

## 1 - GENERAL REGULATIONS

Read carefully the instructions in this manual, before using the headlight beam tester. Do not allow unqualified persons to use this device, this to prevent damage to the device. The work place should be dry, lighted and ventilated. Working areas should be equipped with an exhausts gas aspirator, since the headlights test must be effected with the engine on. Breathing carbon monoxide can seriously damage the human organism, sometimes with lethal results. Put the handbrake on. Do not use the device to direct sunlight, avoid sudden changes of temperature and vibrations, to avoid mistakes.

## 2 - DESCRIPTION OF THE DEVICE

Headlight beam tester (HBT): equipment for the control of car, motorcycle and heavy goods vehicle headlights.

Supplied with:

Turning column

Mirror-visor

Luxmeter

Also available in the various versions.

### Technical characteristics:

height: 177 cm.

width: 61 cm.

length: 61 cm.

maximum measurement height: 141 cm.

minimum measurement height: 24 cm.

focal length: 350mm – 500mm.

## 3 - PACKING

The HBT is delivered in a recycled carton box.

## 4 - HEADLIGHT BEAM TESTER ASSEMBLY

A- Base 560x350mm

B- Column 1670mm

C- Vertical sliding system (VSS)

D- Mirror-visor 400x90mm

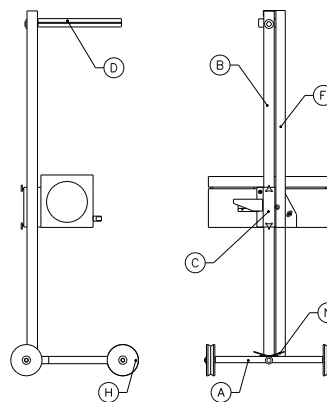
E- Optical system

F- Spring protection

H- Wheels

N- Brake

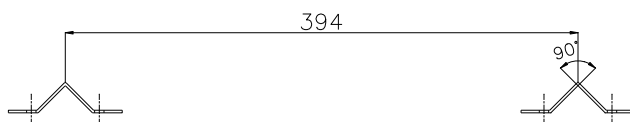
O- Dimension of lens cabinet 590x250x250mm



- 4.1 Fix the mirror-visor D with two screws.
- 4.2 The stand is calibrated and locked in the correct Position at the moment of the test of the device.

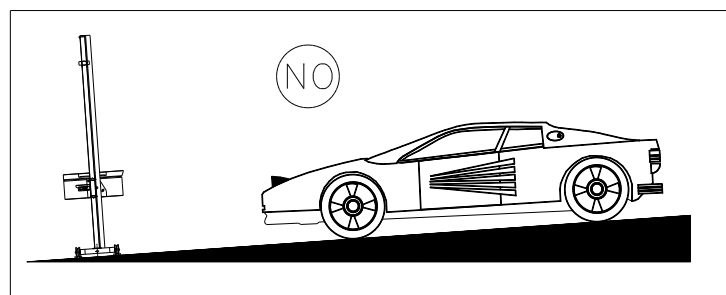
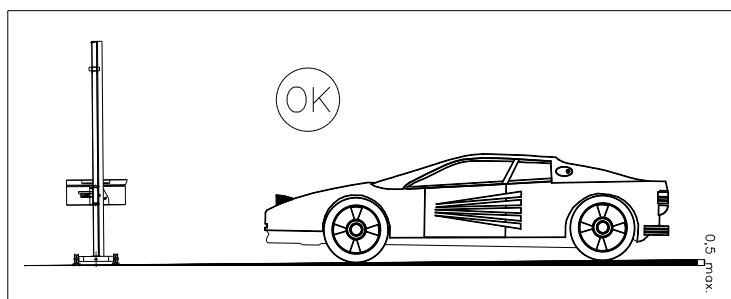
### INSTALLING RAILS

Two sets of rails, each secured to the floor by screws and plastic raw plugs. The rails are positioned at right angles to the test vehicle's line of travel. The two rails must be levelled with each other, shimmed as necessary, and re-checked after tightening down. In the final position the rails must be flat within +/- 2mm.



### 5 – WORKING SURFACE

During the positioning, the floor must be perfectly flat and level. If it is not possible car and HBT must be, at least, on the same slope and it must not exceed 0,5%. It is inadvisable to check headlights on an unlevel surface, or the regulation will not be precise.



### 6 – CAR PREPARATION

Straighten the car wheels up. Check the tyre pressure. Ascertain the headlights are clean and dry. Set, if there are inside the passenger compartment, all “position correcting” devices in the position corresponding to the “vehicle with normal load (0)”. Eliminate anything could alter the position of the vehicle: ice, snow, mod, ... Switch the engine on. Proceed to the checking with engine on. In case of vehicles with automatic damper switch the engine on 5 minutes before the test and proceed with the engine on.

