

Index du dossier de réception d'une homologation par type en application d'un Règlement
Index to the information package of a type approval with regard to a Regulation

Dernière Série d'amendements applicable <i>Last applicable Series of amendments</i>	N° de la réception de base et mise à jour <i>Base approval and update No</i>	Extension N° <i>Extension No</i>	Révision N° <i>Revision No</i>	Date d'émission <i>Issue date</i>	Fiche de renseignements <i>Information document</i>	
					Référence <i>Reference</i>	Nombre de pages <i>Number of pages</i>
112-00	00	-	-	15.05.2014	DEPO COMB HEADL 0137 / 00	6

Vu pour être annexé à la fiche de réception,
Approved and to be attached to the approval certificate,
 Le Conseiller,
The Advisor,



ir. A. DESCAMPS


N° d'homologation mis à jour : <i>Updated Approval No</i>	E6-112R-000533	BEVASYS :	201403383
Mise à jour N° : <i>Update No</i>	00	Date d'émission : <i>Issue date</i>	15.05.2014
		P 1	

COMMUNICATION CONCERNANT L'HOMOLOGATION D'UN TYPE DE PROJECTEUR
COMMUNICATION CONCERNING THE APPROVAL OF A TYPE OF HEADLAMP
EN APPLICATION DU REGLEMENT N° 112-00
PURSUANT TO REGULATION NO. 112-00


N° d'homologation : E6-112R-000533
Approval No.

Marque d'homologation :
Approval mark

Right hand:

A↓ RL HCR PL 1↓
02 00 00 01
← ←
 12.5
0533

Left hand:

1↓ HCR PL RL A↓
01 00 00 02
→ →
 12.5
0533

1. Marque de fabrique ou de commerce du dispositif : DEPO
1. Trade name or mark of the device
2. Désignation du type de dispositif par le fabricant : 446-1122PMLDEM2 (for right hand traffic)
2. Manufacturer's name for the type of device
3. Nom et adresse du fabricant :
3. Manufacturer's name and address
Depo Auto Parts Ind Co., Ltd.
No. 756, Fuxing Rd., Xinying Dist.,
Tainan City 730, Taiwan R.O.C
4. Nom et adresse du mandataire du fabricant (le cas échéant) : -
4. If applicable, name and address of manufacturer's representative
5. Soumis à l'homologation le : 30.04.2014 ~ 05.05.2014
5. Submitted for approval on

6. Service technique chargé des essais :
6. *Technical service responsible for conducting approval tests*

AIB VINCOTTE INTERNATIONAL
Jan Olieslagerslaan 35
1800 VILVOORDE
BELGIUM

7. Date du procès-verbal d'essai : 15.05.2014
7. *Date of report issued by that service*

8. Numéro du procès-verbal d'essai : H1460443261/241
8. *Number of report issued by that service*

9. Description sommaire : voir fiche de renseignements
9. *Brief description : see information document*

Catégorie indiquée par le marquage pertinent ¹ : HCR PL
Category as described by the relevant marking

Nombre et catégorie(s) de la (des) lampe(s) à incandescence : 1×H7 12V, 55W for passing beam and driving beam
Number and category(ies) of filament lamp(s)

Mesures au titre du paragraphe 5.8 du présent Règlement : yes, 5.8.1 (b)
Measures according to paragraph 5.8. of this Regulation

Nombre de modules DEL et code(s) d'identification propre(s) à ce(s) module(s) : -
Number and specific identification code(s) of LED module(s)

Nombre de dispositifs de régulation électronique de source lumineuse et code(s) d'identification propre(s) à ce(s) dispositif(s) : -
Number and specific identification code(s) of electronic light source control gear(s)

Le flux lumineux normal total tel qu'il est décrit au paragraphe 5.9 est supérieur à 2 000 lumens : ~~oui~~/non ²
Total objective luminous flux as described in paragraph 5.9. exceeds 2,000 lumen : ~~yes~~ / no ²
voir rapport d'essai

La détermination du réglage de la ligne de coupure a été effectuée à ~~10 m~~ / 25 m ²
The adjustment of the cut-off has been determined at : ~~10 m~~ / 25 m ²
voir rapport d'essai

La détermination de la netteté minimale de la ligne de coupure a été effectuée à ~~10 m~~ / ~~25 m~~ ²
The determination of the minimum sharpness of the "cut-off" has been carried out at : ~~10 m~~ / ~~25 m~~ ²
voir rapport d'essai

10. Emplacement de la marque d'homologation : sur la lampe
10. *Approval mark position: on the lamp*

11. Motif(s) de l'extension d'homologation : -
11. *Reason(s) for extension of approval*

12. Homologation accordée / étendue ²
12. *Approval granted / ~~extended~~ ¹*

¹ Indiquer le marquage adéquat comme défini dans le règlement R112, Annexe 1 - *Indicate the appropriate marking as defined in regulation R112, Annex 1*

² Rayer les mentions inutiles - *Strike out which does not apply*

13. Lieu : Bruxelles
13. *Place*
14. Date : 15.05.2014
14. *Date*
15. Signature :
15. *Signature*

AU NOM DU MINISTRE :
ON BEHALF OF THE MINISTER
Pour le Directeur Général,
For the Director General
Le Conseiller,
The Advisor,



ir. A. DESCAMPS

16. La liste des pièces constituant le dossier d'homologation déposé au Service administratif ayant délivré l'homologation est jointe en annexe et peut être obtenue sur demande.
16. *The list of documents deposited with the Administrative Service which has granted approval is annexed to this communication and may be obtained on request.*



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Safety, quality and environmental services

AUTOMOTIVE CERTIFICATION

Business Class Kantorenpark – Jan Olieslagerslaan 35 – B-1800 Vilvoorde

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1. **SUBJECT : HEADLAMPS**

R112-00

2. **REF. :** Report number : **H1460443261/241**

No. of pages : 1 of 34

No. of annexes : -

Bevasys : 201403383

Approval No. : (0533 00)

Update : 00

3. **GENERALITIES :**

Make of Device : DEPO

Commercial Type : -

Manufacturer's Type : 446-1122PMLDEM2

Name and address of the manufacturer :

Depo Auto Parts Ind Co., Ltd.

No. 756, Fuxing Rd., Xinying Dist.,

Tainan City 730, Taiwan R.O.C

4. **TESTS :**

Date and place : 2014.04.30 to 2014.05.05

Depo Auto Parts Ind. Co., Ltd. – Xinying Photometric Laboratory

Applied document(s) : DEPO COMB HEADL 0137 / 00

AVI Inspector : LU Wan-Ching

Persons witnessing the tests : LU Wan-Ching

Location of E-mark : On the lamp

5. **CONCLUSIONS :**

The tests were carried out according to the following specifications :

- UNECE Regulation No. 112 incorporating supplement 12 to the original version.

The models presented comply with the requirements to be applied.

Date : 2014.05.15

Signature :



DESCRIPTION OF THE TESTED HEADLAMP

- Headlamp type : ~~passing beam / driving beam~~ / passing and driving beam
- Drive type : ~~left hand traffic / right hand traffic / left and right hand traffic~~
- Adjustable reflector : yes / ~~no~~
- Headlamp class : A / B
- Category and kind of light source(s) : 1×H7 12V, 55W for passing beam and driving beam
- Number of light source(s) : 1 for passing beam and driving beam*

* One H7 light source designed to provide alternately a driving beam and a passing beam.

GENERAL SPECIFICATIONS

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
Each lamp shall be conform to the specifications of § 6 to § 8.	5.1.	X	
Headlamps shall be so made as to retain their prescribed photometric characteristics and to remain in good working order when in normal use, in spite of the vibrations to which they may be subjected.	5.2.	X	
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. 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.	5.2.1.	X	
Where a headlamp providing a principal passing beam and a headlamp providing a driving beam, each equipped with its own filament lamp or LED module(s), the adjusting device shall enable the principal passing beam and the driving beam to be adjusted individually.			
However, these provisions shall not apply to headlamp assemblies whose reflectors are indivisible. For this type of assembly the requirements of paragraph 6.3. of this Regulation apply.	5.2.2.		X
The headlamp shall be equipped with :	5.3.		
Filament lamp(s) approved according to Regulation No. 37. Any filament lamp covered by Regulation No. 37 may be used, provided that no restriction on the use is made in Regulation No. 37 and its series of amendments in force at the time of application for type approval.	5.3.1.	X	
The design of the device shall be such that the filament lamp can be fixed in no other position but the correct one ¹ .	5.3.1.1.	X	
The filament lamp holder shall conform to the characteristics given in IEC Publication 60061. The holder data sheet relevant to the category of filament lamp used, applies.	5.3.1.2.	X	

¹ A headlamp is regarded as satisfying the requirements of this paragraph if the filament lamp can be easily fitted into the headlamp and the positioning lugs can be correctly fitted into their slots even in darkness.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
and/or LED module(s) :	5.3.2.		X
Electronic light source control gear(s), if applicable, shall be considered to be part of the headlamp; they may be part of the LED module(s);	5.3.2.1.		
The headlamp, if equipped with LED modules, and the LED module(s) themselves shall comply with the relevant requirements specified in Annex 10 of this Regulation. The compliance with the requirements shall be tested.	5.3.2.2.		
The total objective luminous flux of all LED modules producing the principal passing beam and measured as described in paragraph 5. of Annex 10 shall be equal or greater than 1,000 lumens.	5.3.2.3.		
Headlamps designed to satisfy the requirements both of right hand and of left hand traffic may be adapted for traffic on a given side of the road either by an appropriate initial setting when fitted on the vehicle or by selective setting by the user. Such initial or selective setting may consist, for example, of fixing either the optical unit at a given angle on the vehicle or the filament lamp or LED module(s) producing the principal passing beam at a given angle/position in relation to the optical unit. In all cases, only two different and clearly distinct settings, one for right hand and one for left-hand traffic, shall be possible, and the design shall preclude inadvertent shifting from one setting to the other or setting in an intermediate position. Where two different setting positions are provided for the filament lamp or LED module(s) producing the principal passing beam, the components for attaching the filament lamp or LED module(s) producing the principal passing beam to the reflector must be so designed and made that, in each of its two settings, this filament lamp or LED module(s) will be held in position with the precision required for headlamps designed for traffic on only one side of the road. Conformity with the requirements of this paragraph shall be verified by visual inspection and, where necessary, by a test fitting.	5.4.		X
Complementary tests shall be done according to the requirements of Annex 4 to ensure that in use there is no excessive change in photometric performance.	5.5.	X	
Light transmitting components made of plastic material shall be tested according to the requirements of Annex 6.	5.6.	X	
On headlamps designed to provide alternately a driving beam and a passing beam, or a passing beam and/or a driving beam designed to become bend lighting, any mechanical, electromechanical or other device incorporated in the headlamp for these purposes shall be so constructed that:	5.7.	X	
The device is robust enough to withstand 50,000 operations under normal conditions of use. In order to verify compliance with this requirement, the Technical Service responsible for approval tests may: (a) Require the applicant to supply the equipment necessary to perform the test; (b) Forego the test if the headlamp presented by the applicant is accompanied by a test report, issued by a Technical Service responsible for approval tests for headlamps of the same construction (assembly), confirming compliance with this requirement.	5.7.1.	X	

