COMMISSION DIRECTIVE

of 1 August 1989

adapting to technical progress Council Directive 76/761/EEC on the approximation of the laws of the Member States relating to motor-vehicle headlamps which function as main-beam and/or dipped-beam headlamps and to incandescent electric filament lamps for such headlamps

(89/517/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers (1), as last amended by Directive 87/403/EEC (2), and in particular Article 11 thereof,

Having regard to Council Directive 76/761/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to motor-vehicle headlamps which function as main-beam and/or dipped-beam headlamps and to incandescent electric filament lamps for such headlamps (3), as last amended by Directive 87/354/EEC (4), and in particular Article 10 thereof,

Whereas, in the light of experience and in view of the current state of the art, certain requirements may now be supplemented and brought more into line with real traffic conditions, thus improving the safety of vehicle occupants and other road users;

Whereas the measures provided for in this Directive are in accordance with the opinion of the Committee for the Adaptation to Technical Progress of Directives on the Removal of Technical Barriers to Trade in the Motor Vehicles Sector,

HAS ADOPTED THIS DIRECTIVE:

Article 1

The list of Annexes and Annexes I, II, V and VI to Directive 76/761/EEC shall be amended in accordance with the Annex to this Directive. A new Annex VII, also set out in the Annex to this Directive, shall be added.

Article 2

1. With effect from 1 January 1990, no Member State may:

(a) — refuse, in respect of a type of vehicle, to grant EEC type-approval, to issue the document referred to in the third indent of Article 10 (1) of Directive 70/156/EEC, or to grant national type-approval, or

— prohibit the entry into service of vehicles,

on grounds relating to the headlamps which function as main-beam and/or dipped-beam headlamps and to the incandescent electric filament lamps for such lamps, hereinafter referred to as 'headlamps' and 'lamps' respectively, if the latter comply with the provisions of this Directive;

(b) — refuse to grant EEC component type-approval or national component type-approval in respect of the said headlamps and lamps if they comply with the provisions of this Directive, or

— prohibit the placing on the market of headlamps and lamps if the latter bear the EEC component type-approval mark issued in accordance with the provisions of this Directive.

2. With effect from 1 July 1990, Member States:

(a) — shall not issue the document referred to in the third indent of Article 10 (1) of Directive 70/156/EEC in respect of a type of vehicle of which the headlamps and lamps do not comply with the provisions of this Directive,

— may refuse to grant national type-approval in respect of a type of vehicle of which the said headlamps and lamps do not comply with the provisions of this Directive;

(b) — shall not grant EEC component type-approval in respect of headlamps and lamps if the latter do not comply with the provisions of this Directive,

— may refuse to grant national component type-approval in respect of the said headlamps and lamps if they do not comply with the provisions of this Directive.

3. With effect from 1 April 1994, Member States may prohibit the entry into service of vehicles of which the

(1) OJ No L 42, 23. 2. 1970, p. 1.
(2) OJ No L 220, 8. 8. 1987, p. 44.
(3) OJ No L 262, 27. 9. 1976, p. 96.
(4) OJ No L 192, 11. 7. 1987, p. 43.

headlamps and lamps do not comply with the provisions of this Directive, and the placing on the market of headlamps and lamps which do not bear the type-approval mark issued in accordance with the provisions of this Directive.

4. By way of derogation from the provisions of 2 (b) above, Member States shall continue to recognize EEC component type-approval granted for a type of headlamp and a type of lamp pursuant to the provisions of Directive 76/761/EEC which are intended to be mounted on vehicles already in service.

Article 3

Member States shall bring into force the provisions necessary to comply with this Directive not later than 31 December 1989. They shall forthwith inform the Commission thereof.

The provisions adopted pursuant to the first subparagraph shall make express reference to this Directive.

Article 4

This Directive is addressed to the Member States.

Done at Brussels, 1 August 1989.

For the Commission
Martin BANGEMANN
Vice-President

ANNEX

The following new Annex VII is added to the List of Annexes, after Annex VI:

'Annex VII — Tests for stability of photometric performance of headlamps in operation'.

