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Working Party on Lighting and Light-Signalling

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Item 4 of the provisional agenda

**Simplification of lighting and light-signalling UN Regulations**

### **Proposal for a new [09] series of amendments to UN Regulation No. 48**

#### **Submitted by the Informal Working Group on Simplification of Lighting and Light-Signalling Regulations\***

The text reproduced below was prepared by the Informal Working Group on Simplification of Lighting and Light-Signalling Regulations (IWG SLR) further to the discussions at the eighty-seventh session of the Working Party on Lighting and Light-Signalling (GRE) (ECE/TRANS/WP.29/GRE/87, para 12). This proposal, based on informal document GRE-87-09, is intended to enable the phasing out of the installation of older lamps/devices. The modifications to the existing text of UN Regulation No. 48 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 2023 as outlined in proposed programme budget for 2023 (A/77/6 (Sect. 20), table 20.6), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



## I. Proposal

*Table of contents, Annexes, Annex 7, amend to read:*

- “7 Indication of the downward inclination of the dipped-beam headlamps cut-off referred to in paragraph 6.2.6.1.1. and downward inclination of the front fog lamp cut-off referred to in paragraph 6.3.6.1.2. of this Regulation”

*Paragraph 2.7.4., amend to read:*

- “2.7.4. "Adaptive front lighting system" (or "AFS") means a lighting device ~~type approved according to Regulation No. 123,~~ providing beams with differing characteristics for automatic adaptation to varying conditions of use of the dipped-beam (passing-beam) and, if it applies, the main-beam (driving-beam).”

*Paragraph 3.2.6.2., amend to read:*

- “3.2.6.2. The related AFS control signals and their technical characteristics as defined according to ~~Annex 10 to UN Regulation No. 123 or~~ Annex 14 to UN Regulation No. 149.”

*Paragraph 6.1., amend to read:*

- “6.1. Main-beam headlamp (UN Regulations Nos. ~~98 and 112 or~~ 149)”

*Paragraph 6.1.2., amend to read:*

- “6.1.2. Number  
Two ~~or four,~~ type approved according to  
~~UN Regulation No. 98,~~  
or  
~~Class B of UN Regulation No. 112,~~  
or  
~~Classes B or D of the 00 series of amendments to UN Regulation No. 149,~~  
or  
~~Class B of the 01 and/or subsequent series of amendments to UN Regulation No. 149.~~  
Optionally, one ~~or two~~ additional pair(s) type approved according to:  
~~UN Regulation No. 98,~~  
or  
~~Classes A or B of UN Regulation No. 112,~~  
or  
~~Classes A or B or RA of the 00 or subsequent series of amendments to UN Regulation No. 149.”~~

*Paragraph 6.2., amend to read:*

- “6.2. Dipped-beam headlamp (Regulations Nos. ~~98 and 112 or~~ 149)”

*Paragraph 6.2.2., amend to read:*

- “6.2.2. Number  
Two, type approved according to  
~~UN Regulations Nos. 98 or 112, excluding Class A,~~  
or

~~–Classes B or D of the 00 series of amendments to UN Regulation No. 149,  
or~~

–Class C of the 01 ~~and~~ subsequent series of amendments to UN Regulation No. 149.”

*Paragraph 6.2.7.3.*, amend to read:

“6.2.7.3. In the case of dipped-beam headlamps **equipped with gas-discharge light sources**~~according to UN Regulation Nos. 98 or 149~~, these **light sources**~~gas-discharge light sources~~ shall remain switched ON during the main-beam operation.”

*Paragraph 6.2.9.*, amend to read:

“6.2.9. Other requirements

[6.2.9.1.] The requirements of paragraph 5.5.2. shall not apply to dipped-beam headlamps.

[6.2.9.2.] Dipped-beam headlamps with a light source or LED module(s) producing the principal dipped-beam [~~and~~] having a total objective luminous flux [for each headlamp] which exceeds 2,000 lumen[s] shall only be installed in conjunction with the installation of headlamp cleaning device(s) according to UN Regulation No. 45<sup>11</sup>.

