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PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 7

(Front and rear position (side) lamps, stop lamps and end-outline marker lamps)

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 include in Regulation No. 7 new provisions concerning rear position lamps, rear end-outline marker lamps and stop lamps with variable luminous intensities. The proposal is based on Revision 3 including Amendments 1, 2 and 3. The modifications to the existing text of the Regulation are marked in **bold** characters.

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

A. PROPOSAL

Paragraph 1.6., amend to read:

"1.6. "Front and rear position lamps, stop-lamps and end-outline marker lamps of different type" means lamps which differ in each said category in such essential respects as:
- the trade name or mark;
- the characteristics of the optical system, (levels of intensity, light distribution angles, category of filament lamp, light source module, etc.);
- **the variable intensity control, if any**.

A change of the colour of the filament lamp or the colour of any filter does not constitute a change of type."

Paragraph 2.1.4., amend to read:

"2.1.4. In the case of a category S3 **or S4** stop lamp, whether it is intended to be mounted outside or inside (behind the rear window) the vehicle."

Insert a new paragraph 2.1.5., to read:

"**2.1.5. Whether the device produces steady luminous intensity (category R1, S1 or S3) or variable luminous intensity (category R2 , S2 or S4).**"

Paragraph 2.1.5. (former), renumber as paragraph 2.1.6.

Paragraph 2.2.1., amend to read:

"2.2.1. Drawings, in triplicate, in sufficient detail to permit identification of the type of the device and showing in what geometrical position(s) the device (and if applicable for category S3 **or S4** lamps the rear window) may be mounted on the vehicle; the axis of observation to be taken is the axis of reference in the tests (horizontal angle H = 0°, vertical angle V = 0°); and the point to be taken as the centre of reference in the said tests. The drawings shall show the position intended for the approval number and the additional symbols in relation to the circle of the approval mark;"

Paragraph 2.2.2., amend to read:

"2.2.2. A brief technical description .... Regulation No. 37; in the case of a category S3 **or S4** stop lamp, which is intended to be mounted inside the vehicle, the technical description shall contain the specification of the optical properties (transmission, colour, inclination, etc.) of the rear window(s);"

Paragraph 2.2.3., amend to read:

"2.2.3. In the case of a **lamp** with **variable luminous** intensity, **a concise description of the variable intensity control,** an arrangement diagram ……."

Paragraph 2.2.4., amend to read:

"2.2.4. …. or only on the left side of the vehicle.

In the case of a **lamp** with **variable luminous** intensity the application shall also be accompanied by **the variable intensity control or a generator providing the same signal(s).**"

Paragraph 2.2.5., amend to read:

"2.2.5. In the case of a category S3 **or S4** stop lamp which is intended to be mounted inside the vehicle, a sample plate or sample plates (in case of different possibilities) having the equivalent optical properties corresponding to those of the actual rear window(s)."

Paragraph 3.4., amend to read:

"3.4. In the case of lamps with an **electronic light source control gear or a variable intensity control and/or** non-replaceable light sources **and/**or light source module(s), bear the marking of the rated voltage **or range of voltage** and rated **maximum** wattage."

Paragraph 3.5., amend to read:

"3.5. Lamps operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, by the application of an **electronic light source control gear or a variable intensity control being** not part of the lamp**,** or having a secondary operating mode**,** must **also** bear a marking denoting the rated secondary design voltage."

Paragraph 3.6.3., amend to read:

"3.6.3. the marking of the rated voltage **or range of voltage** and rated **maximum** wattage."

Insert a new paragraph 3.7., to read:

"**3.7. An electronic light source control gear or a variable intensity control being part of the lamp but not included into the lamp body shall bear the name of the manufacturer and its identification number**."

