

Auto *Test*

Headlight Align





DECLARATION OF CONFORMITY

We, Auto Test Products Pty Ltd. declare under our sole responsibility that the product AutoTest Headlight Align is in conformity with the provisions of the following Council Directive: 1999/5/EC.

A copy of the Declaration of Conformity is available from <http://www.autotest.net.au>

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**AUTO
TEST**
Products Pty Ltd

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1. Preface

Thank you for purchasing AutoTest products. Please read this manual completely before installing and operating the product so as to ensure correct operation of the product. Make certain that this manual can be accessed whenever necessary.

2. For Your Safety

Read these simple guidelines. Not following them may be dangerous. Read the complete user guide. Further detailed information is given in this manual.



SWITCH ON SAFELY

Do not switch the device on when wireless device use is prohibited or when it may cause interference or danger.



SWITCH OFF WHEN REFUELING

Do not use the device at a refuelling point. Do not use near fuel or chemicals.



SWITCH OFF NEAR BLASTING

Follow any restrictions. Do not use the device where blasting is in progress.



USE SENSIBLY

Use only in the positions as explained in the product documentation.



QUALIFIED SERVICE

Only qualified personnel may install or repair this product.



ACCESSORIES AND BATTERIES

Use only approved accessories and batteries. Do not connect incompatible products.



WATER-RESISTANCE

Your device is not water-resistant. Keep it dry.



CONNECTING TO OTHER DEVICES

When connecting to any other device, read its user's guide for detailed safety instructions. Do not connect incompatible products.



RISK OF DAMAGE TO EYES

Wear safety goggles when operating near vehicle battery as Battery acid, fumes, oil and dust particles might cause damage to the eyes.

3. WARRANTY

AutoTest Products Pty Ltd or any Authorised AutoTest Service Centre warrants this product against defects in material and workmanship for a period of 12 months from the original date of purchase. This warranty applies only to products and components supplied by AutoTest Products which can be identified by the trade name or logo affixed to them or by other documents. AutoTest Products does not warrant any products not supplied by AutoTest Products.

During the warranty period, AutoTest Products or any Authorised Service Centre will repair (or at its option replace) any defective component(s) without charge for parts or labour, provided the product is freight prepaid to an authorised AutoTest Service Centre. Transit insurance and return freight will be at the owner's expense.

In order to obtain calibration, warranty or non-warranty service, ship the product, freight and insurance prepaid to your nearest AutoTest Service Centre. Attach to the product your name, address, contact phone numbers, description of the problem and if a warranty claim, proof of purchase (dated sales receipt or invoice).

AutoTest Products or any Authorised AutoTest Service Centre reserves the right to refuse warranty repair if accident, abuse, misuse or misapplication has damaged the product. In transit or as a result of service or modification by other than an Authorised Service Centre, nor are any other warranties expressed or implied, including any regarding merchantability or fitness for any other particular purpose.

AutoTest Products or any Authorised Service Centre is not responsible for incidental or consequential damages resulting from the breach of any express or implied warranty, including damage to property and, to the extent permitted by law, damages for personal injury.

3.1 AUTHORISED SERVICE AGENTS

AUSTRALIA

AutoTest Products

69 Parsons St., Kensington, VIC, 3031

PH: (+61) 3 8840 3000

4. General

AutoTest Headlight Align is used for testing the luminous intensity, headlight elevation and optic axis deviation of the headlights on cars trucks and motorcycles. Equipped with LCD screen and the feature of direct battery operation and easily moved, it is very suitable for automotive maintenance and repair shops.

5. Unpacking your Headlight Align headlight aimer

Please complete the warranty registration visit our website and complete your warranty registration on-line at www.autotest.net.au or alternatively complete the warranty registration card. Your warranty registration ensures that you are kept up-to-date on any software or hardware changes and It also helps us to provide you with faster services.

5.1 Packing List

Item/No	Description	AutoTest P/no	Qty	Remark
1	Headlight Tester	917843	1 set	Divided into 5 parts
	Base	917843-1	1	
	Post	917843-2	1	
	Light Receiving Box	917843-3	1	
	Elevator	917843-4	1	Side of light receiving box
	Mirror (Alignment Device)	917843-5	1	
2	Power Cable		1	
3	Battery	9V	1	Installed
3	User's Manual		1	
4	Calibration Certificate		1	

6. Specifications

- **Operation Conditions**

Ambient Temperature: -10 - 40°C

Relative humidity: less than 95 %

Atmospheric pressure: 70.0 - 106.0KPa

Power supply: DC9V battery or 12v car battery or cigarette lighter (maximum input voltage 25V)

Floor: The instrument and the vehicle must be placed at the same surface, Gradient and out of level shall not exceed 3 %.

- **Measuring range**

Central elevation of the headlight: 30cm-1400cm

Luminous intensity: 0 - 100,000cd

Optic axis deviation of high beam and low beam

Left - Right: L 4%/10m - R 4%/10m (L 40cm/10m - R 40cm/10m)

Up - Down: U 2%/10m- D 4%/10m (U 20cm/10m - D 40cm/10m)

- **Measuring distance:** 500cm
- **Power consumption:** <0.5W
- **Net Weight:** 26kg

7. Construction and Components (Fig.1)

7.1 Base

The base is the installation plate for the post, it can be moved horizontally, with a brake lever.

7.2 Post

The post is for supporting the light-receiving box, with racks and a scale for measuring headlight elevation on it. Laser pointers for easy positioning of the unit.

7.3 Light-receiving Box

Photoelectric parts and optical measuring system in the light-receiving box are for testing the relative parameters. Elevation of the light-receiving box can be changed by sliding the elevator up and down along the light-receiving box. Laser pointers for easy positioning of the unit.

7.4 Aligner

The mirror is used for alignment of the instrument and the vehicle to be inspected; the horizontal alignment line must be vertical to the vehicle driving direction.

