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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations****Working Party on Lighting and Light-Signalling****Eighty-third session**

Geneva, 19–23 October 2020

Item 4 (d) of the provisional agenda

**Simplification of lighting and light-signalling UN Regulations:  
UN Regulation No. 150 (Retro-Reflective Devices)****Revised proposal to correct and improve the text of UN  
Regulation No. 150****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) with the aim to insert missing text and to correct errors inadvertently introduced in the new UN Regulation No. 150. In Annex 24, the figures have been corrected and the readability of the whole Annex has been improved. The modifications to the existing text of UN Regulation No. 150 are marked in bold for new or double-strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2020 as outlined in proposed programme budget for 2020 (A/74/6 (part V sect. 20) para 20.37), 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

Insert new paragraphs 3.3.4.2.2. and 3.3.4.2.3., to read:

**“3.3.4.2.2. In case of Class C, D, E or F, an orientation mark "TOP" which must be inscribed on any marking material whose retro-reflective system is not omni-rotational at least:**

**(a) on strips in a 0.5 m distance,**

**(b) on areas within 100 x 100 mm<sup>2</sup>.**

**3.3.4.2.3. In case of Class 1, 2, 3, 4 or 5, on the plates whose retro-reflective system is not omni-rotational, the word "TOP" is inscribed horizontally on the part of the plates which is intended to be the highest part of the plate when mounted on the vehicle.”**

Insert a new paragraph 3.3.4.4.1., to read:

**“3.3.4.4.1. In case of Class C, D, E or F, the approval mark shall be visible and clearly legible on the outside of the marking material and shall be indelible and positioned at least once:**

**(a) at 0.5 m intervals on strips,**

**(b) on areas within 100 x 100 mm<sup>2</sup>.”**

Table 4, amend to read:

“Table 4

### Chronological order of tests (Classes IA and IB)

Number of Annex	Tests	Samples									
		a	b	c	d	e	f	g	h	i	j
-	General specifications: visual inspection	x	x	x	x	x	x	x	x	x	x
5	Shapes and dimensions: visual inspection	x	x	x	x	x	x	x	x	x	x
<del>4</del> 6	Heat: 48 h at 65° ± 2°C	x	x	x	x	x	x	x	x	x	x
	Visual inspection for distortion	x	x	x	x	x	x	x	x	x	x
<del>6</del> 23	Colorimetry: visual inspection	x	x	x	x	x	x	x	x	x	x
	Trichromatic coordinates in case of doubt		x								
<del>7</del> 4	Photometry: limited to 20' and V = H = 0°	x	x	x	x	x	x	x	x	x	x
<del>7</del> 4	Complete photometry			x	x						
<del>8</del> 7	Water: 10 min. in normal position							x	x		
	10 min. in inverted position							x	x		
	visual inspection							x	x		
<del>4</del> 23	Colorimetry: visual inspection							x	x		
	Trichromatic coordinates in case of doubt							x	x		
4	Photometry: limited to 20' and V = H = 0°							x	x		
<del>8</del> 9	Motor fuels: 5 min. visual inspection							x	x		
								x	x		
<del>8</del> 10	Oils: 5 min. visual inspection							x	x		
								x	x		
<del>4</del> 23	Colorimetry: visual inspection							x	x		
	Trichromatic coordinates in case of doubt							x	x		
4	Photometry: limited to 20' and V = H = 0°							x	x		
8	Corrosion: 24 hours					x	x				
	2 hours interval					x	x				

Number of Annex	Tests	Samples									
		a	b	c	d	e	f	g	h	i	j
	24 hours visual inspection					x	x				
<del>9</del> 12	Rear face: 1 min. visual inspection					x	x				
4	Colorimetry: visual inspection Trichromatic coordinates in case of doubt					x	x				
4	Photometry: limited to 20' and V = H = 0°					x	x				
<del>9</del> 14	Stability in time										
<del>4</del> 23	Colorimetry: Visual inspection or trichromatic coordinates										
4	Photometry: limited to 20' and V = H = 0°										
<del>4</del> 13	Colour-fastness										
<del>4</del> 23	Colorimetry: Visual inspection or trichromatic coordinates										
4	Photometry: limited to 20' and V = H = 0°										
<del>4</del>	Deposit of samples with authority			x	x						

...”

