

Distr.  
GENERAL

TRANS/WP.29/GRE/2002/37  
18 July 2002

Original: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Lighting and Light-Signalling (GRE)  
(Forty-ninth session, 30 September - 4 October 2002,  
agenda item 2.8.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION NO. 113

(Headlamps emitting a symmetrical passing beam)

Transmitted by the Expert  
from the International Motorcycle Manufacturers Association (IMMA)

Note: The text reproduced below was prepared by the expert from IMMA with the aim of introducing into the Regulation provisions concerning the new worldwide-harmonized passing beam pattern. The inserted text is in **bold** characters.

---

Note: This document is distributed to the Experts on Lighting and Light-Signalling only.

Paragraph 1.4., amend to read:

"1.4. Headlamps of different "Classes" (A or B or C or D)" means ... "

Paragraph 2.1.2., amend to read:

"2.1.2. whether it concerns a Class A or B or C or D headlamp;"

Paragraph 2.2.4., amend to read:

"2.2.4. for Class B or C or D headlamps only, ... "

Insert a new paragraph 4.1.2., to read:

**"4.1.2. Where grouped, combined or reciprocally incorporated lamps satisfy the requirements of more than one Regulation, a single international approval mark may be affixed provided that each of the grouped, combined or reciprocally incorporated lamps satisfies the provisions applicable to it."**

Paragraphs 4.1.2. to 4.1.4. (former), renumber as paragraphs 4.1.3. to 4.1.5.

Paragraph 4.2.1.2., amend to read:

"4.2.1.2. the approval number prescribed in paragraph 4.1.3. above;"

Insert a new paragraph 4.2.2.1., to read:

**"4.2.2.1. a horizontal arrow with a head on each end, pointing to the left and to the right;"**

Paragraphs 4.2.2.1. to 4.2.2.4. (former), renumber as paragraphs 4.2.2.2. to 4.2.2.5. and amend to read:

"4.2.2.2. ... for Class B headlamps or "WC-CS" for Class C headlamp or "WC-DS" for Class D headlamp;

4.2.2.3. ... for Class B headlamps or "WR-CS" for Class C headlamp or "WR-DS" for Class D headlamp;

4.2.2.4. ... for Class B headlamps or "WCR-CS" for Class C headlamp or "WCR-DS" for Class D headlamp;"

Insert a new paragraph 4.2.2.6., to read:

**"4.2.2.6. on Class D headlamps meeting the requirements of this Regulation in respect of the driving beam, an indication of the maximum luminous intensity expressed by a reference mark, as defined in paragraph 6.3.2.1.2. below, placed near the circle surrounding the letter "E";"**

Paragraph 4.2.3.1., amend to read:

"4.2.3.1. ... in the approval mark. **On headlamps meeting the requirements of this Regulation which are so designed that the filament of the**

passing beam shall be lit simultaneously with that of any other lighting function with which it may be reciprocally incorporated; a plus symbol (+) shall be placed behind the passing lamp symbol in the approval mark."

Paragraph 4.2.4., amend to read:

"4.2.4. ... of the approval and the arrow defined in paragraph 4.2.2.1. may be marked close to ... "

Paragraph 4.3., amend to read:

"4.3. Arrangement of the approval mark

4.3.1. Annex 2, figures 1 to 10, to this Regulation gives examples of arrangements of the approval mark with the above-mentioned additional symbols.

4.3.2. Grouped, combined or reciprocally incorporated lamps:

4.3.2.1. Where grouped, combined or reciprocally incorporated lamps have been found to comply with the requirements of several Regulations, a single international approval mark may be affixed, consisting of a circle surrounding the letter "E" followed by the distinguishing number of the country which has granted the approval, and an approval number. This approval mark may be located anywhere on the grouped, combined or reciprocally incorporated lamps, provided that:

4.3.2.1.1. it is visible after their installation;

4.3.2.1.2. no part of the grouped, combined or reciprocally incorporated lamps that transmits light can be removed without at the same time removing the approval mark.

4.3.2.2. The identification symbol for each lamp appropriate to each Regulation under which approval has been granted, together with the corresponding series of amendments incorporating the most recent major technical amendments to the Regulation at the time of issue of the approval, and if necessary, the required arrow shall be marked:

4.3.2.2.1. either on the appropriate light-emitting surface,

4.3.2.2.2. or in a group, in such a way that each of the grouped, combined or reciprocally incorporated lamps may be clearly identified.

4.3.2.3. The size of the components of a single approval mark shall not be less than the minimum size required for the smallest of the individual marks by the Regulation under which approval has been granted.

4.3.2.4. An approval number shall be assigned to each type approved. The same Contracting Party may not assign the same number to another type of grouped, combined or reciprocally incorporated lamps covered by this Regulation.

