



**Economic and Social
Council**

Distr.
GENERAL

TRANS/WP.29/GRE/2005/40
25 July 2005

Original: ENGLISH
ENGLISH AND FRENCH ONLY

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

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

Working Party on Lighting and Light-Signalling (GRE)

(Fifty-fifth session, 3-7 October 2005,
agenda item 22.1.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 6

(Direction indicators)

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 into Regulation No. 6 new provisions concerning direction indicators with variable luminous intensities. The proposal is based on Revision 3 including Amendments 1 and 2. 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 1.3., amend to read:

- "1.3. "Direction indicators of different types" means lamps which differ 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 category of direction indicator lamps;
 - **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., amend to read:

- "2.1. The application for approval of a type of direction indicator shall be submitted by the holder of the trade name or mark or by his duly accredited representative. It shall specify to which category or to which of the categories 1, 1a, 1b, 2a, 2b, 3, 4, 5 or 6 according to Annex 1, the direction indicator belongs and, **if it belongs to category 2, whether it has steady luminous intensity (category 2a) or whether it has variable luminous intensity (category 2b)** and if the direction indicator may also be used in an assembly of two lamps of the same category. At the choice of ... "

Paragraph 2.2.3., amend to read:

- "2.2.3. For a direction indicator of category 2b, **a concise description of the variable intensity control**, and arrangement diagram ... "

Paragraph 2.2.4., amend to read:

- "2.2.4. Two samples; if the approval is applied for devices which are not identical but are symmetrical and suitable for mounting one on the left and one on the right side of the vehicle, the two samples submitted may be identical and be suitable for mounting only on the right or only on the left side of the vehicle.
For a direction indicator of category 2b, the application shall also be accompanied by **variable intensity control or a generator providing the same signal(s).**"

Paragraph 3.4., amend to read:

- "3.4. in 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 3.5.3., amend to read:

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

Insert a new paragraph 3.6., to read:

"3.6. 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."

Insert a new paragraph 5.4., to read:

"5.4. In case of failure of the variable intensity control of a direction indicator of category 2b emitting more than the maximum value of category 2a, requirements of steady luminous intensity of category 2a shall be fulfilled automatically."

Paragraph 6.1., amend the table to read:

Direction indicator of category	Minimum luminous intensity in cd	Maximum luminous intensity in cd when used as		
		Single lamp 2/	Lamp (single) marked "D" (see paragraph 4.2.2.3.) 2/	Total for the assembly of two lamps (see paragraph 4.2.2.3.) 2/
1	175	700	500	1000
1a	250	800	600	1200
1b	400	860	600	1200
2a (steady)	50	350	250	500
2b (variable)	50	700	500	1000
3 to the front	175	700	500	1000
to the rear	50	200	140	280
4 to the front	175	700	500	1000
to the rear	0.6	200	140	280
5	0.6	200	140	280
6	50	200	140	280

Footnote 2/ to be prepared after decision of GRE on document TRANS/WP.29/GRE/2005/9.

Paragraph 6.2.3.1., amend to read:

"6.2.3.1. Throughout the fields defined in the diagrams in Annex 1, the intensity of the light emitted must be not less than 0.7 cd for devices of category 1b, not less than 0.3 cd for devices of categories 1, 1a, 2a, **2b**, 3, 4 towards the front and for these ... "

Paragraph 6.2.3.2., amend to read:

"6.2.3.2. For devices of categories 1 and 2b and, to the front, for devices of categories 3 and 4, the intensity of the light emitted outside the zone defined by the measuring points $\pm 10^\circ\text{H}$ and $\pm 10^\circ\text{V}$ (10° -field) must not exceed the following values:

Direction indicator of category	Maximum luminous intensity in cd outside the 10°-field		
	Single lamp	Lamp (single) marked "D" (see paragraph 4.2.2.3.)	Total for the assembly of two lamps (see paragraph 4.2.2.3.)
1, 2 b , 3 and 4	400	280	560

Between the boundaries of the 10°-field ($\pm 10^\circ\text{H}$ and $\pm 10^\circ\text{V}$) and the 5°-field ($\pm 5^\circ\text{H}$ and $\pm 5^\circ\text{V}$), the maximum admissible values of the intensities are linearly increased up to the values as defined in paragraph 6.1.;"

Paragraph 6.4. amend to read

"6.4. In the case of devices of category 2b 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 direction indicator**. 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 category 2a maximum specified in paragraph 6.1.:

- for systems depending only on daytime and night time conditions: under nighttime conditions
- for other systems: under reference conditions as demonstrated by the manufacturer 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.

Paragraphs 7.1. to 7.3., amend to read:

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

7.1.1. In the 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 uncoloured or coloured 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 with the voltage declared by the manufacturer applied to the input terminals of the lamp.
- 7.2. However in the case of a direction indicator of category 2b 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."

Insert paragraphs 7.4. and 7.5., to read:

- 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. "

Footnote 4/, 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 direction indicators of category 2b.**"

Annex 1, amend to read:

" ... direction indicators for the rear of the vehicle

Category 2a: rear direction indicator lamps with steady luminous intensity

Category 2b: rear direction indicator lamps with variable luminous intensity"

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/, should be deleted.

Annex 3,

Inscriptions in models A, B and C, amend to read:

Model A: replace the figures "2a" by "2b", "R" by "R2" and "F" by "F2"
Model B: replace the figures "2a" by "2b", "R" by "R2" and "F" by "F2"
Model C: replace the figures "2a" by "2b", "R" by "R2" and "F" by "F2"

The note after Model C, amend to read:

".... and comprise:

A rear direction indicator lamp with variable luminous intensity (category **2b**) 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 (AR) 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:

"... $y = 0.790 - 0.670 x$

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."

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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