

HEADLIGHT BEAM TESTER

PH 22010 series

Installation Operation Maintenance



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Changes to this manual are as shown below. Revised or additional issues of this manual are available from WT Engineering s.r.l., Via U.Foscolo 96/F 24024 Gandino (BG) ITALY Minor changes are indicated by the use of a broad line adjacent to the affected text.

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HEALTH AND SAFETY

In order to comply with your responsibilities under the Health and Safety at Work Act 1974, it is essential that this vehicle headlamp tester and any optional accessories are sited, installed, operated, and maintained by *competent persons in accordance with the instructions in this manual.



A competent person should be a minimum of 18 years of age and have a minimum qualification of NVQ 3 (or an equivalent qualification) and / or experience within their own field of responsibility, e.g. Installation engineering, automobile engineering etc.



It is important that all persons installing, operating, maintaining or calibrating this headlamp tester and optional accessories must be familiar with the layout of the equipment, safety precautions, using appropriate training methods and supervision as may be required, prior to installing, using, maintaining or calibrating this headlamp tester.

WARNINGS, CAUTIONS AND NOTES

'WARNING' is used in the text of this manual to identify specific hazards which can cause injury or death.

'CAUTION' is used in the text of this manual to identify incorrect procedures which can cause damage to the lift.

'NOTE' is used in the text of this manual to draw attention to specific points of importance.



WARNING OR CAUTIONS



READ FOR FURTHER INFORMATION



WARNING: CLASS 2 LASER FOLLOW ALL SAEFTY PRECAUTIONS





CALIBRATION – SAFETY PRECAUTIONS

WARNING: THE FOLLOWING SAFETY PRECAUTIONS MUST BE READ AND FULLY UNDERSTOOD PRIOR TO USING THE CALIBRATION LASER.

LASER RADIATION DO NOT STARE INTO BEAM CLASS 2 LASER

The PH 22010UK uses a low emission Class 2 laser to check and verify that a horizontal beam of light located at the headlight lens position, striking the centre of the lens of the optical box, bisects

the horizontal 0 -0 line on the aiming screen. The use of this laser does not present a hazard, to either the operator or any other person when used by a competent person as shown below: (NOTE 1)It is recommended by the Health and Safety Executive that a nominated person (Laser Safety Officer') is responsible for the correct use of the laser.

Only an authorized competent person should operate the laser (NOTE 1)

Use only the laser supplied with the headlamp tester to check/verify level specification of the vehicle standing area.

Do not try to dismantle or repair the laser, as it contains no user serviceable parts other than battery replacement. (See Maintenance)

WARNING: If the laser is damaged or defective, it must be replaced (NOTE 2)

Fit the mask on the front of the optical box before operating the laser. This mask ensures that the laser beam reflections from the outer surface of the lens are reduced to a minimum.

WARNING: Do not aim the laser beam at the lens without the mask in position (NOTE 3)

Take care not to accidentally switch on the laser when fitting or removing it from the stand.

Do not operate the laser above the working height of the laser calibration stand.

Do not aim the laser beam at another person.

When aiming the laser beam, ensure it is not directed into the eyes or causes a distraction to a person driving a car or operating machinery. **NOTE:** Do not aim it through a window or an open door, as the beam can travel a significant distance.

Ensure that area behind the headlight tester, is free from personnel and any reflective objects.

Stand with your back to the laser and ensure that your head is higher than the beam.

NOTE 1: Because of the low emission of this laser, precautions are only needed to prevent <u>continuous</u> viewing. A momentary exposure (0.25s) is not considered a hazard because the eye will automatically be protected by an aversion response and blink and or close accordingly. <u>However, damage to the eye can occur if a person stares at the laser beam.</u> It is important to ensure that the above safety precautions are observed at all times. Personal protective equipment does not need to be used. These safety precautions are prepared in accordance with BS EN 60825 Safety of laser products, Health and Safety Executive publication HSG95 and guidance from the Health and Safety Executive.

