



CRYPTON

Headlamp Aligner Models J3 & J11

Including instructions for use of the Checking Unit

WARNING:

Do not attempt to operate this equipment unless you have read and understood these instructions

The reliability of this equipment is fully supported by Transervice with repair workshops and field service engineers to provide a full range of after-sales care, including installation, contract maintenance, factory overhaul and emergency repairs on site. Please see the special Service Page at the end.

Operating Instructions

TES 152/18
Nov 1988

INTRODUCTION

The Headlamp Aligner is designed to check the setting of main and dipped beams of car and commercial vehicle headlamps. Two models are available:

Model J3 For cars and commercial vehicles with headlamp centres between 18½in (400mm) and 43½in (1300mm).

Model J11 Similar to the above model but incorporating a light intensity meter capable of measuring the light output of both standard and halogen lamps without the aid of filters.

RECEPTION

Carefully inspect the equipment as soon as it is received. If any loss or damage has occurred in transit, report immediately in writing to the carrier and supplier, giving full details.

INSTALLATION

Important: Where this equipment is to be used for the Department of Transport vehicle testing scheme in the U.K. it must be sited in accordance with D. Tp. requirements. This is the customer's responsibility.

To ensure accurate results, the headlamp aligner is supplied with rails which must be fixed firmly to a level floor. The tester requires a smooth floor area, not necessarily horizontal but flat in the same plane over the entire area on which the vehicle and tester will stand, (see page 10 for use of Checking Unit). Before fixing the rails, choose a site in the workshop which is readily accessible.

At least 1 metre (39in) must be allowed between the rear of the aligner and any parallel wall for access to the rear of the equipment. If desired, the rails may be driven over by vehicles, but damage by heavy garage equipment, e.g. trolley jacks must be avoided.

The Headlamp Aligner is an optical instrument containing a lens. Steps should be taken in the siting to avoid sunlight falling directly on the front lens. If this cannot be achieved, then the Aligner should be covered with a dark cloth when not in use.

The Headlamp Aligner is robust and has a minimum of moving parts and there is little that can go wrong once it is correctly set up. Accidental damage is the most likely cause of trouble and this can be greatly reduced by painting a white line around the area to be used and identifying it as "Headlamp Testing Area", this phrase to be painted on the floor or on a suitably placed board.

In order for the J3/J11 to be used at the correct height in conjunction with lifts that are flush fitted or raised and conform to Department of Transport specifications, lower height brackets are factory fitted on despatch and additional wheel brackets are supplied. These raise the Headlamp Aligner to ensure correct height and give an increase in height of 130mm.

The range of height adjustment from vehicle lens centre to ground with the wheel brackets is as follows:

Standard bracket - 490mm to 1170mm
Extended bracket - 620mm to 1300mm

To fit the alternative wheel brackets, remove the wheel spindle retaining nut, slide out spindle and remove wheel. Unbolt fitted brackets and replace with new brackets in the holes provided. Refit wheel to spindle and secure to bracket with retaining nut. Ensure Headlamp Aligner is secure and wheels rotate freely.

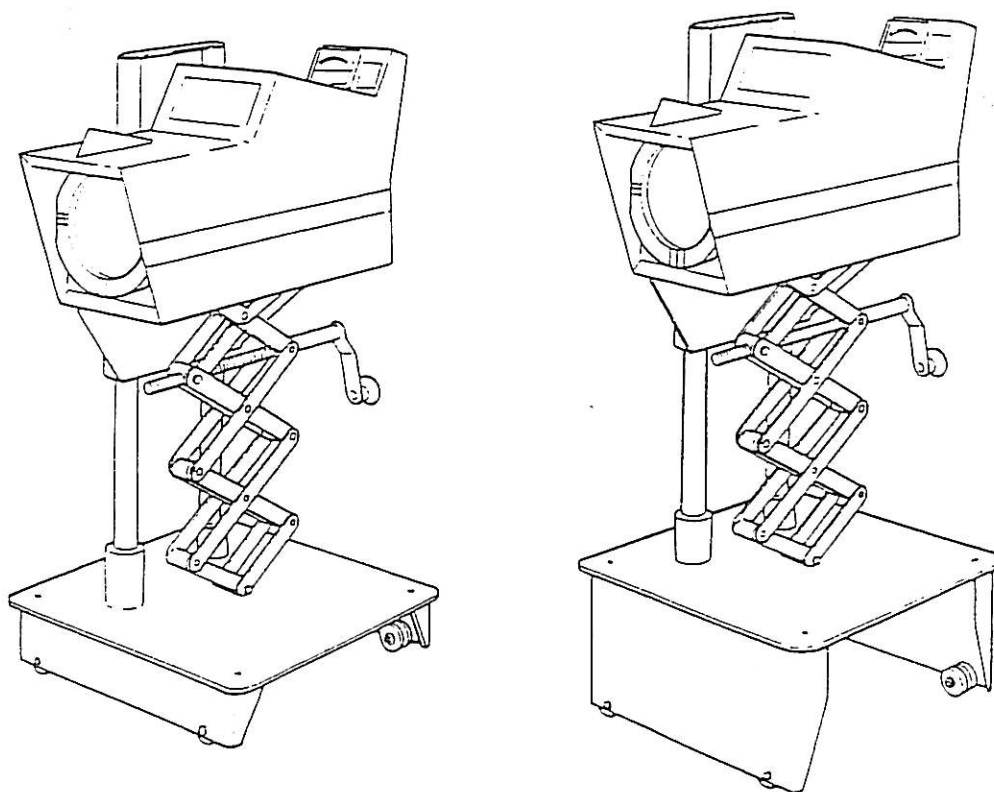


Fig. 1

TO SECURE THE RAILS

1. Place the rail mounting plate in position and scribe marks on the floor through the 9 fixing holes.
2. Remove the mounting plate and using a suitable masonry drill or rawl punch make 9 holes in the floor and fit 9 No. 12 rawl plugs 40mm. (1.5in).
3. Re-position the mounting plate and secure to the floor using 9 No. 12 screws 40mm (1.5in) long.
4. Position the Headlamp Aligner on the rails.

