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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

Fifty-eighth session

Geneva, 1-5 October 2007

Item 5(g) of the provisional agenda

**COLLECTIVE AMENDMENTS**  
Regulations Nos. 6, 7 and 48

Proposal for draft corrigendum 1 to Supplement 15 to  
the 01 series of amendments Regulation No. 6  
(Direction indicators)

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 direction indicators. The modifications to the current text of the Regulation are marked in **bold** characters.

A. PROPOSAL

Annex 1, amend to read:

"Annex 1

CATEGORIES OF DIRECTION INDICATORS:

MINIMUM ANGLES REQUIRED FOR LIGHT DISTRIBUTION IN SPACE OF THESE  
CATEGORIES OF DIRECTION INDICATORS. 5/

1. Minimum vertical visibility angles

(a) lamps of any category except category 6, with a permissible mounting height  $x$  mm above the ground:  $30^\circ$  above the horizontal and  $\alpha^\circ$  below the horizontal so that:

$$\begin{array}{ll} & x \geq 850 \text{ mm:} & \alpha = 15^\circ \\ \text{if} & 850 \geq x \geq 750 \text{ mm:} & \text{it may be reduced to } \alpha = 5^\circ + 0.1(x - 750)^\circ \\ \text{if} & x \leq 750 \text{ mm:} & \text{it may be reduced to } \alpha = 5^\circ \end{array}$$

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

(b) lamps of category 6:  $30^\circ$  above and  $5^\circ$  below the horizontal.

2. Minimum horizontal visibility angles

(a) Direction indicators for the front of the vehicle

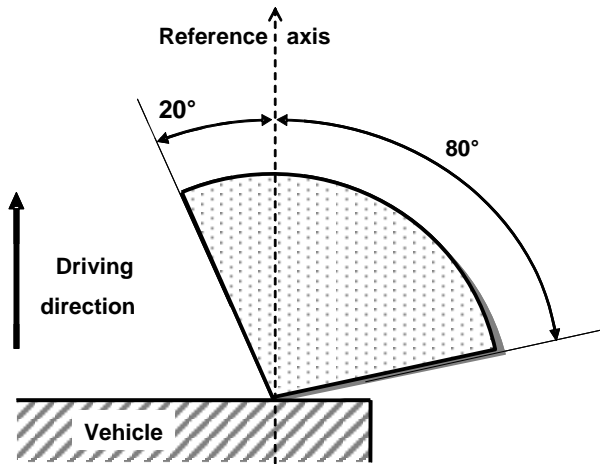
Category 1: for use at a distance not less than 40 mm from the headlamp;

Category 1a: for use at a distance greater than 20 mm but less than 40 mm from the headlamp;

Category 1b: for use at a distance less than 20 mm from the headlamp.

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5/ The angles shown in these arrangements are correct for devices to be mounted on the right side of the vehicle. The arrows.....