- 4.3.2.5. Annex 2, figure 11, to this Regulation gives examples of arrangements of approval marks for grouped, combined or reciprocally incorporated lamps with all the above-mentioned additional symbols.
- 4.3.3. Lamps, the lens of which are used for different types of headlamps and which may be reciprocally incorporated or grouped with other lamps:
- The provisions laid down in paragraph 4.3.2. above are applicable.
- 4.3.3.1. In addition, where the same lens is used, the latter may bear the different approval marks relating to the different types of headlamps or units of lamps, provided that the main body of the headlamp, even if it cannot be separated from the lens, also comprises the space described in paragraph 3.2. above and bears the approval marks of the actual functions. If different types of headlamps comprise the same main body, the latter may bear the different approval marks.
- 4.3.3.2. Annex 2, figure 12, to this Regulation gives examples of arrangements of approval marks relating to the above case."

Paragraph 5.2.1., amend to read:

- "5.2.1. ... the rules applicable to them. Such a device may or may not provide horizontal adjustment, provided that the headlamps are so designed that they can maintain a proper horizontal aiming even after the vertical aiming adjustment. Such a device need ..."

Paragraph 5.3., amend to read:

- "5.3. ...  
(b) for Class A and B , its reference luminous flux for dipped-beam does not exceed 600 lm.  
  
(c) for Class C and D, its objective Luminous flux for dipped-beam does not exceed 2000 lm."

Paragraphs 5.6. and 5.7., amend to read:

- "5.6. In addition, Class B or C or D headlamps shall be ...  
5.7. If the lens of a Class B or C or D headlamp is of ..."

Insert new paragraphs 5.8. to 5.8.4., to read:

- "5.8. On headlamps designed to provide alternately a driving beam and a passing beam, any mechanical, electromechanical or other device incorporated in the headlamp for switching from one beam to the other shall be so constructed that:
- 5.8.1. the device is strong enough to withstand 50,000 operations without suffering damage despite the vibrations to which it may be subjected in normal use;

- 5.8.2. in the case of failure it shall automatically obtain the passing beam position;
- 5.8.3. either the passing beam or the driving beam shall always be obtained without any possibility of the mechanism stopping in between the two positions;
- 5.8.4. the user cannot, with ordinary tools, change the shape or position of the moving parts."

Paragraph 6.2.1., amend to read:

"6.2.1. ... for Class A, C and D headlamps and at least..."

Paragraph 6.2.2.1., amend to read:

"6.2.2.1. laterally, the beam is as symmetrical as possible with the reference to line V-V, except for Class A or B headlamps that have no mechanism to adjust horizontal aim. Such headlamps shall be aligned so that they are in the same attitude as on the vehicle;"

Insert new paragraphs 6.2.3. and 6.2.4., to read:

"6.2.3. When so aimed, the headlamp need, if its approval is sought solely for provision of a passing beam, 9/ comply only with the requirements set out in paragraphs 6.2.5. to 6.2.6. below; if it is intended to provide both a passing beam and a driving beam, it shall comply with the requirements set out in paragraphs 6.2.5., 6.2.6. and 6.3.

6.2.4. Where a headlamp so aimed does not meet the requirements set out in paragraphs 6.2.5, 6.2.6 and 6.3, its alignment may be changed, except for headlamps that have no mechanism to adjust horizontal aim, on condition that the axis of the beam is not displaced laterally by more than 1 degree (=44 cm) to the right or left [10/]. To facilitate alignment by means of the "cut-off", the headlamp may be partially occulted in order to sharpen the "cut-off". However, the "cut-off" should not extend beyond the line h-h."

Paragraph 6.2.3. (former), renumber as paragraph 6.2.5., and amend to read:

"6.2.5. The illumination produced by the passing beam on the screens in annex 3 shall meet the following illumination requirements:"

Paragraphs 6.2.3.1. and 6.2.3.2., renumber as paragraphs 6.2.5.1. and 6.2.5.2.

---

9/ Such a special "passing beam" headlamp may incorporate a driving beam not subject to requirements.

10/ The limit of realignment of 1° towards the right or left is not incompatible with upward or downward vertical realignment. The latter is limited only by the requirements of paragraph 6.3. (the provisions of paragraph 6.3. are not applicable to passing beam headlamps).]

Insert new paragraphs 6.2.5.3. and 6.2.6, to read:

"6.2.5.3. For Class C or D headlamp:

TEST POINT/ LINE/ ZONE	Position in B- $\beta$ Grid in angular degrees		Required illumination in lux at 25 m			
			Minimum Intensity cd		Maximum Intensity cd	
	Vertical $\beta^{**}$	Horizontal B**	Class D	Class C	Class D	Class C
			>125cc	125cc >=	>125cc	125cc >=
1	0.86 D	3.5 R	2.3		15.4	
2	0.86 D	0	5.8	2.9	-	
3	0.86 D	3.5 L	2.3		15.4	
4	0.50 U	1.50 L & 1.50 R	-		1.08	
6	2.00 D	15 L & 15 R	1.28	0.64	-	
7	4.00 D	20 L & 20 R	0.38	0.19	-	
8	0	0	-		1.92	
Line 11	2.00 D	9 L to 9 R	1.6		-	
Line 12	7.00 U	10 L to 10 R	-		0.3; but 0.96 if within 2° cone	
Line 13	10.00 U	10 L to 10 R	-		0.15; but 0.64 if within 2° cone	
Line 14	10 U to 90 U	0	-		0.15; but 0.64 if within 2° cone	
15*	4.00 U	8.0 L	0.1*		1.08	
16*	4.00 U	0	0.1*		1.08	
17*	4.00 U	8.0 R	0.1*		1.08	
18*	2.00 U	4.0 L	0.2*		1.08	
19*	2.00 U	0	0.2*		1.08	
20*	2.00 U	4.0 R	0.2*		1.08	
21*	0	8.0 L & 8.0 R	0.1*		-	
22*	0	4.0 L & 4.0 R	0.2*		1.08	
Zone 1	1U/8L-4U/8L-4U/8R-1U/8R-0/4R-0/1R-0.6U/0-0/1L-0/4L-1U/8L		-		1.08	
Zone 2	>4U to <10 U	10 L to 10 R	-		0.3; but 0.96 if within 2° cone	
Zone 3	10 U to 90 U	10 L to 10 R	-		0.15; but 0.64 if within 2° cone	

Notes:

"D" means under the HH line.

"U" means above the HH line.

"R" means right of the VV line.

"L" means left of the VV line.

\* During measurement of these points, the front position lamp approved to ECE Regulation No. 50 - if combined, grouped, or reciprocally incorporated-shall be switched on.

\*\* 0.25° tolerance allowed independently at each test point for photometry unless indicated otherwise.

Other general text:

ECE-Type Approval at reference luminous flux according to Regulation No. 37 or at objective luminous flux for gas-discharge light sources according to Regulation No. 99.

Nominal Aim For Photometry:

Vertical: 1 per cent D (0.57°D) Horizontal: 0°

Allowed Tolerances for Photometry:

Vertical: 0.3°D to 0.8°D Horizontal: ±0.5°D L-R

- 6.2.6. The light shall be as evenly distributed as possible within zones 1, 2, and 3 for Class C or D headlamps."

Paragraphs 6.3.2. to 6.4., amend to read:

- "6.3.2. Except for class A headlamp, the illumination produced on the screen by the driving beam shall meet the following requirements:

- 6.3.2.1. For Class A headlamps:

the point of intersection (HV) of lines H-H and V-V shall be situated within the isolux 80 per cent of maximum illumination. This maximum value (EM) shall not be less than 32 lux for Class B or C headlamps and 51.2 lux for Class D headlamps. The maximum value shall in no circumstances exceed 240 lux in the case of Class B headlamps and 180 lux in the case of Class B, C and D headlamps.

- 6.3.2.1.1. The maximum intensity ( $I_M$ ) of the driving beam expressed in thousands of candelas shall be calculated by the formula:

$$I_M = 0.625 E_M$$

- 6.3.2.1.2. The reference mark ( $I'_M$ ) of this maximum intensity, referred to in paragraph 4.2.2.6. above, shall be obtained by the ratio:

$$I'_M = \frac{I_M}{3} = 0.208 E_M$$

This value shall be rounded off to the value 7.5 - 10 - 12.5 - 17.5 - 20 - 25 - 27.5 - 30 - 37.5 - 40 - 45 - 50.

- 6.3.2.2. For Classes B, C and D headlamps:  
the point of intersection (HV) ...

...  
starting from point HV, horizontally to the right and left, the illumination shall be not less than 12 lux for Class B and C headlamp, and 24 lux for Class D headlamp to a distance of 1125 mm and not less than 3 lux for Class B and C headlamp, and 6 lux for Class D headlamp to a distance of 2250 mm.

In the case of a Class C and D headlamp, the intensities shall conform to the tables A or B in annex 3. Table A applies in the case where a primary driving beam is being produced with a single light source. Table B applies in the case where the driving beam is

being produced by a Secondary driving beam headlamp operated with a harmonized passing beam headlamp or a primary driving beam headlamp.

- 6.4. In the case of headlamps with an adjustable reflector, additional tests shall be made after the reflector has been moved vertically +/- 2 degrees or at least into the maximum position, if less than 2 degrees, from its initial position by means of the headlamp adjusting device. The whole headlamp shall then be re-positioned (for example by means of the goniometer) by moving it through the same number of degrees in the opposite direction to the movement of the reflector. The following measurements shall be made and the points shall be within the required limits:

passing beam: points HV and 0.86D-V

driving beam:  $I_M$  and point HV (percentage of  $I_M$ )

- 6.5. The screen illumination values mentioned in paragraphs 6.2. and 6.3. above shall be measured by means of a photoreceptor, the effective area of which shall be contained within a square of 65 mm side."

Paragraph 8.2., amend to read:

"8.2. ... procedure specified in paragraph 4.1.4. above to the ..."

