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World Forum for Harmonization of Vehicle Regulations

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Item 4.14.1 of the provisional agenda

1958 Agreement:

Pending proposals for amendments to existing UN Regulations submitted by GRE and GRSG

Proposal for Supplement 16 to the 06 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-fifth session (ECE/TRANS/WP.29/GRE/85, paras. 17, 31 and 33). It is based on ECE/TRANS/WP.29/GRE/2021/16 as amended by informal document GRE-85-23, ECE/TRANS/WP.29/GRE/2021/18 as amended by informal document GRE-85-33 and ECE/TRANS/WP.29/GRE/2020/5/Rev.2 as amended by informal document GRE-85-26. 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 June 2022 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2022 as outlined in proposed programme budget for 2022 (A/76/6 (part V sect. 20) para 20.76), 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.



Add a new paragraph 2.1.7. to read:

- "2.1.7. "Manufacturer logo" means a graphic mark, emblem, word, or a combination of those elements, used to aid and promote public identification and recognition of a vehicle manufacturer's brand name."

Add a new paragraph 2.5.1.1. to read:

- "2.5.1.1. "Auxiliary driving-beam (auxiliary main-beam) lamp" means a driving-beam approved as separate lamp in such a way that it is supplementing a driving-beam of another class."

Add new paragraphs 2.7.8. and 2.7.9. to read:

- "2.7.8. "Driver Assistance Projection" means a modification of the light distribution for driver assistance purposes.
- 2.7.9. "RCT (Risk of Collision Time)" means the estimated time for the own vehicle and the preceding vehicle to collide, assuming that the relative speed, at the time of estimation, remains constant."

Add a new paragraph 3.2.9. to read:

- "3.2.9. Where a system is able to provide driver assistance projections on the road, a list of the patterns and symbols shall be provided by the manufacturer."

Add a new paragraph 5.5.5. to read:

- "5.5.5. In case of lamps incorporating a manufacturer logo, only two lateral logos (one on each side) or one central logo can be fitted on the rear of the vehicle and only two lateral logos (one on each side) or one central logo can be fitted on the front of the vehicle. All logos that are not vehicle manufacturer or body manufacturer logos are prohibited."

Paragraph 5.10. and its sub-paragraphs, amend to read:

- "5.10. Provisions regarding light which could give rise to confusion:
- 5.10.1. Red light emitted by a lamp fitted on the rear of the vehicle (as defined in paragraph 2.1.5.) shall not be visible from the front of the vehicle.
- 5.10.2. White light emitted by a lamp fitted on the front of the vehicle (as defined in paragraph 2.1.5.) shall not be visible from the rear of the vehicle.
- 5.10.3. No account shall be taken of lighting devices fitted for the interior lighting of the vehicle.
- 5.10.4. To verify paragraphs 5.10.1. and 5.10.2.:
- 5.10.4.1. For the visibility of red light towards the front of a vehicle, with the exception of a red rearmost side-marker lamp, there shall be no direct visibility of the apparent surface of a red lamp if viewed by an observer moving within Zone 1 in a transverse plane situated 25 m in front of the vehicle (see Annex 4);
- 5.10.4.2. For the visibility of white light towards the rear of a vehicle, with the exception of reversing lamps and white side conspicuity markings, there shall be no direct visibility of the apparent surface of a white lamp if viewed by an observer moving within Zone 2 in a transverse plane situated 25 m behind the vehicle (see Annex 4);
- 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 less than 0.25 cd per lamp taking into account the influence of the vehicle body if applicable."

Add a new paragraph 5.30.1. to read:

- "5.30.1. Especially in case of light-signalling lamps incorporating a manufacturer logo, the lamp shall be type approved according to the requirements of the UN Regulation No. 148."

