

## PROPOSAL FOR DRAFT AMENDMENTS TO DRAFT REGULATION No. [113]

This is a draft proposal for revisions to ECE draft regulation MH because of the new worldwide harmonized dipped beam pattern.

All of the following is based on the Proposal for a Draft Regulation MH: dated 12 August 1998; TRANS/WP.29/1998/42 and Addendum 1; dated 16 October 1998; TRAN/WP.29/1998/42/Add.1.

Any deletions have a ~~strike~~through.  
Any additions are in *italics* and in bold.

Paragraph numbers refer to draft regulation MH.

1.4. "Headlamps of different "Classes" (A or B *or C or D*)" mean headlamps identified by particular photometric provisions.

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

2.1.4. whether it concerns a Class A or B *or C or D* headlamp;

2.2.4. for Class B *or C or D* headlamps only, for the test of plastic material of which the lenses are made:

*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.*

renumber 4.1.2. to 4.1.3 as 4.1.3 to 4.1.4

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

renumber 4.2.2.1. to 4.2.2.4 as 4.2.2.2. to 4.2.2.5.

*4.2.2.2. on headlamps meeting the requirements of this Regulation in respect of the passing beam only, the letters "C-AS" for Class A headlamp or "C-BS" for Class B headlamps **or "WC-CS" for Class C headlamp or "WC-DS" for Class D headlamp**;*

*4.2.2.3. on headlamps meeting the requirements of this Regulation in respect of the driving beam only, "R-BS" for Class B headlamp **or "WR-CS" for Class C headlamp or "WR-DS" for Class D headlamp**;*

*4.2.2.4. on headlamps meeting the requirements of this Regulation in respect of both the passing beam and the driving beam, the letters "CR-BS" for Class B headlamps **or "WCR-CS" for Class C headlamp or "WCR-DS" for Class D headlamp**;*

- 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";
- 4.2.3.1. on headlamps meeting the requirements of this Regulation which are so designed that the filament of the passing beam shall not be lit simultaneously with that of any other lighting function with which it may be reciprocally incorporated: an oblique stroke (/) shall be placed behind the passing lamp symbol 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.***
- 4.2.4. The two digits of the approval number (at present OO) which indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval and *the required arrow may be marked close to the above 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 (see four possible examples in annex 2).*
- 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 10, 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 11, to this Regulation gives examples of arrangements of approval marks relating to the above case.*

5.2.1. Headlamps shall be fitted with a device enabling them to be so adjusted on the vehicles as to comply with the rules applicable to them. *On Class A or B headlamps, 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 not be fitted on units in which the reflector and the diffusing lens cannot be separated, provided the use of such units is confined to vehicles on which the headlamp setting can be adjusted by other means.

Where a headlamp providing a passing beam and a headlamp providing a driving beam, each equipped with its own filament lamp, are assembled to form a composite unit the adjusting device shall enable each optical system individually to be duly adjusted.

5.3. The headlamp shall be equipped with filament lamp(s) approved according to Regulation No. 37. Any Regulation No. 37 filament lamp may be used, provided that:

(a) no restriction on the application is made in the table of contents of that Regulation;

(b) its reference luminous flux does not exceed 600 lm *except Class C and D.*

5.6. Class B *or C or D* headlamps shall be complementary tested according to the requirements of annex 4 to ensure that in use there is no excessive change in photometric performance.

5.7. If the lens of a Class B *or C or D* headlamp is of plastic material, tests shall be done according to the requirements of annex 6.

