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Working Party on Lighting and Light-Signalling

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Item 5(g) of the provisional agenda

COLLECTIVE AMENDMENTS
Regulations Nos. 6, 7 and 48

Proposal for draft corrigendum to Regulation No. 48
(Installation of lighting and light-signalling devices)

Transmitted by the expert from France

The text reproduced below was prepared by the expert from France proposing to align on the state-of-the art realisations the visibility angles requirements of the position lamps, end-outline marker lamps and direction indicator lamps. The modifications to the current text of the Regulation are marked in **bold** characters.

A.   PROPOSAL

Paragraph 2.13., amend to read:

"2.13.   "Angles of geometric visibility" means the angles …
                ….
                ….optical unit (see Annex 3 of this Regulation). Nevertheless, when the vertical angle of geometric visibility below the horizontal may be reduced, **when the** lamp **is** at less than **850 mm** above the ground**,** the photometric field of measurements of the installed optical unit may be **also** reduced **to below** the horizontal **(see paragraph 6. "INDIVIDUAL SPECIFICATIONS").**"

Paragraph 6.5.5.1., amend to read:

"6.5.5.1.   **Vertical** angles"

Insert new paragraphs 6.5.5.1.1. to 6.5.5.2., to read

"**6.5.5.1.1.   Vertical angles above the horizontal for categories 1, 1a, 1b, 2a, 2b and 5: 15°.**

6.5.5.1.2.   Vertical angles above the horizontal for category 6: 30°.

6.5.5.1.3.   The vertical angle above the horizontal may be reduced to 5° if the optional lamps are not less than 2, 100 mm above the ground.
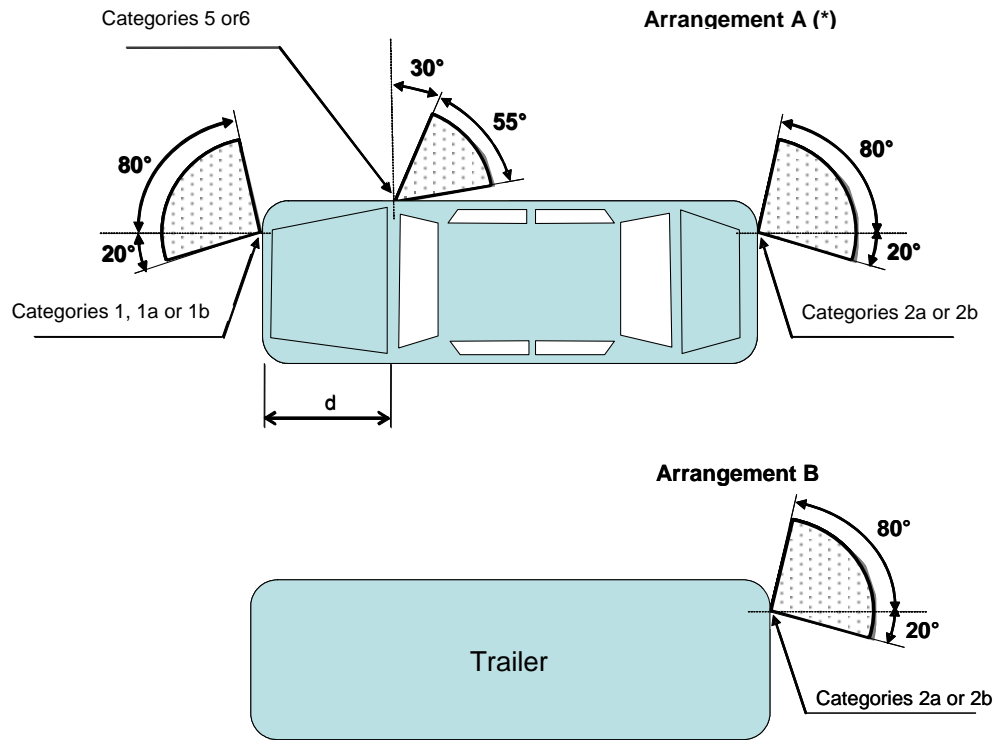
6.5.5.1.4.   Vertical angle below horizontal for categories 1, 1a, 1b, 2a, 2b and 5: α ° so that:

$$x \geq 850 \text{ mm:} \qquad\qquad\qquad \alpha = 15°$$
if $850 \geq x \geq 750$ mm: it may be reduced to $\alpha = 5° + 0.1(x - 750)°$
if $x \leq 750$ mm: it may be reduced to $\alpha = 5°$

where x is the lower height of the lamp above the ground.