Add a new paragraph 5.35. and related sub-paragraphs to read:

- "5.35. General provisions relating to Driver Assistance Projection
The Driver Assistance Projection shall be constituted of patterns, symbols or both.
- 5.35.1. Symbols and patterns shall be related and limited only to warning/highlighting:
- (a) the presence of hazardous traffic situation
 - (b) the presence of other road users which require the driver's attention
 - (c) to maintain the distances to surrounding road users and infrastructure
 - (d) to maintain the correct lane
- The patterns and symbols shall be explained in the owner's handbook.
- 5.35.2. The only symbols and patterns that may be used for the Driver Assistance Projection, and their associated underlying conditions, are listed in Annex 16.
- 5.35.3. It shall be always possible to manually deactivate and reactivate the system which operates the Driver Assistant Projection.
- 5.35.4. The projected symbols and patterns shall no longer be projected when their associated underlying conditions allowing them to be shown do not exist anymore.
- 5.35.5. The projected symbols and patterns shall stop flashing when their associated underlying conditions allowing them to flash do not exist anymore.
- 5.35.6. The Driver Assistance Projection shall be deactivated automatically in case of an electrically detectable failure of the system that affects the visual information."

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 subsequent series of amendments to UN Regulation No. 149.
- Optionally, one additional pair 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 UN Regulation No. 149."

Paragraph 6.1.7.4., amend to read:

“6.1.7.4. The main-beam headlamps may be switched ON either simultaneously or in pairs. In case that more than one pair main-beam headlamps are installed, no more than two pairs may be simultaneously lit.

For changing over from the dipped to the main beam at least one pair of main-beam headlamps shall be switched ON. For changing over from the main-beam to the dipped-beam all main-beam headlamps shall be switched OFF simultaneously.

The auxiliary driving-beam(s), class RA, shall only be switched ON together with the driving-beams of another class, except when one or more pair(s) of auxiliary driving-beams, class RA, are used to produce light signals consisting of intermittent switching ON at short intervals (paragraph 5.12.)”

Paragraph 6.1.7.6., delete.

Paragraph 6.1.9.2., amend to read:

“6.1.9.2. This maximum intensity shall be obtained by adding together the individual reference marks which are indicated on the several headlamps.”

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 6.3.9., amend to read:

“6.3.9. Other requirements

In the case where there is a positive indication in the communication form in item 10.9. of Annex 1 of UN Regulation No. 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 ...”

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 Regulations Nos. 123 or 149.”

Paragraph 6.22.9.1., amend 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. 45¹⁸ 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 UN Regulation No. 123 or under item 9.3.3. 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...”

Paragraph 6.22.9.2.4., amend to read:

“6.22.9.2.4. To verify that the adaptation of the main beam, including Driver Assistance Projection, does not cause any discomfort, distraction or glare, neither to the driver nor to oncoming and preceding vehicles, the technical service shall perform a test drive according to paragraph 2. in Annex 12. This shall include any situation relevant to the system control on the basis of the applicant’s description. The performance of the adaptation of the main beam shall be documented and checked against the applicant’s description. Any obvious malfunctioning shall be contested (e.g. excessive angular movement or flicker).”

Add a new paragraph 6.22.9.3.2. and its subparagraphs to read:

“6.22.9.3.2. The adaptive main beam may produce the Driver Assistance Projection in order to warn the driver appropriately regarding special traffic situations or conditions.

6.22.9.3.2.1. The lateral distance from the outer edges of the Driver Assistance Projection with respect to the trajectory of the centre of gravity of the vehicle shall not be more than 1,250 mm. This shall be demonstrated by the manufacturer by calculation or by other means accepted by the Type Approval Authority.

6.22.9.3.2.2. Driver Assistance Projection shall not interfere with information displayed by the Field of Vision Assistant as defined in UN Regulation No. 125.

6.22.9.3.2.3. No flashing nor transforming of driver assistance projections is permitted, unless expressly allowed for the use cases described under the conditions in Annex 16.

6.22.9.3.2.4. Driver Assistance Projection shall not operate when the windshield wiper is switched ON and its continuous operation has occurred for a period of at least two minutes.”

