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**1958 Agreement – Consideration of draft amendments
to existing Regulations submitted by GRE**

Proposal for Supplement 15 to the 01 series of amendments to Regulation No. 53 (Installation of lighting and light- signalling devices for L₃ vehicles)

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 seventy-second session (ECE/TRANS/WP.29/GRE/72, para. 37). It is based on ECE/TRANS/WP.29/GRE/2014/16, not amended. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee AC.1 for consideration.

* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

Paragraphs 2.5.2. to 2.5.5., amend to read:

- "2.5.2. "Independent lamp" means devices having separate apparent surfaces, separate light sources and separate lamp bodies;
- 2.5.3. "Grouped lamps" means devices having separate apparent surfaces and separate light sources, but a common lamp body;
- 2.5.4. "Combined" means devices having separate apparent surfaces, but a common light source and a common lamp body;
- 2.5.5. "Reciprocally incorporated" means devices having separate light sources or a single light source operating under different conditions (for example, optical, mechanical, electrical differences), totally or partially common apparent surfaces and a common lamp body;"

Insert new paragraphs 2.5.18. to 2.5.19., to read:

- "2.5.18. "Interdependent lamp system" means an assembly of two or three interdependent lamps providing the same function.
- 2.5.18.1. "Interdependent lamp marked "Y"" means a device operating as part of an interdependent lamp system. Interdependent lamps operate together when activated, have separate apparent surfaces in the direction of the reference axis and separate lamp bodies, and may have separate light source(s).
- 2.5.19. "Lamps marked "D"" means independent lamps, approved as separate devices in such a way that they are allowed to be used either independently or in an assembly of two lamps to be considered as a "single lamp"."

Paragraph 2.11., amend to read:

- "2.11. "Angles of geometric visibility" means the angles which determine the field of the minimum solid angle in which the apparent surface of the lamp shall be visible. That field of the solid angle is determined by the segments of the sphere of which the centre coincides with the centre of reference of the lamp and the equator is parallel with the ground. These segments are determined in relation to the axis of reference. The horizontal angles β , correspond to the longitude and the vertical angles α to the latitude;"

Paragraphs 2.14., amend to read:

- "2.14. "A single lamp" means:
- (a) A device or part of a device having one lighting or light-signalling function, one or more light source(s) and one apparent surface in the direction of the reference axis, which may be a continuous surface or composed of two or more distinct parts; or
 - (b) Any assembly of two lamps marked "D", whether identical or not, having the same function, or
 - (c) Any assembly of two independent retro-reflectors, whether identical or not, that have been approved separately; or
 - (d) Any interdependent lamp system composed of two or three interdependent lamps marked "Y" approved together and providing the same function."

Insert a new paragraph 2.31., to read:

- "2.31. "H plane" means the horizontal plane containing the centre of reference of

the lamp."

Paragraph 5.6., amend to read:

"5.6. Grouped, combined or reciprocally incorporated or single lamps"

Paragraph 5.6.2., amend to read:

"5.6.2. Single lamps"

Paragraph 5.6.2.1., amend to read:

"5.6.2.1. Single lamps as defined in paragraph 2.14. (a), composed of two or more distinct parts, shall be installed in such a way that:

- (a) Either the total area of the projection of the distinct parts on a plane tangent to the exterior surface of the outer lens and perpendicular to the reference axis shall occupy not less than 60 per cent of the smallest quadrilateral circumscribing the said projection; or
- (b) The minimum distance between the facing edges of two adjacent/tangential distinct parts shall not exceed 75 mm when measured perpendicularly to the reference axis.

These requirements shall not apply to a single retro-reflector."

Insert new paragraph 5.6.2.2., to read:

"5.6.2.2. Single lamps as defined in paragraph 2.14. (b) or (c), composed of two lamps marked "D" or two independent retro reflectors, shall be installed in such a way that:

- (a) Either the projection of the apparent surfaces in the direction of the reference axis of the two lamps or retro reflectors occupies not less than 60 per cent of the smallest quadrilateral circumscribing the projections of the said apparent surfaces in the direction of the reference axis; or
- (b) The minimum distance between the facing edges of the apparent surfaces in the direction of the reference axis of two lamps or two independent retro reflectors does not exceed 75 mm when measured perpendicularly to the reference axis."

Insert new paragraph 5.6.2.3., to read:

"5.6.2.3. Single lamps as defined in paragraph 2.14. (d), shall fulfil the requirements of paragraph 5.6.2.1.

Where two or more lamps and/or two or more separate apparent surfaces are included into the same lamp body and/or have a common outer lens, these shall not be considered as an interdependent lamp system.

However, a lamp in the shape of a band or strip may be part of an interdependent lamp system."

Paragraph 5.7., at the end, add a new indent to read:

"5.7. ...

For the purposes of reducing the geometric visibility angles, the position of a lamp with regard to height above the ground, shall be measured from the H plane."

Insert new paragraph 5.10.1., to read:

"5.10.1. In the case of an interdependent lamp system, all light sources shall be switched on and off simultaneously."

Insert new paragraphs 5.19. to 5.20.5., to read:

"5.19. Rear position lamps, rear direction-indicators and rear retro-reflectors, may be installed on movable components only:

5.19.1. If at all fixed positions of the movable components the lamps on the movable components meet all the position, geometric visibility, colorimetric and photometric requirements for those lamps.