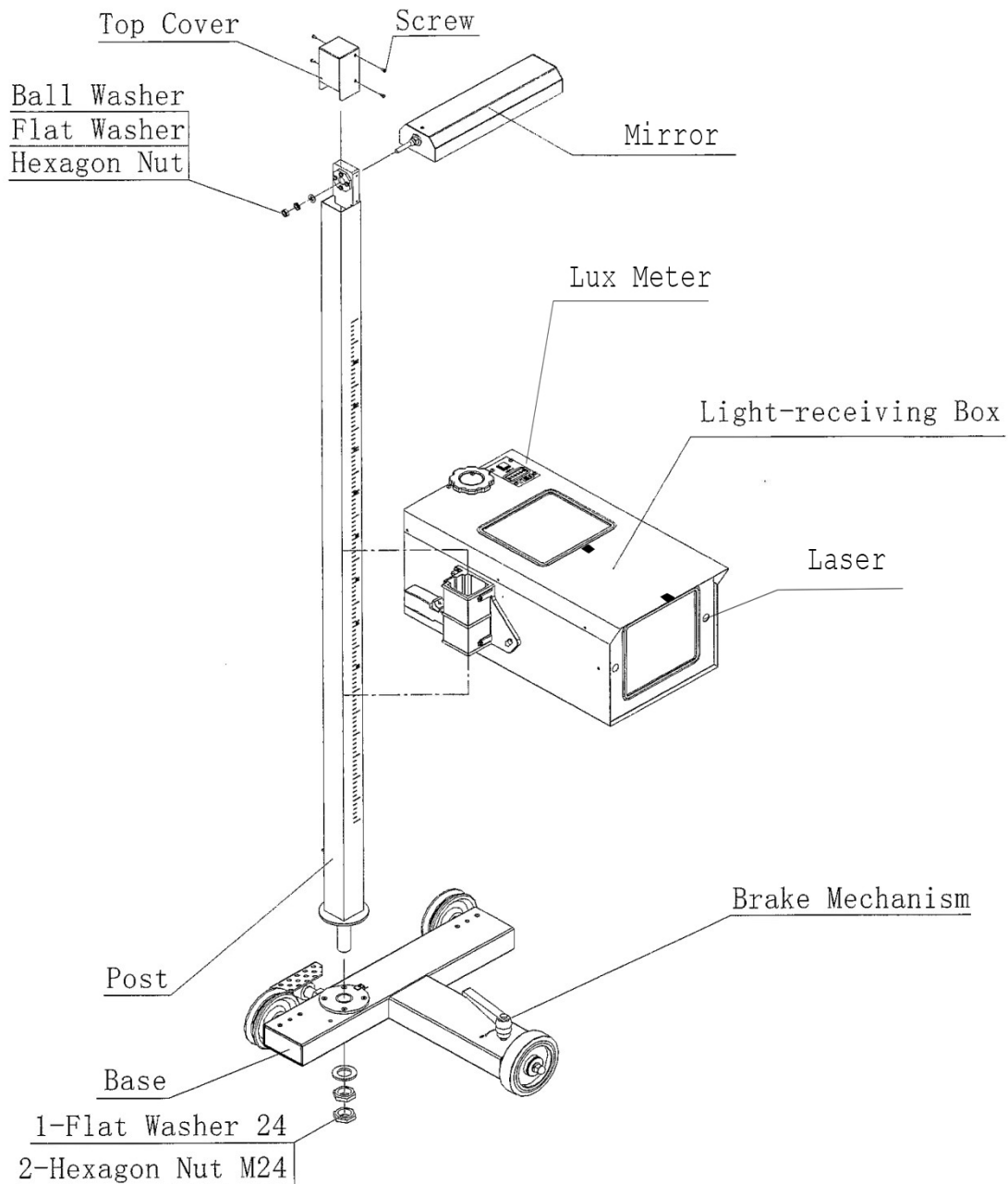


Fig.1

8. Operation assembly and interface

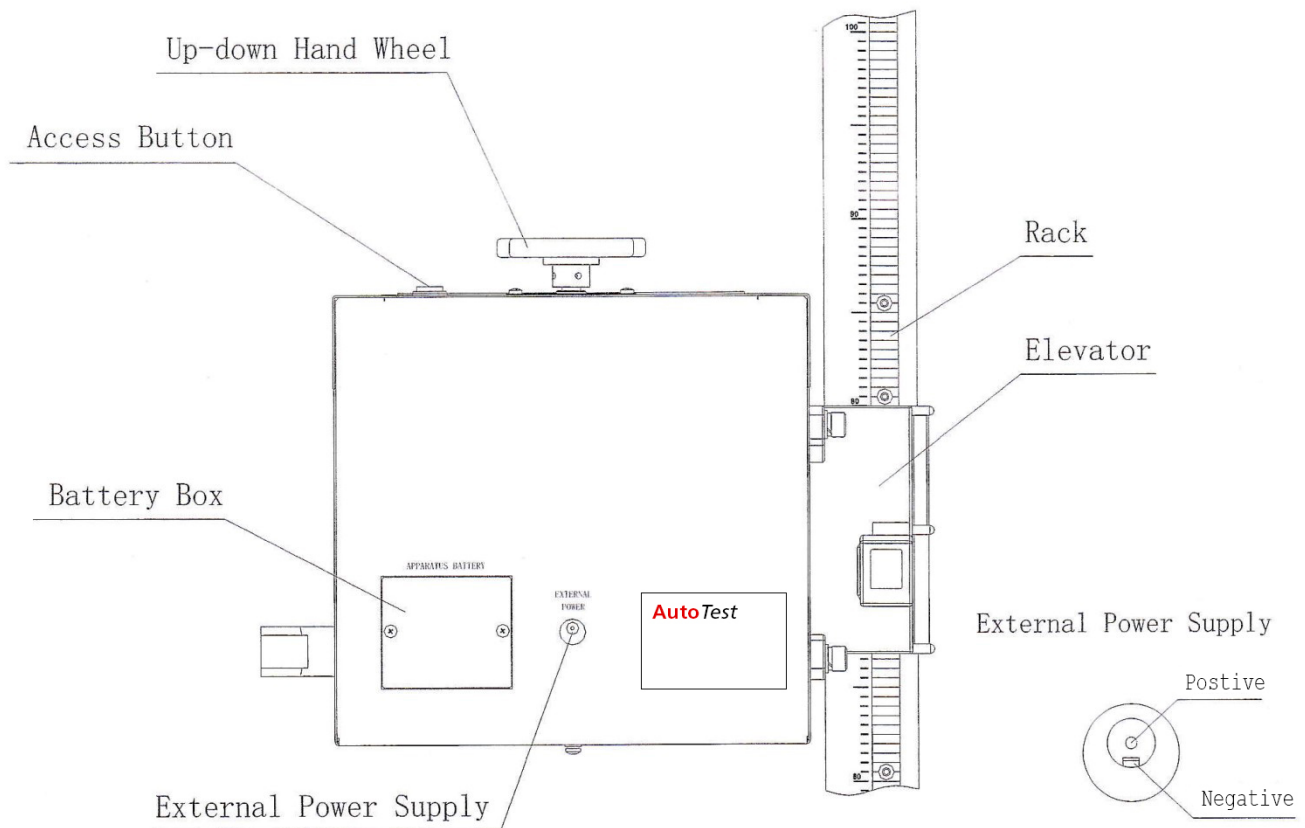


Fig. 2

The instrument is equipped with a DC 9V battery or external 12V DC power supply, the maximum external DC power input should be less than 25V, and Fig. 2 shows polarity of the external power socket. When the DC 9V battery and the external 12V DC power supply are installed at the same time, the instrument automatically uses the external 12V DC power. The external power cable is provided. The user can install it to obtain power supply directly from the cigarette lighter of the vehicle or the vehicle battery.

9. Assembly and Adjustment

9.1 Installation of the Post

As shown in Fig. 3, insert the bottom of the upright post into a corresponding hole and secure it to the base with the plain washer supplied 24, 2 thin hexagon nuts M24. The brake mechanism is for limiting the left and right movement of the instrument.