NOTE 2:WARNING: If the laser is dismantled than extreme danger can occur, because the precise layout of internal critical components will alter and the design safeguards will be inoperative.

NOTE 3: Do not aim the laser beam on the lens without the mask in position. The surface of the lens acts as a mirror so reflecting the beam in an uncontrolled manner.

DESCRIPTION

The PH 22010 is designed to VOSA 2005 specification to facilitate the rapid accurate testing and adjustment of car and commercial vehicle headlamps in accordance with VOSA MOT test requirements.

The optical box is mounted on a single vertical column and it is easily adjusted for height and it will remain in the position selected. The column is rigidly connected to a four wheeled trolley which moves on two rails fastened to the floor. The wheels of the trolley are machined in a wide 'V' section, to run on a similar section rail. The 'V' section reduces the likelihood of the trolley assembly rocking and therefore increases the stability and the accuracy of measurement.

The optical box consists of a condensing lens and aiming screen which can be viewed through the observation panel in the top of the unit. A light cell fitted to ensure that the 'hot spot' can be accurately determined. Provision is made for the instrument to traverse each side of center, to permit alignment with the longitudinal axis of the vehicle.

To calibrate the PH 22010UK in accordance with the requirements of VOSA requirements, it is necessary to use Calibration kit WTLASER. This consists of a Class 2 laser device mounted on a stand. The calibration of the PH 22010UK should only be completed by an authorized competent person. Headlight beam tester (HBT): equipment for the inspection of car, motorcycle and heavy goods vehicle headlight aim. Supplied with: Lockable Turning column Mirror-visor (Laser alignment option) LCD Digital Luxmeter Also available in other options.

Technical characteristics:

Height: 177 cm. Width: 61 cm. Length: 61 cm. Rail length 161 cm (Class I & II) 311 cm (Class III & IV) 411 cm (Class L5 & VII) 461 cm (Class V,VI & HGV) Minimum measurement height: 24 cm. Maximum measurement height: 150 cm. Light intensity: 0-240 lux/25m Test range: 0-40cm/10m Focal length: 500 mm.

PH 22010UK HEADLIGHTS BEAM TESTER COMPOSITION

The unit is made of :

- metal sheet base
- Column with movement for vertical shift
- Optical Camera with F=500 mm lens
- projection screen
- reading area
- 16 characters X 2 lines display
- Four keys keyboard
- Centering Laser, 3R class optical camera according to rule CEI EN 60825-I
- Alignment Laser, 2M class according to rule CEI EN 60825-I
- Photodiodes unit
- Interface circuit RS232
- Battery 6 V, 3,2 VA, rechargeable
- Battery charger 220 V/ 6 V

STOCKING CONDITIONS

Temperature: -10°C - +40°C Humidity: 10 % - 90 %

USE CONDITIONS

Temperature: 0°C - +40°C Humidity: 10 % - 90 % 1) Fit the third wheel on the base (Screw 8X60)

Mount the handle of the optical chamber. (Screws 5X25)

- 3) Mount the laser on the column. Be careful the cup springs must have the concave part side by side.
- 4) Mount the column on the base
- 5) Fit the fixing screw under the column with the appropriate washer.
- 6) Install the optical camera with the three screws indicated by the arrows without tightening them definitively.
- 7) Align the column perpendicularly to the floor using the screw located on the base.











8) Adjust the optical camera until it is aligned with the measurement surface. Use the three screws to secure it.

If necessary adjust the internal level, bringing the bubble to the exact centre.



9) Adjust the laser line using the screws indicated so that the line drawn is parallel to the edges of the optical chamber, both front and rear.





INSTALLATION

Site

The floor area designated for headlamp testing requires careful selection and preparation. For MOT requirements the vehicle standing area and the equipment area where the rails are to be fitted must be level as follows:

Rails +/-2mm Standing Area +/-6mm over 3 meters.

