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Item 4.9.13 of the provisional agenda

1958 Agreement:

Consideration of draft amendments to existing

UN Regulations submitted by GRE

Proposal for a new 09 series of amendments to UN Regulation No. 48 (Installation of lighting and light-signalling devices)

Submitted by the Working Party on Lighting and Light-Signalling*

The text reproduced below was adopted by the Working Party on Lighting and Light-Signalling (GRE) at its eighty-ninth session (ECE/TRANS/WP.29/GRE/89, para. 21). It is based on the consolidated text in informal document GRE-89-02-Rev.3. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration at their March 2024 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2024 as outlined in proposed programme budget for 2024 (A/78/6 (Sect. 20), table 20.5), 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.



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. of this Regulation”

Paragraph 2.5.3., amend to read:

“2.5.3. *“Direction-indicator lamp”* means the lamp used to indicate to other road-users that the driver intends to change direction to the right or to the left. A direction-indicator lamp or lamps may also be used according to the provisions of UN Regulation No. 97, 116, 162 or 163.”

Paragraph 2.5.18., amend to read:

“2.5.18. *“Exterior courtesy lamp”* means a lamp used to provide supplementary illumination to assist the vehicle user to approach or depart, enter or exit, load or unload the vehicle.”

Paragraph 2.5.20., amend to read:

“2.5.20. *“External status indicator”* means an optical signal mounted on the outside of the vehicle to indicate the status or the change of the status for Vehicle Alarm System (VAS), Alarm System (AS) and immobilizer of UN Regulation No. 97, 116, 162 or 163, when the vehicle is parked.”

Insert a new paragraph 2.6.4. to read:

“2.6.4. *“Answer-back signal”* means a signal used to assist the vehicle user to identify and find his/her car under the park condition of a vehicle.”

Paragraph 2.7.4., amend to read:

“2.7.4. *“Adaptive front lighting system”* (or *“AFS”*) means a lighting device, 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 2.10.8., amend to read:

“2.10.8. *“Photometric stability has occurred”* means the variation of the luminous intensity for the specified test point is less than 3 per cent within any 15-minute period or, alternatively less than 1 per cent within any 5-minute period.”

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 14 to UN Regulation No. 149.”

Insert a new paragraph 5.9.4., to read:

“5.9.4. Answer-back signal may flash and/or vary in luminous intensity and/or vary in apparent surface.

The lamp(s) used for answer-back signal shall operate according to the conditions specified in general specifications and/or in dedicated paragraph 6.27.”

Paragraph 5.10.4.3., amend to read:

“5.10.4.3. In case of doubt, the requirement above shall be deemed fulfilled if the luminous intensity of the red light emitted to the front and/or the white light emitted to the rear, as verified during type approval of the lamps, is not more than 0.25 cd per lamp taking into account the influence of the vehicle body if applicable.”

Paragraph 5.15., amend to read:

- "5.15. The colours of the light emitted by the lamps¹⁰ are the following:
 ...
- | | |
|--|--|
| Adaptive front-lighting systems (AFS): | White |
| Exterior courtesy lamp: | White |
| | In addition, in accordance with the individual specifications applicable to the specific lamp used for the exterior courtesy lamp. |
| Manoeuvring lamp: | White |
| Answer-back signal: | In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal." |

Paragraph 6.1., amend to read:

"6.1. Main-beam headlamp"

Paragraph 6.1.2., amend to read:

- "6.1.2. Number
- Two, type approved according to Class B of the 01 or subsequent series of amendments to UN Regulation No. 149.
- Optionally, one or two additional pair(s) type approved according to 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"

Paragraph 6.2.2., amend to read:

- "6.2.2. Number
- Two, type approved according to Class C of the 01 or subsequent series of amendments to UN Regulation No. 149."

Paragraph 6.2.6.1. and related subparagraphs, amend to read:

6.2.6.1. Vertical inclination

6.2.6.1.1. Initial downward inclination

The initial downward inclination of the cut-off of the passing-beam shall be:

- set in the unladen vehicle state with one person in the driver's seat and
- specified within an accuracy of 0.1 per cent by the manufacturer and
- within the range defined in paragraph 6.2.6.1.2.

The value of this specified initial downward inclination shall be 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.

Different values of the initial downward inclination for different variants/versions of the same vehicle type may be specified, within the range defined in paragraph 6.2.6.1.2., provided that only the pertinent value is indicated on each variant/version.