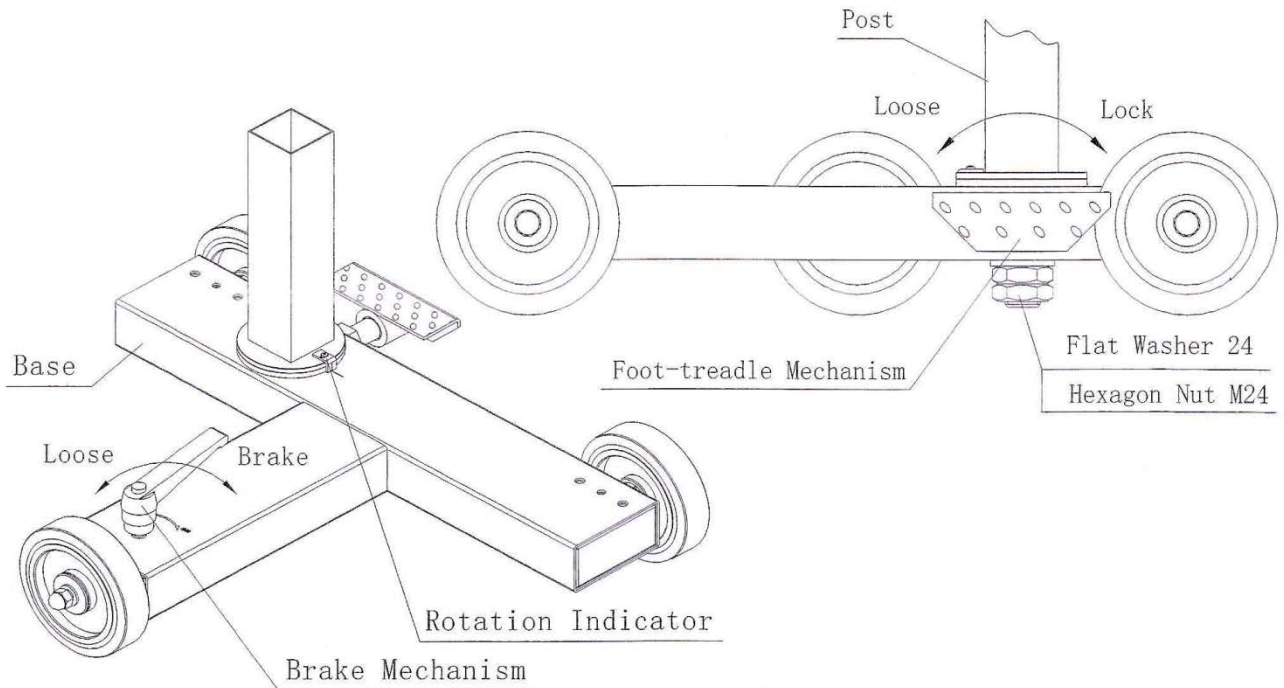


Fig. 3

9.2 Installation of Light-Receiving Box

Remove the top cover of the post, install the elevator on the side of the light-receiving box onto the post from the top (also press the block on the handler backward), the light-receiving box should be at a convenient elevation. (See Fig. 4). Normally, adjustment is not required for the instrument after delivery.

If adjustment is required, raise the light-receiving box to the scale of approx. 85cm, unfasten the screws on the base, and use a spanner to rotate the two eccentric wheels reversely, work with the spirit level to adjust the level of the light-receiving box.

When the spirit level and the horizontal centerline is parallel, the bubble is at the central position, refasten the screws.

Then, unfasten the Screw 1, Screw 2 and Screw 3, adjust the level of the light-receiving box, the light-receiving box can rotate on Screw 1.