ADJUSTING THE HEADLAMP ALIGNER

1. Drive the vehicle to be tested squarely up to the headlamp aligner and bring the car to rest with the headlamp glass 710mm (28in) from the lens of the aligner. This is the optimum position for size, brightness and focus of the image but the distance may be varied from 510 to 910mm (20 to 36in) when acceptable results can be obtained. A white line painted on the floor at right angles to the rails will aid alignment of the vehicle with the tester.

2. Select two points on the vehicle, *parallel with its fore and aft (longitudinal) axis.
*For private cars, a suitable method is to determine the centre of the front and rear windows and affix a strip of this tape to each. On commercial vehicles, the straight line produced by the side of the vehicle may be used.
3. Align the backsight (Fig. 2-1) and foresight (Fig. 2-2) on the headlamp aligner using the knurled adjusting knob (Fig. 2-3) with the two selected points on the vehicle arrowed in Fig. 2. It may be necessary on some cars to raise the aligner to its full height for this operation.

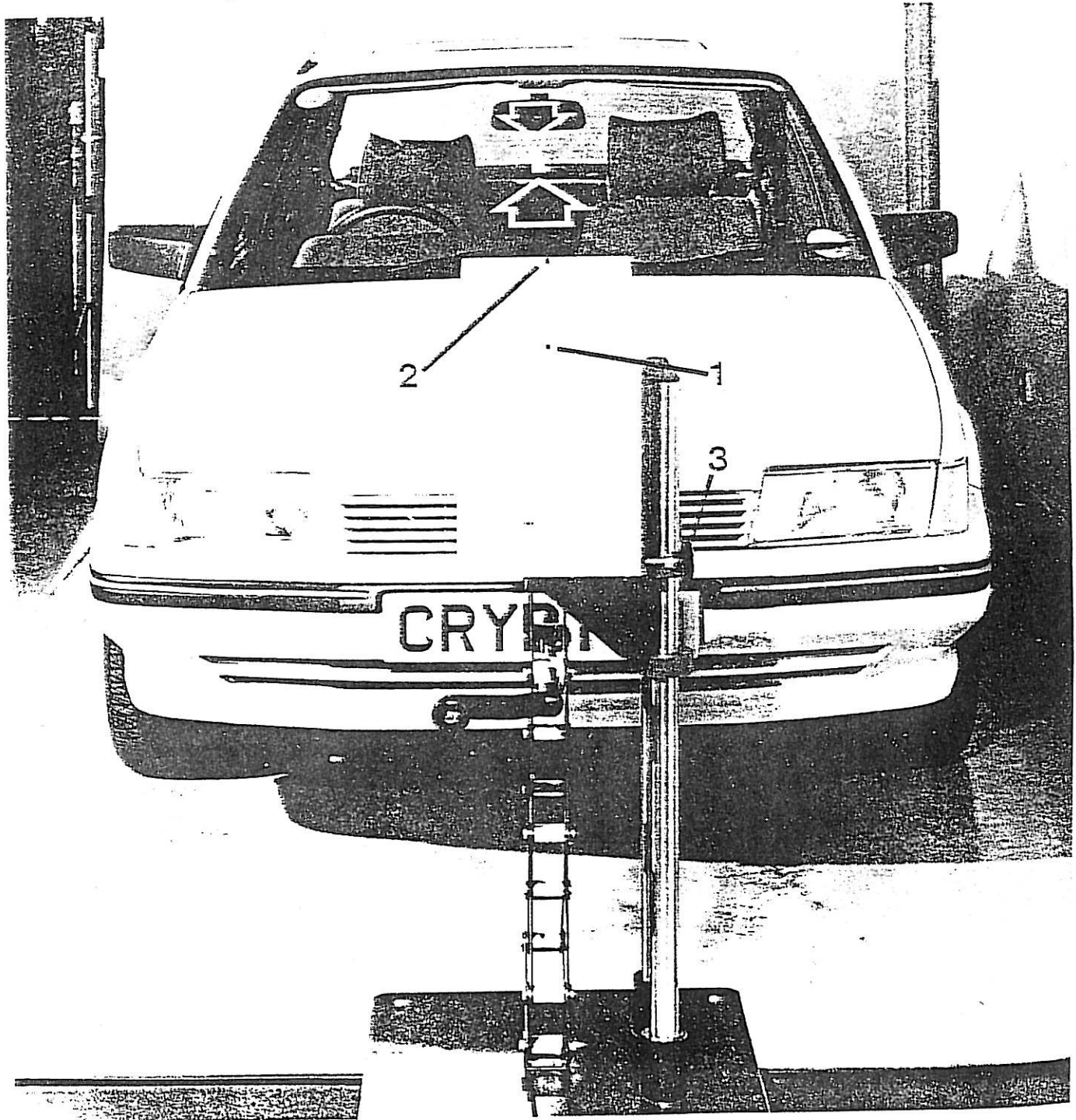


Fig. 2

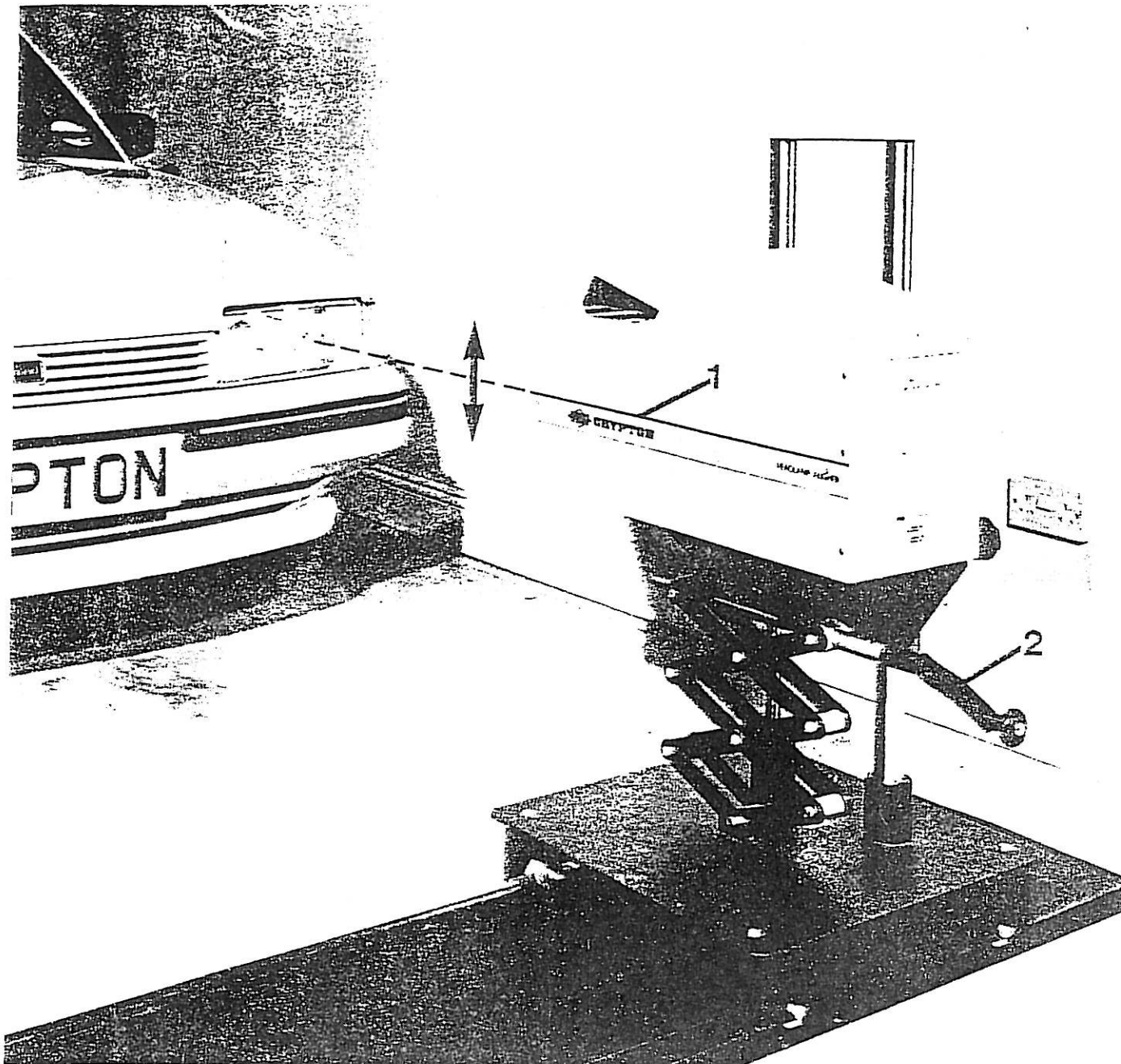


Fig. 3

4. Move the headlamp aligner to bring the left hand side (viewed from the rear of the aligner) into line with the vertical centre line of one of the headlamps. Use the TOP EDGE of the CRYPTON nameplate (Fig. 3-1) and handle (Fig. 3-2) to line up the headlamp aligner and the centre line of the headlamp horizontally in the transverse plane within 6.mm (0.25in).

