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(Fifty-fourth session, 5 – 8 April 2005,
agenda item 2.6.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 48

(Installation of lighting and light-signalling devices)

Transmitted by the expert from the European Commission (EC)

Note: The text reproduced below was prepared by the expert from the European Commission in order to improve road safety by the insertion into the Regulation of new provisions for the automatic activation of a hazard warning signal and indication of an emergency braking. It is based on a document without a symbol (informal document No. GRE-53-10), distributed during the fifty-third GRE session (TRANS/WP.29/GRE/53, paras. 11 and 12). The modification to the existing text of the Regulation is marked in **bold** characters.

Note: This document is distributed to the Experts on Lighting and Light-Signalling only.

GE.04-24023

A. PROPOSAL

Insert a new paragraph 2.27., to read:

"2.27. **"Emergency stop signal"** means the flashing of the vehicle's stop lamps to indicate to other road users to the rear of the vehicle that a high retardation force has been applied to the vehicle relative to the prevailing road conditions."

Paragraph 5.9., amend to read:

"5.9. In the absence of specific instructions, **the photometric characteristics (e.g. intensity, colour, apparent surface, etc.) of a lamp shall not vary during the period of activation of the lamp.**

5.9.1. Direction-indicator lamps, the vehicle-hazard warning signal, amber side-marker lamps complying with paragraph 6.18.7. below, **and the emergency stop signal** shall be flashing lamps."

Paragraph 6.6.7., amend to read:

"6.6.7. Electrical connections

6.6.7.1. Shall be such that all the vehicle's direction-indicator lamps flash in phase.

On M₁ and N₁ vehicles less than 6 m in length, with an arrangement complying with paragraph 6.5.5.2. above, the amber side-marker lamps, when mounted, shall also flash at the same frequency (in phase) with the direction indicator lamps.

6.6.7.2. The hazard warning signal shall be capable of being activated and deactivated manually by the driver at any time using a separate control.

6.6.7.3. The signal may be activated automatically under one or more of the following conditions:

6.6.7.3.1. the vehicle speed is less than [30] km/h and the conditions for the activation of the emergency stop signal had been achieved;

6.6.7.3.2. following a vehicle crash.

6.6.7.4. When activated automatically, the hazard warning signal shall remain activated until it is manually or automatically deactivated. The automatic deactivation shall occur when the vehicle accelerates.

6.6.7.5. The hazard warning signal shall not activate automatically at the same time as the emergency stop signal is operating."

Insert new paragraphs 6.22. to 6.22.9., to read:

"6.22. EMERGENCY STOP SIGNAL

6.22.1. Presence

Optional.

6.22.2. Number

As specified in paragraph 6.7.2.

6.22.3. Arrangement

As specified in paragraph 6.7.3.

6.22.4. Position

As specified in paragraph 6.7.4.

6.22.5. Geometric visibility

As specified in paragraph 6.7.5.

6.22.6. Orientation

As specified in paragraph 6.7.6.

6.22.7. Electrical connections

6.22.7.1. The signal shall be given by the simultaneous operation of all the stop lamps, which shall be activated and deactivated automatically and shall flash in phase at a frequency of $[4 \pm 1.5]$ Hz

6.22.7.2. The signal shall operate independently of the other lamps.

6.22.7.3. The signal shall only activate under one or more of the following conditions:

6.22.7.3.1. the vehicle speed is higher than [50] km/h and the deceleration of the vehicle exceeds $[7]$ m/s²;

6.22.7.3.2. [the physical limit of tyre adhesion to the road surface has been achieved.]

6.22.7.4. The signal shall automatically deactivate under any of the following conditions, whichever happens first:

- [the deceleration of the vehicle is less than $[4] \text{ m/s}^2$,
- the service brake is released, or]
- the hazard warning signal is activated;

6.22.8. Tell-tale

None

6.22.9. Other requirements

If a motor vehicle is equipped to draw a trailer, the signal shall also be capable of bringing the stop lamps on the trailer into action.

[Activation of the signal shall be followed within not more than $[0.5] \text{ s}$ by the emission of light and within not more than $[0.5] \text{ s}$ by its first extinction.]"

* * *

B. JUSTIFICATION

Automatic activation of a hazard warning signal and indication of an emergency braking is intended to increase road safety.

This proposal seeks to take account of previous formal and informal documents submitted, and comments made at previous meetings of GRE.

Paragraph 2.27.

The name is changed to indicate that this is a signalling device that operates existing lamps, rather than a new lamp (c.f. hazard warning signal). As such, it will require its own requirements (see paragraph 6.22.)

The definition is based on that for stop lamps, and seeks to avoid reference to specific performance or activation criteria, which should be in the requirements rather than the definition. Exclusion of the reference to service brakes means that the definition does not preclude the activation of the Emergency Stop Signal (ESS) by collision mitigation systems.

Paragraph 5.9.

This has been changed to prohibit any changes in photometric performance during the operation of a lamp, unless specifically permitted. Paragraph 5.9.1. specifically permits flashing of the specified lamps. Specific provisions for lamps that have varying intensities for day/night settings are included in the relevant component Regulation - Regulation No. 48 does not specifically include provisions for this situation.

No specific instructions are included for the enlarging of the apparent surface of stop lamps, so this is prohibited.

Paragraph 6.6.7.

The proposal requires that the hazard warning signal may only operate after the conditions that would trigger the activation of the ESS have been achieved and the vehicle speed is less than 30 km/h. In addition, activation following a crash is permitted.

The proposal specifically states that the hazard warning signal shall not operate at the same time as the ESS, which ensures a sequential operation, i.e. ESS is activated at higher speeds, but as the vehicle speed reduces, the ESS will be automatically deactivated and the hazard warning signal can be automatically activated at a speed below 30 km/h determined by the vehicle manufacturer.

Paragraph 6.22.

This follows the same format as for hazard warning signals.

Paragraph 6.22.1.

Presence is optional, rather than mandatory as, although, there is evidence to suggest that these devices can enhance the safety of a vehicle, there is insufficient evidence to prove that ESS would be cost-beneficial. Therefore, installation should be at the manufacturers' discretion.

Paragraph 6.22.7.

Two activation criteria are given:

- (i) at speeds above [50] km/h and decelerations above [7] m/s², to address 'high' speed emergency braking situations where the ESS may be of benefit. The speed of 50 km/h has been selected to ensure that the ESS should not be activated in urban, low speed, environments, where high decelerations may be readily achieved, or
- (ii) when the ABS is activated. No speed criteria is included in this instance, as the conditions which may be helpful to give a warning to following road users would include low speeds and deceleration occasions when there is a low coefficient of friction between the road and tyre (e.g. icy conditions).

Deactivation criteria are included to ensure that the signal does not remain active any longer than necessary.

Three are envisaged that would ensure that when the emergency has passed, or other signals given, the ESS would be deactivated. In particular, it is anticipated that the ESS would not remain operating when the hazard-warning signal is activated (either automatically or manually).

Paragraph 6.22.9.

Both sub-paragraphs are derived from the requirements for the hazard-warning signal. The first sub-paragraph would seem to be a sensible extension of the ESS system.

The second sub-paragraph is intended to address the performance characteristics of relays that are often used to flash hazard warning lamps. If ESS is to be effective, then the flashing would need to be much sooner than is permitted for hazard warning systems, and should perhaps be regulated.