[6.2.9.3.] 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 [for each headlamp] 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.

[6.2.9.4.] ~~Only dipped-beam headlamps according to UN Regulation Nos. 98, 112 or 149 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).”

*Paragraph 6.3.2.*, amend to read:

“6.3.2. Number

Two; ~~complying with Class “F3” and type-approved according to the requirements of the 03 and or~~ subsequent series of amendments to UN Regulation No. 19, or **to the 00 or subsequent series of amendments to the requirements of UN Regulation No. 149.**”

*Paragraphs 6.3.6.*, amend to read:

“6.3.6. Orientation

Toward the front.

6.3.6.1. Vertical orientation

- ~~6.3.6.1.1. In the case of class "B" front fog lamps the vertical inclination of the cut-off to be set in the unladen vehicle state with one person in the driver's seat shall be -1.5 per cent or lower.<sup>43</sup>~~
- ~~6.3.6.1.2. In the case of class "F3" front fog lamps:~~
- 6.3.6.1.2.1. When the total objective luminous flux of the light source for each front fog lamp does not exceed 2,000 lumens:
- 6.3.6.1.2.1.1. The vertical inclination of the cut-off to be set in the unladen vehicle state with one person in the driver's seat shall be - 1.0 per cent or lower
- 6.3.6.1.2.2. When the total objective luminous flux of the light source for each front fog lamp exceeds 2,000 lumens:
- 6.3.6.1.2.2.1. Depending on the mounting height in metres (h) of the lower edge of the apparent surface in the direction of the reference axis of the front fog lamp, measured on the unladen vehicles, the vertical inclination of the cut-off shall under all the static conditions of Annex 5 automatically remain between the following values:
- |                 |  |
|-----------------|--|
| $h \leq 0.8$    |  |
| Limits:         | between -1.0 per cent and -3.0 per cent  |
| Initial aiming: | between -1.5 per cent and -2.0 per cent  |
| $h > 0.8$       |  |
| Limits:         | between -1.5 per cent and -3.5 per cent  |
| Initial aiming: | between -2.0 per cent and -2.5 per cent. |
- 6.3.6.1.2.2.2. The initial downward inclination of the cut-off to be set in the unladen vehicle state with one person in the driver's seat shall be specified within an accuracy of one decimal place by the manufacturer and indicated in a clearly legible and indelible manner on each vehicle close to either the front fog lamp or the manufacturer's plate or in combination with the indication referred to in paragraph 6.2.6.1.1. by the symbol shown in Annex 7 to this Regulation. The value of this indicated downward inclination shall be defined in accordance with paragraph 6.3.6.1.2.2.1.
- 6.3.6.2. Front fog lamp levelling device
- 6.3.6.2.1. Where a levelling device is fitted for a front fog lamp, independent or grouped with other front lighting and light signalling functions, it shall be such that the vertical inclination, under all the static loading conditions of Annex 5 of this Regulation, shall remain between the limits prescribed in paragraph 6.3.6.1.2.2.1.
- 6.3.6.2.2. In the case where the front fog lamp ~~of category "F3"~~ is part of the dipped-beam headlamp or is part of an AFS system, the requirements of paragraph 6.2.6. shall be applied during the use of the front fog beam as part of the dipped-beam.
- In this case the levelling limits defined in paragraph 6.2.6. may be applied also when this front fog lamp is used as such.
- 6.3.6.2.3. The levelling device may also be used to automatically adapt the inclination of the front fog beam in relation to the prevailing ambient conditions, provided that the limits for the downward inclination specified in paragraph 6.3.6.1.2.2.1. are not exceeded.
- 6.3.6.2.4. In the case of a failure of the levelling device, the front fog beam shall not assume a position in which the cut off is less inclined than it was at the time when the failure of the device occurred.”