5.19.2. In the case where the functions referred to in paragraph 5.19. are obtained by an assembly of two lamps marked "D" (see paragraph 2.14.), only one of the lamps needs to meet the position, geometric visibility and photometric requirements for those lamps at all fixed positions of the movable components.

5.19.3. Where additional lamps for the above functions are fitted and are activated, when the movable component is in any fixed open position, provided that these additional lamps satisfy all the position, geometric visibility and photometric requirements applicable to the lamps installed on the movable component.

5.19.4. In the case where the functions referred to in paragraph 5.19. are obtained by an interdependent lamp system either of the following conditions shall apply:

(a) Should the complete interdependent lamp system be mounted on the moving component(s), the requirements of paragraph 5.19.1. shall be satisfied. However, additional lamps for the above functions may be activated, when the movable component is in any fixed open position, provided that these additional lamps satisfy all the position, geometric visibility, colorimetric and photometric requirements applicable to the lamps installed on the movable component.

or

(b) Should the interdependent lamp system be partly mounted on the fixed component and partly mounted on a movable component, the interdependent lamp(s) specified by the Applicant during the device approval procedure shall meet all the position, outwards geometric visibility, colorimetric and photometric requirements for those lamps, at all fixed positions of the movable component(s). The inwards geometric visibility requirement(s) is(are) deemed to be satisfied if this(these) interdependent lamp(s) still conform(s) to the photometric values prescribed in the field of light distribution for the approval of the device, at all fixed positions of the movable component(s).

5.20. General provisions relating to geometric visibility

5.20.1. There shall be no obstacle on the inside of the angles of geometric visibility to the propagation of light from any part of the apparent surface of the lamp observed from infinity. However, no account is taken of obstacles, if they were already presented when the lamp was type-approved.

5.20.2. If measurements are taken closer to the lamp, the direction of observation shall be shifted parallel to achieve the same accuracy.

- 5.20.3. If, when the lamp is installed, any part of the apparent surface of the lamp is hidden by any further parts of the vehicle, proof shall be furnished that the part of the lamp not hidden by obstacles still conforms to the photometric values prescribed for the approval of the device.
- 5.20.4. When the vertical angle of geometric visibility below the horizontal may be reduced to 5 degrees (lamp at less than 750 mm above the ground, measured according to the provisions of paragraph 5.7.) the photometric field of measurements of the installed optical unit may be reduced to 5 degrees below the horizontal.
- 5.20.5. In the case of an interdependent lamp system the geometric visibility requirements shall be fulfilled when all its interdependent lamps are operated together."

Paragraph 6.3.4., amend to read:

- "6.3.4. Geometric visibility
Horizontal angles: 20° inwards, 80° outwards.
Vertical angles: 15° above and below the horizontal.
However, where a lamp is mounted below 750 mm (measured according to the provisions of paragraph 5.7.), the downward angle of 15° may be reduced to 5°."

Paragraph 6.4.4., amend to read:

- "6.4.4. Geometric visibility
Horizontal angle: 45° to left and to right for a single lamp;
45° outwards and 10° inwards for each pair of lamps.
Vertical angle: 15° above and below the horizontal
However, where a lamp is mounted below 750 mm (measured according to the provisions of paragraph 5.7.), the downward angle of 15° may be reduced to 5°."

Paragraph 6.6.4., amend to read:

- "6.6.4. Geometric visibility
Horizontal angle: 80° to the left and to the right for a single lamp;
the horizontal angle may be 80° outwards and 20° inwards for each pair of lamps.
Vertical angle: 15° above and below the horizontal.
However, where a lamp is mounted below 750 mm (measured according to the provisions of paragraph 5.7.), the downward angle of 15° may be reduced to 5°."

Paragraph 6.7.4., amend to read:

- "6.7.4. Geometric visibility
Horizontal angle: 80° to left and to right for a single lamp;
the horizontal angle may be 80 degrees outwards and 45° inwards for each pair of lamps.
Vertical angle: 15° above and below the horizontal.

However, where a lamp is mounted below 750 mm (measured according to the provisions of paragraph 5.7.), the downward angle of 15° may be reduced to 5°."

Paragraph 6.8.4., amend to read:

"6.8.4. Geometric visibility

Horizontal angle: 30° to left and to right for a single reflector;
30° outwards and 10° inwards for each pair of reflectors;

Vertical angle: 15° above and below the horizontal.

However, where a lamp is mounted below 750 mm (measured according to the provisions of paragraph 5.7.), the downward angle of 15° may be reduced to 5°."

Paragraph 6.9.3., amend to read:

"6.9.3. "Circuit-closed" tell-tale

Mandatory. Flashing red signal lamp or, in the case of separate tell-tales, the simultaneous operation of the tell-tale prescribed in paragraph 6.3.8."

Paragraph 6.12.4., amend to read:

"6.12.4. Geometric visibility

Horizontal angles $\beta = 30^\circ$ to the front and to the rear.

Vertical angles $\alpha = 15^\circ$ above and below the horizontal.

However, where a lamp is mounted below 750 mm (measured according to the provisions of paragraph 5.7.), the downward angle of 15° may be reduced to 5°."
