

# COMMISSION OF THE EUROPEAN COMMUNITIES

COM(74) 2054 final

// Brussels, 13 December 1974

## Proposal for a COUNCIL DIRECTIVE

on the approximation of the laws of the Member States  
relating to headlights for motor vehicles emitting an  
asymmetrical passing beam or a driving beam or both,  
and to incandescent electric lamps for such headlights

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(submitted to the Council by the Commission)



2

EXPLANATORY MEMORANDUM

This proposed Directive is to form part of the Community type-approval procedure referred to in Council Directive 70/156/EEC of 6 February 1970 (1).

This proposal concerns only technical requirements for the construction and testing of main-beam or dipped-beam headlights and their lamps for motor vehicles, as technical requirements for their installation are included in another proposal concerning the installation of lighting and the light signalling devices (2).

In elaborating this directive the Commission was of the opinion that in order to facilitate commercial exchange beyond the borders of the Community, it was necessary to take into account existing international prescriptions and in particular those of the United Nations Economic Commission for Europe (3) in this perspective the Commission has also examined the possibility to give to the marks granted by this organisation the same effects as of the EEC type approval mark. This possibility has been discarded as some Member States have not ratified to the Agreement of March 1958 of the United Nations concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts, in which framework the activities of the Economic Commission for Europe are carried out. These particular Member States can therefore not defend their interests during the activities of this organisation.

Article 7 incorporates the present directive in the EEC type-approval procedure.

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(1) O.J. No L 42, 23 February 1970, p.1

(2) COM (73) 2024

(3) Regulation No 1 : Uniform regulations for the approval of motor vehicle headlights emitting an asymmetrical passing beam or a driving beam or both.  
Regulation No 2 : Uniform regulations concerning approval of incandescent electric lamps for headlights emitting an asymmetrical passing beam or a driving beam or both.

(Doc. E/ECE/324  
E/ECE/TRANS/505 - Add.1/  
Rev.1)

Since certain Member States do not operate a typeapproval system it is necessary to insert some provisions in order to ensure that vehicles complying with the requirements set out in the Directive can be used in these States. (Art. 8) (1).

The directive is applicable to motor vehicles with at least four wheels and a maximum design speed exceeding 25 km/h (Article 9).

Article 10 contains the procedure for adapting directive to technical progress. This procedure is set out in Article 13 of the Council Directive of 6 February 1970 relating to the type-approval of motor vehicles and trailers.

Article 11 contains two deadlines : before expiry of the first deadline the Member States shall adopt and publish the measures necessary in order to comply with the Directive. The second deadline sets the date on which all of the Member States must simultaneously implement the common rules (Article 11 (1) ).

Finally, the Commission must be informed in good time of all draft provisions drawn up by the Member States in the field referred to in the directive in order to enable it to comment thereon (Article 11 (2)).

#### CONSULTATION OF THE EUROPEAN PARLIAMENT AND ECONOMIC AND SOCIAL COMMITTEE

Pursuant to the Rome Treaty, Article 100 paragraph 2, the opinion of these two institutions is required.

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(1) OJ N°. L 73, 27 March 1972 "Documents concerning the accession to the European Communities of the Kingdom of Denmark, Ireland and the United Kingdom of Great Britain and Northern Ireland". Act concerning the conditions of accession and adjustments to the Treaties - Annex 1, title X.

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof ;

Having regard to the proposal from the Commission ;

Having regard to the Opinion of the European Parliament

Having regard to the Opinion of the Economic and Social Committee ;

Whereas the technical requirements which motor vehicles must satisfy pursuant to national laws relate inter alia to their main-beam and dipped-beam headlights;

Whereas these requirements differ from one Member State to another, ;  
whereas it is therefore necessary that all Member States adopt the same requirements either in addition to or in place of their existing requirements, in order, in particular, to allow the EEC type-approval procedure which was the subject of the Council Directive (70/156/EEC)<sup>(1)</sup> 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 to be applied in respect of each type of vehicle ;

Whereas common requirements for the installation of lighting and light signalling devices on motor vehicles and trailers were laid down by the Council Directive of ..... (2) ;

Whereas common requirements for the construction of other lighting and light signalling devices have been or will be laid down at a later date ;

Whereas a harmonised type-approval procedure for main-beam and dipped.-beam headlights and their lamps makes it possible for each Member State to check compliance with the common construction and testing requirements and to inform the other Member States of its findings by sending a copy of the type-approval certificate completed for each type of main-beam and dipped-beam headlight and its lamps ; whereas the placing of an EEC type-approval mark on all main-beam and dipped-beam headlights and their lamps manufactured in conformity with the approved type obviates any need for technical checks on these in the other Member States ;

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(1) OJ N° L 42, 23 February 1970, p. 1 ; (2) COM (73) 2024

Whereas to facilitate trade with the third countries it is advisable to take into account the technical requirements in this field adopted by the UN Economic Commission for Europe in its Regulation No 1 (Uniform Regulations for the approval of motor vehicle headlights emitting an asymmetrical passing beam or a driving beam or both) and No 2 (Uniform Regulations concerning approval of incandescent electric lamps for headlights emitting an asymmetrical passing beam or a driving beam or both), which are annexed to the Agreement of 20 March 1958 ;

Whereas the approximation of national laws relating to motor vehicles entails reciprocal recognition by Member States of the tests carried out by them individually on the basis of the common requirements; whereas if the system is to function properly these requirements must be applied by all Member States with effect from the same date ;

HAS ADOPTED THIS DIRECTIVE :

Article 1

1. Member States shall grant EEC type approval in respect of any type of main-beam or dipped-beam headlight which satisfies the construction and testing requirements laid down in Annex I hereto and of any type of incandescent electric lamp for such headlights which satisfies the construction and testing requirements laid down in Annex III hereto.
2. Every Member State which grants such type-approval shall take the measures required in order to verify, insofar as is necessary and if

need be in

need be in co-operation with the competent authorities in the other Member States, that production models conform to the approved type. Such verification shall be carried out by means of spot checks.

#### Article 2

Member States shall for each type of main-beam or dipped-beam headlight or lamp for such headlight which they approve pursuant to Article 1 issue to the manufacturer, or to his authorized representative, an EEC type-approval mark conforming to the model shown in Annex VI hereto.

Member States shall take all appropriate measures to prevent the use of marks liable to create confusion between main-beam or dipped-beam headlights and lamps for such headlights which have been type-approved pursuant to Article 1 and other devices.

#### Article 3

1. No Member State may prohibit the placing on the market of main-beam or dipped-beam headlights and lamps for such headlights on grounds relating to their construction or method of functioning if they bear the EEC type-approval mark.
2. Nevertheless, a Member State may prohibit the placing on the market of main-beam or dipped-beam headlights and lamps for such headlights bearing the EEC type-approval mark which, by their design, do not conform to the approved prototype.

That State shall forthwith inform the other Member States and the Commission of the measures taken, specifying the reasons for its decision.

#### Article 4

The competent authorities of the relevant Member State shall within one month send to the competent authorities of the other Member States a copy of the type-approval certificates completed for each type of main-beam or dipped-beam headlight and lamp for such headlights which they approve or refuse to approve.

#### Article 5

1. If the Member State which has granted EEC type-approval finds that a number of main-beam or dipped-beam headlights and lamps for these headlights bearing the same EEC type-approval mark do not conform to the type which it has approved, it shall take the necessary measures to ensure that production models conform to the approved type. The competent authorities of that State shall advise those of the other Member States of the measures taken, which may where necessary extend to withdrawal of EEC type-approval. The said authorities shall take the like measures if they are informed by the competent authorities of another Member State of such failure to conform.
2. The competent authorities of Member States shall inform each other within one month of any withdrawal of EEC type-approval, and of the reasons for such measure.

#### Article 6

All decisions taken pursuant to the provisions adopted in implementation of this Directive which refuse or withdraw type-approval for a main-beam or a dipped-beam headlight or of a lamp for such headlights or prohibit their use shall set out in detail the reasons on which they are based. A decision shall be notified to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member States and of the time limits allowed for the exercise of such remedies.

#### Article 7

No Member State may refuse to grant EEC type-approval or national type-approval of a vehicle on grounds relating to its main-beam or dipped-beam headlights or of the lamps for such headlights if these bear the EEC type-approval mark and are fitted in accordance with the requirements laid down in the Council Directive of .....(1) on the approximation of the laws of the Member States concerning the installation of lighting and light signalling devices on motor vehicles and trailers.

