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PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 98

(Headlamps with gas-discharge light sources)

Transmitted by the Expert from the Working Party "Brussels 1952" (GTB)

Note: The text reproduced below was prepared by the expert from GTB in order to introduce in the Regulation provisions concerning the Distributed Lighting Systems (DLS). The proposal was considered and approved by GTB at its ninety-first plenary session held in Rome, from 9-11 May 2001.

Note: This document is distributed to the Experts on lighting and light-signalling only.

GE.01-22621

A. PROPOSAL

Paragraph "Scope", amend to read (footnote 1/ not modified):

"SCOPE

This Regulation applies to motor vehicle headlamps and motor vehicle distributed lighting systems which may incorporate lenses of glass or plastic material 1/, and which are equipped with gas-discharge light source(s) being fitted in the headlamp or in the remote light-generator of the distributed lighting system."

Insert a new paragraph 1.1., to read:

"1.1. The definitions given in Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation."

Paragraph 1.1. (former), renumber as paragraph 1.2.

Paragraphs 1.2. to 1.4., renumber as paragraphs 1.7. to 1.9.

Paragraph 1.5., should be deleted.

Insert new paragraphs 1.3. to 1.5., to read:

"1.3. "Light-guide" means a light transmitting component based on defraction/ reflection;

1.4. "Light-generator" means an optical device which is a component of a distributed lighting or light signalling system that collects the luminous flux emitted by the light source(s) and distributes it into one or more light-guides. A light-generator is to be considered a light transmitting component;

1.5. "Distributed lighting system" or "distributed light signalling system (DLS)" means a lamp or lamp system comprising a light-generator, light guide(s) and outer lens(es)."

Paragraph 1.7., renumber as paragraph 1.6., and amend to read:

"1.6. "Light transmitting component" means any part of the lamp or lamp system which transmit luminous flux;"

Paragraph 1.6. (former) to 1.6.2., renumber as paragraph 1.10. to 1.10.2.

Paragraph 1.6.3., renumber as paragraph 1.10.3., and amend to read:

"1.10.3. the inclusion or elimination of components capable of altering the optical effects by reflection, refraction, absorption and/or deformation during operation;"

Paragraphs 1.6.5. and 1.6.6., renumber as paragraphs 1.10.5. and 1.10.6.

Insert a new paragraph 2.1.6, to read:

"2.1.6. whether a distributed lighting system is used and which type(s) of beam(s) is (are) intended to be provided by this system;"

Paragraph 2.1.6. (former), renumber as paragraph 2.1.7., and amend to read:

"2.1.7. the category of gas-discharge light source as listed in Regulation No. 99.

[For non-replaceable gas-discharge light sources not approved under Regulation No. 99, the part number assigned by the light source manufacturer to the light source.]

For a distributed lighting system using a non-replaceable gas-discharge light source not approved under Regulation No. 99, the part number assigned by the light-generator manufacturer to the light-generator. "

Paragraph 2.2.2., amend to read:

"2.2.2. A brief technical specification including the make and types of the ballast(s) where it applies.

In addition, for a distributed lighting system, a brief technical specification including the list of the light-guide(s) and related optical components and information describing the light-generator(s) sufficient to permit identification. This information shall include the part number assigned by the light-generator manufacturer, a drawing with dimensions and the basic electrical and photometric values and an official test report related to paragraph 5.8. of this Regulation. "

Insert a new paragraph 2.2.3, to read:

["2.2.3 For non-replaceable gas-discharge light sources not approved under Regulation No. 99, information describing the light source sufficient to permit identification. This information shall include the part number assigned by the light source manufacturer, a drawing with dimensions and the basic electrical and photometric values, an indication whether the light source complies with the UV-radiation requirement of paragraph 3.10. of Regulation No. 99 and an official test report related to paragraph 5.8. of this Regulation."]

Paragraph 2.2.3. (former), renumber as paragraph 2.2.4.

Paragraph 2.2.3.1., renumber as paragraph 2.2.4.1., and amend to read:

"2.2.4.1. for approval of a headlamp, two samples with standard gas-discharge light source and one ballast of each type to be used, where applicable.

[For approval of a headlamps using a non-replaceable light source not approved under Regulation No. 99, two samples with production gas-discharge light source and one ballast of each type to be used, where applicable.]

For approval of a distributed lighting system using a non-replaceable gas-discharge light source not approved under Regulation No. 99, two samples of the system including the light-generator and one ballast of each type to be used, where applicable."