Annex 1, footnote 3/, amend to read:

"3/ Indicate the appropriate marking selected from the listed below :  
C-AS, C-BS, R-BS, CR-BS, C/ -BS, C/R-BS  
C-BS PL, R-BS PL, CR-BS PL, C/ -BS PL, C/R-BS PL,  
WC-CS, WC-DS, WR-CS, WR-DS, WCR-CS, WCR-DS,  
WC/-CS, WC/-DS, WC/R-CS, WC/R-DS, WC-CS PL,  
WC-DS PL, WR-CS PL, WR-DS PL, WCR-CS PL, WCR-DS PL,  
WC/-CS PL, WC/-DS PL, WC/R-CS PL, WC/R-DS PL,  
WC+-CS, WC+-DS, WC+R-CS, WC+R-DS, C+-BS, C+R-BS,  
WC+-CS PL, WC+-DS PL, WC+R-CS PL, WC+R-DS PL, C+-BS PL,  
C+R-BS PL"



Annex 2, amend to read:

"

Annex 2

EXAMPLES OF ARRANGEMENT OF APPROVAL MARKS

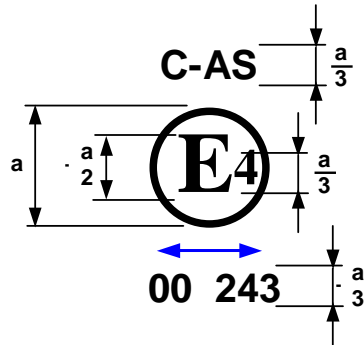


Figure 1

$a \geq 5$  mm for Class A headlamp

**CR-BS**



Figure 2

$a \geq 8$  mm for Class B, C and D headlamp

...

**C-BS PL**



Figure 3

**CR-BS PL**



Figure 4

...

**C/R-BS**



Figure 5

**C/-BS**



Figure 6

... reciprocally incorporated headlamp.

**WC-CS PL**



Figure 7

**WCR-CS PL**



Figure 8

The headlamp bearing the above approval mark is a headlamp incorporating a lens of plastic material meeting the requirements of this Regulation and is designed:

Figure 7: Class C in respect of the passing beam only.

Figure 8: Class C in respect of the passing beam and driving beam.

**WC-DS PL**



Figure 9

**WCR-DS PL**



Figure 10

The headlamp bearing the above approval mark is a headlamp meeting the requirements of this Regulation:

Figure 9: Class D in respect of the passing beam and driving beam.

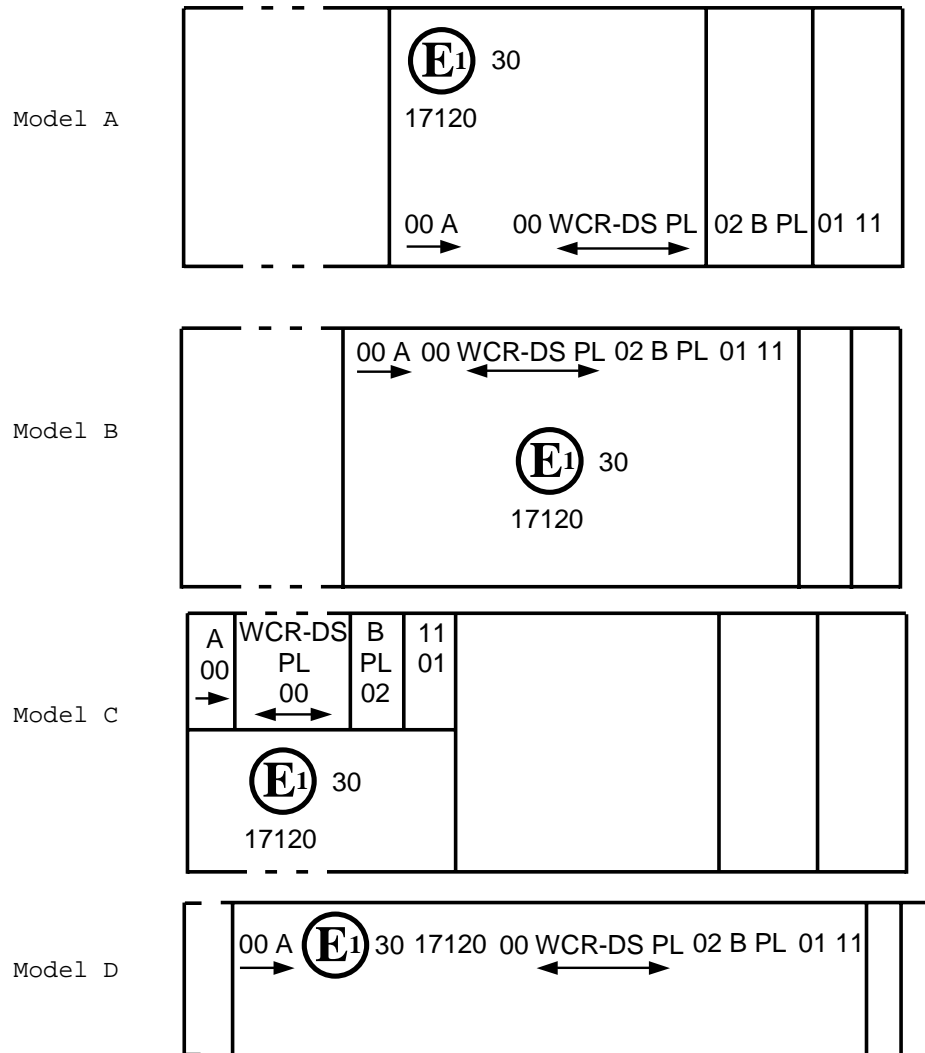
Figure 10: Class D in respect of the passing beam only.