Paragraph 6.26.9.2., amend to read:

"6.26.9.2. At the request of the applicant and with the consent of the Technical Service the requirement of 6.26.9.1 may be verified by a drawing or simulation or deemed be satisfied if the installation conditions comply with paragraph 6.2.2. of UN Regulation No. 23 or paragraph 5.10.2. of the 00 series of amendments to UN Regulation No. 148 or paragraph 5.10.1.2. of the 01 and subsequent series of amendments to UN Regulation No. 148, as noted in the communication document in Annex 1, paragraph 9."

Annex 1, item 9.22., amend to read:

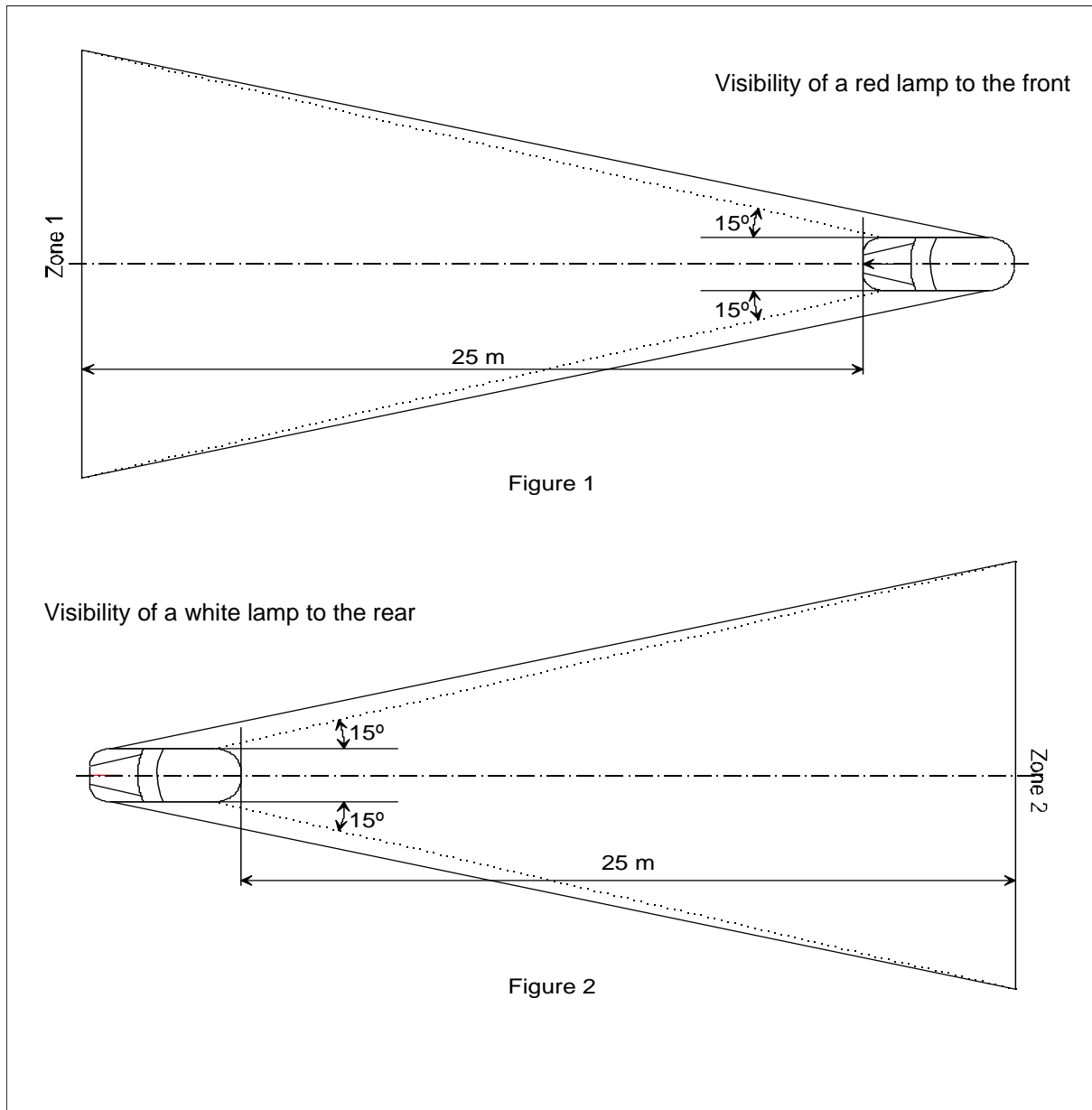
“9.22.	Adaptive front lighting system (AFS):	yes/no ²
9.22.1.	Main-beam ADB	yes/no ²
9.22.1.1.	Main-beam ADB + Driver Assistance Projection	yes/no ² ”

