

## **Proposal for a new series of amendments to UN Regulation No. 48 (Installation of lighting and light-signalling devices)**

The text reproduced below was prepared by the GRE-IWG SLR as requested by GRE at its 81<sup>st</sup> session (see ECE/TRANS/WP.29/GRE/81, Par. 10). This proposal is based on document ECE/TRANS/WP.29/GRE/2019/03 taking into account the agreed modifications to the diagram introduced with GRE-81-21 (see ECE/TRANS/WP.29/GRE/81, Annex II) The modifications to the existing text of UN Regulation No. 48 are marked in **bold** for new and ~~strikethrough~~ for deleted characters.

*Paragraph 6.2.6 and related sub-paragraphs, amend to read:*

“6.2.6. Orientation.

Towards the front.

6.2.6.1. Vertical orientation

The initial downward inclination of the cut-off of the dipped-beam to be set in the unladen vehicle state with one person in the driver's seat shall be specified within an accuracy of 0.1 per cent by the manufacturer and indicated in a clearly legible and indelible manner on each vehicle close to either headlamp or the manufacturer's plate by the symbol shown in Annex 7.

The value of this indicated downward inclination shall be defined ~~in accordance with~~ **by the vehicle manufacturer in the range prescribed in paragraph 6.2.6.1.2. in relation to the dipped-beam headlamp mounting height.**

**Different values of initial downward vertical orientation for different variants/versions of the same vehicle type can be defined, provided that only the pertinent value is indicated on each variant/version.**

6.2.6.1.2. Depending on the mounting height in meters (h) of the lower edge of the apparent surface in the direction of the reference axis of the dipped-beam headlamp, measured on the unladen vehicles, the vertical inclination of the cut-off of the dipped beam, **starting from the initial inclination value set by the vehicle manufacturer as prescribed in paragraph 6.2.6.1.1., shall under all the static conditions of Annex 5, remain between the following limits and the initial aiming shall have the following values:, under all the static loading conditions of Annex 5:**

$h < 0.8$

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

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

$0.8 \leq h \leq 1.0$

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~~

**$0.5 \text{ m} \leq h \leq 0.9 \text{ m}$ :**

**the minimum vertical inclination limit is -0.2 %**

**and**

**the maximum vertical inclination limit increasing linearly, in relation to the dipped-beam headlamp mounting height, from - 1.4 % to - 1.8 %;**

**$0.9 \text{ m} < h \leq 1.2 \text{ m}$ :**

**the minimum vertical inclination limit increasing linearly, in relation to the dipped-beam headlamp mounting height, from - 0.2 % to - 0.85 %**

**and**

**the maximum vertical inclination limit increasing linearly, in relation to the dipped-beam headlamp mounting height, from - 1.8 % to - 2.45 %;**

For category N<sub>3</sub>G (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

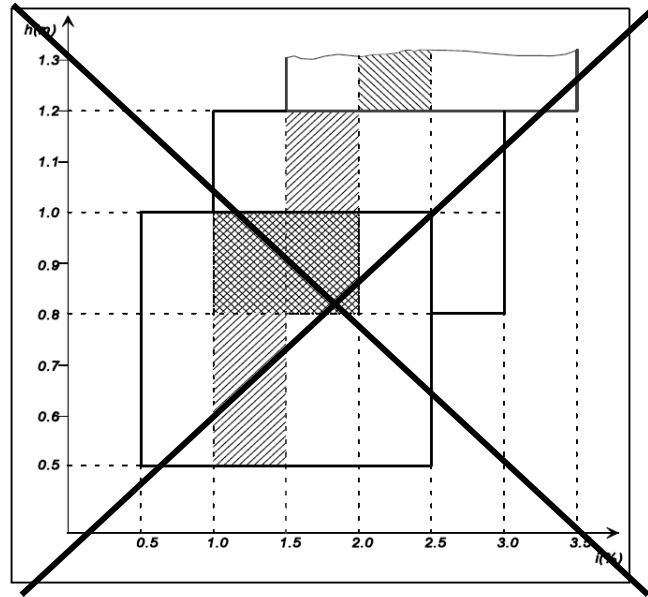
**$1.2 \text{ m} < h \leq 1.5 \text{ m}$ :**