The passing beam shall not be operated simultaneously with the driving beam and/or another reciprocally incorporated headlamp.

Simplified marking for grouped, combined or reciprocally incorporated lamps

Figure 11

(The vertical and horizontal lines schematize the shape of the light-signalling device. They are not part of the approval mark).



Note: The four examples above correspond to a lighting device bearing an approval mark comprising:

A front position lamp approved in accordance with the 00 series of amendments to Regulation No. 50,

A headlamp, Class D, with a passing beam and a driving beam with a maximum intensity comprised between 86 250 and 101 250 candelas (as indicated by the number 30), approved in accordance with the requirements of this Regulation in its original form (00) and incorporating a lens of plastic material,

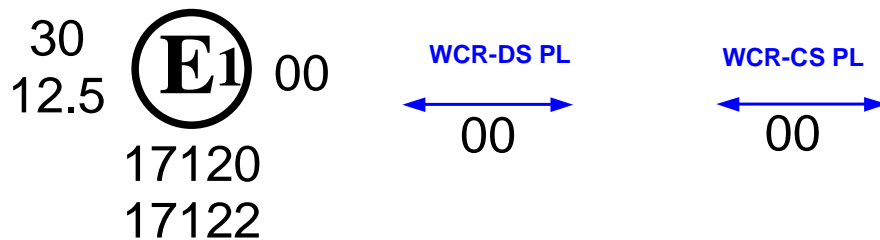
A front fog lamp approved in accordance with the 02 series of amendments to Regulation No. 19 and incorporating a lens of plastic material,

A front direction indicator lamp of category 11 approved in accordance with the 01 series of amendments to Regulation No. 50.

Figure 12

Lamp reciprocally incorporated with a headlamp

Example 1



The above example corresponds to the marking of a lens of plastic material intended to be used in different types of headlamps, namely:

Either A headlamp, Class D, with a passing and a driving beam with a maximum luminous intensity comprised between 86 250 and 101 250 candelas (as indicated by the number 30), approved in Germany (E1) in accordance with the requirements of this Regulation in its original form (00), which is reciprocally incorporated with a front position lamp approved in accordance with the 00 series of amendments to Regulation No. 50;

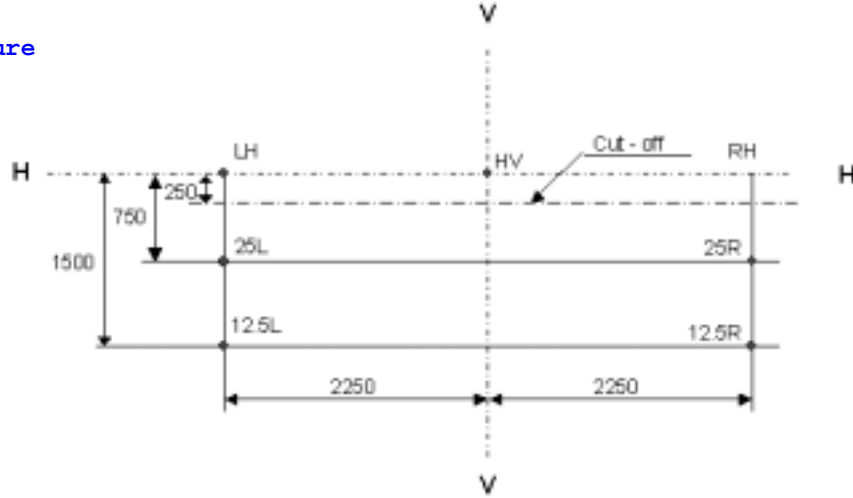
Or A headlamp, Class C, with a passing beam and a driving beam with a maximum luminous intensity comprised between 33 750 cd and 45 000 cd (as indicated by the number 12.5), approved in Germany (E1) in accordance with the requirements of this Regulation in its original form (00), which is reciprocally incorporated with the same front position lamp as above;"

Annex 3, amend to read:

"Annex 3

MEASURING SCREEN  
 for Class A headlamps  
 (Dimensions in mm with screen at 25 m distance)