*Paragraphs 6.3.9.*, amend to read:

“6.3.9. Other requirements

In the case where there is a positive indication in the communication form ~~in~~ **under** item ~~10.9~~ **“Luminous intensity is variable”** of Annex 1, of UN Regulations Nos. 19 or ~~item 9.5.8. of Annex 1 of UN Regulation No. 149,~~ the alignment and the luminous intensities of the class “F3” front fog beam may be automatically adapted in relation to the prevailing ambient conditions. Any variations of the luminous intensities or alignment shall be performed automatically and in such a way that no discomfort, neither for the driver nor to other road users, is caused.”

*Paragraph 6.4.2.*, insert a new subparagraph to read:

“6.4.2. Number

6.4.2.1. One device mandatory and a second device optional on motor vehicles of category M<sub>1</sub> and on all other vehicles with a length not exceeding 6,000 mm.

6.4.2.2. Two devices mandatory and two devices optional on all vehicles with a length exceeding 6,000 mm, except vehicles of category M<sub>1</sub>.

**6.4.2.3. These devices shall be type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 23, or to the 00 or subsequent series of amendments to UN Regulation No. 148.”**

*Paragraph 6.5.2.*, amend to read:

“6.5.2. Number

According to the arrangement.

**The devices shall be type-approved according to the 01 or subsequent series of amendments to UN Regulation No. 6, or to the 00 or subsequent series of amendments to UN Regulation No. 148.”**

*Paragraph 6.7.2.*, amend to read:

“6.7.2. Number

Two S1 or S2 category devices and one S3 or S4 category device on all categories of vehicles.

**The devices shall be type-approved according to the 02 or subsequent series of amendments to UN Regulation No. 7, or to the 00 or subsequent series of amendments to UN Regulation No. 148.”**

*Paragraph 6.8.2.*, amend to read:

“6.8.2. Number

Such that the device illuminates the site of the registration plate according to the type-approval documentation of the device.

**The devices shall be type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 4, or to the 00 or subsequent series of amendments to UN Regulation No. 148.”**

*Paragraph 6.9.2.* amend to read:

“6.9.2. Number

Two, **type-approved according to the 02 or subsequent series of amendments to UN Regulation No. 7, or to the 00 or subsequent series of amendments to UN Regulation No. 148.”**

*Paragraph 6.10.2.*, amend to read:

“6.10.2. Number

Two, **type-approved according to the 02 or subsequent series of amendments to UN Regulation No. 7, or to the 00 or subsequent series of amendments to UN Regulation No. 148.**”

*Paragraph 6.11.2., amend to read:*

“6.11.2. Number

One or two, **type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 38, or to the 00 or subsequent series of amendments to UN Regulation No. 148.**”

*Paragraph 6.12.2., amend to read:*

“6.12.2. Number

According to the arrangement.

**The devices shall be type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 77, or to the 02 or subsequent series of amendments to UN Regulation No. 7, or to the 00 or subsequent series of amendments to UN Regulation No. 148.**”

*Paragraph 6.13.2., amend to read:*

“6.13.2. Number

Two visible from the front and two visible from the rear.

Additional lamps may be fitted as follows:

- (a) Two visible from the front;
- (b) Two visible from the rear.

**The devices shall be type-approved according to the 02 or subsequent series of amendments to UN Regulation No. 7, or to the 00 or subsequent series of amendments to UN Regulation No. 148**”

*Paragraph 6.14.2., amend to read:*

“6.14.2. Number

Two, ~~the performances of which shall~~ **type-approved according to conform** ~~to~~ the requirements concerning Class IA or IB retro-reflectors in **the 02 or subsequent series of amendments to UN Regulation No. 3, or in the 00 or subsequent series of amendments to UN Regulation No. 150.** Additional retro-reflecting devices and materials (including two retro-reflectors not complying with paragraph 6.14.4. below), are permitted provided they do not impair the effectiveness of the mandatory lighting and light-signalling devices.”