**the minimum vertical inclination limit increasing linearly, in relation to the dipped-beam headlamp mounting height, from - 0.85 % to - 1.5 %**

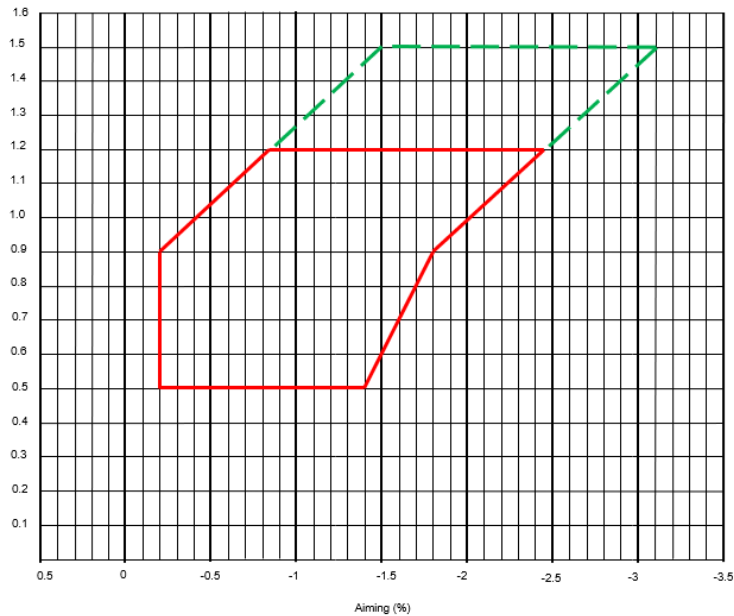
**and**

**the maximum vertical inclination limit increasing linearly, in relation to the dipped-beam headlamp mounting height, from - 2.45 % to - 3.1 %;**

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



Headlamp mounting height (m)



#### 6.2.6.2. Headlamp levelling device

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. and 6.2.6.1.2., the device shall be automatic.

6.2.6.2.2. However, devices which are adjusted manually, either continuously or non-continuously, shall be permitted, provided **that** they have a stop position at which the lamps can be returned to the initial inclination defined in paragraph 6.2.6.1.1. by means of the usual adjusting screws or similar means.

These manually adjustable devices shall be operable from the driver's seat.

Continually adjustable devices shall have reference marks indicating the loading conditions that require adjustment of the dipped-beam.

The number of positions on devices which are not continuously adjustable shall be such as to ensure compliance with the range of values prescribed in paragraph 6.2.6.1.2. in all the loading conditions defined in Annex 5.

For these devices also, the loading conditions of Annex 5 that require adjustment of the dipped-beam shall be clearly marked near the control of the device (Annex 8).

- 6.2.6.2.3. In the event of a failure of devices ~~described~~ **prescribed** in paragraphs 6.2.6.2.1. and 6.2.6.2.2., the dipped-beam shall not assume a position in which the ~~dip~~ **vertical orientation** is less **downward** than it was at the time when the failure of the device occurred.
- 6.2.6.3. Measuring procedure
- 6.2.6.3.1. After adjustment of the initial **downward** vertical inclination, the vertical inclination of the dipped-beam, expressed in per cent, shall be measured in static conditions under all the loading conditions defined in Annex 5.
- 6.2.6.3.2. The measurement of the variation of dipped-beam **downward vertical** inclination as a function of load shall be carried out in accordance with the test procedure set out in Annex 6.”

*Paragraph 6.2.9., amend to read:*

- “6.2.9. Other requirements  
The requirements of paragraph 5.5.2. shall not apply to dipped-beam headlamps.

~~Dipped beam headlamps with a light source or LED module(s) producing the principal dipped beam and having a total objective luminous flux which exceeds 2,000 lumen shall only be installed in conjunction with the installation of headlamp cleaning device(s) according to Regulation No. 45<sup>†</sup>.~~

~~With respect to vertical inclination the provisions of paragraph 6.2.6.2.2. above shall not be applied for dipped beam headlamps with a light source or LED module(s) producing the principal dipped beam and having an objective luminous flux which exceeds 2,000 lumens.~~

~~In the case of filament lamps for which more than one test voltage is specified, the objective luminous flux which produces the principal dipped beam, as indicated in the communication form for the type approval of the device, is applied.~~

~~In the case of dipped beam headlamps equipped with an approved light source, the applicable objective luminous flux is the value at the relevant test voltage as given in the relevant data sheet in the Regulation, according to which the applied light source was approved, without taking into account the tolerances to the objective luminous flux specified on this datasheet.~~

Only dipped-beam headlamps according to Regulation Nos. 98, 112 or 150 may be used to produce bend lighting.