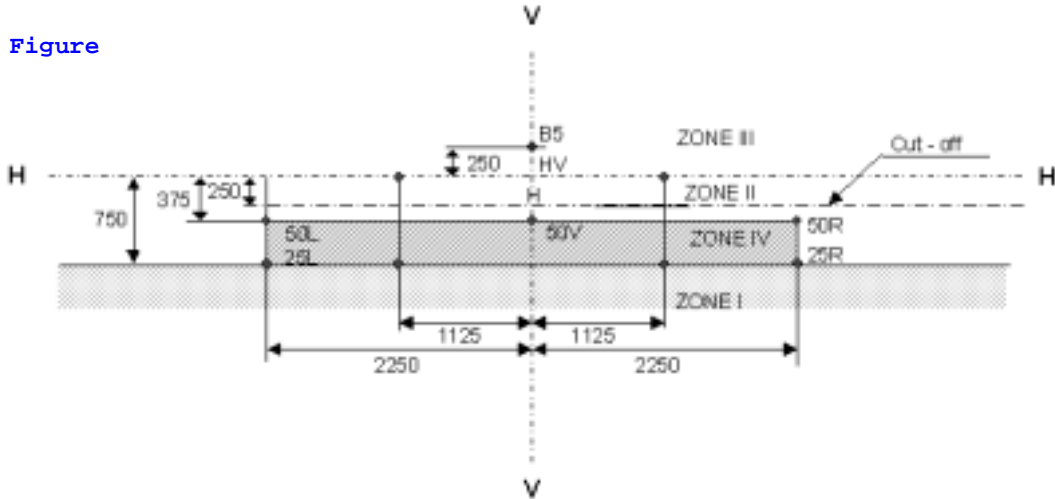
Figure



H-H : horizontal plane ) passing through  
 V-V : vertical plane ) focus of headlamp

MEASURING SCREEN  
 for Class B headlamps  
 (dimensions in mm with screen at 25 m distance)

Figure



H-H : horizontal plane ) passing through  
 V-V : vertical plane ) focus of headlamp

Annex 3

MEASURING SCREEN  
for Class C and D headlamps  
(Dimensions in mm with screen at 25 m distance)

Figure C

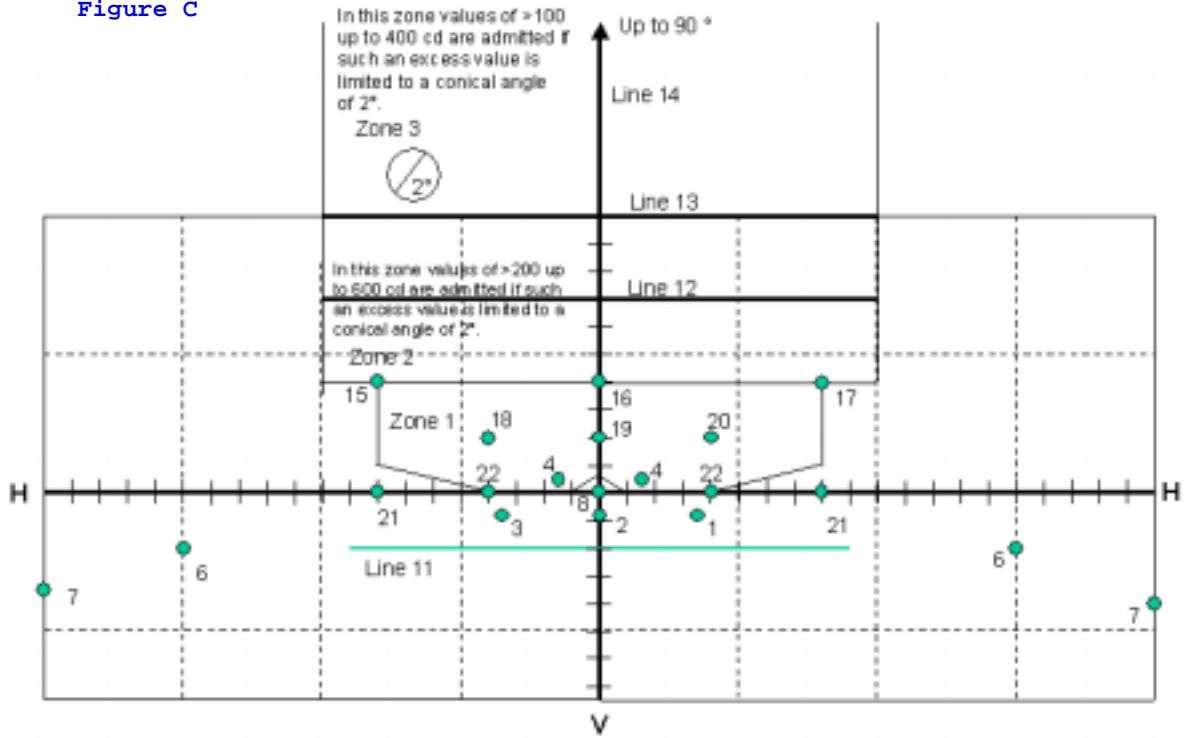


Table A - Primary high beam headlamp

Refer to Figure D for details of test point positions

TEST POINT NUMBER	TEST POINT LOCATION	Required illumination in lux			
		Class D		Class C	
		> 125cc		125cc =>	
		MIN.	MAX.	MIN.	MAX.
1	H-V (1)	(1)	---	(1)	---
2	H-3R & 3L	19.2	---	12.8	---
3	H-6R & 6L	6.4	---	4.16	---
4	H-9R & 9L	3.84	---	2.56	---
5	H-12R & 12L	1.28	---	0.8	---
6	2U-V	1.92	---	1.28	---
7	4D-V	---	(2)	---	(2)
	MIN. LUMINOUS INTENSITY OF THE MAXIMUM	51.2	---	32	---
	MAX. LUM. INTENSITY	---	180.0	---	180.0

- (1) Intensity at H-V shall be equal to or greater than 80 per cent of the maximum intensity in the beam pattern.
- (2) Intensity at 4D-V shall be equal to or less than 30 per cent of the maximum intensity in the beam pattern.