### 7 – OPTICAL POSITIONING

Put the HBT in the front of one of the car lights, about 20-50 cm. from the car, both standard and gas discharge. Look through the visor and look for a horizontal part of the car, or two symmetrical points on the car, for example the top part of the windshield or the bonnet.

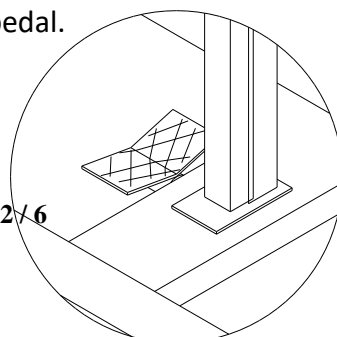
Make sure that the visor lines match with these lines, so that all the device is parallel to the car.

Otherwise slightly turn the HBT, until the lines match.

Measure the height from the floor to the center of the light and put the optical box at the correspondent height, using the scale situated on the carter.

You must use as a point of reference, the top of part VSS.( E.g.: if the height from the floor is 80 cm., put the VSS at the 80 cm. mark as in the picture).There is an allowance of 3 cm. more or less.

The HBT is equipped with a rotating column and brake that allow the device to be easily rotated and locked in the desired position. The brake is operated by pressing the pedal.



## 8 – EUROPEAN TYPE HEADLAMP CHARACTERISTICS (NOTE:1)

- 8.1 An asymmetric dipped beam, pattern with a distinctive horizontal cut-off on the right, and a 15° wedge of light above the horizontal (the “Kick up”) towards the left.
- 8.2 A lens with one or more asymmetric stepped patterns molded in the glass.
- 8.3 A lens may carry:
- European approval mark – a circle containing an “E” and a number, or
  - Rectangle containing an “e”, and a number

The European approval mark should incorporate a single or double-headed arrow.

The dipped beam is denoted by either:

- Capital letter “C” above a capital “E”
- Capital letter “C” above an “e”

NOTE: Setting “E” Beam Headlamp aim

These dip-beam headlamps should be set to aim downwards the amount shown on a marking which is either close to the vehicle manufacturer’s plate or the headlamp.

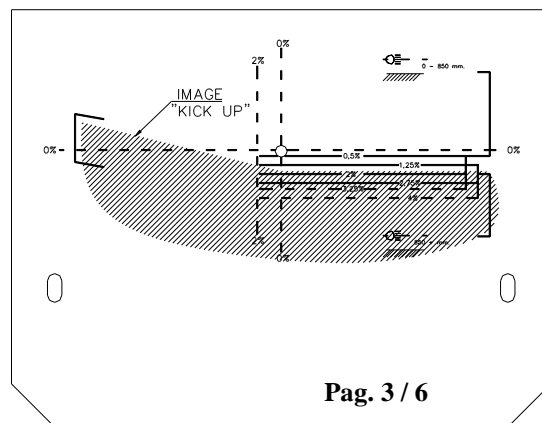
For vehicles without a marking, the downward aim should be set as follows:

- **1,3%**, if the headlamp center is not more than 850 mm. from the ground
- **2.0%**, if the headlamp center is is more than 850 mm. from the ground

### Reason for rejection

- 1 The beam image “Kick-up” is to the offside.
- 2 For headlamps with centers not more than 850 mm. from the ground, the beam image horizontal cut-off is not between the horizontal 0,5% and 2% lines, i.e. the red tolerance band.
- 3 For headlamps with centers more than 850 mm. from the ground, the beam image horizontal cut-off is not between the horizontal 1,25% and 2,75% lines, i.e. the blue tolerance band.
- 4 The beam image “break point” is:
  - To the right of the 0% vertical line or
  - To the left of the vertical 2% line

(NOTE:1) The above information is based on the criteria published in the MOT Inspection Manual which is an HMSO publication and is available from most bookshops. Always refer to the current edition for any amendments or changes to current legislation.