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
In the case of failure, the illumination above the line H-H shall not exceed the values of a passing beam according to paragraph 6.2.4.; in addition, on headlamps designed to provide a passing and/or a driving beam to become a bend lighting, a minimum illumination of at least 3 lux shall be fulfilled in test point 25 V (VV line, D 75 cm). When performing the tests to verify compliance with these requirements, the Technical Service responsible for approval tests shall refer to the instructions supplied by the applicant.	5.7.2.		X
Either the principal passing beam or the driving beam shall always be obtained without any possibility of the mechanism stopping in between two positions;	5.7.3.	X	
The user cannot, with ordinary tools, change the shape or position of the moving parts.	5.7.4.	X	
Illumination configuration for different traffic conditions	5.8.	X	
In the case of headlamps designed to meet the requirements of traffic moving on one side of the road (either right or left) only, appropriate measures shall be taken to prevent discomfort to road-users in a country where traffic moves on the side of the road opposite to that of the country for which the headlamp was designed ² . Such measures may be:	5.8.1.		
(a) Occulting a part of the outer headlamp lens area;			X
(b) Downward movement of the beam. Horizontal movement is allowed;		X	
(c) Any other measure to remove or reduce the asymmetrical part of the beam.			X
Following the application of this (these) measure(s) the following requirements regarding illumination shall be met with the adjustment left unchanged compared to that for the original traffic direction:	5.8.2.		
Passing beam designed for right-hand traffic and adapted to left-hand traffic:	5.8.2.1.	X	
at 0.86D-1.72L at least 3 lux			
at 0.57U-3.43R not more than 1.0 lux			
Passing beam designed for left-hand traffic and adapted to right-hand traffic:			X
at 0.86D-1.72R at least 3 lux			
at 0.57U-3.43L not more than 1.0 lux			
In case of a passing beam headlamp incorporating a light source or LED module(s) producing the principal passing beam and having a total objective luminous flux which exceeds 2,000 lumen a reference shall be made in item 9. of the communication form in Annex 1. The objective luminous flux of LED modules shall be measured as described in paragraph 5. of Annex 10.	5.9.		X

² Instructions on the installation of lamps fitted with these measures are given in Regulation No.48

ILLUMINATION

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
General provisions	6.1.		
Headlamps shall be so made that they give adequate illumination without dazzle when emitting the passing beam, and good illumination when emitting the driving beam. Bend lighting may be produced by activating one additional filament light source or one or more LED module(s) being part of the passing beam headlamp.	6.1.1.	X	
The illumination produced by the headlamp shall be determined by means of a flat vertical screen set up 25 m forward of the headlamp, at right angles to its axes as shown in Annex 3 to this Regulation; the test screen shall be sufficiently wide to allow examination and adjustment of the “cut-off” of the passing beam over at least 5° on either side of the V-V line.	6.1.2.	X	
Apart from LED module(s), the headlamps shall be checked by means of an uncoloured standard (étalon) filament lamp designed for a rated voltage of 12 V. During the checking of the headlamp, the voltage at the terminals of the filament lamp shall be regulated so as to obtain the reference luminous flux as indicated for each filament lamp at the relevant data sheet of Regulation No. 37. The headlamp shall be considered acceptable if it meets the requirements of paragraph 6. with at least one standard (étalon) filament lamp, which may be submitted with the headlamp.	6.1.3.	X	
LED module(s) shall be measured at 6.3 V, 13.2 V or 28.0 V respectively, if not otherwise specified within this Regulation. LED module(s) operated by an electronic light source control gear, shall be measured as specified by the applicant. The values obtained by the LED module(s) shall be multiplied by a factor of 0.7 prior to check for compliance.	6.1.4.		X
In the case of headlamps equipped with LED module(s) and filament lamps, the part of the headlamp with filament lamp(s) shall be tested according to paragraph 6.1.3. and the part of the headlamp with LED module(s) shall be evaluated according to the provisions of paragraph 6.1.4. and then added to the previous result obtained from the filament lamp(s) tested.	6.1.5.		X

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>Where a headlamp so aimed does not meet the requirements set out in paragraphs 6.2.4. to 6.2.6. and 6.3., its alignment may be changed, provided that the axis of the beam is not displaced: Horizontally from line A by more than : (a) 0.5° to the left or 0.75° to the right, for right hand traffic; or (b) 0.5° to the right or 0.75° to the left, for left hand traffic; and vertically not more than 0.25° up or down from line B.</p>	6.2.2.3.		X
<p>If, however, vertical adjustment cannot be performed repeatedly to the required position within the tolerances described in paragraph 6.2.2.3. above, the instrumental method of Annex 9, paragraphs 2. and 3. shall be applied to test compliance with the required minimum quality of the “cut-off” and to perform the vertical and horizontal adjustment of the beam.</p>	6.2.2.4.		X
<p>When so aimed, the headlamp, if its approval is sought solely for provision of a passing beam³, need comply only with the requirements set out in paragraphs 6.2.4. 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 6.2.4. to 6.2.6. and 6.3.</p>	6.2.3.	X	
<p>The illumination produced on the screen by the passing beam shall meet the requirements given in the table in § 6.2.4.</p>	6.2.4.	X	
<p>There shall be no lateral variations detrimental to good visibility in any of the zones I, II, III and IV.</p>	6.2.5.	X	
<p>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 8 on this figure; these values shall lie within the following limits⁴:</p> <p>1 + 2 + 3 ≥ 0.3 lux, and 4 + 5 + 6 ≥ 0.6 lux, and 0.7 lux ≥ 7 ≥ 0.1 lux and 0.7 lux ≥ 8 ≥ 0.2 lux</p>	6.2.6.	X	
<p>Headlamps designed to meet the requirements of both right-hand and left-hand traffic must, in each of the two setting positions of the optical unit or LED module(s) producing the principal passing beam or of the filament lamp, meet the requirements set forth above for the corresponding direction of traffic.</p>	6.2.7.		X
<p>The requirements in paragraph 6.2.4. above shall also apply to headlamps designed to provide bend lighting and/or that include the additional light source or LED module(s) referred to in paragraph 6.2.9.2. In the case of a headlamp designed to provide bend lighting its alignment may be changed, provided that the axis of the beam is not displaced vertically by more than 0.2°.</p>	6.2.8.		X

³ such a special passing beam headlamp may incorporate a driving beam not subject to requirements

⁴ illumination values in any point of zones A en B, which also lies within zone III, shall not exceed 0.7 lux

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>If bend lighting is obtained by :</p> <p>Swivelling the passing beam or moving horizontally the kink of the elbow of the cut-off, the measurements shall be carried out after the complete headlamp assembly has been reaimed horizontally, e.g. by means of a goniometer;</p> <p>Moving one or more optical parts of the headlamp without moving horizontally the kink of the elbow of the cut-off, measurements shall be carried out with these parts being in their extreme operating position;</p> <p>Means of one additional filament light source or one or more LED module(s) without moving horizontally the kink of the elbow of the cut-off, measurements shall be carried out with this light source or LED module(s) activated.</p> <p>Only one filament light source or one or more LED module(s) are permitted for the principal passing beam. Additional light sources or LED modules are permitted only as follows (see Annex 10):</p> <p>One additional light source according to Regulation No. 37 or one or more additional LED module(s) may be used inside the passing beam headlamp to contribute to bend lighting;</p> <p>One additional light source according to Regulation No. 37 and/or one or more LED module(s), inside the passing beam headlamp, may be used for the purposes of generating infrared radiation. It/they shall only be activated at the same time as the principal light source or LED module(s). In the event that the principal light source or (one of) the principal LED module(s) fails, this additional light source and/or LED module(s) shall be automatically switched off;</p> <p>In the event of failure of an additional filament light source or one or more additional LED module(s), the headlamp shall continue to fulfil the requirements of the passing beam.</p>	<p>6.2.8.1.</p> <p>6.2.8.1.1.</p> <p>6.2.8.1.2.</p> <p>6.2.8.1.3.</p> <p>6.2.9.</p> <p>6.2.9.1.</p> <p>6.2.9.2.</p> <p>6.2.9.3.</p>		<p>X</p>
<p>Provisions concerning driving beams</p> <p>In the case of a headlamp designed to provide a driving beam and a passing beam, measurements of the illumination produced on the screen by the driving beam shall be taken with the same headlamp alignment as for measurements under paragraphs 6.2.4. to 6.2.6. above; in the case of a headlamp providing a driving beam only, it shall be so adjusted that the area of maximum illumination is centred on the point of intersection of lines H-H and V-V; such a headlamp need meet only the requirements referred to in paragraph 6.3. Where more than one light source is used to provide the driving beam, the combined functions shall be used to determine the maximum value of the illumination (EM).</p> <p>Irrespective of the type of light source (LED module(s) or filament light source(s)) used to produce the principal passing beam, several light sources:</p> <p>(a) Either filament light sources listed in Regulation No. 37; or</p> <p>(b) LED module(s) may be used for each individual driving beam.</p>	<p>6.3.</p> <p>6.3.1.</p> <p>6.3.2.</p>	<p>X</p> <p>X</p>	<p>X</p>