*Paragraph 6.15.2., amend to read:*

“6.15.2. Number

Two, ~~the performances of which shall~~ **type-approved according to conform** ~~to~~ the requirements concerning Class IIIA or Class IIIB retro-reflectors in **the 02 or subsequent series of amendments to UN Regulation No. 3, or in the 00 or subsequent series of amendments to UN Regulation No. 150.** Additional retro-reflecting devices and materials (including two retro-reflectors not complying with paragraph 6.15.4. below), are permitted provided they do not impair the effectiveness of the mandatory lighting and light-signalling devices.”

*Paragraph 6.16.2., amend to read:*

“6.16.2. Number

Two, ~~the performances of which shall conform to~~ **type-approved according to conform** ~~to the requirements concerning Class IA or IB retro-reflectors in the 02 or subsequent series of amendments to UN Regulation No. 3, or in the 00 or subsequent series of amendments to UN Regulation No. 150.~~ Additional retro-reflecting devices and materials (including two retro-reflectors not complying with paragraph 6.16.4. below), are permitted provided they do not impair the effectiveness of the mandatory lighting and light-signalling devices.”

*Paragraph 6.17.2., amend to read:*

“6.17.2. Number

Such that the requirements for longitudinal positioning are complied with. ~~These performances of these devices shall conform to~~ **be type-approved according to conform** ~~to the requirements concerning Class IA or IB retro-reflectors in the 02 or subsequent series of amendments to UN Regulation No. 3, or in the 00 or subsequent series of amendments to UN Regulation No. 150.~~ Additional retro-reflecting devices and materials (including two retro-reflectors not complying with paragraph 6.17.4. below), are permitted provided they do not impair the effectiveness of the mandatory lighting and light-signalling devices.”

*Paragraph 6.18.2., amend to read:*

“6.18.2. Minimum number per side

Such that the rules for longitudinal positioning are complied with.

**The devices shall be type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 91, or to the 00 or subsequent series of amendments to UN Regulation No. 148.”**

*Paragraph 6.19.2., amend to read:*

“6.19.2. Number

Two, **type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 87, or to the 00 or subsequent series of amendments to UN Regulation No. 148.”**

*Paragraph 6.20.2., amend to read:*

“6.20.2. Number

Two, **type-approved according to the 01 or subsequent series of amendments to UN Regulation No. 119, or to the 00 or subsequent series of amendments to UN Regulation No. 149.”**

*Paragraph 6.21.1.2.5., amend to read:*

“6.21.1.2.5. In cases where the manufacturer, after verification by the Technical Service, can prove to the satisfaction of the Type Approval Authority that it is impossible, due to the operational requirements which may require special shape, structure or design of the vehicle, to comply with the requirements contained in paragraphs 6.21.2. to 6.21.7.5. below, then partial fulfilment of some of these requirements is acceptable. This is conditional upon a portion of the requirements being met where possible, and the application of conspicuity markings that partially meet requirements maximised on the vehicle structure. This may include fitting of additional brackets or plates containing material ~~compliant with~~ **type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 104, or to the 00 or subsequent series of amendments to UN Regulation No. 150,** where structure is available to ensure clear and uniform signalling compatible with the objective of conspicuity.

Where partial fulfilment is deemed acceptable, retro-reflective devices ~~like retro-reflectors of class~~ **Class IVA type-approved according to ~~of the 02 or subsequent series of amendments to~~ UN Regulation No. 3, or ~~the 00 or subsequent series of amendments to~~ UN Regulation No. 150, or brackets containing retro-reflecting material ~~compliant with~~ **type-approved according to the photometric requirements of Class C of the 00 or subsequent series of amendments to UN Regulation No. 104, or the 00 or subsequent series of amendments to UN Regulation No. 150,** may substitute part of the required conspicuity markings. In this case, at least one of these retro-reflective devices shall be installed per 1,500 mm.**

The necessary information shall be indicated in the communication form.”

