lens, insufficient ventilation, mechanical damage and ageing
Indefinable light/dark limit	Broken lamp holder, bulb not steady in the holder (it has become loose)
Impossible to adjust the headlight	Faulty headlight adjustment, the reflector has become detached from the adjustment screws (vibrations)
Weak reddish light in xenon headlights	Faulty power supply or gas discharge lamp
Brief ignition upon start-up with xenon headlights	Insufficient feeder power supply, e.g. power line section too small

9.4 Klux/1m – Lux/25m conversion table



10 Checking the device

Top Auto headlight beam setters are supplied already calibrated. If the device is used improperly in the workshop (for example if it is overturned), the calibration may be lost. For this reason, it is recommended, based on the frequency of use, to have the device checked using an appropriate calibrator at regular intervals, for example by contacting your supplier.

10.1 Cleaning

It is good practice to protect the tool from dust when it is not used. A cover for the optical chamber is available on request. Periodically wipe it with a damp cloth to remove any stains. The paint that covers the tool is resistant to detergents. Do not grease the column and do not use alcohol to clean it.



WARNING

Do not leave the device in areas where there may be corrosive vapours, for example in areas where batteries are charged or in painting areas.

11 Additional instructions

11.1 Decommissioning and disposal

According to directive 2012/19/EU, the machine cannot be disposed of as municipal waste, but it must be delivered to a specialised centre for the separate collection and disposal of WEEE (Waste Electrical and Electronic Equipment), or it can be returned to the supplier if a new one is purchased. Those who release WEEE into the environment will be fined. If released into the environment or used improperly, WEEE can release substances dangerous for the environment itself and for human health.

11.2 Battery disposal

The machine uses a 9V battery which is considered special waste and as such must be disposed of according to the regulations in force.

12 Spare parts

12.1 General provisions

When replacing parts, use only **ORIGINAL SPARE PARTS**.

The use of non-original spare parts shall immediately suspend the warranty; in addition to this, the **Manufacturer** shall not be held responsible for any accidents that may occur.

The **Manufacturer** offers its Customers its Technical Assistance Service to solve any issues regarding the use and maintenance of the device.

To order spare parts, use the form attached, which must be completed in all its parts.

Below is a list specifying, for the individual parts, the number corresponding to its position in the exploded views, the code and the description.

Any orders (which must be sent via email) must be addressed to:

Top Auto S.r.l.

Viale del Lavoro, 40 Colognola ai Colli (VR) – Italy

tel. +39 0456170025 - fax. +39 0456152493

info@topauto-equipment.com www.topauto-equipment.com

12.2 SPARE PARTS REQUEST FORM

The following page features the form that must be used to order spare parts.

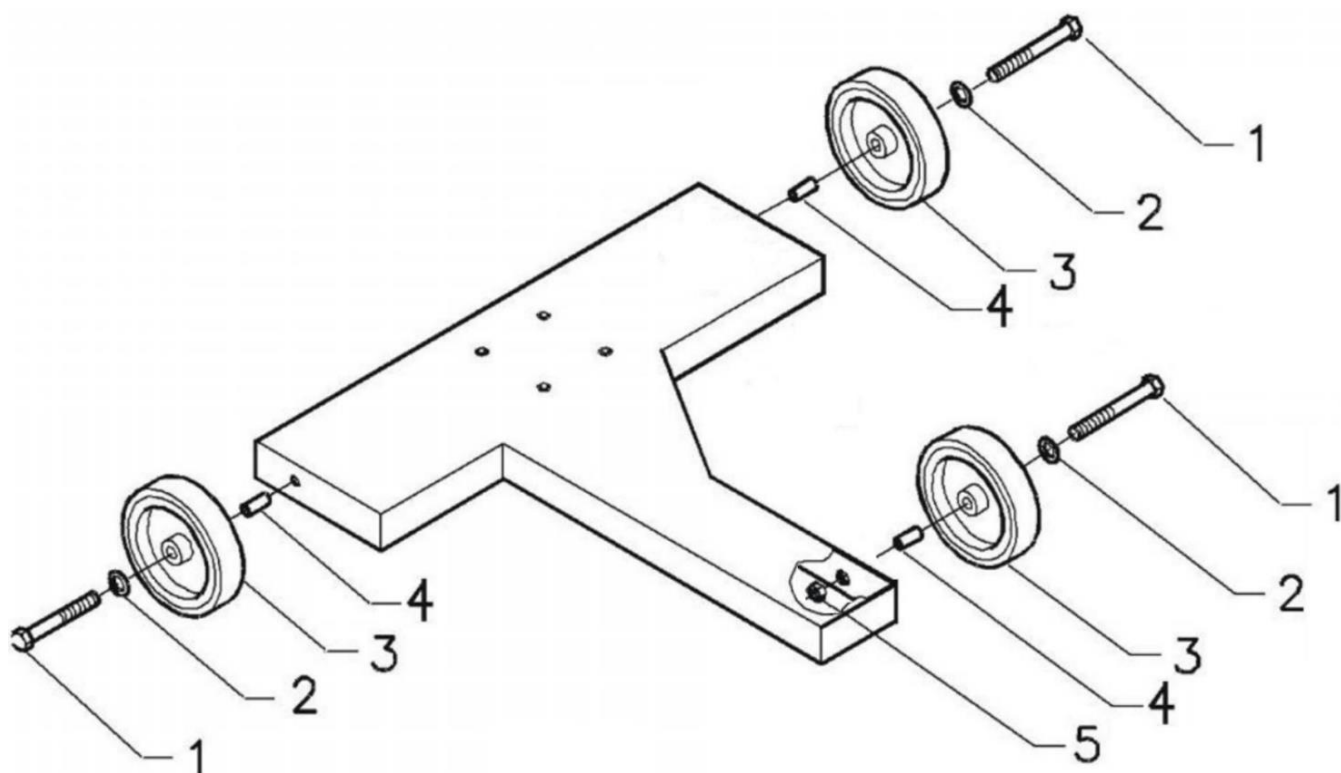
When requesting spare parts or a quote for spare parts, it is advisable to photocopy the form and complete it in all its parts.