For non MOT requirements the vehicle standing area does not need to be precisely level as a slight continuous gradient, maximum 0.4% will not affect accuracy.

NOTE: Preparation of the site to these standards is the customer's responsibility.

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 vehicle's longitudinal axis. The two rails must be leveled with each other, shimmed as necessary, and rechecked after tightening down. In the final position the rails must be level within +/-2 mm.

Where the vehicle tested, or any other traffic, will pass over the rails, each rail must be recessed into the floor and fully supported along its entire length by grouting as necessary, see Fig. 2. It is helpful if lines are painted on the floor at 90 degrees to the Tester's rails to enable the accurate positioning of vehicles for testing.

Leveling the trolley

One wheels are equipped with an integral cams which are factory set and normally do not require adjustment. The level can be checked placing a spirit level on the trolley base together with the use of a plumb line attached to the column. Should any adjustment be required the cams can be adjusted as follows (See Fig. 3):

Loosen screw 3 and just slacken screw 1.

Raise or lower the wheel as necessary with screw 3

• Fully tighten both screws.

Re-check level of trolley base using a spirit level.

Re-check that the column is vertical, using a plumb line.



Fig.2



Fig. 3

PREPARATION OF THE VEHICLE

Make sure that the headlights are dry and clean.

If the vehicle has a device to adjust its inclination lead it up to "0". Eliminate anything that could influence the right position of the vehicle: mud, snow, ice,..

Straighten the wheels of the vehicle up, make sure that the car frame is not deformed, check the tyres pressure, turn the vehicle on in order to start the test.

If the vehicle has hydropneumatic suspensions, they must be adjusted, switch on the ignition 5 minutes before having the measure.

The car must have the longitudinal axis perpendicular to the movement axis of the headlights tester and parallel to the optical axis of the headlights tester. We suggest to put suitable reference bands on the floor.

In closed environments a suitable vacuum device for fumes must be used.

WORKING SURFACE

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

ALIGNMENT OF THE DEVICE WITH THE VEHICLE

The user of a laser device should consider the risks that could occur during the use. In particular, this work unit should not be placed near a passage, it must be delimited by a yellow band or protected by barriers.

Verify the absence of people in the area surrounding the unit, unlock the column, lower the laser and switch it on. Identify an horizontal point of the vehicle, for example the upper part of the headlights or the engine bonnet, rotate the headlights tester until the laser line coincides with these two points, at this point the headlights tester is parallel to the vehicle, lock the column again.

If the headlights tester is provided with a mirror alignment, use the horizontal line on the unit as a reference.

METHOD OF INSPECTION

Positioning the vehicle (See Fig. 7)

To check headlamp aim:

1 Refer to the Tester's Manual for guidance on test procedures, types of headlights and pass/fail criteria.

2 Position the vehicle as accurately as possible at 900 to the tester rails. The headlamp lens should be positioned 350mm (+/- 150mm) from the lens of the beam tester. Ensure that the headlight lens is clean.

3 Measure the height to the centre of the headlight lens from the floor and adjust the height of the optical box to the same height. If the rails are recessed then this must be added to ensure the optical box is at the correct height. There is a tolerance of +/- 10mm.

4 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.

5 Make sure that the visor lines match with these lines, so that the entire device is parallel to the car. Otherwise Slightly turn the HBT, until the lines match

You must use as a point of reference, the top of part Vertical Sliding System (VSS). (E.g.: if the height From the floor is 80 cm. put the VSS at the 80 cm. mark on the column). 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.