Rotate the light-receiving box, when the bubble inside the light-receiving box is at the central position (See Fig. 4), the front-back level of the light-receiving box can be adjusted, fasten the 3 screws, then the adjustment is complete.

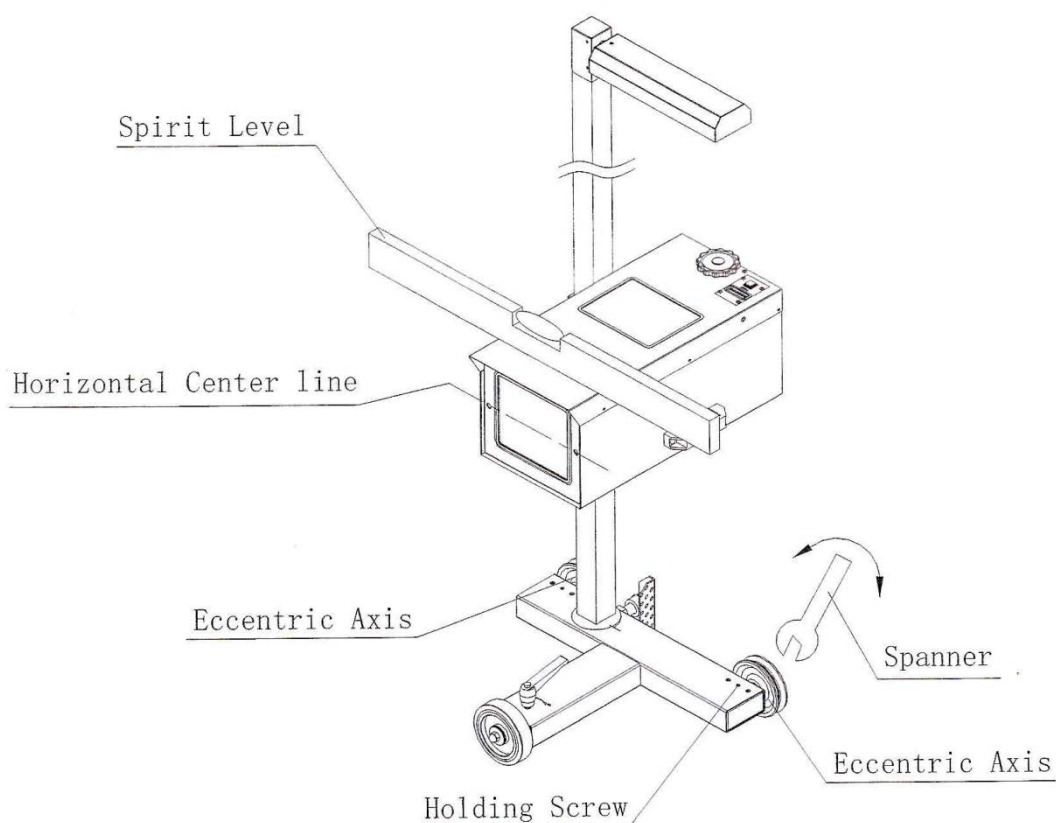
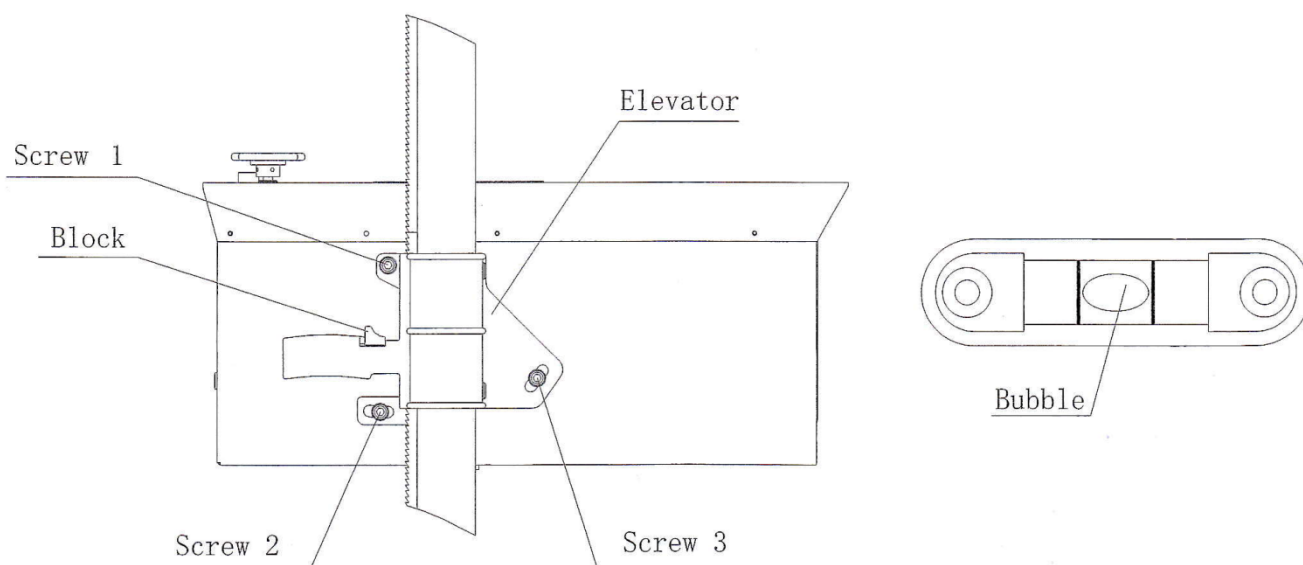


Fig. 4

9.3 Installation of Aligner

Use hexagon nut M8, $\phi 8$ flat washer and $\phi 8$ ball washer to install the aligner on the post (see Fig. 5). After adjustment, close all the covers and fasten the screws.