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
The illumination produced on the screen by the driving beam shall meet the following requirements.	6.3.3.	X	
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 A headlamps and 48 lux for Class B headlamps. The maximum value shall in no circumstances exceed 240 lux; in addition, in the case of a combined passing and driving headlamp, this maximum value shall not be more than 16 times the illumination measured for the passing beam at point 75 R (or 75 L).	6.3.3.1.	X	
The maximum intensity (I _M) of the driving beam expressed in thousands of candelas shall be calculated by the formula: $I_M = 0.625 * E_M$	6.3.3.1.1.	X	
The reference mark (I' _M) of this maximum intensity, referred to in paragraph 4.2.2.7. above, shall be obtained by the ratio: $I'_M = I_M / 3 = 0.208 E_M$ 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.	6.3.3.1.2.	X	
Starting from point HV, horizontally to the right and left, the illumination shall be not less than 16 lux for Class A headlamp and 24 lux for Class B headlamp up to a distance of 1.125 m and not less than 4 lux for Class A headlamp and 6 lux for Class B headlamp up to a distance of 2.25 m.	6.3.3.2.	X	
In the case of headlamps with adjustable reflector the requirements of paragraphs 6.2. and 6.3. are applicable for each mounting position indicated according to paragraph 2.1.3. For verification the following procedure shall be used:	6.4.	X	
Each applied position is realized on the test goniometer with respect to a line joining the centre of the light source and point HV on a aiming screen. The adjustable reflector is then moved into such a position that the light pattern on the screen corresponds to the aiming prescriptions of paragraphs 6.2.1. to 6.2.2.3. and/or 6.3.1.;	6.4.1.	X	
With the reflector initially fixed according to paragraph 6.4.1., the headlamp must meet the relevant photometric requirements of paragraphs 6.2. and 6.3.;	6.4.2.	X	
Additional tests are made after the reflector has been moved vertically $\pm 2^\circ$ or at least into the maximum position, if less than 2° , from its initial position by means of the headlamps adjusting device. Having re-aimed the headlamp as a whole (by means of the goniometer for example) in the corresponding opposite direction the light output in the following directions shall be controlled and lie within the required limits: Principal passing beam: points HV and 75 R (75 L respectively); Driving beam: E _M and point HV (percentage of E _M).	6.4.3.	X	
If the applicant has not indicated more than one mounting position, the procedure of paragraphs 6.4.1. to 6.4.3. shall be repeated for all other positions;	6.4.4.		X
If the applicant has not asked for special mounting positions, the headlamp shall be aimed for measurements of paragraphs 6.2. and 6.3. with the headlamps adjusting device in its mean position. The additional test of paragraph 6.4.3. shall be made with the reflector moved into its extreme positions (instead of $\pm 2^\circ$) by means of the headlamps adjusting device..	6.4.5.	X	
The screen illumination values mentioned in paragraphs 6.2.4. to 6.2.6. and 6.3. above shall be measured by means of a photo receptor, the effective area of which shall be contained within a square of 65 mm side.	6.5.	X	

COLOUR

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
The colour of the light emitted shall be white.	7.1.	X	

GAUGING OF DISCOMFORT

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
The discomfort caused by the passing beam of headlamps shall be gauged ⁵	8.		X

TESTS FOR STABILITY OF PHOTOMETRIC PERFORMANCE OF HEADLAMPS IN OPERATION (ANNEX 4)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>Tests on complete headlamps</p> <p>Once the photometric values have been measured according to the prescriptions of this Regulation, in the point for E_{max} for driving beam and in points HV, 50 R, B 50 L for passing beam (or HV, 50 L, B 50 R for headlamps designed for left-hand traffic) a complete headlamp sample shall be tested for stability of photometric performance in operation. "Complete headlamp" shall be understood to mean the complete lamp itself including those surrounding body parts and lamps which could influence its thermal dissipation.</p> <p>The tests shall be carried out:</p> <p>(a) In a dry and still atmosphere at an ambient temperature of $23\text{ °C} \pm 5\text{ °C}$, the test sample being mounted on a base representing the correct installation on the vehicle;</p> <p>(b) In case of replaceable light sources: using mass production filament light sources, which have been aged for at least one hour, or mass production gas-discharge light sources, which have been aged for at least 15 hours or mass production LED modules which have been aged for at least 48 hours and cooled down to ambient temperature before starting the tests as specified in this Regulation. The LED modules supplied by the applicant shall be used.</p> <p>The measuring equipment shall be equivalent to that used during headlamp type approval tests.</p> <p>The test sample shall be operated without being dismantled from or readjusted in relation to its test fixture. The light source used shall be a light source of the category specified for that headlamp.</p>		<p>X</p> <p>X</p> <p>X</p>	

⁵ This requirement will be the subject of a recommendation to administrations.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>Test for stability of photometric performance</p> <p><i>Clean headlamp</i></p> <p>The headlamp shall be operated for 12 hours as described in paragraph 1.1.1. and checked as prescribed in paragraph 1.1.2.</p> <p>Test procedure⁶</p> <p>The headlamp shall be operated for a period according to the specified time, so that:</p> <p>(a) In the case where only one lighting function (driving or passing beam or front fog lamp) is to be approved, the corresponding filament and/or LED module(s) is (are) lit for the prescribed time⁷</p> <p>(b) In the case of a headlamp with a passing beam and one or more driving beams or in the case of a headlamp with a passing beam and a front fog lamp:</p> <p>(i) the headlamp shall be subjected to the following cycle until the time specified is reached :</p> <p>15 minutes, principal passing-beam filament or principal passing beam LED module(s) lit;</p> <p>5 minutes, all filaments and/or LED module(s) lit</p> <p>(ii) If the applicant declares that the headlamp is to be used with only the passing beam lit or only the driving beam(s) lit⁸ at a time, the test shall be carried out in accordance with this condition, activating successively the passing beam half of the time and the driving beam(s) (simultaneously) for half the time specified in paragraph 1.1. above.</p> <p>(c) In the case of a headlamp with a front fog lamp and one or more driving beams:</p> <p>(i) the headlamp shall be subjected to the following cycle until the time specified is reached:</p> <p>15 minutes, front fog lamp lit;</p> <p>5 minutes, all filaments and/or all LED modules lit.</p> <p>(ii) if the applicant declares that the headlamp is to be used with only the front fog lamp lit or only the driving beam(s) lit⁸ at a time, the test shall be carried out in accordance with this condition, activating successively the front fog lamp half of the time and the driving beam(s) (simultaneously) for half the time specified in § 1.1. above.</p>	<p>1.</p> <p>1.1.</p> <p>1.1.1.</p> <p>1.1.1.1.</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p></p> <p></p> <p></p> <p>X</p> <p></p> <p>X</p>

⁶ For the test schedule see Annex 8 to this Regulation.

⁷ When the tested headlamp includes signalling lamps, the latter shall be lit for the duration of the test, except for a daytime running lamp. In the case of a direction indicator lamp, it shall be lit in flashing mode with an on/ off time of approximately one to one.

⁸ Should two or more lamp filaments and/or LED module(s) be simultaneously lit when headlamp flashing is used, this shall not be considered as being normal use of the filaments and/or LED module(s).

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>Test voltage</p> <p>The voltage shall be applied to the terminals of the test sample as follows:</p> <p>(a) In case of replaceable filament light source(s) operated directly under vehicle voltage system conditions: The test shall be performed at 6.3 V, 13.2 V or 28.0 V as applicable except if the applicant specifies that the test sample may be used at a different voltage. In this case, the test shall be carried out with the filament light source operated at the highest voltage that can be used.</p> <p>(b) In case of replaceable gas discharge light source(s): The test voltage for the electronic light source control-gear is 13.2 ±0.1 volts for 12 V vehicle voltage system, or otherwise specified in the application for approval.</p> <p>(c) In the case of non-replaceable light source operated directly under vehicle voltage system conditions: All measurements on lighting units equipped with non-replaceable light sources (filament light sources and/ or others) shall be made at 6.3 V, 13.2 V or 28.0 V or at other voltages according to the vehicle voltage system as specified by the applicant respectively.</p> <p>(d) In the case of light sources, replaceable or non-replaceable, being operated independently from vehicle supply voltage and fully controlled by the system, or, in the case of light sources supplied by a supply and operating device, the test voltages as specified above shall be applied to the input terminals of that device. The test laboratory may require from the manufacturer the supply and operating device or a special power supply needed to supply the light source(s).</p> <p>(e) LED module(s) shall be measured at 6.75 V, 13.2 V or 28.0 V respectively, if not otherwise specified within this Regulation. LED module(s) operated by an electronic light source control gear, shall be measured as specified by the applicant.</p> <p>(f) Where signalling lamps are grouped, combined or reciprocally incorporated into the test sample and operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, the voltage shall be adjusted as declared by the manufacturer for the correct photometric functioning of that lamp.</p>	<p>1.1.1.2.</p>	<p>X</p> <p>X</p>	<p></p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
Test results	1.1.2.	X	
Visual inspection Once the headlamp has been stabilized to the ambient temperature, the headlamp lens and the external lens, if any, shall be cleaned with a clean, damp cotton cloth. It shall then be inspected visually; no distortion, deformation, cracking or change in colour of either the headlamp lens or the external lens, if any, shall be noticeable.	1.1.2.1.	X	
Photometric test To comply with the requirements of this Regulation, the photometric values shall be verified in the following points: Passing beam : 50 R - B 50 L - HV for headlamps designed for right-hand traffic 50 L - B 50 R - HV for headlamps designed for left-hand traffic Driving beam : Point of E_{max} Another aiming may be carried out to allow for any deformation of the headlamp base due to heat (the change of the position of the cut-off line is covered in paragraph 2 of this annex). A 10 per cent discrepancy between the photometric characteristics and the values measured prior to the test is permissible including the tolerances of the photometric procedure.	1.1.2.2.	X	
<i>Dirty headlamp</i> After being tested as specified in paragraph 1.1. above, the headlamp shall be operated for one hour as described in paragraph 1.1.1., after being prepared as prescribed in paragraph 1.2.1., and checked as prescribed in paragraph 1.1.2.	1.2.	X	
Preparation of the headlamp	1.2.1.	X	
Test mixture	1.2.1.1.	X	
For headlamp with the outside lens in glass: The mixture of water and a polluting agent to be applied to the headlamp shall be composed of: 9 parts by weight of silica sand with a particle size of 0 - 100 μm 1 part by weight of vegetal carbon dust (beechwood) with a particle size of 0 - 100 μm 0.2 parts by weight of NaCMC ¹ an appropriate quantity of distilled water, with a conductivity of $\leq 1\text{mS/m}$ The mixture must not be more than 14 days old.	1.2.1.1.1.		X

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>For headlamps with outside lens in plastic material :</p> <p>The mixture of water and polluting agent to be applied to the headlamp shall be composed of :</p> <p>9 parts by weight of silica sand with a particle size of 0 - 100 µm 1 part by weight of vegetal carbon dust (beechwood) with a particle size of 0 - 100 µm 0.2 parts by weight of NaCMC⁹ 13 parts by weight of distilled water with a conductivity of ≤ 1 mS/m 2 ± 1 parts by weight of surface-actant ¹⁰</p> <p>The mixture must not be more than 14 days old.</p>	1.2.1.1.2.	X	
<p>Application of the test mixture to the headlamp</p> <p>The test mixture shall be uniformly applied to the entire light-emitting surface of the headlamp and then left to dry. This procedure shall be repeated until the illumination value has dropped to 15-20 per cent of the values measured for each following point under the conditions described in this annex:</p> <p>Point of E_{max} in passing beam/driving beam and in driving beam only 50 R and 50 V ¹¹ for a passing lamp only, designed for right-hand traffic 50 L and 50 V ¹¹ for a passing lamp only, designed for left-hand traffic</p>	1.2.1.2.	X	
<p>Test for change in vertical position of the cut-off line under the influence of heat</p> <p>This test consists of verifying that the vertical drift of the cut-off line under the influence of heat does not exceed a specified value for an operating passing lamp.</p> <p>The headlamp tested in accordance with paragraph 1., shall be subjected to the test described in paragraph 2.1., without being removed from or readjusted in relation to its test fixture.</p>	2.	X	
<p>Test</p> <p>The test shall be carried out in a dry and still atmosphere at an ambient temperature of 23 °C ±5 °C.</p> <p>Using a mass production filament lamp or the LED module(s) as submitted with the headlamp, which has (have) been aged for at least one hour, the headlamp shall be operated on the principal passing beam without being dismantled from or readjusted in relation to its test fixture. (For the purpose of this test, the voltage shall be adjusted as specified in paragraph 1.1.1.2.). The position of the cut-off line in its horizontal part (between vv and the vertical line passing through point B 50 L for right-hand traffic or B 50 R for left-hand traffic) shall be verified 3 minutes (r₃) and 60 minutes (r₆₀) respectively after operation.</p> <p>The measurement of the variation in the cut-off line position as described above shall be carried out by any method giving acceptable accuracy and reproducible results.</p>	2.1.	X	

⁹ NaCMC represents the sodium salt of carboxymethylcellulose, customarily referred to as CMC. The NaCMC used in the dirt mixture shall have a degree of substitution (DS) of 0.6-0.7 and a viscosity of 200-300 cP for a 2 per cent solution at 20° C.

