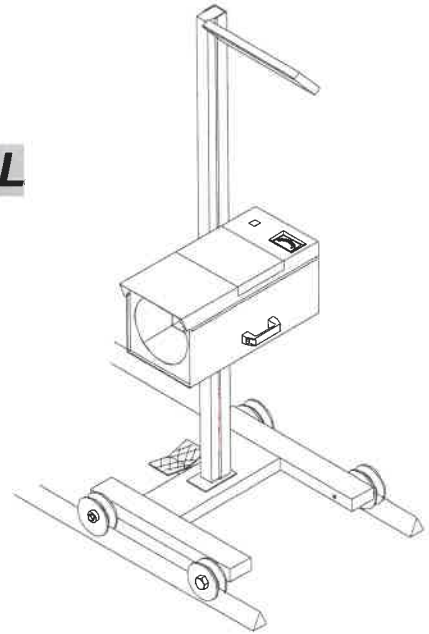


# ART. 2400 UK R I INSTRUCTION MANUAL



Ed.01/02

## 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 affected 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 mistake.

## 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

Colour 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: 500 mm.

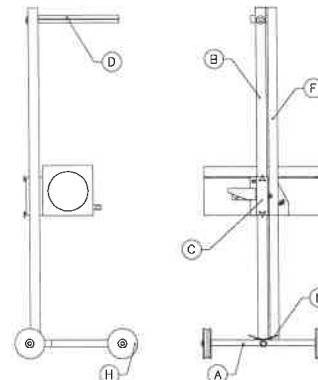
### 3 - PACKING

The HBT is delivered in a recycled carton box.

### 4 - HEADLIGHT BEAM TESTER ASSEMBLY

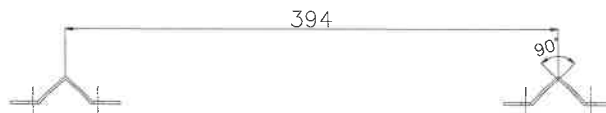
- A- Base
- B- Column
- C- Vertical sliding system (VSS)
- D- Mirror-visor
- E- Optical system
- F- Spring protection
- H- Wheels
- N- Brake

- 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.



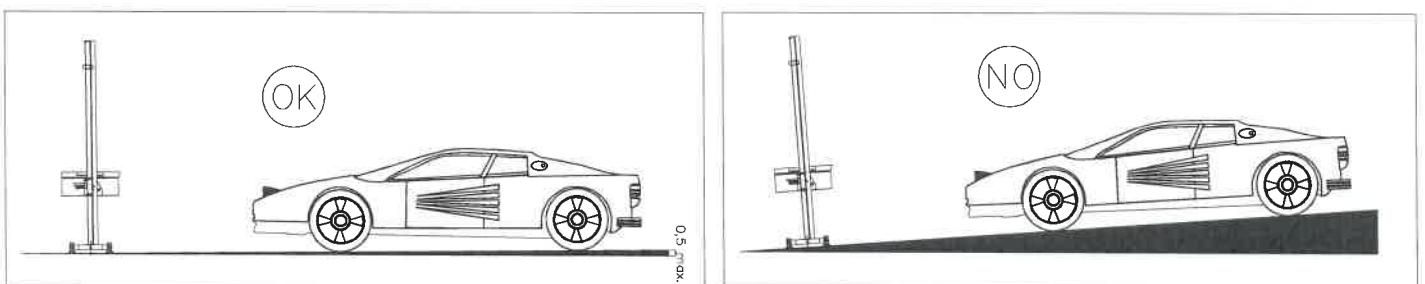
### INSTALLING RAILS

Two sets of rails, each secured to the floor by screws and plastic rawl-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 tyres pressure. The headlights must be 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, mud, ... 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.

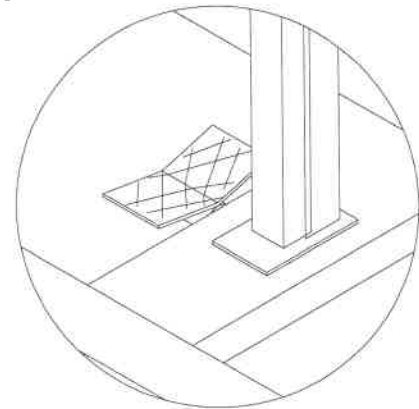
Look through the visor and look for a horizontal part of the car, or two symmetrical points on the car, for example the top part of the windshield or the bonnet.