If bend lighting is produced by a horizontal movement of the whole beam or the kink of the elbow of the cut-off, it shall be switched ON only if the vehicle is in forward motion; this shall not apply if bend lighting is produced for a right turn in right hand traffic (left turn in left hand traffic).

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<sup>†</sup> ~~Contracting Parties to the respective UN Regulations can still prohibit the use of mechanical cleaning systems when headlamps with plastic lenses, marked "PL", are installed.”~~

Paragraph 6.22.6.1. and related sub-paragraphs, amend to read:

“6.22.6.1. Vertical orientation:

6.22.6.1.1. The initial downward inclination of the cut-off of the basic ~~passing~~ **dipped**-beam to be set in the unladen vehicle state with one person in the driver's seat shall be specified ~~within an precision accuracy~~ of 0.1 per cent by the manufacturer and indicated in a clearly legible and indelible manner on each vehicle, close to either the front lighting system or the manufacturer's plate, by the symbol shown in Annex 7.

Where differing initial downward inclination are specified by the manufacturer for different lighting units that provide or contribute to the cut-off of the basic ~~passing~~ **dipped**-beam, these values of downward inclination shall be specified ~~within an precision accuracy~~ of 0.1 per cent by the manufacturer and indicated in a clearly legible and indelible manner on each vehicle, close to either the relevant lighting units or on the manufacturer's plate, **by the symbol shown in Annex 7** in such a way that all the lighting units concerned can be unambiguously identified.

**The value(s) of this (these) indicated vertical orientation(s) shall be defined by the vehicle manufacturer in the range prescribed in paragraph 6.2.6.1.2. in relation to the mounting height of the lighting units that provide or contribute to the cut-off of the basic dipped-beam.**

**Different values of initial downward vertical orientation for different variants/versions of the same vehicle type can be defined, provided that only the pertinent value is indicated on each variant/version.**

6.22.6.1.2. The downward inclination of the horizontal part of the "cut-off" of the basic ~~passing~~ **dipped**-beam shall remain between the limits indicated in paragraph 6.2.6.1.2. ~~of this Regulation~~ under all the static loading conditions of the vehicle of Annex 5 ~~of this Regulation~~; ~~and the initial aiming shall be within the specified values.~~

6.22.6.1.2.1. In case the ~~passing~~ **dipped**-beam is generated by several beams from different lighting units, the **relevant requirements** ~~provisions according to paragraph 6.22.6.1.2.~~ **as above indicated** apply to each said beam's "cut-off" (if any), which is designed to project into the angular zone, as indicated under item 9.4. of the communication form conforming to the model in Annex 1 to Regulation No. 123.

6.22.6.2. Headlamp levelling device

6.22.6.2.1. In the case where a headlamp levelling device is necessary to satisfy the requirements of paragraph 6.22.6.1.2., the device shall be automatic.

6.22.6.2.2. In the event of a failure of ~~this~~ **the device prescribed in paragraphs 6.22.6.2.1.**, the **basic** ~~passing~~ **dipped**-beam shall not assume a position in which the ~~downward inclination dip~~ **vertical orientation** is less **downward** than it was at the time when the failure of the device occurred.”