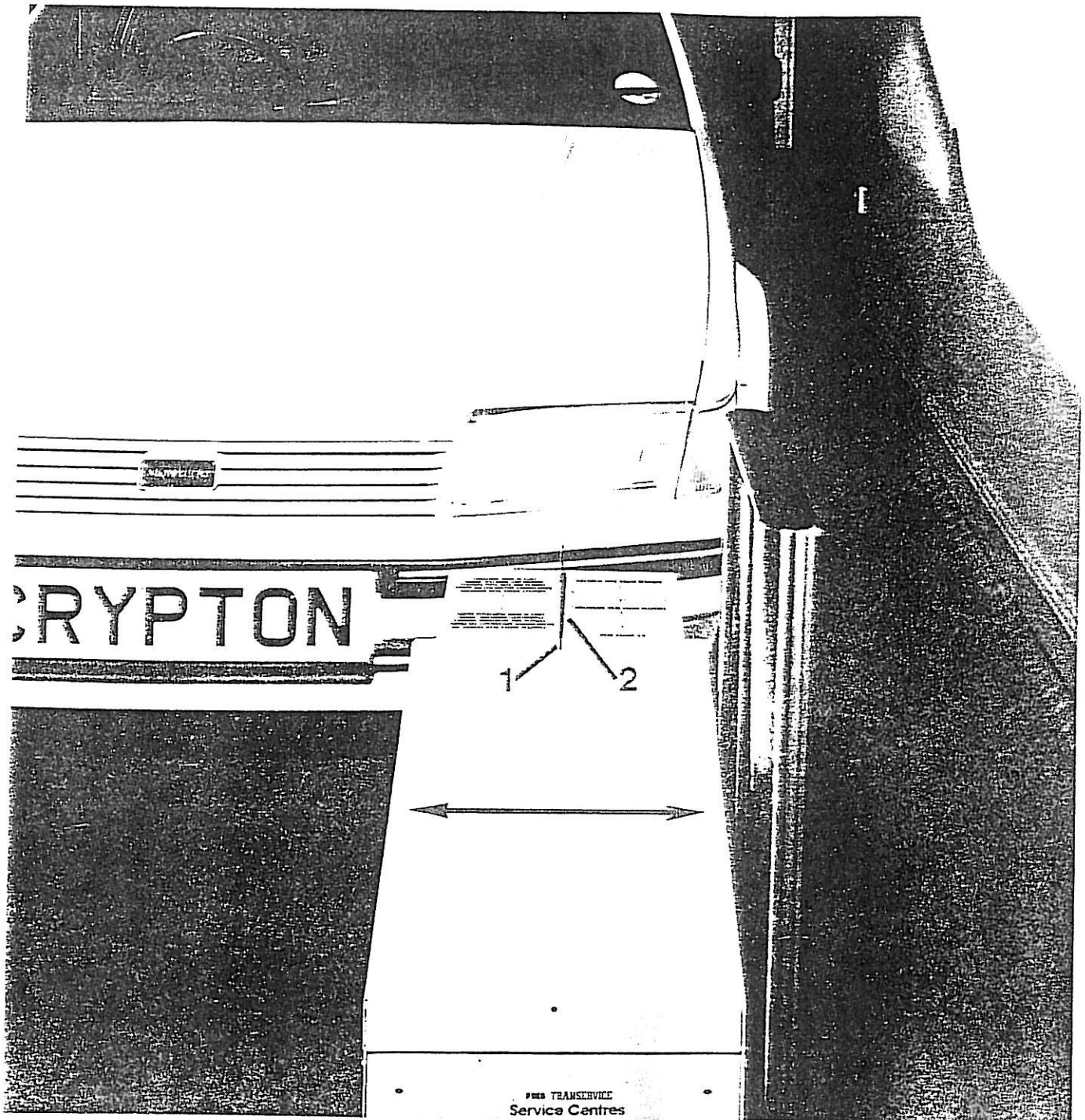


Fig. 4

5. Move the headlamp aligner slightly to the left (viewed from rear of the aligner) and use the top sight (Fig. 4-1) and the foresight (Fig. 4-2) to line up the equipment with the vertical centre line of the headlamp within 6.mm (0.25in).

This headlamp may now be checked for dipped and main beam alignment. Having checked one headlamp, move the tester across to the other lamp. Ensure that the tester is correctly aligned and then check the beam setting.

HEADLAMP ALIGNMENT PROCEDURE

A screen (Fig. 5) inside the equipment is viewed through the tinted window and is a scaled down reproduction of a test screen at least 3m (10ft) wide placed at a distance of 10m (33ft) from the vehicle headlamps.

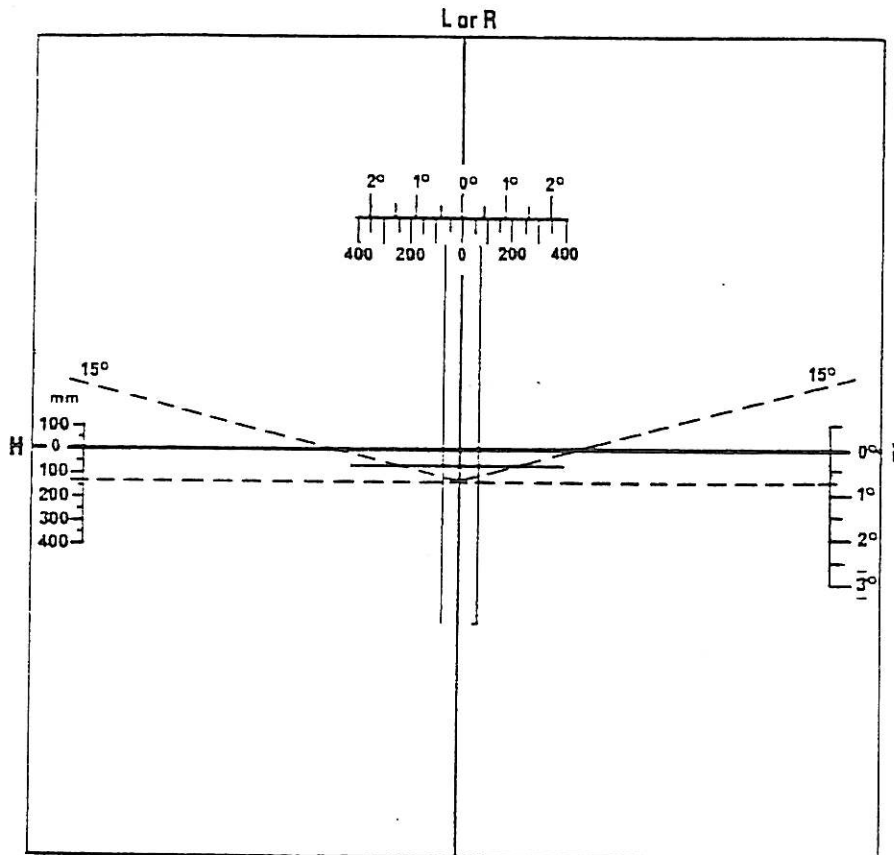


Fig. 5

The British Standards publication BS AU 156 : 1971 gives details of the full size screen. Purchasers in other countries must refer to their own National regulations.

Since the vehicle lighting regulations vary throughout the countries of the world, the following instructions can only be taken as a guide. When in doubt consult your National standards office.

NOTE: Before checking the beam alignment, reflector and bulb filament condition should be examined and the general security of the lamp in its mounting.

The headlamp beams must be set accurately and the greatest possible care must be taken when aligning the vehicle and the equipment.

1. Use the table on page 8 to determine whether the headlamp should be set on main or dipped beam. UK users will find further information in the D. Tp. Testers Manual. Overseas users should refer to the manufacturer's specification.

2. Switch on the headlamps and select the appropriate lamp beam.
 3. View the light pattern displayed on the screen through the tinted window. The brightest area of light - known as the 'hot spot' - should be displayed for the appropriate type of headlamp as follows:
 - UK and European main beam Fig. 6
 - UK dipped beam Fig. 7
 - European asymmetric dipped beam Fig. 8
 - European symmetric dipped beam Fig. 9
- Fig. 10 illustrates a number of headlamp lens markings together with the appropriate testing mode.
4. If the headlamp is not aimed accurately, adjust according to Manufacturers instructions to correct the beam alignment.