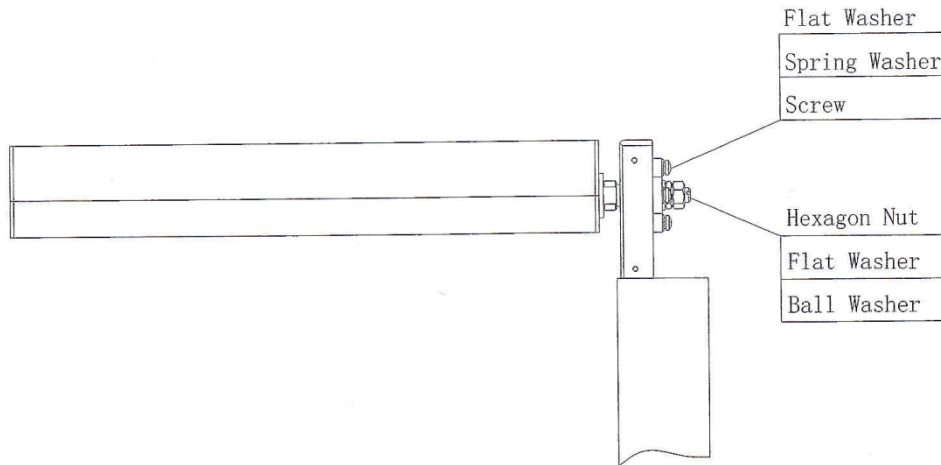
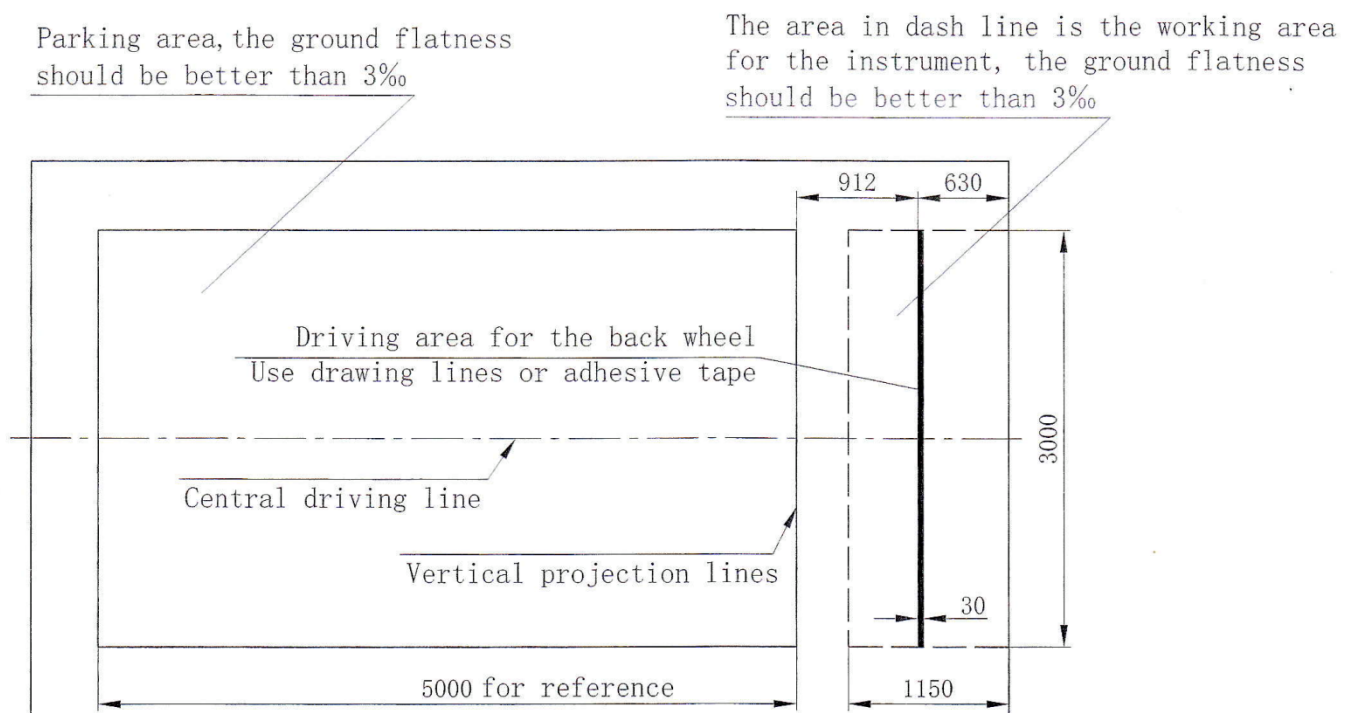


Fig. 5

10. Layout of Inspection Field

Fig. 6 shows the requirements of the inspection area and the ground profile/level. Bold full lines or adhesive tape should be used for the driving area of the vehicle rear wheels. (See fig.6).



*All dimensions in mm

Fig. 6

11. Alignment of Instrument and Headlight

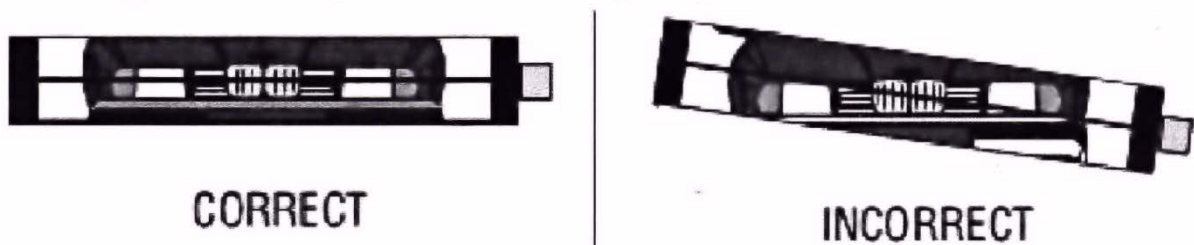
Before measurement, align the vehicle to be inspected as per the following 2 steps.