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(1) COM (73) 2024



Article 8

No Member State may refuse or prohibit the sale or registration, entry into service or use of a vehicle on grounds relating to its main-beam or dipped-beam headlights or of the lamps for such headlights if these bear the EEC type-approval mark and are fitted in accordance with the requirements laid down in the Council Directive of ..... (1) on the approximation of the laws of the Member States concerning the installation of lighting and light signalling devices on motor vehicles and trailers.

Article 9

For the purposes of this Directive, "vehicle" means any motor vehicle intended for use on the road, with or without bodywork, having at least four wheels and a maximum design speed exceeding 25 km/h, with the exception of vehicles which run on rails, agricultural tractors and machinery and public works vehicles.

Article 10

Any amendments necessary in order to adjust the provisions of this Directive so as to take account of technical progress shall be adopted in accordance with the procedure laid down in Article 13 of the Council Directive (70/156/EEC) of 6 February 1970 on the approximation of the laws of Member States relating to the type-approval of motor vehicles and their trailers.

Article 11

1. The Member States shall adopt and publish the provisions needed in order to comply with this Directive before 1 June 1976 and shall forthwith inform the Commission thereof. They shall apply such provisions with effect from 1 October 1976.

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(1) COM (73) 2024

2. As soon as this Directive has been notified, the Member States shall see to it that the Commission is informed, in sufficient time to enable it to submit its comments, of any draft laws, regulations or administrative provisions which they intend to adopt in the field covered by the Directive.

#### Article 12

This Directive is addressed to the Member States.

## LIST OF ANNEXES

ANNEX I - Requirements relating to headlights for motor vehicles, emitting an asymmetrical passing beam or a driving beam or both.

(Definition of "type", general specifications, illumination, conformity in manufacture, standard headlight) (x)

ANNEX II -Model for the EEC component type-approval certificate of a type of main-beam or dipped-beam headlight.

ANNEX III-Requirements relating to incandescent electric lamps for headlights emitting an asymmetrical passing beam or a driving beam or both.

(Definition of "type", general specifications, nominal values, manufacture wattage and light-flux values, colour, optical quality check, remark concerning colour, conformity in manufacture) (x)

ANNEX IV -Model for the EEC component type-approval certificate for a type of incandescent lamp.

ANNEX V -Figures (x)

ANNEX VI -Conditions for EEC component type-approval and examples of EEC type-approval marks for main-beam or dipped-beam headlights and lamps for these headlights.

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(x) Requirements in the annexes are similar to that of Regulations N° 1 and 2 of the Economic Commission for Europe ; in particular the breakdown into items is the same ; for this reason, when an item of Regulations N° 1 and 2 has no counterpart in this directive, its number is given in brackets as a token entry.

## ANNEX I

### REQUIREMENTS RELATING TO HEADLIGHTS FOR MOTOR VEHICLES EMITTING AN ASYMMETRICAL PASSING BEAM OR A DRIVING BEAM OR BOTH

(DEFINITION OF "TYPE", GENERAL SPECIFICATIONS, ILLUMINATION, CONFORMITY IN MANUFACTURE, STANDARD HEADLIGHT)

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#### 1. Definition of "type"

For the purposes of this Annex, the expression "different types of headlight" means headlights which differ intrinsically in matters such as :

- a) the trade name or mark ;
- b) the characteristics of the optical system ;
- c) the inclusion of additional components capable of altering the optical effects by reflection, refraction or absorption ;
- d) suitability for right-hand or left-hand traffic or for both traffic systems ;
- e) ability to provide a passing beam or a driving beam or both.

2.

3.

4.

#### 5. General specifications

- a) Each sample shall conform to the specifications set forth in items 6 and 7 below.
- b) Headlights shall be so made as to retain their prescribed photometric characteristics and to remain in good working order when in normal use, despite the vibrations to which they may be subjected.

- c) The components by which the lamp is fixed to the reflector shall be so made that, even in darkness, the lamp can be fixed in no position but the correct one (1).
- d) Headlights designed to satisfy the requirements both of Member States in which traffic moves on the right and of those in which it moves on the left may be adapted for traffic on a given side of the road either by an appropriate initial adjustment when the vehicle is fitted out or by selective setting by the driver. Such initial adjustment or selective setting shall consist, for example, of fixing either the optical unit at a given angle on the vehicle or the lamp at given angle in relation to the optical unit. In all cases, only two precisely-differentiated setting positions, one for right-hand and one for left-hand traffic, shall be possible, and the design shall preclude inadvertent shifting of the headlight from one position to another or its setting in an intermediate position. Where two different setting positions are provided for the lamp, the components attaching the lamp to the reflector must be so designed and manufactured that, in each of its two settings, the lamp will be held in position with the precision required for headlights intended for traffic on only one side of the road.

Conformity with the requirements of this item shall be verified visually and, where necessary, by a test fitting.

## 6. Illumination

- a) Headlights shall be so made that the passing-beam filaments of suitable lamps give adequate illumination without dazzle, while the driving-beam filaments of suitable lamps also give good illumination.

The illumination produced by the headlight shall be checked on a vertical screen set at a distance of 25 m in front of the headlight and at right angles to its axis (see figures 1 and 2 in Annex Y), and with a standard lamp designed for a nominal voltage of 12 V, having a smooth and colourless bulb, and exhibiting the following characteristics at that voltage :

- (1) It is considered that an arrangement satisfies the requirements of this item, provided that the lamp can be easily fitted into the headlight and that the positioning lug can be correctly fitted into its slot even in darkness, i.e. provided that the slot is of just sufficient size. It is considered that an arrangement whereby the lamp is perceptibly tilted when in the wrong position, but not when in the correct position, adequately satisfies the requirements of item 5 c).

	Consumption in watt	Light flux in lumens
Passing-beam filament	40 $\pm$ 5 %	450 $\pm$ 10 %
Driving-beam-filament	45 + 0 % - 10 %	700 $\pm$ 10 %

The dimensions determining the position of the filaments inside the standard lamp are shown in Annex V, figure 3. The standard lamp shall be supplied with current at its test voltage.

- b) The passing beam shall produce a sufficiently sharp "cut-off" to permit of satisfactory adjustment with its aid. The "cut-off" shall be a horizontal straight line on the side opposite to the direction of the traffic for which the headlight is intended ; on the other side it should be horizontal or within an angle of 15° above the horizontal.

The headlight shall be so adjusted that :

- 1) in the case of headlights designed to meet the requirements of right-hand traffic, the "cut-off" on the left half of the screen (1) is horizontal and, in the case of headlights designed to meet the requirements of left-hand traffic, the "cut-off" on the right half of the screen is horizontal ;
- ii) this horizontal part of the "cut-off" is situated on the screen 25 cm below the outline of the horizontal plane passing through the focus of the headlight (see figures 1 and 2 in Annex V) ;
- iii) the screen is in the position indicated in Annex V, figure 1 and 2 (2).

When so adjusted, the headlight shall, if it is intended to provide a passing beam and a driving beam, comply with the requirements referred to in c) and d) of this item. If it is intended primarily to provide a passing beam, it needs comply only with the requirements referred to in c) (3).

- (1) The adjustment screen shall be sufficiently wide to allow examination of the "cut-off" over a range of at least 5° from the line vv.
- (2) If, in the case of a headlight designed to satisfy the requirements of this annex with respect to the passing beam only, the focal axis diverges appreciably from the general direction of the beam, lateral adjustment shall be effected in the manner which best satisfies the requirements for illumination at points 75 and 50.
- (3) A "passing beam" headlight of this kind may incorporate a driving beam for which no specifications are laid down.

Where a headlight so adjusted does not meet the requirements referred to in c) and d), its adjustment may be changed, provided that the axis of the beam or the point of intersection H specified in figure 1 and 2 of ANNEX V above is not laterally displaced by more than 1° (= 44 cm) to the right or left (1). To facilitate adjustment by means of the "cut-off", the headlight may be partially occulted in order to sharpen the "cut-off".

If the headlight is designed solely to provide a driving beam, it shall be so adjusted that the area of maximum illumination is centred on the point of intersection of the lines hh and vv. Such a headlight need meet only the requirements referred to in d).