Annex I is amended as follows:

Items 1 to 1.1.5 are replaced by the following:

'1. DEFINITIONS

1.1 The definitions set out in Directive 76/756/EEC of:
- main-beam headlamp,
- dipped-beam headlamp,
- lamp,
- light source with regard to filament lamps,
- independent lamps,
- grouped lamps,
- combined lamps,
- reciprocally incorporated lamps,
- illuminating surface of a lighting device,
- apparent surface,
- light-emitting surface,
- axis of reference,
- centre of reference,

shall apply to this Directive.

1.2 **Type of lamp**

"Tpye of lamp" means lamps which do not differ in such essential respects as, for example:

1.2.1 the trade names or marks;

1.2.2 the characteristics of the optical system;

1.2.3 the inclusion of additional components capable of altering the optical effects by reflection, refraction or absorption;

1.2.4 suitability for right-hand or left-hand traffic or for both traffic systems;

1.2.5. ability to provide a dipped beam or a main beam or both.'

In item 5.4, the last paragraph is deleted.

After item 5.4, the following new item 5.5 is added:

'5.5 In order to ensure that the photometric performance of lamps does not change considerably during use, additional tests must be carried out in accordance with the provisions of Annex VII; conformity with the requirements of 5.2 to 5.4 shall be verified visually and, where necessary, by a trial fitting.'

Item 8 is replaced by the following:

'8. CONFORMITY OF PRODUCTION

Every headlamp bearing an EEC component type-approval mark shall conform to the approved type and comply with the photometric requirements set out in item 6 above and in item 3 of Annex VII.'

Annex II is amended as follows:

Add the following to item 1:

'C/R, C/R, C/R, C/, C/, C/'

After the item thus amended, the following new items 2 and 3 are added:

'2. The filament of the dipped-beam headlamp may/may not (*) be lit at the same time as that of the main-beam headlamp and/or another reciprocally incorporated lamp.

3. The lamp may be used with (a) filament lamp(s) having a nominal voltage of 6 V, 12 V or 24 V (*)'

Items 2 to 16 are renumbered 4 to 18.

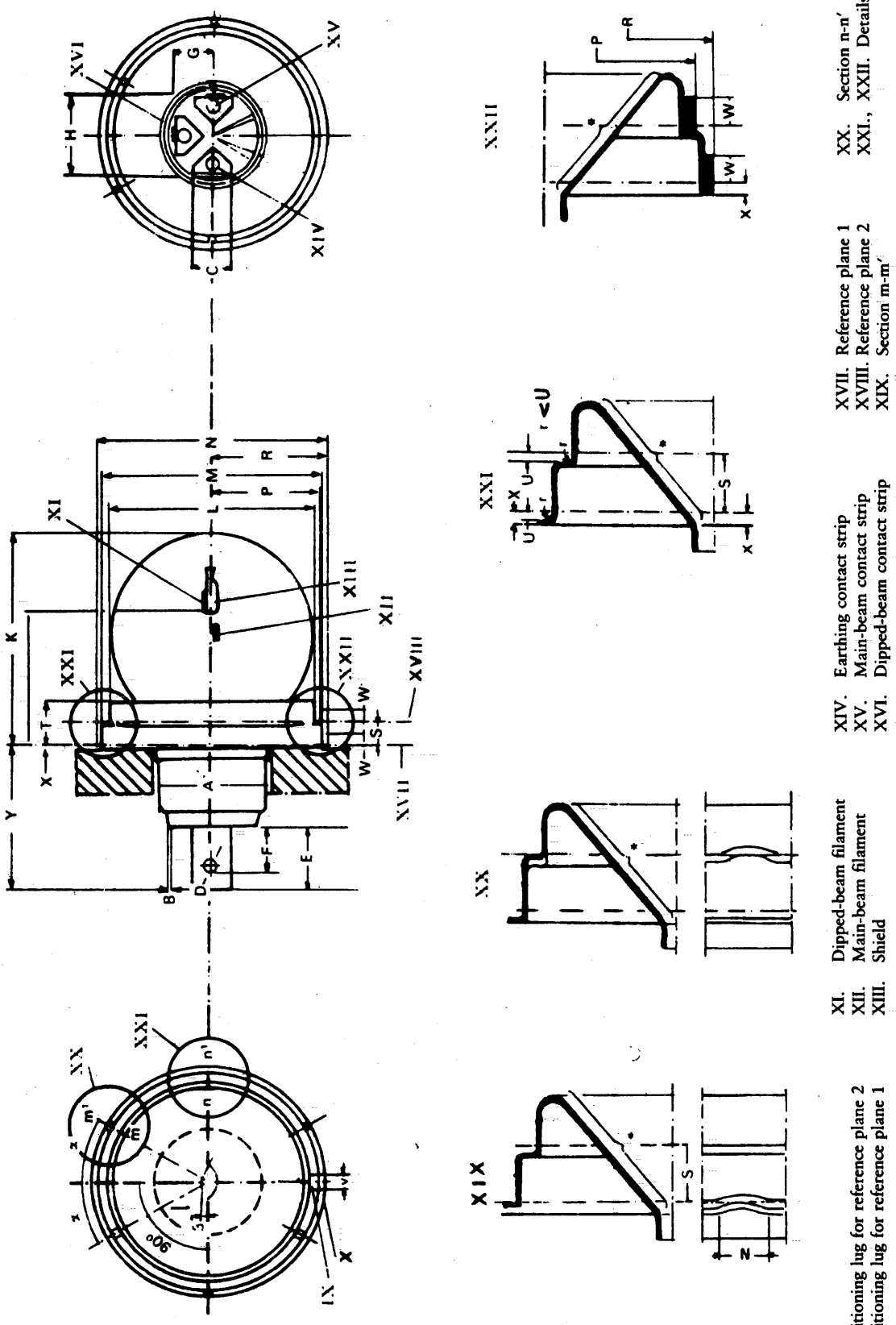
Annex V is amended as follows:

Appendix 4, 1, Figure, is replaced by the following:

'Appendix 4

DOUBLE FILAMENT: INTERCHANGEABILITY

1. Figure



Key

IX. Positioning lug for reference plane 2
X. Positioning lug for reference plane 1
XI. Dipped-beam filament
XII. Main-beam filament
XIII. Shield
XIV. Earthing contact strip
XV. Main-beam contact strip
XVI. Dipped-beam contact strip
XVII. Reference plane 1
XVIII. Reference plane 2
XIX. Section m-m'
XX. Section n-n'
XXI., XXII. Details'

Appendix 4, 3, Notes, is amended as follows:

Item 9 is replaced by the following:

'9. The contact strips (XIV, XV and XVI) must be placed in the order indicated above and positioned in relation to the positioning lugs either as indicated in the drawing or at an angle of 180° from that position, with a tolerance of ± 20° in either case.'

Annex VI is amended as follows:

Item 1.2.1.3 is replaced by the following:

'1.2.1.3 a drawing (three copies), in sufficient detail to permit identification of the type, showing a front view of the lamp with, if necessary, details of the lens moulding, and in cross-section.

The drawing must indicate the limits of the illuminating surface and the position of the EEC component type-approval mark (in particular, the component type-approval number and the category reference(s)).'

After item 2.1.4, the following new item 2.1.5 is added:

'2.1.5 In all cases, the mode of operation used during the test procedure described in 1.1.1.1 of Annex VII and the voltage(s) permitted in accordance with 1.1.1.2 of Annex VII must be indicated on the EEC component type-approval certificate.

The device must bear the following mark in the appropriate place:

— in the case of headlamps that comply with the provisions of this Directive and are so designed as to preclude any simultaneous lighting of the dipped-beam filament and the filament of any other light source with which it may be reciprocally incorporated, a stroke (/) after the dipped-beam symbol in the component type-approval mark;

— in the case of headlamps that comply with the provisions of Annex VII of this Directive only when under a voltage of 6 V or 12 V, a symbol consisting of the figure 24 marked with a cross (~~24~~) affixed near the socket of the filament lamp.'

Item 4.2, read:

'4.2 This mark shall consist of a rectangle surrounding the letter "e" followed by the distinguishing number or letters of the Member State which has granted type approval:

1 for Germany,

2 for France,

3 for Italy,

4 for the Netherlands,

6 for Belgium,

9 for Spain,

11 for the United Kingdom,

13 for Luxembourg,

18 for Denmark,

21 for Portugal,

EL for Greece,

IRL for Ireland.

