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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations****Working Party on Lighting and Light-Signalling****Sixty-sixth session**

Geneva, 4–6 October 2011

Item 4(c) of the provisional agenda

**Regulation No. 48 (Installation of lighting and  
light-signalling devices) - Proposal for Supplement 1  
to the 05 series of amendments****Proposal for Supplement 1 to the 05 series of amendments****Submitted by the expert from Poland\***

The text reproduced below was prepared by the expert from Poland to take into consideration real visibility distance and glaring according to headlamp Regulations. It is based upon informal document No. GRE-65-13-Rev.1, distributed during the sixty-fifth session of the Working Party on Lighting and Light Signalling (GRE). The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Proposal

Paragraph 6.2.6.1.2., amend to read:

"6.2.6.1.2. Depending on the mounting height in metres (h) of the **dipped-beam headlamp reference axis, the vertical inclination of the cut-off of the dipped beam, (in the direction of the reference axis) measured on the unladen vehicles, taking in account 0.1 per cent accuracy, shall have the value of initial aiming for which the horizontal part of cut-off crosses the surface of flat horizontal road at the distance of 75 m from the headlamp.**

**The aiming limits under all the static conditions of Annex 5 should be such that the distance of crossing of the vertical part of cut-off with road surface shall remain between [50 m] and [100 m].**

~~h < 0.8~~

~~limits: ————— between 0.5 per cent and 2.5 per cent~~

~~initial aiming: ————— between 1.0 per cent and 1.5 per cent~~

~~0.8 < h < 1.0~~

~~limits: ————— between 0.5 per cent and 2.5 per cent~~

~~initial aiming: ————— between 1.0 per cent and 1.5 per cent~~

~~Or, at the discretion of the manufacturer,~~

~~limits: ————— between 1.0 per cent and 3.0 per cent~~

~~initial aiming: ————— between 1.5 per cent and 2.0 per cent~~

~~The application for the vehicle type approval shall, in this case, contain information as to which of the two alternatives is to be used.~~

~~h > 1.0~~

~~limits: ————— between 1.0 per cent and 3.0 per cent~~

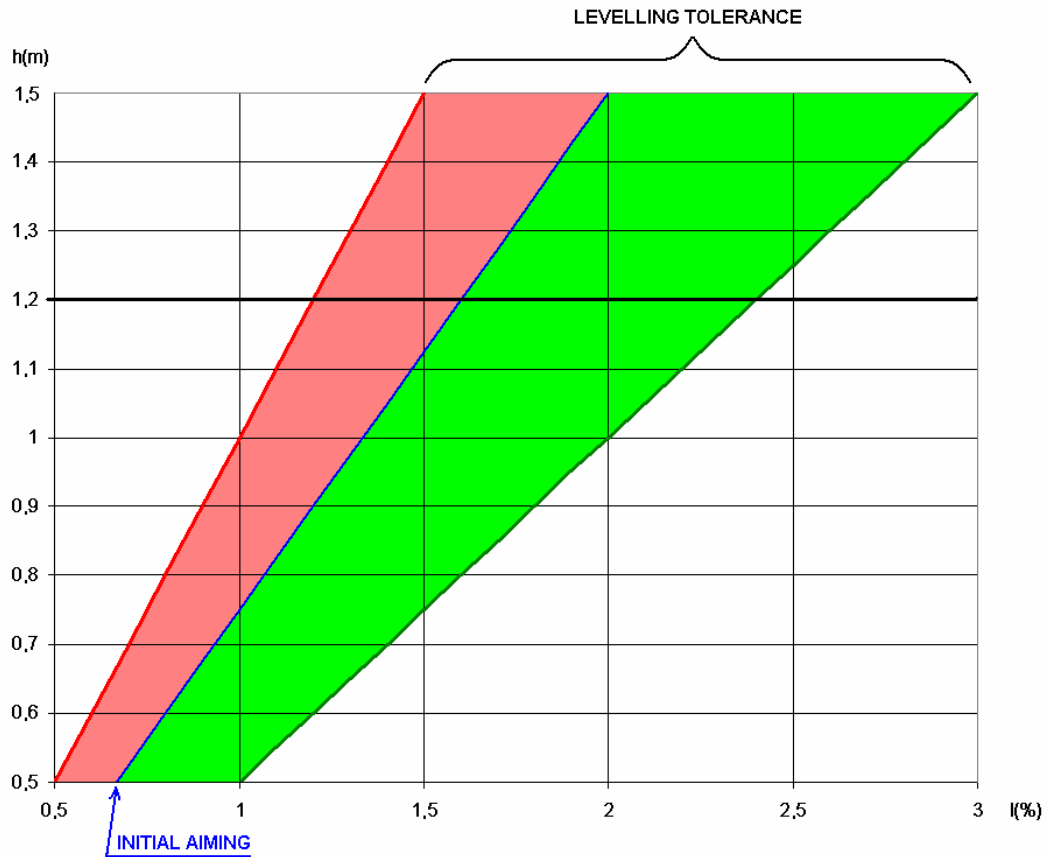
~~initial aiming: between 1.5 per cent and 2.0 per cent~~

The above limits and the initial aiming values are summarized in the diagram below.

