

Proposal for amendments to UN Regulation No. 78 (Motorcycle braking)

The text reproduced below was prepared by the experts from International Motorcycle Manufacturers Association (IMMA), aiming to introduce activation of stop lamps under more conditions than application of the service brake only (e.g. also by regenerative braking) into Regulation No. 78. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters

I. Proposal

Insert a new paragraph 2.31., to read:

"2.31. "Braking Signal" means a logic signal indicating when illumination of the stop lamp is required or allowed as specified in paragraph 5.1.17 of this Regulation. "

Insert a new paragraph 2.32., to read:

"2.32. "Electric Regenerative Braking System" means a braking system which, during deceleration, provides for the conversion of vehicle kinetic energy into electrical energy and is not part of the service braking system."

Insert a new paragraph 5.1.17. and its sub-paragraphs., to read:

"5.1.17. ~~For vehicle category L, g~~Generation and de-activation of the braking signal to illuminate stop lamp(s) as defined in Regulation no. 53 shall only be under the following conditions:

5.1.17.1. Application of any service brake by the rider shall generate a braking signal that will be used to illuminate the stop lamps.

5.1.17.2. In addition, in case of vehicles powered solely by electric powertrain equipped with electric regenerative braking systems as defined in paragraph 2.32. of this regulation, which produces a retarding force upon release of the accelerator control, the braking signal shall be generated also according to the following provisions:

<i>Vehicle decelerations</i>	<i>Signal generation</i>
$\leq 1.3 \text{ m/s}^2$	The signal may be generated
$> 1.3 \text{ m/s}^2$	The signal shall be generated

"

II. Justification

1. The above proposal is an improved version of document GRRF/2017/14 and GRRF-84-13, which were presented at the September 2017 GRRF session, taking into account the comments raised.

2. The proposal aims to introduce activation of stop lamps under more conditions than the application of the service brake only (e.g. also by regenerative braking) into Regulation No. 78.

3. Regulation No. 53 currently allows for the activation of the stop lamp by application of the brakes only. As already presented at a session of the Working Party on Lighting and Light-Signalling (GRE) (see ECE/TRANS/WP29/GRE/2015/42), IMMA is proposing to introduce activation of stop lamps under more conditions than the application of the service brake only, e.g. also by regenerative braking. As noted in the report of seventy-fourth session of GRE, see ECE/TRANS/WP29/GRE/74, para. 30: "the proposal might need to be accompanied by a modification of Regulation No. 78 under GRRF."

4. IMMA has thus prepared also the correspondent proposal for Regulation No. 78, which is herewith being submitted to GRRF, and is submitting in parallel a revised proposal on Regulation No. 53 to GRE (GRE/2018/29).

5. Amendments of the stop lamp installation requirements in Regulation No. 53 lead to amendments of the stop lamp activation criteria in Regulation No. 78, which are proposed here above.

6. The deceleration criteria in para. 5.1.17.2. were taken from the criteria established in Regulation No. 13, para. 5.2.1.30.2., which reads as follows:

"5.2.1.30. Generation of a braking signal to illuminate stop lamps.

5.2.1.30.1. Activation of the service braking system by the driver shall generate a signal that will be used to illuminate the stop lamps.

5.2.1.30.2. Requirements for vehicles that utilize electronic signalling to control initial application of the service braking system, and equipped with endurance braking and/or regenerative braking system of category A:

<i>Deceleration by the endurance braking and/or regenerative braking system</i>	
$\leq 1.3 \text{ m/s}^2$	$> 1.3 \text{ m/s}^2$
May generate the signal	Shall generate the signal

7. Taking into account that, September 2017, "GRRF raised the question why the author of the proposal selected provisions from Regulation No. 13 and not from Regulation No. 13-H", IMMA deemed that the stop lamp activation should not be prohibited for electric regenerative braking - as in Regulation No. 13 - below 0.7 m/s^2 deceleration, for safety reasons. There should be a possibility to utilize the regenerative braking system for most normal braking events for full electric two and three wheeled vehicles, where the brake pedal might be necessary only for aggressive/emergency braking maneuvers. In such cases the illumination of the stop lamp should not be prohibited below 0.7 m/s^2 deceleration.

a. For example, turning off the stop lamps towards the end of a full stop can be interpreted by the driver of a following vehicle as an intent to accelerate. This driver could potentially accelerate in anticipation of the acceleration of the vehicle in front, while that vehicle is still decelerating.