It must also include the EEC component type-approval number which corresponds to the number of the EEC component type-approval certificate issued for the type of headlamp or lamp in question, preceded by one or two figures indicating the serial number assigned to the most recent major technical amendment of Council Directive 76/761/EEC, on the date EEC component type-approval was granted. For the present Directive, the serial number is "2" for filament lamps and "01" for headlamps. That number shall be placed above the rectangle in the case of a headlamp and near the rectangle in the case of a filament lamp.'

After item 4.3.5, the following new item 4.3.6 is added:

'4.3.6 Marking must, moreover, comply with the provisions of item 2.1.5 of this Annex.'

The Appendix is amended as follows:

After Figure 8, the following new Figures 9 and 10 and their keys are added:

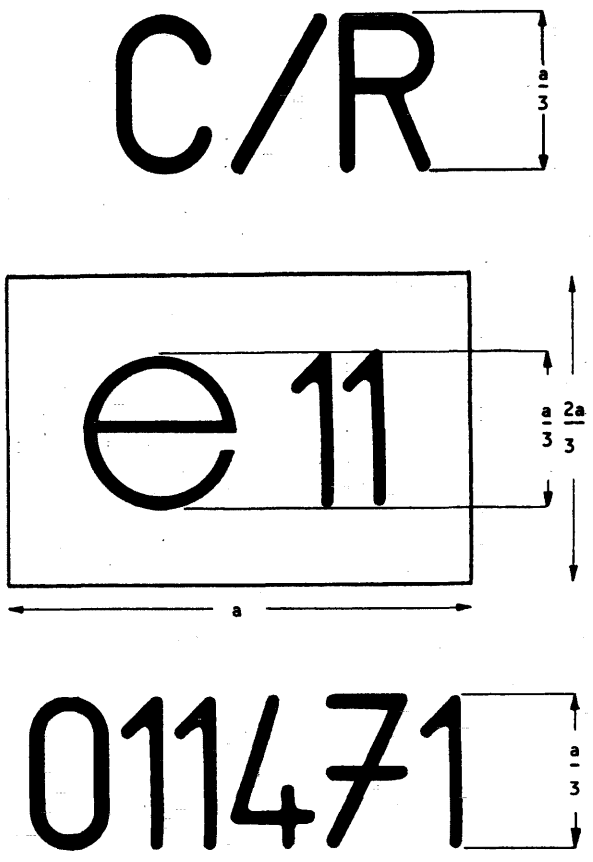


Figure 9

Identification of a headlamp meeting the requirements of this Directive with regard to both the dipped beam and the main beam and designed for right-hand traffic only,

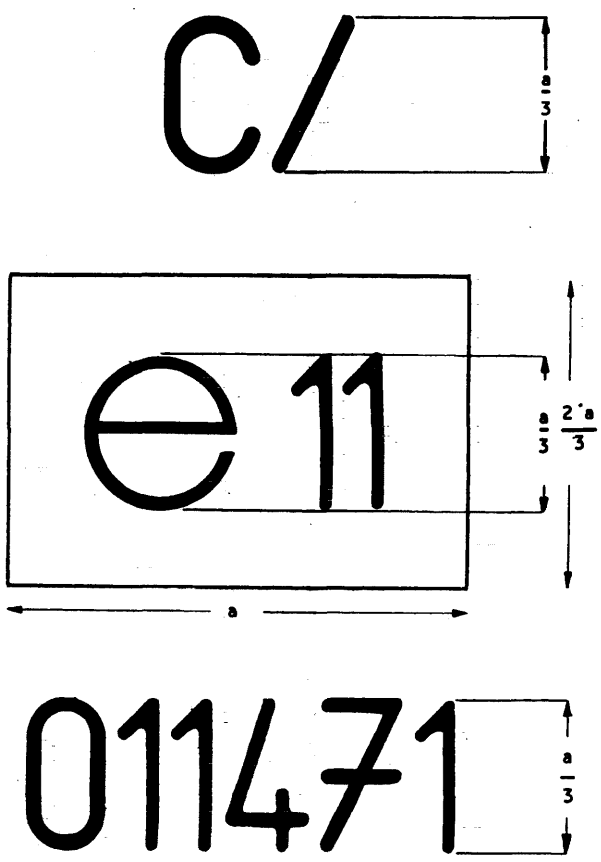


Figure 10

Identification of a headlamp meeting the requirements of this Directive with regard to the dipped beam only and designed for right-hand traffic only,

in which the dipped-beam filament cannot be lit at the same time as the main-beam filament of the R 2 filament lamp or that of any other lamp with which it may be reciprocally incorporated.