6.5.5.1.5.   Vertical angles below the horizontal for category 6: 5°.

6.5.5.2. **Horizontal angles:**

Categories 5 or6   **Arrangement A (*)**

30°

55°

80°   80°

20°   20°

Categories 1, 1a or 1b   Categories 2a or 2b

d

Arrangement B

80°

20°

Trailer

Categories 2a or 2b

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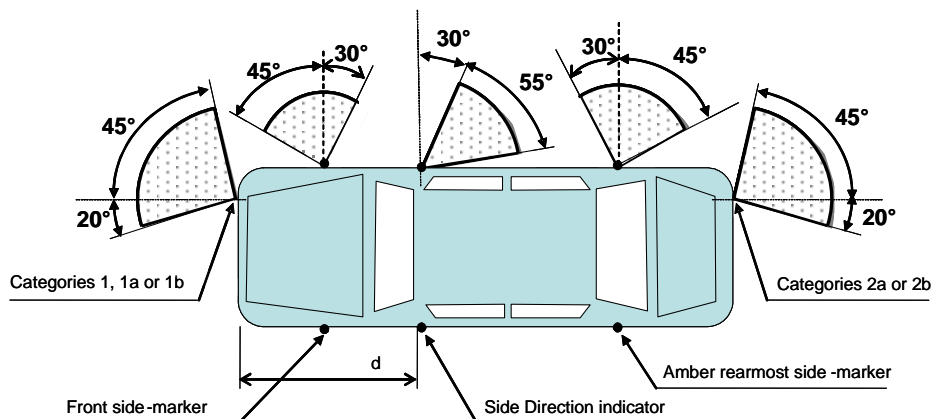
(*)   The value of 5° given for dead angle of visibility to the rear of the side-direction indicator is an upper limit. d $\leq$ 1.80 m(for M_1 and N_1 category vehicles d $\leq$ 2.50 m)."

Paragraph 6.5.5.2. (former), renumber as paragraph 6.5.5.3. and amend to read:

"**6.5.5.3.**   or, at the discretion of the manufacturer, for M 1 and N 1 category vehicles **/ **for front and rear direction-indicator lamps as well as sidemarker lamps:**

Horizontal angles see figure below:

45°   30°   30°   30°   45°

55°

45°   45°

20°   20°

Categories 1, 1a or 1b   Categories 2a or 2b

d

Amber rearmost side -marker

Front side -marker   Side Direction indicator

Vertical angle above horizontal: 15°.
Vertical angle below horizontal as per 6.5.5.1.4.

To be considered visible, the lamp must provide an unobstructed view of the apparent surface of at least 12.5 square centimetres, except for side direction-indicators of categories 5 and 6. The illuminating surface area of any retro-reflector that does not transmit light shall be excluded.

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(**)   The value of 5° given for dead angle of visibility to the rear of the side-direction indicator is an upper limit. d $\leq$ 2.50 m."

Paragraph 6.7.5., amend to read:

"6.7.5.   Geometric visibility

Horizontal angle: **For S1 or S2 categories devices:**
                       45° outboard and 20° inboard

                       For S3 **or S4** categories devices: 10° to the left and to the right of the longitudinal axis of the vehicle;

Vertical angle: For S1 or S2 categories devices **above horizontal:** 15°
                       For S1 or S2 categories devices under horizontal: α° so that:

                            x $\geq$ 850 mm: α = 15°
                       if   850 $\geq$ x $\geq$ 750 mm: it may be reduced to α = 5°+ 0.1(x – 750)°
                       if   x $\leq$ 750 mm: it may be reduced to α = 5°

                       where x is the lower height of the lamp above the ground.