Paragraph 4.2.2.2., amend to read:

"4.2.2.2. .... (side) lamps, the letter "R" **followed by the figure "1" when the device produces steady luminous intensity and by the figure "2" when the device produces variable luminous intensity.**"

Paragraph 4.2.2.3., amend to read:

"4.2.2.3. On devices meeting the requirements of this Regulation in respect of the stop-lamps, the letter "S" followed by the figure:

"1" when the device produces **steady luminous intensity;**

"2" when the device produces **variable luminous intensity;**

"3" when the device meets the specific requirements for category S3 stop-lamps **and produces steady luminous intensity**

"4" when the device meets the specific requirements for category S4 stop-lamps and produces variable luminous intensity;"

Paragraph 4.2.2.4., amend to read:

"4.2.2.4. …., the letters **"R1" or "R2"** and "S1" or "S2" as the case …"

Insert a new paragraph 5.7., to read:

"**5.7. In case of failure of the variable intensity control of:**

- **a rear position lamp category R2 emitting more than the maximum value of category R1;**
- **a stop lamp category S2 emitting more than the maximum value of category S1;**
- **a stop lamp category S4 emitting more than the maximum value of category S3**

requirements of steady luminous intensity of the respective category shall be fulfilled automatically."

Paragraph 6.1., amend the table to read:

1/	Minimum luminous intensity in cd	Maximum **luminous intensity** in cd when used as		
		Single lamp	Lamp (single) marked "D" paragraph (4.2.2.6.)	Total for the assembly of two or more lamps 2/
….				
6.1.3. Rear position lamps, rear end-outline marker lamps				
6.1.3.1. R1 (steady)	4	12	8.5	17
6.1.3.2. R2 (variable)	**4**	**30**	**21**	**42**
6.1.4. Stop-lamps				
6.1.4.1. **S1 (steady)**	60	185	130	260
6.1.4.2. **S2 (variable)**	**60**	**521**	**365**	**730**
6.1.4.3. **S3 (steady)**	25	80	55	110
6.1.4.4. S4 (variable)	**25**	**114**	**80**	**160**

Footnote 2/ after the table, amend to read:

"2/ The total value of maximum intensity for an assembly of two **or more lamps** is given by multiplying by 1.4 the value prescribed for a single lamp.

When an assembly …."

Paragraph 6.2.4.1., amend to read:

"6.2.4.1. Throughout the fields defined in the diagrams in Annex 1, the **luminous** intensity of the light emitted must be not less than 0.05 cd for front and rear position (side) lamps and end-outline marker lamps, not less than 0.3 cd for stop-lamps;"

Paragraph 6.2.4.2., amend to read:

"6.2.4.2. If a rear position (side) lamp is reciprocally incorporated with a stop-lamp **producing either steady or variable luminous intensity**, the ratio between the luminous intensities actually measured of the two lamps when turned on simultaneously at the intensity of the rear position (side) lamp when turned on alone should be at least 5 : 1 in the field delimited by the straight horizontal lines passing through ± 5° V and the straight vertical lines passing through ± 10° H of the light distribution table.

If the rear position (side) lamp or the stop lamp or both contain more than one light source and are considered as a single lamp as defined in note 2 of the table in paragraph 6.1. above, the values to be considered are those obtained with all sources in operation;"

Paragraph 6.4., amend to read

"6.4. In the case of **devices of categories R2, S2 and S4** the time that elapses between **energising the light source(s)** and the light output measured on the reference axis to reach 90 per cent of the value measured in accordance with paragraph 6.3. above shall be measured for **the extreme levels of luminous intensity produced by the device.** The time measured **to obtain the lowest luminous intensity shall not exceed the time measured to obtain the highest luminous intensity.**"

Insert a new paragraph 6.5., to read:

"**6.5. The variable intensity control shall not generate signals which cause luminous intensities:**

6.5.1. outside the range specified in paragraph 6.1. above and

6.5.2. exceeding the respective steady luminous intensity maximum specified in paragraph 6.1. for the specific device

- **for systems depending only on daytime and night time conditions: under night time conditions**
- **for other systems: under standard conditions 3/**"

Insert a new footnote 3/, to read:

"**3/ Good visibility (meteorological optical range MOR > 2,000 m defined according to WMO, Guide to Meteorological Instruments and Methods of Observation, Sixth Edition, ISBN: 92-63-16008-2, pp 1.9.1/1.9.11, Geneva 1996) and clean lens.**"

Paragraph 6.5. (former), renumber as paragraph 6.6.

Paragraph 7. to 7.6., amend to read:

"**7. TEST PROCEDURE**

7.1. All measurements, photometric and colorimetric, shall be made:

7.1.1. In case of a lamp with replaceable light source, if not supplied by an electronic light source control gear or a variable intensity control, with an uncolored or colored standard filament lamp of the category prescribed for the device, supplied with the voltage necessary to produce the reference luminous flux required for that category of filament lamp,

7.1.2. In the case of a lamp equipped with non-replaceable light sources (filament lamps and other), at 6.75 V, 13.5 V or 28.0 V respectively.