Complex systems including Xenon and BI-xenon headlight systems

It is essential that this equipment is aligned exactly on the centre line of the dipped beam pocket. If when carrying out a normal test/adjustment a clearly defined headlamp pattern cannot be seen, it will be necessary to move the vehicle closer to the test equipment. It is essential that the vehicle headlamp and test equipment are as close together as possible



Fig.7



Fig. 8

DIAGRAM OF USE



EUROPEAN TYPE HEADLAMP CHARACTERISTICS (NOTE: 1)

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 moulded 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 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 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



BRITISH AMERICAN TYPE (CHECKED ON MAIN BEAM) - CHARACTERISTICS: (NOTE: 1)

1. Headlamps tested on main beam have a symmetrical main beam pattern with a central area of maximum intensity (hot spot)

2. This type of lamp generally has a circular lens which may be marked with a figure 1 followed by an arrow indicating the direction of dip

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.



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

1 Asymmetric dipped beam pattern with an area of high intensity intended to be directed along the nearside of the road.

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.



(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

SOFTWARE INSALLATION (optional)

Minimum system requirements:

- Microsoft[®] Windows XP[®] o Microsoft[®] Windows 7[®]
- Processor Intel[®] Pentium[®] 4 a 2,33 GHz, AMD Athlon[®] 64 2800 or more powerful (o equivalent)
- 512 Mb RAM
- Microsoft[®] .NET Framework 4 Client (Installable from the CD)
- Port RS232

Installation:

-Insert the CD , the installation should start automatically, if it does not, launch the file "setup.exe".

-Follow the instruction on the screen until the installation is completed.

Configurations :

At the first launch of the program it is necessary to set the directory path containing the MCTC file and the serial port used

UNINSTALLATION OF THE SOFTWARE

Click on: START

Click on: CONTROL BOARD

Click on: "UNINSTAL THE PROGRAM" (WIN7 or VISTA) or "Application installation" (WIN XP).

In the program list select WTUK and Click on Uninstall.

Follow the procedure.

SPARE PARTS



CODE LIST

| CODICE | Descrizione | | |
|----------|--------------------------------|--|--|
| WT3712XX | varnished optical camera body | | |
| WT3706XX | varnished optical camera cover | | |
| WT3713XX | varnished column | | |
| WT3716XX | varnished cart group | | |
| WT3719XX | varnished base | | |
| WT3723XX | varnished pedal | | |
| WT3710UK | Screen | | |
| WT3714XX | varnished brake group | | |
| WT3715 | Brake spring | | |
| WT3720 | Rail wheel | | |
| WT3722 | Pedal hub | | |
| WT3702 | Cable | | |
| WT3701 | Cable trundle | | |
| WT3700 | Return spring | | |
| WT3717 | Plexiglas cover | | |
| WT3721 | Lens | | |
| WT3718 | Level | | |
| WT3711 | Handle | | |
| WT3704 | Instrument panel label | | |
| WT3709 | Battery 6V 3,2 Ah | | |
| WT3705UK | Display card | | |
| WT3707UK | Photodiodes card | | |
| WT3708 | Dot laser | | |
| WT3667 | Battery charger | | |
| WT3703 | Complete line laser | | |
| WT3736 | Mirror group | | |
| | | | |
| | | | |

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. 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.

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.

DEMOLITION AND DISPOSAL

The machine is composed of:

- Glass (lens)
- Plastic (Collector Box Cover, wheels, Plexiglas cover, handles and other small details)
- Copper (wiring and Luxmeter 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.



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CERTIFICATE OF ACCEPTANCE

HEADLAMP BEAM TESTER (HBT)

HBT Make and Model:

WT Engineering PH22010UK

Equipment Identification Number:

EINHB19163A1113092--

Suitable to test All Classes excluding HGV

This is to certify that the above Headlamp Beam Tester meets the requirements of the VOSA 2005 HBT Specifications for the Classes listed above. It is therefore acceptable for performing beam tests and may be used as part of an Automated Test Lane (ATL).

