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Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations**Working Party on General Safety Provisions****128th session**

Geneva, 7-11 October 2024

Item 4(a) of the Provisional Agenda

Awareness of the Proximity of Vulnerable Road Users**UN Regulation No. 46 (Devices for Indirect Vision)****Proposal for the 07 Series of Amendments to Regulation
No. 46 (Devices for Indirect Vision)****Submitted by the expert from Germany on behalf of the Task Force on
UN Regulation No. 46***

During the last meeting (dates) of the Task Force on UN Regulation No. 46, the experts found unclear wording on the pendulum test. The issue could not be solved during this meeting and guidance from GRSG is requested.

* In accordance with the programme of work of the Inland Transport Committee for 2024 as outlined in proposed programme budget for 2024 (A/78/6 (Sect. 20), table 20.5), 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.



Request for Guidance from GRSG Experts

1. The aim of this request is to clarify the meaning "**limit the return of the hammer**" in paragraph 6.3.2.2.5. of the 06 series of amendments of UN Regulation No. 46.
2. The current text in the English version reads as follows:

"6.3.2.2.5. When, under the conditions governing adjustment laid down in paragraphs 6.3.2.2.1. and 6.3.2.2.2. above parts of the device for indirect vision **limit the return of the hammer**, the point of impact shall be displaced in a direction perpendicular to the axis of rotation or pivoting in question.

The displacement shall be no greater than is strictly necessary for the execution of the test; it shall be limited in such a way that:

 - (a) Either the sphere delimiting the hammer remains at least tangential to the cylinder as defined in paragraph 6.1.1.6.;
 - (b) Or, in the case of mirrors, the impact point of the hammer is located on the reflecting surface at least 10 mm from the periphery of the reflecting surface."
 3. This paragraph is part of the provisions on the pendulum test, which shall be conducted to protect vulnerable road users when hitting or be hit by a device for indirect vision.
 4. Under paragraph 6.3.2.2.2. the positioning of the device for indirect vision in the pendulum test is described among others as follows:

"6.3.2.2.3. In the case of mirrors, except in the case of test 2 for Class I mirrors (see paragraph 6.3.2.2.7.1. below), when the pendulum is in a vertical position the horizontal and longitudinal vertical planes passing through the centre of the hammer shall pass through the centre of the reflecting surface as defined in paragraph 2.1.1.10. of this Regulation. The longitudinal direction of oscillation of the pendulum shall be parallel to the longitudinal median plane of the vehicle.

6.3.2.2.4. In the case of camera-monitor systems, when the pendulum is in a vertical position the horizontal and longitudinal vertical planes passing through the centre of the hammer shall pass through the centre of the lens or of the transparent protection part protecting the lens. The longitudinal direction of oscillation of the pendulum shall be parallel to the longitudinal median plane of the vehicle. If the test is performed with a shutter."
 5. Paragraph 6.3.2.2.6. requires that the hammer shall fall from a height corresponding to a pendulum angle of 60° from the vertical so that the hammer strikes the device for indirect vision at the moment when the pendulum reaches the vertical position.
 6. The experts at the TF meeting had different interpretations of what "**limit the return of the hammer**" means:
 - (a) The hammer shall be positioned in the way as described in paragraph 6.3.2.2.3. respectively. 6.3.2.2.4. If the movement from the position described under 6.3.2.2.6 to the impact point on the reflecting surface or described in 6.3.2.2.3. for mirrors respectively 6.3.2.2.4. for camera-monitor systems is expected to be blocked by parts of the device for indirect vision, the impact point may be displaced. In this case "limit the return of the hammer" would mean limiting during the time before the hammer hits the impact point, parts of the device would limit the movement;
 - (b) The hammer shall be positioned in the way as described in paragraphs 6.3.2.2.3. and 6.3.2.2.4. If the movement from the position described in paragraph 6.3.2.2.6. to the impact point on the reflecting surface or described in paragraph 6.3.2.2.3. for mirrors respectively 6.3.2.2.4. for camera-monitor systems **and/or the movement after the impact** is expected to be blocked by parts of the device for indirect vision, the impact point may be displaced. In

this case "limit the return of the hammer" would mean during the time before the hammer hits the impact point and or after the impact, parts of the device would limit the movement.