Filling it out completely is very important to have a prompt response from the **Manufacturer's Technical Assistance Service**.

	SPARE PARTS REQUEST FORM		
CUSTOMER:			
MODEL:		SERIAL No.:	
YEAR OF MANUFACTURE:			
SHIPPING ADDRESS:			
TELEPHONE:		FAX:	

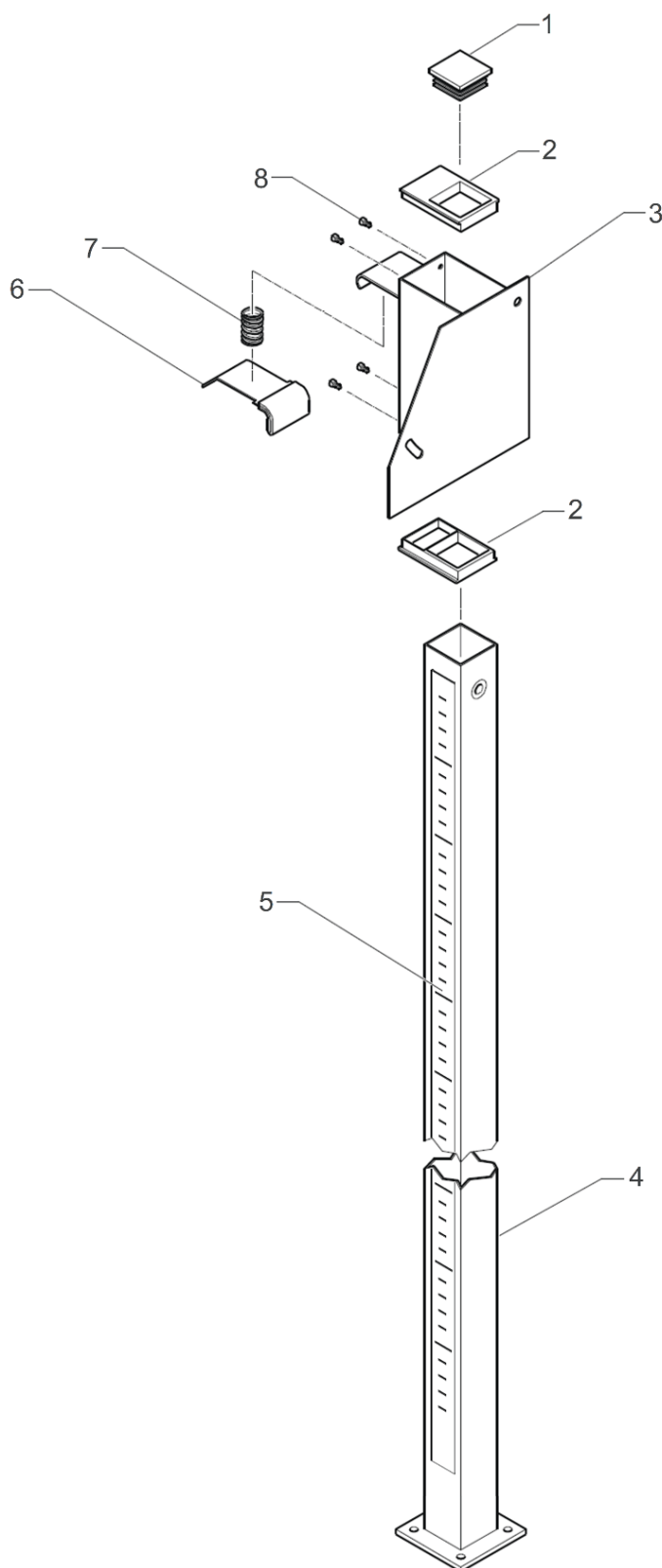
DRAWING No.	POS.	CODE - DESCRIPTION	QUANTITY