*Paragraph 6.21.4.2.1.1., amend to read:*

“6.21.4.2.1.1. For motor vehicles, each end of the vehicle, or in the case of tractors for semi-trailers each end of the cab;

However, an alternative marking mode within 2,400 mm from the front end of the motor vehicle is allowed where a series of retro-reflectors of Class IVA **type-approved according to ~~of the 02 or subsequent series of amendments to~~ UN Regulation No. 3, or ~~the 00 or subsequent series of amendments to~~ UN Regulation No. 150, or Class C **type-approved according to ~~of the 00 or subsequent series of amendments to~~ UN Regulation No. 104 or ~~the 00 or subsequent series of amendments to~~ UN Regulation No. 150** are mounted followed by the required conspicuity marking as follows:**

...”

*Paragraph 6.21.7.4., amend to read:*

“6.21.7.4. Where rear marking plates **type-approved according to ~~conforming either to~~ the 01 or subsequent series of amendments to UN Regulation No. 70, or to ~~the 00 or subsequent series of amendments to~~ UN Regulation No. 150** are installed these may be considered, at the discretion of the manufacturer, as part of the conspicuity marking to the rear, for the purposes of calculating the length of the conspicuity marking and its proximity to the side of the vehicle.”

*Paragraph 6.22., amend to read:*

“6.22. Adaptive front lighting system (AFS) (UN Regulation No. ~~423-04~~ 149)

Where not otherwise specified below, the requirements for main-beam headlamps (paragraph 6.1.) and for dipped-beam headlamps (paragraph 6.2.) of this Regulation apply to the relevant part of the AFS.”

*Paragraph 6.22.2., amend to read:*

“6.22.2 Number

One, **type-approved according to the 01 or subsequent series of amendments to UN Regulation No. 149.**”

*Paragraph 6.22.6.1.2.1., amend to read:*

“6.22.6.1.2.1. In case the passing-beam is generated by several beams from different lighting units, the provisions according to paragraph 6.22.6.1.2. above 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 UN Regulation No. ~~423-04~~ 149.”

*Paragraph 6.22.6.3., amend to read:*

“6.22.6.3. Horizontal orientation:

For each lighting unit the kink of the elbow of the cut-off line, if any, when projected on the screen, shall coincide with the vertical line through the reference axis of said lighting unit. A tolerance of 0.5 degree to that side which



is the side of the traffic direction shall be allowed. Other lighting units shall be adjusted according to the applicant's specification, as defined according to ~~Annex 10 of UN Regulation No. 123 or Annex 14 of~~ UN Regulation No. 149.”

*Paragraph 6.22.7.4.3.*, amend to read:

“6.22.7.4.3. ...

- (b) In case of a ~~class~~**Class E** mode of the passing-beam which, according to the system's approval documents /communication sheet, complies with a "data set" ~~of UN Regulation No. 123, Annex 3, Table 6, or of E1, E2 or E3, as specified in the~~ of UN Regulation No. 149, ~~Table 14 only.~~

Data set E1: the vehicle's speed exceeds 100 km/h (E1-signal applies);

Data set E2: the vehicle's speed exceeds 90 km/h (E2-signal applies);

Data set E3: the vehicle's speed exceeds 80 km/h (E3-signal applies).

...”

*Paragraph 6.22.8.2.*, amend to read:

“6.22.8.2. A visual failure tell-tale for AFS is mandatory. It shall be non-flashing. It shall be activated whenever a failure is detected with respect to the AFS control signals or when a failure signal is received in accordance with ~~paragraph 5.9. of UN Regulation No. 123 or~~ paragraph 4.13. of UN Regulation No. 149. It shall remain activated while the failure is present. It may be cancelled temporarily, but shall be repeated whenever the device which starts and stops the propulsion system is switched ON and OFF.”

*Paragraph 6.22.8.4.*, amend to read:

“6.22.8.4. A tell-tale to indicate that the driver has set the system into a state according to ~~paragraph 5.8. of UN Regulation No. 123 or~~ paragraph 4.12. of UN Regulation No. 149 is optional.”