Table B -Secondary high beam headlamp operated with a harmonized passing beam headlamp or a primary driving beam headlamp

A. Refer to Figure E for details of test point positions

TEST POINT NUMBER	TEST POINT LOCATION	Required illumination in lux			
		Class D		Class C	
		> 125cc		125cc =>	
		MIN.	MAX.	MIN.	MAX.
1	H-V (1)	(1)	---	(1)	---
2	H-3R & 3L	19.2	---	12.8	---
3	H-6R & 6L	6.4	---	4.16	---
6	2U-V	1.92	---	1.28	---
7	4D-V	---	(2)	---	(2)
	MIN. LUMINOUS INTENSITY OF THE MAXIMUM	51.2	---	32	---
	MAX. LUM. INTENSITY	---	180.0 (3)	---	180.0 (3)

- (1) Intensity at H-V shall be equal to or greater than 80 per cent of the maximum intensity in the beam pattern.
- (2) Intensity at 4D-V shall be equal to or less than 30 per cent of the maximum intensity in the beam pattern.

FIGURE D  
Primary Driving Beam

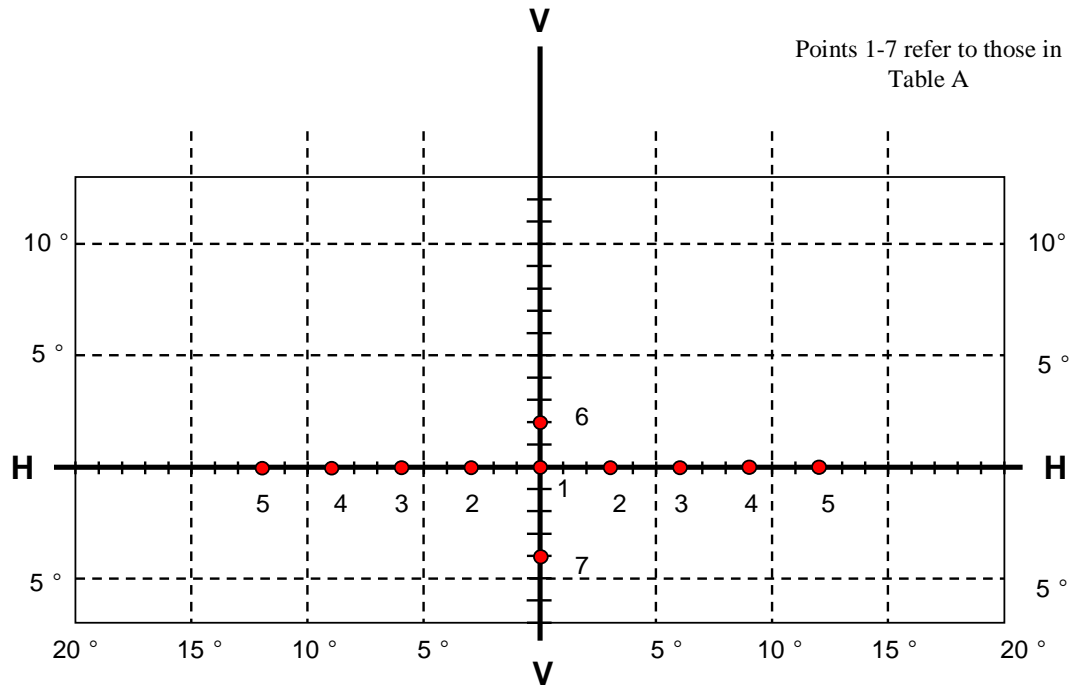
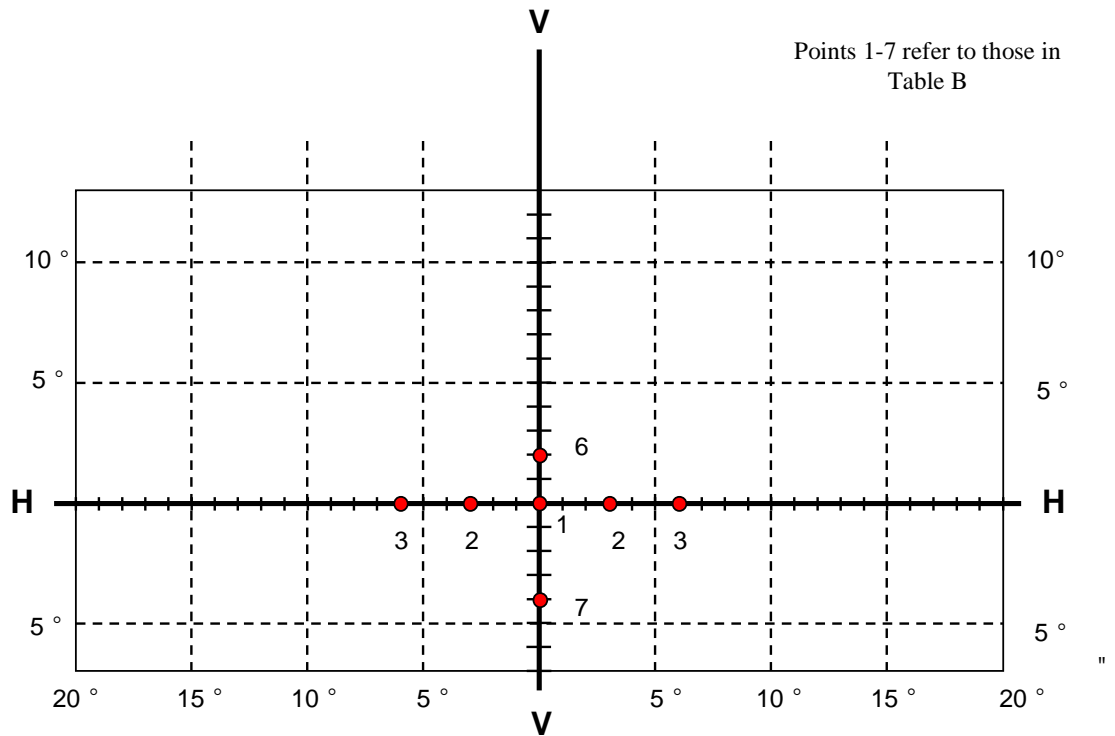