~~For category N3G (off road) vehicles where the headlamps exceed a height of 1,200 mm, the limits for the vertical inclination of the cut off shall be between:~~

~~1.5 per cent and 3.5 per cent.~~

The initial aim shall be set between: 2 per cent and 2.5 per cent.



Insert a new paragraph 6.2.6.1.3., to read:

**"6.2.6.1.3.** Under all static conditions of Annex 5, all photometric values for glare zones required by the respective Regulations (zone III for Regulations Nos. 112 and 123, on and above line H/H2, or on and above line H/H3/H4 for Regulation No. 98) shall be not more [50 per cent] than required in the respective Regulations. The measuring conditions should be as described in the relevant Regulation based at the measuring screen centre (H-V) located at the height of the headlamp reference axis and in a vertical plane including headlamp reference axis."

Paragraph 6.2.6.2.1., correct to read:

"6.2.6.2.1. In the case where a headlamp levelling device is necessary to satisfy the requirements of paragraphs 6.2.6.1.1., 6.2.6.1.2. and **6.2.6.1.3** the "device shall be automatic."

Insert a new paragraph 6.2.6.5., to read:

**"6.2.6.5.** There should be a note in the car, located in the place easily visible for the driver, expressing the shortest visibility distance and the lowest speed corresponding to the worst condition of aiming and loading: e.g.: "SAFE USE OF PASSING BEAM HEADLAMPS DURING NIGHT TIME IN

**THIS VEHICLE ON THE STRAIGHT ROAD IS RESTRICTED TO VISIBILITY DISTANCE ... m WHICH REFLECT MAXIMUM SPEED OF ... km/h". The same values of visibility distance and speed should be also declared by manufacturer in para. 10.7. of communication (see Annex 1) and in vehicle user manual."**

*Annex 1, insert new paragraph 10.9., to read*

**"10.9. Comments regarding the headlamps visibility distance and maximum speed .....**

*Annex 9, paragraph 1.3.2., correct to read:*

"1.3.2. Variation of inclination with load

The variation of the dipped beam downward inclination as a function of the loading conditions specified within this section shall remain within the range **prescribed in para. 6.2.6.1.2. with an additional tolerance of [± 0.2] per cent, and all photometric requirements for glare zones should remain not more than prescribed in para. 6.2.6.1.3. with additional tolerance of [30 per cent].**

~~0.2 per cent to 2.8 per cent for headlamp mounting height  $h < 0.8$ ;~~

~~0.2 per cent to 2.8 per cent for headlamp mounting height  $0.8 \leq h \leq 1.0$ ; or~~

~~0.7 per cent to 3.3 per cent (according to the aiming range chosen by the manufacturer at the approval);~~

~~0.7 per cent to 3.3 per cent for headlamp mounting height  $1.0 < h \leq 1.2$  m;~~

~~1.2 per cent to 3.8 per cent for headlamp mounting height  $h > 1.2$  m.~~

In the case of a class "F3" front fog lamp with (a) light source(s) having a total objective luminous flux which exceeds 2,000 lumen, the variation of the downward inclination as a function of the loading conditions specified within this section shall remain within the range:

0.7 per cent to 3.3 per cent for front fog lamp mounting height  $h \leq 0.8$  ;

1.2 per cent to 3.8 per cent for front fog lamp mounting height  $h > 0.8$  m.

The states of loading to be used shall be as follows, as indicated in Annex 5 of this Regulation, for every system adjusted accordingly."

## II. Justification

1. For many years, Regulation No 48 has used fixed values of initial aiming of headlamps and their tolerances in specific ranges depending on the mounting height. As a result, in the real road condition for the new type approved vehicles, it is possible to have an illuminated road section starting immediately in front of the vehicle and ending between 20m and 200m. These values do not take into account additional conformity of production tolerances. But the requirement of automatic levelling has been made dependent on the luminous flux of the light source. This requirement has no clear connection with real headlamp performance regarding road illumination and glare. The requirements specified for glare zone in headlamps regulations have no practical translation to real road condition because requirements are defined for the fixed headlamp height 0.75 m and aimed

1 per cent down. In practice the mounting height changes from 0.5 m up to 1.2 m (1.5 m) as it is described in Regulation 48. On the other hand there are many doubts regarding aiming and glare in real conditions which are being subjectively identified and linked with the kind of light source used, which does not reflect the reality. It is also important as headlamp design influence which cannot be simply defined. It was basically an attempt to solve this problem by introducing an artificial 2000 lm luminous flux condition as a criterion for automatic levelling requirement. But the first and basic reason of visibility/glare problems is the aiming tolerance allowed by the present Regulation No 48.

2. The above mentioned proposal links **presently used requirements** of the headlamps Regulations with the influence **of the allowed mounting height and all loading conditions**. It replaces present situation by an introduction of performance based requirements: clearly defined visibility distance and glare criteria present in the Regulations currently in force.

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