*Paragraph 6.22.9.1.*, replace existing text to read:

“6.22.9.1. **An AFS shall be permitted only in conjunction with the installation of headlamp cleaning device(s) according to UN Regulation No. 45<sup>16</sup> for at least those lighting units, which are indicated under item 9.3.2.3. of the communication form conforming to the model in Annex 1 to UN Regulation No. 149, 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.**”

*Paragraph 6.22.9.5.*, amend to read:

“6.22.9.5. The means according to the provisions of ~~paragraph 5.8. of UN Regulation No 123 or~~ paragraph 4.12 of UN Regulation No. 149, which allow the vehicle to be used temporarily in a territory with the opposite direction of driving than that for which approval is sought, shall be explained in detail in the owner's manual.”

*Paragraph 6.26.2.*, amend to read:

“6.26.2. Number

One or two (one per side), **type-approved according to the 00 or subsequent series of amendments to UN Regulation No. 23, or to the 00 or subsequent series of amendments to UN Regulation No. 148.**”

*Annex 7*, amend the title, and update the table of contents accordingly, to read:

## “Annex 7

### **Indication of the downward inclination of the dipped-beam headlamps cut-off referred to in paragraph 6.2.6.1.1. and downward inclination of the front fog lamp cut-off referred to in paragraph 6.3.6.1.2. of this Regulation”**

*Annex 9, paragraphs 1.3., 1.3.1. and 1.3.2., amend to read:*

“1.3. Alignment of dipped-beam headlamps and ~~class "F3"~~ front fog lamps towards the front

1.3.1. Initial downward inclination

The initial downward inclination of the cut-off of the dipped-beam and the ~~class "F3"~~ front fog lamps shall be set to the plated figure as required and shown in Annex 7.

Alternatively, the manufacturer shall set the initial aim to a figure that is different from the plated figure where it can be shown to be representative of the type approved when tested in accordance with the procedures contained in Annex 6 and in particular paragraph 4.1.

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 $1.0 < h \leq 1.2$ 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 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.

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

### A. General

1. This proposal is based on the initial request from the expert from the European Commission during the eighty-fifth session of GRE, by proposing alternative transitional provisions to the new 01 series of amendments to UN Regulation Nos. 148, 149 and 150 (informal document GRE-85-30 and ECE/TRANS/WP.29/GRE/85, para. 10). IWG SLR was

requested to consider the issue and to report back to GRE about the most appropriate way to amend the affected UN Regulations. The question was whether it would be at a device level or at the installation level.

2. After analysis, IWG SLR agreed that the most practical way to introduce changes made to the 01 series of the device UN Regulations (Nos. 148, 149 and 150) into the UN Regulations for installation of lighting and light-signalling Devices (Nos. 48, 53, 74 and 86) was to prescribe them in the individual specifications (paragraph 6) of each lighting and light signalling function. During the eighty-sixth session of GRE, this approach was generally supported with the request to avoid proliferation of new series of amendments to the installation UN Regulations (ECE/TRANS/WP.29/GRE/86, para. 9).

3. To determine which requirements needed to be added into UN Regulation No. 48, the International Organization of Motor Vehicle Manufacturers (OICA) initially conducted an evaluation of the technical changes (in terms of increase in performance) that were made to the mandatory devices in the 01 series of the three device UN Regulations during the Stage 2 / Step 1 of the SLR work (informal document SLR-54-10).

4. As a result of the evaluation, it was evident that the main technical changes were introduced into UN Regulation No. 149, as summarized below:

- Asymmetrical passing beam headlamps: revised and unified beam pattern for passing beams, adaptive front-lighting systems (AFS).
  - AFS New passing beam classes (standard beams & AFS)
  - Improved and simplified photometric tables
- Driving beam headlamps: Revised and unified beam pattern for driving beams.
  - New driving beam classes
  - Improved and simplified photometric tables (bigger measurement area for better harmonization with the United States of America)
  - Introduction of auxiliary driving beam
- Cornering lamps: Revised and unified beam pattern for cornering lamps
  - Increase of required minimum level (for harmonization with the United States of America). Cornering lamps are optional.
- Front fog lamps: only Class “F3” is permitted for new vehicle types

5. For transparency and for the sake of clarity, the proposal also specifies – for those functions that had no increase in performance (e.g. paragraph 6.5.2. “Direction-indicator lamp”) – the applicable series of amendments of the pertinent UN Regulations.