FIGURE E  
Secondary Driving Beam





Annex 4,

The title, amend to read:

"...  
... ON COMPLETE CLASS B, C AND D HEADLAMPS"

Paragraph 1.1.2.2., amend to read:

"1.1.2.2. ... in the following points:

**For Class B headlamp:**

Passing beam: 50R - 50L - B50 - HV.  
Driving beam: Point of  $E_{max}$

**For Class C and D headlamp:**

**Passing beam: 0.86D/3.5R - 0.86D/3.5L - 0.50U/1.5L & 1.5R - HV.**  
**Driving beam: Point of  $E_{max}$**

Another aiming may be carried out ..."

Paragraph 1.2.1.2., amend to read:

"1.2.1.2. ... under the conditions described in this annex:

**For Class B headlamp:**

Passing beam/driving beam and driving beam only: Point of  $E_{max}$   
Passing beam only: B 50 and 50 V

**For Class C and D headlamp:**

**Passing beam/driving beam and driving beam only: Point of  $E_{max}$**   
**Passing beam only: 0.50U/1.5L & 1.5R and 0.86D/V"**

Paragraph 2.1., amend to read:

"2.1. ...  
... through point 50 L and 50 R **for Class B headlamp, 3.5 L and 3.5 R for Class C and D headlamp**) shall be verified ...  
..."

Annex 5,

Paragraphs 1.2.2. and 1.2.2.1., amend to read:

"1.2.2. Class B, C and D headlamp:

1.2.2.1. ... For values in zone III, **for Class B headlamp, Zone 1 for Class C and D headlamp**, the maximum unfavourable ...  
..."

Paragraph 1.3., amend to read:

"1.3           ... procedure shall be applied (Class B, C and D headlamps only):  
                  ...  
                  ..."

Paragraph 2.1., amend to read:

"2.1.           ... and for Class B, C and D headlamps ..."

Insert a new paragraph 2.4.3., to read:

"2.4.3.       **For Class C and D headlamps:  $E_{max}$ , HV  $\underline{1}$ /, in the case of the driving beam, and to the points HV, 0.86D/3.5R, 0.86D/3.5L, in the case of the passing beam.**"

Annex 6,

Paragraph 2.1.2.1., amend to read:

"2.1.2.1.     ...  
                  ... following points:  
  
                  B 50, 50L and 50R for Class B headlamp, 0.86D/3.5R, 0.86D/3.5L,  
                  0.50U/1.5L & 1.5R for Class C and D headlamp for the passing beam  
                  or a passing / driving lamp;  
                  ..."

Paragraph 2.6.1.2., amend to read:

"2.6.1.2.     ...  
                  ... prescribed at point 50 L and 50 R50R for Class B headlamp,  
                  0.86D/3.5R, 0.86D/3.5L for Class C and D headlamp."

Annex 7,

Paragraphs 1.2.2. and 1.2.2.1., amend to read:

"1.2.2        Class B, C and D headlamps:  
  
1.2.2.1.     ... For values in zone III for Class B headlamp, zone I for Class C  
                  and D headlamp, the maximum unfavourable ..."

---