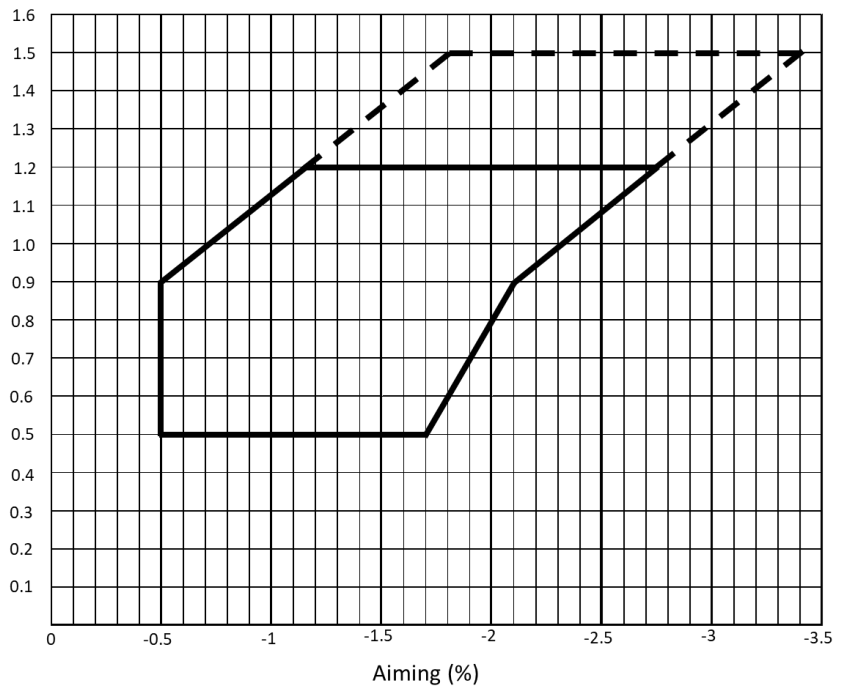
6.2.6.1.2. Vertical inclination limits of the cut-off

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 downward inclination value set by the vehicle manufacturer as prescribed in paragraph 6.2.6.1.1., shall remain between the following limits under all the static loading conditions of Annex 5:

Mounting height h [m]	Upper inclination limit [per cent]	Lower inclination limit [per cent]
$0.5 \leq h \leq 0.9$	-0.50	$-(h + 1.2)$
$0.9 < h \leq 1.2$	$-(h \times 2.17 - 1.45)$	$-(h \times 2.17 + 0.15)$
$1.2 < h \leq 1.5$		

The above limits are summarized in the diagram below.

Headlamp mounting height (m)



The area within the dashed line indicates the extension of the aiming diagram only valid for M₂G, M₃G, N₂G, N₃G (off-road) vehicles.”

Paragraph 6.2.6.2. and related subparagraphs, amend to read:

“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, shall only be permitted for vehicles of categories M₂G, M₃G, N₂G, N₃G, provided 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 easily visible, reachable and identifiable by the driver in accordance with the requirements of UN Regulation No. 121.

The number of positions on devices to adjust the dipped-beam headlamps 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.

Requirements of controls for the headlamps leveling devices are specified in Annex 8.

The different positions to adjust the dipped-beam headlamps shall be explained in the owner's handbook.

- 6.2.6.2.3. In the event of a failure of devices 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 vertical inclination is less downward than it was at the time when the failure of the device occurred.”

Paragraph 6.2.6.3. and related subparagraphs, amend to read:

“6.2.6.3. Measuring procedure

- 6.2.6.3.1. After adjustment of the initial downward 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 inclination as a function of load shall be carried out in accordance with the test procedure set out in Annex 6.”

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, these light sources shall remain switched ON during the main-beam operation.”

Paragraph 6.2.8.2., amend to read:

“6.2.8.2. A visual failure tell-tale whether flashing or not is mandatory:

- (a) In the case where the whole beam or the kink of the elbow of the cut-off is moved to produce bend lighting; or
- (b) If one or more light source module(s) or non-replaceable light source(s) or if more than one UN approved light source(s) are used to produce the principal dipped beam, except when they are wired so that the failure of any one of them causes all of them to stop emitting light.

It shall be activated:

- (a) In the event of a malfunction of the displacement of the kink of the elbow of the cut-off; or
- (b) In case of a failure of any one of the light source module(s) or non-replaceable light source(s) or UN approved light source(s) producing the principal dipped-beam, except when they are wired so that the failure of any one of them causes all of them to stop emitting light.