11.1 Vehicle Alignment

When a guide rail and guiding line are used, vehicle alignment is not required.

Firstly, mark an area of 5000mm x 3000mm with yellow lines at 880mm ahead of the vehicle being inspected, which is used for alignment of the two rear wheels of the instrument. (See Fig. 7). Before inspection, the lens of light-receiving box and the longitudinal centerline of the vehicle to be inspected should be vertical (which is called alignment).

The aligner/mirror on the post is for this purpose of checking. The checking method is: Select two symmetric reference points on the vertical line of the longitudinal centerline of the vehicle (For example, the horizontal connection line from the left corner to the right corner at the edge of the front bonnet), hold the aligner and rotate it, when the horizontal aligned line is parallel to the connection line, the vehicle is aligned. Otherwise, the vehicle needs re-parked.



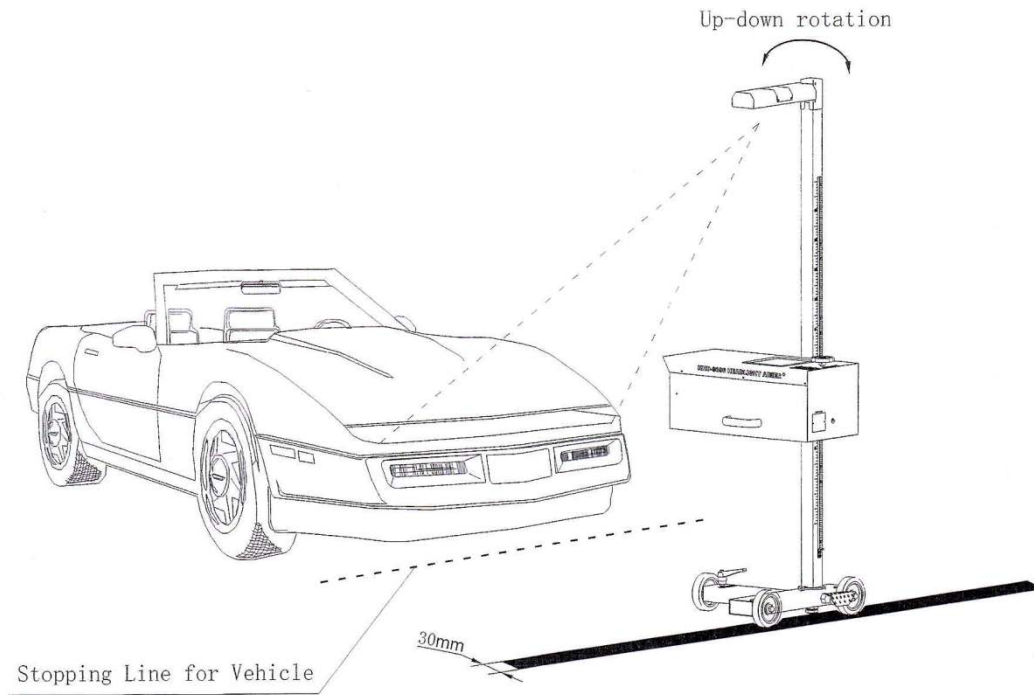


Fig. 7

11.2 Alignment of the Headlight to be Tested

After completing the procedure described in 11.1, along the alignment line of the rear wheels (see Fig. 7), move the instrument to the front of the headlight to be inspected, use a spanner to move the button on the elevator and use hands to move the light-receiving box, make the optical center of the Fresnel lens ahead of the light-receiving box as high as the center of the headlight being tested, and make the centerline extension line of the two alignment indicators on the cover of the light-receiving box and the centerline extension line of the headlight being tested at the vertical plane. As on Fig. 8, the instrument is aligned to the headlight and the inspection distance is $500 \pm 50\text{mm}$.

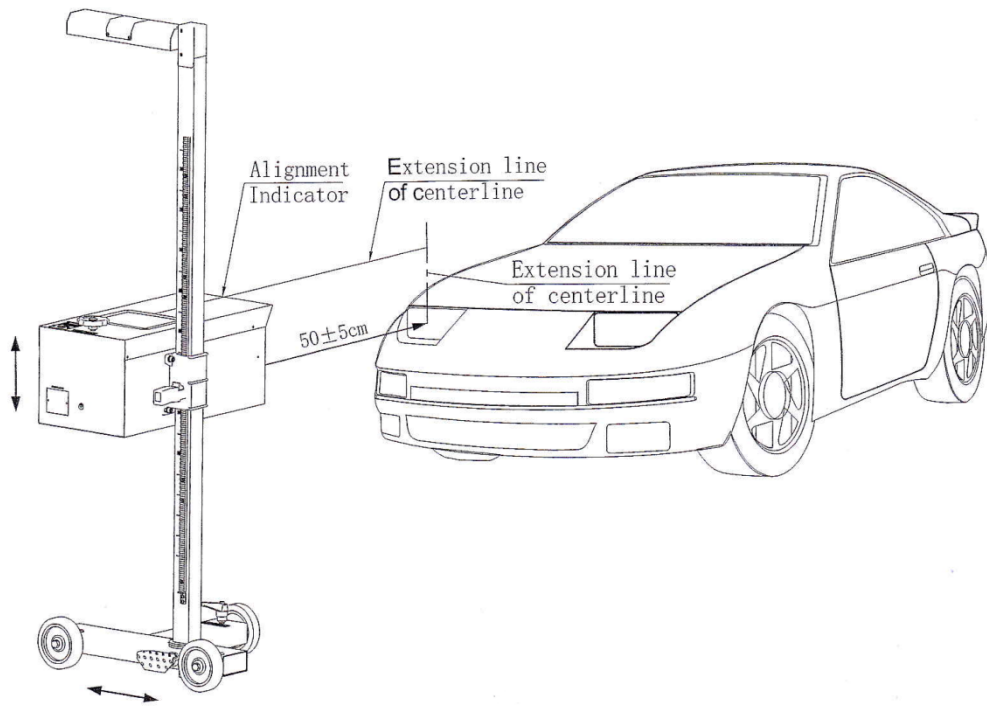


Fig. 8

12. Operation

12.1 High-beam Measurement

After the adjustment of 11.1 and 11.2, keep the instrument fixed in position. Press the access button to adjust the up-down hand wheel of the screen while observing the real-time light intensity on the LCD screen. When the light intensity reaches the maximum value, stop moving the up-down hand wheel. The measurement data displayed is the high-beam intensity of the headlight being tested.