Table 6, amend to read:

“Table 6

**Chronological order of tests (Classes IIIA and IIIB)**

Number of Annex	Tests	Samples									
		a	b	c	d	e	f	g	h	i	j
-	General specifications: visual inspection	x	x	x	x	x	x	x	x	x	x
5	Shapes and dimensions: visual inspection	x	x	x	x	x	x	x	x	x	x
<del>4</del> 06	Heat: 48 h at 65° ± 2°C Visual inspection for distortion	x	x	x	x	x	x	x	x	x	x
<del>6</del> 23	Colorimetry: visual inspection Trichromatic coordinates in case of doubt	x	x	x	x	x	x	x	x	x	x
<del>7</del> 4	Photometry: limited to 20' and V = H = 0°	x	x	x	x	x	x	x	x	x	x
<del>7</del> 4	Complete photometry			x	x						
<del>8</del> 7	Water: 10 min. in normal position 10 min. in inverted position visual inspection							x	x		
<del>4</del> 23	Colorimetry: visual inspection Trichromatic coordinates in case of doubt							x	x		
4	Photometry: limited to 20' and V = H = 0°							x	x		
<del>8</del> 9	Motor fuels: 5 min. visual inspection							x	x		
<del>8</del> 10	Oils: 5 min. visual inspection							x	x		
<del>4</del> 23	Colorimetry: visual inspection Trichromatic coordinates in case of doubt							x	x		
4	Photometry: limited to 20' and V = H = 0°							x	x		

Number of Annex	Tests	Samples									
		a	b	c	d	e	f	g	h	i	j
8	Corrosion: 24 hours 2 hours interval 24 hours visual inspection					x	x				
812	Rear face: 1 min. visual inspection					x	x				
423	Colorimetry: visual inspection Trichromatic coordinates in case of doubt					x	x				
4	Photometry: limited to 20' and V = H = 0°					x	x				
914	Stability in time										
423	Colorimetry: Visual inspection or trichromatic coordinates										
4	Photometry: limited to 20' and V = H = 0°										
113	Colour-fastness										
423	Colorimetry: Visual inspection or trichromatic coordinates										
4	Photometry: limited to 20' and V = H = 0°										
4	Deposit of samples with authority			x	x						

...”

Table 8, amend to read:

“Table 8  
Chronological order of tests (Class IVA)

Number of Annex	Tests	Samples									
		a	b	c	d	e	f	g	h	i	j
-	General specifications: visual inspection	x	x	x	x	x	x	x	x	x	x
5	Shape and dimensions: visual inspection	x	x	x	x	x	x	x	x	x	x
106	Heat: 48 h at 65 °C ± 2°C Visual inspection for distortion	x	x	x	x	x	x	x	x	x	x
623	Colorimetry: visual inspection Trichromatic coordinates in case of doubt	x	x	x	x	x	x	x	x	x	x
74	Photometry: limited to 20' and V = H = 0°	x	x	x	x	x	x	x	x	x	x
74	Complete photometry	x	x								
87	Water: 10 min. in normal position 10 min. in inverted position visual inspection			x	x						
89	Motor fuels: 5 min. visual inspection			x	x						
810	Oils: 5 min. visual inspection			x	x						
623	Colorimetry: visual inspection Trichromatic coordinates in case of doubt			x	x						
74	Photometry: limited to 20' and V = H = 0°			x	x						
8	Corrosion: 24 hours					x	x				

Number of Annex	Tests	Samples									
		a	b	c	d	e	f	g	h	i	j
	2 hours' interval 24 hours visual inspection					x	x				
<del>8</del> 12	Rear face: 1 min. visual inspection					x	x				
<del>13</del> 18	Impact visual inspection					x	x				
<del>6</del> 23	Colorimetry: visual inspection Trichromatic coordinates in case of doubt					x	x				
<del>7</del> 4	Photometry: limited to 20' and V = H = 0°					x	x				
<del>1</del> 4	Deposit of samples with Authority	x	x								

...”

