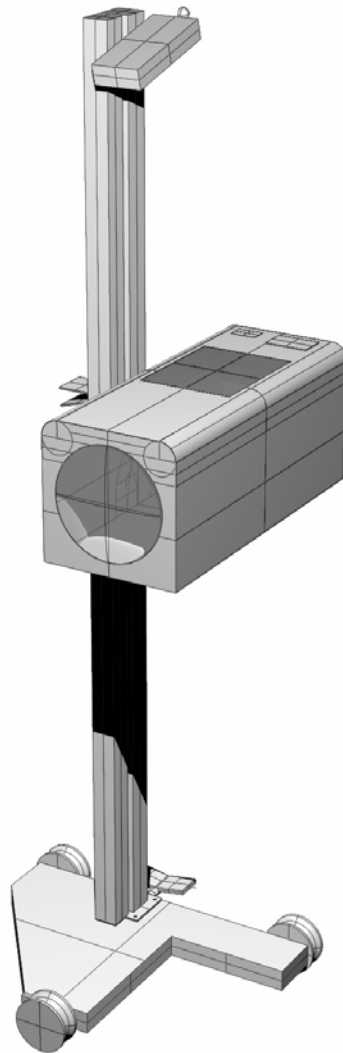


B501 Headlamp Beamsetter



User Manual

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1.0 - GENERAL REGULATIONS FOR OPERATOR SAFETY

- Carefully read the installation, operating and maintenance instructions in the 'Operator's Manual'.
- Do not allow unqualified persons to use this equipment.
- The work place must be dry, sufficiently lit and well ventilated.
- In particular, car diagnostic operations that require the engine to be running must be done in areas equipped with a fume extraction system.
- Do not forget that breathing carbon monoxide (odourless) can cause serious damage.
- Always ensure the handbrake is applied when working on vehicles.

2.0 - CORRECT OPERATION

(Follow these instructions to use your Headlamp Beamsetter correctly)

The instrument should be used in a place possessing the following characteristics:

- It is sheltered from direct sunlight
- There are no sudden changes in temperature or humidity
- It is not subjected to vibrations
- It will not be splashed by water or other liquids

When using the Headlamp Beamsetter:

- Check that the surfaces on which the instrument and vehicle stand are **level.**
- Do not rest any objects on the optical chamber.

ATTENTION:

Only use water based substances when cleaning the control panel, the lens and the other parts of the instrument.

Always cover the optical chamber when the Headlamp Beamsetter is not in use.

Never subject the optical chamber to impact. If this occurs, consult your service agent for functional checks as to whether the symmetries of the instrument are still accurate.



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3.0 - PRODUCT DESCRIPTION

Headlight Beamsetter:

- equipment for the alignment of motorcycle, car and heavy goods vehicle headlights;
- with turning column;
- with brake pedal;
- with laser;
- on rails

Technical Characteristics:

Height:	1770 mm
Width:	610 mm
Length:	650 mm
Weight:	37 kg
Packing:	1740 mm x 640 mm x 330 mm
Packing Weight:	4.5 kg
Minimum Height Measurement:	220 mm
Maximum Height Measurement:	1550 mm
Lens Focal Length:	489 mm

4.0 - ASSEMBLY

Attention:

Where the headlamp tester is to be used for MoT vehicle testing, it must be sited and installed in accordance with the Vehicle Inspectorate's requirements.

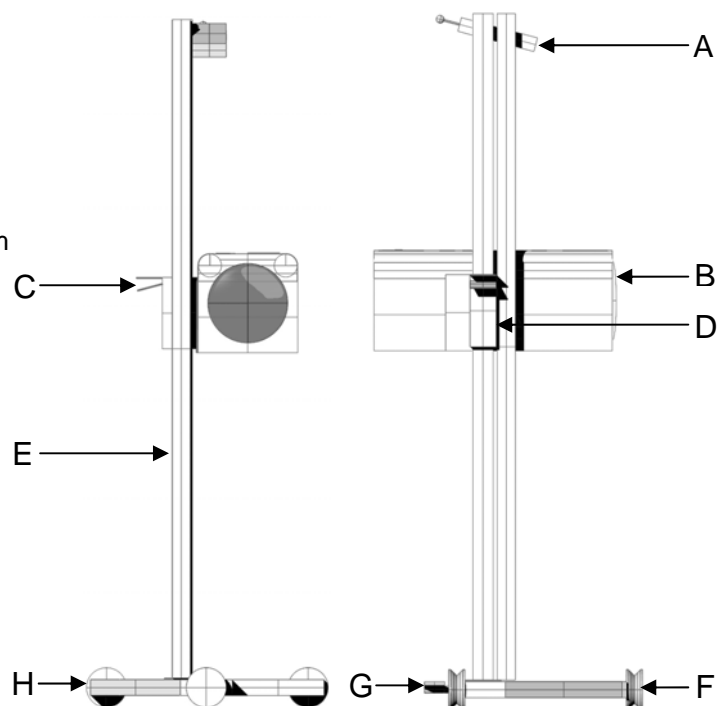
Strictly comply with assembly instructions.