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 6.2.9.3., amend to read:

- “6.2.9.3. 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.”

Paragraph 6.2.9.4., amend to read:

“6.2.9.4. 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., amend to read:

“6.3. Front fog lamp”

Paragraph 6.3.2., amend to read:

“6.3.2. Number

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

Paragraphs 6.3.6. and its subparagraphs, amend to read:

“6.3.6. Orientation

Toward the front.

6.3.6.1. Vertical orientation

6.3.6.1.1. When the total objective luminous flux of the light source for each front fog lamp does not exceed 2,000 lumens:

6.3.6.1.1.1. 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. When the total objective luminous flux of the light source for each front fog lamp exceeds 2,000 lumens:

6.3.6.1.2.1. 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. 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 6.3.6.1.2.1.

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 6.3.6.1.2.1.

- 6.3.6.2.2. In the case where the front fog lamp 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 6.3.6.1.2.1. 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 under item “*Luminous intensity is variable*” of Annex 1 to UN Regulations Nos. 19 or 149, the alignment and the luminous intensities of the 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., amend to read:

- “6.4. Reversing lamp”

Insert a new paragraph 6.4.2.3. to read:

- “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., amend to read:

- “6.5. Direction-indicator lamp”

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 6.5.8., amend to read:

- “6.5.8. Tell-tale

Operating tell-tale mandatory for direction-indicator lamps of categories 1, 1a, 1b, 2a and 2b. It may be visual or auditory or both. If it is visual it shall be a flashing light which, at least in the event of the malfunction of any of these direction-indicator lamps, is either extinguished, or remains alight without flashing, or shows a marked change of frequency. If it is entirely auditory it shall be clearly audible and shall show a marked change of frequency, at least in the event of the malfunction of any of these direction-indicator lamps.

It shall be activated by the signal produced according to:

- paragraph 6.2.2. of UN Regulation No. 6, or
- paragraph 5.6.3. of the 00 series of amendments to UN Regulation No. 148, or
- paragraph 4.6.1.4. of the 01 series of amendments to UN Regulation No. 148, or
- another suitable way.

If a motor vehicle is equipped to draw a trailer, it shall be fitted with a special visual operational tell-tale for the direction-indicator lamps on the trailer unless the tell-tale of the drawing vehicle allows the failure of any one of the direction-indicator lamps on the vehicle combination thus formed to be detected.

For the optional direction-indicator lamps on motor vehicles and trailers, operating tell-tale shall not be mandatory.”

Paragraph 6.7., amend to read:

“6.7. Stop lamp”

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., amend to read:

“6.8. Rear registration plate lamp”

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., amend to read:

“6.9. Front position lamp”

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., amend to read:

“6.10. Rear position lamp”

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., amend to read:

“6.11. Rear fog lamp”

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., amend to read:

“6.12. Parking lamp”

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., amend to read:

“6.13. End-outline marker lamp”

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., amend to read:

“6.14. Rear retro-reflector, non-triangular”

Paragraph 6.14.2., amend to read:

“6.14.2. Number

Two, type-approved according 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., amend to read:

“6.15. Rear retro-reflector, triangular”

Paragraph 6.15.2., amend to read:

“6.15.2. Number

Two, type-approved according 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., amend to read:

“6.16. Front retro-reflector, non-triangular”

Paragraph 6.16.2., amend to read:

“6.16.2. Number

Two, type-approved according 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., amend to read:

“6.17. Side retro-reflector, non-triangular”

Paragraph 6.17.2., amend to read:

“6.17.2. Number

Such that the requirements for longitudinal positioning are complied with. These devices shall be type-approved according 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., amend to read:

“6.18. Side-marker lamps”

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., amend to read:

“6.19. Day-time running lamp”

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 6.19.7.5., amend to read:

“6.19.7.5. When daytime running lamps are switched ON, the rear position lamps shall be switched ON. In addition, any other lamp(s) mentioned in paragraph 5.11. may also be switched ON.

However, the rear position lamps and the other lamp(s) mentioned in paragraph 5.11. may be switched OFF when the daytime running lamps are switched ON, and may remain switched OFF as long as the ambient light conditions outside vehicle are above 7,000 lux (measured according to the requirements of Annex 13).”

Paragraph 6.20., amend to read:

“6.20. Cornering lamp”

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., amend to read:

“6.21. Conspicuity markings”

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 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 of Class IVA type-approved according to 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 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 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 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 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)

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. and related subparagraphs, amend to read:

“6.22.6.1. Vertical inclination:

6.22.6.1.1. The initial downward inclination of the cut-off of the basic passing-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 the front lighting system or the manufacturer's plate, by the symbol shown in Annex 7.