- c) The illumination produced on the screen by the passing beam shall meet the following requirements :

Point on measuring screen				Required illumination in lux
Headlights for right-hand traffic		Headlights for left-hand traffic		
Point B	50 L	Point B	50 R	≥ 0.3
"	75 R	"	75 L	≥ 6
"	50 R	"	50 L	≥ 6
"	25 L	"	25 R	≥ 1.5
"	25 R	"	25 L	≥ 1.5
Any point in zone III				≥ 0.7
"	"	"	IV	≥ 2
"	"	"	I	≥ 20

it is understood that, where the flux of the standard lamp used for measurement is other than 450 lumens, the measurements as taken will be corrected proportionally to the rates of the fluxes.

There shall be no lateral variations detrimental to good visibility in any of the zones I, II, III and IV.

Headlights designed to meet the requirements of both right-hand and left-hand traffic shall, in each of the two setting positions of the optical unit or of the lamp, meet the requirements set forth above for the corresponding traffic system.

- (1) The limit of non-adjustment of 1° to the right or left is not incompatible with vertical non-adjustment. The latter is limited only by the requirements of item 6 d).

- d) Measurements of the illumination produced on the screen by the driving beam shall be taken with the same headlight adjustment as for measurements under c) above, or, in the case of a headlight providing a driving beam only, in accordance with the final paragraph of b).

The illumination produced on the screen by the driving beam shall meet the following requirements :

The point of intersection H of the lines hh and vv shall be situated within the isolux 90 % of maximum illumination. This maximum value shall not be less than 32 lux.

Starting from point H, horizontally to the right and left, illumination shall be not less than 16 lux up to a distance of 1.125 m and not less than 4 lux up to a distance of 2.25 m. (Where the flux of the standard lamp used for measurements is other than 700 lumens, the measurements as taken shall be corrected proportionally to the ratio of the fluxes.).

- e) The screen illumination values mentioned under c) and d) above shall be measured by means of a photo-electric cell, the useful area of which shall be contained within a square of 65 mm side.

(7.)

#### 8. Conformity in manufacture

Every headlight bearing an EEC type-approval mark shall conform to the approved type and meet the photometric conditions states above.

(9.)

#### 10. Standard headlight (1).

A headlight shall be deemed to be a standard headlight if it

- satisfies the above-mentioned requirements for approval ;
- has an effective diameter of not less than 160 mm ;
- provides with a standard lamp, at the various points and in the various areas referred to in item 6 c), illumination equal to :

- 1) not more than 90 per cent of the maximum limits,  
and
- ii) not less than 120 per cent of the minimum limits prescribed in the table in item 6 c)

(11.)

(12.)

(1) See Annex III, item 10



ANNEX II

MODEL FOR AN EEC COMPONENT TYPE-APPROVAL CERTIFICATE  
(Max. format : A 4 (210 x 297 mm))

Name of competent authority
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Notification concerning the grant, refusal or withdrawal  
of EEC type-approval of a type of main-beam  
or dipped-beam headlight

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Type-approval No .....

1. Headlight submitted for \_\_\_\_\_ type-approval as type :  
                                    CR, CR, CR,   C,   C,   C,   R (≠)  
                                    → ↔       → ↔
2. Trade name or mark .....
3. Name and address of manufacturer .....
4. If applicable, name and address of manufacturer's authorized representative .....
5. Submitted for EEC . type-approval on .....
6. Technical service conducting EEC type-approval tests .....
7. Date of report issued by that service .....
8. Number of report issued by that service .....
9. Date of grant/refusal/withdrawal of EEC type-approval(≠) .....
10. Single EEC type-approval granted on the basis of Item 3.3  
of Annex VI for a lighting and light signalling device comprising  
several lights and/or lamps, and in particular (≠) :
11. Date of refusal/withdrawal of the single EEC type-approval(≠) .....
12. Place .....
13. Date .....
14. Signature .....
15. The attached drawing N° ..... shows the headlight in plan, with the  
fluting of the glass, and in lateral elevation

(≠) Delete items not applicable.

### ANNEX III

## REQUIREMENTS RELATING TO INCANDESCENT ELECTRIC LAMPS FOR HEADLIGHTS EMITTING AN ASYMMETRICAL PASSING BEAM OR A DRIVING BEAM OR BOTH

(DEFINITION OF "TYPE", GENERAL SPECIFICATIONS, NOMINAL VALUES, MANUFACTURE, WATTAGE AND LIGHT-FLUX VALUES, COLOUR, OPTICAL QUALITY CHECK, REMARK CONCERNING COLOUR, CONFORMITY IN MANUFACTURE)

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### 1. Definition of "type"

For the purposes of this annex the expression "different types of lamp" means lamps that differ intrinsically in matters such as :

- a) the trade name or mark ;
- b) the nominal voltage ;
- c) the nominal wattage ;
- d) the shape of one or more filaments ;
- e) the shade of the bulb ;
- f) the design of the bulb and its effect on the optical results.

(2.)

(3.)

(4.)

### 5. General specifications

- a) Each sample shall conform to the photometric specifications set forth in item 8 below.
- b) All measurements shall be carried out at the "test voltage"(1) with the lamps lit in the conditions set forth in item 8.
- c) Lamps shall be so made as to be, and to remain, in good working order when in normal use. They shall, moreover, exhibit no fault in design or manufacture.

(1) These test voltages are fixed as follows :

Nominal voltage	6 volt,	test voltage	6.0 volt ;
"	12 volt,	"	12.0 volt ;
"	24 volt,	"	24.0 volt.

16

## 6. Nominal values

The nominal voltage values are : 6, 12 and 24 volts.

The nominal wattage values are :

Driving-beam filament	Passing-beam filament	
45 watt	40 watt	for 6 and 12 volt
55 watt	50 watt	for 24 volt

## 7. Manufacture

- The bulbs of lamps shall have no scores or spots which might impair their efficiency. No ray from the passing-beam filament reflected by the sides of the bulb shall strike the axis of the lamp less than 6 mm (from the cap end) behind the first turn of that filament.
- Lamp caps shall conform to the standard type shown in Annex V, figure 4.
- The position, shape and dimensions of the filaments and the ring inside the lamp shall conform to the specifications shown in Annex V, figure 3.
- The cap shall be strong and firmly secured to the bulb.

To ascertain whether lamps conform to the provisions of this item, a visual inspection, a dimension check and, where necessary, a test fitting, shall be carried out. The dimensions referred to in c) above shall be checked on lamps supplied with current at their test voltage, and, where necessary, by means of a projection system.

## 8. Wattage and light-flux values

The wattage of each filament shall not exceed the nominal wattage by more than 10 per cent. Light-flux values shall remain within the following limits:

Test voltage	Nominal wattage		Light flux in lumens			
	Filament		Passing-beam filament		Driving beam filament	
	passing beam	driving beam	minimum	maximum	minimum	maximum
6.0	40	45	400	550	600	unspecified
12.0						
24.0	50	55				

The check shall be made with the lamp in its normal position of use and supplied with current at its test voltage after having been lit for one hour under the same conditions.

#### 9. Colour

The lamp bulbs shall be colourless or of selective-yellow colour. In the latter case, the dominant wave-length shall be between 5,750 and 5,850 nm (nanometer), the purity factor shall be between 0.90 and 0.98, and the transmission factor shall be not less than 0.78 (1), the values being determined for light emitted by an electric lamp filament at a colour temperature of 2,800 K and on a fragment of a lamp bulb which has been used in a headlight at its test voltage for 48 hours.

#### 10. Optical quality check

The sample which most nearly meets the provisions laid down for the standard lamp shall be tested in a standard headlight (2) to ensure that the assembly comprising the aforesaid headlight and the lamp being tested meets the approval requirements for headlights.

(1) These specifications correspond to the following trichromatic co-ordinates :

SELECTIVE-YELLOW COLOUR	limit towards	red	:	$y \geq 0,138 + 0,580x$
"	"	green	:	$y \leq 1,29x - 0,100$
"	"	white	:	$y \geq -x + 0,966$
"	"	spectro	:	$y \leq -x + 0,992$
		metric		
		value		

(2) See Annex I item 10.

11. Remark concerning colour

EEC type-approval is granted if the colour of the light emitted is that laid down in item 3.13. of Annex I of the directive relating to the installation of lighting and light signalling devices on motor vehicles and trailers.