Annex 13, insert a new paragraph 3. to read:

- "3. Resistance to weathering in the case of retro-reflective marking plates**
- 3.1. Procedure - For each test, two specimens of a sample unit (see paragraph 2.4.17.4. of UN Regulation No. 48) are taken. One specimen shall be stored in a dark and dry container for subsequent use as “reference unexposed specimen”.**
- The second specimen shall be subjected to a source of illumination in accordance with ISO Standard 105 - B02 - 1978, Section 4.3.1; the retro-reflective material shall be exposed until blue standard No. 7 has faded to No. 4 on the grey scale and the fluorescent material until blue standard No. 5 has faded to No. 4 on the grey scale. After the test, the specimen shall be washed in a dilute neutral detergent solution, dried and examined for conformity with the requirements specified in paragraphs 3.2. to 3.4.
- 3.2. Visual appearance - No area of the exposed specimen shall show any evidence of cracking, scaling, pitting, blistering, delamination, distortion, chalking, staining or corrosion.**
- There shall be no shrinkage in excess of 0.5 per cent in any linear direction and no evidence of adhesion failure such as edge lifting from the substrate.
- 3.3. Colour fastness - The colours of the exposed specimen shall still meet the requirements specified in paragraph 5.7.5.**
- 3.4. Effect on the coefficient of retro-reflection of the retro-reflective material:**
- 3.4.1. For this check, measurement shall be made only at an observation angle of 20' and an entrance angle of 5 degrees by the method given in paragraph 5.7.4.**
- 3.4.2. The coefficient of retro-reflection of the exposed specimen when dry shall be not less than 80 per cent of the value in paragraph 5.7.4, Table 12.**
- 3.4.3. The specimen shall then be subjected to simulated rainfall as described in paragraph 7.7. of EN 13422(2004) (Vertical road signs. Portable deformable warning devices and delineators. Portable road traffic signs. Cones and cylinders) and its coefficient of retroreflection under this condition shall be not less than 90 per cent of the value obtained when measured in dry condition, as explained in paragraph 3.4.2.**
- It is possible to use nozzles other than those described in paragraph 7.7. of EN 13422(2004) provided that the same performance (e.g. water

distribution on the surface of the test sample) of the simulated rainfall is achieved.”

Annex 24, amend to read:

### “Examples of approval marks

Figure A 24-I

#### Marking examples for single devices

<p><i>Note:</i> The above approval number must be placed close to, but in any position in relation to, the circle surrounding the letter "E". The digits constituting the approval number must face the same way as the "E". The group of symbols indicating the class must be diametrically opposite the approval number. The Type Approval Authorities shall avoid using approval numbers IA, IB, IIIA, IIIB and IVA which might be confused with the class symbols IA, IB, IIIA, IIIB and IVA.</p> <p>These sketches show various possible arrangements and are given as examples only.</p>	
	<p>Model A:</p> <p>This approval mark affixed to a retro-reflective device shows that the type of device concerned has been approved in the Netherlands (E 4) under approval number 150R00-216. The approval number shows that approval was granted in accordance with the requirements of this Regulation as modified by the original series of amendments.</p> <p>For a = see Table 1</p>
	<p>Model B:</p> <p>Same device as Model A, different arrangement.</p>
	<p>Model C:</p> <p>Same device as Model A, different arrangement.</p>