Paragraph 6.22.9.1., to be deleted and remember the following paragraphs accordingly:

~~“6.22.9.1. An AFS shall be permitted only in conjunction with the installation of headlamp cleaning device(s) according to Regulation No. 45 for at least those lighting units, which are indicated under item 9.3. of the communication form conforming to the model in Annex 1 to Regulation No. 123, if the total objective luminous flux of the light sources of these units exceeds 2,000 lm per side, and which contribute to the class C (basic) passing beam.”~~

At the end of paragraph 12., add a new paragraph 12.8. and its subparagraphs to read:

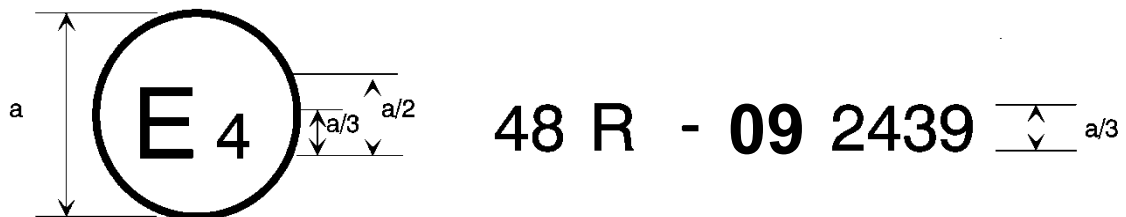
- "12.8. Transitional provisions applicable to 09 series of amendments.**
- 12.8.1. As from the official date of entry into force of the 09 series of amendments, no Contracting Party applying this UN Regulation shall refuse to grant or refuse to accept UN type approvals under this UN Regulation as amended by the 08 series of amendments.**
- 12.8.2. As of 1 September [2024] Contracting Parties applying this UN Regulation shall not be obliged to accept UN type approvals to the preceding series of amendments, first issued after 1 September [2024].**
- 12.8.3. Until 1 September [2027], Contracting Parties applying this UN Regulation shall accept UN type-approvals to the preceding series of amendments, first issued before 1 September [2024]**
- 12.8.4. As from 1 September [2027] , Contracting Parties applying this UN Regulation shall not be obliged to accept type-approvals issued to the preceding series of amendments to this UN Regulation.**
- 12.8.5. Notwithstanding the transitional provisions above, Contracting Parties who start to apply this UN Regulation after the date of entry into force of the most recent series of amendments are not obliged to accept UN type-approvals which were granted in accordance with any of the preceding series of amendments to this UN Regulation.**
- 12.8.6. Notwithstanding paragraph 12.8.4. Contracting Parties applying this UN Regulation shall continue to accept UN type-approvals to the preceding series of amendments to this UN Regulation, for the vehicle types which are not affected by the changes introduced by the 09 series of amendments.**
- 12.8.7. Contracting Parties applying this UN Regulation shall not refuse to grant UN type-approvals according to any preceding series of amendments to this UN Regulation or extensions thereof."**

Annex 2 amend to read

## **"Arrangements of approval marks**

Model A

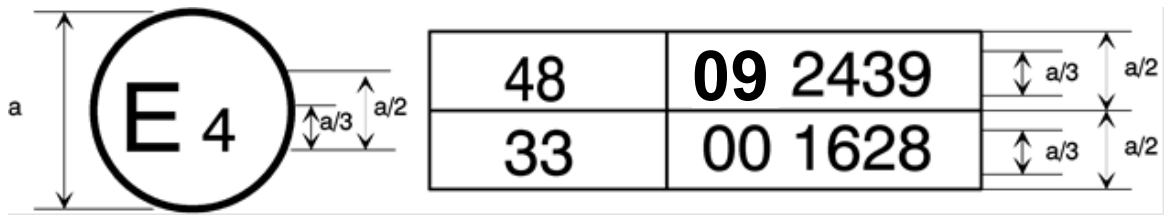
(See paragraph 4.4. of this Regulation)



a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has, with regard to the installation of lighting and light-signalling devices, been approved in the Netherlands (E 4) pursuant to Regulation No. 48 as amended by the 09 series of amendments. The approval number indicates that the approval was granted in accordance with the requirements of Regulation No. 48 as amended by the 09 series of amendments.

Model B  
(See paragraph 4.5. of this Regulation)



$a = 8 \text{ mm min.}$

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in the Netherlands (E 4) pursuant to Regulation No. 48 as amended by the 09 series of amendments and Regulation No. 33.<sup>5</sup> The approval number indicates that, at the dates when the respective approvals were given, Regulation No. 48 was amended by the 09 series of amendments and Regulation No. 33 was still in its original form.

<sup>5</sup> The second number is given merely as an example.”