12. Conformity in manufacture

Every lamp bearing an EEC type-approval mark shall conform to the approved type and meet the photometric conditions stated above.

(13.)

(14.)

ANNEX IV

MODEL FOR AN EEC COMPONENT TYPE-APPROVAL  
CERTIFICATE

(Max. format. A4 (210 x 297 mm))

Name of  
competent authority

Notification concerning the grant, refusal or  
withdrawal of EEC type-approval, or the grant,  
refusal or withdrawal of extension of EEC type-approval,  
in respect of a type of incandescent lamp

e 4

Type-approval No \_\_\_\_\_

1. Lamp with colourless/selective-yellow bulb (x) :  
- nominal voltage \_\_\_\_\_  
- nominal wattage (s) \_\_\_\_\_
2. Trade name or mark \_\_\_\_\_
3. Name and address of manufacturer \_\_\_\_\_
4. If applicable, name and address of manufacturer's authorized  
representative \_\_\_\_\_
5. Submitted for EEC \_\_\_\_\_ type-approval on \_\_\_\_\_
6. Technical service conducting the EEC \_\_\_\_\_ type-approval tests  
\_\_\_\_\_
7. Date of report issued by that service \_\_\_\_\_
8. Number of report issued by that service \_\_\_\_\_
9. Date of grant/refusal/withdrawal of EEC \_\_\_\_\_ type-approval(x)
10. Extension of EEC \_\_\_\_\_ type-approval
11. Date of refusal/withdrawal of extension of EEC \_\_\_\_\_ type-approval  
val \_\_\_\_\_
12. Place \_\_\_\_\_
13. Date \_\_\_\_\_
14. Signature \_\_\_\_\_
15. The attached drawing No ..... shows the entire lamp.

(x) Delete items not applicable.

20

ANNEX V

FIGURE 1 : Measuring screen, headlight for right-hand traffic

FIGURE 2 : Measuring screen, headlight for left-hand traffic

FIGURE 3 : Double-filament lamp : internal elements

FIGURE 4 : Double-filament lamp : interchangeability

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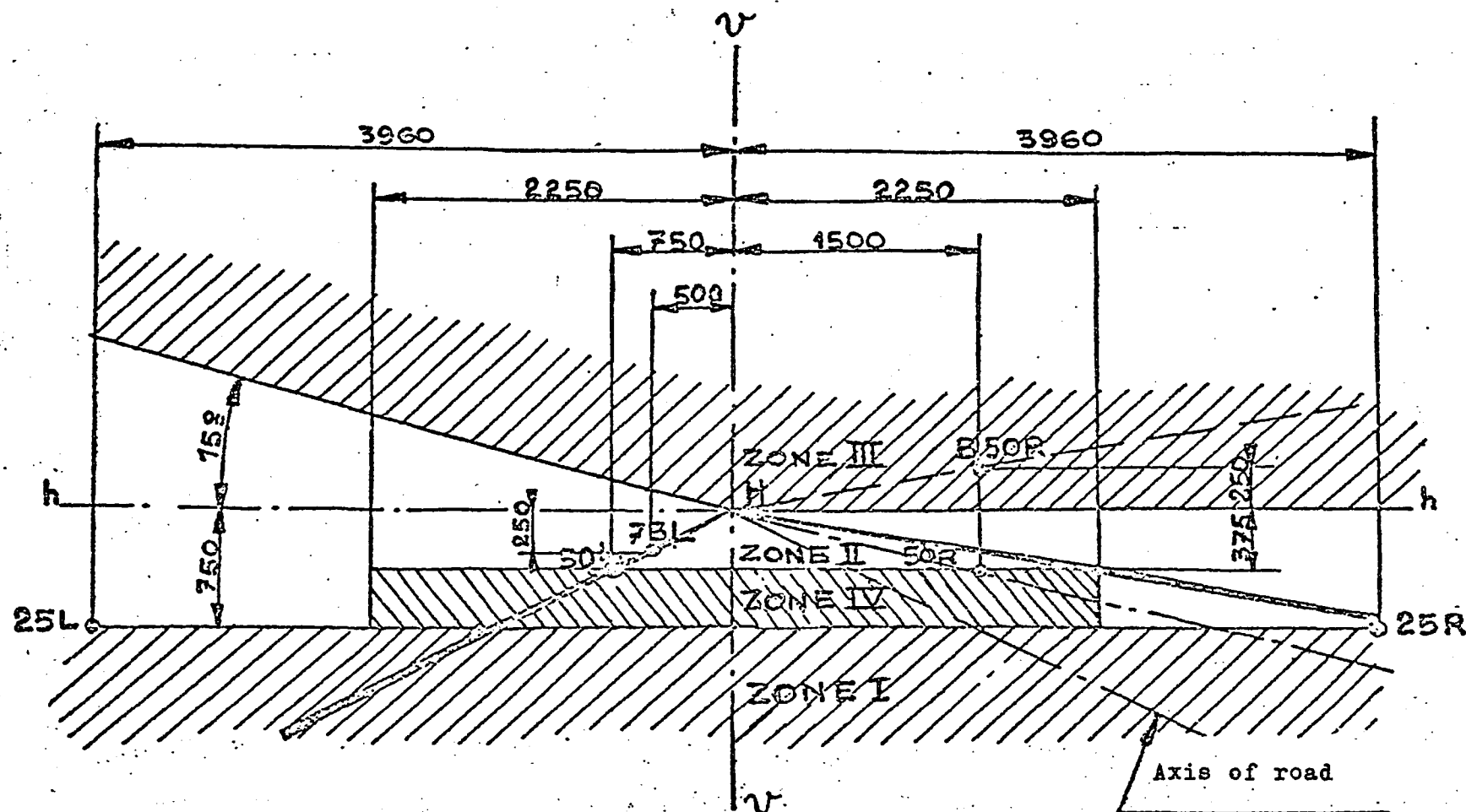
1914

1. The first of the four main branches of the  
2. The second of the four main branches of the  
3. The third of the four main branches of the  
4. The fourth of the four main branches of the





FIGURE 2



MEASURING SCREEN

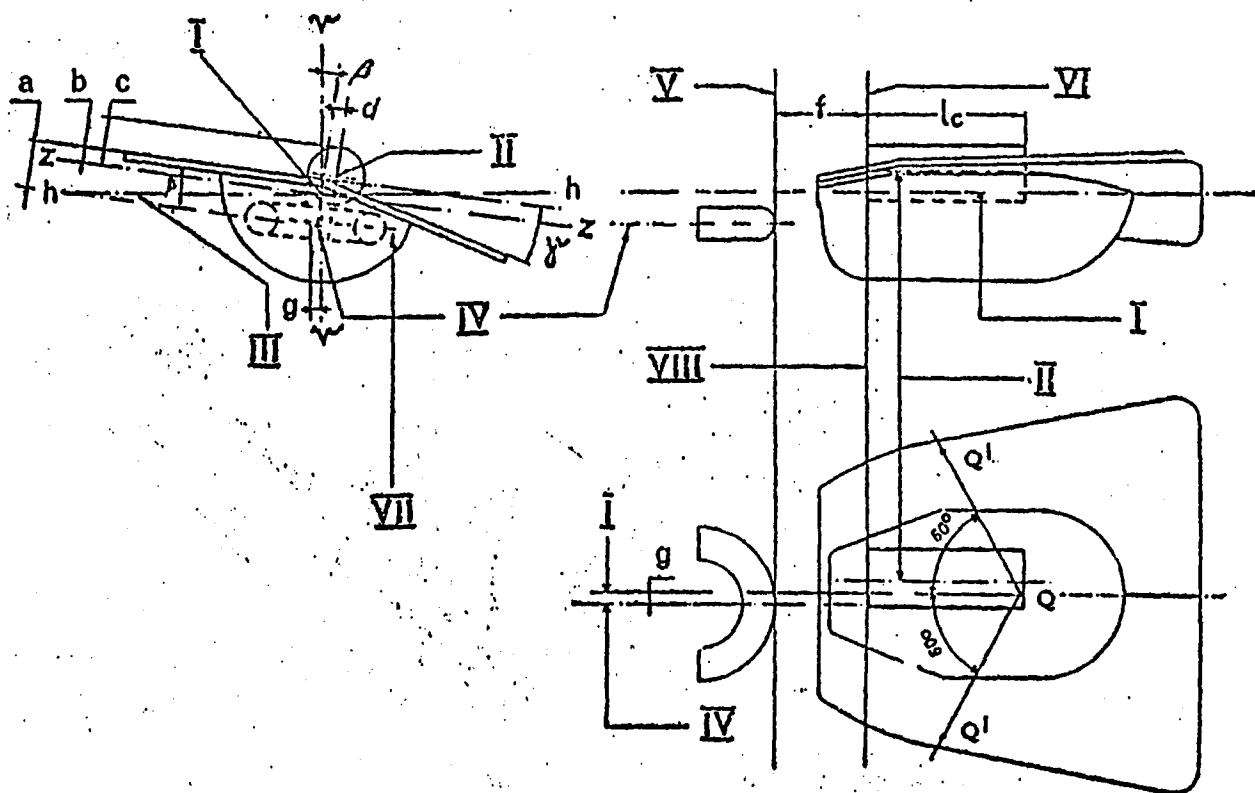
HEADLIGHT FOR LEFT-HAND TRAFFIC

h-h : horizontal plane } passing through dimensions in mm  
v-v : vertical plane } focus of headlight