The two rails supplied are 3000mm long and should be positioned at right angles to the vehicles line of travel, with 440mm between their centres. The rails must be level with each other, and if used for MoT testing the levels must meet the accuracy required by the Vehicle Inspectorate. Shim the rails as necessary and re-check the levels after fixing down. Place the base on the rails and check for smooth operation.

- Place the column (E) onto the base (H)
- Insert the Laser Alignment System (A) in the hole at the top of the column (E).
- Fix the side of the optical box (B) on the vertical sliding system (D).

Fig 4a
Boston B501 Assembly Diagram

- Key:**
- A Laser Alignment System
 - B Optical Box
 - C Clutch-Lever
 - D Vertical Sliding Mechanism
 - E Rotating Column
 - F Wheel
 - G Brake Pedal
 - H Base



5.0 - WORKING SURFACE

The vehicle standing area must be certified to be flat and level to within $\pm 6\text{mm}$. The floor area must be durable and clearly marked with a datum line(s) at the recommended Beamsetter to headlamp lens distance.

Note: It is not possible to accurately check headlights on an uneven surface.

6.0 - VEHICLE PREPARATION

- The wheels of the vehicle must be perpendicular to the Beamsetter rails.
- The pressure of each tyre should be checked and corrected, if necessary, to the vehicle manufacturer's specification.
- The headlamps of the vehicle must be clean and dry.
- If possible, set the headlight position to "vehicle with normal load (0)".
- The headlamp alignment should be carried out whilst the engine is running.

7.0 - CALIBRATION

The purpose of calibration is to ensure that the angle of the optical unit is parallel and perpendicular with the designated vehicle standing area. To calibrate the device:

1. Ensure the device is aimed parallel to the testing area.
2. Lower the head unit of the Beamsetter by compressing the Clutch-Lever (Item C, Fig 4a).
3. When looking down the bay towards the Beamsetter, offset the unit to the right of the centre of the vehicle standing area, or the right of the centre of the lift platform, so that the left hand side of the Beamsetter unit is aligned with the chosen centre-line.
4. Place a laser level in the centre of the vehicle standing area, or on a suitable surface that the vehicle would be placed on during testing, such as a lift platform.
5. Aim the laser at the 45° recess in the left hand side of the front lens plate.
6. Roll the Beamsetter along the rails to the left, when looking down the bay, so that the centre of the lens passes through the static laser point. If the laser passes through the lens centrally, the laser will locate the intersection of the horizontal and vertical dashed lines in the centre of the rear display panel (seen in Fig 9a)
7. Roll the Beamsetter left once more, to align the 45° recess in the right hand side of the front lens plate.

If the laser passed through these reference points successfully without adjustment, then it is level in the X-axis (Fig 7a)

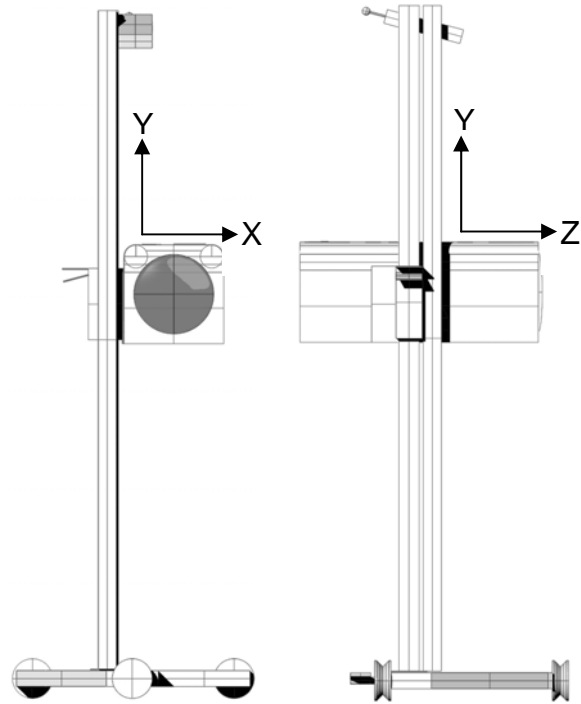
The degree of lateral rotation misalignment that has been tested above should be limited by mechanical fixings but these can incur tolerances over time. Adjustments, to bring the equipment level along the X-axis, can be made by means of adding spacers or thin 'shims' where the optical head attaches to the sliding mechanism.

The Boston B501 Beamsetter incorporates a water level, visible from the window on the upper surface of the optical unit. This level enables the optical unit to be aligned parallel to the level vehicle standing area along the depth of the equipment, Z-axis (Fig 7a). The alignment along the Z-axis can be varied by using the sliding bolt in the side of the optical unit.



