

**ECONOMIC COMMISSION FOR EUROPE**  
**INLAND TRANSPORT COMMITTEE**  
World Forum for Harmonization of Vehicle Regulations (WP.29)  
Working Party on Lighting and Light-Signalling (GRE)  
Informal Group on Group on Visibility, Glare and Levelling (VGL)

**Proposal for the [X] series of amendments to UNECE Regulation No. 48**  
**“Uniform provisions concerning the approval of vehicles with regard to**  
**the installation of lighting and light-signalling devices”**

**I - PROPOSAL**

*Paragraph 2.1. and related sub paragraphs in Annex 5, amend to read:*

- 2.1. Vehicles in category M<sub>1</sub>:<sup>1</sup>
- ~~2.1.1.~~ The **angle inclination, expressed in [per cent] [percentage]**, of the light beam of the dipped-beam headlamps shall be determined under the following load conditions:
- 2.1.1.1. One person in the driver's seat;
- 2.1.1.2. The driver, plus one passenger in ~~the each~~ front seat, ~~farthest from the driver~~ **plus an evenly distributed load in the luggage boot, if the boot is at the front, in order to obtain the permissible load on the front axle;**
- Alternative 1
- 2.1.1.3. **All the seats occupied, plus an evenly distributed load in the luggage boot, in order to obtain the permissible load on the rear axle if the boot is at the rear.**
- Alternative 2
- 2.1.1.3. The driver, one passenger in ~~the front each~~ seat ~~farthest from the driver~~, ~~all the seats farthest to the rear occupied;~~ **plus an evenly distributed load in the luggage boot, if the boot is at the rear, in order to obtain the permissible load on the rear axle.**
- 2.1.4. **If the vehicle has a front and a rear boot, the load shall be appropriately distributed in order to obtain the permissible axle loads.**
- 2.1.5. **If the maximum permissible laden mass is obtained before the permissible load on one of the axles, the loading of the boot(s) shall be limited to the figure which enables that mass to be reached.**
- ~~2.1.1.4.~~ ~~All the seats occupied;~~
- ~~2.1.1.5.~~ ~~All the seats occupied, plus an evenly distributed load in the luggage boot, in order to obtain the permissible load on the rear axle or on the front axle if the boot is at the front. If the vehicle has a front and a rear boot, the additional load shall be appropriately distributed in order to obtain the permissible axle loads. However, if the maximum permissible laden mass is obtained before the permissible load on one of the axles, the loading of the boot(s) shall be limited to the figure which enables that mass to be reached;~~

<sup>1</sup> As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.3, para. 2 - [www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html](http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html)

~~2.1.1.6. Driver, plus an evenly distributed load in the boot, in order to obtain the permissible load on the corresponding axle.~~

~~However, if the maximum permissible laden mass is obtained before the permissible load on the axle, the loading of the boot(s) shall be limited to the figure which enables that mass to be reached.~~

2.1.2.6. In determining the above loading conditions, account shall be taken of any loading restrictions laid down by the manufacturer.

*Paragraph 2.2. in Annex 5*, amend to read:

2.2. Vehicles in categories M<sub>2</sub> and M<sub>3</sub><sup>1</sup>;

The ~~angle~~ **inclination, expressed in [per cent] [percentage]**, of the light beam from the dipped-beam headlamps shall be determined under the following loading conditions:

*Paragraph 2.3. in Annex 5*, amend to read:

2.3. Vehicles in category N with load surfaces:

~~2.3.1.~~ The ~~angle~~ **inclination, expressed in [per cent] [percentage]**, of the light beam from the dipped-beam headlamps shall be determined under the following loading conditions;

*Paragraphs 2.3.1.1. and 2.3.1.2. in Annex 5*, renumber as 2.3.1. and 2.3.2.

*Paragraph 2.4. in Annex 5*, amend to read:

2.4. Vehicles in category N without a load surface:

**The inclination, expressed in [per cent] [percentage], of the light beam from the dipped-beam headlamps shall be determined under the following loading conditions;**

*Paragraph 2.2. in Annex 6*, amend to read:

2.2. Dipped-beam inclination

[It may be defined as follows:

~~Either as the angle, expressed in milliradians, between the direction of the beam towards a characteristic point on the horizontal part of the cut off in the luminous distribution of the headlamp and the horizontal plane,~~

~~Or by the tangent of that angle, expressed in percentage inclination, since the angles are small (for these small angles, 1 per cent is equal to 10 mrad).]~~

~~If the inclination  $i$~~  **It is expressed in [per cent] [percentage] inclination, it can be and is calculated by means of the following formula:**

(for the time being, formula, figure and the rest of the text of this paragraph can remain unchanged).