ANNEX V

27

Double-filament : internal elements



1. Key

- I. Lamp axis
- II. Axis of passing-beam filament.
- III. Plane passing through the axis of the lamp and perpendicular to the median plane of the positioning lug of reference plane 1.
- IV. Axis of driving-beam filament.
- V. Last turn of driving-beam filament.
- VI. First bright turn of passing-beam filament.
- VII. The plane passing through the axis of the driving-beam filament need not be parallel either to the plane h-h or to the plane z-z.
- VIII. Distance e from reference plane.

FIGURE 3

Annex V

2. Table

Ref. points	Nominal values (mm or degrees)	Tolerances in millimetres or in degrees	
		Standard lamp	Production sample
a	0,6	$\pm 0,15$	$\pm 0,35$
b	0,2	$\pm 0,15$	$\pm 0,35$
c	0,5	$\pm 0,15$	$\pm 0,30$
d	0	$\pm 0,3$	$\pm 0,5$
e	28,5 *	$\pm 0,15$	$\pm 0,35$
f	1,8 **	$\pm 0,2$	$\pm 0,4$
g	0	$\pm 0,3$	$\pm 0,5$
$l_c$	5,5	$\pm 0,5$	$\pm 1,5$
$\beta$	$0^\circ$	$\pm 0^\circ 30'$	$\pm 1^\circ 30'$
$\gamma$	$15^\circ$	$\pm 0^\circ 30'$	$\pm 1^\circ 30'$
$Q-Q'$	$3/4(l_c+f)$		

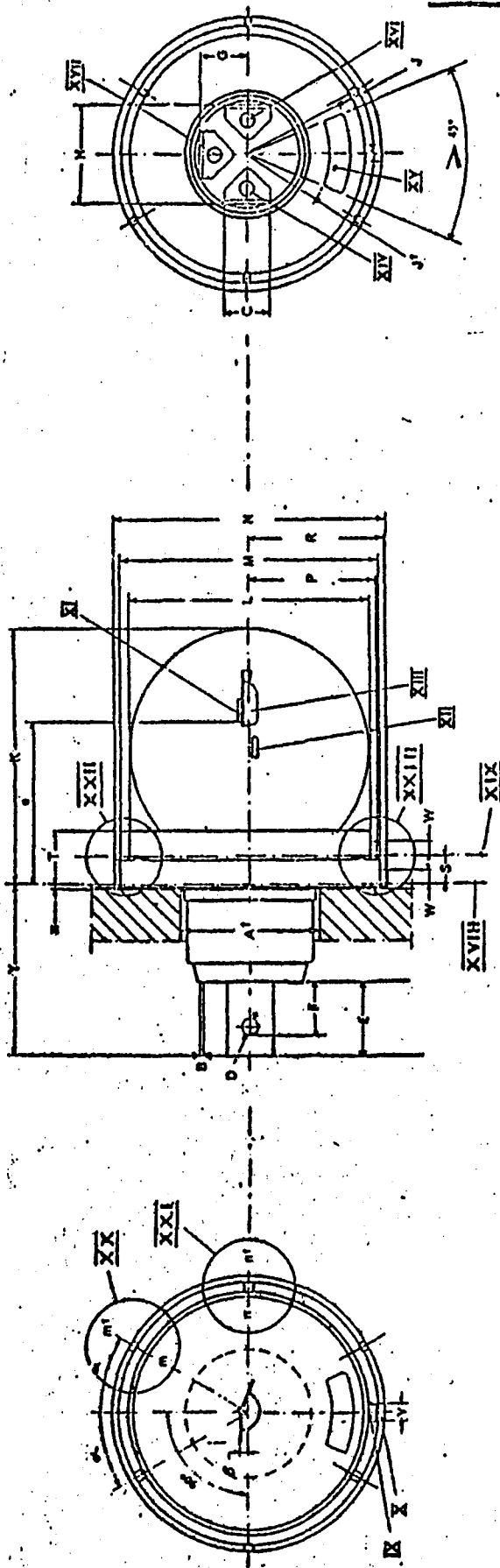
\* 28.8 for 24-volt lamps

\*\* 2.2 for 24-volt lamps

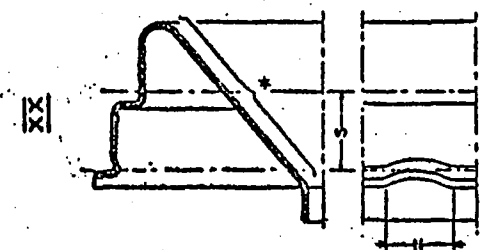
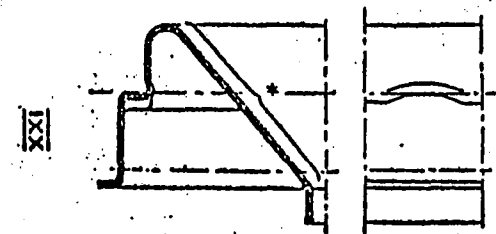
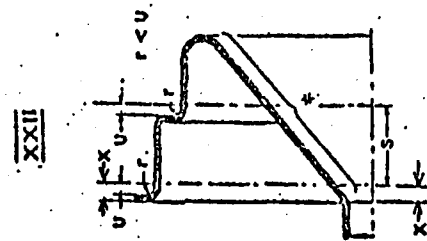
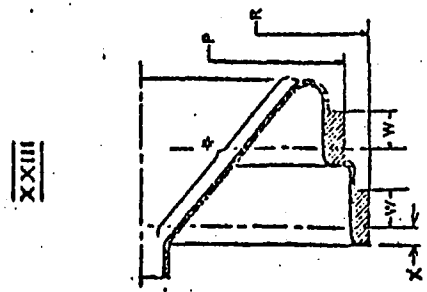
3. Notes

1. The axis of the lamp is the perpendicular to reference plane 1 (see figure 4 below) drawn through the intersection of this plane with the axis of the corresponding centering cylinder.
2. The drawing is not mandatory with respect to the design of the shield and filaments.
3. The value established for  $Q-Q'$  applies solely to the standard lamp used for the approval testing of a headlight ; the dimensions of the shield must be such that the points  $Q'$  are situated within the edge of the shield.
4. The tolerances indicated relate to the test required for the approval of a lamp type.

FIGURE 4



ANNEX V



## KEY

## FIGURE 4

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

2. TABLE

Ref. points	Nominal values (mm or degrees)	Tolerances in mm or degrees		Ref. points	Nominal values (mm or degrees)	Tolerances in mm or degrees	
		Standard lamp	Production sample			Standard lamp	Production sample
A <sup>i/</sup>	25 mini	-	-	N	47,2	± 0,2	± 0,2
B <sup>l</sup>	0,7	+ 0,1 - 0,0	+ 0,1 - 0,0	P	21,5	+ 0,9 - 0,0	+ 0,9 - 0,0
C	7,7	+ 0,4 - 0,0	+ 0,4 - 0,0	R	23,7	+ 0,0 - 0,4	+ 0,0 - 0,4
D	3	+ 0,3 - 0,0	+ 0,3 - 0,0	S	4,7	± 0,06	± 0,20
E	11,8 à 13,6 <sup>ii/</sup>	-	-	T	9,5 maxi	-	-
F	8,8 à 10,3	-	-	U	0,3 mini	-	-
G	8,5	+ 0,5 - 0,0	+ 0,5 - 0,0	V	3	± 0,05	± 0,10
H	17	+ 0,9 - 0,0	+ 0,9 - 0,0	W	2,2	+ 0,0 - 0,4	+ 0,0 - 0,4
J	18 mini	-	-	X	3 maxi	-	-
J <sub>1</sub>	14,5 maxi	-	-	Y	32 maxi	-	-
K	50 maxi	-	-	r	< U	-	-
L	41,5	+ 0,0 - 0,1	+ 0,0 - 0,2	α	-	25 - 35°	25 - 35°
M	45	+ 0,0 - 0,1	+ 0,0 - 0,2	β	0°	± 0°30'	± 1°30'
				e	28,5 <sup>iii/</sup>	± 0,15	± 0,35

<sup>1/</sup> The symbol A<sub>1</sub> to α are, with the exception of K and Y, identical with the corresponding reference point symbols of the IEC standards.