*Annex 9, paragraph 1.3.2* amend 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:

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  $1.0 < h \leq 1.2 \text{ m}$ ;

1.2 per cent to 3.8 per cent for headlamp mounting height  $h > 1.2 \text{ m}$ .

**$0.5 \text{ m} \leq h \leq 0.9 \text{ m}$**

**0% minimum vertical inclination and -1,7 % to -2,1 % maximum vertical inclination, in relation to the dipped-beam headlamp mounting height.**

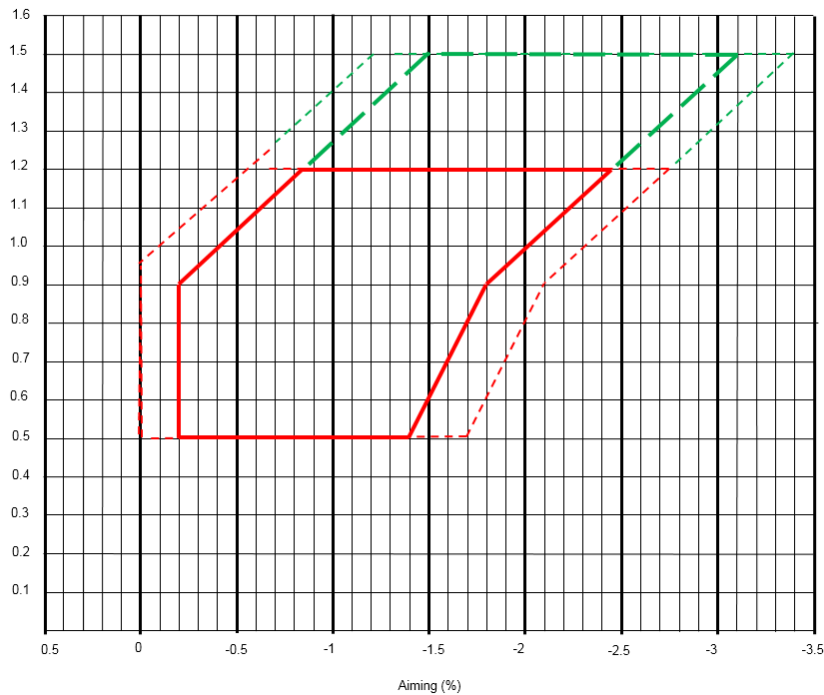
**$0.9 \text{ m} < h \leq 1.2 \text{ m}$ :**

**0% to -0,55 % minimum vertical inclination increasing linearly, in relation to the dipped-beam headlamp mounting height and  
-2,1 % to -2,75 % maximum vertical inclination limit increasing linearly, in relation to the dipped-beam headlamp mounting height**

**$1.2 \text{ m} < h \leq 1.5 \text{ m}$ :**

**-0.55 % to -1.2 % minimum vertical inclination increasing linearly, in relation to the dipped-beam headlamp mounting height and  
-2.75 % to -3.4 % maximum vertical inclination limit increasing linearly, in relation to the dipped-beam headlamp mounting height.**

Headlamp mounting height (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 lumens, 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.~~

**$h \leq 0.8$  m**

**0.7% minimum vertical inclination and 3.3% maximum vertical inclination**

**$h > 0,8$  m**

**1.2% minimum vertical inclination and 3.8% maximum vertical inclination**

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

1.3.2.1. Vehicles in category  $M_1$ :

Paragraph 2.1.1.1.

Paragraph 2.1.1.6. taking into account

Paragraph 2.1.2.

1.3.2.2. Vehicles in category  $M_2$  and  $M_3$ :

Paragraph 2.2.1.

Paragraph 2.2.2.

1.3.2.3. Vehicles in category N with load surfaces:

Paragraph 2.3.1.1.

Paragraph 2.3.1.2.



- 1.3.2.4. Vehicles in category N without load surfaces:
  - 1.3.2.4.1. Drawing vehicles for semi-trailers:
    - Paragraph 2.4.1.1.
    - Paragraph 2.4.1.2.
  - 1.3.2.4.2. Drawing vehicles for trailers:
    - Paragraph 2.4.2.1.
    - Paragraph 2.4.2.2.”