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 two positions;*
- 5.8.4. *the user cannot, with ordinary tools, change the shape or position of the moving parts.*

*(All changes proposed below in 6.2.1.; 6.2.1.1.; and 6.2.1.2. are temporarily on hold until the GTB approves a gradient measuring method.)*

- 6.2.1. The passing beam must produce a sufficiently sharp "cut-off" to permit a satisfactory adjustment with its aid. The "cut-off" must be substantially horizontal and as straight as possible over a horizontal length of at least  $\pm 3^\circ$  for Class A headlamps and at least  $\pm 5^\circ$  for Class B, **C or D** headlamps.
- 5.2.2.1. laterally, the beam is as symmetrical as possible with 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;*
- 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 6.2.7. 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. to 6.2.7. and 6.3.*  
  
*9/ Such a special "passing beam" headlamp may incorporate a driving beam not subject to requirements.*
- 6.2.4. *Where a headlamp so aimed does not meet the requirements set out in paragraphs 6.2.5 to 6.2.7 and 6.3, its alignment may be changed, except for Class A or B headlamps that have no mechanisms for lateral realignment, 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".*  
  
*10/ The limit of realignment of  $1^\circ$  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. However, the "cut-off" should not extend beyond the line hh (the provisions of paragraph 6.3. are not applicable to headlamps intended to meet the requirements of this Regulation only for provision of a passing beam).*

renumber 6.2.3. to 6.2.3.2 as 6.2.5. to 6.2.5.2.

- 6.2.5. The illumination produced on the screen by the passing beam shall meet the following requirements:

6.2.5.3. For Class C or D headlamp; (See Annex X2, page 1 for equivalent values of the test points in x-y coordinates and the intensity values in lux or Annex X2, page 2 for equivalent values of the test points in x-y coordinates and the intensity values in candela): headlamp:

TEST POINT/ LINE/ ZONE	Position in B-b Grid in angular degrees		Minimum Intensity cd		Maximum Intensity cd	
			Class D	Class C	Class D	Class C
	Vertical b**	Horizontal B**	>125cc	125cc >=	>125cc	125cc >=
1	0.86 D	3.5 R	1,440		9,600	
2	0.86 D	0	3,600	1,800	-	
3	0.86 D	3.5 L	1,440		9,600	
4	0.50 U	1.50 L & 1.50R	-		672	
6	2.00 D	15 L & 15 R	800	400	-	
7	4.00 D	20 L & 20 R	240	120	-	
8	0	0	-		1200	
Line 11	2.00 D	9 L to 9 R	1,000		-	
Line 12	7.00 U	10 L to 10 R	-		200; but 600 if within 2° cone	
Line 13	10.00 U	10 L to 10 R	-		100; but 400 if within 2° cone	
Line 14	10 U to 90 U	0	-		100; but 400 if within 2° cone	
15*	4.00 U	8.0 L	62.5*		672	
16*	4.00 U	0	62.5*		672	
17*	4.00 U	8.0 R	62.5*		672	
18*	2.00 U	4.0 L	125*		672	
19*	2.00 U	0	125*		672	
20*	2.00 U	4.0 R	125*		672	
21*	0	8.0 L & 8.0 R	62.5*		-	
22*	0	4.0 L & 4.0 R	125*		672	
Zone 1	1U/8L-4U/8L-4U/8R-1U/8R-0/4R-0/1R-0.6U/0-0/1L-0/4L-1U/8L		-		672	
Zone 2	>4U to <10 U	10 L to 10 R	-		200; but 600 if within 2° cone	
Zone 3	10 U to 90 U	10 L to 10 R	-		100; but 400 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 R7-if combined, grouped, or reciprocally incorporated-with the dipped beam function-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 37 or at objective luminous flux for gas-discharge light sources according to Regulation 99.