<sup>ii/</sup> With soldering, IEC standard 7004-95-1.

<sup>iii/</sup> 28.8 mm for 24-volt lamps.

- The foregoing reference points correspond to the standards (IEC Publications, sheets 7004-95-1, 7004-95A-1 and 7004-95B-1) adopted by the International Electrotechnical Commission.
- Only the overall dimensions and the dimensions affecting interchangeability are shown in the drawing and are mandatory.
- The internal structure of the lamp and the corresponding dimensions are given in the drawing on figure 3.
- The part marked \* of the cap must not, by reflection of light emitted by the passing-beam filament, throw any stray rising ray when the lamp is in normal operating position on the vehicle.
- The diameter of each centering cylinder is measured through any plane of straight section not less than 0.5 mm from the corresponding reference plane for the cylinder.
- The relative eccentricity (distance between the axes) of the two centering cylinders must not exceed 0.05 mm.
- A tolerance is allowed for the distance S - the distance between the two reference planes (4.7 mm) - which includes the admissible error in the parallelism of those two planes.
- The two positioning lugs (IX and X) must be able to fit simultaneously into an opening not exceeding 3.1 mm.
- The contact strips (XIV, XVI and XVII) must be placed in relation to the positioning lugs either in the position indicated in the drawing or at an angle of 180° from that position, with a tolerance of ± 20° in either case. The window (XV) and the passing-beam contact strip (XVII) must face each other on opposite sides of the lamp axis.

## ANNEX VI

### CONDITIONS FOR EEC APPROVAL AND MARKINGS

TYPE--

1. Application for EEC type-approval
- 1.1 Application for EEC type-approval for each type of main-beam or dipped-beam headlights and of their lamps shall be submitted by the holder of the trade name or mark or by his representative.
- 1.2. The application shall be accompanied :
  - 1.2.1. for each type of main-beam or dipped-beam headlight :
    - 1.2.1.1. by an indication as to whether the lamp is intended to provide both a passing beam and a driving beam or only one of these beams; If the headlight is intended to provide a passing beam, whether it is designed for both left-hand and right-hand traffic or for either left-hand or right-hand traffic only ;
    - 1.2.1.2. a brief technical specification ;
    - 1.2.1.3. drawings in triplicate, sufficiently detailed to permit identification of the type and showing the headlight in plan or in lateral elevation, with details of the fluting, if any, of the glass ;
    - 1.2.1.4. two samples.
  - 1.2.2. for each type of lamp :
    - 1.2.2.1. a brief technical specification.
    - 1.2.2.2. drawings in triplicate, sufficiently detailed to permit identification of the type and showing the entire lamp on the scale of 2 : 1, its shield being shown both in plan and in lateral elevation ;
    - 1.2.2.3. in the case of lamps with colourless bulbs - five samples ; in the case of lamps with coloured bulbs - one sample with a coloured bulb and five samples with colourless bulbs, these five samples differing from the type submitted only in that the glass is not coloured. Where the type of lamp concerned differs only in respect of colour from a colourless type which has previously satisfied the tests referred to in items 4 to 8 of annex III, it will be sufficient to submit one sample with a coloured bulb, and the only tests to be made on this sample will be those referred to in item 9 of Annex III.

2. Markings

2.1. Main-beam and dipped-beam headlights

- 2.1.1. Samples of a type of main-beam and dipped-beam headlights submitted for EEC type-approval must bear the trade name or mark of the applicant ;
- 2.1.2. Each main-beam and dipped-beam headlight shall include on both the glass and the main body a space of sufficient size for the EEC type-approval mark ;  
If the glass cannot be separated from the main body of the headlight, the provision of a marking area on the glass will suffice.  
This space shall be shown in the drawings mentioned in item 1.2.1.3.
- 2.1.3. In the case of headlights designed to meet the requirements of traffic moving on one side of the road only (either right or left), the area which can be occulted to prevent discomfort to users in a Member State where traffic moves on the opposite side of the road shall be outlined indelibly on the front glass. This marking is not necessary, however, where the area is clearly apparent from the design.
- 2.1.4. In the case of headlights designed to satisfy the requirements both of Member States with right-hand traffic and of Member States with left-hand traffic, the two settings of the optical unit on the vehicle or of the lamp on the reflector shall be marked by the capital letters R and D, and L and G, respectively. The markings shall be clearly legible and indelible.

2.2. Lamps for main-beam or dipped-beam headlights

- 2.2.1. Samples of a type of lamp for main-beam or dipped-beam headlights submitted for EEC type-approval must bear the trade name of the applicant.
- 2.2.2. Each lamp shall include a space of sufficient size for the EEC type-approval mark ; this space shall be shown in the drawings mentioned in item 1.2.2.2.
- 2.2.3. They shall carry at least an indication of the nominal voltage and an indication of the nominal wattage of the driving-beam filament, followed by that at the passing-beam filament.
- 2.2.3. Markings must be clearly legible and indelible.



3. EEC type-approval

- 3.1. If all the samples submitted in accordance with the provisions of item 1 satisfy the requirements of items 5 and 6 of Annex I for main-beam or dipped-beam headlights and items 5, 6, 7, 8, 9, 10 and 11 of Annex III for the lamps, EEC type-approval shall be granted and a type-approval number assigned.
- 3.2. This number shall not be assigned to any other type of lamp excepting the extension to another type of lamp differing only by its colour.
- 3.3. Where EEC type-approval is requested for a type of lighting and light signalling device comprising a main-beam or dipped-beam headlights and other lights and lamps, a single EEC type-approval mark may be issued provided that the headlights comply with the requirements of this Directive and that each of the other lights and lamps forming part of the lighting and light signalling device for which EEC type-approval is requested complies with the specific Directive applying to it.

4. Marks

- 4.1. Every main-beam or dipped-beam headlight or lamp for these headlights conforming to a type approved under this Directive shall bear an EEC type-approval mark.
- 4.2. This mark shall consist of a rectangle surrounding the lower case letter "e" followed by a number or distinctive letter identifying the Member State which has granted EEC type-approval :

1 for Germany  
2 for France  
3 for Italy  
4 for the Netherlands  
6 for Belgium  
11 for the United Kingdom  
13 for Luxembourg  
DK for Denmark  
IRL for Ireland

It must also include below the rectangle the EEC type-approval number, the EEC type-approval certificate issued for the type of illuminating device in question.

- 4.3. In the following cases a symbol additional to the EEC type-approval mark shall be opposed :

ANNEX VI

- 4.3.1. On headlights meeting left-hand traffic requirements only, there shall be set above the rectangle a horizontal arrow pointing to the right of an observer facing the headlight, i.e. to the side of the road on which traffic moves ;
- 4.3.2. on headlights designed to meet the requirements of both traffic systems by means of an appropriate adjustment of the setting of the optical unit or the lamp, there shall be set above the rectangle a horizontal arrow with a head on each end, the heads pointing respectively to the left and to the right ;
- 4.3.3. on headlights meeting the requirements of this annex in respect of the passing beam only, there shall be set above the rectangle a square containing the letter "C" ;
- 4.3.4. on headlights meeting the requirements of this annex in respect of the passing beam only, there shall be set above the rectangle a square containing the letter "R" ;
- 4.3.5. on headlights meeting the requirements of this annex in respect of both the passing beam and the driving beam, there shall be set above the rectangle a square containing the letters "CR" ;
- 4.4. The EEC type-approval number must be situated close to the rectangle surrounding the letter "e" in any convenient position relative to the rectangle.
- 4.5. The EEC type-approval mark must be placed on the illuminating area or on one of the illuminating areas in such a way that it is indelible and clearly legible even when the rear-registration-place illuminating devices are fitted on the vehicle.
- 4.6. Examples of type-approval mark are appended.
- 4.7. Where, as provided in paragraph 3.3., only one EEC type-approval number is to be assigned to a type of lighting and light signalling device comprising headlights and other lights and lamps, a single EEC type-approval mark may be affixed, consisting of :

- a rectangle surrounding the letter "e" followed by a number or a distinctive letter identifying the Member State which has granted EEC type-approval ;
- the EEC type-approval number ;
- additional symbols required by the various directives under which EEC type-approval was granted.