                       The vertical angle above the horizontal may be reduced to 5° in the case of optional lamps not less than 2,100 mm above the ground;

                       For S3 **or S4** categories devices: 10° above and 5° below the horizontal."

Paragraphs 6.9.5.1. and 6.9.5.2., amend to read:

"6.9.5.1.   Horizontal angle for **the** position lamps:
            20° inwards and 80° outwards.

            In the case of trailers, the angle inwards may be reduced to 5°.

            Vertical angle **above horizontal:** 15°
            Vertical angle under horizontal: α° so that:

$$x \geq 850 \text{ mm:} \qquad \alpha = 15°$$

if $\qquad 850 \geq x \geq 750 \text{ mm:}$ it may be reduced to $\alpha = 5° + 0.1(x - 750)°$

if $\qquad x \leq 750 \text{ mm:}$ it may be reduced to $\alpha = 5°$

where x is the lower height of the lamp above the ground."

6.9.5.2. For M_1 and N_1 category vehicles, as an alternative to paragraph 6.9.5.1., at the discretion of the manufacturer or his duly accredited representative, and only if a front side-marker lamp is installed on the vehicle.

Horizontal angle: 45° outwards to **20° inwards.**
Vertical angle **above horizontal: α° so that:**

$$x \geq 850 \text{ mm:} \qquad \alpha = 15°$$

if $\qquad 850 \geq x \geq 750 \text{ mm:}$ it may be reduced to $\alpha = 5° + 0.1(x - 750)°$

if $\qquad x \leq 750 \text{ mm:}$ it may be reduced to $\alpha = 5°$

where x is the lower height of the lamp above the ground.

To be considered visible, the lamp must provide an unobstructed view of the apparent surface of at least 12.5 square centimetres. The illuminating surface area of any retro-reflector that does not transmit light shall be excluded."

Paragraphs 6.10.5.1. and 6.10.5.2., amend to read:

"6.10.5.1. Horizontal angle **for the position lamps: 20°** inwards and **80°** outwards.

Vertical angle **above horizontal:** 15°
Vertical angle under horizontal: α° so that:

$$x \geq 850 \text{ mm:} \qquad \alpha = 15°$$

if $\qquad 850 \geq x \geq 750 \text{ mm:}$ it may be reduced to $\alpha = 5° + 0.1(x - 750)°$

if $\qquad x \leq 750 \text{ mm:}$ it may be reduced to $\alpha = 5°$

where x is the lower height of the lamp above the ground.

6.10.5.2. For M_1 and N_1 category vehicles, as an alternative to paragraph 6.10.5.1., at the discretion of the manufacturer or his duly accredited representative, and only if a rear side-marker lamp is installed on the vehicle.

Horizontal angle: 45° outwards to **20° inwards.**
Vertical angle **above horizontal: α° so that:**

$$x \geq 850 \text{ mm:} \qquad \alpha = 15°$$

if $\qquad 850 \geq x \geq 750 \text{ mm:}$ it may be reduced to $\alpha = 5° + 0.1(x - 750)°$

if $\qquad x \leq 750 \text{ mm:}$ it may be reduced to $\alpha = 5°$

where x is the lower height of the lamp above the ground.

To be considered visible, the lamp must provide an unobstructed view of the apparent surface of at least 12.5 square centimetres. The illuminating surface area of any retro-reflector that does not transmit light shall be excluded."

B.   JUSTIFICATION

The current visibility requirements of the front and rear direction indicators and position lamps were written in the early 1970s. They were easily fulfilled in those times because the shapes of the vehicles were simple and rather boxy. Recent styling trends based on better aerodynamics and pedestrian protection lead to contoured shapes making the fulfilment of the 15 down and 45 inboard (15D-45inboard) visibility requirement impossible.

This proposal allows the contoured shapes necessary to pedestrian-friendly front ends on energy-conscious vehicles.

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