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 a 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-degree wedge of light above the horizontal (the “Kick up”) towards the left.
- 8.2 A lens with one or more asymmetric stepped patterns moulded 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.

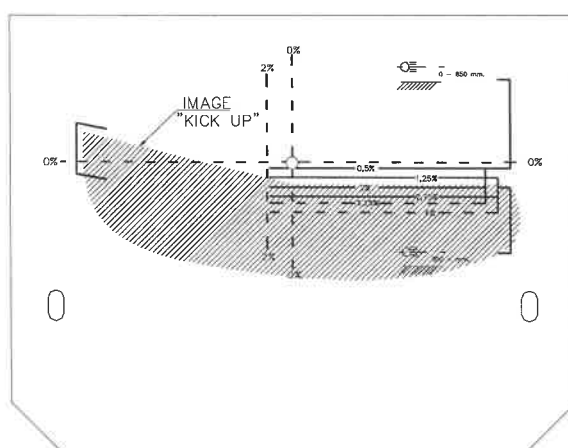
For vehicles without a marking, the downward aim should be set as follows:

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



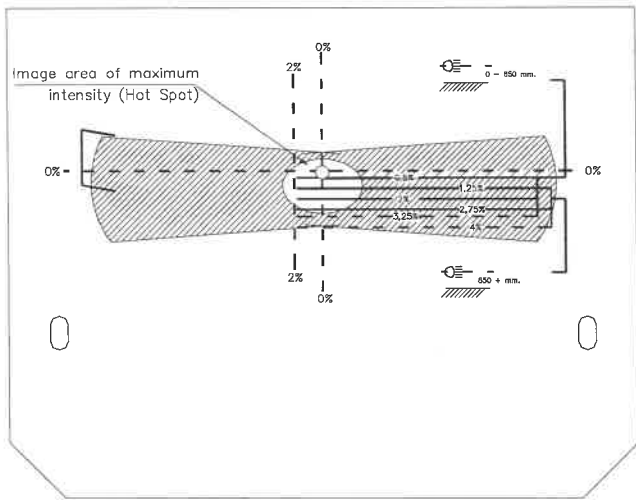
## 9 – BRITISH AMERICAN TYPE, (CHECKED ON MAIN BEAM)- CHARACTERISTICS: (NOTE:1)

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

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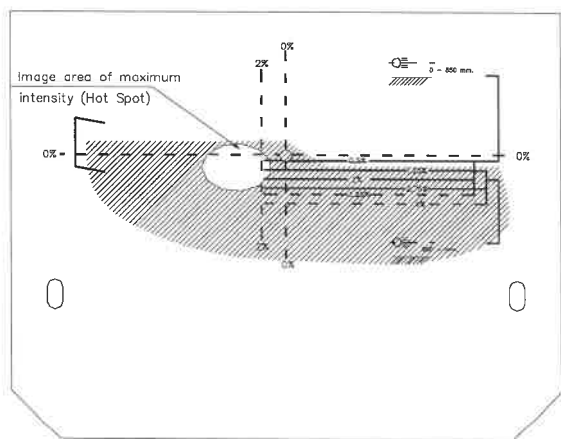
**10 – BRITISH AMERICAN TYPE (CHECKED ON DIPPED BEAM)- CHARACTERISTICS: (NOTE:1)**

- 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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## 11 – CALIBRATION

We suggest the unit is periodically checked for calibration in site. 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.

## 12 – ITEM 2400 UKRi

1 - Push “**START**”, to switch on Luxmeter;

2-with Headlights on dipped beam offer up to the offside;

3-the display will read **CHECK BEAM DX**,

4- Check the line dividing light and shadow, if necessary adjust the headlight for maximum intensity. Press the key marked **ENTER** (this will confirm the correct position of the O/S dipped beam on the system).

