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World Forum for Harmonization of Vehicle Regulations**Working Party on General Safety Provisions****123rd session**

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Item 4 (c) of the provisional agenda

Awareness of the Proximity of Vulnerable Road Users:**UN Regulation No. 158 (Reversing motion)****Proposal for Supplement 2 to the Original Version of 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 to amend UN Regulation No. 158 so that misunderstandings are avoided in the certification process. It is based on informal documents GRSG-122-17 and GRSG-122-39 distributed at the 122nd session of the Working Party on General Safety Provisions (GRSG). The modifications to the existing text are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2022 as outlined in proposed programme budget for 2022 (A/76/6 (part V, sect. 20) para. 20.76), 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

Paragraph 2.1.5.1. amend to read:

"2.1.5.1. **"Acoustic Audible** information" means information using auditory signals provided by a detection system as defined in paragraph 2.1.5. above to enable the driver to detect objects in the area adjacent to the vehicle. "

Paragraph 2.1.2.2.2. amend to read:

"2.1.2.2.2. *"The principal radii of curvature at one point on the reflecting surface (ri)"* means the values obtained with the apparatus defined in Annex 7., ~~measured on the arc of the reflecting surface passing through the centre of this surface parallel to the segment b, as defined in paragraph 6.1.2.1.2. of this Regulation and on the arc perpendicular to this segment."~~

Paragraph 6.1.2.1.2., shall be deleted

Paragraph 15.2.1. amend to read:

"15.2.1. Requirements

When tested under the conditions defined in Annex 9 the requirement for close-proximity rear-view field of vision shall be considered to be satisfied if the defined field of vision can be seen:

(a) For the test objects in the first row (Test objects A, B, and C):

A 0.15 m x 0.15 m area ~~of~~ **located on the side or on** the top of the test object shall be visible at least one position on each test object.

(b) for the test and I);

The whole test object shall be seen. "

Paragraph 15.2.1.4. amend to read:

"15.2.1.4. Via a means of rear visibility (~~mirror or~~ RVCS or other, **except mirrors**) complying with this UN Regulation; or "

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)."**

Paragraph 16.1.3.1., amend to read:

"16.1.3.1. The monitor defined size shall be visible without any **[permanent]** obstruction from the ocular reference point. A virtual testing is acceptable."

Paragraph 17.2.1. amend to read:

"17.2.1. The system shall have at least two kinds of information signal selected from **acoustic audible**, optical, and haptics."

Paragraph 17.2.2. amend to read:

"17.2.2. **Acoustic Audible** information

When an object is detected in the rear horizontal area as described in paragraph 1.3. of Annex 10. while the reverse gear is selected/engaged, **acoustic audible** information in accordance with ISO 15006:2011 shall be given.

In presenting **acoustic audible** information, the distance may be identified at two or more acoustic signals. These acoustic signals, differentiating distances and detection widths, may be indicated by changing the frequency of the intermittent sound. A faster intermittent sound or continuous sound shall be used as the distance becomes closer."

Paragraph 17.2.3. amend to read:

"17.2.3. Duration of signalling

Signalling for an object shall last as long as the object is detected and shall end when the object is no longer detected or when the system is deactivated.

To reduce the driver's discomfort, the **acoustic audible** signal can be automatically suspended temporarily after a certain time set by the manufacturer has elapsed, provided that the system remains activated. If, while the **acoustic audible** signal is automatically suspended temporarily, the distance to the object becomes shorter, the **acoustic audible** signal shall be automatically resumed. If the distance to the object becomes longer, the **acoustic audible** signal may remain suspended."

Paragraph 17.3.1. amend to read:

"17.3.1. Response time

At least one of the **acoustic audible** or haptic information signals that meets the requirements as described in 17.2., shall be given to the driver within a maximum of 0.6 seconds after the start of the backing event, when tested according to paragraph 2. of Annex 10."

Annex 9, paragraph 1.3.1., amend to read:

"1.3.1. Lighting

The ambient illumination conditions in which testing is conducted consists of light that is evenly distributed from above and is at an intensity of between 7,000 lux and 10,000 lux, as measured at the centre of the exterior surface of the vehicle's roof.

At the request of the manufacturer, the test may be carried out at lower ambient illumination intensity conditions."

Annex 10, paragraph 1., amend to read:

"1. Rear horizontal area detection

Acoustic audible warning systems shall fulfil the test as specified in paragraph 1.3.1. in this Annex. However, if **acoustic audible** warning systems fulfil the test as specified in paragraph 1.4. in this Annex, the test as specified in paragraph 1.3.1. in this Annex shall be considered to be satisfied."

Annex 10, paragraph 2.1., amend to read:

"2.1. Test conditions

- (a) The vehicle shall be left in a parked parking status until it is ensured that all electronic systems are de-activated; or for a minimum of 30 minutes.
- (b) It is permissible for the test person or equipment to be already situated within the vehicle.
- (c) Ensure the vehicle gear selector is **not in reverse gear** ~~in neutral or forward gear~~.
- (d) The test may start with opening the driver door. Once the door is opened, it shall be closed again."

II. Justification

1. This document is combined with agreed proposals, GRSG-121-17 and GRSG-121-39, and with several new amendment proposals.
 2. The word "audible" is changed to "acoustic" for alignment with other UN Regulations such as UN Regulations Nos.127, 151, 159, etc.
 3. New proposal of deleted text that is not needed in this UN Regulation taken from UN Regulation No. 46.
 4. New proposal about monitor utilization of other views when the system is deactivated due to coupling with trailer, etc.
 5. New proposal about monitoring temporary obstruction: it is generally accepted that indicators and tell-tales as well as speedometers may be temporarily obscured by a turned steering wheel. Therefore, monitoring the obstruction of the image, as long as it is only NOT permanent, shall be accepted.
 6. This proposal was recently introduced at the last VRU-Proxi IWG session, and it is in square brackets because there were opinions on whether it should be stated explicitly or not.
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