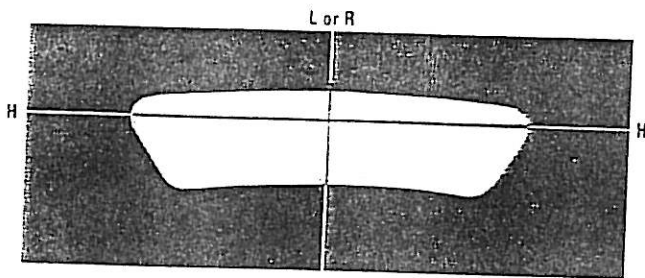


Fig. 6

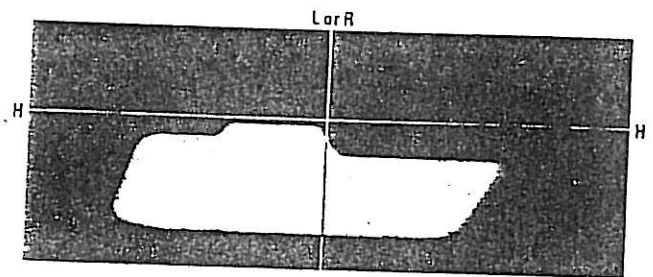


Fig. 7

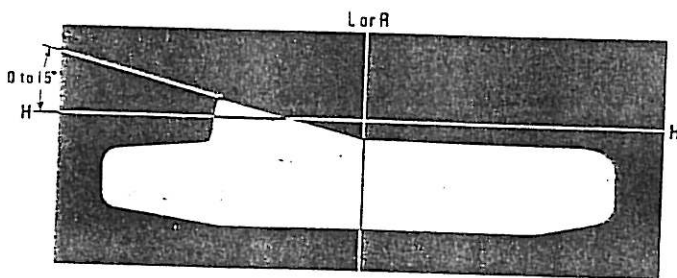


Fig. 8

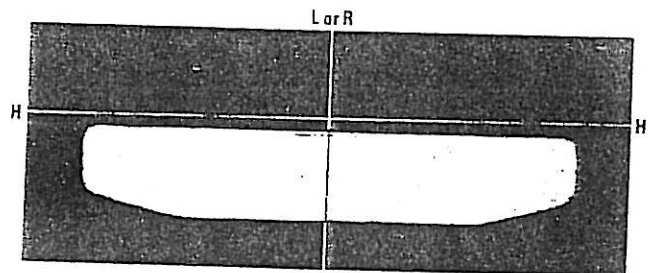


Fig. 9

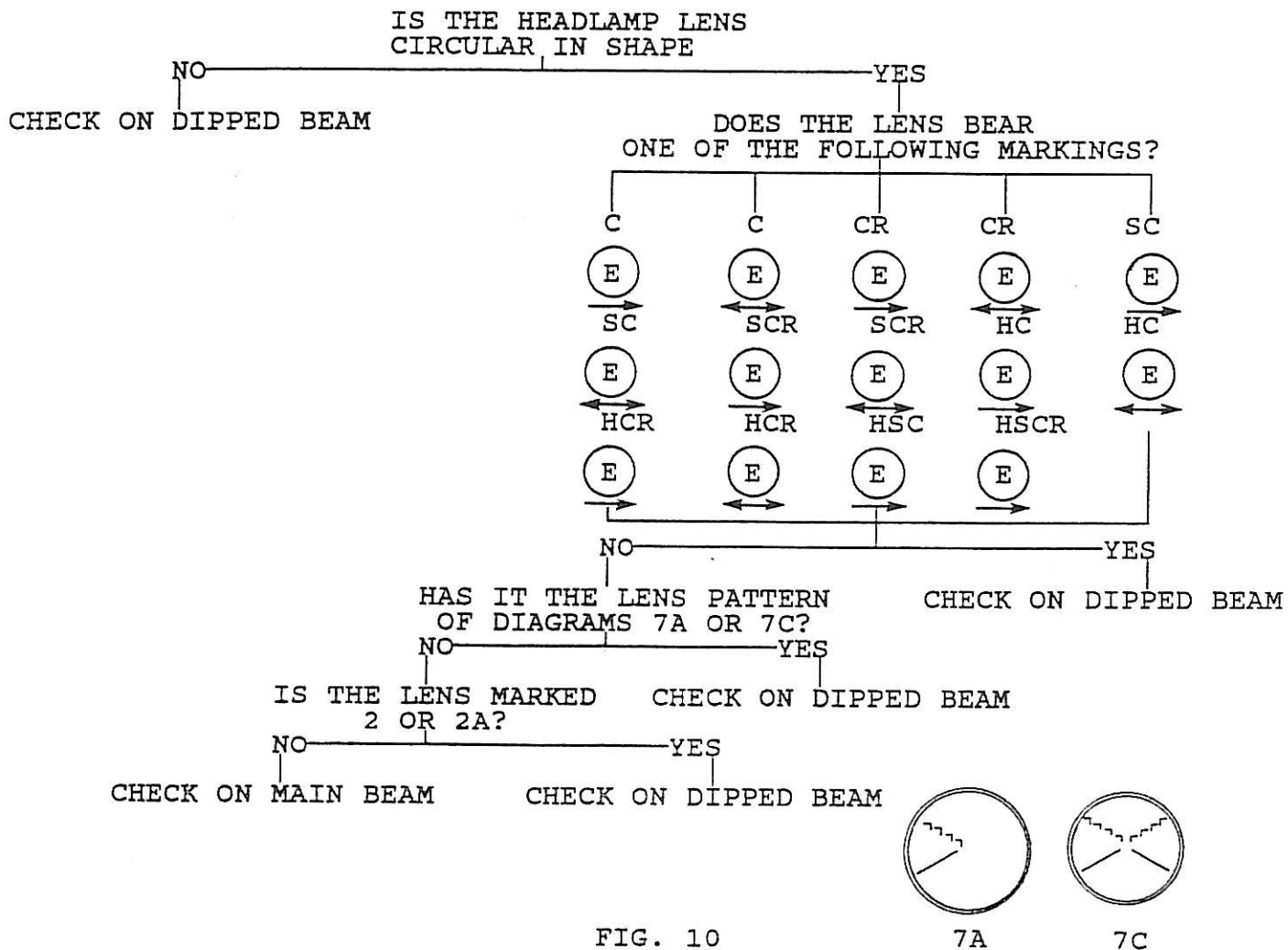


FIG. 10

7A

7C

NOTE: Some European type headlamps have the segment shaped pattern moulded into both the offside and nearside of the lens (Diagram 7C). These are made to dip to the nearside for UK use by adjustment of the bulb. The beam aim must be checked as for other European type headlamps.