Annex 4, amend to read:

“Annex 4

Visibility of a red lamp to the front and visibility of a white lamp to the rear

(See paragraph 5.10.4. of this Regulation)



In their respective planes, the zones 1 and 2 explored by the eye of the observer are bounded:

- In height, by two horizontal planes 1 m and 2.2 m respectively above the ground;
- In width, by two vertical planes which, forming to the front and to the rear respectively an angle of 15° outwards from the vehicle's median longitudinal plane, pass through the point or points of contact of vertical planes parallel to the vehicle's median longitudinal plane delimiting the vehicle's overall width; if there are several points of contact, the foremost shall correspond to the forward plane and the rearmost to the rearward plane.”

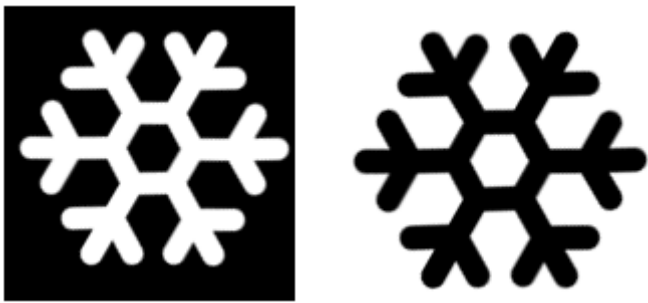

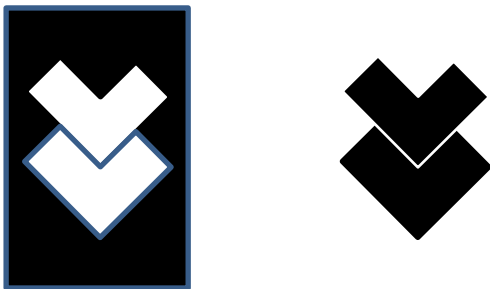
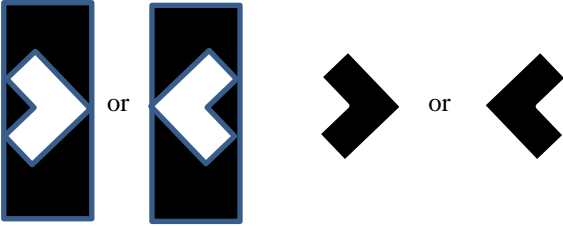
Annex 12, add a new paragraph 2.8. to read:

“2.8. For the test sections A, B, C and E in the table above the engineers conducting the tests shall evaluate Driver Assistance Projection if installed.”

Add a new Annex 16 to read:

“Annex 16

Symbols and patterns for the use as Driver Assistance Projections and Explanations of the Warnings/Highlights

<i>Symbols and Pattern</i>	<i>Use case</i>	<i>Conditions and remarks</i>
	Slippery road warning	
	Risk of collision warning	<p>Triggered when the relative speed is larger than 30 km/h and Risk of Collision Time is less than 1.4 s.</p> <p>Flashing at 4.0 hz +/- 1.0 hz allowed.</p>
	Wrong way warning	<p>Activated when the vehicle is entering a one-way road or a highway in opposite direction.</p> <p>Flashing at 4.0 hz +/- 1.0 hz allowed.</p>
	Lane keeping assist warning	Activated if the vehicle unintentionally exits its lane.

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