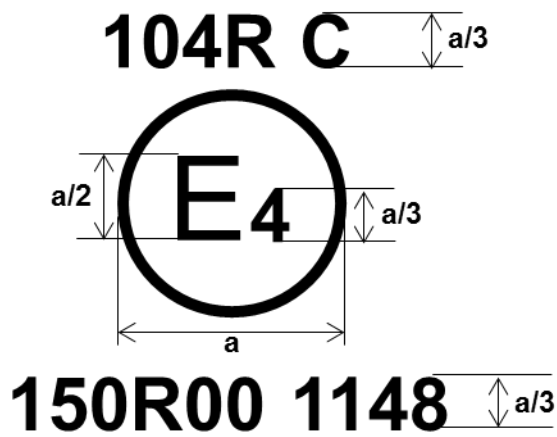
Figure A24-II

#### Simplified marking examples for grouped, combined or reciprocally incorporated devices

<p><i>Note:</i> The two examples of approval marks, models D and E, represent three possible variants of the marking of a lighting device when two or more lamps are part of the same unit of grouped, combined or reciprocally incorporated lamps.</p>
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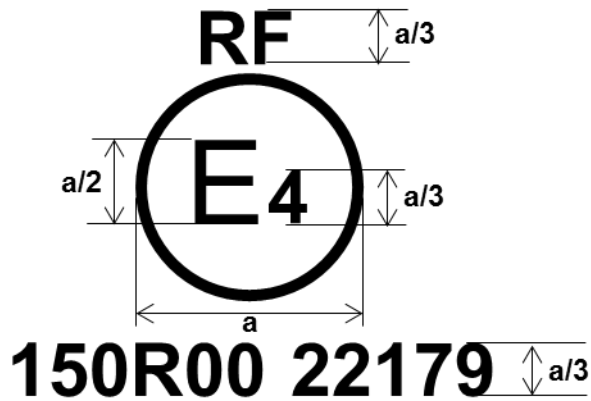
	3333 IA (E <sub>4</sub> ) 148R00 150R00	$2b$	$R_2$	Model D:
	F2	AR	S2	
IA $2b$ $R_2$ F2 AR S2  3333 (E <sub>4</sub> ) 148R00 150R00				Model E:

Figure A24-III  
 Arrangement example of the approval mark for retro-reflective marking material



For a = see Table 1

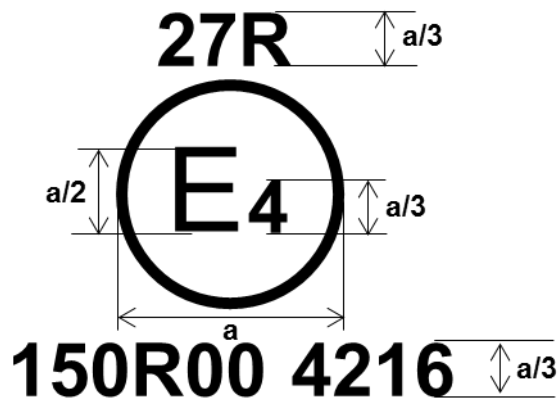
Figure A24-IV  
 Arrangement example of the approval mark for rear marking plates and SMV



For a = see Table 1

Figure A24-V

Arrangement example of the approval mark for advance warning triangle



For a = see Table 1

...”

## II. Justification

1. The provisions inserted in the new paragraph 3.3.4.2.2. are contained in UN Regulation No. 104, paragraph 4.1.2., but unintentionally were not included in the text of UN Regulation No. 150.
2. The provisions inserted in the new paragraph 3.3.4.2.3. are contained in UN Regulation No. 70, paragraph 4.1.2., but unintentionally were not included in the text of UN Regulation No. 150.
3. The provisions inserted in the new paragraph 3.3.4.4.1. are contained in UN Regulation No. 104, paragraph 5.5., but unintentionally were not included in the text of UN Regulation No. 150.
4. In Tables 4, 6 and 8, the column “Number of Annex” has been corrected.
5. The provisions inserted in the new paragraph 3. of Annex 13 are contained in UN Regulation No. 70, Annex 8 paragraph 1., but unintentionally were not included in the text of UN Regulation No. 150.
6. Annex 24 has been editorially reorganized and streamlined without changing its contents. The figures have been corrected to provide examples of the approval marks using



the new UN Regulations. For the size of “a”, the reference was corrected in order to refer to Table 1 instead of Table 2.

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