LIGHT INTENSITY TESTS

The meter fitted to the J11 has two scales as shown in Fig. 11.

Each scale measures lux, one lux = an illumination of one lumen per square metre. A three position switch controls the sensitivity of the instrument as follows:-

Switch up: Read top meter scale - main beam halogen lamps only.

Switch Central: Read top meter scale - main beam standard filament lamps.

Switch Down: Read bottom meter scale - dipped beam only, halogen and standard lamps.

CAUTION: Never press the switch down when the lamp is switched to main beam.

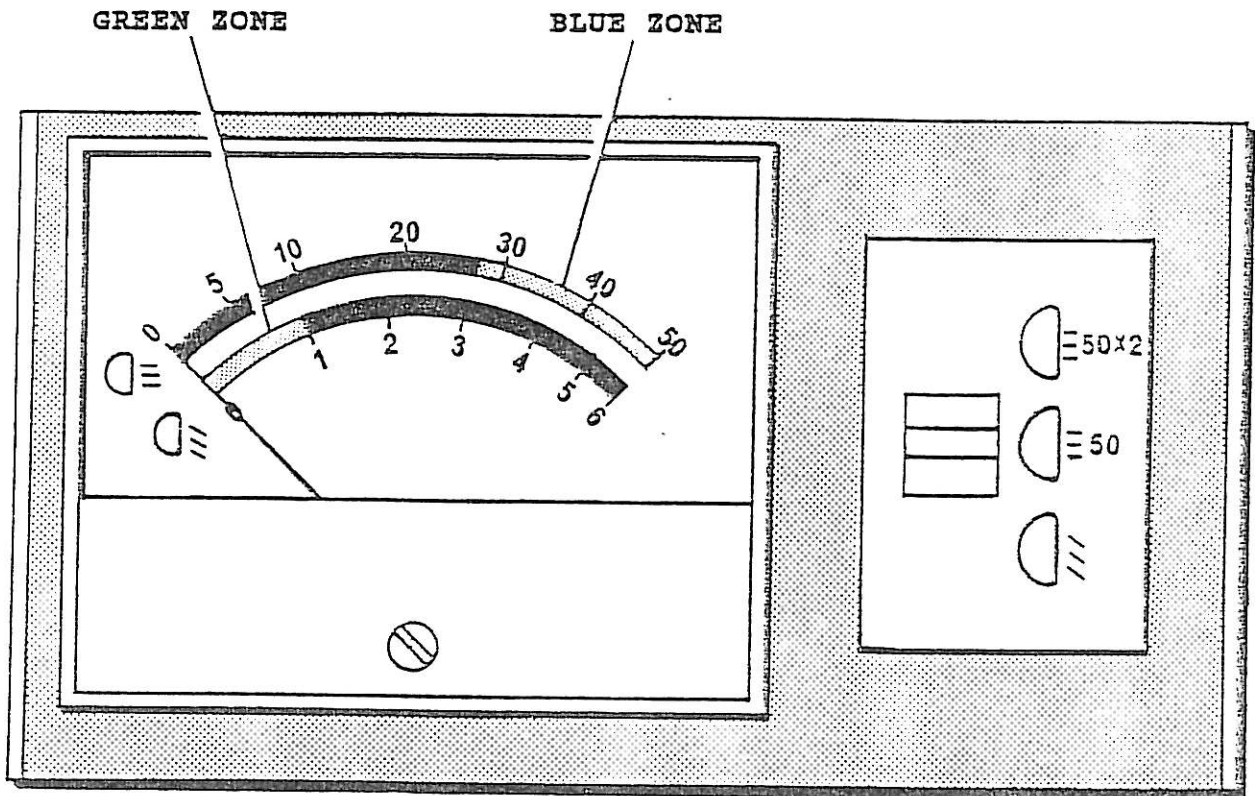


Fig. 11

TEST PROCEDURE

1. Set up the headlamp aligner and adjust the headlamp lens as previously described.
2. Dip the headlamp beam and push the meter sensitivity switch down. The meter needle should read in the green zone on the bottom scale. If the reading is outside the green zone, dazzle will be experienced by drivers of oncoming vehicles.
3. Release the meter sensitivity switch and leave it in the central position (standard filaments) or move it to the top position (halogen lamps).
4. Select main beam and check the reading on the top scale. This should be in the blue zone.

IMPORTANT: Standard filament lamps should emit 32 lux at 12.8 volts, halogen lamps should emit 64 lux at 12.8 volts. This means that the vehicle charging system must be operating during test 4.

HEADLAMP ALIGNER CHECKING UNIT FOR USE WITH MODELS J3 & J11

INTRODUCTION

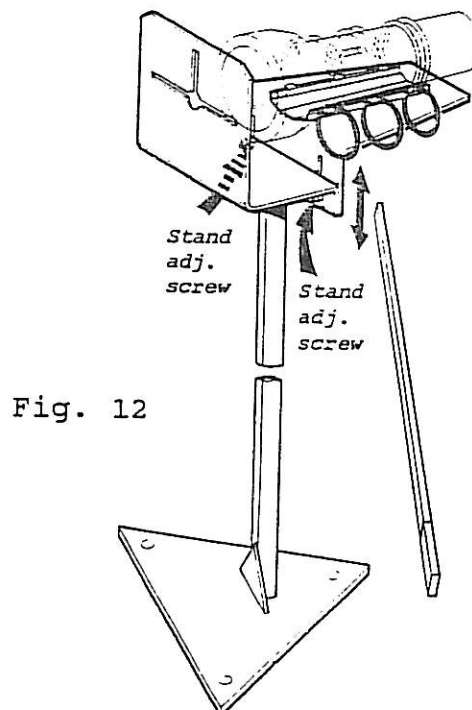
Before a Headlamp Aligner can be used with accuracy it is essential that the equipment itself is installed and set correctly in both vertical and horizontal planes (see pages 1 & 2 of the Operating Instructions).

The Checking Unit is designed for use on site and provides a quick and simple method of ensuring that either Model J3 or J11 Headlamp Aligner is set up accurately.