Where differing initial downward inclinations are specified by the manufacturer for different lighting units that provide or contribute to the cut-off of the basic passing-beam, these values of downward inclination 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 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 initial downward inclination(s) shall be specified by the vehicle manufacturer within the range defined 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 passing-beam.

Different values of the initial downward inclination for different variants/versions of the same vehicle type may be specified, within the range defined in paragraph 6.2.6.1.2., 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-beam shall remain between the limits indicated in paragraph 6.2.6.1.2. under all the static loading conditions of the vehicle of Annex 5.

6.22.6.1.2.1. In case the passing-beam is generated by several beams from different lighting units, the relevant requirements as above indicated apply to each said beam's "cut-off" (if any), which is designed to project into the angular zone, as indicated in Annex 1 to UN Regulation No. 149.”

Paragraph 6.22.6.2. and related subparagraphs, amend to read:

“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 device, the basic passing beam shall not assume a position in which the vertical inclination is less downward than it was at the time when the failure of the device occurred.”

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 14 to UN Regulation No. 149.”

Paragraph 6.22.7.4.3., amend to read:

“6.22.7.4.3. ...

(b) In case of a Class E mode of the passing beam which, according to the system's approval documents /communication sheet, complies with a "data set" of E1, E2 or E3, as specified in UN Regulation No. 149.

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 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 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. 45¹⁶ 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 6.22.9.6., amend to read:

“6.22.9.6. The means according to the provisions of 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.”

Paragraphs 6.24. to 6.24.3., amend to read:

- "6.24. Exterior courtesy lamp
- 6.24.1. Presence
- Optional on motor vehicles
- 6.24.2. Number
- One or two, however further exterior courtesy lamps to illuminate steps and/or door handles, and/or the area around the vehicle are permitted. Each door handle or step shall be illuminated by not more than one lamp.
- 6.24.3. Arrangement
- No special requirement, however, the requirements of paragraph 6.24.9.3. apply."

Paragraph 6.24.9. and its subparagraphs, amend to read:

- "6.24.9. Other requirements
- 6.24.9.1. The exterior courtesy lamp(s) shall not be switched ON unless the vehicle is stationary and one or more of the following conditions is satisfied:
- (a) The propulsion system is stopped; or
- (b) A driver or passenger door is opened or after being closed; or
- (c) A load compartment door is opened or after being closed.
- However, the exterior courtesy lamp(s) shall be switched OFF when the vehicle is no longer stationary.
- 6.24.9.1.1. The exterior courtesy lamps may be switched ON and/or switched OFF manually or automatically.
- 6.24.9.1.2. The exterior courtesy lamp or lamps may vary in luminous intensity and/or vary in apparent surface. The photometric characteristics of the exterior courtesy lamp(s) may vary in relation to the position of vehicle users. No sharp variation of intensity shall be observed during transition.
- 6.24.9.1.3. The exterior courtesy lamp(s) shall not flash.
- 6.24.9.1.4. At the discretion of the manufacturer the exterior courtesy lamp(s) may operate in any combination.
- 6.24.9.2. Approved lamps emitting white light with the exception of main beam head lamps, daytime running lamps and reversing lamps may be switched ON as exterior courtesy lamp(s). In addition, rear position lamps, the parking lamps, the side marker lamps and/or the end-outline marker lamps may be switched ON. The conditions of paragraphs 5.11. and 5.12. above may not apply.
- 6.24.9.3. The technical service shall, to the satisfaction of the Type Approval Authority, perform a visual test to verify that there is no direct visibility of the apparent surface of the exterior courtesy lamps, if viewed by an observer moving on the boundary of a zone on a transverse plane 10 m from the front of the vehicle, a transverse plane 10 m from the rear of the vehicle, and two longitudinal planes 10 m from each side of the vehicle; these four planes to extend from 1 m to 3 m above and perpendicular to the ground as shown in Annex 14.
- 6.24.9.4. At the request of the applicant and with the consent of the Technical Service, the requirements of paragraph 6.24.9.3. may be verified by a drawing or simulation or deemed be satisfactory if the applicant can prove that the luminous intensity of light emitted directly during the observation test described in Annex 14 is not more than 0.5 cd per lamp."