As shown on Fig. 9, the current light intensity is 20000cd. The relative movement of the light-receiving screen can be observed through the transparent glass window on the light-receiving box. The movement distance is the deviation of the headlight being tested. (Note: The deviation equals to the deviation of a 10M screen inspection.) Fig. 10 shows the deviation of high beam as down 0.5%/10m (50cm/10m), left-right 0.0% (0cm/10m).

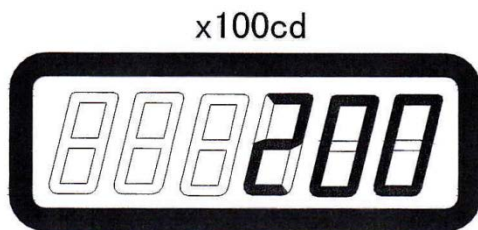


Fig. 9

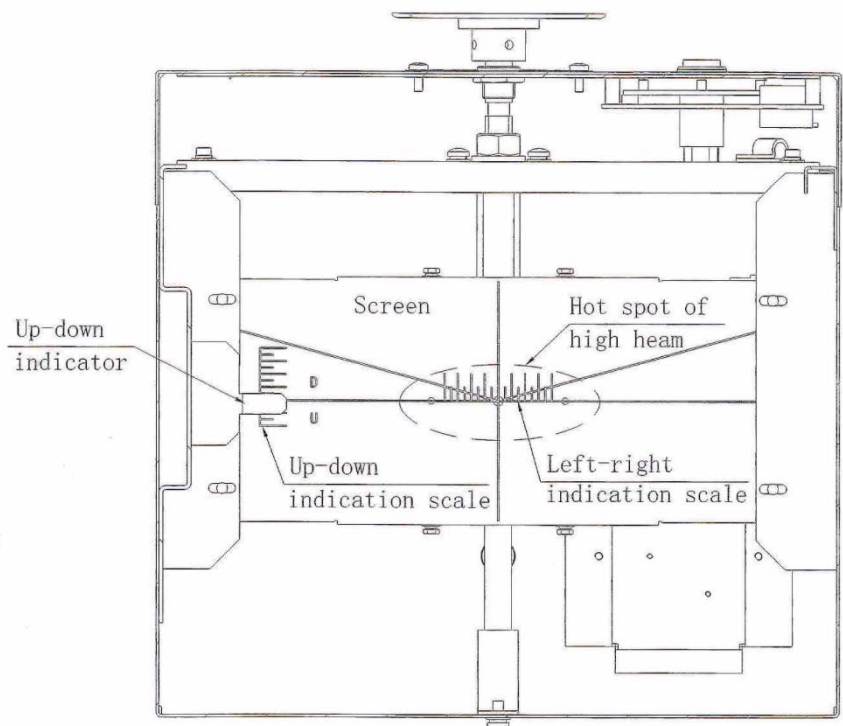


Fig. 10

13. Low Beam Measurement and Assessment

After adjustment according to 11.1 to 11.2, keep the instrument fixed in a single position. Press the access button, adjust the up-down hand wheel of the screen, make the central point of the light-receiving box and the turning point of the cut-off line of the low beam basically overlapping, when the light intensity displayed on LCD is the minimum value, read the optic axis deviation of the low beam on the indication scale of the light-receiving screen assembly (see Fig. 10) use the turning point (see Fig. 11) as the measurement result by the cut-off line on the screen.

As the specification of the light distribution characteristics of low beam varies from car to car, the assessment for test result is for reference only. If the specified result is close to the test result by 10M screen inspection.

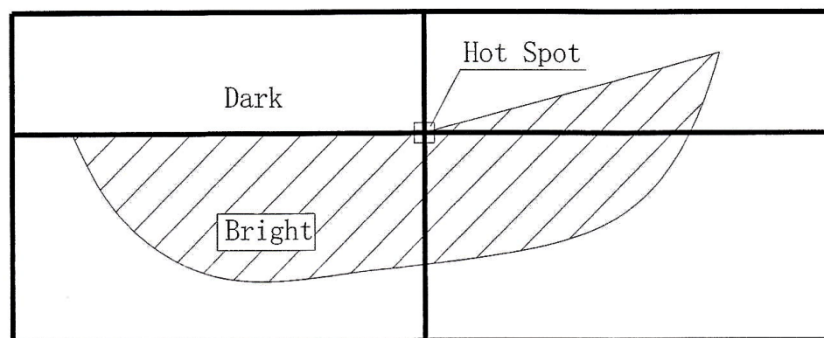


Fig. 11

13.1 Headlight Adjustment

In order to improve the adjustment time, we recommend the following way to adjust any deviation from the specification of the high beam/low beam, especially the low-beam. After adjustment according to 11.1 to 11.2, keep the instrument fixed in position, adjust the up-down and left-right adjustment buttons respectively, make the up-down and left-right zero indicating line point at the user preset optic deviation.

Using the real-time measurement mode adjust the up-down button and left-right button, make the up-down zero indication points at the zero of the up-down scale on the screen

The left-right zero indication points at the zero of left-right scale according to the light distribution characteristics on the screen viewed through the observation window, adjust the hot spot close to the screen center (For high beam. the brightest hot spot aligns with the screen center, for the low beam, the observed cut-off line nearly

overlaps the cut-off line on the screen or the turning point overlaps the screen center).