6. The fitment of the lamps, whether mandatory or optional, was also taken into account where applicable.

## **B. Specific changes made to individual paragraphs**

*Paragraph 2.7.4.*

7. Removal of old reference to UN Regulation No. 123.

*Paragraph 3.2.6.2.*

8. Removal of old reference to UN Regulation No. 123.

### Driving Beam and Passing Beam Headlamps

*Paragraphs 6.1., 6.2. and 6.2.9.*

9. Removal of reference to the old device UN Regulations and original series of UN Regulation No. 149.

*Paragraphs 6.1.2. and 6.2.2.*

10. Removal of references to the device UN Regulations which have now been superseded by the 01 series of UN Regulation No. 149. Introduction of reference to ‘01 or subsequent’ series of amendments. In paragraph 6.1.2., the wording was improved to avoid any misinterpretation.

*Paragraph 6.2.7.3.*

11. Editorial corrections in the requirement for dipped-beam headlamps equipped with gas-discharge light sources, to clarify the provision.

*Paragraph 6.2.9.*

12. A sentence in this paragraph is deleted because, in this proposal, only Class C dipped-beam headlamps type-approved according to the 01 or subsequent series of amendments to UN Regulation No. 149 are allowed (paragraph 6.2.2.). The proposal reflects in square brackets the modifications agreed at the eighty-seventh session of GRE (ECE/TRANS/WP.29/GRE/2022/18) and submitted to the 189th session of the World Forum (ECE/TRANS/WP.29/2023/30).

Front fog lamp

*Paragraph 6.3.2.*

13. Since the performance of Class “F3” front fog lamps has not changed from UN Regulation No. 19 to UN Regulation No. 149, we propose to continue allowing the installation of lamps type-approved according to UN Regulation No. 19 and the original series of amendments to UN Regulation No. 149. However, to guarantee the latest performance level, we have specified that only Class “F3” front fog lamps are allowed. Installation of Class “B” front fog lamps is no longer permitted. It should also be noted that installation of front fog lamps is optional. Allowing installation of already approved front fog lamps would avoid unnecessary administrative burden (re-approval, update of documents and markings).

14. Editorial correction: change “and” to “or”, for subsequent series of amendments to UN Regulation No. 19.

*Paragraph 6.3.6.*

15. Editorial changes due to the deletion of Class B.

*Paragraph 6.3.9.*

16. Editorial improvement and clarification to avoid wrong references in the future.

Adaptive front-lighting systems (AFS)

*Paragraph 6.22.*

17. Removal of old reference to UN Regulation No. 123.

*Paragraph 6.22.2.*

18. Introduction of reference to the “01 or subsequent series of amendments to UN R149”.

*Paragraphs 6.22.6.1.2.1., 6.22.6.3., 6.22.8.2., 6.22.8.4. and 6.22.9.5.*

19. Removal of references to the old device regulations. For paragraph 6.22.6.3. only: editorial correction to replace “of” with “to”.

*Paragraph 6.22.7.4.3.*

20. Deletion of references to old device UN Regulation No. 123 and editorial improvements indicating the specific Classes.

*Paragraph 6.22.9.1.*

21. Removal of references to the old device UN Regulations. Correction of paragraph numbering reference to the communication form. The proposal includes the modifications

agreed at the eighty-seventh session of GRE (ECE/TRANS/WP.29/GRE/2022/18) and submitted to the 189th session of the World Forum (ECE/TRANS/WP.29/2023/30).

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