Paragraphs 2.2.4. (former) to 2.2.5.1, renumber as paragraphs 2.2.5. to 2.2.6.1

Paragraph 2.2.5.2, renumber as paragraph 2.2.6.2., and amend to read:

"2.2.6.2. The UV-resistance testing of internal materials to light source radiation is not necessary:"

Insert new paragraphs 2.2.6.2.1. and 2.2.6.2.2., to read:

"2.2.6.2.1.if low-UV-type gas-discharge light sources are being applied as specified in Regulation No. 99, or;

2.2.6.2.3. if provisions are taken to shield the relevant headlamp components from UV radiation, e.g. by glass filters."

Insert new paragraph 2.3., to read:

"2.3. For a distributed lighting system [X] samples of the material(s) and related protective coating/shield, if any, of which the light-guide and other optical parts of the system are made."

Paragraph 2.3. (former), renumber as paragraph 2.4., and amend to read:

"2.4. The materials making up the lens and, in the case of a distributed lighting system, the materials making up the optical parts of the system, and related coatings/shields, if any, shall be accompanied by the test report of the characteristics of these materials and coatings if they have already been tested."

Paragraph 2.4. (former), should be deleted.

Paragraph 3.1, amend to read:

"3.1. Headlamps or distributed lighting systems submitted for approval shall bear legibly and indelibly the trade name or mark of the applicant."

Paragraph 3.2, amend to read (deleting also the reference to footnote 4/:

"3.2. They shall comprise spaces of sufficient size for the approval mark and the additional symbols referred to in paragraph 4.; these spaces shall be indicated on the drawings referred to in paragraph 2.2.1. above."

Footnote 4/, should be deleted.

Insert new paragraph 3.4., to read:

"3.4 The approval marking shall be placed on an inner or outer part (transparent or not) of the device which cannot be separated from the transparent part of the device emitting light. In the case of a distributed lighting system with outer lens built in the light-guide, this condition is deemed satisfied if the approval marking is placed at least on the light-generator and on the light-guide, or on its protective shield. In any case, the marking shall be visible when the device / system is fitted on the vehicle, at least when a movable part such as the hood or boot lid or a door is opened."

Paragraph 3.4. (former), renumber as paragraph 3.5.

Insert new paragraphs 3.6. and 3.7., to read:

["3.6. A non-replaceable light source not approved under Regulation No. 99, shall bear the trade name or mark of its manufacturer and the part number referred to in paragraph 2.2.3. above.]

3.7 In the case of a light-generator of a distributed lighting system using a non-replaceable gas-discharge light source not approved under Regulation No. 99, the light-generator shall bear the trade name or mark of its manufacturer and the part number referred to in paragraph 2.2.2. above."

Paragraph 4.2.1.1., amend the reference to footnote 5/ as footnote 4/, and the footnote amend to read:

"4/ 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 for Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Greece, 24 for Ireland, 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30 (vacant), 31 for Bosnia and Herzegovina, 32 for Latvia, 33 (vacant), 34 for Bulgaria, 35-36 (vacant), 37 for Turkey, 38-39 (vacant), 40 for The former Yugoslav Republic of Macedonia, 41 (vacant), 42 for the European Community (Approvals are granted by its Member States using their respective ECE symbol), 43 for Japan, 44 (vacant), 45 for Australia, 46 for Ukraine and 47 for South Africa. Subsequent numbers shall be assigned to other countries in the chronological order in which they ratify or accede to the Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement."

Insert new paragraph 4.2.2.8., to read:

4.2.2.8. on distributed lighting systems, the letters "DLS" shall replace the letter "D" required in paragraphs 4.2.2.3, 4.2.2.4 and 4.2.2.5 applying the same criteria."

Paragraph 4.3.3.1., amend to read:

"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 or distributed lighting system of the headlamp, even if they cannot be separated from the lens, also comprises the space described in paragraph 3.2. above, and bears the approval mark of the actual functions."

Insert new paragraphs 4.3.4. and 4.3.5., to read:

["4.3.4. Gas-discharge light source

For a non-replaceable gas-discharge light source not approved under Regulation No. 99, the marking prescribed in paragraph 3.6. above shall comply with the dimensional requirements (normally applicable to the approval number) of annex 3 of Regulation No. 99."]

4.3.5. Distributed lighting systems

For distributed lighting systems the applicable provisions of paragraphs 4.3.1. to 4.3.3.2. shall be complied with, in conjunction with the requirements of paragraph 3.4."

Footnote 6/ and the reference to this footnote in Chapter B. TECHNICAL REQUIREMENTS FOR HEADLAMPS, renumber as footnote 5/

Paragraph 5.3., should be deleted.

Paragraph 5.4., renumber as paragraph 5.3.

Paragraph 5.5., renumber as paragraph 5.4. and the reference to footnote 7/ and footnote 7/, renumber as footnote 6/

Paragraphs 5.5.1. to 5.7., renumber as paragraphs 5.4.1. to 5.6.

