

16 June 2023

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## **Agreement**

### **Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations\***

(Revision 3, including the amendments which entered into force on 14 September 2017)

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### **Addendum 157 – UN Regulation No. 158**

#### **Amendment 2**

Supplement 2 to the original version of the Regulation – Date of entry into force:  
5 June 2023

#### **Uniform provisions concerning the approval of devices for reversing motion and motor vehicles with regard to the driver's awareness of vulnerable road users behind vehicles**

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2022/123/Rev.1.



**UNITED NATIONS**

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\* Former titles of the Agreement:

Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version); Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).

*Paragraph 2.1.5.1.* amend to read:

"2.1.5.1. "Acoustic 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 ( $r_i$ )" means the values obtained with the apparatus defined in Annex 7."

*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 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 15.2.2.,* amend to read:

"15.2.2. The close-proximity rear-view ... the glazing shall have a total light transmission factor in accordance with UN Regulation No. 43, Annex 24."

*Paragraph 15.2.1.4.* amend to read:

"15.2.1.4. Via a means of rear visibility (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 17.1.,* amend to read:

"17.1. System activation

...

In case the vehicle can detect coupling with a coupling device, the system may be switched off. In that case the information signal may be used for informing the rear detected status."

*Paragraph 17.2.1.* amend to read:

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

*Paragraph 17.2.2.* amend to read:

"17.2.2. Acoustic 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 information in accordance with ISO 15006:2011 shall be given.

In presenting acoustic 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 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 signal is automatically suspended temporarily, the distance to the object becomes shorter, the acoustic signal shall be automatically resumed. If the distance to the object becomes longer, the acoustic signal may remain suspended."

*Paragraph 17.3.1.* amend to read:

"17.3.1. Response time

At least one of the acoustic 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 9, paragraph 3.5.,* amend to read:

"3.5. Calculate visual angle subtended by test objects.

...

... of degrees.

At the request of the manufacturer, compliance with the requirements to the object size, paragraph 3 under this annex may be demonstrated by calculation. This shall include the object size, overlay requirements within the required field of vision and the resolution of the Rear-View Camera system.

The validity of the calculation method shall be established to the satisfaction of the Technical Service."

*Annex 10, paragraph 1.,* amend to read:

"1. Rear horizontal area detection

Acoustic warning systems shall fulfil the test as specified in paragraph 1.3.1. in this Annex. However, if acoustic 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 1.3.2., amend to read:*

"1.3.2. Minimum detection rate

...

Here, the rear horizontal area test procedures shall be as per paragraph 7.3. of ISO 17386:2010.

When an information signal is provided for more than 5 seconds continuously, it is judged ..., it can be judged that the test object is detected in case an information signal is provided in 4 out of 5 tests."

*Annex 10 paragraph 1.4.2., amend to read:*

"1.4.2. Minimum detection rate

The minimum detection rate required for the area of ten points shall be 100 per cent.

When an information signal is provided ... it can be judged that the test object is detected in case an information signal is provided in four out of five tests."

*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.
  - (d) The test may start with opening the driver door. Once the door is opened, it shall be closed again."
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