¹⁰ The tolerance on quantity is due to the necessity of obtaining a dirt that correctly spreads out on all the plastic lens.

¹¹ Point 50 V is situated 375 mm below HV on the vertical line v-v on the screen at 25 m distance.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p><i>Test results</i></p> <p>The result in milliradians (mrad) shall be considered as acceptable for a passing lamp, only when the absolute value $\Delta r_1 = r_3 - r_{60}$ recorded on the headlamp is not more than 1.0 mrad ($\Delta r_1 \leq 1.0$ mrad).</p> <p>However, if this value is more than 1.0 mrad but not more than 1.5 mrad ($1.0 \text{ mrad} < \Delta r_1 \leq 1.5 \text{ mrad}$) a second headlamp shall be tested as described in paragraph 2.1. after being subjected three consecutive times to the cycle as described below, in order to stabilize the position of mechanical parts of the headlamp on a base representative of the correct installation on the vehicle:</p> <p>Operation of the passing beam for one hour, (the voltage shall be adjusted as specified in paragraph 1.1.1.2.), Period of rest for one hour</p> <p>The headlamp type shall be considered as acceptable if the mean value of the absolute values Δr_1 measured on the first sample and Δr_{II} measured on the second sample is not more than 1.0 mrad.</p> <p>$(\Delta r_1 + \Delta r_{II})/2 \leq 1.0$ mrad</p>	<p>2.2.</p> <p>2.2.1.</p> <p>2.2.2.</p>	<p>X</p> <p>X</p>	<p>X</p>

REQUIREMENTS FOR LAMPS INCORPORATING LENSES OF PLASTIC MATERIAL - TESTING OF LENS OR MATERIAL SAMPLES AND OF COMPLETE LAMPS (ANNEX 6)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>General specifications</p> <p>The samples supplied pursuant to paragraph 2.2.4. of this Regulation shall satisfy the specifications indicated in paragraphs 2.1. to 2.5. below.</p> <p>The two samples of complete lamps supplied pursuant to paragraph 2.2.3. of this Regulation and incorporating lenses of plastic material shall, with regard to the lens material, satisfy the specifications indicated in paragraph 2.6. below.</p> <p>The samples of lenses of plastic material or samples of material shall be subjected, with the reflector to which they are intended to be fitted (where applicable), to approval tests in the chronological order indicated in table A reproduced in Appendix 1 to this annex.</p> <p>However, if the lamp manufacturer can prove that the product has already passed the tests prescribed in paragraphs 2.1. to 2.5. below, or the equivalent tests pursuant to another regulation, those tests need not be repeated; only the tests prescribed in Appendix 1, table B, shall be mandatory.</p>	<p>1.</p> <p>1.1.</p> <p>1.2.</p> <p>1.3.</p> <p>1.4.</p>	<p>X</p> <p>X⁽¹⁾</p>	<p>X</p> <p>X</p>
<p>Tests</p> <p><i>Resistance to temperature changes</i></p> <p>Tests</p> <p>Three new samples (lenses) shall be subjected to five cycles of temperature and humidity (RH = relative humidity) change in accordance with the following programme::</p> <p>3 hours at 40° C ± 2° C and 85 - 95 % RH</p> <p>1 hour at 23° C ± 5° C and 60 - 75 % RH</p> <p>15 hours at -30° C ± 2° C</p> <p>1 hour at 23° C ± 5° C and 60 - 75 % RH</p> <p>3 hours at 80° C ± 2° C</p> <p>1 hour at 23° C ± 5° C and 60 - 75 % RH</p> <p>Before this test, the samples shall be kept at 23 °C ±5 °C and 60-75 per cent RH for at least four hours.</p> <p><i>Note:</i> The periods of one hour at 23 °C ±5 °C shall include the periods of transition from one temperature to another which are needed in order to avoid thermal shock effects.</p>	<p>2.</p> <p>2.1.</p> <p>2.1.1.</p>	<p>X⁽¹⁾</p>	<p>X</p>

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>Resistance to chemical agents</p> <p>After the test described in paragraph 2.2.1. above and the measurement described in paragraph 2.2.3.1. below have been carried out, the outer face of the said three samples shall be treated as described in paragraph 2.2.2.2. with the mixture defined in paragraph 2.2.2.1. below.</p> <p>Test mixture</p> <p>The test mixture shall be composed of 61.5 per cent n-heptane, 12.5 per cent toluene, 7.5 per cent ethyl tetrachloride, 12.5 per cent trichloroethylene and 6 per cent xylene (volume per cent).</p> <p>Application of the test mixture</p> <p>Soak a piece of cotton cloth (as per ISO 105) until saturation with the mixture defined in paragraph 2.2.2.1. above and, within 10 seconds, apply it for 10 minutes to the outer face of the sample at a pressure of 50 N/cm², corresponding to an effort of 100 N applied on a test surface of 14 x 14 mm.</p> <p>During this 10-minute period, the cloth pad shall be soaked again with the mixture so that the composition of the liquid applied is continuously identical with that of the test mixture prescribed.</p> <p>During the period of application, it is permissible to compensate the pressure applied to the sample in order to prevent it from causing cracks.</p> <p>Cleaning</p> <p>At the end of the application of the test mixture, the samples shall be dried in the open air and then washed with the solution described in paragraph 2.3.1. (Resistance to detergents)</p> <p>Afterwards the samples shall be carefully rinsed with distilled water containing not more than 0.2 per cent impurities at 23 °C ±5 °C and then wiped off with a soft cloth.</p> <p>Results</p> <p>After the test of resistance to atmospheric agents, the outer face of the samples shall be free from cracks, scratches, chipping and deformation, and the mean variation in transmission $\Delta t = (T_2 - T_3)/T_2$, measured on the three samples according to the procedure described in Appendix 2 to this annex shall not exceed 0.020 ($\Delta t_m \leq 0.020$).</p> <p>After the test of resistance to chemical agents, the samples shall not bear any traces of chemical staining likely to cause a variation of flux diffusion, whose mean variation $\Delta d = (T_5 - T_4)/T_2$, measured on the three samples according to the procedure described in Appendix 2 to this annex shall not exceed 0.020 ($\Delta d_m \leq 0.020$).</p> <p>Resistance to light source radiations</p> <p>The following test shall be done:</p> <p>Flat samples of each light transmitting plastic component of the headlamp are exposed to the light of the LED module(s). The parameters such as angles and distances of these samples shall be the same as in the headlamp. These samples shall have the same colour and surface treatment, if any, as the parts of the headlamp.</p> <p>After 1,500 hours of continuous operation, the colorimetric specifications of the transmitted light must be met, and the surfaces of the samples shall be free of cracks, scratches, scalings or deformation.</p>	<p>2.2.2.</p> <p>2.2.2.1.</p> <p>2.2.2.2.</p> <p>2.2.2.3.</p> <p>2.2.3.</p> <p>2.2.3.1.</p> <p>2.2.3.2.</p> <p>2.2.4.</p>		

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p><i>Resistance to detergents and hydrocarbons</i></p> <p>Resistance to detergents</p> <p>The outer face of three samples (lenses or samples of material) shall be heated to 50 °C ±5 °C and then immersed for five minutes in a mixture maintained at 23 °C ±5 °C and composed of 99 parts distilled water containing not more than 0.02 per cent impurities and one part alkylaryl sulphonate. At the end of the test, the samples shall be dried at 50 °C ±5 °C. The surface of the samples shall be cleaned with a moist cloth.</p> <p>Resistance to hydrocarbons</p> <p>The outer face of these three samples shall then be lightly rubbed for one minute with a cotton cloth soaked in a mixture composed of 70 per cent n-heptane and 30 per cent toluene (volume per cent), and shall then be dried in the open air.</p> <p>Results</p> <p>After the above two tests have been performed successively, the mean value of the variation in transmission $\Delta t = (T_2 - T_3)/T_2$, measured on the three samples according to the procedure described in appendix 2 to this annex shall not exceed 0.010 ($\Delta t_m \leq 0.010$).</p> <p><i>Resistance to mechanical deterioration</i></p> <p>Mechanical deterioration method</p> <p>The outer face of the three new samples (lenses) shall be subjected to the uniform mechanical deterioration test by the method described in Appendix 3 to this annex.</p> <p>Results</p> <p>After the test, the variations :</p> <p style="padding-left: 20px;">in transmission : $\Delta t = (T_2 - T_3)/T_2$</p> <p style="padding-left: 20px;">and in diffusion : $\Delta d = (T_5 - T_4)/T_2$</p> <p>shall be measured according to the procedure described in Appendix 2 in the area specified in paragraph 2.2.4.1.1. of this Regulation. The mean value of the three samples shall be such that:</p> <p style="padding-left: 20px;">$\Delta t_m \leq 0.100$</p> <p style="padding-left: 20px;">$\Delta d_m \leq 0.050$</p>	<p>2.3.</p> <p>2.3.1.</p> <p>2.3.2.</p> <p>2.3.3.</p> <p>2.4.</p> <p>2.4.1.</p> <p>2.4.2.</p>		<p>X</p> <p>X</p>

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<i>Test of adherence of coatings</i>	2.5.		X
Preparation of the sample	2.5.1.		
A surface of 20 mm x 20 mm in area of the coating of a lens shall be cut with a razor blade or a needle into a grid of squares approximately 2 mm x 2 mm. The pressure on the blade or needle shall be sufficient to cut at least the coating.			
Description of the test	2.5.2.		
Use an adhesive tape with a force adhesion of 2 N/(cm of width) ± 20 per cent measured under the standardized conditions specified in Appendix 4 to this annex. This adhesive tape, which shall be at least 25 mm wide, shall be pressed for at least five minutes to the surface prepared as prescribed in paragraph 2.5.1.			
Then the end of the adhesive tape shall be loaded in such a way that the force of adhesion to the surface considered is balanced by a force perpendicular to that surface. At this stage, the tape shall be torn off at a constant speed of 1.5 m/s ± 0.2 m/s.			
Results	2.5.3.		
There shall be no appreciable impairment of the gridded area. Impairments at the intersections between squares or at the edges of the cuts shall be permitted, provided that the impaired area does not exceed 15 per cent of the gridded surface.			
<i>Tests of the complete headlamp incorporating a lens of plastic material</i>	2.6.	X ⁽²⁾	
Resistance to mechanical deterioration of the lens surface	2.6.1.	X	
Tests	2.6.1.1.	X	
The lens of lamp sample No. 1 shall be subjected to the test described in paragraph 2.4.1. above.			
Results	2.6.1.2.	X	
After the test, the results of photometric measurements carried out on the headlamp in accordance with this Regulation shall not exceed by more than 30 per cent the maximum values prescribed at points B 50 L and HV and not be more than 10 per cent below the minimum values prescribed at point 75 R (in the case of headlamps intended for left-hand traffic, the points to be considered are B 50 R, HV and 75 L).			
Test of adherence of coatings, if any	2.6.2.	X	
The lens of lamp sample No. 2 shall be subjected to the test described in paragraph 2.5. above.			