26 November 2013

Chief Executive

Date

For and on behalf of the Garage Equipment Association (GEA), administrators of the VOSA equipment approval scheme

For Manufacturers/Importers use

I certify that the test equipment of the above make and model, bearing the serial number: and is suitable for MOT testing. is installed in VTS No: VTS Details: Name Address Postcode Supplier's Details: Name Position Signature Company Proudly C Registered in London No. 2891852



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CERTIFICATE OF ACCEPTANCE

HEADLAMP BEAM TESTER (HBT)

HBT Make and Model:

WT Engineering PH22010UK/HGV

Equipment Identification Number:

EINHB19163A1113093--

Suitable to test All Classes including HGV

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For Manufacturers/Importers use

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|---|----------|--|----------|--|--|--|
| is installed in VTS No: and is suitable for MOT testing. | | | | | | |
| VTS Details: | Name | | | | | |
| | Address | | | | | |
| | | | | | | |
| | Postcode | | | | | |
| Supplier's Details: | | | | | | |
| Name | | | Position | | | |
| Signature | | | Company | | | |
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Registered in London No. 2891852



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CERTIFICATE OF ACCEPTANCE

HEADLIGHT BEAM TESTER (HBT)

Brand: - WT Engineering Model: - PH22010UK/F Equipment Identification Number: - EIN-HB19163A0919048--Software Version: - N/a

Suitable to testing (ATL): - All Classes Suitable to testing (Non ATL): - All Classes (Excluding HGV)

This is to certify that the above Headlamp Beam Tester meets the requirements of the DVSA 2005 HBT Specifications for the Classes listed above. It is therefore acceptable for performing beam tests and may be used as part of an Automated Test Lane (ATL).

Chief Executive

29/07/2019 Date

For and on behalf of the Garage Equipment Association (GEA), administrators of the DVSA equipment approval scheme

For Manufacturers/Importers use

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CERTIFICATE OF ACCEPTANCE

HEADLIGHT BEAM TESTER (HBT)

Brand: - WT Engineering Model: - PH22010UK/F HGV Equipment Identification Number: - EIN-HB19163A0919049--Software Version: - N/a

Suitable to testing (ATL): - All Classes Suitable to testing (Non ATL): - All Classes (including HGV)

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29/07/2019 Date

For and on behalf of the Garage Equipment Association (GEA), administrators of the DVSA equipment approval scheme

For Manufacturers/Importers use

| I certify that th | ne test equipment | of the above make a | and model, beari | ng the serial number: |
|-------------------|--|---------------------|--------------------|--|
| is installed in | VTS No: | | and is suitable fo | r MOT testing. |
| VTS Details: | Name | | | |
| | Address | | | ****** |
| | | | | ······ |
| | Postcode | | | |
| Supplier's De | tails: | | | |
| Name | 11110 10100 M GUI 40 GU | | Position | 10110.00.00.00.00.00.00.00.00.00.00.00.0 |
| Signature | | | Company | |
| | Proudly Backing | ben | 22.2 | |

Registered in London No. 2891852





Dichiarazione di conformità Declaration of Conformity Konformitätserklärung Déclaration de conformité Declaración de conformidad

W.T.Engineering S.r.l. via Ugo Foscolo, 96/F 24024 Gandino (BG) - Italy Telefono 035/733399 Fax 035/7172834

con la presente dichiara che - déclare par la presente que - hereby declare that - erklären hiermit, daß - por la presente declara, que

il centrafari modello - le reglophare modèle - the light centering device model - der Scheinwerfereinstellgerät Modell los centrafaros modèlo

PH 22010UK – PH22010UK/HGV



è stato costruito in conformità alle Direttive 2006/42/CE, 2006/95/CE e 2004/108/CE



a été construite en conformité avec les Directives 2006/42/CE, 2006/95/CE, 2004/108/



was manufactured in conformity with the Directives 2006/42/EC, 2006/95/EC, 2004/108/



in Übereinstimmung mit den Bestimmungen der richtlinie 2006/42/EC, 2006/95/EC, 2004/108/EC,



está fabricada según las disposiciones de las Directivas 2006/42/EC, 2006/95/EC, 2004/108/EC

15/01/2021



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