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Fig 7a
Boston B501 Axis Assignment



8.0 - OPERATION

When using the beamsetter for MoT statutory testing this procedure must be performed in accordance with the instructions specified in the MoT Tester's Manual.

- Park the vehicle to be tested with its longitudinal centre line at 90 degrees to the beam setter tracks and the vehicles front wheels in the straight ahead position.
- The distance from the headlamp lens to the beamsetter lens must be such that a distinct image is obtained on the white aiming screen.
- Adjust the vehicle position as necessary.
- Align the beam setter longitudinally with the vehicle using laser alignment system on top of the optical unit in conjunction with a natural feature of the vehicle (i.e. wing/bonnet line, side of vehicle etc...).
- The column should be rotated left or right to align with the vehicle
- Tighten the pedal (Item G, Fig 4a / Fig 8a) when the unit is aligned.
- Using the sliding handle, lower or raise the optical unit until it is aligned with the centre of the headlamp in the horizontal plane.
- Now align the optical unit in the vertical plane with the centre of the headlamp by moving the beamsetter left or right on the rails. Decide whether the headlamp should be tested on main or dipped beam.
- Switch on the headlamps and determine whether the pattern projected on to the aiming screen (see Fig 9a) conforms to the VI requirements detailed below.

European E beam (checked on dip)

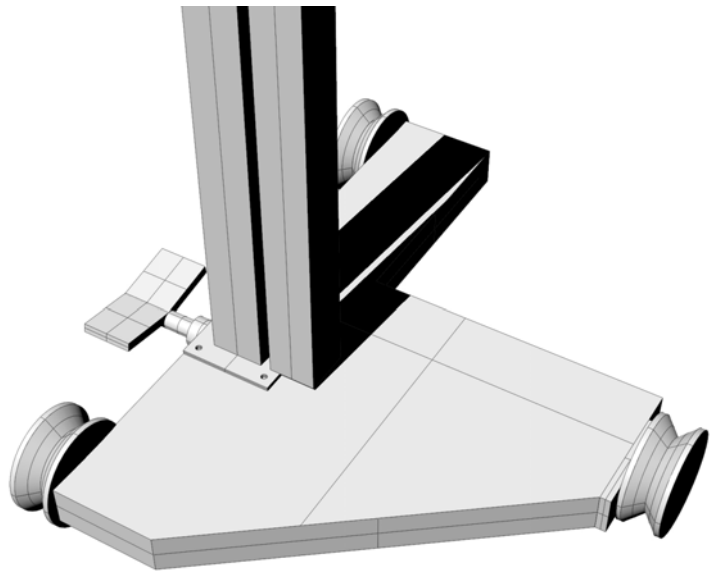
1. The **break point** must not be to the right of the aiming screen vertical 0% line.
2. The beam image horizontal top edge must be below the aiming screen horizontal 0.5% line. (As seen in Fig 9b)

Make any adjustments necessary until out of tolerance headlamps conform to the VI requirements.



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Fig 8a
Boston B501 Base Unit showing
locking pedal