Paragraph 6.26., amend to read:

- "6.26. Manoeuvring lamps"

Paragraph 6.26.2., amend to read:

- "6.26.2. Number
- One or two (one per side) on vehicles not exceeding 6 m in length.
- A maximum of four (up to two per side) on vehicles above 6 m and up to and including 9 m in length.
- A maximum of six (up to three per side) on vehicles exceeding 9 m in length.
- However, installed lamps 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 6.26.4., amend to read:

- "6.26.4. Position
- 6.26.4.1. In width: No special requirement.
- 6.26.4.2. In height: Above the ground, not more than 1,500 mm.
- 6.26.4.3. In length: In the case of the installation of more than one manoeuvring lamp, lamps shall be mounted as symmetrically as practicable along each side of the vehicle.
- The distance between two adjacent manoeuvring lamps on the same side shall not be less than 0.5 m."

Insert a new paragraph 6.27., to read:

- "6.27. Answer-back signal
- 6.27.1. Presence
- Optional.
- 6.27.2. Number
- In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal. However, the number may be less than or equal to the individual specifications applicable to the specific lamp.
- 6.27.3. Arrangement
- In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal.
- 6.27.4. Position
- 6.27.4.1. In width: In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal.
- 6.27.4.2. In height: in accordance with the individual specifications applicable to the specific lamp used for the answer-back signal.
- 6.27.4.3. In length: In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal.
- 6.27.5. Geometric visibility
- In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal. However, the geometric visibility may be reduced in comparison to the individual specifications applicable to the specific lamp.
- 6.27.6. Orientation
- In accordance with the individual specifications applicable to the specific lamp used for the answer-back signal.

- 6.27.7. Electrical connections
 - 6.27.7.1. The answer-back signal shall only operate under the park condition of a vehicle.
 - 6.27.7.2. If the answer-back signal flashes, the frequency shall not exceed 2.0 Hz.
 - 6.27.7.3. The lamps used for the answer-back signal may operate in combination.
 - 6.27.7.4. Individual specific requirements for electrical connections and the conditions of paragraphs 5.11. and 5.12. may not apply to the lamps used for the answer-back signal.
- 6.27.8. Tell-tale
 - No special requirement.
- 6.27.9. Other requirements
 - 6.27.9.1. The answer-back signal shall be provided by approved lighting and light-signalling devices and exterior courtesy lamps where in all these cases, the maximum luminous intensity per lamp does not exceed 700 cd on or above the HH line. However, front fog lamps, rear fog lamps and stop lamps are not permitted to be used.
 - 6.27.9.2. The answer-back signal may only be activated automatically in conjunction with the locking and unlocking of the door(s) and/or the detection of the vehicle user in proximity to the vehicle.
 - 6.27.9.3. The lamp used for the answer-back signal may flash and/or vary in luminous intensity and/or vary in apparent surface.
 - 6.27.9.4. The duration of the optical indication of the answer-back signal shall not exceed 3 seconds.
 - 6.27.9.5. Compliance with the requirements of paragraphs 6.27.9.1. to 6.27.9.4. shall be demonstrated by the applicant, using test reports or other means of verification accepted by the Type Approval Authority. The information shall be indicated in item 10.9. of the communication form."

Add a new paragraph 12.8. and related subparagraphs to read:

- "12.8. Transitional provisions applicable to the 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 Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 09 series of amendments.
 - 12.8.2. For vehicles of categories M, N₁, O₁ and O₂:
 - 12.8.2.1. As from 1 September 2027 Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the preceding series of amendments, first issued after 1 September 2027.
 - 12.8.2.2. Until 1 September 2030, Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued before 1 September 2027.
 - 12.8.2.3. As from 1 September 2030, Contracting Parties applying this Regulation shall not be obliged to accept type approvals, and extensions thereof, issued to the preceding series of amendments to this Regulation.
 - 12.8.3. For vehicles of categories N₂, N₃, O₃ and O₄:
 - 12.8.3.1. As from 1 September 2028, Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the preceding series of amendments, first issued after 1 September 2028.
 - 12.8.3.2. Until 1 September 2031, Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued

before 1 September 2028.