4.8. The dimensions of the various components of this mark must not be less than the minimum dimensions specified for individual marking as appended to this Annex.

1. The first part of the paper is devoted to the study of the properties of the function  $f(x)$  defined by the equation

$$f(x) = \int_0^x \frac{1}{1+t^2} dt, \quad (1)$$

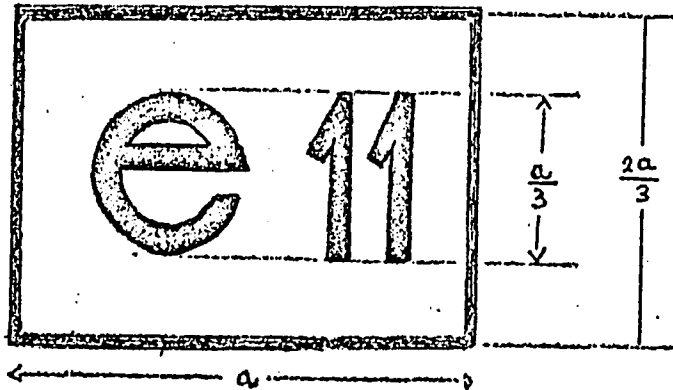
where  $x$  is a real number. It is well known that the function  $f(x)$  is increasing and concave down on the interval  $(-\infty, \infty)$ .

2. In the second part of the paper, we shall study the properties of the function  $f(x)$  defined by the equation

$$f(x) = \int_0^x \frac{1}{1+t^2} dt, \quad (2)$$

where  $x$  is a real number. It is well known that the function  $f(x)$  is increasing and concave down on the interval  $(-\infty, \infty)$ .

EXAMPLE OF EEC TYPE-APPROVAL MARKS FOR  
HEADLIGHTS AND HEADLIGHT LAMPS



DIMENSIONS (mm)		a
I	} for lamps	4
II		
III	} for headlights	12 (min)
IV		



The headlight bearing the EEC component type-approval mark above is a headlight type-approved in the United Kingdom (11) under No 1471.

**Note :** Headlights meeting the requirements of annex I shall bear, in addition, a square containing

- the letter-group CR if they meet the requirements of Annex I with respect to both the passing-beam and the driving-beam (see figures 1, 2 and 3 below) ;
- the letter C if they meet the requirements of annex I with respect to the passing-beam only (see figures 4, 5 and 6 below) ;
- the letter R if they meet the requirements of annex I with respect to the driving beam only (see figure 7 below).

In addition, if the headlights are designed for left-hand traffic or, by means of an adjustment as desired of the setting of the optical unit of the lamp, for both traffic systems, they shall display a horizontal arrow ending in the first case in a point directed to the right (see figures 2 and 6 below) and in the second case in two points, one directed to the right and one to the left (see figures 3 and 4 below).

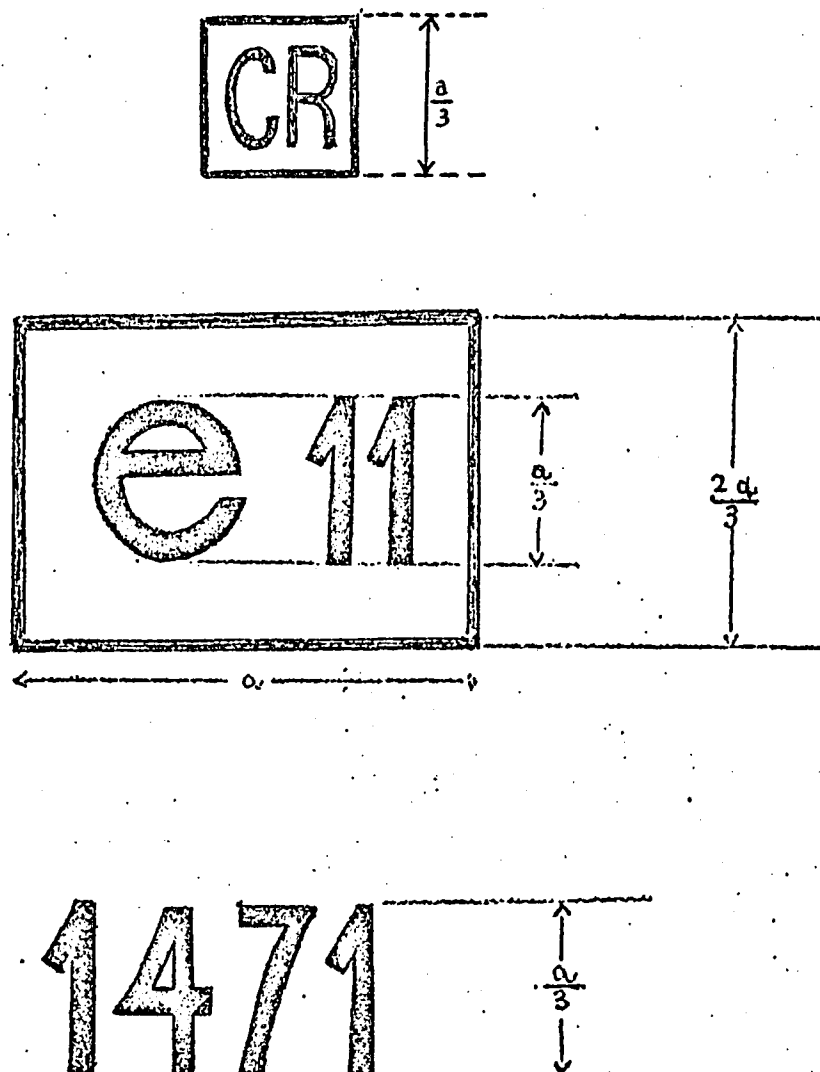


Fig. 1

Identification of a headlight meeting the requirements of Annex I with respect to both the passing beam and the driving beam and designed for right-hand traffic only.