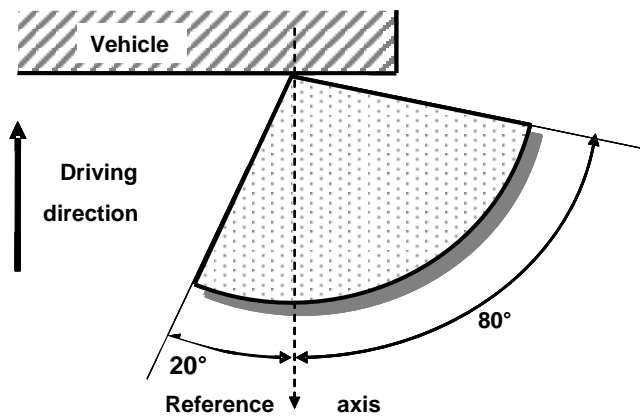


Front direction indicator  
of categories 1, 1a or 1b

**(b) Direction indicators for the rear of the vehicle**

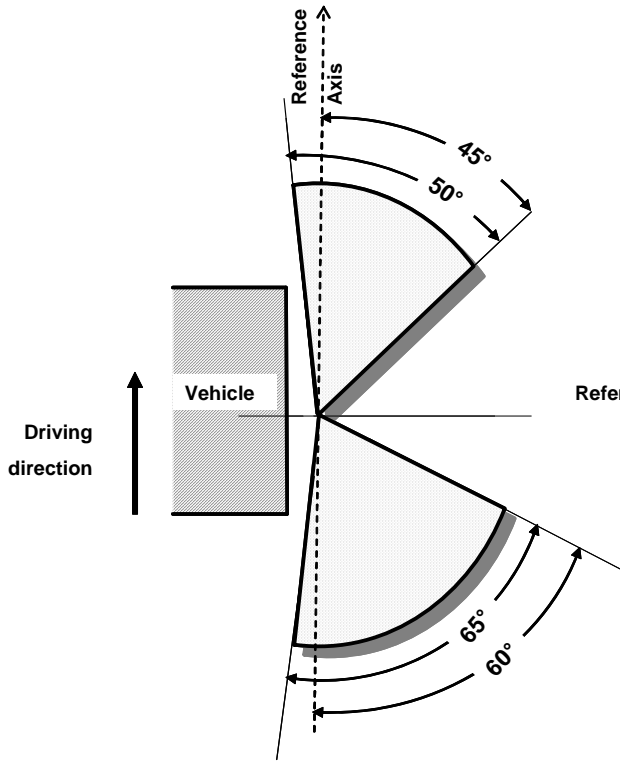
Category 2a: rear direction indicator lamps with steady luminous intensity.

Category 2b: rear direction indicator lamps with variable luminous intensity.

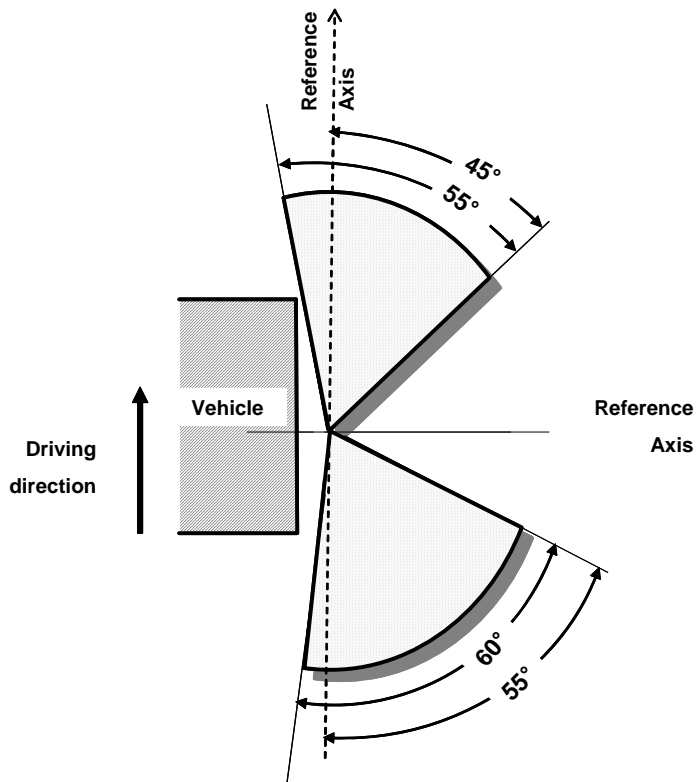


Rear direction indicator  
of categories 2a or 2b

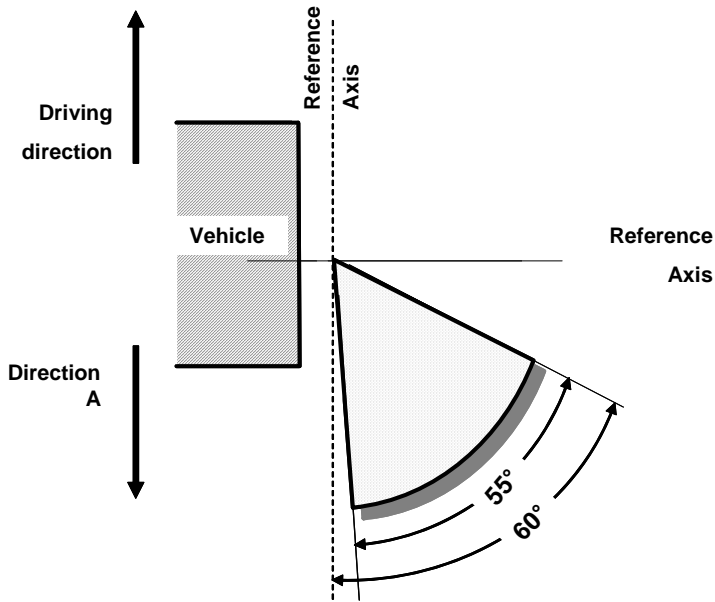
**(c) Front-side direction indicators on the side of the vehicle**