The following new Annex VII is inserted after Annex VI:

'ANNEX VII

TESTS FOR STABILITY OF PHOTOMETRIC PERFORMANCE OF HEADLAMPS IN OPERATION

Compliance with the requirements of this Annex is not sufficient for the approval of headlamps incorporating lenses of plastic material.

TESTS ON COMPLETE HEADLAMPS

Once the photometric values have been measured in accordance with the provisions of this Directive, at points E_{max} for the main-beam and points HV, 50R, and B50L for the dipped beam, (or HV, 50L, B50R for headlamps designed for driving on the left), a complete headlamp sample shall be tested for stability of photometric performance in operation. The term 'complete headlamp' shall be understood to mean the complete lamp itself including those surrounding body parts and lamps which could influence its thermal dissipation.

1. TEST FOR STABILITY OF PHOTOMETRIC PERFORMANCE

The tests shall be carried out in a dry and still atmosphere at an ambient temperature of 23 °C ± 5 °C, the complete headlamp being mounted on a base representing the correct installation on the vehicle.

1.1 **Clean headlamp**

The headlamp shall be operated for 12 hours as described in 1.1.1 and checked as prescribed in 1.1.2.

1.1.1 *Test procedure*

The headlamp shall be operated for the specified time so that:

1.1.1.1 (a) in cases where only one light source (main-beam or dipped-beam) is to be type-approved, the corresponding filament is lit for the prescribed time, (**);

(b) in the case of a reciprocally incorporated main-beam headlamp and dipped-beam headlamp (dual-filament lamp or two filament lamps):

— if the applicant declares that the headlamp is to be used with a single filament lit at a time (*), the test shall be carried out in accordance with this condition, and each specified light source shall be lit (**) for half the time specified in 1.1;

— in all other cases (*) (**), the headlamp shall be subjected to the following cycle until the time specified is reached:

15 minutes, dipped-beam filament lit,
5 minutes, all filaments lit,

(c) in the case of grouped light functions (sources), all the individual sources shall be lit simultaneously for the time specified for individual light sources, (a) also taking into account the use of reciprocally incorporated light sources; (b) according to the manufacturer's specifications.

1.1.1.2 Test voltage

The voltage shall be so adjusted as to supply a wattage 15 % higher than the rated wattage specified in the Directive for 6 V or 12 V filament lamps, and 26 % higher than the rated wattage for 24 V filament lamps.

The applied wattage shall in all cases comply with the corresponding value of a filament lamp of 12 V rated voltage, except where the applicant specifies that the headlamp may be used at a different voltage. In the latter case, the test shall be carried out using the filament lamp with the highest wattage that can be used.

(*) Should two or more lamp filaments be simultaneously lit when headlamp flashing is used, this shall not be considered as being normal simultaneous use of the filaments.

(**) When the headlamp tested is grouped or reciprocally incorporated with the position (side) lamps, the latter shall be lit for the duration of the test. If the device comprises a direction indicator lamp, the latter shall be lit in flashing operation mode with an on/off time ratio of one to one.

1.1.2 *Test results*

1.1.2.1 Visual inspection

Once the headlamp has been stabilized to the ambient temperature, the headlamp lens and the external lens, if any, shall be cleaned with a clean, damp cotton cloth. It shall then be inspected visually; no distortion, deformation, cracking or change in colour of either the headlamp lens or the external lens, if any, shall be noticeable.

1.1.2.2 Photometric test

To comply with the requirements of this Directive, the photometric values shall be verified at the following points:

Dipped-beam:

50 R, B 50 L and HV for headlamps made or adjusted for right-hand traffic;
50 L, B 50 R and HV for headlamps made or adjusted for left-hand traffic;

Main-beam:

Point of E_{max}

A further adjustment may be made to allow for any deformation of the headlamp base due to heat (for the setting of the cut-off line, see section 2).

A 10 % discrepancy, including the tolerances of photometric measurement procedure is permissible between the photometric characteristics and the values measured prior to the test.

1.2 **Dirty headlamp**

After being tested as provided in 1.1 above, the headlamp shall be prepared as prescribed in 1.2.1 then operated for one hour as described in 1.1.1 and checked as prescribed in 1.1.2.