5-the display will read for example:

**LOW DX LUX= 0016.3**

The value can be in Lux at 25 m or Klux at 1 m or at Kcand at 1 m. (this value is factory set and cannot be modified).

6-Switch on the Main Beam

7- Press **ENTER** to confirm

8- The display will read (for example):

**HIGH DX LUX = 0057.2**

9- Press **ENTER**, the display will read **CHECK BEAM SX. SX=NEARSIDE**

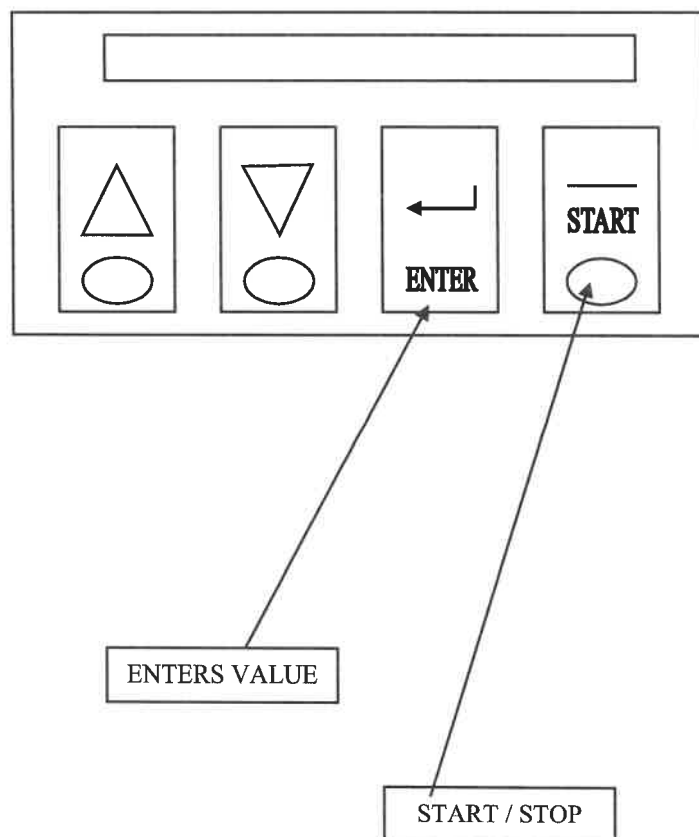
10- Re-position the 2400UKRi to test the Nearside headlight

11 – Check the line dividing light and shadow, if necessary adjust the headlight for maximum intensity. Press the key marked **ENTER** (this will confirm the correct position of the N/S dipped beam on the system)

12 – The display will read for example: **LOW SX LUX= 0016.3**. The value can be in Lux at 25m or Klux at 1m or at Kcand at 1m (This value is factory set and cannot be modified).

13- Switch to Main Beam

14- Press **ENTER** to confirm



**15-** The display will read (for example): **HIGH SX LUX= 0057.2** (this will confirm the correct position of the N/S main beam on the system).

**16** – Press **ENTER** to confirm

**17-** to switch the Luxmeter off press and hold the **START** key until the screen displays **OFF**.

**NOTE: ON ALL MODERN VEHICLES THE LUX VALUE WILL BE ETCHED INTO THE TOP OF THE HEADLIGHT HOUSING**

## **EUROPEAN TYPE HEADLAMP – CHARACTERISTICS (NOTE: 1 and 2)**

**1** – An asymmetric dipped beam pattern with a distinctive horizontal cut-off on the right, and a 15 degree wedge of light above the horizontal (the kick up) towards the left

**2** – a Lens with one or more asymmetric stepped patterns mould in the glass

**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 centre is not more than 850 mm from the ground
- 2.0% if the headlamp centre 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 centres 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 centres 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 HSMO publication and is available from the most bookshops. Always refer to the current edition for any amendments or changes to current legislation.

(NOTE 2) = The specification of the aiming screen is being raised. The 3.25% and 4% will only be required in designated HGV Test Stations.

### **3 – 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 luxmeter 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 vapour is present, for example in battery charging or painting areas.

### **15 – DEMOLITION AND RECYCLING**

The machine is composed of:

- Glass (lens)
- Plastic (wheels, plexiglass 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.