- 12.8.3.3. As from 1 September 2031, Contracting Parties applying this Regulation shall not be obliged to accept type approvals, and extensions thereof, issued to the preceding series of amendments to this Regulation.
- 12.8.4. Notwithstanding the transitional provisions above, Contracting Parties who start to apply this Regulation after the date of entry into force of the most recent series of amendments are not obliged to accept type approvals which were granted in accordance with any of the preceding series of amendments to this Regulation.
- 12.8.5. Notwithstanding paragraphs 12.8.2.3. and 12.8.3.3., Contracting Parties applying this Regulation shall continue to accept type approvals to the preceding series of amendments to this Regulation, for the vehicle types which are not affected by the changes introduced by the 09 series of amendments.
- 12.8.6. Contracting Parties applying this Regulation may grant type approvals according to any preceding series of amendments to this Regulation.
- 12.8.7. Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this Regulation."

Annex 1,

Insert a new item 9.28., to read:

"9.28. Answer-back signal: yes/no²....."

Items 9.28. (former), 9.29. and 9.30., renumber to 9.29., 9.30., 9.31., respectively.

Insert a new item 10.9., to read:

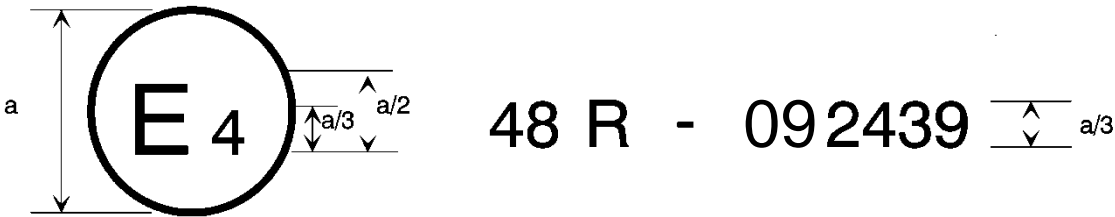
"10.9. Comments regarding answer-back signal (according to paragraphs 6.27.9.1. to 6.27.9.4.):....."

Annex 2, amend to read:

"Arrangements of approval marks

Model A

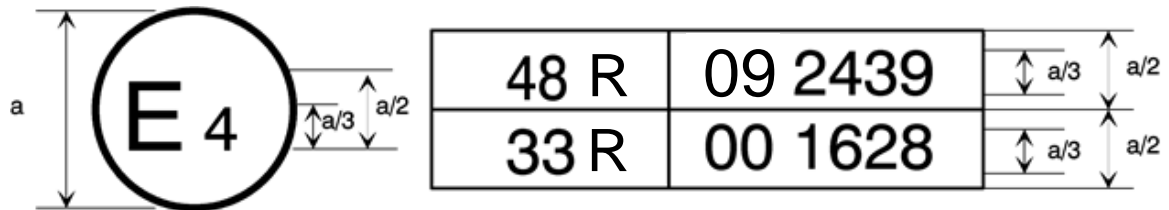
(See paragraph 4.4. of this Regulation)



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 (E4) pursuant to UN 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 UN 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 UN Regulation No. 48 as amended by the 09 series of amendments and UN Regulation No. 33.¹ The approval number indicates that, at the dates when the respective approvals were given, UN Regulation No. 48 was amended by the 09 series of amendments and UN Regulation No. 33 was still in its original form."

Annex 7, title, amend to read:

"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. of this Regulation"

Annex 8, amend to read:

"The controls for the headlamp-levelling devices referred to in paragraph 6.2.6.2.2. of this Regulation

1. Specifications
 - 1.1. Inclination of the dipped beam shall in all cases be produced by a simple control, the operation of which is clearly described in the owner's handbook.
 - 1.1.1. This control shall carry symbol(s) indicating clearly the movements corresponding to the downward and upward inclination of the dipped beam.
 - 1.2. The "0" position corresponds to the initial inclination according to paragraph 6.2.6.1.1. of this Regulation.
 - 1.3. The "0" position which, according to paragraph 6.2.6.2.2. of this Regulation has to be a "stop position", need not necessarily be at the end of the scale."

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

"1.3. Alignment of dipped-beam headlamps and 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 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:

¹ The second number is given merely as an example.

<i>Mounting height h [m]</i>	<i>Upper inclination limit [per cent]</i>	<i>Lower inclination limit [per cent]</i>
$0.5 \leq h \leq 0.9$	-0.50	$-(h + 1.2)$
$0.9 < h \leq 1.2$	$-(h \times 2.17 - 1.45)$	$-(h \times 2.17 + 0.15)$
$1.2 < h \leq 1.5$		

In the case of a 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:

$h \leq 0.8$: 0.7 per cent minimum vertical inclination and 3.3 per cent maximum vertical inclination;

$h > 0.8$: 1.2 per cent minimum vertical inclination and 3.8 per cent 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."