1.2.1 **Preparation of the headlamp**

1.2.1.1 Text mixture

The mixture of water and a polluting agent to be applied to the headlamp shall be composed of nine parts (by weight) of silica sand with a grain size of between 0 and 100 µm, one part (by weight) of powdered vegetable charcoal with a grain size of between 0 and 100 µm 0,2 part (by weight of NaCMC and an appropriate quantity of distilled water, the conductivity of which is lower than 1 mS/m.

The mixture must not be more than 14 days old.

1.2.1.2 Application of the test mixture to the headlamp

The test mixture shall be uniformly applied to the entire light emitting surface of the headlamp and then left to dry. This procedure shall be repeated until the illumination value has dropped to 15 to 20 % of the values measured for each of the following points in the conditions described in this Annex.

Point of E_{max} in main-beam photometric distribution for a main-beam/dipped-beam headlamp;

Point of E_{max} in main-beam photometric distribution for a dipped-beam headlamp only,

50 R and 50 V (*) for a dipped-beam headlamp only, made or adjusted for right-hand traffic;

50 L and 50 V (*) for a dipped-beam headlamp only, made or adjusted for left-hand traffic.

1.2.1.3 Measuring equipment

The measuring equipment shall be equivalent to that used during headlamp component type-approval tests. A standard (reference) filament lamp shall be used for the photometric verifications.

2. TEST FOR CHANGE IN VERTICAL POSITION OF THE CUT-OFF LINE UNDER THE INFLUENCE OF HEAT

This test consists in verifying that the vertical drift under the influence of heat of the cut-off line of a dipped-beam headlamp in operation does not exceed a specified value.

After having been tested in accordance with section 1, the headlamp shall be subjected to the test described in 2.1, without being removed from or readjusted in relation to its test fixture.

(*) 50 V is situated 375 mm below H on the vertical line V-V where the screen is at a distance of 25 m.

2.1 Test

The test shall be carried out in a dry and still atmosphere at an ambient temperature of 23 °C ± 5 °C.

Using a mass-production filament lamp that has been aged for at least one hour, the headlamp shall be operated on dipped beam without being dismounted from or readjusted in relation to its test fixture. (For the purpose of this test, the voltage shall be adjusted as specified in 1.1.1.2. The position of the horizontal part of the cut-off line (between vv and the vertical line passing through point B 50 L for right-hand traffic or B 50 R for left-hand traffic) shall be verified 3 minutes (r_3) and 60 minutes (r_{60}) respectively after operation.

The measurement of the change in the cut-off line position as described above shall be carried out by any method giving acceptable accuracy and reproducible results.

2.2. Test results

2.2.1. The result expressed in milliradians (mrad) shall be deemed acceptable for a dipped-beam headlamp only where the absolute value

$\Delta r_I = [r_3 - r_{60}]$ recorded on the headlamp is not more than 1,0 mrad ($\Delta r_I \leqslant 1{,}0$ mrad).

2.2.2. However, if that value is more than 1,0 mrad, but not more than 1,5 mrad (1,0 mrad $< \Delta r_I \leqslant 1{,}5$ mrad), a second headlamp shall be tested as described in 2.1 after being subjected three times in succession to the cycle described below, in order to stabilize the position of the mechanical parts of the headlamp on a base representative of the correct installation on the vehicle:

— operation of the dipped-beam headlamp for one hour (the voltage being adjusted as specified in 1.1.1.2),

— period of rest for one hour.

The headlamp type shall be deemed acceptable if the mean value of the absolute values Δr_I measured on the first sample and Δr_{II} on the second sample is not more than 1,0 mrad

$$\left(\frac{\Delta r_I + \Delta r_{II}}{2} \leqslant 1{,}0 \text{ mrad}\right)$$

3. CONFORMITY OF PRODUCTION

One of the sampled headlamps shall be tested according to the procedure described in 2.1 after being subjected three times in succession to the cycle described in 2.2.2.

The headlamp shall be deemed acceptable if Δr does not exceed 1,5 mrad.

If that value is worse than 1,5 mrad, but not more than 2,0 mrad, a second headlamp shall be subjected to the test, after which the mean of the absolute values recorded on both samples shall not exceed 1,5 mrad.'