Insert new paragraphs 5.7 to 5.8.3., to read:

"5.7 The gas-discharge light source(s) used in gas-discharge headlamps or in distributed lighting systems shall be approved according to Regulation No. 99; gas-discharge light source(s) not approved according to Regulation No. 99 can be used only in the case where they are non-replaceable. However, in the case of distributed lighting systems the light-generator can be replaceable without using special tools also in the case where the light-source used in it is not approved.

In the case of replaceable gas-discharge light sources the lamp holder shall conform to the dimensional characteristics as given on the data sheet of IEC Publication 60061-2, relevant to the category of gas-discharge light source used. The gas-discharge light source shall fit easily into the headlamp.

5.8. Non-replaceable gas-discharge light sources not approved under Regulation No. 99 used in [headlamps or] distributed lighting systems shall moreover comply with the following requirements [corresponding to those specified in Regulation No. 99 for approval of gas-discharge light sources]:

5.8.1. starting, run-up and hot-restrike as prescribed in paragraph 3.6.;

5.8.2. colour as prescribed in paragraph 3.9. The colour may be white only;

5.8.3. UV-radiation as prescribed in paragraph 3.10., if so indicated in the application for approval (paragraph 2.2.2. above)."

Paragraph 5.8. (former), renumber as paragraph 5.9. and the reference to footnote 8/ and footnote 8/ renumber as footnote 7/.

Insert new paragraphs 5.10. and 5.11., to read:

"5.10. If it is necessary for the test procedure, the test house may require from the manufacturer additional test samples, test benches (holders) or special powers supplies.

5.11. The test procedure shall be carried out under the mounting specifications of the manufacturer."

Paragraphs 6.1.1 to 6.1.4., amend to read:

- "6.1.1. Headlamps or distributed lighting systems shall be so made that with suitable gas-discharge light source they give adequate illuminance without dazzle when emitting the passing-beam, and good illumination when emitting the driving-beam.
- 6.1.2. The illumination produced by the headlamp or distributed lighting systems shall be determined by means of a vertical screen set up 25 m forward of the headlamp and at right angles to its axes (see paragraph 6.2.6. and annex 3 to this Regulation).
- 6.1.3. The headlamp or distributed lighting systems shall be deemed satisfactory if the photometric requirements set in the present paragraph 6. are met with one light source, which has been aged during at least 15 cycles, in accordance with annex 4, paragraph 4. of Regulation No. 99.

Where the gas-discharge light source is approved according to Regulation No. 99 it shall be a standard (etalon) light-source and its luminous flux may differ from the objective luminous flux specified in Regulation No. 99. In this case, the illuminances shall be corrected accordingly.

Where the gas-discharge light source is not approved according to Regulation No. 99 it shall be a production non-replaceable light source.

The above correction does not apply to headlamps using non-replaceable gas-discharge light source, or to headlamps with the ballast(s) totally or partially integrated.

- 6.1.4. The gas-discharge light source used for the photometric tests shall be aged for 15 cycles minimum, in accordance with annex 4, paragraph 4. to Regulation No. 99. Where the light source is approved according to Regulation No. 99, it shall be a standard (etalon) light source. The flux of this light source may differ from the objective luminous flux specified in Regulation No. 99. In this case, the illuminances shall be corrected accordingly.

This correction does not apply to headlamps with non-replaceable gas-discharge light source, or to headlamps with the ballast() totally or partly integrated in the headlamp."

Paragraph 6.2.2.1., the reference to footnote 9/ and footnote 9/, renumber as footnote 8/.

Paragraph 6.2.4., the reference to footnote 10/ and footnote 10/, renumber as footnote 9/.

Paragraph 6.2.5., amend to read:

- "6.2.5. Not more than one gas-discharge light source is permitted for each passing beam headlamp."

Paragraph 6.3.2., amend to read:

- "6.3.2. It is possible to use several light sources for the driving beam, these light sources being filament lamps listed in Regulation No. 37, or gas-discharge light sources either listed in Regulation

No. 99. Paragraphs 5.7. and 5.8. apply. The following provisions shall be met:"

Paragraph 7., amend to read (renumbering also footnote 11/ as footnote 10/):

7. GAUGING OF DISCOMFORT AND/OR DISABILITY

The discomfort and/or disability caused by the passing beam of headlamps shall be gauged. 10/

Annex 1,

The sub-title, amend to read:

".....
of a type of headlamp or of a distributed lighting system pursuant to Regulation No. 98."

Items 1. and 2., to read:

- "1. Trade name or mark of the headlamp or distributed lighting system: ...
.....
2. Manufacturer's name for the type of device or system:
....."