⁽¹⁾ According to the §1.4, the lamp manufacturer can prove that the product has already passed the tests prescribed in §2.1. to 2.5, the tests have been performed by Taiwan Accredited Technical Services- Automotive Research & Testing Center: test report B96RE081.

⁽²⁾ Tests of the complete headlamp incorporating a lens of plastic material have been tested by Depo Auto Parts Ind. Co., Ltd.- Xinying Photometric Laboratory and test results have been attached within this report.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p><i>Verification of the conformity of production</i></p> <p>With regard to the materials used for the manufacture of lenses, the lamps of a series shall be recognized as complying with this Regulation if:</p> <p>After the test for resistance to chemical agents and the test for resistance to detergents and hydrocarbons, the outer face of the samples exhibits no cracks, chipping or deformation visible to the naked eye (see paras. 2.2.2., 2.3.1. and 2.3.2.);</p> <p>After the test described in paragraph 2.6.1.1., the photometric values at the points of measurement considered in paragraph 2.6.1.2. are within the limits prescribed for conformity of production by this Regulation.</p> <p>If the test results fail to satisfy the requirements, the tests shall be repeated on another sample of headlamps selected at random.</p>	<p>3.</p> <p>3.1.</p> <p>3.1.1.</p> <p>3.1.2.</p> <p>3.2.</p>		<p>X</p>

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>Vertical and horizontal adjustment</p> <p>If the “cut-off” complies with the quality requirements of paragraph 2. of this annex, the beam adjustment may be performed instrumentally.</p> <p>Vertical adjustment</p> <p>Moving upward from below the line B (see figure 2 below), a vertical scan is carried out through the horizontal part of the “cut-off” at 2.5° from V-V. The inflection point (where $d^2(\log E) / dv^2 = 0$) is determined and positioned on the line B situated one per cent below H-H.</p> <p>Horizontal adjustment</p> <p>The applicant shall specify one of the following horizontal aim methods:</p> <p>(a) The "0.2 D line" method (see figure 2 of Annex 9). A single horizontal line at 0.2° D shall be scanned from 5° left to 5° right after the lamp has been aimed vertically. The maximum gradient “G” determined using the formula $G = (\log E_{\beta} - \log E_{(\beta + 0.1^{\circ})})$ where β is the horizontal position in degrees, shall not be less than 0.08. The inflection point found on the 0.2 D line shall be positioned on the line A.</p> <p>(b) The "3 line" method (see figure 3 of Annex 9) Three vertical lines shall be scanned from 2° D to 2° U at 1°R, 2°R, and 3°R after the lamp has been aimed vertically. The respective maximum gradients "G" determined using the formula : $G = (\log E_{\beta} - \log E_{(\beta + 0.1^{\circ})})$ where β is the vertical position in degrees, shall not be less than 0.08. The inflection points found on the three lines shall be used to derive a straight line. The intersection of this line and the line B found while performing vertical aim shall be placed on the V line.</p>	<p>3.</p> <p>3.1.</p> <p>3.2.</p>		

REQUIREMENTS FOR LED MODULES AND HEADLAMPS INCLUDING LED MODULES (ANNEX 10) N.A.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>General specifications</p> <p>Each LED module sample submitted shall conform to the relevant specifications of this Regulation when tested with the supplied electronic light source control-gear(s), if any.</p> <p>LED module(s) shall be so designed as to be and to remain in good working order when in normal use. They shall moreover exhibit no fault in design or manufacture. A LED module shall be considered to have failed if any one of its LEDs has failed.</p> <p>LED module(s) shall be tamperproof.</p> <p>The design of removable LED module(s) shall be such that :</p> <p>When the LED module is removed and replaced by another module provided by the applicant and bearing the same light source module identification code, the photometric specifications of the headlamp shall be met;</p> <p>LED modules with different light source module identification codes within the same lamp housing, shall not be interchangeable.</p> <p>Manufacture</p> <p>The LED(s) on the LED module shall be equipped with suitable fixation elements.</p> <p>The fixation elements shall be strong and firmly secured to the LED(s) and the LED module.</p> <p>Test conditions</p> <p>Application</p> <p>All samples shall be tested as specified in § 4. below.</p> <p>The kind of light sources on a LED module shall be light-emitting diodes (LED) as defined in Regulation No. 48 paragraph 2.7.1. in particular with regard to the element of visible radiation. Other kinds of light sources are not permitted.</p> <p>Operating conditions</p> <p>LED module operating conditions</p> <p>All samples shall be tested under the conditions as specified in paragraphs 6.1.4. and 6.1.5. of this Regulation. If not specified differently in this annex LED modules shall be tested inside the headlamp as submitted by the manufacturer.</p> <p>Ambient temperature</p> <p>For the measurement of electrical and photometric characteristics, the headlamp shall be operated in a dry and still atmosphere at an ambient temperature of 23 °C \pm5 °C.</p> <p>Ageing</p> <p>Upon the request of the applicant the LED module shall be operated for 15 h and cooled down to ambient temperature before starting the tests as specified in this Regulation.</p>	<p>1.</p> <p>1.1.</p> <p>1.2.</p> <p>1.3.</p> <p>1.4.</p> <p>1.4.1.</p> <p>1.4.2.</p> <p>2.</p> <p>2.1.</p> <p>2.2.</p> <p>3.</p> <p>3.1.</p> <p>3.1.1.</p> <p>3.1.2.</p> <p>3.2.</p> <p>3.2.1.</p> <p>3.2.2.</p> <p>3.3.</p>		

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>Specific requirements and tests</p> <p>Colour rendering</p> <p>Red content</p> <p>In addition to measurements as described in § 7. of this Regulation :</p> <p>The minimum red content of the light of a LED module or headlamp incorporating LED module(s) tested at 50 V shall be such that : $k_{red} \geq 0.05$ (see § 4.1.1. for the formula to calculate k_{red})</p> <p>This value shall be calculated using intervals of one nanometre.</p> <p>UV-radiation</p> <p>The UV-radiation of a low-UV-type LED module shall be such that : $k_{UV} \leq 10^{-5}$ W/lm (see § 4.2.. for the formula to calculate k_{UV})</p> <p>This value shall be calculated using intervals of one nanometer. The UV-radiation shall be weighted according to the values as indicated in § 4.2.</p> <p>Temperature stability</p> <p>Illuminance</p> <p>A photometric measurement of the headlamp shall be made after 1 minute of operation for the specific function at the test point specified below. For these measurements, the aim can be approximate but must be maintained for before and after ratio measurements.</p> <p>Test points to be measured :</p> <p>Passing beam 50 V</p> <p>Driving beam H - V</p> <p>The lamp shall continue operation until photometric stability has occurred. The moment at which the photometry is stable is defined as the point in time at which the variation of the photometric value is less than 3 per cent within any 15 minutes period. After stability has occurred, aim for complete photometry shall be performed in accordance with the requirements of the specific device. Photometer the lamp at all test points required for the specific device.</p> <p>Calculate the ratio between the photometric test point value determined in paragraph 4.3.1.1. and the point value determined in paragraph 4.3.1.2.</p> <p>Once stability of photometry has been achieved, apply the ratio calculated above to each of the remainder of the test points to create a new photometric table that describes the complete photometry based on one minute of operation.</p> <p>The illuminance values, measured after one minute and after photometric stability has occurred, shall comply with the minimum and maximum requirements.</p>	<p>4.</p> <p>4.1.</p> <p>4.1.1.</p> <p>4.2.</p> <p>4.3.</p> <p>4.3.1.</p> <p>4.3.1.1.</p> <p>4.3.1.2.</p> <p>4.3.1.3.</p> <p>4.3.1.4.</p> <p>4.3.1.5.</p>		

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>Colour</p> <p>The colour of the light emitted measured after one minute and measured after photometric stability has been obtained, as described in paragraph 4.3.1.2. of this annex, shall both be within the required colour boundaries.</p> <p>The measurement of the objective luminous flux of LED module(s) producing the principal passing beam shall be carried out as follows:</p> <p>The LED module(s) shall be in the configuration as described in the technical specification as defined in paragraph 2.2.2. of this Regulation. Optical elements (secondary optics) shall be removed by the Technical Service at the request of the applicant by the use of tools. This procedure and the conditions during the measurements as described below shall be described in the test report.</p> <p>Three LED modules of each type shall be submitted by the applicant with the light source control gear, if applicable, and sufficient instructions. Suitable thermal management (e.g. heat sink) may be provided, to simulate similar thermal conditions as in the corresponding headlamp application. Before the test each LED module shall be aged at least for seventy-two hours under the same conditions as in the corresponding headlamp application. In the case of use of an integrating sphere, the sphere shall have a minimum diameter of one meter, and at least ten times the maximum dimension of the LED module, whichever is the largest. The flux measurements can also be performed by integration using a goniophotometer. The prescriptions in CIE - Publication 84 - 1989, regarding the room temperature, positioning, etc., shall be taken into consideration. The LED module shall be burned in for approximately one hour in the closed sphere or goniophotometer. The flux shall be measured after stability has occurred, as explained in paragraph 4.3.1.2. of Annex 10 to this Regulation. The average of the measurements of the three samples of each type of LED module shall be deemed to be its objective luminous flux.</p>	<p>4.3.2.</p> <p>5.</p> <p>5.1.</p> <p>5.2.</p>		

FACILITIES AND EQUIPMENT

The facilities and equipment used to carry out the inspections are in compliance with the requirements of the applied Regulatory Act(s).

Photometric Measurement tested by Testing by Depo Auto Parts Ind. Co., Ltd. – Xinying Photometric Laboratory

TEST RESULTS : PASSING BEAM

Light sources : 1×H7 , Rated voltage and wattage : 12V, 55W

During the testing of the passing beam the power supply for this H7 shall be regulated so as to obtain the reference luminous flux 1100 lm at 12V.

