

Proposal for amendments to UN Regulation No. 158 (Reversing motion)

Submitted by the expert from the Informal Working Group on Awareness of Vulnerable Road Users Proximity

The text reproduced below was prepared by the experts from the Informal Working Group VRU-Proxi as amendments to UN Regulation No. 158. On request of GRSG in its 123rd session proposed changes are presented to paragraph 16.1.3.1 of GRSG-123-31. In addition, new discussions in VRU-Proxi resulted in proposed changes to paragraphs 16.1.1.3 and 16.1.1.4. The modifications to the existing text are marked in bold for new or strikethrough for deleted characters. Proposals drafted in between square brackets are still subject for discussion in VRU-Proxi.

I. Proposal

Paragraph 16.1.1.3., amend to read:

"16.1.1.3. Deactivation

The rear-view image shall remain visible during the backing event until either, ~~[the driver modifies the view]~~, or the vehicle direction selector is no longer in the reverse position, or the backing event is finished.

~~Modifying the view means to switch to any other camera views.~~

The view can be manually switched off when the vehicle is not moving rearward.

The system may be switched off when the vehicle detects a coupling by means of a coupling device. In that case the monitor may be used to display other views (e.g. view of a rear-mounted camera on a trailer).

[Furthermore, at any time, the driver shall be able to deactivate the temporarily modified view, as described in paragraph 16.1.1.4..]"

Paragraph 16.1.1.4., amend to read:

"16.1.1.4. **[Temporarily modified** ~~Automatic change of view~~

~~When there is a risk of collision, the field of view may change and focus on the collision area. It shall be demonstrated to the Technical Service that this change of view increases the safety.~~

~~When the vehicle is not driving straight, the field of view may change following the vehicle trajectory.~~

To enable an improved view while manoeuvring (e.g. when there is a risk of collision, the field of view may change and focus on the collision area or when the vehicle is not driving straight, the field of view may change following the vehicle's trajectory), it shall be permitted to temporarily change the view, so that the requirements laid down in paragraphs 16.1. (default view) and 16.1.1. (object size) may not be fulfilled during this temporarily modified view.

The operation of this function should be intuitive to the driver and shall not cause additional safety risks or blind spots relevant for vehicle movement in such manoeuvres. The operation of the function shall cease when the manoeuvre has been completed and the view shall return to the default rear-view.

It shall be indicated to the driver, that a temporarily modified view is displayed. At any time, the driver shall be able to deactivate the function. The operator’s manual shall inform the driver accordingly.

The vehicle manufacturer shall demonstrate the improvement of the rear-view by an analysis to the satisfaction of the Technical Service and the Type Approval Authority.]”

Paragraph 16.1.3.1., amend to read:

"16.1.3.1. [The defined size of the monitor] shall be visible without any obstruction from the ocular reference point.

[In case of temporary obstruction, the driver shall be able to see the close proximity rear view field of vision under the conditions defined in Annex 9 paragraph 1.3.3.5. Virtual testing is acceptable.

If the driver is not able to see the close proximity rear view field of vision in all normal adjusted driving positions the vehicle shall be fitted with a system complying with other means as described in paragraph 15.1.]”

Insert new Paragraph 1.3.3.5 to Annex 9, to read:

“1.3.3.5. [The close proximity rear view field of vision

The driver has adapted to the ambient light conditions.

The driver seating position is adjusted to all driving positions in order to consider all driver heights.

In case of monitor located behind a temporary obstruction (for example steering wheel spoke during reversing manoeuvre), the driver shall be able to see the close proximity rear view field of vision display in the same location on the screen of a monitor in all normal reversing motion conditions when the driver is restrained by the installed crash protection system, adjusted in accordance with the manufacturer's instructions, and is free to move within constraints of that system (e.g. head movement).

It shall be demonstrated by the applicant to the Technical Service that all height of drivers and each binocular vision have been considered. Virtual testing is acceptable.]”

II. Justification

1. New proposal for changes in paragraph “temporarily modified view” of the current paragraph for “automatic change of view” and removal of such elements in paragraph “deactivation”. The proposal allows systems with enhanced view e.g. in case of vehicle manoeuvres for reversing at a risk of collision or when not driving straight. It also always ensures an intuitive and safe rear-view related view is visible to the driver is not replaced by any other camera views. The change makes sure that the driver is informed of the temporary modified view or can switch to the default view.

2. New proposal about monitoring temporary obstruction. Temporary obstruction may be permitted provided that the vehicle guarantees the visibility of the monitor to the driver or the driver's alert in the case of the presence of a VRU in the rear zone of the vehicle e.g. during a turned steering wheel.

From the principle of UN Regulation No. 121, all driving conditions have to be considered (straight on and also turning manoeuvre), as well all the driver's height and seating position adjustment. Visibility through the driver’s eyes need to be assessed considering driver restraint systems and capability of the driver’s head to move within constraint of the restraint system.