7.1.3. In the case of a system that uses an electronic light source control gear or a variable intensity control, being part of the lamp 4/ applying at the input

terminals of the lamp the voltage declared by the manufacturer or, if not indicated, 6.75 V, 13.5 V or 28.0 V respectively.

7.1.4. **In the case of a system that uses an electronic light source control gear or a variable intensity control, not being part of the lamp the voltage declared by the manufacturer shall be applied to the input terminals of the lamp.**

7.2. **However, in the case of light sources operated by a variable intensity control to obtain variable luminous intensity, photometric measurements shall be performed according to the applicant's description.**

7.3. **The test laboratory shall require from the manufacturer the light source control gear or a variable intensity control needed to supply the light source and the applicable functions.**

7.4. **The voltage to be applied to the lamp shall be noted in the communication form in Annex 2 of this Regulation.**

7.5. **The limits of the apparent surface in the direction of the reference axis of a light-signalling device shall be determined.**

7. 6. **In the case of a category S3 or S4 stop lamp, which is intended to be mounted inside the vehicle a sample plate or sample plates (in case of different possibilities) as supplied (see paragraph 2.2.5.) shall be positioned in front of the lamp to be tested, in the geometrical position(s) as described in the application drawing(s) (see paragraph 2.2.1.).**"

Footnote 2/ (former), renumber as footnote 4/ and amend to read:

"**4/ For the purpose of this Regulation "being part of the lamp" means to be physically included in the lamp body or to be external, separated or not, but supplied by the lamp manufacturer as part of the lamp system.**"

Paragraph 8., amend to read:

" … to this Regulation. Outside this field, no sharp variation of colour shall be observed.

These requirements shall also apply within the range of variable luminous intensity produced by:
- rear position lamps of category R2;
- stop lamps of categories S2 and S4."

Paragraph 12., amend to read:

"12. REMARKS CONCERNING COLOURS AND PARTICULAR DEVICES

The Parties to the Agreement to which this Regulation is annexed are not precluded by Article 3 of that Agreement from prohibiting, for devices installed on vehicles registered by them, certain colours for which provision is made in this Regulation, or from prohibiting for all categories or for certain categories of vehicles registered by them stop-lamps having only **steady** luminous intensity."

Annex 1, first sentence, amend to read:

" ….

(a) …. below the horizontal;

(b) for category S3 **or S4** stop lamp for which they are 10° above and 5° below the horizontal;"

Annex 2,

Item 9., amend to read:

"**9. Number, category and kind of light source(s): ……**

Voltage and wattage: ……

Application of an electronic light source control gear/variable intensity control:
-being part of the lamp : yes/no 2/
-being not part of the lamp : yes/no 2/

Input voltage*(s)* supplied by an electronic light source control gear/ variable intensity control: ……

Electronic light source control gear/variable intensity control manufacturer and identification number (when the light source control gear is part of the lamp but is not included into the lamp body): ……..

Variable luminous intensity ……..yes/no 2/"

Footnote 3/, to be deleted.

Annex 3,

Item 2., the figure, amend the symbol "RD" to read **"R1D"**.

Item 2., second paragraph, amend to read:

"… the symbol **"R1D"** indicates that …."

Item 4., the figure, amend the symbol "RD-S2 D" to read "**R2D-S2 D"**.

Item 4., first paragraph, amend to read:

" … and a stop-lamp with **variable luminous intensity**, approved in …"

Item 4., second paragraph, amend to read:

"The number mentioned below the symbol "**R2D**-S2D" indicates …... stop lamp, both with **variable luminous intensity**, which may also …"

Item 5., inscriptions in Models A, B and C, replace "2a" by **"2b"**, "R" by **"R2"** and "F" by **"F2"**.