Test Results of Photometric Measurement

Lamp Function	: Passing Beam	Test Voltage	: 12 V
Headlamp Class	: Class B	Reference Flux	: 1100 lm
Requirement	: ECE Reg. 112 Para. 6.2	Test Distance	: 25 m

Point on Measuring Screen	Requirement (lx)		Measurement (lx)	
	Min	Max	Sample LH	Sample RH
H V	-	0.7	0.67	0.53
B50L	-	0.4	0.14	0.06
75R	12	-	38.03	34.43
75L	-	12	1.19	6.42
50L	3	15	15.00	13.22
50R	12	-	37.87	26.83
50V	6	-	48.45	39.10
25L	2	-	4.18	4.39
25R	2	-	4.07	3.57
Point 1	-	0.7	0.15	0.12
Point 2	-	0.7	0.17	0.13
Point 3	-	0.7	0.15	0.13
Point 1+2+3	0.3	-	0.47	0.38
Point 4	-	0.7	0.18	0.13
Point 5	-	0.7	0.22	0.24
Point 6	-	0.7	0.20	0.24
Point 4+5+6	0.6	-	0.61	0.61
Point 7	0.1	0.7	0.27	0.32
Point 8	0.2	0.7	0.33	0.37
Zone III	-	0.7	0.69	0.52
Zone IV	3	-	8.00	6.86
Zone I	-	2E* (75.74 / 53.66)	37.43	13.25

*/ E is the actually measured value in points 50R respectively 50L

Test Results	<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed
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Test Results of Colour Measurement

Lamp Function : Passing Beam
 Requirement : ECE Reg. 112 Para.7

Light Emitted Color : White

- Color Boundaries
- limit towards blue : $x \geq 0.310$
 - limit towards yellow : $x \leq 0.500$
 - limit towards green : $y \leq 0.150 + 0.640 x$
 - limit towards green : $y \leq 0.440$
 - limit towards purple : $y \geq 0.050 + 0.750 x$
 - limit toward red : $y \geq 0.382$

Test Points	Sample RH Measurement	
	Colour x	Colour y
H - V	0.4014	0.3511
Test Results	<input checked="" type="checkbox"/> Passed	<input type="checkbox"/> Failed

TEST RESULTS : DRIVING BEAM

Light sources : 1xH7 , Rated voltage and wattage : 12V, 55W

During the testing of the driving beam the power supply for this H7 shall be regulated so as to obtain the reference luminous flux 1100 lm at 12V.

<u>Test Results of Photometric Measurement</u>				
Lamp Function	: Driving Beam		Test Voltage	: 12 V
Headlamp Class	: Class B		Reference Flux	: 1100 lm
Requirement	: ECE Reg. 112 Para. 6.3		Test Distance	: 25 m
Point on Measuring Screen	Requirement (lx)		Measurement (lx)	
	Min	Max	Sample LH	Sample RH
H – V (Point)	80 % Emax (52.54 / 53.04)	-	62.52	60.63
H : -1.125m to +1.125m (Line)	24	-	27.01	31.91
H : -2.25m to -1.125m (Line)	6	-	7.73	7.46
H : +1.125m to +2.25m (Line)	6	-	7.38	6.05
Maximum (Emax) (Zone)	48	240	65.67	66.30
Maximum Intensity, I _M ⁽¹⁾	I _M = 0.208 Emax		13.66	13.79
Rounded off to the reference mark of			12.5	
Test Results	<input checked="" type="checkbox"/> Passed		<input type="checkbox"/> Failed	

⁽¹⁾ The reference mark (I_M) of this maximum intensity, referred to in § 4.2.2.7., shall be obtained by the ratio:

$$I_M = I_M / 3 = 0.208 E_M$$

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.

TEST RESULTS : PASSING BEAM AND DRIVING BEAM

<u>Test Results for Stability of Photometric Performance</u>						
Lamp Function		: One passing beam and one driving beam			Test Voltage	: 12 V
Headlamp Class		: Class B			Test Distance	: 25 m
Requirement		: ECE Reg. 112 Annex 4				
Tests Points	Requirement			Measurement		
	Min (lx)	Max (lx)	Discrepancy (%)	Sample LH (lx)	Discrepancy (%)	
Clean headlamp test before shall be operated for 12 hours						
Passing Beam	H-V	-	0.7	-	0.64	-
	B50 L	-	0.4	-	0.13	-
	50 R	12	-	-	35.98	-
Clean headlamp test after shall be operated for 12 hours						
Passing Beam	H-V	-	0.7	10	0.65	1.6
	B50 L	-	0.4	10	0.14	7.7
	50 R	12	-	10	36.47	1.4
Dirty headlamp test after shall be operated for 1 hour						
Passing Beam	H - V	-	0.7	10	0.67	3.1
	B 50 L	-	0.4	10	0.14	0
	50 R	12	-	10	37.17	1.9
Test Results		<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed				
Tests Points	Requirement			Measurement		
	Min (lx)	Max (lx)	Discrepancy (%)	Sample LH (lx)	Discrepancy (%)	
Clean headlamp test before shall be operated for 12 hours						
Driving Beam	Point of Emax	48	240	-	62.4	-
Clean headlamp test after shall be operated for 12 hours						
Driving Beam	Point of Emax	48	240	10	63.5	1.8
Dirty headlamp test after shall be operated for 1 hour						
Driving Beam	Point of Emax	48	240	10	65.5	3.1
Test Results		<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed				

DEPO AUTO PARTS INDUSTRIAL CO., LTD.

Plant 1

No. 20-3, Nanshi Ln., Tounan Vil.,
Lugang Township, Changhua County 505,
Taiwan, R.O.C.

Plant 2

No. 756, Fuxing Rd., Xinying Dist.,
Tainan City 730, Taiwan R.O.C.

COMBINATION HEADLAMP

DEPO 446-1122PMLDEM2 for Right Hand Traffic

Application: original

Date: March 11, 2014

Total number of pages: 6



AUTOMOTIVE certification
Business Class Kantorenpark
Jan Olieslagerslaan 35
B-1800 Vilvoorde
E-mail: homologation@vincotte.be

2014.05.15

Manufacturer name and address: Depo Auto Parts Ind Co., Ltd.
No. 756, Fuxing Rd., Xinying Dist.,
Tainan City 730, Taiwan R.O.C.

Trade name or mark : DEPO

Type of device : 446-1122PMLDEM2

SPECIFICATIONS



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E-mail: homologation@vincotte.be
2014.05.15

Function-Application-class category lamp and colour

Trade name or mark	DEPO				
Function	Headlamp		Direction ⁽¹⁾ indicator	Front ^{(1) (2)} position lamp	Daytime ⁽²⁾ Running lamp
	Driving beam ⁽²⁾	Passing beam ⁽²⁾			
ECE Regulation	112-00 Supplement 12	112-00 Supplement 12	6-01 Supplement 21	7-02 Supplement 19	87-00 Supplement 15
Class	B HR	B HC	-	-	-
Category	-	-	1	A	-
Number, category and kind of lamp source(s)	1×H7	1×H7	1×PSY24W	14LEDs / 1 light source	14LEDs / 1 light source
Voltage and wattage	12V, 55W	12V, 55W	12V, 24W	13.5V, 0.5W	13.5V, 7W
Lens	Outer	Clear	Clear	Clear	Clear
	Filter (Inner)	-	-	-	Clear
Colour of light emitted	White	White	Amber	White	White

⁽¹⁾ This device is intended to be installed at a mounting height of equal to or less than 750 mm above the ground.

⁽²⁾ Front position lamp, which is reciprocally incorporated with daytime running lamp.

Electronic light source control gear is installed, being part of the lamp.

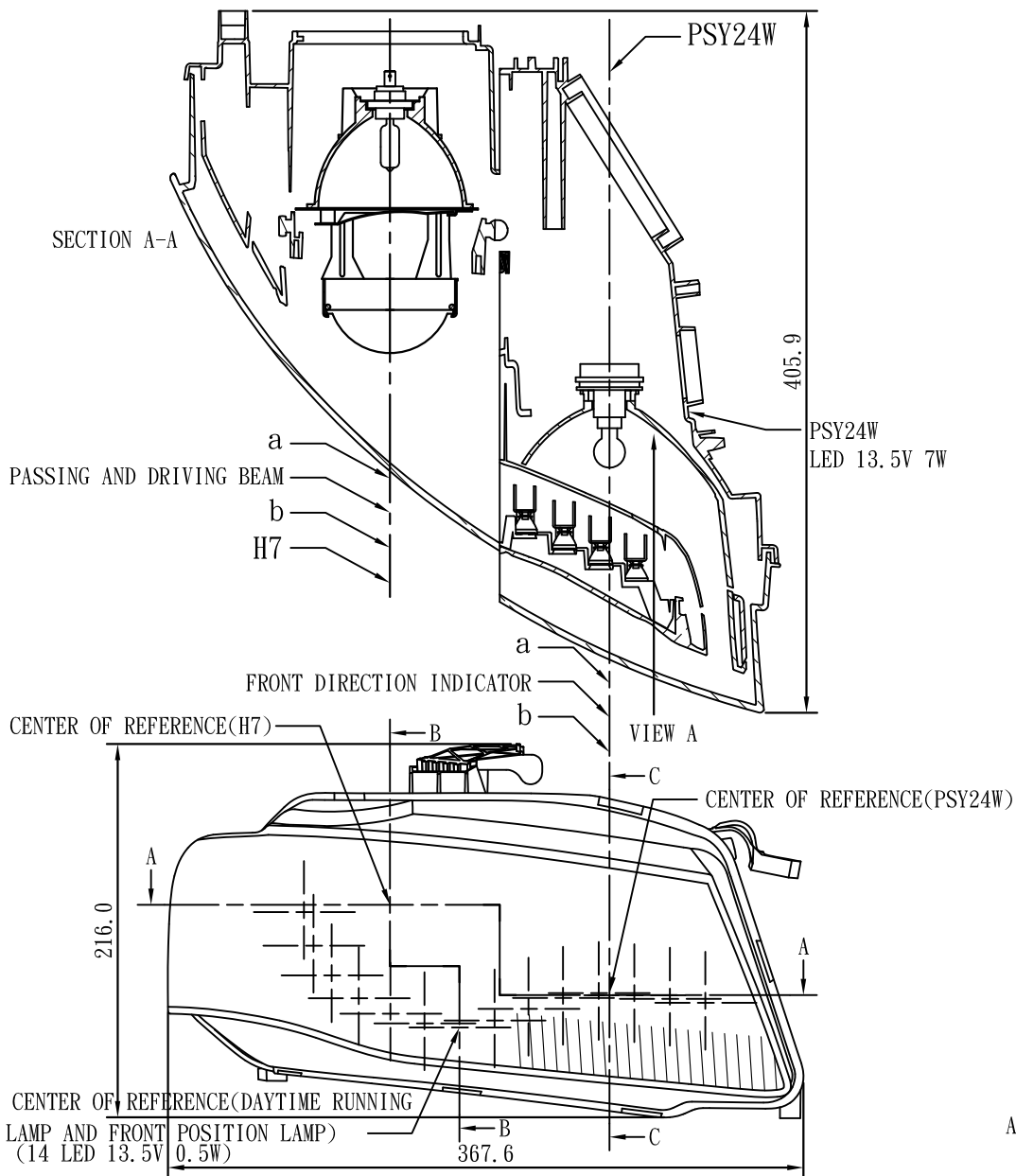
⁽³⁾ One H7 light source designed to provide alternately a driving beam and a passing beam.