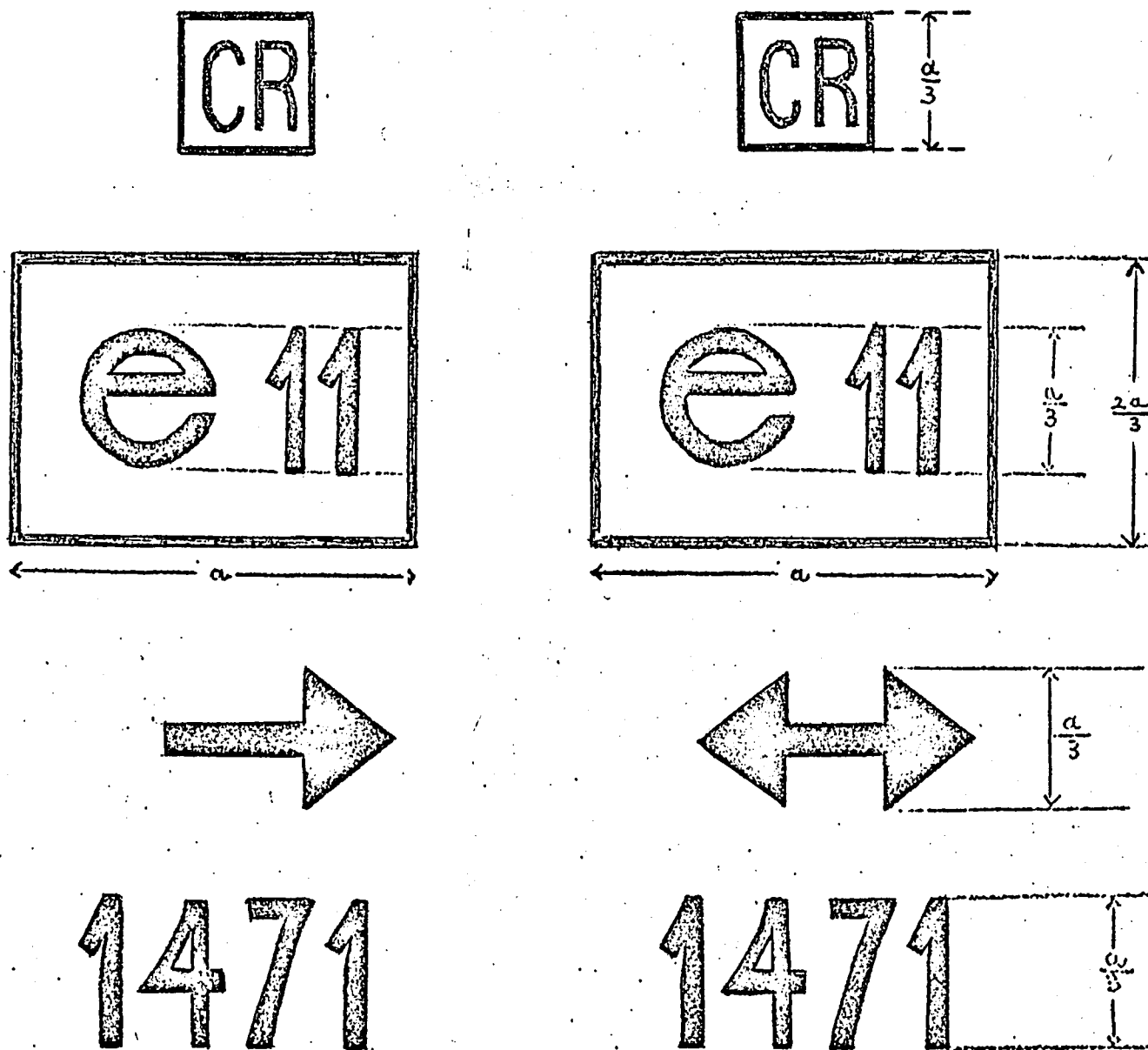


Fig. 2

Fig. 3

Identification of a headlight meeting the requirements of annex I with respect to both the passing beam and the driving beam and designed for

for left-hand traffic only

for both traffic systems, by means of an adjustment as desired of the setting of the optical unit or the lamp

35

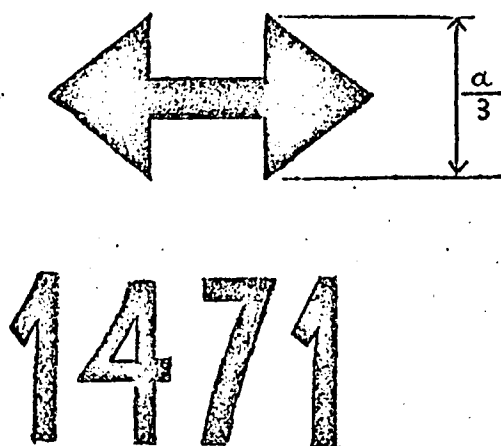
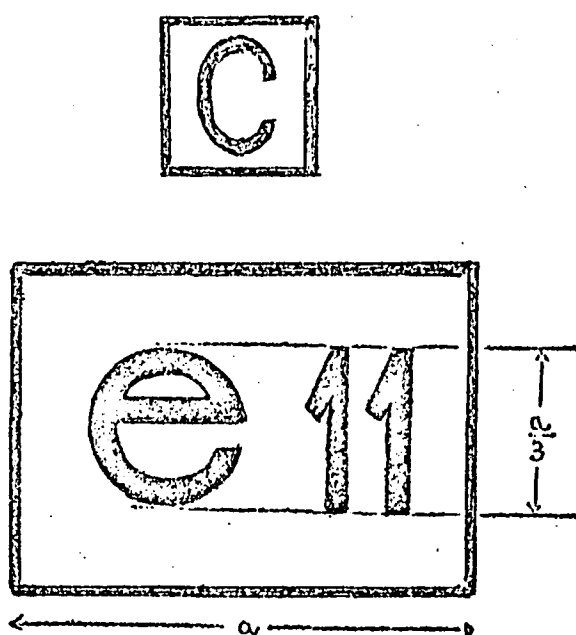


Fig. 4

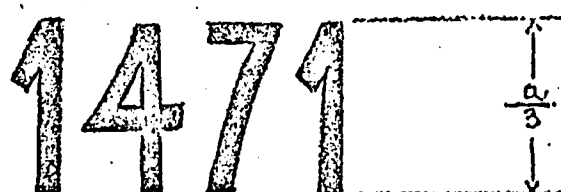
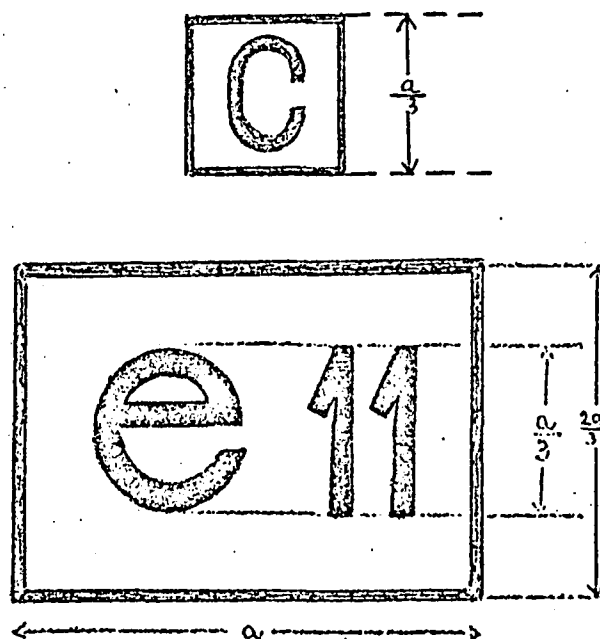


Fig. 5

Identification of a headlight meeting the requirements of Annex I with respect to the passing beam only and designed

for both traffic systems

for right-hand traffic only



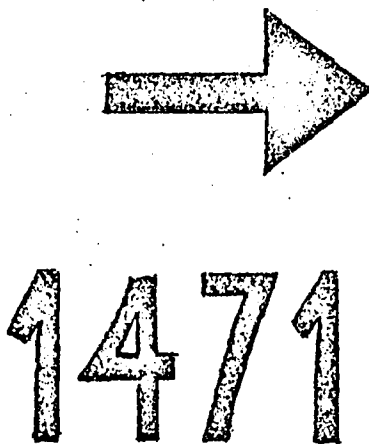
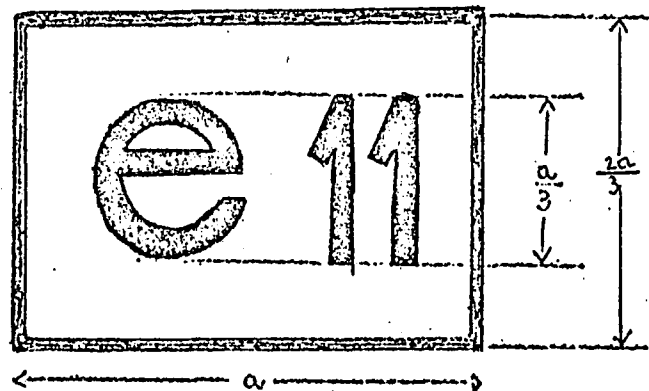
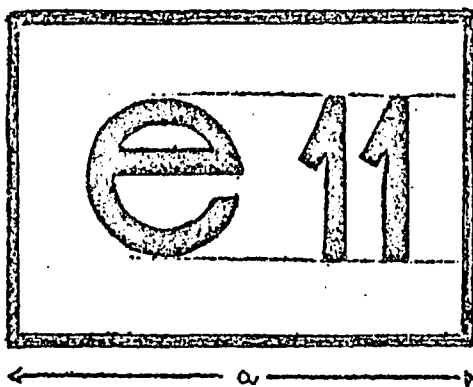


Fig. 6

Fig. 7

Identification of a headlight meeting the requirements of annex I with respect to

the passing beam only and  
designed for left-hand traffic  
only

the driving beam only