**Category 3**  
Front-side direction indicators for use on a vehicle equipped with this category of direction indicator only.



**Category 4**  
Front-side direction indicators for use on a vehicle also equipped with category 2a or 2b direction indicators.



Categories 5 and 6:  
Supplementary side direction  
indicators for use on a vehicle  
also equipped with categories  
1, 1a, 1b, 2a or 2b direction  
indicators.

"

## 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.

No modification is proposed for the visibility angles of the direction indicators for the side of the vehicle.

### 1. Front or rear direction indicators, vertical visibility.

The current limit of 750 mm in height is somewhat arbitrary. The proposed formulae to Annex 1 (a) create a smooth transition between these two angles and remove the threshold effect.

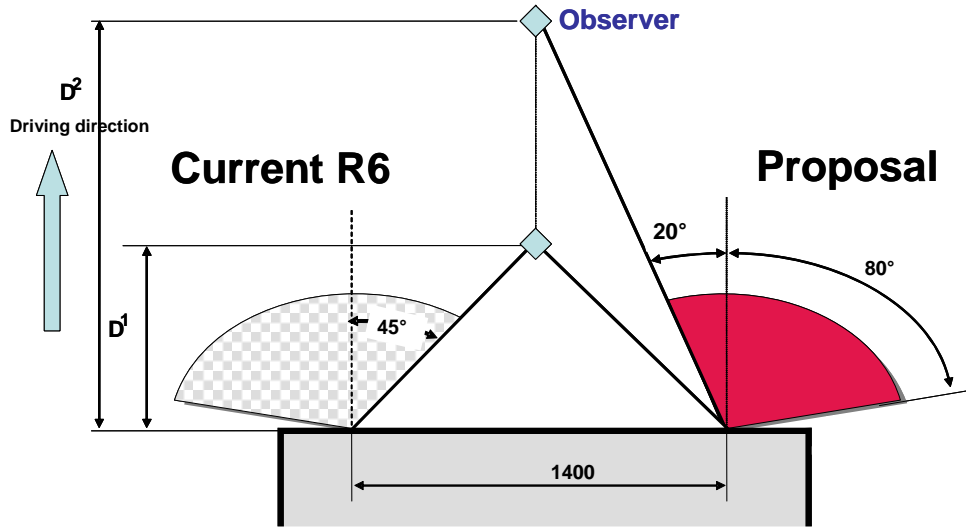
### 2. Front direction indicators, inboard horizontal visibility.

The interior visibility angle reduction of the front direction indicator from 45° to 20° has a minimum impact on the distance of visibility of the vehicle when observed along its longitudinal median plan. In the case of a vehicle with 1400 mm between the reference axis of the direction indicator lamps, this angular reduction, as seen by an observer standing on the median longitudinal plan of the vehicle, leads to a minimal change of just 1.22 m:

With the current visibility angle, the lamp is visible at  $D_1 = 1400 \times 0.5 \cotg 45^\circ$ .

With the proposed visibility angle, the lamp is visible at  $D_2 = 1400 \times 0.5 \cotg 20^\circ$ .

The "danger" distance is increased by a modest  $D_2 - D_1 = 1400 \times 0.5 (\cotg 20^\circ - \cotg 45^\circ) = 1220 \text{ mm}$ .