TECHNICAL DATA

Part	Material	Remark
Lens	Outer	PC
	Filter	PC
Reflector	ADC ; BMC ; PBT+PC	-
Housing	PP + T20%	-

MARKING

Marking		Location
Trade name or mark	DEPO	See drawing
Approval marks	0533	See drawing

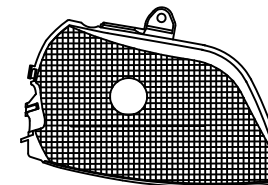


NOTE:

1. THIS DRAWING SHALL BE APPLIED FOR RIGHT HAND ONLY AND LEFT HAND SHALL BE SYMMETRICAL, EXCEPT THE PASSING LAMP'S REFLECTOR MODULE.
2. THIS OUTER LENS IS FIXED ON THE HOUSING BY USING GLUE AND SNAP-IN CONNECTORS.
3. THIS LAMP IS EQUIPPED WITH A REFLECTOR ADJUSTING DEVICE.



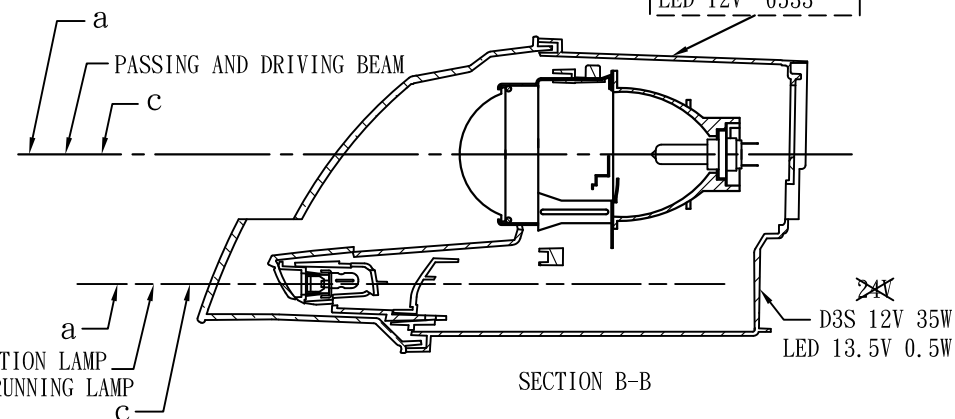
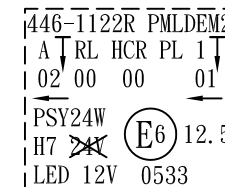
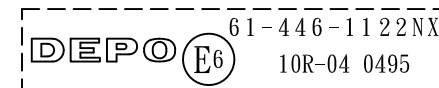
FRONT OF VEHICLE



VIEW A



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 E-mail: normologation@vincotte.be
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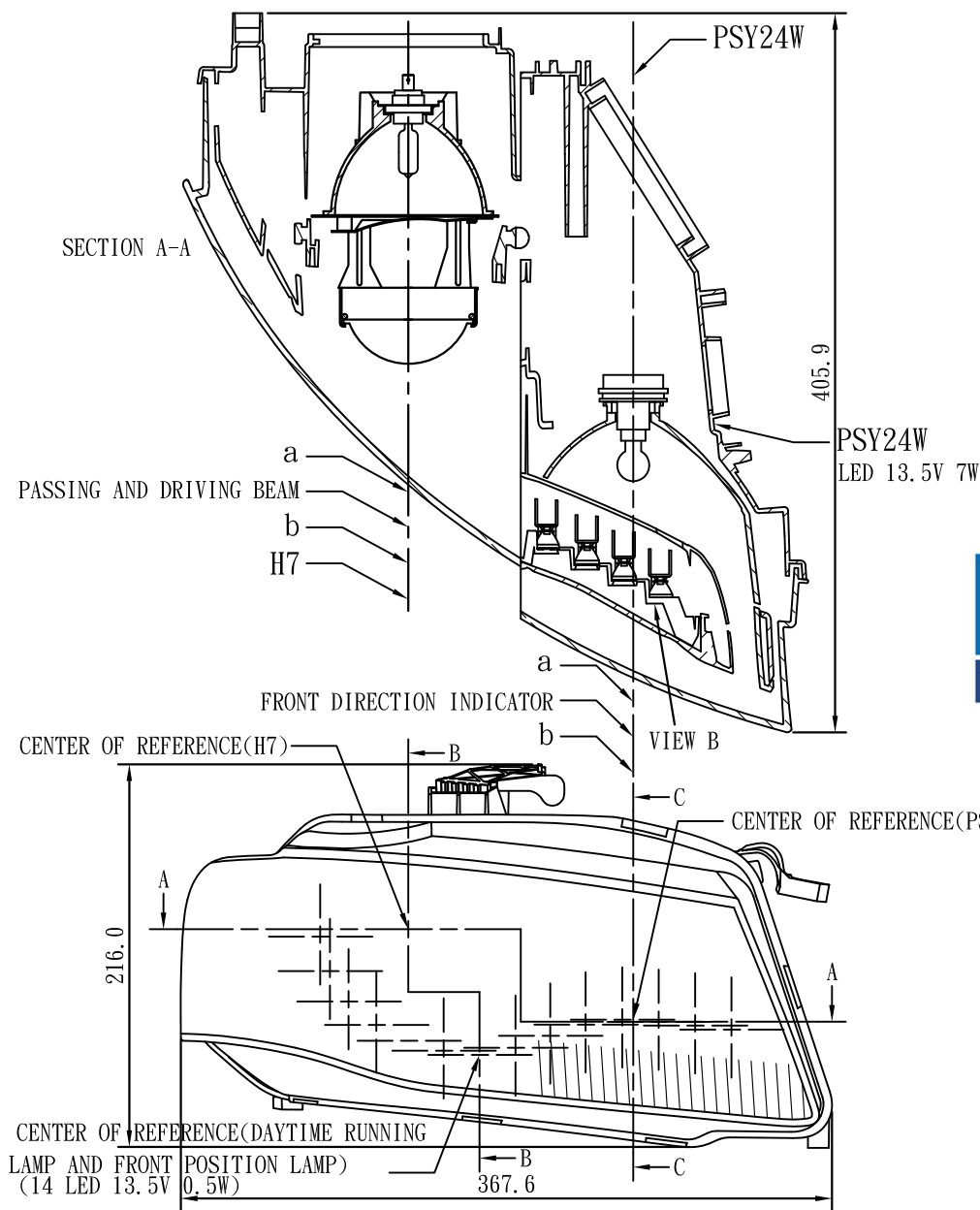
一般尺寸	公差
6以下	±0.1
6-30以下	±0.2
30-120以下	±0.3
120-150以下	±0.5
150以上	±1.0

未註記公差者適用本表

a: AXIS OF REFERENCE
 b: LONGITUDINAL PLANE OF VEHICLE
 c: HORIZONTAL PLANE OF VEHICLE

446-1122R PMLDEM2		件 號	名 稱	材 質	R 件	L 數	規 格 備 註
製 圖	黃 慧 中	2014/05/02	投影法	第三角法	單 位		
設 計	陳 郁 仁		比 例	0.32 : 1	m m		
審 核			楊 忠 能	圖 名	頭 燈 組 立 圖		
版 次	修 改 說 明	日 期	制 訂	審 查	核 准	許 叙 超	圖 號
							00\446-1122L1

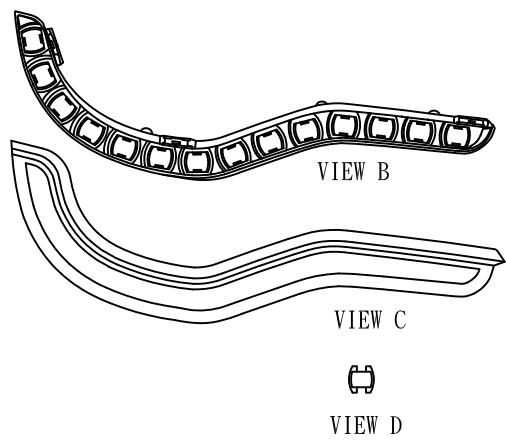
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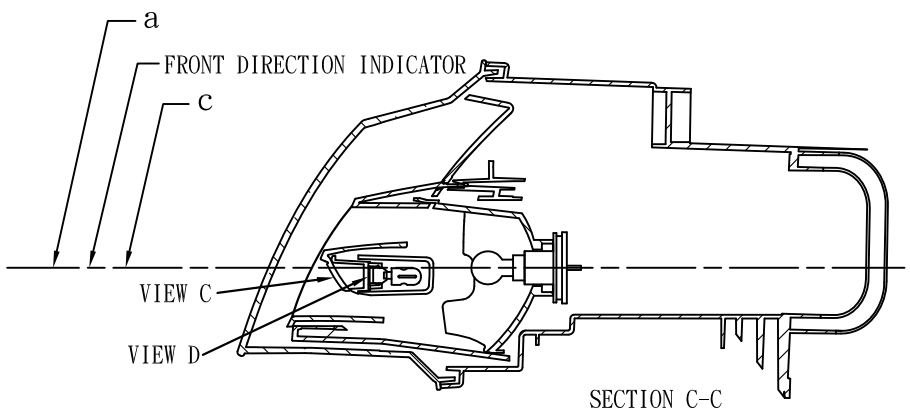
↓
FRONT OF VEHICLE

NOTE:

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2. THIS OUTER LENS IS FIXED ON THE HOUSING BY USING GLUE AND SNAP-IN CONNECTORS.
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一般尺寸	公差
6以下	±0.1
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446-1122R PMLDEM2						
件 號	名 稱	材 質	R 件 數	L 數	規 格 備 註	
製 圖	黃 慧 中	2014/05/02	投影法	第三角法	單 位	
設 計	陳 郁 仁		比 例	0.32 : 1	m m	
審 核		圖 名	頭 燈 組 立 圖			
		圖 號	00\446-1122L2			

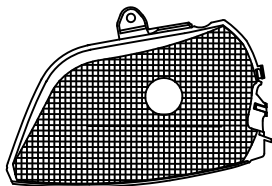
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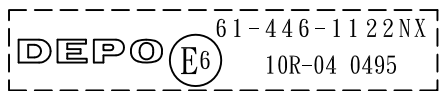
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2. THIS LAMP IS EQUIPPED WITH A REFLECTOR ADJUSTING DEVICE.