12.3 Exploded view of the base (0HBP211HB00)



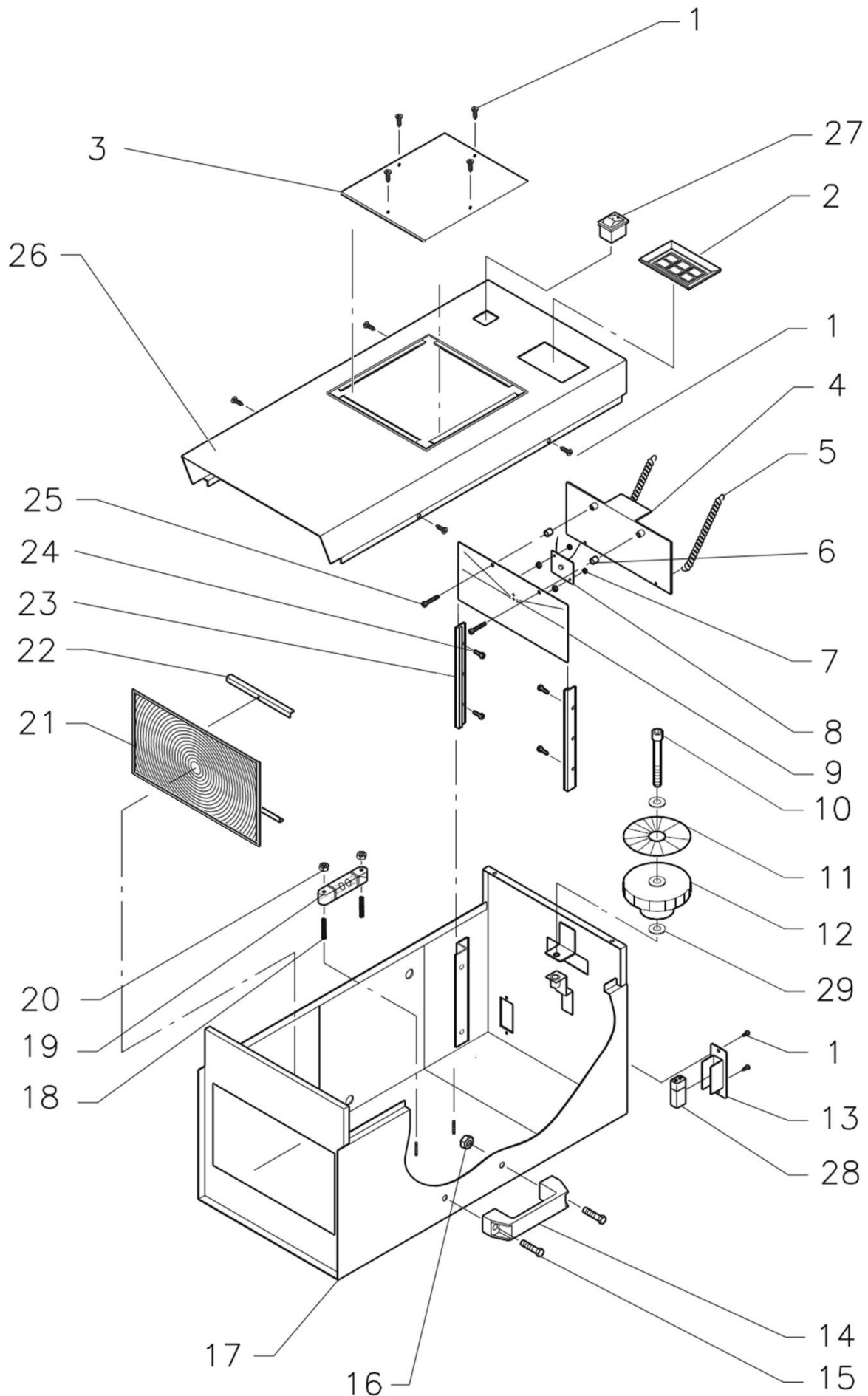
POS.	CODICE	DESCRIZIONE	Q. TA
1	VM8x65	Screw M8x65	3
2	R8x24	Washer 8x24	3
3	ORT0007HB00	Plastic wheel Ø 150 standard	3
4	ORT0008HB00	Wheel bush	3
5	DM8A	Self-locking nut M8	1