Item 9.1., amend to read:

"9.1. Headlamp/system submitted for approval as type 3/:"

Footnote 3/, pertinent to item 9.1., amend to read:

"3/ Indicate the appropriate marking selected from the list below:

DC,	DC/	DC/PL,	DR,	DCR,	DC/R,	DC PL,	DR PL,	DCR PL,	DC/R PL,
DC,	DCR,	DC/R,	DC/	DC PL,	DCR PL,	DC/R PL,	DC/PL,		
→	→	→	→	→	→	→	→		
DC,	DCR,	DC/R,	DC/	DC PL,	DCR PL,	DC/R PL,	DC/PL,		
←	←	←	←	←	←	←	←		
DLSC,	DLSC/	DLSC/PL,	DLSR,	DLSCR,	DLSC/R,	DLSC PL,	DLSR PL,	DLSCR PL,	DLSC/R PL,
DLSC,	DLSCR,	DLSC/R,	DLSC/	DLSC PL,	DLSCR PL,	DLSC/R PL,	DLSC/PL,		
→	→	→	→	→	→	→	→		
DLSC,	DLSCR,	DLSC/R,	DLSC/	DLSC PL,	DLSCR PL,	DLSC/R PL,	DLSC/PL,		
←	←	←	←	←	←	←	←		

Item 9.4., amend to read:

"9.4. Category (or categories) of light source(s) 4/:"

Insert new item 9.6., to read:

"9.6. Distributed lighting system with one common gas-discharge light source Yes / No 2/."

Item 9.6. (former), renumber as item 9.7.

Insert new footnote 4/, to read:

"4/ [In the case of a headlamp using non-replaceable gas-discharge light sources not approved according to Regulation No. 99 shall be indicated the part number assigned by the light source manufacturer.]

In the case of a DLS. using a non-replaceable gas-discharge light source not approved under Regulation No. 99 shall be indicated the part number assigned by the light-generator manufacturer to the light-generator."

Annex 2,

Insert new figure 10, to read:



Figure 10

The approval marking shown above identifies a distributed lighting system using a gas-discharge light source and meeting the requirements of this Regulation with respect to both the passing beam and the driving beam for both traffic systems."

Figures 10 (former) and 11, renumber as figures 11 and 12.

Annex 5,

Paragraphs 1.1. and 1.2., amend to read:

- "1.1 The samples supplied pursuant to paragraph 2.2.5. and 2.3. of this Regulation shall satisfy the specifications indicated in paragraphs 2.1. to 2.5. below.
- 1.2. The two samples of complete lamps / systems supplied pursuant to paragraph 2.2.4. of this Regulation and incorporating lenses of plastic material shall, with regard to the lens material, satisfy the specifications below."

B. Justification.

The first head-lighting systems consisted of two or four independent headlamps mounted on the car body. Later two or more lamps were grouped in one lamp housing and concealable lamps and movable reflectors were introduced. Test requirements for these traditional devices have been established in the well-known headlamp regulations.

All these headlamps were characterized by the fact that each individual headlamp employed one light source for each function and this light source was part of the headlamp unit.

In the latest developments of a head-lighting and light signalling system the light source is no longer a part of the reflector but built in a remote light-generator (more popular light generator) serving one or more headlamps through a special light transmitting component: the light-guide (a kind of fiber optics). The total system is called Distributed Lighting System. A demonstration of such a system was given at the 39th GRE meeting.

The application of this new development asks for additional test requirements and this document covers the proposed amendments to Regulation No. 98.

Permitting DLS on vehicles would only require the amendment of few paragraphs and could be written on one or two sheets of paper. However, when one light source emits the light for two headlamps, a new more powerful light-source has to be developed and included into Regulation No. 98 and No. 99, as Regulation No. 98 states that headlamps may only employ light sources approved to Regulation No. 99. Moreover, it may be expected that a wide variety of distributed lighting systems will be designed consisting of a combination of high-beam, low-beam, front fog beam and front position beam, each asking for an accommodated light source.

In order to prevent a number of gas-discharge light sources to be proposed for Regulation No. 99, this document also includes a proposal to introduce the use of non-replaceable discharge light sources and not approved under Regulation No. 99.

Conditions to apply non-replaceable light sources are:

- Information describing the light source sufficient to permit identification. This information shall include the part number assigned by the light source manufacturer, a drawing with dimensions and the basic electrical and photometric values, an indication whether the light source complies with the UV-radiation requirement Regulation No. 99 and an official test report.
- The light source shall comply with some electrical and photometric requirements as specified in Regulation No. 99.

As a first proposal, the use of non-replaceable light sources is restricted to the distributed lighting system. The Light Source Module, the definition of it proposed to R48, was neither introduced in this first proposal.

Apart from one minor change of Annex 1, other Annexes need not to be amended.

Finally, some paragraphs are updated.