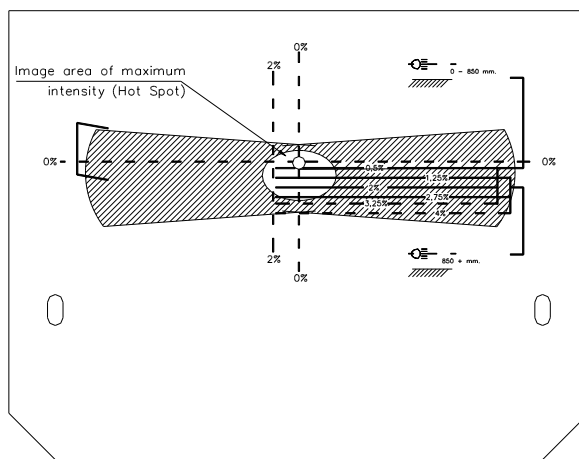
## 9 – BRITISH AMERICAN TYPE, (CHECKED ON MAIN BEAM)- CHARACTERISTICS: (NOTE:1)

- 9.1 Headlamps tested on main beam have a symmetrical main beam pattern with a central area of maximum intensity (hot spot).
- 9.2 This type of lamp generally has a circular lens

### Reason for rejection

- 1 The “hot spot” center is above the horizontal 0% line.
- 2 The “hot spot” center is to the right of the vertical 0% line, or to the left of the vertical 2% line.
- 3 For headlamps whose center is not more than 850 mm. from the ground, the “hot spot” center is below the horizontal 2% line.
- 4 For headlamps whose center is more than 850 mm. from the ground, the “hot spot” center is below the horizontal 2,75 line.

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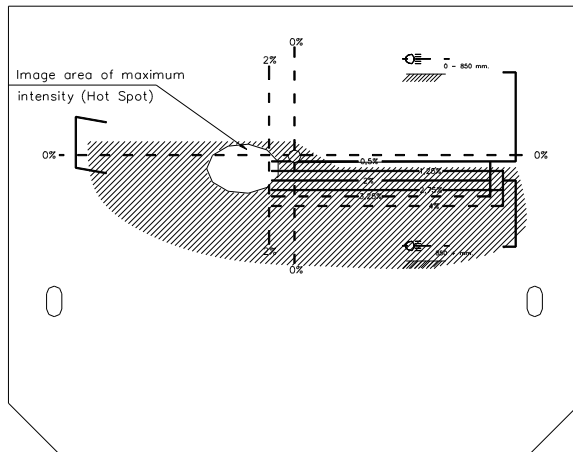
## 10 – BRITISH AMERICAN TYPE (CHECKED ON DIPPED BEAM)- CHARACTERISTICS: (NOTE:1)

- 10.1 Asymmetric dipped beam pattern with an area of high intensity intended to be directed along the nearside of the road.
- 10.2 Circular lens.

### Reason for rejection

- 1 The upper edge of the “hot spot” is above the horizontal 0% line.
- 2 The upper edge of the “hot spot” is below the horizontal 2,75%line.
- 3 The right hand edge of the “hot spot” is: to the right of the vertical 0% line or to the left of the vertical 2% line.

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## 12 – CALIBRATION

See page 6

We suggest the unit is periodically checked for calibration in situ. If the unit is covered by a service agreement with the MOT package installer, they will carry this out on your behalf. Should you wish to regularly check the calibration yourself, we recommend you purchase an Alignment Device from your local dealer. Full instructions are provided with the re-calibration tool.

## 13 – OTHER REGULATIONS AND CALIBRATIONS

The machine is equipped with a spirit level located on the base of the optical box and visible through the transparent panel, with headlights on. If necessary, to level the box open the clutch lever located on the side of the box itself and move the box until perfectly level, then re-close the clutch lever. This operation may prove necessary whenever the equipment is mounted on a different work surface.

Correct use of the machine permits long periods of use without significant maintenance.

Eventual calibration of the panel and luxometer must be carried out on our premises, sending just the optical box that can be easily dismantled by removing the screws . . .

## 14 – CLEANING

It is good practice to protect the instrument from dust when not in use. A plastic cover for the optical box is available on request.

Occasionally clean with a damp cloth and remove any stains. Paintwork is detergent resistant. Do not oil the column, or use alcohol for stain removal.

Do not leave the machine in areas where corrosive vapor is present, for example in battery charging or painting areas.

## 15 – DEMOLITION AND DISPOSAL

The machine is composed of:

- Glass (lens)
- Plastic (wheels, Plexiglas cover, handles and other small details)
- Copper (wiring and luxometer coils)

- Steel (structure and mechanics) up to 80%
- Paper and cardboard (instruction manual, packaging)

The machine is constructed principally of steel. For disposal of this material, local authority regulations must be observed.

Calibration is carried by a Laser

1. Position the laser level 600 – 800mm from the aligner, centralize and align the tester on the beam.
2. When centralized, check the aligner is level by the gauge within the cabinet.
3. With the calibrator level and the headlamp aligner level the laser beam spot should be on the 0% line on the aligner screen.
4. To adjust the aligner to gain level body release screws on support bracket and adjust until gauge is level
5. To adjust screen release screen securing screws and adjust to 0% line.
6. When adjustments are made complete operations 1, 2 and 3.