The component parts of the unit (Fig. 12) are:

- (a) Stand with checking screen.
- (b) Electric tubular hand torch (not supplied with the equipment). The torch is held secure on the calibration stand by three rubber bands as shown in Fig. 12.
- (c) Height adjustment rod. This is used to set the centreline of the lens on the Headlamp Aligner at the same height as the horizontal slits in the screen of the checking unit.

Carefully inspect the equipment as soon as it is received. If any loss or damage has occurred in transit, report immediately in writing to the carrier and supplier, giving full details.



CHECKING PROCEDURE

1. Place the Checking Unit in front of the Headlamp Aligner with the checking screen 2.44m (8ft) from the lens. Switch the torch ON. Adjustment of the torch height may be gained by loosening off the two stand adjusting screws, altering the height of the torch stand so that the torch is parallel and square on a centre with the aperture in the calibration screen. Retighten the screws and check for correct torch alignment.

- Looking through the backsight of the Headlamp Aligner, observe the screen on the Checking Unit. Using the raise and lower handle, move the Aligner so that the illuminated centre aperture and slits of the screen come into view (see Fig. 13).

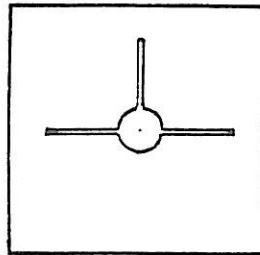


Fig. 13

- Using the knurled adjusting knob on the Headlamp Aligner, align the foresight with the vertical slit on the screen. When the two are directly in line the slit will be hidden by the foresight (see Fig. 14).

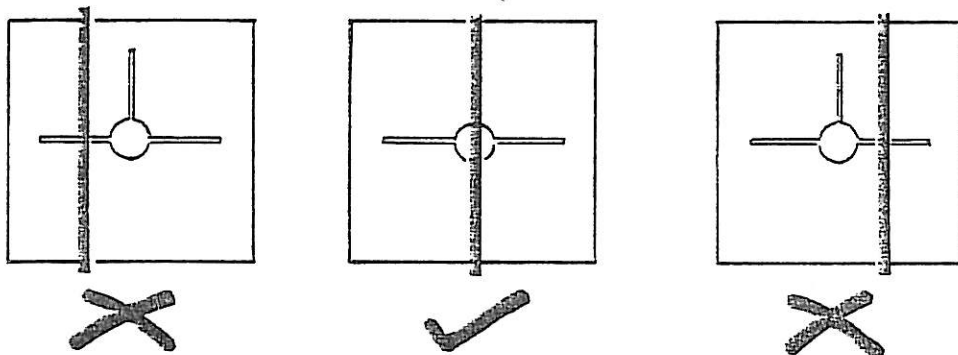


Fig. 14

- Using the height adjustment rod, set the Headlamp Aligner to the correct height from the floor. The top edge of the mark on the rod is to be aligned with the top edge of the CRYPTON nameplate (see Fig. 3). The Headlamp Aligner is now correctly set up for height and must not be moved during the rest of the test.

NOTE: Where a Headlamp Aligner is used in conjunction with a vehicle lift which is not flush mounted and the checking unit has to be located on the lift platform, a new mark must be made higher up on the height adjustment rod to compensate for the height of the lift platform.

- Move to the rear of the checking unit and taking care not to move the stand, look at the Headlamp Aligner through the top vertical slit (see Fig. 15).

