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Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations**Working Party on Lighting and Light-Signalling****Eighty-seventh session**

Geneva, 25–28 October 2022

Item 6 (b) of the provisional agenda

Installation UN Regulations:**UN Regulation No. 53 (Installation of Lighting and Light-Signalling Devices for L₃ Vehicles)****Proposal for a Supplement to the 01, 02 and 03 series of amendments to UN Regulation No. 53 (Installation of lighting and light-signalling devices for L₃ vehicles)****Submitted by the experts from the International Motorcycle Manufacturers Association***

The text reproduced below was prepared by the experts from the International Motorcycle Manufacturers Association (IMMA) with the aim to enable the use of Rear-End Collision Alert Signal (RECAS) on vehicles of category L₃. The modifications to the existing text of UN Regulation No. 53 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 (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

Insert a new paragraph 2.22., to read:

"2.22. "Rear-end collision alert signal (RECAS)" means an automatic signal given by the leading vehicle to the following vehicle. It warns that the following vehicle needs to take emergency action to avoid a collision."

Paragraph 5.13., amend to read:

"5.13. Colours of the lights
...
Rear-end collision alert signal: amber"

Insert a new paragraph 5.15.8., to read:

"5.15.8. Rear-end collision alert signal (paragraph 6.17.)."

Paragraph 6.9.2., amend to read:

"6.9.2. Electrical connection

The signal shall be given by means of a separate control enabling all the direction indicators to be supplied with current simultaneously. In addition, it may be activated automatically in the event of a vehicle being involved in a collision or after the de-activation of the emergency stop signal, as specified in paragraph 6.14. below. In such cases, it may be turned OFF manually.

In addition, the hazard warning signal may be switched ON automatically to indicate to other road-users the risk of imminent danger as defined by Regulations; in this case, the signal shall remain switched ON until it is manually or automatically switched OFF."

Insert a new paragraph 6.17., to read:

"6.17. Rear-end collision alert signal
6.17.1. Presence
Optional.
The rear-end collision alert signal shall be given by the simultaneous operation of all the direction indicator lamps fitted as described in paragraph 6.17.7.
6.17.2. Number
As specified in paragraph 6.3.1.
6.17.3. Arrangement
As specified in paragraph 6.3.2.
6.17.4. Position
As specified in paragraph 6.3.3.
6.17.5. Geometric visibility
As specified in paragraph 6.3.4.
6.17.6. Orientation
As specified in paragraph 6.3.5.
6.17.7. Electrical connections

Compliance with these requirements shall be demonstrated by the applicant, by simulation or other means of verification accepted by the Technical Service responsible for type approval.

- 6.17.7.1. All the lamps of the rear-end collision alert signal shall flash in phase at a frequency of 4.0 +/- 1.0 Hz.
- 6.17.7.1.1. However, if any of the lamps of the rear-end collision alert signal to the rear of the vehicle use filament light sources the frequency shall be 4.0 +0.0/-1.0 Hz.
- 6.17.7.2. The rear-end collision alert signal shall operate independently of other lamps.
- 6.17.7.3. The rear-end collision alert signal shall be switched ON and OFF automatically.
- 6.17.7.4. The rear-end collision alert signal shall not be switched ON if the direction indicator lamps, the hazard warning signal or the emergency stop signal is activated.
- 6.17.7.5. The rear-end collision alert signal may only be switched ON under the following conditions:

V_r	Activation
$V_r > 30 \text{ km/h}$	$TTC \leq 1.4$
$V_r \leq 30 \text{ km/h}$	$TTC \leq 1.4 / 30 \times V_r$

" V_r (Relative Speed)": means the difference in speed between a vehicle with rear-end collision alert signal and a following vehicle in the same lane.

"TTC (Time to collision)": means the estimated time for a vehicle with rear-end collision alert signal and a following vehicle to collide assuming the relative speed at the time of estimation remains constant.

- 6.17.7.6. The switch ON period of the rear-end collision alert signal shall be not more than 3 seconds.
- 6.17.8. Tell-tale
Optional."

II. Justification

- The objective of this proposal is to enable the use of Rear-End Collision Alert Signal (RECAS) on motorcycles, a safety function aimed at warning the driver of the following vehicle to avoid an imminent rear-end collision, whose installation is already allowed in UN Regulation No. 48 for vehicles of categories M and N since 2011.
- RECAS provides an automatic signal by means of the direction indicators when the motorcycle detects an imminent collision from the rear, to prompt the driver of the vehicle behind the motorcycle to take immediate action with the ultimate goal of avoiding a crash or, at least, mitigating its consequences.
- The safety benefits provided by RECAS for vehicles of categories M and N can be achieved on motorcycles by the same operating principles, as the RECAS activation does not depend on the vehicle equipped with the system, but it is essentially determined by the characteristics of the following vehicle. Therefore, the proposed amendments to UN Regulation No. 53 are equivalent to the existing RECAS provisions in UN Regulation No. 48.