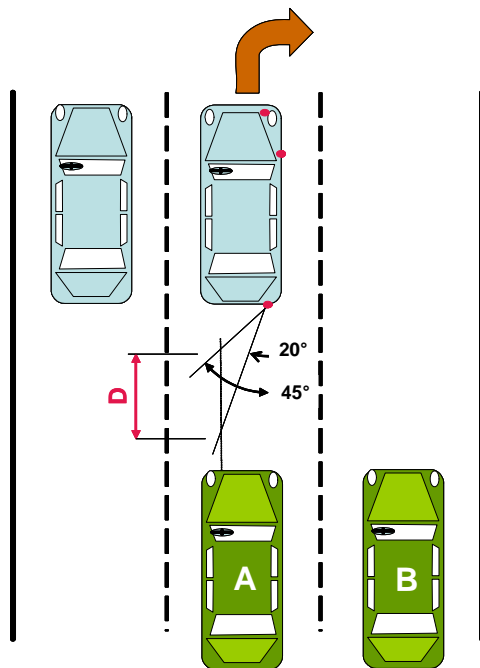


This angular modification allows more pedestrian-friendly front ends. It improves the aerodynamics, thus reducing the fuel consumption of the vehicle.

3. Rear direction indicators, inboard horizontal visibility.

This proposal is solely based on styling considerations. Pedestrian protection and aerodynamics do not apply to parts that are installed at the rear end of the vehicle.

The inboard visibility angles reduction does not jeopardize safety, as shown by the following three sketches:

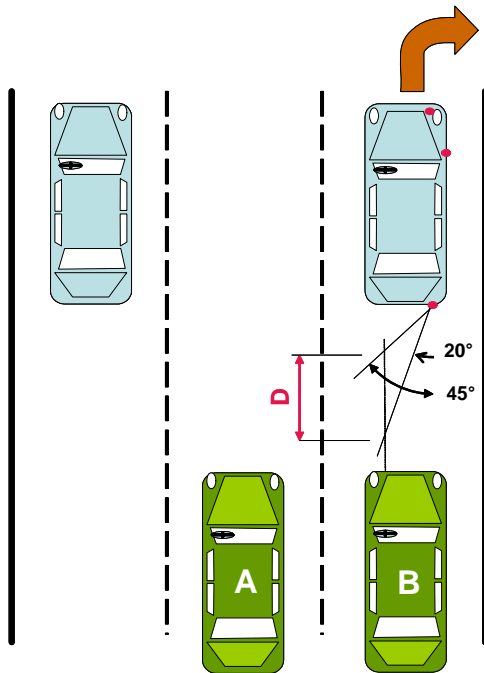


**Case 1:**

The following vehicle A experiences a small reduction of its visibility distance:

$$D = e (\cotg 20^\circ - \cotg 45^\circ)$$

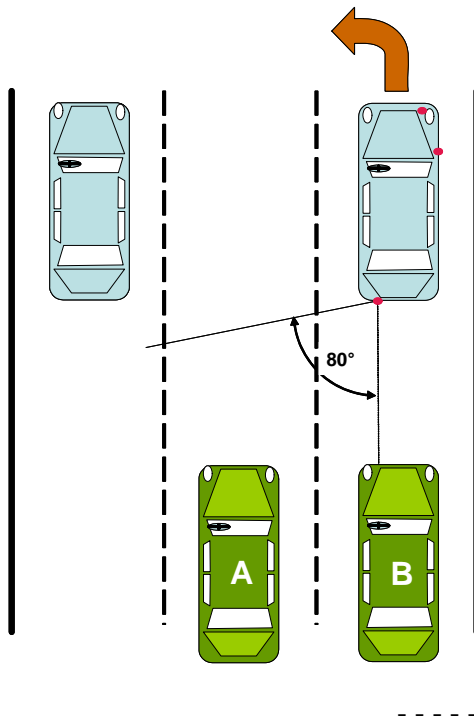
The safety of vehicle B is unchanged because the outer visibility angles are not concerned by the proposal.



**Case 2:**

The following vehicle B experiences a small reduction of its visibility distance:

$$D = e (\cotg 20^\circ - \cotg 45^\circ)$$



**Case 3:**

No safety issue for both vehicles:

Vehicle B is not concerned, and, the 80° outer angle being unchanged, the visibility of vehicle A is not altered by the proposal.