Nominal Aim For Photometry:

Vertical: 1%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.** *There shall be no lateral variations detrimental to good visibility in any of the zones 1, 2, and 3 for Class C or D headlamp.*

**6.2.7.** *For Class B or C or D headlamp, the illumination values in zones "A" and "B" as shown in Figure C in annex 3 shall be checked by the measurement of the photometric values of points 1 to 10 on this figure; these values shall lie within the following limits: \*/*

$$1 + 2 + 3 \geq 0.3 \text{ lux, and}$$

$$4 + 5 + 6 \geq 0.6 \text{ lux, and}$$

$$0.7 \text{ lux} \geq 7, 10 \geq 0.1 \text{ lux and}$$

$$0.7 \text{ lux} \geq 8, 9 \geq 0.2 \text{ lux}$$

*\*/ Illumination values in any point of zones A and B, which also lies within zone III, shall not exceed 0.7 lux.*

**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.** *The point of intersection (HV) of lines hh and vv shall be situated within the isolux 80 per cent of maximum illumination. This maximum value ( $E_M$ ) shall not be less than 32 lux for Class B or C headlamps and 48 lux for Class D headlamps. The maximum value ( $E_M$ ) shall not be less than 32,000 cd for Class D headlamps. The maximum value shall in no circumstances exceed 240 lux;*

**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:*

$$IM = 0.625 E_M$$

**6.3.2.1.2.** *The reference mark ( $I'_M$ ) of this maximum intensity, referred to in paragraph 4.2.2.7. 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.** 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.

(There will be some changes to 6.3.2.2 later when all of the documentation is prepared for the harmonized main beam.)

**6.4.** *In the case of headlamps with adjustable reflector, additional tests are 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. Having re-aimed the headlamps as a whole (by means of the goniometer for example) in the corresponding opposite direction the light output in the following direction shall be controlled and lie within the required limits:*

*passing beam: points HV and 0.86D-V*

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

renumber 6.4. to 6.5.

*Changes in Annex 1 Approval Markings will be made whenever everything else is agreed to.*

*Changes in Annex 2 Arrangement of Approval Markings will be made whenever everything else is agreed to.*

*Annex 3 has a different screen for Class C headlamps.*

*Annex 4 will have some editorial changes because there are different test point locations for Class A and Class B headlamps than the test point locations for Class C headlamps. None of the test procedures or requirements will be changed.*

*Annex 5 will have some editorial changes because there are different test point locations for Class A and Class B headlamps than the test point locations for Class C headlamps. None of the test procedures or requirements will be changed.*

*Annex 6 will have some editorial changes because there are different test point locations for Class A and Class B headlamps than the test point locations for Class C headlamps. None of the test procedures or requirements will be changed.*

*Annex 7 will have some editorial changes because there are different test point locations for Class A and Class B headlamps than the test point locations for Class C headlamps. None of the test procedures or requirements will be changed.*

TEST POINT/ LINE/ ZONE	Distance on Measuring Screen in mm at 25 m		Required illumination in Lux at 25 m			
	Vertical y**	Horizontal x**	Minimum		Maximum	
			Class D	Class C	Class D	Class C
			>125cc	125cc >=	>125cc	125cc >=
1	375 D	1529 R	2.3		15.4	
2	375 D	0	5.8	2.9	-	
3	375 D	1529 L	2.3		15.4	
4	218.2 U	654.6 L & 654.6 R	-		1.8	
6	873.0 D	6698.7 L & 6698.7 R	1.28	0.64	-	
7	1748.2 D	9099.3 L & 9099.3 R	0.38	0.19	-	
8	0	0	-		1.92	
Line 11	873.0 D	3960 L to 3960 R	1.6		-	
Line 12	3069.6 U	4408.2 L to 4408.2 R	-		0.3; but 0.96 if within 2° cone	
Line 13	4408.2 U	4408.2 L to 4408.2 R	-		0.15; but 0.64 if within 2° cone	
Line 14	4408.2 U to ∞U	0	-		0.15; but 0.64 if within 2° cone	
15*	1748.2 U	3513.5 L	0.1*		1.08	
16*	1748.2 U	0	0.1*		1.08	
17*	1748.2 U	3513.5 R	0.1*		1.08	
18*	873.0 U	1748.2 L	0.2*		1.08	
19*	873.0 U	0	0.2*		1.08	
20*	873.0 U	1748.2 R	0.2*		1.08	
21*	0	3513.5 L	0.1*		-	
22*	0	1748.2 L	0.2*		1.08	
Zone 1	436.4U/3513.5L-1748.2U/3513.5L- 1748.2U/3513.5R-436.4U/3513.5R- 0/1748.2R-0/436.4R-261.8U/0- 0/436.4L-0/1748.2L- 436.4U/3513.5L		-		1.08	
Zone 2	>1748.2 U to <4408.2 U	4408.2 L to 4408.2 R	-		0.3; but 0.96 if within 2° cone	
Zone 3	4408.2 U to ∞U	4408.2 L to 4408.2 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 R7-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 37 or at objective luminous flux for gas-discharge light sources according to Regulation 99.