The second note after item 5., amend to read:

"…. and comprises:

A rear direction indicator lamp **with variable luminous intensity** (category 2**b)** approved in accordance with the 01 series of amendments to Regulation No. 6,

A red rear position (side) lamp **with variable luminous intensity** (**R2)** approved in accordance with the 02 series of amendments to Regulation No. 7,

A rear fog lamp **with variable luminous intensity (F2)** approved in accordance with Regulation No. 38 in its original version,
A reversing lamp (*A*R) approved in accordance with Regulation No. 23 in its original version,

A stop-lamp with **variable luminous intensity** (S2) approved in accordance with the 02 series of amendments to Regulation No. 7."

Annex 4, paragraph 3.1., amend to read:

"3.1. For non-replaceable light sources (filament lamps and other):
with the light sources present in the lamp, in accordance with the **relevant sub-paragraph of paragraph 7.1.** of this Regulation."

Annex 5, amend to read:

" …… $y \leq -x + 0.992$

For checking these colorimetric characteristics, **the test procedure described in paragraph 7. of this Regulation shall be applied.**

However, for lamps equipped with non-replaceable light sources (filament lamps and other), the colorimetric characteristics should be verified with the light sources present in the lamp, in accordance with the relevant **sub-paragraph of** paragraph **7.1.** of this Regulation.

In the case of a category S3 **or S4** stop lamp, which is intended to be mounted inside the vehicle, the colorimetric characteristics shall be verified with the worst case combination(s) of lamp and rear window(s) or sample plate(s)."

Annex 6,

Paragraph 1.2., amend to read:

"1.2. With respect to photometric performances, the conformity of mass-produced lamps shall not be contested if, when testing photometric performances of any lamp chosen at random **according to paragraph 7. of this Regulation,** respectively:"

Paragraph 1.3., amend to read:

"1.3. The chromaticity coordinates shall be complied when **tested under conditions of paragraph 7. of this Regulation.**"

Annex 7,

Paragraph 1.2., amend to read:

"1.2. With respect to photometric performances, the conformity of mass-produced lamps shall not be contested if, when testing photometric performances of any lamp chosen at random **according to paragraph 7. of this Regulation,** respectively:"

Paragraph 1.3., amend to read:

"1.3. The chromaticity coordinates shall be complied when **tested under conditions of paragraph 7. of this Regulation.**"

B. JUSTIFICATION

For more than 30 years Regulations Nos. 6 and 7 have included photometric provisions regarding 2-level intensities for rear direction indicator lamps and stop lamps. These provisions were intended to define particular intensity limits for daytime and nighttime operation; it was assumed that their activation would be controlled by the conventional light switch. No further consideration was given to more detailed specifications, as such 2-level systems were practically never used in actual vehicle construction.

Technical development in light sources, sensors and electronic control gear now permits rear lighting systems having variable intensities with continuous adaptation to ambient light conditions, which would not be restricted to daytime and night time but would also cover transient situations, such as entering/leaving a tunnel, or variable daylight conditions, e.g. cloudy sky or bright sunshine. In addition, such systems would be able to adjust intensity in order to compensate for reduced light output due to deposition of dirt on the lens or to adverse weather, e.g. fog, rain, snow, spray, dust or smoke.

In order to enable type approval of these systems it is proposed to:

(a) close the gap between existing maximum and minimum luminous intensity levels for 2-level systems;

(b) introduce new categories for rear position lamps (in Regulation No. 7) and for rear fog lamps (in Regulation No. 38) with suitable limit values which would provide a homogenous appearance of the respective rear lighting functions, i.e. position, stop, direction indicator and rear fog lamps.

The proposed maximum intensity levels correspond to levels already allowed on the road (for direction indicators and stop lamps), or are adjusted to achieve a uniform signal perception (for position and rear fog lamps) for all visibility conditions, taking into account the laboratory conditions for photometric approval tests.

In Regulations Nos. 6, 7 and 38 provisions have been inserted to cover the case of failure of the electronic control gear regulating the continuously variable level of luminous intensity.

Proposed by France, the new paragraph 7. has been inserted into these Regulations as a result of discussions in the GTB Working Group Photometry, not only to allow devices with variable intensities.

General provisions regarding the installation of light-signalling devices having variable luminous intensity have been inserted into Regulation No. 48 as a new paragraph 5.25. This would require simultaneous production of variable levels, except for centre high-mounted stop lamps, which - by design - are not reciprocally incorporated or grouped with other rear lamps grouped with other rear lamps.

The proposal has also been used to introduce editorial corrections and to adjust certain luminous intensity figures for consistency.

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