FRONT OF VEHICLE



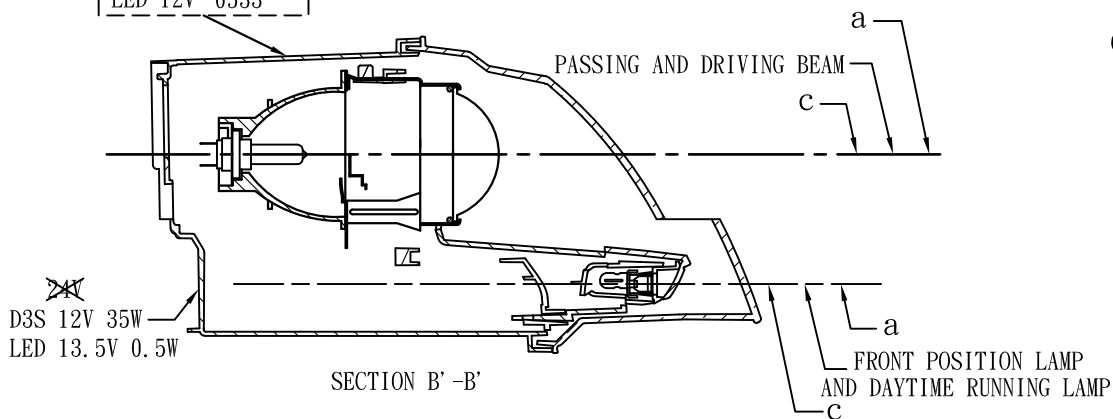
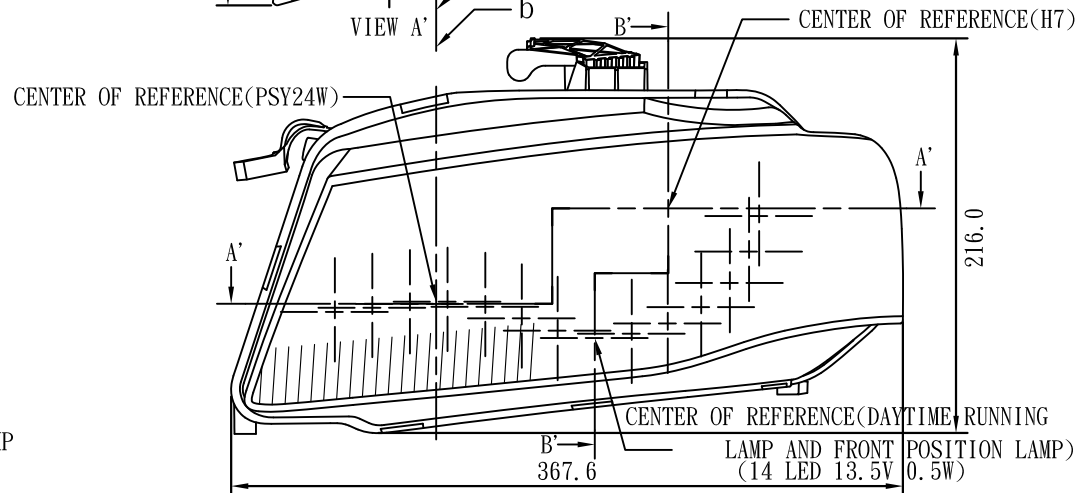
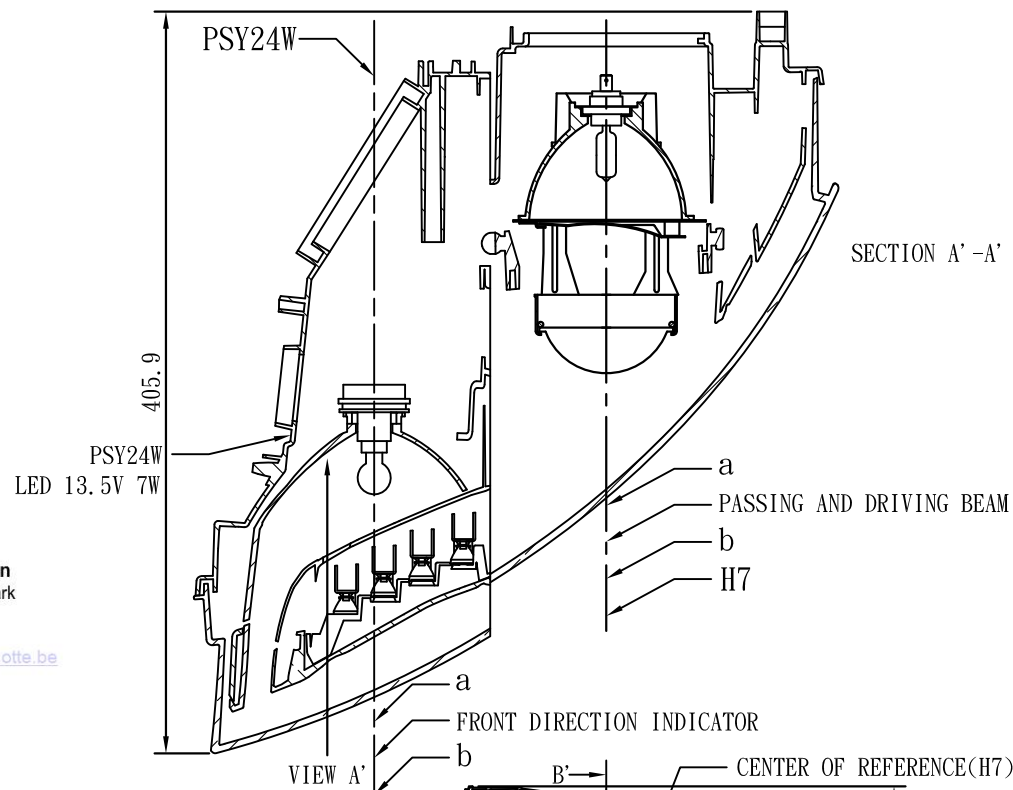
VIEW A'



446-1122L PMLDEM2
 1 HCR PL RL A
 01 00 00 02
 PSY24W
 H7
 LED 12V 0533



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設 計	陳 郁 仁		比 例	0.32 : 1	m m		
審 核			圖 名	頭 燈 組 立 圖			
			圖 號	00\446-1122L3			

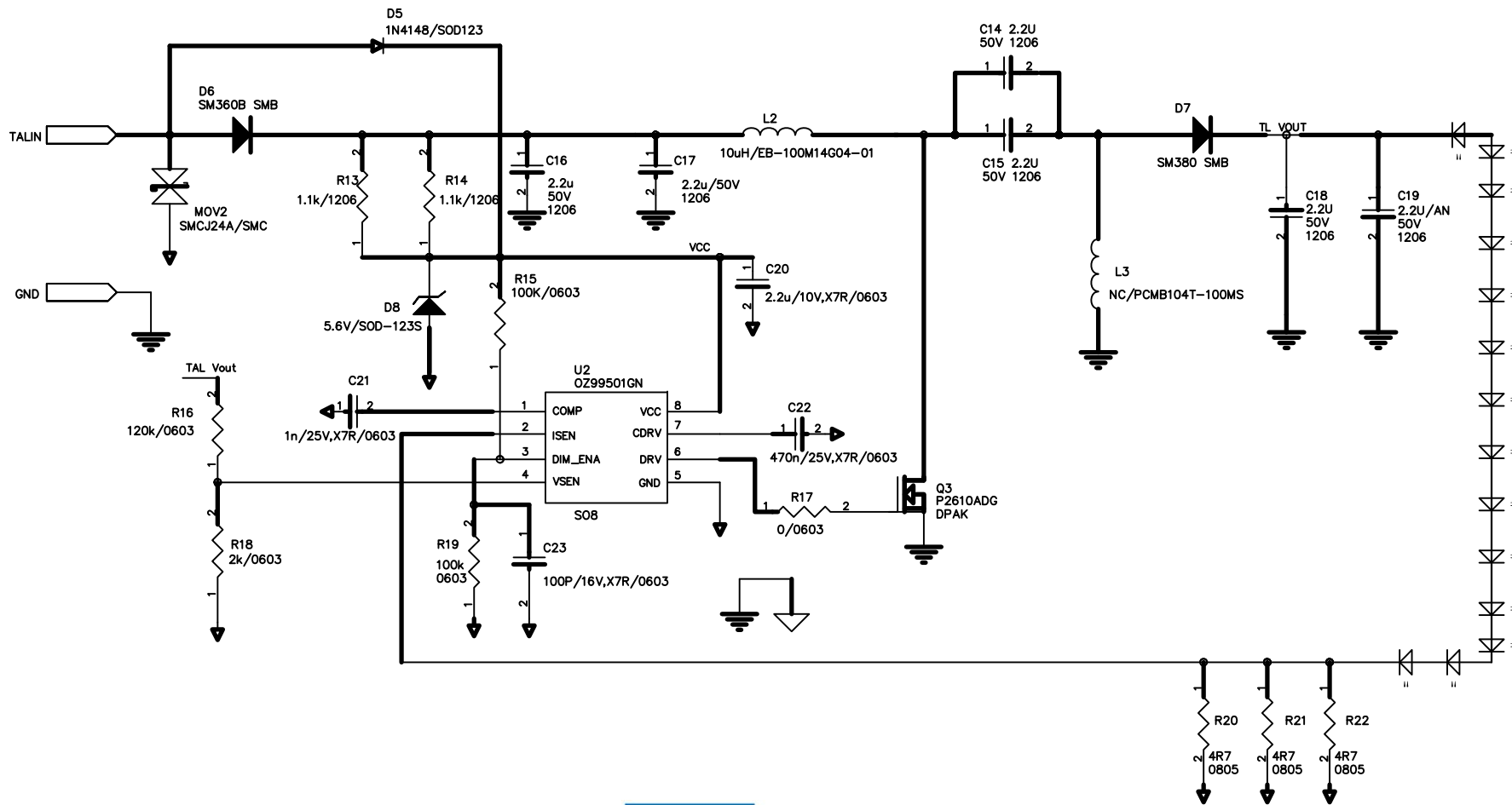
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NOTE:

1. THIS DRAWING SHALL BE APPLIED FOR RHGHT HAND AND LEFT HAND.

61-446-1122NX

FUNCTION:DAYTIME RUNNING LAMP & FRONT POSITION LAMP



Vin : 12V +/- 10%
 Frequency : ~300KHz
 LED current = 125mA



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版次	修改說明	日期	制訂	審查	核准

446-1122PMLDEM2		名稱	材質	R 件數	L 數	規格備註
件	號	黃慧中	投影法	第三角法	單位	
製	圖	陳郁仁	比例	1 : 1	mm	
設	計	楊忠能	圖名	電路圖		
		許敘超	圖號	00\446-1122L4		

審核