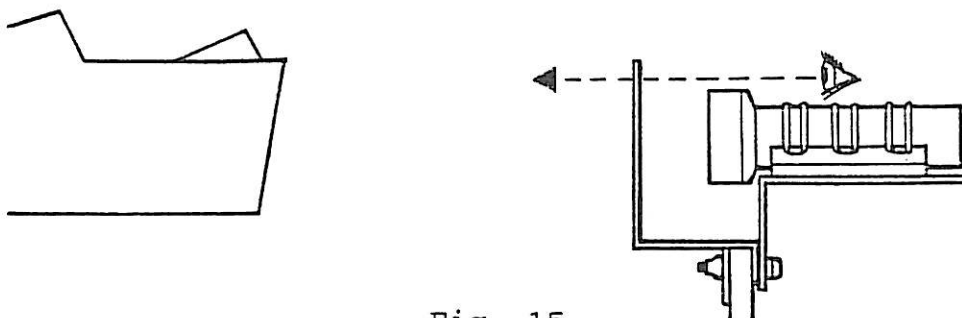


Fig. 15

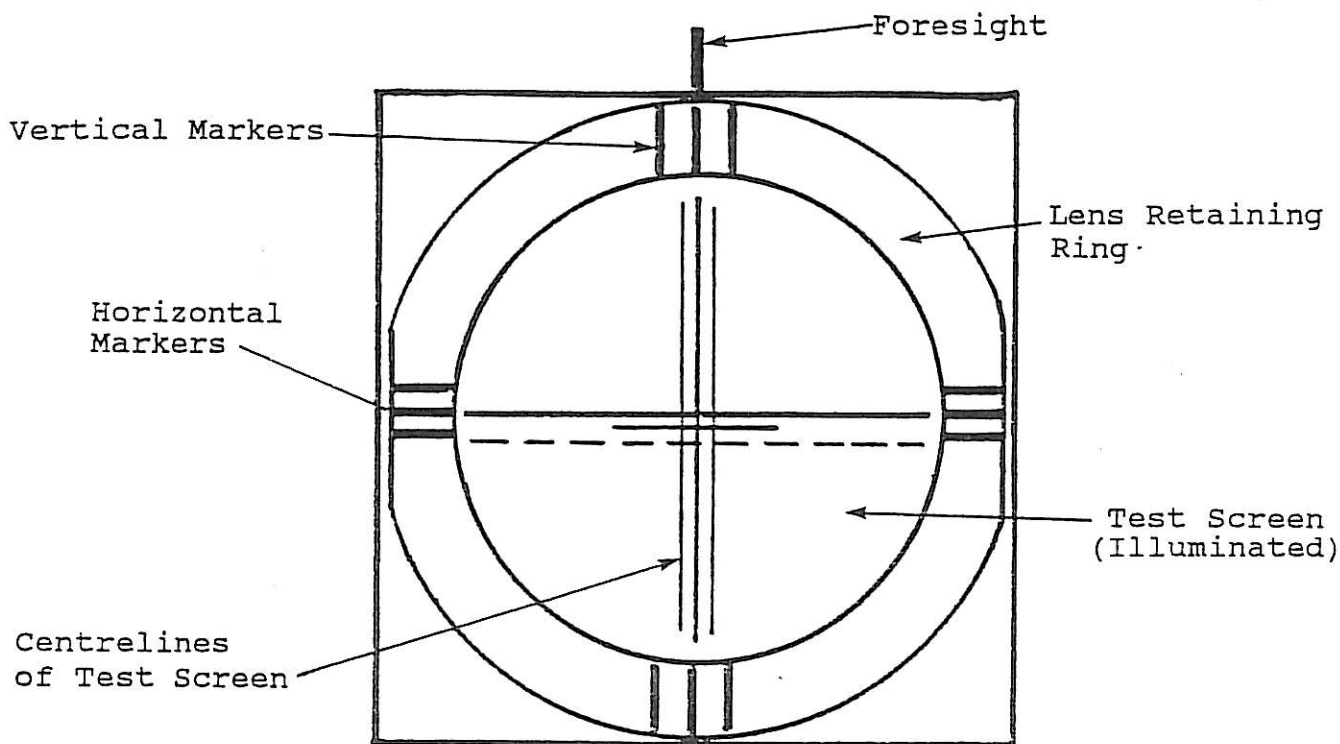


Fig. 16

6. Observe the lens retaining ring fitted to the Headlamp Aligner - this is illuminated by the beam from the torch. The alignment in the vertical plane is checked by noting that the vertical centre-line on the test screen, the centre vertical mark on the lens retaining ring* and the foresight are all in line (see Fig. 16).

NOTE: If the foresight is difficult to see, chalk or paint white its front edge. It is inadvisable to carry out the checking procedure in high ambient light conditions, i.e. in bright sunlight or where high intensity overhead lighting is employed. However, if difficulty is experienced in observing the calibration marks, an additional lamp can be used along-side the checking unit, e.g. a car headlamp or a hand-held spot lamp.

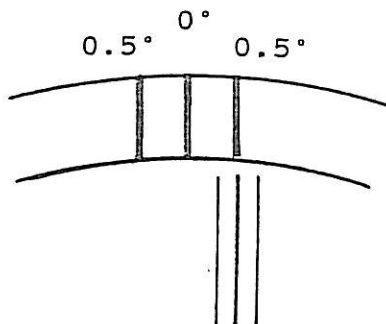


Fig. 17

The lines on each side of the centre mark of the lens retaining ring represent 0.5° misalignment of the optical system (see Fig. 17).

*On earlier Headlamp Aligners the lens retaining ring was not calibrated. Suitably marked replacements are available and can be purchased and fitted quite easily. Fitting instructions are on page 13.

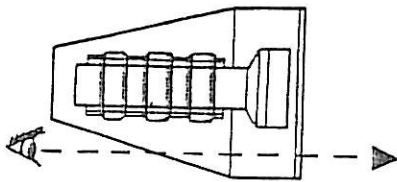


Fig. 18

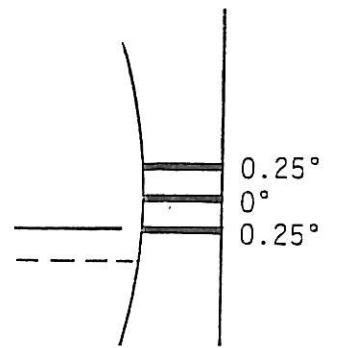
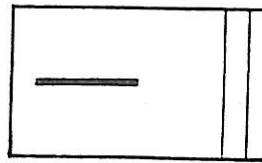


Fig. 19

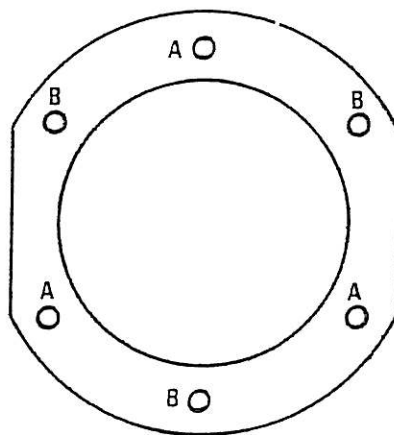
7. To check the horizontal plane repeat the procedure, viewing this time through the right hand horizontal slit of the checking screen (see Fig. 17). In this case the horizontal centre-line of the test screen and the centre horizontal mark on the lens retaining ring should be in line (see Fig. 19). The lines on either side of the centre mark of the lens retaining ring each represent 0.25° misalignment of the optical system.

NOTES:

1. If the area used for checking complies with the installation procedure outlined on Page 1 and the equipment has been carefully installed, i.e. rails are level, parallel and undistorted, then the Headlamp Aligner should be capable of meeting the standard laid down (BS AU 156: 1971) in this test procedure.
2. If at any time the equipment does not meet the required standard, providing the rails are still in correct alignment and the requirements under INSTALLATION (page 1) have been met, the equipment is faulty and should be carefully packed and returned to FKI Transervice at Bridgwater for overhaul.

CALIBRATED LENS RETAINING RING FITTING INSTRUCTIONS

1. Remove the three screws at A, complete with spacers. Take care not to drop or damage the lens assembly.
2. Remove the lens from the mounting plate by removing the three screws at B, plus the rear retaining clips (not shown).
3. Transfer the screws B and retaining clips to the new lens retaining ring. Attach the lens to the new ring (marker lines to front) at the same time ensuring that the lens is centrally located on the ring.
4. Refit the lens assembly using screws A and spacers.





CRYPTON

FKI Crypton Ltd.,
Bristol Road,
Bridgwater, Somerset,
TA6 4BX, England.
Tel: Bridgwater (0278) 424300
Telex: 46356 Fax: (0278) 450567