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## II - JUSTIFICATION

During the last years, the need for a better approach to the problem illumination distance vs glaring has been widely discussed.

One of the first issues pointed out was the artificiality of the present requirements governing the headlamp levelling in relation to the vehicle loading conditions.

Statistic data related to the traffic in some European Countries have demonstrated that for the most part of their life, the vehicles of M1 category are travelling only with the driver on board. For a low percentage of their life they are traveling with a medium loading (2 - 3 persons and low load in the loading compartment) and only exceptionally their maximum allowed mass is reached, quite only by carrying all the persons allowed in their seats and a load in the loading compartment close to the maximum allowed but many time limited by the available volume of the boot.

It is then clear that, among the loading conditions presently prescribed for the verification of the correct headlamp levelling, the one requesting to load the loading compartment up to the maximum permissible axle load without any persons on board but the driver (paragraph 2.1.1.6.) is totally unrealistic and, many time, it is even impracticable due to the limited loading area available for the prescribed conditions.

In addition, due to the above indicated statistical data and in relation to the experience acquired during the years in the practical application of the loading conditions requirements, the levelling verifications in the two intermediates loading conditions described in paragraphs 2.1.1.3 and 2.1.1.4. have been demonstrated to be not necessary, since the attitude of the vehicle in relation to its loading is vary quite linearly increasing the its load.

Italy has many time pointed out these problems and the substantial inconsistency of paragraph 2.1.1.6. requirement ith the real life.

Italy is then proposing to revise the requirements for M1 vehicles loading conditions taking into account the above considerations.

In a first time the simply deletion of paragraph 2.1.1.3, 2.1.1.4. and 2.1.1.6. was envisaged. However, discussion with other GRE experts has led to the conclusion that a different description of the essential loading conditions able to provide the correct information on the vehicle attitude and consequently on the headlamp levelling are necessary.

The above Italian proposal for the amendment of Annex 5 of UNECE Regulation 48 has then been structured in the following way, also including some editorial updating:

paragraph 2.1.1.: requirements of paragraph 6.2.6.1.1. and 6.2.6.1.2. indicate the inclination in percent; it is more clear and logic to refers to inclination in percent also in the Annex 5.

paragraph 2.1.1.2 (now 2.1.2.): the loading condition as defined in the proposed text takes into account the possibility of a three or more seats row and of a loading compartment in front of the vehicle; this loading condition is the one producing the most downward inclination reachable by the vehicle in real circulation conditions.

#### Alternative 1

paragraph 2.1.1.3. (now 2.1.3.): the loading condition as defined in the proposed text is proposed since is the one producing the less downward (or most upward) inclination reachable by the vehicle in real circulation conditions. It is mainly based on the loading condition described in the present paragraph 2.1.1.5

#### Alternative 2

paragraph 2.1.1.3. (now 2.1.3.): the loading condition as defined in the proposed text, even being quite uncommon in the real life in case of three or more row of seats, is proposed since is the one producing the less downward (or most upward) inclination reachable by the vehicle in possible real circulation conditions. It takes into account the possibility of a three or more seats row and of a loading compartment at the rear of the vehicle. It is mainly based on suggestions from Japan and Nederland experts.

paragraphs 2.1.4. and 2.1.5. : are just the re-location of part of the text previously contained in paragraphs 2.1.1.5 and 2.1.1.6.

paragraphs 2.1.1.4., 2.1.1.5. and 2.1.1.6.: are deleted, for the reasons indicted above.

paragraph 2.1.2.: is renumbered as 2.1.6. without any change in the text.

paragraphs 2.2., 2.3. and 2.4.: are aligned to the updated text of paragraph 2.1. and editorially uniformed.

Annex 6. paragraph 2.2.: to avoid text discrepancy between paragraphs 2.6.2.1.1. and 2.6.2.1.2., the above indicate paragraphs in Annex 5 and the rest of the Regulation, also the wording of this paragraph should be updated and simplified as proposed above.

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