Adjust the headlight up and down, then left and right. When the high-beam/low-beam deviation is adjusted, adjust the headlight while observing the light intensity on the LCD screen.

When the light intensity is exactly the maximum or minimum value, do not move the headlight. The adjustment is completed. (Note: For high-beam, it corresponds to the maximum value, for low-beam, it corresponds to the minimum value)

13.2 Indication Scale

The unit of the scale is %10m (cm/10m), the scale of each grid is 0.5%/10m (5cm/10m), which is 17.2'.

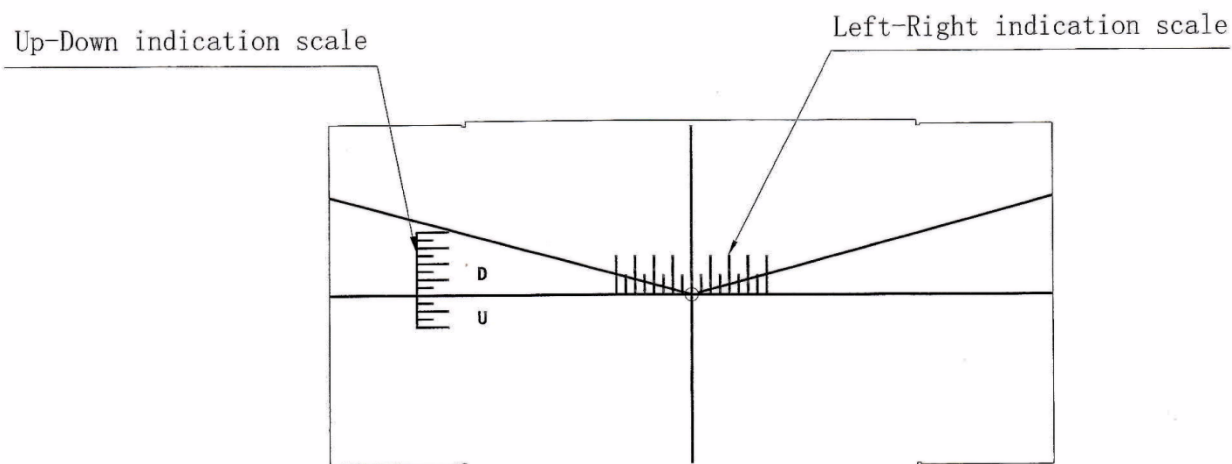


Fig. 12

14. Calibration

The Headlight Align must be re-calibrated periodically. The reason for this is to maintain creditability and accuracy in tests and acceptance of data according to international standards. Calibration is not required during daily use. Periodic calibration should be every year. The instrument should be returned to your nearest service center to have this performed.

14.1 Return of Headlight Align for Calibration

14.1.1 Packaging

The Headlight Align should be packaged in the original shipping container. However, where this container is not available, remember that you are shipping an electronic instrument. Bubble pack or foam should surround the Headlight Align and should be inserted into a sturdy cardboard box.

14.1.2 Shipping

Labelling - A label noting "Electronic Device - Fragile" should be placed on the box. Freight Carrier - Container should be sent "**Freight Prepaid**". AutoTest Products has no preference on freight carriers. However, the unit should be forwarded by companies such as Toll, Startrack, UPS, or Federal Express if an expedient delivery is required.

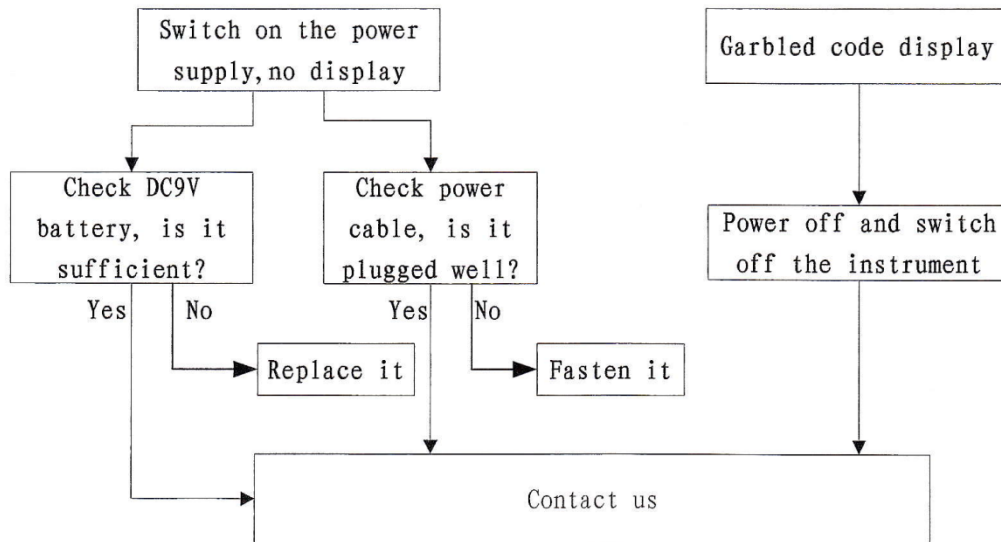
Ship to: The Service Department, AutoTest Products Pty Ltd, 69 Parsons St Kensington, VIC, 3031, Australia. Phone: (+61 3) 8840 3004.

14.1.3 Documentation

A copy of the purchase order for re-calibration and a packing slip must be included with the shipment. It should note the Purchase Order Number, Date, Serial Number and the address where the unit should be returned to.

15. Maintenance and Troubleshooting

The batteries should be taken out of the instrument if it is not to be used for a long time. If external power is applied for a long time, the 9V battery should also be taken out. When the power for laser is insufficient, the laser hot spot is hard to be seen, replace the battery. The instrument should be kept clean, no dust or oil on the concentration lens ahead of the light-receiving box. In case of pollution, use wet cloth (with a small amount of detergent) to clean it.



NOTES:



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