Nominal Aim For Photometry:

**Vertical: 1%D (0.57°D)**

**Horizontal: 0°**

**Allowed Tolerances for Photometry:**

**Vertical: 0.3°D to 0.8°D**

**Horizontal: ±0.5°D L-R**

TEST POINT/ LINE/ ZONE	Position in B-b Grid in angular degrees		Required illumination in Lux at 25 m			
			Minimum Intensity cd		Maximum Intensity cd	
	Vertical b**	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 & 1.50R	-		1.8	
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 R7-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 37 or at objective luminous flux for gas-discharge light sources according to Regulation 99.

**Nominal Aim For Photometry:**

Vertical: 1°D (0.57°D)

Horizontal: 0°

**Allowed Tolerances for Photometry:**

Vertical: 0.3°D to 0.8°D

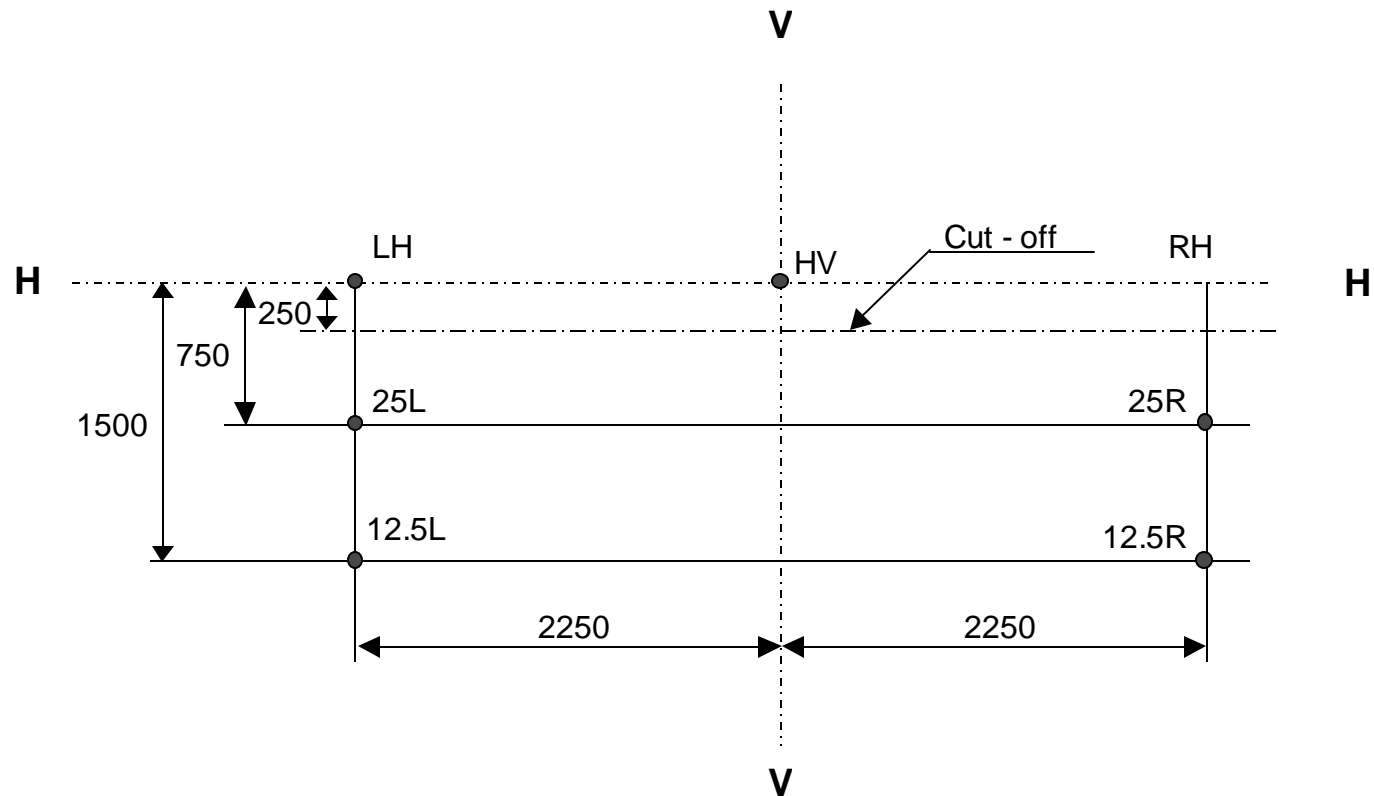
Horizontal: ±0.5°D L-R

Annex 3  
MEASURING SCREEN

for Class A Headlamps

Figure A

(dimensions in mm with screen at 25 m distance)



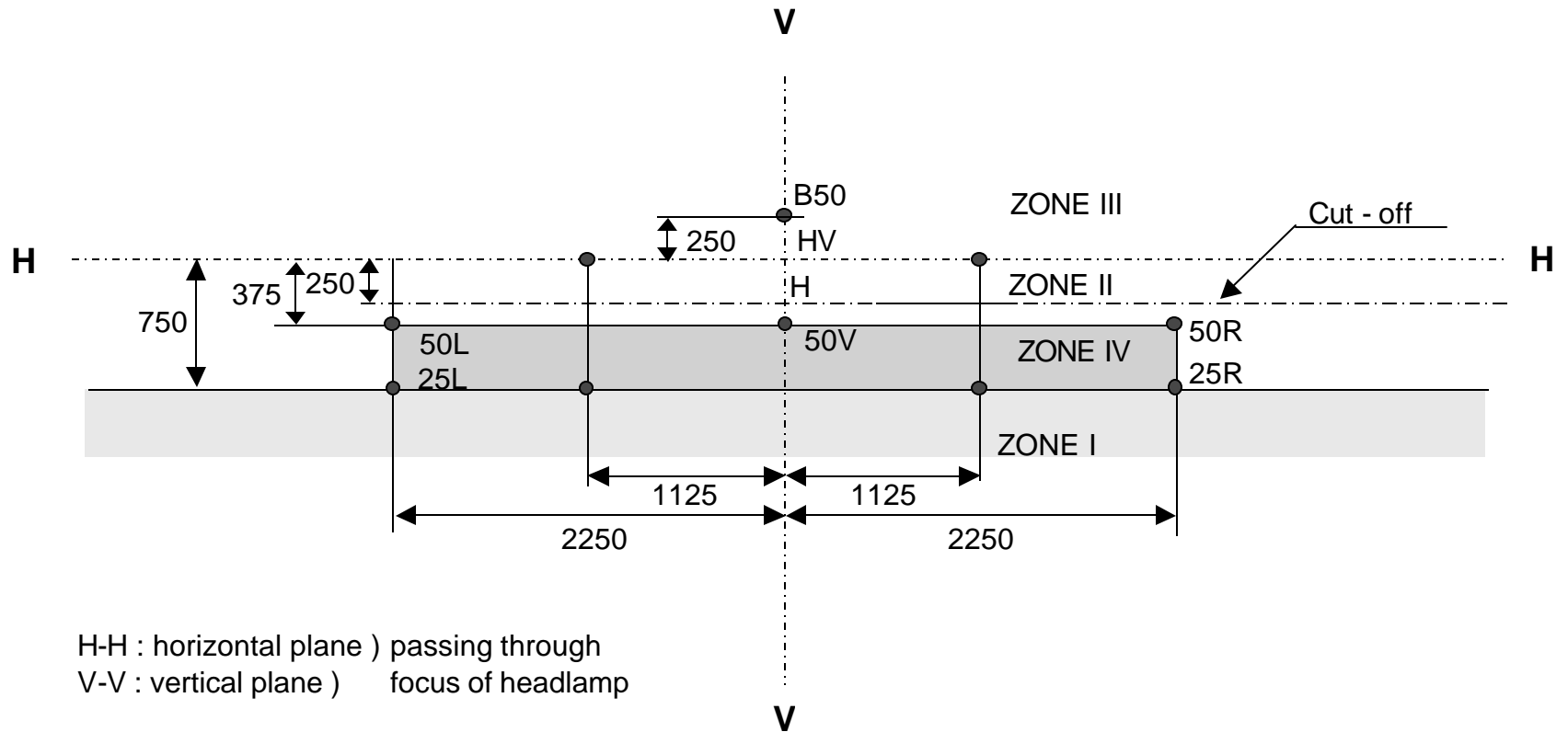
H-H : horizontal plane ) passing through  
V-V : vertical plane ) focus of headlamp