9.0 - TESTING LIMITS

Fig 9a - European E Beam Testing Limits

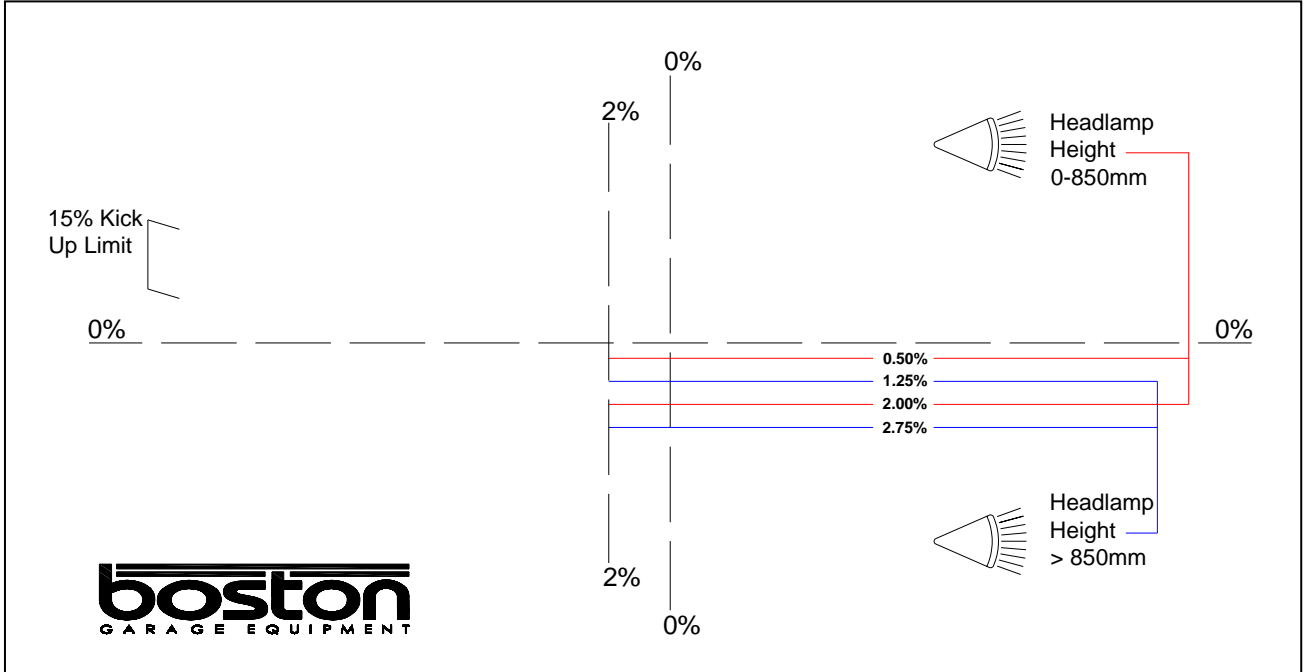
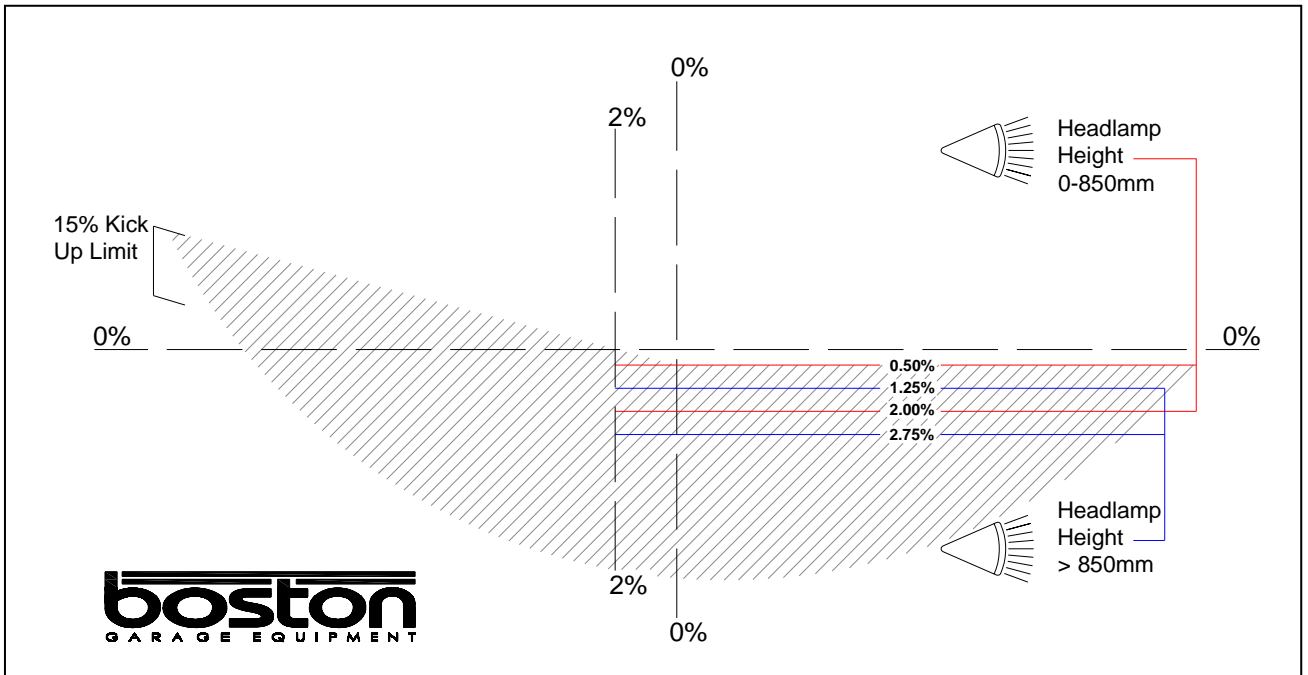


Fig 9b - Typical Projected Beam



10.0 - MAINTENANCE

Very little maintenance is required. The unit should be kept clean and covered when not in use.

The vertical guide should be smeared lightly with SAE 30 oil at regular intervals or when any stiffness develops.

11.0 - DISPOSAL

This machine is composed of:

- Glass (lens)
- Plastic (Wheels, Plexiglas cover and Handles)
- Copper (Wiring)
- Steel (Structure and Mechanisms) ~ 85%
- Paper and cardboard (Instruction Manual and Packing)

Note: As the machine is mainly composed of steel, local authority regulations must be observed when disposing.



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