12.4 Exploded view of column (0HBC002HB00)



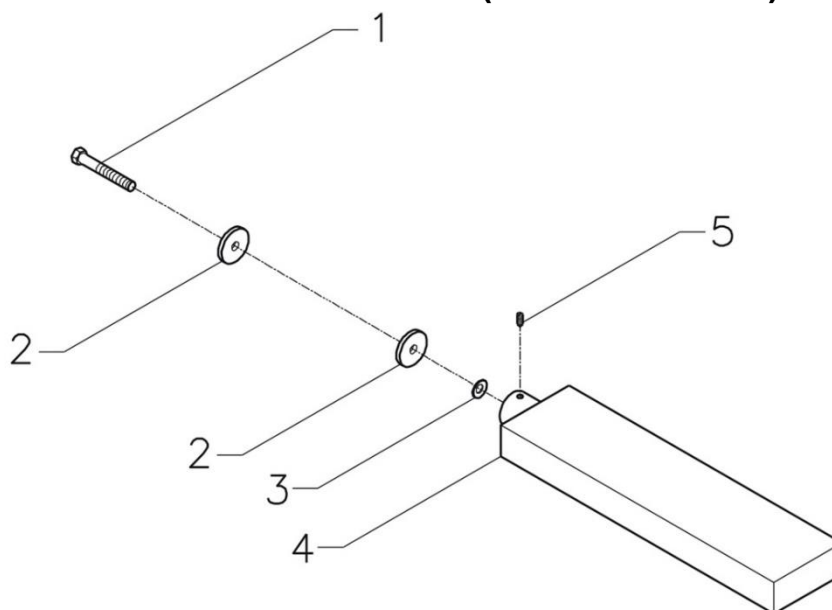
POS.	CODICE	DESCRIZIONE	Q. TA
1	0HB0288HB00	Column upper cap	1
2	0HB0146HB00	Column guide frame	2
3	CHB0243HB00	Painted sliding sheet	1
4	YVHB0109HB00	HL column H1660 painted	1
5	0AD0054HB00	Screen-printed sticker for the column	1
6	0HB0305HB00	Complete brake lever	1
7	0HB0128HB00	Sliding gun spring	1
8	VA5x18	Self-tapping screw 5x18 large head	4

12.5 Exploded view of optical chamber (0HBS023HB00)



POS.	CODICE	DESCRIZIONE	Q. TA
1	VA3.5x10	Self-tapping screw 3.5x10	10
2	EHB0104HB00	Digital Luxmeter	1
3	0HB0101HB00	Standard smoked plexiglass screen	1
4	ZHB0301HB00	Standard panel support	1
5	0HB0130HB00	Panel sliding spring	2
6	DIST4x10	Spacer 4x6x10	4
7	DM3	Nut M3	2
8	EHB0240HB00	Photodiode board	1
9	YSHB0203HB00	Screen-printed panel	1
10	VM10x65	Screw M10X65	1
11	0AD0056HB00	Sticker for panel adjustment wheel	1
12	0HB0141HB00	Panel adjustment wheel	1
13	YVHB0300LHB0	Battery holder	1
14	0HB0138HB00	Optical box handle	1
15	VM8x16	Screw M8x16	2
16	DM8	Nut M8	2
17	YVHB0202HB19	Standard optical box	1
18	0HB0129HB00	Spring for optical box level	2
19	0HB0140HB00	Optical box spirit level	1
20	DM4A	Self-locking nut M4	3
21	0HB0120HB00	Fresnel optical lens	1
22	YVHB2327HB00	Lens locking plate	1
23	0HB0102HB00	Panel sliding guide	2
24	VM4x10	Screw M4x10	4
25	VM4x25	Screw M4x25	2
26	YVHB0206HB00	Standard cover	1
27	EHB0105HB00	Screen-printed button ABB-ANABB	1
28	EHB0229HB00	9V Battery	1
29	R10x20	Washer 10x20	2

12.6 Exploded view of mirror visor (0HBV001HB00)



POS.	CODE	DESCRIPTION	Q. TA
1	0HB0148HB00	Handwheel 10x70 for mirror visor	1
2	R10x30	Washer 10x30	2
3	MT10x20	Cup spring 10x20	1
4	0HB0119HB00	Plastic visor without mirror	1
5	GM6x6	Grub screw M6x6	1
6	0HB0154HB00	Screen-printed glass mirror (not visible)	1