Annex 3  
MEASURING SCREEN

for Class B Headlamps

Figure B

(dimensions in mm with screen at 25 m distance)



Annex 3  
MEASURING SCREEN

Figure B

for Class B headlamps

(dimensions in mm with screen at 25 m distance)

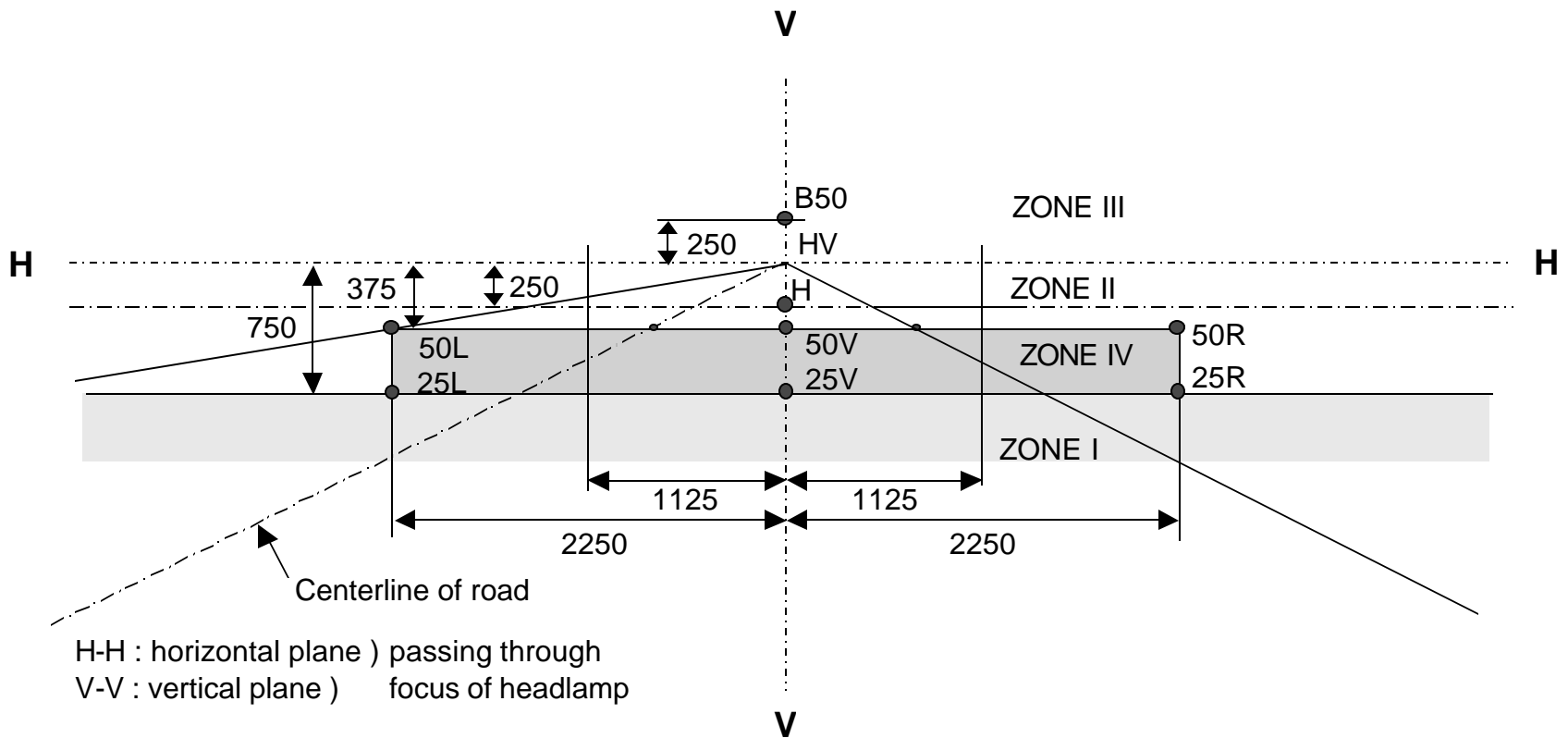
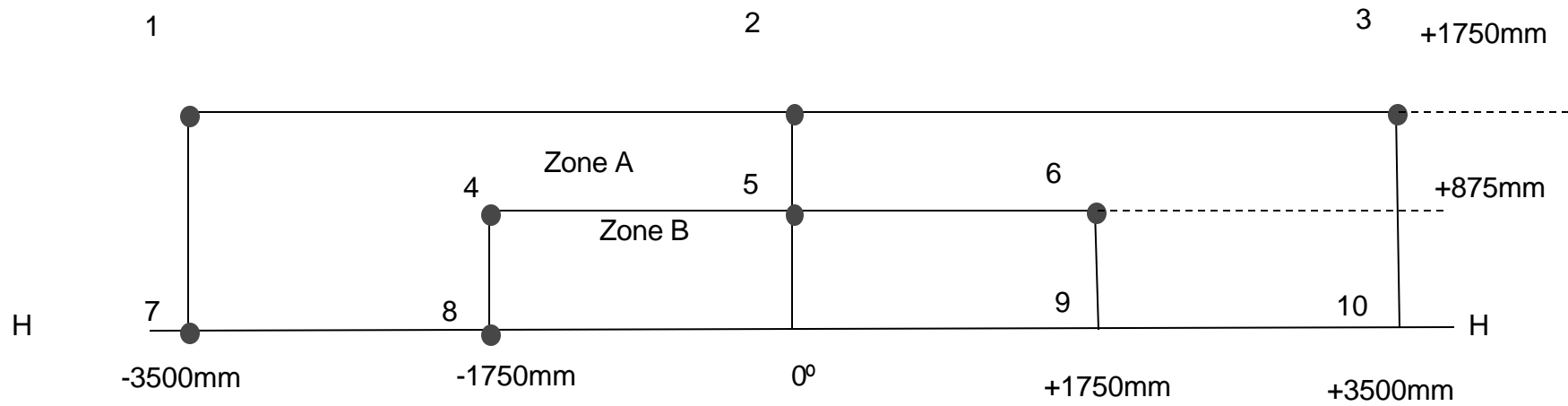


Figure C



Note: This Figure is applicable to headlamps of Class B or C or D.  
The above measuring points are exclusively specified for this Figure C, and not identical to the points of the same numbers specified in Figure D.

# Figure D--CLASS C or D HEADLAMP

