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Working Party on Lighting and Light-Signalling

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Item 4 (a) of the provisional agenda

Regulation No. 48 (Installation of lighting and light-signalling devices)

Proposal for Supplement 8 to the 04 series of amendments

Submitted by the expert from the Working Party "Brussels 1952"*

The text reproduced below was prepared by the expert from the Working Party "Brussels 1952" (GTB) in order to increase the maximum mounting height of rear foglamps. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, 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.

I. Proposal

Paragraph 6.11.4.2., amend to read:

"6.11.4.2. In height: not less than 250 mm nor more than 1,000 mm above the ground. **For rear fog lamps grouped with any rear lamp or for ~~For~~** category N₃G (off-road) vehicles, the maximum height may be increased to 1,200 mm."

II. Justification

1. In order to reduce the difficulties of installing rearlamps in modern vehicle structures the maximum mounting height of rear retro reflectors has been increased to 1,200 mm provided they are located within a rearlamp assembly. For the same reasons it is proposed to also increase the maximum mounting height of the rear fog lamp to 1,200 mm.

This approach has a number of advantages:

(a) Improvement in serviceability for the end customer and workshops and reduction in the cost of ownership.

(b) Reduction of material and weight of the lamp and its electrical connections.

(c) Avoids the need to install the rear fog lamps in the bumper or lower valance panel. It is preferable to avoid mounting the rear foglamp in these positions where there is a higher risk of dirt accumulation when driving in bad weather conditions with salt spray.

(d) It decreases the rear bumper complexity, which will decrease engineering and testing cost for global vehicle platforms which must comply with different bumper standards.

2. The GTB signal lighting working group has studied the safety implications as detailed below and has concluded that no additional risk is associated with this proposal:

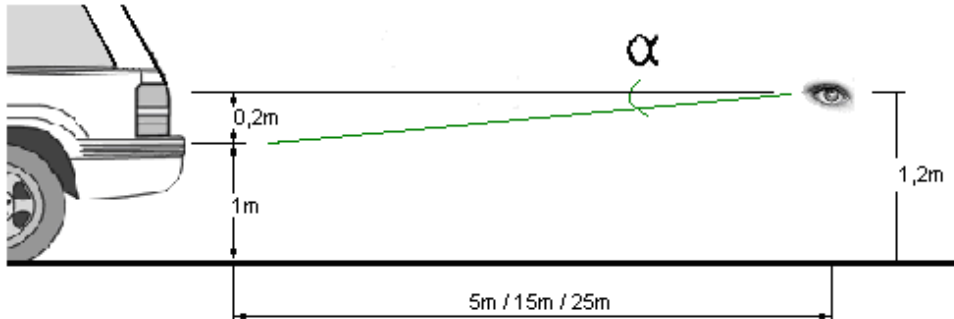
(a) The various situations relating to the observation angle of a rear fog lamp by a following driver were analysed to determine any possible increased glare effects due to a higher mounting height.

(b) The height of the eye point of the driver in a M₁ vehicle was taken to be 1.2 m (typically located between 1,000 and 1,500 mm).

(c) It is generally accepted that a safe separation distance for stopping from 30 km/h is 15 m, and for 50 km/h is 25 m. When vehicles are stationary the observation distance is approximately 5 m. These distances can be used to evaluate possible glare effects.

(d) The change (delta) in the observation angle for these three situations is calculated as follows:

Example:



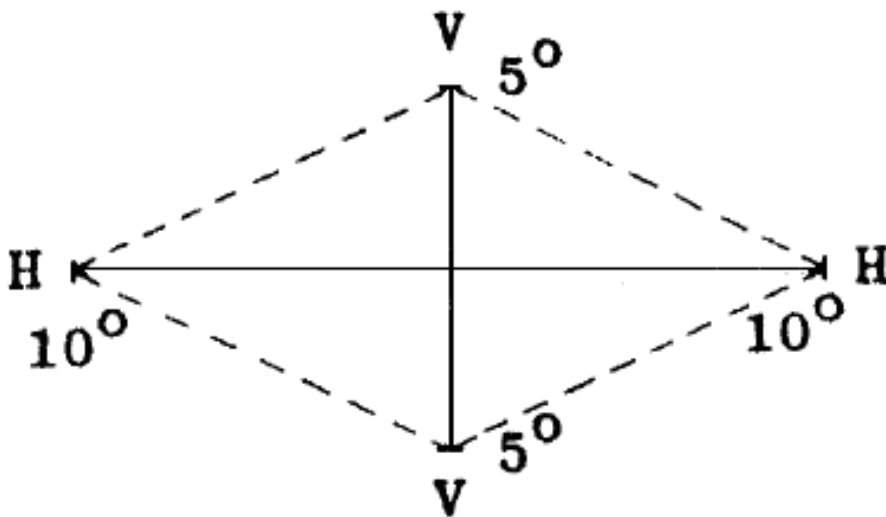
- (i). Increasing the mounting height by 200 mm changes the angle α of observation by a following driver's eye as follows:

$\alpha = 2,3^\circ$ distance 5 m $\hat{=}$ vehicle at standstill

$\alpha = 0,8^\circ$ distance 15 m $\hat{=}$ vehicle speed 15 km/h

$\alpha = 0,5^\circ$ distance 25 m $\hat{=}$ vehicle speed 30 km/h

The light distribution of a rear fog lamp according to Regulation No. 38 is shown below:



- (ii). Along the H-H axis between 10 degrees left to 10 degrees right and the V-V axis between 5 degrees up to 5 degrees down the luminous intensity shall not be less than 150 cd and not more than 300 cd. This

means that a small change in observation angle (2.3 degree, worst case) will not significantly affect the intensity perceived by the following driver.

(e) In addition to considering the glaring effect due to the intensity distribution, it is also necessary to take into account the effect of the increased height of the lamp upon the drivers forward vision. It is well known that a glare source will have differing effects upon the forward vision of the driver depending upon the angle subtended by the glare source and the observation axis. As the subtended angle increases the observer will tolerate higher intensities provided his attention is concentrated upon a target in the normal road scene.

(f) In the case of this proposal to increase the mounting height from 1.0 m to 1.2 m the subtended angle, in the worst case where the separation distance is 5.0 m, reduces by 2.3 degrees and this is not considered to be significant with respect to increased discomfort to the driver.

(g) Finally, the proposed increase in the mounting height was considered in the context of the class F2 Rear Foglamp with variable luminous intensity where the maximum luminous intensity of 840 cd is permitted. It was concluded that the proposed increase in mounting height from 1.0 m to 1.2 m does not affect the provisions in paragraph 6.5. of Regulation No. 38.
